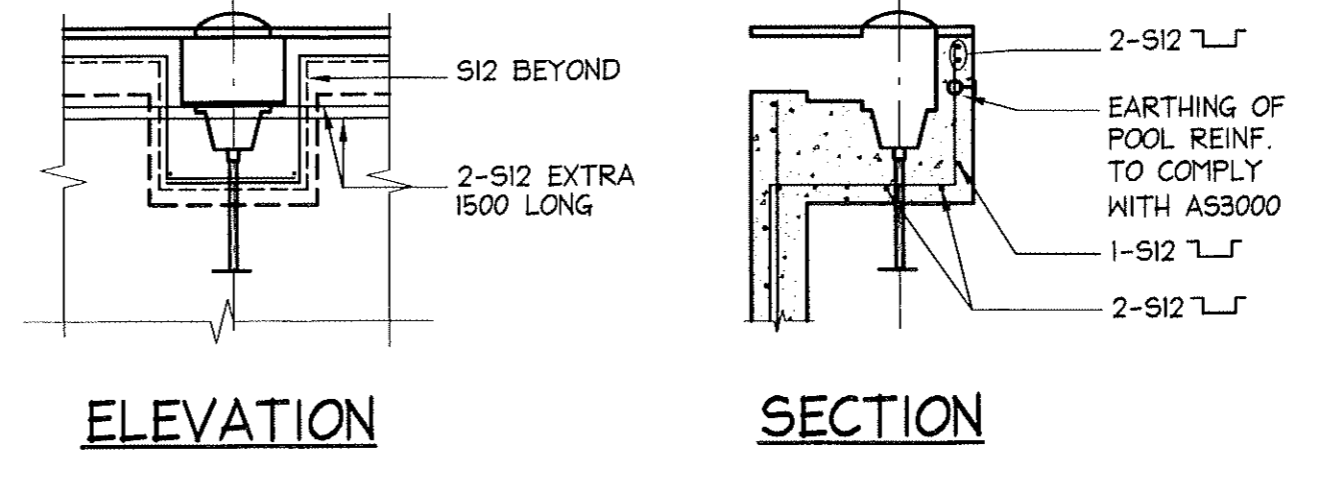


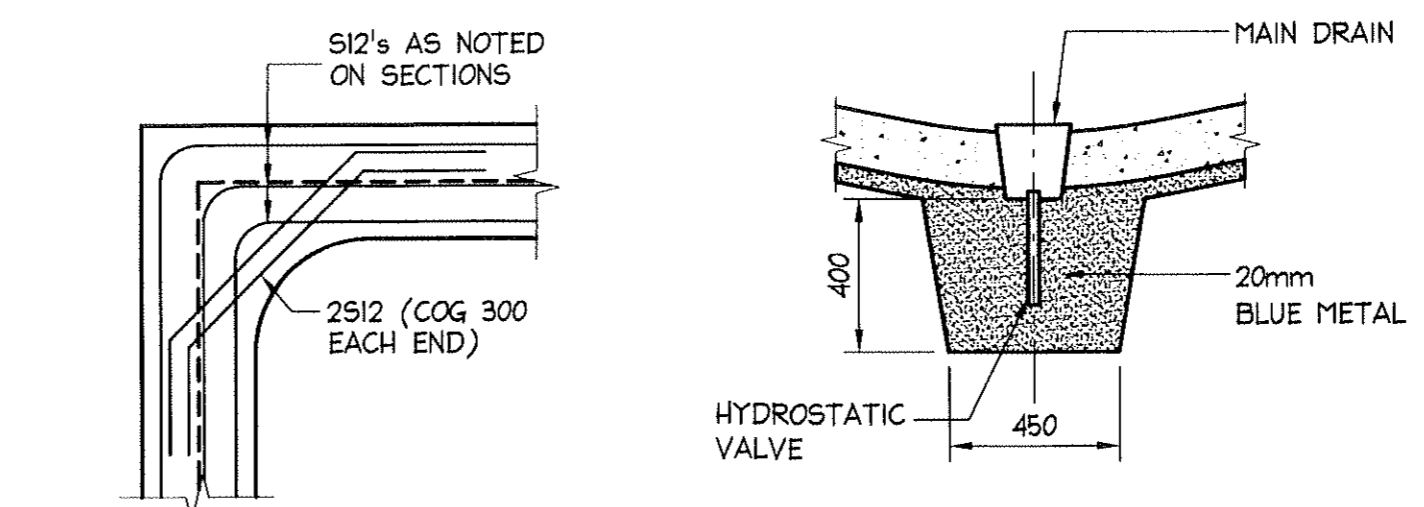
POOL PLAN
SCALE = 1 : 50

CONCRETE STRENGTH:
F_c = 50 MPa

REFER ARCHITECTURAL PLANS FOR
DIMENSIONAL SETOUT OF POOL,
SKIMMER/RTP/DEPTH CONFIRMATION



SKIMMER DETAIL



COPING CORNER DETAIL **MAIN DRAIN DETAIL**
(FOR 300mm COPINGS OR SMALLER)

CONCRETE POOL NOTES:

REINFORCEMENT:
All welded fabric shall be lapped as follows:
- 300mm minimum lap.
- 50mm minimum concrete cover.
Mild steel rods denoted S12 are 12mm diameter 250S Grade deformed bars.
- 450mm minimum lap.
- 65mm minimum concrete cover.
Reinforcement to be held in its correct position at 800mm centres.

CONCRETE:
All workmanship and materials shall be carried out in accordance with AS 3600. Concrete design strength (F_c) at 28 days to be : 50 MPa.

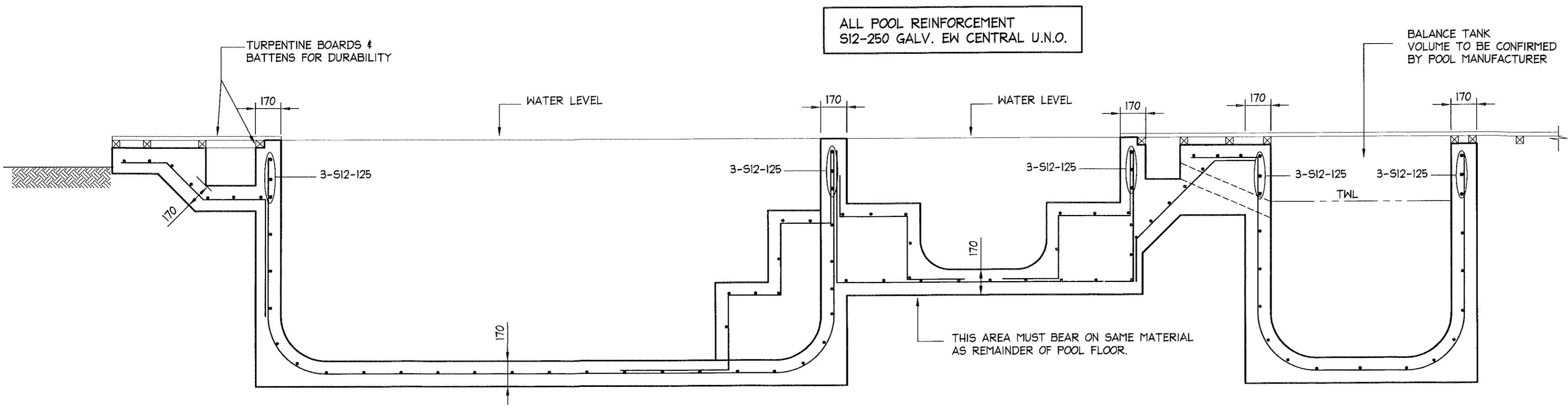
FOUNDATION:
Piers to be provided as directed by the Engineer if rock or filled ground is encountered when the pool is excavated.

CONCRETE COVER:
Concrete placed in contact with the (excavation) ground to have 65mm minimum cover to reinforcement. 65mm minimum cover to pool face.

DESIGN:
Pool design and construction to be in accordance with AS 2783 (1992) and all other relevant Australian Standards.

PIER NOTES:
If pool floor is partially founded on solid rock provide 400mm Ø concrete piers at 1800mm maximum centres to remainder of pool floor.
All piers to be founded on rock. Piers up to 1.0m deep to be mass concrete.
Piers between 1.0m and 2.0m deep provide 4 S12 bars with R6 Ties at 300mm centres.
Any piers over 2.0m deep to Engineers detail.
For any internal piers under pool floor provide 3 S12 bars (1500mm long) at 200mm centres each way directly over piers to pool floor.

WASTE WATER:
Waste water from pool will be discharged into Sydney Water's Sewerage System.

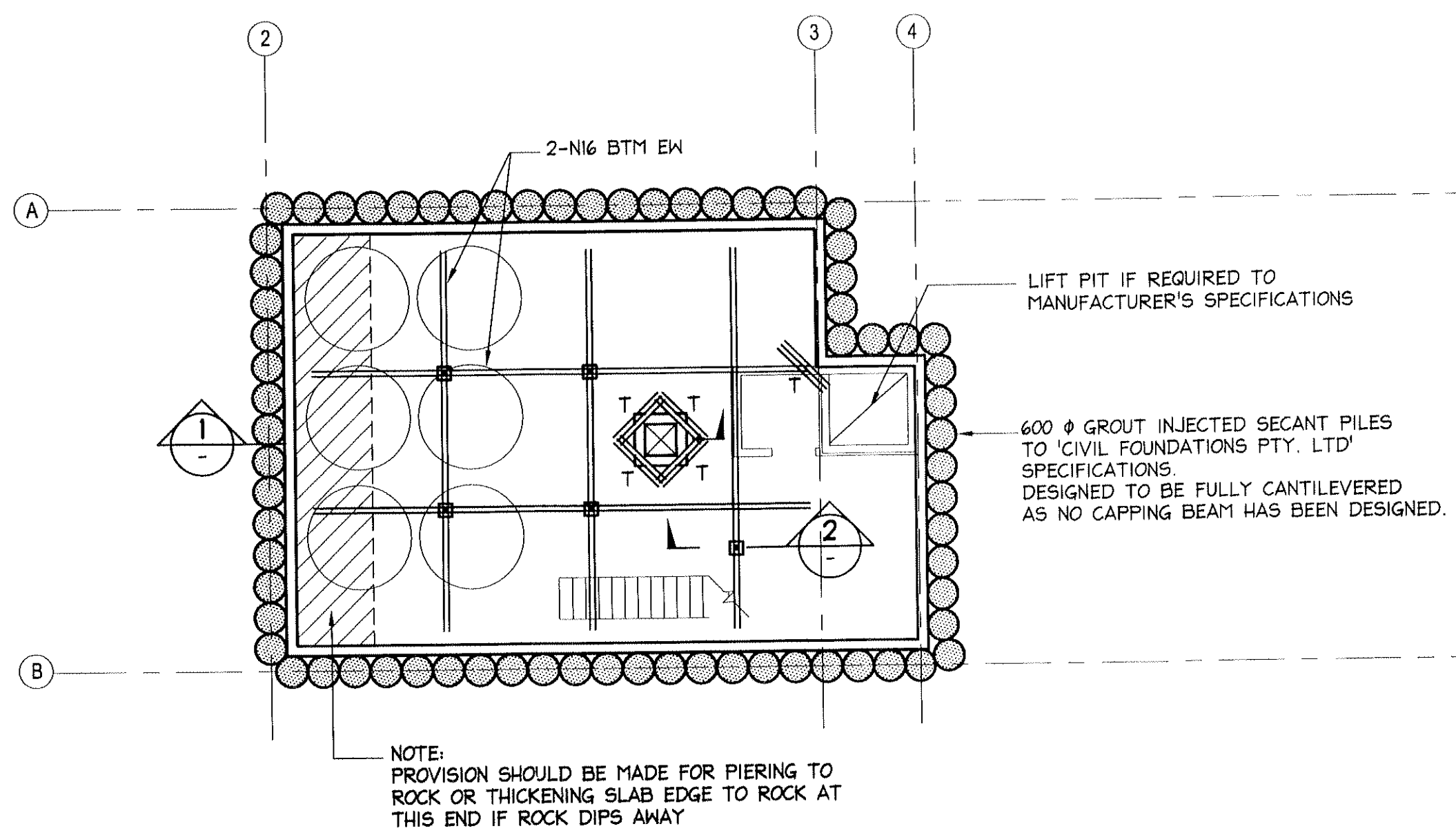


SECTION
SCALE = 1:20

This Plan/Specification forms part of the certification for:
J - 90533A 12 AUG 2010

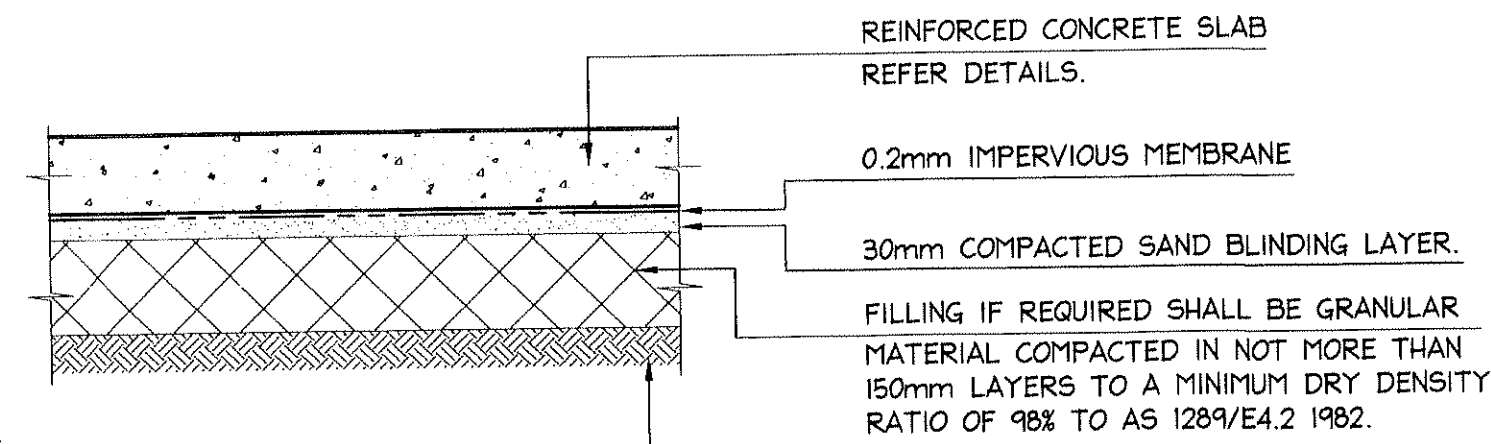
DOCUMENT CERTIFICATION Date: 11/11/10 Stewart McGeedy B.E. (Civil), MIEAust, P. Eng (Director Northern Beaches Consulting Engineers) By:			NORTHERN BEACHES Consulting Engineers P/L. A.C.N. 076 121 616 A.B.N. 24 076 121 616 Suite 207, 30 FISHER ROAD DEE WHY N.S.W. 2059 Ph: (02) 9984 7000 Fax: (02) 9984 7444 e-mail: nb@nbconsulting.com.au web page: www.nbconsulting.com.au			Architect: LEGGE ARCHITECTS Client: Tom Lane		Project: NEW RESIDENCE 38 Stuart Street MANLY Drawing Title: POOL PLAN & DETAILS		Date: June 2010	Design: BS	Drawn: MC	Checked:
Date: Rev: Amendment:			The copyright of this drawing remains with Northern Beaches Consulting Engineers P/L.			Job No: 080710		Drawing No: P01	Rev:				

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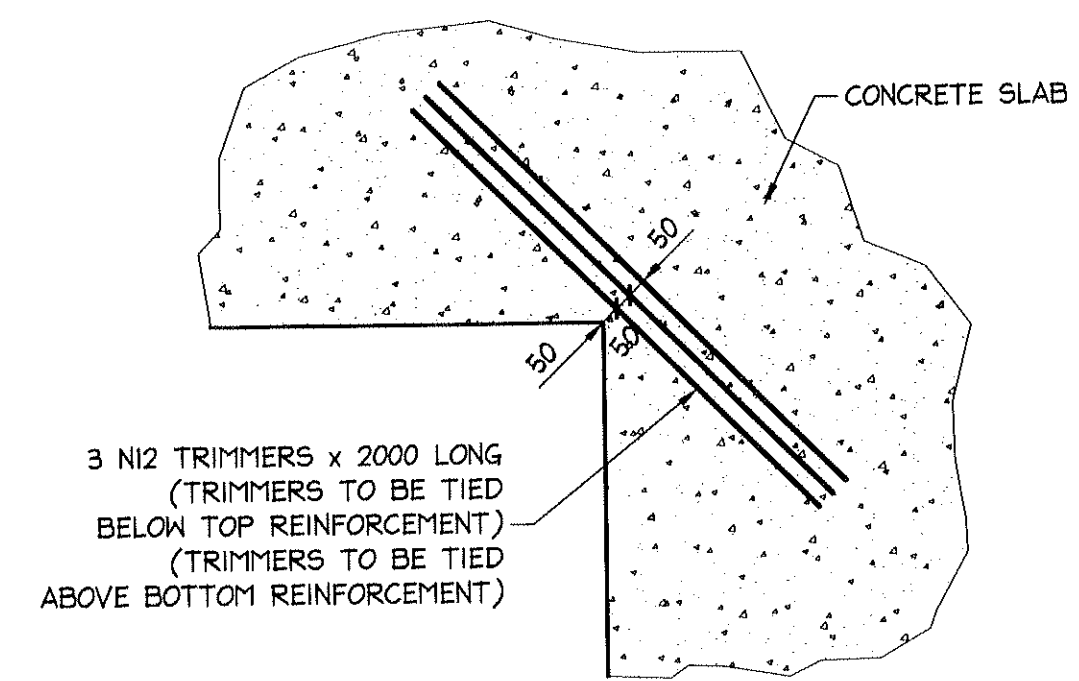
BASEMENT FLOOR SLAB & FOOTING PLAN

SCALE = 1 : 100
 U.N.O - 200 THICK SLAB - SL92 TOP & BTM
 f_c = 40 MPa, COVER = 40 mm

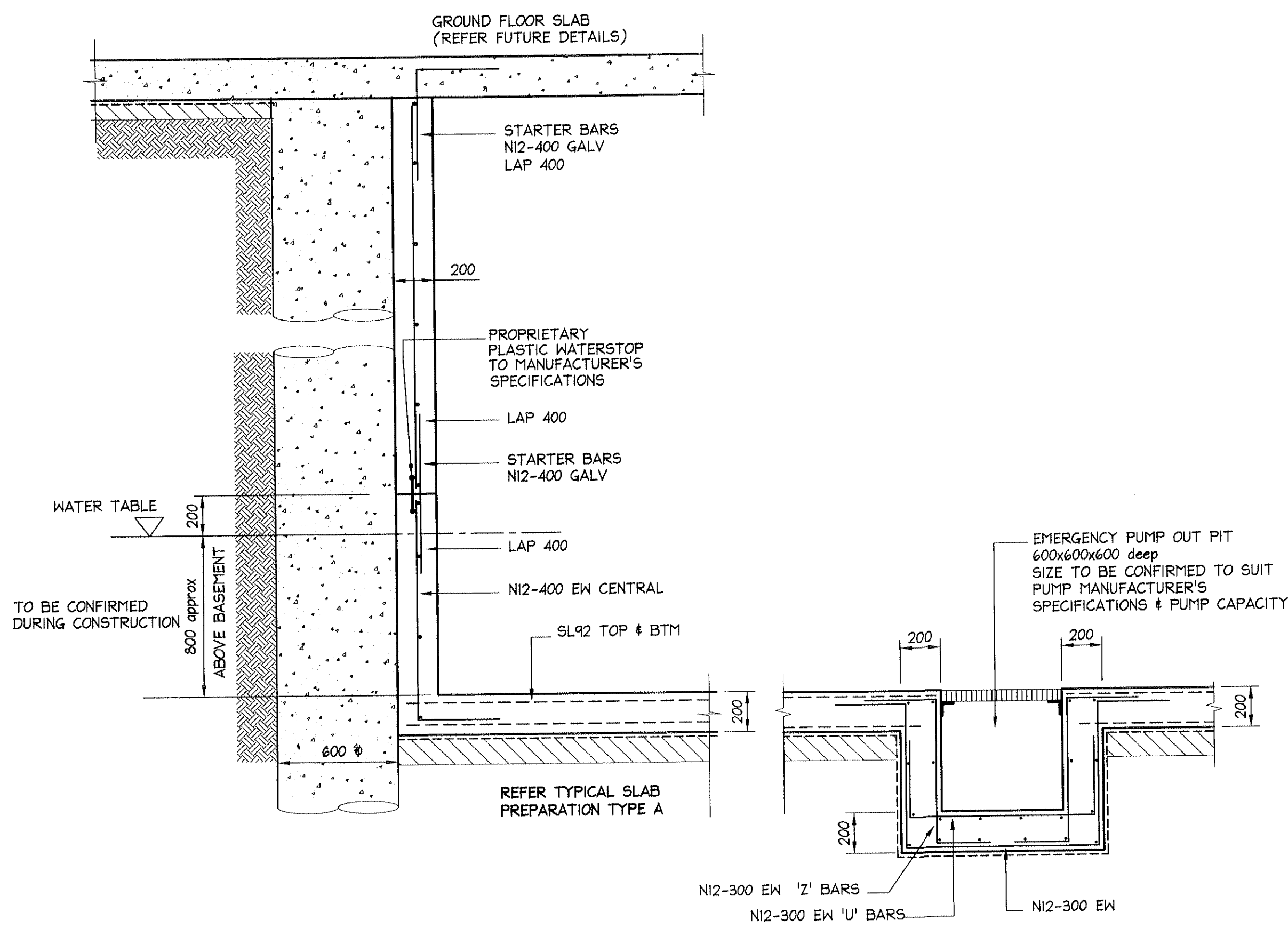


NOTE :
 SAND BLINDING, SUB-BASE, FILLING AND SUB GRADE TO BE MECHANICALLY COMPACTED TO A DRY DENSITY RATIO OF NOT LESS THAN 98% STANDARD MAXIMUM DRY DENSITY TO A.S. 1289/E4.2 1982. ALL AREAS TO BE TESTED BY GEOTECHNICAL ENGINEER AND RESULTS FORWARDED TO STRUCTURAL ENGINEER PRIOR TO POURING CONCRETE.

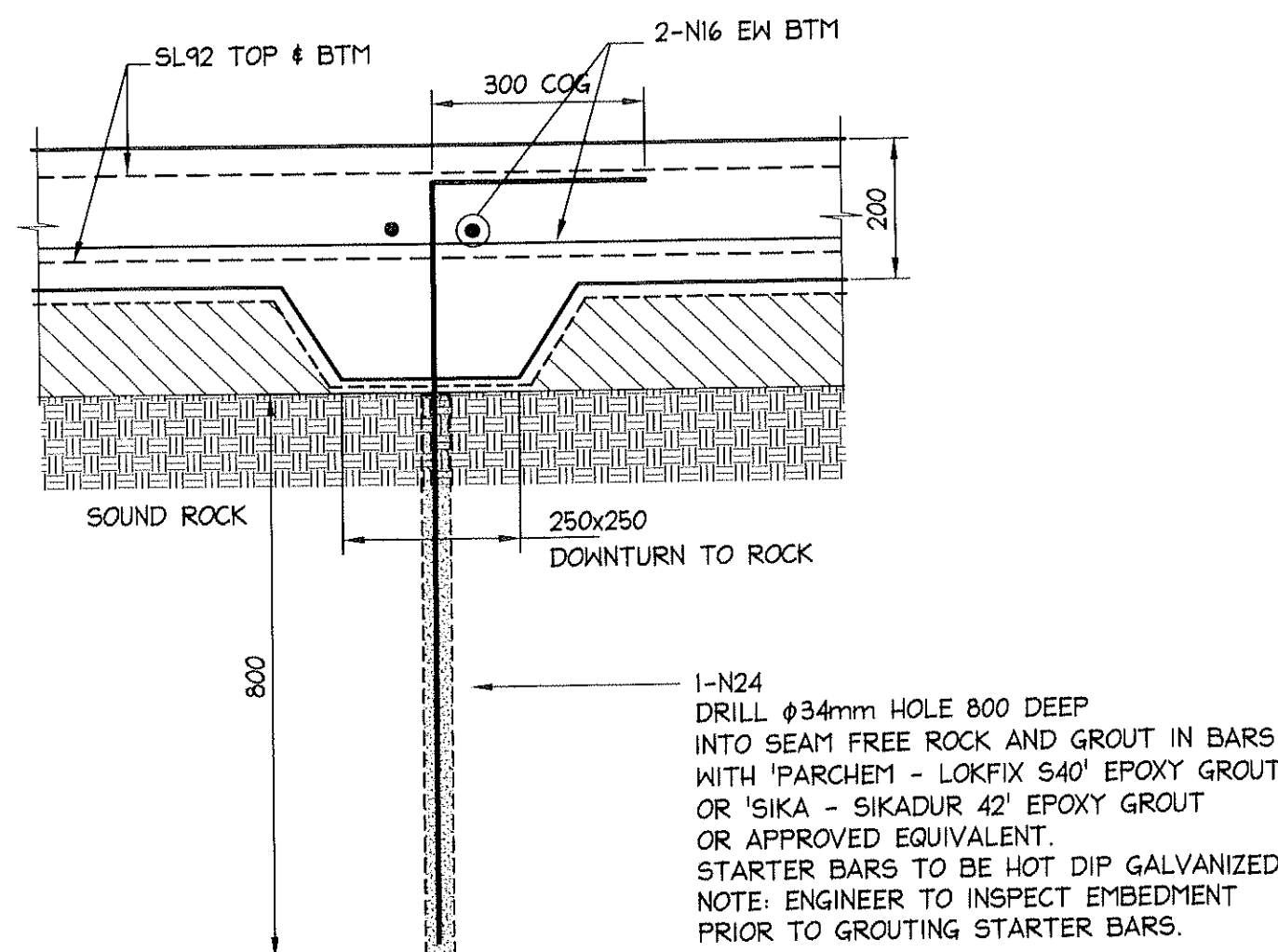
TYPICAL SLAB PREPARATION TYPE A SLAB ON GRADE
 N.T.S.



TYPICAL TRIMMER DETAIL
 SCALE = 1 : 20



SECTION 1
 SCALE = 1:20



SECTION 2
 SCALE = 1:10

- This Plan/Specification forms part of the certification for J 90533A 12 AUG 2010
- NOTES:**
- ALL DIMENSIONS TO BE VERIFIED ON SITE BY BUILDER BEFORE COMMENCING WITH WORK.
 - FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: S01.

AI		DOCUMENT CERTIFICATION		NORTHERN BEACHES Consulting Engineers P/L		Architect: LEGGE ARCHITECTS		Project: NEW RESIDENCE 38 Stuart Street MANLY		Date: June 2010	Design: BS	Drawn: MC	Checked:
		Date: 4/8/10 By: Stewart McGeedy B.E. (Civil), MIEAust, P.Eng (Director Northern Beaches Consulting Engineers)		A.C.N. 076 121 616 A.B.N. 24 076 121 616 Suite 207, 33 FISHER ROAD DEE WHY N.S.W. 2099 Ph: (02) 9984 7000 Fax: (02) 9984 7444 e-mail: nb@nbconsulting.com.au web page: www.nbconsulting.com.au		Client: Tom Lane		Drawing Title: BASEMENT LEVEL PLAN & DETAILS		Job No: 080710	Drawing No: S02	Rev: -	
Date:	Rev:	Amendment:											

Northern Beaches Consulting Engineers Pty Ltd.

GENERAL NOTES:

GENERAL

- G1. The drawings are to be read together with all Architects drawings and specifications.
- G2. Dimensions shall not be obtained by scaling from the drawings. All setting out dimensions shall be verified and discrepancies shall be referred to the Engineer prior to commencement of work.
- G3. Care is required during construction so that structural elements are not overstressed and that the works and excavations required therefore are kept stable at all times.
- G4. Design, materials and workmanship are to be in accordance with current S.A.A standards and statutory authority regulations except where varied by these documents.
- G5. Design live loads are in accordance with AS 1170.1
- G6. Builder to ensure stability of existing structures in the vicinity of excavation works.

FOOTINGS

F1. FOUNDATION STRATA IS ASSUMED FOR DESIGN PURPOSES IN ACCORDANCE WITH AS 2870-1996 "RESIDENTIAL SLAB AND FOOTINGS-CONSTRUCTION". SEE FOOTNOTE. CLASSIFICATION TO BE VERIFIED BY A GEOTECHNICAL ENGINEER COMMISSIONED BY THE CLIENT FOR CERTIFICATION OF FOUNDATIONS.

- F2. Footings to be constructed and back filled as soon as possible following excavation to avoid softening by rain or drying out by exposure.
- F3. Footings must bear into undisturbed natural ground clear of organic material. Refer to details.
- F4. If rock or variable bearing strata is encountered during excavation of the footings all footings/piers are to be excavated to similar material of greater bearing capacity. The Engineer is to be contacted at that time for approval or review.
- F5. Footings to be cast in approved material having an allowable capacity as follows:

Sand Foundations:

- SA1. Required bearing capacity 100 kPa.
SA2. Trenches must be cleaned of all debris and hand compacted prior to placement of reinforcement.

Clay Foundations:

- CL1. Required bearing capacity 150 kPa.
CL2. Trenches must be cleaned of all debris. Soft spots must be cut out and filled as per compacted fill notes, prior to placement of reinforcement.

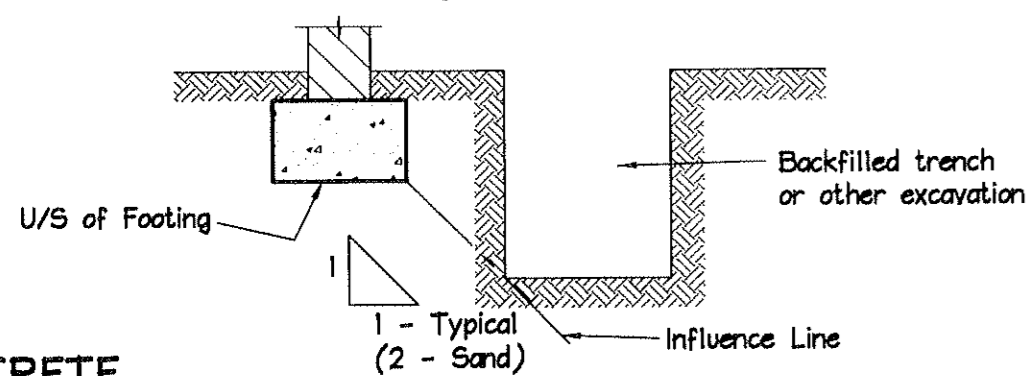
Shale Foundations:

- SH1. Required bearing capacity 400 kPa.
SH2. Excavation for footings into shale must be cast or capped with plain concrete on the same day as excavation.

Sandstone Foundations:

- SS1. Required bearing capacity 600 kPa.
SS2. Scrape weathered surface to remove cleaved sandstone under footings. Refer adjacent for assumed Design bearing strata.

- F6. Future development of neighboring properties may affect ground water conditions on this site. Consequently, reactivity in subgrade beneath footings may be locally altered therefore putting footing at risk of differential settlement. We recommend that, particularly in clay subgrades, agricultural drainage is installed to the upstream perimeter of the building at a distance from the building which is outside the zone of influence of the footings. The agricultural drain must be installed below the fluctuating seasonal zone which should be identified by geotechnical investigation.
- F7. UNLESS OTHERWISE APPROVED. Excavations near new or existing footings shall not be within the footing influence line.



CONCRETE

- C1. All workmanship and materials shall be in accordance with AS 3600.
- C2. Concrete quality shall be as follows and shall be verified by tests.
- C3. All concrete unless otherwise noted shall have a slump of 80mm at point of placement, a max. aggregate size of 20 mm. No water shall be added to the mix prior to or during placement of concrete. Strength as specified on plans.
- C4. Clear concrete cover to reinforcement shall be as follows unless otherwise shown-

ELEMENT	INTERIOR	EXTERIOR	EXTERIOR CAST AGAINST GROUND
FOOTINGS	-	-	50
COLUMNS/PEDESTALS	30 UNO	REFER TO PLAN	-
SLABS/WALLS	25	REFER TO PLAN	40 ON MEMBRANE
BEAMS	25 UNO	REFER TO PLAN	50
BLOCKWORK	55 FROM APPROPRIATE FACE		

- C5. Sizes of concrete elements do not include thickness of applied finishes.
- C6. All Construction Joints locations shall be approved by the Structural Engineer.
- C7. Beam depths are written first and include slab thickness, if any.
- C8. No holes or chases other than those shown on the structural drawings shall be made in concrete elements without the prior approval of the engineer.
- C9. Shrinkage reducing admixtures such as 'Eclipse' or approved equivalent, if specified, must be added to mix prior to pour.
- C10. Water reducing agents, if specified, must be added to mix prior to pour. No extra water is to be added to increase slump.
- C11. Where vertical slab/beam surfaces are formed against a masonry (or other) wall, provide 10 mm styrene separation material.
- C12. Water must not be added to concrete mix prior to placement of concrete.
- C13. Above covers may have to be adjusted if fire rating is a requirement.

REINFORCEMENT

- R1. All reinforcement specified is Grade D500 unless noted otherwise.
- R2. Reinforcement is represented diagrammatically it is not necessarily shown in true projection.
- R3. Top reinforcement is to be continuous over supports. Bottom reinforcement to be lapped at supports.
- R4. Welding of reinforcement shall not be permitted unless shown on the structural drawings.
- R5. Pipes or conduits shall not be placed within the zone of concrete cover to the reinforcement without the approval of the engineer.
- R6. All reinforcing bars and fabric shall comply with AS 4671-2001.
- R7. Reinforcement symbols:
N - Grade 500N deformed bar (D500) Normal Ductility
R - Grade 250N plain round bar (R250) Normal Ductility.
SL - Grade 500L welded deformed ribbed mesh (D500) Square Low Ductility.
RL - Grade 500L welded deformed ribbed mesh (D500) Rectangular Low Ductility.
The number immediately following these symbols is the number of millimeters in the bar diameter.
Example :
8 N12-250, denotes 8, Grade 500N deformed bars, 12 mm diameter at 250 cts.
- R8. Fabric reinforcement to be lapped 1 complete square + 25 mm unless noted otherwise.
- R9 All reinforcement shall be firmly supported on bar chairs spaced at a maximum of 750 centres both ways under rod and fabric reinforcement. Reinforcement shall be tied at alternate intersections.

FORMWORK

- FW1. Formwork must be cleaned of all debris prior to casting of concrete.
- FW2. Minimum stripping times for form work shall be as recommended in AS 3610 - 1990 or as directed by the engineer.
- FW3. The finished concrete shall be a dense homogeneous mass, completely filling the form work, thoroughly embedding the reinforcement and free of stone pockets. All concrete elements including slabs on ground and footings shall be compacted with mechanical vibrators.
- FW4. Curing of all concrete is to be achieved by keeping surfaces continuously wet for a period of 3 days, followed by prevention of loss of moisture for seven days followed by a gradual drying out. Approved sprayed on curing compounds may be used where no floor finishes are proposed. Polythene sheeting or wet hessian may be used if protected from wind and traffic.

BRICKWORK

- BR1. Brickwork is to be constructed to AS 3700.
- BR2. Two layers of approved greased metal based slip material shall be used over all load bearing walls that support concrete slabs and placed on smooth brickwork or trowelled mortar finish. Non load-bearing walls shall have 10 mm compressible material and ties to the slab soffit.
- BR3. No brickwork shall be constructed on suspended slabs until all propping has been removed from the underside of the slab and the concrete has the specified 28 day cylinder strength verified by tests.
- BR4. Control joints to be placed at a maximum of 8m centres or in accordance with AS 3700.
- BR5. Exposure grade bricks to be used below damp proof course.
- BR6. Vertical control joint material where specified on plan between slabs and brick walls shall be: 10 mm Spandex External UNO. Bitumastic fibreboard internal UNO.
- BR7. Provide stainless steel wall ties below DPC to AS 3700. Provide galvanized wall ties above DPC to AS 3700 & Local Council Specifications.
- BR8. Dry Pressed Bricks should always be used for brick retaining walls. In addition we recommend that dry pressed bricks be used for all types of construction where possible. Dry pressed bricks grow only half as much as extruded bricks. Extruded bricks are difficult to fix to and excessive brick growth leads to cracking in walls and render.

BLOCKWORK

- BL1. Concrete blocks shall have a minimum compressive strength of 15 MPa and conform to AS 1500. Masonry to be constructed to AS 3700.
- BL2. Where cores of hollow blocks are to be filled, properly compacted 20MPa concrete with 10 mm aggregate and 230 mm slump shall be used. Clean out openings must be utilized for all cores.
- BL3. Location of actual starters is critical to suit block cores, allow 55 mm cover from the outside face of blockwork. All reinforcement lap lengths to conform to AS 3600.
- BL4. Control joints to be placed at a maximum of 8 m centres or in accordance with AS 3700.
- BL5. Vertical control joint material where specified on plan between slabs and brick walls shall be: 10 mm Spandex External UNO. Bitumastic fibreboard internal UNO.
- BL6. Retaining walls or any reinforced and concrete core filled block walls to be of Double 'U' Block Construction.
- BL7. No blockwork shall be constructed on suspended slabs until all propping has been removed from the underside of the slab and the concrete has the specified 28 day cylinder strength verified by tests, unless approved by the Structural Engineer.
- BL8. Max. pour height for unrestrained blockwork is 2000.

STEEL

- S1. All Structural steelwork to be Grade 300 or greater. Design, fabrication and erection to be in accordance with AS 4100.
- S2. Materials and workmanship shall comply with AS 1250 - 1981, SAA Steel Structures Code and the specification for Structural Steel.
- S3. Rolled steel sections including steel plates shall comply with AS 3678 - 1990.
- S4. Cold formed steel sections shall be Grade 450 Zinc coated in accordance with AS 1538-1988.
- S5. Welded and seamless steel hollow sections shall comply with AS 1163. Grade 350.
- S6. Bolt Designation:
4.6S - Commercial bolts Grade 4.6, snug tightened.
8.8S - High Strength structural bolts Grade 8.8, snug tightened.
8.8TB - High Strength structural bolts Grade 8.8, fully tightened to AS 1511 and acting as a Bearing Joint.
8.8TF - High Strength structural bolts Grade 8.8, fully tensioned to AS 1511 and acting as a Bearing Joint.
Unless noted otherwise, all bolts will be 8.8S.
- S7. Unless shown otherwise, minimum connection shall be 2M16 bolts, 10 thick gusset plates, 6mm continuous fillet welds.
- S8. Load indicating washers shall be used in all fully tensioned joints. (8.8TF & 8.8TB).
- S9. All welding shall be carried out in accordance with AS 1554 SAA Structural Steel Welding Code.
- S10. Unless noted otherwise all welds shall be category SP using E41xx Electrodes. All butt welds shall be complete penetration butt welds category SP.
- S11. Grouting of anchor bolt sleeves and base plates shall be completed by the contractor using High Strength, Non-Shrink grout.
- S12. Fabrication and erection tolerances for Structural Steelwork shall be in accordance with AS 4100.
- S13. Purli: bolts shall be M12 - 4.6S galvanised.
- S14. Steel work shall have one of the following grades of corrosion protection:-
INTERNAL

- a. Thoroughly cleaned wire brushing, followed by two coats of zinc phosphate primer equivalent to Dulux Luxaprime applied by hand using brushes to achieve a total dry film thickness of 70 microns.

EXTERNAL ELEMENTS, & ELEMENTS WITHIN EITHER SKIN OF EXTERNAL CAVITY WALLS GREATER THAN 2 km FROM SEA WATER:

- b. Preparation Blast clean to a minimum standard Class 2.5 in accordance with AS 1627 Part 4.
Primer 2-pack epoxy phosphate at dft 75 microns (Dulux Durepon P14).
Barrier Coat 2-pack epoxy micaceous iron oxide, dft 100 microns.
Finish Coat 2-pack epoxy high glass acrylic to dft 75 microns.
(e.g. Dulux Acrathane 1 F)
- c. Hot dipped galvanized to AS 4680.
Where the galvanic (Hot Dip Galvanized) coating is compromised by welding, bolting or damage, two pack zinc rich epoxy primer (Dulux Zincanode 202) is to be applied after wire brushing affected area (use 3 coats minimum) or Hot Metal Spray in accordance with AS 4680.

PAINTING OVER HOT DIP GALVANISED STEEL:

- Degrease and preparation whip blast
Application of a general purpose epoxy (Dulux Duremax GPE) thickness 125 microns
Application of a high build polyurethane (Dulux Weathermax HBR) thickness 100 microns

EXTERNAL ELEMENTS, & ELEMENTS WITHIN EITHER SKIN OF EXTERNAL CAVITY WALLS LESS THAN 2 km FROM SEA WATER:

- d. Preparation blast clean to minimum Class 2.5
Application of a two pack zinc rich epoxy primer (Dulux Zincanode 402) thickness 75 microns
Application of a general purpose epoxy (Dulux Duremax GPE) thickness 125 microns
Application of a high build polyurethane (Dulux Weathermax HBR) thickness 100 microns

- S15. Workshop drawings shall be prepared and two copies submitted to the engineer for review prior to fabrication commencement.

DRAWING SCHEDULE:

S01 - GENERAL NOTES AND DRAWING SCHEDULE
S02 - BASEMENT FLOOR SLAB & FOOTING PLAN

P01 - POOL PLAN & DETAILS

D01 - STORMWATER MANAGEMENT PLAN & DETAILS
D02 - STORMWATER MANAGEMENT NOTES & DETAILS
D03 - STORMWATER MANAGEMENT PLAN & DETAILS

TIMBER

- T1. All workmanship and materials to be in accordance with AS 1684, AS 1720 and as 3954. All soft wood to be Grade F7 unless noted otherwise. All hardwood to be minimum Grade F14 unless otherwise noted. Exposed timber to be CCA treated (to AS 1604) redried after full impregnation, or durability class 1, 2 or 3. ALL SOFTWOOD TIMBER FRAMING TO HAVE A MINIMUM TREATMENT PROTECTION OF H2 or T2 TREATED FOR TERMITE PROTECTION UNLESS NOTED OTHERWISE.
- T2. All joists deeper than 150 to have blocking over support bearers and at a maximum 3000 centres.
- T3. Roof trusses to be designed by the manufacturer to the relevant standards. Pre camber to be an amount equal to dead load deflection u.n.o.
- T4. All holes for bolts to be exact size. Washers to be used under all heads and nuts and to be at least 2.5 times the bolt diameter. Bolts to be M16 grade 4.6 unless noted otherwise.
- T5. Treat all exposed cut ends with Reseal by Protim to manufacturers specification to achieve required Hazard Level Exposure Classification.
- T6. Battens for T & G to be Kiln Dried to 12 %
38mm minimum deep treated pine or as recommended by supplier. Flooring to be installed no sooner than 28 days after slab pour.
- T7. Hot dip galvanized nails/clouts/screws to be used with all timber connections.
- T8. Continuous nailing must not be used for any timber connections.
- T9. All exposed CCA treated pine to have an application of penetrating sealer to reduce warping and twist of the timber due to varying moisture content in service.
- T10. All Stud walls to be 90x45 F7 Kiln Dried
T2 Treated at 450 Cts and noggings to AS 1684.

COMPACTED FILL

- CF1. Only to be used with approval by Engineer & to be certified by a geotechnical Engineer.
- CF2. Clear organic material, topsoil and any uncontrolled existing fill under proposed slabs/footings.
- CF3. Filling shall be granular material compacted in not more than 200 mm layers to a minimum dry density ratio (AS 1289/E4.2 1982) of 98 percent standard maximum dry density.
- CF4. During clearing and excavation for slabs and footings cut out soft spots and fill as above.

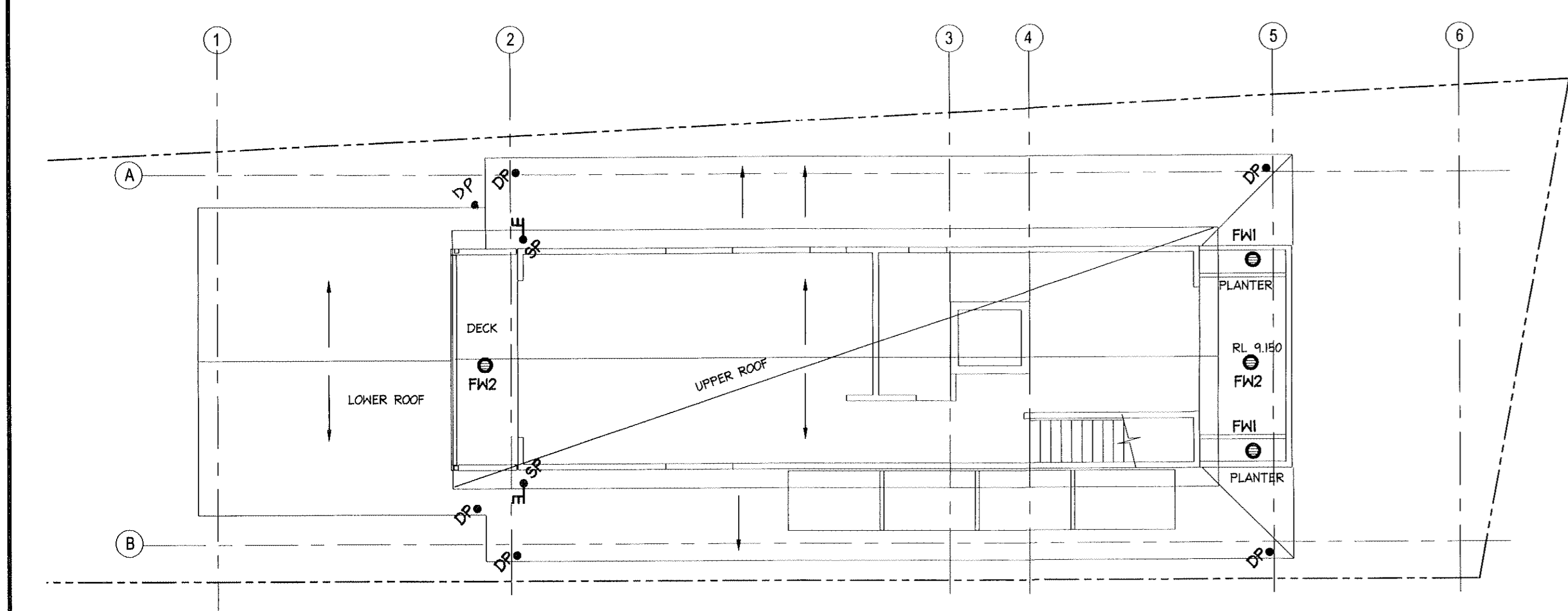
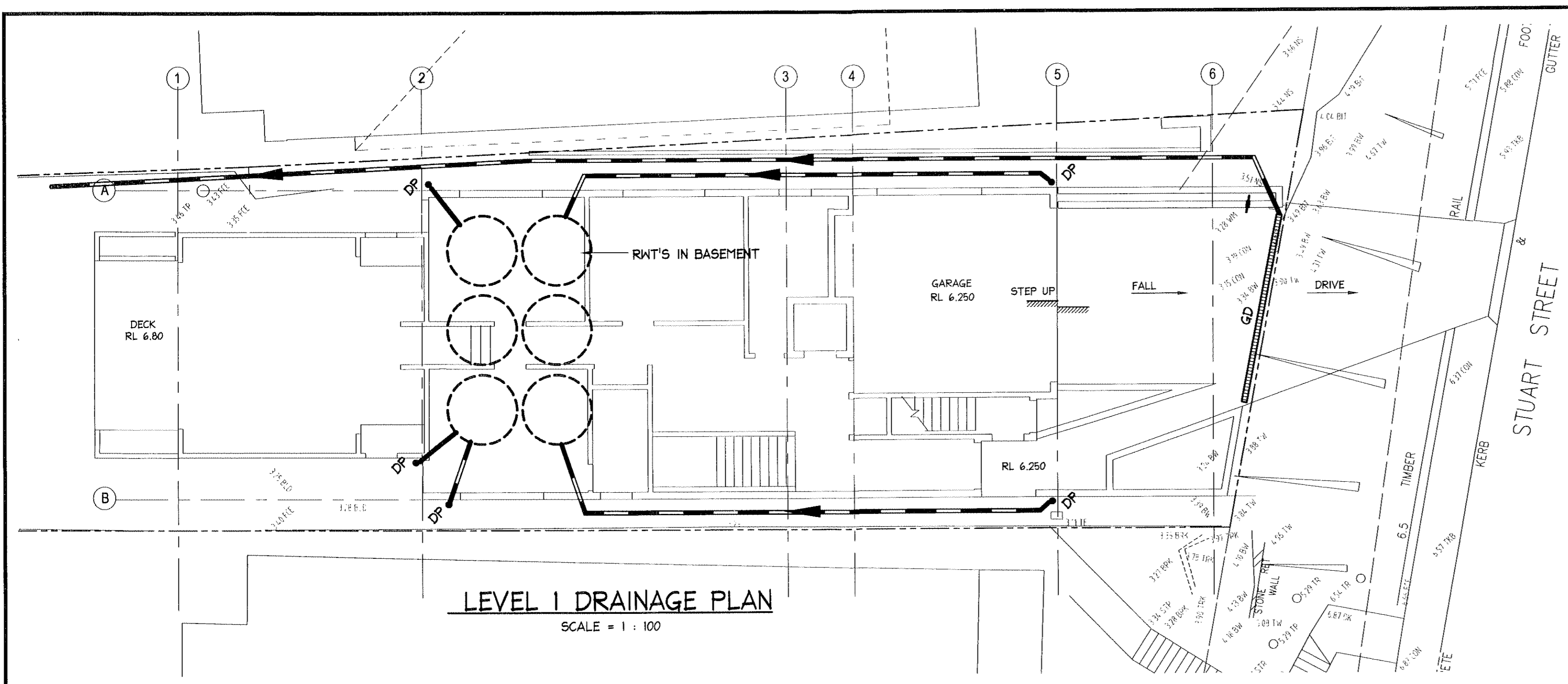
INSPECTIONS BY ENGINEER

48 HOURS NOTICE IS REQUIRED BEFORE ANY SITE INSPECTION

- Bearing strata of all footings prior to concrete pour by Geotechnical Engineer.
- Any reinforcement prior to concrete pour.
- Timber and Steel framing prior to cladding or lining.
- Steel lintels after installation.
- CONTACT YOUR PCA (Principal Certifying Authority) AS TO REQUIREMENTS FOR MANDATORY CRITICAL STAGE INSPECTIONS IN ACCORDANCE WITH REVISED EP&A ACT REGULATIONS EFFECTIVE JULY 1, 2004.
- Inspection by Geotechnical Engineer over 1.5m of vertical cut through Sandstone bed rock to permit identification of defects and remedial measures initiated.

ASSUMED BEARING STRATA FOR DESIGN PURPOSES - ROCK, 600 kPa.
ASSUMED FOUNDATION CLASSIFICATION FOR DESIGN PURPOSES - 'A'
CONTRACTOR TO ENGAGE GEOTECHNICAL CONSULTANT TO
VERIFY FOUNDATION CLASSIFICATION

DOCUMENT CERTIFICATION			NORTHERN BEACHES Consulting Engineers P/L		Architect:	Project:	Date:	Design:	Drawn:	Checked:
Date:	Rev:	Amendment:	Date:	4/6/10	Stewart McGeady	LEGGE ARCHITECTS	NEW RESIDENCE	BS	MC	
			A.C.N. 076 121 816 A.B.N. 24 076 121 816 Suite 207, 30 FISHER ROAD DEE WHY N.S.W. 2099 Ph: (02) 9984 7000 Fax: (02) 9984 7444 e-mail: nb@northernbeaches.com.au web page: www.northernbeaches.com.au		Client:	38 Stuart Street MANLY	June 2010			
			The copyright of this drawing remains with Northern Beaches Consulting Engineers P/L.		Tom Lane	GENERAL NOTES AND DRAWING SCHEDULE	Job No:	080710	Drawing No:	S01



LEGEND

	DOWNPIPE
	DOWNPIPE WITH SPREADER
	STORMWATER PIPE FLOW DIRECTION
	STORMWATER PIT
	200x200 FLOOR WASTE
	GRATED DRAIN GDI - 150x100 wide GRATED DRAIN
	RAINWATER RE-USE TANK
	OSD TANK

NOTE:
DRAINAGE LINE LOCATIONS ARE INDICATIVE ONLY
AND MAY VARY DUE TO CONSTRAINTS.
IF IN DOUBT CONTACT THE ENGINEER.

<p>DOCUMENT CERTIFICATION</p> <p>Date: 4/8/10</p> <p>By: Stewart McGeady B.E. (Civil), M.E.Aust., P.Eng. (Director Northern Beaches Consulting Engineers)</p> <p>The copyright of this drawing remains with Northern Beaches Consulting Engineers P/L.</p>		<p>NORTHERN BEACHES Consulting Engineers P/L.</p> <p>A.C.N. 076 121 616 A.B.N. 24 076 121 616 Suite 207, 30 FISHER ROAD DEE WHY N.S.W. 2099 Ph: (02) 9984 7000 Fax: (02) 9984 7444 e-mail: nb@nbconsulting.com.au web page: www.nbconsulting.com.au</p>		<p>Architect: LEGGE ARCHITECTS</p> <p>Client: Tom Lane</p>		<p>Project: NEW RESIDENCE 38 Stuart Street MANLY</p> <p>Drawing Title: STORMWATER MANAGEMENT PLAN & DETAILS</p>		<p>Date: June 2010</p> <p>Design: RM</p> <p>Drawn: MC</p> <p>Checked: RM</p>		<p>Job No: 080710</p> <p>Drawing No: D03</p> <p>Rev: A</p>	
<p>04-08-2010 A NEW ARCH. PLANS. ISSUED FOR CONSTRUCTION</p>											
Date:	Rev:	Amendment:									

This Plan/Specification forms part of the certification for:
J 9 0 5 3 3 A 1 2 AUG 2010

Northern Beaches Consulting Engineers Pty Ltd.

STORMWATER NOTES:

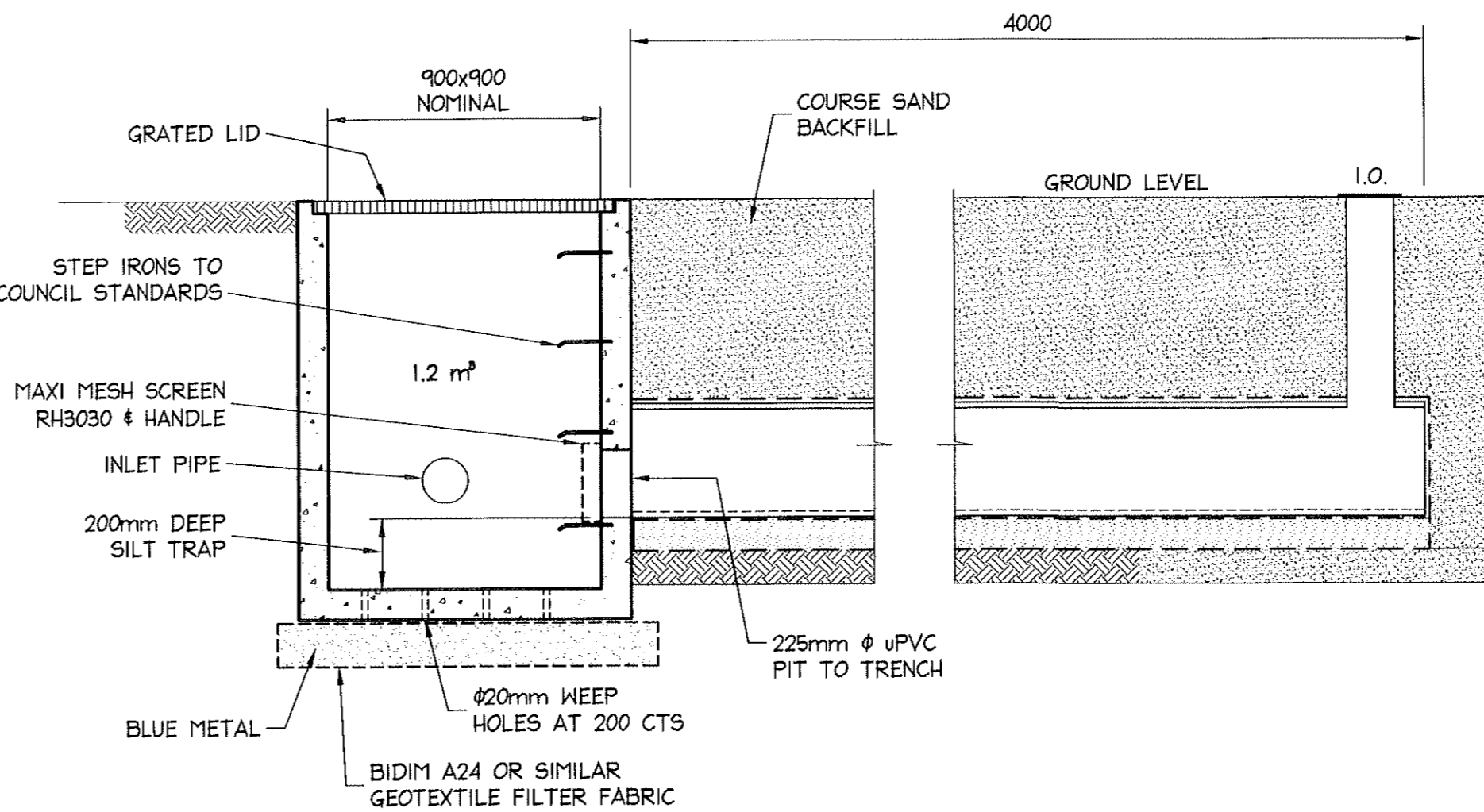
- ALL PIPES TO BE 90mm ϕ UNLESS NOTED OTHERWISE.
- ALL PIPES TO BE UPVC TO AS 1254-1973 UNLESS NOTED OTHERWISE.
- ALL PIPES TO BE LAYED AT 1% MINIMUM GRADE UNLESS NOTED OTHERWISE.
- ALL PIPES SHALL BE LAID ON A 75mm SAND BED, COMPACTED TO 100% S.M.D.D. BELOW PAVEMENTS.
(NO COMPACTION REQUIRED BELOW LANDSCAPING)
COVER TO SURFACE FROM TOP OF PIPE TO BE 300mm MINIMUM.
BACKFILL TO BE ADEQUATELY CONSOLIDATED AROUND PIPES BY METHOD OF RAMMING AND WATERING IN. TRENCHES TO BE FILLED WITH GRANULAR MATERIAL AS SPECIFIED.
- ALL DOWN PIPES TO BE 90mm ϕ UNLESS NOTED OTHERWISE.
- DOWN PIPE LOCATIONS ARE INDICATIVE ONLY. LOCATIONS TO BE CONFIRMED WITH ARCHITECT PRIOR TO COMMENCEMENT WITH WORK.
- PROVIDE CLEANING EYES AT ALL DOWNPIPES.
- ALL PITS TO BE CAST INSITU OR, IF PRECAST, APPROVED BY ENGINEER.
CAST INSITU PITS TO HAVE 150mm THICK CONCRETE WALLS AND BASE. WALLS TO BE REINFORCED WITH 1 N12 TOP TIE UNLESS NOTED OTHERWISE.
CAST INSITU PITS GREATER THAN 1000 DEEP TO BE MINIMUM 900x600 AND TO HAVE 150mm THICK CONCRETE WALLS AND BASE. WALLS TO BE REINFORCED WITH N12 AT 300 EACH WAY UNLESS NOTED OTHERWISE.
- ALL PITS GREATER THAN 1000mm DEEP SHALL HAVE STEP IRONS AS PER COUNCIL STANDARDS.
- ALL WORK TO BE IN ACCORDANCE WITH LOCAL COUNCIL STANDARDS AND SPECIFICATIONS.
- PRIOR TO COMMENCING ANY SITE WORKS THE CONTRACTOR SHALL IMPLEMENT EROSION CONTROL MEASURES TO APPROVED SEDIMENT AND EROSION CONTROL PLAN, EPA GUIDELINES AND COUNCIL SPECIFICATIONS. ALL MEASURES TO REMAIN IN PLACE UNTIL COMPLETION AND STABILIZATION OF THE SITE TO COUNCIL SATISFACTION.
- ALL LEVELS SHOWN ARE TO AHD
- ENSURE THAT ALL PITS AND STORMWATER PIPES ARE LOCATED CLEAR FROM TREE ROOT SYSTEMS.
- ALL EXISTING EARTHENWARE PIPES TO BE UPGRADED TO UPVC.
- ALL WORKS TO BE IN ACCORDANCE WITH AS 3500-1990 NATIONAL PLUMBING DRAINAGE CODE PART 3 - STORMWATER DRAINAGE.
- 40mm ϕ x 3000 LONG TAIL OUT SUBSOIL LINE TO BE PROVIDED ON THE UPSTREAM SIDE OF ALL PITS. SUBSOIL LINE TO BE COVERED WITH GEOTEXTILE FILTER SOCK FOR THE FULL LENGTH AND END COVERED.

PUMP OUT NOTES:

- TO ENSURE THAT SEEPAGE WATER IS NOT BEING PUMPED CONTINUALLY OUT TO THE STREET, THE PUMPS IN THE PUMP OUT PIT SHALL BE ADJUSTED TO PERMIT STORAGE IN THE PIT AND PIPE SYSTEM (REFER DETAIL FOR RL) PRIOR TO THE PUMPS CUTTING IN. THE PUMPS SHOULD THEN DISCHARGE ALL WATER SO THAT ONLY MINIMAL WATER IS LEFT OVER THE PUMP INTAKE AS REQUIRED BY THE MANUFACTURER.
- THE PUMPS SHALL OPERATE ALTERNATELY TO RL INDICATED ON DETAILS, WITH BOTH PUMPS OPERATING IN UNISON AT RL INDICATED ON DETAILS, IF THE WATER LEVEL CONTINUES TO RISE ABOVE THE MAXIMUM WATER LEVEL AFTER THE FIRST PUMP HAS COME ON.
- PUMP CAPACITY 2 x 12.5 l/s (TOTAL 25 l/s) TO BE CONFIRMED BY GEOTECHNICAL CONSULTANT DURING CONSTRUCTION. ASSUMED UNIFORM FINE SAND 0.25 - 0.5mm ϕ $k=40 \times 10^{-4}$ cm/s.
- ALL WORKS TO BE IN ACCORDANCE WITH AS 3500-3.2:1998 SECTION 9 PUMPED SYSTEMS
- PUMPS SHALL BE IN DUPLICATE. THE MAXIMUM CAPACITY OF EACH PUMP SHALL BE SELECTED SO THAT THE CAPACITY OF THE SYSTEM RECEIVING THE DISCHARGE IS NOT EXCEEDED. THE PUMP CONTROLS SHALL BE SET UP TO ENABLE ALTERNATE PUMP OPERATION AT EACH START. IN THE EVENT THAT A PUMP FAILS TO OPERATE WHEN THE WATER LEVEL IN THE PUMP OUT PIT REACHES THE PUMP START, THE OTHER PUMP SHALL BE ACTIVATED AND A VISIBLE ALARM INITIATED.
- PUMPING EQUIPMENT SHALL BE SECURELY FIXED TO THE PUMP OUT PIT USING CORROSION RESISTANT FIXINGS.
- PUMPS SHALL BE FITTED WITH A GATE VALVE AND NON-RETURN VALVE ON THE DELIVERY SIDE OF EACH PUMP.
- PUMPS SHALL HAVE FLANGES OR UNIONS INSTALLED TO FACILITATE REMOVAL.
- PUMPS SHALL BE CONTROLLED SO AS TO LIMIT THE NUMBER OF STARTS PER HOUR TO WITHIN THE CAPACITY OF THE ELECTRICAL MOTORS AND EQUIPMENT, AND SHALL, AS FAR AS PRACTICABLE, EMPTY THE CONTENTS OF THE PUMP OUT PIT AT EACH OPERATION.
- THE REQUIRED PUMPING RATE HAS BEEN CALCULATED BASED ON AN ASSESSMENT OF THE EXPECTED INFLOW AND, WHERE APPROPRIATE, THE ALLOWABLE DISCHARGE RATE. REFER CALCULATION TABLE.

RAINWATER RE-USE TANKS:

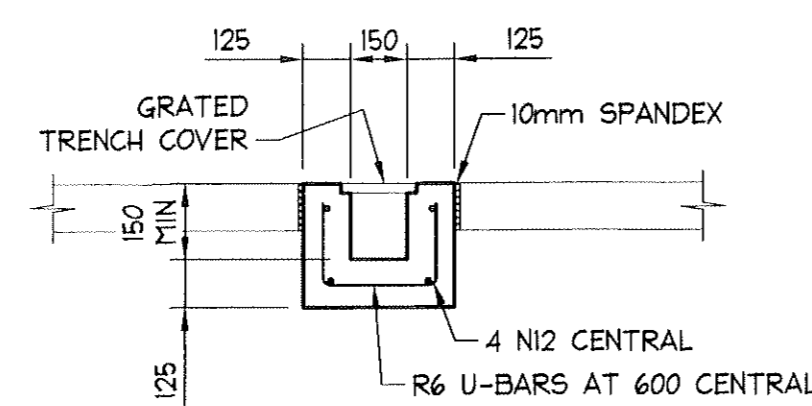
- CONSIDERING THE ROOF CATCHMENT AREA, LOCATION OF PROPERTY, INTENDED USE OF RAINWATER AND GARDEN SIZE WE RECOMMEND PROVIDING 10,000 L CAPACITY RAINWATER TANKS FOR THE FOLLOWING USES:
a) TO WATER GARDEN AREAS TO BASIX REQUIREMENTS.
- THE TANKS PROVIDED WILL REDUCE PRESSURE ON COUNCIL'S STORMWATER INFRASTRUCTURE.
- REFERENCES:
COOMBS P.J. & KUCZERA G. (2001), "RAINWATER TANK DESIGN FOR WATER SUPPLY & STORMWATER MANAGEMENT." STORMWATER INDUSTRY ASSOCIATION REGIONAL CONFERENCE.
PATRICK DUPONT & STEVE SHACKEL, "RAINWATER"
AUSTRALIAN GOVERNMENT (2004), "GUIDANCE ON USE OF RAINWATER TANKS"
- ALL CONNECTIONS TO PLUMBING AND RAINWATER TANKS TO BE IN ACCORDANCE WITH SYDNEY WATERS' GUIDE "INSTALLING A RAINWATER TANK" AVAILABLE AT www.sydneywater.com.au
- PROVIDE A DUAL SUPPLY SYSTEM AND BACKFLOW PREVENTION SYSTEM IN ACCORDANCE WITH 'BASIX-DESIGN GUIDE FOR SINGLE DWELLINGS' BY NSW DEPARTMENT OF INFRASTRUCTURE, PLANING AND NATURAL RESOURCES.



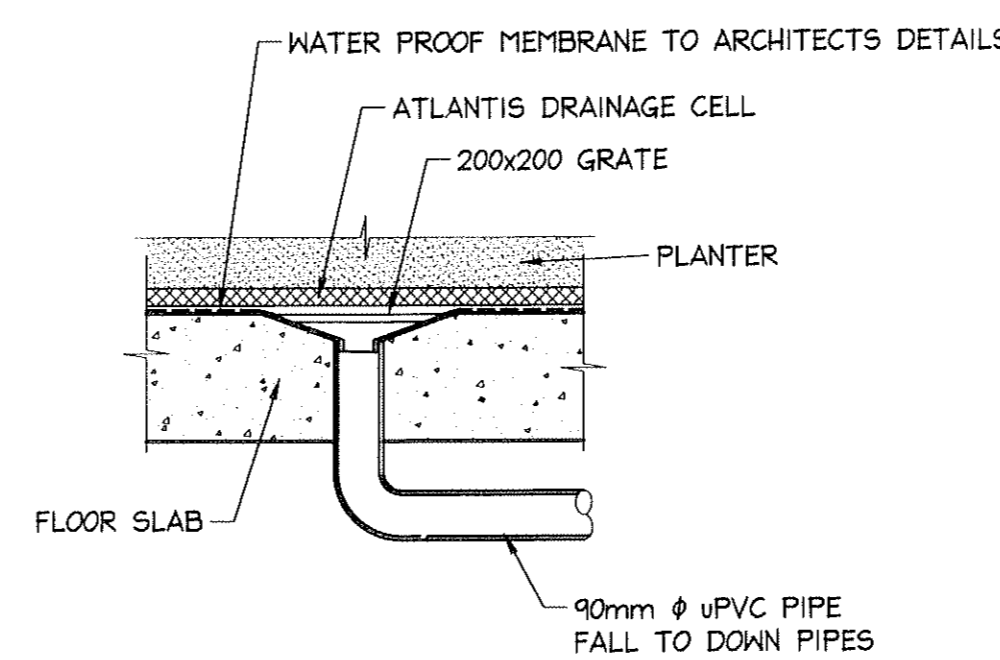
NOTE:
PROVIDE 1,000 L IN TRENCH.
PIT 2.0m DEEP OR 900x900
PIT 1.6m DEEP.

DISPERSION TRENCH LONGITUDINAL SECTION
NOT TO SCALE

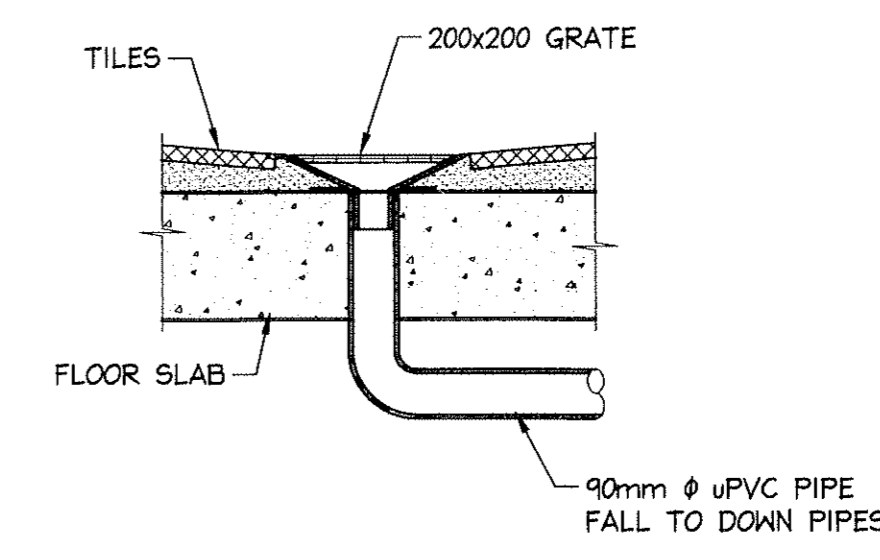
ON-SITE DETENTION SYSTEM SUMMARY NOTES	
OPTIONS 1 AND 2	
TOTAL SITE AREA	591 m ²
DESIGN METHOD USED	DRAINS (REFER TO DISK)
PRE DEVELOPMENT IMPERVIOUS AREA	250 m ²
POST DEVELOPMENT IMPERVIOUS AREA	343 m ²
PRE DEVELOPMENT SITE DISCHARGE	
5 YR	27 l/s
100 YR	43 l/s
OPTION 1	
POST DEVELOPMENT SITE DISCHARGE	
5 YR	19 l/s
100 YR	27 l/s
PORTION OF SITE THROUGH OSD	97 %
ORIFICE SIZE	130 mm ϕ
CALCULATED OSD VOLUME	11 m ³
RAINWATER RE-USE TANK	10,000 L RAINCYCLE TANK TO BASIX REQUIREMENTS
REDUCED OSD VOLUME	11 m ³ - 5 m ³ = 6 m ³ (100% OF BASIX VOLUME DEDUCTED)
TYPE OF OSD PROPOSED	10,000 L RAINCYCLE TANK & DISPERSION
PROVIDED VOLUME OF OSD	5 m ³ (TANK) & 1.2 m ³ (DISPERSION TRENCH)
TOTAL	6.2 m ³ (NOTE: 6 m ³ REQUIRED)



OR PRECAST GRATED DRAIN
ALTERNATE POLYPROPYLENE DRAIN BY MANUFACTURER
TYPICAL GRATED DRAIN
SCALE = 1 : 20



STANDARD FLOOR WASTE - 'FW1'



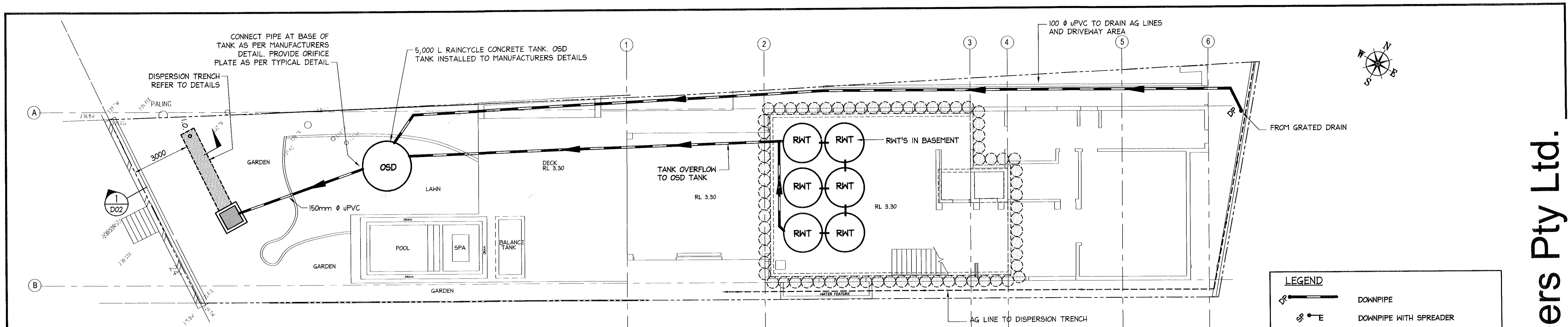
STANDARD FLOOR WASTE - 'FW2'
SCALE = 1 : 10

This Plan/Specification forms part of the certification for
J 90533A 12 AUG 2008

AI

<p>04/08/2010 C NEW ARCH. PLANS - REVISED TO SUIT. ISSUED FOR CONSTRUCTION</p> <p>03/12/2009 B OPTION 2 OMITTED</p> <p>11.09.2008 A DISPERSION TRENCH LOCATION ALTERED AS PER COUNCIL REQU.</p>		<p>DOCUMENT CERTIFICATION</p> <p>Date: 9/3/10 Stewart McGeadey B.E. (Civil), MIEAust, P.Eng (Director Northern Beaches Consulting Engineers)</p> <p>The copyright of this drawing remains with Northern Beaches Consulting Engineers PL.</p>		<p>NORTHERN BEACHES Consulting Engineers P/L.</p> <p>A.C.N. 076 121 616 A.B.N. 24 076 121 616 Suite 207, 30 FISHER ROAD DEE WHY N.S.W. 2099 Ph: (02) 9984 7000 Fax: (02) 9984 7444 e-mail: nb@nbconsulting.com.au web page: www.nbconsulting.com.au</p>		<p>Architect: LEGGE ARCHITECTS</p> <p>Client: Tom Lane</p>		<p>Project: NEW RESIDENCE 38 Stuart Street MANLY</p> <p>Drawing Title: STORMWATER MANAGEMENT NOTES & DETAILS</p>		Date: July 2008	Design: RM1	Drawn: MC	Checked: RM
Date:	Rev:	Amendment:	By:	Job No: 080710	Drawing No: D02	Rev: C							

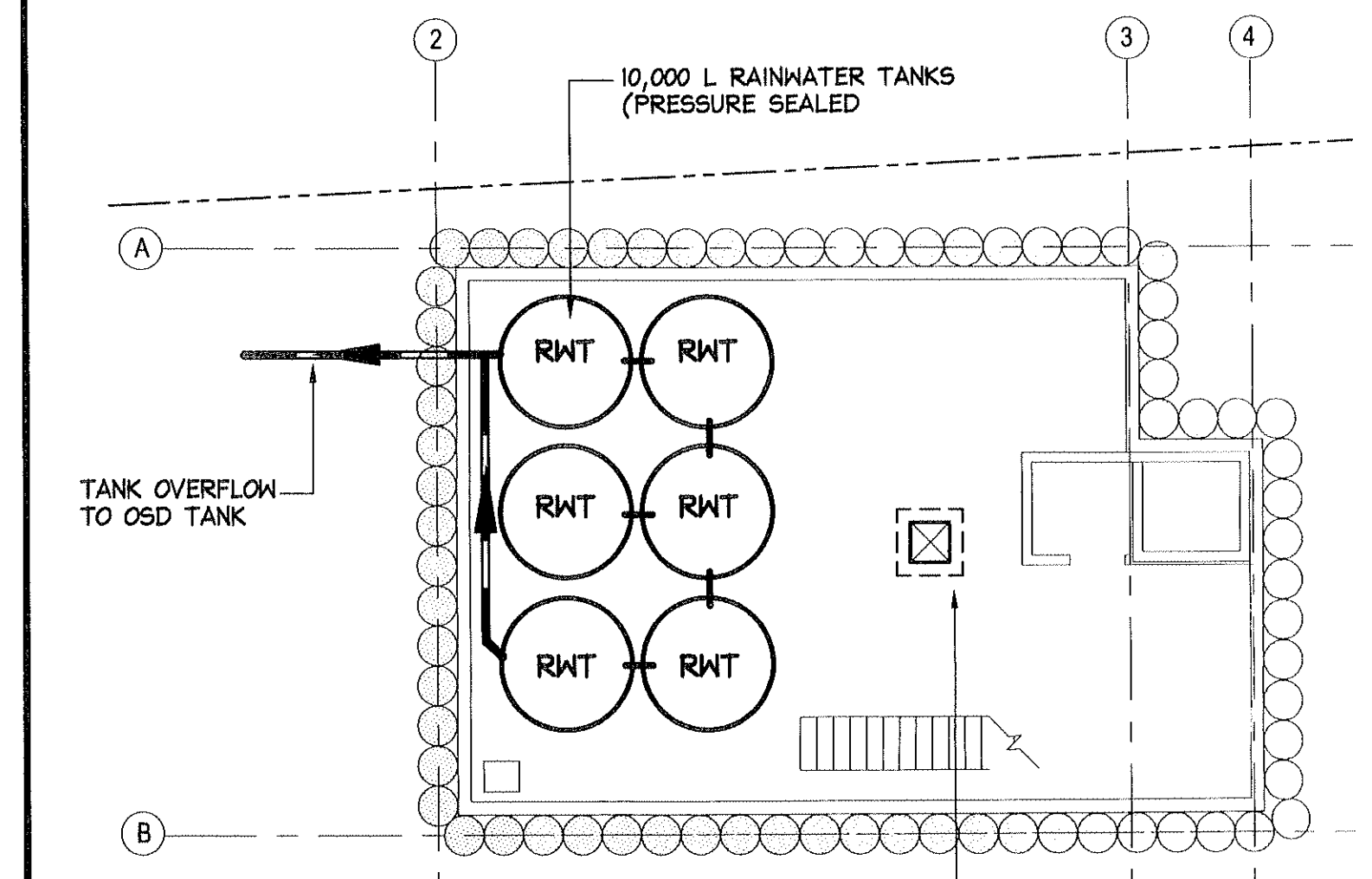
Northern Beaches Consulting Engineers Pty Ltd.



GROUND LEVEL DRAINAGE PLAN
SCALE = 1 : 100

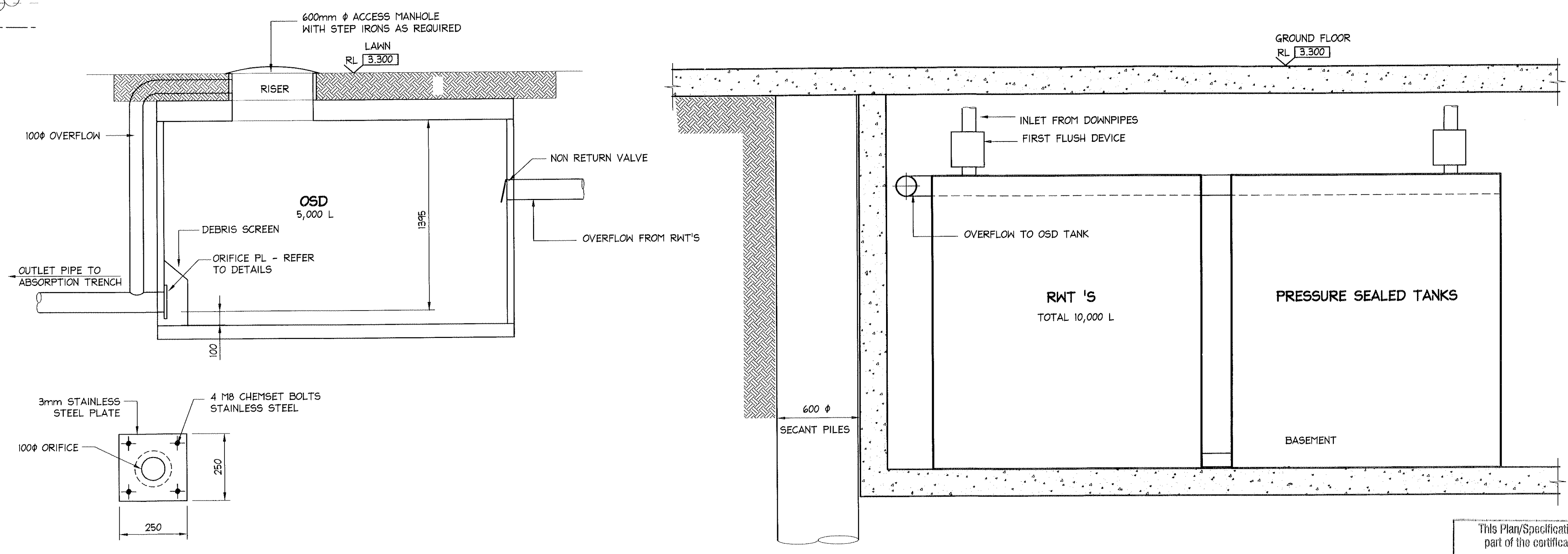
LEGEND	
	DOWNPIPE
	DOWNPIPE WITH SPREADER
	STORMWATER PIPE FLOW DIRECTION
	STORMWATER PIT
	200x200 FLOOR WASTE
	GRATED DRAIN
	GDI - 150x100 wide GRATED DRAIN
	RWT RAINWATER RE-USE TANK
	OSD OSD TANK

NOTE:
DRAINAGE LINE LOCATIONS ARE INDICATIVE ONLY
AND MAY VARY DUE TO CONSTRAINTS.
IF IN DOUBT CONTACT THE ENGINEER.



BASEMENT DRAINAGE PLAN
SCALE = 1 : 100

NOTE:
RWT'S ARE TO BE FULLY SEALED TO WITHSTAND
PRESSURE HEAD OF 3.0m



ORIFICE PLATE DETAIL

OSD AND RAINWATER RE-USE TANK DETAILS
SCALE = N.T.S.

This Plan/Specification forms part of the certification to
J 9 0 5 3 3 A 1 2 AUG 08

Date	Rev	Amendment	By	DOCUMENT CERTIFICATION	NORTHERN BEACHES Consulting Engineers P/L	Architect	Project	Date	Design	Drawn	Checked		
04/08/2010	C	NEW ARCH. PLANS - REVISED TO SUIT. ISSUED FOR CONSTRUCTION		Date: <i>11/09/2008</i> Stewart McGeady B.E.(Civil), MIEAust, P.Eng (Director Northern Beaches Consulting Engineers) The copyright of this drawing remains with Northern Beaches Consulting Engineers P/L.	A.C.N. 076 121 616 A.B.N. 24 076 121 616 Suite 207, 30 FISHER ROAD DEE WHY N.S.W. 2099 Ph: (02) 9984 7000 Fax: (02) 9984 7444 e-mail: nb@nbconsulting.com.au web page: www.nbconsulting.com.au	LEGGE ARCHITECTS Client: Tom Lane	NEW RESIDENCE 38 Stuart Street MANLY Drawing Title: STORMWATER MANAGEMENT PLAN & DETAILS	July 2008	RM	MC			
03/12/2009	B	DECK & OPTION 2 OMITTED, TANK REVISED, TANK DETAILS ADDED											
11.09.2008	A	DISPERSION TRENCH LOCATION ALTERED AS PER COUNCIL REQU.											
								Job No:	080710	Drawing No:	D01	Rev:	C