

**GENERAL**

- G1 THESE DRAWINGS SHALL BE REAR IN CONJUNCTION WITH ARCHITECTURAL AND OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS OR SKETCHES AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCIES SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.
- G2 MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH SPECIFICATIONS, CURRENT AUST CODES, BUILDING REGULATIONS AND THE REQUIREMENTS OF ANY OTHER RELEVANT STATUTORY AUTHORITIES.
- G3 THESE DRAWINGS MUST NOT BE SCALED.
- G4 DURING CONSTRUCTION THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED.

**CONCRETE**

- C1 CONCRETE SIZES DO NOT INCLUDE FINISHES.
- C2 NO HOLES, CHASES OR EMBEDMENTS OTHER THAN THOSE SHOWN ON DRAWINGS SHALL BE MADE IN CONCRETE ELEMENTS WITHOUT THE ENGINEER'S APPROVAL.
- C3 DEPTHS OF BEAMS ARE GIVEN FIRST AND INCLUDE SLAB THICKNESS, SLAB AND BEAMS SHALL BE CAST TOGETHER UNLESS NOTED OTHERWISE.
- C4 CONCRETE SHALL BE KEPT FREE OF SUPPORTING MASONRY WITH TWO LAYERS OF SUITABLE SLIP JOINT MEMBRANE (NOT MALTHOID). VERTICAL FACES SHALL BE SEPARATED BY 12 mm BITUMINOUS CANITE OR SIMILAR.
- C5 CONSTRUCTION JOINTS SHALL BE LOCATED TO THE SATISFACTION OF THE ENGINEER. THE BUILDER SHALL ALLOW FOR ALL NECESSARY CONSTRUCTION JOINTS.
- C6 CAMBER TO SUSPENDED SLABS AND BEAMS SHALL BE 1 mm EVERY 500 mm OF SPAN UNLESS NOTED OTHERWISE.
- C7 REINFORCEMENT IS SHOWN DIAGRAMMATICALLY AND IS NOT NECESSARILY IN TRUE PROJECTION. SPLICES TO REINFORCEMENT SHALL BE MADE ONLY AT THE LOCATION SHOWN OR AS OTHERWISE APPROVED BY THE ENGINEER.
- C8 COVER TO REINFORCEMENT AND CONCRETE GRADES SHALL BE AS FOLLOWS UNO:

ELEMENT	LOCATION	COVER mm	FORMED OR SURFACES CAST AGAINST GROUND	OR FINISHED	CONCRETE GRADE/AGG/SLUMP MPa
	FOOTING	75		50	25 / 20 / 80
	PIERS	75		50	25 / 20 / 80
	COLUMNS	INTERNAL		50	
			EXTERNAL	50	40
	WALLS	INTERNAL		50	30
			EXTERNAL	50	40
	BEAMS	INTERNAL		50	30
			EXTERNAL	50	40
	WALLS	INTERNAL		50	30
			EXTERNAL	50	40
	SLABS	INTERNAL		30	25 / 20 / 80
			EXTERNAL	30	40

- i COVER IS A CLEAR DISTANCE BETWEEN ANY REINFORCEMENT (INCLUDING FITMENTS) AND THE FACE OF THE STRUCTURAL ELEMENT.
- ii FOR ALL EXTERNAL SURFACES PROVIDE FULLY PLASTIC BAR CHAIRS. TIE WIRE SHALL NOT BE NAILED TO THE FORMS, REINFORCEMENT BARS SHALL NOT BE USED TO KEEP FORMS APART AND A THROUGH TIE SYSTEM SHALL BE USED TO TIE FORMS.
- iii PROVIDE AN APPROVED VAPOUR BARRIER FOR SLABS, BEAMS AND THICKENINGS CAST AGAINST THE GROUND.
- iv THE COVERS SHALL BE MAINTAINED USING APPROVED BY CHAIRS. IN SLABS THE BAR CHAIRS SHALL BE AT 800 mm X 800 mm CENTRES MAX. BAR CHAIRS SHALL BE APPROVED ALONG THE EDGES OF ALL CONSTRUCTION JOINTS. STOP EDGES SHALL NOT BE TO MAINTAIN THE COVERS.
- v EXTERNAL ELEMENTS ARE THOSE EXPOSED TO WEATHER, RAIN AND WATER PENETRATION AND ARE CLASSIFIED B1 UNLESS NOTED OTHERWISE.
- C9 ALL CONCRETE SUPPLIED SHALL HAVE A SLUMP OF 80 mm AND A MAXIMUM NOMINAL AGGREGATE SIZE OF 20 mm. VARIATIONS FROM THESE SHALL BE APPROVED BY THE ENGINEER.
- C10 EXTERNAL CONCRETE ELEMENTS, GRADE S32 MINIMUM, SHALL MEET THE FOLLOWING REQUIREMENTS: MINIMUM PORTLANDS CEMENT CONTENT 330 kg/cm (NO FLY ASH TO BE USED), MAXIMUM WATER / CEMENT RATIO 0.5, SHRINKAGE LIMIT 600 MICRO-STRAIN AFTER 56 DAYS, AND CHLORIDE CONTENT RESTRICTED AS PER CLAUSE 4.9 OF AS 3600. NO SALT SHALL BE ADDED.
- C11 CONDUITS AND PIPES WHEN CAST IN SLABS OR WALLS ARE TO BE PLACED IN BETWEEN THE TWO REINFORCEMENT LAYERS. WHERE THERE IS ONLY ONE LAYER OF REINFORCEMENT PROVIDE 50 mm COVER TO CONDUIT WITH EXTRA REO LAYER.
- C12 WHERE DISTRIBUTION BARS TO MAIN REINFORCEMENT ARE NOT SHOWN ON .....

**STEELWORK**

- S1 THE FABRICATOR SHALL BE RESPONSIBLE FOR SHOP DRAWINGS WHICH SHALL COMPLY TO AS 4100 AND THESE DRAWINGS. ANY VARIATION SHALL BE APPROVED BY THE ENGINEER PRIOR TO FABRICATION.
- S2 WHERE CONNECTION FORCES, IN KILONEWTONS (kN) ARE SHOWN ON THE DRAWINGS CONNECTIONS SHALL BE PROVIDED TO TRANSMIT THOSE FORCES. CONNECTIONS SHALL PROVIDE A MINIMUM OF 25 kN.
- S3 UNLESS NOTED OTHERWISE (UNO); WELDS TO BE 6 mm CONTINUOUS FILLETS LAID DOWN WITH APPROVED COVERED ELECTRODES. GUSSET PLATES TO BE 10 mm THICK. BOLTS TO BE M20-4.6/S IN 22 mm DIAMETER HOLES. PROVIDE A MINIMUM OF TWO BOLTS PER CONNECTION.
- S4 FABRICATOR SHALL PROVIDE ALL FIXINGS FOR ARCHITECTURAL ELEMENTS ETC. WITHOUT WEAKENING THE STRUCTURAL MEMBER IN ANY WAY.
- S5 UNO CAMBER SHALL BE PROVIDED TO ALL ROOF BEAMS, TRUSSES, PORTAL FRAMES ETC AT 5 mm / 2000 mm OR SPAN. NO MEMBER SHALL BE ERECTED WITH NEGATIVE CAMBER.
- S6 ALL STEELWORK BELOW GROUND SHALL BE ENCASED BY 75 mm OF CONCRETE.
- S7 CONCRETE ENCASED STRUCTURAL STEEL TO BE WRAPPED WITH FGW41 PLACED 25 mm CLEAR OF STEEL.
- S8 ALL STEELWORK NOT TO BE ENCASED IN CONCRETE SHALL BE GIVEN ONESHOP COAT OF AN APPROVED PRIMER UNO. FACES OF FRICTION GRIP CONNECTIONS SHALL NOT BE PAINTED.
- S9 THE BOLTING PROCEEDURE IS DESIGNATED AS FOLLOWS:  
4.6/S REFERS TO COMMERCIAL BOLTS OF STRENGTH GRADE 4.6 TO AS 1111 TIGHTENED USING A STANDARD WRENCH TO A SNUG TIGHT CONDITION.  
8.8/S REFERS TO HIGH STRENGTH BOLTS OF STRENGTH GRADE 8.8 TO AS 1252 TIGHTENED USING A STANDARD WRENCH TO A SNUG TIGHT CONDITION.  
8.8/TF REFERS TO HIGH STRENGTH BOLTS OF STRENGTH GRADE 8.8 TO AS 1252 FULLY TENSIONED TO AS 1511 DESIGNATED AS A FRICTION TYPE JOINT.  
8.8/TB REFERS TO HIGH STRENGTH BOLTS OF A STRENGTH GRADE 8.8 TO AS 1252 FULLY TENSIONED TO AS 1511 DESIGNATED AS A BEARING TYPE JOINT.
- S10 ALL BOLTS SHALL BE OF SUCH LENGTH THAT AT LEAST ONE FULL THREAD IS EXPOSED BEYOND THE NUT AFTER THE NUT HAS BEEN TIGHTENED.
- S11 MINIMUM OF ONE WASHER SHALL BE USED UNDER THE NUT IN ALL SITUATIONS. IF TIGHTENING IS CARRIED OUT AT THE HEAD THEN AN ADDITIONAL WASHER SHALL BE USED UNDER THE HEAD. FOR SLOTTED HOLES USE HARDENED WASHERS UNDER BOTH NUT AND HEAD.

**BRICKWORK - BLOCKWORK (MASONRY)**

- M1 ALL BLOCKWORK WALLS SHALL BE CONSTRUCTED IN GRADE 15 BLOCKS (15 MPa) ACCORDING TO AS 2733. ALL BRICKS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 40 MPa ACCORDING TO AS 1255 IN ACCORDANCE WITH NATA REGISTERED TEST B01. THE MAXIMUM UNRESTRAINED FIVE YEAR EXPANSION OF BRICKS SHALL BE 0.7 mm/m.
- M2 UNLESS NOTED OTHERWISE THE NOMINAL PROPORTIONS BY VOLUME OF MORTAR SHALL BE 1:1:6 OF CEMENT- SAND - LIME. NO PLASTICISERS SHALL BE USED IN THE MIX.
- M3 GROUT USED TO FILL CAVITIES AND CORE IN REINFORCED MASONRY SHALL HAVE A MINIMUM OF COMPRESSIVE STRENGTH OF 15 MPa (fc) AND A SLUMP OF 225 ± 25 mm. MAXIMUM AGGREGATE SHALL BE OF 10 mm ROUNDED GRAVEL. NORMAL PROPORTIONS SHALL BE 1 : 0.1 : 3 : 3 OF CEMENT-LIME-SAND-AGGREGATE AND WITH A MINIMUM CEMENT CONTENT OF 300 kg/m³. PROVIDE CLEAN OUT HOLES AT BASE OF PILASTERS AND EVERY CORE OF REINFORCED WALLS.
- M4 HORIZONTAL JOINT REINFORCEMENT SHALL BE PROVIDED AT MAXIMUM 600 mm VERTICAL SPACING FOR ALL CONCRETE BLOCKWORK, CONCRETE BRICKWORK AND CALCIUM SILICATE BRICKWORK.
- M5 FULLY BED FACE SHELLS AND CROSS WEBS IN HOLLOW BLOCK WALLS.
- M6 HOLLOW BLOCKWORK OPENINGS GREATER THAN 600 mm VERTICALLY AND HORIZONTALLY SHALL BE TRIMMED AT SIDES AND BOTTOM BY FILLING ONE CORE AND REINFORCE WITH 1 x N12 EXTENDING 600 mm PAST OPENING. THE TOP OF THE OPENING SHALL HAVE A REINFORCEMENT LINTEL BEAM, ARCH BAR OR STEEL ANGLE SUPPORT AS DETAILED.
- M7 ALL TIES AND REINFORCEMENT SHALL HAVE MINIMUM CLEAR COVER OF 50 mm TO EXTERNAL FACE OF MASONRY.
- M8 ALL WALLS SHALL BE TIED OR BONDED AT THEIR INTERSECTIONS.
- M9 NO CAVITY OR CORE SHALL BE FILLED TO A HEIGHT GREATER THAN 1200 mm WITHOUT SUITABLE SHORING.
- M10 NO CHASES OR HOLES SHALL BE MADE WITHOUT PRIOR APPROVAL OF THE ENGINEER.

**CONSTRUCTION ADVICE - Generic advice**

- AS PER AND ADDITIONAL TO THE ADVICE IN THE GEOTECH REPORT THEN DUE TO THE CLOSE PROXIMITY OF THE TWO NEIGHBOURING HOUSES THE EXCAVATION AND DEMOLITION PROCESS AND REMOVAL OF THE MATERIAL HAS TO BE DONE IN A SYMPATHETIC AND NOT AN OVERLY AGGRESSIVE MANNER.
- IN GENERALLY AS SMALL A MACHINE, IE EXCAVATORS, AS POSSIBLE SHOULD BE USED IN PREFERENCE TO A LARGER MACHINE.
- ROCK SAWS ON AN EXCAVATOR SHOULD BE USED IN PREFERENCE TO JACKHAMMERING OR EXTENSIVE ROCK SAWING SHOULD BE USED TO CUT AROUND AREAS TO BE JACKHAMMERED AND DOWN TO THE BASE OF THE AREA TO BE JACKHAMMERED OUT SO THAT VIBRATION FROM THE JACKHAMMERING DOES NOT TRAVEL ACROSS THE CUTS TO THE NEIGHBOURING STRUCTURES.
- THE SIZE OF THE JACKHAMMER USED AND THE VIBRATION PRODUCED SHOULD BE LIMITED AS DETAILED IN THE GEOTECH REPORT.
- IF POSSIBLE THE SAWING PROCESS CAN BE USED TO PRODUCE LARGE DIMENSIONED BLOCKS OF SANDSTONE THAT CAN BE USED DIRECTLY TO PRODUCE THE RETAINING WALLS OR CAN BE USED BY A STONE MASON TO PRODUCE DIMENSIONED STONE TO PRODUCE A MORE FORMAL RETAINING WALL. THIS POTENTIAL REUSE OF ANY SANDSTONE MATERIAL WILL OBVIOUSLY LIMIT THE AMOUNT OF MATERIAL GOING OFF SITE AND POSSIBLY TO LANDFILL.
- TO REMOVE THE SPOIL MATERIAL FROM THE SITE IT WILL PROBABLY BE ADVISABLE TO MOVE THE MATERIAL TO THE REAR OF THE SITE BUT FIRST TO THE REAR AT THE BASE OF THE EXISTING CLIFF, WITH SAY A BOBCAT, AND THEN TO LIFT IT UP TO TRUCKS OR BINS IN PRITCHARD ST VIA A LARGER EXCAVATOR WITH A LONG REACH ARTICULATED ARM.
- ALTERNATIVELY IF A LARGER EXCAVATOR IS TO BE DROPPED ONTO THE SITE BY A CRANE THEN THE LARGER EXCAVATOR MAY BE ABLE TO LIFT THE SPOIL TO THE UPPER LEVEL FROM THE REAR OF THE BLOCK.
- IT MAY BE APPROPRIATE IF THE EXCAVATOR IS LIFTED ONTO THE REAR YARD TO PRODUCE A PLATFORM BEING AROUND HALF THE HEIGHT OF THE CLIFF AND THE EXCAVATOR COULD POSSIBLY OR POTENTIALLY GATHER THE SPOIL MATERIAL TO THE PROXIMITY OF THIS PLATFORM AND THEN LIFT THE SPOIL UP TO AWAITING TRUCKS OR BINS.
- ALTERNATIVELY THE EXCAVATOR MAY BE ABLE TO PRODUCE A RAMP TO THE UPPER LEVEL FROM THE SPOIL MATERIAL AND ON OR NEAR TO COMPLETION OF THE EXCAVATION PHASE TO BE ABLE TO CLIMB THE RAMP AND THEN REPOSITION TO THE UPPER LEVEL AND FROM THAT POSITION TO LIFT THE SPOIL UP.
- ALTERNATIVELY THE MATERIAL COULD BE LOADED INTO SMALLER SAY 2 CU.M BINS POSITIONED ON THE REAR YARD PLATFORM AND THEN THEY CAN BE LIFTED UP BY A CRANE BEFORE REMOVING THE EXCAVATOR.
- IF THE SPOIL WAS SMALL ENOUGH IT MAY BE POSSIBLE TO MOVE THE MATERIAL TO THE LOWER FRONT END VIA A SERIES OF SAY 10 M CONVEYOR BELT SYSTEMS OR SIMILAR.
- ALTERNATIVELY OTHER MEANS OF EXTRACTING THE SPOIL CAN BE SUGGESTED BY THE BUILDER AND EXCAVATOR CONTRACTOR / OPERATOR FOR CONSIDERATION BY THE ENGINEER.
- IF A HEAVY LIFT CRANE IS TO BE USED AND POSITION ON THE UPPER LEVEL ON PRITCHARD ST THEN THE AREA OF THE SUPPORTING GROUND MUST BE INVESTIGATED TO ENSURE IT IS SOUND ENOUGH TO SUPPORT THE CRANE AND ITS STABILISING OUTRIGGERS. IN SUCH A CASE THE ASSUMED UNDERLYING ROCK STRATA SHOULD BE CONSIDERED.
- IT IS ANTICIPATED THAT ALL THE NEW FOUNDATION WORKS WILL BE OF SUCH A LEVEL THAT THE SUPPORTING GROUND WILL BE REDUCED IN HEIGHT DOWN TO THE UNDERLYING SANDSTONE LEVEL.
- IF ANY UNDERPINNING OF ANY STRUCTURES IS REQUIRED ON THE PROPERTY OR THE NEIGHBOURING PROPERTIES OR TO THE DIVIDING RETAINING WALLS THEN PLEASE SEE THE UNDERPINNING SCHEDULE ATTACHED.

CONCRETE:  
See drawing

Site classified as Rock to AS 2870 - 2011

**POOL CONSTRUCTION**

1. POOL SET-OUT  
Pool set-out ,size, location and height level is deemed to be acceptable to the Owner unless the Builder is advised otherwise. Such advice must be prior to placement of reinforcement.
2. EXCAVATION:  
Pool to be excavated in sound, natural, clean ground of sufficient size to allow for the appropriate shell thickness c/w any bottom gravel or other lining and any pipes running around the outside of the shell to be positioned in their own trenches to be additionally over excavated beyond the outline of the shell so that they do not cause a local thinning of the pool shell thickness.
3. CONSTRUCTION FENCING  
Construction fencing is to be installed around the excavation and at a workable distance to make safe during the construction phase.
4. CURING CONCRETE  
After concreting the pool shell it is to be thoroughly wetted down twice daily for at least seven (7) days in mild weather and ten (10) days in hot summer weather.
5. SAFETY FENCES  
Safety fencing is to be Council approved and installed before the Pool is filled.
6. FILLING THE POOL  
Leave the Pool to cure for a minimum of 28 days before tiling and then filling.
7. UNDERWATER LIGHTS  
Lights must be checked and may need to be fully submerged before using.
8. WALKWAYS AND COPINGS  
Walkways and copings are designed for a 2 kPa loading (200 kg/m²) live load and are not designed to support masonry walls unless noted otherwise.

**SPECIFICATIONS:**

1. All workmanship and materials to be in accordance with Australian Standard AS 2783.
2. Site Plan dimensions are to water face.
3. Dimensions shall not be obtained by scaling the details. Ask if unsure.
4. All levels and dimensions are relative to concrete coping levels. Fixed Datum represents the fixed coping height/level.  
Approximate coping levels are represented as follows:  
a) NGL +200 represents 200 mm above existing Natural Ground Level.  
b) NGL -400 represents 400 mm below existing Natural Ground Level.
5. Provide filter with matched pump and plumbing to manufacturer's recommendations.
6. Supporting soil to be stable natural material with min. safe bearing capacity of 100 kPa.
7. Advise Engineer if excavation is in fill or ground water is encountered. Provide temporary penetrations to floor slab if ground water level exceeds 500 mm above deep floor level.
8. The excavation base is to be provided with an under shell drainage layer as follows:  
a) 75 mm min blue 20 mm metal drainage layer, or 50 mm min thick layer with plastic over;  
b) Corrugated iron sheeting & membrane if over rock;  
c) Plastic layer only if base is entirely on sand;  
d) Main Drain pit is to be blue metal filled irrespective of drainage layer type.
9. All reinforcement to be of Australian manufacture in accordance with Australian Standard AS 4671 as 250S Grade 12Ø.
10. Reinforcing bars, unless noted otherwise, are to be lapped 40 bar diameters min, fabric to be lapped 400 mm min. All laps should preferably be staggered.
11. All reinforcement to be securely supported by bar chairs at 1000 mm max cts preferably at 900 mm max.
12. Minimum concrete cover to reinforcement, from closest concrete surface to be as follows:  
Water face salt chlorination: 65 mm  
Water face standard chlorination: 50 mm  
Coping / Walkway surface: 50 mm,  
Rear: face formed up: 40 mm,  
Rough ground: 65 mm.
13. Concrete to be pneumatically placed (shot-crete) have a min. design strength F'c 25 MPa at 28 days.
14. Upon completion of concreting the hydrostatic valve is to be cleaned & checked to ensure correct operation.

Drawing Index:

- 01 - General Notes, Drawings & Inspections Lists
- 02 - Retaining Wall Layout and Design

List of required inspections (by this office):

Note that some of these can be conducted concurrently and are not necessarily in strict construction sequence order

- 01 - The cleaned back area for the slab to the required depth
- 02 - Installation of the bored piers
- 03 - Installation of the reo to bored piers then fill bored piers with concrete
- 04 - Installation of the lower level drainage lines and the installed starter bars  
Install the concrete to the base slab.  
Install the Dince1 275 mm wall product  
Install the wall horizontal bars as the wall progresses
- 05 - Inspect all of the above say half way through
- 06 - Inspect the installed wall vertical reo bars  
Fill the wall with concrete  
Fill behind the wall with the TerrFill foamed concrete
- 07 - Inspect the above
- 08 - Inspect the installed lapping reo for the spoon drain / path

Client: <b>Steve &amp; Sandy Speter</b>		<b>pba</b> peter blacker and associates <small>civil structural hydraulic acoustic consulting engineers 1 yinnell place, castle hill, 2154 tel: 02-9899-7923 mob: 0416-022-883 email: peterblacker@bigpond.com, web:pbcivil.com.au</small>				
Project: Retaining wall at lower boundary 55 Robertson Road, Scotland Island						
Drawing: <b>General Notes, Drawings and Inspections Lists</b>		Drawn: PB	Checked: PB	Approved: PB	Scale: -	Date: July 2021
No.	Revision	Date	Drawing No: 20041 - 1		Revision No: -	