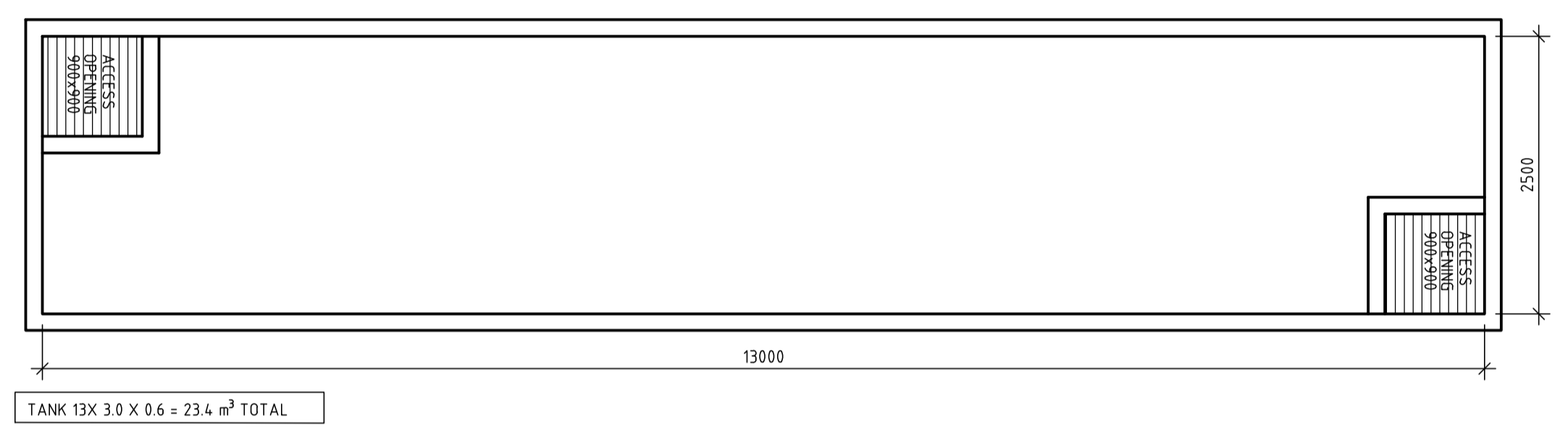
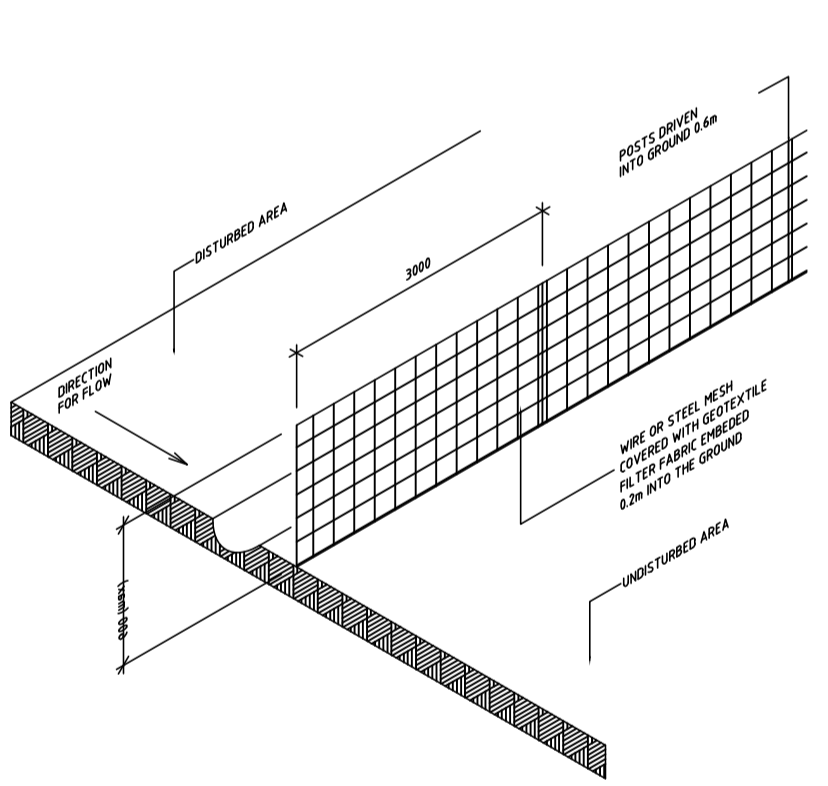


SITE PLAN  
1:100

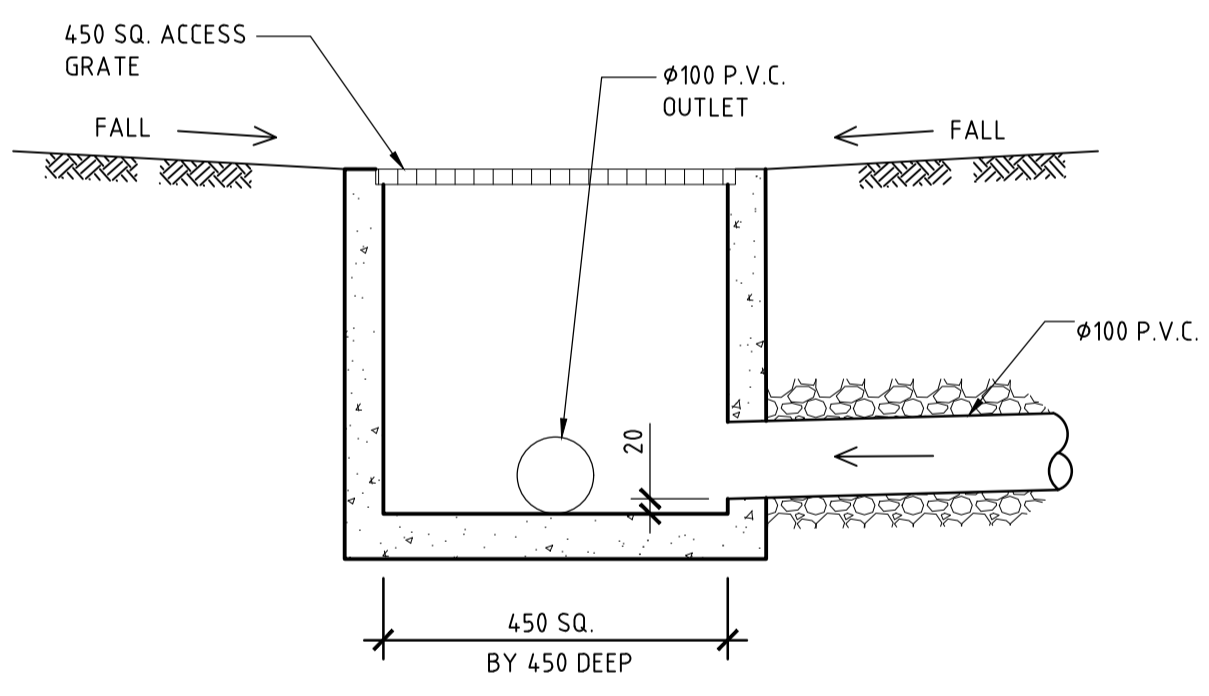
SITE PARAMETERS	
ZONE	1
SITE AREA	950 m <sup>2</sup>
TOTAL RUNOFF VOLUME (RV)	216.7 m <sup>3</sup>
TOTAL INFILTRATION VOLUME (IV)	95.8 m <sup>3</sup>
REQUIRED ABSORPTION SYSTEM VOLUME	27 m <sup>3</sup>
PROVIDED ABSORPTION SYSTEM VOLUME	32.5 m <sup>3</sup>



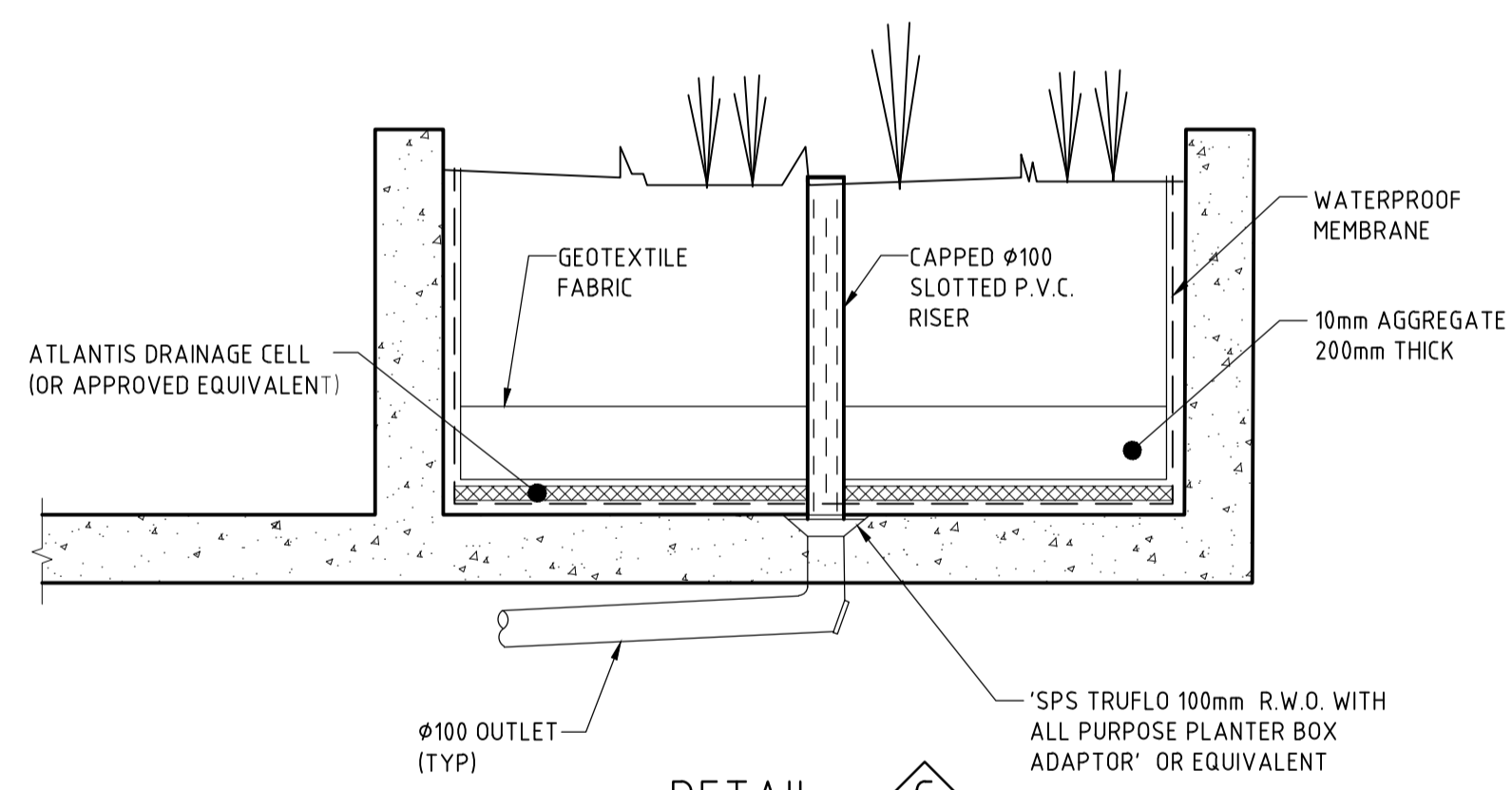
PLAN ON DETENTION TANK  
1:50



SEDIMENT FENCE DETAIL  
N.T.S.



DETAIL B  
SCALE 1:10  
TYPICAL SURFACE PIT DETAIL



DETAIL C  
SCALE 1:20  
SHOWING TYPICAL PLANTER BOX DETAIL

HYDRAULIC NOTES

- H1 ALL SERVICES ARE TO BE LOCATED IN THE FIELD IN CONJUNCTION WITH A RESPONSIBLE OFFICER OF EACH RELEVANT AUTHORITY PRIOR TO COMMENCEMENT OF CONSTRUCTION.
  - H2 DRAINAGE PITS ARE TO BE 450 mm SQUARE OR LARGER AND FITTED WITH A GALVANISED GRATE.
  - H3 DRAINAGE PIPE SIZES ARE Ø100 mm UNLESS NOTED.
  - H4 DRAINAGE PIPES SHALL BE SEWER GRADE PVC UNLESS NOTED.
  - H5 ALL BARE SOIL AREAS ARE TO BE PROTECTED FROM EROSION BY TEMPORARY MEASURES AND RE-VEGETATED AT CESSATION OF CONSTRUCTION.
  - H6 A SEDIMENT CATCHMENT POND IS TO BE PROVIDED AT THE RATE OF 120 m<sup>3</sup> 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.
  - H7 THE DOWNHILL BOUNDARY OF THE SITE IS TO BE PROTECTED BY HAY BALE OR FILTER FABRIC FENCE DURING CONSTRUCTION AS SHOWN IN ATTACHED DETAIL.
  - H8 THE STREET DRAINAGE PIT LOCATED DOWNHILL OF THE SITE SHALL BE PROTECTED FROM SEDIMENT WITH HAY BALES.
  - H9 A SINGLE CONSTRUCTION ENTRANCE SHALL BE ESTABLISHED IN THE MANNER SHOWN IN ATTACHED DETAIL.
  - H10 ALL EROSION PROTECTION MEASURES TO MEET THE REQUIREMENTS OF THE DEPT. OF CONSERVATION AND LAND MANAGEMENT AS OUTLINED IN URBAN EROSION & SEDIMENT CONTROL, SCS TECH HANDBOOK No.2 1978 UNLESS SPECIFIED BY COUNCIL.
- PIPE MAXIMUM FLOW TABLE (BASED ON D = 0.0626A + HANNINGS n = 0.012)
- | SLOPE (%) | 100 mm PVC |                         | 150 mm PVC |                         | 225 mm PVC |                         |
|-----------|------------|-------------------------|------------|-------------------------|------------|-------------------------|
|           | Q (l/s)    | EIA (m <sup>3</sup> /d) | Q (l/s)    | EIA (m <sup>3</sup> /d) | Q (l/s)    | EIA (m <sup>3</sup> /d) |
| 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

SPECIAL NOTES

1. ALL PIPES TO BE LAID ON 75 mm SAND BED WITH THE BARRELS FULLY SUPPORTED ('B' CLASS BEDDING)
2. PROVIDE "CLEANING EYES" TO ALL DOWN PIPES NOT DIRECTLY CONNECTED TO PITS.
3. "HEAVY DUTY" GRATES AND COVERS ARE TO BE PROVIDED IN TRAFFICABLE AREAS.
4. THE SUMP IN THE DETENTION TANK SHALL BE DELETED.
5. 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.
6. 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.
7. 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.
8. 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.
9. 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.

GENERAL NOTES

- G1 THESE NOTES SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS ISSUED DURING THE COURSE OF THE CONTRACT. ALL DISCREPANCIES SHALL BE REFERRED TO THE ARCHITECT OR ENGINEER BEFORE PROCEEDING WITH THE WORK.
  - G2 DIMENSIONS SHALL NOT BE OBTAINED BY SCALING THE STRUCTURAL DRAWINGS.
  - G3 SETTING OUT DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE VERIFIED BY ON-SITE MEASUREMENT.
  - G4 DURING CONSTRUCTION THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED.
  - G5 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.
  - G6 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
- F1 FOOTINGS HAVE BEEN DESIGNED FOR AN ALLOWABLE INTENSITY OF BEARING PRESSURE OF 150kPa. THE BUILDER SHALL OBTAIN APPROVAL OF THE FOUNDATION MATERIAL BEFORE PLACING CONCRETE.
  - F2 FOOTINGS SHALL BE PLACED UNDER WALLS AND COLUMNS UNLESS OTHERWISE NOTED.
- SUB-GRADE
- SG1 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
- C1 ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3600.
  - C2 CONCRETE QUALITY SHALL BE AS TABULATED AND SHALL BE VERIFIED BY TESTS.

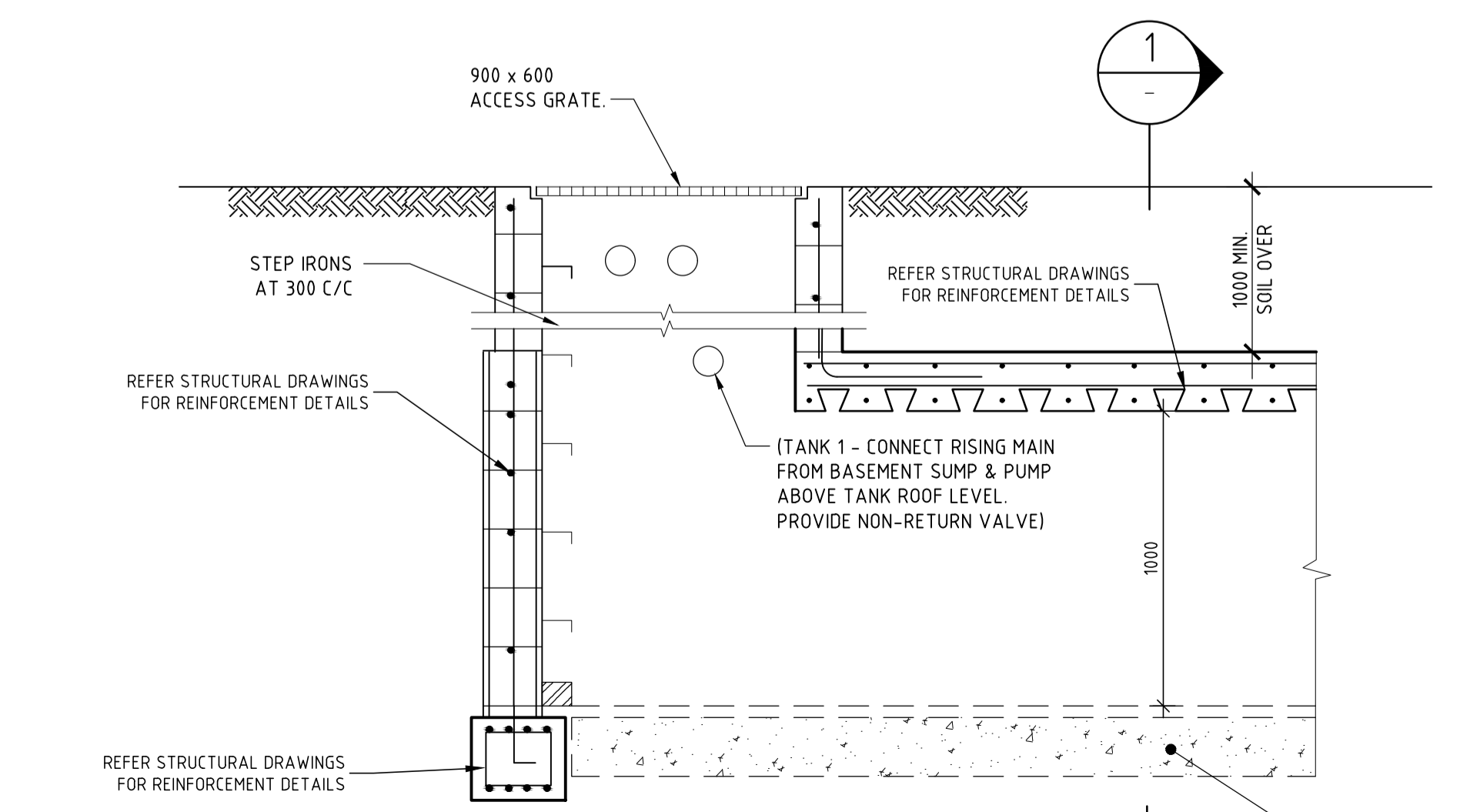
ELEMENT	SLUMP	MAX SIZE AGG	CEMENT TYPE	ADMXTURE	MPa CONCRETE GRADE
ALL	80	20	A	NIL	32

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

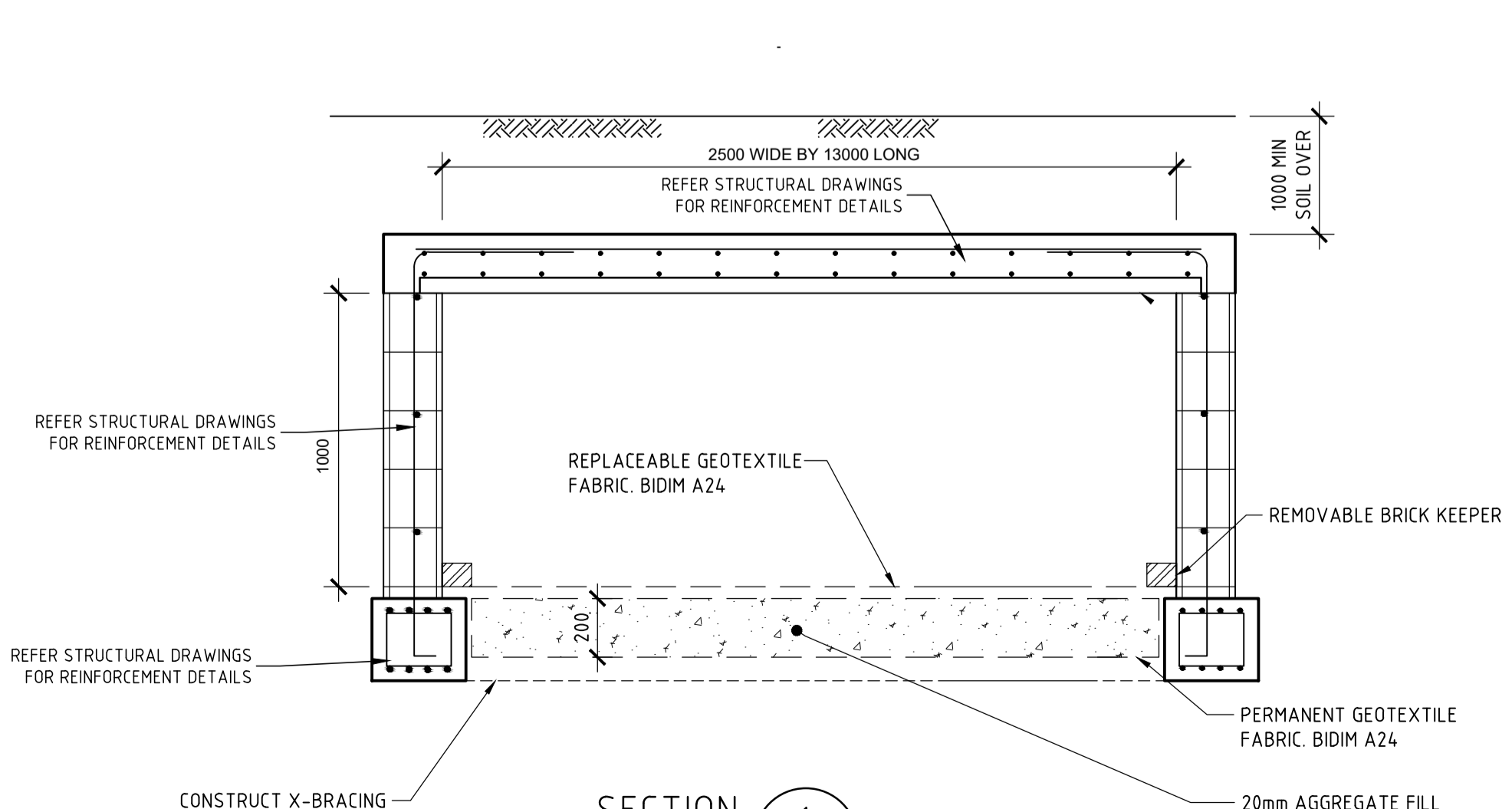
ELEMENT	CAST IN FORMS COMPLYING WITH AS 1599		
	CONDITION 1 TO BE EXPOSED TO WEATHER GROUND WATER OR FRESH WATER	CONDITION 2 TO BE EXPOSED TO WEATHER GROUND WATER OR FRESH WATER	CONDITION 3 CAST AGAINST OTHER FORMWORK OR THE GROUND
PAD FOOTINGS & PILE CAPS	-	65	75
STRIP FOOTINGS	-	50	65
SOME OR CAST PIERS	-	50	75
COLUMNS	40	50	75
WALLS, INCLUDING RETAINING WALLS	20	30	65
BEAMS	25	40	65
SLABS, INCLUDING SLABS FOLLOWING BLOCK CONSTRUCTION	20	30	65
REINFORCEMENT ADJACENT TO HOLLOW BLOCKS INTEGRAL WITH STRUCTURE	5	-	-

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

- C4 SIZES OF ELEMENTS DO NOT INCLUDE THICKNESS OF APPLIED FINISHES.
- C5 CONSTRUCTION JOINTS WHERE NOT SHOWN SHALL BE TO THE APPROVAL OF THE ENGINEER.
- C6 BEAM DEPTHS ARE WRITTEN FIRST AND INCLUDE SLAB THICKNESS, IF ANY, UNL.
- C7 NO HOLES OR CHASES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE ELEMENTS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
- C8 REINFORCEMENT IS REPRESENTED DIAGMATICALLY. IT IS NOT NECESSARILY SHOWN IN TRUE PROJECTION.
- C9 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.
- C10 WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS.
- C11 PIPES OR CONDUITS SHALL NOT BE PLACED WITHIN THE CONCRETE COVER TO REINFORCEMENT WITHOUT THE APPROVAL OF THE ENGINEER.
- C12 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.
- C13 REINFORCING SYMBOLS  
S GRADE 230S DEFORMED BAR  
C GRADE 40C COLD WORKED DEFORMED BAR  
Y GRADE 430R 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
- C14 FABRIC REINFORCEMENT TO BE LAPPED 300 MINIMUM AT ENDS AND SIDES UNL. LAPS IN POSITION OF MAXIMUM MOMENT ARE NOT PERMITTED.
- C15 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.
- C16 MINIMUM STRIPPING TIMES FOR FORMWORK SHALL BE AS RECOMMENDED IN AS 1599 OR AS DIRECTED BY ENGINEER.



DETAIL A  
SCALE 1:20



SECTION 1  
SCALE 1:20  
ABSORPTION TANK 1 CROSS-SECTION DETAIL

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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-11-267490A  
Amendment: A-13/03/2020

Registered Professional Engineer 19823+  
Mr Edward A. Bennett  
MIE Aust CPEng  
Signature: *E. A. Bennett* Date 13/09/2019  
Register on the NPSR in the Category of  
Civil/Environmental/Structural/Geotechnical  
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