

SPECIFICATION OF BUILDING WORKS



SOUTHspec
Revision 26

NCC BCA 2019 amendment 1
1 July 2020

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BUILDING NOMINATION

BUILDING TYPE

- | | | |
|---|---|--|
| SINGLE DWELLING <input type="checkbox"/> | VILLA OR TOWNHOUSE <input type="checkbox"/> | INDUSTRIAL BUILDING <input type="checkbox"/> |
| DUAL OCCUPANCY <input type="checkbox"/> | GARAGE <input type="checkbox"/> | OFFICE BUILDING <input type="checkbox"/> |
| MEDIUM DENSITY UNITS <input type="checkbox"/> | RETAIL BUILDING <input type="checkbox"/> | ADDITION <input type="checkbox"/> |
| FARM SHED <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

CONSTRUCTION

- | | | |
|---------------------------------------|--|--|
| CAVITY BRICK <input type="checkbox"/> | TIMBER FRAMED <input type="checkbox"/> | A.A.C.BLOCK/PANEL <input type="checkbox"/> |
| BRICK VENEER <input type="checkbox"/> | STEEL FRAMED <input type="checkbox"/> | MASONRY BLOCK <input type="checkbox"/> |
| SINGLE BRICK <input type="checkbox"/> | STEEL CLAD <input type="checkbox"/> | CONCRETE PANEL <input type="checkbox"/> |

ADDENDUM

If any difference in requirements exists between this specification and the National Construction Code or relevant Standard that may apply to the construction of any building nominated in this specification, then requirements of the National Construction Code and/or the appropriate Standard shall take precedence over any nomination of construction in this specification.

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SPECIFICATION: THIS SPECIFICATION IS LICENCED FOR THE ERECTION AND COMPLETION OF A

BUILDING AT: (Enter land identification details for your state as per title)

LOT/BLOCK No. D.P. No. SECTION VOL. No.

CERT. of TITLE No. FOLIO No. LOCAL GOV. AREA

ADDRESS:.....

TOWN/AREA :

MUNICIPALITY / SHIRE / CITY:..... POST CODE.....

FOR: Hereinafter called the Proprietor or Owner.

The builder must ensure that relative drawings, plans and construction comply with the prescribed construction, the Local Government Act, the National Construction Code and that the work and services performed by the Builder are to the satisfaction of the Proprietor and Lending Authorities.

INSPECTION NOTICE

This is to apply only if inspections are required by the Lending Authority. The building is to be inspected by the Society or Bank Representative at the following stages of construction and the Builder is to give the Lending Authority and Owner at least (2) clear working days notice that inspections are required.

1. When trenches for footings have been prepared or rock surfaces scabbled and in the case of reinforced concrete footings, when reinforcement and depth pegs have been placed in position just prior to placing of concrete. Footings must not be commenced until the trenches have been inspected and approved by the Society Representative.
2. On completion of floor, wall and roof framing with noggins in position and veneer walling, but before flooring is cut down, roof covering is laid or wall linings and sheetings are installed.
3. When the internal wall coverings have been secured and fixing out commenced, apron mouldings must not be fixed until flashings have been inspected and approved.
4. ON COMPLETION OF BUILDING. The owner is cautioned that if works have advanced beyond these stages without the requisite notices being given, inspections made and unsatisfactory conditions are discovered later, the offer of a loan or the terms and conditions of a loan may be varied by the lending authority.

REGULATIONS AND NOTICES: The builder is to comply with the National Construction Code as amended and as applicable to the particular State or Territory in which the building is being constructed and the requirements of legally constituted Authorities for local Government and/or Services. The Builder is to give all notices, obtain all permits and pay all fees required by such Authorities. Where materials, components, design factors and construction methods comply with the Performance Requirements of the National Construction Code these may be accepted by approval authorities as an alternative as per the Deemed to Satisfy Provisions.

INSURANCE: Insurance of the works against fire will be effected as nominated in the Building Contract. The Builder shall at his own expense adequately insure against Public Risk and arrange indemnification in respect of his liability under the Workers' Compensation Act, Work Cover and other regulations as applicable.

WORK, HEALTH & SAFETY: Workplaces: Regulations of the Work Health & Safety Act as applicable in the State in which the building work is to proceed are to be complied with. Under the Act if a structure is to be used as, or at a workplace it must be designed to be without risk to health and safety by including testing and analysis, addressing the suitability of the design for the ultimate use of the structure as well as materials, method of construction, maintenance and future demolition. The builder is to comply with the regulations of the Work Health and Safety Act 2011 for all construction on site. If the structure will be used as or at a workplace, a Safety Report is to accompany plans and specifications and be distributed to the Builder, Certifier or Council and the Client.

VISIT THE SITE: Builders tendering are to visit the site and satisfy themselves as to the nature and extent of the work, the facilities available and any difficulties entailed in the execution of the said works. No amount above the accepted price will be allowed because of work arising due to neglect of this precaution, or assumptions made.

FLOOD HAZARD AREAS: Vol. 2 part 3.10.3; and NCC Vol. 1 part B 1.4 Where a building is to be erected in a Flood Hazard Area defined by an Appropriate Authority; the floor level of a non-habitable room shall not be greater than 1m below the height of the Flood Hazard Level for that area. Freeboard height of the Flood Hazard Level must be established and the Habitable Floor level of the building must be constructed above the Flood Hazard Level. An acceptable construction manual for buildings in a Flood Hazard Area is the 'ABC Standard for Construction of Buildings in Flood Hazard Areas'.

QUEENSLAND VARIATION: Building work in a flood hazard area is regulated by 'Building Act 19975' and Queensland Development Code 3.5 'Construction of Buildings in Flood Hazard Areas'.

SOUTH AUSTRALIAN VARIATION: PART 3.10.3 does not apply.

VICTORIATION VARIATION: in respect of definitions of 'Flood Hazard Areas' and 'Freeboard' in Part 3.10.3.0; these definitions are to be replaced with definitions as per Victorian Schedule 3.

LABOUR AND MATERIALS: The Builder is to provide all materials, labour, fittings and plant required to construct and complete the work. Materials shall be of the standard specified and workmanship in each trade shall be performed by tradesmen of that particular trade and in conformity with current good building practice.

SET OUT: The Builder shall be responsible for the accuracy and clear delineation of the site boundaries and location of the buildings there on. The Builder is to set out and maintain the works in accordance with the drawings. Figured dimensions are to be taken in preference to scale.

PLANS AND SPECIFICATIONS: Any work indicated on the plans and not in the specification or vice versa, and any item not shown on either plans or specifications but which is obviously necessary as part of proper construction and/or finish, is to be considered as so shown or specified and is to be duly done as part of the contract. Any variations to plans or specifications are to be agreed and recorded by the proprietor and the builder/contractor.

ADDITIONAL BUILDING REQUIREMENTS: All instructions for extra work or additional requirements must be in writing. Dated and signed copies of instructions shall be retained by both the owner and the builder.

PLANS ON JOB: The builder must at all times maintain on the job a legible copy of the plans and specifications, bearing the approval of the Municipal Authority concerned, Building Surveyor or Principal Certifying Authority.

NATIONAL CONSTRUCTION CODE: Where NCC is referenced in this specification; then that nomination refers to the National Construction Code of Australia BCA Vol.1 and/or Vol.2 and/or PCA Vol.3 as amended.

STANDARDS: Where an Australian Standard (AS) or Australian New Zealand Standard (AS/NZS) is nominated in this specification then that nomination refers to the latest revision of that Standard unless the National Construction Code references a different revision.

DEMOLITION: Demolition is defined as 'Development' work and requires Development Approval (DA) from Local Government (Councils). A licence is required under the 'Occupational Health and Safety Regulation 201' for demolition or partial demolition of a structure over 4 metres high, requiring mechanical operations or costs more than \$10,000. Notification to 'WorkCover' is required 5 days prior to demolition work commencing.

ASBESTOS—If asbestos requiring removal is detected in a building, its removal must be performed by a licenced operator depending on the type of asbestos product found

- (a) more than 10 sq. metres of sheet or roofing material
 - (b) any amount of loose friable asbestos fibres eg. insulation or packing.
- In all cases, asbestos removal is subject to approval by 'Work Health and Safety' and Regulations available from Local Government. AS2601-2001

EARTHWORKS AND EXCAVATIONS: All earthworks shall be designed and constructed in accordance with the drawings and guidelines of AS4678. Stormwater and other surface water drainage by underground piping or surface diversions shall be in accordance with AS/NZS3500. All siteworks shall be in accordance with the Environmental Planning and Assessment Act and Regulations for siteworks for the erection of a building, safeguarding excavations, backfilling, preventing soil movement and supporting neighboring buildings. Drainage requirements must be determined according to the soil classifications of NCC Vol. 2 part 3.1.1 and part 3.1.2. Earth Retaining Structures between 800mm and 15 metres high are subject to AS4678. Note that AS 4678 does not apply to retaining structures on land slip areas or for dams and embankments for water retention.

ROCK EXCAVATIONS: Should rock of any type be encountered in excavation of the works, unless its existence is known and allowed for, the cost of its removal is to be considered as an extra to the contract and charged for at a rate per cubic metre as indicated in the schedule of rates. The Proprietor is to be notified when any rock is encountered in excavations.

TERMITE MANAGEMENT SYSTEM: NCC Vol. 2 part 3.1.4 or Vol.1 part B 1.4 (i) Where the building is being erected in a prescribed termite area and protection is required by regulation of local government or state authority then protection against subterranean termites shall be installed in accordance with AS 3660. Details of method of protection to be used shall be submitted where required, prior to commencement of building works. Written certification, signed by the installer, that the method used and the manufacturers specification complies with the Australian Standard shall be provided to the relevant authority and owner where required. A durable notice must be permanently fixed in a prominent location in the building prior to its occupation indicating:-

1. The method and date of installation of the system and the need to inspect and maintain the system on a regular basis.
2. Where a chemical barrier is used, the life expectancy as listed on the National Registration Authority label and recommended date of renewal. Note that AS3660 and NCC lists the minimum acceptable level of protection only. Owners may direct additional protection. Special requirements exist in Queensland and Northern Territory

FOOTINGS AND PIERS: Excavate for all footings, piers, etc. to dimensions shown on plans or otherwise specified, to depths necessary to secure solid bottoms and even bearing. Grade, fill and ram where necessary to receive concrete floors where shown on ground level. Footings for piers/dwarf brick walls and slab on ground construction shall be as per BCA Vol.2 Part 3.2.5

At completion all excavations to be filled to ground level. All seepage and soakage water to be effectively dealt with and diverted clear of the building. Excavate for and lay agricultural drains to back of walls retaining earth and to any other sections of foundations as may be necessary and/or directed.

CONCRETE: NCC Vol. 1 part B1.4 or Vol. 2 part 3.2.3 All structural concrete shall be mixed and in compliance with AS3600, and unless otherwise specified on Engineers drawings, shall be of N20 grade. Concrete shall be supplied by an approved firm and delivery docketts shall be kept on the job for inspection by the proprietor if he so desires. The concrete for minor works where strength of concrete is not critical, such as paving on solid ground, may have a minimum compressive strength of 15MPa if unreinforced and 20 MPA if reinforced. Alternatively, such concrete may be mixed on site where the aggregate proportions and water/cement ratio can be controlled for required compressive strength. Reinforcing mesh fabric to AS/NZS467 and all reinforcing bars to be mild steel grade unless otherwise specified

FOOTINGS: NCC Vol. 2 parts 3.2.3, 3.2.4 and 3.2.5. Where sites have soils or foundations of reactive nature or problem sites footings shall be approved by a practicing structural engineer and in the case of known highly swelling soils or other unstable soils special precautions may have to be taken in the design and construction. In the case of concrete suspended floors to first floor it will be necessary for size of footings to be specified by a practicing structural engineer. Footing sizes otherwise are to be as per AS2870 or designed by an engineer.

CROSS SECTION DIMENSIONS OF REINFORCED CONCRETE FOOTINGS: for buildings with timber framed floors. for sites classified a or s according to AS2870. Structural Engineers details shall be used for buildings greater than two stories high. BCA Vol. 2 details footings and slab on ground dimensions for timber framed, brick veneer and cavity brick construction.

CONCRETE FLOORS: NCC Vol. 2 part 3.2.5 or Vol. 1 part B1. Provide concrete floors where indicated on plans. Where not specifically detailed, floors are to be a minimum of 100mm thick, reinforced with No. F72 hard drawn reinforcing fabric set 32mm below top of concrete. Floor slabs to be full thickness and free from grooves and ridges. Finish surface in one operation as required for tiling or otherwise to fine finish with float or steel trowel and sponge. Thickness of floors shall be maintained under tiling recesses in all cases.

INTEGRAL FLOOR SLABS AND SLAB ON GROUND: NCC Vol.1 part B 1.4, or Vol. 2 part 3.2.5. Grade whole area occupied by floor to a minimum depth as required to remove top soil and grass roots etc. Determine level of top of floor to habitable rooms, a minimum of 150mm above highest point of adjacent proposed external ground level or as otherwise required by Local Council. The external finished ground surface must be graded to drain water away from the building at a minimum slope away of 50mm over the first 1m as per NCC Vol. 2 part 3.1.2.3. Reinforce to Engineers detail and pour in one continuous operation in concrete Grade 20 unless otherwise nominated. Residential slabs and footings must be constructed in accordance with AS2870 as amended in conjunction with BCA Vol.2 Part 3.2 as applicable.

SUSPENDED REINFORCED CONCRETE SLABS: All concrete slabs to separate areas within or adjoining a building generally of timber floor construction shall be suspended. Permanent metal formwork approved by the lending authority may be used with slab sizes and reinforcement according to manufacturers recommendation. Spans are not to exceed 2100mm except where specifically detailed. Solid fill forming may be used under concrete floors (e.g. laundry, garage) adjoining the building providing that the level of the top of the slab is not less than 50mm below antcap and/or dampcourse level of the main building. For spans exceeding 2100mm, slabs supporting walls, cantilever slab floors or where beams and columns are used to support the slab, a practising structural engineers details shall be submitted with the drawings and specifications.

PRE-STRESSED BEAM FLOORING: Pre-stressed beams for floors to be constructed by this method shall be delivered to site and stacked for storage on timber packers to avoid damage and where stacked one above the other the timber packers shall be positioned in vertical lines. Beams shall be purpose made by the manufacturer for this particular project, designed in accordance with AS3600. Beams shall be individually marked for their respective location on the job and positioned to comply with manufacturers key drawing. Cutting or drilling into beams or modification in any way shall be done only with the express authority of the manufacturer or their site representative. Spacing of beams and fibre cement infill panel placement shall be strictly to manufacturers detail. Topping slab concrete shall have a 28 day strength of not less than 20 MPA and thickness shall not exceed 50mm unless shown on the drawings. Reinforce with nominal F52 Mesh U.N.O. Topping slabs shall be continuously cured for 7 days to prevent non structural cracking.

PATHS: (see AS 3727 for guide to residential pavement construction). Provide paths as indicated on plans. Concrete to be as previously specified and surfaced with wooden float. Car tracks to be a minimum of 100mm thick and paths a minimum of 75mm. Provide expansion joints in paths at a maximum spacing of 1200mm with bitumen impregnated felt joining strips the full thickness of concrete with tooled V-joints above same.

MASONRY VENEER: performance requirements are satisfied if designed and constructed in accordance with AS 3700 and or AS 4773.1 & 2. NCC 2019 Vol.2 Part 3.3.5 Masonry Veneer satisfies performance subject to the following requirements :-

- (a) Is located in an area where design wind speed is not more than N3
- (b) Footings are to comply with NCC 2019 Vol. 2 Part 3.2
- (c) Site soil classification is A, S or M
- (d) Masonry is tied to framing that complies with NCC Vol. 2 Parts 3.4 and/or 3.0
- (e) Is not in an Alpine area
- (f) The site has no specific earthquake requirements as per appendix A of AS 1170.4

HEIGHT: Part 3.3.5.2: Maximum height of wall not greater than 8.5M above adjacent finished ground level.

MASONRY UNITS: Part 3.3.5.3: To have minimum unconfined compressive strength of 3 MPa for solid units and 10 MPa for hollow units and have minimum veneer thickness of 90mm.

CLAY BRICKS : To be sound, hard, of well burnt clay and shale to comply with AS1225 'Burnt clay and shale building bricks'.

MORTAR MIXES: Part 3.3.5.4: For masonry must comply with AS 3700 or AS 4773 except that mixing by volume is can be as per Table 3.3.5.2

MORTAR JOINTS: Part 3.3.5.5: Have a nominal thickness of 10mm. Where raked they must not be deeper than 10mm or raked if in saline or heavy industrial airborne pollution areas.

CAVITIES: Part 3.3.5.6: Clear width between inside face of veneer and exterior face of frame to be not less than 25mm and drained to the outside if constructed on a slab on ground.

DAMP-PROOF COURSES/FLASHINGS: Materials: Part 3.3.5.7: Must comply with AS/NZS 2094 clauses 7.5 and/or 7.6 and can be embossed black polyethylene film, polyethylene coated aluminium, bitumen impregnated material not less than 2.5mm thick or termite proof materials as per Part 3.1.4 with no penetrations as a damp-proof course and/or flashing that is continuous through the wall or pier. Installation must be performed to comply with NCC 2019 Vol.2 Part 3.3.5.8.

WEEPHOLES: Part 3.3.5.9: Open perpendicular joints must be created in the course immediately above any flashing/damp-course at a maximum of 1200mm crs. over openings greater than 1.2M wide. Not required beneath window and door sills.

WALL TIES: Part 3.3.5.10: Veneer wall ties must comply with AS 2699.1 with heavier duty ties to be used in wind speed areas greater than N2 and in engaged piers. Spacing and fixings are to be in accordance with NCC Vol.2 Tables 3.3.5.3a and 3.3.5.3b. Corrosion protection varies in respect of exposure to nearness of breaking surf, saltwater and/or heavy industrial locations. NCC Vol.2 Table 3.3.4.4 lists minimum corrosion protection required.

OPENINGS IN MASONRY VENEER: Part 3.3.5.11: Masonry over openings must be supported by steel lintels, except openings of less than 500mm if they are adequately supported.

LINTELS: Part 3.3.5.12 (or Part 3.4.4): Lintels must be:-

(i) sized as per Table 3.3.5.5	(ii) installed with long leg vertical
(iii) carry not more than a 110mm thick veneer	(iv) not carry masonry more than 3 M in height above the opening
(v) minimum bearing length each end of:- 100mm for spans up to 1metre and 150mm for spans more than 1metre, See Vol. 2 fig. 3.3.5.2	

Corrosion Protection of lintels requires durability of thicker galvanizing or stainless steel material according to requirements of AS/NZS 2699.3 Note 1. FOR BUILDINGS CLASS 2 TO 9 Lintels requiring a Fire Resistance Level shall comply with Specification C1.1 & C 2.3 of NCC BCA Vol. 1

VERTICAL ARTICULATION JOINTS: Part 3.3.5.13: Vertical articulation joints serve the purpose of a contraction or expansion joint, be a minimum of 10mm wide and be installed in positions as listed in NCC diagrams
Joints must not be constructed adjacent to arched openings. Joint fillers options can be selected from NCC Vol. 2 Figure 3.3.5.5.

ENGAGED PIERS: Part 3.3.5.14: Where piers are to support sub-floor framing they must comply with the requirements of Part 2.

ISOLATED MASONRY PIERS: Performance requirements are satisfied if designed and constructed in accordance with AS 3700 and/or AS 4773 1 & 2 NCC 2019 Vol.2 Part 3.3.6 satisfies performance subject to the building not be constructed in an area with a wind speed greater than N3. See 3.3.6.1

PIERS FOR ATTACHED CARPORTS PORCHES & SIMILAR STRUCTURES: Part 3.3.6.2: And for vehicle access door openings as part of main roof or attached to a wall of a Class 1 building must be:-

(a) Not less than 290X290mm in section, not more than 2.7M high, at not more than 3.0M centres and provide a bearing length of 150mm for any supported member

PIERS SUPPORTING ROOFS and for FREE STANDING CARPORTS the requirements for Tiled Roofs and Sheet roofs are listed in Parts 3.3.6.3 and 3.3.6.4 respectively. Requirements for piers of free standing carports are listed in Part 3.3.6.5

Part 3.3.6.3: Tiled roof to have 32X0.8mm Galv. strap fixed to roof members through pier and looped with 4.6 grade M12 Galv. rod cast into footing

Part 3.3.6.4: Sheet roof similar strap as per tiled roof fixed to roof members through pier and looped with 4.6 grade M16 Galv rod cast into footing or a 4.6 grade Galv steel rod cast into the footing, threaded at the top extending up through the pier to connect to the roof structure.

Part 3.3.6.5: Piers for Free Standing Carport must be not less than 290X290mm filled with 20MPa concrete and reinforced with a Y16 rod cast into the footing and fastened securely to the roof structure

SUB-FLOOR ISOLATED PIERS: Part 3.3.6.6: Piers on concrete footings- maximum height above footing and section details:-

190mm sq. pier -- Max.height 1.2M	Pier up to 2.4M max height -- 230mm sq.X1.5 high on 350mm sq.X 0.9M high
230mm sq. pier -- Max height 1.5M	Pier up to 3.0M max height --- 230mm sq.X1.2high on 350mm sq. X1.2M high on 470mm sq.X 0.6M high

SERVICE OPENINGS: Service openings in floors,walls,ceilings in the building are to be installed and protected in accordance with C3.12 of BCA Vol.1

ACCESS: Adequate access in the external foundation wall must be provided with a weatherproof lockable door and crawl access is to be provided to all under floor areas.

SUBFLOOR VENTILATION: NCC Vol.1 parts F1 to 12 or NCC 2019 Vol. 2 Part 3.4.1.2 sub-floor areas shall be ventilated by means of evenly distributed openings with an unobstructed area of 6000mm² per lineal metre of external wall as a minimum dependent on the relative humidity of the area. Where particle board flooring is installed the unobstructed area shall be as recommended by the manufacturer. Ventilation of internal sub-floor walls shall be a minimum of 22000mm²/m run of wall. Vents to be immediately below bearers and similarly provide vents under verandah floors and suspended floor slabs. Sufficient cross ventilation to be provided through all walls below floors. No section of the under-floor area should be so constructed that it will hold pockets of still air. Appropriate special provision to be made where a gas bath heater is installed. Table 3.4.1.1 also allows variation to minimum aggregate sub floor openings where the ground under is sealed with an impervious membrane.
Subfloor Ground Clearance below the underside of the lowest floor member shall be not less than 150mm. Where termite inspection is required the minimum shall be 400mm. On sloping sites the 400mm clearance may be reduced to 150mm within 2M of external walls. Where the subfloor ground or space is excessively damp or subject to flooding the ventilation openings must be increased by 50% or the ground sealed with an impervious membrane.

BRICK REINFORCEMENT: In full brick cavity walls at two courses above level of the highest opening build into each 110mm thickness one continuous strand of 64 wide galvanised metal reinforcement lapped 100mm at joints and full width of layer at intersections.

ANT CAPS: To all brickwork and piers, at the level of underside of floorbearers, ant capping of approved metal is to be set, projecting 38mm beyond the internal faces of all brickwork and turned down at a 45 degree angle, lapped 13mm and sealed or crimped at all joints and corners so as to provide a continuous and effective barrier against termites throughout the length of the material. Whole of house protection against subterranean termite attack shall be installed in accordance with AS 3660.

FIREPLACE CHIMNEY and FLUES: See NCC Vol. 2 part 3.10.7.
An open fireplace or solid fuel burning appliance where the fuel burning area is not enclosed must have:-

- all masonry constructed in accordance with Part 3.3
- a hearth constructed of stone, concrete, masonry or other non-combustible material
- walls of the sides and back of two separate leaves of 180mm thick solid masonry to a height 300mm above the arch or lintel
- footings must comply with Part 3.2.5.5 and constructed as per 3.10.7.2 with clearances from combustible materials as per Figure: 3.10.7.1

Chimney construction must comply with Part 3.10.7.3 and Figure 3.10.7.2 Height and position of chimney in relation to highest part of building ridge line

INSERT FIREPLACES AND FLUES must comply with tests required by AS/NZS 2918 and the fireplace and chimney constructed in accordance with Part 3.3. The flue must be double skinned and comply with tests as per AS/NZS 2918. Figure 3.10.7.3 shows installation of flues for insert fireplaces and Figure 3.10.7.4 shows an acceptable location of freestanding heating appliances in diagram a – Elevation.
Domestic Solid Fuel appliances shall comply with AS/NZS 4013. Installation of Gas fired appliances shall be carried out by a Licenced Gas Plumber.

HEATING APPLIANCES NCC Vol 2 part 3.7.3: Domestic Solid Fuel appliances shall comply with AS/NZS 4013 and be installed in accordance with AS/NZS2918: Installation of gas fired appliances shall be carried out by a licensed gas plumber.

FIRE CONTROL REQUIREMENTS: FOR BUILDINGS CLASS 2 to 9

Fire rated construction to be built to either Table 3 or 4 or 5 of the BCA Vol. 1 (whichever is applicable)

Openings in an external wall requiring a Fire Resistance Level (FRL) (within the relevant distances) to be protected as per provisions of C3.2 & C3.4

Fire Hydrants are to be provided as per E1.3 of the BCA for buildings greater than 500 m² in area

Fire Hose Reels to be provided within 4m of an exit door for buildings greater than 500 m² in area and installed as per E1.4 of the BCA and AS 2441

Portable Fire Extinguishers to be installed as per E1.6 of the BCA and AS 2444

Smoke Control Provisions (if applicable) to be installed as per requirements of Tables 2.2a and 2.2b of the BCA Vol. 1

GAS SERVICE: The whole of the work is to be carried out as per requirements of the Local Supply Authority. The plumber is to be responsible for the gas service from boundary alignment, including fixing of the meter and cover for same. Installations for bottled gas supply shall comply with the relevant standard. Gas installations shall comply with 'Gas Safety Regulations and Act' and AS5601

VERMIN PROOFING: 13mm mesh galvanised bird wire to be built into brickwork and taken across cavity and secured to cavity face of inner wall at bottom plate level.

RETAINING WALLS: Retaining walls not specifically detailed, and foundation walling required to retain earth, are to be a minimum of 230mm thick, up to a height of 750mm of retained earth. Cavity walls used to retain earth are to have the leaf adjacent to the retained earth a minimum of 230mm thick, to a maximum of 900mm of retained earth height. All to be properly bonded (see 'Bonded Walls') and provide with a properly constructed agricultural drain to the earth side of retaining wall. For walls in excess of the above heights of retained earth, an Engineers detail will be required. NCC 2019 Vol.2 references a new Part 3.1.2 EARTH RETAINING STRUCTURES detailing higher retained earth provisions.

BONDED WALLS: Solid brick walls more than one brick width, which are used to retain earth or are otherwise noted as 'Bonded Walls', shall be bonded throughout the thickness of the wall by either header bricks or equivalent tying. Where header bricks are used, every sixth course shall be a header course or there shall be at least one header or equivalent tie to every 0.13sq metres (every third course at 480mm centres). Walls 350mm or more in thickness shall have overlapping headers or ties to provide a continuous tie through the wall.

CAVITY WALLS: Walls indicated as cavity walls to be constructed with two leaves. Where thermal insulation is required to comply with Energy Efficiency requirements clear cavity spaces must be maintained. Connect the two leaves with wall ties as per AS2699.

STRAPS: To full brick cavity walls, secure door and window frames with 1.6mm galvanised iron straps set in brickwork. Straps to be 25mm wide and at least 300mm long, where practicable and spaced at a maximum of five courses apart. Set 25mm x 1.6mm galvanised iron straps 1800 apart and 1200mm down cavity with ends turned 75mm into brickwork to secure wall top plates.

COMPLETION: Clean all cavities. Wait upon and make good after other trades. Replace all damaged and defective bricks. Clean all exposed brickwork with diluted spirits of salts, or as otherwise recommended by brick manufacturers, wash down with clean water and leave free from cement and mortar stains.

AUTOCLAVED AERATED BLOCKS/CONCRETE: Lightweight blockwork shall be Autoclaved Aerated Blockwork or proprietary manufactured concrete consisting of sand, cement and lime and shall be installed to areas as indicated on drawings. Site provisions for storage of materials and for the mixing of adhesive for block construction shall be as recommended by the manufacturer.

REINFORCED AERATED CONCRETE STRUCTURES: Where block or cast in situ aerated concrete structures are required construction is regulated by AS 5146.

WORKMANSHIP: Fixings, fastenings, anchors, lugs and the like shall be of a type approved by the manufacturer and shall transmit the loads and stresses imposed and ensure the rigidity of the assembly. Block laying shall be in accordance with the manufacturers current published specifications.

TOLERANCES: Maximum planar misalignment is not to exceed 2mm along butt joints. The thickness and width of walls shall not vary by more than 5mm from design sizes. Deviation from plumb, level or dimensional angle must not exceed 5mm per 3.5m of length of member or 6mm in total run.

INSTALLATIONS: All lightweight blockwork shall be installed using thin bed adhesive mortar to all horizontals and perpend. The first course must be made true and level using a normal thick bed mortar with thin bed adhesive to fully seal the perpend. All thin bed adhesive shall be applied using a recommended notched trowel to obtain an even distribution of adhesive to achieve joint thickness of 2-3mm. All lightweight blockwork shall be laid to conform with manufacturers recommendations. A slip joint bond breaker must be installed between the first course and the footings or slab on all internal and external walls to allow for differential movement between the blocks and the supporting structure. Build in as necessary all flashings, reinforcements, arch bars, lintels, frames, straps, bolts, lugs, wall ties, metalwork, precast units, sills, joists and the like. Carefully set out and leave openings for other trades to eliminate cutting.

JOINTS & CONSTRUCTION BEDDING: All face and end joints shall be fully filled with mortar and joints shall be squeezed tight. Slushing of mortar into joints shall not be permitted. The first course of blocks shall be laid in a full bed of mortar. Joints on all exposed surfaces shall be as specified. The joint shall be formed by striking the mortar flush and after it has partially set, tooling with the proper shaped tool to adequately compact the surface. The tool shall be of sufficient length to form a straight line free from waves. Internal joints shall be ironed. Where flush joints are left exposed, they shall be first compacted, then repointed and excess mortar removed. Joints shall be 10mm thick unless otherwise specified or directed.

JOINT REINFORCEMENT: Reinforce every 600mm in height and in the two courses immediately above and below window openings. Lap mesh at least 150mm at all joints and intersections except at articulation and expansion joints where a slip joint may be required.

BRACING DURING CONSTRUCTION: Masonry walls constructed in locations where they may be exposed to high winds during erection shall not be built higher than ten times their thickness unless adequately braced, or unless provision is made for prompt installation of permanent bracing such as intermediate floor or roof structure. Back filling shall not be placed against foundation walls horizontal pressure.

WEATHERPROOFING: All concrete masonry walls exposed to the weather or below ground level shall be adequately water proofed, using an approved paint or other coating and applied in accordance with the directions of the manufacturer. Assessment of weatherproofing for other wall construction can be referenced in the 'Verification Methods' of the National Construction Code.

ATTACHMENT OF DECKS AND BALCONIES: NCC 2019 Vol.2 Part 3.10.6 - Performance Requirement P 2.1.1 for the attachment of a deck or balcony to an external wall is satisfied if:-

- (a) the deck or balcony is not in an Alpine Area
- (b) the height of the floor of the deck at any point is not more than 3M above the top of the supporting footing
- (c) the walling plate does not support more than one floor or loadbearing or non-loadbearing walls or roof loads
- (d) the deck or balcony does not cantilever off the external wall and total imposed load on the deck or balcony does not exceed 2 kPa.
- (e) acceptable construction of the deck or balcony is to comply with 3.10.6.1 clauses (f) to (j) inclusive and if the load on the balcony or deck exceeds 2kPa such as heavy equipment, spa or bathing pools, design is required by a professional engineer.
- (f) fixing to walls: where the deck or balcony is fixed to a wall for support compliance with 3.10.6.2 is required
- (g) if wall cladding is removed to attach a deck complete flashing of the connection must comply with 3.10.6.3
- (h) where a deck or balcony is more than 1M off the ground and the surface of the footing bracing must be installed as per 3.10.6.4
- (i) Figures 3.10.6.1 a & b show methods of attachment to timber framed and masonry walls.

BUSHFIRE PRONE AREAS NCC 2019 Vol. 2 part 3.10.5.0 NCC Vol. 1 parts G 5.0, 5.1, 5. or Site assessment and preparation, construction of and maintenance of Class 1 buildings and decks and Class 10a buildings in a Bushfire Prone Area are required to comply with the provisions of AS 3959 as applicable and BCA 3.10.5 or NASH Standard 'Steel Framed Construction in Bushfire Areas'.

NSW VARIATIONS: Performance requirement is satisfied for Class 1 buildings or Class 10 buildings and decks if constructed in accordance with the following:- (see page 5)

to comply with AS3959 except as amended by 'Planning for Bushfire Protection' and Section 9 'Bushfire Attack level FZ (BAL-FZ)'. Buildings subject to BAL-FZ must comply with Specific Conditions of Development Consent for construction at this level of fire threat, OR Consultation with NSW Rural Fire Service under Section 4.14 of the Environmental Planning and Assessment Act 1979 OR As modified by Development Consent Issued under Section 100B of the Rural Fire Act 1997.

QUEENSLAND VARIATIONS: Some requirements do not apply when; in accordance with AS 3959 the building is situated in a Group F Rainforest area, mangrove community or grass in grassland under 300mm high.

NOTE: Other Australian Standards specify requirements for construction in Bushfire areas and if AS3959 does not nominate requirements for a particular building element then the normal Australian Standard will apply for those elements. The Local Bushfire Authority should be consulted. Where a building is to be constructed more than 100 metres away from a bushfire hazard the bushfire construction requirements of AS3959 do not normally apply. Clarification of the site requirements should be obtained from the local authority.

BUSHFIRE ATTACK LEVEL (BAL): Where a building is to be constructed in a Bushfire Prone Area, the BAL index shall be determined for the site. If the building has different BAL hazard requirements for different facades, then the highest BAL construction requirements will be used to determine the appropriate construction. Facade requirements may be reduced by one level of construction unless subject to the same bushfire attack level.

ENERGY EFFICIENCY: Note: From 1 May 2019 to 30 April 2020 Part 3.12 of NCC 2016 Vol.2 may apply instead of Part 3.12 of NCC 2019 Performance provisions of the BCA Part 2.6 requires that a building must have a level of thermal performance so that greenhouse gas emissions are reduced using energy efficiently. This level of thermal performance must facilitate the efficient use of energy for cooling and heating. This will be achieved by selection of materials and methods of construction of Building Fabric, External Glazing, Building sealing. Air movement and service as best suited to the particular Climatic Zone in which the building is sited. A building must have an energy rating of not less than 6 stars complying with the ABCB protocol for House Energy Rating. (Note: in NSW, for Class 1 and 10 buildings subject to BASIX the Energy Efficiency Provisions of NCC as varied by the NSW Appendix apply). Map of Australian Climate Zones for Thermal Design can be viewed on the Australian Building Code Board website at: www.abcb.gov.au

STATE AND TERRITORY VARIATIONS:

- (1) In NSW Part 3.12 does not apply
- (2) In N.T. Part 3.12 is replaced with BCA 2009 Part 3.12
- (3) In S.A. as per this Part, a sunroom or similar is deemed to be a Class 10a building and must comply with Part 3.12.1.6
- (4) In TAS. From 1 May 2019 to 30 April 2020 Part 3.12 of NCC 2016 Vol.2 may apply instead of Part 3.12 of NCC 2019. From 1 May 2020 Part 3.12 of NCC 2019 applies
- (5) In QLD. Construction for the energy efficiency of Class 1 buildings is also regulated by the Building Act 1975 and the Queensland Development Code MP 4.1- Sustainable Buildings.
- (6) In ACT, see the NCC 2019 Vol. 2 ACT appendix for further information that applies to new buildings and additions in the ACT

CLIMATE ZONE 8 requires specific insulation to be placed against the edges and under concrete of slab on ground construction. Added insulation to achieve minimum R-Values for various climate zones must comply with AS/NZS 4859.1 Care should be taken that insulation does not interfere with the safety or performance of services, fittings or electrical components. Insulation as manufactured must comply with AS/NZS4859.1.

A roof must achieve the minimum Total R – Value specified. In Climate Zones 1, 2, 3, 4 & 5 a pitched roof with a flat ceiling must have a Solar Absorbance value less than 0.55. RBM installed below the roof and the roof space ventilated by roof, gable, eaves or ridge vents that allow an unobstructed air flow with no dead air spaces, Vents must have a total fixed open area of not less than 1% of the ceiling area. OR not less than 2 wind driven ventilators in association with fixed vents subject to approval.

3.12.0 Application of Part 3.12

ACCEPTABLE CONSTRUCTION PRACTICE as per NCC 2019

- (1) Performance Requirement P.2.6.1 for the thermal protection of a building is satisfied by:
 - (i) Complying with:-
 - (A) 3.12.0.1 for reducing the heating or cooling loads
 - (B) 3.12.1.1 for building fabric thermal insulation
 - (C) 3.12.1.2(c) and 3.12.1.4(d) for thermal breaks
 - (D) 3.12.1.2(e) for compensating a loss of ceiling insulation except where energy rating software can automatically compensate.
 - (E) 3.12.1.5(c) and 3.12.1.5(d) for floor edge insulation
 - (F) 3.12.3 building sealing.

OR (ii) complying with:-

- (a) Part 3.12.1 for the building fabric
- (b) Part 3.12.2 for the external glazing and shading
- (c) Part 3.12.3 for the building sealing
- (d) Part 3.12.4 for air movement.

VICTORIAN VARIATION

(D) 3.12.1.2(e) text is replaced by : 'for compensating a loss of ceiling insulation and in the case of a new Class 1 building, having either a rainwater tank connected to all sanitary flushing systems, or a solar water heater system installed in accordance with the Plumbing Regulations 2018 or Performance Requirement P2.6.2 for reducing greenhouse gas emissions is satisfied by complying with Part 3.12.

Heating and Cooling Loads as per 3.12.0.1

(a) building must include an energy rating, including the separate heating and cooling load limits (using house energy rating software) of equal to or greater than 6 stars or if a building is in climate zones 1 or 2, 5.5 stars if it has an outdoor living area with an impervious roof with total R-Value of 1.5 min. (for downward heat flow) and at least one permanent ceiling fan.

NOTE: An easy to follow Flow Chart with options for compliance with NCC 2019 Part 3.12.0.1 is published in Vol.2 page 369.

SOUTH AUSTRALIAN VARIATION

In addition to the clause (a) above, clauses SA 3.12.01(a)(iv) and (v); SA 3.12.0.1(b) and (c); and SA Table 3.12.0.1 have varied requirements for elevated buildings in climate zones 4, 5 and 6. SA Table lists required levels of energy that are to be generated by an on-site renewable energy source and the Local Government Council areas where star ratings of 5.4 and/or 5.9 apply.

FRAMING: NCC Vol. 2 part 3.4.3 applies to all framing

TIMBER FRAMING: Performance Requirement for a timber frame is satisfied if it is designed and constructed in accordance with 3.4.3.0 as follows

- (a) AS 1720.1 Design of timber structures
- (b) AS 1720.5 Design of nailplated timber roof trusses
- (c) AS 1684.2 Residential timber-framed construction – non-cyclonic areas
- (d) AS 1684.3 Residential timber-framed construction – cyclonic areas
- (e) AS 1684.4 Residential timber-framed construction – non-cyclonic areas (simplified)
- (f) AS 1860.2 Installation of particleboard flooring

QUEENSLAND VARIATION: After (f) above add Qld. 3.4.3.0(g) Timber species

(g) In addition to sub-clauses (a) to (f), timber for structural purposes must be species as per Schedules A, B, or C of Book 2; December 2017 version of "Queensland Government, Department of Agriculture, Fisheries and Forestry – Construction timbers in Queensland.

CARPENTRY:

All timber shall comply with the appropriate standard as listed below. Timber sizes shall be selected so that the building as constructed complies with AS1170.2 or AS4055 for serviceability and Design Wind Gust Velocities (permissible stress) of 33 M/s minimum. Substitution of some members may be required for higher Gust Wind Velocities and advice of local authorities Building Department or Structural Engineer should be sought as whether design to N3 or higher is required.

TIMBER STRESS GRADES:

Visually Stress Graded Timber: Timbers whose species or place of growth is known may be visually graded for quality in accordance AS 2082. Mechanically Stress Graded Timber of required stress grade according to AS/NZS 1748 may be used regardless of species. Where seasoned timber is required timber shall be regarded as seasoned only if its moisture content does not exceed 18%.

CUTTING, ASSEMBLY AND ERECTION OF FRAMING ABOVE GROUND FLOOR LEVEL:

Where framing is cut, assembled and erected on site, particular care should be taken that member sizes and fixings are designed to comply with stress grades for the particular number of stories and roof loads according to AS1684.

SUBFLOOR FRAMING: Ground floor timbers shall be only of hardwood, cypress pine or pressure treated H3 Radiata or Canada Pine below a height of 400mm above finished ground level and must not be built into brickwork. If timbers are in ground they shall be pressure treated to H5. Subfloor ventilation shall conform to NCC Vol. 2 part 3.4.1. In Bushfire Prone Areas special conditions apply. Where termite barriers need to be inspected, 400mm clearance is required between the underside of bearer and ground surface. Sub floor ventilation shall be as per NCC Vol. 2 part 3.4.1

BEARERS AND JOISTS: Bearers and joists shall be installed to comply with AS1684 as amended for timber components or AS3620 for lightweight steel framing sections or as per the NASH alternatives.

STEEL FRAMING:

Performance Requirement P2.1.1 is satisfied for steel framing if it is designed and constructed in accordance with one of the following:

- (a) Design: NASH Standard 'Residential and Low-Rise Steel Framing' Part 1 and
- (b) Design solutions: NASH Standard 'Residential and Low-rise Steel framing' Part 2 or
- (c) Steel structures: AS 4100
- (d) Cold-formed steel structures: AS/NZS 4600

Design requirements for other materials in combination with steel framing including concrete floors, structural steel support beams, etc. are described in Part 3.0 – Structural provisions or Part 3.4.4 for structural sheet members.

STRUCTURAL STEEL MEMBERS: Part 3.4.4.0 Performance Requirements P2.1.1 is satisfied for structural steel sections if they are designed and constructed in accordance with one of the following:- Part3.4.4.1

- (a) AS 4100 Steel Structures
- (b) AS/NZS 4600 Cold-Formed structures
- (c) the building is located in an area where the wind speed is not greater than N3
- (d) is in an area where there are no specific earthquake design requirements as per AS 1170.4 appendix A.
- (e) and not subject to snow loads.

Part 3.4.4.2 lists structural members as follows:-

- (i) bearers
- (ii) strutting beams
- (iii) lintels
- (iv) columns

Tables for various loads on members as listed above are contained in Tables 3.4.4.0 to 3.4.4.7.

FABRICATION AND ERECTION: All structural components fabricated into frames and/or trusses and shall be cut accurately to length to fit firmly against abutting members. Studs shall be seated squarely in bottom plates with webs at 90deg. to the face of the wall and accurately located, plumbed and securely fixed to top and bottom plates. Multiple studs shall be used as specified at concentrated load points. Plates shall be securely spliced to maintain continuity. Splices in studs are not permitted. Structurally adequate heads shall be fitted over openings in walls. Preferred fastening is by MIG welding. All welds shall be cleaned and painted with zinc rich paint. Holes for electrical wiring, other cables and plumbing services shall be max. 33mm dia. flanged holes. Service pipes shall be effectively separated from framing by lagging and be securely fixed in cavities. Permanent electrical earthing of a steel frame building shall be carried out in accordance with the requirements of the local electrical authority. Where power tools are used on site, temporary earthing to the frame shall be made during construction. Domestic metal framing shall be designed to comply with the load combinations as per AS3623.

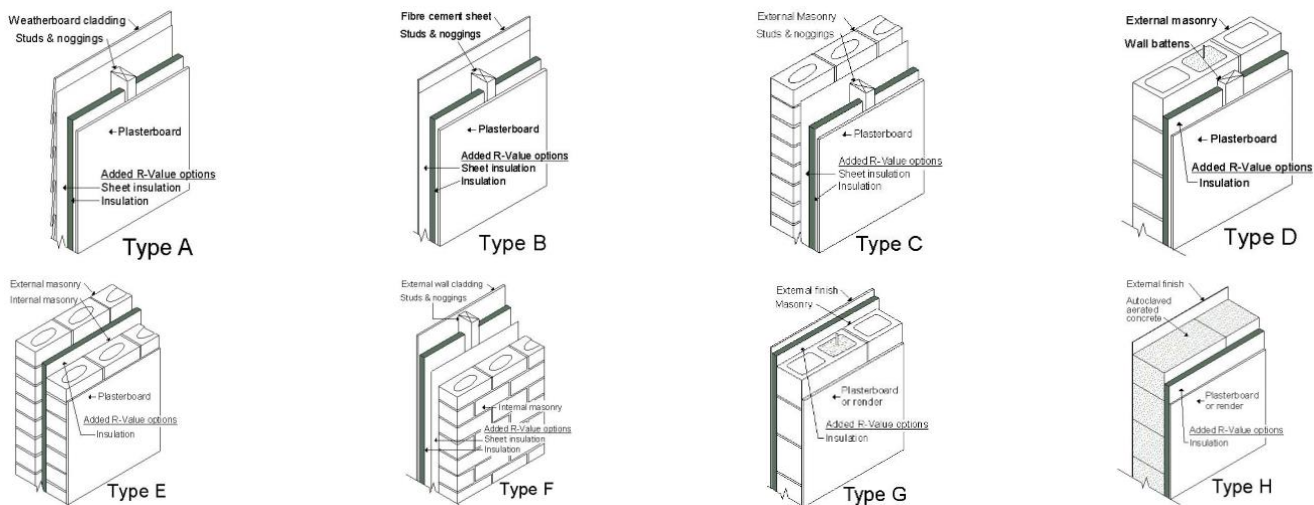
PURLINS AND GIRTS: To roof and walls of building provide purlins and girts as required according to engineers details. Cover roof and walls of building in full length sheets complete with all necessary flashings, cappings etc. Secure as recommended by manufacturer and provide panels of selected translucent sheeting as indicated or directed.

CORROSION PROTECTION required in respect of environment conditions of breaking surf, smooth seawater and industrial areas; see Part 3.4.4.4

LIGHTWEIGHT CONSTRUCTION: BUILDINGS CLASS 2 to 9 is to comply with Specification C1.8 of the BCA Vol.1 and manufacturers specification

EXTERNAL WALLS

An external wall must achieve the minimum Total R-Value for the relevant Climate Zone or in Climate Zones 1,2 and 3 can be shaded by a verandah, balcony, carport eaves and gutter or the like with a reduction of 0.4 to the minimum Total R Value required. The horizontal projection from the external face of the building must be not less than one quarter of the overall height of the wall measured from the internal floor vertically to the underside of the projection. This applies to all stories. **NOTE:** In Climate Zones 4,,5,6,7 and 8 all walls must achieve a surface density of not less than 220 Kg/m2 and in Climate Zone 6 be constructed on a flooring system that is in direct contact of ground i.e. concrete slab or in Climate Zones 6,7, and 8 incorporate insulation with an R-Value not less than 1.0 to the edges and underneath the slab. These requirements to not apply to South facing walls in Climate Zones 1,2 and 3 south of latitude 20° south.



SOLAR ABSORPTANCE VALUES OF COLOURED ROOFS

Slate (dark grey)	0.9	Light Grey	0.45		
Red, Green	0.75	Zinc Aluminium (dull)	0.55	off white	0.35
Yellow, Buff	0.6	Galvanised steel (dull)	0.55	Light Cream	0.3

FIRE SAFETY: NCC 2019 VOL. 2 Part 3.7: Requirements for fire separation of external walls of Class 1 buildings, Class 10a buildings and Open Car ports are covered in Part 3.7.2. clauses 1 to 8. Garage top dwellings fire separation as listed in Part 3.7.4 applies to floors and walls and requires fire protection as covered in Part 3.7.3 including roof lights and horizontal building projections over lower portions.

SMOKE ALARMS AND EVACUATION LIGHTING: NCC 2019 Vol. 2 Part 3.7.5 clauses 1 to 6, defines requirements, application, location of Smoke Alarms and Lighting to assist evacuation. Alarms must comply with AS 3786 and installed in Class 1a or Class 1b buildings as per Clause 3.7.5.2. Location of alarms varies between Class 1a and Class 1b buildings as per Clauses 3.7.5.3 and 3.7.5.4 see figures 3.7.5.1 a, b, c.)

Part 3.7.5.6: IN A CLASS1 BUILDING: A lighting system must be installed to assist evacuation of occupants in case of fire. The system must be actuated by a smoke alarm as required by Part 3.7.5.4b and consist of a light within the smoke alarm or a light or series of lights located in a corridor or hallway.

GARAGE TOP DWELLINGS: NSW PART 1.1.0 Defines a garage top dwelling as a Class 1a dwelling located above a Class 10a private garage which is not appurtenant to that Class 1a dwelling and includes any internal stair serving the garage top dwelling. Fire separation, construction of floors, walls and required heat alarms are to comply with NSW Part 1.1 clauses 1,2,3 and 4.

VENTILATION: Part 3.8.5.2 requires that natural ventilation to a room may come from a window, door or other device if the openable area is not less than 5% of the floor area of the room. Ventilation may come from an adjoining room if the adjoining room has openings not less than that required for the combined area of both rooms. The area of the common opening between the rooms shall be as per Fig.3.8.5.1. Ventilation must be provided to habitable rooms, sanitary, bath, shower, laundries and rooms occupied by a person.

SOUND INSULATION: NCC Part 3.8.6 requires that wall sound insulation must comply with Part 3.8.6.2 clauses (a), (b), and (c); determination of the Airborne Sound Insulation rating required must be as per Part 3.8.6.3. Complying construction is found in Parts 3.8.6.4 and 3.8.6.5

EAVES BEAMS AND VERANDAH PLATES: Eaves beams and verandah plates shall be provided to support rafters or trusses over full height openings or recesses in walls or over verandahs or porches covered by main roof structure. The ends of eaves beams and verandah plates that are supported on stud walls shall be carried by studs or stud groups as for heads for equivalent spans. End fixing shall provide resistance to uplift or displacement.. If supporting roof loads they shall be as per AS1684.

EAVES: Project rafters to give a soffit at eaves of directed width. In brick veneer buildings the inner ends of soffit bearers shall be fixed to the frame so as to be 20mm or more clear above top of brickwork at time of construction In solid masonry buildings the inner ends of soffit bearers shall be located by means of 50mm x 25mm minimum hangers from rafters or wall plates. In Bushfire Prone Areas fascias and eaves linings have special requirements.

ANTI-PONDING BOARDS: must be of a water resistant material and are not required if sarking is not directed. See sarking page 8.

ROOFING BATTENS: Supporting roofing only. (Note: roofing battens are not suitable for the safe support of workers prior to fixing roof cladding). Battens should be continuous over a minimum of two spans and their design to suit rafter/truss spacing and batten spacing must be in accordance with AS1684 for the allowable roof mass.

MANHOLE: Trim between ceiling joists or trusses for manhole 600 x 400mm minimum size. Line the opening and provide a suitable cover.

PREFABRICATED TIMBER WALL FRAMES AND TRUSSES

Where prefabricated frames and/or trusses are used for construction of the building, the manufacturer's certification of construction according to AS1684.2 or AS1684.4 for the building on the particular site must be obtained. Where certification is attached to truss or framing members the certification labels shall be left in place after erection for approval by the appropriate Building Surveyor, P.C.A, or Council Authority. Timber trusses purpose manufactured for the project are to be engineer designed according to AS 1720.5

NAIL PLATED TIMBER ROOF TRUSSES: construction requirements have been referenced in BCA Vol.2 as per AS 1720 Part 5.

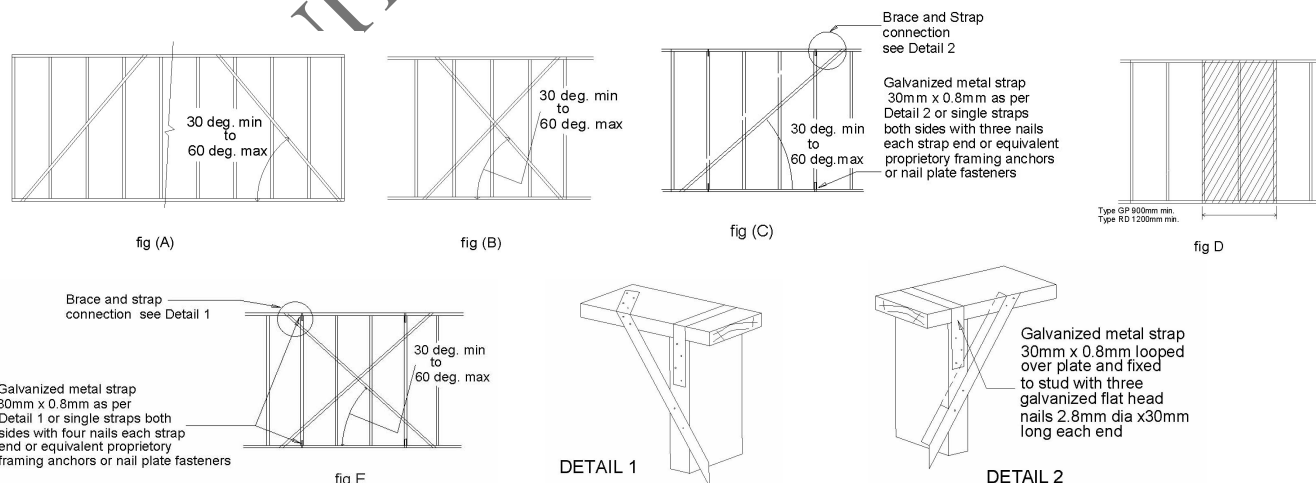
LIFT INSTALLATIONS: All lifts are to comply with the requirements of Part E3 of the BCA Vol. 1

MASSES OF TYPICAL ROOF CONSTRUCTION

MASS OF ROOF	MATERIAL
10 kg/m2	Steel sheet roofing 0.50mm thick and battens
20 kg/m2	Metal sheet tiles or medium gauge steel sheet roofing , battens, 12mm softwood ceiling lining, sarking and lightweight insulation
30 kg/m2	Steel sheet roofing 0.775mm thick, 13mm plaster ceiling, roof and ceiling battens, sarking and lightweight insulation
40 kg/m2	Steel sheet roofing 0.75 thick, battens, graded purlins and high density fibreboard ceiling lining
60 kg/m2	Terracotta or concrete tiles and battens
75 kg/m2	Terracotta or concrete tiles, roofing and ceiling battens, 10mm plasterboard, sarking and insulation
90 kg/m2	Terracotta or concrete tiles, purlins, roofing and ceiling battens, 19mm hardwood ceiling lining, sarking and insulation

DEFINITIONS: Spacing - Where this term is used the measurement shall be the centre-to-centre distance between members.
Span - Where this term is used the measurement shall be the face-to-face distance between members.
Reference is made to effective roof spans in the tables - the span is an indicator of the mass of roof being carried by the outer wall members.

BRACING OF WALLS Permanent Bracing of walls as per AS1684 shows typical bracing applicable to timber frame construction as explanatory information only.



Diagrams as shown and explanation of the various types of bracings are not intended to specify bracing requirements for any timber frame construction. All bracing requirements for a particular design in timber framing must be determined in accordance with Section 8 of AS1684.2 or AS1684.4 as applicable.

ANCHORAGE REQUIREMENTS: NCC Vol. 2 tables 3.4.3 Tie down requirements for timber frame construction can be determined from AS1684.4 Section 9 for maximum design gust wind speeds of 33m/sec. For wind speeds in excess of 33m/sec, design as per AS1684.2 is required.

Tie down fixings should be determined for the following connections:

- | | | |
|--|-----------------------------------|---|
| a) bearers to piers | d) studs to bottom and top plates | g) battens and/or purlins to rafters |
| b) floor joists to bearers | e) rafters to top plates | h) collar ties to rafters |
| c) Bottom plates to floor joists or concrete slabs | f) rafters to ceiling joists | i) verandah plates and eaves beams to posts |

NOTE: Special fastening requirements are required for type 'A' and 'B' wall bracing for connections (c) and (d) above.

CYCLONIC AND OTHER HIGH WIND AREAS: Where buildings are to be constructed in regions B, C, and D as per AS/NZS1170.2 and AS1170.2 compliance with the AS1170.2 Minimum Design Loads on Structures or AS4055 Australian Wind Loads for Housing.

NOTE: High wind areas exist outside of cyclone regions B,C and D. Clarification of the category at the site should be sought from local authorities. Cyclonic Regions of Australia and Tasmania are shown on Map NCC Vol. 2 Figure 3.01 Wind Regions.

ROOFING – NCC Vol. 2 part 3.5.2, or Vol. 1 part F1.5

TILE ROOFING: Provide all roofs with first quality roofing tiles. Where the pitch of rafters is less than 20°, the roof shall be sarked with either 2 ply bituminous felt or double faced aluminium foil covered reinforced fabric as per AS/NZS 4200. Between 12 and 15 degrees slope, perimeter of roof shall be provided with an anti ponding board or device to ensure that all water will be discharged into eaves gutter, a clear space must be provided between edge of the device and the lowest side of the first batten so as to allow a free flow of water into the gutter. . Where one section of the roof discharges into a lower section, the discharge is to be widely distributed, and the roof is to be fully sarked. Elsewhere, where a spreader is used the roof shall be sarked from the point of discharge to eaves with a minimum width of 1800mm approved sarking.

TERRA COTTA TILES: To be glazed and manufactured in accordance with AS 2049. To be fixed to battens in accordance with AS2050.

CONCRETE TILES: To conform to AS2049, **AS4046** and AS2050 and to be produced by manufacturers who provide a comprehensive guarantee. Tiles are to have an end lap of not less than 75mm. Fixing to be as per AS2050.

FIXING ROOF TILES: NCC Vol. 2, fig. 3.5.2.1 defines areas and fastening requirements for tiled roofs in any area with a Design Wind Speed up to and including **N3**. Specific requirements exist within a 1.2m band parallel to ridges, hips, edges and barges extending towards the field of the roof.

NON- INTERLOCKING ROOF TILES AND SHINGLES installation is required to be in conformance with AS 4597 – 1999.

PROFILED STEEL ROOF: NCC Vol. 2 part 3.5.1 All metal sheet to be material as nominated on drawings. All necessary accessories to be provided and fixed according to manufacturers recommendations. Roof is to be bird proofed. Sheet fixings and spacings are to be strictly as per manufacturers recommendations for the design wind speed for the area. Design and installation shall be in accordance with AS/NZS 1562..

SARKING: Where sarking is specified or required by any authority the selection of and fixing shall be in accordance with the code of practice as specified in AS/NZS 4200 for pliable roof sarking or reflective foil laminates. All installations must comply with the requirements of NCC Vol. 2 part 3.5.2.4. and AS3959 in Bushfire prone areas.

OVERFLOW CONTROL FROM EAVES GUTTERS: BCA Vol. 2 Table 3.5.3 clauses 3 and 4 lists new requirements for selection of eaves gutters for overflow control of water.

CONDENSATION MANAGEMENT: NCC Part 3.8.7 Mitigation of condensation within buildings is achieved by installation of pliable membrane sarking, or provision of an exhaust system with a minimum flow rate and/or roof space ventilation to comply with the requirements of Part 3.8.7 clauses 2, 3, and 4. Pliable membrane in exterior walls must comply with and be installed in accordance with AS/NZS 4200 clauses 1 and 2. In Climate Zones 6, 7 and 8 the membrane must be vapour permeable. Exhaust systems must remove 25 L/sec. from bathrooms or sanitary compartments and 40 L/sec. from kitchens and laundries thru' ducts to exterior or into a roof space ventilated as per Part 3.8.7.4.

EXTERNAL WALL CLADDING NCC 2019 Vol. 2 part 3.5

WEATHERBOARDS OR PROFILE SHEETING: Shall be fixed and flashed in accordance with manufacturers instructions. Weatherboards with laps as specified by the relevant Australian Standard shall be hardwood, pressure treated radiata pine or slash pine, cypress pine, baltic pine or western red cedar. Western red cedar used externally shall be fixed with galvanised or cadmium plated fasteners. External boarding shall be in one length or have joints specially designed for external use.

FIBRE CEMENT: Flat Sheeting: Fibre cement sheeting shall be not less than 7.5mm thick and close jointed to full height of walling. Horizontal joints shall be flashed with 0.42mm galvanised steel turned up 13mm against stud faces and down 12mm over sheet faces, lapped 25mm at joints. Internal angles of walls shall be flashed with 38mm x 38mm x 0.42mm minimum base thickness galvanised steel angles or bitumen coated metal flashing to full height of studs and lapped 50mm at joints.

PROFILED METAL SHEETING shall be fixed and flashed in accordance with the manufacturers instructions and comply with AS1562.1.

ALUMINIUM COMPOSITE WALL PANNELLING must have permanent identification labelling in accordance with SA Technical Specification 5344.

HARDBOARD: Sheets shall not be less than 9.5mm thick as per AS/NZS 1859.4 and fixed in accordance with NCC Vol. 2 Table and Figure 3.5.3.1

T & G STRIP FLOORING: Flooring shall be seasoned and stored in a way to preserve its delivery condition. Flooring boards shall be laid in straight and parallel lines with tongues fitted into grooves and cramped together with pressures suited to moisture content and seasonal conditions. End joints shall be made on a joist and joints in adjoining boards shall be staggered. Flooring shall be kept 12mm clear of walls or wall plates parallel with the direction of laying. Nails in faces of boards are to be well punched to allow for subsequent sanding and stopping. Flooring is not to be cut in and fixed before roofing is complete, external walls sheeted or lined and all external openings covered.

SHEET FLOORING: The minimum height of sheet flooring above ground level and under-floor ventilation shall be in accordance with manufacturers instructions or as required by Council or Lending Authority.

STRUCTURAL PLYWOOD: manufactured in accordance with AS2269 and sheets stamped on the face side with manufacturers name or trademark

PARTICLE BOARD: Approved board bonded with phenolic resin to achieve a type 'A' bond as defined in AS/NZS4785 for plywood may be used in platform construction or as fitted flooring

COMPRESSED FIBRE CEMENT: Sheet flooring not less than 18mm thick with density of not less than 1.8g/cm3 may be used in lieu of suspended concrete floors.

ELECTRICAL INSTALLATIONS: Provide all labour and materials necessary for the proper installation of electrical services in accordance with the appropriate AS Rules and requirements of the Local Supply Authority. Arrange with the supply Authority for connection from supply main to meter board. Provide for the proper installation and connect electricity stove/s and hot water unit/s. Provide light and power points as indicated on drawings or as directed and in accordance with AS/NZS1680. Provide box to enclose meters in accordance with the requirements of the Authority concerned. AS/NZS 3000 specifies the minimum requirements including safety provisions.

LIGHTING; NCC Vol. 2 part 3.8.4.2 Natural lighting must be provided to all habitable rooms of buildings by windows or roof lights or by light 'borrowed' from an adjoining room. If a door is used to transmit natural borrowed light to an adjoining room it must do so when in the closed position. Windows must have a clear aggregate light transmitting area of not less than 10% of the room floor area, and face a court or open verandah/carport. Roof lights must have a clear aggregate area of not less than 3% of the floor area of the room and face the sky. 'Borrowed' light can be supplied by a clear glazed panel or opening that is not less than 10% of the floor area of a room supplying the light if that room complies with the natural light requirements. Artificial lighting of one light fitting per 16 sq. metres of floor area must be provided to sanitary

compartments, bathrooms, airlocks, showers etc. in accordance with AS/NZS 1680.0 if natural lighting cannot be supplied.
FOR BUILDINGS CLASS 2 to 9 natural and artificial lighting must comply with NCC Vol. 1 part F1.4 or Deemed to Satisfy provisions as per part F4.0. Emergency lighting is to be installed as per provisions of C1, E4.2 of the BCA Vol. 1 and AS 2293.1. Exit and exit directional signs are to be installed as per E4.5, E4.6, E4.8 of BCA Vol. 1 and AS 2293.1

FLASHINGS: NCC 2019 Vol. 2 Part 3.5 lists requirements for all roof flashings. Flash around chimney stacks, exhaust flues and wherever else required with approved flashings. Eaves gutters, valleys and roof flashings shall be selected from materials compatible with each other and the roof covering to prevent bi-metallic corrosion. (See BHP publications TB8, TB15). Use of lead for flashings, gutters, downpipes and roofing is prohibited if the roof will collect potable water. NOTE: Where ridge and hip tiles are fixed with proprietary mechanical clips NCC Vol.2 fig 3.5.1.1 and fig 3.5.1.2 shows details for mechanical fastening ridge and valley clips

DETECTORS/ALARMS: NCC Vol. 2 part 3.7.2 Fire/smoke alarms complying with the requirements of the Local Government Act and/or state or territory regulations must be fitted in the locations required and approved by the regulatory authority and shall be installed in accordance with AS3786. Installations in buildings must be installed and managed to comply with NCC Spec. E2.2a. Multiple alarms within houses and sole occupancy units must be hard wired and interconnected. AS1603 references 'Automatic Fire Detection and Alarm Systems'- Heat Alarms.

HEAT ALARMS: State and Territory variations now require heat alarms to be installed in non-appurtenant private garages located below a Class 1a building. Fire Detection, Warning, Control and Intercom Systems – Design – Commissioning – Fire Installations shall be as per AS 1670 Part 1.

LIGHTNING PROTECTION: Where lightning protection is specified by the proprietor or required under regulatory provisions it shall be installed in accordance with AS1768.

INTERNAL LININGS: Line all internal walls not specified as otherwise with Gypsum plasterboard fixed horizontally in full length sheets. Sheets to have recessed edges and thickness as recommended by the manufacturer for the stud, batten or support spacing. Fixing is to be strictly in accordance with manufacturers instructions. Note: Where below 1200mm in laundry, bathroom and W.C. and at back of kitchen sink unit and below 1800mm in shower recess, only approved water repellent sheet shall be used. Provide Gypsum plasterboard to all internal ceilings unless otherwise specified. Fixing is to be in accordance with manufacturers recommendations as approved. Provide selected cornices, neatly mitred, properly fixed and set at all joints in full wall lengths where practicable. Gypsum plasterboard for ceilings and walls shall be as per AS2589.

FOR BUILDINGS CLASS 2 to 9 all room linings are to be installed as per provisions of BCA specification C1.10 Fire Hazard Properties

JOINERY: Joinery timber is to be of species seasoned and free from those defects that might effect its appearance and/or durability. All to be DAR accurately cut and fitted, properly mitred and scribed as required and securely fixed.

JAMBS: Linings shall be a minimum of 38mm thick solid rebated and to all door openings. Where return plaster reveals occur linings shall be 75mm x 50mm rebated. In brick veneer and timber framed construction 12mm clearance shall be provided over jamb linings to external openings. Linings to openings not having doors or to have swing doors are to be 25mm thick timber. Other proprietary linings may be approved by the owner.

DOORS: External doors shall not be less than 2040mm x 820mm x 40mm thick. Where sheeted with plywood, waterproof plywood only shall be used. All framed glazed doors (external or internal) shall be minimum of 40mm thick, internal doors shall be minimum of 35mm thick and free of warping. External glazed doors shall be installed to comply with AS2047.

FOR BUILDINGS CLASS 2 to 9 Fire doors and jambs are to be installed to comply with Specification C3.4 of BCA Vol. 1 and AS 1905.1. and doorways utilised for access shall be 920mm wide to allow a clear opening measurement of 850mm. Door latches to have lever type handles located between 900mm and 1100mm from the floor as per D2.21 and D3 of the BCA Vol. 1

EXITS are to comply with the requirements of Part 1 and constructed in accordance with Part D2 of BCA Vol.1.

WINDOWS: All framed windows shall be installed in accordance with AS2047-18 for Aluminium windows and AS2047 for timber windows.

PROTECTION OF OPEN-ABLE WINDOWS: (Against Falling From) NCC Vol. 2 part 3.9.2.5, or NCC Vol.1 part 2.2c: If a floor or exterior surface is 2m or more below a window in a bedroom, the window must comply with the following:- 'the open-able portion of the window must have a device to restrict the opening, or a screen with secure attachment fittings'. The window and or screen is to comply with the requirements of NCC Vol. 2 part 3.9.2.5 (a) and (b)'. If the lowest level of any window opening is greater than 1.7m above the room floor, no protection is required.

Open-able windows in a bedroom with a floor level greater than 2m above an exterior surface level below must have a barrier or wall with a height not less than 865mm above the room floor with no horizontal climbing elements.

In a room where the room floor under an open able window is 4m or more above an exterior floor or surface beneath, special conditions apply NCC Vol. 2 part 3.9.2.5 (c) and (d).

Open-able restrictions to windows in BUILDINGS CLASSES 2, 3, 4, and 9b are to comply with D2.24 of the BCA vol.1.

STAIRS, HANDRAILS AND BALUSTRADES: NCC Vol. 2 parts 3.9.1 and 3.9.2 Stairways shall be constructed to the layout as shown on plans with treads of equal dimensions except where shown or where winders are required. All risers in any flight shall be of equal height. All flights shall have a minimum of 2 and not more than 18 risers. Relationship of riser to going shall be between 1:2 and 1:1.35 unless otherwise directed or as permitted in AS1657. Balustrades shall be provided to all landings, ramps, decks, roofs and other elevated platforms where the vertical distance from that level is more than 1 metre above the adjoining floor or finished ground level. Height of the balustrade must be a minimum of 1 metre above landings etc. and not less than 865mm above the nosings of any stair treads or floor of a ramp. Openings in balustrades (decorative of otherwise) and space between treads, e.g. riser opening must not allow a 125 mm dia. sphere to pass through. Resistance to loading forces of a stairway must be in accordance with AS 1170.1. Where balustrades are constructed of tensioned wires provision shall be made to maintain the wire tensions.

FOR BUILDINGS CLASS 2 to 9 stairs are to comply with D2.13, and D2.14 and have slip resistance as required by AS 4586.

SLIP RESISTANCE: NCC BCA Vol.2 Part 3.9.1.4 specifies slip resistance requirements for areas of stair treads, ramps and landings. The classification of slip resistant treatment applied to these areas must be not less than that listed in Table 3.9.1.3 when tested according to AS4586 for the application and surface condition.

GLAZING: NCC 2019 Vol. 2 Part 3.6 lists requirements for all glazing. B 1.4, D 3.12, F 1.13

All sashes, doors, fixed lights and other glass in building shall be selected and installed by procedures as set out in AS1288 and/or AS2047 for type, thickness and area of glass according to wind loading, human impact and other considerations for glazing in frames of timber, steel, stainless steel, aluminium and bronze according to type of frame, height of building and glazing compound and for design and glazing of unframed toughened glass assemblies. Specific attention should be made to the selection of frame materials, glazing, location in walls and orientation to the path of the sun for various climate zones. Where windows are not shaded by roof eaves or other building projections, advice by an approved specialist or manufacturer should be sought to ensure that all installations comply with the Energy Efficiency requirements of the NCC. (Or BASIX in NSW).

Where human impact on glass panels is possible in mistake for doorway openings visual markings must be applied to the glass in specific locations. Note that glazing in areas where wind speeds are greater than N3 requires special design.

GLASS BALUSTRADES: AS 1288 and NCC Part 3.6.0(b)0(ix) All glass balustrades require an interlinking handrail where the handrail is greater than 1000mm above the floor level. AGGA Technical Fact Sheet provides guides for most residential variations.

ACCESS AND MOBILITY: Where access and mobility requirements are to be addressed in the construction of a new building, AS/NZS1428 General Requirements for Access – New Building Work contains the minimum design requirements to enable access for people with disabilities. The design must comply with 'Access to Premises Standards 2010' as referenced in the NCC. A link for advice on the 'Disability (Access to Premises)- Building Standards 2010' can be found at www.wst.tas.gov.au/industries/publications

See NCC Vol. 2 : South Australian appendix additions 5.1 and 5.2: Access for Disabled People as listed on page 13 of this specification.

FOR BUILDINGS CLASS 2 to 9 Access for the Disabled is to be provided to the building, car parking spaces and the front boundary as per Part D3.

EGRESS FROM EARLY CHILDHOOD CENTRES: Every part of Class 9b Early Childhood Centre must be wholly within a story that provides direct egress to a road or open space

DISABLED SANITARY PROVISIONS are to be installed as per F2.4 and constructed according to F2 of BCA Vol.1 and comply with AS/NZS1428.

EAVES GUTTERS VALLEY GUTTERS AND DOWNPIPES: NCC 2019 Vol.2 Part 3.5.3: Eaves gutters and downpipes of material and finish as nominated on drawings shall be installed as per manufacturers specification to all eaves as required with falls to downpipes in positions shown. All items shall be of material compatible with roof covering and to comply with AS/NZS 2179 for metal and AS1273 for UPVC components.

OVERFLOW CONTROL BCA Vol. 2 Table 3.5.3 lists new requirements in selection of eaves gutters for overflow control.

WATER SERVICES: Where a reticulated water supply is available all work shall be carried out by a licensed water plumber. All water supply installations shall be carried out in accordance with National Construction Code Vol. 3 (APC). Any products in a drinking water system shall comply with AS/NZS 4020.

WELS: Taps, shower heads, sanitary fittings should be selected according to the requirements of Water Efficiency Labelling Standards Act 2005. Plumbing fittings, pipes, cisterns etc. should comply with the Watermark Technical Specifications.

WATERMARK CERTIFICATION SCHEME is a mandatory certification scheme for products used in plumbing and drainage installations. Fixtures, fittings and appliances regulated by the scheme are showers, taps, flow controllers, toilets, urinals, dishwashers, clothes washing machines and combination driers. All products installed in new work must comply with and be labelled with their water rating information in accordance with AS6400 (available free from SAI Global). Penalties apply if unregistered, un-labelled or incorrectly labelled products are installed in new work.

RETICULATED RECYCLED WATER: Where a utility supplied reticulated recycled water supply is connected as a dual reticulation it is important that no cross connection between the potable and recycled water can occur. There must be at least one external tap for each system and the recycled water system must have lilac coloured components. Identification markings and signage shall be installed as per AS1319 and AS1345.

HOT WATER SERVICE: All installations must comply with AS3500.4 Provide from H/water unit with selected tubing to points necessary. Terminate with taps selected. Provide inlet stopcock to hot water unit. Storage water heater selection and installation conditions are now consolidated into NCC BCA Vol.3 – Plumbing Code.

GREYWATER REUSE SYSTEMS:

Where a greywater reuse system is proposed the installation shall comply with the following Australian Standards and Codes: AS1546 parts 1 and 3: AS1547: NSW Health 1998 AWTS guideline: NSW Health 2000 Domestic greywater treatment guidelines and sewerage single domestic premises. An on site greywater reuse system is not permitted in Reticulated Recycled water areas. Domestic Greywater Treatment Systems (DGETS) and Aerated Wastewater Treatment Systems (AWTS) require a certificate of accreditation from NSW Health.

WET AREAS: NCC Vol.1 Part F1 and Vol. 2 part 3.8.1: Building elements in wet areas must be water resistant and/or waterproof as listed in table 3.8.1.1 of the NCC Vol. 2 and constructed in accordance with AS3740. Water resistance or Waterproofing varies in respect of different building elements such as:- floors and horizontal surfaces, walls, wall junctions and joints, wall and floor junctions and penetrations.

SEWERED AREAS: Provide a drainage system from pedestal pan and from wastes of all fittings unless a grey water system is to be installed and connect to the sewer main, where shown on site plan all to be in accordance with the rules and requirements of the Authority for Water Supply and Sewerage. Provide at least one gully outside the building. The Authority Certificate to be produced at Completion of the Work.

UNSEWERED AREAS: Provide a drainage system from all fittings and from grease trap in accordance with the requirements of the Local Authority concerned. All drainage work from fittings to the drainage line outside the building is to be in accordance with the rules and requirements of the Water Supply and Sewerage Authority for sewerage areas. The Authority 'Special Inspection' Certificate of the work is to be produced by the builder. All plumbing and drainage shall be in accordance with the Code of Practice for state or Territory and Regulating Local Government area.

SEPTIC SYSTEM: Provide and install septic system in position nominated by the proprietor together with a holding tank and length of absorption trench installed in accordance with the manufacturers instructions and the requirements of the Local Authority to comply with AS1546 part 1.

STORM WATER TREATMENT METHODS: NCC 2019 Vol. 2 Part 3.1.3.5 Provide roof water drains from downpipes and from grates in paving where shown on site plan. Drains to be 100mm socketed vitrified clay pipes or PVC laid to an even and regular fall so as to have a minimum cover of 150mm. Drains to discharge into street gutter where possible. Where outlets are shown within the site they are to discharge at least 3000mm clear of the building into rubble packing 600mm diameter and 600mm deep. Acceptable solutions for stormwater drainage to be as per AS/NZS3500 part 3. Stormwater treatment systems should satisfy the following performance requirements:-

1. Conserve Water 2. Prevent Increases In Flooding/Erosion 3. Maintain water balance 4. Control Stormwater Pollution.
Systems suitable for detached dwellings are:- Roof/rainwater tanks; Detention devices; Infiltration devices and Filter strips. These are also suitable for multi-dwelling developments in addition to Stormwater tanks and Bio retention devices.

DRAINS FROM UNDER BUILDINGS: Vol.2 Part 3.1.3.3 NOTE- AS 2870: All stormwater, sanitary drainage or other discharge pipes emerging from under a building footing or slab or attached to a building shall have a flexible joint incorporated into the pipework outside the footing or slab and within 1 metre of the building perimeter. NOTE: Drain pipes must not be taken through the footings of the building. All seepage and soakage water is to be effectively dealt with and diverted clear of the buildings as shown on site plan. Trenches for drains, where running parallel to the building must not be within 600mm of the footings of the building.

RAIN WATER TANKS: Install rainwater tanks of selected material on slab or support as nominated by tank manufacturer.. A dual supply system should have no direct or indirect connection between the mains potable supply and the rainwater tank supply. In ground concrete tanks may be installed as an option with a suitable pressure pump and a testable backflow prevention device as per AS/NZS2845.1 Where an above ground tank is connected to internal reticulation, a meter with a dual check valve is to be installed and a visible air gap between the mains supply and the rainwater tank as per AS3500 and AS2845.2.1. (See NSW Health circular: Use of rainwater tanks where a reticulated mains water supply is available).
See -: NCC: SOUTH AUSTRALIA appendix additions SA 2.1 and 2.2: Water efficiency as listed on page 13 of this specification.

WALL AND FLOOR TILES: For guidance on installation of ceramic tiles see recommendations as set out in AS3958 parts 1 and 2.

WALLS: selected tiles shall be applied to areas as directed or in layouts as shown on plans
Finish at top and salient angles with round edge tiles or other finishes as directed. Provide vent tiles and selected recess fittings. Tiles to be fixed to a backing of Fibre Cement with approved adhesive. Areas for tiles can be increased by proprietors direction or as noted on plans.

FLOORS: Cover floors of bathroom, shower recess, WC and ES with selected tiles, set in cement mortar or approved adhesive and graded to give an even and adequate fall to floor waste.

PAINTING: All paints, stains, varnishes and water colours are to be of approved brands as selected. Materials used for priming and undercoating are to be the same brand as the finishing paints or as recommended by the manufacturers of the finishes. Do necessary stopping after the priming has been applied. Rub down all surfaces to a smooth finish prior the application of each successive coat of paint. External joinery or other exposed woodwork to have a clear plastic finish is to be treated with a priming oil containing wood preservative and a water repellent.

EXTERNALLY: All external woodwork to be given one coat of primer, one coat of oil based undercoat and one coat of gloss finish enamel or clear finish as directed.

PRIMING WEATHERBOARDS: Any pine timber is to be primed all round as well as on the ends. Before fixing; hardwood, cypress pine, radiata pine and oregon are to be primed on external faces including rebates. Pressure treated Canada pine is to be primed at ends before fixing.

IRONWORK: Eaves, gutters, downpipes, exposed service pipes and wrought iron etc. to be cleaned and primed and give one coat of gloss paint all round.

INTERNALLY: All exposed woodwork in kitchen, bathroom, laundry WC EC to be prepared primed and then given one undercoat and finished with one coat of full gloss paint or to be stained and finished with two coats of clear liquid plastic as selected.

CEILING: To be given one coat of sealer and two coats of paint. The finishing coat of bathroom, laundry, and kitchen ceilings to be semi-gloss (unless directed otherwise).

WALLS: All rooms except bathroom, laundry and kitchen to be given one coat of sealer and two coats of water based paint. To bathroom, kitchen, WC EC and laundry where no tiled or pre-surfaced material is required, walls are to be given one coat of sealer, one coat of undercoat and one coat of gloss oil paint system.

FENCING: Provide selected fencing as directed or detailed on plans of type and dimensions as approved by Local Government Authority. Alignment of fencing in relation to Lot boundary lines must comply with council regulations.

SWIMMING POOLS: Swimming pool access is to comply with NCC 2019 Vol. 2 Part 3.10.1.0. and AS 1926 clauses 1 and 2. This applies to any wading pool, spa, or swimming pool with a depth of water exceeding 300mm. BCA Vol. 2 defines a swimming pool as any excavation or structure that contains water and principally designed, manufactured or adapted to be used for swimming, wading or the like, including a bathing, wading pool or spa. The water recirculation system of a swimming pool with a depth of water exceeding 300mm must comply with AS 1926.3

NSW VARIATION: Performance requirements for a pool with a depth more than 300mm and associated with a Class 1 building if it has safety barriers complying with AS 1926 Parts 1 & 2 or if the swimming pool is a spa pool Clause 9 of the Swimming Pools Regulation 2018.

QUEENSLAND VARIATION: Access to swimming pools is regulated under the Building Act 1975.

NORTHERN TERRITORY VARIATION: Access to swimming pools is regulated under the Swimming Pool Safety Act.

SOUTH AUSTRALIA: Amended Part 3.10.1.0(b) is replaced with SA 3.10.10(b) Performance Requirement P 2.7.2 is satisfied for a water circulation if it complies with AS 1926.3 – a skimmer box must have means for releasing vacuum pressure should suction is blocked. NCC 2019 Vol.3 Part C2 sets out requirements for pumped discharge (emptying) of swimming pools.

ALPINE AREAS: For buildings to be constructed in an alpine area, compliance with the requirements of NCC 2019 Vol.2 Part 3.10.4 is required. Alpine areas are areas above Australian Height Datum (AHD) as follows:- NSW, VIC, ACT above 1,200 metres AHD. TASMANIA above 900 metres AHD. Where access and snow loads may be applied to a building; specific additional requirements are necessary according to Part 3.0 (structural provisions) and Part 3.12 (energy efficiency). Acceptable construction practice is listed in Parts 3.10.4.1,2,3 and 4 ; Application, External doors, external trafficable structures and clear spaces around buildings. See figures 3.10.4.3 a,b,c and d.

CLIMATE

ZONES: Climate Zone classifications for various localities are shown in NCC Vol. 2 2014 Table 1.1.2. Thermal design requirements for climate zones should be as per NCC fig. 1.1.4

EARTHQUAKE: Earthquake probability shall be determined according to NCC Vol. 2 Part 3.10.2 and loading requirements are to be designed to comply with AS1170.4. Most domestic structures are not required to be specifically designed for earthquake resistance.

LANDSCAPING: The area to be landscaped shall comply with the landscape plan and requirements of the Local Council Authorities. Appropriate landscape design will reduce water usage in lawns and gardens by up to 50%. Selection of native indigenous plants suited to the local micro climate along with exotic species from California, South Africa and the Mediterranean will normally require minimal maintenance and water use. (BASIX website: see table D.2.1 for indigenous plants in various local government areas for NSW use).

CAR PARKING: All car parking and loading bays to be kerbed, guttered, sealed, drained, line marked and landscaped. Drainage of surface water into neighbouring properties is NOT permitted except where an easement is obtained. All car parks shall comply with the provisions of Local Council

COMPLETION: The building shall be completed in every trade. Sashes, doors, locks and all other equipment shall be checked and left in a satisfactory operating condition. Timber floors shall be at least rough sanded. Where fine sanding is specified see CA39: Code of practice for sanding interior wooden floors. All plant, surplus materials and rubbish is to be removed from site. Gutters and drains shall be cleared and the building generally to be left clean and fit for occupation.

The Builder is to furnish the Owner with:

1. Notification of Completion
2. All Keys for all doors
3. Certificate of termite protection treatment
4. Certificate from Sewerage Authority re-sanitary drainage
5. Invoices for all PC items required

It is the responsibility of the builder to arrange any inspections necessary by Local Council, Waterboard or Lending Authorities and/or Principal Certifying Authority. It is the responsibility of the Owner to apply to Local Supply Authorities for connection of Electricity from mains to meter box.

ENERGY EFFICIENCY COMPLIANCE FOR DWELLINGS IN NEW SOUTH WALES ARE SUBJECT TO THE PROVISIONS AS OUTLINED IN THE BASIX DATA INPUT CHECKLIST THAT IS AVAILABLE ON LINE . see www.basix.nsw.gov.au/basix-help-notes

BASIX: *The Building Sustainability Index*

For Class 1 and 10 buildings subject to BASIX, the NCC energy provisions of Part 2.6 and Part 3.12 of NCC BCA 2009 apply

A BASIX Certificate must be submitted with a Development Application, Complying Development Certificate and Construction Certificate Application for all of NSW for new homes and for some alterations and additions.

Data required to Complete a BASIX Assessment is described in the BASIX Data Input checklist and this should be used in conjunction with the BASIX Assessment Tool.

Generation of a BASIX Certificate can only be made in the NSW Department of Infrastructure , Planning and Natural Resources BASIX website

**Australian Standards and Australian/New Zealand Standards referenced in The National Construction Code
BCA 2019 Vol. 2 Amendment 1 and Specification of building works revision 26**

STANDARD	PART	YEAR	AMDT	DESCRIPTION	STANDARD	PART	YEAR	AMDT	DESCRIPTION
AS/NZS ISO717	1	2004		Acoustics/sound insulation	AS/NZS 2918		2018		Domestic fuel burning appliances
AS 1056	1	1991		Storage water heaters	AS/NZS 3500	0	2003		Plumbing drainage/definition terms
AS NZS 1170	0	2002	1,3,4	Structural design actions		3	2018		Storm water drainage
	1	2002	1,2	Permanent, imposed	AS 3600		2018	1	Concrete structures
	2	2011	1 to 5	Wind actions	AS 3660	1	2014	1	Tremite management- New work
	3	2003	1,2	Snow and ice actions		3	2014		Management systems
AS 1170	4	2007	1,2	Earthquake actions in Aust	AS 3700		2018		Masonry Structures
AS 1273		1991		UPVC Downpipe and fittings	AS 3740		2010	1	Waterproofing wet areas
AS 1288		2006	1,2,3	Glass in buildings	AS 3786		2014	1,2	Smoke alarms/light or ion/z type
AS 1289	6.3.3	1997	1	Soil testing for engineering	AS 3959		2018		Construct in bushfire prone areas
AS 1428	1	2009	1,2	Access & mobility/tactile surfaces	AS/NZS 4020		2018		Products/contact of drinking water
AS 1562	1	2018		Installation sheet/ roofs & walls	AS 4055		2012	1	Wind loads for housing
AS/NZS 1664	1,2	1997	1	Alluminium structures/Design	AS 4072	1	2005	1	Fire protection/ service openings
AS 1668	2	2012	1,2	Mechanical ventilation buildings	AS 4100		1998	1	Steel structures
AS 1670	1	2018		Fire detection/warning systems	AS/NZS 4200	1	2017		Pliable membranes & underlays
AS/NZS 1680	0	2009		Interior lighting safe movement		2	2017		Installation requirements
AS 1684	2	2010	1,2	Timber frames non cyclonic	AS 4254	1,2	2012		Air handling/flexible/rigid ducts
	3	2010	1	Timber frames cyclonic areas	AS/NZS 4284		2008		Testing of building facads
	4	2010	1,2	Timber frms simple non cyclonic	AS/NZS 4505		2012	1	Garage & other large doors
AS 1720	1	2010	1,2,3	Timber structures design	AS 4586		2013	1	Slip resist, new surface materials
	4	2006		Timber structures fire resistant	AS 4597		1999		Non locking roof slate and shingle
	5	2015		Timber Strut nail plated roof truss	AS/NZS 4600		2018		Cold formed steel structures
AS/NZS 1859	4	2018		Wood panels/fibre board	AS 4654	1	2012		External waterproof membrane
AS 1860	2	2006	1	Partial board flooring installation		2	2012		Design & Installation
AS 1926	1	2012		Safety barriers - swimming pools	AS 4678		2002		Earth retaining structures
	2	2007	1,2	Safety barriers / location	AS 4773	1	2015	1	Masonry design/small buildings
	3	2010	1	Water recirculation system		2	2015		Small building construction
AS 2047		2014	1,2	External Glazing/ windows ,doors	AS/NZS 4859	1	2018		Thermal installation Mat'l buildings
AS 2049		2002	1	Roof tiles	AS 5146	1	2015	1	Reinf'd aerated concrete struct's
AS 2050		2018		Installation of roof tiles					
AS 2159		2009	1	Piling design/installation	AS 5216		2018		Post & cast in fastenings concrete
AS/NZS 2179	1	2014		Metal Rain water goods/Access's	AS 5637	1	2015		Wall/ceiling fire hazard property
AS/NZS 2269	0	2012	1	Plywood struct' specification	AS/NZS 2269		2012		Construction in flood hazard areas
AN/NZS 2327		2017		Comp' steel/concrete construction	AS/NZS 2327		2019		NatHERS - Heating & cooling limits
AS/NZS 2699	1	2000		Masonry construction/wall ties	ISO 8336		1993		Fibre cement flat sheets
	3	2002		Masonry const lintels & shelf angle	NASH STANDARD		2014		A Steel frame const' bush fire areas
AS 2870		2011		Residential slabs & footings		1	2005	a,b,c	Steel frame low rise design criteria
AS/NZS 2904		1995	1,2	Damp proof courses & flashings		2	2014	a	Steel fram const' design solutions
AS/NZS 2908	2	2000		Cellulose cement flat sheets					

Standards added as referenced by NCC BCA 2019 Vol. 2 Amendment 1 - July 1, 2020

STANDARD	PART	YEAR	AMDT	DESCRIPTION	STANDARD	PART	YEAR	AMDT	DESCRIPTION
AS/NZS 4517		1999		Sprinkler systems	AS 5637	1	2015		Determination of fire hzd propertys
AS/NZS ISO 9972				Air tightness of buildings	SA TS 5344		2019		Identification of cladding products

Standards as listed show the Part Number and the Revision Year of the latest amendment (if any)

MASONRY CONSTRUCTION	Clay Bricks <input type="checkbox"/>	Face <input type="checkbox"/>	Commons <input type="checkbox"/>	Stone <input type="checkbox"/>
	Concrete Bricks <input type="checkbox"/>	Concrete Blocks <input type="checkbox"/>	AAC Blocks <input type="checkbox"/>	AAC Panels <input type="checkbox"/>
	Rendered <input type="checkbox"/>	Bagged <input type="checkbox"/>	Painted <input type="checkbox"/> <input type="checkbox"/>
MORTAR JOINTS	Colour..... <input type="checkbox"/>	Ironed <input type="checkbox"/>	Flush <input type="checkbox"/>	Raked <input type="checkbox"/>
SILLS	Brick <input type="checkbox"/>	Quarry Tiles <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
EXTERNAL WALL SHEETING	Timber Cladding <input type="checkbox"/>	Fibre Cement Cladding <input type="checkbox"/>	Metal Cladding <input type="checkbox"/>	PVC/Vinyl <input type="checkbox"/>
	Type..... <input type="checkbox"/>	Type..... <input type="checkbox"/>	Type..... <input type="checkbox"/>	Type..... <input type="checkbox"/>
FLOOR CONSTRUCTION	Timber <input type="checkbox"/>	Concrete <input type="checkbox"/>	Pre.Str. Beam Floor <input type="checkbox"/>	Steel <input type="checkbox"/>
FLOORING	T & G <input type="checkbox"/>	Species..... <input type="checkbox"/>	Compressed FC Sheet <input type="checkbox"/>	Structural Plywood <input type="checkbox"/>
	Particle Board <input type="checkbox"/>	Tiles: Ceramic <input type="checkbox"/>	Terra Cotta <input type="checkbox"/>	Quarry <input type="checkbox"/>
DECKING	Treated Pine <input type="checkbox"/>	Other..... <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
WALL FRAMES	Timber <input type="checkbox"/>	Hardwood <input type="checkbox"/>	Pine <input type="checkbox"/>	H.S.Galv. Steel <input type="checkbox"/>
	Structural Steel <input type="checkbox"/>	Off site prefabricated <input type="checkbox"/>	Onsite cut/assembled <input type="checkbox"/> <input type="checkbox"/>
ROOF CONSTRUCTION	Pitched Roof <input type="checkbox"/>	Exposed Rafters <input type="checkbox"/>	Oregon <input type="checkbox"/>	Hardwood <input type="checkbox"/>
	Roof Trusses <input type="checkbox"/>	Raked Ceiling <input type="checkbox"/>	Pine <input type="checkbox"/>	Steel Framing <input type="checkbox"/>
	Flat/Skillion <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
ROOF COVER	Concrete Tiles <input type="checkbox"/>	Terra Cotta Tiles <input type="checkbox"/>	Shingles/Slate <input type="checkbox"/>	Corrugated FC <input type="checkbox"/>
	Zincalume <input type="checkbox"/>	Colorbond <input type="checkbox"/>	Polycarbonate <input type="checkbox"/>	Profile..... <input type="checkbox"/>
THERMAL INSULATION	Roof/ceiling <input type="checkbox"/>	Reflective Insulation Rating R..... <input type="checkbox"/>	Bulk Insulation Rating R..... <input type="checkbox"/> <input type="checkbox"/>
	Walls <input type="checkbox"/>	Reflective Insulation Rating R..... <input type="checkbox"/>	Bulk Insulation Rating R..... <input type="checkbox"/> <input type="checkbox"/>
	Floors <input type="checkbox"/>	Reflective Insulation Rating R..... <input type="checkbox"/>	Bulk Insulation Rating R..... <input type="checkbox"/> <input type="checkbox"/>
INTERNAL WALL LININGS	Gypsum Plasterboard <input type="checkbox"/>	FC Sheeting <input type="checkbox"/>	Timber Panelling <input type="checkbox"/>	Cement Render <input type="checkbox"/>
	Face Brick <input type="checkbox"/>	Other..... <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
WET AREA LININGS	WR Gyp. Plasterboard <input type="checkbox"/>	Villaboard <input type="checkbox"/>	Timber Panelling <input type="checkbox"/>	Laminated Panel <input type="checkbox"/>
CEILINGS	Gypsum Plasterboard <input type="checkbox"/>	Timber Panelling <input type="checkbox"/>	FC Sheeting <input type="checkbox"/> <input type="checkbox"/>
CORNICE	Type..... <input type="checkbox"/>	Size.....mm <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
DOOR JAMBS	Timber <input type="checkbox"/>	Galvanised Steel <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
WINDOWS	Timber <input type="checkbox"/>	Aluminium <input type="checkbox"/>	Type/Manufacturer..... <input type="checkbox"/> <input type="checkbox"/>
FLYSCREENS	Timber <input type="checkbox"/>	Aluminium <input type="checkbox"/>	Other <input type="checkbox"/> <input type="checkbox"/>
JOINERY	Timber <input type="checkbox"/>	Species..... <input type="checkbox"/>	Stained/Polished <input type="checkbox"/>	Other..... <input type="checkbox"/>
	Architrave Size.....mm <input type="checkbox"/>	Skirting Size.....mm <input type="checkbox"/>	Material..... <input type="checkbox"/> <input type="checkbox"/>
	Kitchen Cupboards..... <input type="checkbox"/> <input type="checkbox"/>	Stained <input type="checkbox"/>	Painted <input type="checkbox"/>
	Front Door Type..... <input type="checkbox"/> <input type="checkbox"/>	Stained <input type="checkbox"/>	Painted <input type="checkbox"/>
	Other External Doors Type..... <input type="checkbox"/> <input type="checkbox"/>	Stained <input type="checkbox"/>	Painted <input type="checkbox"/>
	Internal Doors Type..... <input type="checkbox"/> <input type="checkbox"/>	Stained <input type="checkbox"/>	Painted <input type="checkbox"/>
	Garage Door Type..... <input type="checkbox"/> <input type="checkbox"/>	Size.....mm <input type="checkbox"/>	Colour..... <input type="checkbox"/>
EXTERNAL STAIRS	Timber <input type="checkbox"/>	Steel <input type="checkbox"/>	Concrete <input type="checkbox"/>	Brick <input type="checkbox"/>
INTERNAL STAIRS	Timber <input type="checkbox"/>	Steel <input type="checkbox"/>	Concret <input type="checkbox"/>	Brick <input type="checkbox"/>
	as manufactured by..... <input type="checkbox"/> <input type="checkbox"/>	Balustrade type..... <input type="checkbox"/> <input type="checkbox"/>
ELECTRICIAN	Provide:	Light Points..... <input type="checkbox"/>	Single Switches..... <input type="checkbox"/>	Two way switches..... <input type="checkbox"/>
		Power Outlets..... <input type="checkbox"/>	Single..... <input type="checkbox"/>	Double..... <input type="checkbox"/>
		Light fittings..... <input type="checkbox"/>	Smoke Detectors..... <input type="checkbox"/>	Exhaust Fans..... <input type="checkbox"/>
ROOF PLUMBER	Quad Gutters(size....) <input type="checkbox"/>	Box Gutters <input type="checkbox"/>	Sheerline Gutters <input type="checkbox"/> <input type="checkbox"/>
GUTTERS/DOWNSPIPES	Downpipes 100 x 50 <input type="checkbox"/>	100 x 75 <input type="checkbox"/>	100 x 100 <input type="checkbox"/>	Round..... dia <input type="checkbox"/>
	Colorbond <input type="checkbox"/>	PVC <input type="checkbox"/>	Copper <input type="checkbox"/>	Zincalume <input type="checkbox"/>
	Aluminium <input type="checkbox"/>	Galvanised <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
WATER SERVICE	Copper pipe <input type="checkbox"/>	PVC Pipe <input type="checkbox"/>	Flex. pipe system <input type="checkbox"/> <input type="checkbox"/>
RETICULATED RECYCLED WATER	All Reticulation Systems for Recycled Water must have Lilac Coloured components and markings.			
RAINWATER STORAGE TANKS	Type..... <input type="checkbox"/>	Size.....(kl) <input type="checkbox"/>	Nos. <input type="checkbox"/>	Pressure Pump <input type="checkbox"/>
STORMWATER STORAGE TANKS	Type..... <input type="checkbox"/>	Size.....(kl) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
HOT WATER SERVICE	Electric <input type="checkbox"/>	Gas <input type="checkbox"/>	Solar <input type="checkbox"/> <input type="checkbox"/>
	Mains Pressure <input type="checkbox"/>	Gravity Fed <input type="checkbox"/>	Cylinder capacity litres <input type="checkbox"/> <input type="checkbox"/>
INTERNAL SEWER SERVICE	Copper <input type="checkbox"/>	PVC <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
DRAINER	Sewer connection <input type="checkbox"/>	Septic System <input type="checkbox"/>	Aerated System <input type="checkbox"/>	Greywater diversion <input type="checkbox"/>
	PVC pipes <input type="checkbox"/>	Vitrified clay pipes <input type="checkbox"/>	Copper pipes <input type="checkbox"/> <input type="checkbox"/>
FENCING	Brick <input type="checkbox"/>	Paling <input type="checkbox"/>	Rail <input type="checkbox"/>	Brushwood <input type="checkbox"/>
	Front Boundary <input type="checkbox"/>	Side Boundary <input type="checkbox"/>	Rear Boundary <input type="checkbox"/>	Colorbond <input type="checkbox"/>
	As manufactured by..... <input type="checkbox"/> <input type="checkbox"/>	Type..... <input type="checkbox"/> <input type="checkbox"/>
POOL	Type..... <input type="checkbox"/>	Inground <input type="checkbox"/>	Above Ground <input type="checkbox"/>	Pool Cover <input type="checkbox"/>

This Schedule is to be fully completed. Items applicable should be marked - items with blank spaces will NOT be included in the works

PROPRIETOR..... BUILDER..... DATE/..../.....

SCHEDULE OF RATES / P.C. ALLOWANCES AND MATERIALS

ITEMS	MODEL OR TYPE	PRIME COST
1. CONCRETE PIERS TO FOOTINGS	\$
2. ROCK EXCAVATION: per cubic metre.....	\$
3. AGRICULTURAL DRAINS: per lin. metre.....	\$
4. STORMWATER	\$
5. SEWER CONNECTIONS	\$
6. CERAMIC TILES WALL \$ PER M2 S/O	\$
S/O=SUPPLY ONLY FLOOR \$ PER M2 S/O	\$
QUARRY \$ PER M2 S/O	\$
7. SEPTIC INSTALLATIONS	\$
8. GREYWATER TREATMENT INSTALLATION	\$
9. BATHROOM VANITY & CABINET	\$
10. EN-SUITE VANITY & CABINET	\$
11. BASIN	\$
12. BATH.....	\$
13. TOWEL RAILS	\$
14. SOAP HOLDERS.....	\$
15. MIRRORS	\$
16. TOILET SUITES.....	\$
17. SHOWER SCREENS.....	\$
18. LAUNDRY TUB	\$
19. KITCHEN SINK	\$
20. TAP SELECTIONS	\$
21. KITCHEN CUPBOARDS	\$
22. OVEN	\$
23. HOT PLATES	\$
24. STOVE	\$
25. DISHWASHER	\$
26. EXHAUST FANS	\$
27. RANGE HOOD	\$
28. HOT WATER UNIT	\$
29. SMOKE/FIRE DETECTORS	\$
30. PHONE WIRING/FAX WIRING	\$
31. T.V. WIRING/COMPUTER WIRING	\$
32. INTERCOM WIRING	\$
33. SECURITY INSTALLATION	\$
34. AIR CONDITIONING, SINGLE UNIT.....	\$
35. INTERNAL VACUUM SYSTEM	\$
36. FRONT GATE	\$
37. FRONT FENCE	\$
38. CLOTHES HOIST	\$
39. CONCRETE PATHS per lin. metre	\$
40. GARAGE DOORS (remote controlled)	\$
41. LANDSCAPING (As per Design Supplied)	\$
42. UNIT PAVING	\$
43. RAINWATER TANKS.....	\$
44. RETICULATED RECYCLED WATER SYSTEM.....	\$
45.	\$
46.	\$
47.	\$

Where there are additional items or different types of the same item a duplicate list should be added and agreed on by the proprietor and builder.

NOTE: The builder is to allow Prime Costs amounts of items set out in this Schedule above. All items to be selected by Owner. The Builders tender is to include the provision of all items, including the cost of cartage, freight, fixing and fitting as part of his contract. Adjustment for substituted fittings will be made on the basis of the prevailing retail price.

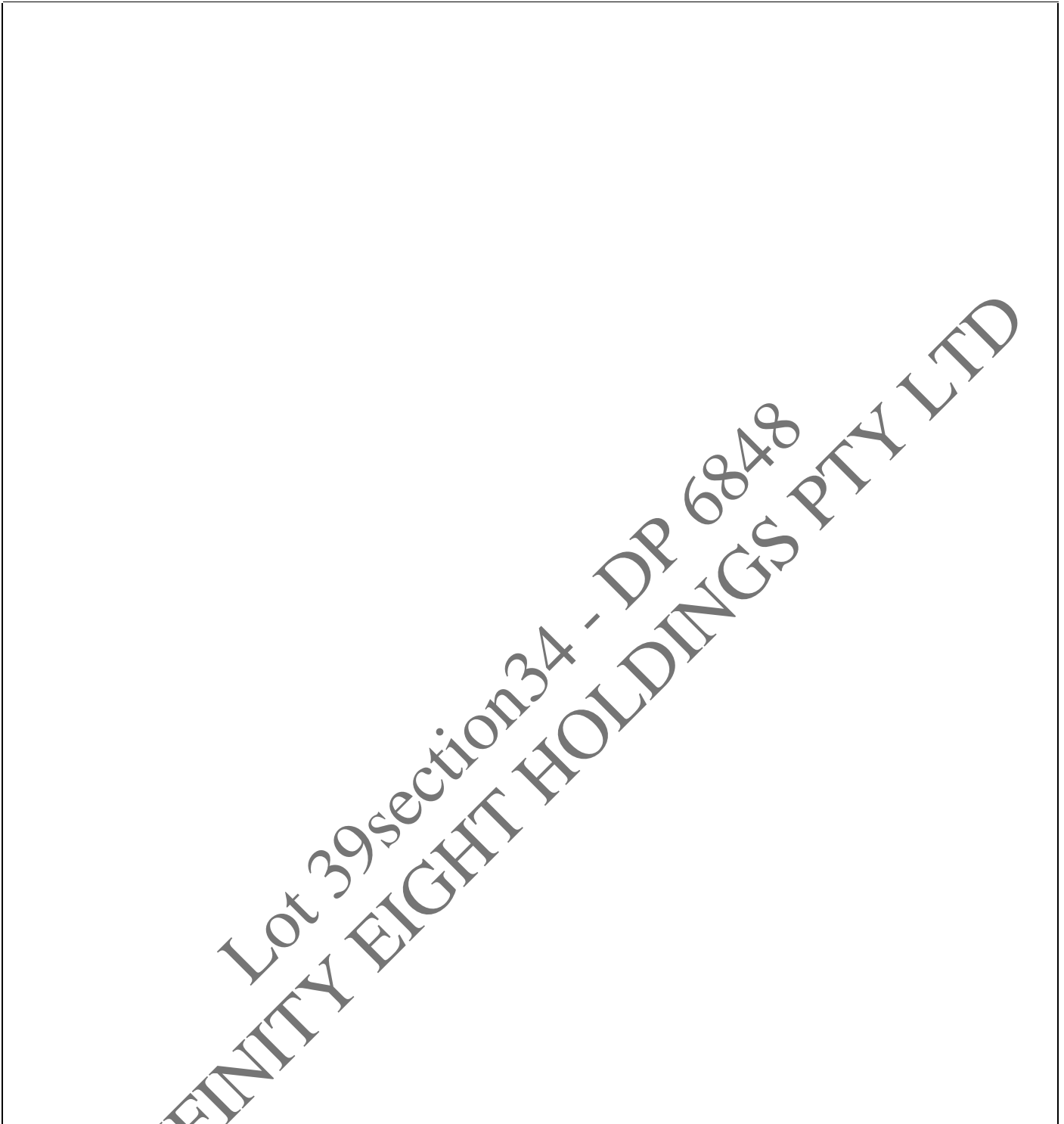
PROPRIETOR.....

DATE/...../.....

BUILDER.....

DATE...../...../.....

ADDITIONAL BUILDING REQUIREMENTS: All instructions for work extra to that shown on the plans or additional requirements must be in Writing. Verbal instructions must be confirmed in writing, dated and signed by the Owner and the Builder with a copy held by each.



This is the specification referred to in the contract between.....OWNERS

andBUILDER

Dated...../...../.....

.....OWNER

.....BUILDER

BUILDERS LICENCE No.....

Appendix 1

AMENDMENTS OF 'SPECIFICATION OF BUILDING WORKS' REV. 26 TO UPDATE NOMINATION OF CONSTRUCTION TO COMPLY WITH REQUIREMENTS OF NCC 2022

References to NCC Vol. 2 2019 amendment 1 as noted should now be read as referencing to relevant and applicable sections and parts of NCC Vol.2 2022, including the ABCB Housing Provisions as follows;

NATIONAL CONSTRUCTION CODE: Where NCC is referenced that nomination refers to the National Construction Code of Australia BCA Vol.1 and/or Vol.2 and/or PCA Vol.3 as amended.

FLOOD HAZARD AREAS: NCC Vol. 2 Part H1D10

BUSHFIRE PRONE AREAS: NCC Vol. 2 Part H7D4, and as varied by; NSW H7D4, QLD H7D4 and SA H7D4

ALPINE AREAS: NCC Vol.2 Part H7D3 and Section 12.2 of the ABCB Housing Provisions

EARTHQUAKE: NCC Vol 2 H1D9 and Section 2 of the ABCB Housing Provisions

CLIMATE ZONES: NCC Vol. 2 Table 2, and Table 3

TERMITE MANAGEMENT SYSTEM: NCC Vol. 2 Part H1D3 and Part 3.4 of the ABCB Housing Provisions

EARTHWORKS AND EXCAVATIONS: NCC Vol. 2 Part H1D3 and Part 3.2 of the ABCB Housing Provisions

Piled footings: NCC Vol. 2 Part H1D12

CONCRETE: NCC Vol. 2 Part H1D4

MASONRY: NCC Vol. 2 Part H1D5 and Part 5 of the ABCB Housing Provisions

Weatherproofing of Masonry: H2D4 or Part 5.7 part 8.3 of the ABCB Housing Provisions

FRAMING: Generally: NCC Vol. 2 part H1D6(1)&(7) and Part 6 of the ABCB Housing Provisions

Timber: H1D6(4)

Steel: H1D6(3)

Structural Steel: H1D6(2),(5)&(6)

Attachment of framed decks and balconies to external walls of buildings using a waling plate: H1D11 and clause 12.3.2 & 12.3.4 of the ABCB Housing Provisions

Sub-Floor Ventilation: H2D5 and Part 6.2 of the ABCB Housing Provisions

ROOFING: Generally: NCC Vol. 2 part H1D7(1)

Sheet Roofing and Flashings: NCC Vol. 2 part H1D7(2) and part 7.2 of the ABCB Housing Provisions

Roof Tiles and Flashings: NCC Vol. 2 part H1D7(3)(a)&(b) and / or part 7.3 of the ABCB Housing Provisions

Sarkings: NCC Vol. 2 part H3D2 and part 7.3.4 of the ABCB Housing Provisions

Fibre-Cement, Timber Slates and Shingles: NCC Vol. 2 part H1D7(3)(a)

Gutters and Downpipes: NCC Vol. 2 part H2D6 and part 7.4 of the ABCB Housing Provisions

EXTERNAL WALL CLADDING: Generally: NCC Vol. 2 part H1D7(4) and Part 7.5 of the ABCB Housing Provisions

Metal Wall Cladding: NCC Vol. 2 part H1D7(5)

GLAZING, WINDOWS AND EXTERNAL GLAZED DOORS: Generally: NCC Vol. 2 part H1D8(1) and part 8.2 of the ABCB Housing Provisions as applicable

Glass and Framed / Glazed Assemblies: NCC Vol. 2 part H1D8(2)&(3), and / or part 8.3 & 8.4 of the ABCB Housing Provisions

Protection of openable windows: NCC Vol. 2 part H5D3 and clause 11.3.7 & 11.3.8 of the ABCB Housing Provisions

Glass Balustrades: NCC Vol. 2 part H1D8(2)(b) or part 8.3 of the ABCB Housing Provisions

SMOKE DETECTORS / ALARMS AND EVACUATION LIGHTING: NCC Vol. 2 H3D6 and Part 9.5 of the ABCB Housing Provisions

SLIP RESISTANCE: NCC BCA Vol.2 Part H5D2 and clause 11.2.4 of the ABCB Housing Provisions

STAIRS, HANDRAILS AND BALUSTRADES: NCC Vol. 2 parts H5D2, H5D3 and parts 11.2 and 11.3 of the ABCB Housing Provisions

HEATING APPLIANCES: NCC Vol.2 H7D5 and / or part 12.4 of the ABCB Housing Provisions

OPEN AND INSERT FIREPLACES, CHIMNEYS AND FLUES: NCC Vol. 2 part H1D5 and part 12.4 clauses 2 to 5 of the ABCB Housing Provisions

SWIMMING POOLS: NCC Vol 2 H7D2, and as varied by; NSW H7D2, QLD H7D2, SA H7D2 and NT H7D2

SOUND INSULATION: NCC Vol. 2 Part H4D8 and part 10.7 of the ABCB Housing Provisions

**INCLUSION OF THESE AMENDMENTS IN 'SPECIFICATION OF BUILDING WORKS' REV. 26
WILL UPDATE NOMINATION OF CONSTRUCTION TO COMPLY WITH REQUIREMENTS OF
NCC 2022 Vol 2; AS FROM 1 MAY 2023**

WATERPROOFING OF WET AREAS: NCC Vol. 2 part H4D2 and either Part 10.2 of the ABCB Housing Provisions, or, AS3740 and Clauses 10.2.1 to 10.2.6 and 10.2.12 of the ABCB Housing Provisions. Building elements in wet areas must be protected with a waterproofing system that is either water resistant and/or waterproof in accordance with Clauses 10.2.1 to 10.2.6 and 10.2.12 of the ABCB Housing Provisions, and, constructed in accordance with Section 10.2 of the ABCB Housing Provisions or AS3740. Waterproof Membranes to comply with AS/NZS 4858.

CONDENSATION MANAGEMENT: NCC Vol.2 Part H4D9 and Section 10.8 of the ABCB Housing Provisions. Mitigation of condensation within buildings is achieved by;

- Installation of pliable building membrane on the exterior side of primary insulation layer of the external wall in accordance with the requirements of clause 10.8.1 of the ABCB Housing Provisions, and the inclusion of a drained cavity where a pliable building membrane is not installed in accordance with requirements of clause 10.8.1(c) of the ABCB Housing Provisions.
- Provision of an exhaust system installed in a kitchen, bathroom, sanitary compartment or laundry must discharge directly to outside air in accordance with the requirements of clause 10.8.2 of the ABCB Housing Provisions
- Ventilation of Roof spaces in climate zones 6,7 and 8 in accordance with the requirements of clause 10.8.3 of the ABCB Housing Provisions

Pliable building membrane in exterior walls must comply with and be installed in accordance with AS/NZS 4200 clauses 1 and 2. In Climate Zones 4 and 5 the membrane must be vapour permeable minimum Class 4. In Climate Zones 6, 7 and 8 the membrane must be vapour permeable minimum Class 4.

Note: Adoption of **NCC 2022 Condensation Management** is subject to transitional periods and differing adoption dates between states and territories. Refer to ABCB [NCC 2022 State and Territory Adoption Dates](#) for current transition and adoption dates. NCC 2019 Amendment 1 requirements apply in the interim.

ENERGY EFFICIENCY: NCC Vol.2 Parts H6D1 and H6D2, and;

- **Thermal Performance:** Complying with NCC Vol. 2 Specification 42 - S42C2 – A building in climate zones 3 to 8 must achieve an energy rating, including separate heating and cooling load limits, of equal to or greater than 7 stars using accredited house energy rating software and NCC Vol. 2 Part S42C4(1); **or**, complying with Parts 13.2 to 13.5 of the ABCB Housing Provisions.
- **Energy Usage:** Complying with NCC Vol. 2 Specification 42 - S42C3 - A building must achieve a whole-of-home rating of not less than 60 using an accredited house energy rating software and comply with Part 13.7 of the ABCB Housing Provisions; **or**, complying with Parts 13.6 and 13.7 of the ABCB Housing Provisions for a building with a total area no greater than 500m².

State and Territory Variations;

- **NSW Variation:** In NSW, Class 1 buildings and certain Class 10 buildings are subject to BASIX (the Building Sustainability Index). NSW Part H6 Energy Efficiency applies and is designed to complement requirements that arise under BASIX. Where BASIX is not applied to alterations and additions to these buildings, the provisions will also complement council development controls that require energy efficiency measures to be incorporated as part of the alterations and additions
- **NT Variation:** NT Part H6 Energy Efficiency applies
- **Tasmania Variation:** TAS Part H6 Energy Efficiency applies - BCA 2019 Amendment 1 Part 2.6

NOTE: Adoption of **NCC 2022 Energy Efficiency requirements** is subject to individual State and Territory adoption, and where adopted fully or partially, transitional periods and differing adoption dates. Refer to ABCB [NCC 2022 State and Territory Adoption Dates](#) for current transition and adoption dates. NCC 2019 Amendment 1 requirements apply in the interim.

NEW AND REVISED STANDARDS AND REFERENCED DOCUMENTS

Addition of this list of standards and referenced documents to 'Specification of Building Works' Rev. 26 will comply with the nomination of construction required by the National Construction Code 2022 Vols.1 and 2, building Classes 1 and 10 and the simpler types of building Classes 2 to 9.

REVISED STANDARDS AND DOCUMENTS REFERENCED by NCC 2022 Vol.2

STANDARD / DOCUMENT	PART	YEAR	AMD'T	TITLE
AS/NZS 1170	2	2021		Structural design actions — Wind actions
AS 1288		2021		Glass in buildings — Selection and installation
AS 1670	1	2018	1	Fire detection, warning, control and intercom systems — System design, installation and commissioning — Fire
AS 1684	2	2021		Residential timber framed const. - Non-cyclonic areas
"	3	2021		Residential timber framed const. - Cyclonic areas
AS 1720	4	2019		Timber structures - Fire resistance of timber elements
AS/NZS 2327		2017	1	Composite structures — Composite steel-concrete construction in buildings
AS/NZS 2699	1	2020		Built-in components for masonry construction - Wall ties
"	3	2020		Built-in components for masonry construction - Lintels & shelf angles
AS/NZS 3500	0	2021		Plumbing and drainage - Glossary of terms
"	3	2021		Plumbing and drainage - Stormwater drainage
AS 3600		2018	1,2	Concrete structures
AS 3740		2021		Waterproofing of domestic wet areas
AS 3959		2018	1,2	Construct of buildings in bushfire prone areas
AS 4055		2021		Wind loads for housing
AS 4100		2020		Steel structures
AS/NZS 4200	1	2017	1	Pliable building membranes and underlays — Materials
"	2	2017	1,2	Pliable building membranes and underlays — Installation requirements
AS 4254	1	2021		Ductwork for air-handling systems in buildings — Flexible duct
AS 4773	2	2015	1	Masonry in small buildings — Construction
AS 5216		2021		Design of post-installed and cast-in fastenings in concrete
ABCB		2022	Version 2022.1	Standard for NatHERS Heating and Cooling Load Limits
NASH STANDARD		2021		Steel Framed Construction in Bushfire Areas

REFERENCED STANDARDS AND DOCUMENTS ADDED by NCC 2022 Vol.2

STANDARD / DOCUMENT	PART	YEAR	AMDT	TITLE
AS 1397		2021		Continuous hot-dip metallic coated steel sheet and strip
AS/NZS 1546	1	2008		On-site domestic wastewater treatment units - Septic tanks
AS/NZS 1546	2	2008		On-site domestic wastewater treatment units - Waterless composting toilets
AS/NZS 1546	3	2017	1	On-site domestic wastewater treatment units - Secondary treatment systems
AS/NZS 1546	4	2016		On-site domestic wastewater treatment units - Domestic greywater treatment systems
AS/NZS 1547		2012		On-site domestic wastewater management
AS 2312	1	2014		Guide - Protection of structural steel - Paint coatings
AS/NZS 2312	2	2014		Guide - Protection of structural steel - Hot dip galv.
AS/NZS 4858		2004		Wet area membranes
AS 5146	3	2018		Reinforced autoclaved aerated concrete — Construction
AS/NZS 5601	1	2013		Gas installations — General installations
ABCB		2022		Housing Provisions Standard
ABCB		2022		Livable Housing Design
ABCB		2022		Standard for Whole-of-Home Efficiency Factors