

DO NOT SCALE FROM DRAWINGS - USE ONLY FIGURED DIMENSIONS

A3 ORIGINAL SIZE

1.0 GENERAL

- 1.1 These drawings shall be read in conjunction with the architectural and other consultants' drawings / specifications and with other such written instructions as may be issued during the construction. Any discrepancy shall be referred to the Engineer before commencing the work.
- 1.2 All dimensions are in millimeters, UNO (unless noted otherwise).
- 1.3 These drawings shall not be scaled, refer to dimensions given only or refer to the Architectural drawings.
- 1.4 All levels and setting out dimensions shown on the drawings shall be checked on site prior to the commencement of the work.
- 1.5 During construction the structure shall be maintained in a stable condition with no part being overstressed with temporary bracing installed as required.
- 1.6 The engineer shall approve any proposed substitution prior to the commencement of work

2.0 LOADING

- 2.1 Superimposed loads are in accordance with AS 1170.1 or as shown in note L4.
- 2.2 Wind loads are in accordance with AS 1170.2 as follows:
Region : A Basic Wind Velocity, Vp : 41 m/s Category : N2 (W33)
- 2.3 Earthquake loads are in accordance with AS 1170.4 as follows:
a = 0.08 S = 1.0 I = 1.0
- 2.4 Element superimposed loading:

Element	Live Load (kPa)	Dead Load (kPa)
Floors - Internal	1.50	-
Floors - External & Garage	3.00	-
Roof Areas	0.25	-

- 2.5 Assumed site soil classification is: Class A (Rock Site)

3.0 EARTHWORKS

- 3.1 The earthworks shall be carried out in accordance with the geotechnical report reference GG10613.001 by Green Geotechnics.
- 3.2 The site shall be stripped a minimum depth of 150 mm under pavements and buildings to remove the topsoil. Any remaining uncontrolled fill material, organic material, refuse or roots shall be removed.
- 3.3 The subgrade shall be inspected and approved by the geotechnical engineer.
- 3.4 The excavated subgrade shall be proof rolled a minimum of six (6) passes using a vibrating drum roller with a minimum deadweight of 10 tonnes. Any soft, wet and unsuitable spots shall be removed and reinstated using approved material.
- 3.5 The subgrade shall be compacted to not less than 100% standard dry density ratio within ±2% of the optimum moisture content in accordance with AS1289. Where fill is required to achieve subgrade level it shall be approved ripped sandstone having a maximum particle size of 75 mm. It shall be placed in loose layers no thicker than 300 mm and compacted to not less than 100% standard dry density ratio within ±2% of the optimum moisture content in accordance with AS1289.
- 3.7 If a vibrating type roller is used, consideration shall be given to the effects on adjacent properties.
- 3.8 All batters shall be a minimum of 1:2 for temporary batters and 1:4 for final batters in clay material.
- 3.9 All filling shall be under the supervision of the project geotechnical engineer who shall provide compaction certificates to the engineer for approval.

4.0 FOUNDATION MATERIAL

- 4.1 Strip & pad footings have been designed for an allowable end bearing value of 800 kPa off rock.
- 4.2 Bored piers have been designed for an allowable end bearing value of 800 kPa & a skin friction of 80 kPa off rock.
- 4.3 The foundation material shall be inspected & approved in writing by the geotechnical engineer for the above allowable bearing capacities.
- 4.4 Slabs on ground have been design for a CBR of 5 in accordance with the Cement & Concrete Association Industrial Floors & Pavement Handbook.
- 4.5 Footings shall be located centrally under walls & columns UNO.

5.0 REINFORCED CONCRETE

- 5.1 All workmanship and materials shall be in accordance with AS 3600, except where varied by the project documentation.
- 5.2 Concrete quality shall be as follows (subject to note C4 being satisfied), UNO:

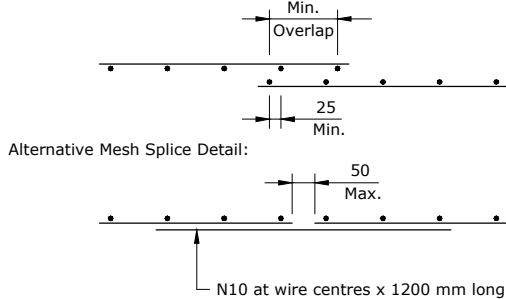
Element	Slump (mm)	Maximum Aggregate size (mm)	Cement Type	Strength 28 Days (MPa)	Admixture
Footings	80	20	Normal	25	-
Bored Piers & Pile Caps	80	20		25	-
Floor Slabs on Ground	80	20		25	-
Suspended Floor Slabs	80	20	Type A	32	-
Hollowcore Floor Slabs	80	20	Cement	32	-
Walls & Columns	80	20		32	-

- 5.3 The engineer shall approve any admixtures to be used in the concrete mix.
- 5.4 The clear concrete cover to all reinforcement shall be as follows, UNO:

Exposure Classification to AS 3600	Strength 28 Days (MPa)	Against Formwork		Against Ground	
		Interior Surface	Exterior Surface	With Membrane	With No Membrane
A1	20	20	30	30	50
A2	25	40	30	40	50
B1	32	40	40		
B2	40	45	45		

- 5.5 Cover to reinforcement shall be obtained by the use of approved bar chairs placed at maximum 750 mm centers in each direction.
- 5.6 All concrete shall be mechanically vibrated and the vibrators SHALL NOT be used to spread the concrete.
- 5.7 Sizes of the concrete elements do not include thickness of the applied final finishes.
- 5.8 Approval shall be obtained from the engineer prior to the drilling of any holes or cutting in of any chases other than those shown on the structural drawings.
- 5.9 Construction joints where not shown on the structural drawings shall be located in accordance with the engineers approval.
- 5.10 Curing of all concrete is to be achieved by keeping surfaces continuously wet for a period of 7 days (10 days in summer months), and prevention of loss of moisture for a total of 10 days followed by gradual drying out. Approved sprayed on compounds complying with AS3799 may be used provided that they do not interfere with the performance of the proposed floor finishes. Polythene sheeting or wet hessian may be used if protected from wind and traffic.
- 5.11 The suspended slabs shall be propped until 28 day strength has been achieved for slabs. The formwork may be removed once 20 MPa strength has been achieved, however the slab will need to be back propped until 28 day strength has been achieved. No masonry or partition walls are to be constructed on suspended levels until all propping is removed.
- 5.12 Conduits, pipes, etc. shall only be placed in the middle third of the slab depth and spaced at not less than 3 diameters. They shall not be placed within the cover of the reinforcement.
- 5.13 Reinforcement symbols:
S - Denotes grade 250 S bars to AS1302.
N - Denotes grade 500 normal ductility deformed bars to AS4671.
R - Denotes grade 250 normal ductility round bars to AS4671.
SL - Denotes grade 500 low ductility square welded mesh to AS4671.
RL - Denotes grade 500 low ductility rectangular welded mesh to AS4671.
L - Denotes grade 500 low ductility trench welded mesh to AS4671.
- 5.14 Reinforcement is represented diagrammatically and is not necessarily shown in true projection.
- 5.15 Splices in reinforcement shall be made only in positions shown or otherwise approved by the engineer.
- 5.16 Laps and cogs shall be in accordance with AS3600 and not less than the below:
- | | Minimum Splice Lengths | Minimum Overall Cog Lengths |
|-----|------------------------|-----------------------------|
| N12 | 400 mm | 200 mm |
| N16 | 600 mm | 225 mm |
| N20 | 800 mm | 275 mm |
| N24 | 1100 mm | 325 mm |
| N28 | 1400 mm | 375 mm |

- 5.17 Site bending of deformed reinforcing bars shall be done without heating and using mechanical bending tools.
- 5.18 Welding of the reinforcement shall not be permitted unless shown on the structural drawings or approved by the engineer.
- 5.19 Joggles to the bars shall be 1 bar diameter over a length of 12 bar diameters.
- 5.20 Bundled bars shall be tied together at 30 bar diameter centers with 3 wraps of tie wire.
- 5.21 Mesh shall be lapped 2 transverse wires plus 25 mm.



6.0 FORMWORK

- 6.1 All workmanship and materials shall be in accordance with AS 3610 & AS3600, except where varied by the project documentation.
- 6.2 The design certification & the performance of the formwork shall be the responsibility of the contractor.
- 6.3 During construction support propping shall be required where there are loads from stacked materials, formwork & other supported slabs. Once the concrete has achieved its nominated 28 day strength, the imposed loads shall not exceed those given in the loading table.
- 6.4 With multistory construction, it is expected that support propping will extend a minimum of 3 levels below the slab being poured. Prop removal is to be programmed so as not to overstress previously cast floors and shall be submitted to the engineer for approval.
- 6.5 The suspended slabs shall be propped until 28 day strength has been achieved for slabs. The formwork may be removed once 20 MPa strength has been achieved, however the slab will need to be back propped until 28 day strength has been achieved. No masonry or partition walls are to be constructed on suspended levels until all propping is removed.
- 6.6 All exposed corners shall have a 20 mm chamfer, UNO.
- 6.7 All finishes shall be in accordance with the architectural specification.

7.0 PERMANENT METAL FORMWORK

- 7.1 The permanent metal formwork shall be installed in accordance with the manufacturers recommendations and shall NOT be substituted from the product specified without written approval from the engineer.
- 7.2 The permanent metal formwork shall be suitably propped.
- 7.3 The permanent metal formwork shall not be spliced or joined midspan.
- 7.4 The permanent metal formwork shall have a minimum end bearing of 50 mm.
- 7.5 The permanent metal formwork shall be fixed to the supporting structure with spot welds or fasteners, there shall be a minimum of 1 fixing per sheet to the support each end adjacent to the side lap.

- 7.6 The permanent metal formwork may need to have the side lap fastened together midspan, this shall be carried out in accordance with the manufacturers recommendations.

8.0 HOLLOWCORE FLOOR PLANKS & WALL PANELS

- 8.1 All workmanship & materials shall be in accordance with AS3600.
- 8.2 The 28 day concrete strength shall be a minimum of 40 MPa.
- 8.3 The prestressing steel shall be stress relieved low relaxation strand in accordance with AS1311.
- 8.4 The floor plank topping shall be with 32 MPa concrete or as shown on the drawings. If the topping concrete is used to grout the keyways then the concrete shall have a maximum aggregate size of 10 mm.
- 8.5 The concrete topping thickness and reinforcement shall be as noted on the plans & sections.
- 8.6 The hollowcore planks & panels shall be lifted & supported only at the nominated lifting points.
- 8.7 The hollowcore floor planks shall be installed in accordance with the manufacturers specifications & workshop drawings.
- 8.8 The structure shall be maintained in a stable condition during the erection of the floor planks or wall panels with temporary bracing provided as required.
- 8.9 All keyways shall be aligned & grouted with a 3:1 sand : cement mix or approved concrete topping mix. Ensure that all keyways are properly filled.
- 8.10 Any proposed penetrations &/or chases will require the manufacturers and engineers approval prior to work being carried out.
- 8.11 A minimum of two (2) copies of all workshop drawings shall be supplied to the engineer for approval.

9.0 MASONRY

- 9.1 All workmanship and materials shall be in accordance with AS 3700.
- 9.2 The design strength of masonry shall be:

Exposure Classification to AS 3600	Brick Compressive Strength (MPa)	Brick Salt Resistance Grade	Durability Classification Of Built In Components	Mortar Mix	
				GP Portland e Cement:Lime: Sand	f'c (MPa)
A1 / A2	20	General Purpose	R3 (Galvanised)	1.0 : 1.0 : 6.0	2.8
B1	20			1.0 : 1.0 : 6.0	2.8
B2	20	Exposure	R4 (Stainless)	1.0 : 0.5 : 4.5	2.8

- 9.3 All masonry walls supporting concrete slabs and beams shall have a slip joint comprising of two layers of galvanized steel in between the concrete and masonry.
- 9.4 All masonry walls supporting or supported by concrete floors shall be have vertical joints located to match any control / construction joints in the concrete.
- 9.5 Do not construct any masonry walls on suspended slabs until the slab formwork has been stripped and de-propped.
- 9.6 Non load bearing masonry walls shall be separated from concrete slab or beam above by 20 mm thick compressible filler.
- 9.7 Provide vertical control joints at 8 meters maximum centers, and 4 meters maximum from corners in masonry walls, and between new & existing brickwork. The joint shall have expansion joint ties and suitably sealed with a mastic sealant.
- 9.8 Masonry retaining walls are to be back filled with either of the following material:
- Coarse grained soil with low silt content
- Residual soil containing stones
- Fine silty sand
- Granular materials with low clay content

10.0 BLOCKWORK

- 10.1 All workmanship and materials shall be in accordance with AS 3700.
- 10.2 Reinforced concrete blockwork shall comply with the following, UNO:
- Blocks: Minimum 10 MPa unconfined compressive strength conforming to AS4455.
- Mortar: 1.0 : 1.0 : 6.0 ratio of cement : lime : sand UNO.
- Blocks shall be either 'H' or 'Double-U' configuration.
- Provide cleanout holes at the base of the wall & rod core holes to remove excess mortar.
- Core filling shall be 20 MPa concrete with maximum 10 mm aggregate size with a maximum slump of 120 ±20 mm.
- Minimum cover of 55 mm from the outside of the blockwork.
- 10.3 Blockwork retaining walls are to be back filled with either of the following material:
- Coarse grained soil with low silt content
- Residual soil containing stones
- Fine silty sand
- Granular materials with low clay content
- 10.4 Vertical control joints shall be provided at maximum 8000 mm centers. They shall be reinforced with N20-400 dowels 600 mm long. One end shall be greased & capped.
- 10.5 No admixtures shall be used to the mortar mix or the core fill mix without prior written consent from the engineer.

11.0 STRUCTURAL STEELWORK

- 11.1 All workmanship and materials shall be in accordance with AS 4100 and AS/NZS 4600.
- 11.2 The structural design has been based on the following steel grades, UNO:
Hot rolled universal beams, columns, channels & angles:300PLUS
Circular, square & rectangular hollow sections: C350/C450LO
Cold formed open DuraGal profiles: C350/C450LO
Cold formed lipped Cee & Zed purlins: G550/G500/G450
- 11.3 The structural design has been based on MBPMA nominal size Cee & Zed lipped purlins.
- 11.4 Qualifications of welding procedures and personnel shall conform to Section 4 of AS 1554.1. Non destructive testing of welds shall include 100% visual inspection and additional testing as shown on the drawings.
- 11.5 All welds shall be 6 mm continuous fillet type SP, UNO. All butt welds shall be complete penetration in accordance with AS 1554.1, UNO.

- 11.6 Bolt designation:
- | | |
|--------|--|
| 4.6/S | Commercial bolts to AS 1111, snug tightened. |
| 8.8/S | High strength structural bolts to AS 1562, snug tightened. |
| 8.8/TB | High strength structural bolts to AS 1562, fully tensioned bearing joint. |
| 8.8/TF | High strength structural bolts to AS 1562, fully tensioned friction joint. |

- 11.7 All bolts shall be M20 8.8/S, with a minimum of 2 bolts per connection, UNO.
- 11.8 Fin plates shall be a minimum of 10 mm thick, grade 300PLUS steel, UNO.
- 11.9 Concrete encased steelwork shall be wrapped with SL62 mesh and shall have a minimum of 50 mm cover, UNO.

- 11.10 Steelwork not encased in concrete shall have the following surface treatment :

Exposure Classification to AS 3600	Steelwork Protection Required
A1 / A2	Power tool clean to AS1627 Class 1 1 Coat Alkyd Primer (Zinc Phosphate)
B1	Abrasive blast to AS1627 Class 2.5 1 Coat Inorganic Zinc Silicate
B2	Hot Dipped Galvanised to AS1650

- 11.11 Where sealed tube members are hot dip galvanized, the fabricator shall provide drill holes as necessary to allow gases to escape.
- 11.12All transport and erection damage, site welds etc., shall be reinstated to an equivalent finish to adjacent steelwork.
- 11.13A minimum of two (2) copies of all workshop drawings shall be supplied to the engineer for approval.

12.0 PRECAST PANELS

- 12.1 All workmanship and materials shall be in accordance with AS 3600.
- 12.2 The precast panel concrete strength at 28 days shall be a minimum of 40 MPa. The concrete shall be a minimum of 20 MPa before removal from molds.
- 12.3 Dimensions shown are final concrete sizes and additional concrete must be provided to allow for loss of structural thickness due to surface treatment, etc.
- 12.4 Panel structural thickness shall be as noted.
- 12.5 Refer to the architectural drawings for dimensions. rebates, etc.
- 12.6 All metal work and cast-in ferrules shall be hot dipped galvanized which are exposed to the external enviroment.
- 12.7 All cast-in ferrules shown on the drawings are to remain sealed until the erection of the panel and shall not be used for lifting.
- 12.8 Lifting ferrules are the contractors responsibility & extra reinforcement needs to be provided in accordance with manufacturers recommendations.
- 12.9 Concrete cover shall be in accordance with structural drawings.
- 12.10Fabric in the panels shall be one sheet, no lapping is permitted unless shown on the structural drawings.
- 12.11Penetrations for services shall be neat formed holes, hole boring is not permitted.
- 12.12Temporary steel packers may be used under the panels provided they have a minimum of 50 mm cover from the concrete slab or grout.
- 12.13A minimum of two (2) copies of all workshop drawings shall be supplied to the engineer for approval. The shop drawings shall show all cast-in inserts.

13.0 TIMBER

- 13.1 All workmanship and materials shall be in accordance with AS 1684 and AS1720.
- 13.2 AS1684 shall be applied to domestic construction in sheltered locations.
- 13.3 Softwood to be a minimum of F7 and hardwood to be a minimum of F17 UNO.
- 13.4 External timber shall be either hardwood durability class I or II as per AS1720 or impregnated pine grade F7, pressure treated to AS1604 and re-dried prior to use.
- 13.5 Supplementary treatment shall be applied to all cut surfaces.
- 13.6 Two (2) copies of timber truss shop drawings shall be submitted to the engineer for approval, clearly indicating design loads and point loads applied to the structure.
- 13.7 All bolts in timber construction shall be M16 4.6/s UNO. Washers under heads and nuts shall be at least 2.5 times the bolt diameter.
- 13.8 All timber joints and notches shall be a minimum of 100 mm away from loose knots, severe sloping grain, gum veins or other minor defects.

14.0 FOUNDATION MAINTENANCE

- 14.1 All soils are affected by water. Silts are weakened by water and some sands can settle if heavily watered, but most problems arise on clay foundations. Clays swell and shrink due to changes in moisture content and the potential amount of the movement is implied in the site classification in Australian Standard AS2870, which is specified as follows:
A Stable (Non-reactive). S Slightly Reactive.
M Moderately Reactive. H Highly Reactive.
E Extremely Reactive.
- 14.2 All sites shall be maintained at essentially stable moisture conditions and extremes of wetting and drying prevented. This will require attention to the following.
- 14.3 Site drainage: The site shall be graded or drained so that water cannot pond against or near the house. The ground immediately adjacent to the house shall be graded to a uniform fall of 50 mm minimum away from the house over the first meter. The sub floor space for houses with suspended floors shall be graded or drained to prevent ponding. The site drainage requirements shall be maintained.
- 14.4 Gardens: The gardens shall not interfere with the drainage requirements or the sub floor ventilation and weep hole drainage systems. Garden beds adjacent to the house should be avoided. Over watering of gardens close to the house shall be avoided.
- 14.5 Restrictions on trees / shrubs: Planting of trees shall be avoided near the footings of a house or neighboring house on reactive sites as they can cause damage due to drying of the clay. To minimize the possibility of damage, tree planting should be restricted to a distance from the house of :
1.50 x mature height for Class E sites
1.00 x mature height for Class H sites
0.75 x mature height for Class M sites
- 14.6 Where rows or groups of trees are involved, the distance from the building should be increased. Removal of trees from the site can also cause similar problems.
- 14.7 Repair of leaks : Leaks in plumbing, including storm water and sewerage drainage should be repaired promptly.

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CLIENT:

GLOZIER/SHEPPARD

PROJECT NAME:

**PROPOSED ALTERATIONS
9 ALLINGTON CRESCENT
ELANORA HEIGHTS NSW 2101**

DRAWING TITLE:

General Notes

SCALE:

DATE:

15 MAR 2023

DESIGN/APPROVED:

JDM

REV:

0

PROJECT:

23.019

DRAWING:

S1

SIGNED:

REV.	APP.	AMENDMENT DESCRIPTION	DATE
0		UNENDORSED	15.03.23

DO NOT SCALE FROM DRAWINGS - USE ONLY FIGURED DIMENSIONS

A3 ORIGINAL SIZE

DESIGN CRITERIA:

Site Soil Classification = A (Rock Site)
Wind Classification = W33 (N2)
Construction Type = Mixed
Roof Cladding Type = Metal Sheetting
(Note: Masonry shall be articulated in accordance with technical note 61 from the Cement & Concrete Association of Australia)

EXPOSURE CLASSIFICATION:

Interior Surfaces = A1
Exterior Surfaces= B2

GEOTECHNICAL NOTE:

The foundation requirements are in accordance with the Geotechnical report completed by Green Geotechnics project GG10613.001 dated 24 May 2022.
The foundation and bearing material along with the chosen piercing method shall be approved by the geotechnical engineer during excavation.

BORED PIER NOTE:

Bored piers shall be installed if the slab or footings are founded on fill or non-uniform material or the existing residence has been pierced.
Design engineer shall be contacted once excavation is complete to assess the need for piercing.
The bored piers shall be installed to engineers approval

FLOOR TILING NOTE:

SL92 mesh shall be installed in place of the SL82 mesh for tiles areas.

EXISTING FOOTING NOTE:

Existing footing depth shall be confirmed on-site to assess the need for underpinning.
No existing footing shall be undermined during excavation.

TIMBER FRAMING NOTE:

All timber framing, connections, fixings, notches, etc shall be in installed in accordance with AS1684-2010: Residential Timber Framed Construction (non-cyclonic areas) and the current edition of the Building Code of Australia.
Double LVL (of same depth and width as floor joists) shall be installed under all load bearing walls & columns over, UNO. Floor joist centers shall be closed up to 300mm max. in tiled floor areas.
All fire resistant cladding solutions shall be to architects details and installed to BCA requirements to achieve required FRL.

BRACING NOTE:

All wall & floor bracing shall be to suppliers detail & is the builders responsibility.
Additional bracing may be required to Engineer's discretion.

ROOF BRACING NOTE:

Roof shall be fully braced using Pryda Speed Brace fitted to manufacturers specifications.
Additional structural ply/yellow tongue bracing may be required to the underside of the ceiling to Engineer's discretion.

EXISTING FRAMING:

All proposed framing members are based on assumptions and should be confirmed during demolition once structure is exposed for visible inspection.

THRESHOLD NOTE:

All new slabs shall have compliant set downs at all thresholds.
Threshold design is the responsibility of the architect and builder to comply with the requirements of the NCC (previously BCA) section 3.1.3.
E2 Design takes no responsibility for structures built without a compliant threshold set down.

STEEL CONNECTION NOTE:

All structural steel bolt holes shall not exceed a diameter 2mm greater than that of the given bolt diameter. All column base plate bolt holes shall not exceed a diameter 6mm greater than that of the given bolt diameter. All base plate bolt holes exceeding 3mm but not more than 6mm greater in diameter than the given bolt will require a 4mm thick base plate washer to be installed. Elongated or protruded bolt holes are not approved.
The minimum pitch, or the distance between the centres of the bolt holes, in any given plate or cleat shall not be less than 2.5 times the diameter of the given bolt. The minimum edge distance from the centre of the bolt hole to the edge of the given plate or cleat for all standard bolt holes shall not be less than 1.5 times the diameter of the given bolt or 30mm, whichever is greater.

PROPPING NOTE:

Propping and stability of the existing structure during demolition & construction is the responsibility of the builder. Care shall be taken to ensure the existing structure is stable prior to & during demolition.

DURABILITY NOTE:

All LVL timbers shall be protected from the environment.
Steel beams and columns shall be protected from corrosion using paint protection or galvanising in accordance with Australian Standards AS 2312 to meet a minimum design life of 50 years. If maintenance of this system is required this must be carried out by the owner. Corrosion protection systems shall be maintained by others for the design life of 50 years. The occupant should be made aware of the corrosion protection life and maintain accordingly. For example most paint protection systems can be made to last 15 years without maintenance. They will require maintenance to meet the 50 year design life that is not the responsibility of the engineer.
If development is in a bushfire zone all exposed timber members shall be F17 grade hardwood.
If steel beams and posts are designated to be galvanised end plates, cap plates and base plates shall also be galvanised.
All nuts and bolts shall be galvanised or marine grade stainless steel.

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0		UNENDORSED	15.03.23
REV.	APP.	AMENDMENT DESCRIPTION	DATE

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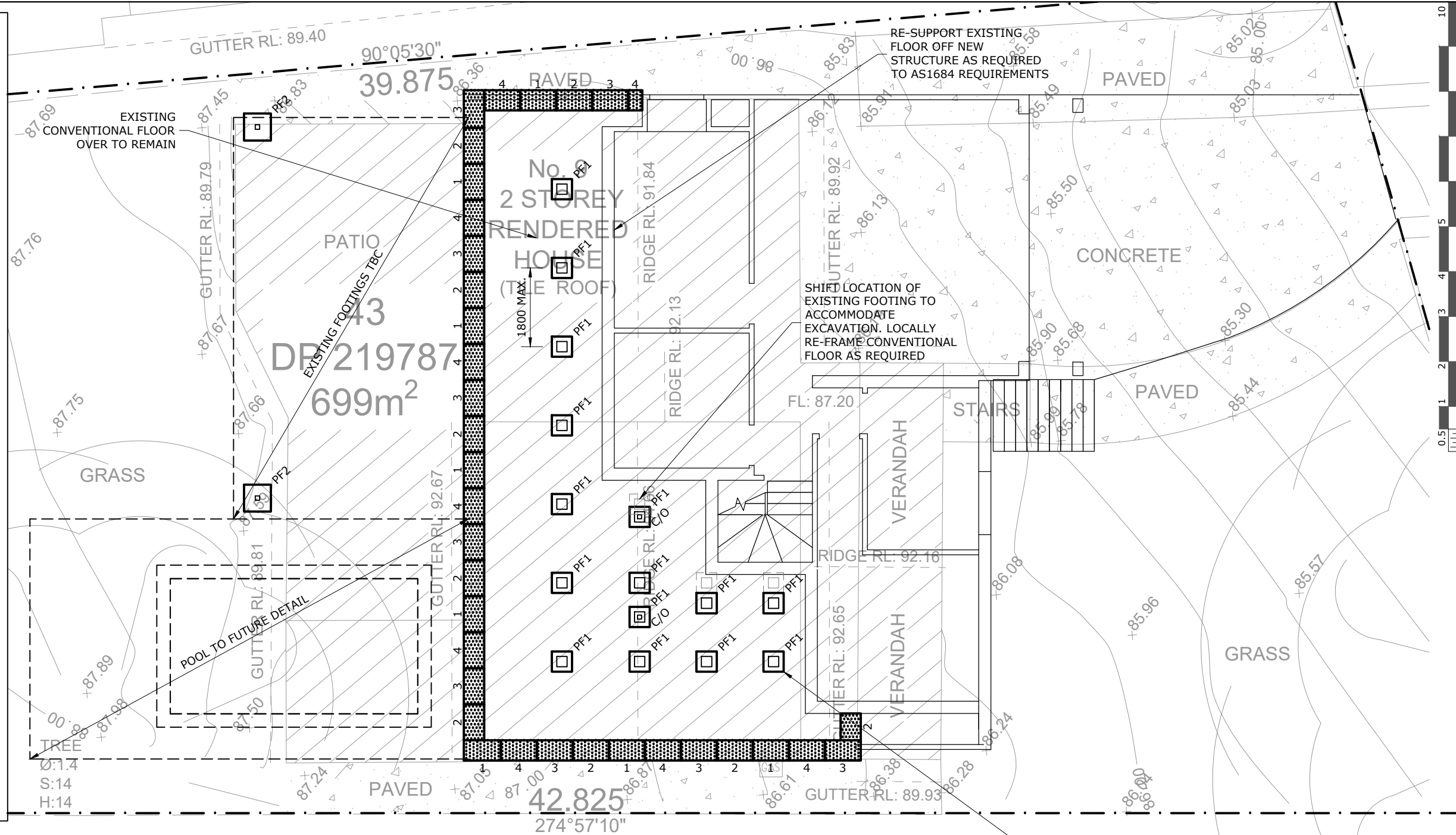
CLIENT:
GLOZIER/SHEPPARD

PROJECT NAME:
**PROPOSED ALTERATIONS
9 ALLINGTON CRESCENT
ELANORA HEIGHTS NSW 2101**

DRAWING TITLE: Footing & Framing Notes			
SCALE:	DATE: 15 MAR 2023	DESIGN/APPROVED: JDM	REV: 0
PROJECT: 23.019	DRAWING: S2	SIGNED:	

A3 ORIGINAL SIZE

1. Carry out underpinning work in the sequence shown on the drawing. Work on adjacent walls shall not be carried out simultaneously.
2. Underpinning shall bear on material of allowable bearing capacity of 800 kPa.
3. Remove all dirt and loose materials from the underside of the existing footing.
4. Hand excavate 800 mm wide maximum width underpinning to existing footings to the extent shown on the drawing. All bays marked "1" may be excavated simultaneously, except at adjacent walls which are to be fully underpinned prior to commencing excavation.
5. Build underpinning in brickwork or mass concrete.
6. Cut off underpinning 75 mm from underside of existing footing. The final pinning up of the existing footing is to be carried out with a semi-dry fine concrete mix. Ram this concrete mix into the underside of the existing footing as soon as possible. This concrete mix shall consist of one part (by volume) rapid hardening portland cement, two parts sand and three parts 10 mm aggregate with a w/c ratio (by weight) of 0.35. Alternatively, use "Underpinning Mortar" from Master Builders Technologies (or equivalent), in accordance with the manufacturers specifications.
7. Excavation to bays marked "2" shall not commence until 48 hours after all bays marked "1" are completely underpinned.
8. Repeat steps 3 to 7 for bays 2, 3 and 4.
9. The builder shall ensure that underpinning operations do not in any way impair the safety or condition of the existing structure. The builder shall provide any temporary props required and shall constantly monitor the condition of the structure during the course of the work.
10. All work is to be carried out in accordance with the local council and Work Cover Authority requirements.



REPLACE ALL EXISTING PAD
FOOTINGS WITH NEW PAD
FOOTINGS FOUNDED
DIRECTLY OFF ROCK,
TYPICAL

1. Extra bars as noted on plan & sections.
2. 32 MPa Minimum concrete strength, typical unless noted otherwise.
3. Site preparation shall be carried out in accordance with the current edition of AS2870 Residential slabs & footings construction code & with the general notes.
4. Reinforcement cover to the ground floor slab shall be as follows:
 - 40mm - To unprotected ground
 - 50mm - To external exposure
 - 30mm - To a vapor barrier in contact with the ground
 - 30mm - To internal exposure
5. Bored piers shall be in accordance with the bored pier note and as shown on plan.
6. C/O: Denotes column over.

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CLIENT:
GLOZIER/SHEPPARD

PROJECT NAME:
**PROPOSED ALTERATIONS
 9 ALLINGTON CRESCENT
 ELANORA HEIGHTS NSW 2101**

DRAWING TITLE:
Underpinning & Pad Footing Replacement

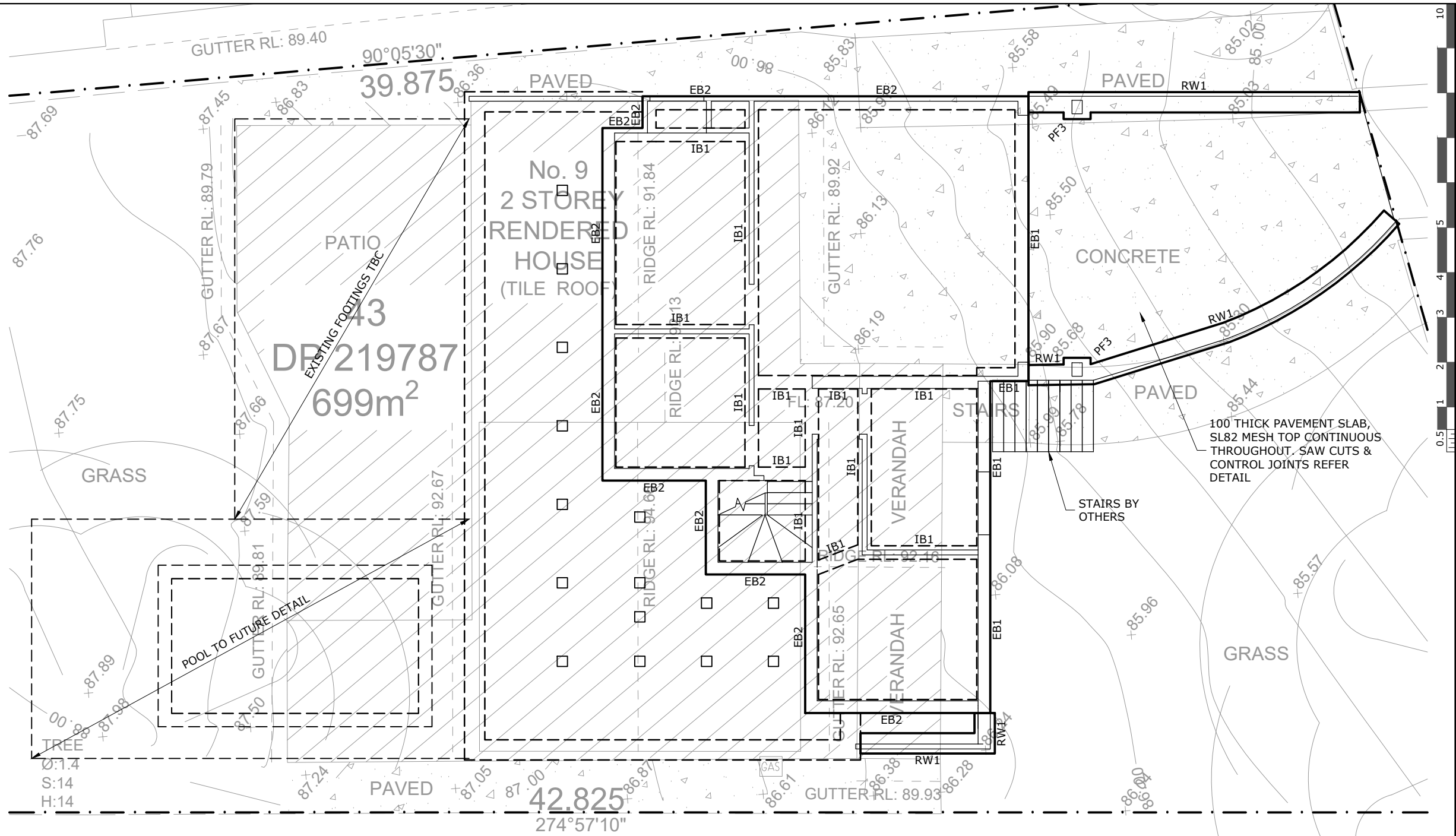
SCALE: 1:100	DATE: 15 MAR 2023	DESIGN/APPROVED: JDM	REV: 0
PROJECT: 23.019	DRAWING: S3	SIGNED:	

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REV.	APP.	AMENDMENT DESCRIPTION	DATE

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A3 ORIGINAL SIZE

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LOWER GROUND FLOOR RAFT SLAB PLAN 1:100

- 100 thick slab with SL82 mesh top continuous throughout.
- 2N12 (1200 long) Trimmer bars shall be located at all re-entrant corners, typical.
- Extra bars as noted on plan & sections.
- 32 MPa Minimum concrete strength, typical unless noted otherwise.
- Site preparation shall be carried out in accordance with the current edition of AS2870 Residential slabs & footings construction code & with the general notes.
- Reinforcement cover to the ground floor slab shall be as follows:
 - 40mm - To unprotected ground
 - 50mm - To external exposure
 - 30mm - To a vapor barrier in contact with the ground
 - 30mm - To internal exposure
- Bored piers shall be in accordance with the bored pier note and as shown on plan.

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PROJECT NAME:
**PROPOSED ALTERATIONS
9 ALLINGTON CRESCENT
ELANORA HEIGHTS NSW 2101**

DRAWING TITLE:
Lower Ground Raft Slab Plan

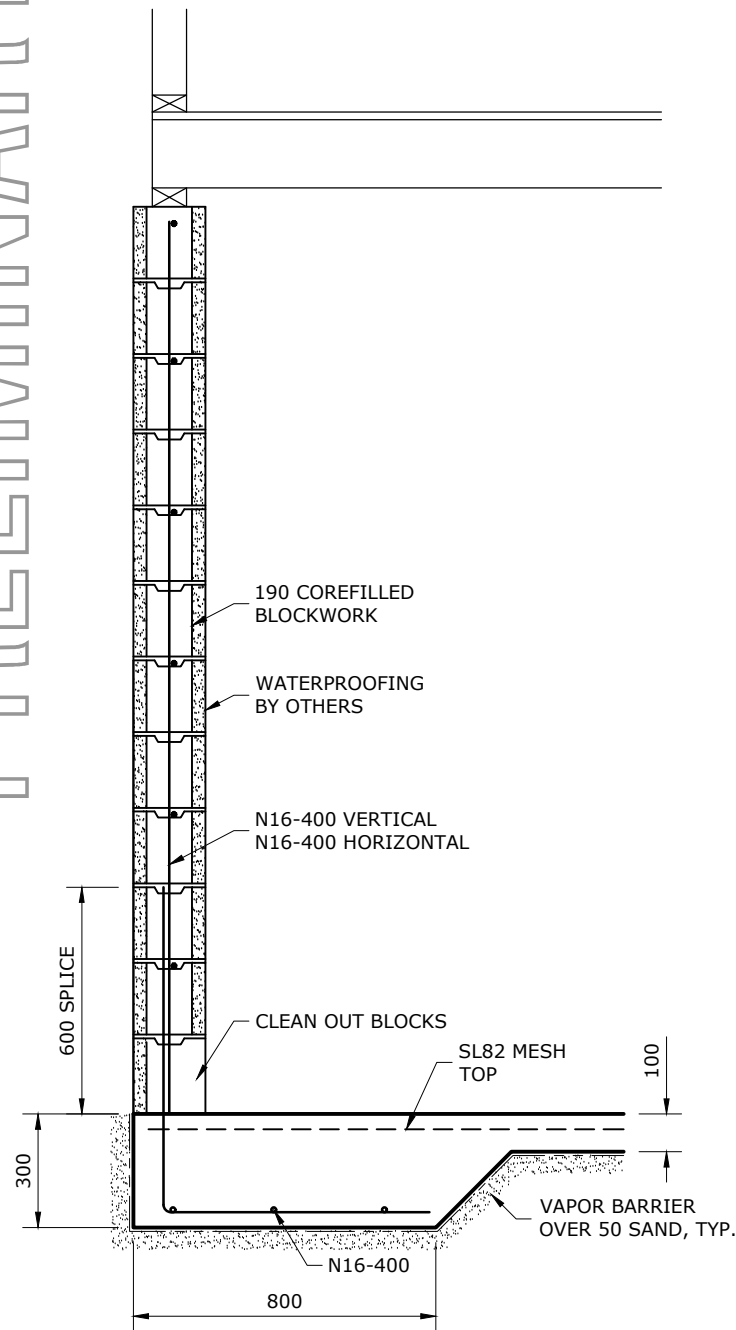
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PROJECT: 23.019	DRAWING: S4	SIGNED:	

REV.	APP.	AMENDMENT DESCRIPTION	DATE
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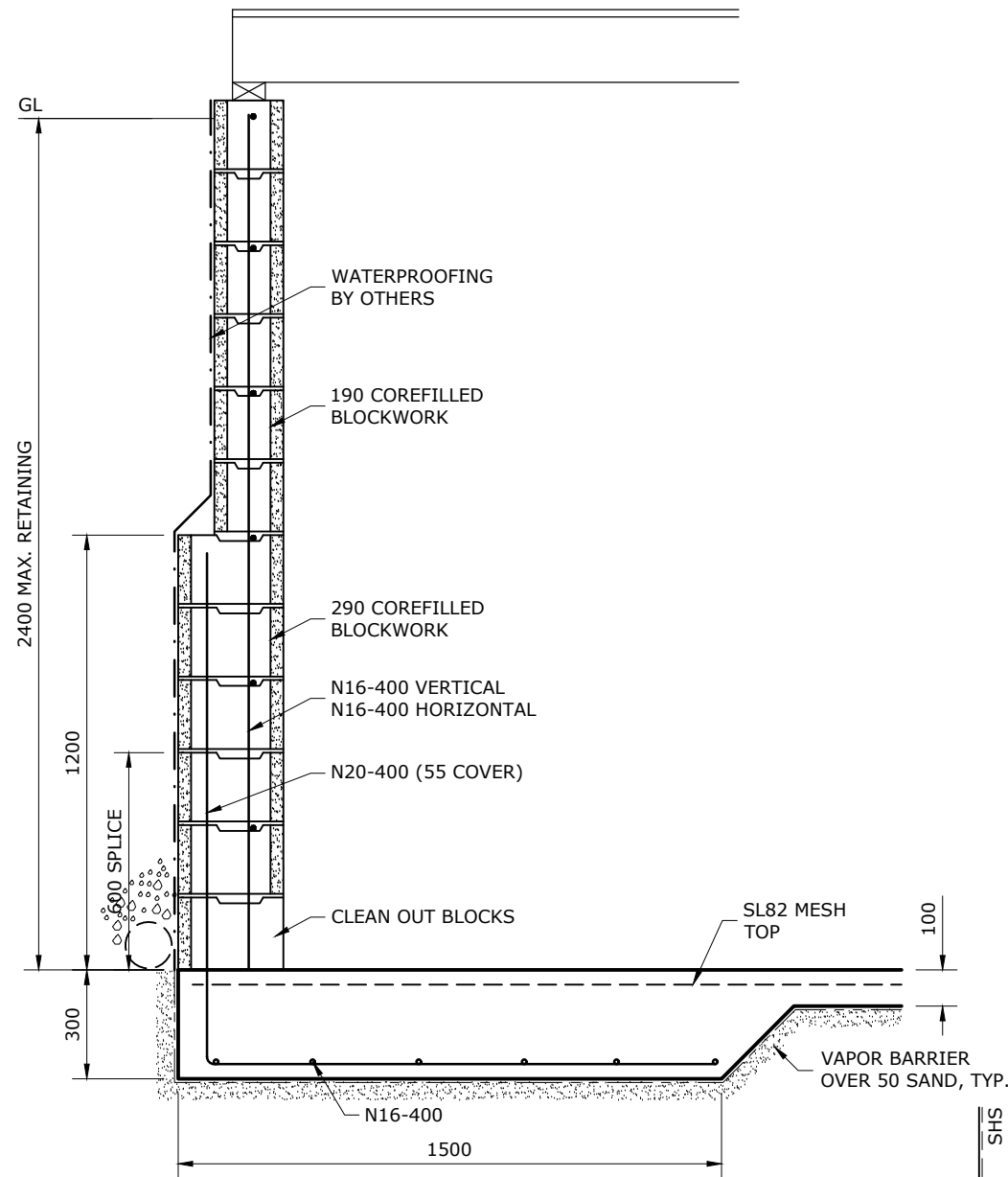
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A3 ORIGINAL SIZE

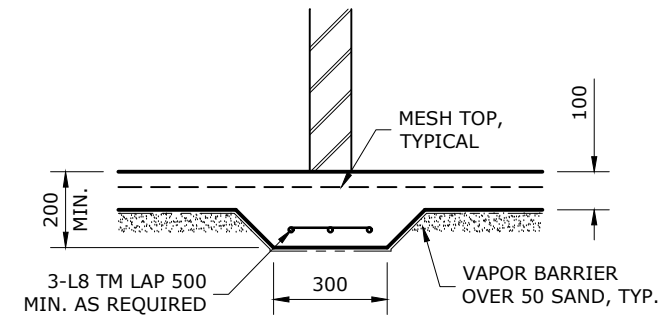
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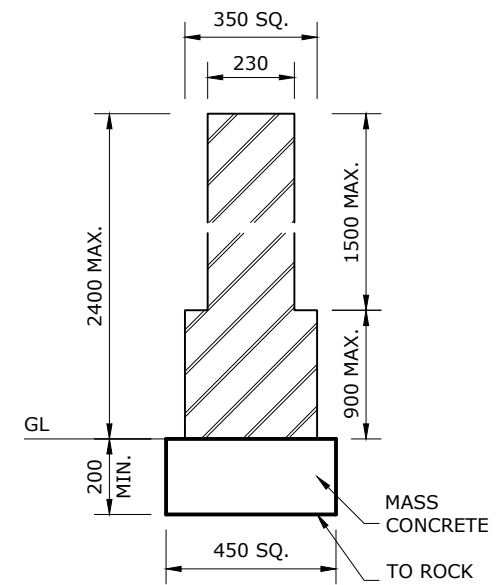
EDGE BEAM 'EB1' OFF ROCK 1:20



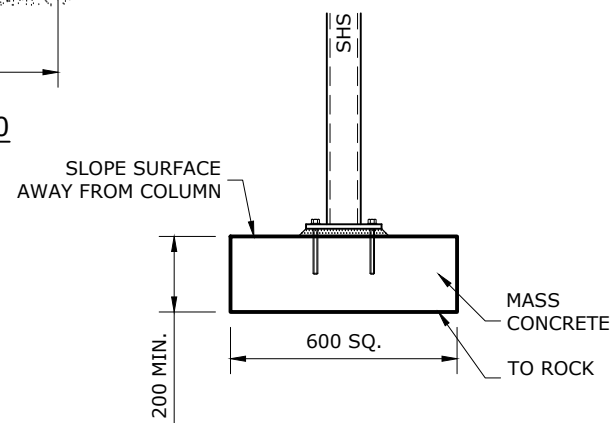
EDGE BEAM 'EB2' OFF ROCK 1:20



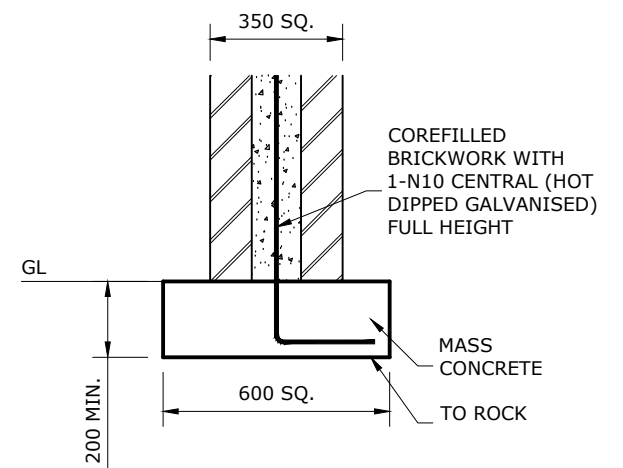
FOUNDED DIRECTLY OFF ROCK
INTERNAL BEAM DETAIL 'IB1' 1:20



PAD FOOTING 'PF1' DETAIL 1:20



PAD FOOTING 'PF2' DETAIL 1:20



PAD FOOTING 'PF3' DETAIL 1:20

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DRAWING TITLE:
Raft Slab & Pad Footing Details

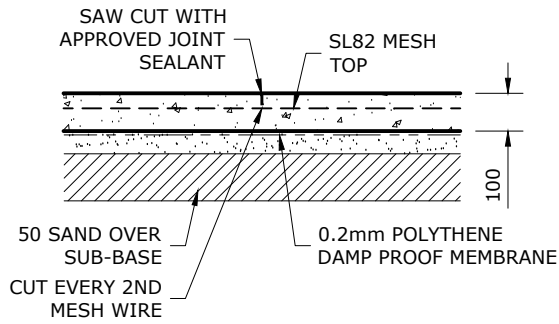
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PROJECT: 23.019	DRAWING: S5	SIGNED:	

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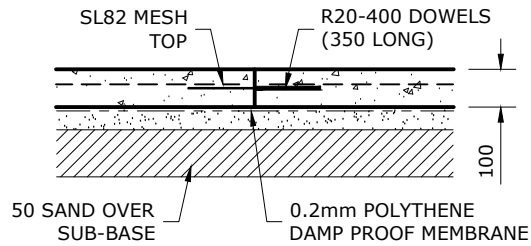
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A3 ORIGINAL SIZE

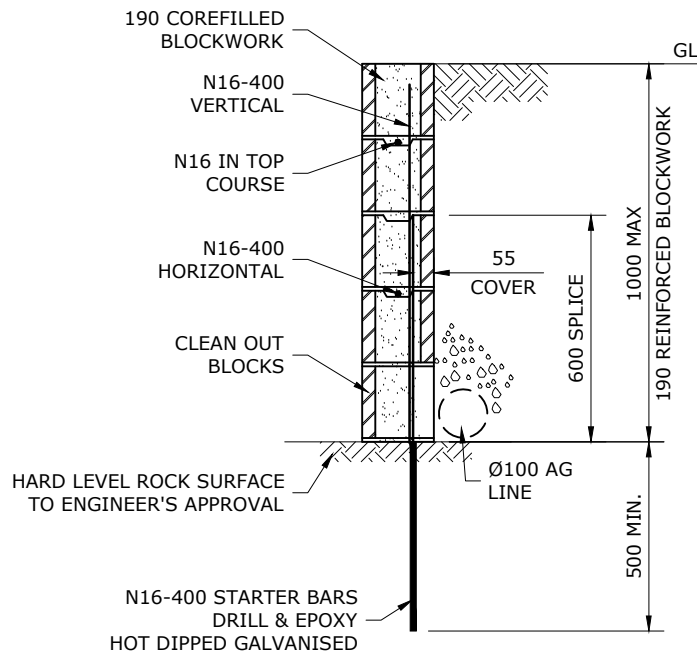
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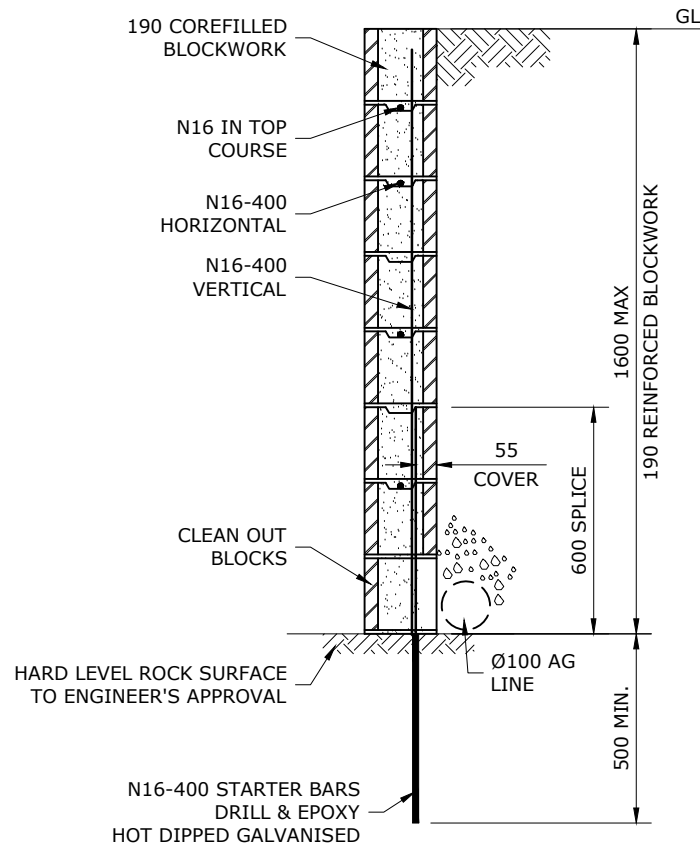
SAWN JOINT 'SJ' DETAIL 1:20
MAXIMUM 3600mm c/c SPACING



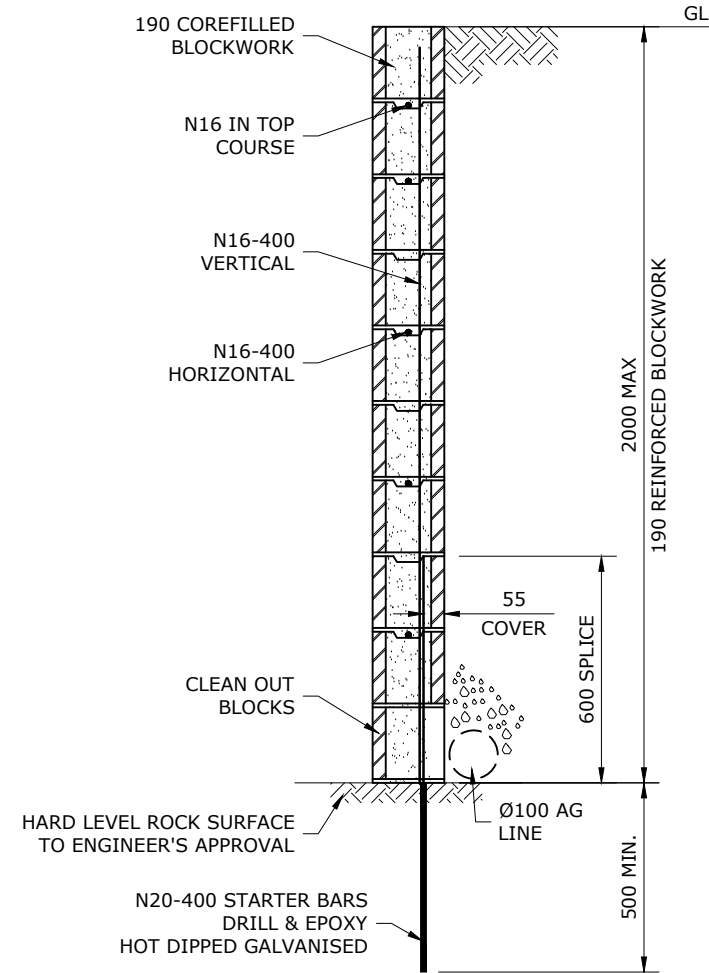
CONSTRUCTION JOINT 'CJ' DETAIL 1:20
MAXIMUM 10800mm c/c SPACING



1000 HIGH MAXIMUM RETAINING



1600 HIGH MAXIMUM RETAINING



2000 HIGH MAXIMUM RETAINING

BLOCKWALL RETAINING WALL TYPICAL DETAILS 1:20

WALL BACKFILL NOTE:

Retaining walls shall be backfilled with either:

1. Coarse grained soil with low silt content
2. Residual soil containing stones
3. Fine silty sand
4. Granular materials with low clay content

BLOCKWORK WALL NOTE:

Vertical control joints shall be installed at 8000mm centers with N20-400 reinforcement (600 long). One end shall be greased & capped. N16-400 L-bars (600 legs) shall be installed at horizontal corners throughout.

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9 ALLINGTON CRESCENT
ELANORA HEIGHTS NSW 2101

DRAWING TITLE:

Retaining Wall & Pavement Slab Details

SCALE:

1:20

DATE:

15 MAR 2023

DESIGN/APPROVED:

JDM

REV:

0

PROJECT:

23.019

DRAWING:

S6

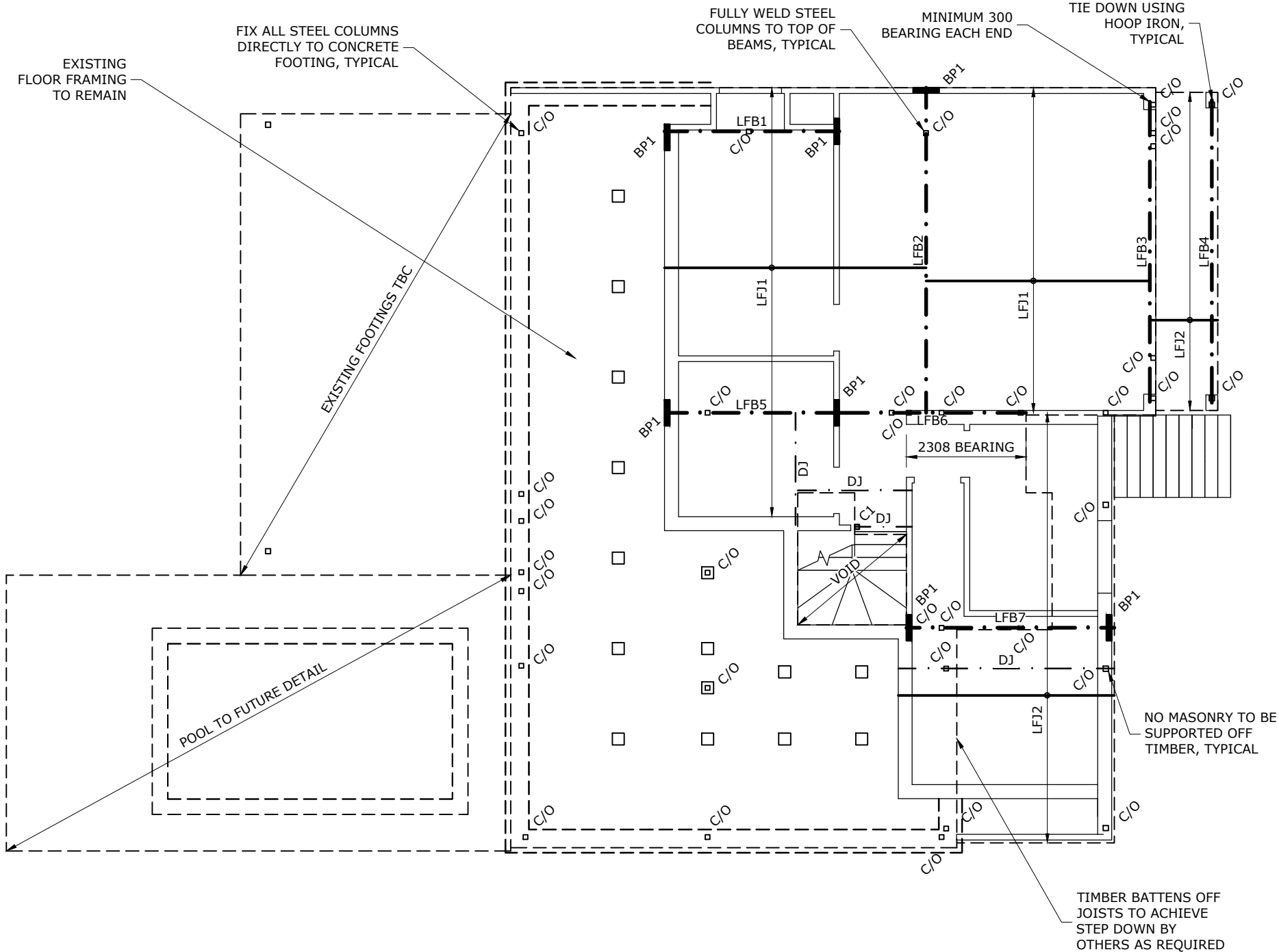
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STRUCTURAL STEEL & TIMBER FRAMING SCHEDULE			
MARK	TYPE	SECTION SIZE	COMMENT
LFB1	Floor Beam	250 UB 25.7	300 Plus
LFB2	Floor Beam	250 UC 89.5	300 Plus
LFB3	Floor Beam	250 UB 37.3	300 Plus
LFB4	Floor Beam	200 UB 22.3	300 Plus
LFB5	Floor Beam	250 UB 25.7	300 Plus
LFB6	Floor Beam	250 PFC	300 Plus
LFB7	Floor Beam	200 UB 22.3	300 Plus
LFJ1	Floor Joists	240 x 45 LVL @ 450 C/C (Fully Enclosed)	Hyspan
LFJ2	Floor Joists	200 x 45 LVL @ 450 C/C (Fully Enclosed)	Hyspan
DJ	Floor Joists	Double Joist	Hyspan
BP1	Plate	500 x 100 x 20 Steel Bearing Plate	300 Plus
C1	Column	90 x 90 MGP10 Pine (Double Stud)	Seasoned
C2	Column	135 x 135 MGP10 Pine	Treated
C3	Column	89 x 89 x 6.0 SHS	C350L0
C4	Column	135 x 70 MGP10 (Triple Stud)	Seasoned
C5	Column	90 x 90 F17	Hardwood
C6	Column	100 x 100 x 6.0 SHS	C350L0

GALVANISING NOTE:
All proposed framing members with external exposure shall be hot dipped galvanised - see notes on S1.



GROUND FLOOR FRAMING PLAN 1:100

1. Minimum 150mm end bearing for all beams unless noted otherwise.
2. Block beams down to brickwork walls under at supports unless noted otherwise.
3. Wet areas to have minimum 15mm CFC floor sheeting typical.
4. Packing to be provided over all existing ground floor walls.
5. Blocking shall be provided between joists at maximum 1.8m centres and at ends of any cantilevered joists.
6. Floor sheeting shall be screw fixed to joists at maximum 300 crs along each joists.
7. Step downs to BCA requirements.
8. Balustrades and handrails to be by others to Australian Standards.
9. C/O: Denotes column over.

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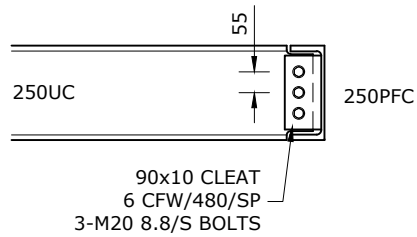
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9 ALLINGTON CRESCENT
ELANORA HEIGHTS NSW 2101**

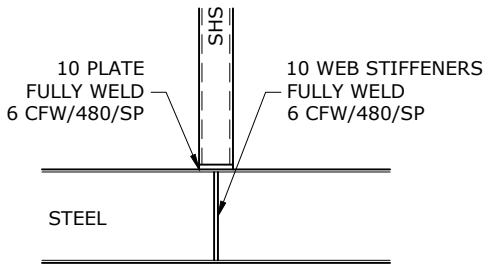
DRAWING TITLE:
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SCALE: 1:100	DATE: 15 MAR 2023	DESIGN/APPROVED: JDM	REV: 0
PROJECT: 23.019	DRAWING: S7	SIGNED:	

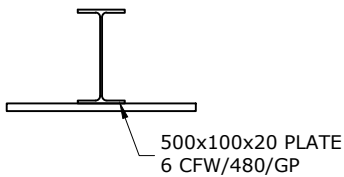
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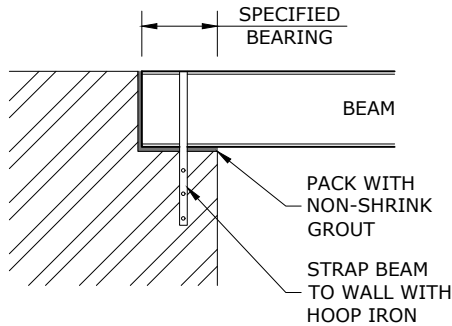
250UC TO 250PFC CONNECTION 1:20



SHS COLUMN OVER STEEL BEAM CONNECTION 1:20



500 BEARING PLATE DETAIL 1:20



TYPICAL BEAM BEARING ON MASONRY DETAIL 1:20

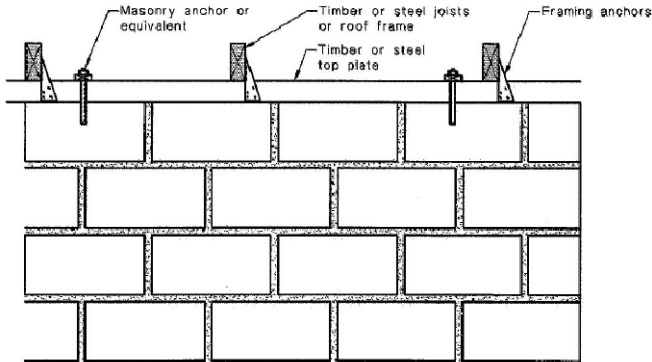


FIGURE 10.5 DETAILS OF TOP SUPPORT T5—TIMBER OR STEEL FRAMING

AS3700 TIMBER FRAMING TO MASONRY WALL CONNECTION DETAIL NTS

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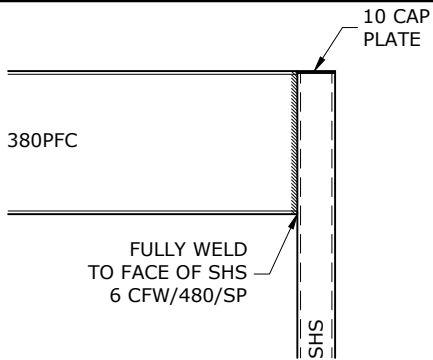
DRAWING TITLE:
Ground Floor Steel Connection Details

SCALE: 1:20	DATE: 15 MAR 2023	DESIGN/APPROVED: JDM	REV: 0
PROJECT: 23.019	DRAWING: S8	SIGNED:	

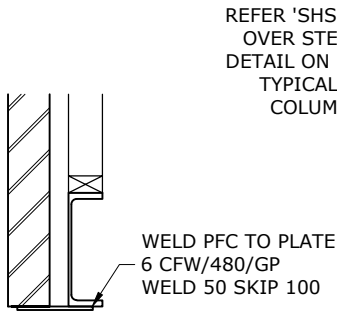
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A3 ORIGINAL SIZE

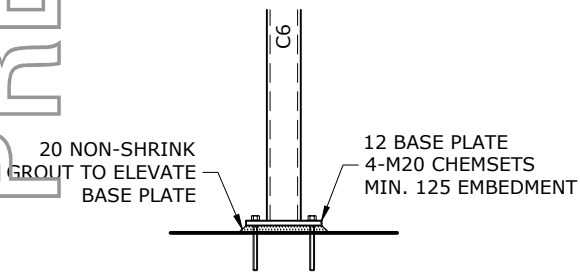
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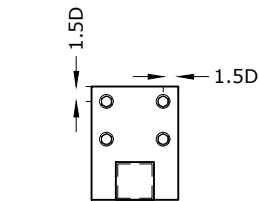
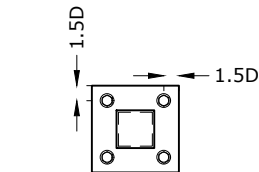
380PFC TO SHS CONNECTION 1:20



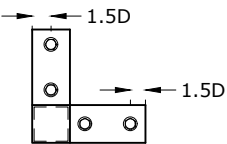
380 PFC + 200x10 PLATE DETAIL 1:20



C6 BASE DETAIL 1:20



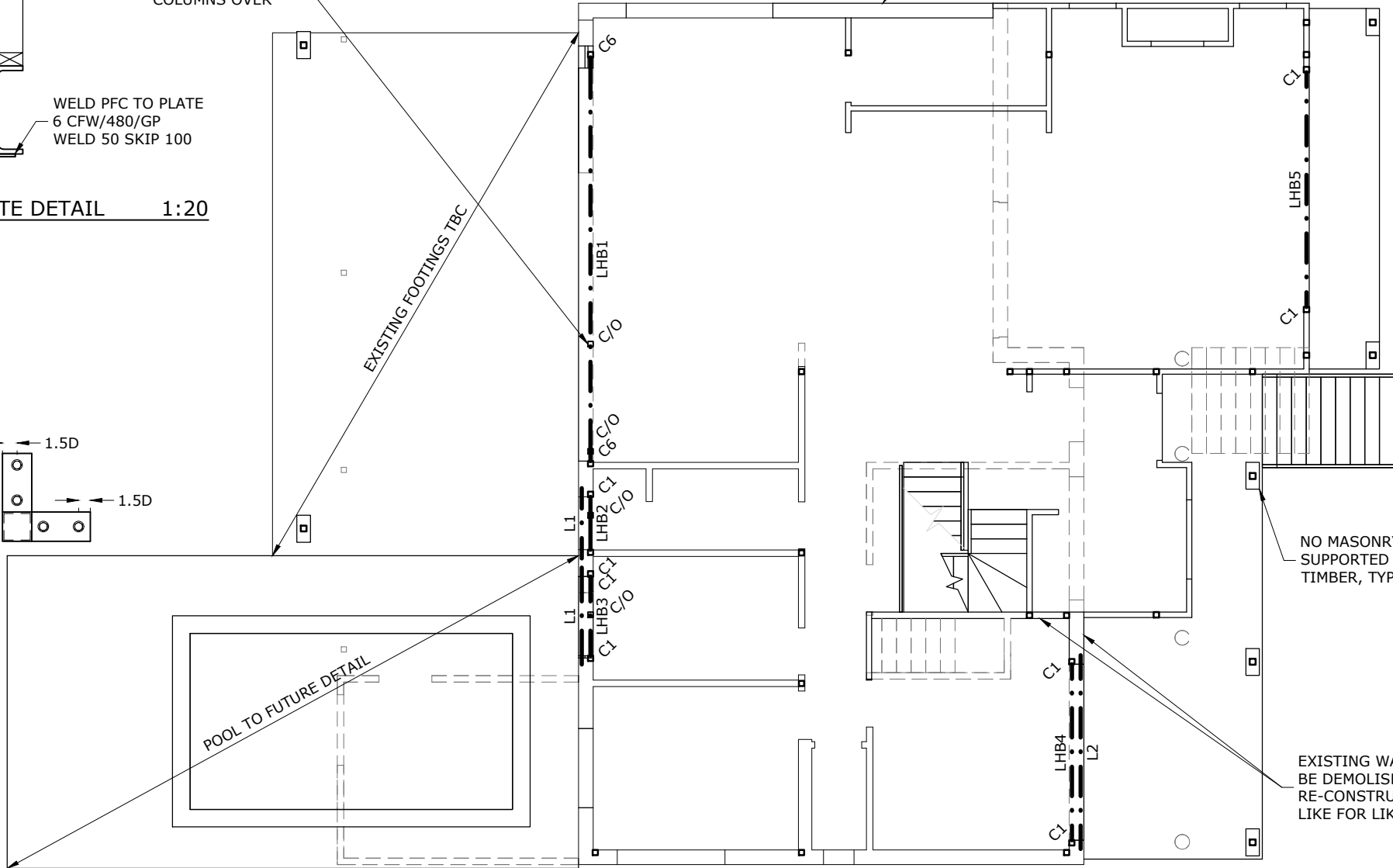
D = DIAMETER OF BOLT HOLE.



REFER 'SHS COLUMN OVER STEEL BEAM' DETAIL ON PAGE S8, TYPICAL FOR ALL COLUMNS OVER

WELD PFC TO PLATE 6 CFW/480/GP WELD 50 SKIP 100

EXISTING WALL TO BE DEMOLISHED AND RE-CONSTRUCTED LIKE FOR LIKE



GROUND FLOOR WALL FRAMING PLAN 1:100

1. Minimum 150mm end bearing for all beams unless noted otherwise.
2. Block beams down to brickwork walls under at supports unless noted otherwise.
3. Wet areas to have minimum 15mm CFC floor sheeting typical.
4. Packing to be provided over all existing ground floor walls.
5. Blocking shall be provided between joists at maximum 1.8m centres and at ends of any cantilevered joists.
6. Floor sheeting shall be screw fixed to joists at maximum 300 crs along each joists.
7. Step downs to BCA requirements.
8. Balustrades and handrails to be by others to Australian Standards.
9. C/O: Denotes column over.

STRUCTURAL STEEL & TIMBER FRAMING SCHEDULE

MARK	TYPE	SECTION SIZE	COMMENT
LHB1	Header	380 PFC + 200 x 10 Plate	300 Plus
LHB2	Header	2/150 x 45 LVL	Hyspan
LHB3	Header	2/150 x 45 LVL	Hyspan
LHB4	Header	2/200 x 45 LVL	Hyspan
LHB5	Header	2/200 x 45 LVL	Hyspan
L1	Lintel	100 x 100 x 10 EA	Galintel
L2	Lintel	150 x 100 x 10 UA	Galintel
C1	Column	90 x 90 MGP10 Pine (Double Stud)	Seasoned
C2	Column	135 x 135 MGP10 Pine	Treated
C3	Column	89 x 89 x 6.0 SHS	C350L0
C4	Column	135 x 70 MGP10 (Triple Stud)	Seasoned
C5	Column	90 x 90 F17	Hardwood
C6	Column	100 x 100 x 6.0 SHS	C350L0

GALVANISING NOTE:

All proposed framing members with external exposure shall be hot dipped galvanised - see notes on S1.

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**PROPOSED ALTERATIONS
9 ALLINGTON CRESCENT
ELANORA HEIGHTS NSW 2101**

DRAWING TITLE:

Ground Floor Wall Framing Plan

SCALE:

1:100, 1:20

DATE:

15 MAR 2023

DESIGN/APPROVED:

JDM

REV:

0

PROJECT:

23.019

DRAWING:

S9

SIGNED:

0.5 1 2 3 4 5 10

A3 ORIGINAL SIZE

GALVANISING NOTE:
All proposed framing members with external exposure shall be hot dipped galvanised - see notes on S1.



1. Minimum 150mm end bearing for all beams unless noted otherwise.
2. Block beams down to brickwork walls under at supports unless noted otherwise.
3. Wet areas to have minimum 15mm CFC floor sheeting typical.
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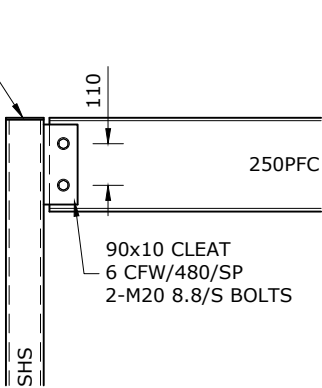
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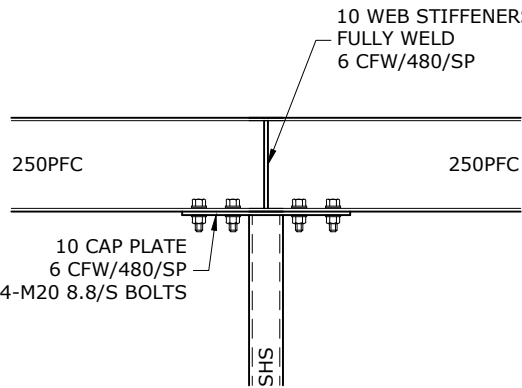
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A3 ORIGINAL SIZE

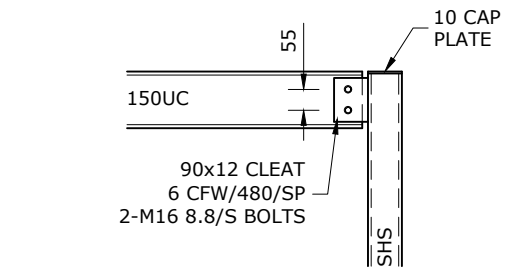
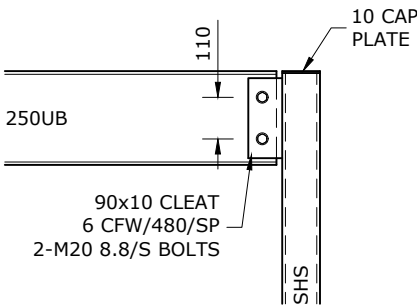
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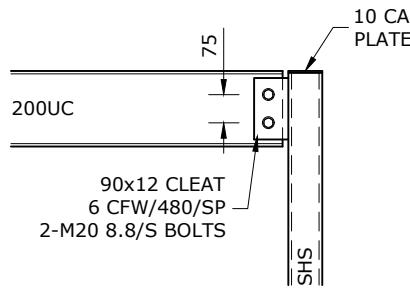
250PFC TO SHS CONNECTION 1:20



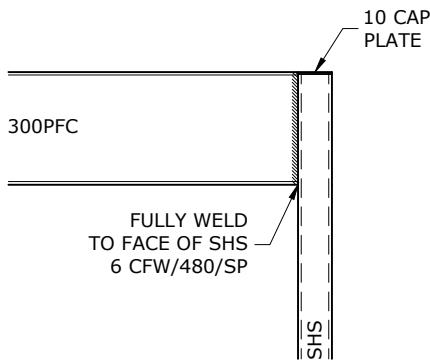
250UB TO SHS CONNECTION 1:20



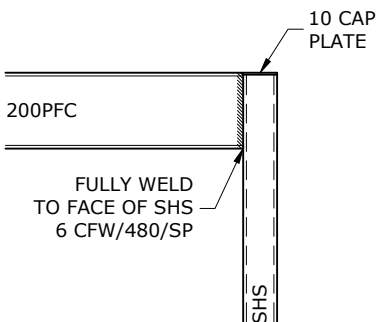
150UC TO SHS CONNECTION 1:20



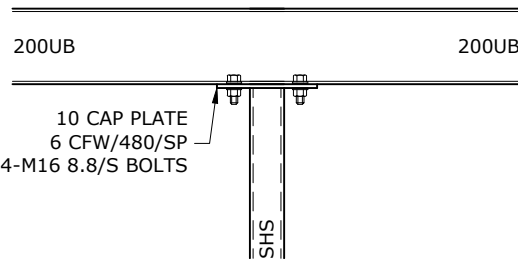
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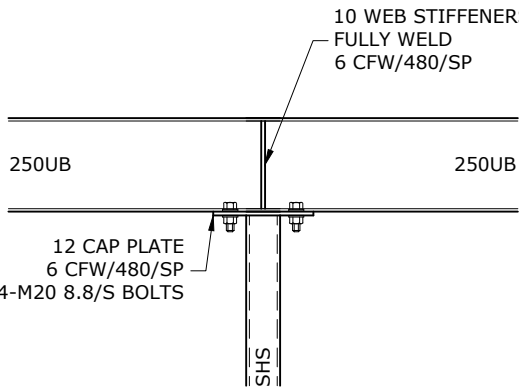
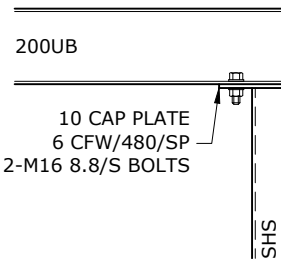
300PFC TO SHS CONNECTION 1:20



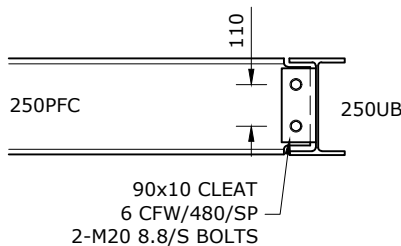
200PFC TO SHS CONNECTION 1:20



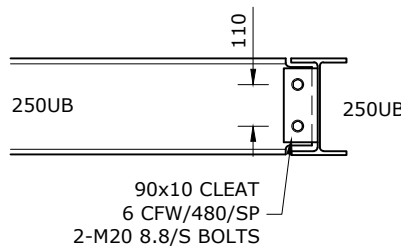
200UB TO SHS CONNECTION 1:20



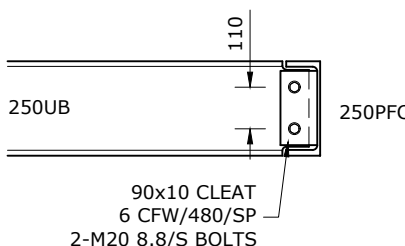
250UB TO SHS CONNECTION 1:20



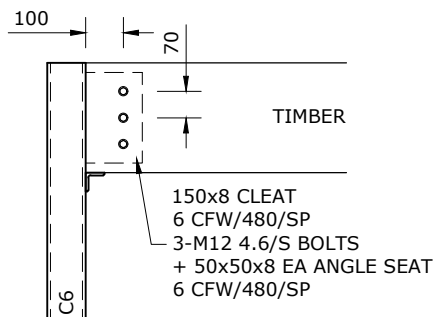
250PFC TO 250UB CONNECTION 1:20



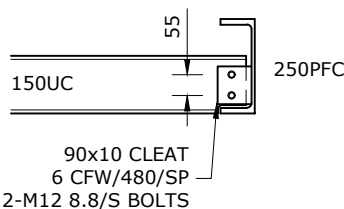
250UB TO 250UB CONNECTION 1:20



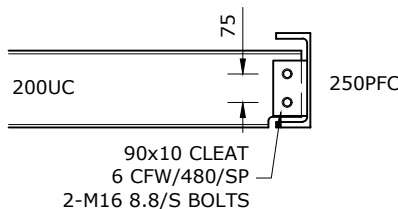
250UB TO 250PFC CONNECTION 1:20



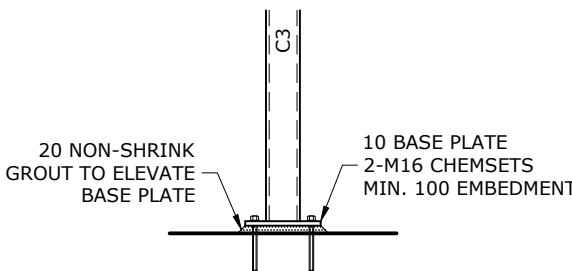
TIMBER BEAM TO STEEL COLUMN CONNECTION 1:20



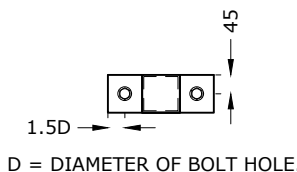
150UC TO 250PFC CONNECTION 1:20



200UC TO 250PFC CONNECTION 1:20



C3 BASE DETAIL 1:20



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ELANORA HEIGHTS NSW 2101**

DRAWING TITLE:
First Floor Steel Connection Details

SCALE: 1:20	DATE: 15 MAR 2023	DESIGN/APPROVED: JDM	REV: 0
PROJECT: 23.019	DRAWING: S11	SIGNED:	

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PRELIMINARY

STRUCTURAL STEEL & TIMBER FRAMING SCHEDULE			
MARK	TYPE	SECTION SIZE	COMMENT
URB1	Roof Beam	295 x 65 GL17	Glulam
URB2	Roof Beam	295 x 65 GL17	Glulam
URB3	Roof Beam	295 x 65 GL17	Glulam
URB4	Roof Beam	295 x 65 GL17	Glulam
URB5	Roof Beam	295 x 65 GL17	Glulam
UHB1	Header	2/150 x 45 LVL	Hyspan
UHB2	Header	2/150 x 45 LVL	Hyspan
UHB3	Header	2/150 x 45 LVL	Hyspan
C1	Column	90 x 90 MGP10 Pine (Double Stud)	Seasoned
C2	Column	135 x 135 MGP10 Pine	Treated
C3	Column	89 x 89 x 6.0 SHS	C350L0
C4	Column	135 x 70 MGP10 (Triple Stud)	Seasoned
C5	Column	90 x 90 F17	Hardwood
C6	Column	100 x 100 x 6.0 SHS	C350L0

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0		UNENDORSED	15.03.23
REV.	APP.	AMENDMENT DESCRIPTION	DATE

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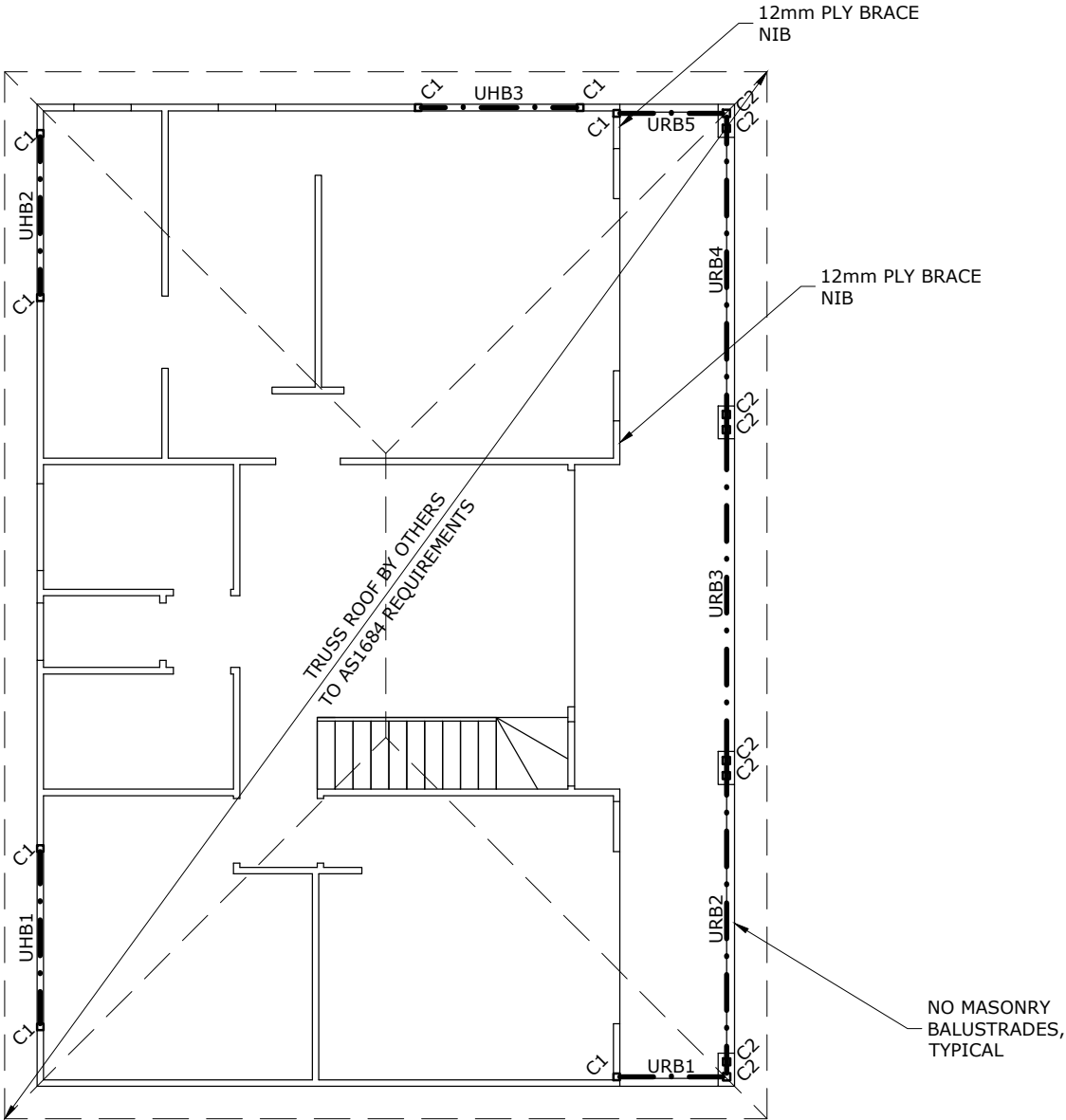


CLIENT:
GLOZIER/SHEPPARD

PROJECT NAME:
**PROPOSED ALTERATIONS
9 ALLINGTON CRESCENT
ELANORA HEIGHTS NSW 2101**

DRAWING TITLE:
Roof Framing Plan

SCALE: 1:100	DATE: 15 MAR 2023	DESIGN/APPROVED: JDM	REV: 0
PROJECT: 23.019	DRAWING: S12	SIGNED:	



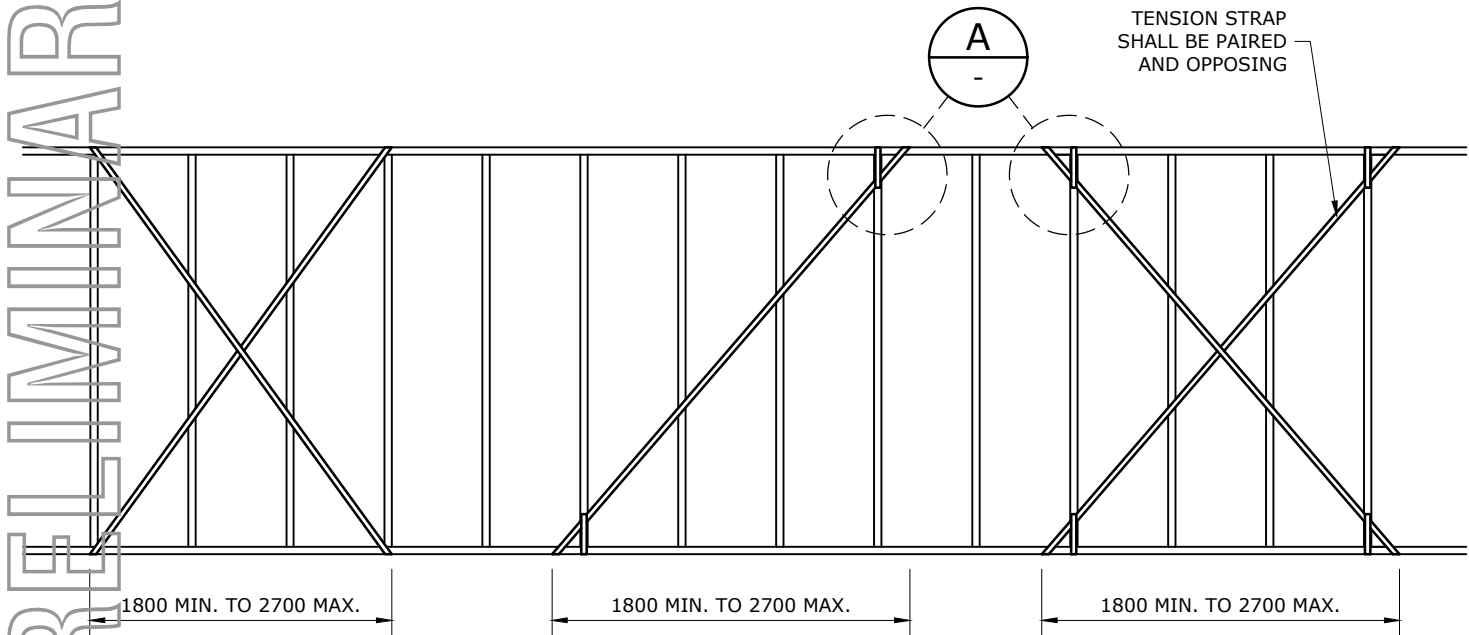
ROOF FRAMING PLAN 1:100

- 1. New timber roof framing to AS 1684 specifications.
- 2. Roof trusses shall be to manufacturer's specifications.
- 3. Balustrades and handrails to be by others to Australian Standards.

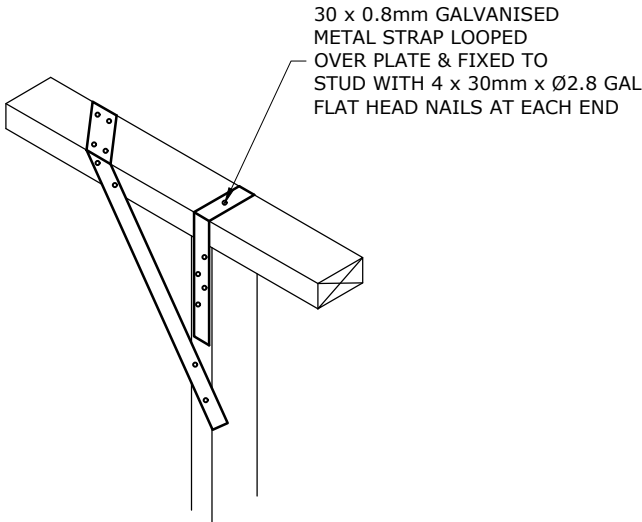
DO NOT SCALE FROM DRAWINGS - USE ONLY FIGURED DIMENSIONS

A3 ORIGINAL SIZE

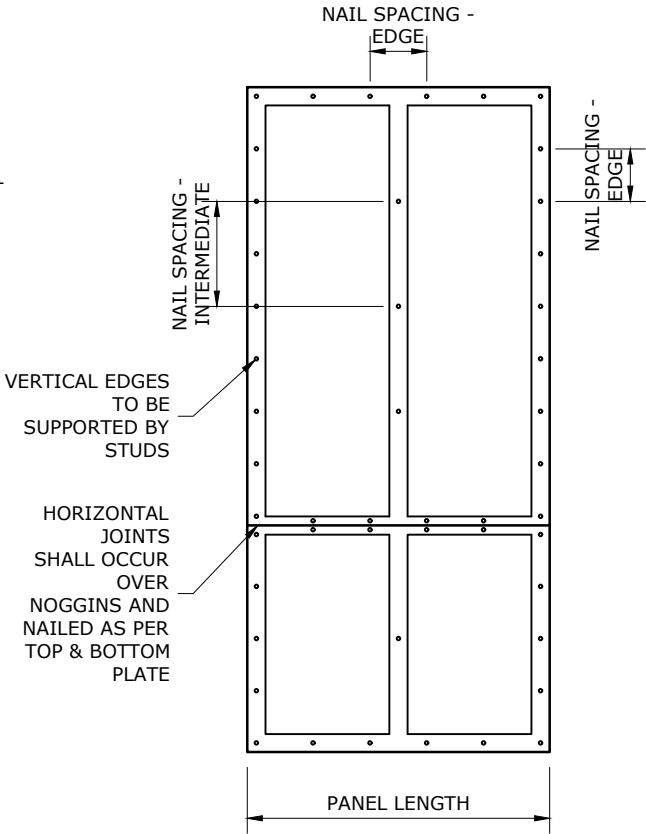
PRELIMINARY



TYPE A TENSION STRAP TYPE A METAL ANGLE TYPE B TENSION STRAP



DETAIL A



SHEET BRACING DETAILS
TYPE C

TYPE A - SHEET BRACING (PA) SPECIFICS

PRODUCT	AUSTRALIAN STANDARD	TYPE / GRADE	MINIMUM THICKNESS (mm) FOR STUD SPACING (mm)		PANEL LENGTH (mm)	NAIL SIZE (mm)	NAIL SPACING (mm)		SPECIAL REQUIREMENTS
			450	600			EDGE	INTERMEDIATE	
PLYWOOD	AS2269	F8 F11 F14 F27	7	9	900	30xØ2.8 GALV.	150	300	NO NOGGING REQ'D EXCEPT AT SHEET ENDS. NAILS SHALL BE 7mm FROM ALL EDGES
			6	7					
			6	6					
			6	6					
HARDBOARD (MASONITE)	AS2458	G.P.	6.4	6.4	900	30xØ2.8 GALV.	100	300	NAILS TO BE 10mm FROM VERTICAL EDGES & 20mm FROM HORIZONTAL EDGES. NO NOGGING REQ'D EXCEPT AT SHEET ENDS.

- TYPE A - SHEET BRACING NOTES
- PANEL LENGTHS GREATER THAN THOSE LISTED ABOVE CAN BE CONSIDERED AS A NUMBER OF BRACING UNITS DIRECTLY PROPORTIONED TO THEIR INSTALLED LENGTH i.e. A 1200mm PANEL OF PLYWOOD EQUALS 1200 / 900 = 1.33 BRACING UNITS.
 - NAILS SHOULD BE DRIVEN JUST BELOW THE SURFACE OF THE SHEET USING THE HAMMER FACE ONLY. NAILS MUST NOT BE PUNCHED.
 - PLYWOOD PANEL LENGTHS OF 600mm ARE EQUIVALENT TO 2/3 OF A TYPE A BRACING UNIT.
 - FOR STUD SPACING OF 600mm c/c WHERE NOGGINS ARE INSTALLED AND THE PLYWOOD BRACING PANELS ARE NAILED TO THE NOGGINS AT 1500mm c/c, THE PLYWOOD THICKNESS MAY BE AS FOR STUD SPACING AT 450mm c/c.
 - PA* INDICATES FULL LENGTH AVAILABLE.
 - REFER TO TABLE 1 ON THE FOLLOWING SHEET FOR TOP & BOTTOM PLATE FIXING DETAILS.

TYPE A - STRAP BRACING (SA) SPECIFICS

TYPE OF DIAGONAL BRACE	MATERIAL & SIZE	NAILING REQUIREMENTS		SPECIAL REQUIREMENTS
		TO EACH STUD	TO EACH PLATE	
METAL ANGLE	GALVANISED ANGLE, NOM. SECTION 20x18x1.2mm MIN. NET SECTION 42mm²	1x30xØ2.8 GALV. FLAT HEAD NAIL	2x30xØ2.8 GALV. FLAT HEAD NAIL	DRILL HOLES IF NECESSARY TO PREVENT NAIL SPLITTING
TENSION STRAP	GALVANISED FLAT METAL TENSION STRAPPING OF MIN. THICKNESS 0.8mm & MIN. NET SECTION OF 15.2mm²	1x30xØ2.8 GALV. FLAT HEAD NAIL	3x30xØ2.8 GALV. FLAT HEAD NAIL	STRAPS MUST BE PROPERLY TENSIONED

TYPE C - SHEET BRACING (PB) SPECIFICS

PRODUCT	AUSTRALIAN STANDARD	TYPE / GRADE	MINIMUM THICKNESS (mm) FOR STUD SPACING (mm)		PANEL LENGTH (mm)	NAIL SIZE (mm)	NAIL SPACING (mm)		SPECIAL REQUIREMENTS
			450	600			EDGE	INTERMEDIATE	
PLYWOOD	AS2269	F8 F11 F14 F27	7	9	900 / 1200	30xØ2.8 GALV.	50 TO PLATES & 150 TO EDGE STUDS	300	NO NOGGING REQ'D EXCEPT AT SHEET ENDS. NAILS SHALL BE 7mm FROM ALL EDGES
			6	7					
			6	6					
			6	6					
HARDBOARD (MASONITE)	AS2458	G.P.	6.4	6.4	900 / 1200	30xØ2.8 GALV.	50 TO PLATES & 150 TO EDGE STUDS	300	NAILS TO BE 10mm FROM VERTICAL EDGES & 20mm FROM HORIZONTAL EDGES. NO NOGGING REQ'D EXCEPT AT SHEET ENDS.

- TYPE B - SHEET BRACING NOTES
- PANEL LENGTHS GREATER THAN THOSE LISTED ABOVE CAN BE CONSIDERED AS A NUMBER OF BRACING UNITS DIRECTLY PROPORTIONED TO THEIR INSTALLED LENGTH i.e. A 1200mm PANEL OF PLYWOOD EQUALS 1200 / 900 = 1.33 BRACING UNITS.
 - NAILS SHOULD BE DRIVEN JUST BELOW THE SURFACE OF THE SHEET USING THE HAMMER FACE ONLY. NAILS MUST NOT BE PUNCHED.
 - PB* INDICATES FULL LENGTH AVAILABLE.
 - REFER TO TABLE 1 ON THE FOLLOWING SHEET FOR TOP & BOTTOM PLATE FIXING DETAILS.

TYPE B - STRAP BRACING (SB) SPECIFICS

TYPE OF DIAGONAL BRACE	MATERIAL & SIZE	NAILING REQUIREMENTS		SPECIAL REQUIREMENTS
		TO EACH STUD	TO EACH PLATE	
TENSION STRAP	GALVANISED FLAT METAL TENSION STRAP NOM. SIZE 30x0.8mm & MIN. SECTION OF 24mm²	2x30xØ3.15 GALV. FLAT HEAD NAIL	4x30xØ2.8 GALV. FLAT HEAD NAIL	STRAPS MUST BE PROPERLY TENSIONED & STRAP MUST RETURN OVER TOP PLATE & UNDER THE BOTTOM PLATE. THE STUD NEAREST TO EACH END OF EACH DIAGONAL STRAP SHALL BE FIXED TO THE PLATES WITH STRAPS OR FRAMING ANCHORS 4x30xØ2.8 NAILS AT EACH END.

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CLIENT:
GLOZIER/SHEPPARD

PROJECT NAME:
**PROPOSED ALTERATIONS
9 ALLINGTON CRESCENT
ELANORA HEIGHTS NSW 2101**

DRAWING TITLE:
Typical Bracing Details Page 1 of 2

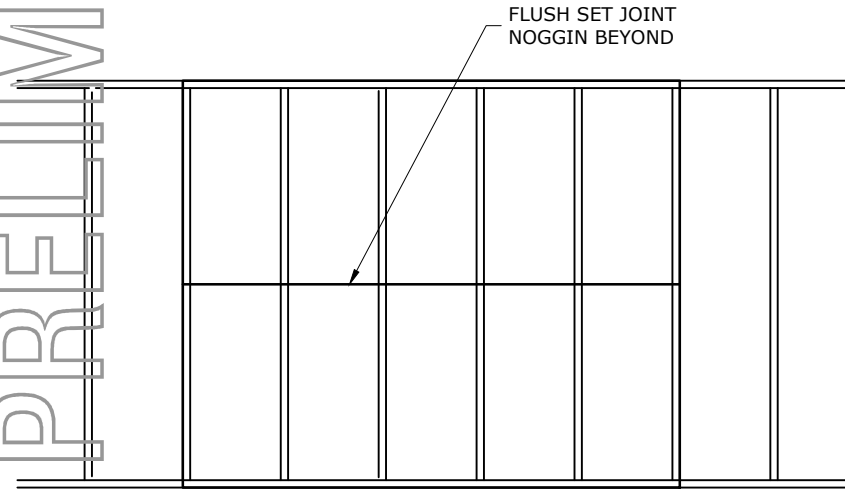
SCALE: NTS	DATE: 15 MAR 2023	DESIGN/APPROVED: JDM	REV: 0
PROJECT: 23.019	DRAWING: S13	SIGNED:	

GENERAL NOTES

1. FIXING SHOULD COMMENCE AS CLOSE AS POSSIBLE TO THE ENDS OF EACH BRACING UNIT.
2. WALL TOP PLATES MUST BE DESIGNED TO PROVIDE LATERAL LOAD TRANSFER WHILE ALLOWING TRUSS TO SETTLE UNDER DEAD LOAD.

SUB-FLOOR BRACING

ALL BRACING SHALL BE FIXED TO THE FLOOR OR FOOTING BELOW & THE FLOOR ABOVE TO ENABLE THE TRANSFER OF THE FULL DESIGN STRENGTH OF THE BRACING SYSTEM.
BRACING IN THE SUB-FLOOR SHALL BE EVENLY DISTRIBUTED. THE MAXIMUM DISTANCE BETWEEN BRACING SETS, STUMPS, PIERS, WALLS OR POSTS, etc. UNDER A PLATFORM STRIP OR SHEET TIMBER FLOOR SYSTEM SHALL BE 1400mm PROVIDED THE MINIMUM WIDTH OF THE FLOOR IS 6000mm.



PROVIDE NAILING
PLATE WITH
4x30xØ2.8 GALV.
NAILS

10mm ANCHOR
BOLT

DIMENSTON 'A'

TYPICAL ANCHORING DETAILS

TYPICAL NAILING PLATE & ANCHOR BOLT
ANCHOR BOLTS ARE Ø10mm & ARE FOR TYING THE WALLS BOTTOM PLATE TO THE SUB-STRUCTURE. A STANDARD Ø30mm FLAT ROUND WASHER MUST BE USED UNDER EACH NUT EXCEPT WHERE TIE DOWN STRAPS ARE USED. ANCHOR BOLTS MAY BE REPLACED WITH M10 CHEMSET ANCHORS.

MAXIMUM DIMENSION 'A' WITH TOP & BOTTOM PLATE OF		
75 x 38 F1	470 x 45 F5	70 x 35 F5
220	110	60

HARDIES VILLABOARD BRACING DETAILS (V)

NOTES

1. SHEETS SHOULD BE FIXED TO TIMBER FRAMED BRACING WALLS WITH 30xØ2.8 FIBRE CEMENT NAILS (GALVANISED).
2. NAILS SHOULD BE DRIVEN JUST BELOW THE SURFACE OF THE SHEET USING THE HAMMER FACE ONLY. NAILS MUST NOT BE PUNCHED.
3. ANCHOR BOLTS MUST BE PLACED AT BOTH ENDS OF EACH SECTION OF BRACING WALL AND NOT AT MORE THAN 2400mm c/c.
4. ANCHOR BOLTS MUST BE LOCATED WITHIN DIMENSION 'A' OF THE ADJACENT FACE OF THE STUDS ABOVE AND IN THE TABLE FOLLOWING.
5. BETWEEN ANCHOR BOLTS 1-M10 BOLT SHALL BE PROVIDED AT A MAXIMUM OF 1200mm c/c TO FURTHER FIX THE BOTTOM PLATE TO THE SUB-STRUCTURE.

PLATE FIXING TABLE - (TABLE 1)

BRACING TYPE	PLATE	FIXING DETAILS
TYPE A	BOTTOM PLATE TO JOISTS	2 / 75mm NAILS AT 600mm c/c ALONG JOIST FOR PLATES TO 38mm THICK & 2 / 90mm NAILS AT 600mm c/c ALONG JOIST FOR PLATE TO 50mm THICK.
	BOTTOM PLATE TO SLAB	1 / 75mm MASONRY NAIL AT 1200mm c/c FOR PLATES TO 38mm THICK & 1 / 90mm MASONRY NAIL AT 1200mm c/c ALONG JOIST FOR PLATE TO 50mm THICK.
TYPE B	BOTTOM PLATE TO JOISTS	1-M10 BOLT OR 1 / 30xØ0.8 GALVANISED METAL STRAP AT MAXIMUM 1200mm c/c ALONG JOIST OR TO EVERY SECOND JOIST. STRAP TO HAVE 3 / 30xØ2.8 NAILS EACH END.
	BOTTOM PLATE TO SLAB	1-M10 BOLT OR CAST-IN GALVANISED METAL BOTTOM PLATE CONNECTOR AT EACH END OR BRACING UNIT & AT 1200mm MAXIMUM c/c.
ALL TYPE A OR B	TOP PLATE TO CEILING OR ROOF FRAMING	JOISTS, BATTENS OR RAFTERS SHALL BE FIXED TO TOP PLATES WITH 2 / 75mm NAILS AT EACH CROSSING AT MAXIMUM OF 1200mm c/c ALONG THE TOP PLATE. TRUSSES CAN BE FIXED TO TOP PLATE USING BLOCKING OR PROPRIETARY CONNECTORS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

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PROJECT NAME:

PROPOSED ALTERATIONS
9 ALLINGTON CRESCENT
ELANORA HEIGHTS NSW 2101

DRAWING TITLE:

Typical Bracing Details Page 2 of 2

SCALE:

NTS

DATE:

15 MAR 2023

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PROJECT:

23.019

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Table 2: Maximum unsupported wall height – single skin (leaf) or cavity wall

Width of brick or block (mm)		Maximum unsupported wall height (mm)			
		Low to moderate winds		Fresh winds	
Brick	90	Single skin	1500	Single skin	750
		Cavity	2100	Cavity	1050
	110	Single skin	1800	Single skin	900
		Cavity	2500	Cavity	1250
Block	90	1050		525	
	140	1600		800	
	190	2500		1250	

Note: This table is based on a maximum spacing of 3 m between supports, and applies to standard-weight extruded or pressed-clay bricks and hollow-core concrete blocks. Lower heights apply for lighter weight bricks or blocks – seek engineering or manufacturer's advice.

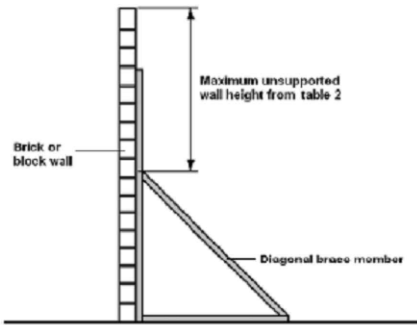


Figure 1: Illustration of unsupported wall height above a brace

Note: The upright member above the diagonal is ignored, as it may not be rigid enough to provide support. If the brace was not in place, the maximum unsupported wall height from table 2 would apply from ground level.

AS 1684.2 N1/N2 Supp 1 - 2006

Wind classification N1/N2 - Seasoned softwood - Stress grade F5

TABLE 36

		Floor Joist Spacing (mm)															
		450				600				450				600			
Upper Floor Load Width (mm)		1800	3600	4800	1000	3600	4800	1800	3600	4800	1800	3600	4800	1800	3600	4800	
Size DxB (mm)	Stud Height (mm)	Maximum Roof Load Width (mm)															
		Sheet Roof						Tile Roof									
		Stud Spacing 450 mm															
70x35	2400	7500	7500	7200	7500	5800	N5	6700	4700	3200	4600	2600	N5	N5			
	2700	6300	3600	N5	N5	4200	N5	N5	2100	N5	2500	N5	N5	N5	N5		
	3000	2300	N5	N5	N5	N5	N5	N5	N5	N5	N5	N5	N5	N5	N5	N5	
70x45	2400	7500	7500	7600	7500	7500	7000	7500	7400	5800	6600	4600	3100				
	2700	7500	7500	6500	7500	4500	N5	6000	4000	2300	4100	2000	N5				
	3000	5400	2800	N5	3600	N5	N5	3300	1600	N5	2200	N5	N5	N5	N5		
2/70x35	2400	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	
	2700	7500	7500	7500	7500	7500	7500	7500	7500	7500	6900	7500	5600	4200			
	3000	7500	7500	7500	7500	6400	1800	7500	5100	3600	3600	3600	3600	N5	N5		
2/70x45	2400	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	
	2700	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	
	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	
90x35	2400	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	
	2700	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	
	3000	7500	7500	7500	7500	7500	6700	3300	7500	5700	4200	5400	3400	1500	4800		
90x45	2700	7800	7800	7800	7500	7500	7500	7500	7500	7800	7500	7500	7500	7500	7500	7500	
	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7100	7500	5600	4100			
	2/90x35	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	
2/90x45	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	

		Stud Spacing 600 mm											
70x35	2400	7500	7500	5200	7100	4200	N5	5800	4400	2800	4000	2400	N5
	2700	3800	N5	N5	2200	N5	N5	2300	N5	N5	N5	N5	N5
70x45	2400	7500	7500	7500	7500	6500	7500	7500	7000	5500	6500	4400	2800
	2700	7500	5600	3500	5700	2900	N5	4800	3300	2000	3300	1800	N5
2/70x35	2400	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/70x45	2400	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
90x35	2400	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
90x45	2400	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/90x35	2400	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/90x45	2400	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500

NOTES:

- i) Maximum Roof Load Widths are based on the support of a maximum total sheet roof, framing and ceiling mass of 40kg/m² and a maximum flooring mass of 40kg/m². For guidance on roof and ceiling mass refer to Appendix B.
ii) Studs for intermediate loadbearing bracing walls and partitions (not carrying roof loads) shall be as per Clause 6.3.5.
iii) Edge distances for some sheet bracing materials may require a minimum stud width of 45mm for joining sheets.
iv) For gable or skillion roofs (not supporting floor or roof loads) refer Clause 6.3.2.5.
v) Large stud sizes may be made up by vertical nail termination as per Clause 6.4.
vi) For design parameters refer to Figure 6.1.2.
vii) All stud walls shall be nogged at not more than 1350mm centres.
viii) Where studs are used for tie-down, the maximum tension load that can be imparted to the stud is 8.5kN per stud or laminate where they are nail terminated.

AS 1684.2 N1/N2 Supp 1 - 2006

Wind classification N1/N2 - Seasoned softwood - Stress grade F5

TABLE 7

Size Stud DgB (mm)	Stud Height (mm)	Rafer / Truss Spacing (mm)											
		Maximum Roof Load Width (mm)											
		Sheet Roof						Tile Roof					
		Stud Spacing 450 mm											
70x35	2400	7500	7500	7500	7500	5800	7500	6900	4500	3300	4100	2700	2000
	2700	7500	7500	7500	7500	5800	7500	6900	4500	3300	4100	2700	2000
	3000	4900	5200	2500	1500	2900	2700	2700	N5	N5	N5	N5	N5
70x45	2400	7500	7500	7500	7500	7500	7500	7500	5800	4300	3000	2400	1800
	2700	7500	7500	5900	5200	7500	6000	4000	3000	2400	1800	1200	900
	3000	7500	6300	4200	3200	2900	3600	2400	1800	1200	900	600	300
2/70x35	2400	7500	7500	7500	7500	7500	7500	7500	7500	6800	4900	3400	2600
	2700	7500	7500	7500	7500	7500	7500	7500	6400	4900	3400	2600	2100
	3000	7500	7500	7500	7500	7500	7500	7500	6400	4900	3400	2600	2100
2/70x45	2400	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
90x35	2400	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
90x45	2400	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/90x35	2400	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
2/90x45	2400	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	2700	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500
	3000	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500