

# New Class 1a dwelling

Soil classification	-
AS 2870-2011	
Wind classification	-
AS 4055-2012	
Climate zone	-
ABCB Climate Zone Map	
Bushfire Attack Level	-
AS 3959-2018	
Alpine area	-
BCA Figure 3.7.5.2	
Corrosion environment	-
BCA section 3.4.2.2 & BCA Table 3.4.4.2	
Other	-

Issue Contents		
Layout ID	Layout Name	Revision ID
01	Cover	01 - WIP
02	Site Plan	03 - WIP
03	Floor Plan	01 - WIP
04	Elevations	02 - WIP
05	Sections	01 - WIP
06	Plumbing Plan	01 - WIP
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13	Specifications, Notes	01 - WIP
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29	Window Details	01 - WIP
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31	Door Details	01 - WIP
32	Structural Floor	01 - WIP
33	Structural Walls	01 - WIP
34	Structural Roof	01 - WIP
35	Lighting Calculator	01 - WIP
36	Energy	01 - WIP



Zones			
Status, Type	Story	Name	Area
New, Conditioned	Ground Floor	Bedroom A	12.38
	Ground Floor	Bedroom B	12.03
	Ground Floor	Bedroom C	12.03
	Ground Floor	Dining	15.88
	Ground Floor	Hall	10.55
	Ground Floor	Hallway	4.67
	Ground Floor	Kitchen	13.13
	Ground Floor	Living	19.88
			100.55 m²
New, Exterior	Ground Floor	Deck A	4.68
	Ground Floor	Deck B	11.52
			16.20 m²
New, Unconditioned	Ground Floor	Bathroom	5.90
	Ground Floor	Mud room	8.71
			14.61 m²
			131.36 m²

LAYOUT ID

01

LAYOUT

SCALE @A3 1:100

ISSUE ID

01

ISSUE

Open source plans

ISSUED

Work in Progress

PRINTED

28/11/2024

DATE	REV ID	CHANGE/S
Work in Progress	01 - WIP	Kitchen, Entrance relocate and double doors to single, Terrace floor

WORK IN PROGRESS

PROJECT ID-	
PROJECT	New Class 1a dwelling
SITE	-
ADDRESS	-
CLIENT	-

IMPORTANT NOTES

All work must comply with the NCC and all relevant standards, laws, codes, specifications and development consent conditions. All structural work must be to engineer's detail. All dimensions are in mm to structure without finishes unless otherwise stated. Do not scale drawings; work to express dimensions only. Drawings are not for construction purposes until issued and certified for construction. Prior to construction, check all dimensions and levels on site, confirm compliance with building surveyor/certifier and notify any discrepancies.

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LAYOUT ID

02

LAYOUT

SCALE @A3

ISSUE ID

01

ISSUE

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Work in Progress

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28/11/2024

Site Plan

DATE	REV ID	CHANGE/S
Work in Progress	03 - WIP	Bushfire provisions, Watercourse sediment protection, bushfire annotations, Cut and fill correction

WORK IN PROGRESS

PROJECT ID-

PROJECT

New Class 1a dwelling

SITE

-

ADDRESS

-

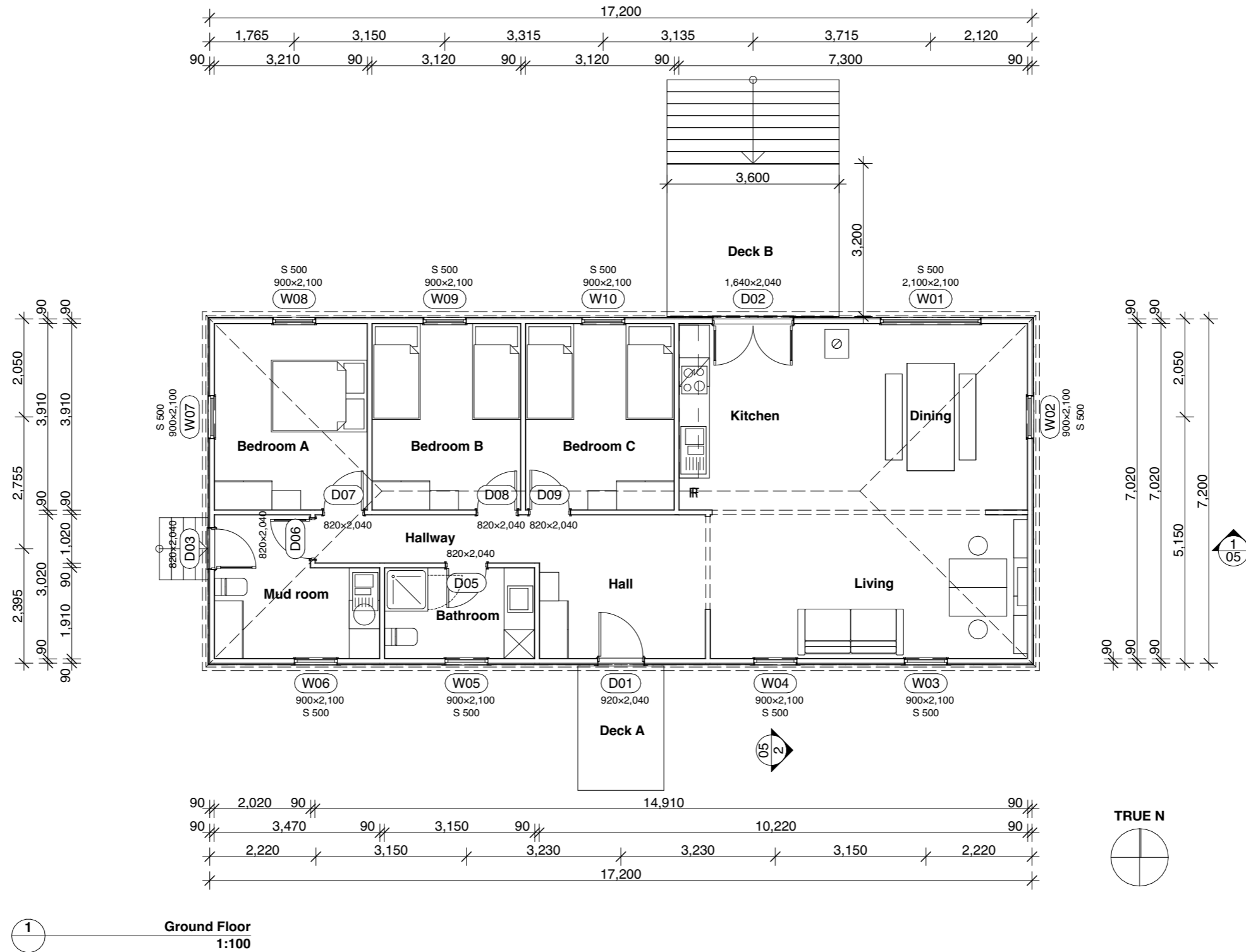
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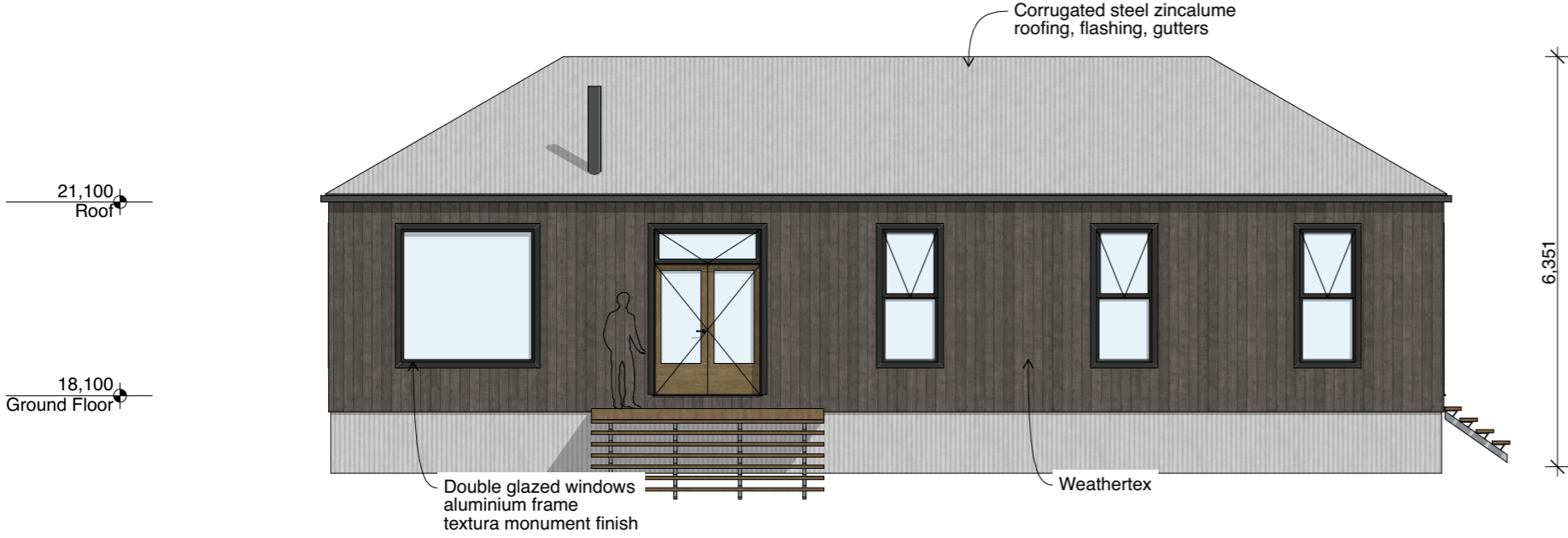
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IMPORTANT NOTES

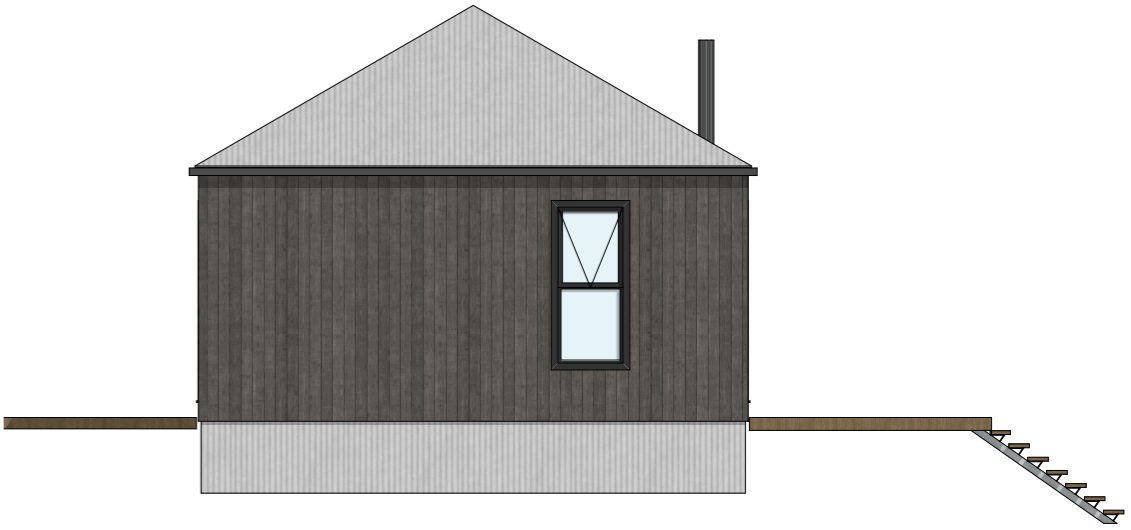
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1 North  
1:100



2 East  
1:100



3 South  
1:100



4 West  
1:100

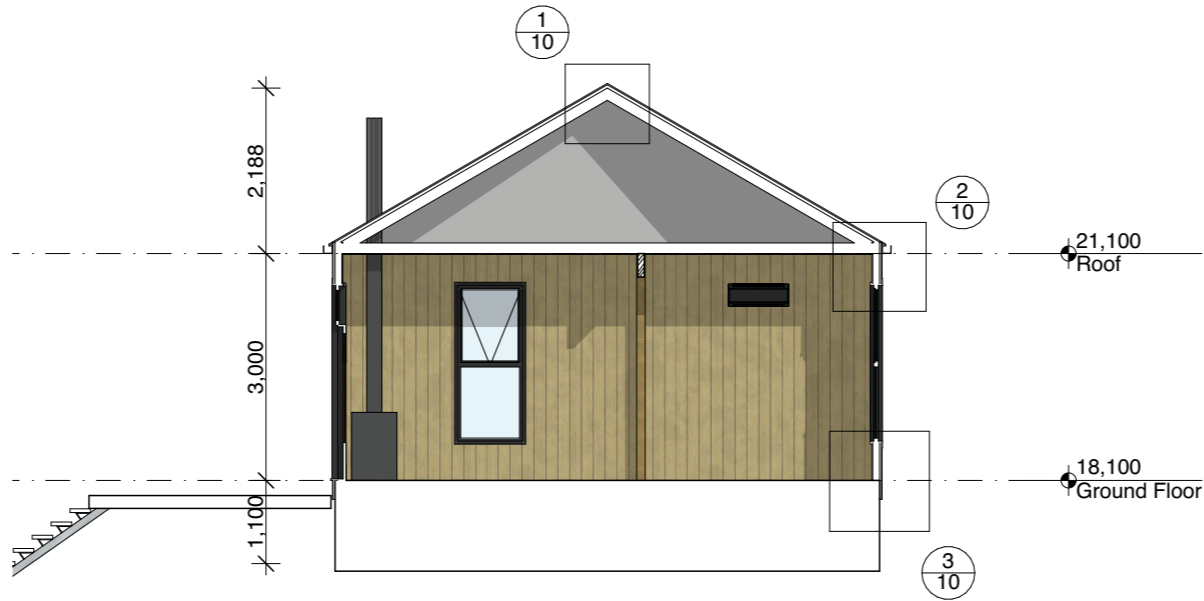
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04	SCALE @A3	1:100
	ISSUE ID	01
	ISSUE	Open source plans
	ISSUED	Work in Progress
	PRINTED	28/11/2024

DATE	REV ID	CHANGE/S
Work in Progress	02 - WIP	Cut and fill correction, Kitchen, Entrance relocate and double doors to single, framed floor

WORK IN PROGRESS

PROJECT ID-	
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2 Section A  
1:100



1 Section B  
1:100

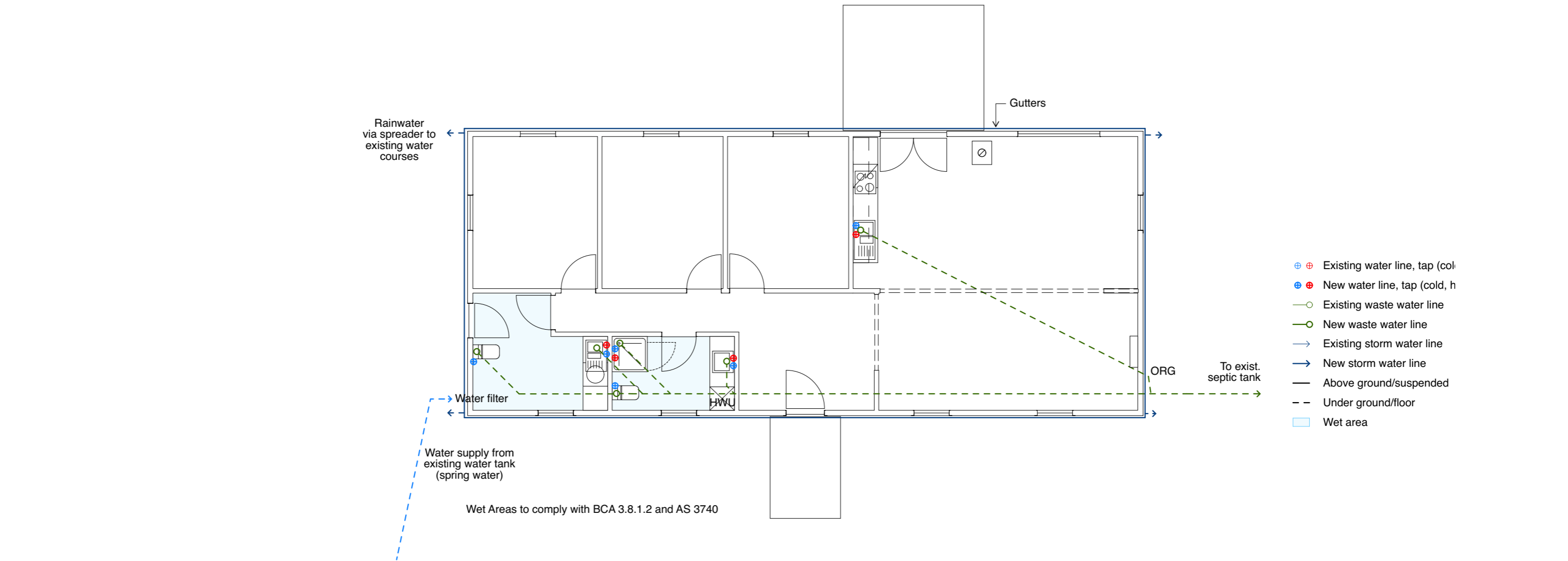
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05	SCALE @A3	1:100
	ISSUE ID	01
	ISSUE	Open source plans
	ISSUED	Work in Progress
	PRINTED	28/11/2024

DATE	REV ID	CHANGE/S
Work in Progress	01 - WIP	Kitchen, Entrance relocate and double doors to timber, Terrace floor

WORK IN PROGRESS

PROJECT ID-	
PROJECT	New Class 1a dwelling
SITE	-
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CLIENT	-

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1

Plumbing  
1:100

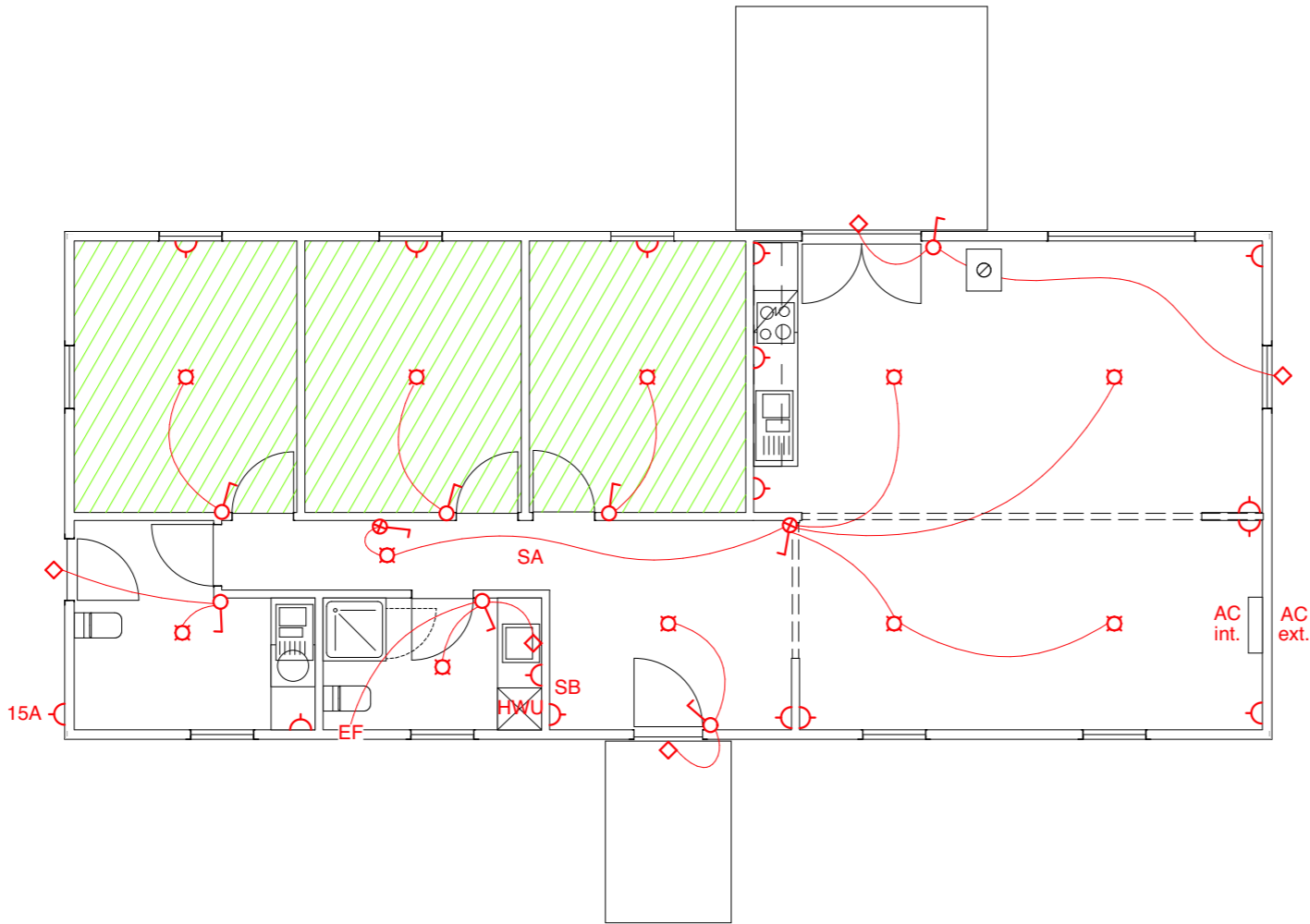
LAYOUT ID	LAYOUT	Plumbing Plan
06	SCALE @A3	1:100
	ISSUE ID	01
	ISSUE	Open source plans
	ISSUED	Work in Progress
	PRINTED	28/11/2024

DATE	REV ID	CHANGE/S
Work in Progress	01 - WIP	Kitchen, Entrance relocate and double doors to 1st floor, Plumbing

WORK IN PROGRESS

PROJECT ID-	
PROJECT	New Class 1a dwelling
SITE	-
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- Switch
- Multi-way switch
- Power outlet
- LED light surface mounted
- LED light linear
- LED light recessed
- LED light wall mounted
- LAN
- LAN outlet
- CF
- Ceiling fan
- EF
- Exhaust fan
- TV
- TV outlet
- S
- Motion sensor
- SA
- Smoke alarm
- SB
- Switch board
- AC
- Air conditioning unit
- No under-floor wiring

Lighting fixtures total power shall be  $\leq 5W/sqm$

1 Electrical  
1:100

LAYOUT ID	LAYOUT	Electrical Plan
07	SCALE @A3	1:100
	ISSUE ID	01
	ISSUE	Open source plans
	ISSUED	Work in Progress
	PRINTED	28/11/2024

DATE	REV ID	CHANGE/S
Work in Progress	01 - WIP	Kitchen, Entrance relocate and double doors to 1st floor, Plumbing

WORK IN PROGRESS

PROJECT ID-	
PROJECT	New Class 1a dwelling
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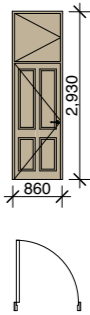
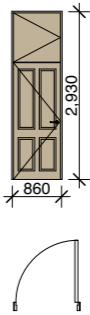
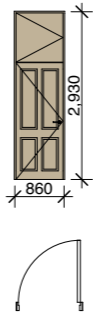
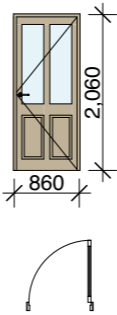
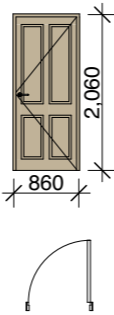
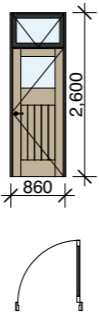
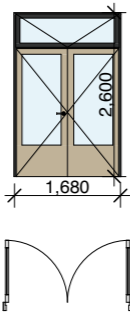
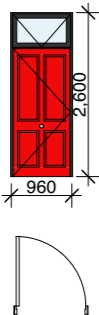
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Doors

Door ID	D01	D02	D03	D05	D06	D07	D08	D09
Leaf Dimensions	920×2,040	1,640×2,040	820×2,040	820×2,040	820×2,040	820×2,040	820×2,040	820×2,040
Unit Dimensions	960×2,600	1,680×2,600	860×2,600	860×2,060	860×2,060	860×2,930	860×2,930	860×2,930
Surface Area	2.55	4.42	2.29	1.82	1.82	2.59	2.59	2.59
Note		Door screen (ventilation door)				Convection door	Convection door	Convection door



BAL 12.5 flyscreens to all windows/transoms.

**Note:**  
Unit width is estimate only. Manufacturer to *adjust unit width* to fit specified Leaf width.  
Unit height of doors **without** transom is estimate only. Manufacturer to *adjust unit height* to fit specified Leaf heigh.  
Unit height of doors **with** transom is fixed. Manufacturer to *adjust transom height* to achieve specified Unit height.

LAYOUT ID

08

LAYOUT **Doors**  
SCALE @A3  
ISSUE ID 01  
ISSUE Open source plans  
ISSUED Work in Progress  
PRINTED 28/11/2024

DATE  
Work in Progress

REV ID  
01 - WIP

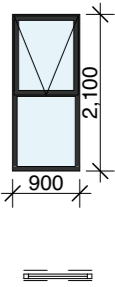
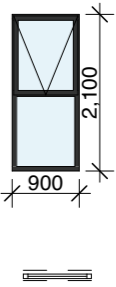
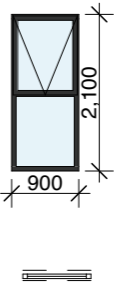
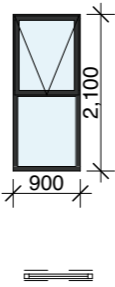
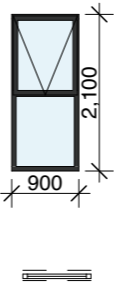
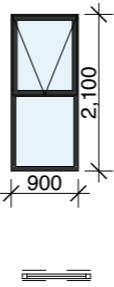
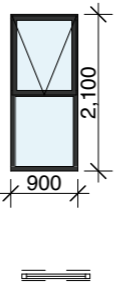
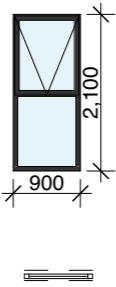
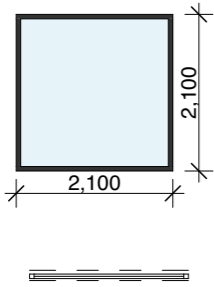
CHANGE/S

WORK IN PROGRESS

PROJECT ID-  
PROJECT New Class 1a dwelling  
SITE -  
ADDRESS -  
CLIENT -

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Windows



Window ID  
Unit Dimensions  
Sill height  
Surface Area  
Note

W01  
2,100×2,100  
500  
4.41

W02  
900×2,100  
500  
1.89

W03  
900×2,100  
500  
1.89

W04  
900×2,100  
500  
1.89

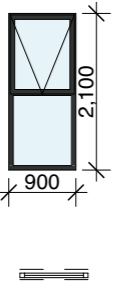
W05  
900×2,100  
500  
1.89

W06  
900×2,100  
500  
1.89

W07  
900×2,100  
500  
1.89

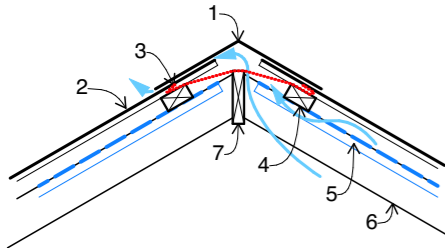
W08  
900×2,100  
500  
1.89

W09  
900×2,100  
500  
1.89



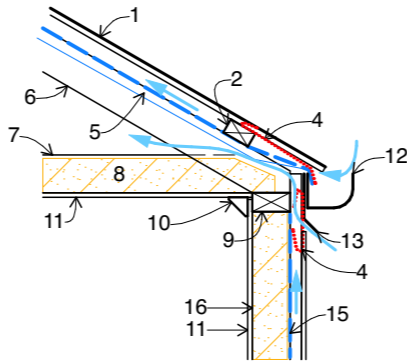
W10  
900×2,100  
500  
1.89

BAL 12.5 flyscreens to all windows



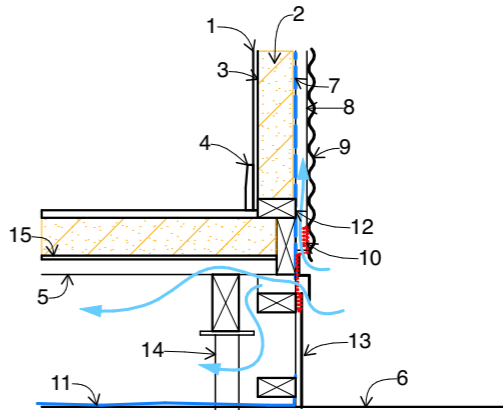
1. Ridge cap
2. Corrugated steel
3. Non-combustible mesh BAL-12.5
4. Roof batten
5. Sarking sagged between rafters
6. Rafter
7. Ridge board

1 Roof ridge  
1:20



1. Corrugated steel
2. Roof batten
4. Non-combustible mesh BAL-12.5
5. Sarking sagged between rafters
6. Rafter
7. Ceiling joist
8. Insulation
9. Top plate
10. Cornice
11. Pine lining
12. Steel gutter
13. Steel flashing
15. VPM
16. Stud

2 Wall top  
1:20



1. Lining
2. Insulation
3. Stud
4. Skirting
5. Joists
6. Finished ground graded outwards
7. VPM
8. Batten
9. Corrugated steel galvanised
10. Non-combustible mesh BAL-12.5
11. Vapour barrier
12. Bottom plate
13. Corrugated steel galvanised
14. Structure per structural drawings
15. FC insulation support

3 Wall bottom  
1:20

LAYOUT ID

10

LAYOUT Details

SCALE @A3 1:20

ISSUE ID 01

ISSUE Open source plans

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DATE  
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REV ID  
01 - WIP

CHANGE/S

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LAYOUT ID	LAYOUT	Diagram
11	SCALE @A3	1:142.86
	ISSUE ID	01
	ISSUE	Open source plans
	ISSUED	Work in Progress
	PRINTED	28/11/2024

DATE	REV ID	CHANGE/S
Work in Progress	01 - WIP	Kitchen, Entrance relocate and double doors to 1st floor, Plumbing

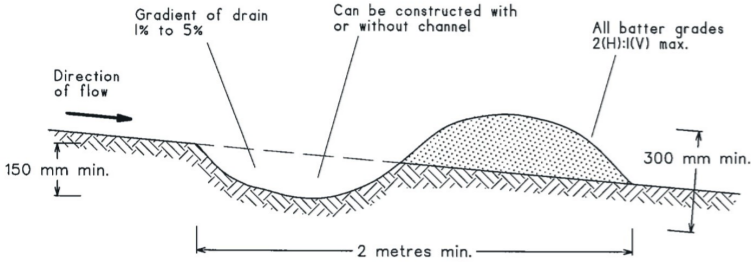
WORK IN PROGRESS

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DIVERT UPSLOPE STORMWATER

Avoid contamination of stormwater with sediment. Use flow diversion devices to reduce the volume of stormwater reaching the disturbed area.



NOTE: Only to be used as temporary bank where maximum upslope length is 80 metres.

WASTE AND WASHING

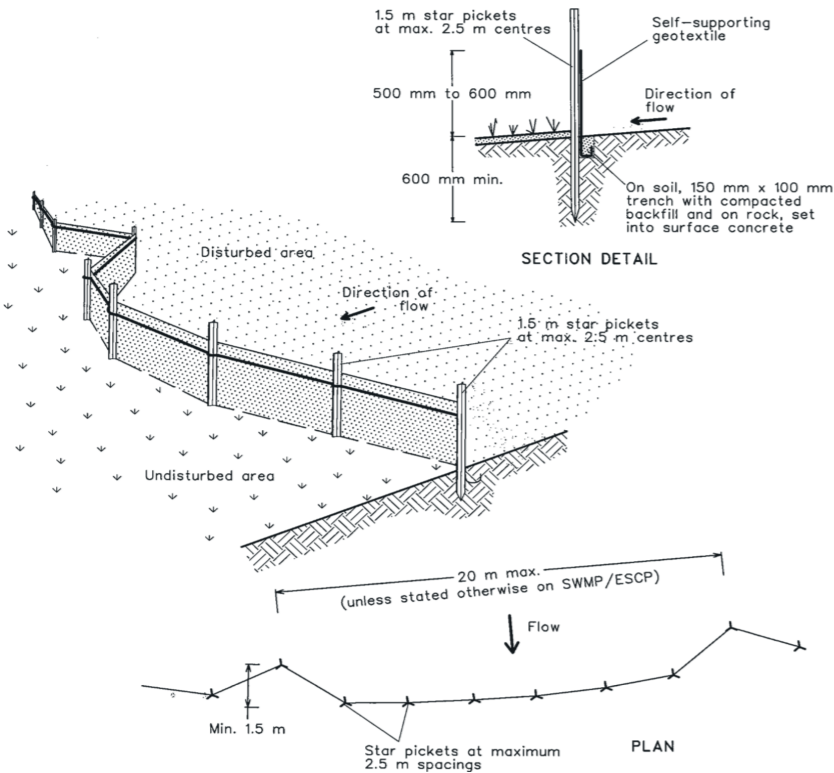
Cut bricks, tiles or masonry and clean equipment on a pervious surface such as grass or loosened soil within the property boundary. Waste concrete, paint and other solutions used on site must not be allowed to wash into the gutters or the street.

SITE DISTURBANCE

Delay removing vegetation or beginning earthworks until just before the start of construction. Minimise site disturbance and stabilise disturbed surfaces. Use biodegradable erosion control mats to protect exposed earth. Preserve grassed areas and vegetation where possible.

SEDIMENT BARRIERS

Install sediment barriers downslope of the building site to trap sediment.



CONNECT RAINWATER DRAINAGE

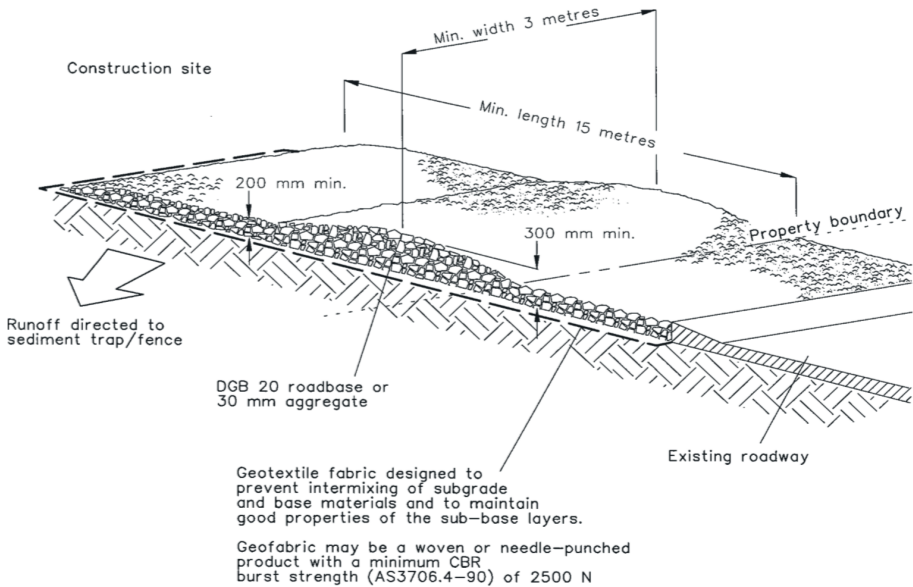
Complete the final stormwater drainage system before the roof is installed. Discharge rainwater to the stormwater system, unless rainwater is being harvested. Connect using temporary or permanent downpipes.

WASTE COLLECTION

Contain waste in covered bins or traps made from geotextile. Prevent airborne contamination of neighbouring land.

SITE ACCESS POINT

Construct a single vehicle entry/exit pad to minimise tracking of sediment onto roadways. A raised hump across the entry/exit pad to direct stormwater into a sediment trap to the side of the pad.

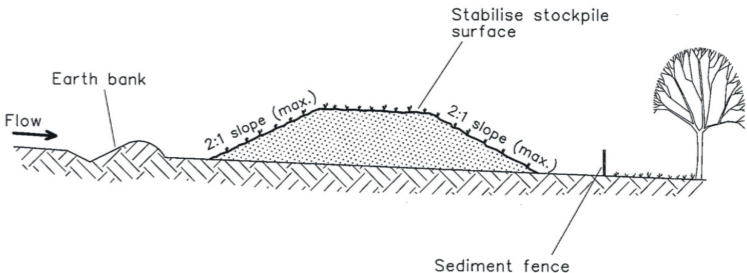


FOOTPATH PROTECTION

Protect kerbside vegetation. Do not use nature strips or footpaths for parking or stockpiling unless unavoidable (council permission is required).

SECURE STOCKPILES

Prevent material stockpiles from collecting or discharging sediment. Protect materials that may erode, particularly sand and soil, with waterproof coverings. Place stockpiles wholly on the construction site and behind a sediment barrier.



LAYOUT ID

12

LAYOUT

SCALE @A3

ISSUE ID

01

ISSUE

Open source plans

ISSUED

Work in Progress

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28/11/2024

Site Management

DATE

Work in Progress

REV ID

01 - WIP

CHANGE/S

WORK IN PROGRESS

PROJECT ID-

PROJECT New Class 1a dwelling

SITE -

ADDRESS -

CLIENT -

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All work must comply with BCA/NCC, any relevant laws, codes, standards, specifications and development consent conditions, including but not limited to the relevant clauses below:

0131 PRELIMINARIES

General  
The site  
Site restrictions  
Site limitations: Comply with the restrictions on the use of the site.  
Access: Comply with access on to and within the site, use of the site for temporary works and constructional plant, including working and storage areas, location of offices, workshops, sheds, roads and parking, as documented.  
Occupied premises  
General: For the parts of the site designated as occupied premises:

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

Proposals: Submit details of proposed methods.

- Purpose of submission: Information only.

Protection of persons and property  
Temporary works: Provide and maintain required barricades, guards, fencing, shoring, temporary roadways, footpaths, signs, lighting and traffic management.  
Accessways and services: Do not obstruct or damage roadways and footpaths, drains and watercourses and other existing services in use on or adjacent to the site.  
Determine the location of such services.  
Property: Do not interfere with or damage trees and property which are to remain on or adjacent to the site, including adjoining property encroaching onto the site.  
Rectification

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

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

Existing services  
Service to be continued: Repair, divert or relocate, as documented.  
Trenches: If the existing service crosses the line of a required trench, or will lose support when the trench is excavated, provide permanent support for the existing service.  
Redundant services: Remove redundant parts and make safe.

Interruptions to services: Minimise the number and duration of interruptions.  
Proposals: Submit proposals for action to be taken to existing services before starting this work.

- Purpose of submission: For review.

Adjoining properties

Notice: At least 10 working days before commencing work, submit to owners and occupants of adjoining property written notice of intention to commence work and an outline description of the type and extent of work.  
Revealed encroachments: If the works reveal unknown encroachments of adjoining property on to the site or of existing site structures on to adjoining property, immediately seek instructions.

Records: For each adjoining property to be recorded:

- Inspect the property with the architect and owner and occupant of the property, before commencement of work.
- Make detailed records of conditions existing within the property, especially structural defects and other damage or defacement.
- Arrange for at least 2 copies of each record, including drawings, written descriptions, and photographs, endorsed by the owner and occupant of the property, or their representatives, as evidence of conditions existing before commencement of work.

Endorsed copies: Submit one endorsed copy of each record. Keep the other endorsed copy on site.

- Purpose of submission: Information only.

Construction plant  
Access  
Access route: As nominated and documented.  
Parking  
Owner's existing parking areas: Use spaces only in designated parking areas and as documented.  
Use of existing services  
General: Existing services may be used as temporary services for the performance of the contract subject to conditions of use, as documented.  
Temporary services  
General: Provide temporary services for the performance of the contract, as documented.  
Project signboards  
General: Provide project-specific signboards and as follows:

- Locate where directed.
- Maintain in good condition for duration of the work.
- Obtain permission for removal.
- Remove on completion.

Building the works  
Surveys  
General: Use information from a licensed surveyor for the following:

- Setting out.
- Check surveys.
- Final survey.

Survey marks  
Definition: A survey peg, bench mark, reference mark, signal, alignment, level mark or any other mark used or intended to be used for the purpose of setting out, checking or measuring the work.  
Care of survey marks: Preserve and maintain the principal's survey marks in their true positions.  
Rectification: If the survey marks are disturbed or obliterated, immediately rectify.

Safety  
Accidents: Promptly notify the principal of the occurrence of the following:

- Accidents involving death or personal injury.
- Accidents involving loss of time.

Accident reports: Submit reports of accidents.

- Purpose of submission: Information only.

Contractor's representative

General: Must be accessible, and fluent in English and technical terminology.  
Subcontracting  
General: Submit a complete list of proposed subcontractors and suppliers.  
Items supplied by owner  
General: Materials and other items supplied free of charge to the contractor for installation in the execution of the works, as documented.  
Unload and take delivery, inspect for defects and take care of the items. If defects are found, advise. Return unused items to the principal.  
Completion of the works  
Reinstatement  
General: Before the date for practical completion, clean and repair damage caused by installation or use of temporary work and restore existing facilities used during construction to original condition.  
Adjoining properties  
Evaluation: At practical completion, for each adjoining property recorded, inspect the property with the architect and owner and occupant of the property, recording any damage that has occurred since the pre-commencement inspection.  
Pest eradication  
General: Employ suitably qualified pest exterminators. At practical completion verify that completed works are free of pest types, as documented.  
Miscellaneous  
Contractor and owner to observe confidentiality  
Publicity: Do not issue information concerning the project for publication in the media without prior written approval of the owner.  
Compliance with the law  
Requirements of authorities: The Principal, before entering into the contract, has given the notices, paid the fees, and obtained the permits, approvals and other authorisations as documented.

0171 GENERAL REQUIREMENTS

General  
Precedence  
General  
Order of precedence: If there is conflict or inconsistency between the worksection of this specification, the requirements of the worksections take precedence over *0171 General requirements*.  
Standards  
Current editions  
General: Use referenced Australian or other standards (including amendments), and the NCC including state and territory variations which are current three months before the date of the contract except where other editions or amendments are required by statutory authorities. Any local authority requirements take precedence.  
Interpretation  
Abbreviations  
General: For the purposes of this specification the following abbreviations apply:

- BCA: National Construction Code series Volume Two: Building Code of Australia Class 1 and Class 10 buildings.
- NCC: National Construction Code.

Definitions  
General: For the purposes of this specification, the following definitions apply:

- Contractor: Means the same as builder.

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

Performance

Bushfire prone areas  
General  
Bushfire Attack Level (BAL): To AS 3959 and BCA 3.10.5, and as documented.  
Energy efficiency  
General  
Energy efficiency approval commitments: To the performance requirements of BCA 2.6, the construction requirements of BCA 3.12, and as documented.  
Structure  
Structural design actions  
Standard: To the AS/NZS 1170 series and AS 4055 as appropriate.  
Importance level to AS/NZS 1170.0: Level 2.  
Products and materials  
Proprietary items  
Manufacturers' or suppliers' recommendations  
General: Provide manufactured items to the manufacturers' or suppliers' recommendations.  
Proprietary items/systems/assemblies: Assemble, install or fix to substrate to the manufacturers' or suppliers' recommendations.  
Identification of proprietary items  
Sealed containers: If items are supplied by the manufacturer in closed or sealed containers or packages, bring them to point of use in the original containers or packages.  
Substitution  
General  
Identified proprietary items: Identification of a proprietary item does not necessarily imply exclusive preference for the identified item, but indicates the necessary properties of the item.  
Alternatives: If alternatives to the documented products, methods or systems are proposed, submit sufficient information to permit evaluation of the proposed alternatives.  
Timber  
Moisture content  
General: Make milled products from timbers seasoned as follows:

- To within 3% of the equilibrium moisture content appropriate to the timber and its intended conditions of use.

- With no more than 3% difference between any 2 pieces in any one group.
- Acclimatisation  
General: Acclimatise timber fitouts by stacking them for two weeks in the in-service conditions with air circulation to all surfaces after the following are complete:
- Air conditioning operational.
  - Lighting operational.
  - Site drainage and stormwater works are complete.
  - Space fully enclosed and secure.
  - Wet work complete and dry.

Unseasoned timber  
General: If unseasoned timber is provided, or variation in moisture content is likely, make allowance for shrinkage, swelling and differential movement.  
Recycled timber  
Grit blasted or re-machined: Remove all nails and screws.  
Classification: Visually graded.  
Durability  
General: Provide timbers with natural durability appropriate to the conditions of use or preservative-treated timbers of equivalent durability.  
Natural durability class of heartwood: To AS 5604.  
Preservative treatment: To the AS/NZS 1604 series.  
Minimum requirement: To the Natural and treated timber durability table.

Natural and treated timber durability table			
Exposure	Natural timber	Treated timber	Remarks
	Require d durability class to AS 5604	Require d hazard class to the AS/ NZS 1604	
Inside, above ground. Completely protected from the weather. Well maintained	Class 4	H1	Treated timber resistant to lyctids. Untreated timber must be protected from termites
Inside, above ground. Protected from wetting with nil leaching. Well maintained	Class 3	H2	Treated timber resistant to borers and termites. Untreated timber must be protected with a finish
Above ground, exposed to weather. Periodic moderate wetting and leaching	Class 2	H3	Treated timber resistant to borers, termites and moderate decay. Applicable to weatherboards, fascias, pergolas (above ground), window joinery,

In-ground	Class 1	H4 (Severe wetting and leaching )	Treated timber resistant to borers, termites and severe decay. Applicable to fence posts, greenhouses, pergolas (in-around) and
		H5 (Extrem e wetting and leaching and/or critical	Applicable to retaining walls, piling, house stumps, building poles, cooling tower fill

Steel  
Durability  
General: Provide steel products protected from corrosion to suit the conditions of use.  
Internal engineer designed steel members: Remove mill scale, rust, moisture and oil. Coat with a zinc phosphate primer to the manufacturer’s instructions.  
Built-in products below damp proof course: Stainless steel 316 or engineered polymer.  
Corrosion resistance  
Atmospheric corrosivity category: As defined in AS 4312, the AS/NZS 2312 series, and as documented.  
Compliance: Conform to the **Corrosion resistance table** or provide proprietary products with metallic and/or organic coatings of equivalent corrosion resistance.  
Corrosion resistance table

Atmospheri c corrosivity category to AS 4312	Heavy steel members including lintels more than 3.2 mm thick	Steel cladding, lining, trims and flashings
C1 and C2 (Low)	Galvanize after fabrication 600 g/m2	Metallic-coated sheet AZ150
C3 (Medium)	Galvanize after fabrication 600 g/m2	Metallic-coated sheet AZ200
C4 (High)	Stainless steel Type 316 or 316L or galvanize after fabrication 600 g/ m2 plus organic coating	Metallic-coated sheet AZ200 plus organic coating

Preparation and pre-treatment  
Standard: To the AS 1627 series.  
Galvanizing  
General: Galvanize mild steel components (including fasteners) to AS/NZS 1214, AS 1397 or AS/NZS 4680, as appropriate, and in the following conditions:

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

Protective coatings  
General  
Environment: To AS 2312.1 clause 2.3.  
Coating designation: To AS 2312.1 Table 6.3.

CCA (copper chrome arsenic) treated timber

Greasing: Before placing bolts or other metal components in contact with CCA-treated timber, paint contact surfaces or coat in grease or a bituminous coating.  
Unseasoned timber  
General: Do not fix in contact with steel framing without fully painting the contact surfaces of timber and steel.  
Fasteners  
Self-drilling screws  
Standard: To AS 3566.1.  
Execution  
Wall chasing  
Holes and chases  
General: Make holes and chases required in masonry walls so that the structural integrity of the wall is maintained. Do not chase walls with a fire-resistance level or an acoustic rating.  
Parallel chases or recesses on opposite faces of a wall: Not closer than 600 mm to each other.  
Chasing blockwork: Only chase core-filled hollow blocks or solid blocks not documented as structural.  
Concrete blockwork chasing table

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

Fixing  
General  
Suitability: If equipment is not suitable for fixing to non-structural building elements, fix directly to structure and trim around penetrations in non-structural elements.  
Fasteners  
Sufficiency: Use proprietary fasteners capable of transmitting the loads imposed, and sufficient for the rigidity of the assembly.  
Footpath crossing  
General  
Requirement: Provide a footpath and kerb crossing to local authority requirements.  
Completion  
General  
Removal of temporary work, services and plant: Remove temporary work services and construction plant within 10 working days after occupation of the works.  
Final cleaning: Remove rubbish and surplus material from the site and clean the works throughout including interior and exterior surfaces exposed to view. Vacuum clean carpeted and soft surfaces. Clean debris from the site, roofs, gutters, downpipes and drainage systems.  
Samples: Remove non-incorporated samples, sample panels and prototypes.  
Warranties: Register with manufacturers, as necessary, and provide copies of manufacturers’ warranties.  
Instruction manuals: Provide the manufacturers’ instruction manuals.  
Operation: Make sure moving parts operate safely and smoothly.  
Surveyor’s certificate: Provide a certificate which confirms that the work, including boundary fences, has been correctly located.  
Services layout: Provide a plan which shows the location of underground services.  
Authorities’ approvals: Provide evidence of approval of the local authority or principal accredited certifier and statutory authorities whose requirements apply to the work.

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

Selections Schedules Building performance schedule	
Energy efficiency	
Bushfire Attack Level (BAL)	
Atmospheric corrosivity category to AS 4312: External	
Atmospheric corrosivity category to AS 4312: Internal	C1

## 0184 TERMITE MANAGEMENT (IF REQUIRED)

General  
Standards  
General  
Standard: To AS 3660.1.  
Chemical soil barriers – reticulation systems  
System assessment: To AS 3660.3 Section 5.  
Termite management system notice  
Requirement: Permanently fix a durable notice in a prominent location to BCA 3.1.4.4.  
Certification  
Requirement: Submit installation certificate to AS 3660.1 Appendix A3.

## 0222 EARTHWORK

General  
Standards  
General  
Earthwork: To the recommendations of AS 3798.  
Interpretation  
Definitions  
General: For the purposes of this worksection the following definitions apply:

- Bad ground: Ground unsuitable for the works, including fill liable to subsidence, ground containing cavities, faults or fissures, ground contaminated by harmful substances and ground that is, or becomes, soft, wet or unstable.
- Rock: Monolithic material with volume greater than 0.3 m3 that cannot be removed until broken up by rippers or percussion tools.
- Site classification: To AS 2870 and BCA 3.2.4.
- Subgrade: The trimmed or prepared earth material on which the pavement, footing or slab is constructed. Generally taken to relate to the upper line of the earth material.
- Zone of influence: A foundation zone bounded by planes extending downward and outward from the bottom edge of a footing, slab or pavement and

defining the extent of foundation material having influence on the stability or support of the footings, slab or pavement.

Products  
Fill materials  
General  
Suitable material: To AS 3798 clause 4.4 including inorganic, non-perishable material suitably graded and capable of compaction to the documented density.  
Unsuitable materials: To AS 3798 clause 4.3.  
Execution  
Geotechnical  
As found site conditions  
General: If the following are encountered, give notice and obtain instructions before carrying out any further work in the affected area:

- Bad ground.
- Rock.

Removal of topsoil  
General  
Extent: Areas of cut or fill and areas occupied by structures, pavements and embankments.  
Maximum depth: 200 mm.  
Disposal: Remove topsoil unsuitable for re-use from the site to AS 3798 clause 6.1.8.  
Topsoil stockpiles  
General: Stockpile site topsoil intended for re-use.  
Stockpile maximum height: 1.5 m.  
Protection: Protect the topsoil stockpiles from contamination by other excavated material, weeds and building debris.

Excavation  
Extent  
Site surface: Excavate the site to the levels and profiles required for the documented structures, pavements, filling and landscaping. Make allowance for compaction, settlement or heaving.  
Footings: Excavate to the required sizes and depths. Confirm that the foundation conditions meet the design bearing capacity.  
Crawl space: Provide a clear space under timber or steel bearers:

- Minimum clearance: 400 mm.

Rock  
General: Do not use explosives.  
Existing footings  
Requirement: If excavation is required within the zone of influence of an existing footing, provide supports to the footing sufficient to prevent damage arising from the works. Use methods including temporary shoring or underpinning.  
Existing services  
Utility services: Contact DIAL BEFORE YOU DIG to identify location of underground utility services pipes and cables.  
Bearing surfaces  
Requirement: Provide even plane bearing surfaces for loadbearing elements including footings. Step to accommodate level changes. If supporting masonry, make the steps appropriate to the courses.  
Reinstatement of excavation  
Requirement: If excavation exceeds the required depth, or deteriorates, reinstate with fill to the correct depth, level and bearing capacity.  
Grading  
External areas: Grade to give falls away from buildings, minimum 1:100.  
Subfloor areas: Grade the ground surface under suspended floors to drain ground or surface water away from buildings without ponding.

Preparation for filling  
Preparation  
Stripping: Prepare the ground surface before placing fill (including topsoil fill), ground slabs or load bearing elements to AS 3798 clause 6.1.5. Remove material that inhibits or prevents satisfactory placement of fill layers, loose material, debris and organic matter.  
Placing fill  
General  
Placement: To BCA 3.2.2.  
Layers: Place fill in near-horizontal layers of uniform thickness no greater than 150 mm after compaction, deposited systematically across the fill area.  
Placing at structures: Place and compact fill in layers simultaneously on both sides of structures, culverts and pipelines to avoid differential loading.  
Moisture content: Adjust the moisture content of fill during compaction within the range of 85% to 115% of the optimum moisture content determined by AS 1289.5.1.1 or AS 1289.5.2.1 as appropriate, to achieve the required density.  
Compaction  
Density: Compact the subgrade and each layer of fill to the required depth and density, as a systematic construction operation. Shape surfaces to provide drainage and prevent ponding.  
Excavated and stripped ground surface: After excavation and/or stripping, compact these surfaces to minimum depth of 150 mm.  
Minimum relative compaction: To AS 3798 Table 5.1.

## 0223 SERVICE TRENCHING

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

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

Execution  
Existing surfaces  
Concrete and asphalt pavements  
Method: Sawcut trench set-out lines for the full depths of the bound pavement layers except where the set out line is located along expansion joints.  
Paving  
Removal: Take up paving units, both full and cut by hand, between the trench set out lines, and neatly stack on wooden pallets at locations as directed.  
Excavating  
Excavation  
Requirement: Excavate for underground services in conformance with the following:

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

Trench widths

General: Keep trench widths to the minimum consistent with the laying and bedding of the relevant service and construction of access chambers and pits.

Trench backfill

General

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

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

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

Surface restoration

General

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

0310 CONCRETE

General

Standards

General

Formwork design and construction: To AS 3610.1.

Plywood formwork: To AS 6669.

Reinforced concrete construction: To AS 3600.

Specification and supply of concrete: To AS 1379.

Residential ground slabs and footings: To AS 2870.

Interpretation

Definitions

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

- Ambient temperature: The air temperature at the time of mixing and placing of concrete.
- Average ambient temperature: Average value of the daily maximum and minimum ambient temperatures over the defined period at a site.
- Weather - cold: Ambient shade temperature less than 10°C.
- Weather - hot: Ambient shade temperature greater than 30°C.

Tolerances

Finishes

Form face deflections: To AS 3610.1 Table 3.3.4.1.

Straight elements: To AS 3610.1 Table 3.3.5.1.

Unformed surfaces flatness: To the **Flatness tolerance class table**, for the documented class of finish, using a straightedge placed anywhere on the surface in any direction.

Flatness tolerance class table

Class	Measurement	Maximum deviation (mm)
A	2 m straightedge	4
B	3 m straightedge	6
C	600 mm straightedge	6

Products

Materials

Cement

Standard: To AS 3972.

Age: Less than 6 months old.

Storage: Store cement bags under cover and above ground.

Pre-mixed concrete supply

Standard: To AS 1379 by the batch production process.

Maximum slump: 100 mm.

Reinforcement

Standard: To AS/NZS 4671.

Polymeric film underlay

Vapour barriers and damp-proofing membranes: To AS 2870 clause 5.3.3.

Minimum thickness: 0.2 mm.

Curing compounds

Standard: To AS 3799.

Formwork

General

Lost formwork: Free of timber or chlorides and not to impair the structural performance of the concrete members.

Design

Formwork: The design of the formwork is the contractor’s responsibility.

Plywood forms

Material: To AS 6669.

Grade: Use appropriate grade for the documented design dimensions, loading and surface quality.

Joints: Seal the joints consistent with the documented surface finish class.

Tolerances: To AS 3610.1 Section 3.

Execution

Polymeric film underlay

Location

Requirement: Under slabs on ground including integral ground beams and footings, provide a vapour barrier or, in areas prone to rising damp or salt attack, a damp-proofing membrane.

Formwork

Corners

Work above ground: Chamfer at re-entrant angles, and fillet at corners.

- Face of bevel: 25 mm.

Void formers

Protection: Keep void formers dry until use, install on a firm level surface and place reinforcement and concrete with minimum delay.

Reinforcement

Supports

Concrete, metal or plastic supports: Provide as follows:

- Able to withstand construction and traffic loads.
- With a protective coating if they are ferrous metal, located within the concrete cover zone, or are used with galvanized or zinc-coated reinforcement.

Spacing:

- Bars: ≤ 60 diameters.
- Mesh: ≤ 600 mm.

Supports over membranes: Prevent damage to waterproofing membranes or vapour barriers. If appropriate, place a metal or plastic plate under each support.

Projecting reinforcement

Protection: If starter or other bars extend beyond reinforcement mats or cages, through formwork or from cast concrete, provide a plastic protective cap to each bar until it is cast into later work.

Bending

Restriction: Use only bars with bends as documented. If required to bend or straighten bars on site, do not use heat and use only methods that will not damage the steel and its structural properties, to AS 3600 clause 17.2.3.2.

Tying

Requirement: Secure the reinforcement against displacement at intersections with either wire ties, or clips. Bend the ends of wire ties away from nearby faces

of formwork or unformed faces to prevent the ties projecting into the concrete cover.

Bar lapping

Requirement: Minimum lap as follows:

- Mesh sheets: Overlap by a minimum of 2 cross bars.
- Trench mesh: 500 mm.
- Bars: Greater of either 500 mm or 25 x bar diameter.
- Strip footing intersections and corners: Full width of intersecting reinforcement.

Concrete

Preparation

Cleaning: Before placing concrete, remove free water, dust, debris and stains from the form face and the formed space.

Placing

Method: Avoid segregation and loss of concrete, and minimise plastic settlement. Maintain a nominally vertical and plastic concrete edge during placement.

Horizontal elements: Place concrete in layers not more than 300 mm thick. Compact the following layer into previous layer before previous layer has taken initial set.

Compaction

Methods: Use immersion and screed vibrators accompanied by hand methods as appropriate to remove entrapped air and to fully compact the mix.

Vibrators: Do not allow vibrators to contact set concrete, reinforcement or items including pipes and conduits embedded in concrete. Do not use vibrators to move concrete along the formwork. Avoid causing segregation by over-vibration.

Rain

Protection: During placement and before setting, protect the surface from damage.

Placing in cold weather

Temperature limits: Maintain the following:

- Freshly mixed concrete: ≥ 5°C.
- Forms and reinforcement before and during placing: ≥ 5°C.
- Water: Maximum 60°C when placed in the mixer.

Temperature control: Heat the concrete materials, other than cement, to the minimum temperature necessary so that the temperature of the placed concrete is ≥ 5°C .

Placing in hot weather

Temperature limits: Maintain the following:

- Freshly mixed concrete ≤ 35°C.
- Forms and reinforcement before and during placing: ≤ 35°C.

Temperature control: Select one or more of the following methods of maintaining the temperature of the placed concrete at 35°C or less:

- Cover the horizontal transport containers.
- Spray the coarse aggregate using cold water prior to mixing.
- Use chilled mixing water or ice.

Evaporation control barriers: Erect barriers to protect freshly placed concrete from drying winds.

Curing

General

Requirements: Taking into account the average ambient temperature at site over the relevant period affecting the curing, adopt procedures to make sure of the following:

- Curing: Cure continuously from completion of finishing, when the concrete has set sufficiently not to be damaged by the curing process, until the minimum total cumulative number of days or fractions of days, during which the air temperature in contact with the concrete is above 10°C, conforms to the following:

- Fully enclosed internal surfaces: 3 days.
- Other concrete surfaces: 7 days.
- End of curing period: Prevent rapid drying out at the end of the curing period.
- Protection: Maintain at a reasonably constant temperature with minimum moisture loss, during the curing period.

Curing compounds

Liquid membrane forming compounds: Provide a uniform continuous flexible coating without visible breaks or pinholes, which remains unbroken for at least the required curing period after application.

Substrates: Do not use wax-based or chlorinated rubber-based curing compounds on surfaces forming substrates to applied finishes, concrete toppings and cement-based render.

Cold weather curing

Temperature: Maintain concrete surface temperature above 5°C for the duration of the curing period.

Hot weather curing

Requirement: If the concrete temperature exceeds 25°C, or the ambient shade temperature exceeds 30°C, protect from drying winds and sun by using an evaporative retarder until curing is commenced.

Water curing

Method: Select a method of ponding or continuously sprinkling water to prevent damage to the concrete surface during the required curing period.

Joints

Construction joints

Location: Do not relocate or eliminate construction joints, or form undocumented construction joints. If emergency construction joints are made necessary by unforeseen interruptions to the concrete pour, submit a report on the action taken.

Joint preparation: Scabble hardened concrete joint surface to a minimum 3 mm amplitude. Remove loose or soft material, foreign matter and laitance. Dampen the surface just before placing the fresh concrete and coat with a neat cement slurry.

Slip joints

Requirement: If concrete slabs are supported on masonry, provide proprietary slip joints.

Formed surfaces

General

Formed surface finish quality: To AS 3610.1 Table 3.3.3.1 and the following:

- Visible: Class 3.
- Not visible: Class 5.

Damage: Do not damage concrete works through premature removal of formwork.

Curing

General: If formwork is stripped before the minimum curing period for the concrete has elapsed, continue curing the exposed faces as soon as the stripping is completed.

Surface repairs

Method: If surface repairs are required, submit proposals.

Unformed surfaces

Surface finishes

General: As documented.

Surface repairs

Method: If surface repairs are required, submit proposals.

Completion

Formwork removal

Extent: Remove formwork, other than trapped forms, including formwork in concealed locations.

Timing: Do not disturb formwork until concrete has reached sufficient hardness to withstand formwork movements and removal without damage.

Stripping times: Leave formwork for suspended structures in place after pouring concrete for the following periods:

- Vertical surfaces: To AS 3610.1 Appendix C Table C2.
- Horizontal surfaces: To AS 3600 clause 17.6.2.

Protection

General: Protect the concrete from damage due to construction loads, physical and thermal shocks and excessive vibrations, particularly during the curing period.

Surface protection: Protect finished concrete surfaces and applied finishes from damage.

0331 BRICK AND BLOCK CONSTRUCTION

General

Standard

General

Materials and construction: To AS 4773.1 and AS 4773.2.

Products

Durability

General

Exposure environment: To AS 4773.1 clause 4.3.

Exposure locations: To AS 4773.1 clause 4.4.

Materials

Masonry units

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

Minimum age of clay bricks: 7 days.

Salt attack resistance grade: To AS 4773.2 Table 2.1.

Mortar materials

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

Mortar mixes: To AS 4773.1 Table 3.1

Grout

Standard: To AS 4773.1 clause 3.3.

Built-in components

General

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

Steel lintels

Angles and flats: Sizes to AS 4773.1 Table 12.2.

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

Corrosion protection: To AS 2699.3.

Galvanizing: Do not cut after galvanizing.

Reinforcement

Standard: To AS/NZS 4671.

Wall ties

Standard: To AS 2699.1.

Type: A.

Corrosion protection: To AS 2699.1.

Connectors and accessories

Standard: To AS 2699.2.

Corrosion protection: To AS 2699.2.

Flashings and damp-proof courses

Standard: To AS/NZS 2904.

Execution

General

Mortar mixing

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

Protection

Masonry materials and components: Protect from ground moisture and contamination.

During construction: Cover the top surface of masonry to prevent the entry of rainwater and contaminants.

Bond

Type: Stretcher bond.

Building in

WORK IN PROGRESS

Embedded items: Build in wall ties and accessories as the construction proceeds. If not practicable to obtain the required embedment within the mortar joint in cored or hollow masonry units, fill appropriate cores with grout or mortar.

Clearance for timber frame shrinkage

General: In timber frame masonry veneer construction, leave clearances between window frames and sill and between roof frames and the masonry veneer as follows:

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

Joining to existing

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

Mortar joints

General: Set out masonry with joints of uniform width and the minimum of cutting of masonry units.

Solid and cored units: Lay on a full bed of mortar. Fill perpends solid. Cut mortar flush.

Face-shell bedded hollow units: Fill perpends solid. Cut mortar flush.

Joint thickness: 10 mm.

Finish: Conform to the following:

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

Rate of construction

General: Regulate the rate of construction to eliminate joint deformation, slumping or instability.

Rods

Set-out: Construct masonry to the following rods:

- 75 mm high units: 7 courses to 600 mm.
- 90 mm high units: 6 courses to 600 mm.
- 190 mm high units: 3 courses to 600 mm.

Facework

Cleaning

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

Acid solution: Do not use.

Colour mixing

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

Sills and thresholds

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

Minimum size of unit: Three quarters full width.

Subfloor work

Bearer piers

Provide engaged or free standing unreinforced masonry piers to support bearers at 1800 mm maximum centres and to the **Bearer pier table**.

Bearer pier table

Type	Minimum size (mm)
Engaged	230 x 110 bonded or tied to walls
Freestanding up to 1500 mm high	230 x 230
Freestanding 1500 to 2700 mm high	350 x 350

Access openings

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

Air vent location

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

Cavity walls: Provide matching vents in the internal leaves located as near as practicable to the air vents in the external leaves.

Location: Below damp-proof course to internal and external walls.

Minimum provision: 6000 mm<sup>2</sup> net ventilation area per linear metre of wall.

Underpinning

Requirement: Install underpinning without causing damage to the building.

Grouting: Pack dry mix M4 mortar between underpinning and existing structue within 24 and 48 hours of completion of each panel of underpinning.

Cavity work

Cavity clearance

General: Keep cavities clear at all times.

Cavity fill

General: Fill the cavity with mortar to one course above the adjacent finished (ground) level. Fall the top surface towards the outer leaf.

Cavity width

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

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

Openings

Jambs of external openings: Do not close the cavity.

Wall ties, connectors and accessories

Protection: Install to prevent water passing across the cavity.

Damp-proof courses

Location

General: Locate damp-proof courses as follows:

- Timber floors: In the first course below the level of the underside of ground floor timbers in internal walls and inner leaves of cavity walls.
- Cavity walls built off slabs on ground: In the bottom course of the outer leaf, continuous horizontally across the cavity and up the inner face bedded in mortar, turned 30 mm into the inner leaf one course above. Project 10 mm beyond the external slab edge and turn down 450.
- Masonry veneer construction: In the bottom course of the outer leaf, continuous horizontally across the cavity. Fastened to the inner frame 75 mm above floor level.
- Internal walls built off slabs on ground in the first course above floor level.
- Walls adjoining infill floor slabs on membranes: In the course above the underside of the slab in internal walls and inner leaves of cavity walls. Project 40 mm and dress down over the membrane turned up against the wall.

Height: Not less than:

- 150 mm above the adjacent finished ground level.
- 75 mm above the finished paved or concrete area.
- 50 mm above the finished paved or concreted area and protected from the direct effect of the weather.

Installation

General: Lay in long lengths. Lap the full width of angles and intersections and 150 mm at joints. Step as necessary, but not more than two courses per step for brickwork and one course per step for blockwork.

Sandwich damp-proof courses between mortar.

Junctions: Preserve continuity of damp-proofing at junctions of damp-proof courses and waterproof membranes.

Flashings

Location

General: To AS 4773.2 clause 9.6 and clause 10.5.

Installation

General: Sandwich flashings between mortar except where on lintels.

Pointing: Point up joints around flashings to fill voids.

Weepholes

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

Form: Open perpends.

Maximum spacing: 1200 mm.

Weephole guards: Provide access barrier.

Wall ties

Location

Spacing: To AS 4773.2 clause 9.7 and clause 10.6.

Installation

Embedment: At least 50 mm into mortar ensuring that mortar cover is 15 mm minimum to the outside face of the mortar.

Control joints

General

Location and spacing: Provide control joints to AS 4773.2 Section 7.

Control joint filling

Installation: Clean the joints thoroughly and insert an easily compressible backing material before sealing.

Sealant depth: Fill the joints with a gun-applied flexible sealant for a depth of at least two-thirds the joint width.

Sealant type: External: UV stable.

Flexible masonry ties

Requirement: Provide stabilising ties at control joints and abutting structural elements, including columns, beams and slab soffits.

Reinforced and grouted blockwork

Cleaning core holes

General: Provide purpose-made cleanout blocks or machine cut a cleaning hole at the base of each grouted core.

Location: Locate on the side of the wall which is to be rendered or otherwise concealed.

Cleaning: Rod cores to dislodge mortar fins protruding from the blocks and mortar droppings from reinforcement.

Remove through the clean-out blocks.

Grouting

Commencement: Do not commence until grout spaces have been cleaned out and the mortar joints have attained sufficient strength to resist blow-outs.

Height of lift: Limit the height of individual lifts in any pour to make sure that the grout can be thoroughly compacted to fill all voids.

Compaction: Compact by vibration or by rodding.

Topping up: On the completion of the last lift, top up the grout after 10 min to 30 min, and vibrate or rod to mix with the previous pour.

Lintels

Installation

General: Do not cut on site. Keep lintels 10 mm clear of heads of frames.

Steel lintels: Pack mortar between any vertical component and supported masonry units. For angles install with the long leg vertically.

Propping: Provide temporary props to lintels to prevent deflection or rotation.

## 0342 LIGHT STEEL FRAMING

General

Standards

General

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

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

Tolerances

General

Manufacturing, assembly and installation tolerances: To NASH-1 Appendix D and NASH-2 Appendix A.

Submissions

Design

General: Where the structural documentation defines performance criteria, submit as follows:

- Design to AS/NZS 4600 or NASH-1: Independent design, documentation and certification from a professional engineer.
- To NASH-2: Certification of conformance to NASH-2.

Reactions: Provide location and magnitude of reactions to be accommodated by the support structure.

Shop drawings

General: Submit shop drawings, to a scale that best describes the detail requirements for the documented configurations and loadings.

Prefabricated roof trusses: Include the following:

- Plan: Truss layout.
- Elevations: Arrangement of members, allowing for the accommodation of in-roof services and the size and section type of each member.
- Holding down and bracing: Details demonstrating capability to resist lateral and uplift forces.
- Method of assembly and connection details.

Prefabricated wall frames: Include the following:

- Plan: Wall layout.
- Elevation: Arrangement of members, and size and section type of each member.
- Method of assembly, connection, holding down and bracing.

Prefabricated floor frames/cassettes: Include the following:

- Plan: Level of installation, arrangement of members, and size and section type of each member, including prefabricated floor joists.
- Method of assembly, connection, holding down and bracing.

Products

General

Storage and handling

Requirement: Transport all components to site and store if required in a manner so as not to damage or distort the components.

Components

Damp-proof course

Membrane: To the membrane requirements of AS 2870 or AS/NZS 2904.

Cold-formed steel framing

Cold-formed sections from metallic-coated steel: To AS 1397.

Corrosion protection: To NASH-2 Section 8.

Framing members

Cold-formed steel framing for proprietary systems: To NASH-1 or NASH-2.

Execution

General

Frame fabrication

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

Service holes: If not pre-punched, form holes by drilling or punching, conforming to the requirements of NASH-2.

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

Fastening

Prefabricated framing: Fasten framing elements using fasteners, as documented, to the fabricator's requirements.

Framing built in-situ: Use fasteners, as documented, from the following types:

- Bolting.
- Self-drilling, self-tapping screws.
- Blind rivets.
- Proprietary clinching system.
- Structural adhesives.
- Welding. On-site welded connections are not permitted.

Compatibility: Compatible with steel frame to prevent galvanic corrosion of dissimilar metals.

Welding

Burning: Avoid procedures that result in greater than localised burning of the sheets or framing members.

Prefabricated frames

General: Protect frames from damage or distortion during erection.

Unseasoned or CCA treated timber

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

Earthing

Requirement: To AS/NZS 3000. Provide temporary earthing during erection until the permanent earthing is installed.

Protection

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

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

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

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

Floor framing

General

Protection: If floor framing is for ground floor construction, make sure that it is protected from moisture.

Construction loads: If construction loading exceeds design loading, provide additional support so as to avoid overstressing of members.

Decks and balconies

Attachment to external walls: To BCA 3.10.6.

Wall framing

Wall studs

General: Provide studs in single lengths without splices.

Place a stud and a stiffened top plate under each structural load point from the roof or ceiling (except at openings). Provide multiple studs at points of concentrated load.

Maximum stud spacing: 600 mm.

Heads to openings

Requirement: Provide lintels appropriate to load and span.

Additional support

General: Provide additional support in the form of noggings, trimmers and studs for support and fixing of lining, cladding, hardware, accessories, fixtures and fittings.

Vermin barriers

Requirement: Provide vermin barriers as follows:

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

Damp-proof course

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

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

Installation: Lay in long lengths. Lap full width at angles and intersections and at least 150 mm at joints.

Junctions: Preserve continuity of damp-proofing at junctions of sarking, damp-proof courses and waterproof membranes.

Flashings

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

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

Prefabricated walling

Assembly: Factory assemble wall frames.

Bracing: Provide details of bracing.

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

Roof and ceiling framing

Beam framing

General: Construct framing for flat or pitched roofs where the ceiling follows the roof line, consisting of prefabricated roof beams, rafters or purlins supporting both ceiling and roof covering.

Additional support

Requirement: Provide additional frame members at the following locations:

- Hanging light fittings.
- Ceiling fans.
- Access panels.
- Any other hanging services or fixtures and fittings.

Water tank or heater located in the roof space: Provide a support platform to AS/NZS 3500.4 clause 5.5.1.

Battens

Requirement: Supply and fix battens suitable for span, spacing and proposed roofing material.

Anti-ponding boards

Standard: To AS 4200.2.

Trusses

Fabrication

Assembly: Factory assemble trusses.

Marking

General: Permanently mark each truss to show:

- Project identification.
- Manufacturer.
- Tag or number.
- Location.

- Support points.

Installation

Support: Support and fix trusses to the truss fabricator’s recommendations.

Vertical movement: Over internal walls provide at least 10 mm vertical clearance and use bracing methods which allow for vertical movements, to the truss fabricator’s recommendations. .

Holding down and bracing: Provide details demonstrating capability to resist lateral and uplift forces.

Roof trim

Fascia, valley and barge boards

Requirement: Fix fascia, valley gutter boards and barge boards in conformance with the manufacturer’s recommendations.

Completion

Cleaning

General: On completion of framing remove debris from any gaps between members and make sure void between bottom chord of roof trusses and top of any non-supporting internal wall is clear.

0382 LIGHT TIMBER FRAMING

General

Standards

General

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

Design: To AS 1720.3.

Nailplated roof trusses: To AS 1720.5.

Submissions

Design

General: Where the structural drawings define performance criteria, submit independent design, documentation and certification from a professional engineer, including for the erected work.

Reactions: Provide location and magnitude of reactions to be accommodated by the support structure.

Floor and wall frame member sizes: Submit a schedule of proposed member sizes, certified as meeting stated project, AS 1684 series and AS 1720.3 requirements for span, spacings, loadings and deflections.

Preservative treatment

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

Shop drawings

Requirement: Submit shop drawings, to a scale that best describes the detail, certified by a professional engineer stating that the design has been carried out to the requirements of the AS 1684 series and AS 1720.3 for the documented configurations and loadings.

Prefabricated roof trusses: Include the following:

- Plan: Truss layout.
- Elevations: Arrangement of members allowing for the accommodation of in-roof services and the size and section type of each member.
- Camber of bottom chord.
- Method of assembly, connection, lifting, holding down and bracing.

Prefabricated wall frames: Include the following:

- Plan: Wall layout.
- Elevations: Arrangement of members, and the size and section type of each member.
- Method of assembly, connection, lifting, holding down and bracing.

Products

General

Storage and handling

General: Do not distort or damage timber or timber products.

Moisture content: Maintain the equilibrium moisture content of seasoned timber.

Timber

Fascias and barge boards

Hardwood: To AS 2796.1.

Softwood: To AS 4785.1.

Laminated veneer lumber

Standard: To AS/NZS 4357.0.

Formaldehyde emission class to AS/NZS 4357.0: E1

Sheet products

Structural plywood

Standard: To AS/NZS 2269.0.

Bond: Type A to AS/NZS 2754.1.

Wet process fibreboard (including hardboard)

Standard: To AS/NZS 1859.4.

Components

Mild steel post bases

Minimum dimensions:

- Stirrup: 75 mm wide x 6 mm thick.
- Dowel: 20 mm diameter heavy tube.

Location: To timber posts supported off concrete slabs or footings.

Finish: Galvanize after fabrication.

Fasteners

Installation: Do not split or otherwise damage the timber.

Coating: Before placing bolts in contact with CCA treated timber, coat the shank of the bolt in a grease or bituminous coating.

Damp-proof course

Material: To AS/NZS 2904.

Flashings

Material: To AS/NZS 2904.

Execution

General

Prefabricated frames

General: Protect frames from damage or distortion during erection. Provide temporary protection for members until permanent covering is in place.

Floor framing

Bearers and joists

Levelling: Level bearers and joists by checking or by packing for the full width of the member with dense corrosion-resistant material which is secured in place.

Maximum thickness of packing: 3 mm.

Spring: Lay bearers and joists to allow for straightening under loading.

Joints

Requirement: Locate joints only over supports:

- Minimum bearing of bearers: 50 mm.
- Minimum bearing of joists: 30 mm.

Fixing and restraint

Fixing: Secure bearers and joists to supports to provide restraint against lateral movement.

Deep joists: To AS 1684.2 clause 4.2.2.3 or AS 1684.3 clause 4.2.2.3 as appropriate.

Trimmers or blocking dimensions:

- Depth: Joist depth less 25 mm.
- Width: ≥ 25 mm.

Engineered timber joists 200 mm deep or greater: Provide lateral restraint using blocking or seasonal rim board.

Decks and balconies

Attachment to external walls: To BCA 3.10.6.

Wall framing

Additional support

Requirement: Provide additional support in the form of noggings, trimmers and studs for fixing lining, cladding, hardware, accessories, fixtures and fittings as required.

Spacing of noggings: Maximum 1350 mm centres.

Vermin barriers

Requirement: Provide vermin barriers as follows:

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

Damp-proof course

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

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

Installation: Lay in long lengths. Lap full width at angles and intersections and at least 150 mm at joints.

Junctions: Preserve continuity at junctions of damp-proof courses, sarking and waterproof membranes.

Flashings

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

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

Prefabricated walling

Assembly: Factory assemble wall frames.

Bracing: Provide details of bracing.

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

Roof and ceiling framing

Wall plates

Fixing: Fix timber wall plates to masonry, with straps, bolts or both.

Fixing plates

General: Provide 45 mm minimum thick timber fixing plates to transfer the design loads where timber joists, rafters or purlins bear on or into steel members. Bolt to the steel member at maximum 500 mm centres and a maximum 100 mm from the end of the fixing plate.

Beam framing

Ridge straps: Butt ends of rafters together at ridge, and strap each pair together with 900 mm long steel strap passing over the ridge, triple nail to each rafter.

Additional support

Requirement: Provide additional frame members at the following locations:

- Hanging light fittings.
- Ceiling fans
- Access panels.
- Any other hanging services or fixtures and fittings.

Water tank or heater in roof space: Provide a support platform to AS/NZS 3500.4 clause 5.5.1.

Anti-ponding boards

Standard: To AS 4200.2.

Trusses

Marking

General: Permanently mark each truss to show:

- Project identification.
- Manufacturer.
- Tag or number.
- Location.
- Support points.

Installation

Nailplated prefabricated roof trusses: To AS 4440.

Support: Support trusses on bottom chord at two points only, unless designed for additional support.

Plumb: The lessor of H/50 or 50 mm, where H is the height of the truss at the point where plumb is being measured.

Vertical movement: Provide at least 10 mm vertical clearance plus ceiling batten depth over internal non-load bearing walls. Use bracing methods that accommodate the design vertical movements.

Roof trim

Fascia, valley and barge boards

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

Completion

Protection

Protection from weather: Provide temporary protection for members until permanent covering is in place.

Tightening

Requirement: Retighten all bolts, screws and other fixings so that joints and anchorages are secure at practical completion.

Cleaning

General: On completion of framing remove debris from any gaps between members and make sure void between bottom chord of trusses and top of any non-supporting internal walls is clear.

0383 SHEET FLOORING AND DECKING

General

Standards

General

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

Products

Decking

New timber decking

Standard:

- Preservative-treated softwood to AS 4785.1 Section 4.
- Hardwood to AS 2796.1 Section 4.

Composite decking

General: Proprietary composite decking boards, as documented.

Sheet flooring

Plywood

Standard: To AS/NZS 2269.0.

Plywood certified formaldehyde emission level to AS/NZS 2269.0: Class E1.

Grading:

- Surface grade: CD.
- Bond: Type A to AS/NZS 2754.1.

Durability: Preservative treatment to AS 1604.1 Table D1.

Particleboard

Particleboard: To AS 1860.1, Class 1.

Particleboard certified formaldehyde emission level to AS/NZS 2098.11: Class E1.

Compressed fibre cement sheet

Standard: To AS/NZS 2908.2.

Category: Minimum 4.

Classification:

- External Type A.
- Internal: Type B.

Execution

General



- Turn pans of sheets up at tops and down into gutters by mechanical means.
- Provide pre-cut notched eaves flashing and bird proofing if required.
- Close off ridges with purpose-made ridge fillers of closed cell polyethylene foam.

Swarf: Remove swarf and other debris as soon as deposited.

Accessories: Provide accessories with the same finish as roofing sheets to complete the roofing installation.

Tiling

Installation

Standard: To AS 2050.

Setting out: Set out the roof to give an even tile gauge in each course, with full or saw cut tiles at verges.

Bedding and pointing: Bed and point ancillary tiles, including ridges, hips and verges, in coloured mortar to match the tiles.

Pointed verge: Bed and point tiles on 100 x 5 mm fibre cement pointing strip.

Plastic sheet roofing

Installation

Standard: To AS 1562.3.

Glazed roofing

Installation

Standard: To AS 1288.

Roof plumbing

Joining sheet metal rainwater goods

Sealing: Seal fasteners and mechanically fastened joints.

Fill the holes of blind rivets with silicone sealant.

Flashings and cappings

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

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

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

Gutters

Minimum slope of eaves gutters: 1:200.

Minimum width overall of valley gutters: 400 mm.

Eaves gutter overflow measures: To BCA 3.5.3.4.

Downpipes

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

Downpipe support: Provide supports and fixings for downpipes.

## 0431 CLADDING

Products

Materials

Autoclaved aerated concrete (AAC) panels

Requirement: Proprietary AAC panels.

Standard: To AS 5146.1.

Joint adhesive: Proprietary adhesive to manufacturer's recommendations.

Control joints: At all external and internal corners, adjacent to all openings and at maximum 6 m centres.

Aluminium weatherboards

Requirement: Proprietary prefinished aluminium weatherboards.

Standards: To AS/NZS 1734.

Exterior insulation and finish system (EIFS)

Requirement: Proprietary system comprising rigid insulation panels, fixed to a subframe and finished with a cementitious base coat and finish coat.

Fibre cement (FC) planks

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

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

Plank thickness: 7.5 mm.

Joints and edges: PVC-U extrusion.

Corners: Preformed metal joining pieces.

Fibre cement (FC) sheets

Standard: To AS/NZS 2908.2.

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

Compressed cladding: Type A Category 5.

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

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

Eaves lining: Single faced fibre cement:

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

Hardboard planks

Requirement: Proprietary wet process fibreboard planks.

Standard: To AS/NZS 1859.4.

Classification: Exterior.

Plank thickness: 9.5 mm.

Joints and edges: PVC-U extrusions.

External corners: Preformed metal joining pieces.

Internal corners: Scribe.

Plastic sheets

Requirement: Proprietary plastic sheets.

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

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

Polycarbonate: To AS 4256.5.

Profiled sheet metal

Standard: To AS 1562.1.

Timber weatherboards

Hardwood: To AS 2796.1.

Softwood: To AS 4785.1.

Components

Flashing material

Standard: To AS/NZS 2904.

Execution

General

Preparation

Substrates or framing: Before fixing cladding check the alignment of substrates or framing and adjust if necessary.

Fixing

Method: Nail to timber framing, screw to steel framing.

Accessories and trim

Requirement: Provide accessories and trim required to complete the installation.

Proprietary systems or products

Requirement: Use panels and components from a single proprietary system and install to the manufacturer's recommendations.

Fixing eaves and soffit lining

Nailing: 150 mm centres to bearers at maximum 450 mm centres.

Metal separation

Requirement: Prevent direct contact between incompatible metals, and between green hardwood or

chemically treated timber and aluminium or coated steel, by either of the following methods:

- Applying an anti-corrosion, low moisture transmission coating to contact surfaces.
- Inserting a separation layer.

Incompatible metal fixings: Do not use.

AAC panels

Installation

Standard: To AS 5146.3.

Plastic sheets

Installation

Standard: To AS 1562.3.

Profiled sheet metal

General

Swarf: Remove swarf and other debris as soon as it is deposited.

Accessories: Provide material with the same finish as cladding sheets.

Installation

Standard: To AS 1562.1.

Corner flashing

Requirement: Finish off at corners with purpose-made

folded flashing strips.

Timber weatherboards

Preparation

Preservative treatment: For cladding with a natural or stained finish, prefinish the boards by dipping or brushing with water repellent preservative.

Compatibility: Make sure preservative is compatible with a documented pigmented stain finish.

Cut surfaces: Treat freshly cut surfaces with water repellent preservative before fixing.

Installation

Fixing: To BCA 3.5.4.2.

Single lengths: If installed vertically, use single lengths. If installed horizontally, use single lengths whenever possible.

Fixing at supports:

- Seasoned milled weatherboards: 2 fixings.
- Unseasoned hardwood, sawn weatherboards, or secret nailed profiles: 1 fixing.

Nailheads: Treat visible nailheads as follows:

- Stained or clear finishes: Drive flush with weatherboard surface.
- Opaque finishes: Punch below the weatherboard surface and fill flush with putty after the surface has been primed.

Joints

End grain joints: Install boards so that butt joints are in compression. Fix all board ends to support framing.

Stagger joints vertically or as documented.

Internal and external corners: Butt against a stop bead that projects at least the thickness of the cladding.

## 0451 WINDOWS AND GLAZED DOORS

General

Standards

General

Selection and installation: To AS 2047.

Glazing

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

Quality requirements for cut-to-size and processed glass: To AS/NZS 4667.

Products

General

Glass

Safety glass: To AS/NZS 2208.

Aluminium frame finishes

Powder coating: To AS 3715:

Anodising: To AS 1231:

- Thickness: ≥ 15 to 20 microns.

Flashings

Standard: To AS/NZS 2904.

Window labelling and certification

Requirement: To AS 2047 Section 8.

Protection of openable windows

Fall prevention: To BCA 3.9.2.6 and BCA 3.9.2.7.

Testing: To AS 5203.

Components

Louvre window assemblies

Requirement: Louvre blades mounted in a metal surround frame or subframe and able to withstand the permissible-stress-design wind pressure for that location without failure or permanent distortion of members, and without blade flutter.

Adjustable louvres: Louvre blades clipped into blade holders pivoted to stiles or coupling mullions, linked together in banks, each bank operated by an operating handle incorporating a latching device, or by a locking bar.

Insect screens

Fixed screens: Provide fixed screens fitted to the window frames with a clipping device which permits removal for cleaning.

Hinged screens: Hinged at the top to give access to opening sash.

Retractable screens: Provide a proprietary retractable insect screen comprising aluminium frame and fibreglass mesh fitted between guide channels incorporated in the frame, and a retraction system including tension spring, nylon bearings, positive self-locking device, and plastic sealing strip at sill.

Sliding screens: Provide a matching aluminium head guide, sill runner, and frame stile sections for screens not part of the window frame.

- Hardware: Nylon slide runners and finger pull handle. Provide pile strip closers against sash where necessary to close gaps.

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

- Mesh: Bead the mesh into the frame channel with a continuous resilient gasket, so that the mesh is taut and free of distortion.

Bushfire screens and seals

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

Standard: AS 3959.

Security screens

Security grilles and screen doors: To AS 5039.

Installation: To AS 5040.

Hardware

Hardware documented generically

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

Execution

Installation

Preglazing

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

Windows and glazed doors

General: Install windows and glazed doors frames as follows:

- Plumb, level, straight and true within acceptable building tolerances.
- Fixed or anchored to the building structure in conformance with the wind action loading requirements.
- Isolated from any building loads, including loads caused by structural deflection or shortening.
- Allow for thermal movement.

Weatherproofing

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

Fixing

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

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

Trim

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

## 0453 DOORS AND ACCESS PANELS

General

Standards

General

Timber and composite doors: To AS 2688.

Interpretation

Definition

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

- Doorset: An assembly comprising a door or doors and supporting frame, guides and tracks including the hardware and accessories necessary for satisfactory operation.

Products

Door frames

Aluminium frames

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

Timber frames

Hardwood: To AS 2796.1.

- Grade: Select.

Softwood: To AS 4785.1.

- Grade: Select.

Joints:

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

Doors

General

LAYOUT ID	LAYOUT	Specifications, Notes	DATE	REV ID	CHANGE/S	PROJECT ID-PROJECT	PROJECT	IMPORTANT NOTES
19	SCALE @A3		Work in Progress	01 - WIP		New Class 1a dwelling		All work must comply with the NCC and all relevant standards, laws, codes, specifications and development consent conditions. All structural work must be to engineer's detail. All dimensions are in mm to structure without finishes unless otherwise stated. Do not scale drawings; work to express dimensions only. Drawings are not for construction purposes until issued and certified for construction. Prior to construction, check all dimensions and levels on site, confirm compliance with building surveyor/certifier and notify any discrepancies. No copyright - Open Source - attribution Jiri Lev Architect
	ISSUE ID	01				SITE	-	
	ISSUE	Open source plans				ADDRESS	-	
	ISSUED	Work in Progress				CLIENT	-	
	PRINTED	28/11/2024						

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

Flush panel doors

General: Provide flush panel doors of balanced construction.

Construction

Door thickness:

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

Edge strips: Minimum thickness 10 mm. Increase overall thickness to greater than 15 mm to accommodate the full depth of the rebate in rebated doors. Apply to the external edges of door after the facings are bonded to the door framing/core and finish flush with outside surface of the facings.

Tolerances

Standard: To AS 2688 clauses 4.1 and 5.3.

Security screen doors

Standard: To AS 5039.

Bushfire screens and seals

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

Standard: AS 3959.

Sliding internal doors

Face mounted

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

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

Cavity sliding

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

Ancillary materials

Flashings

Standard: To AS/NZS 2904.

Weather bars

General: Provide a weather bar under hinged external doors, locate under the centres of closed doors.

Execution

General

Security screen doors

Installation: To AS 5040.

Ceiling access

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

Under floor access

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

Priming

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

Frames

General

Frames: Install the frames as follows:

- Plumb, level, straight and true.
- Fixed or anchored to the building structure.
- Isolated from any building loads, including loads caused by structural deflection or shortening.

Aluminium frames

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

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

Fixing to stud frame openings: Screw once to studs at each fixing.

Timber frames

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

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

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

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

Finishing

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

Weatherproofing

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

## 0454 OVERHEAD DOORS

General

Standard

General

Garage doors: To AS/NZS 4505.

Execution

Installation

Frames, guides and tracks

Requirement: Install frames as follows:

- Plumb, level, straight, true, and within tolerances and clearances recommended by the manufacturer.
- Fixed or anchored to the building structure using mechanical fixings suitable for the substrate and the imposed loads.
- Isolated from any building loads, including loads caused by structural deflection or shortening.

## 0455 DOOR HARDWARE

Products

Components

Hinges

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

Hinges table

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

Locksets

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

Internal doors:

- Generally: Passage sets.
- Bathrooms, showers and toilets: Privacy sets.

- Sliding patio doors and windows: Key-lockable surface mounted bolts.

Keying

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

Execution

Installation

Supply

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

- Clearly labelled to show the intended location.
- In a separate dust and moisture proof package.
- Including the necessary templates, accessories, fixings and fixing instructions.

Mounting height

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

Locks

Cylinders: Fix vertically and with consistent key alignment.

Door stops

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

Fasteners

Materials: Provide materials compatible with the item being fixed, and of sufficient strength, size and quality to perform their function.

- Concealed fasteners: Provide a corrosion-resistant finish to concealed fasteners.
- Exposed fasteners: Match exposed fasteners to the material being fixed.

Security: Locate exposed fasteners to lock furniture on the inside faces of external doors.

Support: Provide appropriate back support (for example lock stiles, blocking, wall noggings and backing plates) for hardware fasteners.

Hinges

Metal frames: Fix hinges using metal thread screws.

Timber doorsets: Install butt hinges in housings equal in depth to the thickness of the hinge leaf (except for hinges designed for mounting without housing), and fix with countersunk screws.

## 0467 GLASS COMPONENTS

General

Standards

General

Materials and installation: To AS 1288.

Safety glass: To AS/NZS 2208.

Submissions

Certification

Barrier design: Submit a professional engineer's certificate confirming conformance with AS/NZS 1170.1 clause 3.6.

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

Products

Mirrors

Reflective surface

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

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

Safety glass mirrors

Type: Grade A safety glass to AS 1288.

Safety compliance: To AS/NZS 2208.

Solid backed annealed glass mirrors

Type: Adhered glass mirror with backing.

Backing: 9 mm waterproof plywood.

Adhesion to backing: Apply non-acidic silicone adhesive at the rate recommended by the manufacturer. Secure the mirror with double sided adhesive tape during the adhesive curing period.

Shower screens

Type

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

Glass: To AS 1288 clause 5.8.

Glass balustrades

Glass barrier systems

Requirement: To AS 1288 Section 7 and as documented.

Glass: Grade A safety glass.

Execution

Fixing mirrors

General

Adhesive fixing: Clean surfaces to be bonded. Apply adhesive to the manufacturer's recommendations. Secure the mirror to the substrate with double sided adhesive tape until the adhesive cures.

Screw fixing: Fix direct to wall plugs with dome-headed chromium-plated screws in each corner and at 900 mm maximum centres around perimeter. Provide polyethylene sleeves and washers or prevent contract between screw and glass. Do not over-tension the screws.

Frame fixing: Proprietary aluminium frames to mirror perimeter, corners mitred. If unbacked, bed glass edges in a continuous resilient gasket. Attach the frame to the substrate with concealed screw fixings. Seal the frame to the substrate with paintable sealant which will not react with the mirror coating. Do not allow the sealant to contact the mirror back.

Bead fixing: Rebated timber beads to mirror perimeter, corners mitred. If unbacked, bed glass edges in a continuous resilient gasket. Screw fix the beads to the substrate.

Clip fixing: Fix direct to wall plugs with chromium-plated fixed clip and spring clip fixings at 900 mm maximum centres around perimeter. If unbacked, provide polyethylene or cork washers to prevent contact between clips and mirror back.

Glazed shower screens

Water shedding

General: Provide an assembly which sheds water to the inside without retaining it on the frame surfaces. Seal the edge of the frame to adjoining surfaces with a resilient strip.

Sliding assemblies

Hanging: Hang the sliding sash on stainless steel or nylon sheaves on overhead channel track formed in the frame head, and fit nylon or equivalent bottom guides.

Hardware: Pull handles on both sides of sash, or of leading sash in multiple sash arrangements.

Fixing

Proprietary shower screens: To the manufacturer's recommendations.

Glass balustrades

Installation

General: Install proprietary glass barrier systems to the manufacturer's recommendations.

## 0471 THERMAL INSULATION AND PLIABLE MEMBRANES

General

Interpretation

Definitions

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

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

Products

Materials

Thermal insulation

Standard: To AS/NZS 4859.1.

Pliable building membrane

Standard: To AS/NZS 4200.1 and BCA 3.12.1.1.

Thermal break strips

Product type: Proprietary item.

R-Value (m<sup>2</sup>.K/W): ≥ 0.2.

Execution

General

Thermal insulation

Standard: To AS 3999 and BCA 3.12.1.1.

Installation: Firmly butt together, with no gaps except as follows:

- Access openings and vents: Do not obstruct.
- Light fittings: To AS/NZS 3000 clause 4.5.
- Electrical cables: To AS 3999 clause 2.6.

Pliable building membrane

Standard: To AS 4200.2 and BCA 3.12.1.1.

Floors

Under suspended framed floors

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

Below concrete slab on ground

Rigid cellular insulation boards:

- Laying pattern: Stretcher bond, with edges tightly butted.
- Damp-proof membrane: Lay over insulation.

Walls

Framed walls

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

Thermal break strips: To steel or timber framing with lightweight external cladding:

- Screw fixing: Button head screws at 1 m centres.
- Adhesive fixing: Wallboard adhesive walnuts at 1 m centres.

Masonry veneer cavity walls

Rigid cellular insulation boards:

- Installation: Fix boards horizontally with the tongue to the top edge, pushed over prefixed wall ties and held firmly against the wall frame. Keep boards clean, dry and free from mortar and grout. Do not bridge the cavity.
- Fixing: Hex head screws at 450 mm centres.

Flashings: Install flashings before installing insulation.

Prevent entry of water behind the insulation boards.

Full masonry cavity walls

Rigid cellular insulation boards:

- Installation: Fix boards horizontally with the tongue to the top edge and firmly against the inner brick skin. Keep boards clean, dry and free from mortar and grout. Do not bridge the cavity.

- Fixing: Proprietary plastic clips on pre-installed wall ties.
- Flashings: Install flashings before installing insulation. Prevent entry of water behind the insulation boards. Vapour permeable (breathable) membrane Requirement: Provide a vapour permeable membrane behind the external facing material that does not provide permanent weatherproofing or that may be subject to condensation forming on the internal face, including the following:
- Boards or planks fixed vertically or diagonally.
  - Boards or planks fixed in exposed locations where wind driven rain can penetrate the joints.
  - Unpainted or unsealed cladding.
  - Masonry veneer.

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

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

Ceilings

Framed ceilings

Fibre batts: Fit tightly between framing members.

Roofs

Metal roofs

Fibre batts: Fit tightly between framing members.

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

Combined fibre blanket and reflective insulation: Lay facing reflective insulation face downward.

Thermal break strips: Provide to steel framing supporting sheet metal roofing.

Pliable building membranes

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

Water control (sarking) membrane: Provide sarking under tile and shingle roofing.

## 0511 LINING

Products

Materials and components

Plasterboard

Standard: To AS/NZS 2588.

Fibre cement

Standard: To AS/NZS 2908.2.

Wall and ceiling linings: Type B, Category 2.

Minimum thickness: 4.5 mm.

Execution

Construction generally

Preparation

Requirement: Before fixing linings check and, if necessary, adjust the alignment of substrates or framing.

Substrate: Make sure substrates are plumb, level, in true alignment and to the lining manufacturer's recommendations.

Timber, steel framing and battened masonry: To AS/NZS 2589 clause 4.2.

Ceiling linings

General: Do not install until at least 14 days after the timber roof structure is fully loaded.

Accessories and trim

General: Provide accessories and trim as required to complete the installation.

Cornices: Proprietary item, as documented.

Plasterboard lining

Installation

Gypsum plasterboard: To AS/NZS 2589.

Supports

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

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

Joints

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

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

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

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

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

Fibre cement lining

Installation

General: Run sheets across the framing members. In flush jointed applications, stagger end joints in a brick pattern and locate them on framing members, away from the corners of large openings. Provide supports at edges and joints.

Timber framed construction: Nail only or combined with adhesive.

Steel framed construction: Screw only or combined with adhesive.

Wall framing: Conform to the following:

- Do not fix to top and bottom plates or noggings.
- In tiled areas: Provide an extra row of noggings immediately above wall-to-floor flashings. Fix sheet at 150 mm centres to each stud and around the perimeter of the sheet.

Ceilings: Fix using screws and/or adhesive to ceiling furring members. Do not fix sheets to the bottom chords of trusses.

Wet areas: Do not use adhesive fixing alone.

Supports

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

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

Joints

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

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

Dry joints: Provide square edged sheet and finish with a PVC-U joining section.

Control joints: Provide purpose-made metallic-coated control joint beads at not more than 7.2 m centres in

walls and ceilings and to coincide with structural control joints.

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

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

- Control joints: Not more than 4.2 m centres and space to suit joints required in tiling.
- Internal corners: Reinforce with metallic-coated steel angles. In corners subject to continuous moisture, flash over the angle and under the sheeting with continuous bitumen coated aluminium flashing.

## 0551 JOINERY

Products

Joinery materials and components

Joinery timber

Hardwood for trim: To AS 2796.1.

Hardwood for furniture: To AS 2796.3.

Seasoned cypress pine: To AS 1810.

Softwood for trim: To AS 4785.1.

Softwood for furniture: To AS 4785.3.

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

Execution

Joinery

General

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

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

Accessories and trim

General: Provide accessories and trim necessary to complete the installation.

Timber stairs

Set-out

General: Set out stair rod to give uniform risers and uniform treads respectively in each flight.

Fabrication

Closed strings: Trench for treads and risers.

Cut strings: Profile for treads and risers. Mitre riser ends.

Treads: Arris nosings to a pencil-round. Return nosings at cut strings. Groove for riser tongue in closed riser stair.

Set riser 19 mm back from nosing.

Top tread: Flush with finished floor, otherwise to match stair treads. Provide similar tread section as nosing to floor edges around stairwell.

Risers: Tongue to tread. Mitre to string in cut-string stairs.

Installation

General: Glue joints in internal work. In closed riser stairs, wedge treads and risers to strings. Plant 2 glue-blocks behind each tread to riser junction. Trim floors to carry ends of stairs and around stairwell.

Stair bolts (to open rise close string stairs): Provide 8 mm diameter mild steel stair bolts, one at each end and one at centre of flight, transversely between strings. Draw strings tight against ends of treads.

Fascia: Provide fascia of sufficient depth to overlap 19 mm below ceiling, and fixed to floor joists hard up under nosing.

Trim: Provide beads and mouldings as necessary, including a scotia or similar planted under the tread nosing against the risers and cut strings, a bead between wall strings and wall, and a bead behind the fascia over the ceiling finish.

Timber balustrades

General

Requirement: Provide a balustrade to the stair and landing, consisting of newels, handrail, balusters, and associated mouldings.

Newels

General: Halve and bolt to strings. Turn tops to detail.

Handrails

General: On edge. Bullnose arrises 13 mm radius. Stub tenon to newels.

Balusters

General: At 100 mm centres. Stub tenon to handrail at top and to tread or floor at bottom.

Trim

General

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

Proprietary items: Provide complete with installation accessories.

Fixing

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

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

## 0572 MISCELLANEOUS FIXTURES AND APPLIANCES

Execution

Proprietary stair system

General

Materials, design and construction: To BCA 3.9.1.

Straight flight stair

Requirement: Provide a proprietary system, pre-assembled and fixed in place, comprising the following:

- Stair flights with treads and risers.
- Top landing.
- Balustrade to stair flight and landing.

Circular stairs

Requirement: Provide a proprietary system, mechanically assembled and fixed in place, comprising the following:

- A central steel tube column.
- Prefabricated metal treads sleeved over and cantilevered from the column.
- Top landing.
- Balustrade and handrail to stair and landing.
- Spacers, fixings and accessories necessary to complete the system.

Balustrades

Steel balustrades

Fabrication method: Welding.

Joints: Produce smooth unbroken surfaces at joints.

Scribe the joints between posts and rails. Make end-to-end joints over an internal sleeve.

Free ends: Seal the free ends of pipes with fabricated or purpose-made end caps.

Fixing: Provide fabricated predrilled or purpose-made brackets or post bases, and attach sections to the building structure with fixings, including bolts into masonry anchors, and coach screws or bolts into timber, of metal compatible with the section.

Finish: Apply protective coatings as documented and to the manufacturer's recommendations.

Proprietary balustrades

Requirement: Provide a proprietary system, pre-assembled and fixed in place, comprising the following:

- Posts, rails and balusters.
- Infill frame and panels.
- Handrails.

## 0611 RENDERING AND PLASTERING

General

Interpretation

Abbreviations

General: For the purpose to this worksection the following abbreviations apply:

- CRF: Cement render – finish.
- CRM: Cement render – medium.
- CRS: Cement render – stronger.
- CRW: Cement render – weaker.
- GPF: Gypsum plaster – finish.

Products

Materials and components

Accessories

Beads: Provide metal proprietary sections manufactured for fixing to substrates and/or embedding in the plaster to form and protect plaster edges and junctions.

Admixtures

Plasticisers or workability agents: Do not use in cement plasters.

Aggregates

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

Bonding products

General: Proprietary products manufactured for bonding cement-based plaster to solid substrates.

Cement

Standard: To AS 3972.

Type: GP.

Cornice cement

General: Provide a proprietary product manufactured for use with the cornice.

Cornices

Cast plaster: Proprietary item.

Lime

Limes for building: To AS 1672.1.

Lime putty

General: Prepare lime putty as follows:

- Stand dry hydrate of lime to AS 1672.1 and water for 24 hours or more without drying out.
- Stand quicklime and water for 14 days or more without drying out.

Lath

General: Provide a proprietary product for use with plaster.

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

External: Stainless steel or PVC-U.

Beads

General: Provide a proprietary product for use with plaster.

Internal: Metallic-coated sheet AZ 150, minimum.

External: Stainless steel or PVC-U.

Mixes

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

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

Plaster mixing: Machine mix for 3 to 6 minutes.

LAYOUT ID	LAYOUT	Specifications, Notes	DATE	REV ID	CHANGE/S	PROJECT ID-	PROJECT	IMPORTANT NOTES
21	SCALE @A3		Work in Progress	01 - WIP		New Class 1a dwelling		All work must comply with the NCC and all relevant standards, laws, codes, specifications and development consent conditions. All structural work must be to engineer's detail. All dimensions are in mm to structure without finishes unless otherwise stated. Do not scale drawings; work to express dimensions only. Drawings are not for construction purposes until issued and certified for construction. Prior to construction, check all dimensions and levels on site, confirm compliance with building surveyor/certifier and notify any discrepancies. No copyright - Open Source - attribution Jiri Lev Architect
	ISSUE ID	01				SITE	-	
	ISSUE	Open source plans				ADDRESS	-	
	ISSUED	Work in Progress				CLIENT	-	
	PRINTED	28/11/2024						

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

Control joint products

General: Provide proprietary products manufactured for use with the plastering system and to accommodate the anticipated movement of the substrates and/or the plaster.

Water

General: Clean and free from any deleterious matter.

Execution

Preparation

Substrates

General: Provide substrates as follows:

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

Absorbent substrates: If suction is excessive, control it by dampening but avoid over-wetting and do not plaster substrates showing surface moisture.

Dense concrete: If not sufficiently rough to provide a mechanical key, roughen by scabbling or the like to remove 2 mm of the laitance and expose the aggregate then apply a bonding treatment.

Painted surfaces: Remove paint and hack the surface at close intervals.

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

Beads

Location: Fix beads as follows:

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

Joints in beads: Provide dowels to maintain alignment.

Mechanical fixing to substrate: ≤ 300 mm centres.

Bonding treatment

General: If bonding treatment is required, throw a wet mix onto the background. Mix proportions to the following:

- Cement plaster (cement:sand): 1:2.
- Gypsum plaster (gypsum:sand): 1:2.

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

Thickness: ≥ 3 < 6 mm.

Embedded items

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

Lath

Location: Provide lath as follows:

- Chases: If chases or recesses are 50 mm wide or greater, fix metal lath extending 75 mm or more beyond each side of the chase or recess.
- Masonry and concrete substrates: If mechanical key cannot be attained by scabbling and bonding, fix metal lath.
- Metal and other non-porous backgrounds: Fix metal lath to provide a key.

Weepholes

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

Application

Plastering

Base coats: Scratch-comb each base coat in two directions when it has stiffened.

Metal lath: Press the plaster through the apertures of expanded metal lath and wings of beads.

Incidental work

General: Return plaster into reveals, beads, sills, recesses and niches. Plaster faces, ends, and soffits of projections in the substrate, such as string courses, sills, pilasters and corbels. Run neatly finished throating on soffits of external projections. Trim around openings.

Plaster exposed internal surfaces of built-in cupboards.

Joining up

General: If joining up is required, make sure joints are imperceptible in the finished work after decoration.

Control joints

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

Size:

- Depth: Extend the joint right through the plaster and reinforcement to the substrate.
- Width: 3 mm, or the same width as the substrate joint, whichever is greater.

Damp-proof courses: Do not continue plaster across damp-proof courses.

Plastering on metal lath: Provide control joints to divide the plastering area into rectangular panels 10 m2 or less.

V-joints: Provide V-joints, cut right through the plaster to the substrate, at the following locations:

- Abutments with metal door frames.
- Abutments with other finishes.
- Junctions between different substrates.

Cornices

General: Accurately cut and mitre corners. Match and align ornament. Do not make butt joints in the length of a cornice unless required, or full lengths are not available.

Installation: Butter edges, mitres and joins for full length of the cornice with adhesive.

Mechanical fixing: If cornice projects across a ceiling 400 mm or more, provide additional mechanical fixing:

- Fixing centres: ≤ 600 mm.

Decorative joints

General: Apply decorative joints in the second coat of two coat work as required.

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

Temperature

General: If the ambient temperature is 10°C or less or 30°C or more make sure that the temperature of mixes, substrates and reinforcement at the time of application are between 5°C and 35°C.

Tolerances

General: Finish plane surfaces within a tolerance of 6 mm in 2400 mm, determined using a 2400 mm straightedge placed anywhere in any direction. Finish

corners, angles, edges and curved surfaces within equivalent tolerances.

Finishes

Finishing treatments

Plain even surfaces: Work the hardening plaster as follows:

- Bag: Rub the finish coat when set firm with a hessian pad or similar.
- Carborundum stone: Rub the finish coat when set hard with a carborundum stone to achieve a finish free from sand.
- Foam float: Float finish coat on application with a wood or plastic float to an even surface and finish with a foam float to achieve a fine sand textured finish.
- Steel trowel: Steel trowel finish coat to a smooth dense surface which is not glass-like and is free from shrinkage cracks and crazing.
- Wood or plastic float: Float the finish coat on application with a wood or plastic float to an even surface.

Completion

Curing

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

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

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

## 0621 WATERPROOFING - WET AREAS

General

Standards

Waterproofing wet areas

Standard: To AS 3740.

Products

Products

Membranes

Standard: To AS/NZS 4858.

Membrane systems

Requirement: Proprietary membrane system suitable for the intended internal waterproofing.

Shower tray

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

Waterstop angles

Material: Rigid, corrosion-resistant angles compatible with the waterproof membrane system.

Bond breakers

Requirement: Compatible with the extensibility class of the membrane to be used.

Material: Purpose-made bond breakers tapes or fillets of sealant.

Sealants

Requirement: Waterproof or water-resistant, flexible, mould-resistant and compatible with the waterproofing system.

Execution

Preparation

Substrates

General: Prepare substrates as follows:

- Clean and remove any deposit or finish which may impair adhesion of membranes.
- If walls are plastered, remove loose sand.

- If walls or floors are framed or discontinuous, make sure members are supported in full lengths without splicing.
- If floors are solid or continuous:
  - Remove excessive projections.
  - Fill voids and hollows greater than 10 mm with abrupt edges with a cement:sand mix not stronger than the substrate nor weaker than the bedding.
  - Fill depressions less than 10 mm with a latex modified cementitious product with feathering eliminated by scabbling the edges.
  - Fill cracks in substrates wider than 1.5 mm with a filler compatible with the membrane system.

Concrete substrates: Cure for at least 28 days.

External corners: Round or arris edges.

Moisture content

Requirement: Verify that the moisture content of the substrate is compatible with the water vapour transmission rate of the membrane system by testing to the recommendations of AS 3740 Appendix F.

Falls

Membranes applied to substrate: Make sure the fall in the substrate conforms to the fall documented for the finish.

Waterstop angles

Requirement: Provide waterstop angles at door thresholds and shower enclosures to support the waterproof membrane at junctions between waterproofed and non-waterproofed areas.

Sizing: Size the vertical leg of the waterstop angle to conform to the requirements of AS 3740.

Corners: Cut the horizontal leg and bend the vertical leg at corners instead of forming vertical joints between separate lengths of angle.

Fixing: Fix waterstop angles to the substrate with compatible sealant or adhesive and corrosion-resistant countersunk or wafer head screws.

Bond breakers

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

Sealant fillet bond breakers:

- Application: Form a triangular fillet or cove of sealant to internal corners within the period recommended by the membrane manufacturer after the application of the primer.
- Widths: Conform to AS 3740 Table 4.10.

Installation

Ambient conditions

Requirement: Do not install in conditions outside the manufacturer's recommendations.

Protection

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

Extent of waterproofing

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

Drainage connections

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

Vertical membrane terminations

Upstands:

- Shower areas with hobs and step-downs: Minimum 150 mm above the finished tile level of the floor or 25 mm above the maximum retained water level, whichever is the greater.
- Shower areas without hobs: Minimum 150 mm above the highest finished tile level of the floor within the shower area.

Anchoring: Secure sheet membranes along the top edge.

Edge protection: Protect edges of the membrane.

Showers with hobs

Masonry or concrete hob: Extend membrane over the hob and into the room at least 50 mm.

Metal hob: Provide metal angle with height at least 15 mm above the finished floor level of the floor outside the shower. Terminate the membrane within 5 mm from the top of the angle. Seal the gap between the shower screen and the angle.

Unenclosed showers

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

Curing of liquid applied systems

General: To the manufacturer's instructions.

Curing: Allow membrane to fully cure before tiling.

Overlaying finishes on membranes

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

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

Completion

Reinstatement

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

Warranties

Requirement: Cover materials and workmanship in the terms of the warranty in the form of interlocking warranties from the supplier and the applicator.

- Form: Against failure of materials and execution under normal environment and use conditions.
- Period: As offered by the supplier.

## 0631 CERAMIC TILING

General

Standards

Tiling

General: Conform to the recommendations of AS 3958.1.

Slip resistance

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

Products

Tiles and accessories

Tiles

Standard: To AS ISO 13006.

Coves, nosings and skirtings: Provide matching stop-end and internal and external angle tiles moulded for that purpose.

Exposed edges: Purpose-made border tiles with the exposed edge (whether round, square or cushion) glazed to match the tile face. If such tiles are not available, mitre tiles on external corners.

Accessories

General: If available, provide tile accessories such as round edge ceramic tiles, cove tiles, step treads and nosings to stairs, landings, and thresholds, skirtings, sills,

copings and bath vents, which match the surrounding tiles, composition, colour and finish.

Materials

Adhesives

Standard: To AS ISO 13007.1.

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

Mortar materials

Cement type to AS 3972: GP.

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

Bedding mortar

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

Water

General: Clean and free from any deleterious matter.

Grout

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

Terracotta tiles: Provide proprietary polymer modified grout.

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

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

Execution

Substrates

Drying and shrinkage

General: Before tiling, allow at least the following times to elapse (for initial drying out and shrinkage) for these substrates:

- Concrete slabs: 42 days.
- Concrete blockwork: 28 days.
- Toppings on slabs and rendering on brick or blockwork: A further 21 days.
- Rendering on swimming pool shells: A further 21 days minimum.

Preparation

Substrates without wet area membranes

General: Make sure substrates are as follows:

- Clean and free of any deposit or finish which may impair adhesion or location of tiles.
- If framed or discontinuous, support members are in full lengths without splicing.
- If solid or continuous:
  - Remove excessive projections.
  - Fill voids and hollows greater than 10 mm with abrupt edges with a cement:sand mix not stronger than the bedding.
  - Fill depressions less than 10 mm with a latex modified cementitious product and eliminate feathering by scabbling the edges.

Absorbent substrates: If suction is excessive, control it by dampening but avoid over-wetting and do not apply mortar bedding to substrates showing surface moisture.

Dense concrete: If not sufficiently rough to provide a mechanical key, roughen by scabbling or the like to remove 3 mm of the surface and expose the aggregate; then apply a bonding treatment.

Substrates with wet area membranes

General: Make sure substrates are as follows:

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

Tiling generally

Cutting and laying

Cutting: Cut tiles neatly to fit around fixtures and fitting and at margins where necessary. Drill holes without damaging tile faces. Cut recesses for fittings such as soap holders. Rub edges smooth without chipping.

Laying: Return tiles into sills, reveals and openings. Butt up to returns, frames, fittings, and other finishes. Strike and point up beds where exposed. Remove tile spaces before grouting.

Variations

General: Distribute variations in hue, colour, or pattern uniformly, by mixing tiles or tile batches before laying.

Protection

Floor tiles: Keep traffic off floors until the bedding has set and attained its working strength.

Floor finish dividers

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

Bath ventilation

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

Setting out

Tile joints

Joint widths: Set out tiles to give uniform joint widths within the following limits:

- Floors:
  - Dry pressed tiles: 3 mm.
  - Extruded tiles: 6 mm.
  - Vitrified: 3 to 5 mm.
  - Quarry tiles: 6 to 12 mm.
- Mounted mosaics: To match mounting pattern.
- Walls:
  - Dry pressed tile: 1.5 mm.
  - Extruded tile: 6 mm.

Joint alignment: Set out tiling with joints accurately aligned in both directions and wall tiling joints level and plumb.

Joint position: Set out tiles from the centre of the floor or wall to be tiled and, if possible, make sure cut tiles are a half tile or larger.

Fixtures: If possible, position tiles so that holes for fixtures and other penetrations occur at the intersection of horizontal and vertical joints or in the centre of tiles.

Falls and levels

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

Fall, general: 1:100 minimum.

Fall, in shower areas: 1:60 minimum.

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

Bedding

Preparation of tiles

Adhesive bedding: Fix tiles dry; do not soak.

Mortar bedding: Soak porous tiles in water for half an hour and then drain until the surface water has disappeared.

Terracotta tiles: Use pre-sealed tiles or apply a breathable sealer and lay dry. If a final sealed finish is selected, use a compatible laying sealer.

Bedding

General: Use bedding methods and materials which are appropriate to the tile, the substrate, the conditions of service, and which leave the tile firmly and solidly bedded

in the bedding material and adhered to the substrate.

Form falls integral with the substrate.

Grouted and sealant joints

Grouted joints

General: Commence grouting as soon as practicable after bedding has set. Clean out joints as necessary before grouting.

Face grouting: Fill the joints solid and tool flush. Clean off surplus grout. Wash down when the grout has set. When grout is dry, polish the tiled surface with a grout film remover and clean cloth.

Sealant joints

General: Provide sealant joints filled with sealant and finished flush with the tile surface as follows:

- Where tiling is cut around sanitary fixtures.
- At corners of walls in showers.
- Around fixtures interrupting the tile surface, for example pipes, brackets, bolts and nibs.
- At junctions with elements such as window and door frames and built-in cupboards.

Material: Anti-fungal modified silicone.

Width: 5 mm.

Depth: Equal to the tile thickness.

## 0651 RESILIENT FINISHES

General

Standards

General

Installation: To AS 1884.

Products

Materials

Resilient flooring

General: Proprietary resilient flooring, as documented.

Wet process fibreboard (hardboard) hard underlay

Standard: To AS/NZS 1859.4.

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

Thickness: 5.5 mm.

Execution

Preparation

Substrates

General: To AS 1884 Section 3.

Concrete substrates

Moisture content: Do not start installation of the resilient finishes until the concrete substrate conforms to AS 1884 clause 3.1 and the adhesive and resilient finish manufacturer's recommendations.

Substrate rectification: Conform to the following:

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

Cleaning: Remove loose materials or dust.

Timber, plywood and particleboard substrates

Requirement: Do not start installation of the resilient finishes until the timber, plywood or particleboard substrate conforms to AS 1884 clause 3.6.

Substrate rectification: Remove projections. If conformance to a planeness tolerance of 4 mm in 2 m determined using a 2 m straightedge cannot be achieved,

provide an underlay in brick pattern with joints avoiding substrate joints.

Working environment

General: Do not start work before the building is enclosed, wet work is complete and dry, overhead work is complete and good lighting is available. Protect adjoining surfaces.

Installation

Sheet set-out

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

Tile set-out

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

Plank set-out

General: Set out planks from centre of room. Align patterns, texture and grain in one direction.

Joints

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

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

Junctions

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

Completion

Protection

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

Reinstatement

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

Cleaning

General: Clean the finished surface. Buff and polish.

Before the date for practical completion, mop and leave the finished surface clean and undamaged on completion.

## 0652 CARPETS

Products

Materials

Carpet

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

Total VOC emission tested to ISO 10580: < 0.5 mg/m<sup>2</sup>/h.

Wet process fibreboard (hardboard) hard underlay

Standard: To AS/NZS 1859.4.

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

Thickness: 5.5 mm.

Soft underlay

Standard: To AS 4288.

Hot-melt adhesive tapes

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

Preformed carpet grippers

General: Architectural plywood carpet grippers with 3 rows of corrosion-resistant angled pins of length appropriate to the carpet type to AS 2455.1 clause 1.5.4.

Edge strips

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

Execution

Preparation

Substrates

Cleaning concrete surfaces: Mechanically remove the following surface treatments:

- Sealers and hardeners.
- Curing compounds.

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

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

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

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

Moisture content

General: Do not start installation unless:

- Concrete substrate: The moisture content of the concrete has been tested to AS 2455.1 Appendix B and values in AS 2455.1 Appendix B have been obtained.
- Timber, plywood or particleboard substrates: The moisture content of the substrate has been tested to AS/NZS 1080.1 for timber and particleboard or AS/NZS 2098.1 for plywood and values obtained as follows:
  - Air conditioned buildings: 8 to 10%.
  - Intermittently heated buildings: 10 to 12.5%.
  - Unheated buildings: 12 to 15%.

Laying carpet

Standard

General: To AS 2455.1.

Setting out

Joints in underlay: Make sure joints in underlay do not coincide with carpet joints. Do not carry underlay over carpet grippers or edge strips.

Seaming methods

Woven carpet: Machine or hand sew.

Tufted carpet: Seam with hot-melt adhesive tapes.

## 0655 TIMBER FLOORING

Products

General

Storage and handling

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

Adhesive

Ventilation: Provide ventilation appropriate for moisture curing.

Strip flooring

New timber

LAYOUT ID
23

LAYOUT	Specifications, Notes
SCALE @A3	
ISSUE ID	01
ISSUE	Open source plans
ISSUED	Work in Progress
PRINTED	28/11/2024

DATE
Work in Progress

REV ID
01 - WIP

CHANGE/S

WORK IN PROGRESS

PROJECT ID-	
PROJECT	New Class 1a dwelling
SITE	-
ADDRESS	-
CLIENT	-

IMPORTANT NOTES
All work must comply with the NCC and all relevant standards, laws, codes, specifications and development consent conditions. All structural work must be to engineer's detail. All dimensions are in mm to structure without finishes unless otherwise stated. Do not scale drawings; work to express dimensions only. Drawings are not for construction purposes until issued and certified for construction. Prior to construction, check all dimensions and levels on site, confirm compliance with building surveyor/certifier and notify any discrepancies. No copyright - Open Source - attribution Jiri Lev Architect

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

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

Recycled timber  
Standard: To FWPA PN06.1039.

- Grading: To Section 5.1.

Product certification scheme  
Identification: Identify timber products using branding or certification.  
Branding: Locate the brand mark on faces which will be concealed in the works.  
Execution  
Support fixing  
Battens for strip flooring on steel joists  
General: Screw fix seasoned battens along the steel joists with countersunk screws so that their top surfaces are aligned.  
Fixing timber flooring  
Room environment  
General: Fix flooring in the average in-service environment. During fixing operate the heating system of radiant heated or air conditioned rooms at 1.5°C above normal maximum temperature.  
Control joints  
Perimeters: Provide 10 mm wide expansion joints against vertical building elements.  
Strip flooring: For floors greater than 6000 mm wide allow for expansion using one of the following methods:

- Expansion gaps: Partially cramp strip flooring to allow a 1 mm gap every 600 mm or 1.5 mm/m.
- Intermediate expansion joints: Divide floors into maximum widths of 6000 mm with expansion joints 12 mm wide filled with cork.

Adhesive fixing  
Strip flooring: Use a polyurethane elastomer adhesive in addition to nails.  
Mechanical fixing  
General: Make sure boards are in contact with the subfloor at the time of fixing, particularly where boards are machine nailed. If nails are to be less than 12 mm from ends of boards, pre-drill nail holes 0.5 to 1 mm undersize.  
Top nailing: For boards of 65 to 130 mm cover width, use two nails.  
Secret fixing: Do not use boards of more than 85 mm cover width, and use one staple or cleat skewed at 45° through edges.  
Sinking: Punch nails 3 mm below finished surfaces and fill the sinking flush with a material tinted to match the darker tone of the flooring which is compatible with the floor finish.  
Strip flooring

General: Blend floor boards from more than one pack to distribute the colour range and grade features throughout the floor.  
Installation: Lay in straight and parallel lines with each board firmly butted to the next and firmly in contact with the subfloor. If land over joists or battens cramp sufficient only to bring the boards together and no more than 800 mm of flooring at any one time. With secret fixing do not cramp more than one board at a time.  
Fixing to softwood joists or battens: Apply adhesive in addition to mechanical fixing.  
Set-out: Locate joints in boards so that they are evenly distributed as follows:

- General: Staggered randomly and at least 450 mm apart.
- Butt joints: Centrally on supports.
- End-matched joints: Not adjacent within the same span between joists/battens.
- Minimum number of spans across supports: 2.

Completion  
Protection  
General: Provide protection as follows:

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

## 0702 MECHANICAL DESIGN AND INSTALL

General  
Standards  
General  
Mechanical ventilation: To AS 1668.1 and AS 1668.2, as required by the NCC.  
Refrigeration systems: To AS/NZS 5149.1, AS/NZS 5149.2, AS/NZS 5149.3 and AS/NZS 5149.4.  
Mechanical systems: Conform to the recommendations of SA HB 276.  
Heating and cooling systems: To AS/NZS 5141.  
Air conditioning design  
Standards  
General: To the recommendations of one or more of the following:

- AIRAH Design Application Manuals.
- ASHRAE Handbooks.
- CIBSE Guides.

Method of calculation: Manual or software that employs the data and methods in the above standards.  
Design criteria  
Outside design conditions: Use outdoor design conditions listed in AIRAH DA09, Table 1 or Table 1A for the following:

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

Inside design conditions:

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

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

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

Zoning: Divide the systems into temperature controlled zones to meet the specified permissible limits in temperature variation and the system divisions documented.  
Fresh air: Supply fresh air to spaces with air conditioning systems via the air handling system.  
Heating: Reverse cycle.  
Windows, walls, floors and roofs: Refer to drawings for construction and insulation.  
Internal window shading type: As documented.  
Ambient noise emitted: Lower than the level that can be heard within a habitable room in any neighbouring residential premises, regardless of whether any door or window to that room is open.  
Products  
Air conditioning equipment  
Standards - ducted systems  
Ducted air conditioners: To AS/NZS 3823.1.2.

Standards - non-ducted systems  
Non-ducted air conditioners: To AS/NZS 3823.1.1.  
Equipment  
Performance: Supply equipment as follows:

- Made by a manufacturer with a demonstrated ability to provide spare parts and service promptly to the site.
- Operational within the documented range of outdoor design conditions under the calculated loads without excessive head pressure or icing.
- Labelled to AS/NZS 3823.2.

Refrigerant: Provide refrigerant listed as Safety Group A1 or A2L in AS/NZS ISO 817 and having an Ozone Depletion Potential of 0 and Global Warming Potential less than 700.  
Reverse cycle units: Provide effective outdoor coil defrost facility that prevents room temperature dropping more than 2°C during defrost.  
Split systems and variable refrigerant flow systems: Provide indoor and outdoor units from the same manufacturer, designed and automatically controlled to operate as an integrated whole, under the documented operating conditions and over the whole capacity range of the system.  
Cabinet: Aluminium, powder coated steel or moulded ABS plastic with metallic-coated steel or stainless steel fasteners. Insulate and vapour seal cabinet and drain trays to prevent external condensation under all operating conditions.  
Drain trays: Aluminium, stainless steel or plastic to collect all moisture inside indoor and outdoor units.  
Filters: Washable panel type with at least 85% of arrestance when tested to AS 1324.2, Test Dust No.4.  
Coils: Copper tube with aluminium plate fins.  
Controls

General: Provide the following functions:

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

Execution  
Ductwork  
Standard  
Flexible duct: To AS 4254.1.  
Rigid ductwork: To AS 4254.2.  
Flexible duct

Material: Aluminised fabric clamped on formed metal helix with insulation blanket wrapped around duct and covered with an outer vapour barrier.  
Installation: Install flexible duct as straight as possible with minimum number of bends. Maximise bend radius but not less than required by AS 4254.1 clause 2.5.3(i). Check for and rectify any crushed flexible duct.  
Support: To AS 4254.1. Limit sag to less than 40 mm/m.  
Duct insulation  
General: Insulate ducts to reduce heat gain and prevent condensation. Provide continuous vapour barrier around ducts carrying conditioned air. Insulate flexible connections on ducts carrying air below ambient temperature.  
Cleaning  
General: Clean interior of ductwork progressively during installation.  
Refrigeration pipework  
General  
Pipes: To AS 1571.  
Deemed to comply: Split system manufacturer's standard pre-charged piping kit standard.  
Pipe insulation  
General: Insulate all refrigerant and drain piping that may sweat with chemically blown closed cell nitrile rubber in tubular form to ASTM C534. Protect insulation from sunlight and mechanical damage.  
Insulation thickness: 13 mm for pipes less than DN 20, 19 mm otherwise.  
Pipe duct  
Duct: Run exposed piping external to the building in a metallic-coated steel duct and run cables in the same duct. Provide a removable cover or similar for access.  
Paint duct to match the surrounding surface.

Condensate drains  
Requirement: Provide trapped, at least DN 20 condensate drains to AS/NZS 3666.1 from each indoor coil and safety tray. Provide drains from each reverse cycle outdoor coil unless casing freely drains to a roof or other location where condensate will not cause damage or pond.  
Unit installation  
General  
Outdoor equipment: Provide clearance around units for condenser air flow and maintenance access. Make sure discharge air does not short-circuit to condenser intake.  
Equipment at ground level: Mount on 100 mm level concrete plinth or equivalent impervious material.  
Duct connections: Provide internal or external flexible duct connections at indoor unit.  
Vibration isolation  
Suspended units: Provide at least 4 metal spring or rubber-in-shear isolation mountings with at least 25 mm static deflection and 98% isolation efficiency.  
Floor mounted units: Provide neoprene waffle pads. Bolt in place.  
Safety trays  
General: If leaks or condensation from equipment could cause nuisance or damage to the building or its contents, provide a galvanized steel safety tray under the equipment.  
Completion  
Commissioning  
General: Commission the systems to manufacturer's recommendations using instruments calibrated within the past 12 months.  
Checklist: Submit signed commissioning checklist before the date for practical completion.  
Cleaning

General: Clean filters, outdoor coils, grilles and diffusers before the date for practical completion.  
Operating and maintenance instructions  
Requirement: Provide written operating and maintenance instructions containing the following:

- Contractor's contact details for service calls.
- Manufacturers' maintenance and operation literature.
- Manufacturers' warranty certificates if the manufacturers' warranty period is greater than the defects liability period.
- Description of day to day operation.
- Setting of time switches.
- Schedule of recommended maintenance.

Record drawing: Provide a drawing of the system as installed.  
Maintenance  
General  
Maintenance period: The greater of 12 months from the date of completion of commissioning of the systems and the duration of the Defects Liability Period.  
Corrective maintenance: Attend site and undertake corrective maintenance within 24 hours of receipt of verbal or written advice.  
Preventative maintenance: Provide preventative maintenance recommended by the equipment manufacturer. Provide all materials including consumable items and refrigerant.  
Summer preventative maintenance visit: Provide at least one preventative maintenance visit during the months of December, January or February. Carry out preventative maintenance and provide electronic data logger or thermohydrograph to record temperatures at one location in each zone over a period of 7 days. Submit results. If the temperature recorded is outside the specified tolerance identify and correct the cause and repeat the test.  
Maintenance reports: Submit a signed maintenance report setting out the work done and any measured values after each visit.

## 0802 HYDRAULIC DESIGN AND INSTALL

General  
Standards  
General  
Plumbing and drainage: To the AS/NZS 3500 series.  
Authorised products: Listed in the WaterMark Product Database, unless otherwise required by the network utility operator.  
Execution  
Installation  
Connections to Network Utility Operator mains  
General: Excavate to locate and expose the connection points and connect to the Network Utility Operator mains.  
On completion, backfill and compact the excavation and reinstate surfaces and elements which have been disturbed such as roads, pavements, kerbs, footpaths and nature strips.  
Piping  
Requirement: Install piping in straight lines and to uniform grades. Arrange and support the piping so that it remains free from vibration and water hammer, while permitting thermal movement. Keep the number of joints to a minimum. Prevent direct contact between incompatible metals.  
Embedded pipes: Do not embed pipes that operate under pressure in concrete or surfacing material.

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	ISSUE	Open source plans
	ISSUED	Work in Progress
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Work in  
Progress

REV ID  
01 - WIP

CHANGE/S

WORK IN PROGRESS

PROJECT ID-  
PROJECT New Class 1a dwelling  
SITE -  
ADDRESS -  
CLIENT -

IMPORTANT NOTES  
All work must comply with the NCC and all relevant standards, laws, codes, specifications and development consent conditions. All structural work must be to engineer's detail. All dimensions are in mm to structure without finishes unless otherwise stated. Do not scale drawings; work to express dimensions only. Drawings are not for construction purposes until issued and certified for construction. Prior to construction, check all dimensions and levels on site, confirm compliance with building surveyor/certifier and notify any discrepancies. No copyright - Open Source - attribution Jiri Lev Architect

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

Building penetrations: If piping or conduit penetrates building elements, provide metal or PVC-U sleeves formed from oversized pipe sections.

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

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

Finishes

General

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

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

Cold and heated water

Standards

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

Copper pipe: To AS 4809.

Pipe material

General: Provide pipework for the reticulation of cold and heated water and as documented.

Tap positions

Requirement: Locate hot tap to the left of, or above, the cold water tap.

Fittings and accessories

General: Provide the accessories and fittings necessary for the proper functioning of the plumbing systems, including taps, valves, outlets, pressure and temperature control devices, strainers, gauges and pumps.

Water heaters

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

Types:

- Electric water heaters: To AS/NZS 4692.1.
  - Energy performance: To AS/NZS 4692.2.
- Gas hot water heaters: To AS/NZS 5263.1.2. If a flue damper is available for the water heater supplied, provide one.
- Energy performance: To AS/NZS 4552.2.
- Solar water heaters: To AS/NZS 2712.
- Heat pump water heaters: To AS/NZS 2712.
- Gas instantaneous water heaters: To AS/NZS 5601.1.
- Electric instantaneous water heaters: To AS/NZS 60335.2.35.

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

Isolating valves: Provide isolation valves to water heaters.

Heated water temperature

Standard: To AS/NZS 3500.4.

Maximum temperature at ablation outlets: 50°C.

Maximum recommended temperature at kitchen sinks and laundry tubs: 60°C.

Hot water temperature control

Requirement: Provide thermostatic mixing valves or special taps that automatically control the temperature at the mixed outlet to a preselected temperature.

Cleaning

General: On completion, flush the pipelines using water and leave pipelines clean.

Cleaning

General: On completion, flush the pipelines using water and leave pipelines clean.

Stormwater

Standards

General: To AS/NZS 3500.3.

Cleaning

General: During construction, use temporary covers to openings and keep the system free of debris. On completion, clean and flush the system.

Pipe laying

General: Lay pipelines with the spigot ends in the direction of flow.

Downpipe connections

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

Subsoil drains

Connection: Connect subsoil drains to the stormwater drainage system.

Trench width: Minimum 450 mm.

Subsoil drains: Provide proprietary perforated plastic pipe.

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

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

Pits

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

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

Wastewater

Standards

General: To AS/NZS 3500.2.

Waterless composting toilets: To AS/NZS 1546.2.

On-site domestic wastewater treatment units: To AS 1546.3.

Cleaning

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

On completion: Clean and flush the system.

Septic tanks

Standard: To AS/NZS 1546.1.

Effluent disposal: To AS 1547.

Vent pipes

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

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

Rainwater tanks

Standards

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

Rotationally moulded tanks: To AS/NZS 4766.

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

Coated steel tanks: Metallic-coated steel with polymer film to AS 2070 on the inside and prepainted on the outside.

Bladder tanks: Proprietary plastic bladder type constructed from polymer conforming to AS 2070, resistant to puncture and microbial attack.

Rainwater tanks

Accessories: Provide accessories needed to complete the installation and constructed from corrosion resistant material compatible with the tank material. Include the following:

- Inlet and outlet connections.
- Floating outlet to draw water from the upper part of the tank.
- Tight fitting lids or insect proof screens at all openings.
- Flap valves at every opening to the tank.
- Calmed inlet to the tank to prevent stirring sediment.
- Flywire screened overflow siphon to skim surface contaminants.
- Vermín proof, childproof access opening.
- Easily cleanable filter before the entry to the tank with maximum 1 mm mesh size.

First flush diverter

General: Provide a first flush diverter. Arrange to drain completely.

Sizing: Select for at least 20 L/100 m<sup>2</sup> rainwater catchment area.

Construction: Corrosion resistant and compatible with the rainwater plumbing and tank.

Discharge: Discharge waste water from the first flush diverter either:

- If permitted by the local authority, onto grassed areas away from tank and building footings.
- To the stormwater installation.

Installation

Requirement: Provide structural support to withstand the mass of the tank when full without deformation or excessive settling. Support connecting piping independently of the tank. Provide a 300 mm long section of reinforced flexible hose to prevent piping exerting a load on the tank. Pipe overflow to discharge away from the tank. Prevent the entry of sunlight to the interior of the tank.

Above ground tanks: Restrain the tank to prevent movement, when empty, caused by wind and other loads. Provide a level base with gaps not exceeding 10 mm, free of sharp projections and projecting beyond the edge of the tank at all points.

Rotationally moulded tanks: Trim and compact the ground and place a level bed of sand at least 50 mm thick.

Coated steel tanks: Fully support the tank on a self-draining timber or concrete base. Prevent contact with dissimilar metals. Arrange so that no part of the tank is below ground level and so that adjacent ground surfaces fall away from the tank. Do not use sharp objects inside the tank. Remove swarf with a magnet if drilling or cutting.

Bladder tanks: Locate on level base free from sharp objects. Install with manufacturer's supporting frame.

Provide over-pressurising relief and air vent.

Cleaning: Flush the rainwater system. Wash and flush tanks to remove manufacturing and other contaminants.

Greywater systems

Standards

Design and installation: To AS 1546.4.

Greywater diversion devices

WaterMark: Required.

Access: Locate to facilitate access for inspection and maintenance.

Tanks

General: Provide an appropriately sized surge tanks.

Overflow: Pipe to sewer.

Arrangement: Prevent the entry of sunlight to the interior of the tank.

Backflow prevention

Standard: To AS/NZS 3500.1 and the requirements of the network utility operator.

Gas

Standard

Reticulated gas systems: To AS/NZS 5601.1.

Buried pipes

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

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

Commissioning

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

## 0902 ELECTRICAL DESIGN AND INSTALL

General

Standards

General

Electrical installation: To AS/NZS 3000.

Electrical cable selection: To AS/NZS 3008.1.1.

Telecommunications cabling: To AS/CA S008, AS/CA S009 and AS/NZS 11801.1.

Interpretation

Abbreviations

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

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

Definition

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

- Telephony: Speech and low band frequencies (= 100 kHz).

Execution

General

Applications and compliance

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

Consumers mains and metering

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

Electricity distributor's requirements: Provide metering, protection, and control equipment as required by the ED SI&R .

Switchboards

Standard: To AS/NZS 61439.3.

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

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

Maximum demand and spare capacity

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

Spare capacity: Provide the following:

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

Load balancing: Spread electrical load equally across circuits to prevent overloading and inadvertent circuit breaker operation.

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

Accessories

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

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

Wet areas: Position accessories in locations containing baths showers or other fixed water containers to comply with the requirements of AS/NZS 3000.

Wiring

Concealed cables and conduits: Provide conduits as necessary to allow wiring replacement without structural work or the removal of cladding, lining, plaster or cement rendering.

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

Installation: Do not penetrate damp-proof courses.

Arrange wiring such that it does not bridge the cavity in external masonry.

Conduit sizes: Provide conduits of sufficient internal diameter and arranged so that cables are not subject to undue mechanical stress during installation.

Minimum conduit diameter: 20 mm.

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

Luminaires

Standard: To AS/NZS 60598.1.

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

Minimum energy performance standards:

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

Lighting control systems

General: Locate grouped dimmers and control devices for future access. Provide ventilation and acoustic treatment to suit the device characteristics.

Appliances

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

Isolation switch: Provide isolating switch adjacent to equipment.

Telecommunications

Submissions: Submit required applications for telecommunications services to the telecommunications services carrier and liaise with the carrier.

Installations requiring telephony only: To AS/CA S009.

Small office/home office installations: Category 6, to AS/CA S009 and AS 11801.4.

Television systems

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25	SCALE @A3		Work in Progress	01 - WIP		New Class 1a dwelling	All work must comply with the NCC and all relevant standards, laws, codes, specifications and development consent conditions. All structural work must be to engineer's detail. All dimensions are in mm to structure without finishes unless otherwise stated. Do not scale drawings; work to express dimensions only. Drawings are not for construction purposes until issued and certified for construction. Prior to construction, check all dimensions and levels on site, confirm compliance with building surveyor/certifier and notify any discrepancies. No copyright - Open Source - attribution Jiri Lev Architect
	ISSUE ID	01				SITE	
	ISSUE	Open source plans				ADDRESS	
	ISSUED	Work in Progress				CLIENT	
	PRINTED	28/11/2024					

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

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

Network systems

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

Conduits for future cabling: ≥ 25 mm diameter with drawstrings.

Intruder alarm system

General: Provide intruder alarm system.

Standard: To AS/NZS 2201.1.

Smoke detection system

General: Provide smoke alarms to the requirements of the BCA 3.7.5. Connect smoke alarms to mains power.

Labelling

General: Provide labels including control and circuit equipment ratings, functional units, notices for operational and maintenance personnel, incoming and outgoing circuit rating, sizes and origin of supply.

Telecommunications cables: Label telecommunications cables, cross connects and outlets in accordance with the requirements of AS/NZS 11801.1.

Label colours

Generally: Black lettering on white background except as follows:

- Main switch and caution labels: Red lettering on white background.
- Danger, warning labels: White lettering on red background.

Completion

Testing and certification

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

Telecommunications cabling: To AS 11801.4. Test the cable link performance at the maximum frequency and data rate for the cable class, and the cable category.

Provide a certificate showing test results and certifying compliance with AS 11801.4.

Submission: Provide ACMA Telecommunications Cabling Advice (TCA1) form.

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

Abbreviations

AB	Air brick
AC	Air conditioning
AHD	Australian height datum
AL	Aluminium
AP	Acoustic plaster
AR	Acid-resistant
ASPH	Asphalt
AT	Acoustic tiling
AW	Acid waste
BC	Bookcase
BLKT	Blanket
BP	Butlers pantry
BV	Brick veneer
BWK	Brickwork
COOK	Cooker
CC	Chemical closet
CD	Clothes dryer
COR	Corrugated
CPD	Cupboard
CR	Cement render

CT	Ceramic tile
CW	Cavity wall
D	Door
DF	Drinking fountain
DG	Double glazing
DH	Double hung
DP	Downpipe
DPC	Damp-proof course
DPM	Damp-proof membrane
DW	Dishwasher
ENS	Ensuite
EX	Existing
FXD	Fixed
FB	Face brick
FC	Fibrous cement
FCL	Finished ceiling level
FFL	Finished floor level
FP	Fireplace
FW	Floor waste
GEW	Glazed earthenware
GFL	Ground floor level
GRANO	Granolithic
GRC	Glass-reinforced concrete
GRP	Glass-reinforced plastic
HTR	Heater
HWU	Hot water unit
LIN	Linoleum
NP	Nickel plated
OFC	Off-form concrete
ORG	Overflow relief gully with tap over
PC	Precast concrete
PTRY	Pantry
QT	Quarry tile
REF	Refrigerator
RC	Reinforced concrete
RL	Reduced level
RS	Roller shutter
RWH	Rainwater head
RWP	Rainwater pipe
RWT	Rainwater tank
SD	Smoke detector/alarm
SFL	Structure finished level
SP	Standpipe
SS	Stainless steel
SWR	Shower
TC	Terracotta
TRZO	Terrazzo
URL	Urinal
US	Underside
VNL	Vinyl
W	Window
WB	Weatherboard
WC	Water closet
WIR	Walk-in robe
WM	Washing machine
WR	Wardrobe
WRC	Western red cedar
YG	Yard gully

LAYOUT ID

26

LAYOUT

SCALE @A3

ISSUE ID

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ISSUE

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IMPORTANT NOTES

All work must comply with the NCC and all relevant standards, laws, codes, specifications and development consent conditions. All structural work must be to engineer's detail. All dimensions are in mm to structure without finishes unless otherwise stated. Do not scale drawings; work to express dimensions only. Drawings are not for construction purposes until issued and certified for construction. Prior to construction, check all dimensions and levels on site, confirm compliance with building surveyor/certifier and notify any discrepancies.

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3.1 GENERAL

This Section specifies general requirements for the construction of buildings for all Bushfire Attack Levels (BALs).

The BALs and the corresponding Sections for specific construction requirements are listed in Table 3.1.

TABLE 3.1  
BUSHFIRE ATTACK LEVELS AND CORRESPONDING SECTIONS FOR SPECIFIC CONSTRUCTION REQUIREMENTS

Bushfire Attack Level (BAL)	Classified vegetation within 100 m of the site and heat flux exposure thresholds	Description of predicted bushfire attack and levels of exposure	Construction Section
BAL—LOW	See Clause 2.2.3.2	There is insufficient risk to warrant specific construction requirements	4
BAL—12.5	≤12.5 kW/m²	Ember attack	3 and 5
BAL—19	>12.5 kW/m² ≤19 kW/m²	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux	3 and 6
BAL—29	>19 kW/m² ≤29 kW/m²	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux	3 and 7
BAL—40	>29 kW/m² ≤40 kW/m²	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux with the increased likelihood of direct contact with flames	3 and 8
BAL—FZ	>40 kW/m²	Direct exposure to flames from fire front in addition to heat flux and ember attack	3 and 9

3.2 CONSTRUCTION REQUIREMENTS FOR SPECIFIC STRUCTURES

3.2.1 Attached structures and structures sharing a common roof space

Where any part of a garage, carport, veranda, cabana, studio, storage area or similar roofed structure is attached to, or shares a common roof space with, a building required to conform with this Standard, the entire garage, carport, veranda or similar roofed structure shall conform with the construction requirements of this Standard, as applicable to the subject building.

Alternatively, the structure shall be separated from the subject building by a wall that extends to the underside of a non-combustible roof covering, and that conforms with one of the following:

- (a) The wall shall have an FRL of not less than 60/60/60 for loadbearing walls and –/60/60 for non-loadbearing walls when tested from the attached structure side and shall have openings protected as follows:
- (i) *Doorways*—by self-closing fire doors with an FRL of –/60/30, conforming with AS 1905.1 and tested in accordance with AS 1530.4.
- (ii) *Windows*—by fire windows with an FRL of –/60/– when tested in accordance
- (iii) *Other openings*—by construction with an FRL of not less than –/60/– when tested in accordance with AS 1530.4.
- NOTE: Control and construction joints, subfloor vents, weepholes and penetrations for pipes and conduits need not conform with Item (iii).
- or
- (b) The wall shall be of masonry, earth or masonry-veneer construction with the masonry leaf of not less than 90 mm in thickness and shall have openings protected as follows:
- (i) *Doorways*—by self-closing fire doors with an FRL of –/60/30, conforming with AS 1905.1 and tested in accordance with AS 1530.4.
- (ii) *Windows*—by fire windows with an FRL of –/60/– when tested in accordance with AS 1530.4 and permanently fixed in the closed position.
- (iii) *Other openings*—by construction with an FRL of not less than –/60/– when tested in accordance with AS 1530.4.
- NOTE: Control and construction joints, subfloor vents, weepholes and penetrations for pipes and conduits need not conform with Item (iii).

3.2.2 Garages and carports beneath the subject building

Where a garage or carport is beneath a building required to comply with this Standard, it shall conform with the construction requirements of this Standard, as applicable to the subject building.

Alternatively, any construction separating the garage or carport (including walls and flooring systems) from the remainder of the building shall conform with one of the following:

- (a) The separating construction shall have an FRL of not less than 60/60/60 for loadbearing construction and –/60/60 for non-loadbearing construction when tested from the garage or carport side and shall have openings protected in accordance with the following:
- (i) *Doorways*—by self-closing fire doors with an FRL of –/60/30, conforming with AS 1905.1 and tested in accordance with AS 1530.4.
- (ii) *Windows*—by fire windows with an FRL of –/60/– when tested in accordance with AS 1530.4 and permanently fixed in the closed position.
- (iii) *Other openings*—by construction with an FRL of not less than –/60/– when tested in accordance with AS 1530.4.
- NOTE: Control and construction joints, subfloor vents, weepholes and penetrations for pipes and conduits need not conform with Item (iii).
- or
- (b) Where part or all of the separating construction is a wall, the wall need not conform with Item (a) above, provided the wall is of masonry, earth or masonry-veneer construction with the masonry leaf of not less than 90 mm in thickness and the wall has openings protected in accordance with the following:
- (i) *Doorways*—by self-closing fire doors with an FRL of –/60/30 conforming with AS 1905.1 and tested in accordance with AS 1530.4.
- (ii) *Windows*—by fire windows with an FRL of –/60/– when tested in accordance with AS 1530.4 and permanently fixed in the closed position.
- (iii) *Other openings*—by construction with an FRL not less than –/60/– when tested in accordance with AS 1530.4.
- NOTE: Control and construction joints, subfloor vents, weepholes and penetrations for

3.2.3 Adjacent structures on the subject allotment

Where any garage, carport, or similar roofed structure on the subject allotment is not attached to a building required to conform with this Standard, that structure shall conform with the construction requirements of this Standard.

Alternatively, the adjacent structure shall be separated from the subject building by one of the following:

- (a) A distance of not less than 6 m from the building required to conform with this Standard. This distance is measured as any of the horizontal straight lines from the adjacent structure to the subject building.
- or
- (b) A wall of the building required to conform that extends to the underside of a non-combustible roof covering and has an FRL of not less than 60/60/60 for loadbearing walls and –/60/60 for non-loadbearing walls when tested from the outside. Any openings in the wall shall be protected in accordance with the following:
- (i) *Doorways*—by self-closing fire doors with an FRL of –/60/30, conforming with AS 1905.1 and tested in accordance with AS 1530.4.
- (ii) *Windows*—by fire windows with an FRL of –/60/– when tested in accordance with AS 1530.4 and permanently fixed in the closed position.
- (iii) *Other openings*—by construction with an FRL of not less than –/60/– when tested in accordance with AS 1530.4.
- NOTE: Control and construction joints, subfloor vents, weepholes and penetrations for pipes and conduits need not conform with Item (iii).
- or
- (c) A wall of the building required to conform that extends to the underside of a non-combustible roof covering and is of masonry, earth or masonry-veneer construction with the masonry leaf of not less than 90 mm in thickness. Any openings in the wall shall be protected in accordance with the following:
- (i) *Doorways*—by self-closing fire doors with an FRL of –/60/30, conforming with AS 1905.1 and tested in accordance with AS 1530.4.
- (ii) *Windows*—by fire windows with an FRL of –/60/– when tested in accordance with AS 1530.4 and permanently fixed in the closed position.
- (iii) *Other openings*—by construction with an FRL of not less than –/60/– when tested in accordance with AS 1530.4.
- NOTE: Control and construction joints, subfloor vents, weepholes and penetrations for pipes and conduits need not conform with Item (iii).

3.3 EXTERNAL MOULDINGS

Unless otherwise required in Clause 3.6.1 and Sections 5 to 9, combustible external mouldings, jointing strips, trims and sealants may be used for decorative purposes or to cover joints between sheeting material.

3.4 HIGHER LEVELS OF CONSTRUCTION

The construction requirements specified for a particular BAL shall be acceptable for a lower level.

NOTE: For example, if the site has been assessed at BAL—12.5, BAL—12.5 construction is required; however any element or combination of elements contained in BAL—19, BAL—29, BAL—40 and BAL—FZ levels of construction may be used to satisfy this Standard.

3.5 REDUCTION IN CONSTRUCTION REQUIREMENTS DUE TO SHIELDING

Where an elevation is not exposed to the source of bushfire attack, then the construction requirements for that elevation can reduce to the next lower BAL. However it shall not reduce to below BAL—12.5.

An elevation is deemed to be not exposed to the source of bushfire attack if all of the straight lines between that elevation and the source of bushfire attack are obstructed by another part of the same building (see Figure 3.1). However it shall not reduce to below BAL 12.5.

The shielding of an elevation shall apply to all the elements of the wall, including openings, but shall not apply to subfloors or roofs.

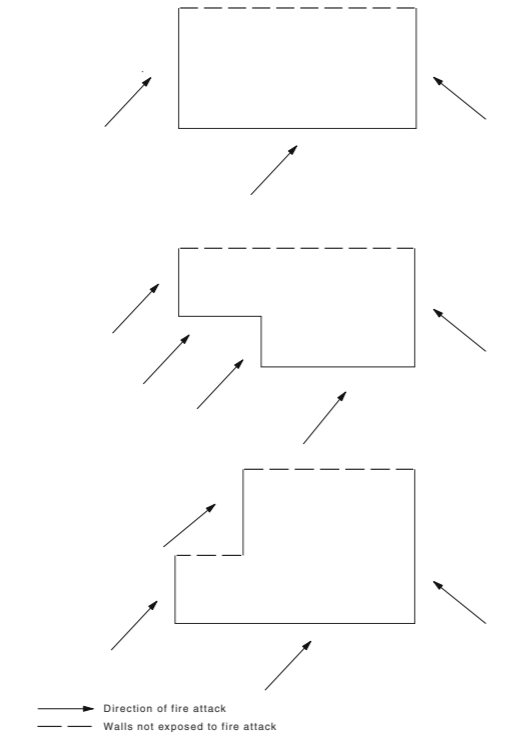


FIGURE 3.1 EXAMPLES OF WALLS SUBJECT TO SHIELDING

3.6 VENTS, WEEPHOLES, GAPS AND SCREENING MATERIALS

3.6.1 Vents, weepholes, joints and the like

All gaps including vents, weepholes and the like shall be screened, except for weepholes to the sills of windows and doors.

All joints shall be suitably backed with a breathable sarking or mesh, except as permitted by Clause 3.3.

The maximum allowable aperture size of any mesh or perforated material used as a screen shall be 2 mm.

**C3.6.1** Weepholes in sills of windows and doors and those gaps between doors and door jambs, heads or sills (thresholds) are exempt from screening because they do not provide a direct passage for embers to the interior of the building or building cavity.

3.6.2 Gaps to door and window openings

Where screens are fitted to door openings for ember protection, they shall have a maximum aperture of 2.0 mm and be tight fitting to the frame in the closed position.

Gaps between doors including jambs, heads or sills (thresholds) shall be protected using draught seals and excluders or the like (see Figure 3.2).

Windows conformant with AS 2047 will satisfy the requirements for gap protection. Screens fitted to window openings shall have a maximum aperture of 2.0 mm and these shall be tight fitting to the frames.

**C3.6.2** There are no requirements to screen the openable parts of doors for ember protection at the lower BALs, however in many circumstances it may be desirable to screen the opening for insect protection. In such circumstances, where the insect screen is fitted internally, such screens may be considered as a door furnishing and the use of non-metallic mesh permissible, provided the screening system is fitted internally and wholly protected by the closed door.

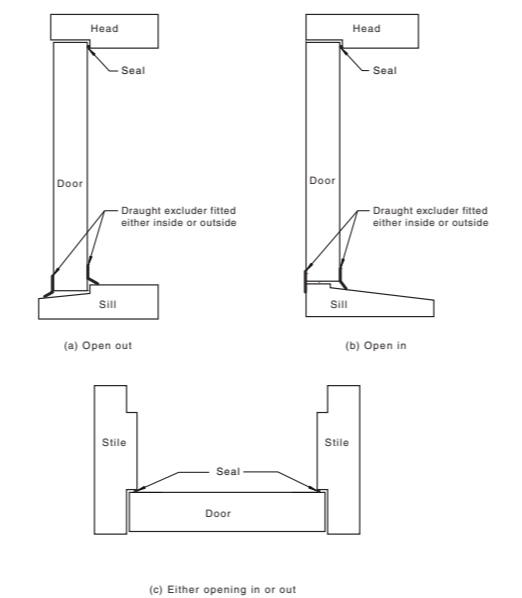


FIGURE 3.2 GAPS BETWEEN DOORS AND THE DOOR JAMBS, HEADS OR SILLS (THRESHOLDS)

3.7 BUSHFIRE SHUTTERS

Bushfire shutters shall—

- (a) protect the entire window assembly including framing, glazing, sash and sill;
- (b) protect the entire door assembly including framing, glazing, sill and hardware;
- (c) consist of materials specified in Clauses 5.5.1, 6.5.1, 7.5.1, 8.5.1 and 9.5.1 for the relevant BAL;
- (d) be fixed to the building and be non-removable;

- (e) be capable of being closed manually from either inside or outside or motorised shutter systems, where they are not reliant on mains power to close;
- NOTE: If power-assisted shutter systems are used then that system is powered with continuous back-up energy such as a battery system.
- (f) when in the closed position, have no gap greater than 2 mm between the shutter and the wall, frame or sill; and
- (g) where perforated, have uniformly distributed perforations with a maximum aperture of 2 mm and a perforated area no greater than 20% of the shutter.

If bushfire shutters are fitted to all external doors then at least one of those shutters shall be operable from the inside to facilitate safe egress from the building.

3.8 TESTING OF MATERIALS, ELEMENTS OF CONSTRUCTION AND SYSTEMS TO THE AS 1530.8 SERIES

Unless otherwise specified, elements of construction and systems satisfy this Standard when tested in accordance with the AS 1530.8 series for the relevant BAL level and Crib Class in Table 3.2.

Elements of construction or systems tested in accordance with AS 1530.8.1—2007 with Crib Class A prior to the issue of this Standard are acceptable.

TABLE 3.2  
TESTING OF MATERIALS, ELEMENTS OF CONSTRUCTION AND SYSTEMS

Acceptable test criteria	Relevant allowable BAL level	Crib class
AS 1530.8.1	BAL—12.5 to BAL—40	AA
AS 1530.8.2	BAL—FZ	Not applicable

Where any element of construction or system satisfies the test criteria in the AS 1530.8 series without screening for ember protection, the requirements of this Standard for screening of openable parts of windows shall still apply.

Where a window protected with a shutter satisfies the test criteria of the AS 1530.8 series, the additional requirements of this Standard for screening of openable parts of windows do not apply.

NOTE: The ember protection function of tested shutter has been verified by the testing.

3.9 GLAZING

Glazing requirements shall be in accordance with Sections 5 to 9 of this Standard.

NOTES:

- 1 Where double-glazed assemblies are used, the glazing requirements provided in this Standard apply to the external face of the glazed assembly only.
- 2 Refer to AS 1288 for an explanation of the terminologies used to describe various types of glass in this Standard.

3.10 SARKING

Where sarking is required in Sections 5 to 9, the flammability index shall not exceed five when tested to AS 1530.2.

**C3.10** Sarking material is a principle component used to control condensation and is used for energy efficiency purposes under the NCC. It may be vapour permeable or impermeable dependant on its location within the structure. Seek independent advice regarding selection of sarking prior to installation.

3.11 TIMBER LOG WALLS

Where the thickness of a timber log wall is specified in Sections 5, 6 and 7, two criteria are nominated, as follows:

- (a) The nominal overall thickness is the overall thickness of the wall.
- (b) The minimum thickness is the thickness of the wall at the interface of two logs in the wall.

For most log profiles, the thickness of the log at the interface with an adjacent log is less than the overall thickness of the wall.

IMPORTANT NOTES

All work must comply with the NCC and all relevant standards, laws, codes, specifications and development consent conditions. All structural work must be to engineer's detail. All dimensions are in mm to structure without finishes unless otherwise stated. Do not scale drawings; work to express dimensions only. Drawings are not for construction purposes until issued and certified for construction. Prior to construction, check all dimensions and levels on site, confirm compliance with building surveyor/certifier and notify any discrepancies. No copyright - Open Source - attribution Jiri Lev Architect

LAYOUT ID

28

LAYOUT SCALE @A3 1:2

BAL-12.5

ISSUE ID 01

ISSUE Open source plans

ISSUED Work in Progress

PRINTED 28/11/2024

DATE

Work in Progress

REV ID

01 - WIP

CHANGE/S

PROJECT ID-

PROJECT New Class 1a dwelling

SITE -

ADDRESS -

CLIENT -

IMPORTANT NOTES

All work must comply with the NCC and all relevant standards, laws, codes, specifications and development consent conditions. All structural work must be to engineer's detail. All dimensions are in mm to structure without finishes unless otherwise stated. Do not scale drawings; work to express dimensions only. Drawings are not for construction purposes until issued and certified for construction. Prior to construction, check all dimensions and levels on site, confirm compliance with building surveyor/certifier and notify any discrepancies. No copyright - Open Source - attribution Jiri Lev Architect

SECTION 5 CONSTRUCTION REQUIREMENTS FOR BAL—12.5

5.1 GENERAL

A building assessed in Section 2 as being BAL—12.5 shall conform with Section 3 and Clauses 5.2 to 5.8.

Any element of construction or system that satisfies the test criteria of AS 1530.8.1 may be used in lieu of the applicable requirements contained in Clauses 5.2 to 5.8 (see Clause 3.8).

NOTE: BAL—12.5 is primarily concerned with protection from ember attack and radiant heat up to and including 12.5 kW/m<sup>2</sup> where the site is less than 100 m from the source of bushfire attack.

5.2 SUB-FLOOR SUPPORTS

This Standard does not provide construction requirements for subfloor support where the subfloor space is enclosed with—

(a) a wall that conforms with Clause 5.4; or

(b) a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium; or

(c) a combination of Items (a) and (b).

NOTE: This requirement applies to the subject building only and not to verandas, decks, steps, ramps and landings (see Clause 5.7).

C5.2 Combustible materials stored in the subfloor space may be ignited by embers and cause an impact to the building.

5.3 FLOORS

5.3.1 General

This Standard does not provide construction requirements for concrete slabs on the ground.

5.3.2 Elevated floors

5.3.2.1 Enclosed subfloor space

This Standard does not provide construction requirements for elevated floors, including bearers, joists and flooring, where the subfloor space is enclosed with—

(a) a wall that conforms with Clause 5.4; or

(b) a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium; or

(c) a combination of Items (a) and (b) above.

5.3.2.2 Unenclosed subfloor space

Where the subfloor space is unenclosed, the bearers, joists and flooring, less than 400 mm above finished ground level, shall be one of the following:

(a) Materials that conform with the following:

(i) Bearers and joists shall be—

(A) non-combustible; or

(B) bushfire-resisting timber (see Appendix F);or

(C) a combination of Items (A) and (B).

(ii) Flooring shall be—

(A) non-combustible; or

(B) bushfire-resisting timber (see Appendix F); or

(C) timber (other than bushfire-resisting timber), particleboard or plywood flooring where the underside is lined with sarking-type material or mineral wool insulation; or

(D) a combination of any of Items (A), (B) or (C);

or

(b) A system conforming with AS 1530.8.1.

This Standard does not provide construction requirements for elements of elevated floors, including bearers, joists and flooring, if the underside of the element is 400 mm or more above finished ground level.

5.4 WALLS

5.4.1 General

The exposed components of an external wall that are less than 400 mm from the ground or less than 400 mm above decks, carport roofs, awnings and similar elements or fittings having an angle of less than 18 degrees to the horizontal and extending more than 110 mm in width from the wall (see Figure D3, Appendix D) shall be one of the following:

(a) Non-combustible material including the following provided the minimum thickness is 90 mm:

(i) Full masonry or masonry veneer walls with an outer leaf of clay, concrete, calcium silicate or natural stone.

(ii) Precast or in situ walls of concrete or aerated concrete.

(iii) Earth wall including mud brick; or

(b) Timber logs of a species with a density of 680 kg/m<sup>3</sup> or greater at a 12% moisture content; of a minimum nominal overall thickness of 90 mm and a minimum thickness of 70 mm (see Clause 3.1.1); and gauge planed; or

(c) Cladding that is fixed externally to a timber-framed or a steel-framed wall and is—

(i) non-combustible material; or

(ii) fibre-cement a minimum of 6 mm in thickness; or

(iii) bushfire-resisting timber (see Appendix F); or

(iv) a timber species as specified in Paragraph E1, Appendix E; or

(v) a combination of any of Items (i), (ii), (iii) or (iv); or

(d) A combination of any of Items (a), (b) or (c).

This Standard does not provide construction requirements for the exposed components of an external wall that are 400 mm or more from the ground or 400 mm or more above decks, carport roofs, awnings and similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110 mm in width from the wall (see Figure D3, Appendix D).

5.4.2 Joints

All joints in the external surface material of walls shall be covered, sealed, overlapped, backed or butt-jointed.

5.4.3 Vents and weepholes

Except for exclusions provided in Clause 3.6, vents and weepholes in external walls shall be screened with a mesh made of corrosion-resistant steel, bronze or aluminium.

5.5 EXTERNAL GLAZED ELEMENTS, ASSEMBLIES AND DOORS

5.5.1 Bushfire shutters

Where fitted, bushfire shutters shall conform with Clause 3.7 and be made from—

(a) non-combustible material; or

(b) a timber species as specified in Paragraph E1, Appendix E; or

(c) bushfire-resisting timber (see Appendix F); or

(d) a combination of any of Items (a), (b) or (c).

5.5.2 Screens for windows and doors

Where fitted, screens for windows and doors shall have a mesh or perforated sheet made of corrosion-resistant steel, bronze or aluminium.

The frame supporting the mesh or perforated sheet shall be made from—

(a) metal; or

(b) bushfire-resisting timber (see Appendix F); or

(c) a timber species as specified in Paragraph E2, Appendix E.

5.5.3 Windows and sidelights

Window assemblies shall:

(a) Be completely protected by a bushfire shutter that conforms with Clause 3.7 and Clause 5.5.1; or

(b) Be completely protected externally by screens that conform with Clause 3.6 and Clause 5.5.2.

C5.5.3 For Clause 5.5.3(b), the screening needs to be applied to cover the entire assembly, that is including framing, glazing, sash, sill and hardware.

or

(c) Conform with the following:

(i) Frame material For window assemblies less than 400 mm from the ground or less than 400 mm above decks, carport roofs, awnings and similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110 mm in width from the window frame (see Figure D3, Appendix D),window frames and window joinery shall be made from one of the following:

(A) Bushfire-resisting timber (see Appendix F); or

(B) A timber species as specified in Paragraph E2, Appendix E; or

(C) Metal; or

(D) Metal-reinforced uPVC. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel.

There are no specific restrictions on frame material for all other windows.

(ii) Hardware There are no specific restrictions on hardware for windows.

(iii) Glazing Where glazing is less than 400 mm from the ground or less than 400 mm above decks, carport roofs, awnings and similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110 mm in width from the window frame (see Figure D3, Appendix D), this glazing shall be Grade A safety glass a minimum of 4 mm in thickness or glass blocks with no restriction on glazing methods.

NOTE: Where double-glazed assemblies are used above, the requirements apply to the external pane of the glazed assembly only. For all other glazing, annealed glass may be used in accordance with AS 1288.

(iv) Seals and weather strips There are no specific requirements for seals and weather strips at this BAL level.

(v) Screens The openable portions of windows shall be screened internally or externally with screens that conform with Clause 3.6 and Clause 5.5.2.

C5.5.3 For Clause 5.5.3(c), screening to openable portions of all windows is required in all BALs to prevent the entry of embers to the building when the window is open.

For Clause 5.5.3(c)(v), screening of the openable and fixed portions of some windows is required to reduce the effects of radiant heat on annealed glass and has to be externally fixed.

For Clause 5.5.3(c)(v), if the screening is required only to prevent the entry of embers, the screening may be fitted externally or internally.

5.5.4 Doors—Side-hung external doors (including French doors, panel fold and bi-fold doors)

Side-hung external doors, including French doors, panel fold and bi-fold doors, shall—

(a) be completely protected by bushfire shutters that conform with Clause 3.7 and Clause 5.5.1;

or

(b) be completely protected externally by screens that conform with Clause 3.6 and Clause 5.5.2;

or

(c) conform with the following:

(i) Door panel material Materials shall be—

(A) non-combustible; or

(B) solid timber, laminated timber or reconstituted timber, having a minimum thickness of 35 mm for the first 400 mm above the threshold; or

(C) hollow core, solid timber, laminated timber or reconstituted timber with a non-combustible kickplate on the outside for the first 400 mm above the threshold; or

(D) hollow core, solid timber, laminated timber or reconstituted timber protected externally by a screen that conforms with Clause 5.5.2; or

(E) for fully framed glazed door panels, the framing shall be made from metal or bushfire resisting timber (see Appendix F) or a timber species as specified in Paragraph E2, Appendix E or uPVC.

(ii) Door frame material Door frame materials shall be—

(A) bushfire resisting timber (see Appendix F); or

(B) a timber species as specified in Paragraph E2 of Appendix E; or

(C) metal; or

(D) metal-reinforced uPVC. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel.

(iii) Hardware There are no specific requirements for hardware at this BAL level.

(iv) Glazing the glazing shall be Grade A safety glass a minimum of 4 mm in thickness, or glass blocks with no restriction on glazing methods.

NOTE: Where double glazed units are used the above requirements apply to the external face of the window assembly only.

(v) Seals and weather strips Weather strips, draft excluders or draft seals shall be installed.

(vi) Screens There are no requirements to screen the openable part of the door at this BAL level.

(vii) Doors shall be tight-fitting to the door frame and to an abutting door, if applicable.

5.5.5 Doors—Sliding doors

Sliding doors shall—

(a) be completely protected by a bushfire shutter that conforms with Clause 3.7 and Clause 5.5.1;

or

(b) be completely protected externally by screens that conform with Clause 3.6 and Clause 5.5.2; or

(c) conform with the following:

(i) Frame material The material for door frames, including fully framed glazed doors, shall be—

(A) bushfire-resisting timber (see Appendix F); or

(B) a timber species as specified in Paragraph E2, Appendix E; or

(C) metal; or

(D) metal-reinforced uPVC and the reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel.

(ii) Hardware There are no specific requirements for hardware at this BAL level.

(iii) Glazing Where doors incorporate glazing, the glazing shall be grade A safety glass a minimum of 4 mm in thickness.

(iv) Seals and weather strips There are no specific requirements for seals and weather strips at this BAL level.

(v) Screens There is no requirement to screen the openable part of the sliding door at this BAL level.

(vi) Sliding panels Sliding panels shall be tight-fitting in the frames.

5.5.6 Doors—Vehicle access doors (garage doors)

The following applies to vehicle access doors:

(a) The lower portion of a vehicle access door that is within 400 mm of the ground when the door is closed (see Figure D4, Appendix D) shall be made from—

(i) non-combustible material; or

(ii) bushfire-resisting timber (see Appendix F); or

(iii) fibre-cement sheet a minimum of 6 mm in thickness; or

(iv) a timber species as specified in Paragraph E1, Appendix E; or

(v) a combination of any of Items (i), (ii), (iii) or (iv).

(b) All vehicle access doors shall be protected with suitable weather strips, draught excluders, draught seals or brushes. Door assemblies fitted with guide tracks do not need edge gap protection.

NOTES:

1 Refer to AS/NZS 4505 for door types.

2 Gaps of door edges or building elements should be protected as per Section 3.

C5.5.6(b) These guide tracks do not provide a direct passage for embers into the building.

(c) Vehicle access doors with ventilation slots shall be protected in accordance with Clause 3.6.

5.6 ROOFS (INCLUDING PENETRATIONS, EAVES, FASCIAS AND GABLES, AND GUTTERS AND DOWNPIPES)

5.6.1 General

The following applies to all types of roofs and roofing systems:

(a) Roof tiles, roof sheets and roof-covering accessories shall be non-combustible.

(b) The roof/wall and roof/roof junction shall be sealed or otherwise protected in accordance with Clause 3.6.

(c) Roof ventilation openings, such as gable and roof vents, shall be fitted with ember guards made of non-combustible material or a mesh or perforated sheet conforming with Clause 3.6 and, made of corrosion-resistant steel, bronze or aluminium.

(d) Only evaporative coolers manufactured in accordance with AS/NZS 60335.2.98 shall be used. Evaporative coolers with an internal damper to prevent the entry of embers into the roof space need not be screened externally.

5.6.2 Tiled roofs

Tiled roofs shall be fully sarked. The sarking shall—

(a) be located on top of the roof framing, except that the roof battens may be fixed above the sarking;

(b) cover the entire roof area including ridges and hips; and

(c) extend into gutters and valleys.

5.6.3 Sheet roofs

Sheet roofs shall—

(a) be fully sarked in accordance with Clause 5.6.2, except that foil-backed insulation blankets may be installed over the battens; or

(b) have any gaps sealed at the fascia or wall line, hips and ridges by—

(i) a mesh or perforated sheet that conforms with Clause 3.6 and that is made of corrosion-resistant steel, bronze or aluminium; or

(ii) mineral wool; or

(iii) other non-combustible material; or

(iv) a combination of any of Items (i), (ii) or (iii).

C5.6.3 Sarking is used as a secondary form of ember protection for the roof space to account for minor gaps that may develop in sheet roofing.

5.6.4 Veranda, carport and awning roof

The following applies to veranda, carport and awning roofs:

(a) A veranda, carport or awning roof forming part of the main roof space [see Figure D1(a), Appendix D] shall meet all the requirements for the main roof, as specified in Clauses 5.6.1 to 5.6.6.

(b) A veranda, carport or awning roof separated from the main roof space by an external wall [see Figures D1(b) and D1(c), Appendix D] conforming with Clause 5.4 shall have a non-combustible roof covering, except where the roof covering is a translucent or transparent material.

NOTE: There is no requirement to line the underside of a veranda, carport or awning roof that is separated from the main roof space.

5.6.5 Roof penetrations

The following applies to roof penetrations:

(a) Roof penetrations, including roof lights, roof ventilators, roof-mounted evaporative cooling units, aerials, vent pipes and supports for solar collectors or the like, shall be sealed. The material used to seal the penetration shall be non-combustible.

(b) Openings in vented roof lights, roof ventilators or vent pipes shall conform with Clause 3.6 and be made of corrosion-resistant steel, bronze or aluminium.

This requirement does not apply to a room sealed gas appliance.

NOTE: A gas appliance designed such that air for combustion does not enter from, or combustion products enter into, the room in which the appliance is located.

In the case of gas appliance flues, ember guards shall not be fitted.

NOTE: AS/NZS 5601 contains requirements for gas appliance flue systems and cowls. Advice can be obtained from manufacturers and State and Territory gas technical regulators.

(c) All overhead glazing shall be Grade A safety glass conforming with AS 1288.

(d) Glazed elements in roof lights and skylights may be of polymer provided a Grade A safety glass diffuser, conforming with AS 1288, is installed under the glazing. Where glazing is an insulating glazing unit (IGU), Grade A toughened safety glass of minimum 4 mm in thickness shall be used in the outer pane of the IGU.

(e) Flashing elements of tubular skylights may be of a fire-retardant material, provided the roof integrity is maintained by an under-flashing of a material having a flammability index not exceeding five.

(f) Evaporative cooling units shall be fitted with non-combustible butterfly closers as close as practicable to the roof level or the unit shall be fitted with non-combustible covers with a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.

(g) Vent pipes made from PVC are permitted.

(h) Eaves lighting shall be adequately sealed and not compromise the performance of the element.

5.6.6 Eaves linings, fascias and gables

The following applies to eaves linings, fascias and gables:

(a) Gables shall conform with Clause 5.4.

(b) Eaves penetrations shall be protected in the same way as roof penetrations, as specified in Clause 5.6.5.

(c) Eaves ventilation openings shall be fitted with ember guards in accordance with Clause 3.6 and made of corrosion-resistant steel, bronze or aluminium.

Joints in eaves linings, fascias and gables may be sealed with plastic joining strips or timber storm moulds.

This Standard does not provide construction requirements for fascias, bargeboards and eaves linings.

5.6.7 Gutters and downpipes

This Standard does not provide material requirements for—

(a) gutters, with the exception of box gutters; and

(b) downpipes.

If installed, gutter and valley leaf guards shall be non-combustible.

Box gutters shall be non-combustible and flashed at the junction with the roof with non-combustible material.

5.7 VERANDAS, DECKS, STEPS AND LANDINGS

5.7.1 General

Decking may be spaced.

There is no requirement to enclose the subfloor spaces of verandas, decks, steps, ramps or landings.

C5.7.7 Spaced decking is nominally spaced at 3 mm (in accordance with standard industry practice); however, due to the nature of timber decking with seasonal changes in moisture content, that spacing may range from 0 mm–5 mm during service. It should be noted that recent research studies have shown that gaps at 5 mm spacing afford opportunity for embers to become lodged in between timbers, which may contribute to a fire. Larger gap spacing of 10 mm may preclude this from happening but such a spacing regime may not be practical for a timber deck.

5.7.2 Enclosed subfloor spaces of verandas, decks, steps, ramps and landings

5.7.2.1 Materials to enclose a subfloor space

This Standard does not provide construction requirements for the materials used to enclose a subfloor space except where those materials are less than 400 mm from the ground.

Where the materials used to enclose a subfloor space are less than 400 mm from the ground, they shall conform with Clause 5.4.

5.7.2.2 Supports

This Standard does not provide construction requirements for support posts, columns, stumps, stringers, piers and poles.

5.7.2.3 Framing

This Standard does not provide construction requirements for the framing of verandas, pergolas, decks, ramps or landings (i.e. bearers and joists).

5.7.2.4 Decking, stair treads and the trafficable surfaces of ramps and landings

This Standard does not provide construction requirements for decking, stair treads and the trafficable surfaces of ramps and landings that are more than 300 mm from a glazed element.

Decking, stair treads and the trafficable surfaces of ramps and landings less than 300 mm (measured horizontally at deck level) from glazed elements that are less than 400 mm (measured vertically) from the surface of the deck (see Figure D2, Appendix D) shall be made from—

(a) non-combustible material; or

(b) bushfire-resisting timber (see Appendix F); or

(c) a timber species as specified in Paragraph E1, Appendix E; or

(d) uPVC; or

(e) a combination of any of Items (a), (b), (c) or (d).

5.7.3 Unenclosed subfloor spaces of verandas, decks, steps, ramps and landings

5.7.3.1 Supports

This Standard does not provide construction requirements for support posts, columns, stumps, stringers, piers and poles.

5.7.3.2 Framing

This Standard does not provide construction requirements for the framing of verandas, decks, ramps or landings (i.e. bearers and joists).

5.7.3.3 Decking, stair treads and the trafficable surfaces of ramps and landings

This Standard does not provide construction requirements for decking, stair treads and the trafficable surfaces of ramps and landings that are more than 300 mm from a glazed element.

Decking, stair treads and the trafficable surfaces of ramps and landings less than 300 mm (measured horizontally at deck level) from glazed elements that are less than 400 mm (measured vertically) from the surface of the deck (see Figure D2, Appendix D) shall be made from—

(a) non-combustible material; or

(b) bushfire-resisting timber (see Appendix F); or

(c) a timber species as specified in Paragraph E1, Appendix E; or

(d) a combination of any of Items (a), (b) or (c) above.

5.7.4 Balustrades, handrails or other barriers

This Standard does not provide construction requirements for balustrades, handrails and other barriers.

5.7.5 Veranda posts

Veranda posts—

(a) shall be timber mounted on galvanized mounted shoes or stirrups with a clearance of not less than 75 mm above the adjacent finished ground level; or

(b) less than 400 mm (measured vertically) from the surface of the deck or ground (see Figure D2, Appendix D) shall be made from—

(i) non-combustible material; or

(ii) bushfire-resisting timber (see Appendix F); or

(iii) a timber species as specified in Paragraph E1, Appendix E; or

(iv) a combination of any of Items (a) or (b).

5.8 WATER AND GAS SUPPLY PIPES

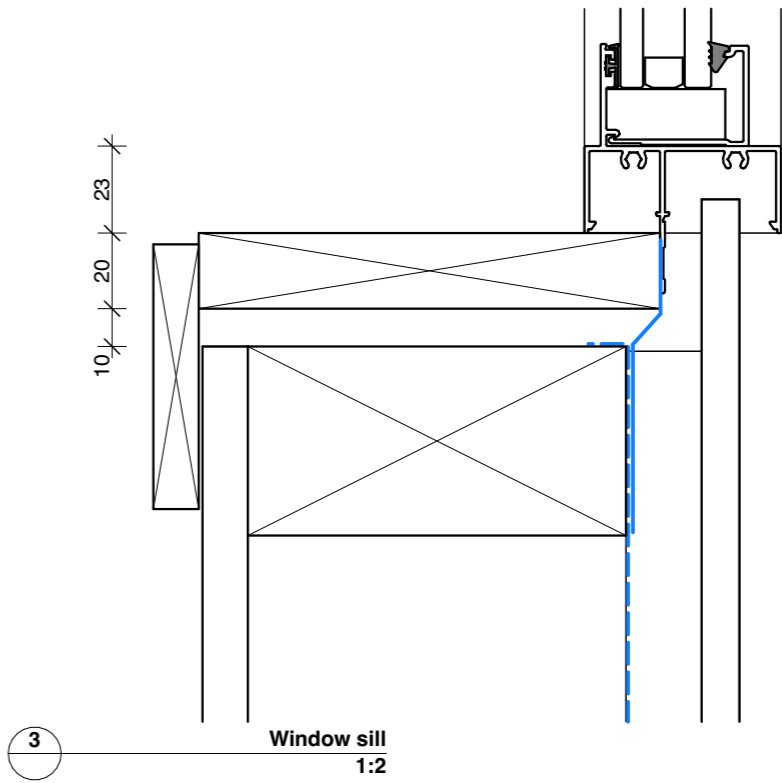
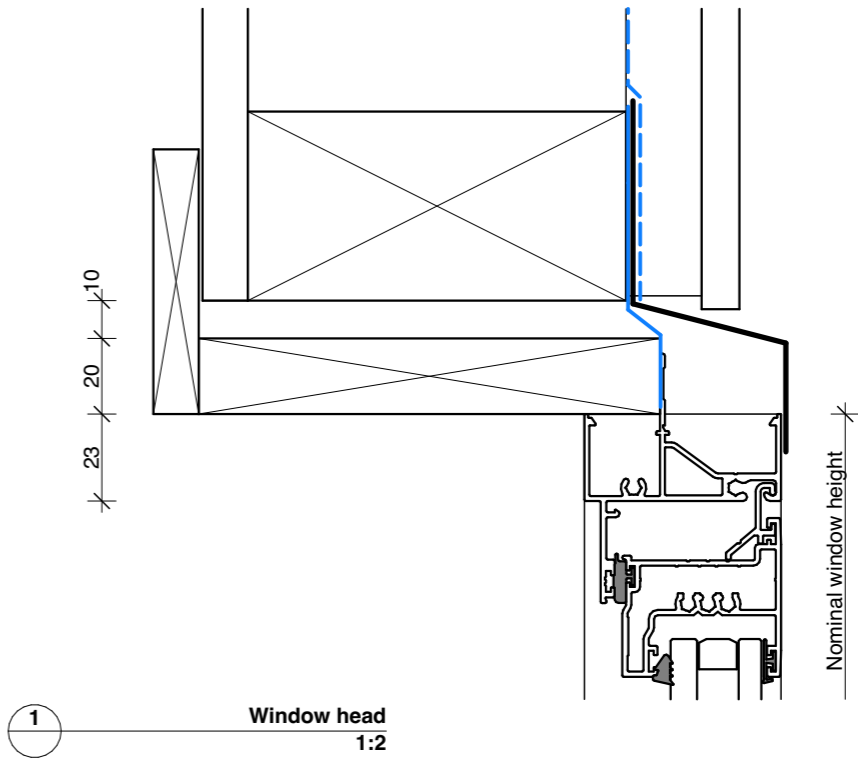
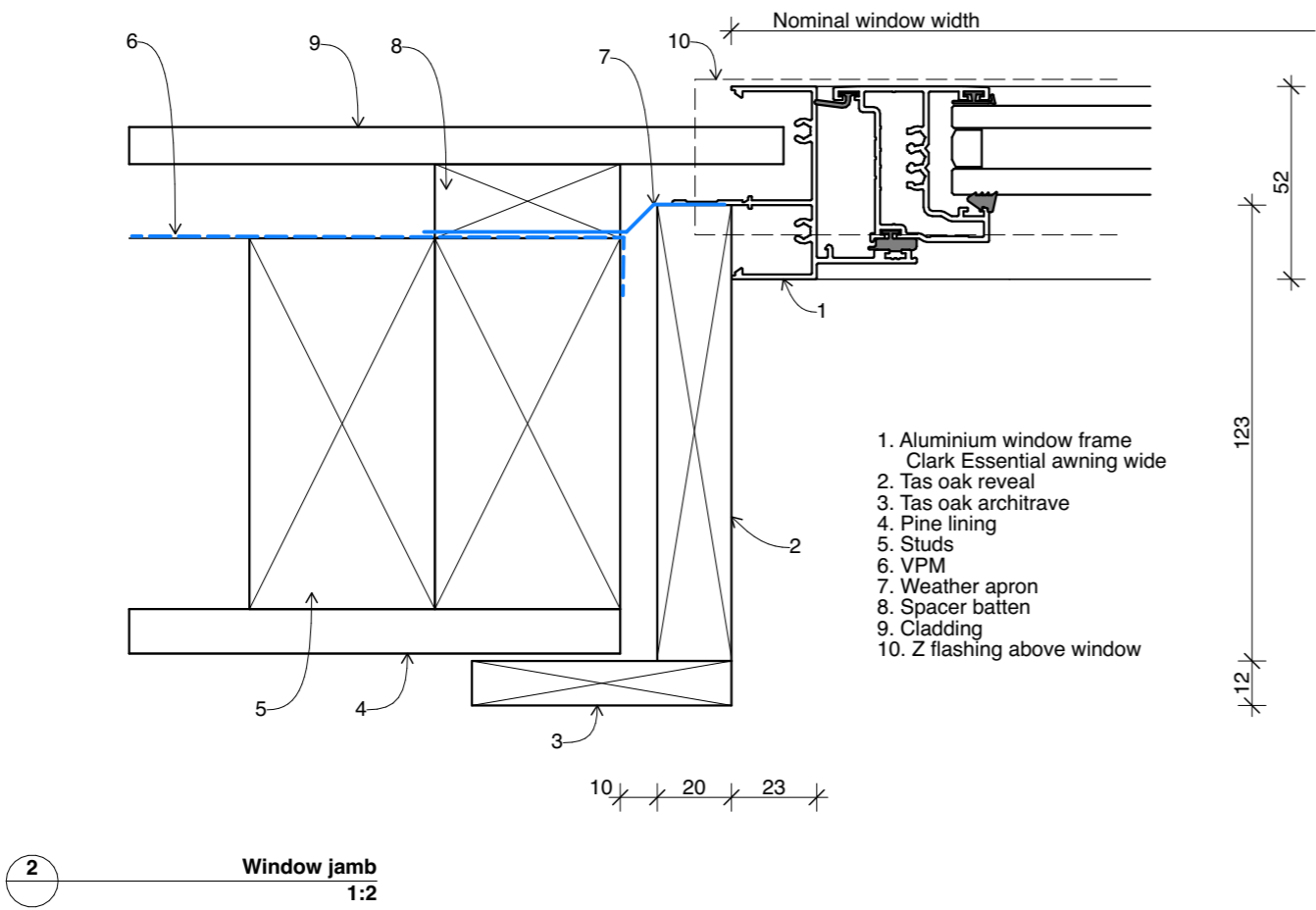
Above-ground, exposed water supply pipes shall be metal.

External gas pipes and fittings above ground shall be of steel or copper construction having a minimum wall thickness in accordance with gas regulations or 0.9 mm whichever is the greater. The metal pipe shall extend a minimum of 400 mm within the building and 100 mm below ground.

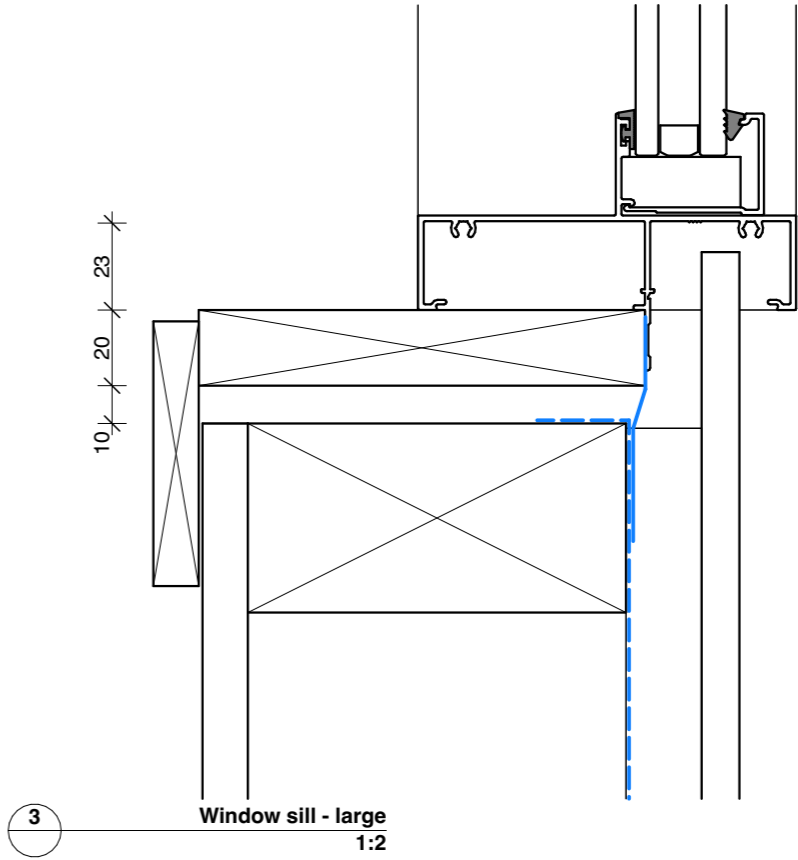
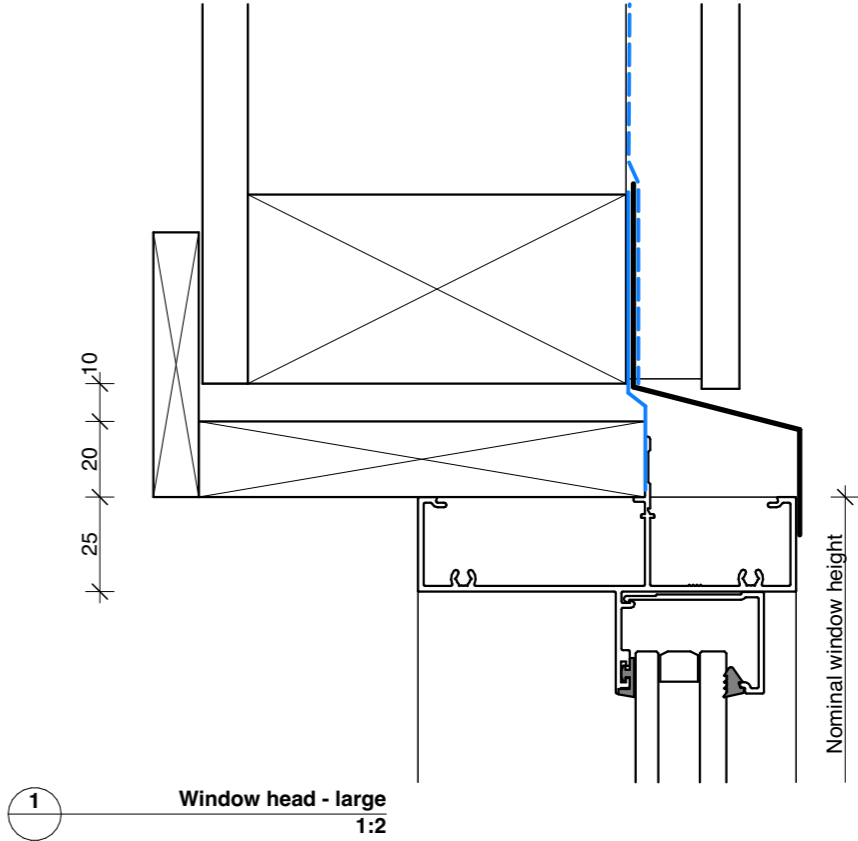
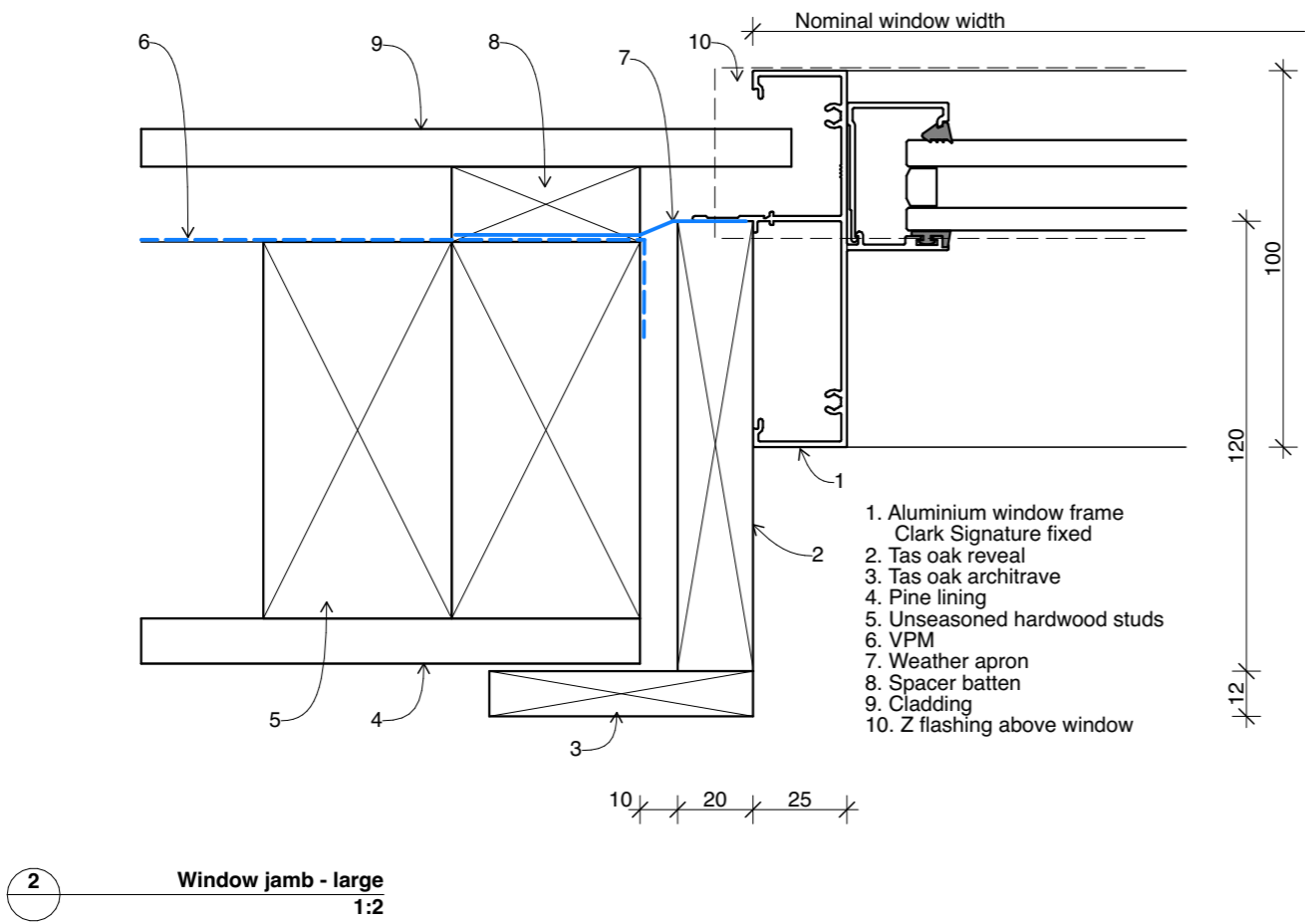
NOTE: Refer to State and Territory gas regulations, AS/NZS 5601.1 and AS/NZS 4645.1.

C5.8 Concern is raised for the protection of bottled gas installations. Location, shielding and venting of the gas bottles needs to be considered.

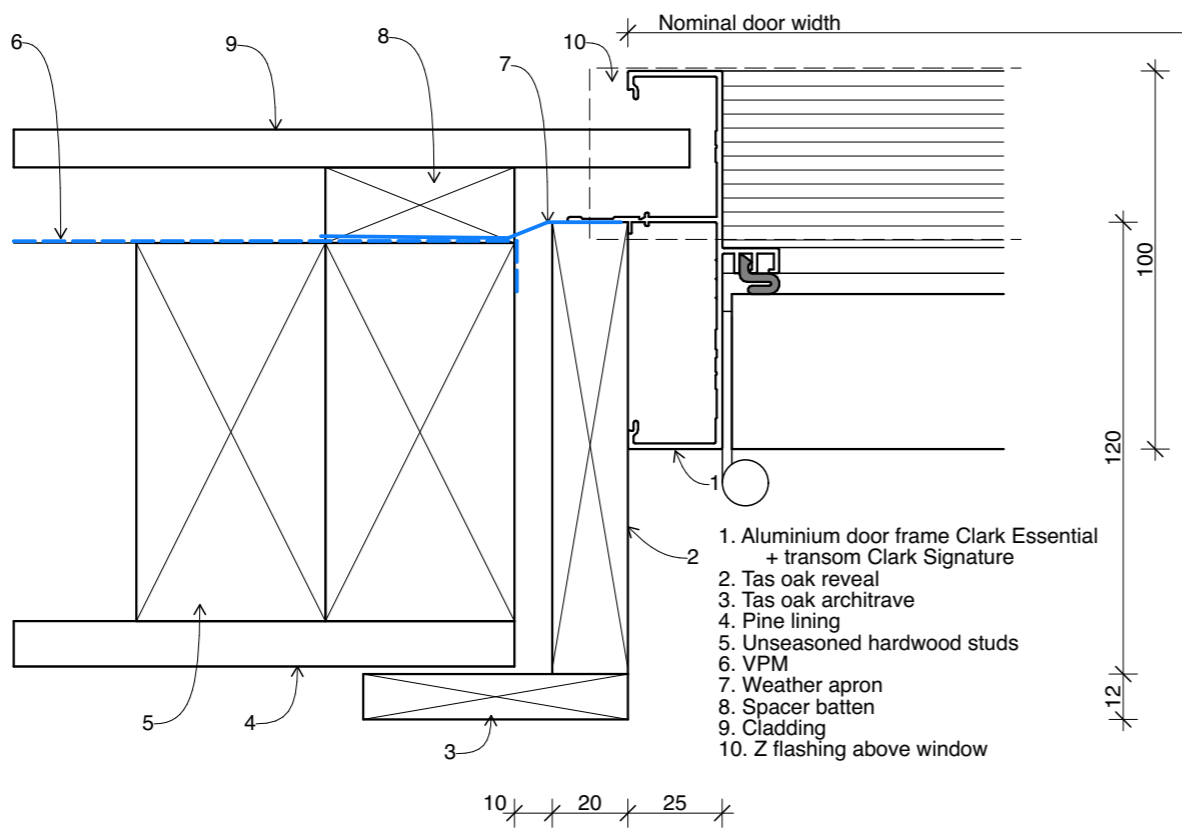
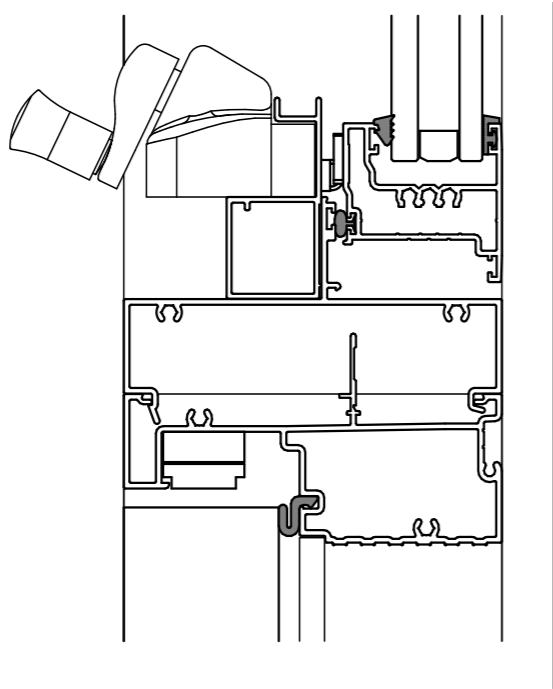
Windows W02-W10:



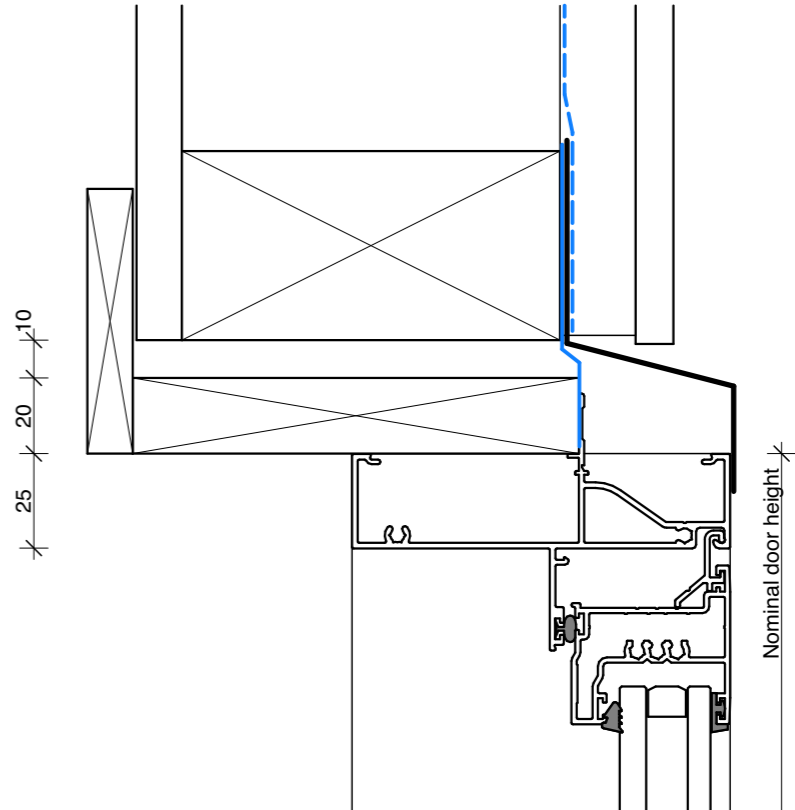
Window W01:



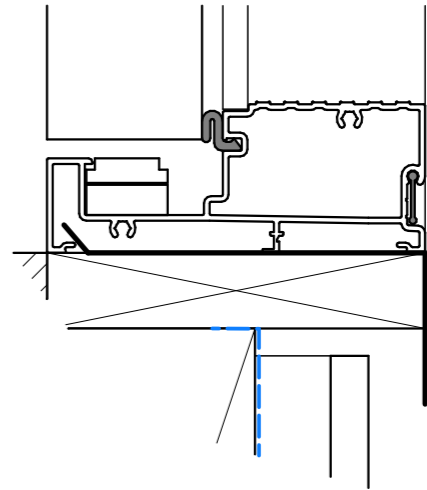
Doors D01-D03:



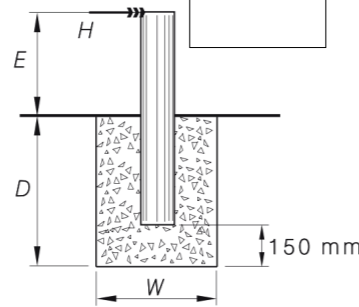
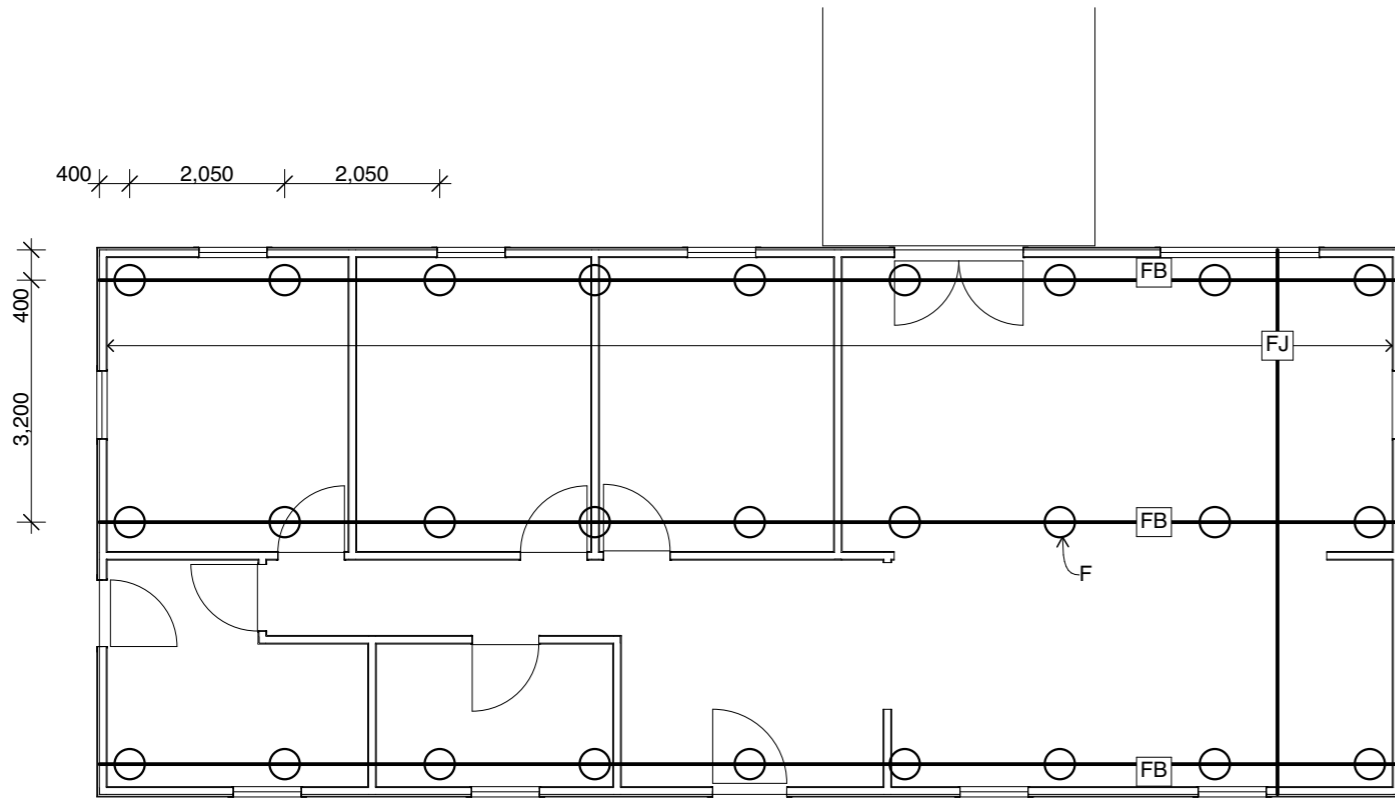
1 Door jamb  
1:2



3 Door head  
1:2



2 Door sill  
1:2



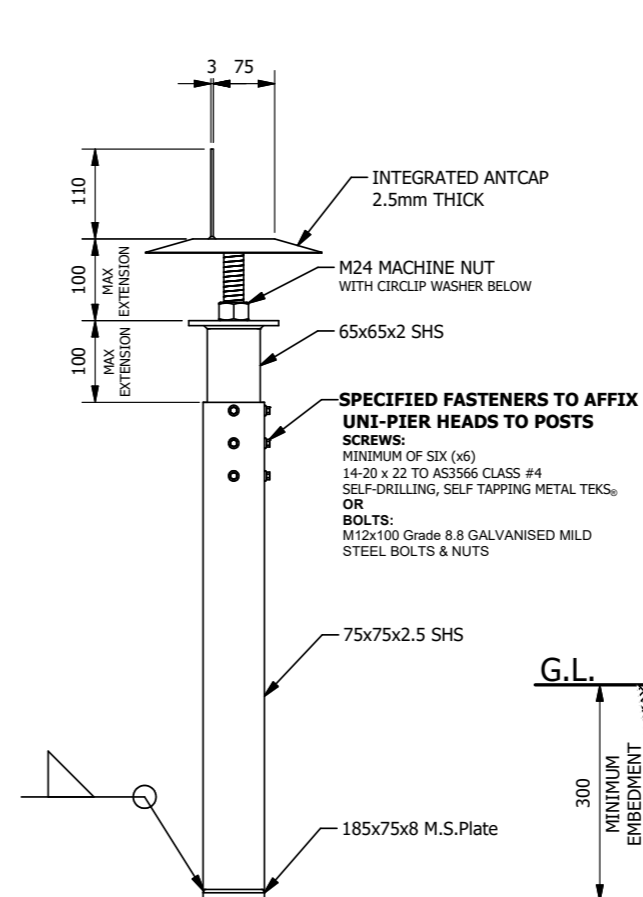
**Bracing capacity of footings**  
E = 150 min. to 900 max.  
D = 600 min.  
W = 400  
H = 2.7kN bracing capacity  
27 x H = 72.9kN minimum total bracing capacity

**Structural drawings are informative only;  
engineer must be engaged to confirm adequacy  
for your specific site conditions and materials**

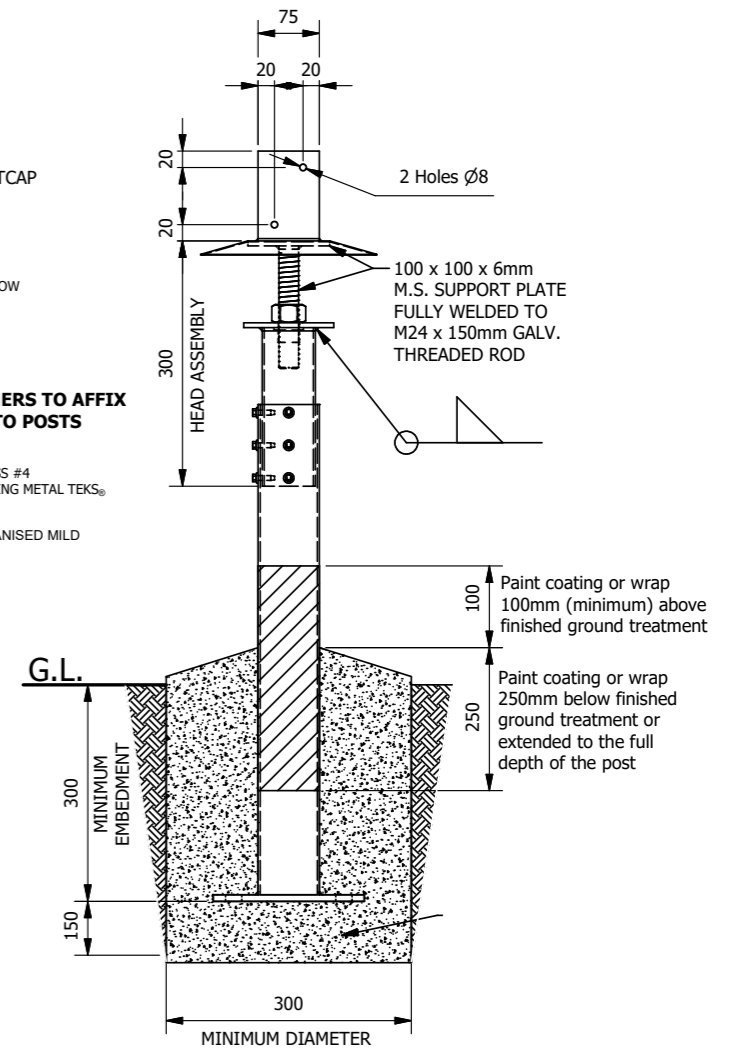
1 Structural Floor  
1:100

Footings to comply with AS 1684.2 and AS 2870

F Footing Concrete ø400, 600 deep min.  
FB Floor Bearers 2/190x45 MGP10  
FJ Floor joists 190x45 MGP10 @450



**ELEVATION 2**



**ELEVATION 1**

LAYOUT ID

32

LAYOUT **Structural Floor**  
SCALE @A3 1:100  
ISSUE ID 01  
ISSUE Open source plans  
ISSUED Work in Progress  
PRINTED 28/11/2024

DATE  
Work in  
Progress

REV ID  
01 - WIP

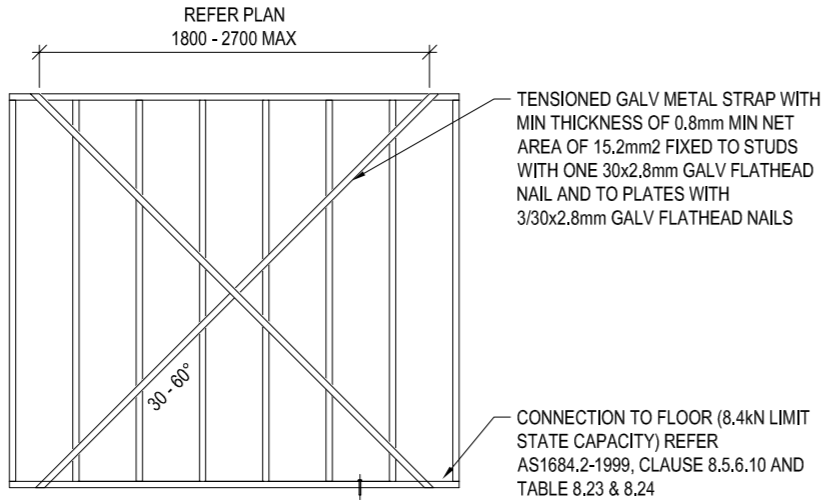
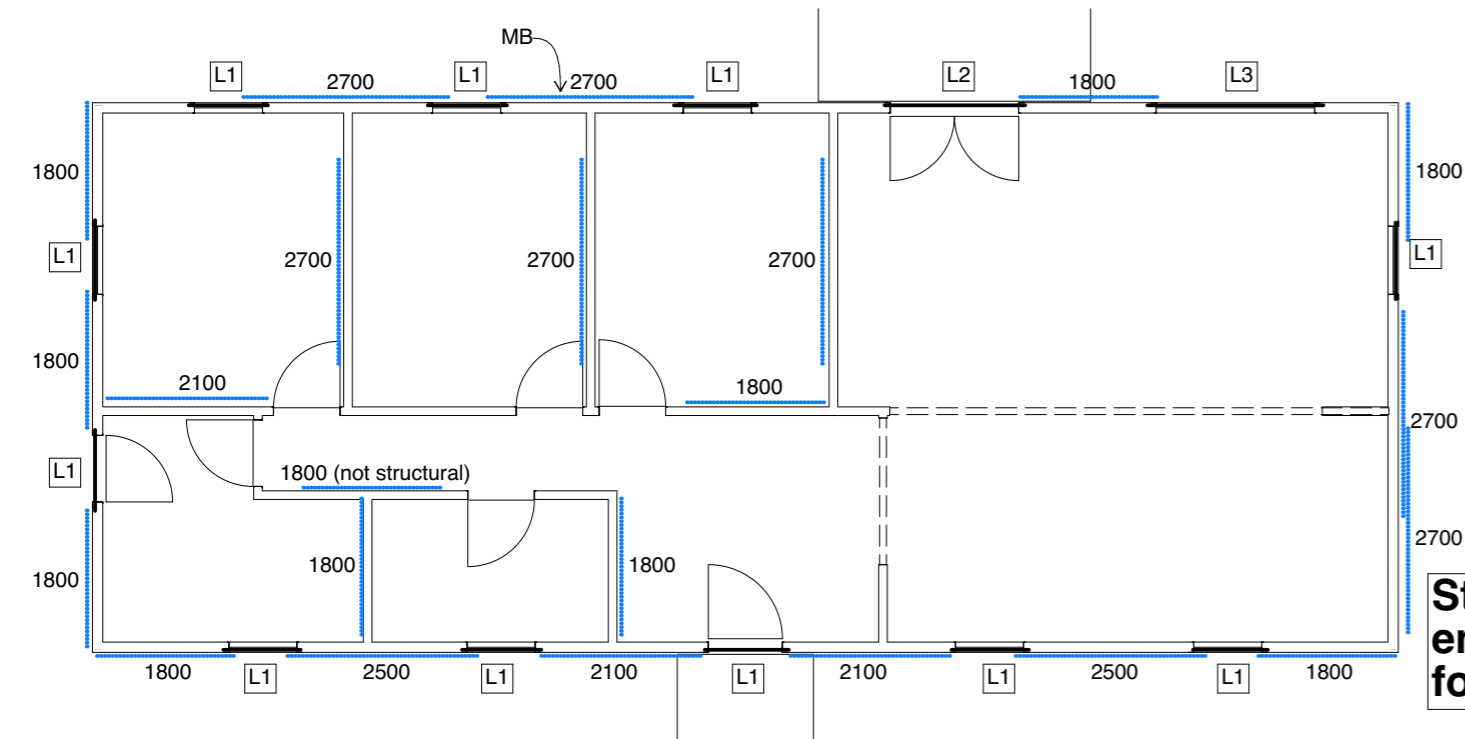
CHANGE/S  
Kitchen, Entrance relocate and double doors to 1st floor

**WORK IN PROGRESS**

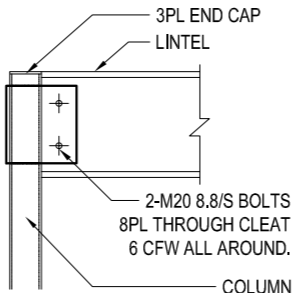
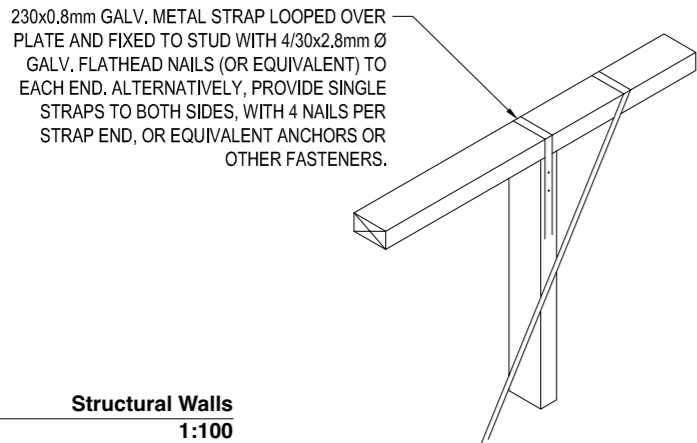
PROJECT ID-  
PROJECT New Class 1a dwelling  
SITE -  
ADDRESS -  
CLIENT -

IMPORTANT NOTES

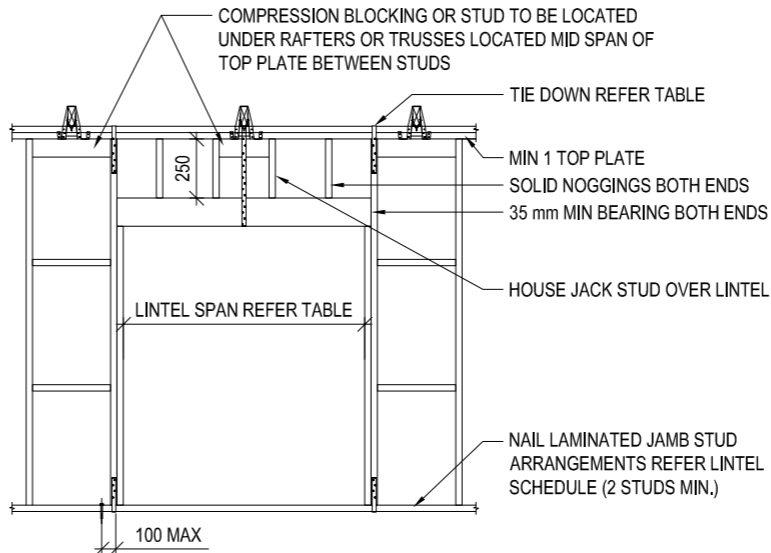
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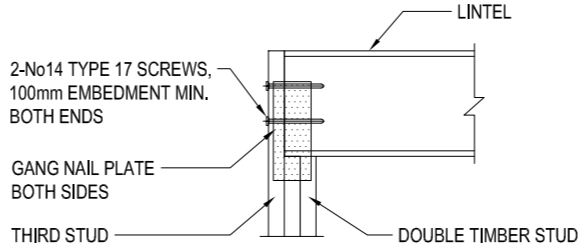
METAL STRAP BRACE (PB XXX) 3.0kN/m  
1:20



TYPICAL CONNECTION  
LINTEL TO COLUMN  
1:20



TIMBER LINTEL CONNECTION DETAILS  
1:20



TYPICAL CONNECTION  
LINTEL TO TIMBER WALL  
1:20

S	Bottom plates	90x45	MGP10	
	Studs	90x35	MGP10	@450
	Top plates perimeter	2/90x45	MGP10	
	Top plates internal	90x45	MGP10	
L1	Lintel	90x35	MGP10	
	Jamb studs	2/90x35	MGP10	
L2	Lintel	140x35	MGP10	
	Jamb studs	3/90x35	MGP10	
L3	Lintel	2/140x45	MGP10	
	Jamb studs	3/90x35	MGP10	
MB	Metal double strap brace of indicated length			

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#### Wind Classification System

Region (Figure 2.1)	A
Terrain Category (Section 2.3)	TC2
Topographic Classification (Table 2.3)	T1
Shielding Classification (Section 2.5)	NS
Wind Classification (Table 2.2)	N3

#### Racking Forces

Wind Along X-Axis	5.1,5.4
Table Selected (Section 5)	

	Section 1	Section 2	Section 3	
Roof Pitch	30.00			degrees
Roof Width	7.20			m
Pressure Adopted	0.70			kPa
Projected Area	21.60			m2
Racking Load Per Section	15.12	0.00	0.00	kN

Total Racking Force 15.12 kN

Wind Along Y-Axis	5.1,5.4
Table Selected (Section 5)	

	Section 1	Section 2	Section 3	
Roof Pitch	30.00			degrees
Roof Width	17.2			m
Pressure Adopted	0.70			kPa
Projected Area	51.60			m2
Racking Load Per Section	36.12	0.00	0.00	kN

Total Racking Force 36.12 kN

Panel Width (mm)	1200	1800	2400	Z-br
Bracing Capacity (kN)	1.8	2.7	3.6	

#### Wind Along X-Axis Plasterboard Contribution

Length (m)	Force (kN)
0	0.00
0	0.00
0	0.00

Note: Bracing walls must constitute at least 40% of required bracing strength

#### Bracing Unit Contribution

Width	No. Units	Force (kN)
1.2	1	1.80
1.5	3	6.75
2.1	4	12.60
2.4	0	0.00
2.7	0	0.00
3.6	0	0.00
Structural	1	6.00

Total Resisting Force from Bracing	27.15	kN
Total Bracing Capacity	27.15	kN
Total Racking Force	15.12	kN

Therefore :- **Bracing is Satisfactory**

#### Wind Along Y-Axis

LENGTH	Force (kN)
0	0.00
0	0.00
0	0.00

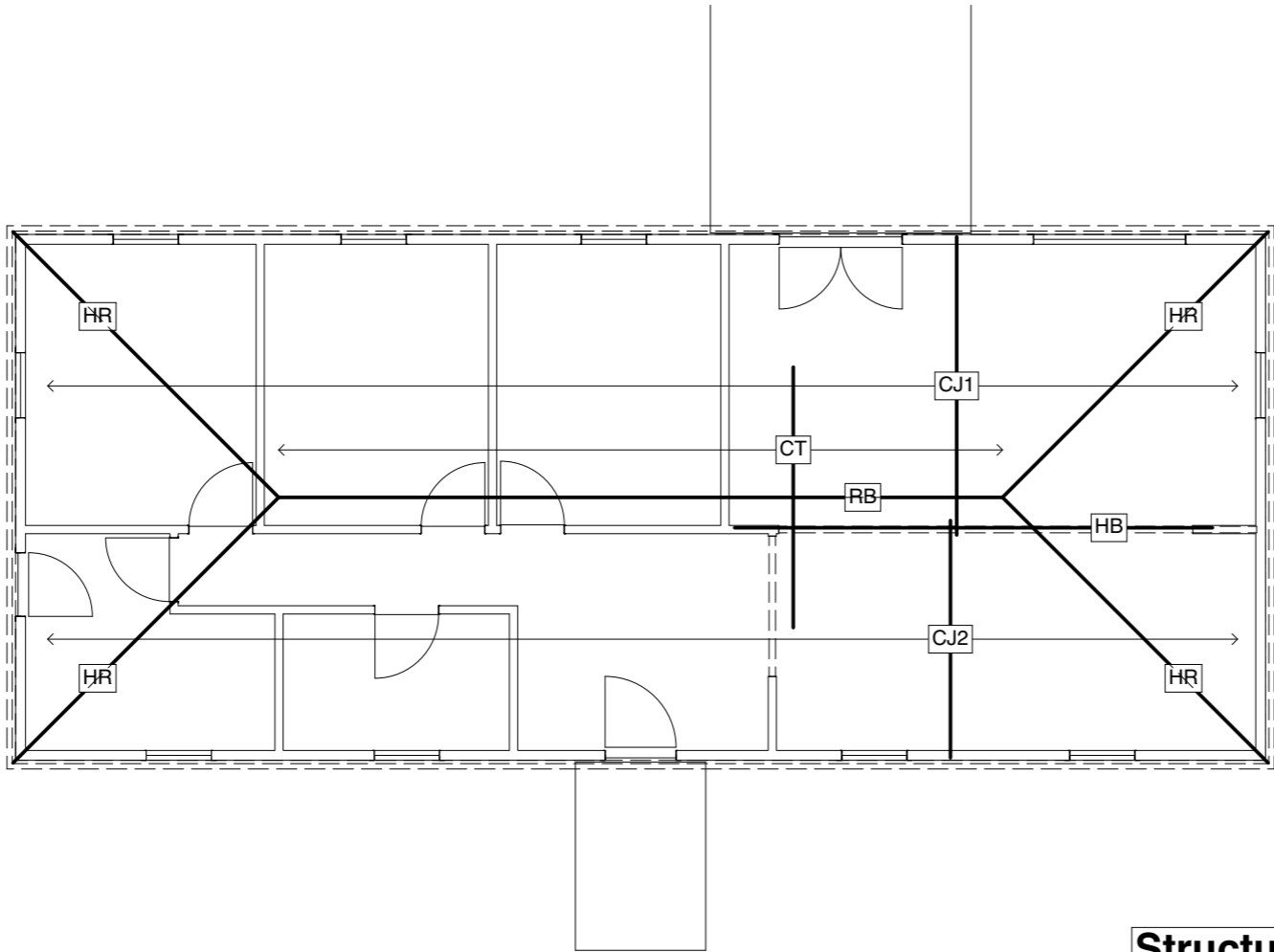
Note: Bracing walls must constitute at least 40% of required bracing strength

#### Bracing Unit Contribution

Width	No. Units	Force (kN)
1.2	1	1.80
1.5	2	4.50
1.8	2	5.40
2.1	1	3.15
2.4	0	0.00
2.7	4	16.20
Structural	1	6.00

Total Resisting Force from Bracing	37.05	kN
Total Bracing Capacity	37.05	kN
Total Racking Force	36.12	kN

Therefore :- **Bracing is Satisfactory**



RB	Ridge board	190x45	MGP10	
HR	Hip rafters	190x45	MGP10	
R	Rafters	140x45	MGP10	@900
CT	Collar ties	90x35	MGP10	
CJ1	Ceiling joists	140x45	MGP10	@900
CJ2		140x35	MGP10	@900
HB	Hanging beam	315x100	USSW F11	

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engineer must be engaged to confirm adequacy  
for your specific site conditions and materials

1

Structural Roof  
1:100

LAYOUT ID	LAYOUT	Structural Roof
SCALE @A3	1:100	
ISSUE ID	01	
ISSUE	Open source plans	
ISSUED	Work in Progress	
PRINTED	28/11/2024	

DATE	REV ID	CHANGE/S
Work in Progress	01 - WIP	Kitchen, Entrance relocate and double doors to single, Entrance floor

WORK IN PROGRESS

PROJECT ID-	
PROJECT	New Class 1a dwelling
SITE	-
ADDRESS	-
CLIENT	-

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ABCBB

Lighting

(Beta release)

Class 1 & 10a buildings

Main Menu

Help

Calculator

Building name/description

New dwelling

Classification

Class 1

Number of rows preferred in table below

10

(as currently displayed)

Separate aggregate allowances are calculated for Class 1 cases; for a verandah or balcony; or for a Class 10 building. The % of allowance used' outcomes refer to these aggregate allowances.

ID	Description	Type of space	Floor area of the space	Design lamp or illumination power load	Location	Adjustment factor				SATISFIES PART 13.7.6		
						Adjustment factor	Dimming % area	Dimming % of full power	Design lumen depreciation factor	Lamp or illumination power density		System share of % of aggregate allowance used
										System allowance	System design	
1	Hallway	Corridor	11.0 m <sup>2</sup>	30 W	Class 1 building					5.0 W/m <sup>2</sup>	2.7 W/m <sup>2</sup>	17 % of 34 %
2	Kitchen	Kitchen	21.0 m <sup>2</sup>	40 W	Class 1 building					5.0 W/m <sup>2</sup>	1.9 W/m <sup>2</sup>	12 % of 34 %
3	Living	Living room	29.0 m <sup>2</sup>	30 W	Class 1 building					5.0 W/m <sup>2</sup>	1.0 W/m <sup>2</sup>	6 % of 34 %
4	Bedrooms total (3x)	Bedroom	37.0 m <sup>2</sup>	45 W	Class 1 building					5.0 W/m <sup>2</sup>	1.2 W/m <sup>2</sup>	7 % of 34 %
5	Bathroom	Bathroom	6.0 m <sup>2</sup>	15 W	Class 1 building					5.0 W/m <sup>2</sup>	2.5 W/m <sup>2</sup>	15 % of 34 %
6	Laundry	Laundry	8.0 m <sup>2</sup>	15 W	Class 1 building					5.0 W/m <sup>2</sup>	1.9 W/m <sup>2</sup>	12 % of 34 %
7	Storage	Other	3.0 m <sup>2</sup>	15 W	Class 1 building					5.0 W/m <sup>2</sup>	5.0 W/m <sup>2</sup>	31 % of 34 %
8	Outside total (4x)	Verandah or balcony	100.0 m <sup>2</sup>	120 W	Verandah or balcony					4.0 W/m <sup>2</sup>	1.2 W/m <sup>2</sup>	100 % of 30 %
9												
10												

215.0 m<sup>2</sup>

310 W

Class 1 building

Verandah or balcony

Allowance

Design average

5.0 W/m<sup>2</sup>

1.7 W/m<sup>2</sup>

4.0 W/m<sup>2</sup>

1.2 W/m<sup>2</sup>

if inputs are valid

IMPORTANT NOTICE AND DISCLAIMER IN RESPECT OF THIS LIGHTING CALCULATOR

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LAYOUT ID

35

LAYOUT

SCALE @A3

ISSUE ID

01

ISSUE

Open source plans

ISSUED

Work in Progress

PRINTED

28/11/2024

Lighting Calculator

DATE

Work in Progress

REV ID

01 - WIP

CHANGE/S

WORK IN PROGRESS

PROJECT ID-

PROJECT

SITE

ADDRESS

CLIENT

New Class 1a dwelling

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-

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