

STRUCTURAL NOTES

GENERAL

- These structural drawings shall be read in conjunction with the Specifications, Architectural, Civil, and Engineering Service documents. Refer to Architectural Drawings for all levels, falls, setouts and dimensions.
- Unless otherwise noted, all levels are in metres, all dimensions are in millimetres and shall be checked by contractor prior to construction.
- Dimensions shall not be obtained by scaling from drawings. If in doubt, ask.
- All discrepancies shall be referred to the Architect or Engineer for resolution before proceeding with the work.
- The stability of the structure during construction including all temporary works and propping are the responsibility of the contractor / builder.
- All materials and workmanship shall be in accordance with the current Codes of Practice except where varied by the Specification and/or Drawings.
- Where proprietary products are specified in the documents, the contractor may submit an alternative product for approval.
- Temporary work and propping is the responsibility of the Builder.

ABBREVIATIONS

UB	Universal Beam
TFB	Tapered Flange Beam
UC	Universal Column
EA	Equal Angle
UA	Unequal Angle
CHS	Circular Hollow Section
SHS	Square Hollow Section
RHS	Rectangular Hollow Section
PFC	Parallel Flange Channel
P/C	Pre-camber
PL	Steel Plate
SG	Stress Graded timber, available in grade G, B, IO, and I2
G	Only available in GB, verified green timber, typically used in wet service situations
GL	Glulam Timber
c/c	Centre to centre distance (also CRS)

DESIGN LOADS

- All imposed loads have been calculated in accordance with AS / NZS 1170.1, and structural elements designed for the following loads
- Permanent Loads

ELEMENTS	LOADING kPa (Plan area)
Timber Floors	0.5
Timber Decks	0.5
Heavy Roof	0.85
Light Roof	0.45

ELEMENTS	LOADING kPa (Plan area)
Timber Framed Walls	0.5
Timber Framed Walls + Brick Veneer	2.1
20 Series Masonry	4.1
25 Series Masonry	5.1

3. Imposed Loads

	LOADINGS	
ELEMENTS	UDL Q _s kPa	Pt Loads Q _s kN
Decks	2.0	1.8
Roofs	0.25	1.1
Dom. Floors	1.5	1.8
Comm. Floors	3 - 7	2.7 - 4.5

SITE WORKS

- Origin of levels is the Lands and Survey (L&S) datum - refer to Survey drawings.
- All drawings to be read in conjunction with the specification.
- Existing services are shown indicatively only. Before construction commences, it is the contractor's responsibility to locate the position and depth of all services that could be adversely affected by their operations. Inform Architect of any variations.
- All work to be in accordance with the Territorial Authority standards.
- Concrete for site works only to be 10MPa unless noted otherwise.
- Catchpit positions and grate levels are approximate. Final positions are to suit kerb levels.
- All work on public drains is to be carried out by an approved licensed drain layer, to the relevant Territorial Authorities' standards.
- Temporary batters to have a 1V:1H maximum slope, but also refer to any specific requirements in the geotechnical report.
- Work to include the stripping of vegetation, topsoil, and any surface deleterious matter. This includes the breaking out of substructures and hard paving where required.
- Care is to be exercised adjacent to existing trees that are to be retained.
- The subgrade shall be inspected by the Geotechnical Engineer and proof rolled as necessary. Any soft spots shall be over-excavated and compacted back to level with imported GAP65 material.
- The Contractor shall ensure the subgrade below reinforced concrete slabs is thoroughly soaked prior to slab construction where required to achieve natural optimum moisture content.

FOUNDATIONS

- Foundation material shall be approved by the Engineer for safe bearing capacity before construction of Footings. Blinding concrete to be used where necessary, typically not shown on drawings. Foundations are assumed to have a minimum safe bearing capacity of 100kPa unless noted otherwise. This may be deemed satisfied by compliance with NZS 3604 section 3 (ultimate bearing strength of 300kPa). If foundation material is less than 100kPa safe bearing, the Design Engineer is to be contacted for alternative design.
- Sub grade below Base Course for slabs shall be suitable material compacted to 95% of maximum dry density determined by test NZS 4402: Test 4.1.1. or equivalent, unless otherwise noted.
- All walls and columns shall be concentric with supporting foundations unless otherwise noted on drawings.
- No service excavations shall be formed within a 1:1 line of the underside of any foundation unless specifically instructed by the Engineer
- All backfill behind retaining walls is to be approved free-draining material. Drain coils are to be fitted with geotextile 'filtersok' and drain to approved silt traps.

STRUCTURAL TIMBER

- Timber beam shall be propped until dry to prevent premature creep.
- All normal timber sizes given are nominal dimensions unless otherwise stated.
- All glue laminated timber sizes are actual dimensions.
- Timber treatment shall be specified and shall comply with the recommendations of the Timber Preservation Authority. Generally all timber to be treated to the requirements of the Building Code. Refer to Architects drawings / specifications.

Hazard	Hazard Class	Examples
Low	H1.1	Interior linings, internal wall
	H1.2	Wall framing, skillion roof framing
Moderate	H3.1	Cladding, fascia, wall framing
	H3.2	Deck bearers, joists, boards
High	H4	Fence posts, landscaping timber
Severe	H5	House piles, retaining walls
Marine	H6	Marnas, wharf piles

5. All Structural timber to be stress graded SG8 Pinus Radiata unless noted otherwise.

6. Where timber connections are exposed to the weather, all steel connectors shall be galvanised (unless in the sea spray zone which case they are to be stainless steel). Faces and edges of steel elements which rest against tanalised timber shall be painted before positioning. Minimum connections are 5mm plate and 2/M16 bolts unless noted otherwise.

CONCRETE

- Minimum concrete strengths shall be as shown in the specification.
- Sizes of concrete elements do not include thickness of applied finishes.
- No penetrations, chases or embedments of pipes other than those shown on the Structural drawings shall be made in concrete members without prior approval of the Engineer.
- Finishes to concrete to be as per specification and Architectural drawings.
- Contractor to submit all shop drawings of Precast Units prior to commencement of work.
- Proprietary Precast components referred to on these drawings shall be designed and detailed by the supplier and a copy of the documentation submitted to the Engineer.
- Tolerances to be as per the specification.
- All penetrations through concrete slabs shall be trimmed by 2-D12 bars to each edge of the penetrations. Trimmer bars to extend 600mm beyond the return of the penetration.
- All beams to be suitably propped during construction unless other wised noted.
- Chamfers shall be formed on all exposed corners, generally 15mm x 15mm
- Ensure adequate gaps maintained between suspended concrete work and all non-structural elements
- If construction joints are not shown, their location shall be the contractor's responsibility to suit the site conditions of the design. The Contractor is to allow for all construction joints necessary to complete the work, without causing distress to the structure. Location to be agreed with Architect and Engineer. In general, for slabs on grade, saw cuts (25mm deep x 5mm wide) are to be formed to produce a grid of 6.0m x 6.0m maximum, after the initial cure (approximately 24 - 48 hours after concrete pour).
- All reinforced concrete slabs shall be cured in accordance with CCANZ "Reinforced Concrete Slab-on-Ground Floors"

REINFORCING

1. Steel abbreviations
D12's, D16's etc Deformed grade 300E steel reinforcement to NZS 4671
HD12's, HD16's etc Deformed grade 500E steel reinforcement to NZS 4671
RG's, R10's etc Plain round grade 300MPa steel shear reinforcement to NZS 3679.1
GG5, GG4, etc Mesh to NZS 3421. Grade 485 MPa.

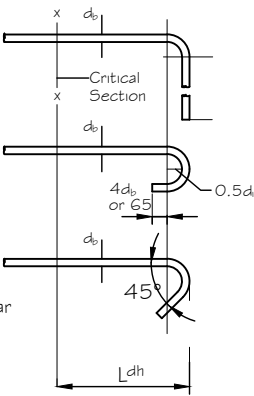
2. Minimum bend diameters of Class E steel bars, with yield strength 300MPa or 500MPa

- Normal
 - Bar diameter (d_b) 6-20mm = 5d_b (d)
 - Bar diameter (d_b) 25-32mm = 6d_b (d)
- Stirrups or ties
For deformed bars:
 - Bar diameter (d_b) 6-20mm = 4d_b
 - Bar diameter (d_b) 25-32mm = 6d_b
For plain bars:
 - Bar diameter (d_b) 6-20mm = 2d_b
 - Bar diameter (d_b) 25-32mm = 3d_b

For example;

Bar Diameter	Type	Required Bend Diameter
RG D10 D12/HD12 D25/HD25	Stirrup or tie Stirrup or tie Normal Normal	12mm 40mm 60mm 150mm

- Hook definitions;
 - A 90° turn plus an extension of at least 12 bar diameters at the free end of the bar.
 - A semi-circular turn plus an extension of at least 4 bar diameters but not less than 65mm at the free end of the bar.
 - A stirrup hook, which is defined as a 135° turn around a longitudinal bar plus an extension of at least 8 stirrup bar diameters for plain bars and 6 stirrup bar diameters for deformed bars at the free end of the bar embedded in the core concrete of the member.



- Minimum lap length as follows:
 - Masonry lap lengths;
Grade 300 reinforcing = 40 x bar diameter
Grade 500 reinforcing = 70 x bar diameter
 - Concrete lap lengths;

Concrete Strength	Steel Strength	Lap Length for Straight Bars	Lap Length for Hooked Bars
20 MPa	300 MPa	34 x d _b	17 x d _b
20 MPa	500 MPa	56 x d _b	27 x d _b
25 MPa	300 MPa	30 x d _b	15 x d _b
25 MPa	500 MPa	50 x d _b	24 x d _b
30 MPa	300 MPa	28 x d _b	14 x d _b
30 MPa	500 MPa	46 x d _b	22 x d _b

5. All Concrete Cover to reinforcing steel to be in accordance with drawings and / or referred to Engineer. Code required minimum values as follows.

Exposure Classification	Concrete Strength (MPa)					Masonry
	17.5	20	25	30	40	
	Minimum cover (mm)					
Closed Interior	30	25	25	20	20	35
External (Inland)	50	40	35	30	25	45
Coastal Perimeter	65	50	40	35	30	50
Coastal Frontage*	-	-	50	45	40	60
Cast against Ground	75	75	75	75	75	-
Cast against Ground with DPC	50	50	50	50	50*	-

* Within 100m of high tide mark or within 500mm of high tide mark to the direction of the prevailing wind.

6. Welding and re-bending of reinforcement:

- Do not bend Grade 500E bars to diameters less than those permitted by NZS 3101 and NZS 3109.
- Do not re-bend Grade 500E microalloy bars of 16mm or less, unless the strict conditions of NZS 3109 can be met.
- Do not re-bend Grade 500E microalloy bars more than 16mm diameter.
- Do not weld Grade 500E microalloy bars if it can be avoided.
- No tack welding of reinforcing shall take place without explicit written approval of the Engineer.

7. Minimum distribution steel shall be D12 at 300 centres

8. No Grade 500E QT bars shall be used.

9. Reinforcement laps to be to NZS3109. Mesh lap to be one mesh + 25mm

10. Adequate support to all reinforcement shall be made by the use of spacers, stools and / or the like.

11. Notation used for reinforcement fixing:

B/W	Both ways
B/F	Both faces
E/F	Each face
V	Vertical
H	Horizontal
N/F	Near Face
BOT	Bottom
ABR	Alternative bars reversed

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No.	Revision	Drawn	Chk.	Appd.	Date



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Design	P. WILSON	OCT 2017
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Checked	P. JARVIE	OCT 2017
Approved	I. HUTCHINSON	OCT 2017
Scale	NTS	
Scale vert. exag.		

THREE BLOKES LTD.

Project
**PROPOSED PLANING SHED
362 MATAKANA VALLEY ROAD
MATAKANA**

Title
GENERAL STRUCTURAL NOTES

Job No.
20145

Sheet No.

SN1



16/02/2018
BCO10260425
APPROVED
BUILDING CONSENT PLANS

STRUCTURAL NOTES

STRUCTURAL STEEL

1. Steel members shall be the following grade unless otherwise noted.

Member	Grade
TFCs, TFBs, EAs	300
UAs	350
UBs, UCs, PFCs, EAs	300 plus (typ BHP Australia)
UAs	300 plus (typ BHP Australia)
RHS, SHS, CHS	350

2. All cold formed sections including cold rolled purlins to conform to AISI 538 and shall have a minimum yield stress of 450 MPa, unless otherwise noted.

3. The ends of all hollow sections shall be sealed with 3mm min. steel plate, seal welded unless otherwise noted.

4. All plates shall be 6mm min. unless otherwise noted.

5. All Holding Down bolts and other fixing devices shall have a minimum yield stress of 250 MPa unless otherwise noted.

6. All dry pack non-shrink mortar / grout shall have a compressive strength of at least 30 MPa.

7. Surface preparation and corrosion protection of steel work shall be in accordance with the Architectural Specifications U.N.O. Any damage to the protective coating of steel work shall be made good. Generally all structural steel to be hot dip galvanised to a minimum of 600g/m².

- 8. Bolts, unless noted otherwise;
- a. Bolts and nuts shall be Grade 8.8 high strength steel to AS 1252: "ISO Metric High Strength Steel Bolts" unless noted otherwise.
- b. Typically all edge distances to be 30mm U.N.O.
- c. Gauge distances shall be 70, 90 or 140 as per AISC.
- d. All bolts shall have at least one washer which shall be not less than twice the nominal bolt size in diameter.
- e. All bolts shall have a spring washer in addition to the washer located directly above the nut.
- f. The bolt shall be selected so that the projection beyond the nut is not less than two threads and not more than 10mm.
- g. Heavy duty square washers to be placed below bolt heads in timber applications.
- h. Heavy duty round washers to be placed below bolt heads in steel applications.
- i. Do not weld bolts under any circumstances
- 9. Holing:
 - a. Holes cut for bolts shall be drilled or punched and not gas cut.
 - b. Common detailing components:
 - Standard holes - D+2mm
 - Standard slotted holes - D+2mm wide and 2.5D long unless noted otherwise.
 - H.D. bolts - 1.33D composite simple (standard washer) (fabricated washer).

10. Welds:

- a. All welded connections shall be metal arc welded as shown on the drawings. All welding shall comply with AS 1554:Part 1 "Welding of Steel structures" unless noted otherwise. Welds exposed in the completed building and in particular butt welds of stock lengths shall be neatly finished and ground smooth.
- b. All butt welds shall be full penetration.
- c. Welding of hollow sections shall incorporate internal sections or backing plates as necessary to complete the specified weld.
- d. All welds on drawings unless otherwise noted to be 6mm structural purpose fillet welds all round.

11. Steelwork drawings show the design intent. The Contractor is to prepare shop drawings for review. No fabrication is to commence until shop drawings are reviewed by the Engineer and written notification issued.

12. All reactions shown are in kN.
13. Where the weight of a steel section is omitted, the heaviest commonly available steel section shall be utilized.
14. All bolts shall be a minimum of M12 and all welds shall be a minimum of 6mm continuous fillet (SF)
15. All nuts and turning bolts are to have approved washers. All exposed nuts, bolts and washers to be galvanised and to have protective coatings to match general steelwork, unless noted otherwise.
16. All rod bracing to be a minimum of grade 300 plain reinforcing bar, unless noted otherwise.
17. All sealed sections to be galvanised shall have vent holes.
To be shown on shop drawings.
18. Purlin cleats are to be in accordance with the manufacturer's standard details except where the top of the flange of the purlin is more than 300mm above supporting steelwork 75 x 75 x 8 angle cleats shall be used. Purlins shall be fixed using approved flanged bolts and washers.
19. Ceiling systems, ductwork, etc. to be suspended from purlins shall be fixed with hook bolts through purlin web. The flanges of the purlins or girts shall not be holed.
20. All dissimilar metals shall be separated by a DPC layer or other method as approved by the Engineer.
21. All steel elements shall be separated from treated timber by DPC layer or other method as approved by the Engineer.

TIMBER POLE RETAINING WALLS

1. Unless otherwise stated, all round poles shall be “Searle” machine peeled normal density pine complying with the requirements of NZS 3605 “Load Bearing Round Timber Piles” and NZS 3603 “Timber Structures Standard”. “Morbark” machine shaved poles may only be used at the approval of the Engineer.
2. All poles are expressed as a minimum “Small End Diameter” (SED) with an average taper of 6 mm per metre length.
3. Unless otherwise stated all square posts shall be visually graded machine stress graded complying with the requirements NZS 3603 “Timber Structures Standard”.
4. All poles and posts shall be “tanalised” to a minimum “Tanalith” preservation retention of 16 kg/m³ (H5) or approved equivalent. All poles and posts must be positively identified with their Hazard Class on the butt end of the pole when delivered to site.
5. Poles or posts shall not be rolled or dropped from the delivery vehicle. Any pole with evidence of handling damage shall not be used and shall be removed from the site.
6. Cutting rebates and / or bored holes within the timber shall be avoided wherever possible. If necessary, the exposed surfaces shall be liberally coated with a brush application of either “Ensele”, pentachlorophenol, “Tanalith” concentrated solution or copper naphthenate or creosote. Re-protected areas shall not be placed within 300 mm of finished ground level.
7. Unless otherwise noted, concrete encased poles shall be installed SED upwards whilst driven timber piles shall be installed SED downwards.
8. Unless otherwise noted, all timber poles and posts shall be installed with a vertical layback of 1H: 20V and spaced at 1200 centres vertically.
9. All timber rails, unless otherwise noted, shall be rough sawn timber, 150 mm deep with a thickness and grade as specified and tanalised to a minimum “Tanalith” preservative retention of 12 kg/m³ (H4) or approved equivalent.
10. Rails shall be installed horizontally and where possible multi-span with staggered butt joints. All rails shall be securely nailed to the rear of the timber poles with 100mm x 4.0mm galvanised flat head nails.
11. The timber face walls shall be continuous both vertically and horizontally. Hit and miss placement and / or galvanised wire netting is not permitted.

12. Excavation shall be carried out immediately prior to constructing the retaining wall. Exposed cut batters shall be protected with a weather-proof polythene cover until the wall has been constructed.
13. Excavations shall be completed in stages to restrict unsupported lengths of cut batters.
14. Excavations in excess of 1.2 m height or within 1.2 m of a property boundary shall be directly supervised by the Engineer. Notification must be given by the Contractor, to the Engineer, prior to commencing the excavation.
15. Excavations for concrete encasement shall be carried out by a machine auger to the dimensions detailed on the drawings. All surplus spoil shall be removed from the site.
16. The augered excavations shall be accurately located, with sufficient allowance for pole back slope and concrete encasement.
17. Unless otherwise noted, all locating dimensions refer to the front face of the poles at the base of the wall.
18. Unless otherwise noted, the ground profile above and below the wall shall be level and free draining.
19. The foundation encasement shall be Ordinary Grade concrete complying with NZS 3109 "Specification for Concrete", having a minimum 28 day compressive strength of 20.0 MPa.
20. A 100 mm concrete punch pad shall be provided at the base of the excavation prior to placing the timber poles.

21. The concrete encasement shall be well compacted by tamping and/or vibrating ensuring an even concrete encasement cover at the base of the wall. The concrete encasement shall be sloped down and away from the pole base to prevent water ponding at the base of the pole. All timber poles shall be accurately placed and adequately braced prior to placing the concrete encasement. The pole bracing shall not be removed until 48 hours after the placement of the concrete encasement.

22. A 100 mm perforated draincoil shall be placed at the base of the rear of the wall, prior to placing the 20/7 scona or 40/20 drainage metal or similar approved. The invert of the 100 mm PVC perforated pipe shall be a minimum of 200 mm below the finished ground level in front of the wall. The 100 mm PVC perforated pipe shall be protected with 'filtersok' and be free draining into a sealed stormwater system.

REINFORCED MASONRY

1. Generally all concrete block masonry construction to be in accordance with NZS 4229:2013, and NZS 4210:2001.
2. Refer to figure 8.1, NZS 4229:2013 for D16 trimmers around openings.
3. The top of all the concrete block walls to be continuous bond beam B1 or B2, as per figure 10.1 and 10.2, NZS 4229:2013. Continuous bond beam type B3 (figure 10.2, NZS 4229:2013) to be provided at mid-floor level of 2 storey walls.
4. Minimum reinforcing to be as follow unless shown otherwise:

	15 SERIES		20 SERIES	
	VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL
RUNNING	D12@800crs	D12@800crs	D12@600crs	D12@600crs
STACK	D10@400crs	D10@400crs	D12@400crs	D12@400crs

5. In general only load bearing masonry is shown on the structural drawings. All non-load bearing masonry is to be separated from structure by a 12mm compressible joint.
6. Concrete blocks shall have a minimum compressive strength of 12.5MPa, to NZS 4210. Density to be greater than 1750kg/m³.
7. Mortar shall comply with the requirements of NZS 4210.

8. All cores with reinforcement to be grout filled as a minimum. Additional covers filled as noted on the drawings. Grout shall have a slump of 230mm and a compressive strength in accordance with NZS 3604:2011 clause 4.5.3.

9. In general, walls to be full height before grouting cores. Washout ports to be provided at bottom course where vertical bars are located for all walls where poured height exceeds 1.2m. Mortar joints to be 10mm thick with blocks fully bedded and perpend filled. Joints to be tooled at exposed or rendered surfaces.

10. Cores are to be cleaned of all mortar fines and droppings through washout ports which shall to be closed until inspected by engineer.

11. Grout to be added to ensure fill of cores with a maximum continuous pour height of 3600mm.

12. No construction of masonry on suspended floors is to take place until floor is fully de-propped.

1.3. All grade A masonry to be supervised by a registered mason, including grouting. In addition, all grade A & B masonry to be inspected by Engineer prior to grouting, or as required by the local authority.

14. Chasing of load bearing masonry only permitted as shown on the Engineer's drawings.

15. All grout shall be 20 MPa unless otherwise noted.

16. All masonry cells shall be solid filled with grout.

17. Control joints to be provided at no more than 6m centres or to approval of the Engineer, as per NZS4229:2013

REINFORCED MASONRY RETAINING WALLS

1. The rear face of the blockwork shall be protected with three coats of flint-kote, or similar approved waterproofing agent. The waterproofing agent shall be subsequently permanently protected with hardiflex soft board or similar prior to placing scona backfill. The waterproofing shall extend 200mm above the proposed finished ground level.
2. The drainage blanket behind the wall shall be formed with at least a 300mm thick layer of 20/7 scona or 40/20 drainage metal or approved equivalent. The 100mm draincoil at the base of the wall shall be free draining to a sealed stormwater system. Filter sock shall be placed between the draincoil and the scona.
3. All concrete cast against and permanently exposed to the unprotected footing excavation shall provide a 75mm minimum cover to the reinforcing steel.
4. If the masonry retaining wall forms a perimeter foundation wall, the 20/7 scona / 40/20 drainage metal or approved equivalent shall be completed 200mm below the proposed finished ground level. Filter cloth (Terram 2000 or approved equivalent) shall then be placed over the top level surface of the above mentioned approved drainage media. The filter cloth shall lap 100mm vertically up the wall and 300mm horizontally over the clay/scona interface. A 200mm compacted depth of topsoil shall then be placed over the filter cloth.

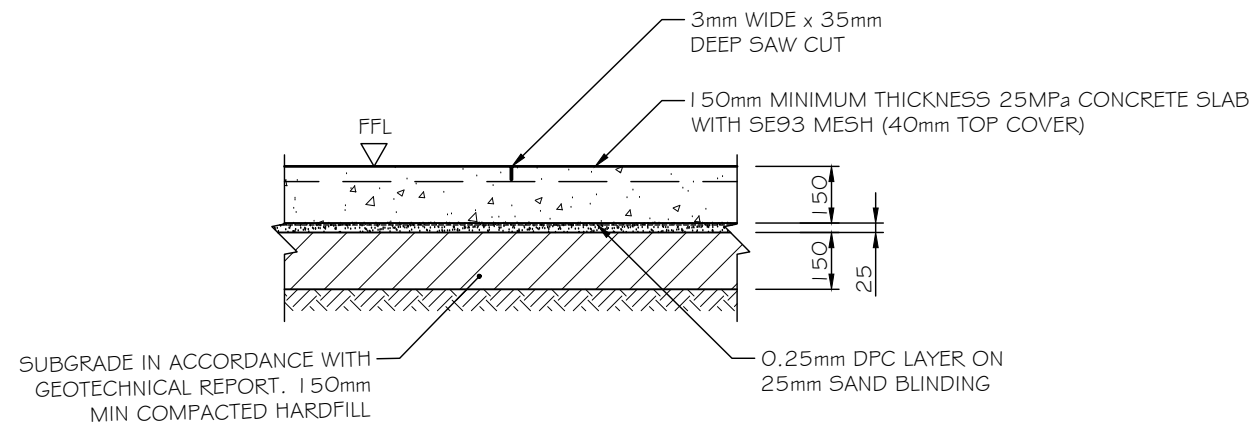
5. The ground profile behind the top of the wall shall direct all overland run-off away from the rear face of the retaining wall.

6. If specified, the lower concrete floor slab shall be poured and cured prior to backfilling behind the masonry retaining wall.

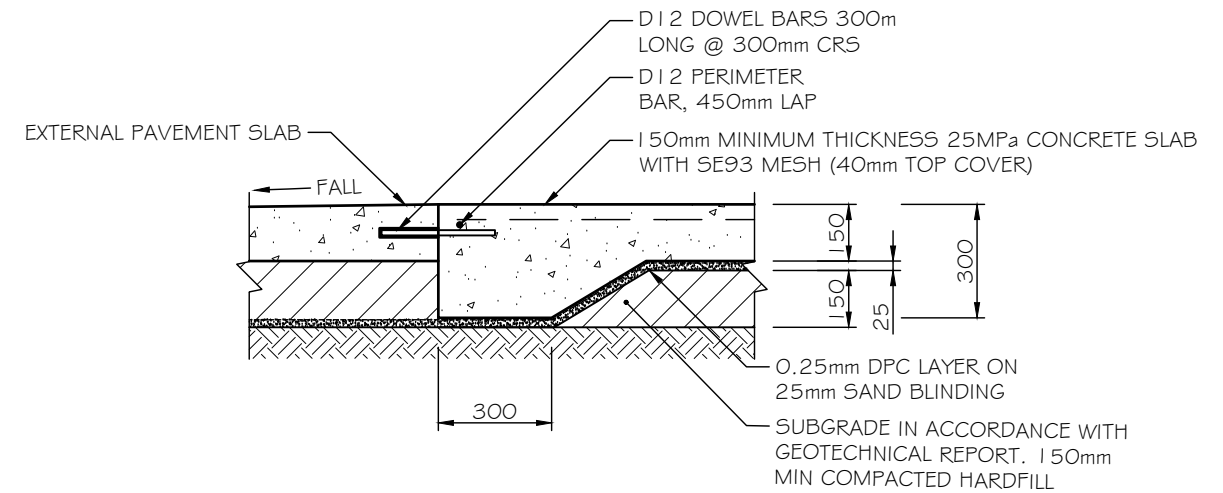
7. Control joints to be adequately waterproofed (Sikadur Combiflex or approved equivalent).

8. Where rear placed reinforcing is specified by the Engineer, reinforcing shall be placed with maximum 60mm cover from the back face of the wall.

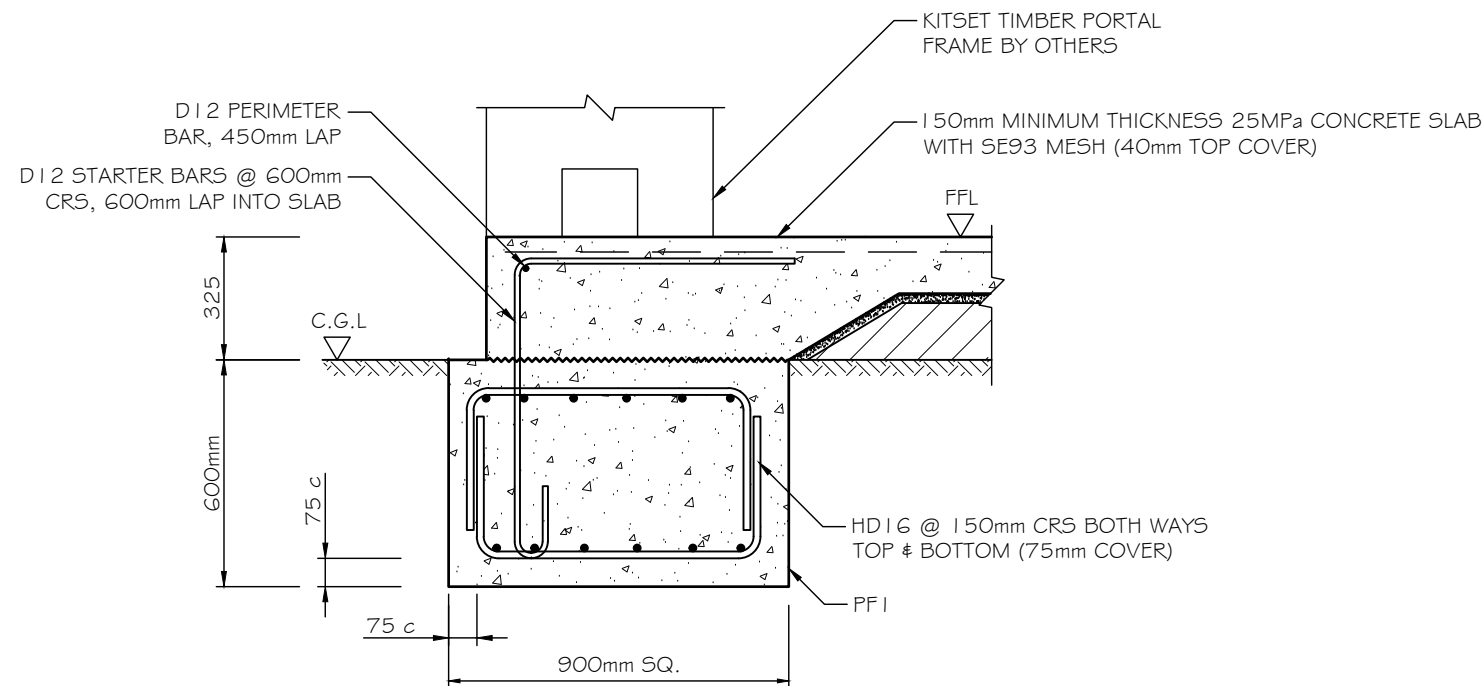
						 Hutchinson ENGINEERING PO Box 150, Orewa 0946 154 Centreway Road, Orewa 0931 Ph: 09 426 5702 www.hc.co.nz	Design	P. WILSON	OCT 2017	THREE BLOKES LTD.	Project PROPOSED PLANING SHED 362 MATAKANA VALLEY ROAD MATAKANA	Title GENERAL STRUCTURAL NOTES	Sheet No. SN2
							Drawn	K. DOUGALL	OCT 2017				
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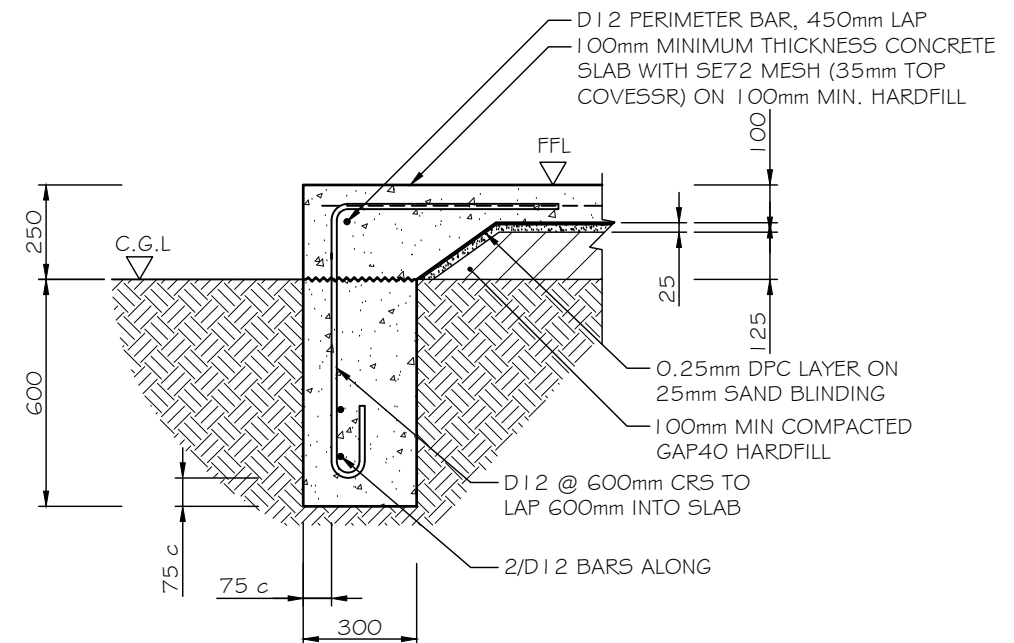
1 TYPICAL WORKSHOP SLAB DETAIL
SCALE 1:20



2 TYPICAL WORKSHOP EDGE THICKENING DETAIL
SCALE 1:20



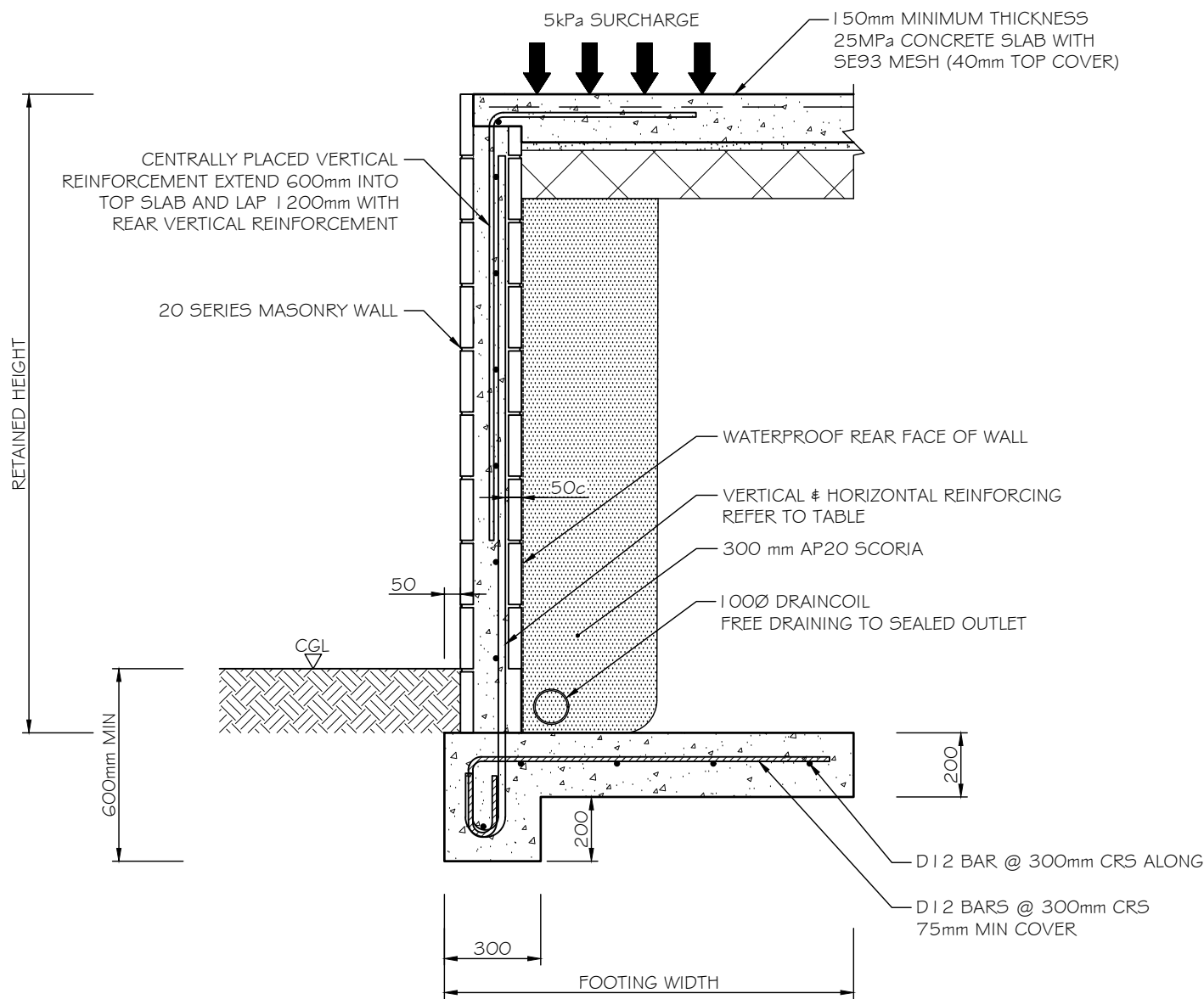
3 TYPICAL PAD FOOTING DETAIL
SCALE 1:20



4 TYPICAL SHOWROOM SLAB EDGE DETAIL
SCALE 1:20

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BUILDING CONSENT PLANS

						 PO Box 150, Orewa 0946 154 Centreway Road, Orewa 0931 Ph: 09 426 5702 www.hc.co.nz	Design	P. WILSON	OCT 2017	THREE BLOKES LTD.	Project PROPOSED PLANING SHED 362 MATAKANA VALLEY ROAD MATAKANA	Title FOUNDATION DETAILS	Sheet No. S01
							Drawn	K. DOUGALL	OCT 2017				
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5 TYPICAL RETAINING WALL A FOUNDATION DETAILS
SCALE 1:20

RETAINING WALL A

RETAINED HEIGHT (mm)	REAR VERTICAL REINFORCEMENT	HORIZONTAL REINFORCEMENT	FOOTING WIDTH (mm)	REAR COVER (mm)	MASONRY GRADE / SERIES
1000	D12 @ 600	D12 @ 600	700	50	20 / C
1200	D12 @ 600	D12 @ 600	800	50	20 / C
1400	D12 @ 400	D12 @ 600	900	50	20 / C
1600	D16 @ 600	D12 @ 600	1000	50	20 / B
1800	D16 @ 400	D12 @ 600	1200	50	20 / B
2000	D20 @ 400	D12 @ 600	1300	50	20 / A

- CONSTRUCTION NOTES**
- THE REAR FACE OF THE BLOCKWORK SHALL BE PROTECTED WITH THREE COATS OF FLINT-KOTE, OR SIMILAR APPROVED WATERPROOFING AGENT. THE WATERPROOFING AGENT SHALL BE SUBSEQUENTLY PERMANENTLY PROTECTED WITH HARDIFLEX SOFT BOARD OR SIMILAR PRIOR TO PLACING SCORIA BACKFILL. THE WATERPROOFING SHALL EXTEND 200mm ABOVE THE PROPOSED FINISHED GROUND LEVEL.
 - ALL CONCRETE SHALL BE 20 MPa UNLESS OTHERWISE NOTED.
 - ALL MORTAR JOINTS, AFTER INITIAL HARDENING, SHALL BE TOOLED INCLUDING THE REAR FACE OF THE WALL.
 - THE DRAINAGE BLANKET BEHIND THE WALL SHALL BE FORMED WITH AT LEAST A 300mm THICK LAYER OF AP20 SCORIA. DO NOT BACKFILL ANY PART OF THE WALL WITH SURPLUS MASONRY COMPONENTS AND/OR ANY OTHER MATERIAL OTHER THAN AP20 SCORIA. THE 100mm DRAINCOIL AT THE BASE OF THE WALL SHALL BE FREE DRAINING TO A SEALED STORMWATER SYSTEM. FILTER CLOTH SHALL BE PLACED BETWEEN THE DRAINCOIL AND THE SCORIA.
 - ALL MASONRY CELLS SHALL BE SOLID FILLED WITH GROUT.
 - ALL CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO THE UNPROTECTED FOOTING EXCAVATION SHALL PROVIDE A 75mm MINIMUM COVER TO THE REINFORCING STEEL.
 - CLEAN OUT PORTS SHALL BE PROVIDED AT THE FIRST BLOCKWORK COURSE AT EACH REINFORCED CELL POSITION FOR LIFTS GREATER THAN 1.2m IN HEIGHT.
 - IF THE MASONRY RETAINING WALL FORMS A PERIMETER FOUNDATION WALL, THE AP20 SCORIA SHALL BE COMPLETED 200mm BELOW THE PROPOSED FINISHED GROUND LEVEL. FILTER CLOTH (TERRAM 2000 OR APPROVED EQUIVALENT) SHALL THEN BE PLACED OVER THE TOP LEVEL SURFACE OF AP20 SCORIA. THE FILTER CLOTH SHALL LAP 100mm VERTICALLY UP THE WALL AND 300mm HORIZONTALLY OVER THE CLAY/SCORIA INTERFACE. A 200mm COMPACTED DEPTH OF TOPSOIL SHALL THEN BE PLACED OVER THE FILTER CLOTH.
 - THE GROUND PROFILE BELOW THE WALL SHALL DIRECT ALL OVERLAND RUN-OFF AWAY FROM THE RETAINING WALL.
 - CONTROL JOINTS TO BE PROVIDED AT NO MORE THAN 6m CENTRES. JOINT TO BE ADEQUATELY WATERPROOFED (SIKADUR COMBIFLEX OR APPROVED EQUIVALENT).

Auckland Council

16/02/2018

BCO10260425

APPROVED

BUILDING CONSENT PLANS

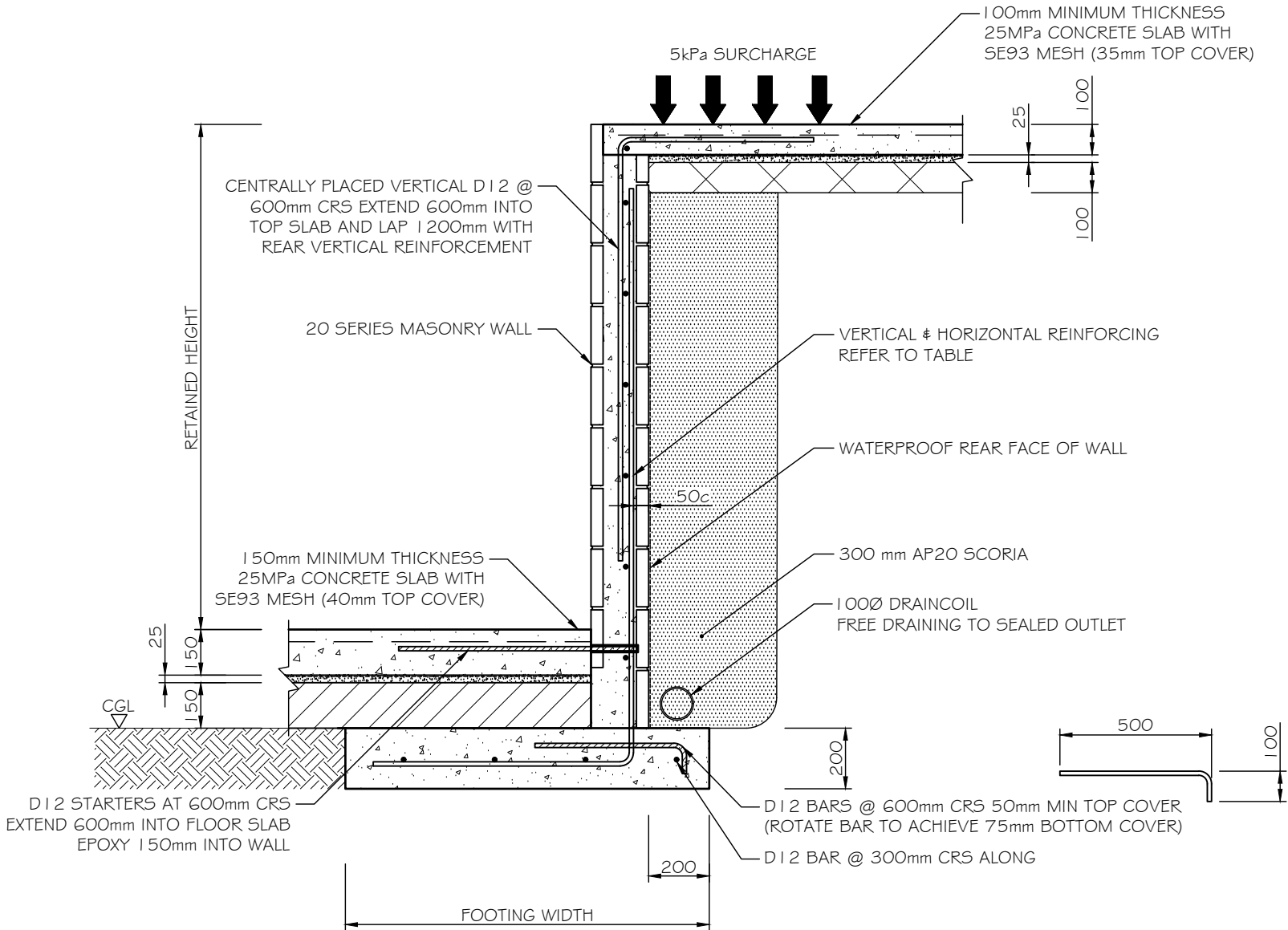
						 PO Box 150, Orewa 0946 154 Centreway Road, Orewa 0931 Ph: 09 426 5702 www.hc.co.nz	Design	P. WILSON	OCT 2017	THREE BLOKES LTD.	Project PROPOSED PLANING SHED 362 MATAKANA VALLEY ROAD MATAKANA	Title	RETAINING WALL DETAILS	Sheet No. S02
							Drawn	K. DOUGALL	OCT 2017					
							Checked	P. JARVIE	OCT 2017					
							Approved	I. HUTCHINSON	OCT 2017					
							Scale	1:20 @ A3						
							Scale vert. exag.							
-	FOR BUILDING CONSENT	K.D	P.J	I.H	DEC 2017									
-	ISSUED FOR APPROVAL	K.D	P.J	I.H	OCT 2017									
No.	Revision	Drawn	Chk.	Appd.	Date							Job No.	20145	

RETAINING WALL B

RETAINED HEIGHT (mm)	REAR VERTICAL REINFORCEMENT	HORIZONTAL REINFORCEMENT	FOOTING WIDTH (mm)	REAR COVER (mm)	MASONRY GRADE / SERIES
500	D12 @ 600	D12 @ 600	600	50	20 / C
600	D12 @ 600	D12 @ 600	600	50	20 / C
700	D12 @ 600	D12 @ 600	700	50	20 / C
800	D12 @ 600	D12 @ 600	800	50	20 / C
900	D12 @ 600	D12 @ 600	900	50	20 / C
1000	D12 @ 600	D12 @ 600	900	50	20 / C
1100	D12 @ 600	D12 @ 600	1000	50	20 / C
1200	D12 @ 400	D12 @ 600	1100	50	20 / C
1300	D12 @ 400	D12 @ 600	1200	50	20 / B
1400	D16 @ 600	D12 @ 600	1300	50	20 / B
1500	D16 @ 400	D12 @ 600	1400	50	20 / B
1600	D16 @ 400	D12 @ 600	1500	50	20 / A
1700	D12 @ 200	D12 @ 600	1600	50	20 / A
1800	D20 @ 400	D12 @ 600	1700	50	20 / A

CONSTRUCTION NOTES

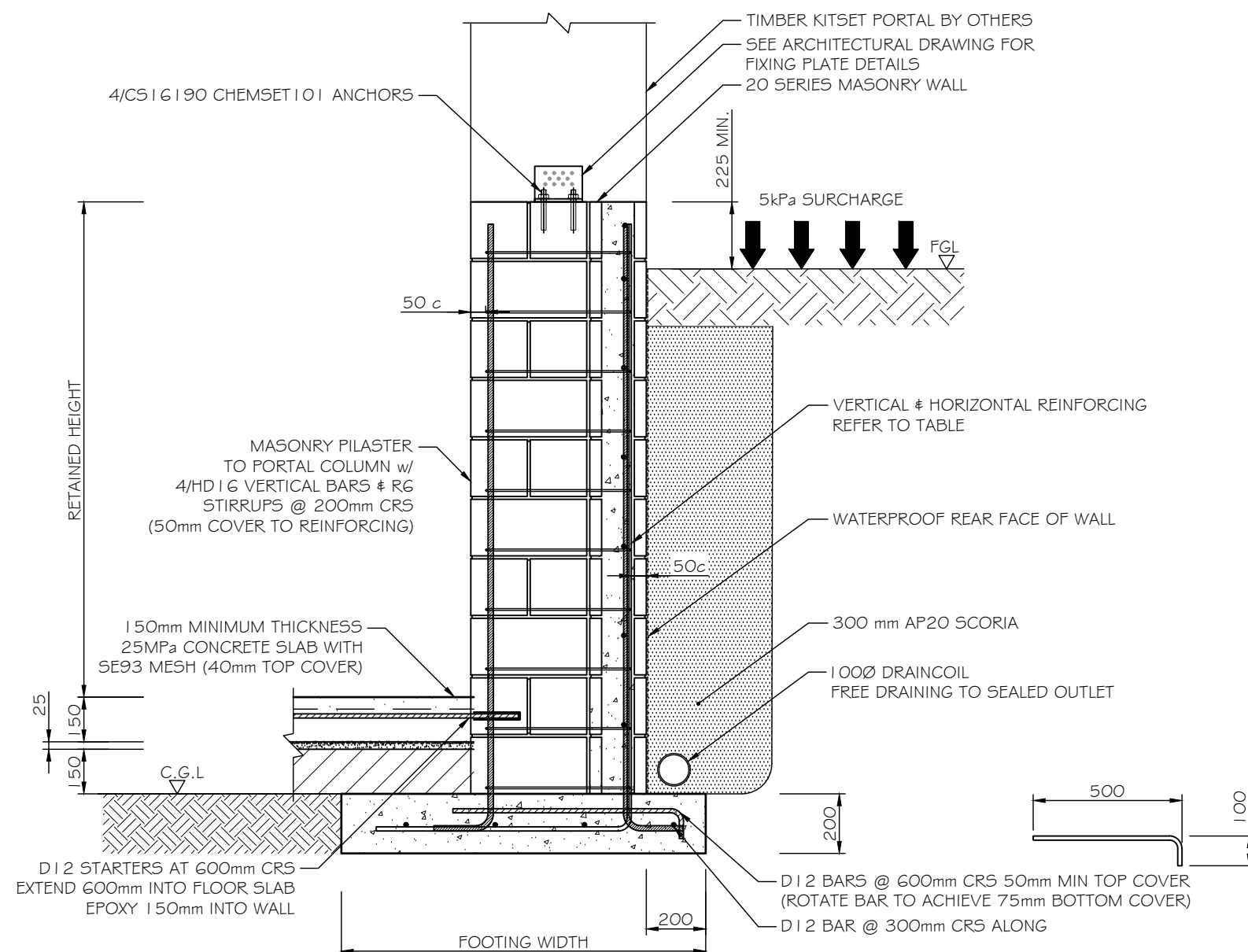
1. THE REAR FACE OF THE BLOCKWORK SHALL BE PROTECTED WITH THREE COATS OF FLINT-KOTE, OR SIMILAR APPROVED WATERPROOFING AGENT. THE WATERPROOFING AGENT SHALL BE SUBSEQUENTLY PERMANENTLY PROTECTED WITH HARDIFLEX SOFT BOARD OR SIMILAR PRIOR TO PLACING SCORIA BACKFILL. THE WATERPROOFING SHALL EXTEND 200mm ABOVE THE PROPOSED FINISHED GROUND LEVEL.
2. ALL CONCRETE SHALL BE 20 MPa UNLESS OTHERWISE NOTED.
3. ALL MORTAR JOINTS, AFTER INITIAL HARDENING, SHALL BE TOOLED INCLUDING THE REAR FACE OF THE WALL.
4. THE DRAINAGE BLANKET BEHIND THE WALL SHALL BE FORMED WITH AT LEAST A 300mm THICK LAYER OF AP20 SCORIA. DO NOT BACKFILL ANY PART OF THE WALL WITH SURPLUS MASONRY COMPONENTS AND/OR ANY OTHER MATERIAL OTHER THAN AP20 SCORIA. THE 100mm DRAINCOIL AT THE BASE OF THE WALL SHALL BE FREE DRAINING TO A SEALED STORMWATER SYSTEM. FILTER CLOTH SHALL BE PLACED BETWEEN THE DRAINCOIL AND THE SCORIA.
5. ALL MASONRY CELLS SHALL BE SOLID FILLED WITH GROUT.
6. ALL CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO THE UNPROTECTED FOOTING EXCAVATION SHALL PROVIDE A 75mm MINIMUM COVER TO THE REINFORCING STEEL.
7. CLEAN OUT PORTS SHALL BE PROVIDED AT THE FIRST BLOCKWORK COURSE AT EACH REINFORCED CELL POSITION FOR LIFTS GREATER THAN 1.2m IN HEIGHT.
8. IF THE MASONRY RETAINING WALL FORMS A PERIMETER FOUNDATION WALL, THE AP20 SCORIA SHALL BE COMPLETED 200mm BELOW THE PROPOSED FINISHED GROUND LEVEL. FILTER CLOTH (TERRAM 2000 OR APPROVED EQUIVALENT) SHALL THEN BE PLACED OVER THE TOP LEVEL SURFACE OF AP20 SCORIA. THE FILTER CLOTH SHALL LAP 100mm VERTICALLY UP THE WALL AND 300mm HORIZONTALLY OVER THE CLAY/SCORIA INTERFACE. A 200mm COMPACTED DEPTH OF TOPSOIL SHALL THEN BE PLACED OVER THE FILTER CLOTH.
9. IF SPECIFIED, THE LOWER CONCRETE FLOOR SLAB SHALL BE POURED AND CURED PRIOR TO BACKFILLING BEHIND THE MASONRY RETAINING WALL.
10. CONTROL JOINTS TO BE PROVIDED AT NO MORE THAN 6m CENTRES. JOINT TO BE ADEQUATELY WATERPROOFED (SIKADUR COMBIFLEX OR APPROVED EQUIVALENT).



6 TYPICAL RETAINING WALL B FOUNDATION DETAILS
SCALE 1:20

						 PO Box 150, Orewa 0946 154 Centreway Road, Orewa 0931 Ph: 09 426 5702 www.hc.co.nz	Design	P. WILSON	OCT 2017	THREE BLOKES LTD.	Project PROPOSED PLANING SHED 362 MATAKANA VALLEY ROAD MATAKANA	Title RETAINING WALL DETAILS	Sheet No. S03
					Drawn		K. DOUGALL	OCT 2017					
					Checked		P. JARVIE	OCT 2017					
					Approved		I. HUTCHINSON	OCT 2017					
					Scale		1:20 @ A3						
-	FOR BUILDING CONSENT	K.D	P.J	I.H	DEC 2017							Job No. 20145	
-	ISSUED FOR APPROVAL	K.D	P.J	I.H	OCT 2017								
No.	Revision	Drawn	Chk.	Appd.	Date		Scale vert. exag.						

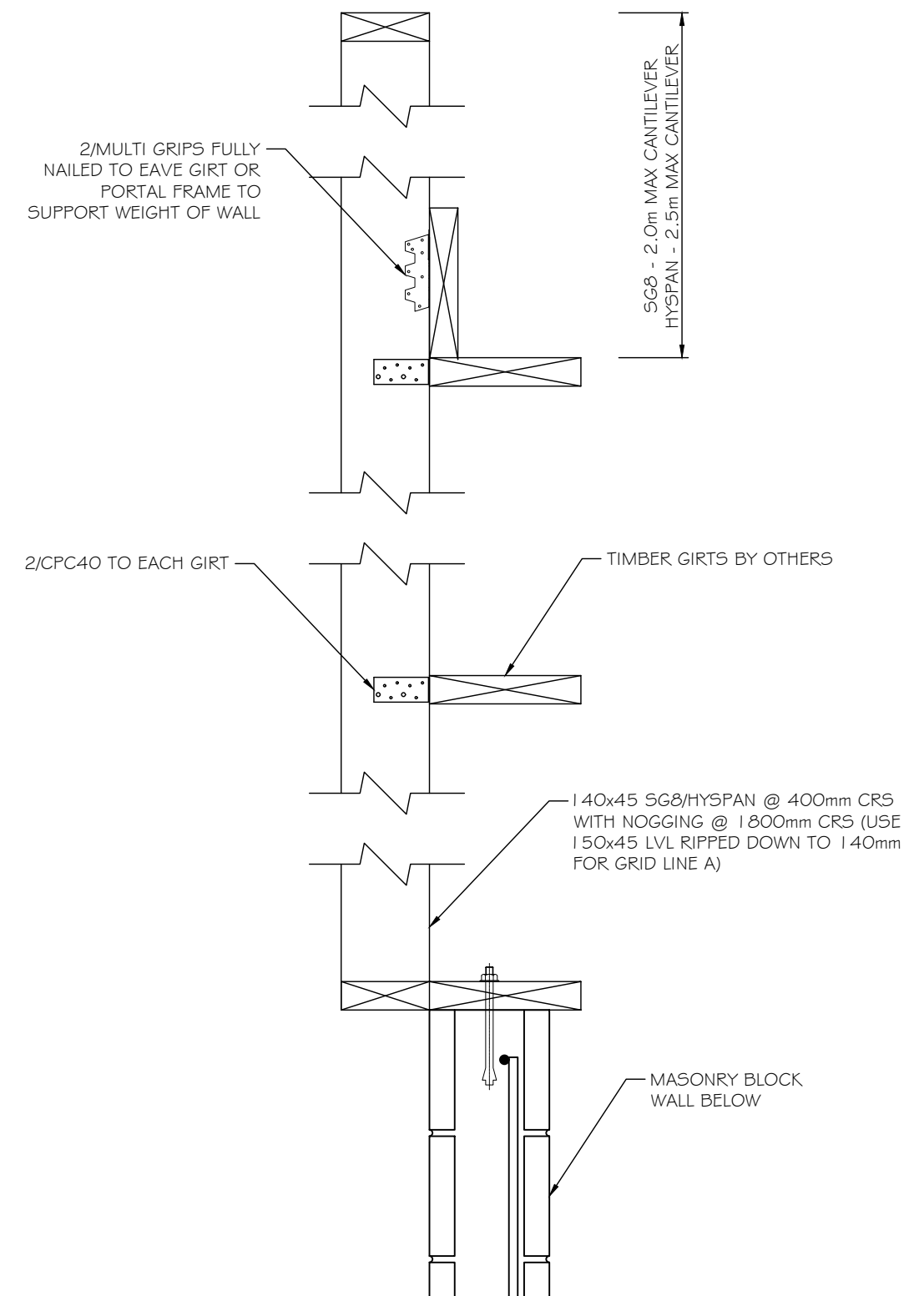
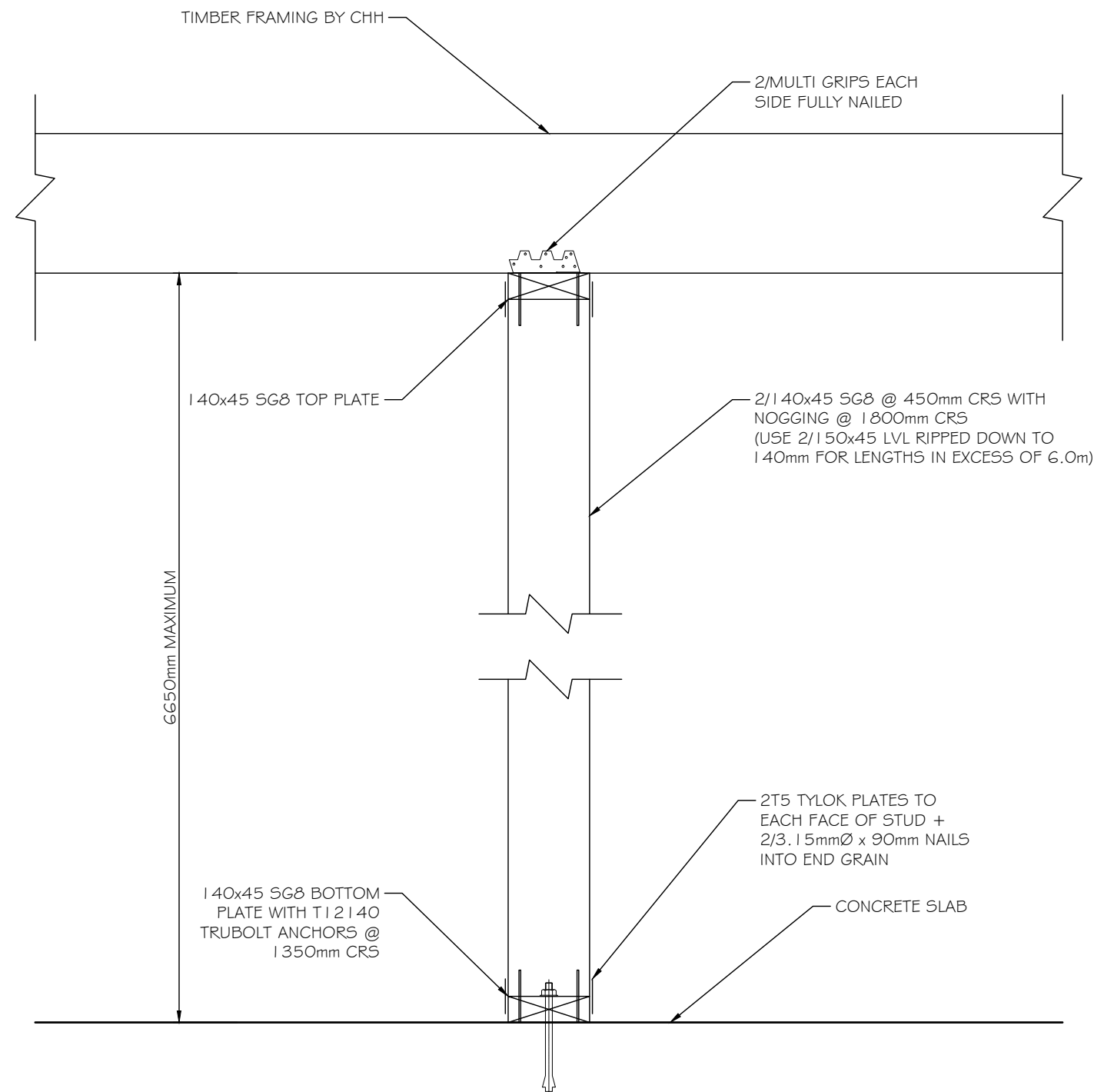




RETAINING WALL B					
RETAINED HEIGHT (mm)	REAR VERTICAL REINFORCEMENT	HORIZONTAL REINFORCEMENT	FOOTING WIDTH (mm)	REAR COVER (mm)	MASONRY GRADE / SERIES
500	D12 @ 600	D12 @ 600	600	50	20 / C
600	D12 @ 600	D12 @ 600	600	50	20 / C
700	D12 @ 600	D12 @ 600	700	50	20 / C
800	D12 @ 600	D12 @ 600	800	50	20 / C
900	D12 @ 600	D12 @ 600	900	50	20 / C
1000	D12 @ 600	D12 @ 600	900	50	20 / C
1100	D12 @ 600	D12 @ 600	1000	50	20 / C
1200	D12 @ 400	D12 @ 600	1100	50	20 / C
1300	D12 @ 400	D12 @ 600	1200	50	20 / B
1400	D16 @ 600	D12 @ 600	1300	50	20 / B
1500	D16 @ 400	D12 @ 600	1400	50	20 / B
1600	D16 @ 400	D12 @ 600	1500	50	20 / A
1700	D12 @ 200	D12 @ 600	1600	50	20 / A
1800	D20 @ 400	D12 @ 600	1700	50	20 / A

						 Hutchinson ENGINEERING LIMITED	Design	P. WILSON	OCT 2017	THREE BLOKES LTD.	Project	PROPOSED PLANING SHED 362 MATAKANA VALLEY ROAD MATAKANA	Title	RETAINING WALL DETAILS	Sheet No. S04
							Drawn	K. DOUGALL	OCT 2017						
							Checked	P. JARVIE	OCT 2017						
-	FOR BUILDING CONSENT	K.D	P.J	I.H	DEC 2017		Approved	I. HUTCHINSON	OCT 2017						
-	ISSUED FOR APPROVAL	K.D	P.J	I.H	OCT 2017		Scale	1:20 @ A3							
No.	Revision	Drawn	Chk.	Appd.	Date	Scale vert. exag.				Job No.	20145				





						 Hutchinson ENGINEERING PO Box 150, Orewa 0946 154 Centretway Road, Orewa 0931 Ph: 09 426 5702 www.hc.co.nz	Design	P. WILSON	OCT 2017	THREE BLOKES LTD.	Project	PROPOSED PLANING SHED 362 MATAKANA VALLEY ROAD MATAKANA	Title	FRAMING DETAILS	Sheet No. S06
							Drawn	K. DOUGALL	OCT 2017						
							Checked	P. JARVIE	OCT 2017						
-	FOR BUILDING CONSENT	K.D	P.J	I.H	DEC 2017		Approved	I. HUTCHINSON	OCT 2017						
-	ISSUED FOR APPROVAL	K.D	P.J	I.H	OCT 2017		Scale	1:20 @ A3							
No.	Revision	Drawn	Chk.	Appd.	Date		Scale vert. exag.				Job No.	20145			