

PROPOSED INDUSTRIAL SUB-DIVISION
OLD WALLGROVE RD EASTERN CREEK
STORMWATER DRAINAGE PLAN SET

PLAN NO.

1	COVER SHEET
2	CONSTRUCTION NOTES - SHEET 1 OF 4
3	CONSTRUCTION NOTES - SHEET 2 OF 4
4	CONSTRUCTION NOTES - SHEET 3 OF 4
5	CONSTRUCTION NOTES AND PIT SCHEDULE - SHEET 4 OF 4
6	DRAINAGE PLAN - OVERVIEW
7	CATCHMENTS PLAN
8	OSD AND BIOREMEDIATION BASINS PLAN
9	OSD SECTIONS
10	BIOREMEDIATION SECTION AND TYPICAL DETAIL
11	OSD AND WETLAND INLET / OUTLET TYPICAL DETAILS
12	TYPICAL OVERLAND SWALE SECTIONS
13	LOT 4 AND LOT 5 OVERLAND FLOW PATH PLAN
14	STORMWATER PIT AND PIPE NETWORK LONG-SECTIONS
15	DRAINS MODELLING RESULTS SUMMARY
16	TYPICAL DETAIL - CDS P1015 UNIT
17	TYPICAL DETAIL - CDS P1012 UNIT
18	TYPICAL DETAIL - CDS P1009 UNIT
19	TYPICAL DETAIL - CDS P0708 UNIT

 MARTENS & ASSOCIATES PTY LTD Sustainable Solutions Environmental - Geotechnical - Civil Hydraulic - Wastewater Engineers 6/37 Leighton Place Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767 Email: mail@martens.com.au Internet: http://www.martens.com.au	CLIENT/ PROJECT HANSON / OLD WALLGROVE RD EASTERN CREEK	TITLE COVER	DESIGNED: MGD	DATUM: NA	SHEET 1 OF 19 SHEETS	REV.	DESCRIPTION	DATE	ISSUED
						1	DRAFT	19.04.12	ASN
						2	REVISED DRAFT - AMENDMENT TO BASINS AND GPT DETAIL ADDED	20.04.12	ASN
	THIS PLAN MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED BY PRINCIPAL CERTIFYING AUTHORITY All measurements in m unless otherwise specified.	PROJECT MANAGER: ANDREW NORRIS	DRAWING NUMBER: P1002913JD05V02	REVIEWED:	VERTICAL RATIO:	PAPER SIZE:			
				ASN	NA	A1 / A3			

1	ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH, AND THESE NOTES ARE TO BE READ IN CONJUNCTION WITH, THE RELEVANT AUSTRALIAN STANDARDS, COUNCIL'S SPECIFICATIONS AND NOTICE OF DEVELOPMENT APPLICATION DETERMINATION (DA CONDITIONS).
2	SURVEY INFORMATION SHOWN, AND DESIGN LEVELS, ARE BASED ON THE SURVEY PROVIDED BY MSK ARCHITECTS (DWG REFERENCE 72683_DWG_TRACK.DWG).
3	THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS, SPECIFICATIONS AND WRITTEN INSTRUCTIONS THAT MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. THE CONTRACTOR SHALL ENSURE THAT THEY HAVE THE LATEST DRAWING REVISION PRIOR TO COMMENCING ANY WORKS.
4	IF THE CONTRACTOR HAS ANY QUESTIONS, REQUIRES CLARIFICATION OF ANY ISSUES, OR FINDS ANY DISCREPANCIES WITHIN THESE DRAWINGS, THE CONTRACTOR SHALL ADVISE THE SUPERINTENDENT BEFORE PROCEEDING.
5	ALL SET OUT DIMENSIONS SHALL BE VERIFIED BY THE CONTRACTOR ON SITE BEFORE WORK COMMENCES. DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS. ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
6	LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (AHD).
7	ALL MATERIALS AND WORKMANSHIP USED SHALL BE IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS, BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES OR GEOTECHNICAL ENGINEER'S SPECIFICATIONS, EXCEPT WHERE VARIED BY THE PROJECT SPECIFICATIONS. WHERE THE CONTRACTOR BELIEVES THAT NECESSARY DIMENSIONS ARE NOT SHOWN, REFER THE MATTER TO THE DESIGN CONSULTANT.
8	ALL ENGINEERING WORK MUST BE CERTIFIED AT A MINIMUM AT THE "HOLD POINTS" AS FOLLOWS OR AS REQUESTED BY THE PCA: - AFTER SEDIMENT AND EROSION CONTROL MEASURES INSTALLED. - AFTER POLLUTION EVENTS. ALL WORKS TO CEASE AND ENGINEER TO BE CONTACTED. MARTENS & ASSOCIATES (9476 9999). - COMPLETION OF SITE WORKS.
	CERTIFICATES ARE TO BE ISSUED ON COMPLETION CONFIRMING THAT THE WORKS COMPLY WITH THE DEVELOPMENT CONSENT AND CONSTRUCTION CERTIFICATE.
9	DURING CONSTRUCTION, THE WORKS SITE SHALL BE MAINTAINED DAILY IN A SAFE AND STABLE CONDITION. PERIMETER SAFETY FENCING, TEMPORARY BRACING, BENCHING OF EXCAVATIONS AND BATTERS SHALL BE PROVIDED BY THE CONTRACTOR TO KEEP THE WORKS AND EXCAVATIONS STABLE AT ALL TIMES.
10	THE CONTRACTOR IS TO NOTIFY THE SUPERINTENDENT AND DESIGN ENGINEER IF IT BECOMES EVIDENT THAT CONDITIONS ON SITE (INCLUDING ENCOUNTERING OF GROUNDWATER) HAVE POTENTIAL TO NEGATIVELY IMPACT ON THE INTENDED ENGINEERING DESIGN.
11	ALL CONSTRUCTION WORK SHALL BE CARRIED OUT SO THAT AT ANY TIME THE AMENITY OF ADJOINING PROPERTIES ARE NOT COMPROMISED - I.E. DISCHARGE OF ADDITIONAL OR POLLUTED STORMWATER RUNOFF, ALL WEATHER ACCESS TO THE PROPERTY, NOISE, DUST, BUILDING WASTE ETC.
12	THE CONTRACTOR SHALL PLACE CONDUITS WHERE REQUIRED BY THE RELEVANT UTILITY SERVICE AUTHORITIES AND SHALL UNDERTAKE ALL UTILITY ADJUSTMENTS AS DIRECTED NECESSARY FOR THE COMPLETION OF THE WORKS.
13	THE CONTRACTOR SHALL MAINTAIN AND RESTORE ANY DAMAGE WHICH MAY HAVE BEEN CAUSED BY THE CONSTRUCTION OF THE "WORKS" TO EXISTING ROAD SURFACES, ROADSIDE DRAINAGE OR UTILITY SERVICES.
14	ALL DISTURBED AREAS ARE TO BE REINSTATED AS NEAR AS POSSIBLE TO THE PRE-CONSTRUCTION CONDITION AND/OR IN ACCORDANCE WITH THE SITE'S LANDSCAPING PLAN.
15	THE CONTRACTOR SHALL ENSURE THAT A SMOOTH CONNECTION IS MADE TO ALL EXISTING ENGINEERING WORKS AND NATURAL SURFACES.
16	EROSION AND SEDIMENT CONTROLS IN ACCORDANCE WITH APPROVED EROSION SEDIMENT CONTROL PLAN ARE TO BE IN PLACE AT ALL TIMES. CONTROLS TO BE INSPECTED, MAINTAINED AND REPLACED AS REQUIRED BY THE CONTRACTOR UNTIL WORKS ARE COMPLETED AND PERMANENT MEASURES HAVE BEEN ESTABLISHED.
17	PROVISION IS TO BE MADE FOR MAINTAINING TRAFFIC FLOW IN PUBLIC ROADS AT ALL TIMES. TRAFFIC CONTROL MEASURES ARE TO BE IN ACCORDANCE WITH COUNCIL GUIDELINES AND APPROVED CONSTRUCTION TRAFFIC MANAGEMENT PLAN (CTMP).
18	THE CONTRACTOR IS TO ENSURE THAT NO BUILDING MATERIALS, STOCKPILES OR FILL ENCROACHES UPON ADJACENT PROPERTY OR RETAINED TREES FOR THE DURATION OF THE WORKS.
19	COUNCIL AND THE PCA MUST BE NOTIFIED IMMEDIATELY, SHOULD THE PRESENCE OF ASBESTOS OR SOIL CONTAMINATION, NOT RECOGNISED DURING THE ASSESSMENT PROCESS, BE IDENTIFIED DURING DEMOLITION OR CONSTRUCTION WORKS.
20	A SUFFICIENT SUPPLY OF APPROPRIATE SPILL CONTROL EQUIPMENT MUST BE KEPT ON THE PREMISES AT ALL TIMES. MATERIALS USED IN THE CLEAN UP OF A SPILL MUST BE DISPOSED OF TO AN APPROPRIATELY LICENSED WASTE FACILITY.
21	ALL ABOVE GROUND STORAGES OF HAZARDOUS MATERIALS, OILS, CHEMICALS OR FERTILISERS MUST BE BUNDED. THE BUND IS TO BE MADE FROM AN IMPERVIOUS

22 NO SITE WORKS, INCLUDING THE REMOVAL OF VEGETATION OR ANY DEMOLITION WORKS, SHALL BE COMMENCED PRIOR TO A CONSTRUCTION CERTIFICATE BEING ISSUED.

23 THE COST OF REPAIRING ANY DAMAGE CAUSED TO COUNCIL'S ASSETS AS A RESULT OF CONSTRUCTION WORKS ASSOCIATED WITH THE APPROVED DEVELOPMENT IS TO BE MET IN FULL BY THE APPLICANT/DEVELOPER PRIOR TO THE ISSUE OF A SUBDIVISION CERTIFICATE.

24 TEMPORARY CLOSET ACCOMMODATION IS TO BE PROVIDED AT THE WORK SITE AT ALL TIMES AT THE RATE OF ONE CLOSET FOR EVERY 20 PERSONS AND BE LOCATED WHOLLY WITHIN THE BOUNDARIES OF THE PROPERTY. PERMANENT FACILITIES ARE TO BE PROVIDED IN ACCORDANCE WITH PART F2.1, F2.4 AND F2.5 OF THE BUILDING CODE OF AUSTRALIA.

- 1 THE CONTRACTOR SHALL IMPLEMENT AND MAINTAIN A QUALITY ASSURANCE SYSTEM WHICH COMPLIES WITH THE REQUIREMENTS OF A.S. 9001 (2000) AND AUS-SPEC COC & COS. THE QUALITY SYSTEM SHALL BE SUCH THAT RECORDS ARE KEPT OF ALL ASPECTS AND STAGES OF THE WORK.
- 2 THE RECORDS FOR EACH CONSTRUCTION TASK SHALL BE STAGED AND ITEMISED TO THE SATISFACTION OF THE SUPERINTENDENT. THE PROFORMERS SHALL BE SUBMITTED TO THE SUPERINTENDENT FOR APPROVAL PRIOR TO ANY WORK BEING COMMENCED.
- 3 DURING THE COURSE OF CONSTRUCTION, THE CONTRACTOR SHALL MAINTAIN ACCURATE AND UP TO DATE RECORDS (SUCH AS GOODS RECEIVED / REJECTED / RETURNED, ALL "ISSUED NOTICES / INSTRUCTIONS / CERTIFICATES", RETAIN ALL DRAWING REVISIONS, REPORTS, MARKED UP DRAWINGS OF EITHER AMENDMENTS OR "WAE"); AND SHALL MAKE SUCH RECORDS AVAILABLE TO THE SUPERINTENDENT IF REQUESTED. FAILURE TO MAINTAIN THE APPROPRIATE RECORDS MAY RESULT IN THE CONTRACTOR REINSPECTING COMPLETED WORKS IF INSTRUCTED BY THE SUPERINTENDENT.
- 4 AT THE COMPLETION OF EACH STAGE OF THE WORKS, THE CONTRACTOR SHALL CERTIFY THAT THOSE WORKS HAVE BEEN UNDERTAKEN AND COMPLETED IN ACCORDANCE WITH THE DRAWINGS, SPECIFICATIONS, AND INSTRUCTIONS ISSUED DURING THE COURSE OF THE CONTRACT.
- 5 THE CONTRACTOR SHALL OBTAIN AND KEEP ON SITE AT ALL RELEVANT MATERIAL SAFETY DATA SHEETS (MSDS) THAT ARE APPLICABLE FOR MATERIALS BEING USED ON THE SITE. ALL TRANSPORTATION, STORAGE, USE OF, AND DISPOSAL OF THESE MATERIALS SHALL BE IN ACCORDANCE WITH MSDS. THE LOCATION OF THESE MSDS SHALL BE MADE KNOWN TO ALL PERSONS DURING THE SITE INDUCTION AND ARE TO BE ACCESSIBLE AT ALL TIMES TO ALL SITE PERSONNEL.
- 6 ATTENTION IS DRAWN TO THE OCCUPATIONAL HEALTH AND SAFETY ACT NSW. 2000 NO.40 AND ITS REGULATIONS, WHICH REQUIRES THAT EMPLOYERS ENSURE THE HEALTH, SAFETY AND WELFARE OF ALL PERSONS WORKING ON OR VISITING THE SITE.
- 7 THE CONTRACTOR SHALL AT ALL TIMES EXERCISE ALL NECESSARY AND REASONABLE SAFETY PRECAUTIONS APPROPRIATE TO ENSURE THE SAFETY OF ALL PERSONS ON THE WORK SITE OR IN THE VICINITY OF THE WORKS.
- 8 THE CONTRACTOR SHALL IMPLEMENT AN OH&S SYSTEM AND MAINTAIN ALL THE REQUIREMENTS OF THE RELEVANT OH&S ACT, SUCH AS LOG BOOKS RECORDING OF PERSONNEL INDUCTIONS, PERSONNEL SIGN-IN AND SIGN-OUT, INJURIES ETC, AND FIRST AID STATIONS AND TOOL BOX MEETINGS ETC.
- 9 THE CONTRACTOR SHALL PROVIDE A SECURE PERIMETER FENCE AROUND THE SITE TO EXCLUDE THE PUBLIC, PLUS SAFETY FENCING AROUND EXCAVATIONS WITHIN THE SITE, AND ANY OTHER FENCING THAT IS REQUIRED TO ENSURE THE SAFETY OF SITE PERSONNEL / VISITOR PEDESTRIANS, ANIMALS AND VEHICLES.
- 10 THE LAND AND ADJOINING AREAS ARE TO BE KEPT IN A CLEAN AND TIDY CONDITION AT ALL TIMES. LITTER AND RUBBISH SHALL BE PLACED IN CONTAINERS AND REMOVED FROM THE SITE. A WASTE STORAGE CONTAINER IS TO BE PROVIDED AT THE COMMENCEMENT OF THE BUILDING WORK.
- 11 THE WORK SITE IS TO BE KEPT LIT BETWEEN SUNSET AND SUNRISE IF IT IS LIKELY TO BE A SOURCE OF DANGER TO PERSONS USING A PUBLIC PLACE OR UPON INSTRUCTION BY COUNCIL TO ENHANCE THE SAFETY AND SECURITY OF THE AREA IN WHICH THE WORK IS LOCATED.
- 12 ANY HOARDING, FENCE OR AWNING IS TO BE REMOVED WHEN NO LONGER REQUIRED.
- 13 DURING ALL PILING AND EARTHWORKS ON LANDFILL AREAS LANDFILL GAS MONITORING IS TO BE UNDERTAKEN IN ACCORDANCE WITH A MONITORING PLAN APPROVED BY THE SUPERINTENDENT.

1 PRIOR TO COMMENCING ANY WORKS, THE CONTRACTOR SHALL CARRY OUT A "DIG BEFORE YOU DIG" FOR A SERVICES SEARCH. THE CONTRACTOR SHALL THEN ARRANGE FOR ALL SERVICES TO BE PHYSICALLY LOCATED, IDENTIFIED AND CLEARLY MARKED WITHIN THE WORKS AREA PRIOR TO THE COMMENCEMENT OF ANY WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY DAMAGE CAUSED TO SUCH SERVICES DURING THE COURSE OF THE WORKS.

2 ANY SERVICE LOCATION SHOWN ON THE DESIGN PLANS ARE INDICATIVE ONLY AND THE POSITION AND DEPTH INDICATED SHOULD NOT BE RELIED UPON.

3 ALL CARE IS TO BE EXERCISED WHEN EXCAVATING NEAR EXISTING UTILITY SERVICES. MANUAL EXCAVATION PARALLEL TO THE SERVICE IS RECOMMENDED AND. MECHANICAL DIGGING IS NOT TO BE CARRIED OUT OVER OR NEAR ANY ELECTRICAL / TELECOMMUNICATIONS CABLES OR GAS PIPES. EXCAVATIONS ARE TO BE UNDERTAKEN IN ACCORDANCE WITH THE REQUIREMENTS OF THE NSW WORK COVER CODE OF EXCAVATION 2000.

4 DURING THE EXECUTION OF WORKS, THE CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF ALL EXISTING UTILITY SERVICES. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED TO THE EXISTING SERVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE RELEVANT UTILITY SERVICE PROVIDER, AT NO COST TO THE PRINCIPAL OR OTHER PROPERTY OWNER.

5 WHERE IT IS NECESSARY TO REMOVE, DIVERT OR CUT INTO ANY EXISTING UTILITY SERVICE, AND ON COMPLETION OF THE NEW 'WORKS, THE CONTRACTOR SHALL GIVE AT LEAST THREE (3) DAYS NOTICE OF THE REQUIREMENTS TO THE SUPERINTENDENT, WHO WILL ADVISE WHAT ARRANGEMENTS SHOULD BE MADE FOR THE ALTERATION OF SUCH EXISTING WORKS.

6 PRIOR TO THE COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL OBTAIN THE SUPERINTENDENT'S APPROVAL OF THE PROGRAMME FOR THE RELOCATION / CONSTRUCTION OF TEMPORARY SERVICES.

7 ALL NEW OR EXCAVATED EXISTING UTILITY SERVICES THAT CROSS EXISTING AND FUTURE ROADS/PAVEMENTS SHALL HAVE APPROPRIATE WARNING TAPES AND/OR WIRES PLACED IN ACCORDANCE WITH THE RELEVANT STANDARDS AND THEN BE BACKFILLED WITH DGB20 MATERIAL TO SUBGRADE LEVEL AND COMPACTED TO 98% STANDARD DENSITY RATIO, SUBJECT TO PRIOR APPROVAL FROM THE RELEVANT AUTHORITY.

8 ON COMPLETION OF SERVICES INSTALLATION, ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION, INCLUDING NATURE STRIPS, FOOTPATHS, CONCRETE AND GRAVEL AREAS, KERBS AND ROAD PAVEMENTS.

9 THE CONTRACTOR SHALL ALLOW FOR THE EXCAVATION, CAPPING OFF AND REMOVAL IF REQUIRED OF ALL EXISTING SERVICES IN AREAS AFFECTED BY THE WORKS WITHIN THE CONTRACT AREA AS SHOWN ON THE DRAWINGS UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT. ALL SERVICES WORKS ARE TO BE COMPLETED TO REGULATORY AUTHORITY STANDARDS AND APPROVAL.

10 THE CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES AS REQUIRED TO MAINTAIN THAT SERVICE TO ANY PROPERTY OR BUILDING IN OPERATION DURING THE CONSTRUCTION WORKS, TO THE SATISFACTION AND APPROVAL OF THE SUPERINTENDENT. WHEN ALL NEW WORKS / DIVERSIONS ARE COMPLETED, COMMISSIONED AND INSPECTED, THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY UTILITY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT.

11 INTERRUPTION TO EXISTING UTILITY SERVICES SHALL BE CARRIED OUT SO AS NOT TO CAUSE ANY INCONVENIENCE OR DAMAGE TO ADJACENT PROPERTIES. THE CONTRACTOR IS RESPONSIBLE FOR GAINING PERMISSION OF THE SUPERINTENDENT FOR TIME OF INTERRUPTION.

12 THE CONTRACTOR SHALL MAINTAIN THE EXISTING STORMWATER DRAINAGE FLOWS THROUGH THE SITE AT ALL TIMES, AND MAKE DUE ALLOWANCE FOR ALL SUCH FLOWS AT ALL TIMES.

13 THE CONTRACTOR SHALL ENSURE THAT APPROPRIATE UTILITY SERVICES ABOVE GROUND MARKERS ARE PLACED IN ACCORDANCE WITH SERVICE PROVIDER AND COUNCIL SPECIFICATIONS.

14 ALL NEW AND REPLACEMENT UTILITY SERVICES SHALL BE LAID AT THE DEPTH AND POSITION WITHIN THE SERVICES TRENCH IN ACCORDANCE WITH RELEVANT AUTHORITY REQUIREMENTS AND SPECIFICATIONS OR AS DIRECTED IN THE DETAILED DRAWINGS.

15 SERVICES TRENCHES TO BE GRADED AT A MINIMUM OF 1% TO EITHER SUBSOIL OR STORMWATER DRAINAGE LINES.

16 THE CONTRACTOR SHALL ENSURE THAT ALL LOCATED AND NEW UTILITY SERVICES WITHIN AND OUTSIDE THE SITE ARE SURVEYED BY A DULY QUALIFIED SURVEYOR AS PART OF THE "WORK AS EXECUTED" RECORDS.

1. MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS AND WITH THE BY-LAWS AND ORDINANCE REQUIREMENTS OF THE RELEVANT BUILDING AUTHORITY, EXCEPT WHERE VARIED BY THE PROJECT SPECIFICATIONS.
2. SUFFICIENT NOTICE SHALL BE GIVEN BY THE CONTRACTOR TO THE SUPERINTENDENT TO ENABLE MATERIALS THAT ARE TO BE BROUGHT ON SITE TO BE EXAMINED AND TESTED AS REQUIRED. ALL MATERIALS ARE TO BE STACKED IN A SUITABLE MANNER TO FACILITATE EXAMINATION.

EARTHWORKS GENERAL

GENERALY ALL EARTHWORKS ARE TO BE UNDERTAKEN IN ACCORDANCE WITH THE GUIDELINES FOR EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS AS SET OUT IN A.S. 3798 (2007), THE PROJECT APPROVAL CONDITIONS AND THE GEOTECHNICAL REPORT FOR THE DEVELOPMENT PREPARED BY MARTENS AND ASSOCIATES (P1002913JR02V01, MARCH 2012). WHERE INCONSISTENCIES BETWEEN THESE NOTES AND PROJECT GEOTECHNICAL REPORT ARE IDENTIFIED, THE REPORT SHALL BE CONSIDERED TO PREVAIL AND THE PROJECT GEOTECHNICAL ENGINEER IS TO BE CONSULTED.

2 EARTHWORKS ARE TO BE UNDERTAKEN UNDER LEVEL 1 SUPERVISION AS DEFINED IN SECTION 8 OF AS 3798 (2007).

3 GEOTECHNICAL TESTING AND INSPECTION AUTHORITY (GITA) TO BE ENGAGED BY COUNCIL NOT THE EARTHWORKS CONTRACTOR.

4 THE CONTRACTOR SHALL ENSURE THAT ALL EXCAVATION WORKS COMPLY WITH THE NSW WORK COVER 'CODE OF PRACTICE: EXCAVATION 2000' OR THAT REQUIRED IN THE STATE WHERE THIS CONTRACT IS BEING UNDERTAKEN.

5 THE CONTRACTOR SHALL TAKE ALL DUE CARE THAT ONLY THE ABSOLUTE MINIMUM OF AREA FOR CONSTRUCTION IS USED AND THAT NO UNDUE DAMAGE IS DONE TO EXISTING VEGETATION.

6 THE CONTRACTOR SHALL PROGRAMME THE EARTHWORKS OPERATION SO THAT THE WORKING AREAS ARE ADEQUATELY DRAINED DURING THE PERIOD OF CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SEALED OFF TO REMOVE DEPRESSIONS, ROLLER MARKS AND SIMILAR WHICH WOULD ALLOW WATER TO POND AND PENETRATE THE UNDERLYING MATERIAL. ANY DAMAGE OR DETERIORATION IN ENGINEERING PROPERTIES OF SOIL RESULTING FROM THE CONTRACTOR NOT OBSERVING THESE REQUIREMENTS SHALL BE RECTIFIED BY THE CONTRACTOR AT HIS COST.

7 THE CONTRACTOR SHALL BE DEEMED TO HAVE INVESTIGATED THE SITE AND BE SATISFIED AS TO THE QUANTITY AND TYPE OF MATERIAL TO BE EXCAVATED AND THE SUB-SURFACE CONDITIONS LIKELY TO BE ENCOUNTERED DURING BULK EARTHWORKS.

8 WORKS AREAS SHALL BE STRIPPED OF PAVEMENTS, VEGETATION (INCLUDING ROOT AFFECTED SOILS) AND OTHER DELETERIOUS MATERIAL. TOPSOIL IS TO BE STOCKPILED ON SITE FOR RE-USE. STOCKPILE LOCATION IS TO BE CONFIRMED ON SITE BY THE SUPERINTENDENT AND IN ACCORDANCE WITH THE SECP. STOCKPILES TO BE IN ACCORDANCE WITH APPROVED PROJECT SEC.

9 ALL GENERATED WASTE AND SPOIL TO BE MANAGED IN ACCORDANCE WITH THE APPROVED SITE WASTE MANAGEMENT PLAN AND/OR RELEVANT NSW DEC GUIDELINES. ANY SPOIL OR OTHER MATERIAL SUSPECTED OF BEING CONTAMINATED IS TO BE REFERRED TO THE SUPERINTENDENT.

10 EARTHWORKS SHALL INCLUDE THE EXCAVATION, PLACING AND COMPACTION OF CUT MATERIALS TO THE LEVELS AND PROFILES AS DETAILED ON THE BULK EARTHWORKS PLAN AND AS REQUIRED TO COMPLETE THE PROJECT SPECIFIED WORKS. EXCESS SPOIL IS TO BE MANAGED AS DIRECTED BY THE SUPERINTENDENT. BATTERS SHALL CONTINUE IN REGULAR LINES AROUND CURVES.

11 THE PRINCIPAL RESERVES THE RIGHT TO AMEND ALL LEVELS SHOWN ON THE DRAWINGS AT ANY STAGE DURING THE CONTRACT PERIOD, PRIOR TO THE PLACEMENT OF TOPSOIL, SHOULD SUCH AMENDMENT BE DEEMED BY THE OWNER'S REPRESENTATIVE / SUPERINTENDENT PRIOR TO PLACEMENT.

12 WHERE BATTERS ARE NOT DETAILED ON PLANS AND SECTIONS, AN EVEN GRADE BETWEEN NOMINATED LEVELS WILL APPLY. THE MAXIMUM UNSUPPORTED BATTER SHALL BE 1V:3H UNLESS NOTED OTHERWISE.

13 BATTERS SHALL BE FREE OF LOOSE MATERIAL AND SHALL BE NEATLY TRIMMED AND ROLLED TO SEAL THE SURFACE (PRIOR TO REVEGETATION AS REQUIRED IN ACCORDANCE WITH SITE VMP).

14 FILL BATTERS TO BE CONSTRUCTED BY OVER PLACEMENT OF ENGINEERED FILL AND TRIMMING BACK TO THE FINAL PROFILE.

EXCAVATION

- 1

THE EXCAVATION SHALL BE CARRIED OUT IN THE LOCATIONS SHOWN AND TO THE LEVELS, WIDTHS AND BATTER SLOPES INDICATED ON THE DRAWINGS. IN ALL AREAS WHERE EXISTING LEVELS ARE ABOVE DESIGN LEVELS, EXCAVATION OF EXCESS MATERIAL IS TO BE COMPLETED. WHERE EXPOSED UNDERLYING MATERIAL IS FILL, EXCAVATION IS TO PROCEED TO A LEVEL OF 1.0 M BELOW DESIGN FINISHED SURFACE LEVELS. WHERE NATURAL SOIL / ROCK PROFILES ARE EXPOSED, EXCAVATION IS TO PROCEED TO DESIGN FINISHED LEVEL.
- 2

EXCAVATED MATERIAL NOT MEETING THE SPECIFICATION FOR FILL MATERIAL AND CLASSIFIED AS UNSUITABLE FOR RE-USE AS TOPSOIL OR IN LANDSCAPING SHALL BE DISPOSED OF IN AN APPROPRIATE MANNER AND AS DIRECTED BY THE SUPERINTENDENT.
- 3

ALL EXCAVATED MATERIAL REMOVED FROM THE SITE MUST BE CLASSIFIED IN ACCORDANCE WITH NSW DECC (2009) ENVIRONMENTAL GUIDELINES: ASSESSMENT, CLASSIFICATION AND MANAGEMENT OF LIQUID AND NON-LIQUID WASTES PRIOR TO DISPOSAL.
- 4

WHERE EXCAVATION WORK IS REQUIRED IN THE VICINITY OF EXISTING UTILITY SERVICES, THE CONTRACTOR SHALL SUPPORT ALL SUCH UTILITY SERVICES DURING THE WORKS. ON COMPLETION OF EXCAVATION WORKS SUCH UTILITY SERVICES SHALL BE BACK FILLED IN SUCH A MANNER AS TO RETAIN THE UTILITY SERVICE IN ITS ORIGINAL GRADE AND POSITION TO THE SATISFACTION OF THE SUPERINTENDENT AND UTILITY SERVICE PROVIDER.
- 5

WHERE EXCAVATED MATERIAL IS TO BE USED FOR FILLING, THE MATERIAL SHALL BE INSPECTED AND APPROVED BY THE SUPERINTENDENT PRIOR TO USE.
- 6

WHERE ROCK IS EXPOSED DURING EXCAVATION, THE CONTRACTOR SHALL CEASE EXCAVATION AT THIS LOCALITY AND CONTACT THE SUPERINTENDENT WHO WILL THEN DEPENDING ON THE NATURE OF THE CONSTRUCTION, ADVISE ON THE LEVEL TO WHICH THE EXCAVATION IS TAKEN.
- 7

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE MAINTENANCE OF ANY EXCAVATIONS AND IS LIABLE FOR ANY DAMAGE WHICH MAY BE CAUSED TO ANY WATER / SEWER PIPE / STORMWATER, PUBLIC UTILITY SERVICE OR STRUCTURES, CAUSED BY THE COLLAPSE OF THE EXCAVATION.
- 8

WHERE DIRECTED BY THE SUPERINTENDENT THE BOTTOM OF TRENCHES OR EXCAVATIONS SHALL BE COMPACTED PRIOR TO PLACING OF ANY PAVEMENT SUB-BASE, BEDDING OR CONCRETE MATERIALS. SHOULD THE FOUNDATION MATERIAL, IN THE OPINION OF THE SUPERINTENDENT, BE INCAPABLE OF EFFECTIVE COMPACTION, SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH APPROPRIATE MATERIAL.
- 9

STRIPPED PAVEMENT SUBGRADES MUST BE PROOF ROLLED (PRIOR TO THE ADDITION OF SUITABLE FILL) BY A MINIMUM 12 TONNE MASS SMOOTH DRUM ROLLER WITHOUT VIBRATION UNDER THE SUPERVISION OF THE GEOTECHNICAL INSPECTION AND TESTING AUTHORITY (GITA) AND/OR SITE ENGINEER.
- 10

SUBGRADE IN ROCK IS TO BE RIPPED, SCARIFIED, SPREAD AND COMPACTED TO A MINIMUM DEPTH OF 300MM BELOW THE FINISHED SUBGRADE LEVEL.
- 11

IF APPROVED BY THE SUPERINTENDENT EXCAVATED MATERIAL MAY BE USED FOR BACKFILL OVER PIPES PROVIDED IT COMPLIES WITH RELEVANT BUILDING AND CONSTRUCTION CODES AND SPECIFICATIONS. THIS MATERIAL SHALL REMAIN THE PROPERTY OF THE PRINCIPAL AND ANY EXCESS SHALL BE SPOILED OR USED FOR FILLING WITHIN THE SITE AS DIRECTED BY THE SUPERINTENDENT.
- 12

ALL EXCAVATIONS MUST BE PROPERLY GUARDED AND PROTECTED TO PREVENT THEM FROM BEING DANGEROUS TO LIFE OR PROPERTY.
- 13

RETAINING WALLS OR OTHER APPROVED METHODS NECESSARY TO PREVENT THE MOVEMENT OF EXCAVATED OR FILLED GROUND, ARE TO BE CONSTRUCTED TOGETHER WITH ASSOCIATED STORMWATER DRAINAGE MEASURES PRIOR TO OCCUPATION OF THE DEVELOPMENT OR BEFORE WHERE SITE CONDITIONS REQUIRE.
- 14

NO BUSH ROCK IS TO BE REMOVED FROM THE SITE WITHOUT PRIOR APPROVAL FROM NSW DECC AND COUNCIL.

ENGINEERED FILL (GENERAL)

- 1

FOUNDATION MATERIAL DEEMED BY THE GEOTECHNICAL INSPECTION TESTING AUTHORITY (GITA) AS UNSUITABLE IS TO BE REMOVED AS DIRECTED BY THE SUPERINTENDENT AND REPLACED WITH APPROVED MATERIAL SATISFYING THE REQUIREMENTS BELOW.
- 2

PRIOR TO PLACEMENT OF ANY FILL THE SUBGRADE IS TO BE PREPARED IN ACCORDANCE WITH THIS SPECIFICATION.
- 3

ANY IMPORTED SOILS TO THE SUBJECT SITE MUST BE VIRGIN EXCAVATED NATURAL MATERIAL (VENM) AS DEFINED IN SCHEDULE 1 OF THE PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997 UNLESS OTHERWISE APPROVED BY THE SUPERINTENDANT.
- 1

PRIOR TO THE IMPORTATION AND / OR PLACEMENT OF ANY FILL MATERIAL, A VALIDATION REPORT AND SAMPLING LOCATION PLAN MUST BE SUBMITTED TO AND APPROVED BY THE PRINCIPAL. THE VALIDATION REPORT AND SAMPLING LOCATION PLAN MUST:
 - CERTIFY THE MATERIAL TO BE VENM IN ACCORDANCE WITH THE POEO ACT (1997).
 - BE PREPARED BY A PERSON WITH EXPERIENCE IN THE GEOTECHNIAL ASPECTS OF THE EARTHWORKS.

- BE PREPARED IN ACCORDANCE WITH: DEPARTMENT OF ENVIRONMENT AND CONSERVATION (2006) CONTAMINATED SITES GUIDELINES "GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (SECOND EDITION) – SOIL INVESTIGATION LEVELS FOR URBAN DEVELOPMENT SITES IN NSW".

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CONFIRM THAT THE FILL MATERIAL:

A) PROVIDES NO UNACCEPTABLE RISK TO HUMAN HEALTH AND THE ENVIRONMENT.

B) IS FREE OF CONTAMINANTS.

C) IS SUITABLE FOR ITS INTENDED PURPOSE AND LAND USE; AND

D) HAS BEEN LAWFULLY OBTAINED.

5

UNLESS OTHERWISE APPROVED OR SPECIFIED, ALL FILL MATERIAL SHALL BE FROM A SOURCE APPROVED BY THE SUPERINTENDENT AND SHALL COMPLY WITH THE FOLLOWING:
 - FREE FROM ORGANIC AND PERISHABLE MATTER AND OTHER DELETERIOUS / UNSUITABLE MATERIAL AS DEFINED BY AS 3798 (2007).
 - MAXIMUM PARTICLE SIZE 75MM.
 - PLASTICITY INDEX BETWEEN 2% AND 20%.
 - A MINIMUM CBR TO BE DETERMINED DURING CONSTRUCTION OR AS SPECIFIED ON THESE DRAWINGS.
 - ENGINEERED FILL IS TO BE PLACED IN LAYERS NOT GREATER THAN 300 MM (LOOSE) AND COMPACTED TO ACHIEVE 98% SMDD AND NO DRYER THAN – 3% SOMC OR AS SPECIFIED ELSEWHERE BY RELEVANT GEOTECHNICAL REPORT OR ON PLAN.. FINAL FILL LAYER ON ALL AREAS TO BE COMPACTED TO ACHIEVE 100% SMDD. PAVEMENT AND ROAD SUB-GRADE IS TO BE COMPACTED TO LEVELS AS SPECIFIED IN THE GEOTECHNICAL REPORT.

6

MATERIAL ACCEPTANCE AND SELECTION SHOULD BE SUBJECT TO FULL TIME MONITORING BY THE GITA NOMINATED FOR THE PROJECT.

7

A LOG-BOOK SHALL BE KEPT ON SITE AND MAINTAINED TO RECORD ALL DAILY TRUCK LOADS OF FILL BROUGHT TO THE SITE. THIS LOG-BOOK SHALL BE MADE AVAILABLE FOR PERUSAL TO AUTHORISED COUNCIL OFFICERS UPON REQUEST.

8

PRIOR TO ANY FILL BEING PLACED, TOPSOIL AND UNSUITABLE MATERIAL SHALL BE STRIPPED OFF TO A MINIMUM DEPTH OF 150MM AND STOCKPILED AS DIRECTED BY THE SUPERINTENDENT OR AS SPECIFIED IN THE DESIGN DRAWINGS. UNSUITABLE TOPSOIL MATERIAL SO DEEMED BY THE SUPERINTENDENT SHALL BE SEPARATELY STOCKPILED.

9

WHERE FILL IS TO BE PLACED ON THE EXISTING SURFACE, THE EXISTING SURFACE WILL BE PREPARED IN ACCORDANCE WITH THIS SPECIFICATION THEN BE BENCHED TO ALLOW COMPACTION AND MATERIAL KEYING. ADJACENT BENCHES SHALL STEP NOT MORE THAN 0.4 M WITHOUT GEOTECHNICAL ENGINEERS APPROVAL.

10

THE STRIPPED SURFACE MUST BE PROOF ROLLED (PRIOR TO THE ADDITION OF FILL) BY A MINIMUM 12 TONNE STATIC MASS SMOOTH DRUM ROLLER WITHOUT VIBRATION UNDER THE SUPERVISION OF THE GITA.

11

WHERE EXISTING FILL IS ENCOUNTERED, FOLLOWING STRIPPING / EXCAVATION TO SUB-GRADE LEVELS OR WHERE LEVELS ARE TO BE RAISED BY FILLING, THE FOLLOWING WORKS ARE REQUIRED:

- EXCAVATION TO A DEPTH OF 1.0 M BELOW DESIGN FINISHED SURFACE LEVELS (NOTE: NOT REQUIRED WHERE SURFACE IS GREATER THAN 1.0 M BELOW DESIGN LEVEL).

- COMPACTION OF *IN-SITU* FILL USING AN IMPACT ROLLER. ALL IMPACT ROLLING OPERATIONS ARE TO BE SUPERVISED BY A GEOTECHNICAL ENGINEER WITH FINAL REQUIREMENT FOR WORKS TO BE DETERMINED ON-SITE.

- PROOF ROLL AFTER IMPACT ROLLING TO DETECT ANY HEAVING OR SOFT AREAS. ALL SUCH AREAS TO BE REMEDIATED UNDER GEOTECHNICAL ENGINEER'S DIRECTION.

12

WHERE ROCK IS ENCOUNTERED AT FINISHED LEVELS OR DEEPER, NO FURTHER WORKS ARE REQUIRED PRIOR TO FILLING.

13

SHOULD GROUNDWATER SEEPAGE THROUGH SOIL / FILL BE OBSERVED, THEN SUB-SOIL DRAINS SHALL BE REQUIRED.

14

THE CONTRACTOR SHALL ENSURE THAT LEVEL 1 TESTING AS PER AS3798-2007 CLAUSE 8.2 IS CARRIED OUT FOR ANY FILLING OPERATIONS. DENSITY AND COMPACTION TESTING TO BE UNDERTAKEN ON EACH FILL LAYER (MAXIMUM 300 MM RISE IN VERTICAL HEIGHT) BY A NATA REGISTERED LABORATORY OR MINIMUM REQUIREMENTS OF AS.3798 (2007).

15

DENSITY AND COMPACTION TESTING TO BE UNDERTAKEN ON EACH FILL LAYER TO MINIMUM REQUIREMENTS OF AS.3798 (2007).

16

FILL TO BE PLACED AND COMPACTED TO RELATIVE COMPACTION LEVELS AS SPECIFIED IN AS 3798-2007 TABLE 5.1 AND IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 6.2. MINIMUM RELATIVE COMPACTION REQUIREMENTS ARE SUMMARISED FOR THE SITE AS FOLLOWS:

- 98% SMDD FOR GENERAL ENGINEERED FILL LAYERS AND AREAS TO BE REGRADED UP TO 300 MM BELOW FINISHED SURFACE LEVELS.

- 100% SMDD FOR TOP 300 MM LAYER OF FILL FOR ALL AREAS AND FOR PAVEMENT SUB-GRADE.

17

MOISTURE CONTROL OF FILLING MATERIALS TO BE AT ±2% OMC OR AS SPECIFIED ELSEWHERE BY RELEVANT GEOTECHNICAL REPORT OR AS INSTRUCTED BY GTA.

18

FILL TO BE PLACED AND COMPACTED UNDER SUPERVISION OF A GEOTECHNICAL ENGINEER WITH LEVEL 2 QUALIFICATION, IN ACCORDANCE WITH A.S. 3798 (2007).

19

BATTERS SHALL BE CONSTRUCTED BY 'OVER PLACING' SOILS AND TRIMMING BACK TO THE FINAL PROFILE (BEFORE TOP DRESSING) UNLESS OTHERWISE INSTRUCTED ON THE DESIGN DRAWINGS.

20

TOPSOIL WHERE PLACED OR REQUIRED IS TO HAVE A MAXIMUM THICKNESS OF 300MM AND SHALL BE LIGHTLY ROLLED TO ACHIEVE A 'NATURAL IN-SITU' COMPACTION TO PREVENT EROSION BUT TO ACHIEVE THE REQUIRED GRADES AS SPECIFIED ON THE DESIGN DRAWINGS.

21

SURFACE RUNOFF AND SCOUR MUST BE CONTROLLED AND THE SURFACE BETWEEN LAYERS GRADED WITH A 1% MINIMUM FREE DRAINING SLOPE.

22

DURING CLEARING AND EXCAVATION FOR SLABS AND FOOTINGS CUT OUT SOFT SPOTS AND FILL AS ABOVE AND AS DIRECTED BY THE GTA.

23

EXCEPT WHERE OTHERWISE SPECIFIED TOPSOIL WHERE PLACED OR REQUIRED IS TO HAVE A MAXIMUM THICKNESS OF 150MM AND SHALL BE LIGHTLY ROLLED TO ACHIEVE A 'NATURAL IN-SITU' COMPACTION TO PREVENT EROSION BUT TO ACHIEVE THE REQUIRED GRADES AS SPECIFIED ON THE DESIGN DRAWINGS. A SINGLE PASS WITH A 12T SMOOTH DRUM ROLLER IS TYPICALLY ADEQUATE TO STABILISE TOPSOIL.

24

SURFACE RUNOFF AND SCOUR MUST BE CONTROLLED AND THE SURFACE BETWEEN LAYERS GRADED WITH A 1% MINIMUM FREE DRAINING SLOPE.

EDGE COMPACTION

1

OUTER EDGE OF FILL LAYERS TO EXTEND A HORIZONTAL DISTANCE AT LEAST 1.0 M BEYOND THE DESIGN GEOMETRY.

2

ROLLER MUST EXTEND OVER THE EDGE OF EACH PLACED LAYER IN ORDER TO SEAL THE BATTER SURFACE.

3

ON COMPLETION OF FILLING, EXCESS UNDER-COMPACTED EDGE FILL TO BE TRIMMED BACK TO DESIGN GEOMETRY.

SERVICE / ANCHOR TRENCHES & GABION WALL FILL

1

BACKFILLING OF SERVICE TRENCHES, LINER ANCHOR TRENCHES AND MATERIAL IMMEDIATELY IN FRONT AND BEHIND GABION RETAINING WALLS IS TO BE COMPLETED TO THE PROJECT ENGINEERING FILL SPECIFICATION EXCEPT AS AMENDED BELOW.

2

BACKFILL IS TO BE PLACED IN MAXIMUM 100 MM LOOSE LAYERS.

3

BACKFILL TO CONTAIN NO MATERIAL > 40 MM.

4

COMPACTION TO UTILISE TRENCH ROLLER OR A PAD FOOT ROLLER ON ATTACHMENT FITTED TO EXCAVATOR.

5

COMPACTION TESTING TO BE COMPLETED TO PROJECT SPECIFICATION.

COMPACTION TESTING

1

DENSITY TESTING IS TO BE UNDERTAKEN TO CONFIRM COMPACTION.

2

ENGINEERED FILL – TESTING AT RATE OF AT LEAST 1 TEST PER LAYER PER 2500 M2 OR 1 PER 500 M3 DISTRIBUTED EVENLY THROUGHOUT THE FULL DEPTH AND AREA OR THREE TESTS PER LOT (REFER TO CLAUSE 12.8 OF AS 3798 – 2007), WHICHEVER REQUIRES MORE TESTS.

3

TRENCH BACKFILL – TESTING AT RATE OF AT LEAST 1 TEST PER TWO LAYER PER 40 LINEAR METRES OF TRENCH.

4

GABION WALL FILLING - TESTING AT RATE OF AT LEAST 1 TEST PER TWO LAYER PER 50 M2.

5

DENSITY TESTING OF AGGREGATE BACKFILL IS NOT WARRANTED. REFER TO CATCH DRAIN NOTES ON SHEET 4.

PRE-COMMENCEMENT BRIEFING

1

A PRE-CONSTRUCTION MEETING IS TO BE HELD BETWEEN PROJECT ENGINEERS, COUNCIL AND CONTRACTOR SO THAT ALL PARTIES INVOLVED UNDERSTAND THE EARTHWORKS REQUIREMENTS AND POTENTIAL DIFFICULTIES (E.G. GROUNDWATER INGRESS).

2

LINES OF COMMUNICATION ARE TO BE CLEARLY DEFINED AT THIS MEETING.

REVEGETATION OF SWALES, ROAD SHOULDERS, BUFFER STRIPS AND OTHER DISTURBED AREAS.

1

ALL EARTHWORK AREAS ARE TO BE FINISHED WITH 150MM THICK LAYER OF SITE SOURCED OR APPROVED EXTERNAL SUPPLY TOPSOIL AND SPRAY GRASSED ASAP FOLLOWING COMPLETION OF WORKS IN ANY ONE AREA. ALL TRAFFIC IS TO BE EXCLUDED FROM NEWLY RE-VEGETATED AREAS BY THE ERECTION OF SUITABLE TEMPORARY BARRIER FENCING.

2

SITE SEDIMENT AND EROSION CONTROL MEASURES ARE TO BE MAINTAINED UNTIL THE VEGETATION IS ESTABLISHED OR OTHERWISE DIRECTED BY THE SUPERINTENDENT OR COUNCIL ENGINEER.

3

THE CONTRACTOR IS RESPONSIBLE FOR THE REVEGETATED AREAS FOR THE PERIOD SPECIFIED IN THE CONTRACT.

CONCRETE

1

ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS AND WITH THE BY-LAWS AND ORDINANCE REQUIREMENTS OF THE RELEVANT BUILDING AUTHORITY EXCEPT WHERE VARIED BY THE PROJECT SPECIFICATIONS OR SUPERINTENDENT.

2

ALL CONCRETE SHALL COMPLY WITH A.S. 3600.

3

CONCRETE SHALL HAVE A MINIMUM STRENGTH OF 25 MPA AT 28 DAYS IN ACCORDANCE WITH A.S. 3600, UNLESS NOTED OTHERWISE IN DESIGN PLANS, REFERENCED SPECIFICATIONS OR ADVISED IN WRITING BY THE SUPERINTENDENT.

4

EXPANSION JOINTS SHALL BE INSTALLED AS INDICATED ON THE DESIGN DRAWINGS AND IN ACCORDANCE WITH A.S 3600, GENERALLY AT EVERY 6.0M, AND SHALL BE TOOL FINISHED. DUMMY JOINTS SHALL BE STRUCK AT 3.0M INTERVALS TO A DEPTH OF 10MM. UNLESS OTHERWISE INDICATED ON DESIGN DRAWINGS.

5

CRACK CONTROL JOINTS SHALL BE CUT TO A DEPTH OF 20MM, AT 4.0 M INTERVALS, WITHIN 24 HOURS OF THE CONCRETE BEING POURED.

6

PLACEMENT OF CONCRETE - ALL CONCRETE SHALL BE MECHANICALLY VIBRATED TO ACHIEVE COMPACTION WITHOUT SEGREGATION. VIBRATORS SHALL NOT BE USED TO SPREAD THE CONCRETE.

7

CONDUITS SHALL NOT BE PLACED BETWEEN REINFORCEMENT AND CONCRETE SURFACES.

8

CONSTRUCTION JOINTS SHALL BE PROPERLY FORMED AND USED ONLY WHERE SHOWN OR SPECIFICALLY APPROVED BY THE ENGINEER.

9

ALL CONSTRUCTION JOINT LOCATIONS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER.

10

NO HOLES, CHASERS OR EMBEDMENT OF PIPES, OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWING, SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR APPROVAL OF THE ENGINEER.

11

ALL CONCRETE SHALL BE PLACED AND 'CURED' IN ACCORDANCE WITH A.S.3600. CONCRETE SHALL BE FINISHED TO THE SPECIFICATIONS ON THE DRAWINGS.

12

NO CONCRETE SHALL BE PLACED UNTIL COMPLETED FALSEWORK, FORMWORK AND REINFORCING HAS BEEN INSPECTED AND APPROVED BY THE ENGINEER.

13

ALL NEW CONCRETE PAVING TO CONSIST OF A MINIMUM 100MM THICK 25MPA REINFORCED CONCRETE WITH SL72 CENTRALLY PLACED.

14

ALL CONCRETE UNLESS OTHERWISE NOTED SHALL HAVE A SLUMP OF 80MM AT POINT OF PLACEMENT, A MAX. AGGREGATE SIZE OF 20MM. NO WATER SHALL BE ADDED TO THE MIX PRIOR TO OR DURING PLACEMENT OF CONCRETE. STRENGTH AS SPECIFIED ON PLANS.

15

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

ELEMENTS	INTERIOR	EXTERIOR	EXTERIOR CAST AGAINST GROUND
FOOTINGS	-	-	50
COLUMNS/PEDESTALS	30 UNO	REFER TO PLAN	-
SLABS/WALLS	25	REFER TO PLAN	40 ON MEMBRANE
BEAMS	25 UNO	REFER TO PLAN	50
BLOCKWORK	55 FROM APPROPRIATE FACE		

16

SIZES OF CONCRETE ELEMENTS DO NOT INCLUDE THICKNESS OF APPLIED FINISHES.

17

BEAM DEPTHS ARE WRITTEN FIRST AND INCLUDE SLAB THICKNESS, IF ANY.

18

NO HOLES OR CHASES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE ELEMENTS WITHOUT THE PRIOR APPROVAL OF THE ENGINEER.

19

SHRINKAGE REDUCING ADMIXTURES SUCH AS 'ECLIPSE' OR APPROVED EQUIVALENT, IF SPECIFIED, MUST BE ADDED TO MIX PRIOR TO POUR.

20

WATER REDUCING AGENTS, IF SPECIFIED, MUST BE ADDED TO MIX PRIOR TO POUR. NO EXTRA WATER IS TO BE ADDED TO INCREASE SLUMP.

21

WHERE VERTICAL SLAB/BEAM SURFACES ARE FORMED AGAINST A MASONRY (OR OTHER) WALL, PROVIDE 10MM STYRENE SEPARATION MATERIAL.

22

ABOVE COVERS MAY HAVE TO BE ADJUSTED IF FIRE RATING IS A REQUIREMENT.

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 6/37 Leighton Place Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767 Email: mail@martens.com.au Internet: http://www.martens.com.au MARTENS & ASSOCIATES PTY LTD Sustainable Solutions Environmental - Geotechnical - Civil Hydraulic - Wastewater Engineers	CLIENT/ PROJECT	TITLE	DESIGNED: MGD	DATUM: NA	SHEET 3 OF 19 SHEETS	REV.	DESCRIPTION	DATE	ISSUED
	HANSON / OLD WALLGROVE RD EASTERN CREEK	CONSTRUCTION NOTES – SHEET 2 OF 4	DRAWN: KT	HORIZONTAL RATIO: NA		1	DRAFT	19.04.12	ASN
						2	REVISED DRAFT – AMENDMENT TO BASINS AND GPT DETAIL ADDED	20.04.12	ASN
	THIS PLAN MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED BY PRINCIPAL CERTIFYING AUTHORITY All measurements in m unless otherwise specified.	PROJECT MANAGER: ANDREW NORRIS	DRAWING NUMBER: P1002913J005V02	REVIEWED: ASN	VERTICAL RATIO: NA	PAPER SIZE: A1 / A3			

- REINFORCEMENT

- 1
- ALL REINFORCEMENT SPECIFIED IS GRADE D500 UNLESS NOTED OTHERWISE.
- 2
- REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY IT IS NOT NECESSARILY SHOWN IN TRUE PROJECTION.
- 3
- TOP REINFORCEMENT IS TO BE CONTINUOUS OVER SUPPORTS.
BOTTOM REINFORCEMENT TO BE LAPPED AT SUPPORTS.
- 4
- WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS. WHERE PERMITTED WELDING TO COMPLY WITH AS1554.3.
- 5
- PIPES OR CONDUITS SHALL NOT BE PLACED WITHIN THE ZONE OF CONCRETE COVER TO THE REINFORCEMENT WITHOUT THE APPROVAL OF THE ENGINEER.
- 6
- ALL REINFORCING BARS AND FABRIC SHALL COMPLY WITH AS 4671-2001.
- 7
- REINFORCEMENT SYMBOLS:

N - GRADE 500N DEFORMED BAR (D500) NORMAL DUCTILITY
R - GRADE 250N PLAIN ROUND BAR (R250) NORMAL DUCTILITY.
SL - GRADE 500L WELDED DEFORMED RIBBED MESH (D500) SQUARE LOW DUCTILITY.
RL - GRADE 500L WELDED DEFORMED RIBBED MESH (D500) RECTANGULAR LOW DUCTILITY.
THE NUMBER IMMEDIATELY FOLLOWING THESE SYMBOLS IS THE NUMBER OF MILLIMETERS IN THE BAR DIAMETER.
EXAMPLE : 8 N12-250
DENOTES 8, GRADE 500N DEFORMED BARS, 12MM DIAMETER AT 250 CTS.
- 8
- FABRIC REINFORCEMENT TO BE LAPPED 1 COMPLETE SQUARE + 25MM UNLESS NOTED OTHERWISE.
- 9
- ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON BAR CHAIRS SPACED AT A MAXIMUM OF 750 CENTRES BOTH WAYS UNDER ROD AND FABRIC REINFORCEMENT. REINFORCEMENT SHALL BE TIED AT ALTERNATE INTERSECTIONS.

- FORMWORK

- 1
- FORMWORK MUST BE CLEANED OF ALL DEBRIS PRIOR TO CASTING OF CONCRETE.
- 2
- MINIMUM STRIPPING TIMES FOR FORM WORK SHALL BE AS RECOMMENDED IN AS 3610 - 1990 OR AS DIRECTED BY THE ENGINEER.
- 3
- THE FINISHED CONCRETE SHALL BE A DENSE HOMOGENEOUS MASS, COMPLETELY FILLING THE FORM WORK, THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS. ALL CONCRETE ELEMENTS INCLUDING SLABS ON GROUND AND FOOTINGS SHALL BE COMPACTED WITH MECHANICAL VIBRATORS.
- 4
- CURING OF ALL CONCRETE IS TO BE ACHIEVED BY KEEPING SURFACES CONTINUOUSLY WET FOR A PERIOD OF 3 DAYS, FOLLOWED BY PREVENTION OF LOSS OF MOISTURE FOR SEVEN DAYS FOLLOWED BY A GRADUAL DRYING OUT . APPROVED SPRAYED ON CURING COMPOUNDS MAY BE USED WHERE NO FLOOR FINISHES ARE PROPOSED. POLYTHENE SHEETING OR WET HESSIAN MAY BE USED IF PROTECTED FROM WIND AND TRAFFIC.

SIGNAGE

- 1
- ON-SITE SIGNAGE IS REQUIRED TO CLEARLY IDENTIFY THE PCA AND THE PRINCIPAL CONTRACTOR (THE COORDINATOR OF THE BUILDING WORK) PURSUANT TO THE ENVIRONMENTAL PLANNING AND ASSESSMENT AMENDMENT (QUALITY OF CONSTRUCTION).
- 2
- ALL SIGNAGE REQUIREMENTS AS SPECIFIED IN THE CTMP ARE TO BE IMPLEMENTED PRIOR TO AND DURING CONSTRUCTION WORKS.
- 3
- WHERE SIGNS ARE TO BE REUSED THEY ARE TO BE WASHED AND CLEANED WHERE REQUIRED.
- 4
- ALL EXISITNG SIGNS WHICH ARE DAMAGED AND NON LEGIBLE ARE TO BE REPLACED.

SEDIMENT AND EROSION CONTROL PLAN

- 1
- A SEDIMENT AND EROSION CONTROL PLAN (SECP) FOR ALL SITE WORKS IS TO BE SUBMITTED FOR APPROVAL. MEASURES FOR SEDIMENT AND EROSION CONTROL NOTED IN THE APPROVED SECP ARE TO BE INSTALLED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF ANY WORK TO ELIMINATE THE DISCHARGE OF SEDIMENT FROM THE SITE. THE CONTROLS ARE TO BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF LANDCOM'S "MANAGING URBAN STORMWATER: SOILS AND CONSTRUCTION", VOLUME 1, 4TH EDITION, MARCH 2004, (THE BLUE BOOK).

GEOTEXTILES

- 1
- GEOTEXTILES SHALL BE NON-WOVEN, NEEDLE PUNCHED, CONTINUOUS FILAMENT AND POLYESTER.
- 2
- ALL GEOTEXTILE USED ARE TO COMPLY WITH AS 3706
- 3
- GEOTEXTILES WITH THE FOLLOWING MINIMUM PROPERTIES TESTED TO RTA R63 SHALL BE USED WHERE SPECIFIED WITHIN THE PLANS:-

TYPE	GRAB TENSILE STRENGTH (N) Q	TRAPEZOIDAL TEAR STRENGTH (N) Q	CBR BURST STRENGTH (N) Q	G RATING (-) Q	PORE SIZE (UM) MEAN	FLOW RATE (L/M ² /S) MEAN
A	500	180	1720	900	≤ 120	>50
B	700	250	2250	1350	≤ 120	>50
C	900	350	3200	2000	≤ 120	>50
D	1200	450	4400	3000	≤ 120	>50
E	1600	650	6400	4500	≤ 120	>50

- 4
- GEOTEXTILE MUST BE DELIVERED TO THE SITE AT LEAST 14 DAYS PRIOR TO COMMENCEMENT OF INSTALLATION.
- 5
- CONTRACTOR TO PROVIDE A CERTIFICATE OF COMPLIANCE THAT THE GEOEXTILE COMPLIES WITH TEST RESULTS REPORTED ON NATA ENDORSED TEST DOCUMENTS; THE CERTIFICATE MUST NOT BE MORE THAN 12 MONTHS OLD.
- 6
- AT ALL JOINS GEOTEXTILES ARE TO BE LAPPED BY NOT LESS THAN 300 MM OR GREATER IF SPECIFIED BY MANUFACTURER. WHERE UNDERLYING MATERIAL IS < CBR 2 LAP IS TO BE INCREASED AS SPECIFIED BY ENGINEER OR SUPPLIER.
- 7
- WHERE INITIAL LAYER OVER GEOTEXTILE HAS D50<150 MM THE INITIAL LAYER OF PLACED LOOSE MATERIAL IS TO BE A MINIMUM OF 300 MM OR 3 TIMES THE D50 (WHICHEVER THE GREATER.
- 8
- WHERE INITIAL LAYER OVER GEOTEXTILE HAS D50>150 MM THE INITIAL LAYER OF PLACED LOOSE MATERIAL IS TO BE A MINIMUM OF 500 MM OR 2 TIMES THE D50 (WHICHEVER THE GREATER.
- 9
- PLANT AND EQUIPMENT ARE NOT TO TRAVERSE PLACED GEOTEXTILE WITHOUT SUPERINTENDENTS PERMISSION UNTIL FIRST LAYER OF COVER MATERIAL IS PLACED.

- SITE SAMPLING AND TESTING

- 1
- CONFORMITY TESTING SHALL BE UNDERTAKEN ON GEOTEXTILES DELIVERED TO SITE FOR THE RANGE OF TESTS SPECIFIED AS FOLLOWS:

A.

GRAB TENSILE TO AS 2001.23 (METHOD B-88)

B.

WIDE STRIP TENSILE STRENGTH TO AS 3706.2

C.

TRAPEZOIDAL TEAR STRENGTH TO AS 3706.3

- 2
- THE ON-SITE TESTING SCHEME SHALL BE CARRIED OUT IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:

BATCH OR ORDER SIZE (M ²) DEFINED AS THE LOT SIZE	NUMBER OF ROLLS TO BE SAMPLED REPRESENTING THE LOT
INITIAL 10,000 OR PART THEREOF	1
EACH SUBSEQUENT 20,000 OR PART THEREOF (MAXIMUM)	1

- 3
- FOR LOT SIZE DEFINITION AS REFERRED TO IN THE ABOVE TABLE, REFEF TO RTA SPECIFICATION R63. REFER TO R63 FOR TESTING AND SAMPLING GUIDELINES. A LOT MAY ONLY COMPRISE ONE CLASS OF GEOTEXTILE AND MUST BE FROM A SINGLE MANUFACTURER.
- 4
- 5 SAMPLES ARE TO BE TESTED FROM BOTH THE LONGITUDINAL AND TRANSVERSE DIRECTION OF THE FABRIC. THE MEAN VALUE FROM THE WEAKER DIRECTION MUST BE USED TO ASSESS LOT CONFORMITY.
- 5
- TEST SUBMISSIONS ARE TO INCLUDE THE LOCATION, DATE AND TIME OF SAMPLING AND PERSON SAMPLING.
- 6
- TEST RESULTS TO BE SUBMITTED TO BOTH THE PRINCIPAL AND THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
- 7
- GEOTEXTILE WHICH HAS NOT BEEN VERIFIED BY THE ON-SITE TESTING SAMPLING SCHEME AS COMPLYING WITH THE ABOVE REQUIREMENTS MUST BE REJECTED AND REMOVED FROM THE SITE.

FLEXIBLE LINED DRAINS

- 1
- WHERE FLEXIBLE LINED DRAINS SPECIFIED ON PLANS THE FOLLOWING PRESCRIBED LINER IS TO BE USED UNLESS ALTERNATIVE IS APPROVED BY THE SUPERINTENDENT:

A.

DRAINS TO BE FORMED IN PREVIOUSLY COMPACTED ENGINEERED FILL.

B.

DRAINS TO BE SHAPED AS SPECIFIED ON DESIGN DRAWINGS.

C.

ANCHOR TRENCHES 300 MM WIDE AND 300 MM DEEP TO BE EXCAVATED ALONG EDGE OF DRAIN.

D.

ANCHOR TRENCH AND DRAIN TO BE LINED WITH TYPE E GEOTEXTILE (POLYPROPYLENE)

E.

ANCHOR TRENCH TO BE BACKFILLED AS SPECIFIED FOR SERVICE TRENCH IN THIS SPECIFICATION.

F.

GEOTEXTILE TO BE COATED WITH POLYMER MODIFIED CEMENTITIOUS GEOCOATING SUCH AS PCS-3LV.

G.

COATING TO HAVE TENSILE ELONGATION OF > 150%.

H.

COATING TO BE APPLIED AT NOT LESS THAN 3.5 KG/M2

I.

FOLLOWING 28 DAY CURE COATING IS TO HAVE NO CRACKING EVIDENT

J.

COATING TO HAVE UL94 FIRE RESISTANCE AND IS TO BE UV STABLE.

K.

GEOTEXTILE TO BE TESTED IN ACCORDANCE WITH THIS SPECIFICATION.

L.

APPLIED GEOCOATING TO BE SAMPLED AND TESTED AT A RATE OF 1 TEST PER 100 M OF DRAIN. SAMPLE NOT LESS THAN 0.25 M² TO BE TESTED.

M.

WHERE GEOCOATING FAILS TEST ADJACENT 50 M OF DRAIN TO BE RECOATED AT A RATE OF 1 KG/M2 (OR GREATER IF SO INDICATED BY TEST) THEN RETESTED.

GENERAL INSPECTIONS BY ENGINEER OR PCA

- 1
- CONTACT THE PCA (PRINCIPAL CERTIFYING AUTHORITY) AS TO REQUIREMENTS FOR MANDATORY CRITICAL STAGE. INSPECTIONS IN ACCORDANCE WITH REVISED EP&A ACT REGULATIONS EFFECTIVE JULY 1, 2004. AS A MINIMUM, THE FOLLOWING APPLIES.
- 2
- 48 HOURS NOTICE IS REQUIRED BEFORE ANY SITE INSPECTION
- 3
- BEARING STRATA OF ALL FOOTINGS PRIOR TO CONCRETE POUR.
- 4
- ANY REINFORCEMENT PRIOR TO CONCRETE POUR.
- 5
- GEOTECHNICAL INSPECTION AND/OR COMPACTION TESTING OF ALL BACKFILL TO LEVEL 1 CONTROL
- 6
- ENGINEERING INSPECTIONS FOR RETAINING STRUCTURES ARE AS FOLLOWS:

A.

ALL PROJECT EARTHWORKS ARE TO HAVE LEVEL 1 GITA SUPERVISION.

B.

EXCAVATION OF FOOTINGS.

C.

EXCAVATED DRAINAGE TRENCH.

D.

BACKFILL OF DRAINAGE MATERIAL WITHIN DRAINAGE TRENCH.

E.

COMPLETION OF WORKS.

F.

WHERE INSPECTIONS HAVE IDENTIFIED ADDITIONAL WORKS, THEN RE-INSPECTION MAY BE REQUIRED

COUNCIL GENERAL NOTES

THE FOLLOWING COUNCIL NOTES SHALL TAKE PRECEDENCE OVER THE PRECEEDING CONSTRUCTION NOTES IF ANY DISCREPANCIES EXIST.

- G1
- ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL'S ENGINEERING DESIGN AND ENGINEERING CONSTRUCTION SPECIFICATIONS AND TO THE REQUIREMENTS OF THE CERTIFYING AUTHORITY.
- G2
- MANDATORY CONSTRUCTION INSPECTIONS BY CERTIFYING AUTHORITY ARE REQUIRED AT THE FOLLOWING STAGES AND THE WORKS APPROVED PRIOR TO CONTINUANCE OF ANY FUTURE WORK:

(A)

SEDIMENT AND EROSION CONTROL:

•

IMPLEMENTATION OF SEDIMENT AND EROSION CONTROL MEASURES

•

REVEGETATION OF DISTURBED AREAS

•

CONSTRUCTION OF MAJOR CONTROLS (E.G. GABIONS, SHOT-CRETING, ETC)

•

REMOVAL OF SEDIMENT BASINS AND FENCING

•

INTERNAL SEDIMENT / POLLUTION CONTROL DEVICES

•

FINAL INSPECTION.

(B)

TRAFFIC CONTROL:

•

IMPLEMENTATION OF TRAFFIC CONTROL

•

MAINTENANCE OF TRAFFIC CONTROL DURING WORKS

•

REMOVAL OF TRAFFIC CONTROL

(C)

CONSTRUCTION OF DRAINAGE WORKS (INCLUDING INTER-ALLOTMENT):

•

PIPES BEFORE BACKFILLING, INCLUDING TRENCH EXCAVATION AND BEDDING

•

SAND BACKFILLING

•

FINAL PIPE INSPECTION

•

PIT BASES AND HEADWALL APRONS

•

PIT WALLS / WING WALLS / HEAD WALLS

•

CONCRETE PIT TOPS

•

CONNECTION TO EXISTING SYSTEM

•

TAILOUT WORKS

•

FINAL INSPECTION.

(D)

CONSTRUCTION OF ROAD PAVEMENT:

•

BOXING OUT

•

PRIOR TO PLACEMENT OF SUB BASE AND ALL SUBSEQUENT PAVEMENT LAYERS, A PROOF ROLLER TEST OF EACH PAVEMENT LAYER IS REQUIRED.

•

SUBSOIL DRAINAGE

•

KERB PRE-LAYING

•

KERB DURING LAYING INCLUDING PROVISION OF ROOFWATER OUTLETS.

•

PAVEMENT PROFILES

•

WEARING COURSE

•

KERB FINAL

•

FORMWORK FOR ALL CONCRETE PAVEMENTS INCLUDING FOOTPATHS AND CROSSINGS.

•

FINAL INSPECTION.

(E)

PROVISION OF STREET FURNITURE:

•

STREET FURNITURE (INCLUDING STREETSIGNS, GUIDEPOSTS, GUARDRAIL ETC.)

•

ERECTION OF FENCING ADJOINING PUBLIC / DRAINAGE RESERVES.


6/37 Leighton Place
Hornsby, NSW 2077 Australia
Phone: (02) 9476 9999
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Email: mail@martens.com.au
Internet: <http://www.martens.com.au>

**MARTENS &
ASSOCIATES PTY LTD**
Sustainable Solutions
Environmental - Geotechnical - Civil
Hydraulic - Wastewater Engineers

CLIENT/ PROJECT
**HANSON / OLD WALLGROVE
RD EASTERN CREEK**

THIS PLAN MUST NOT BE USED FOR CONSTRUCTION UNLESS
SIGNED AS APPROVED BY PRINCIPAL CERTIFYING AUTHORITY
All measurements in m unless otherwise specified.

TITLE
CONSTRUCTION NOTES – SHEET 3 OF 4

PROJECT MANAGER:
ANDREW NORRIS

DRAWING NUMBER:
P1002913J005V02

DESIGNED:
MGD

DRAWN:
KT

REVIEWED:
ASN

DATUM:
NA

HORIZONTAL RATIO:
NA

VERTICAL RATIO:
NA

SHEET
4
OF 19
SHEETS
A1 / A3

REV.	DESCRIPTION	DATE	ISSUED
1	DRAFT	19.04.12	ASN
2	REVISED DRAFT – AMENDMENT TO BASINS AND GPT DETAIL ADDED	20.04.12	ASN



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CLIENT/ PROJECT

HANSON / OLD WALLGROVE RD EASTERN CREEK

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All measurements in m unless otherwise specified.

TITLE

CONSTRUCTION NOTES AND PIT SCHEDULE – SHEET 4 OF 4

PROJECT MANAGER:
ANDREW NORRIS

DRAWING NUMBER:
P1002913J005V02

DESIGNED:
MGD

DATUM:
NA

SHEET
5
OF 19
SHEETS

REV. DESCRIPTION DATE ISSUED

1 DRAFT 19.04.12 ASN

2 REVISED DRAFT – AMENDMENT TO BASINS AND GPT DETAIL ADDED 20.04.12 ASN

DRAWN:
KT

HORIZONTAL RATIO:
NA

REVIEWED:
ASN

VERTICAL RATIO:
NA

PAPER SIZE:
A1 / A3

EARTHWORKS NOTES

G3

NO TREES ARE TO BE REMOVED UNLESS APPROVAL IS GRANTED BY COUNCIL'S LANDSCAPE COMPLIANCE OFFICER OR AS AUTHORISED BY DEVELOPMENT CONSENT.

G4

MAKE SMOOTH JUNCTIONS WITH EXISTING WORKS.

G5

NO WORK IS TO BE CARRIED OUT ON COUNCIL PROPERTY OR ADJOINING PROPERTIES WITHOUT THE WRITTEN PERMISSION FROM THE OWNER/S.

G6

VEHICULAR ACCESS AND ALL UTILITIES/SERVICES ARE TO BE MAINTAINED AT ALL TIMES TO ADJOINING PROPERTIES AFFECTED BY CONSTRUCTION.

G7

ALL RUBBISH, BUILDINGS, SHEDS AND FENCES TO BE REMOVED TO SATISFACTION OF COUNCIL'S ENGINEER.

G8

COUNCIL ENGINEERS HAVE DISCRETION TO VARY, AS CONSIDERED NECESSARY, THE ENGINEERING REQUIREMENTS IN RESPECT OF A PARTICULAR SUBDIVISION OR DEVELOPMENT HAVING REGARD TO THE SITE CONTEXT.

E1

EARTHWORKS ARE TO BE CARRIED OUT TO THE SATISFACTION OF THE COUNCIL. UNSUITABLE MATERIALS ARE TO BE REMOVED FROM ROADS AND LOTS PRIOR TO FILLING. THE CONTRACTOR IS TO ARRANGE AND MAKE AVAILABLE COMPACTION TESTING RESULTS FOR ALL AREAS THAT CONTAIN FILL IN EXCESS OF 200 MM.

E2

COMPACTION OF EARTHWORKS SHALL CONTINUE UNTIL A DRY DENSITY RATIO OF 95% FOR SITE FILLING AND 100% FOR ROAD PAVEMENT SUBGRADES HAS BEEN ACHIEVED IN ACCORDANCE WITH TEST METHOD AS1289.5.3.1 OR AS1289.5.1.1. THE CONTROL TESTING OF EARTHWORKS SHALL BE IN ACCORDANCE WITH THE GUIDELINES IN AS3798 'GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS'. WHERE IT IS PROPOSED TO USE TEST METHOD AS1289.5.8.1 TO DETERMINE THE FIELD DENSITY, A SAND REPLACEMENT METHOD SHALL BE USED TO CONFIRM THE RESULTS.

E3

THE SUITABLE QUALIFIED GEOTECHNICAL ENGINEER, SHALL HAVE A LEVEL 1 RESPONSIBILITY FOR ALL FILLING AS DEFINED IN APPENDIX B AS3798 'GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS', AND AT THE END OF THE WORKS SHALL CONFIRM THE EARTHWORKS COMPLY WITH THE REQUIREMENTS OF THE SPECIFICATION AND DRAWINGS BY WRITTEN NOTIFICATION.

E4

IN AREAS TO BE FILLED WHERE THE SLOPE OF THE NATURAL SURFACE EXCEEDS 1(V):3(H), THE BASE OF THE ENTIRE EMBANKMENT SHALL BE SUITABLY STEPPED, SCARIFIED OR ROUGHENED BEFORE CONSTRUCTION OF THE EMBANKMENT IS COMMENCED, AS REQUIRED BY THE COUNCIL. NATURAL GROUND ADJOINING AN EXISTING EMBANKMENT TOGETHER WITH THE EXISTING BATTER SHALL BE SIMILARLY TREATED BEFORE THE EMBANKMENT IS WIDENED.

E5

ALL BATTERS ARE TO BE SCARIFIED TO A DEPTH OF 50 MM TO ASSIST WITH ADHESION OF TOP SOIL TO BATTER FACE.

E6

PROVIDE MINIMUM 150 MM AND MAXIMUM 300 MM TOPSOIL WITH ON FOOTPATHS, FILLED AREAS AND ALL OTHER AREAS DISTURBED DURING CONSTRUCTION. TOPSOILED AREAS TO BE STABILISED WITH APPROVED VEGETATION A MAXIMUM OF 14 DAYS AFTER TOPSOILING AND ARE TO BE WATERED TO ENSURE GERMINATION.

E7

THE CONTRACTOR SHALL CONTROL SEDIMENTATION, EROSION AND POLLUTION DURING CONSTRUCTION IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT EDITION OF 'MANAGING URBAN STORMWATER: SOILS AND CONSTRUCTION' PRODUCED BY LANDCOM.

E8

A MINIMUM 1 METRE WIDE, CONTINUOUS STRIP OF COUCH GRASS SHALL BE PLACED BEHIND THE BACK OF ALL KERBS AND OTHER CONCRETE STRUCTURES IMMEDIATELY AFTER THE COMPLETION OF THE FOOTPATH GRADING OR OTHER ELEMENTS AS APPLICABLE, AND SHALL BE MAINTAINED AND REPLACED AS REQUIRED DURING THE CONSTRUCTION MAINTENANCE PERIOD.

STORMWATER NOTES

S1

ALL PIPES TO BE SPIGOT AND SOCKET, RUBBER RING JOINTED.

S2

ALL LONGITUDINAL PIPELINES IN ROADS MUST BE LOCATED UNDER KERB AND GUTTER AND BE BACKFILLED WITH APPROVED GRANULAR MATERIAL UNLESS OTHERWISE APPROVED BY THE COUNCIL ENGINEER.

S3

DRAINAGE LINES MUST BE BACKFILLED WITH APPROVED GRANULAR MATERIAL IN TRAFFICABLE AREAS. THREE (3) METRES OF SUBSOIL DRAINAGE WRAPPED IN GEOTEXTILE STOCKING MUST BE PROVIDED TO ALL DOWNSTREAM PITS.

S4

ALL GULLY PITS TO COUNCIL'S STANDARD AND LINTELS CENTRALLY PLACED AT SAG PITS.

S5

ALL PITS MUST BE BENCHED AND STREAMLINED. PROVIDE SL72 REINFORCEMENT AND GALVANISED STEP IRONS IN ALL PITS OVER 12-METRES DEEP AS MEASURED FROM THE TOP OF GRATE TO THE INVERT OF THE PIT.

S6

CONCRETE IS TO HAVE MINIMUM COMPRESSIVE STRENGTH OF 32MPa AT 28-DAYS UNLESS OTHERWISE APPROVED BY THE COUNCIL ENGINEER.

S7

ALL INTERALLOTMENT DRAINAGE MUST HAVE A MINIMUM PIPE DIAMETER OF 150 MM AND A MINIMUM GRADE OF 1% UNLESS OTHERWISE APPROVED BY THE COUNCIL ENGINEER.

S8

ALL INTERALLOTMENT DRAINAGE LINES MUST BE LAID CENTRALLY WITHIN DRAINAGE EASEMENTS. INSPECTION PITS MUST BE PROVIDED AT ALL CHANGES OF GRADE AND DIRECTION.

S9

INTERALLOTMENT DRAINAGE LINES MUST BE INSTALLED AFTER SYDNEY WATER SEWERAGE LINES HAVE BEEN INSTALLED WHERE SEWER IS PROPOSED ADJACENT TO INTERALLOTMENT DRAINAGE LINES.

S10

1% AEP OVERLAND FLOW PATHS MUST BE FORMED AND SHOWN ON 'WORKS AS EXECUTED' DRAWINGS.

S11

ALL PLANS (BOTH DESIGN AND WAE) ARE TO CLEARLY DELINEATE THE EXTENT/LOCATION OF FLOOD LINES INCLUDING THE 5% AEP, 1% AEP AND PMF.

S12

ADEQUATE PROVISION IS TO BE MADE TO PREVENT SCOURING AND SEDIMENTATION FOR ALL DRAINAGE WORKS IN ACCORDANCE WITH COUNCIL'S REQUIREMENTS.

S13

PIT LINTELS ARE TO BE STENCILLED WITH APPLICABLE DISTINCTION STENCIL AVAILABLE FROM COUNCIL.

S14

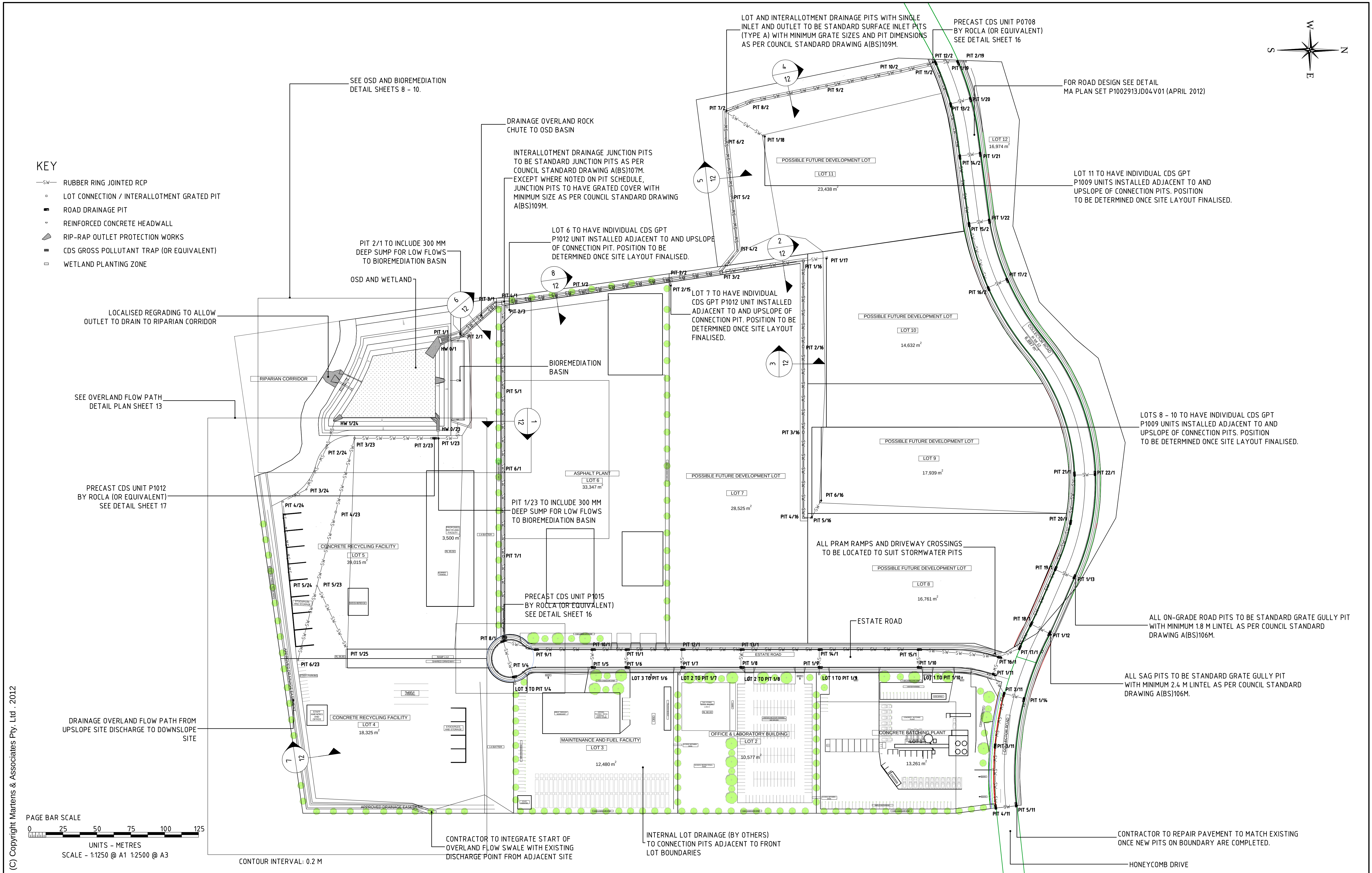
CATCH DRAINS MUST BE CONSTRUCTED AS REQUIRED BY THE APPROVED PLANS OR THE PRINCIPAL CERTIFYING AUTHORITY.

S15

SOIL AND WATER MANAGEMENT PLANS ARE TO BE PREPARED FOR ALL DISTURBED SITES AND ADHERED TO AT ALL TIMES DURING THE CONSTRUCTION AND MAINTENANCE PERIODS.

PIT AND PIPE SCHEDULE

PIT I.D.	PIT / NODE TYPE	Catchment (ha)	FSL (m AHD)	PIT CENTRELINE EASTING	PIT CENTRE LINE NORTHING	FROM PIT / TANK	NO. OF INLET PIPES	INLET PIPE I.L. (m AHD)	OUTLET PIPE I.L. (m AHD)	PIT DEPTH (m)	OUTLET PIPE DIA. (mm)	PIPE O.D. (mm)	TO PIT / TANK	OUTLET PIPE LENGTH (m)	OUTLET PIPE SLOPE (%)
0/1	HEAD WALL	0.0000	61.000	298855.2	6257493.6	1/1	2	61.000	61.000	0.00	-	-	OSD	-	-
1/1	1200 X 1200 GRATE ¹	0.0000	63.450	298855.6	6257499.6	2/1	2	61.500	61.450	2.00	1200	1543	0/1	7.98	5.64
2/1	1200 X 1200 GRATE ¹	0.0162	65.850	298854.9	6257508.4	3/1	2	64.000	63.950	1.90	1200	1543	1/1	8.83	27.73
3/1	1200 X 1200 GRATE ¹	0.0031	69.827	298841.2	6257538.5	4/1	2	67.550	67.500	2.33	1200	1543	2/1	33.04	10.59
4/1	1200 X 1200 GRATE ¹	0.0461	69.937	298842.1	6257544.7	5/1	1	67.663	67.613	2.32	1200	1543	3/1	6.27	1.01
5/1	1200 X 1200 GRATE	0.0273	71.697	298901.7	6257527.4	6/1	1	69.747	69.697	2.00	825	1086	4/1	62.00	3.28
6/1	1200 X 1200 GRATE	0.0391	73.423	298961.2	6257510.2	7/1	1	71.473	71.423	2.00	825	1086	5/1	62.00	2.70
7/1	1200 X 1200 GRATE	0.0416	74.923	299020.8	6257492.9	8/1	1	72.973	72.923	2.00	825	1086	6/1	62.00	2.34
8/1	2.4 M LINTEL SAG	0.1106	76.900	299080.8	6257475.5	9/1	1	74.950	74.900	2.00	825	1086	7/1	62.49	3.08
9/1	1.8 M LINTEL ON GRADE	0.0460	77.575	299093.3	6257496.5	10/1	1	75.725	75.675	1.90	825	1086	8/1	24.40	2.97
10/1	1.8 M LINTEL ON GRADE	0.0275	78.562	299104.9	6257536.6	11/1	1	76.269	76.219	2.34	750	1017	9/1	41.82	1.18
11/1	1.8 M LINTEL ON GRADE	0.0461	78.851	299111.9	6257560.6	12/1	1	76.549	76.519	2.33	750	1017	10/1	25.00	1.00
12/1	1.8 M LINTEL ON GRADE	0.0488	79.262	299123.3	6257600.1	13/1	1	76.989	76.959	2.30	750	1017	11/1	41.04	1.00
13/1	1.8 M LINTEL ON GRADE	0.0646	79.697	299135.4	6257641.8	14/1	1	77.454	77.424	2.27	750	1017	12/1	43.50	1.00
14/1	1.8 M LINTEL ON GRADE	0.0821	80.273	299151.5	6257697.1	15/1	1	78.060	78.030	2.24	750	1017	13/1	57.58	1.00
15/1	1.8 M LINTEL ON GRADE	0.0688	81.003	299171.8	6257767.2	16/1	1	78.820	78.790	2.21	525	736	14/1	73.00	1.00
16/1	1.8 M LINTEL ON GRADE	0.0158	81.639	299193.6	6257822.5	17/1	1	79.444	79.414	2.22	525	736	15/1	59.37	1.00
17/1	1.8 M LINTEL ON GRADE	0.0108	81.644	299191.9	6257838.8	18/1	1	79.658	79.608	2.04	525	736	16/1	16.39	1.00
18/1	2.4 M LINTEL SAG	0.0792	81.322	299177.0	6257852.1	19/1	1	79.908	79.858	1.46	450	647	17/1	20.01	1.00
19/1	1.8 M LINTEL ON GRADE	0.0418	82.059	299143.4	6257880.3	20/1	1	80.644	80.594	1.47	375	543	18/1	43.89	1.56
20/1	1.8 M LINTEL ON GRADE	0.0417	82.809	299113.8	6257900.5	21/1	1	81.359	81.309	1.50	300	451	19/1	35.83	1.86
21/1	1.8 M LINTEL ON GRADE	0.1045	83.559	299080.5	6257913.2	22/1	1	82.109	82.059	1.50	300	451	20/1	35.61	1.97
22/1	1.8 M LINTEL ON GRADE	0.1125	83.559	299084.3	6257928.3	-	-	-	82.359	1.20	225	375	21/1	15.50	1.61
1/2	1200 X 1200 GRATE ¹	0.0267	70.548	298850.8	6257606.2	2/2	2	68.334	68.284	2.26	1050	1353	4/1	62.12	1.00
2/2	1200 X 1200 GRATE ¹	0.0161	71.170	298859.4	6257667.7	3/2	2	69.005	68.955	2.22	900	1194	1/2	62.12	1.00
3/2	1200 X 1200 GRATE ¹	0.0497	71.522	298864.6	6257704.8	4/2	2	70.055	70.005	1.52	900	1194	2/2	37.40	2.67
4/2	1200 X 1200 GRATE	0.1837	72.203	298852.8	6257721.2	5/2	1	70.553	70.503	1.70	825	1086	3/2	20.26	2.21
5/2	1200 X 1200 GRATE	0.1247	72.781	298812.0	6257728.6	6/2	1	71.431	71.381	1.40	825	1086	4/2	41.45	2.00
6/2	1200 X 1200 GRATE	0.0324	73.363	298771.2	6257735.9	7/2	1	71.983	71.933	1.43	825	1086	5/2	41.45	1.21
7/2	1200 X 1200 GRATE	0.0307	73.575	298752.0	6257741.3	8/2	1	72.233	72.183	1.39	825	1086	6/2	19.95	1.00
8/2	1200 X 1200 GRATE	0.1456	73.893	298749.6	6257762.5	9/2	1	72.496	72.446	1.45	750	1017	7/2	21.35	1.00
9/2	1200 X 1200 GRATE	0.1407	74.454	298754.3	6257818.1	10/2	1	73.104	73.054	1.40	750	1017	8/2	55.76	1.00
10/2	1200 X 1200 GRATE	0.0500	75.015	298758.9	6257873.6	11/2	1	73.712	73.662	1.35	600	831	9/2	55.76	1.00
11/2	1200 X 1200 GRATE	0.0088	75.232	298760.1	6257894.0	12/2	1	73.966	73.916	1.32	600	831	10/2	20.42	1.00
12/2	1.8 M LINTEL ON GRADE	0.0390	75.423	298759.7	6257899.5	13/2	1	74.071	74.021	1.40	600	831	11/2	5.52	1.00
13/2	1.8 M LINTEL ON GRADE	0.0464	77.479	298792.5	6257901.8	14/2	1	75.979	75.929	1.55	375	543	12/2	32.92	5.64
14/2	1.8 M LINTEL ON GRADE	0.0585	79.879	298831.2	6257897.6	15/2	1	78.379	78.329	1.55	300	451	13/2	38.95	6.03
15/2	1.8 M LINTEL ON GRADE	0.0541	82.848	298881.0	6257890.2	16/2	1	81.348	81.298	1.55	300	451	14/2	50.28	5.81
16/2	1.8 M LINTEL ON GRADE	0.0715	84.234	298930.2	6257890.6	17/2	1	82.734	82.684	1.55	300	451	15/2	49.27	2.71
17/2	1.8 M LINTEL ON GRADE	0.1036	84.234	298928.2	6257906.0	-	-	-	83.024	1.21	300	451	16/2	15.50	1.87
1/3	INSPECTION OPENING	0.0000	69.941	298843.8	6257545.7	2/3	1	68.191	68.141	1.80	675	926	4/1	1.92	5.43
2/3	1200 X 1200 GRATE ²	3.1024	76.875	298844.8	6257546.3	LOT 6	1	74.725	74.675	2.00	675	926	1/3	1.22	532.79
1/4	1.8 M LINTEL ON GRADE	0.0246	77.619	299108.5	6257475.3	LOT 3	1	75.669	75.619	2.00	600	831	8/1	27.73	2.41
1/5	1.8 M LINTEL ON GRADE	0.0249	78.696	299117.9	6257532.9	-	-	77.537	77.487	1.21	225	375	10/1	13.50	1.00
1/6	1.8 M LINTEL ON GRADE	0.0421	78.851	299124.9	6257556.9	LOT 3	1	77.401	77.351	1.50	300	451	11/1	13.50	1.00
1/7	1.8 M LINTEL ON GRADE	0.0446	79.262	299136.3	6257596.3	LOT 2	1	77.622	77.572	1.69	450	647	12/1	13.50	1.00
1/8	1.8 M LINTEL ON GRADE	0.0590	79.697	299148.4	6257638.1	LOT 2	1	78.247	78.197	1.50	525	736	13/1	13.50	1.00
1/9	1.8 M LINTEL ON GRADE	0.0749	80.273	299164.4	6257693.4	LOT 1	1	78.623	78.573	1.70	675	926	14/1	13.50	1.00
1/10	1.8 M LINTEL ON GRADE	0.0595	81.003	299184.8	6257763.5	LOT 1	1	79.453	79.403	1.60	375	543	15/1	13.50	1.00
1/11	1.8 M LINTEL ON GRADE	0.0286	81.638	299204.9	6257815.1	2/11	1	80.188	80.138	1.50	225	375	16/1	13.50	5.00
2/11	1.8 M LINTEL ON GRADE	0.0443	82.523	299220.5	6257818.8	3/11	1	81.023	80.973	1.55	225	375	1/11	16.01	4.90
3/11	1.8 M LINTEL ON GRADE	0.0374	83.420	299255.2	6257801.8	4/11	1	81.920	81.870	1.55	225	375	2/11	38.55	2.20
4/11	1.8 M LINTEL ON GRADE	0.0137	83.891	299299.9	6257789.3	5/11	1	82.491	82.441	1.45	225	375	3/11	46.46	1.12
5/11	1.8 M LINTEL ON GRADE	0.0131	83.891	299302.6	6257804.5	-	-	-	82.646	1.25	225	375	4/11	15.50	1.00
1/12	2.4 M LINTEL SAG	0.1232	81.322	299187.6	6257863.3	-	-	-	80.113	1.21	300	451	18/1	15.50	1.00
1/13	1.8 M LINTEL ON GRADE	0.0888	82.059	299153.2	6257892.2	-	-	-	80.849	1.21	225	375	19/1	15.50	1.00
1/14	1.8 M LINTEL ON GRADE	0.0771	82.450	299228.5	6257832.1	-	-	-	81.250	1.20	225	375	2/11	15.50	1.46
1/15	INSPE														



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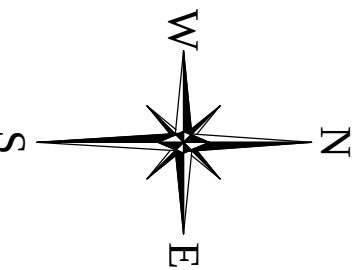
Sustainable Solutions

Environmental - Geotechnical - Civil

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CLIENT/ PROJECT		TITLE		DESIGNED:	DATUM:	SHEET 6 OF 19 SHEETS	REV.	DESCRIPTION	DATE	ISSUED
HANSON / OLD WALLGROVE RD EASTERN CREEK		DRAINAGE PLAN - OVERVIEW		MGD	M R.L.		1	DRAFT	19.04.12	ASN
THIS PLAN MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED BY PRINCIPAL CERTIFYING AUTHORITY All measurements in m unless otherwise specified.		PROJECT MANAGER: ANDREW NORRIS		DRAWN: KT	HORIZONTAL RATIO: 1:1250 @ A1 1:2500 @ A3		2	REVISED DRAFT - AMENDMENT TO BASINS AND GPT DETAIL ADDED	20.04.12	ASN
		DRAWING NUMBER: P1002913JD05V02		REVIEWED: ASN	VERTICAL RATIO: 1:1250 @ A1 1:2500 @ A3					

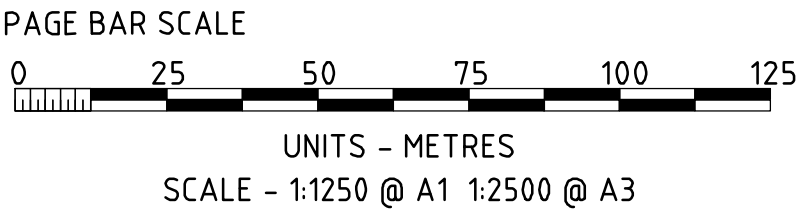


KEY

—SW— STORMWATER PIPE

PIT 2/23 STORMWATER PIT AND I.D.

PIT 2/23 PIT CATCHMENT AND I.D.



CONTOUR INTERVAL: 0.2 M

NOTE: SEE PIT AND PIPE SCHEDULE (SHEET 5) FOR CATCHMENT AREAS.

martens

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TITLE

CATCHMENTS PLAN

PROJECT MANAGER:
ANDREW NORRIS

DRAWING NUMBER:
P1002913.D05V02

DESIGNED:
MGD

DRAWN:
KT

REVIEWED:
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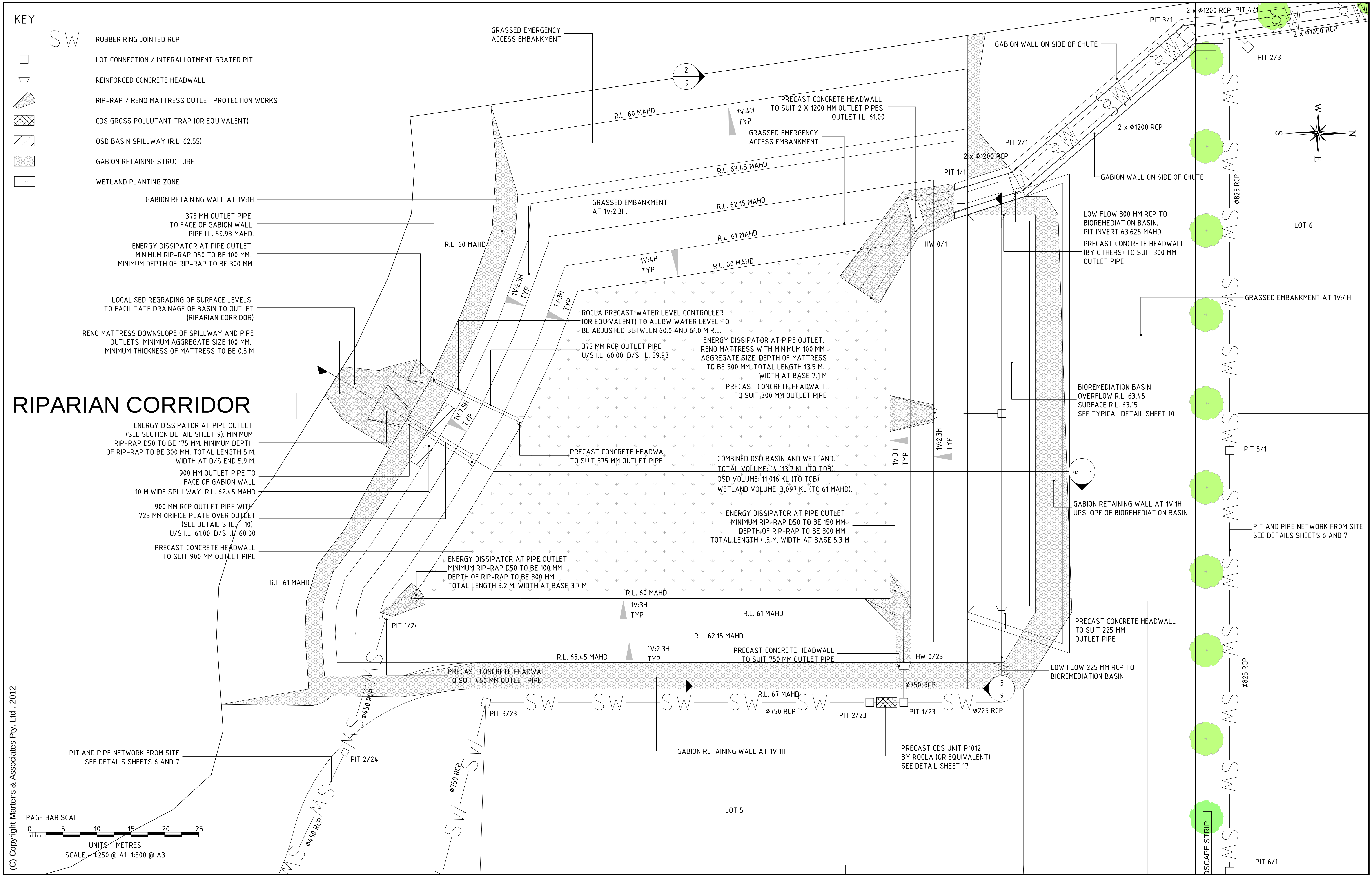
HORIZONTAL RATIO:
1:1250 @ A1
1:2500 @ A3

VERTICAL RATIO:
1:1250 @ A1
1:2500 @ A3

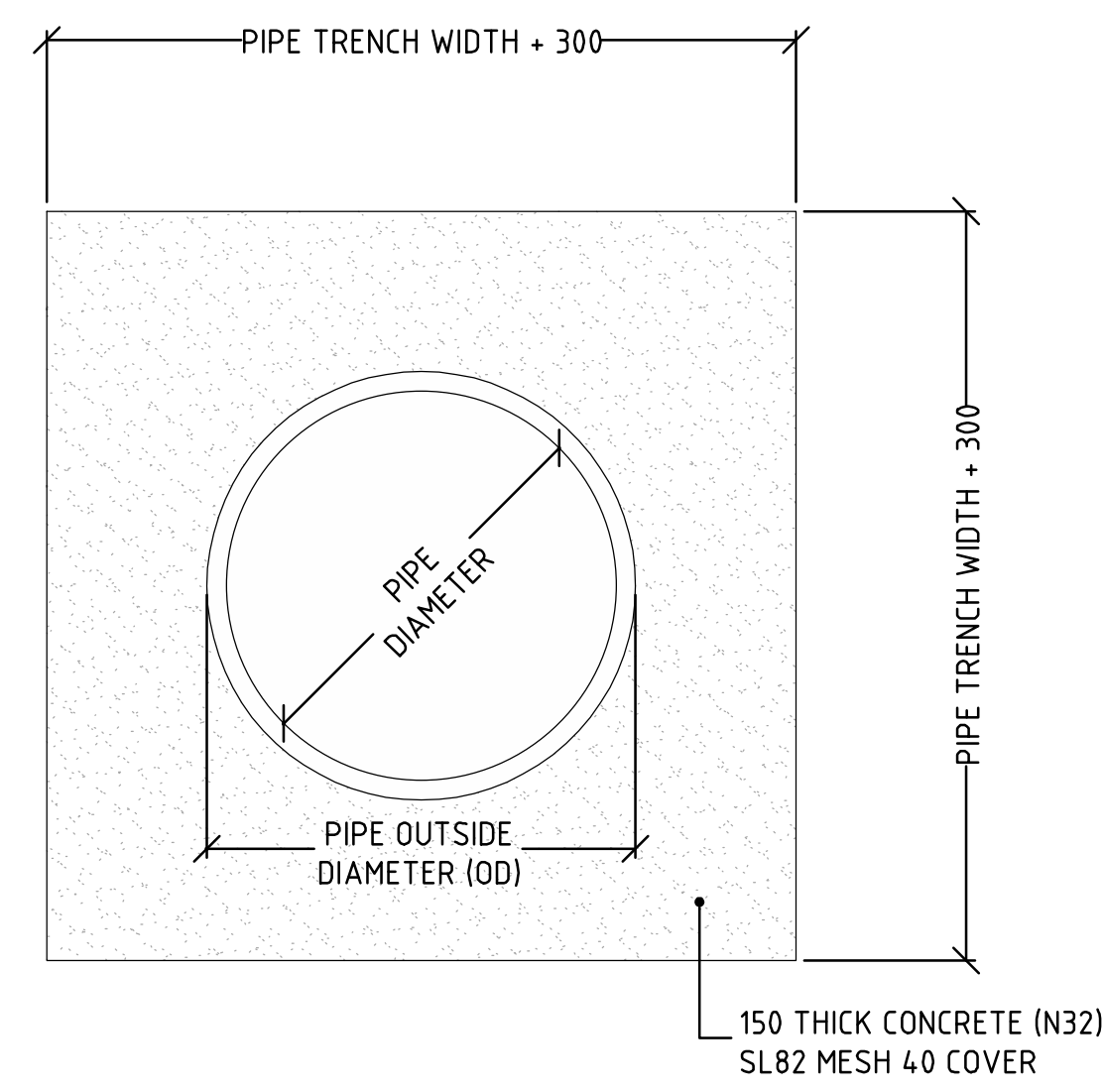
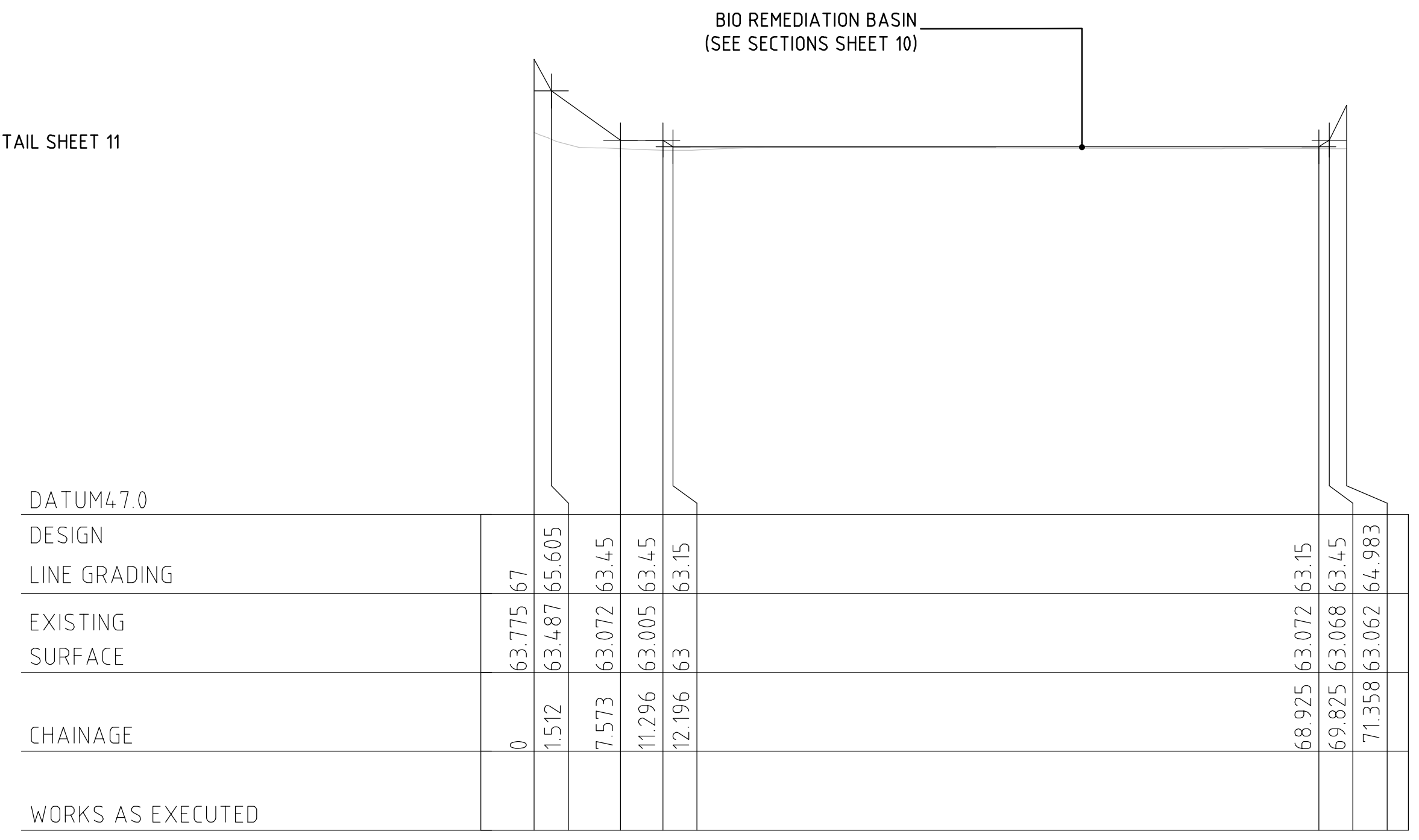
SHEET
7
OF 19
SHEETS

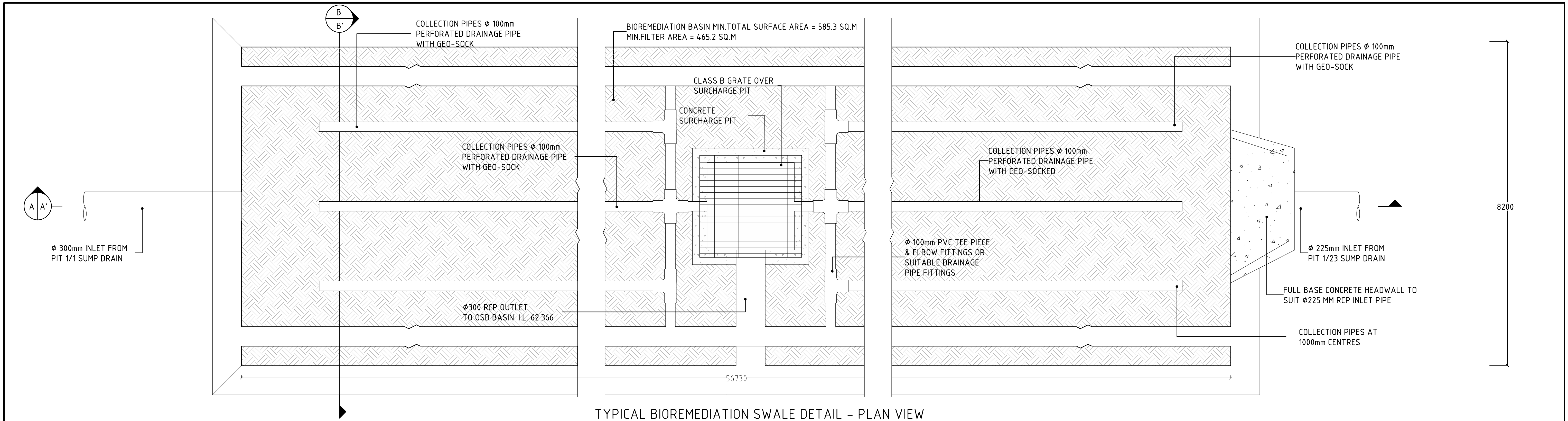
PAPER SIZE:
A1 / A3

REV.	DESCRIPTION	DATE	ISSUED
1	DRAFT	19.04.12	ASN
2	REVISED DRAFT - AMENDMENT TO BASINS AND GPT DETAIL ADDED	20.04.12	ASN



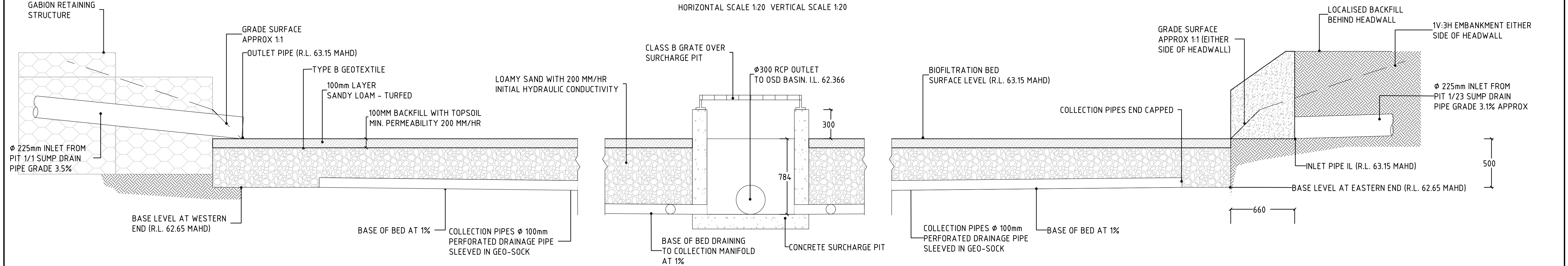
 MARTENS & ASSOCIATES PTY LTD Sustainable Solutions Environmental - Geotechnical - Civil Hydraulic - Wastewater Engineers 6/37 Leighton Place Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767 Email: mail@martens.com.au Internet: http://www.martens.com.au	CLIENT/ PROJECT	TITLE		DESIGNED:	DATUM:	SHEET	REV.	DESCRIPTION	DATE	ISSUED	
	HANSON / OLD WALLGROVE RD EASTERN CREEK	OSD AND BIOREMEDIATION BASINS PLAN	PROJECT MANAGER: ANDREW NORRIS	DRAWING NUMBER: P1002913JD05V02	MGD	M R.L.	8	1	DRAFT	19.04.12	ASN
					DRAWN:	HORIZONTAL RATIO:	OF 19 SHEETS	2	REVISED DRAFT – AMENDMENT TO BASINS AND GPT DETAIL ADDED	20.04.12	ASN
					KT	1:250 @ A1 1:500 @ A3					
	THIS PLAN MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED BY PRINCIPAL CERTIFYING AUTHORITY All measurements in m unless otherwise specified.			REVIEWED:	VERTICAL RATIO:	PAPER SIZE:					
				ASN	1:250 @ A1 1:500 @ A3	A1 / A3					

SECTION SECTION SECTION 

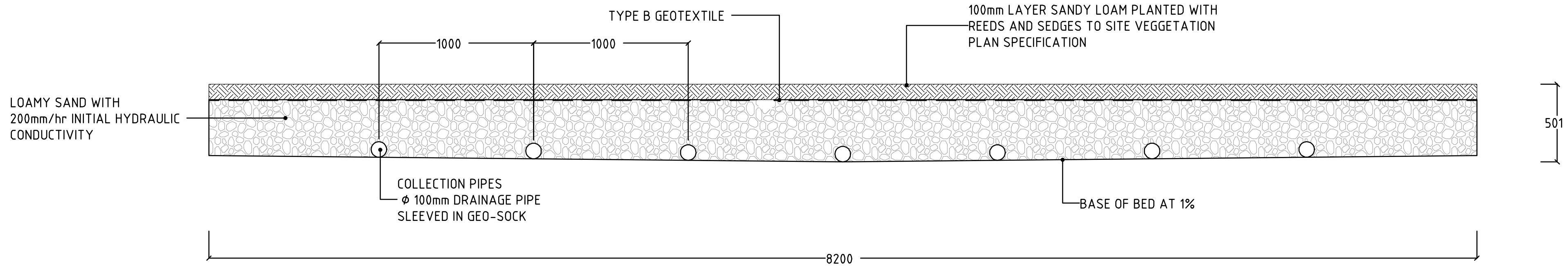


TYPICAL BIOREMEDIATION SWALE DETAIL - PLAN VIEW

HORIZONTAL SCALE 1:20 VERTICAL SCALE 1:20

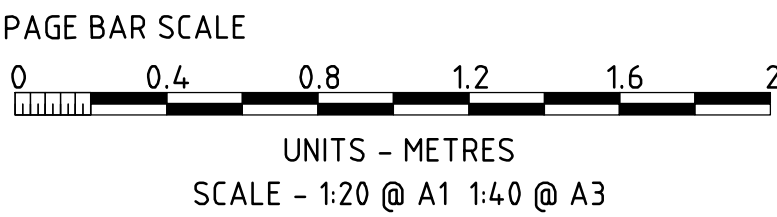


SECTION A-A'
HORIZONTAL SCALE 1:20 VERTICAL SCALE 1:20

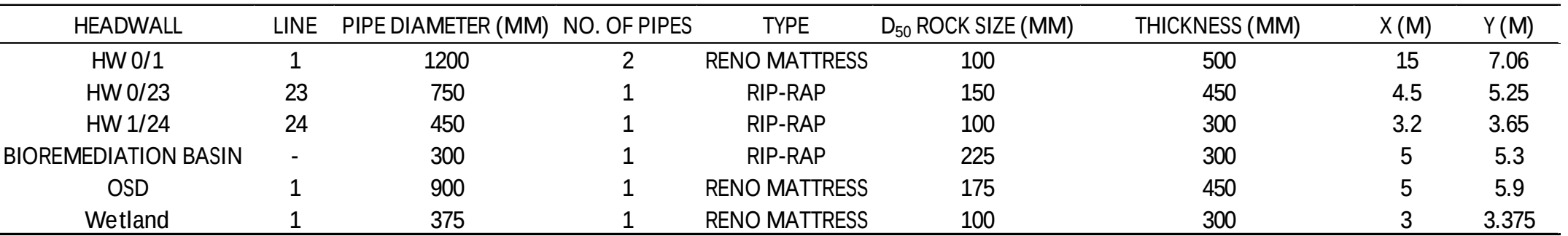


SECTION B-B'
HORIZONTAL SCALE 1:40 VERTICAL SCALE 1:40

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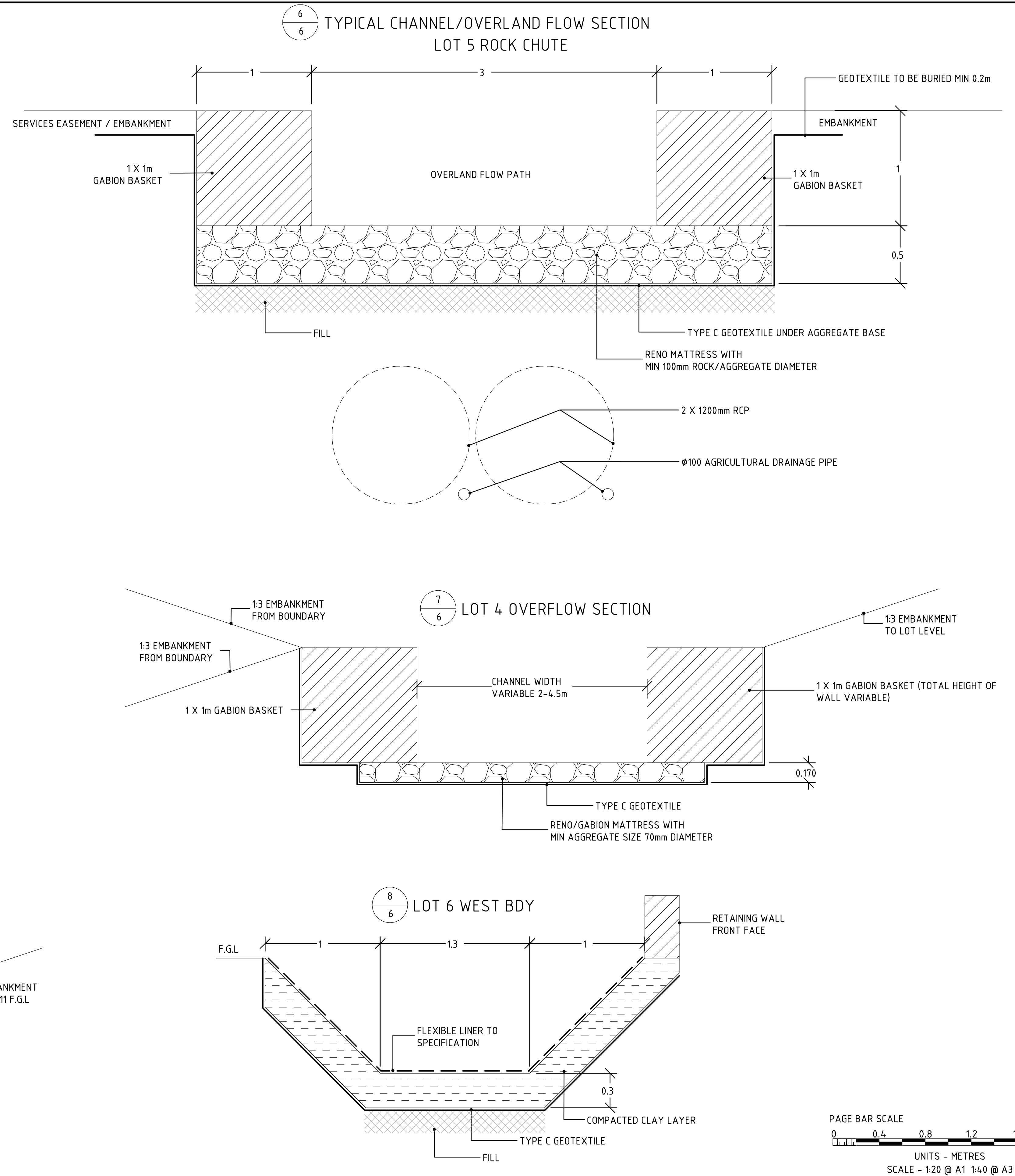
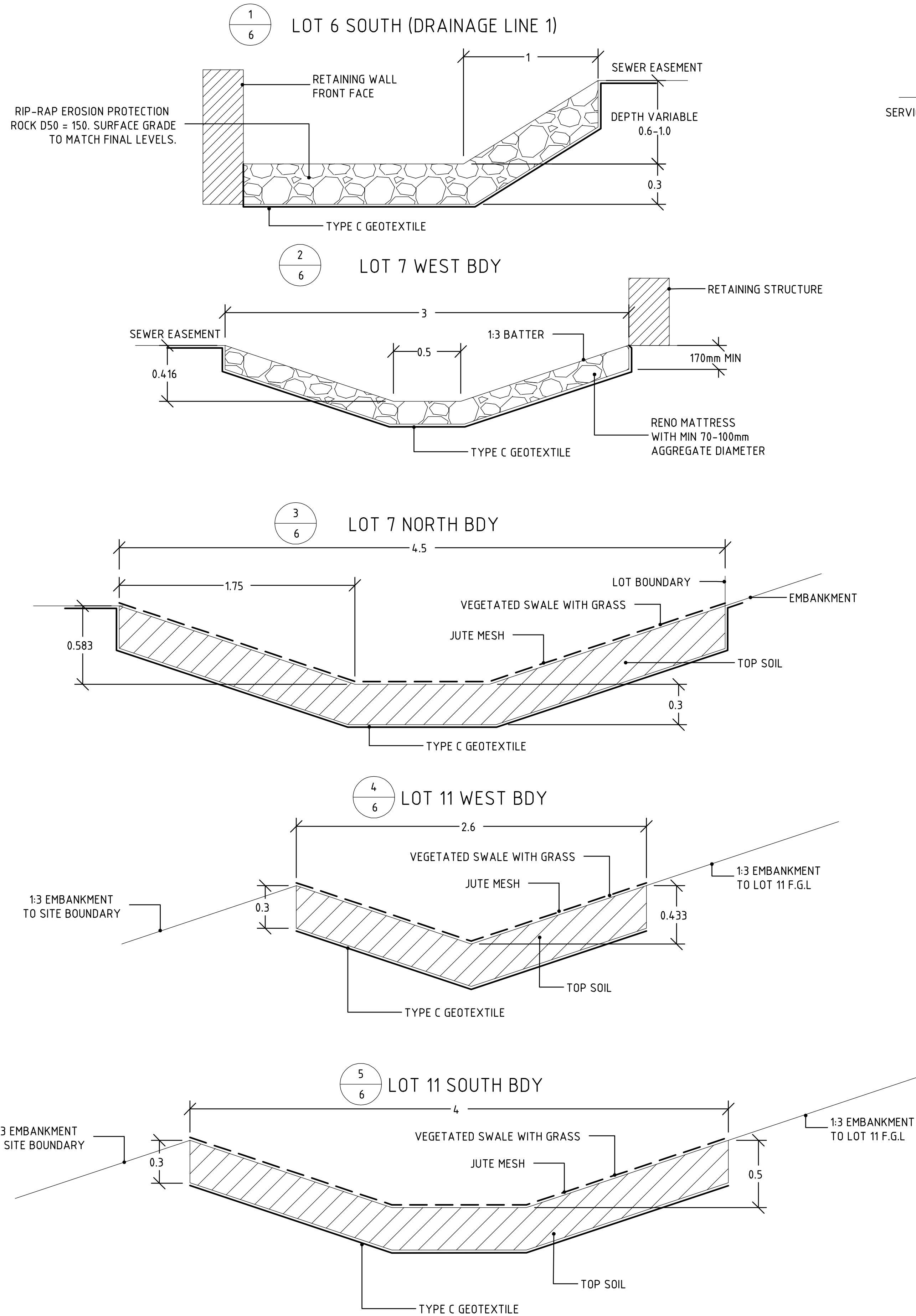
 MARTENS & ASSOCIATES PTY LTD Sustainable Solutions Environmental - Geotechnical - Civil Hydraulic - Wastewater Engineers 6/37 Leighton Place Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767 Email: mail@martens.com.au Internet: http://www.martens.com.au	CLIENT/ PROJECT		TITLE		DESIGNED: MGD	DATUM: M R.L.	SHEET 10 OF 19 SHEETS	REV.	DESCRIPTION	DATE	ISSUED
	HANSON / OLD WALLGROVE		BIOREMEDIATION SECTION AND TYPICAL DETAIL					1	DRAFT	19.04.12	ASN
	RD EASTERN CREEK				DRAWN: KT	HORIZONTAL RATIO: 1:20 @ A1 1:40 @ A3		2	REVISED DRAFT – AMENDMENT TO BASINS AND GPT DETAIL ADDED	20.04.12	ASN
	THIS PLAN MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED BY PRINCIPAL CERTIFYING AUTHORITY All measurements in m unless otherwise specified.		PROJECT MANAGER: ANDREW NORRIS		DRAWING NUMBER: P1002913JD05V02		REVIEWED: ASN	VERTICAL RATIO: 1:20 @ A1 1:40 @ A3	PAPER SIZE: A1 / A3		



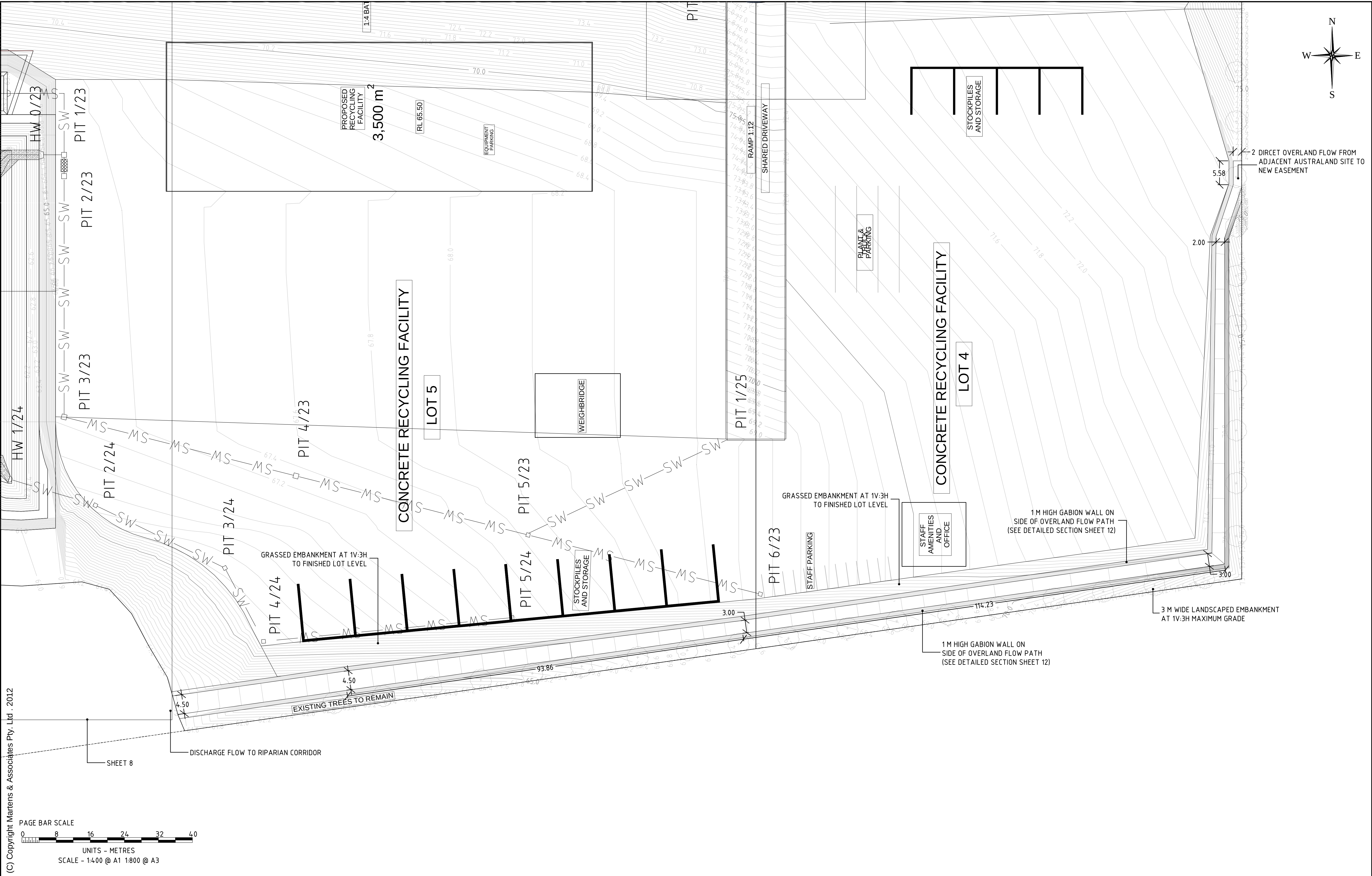
PIPE OUTLET PLAN
SCALE 1:10 @ A1



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	THIS PLAN MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED BY PRINCIPAL CERTIFYING AUTHORITY All measurements in m unless otherwise specified.	PROJECT MANAGER: ANDREW NORRIS	DRAWN: KT	HORIZONTAL RATIO: 1:20 @ A1 1:40 @ A3	OF 19 SHEETS	1	DRAFT	19.04.12	ASN
		DRAWING NUMBER: P1002913JD05V02	REVIEWED: ASN	VERTICAL RATIO: 1:20 @ A1 1:40 @ A3	PAPER SIZE: A1 / A3	2	REVISED DRAFT - AMENDMENT TO BASINS AND GPT DETAIL ADDED	20.04.12	ASN



 MARTENS & ASSOCIATES PTY LTD Sustainable Solutions Environmental - Geotechnical - Civil Hydraulic - Wastewater Engineers 6/37 Leighton Place Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767 Email: mail@martens.com.au Internet: http://www.martens.com.au	CLIENT/ PROJECT HANSON / OLD WALLGROVE RD EASTERN CREEK		TITLE LOT 4 AND LOT 5 OVERLAND FLOW PATH PLAN		DESIGNED: MGD	DATUM: MAHD	SHEET 13 OF 19 SHEETS	REV.	DESCRIPTION	DATE	ISSUED
	THIS PLAN MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED BY PRINCIPAL CERTIFYING AUTHORITY All measurements in m unless otherwise specified.		PROJECT MANAGER: ANDREW NORRIS		DRAWN: KT	HORIZONTAL RATIO: 1400 @ A1 1800 @ A3		1	DRAFT	19.04.12	ASN
					REVIEWED: ASN	VERTICAL RATIO: 1400 @ A1 1800 @ A3		2	REVISED DRAFT - AMENDMENT TO BASINS AND GPT DETAIL ADDED	20.04.12	ASN

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ASSOCIATES PTY LTD**
Sustainable Solutions
Environmental - Geotechnical - Civil
Hydraulic - Wastewater Engineers

CLIENT/ PROJECT	TITLE
HANSON / OLD WALLGROVE RD EASTERN CREEK	
THIS PLAN MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED BY PRINCIPAL CERTIFYING AUTHORITY All measurements in meters unless otherwise specified.	PROJECT MANAGER ANDREW NORRIS

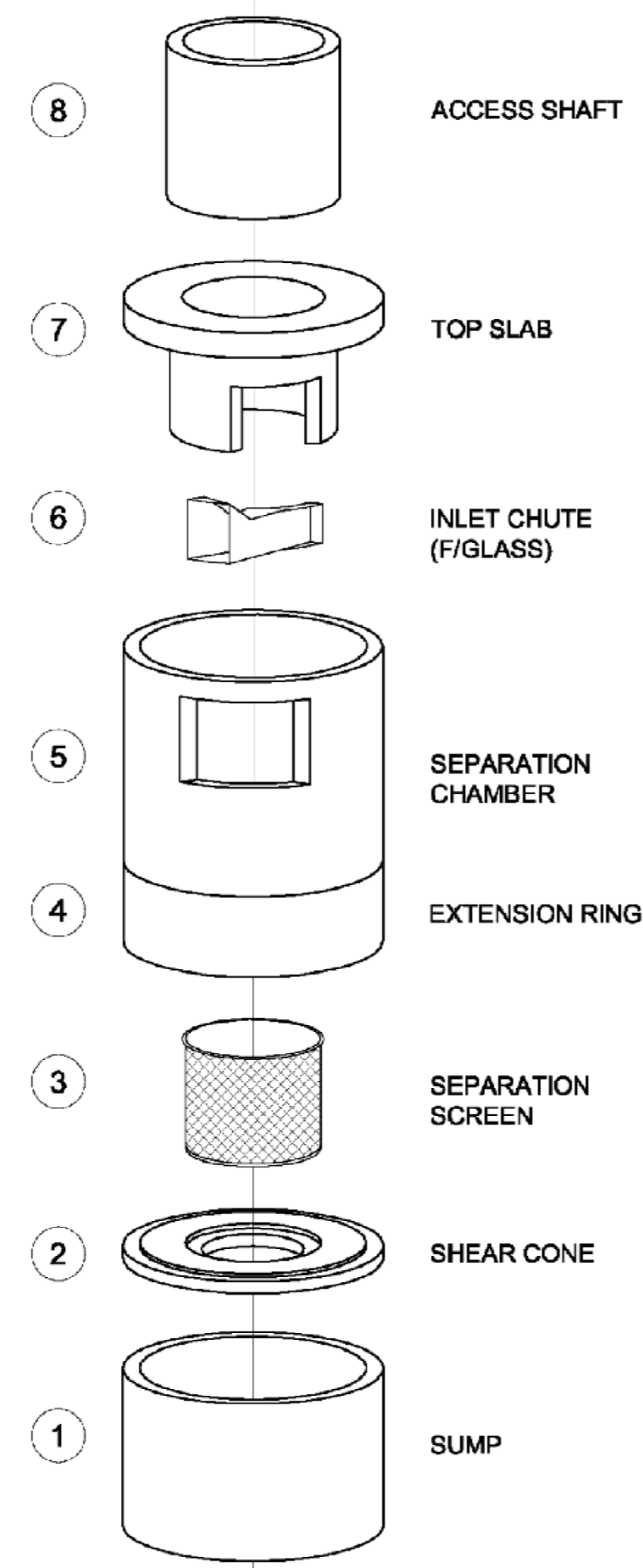
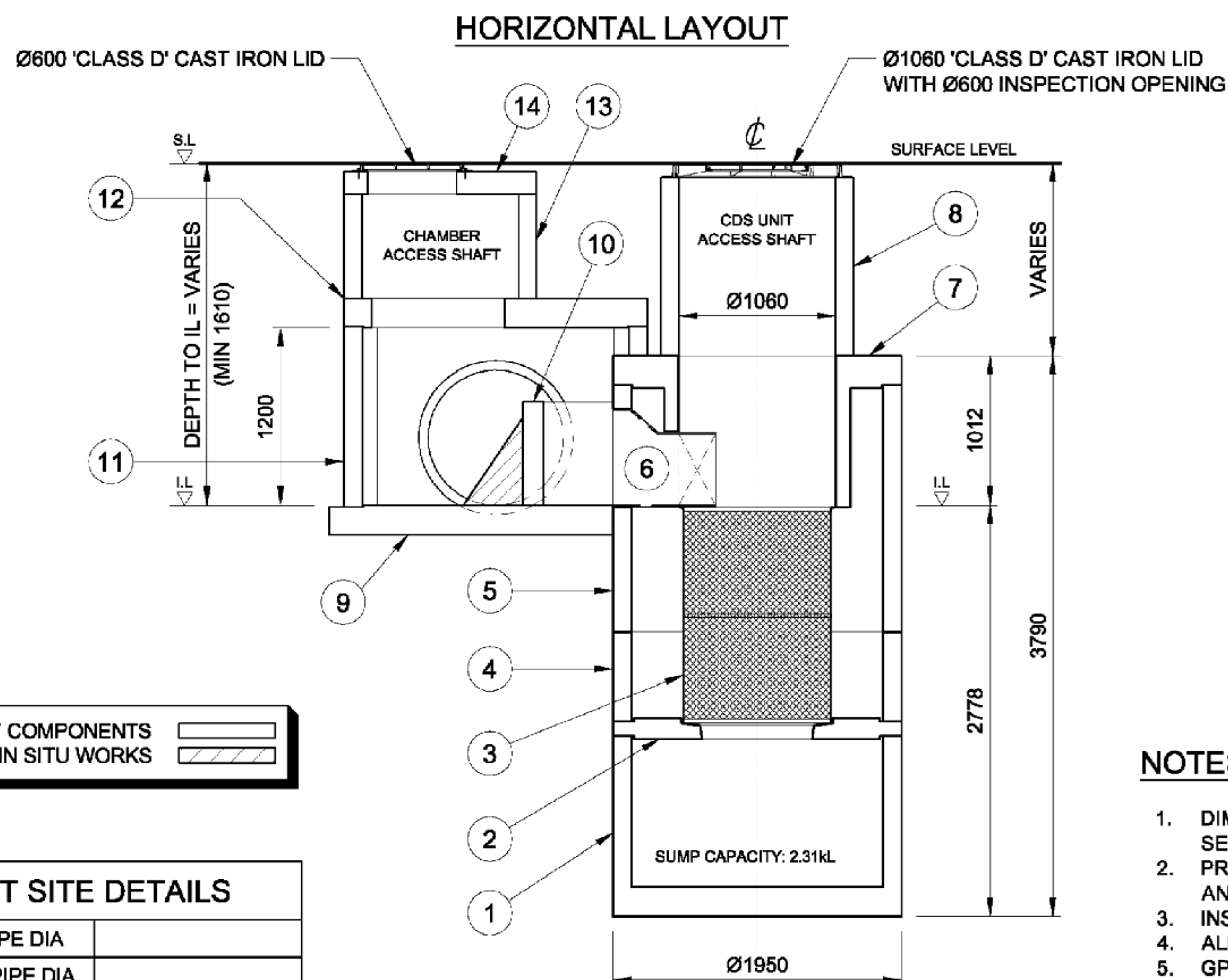
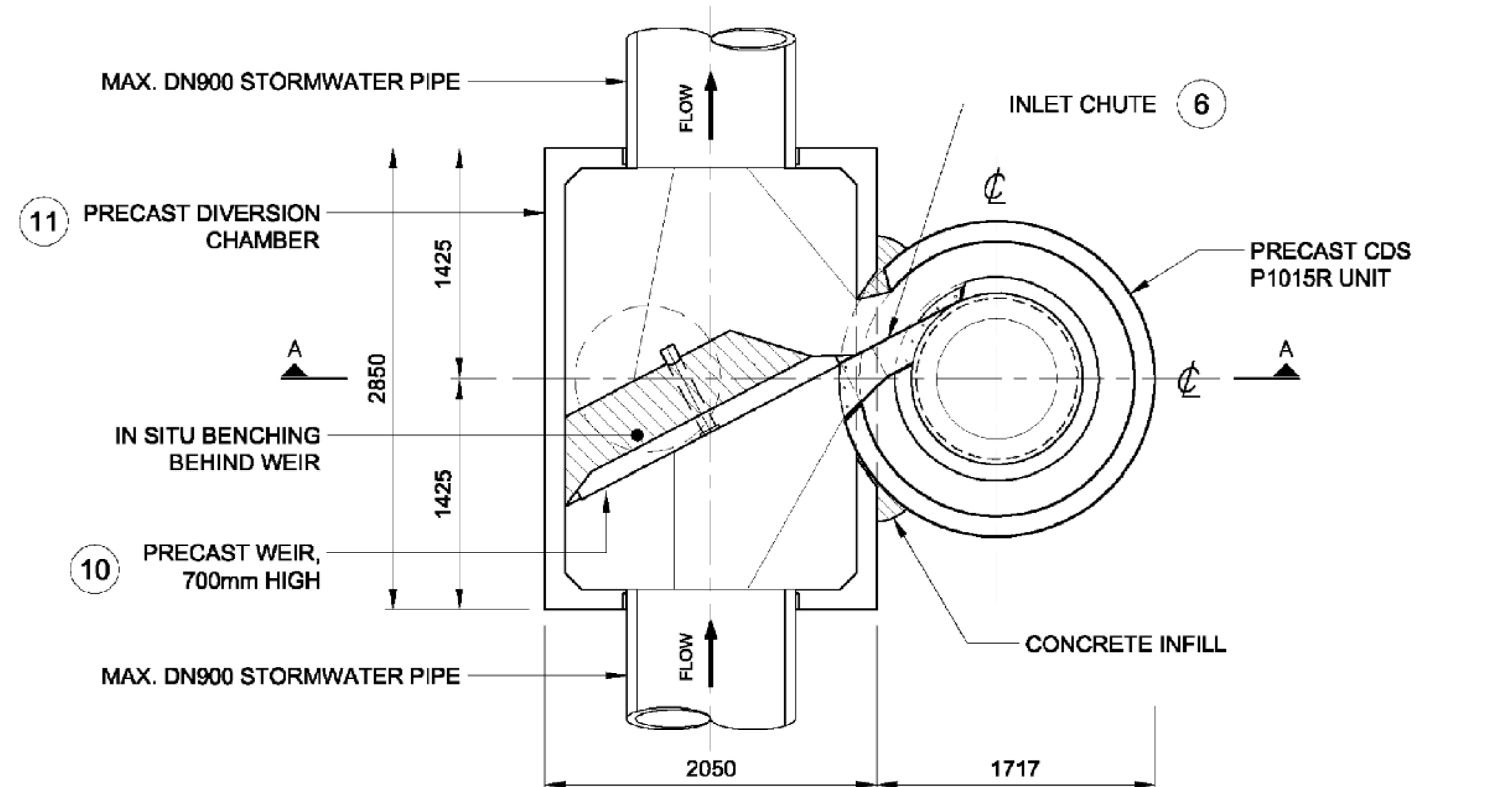
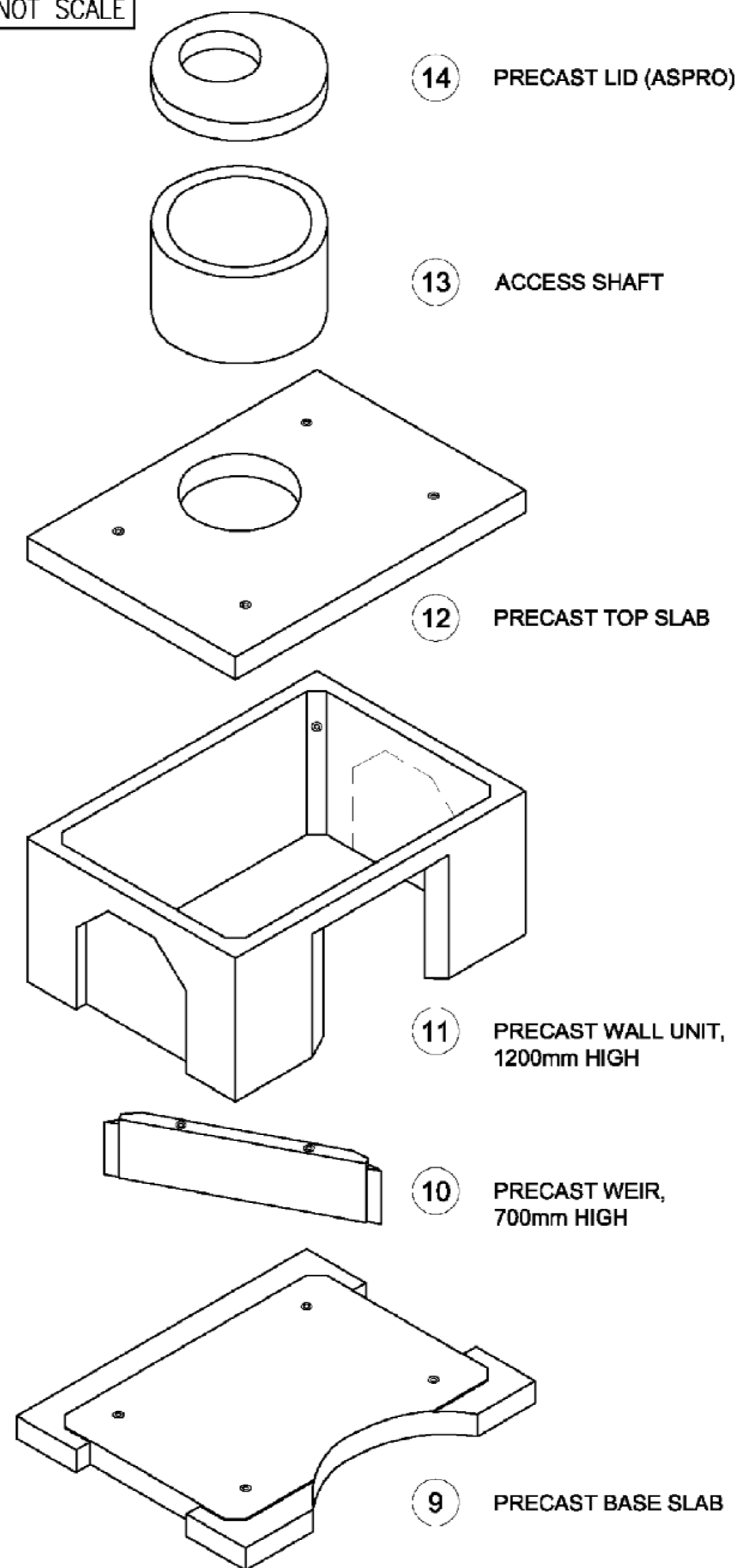
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DRAINS MODELLING RESULTS SUMMARY

DRAWING NUMBER
P1002913JD05V02

DESIGNED:	DATUM:	15 OF 19 SHEETS	REV.	DESCRIPTION	DATE	ISSUED
MGD	M R.L.		1	DRAFT	19.04.12	ASN
DRAWN:	HORIZONTAL RATIO:		2	REVISED DRAFT – AMENDMENT TO BASINS AND GPT DETAIL ADDED	20.04.12	ASN
KT	1:100 @ A1 1:200 @ A3					
REVIEWED:	VERTICAL RATIO:	PAPER SIZE:				
ASN	1:100 @ A1 1:200 @ A3	A1 / A3				

DO NOT SCALE



NOTES:

- DIMENSIONS SHOWN ARE FOR CONCRETE COMPONENTS ONLY. SEALANTS BETWEEN COMPONENTS (APPROX 10mm PER JOIN).
- PRECAST RISER SHAFTS MAY NOT MATCH SURFACE LEVELS AND CAST INSITU FINISHING MAY BE REQUIRED.
- INSITU CONCRETE DESIGN BY CLIENT, U.N.O (40mpa MIN.)
- ALL LEVELS TO BE CONFIRMED PRIOR TO INSTALLATION.
- GPT SHALL BE INSTALLED IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND/OR AS.3725-2007, AND ROCLA PRODUCT INSTALLATION GUIDES.

DRAWING APPROVAL

I/WE HAVE REVIEWED ALL DRAWINGS AND ARE SATISFIED THAT ALL INFORMATION SHOWN IS CORRECT

NAME OF PERSON AUTHORISED BY CUSTOMER

SIGNATURE

DATE

PRECAST COMPONENTS
CAST IN SITU WORKS

GPT SITE DETAILS

INLET PIPE DIA	
OUTLET PIPE DIA	
D.T.I (OUTLET)	

E					
D					
C					
B	DRC	DRC	SDB	ISSUED FOR INFORMATION	15.06.09
A	SB	LH	PW	ISSUED FOR INFORMATION	29.06.07
RV	DRN	CKD	APR	DESCRIPTION	DATE

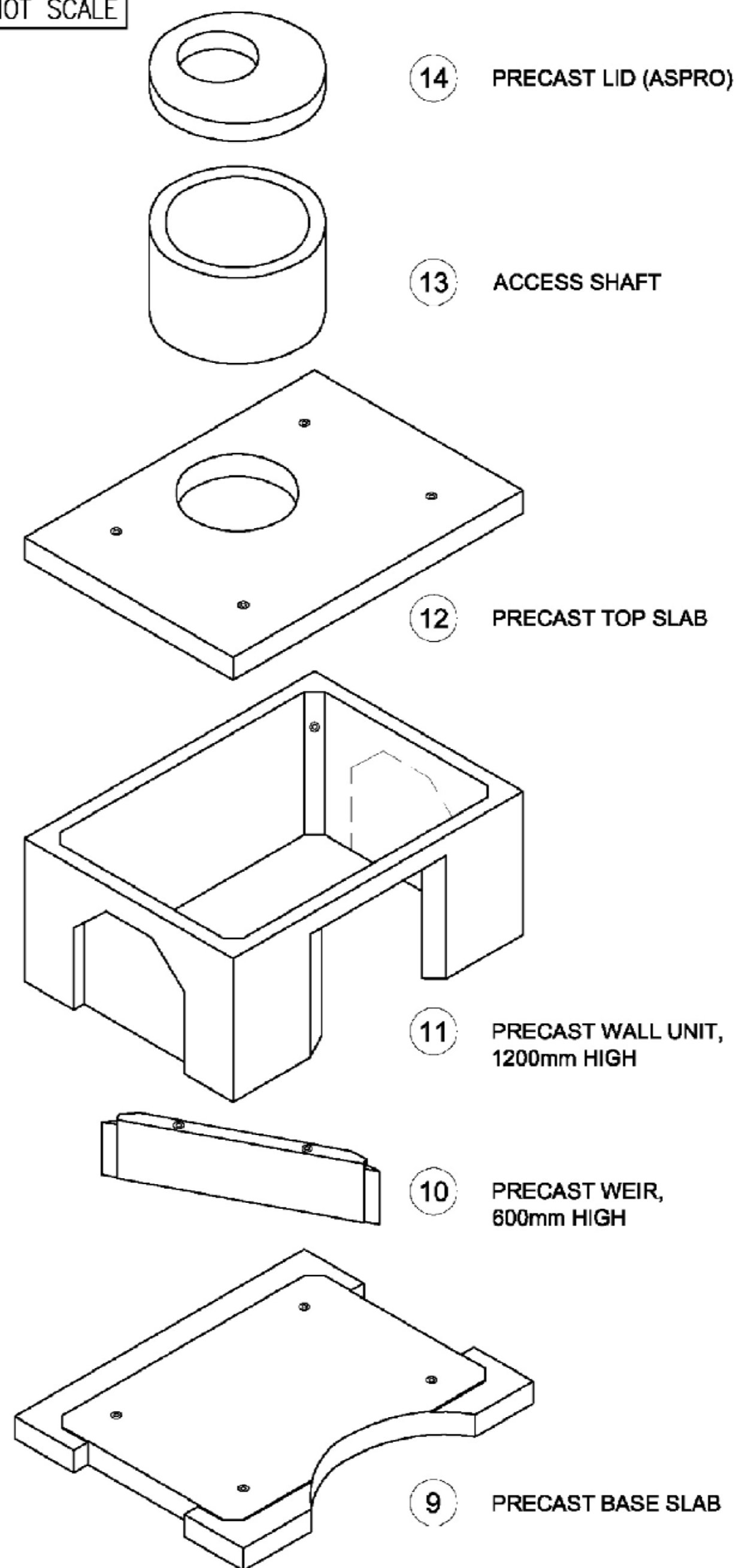
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ROCLA CDS	
P1015R GPT	
1800W x 1200H CHAMBER	
GENERAL ARRANGEMENT	

RWQ No.	SALES
JOB No.	
SHEET	1 OF 1
SCALE	DO NOT SCALE
D	205360

DO NOT SCALE



DIVERSION CHAMBER ASSEMBLY

DRAWING APPROVAL

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NAME OF PERSON AUTHORISED BY CUSTOMER

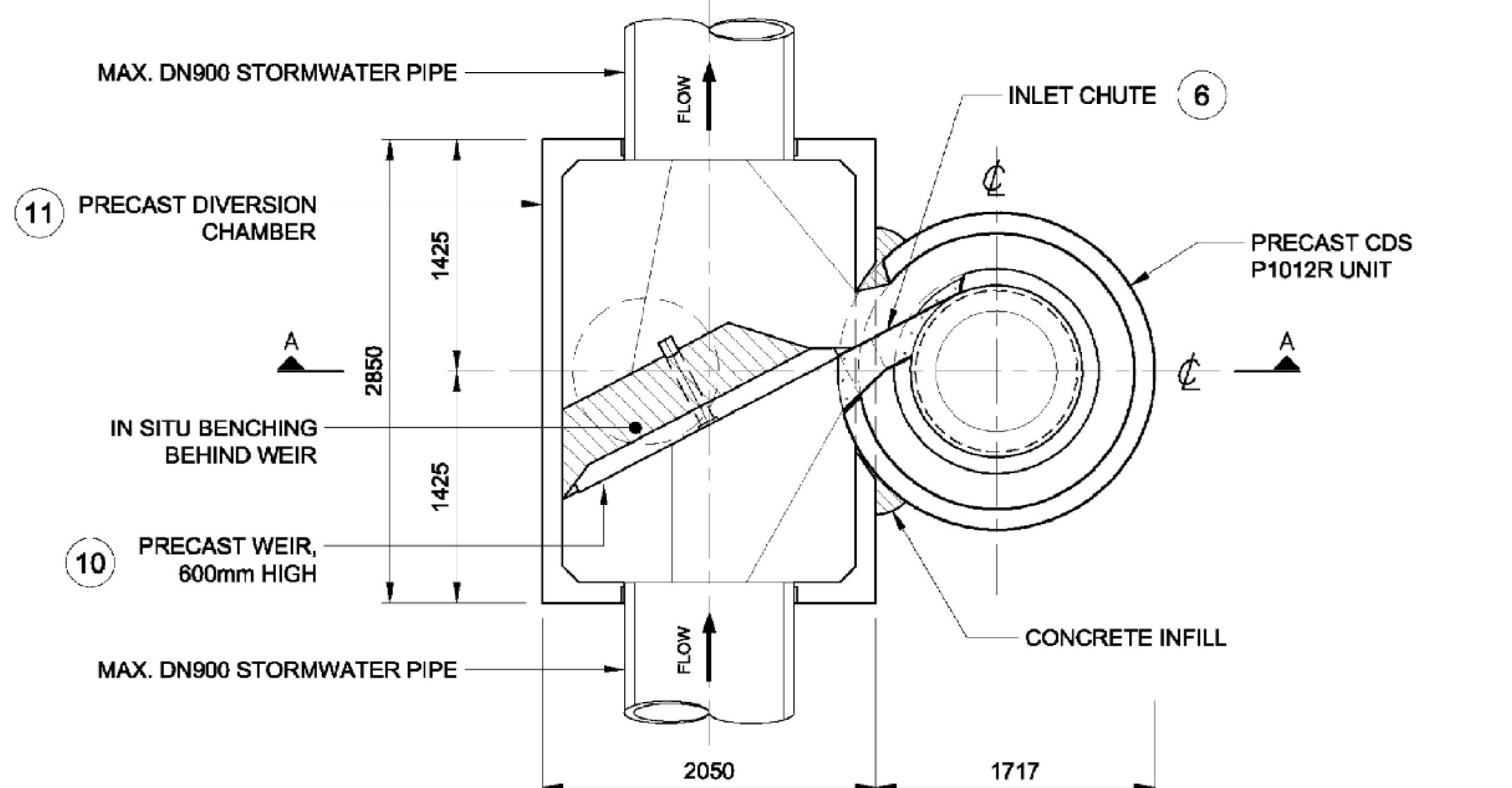
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DATE

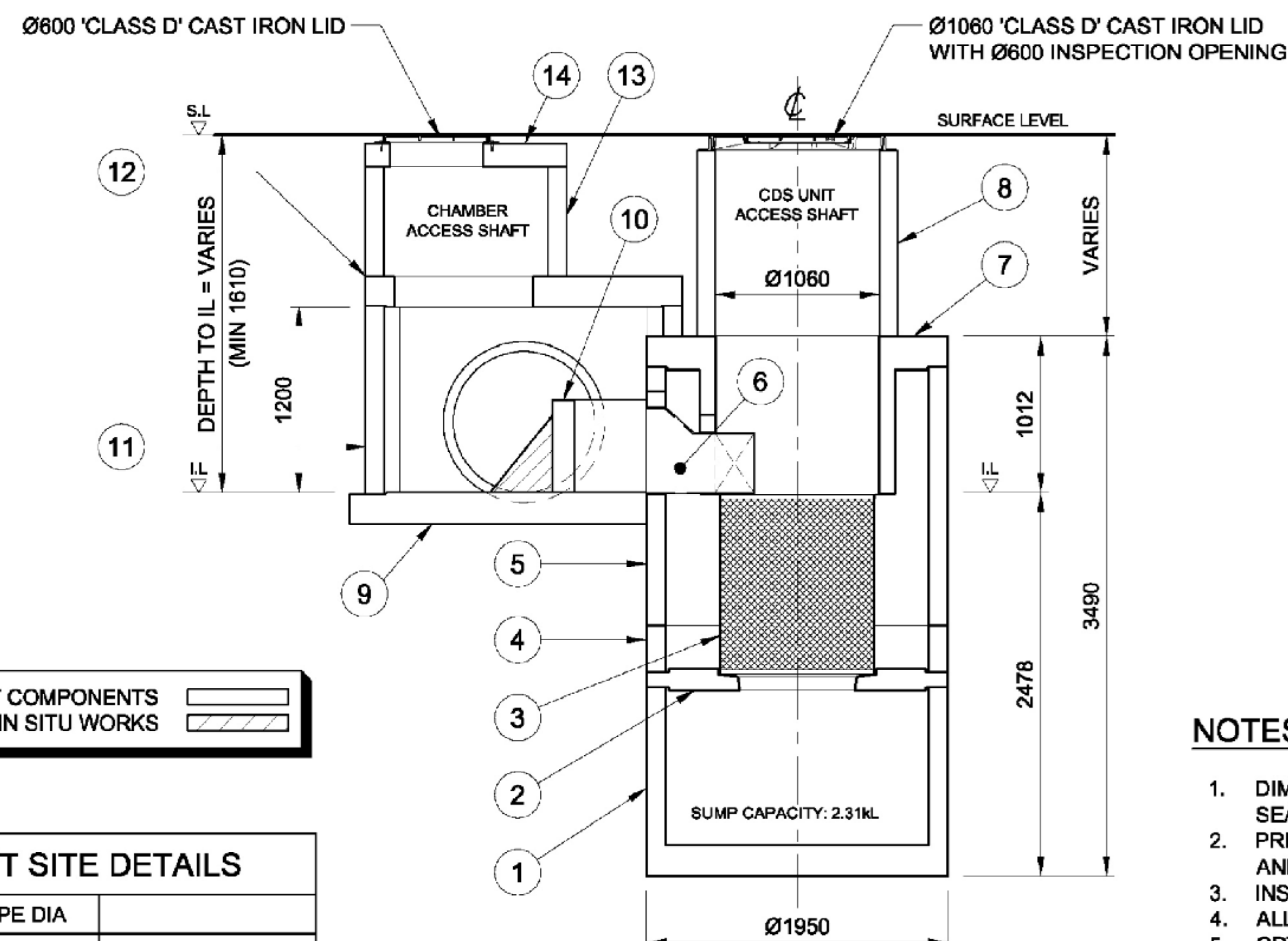
PRECAST COMPONENTS
CAST IN SITU WORKS

GPT SITE DETAILS

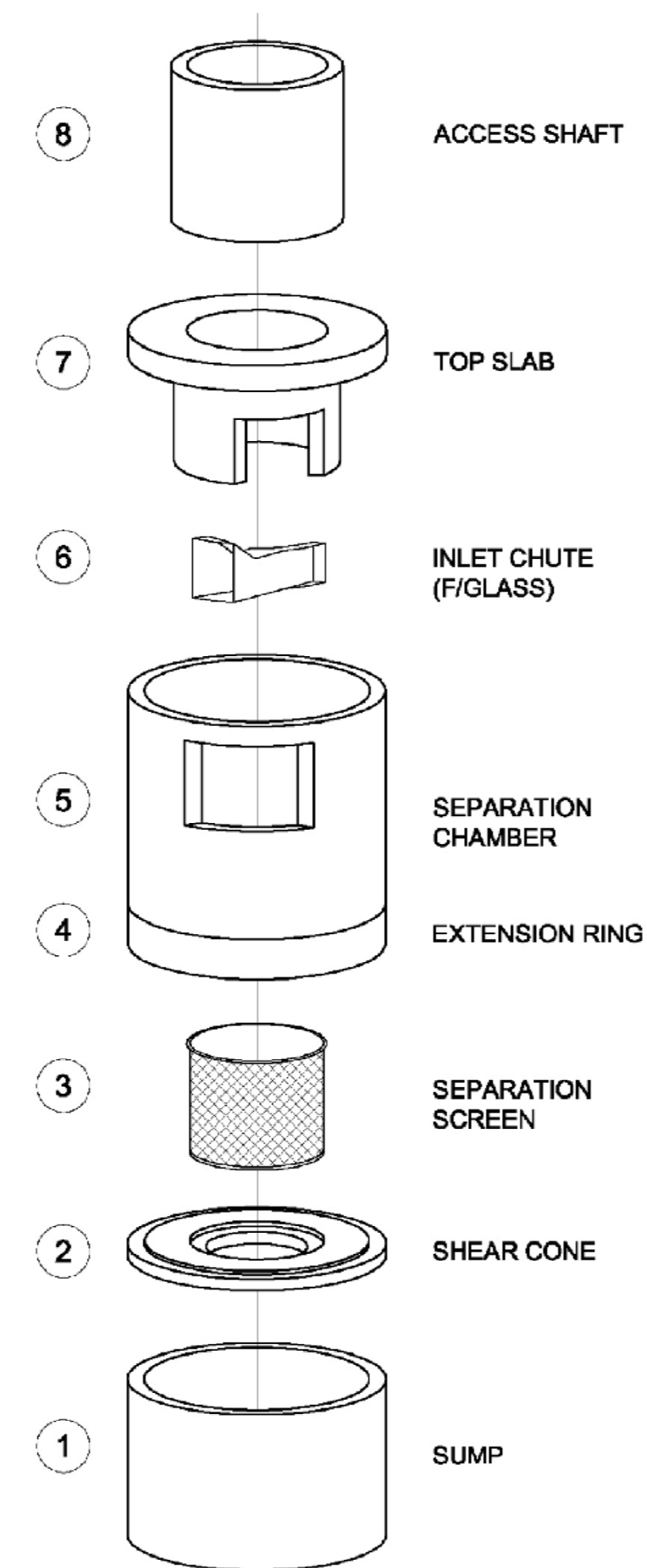
INLET PIPE DIA	
OUTLET PIPE DIA	
D.T.I (OUTLET)	



HORIZONTAL LAYOUT



VERTICAL SECTION A



CDS UNIT ASSEMBLY

NOTES:

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- GPT SHALL BE INSTALLED IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND/OR AS.3725-2007, AND ROCLA PRODUCT INSTALLATION GUIDES.

E					
D					
C					
B	DRC	DRC	SDB	ISSUED FOR INFORMATION	15.06.09
A	SB	LH	PW	ISSUED FOR INFORMATION	29.06.07
RV	DRN	CKD	APR	DESCRIPTION	DATE

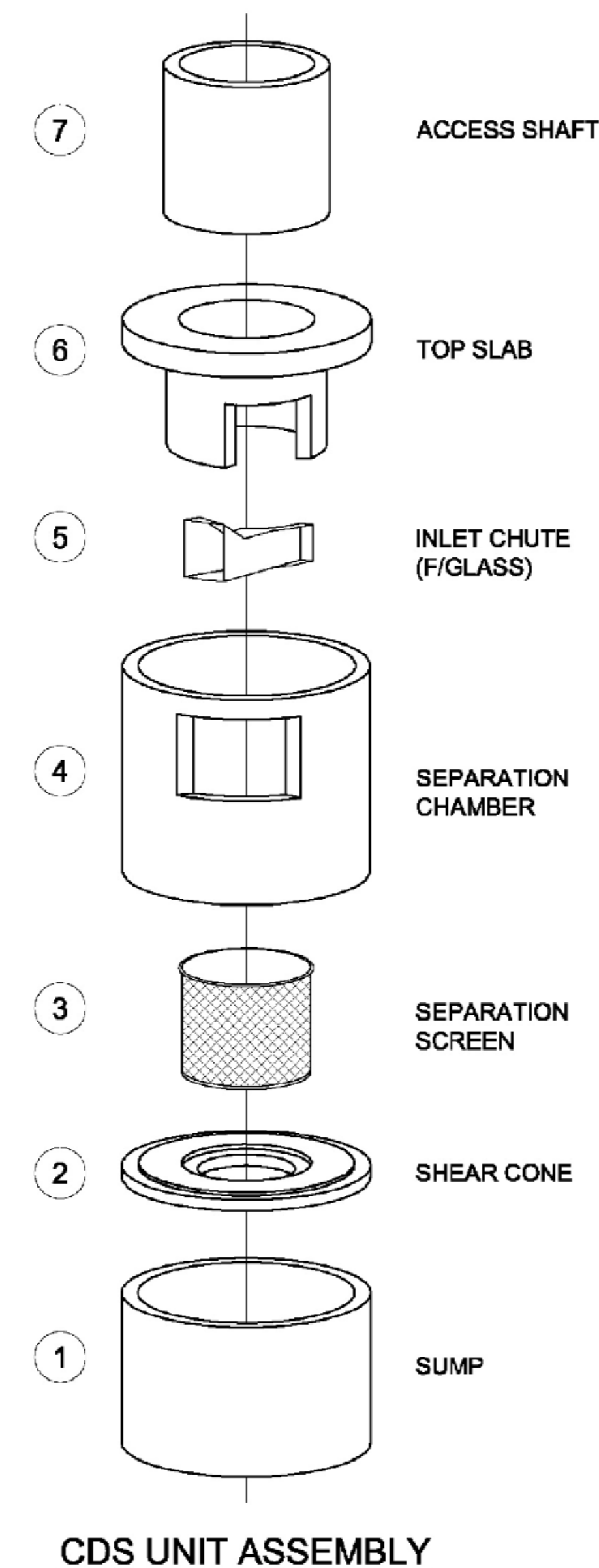
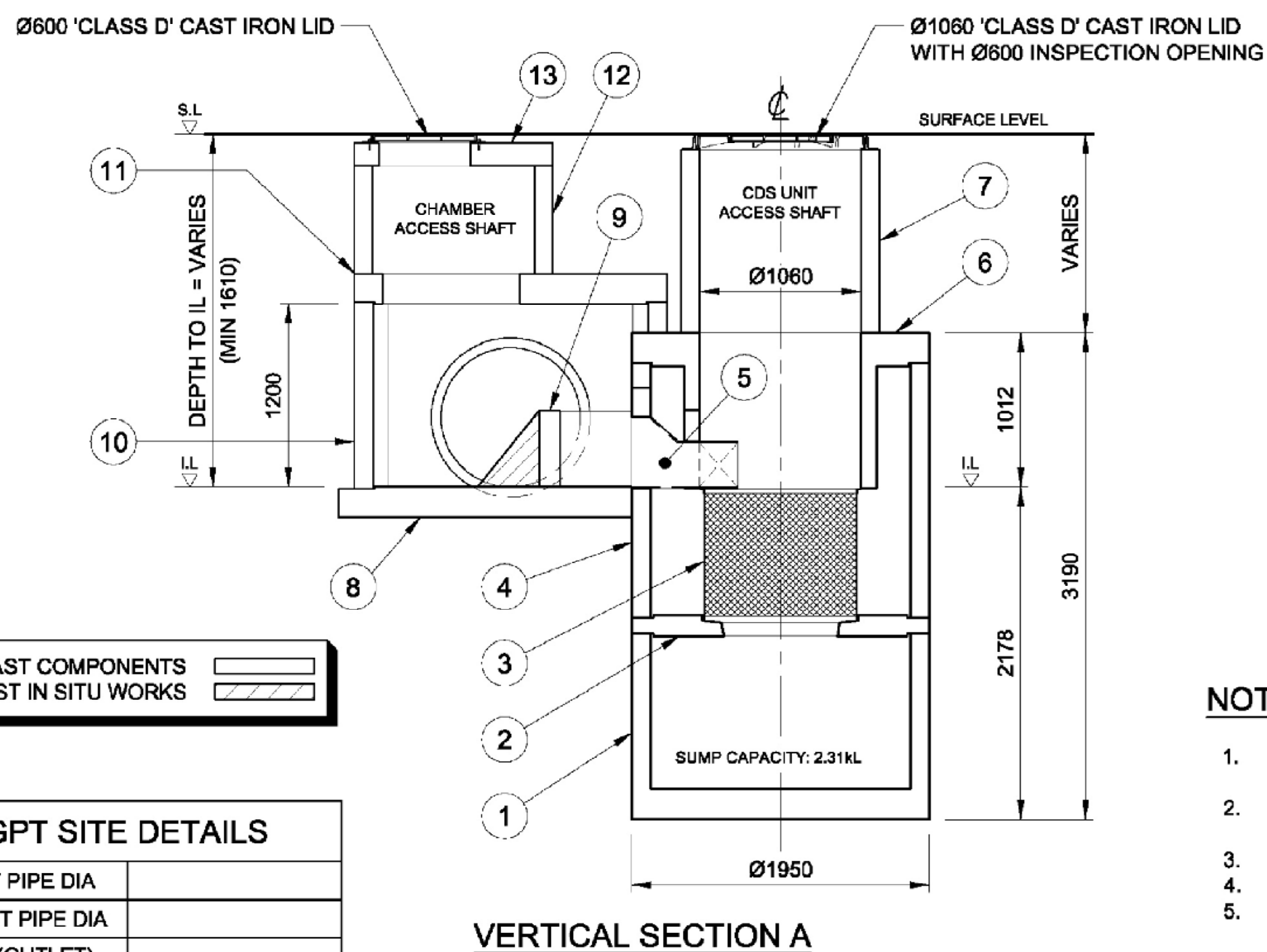
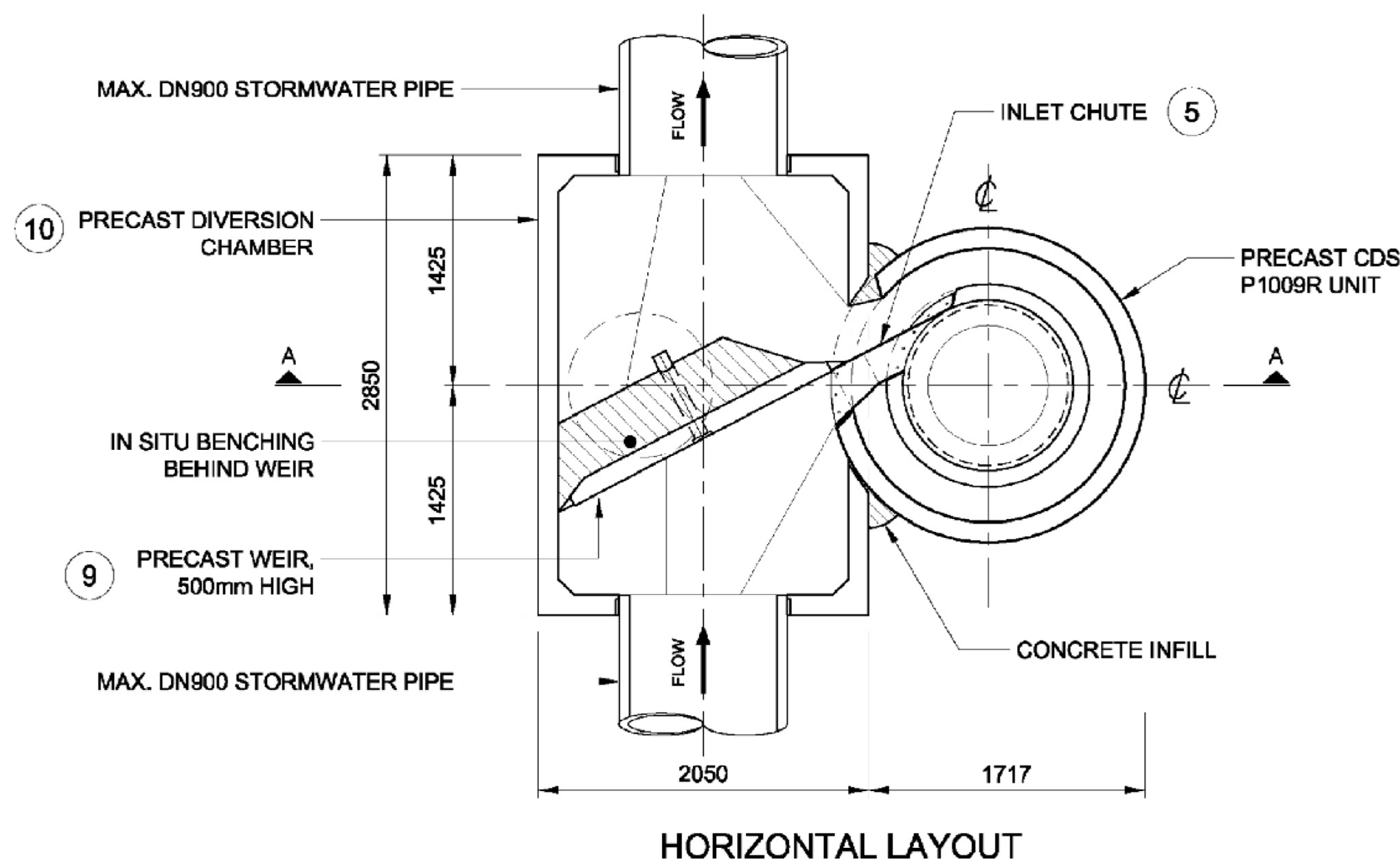
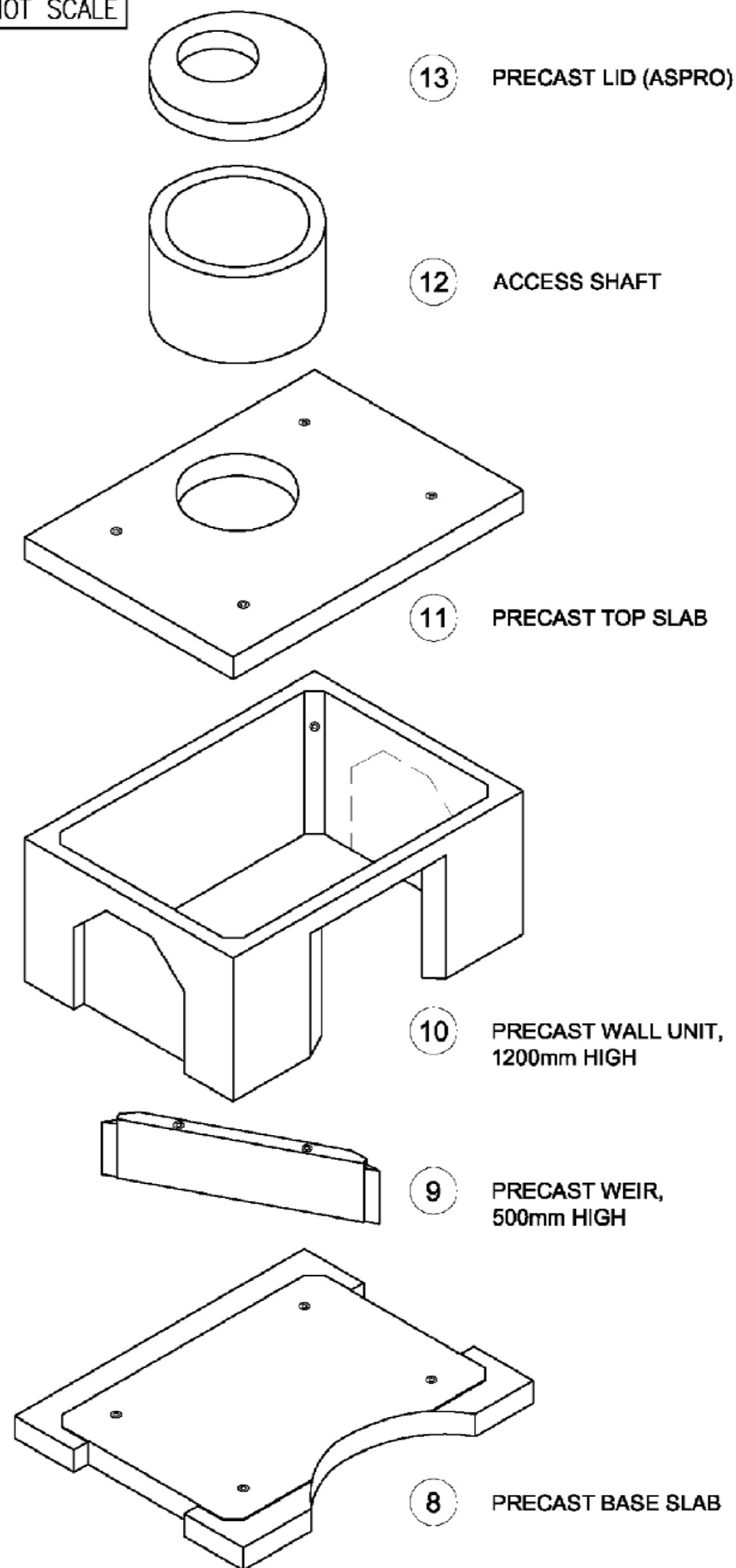
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ROCLA CDS P1012R GPT 1800W x 1200H CHAMBER GENERAL ARRANGEMENT	
---	--

RWQ No.	SALES
JOB No.	
SHEET	1 OF 1
SCALE	DO NOT SCALE
D	205352

DO NOT SCALE



NOTES:

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DRAWING APPROVAL

I/WE HAVE REVIEWED ALL DRAWINGS AND ARE SATISFIED THAT ALL INFORMATION SHOWN IS CORRECT

NAME OF PERSON AUTHORISED BY CUSTOMER

SIGNATURE

DATE

PRECAST COMPONENTS
CAST IN SITU WORKS

GPT SITE DETAILS

INLET PIPE DIA	
OUTLET PIPE DIA	
D.T.I (OUTLET)	

E					
D					
C					
B	DRC	DRC	SDB	ISSUED FOR INFORMATION	15.06.09
A	SB	LH	PW	ISSUED FOR INFORMATION	29.06.07
RV	DRN	CKD	APR	DESCRIPTION	DATE

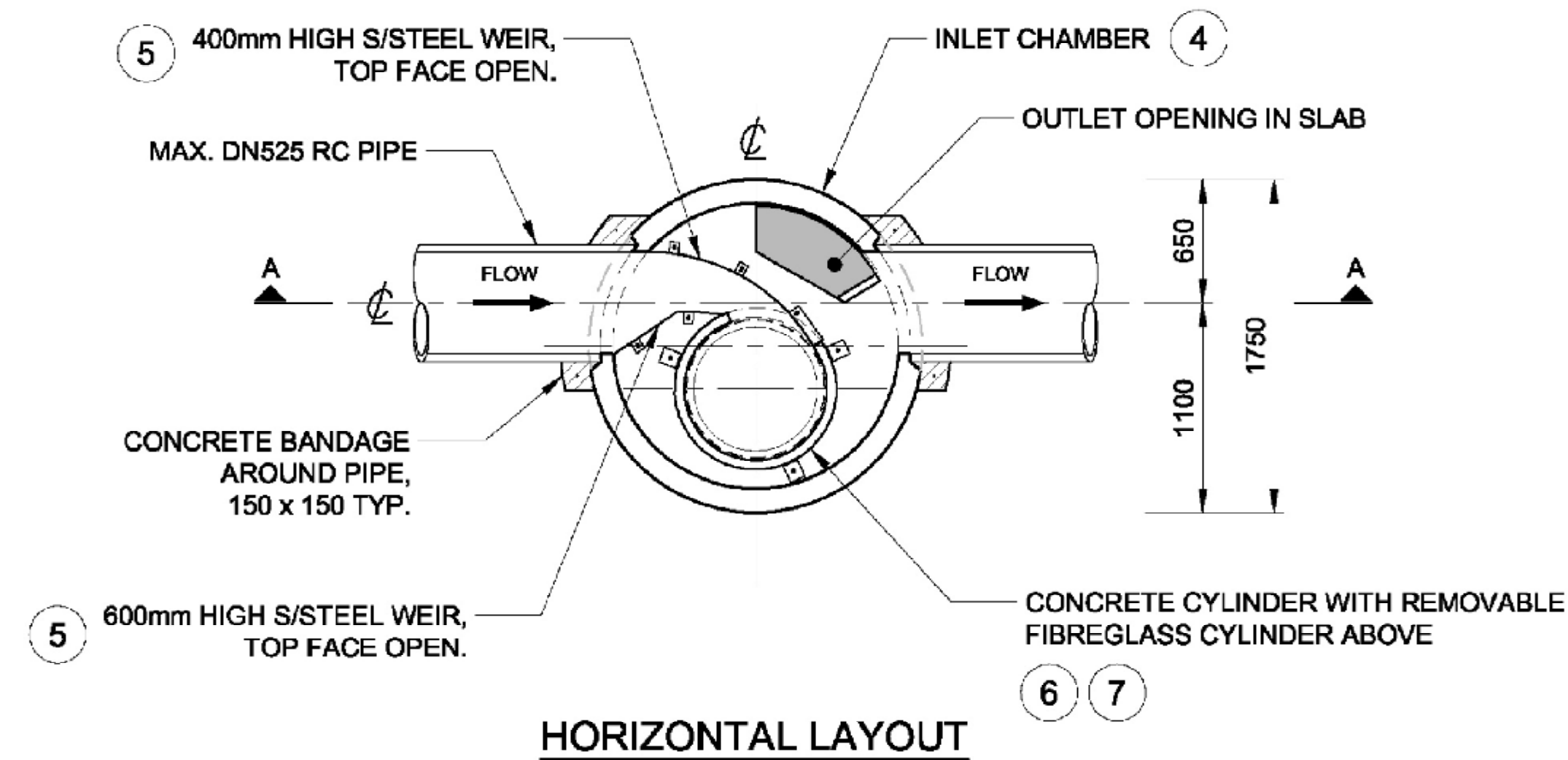
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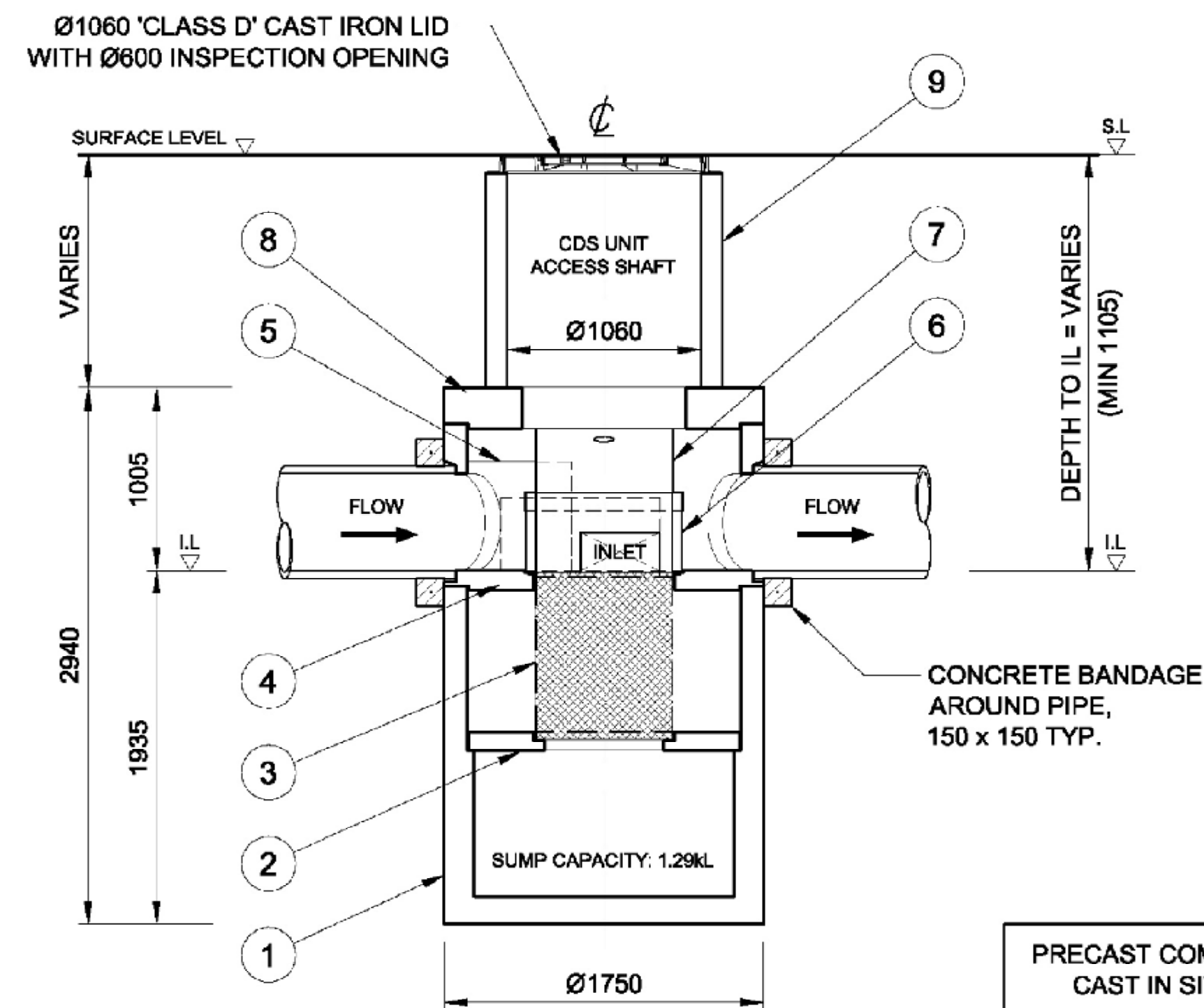
ROCLA CDS P1009R GPT	
1800W x 1200H CHAMBER	
GENERAL ARRANGEMENT	

RWQ No.	SALES
JOB No.	
SHEET	1 OF 1
SCALE	DO NOT SCALE
D	205344

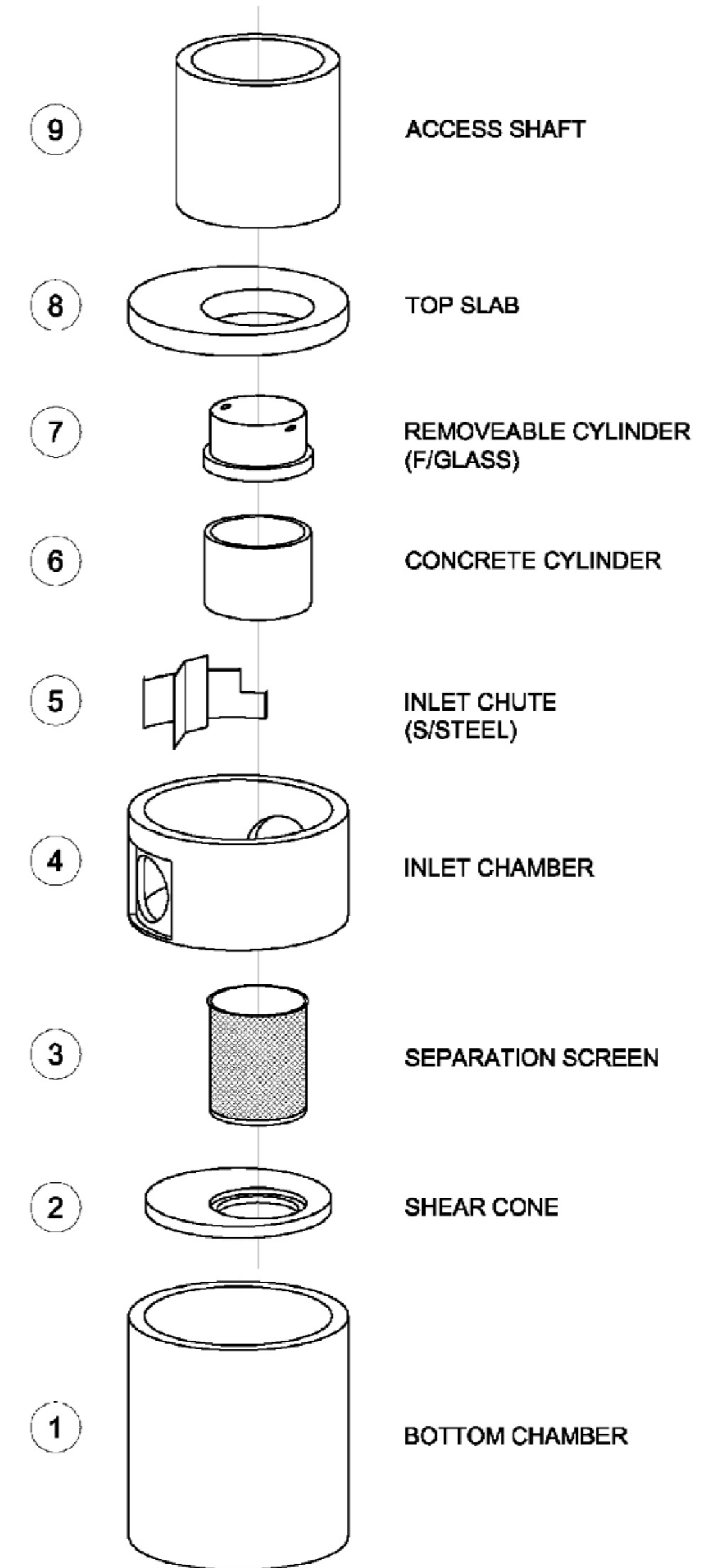
DO NOT SCALE



HORIZONTAL LAYOUT



VERTICAL SECTION A



CDS UNIT ASSEMBLY

GPT SITE DETAILS

INLET PIPE DIA	
OUTLET PIPE DIA	
D.T.I (OUTLET)	

DRAWING APPROVAL

I/WE HAVE REVIEWED ALL DRAWINGS AND ARE SATISFIED THAT ALL INFORMATION SHOWN IS CORRECT

NAME OF PERSON AUTHORISED BY CUSTOMER SIGNATURE DATE

NOTES:

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E						CONFIDENTIAL	 	ROCLA CDS P0708 GPT GENERAL ARRANGEMENT	RWQ No.	SALES
D	DRC	DRC	SDB	REVISED MINIMUM DTI	2.02.10	(NOT TO BE DISCLOSED TO ANY OTHER PERSON WITHOUT PERMISSION FROM ROCLA PTY LIMITED. UNAUTHORISED DISCLOSURE MAY RESULT IN PROSECUTION)			JOB No.	
C	DRC	DRC	SDB	ISSUED FOR INFORMATION	15.06.09	©Rocla Pty Limited			SHEET	1 OF 1
B	DRC	SDB	SDB	ISSUED FOR INFORMATION	3.11.08	This drawing is the property of Rocla Pty Limited A.B.N. 31 000 032 191 and is subject to return upon demand. It is submitted for use only in connection with proposals and contracts of Rocla Pty Limited upon the express condition that it is not to be reproduced or copied in any form. Data to be used only with reference to products manufactured and supplied by Rocla Pty Limited.			SCALE	DO NOT SCALE
A	SB	LH	PW	ISSUED FOR INFORMATION	28.06.07				D	205338
RV	DRN	CKD	APR	DESCRIPTION	DATE					