

# 23 - 25 CHARLES STREET, LIVERPOOL

## PROPOSED MULTI-UNIT DEVELOPMENT

### STORMWATER CONCEPT PLANS



LOCALITY PLAN  
N.T.S

DRAWING INDEX	
Drawing No.	DESCRIPTION
000	COVER SHEET PLAN
101	STORMWATER LAYOUT PLAN GROUND LEVEL
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103	ON-SITE DETENTION DETAILS AND CALCULATION SHEETS SHEET 2 OF 2
104	SEDIMENT & EROSION CONTROL PLAN

NOT FOR CONSTRUCTION

				Certification By Dr. Anthony Hasham (NPER):		Architect		Council		Scale		Project		Drawing Title	
						Idraft Architects Pty Ltd		Liverpool City Council				23 - 25 CHARLES STREET, LIVERPOOL PROPOSED MULTI-UNIT DEVELOPMENT STORMWATER CONCEPT PLANS DEVELOPMENT APPLICATION		COVER SHEET PLAN	
A				09/12/2020		AGA		JSF							
Issue				Description		Date		Design		Checked		Scale		Project No.	
1				10m at full size		10m		20m				A1		200977	
												Dwg. No.		000	
												Issue		A	

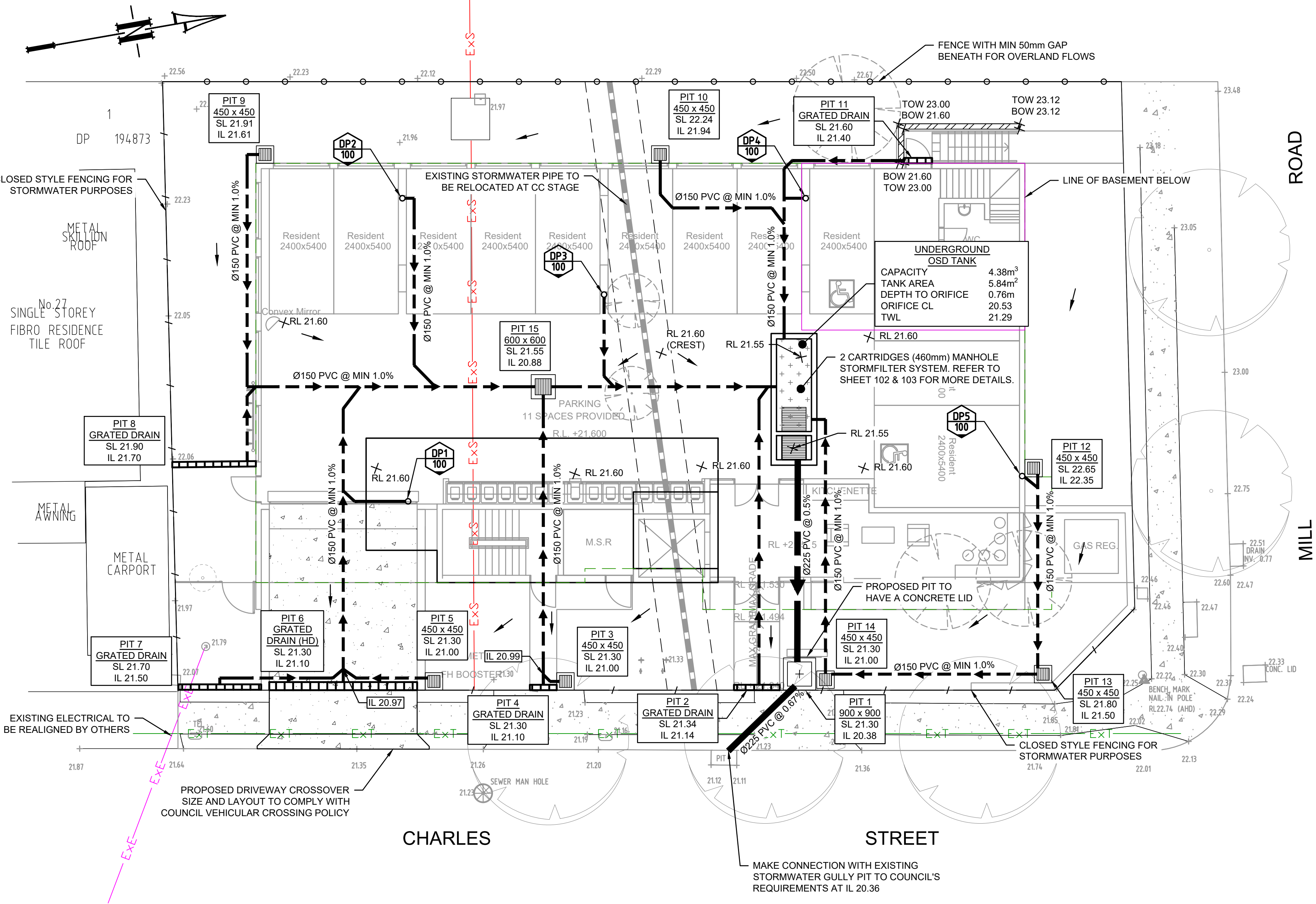


LEGEND

- PROPOSED STORMWATER
- EXISTING STORMWATER
- EXISTING SEWER MAIN
- EXISTING TELSTRA
- GUTTER DOWNPIPE
- SURFACE FLOW ARROWS
- DESIGN SURFACE LEVEL
- EXISTING SURFACE LEVEL
- INVERT LEVEL OF PIPE JUNCTION
- FENCE WITH 50mm GAP BENEATH FOR OVERLAND FLOWS
- CLOSED STYLE FENCING
- MASONRY RETAINING WALL TO STRUCTURAL ENGINEER'S DETAILS
- TREES TO BE RETAINED
- TREES TO BE REMOVED

GENERAL NOTES

- ALL LINES ARE TO BE Ø90 uPVC 1.0% GRADE UNLESS NOTED OTHERWISE. CHARGED LINES TO BE SEWERGRADE & SEALED.
- EXISTING SERVICES LOCATIONS SHOWN INDICATIVE ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE & LEVEL ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS.
- ALL PIPES TO HAVE MIN 150mm COVER IF LOCATED WITHIN PROPERTY.
- ALL PITS IN DRIVEWAYS TO BE 450x450 CONCRETE AND ALL PITS IN LANDSCAPED AREAS TO BE 450x450 PLASTIC.
- PITS LESS THAN 600mm DEEP MAY BE BRICK, PRECAST OR CONCRETE.
- ALL BALCONIES AND ROOFS TO BE DRAINED AND TO HAVE SAFETY OVERFLOWS IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS.
- ALL EXTERNAL SLABS TO BE WATERPROOFED.
- ALL GRATES TO HAVE CHILD PROOF LOCKS.
- ALL DRAINAGE WORKS TO AVOID TREE ROOTS.
- ALL DPs TO HAVE LEAF GUARDS.
- ALL EXISTING LEVELS TO BE CONFIRMED BY BUILDER PRIOR TO CONSTRUCTION.
- ALL WORK WITHIN COUNCIL RESERVE TO BE INSPECTED BY COUNCIL PRIOR TO CONSTRUCTION.
- COUNCIL'S ISSUED FOOTWAY DESIGN LEVELS TO BE INCORPORATED INTO THE FINISHED LEVELS ONCE ISSUED BY COUNCIL.
- ALL WORK SHALL BE IN ACCORDANCE WITH B.C.A. AND A.S.3500.3.
- REFER TO LANDSCAPE ARCHITECT'S DRAWINGS FOR LANDSCAPING.
- CARE TO BE TAKEN AROUND EXISTING SEWER. STRUCTURAL ADVICE IS REQUIRED FOR SEWER PROTECTION AGAINST ADDITIONAL LOADING FROM NEW PITS, PIPES, RETAINING WALLS AND OSD BASIN WATER LEVELS.
- ALL PIPES IN BALCONIES TO BE Ø65 uPVC CAST IN CONCRETE SLAB. CONTRACTOR TO PROVIDE A BREAK / OPEN VOID IN RAIL / BALLUSTRADE FOR STORMWATER EMERGENCY OVERFLOW. ALL ENCLOSED AREAS/PLANTER BOXES TO BE FITTED WITH FLOOR WASTES & DRAINED TO OSD. DOWNPIPES TO BE CHECKED BY ARCHITECT & PLUMBER PRIOR TO CONSTRUCTION.



PIPES NOTE:

Ø65 PVC @ MIN 1.0%  
Ø90 PVC @ MIN 1.0%  
Ø100 PVC @ MIN 1.0%  
Ø150 PVC @ MIN 1.0%  
Ø225 PVC @ MIN 0.5%  
Ø300 PVC @ MIN 0.4%  
UNLESS NOTED OTHERWISE

ROOF NOTE:

IT IS CONTRACTOR'S RESPONSIBILITY TO ENSURE MINIMUM 30 TO 40MM OF PONDING IS ACHIEVED OVER THE RAINWATER OUTLETS BY GRADING CATCHMENTS' SURFACES AT MINIMUM 0.5% FALL FOR PAVED SURFACES AND MINIMUM 1% FALL FOR OTHER SURFACES.

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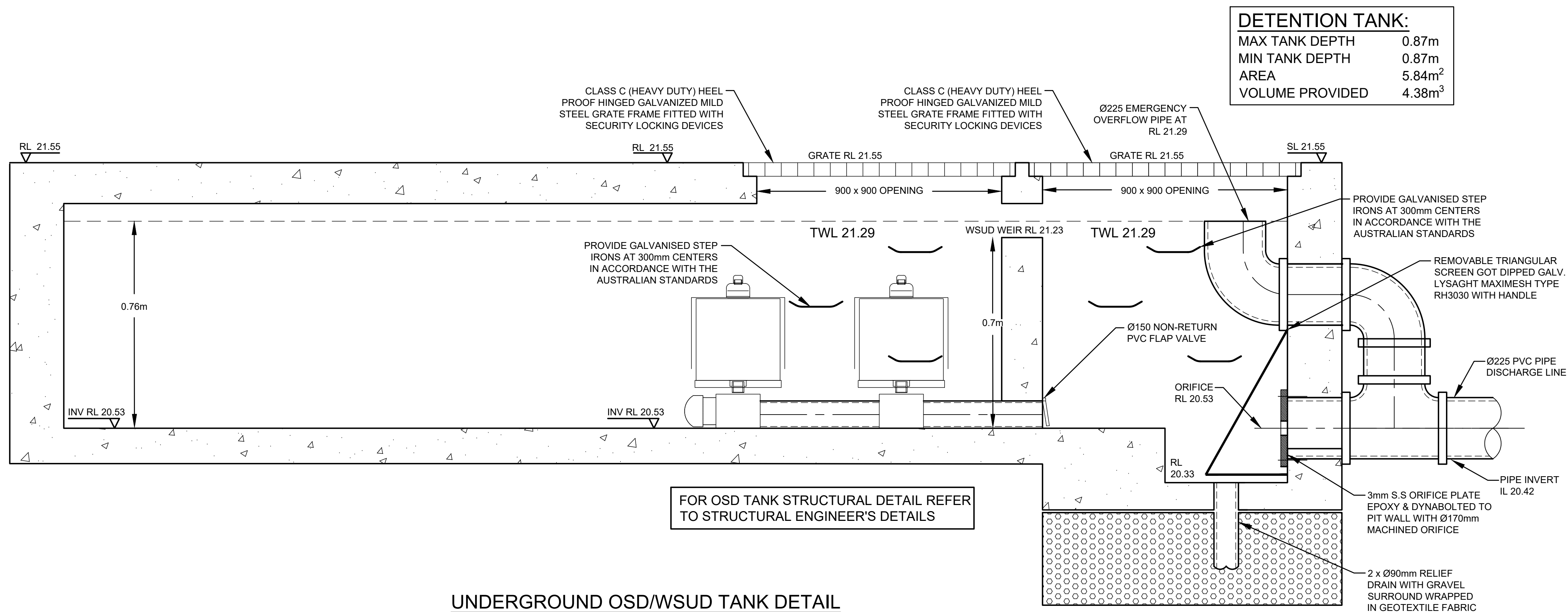
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Project  
23 - 25 CHARLES STREET, LIVERPOOL  
PROPOSED MULTI-UNIT DEVELOPMENT  
STORMWATER CONCEPT PLANS  
DEVELOPMENT APPLICATION

Drawing Title  
STORMWATER CONCEPT PLAN  
Scale A1 Project No. 200977 Dwg. No. 101 Issue A

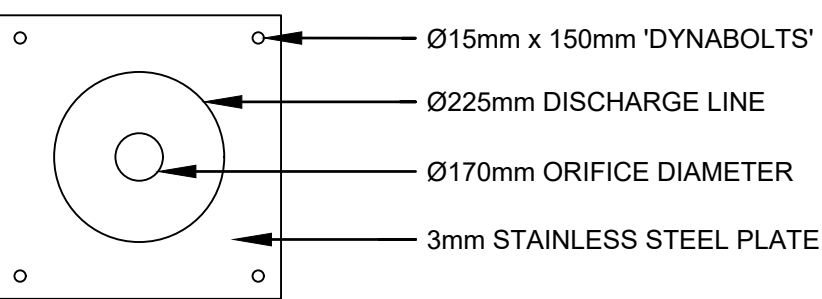




DETENTION TANK:	
MAX TANK DEPTH	0.87m
MIN TANK DEPTH	0.87m
AREA	5.84m <sup>2</sup>
VOLUME PROVIDED	4.38m <sup>3</sup>

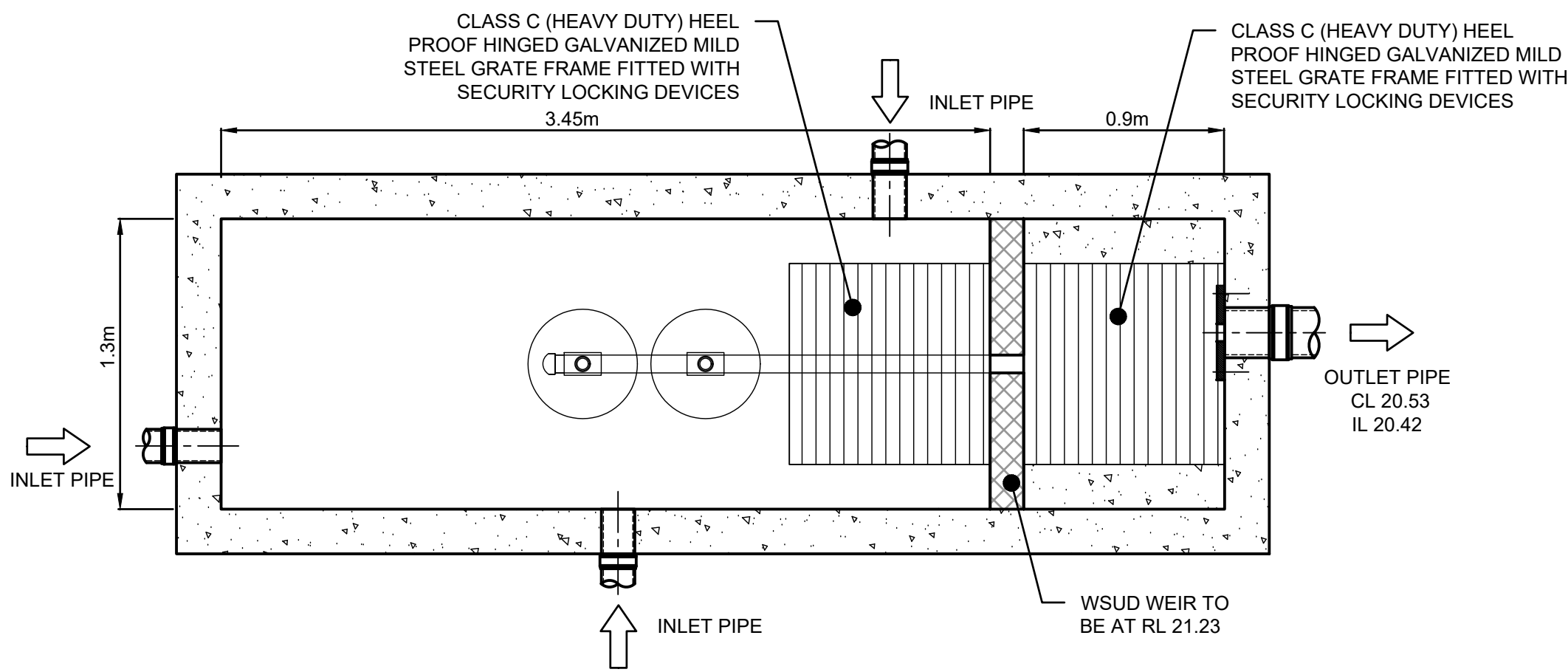
### UNDERGROUND OSD/WSUD TANK STAGED STORAGE CALCULATIONS

DEPTH (mm)	AREA (m <sup>2</sup> )	CUMULATIVE VOLUME (m <sup>3</sup> )
0	5.84	0
100	5.84	0.438
200	5.84	1.022
300	5.84	1.606
400	5.84	2.190
500	5.84	2.774
600	5.84	3.358
700	5.84	3.942
760	5.84	4.385



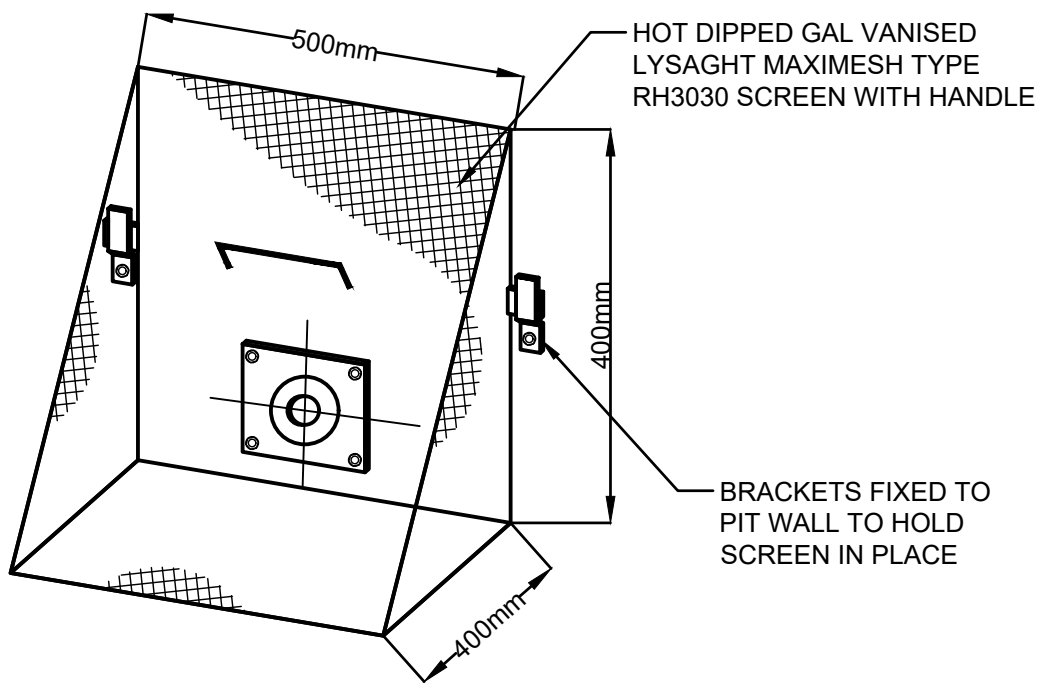
ORIFICE PLATE DETAIL  
SCALE 1:10

UNDERGROUND OSD/WSUD TANK DETAIL  
SCALE 1:10

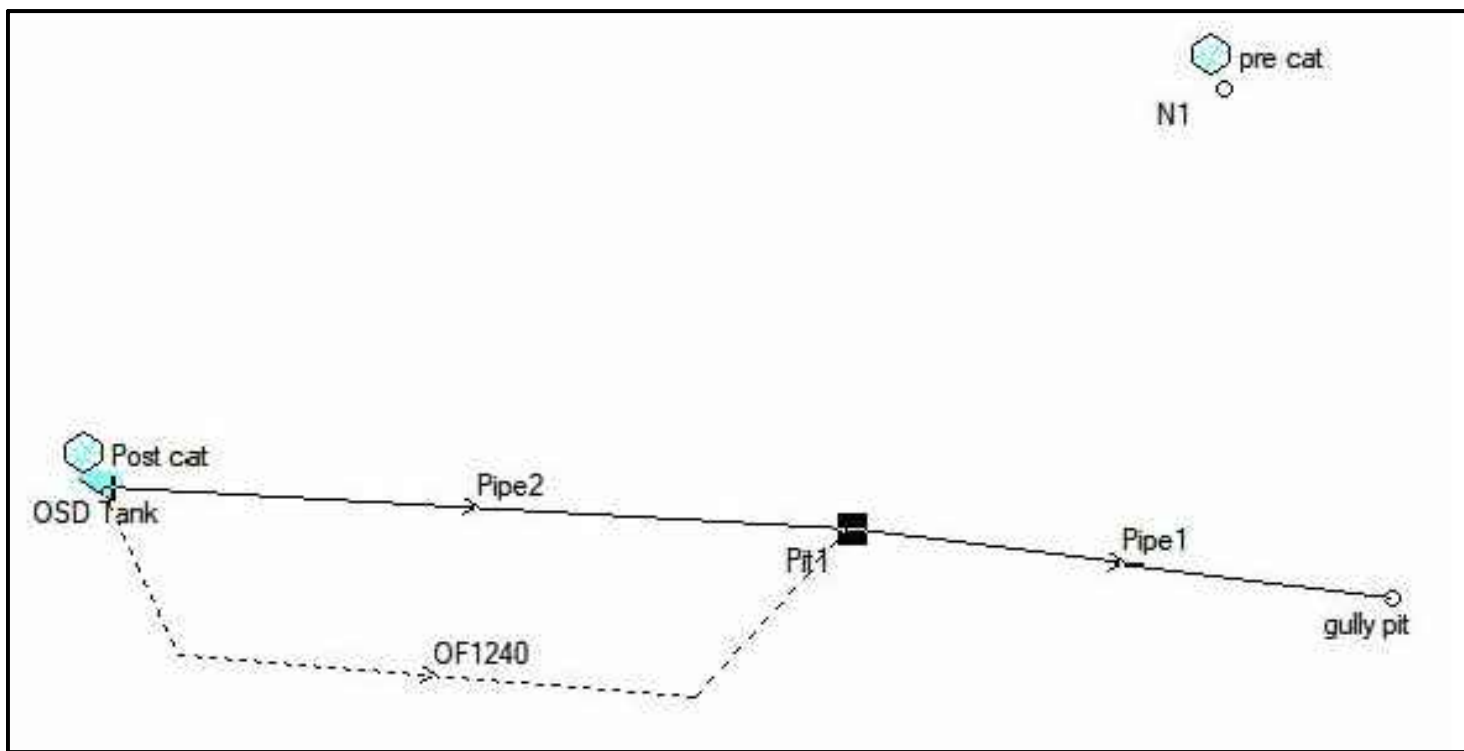


UNDERGROUND OSD/WSUD TANK DETAIL  
PLAN VIEW  
SCALE 1:25

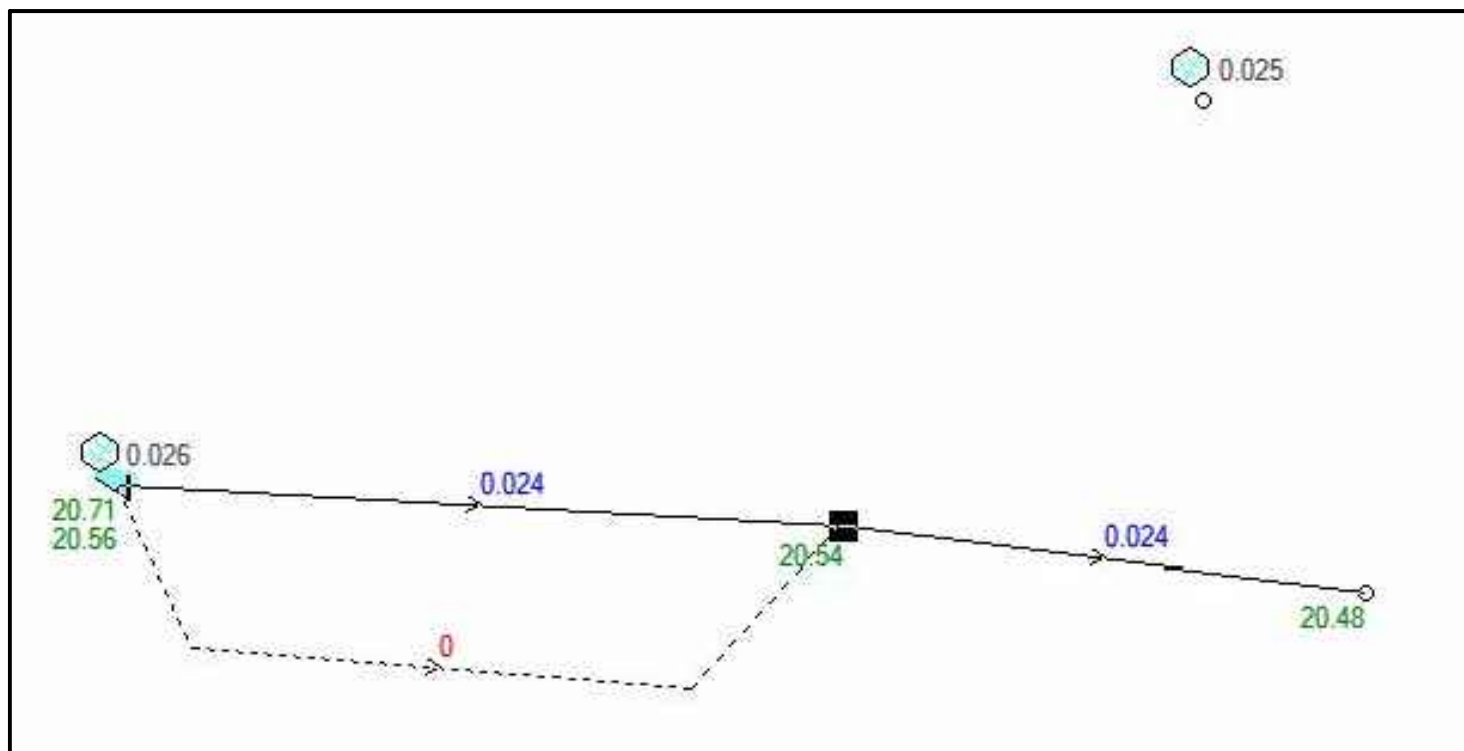
YEAR (event)	PRE DEVELOP FLOWS (l/s)	ORIFICE FLOWS (l/s)	OSD DISCHRG (l/s)	FLOWS BYPASSING OSD (l/s)	TOTAL SITE DISCHARGE (l/s)	WATER STORAGE LEVEL (m)
5	25	24	24	0	24	20.71
100	39	37	37	0	37	21.27



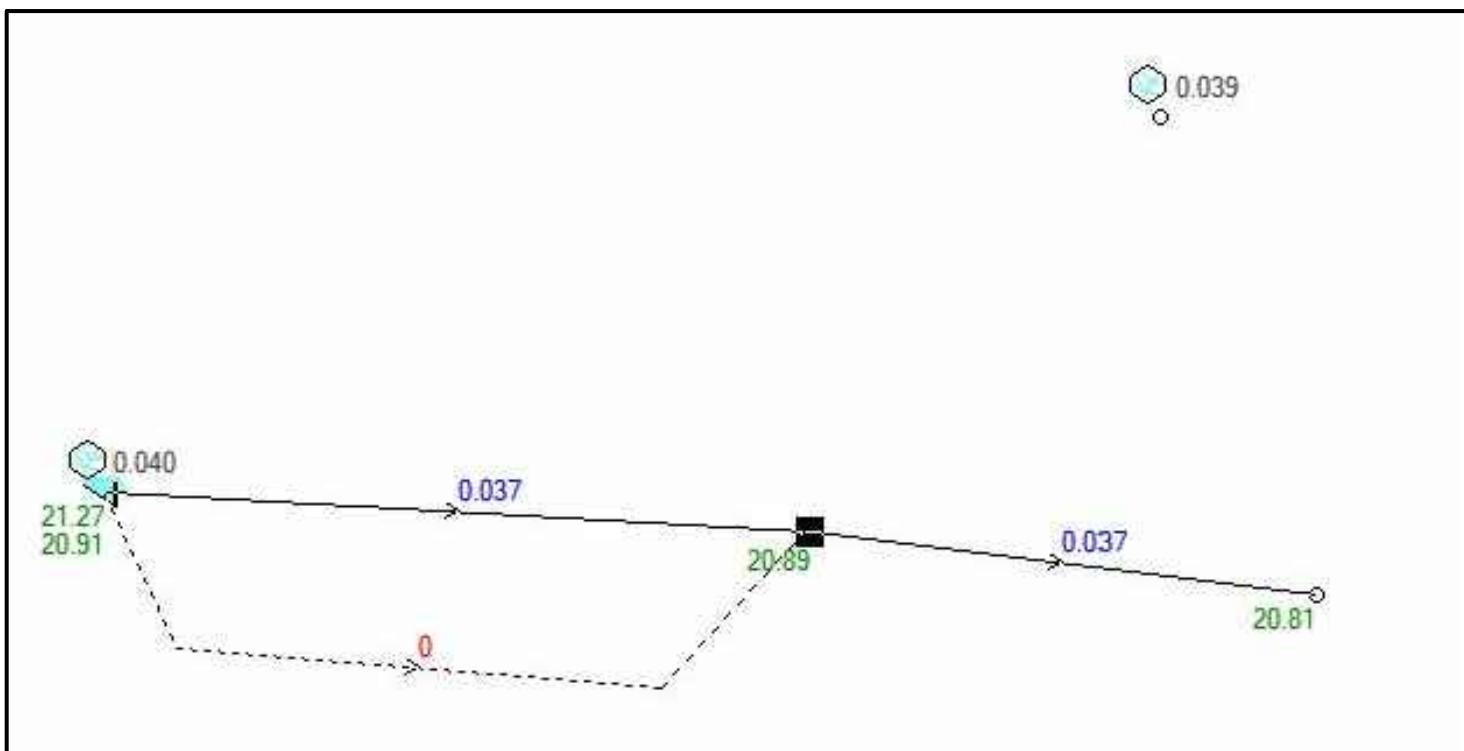
TRASH SCREEN DETAIL  
N.T.S.



DRAINS WITHOUT RESULTS  
N.T.S.



DRAINS RESULTS 5yr  
N.T.S.



DRAINS RESULTS 100yr  
N.T.S.

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Issue	Description	Date	Design	Checked
A	ISSUE FOR DEVELOPMENT APPLICATION	09/12/2020	AGA	JSF

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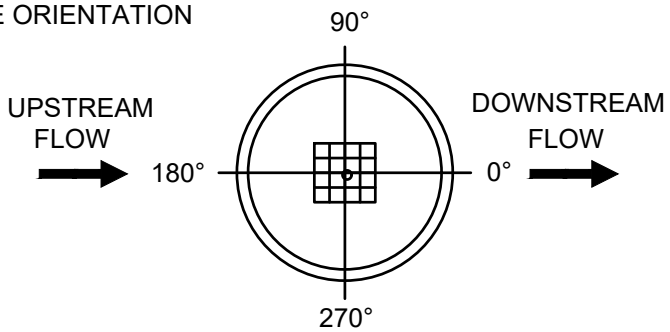
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SCALE 1:10 @ A1  
0 0.2 0.4 0.6 0.8 1.0 1.2m  
SCALE 1:25 @ A1

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Project  
**23 - 25 CHARLES STREET, LIVERPOOL  
PROPOSED MULTI-UNIT DEVELOPMENT  
STORMWATER CONCEPT PLANS  
DEVELOPMENT APPLICATION**

Drawing Title  
**ON-SITE DETENTION DETAILS  
AND CALCULATION SHEETS  
SHEET 1 OF 2**  
Scale A1 Project No. 200977 Dwg. No. 102 Issue A



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)	2		
CARTRIDGE HEIGHT (310, 460 or 690mm)	460		
MEDIA TYPE (PERLITE, PERLITE/ZEOLITE OR ZPG)	ZPG		
PRECAST VAULT WEIGHT	2524 kg		
PRECAST LID WEIGHT	547 kg		
PIPE DATA:	I.L.	MATERIAL	DIAMETER
INLET PIPE #1	20.53	PVC	150
INLET PIPE #2	20.53	PVC	150
INLET PIPE #3	20.53	PVC	150
OUTLET PIPE	20.42	PVC	225
PIPE ORIENTATION			
			
LADDER	YES/NO		
ANTI-FLOTATION BALLAST	N/A	N/A	
	N/A	N/A	

STORMFILTER TABLE

N.T.S.

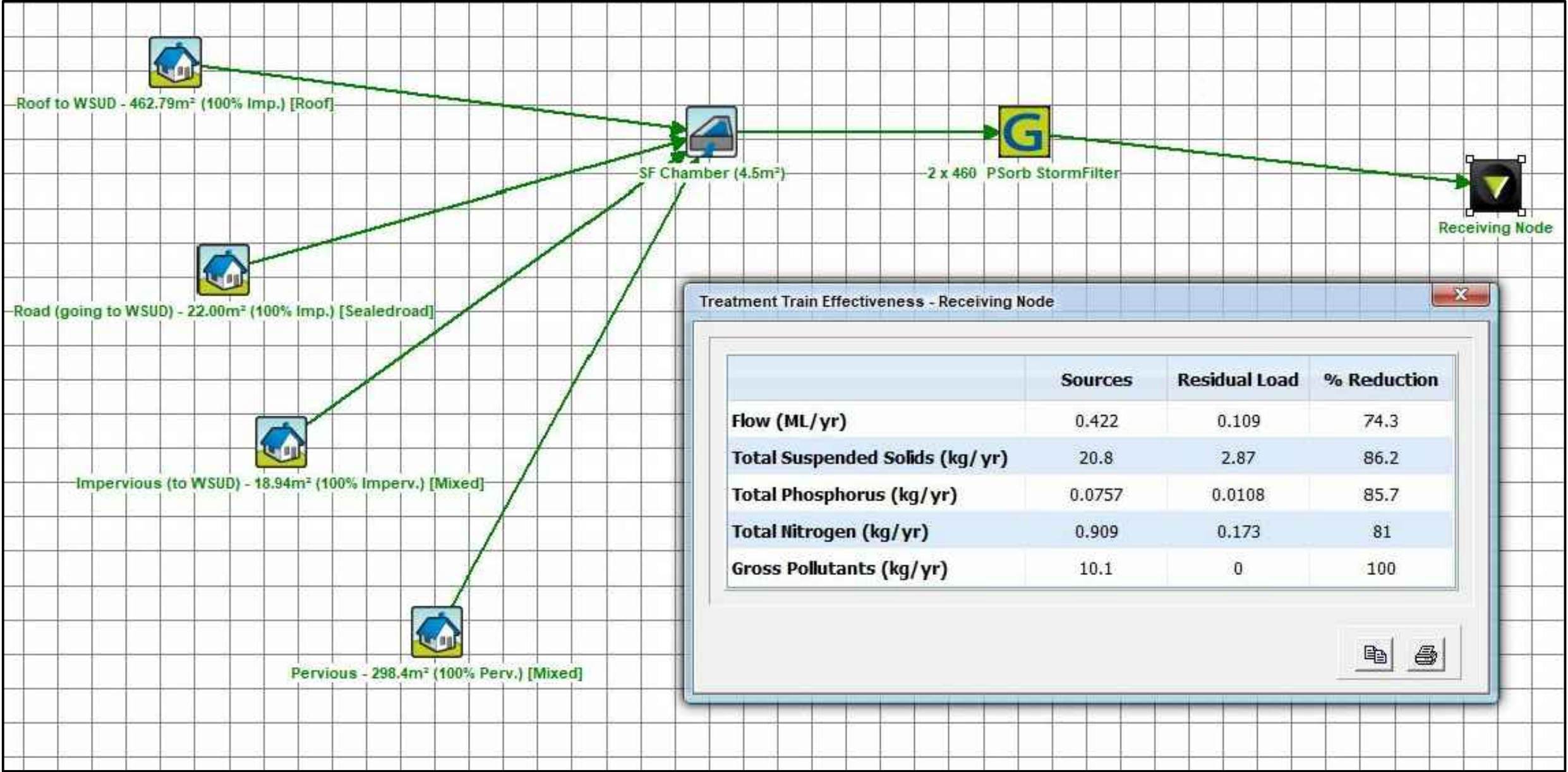
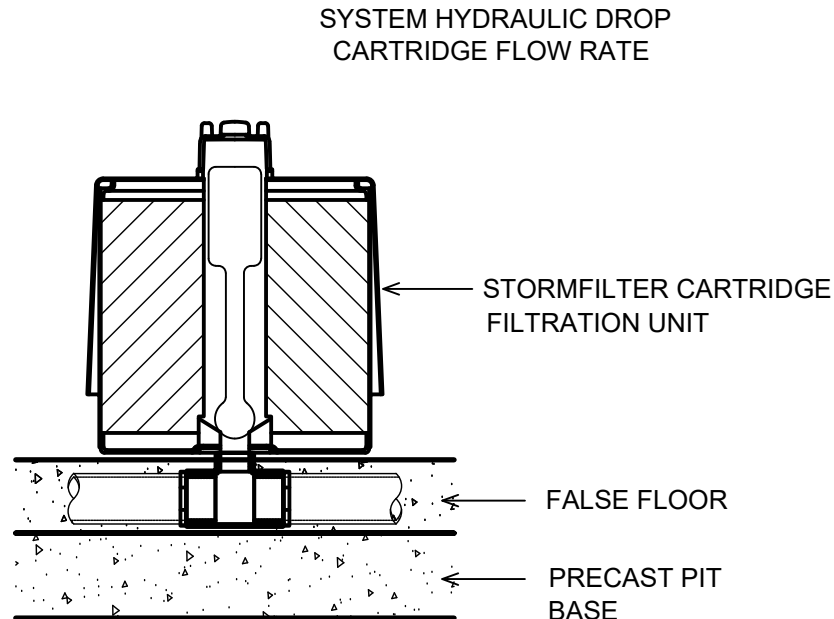
GENERAL NOTES

1. 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.
2. 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.
3. 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.
4. FOR SHALLOW, LOW DROP OR SPECIAL DESIGN CONSTRAINTS, CONTACT STORMWATER360 FOR DESIGN OPTIONS.
5. ALL WATER QUALITY PRODUCTS REQUIRE PERIODIC MAINTENANCE AS OUTLINED IN THE O&M GUIDELINES. PROVIDE MINIMUM CLEARANCE FOR MAINTENANCE ACCESS.
6. STRUCTURE AND ACCESS COVERS DESIGNED TO MEET AUSTRROADS T44 LOAD RATING WITH 0-2m FILL MAXIMUM.
7. THE STRUCTURE THICKNESSES SHOWN ARE FOR REPRESENTATIONAL PURPOSES AND VARY REGIONALLY.
8. ANY BACKFILL DEPTH, SUB-BASE, AND OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY SITE CIVIL ENGINEER.
9. STORMFILTER BY STORMWATER360:  
SYDNEY (AU) PHONE: (02) 9525 5833,  
BRISBANE (AU) PHONE: (07) 3272 1872.

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.
- THE STANDARD CONFIGURATION IS SHOWN. ACTUAL CONFIGURATION OF THE SPECIFIED STRUCTURE(S) PER CIVIL ENGINEER WILL BE SHOWN ON SUBMITTAL DRAWING(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/m <sup>2</sup>	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

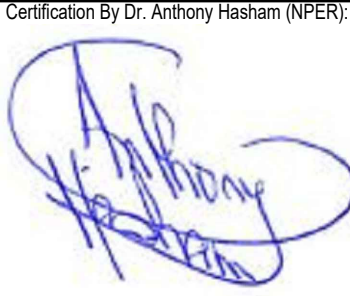


WSUD RESULTS

N.T.S.

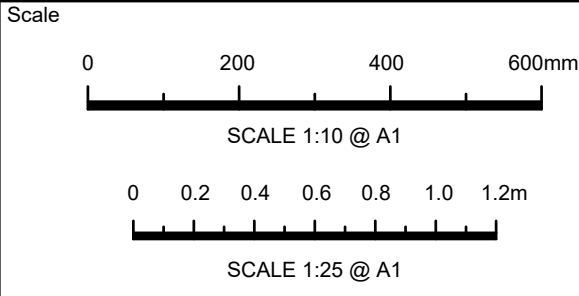
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Scale  
  
SCALE 1:10 @ A1  
SCALE 1:25 @ A1

  
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Drawing Title  
**ON-SITE DETENTION DETAILS  
AND CALCULATION SHEETS  
SHEET 2 OF 2**  
Scale A1 Project No. 200977 Dwg. No. 103 Issue A

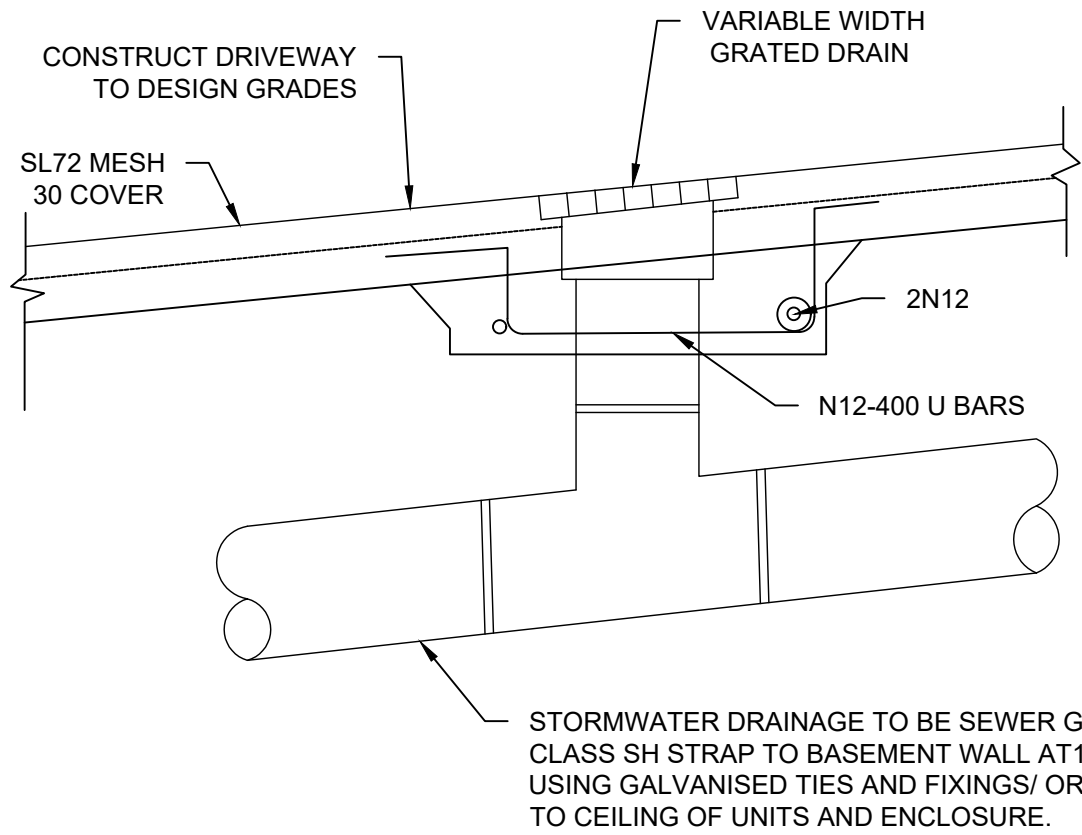


SEDIMENT & EROSION NOTES

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.

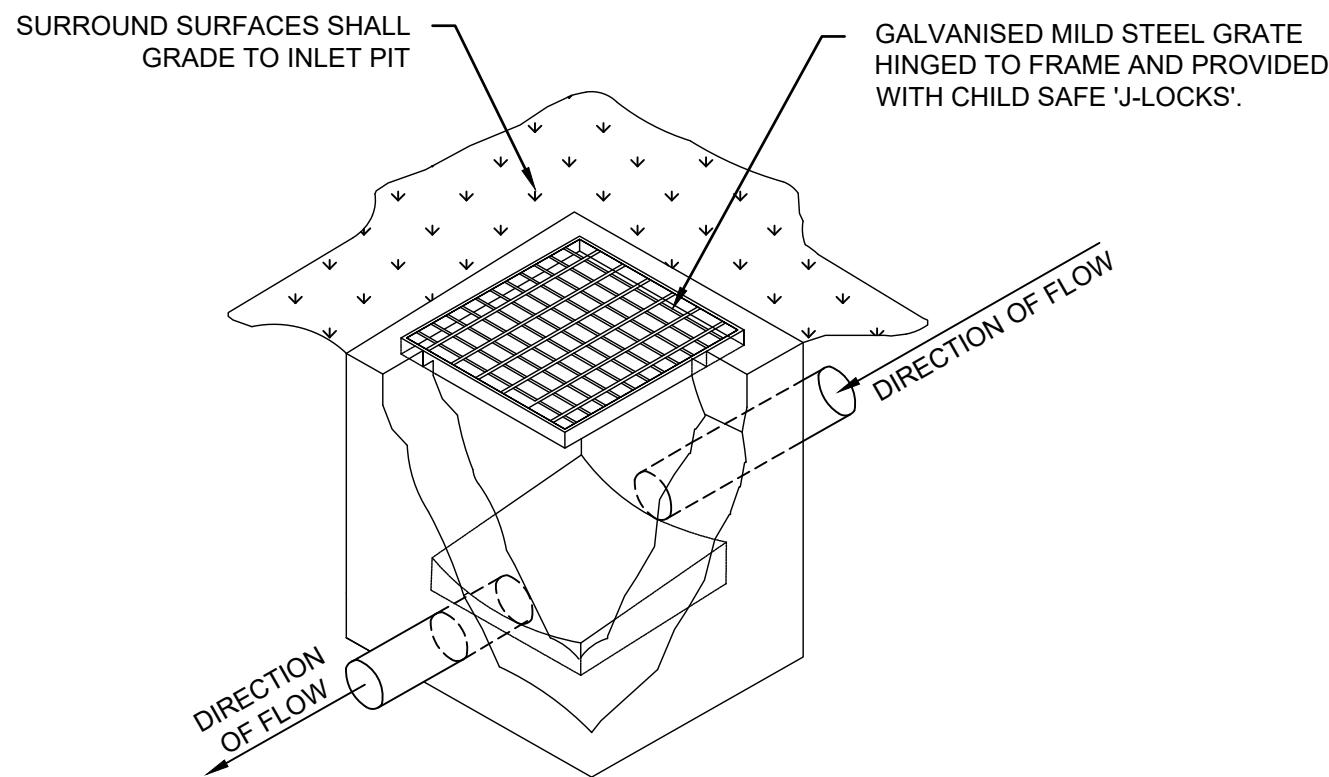
LEGEND

- ExS EXISTING SEWER MAIN (FROM RECORDS)
- ExT EXISTING TELSTRA (FROM RECORDS)
- EXISTING CONTOUR
- EXISTING SURFACE LEVEL
- EARTHWORKS LEVEL
- DESIGN SURFACE LEVEL
- SILT FENCE
- CUT AREA
- STABILISED SITE ACCESS
- 1.8 HIGH CONSTRUCTION BARRIER FENCING
- TREES TO BE RETAINED
- TREES TO BE REMOVED
- INLET PROTECTION



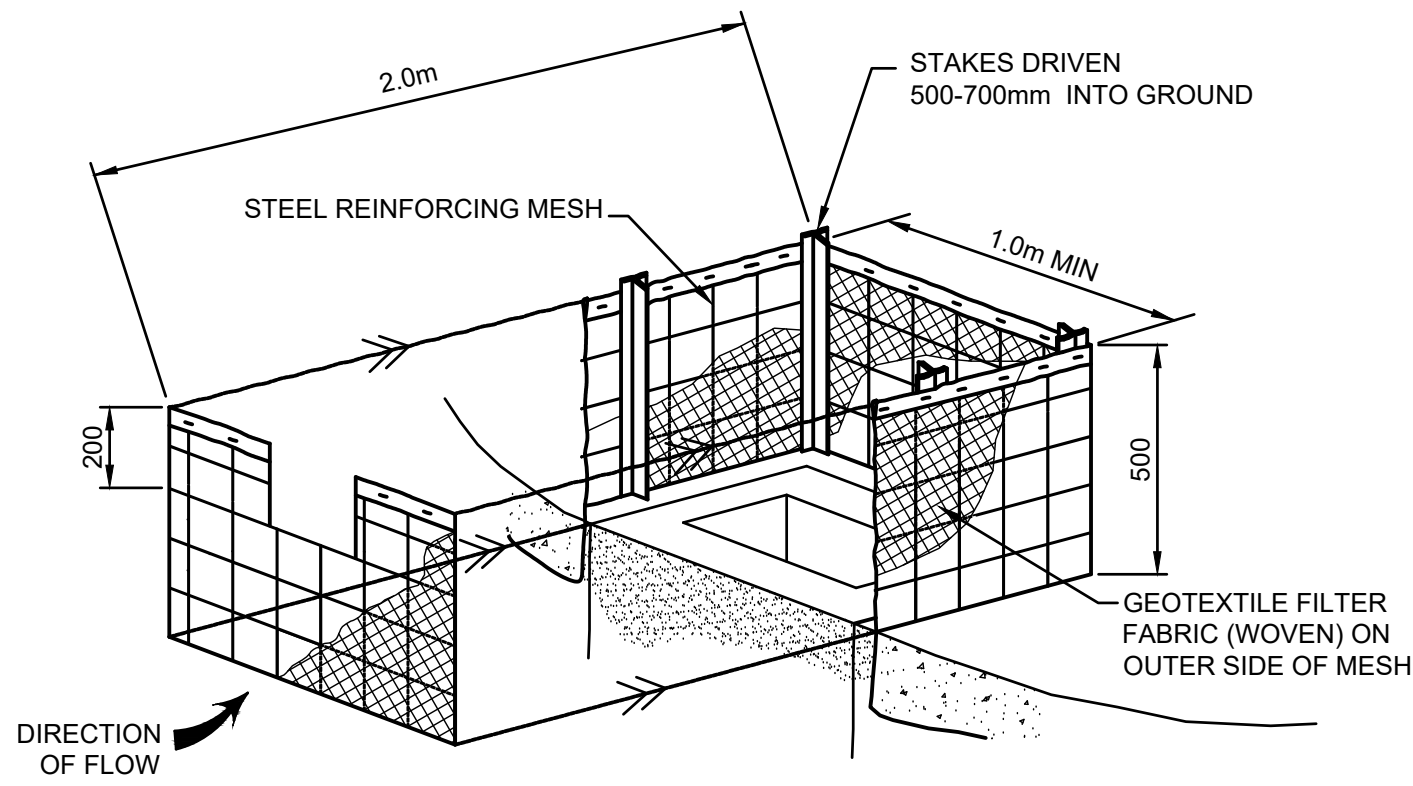
GRATED DRAIN DETAIL

N.T.S.



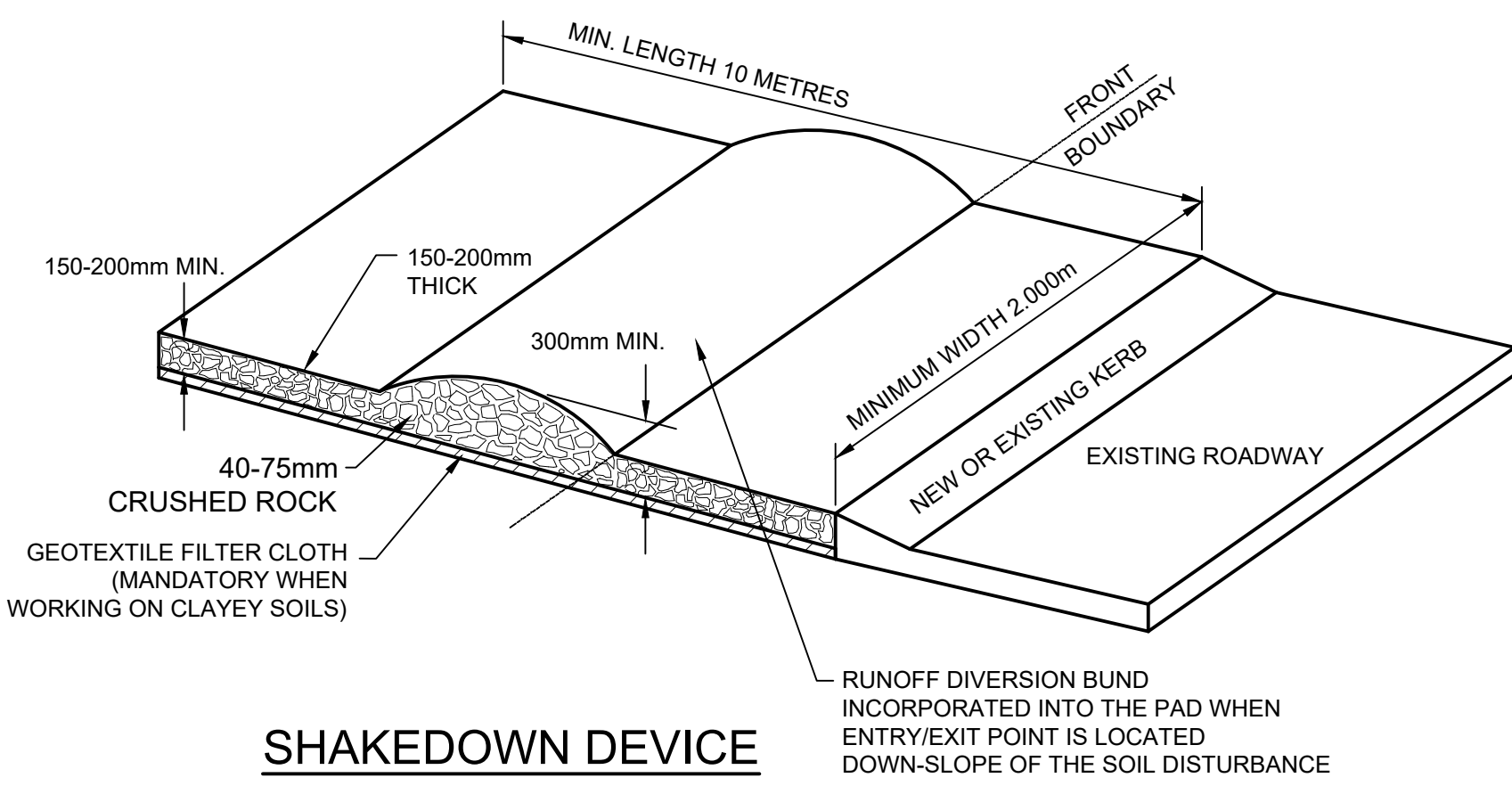
TYPICAL GRATED INLET PIT DETAIL

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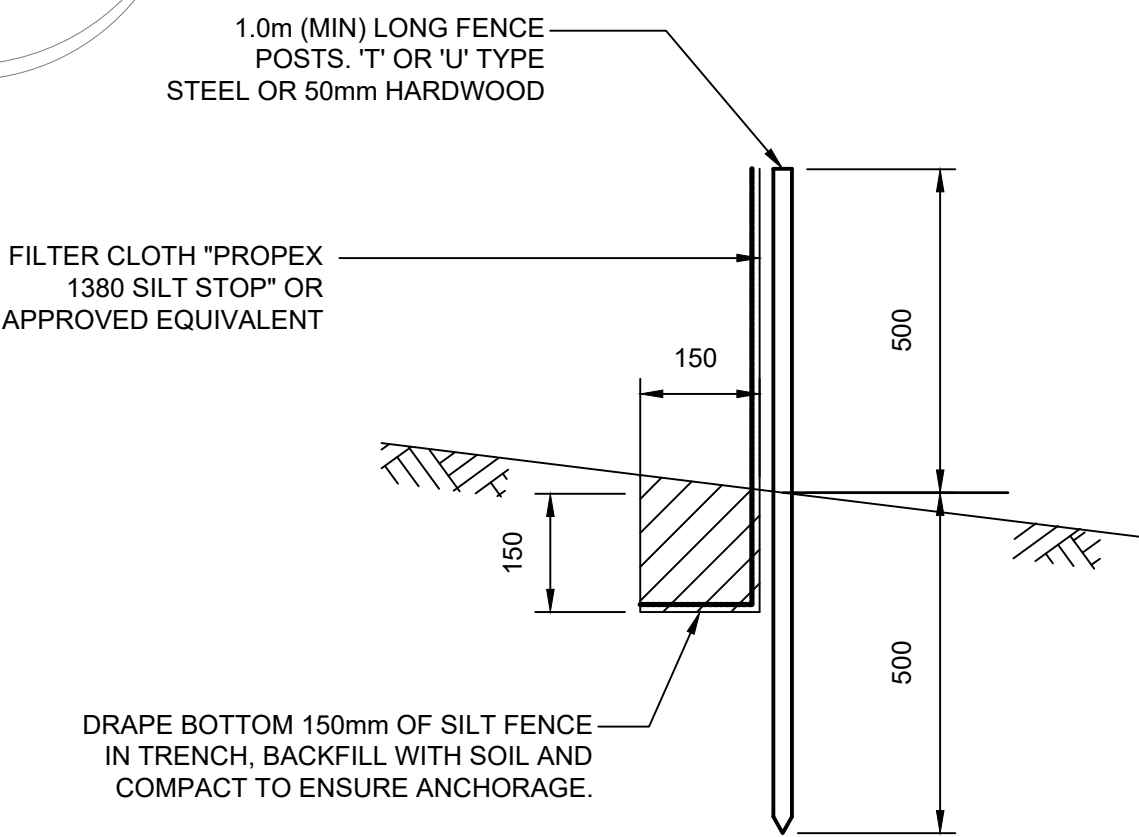
FIELD INLET SEDIMENT TRAP

N.T.S.



SHAKEDOWN DEVICE

N.T.S.



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.

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