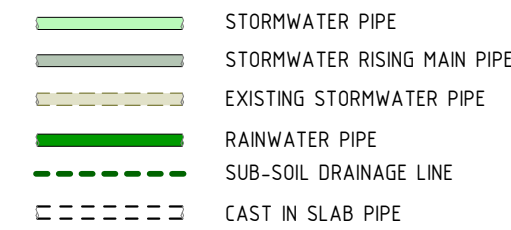


# ST IVES HIGH SCHOOL

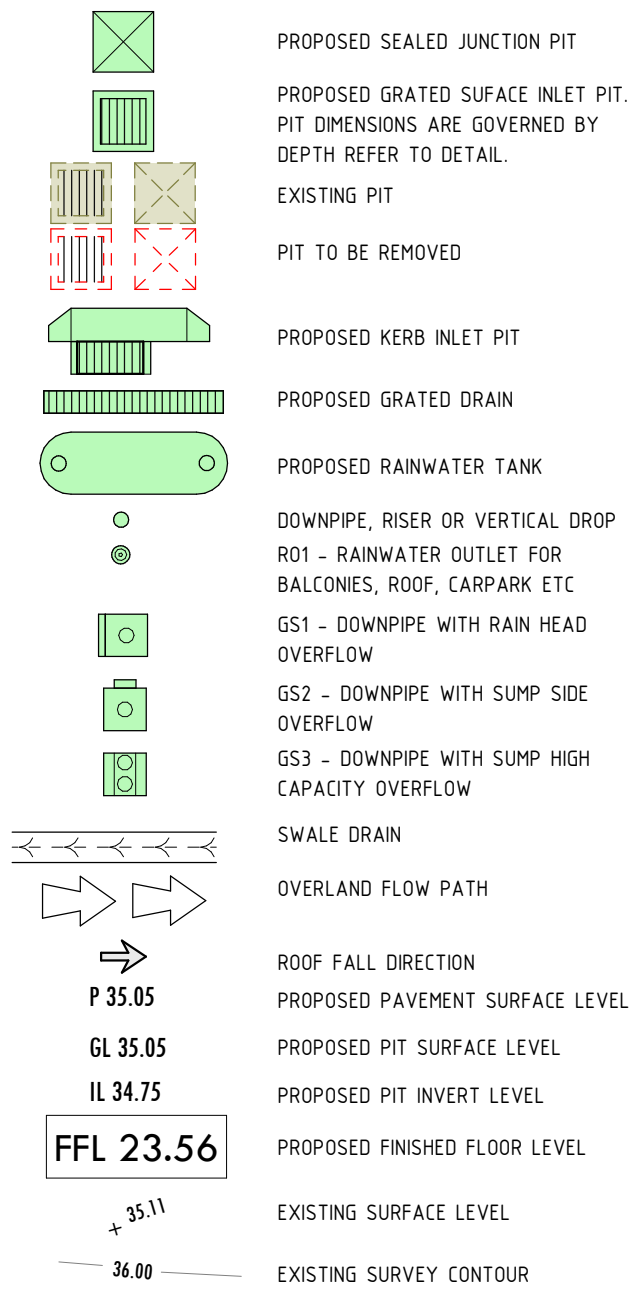
YARRABUNG RD, ST IVES NSW 2075

Job No. 17011065

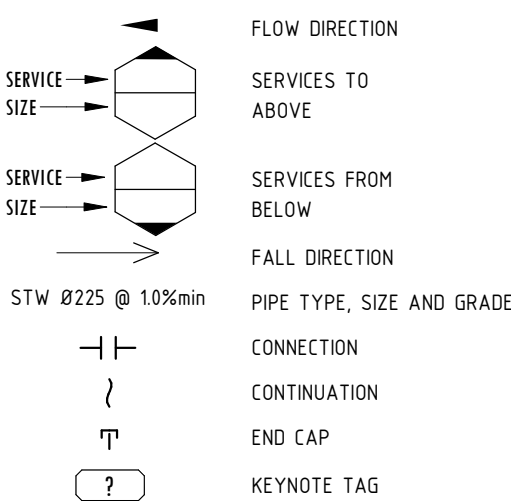
## STORMWATER SERVICES



## STORMWATER LEGEND



## GENERAL PIPEWORK LEGEND



## GENERAL ABBREVIATIONS

AB	ABOVE BENCH
AFFL	ABOVE FINISHED FLOOR LEVEL
CIS	CAST IN SLAB
CL	CENTRELINE
CS	CEILING SPACE
CU	COPPER
DIA	DIAMETER
DP	DOWNPIPE
EX	EXISTING
FC	FALSE CEILING
FFL	FINISHED FLOOR LEVEL
GL	GROUND LEVEL
HBS	PIPES HUNG BELOW SLAB
HL	HIGH LEVEL
IG	IN-GROUND
IL	INVERT LEVEL
LL	LOW LEVEL
O/F	OVERFLOW
PVC	POLYVINYLCHLORIDE
RL	REDUCED LEVEL
SL	SURFACE LEVEL
S/S	STAINLESS STEEL
UB	UNDER BENCH
uPVC	UNPLASTICISED POLYVINYLCHLORIDE
U/S	UNDER SIDE
VD	VERTICAL DROP

## PROJECT INFORMATION TABLE

THE TABLES BELOW ARE TO BE READ IN CONJUNCTION WITH THE ADJACENT NOTES

## SURVEY INFORMATION

THE SURVEY INFORMATION ON THESE DRAWINGS HAS BEEN PROVIDED BY

COMPANY	DATED
RPS GROUP	12.09.18

CIVIL DRAWING LIST	
No.	SHEET NAME
C001	NOTES & LEGEND
C010	SITE STORMWATER PLAN
C050	TYPICAL DETAILS
C051	OSD DETAILS
C200	GROUND STORMWATER PLAN

## GENERAL

1. ALL EXISTING LEVELS TO BE CONFIRMED ON SITE PRIOR TO COMMENCEMENT OF WORKS.
2. ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE NOMINATED OR APPLICABLE COUNCIL SPECIFICATION. WHERE A SPECIFICATION HAS NOT BEEN NOMINATED THEN THE CURRENT NSW DEPARTMENT OF HOUSING CONSTRUCTION SPECIFICATION IS TO BE USED. THE NOMINATED SPECIFICATION SHALL TAKE PRECEDENCE TO THESE NOTES.
3. ALL DRAWINGS SHOULD BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECTURAL DRAWINGS & DRAWINGS FROM OTHER CONSULTANTS.
4. THE CONTRACTOR SHOULD REPORT ANY DISCREPANCIES ON THE DRAWINGS TO THE ENGINEER RESPONSIBLE FOR THE DESIGN.
5. THE CONTRACTOR SHOULD LOCATE AND LEVEL ALL EXISTING SERVICES PRIOR TO COMMENCING CONSTRUCTION AND PROTECT AND MAKE ARRANGEMENTS WITH THE RELEVANT AUTHORITY TO RELOCATE AND/OR ADJUST IF NECESSARY. INFORMATION GIVEN ON THE DRAWINGS IN RESPECT TO SERVICES IS FOR GUIDANCE ONLY AND IS NOT GUARANTEED COMPLETE NOR CORRECT.
6. CONTRACTOR IS NOT TO ENTER UPON NOR DO ANY WORK WITHIN ADJACENT LANDS WITHOUT THE PERMISSION OF THE OWNER.
7. SURPLUS EXCAVATED MATERIAL SHALL BE PLACED WHERE DIRECTED OR REMOVED FROM SITE.
8. ALL NEW WORKS SHALL MAKE A SMOOTH JUNCTION WITH EXISTING.
9. ALL DRAINAGE LINES THROUGH ADJACENT LOTS SHALL BE CONTAINED WITHIN EASEMENTS CONFORMING TO COUNCIL'S STANDARDS.
10. THE CONTRACTOR SHALL CLEAR THE SITE BY REMOVING ALL RUBBISH, FENCES AND DEBRIS ETC. TO THE EXTENT SPECIFIED.
11. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL PROVIDE A TRAFFIC MANAGEMENT PLAN PREPARED BY AN ACCREDITED PERSON IN ACCORDANCE WITH RMS REQUIREMENTS, FOR ANY WORK ON OR ADJACENT TO PUBLIC ROADS, PLAN TO BE SUBMITTED TO COUNCIL & RMS.

## SURVEY

1. JONES NICHOLSON IS NOT RESPONSIBLE FOR THE ACCURACY OF ANY 3rd PARTY INFORMATION PROVIDED ON THIS DRAWING.
2. ALL LEVELS ARE TO A.H.D.
3. ALL CHAINAGES AND LEVELS ARE IN METRES, AND DIMENSIONS IN MILLIMETRES.
4. CONTRACTORS SHALL ARRANGE FOR THE WORKS TO BE SET OUT BY A REGISTERED SURVEYOR.

## SAFETY IN DESIGN

THERE ARE INHERENT RISKS WITH CONSTRUCTING, MAINTAINING, OPERATING, DEMOLISHING, DISMANTLING AND DISPOSING THIS DESIGN THAT ARE TYPICAL OF SIMILAR DESIGNS. AS FAR AS IS REASONABLY PRACTICABLE RISKS HAVE BEEN ELIMINATED OR MINIMISED THROUGH THE DESIGN PROCESS. HAZARD CONTROLS MUST STILL BE IMPLEMENTED BY THE CONTRACTOR, OWNER OR OPERATOR TO ENSURE THE SAFETY OF WORKERS.

JONES NICHOLSON DO NOT CONSIDER THAT THERE ARE ANY UNIQUE RISKS ASSOCIATED WITH THE DESIGN OF THIS PROJECT.

## STORMWATER DRAINAGE

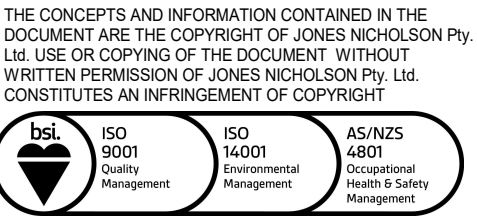
1. STORMWATER DRAINAGE SHALL BE GENERALLY IN ACCORDANCE WITH CURRENT AUSTRALIAN STANDARDS AND COUNCIL'S SPECIFICATION.
2. PIPES OF 225mm DIA. AND UNDER SHALL BE UPVC.
3. PIPES OF 300mm DIA. AND LARGER SHALL BE FRC OR CONCRETE CLASS 2 RUBBER RING JOINTED UNO.
4. ALL FRC OR RCP STORMWATER PIPES WITHIN ROAD RESERVE AREAS TO BE CLASS 3 UNO.
5. MINIMUM COVER TO PIPES 300mm DIA. AND OVER GENERALLY SHALL BE 600mm IN CARPARK & ROADWAY AREAS UNO.
6. PIPES SHALL GENERALLY BE LAID AT THE GRADES INDICATED ON THE DRAWINGS.
7. PIPES UP TO 150mm DIA SHALL BE LAID AT 10% MIN. GRADE UNO.
8. PIPES 225mm DIA AND OVER SHALL BE LAID AT 0.5% MIN. GRADE UNO.
9. BACKFILL TRENCHES WITH APPROVED FILL COMPACTED IN 200mm LAYERS TO 98% OF STANDARD DENSITY.
10. ANY PIPES OVER 16% GRADE SHALL HAVE CONCRETE BULKHEADS AT ALL JOINTS.
11. PITS SHALL BE AS DETAILED WITH METAL GRATES AT LEVELS INDICATED. ALL PITS DEEPER THAN 1200mm TO HAVE CLIMB IRONS.
12. BUILD INTO UPSTREAM FACE OF ALL PITS A 3.0m SUBSOIL LINE FALLING TO PITS TO MATCH PIT INVERTS.
13. ALL COURTYARD & LANDSCAPED PITS TO BE 450 SQUARE LOAD CLASS A UNLESS NOTED OTHERWISE.
14. ALL DRIVEWAY & OSD PITS TO BE 600 SQUARE LOAD CLASS D UNLESS NOTED OTHERWISE.
15. INSTALL TEMPORARY SEDIMENT BARRIERS TO INLET PITS, TO COUNCIL'S STANDARDS UNTIL SURROUNDING AREAS ARE PAVED OR GRASSED.
16. PITS & DOWNPIPE LOCATIONS AND LEVELS MAY BE VARIED TO SUIT SITE CONDITIONS AFTER CONSULTING THE ENGINEER.
17. DOWNPIPES SHOWN ARE INDICATIVE ONLY. ALL ROOF GUTTERING AND DOWNPIPES TO THE CURRENT AUSTRALIAN STANDARDS.
18. ALL PLANTER BOXES AND BALCONIES TO BE CONNECTED TO THE PROPOSED STORMWATER DRAINAGE LINE.
19. HAND-EXCAVATE STORMWATER PIPES IN VICINITY OF TREE ROOTS.
20. FOOTPATH CROSSING LEVELS SHOWN ARE TO BE ADJUSTED TO FINAL COUNCIL'S ISSUED LEVELS.
21. GEOTEXTILE FABRIC TO BE PLACED UNDER RIP RAP SCOUR PROTECTION.
22. ALL BASES OF PITS TO BE BENCH TO HALF PIPE DEPTH AND PROVIDE GALVANISED ANGLE SURROUNDINGS TO HALF.
23. SUBSOIL LINE PIPES AND FITTINGS SHALL BE PERFORATED PLASTIC TO CURRENT AUSTRALIAN STANDARDS. LAY PIPES ON FLOOR OF TRENCH GRADED AT 1% MIN. AND OVERLAY WITH FILTER MATERIAL EXTENDING TO WITHIN 200mm OF SURFACE. PROVIDE FILTER FABRIC OF PERMEABLE POLYPROPYLENE BETWEEN FILTER MATERIAL AND TOPSOIL.
24. SHOULD THE CONTRACTOR ELECT TO INSTALL PRECAST STORMWATER PITS AND THEY ARE PERMITTED BY COUNCIL AND THE CLIENT, THE PRECAST PITS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH RMS STANDARDS INCLUDING:
  1. SEAL THE SEGMENTS TOGETHER USING A SITE-APPROVED NON-SHRINK GROUT OR MASTIC-TYPE PRODUCT. APPLY THE SEALANT IN ACCORDANCE WITH THE PRODUCT MANUFACTURER'S REQUIREMENTS.
  2. ENSURE THAT NO GAPS REMAIN AND THAT A SMOOTH FACE EXISTS BETWEEN MULTIPLE UNITS.
  3. LEAVE THE SEGMENTS UNDISTURBED UNTIL THE PERIOD OF CURING IS COMPLETED IN ACCORDANCE WITH THE GROUT OR SEALANT PRODUCT MANUFACTURER'S REQUIREMENTS.

## STORMWATER DRAINAGE INSTALLATION

1. SUPPLY & INSTALLATION OF DRAINAGE WORKS TO BE IN ACCORDANCE WITH THESE DRAWINGS, THE COUNCIL SPECIFICATION AND THE CURRENT APPLICABLE AUSTRALIAN STANDARDS.
2. BEDDING OF THE PIPELINES IS TO BE TYPE 'HS2' IN ACCORDANCE WITH THE STANDARDS AND AS FOLLOWS:
  - a. COMPACTED GRANULAR MATERIAL IS TO COMPLY WITH THE FOLLOWING GRADINGS:

SIEVE SIZE (mm)	19	2.36	0.60	0.30	0.15	0.075
% MASS PASSING	100	50-100	20-90	10-60	0-25	0-10
  - AND THE MATERIAL PASSING THE 0.075 SIEVE HAVING LOW PLASTICITY AS DESCRIBED IN APPENDIX D OF AS1726.
  - b. BEDDING DEPTH UNDER THE PIPE TO BE 100mm.
  - c. BEDDING MATERIAL TO BE EXTENDED FROM THE TOP OF THE BEDDING ZONE UP TO 0.3 TIMES PIPE OUTSIDE DIAMETER. THIS REPRESENTS THE 'HAUNCH ZONE.'
  - d. THE BEDDING & HAUNCH ZONE MATERIAL IS TO BE COMPACTED TO A MINIMUM RELATIVE COMPACTION OF 98% WITHIN ROAD RESERVES AND TRAFFICABLE AREAS AND 95% ELSEWHERE FOR COHESIVE MATERIAL OR A MINIMUM DENSITY INDEX OF 70% IN ACCORDANCE WITH THE STANDARDS FOR COHESIONLESS MATERIAL.
  - e. COMPACTION TESTING SHALL BE CARRIED OUT BY AN APPROVED ORGANISATION WITH A NATA CERTIFIED LABORATORY FOR ALL DRAINAGE LINES LAID WHOLLY OR IN PART UNDER THE KERB & GUTTER OR PAVEMENT.
3. BACKFILL SHALL BE PLACED & COMPACTED IN ACCORDANCE WITH THE SPECIFICATION. A GRANULAR GRAVEL AGGREGATE MATERIAL (<10mm) BACKFILL IS RECOMMENDED FOR THE BEDDING, HAUNCH SUPPORT AND SIDE ZONE DUE TO ITS SELF-COMPACTING ABILITY.
4. A MINIMUM OF 150mm CLEARANCE IS TO BE PROVIDED BETWEEN THE OUTSIDE OF THE PIPE BARREL AND THE TRENCH WALL FOR PIPES > 600 DIA. 200mm CLEARANCE FOR PIPES 600 TO 1200 DIA AND D/6 CLEARANCE FOR PIPES > 1200 DIA.

2	27.11.18	JH	ISSUED FOR DA
1	23.11.18	ELR	50% DETAIL DESIGN
AMDT	DATE	BY	DESCRIPTION



**JONES NICHOLSON**  
CONSULTING ENGINEERS

DESIGN : LAM  
DRAWN : ER  
DATE : NOV '18  
DRG SIZE : A1  
SCALE : 1 : 1  
PROJECT MGR : DB

CIVIL DESIGN  
NOTES & LEGEND

ST IVES HIGH SCHOOL  
YARRABUNG RD, ST IVES NSW 2075  
JDH ARCHITECTS

17011065  
C001 2

NOT TO BE USED FOR  
CONSTRUCTION

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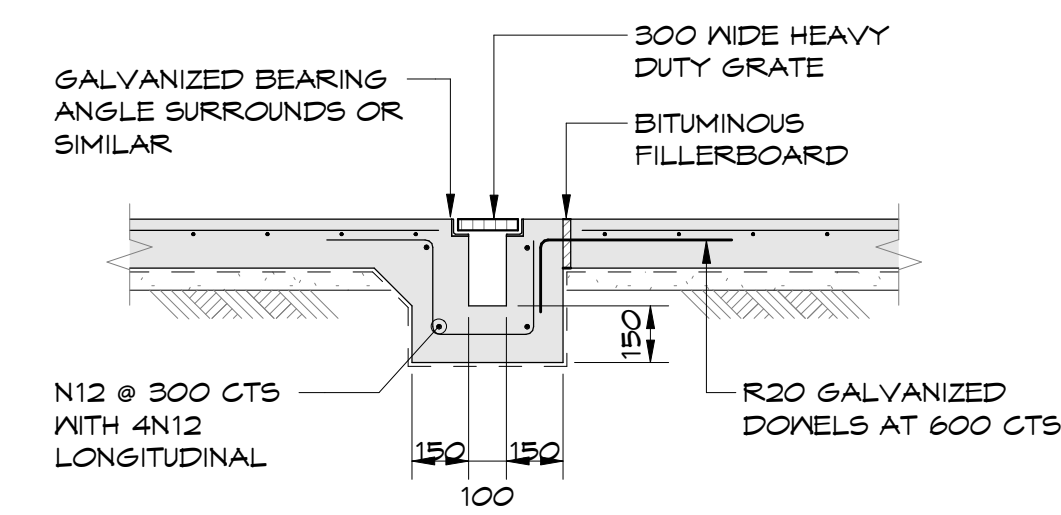
bsi ISO 9001 Quality Management ISO 14001 Environmental Management AS/NZS 4801 Occupational Health & Safety Management

DESIGN : LAM  
DRAWN : ER  
DATE : NOV '18  
DRG SIZE : A1  
SCALE : As indicated  
PROJECT MGR : DB

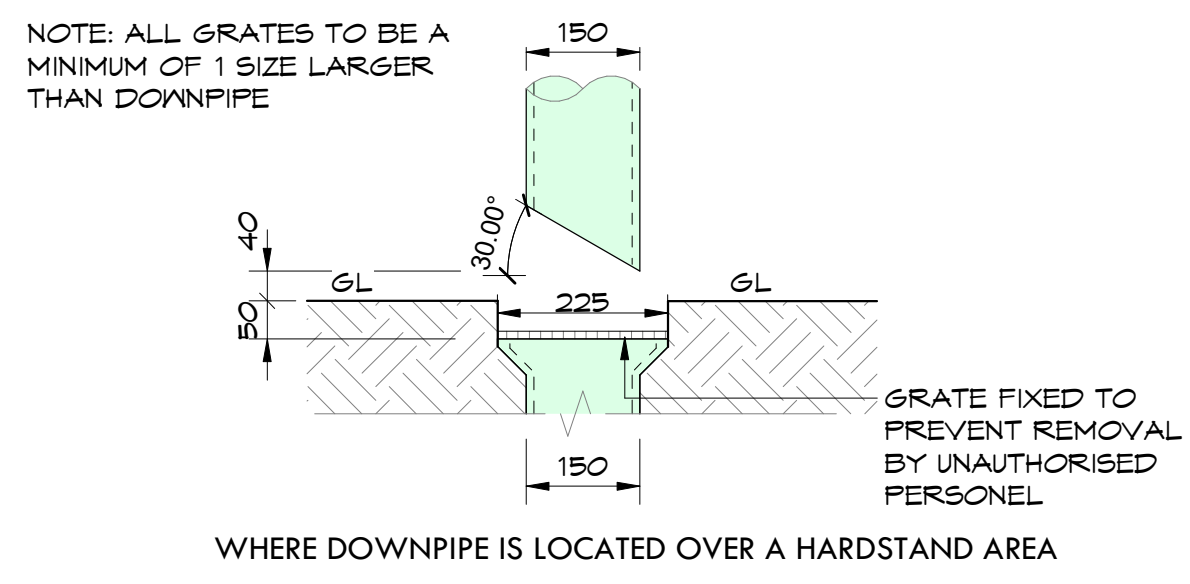
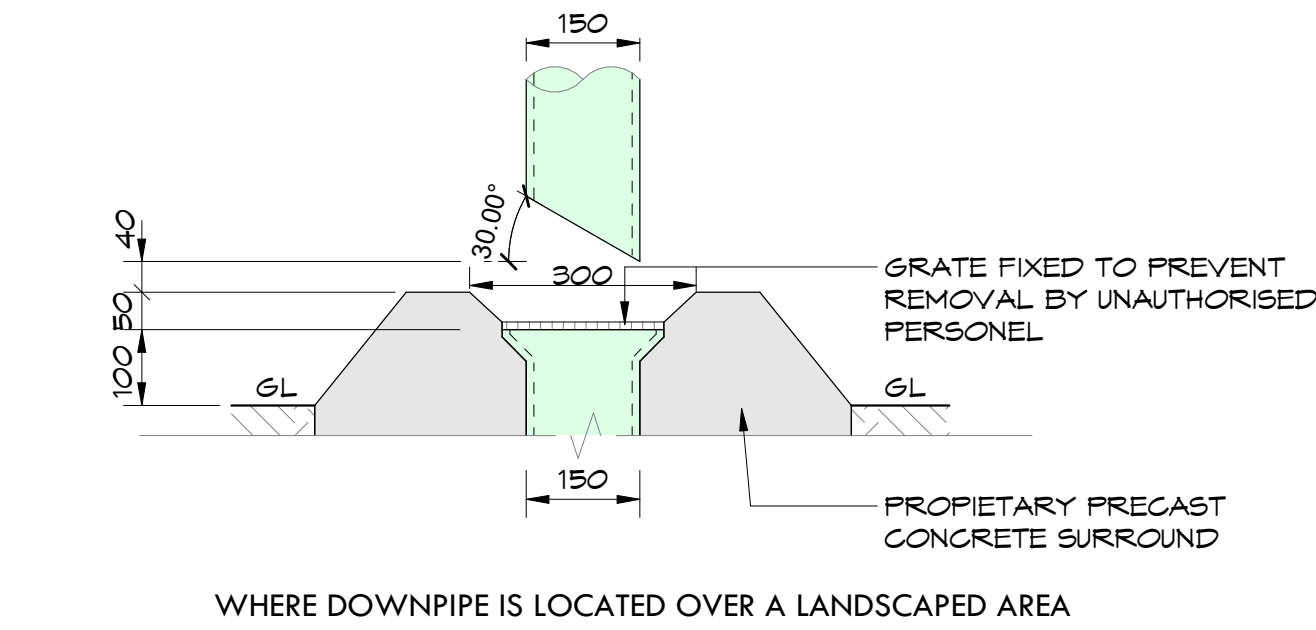
**ST IVES HIGH SCHOOL** 1  
YARRABUNG RD, ST IVES NSW 2075  
**JDH ARCHITECTS**

17011065  
C010 2

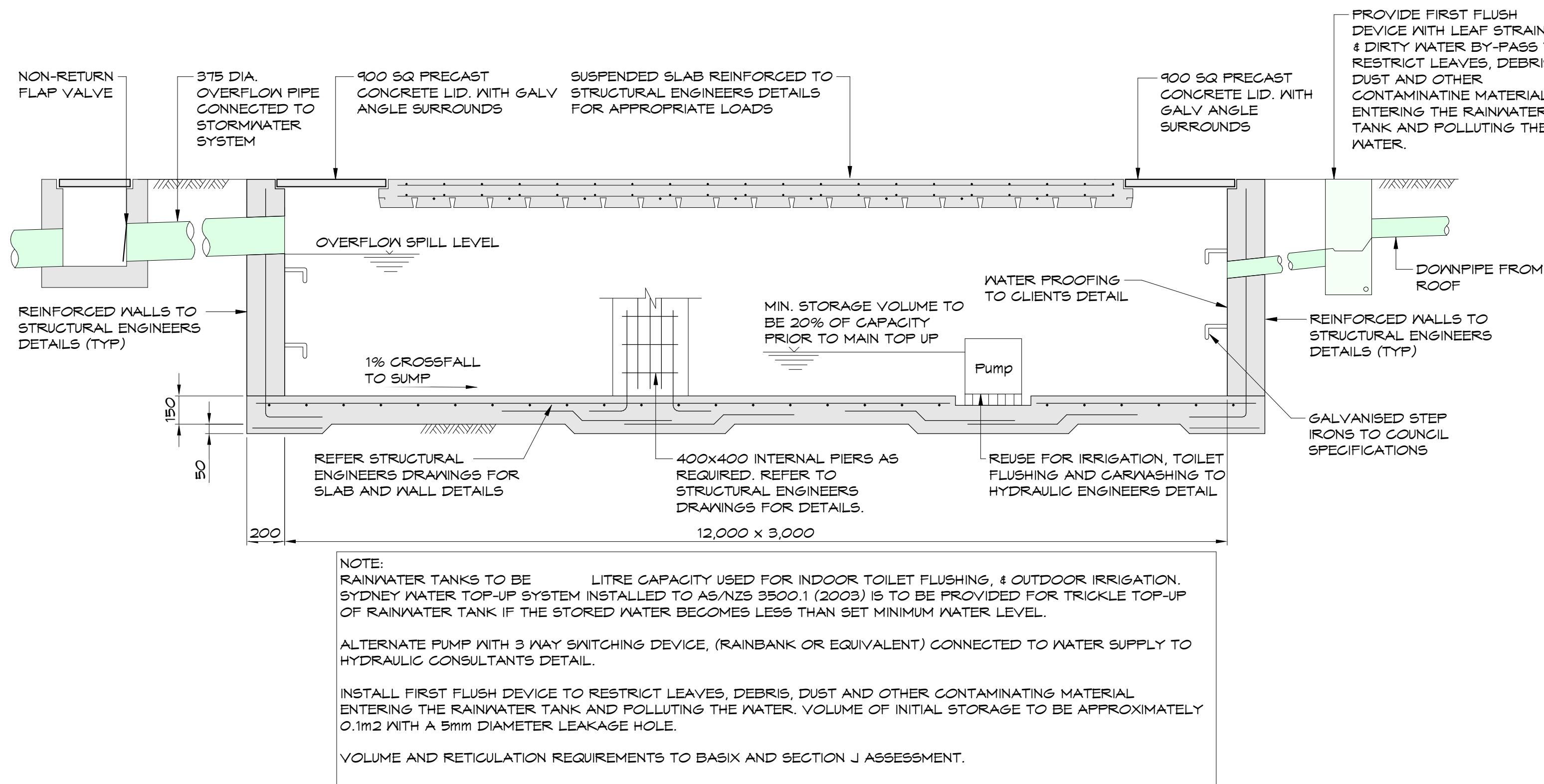




TYPICAL GRATED DRAIN DETAIL

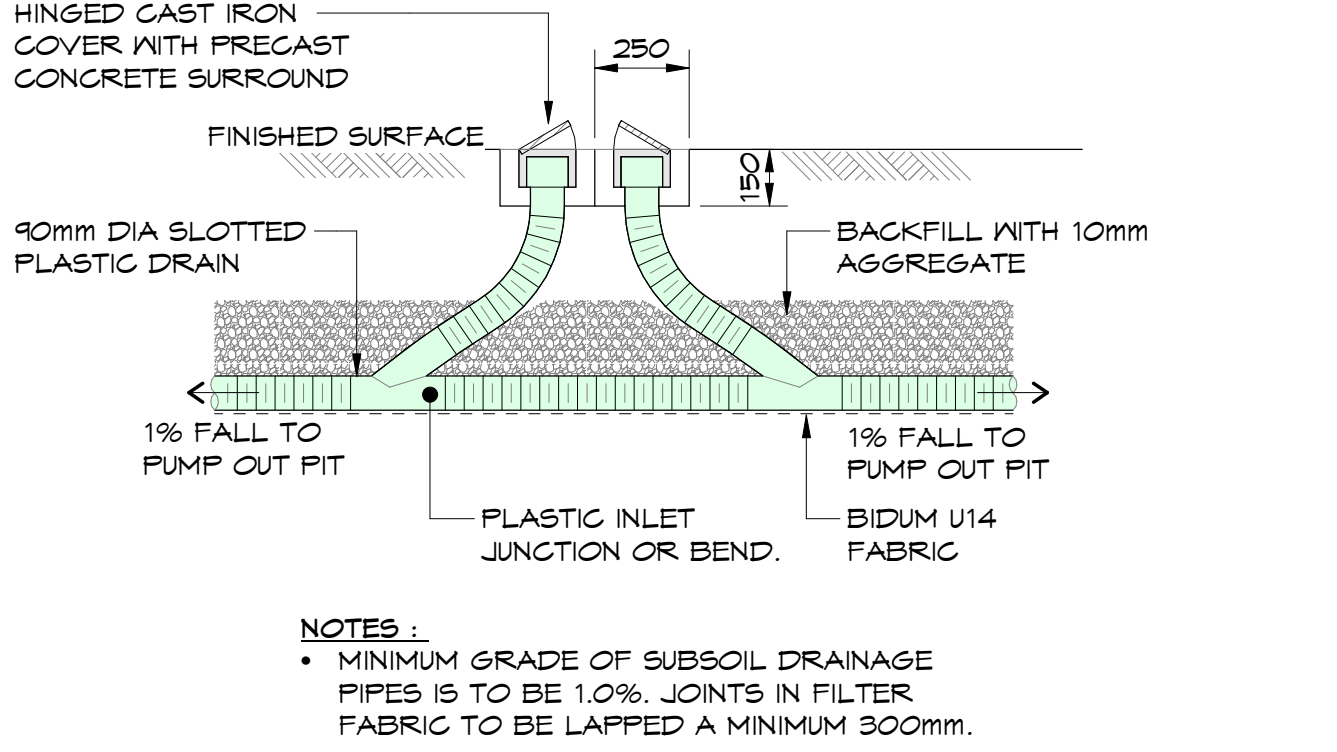


TYPICAL DOWNPIPE DISCHARGE DETAIL

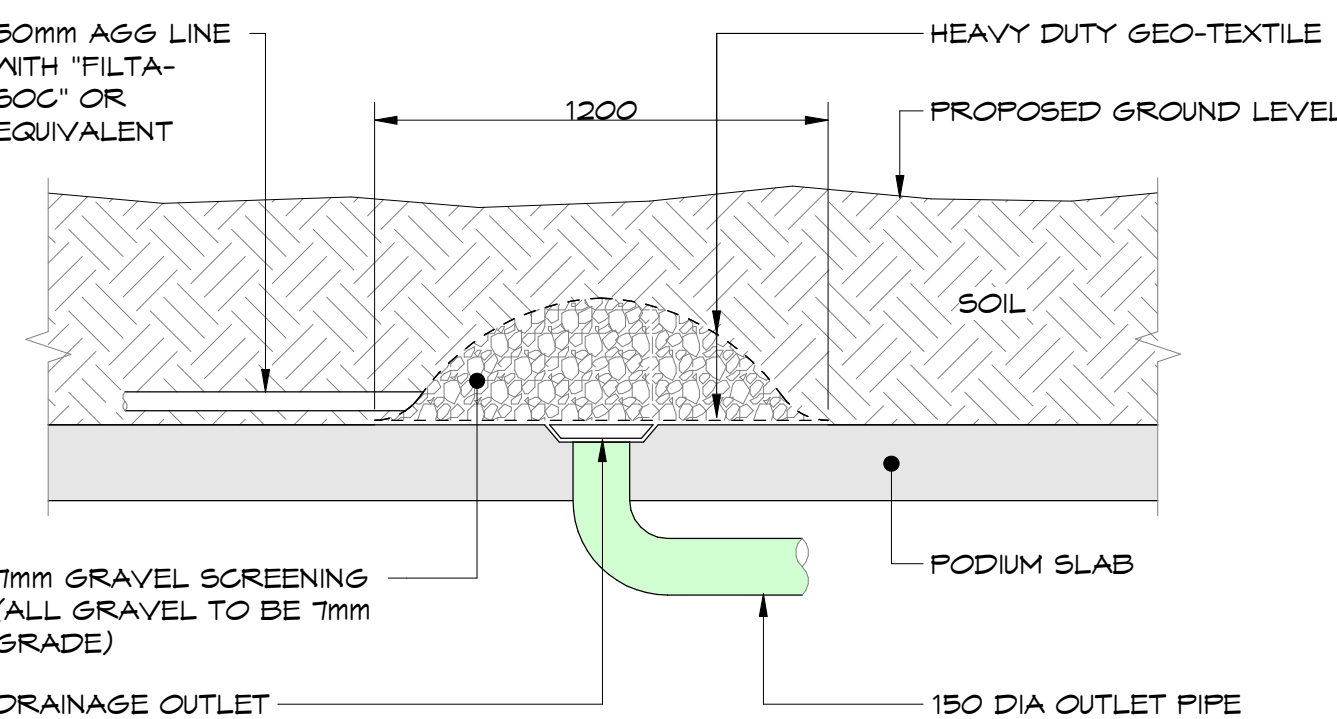


RAINWATER TANK (RWT) - UNDERGROUND

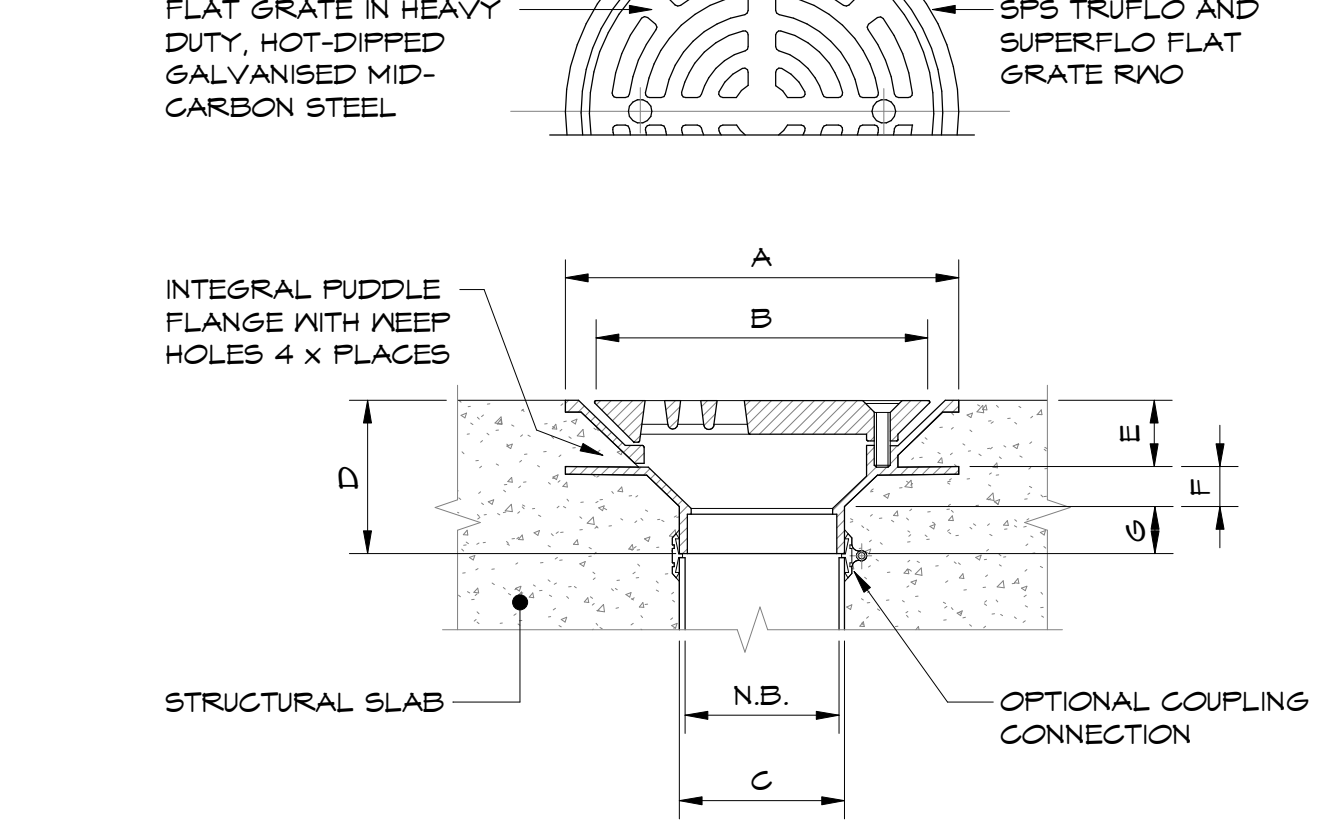
2	27.11.18	JH	ISSUED FOR DA
1	23.11.18	ELR	50% DETAIL DESIGN
AMDT	DATE	BY	DESCRIPTION



SUBSOIL PIPE FLUSHING POINT



TYPICAL SUBSOIL OUTLET DETAIL



N.B.	A	B	C	D	E	F	G	FLOW RATE* L/S
100	260	200	110	95	44	26	25	8.2
150	260	200	160	80	48	29	28	10.2
SUPERFLO**	400	290	160	143	66	39	38	17

\* BASED ON 50mm HEAD OF WATER ABOVE SURFACE LEVEL. FOR FURTHER DATA REFER TO FLOW CHARTS.

\*\* SUPERFLO AVAILABLE IN 150mm OUTLET ONLY.

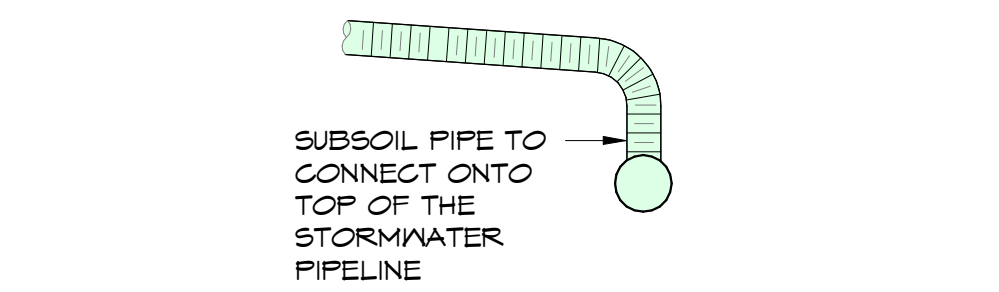
SPECIFICATION CODE:

- TIA100F (100mm TRUFLO GI BODY, GALVANISED FLAT GRATE).
- TIA150F (150mm TRUFLO GI BODY, GALVANISED FLAT GRATE).
- TIA100/90F2 (150mm SUPERFLO GI BODY, GALVANISED FLAT GRATE).

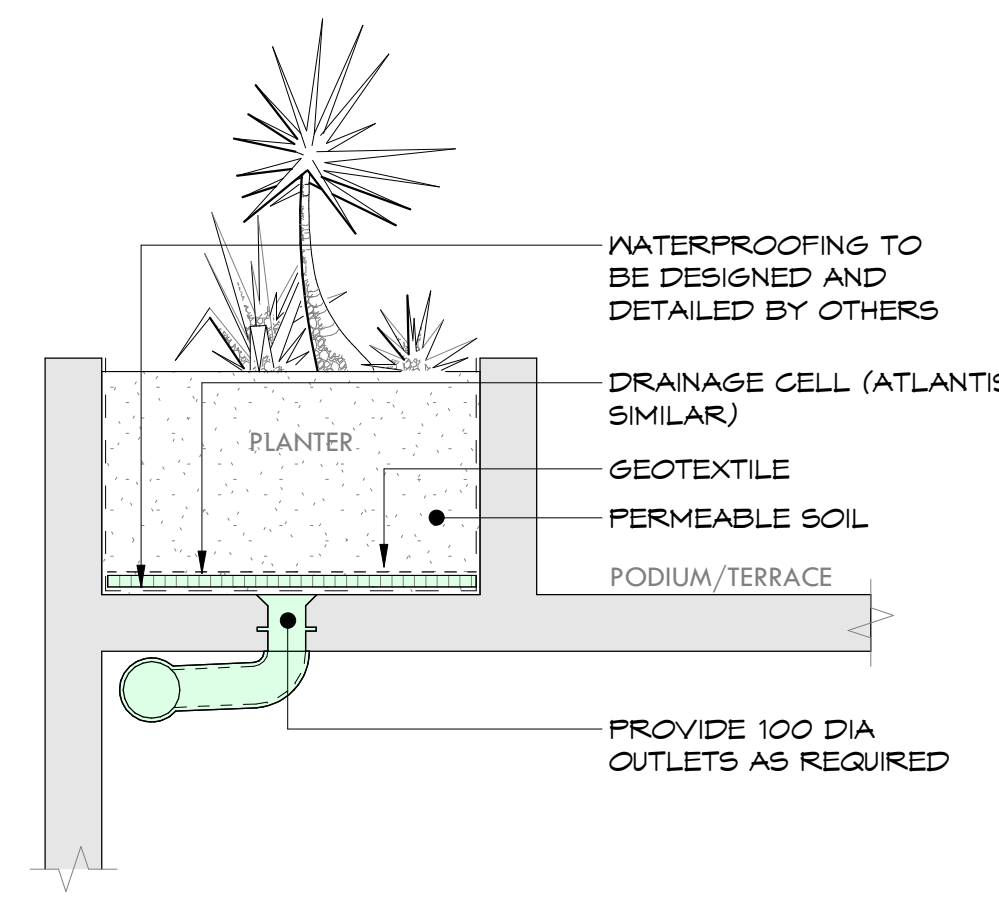
SUGGESTED APPLICATIONS:

- CAR PARK DECKS.
- PLANT ROOMS.
- PEDESTRIAN PRECINCTS.

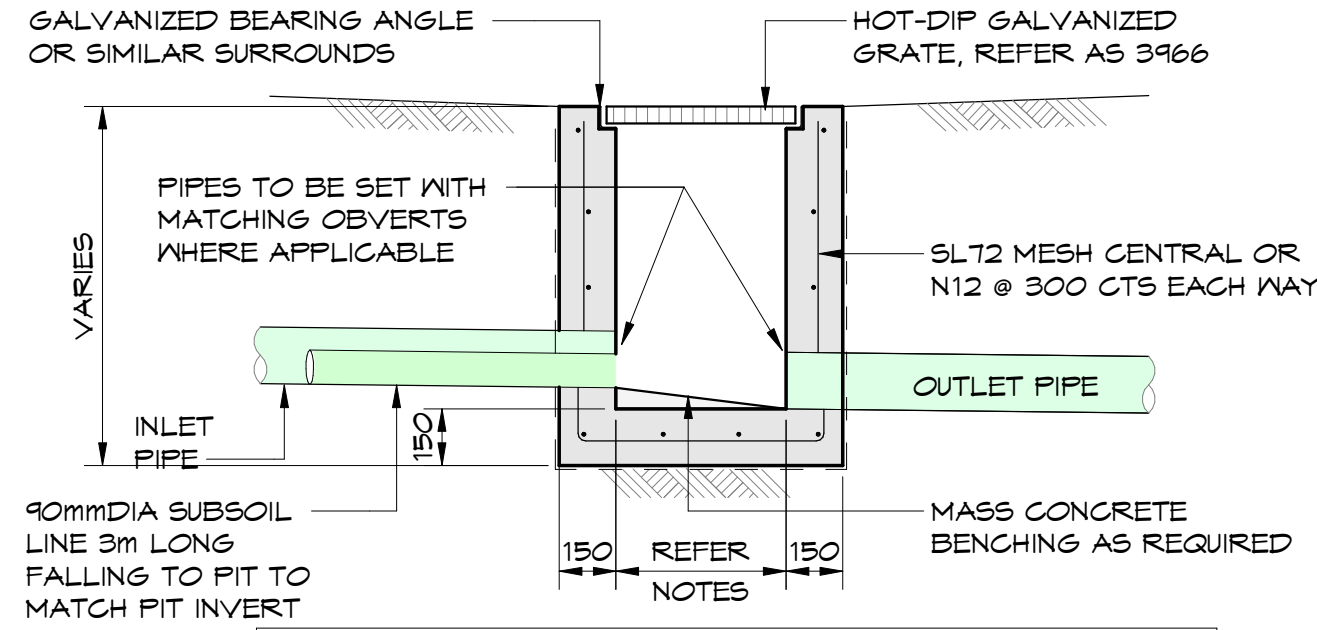
SPS TRUFLO & SUPERFLO FLAT GRATE RWO



SUBSOIL PIPE CONNECTION



TYPICAL PLANTER DRAINAGE DETAIL

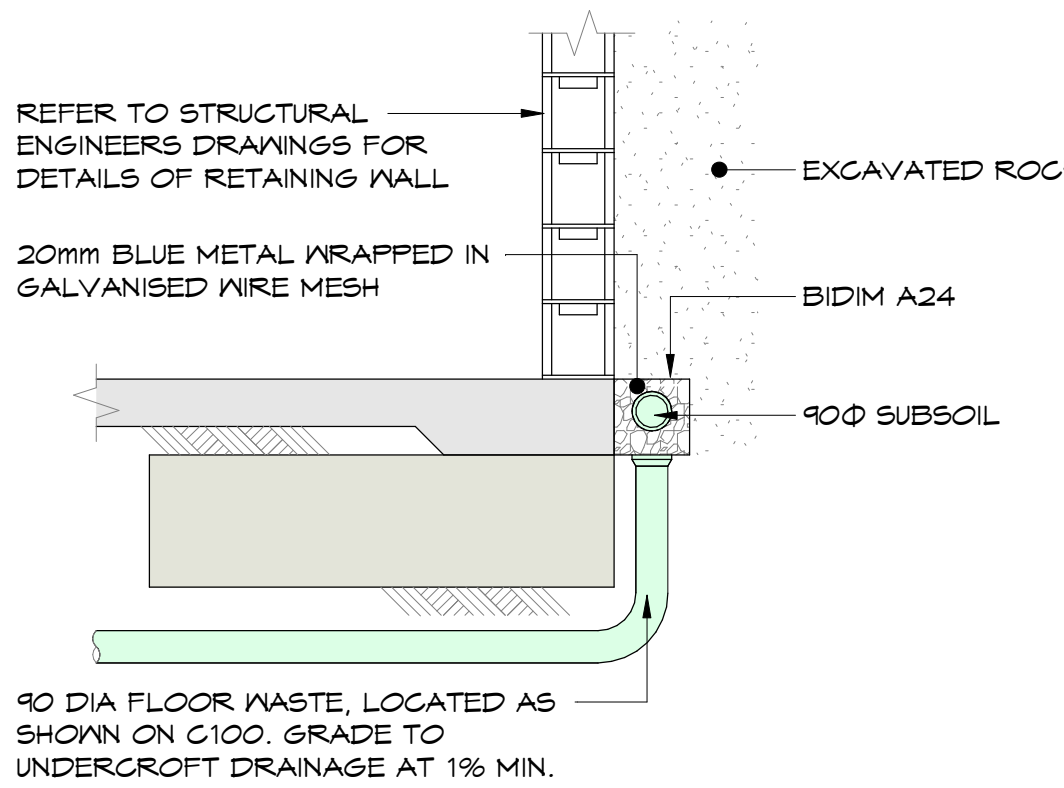


MINIMUM INTERNAL DIMENSIONS FOR STORMWATER PITS			
DEPTH OF INVERT OF OUTLET	DEPTH OF INVERT OF OUTLET	WIDTH	LENGTH
< 600	< 600	450	450
> 600	> 600	600	600
> 900	> 900	600	900
> 1200	> 1200	900	900

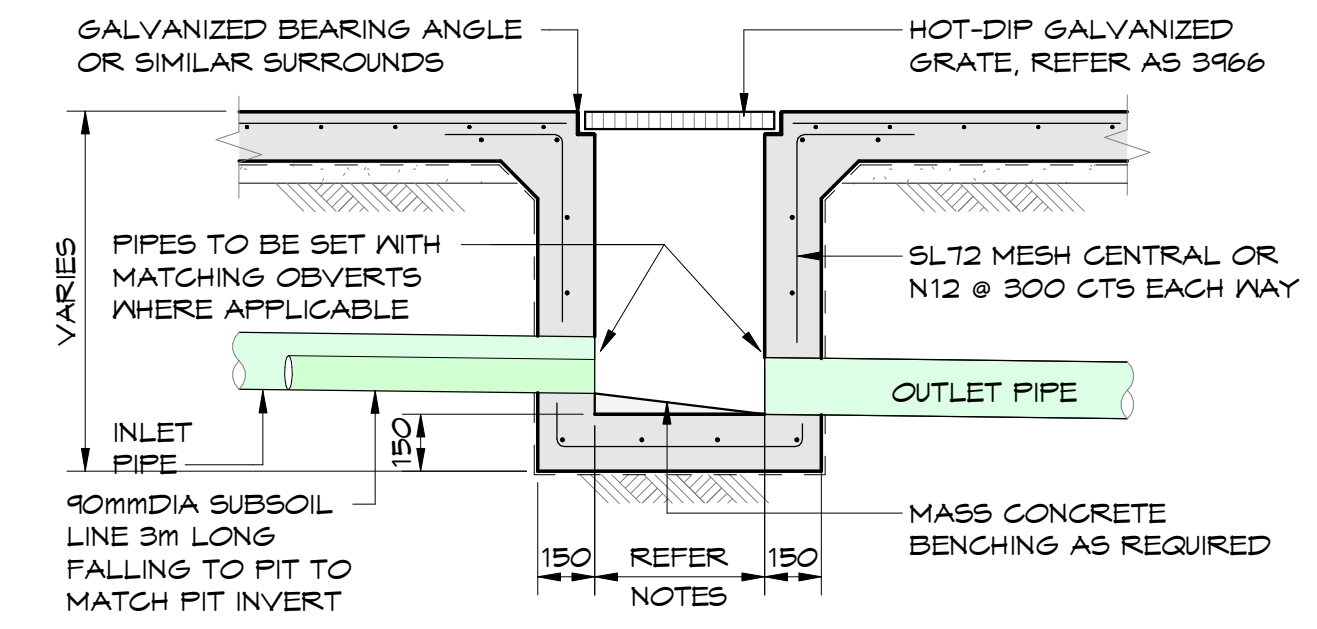
NOTE:

- CLIMB IRONS SHALL BE PROVIDED UNDER LID AT 300 CTS TO COUNCIL STANDARDS WHERE PIT DEPTH IS DEEPER THAN 1000.
- REINFORCEMENT NOTED IS ONLY REQUIRED FOR PITS EXCEEDING 900 DEEP, SUBJECT TO COUNCIL REQUIREMENTS. PITS GREATER THAN 3000 DEEP WILL REQUIRE STRUCTURAL ENGINEERS DESIGN.
- PROVIDE 90DIA x 3000 LONG SUBSOIL DRAINAGE SUB PIPE SURROUNDED WITH 100mm THICKNESS OF NOMINAL 20mm COARSE FILTER MATERIAL WRAPPED IN GEOTEXTILE FILTER FABRIC (BIDUM A24 OR APPROVED SIMILAR). TO BE PARALLEL TO UPSTREAM SIDE OF EACH INLET PIPE.
- ALTERNATIVE PIT CONSTRUCTION MAY BE USED SUBJECT TO THE ENGINEERS APPROVAL.
- CONCRETE STRENGTH  $F_c = 32 \text{ MPa}$

TYPICAL CONCRETE INLET PIT - NATURAL SURFACE



TYPICAL GROUNDWATER DRAINAGE DETAIL



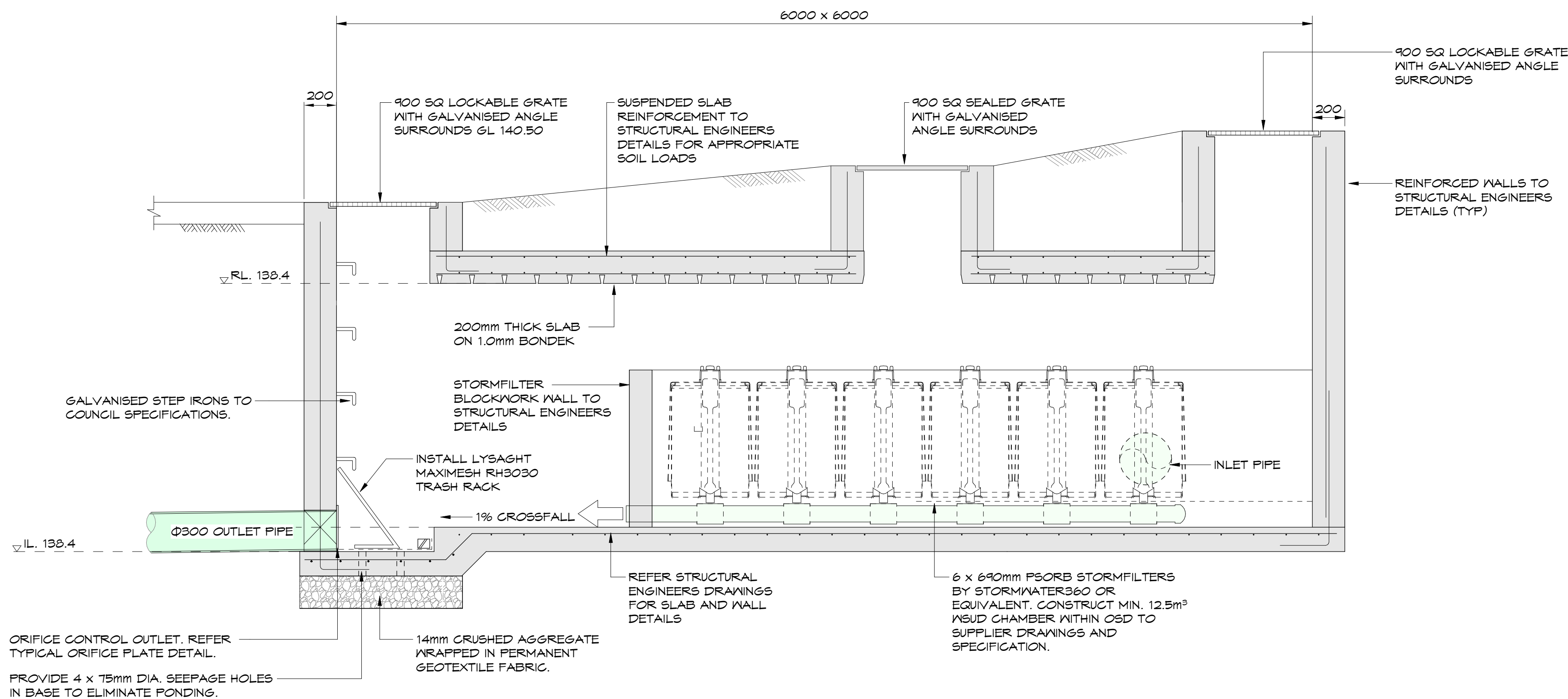
MINIMUM INTERNAL DIMENSIONS FOR STORMWATER PITS			
DEPTH OF INVERT OF OUTLET	DEPTH OF INVERT OF OUTLET	WIDTH	LENGTH
< 600	< 600	450	450
> 600	> 600	600	600
> 900	> 900	600	900
> 1200	> 1200	900	900

NOTE:

- CLIMB IRONS SHALL BE PROVIDED UNDER LID AT 300 CTS TO COUNCIL STANDARDS WHERE PIT DEPTH IS DEEPER THAN 1000.
- REINFORCEMENT NOTED IS ONLY REQUIRED FOR PITS EXCEEDING 900 DEEP, SUBJECT TO COUNCIL REQUIREMENTS. PITS GREATER THAN 3000 DEEP WILL REQUIRE STRUCTURAL ENGINEERS DESIGN.
- PROVIDE 90DIA x 3000 LONG SUBSOIL DRAINAGE SUB PIPE SURROUNDED WITH 100mm THICKNESS OF NOMINAL 20mm COARSE FILTER MATERIAL WRAPPED IN GEOTEXTILE FILTER FABRIC (BIDUM A24 OR APPROVED SIMILAR). TO BE PARALLEL TO UPSTREAM SIDE OF EACH INLET PIPE.
- ALTERNATIVE PIT CONSTRUCTION MAY BE USED SUBJECT TO THE ENGINEERS APPROVAL.
- CONCRETE STRENGTH  $F_c = 32 \text{ MPa}$

TYPICAL CONCRETE INLET PIT - CONCRETE SURFACE

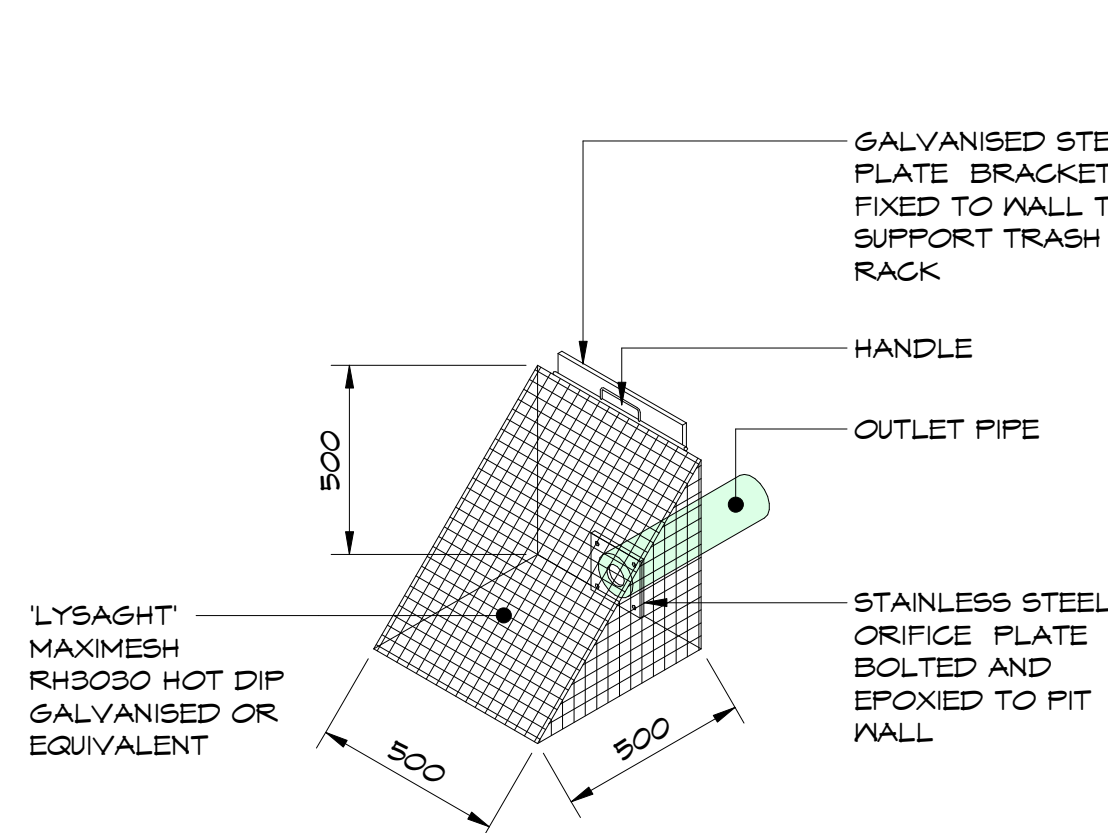




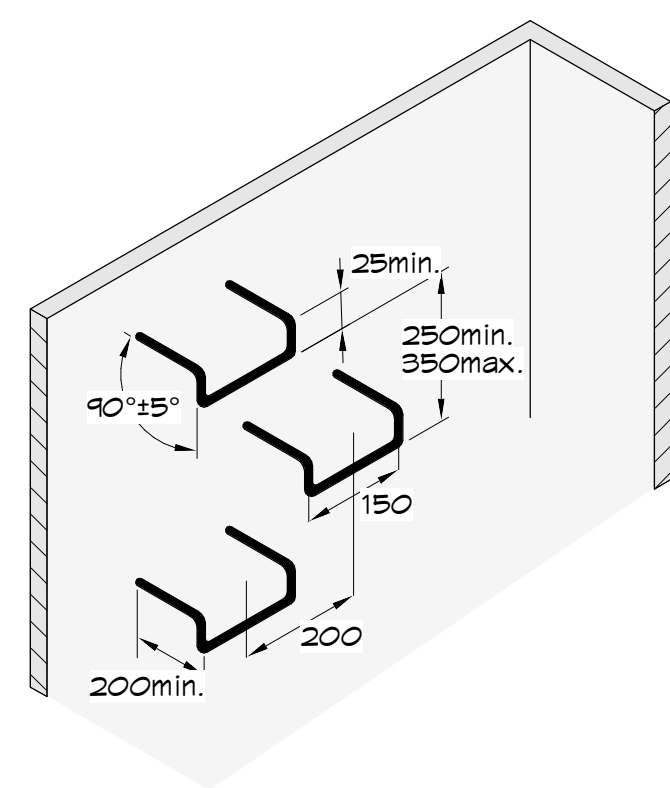
NOTE: CONTRACTOR IS TO VERIFY THE LEVEL OF ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF EXCAVATION FOR DRAINAGE.

# SECTION 1

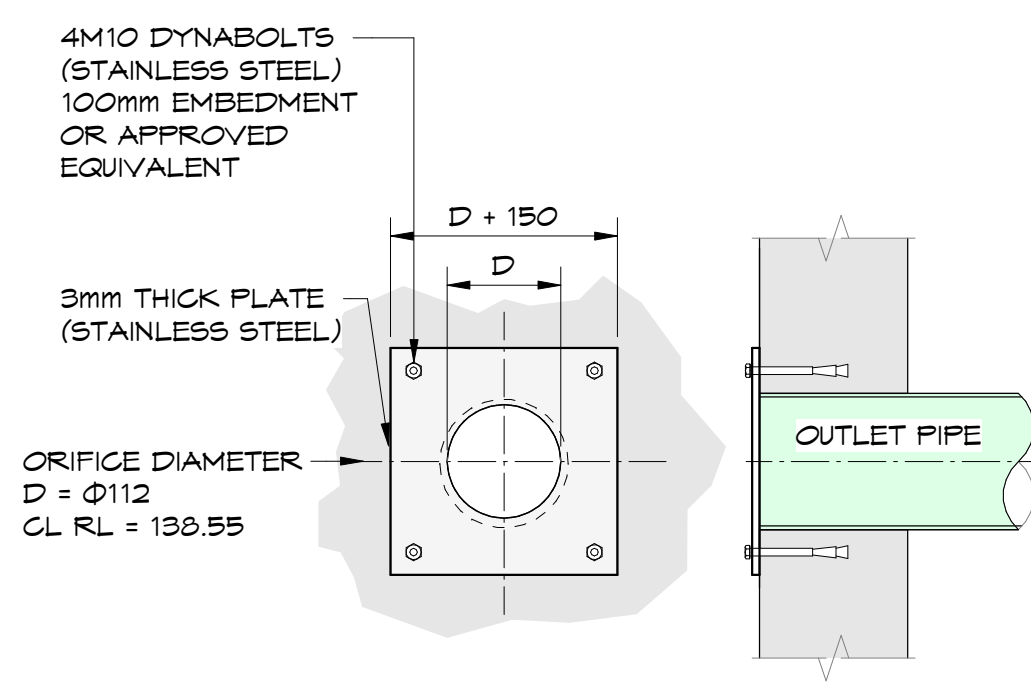
SCALE 1 : 20



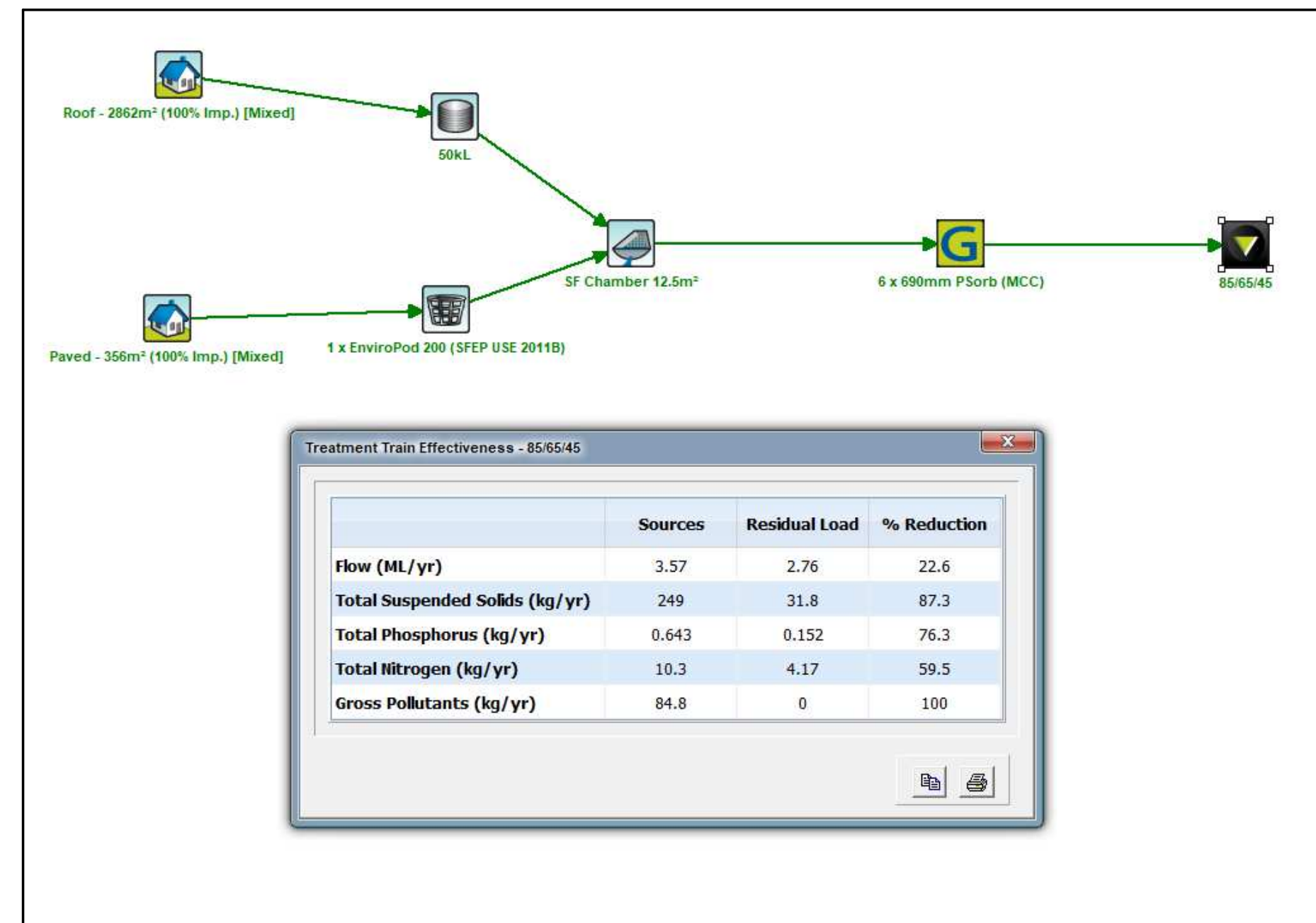
TYPICAL TRASH RACK SCREEN DETAIL



STEP IRON DETAIL



TYPICAL ORIFICE PLATE DETAIL



WSUD TREATMENT TRAIN

POLLUTANT	REDUCTION TARGET (%)	REDUCTION ACHIEVED (%)
TOTAL SUSPENDED SOLIDS (TSS)	85	87.3
TOTAL PHOSPHORUS (TP)	65	76.3
TOTAL NITROGEN (TN)	45	59.5
GROSS POLLUTANTS (GP)	70	100

OSD DESIGN NOTES:  
ADVICE FROM KU-RING-GAI COUNCIL PROVIDED AT PRE-DA MEETING, ADVISED THAT NO OSD REQUIRED IF NO SIGNIFICANT INCREASE IN IMPERVIOUS AREA BETWEEN THE NEW MULTIPURPOSE HALL. REVIEW OF PRE-DEVELOPMENT VS POST-DEVELOPMENT AS PER THE TABLE BELOW SHOWS AN INCREASE OF 1865.6 M2 OF IMPERVIOUS AREA WITHIN THE FOOTPRINT OF THE HALL.

	PERVIOUS (M2)	IMPERVIOUS (M2)	TOTAL (M2)
PRE-DEVELOPMENT	1865.6	1352.4	3218
POST-DEVELOPMENT	0	3218	3218
CHANGE	-1865.6	1865.6	0

NOTE: 5418 M2 TAKEN AS THE AREA OF WORKS.

ADJACENT WORKS PROPOSED FOR DEMOLITION OF B BLOCK AND LANDSCAPING, PRELIMINARY LANDSCAPE DRAWINGS FOR THE AREA SHOW NO SIGNIFICANT INCREASE IN IMPERVIOUS AREA.

CALCULATION UNDERTAKEN BASED ON KU-RING-GAI COUNCIL OSD CALCULATION SHEET BELOW.

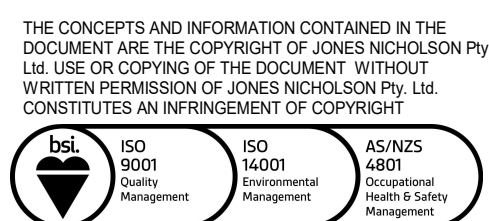
## ON-SITE DETENTION CALCULATION

JOB NUMBER:	17011065			
ADDRESS:	ST IVES HIGH SCHOOL			
CATCHMENT DETAIL				
CATCHMENT NAME:	RC2	ROCKY CREEK		
1				
2	CATCHMENT DISCHARGE RATE:	0.0168	L/SEC/M <sup>2</sup>	A
3	CATCHMENT STORAGE RATE:	0.0241	M <sup>3</sup> /M <sup>2</sup>	B
SITE DETAILS				
4	SITE AREA:	3218	M <sup>2</sup>	60% OF SITE AREA: 1930.8
5	AREA(S) NOT DRAINING TO THE DETENTION SYSTEM:	0	M <sup>2</sup>	C
6	TOTAL IMPERVIOUS AREA (ROOFS, DRIVEWAYS, PAVING, ETC):	3218	M <sup>2</sup>	D
7	IMPERVIOUS AREA BYPASSING DETENTION SYSTEM:	0	M <sup>2</sup>	E
PERMITTED SITE DISCHARGE				
8	C X A =	32.05128	L/SEC	FLOW 1
9	ADJUSTMENT FOR ANY UNCONTROLLED IMPERVIOUS FLOW E/D =	0	(<0.25)	F
10	FLOW 1 X F =	0	L/SEC	FLOW 2
11	FLOW 1 - FLOW 2 =	32.05128	L/SEC	PSD
SITE STORAGE REQUIREMENT				
12	C X B =	46.53228	M <sup>3</sup>	SSR1
13	IF THE STORAGE IS IN A LANDSCAPED BASIN, SSR1 X 1.2 =	55.83874	M <sup>3</sup>	SSR2
	IF THE STORAGE IS NOT IN A LANDSCAPED BASIN, SSR1 = SSR2	46.53228		
OUTLET CONTROL				
14	HEIGHT DIFFERENCE BETWEEN TOP WATER SURFACE LEVEL AND THE CENTRE OF THE ORIFICE (M):			
15	ORIFICE DIAMETER 21.8 X SQRT(PSD/SQRT(G)) =	111.521	MM	1.5 G OD

RAINWATER TANK DESIGN NOTES:  
KU-RING-GAI COUNCIL ADVICE REGARDING RAINWATER TANK WAS THAT SIZING SHOULD BE UNDERTAKEN BASED OF WATER BALANCE HOWEVER TO NO SPECIFIC TARGET.

ALLOWED 50KL RAINWATER TANK BASED ON PRELIMINARY WATER BALANCE ALLOWING FOR TOILETS (270 FLUSHES PER DAY, 1610 L/DAY) AND IRRIGATION OF SOCCER PITCH (~5400 M2 AT 1 MM/DAY WITH SEASONAL INCREASE IN SUMMER TO 2 MM/DAY). APPROX. 70% OF RAINWATER ON MAIN ROOF OF MULTIPURPOSE HALL RETAINED FOR RE-USE WITH AVAILABILITY ON 205 DAYS PER YEAR.

2	27.11.18	JH	ISSUED FOR DA
1	23.11.18	ELR	50% DETAIL DESIGN
AMDT	DATE	BY	DESCRIPTION



**JONES NICHOLSON CONSULTING ENGINEERS**

DESIGN : LAM  
DRAWN : ER  
DATE : NOV '18  
DRG SIZE : A1  
SCALE : As indicated  
PROJECT MGR : DB

CIVIL DESIGN  
OSD DETAILS

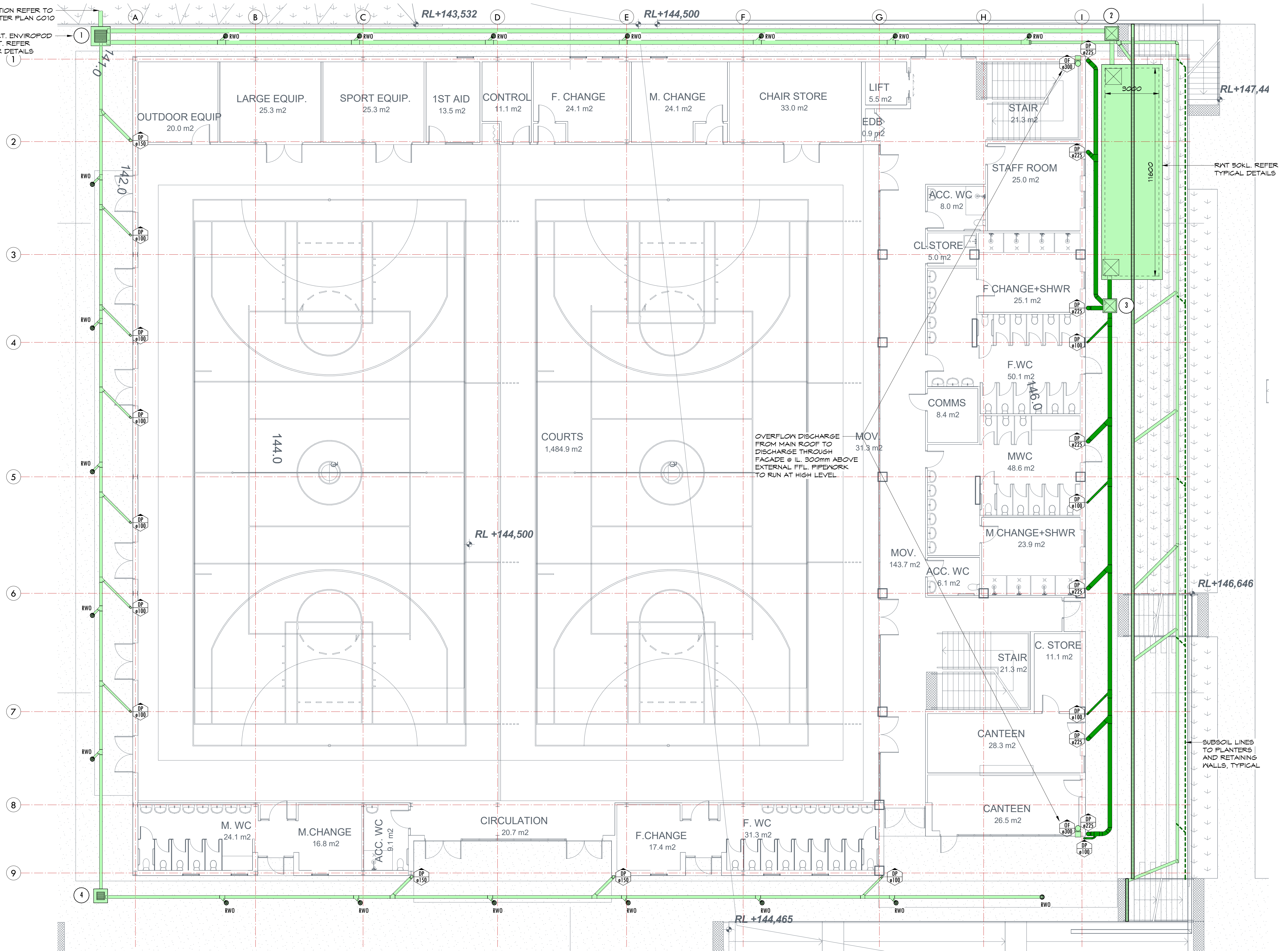
ST IVES HIGH SCHOOL  
YARRABUNG RD, ST IVES NSW 2075  
JDH ARCHITECTS

17011065  
C051 2

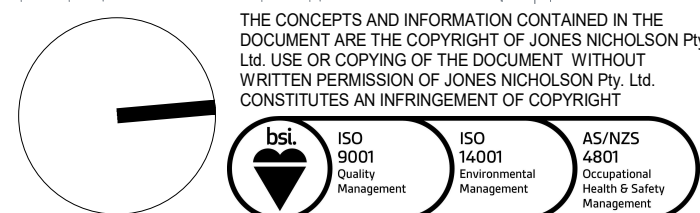


FOR CONTINUATION REFER TO  
SITE STORMWATER PLAN C200

ASUD PIT INSERT, ENVIROPOD  
OR EQUIVALENT. REFER  
MANUFACTURER DETAILS



**GROUND FLOOR STORMWATER PLAN**  
SCALE 1 : 100



**JONES NICHOLSON**  
CONSULTING ENGINEERS

DESIGN : LAM  
DRAWN : ER  
DATE : NOV '18  
DRG SIZE : A1  
SCALE : 1 : 100  
PROJECT MGR : DB

CIVIL DESIGN  
GROUND  
STORMWATER PLAN

ST IVES HIGH SCHOOL  
YARRABUNG RD, ST IVES NSW 2075  
JDH ARCHITECTS

17011065  
C200 2

AMDT	DATE	BY	DESCRIPTION
2	27.11.18	JH	ISSUED FOR DA
1	23.11.18	ELR	50% DETAIL DESIGN

CIVIL - STRUCTURAL - BUILDING SERVICES

NOT TO BE USED FOR  
CONSTRUCTION

P R E L I M I N A R Y