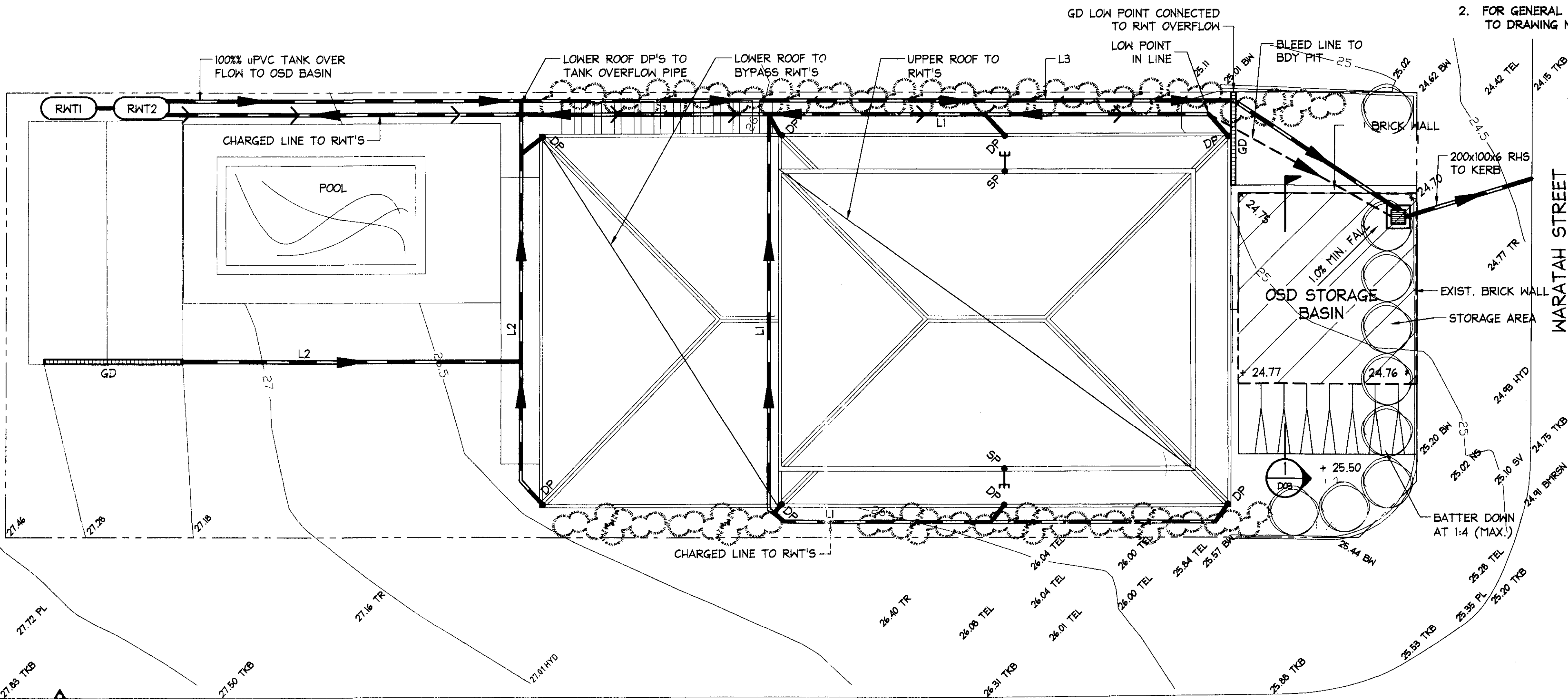


NOTES:

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2. FOR GENERAL NOTES REFER TO DRAWING NUMBER: S01.



LEGEND

- DR DOWNPIPE
- DR WITH SPREADER DOWNPIPE WITH SPREADER
- STORMWATER PIPE FLOW DIRECTION
- PIPE GRADE IF OPPOSITE TO FLOW DIRECTION
- PIT STORMWATER PIT
- GD GRATED DRAIN
- GD - 150x100 wide GRATED DRAIN
- RWT 1, RWT 2 RAINWATER TANKS TO COLLECT DOWNPIPES. TO BE RE-USED IN LAUNDRY & GARDEN IRRIGATION IN ACCORDANCE WITH BASIX, LOCAL COUNCIL & SYDNEY WATER REQUIREMENTS
- RWT 1 = 2000 L
- RWT 2 = 2000 L
- OSD STORAGE OSD BASIN - REFER TO DETAILS

ROOF PLAN

SCALE = 1 : 100

NOTE: ALL DRAINAGE LINES ARE INDICATIVE ONLY. LOCATION MAY VARY DUE TO CONSTRAINTS.

PIPE SCHEDULE

PIPE NUMBER	COMMENTS
L1	100Ø uPVC ROOF WATER CHARGED LINE TO RWT
L2	100Ø uPVC ROOF WATER CHARGED TO RWT OVERFLOW
L3	100Ø uPVC RWT OVERFLOW GRAVITY LINE TO BDY PIT

THE ON SITE STORMWATER DETENTION SYSTEM AND/OR DRAINAGE WORKS HAVE BEEN ASSESSED BY THE DEVELOPMENT ENGINEERING SECTION AND ARE

☒ SATISFACTORY ☐ UNSATISFACTORY

☐ SATISFACTORY SUBJECT TO AMENDMENTS/ADDITIONS SHOWN IN RED

3/8/2010

DEVELOPMENT ENGINEER

IF IN DOUBT ASK

DOCUMENT CERTIFICATION

Date: 14/02/10

Rick G. Wray

BE(Civil), CPENG, MIEAust., NPER.

(Director Northern Beaches Consulting Engineers)

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Architect:

TEAM 2 DESIGN

Client:

STEPHEN & SUSAN NATILLI

Project:

ALTERATIONS & ADDITIONS TO: 29 WARATAH ST, FRESHWATER

Date:

FEB '10

Design:

SMABB

Drawn:

RYAN

Checked:

RW

Job No:

091158

Drawing No:

DOI

Rev:

-

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STORMWATER NOTES:

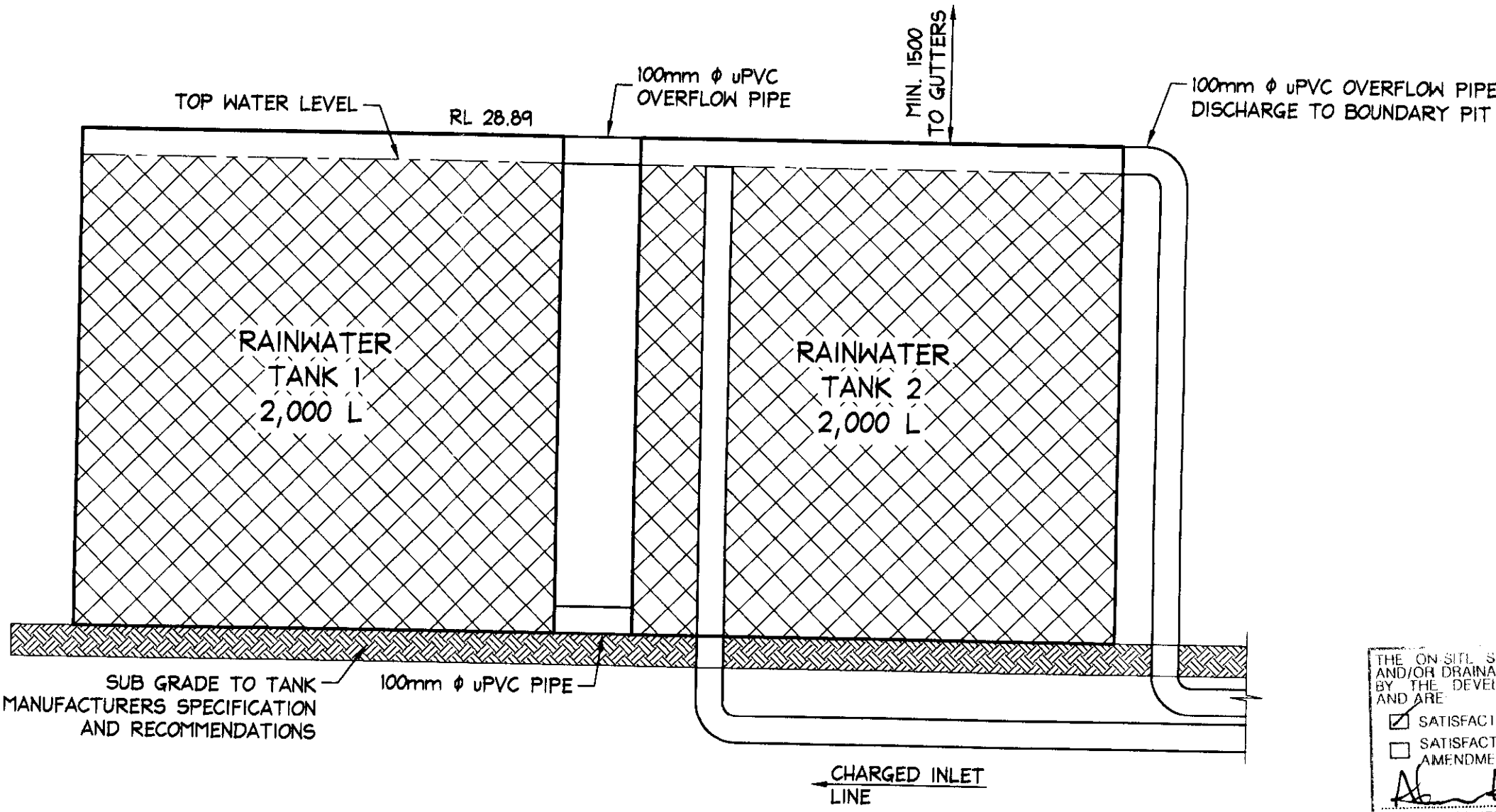
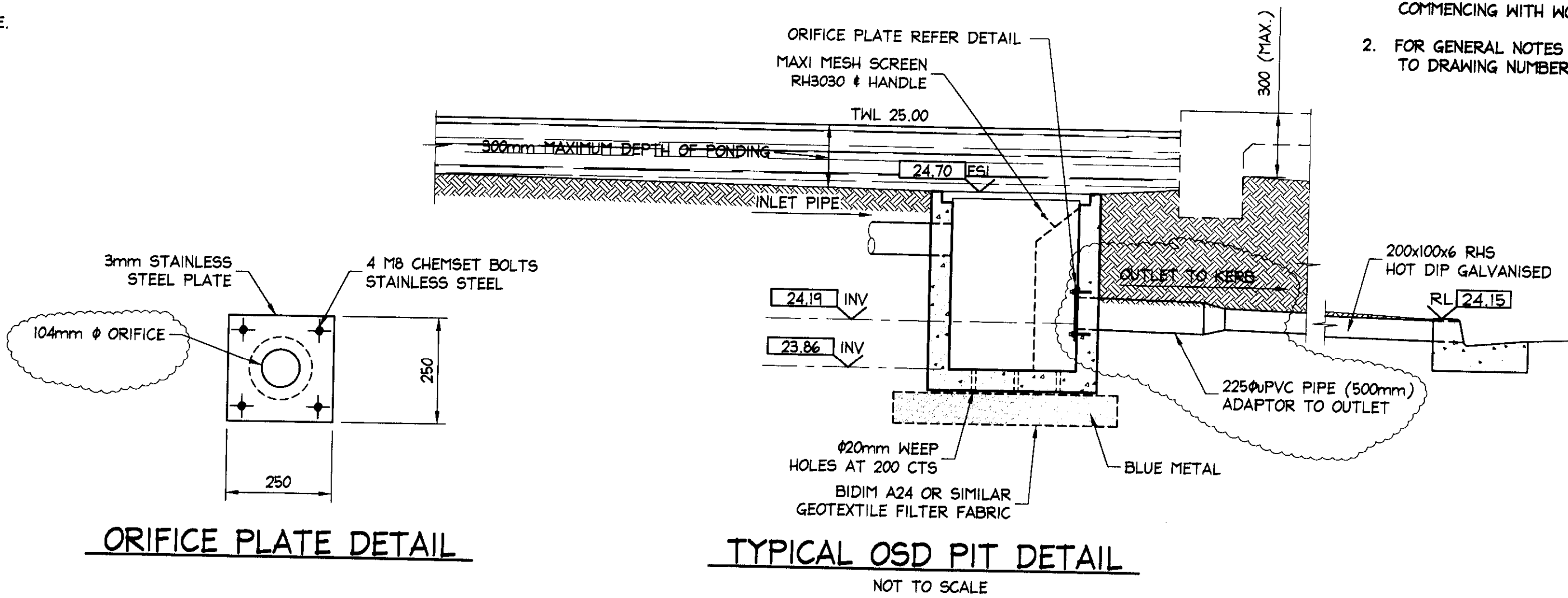
- 1 - ALL PIPES TO BE 100mm Ø UNLESS NOTED OTHERWISE.
- 2 - ALL PIPES TO BE uPVC TO AS 1254-2002 UNLESS NOTED OTHERWISE.
- 3 - ALL PIPES TO BE LAYED AT 1 % MINIMUM GRADE UNLESS NOTED OTHERWISE.
- 4 - ALL PIPES SHALL BE LAID ON A 75mm SAND BED, COMPACTED TO 100% S.M.D.D. BELOW PAVEMENTS.  
( NO COMPACTION 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.
- 5 - ALL DOWN PIPES TO BE 100mm Ø UNLESS NOTED OTHERWISE.
- 6 - DOWN PIPE LOCATIONS ARE INDICATIVE ONLY. LOCATIONS TO BE CONFIRMED WITH ARCHITECT PRIOR TO COMMENCEMENT WITH WORK.
- 7 - PROVIDE CLEANING EYES AT ALL DOWNPIPES.
- 8 - 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.
- 9 - ALL PITS GREATER THAN 1000mm DEEP SHALL HAVE STEP IRONS AS PER COUNCIL STANDARDS.
- 10 - ALL WORK TO BE IN ACCORDANCE WITH LOCAL COUNCIL STANDARDS AND SPECIFICATIONS.
- 11 - 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.
- 12 - ALL LEVELS SHOWN ARE TO AHD
- 13 - ENSURE THAT ALL PITS AND STORMWATER PIPES ARE LOCATED CLEAR FROM TREE ROOT SYSTEMS.
- 14 - ALL EXISTING EARTHENWARE PIPES TO BE UPGRADED TO uPVC.
- 15 - ALL WORKS TO BE IN ACCORDANCE WITH AS 3500-2003 NATIONAL PLUMBING DRAINAGE CODE PART 3 - STORMWATER DRAINAGE.
- 16 - 90mm Ø 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.
- 17 - IF NOT INDICATED ON PLANS, PROVIDE FIRST FLUSH TO ALL DOWNPIPES.

RAINWATER RE-USE TANKS:

- 1. CONSIDERING THE ROOF CATCHMENT AREA, LOCATION OF PROPERTY, INTENDED USE OF RAINWATER AND GARDEN SIZE WE RECOMMEND PROVIDING A 4000 L CAPACITY RAINWATER TANK FOR THE FOLLOWING USES:  
a) TO WATER GARDEN AREAS b) CONNECT TO W.C. c) CONNECT TO WASHING MACHINE.
- 2. THE TANKS PROVIDED WILL REDUCE PRESSURE ON COUNCIL'S STORMWATER INFRASTRUCTURE.
- 3. 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"
- 4. 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](http://www.sydneywater.com.au)
- 5. 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.

NOTES:

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- 2. FOR GENERAL NOTES REFER TO DRAWING NUMBER: S01.



THE ON SITE STORMWATER DETENTION SYSTEM AND/OR DRAINAGE WORKS HAVE BEEN ASSESSED BY THE DEVELOPMENT ENGINEERING SECTION AND ARE:	
<input checked="" type="checkbox"/> SATISFACTORY	<input type="checkbox"/> UNSATISFACTORY
<input type="checkbox"/> SATISFACTORY SUBJECT TO AMENDMENTS/ADDITIONS SHOWN IN RED	
Development Engineer	DATE: 3/8/2010

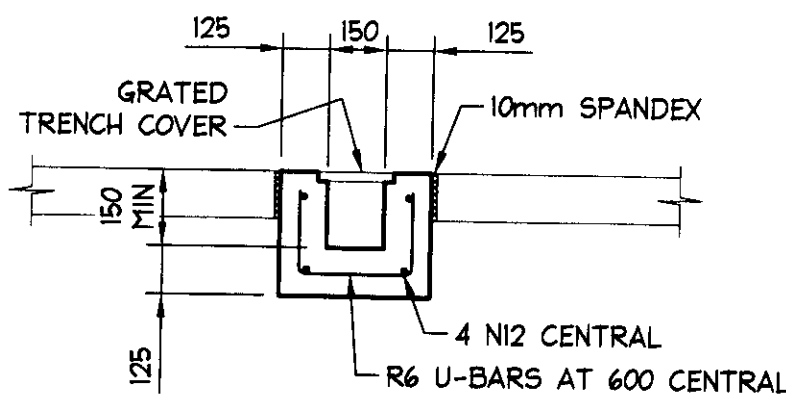
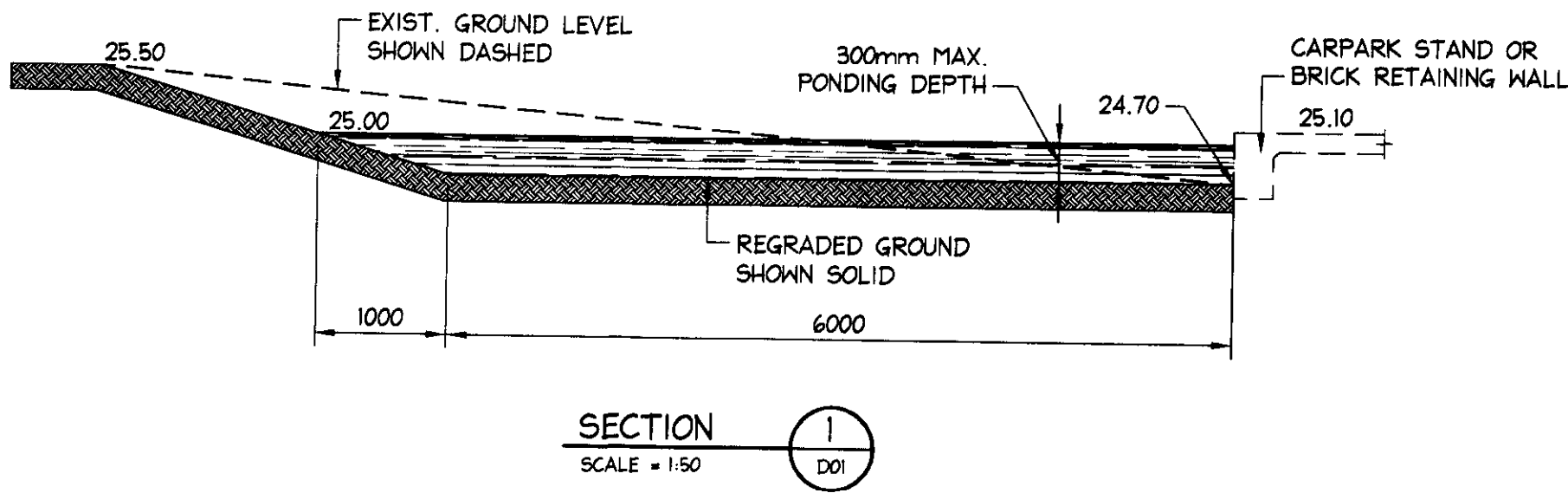
TYPICAL SECTION THROUGH RWT TANK SYSTEM  
NOT TO SCALE

A2

DOCUMENT CERTIFICATION				NORTHERN BEACHES Consulting Engineers P/L		Architect: TEAM 2 DESIGN		Project: ALTERATIONS & ADDITIONS TO: 29 WARATAH ST, FRESHWATER		Date: FEB '10	Design: SMABB	Drawn: RYAN	Checked: RM
Date: 09/06/2010				Rev: A		Amendment: ORIFICE SIZE ADJUSTED		Client: STEPHEN & SUSAN NATILLI		Job No: 091158		Drawing No: D02	
By: RM				Rev: A		Amendment: ORIFICE SIZE ADJUSTED		Client: STEPHEN & SUSAN NATILLI		Job No: 091158		Drawing No: D02	
By: RM				Rev: A		Amendment: ORIFICE SIZE ADJUSTED		Client: STEPHEN & SUSAN NATILLI		Job No: 091158		Drawing No: D02	
By: RM				Rev: A		Amendment: ORIFICE SIZE ADJUSTED		Client: STEPHEN & SUSAN NATILLI		Job No: 091158		Drawing No: D02	

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

ONSITE DETENTION SYSTEM  
SUMMARY NOTES

TOTAL SITE AREA	653 m <sup>2</sup>
DESIGN METHOD USED	DRAINS (REFER TO DISK)
PRE DEVELOPMENT IMPERVIOUS AREA	228.5 m <sup>2</sup>
POST DEVELOPMENT IMPERVIOUS AREA	438 m <sup>2</sup> (INCLUDING ADDITIONAL 15% OF TOTAL SITE AREA)
PRE DEVELOPMENT SITE DISCHARGE	
5 YR	19 l/s
100 YR	38 l/s
POST DEVELOPMENT SITE DISCHARGE	
5 YR	18 l/s
100 YR	31 l/s
PORTION OF SITE THROUGH OSD	100 %
ORIFICE SIZE	104 mm $\phi$
TYPE OF CONTROL	ABOVE GROUND BASIN
MAXIMUM CONCENTRATED DISCHARGE TO KERB	20 l/s
DIMENSION OF OSD	37 m <sup>2</sup> x 0.3 m DEPTH
VOLUME OF OSD	11 m <sup>3</sup> (NOTE: 9 m <sup>3</sup> REQUIRED)

NOTE: FOR ABOVE GROUND DETENTION BASINS, BUILDER IS TO ENSURE VOLUME HAS BEEN ACHIEVED PRIOR TO LANDSCAPING AS A WORKS AS EXECUTED PLAN (WAE) MAY BE REQUIRED BY COUNCIL PRIOR TO CERTIFICATION AND APPROVAL.

THE ON-SITE STORMWATER DETENTION SYSTEM AND/OR DRAINAGE WORKS HAVE BEEN ASSESSED BY THE DEVELOPMENT ENGINEERING SECTION AND ARE:	
<input checked="" type="checkbox"/> SATISFACTORY	<input type="checkbox"/> UNSATISFACTORY
<input type="checkbox"/> SATISFACTORY SUBJECT TO AMENDMENTS/ADDITIONS SHOWN IN RED	
Development Engineer	DATE
<i>[Signature]</i>	3/8/2010

A2

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		<b>DOCUMENT CERTIFICATION</b>		<b>NORTHERN BEACHES Consulting Engineers P/L</b>		Architect:		<b>TEAM 2 DESIGN</b>		Project:		Date:		Design:		Drawn:		Checked:	
		Date: 09/06/2010		Rick G. Wray BE(Civil), CPENG, MIEAust, NPER (Director Northern Beaches Consulting Engineers)		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		Client:		ALTERATIONS & ADDITIONS TO: 29 WARATAH ST, FRESHWATER		FEB '10		SMABB		RYAN		RM	
		Date:		Rev:		Amendment:		By:		STORMWATER MANAGEMENT DETAILS CONTINUED		Job No:		091158		Drawing No:		D03	
																		A	

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