

PROPOSED NEW DWELLING
25 MARINE DRIVE
WALLABI POINT, NSW 2430
FOR: G.J GARDNER

ENGINEERING DETAILS

DRAWING No 13106
AMENDMENT -A- 01.03.2023

Drawing Schedule

Sheet No	Title
1	COVER SHEET
2	CONSTRUCTION NOTES
3	RETAINING WALLS
4	SLAB PLAN
5	DETAIL
6	UPPER FLOOR FRAME
7	DETAIL
8	ROOF FRAME

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ABN 87 130 986 935

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Postal Address: PO Box 1076 Port Macquarie NSW 2444

02 6583 2733 office@brconsulting.net.au

THIS DESIGN IS BASED ON ALL SURROUNDING PROPERTIES BEING FINISHED ON NATURAL GROUND WITH THE ZONE OF INFLUENCE OF ANY PROPOSED STRUCTURES, IMPOSING NO ADDITIONAL LOADS ABOVE OR BELOW PROPOSED STRUCTURES.
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BRC WILL NOT BE HELD LIABLE ABSENCE OF DETAILED INFORMATION OF NEIGHBORING STRUCTURES THAT MAY AFFECT THE STRUCTURAL PERFORMANCE OF THE DESIGN TO SUPPORT THE PROPOSED STRUCTURES.

CONSTRUCTION NOTES:

PODS

- 1. Pods to be installed to manufacturer's specification
- 2. Pods nominated as extended may have rib deleted in one direction only. Maximum extension 0.5m

CONCRETE

- 1. All workmanship and materials shall be in accordance with AS 3600, current edition with amendments.
- 2. Concrete quality: All cement shall be Type A Normal Portland Cement.

Element	Slump mm	Max. Size Agg. mm	f _c MPa	Special Requirements
FOOTINGS	80	20	20	330 kg/m3 min cement content
SLAB ON GROUND	80	20	25	
SUSPENDED SLAB	80	20	40	

Strength shall be verified by plant control testing.

- 3. Clear concrete cover to reinforcement including ties and stirrups shall as follows unless shown otherwise:

Element	Exposure Classification		
	A1 Sheltered locations	B1 External locations over 1km from saltwater shoreline	B2 External locations within 1km of saltwater shoreline
Strip footings	-	50	50
Columns and piers	20	40	50
Beams	20	40	45
Slabs and walls	20	40	45

Note that slabs placed over a membrane on ground are included as A1.


- 4. Reinforcement symbols:


N denotes Grade 500 deformed normal ductility bar to AS 4671.

R denotes Grade 250 plain round normal ductility bar to AS 4671.

SL denotes Grade 500 low ductility square welded mesh to AS 4671.

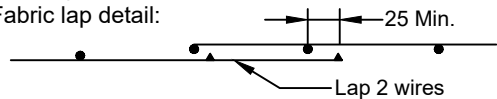
RL denotes Grade 500 low ductility rectangular welded mesh to AS 4671.

 denotes direction of main bars of rectangular mesh (main bars down for bottom reinforcement, main bars up for top reinforcement).

 denotes square mesh.

 denotes extent of reinforcement.

- 5. All unsupported bars shall be tied in the transverse direction to N12-250 unless otherwise noted.
- 6. Reinforcement is shown diagrammatically and is not necessarily shown in the true projection.
- 7. Splices in the reinforcement shall be made only in the positions shown. The written approval of the Supervising Officer shall be obtained for any other splices. Where the lap length is not shown it shall at least 30 bar diameters and of sufficient length to develop the full strength of the reinforcement.
- 8. Welding of reinforcement will not be permitted unless shown on the structural drawings.
- 9. Fabric lap detail:



- 10. Slab reinforcement shall extend at least 65 onto masonry support walls unless shown otherwise.
- 11. Concrete sizes shown are minimum and no reductions by ducts, pipes, etc. shall be made without the approval of the Supervising Officer. Sizes do not include thickness of applied finishes.
- 12. All fillets are to be 50mm unless shown otherwise.
- 13. Pipes or conduits shall not be placed within the concrete cover to reinforcement without the approval of the Supervising Officer.
- 14. No holes or chases other than those shown on the structural drawings shall be made in concrete members without the prior approval of the Supervising Officer.
- 15. Construction joints where not shown shall be located to the approval of the Supervising Officer.
- 16. The contractor shall notify the Engineer 24 hours before pouring concrete.
- 17. To ensure that the slab is effective as a termite barrier and is structurally adequate the concrete is to be compacted using high frequency vibrators at 1.0m centres or by a vibrating screed.
- 18. Columns, piers, and pedestals shall be placed 24 hours (min.) before concrete in slabs or beams over.
- 19. Formwork for suspended floors is to remain in place for 14 days. Backpropping is to remain in place for a further 14 days. If loaded with building materials such as bricks, sand piles, gyprock etc props are to remain in place until these materials are no longer present. Bondek (or equivalent) slabs are to be constructed and propped to manufacturer's specifications.
- 20. Curing of all concrete surfaces shall commence immediately after surfaces are finished as specified. Curing shall be by moisture retention (eg. Polythene sheet, damp hessian or curing compound) and is to continue for 7 days minimum after pouring concrete.

GENERAL

- 1. These drawings shall be read in conjunction with all architectural and other consultants drawings and specifications and with such other written instructions as may be issued during the course of the contract. Dimensions shown on these Engineering drawings shall generally override other relevant dimensions. All discrepancies shall be referred to the Supervising Officer for decision before proceeding with the work.
- 2. Dimensions shall not be obtained by scaling the structural drawings.
- 3. All dimensions, levels & contours shall be verified on site by the Contractor who shall be responsible for their correctness.
- 4. The contractor shall be responsible for maintaining the structure and neighbouring structures in a safe and stable condition during construction. No part shall be over-stressed.
- 5. All workmanship and materials shall be in accordance with the requirements of the current edition of the National Construction Code (NCC), Building Code of Australia (BCA), current SAA Codes and the By-Laws and Ordinances of the relevant Government Authority.
- 6. Provide site drainage in accordance with the current version of the BCA. On sloping sites provide a subsoil drain along outer side of footing on high side of building.

DESIGN LOADS

- 1. The structure shown on these drawings has been designed for dead loads generally in accordance with AS1170 and wind loads to AS1170 and AS4055.
- 2. Live loads have been applied in accordance with AS1170 as follows:

Internal Areas	1.5 kPa
Balconies	2.0 kPa
Garages/Carparking	3.0 kPa
Roofs	0.25 kPa
- 3. The site wind classification to AS4055 has been calculated to be N2.

FOUNDATIONS & EXCAVATION

- 1. All workmanship and materials shall be in accordance with AS2870, current edition with amendments
- 2. Strip underslab area of all topsoil, debris and organic matter. Cut and/or fill as required or as shown on drawings.
- 3. Unless otherwise noted, footings and edgebeams are to bear on FIRM NATURAL GROUND at approximately 400mm below original surface. MINIMUM BEARING CAPACITY 100 kPa. Where PIERS or PILES are required, these are to be founded 500mm minimum below either finished excavation level in cut areas or stripped natural ground level in fill areas or as shown on the drawings. Ensure at least 500mm embedment into firm foundation or as shown on drawings. Driven piles or screw piles are to be referred to the Supervising Engineer prior to selection.
- 4. If BEDROCK is encountered all footings, edgebeams and load-bearing slab beams are to be founded on rock. Provide piers as necessary to Engineers instructions.
- 5. Site fill is to be free from organic material and topsoil and in accordance with AS2870 "Controlled Fill." Fill is to be compacted in 150 thick layers to at least 98% maximum dry density. Filled areas shall comply with AS2870 section 6.4.2.
- 6. Extend foundation excavation through any layer of black clay, disturbed natural ground, soft or loose material, uncontrolled or poorly compacted fill and stump holes. Backfill material to be coarse sand, quarry grit or equivalent approved material and shall be compacted in layers to AS2870, section 6.4.2 and as noted above. Total thickness of backfilled areas shall be 300mm minimum.
- 7. Provide a binding layer of granular material such as coarse sand or quarry grit or other approved non-plastic material immediately under slab, 75 thick minimum. Compact to 98% maximum dry density.
- 8. All service pipes laid under slab or footings are to be bedded in accordance with AS3500 and backfilled with controlled fill to AS2870 or as noted on the drawings or alternative approved method.
- 9. An unpunctured polythene vapour barrier (DPM), 0.2mm thick is to be provided under the total area of the floor slab, including edgebeams & internal beams & terminated at ground level. Joints in membrane are to be lapped a minimum of 200mm and sealed with pressure sensitive tape. Service pipes through slab are to be wrapped with polythene membrane that is in turn lapped and sealed with main layer.
- 10. Foundation material shall be approved immediately before placing concrete.
- 11. Design and Site Classification to AS 2870 is Class "P" Site. From Geotech report Number P/659-20-T/20493. by Construction Sciences.
- 12. Treat against Termite infestation to AS2870, AS3360.1 and Council Termite Code as nominated in the DA Consent.
- 13. If earthworks reveal ground anomalies including soft or 'spongey' soil, stump holes, bedrock, large tree roots or other similar questionable material contact supervising Engineer for inspection and assessment.
- 14. If trees within 10m of the building are to remain or have been recently removed contact this office as these trees may affect site classification and slab and/or footing design.
- 15. In areas where ground water is encountered, sub-soil drains are to be provided at steps in the floor slab & to the perimeter of the building to intercept and divert the water around the building.

BRICK AND CONCRETE BLOCK MASONRY

- 1. All workmanship and materials shall be in accordance with AS 3700, current edition with amendments.
- 2. Two layers of approved metal based slip joint material shall be laid under all slabs where they bear on brickwork.
- 3. Walls shown on structural drawings are load bearing walls. Non load bearing walls under slabs shall be separated from the concrete by a minimum of 10mm thick compressible material.
- 4. No brickwork which is supported by the slab shall be erected until formwork has been removed.
- 5. Brick mortar to be 1:1:5 proportions by volume of cement, lime and sand unless otherwise noted.
- 6. Brick strength of load bearing brickwork to be a minimum of f_{uc} = 12 Mpa unless otherwise noted.
- 7. Provide control joints in masonry walls as shown on the drawings or at 6m maximum spacing. Where a masonry wall is positioned over a control joint in a slab the joint is to continue up the wall.

REINFORCED CONCRETE BLOCK MASONRY

- 1. All materials shall be in accordance with AS 3700, current edition with amendments.
- 2. Workmanship involved in placing concrete units shall comply with AS 3700 and all units shall be have fully bedded face shells and cross walls.
- 3. The design strength of concrete masonry shall be:

Element	Strength Grade of Units	Mortar Mix
		Cement, Lime ,Sand
BASEMENT WALLS & RETAINING WALLS	15 MPa (BLOCKS)	1 : 0.1 : 3

- 4. Clean out holes shall be provided at the base of all reinforced cores.
- 5. Unless noted otherwise the cores of all concrete masonry units shall be filled with concrete having a characteristic strength at 28 days (f_c) of 20 MPa and a slump of 180mm to 230mm when being placed. The concrete filling shall be thoroughly compacted.
- 6. Max size of course aggregate in concrete used to fill cores shall be 10mm unless shown otherwise.

STRUCTURAL STEELWORK

- 1. All workmanship and materials shall be in accordance with AS4100 and AS1554, current edition with amendments except where varied by the contract documents.
- 2. All steelwork is designed using BHP design aids for grade 300 PLUS or C450LO. If other steel is proposed it is to be referred to the Supervising Officer for confirmation. This particularly applies to imported steel which may be of lower strength.
- 3. Three (3) copies of all shop details shall be submitted to the engineer for approval of structural sufficiency before fabrication.
- 4. All welds shall be 6mm continuous fillet, all bolts Ø20mm, all gussets plates 10mm thick, unless noted otherwise on the drawing.
- 5. Concrete encased steelwork shall be wrapped with 3mm wire at 100mm centres and shall have a minimum 50 cover of concrete.
- 6. Steel beams and trusses with span greater than 6m shall be fabricated with an upwards precamber of 1/500 span in each span unless noted otherwise on the drawings.
- 7. Structural steelwork is to be wire brushed to remove rust and loose mill scale and coated with one coat of approved primed unless noted otherwise on the drawings.
- 8. All steelwork cast into brickwork is to be hot dipped galvanised.

TIMBER

- 1. All workmanship and materials shall be in accordance with AS1720 and AS1684, current edition with amendments except where varied by the contract documents.
- 2. Timber stress grade shall be F7 unless noted otherwise.



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✉ office@brconsulting.net.au
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CONSTRUCTION NOTES

Client:

G.J Gardner

Job Address:

25 MARINE DRIVE
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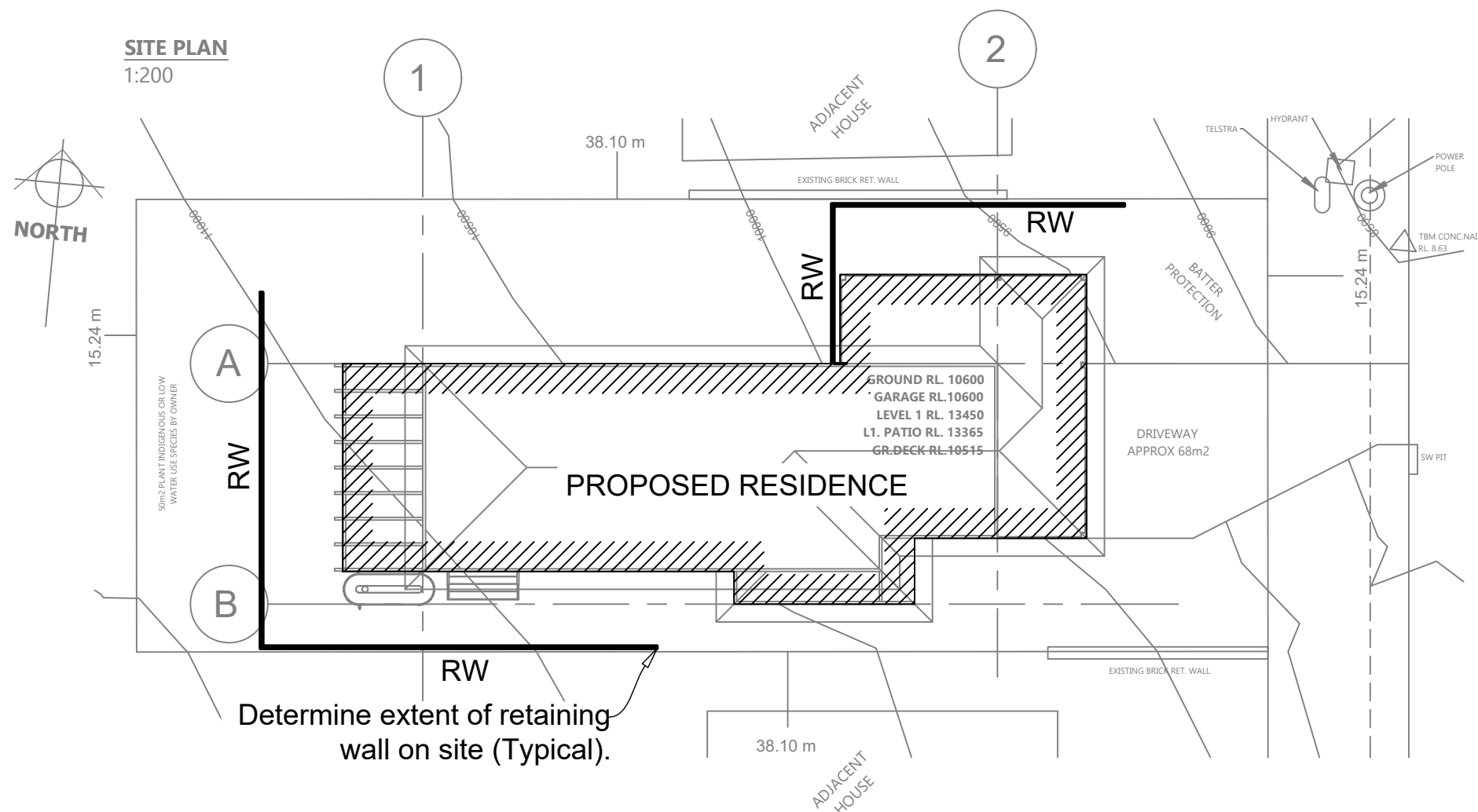
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Date: Mar 2022

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Sh 2 of 8



SITE PLAN SHOWING RETAINING WALLS 1:200

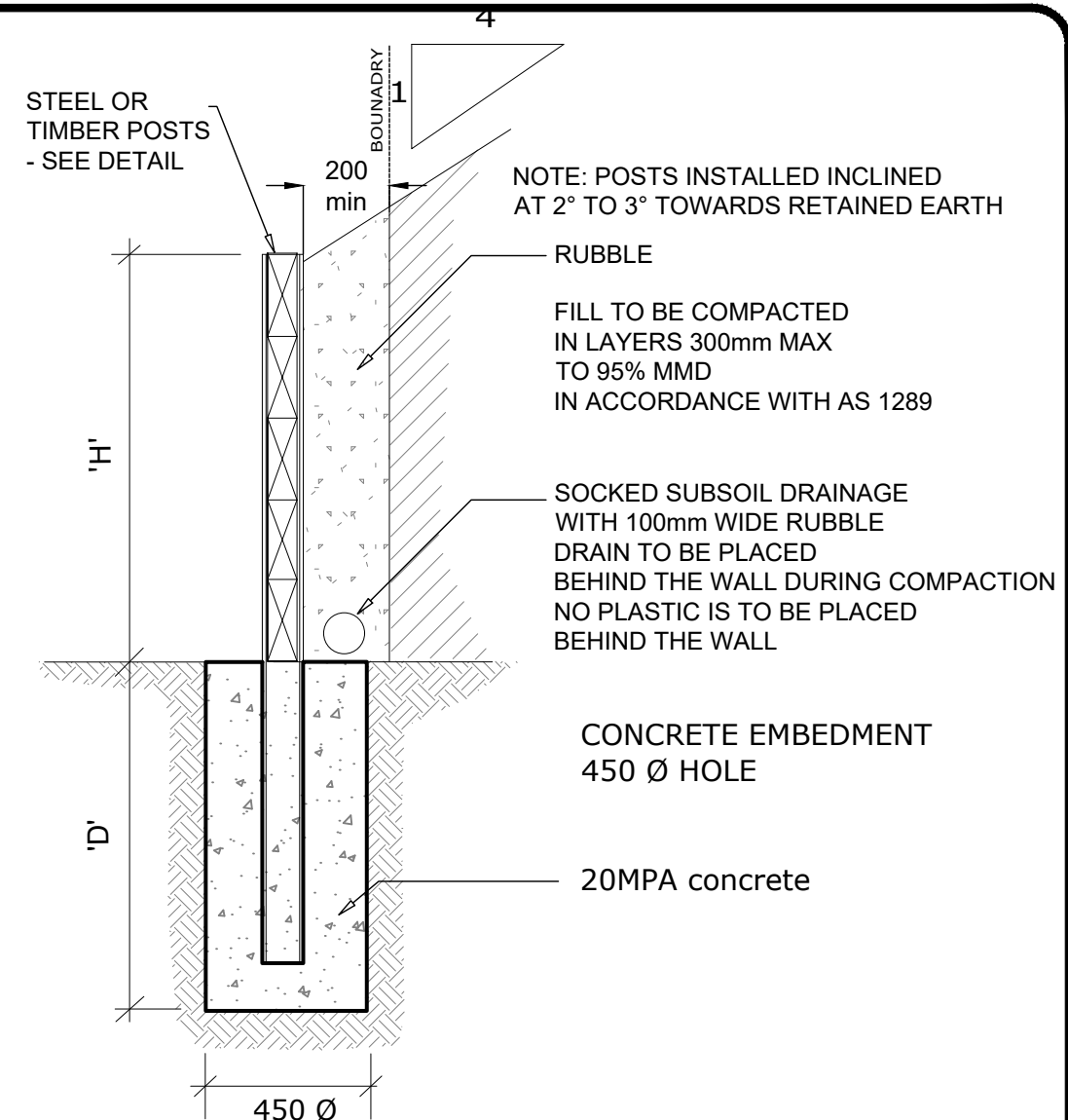
SEE ARCHITECTURAL PLANS BY ALIGN BUILDING DESIGN
REVISION - A, DATED 21-2-2022 FOR SETOUT DIMENSIONS

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TO PROCEEDING WITH WORKS



RW - TREATED PINE RETAINING WALL

POST CENTRE	WALL HEIGHT 'H'	EMBED. DEPTH 'D'	POST SIZE	SLEEPER SIZE	ORIENTATION
1200	1200 max	1000 min	steel 100x85x4 (HD Galv)	200x75	
1800	1000 max	700 min	steel 100x85x4 (HD Galv)	200x75	
1800	450 max	500 min	steel 100x85x4 (HD Galv)	200x75	
1800	800 max	1000 min	timber 200x75	200x75	
1600	800 max	1000 min	timber 2/200x75	200x75	



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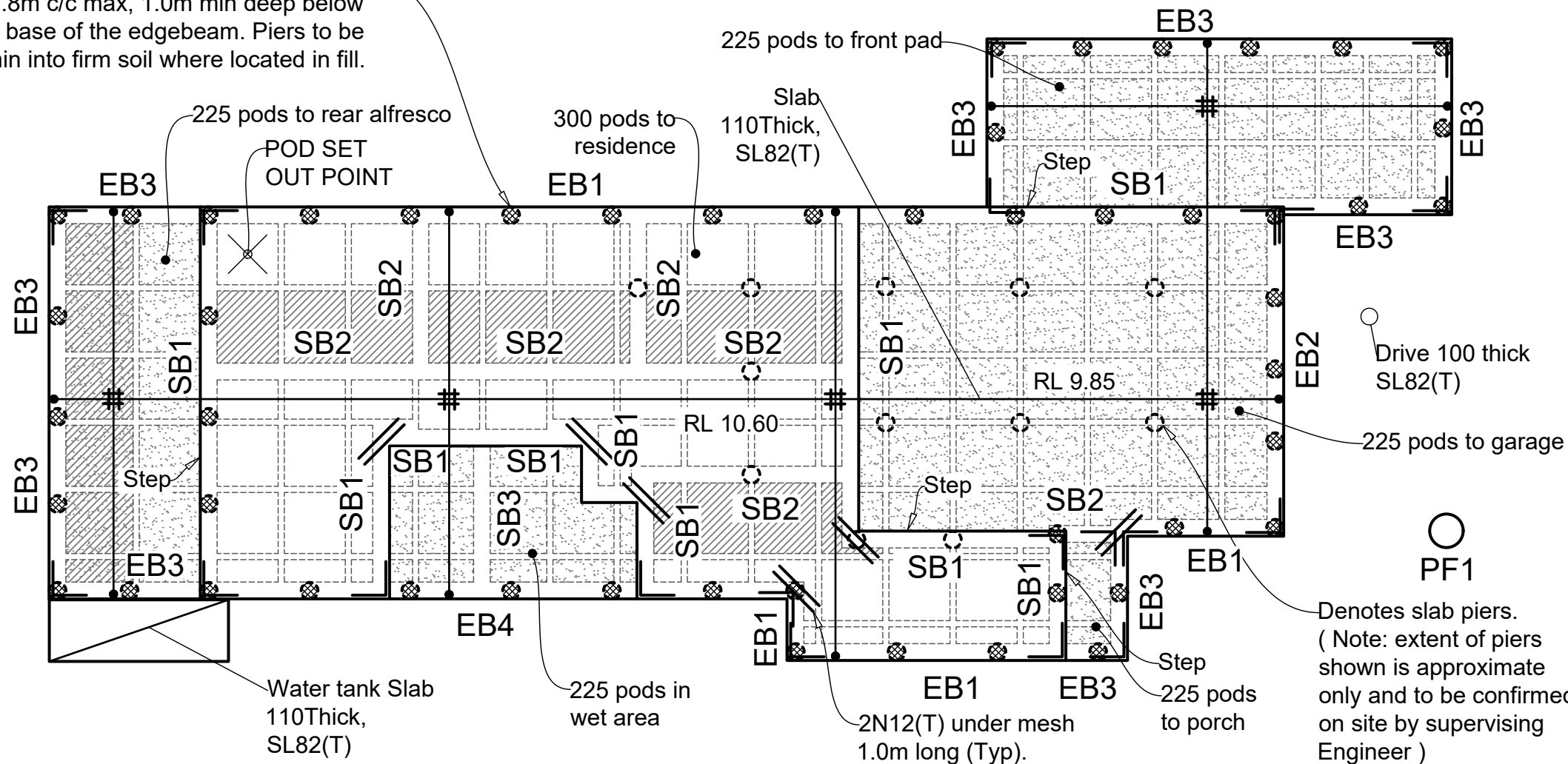
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Sh 3 of 8

Denotes Ø300 concrete edgebeam piers at 1.8m c/c max, 1.0m min deep below base of the edgebeam. Piers to be 500mm into firm soil where located in fill.



KEY

-  EXTEND PODS
 POD SETDOWN AREA
 2/N12's TOP SLAB
 LAPBARS 1N12 - 600 LONG

Note: All areas of fill under wet areas are to be compacted to AS2870 & AS3500 & compaction confirmed by Geotechnical Engineer prior to placement of DPM & reinforcement

NOTE:

- 1) FILLING UNDER SLABS
FILL UNDER SLABS IS TO BE COMPACTED TO A SUFFICIENT LEVEL TO BE CLASSED AS "CONTROLLED FILL".
THIS CAN BE ACHIEVED BY EITHER:
 - (a) COMPACT FILL IN ACCORDANCE WITH CL6.4.2 OF AS2870
OR
 - (b) FILL TO BE PLACED & COMPACTED UNDER SUPERVISION OF GEOTECHNICAL CONSULTANT & RECEIVE APPROPRIATE CERTIFICATION

WHERE FILL IS UNABLE TO BE CLASSED AS
"CONTROLLED FILL" IT SHALL BE TREATED AS
LOOSE & REDESIGN OF THE SLAB MAYBE
REQUIRED

- 2) ALL INTERNAL SEWER PIPES LAID UNDER BUILDING SLABS ARE TO BE LAID IN CONTROLLED FILL & TO AS3500.
- 3) BRICKWORK TO BCA REQUIREMENTS, AS3700 & AS4773
- 4) DESIGN FOR SITE CLASSIFICATION 'P' TO AS 2870
- 5) THE OWNER IS TO MAINTAIN THE BUILDING IN ACCORDANCE WITH THE REQUIREMENTS SET OUT IN CSIRO PAMPHLET BTF18 "GUIDE TO HOME OWNERS ON FOUNDATION MAINTENANCE & FOOTING PERFORMANCE"

NOTE :

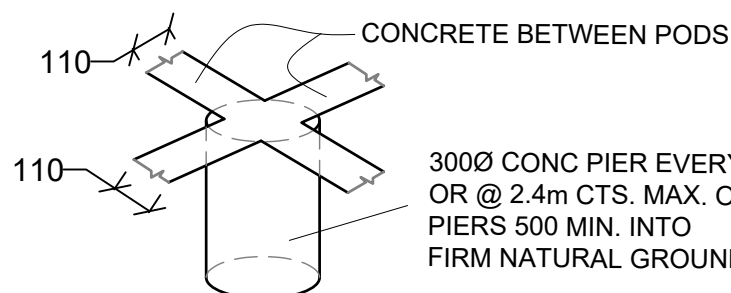
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SLAB PLAN 1:100

SEE ARCHITECTURAL PLANS BY ALIGN BUILDING DESIGN
REVISION - A, DATED 21-2-2022 FOR SETOUT DIMENSIONS

PODS TO BE INSTALLED TO
MANUFACTURERS SPECIFICATIONS
REFER TO GENERAL NOTES FOR SITE PREPARATION
& CONSTRUCTION PROCEDURE.

NOTE: PROVIDE 300Ø CONC PIERS @ 2.4m CTS
IN ALL FILLED AREAS. ENGINEER TO CHECK ON
SITE. 1/N12 - CENTER IF FILL > 0.9m



SLAB PIER DETAIL FOR WAFFLE POD SLAB

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NSW 2444

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P 02 6583 2733
E office@brconsulting.net.au
APN 67 120 996 925

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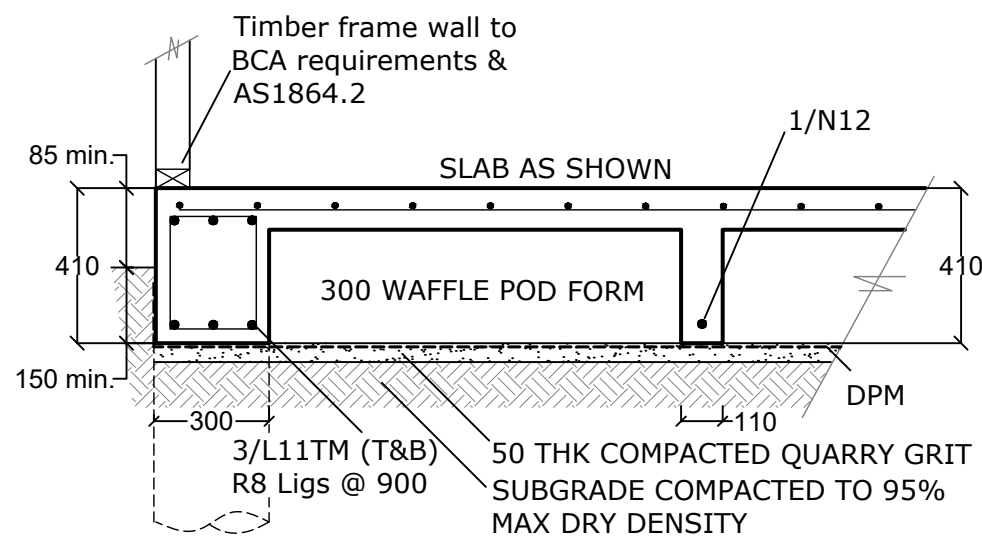
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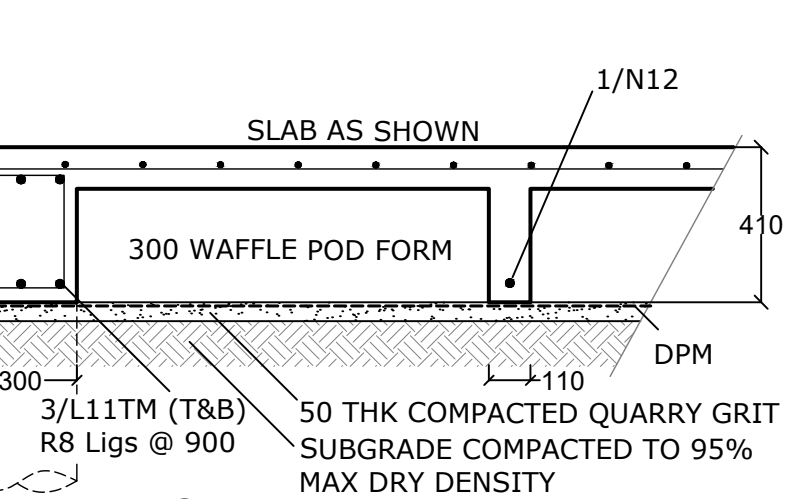
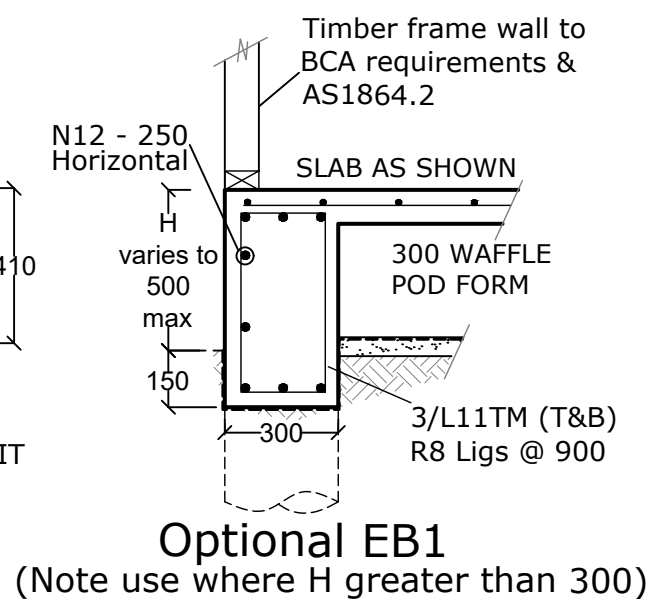
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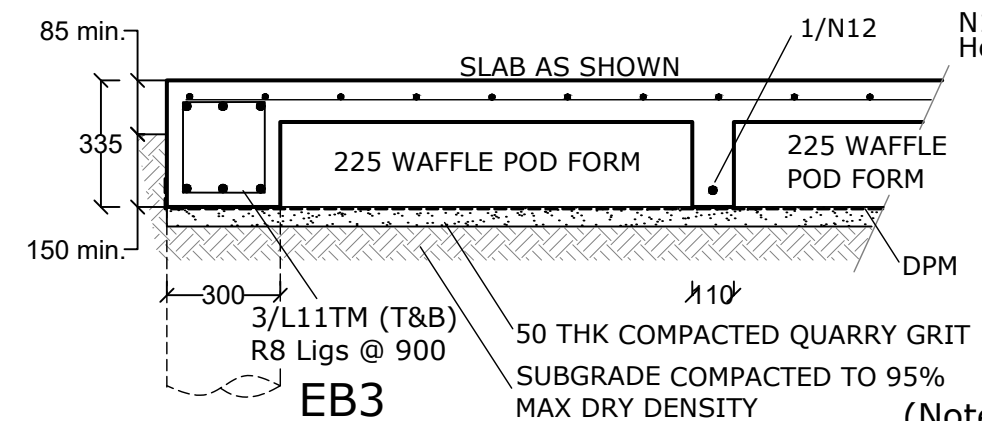


EB1

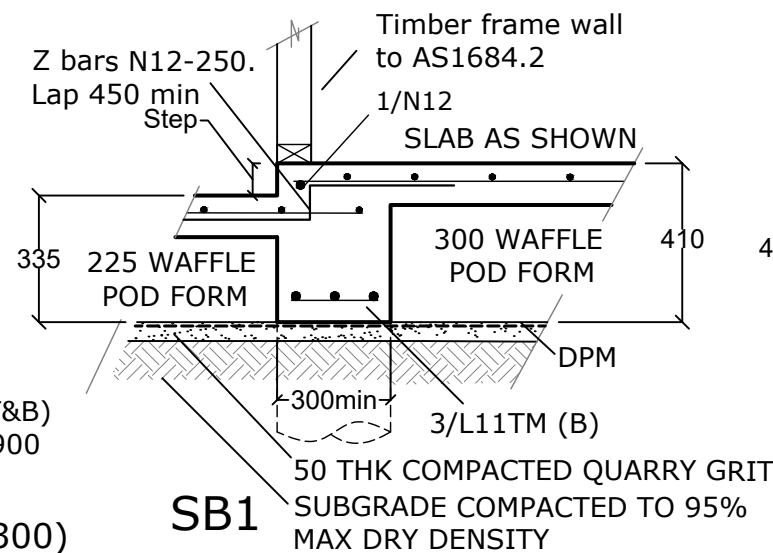
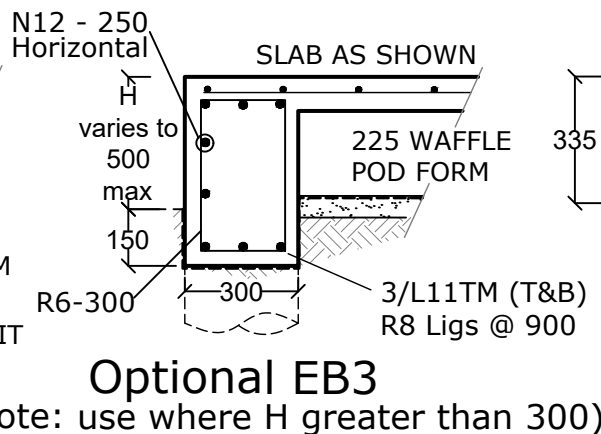
EDGE BEAM PIERS SHOWN DASHED (TYPICAL)



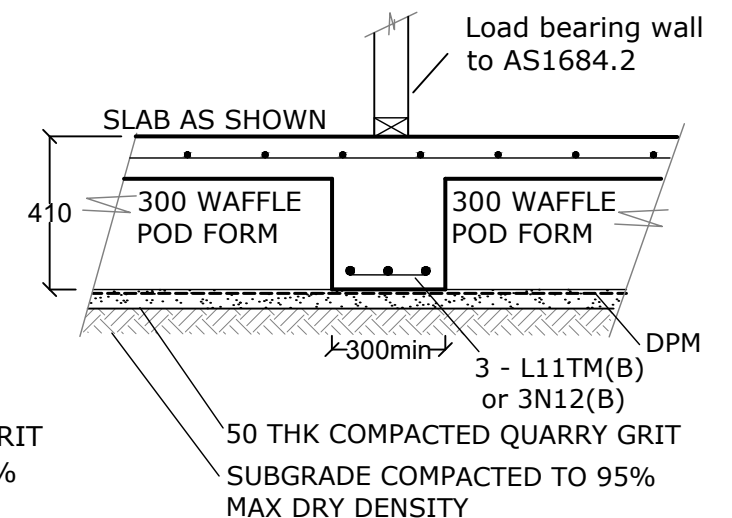
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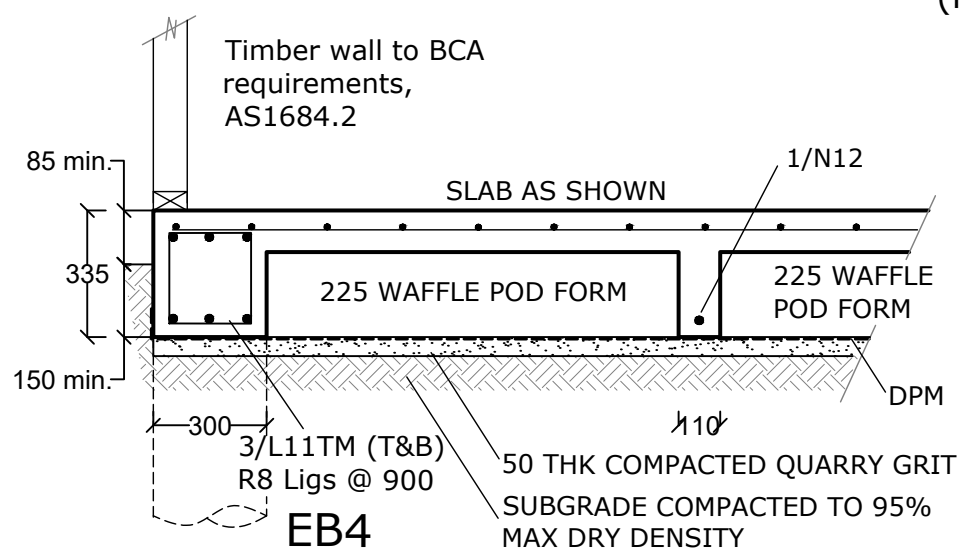
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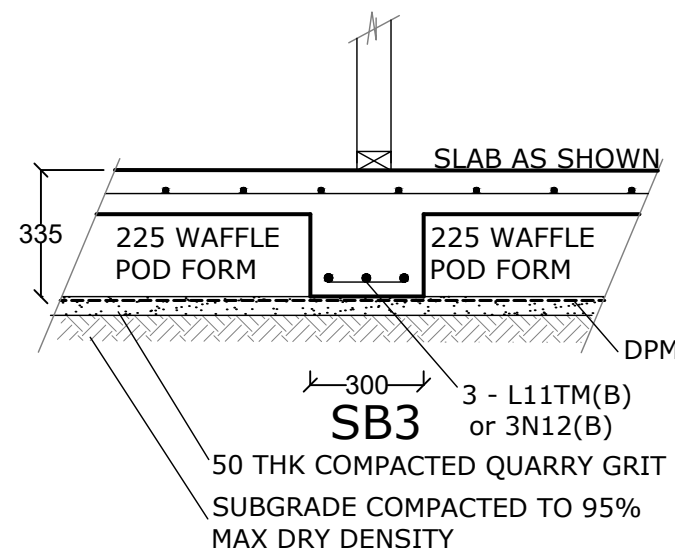
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SB2

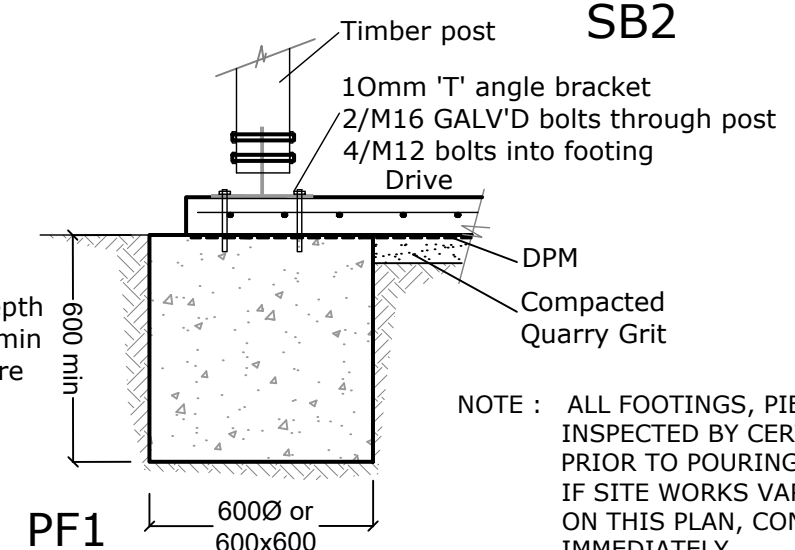


EB4



SB3

Note: increase depth to additional 500min into firm soil where pad footings are located in fill



PF1

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NOTE:

- 1) FILLING UNDER SLABS TO COMPLY WITH CLAUSE 6.4.2 "CONTROLLED FILL" OF AS 2870.
- 2) THE OWNER IS TO MAINTAIN THE BUILDING IN ACCORDANCE WITH THE REQUIREMENTS SET OUT IN CSIRO PAMPHLET BTF18 "GUIDE TO HOME OWNERS ON FOUNDATION MAINTENANCE & FOOTING PERFORMANCE"
- 3) DESIGN FOR SITE CLASSIFICATION 'P' TO AS 2870
- 4) BRICKWORK TO BCA REQUIREMENTS, AS3700 & AS4773

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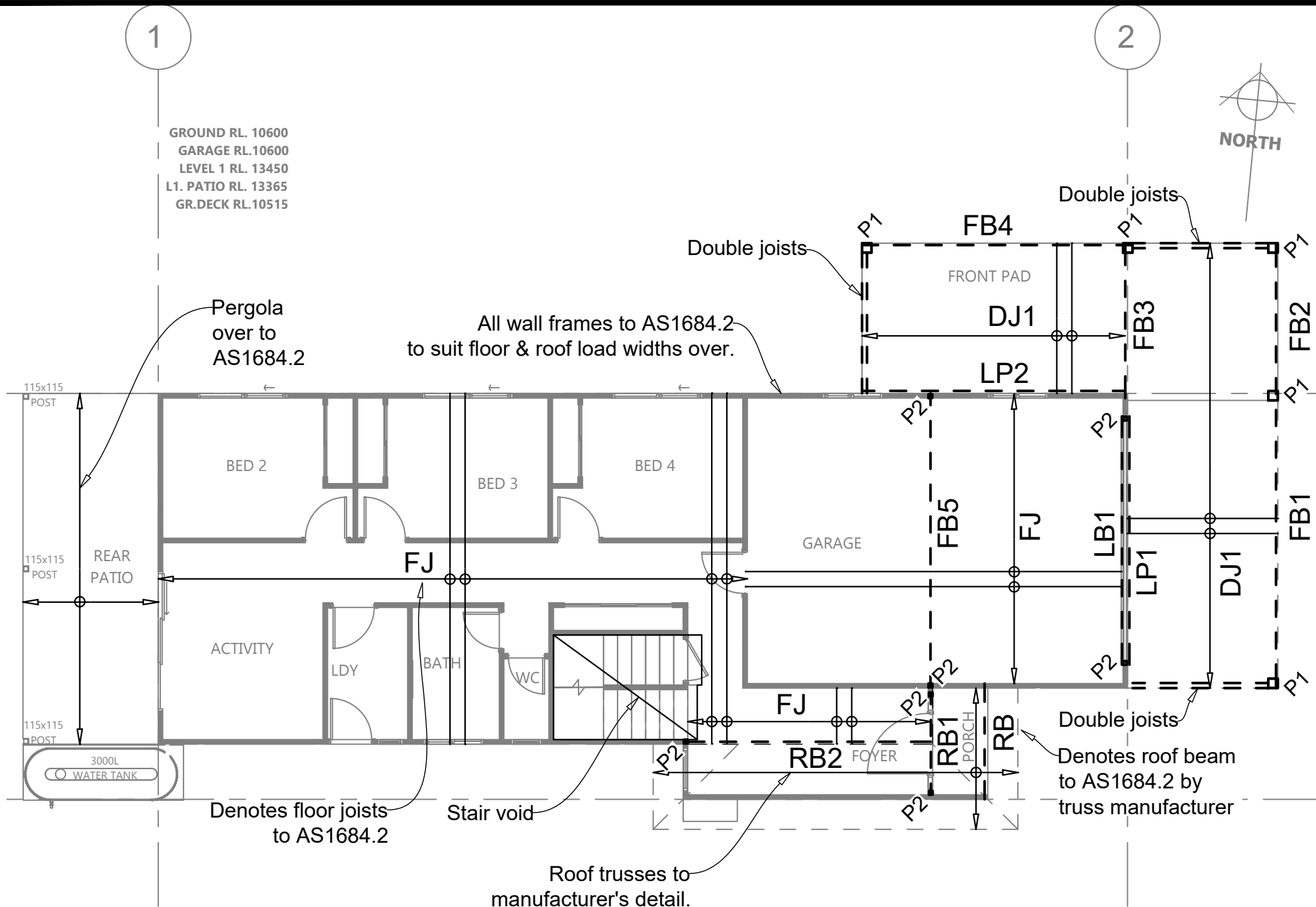
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MEMBER SCHEDULE

Floor Joists

DJ1.....190x45 F27 hwd at 450c/c

Floor, Roof & Lintel Beams

FB1.....250 PFC or
378x65 13GLT Cambered (or equivalent).
FB2.....250 PFC or
378x65 13GLT Cambered (or equivalent).
FB3.....250 PFC or
378x65 13GLT Cambered (or equivalent).
FB4.....336x65 13GLT Cambered (or equivalent).
FB5.....310UB32.
RB1.....230 PFC.
RB2.....230 PFC.
LB1.....250 PFC.
LP1, LP2...190x45 F27 hwd.

Posts

P1.....190sq F27 hwd
P2.....89x89x6 SHS. Provide 10 base plate with
2M12 chemical anchors to slab and 10 top
plate with 2M12 bolts to beam.

NOTES:

1. All exposed steel members, fittings & fasteners to be hot-dip galvanised.
2. All exposed timber members to be preservative treated to H3 level or hardwood, durability grade 2 or better.
3. Roof, wall & floor construction to be generally in accordance with AS1684.2 Residential Timber Framed Construction.
4. Roof, floor & wall frames to be subject to separate certification. This certification to be supplied to this office prior to commencement of construction.

GROUND FLOOR PLAN SHOWING UPPER FLOOR FRAME OVER 1:100

SEE ARCHITECTURAL PLANS BY ALIGN BUILDING DESIGN
REVISION - A, DATED 21-2-2022 FOR SETOUT DIMENSIONS

USE FIGURED DIMENSIONS ONLY. DO NOT SCALE. DO NOT WORK FROM REDUCED SCALE DRAWINGS.
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DO NOT SCALE
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B.R. Development Consulting
Surveying • Civil & Structural Engineering • Planning

B.R. Development Consulting
64 Lord Street
Port Macquarie
NSW 2444

Postal Address:
PO Box 1076
Port Macquarie
NSW 2444

02 6583 2733
office@brconsulting.net.au
ABN 67 130 965 935

UPPER FLOOR FRAME

Client:

G.J Gardner

Job Address:

25 MARINE DRIVE
WALLABI POINT

AMENDMENT -A- 01.03.23

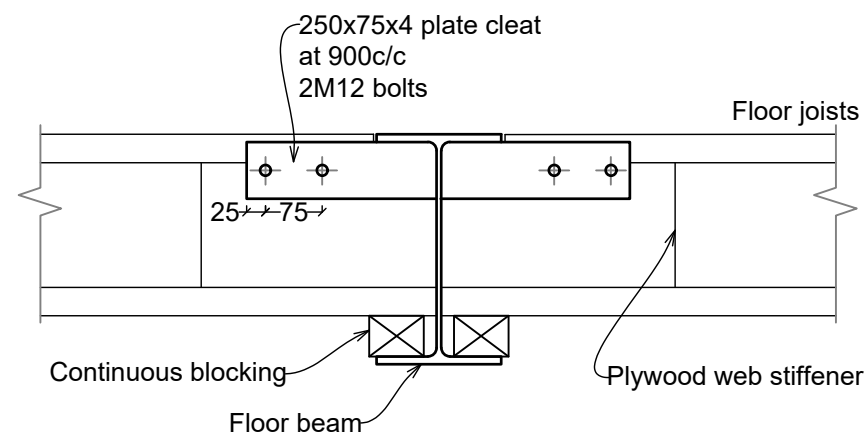
Dwg No: 13106

Date: Mar 2022

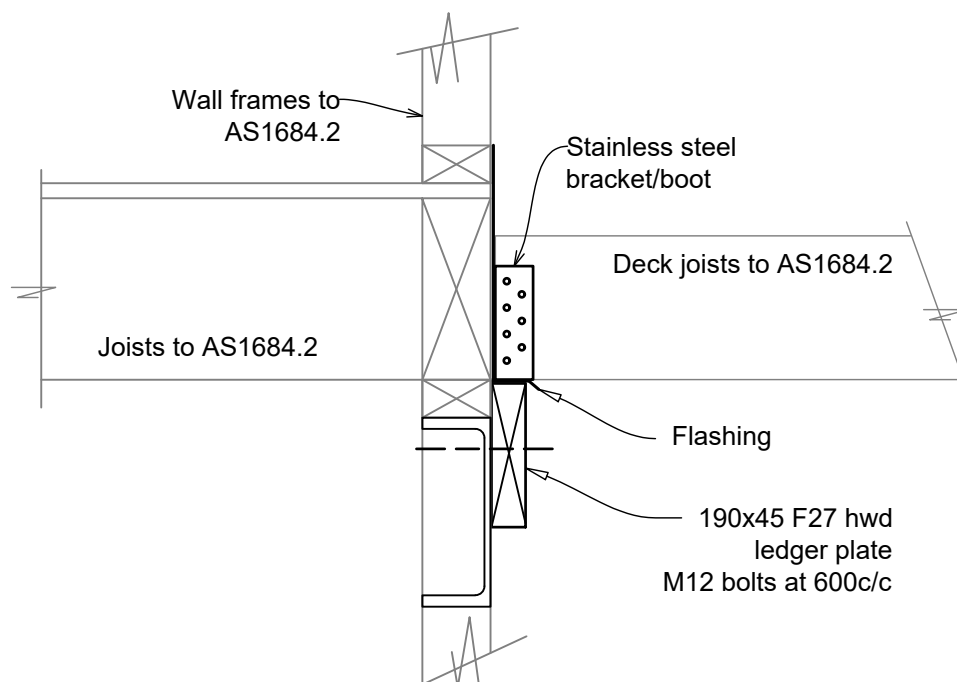
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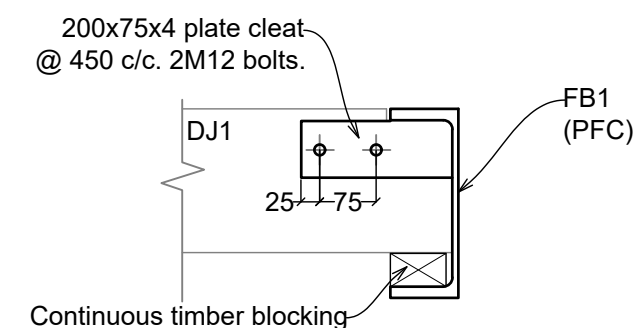
Sh 6 of 8



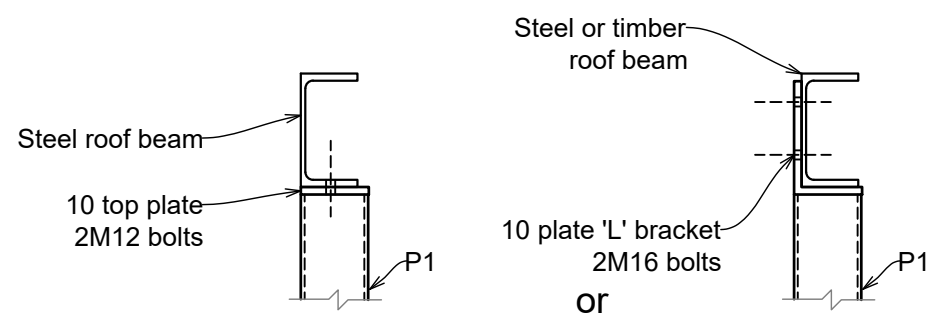
FB5 Lateral Restraint Detail



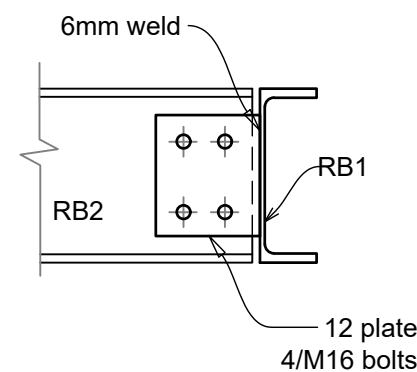
Ledger Plate Detail



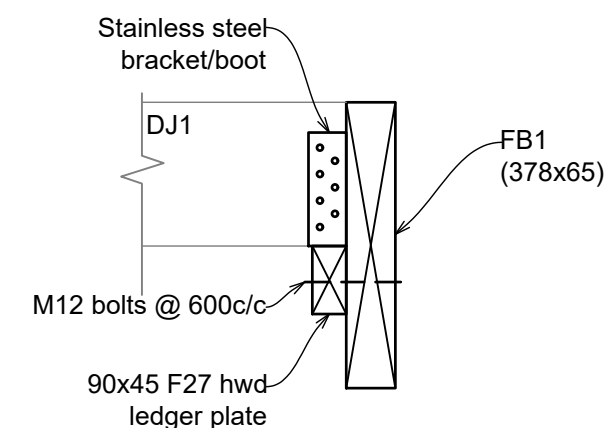
FB1 Detail (PFC option)
(FB2, FB3 similar)



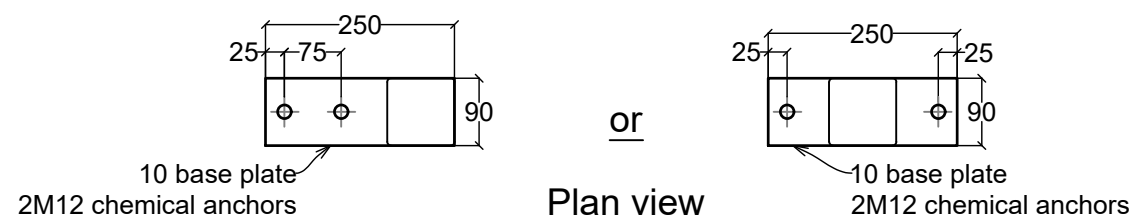
P2 Top Plate Detail



RB1 to RB2 Connection Detail



FB1 Detail (timber option)
(FB2, FB3. FB4 similar)



Plan view
P2 Base Plate Detail

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DETAIL
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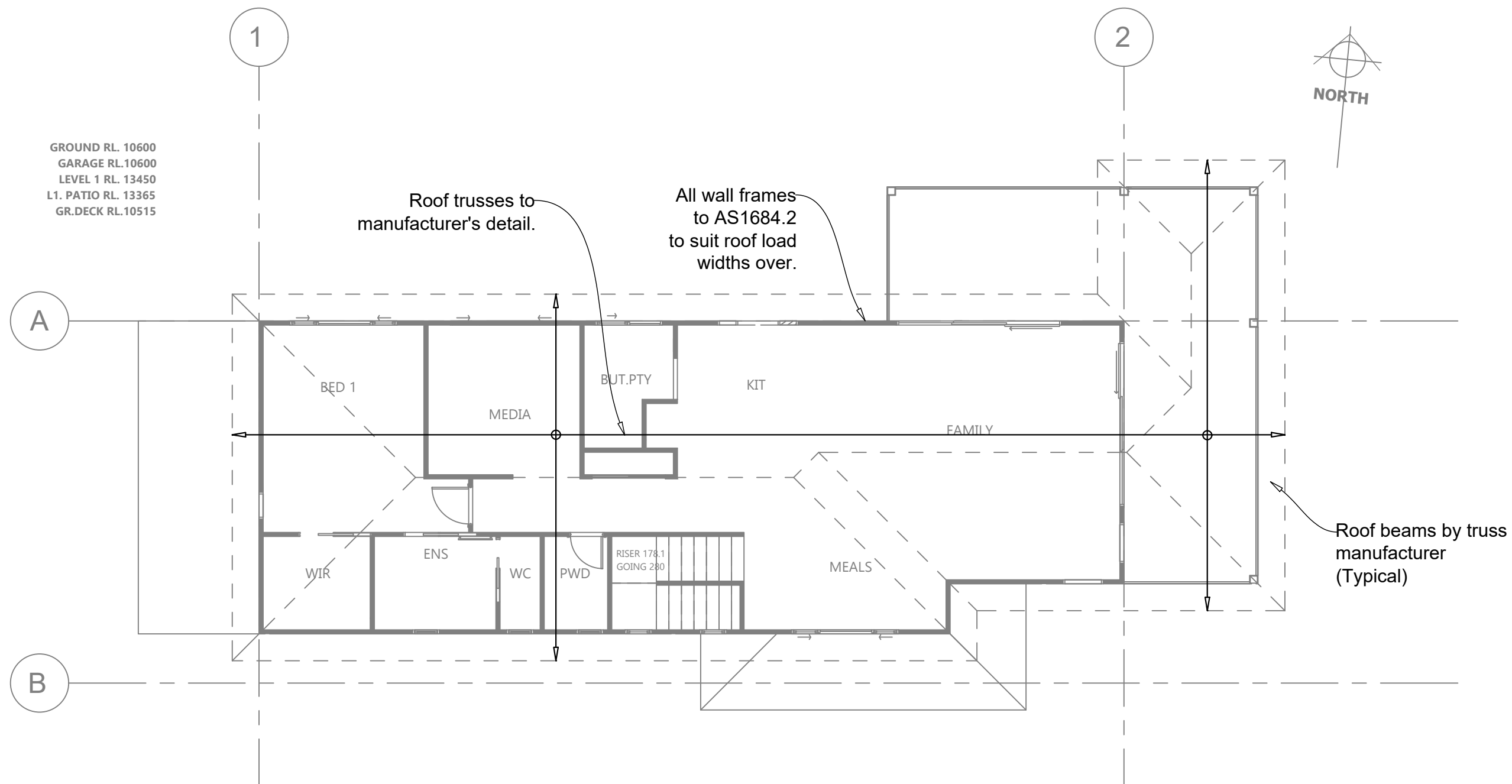
Dwg No: 13106

Date: Mar 2022

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Sh 7 of 8



ROOF FRAME PLAN 1:100

SEE ARCHITECTURAL PLANS BY ALIGN BUILDING DESIGN
REVISION - A, DATED 21-2-2022 FOR SETOUT DIMENSIONS

ROOF TIE DOWN NOTES METAL ROOF, WIND CLASSIFICATION N3

- FIX ROOF TRUSSES TO WALL TOP PLATE TO TRUSS MANUFACTURERS REQUIREMENTS
- FIX RAFTERS TO WALL TOP PLATE WITH METAL FRAMING ANCHORS & 4 NAILS INTO SIDE GRAIN OF EACH MEMBER.
- FOR WALL FRAMES PROVIDE M12 THREADED ROD AT 1.8m c/c FROM WALL TOP PLATE TO FLOOR FRAME, SIMILAR TO TIE-DOWN TYPE 'f' TABLE 9.19 OF AS1684.2
- STRAP FLOOR JOISTS UNDER EXTERNAL WALLS TO BEARERS WITH 30 0.8 HOOP-IRON STRAP AT 1.8m c/c WITH 4 NAILS EACH END SIMILAR TO TIE-DOWN TYPE 'C' TABLE 9.17 OF AS1684.2
- FIX BEARER TO FOOTING WITH M10 THREADED ROD CAST INTO FOOTING & BOLTED THROUGH BEARER, SIMILAR TO TIE-DOWN TYPE 'g', TABLE 9.17 OF AS1684.2
- FOR LINTELS & ROOF BEAMS PROVIDE TIE-DOWN IN ACCORDANCE WITH TABLE 9.20 OF AS1684.2 TO SUIT N3 WIND CLASSIFICATION & ROOF LOAD WIDTH OVER.

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Dwg No:	13106
Date:	Mar 2022
Scale:	1:100 (@A3)
Checked:	
Sh	8 of 8