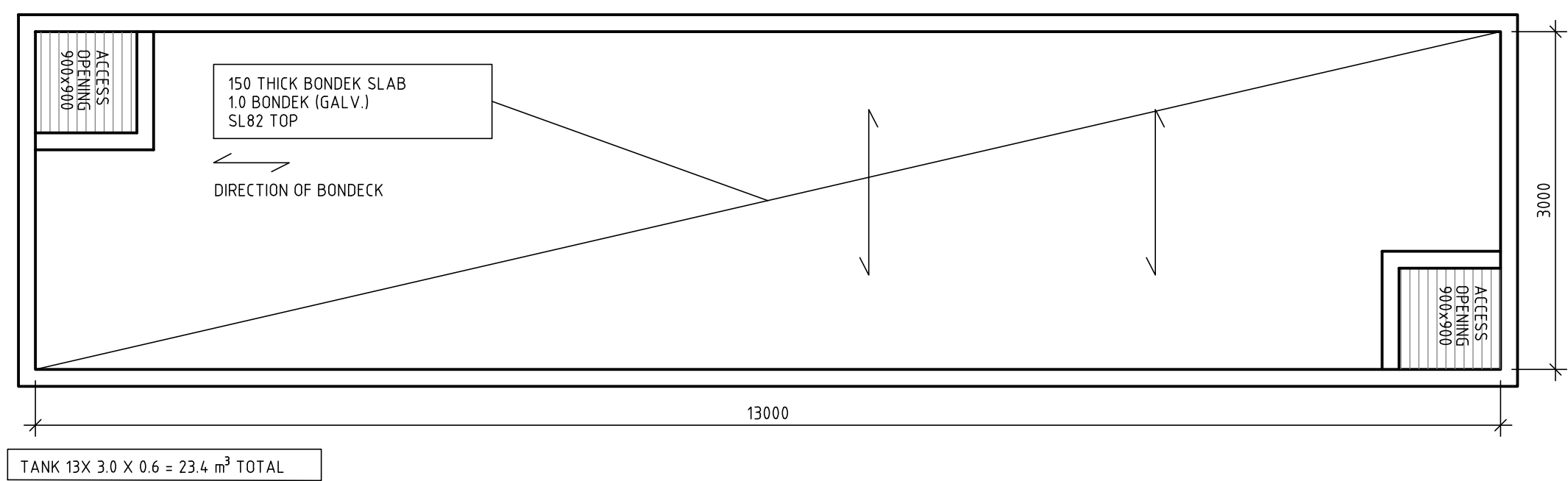


SITE PLAN
1:100



PLAN ON DETENTION TANK
1:50

SITE PARAMETERS	
ZONE	1
SITE AREA	950 m ²
OSD REQUIRED	22.8 m ³
OSD PROVIDED	23.4 m ³
5YEAR PRE-DEVELOPMENT FLOW RATE	36 l/sec
100YEAR POST-DEVELOPMENT DISCHARGE RATE	36 l/sec
ORIFICE DIAMETER	165 mm

HYDRAULIC NOTES

- ALL SERVICES ARE TO BE LOCATED IN THE FIELD IN CONJUNCTION WITH A RESPONSIBLE OFFICER OF EACH RELEVANT AUTHORITY PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- DRAINAGE PITS ARE TO BE 450 mm SQUARE OR LARGER AND FITTED WITH A GALVANISED GRATE.
- DRAINAGE PIPE SIZES ARE ø100 mm UNLESS NOTED.
- DRAINAGE PIPES SHALL BE SEWER GRADE PVC UNLESS NOTED.
- ALL BARE SOIL AREAS ARE TO BE PROTECTED FROM EROSION BY TEMPORARY MEASURES AND RE-VEGETATED AT CESSATION OF CONSTRUCTION.
- A SEDIMENT CATCHMENT POND IS TO BE PROVIDED AT THE RATE OF 120 m³ CAPACITY PER HECTARE DRAINED. THE DETENTION TANKS MAY BE USED FOR THIS PURPOSE, PROVIDED SUFFICIENT WATER IS RETAINED AS A POOL DURING CONSTRUCTION & ADEQUATE SAFETY FENCING IS PROVIDED.
- THE DOWNHILL BOUNDARY OF THE SITE IS TO BE PROTECTED BY HAY BALE OR FILTER FABRIC FENCE DURING CONSTRUCTION AS SHOWN IN ATTACHED DETAIL.
- THE STREET DRAINAGE PIT LOCATED DOWNHILL OF THE SITE SHALL BE PROTECTED FROM SEDIMENT WITH HAY BALES.
- A SINGLE CONSTRUCTION ENTRANCE SHALL BE ESTABLISHED IN THE MANNER SHOWN IN ATTACHED DETAIL.
- ALL EROSION PROTECTION MEASURES TO MEET THE REQUIREMENTS OF THE DEPT. OF CONSERVATION AND LAND MANAGEMENT AS OUTLINED IN URBAN EROSION & SEDIMENT CONTROL, SC5 TECH HANDBOOK No.2 1978 UNLESS SPECIFIED BY COUNCIL.

PIPE MAXIMUM FLOW TABLE (BASED ON $d = 0.0656A + MANNINGS n = 0.012$)

SLOPE (%)	100 mm PVC		150 mm PVC		225 mm PVC	
	D (m)	Q (l/s)	D (m)	Q (l/s)	D (m)	Q (l/s)
1	5.6	85	16.5	260	48.6	750
2	7.9	120	23.3	360	68.7	1060
3	9.7	150	28.6	440	84.2	1300
4	11.2	175	33.0	510	97.2	1500
5	12.5	190	36.9	570	109	1680
10	17.7	240	52.2	810	154	2380

EIA - EQUIVALENT IMPERVIOUS AREA

GENERAL NOTES

- THESE NOTES SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTION AS ISSUED DURING THE COURSE OF THE CONTRACT. ALL DISCREPANCIES SHALL BE REFERRED TO THE ARCHITECT OR ENGINEER BEFORE PROCEEDING WITH THE WORK.
- DIMENSIONS SHALL NOT BE OBTAINED BY SCALING THE STRUCTURAL DRAWINGS.
- SETTING OUT DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE VERIFIED BY ON-SITE MEASUREMENT.
- DURING CONSTRUCTION THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED.
- ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT EDITIONS OF THE SAA CODE AND THE BY-LAWS AND ORDINANCES OF THE RELATIVE BUILDING AUTHORITY.
- EXCAVATIONS SHALL NOT BE PERMITTED WITHIN 2 METRES OF AN EXISTING STRUCTURE WITHOUT PRIOR APPROVAL OR RECOMMENDATIONS FOR SHORING OR UNDERPINNING PROVIDED BY ENGINEER.

FOUNDATIONS AND FOOTINGS

- FOUNDINGS HAVE BEEN DESIGNED FOR AN ALLOWABLE INTENSITY OF BEARING PRESSURE OF 150 kPa. THE BUILDER SHALL OBTAIN APPROVAL OF THE FOUNDATION MATERIAL BEFORE PLACING CONCRETE.
- FOUNDINGS SHALL BE PLACED UNDER WALLS AND COLUMNS UNLESS OTHERWISE NOTED.

SUB-GRADE

- UNDER ALL SLABS ON GRADE, WHETHER ON CUT OR FILL, REMOVE SOFT SPOTS AND RE-FILL BY COMPACTING CUT SURFACES OR FILL SURFACES IN LAYERS NOT EXCEEDING 200 mm TO 95% DRY DENSITY, ENSURING MINIMUM SETTLEMENT TO SLABS.

CONCRETE WORK

- ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3600.
- CONCRETE QUALITY SHALL BE AS TABULATED AND SHALL BE VERIFIED BY TESTS.

ELEMENT	SLUMP	MAX SIZE AGG	CEMENT TYPE	ADMIXTURE	MPa CONCRETE GRADE
ALL	80	20	A	NIL	32

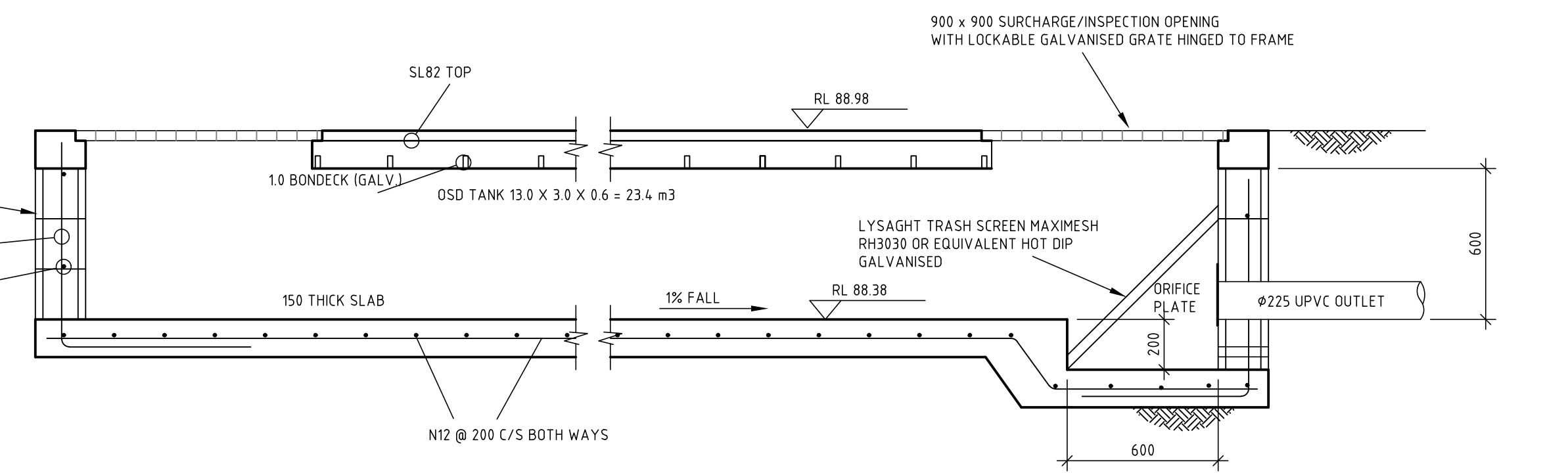
CONCRETE COVERS TO REINFORCEMENT SHALL BE AS FOLLOWS UNLESS OTHERWISE SHOWN.

ELEMENT	CONDITION 1 NOT TO BE EXPOSED TO WEATHER GROUND WATER OR FRESH WATER	CONDITION 2 TO BE EXPOSED TO WEATHER GROUND WATER OR FRESH WATER	CONDITION 3 CAST AGAINST OTHER FORMWORK OR THE GROUND
PAD FOOTINGS & PILE CAPS	-	65	75
STRIP FOOTINGS	-	50	65
SOME OR CAST PIERS	-	50	75
COLUMNS	40	50	75
WALLS, INCLUDING RETAINING WALLS	20	30	65
BEAMS	25	40	65
SLABS, INCLUDING JOISTS & HOLLOW BLOCK CONSTRUCTION	20	30	65
REINFORCEMENT ADJACENT TO HOLLOW BLOCKS INTEGRAL WITH STRUCTURE	5	-	-

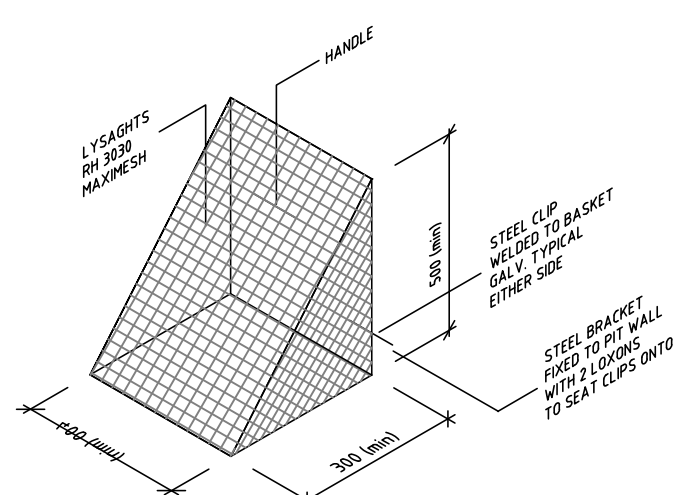
NOTE:

- SLABS POURED OVER A MEMBRANE ON THE GROUND ARE INCLUDED AS CONDITION 2.
- SLABS EXPOSED TO CORROSIVE VAPOURS, CORROSIVE GROUND WATER, SEA WATER OR SPRAY ARE TO HAVE REINFORCEMENT COVERS AS NOTED OR NOT LESS THAN AS REQUIRED FOR CONDITION 3.

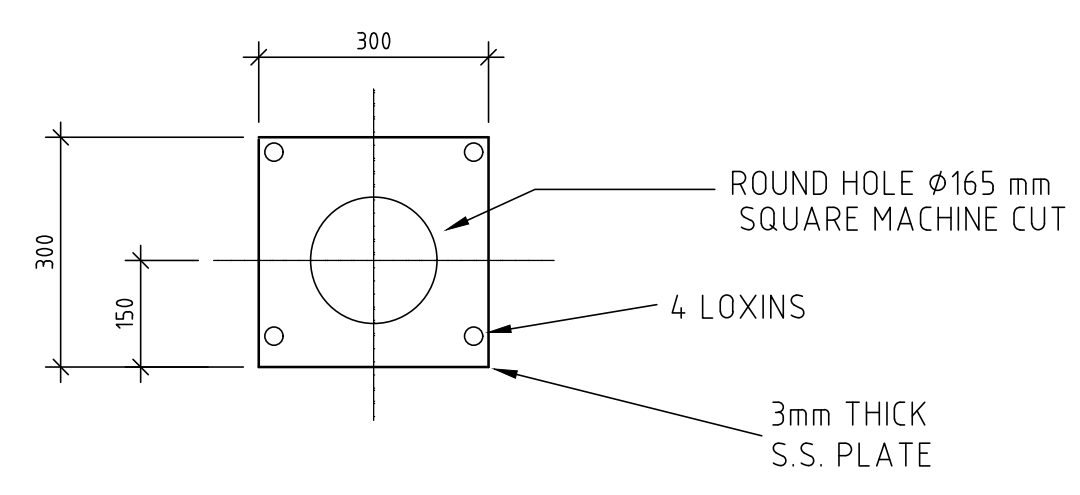
- SIZES OF ELEMENTS DO NOT INCLUDE THICKNESS OF APPLIED FINISHES.
- CONSTRUCTION JOINTS WHERE NOT SHOWN SHALL BE TO THE APPROVAL OF THE ENGINEER.
- BEAM DEPTHS ARE WRITTEN FIRST AND INCLUDE SLAB THICKNESS, IF ANY, UNL.
- NO HOLES OR CHASES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE ELEMENTS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
- REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY. IT IS NOT NECESSARILY SHOWN IN TRUE PROJECTION.
- SPLICES IN REINFORCEMENT MADE IN POSITIONS OTHER THAN SHOWN SHALL BE TO THE APPROVAL OF THE ENGINEER WHERE THE LAP LENGTH IS NOT SHOWN IT SHALL BE SUFFICIENT TO DEVELOP THE FULL STRENGTH OF THE REINFORCEMENT.
- WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS.
- PIPES OR CONDUITS SHALL NOT BE PLACED WITHIN THE CONCRETE COVER TO REINFORCEMENT WITHOUT THE APPROVAL OF THE ENGINEER.
- ALL REINFORCING BARS SHALL COMPLY WITH AS 1302. ALL FABRIC SHALL COMPLY WITH AS 1303 AND AS 1304 AND SHALL BE SUPPLIED IN FLAT SHEETS.
- REINFORCING SYMBOLS
S GRADE 2305 DEFORMED BAR
C GRADE 440C COLD WORKED DEFORMED BAR
Y GRADE 440R DEFORMED BAR
R GRADE 230R PLAN BAR
F GRADE 450 WELDED WIRE FABRIC
N GRADE 500 DEFORMED BAR
- THE NUMBER IMMEDIATELY FOLLOWING THESE SYMBOLS IS THE BAR DIAMETER IN MILLIMETRES.
- FABRIC REINFORCEMENT TO BE LAPPED 300 MINIMUM AT ENDS AND SIDES UNL. LAPS IN POSITION OF MAXIMUM MOMENT ARE NOT PERMITTED.
- ALL REINFORCEMENT SHALL BE FULLY SUPPORTED ON INSULATED STEEL, PLASTIC OR CONCRETE CHAIRS SPACED AT 900 AND 750 CENTRES BOTH WAYS UNDER ROOF AND FABRIC REINFORCEMENT RESPECTIVELY. RODS SHALL BE TIED AT ALTERNATE INTERSECTIONS.
- MINIMUM STRIPPING TIMES FOR FORMWORK SHALL BE AS RECOMMENDED IN AS 1599 OR AS DIRECTED BY ENGINEER.



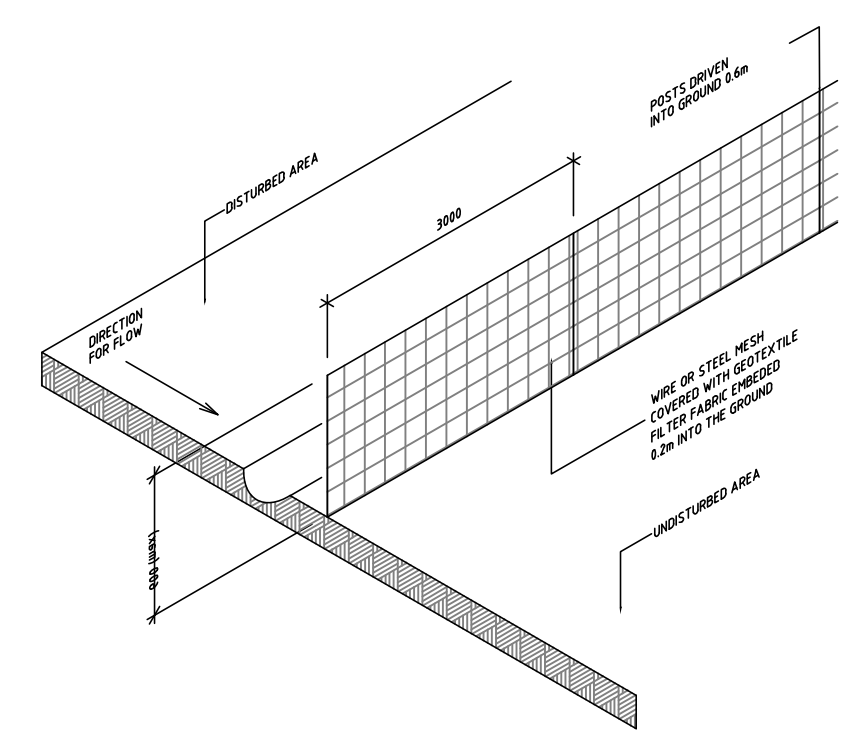
TYPICAL SECTION THRU OSD TANK
1:20



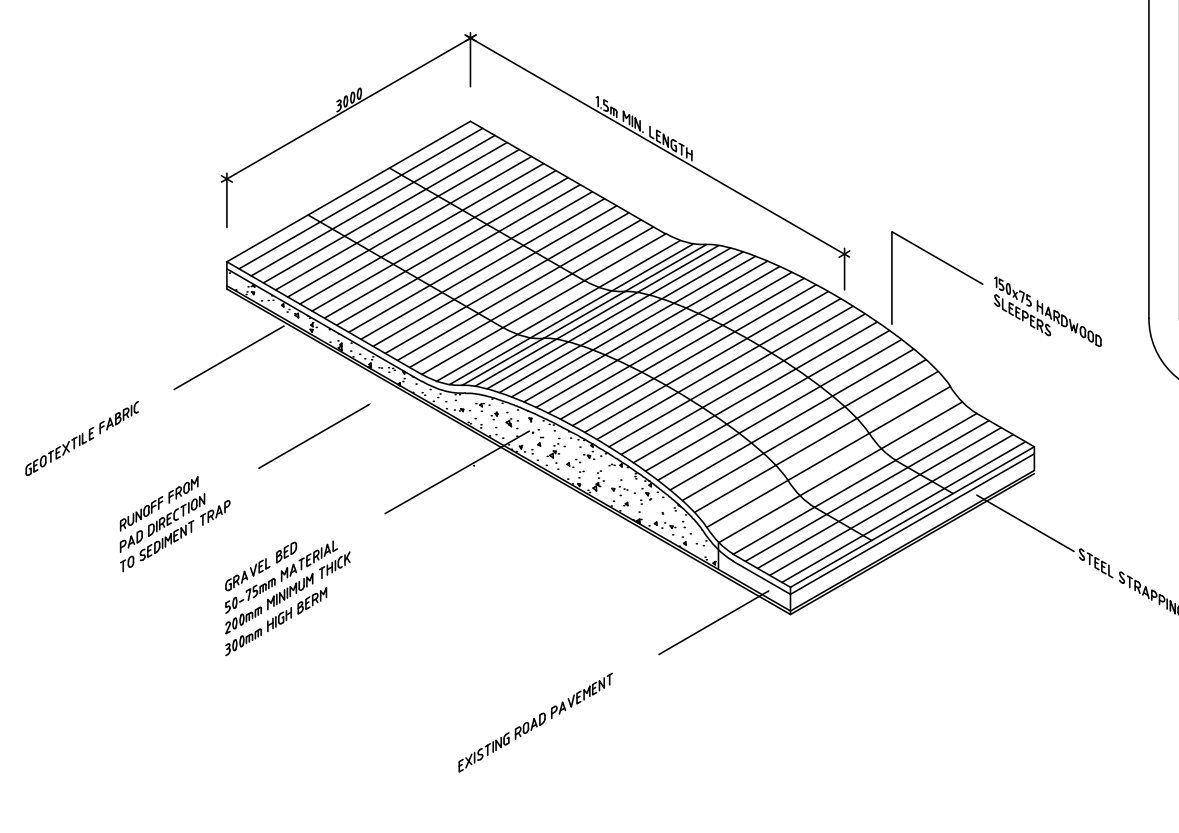
SCREEN DETAIL
N.T.S.



ORIFICE PLATE DETAIL
1:10



SEDIMENT FENCE DETAIL
N.T.S.



TEMPORARY CONSTRUCTION EXIT
N.T.S.

SPECIAL NOTES

- ALL PIPES TO BE LAID ON 75 mm SAND BED WITH THE BARRELS FULLY SUPPORTED ('B' CLASS BEDDING).
- PROVIDE 'CLEANING EYES' TO ALL DOWN PIPES NOT DIRECTLY CONNECTED TO PITS.
- 'HEAVY DUTY' GRATES AND COVERS ARE TO BE PROVIDED IN TRAFFICABLE AREAS.
- THE SURF IN THE DETENTION TANK SHALL BE DELETED.
- ORIFICE PLATES USED TO RESTRICT THE OUTFLOW MUST BE MACHINED TO THE EXACT DIMENSION AS CALCULATED, FROM MINIMUM 3 mm THICK STAINLESS STEEL OR 3 mm THICK GALVANISED STEEL AFTER MACHINING, THEY MUST BE CAST IN THE PIT WALLS OR PERMANENTLY FIXED IN THE PIT BY SOME APPROVED METHOD SO THEY CANNOT BE EASILY REMOVED.
- A PLAQUE MEASURING NO LESS THAN 400 mm X 200 mm SHALL BE IN SOME WAY PERMANENTLY ATTACHED AND PROMINENTLY DISPLAYED WITHIN THE IMMEDIATE VICINITY OF THE OSD DEVICE. THIS PLAQUE SHALL ADVISE OCCUPERS OF THE PROPERTY OF THE EXISTENCE OF THE OSD DEVICE AND ALSO THAT THE DEVICE IS NOT IN ANY WAY TO BE TAMPERED WITH OR CHANGED WITHOUT PRIOR WRITTEN CONSENT OF COUNCIL.
- THE CONSTRUCTED OSD INSTALLATION MUST BE APPROPRIATELY CERTIFIED BY A SUITABLY QUALIFIED AND EXPERIENCED CONSULTING ENGINEER (GENERALLY OF ENG. QUALIFICATION) WHO MUST STATE THAT IT COMPLIES WITH COUNCIL'S OSD POLICY, ALL RELEVANT CODES AND STANDARDS AND ALSO THAT IT IS GENERALLY IN ACCORDANCE WITH APPROVED PLANS.
- UPON COMPLETION OF THE OSD WORKS, WORK-AS-EXECUTED (WAE) PLANS SHALL BE SUBMITTED TO THE COUNCIL BY THE CONSULTING ENGINEER/REGISTERED SURVEYOR TO VERIFY THAT THE VOLUME OF STORAGE HAS BEEN ATTAINED AND THAT CRITICAL WATER AND FLOOR LEVELS ARE IN ACCORDANCE WITH DESIGN REQUIREMENTS. ANY CHANGES OR VARIATIONS TO THE APPROVED PLANS SHALL BE HIGHLIGHTED IN RED.
- CERTIFICATION ON THE STANDARD FORM FOR ON-SITE DETENTION RECORD OF INSTALLATION ISSUED BY COUNCIL AND WAE PLANS SHALL BE SUBMITTED TOGETHER WITH THE COMPLIANCE CERTIFICATE.

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CLIENT: MISSIONARY SISTERS OF BLESSED MARY
PROJECT: HYDRAULICS DETAILS FOR NEW DEVELOPMENT AT 140 OCEAN ST, NARRABEEN

Drawn By: KZ
Checked By: E. A. BENNETT M.I.E. Aust.
Date: 13/09/2019

Scale: AS SHOWN
Drawing No: M-11-267490
Amendment: -

Registered Professional Engineer 19823+
Mr Edward A. Bennett
MIEAust CPEng

Signature: Date: 13/09/2019

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