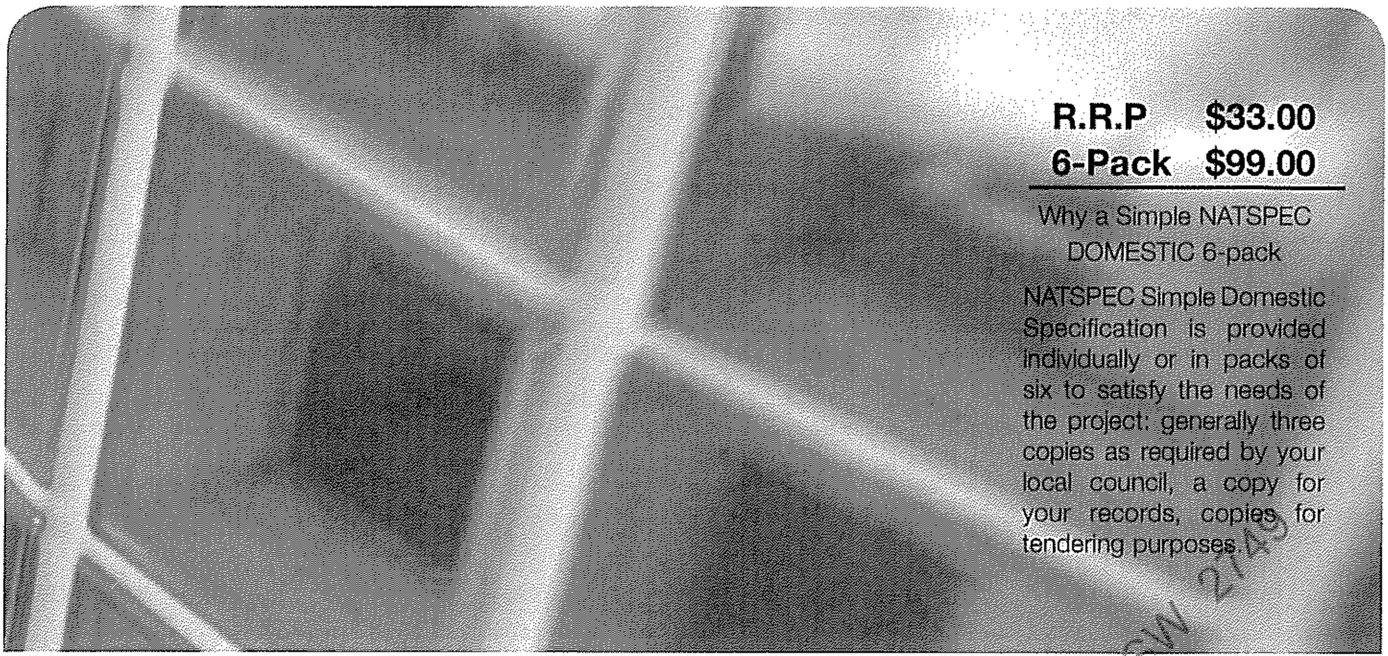
ARCHITECTURAL SPECIFICATION

GREY GUMS OVAL, CRANEBROOK

(Building B) & Auxiliaries

Canteen, Canteen Store, Meeting Room, Office, First Aid Room, Referee Room, Stores, Plant/Service

Revision	Date	Approved by
A	10.04.2018	RMC



R.R.P $33.00
6-Pack $99.00

Why a Simple NATSPEC DOMESTIC 6-pack

NATSPEC Simple Domestic Specification is provided individually or in packs of six to satisfy the needs of the project: generally three copies as required by your local council, a copy for your records, copies for tendering purposes.

SIMPLE DOMESTIC SPECIFICATION

2017 COMPLIANT

In Australia, there is no law requiring contractors to build your project to Australian Standards, if it is not specified or required under the National Construction Code Series. A specification reduces the number of variations, or extras, by enabling a clear understanding of the acceptable level of quality for the project. Without a specification, such as SIMPLE DOMESTIC SPECIFICATION, you may find a number of small extra items resulting in unexpected, substantial additional cost, and you may not receive the quality you would like. For a specification to be enforceable, it needs to be included or referenced in the contractual agreement between you and your contractor.

SIMPLE DOMESTIC SPECIFICATION is suitable for owner-builders undertaking new domestic building work or alterations and additions, using conventional construction practice under normal conditions covered by Class 1a and Class 10 of the Building Code of Australia.

SIMPLE DOMESTIC SPECIFICATION is a reference specification. It provides a quality statement which defines the minimum level of acceptable materials and workmanship for the building works. It should be included, along with drawings and schedules, as a condition of contract between the owner and the builder.

SIMPLE DOMESTIC SPECIFICATION relies on the 'organiser only' owner taking responsibility for complying with statutory, local government and other mandatory requirements. A comprehensive checklist of project specific information which may require additional documentation, such as drawings or schedules, is included to assist the owner. For work involving extensive structural design, customised airconditioning, prestige finishes or unusual features, facilities or conditions (e.g snow, high winds, earthquake, bushfire zoning and/or marine exposure), the owner is recommended to engage professional consultants to prepare a customised specification.

Professional consultants should use the NATSPEC national building specification system for architects, building designers, landscape architects, structural engineers and services engineers.

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Australian Institute of Architects

AIBS Australian Institute of Building Surveyors

AIQS Australian Institute of Quantity Surveyors

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Use the current edition

This specification is published annually and is aligned with NCC Volume 2 Building Code of Australia Class 1 and Class 10 Buildings.

DEFINITIONS

Specifications are written descriptions of the required quality of the built product and its component products.

Drawings are graphic descriptions which define quantity, position and sometimes quality.

Schedules are written selections, often presented as tables, which form an appendix or addition to another document such as the specification or a drawing.

PURPOSE

The quality of a building project is dependent on the documentation included as part of the contract. The adoption of the National Construction Code (NCC) under State and Territory building regulation establishes a minimum level of quality of construction. Higher standards of construction and quality of workmanship are achieved through the contractual agreement between the owner and the builder and are not defined by the NCC or administered by the certifying or approval authority. The contract documents include the general conditions of contract, the schedules, the drawings and the specification which complement each other to express the owner's intentions to the builder.

The specification has many roles. It may be:

- A written record of design decisions taken.
- A document demonstrating compliance with statutory requirements.
- An estimating document.
- A tendering document.
- A legal (contractual) document.
- An on-site working document.
- A dispute settlement document.
- A project management tool.

THE FORM OF A SPECIFICATION

NATSPEC SIMPLE DOMESTIC SPECIFICATION is divided into worksections classified, numbered and sequenced according to the National Classification System which corresponds to Australian construction industry practice. Where appropriate, each worksection is divided into three parts:

- **General** including standards, definitions and submission requirements.
- **Products** including details of materials and components.
- **Execution** dealing with the fabrication, installation, erection and completion as part of a project.

METHODS OF SPECIFICATION

NATSPEC SIMPLE DOMESTIC SPECIFICATION uses the well recognised methods of specifying by:

- **Reference**: Where an identifiable printed and published document is incorporated by reference. Such documents may be Australian Standards or manufacturer's technical manuals. The Australian standards referenced in NATSPEC SIMPLE DOMESTIC SPECIFICATION include those which are referenced in the NCC and are relevant to domestic work, have other statutory application, are important to the quality of materials and work in terms of public safety and long-term performance of the building and/or are widely accepted in the building industry.
- **Performance**: That is, by stating a desired end result and the criteria by which the result will be judged for its acceptability.
- **Description**: Detailing the materials, workmanship and installation procedures to be used.
- **Direct**: Specification stating a proprietary trade name product. The owner may specify particular brands or products on the drawings or in the schedules.

NATSPEC SIMPLE DOMESTIC SPECIFICATION is a reference specification and does not require editing or amendment. It is intended for inclusion, along with other documents such as drawings and schedules, as a condition of contract for the building works. It assumes all project specific design information is shown on the drawings or in schedules, including the requirements of the consent authority. The Preliminaries worksection provides for the requirements of the drawings and schedules to override conflicting requirements of this reference specification.

National Construction Code

The National Construction Code (NCC), including state and territory variations, is enforced by local authorities and controls domestic construction in Australia, along with the requirements of statutory authorities (e.g. electricity and water supply). This specification has been aligned with NCC Volume 2 but any local requirements must take precedence. NATSPEC recommends that the users of this document have ready access to NCC Volume 2 – Building Code of Australia (BCA) Class 1 and Class 10 Buildings (e.g. local library).

Work Health and Safety (WHS)

Everyone at a workplace is responsible for complying with stringent Occupational Health and Safety legislation. However, the accountable person has primary control over the workplace and therefore the greatest WHS responsibility. A builder engaged to manage a project and organise the relevant sub-contractors is the accountable person and must make sure that they, their employees and sub-contractors work in a safe manner. An owner builder, engaging independent tradespeople as required, is the accountable person responsible for ensuring the tradespeople comply with safety standards. WHS legislation in some States and Territories also includes statutory obligations on designers in relation to WHS issues arising out of their designs during and after construction. It is important to note that WHS obligations differ in each State and Territory.

Standards and tolerances

Check that the building work conforms to requirements of the drawings, schedules and this specification. *Guide to Standards and Tolerances* is a reference document of best construction practice available on the web.

Dispute resolution

Many building contracts include dispute resolution provisions and in most states there are dispute resolution services provided and/or mandated under State legislation.

The following is a checklist of project specific information that may require additional documentation on the drawings or in schedules.

This checklist is provided to assist the owner and does not form part of the contract between the owner and the builder.

0131 Preliminaries

- Prior applications and approvals: List of applications made and approvals received. All items noted in the Local Council Development Approval and Construction Certificate checklist. Conditions of approval that impact design and construction.
- Mines Subsidence Districts: Note Conditions of approval
- Occupied premises: Define.
- Energy efficiency: Approval commitments.
- Site restrictions: Easements, restrictions arising out of actions of adjoining land owners, limitations related to continued occupancy by owner, toxic ground conditions.
- Block and survey pegs for the purpose of setting out, checking or measuring the work.
- Site access: Define access to and within the site, use of the site for temporary works and constructional plant, working and storage areas, parking.
- Conditions for work on adjoining property: Define.
- Existing services: Define use of existing services as temporary services for the performance of the contract.
- Temporary services: Define if it is necessary to specify particular requirements such as temporary services for owner facilities if construction activities interfere.
- Items to be supplied by the owner: Define items and any conditions of supply.
- Requirements for dilapidation records on adjoining properties if there is a danger of damage to adjoining property.

0180 Common requirements

- Bushfire protection. AS 3959 is incorporated in the BCA, but many local authorities have their own requirements which must also be complied with. SAA HB 330 is an invaluable aid to understanding bushfire protection and is designed to be read in conjunction with the standard. AS 3959 defines 6 levels of construction for low to extreme Bushfire Attack Levels (BAL). Consult local councils for any additional bushfire protection requirements.
- Timber durability: See Natural and treated timber durability table of Common requirements. AS 5604 gives a comprehensive table of the natural durability of timber species. Clause 6 sets rules for the use of timber in relation to its natural durability class and for its preservative treatment if it does not have the required natural durability.
- Recycled material: Nominate type, certification and source.
- Corrosion protection environment: Nominate the Corrosion protection environment as defined in BCA Table 3.5.1.1a.
- Moisture content: A convenient method for testing the moisture content of new concrete is the hand held hygrometer that is mastic sealed to the surface and left 16 hours overnight. The reading obtained is the relative humidity in the instrument chamber after equalisation with the concrete. A rule of thumb for the approximate drying time for concrete slabs is one month for every 25 mm thickness.

0184 Termite management

- Location: Slab, slab penetrations, slab control joints and footing/slab joints, under slabs, building perimeters, under suspended floors and timber poles and posts.
- Type: Select from concrete slab, sheet materials, woven stainless steel mesh, graded particles, chemical barriers or reticulated systems.
- Termite barrier notice: Locate in the electrical meter box.

0201 Demolition

- Identify items for removal, recycling or re-use.
- Identify items for protection in their existing location.
- Notification of asbestos products.

0221 Site management

- Temporary fence: Location. A temporary fence or safety barrier may be required by the local authority.
- Trees and shrubs to be protected. Local authorities often have detailed requirements for protection of trees.
- Trees and shrubs to be removed.
- Include erosion and sedimentation control and any other site management requirements noted by the local authority.
- Soil stockpile locations

0222 Earthwork

- Site classification to BCA 3.2.4.
- Excavation.
- Surface preparation. AS/NZS 3500.3 is referenced in BCA 3.1.2.0 for storm water drainage.
- Crawl space under suspended floors: Subfloor ventilation requirements are set out in BCA 3.1.2.3 and BCA 3.4.1. These requirements vary for climate zones. Open spaces under timber floors can be subjected to hot drying wind at times that could shrink the flooring and in these circumstances a vapour barrier is recommended under the flooring. BCA 3.4.1 calls for a general clearance of 400 mm under suspended timber floors that can be reduced to 150 mm within 2 m of an external wall for sloping sites.
- Placing fill: Requirements for load-bearing fill should be specified by a professional engineer. AS 3798 gives general advice on earthworks. Inadequate backfilling can lead to differential settlement and damage to paving and landscaping. In reactive clay soils, it is important that service trenches do not act as a conduit to carry moisture into the ground next to the foundations, so impervious material should be used for backfill.

0223 Service trenching

- Trench widths.
- Backfilling material.

0242 Landscape – fences and barriers

- Location, material, manufacturer, height, finish and colour of fencing and gates.
- The construction and maintenance of common fences dividing land with separate titles is covered by state legislation.
- Nominate a preservative treatment.
- Fencing for swimming pools: Check the local authority for additional requirements. AS 1926.1 and AS 1926.2 are referenced in the BCA for safety fencing of swimming pools. Hazards such as fountains, fish ponds, incinerators, barbecues, and vehicle manoeuvring areas should also be fenced off or otherwise secured.

0250 Landscape – gardening

- Imported topsoil: Composition and supplier.
- Removal and disposal of excess spoil.
- Turfed areas.
- Schedule of plants: Species, size as supplied and location.

0271 Pavement base and subbase

- Base course material and thickness.

0274 Concrete pavement

Concrete pavements, except footpaths should be specified by a professional engineer. The requirements for in situ concrete may be varied if it is unreinforced. AS 3727 can then be used for design purposes.

- Site preparation.
- Mix, thickness, grading, location of control joints and finish.
- Concrete strength.
- Reinforcement.
- Type: Select concrete colour, broom finish or stamped finish.
- Curing.

0276 Paving – sand bed

- Preparation and bedding sand/mortar edge restraint.
- Thickness, grading and laying.
- Cutting.
- Type: Select from clay brick pavers or concrete.
- Pattern: Select from rectangular or interlocking.

0310 Concrete

- Construction notes/specification on structural engineer's drawings.
- Because ground conditions vary so much within Australia, concrete ground slabs or footings are usually designed by a professional engineer, but this is not always necessary. AS 2870 has 'deemed-to-comply' provisions. The BCA 3.2.4 contains a table of site classifications that are the basis for requirements for footing design. The site classification should be determined by the local council engineer or a geotechnical engineer. SAA HB 28 and SAA HB 109 are also useful design guides.
- Formwork: Stripping times and repair. The design of the formwork is the contractor's responsibility. This applies to all formwork types, including conventional, proprietary or purpose-made formwork.
- Ground slab vapour barrier: Note type. Provision of a vapour barrier for external slabs on ground prevents water loss to the subgrade and has the potential to reduce slab curling at edges and corners.
- Concrete strength.
- Reinforcement: Location, cover to reinforcement and splicing.
- Joints.
- Surface finish class: To AS 3610.1 (Class 1 – 5)
  - Class 2 – high.
  - Class 3 – good.
- Surface finish type: Select from:
  - Machine float: Under dry floor finishes.
  - Steel trowel: Under resilient finishes, garage floors.
  - Wood float: External
  - Broomed/patterned/coloured: External.
  - Rough scored: Under tiles in a mortar bed.
  - Specify others.
- Slip resistance, if required.
- Curing.

0331 Brick and block construction

For buildings not conforming to the scope of the AS 4773 series use AS 3700.
Consult the local approval authority to determine where walls over a certain height require design by a professional engineer.

Energy efficiency requirements at BCA 2.6 set out minimum insulation performance requirements for walls, roofs, floor slabs and external glazing depending on climate zone and orientation.

- Masonry units: Brick or block.
- Reinforced blockwork.
- Masonry unit description: Type/size, colour, texture, supplier. Check durability if soil is aggressive or heavily fertilized.
- Mortar type: M3 applies generally, except that M4 applies for interior elements subjected to saline wetting and drying, elements below the damp-proof course or in contact with ground that are in aggressive soils, elements in severe marine environments as defined by AS 4773.1 clause 4.3.1, elements in saline or contaminated water including tidal and splash zones and elements in especially aggressive environments.
- Mortar colour.
- Damp proof courses.
- Cavity width: Note increased width if wall insulation is required to BCA 3.12.1.4.
- Wall ties: Type and location.
- Flashing details.
- Mortar joint types: Select tooled, weatherstruck or raked. Mortar joints which are not completely filled and tooled may not provide adequate weatherproofing. A flush joint which is cut with the trowel without compacting the mortar should not be used externally unless agreed.
- Brick rods.
- Bond patterns.
- Joints.
- Lintels.
- Chasing locations.
- Air vent location: For subfloor ventilation, BCA 3.4.1 and BCA Table 3.4.1.1 provides minimum requirements for various climates.
- Weep holes.
- Weephole guards: Insect only or insect and bushfire ember protection.
- Control joints: Clay bricks grow after they have been fired and concrete slabs shrink after they have been poured. The provision for control joints is based on a minimum age of bricks and supporting concrete. If these ages cannot be complied with, additional joints may be necessary. Refer to AS 4773.2 Section 7 for joint detail.

0342 Light steel framing

The NASH-1 (National Association of Steel-framed Housing) is cited in the BCA. It sets out the design criteria to comply with the performance requirements of the BCA for steel framing of low-rise housing as well as commercial buildings. Design of structural steelwork, and cold-formed steel framing except domestic, should be by a professional engineer. The local authority may have requirements for permanent earthing of the frame. Refer to AS/NZS 3000 Section 5 for earthing arrangements and earthing conductors.

- Framing to NASH-1 and NASH-2.
- Cyclonic area as classified in BCA figure 3.10.1.4.

- Steel roof truss: Type and supplier.

0382 Light timber framing

Detailed requirements for timber framing in areas with design gust wind speeds up to 33 m/s are set out in AS 1684.4 but other codes designed for local conditions may be acceptable or mandatory. For cyclonic areas refer to AS 1684.3.

Design of timber framing to AS 1720.1 should be by a professional engineer.

- Cyclonic area as classified in BCA figure 3.10.1.4.
- Framing to AS 1684 series.
- Bracing.
- Timber roof truss: Supplier.
- Truss type. Design of timber trusses to AS 1720.1 and AS 1720.5.
- Fascias and barge boards.

0383 Decking and platform floors

- Material and fixings.
- Timber decking selection.

0421 Roofing

- Roof tiles: Manufacturer, material, pattern and colour.
- Sheet metal roofing: Manufacturer, profile, finish, BMT and colour.
- Flashing and rainwater goods: Material, finish and colour.
- Roof lights: Selection details. Check the product for compliance, particularly spark arrestor mesh. See BCA 3.12.1.3 for thermal performance requirements of roof lights serving a habitable room. See BCA 3.7.1.10 for locating combustible roof lights. See BCA 3.7.4.0 for construction requirements for buildings in bushfire prone areas.
- Roof ventilators: Selection details.

0431 Cladding

- Cladding type: Fibre cement planks or sheeted system, plywood, timber weatherboards, hardboard planks, AAC panels, or EIFS (external insulated finishing system).
- Description: Manufacturer, material, pattern and colour.

0451 Windows and glazed doors

Performance: For each elevation document the total U-value, solar heat gain coefficient, reflectance %, WERS energy rating % (heating and cooling) and AWA (Australian Window Association) Compliance certificate. BCA 3.12.2 sets out thermal performance of external glazing. See BCA 3.12.3 for sealing of windows and doors.

- Location.
- Size.
- Window rating: To AS 2047.
- Water penetration resistance: To AS 2047.
- Door and window type.
- Operation: Swing, sliding or cavity sliding.
- Material: Aluminium, timber, PVC-U.
- Sliding internal doors; removable pelmets.
- Finish and colour.
- Insect/security screens.
- Bushfire screens.
- External glazing systems.

0453 Doors and access panels

- Location.
- Size.
- Door type: Flush solid core, flush hollow core, timber panelled, aluminium framed and glazed.
- Operation: Swing, sliding or cavity sliding doors.
- Material.
- Door frames: Timber, steel, or aluminium.
- Multiple folding doors.
- Sliding internal doors; removable pelmets.
- Security screen doors and bushfire screens.
- Floor clearances.

0454 Overhead doors

- Type: Roller, tilting, sectional, plywood, prefinished steel, stain/clear, paint or powder coated.
- Manufacturer.
- Operation. e.g. Direct manual or Motorised.
- Motorised operation: e.g. Direct push-button, Key switch, Radio remote controller, etc.

0455 Door hardware

- Lock function.
- Lock durability, physical security and keying security. Refer to AS 4145.2.
- Door furniture style.
- Weatherseal requirements.

0467 Glass components

- Mirrors, shower screens, glass balustrades: To AS 1288.
- Mirror fixing: Select adhesive (double sided adhesive tape) or mechanical (screw fixing, frame fixing, bead fixing or clip fixing). Where mirrors are required, by AS 1288, to be Grade A safety glass, ordinary annealed glass may be substituted when the panel is fully backed by and completely adhered to a solid material. Mirrors with backing avoid the distortion problem associated with toughened mirror glass. In wet or moist areas the space behind the mirror should be either well ventilated or entirely sealed.
- Glass balustrades: Framed (post fixing) or frameless (side fixings), pocket fixing (size, set back from concrete, glazing and sealing material). AS/NZS 1170.1, clause 3.6 deals with imposed loads on barriers, including parapets, balustrades and railings.
- Glazed shower screens: Water shedding details, sliding assemblies.

0471 Thermal insulation and pliable membranes

- Location on plan and within the building element.
- Energy efficiency: Type, thickness and R-value for floors, walls, ceilings and roofs. See BCA 3.12 Energy Efficiency, and check state and local council regulations.
- Pliable membranes: Note if acting as vapour permeable, vapour barrier, reflective thermal insulation or together in combination. In cool climates provide a vapour barrier on the warm side of bulk insulation.
- Slab edge insulation.
- Pipe insulation.

0511 Lining

- Material: Plasterboard, fibre cement, timber/plywood feature lining.
- Trims: Skirtings, cornices, architraves and picture rails.

0551 Joinery

- Layout and location: Kitchen, laundry, study, bedrooms.
- High moisture resistance materials: Plinths, carcasses, drawer fronts, shelves and doors.
- Finishes and colour: Carcass, bench tops, splashbacks, cupboards and internal surfaces.
- Benchtop details.

- Wardrobe carcasses and frames.
- Wardrobe doors and panels.
- Drawer and door hardware, including handles.
- Edge treatment to laminated panels and benchtops e.g. rolled edge or plastic edgestrip.
- Timber stairs and balustrades.

0572 Miscellaneous furniture, appliances and fixtures

- Kitchen appliances: Product selection, colour and connection details for dishwasher, wall oven, cook top, range hood, microwave.
- Laundry appliances: Product selection, colour and connection details for washing machine and dryer.
- All appliances: Compliance with Minimum Energy Performance Standards (MEPS).
- Bathroom fixtures: Towel rails, soap holders, toilet paper holder, handrails, clothes hooks and cabinets.
- General fixtures / appliances: Clothes line, letterbox, street number, door bell.

0611 Rendering and plastering

- Level of finish: See Guide to Standards and Tolerances.
- Material, substrate, thickness, joints.
- Finish: wood float (sandy finish), steel trowel (polished) and sponge (smooth textured).
- Cornices.
- Cornice cement.

0621 Waterproofing – wet areas

- Extent. To BCA 3.8.1.2.
- Membrane: Manufacturer and type.
- Shower tray: PVC, copper, stainless steel.

0631 Ceramic tiles

- Location.
- Internal tile selection: Floors, skirtings, walls, dado.
- External tile selection: Slip resistance to AS 4586.
- Grout: Type and colour.

0651 Resilient finishes

- Location.
- Product and manufacturer.

0652 Carpets

- Location.
- Product and manufacturer.
- Underlay.
- Edge strip: Type, material and colour.
- Fixing method: Select from covers gripper, direct-stick, or double-bond systems.

0654 Engineered panel floors

- Location.
- Product and manufacturer.

0655 Timber flooring

- Location.
- Species and manufacturer.
- Profile, width.
- Recycled timber flooring: If stained nail holes are unacceptable, specify remedial work such as coring and plugging with matching timber.

0656 Floor sanding and finishing

- Location.
- Product and manufacturer.

Guidance on the properties of coating systems is given in AS 4786.2 Appendix C. Advice on the properties include edge bonding, fume nuisance, darkening with age, flammability, wear resistance and gloss levels. Coating systems can be selected from the following groups: Oil based finishes, solvent based polyurethane finishes or water based finishes.

0671 Painting

Select your paint and supplier.

- External: Final coat paint type, finish (full, semi, low gloss or flat) and colour for fascias and barges, rainwater goods, eaves, cladding, shutters, balustrades and handrails, posts and beams and masonry.
- Windows and external doors: Final coat paint type, finish (full, semi, low gloss or flat) for internal, external and mouldings. Front and garage door panels and frames and windows.
- Internal: Final coat paint type, finish (full, semi, low gloss or flat) and colour: Room by room schedule for walls, ceilings, doors and frames and joinery.

0702 Mechanical design and install

So that the air conditioning systems can be adequately designed, the drawings should show:

- Preferences for heating and cooling systems (e.g. ducted, non-ducted split etc.) otherwise leave to the contractor's choice.
- The extent and performance (R-Values) of insulation for the walls roof and floor.
- The type, location and performance of windows.
- External shading of windows and intended type of internal shading (e.g. blinds, curtains).
- The preferred location of plant, otherwise leave to the contractor's choice.
- Any provisions for ducts (e.g. duct risers, roof spaces).
- Rooms requiring mechanical ventilation. The BCA requires that where its requirements for natural ventilation are not satisfied, mechanical ventilation must be provided. Identify areas requiring mechanical ventilation on the drawings. If local exhaust fans are required (e.g. for a bathroom), include the fans in Electrical design and install.
- The type of supply, return and exhaust grilles if there is a preference, otherwise leave to the contractor's choice.

It is recommended that the following be provided by tenderers for review before the mechanical tender is accepted:

- Outside design conditions, corresponding geographic location and source of data.
- Calculated total and sensible cooling capacities and heating capacity.
- Name of calculation method used.
- Makes and model numbers of proposed equipment.
- Compliance of proposed equipment with Minimum Energy Performance Standard (MEPS).
- Details and locations of controls.
- Total and sensible cooling capacities and heating capacity of the proposed equipment, adjusted for the specified outdoor and indoor conditions and any effects of the proposed plant configuration.
- Any assumptions on which the calculations are based (e.g. that the curtains will be closed at all times).
- Details of any departures from this specification.
- A drawing of the proposed duct, pipe and equipment layout showing proposed zoning.
- An explanation of why the proposed zoning has been chosen.

- Licence numbers and type of licences held by persons responsible for the installation.

Other matters:

- The AIRAH Residential Air Conditioning Best Practice Guideline for each State and Territory (available free from www.airah.org.au) sets out industry best practice guidelines for the selection, installation and maintenance of residential air conditioning units. The guideline addresses issues such as energy efficiency and air conditioner noise in a clear and concise manner.
- The plant should have at least 12 months defects liability and maintenance period to make sure it operates through the full range of cooling and heating seasons.

0802 Hydraulic design and install

The drawings should show:

- Cold water pipe material, otherwise leave to the contractor's choice. In bushfire prone areas, above - ground gas and water pipes, and pipes < 300 mm below ground are to be metal, not plastic.
- Heated water pipe material, otherwise leave to the contractor's choice.
- Mixing valves if required.
- Water heater location and details e.g. gas instantaneous, electric, and solar or heat pump. Include manufacturer, model/capacity and temperature control for thermostatic mixing valves and special taps.
- Cold and heated water: For insulation of heated water pipes see AS/NZS 3500.4 Sections 8 or AS/NZS 3500.5 clause 3.33 which require insulation only at the heater and between the heater and the kitchen sink, document additional insulation, if required. A maximum temperature of 50°C is required by AS/NZS 3500.5 at clause 3.2.2 for all personal hygiene sanitary fixtures. A maximum temperature of 60°C is recommended for kitchen sinks and laundry tubs. This can be achieved by adjusting tempering values, thermostats, regulating flow e.g. with thermostatic mixing valves, or by using special taps.
- Provisions for additional piping for connecting to irrigation, toilet flushing, laundry, swimming pool top-up and similar uses (if required and permitted).
- External hose cock locations.
- Stormwater detention (if required by local authority, and in addition to any rainwater storage).
- Sanitary plumbing and drainage layout including the location of the connection point to the Network Utility Operator's mains and/or rainwater tanks if required by local authority.
- Sanitary ware items, locations and tapware e.g. sinks, basins, baths, WC, shower trays, laundry tub.
- Location of other plumbed items e.g. dishwasher, washing machine.
- For WCS: P-trap or S-trap, dual or single flush, exhaust ventilation through cistern.
- For sinks and hand basins: Number of tap holes for each (0, 1, 2 or 3).
- Waste disposal unit, if required.
- Rainwater tank (if required): Size, material, location, connections, pump and what rainwater serves. Plastic tanks are not to be used in bushfire prone areas.
- Gas Meter location.
- Gas appliance connection points.
- Gas bayonet outlet locations.
- Greywater system (if required): Source of greywater (e.g. laundry), location of the greywater diversion devices, surge tanks and connections to intended use (e.g. irrigation system).

0902 Electrical design and install

- Switchboards: The Electricity Distributor's Service and Installations Rules defines further prohibited locations for switchboards and metering equipment.
- Telecommunications installation: Fees in respect of applications for electricity and telecommunications services are normally paid by the owner. Consider specifying as 'smart-wired'. See www.smartwiredhouse.com.au
- Accessory schedule: Type, function and location of socket outlets, light switches, dimmers, telephone outlet, data outlet, exhaust fans, circulating fans, and computer outlets.
- Luminaire schedule: Type, product selection, lamp type and location. The Australian Government has introduced a programme to eliminate low efficiency lamps, including incandescent and low voltage halogen reflector types.
- Smoke detection system: To BCA 3.7.2. Details of automatic 'back to base' alarms if required.
- Cable/satellite television network operator.
- Intruder alarm system. Method of arming/disarming and details of automatic action on alarm registering i.e. local or 'back to base' or auto dialler.
- Garage door operation.
- Home automation: Full details of location functionality and equipment selected.

Make sure all subcontractors are aware of the requirements within
0180 Common requirements

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0131 PRELIMINARIES

1 GENERAL

1.1 THE SITE

Occupied premises

General: For the parts of the site designated as occupied premises:

- Allow occupants to continue in secure possession and occupancy of the premises for the required period.
- Maintain safe access for occupants.
- Arrange work to minimise nuisance to occupants and for their safety.
- Protect occupants against weather, dust, dirt, water or other nuisance, by such means as temporary screens.

Protection of persons and property

Temporary works: Provide and maintain required barricades, guards, fencing, shoring, temporary roadways, footpaths, signs, lighting, watching and traffic management.

Accessways and services: Do not obstruct or damage roadways and footpaths, drains and watercourses and other existing services in use on or adjacent to the site. Determine the location of such services.

Property: Do not interfere with or damage property which is to remain on or adjacent to the site, including adjoining property encroaching onto the site, and trees.

Rectification

Accessways and services: Rectify immediately any obstruction or damage to roadways and footpaths, drains and watercourses and other existing services in use on or adjacent to the site. Provide temporary services whilst repairs are carried out.

Property: Rectify immediately any interference or damage to trees and property which are to remain on or adjacent to the site, including adjoining property encroaching onto the site.

Existing services

Service to be continued: Repair, divert or relocate, as documented.

Trenches: If the existing service crosses the line of a required trench, or will lose support when the trench is excavated, provide permanent support for the existing service.

Redundant services: Remove redundant parts and make safe.

Interruptions to services: Minimise the number and duration of interruptions.

Signs

General: Provide a signboard displaying the lot number, the builder's name, address and licence number, and the BCA accreditation authority, address and contact details, if required.

1.2 BUILDING THE WORKS

Order of precedence of documents

Precedence: Requirements of the schedules and drawings override conflicting requirements in this reference specification.

Survey marks

Definition: A survey peg, bench mark, reference mark, signal, alignment, level mark or any other mark used or intended to be used for the purpose of setting out, checking or measuring the work.

Care of survey marks: Preserve and maintain the principal's survey marks in their true positions.

Rectification: If the survey marks are disturbed or obliterated, immediately rectify.

Items supplied by owner

General: Materials and other items supplied free of charge to the contractor for installation in the execution of the works. Unload and take delivery, inspect for defects and take care of the items. If defects are found, advise. Return unused items to the principal.

1.3 MISCELLANEOUS

Contractor and owner to observe confidentiality

Publicity: Do not issue information concerning the project for publication in the media without prior written approval of the owner.

0180 COMMON REQUIREMENTS

1 GENERAL

1.1 APPLICABILITY

General

Requirement: Conform to *0171 General requirements*, as appropriate, in all worksections.

1.2 STANDARDS

Current editions

General: Use referenced Australian or other standards (including amendments), and the BCA including state and territory variations which are current three months before the date of the contract except where other editions or amendments are required by statutory authorities. Any local authority requirements take precedence.

1.3 INTERPRETATION

Definitions

General: For the purposes of this document the definitions given below apply:

- Owner: Owner has the same meaning as client, principal or proprietor and is the party to whom the contractor is legally bound to construct the works.
- Contractor: Means the same as builder.
- Documented: Documented, as documented and similar terms mean contained in the contract documents.
- Metallic-coated: Steel coated with zinc or aluminium-zinc alloy via a continuous hot-dip process.
- Hot-dip galvanized: Zinc coated to AS/NZS 4680 after fabrication.
- Professional engineer: As defined by the BCA.
- Proprietary: Identifiable by naming manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.
- Provide: Provide and similar expressions mean supply and install and include development of the design beyond that documented.
- Required: Means required by the contract documents, the local council or statutory authorities.
- Supply: Supply, furnish and similar expressions mean supply only.

1.4 BUSHFIRE PROTECTION

General

Conformance: In areas designated as bushfire prone, comply with statutory and local authority requirements.

Standard: To AS 3959 in conjunction with SAA HB 330.

2 PRODUCTS

2.1 GENERAL

Manufacturers' or suppliers' recommendations

General: Provide and select, if no selection is given, transport, deliver, store, handle, protect, finish, adjust and prepare for use the manufactured items in accordance with the current written recommendations and instructions of the manufacturer or supplier.

Proprietary items/systems/assemblies: Assemble, install or fix to substrate in accordance with the current written recommendations and instructions of the manufacturer or supplier.

Substitution

Identified proprietary items: Identification of a proprietary item does not necessarily imply exclusive preference for the identified item, but indicates the necessary properties of the item.

Alternatives: If alternatives to the documented products, methods or systems are proposed, submit sufficient information to permit evaluation of the proposed alternatives.

2.2 TIMBER

Acclimatisation

General: Acclimatise timber fitouts by stacking them for two weeks in the in-service conditions with air circulation to all surfaces after the following are complete:

- Air conditioning operational.
- Lighting operational.
- Site drainage and stormwater works are complete.
- Space fully enclosed and secure.
- Wet work complete and dry.

Unseasoned timber

General: If unseasoned timber is provided, or variation in moisture content is likely, make allowance for shrinkage, swelling and differential movement.

Durability

General: Provide timbers with natural durability appropriate to the conditions of use or preservative-treated timbers of equivalent durability.

Natural durability class of heartwood: To AS 5604.

Preservative treatment: To the AS 1604 series.

Minimum requirement: To the **Natural and treated timber durability table**.

Natural and treated timber durability table

Exposure	Natural timber	Treated timber	Remarks
	Required durability class to AS 5604	Required hazard class to the AS 1604 series	
Inside, above ground. Completely protected from the weather. Well ventilated	Class 4	H1	Treated timber resistant to lyctids. Untreated timber must be protected from termites
Inside, above ground. Protected from wetting with nil leaching. Well ventilated	Class 3	H2	Treated timber resistant to borers and termites. Untreated timber must be protected with a finish
Above ground, exposed to weather. Periodic moderate wetting and leaching	Class 2	H3	Treated timber resistant to borers, termites and moderate decay. Applicable to weatherboards, fascias, pergolas (above ground), window joinery, framing and decking
In-ground	Class 1	H4 (Severe wetting and leaching)	Treated timber resistant to borers, termites and severe decay. Applicable to fence posts, greenhouses, pergolas (in-ground) and landscaping timbers
		H5 (Extreme wetting and leaching and/or critical uses.)	Applicable to retaining walls, piling, house stumps, building poles, cooling tower fill

2.3 STEEL

Durability

General: Provide steel products protected from corrosion to suit the conditions of use.

Internal engineer-designed steel members: Remove mill scale, rust, moisture and oil. Coat with a zinc phosphate primer to the manufacturer's instructions.

Built-in products below damp proof course: Stainless steel 316 or engineered polymer.

Corrosion resistance

General: Conform to the atmospheric corrosivity category as defined in AS 4312, the AS/NZS 2312 series and the **Building performance schedule**.

Compliance: Conform to the **Corrosion resistance table** or provide proprietary products with metallic and/or organic coatings of equivalent corrosion resistance.

Preparation and pre-treatment

Standard: To the AS 1627 series.

Galvanizing

General: Galvanize mild steel components (including fasteners) to AS 1214, AS 1397 or AS/NZS 4680, as appropriate, and in the following conditions:

- Exposed to weather.
- Embedded in masonry.
- Exposed to or in air spaces behind external leaves of masonry walls.
- In contact with chemically treated timber.

2.4 PROTECTIVE COATINGS

General

Environment: To AS/NZS 2312.1 clause 2.3.

Coating designation: To AS/NZS 2312.1 Table 6.3.

CCA (copper chrome arsenic) treated timber

Greasing: Before placing bolts or other metal components in contact with CCA-treated timber, paint contact surfaces or coat in grease or a bituminous coating.

Unseasoned timber
General: Do not fix in contact with steel framing without fully painting the contact surfaces of timber and steel.

2.5 FASTENERS

Self-drilling screws
Standard: To AS 3566.1.

2.6 VAPOUR BARRIER

General
Vapour barrier to slabs: To AS 2870 clause 5.3.3.

Minimum thickness: 0.2 mm.

2.7 DAMP-PROOF MEMBRANES

General (Damp-proof)
Damp-proof membrane: To AS 2870 clause 5.3.3.

Type: High impact resistant polyethylene film, minimum 0.2 mm thick. which has been pigmented and branded by the manufacturer.

3 EXECUTION

3.1 WALL CHASING

Holes and chases
General: Make holes and chases required in masonry walls so that the structural integrity of the wall is maintained. Do not chase walls nominated as fire or acoustic rated.

Parallel chases or recesses on opposite faces of a wall: Not closer than 600 mm to each other.

Chasing in blockwork: Chase only core-filled hollow blocks or solid blocks not designated as structural.

Concrete blockwork chasing table

Block thickness (mm)	Maximum depth of chase (mm)
190	35
140	25
90	20

3.2 MOISTURE CONTENT

Flooring
General: Do not start installation of flooring unless:

- Concrete substrate: The moisture content of the concrete has been tested to AS 1884 Appendix A and values in clause A3.1.2 and A3.1.3 have been obtained.
- Plywood substrates and timber flooring products: The moisture content has been tested to AS/NZS 2098.1 for plywood and AS/NZS 1080.1 for timber and values obtained as follows:
  - Air conditioned buildings: 8 to 10%.
  - Intermittently heated buildings: 10 to 12.5%.
  - Unheated buildings: 12 to 15%.

3.3 FIXING

General
Suitability: If equipment is not suitable for fixing to non-structural building elements, fix directly to structure and trim around penetrations in non-structural elements.

Fasteners
Sufficiency: Use proprietary fasteners capable of transmitting the loads imposed, and sufficient for the rigidity of the assembly.

3.4 FOOTPATH CROSSING

General
Requirement: Provide a footpath and kerb crossing to local authority requirements.

3.5 COMPLETION

General
Removal of temporary work, services and plant: Remove temporary work services and construction plant within 10 working days after occupation of the works.

Final cleaning: Remove rubbish and surplus material from the site and clean the works throughout including interior and exterior surfaces exposed to view. Vacuum clean carpeted and soft surfaces. Clean debris from the site, roofs, gutters, downpipes and drainage systems.

Samples: Remove non-incorporated samples, sample panels and prototypes.

Warranties: Register with manufacturers, as necessary, and provide copies of manufacturers' warranties.

Instruction manuals: Provide the manufacturers' instruction manuals.

Operation: Make sure moving parts operate safely and smoothly.

Surveyor's certificate: Provide a certificate which confirms that the work, including boundary fences, has been correctly located.

Services layout: Provide a plan which shows the location of underground services.

Authorities' approvals: Provide evidence of approval of the local authority or principal accredited certifier and statutory authorities whose requirements apply to the work.

Keys: Provide two keys for each set of locks keyed alike and two keys for each lock keyed to differ.

0184 TERMITE MANAGEMENT

1 GENERAL

1.1 STANDARDS

General
Standard: To AS 3660.1.

General
Standard: To AS 3660.1.

Termite management system notice
Requirement: Permanently fix a durable notice in a prominent location to BCA 3.1.3.4.

Certification
Requirement: Submit installation certificate to AS 3660.1 Appendix A.

0201 DEMOLITION

1 GENERAL

1.1 STANDARDS

Demolition
Standard: To AS 2601.

1.2 SUBMISSIONS

Records
Dilapidation record: Submit a copy of the dilapidation record for inspection. Submit to each owner of each adjacent property a copy of the part of the record relating to that property and obtain their written agreement to the contents of the record, before commencement of demolition.

2 EXECUTION

2.1 SUPPORT

Temporary support

Existing buildings: Until permanent support is provided, provide temporary support for sections of existing buildings which are to be altered and which rely for support on work to be demolished.

2.2 PROTECTION

Encroachment

General: Prevent the encroachment of demolished materials onto adjoining property, including public places.

Weather protection

General: If walls or roofs are opened for alterations and additions, or the surfaces of adjoining buildings are exposed, provide temporary covers to prevent water penetration. Provide covers to protect existing plant equipment and materials intended for re-use.

Security

General: If walls or roofs are opened for alterations or additions, provide security against unauthorised entry to the building.

2.3 DEMOLITION

Asbestos removal

Method: Use wet removal methods recommended in the Safe Work Australia Code of Practice - How to safely remove asbestos.

Dilapidation record

Purpose: Use the dilapidation record to assess the damage and rectification work arising from the demolition work.

Notice of completion

General: Give at least 7 working days' notice of completion of demolition so that adjacent structures may be inspected following completion of demolition.

Rectification: Repair any damage arising out of demolition work. Obtain written acceptance from the owner of each adjoining property of the completeness and standard of the rectification work.

0221 SITE PREPARATION

1 EXECUTION

1.1 CONTROL AND PROTECTION

Erosion control

General: Plan and carry out the work so as to avoid erosion, contamination, and sedimentation of the site, surrounding areas, and drainage systems.

Dewatering

Requirement: Keep earthworks free of water. Prevent water flow over freshly laid work.

1.2 TREE PROTECTION

General

Protection: Protect from damage trees which are required to be retained. Provide a temporary fence or safety barrier if required by the local authority. Comply with local authority requirements for protection of trees.

Work near trees

Harmful materials: Keep the area within the dripline free of sheds and paths, construction material and debris.

Work under trees: Do not remove topsoil from, or add topsoil to, the area within the dripline of the trees.

1.3 SITE CLEARING

Extent

Requirement: Clear only areas to be occupied by works such as structures, paving, excavation, regrading and landscaping or other areas designated to be cleared.

Clearing and grubbing

Clearing: Remove everything on or above the site surface, including rubbish, scrap, grass, vegetable matter and organic debris, scrub, trees, timber, stumps, boulders and rubble.

Turf: Remove turf to a depth just sufficient to include the root zone.

Grubbing: Grub out stumps and roots over 75 mm diameter to a minimum depth of 500 mm below subgrade under buildings, embankments or paving, and 300 mm below the finished surface in unpaved areas. Backfill holes remaining after grubbing with sand material to prevent ponding of water. Compact the material to the relative density of the existing adjacent ground material.

Surplus material

Removal: Take possession of surplus material and removal it from the site.

0222 EARTHWORK

1 GENERAL

1.1 STANDARDS

General

Earthwork: To the recommendations of AS 3798.

1.2 INTERPRETATION

Definitions

General: For the purposes of this worksection the following definitions apply:

- Site classification: To AS 2870 and BCA 3.2.4.
- Subgrade: The trimmed or prepared portion of the formation on which the pavement, footing or slab is constructed. Generally taken to relate to the upper line of the formation.
- Zone of influence: A foundation zone bounded by planes extending downward and outward from the bottom edge of a footing, slab or pavement and defining the extent of foundation material having influence on the stability or support of the footings, slab or pavement.
- Bad ground: Ground unsuitable for the purposes of the works, including fill liable to subsidence, ground containing cavities, faults or fissures, ground contaminated by harmful substances and ground which is, or becomes, soft, wet or unstable.
- Rock: Monolithic material with volume greater than 0.5 m^3 which cannot be removed until broken up by rippers or percussion tools.

2 EXECUTION

2.1 REMOVAL OF TOPSOIL

General

Extent: Areas of cut or fill and areas occupied by structures, pavements and embankments.

Maximum depth: 200 mm.

Soil removal: Remove topsoil unsuitable for re-use from the site to AS 3798 clause 6.1.8.

2.2 EXCAVATION

Extent

Site surface: Excavate over the site to give correct levels and profiles required as the basis for structures, paving

and landscaping. Make allowance for compaction or settlement or heaving.

Footings: Excavate for footings to the required sizes and depths. Confirm that the foundation conditions meet the design bearing capacity.

Crawl space: Provide a clear space under timber or steel bearers:

- Minimum clearance: 400 mm.

Existing footings

Requirement: If excavation is required within the zone of influence of an existing footing, use methods including (temporary) shoring and underpinning that maintain the support of the footing and make sure that the structure and finishes supported by the footing are not damaged.

Existing services

Utility services: Contact DIAL BEFORE YOU DIG to identify location of underground utility services pipes and cables.

Bearing surfaces

General: Provide even plane bearing surfaces for loadbearing elements including footings. Step to accommodate level changes. Make the steps to the appropriate courses if supporting masonry.

Grading

External areas: Grade to give falls away from buildings, minimum 1:100.

Subfloor areas: Grade the ground surface under suspended floors to drain ground or surface water away from buildings without ponding.

2.3 PREPARATION FOR FILLING

Preparation

Stripping: Prepare the ground surface before placing fill (including topsoil fill), ground slabs or load bearing elements to AS 3798 clause 6.1.5. Remove materials which will inhibit or prevent satisfactory placement of fill layers, loose material, debris and organic matter.

2.4 PLACING FILL

Placing fill

Placement: To BCA 3.2.2.

Layers: Place fill in near-horizontal layers of uniform thickness no greater than 150 mm after compaction, deposited systematically across the fill area.

Moisture content: Adjust the moisture content of fill during compaction in order to achieve the required density.

Base preparation underground slab vapour barrier or damp-proof membrane: Blind the surface with sufficient sand to cover any hard projections. Dampen the sand just before placing the vapour barrier.

0223 SERVICE TRENCHING

1 PRODUCTS

1.1 FILL MATERIALS

General

Backfill material: To **FILL MATERIALS** in *0222 Earthwork*, free from stones larger than 100 mm maximum dimension and as follows:

- Next to services: Do not place any particles greater in size than 25 mm within 150 mm of services.
- Under paved areas and within 4 m of structures: Coarse sand, controlled low strength material or fine crushed rock.
- In reactive clay: In sites classified M, M-D, H1, H1-D, H2, H2-D, E or E-D to AS 2870, re-use excavated site material at a moisture content within ± 1% of that of the adjoining in situ clay.

2 EXECUTION

2.1 EXCAVATING

Excavation

General: Excavate for underground services in conformance with the following:

- To required lines and levels, with uniform grades.
- Straight between access chambers, inspection points and junctions.
- With stable sides.

2.2 TRENCH BACKFILL

General

Place fill: To **PLACING FILL** in the *0222 Earthwork* worksection.

Timing: Backfill service trenches as soon as possible after laying and bedding the service, if possible on the same working day.

Layers: Compact all material in layers not exceeding 150 mm compacted thickness. Compact each layer to the relative compaction specified before the next layer is commenced.

2.3 SURFACE RESTORATION

General

Reinstatement: Reinstate existing surfaces removed or disturbed by trench excavation to match existing and adjacent work.

0242 LANDSCAPE – FENCES AND BARRIERS

1 PRODUCTS

1.1 TIMBER

Posts and rails

Hardwood: To AS 2082.

Softwood: To AS 2858.

Pickets and palings

Hardwood: To AS 2796.1, Section 8.

- Grade to AS 2796.2: Select.

Softwood: To AS 4785.1, Section 7.

Seasoned cypress pine: To AS 1810, Section 5.

Preservative treatment

Timber type: Provide only timbers with preservative treatment appropriate to the Hazard class.

Cut surfaces: Provide supplementary preservative treatment to all cut and damaged surfaces.

CCA treated timber: If proposed to be used, provide details.

1.2 STEEL

Steel tubes

Posts, rails, stays and pickets: To AS/NZS 1163.

- Grade: C350L0.

Post and rail finish: Hot-dip galvanized.

1.3 COMPONENTS

Steel panel fencing

Steel framing: Zinc-coated or aluminium/zinc alloy coated steel to AS 1397.

Steel sheeting: Prepainted to AS/NZS 2728.

Timber fencing

General: Conform to the timber members in the **Timber fencing sizes table.**

Timber fencing sizes table

Member	Preservative treated soft wood picket (mm)	Preservative treated soft wood paling/lap and cap (mm)	Hardwood or cypress pine paling/lap and cap (mm)
Maximum height	1200	1800	1800
End/corner gate posts	90 x 90	100 x 100	125 x 125 or 100 x 100
Intermediate posts	90 x 90	140 x 45 or 100 x 75	125 x 50 or 100 x 75
Maximum post spacing	2400	2400/2700*	2700*
Rails	70 x 40	75 x 50 or 100x 38	75 x 50 or 100x 38
Picket/paling size	70 x 19	75, 100 or 150* x 15	100 or 150* x 13
Capping	-	125 x 35	100 x 50
Footing type	Earth	Earth	Earth
Footing size (diameter x depth)	200 x 600	250 x 600	250 x 600
* Three rail fences only			

Fencing for swimming pools

Design, construction and performance: To AS 1926.1.

Location of fencing for private swimming pools: To AS 1926.2.

2 EXECUTION

2.1 GENERAL

Installation

Requirement: Adopt local industry practices for set-out, clearing of vegetation, excavation, minimum footing size, materials, components and erection.

0250 LANDSCAPE – GARDENING

1 GENERAL

1.1 STANDARDS

Soils

Site and imported topsoil: To AS 4419.

Potting mixes: To AS 3743.

Composts, soil conditioners and mulches: To AS 4454.

2 PRODUCTS

2.1 MATERIAL

Topsoil

Source: Provide topsoil which contains organic matter, will support plant life and is free from stones, contaminants and weeds.

Site: If available, provide material recovered from the site.

Turf

Description: Cultivated turf of even thickness, free from weeds and other foreign matter.

Supplier: A specialist grower of cultivated turf.

Plants

General: Provide plants in conformance with the local authority approval requirements.

3 EXECUTION

3.1 GENERAL

Weed eradication

Herbicide: Eradicate weeds with a non-residual glyphosate herbicide in any of its registered formulae, at the recommended maximum rate.

Watering

General: Comply with local restrictions.

Turf: Water immediately after laying turf until the topsoil is moistened to its full depth. Maintain moisture to this depth.

Planting: Water as required to maintain planting to the completion of the contract.

0271 PAVEMENT BASE AND SUBBASE

1 PRODUCTS

1.1 BASE AND SUBBASE MATERIAL

Granular material

Requirement: Provide unbound granular materials, including blends of two or more different materials which when compacted develop structural stability and are uniform in grading and physical characteristics.

Crushed rock and recycled material class

Requirement: Provide crushed rock and recycled material as documented, from the following classes:-

- Class 2: Pavement base material (with no minimum plasticity index) for unbound pavements which may not require a very high standard of surface preparation.
- Class 3: Subbase material for unbound flexible pavements.

2 EXECUTION

2.1 SUBGRADE PREPARATION

General

Requirement: Prepare the subgrade in conformance with *0222 Earthwork*.

2.2 PLACING BASE AND SUBBASE

General

Weak surfaces: Do not place material on a surface that is weakened by moisture and is unable to support, without damage, the construction plant required to perform the works.

Spreading: Spread material in uniform layers without segregation.

Moisture content: Maintain wet mixed materials at the required moisture content before and during spreading. Add water to dry mixed materials through fine sprays to the entire surface of the layer after spreading, to bring the material to the required moisture content.

Compacted layer thickness: 200 mm maximum and 100 mm minimum. Provide layers of equal thickness in multilayer courses.

2.3 TOLERANCES

Surface level

General: Provide a finished surface level which is free draining and evenly graded between level points.

2.4 BASE AND SUBBASE COMPACTION

General

Construction operation: Compact each layer of fill to the required depth and density, as a systematic construction operation.

Minimum relative compaction table

Item description	Minimum dry density ratio (modified compaction) to AS 1289.5.2.1
Subbase	95%
Base	98%

Compaction requirements
General: Apply uniform compactive effort, over the whole area to be compacted, until the required density is achieved or until failure is acknowledged.

Equipment: Use rollers appropriate to the materials and compaction requirements documented.

0274 CONCRETE PAVEMENT

1 GENERAL

1.1 STANDARDS

General
Specification and supply: To AS 1379.

Materials and construction: To AS 3600.

Residential pavements: To AS 3727.1.

Vapour barrier
Requirement: To AS 2870 clause 5.3.3.

Grading
General: Grade paving to even falls to drain away from buildings to drainage outlets without ponding.

Minimum fall for drainage: 1:100.

0276 PAVING – SAND BED

1 PRODUCTS

1.1 MATERIALS

Sand
Bedding and joint filling: Well-graded and free of deleterious materials such as soluble salts which may cause efflorescence.

Mortar
Mix proportions (cement:sand): 1:3.

2 EXECUTION

2.1 GENERAL

Preparation
General: Trim the subgrade to the required profile and to suit the thickness of pavers and sand bed. Compact to a firm, even surface.

Base course
General: Conform to 0271 Pavement base and subbase.

Edge restraint
Perimeter: If not provided by other structures, provide edge restraints to bedding and units.

Type: Bed units in mortar at least 40 mm thick.

Drainage: Position the edge restraint and pavers so that the top of the pavers is slightly above the front edge of the edge restraint.

Bedding course
Bedding sand: Screed uncompacted sand over prepared base uniformly to achieve a 30 mm thick layer. Maintain sand at a uniform loose density and moisture content.

Grading
General: Grade paving to even falls to drain away from buildings to drainage outlets without ponding.

Minimum fall for drainage: 1:100.

Laying
General: Lay paving units on the screeded sand bedding to the nominated pattern shown on the drawings.

Joints: 2 to 5 mm gap.

Cut courses: 50 mm minimum plan dimension. On footpaths and other linear elements, use at least two cut courses and maintain symmetry.

Compaction: Compact the sand bedding after laying paving units using a vibrating plate compactor and appropriate hand methods, and continue until lipping between adjoining units is eliminated.

Joint filling: Spread dry sand over the paving units and fill the joints by brooming. Carry out one or more passes with the vibrating plate compactor and refill the joints with sand. Repeat the process until the joints are completely filled.

0310 CONCRETE

1 GENERAL

1.1 STANDARDS

General
Formwork design and construction, formed surfaces: To AS 3610 and AS 3610.1.

Plywood formwork: To AS 6669.

Specification and supply of concrete: To AS 1379.

Reinforced concrete construction: To AS 3600.

Residential ground slabs and footings: To AS 2870.

Design
Requirement: As documented by a professional engineer.

Vapour barrier or damp-proof membrane
Requirement: Conform to *Common requirements* worksection.

0331 BRICK AND BLOCK CONSTRUCTION

1 GENERAL

1.1 STANDARD

General
Materials and construction: To AS 4773.1 and AS 4773.2.

2 PRODUCTS

2.1 DURABILITY

General
Exposure environment: To AS 4773.1 clause 4.3.

Exposure locations: To AS 4773.1 clause 4.4.

2.2 MATERIALS

Bricks and blocks
Standard: To AS/NZS 4455.1 and AS/NZS 4455.3.

Salt attack resistance grade: To AS 4773.2 Table 2.1.

Mortar materials
Sand: Fine aggregate with a low clay content and free from efflorescing salts, selected for colour and grading.

Proportions: To AS 4773.1 Table 3.1

2.3 BUILT-IN COMPONENTS

General
Durability class of built-in components: To AS 4773.1 Table 4.1.

Steel lintels
Angles and flats: Sizes to AS 4773.1 Table 12.2.

Cold-formed lintels: Designed to AS/NZS 4600.

Corrosion protection: To AS/NZS 2699.3.

Galvanizing: Do not cut after galvanizing.

Wall ties
Standard: To AS/NZS 2699.1.

Type: A.

Corrosion protection: To AS/NZS 2699.1.

Spacing: To AS 4773.2 clause 9.7 and clause 10.6.

Flashings and damp-proof courses
Standard: To AS/NZS 2904.

3 EXECUTION

3.1 GENERAL

Mortar mixing
General: Measure volumes accurately to the documented proportions. Machine mix for at least six minutes.

Protection from contamination
General: Protect masonry materials and components from ground moisture and contamination.

Bond
Type: Stretcher bond.

Clearance for timber frame shrinkage
General: In timber frame brick veneer construction, leave clearances between window frames and brick sill and between roof frames and the brick veneer as follows:

- Additional clearance: Accommodate additional shrinkage of unseasoned floor timbers.
- Single storey frames and ground floor windows (not for slab on ground): 10 mm.
- Two storey frames and upper floor windows: 20 mm.

Joining to existing
General: Provide a control joint where joining to existing structures. Do not tooth new masonry into existing work unless approved by a professional engineer.

Mortar joints
Finish: Conform to the following:

- Externally: Tool to give a dense water-shedding finish.
- Internally: If wall is to be plastered, do not rake more than 10 mm to give a key.
- Thickness: 10 mm.

3.2 FACEWORK

Cleaning
General: Clean progressively as the work proceeds to remove mortar smears, stains and discolouration. Do not erode joints if using pressure spraying.

Acid solution: Do not use.

Colour mixing
Distribution: In facework, distribute the colour range of units evenly to prevent colour concentrations and banding.

Sills and thresholds
General: Solidly bed sills and thresholds and lay them with the top surfaces drain away from the building.

Minimum size of unit: Three quarters full width.

3.3 SUBFLOOR WORK

Access openings
General: In internal walls, leave door-width openings beneath doorways to give access to underfloor areas.

Air vent location
General: Provide air vents to give adequate cross ventilation to the space under suspended ground floors.

3.4 CAVITY WORK

Cavity width
General: Construct minimum cavity widths in conformance with the following:

- Masonry walls: 50 mm.
- Masonry veneer walls: 40 mm between the masonry leaf and the loadbearing frame and 25 mm minimum between the masonry leaf and sheet bracing.

3.5 DAMP-PROOF COURSES

Location
General: To AS 4773.2 clause 9.6 and clause 10.5.

Installation
General: Lay in long lengths. Lap the full width of angles and intersections and 150 mm at joints. Step as necessary, but not more than 2 courses per step for brickwork and 1 course per step for blockwork. Sandwich damp-proof courses between mortar.

3.6 FLASHINGS

Location
General: To AS 4773.2 clause 9.6 and clause 10.5.

Installation
General: Sandwich flashings between mortar except where on lintels.

Pointing: Point up joints around flashings to fill voids.

Weepholes
Location: Provide weepholes to external leaves of cavity walls in the course immediately above flashings, and cavity fill, and at the bottoms of unfilled cavities.

Form: Open perpend.

Maximum spacing: 1200 mm.

0342 LIGHT STEEL FRAMING

1 GENERAL

1.1 STANDARDS

General
Design, materials and protection: To AS/NZS 4600.

Residential and low-rise steel framing: To NASH-1 (National Association of Steel Housing) and NASH-2 Standard.

2 EXECUTION

2.1 GENERAL

Fabrication
Length: Cut members accurately to length so that they fit firmly against abutting members.

Service holes: Form holes by drilling or punching.

Bushes: Provide plastic bushes or grommets to site cut holes.

Swarf: Immediately remove swarf and other debris from cold-formed steel framing.

Prefabricated wall frames and trusses
Assembly: Factory assemble wall frames and trusses.

Bracing: Provide details of bracing.

Certification: Obtain certification from a professional engineer for the erected frames.

Protection: Protect from damage or distortion during storage, transport and erection. Provide temporary protection for members until permanent covering is in place

Site work
Requirement: On-site welded connections are not permitted.

Metal separation
General: Install lagging to separate non-ferrous service pipes and accessories from the framing.

Unseasoned or CCA treated timber
General: Do not fix in contact with framing without fully painting the timber and/or the steel.

Earthing
Permanent earthing: Required.

Protection
General: Restore coatings which have been damaged by welding or other causes. Thoroughly clean affected areas back to base metal and coat with a zinc rich organic primer.

Grommets: Provide grommets to isolate piping and wiring from cold-formed steel framing.

Vermin barriers

Requirement: Provide vermin barriers as follows:

- Brick veneer barrier: Fix 10 mm steel galvanized wire mesh to the underside of the bottom plate of external stud walls, extending across the cavity for building into brickwork.

Anti-ponding boards

Standard: To AS/NZS 4200.2.

Fascia, valley and barge boards

Requirement: Provide fascia, valley gutter boards and barge boards in conformance with the manufacturer's requirements.

0382 LIGHT TIMBER FRAMING

1 GENERAL

1.1 STANDARDS

General

Residential timber framed construction: To AS 1684.2, AS 1684.3 or AS 1684.4, as appropriate.

Nailplated roof trusses: To AS 1720.5.

2 EXECUTION

2.1 GENERAL

Fabrication

Length: Cut members accurately to length so that they fit firmly against abutting members.

Service holes: Form holes by drilling.

Prefabricated wall frames and trusses

Assembly: Factory assemble wall frames and trusses.

Bracing: Provide details of bracing.

Certification: Obtain certification from a professional engineer for the erected frames.

Protection: Protect from damage or distortion during storage, transport and erection. Provide temporary protection for members until permanent covering is in place

Timber fasteners

Metal washers: Provide washers to the heads and nuts of all bolts and coach screws.

Connectors: Press connector plates fully into the frame members. Knots not permitted in plate area.

Joints

General: No gaps greater than 2 mm.

Priming

Steel: Before fixing, prime steel which is not galvanized or metallic-coated.

Vermin barriers

Requirement: Provide vermin barriers as follows:

- Brick veneer barrier: Fix 10 mm galvanized steel wire mesh to the underside of the bottom plate of external stud walls, extending across the cavity for building into brickwork.

Anti-ponding boards

Standard: To AS/NZS 4200.2.

Fascia, valley and barge boards

Requirement: Provide fascia, valley gutter boards and barge boards.

Damp-proof course

Requirement: Provide damp-proof courses under the bottom plate of stud walls built off slabs or masonry dwarf walls, as follows:

- External walls (not masonry veneer): Turn up at least 75 mm on the inside and tack. Project 10 mm beyond the external slab edge or dwarf wall and turn down at 45°.
- Walls of bathrooms, shower rooms and laundries: Turn up at least 150 mm on the wet side and tack to studs.

Flashings

Location: Provide flashings to external openings sufficient to prevent the entry of moisture. Form trays at the ends of sill flashings.

Masonry veneer construction: Extend flashing across cavities and build into brickwork.

0383 SHEET FLOORING AND DECKING

1 GENERAL

1.1 STANDARDS

General

Flooring and decking: To AS 1684.2, AS 1684.3 or AS 1684.4, as appropriate.

2 PRODUCTS

2.1 DECKING

New timber decking

Standard:

- Treated softwood to AS 4785.1 Section 4.
- Hardwood to AS 2796.1 Section 4.

2.2 SHEET FLOORING

Plywood

Standard: To AS/NZS 2269.0.

Grade: Bond Type A to AS/NZS 2754.1.

Particleboard

Particleboard: To AS 1860.1, Class 1.

Compressed fibre cement sheeting

Standard: To AS/NZS 2908.2.

Category: Minimum 4.

3 EXECUTION

3.1 GENERAL

Timber decking on steel joists

General: Screw fix seasoned timber battens to the steel joists so that their top surfaces are aligned.

3.2 FIXING SHEET FLOORING

Particleboard flooring

Installation: To AS 1860.2.

Plywood flooring

Installation: To AS 1684.2, AS 1684.3 or AS 1684.4, as appropriate.

Compressed fibre cement flooring

Installation: Lay the length of the sheets at right angles to the joists. Stagger the end joints and locate centrally over joists. Apply adhesive to edges of sheets and firmly butt join together.

Minimum number of spans across support: 2.

Fixing: Pre-drill screw holes with 1 mm clearance over screw diameter and countersink. Fix with corrosion resistant countersunk screws.

Spacing of fasteners:

- Sheet edge and intermediate: Less than 450 mm.
- Corners and sheet edges: At least 12 mm from sheet edges and 50 mm from corners.

Wet area flooring: Stop screw heads with sealant.

3.3 FIXING DECKING

Timber decking

Installation: Lay in long lengths with the ends of each board firmly butted to the next and firmly in contact with the joists. Stagger joints and make over joists.

Gap between edges of seasoned boards: 4 mm.

Minimum number of spans across support: 3.

Nailing:

- General: Make sure the boards are in contact with the joists at the time of nailing, particularly where boards are machine nailed. If nails are to be less than 10 mm from ends of boards, pre-drill nail holes 0 to 1 mm undersize.
- Top nailing: Double nail at each bearing with nails driven flush. Offset nails at intermediate fixings or skew nail 10° in opposite directions.

Sealing: Apply 1 coat of water repellent preservative and 1 coat of finish coat to top surface of joists and all surfaces of boards before fixing.

0421 ROOFING

1 PRODUCTS

1.1 COMPONENTS

Fasteners

Finish: Prefinish exposed fasteners with an oven baked polymer coating to match the roofing material.

1.2 MATERIALS

Sheet metal roofing

Standard: To AS 1562.1.

Corrosion protection: To BCA Table 3.5.1.1a.

Roof tiling

Standard: To AS 2049.

Accessories: Compatible with the tiles and necessary to complete the tiling.

Plastic sheet roofing

Unplasticised polyvinyl chloride (PVC-U) sheet: To AS 4256.2.

Glass fibre reinforced polyester (GRP) sheet: To AS 4256.3.

Polycarbonate: To AS 4256.5.

Skylights

General: To AS 4285.

Skylights (roof lights) in bushfire prone areas: To AS 3959.

Roof windows

Standard: To AS 4285.

Type: A proprietary window system for non-vertical installation in roofs pitched between 15° and 85°.

Roof windows (roof lights) in bushfire prone areas: To AS 3959.

Roof ventilators

General: A proprietary roof ventilator system, including framing, fixing, trim, seals, accessories and flashings.

Finish: Match adjacent roofing.

Roof plumbing goods

Standard: To AS/NZS 3500.3.

Flashing and capping

Standard: To AS/NZS 2904.

2 EXECUTION

2.1 GENERAL

Installation

General: To the manufacturer's recommendations.

Roof tiling: To AS 2050.

Plastic sheet roofing: To AS 1562.3.

2.2 ROOF PLUMBING

Jointing sheet metal rainwater goods

Sealing: Seal fasteners and mechanically fastened joints. Fill the holes of blind rivets with silicone sealant.

Flashings and cappings

Upstands: Flash projections above or through the roof with two part flashings consisting of an apron flashing and an over-flashing, with at least 100 mm vertical overlap. Provide for independent movement between the roof and the projection.

Wall abutments: Provide overflashings where roofs abut walls, stepped to the roof slope in masonry and planked cladding, otherwise raking and as follows:

- In masonry: Build into the full width of the outer leaf. Turn up within cavity, sloping inward across the cavity and fixed to or built in to the inner leaf at least 75 mm above.

Gutters

Minimum slope of eaves gutters: 1:200.

Minimum width overall of valley gutters: 400 mm.

Eaves gutter overflow measures: To BCA 3.5.2.4.

Downpipes

General: Prefabricate downpipes to the required section and shape where possible. Connect heads to gutter outlets and, if applicable, connect feet to rainwater drains.

Downpipe support: Provide supports and fixings for downpipes.

0431 CLADDING

1 PRODUCTS

1.1 MATERIALS

Hardboard planks

Requirement: Proprietary wet-processed fibreboard planks.

Standard: To AS/NZS 1859.4.

Classification: Exterior.

Plank thickness: 9.5 mm.

Joints and edges: PVC-U extrusions.

External corners: Preformed metal joining pieces.

Internal corners: Scribe.

Fibre cement planks

Requirement: Proprietary system of single faced fibre cement building planks.

Standard: To AS/NZS 2908.2. Type A Category 3.

Plank thickness: 7.5 mm.

Joints and edges: PVC-U extrusion.

Corners: Preformed metal joining pieces.

Profiled sheet metal

Standard: To AS 1562.1.

Fibre cement sheet

Standard: To AS/NZS 2908.2.

Cladding, eaves and soffit linings: Type A Category 3.

Compressed cladding: Type A Category 5.

Sheet cladding: A proprietary system of single faced fibre cement sheets:

- Arrangement: Set out in even panels with joints coinciding with framing.
- Sheet thickness: 6 mm.
- Joints, corners and edges: PVC-U extrusion.

Eaves lining: Single faced fibre cement:

- Sheet thickness: 4.5 mm.
- Joints: PVC-U extrusion.

Plastic sheets

Requirement: Proprietary plastic sheets.

Unplasticised polyvinyl chloride (PVC-U) sheet: To AS 4256.4.

Glass fibre reinforced polyester (GRP) sheet: To AS 4256.3.

Polycarbonate: To AS 4256.5.

1.2 COMPONENTS

Flashing material

Standard: To AS/NZS 2904.

2 EXECUTION

2.1 GENERAL

Cladding

Installation: To the manufacturer's recommendations.

0451 WINDOWS AND GLAZED DOORS

1 GENERAL

1.1 STANDARDS

General

Selection and installation: To AS 2047.

Glazing

Glass type and thickness: To AS 1288, if no glass type or thickness is nominated.

2 PRODUCTS

2.1 GENERAL

Glass

Safety glasses: To AS/NZS 2208.

Aluminium frame finishes

Powder coating: To AS 3715:Anodising: To AS 1231:

- Thickness: ≥ 15 to 20 microns.

Flashings

Standard: To AS/NZS 2904.

Window labelling and certification

Requirement: To AS 2047 Section 8.

Protection of openable windows

Fall prevention: To BCA 3.9.2.5.

Testing: To AS 5203.

2.2 COMPONENTS

Insect screens

Aluminium framed insect screens: Provide aluminium extruded or folded box frame sections with mesh fixing channel, mitred, staked and screwed at corners. Provide an extended frame section where necessary to adapt to window opening gear.

- Mesh: Bead the mesh into the frame channel with a continuous resilient gasket, so that the mesh is taut and without distortion.

Bushfire screens and seals

Protection: Protect glazed windows and doors from the ingress of embers.

Standard: AS 3959.

Security screens

Security grilles and screen doors: To AS 5039.

Installation: To AS 5040.

2.3 HARDWARE

Hardware documented generically

General: Provide hardware of sufficient strength and quality to perform its function, appropriate to the intended conditions of use, compatible with associated hardware, and fabricated with fixed parts firmly joined.

3 EXECUTION

3.1 INSTALLATION

Preglazing

Window assemblies and glazed doors: Supply inclusive of glazing, shop preglazed.

Weatherproofing

Flashings and weatherings: Install flashings, weather bars, drips, storm moulds, caulking and pointing so that water is prevented from penetrating the building between frames and the building structure under prevailing service conditions, including normal structural movement of the building.

Fixing

Packing: Pack behind fixing points with durable full width packing.

Prepared masonry openings: If fixing of timber windows to prepared anchorages is by fastening from the frame face, conceal the fasteners by sinking the heads below the surface and filling the sinking flush with a material compatible with the surface finish.

Trim

General: Provide mouldings, architraves, reveal linings, and other internal trim using materials and finishes matching the window frames. Install to make neat and clean junctions between frames and the adjoining building surfaces.

0453 DOORS AND ACCESS PANELS

1 PRODUCTS

1.1 DOOR FRAMES

Aluminium frames

General: Assembled from aluminium sections, including accessories such as buffers, pile strips, strike plates, fixing ties or brackets and cavity flashing, with provision for fixing documented hardware.

Timber frames

Hardwood: To AS 2796.1.

- Grade: Select.

Softwood: To AS 4785.1.

- Grade: Select.

Joints:

- Morticed head and through tenons.
- Trenched head:
  - Bare faced tenons on jambs.
  - Full let-in jambs.

1.2 DOORS

General

Doors: Proprietary products manufactured for interior or exterior applications and for the finish required.

Flush doors

General: Provide flush doors of balanced construction.

Construction

Door thickness:

- General: 35 mm.
- External doors and doors over 900 mm wide: 40 mm.

Tolerance

Squareness: The difference between the lengths of diagonals of a door:

- Maximum 3 mm.

Twist: The difference between perpendicular measurements taken from diagonal corners:

- Maximum 3 mm.

Door panel nominal size (mm):

- Height: ± 2.
- Width: + 2, - 0.

Security screen doors

Standard: To AS 5039.

Bushfire screens and seals

Protection: Protect glazed windows and doors from the ingress of embers.

Standard: AS 3959.

1.3 ANCILLARY MATERIALS

Flashings

Standard: To AS/NZS 2904.

2 EXECUTION

2.1 GENERAL

Security screen door

Installation: To AS 5040.

Ceiling access

General: Trim an opening and provide a loose access panel of minimum size 600 x 400 mm.

Under floor access

Requirements: Provide a frame and a door, minimum size 620 mm wide x 600 mm high, complete with padbolt.

Priming

General: Prime timber door leaves on top and bottom edges before installation.

2.2 FRAMING

Timber frames

Building into masonry: Screw galvanized steel brackets twice to jambs and build in.

Fixing to masonry openings: Build in seasoned timber plugs to masonry joints or use proprietary expansion anchors and screw twice through jambs at each fixing.

Fixing to stud frame openings: Back screw twice to jambs at each fixing.

Heads of fasteners: Conceal where possible, otherwise sink the head below the surface and fill the sinking flush with a material compatible with the surface finish.

Finishing

Trim: Provide mouldings, architraves, reveal linings, and other internal trim using materials and finishes matching the door frames. Install to make neat and clean junctions between the frame and the adjoining building surfaces.

Weatherproofing

Flashings and weatherings: Install flashings, weather bars, drips, storm moulds, caulking and pointing to prevent water from penetrating the building between the door frame and the building structure under the prevailing service conditions, including normal structural movement of the building.

2.3 SLIDING INTERNAL DOORS

Face mounted

General: Provide overhead track supports and head and jamb linings appropriate to the arrangement of the door, and removable pelmets at the head to allow access to the wheel carriages for adjustment.

Wheel carriages: Fully adjustable precision ball race type providing smooth, quiet operation.

Cavity sliding

Door assemblies: Proprietary product comprising steel and timber frame construction with rigid steel top, base and rear supporting members and incorporating the overhead door track, ball race type wheel carriages, guides, stops, split jamb linings and removable pelmet.

0454 OVERHEAD DOORS

1 GENERAL

1.1 STANDARD

General

Garage doors: To AS/NZS 4505.

0455 DOOR HARDWARE

1 PRODUCTS

1.1 COMPONENTS

Hinges

Requirement: Provide 3 hinges for external doors and door leafs over 2040 mm in height and 600 mm in width. Conform to the **Hinges table**.

Hinges table

Size of door (mm x mm)	Number of hinges (per door leaf)	Size of hinges (steel)
2040 x 920	3	100 x 75 x 2.5 mm
2040/2400 x 1020	4	100 x 100 x 2.5 mm

Locksets

External doors: Push-button key and knob set and a double-cylinder dead bolt to each door.

Internal doors:

- Generally: Passage sets.
- Bathrooms, showers and toilets: Privacy sets.
- Sliding patio doors and windows: Key-lockable surface mounted bolts.

Keying

Requirement: Key doors (excluding garage doors) alike and key windows alike.

2 EXECUTION

2.1 INSTALLATION

Supply

Delivery: Deliver door hardware items, ready for installation, in individual complete sets for each door.

Mounting height

Door lockset mounting heights: 1000 mm above finished floor to centreline of spindle.

Locks

Cylinders: Fix vertically and with consistent key alignment.

Door stops

Fixing: Fix on the floor, skirting or wall, as appropriate, to prevent the door or door furniture striking the wall or other surface.

0467 GLASS COMPONENTS

1 GENERAL

1.1 SUBMISSIONS

Certification

Balustrade design: Submit a professional engineers' certificate confirming conformance with AS/NZS 1170.1 clause 3.6.

Sealant compatibility: Submit statements from all parties to the installation certifying the compatibility of sealants and glazing systems to all substrates.

2 PRODUCTS

2.1 MIRRORS

Reflective surface

Type: Silver layer deposited on the glass or glazing plastic.

Protective coatings: Electrolytic copper coating at least 5 microns thick, and 2 coats of mirror backing and edge sealing paint having a total dry film thickness of at least 50 microns.

Safety mirror

Type: Vinyl backed Grade A safety mirror.

Safety compliance: To AS/NZS 2208.

2.2 SHOWER SCREENS

Type

General: Proprietary system comprising frames of extruded aluminium, stainless steel, or PVC-U, assembled around safety glass to form fixed panels and sliding, hinged or pivoted doors.

2.3 GLASS BALUSTRADES

Standard

Glass balustrades: To AS 1288 Section 7.

0471 THERMAL INSULATION AND PLIABLE MEMBRANES

1 GENERAL

1.1 INTERPRETATION

Definition

General: For the purposes of this worksection the following definition applies:

- Pliable building membrane: To AS/NZS 4200.1 and equivalent to sarking-type material in the BCA.

1.2 ENERGY EFFICIENCY

Commitment to energy efficiency required by authorities

General: Provide details as required by state and local authorities.

2 PRODUCTS

2.1 MATERIALS

Insulation

Cellulosic fibre (loose fill): To AS/NZS 4859.1 Section 5.

Mineral wool blankets and cut pieces: To AS/NZS 4859.1, Section 8.

Polyester: To AS/NZS 4859.1 Section 7.

Polystyrene (extruded rigid cellular RC/PS-E): To AS 1366.4.

Polystyrene (moulded rigid cellular RC/PS-M): To AS 1366.3.

Reflective thermal insulation: To AS/NZS 4859.1, Section 9.

Wool: To AS/NZS 4859.1, Section 6.

Pliable membrane

Standard: To AS/NZS 4200.1.

3 EXECUTION

3.1 GENERAL

Bulk insulation

Standard: To AS 3999.

Pliable membrane

Standard: To AS/NZS 4200.2 and BCA 3.12.1.1.

3.2 FLOOR INSULATION

Under suspended framed floors - bulk insulation

Product type: Fibre batts.

Installation: Fit tightly between framing members. If other support is not provided, staple nylon twine to the framing and stretch tight.

Below concrete slab on ground

Product type: Rigid cellular extruded sheets.

Laying pattern: Stretcher bond, with edges tightly butted.

Damp-proof membrane: Lay over insulation.

3.3 WALL INSULATION

Framed wall thermal break strips

Product type: Proprietary item.

Application: To steel or timber framing with lightweight external cladding.

R-Value: ≥ 0.2.

Screw fixing: Button head screws at 1 m centres.

Adhesive fixing: Wallboard adhesive walnuts at 1 m centres.

Framed walls – bulk insulation

Product type: Fibre batts.

Installation: Friction fit between framing members. If other support is not provided, staple nylon twine to the framing and stretch tight.

Vapour permeable (breathable) membrane

Application: Provide a vapour permeable membrane behind the external facing material which does not provide permanent weatherproofing or may be subject to condensation forming on the internal face, including the following:

- Boards fixed vertically or diagonally.
- Boards or planks fixed in exposed locations where wind driven rain can penetrate the joints.
- Unpainted or unsealed cladding.
- Masonry veneer.

Installation: Run the vapour permeable membrane horizontally on the outer face of external wall framing, over the flashing, from the bottom plate up. Pull taught over the framing and fix to framing members. Seal across the wall cavity at the top.

Horizontal laps: At least 150 mm wide, lapped to make sure water is shed to the outer face of the membrane.

3.4 ROOF INSULATION

Pliable membranes

Sarking membrane:

- Location: Provide sarking under tile and shingle roofing.

Vapour barrier:

- Installation: Lay over the roof framing with sufficient sag to allow the bulk insulation to achieve its full thickness. Overlap all edges 150 mm and seal all joints with pressure sensitive adhesive tape.

Metal roofs – bulk insulation

Product type: Fibre blankets or batts.

Installation:

- Batts: Fit tightly between framing members.
- Blanket for sound insulation: Install over the roof framing, reflective thermal insulation (if any), and mesh support, so that the blanket is in continuous contact with the underside of the metal roofing sheets.

Ceiling insulation – bulk insulation

Product type: Fibre batts.

Installation: Fit tightly between framing members.

0511 LINING

1 GENERAL

1.1 STANDARDS

Plasterboard

Standard: To AS/NZS 2588.

Fibre cement

Standard: To AS/NZS 2908.2.

Wall and ceiling linings: Type B, Category 2.

Minimum thickness: 4.5 mm.

2 EXECUTION

2.1 SHEET LINING

Installation

Gypsum plasterboard: To AS/NZS 2589.

Wet areas: To AS 3740.

- Fixing: Do not use adhesive fixing alone.

Supports

General: Install timber battens or proprietary cold-formed galvanized steel furring channels as follows:

- Where framing member spacing exceeds the recommended spacing.
- Where direct fixing of the plasterboard is not possible due to the arrangement or alignment of the framing or substrate.
- Where the lining is the substrate for tiled finishes.
- If required to support fixtures.

Joints

Flush joints: Provide recessed edge sheets and finish flush using perforated paper reinforcing tape.

External corner joints: Make joints over metallic-coated steel corner beads.

Control joints: Provide purpose-made metallic-coated control joint beads at not more than 12 m centres in plasterboard linings or 7.2 m centres in fibre cement lining in walls and ceilings and to coincide with structural control joints.

Wet areas: Install additional supports, flashings, trim and sealants as required.

Joints in tiled areas: Do not apply a topping coat after bedding perforated paper tape in bedding compound.

0551 JOINERY

1 PRODUCTS

1.1 MATERIALS

Joinery timber

Hardwood for trim: To AS 2796.1.

Hardwood for furniture: To AS 2796.3.

Seasoned cypress pine: To AS 1810.

Softwood for trim: To AS 4785.1.

Softwood for furniture: To AS 4785.3.

Finished sizes for milled timber: Not less than the documented dimension unless qualified by a term such as nominal, out of or ex, to which industry standards for finished sizes apply.

Plywood

Interior use generally: To AS/NZS 2270.

Interior use, exposed to moisture: To AS/NZS 2271.

Wet processed fibreboard (including hardboard)

Standard: To AS/NZS 1859.4.

Particleboard

Standard: To AS/NZS 1859.1.

Dry processed fibreboard (including medium density fibreboard)

Standard: To AS/NZS 1859.2.

Decorative overlaid wood panels

Standard: To AS/NZS 1859.3.

Certification

General: Brand panels under the authority of a recognised certification program applicable to the product. Locate the brand on faces or edges which will be concealed in the works.

Plywood certified formaldehyde emission level: To AS/NZS 2270 and AS/NZS 2271: E_1.

Reconstituted wood-based panel certified formaldehyde emission level: To AS/NZS 1859 series: E1.

High-pressure decorative laminate sheets

Standard: To AS/NZS 2924.1.

Minimum thickness: Conform to the following:

- For horizontal surfaces fixed to a continuous substrate: 1.2 mm.
- For vertical surfaces fixed to a continuous substrate: 0.8 mm.
- For post formed laminate fixed to a continuous substrate: 0.8 mm.
- For vertical surfaces fixed intermittently (e.g. to studs): 3.0 mm.
- For edge strips: 0.4 mm.

High-pressure decorative laminate sheet application table

Class to AS/NZS 2924.1	Application
HGS or HGP	Kitchen work-tops
VGS or VGP	Kitchen front panels
VLS	Other vertical locations

1.2 KITCHEN ASSEMBLIES

Standard

General: To AS/NZS 4386.1.

1.3 WARDROBE, CUPBOARD AND DRAWER UNITS

Plinths, carcasses, drawer fronts, shelves and doors

Material: Select from the following:

- Overlaid high moisture resistant particleboard.
- Overlaid high moisture resistant medium density fibreboard.

Thickness: 16 mm.

Adjustable shelves: Support on proprietary pins in holes bored at equal spacing of 32 mm centres vertically.

Fasteners: Conceal with finish.

Drawer fronts: Rout for drawer bottoms.

Drawer and door hardware

Hinge types: Concealed metal hinges with the following features:

- Adjustable for height, side and depth location of door.
- Self-closing action.
- Hold-open function.
- Nickel plated.

Slides: Metal runners and plastic rollers with the following features:

- 30 kg loading capacity.
- Closure retention.
- White thermoset powder coating or nickel plated.

Hardware

Requirement: Provide details of handles and locks.

1.4 WORKING SURFACES

Laminated benchtops

Material: High moisture-resistant particleboard or medium density fibreboard.

Finish: High pressure decorative laminate sheet.

Exposed edges: Extend laminate over shaped nosing, finishing more than 50 mm back on underside. Splay outside corners at 45°.

Minimum thickness: 32 mm.

Balance underside: Extend laminate to the undersides of benchtops if subject to excessive moisture from equipment such as dishwashers.

Stone or engineered stone benchtops

General: Provide stone or engineered stone slabs within the visual range of approved samples. In natural stone, repair mud veins or lines of separation that are integral to the selected pattern with resin fillers and back lining.

Splashbacks

Glass: 6 mm toughened colourback glass to AS/NZS 2208.

Stainless steel: Type 304, fine linished finish.

2 EXECUTION

2.1 JOINERY

General

Joints: Provide materials in single lengths whenever possible. If joints are necessary, make them over supports.

Framing: Frame and trim where necessary for openings, including those required by other trades.

Fasteners

Installation: Secure plinths and carcasses to floors, walls, or both at not more than 600 mm centres.

Visibility: Do not provide visible fasteners except in the following locations:

- Inside cupboards and drawer units.
- Inside open units, in which case provide proprietary caps to conceal fixings.

Adhesives

General: Provide adhesives to transmit the loads imposed and for the rigidity of the assembly, without causing discolouration of finished surfaces.

Finishing

Junctions with structure: Scribe plinths, benchtops, splashbacks, ends of cupboards, kickboards and returns to follow the line of structure.

Benchtops

Installation: Fix to carcass at least twice per 600 mm length of benchtop.

Joint sealing: Fill joints with sealant matching the finish colour and clamp with proprietary mechanical connectors.

Edge sealing: Seal to walls and carcasses with a sealant, which matches the finish colour.

Splashbacks

Glass: Fix with non-acidic silicone adhesive. Apply at the rate recommended by the manufacturer.

Installation: Clean the back of the glass panel and apply walnuts of adhesive together with double sided adhesive tape for temporary support, and affix directly to the substrate.

2.2 TRIM

General

Requirement: Provide timber or medium density fibreboard trim, such as beads, skirtings, architraves, mouldings and stops to make neat junctions between components, finishes and adjacent surfaces.

Proprietary items: Provide complete with installation accessories.

Fixing

To masonry walls: Wall plugs at 600 mm centres, maximum.

To stud walls: Nail to plate or framing at 600 mm centres, maximum.

0572 MISCELLANEOUS FIXTURES AND APPLIANCES

1 PRODUCTS

1.1 COMPONENTS

General

Requirement: Provide kitchen and laundry appliances, and bathroom and other fixtures as documented.

1.2 PROPRIETARY STAIR SYSTEM

General

Materials, design and construction: To BCA 3.9.1.

Balustrades: To BCA 3.9.2.

Requirement: Provide details of stairs, including proposed finishes, before fabrication and/or construction.

0611 RENDERING AND PLASTERING

1 PRODUCTS

1.1 MATERIALS AND COMPONENTS

Aggregates

Sand: Fine, sharp, well-graded sand with a clay content between 1% and 5% and free from effloresclng salts.

Cement

Standard: To AS 3972.

Type: GP.

Lime

Limes for building: To AS 1672.1.

Mixes

General: Select a mix proportion to suit the conditions of application.

Measurement: Measure binders and sand by volume using buckets or boxes. Do not allow sand to bulk by absorption of water.

Plaster mixing: Machine mix for 3 to 6 minutes.

Strength of successive coats: Make sure successive coats are no richer in binder than the coat to which they are applied.

Mix proportion table - Cement render, by volume

Mix type	Substrate		Upper and lower limits of proportions by volume		
			Cement	Lime	Sand
- Single or multi-coat systems with integral finishing treatments - Base coats in multi-coat systems with cement or gypsum finishes	CRS	Dense and smooth concrete and masonry	1 1	0 0.5	3 4.5
	CRM	Regular clay or concrete masonry	1 1	0.5 1	4.5 6
	CRW	Lightweight concrete masonry and other weak substrates	1 1	1 2	6 9

Mix type	Substrate		Upper and lower limits of proportions by volume		
Second coat - internal	CRF	Cement render base coats	1 1	1 2	6 9
Second coat - external	CRF	Cement render base coats	1 1	1 2	5 6

Metal lath

General: Provide a proprietary product for use with plaster.

Internal: Expanded metal to AS 1397 coating class Z350, minimum.

External: Stainless steel or PVC-U.

Beads

General: Provide a proprietary product for use with plaster.

Internal: Metallic-coated sheet AZ 150, minimum.

External: Stainless steel or PVC-U.

Water

General: Clean and free from any deleterious matter.

2 EXECUTION

2.1 PREPARATION

Substrates

General: Provide substrates as follows:

- Clean and free from any deposit or finish which may impair adhesion of plaster.
- If framed or discontinuous, support members in full lengths without splicing.
- If solid or continuous, remove excessive projections and fill voids and hollows with plaster stronger than the first coat and not weaker than the substrate.

Untrue substrates: If the substrate is not sufficiently true for conformity with the thickness limits for the plaster system, or has excessively uneven suction resulting from variations in the composition of the substrate, apply additional coats without exceeding the thickness limits for the substrate or system.

Beads

Location: Fix beads as follows:

- Angle beads: At all external corners.
- Drip beads: At all lower terminations of external plaster.
- Beads for control of movement: At all control joints.
- Stop beads: At all terminations of plaster and junctions with other materials or plaster systems.

Joints in beads: Provide dowels to maintain alignment.

Mechanical fixing to substrate: ≤ 300 mm centres.

Bonding treatment

General: If bonding treatment is required, throw a wet mix onto the background of 1 part cement to 2 parts sand.

Curing: Keep continuously moist for 5 days or more and allow to dry before applying plaster coats.

Embedded items

General: If there are water pipes and other embedded items, sheath them to permit thermal movement.

Metal lath

Location: Provide lath as follows:

- Chases: If chases or recesses are 50 mm wide or greater, fix metal lath extending 75 mm or more beyond each side of the chase or recess.
- Metal and other non-porous backgrounds: Fix metal lath to provide a key.

Weepholes

Requirement: Keep opening free of plaster. Maintain consistent opening size.

2.2 APPLICATION

Control joints

General: Provide joints in the finish to coincide with control joints in the substrate. Make sure that the joint in the substrate is not bridged during plastering.

Tolerances

General: Finish plane surfaces within a tolerance of 6 mm in 2400 mm, determined using a 2400 mm straightedge placed anywhere in any direction. Finish corners, angles, edges and curved surfaces within equivalent tolerances.

Plaster thickness table

Substrate	Cement render, total thickness of single or multi-coat work (mm)
Brickwork and blockwork	12 min
Lightweight concrete and blocks	12 min
Metal lath measured from the face of the lath.	18 min

Curing

General: Prevent premature or uneven drying out and protect from the sun and wind.

Keeping moist: If a proprietary curing agent is not used, keep the plaster moist as follows:

- Base coats and single coat systems: Keep continuously moist for 2 days and allow to dry for 5 days before applying further plaster coats.
- Finish coats: Keep continuously moist for 2 days.

0621 WATERPROOFING - WET AREAS

1 GENERAL

1.1 STANDARDS

Wet areas

Waterproofing: To AS 3740.

2 PRODUCTS

2.1 PRODUCTS

Membranes

Standard: To AS/NZS 4858.

Membrane systems

Requirement: Provide a proprietary membrane system suitable for the intended internal waterproofing.

Shower tray

General: Purpose-made jointless shower tray, with wall upstands at least 50 mm higher than the hob upstands. Set hob masonry on the inside of the tray upstands.

3 EXECUTION

3.1 PREPARATION

Substrates

General: Provide substrates as follows:

- Clean and free of any deposit or finish which may impair adhesion of membranes.
- If walls or floors are framed or discontinuous, support members in full lengths without splicing.
- If floors are solid or continuous remove excessive projections and fill voids, hollows and cracks.

Concrete substrates: Cure for at least 21 days.

Bond breakers

Requirement: After the priming of surfaces, provide bond breakers at all wall/floor, hob/wall junctions and at control joints where the membrane is bonded to the substrate.

3.2 APPLICATION

Protection

Damage: Protect membrane from damage during installation and for the period after installation until the membrane achieves its service characteristics that resist damage.

Extent of waterproofing

Waterproof or water resistant surfaces: To requirements of BCA 3.8.1.2.

Vertical membrane terminations

Upstands: At least 150 mm above the finished tile level of the floor or 25 mm above the maximum retained water level, whichever is the greater.

Anchoring: Secure sheet membranes along the top edge.

Edge protection: Protect edges of the membrane.

Waterproofing above terminations: Waterproof the structure above the termination to prevent moisture entry behind the membrane using tiler's angle and finish overlaps.

Drainage connections

Floor wastes: Turn membrane down 50 mm minimum into the floor waste drainage flanges and adhere to form a waterproof connection.

Enclosed showers with hobs

Internal membranes: Extend membrane over the hob and into the room at least 50 mm.

Unenclosed showers

Requirement: Extend membrane at least 1500 mm into the room from the shower rose outlet on the walls and floor.

Membrane vertical penetrations

Pipes, ducts, and vents: Provide separate sleeves for all pipes, ducts, and vents and have fixed to the substrate.

Membrane horizontal penetrations

Sleeves: Provide a flexible flange for all penetrations, bonded to the penetration and to the membrane.

Curing of liquid applied systems

General: To the manufacturer's instructions.

Curing: Allow membrane to fully cure before tiling.

Overlaying finishes on membranes

Requirement: Protect waterproof membranes with compatible water-resistant surface materials that do not cause damage to the membrane.

Bonded or partially bonded systems: If the topping or bedding mortar is required to be bonded to the membrane, provide sufficient control joints in the topping or bedding mortar to reduce the movement over the membrane.

3.3 COMPLETION

Protection

General: Keep traffic off membrane surfaces until bonding has set or for 24 hours after laying, whichever period is the longer.

Reinstatement: Repair or replace faulty or damaged work.

0631 CERAMIC TILING

1 GENERAL

1.1 STANDARDS

Tiling

General: Comply with the recommendations of AS 3958.1.

Slip resistance

Stair treads, ramps and landings: Classification to AS 4586.

2 PRODUCTS

2.1 MATERIALS

Adhesives

Standard: To AS ISO 13007.1.

PVA (polyvinyl acetate)-based adhesives: Do not use in wet areas or externally.

Mortar materials

Cement type to AS 3972: GP.

Sand: Fine aggregate with a low clay content selected for grading, sharp and free from efflorescing salts.

Bedding mortar

Mix proportion (cement:sand), by volume: Select proportions from the range 1:3 to 1:4 for satisfactory adhesion. Provide minimum water.

Water

General: Clean and free from any deleterious matter.

Grout

Cement-based proprietary grout: Mix with water. Fine sand may be added as a filler in wider joints.

Terracotta tiles: Provide proprietary polymer modified grout.

General purpose cement based grout: Mix with fine sand. Provide minimum water consistent with workability.

Pigments for coloured grout: Colourfast fillers compatible with the grout material. For cement-based grouts, provide lime-proof natural or synthetic metallic oxides compatible with cement.

3 EXECUTION

3.1 APPLICATION

Preparation of substrate

General: Conform to the following:

- Clean off any deposit or finish which may impair adhesion or location of tiles.
- Compatible with all components of floor system.

Floor finish dividers

General: Finish tiled floors at junctions with differing floor finishes with a corrosion-resistant metal dividing strip fixed to the substrate. If changes of floor finish occur at doorways, make the junction directly below the closed door.

Bath ventilation

General: Ventilate the space below fully enclosed baths with at least 2 vermin proofed ventilating tiles.

Falls and levels

General: Grade floor tiling to even and correct falls generally and to floor wastes and elsewhere as required. Make level junctions with walls. If falls are not required, lay level.

Fall, general: 1:100 minimum.

Fall, in shower areas: 1:60 minimum.

Change of finish: Maintain finished floor level across changes of floor finish including carpet.

Sealant joints

General: Provide sealant joints filled with silicone sealant and finish flush with the tile surface where tiling joins sanitary fixtures and at internal corners of walls.

0651 RESILIENT FINISHES

1 GENERAL

1.1 STANDARDS

General

Installation: To AS 1884.

2 PRODUCTS

2.1 MATERIALS

Wet processed fibreboard (hardboard) underlay

Standard: To AS/NZS 1859.4.

Classification: General purpose medium board, manufactured specifically as flooring underlay.

Thickness: 5.5 mm.

3 EXECUTION

3.1 PREPARATION

Substrates

General: To AS 1884 Section 3.

Concrete substrates

Concrete substrate rectification: Conform to the following:

- Surface treatments: Mechanically remove the following surface treatments:
  - Sealers and hardeners.
  - Curing compounds.
  - Waterproofing additives.
  - Surface coatings and contamination.
- Planeness, smoothness, projections: Remove projections and fill voids and hollows with a self-smoothing levelling compound compatible with the adhesive. Allow filling or levelling compound to dry to manufacturer's recommendations.

Cleaning: Remove loose materials or dust.

Timber, plywood and particleboard substrates

Timber, plywood and particleboard substrate rectification: Remove projections. If conformance to a planeness tolerance of 4 mm in 2 m determined using a 2 m straightedge cannot be achieved, provide an underlay in brick pattern with joints avoiding substrate joints.

Cleaning: Remove oil, grease, traces of applied finishes and loose materials or dust.

3.2 SHEET AND TILE INSTALLATION

General

Fixtures: Remove door stops and other fixtures, and refix in positions undamaged on completion of the installation.

Sheet set-out

General: Set out sheets to give the minimum number of joints. Position joints away from areas of high stress. Run sheet joints parallel with the long sides of floor areas, vertically on non-horizontal surfaces.

Tile set-out

General: Set out tiles from centre of room. If possible cut tiles at margins only, to give a cut dimension of at least 100 mm x full tile width. Match edges and align patterns. Arrange the cut tiles so that any variation in appearance is minimised.

Joints

Non-welded: Butt edges together to form tight neat joints showing no visible open seams.

Chemical welding: Apply seaming compound 100 mm wide to the substrate centrally under the seam. Roll the seam until the compound is forced up into the joint. Clean off flush using a damp cloth.

Junctions

General: Scribe neatly up to returns, edges, fixtures and fittings. Finish flush with adjoining surfaces.

3.3 COMPLETION

Protection of sheet materials

Finished floor surface: Keep traffic off floors for minimum 24 hours after laying or until bonding has set, whichever period is the longer. Avoid contact with water for minimum 7 days.

Reinstatement

Extent: Repair or replace faulty or damaged work. If the work cannot be repaired satisfactorily, replace the whole area affected.

Cleaning

General: Clean the finished surface. Buff and polish. Before the date for practical completion, mop and leave the finished surface clean and undamaged on completion.

0652 CARPETS

1 PRODUCTS

1.1 MATERIALS

Carpet

Minimum grade: Residential Medium Duty under the Australian Carpet Classification Scheme.

Total VOC limit:

- Generally: 0.5 mg/m^2/h.
- Compliance: To the Environmental Classification Scheme operated by the Carpet Institute of Australia Limited (CIAL).

Wet processed fibreboard (hardboard) underlay

Standard: To AS/NZS 1859.4.

Classification: General purpose medium board, manufactured specifically as flooring underlay.

Thickness: 5.5 mm.

Soft underlay

Standard: To AS 4288.

Hot-melt adhesive tape

General: Glass fibre and cotton thermoplastic adhesive coated tape 60 mm wide on a 90 mm wide metal foil base and backed with silicon-coated release paper.

Preformed gripper strips

General: Domestic grade plywood carpet gripper strip with 3 rows of rust-resistant angled pins of length appropriate to the carpet type.

Edge strips

Location: At exposed edges of the carpet and at junctions with different floor finishes or finishes of different thickness. Where edge strips occur at doorways, locate the junctions directly below the closed door.

2 EXECUTION

2.1 PREPARATION

Substrates

Cleaning concrete surfaces: Mechanically remove the following surface treatments:

- Sealers and hardeners.
- Curing compounds.

Cleaning timber surfaces: Remove oil, grease and traces of applied finishes.

Concrete substrate rectification: Remove projections and fill voids and hollows with a levelling compound compatible with the adhesive.

Timber substrate rectification: Remove projections. If conformance to a flatness tolerance of 6 mm in 3000 mm, determined using a 3000 mm straightedge placed anywhere in any direction cannot be achieved, fix an underlay in brick pattern with joints avoiding substrate joints.

Fixtures: Remove door stops and other fixtures, and refix in position undamaged on completion of the installation.

2.2 LAYING CARPET

Standard

General: To AS/NZS 2455.1.

0654 ENGINEERED PANEL FLOORS

1 PRODUCTS

1.1 MATERIALS

Flooring panels
General: Provide the proprietary flooring system nominated.

Floating floor underlay
Requirement: Proprietary closed cell foam sheeting, integral to the flooring system.

Acoustic underlay
General: Resilient underlay fixed with compatible adhesive.

Adhesive
Ventilation: Provide adequate ventilation appropriate for moisture curing.

2 EXECUTION

2.1 GENERAL

Storage and handling
General: Deliver panel flooring to site in unbroken wrapping or packs. Store in dry conditions, a minimum 100 mm above the subfloor. Do not store on the subfloor until the moisture content of the subfloor is suitable for the installation of the floor. Do not store in areas with wet plaster.

Subfloor
Cleaning: Remove loose material and dust and any deposits or finishes that may impair adhesion or location and functioning of control joints.

Rectification: Conform to the following:

- Solid or continuous subfloors: Remove excessive projections and fill voids and hollows with a self-smoothing levelling compound compatible with the flooring including any adhesive.
- Plywood and particleboard subfloors: If required to achieve a smooth finish, sand joints between sheets.
- Existing timber flooring subfloors: Remove cupping, rough material and surface finishes by rough sanding.

2.2 INSTALLATION

Trial set-out
General: Prepare a trial panel set-out to each area as follows to:

- Maximise the size of equal margins of cut panels.
- Locate control joints.

Control joints
General: Provide control joints as follows:

- Against vertical building elements: 12 mm wide cork filled.
- To divide floors into maximum dimensions of 6 m: 4 mm wide silicone sealant filled.

0655 TIMBER FLOORING

1 PRODUCTS

1.1 GENERAL

Storage and handling
General: Deliver timber flooring to site in unbroken wrapping or packs. Store in dry conditions a minimum 100 mm above the subfloor. Do not store on the subfloor until the moisture content of the subfloor is suitable for the installation of the floor. Do not store in areas of wet plaster or paint.

Adhesive
Ventilation: Provide ventilation appropriate for moisture curing.

1.2 STRIP FLOORING

Recycled timber
Standard: To FWPA PN06.1039.

- Grading: To Section 5.1.

New timber
General: Conform to the **Grading table**.

Grading table

Product	Standard	Grade
Hardwood	AS 2796.2	High Feature Grade if available for the species selected, otherwise Select Grade
Seasoned cypress pine	AS 1810	1
Softwood - pinus ssp	AS 4785.2	Appearance
Softwood - other	AS 4785.2	Select

2 EXECUTION

2.1 SUPPORT FIXING

Battens for strip flooring on steel joists
General: Screw fix seasoned battens along the steel joists with countersunk screws so that their top surfaces are aligned.

2.2 FLOOR FIXING

Adhesive
General: Use a polyurethane elastomer adhesive in addition to nails.

Mechanical fixing
General: Make sure the boards are in contact with the subfloor at the time of fixing, particularly where boards are machine nailed. If nails are to be less than 12 mm from ends of boards, pre-drill nail holes 0 to 1 mm undersize.

Top nailing: For boards of 65 to 130 mm cover width, use two nails.

Secret fixing: Do not use boards of more than 85 mm cover width, and use one staple or cleat skewed at 45°.

Sinking: Punch nails 3 mm below finished surfaces and fill the sinking flush with a material tinted to match the darker tone of the flooring which is compatible with the floor finish.

Control joints
Perimeters: Provide 10 mm wide expansion joints against vertical building elements.

Strip flooring: For floors greater than 6 m wide select from the following:

- Partially cramp strip flooring to allow a 1 mm gap every 600 mm or 1.5 mm every metre.
- Divide floors into maximum widths of 6 m with expansion joints 12 mm wide filled with cork.

Strip flooring
General: Blend floor boards from more than one pack to distribute the colour range and grade features throughout the floor.

Installation: Lay in straight and parallel lines with each board firmly butted to the next and firmly in contact with the subfloor. If land over joists or battens cramp sufficient only to bring the boards together and no more than 800 mm of flooring at any one time. With secret fixing do not cramp more than one board at a time.

Fixing to softwood joists or battens: Apply adhesive in addition to mechanical fixing.

2.3 COMPLETION

Protection

General: Provide protection as follows:

- Floors: With hardboard taped at all butt joints. Do not cover with sheet plastic.
- Stair treads: Full timber or plywood casing.

0656 FLOOR SANDING AND FINISHING

1 GENERAL

1.1 STANDARDS

Floor sanding and finishing

General: To AS 4786.2.

0671 PAINTING

1 GENERAL

1.1 STANDARDS

Painting

General: To the recommendations of those parts of AS/NZS 2311 referenced in this worksection.

2 PRODUCTS

2.1 PAINTING MATERIAL

Low VOC emitting paints

VOC limits for low odour/low environmental impact paint types:

- Primers and undercoats: < 65 g/litre.
- Low gloss white or light coloured latex paints for wall areas: < 16 g/litre.
- Coloured low gloss latex paints: < 16 g/litre.
- Gloss latex paints for timber doors and trims: < 75 g/litre.

Combinations

General: Do not combine paints from different manufacturers in a paint system.

Clear timber finish systems: Provide only the combinations of putty, stain and sealer recommended by the manufacturer of the top coats.

Delivery

General: Deliver paints to the site in the manufacturer's labelled and unopened containers.

Putty and fillers

Material: To the recommendation of the paint system manufacturer as suitable for the substrate and compatible with the primer.

Tinting

General: Provide only products which are colour tinted by the manufacturer or supplier.

3 EXECUTION

3.1 PREPARATION

Order of work

Other trades: Before painting, complete the work of other trades as far as practicable within the area to be painted, except for the installation of fittings, floor sanding and laying flooring materials.

Clear finishes: Complete clear timber finishes before commencing opaque paint finishes in the same area.

Protection

General: Before painting, clean the area and protect from dust contamination. Use drop sheets and masking agents to protect surfaces, including finished surfaces and adjacent surfaces during painting.

Fixtures and furniture: Remove door furniture, switch plates, light fittings and other fixtures before painting, and refix in position on completion of painting.

Wet paint warning

Notice: Place in a conspicuous location and do not remove until the paint is dry.

Substrate preparation - generally

General: Prepare substrates to receive the painting systems.

Cleaning: Clean down the substrate surface. Do not cause damage to the substrate or the surroundings.

Filling: Fill cracks and holes with fillers, sealants, putties or grouting cements as appropriate for the finishing system and substrate, and sand smooth.

- Clear finish: Provide filler tinted to match the substrate.

Clear timber finish systems: Prepare the surface so that its attributes will show through the clear finish without blemishes, using methods including the following:

- Removal of bruises.
- Removal of discolourations, including staining by oil, grease and nailheads.
- Bleaching where necessary to match the timber colour sample.
- Puttying.
- Fine sanding, with the last abrasive no coarser than 220 grit, so that there are no scratches across the grain.

Unpainted surfaces

Standard: To AS/NZS 2311 Section 3.

Previously painted surfaces

Standard: To AS/NZS 2311 Section 7.

3.2 PAINTING

Light levels

General: During preparation of surfaces, painting and inspection, maintain light levels to ≥ 400 lux to allow close examination of the entire process.

Paint application

Standard: To AS/NZS 2311 Section 6.

Timing: Apply the first coat immediately after substrate preparation and before contamination of the substrate can occur. Apply subsequent coats after the manufacturer's recommended drying period has elapsed.

Priming before fixing

General: Apply one coat of wood primer (2 coats to end grain) to the back of the following before fixing in position:

- External fascia boards.
- Timber door and window frames.
- Bottoms of external doors.
- Associated trims and glazing beads.
- Timber board cladding.

Spraying

General: If the paint application is by spraying, use conventional or airless equipment that conforms to the following:

- Satisfactorily atomises paint being applied.
- Does not require paint to be thinned beyond the maximum amount recommended by the manufacturer.
- Does not introduce oil, water or other contaminants into the applied paint.

Paint with known health hazards: Not permitted on site.

Sanding

Clear finishes: Sand the sealer, using abrasive no coarser than 320 grit, without cutting through the colour. Take special care with round surfaces and edges.

Repair

Requirement: Clean off marks, paint spots and stains progressively and restore damaged surfaces to their original condition. Touch up new damaged decorative paintwork or misses with the paint batch used in the original application.

Repair of galvanizing

Cleaning: For galvanized surfaces which have been subsequently welded, or which have been welded, prime the affected area.

Primer: Type 2 organic zinc rich coating for the protection of steel to AS/NZS 3750.9.

Services

General: Paint new services and equipment if not embedded, except chromium, anodised aluminium, GRP, PVC-U, stainless steel, non-metallic flexible materials and normally lubricated machined surfaces. Repaint proprietary items only if damaged.

3.3 PAINT SYSTEMS

Paint system description

Generally: The paint system is referred to by its final coat.

Primers and undercoats: Provide primers and undercoats recommended by the manufacturer of the selected final coat as suitable for the substrate and the final coat.

Number of coats: Unless specified as one or two coat systems, each paint system consists of at least 3 coats.

Paint final coat table

Final coat	Applicable Australian Standard
Interior	
Flat latex	AS 3730.1
Floor varnish - moisture cured	AS 3730.27
Floor varnish - two pack isocyanate cured	AS 3730.27
Low gloss latex	AS 3730.3
Semi-gloss latex	AS 3730.2
Gloss latex	AS 3730.12
Exterior	
Full gloss solvent-borne	AS 3730.6
Flat latex	AS 3730.7
Low gloss latex	AS 3730.8
Gloss latex	AS 3730.10
Stain, lightly pigmented	AS 3730.28
Latex stain, opaque	AS 3730.16
Semi-gloss latex	AS 3730.9
Paving	
Paving paint, semi-gloss	AS 3730.29
Paving paint, gloss	AS 3730.29

0702 MECHANICAL DESIGN AND INSTALL

1 GENERAL

1.1 AIR CONDITIONING DESIGN

Design criteria

Outside design conditions: Use outdoor design conditions listed in AIRAH DA09, Table 1 or Table 1A for the following:

- The location geographically closest to the site.
- Comfort (or non-critical process) conditions.

Inside design conditions:

- Summer: 24°C dry bulb, 50% relative humidity.
- Winter: 21°C dry bulb.

Temperature variation: Limit the temperature difference in air conditioned spaces served by the same zone or system to 2°C as follows:

- Between any 2 points in the space from floor level to 1500 mm above floor level.
- More than 2000 mm from cooking equipment and more than 1000 mm from any other appliance.
- When outside conditions are in the range specified above.
- After the plant has been operating for one hour.
- With the temperatures measured in the same 5 minute period.

Zoning: Divide the systems into temperature controlled zones to meet the specified permissible limits in temperature variation and the system divisions documented.

Fresh air: Supply fresh air to spaces with air conditioning systems via the air handling system.

Heating: Reverse cycle.

Windows, walls, floors and roofs: Refer to drawings for construction and insulation.

Internal window shading type: To the **Window coverings schedule**.

Ambient noise emitted: Lower than the level that can be heard within a habitable room in any neighbouring residential premises, regardless of whether any door or window to that room is open.

2 PRODUCTS

2.1 AIR CONDITIONING EQUIPMENT

Standards

Ducted air conditioners: To AS/NZS 3823.1.2.

Non-ducted air conditioners: To AS/NZS 3823.1.1.

Controls

General: Provide the following functions:

- Temperature control for each zone located to accurately sense zone temperature.
- Fan speed selection for multi and variable speed fans.
- Day/night zone changeover if scheduled.
- Time switch for each system with ≥ 6 temperature programs per day, separate programs for each day of the week, manual set point over ride and Vacation temperature set back.

0802 HYDRAULIC DESIGN AND INSTALL

1 GENERAL

1.1 STANDARDS

General

Plumbing and drainage: To the AS/NZS 3500 series.

Authorised products: Listed in the WaterMark Product Database, unless otherwise required by the network utility operator.

2 EXECUTION

2.1 INSTALLATION

Connections to Network Utility Operator mains

General: Excavate to locate and expose the connection points and connect to the Network Utility Operator mains. On completion, backfill and compact the excavation and reinstate surfaces and elements which have been disturbed such as roads, pavements, kerbs, footpaths and nature strips.

Piping

Embedded pipes: Do not embed pipes that operate under pressure in concrete or surfacing material.

Concealment: If practicable, conceal piping and fittings requiring maintenance or servicing so that they are accessible within non-habitable enclosed spaces such as roof spaces, subfloor spaces and ducts. Keep pipelines in subfloor spaces at least 150 mm above ground and make sure access can be provided throughout for inspection. Provide at least 25 mm clearance between adjacent pipelines (measured from the piping insulation where applicable).

Cover plates: If exposed piping emerges from wall, floor or ceiling finishes, provide cover plates of non-ferrous metal, finished to match the piping, or of stainless steel.

Pipe support materials: The same as the piping, or galvanized or non-ferrous metals, with bonded PVC-U or glass fibre woven tape sleeves where needed to separate dissimilar metals.

2.2 FINISHES

General

Requirement: Finish exposed piping, including fittings and supports as follows:

- In internal locations such as toilet and kitchen areas: Chrome plate copper piping to AS 1192 service condition 2, bright.
- Externally and steel piping or worn fittings internally: Paint.
- In concealed but accessible spaces (including cupboards and non-habitable enclosed spaces): Leave copper and plastic unpainted except for required identification marking. Prime steel piping and iron fittings.
- Valves: Finish valves to match connected piping.

2.3 COLD AND HEATED WATER

Standards

General: To AS/NZS 3500.1 and AS/NZS 3500.4 or AS/NZS 3500.5.

Water heaters

Location: Locate water heaters where they can be maintained or replaced without damaging adjacent structures, fixtures or finishes.

Types:

- Electric water heaters: To AS/NZS 4692.1.
  - Energy performance: To AS/NZS 4692.2.
- Gas hot water heaters: To AS/NZS 5263.1.2. If a flue damper is available for the water heater supplied, provide one.
  - Energy performance: To AS 4552.2.
- Solar water heaters: To AS/NZS 2712.
- Heat pump water heaters: To AS/NZS 2712.

Tariff: Install so that the heating system qualifies for the tariff concession or subsidy offered by the statutory authority.

Isolating valves: Provide isolation valves to water heaters.

Heated water temperature

Standard: To AS/NZS 3500.4.

2.4 STORMWATER

Standards

General: To AS/NZS 3500.3 or AS/NZS 3500.5.

Downpipe connections

General: Turn up drain branch pipelines to finish 50 mm above finished ground or pavement level.

Subsoil drains

Connection: Connect subsoil drains to the stormwater drainage system.

Trench width: Minimum 450 mm.

Subsoil drains: Provide proprietary perforated plastic pipe.

Filter fabric: Provide a polymeric fabric formed from a plastic yarn containing stabilisers or inhibitors to make the filaments resistant to deterioration due to ultraviolet light.

Filter sock: Provide a polyester permeable sock capable of retaining particles of 0.25 mm size. Securely fit or join the sock at each joint.

Pits

Cover levels: Locate the top of covers or gratings, including frames as follows:

- In paved areas: Flush with the paving surface.
- In landscaped areas: 25 mm above finished surface.
- Gratings taking surface water runoff: Set to receive the runoff without ponding.

2.5 WASTEWATER

Standards

General: To AS/NZS 3500.2 or AS/NZS 3500.5.

Cleaning

During construction: Use temporary covers to openings and keep the system free of debris.

On completion: Clean and flush the system.

Septic tanks

Standard: To AS/NZS 1546.1.

Vent pipes

Staying to roof: If fixings for stays penetrate the roof covering, seal the penetrations and make watertight.

Terminations: Provide bird-proof vent cowls made of the same material and colour as the vent pipe.

2.6 RAINWATER TANKS

Standards

Metal tanks and rainwater goods: To AS/NZS 2179.1.

Design and installation: To the recommendations of SAA HB 230.

2.7 GAS

Standard

Reticulated gas systems: To AS/NZS 5601.1.

Buried pipes

Warning tape: During backfilling, lay plastic warning tape 300 mm above and for the full length of buried gas pipes.

- Type: Minimum 100 mm wide, with GAS PIPE UNDER marked continuously.

Commissioning

General: On completion of installation and testing, turn on isolating and control valves and purge and charge the installation.

0902 ELECTRICAL DESIGN AND INSTALL

1 GENERAL

1.1 STANDARDS

General

Electrical installation: To AS/NZS 3000 and SAA HB 301.

Electrical cable selection: To AS/NZS 3008.1.1.

Telecommunications cabling: To AS/CA S008, AS/CA S009, AS/NZS 3080, and SAA HB 252.

1.2 INTERPRETATION

Abbreviations

General: For the purposes of this worksection the following abbreviations apply:

- ED S&IR: The Electricity Distributor's Service and Installation Rules.

- RCD: Residual Current Device.

2 EXECUTION

2.1 GENERAL

Applications and compliance

General: Submit all necessary applications for electricity supply. Liaise with the electricity distributor and comply with the ED S&IR.

Consumers mains and metering

General: Provide consumers mains and connect them to the electricity distributor mains.

Switchboards

Standard: To AS/NZS 3439.3 or AS/NZS 61439.3.

Construction: Enclosed type with a hinged lid. Provide circuit breakers and RCDs.

Location: Verify that the location selected is compliant before proceeding.

Maximum demand and spare capacity

General: Calculate the maximum demand of the installation in accordance with AS/NZS 3000 and provide a copy of the calculations.

Spare capacity: Provide the following:

- > 10% spare capacity in mains and submains.
- > 25% spare capacity in final subcircuits.

Spare spaces: Provide switchboards with ≥ 25% spare positions for future single phase circuit breakers.

Accessories

General: Provide accessories necessary for a complete installation including but not limited to switches, dimmers, socket outlets, and telecommunications outlets. Provide accessories located in close proximity of the same size and material and from the same manufacture.

Mounting: Flush mount accessories to the wall (or ceiling) unless noted otherwise. Provide proprietary wall boxes in masonry and wall brackets in stud walls.

Wiring

Sequence of work: Install conduits and cables before the installation of wall and ceiling linings, and before any external landscaping works.

Installation: Do not penetrate damp-proof courses. Arrange wiring such that it does not bridge the cavity in external masonry.

Minimum conduit diameter: 20 mm.

Conduits for future use: Provide a non-metallic drawstring having a breaking strain > 100 kg.

Luminaires

Standard: to AS/NZS 60598.1.

Non-specified luminaires: Provide a bayonet cap batten holder and lamp at each lighting point location where no luminaire is documented.

Minimum energy performance standards:

- General: To AS/NZS 4782.2 and AS/NZS 4783.2.
- Self-ballasted lamps: To AS/NZS 4847.2.
- Incandescent lamps: To AS 4934.2.

Appliances

General: Provide final subcircuits and terminate at fixed appliances, hot water units, packaged air conditioning and other plant and equipment.

Isolation switch: Provide isolating switch adjacent to equipment.

Telecommunications

General: Liaise with the telecommunication services carrier.

Installations requiring telephony only: To AS/CA S009.

Small office/home office installations: Category 6, to AS/CA S009 and AS/NZS ISO/IEC 15018.

Television systems

General: Provide a digital television distribution system to AS/NZS 1367 and conforming to the recommendations of Broadcast Australia and ACMA.

Antennas: Provide and locate antennas to receive all locally available free-to-air television stations.

Network systems

General: Provide a coaxial cabling system suitable for satellite or cable network operator's services.

Intruder alarm system

Standard: To AS/NZS 2201.1.

Smoke detection system

General: Provide smoke alarms to the requirements of the BCA 3.7.2. Connect smoke alarms to mains power.

Labelling

General: Provide labels.

Telecommunications cables: Label telecommunications cables, cross connects and outlets in accordance with the requirements of AS/NZS 3080.

2.2 COMPLETION

Testing and certification

Electrical installations: Test to AS/NZS 3017. Provide a certificate showing test results and certifying compliance with AS/NZS 3000.

Telecommunications cabling: To AS/NZS ISO/IEC 15018. Provide a certificate showing test results and certifying compliance with AS/NZS ISO/IEC 15018.

Submission: Provide Telecommunications Cabling Advice (TCA1).

Television and audio systems: To AS/NZS 1367. Test the complete television and audio system. Provide a certificate showing test results and certifying compliance.

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REFERENCED DOCUMENTS

The following documents are incorporated into this worksection by reference:

AS/CA S008	2010	Requirements for customer cabling products
AS/CA S009	2013	Installation requirements for customer cabling (Wiring Rules)
AS/NZS 1080		Timber - Methods of test
AS/NZS 1080.1	2012	Moisture content
AS/NZS 1163	2016	Cold-formed structural steel hollow sections
AS 1170		Structural design actions
AS/NZS 1170.1	2002	Permanent, imposed and other actions
AS 1192	2004	Electroplated coatings - Nickel and chromium
AS/NZS 1214	2016	Hot-dip galvanized coatings on threaded fasteners (ISO metric coarse thread series)
AS 1231	2000	Aluminium and aluminium alloys - Anodic oxidation coatings
AS 1288	2006	Glass in buildings - Selection and installation
AS 1289		Methods of testing soils for engineering purposes
AS 1289.5.2.1	2003	Soil compaction and density tests - Determination of the dry density/moisture content relation of a soil using modified compactive effort
AS 1366		Rigid cellular plastics sheets for thermal insulation
AS 1366.3	1992	Rigid cellular polystyrene - Moulded (RC/PS - M)
AS 1366.4	1989	Rigid cellular polystyrene - Extruded (RC/PS-E)
AS/NZS 1367	2016	Coaxial cable and optical fibre systems for the RF distribution of digital television, radio and in-house analog signals in single and multiple dwelling installations
AS 1379	2007	Specification and supply of concrete
AS 1397	2011	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS/NZS 1546		On-site domestic wastewater treatment units
AS/NZS 1546.1	2008	Septic tanks
AS 1562		Design and installation of sheet roof and wall cladding
AS 1562.1	1992	Metal
AS 1562.3	2006	Plastics
AS 1604		Specification for preservative treatment
AS 1627		Metal finishing - Preparation and pretreatment of surfaces
AS 1672		Limes and limestones
AS 1672.1	1997	Limes for building
AS 1684		Residential timber-framed construction
AS 1684.2	2010	Non-cyclonic areas
AS 1684.3	2010	Cyclonic areas
AS 1684.4	2010	Simplified - non-cyclonic areas
AS 1720		Timber structures
AS 1720.1	2010	Design methods
AS 1720.5	2015	Nailplated timber roof trusses
AS 1810	1995	Timber - Seasoned cypress pine - Milled products
AS/NZS 1859		Reconstituted wood-based panels - Specifications
AS/NZS 1859.1	2004	Particleboard
AS/NZS 1859.2	2004	Dry-processed fibreboard
AS/NZS 1859.3	2005	Decorative overlaid wood panels
AS/NZS 1859.4	2004	Wet-processed fibreboard
AS 1860		Particleboard flooring
AS/NZS 1860.1	2002	Specifications
AS 1860.2	2006	Installation
AS 1884	2012	Floor coverings - Resilient sheet and tiles - Installation practices
AS 1926		Swimming pool safety
AS 1926.1	2012	Safety barriers for swimming pools
AS 1926.2	2007	Location of safety barriers for swimming pools
AS 2047	2014	Windows and external glazed doors in buildings
AS 2049	2002	Roof tiles
AS 2050	2002	Installation of roof tiles
AS 2082	2007	Timber - Hardwood - Visually stress-graded for structural purposes
AS/NZS 2098		Methods of test for veneer and plywood
AS/NZS 2098.1	2006	Moisture content of veneer and plywood
AS/NZS 2179		Specifications for rainwater goods, accessories and fasteners
AS/NZS 2179.1	2014	Metal shape or sheet rainwater goods, and metal accessories and fasteners
AS 2201		Intruder alarm systems
AS/NZS 2201.1	2007	Client's premises - Design, installation, commissioning and maintenance
AS/NZS 2208	1996	Safety glazing materials in buildings
AS/NZS 2269		Plywood - Structural
AS/NZS 2269.0	2012	Specifications
AS/NZS 2270	2006	Plywood and blockboard for interior use
AS/NZS 2271	2004	Plywood and blockboard for exterior use
AS/NZS 2311	2009	Guide to the painting of buildings
AS/NZS 2312		Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings
AS/NZS 2312		Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings
AS/NZS 2312.1	2014	Paint coatings

AS/NZS 2455		Textile floor coverings - Installation practice
AS/NZS 2455.1	2007	General
AS/NZS 2588	1998	Gypsum plasterboard
AS/NZS 2589	2007	Gypsum linings - Application and finishing
AS 2601	2001	The demolition of structures
AS/NZS 2699		Built-in components for masonry construction
AS/NZS 2699.1	2000	Wall ties
AS/NZS 2699.3	2002	Lintels and shelf angles (durability requirements)
AS/NZS 2712	2007	Solar and heat pump water heaters - Design and construction
AS/NZS 2728	2013	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
AS 2754		Adhesives for timber and timber products
AS/NZS 2754.1	2016	Adhesives for manufacture of plywood and laminated veneer lumber (LVL)
AS 2796		Timber - Hardwood - Sawn and milled products
AS 2796.1	1999	Product specification
AS 2796.2	2006	Grade description
AS 2796.3	1999	Timber for furniture components
AS 2858	2008	Timber - Softwood - Visually stress-graded for structural purposes
AS 2870	2011	Residential slabs and footings
AS/NZS 2904	1995	Damp-proof courses and flashings
AS/NZS 2908		Cellulose-cement products
AS/NZS 2908.2	2000	Flat sheets
AS/NZS 2924		High pressure decorative laminates - Sheets made from thermosetting resins
AS/NZS 2924.1	1998	Classification and specifications
AS/NZS 3000	2007	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3008		Electrical installations - Selection of cables
AS/NZS 3008.1.1	2017	Cables for alternating voltages up to and including 0.6/1 kV - Typical Australian installation conditions
AS/NZS 3017	2007	Electrical installations - Verification guidelines
AS/NZS 3080	2013	Information technology - Generic cabling for customer premises (ISO/IEC 11801:2011, MOD)
AS/NZS 3439		Low-voltage switchgear and controlgear assemblies
AS/NZS 3439.3	2002	Particular requirements for low-voltage switchgear and controlgear assemblies intended to be installed in places where unskilled persons have access for their use - Distribution boards
AS/NZS 3500		Plumbing and drainage
AS/NZS 3500.1	2015	Water services
AS/NZS 3500.2	2015	Sanitary plumbing and drainage
AS/NZS 3500.3	2015	Stormwater drainage
AS/NZS 3500.4	2015	Heated water services
AS/NZS 3500.5	2012	Housing installations
AS 3566		Self-drilling screws for the building and construction industries
AS 3566.1	2002	General requirements and mechanical properties
AS 3600	2009	Concrete structures
AS 3610	1995	Formwork for concrete
AS 3610.1	2010	Documentation and surface finish
AS 3660.1	2014	New building work
AS 3700	2011	Masonry structures
AS 3715	2002	Metal finishing - Thermoset powder coating for architectural applications of aluminium and aluminium alloys
AS 3727	2016	Pavements
AS 3727.1	2016	Residential
AS 3730		Guide to the properties of paints for buildings
AS 3730.1	2006	Latex - Interior - Flat
AS 3730.2	2006	Latex - Interior - Semi-gloss
AS 3730.3	2006	Latex - Interior - Low-gloss
AS 3730.6	2006	Solvent-borne - Interior/exterior - Full gloss enamel
AS 3730.7	2006	Latex - Exterior - Flat
AS 3730.8	2006	Latex - Exterior - Low gloss
AS 3730.9	2006	Latex - Exterior - Semi-gloss
AS 3730.10	2006	Latex - Exterior - Gloss
AS 3730.12	2006	Latex - Interior - Gloss
AS 3730.16	2006	Latex - Self-priming timber finish - Exterior
AS 3730.27	2006	Clear coatings for interior timber floors
AS 3730.28	2006	Wood stain - Solvent-borne - Exterior
AS 3730.29	2006	Solvent-borne - Exterior/interior - Paving paint
AS 3740	2010	Waterproofing of domestic wet areas
AS 3743	2003	Potting mixes
AS/NZS 3750		Paints for steel structures
AS/NZS 3750.9	2009	Organic zinc-rich primer
AS 3798	2007	Guidelines on earthworks for commercial and residential developments
AS/NZS 3823		Performance of electrical appliances - Air conditioners and heat pumps
AS/NZS 3823.1.1	2012	Non-ducted airconditioners and heat pumps - Testing and rating for performance (ISO 5151:2010, MOD)
AS/NZS 3823.1.2	2012	Ducted airconditioners and air-to-air heat pumps - Testing and rating for performance (ISO 13253:2010, MOD)

AS 3958		Ceramic tiles
AS 3958.1	2007	Guide to the installation of ceramic tiles
AS 3959	2009	Construction of buildings in bushfire prone areas
AS 3972	2010	General purpose and blended cements
AS 3999	2015	Bulk thermal insulation - Installation
AS/NZS 4200		Pliable building membranes and underlays
AS/NZS 4200.1	1994	Materials
AS/NZS 4200.2	1994	Installation requirements
AS 4256		Plastic roof and wall cladding materials
AS 4256.2	2006	Unplasticized polyvinyl chloride (uPVC) building sheets
AS 4256.3	2006	Glass fibre reinforced polyester (GRP)
AS 4256.4	2006	Unplasticized polyvinyl chloride (uPVC) wall cladding boards
AS 4256.5	2006	Polycarbonate
AS 4285	2007	Skylights
AS 4288	2003	Soft underlays for textile floor coverings
AS 4312	2008	Atmospheric corrosivity zones in Australia
AS/NZS 4386		Domestic kitchen assemblies
AS/NZS 4386.1	1996	Kitchen units
AS 4419	2003	Soils for landscaping and garden use
AS 4454	2012	Composts, soil conditioners and mulches
AS/NZS 4455		Masonry units, pavers, flags and segmental retaining wall units
AS/NZS 4455.1	2008	Masonry units
AS/NZS 4455.3	2008	Segmental retaining wall units
AS/NZS 4505	2012	Garage doors and other large access doors
AS 4552	2005	Gas fired water heaters for hot water supply and/or central heating
AS/NZS 4552.2	2010	Minimum energy performance standards for gas water heaters
AS 4586	2013	Slip resistance classification of new pedestrian surface materials
AS/NZS 4600	2005	Cold-formed steel structures
AS/NZS 4680	2006	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
AS/NZS 4692		Electric water heaters
AS/NZS 4692.1	2005	Energy consumption, performance and general requirements
AS/NZS 4692.2	2005	Minimum Energy Performance Standard (MEPS) requirements and energy labelling
AS 4773		Masonry in small buildings
AS 4773.1	2015	Design
AS 4773.2	2015	Construction
AS/NZS 4782		Double-capped fluorescent lamps - Performance specifications
AS/NZS 4782.2	2004	Minimum Energy Performance Standard (MEPS)
AS/NZS 4783		Performance of electrical lighting equipment - Ballasts for fluorescent lamps
AS/NZS 4783.2	2002	Energy labelling and minimum energy performance standards requirements
AS 4785		Timber - Softwood - Sawn and milled products
AS 4785.1	2002	Product specification
AS 4785.2	2002	Grade description
AS 4785.3	2002	Timber for furniture components
AS 4786		Timber flooring
AS 4786.2	2005	Sanding and finishing
AS/NZS 4847		Self-ballasted lamps for general lighting services
AS/NZS 4847.2	2010	Minimum Energy Performance Standards (MEPS) requirements
AS/NZS 4858	2004	Wet area membranes
AS/NZS 4859		Materials for the thermal insulation of buildings
AS/NZS 4859.1	2002	General criteria and technical provisions
AS 4934		Incandescent lamps for general lighting service - Test methods
AS 4934.2	2011	Minimum energy performance standards (MEPS) requirements
AS 5039	2008	Security screen doors and security window grilles
AS 5040	2003	Installation of security screen doors and window grilles
AS 5203	2016	Protection of openable windows/ fall prevention – Test sequence and compliance method
AS/NZS 5263		Gas appliances
AS/NZS 5263.1.2	2016	Gas fired water heaters for hot water supply and/or central heating
AS/NZS 5601		Gas installations
AS/NZS 5601.1	2013	General installations
AS 5604	2005	Timber - Natural durability ratings
AS 6669	2016	Plywood - Formwork
AS ISO 13007		Ceramic tiles
AS ISO 13007.1	2013	Grouts and adhesives - Terms, definitions and specifications for adhesives
AS/NZS ISO/IEC 15018	2005	Information technology - Generic cabling for homes
AS/NZS 60598		Luminaires
AS/NZS 60598.1	2013	General requirements and tests (IEC 60598-1, Ed. 7.0 (2008) MOD)
AS/NZS 61439		Low-voltage switchgear and controlgear assemblies
AS/NZS 61439.3	2016	Distribution boards intended to be operated by ordinary persons (DBO) (IEC 61439-3, Ed 1.0 (2012), MOD)
SAA HB 230	2008	Rainwater tank design and installation handbook
SAA HB 252	2014	Communications Cabling Manual - Module 3: Residential communications cabling handbook
SAA HB 301	2001	Electrical installations - Designing to the Wiring Rules
SAA HB 330	2009	Living in bushfire-prone areas
AIRAH DA09	1998	Air conditioning load estimation and psychrometrics

BCA 3.1.3.4	2016	Acceptable construction - Site preparation - Termite risk management - Durable notices
BCA 3.2.2	2016	Acceptable construction - Footings and slabs - Preparation
BCA 3.2.4	2016	Acceptable construction - Footings and slabs - Site classification
BCA Table 3.5.1.1a	2016	Acceptable construction - Roof and wall cladding - Roof cladding - Metal sheet roofing - Acceptable corrosion protection for sheet roofing
BCA 3.5.2.4	2016	Acceptable construction - Roof and wall cladding - Gutters and downpipes - Installation of gutters
BCA 3.7.2	2016	Acceptable construction - Fire safety - Smoke alarms
BCA 3.8.1.2	2016	Acceptable construction - Health and amenity - Wet areas and external weatherproofing - Wet areas
BCA 3.9.1	2016	Acceptable construction - Safe movement and access - Stair construction
BCA 3.9.2	2016	Acceptable construction - Safe movement and access - Barriers and handrails
BCA 3.9.2.5	2016	Acceptable construction - Safe movement and access - Barriers and handrails - Protection of openable windows
BCA 3.12.1.1	2016	Acceptable construction - Energy efficiency - Building fabric - Building fabric thermal insulation
FWPA PN06.1039	2008	Interim industry standard – Recycled timber – Visually graded recycled decorative
NASH		NASH Standard Residential and Low-rise Steel Framing
NASH-1	2005	Design criteria
NASH-2	2014	Design solutions

The following standards are mentioned only in the Owner's responsibilities and selections

AS 4145		Locksets and hardware for doors and windows
AS 4145.2	2008	Mechanical locksets for doors and windows in buildings
SAA HB 28	1997	Design of residential slabs and footings
SAA HB 109	1998	Footings for reinforced masonry slabs
BCA 2.6	2016	Performance provisions - Energy efficiency
BCA 3.1.2.0	2016	Acceptable construction - Site preparation - Drainage - Acceptable construction manuals
BCA 3.1.2.3	2016	Acceptable construction - Site preparation - Drainage - Surface water drainage
BCA 3.4.1	2016	Acceptable construction - Framing - Subfloor ventilation
BCA Table 3.4.1.1	2016	Acceptable construction - Framing - Subfloor ventilation - Subfloor openings and ground clearance
BCA 3.7.4.0	2016	Acceptable construction – Fire safety – Bushfire areas - Acceptable construction manuals
BCA Figure 3.10.1.4	2016	Acceptable construction – Additional construction requirements – High wind areas – Cyclonic areas
BCA 3.12	2016	Acceptable construction - Energy efficiency
BCA 3.12.1.3	2016	Acceptable construction - Energy efficiency - Building fabric - Roof lights
BCA 3.12.1.4	2016	Acceptable construction - Energy efficiency - Building fabric - External walls
BCA 3.12.2	2016	Acceptable construction - Energy efficiency - External glazing
BCA 3.12.3	2016	Acceptable construction - Energy efficiency - Building sealing

SPECIFICATIONS

WHY HAVE A SPECIFICATION?

The primary function of the drawings and specification is to give effect to design decisions. Many design decisions cannot be expressed in graphic form and therefore rely on words for their expression. Other decisions would be too tedious or impractical to be conveyed in graphic form. The drawings and specification complement each other.

THE IMPORTANCE OF A SPECIFICATION?

The quality of a building project is dependent on the documentation provided. The contract documentation includes the conditions of contract, the drawings, the schedules and the specification. Whilst the specification is a multi-purpose document, its primary function is to define precisely and succinctly the quality required and the processes necessary for achieving it. Its role includes, but extends beyond, the selection of materials by providing the criteria for acceptable quality of construction.

THE ROLES OF THE SPECIFICATION

The specification has many roles including being:

- a written record of design decisions taken.
- a document demonstrating compliance with statutory requirements.
- an estimating document.
- a tendering document.
- a legal (contractual) document.
- an on-site working document.
- a dispute settlement document.
- a project management tool.

THE FORM OF A SPECIFICATION

NATSPEC specification worksections are classified, numbered and sequenced in a logical order, which responds to the Australian construction industry. There are recognised methods of specification writing. These include specifying by:

- **Reference:** Where an identifiable printed and published document is incorporated by reference to it. These may be Australian Standards or manufacturer's technical manuals.
- **Performance:** That is, by stating a desired end result and the criteria by which the result will be judged for its acceptability.
- **Description:** Detailing the materials, workmanship and installation procedures to be used.
- **Direct/Proprietary:** Specification stating a proprietary trade name product.

Typically each worksection is divided into General, Products, Execution and Selections:

- **General** includes cross referencing, standards, interpretation, tolerances, submissions and inspection requirements.
- **Products** includes details of materials and components.
- **Execution** deals with the fabrication, installation, erection and completion as part of a project.
- **Selections** may be made within the text, in schedules within the worksections or provided separately. With simple projects, all selections may be on the drawings.

NATSPEC is the trading name of Construction Information Systems Limited, ABN 20 117 574 606.

NATSPEC, founded in 1975, is a not-for-profit organisation that is owned by the design, build, construct and property industry through professional associations and government property groups. It is impartial and is not involved in advocacy or policy development.

NATSPEC's major service is the provision of the comprehensive national specification systems endorsed by government and professional bodies. NATSPEC, the National Building Specification, is for all building structures, with specialist packages for architects, interior designers, landscape architects, structural engineers, service engineers and domestic owners. AUS-SPEC is the Local Government specification system for the life-cycle management of assets. Packages include Urban and Open Spaces, Roadworks and Bridges, Public Utilities, and Maintenance.

NATSPEC's objective is to improve the quality of construction in Australia through its updating services and via the provision of information, tools, products and other services.

Stakeholders

- Air Conditioning and Mechanical Contractors' Association of Australia
- Australian Council of Built Environment Design Professions
- Australian Elevator Association
- Australian Institute of Architects
- Australian Institute of Building
- Australian Institute of Building Surveyors
- Australian Institute of Quantity Surveyors
- Chief Minister, Treasury and Economic Development Directorate (ACT)
- Construction Industry Engineering Services Group
- Consult Australia
- Dept of Finance (Federal)
- Dept of Finance (WA)
- Department of Finance, Services and Innovation (NSW)
- Dept of Housing and Public Works (QLD)
- Dept of Infrastructure, Planning and Logistics (NT)
- Dept of Planning, Transport and Infrastructure (SA)
- Dept of Treasury and Finance (TAS)
- Dept of Treasury and Finance (VIC)
- Engineers Australia
- Master Builders Australia
- Standards Australia

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NATSPEC's objective is to improve the quality of construction in Australia through its updating services and via the provision of information, tools, products and other services.

STAKEHOLDERS

// Air Conditioning and Mechanical Contractors' Association of Australia

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// Australian Institute of Architects

// Australian Institute of Building

// Australian Institute of Building Surveyors

// Australian Institute of Quantity Surveyors

// Chief Minister, Treasury and Economic Development Directorate (ACT)

// Construction Industry Engineering Services Group

// Consult Australia

// Department of Finance (Federal)

// Department of Finance (WA)

// Department of Finance, Services and Innovation (NSW)

// Department of Housing and Public Works (QLD)

// Department of Infrastructure, Planning and Logistics (NT)

// Department of Planning, Transport and Infrastructure (SA)

// Department of Treasury and Finance (TAS)

// Department of Treasury and Finance (VIC)

// Engineers Australia

// Master Builders Australia

// Standards Australia

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NATSPEC//ConstructionInformation

- Licence numbers and type of licences held by persons responsible for the installation.

Other matters:

- The AIRAH Residential Air Conditioning Best Practice Guideline for each State and Territory (available free from www.airah.org.au) sets out industry best practice guidelines for the selection, installation and maintenance of residential air conditioning units. The guideline addresses issues such as energy efficiency and air conditioner noise in a clear and concise manner.
- The plant should have at least 12 months defects liability and maintenance period to make sure it operates through the full range of cooling and heating seasons.

0802 Hydraulic design and install

The drawings should show:

- Cold water pipe material, otherwise leave to the contractor's choice. In bushfire prone areas, above - ground gas and water pipes, and pipes < 300 mm below ground are to be metal, not plastic.
- Heated water pipe material, otherwise leave to the contractor's choice.
- Mixing valves if required.
- Water heater location and details e.g. gas instantaneous, electric, and solar or heat pump. Include manufacturer, model/capacity and temperature control for thermostatic mixing valves and special taps.
- Cold and heated water: For insulation of heated water pipes see AS/NZS 3500.4 Sections 8 or AS/NZS 3500.5 clause 3.33 which require insulation only at the heater and between the heater and the kitchen sink, document additional insulation, if required. A maximum temperature of 50°C is required by AS/NZS 3500.5 at clause 3.2.2 for all personal hygiene sanitary fixtures. A maximum temperature of 60°C is recommended for kitchen sinks and laundry tubs. This can be achieved by adjusting tempering values, thermostats, regulating flow e.g. with thermostatic mixing valves, or by using special taps.
- Provisions for additional piping for connecting to irrigation, toilet flushing, laundry, swimming pool top-up and similar uses (if required and permitted).
- External hose cock locations.
- Stormwater detention (if required by local authority, and in addition to any rainwater storage).
- Sanitary plumbing and drainage layout including the location of the connection point to the Network Utility Operator's mains and/or rainwater tanks if required by local authority.
- Sanitary ware items, locations and tapware e.g. sinks, basins, baths, WC, shower trays, laundry tub.
- Location of other plumbed items e.g. dishwasher, washing machine.
- For WCS: P-trap or S-trap, dual or single flush, exhaust ventilation through cistern.
- For sinks and hand basins: Number of tap holes for each (0, 1, 2 or 3).
- Waste disposal unit, if required.
- Rainwater tank (if required): Size, material, location, connections, pump and what rainwater serves. Plastic tanks are not to be used in bushfire prone areas.
- Gas Meter location.
- Gas appliance connection points.
- Gas bayonet outlet locations.
- Greywater system (if required): Source of greywater (e.g. laundry), location of the greywater diversion devices, surge tanks and connections to intended use (e.g. irrigation system).

0902 Electrical design and install

- Switchboards: The Electricity Distributor's Service and Installations Rules defines further prohibited locations for switchboards and metering equipment.
- Telecommunications installation: Fees in respect of applications for electricity and telecommunications services are normally paid by the owner. Consider specifying as 'smart-wired'. See www.smartwiredhouse.com.au
- Accessory schedule: Type, function and location of socket outlets, light switches, dimmers, telephone outlet, data outlet, exhaust fans, circulating fans, and computer outlets.
- Luminaire schedule: Type, product selection, lamp type and location. The Australian Government has introduced a programme to eliminate low efficiency lamps, including incandescent and low voltage halogen reflector types.
- Smoke detection system: To BCA 3.7.2. Details of automatic 'back to base' alarms if required.
- Cable/satellite television network operator.
- Intruder alarm system. Method of arming/disarming and details of automatic action on alarm registering i.e. local or 'back to base' or auto dialler.
- Garage door operation.
- Home automation: Full details of location functionality and equipment selected.