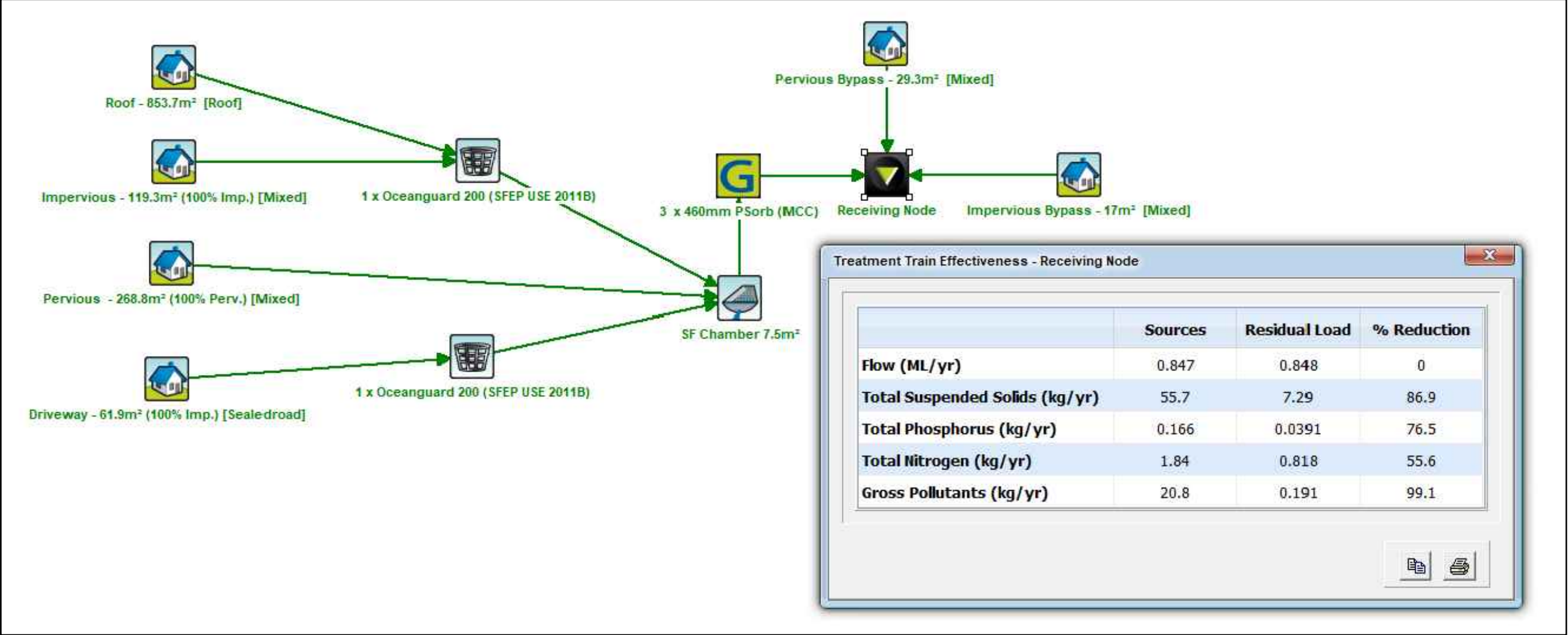


WSUD CATCHMENT PLAN  
SCALE 1:100



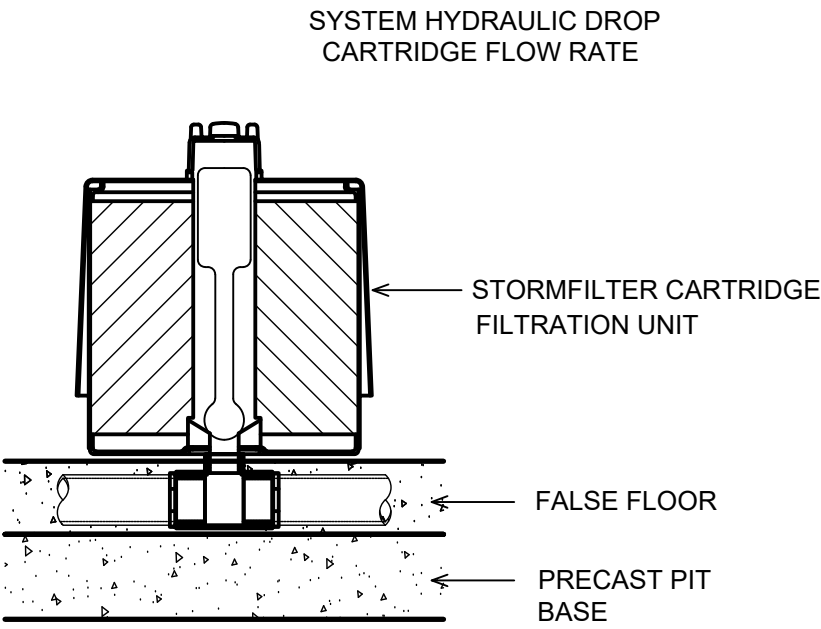
STORMFILTER DESIGN TABLE

- STORMFILTER TREATMENT CAPACITY VARIES BY NUMBER OF FILTER CARTRIDGES INSTALLED AND BY REGION SPECIFIC INTERNAL FLOW CONTROLS. CONVEYANCE CAPACITY IS RATED AT 80L/S.
- ALL PARTS PROVIDED AND INTERNAL ASSEMBLY BY STORMWATER360 AUSTRALIA UNLESS OTHERWISE NOTED.

CARTRIDGE HEIGHT	690		460		310	
SYSTEM HYDRAULIC DROP (H - REQ'D. MIN.)	930		700		550	
TREATMENT BY MEDIA SURFACE AREA L/S/m2	1.4	0.7	1.4	0.7	1.4	0.7
CARTRIDGE FLOW RATE (L/s)	1.42	0.71	0.95	0.47	0.63	0.32

CATCHMENT LEGEND

- ROOF AREA TO OCEANGUARD THEN TO WSUD WSUD = 853.7m<sup>2</sup>
- PERVIOUS AREA TO WSUD = 268.8m<sup>2</sup>
- IMPERVIOUS AREA TO OCEANGUARD THEN TO WSUD = 119.3m<sup>2</sup>
- ROAD TO BASEMENT THEN TO WSUD = 61.9m<sup>2</sup>
- IMPERVIOUS AREA TO BYPASS OSD = 17.0m<sup>2</sup>
- PERVIOUS AREA TO BYPASS OSD = 29.3m<sup>2</sup>



NOT FOR CONSTRUCTION

Issue	Description	Date	Design	Checked
A	ISSUE FOR DEVELOPMENT APPLICATION	25/11/2021	JTF	JSF

Certification By Dr. Michel Chasys  
in affiliation with Joe Bacha (formerly  
Australian Consulting Engineers):

Architect  
**IDRAFT ARCHITECTS**  
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PHONE : (02) 9648 8848

Client  
**Pradip Dhakal**  
Council  
**City of Parramatta Council**

Scale  
0 2 4 6 m  
SCALE 1:100 @ A1

**TELFORD CIVIL**  
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Level 4, 470 Church Street,  
Parramatta NSW 2150  
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Email : info@telfordcivil.com.au  
PHONE : 02 7809 4931

Project  
**1-3 CROWN STREET, HARRIS PARK  
PROPOSED MIXED-USE DEVELOPMENT  
STORMWATER CONCEPT PLANS  
DEVELOPMENT APPLICATION**

Drawing Title <b>WSUD CATCHMENT PLAN, MODEL AND RESULTS</b>				
Scale 1:100	A1	Project No. 202166	Dwg. No. 104	Issue A



TOTAL SITE AREA = 1350.0m<sup>2</sup>  
BY-PASS AREA = 46.3m<sup>2</sup>  
SITE AREA DRAINING TO OSD = 1303.7m<sup>2</sup>

EFFECTIVE DEPTH OF WATER WITHIN FILTRATION CHAMBER=  
 $0.46 \text{ (CARTRIDGE HEIGHT)} + 0.08 \text{ (HEAD REQUIRED FOR SW 460 CARTRIDGE)} = 0.54\text{m}$   
 AREA NEEDED FOR THE FILTRATION CARTRIDGES=  $1303.7 \times 0.003 / 0.54 = 7.24\text{m}^2$   
 AREA PROVIDED =  $7.5 \text{ m}^2$

3x460m PSORB CARTRIDGES PROVIDED - OUTFLOW = 1.88 L/s

PSD (2) = PSD (1) - 1.88 L/s  
= 15.96 - 1.88 = 14.08 L/s  
ORIFICE HEAD = 19.45 - 18.35 = 1.1m NEW ORIFICE DIAMETER = Ø80mm

$$Q = C \times A \times (2 \times g \times h)^{0.5}$$

$$\begin{aligned}\text{SO: } A &= Q / (C \times \sqrt{2 \times g \times h}) \\ &= 0.01408 / (0.61 \times \sqrt{2 \times 9.81 \times 1.1}) \\ &= 0.00497 \text{ m}^2\end{aligned}$$

$$\begin{aligned} d &= \sqrt{4 \times A / \pi} \\ &= \sqrt{4 \times 0.00497 / 3.14159} \\ &= 80 \text{ mm} \end{aligned}$$

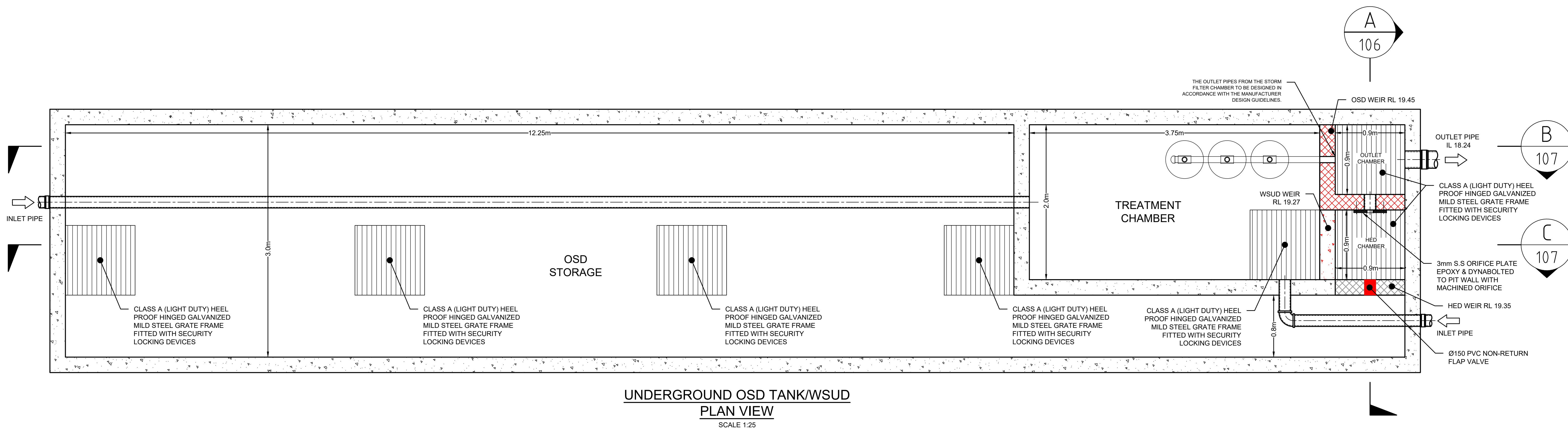
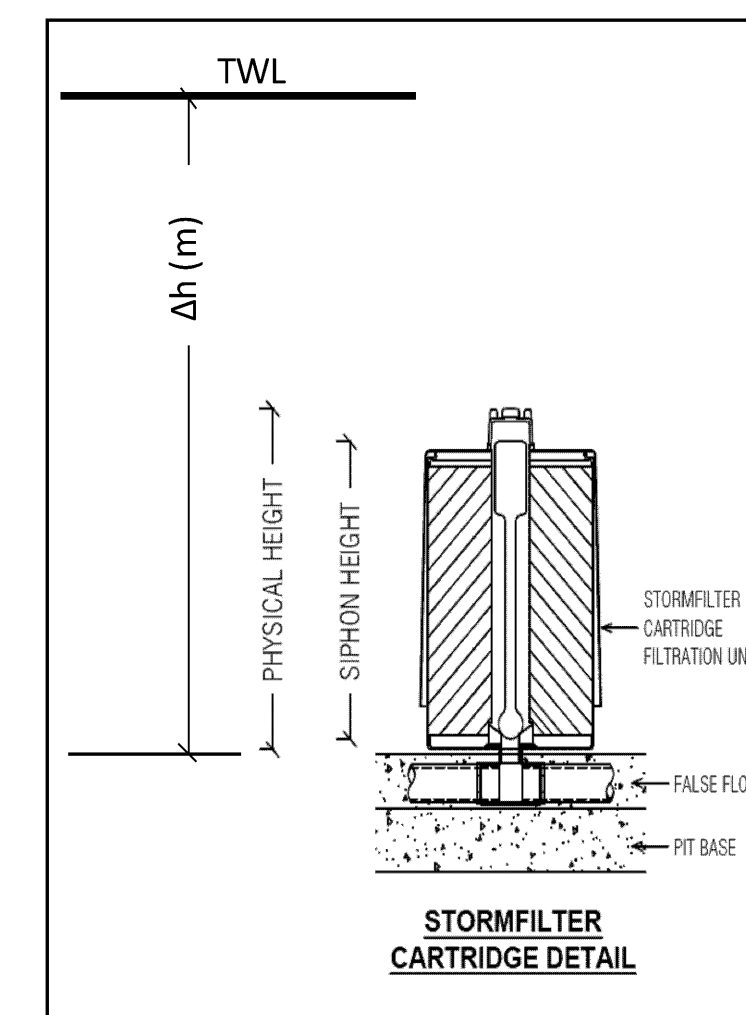
## StormFilter Flow Calculator - Psorb Media

The equation below defines the relationship between the diameter of the orifice plate, the flow rate through the cartridge and head.


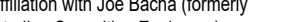
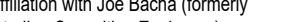
$Q = (0.111d^{2.06}h^{0.5})/60$   
where d = Restrictor Disc Diameter  
 $\Delta h$  = head

Cartridge Name	460
Cartridge Quantity	3
$\Delta h$ (m)	1

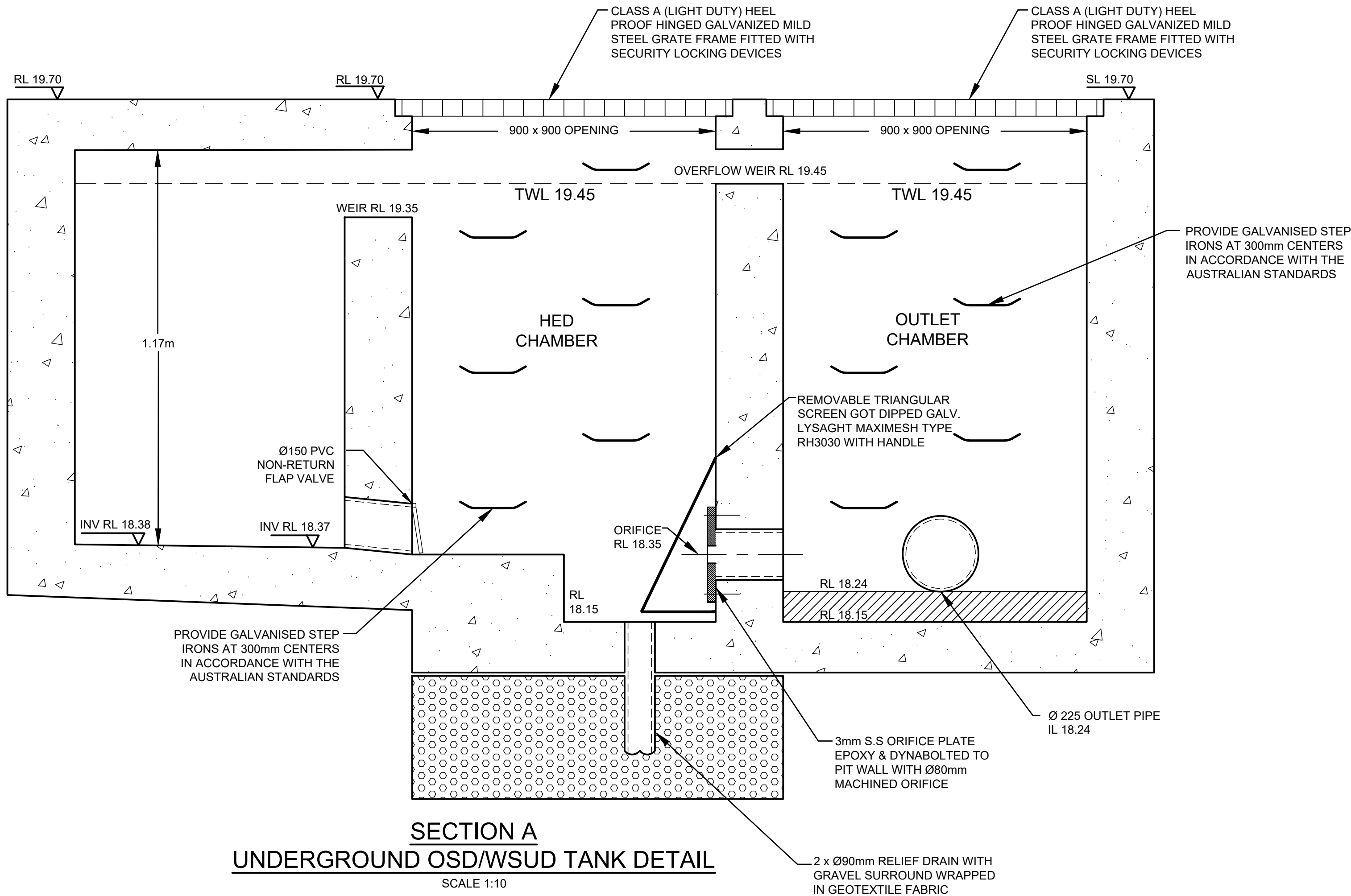
Total Q at head	1.88
-----------------	------



NOT FOR CONSTRUCTION

				Certification By Dr. Michel Chaaya in affiliation with Joe Bacha (formerly Australian Consulting Engineers).		Architect <b>IDRAFT ARCHITECTS</b> Unit 43, 2 Slough Ave, Silverwater NSW PHONE : (02) 9648 8848		Client <b>Pradip Dhakal</b>  Council <b>City of Parramatta Council</b>		Scale  SCALE 1:25 @ A1		<b>TELFORD CIVIL</b> DESIGN & CONSTRUCTION EXCELLENCE Level 4, 470 Church Street, Parramatta NSW 2150 PO BOX 3579 Parramatta 2124 Email : info@telfordcivil.com.au PHONE : 02 7809 4931		Project <b>1-3 CROWN STREET, HARRIS PARK PROPOSED MIXED-USE DEVELOPMENT STORMWATER CONCEPT PLANS DEVELOPMENT APPLICATION</b>		Drawing Title <b>ON-SITE DETENTION DETAILS AND CALCULATION SHEETS SHEET 1 OF 3</b>																					
<table><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td>A</td><td>ISSUE FOR DEVELOPMENT APPLICATION</td><td>25/11/2021</td><td>JTF JSF</td></tr></table>																				A	ISSUE FOR DEVELOPMENT APPLICATION	25/11/2021	JTF JSF														
A	ISSUE FOR DEVELOPMENT APPLICATION	25/11/2021	JTF JSF																																		
<table><tr><th>Issue</th><th>Description</th><th>Date</th><th>Design</th><th>Checked</th></tr><tr><td>0</td><td>10m at full size</td><td></td><td></td><td>200m</td></tr></table>				Issue	Description	Date	Design	Checked	0	10m at full size			200m																								
Issue	Description	Date	Design	Checked																																	
0	10m at full size			200m																																	
				Scale A1 As Shown		Project No. 202166		Dwg. No. 105		Issued By 																											



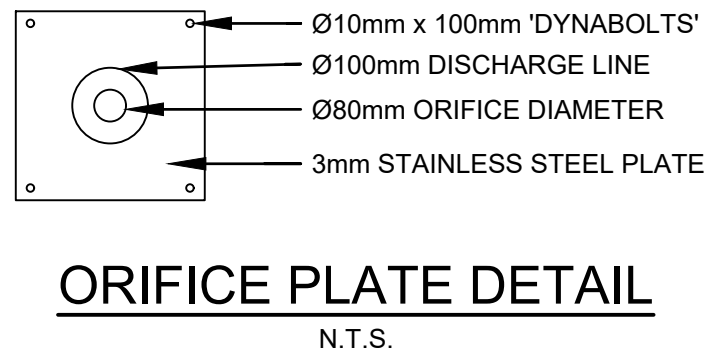
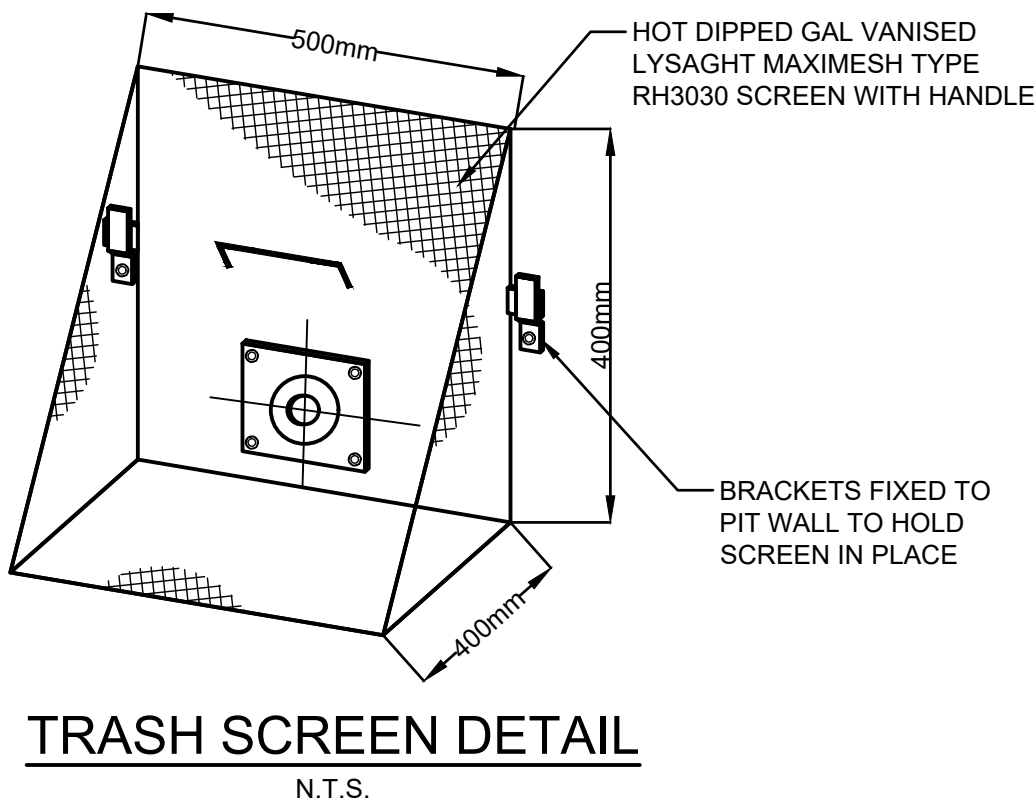


### UNDERGROUND OSD TANK STAGED STORAGE CALCULATIONS

DEPTH (mm)	AREA (m²)	CUMULATIVE VOLUME (m³)
0	50.69	0
100	50.69	4.5621
200	50.69	5.5759
300	50.69	10.6449
400	50.69	15.7139
500	50.69	20.7829
600	50.69	25.8519
700	50.69	30.9209
800	50.69	35.9899
900	50.69	41.0589
1000	50.69	46.1279
1100	50.69	51.1969

CITY OF PARRAMATTA COUNCIL				
On-Site Detention Calculation Sheet				
Project:	TEL202166.SW.DA	Lot No.	A & B	
Location:	1-3 Crown St. Harris Park	DP No.	326493	
Designer:	Youssef Frangieh	D.A. No.		
Phone:	02 7809 4931			
OSD Area:	Front Lot	UPRCT		UPRCT Drowned
Site Area		0.135		0.135
Basic Storage Volume		29.03		63.45
Basic Discharge		1.73		10.80
Area of Site to Storage		130	97%	0.130 97%
Percentage of Site		6.57		96.57
Storage per ha of contributing area		22.64		486.69
Volume/PSD Adjustment		22.35		76.35
PSD for site		2.11		9.95
Maximum Head to Orifice Centre		1.00		0.330
Calculated Orifice Diameter		0.113		0.113
Maximum discharge		29.08		15.953
Head for high early discharge		1.00		0.230
High Early Discharge		27.53	95%	13.318 134%
Mean Discharge		28.31		14.636
Average Discharge per Hectare		218.07		112.262
Final Site Storage Ratio		2.7		369
Site Storage Volume		29.03		48.14
Volume Provided		50.69	171%	50.690 105%
Checked By:	Joe Frangie			
Date Checked:	18-Nov-21			
OSD Plan Number:	101-108			

NOTE:  
USE 80mm ORIFICE DIAMETER. REFER TO ORIFICE CALCULATIONS ON SHEET 104



### GENERAL NOTES

- INLET AND OUTLET PIPING SHALL BE SPECIFIED BY SITE CIVIL ENGINEER (SEE PLANS) AND PROVIDED BY CONTRACTOR. STORMFILTER IS PROVIDED WITH OPENINGS AT INLET AND OUTLET LOCATIONS.
- IF THE PEAK FLOW RATE, AS DETERMINED BY THE SITE CIVIL ENGINEER, EXCEEDS THE PEAK HYDRAULIC CAPACITY OF THE PRODUCT, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED. PLEASE CONTACT STORMWATER360 FOR OPTIONS.
- THE FILTER CARTRIDGE(S) ARE SIPHON-ACTUATED AND SELF-CLEANING. THE STANDARD DETAIL DRAWING SHOWS THE MAXIMUM NUMBER OF CARTRIDGES. THE ACTUAL NUMBER SHALL BE SPECIFIED BY THE SITE CIVIL ENGINEER ON SITE PLANS OR IN DATA TABLE BELOW. PRECAST STRUCTURE TO BE CONSTRUCTED IN ACCORDANCE WITH AS3600.
- FOR SHALLOW, LOW DROP OR SPECIAL DESIGN CONSTRAINTS, CONTACT STORMWATER360 FOR DESIGN OPTIONS.
- ALL WATER QUALITY PRODUCTS REQUIRE PERIODIC MAINTENANCE AS OUTLINED IN THE O&M GUIDELINES. PROVIDE MINIMUM CLEARANCE FOR MAINTENANCE ACCESS.
- STRUCTURE AND ACCESS COVERS DESIGNED TO MEET AUSTRROADS T44 LOAD RATING WITH 0.2m FILL MAXIMUM.
- THE STRUCTURE THICKNESSES SHOWN ARE FOR REPRESENTATIONAL PURPOSES AND VARY REGIONALLY.
- ANY BACKFILL DEPTH, SUB-BASE, AND OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY SITE CIVIL ENGINEER.
- STORMFILTER BY STORMWATER360:  
SYDNEY (AU) PHONE: (02) 9525 5833,  
BRISBANE (AU) PHONE: (07) 3272 1872.

### SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	1
WATER QUALITY FLOW RATE (L/S)	-
PEAK FLOW RATE (L/S)	-
RETURN PERIOD OF PEAK FLOW (yrs)	-
# OF CARTRIDGES REQUIRED (8-22)	4
CARTRIDGE HEIGHT (310, 460 or 690mm)	460
MEDIA TYPE (PERLITE, PERLITE/ZEOLITE OR ZPG)	ZPG

PRECAST VAULT WEIGHT	- kg
PRECAST LID WEIGHT	- kg

PIPE DATA:	I.L.	MATERIAL	DIAMETER

PIPE ORIENTATION		
UPSTREAM FLOW	180°	DOWNSTREAM FLOW
90°		
270°		
0°		
LADDER	YES/NO	
ANTI-FLOTATION BALLAST	N/A	N/A
	N/A	N/A

### STORMFILTER TABLE

N.T.S.

NOT FOR CONSTRUCTION

A	ISSUE FOR DEVELOPMENT APPLICATION		25/11/2021	JTF	JSF
Issue	Description	Date	Design	Checked	
10m at full size					
20m					

Certification By Dr. Michel Chasaya  
in affiliation with Joe Bacha (formerly  
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Architect  
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Unit 43, 2 Slough Ave,  
Silverwater NSW  
PHONE : (02) 9648 8848

Client  
**Pradip Dhakal**  
Council  
**City of Parramatta Council**

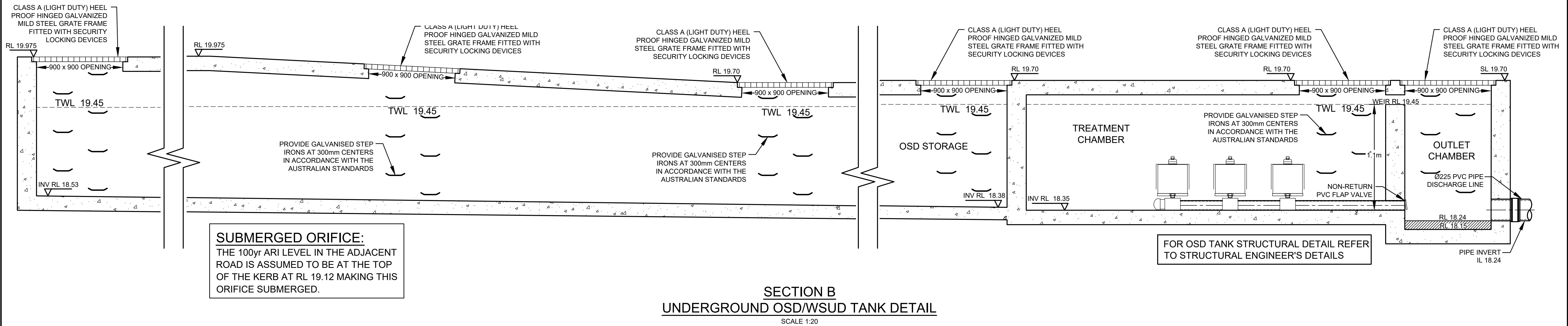
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SCALE 1:10 @ A1

**TELFORD**<sub>CIVIL</sub>  
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Level 4, 470 Church Street,  
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PO BOX 3579 Parramatta 2124  
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PHONE : 02 7809 4931

Project  
**1-3 CROWN STREET, HARRIS PARK  
PROPOSED MIXED-USE DEVELOPMENT  
STORMWATER CONCEPT PLANS  
DEVELOPMENT APPLICATION**

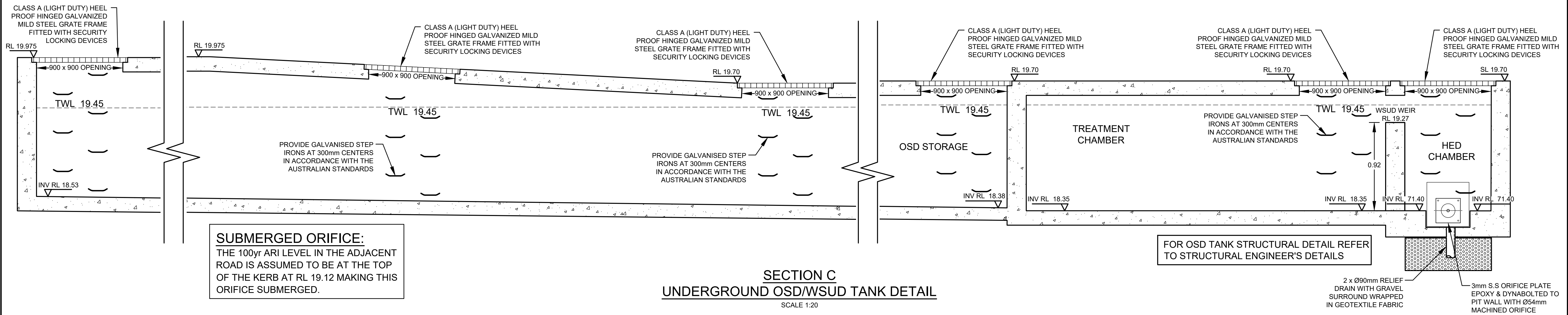
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**ON-SITE DETENTION DETAILS  
AND CALCULATION SHEETS  
SHEET 2 OF 3**  
Scale A1  
As Shown  
Project No.  
202166  
Dwg. No.  
106  
Issue  
A





SECTION B  
UNDERGROUND OSD/WSUD TANK DETAIL  
SCALE 1:20

THE OUTLET PIPES FROM THE STORM FILTER CHAMBER TO BE DESIGNED IN ACCORDANCE WITH THE MANUFACTURER DESIGN GUIDELINES.



SECTION C  
UNDERGROUND OSD/WSUD TANK DETAIL  
SCALE 1:20

2 x Ø90mm RELIEF DRAIN WITH GRAVEL SURROUND WRAPPED IN GEOTEXTILE FABRIC  
3mm S.S ORIFICE PLATE EPOXY & DYNABOLTED TO PIT WALL WITH Ø54mm MACHINED ORIFICE

NOT FOR CONSTRUCTION

A	ISSUE FOR DEVELOPMENT APPLICATION	25/11/2021	JTF	JSF	
Issue	Description	Date	Design	Checked	
1	10m at full size	10m	20m		

Certification By Dr. Michel Chasaya  
in affiliation with Joe Bacha (formerly  
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PHONE : (02) 9648 8848

Client  
**Pradip Dhakal**  
Council  
**City of Parramatta Council**

Scale  
0 400 800 1200 mm  
SCALE 1:20 @ A1

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Parramatta NSW 2150  
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Email : info@telfordcivil.com.au  
PHONE : 02 7809 4931

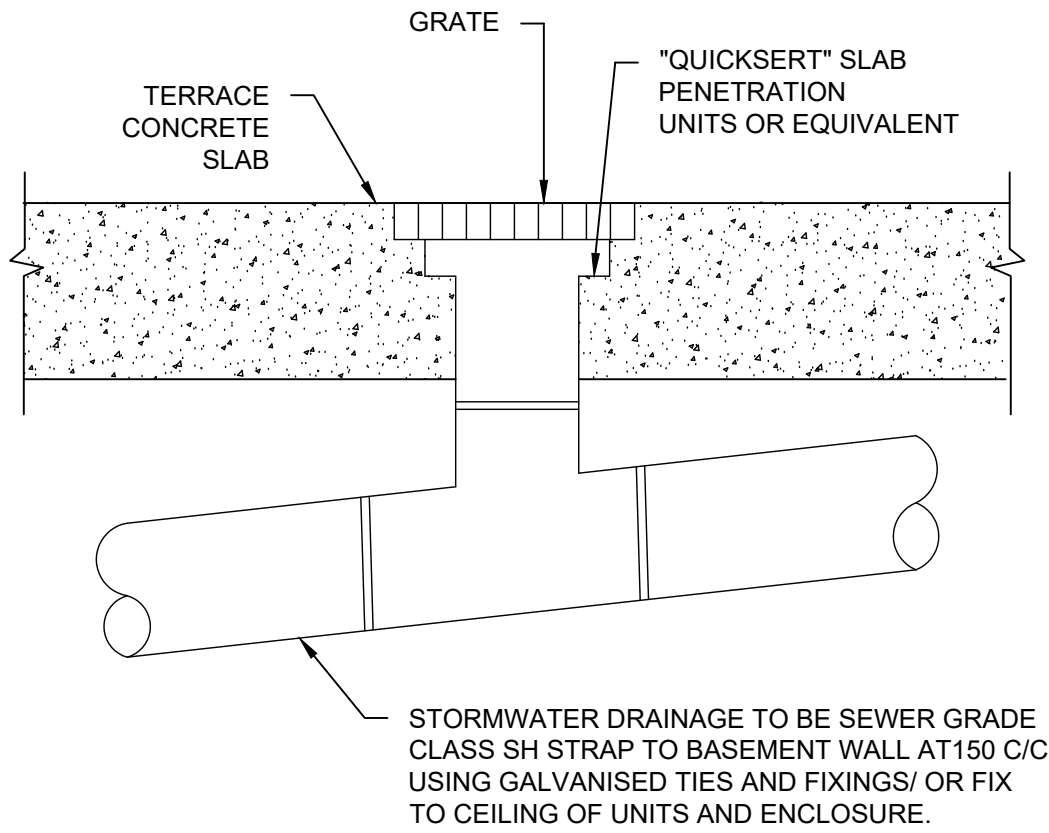
Project  
**1-3 CROWN STREET, HARRIS PARK  
PROPOSED MIXED-USE DEVELOPMENT  
STORMWATER CONCEPT PLANS  
DEVELOPMENT APPLICATION**

Drawing Title  
**ON-SITE DETENTION DETAILS  
AND CALCULATION SHEETS  
SHEET 3 OF 3**  
Scale 1:20 A1 Project No. 202166 Dwg. No. 107 Issue A

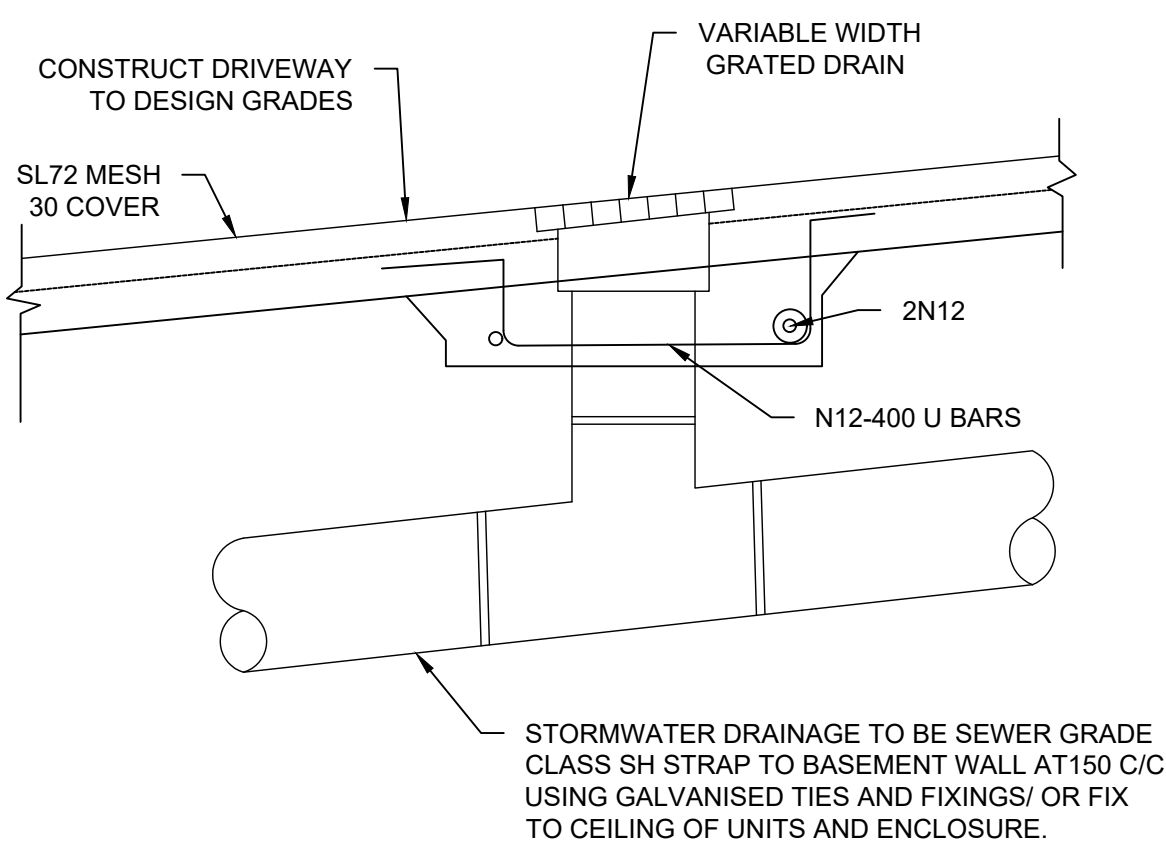


SEDIMENT & EROSION NOTES

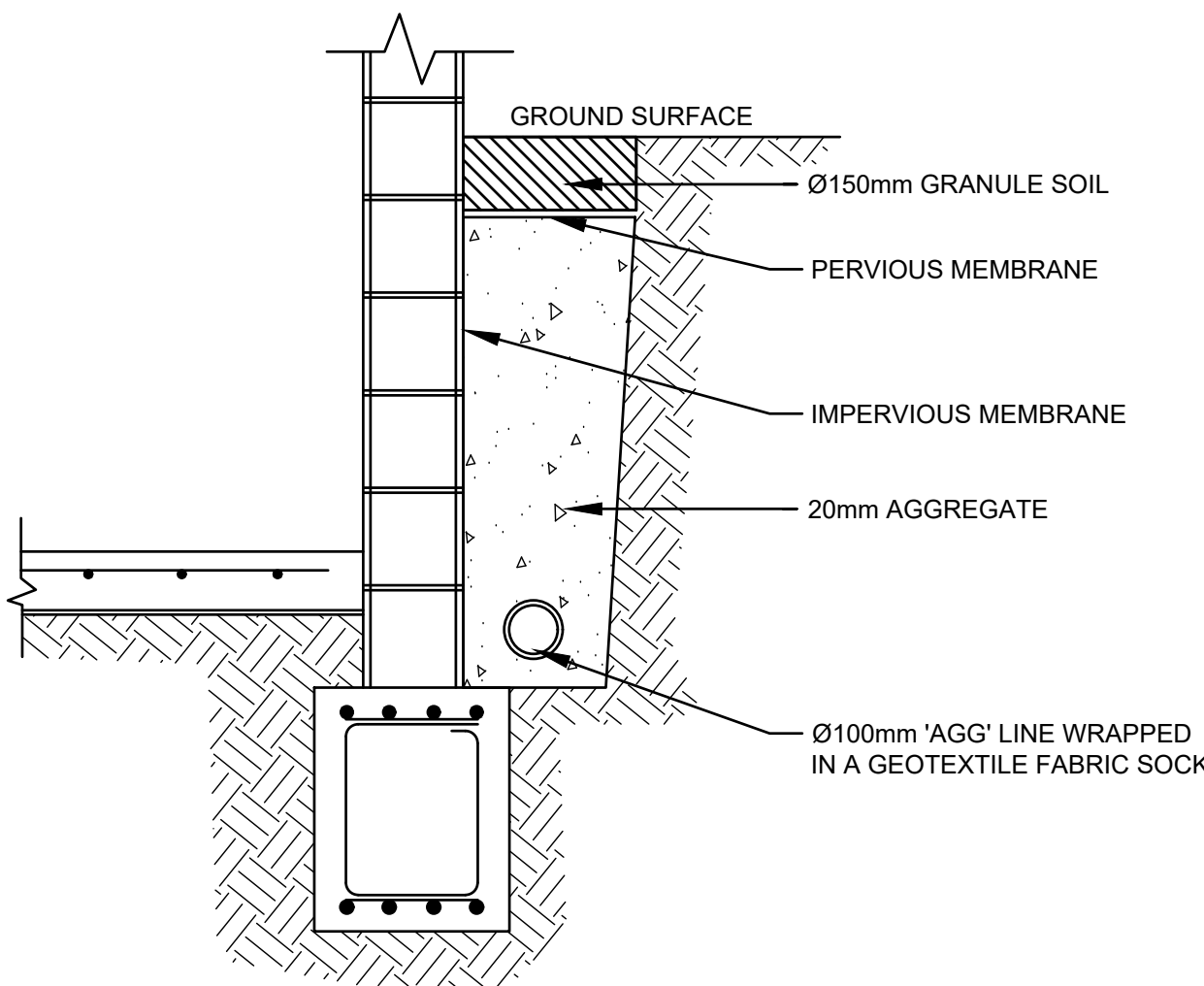
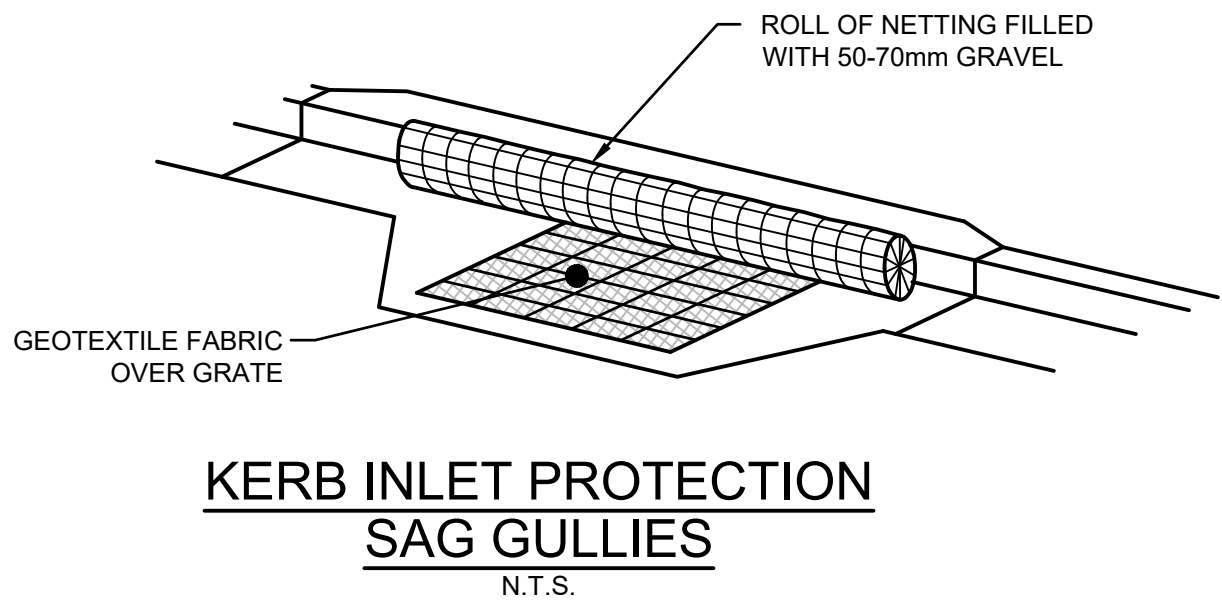
1. IMMEDIATELY FOLLOWING SETTING OUT OF THE WORKS, BUT PRIOR TO COMMENCEMENT OF ANY CLEARING OR EARTHWORKS, THE CONTRACTOR AND SUPERINTENDENT SHALL WALK THE SITE TO NOMINATE THE LOCATIONS AND TYPES OF SEDIMENT AND EROSION CONTROL MEASURES TO BE ADOPTED. THESE MEASURES SHALL BE IMPLEMENTED PRIOR TO ANY CLEARING OR EARTHWORKS AND MAINTAINED UNTIL THE WORKS ARE COMPLETED AND NO LONGER POSE AN EROSION HAZARD, UNLESS OTHERWISE APPROVED BY THE SUPERINTENDENT.
2. IMMEDIATELY FOLLOWING SETTING OUT OF THE WORKS, BUT PRIOR TO COMMENCEMENT OF ANY CLEARING OR EARTHWORKS, THE CONTRACTOR AND SUPERINTENDENT SHALL WALK THE SITE TO IDENTIFY AND MARK TREES WHICH ARE TO BE PRESERVED. NOTWITHSTANDING THE ABOVE,THE CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO MINIMISE DISTURBANCE TO EXISTING VEGETATION AND GROUND COVER OUTSIDE THE MINIMUM AREAS REQUIRED TO COMPLETE THE WORKS AND SHALL BE RESPONSIBLE FOR RECTIFICATION, AT ITS OWN COST, OF ANY DISTURBANCE BEYOND THOSE AREAS.
3. PROVIDE GULLY GRATE INLET SEDIMENT TRAPS AT ALL GULLY PITS.
4. PROVIDE SILT FENCING ALONG PROPERTY LINE AS DIRECTED BY SUPERINTENDENT.
5. ADDITIONAL CONTROL DEVICES TO BE PLACED WHERE DIRECTED BY THE PRINCIPLE.
6. ALTERNATIVE DESIGNS TO BE APPROVED BY SUPERINTENDENT PRIOR TO CONSTRUCTION.
7. WASH DOWN/RUMBLE AREA TO BE CONSTRUCTED WITH PROVISIONS RESTRICTING ALL SILT AND TRAFFICKED DEBRIS FROM ENTERING THE STORMWATER SYSTEM.
8. NO WORK OR STOCKPILING OF MATERIALS TO BE PLACED OUTSIDE OF SITE WORK BOUNDARY.
9. APPROPRIATE EROSION AND SEDIMENT CONTROLS TO BE USED TO PROTECT STOCKPILES AND MAINTAINED THROUGH OUT CONSTRUCTION.
10. IT IS THE CONTRACTORS RESPONSIBILITY TO TAKE DUE CARE OF NATURAL VEGETATION. NO CLEARING IS TO BE UNDERTAKEN WITHOUT PRIOR APPROVAL FROM THE SUPERINTENDENT.
11. TO AVOID DISTURBANCE TO EXISTING TREES, EARTHWORKS WILL BE MODIFIED AS DIRECTED ON-SITE BY THE SUPERINTENDENT.
12. THE LOCATION OF EROSION AND SEDIMENTATION CONTROLS WILL BE DETERMINED ON SITE BY THE SUPERINTENDENT.
13. ACCESS TRACKS THROUGH THE SITE WILL BE LIMITED TO THOSE DETERMINED BY THE SUPERINTENDENT AND THE CONTRACTOR PRIOR TO ANY WORK COMMENCING.
14. ALL SETTING OUT IS THE RESPONSIBILITY OF THE CONTRACTOR PRIOR TO WORKS COMMENCING ON SITE. THE SUPERINTENDENT'S SURVEYOR SHALL PEG ALL ALLOTMENT BOUNDARIES, PROVIDE COORDINATE INFORMATION TO THESE PEGS AND PLACE BENCH MARKS. THE CONTRACTOR SHALL SET OUT THE WORKS FROM AND MAINTAIN THESE PEGS.
15. PLANS ARE MINIMUM REQUIREMENTS AND ARE TO BE USED AS A GUIDE ONLY. EXACT MEASURES USED SHALL BE DETERMINED ON SITE IN CONJUNCTION WITH PROGRAM OF CONTRACTORS WORKS etc.



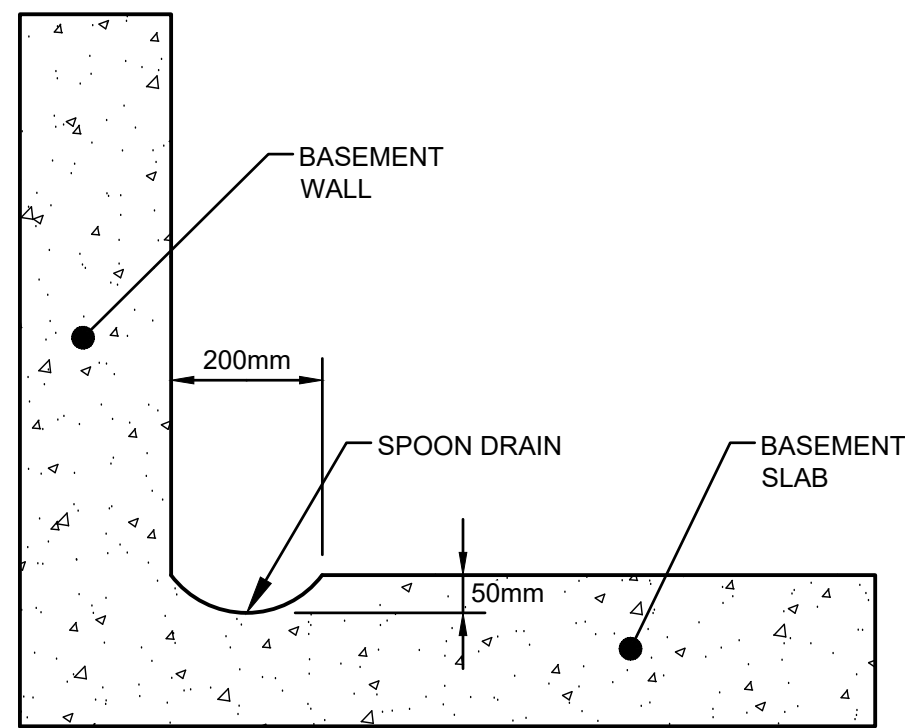
RAINWATER OUTLET DETAIL  
N.T.S.



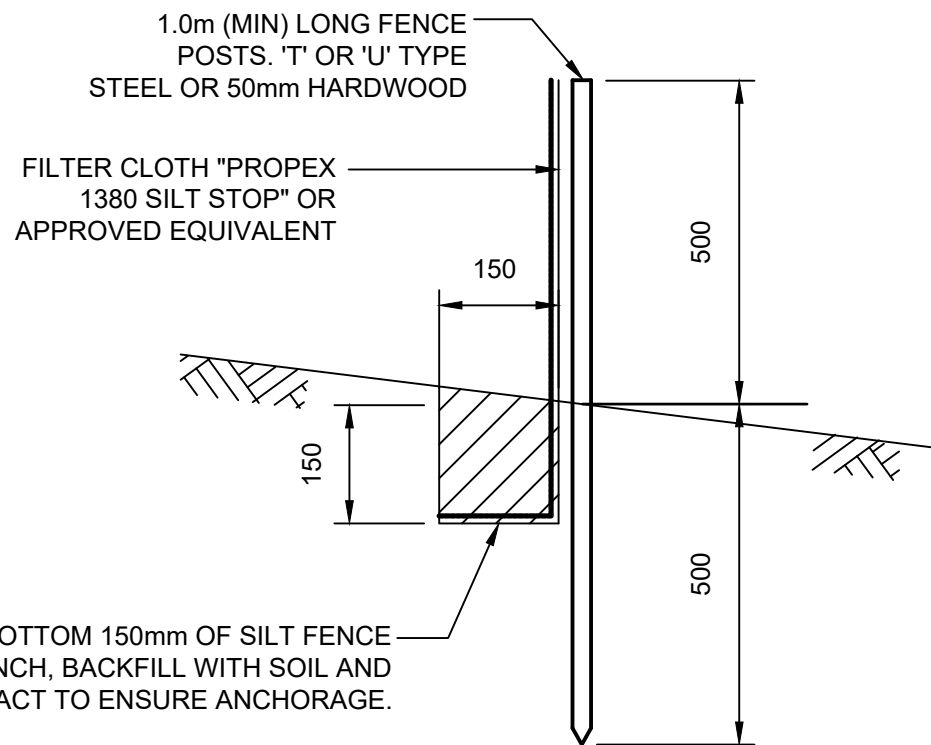
GRADED DRAIN DETAIL  
N.T.S.



TYPICAL SUBSOIL DRAIN  
N.T.S



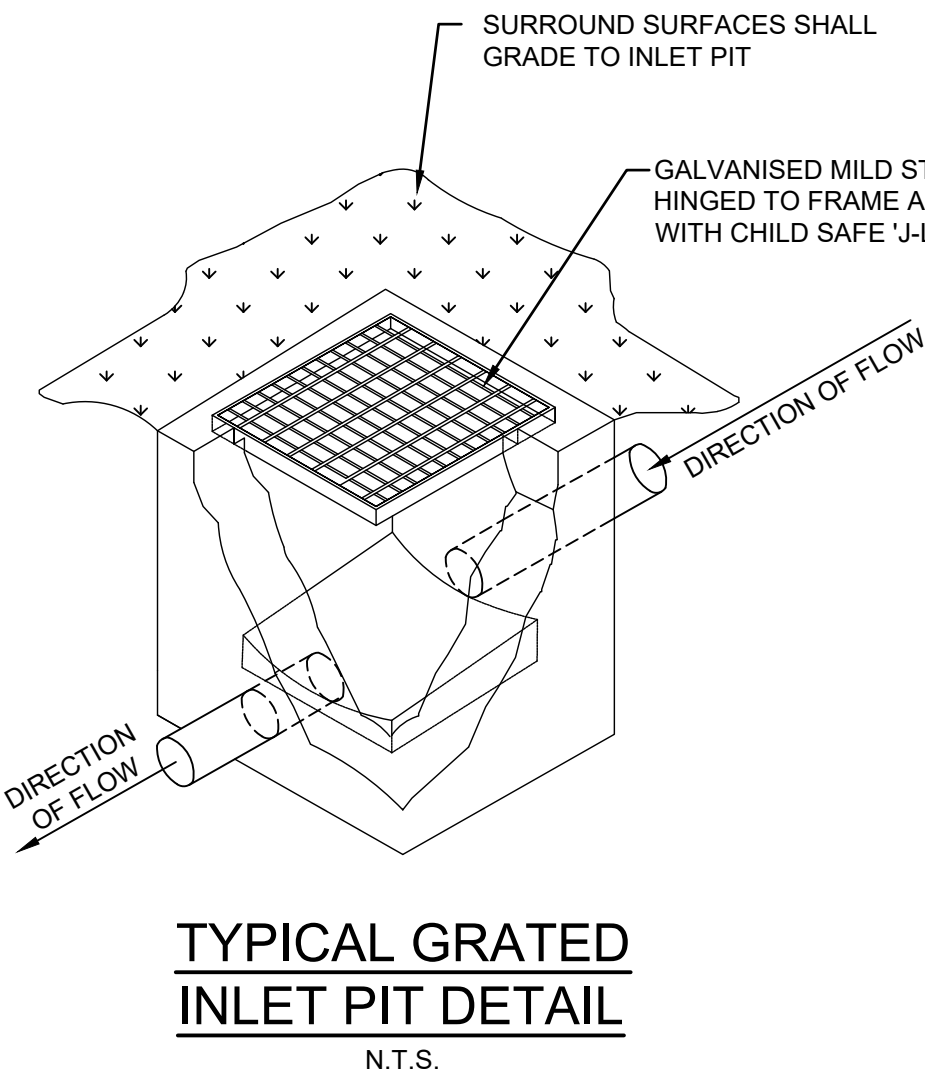
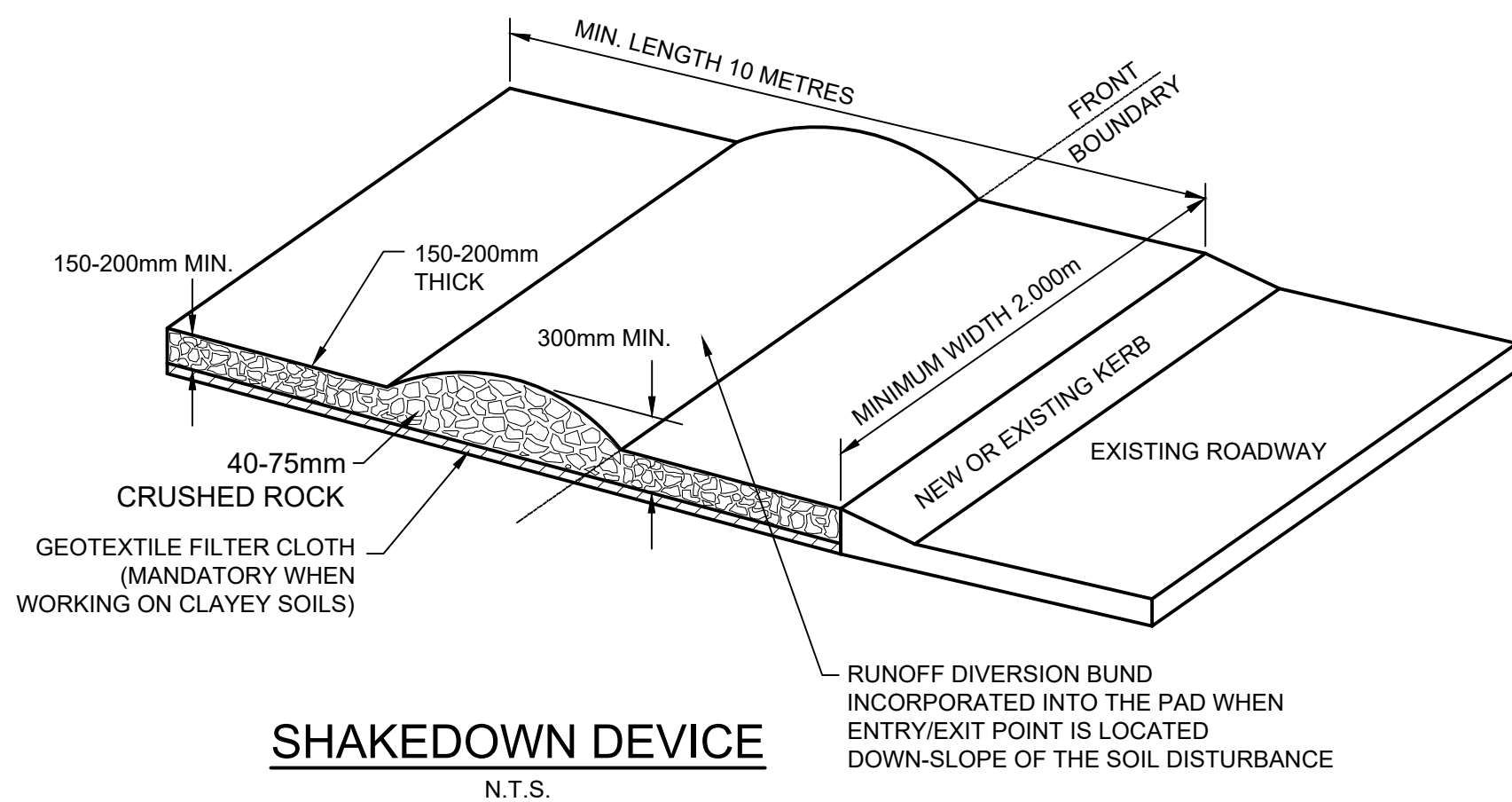
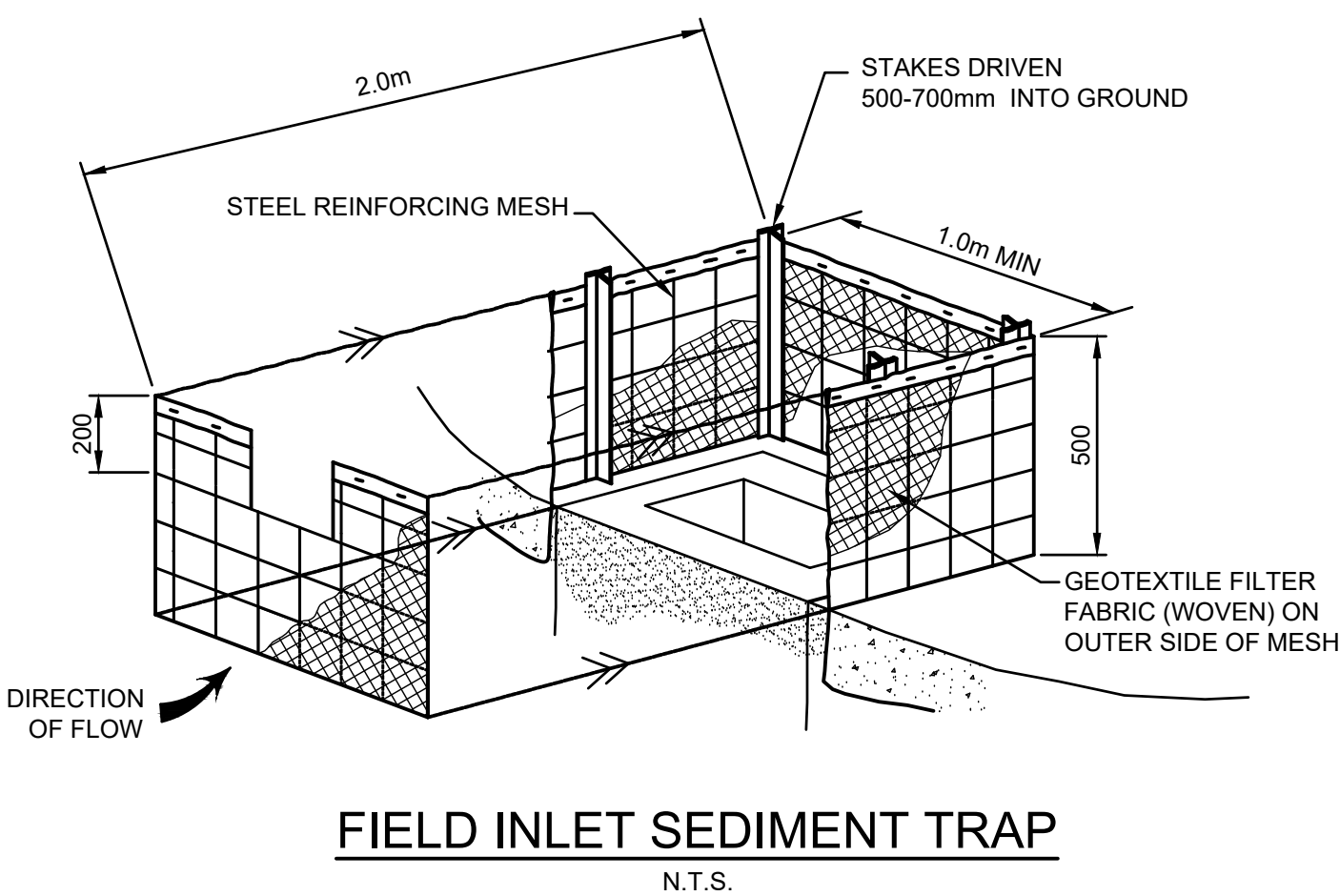
SPOON DRAIN SECTION DETAIL  
SCALE 1:10



SILT FENCE DETAIL  
N.T.S

SILT FENCE NOTES:

1. FILTER CLOTH TO BE FASTENED SECURELY TO POSTS WITH GALVANISED WIRE TIES, STAPLES OR ATTACHMENT BELTS.
2. POSTS SHOULD NOT BE SPACED MORE THAN 3.0m APART.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 150mm AND FOLDED.
4. FOR EXTRA STRENGTH TO SILT FENCE, WOVEN WIRE (14mm GAUGE, 150mm MESH SPACING) TO BE FASTENED SECURELY BETWEEN FILTER CLOTH AND POSTS BY WIRE TIES OR STAPLES
5. INSPECTIONS SHALL BE PROVIDED ON A REGULAR BASIS, ESPECIALLY AFTER RAINFALL AND EXCESSIVE SILT DEPOSITS REMOVED WHEN 'BULGES' DEVELOP IN SILT FENCE
6. SEDIMENT FENCES SHALL BE CONSTRUCTED WITH SEDIMENT TRAPS AND EMERGENCY SPILLWAYS AT SPACINGS NO GREATER THAN 40m ON FLAT TERRAIN DECREASING TO 20m SPACINGS ON STEEP TERRAIN.



TYPICAL GRATED INLET PIT DETAIL  
N.T.S.

NOT FOR CONSTRUCTION

A	ISSUE FOR DEVELOPMENT APPLICATION	25/11/2021	JTF	JSF	
Issue	Description	Date	Design	Checked	
0	1cm at full size	10cm	20cm		

Certification By Dr. Michel Ghasya  
in affiliation with Joe Bacha (formerly  
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Architect  
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PHONE : (02) 9648 8848

Client  
**Pradip Dhakal**  
  
Council  
**City of Parramatta Council**

Scale  
  
SCALE 1:10 @ A1

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Project  
**1-3 CROWN STREET, HARRIS PARK  
PROPOSED MIXED-USE DEVELOPMENT  
STORMWATER CONCEPT PLANS  
DEVELOPMENT APPLICATION**

Drawing Title	<b>MISCELLANEOUS DETAILS SHEET</b>			
Scale	A1 As Shown	Project No. 202166	Dwg. No. 108	Issue A