

Our Ref: 80813340 – 18 – 0077 :PL
Contact: Pak Lau

4 July 2018

Artazan Property Group
Level 8, 210 George Street
Sydney NSW 2000

Attention: Cian Fitzgerald

Cardno (NSW/ACT) Pty Ltd
ABN 95 001 145 035

Suite 3.01, Level 3
3 Horwood Place
Parramatta 2150
Australia

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Dear Cian,

ST AUGUSTINE COLLEGE GOOLD BUILDING EXTENSION - OVERLAND FLOW ASSESSMENT

Cardno (NSW/ACT) has been engaged by Artazan Property Group (APG) to undertake a flood assessment of the existing overland flow path adjacent to the Goold Building, which is located on the eastern corner of St Augustine College. The college is proposing to:

1. Demolish the existing building (St Possidus Chalets) between the Goold building and the site boundary; and
2. Construct an extension and refurbishment of the Goold Building.

This report has been prepared to detail the result of the hydraulic assessment of the overland flow path, hence provides a guidance on the finished floor level of the proposed extension.

Catchment Analysis

The existing Goold Building is located in close proximity of the existing overland flowpath, which follows the alignment of an existing drainage easement. The existing overland flow path, has a catchment area of 38.6ha, which was delineated from the aerial photographs, 2m contours and the GIS data for the existing stormwater drainage infrastructure. Figure 1 shows the location of the buildings and the extent of the catchment.

A DRAINS model has been set up and the peak flow was calculated by ILSAX hydrological method. The Rainfall IFD data (2016) and the temporal patterns were obtained from the Bureau of Meteorology and Australian Rainfall and Runoff Datahub respectively.

Based on the current land use, the catchment has divided into two catchments. Catchment A has an area of 28.8ha, which is predominantly a residential area with 40% impervious. The time of concentration was assumed to be 20mins based on the travel time along the gutter and through the stormwater pipes. Catchment B has an area of 9.76ha, which represents the dense vegetated area to the north west of the school site. DRAINS modelling result shows the 1% AEP peak flow discharges at the overland flow path is approximately 5.5m³/s.



Figure 1 Extent of catchment

Hydraulic Assessment

Hydraulic modelling software, HEC-RAS, was used to analyse the flood levels and flow velocities along the existing and designed overland flowpath. The existing model is based on the detail survey data and imported to HEC-RAS from 12d design software. The model for the proposed overland flowpath is based on the detailed survey of the site. Cross sections have been created at 2m intervals along the centreline of the overland flowpath. The overland flowpath alignment is shown in Figure 2.

The roughness coefficient Manning's 'n' used in the analysis was 0.015 (paved area) and 0.035 (grassed area). The upstream boundary condition for the analysis were assumed to be normal depth.

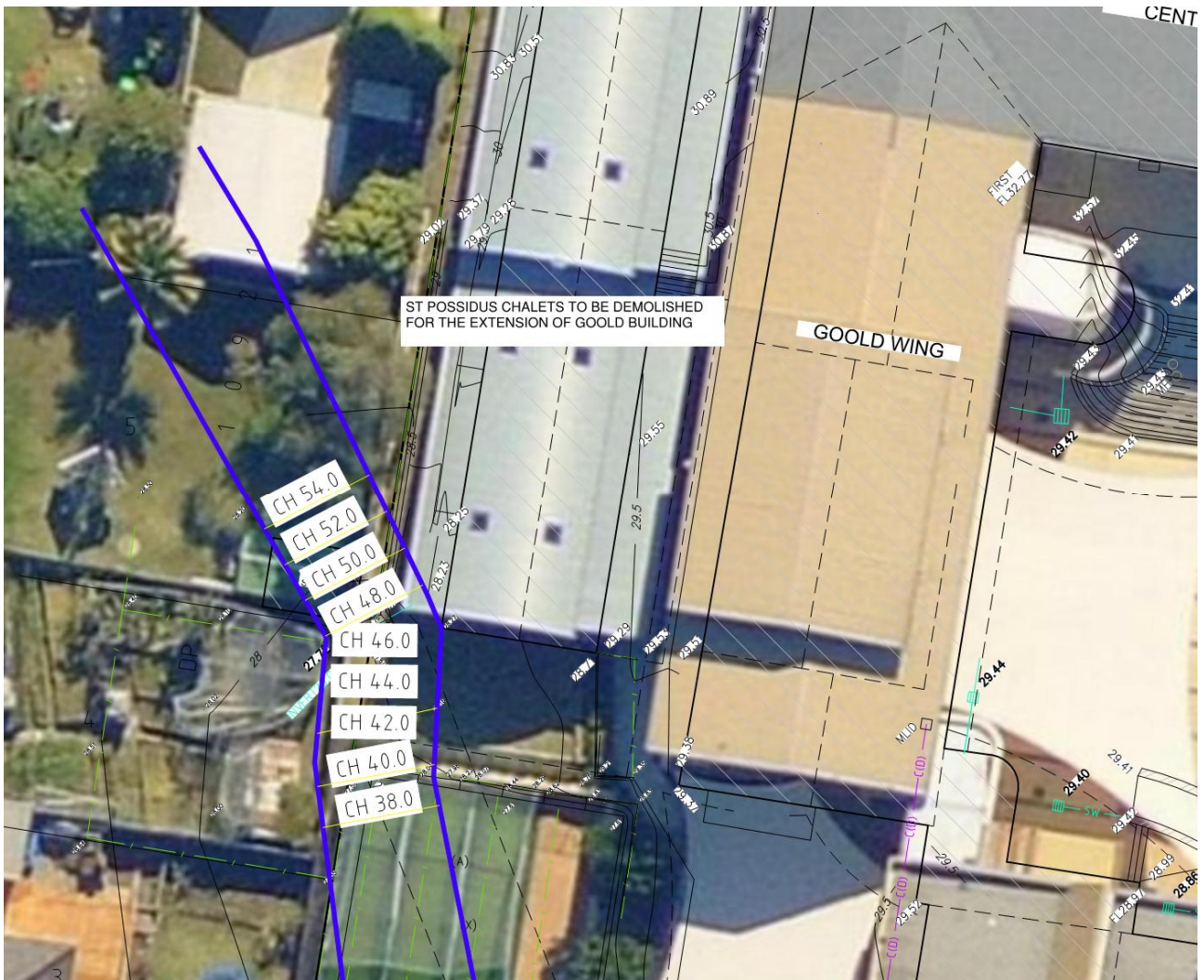


Figure 2 Overland flowpath alignment

Results

The 1% AEP flow depth along the existing overland flowpath that is adjacent to the Goold Building is between RL 27.76m and RL 28.31m. Table 1 shows the water levels at different location of the overland flowpath.

Table 1 HEC-RAS results

Location	1% AEP Water Level (RLm)	Comments
CH 54.00	28.69	At the metal shed in the neighbouring property. Existing surface level at the school boundary RL 28.25m. Proposed Goold Building Ground Floor RL 29.59m
CH 52.00	28.49	
CH 50.00	28.34	
CH 48.00	28.22	At the corner of the Goold Building
CH 42.66	28.16	Fore court of the Goold Building
CH 40.00	28.10	At the top of the retaining wall adjacent to the cricket nets
CH 38.00	27.95	At the bottom of the retaining wall, within the cricket nets area

A 500mm freeboard to the finished floor level is required from the 1% AEP flood level as per Northern Beach Council design guidelines. The proposed extension of Goold Building will have a finished floor level of RL 29.59m, which is 900mm higher than the 1% AEP flood level.

Conclusion

The proposed development will not cause any adverse impact on the existing flow condition as the demolition of the existing St Possidus Chalets will increase the available flow area, hence reduce the flow depths along the flow path.

The proposed extension of the Goold Building has more than 500mm freeboard from the 1% AEP flood level, which satisfies council's design requirement.

It is anticipated there will be some civil works associated with the proposed development, which may change the surface level along the overland flowpath. A detailed hydraulic analysis on the post development condition may be required for the development application submission.

If you have any query regarding to the above, please do not hesitate to contact the undersigned.

Yours sincerely,



Pak Lau
Civil Engineer
for Cardno
Direct Line: +61 2 9496 7846
Email: pak.lau@cardno.com.au

Appendix 16 – On-site Detention Checklist

This checklist is to be used to determine the on-site stormwater disposal requirement for developments and must be completed and included with the submission of any development application for these works. Please read this form carefully for its notes, guidelines, definition and relevant policies.

For assistance and support, please contact Council's Development Engineering and Certification team on 1300 434 434.

Part 1 Location of the Property			
House Number	33	Legal Property Description	VACANT LAND
Street	CONSUL	Lot	3
Suburb	BROOKVALE	Section	
Postcode		DP	12815

Part 2 Site Details			
Northern Beaches Stormwater Regions (refer to Map 2 of Northern Beaches Council's Water Management for Development policy)		Total Site Area	556.11 m ² (AS PER CAD)
Pre-Development Impervious Area	0%	Post-Development Impervious Area	452.47 m ²
Is the site of the development located within an established Flood Prone Land as referred to Council's Local Environmental Plans? If yes, On-site stormwater Detention system (OSD) is not required and please proceed to part 5 of this checklist If no, please proceed to part 3 of this checklist.			Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NO. OSD IS REQUIRED

Part 3: Northern Beaches Stormwater Regions (refer to Map 2 of Northern Beaches Council's Water Management for Development policy)
If the site of the development located within Region 1, please proceed to the part 4.1 of this checklist
If the site of the development located within Region 2, please proceed to the part 4.2 of this checklist ✓
If the site of the development located within Region 3, please proceed to the part 4.3 of this checklist
If the site of the development located within Region 4, please refer to Council's Warriewood Valley Water Management Specification.

Part 4 Determination of OSD Requirements

Part 4.1 Northern Beaches Stormwater Region 1

N/A

Is the additional impervious area of the development more than 50 m² on a cumulative basis since February 1996?

Yes No

If yes, OSD is required and please refer to section 9.3.1 of Council's Water Management for Development Policy
If no, OSD is not required and please proceed to the part 5 of this checklist

Part 4.2 Northern Beaches Stormwater Region 2

Part 4.2.1 Description of Work

Residential flat building, commercial, industrial, multiple occupancy development and subdivisions resulting in the creation of three lots or more, will require OSD in all case. Please provide a design in accordance with the section 9.3.2 of Council's Water Management for Development Policy.
Any single residential building development, please proceed to part 4.2.2 of this checklist.

Part 4.2.2 Exemption

Is the site area less than 450m²?

Yes No

Does the site of the development drain directly to the ocean without the need to pass through a drainage control structure such as pipe, bridge, culvert, kerb and gutter or natural drainage system?

Yes No

Is it an alternation and addition development to the existing dwellings?

Yes No

If yes to any of the above questions, OSD is not required.
If no to all the above questions, proceed to part 4.2.3

Part 4.2.3 Determination of OSD Requirements

Calculation

a) Site area m² x 0.40 (40%) = 222.93 m²
b) Post- development impervious area = ~~452.47~~ m²

OSD will not be required when (a) is greater than (b)

Is OSD required for this development (tick one only) Yes No

If yes, provide a design in accordance with the section 9.3.2 of Council's Water Management for Development Policy.

If no, OSD is not required and please proceed to part 5 of this checklist.

Part 5 Disposal of Stormwater

Does the site fall naturally towards the street? Yes No

If yes, provide a design in accordance with section 5.1 of Council's Water Management for Development Policy.
If no, provide a design in accordance with section 5.5 of Council's Water Management for Development Policy.

Definitions

Designed to help you fill out this application

Site area: This refers to the area of the land bounded by its existing or proposed boundaries.
Impervious area: This refers to driveways, parking spaces, pathways, paved areas, hardstand areas, roofed areas, garages and outbuildings.
Pre Development Impervious area: This refers all impervious areas of the site before the development.
Post Development Impervious areas: This refers all the impervious areas within the site after the development is completed.



ELECTRICAL • FIRE • HYDRAULIC • MECHANICAL • STRUCTURAL • CIVIL • FACADES

5 / 45-55 Epsom Road
Rosebery NSW 2018

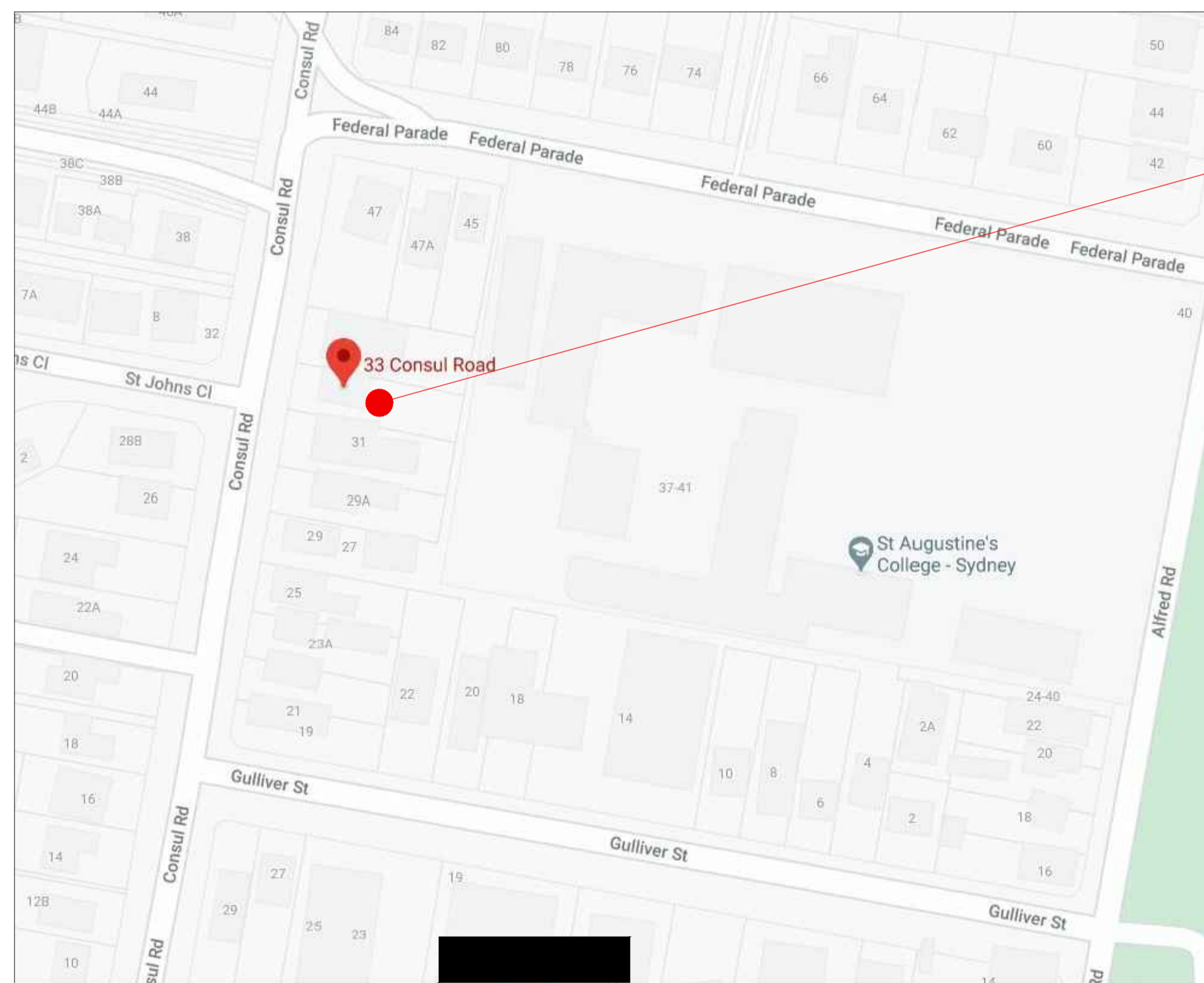
P 02 8662 9300
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ABN 34 620 484 602

PROJECT ADDRESS:
PROPOSED CARPARK A7.
33 CONSUL ROAD, BROOKVALE

DRAWING INDEX & COVER SHEET: **CIVIL**

PROJECT No.	DWG No.	DWG TITLES	REVISION
2290	C000	COVER SHEET & DRAWING INDEX	02
	C001	GENERAL NOTES	02
	C002	DIAL B4 YOU DIG INVESTIGATION	02
	C003	WASTE MANAGEMENT PLAN	02
	C100	SEDIMENTATION & EROSION CONTROL PLAN	02
	C101	AREA ANALYSIS & SEC DETAILS	02
	C102	STANDARD DETAILS LAYBACK & CARPARK	02
	C200	CONCEPT STORMWATER MANAGEMENT PLAN	02
	C201	OSD & SILT ARRESTOR & MISC DETAILS	02
	C202	MISC DETAILS	02
	C300	LANDSCAPE PLAN	02
	C301	PROPOSED PLANTS	02



SATE MAP (SOURCE: GOOGLE MAP)



SITE LAYOUT (SOURCE: SIX MAPS)

ISSUE FOR DA

ISSUE	DATE	AMENDMENT	CLIENT / BUILDER / ARCHITECT	CIVIL	NORTH:	SCALE:	VERIFIED:	DRAWING TITLE:	DATE:	SCALE:	
00	29.09.2020	ISSUE FOR DISCUSSION		 5 / 45-55 Epsom Road Rosebery NSW 2018 P 02 8662 9300 E info@core.engineering W core.engineering ABN 34 620 484 602		NTS	AC	COVER SHEET & DRAWING INDEX	12/09/2020	N.T.S	
01	02.10.2020	ISSUE FOR DEVELOPMENT APPLICATION					DESIGNED:		PROJECT:	PROJECT No:	REVISION:
02	09.10.2020	ISSUE FOR DEVELOPMENT APPLICATION					HR		PROPOSED CARPARK A7. 33 CONSUL ROAD, BROOKVALE	2290	02
							RQ		DRAWING No:	C000	

EXISTING UNDERGROUND SERVICES NOTES

THE LOCATIONS OF UNDERGROUND SERVICES SHOWN IN THIS SET OF DRAWINGS HAVE BEEN PLOTTED FROM SURVEY INFORMATION AND SERVICE AUTHORITY INFORMATION. THE SERVICE INFORMATION HAS BEEN PREPARED ONLY TO SHOW THE APPROXIMATE POSITIONS OF ANY KNOWN SERVICES AND MAY NOT BE AS CONSTRUCTED OR ACCURATE. CARDNO CAN NOT GUARANTEE THAT THE SERVICES INFORMATION SHOWN ON THESE DRAWINGS ACCURATELY INDICATES THE PRESENCE OR ABSENCE OF SERVICES OR THEIR LOCATION AND WILL ACCEPT NO LIABILITY FOR INACCURACIES IN THE SERVICES INFORMATION SHOWN FROM ANY CAUSE WHATSOEVER.

CONTRACTORS SHALL TAKE DUE CARE WHEN EXCAVATING ONSITE INCLUDING HAND EXCAVATION WHERE NECESSARY. CONTRACTORS ARE TO CONTACT THE RELEVANT SERVICE AUTHORITY PRIOR TO COMMENCEMENT OF EXCAVATION WORKS. CONTRACTORS ARE TO UNDERTAKE A SERVICES SEARCH, PRIOR TO COMMENCEMENT OF WORKS ON SITE. SEARCH RESULTS ARE TO BE KEPT ON SITE AT ALL TIMES.

COMMUNICATIONS - DUTY OF CARE NOTE

COMMUNICATIONS AND DATA PROVIDER PLANS SHOW ONLY THE PRESENCE OF CABLES AND PLANT. THEY ONLY SHOW THEIR POSITION RELATIVE TO ROAD BOUNDARIES, PROPERTY FENCES ETC. AT THE TIME OF INSTALLATION AND EACH PROVIDER DOES NOT WARRANT OR HOLD OUT THAT SUCH PLANS ARE ACCURATE. THEREAFTER DUE TO CHANGES THAT MAY OCCUR OVER TIME, DO NOT ASSUME DEPTH OR ALIGNMENT OF CABLES OR PLANT AS THESE VARY SIGNIFICANTLY. THE CONTRACTOR HAS A DUTY OF CARE WHEN EXCAVATING NEAR COMMUNICATIONS AND DATA CABLES AND PLANT. BEFORE USING MACHINE EXCAVATORS COMMUNICATIONS PLANT MUST FIRST BE PHYSICALLY EXPOSED BY SOFT DIG POTHOLING TO IDENTIFY ITS LOCATION, PROVIDERS WILL SEEK COMPENSATION FOR DAMAGES CAUSED TO ITS PROPERTY AND LOSSES CAUSED TO THE PROVIDERS AND ITS CUSTOMERS.

TELSTRA - DUTY OF CARE NOTE

TELSTRA'S PLANS SHOW ONLY THE PRESENCE OF CABLES AND PLANT. THEY ONLY SHOW THEIR POSITION RELATIVE TO ROAD BOUNDARIES, PROPERTY FENCES ETC. AT THE TIME OF INSTALLATION AND TELSTRA DOES NOT WARRANT OR HOLD OUT THAT SUCH PLANS ARE ACCURATE. THEREAFTER DUE TO CHANGES THAT MAY OCCUR OVER TIME, DO NOT ASSUME DEPTH OR ALIGNMENT OF CABLES OR PLANT AS THESE VARY SIGNIFICANTLY. THE CONTRACTOR HAS A DUTY OF CARE WHEN EXCAVATING NEAR TELSTRA CABLES AND PLANT. BEFORE USING MACHINE EXCAVATORS TELSTRA PLANT MUST FIRST BE PHYSICALLY EXPOSED BY SOFT DIG POTHOLING TO IDENTIFY ITS LOCATION TELSTRA WILL SEEK COMPENSATION FOR DAMAGES CAUSED TO ITS PROPERTY AND LOSSES CAUSED TO TELSTRA AND ITS CUSTOMERS.

BULK EARTHWORKS NOTES

- STRIP ALL TOPSOIL/ORGANIC MATERIAL FROM CONSTRUCTION AREA AND REMOVE FROM SITE OR STOCK PILE AS DIRECTED BY SUPERINTENDENT.
- EXCAVATED MATERIAL TO BE USED AS STRUCTURAL FILL PROVIDED THE PLACEMENT MOISTURE CONTENT OF THE MATERIAL IS +/- 2% OF THE OPTIMUM MOISTURE CONTENT.
- COMPACT FILL AREAS AND SUBGRADE TO NOT LESS THAN:

LOCATION	STANDARD DRY DENSITY (AS 1289 E 5.1.1.)
UNDER BUILDING SLABS ON GROUND	98%
UNDER ROADS AND CARPARKS	98%
LANDSCAPED AREAS UNLESS NOTED OTHERWISE	98%
- FOR NON COHESIVE MATERIAL, COMPACT TO 75% DENSITY INDEX.
- BEFORE PLACING FILL, PROOF ROLL EXPOSED SUBGRADE WITH AN 8 TONNE (MIN) DEADWEIGHT SMOOTH DRUM VIBRATORY ROLLER TO DETECT THEN REMOVE SOFT SPOTS (AREAS WITH MORE THAN 2mm MOVEMENT UNDER ROLLER).
- FREQUENCY OF COMPACTION TESTING SHALL BE NOT LESS THAN:
 - 1 TEST PER 200m² OF FILL PLACED PER 300 LAYER OF FILL.
 - 3 TESTS PER VISIT
 - 1 TEST PER 1000m² OF EXPOSED SUBGRADE "LEVEL 1" TESTING SHALL BE TESTING IN ACCORDANCE WITH AS 3798 (1996).
- FILLING TO BE PLACED IN MAXIMUM 150mm - LOOSE LAYERS AND COMPACTED AS SPECIFIED
- NO FILLING SHALL TAKE PLACE TO EXPOSED SUBGRADE UNTIL THE AREA HAS BEEN PROOF ROLLED IN THE PRESENCE OF CARDNO AND APPROVAL GIVEN IN WRITING THAT FILLING CAN PROCEED.

EROSION AND SEDIMENT CONTROL NOTES

GENERAL INSTRUCTIONS

- THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONTROL OF EROSION AND SEDIMENTATION TO THE SATISFACTION OF COUNCIL, NSW OFFICE OF WATER, OFFICE OF ENVIRONMENT AND HERITAGE, THE EROSION AND SEDIMENTATION CONTROLS SHOWN ON THE DRAWINGS SHALL ONLY BE USED AS A GUIDE BY THE CONTRACTOR, AND SHALL REPRESENT THE MINIMUM REQUIREMENT ONLY.
- THE CONTRACTOR SHALL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED AS DOCUMENTED OR AS OTHERWISE DIRECTED BY THE SUPERINTENDENT. ALL WORK SHALL BE GENERALLY CARRIED OUT IN ACCORDANCE WITH
 - LOCAL AUTHORITY REQUIREMENTS
 - EPA REQUIREMENTS
 - NSW DEPARTMENT OF HOUSING MANUAL "MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION", 4th EDITION, MARCH 2004.
- MAINTAIN THE EROSION CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE LOCAL AUTHORITY.
- WHEN STORMWATER PITS ARE CONSTRUCTED, PREVENT SITE RUNOFF ENTERING UNLESS SEDIMENT FENCES ARE ERECTED AROUND PITS.
- CONTRACTOR IS TO ENSURE ALL EROSION & SEDIMENT CONTROL DEVICES ARE MAINTAINED IN GOOD WORKING ORDER AND OPERATE EFFECTIVELY. REPAIRS AND OR MAINTENANCE SHALL BE UNDERTAKEN AS REQUIRED, PARTICULARLY FOLLOWING STORM EVENTS.

LAND DISTURBANCE

- WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE WILL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE:
 - INSTALL A SEDIMENT FENCE ALONG THE BOUNDARIES AS SHOWN ON PLAN. REFER DETAIL.
 - CONSTRUCT STABILISED CONSTRUCTION ENTRANCE TO LOCATION AS DETERMINED BY SUPERINTENDENT/ENGINEER. REFER DETAIL.
 - INSTALL SEDIMENT BASIN AS SHOWN ON PLAN (D). INSTALL SEDIMENT TRAPS AS SHOWN ON PLAN.
 - UNDERTAKE SITE DEVELOPMENT WORKS IN ACCORDANCE WITH THE ENGINEERING PLANS, WHERE POSSIBLE, PHASE DEVELOPMENT SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF WORKABLE SIZE.

EROSION CONTROL

- DURING WINDY WEATHER, LARGE, UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.
- FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS POSSIBLE AND WITHIN 20 WORKING DAYS FROM COMPLETION OF CONSTRUCTION ACTIVITIES.

SEDIMENT CONTROL

- STOCKPILES WILL NOT BE LOCATED WITHIN 2 METRES OF HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS, WHERE THEY ARE BETWEEN 2 AND 5 METRES FROM SUCH AREAS, SPECIAL SEDIMENT CONTROL MEASURES SHOULD BE TAKEN TO MINIMISE POSSIBLE POLLUTION TO DOWNSLOPE WATERS, E.G. THROUGH INSTALLATION OF SEDIMENT FENCING.
- ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) WILL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
- WATER WILL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE, I.E. THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.
- TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.
- ACCEPTABLE RECEPTORS WILL BE PROVIDED FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER.
- ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY:
 - PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE
 - ENSURING THAT NOTHING IS NAILED TO THEM
 - PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS.
 - ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5 METRES OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICH EVER IS THE GREATER
 - A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (E.G. A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300 MILLIMETRES DEPTH
 - CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY NOR TO COMPACT THE SOIL AROUND THEM.

OTHER MATTERS

- PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE
- ENSURING THAT NOTHING IS NAILED TO THEM
- PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS.
 - ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5 METRES OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICH EVER IS THE GREATER
 - A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (E.G. A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300 MILLIMETRES DEPTH
 - CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY NOR TO COMPACT THE SOIL AROUND THEM.

STORMWATER DRAINAGE NOTES

- STORMWATER DESIGN CRITERIA:
 - AVERAGE RECURRENCE INTERVAL:

100 YEAR ARI	ROOFED AREAS TO SURCHARGE PIT
10 YEAR ARI	PAVEMENTS (MINOR SYSTEM)
100 YEAR ARI	OVERLAND FLOW PATHS (MAJOR SYSTEM)
 - RAINFALL INTENSITIES: TIME OF CONCENTRATION:

5 MINUTES	
100 YEAR ARI	193mm/hr
10 YEAR ARI	280mm/hr
- PIPES 375 DIA. AND LARGER TO BE REINFORCED CONCRETE CLASS "2" APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS. U.N.O.
- PIPES 300 DIA AND LESS SHALL BE DWV GRADE (CLASS SN8) uPVC WITH SOLVENT WELDED JOINTS.
- ALL PIPES ARE TO BE UNIFORMLY SUPPORTED ALONG THE LENGTH OF THE BARREL BY SUITABLE FILL MATERIAL. REFER TO BEDDING SUPPORT TYPE.
- PIPES WITH SOCKETS SHALL BE LAID IN BEDDING WHERE SUITABLE RECESSES HAVE BEEN PROVIDED TO ENSURE PIPES DO NOT BEAR ON THEIR SOCKETS.
- ALL STORMWATER DRAINAGE LINES UNDER PROPOSED BUILDING SLABS TO BE uPVC PRESSURE PIPE GRADE 6. ENSURE ALL VERTICALS AND DOWNPIPES ARE uPVC PRESSURE PIPE, GRADE 6 FOR A MIN OF 3.0m IN HEIGHT.
- PIPES TO BE INSTALLED TO TYPE HS1 SUPPORT IN ACCORDANCE WITH AS 3725 (2007) IN ALL CASES BACKFILL TRENCH WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75).
- REFER TO AS/NZS 3725:2007 TABLE B1 FOR REQUIRED FILL DEPTHS ABOVE PIPE BARREL PRIOR TO USE OF COMPACTION MACHINERY OR TRAVERSING OF PIPES BY GENERAL SITE EQUIPMENT.
- WHERE WORKING METHODS REQUIRE HIGHER CLASS PIPE, THE CONTRACTOR SHALL REFER TO AS 3725 (2007) TO DETERMINE THE APPROPRIATE PIPE CLASS. PROPOSED PIPE CLASS SHALL BE REVIEWED BY CORE PRIOR TO INSTALLATION.
- INTERNAL WORKS WITHIN PROPERTY BOUNDARIES ARE TO COMPLY WITH THE REQUIREMENTS OF AS 3500 3.1 (2003) AND AS/NZS 3500 3.2 (2003).
- PRECAST PITS MAY BE USED EXTERNAL TO THE BUILDING SUBJECT TO APPROVAL BY CORE.
- ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE PREFABRICATED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.
- WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS, UNSLOTTED uPVC SEWER GRADE PIPE IS TO BE USED.
- CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES SHOWN ARE NOT TO BE REDUCED WITHOUT APPROVAL.
- GRATES AND COVERS SHALL CONFORM TO AS 3996.
- ALL BOX CULVERTS SHALL BE STRUCTURALLY DESIGNED BY THE MANUFACTURER AND DELIVERED TO SITE AS FIT FOR PURPOSE.
- AT ALL TIMES DURING CONSTRUCTION OF STORMWATER PITS, ADEQUATE SAFETY PROCEDURES SHALL BE TAKEN TO ENSURE AGAINST THE POSSIBILITY OF PERSONNEL FALLING DOWN PITS.
- ALL EXISTING STORMWATER DRAINAGE LINES AND PITS THAT ARE TO REMAIN ARE TO BE INSPECTED AND CLEANED DURING THIS PROCESS ANY PART OF THE STORMWATER DRAINAGE SYSTEM THAT WARRANTS REPAIR SHALL BE REPORTED TO THE SUPERINTENDENT/ENGINEER FOR FURTHER DIRECTIONS.

SITEWORKS NOTES

- ORIGIN OF LEVELS:- REFER SURVEY DRAWING AND SETOUT PLAN.
- CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK. ANY DISCREPANCIES TO BE REPORTED TO CORE.
- MAKE SMOOTH CONNECTION WITH EXISTING WORKS.
- ALL TRENCH BACKFILL MATERIAL SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT MATERIAL.
- ALL SERVICE TRENCHES UNDER VEHICULAR PAVEMENTS SHALL BE BACKFILLED WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75)
- PROVIDE 10mm WIDE EXPANSION JOINTS BETWEEN BUILDINGS AND ALL CONCRETE OR UNIT PAVEMENTS.
- ASPHALTIC CONCRETE SHALL CONFORM TO R.M.S. SPECIFICATION R116.
- ALL BASECOURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH R.M.S. FORM 3051, COMPACTED TO MINIMUM 98% MODIFIED DENSITY IN ACCORDANCE WITH AS 1289 5.2.1 FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m² OF BASECOURSE MATERIAL PLACED.
- ALL SUB-BASE COURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH R.M.S. FORM 3051, AND COMPACTED TO MINIMUM 95% MODIFIED DENSITY IN ACCORDANCE WITH A.S 1289 5.2.1 FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m² OF SUB-BASE COURSE MATERIAL PLACED.
- AS AN ALTERNATIVE TO THE USE OF IGNEOUS ROCK AS A SUB-BASE MATERIAL IN (9) A CERTIFIED RECYCLED CONCRETE MATERIAL COMPLYING WITH R.M.S. FORM 3051 WILL BE CONSIDERED. SUBJECT TO MATERIAL SAMPLES AND APPROPRIATE CERTIFICATIONS BEING PROVIDED TO THE SATISFACTION OF CARDNO.
- SHOULD THE CONTRACTOR WISH TO USE A RECYCLED PRODUCT THIS SHALL BE CLEARLY INDICATED IN THEIR TENDER AND THE PRICE DIFFERENCE BETWEEN AN IGNEOUS PRODUCT AND A RECYCLED PRODUCT SHALL BE CLEARLY INDICATED.
- WHERE NOTED ON THE DRAWINGS THAT WORKS ARE TO BE CARRIED BY OTHERS, (eg. ADJUSTMENT OF SERVICES), THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CO-ORDINATION OF THESE WORKS.

ISSUE FOR DA

ISSUE	DATE	AMENDMENT	CLIENT / BUILDER / ARCHITECT	CIVIL	NORTH :	SCALE :	VERIFIED :	DRAWING TITLE :	DATE :	SCALE :	
00	29.09.2020	ISSUE FOR DISCUSSION				NTS	AC	GENERAL NOTES	12/09/2020	N.T.S	
01	02.10.2020	ISSUE FOR DEVELOPMENT APPLICATION					HR		PROJECT :	2290	02
02	09.10.2020	ISSUE FOR DEVELOPMENT APPLICATION					RQ		PROPOSED CARPARK A7. 33 CONSUL ROAD, BROOKVALE	DRAWING No :	C001

LEGEND:

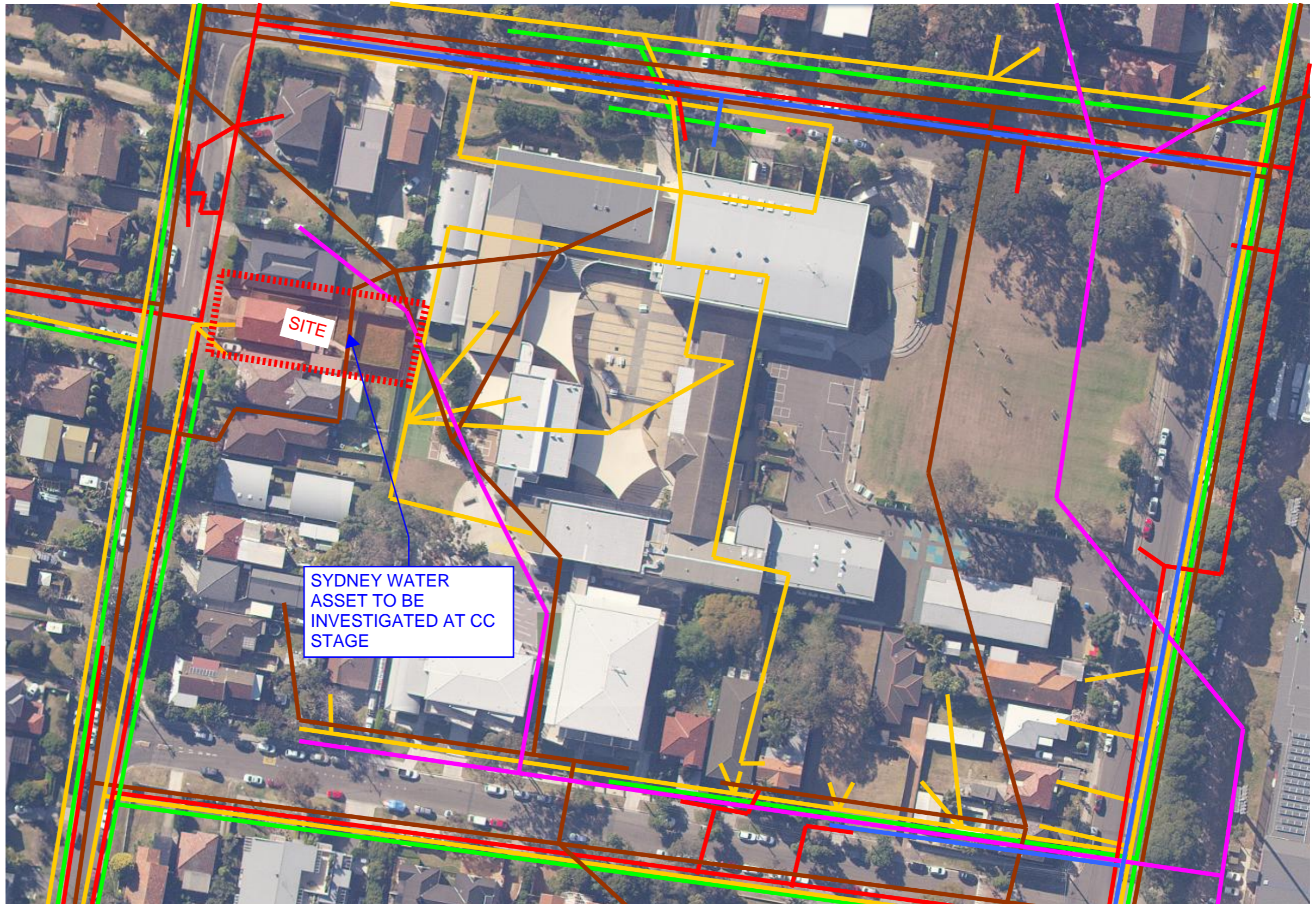
- AUSGRID
- JEMENA GAS NORTH
- TELSTRA
- NBN
- NORTHERN BEACHES COUNCIL
- SYDNEY WATER
- VERIZON BUSINESS

NOTE:

- * THIS PLAN IS SHOULD BE USED **FOR INDICATIVE PURPOSES ONLY.**
- * BEFORE WORKS ARE CARRIED OUT THE CONTRACTOR SHOULD CONTACT DIAL BEFORE YOU DIG TO OBTAIN AN UPDATED PLAN.
- * IF THE SERVICES ARE OBSERVED ON SITE AND NOT SEEN ON DIAL BEFORE YOU DIG PLANS. UNDERGROUND UTILITY MAPPING SHOULD BE DONE TO EXPLORE UNDERGROUND SERVICES.
- * THIS PLAN DOES NOT RELEASE ANY OTHER CONTRACTOR FROM HIS RESPONSIBILITIES. THIS PLAN SHOULD NOT BE CONSIDERED AS A DIAL BEFORE YOU DIG MAP.
- * THIS PLAN IS DRAWN ON THE BASIS OF AVAILABLE INFORMATION, INVESTIGATION REGARDING OTHER SERVICE SHALL BE DONE BY THE CONTRACTOR.

DIAL BEFORE YOU DIG REFERENCE DETAILS:

JOB NO.: 1935313
 USER REF NO.: NOT SUPPLIED
 WORKING ON BEHALF OF: PRIVATE
 ENQUIRY DATE: 04/09/2020



ISSUE FOR DISCUSSION

ISSUE	DATE	AMENDMENT
00	29.09.2020	ISSUE FOR DISCUSSION
01	02.10.2020	ISSUE FOR DEVELOPMENT APPLICATION

CLIENT / BUILDER / ARCHITECT

APG

CIVIL

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ABN 34 620 484 602

ELECTRICAL • FIRE • HYDRAULIC • MECHANICAL • STRUCTURAL • CIVIL • FACADES

NORTH:

SCALE: **NTS**

VERIFIED: AC
 DESIGNED: HR
 DRAWN: RQ

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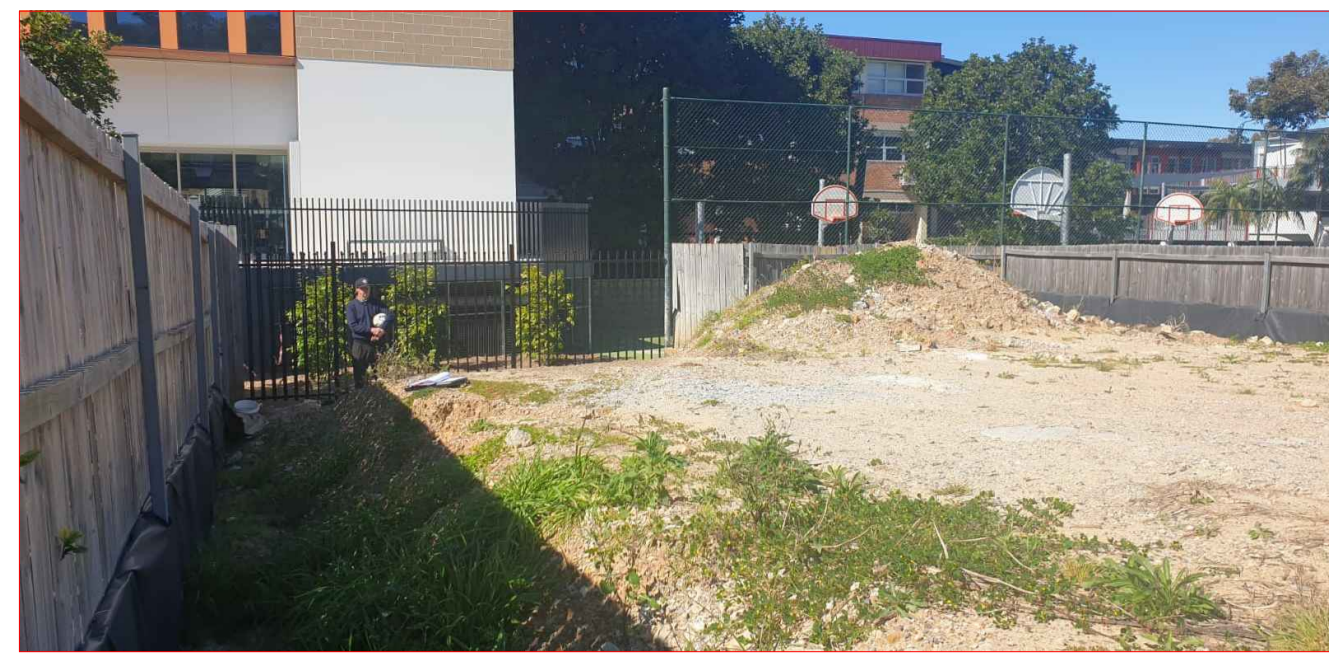
DRAWING TITLE: **DIAL B4 YOU DIG INVESTIGATION**

PROJECT: **PROPOSED CARPARK AT 33 CONSUL ROAD, BROOKVALE**

DATE:	SCALE:
12/09/2020	N.T.S
PROJECT No:	REVISION:
2290	01
DRAWING No:	C002



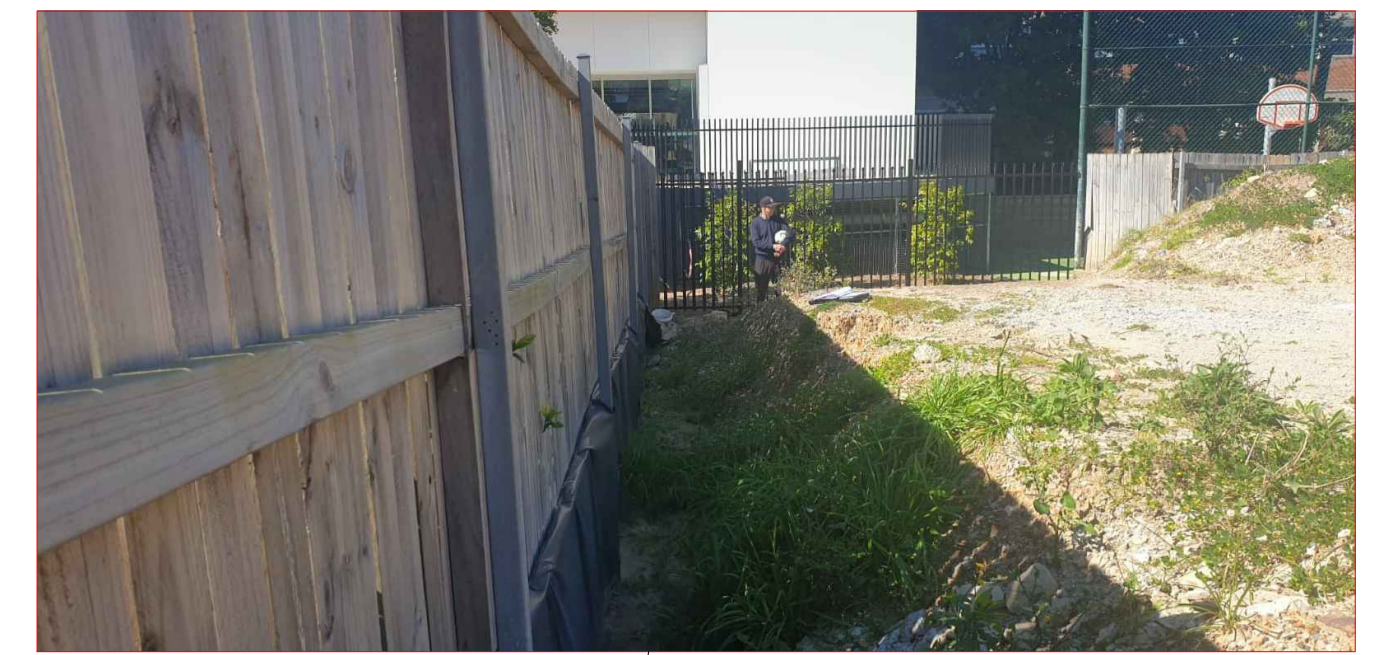
EXISTING CONCRETE TO BE REMOVED AND SEND TO RECYCLING FACILITY. BRICKS TO BE REUSED IN CONSTRUCTION OF OSD & PITS. CAN ALSO BE USED IN SET OUT DURING INITIAL WORK.



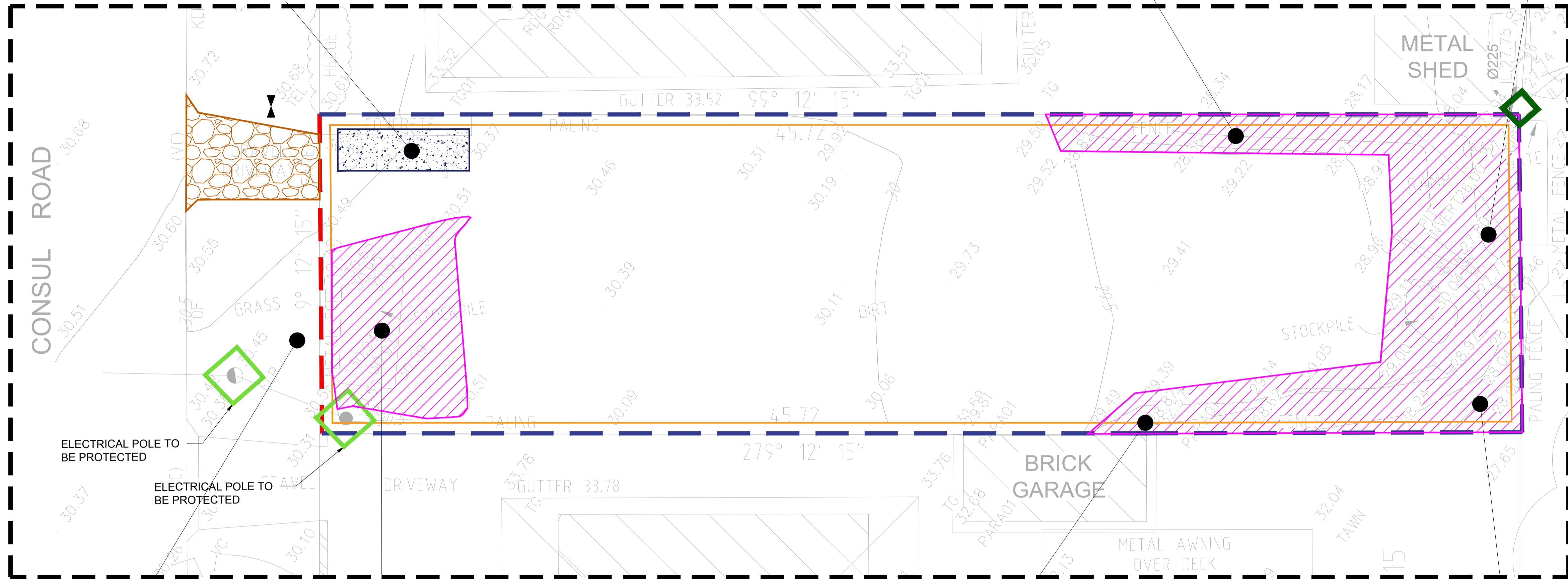
EXISTING CAVITY TO BE FILLED AND GRADED WITH AVAILABLE TOP SOIL (STOCKPILE) AFTER CLEANING THE DEBRIS.



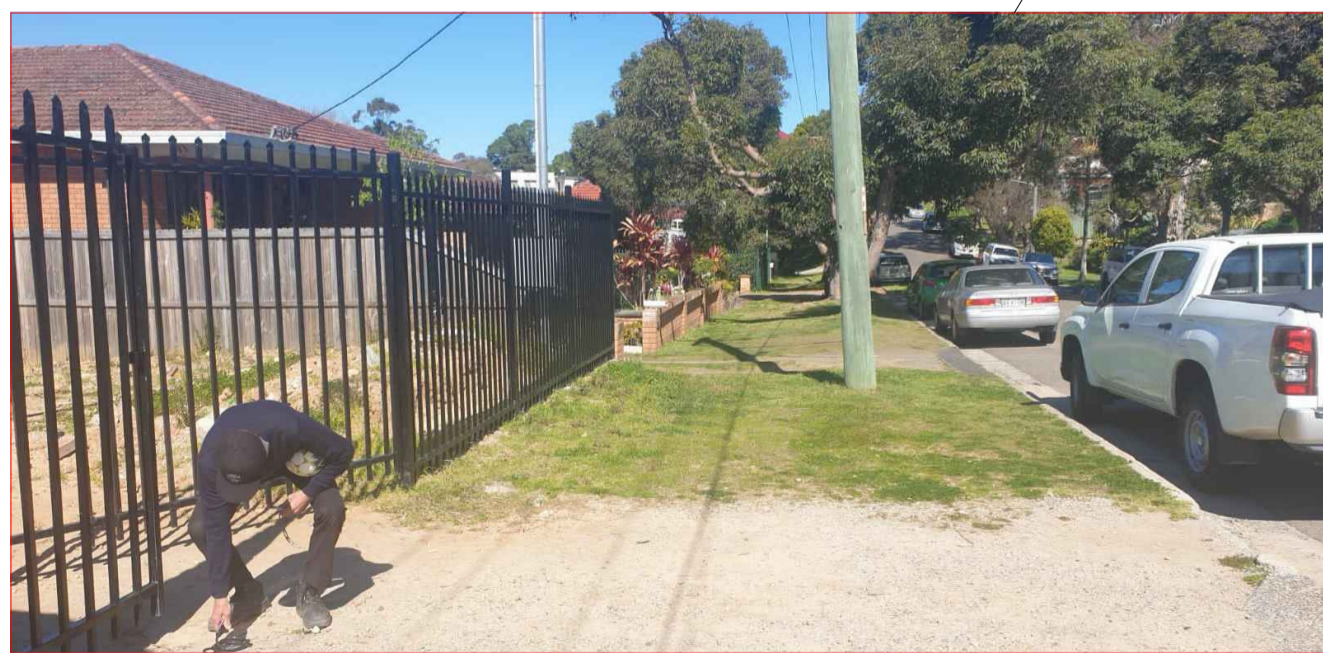
EXISTING CAVITY TO BE FILLED AND GRADED WITH AVAILABLE TOP SOIL (STOCKPILE) AFTER CLEANING THE DEBRIS.



EXISTING TOPSOIL TO BE CLEANED FROM WASTE, GRAVELS & CLEAN SOIL IS TO BE USED AS BACKFILL IN THE CAVITIES PRESENT ALONG THE TWO SIDES OF THE BOUNDARY. NOTE THE FILL IS TO BE COMPACTED AND GRADED AS PER PROPOSED DRIVEWAY PLAN.



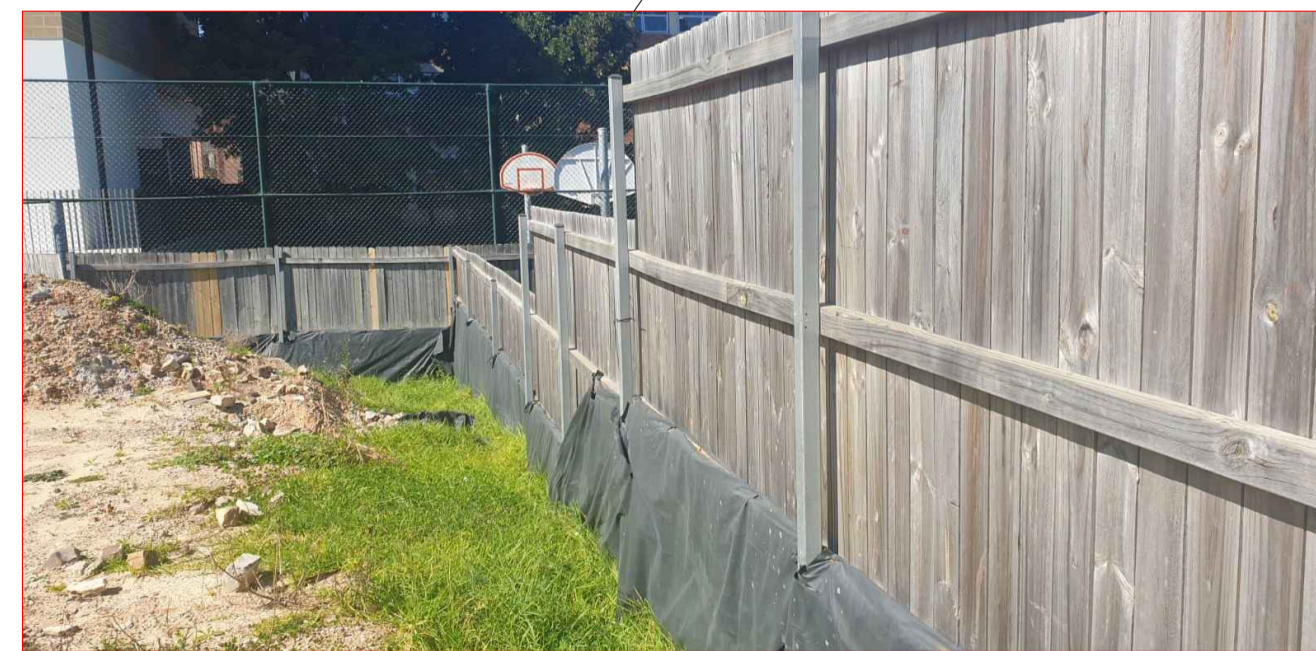
WASTE MANAGEMENT PLAN
SCALE - 1:100



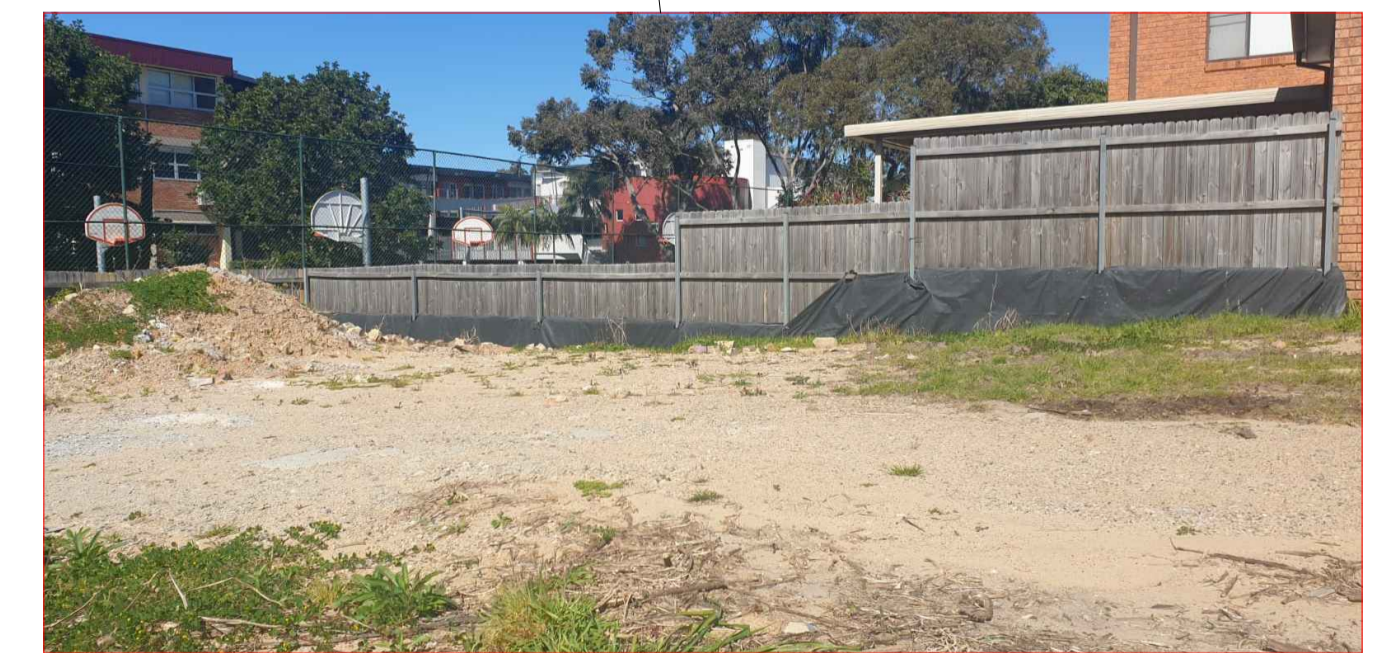
EXTERNAL GREEN AREA AND POLE TO BE PRESERVED. THE EXISTING STEEL FENCE TO BE REUSED.



STOCKPILE AT THE FRONT AREA TO BE RELOCATED AND REUSED AFTER REMOVING THE TOP SOIL, BOULDERS & GRAVELS.



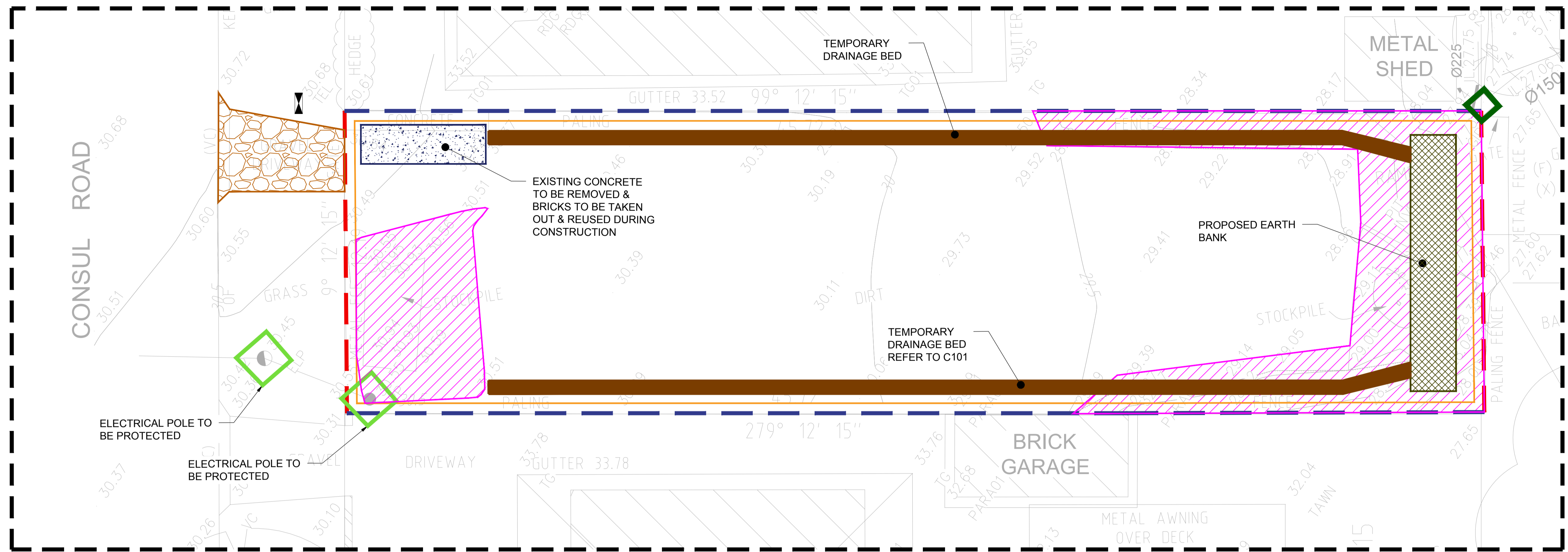
GRASS AND VEGETATION TO BE REMOVED. EXISTING CAVITY TO BE FILLED AND GRADED WITH AVAILABLE TOP SOIL (STOCKPILE) AFTER CLEANING THE DEBRIS.



EXISTING TOPSOIL TO BE CLEANED FROM WASTE, GRAVELS CLEAN SOIL IS TO BE USED AS BACKFILL IN THE CAVITY PRESENT ALONG THE TWO SIDES OF THE BOUNDARY. NOTE THE FILL IS TO BE COMPACTED AND GRADED AS PER PROPOSED DRIVEWAY PLAN.

ISSUE FOR DA





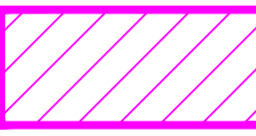


ISSUE	DATE	AMENDMENT	CLIENT / BUILDER / ARCHITECT	CIVIL	NORTH:	SCALE:	VERIFIED:	DRAWING TITLE:	DATE:	SCALE:
00	29.09.2020	ISSUE FOR DISCUSSION	APG	5 / 45-55 Epsom Road Rosebery NSW 2018 P 02 8662 9300 E info@core.engineering W core.engineering ABN 34 620 484 602 ELECTRICAL • FIRE • HYDRAULIC • MECHANICAL • STRUCTURAL • CIVIL • FACADES	NTS	AC	WASTE MANAGEMENT PLAN	12/09/2020	1:100	
01	02.10.2020	ISSUE FOR DEVELOPMENT APPLICATION						PROJECT No:	REVISION:	
02	09.10.2020	ISSUE FOR DEVELOPMENT APPLICATION						2290	02	
								PROPOSED CARPARK A7. 33 CONSUL ROAD, BROOKVALE	DRAWING No: C003	



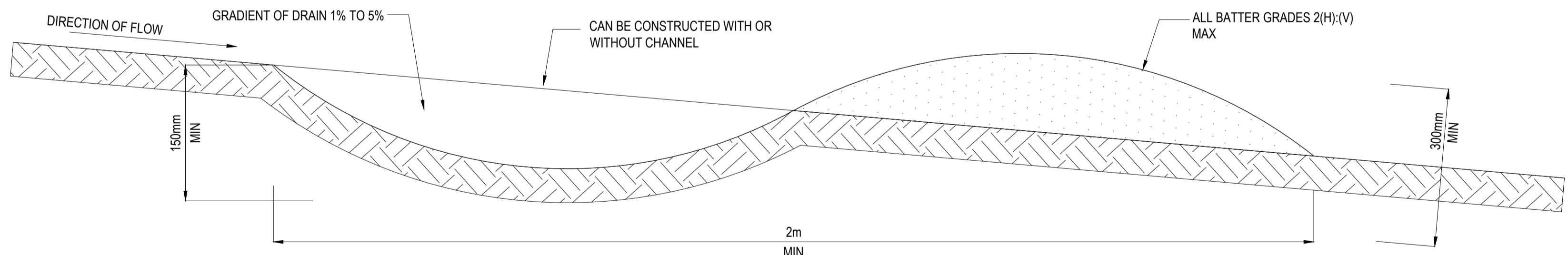
SEDIMENTATION & EROSION CONTROL PLAN

SCALE - 1:100

LEGEND

-  SEDIMENT FENCE
-  EXISTING METAL FENCE (TO BE RETAINED OR REINSTALLED IF REMOVED)
-  EXISTING TIMBER FENCE
-  EXISTING CONCRETE TO BE REMOVED & BRICKS TO BE TAKEN OUT & REUSED DURING CONSTRUCTION
-  ON SITE SOIL TO BE REMOVED
-  PIT TO BE PRESERVED REFER TO DETAIL
-  EXISTING GRAVEL DRIVEWAY TO BE RECONSTRUCTED AT COMPLETION STAGE

NOTE:
ONLY TO BE USED AS TEMPORARY BANK
WHERE MAXIMUM UPSLOPE LENGTH IS 80m



EARTH BANK

NOT TO SCALE

CONSTRUCTION NOTES:

1. BUILD WITH GRADIENTS BETWEEN 1% AND 5%
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE- WORK AROUND THEM
3. ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER FLOW
4. BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED
5. ENSURE THE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE
6. COMPLETE PERMANENT OR TEMPORARY STABILISATION WITHIN 10 DAYS OF CONSTRUCTION

ISSUE FOR DA

ISSUE	DATE	AMENDMENT
00	29.09.2020	ISSUE FOR DISCUSSION
01	02.10.2020	ISSUE FOR DEVELOPMENT APPLICATION
02	09.10.2020	ISSUE FOR DEVELOPMENT APPLICATION

CLIENT / BUILDER / ARCHITECT



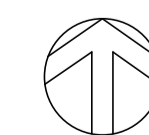
CIVIL



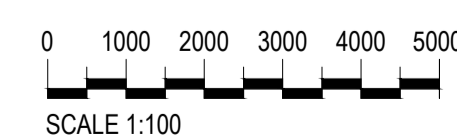
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ABN 34 620 484 602

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VERIFIED:

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DESIGNED:

HR

DRAWN:

RQ

DRAWING TITLE:

SEDIMENTATION & EROSION CONTROL PLAN

PROJECT:

PROPOSED CARPARK A7.
33 CONSUL ROAD, BROOKVALE

DATE:

12/09/2020

SCALE:

1:100

PROJECT No:

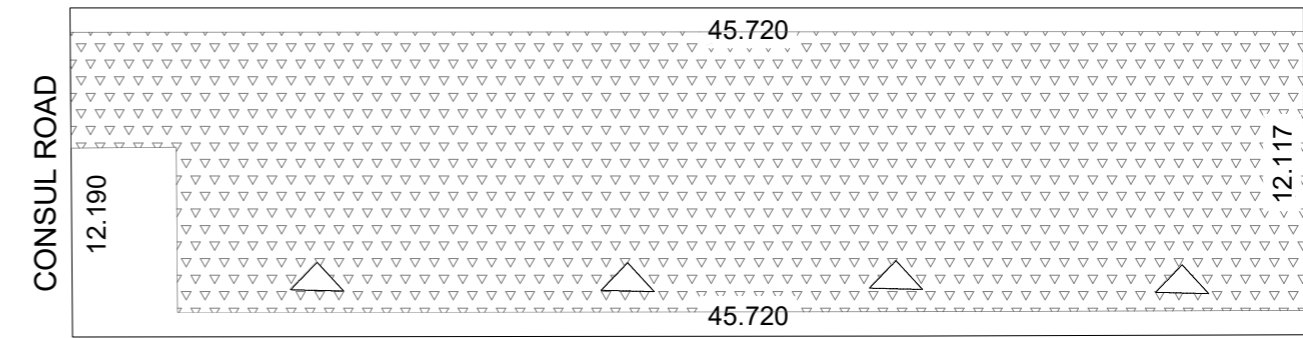
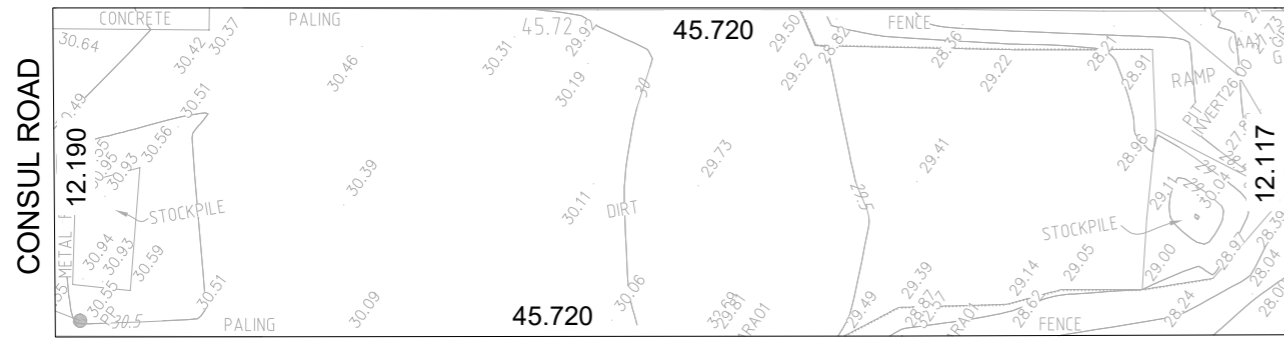
2290

REVISION:

02

DRAWING No:

C100

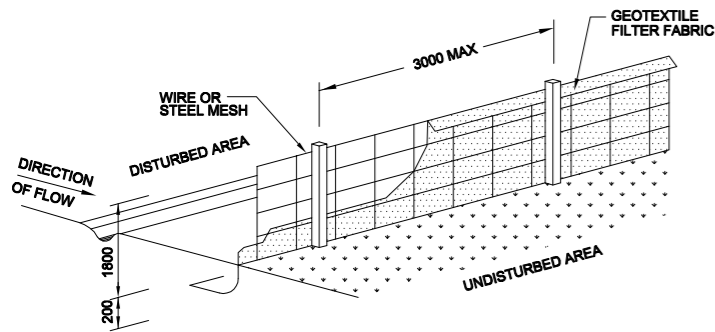


SITE AREA	556.11 m ² (AS PER CAD)
IMPERVIOUS AREA	0 m ² (0%)
PERVIOUS AREA	556.11 m ² (100%)

SITE AREA	556.11 m ² (AS PER CAD)
IMPERVIOUS AREA	452.47 m ² (81.36%)
PERVIOUS AREA	103.64 m ² (18.64%)

CATCHMENTS ANALYSIS

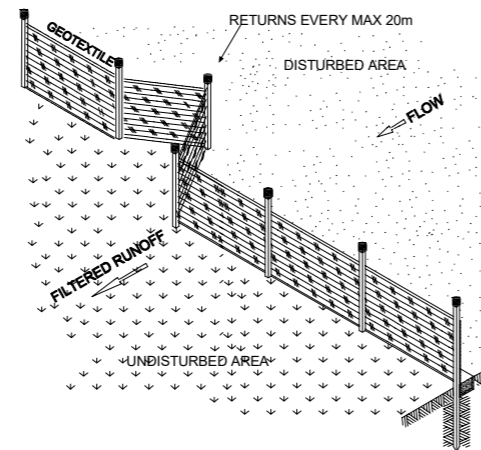
AS PER CATCHMENT ANALYSIS OF PRE AND POST DEVELOPMENT IT IS EVALUATED THAT THERE IS 100% INCREASE IN THE IMPERVIOUS AREA. AS THE LOT BEFORE DEVELOPMENT WAS A VACCANT LOT. DUE TO THIS INCREASE IN IMPERVIOUS AREA STORMWATER MANAGEMENT IS PROPOSED IN ACCORDANCE WITH COUNCIL DCP. FURTHER COUNCIL OSD CHECKLIST IS ALSO PROVIDED AS PART OF THIS DA DOCUMENTATION.



SEDIMENT FENCE

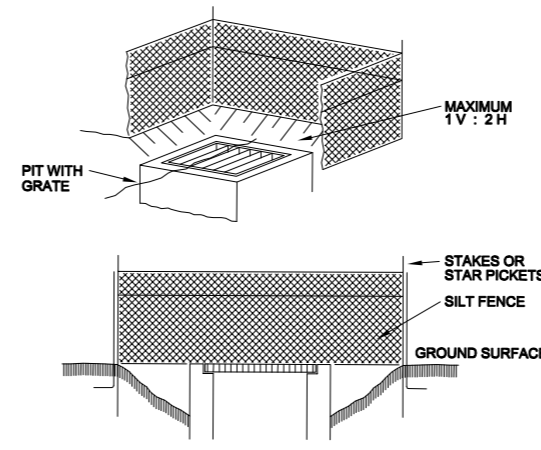
- TO BE USED AS A TEMPORARY BARRIER TO INTERCEPT SEDIMENT LADEN RUN-OFF FROM SMALL DRAINAGE AREAS
- MAXIMUM DRAINAGE AREA FOR OVERLAND FLOW TO A SILT FENCE SHALL NOT EXCEED 0.8ha PER LINE OF FENCE
- DO NOT USE IF CONCENTRATED FLOW IS DIRECTED TO SILT FENCE
- MAXIMUM ALLOWABLE DISTANCE BETWEEN SILT FENCE FOR VARIOUS GRADES LISTED BELOW:

SLOPE V:H	MAX. SLOPE LENGTH (m)
1:2	15
1:3	25
1:4	40
1:5	50
FLATTER THAN 1:5	60



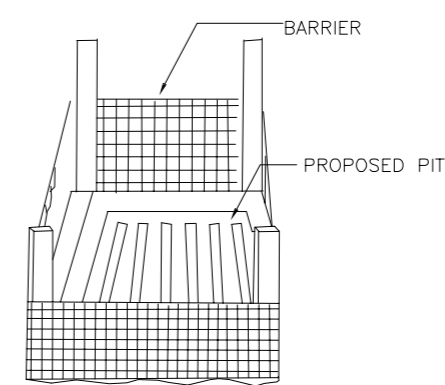
SEDIMENT FENCE ISOMETRIC

NOT TO SCALE



SURFACE INLET PIT PROTECTION

NOT TO SCALE



SEDIMENT BARRIER AROUND STORMWATER PIT (DURING CONSTRUCTION)

SEDIMENT CONTROL DEVICES

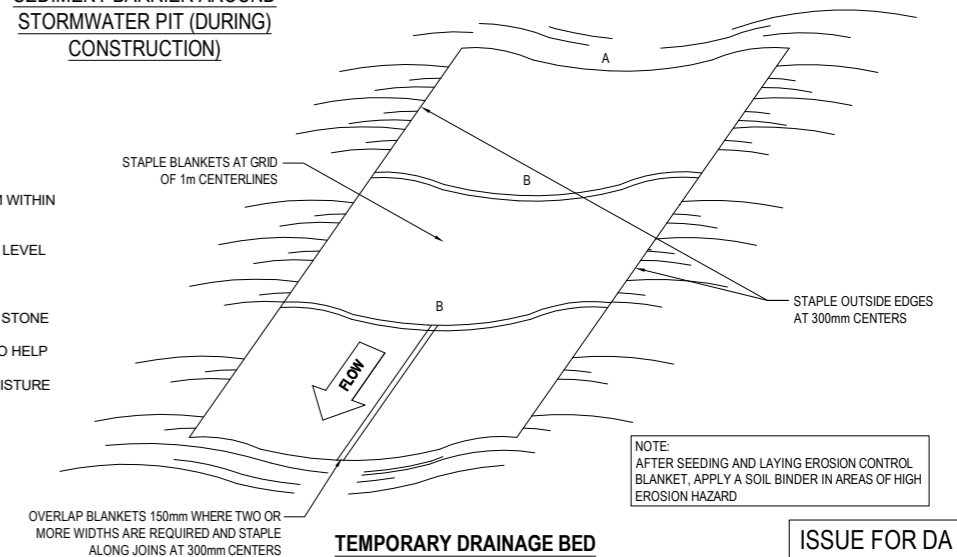
- IF SILT FENCE IS NOT USED HAY BALES CAN BE USED FOR SURFACE INLET PIT PROTECTION.
- ALL HAY BALES SHALL BE BOUND WITH WIRE. HAY BALES SHALL BE PLACED END TO END IN A SINGLE ROW AND EMBEDDED INTO THE SOIL TO A DEPTH OF 100mm. EACH BALES SHALL BE SECURELY ANCHORED WITH TWO STEEL STAKES DRIVEN 600mm INTO THE GROUND AND LOCATED ON THE BALE CENTERLINE.
- FILTER FENCE SHALL BE CONSTRUCTED BY STRETCHING A FILTER FABRIC (PROPEX OR SIMILAR) BETWEEN POSTS AT 3m CENTERS MAXIMUM. FABRIC SHALL BE BURIED INTO THE GROUND 200mm ALONG ITS LOWER EDGE.

TEMPORARY SITE CONTROL FOR ENTRY / EXIT AREAS

- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC ROADS.
- PERIODIC TOP DRESSING WITH ADDITIONAL AGGREGATE MAY BE REQUIRED TO KEEP THE SITE CONTROL IN A 'USEABLE STATE'.
- ALL SEDIMENT SPILLED, DROPPED OR WASHED ONTO PUBLIC ROADS MUST BE REMOVED IMMEDIATELY AND CHECKED DAILY.
- REMOVAL AND CLEANING OF PUBLIC ROADS BY BROOMS AND SHOVELS ETC.. WASHING DOWN ROADS IS NOT PERMITTED.

EARTH WET BASIN (EARTH BANK)

- REMOVE ALL VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA.
- CONSTRUCT A CUT-OFF TRENCH 500mm DEEP AND 1200mm WIDE ALONG THE CENTERLINE OF THE EMBANKMENT EXTENDING TO A POINT ON THE GULLY WALL LEVEL WITH THE RISER CREST.
- MAINTAIN THE TRENCH FREE WATER AND RE-COMPACT THE MATERIALS WITH EQUIPMENT AS SPECIFIED IN THE SWMP TO 95% STANDARD PROCTOR DENSITY.
- SELECT FILL FOLLOWING THE SWMP THAT IS FREE ROOTS, WOOD, ROCK, LARGE STONE OR FOREIGN MATERIAL.
- PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING TO AT LEAST 100mm TO HELP BOND COMPACTED FILL TO EXISTING SUBSTRATE.
- SPREAD THE FILL IN 100mm TO 150mm LAYERS AND COMPACT IT AT OPTIMUM MOISTURE CONTENT FOLLOWING THE SWMP.
- CONSTRUCT THE EMERGENCY SPILLWAY.
- REHABILITATE THE STRUCTURE FOLLOWING THE SWMP.



NOTE: AFTER SEEDING AND LAYING EROSION CONTROL BLANKET, APPLY A SOIL BINDER IN AREAS OF HIGH EROSION HAZARD

ISSUE FOR DA

EROSION CONTROL MEASURES.

- ALL EROSION AND SEDIMENT CONTROL MEASURES, (INCLUDING RE-VEGETATION AND STORAGE OF SOIL AND TOP SOIL), SHALL BE IMPLEMENTED TO THE DEPARTMENT OF CONSERVATION OF NEW SOUTH WALES STANDARDS.
- TOPSOIL FROM ALL AREAS TO BE DISTURBED, SHALL BE STOCK PILED AND LATER RESPREAD TO AID VEGETATION AS SHOWN IN C102
- ALL DRAINAGE WORKS SHALL BE CONSTRUCTED AND STABILIZED AS EARLY AS POSSIBLE DURING DEVELOPMENT.
- SEDIMENT TRAPS SHALL BE CONSTRUCTED AROUND ALL PITS.
- DISTURBANCE TO VEGETATION SHALL BE LIMITED TO FILL AREAS, ROADWAYS AND DRAINAGE LINES. AREAS OTHER THAN SPECIFIED SHALL BE DISTURBED ONLY WITH PRIOR APPROVAL FROM THE COUNCIL ENGINEER.
- ALL DISTURBED AREAS SHALL BE REVEGETATED AS SOON AS THE RELEVANT WORKS ARE COMPLETED.
- ALL SEDIMENT BASINS AND TRAPS SHALL BE CLEANED WHEN THE STRUCTURES ARE A MAXIMUM OF 60% FULL OF SOLID MATERIALS, INCLUDING DURING MAINTENANCE PERIOD.
- A STRIP OF TURF BEHIND AND FOR TOTAL LENGTH OF ALL THE KERBS SHALL BE PROVIDED.
- PIT GUARDS SHALL BE INSTALLED AROUND DRAINAGE PITS AT THE COMPLETION OF ROAD WORKS.

ISSUE	DATE	AMENDMENT	CLIENT / BUILDER / ARCHITECT
00	29.09.2020	ISSUE FOR DISCUSSION	
01	02.10.2020	ISSUE FOR DEVELOPMENT APPLICATION	
02	09.10.2020	ISSUE FOR DEVELOPMENT APPLICATION	



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VERIFIED: **AC**

DESIGNED: **HR**

DRAWN: **RQ**

DRAWING TITLE: **AREA ANALYSIS & SEC DETAILS**

PROJECT: **PROPOSED CARPARK A7, 33 CONSUL ROAD, BROOKVALE**

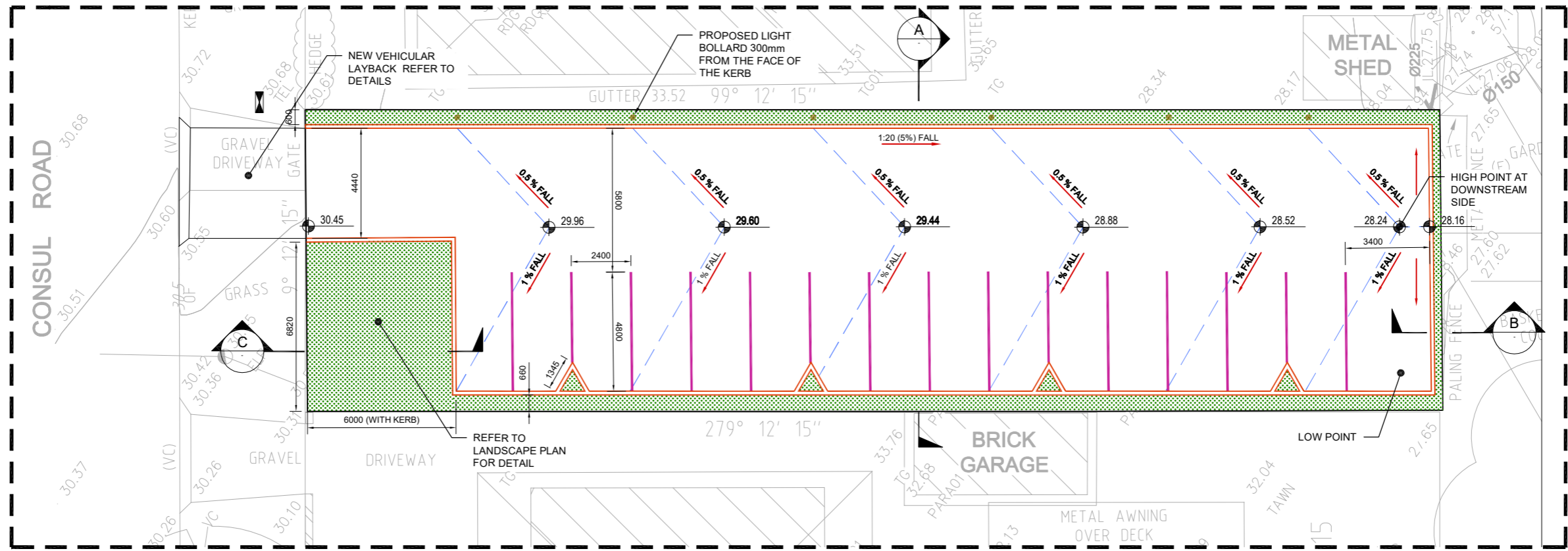
DATE: **12/09/2020**

SCALE: **1:100**

PROJECT No: **2290**

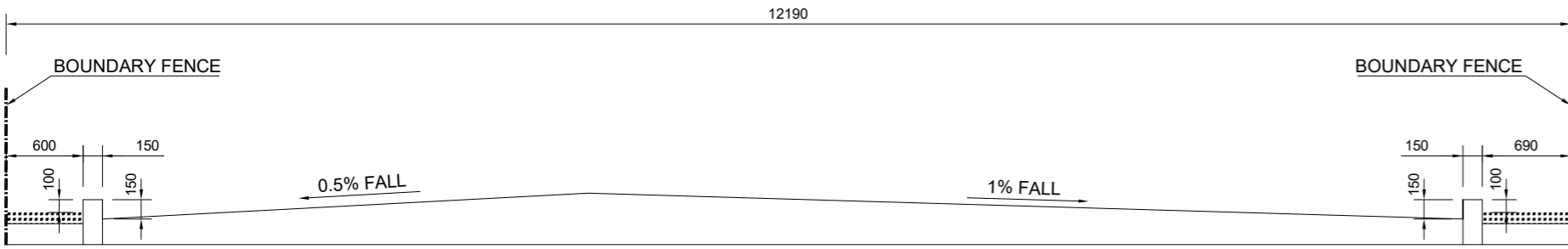
REVISION: **02**

DRAWING No: **C101**

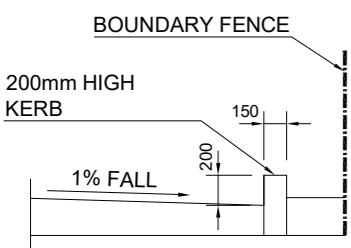


PROPOSED CARPARK LAYOUT
SCALE - 1:100

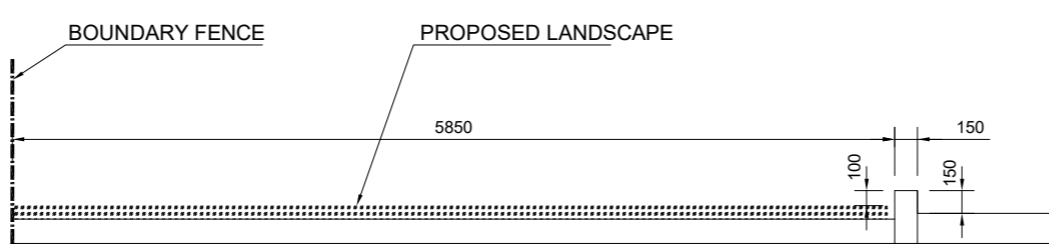
NOTE:
THIS CAR PARK IS PROPOSED AS PER ADVISE OF THE TRAFFIC CONSULTANT.
REFER TO TRAFFIC ENGINEER REPORT & EVALUATION.



SECTION A-A
SCALE - 1:25



SECTION B-B
SCALE - 1:25



SECTION C-C
SCALE - 1:25

PAVEMENT DESIGN NOTES & SPECIFICATION

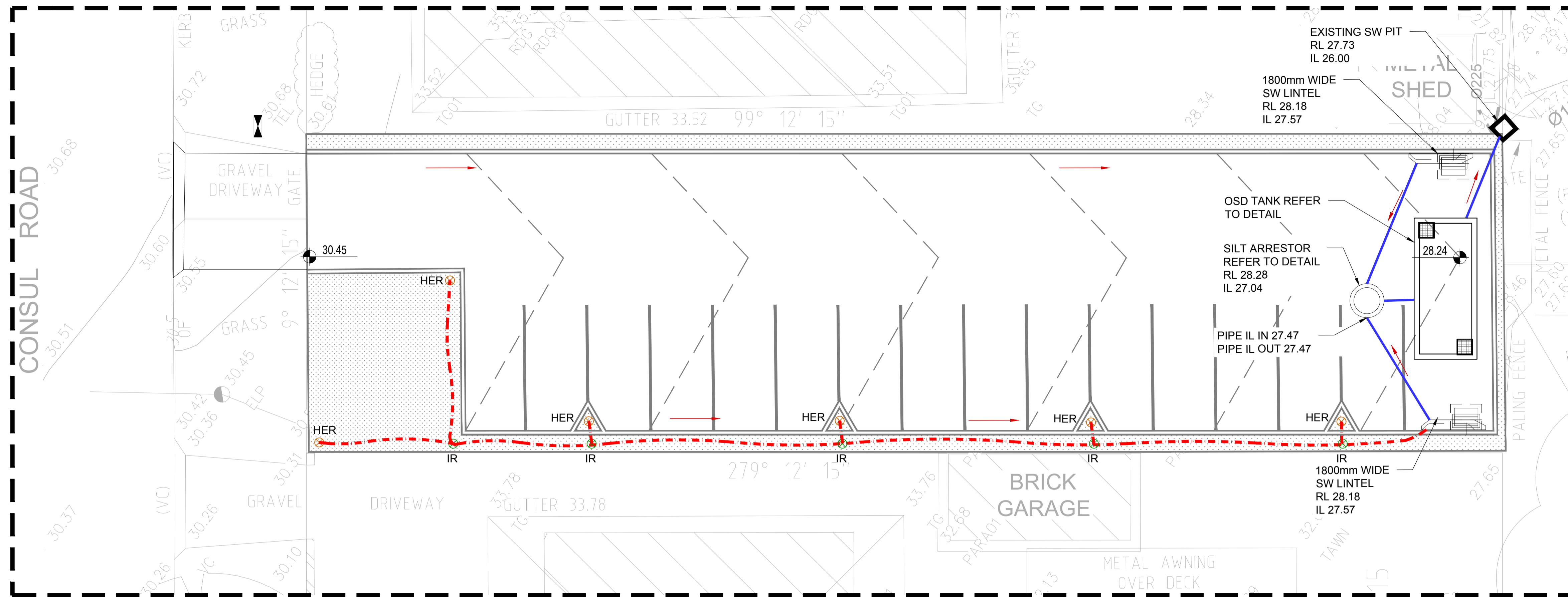
ENGINEER OBSERVATION AS PER MY SITE EVALUATION & GEOTECHNICAL INITIAL ADVISE I HAVE ANTICIPATED THE SUBGRADE IN MEDIUM CATEGORY SUBGRADE IS MAINLY COMPOSED OF MAINLY CLAYEY GRAVELS, FIRM SAND WITH SOME CLAY, SANDY CLAY, SILTY CLAY. THIS MATERIAL IS OBSERVED TO MAKE A POOR UNSEALED ROAD WHEN EXCESSIVELY WET OR DRY. THIS TYPE OF SUBGRADE NORMALLY HAVE CBR VALUE BETWEEN 6 TO 10.

SPECIFICATION OF THE PAVEMENT:
30mm ASPHALT WEARING COURSE
10mm SINGLE COAT PRIME SEAL.
175mm THICK BASE COURSE (DGB20) OR
220mm THICK SUB BASE DGB40. ON
COMPACTED SUB GRADE MIN CBR 5%.



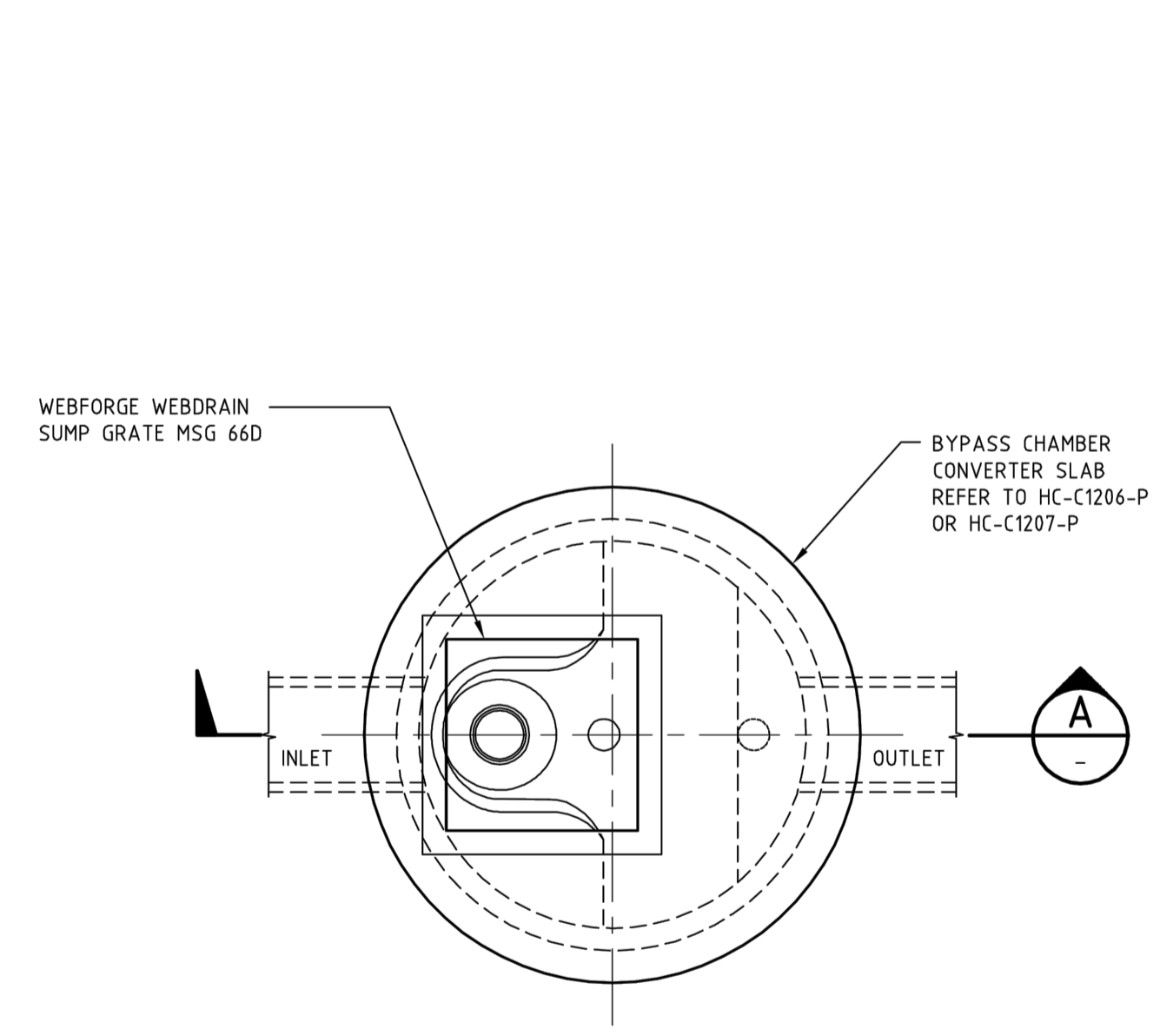
ISSUE FOR DA

ISSUE	DATE	AMENDMENT	CLIENT / BUILDER / ARCHITECT	CIVIL	NORTH:	SCALE:	VERIFIED:	DRAWING TITLE:	DATE:	SCALE:	
00	29.09.2020	ISSUE FOR DISCUSSION	APG	 5 / 45-55 Epsom Road Rosebery NSW 2018 P 02 8662 9300 E info@core.engineering W core.engineering ABN 34 620 484 602		NTS	AC	STANDARD DETAILS LAYBACK & CARPARK	12/09/2020	1:100	
01	02.10.2020	ISSUE FOR DEVELOPMENT APPLICATION					HR	PROJECT:	2290	REVISION:	02
02	09.10.2020	ISSUE FOR DEVELOPMENT APPLICATION					RQ	PROPOSED CARPARK A7. 33 CONSUL ROAD, BROOKVALE	C102		



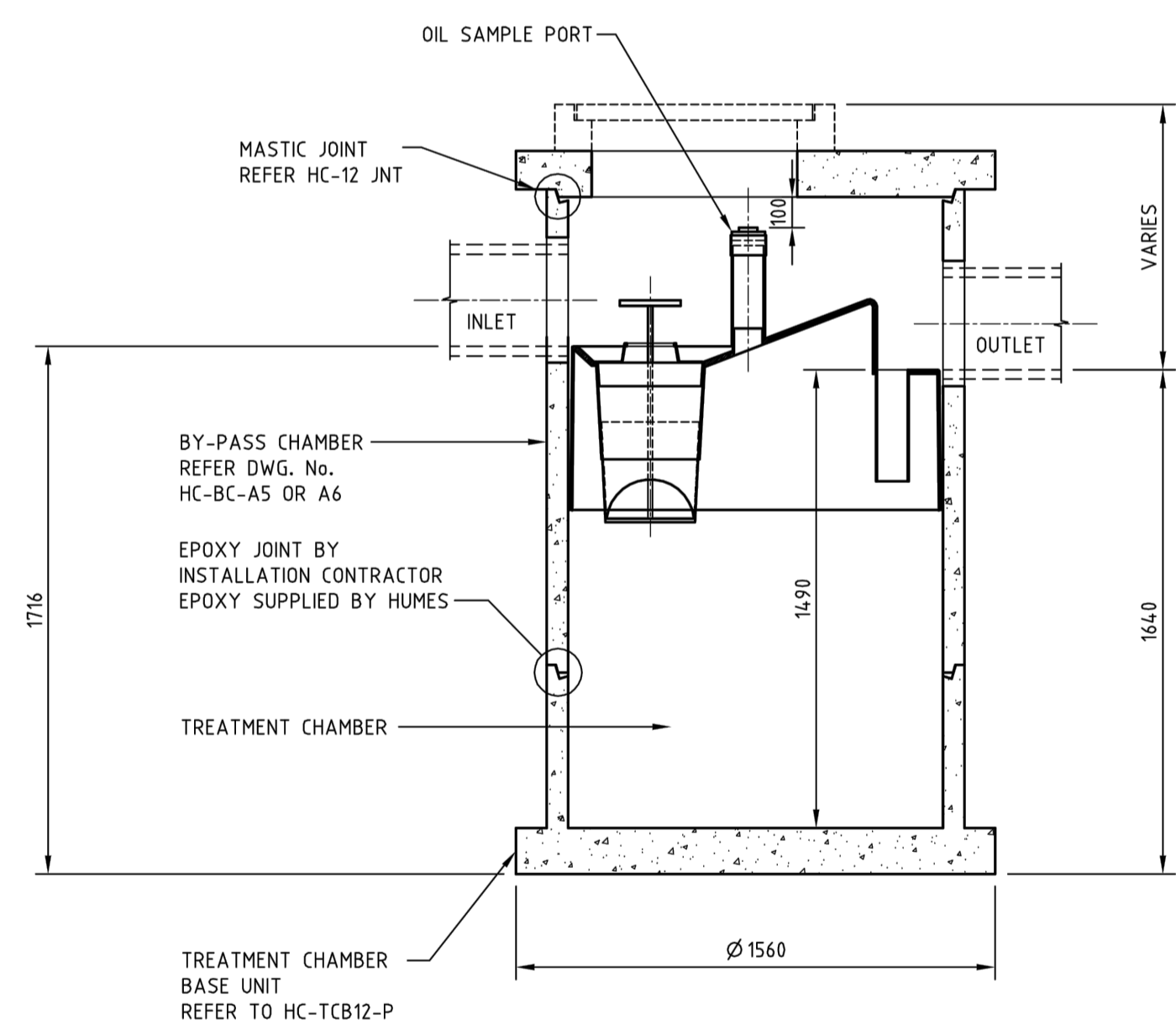
- ### LEGENDS
- SWD STORM WATER DRAIN LINE (Ø150)
 - SW-PIT WITH LINTEL
 - FLOW DIRECTION
 - EXISTING SW PIT
 - SILT ARRESTOR
 - - - Ø100 SUBSOIL DRAINAGE LINE- (AGI LINE)
 - (IR) INTERMEDIATE RISER
 - (HER) HIGH END RISER

STORMWATER MANAGEMENT PLAN
SCALE - 1:100



PLAN - SQUARE OPENING
SCALE 1:20 (PREFERRED)

NOTE:
THE PRODUCT SPECIFICATIONS ARE AS PER MANUFACTURER / PROVIDER INFORMATION



SECTION A
SCALE 1:20

NOTE: STANDARD DROP INLET TO OUTLET IS 76mm



HUMECEPTOR STC 2 (INLET) MODEL
PROPOSED SILT ARRESTOR

NOTE:
CONCEPT PROVIDED FOR ILLUSTRATION
DETAIL DECOMENTATION.

ISSUE FOR DA

ISSUE	DATE	AMENDMENT
00	29.09.2020	ISSUE FOR DISCUSSION
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02	09.10.2020	ISSUE FOR DEVELOPMENT APPLICATION

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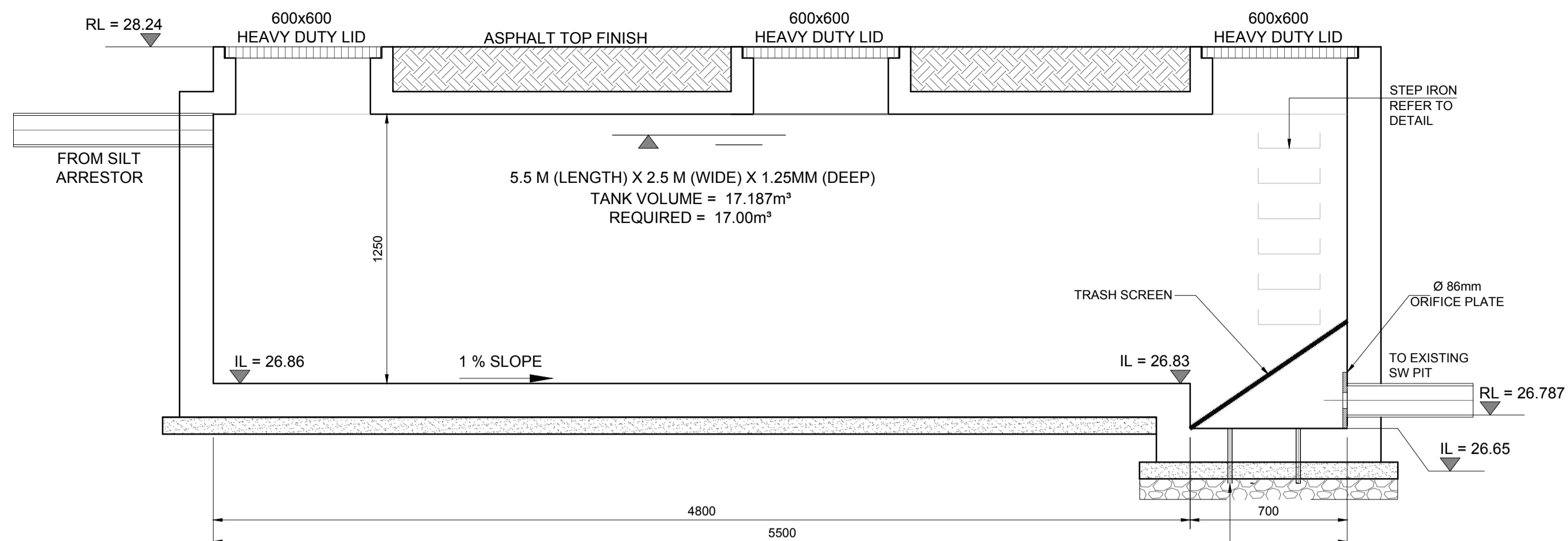
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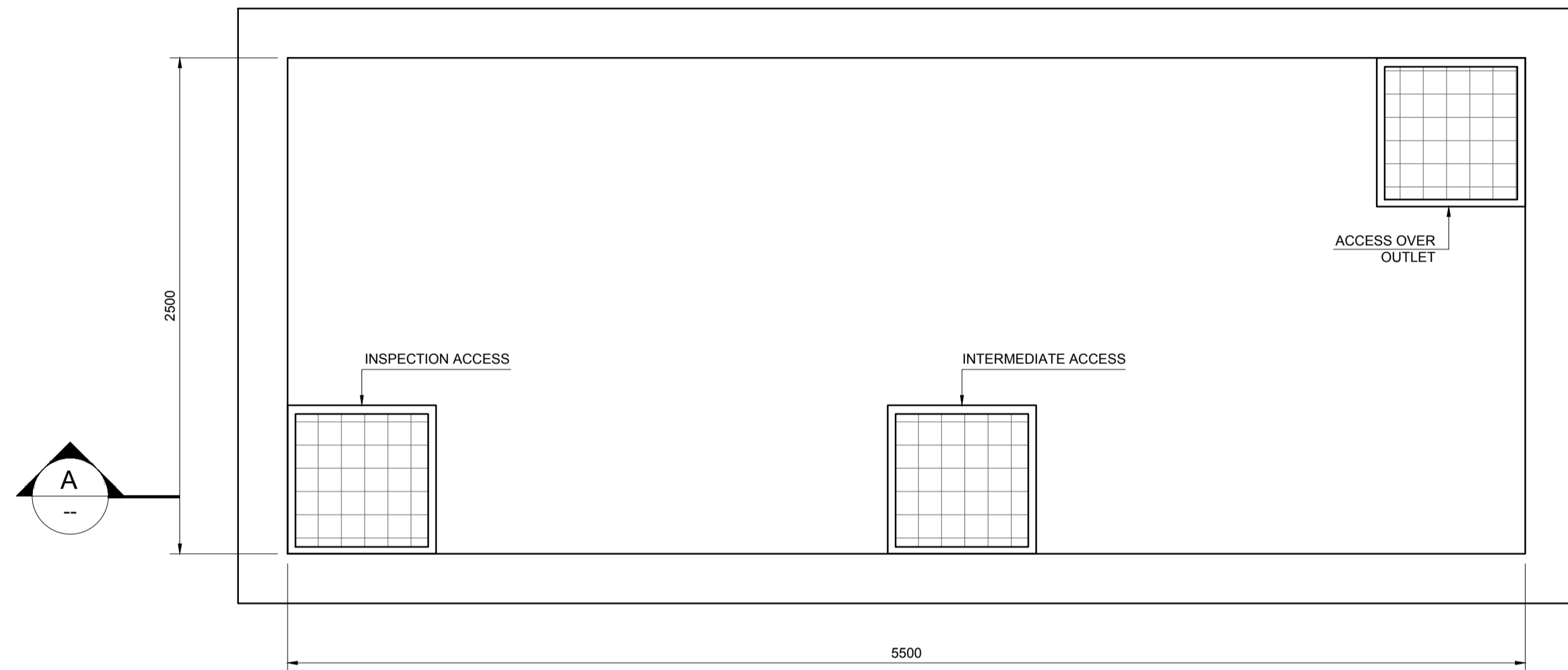
NORTH:	SCALE:	VERIFIED:
	NTS	AC
DESIGNED:		HR
DRAWN:		RQ

DRAWING TITLE:	DATE:	SCALE:
CONCEPT STORMWATER MANAGEMENT PLAN	12/09/2020	1:100
PROJECT:	PROJECT No:	REVISION:
PROPOSED CARPARK A7. 33 CONSUL ROAD, BROOKVALE	2290	02
DRAWING No:	C200	

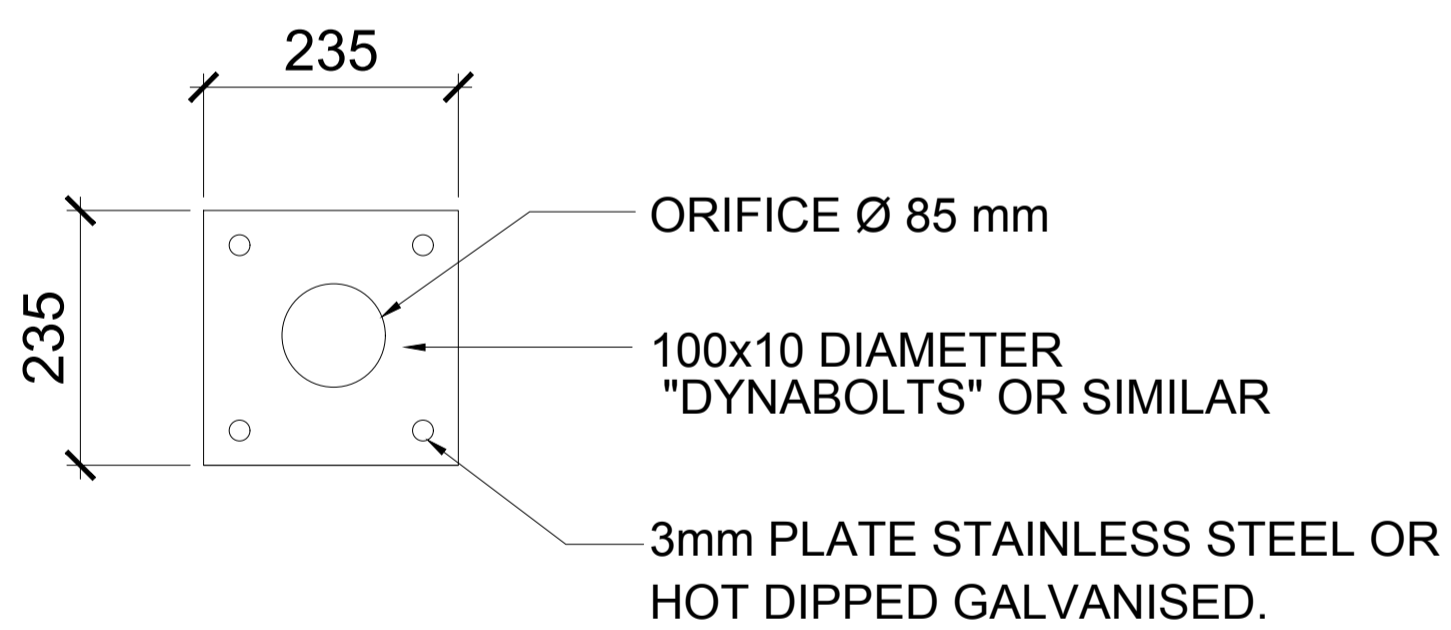


SECTION A-A
OSD TANK SECTION DETAIL
SCALE= 1:20

PROVIDE SEEPAE HOLES 20-DIA AT 150 SPACING ON 100 THICK GRANULAR BEDDING WHERE FOUNDATION IS UNSUITABLE FRO ABSORPTION PROVIDE SUBSOIL DRAIN CONNECTED TO NEAREST DOWNSTREAM PIT, PIPE, KERB OR OUTLET



OSD TANK
SCALE= 1:20



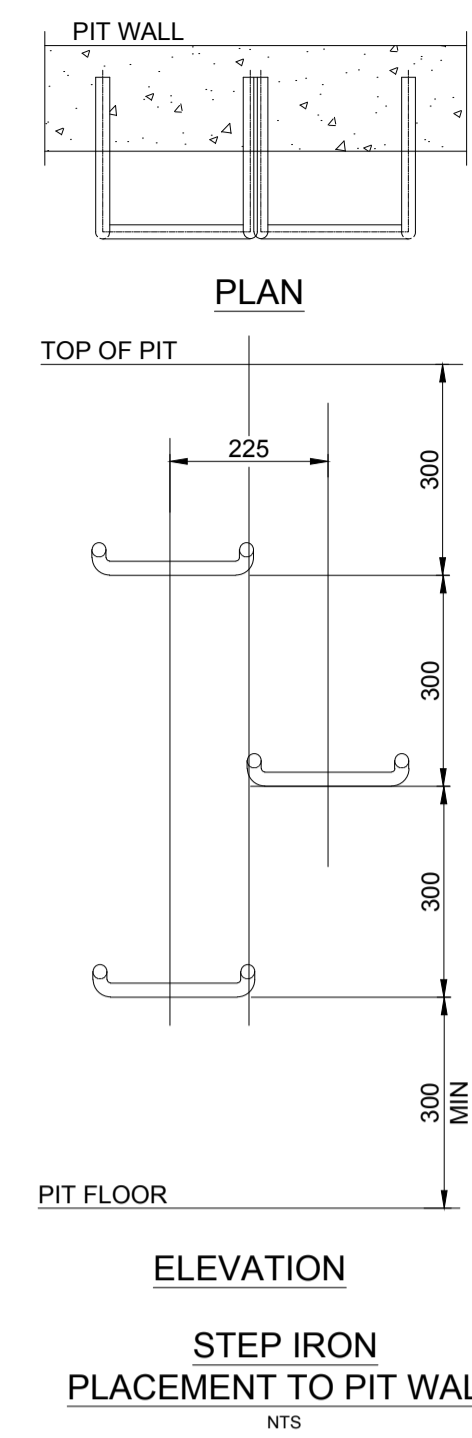
ORIFICE PLATE DETAIL
NTS

ON SITE DETENTION NOTE:

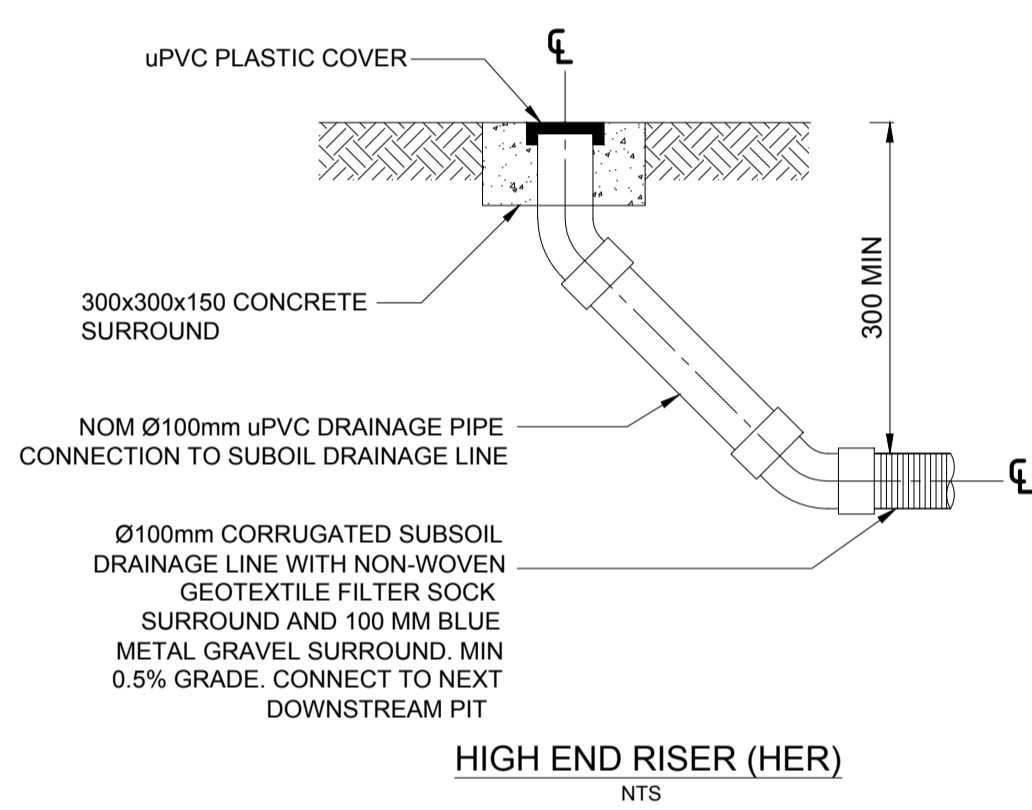
1. AS PER COUNCIL DCP & WATER MANAGEMENT POLICY.
2. THE SIYE LIES IN ZONE REGION 2. AND THE LOT AREA IS GREATER THAN 450 sqm.
3. AS SITE IMPERVIOUS AREA IS MORE THAN 40% SO OSD IS REQUIRED.
4. AS PER TABLE 2B OF ONSITE STORMWATER TECHNICAL SPECIFICATION FOR A 550 sqm SITE WE REQUIRED.
17 m² OSD
Q5 (EXISTING) 17 l/s
Q100 (EXISTING) 33 l/s
5. FROM TABLE 3, FOR 17 l/sec 85mm ORIFICE PLATE IS REQUIRED WITH 1.25 M OSD.

ORIFICE PLATE NOTES

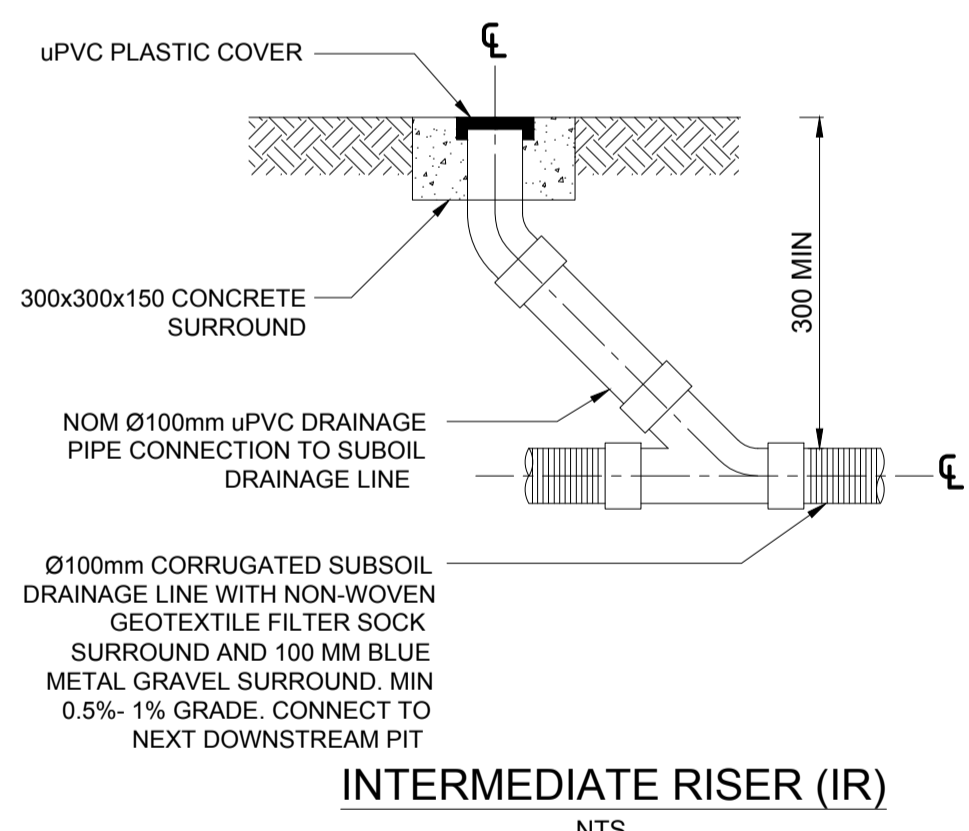
1. HOLE IN ORIFICE PLATE TO BE PRECISION CUT WITH SHARP EDGES TO THE SPECIFIED DIAMETER.
2. ORIFICE PLATE TO BE PLACED CENTRALLY OVER THE OUTLET PIPE.
3. ORIFICE PLATE TO BE MADE FROM STAINLESS STEEL HOT DIPPED GALVANIZED OR OTHERS NOT ACCEPTABLE.
4. OUTLET PIPE TO BE CAST INTO THE WALL OF THE PIT.
5. HOLE IN THE PLATE TO BE CENTRALLY PLACED.



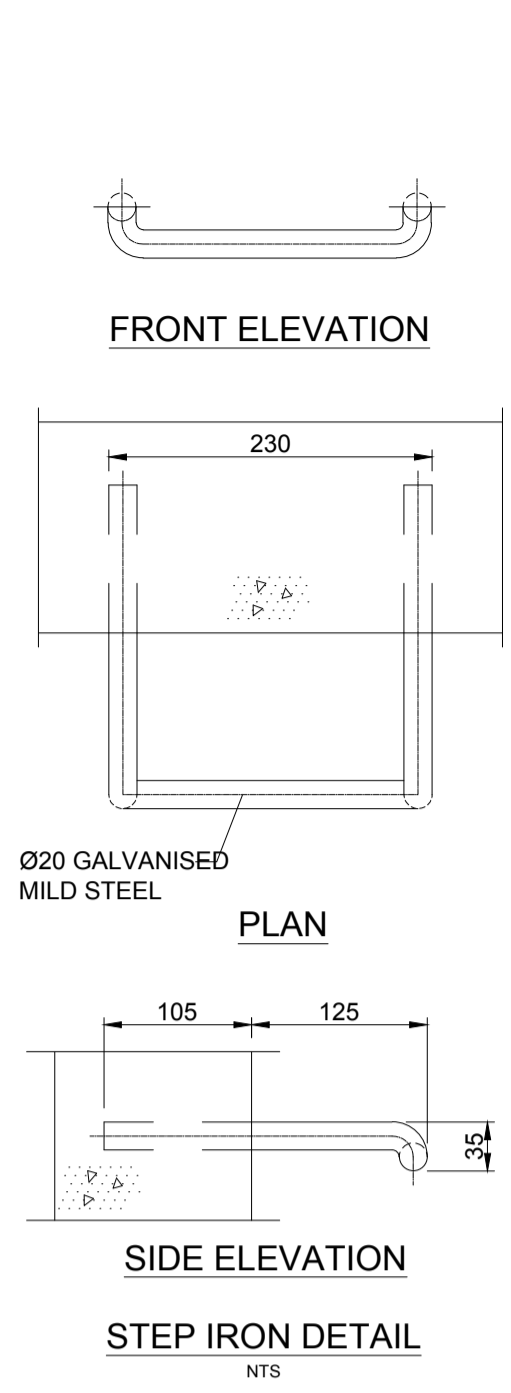
STEP IRON PLACEMENT TO PIT WALL
NTS



HIGH END RISER (HER)
NTS



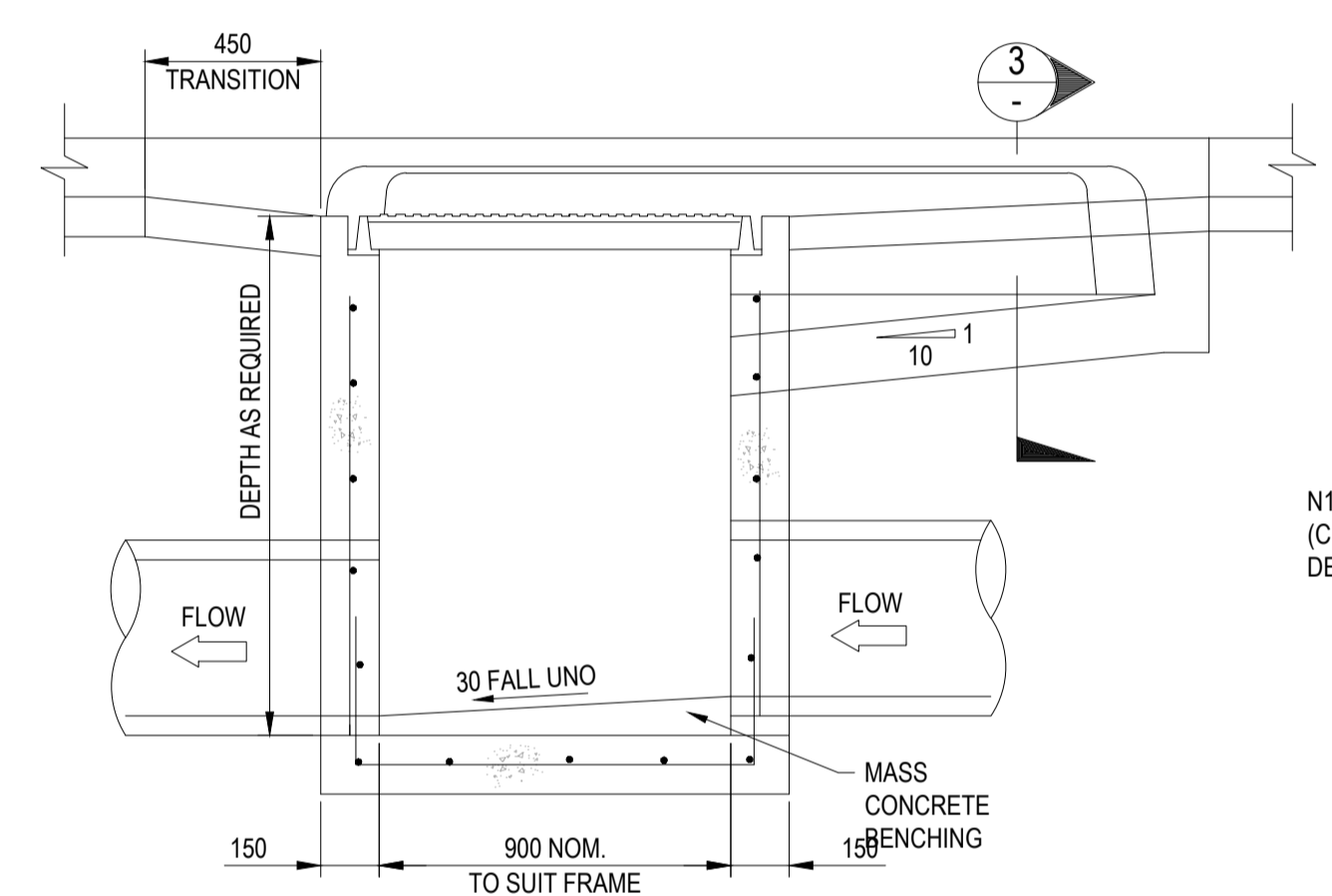
INTERMEDIATE RISER (IR)
NTS



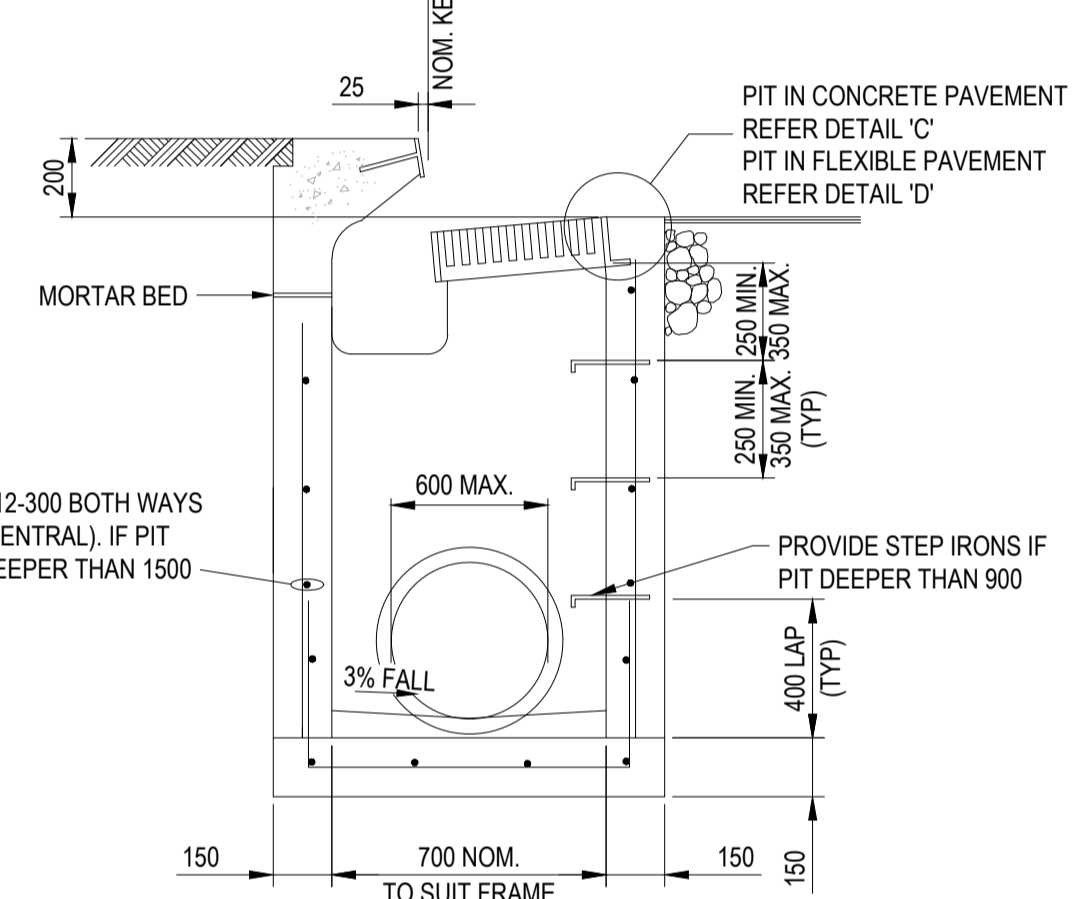
MULTI PURPOSE FILTER SCREEN
PRODUCT CODE: MMMP (MASCOT ENGINEERING) FITTED TO CONTROL PIT PRIOR TO OUTLET

TRASH SCREEN NOTES:

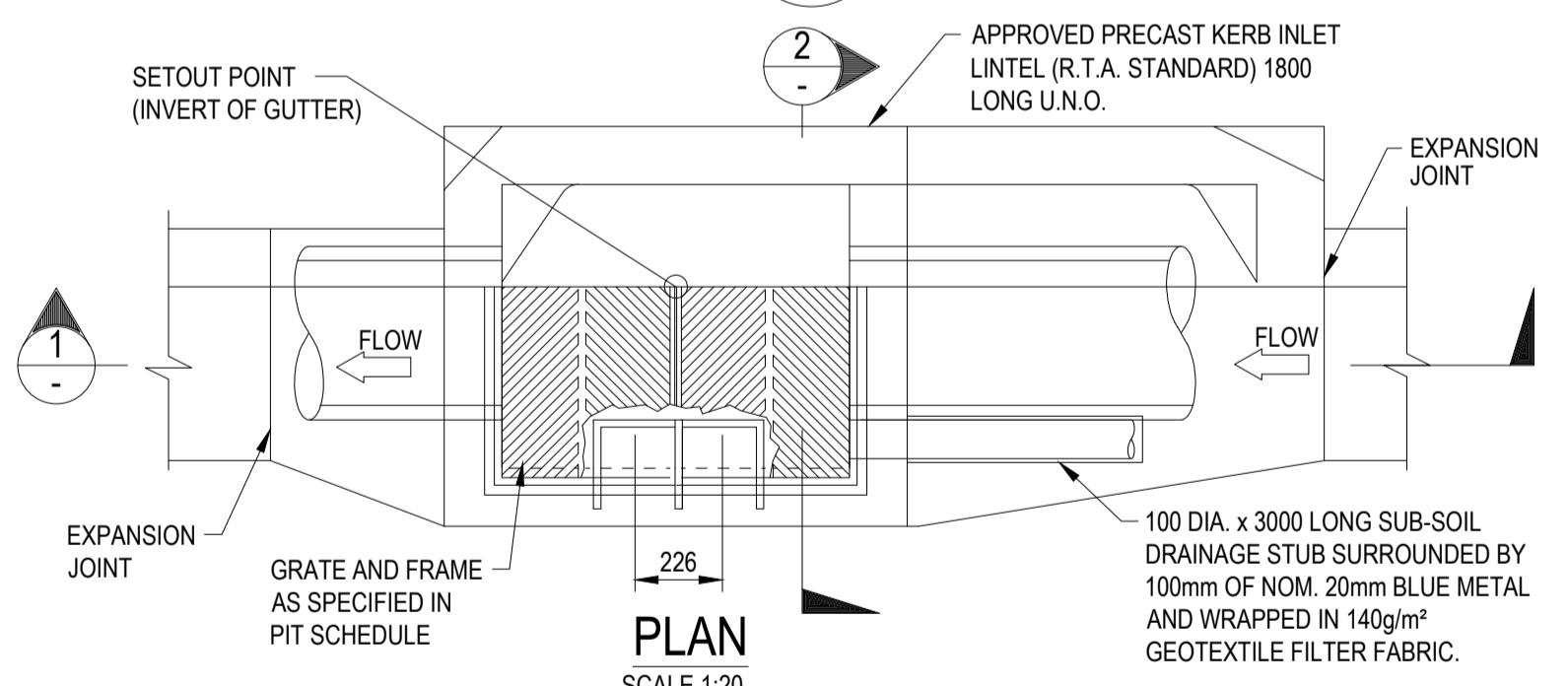
1. MAXIMUM SCREENS MUST BE PLACED SUCH THAT THE LONG AXIS OF THE OVAL SHAPED HOLES ARE ORIENTATED HORIZONTALLY WITH THE PROTRUDING LIP ANGLED UPWARDS AND FACING TOWARDS THE OUTLET.
2. THE SCREEN IS TO BE FORMED BY WELDING TWO TRIANGULAR MAXIMESH (OR EQUIVALENT) PANELS TO A RECTANGULAR FRONT MAXIMESH PANEL (OR EQUIVALENT)



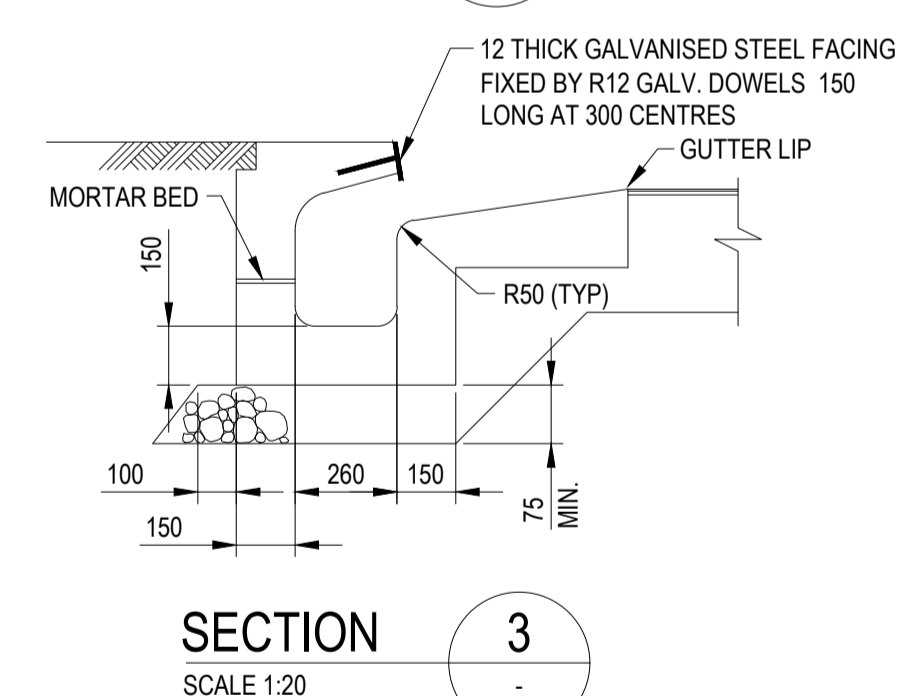
SECTION 1
SCALE 1:20



SECTION 2
SCALE 1:20



SECTION 3
SCALE 1:20



SECTION 3
SCALE 1:20

IMPORTANT NOTE:

INTERMEDIATE ACCESS IS PROVIDED BECAUSE THE LENGTH OF OSD IS GREATER THAN 3M.

ISSUE FOR DA

ISSUE	DATE	AMENDMENT	CLIENT / BUILDER / ARCHITECT
00	29.09.2020	ISSUE FOR DISCUSSION	
01	02.10.2020	ISSUE FOR DEVELOPMENT APPLICATION	
02	09.10.2020	ISSUE FOR DEVELOPMENT APPLICATION	

CLIENT / BUILDER / ARCHITECT



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CORE PROJECT CONSULTING

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NORTH: NTS

SCALE: NTS

VERIFIED: AC

DESIGNED: HR

DRAWN: RQ

PROJECT: PROPOSED CARPARK A7, 33 CONSUL ROAD, BROOKVALE

DATE: 12/09/2020

SCALE: 1:100

PROJECT No: 2290

REVISION: 02

DRAWING No: C201

DRAWING TITLE: OSD & SILT ARRESTOR AND MISC DETAILS

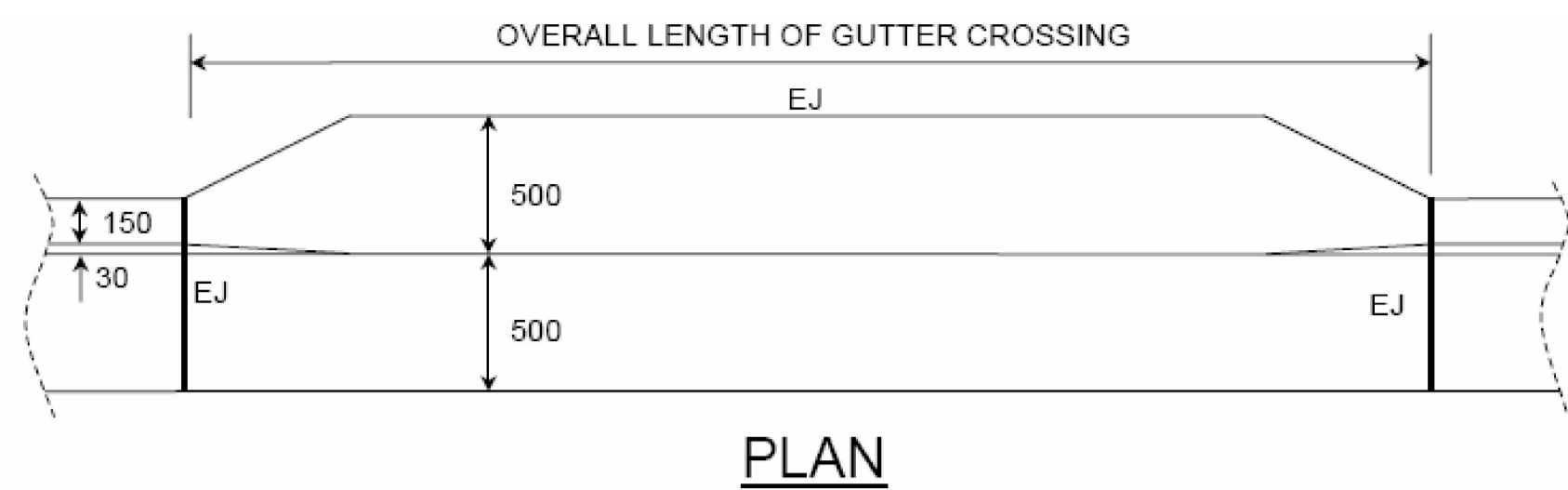
DATE: 12/09/2020

SCALE: 1:100

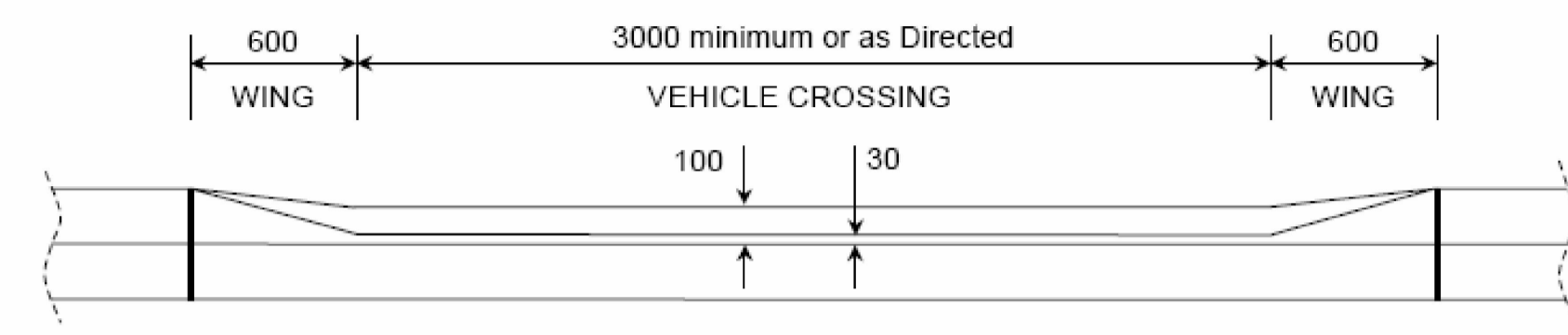
PROJECT No: 2290

REVISION: 02

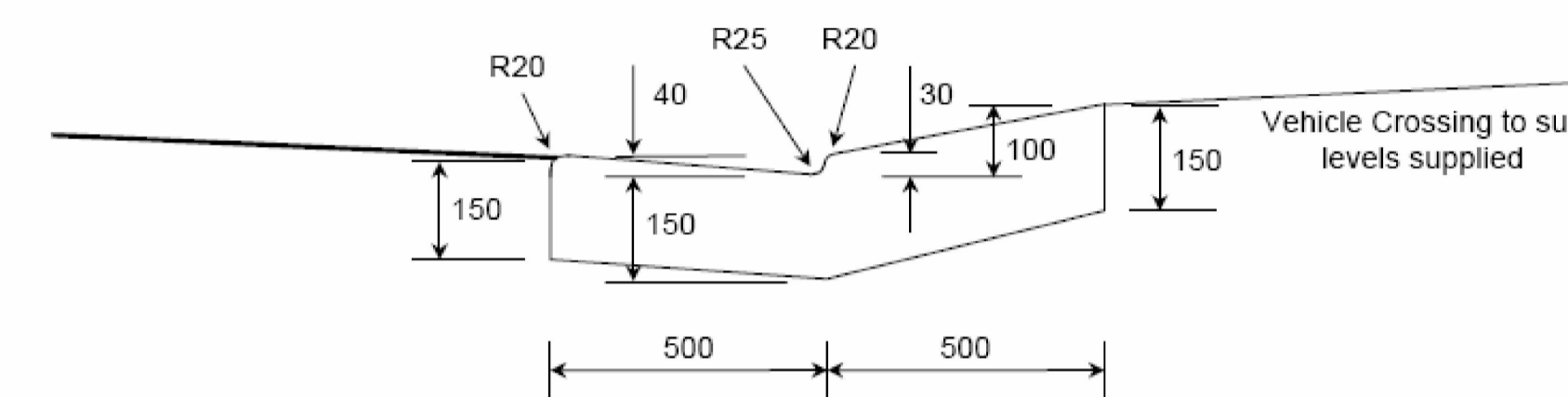
DRAWING No: C201



PLAN



FRONT ELEVATION

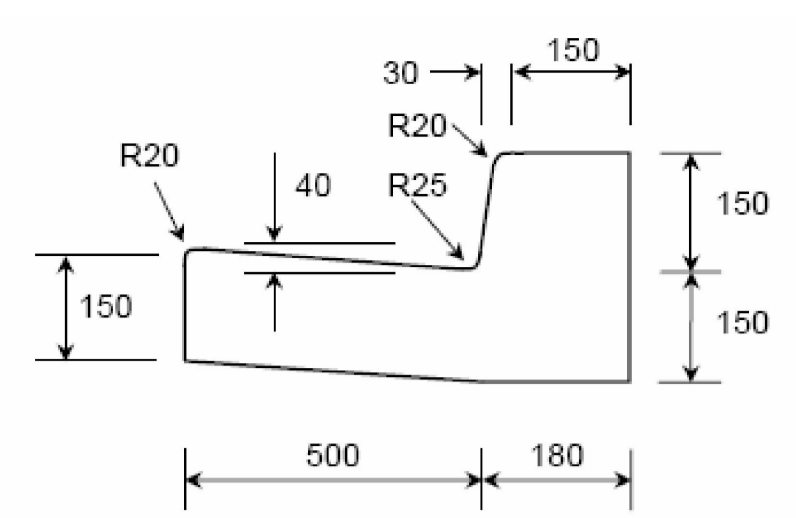


TYPICAL CROSS SECTION

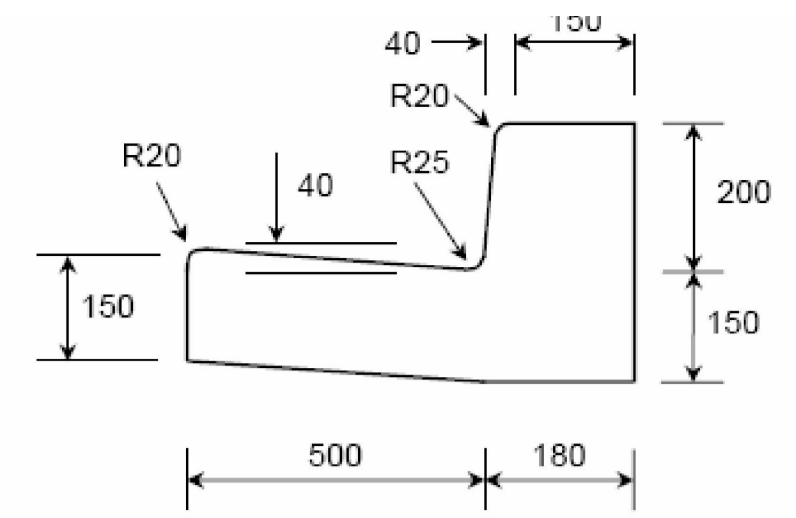
NOTES:

- Layback and gutter shall be poured in **PLAIN CONCRETE** and finished with a steel trowel. Minimum compressive strength of concrete shall be 25MPa at 28 days. Industrial/commercial properties shall increase the depth of concrete to 180mm and provide SL82 mesh with 30mm top cover.
- The subgrade shall be thoroughly compacted by the use of vibratory compaction equipment until it shows no signs of movement, or as directed by Council.
- Vehicle crossing to be constructed in accordance with levels and specifications issued by Council.
- Kerbing to be constructed in accordance with Council Plan A4 2276/A and specifications.
- Where Council or an Accredited Certifier (Civil Woks) directs that the gutter be retained, the contractor shall place a 75mm deep saw cut in the gutter invert and remove kerb and/or layback.
- Where Council or an Accredited Certifier (Civil Woks) directs that the gutter be removed, a Road Opening Permit must be obtained from Council's Customer Service Centre prior to commencing work. Once the permit is established the contractor may commence vehicle crossing works. Upon completion of the works, temporary restoration shall be provided as set out in the 'Specification For Trench Construction Within Council Roads'.
- The construction of all vehicle crossings and associated works on the road reserve must be completed by a Council approved concrete contractor.
- EJ – Expansion Joint – 10mm Mastic.
R – Radius

THIS DRAWING & DETAILS ARE TAKEN FROM COUNCIL DRAWING No. A4 2276/B



150mm KERB & GUTTER

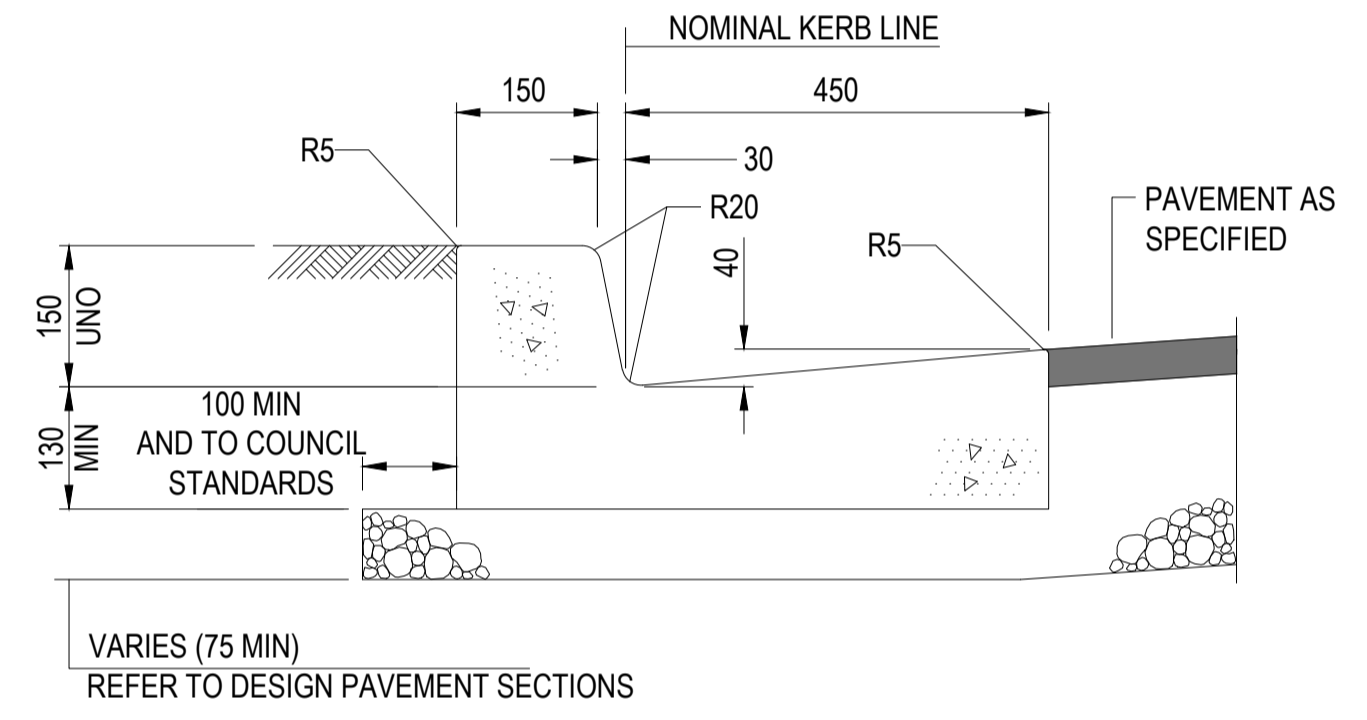


200mm KERB & GUTTER

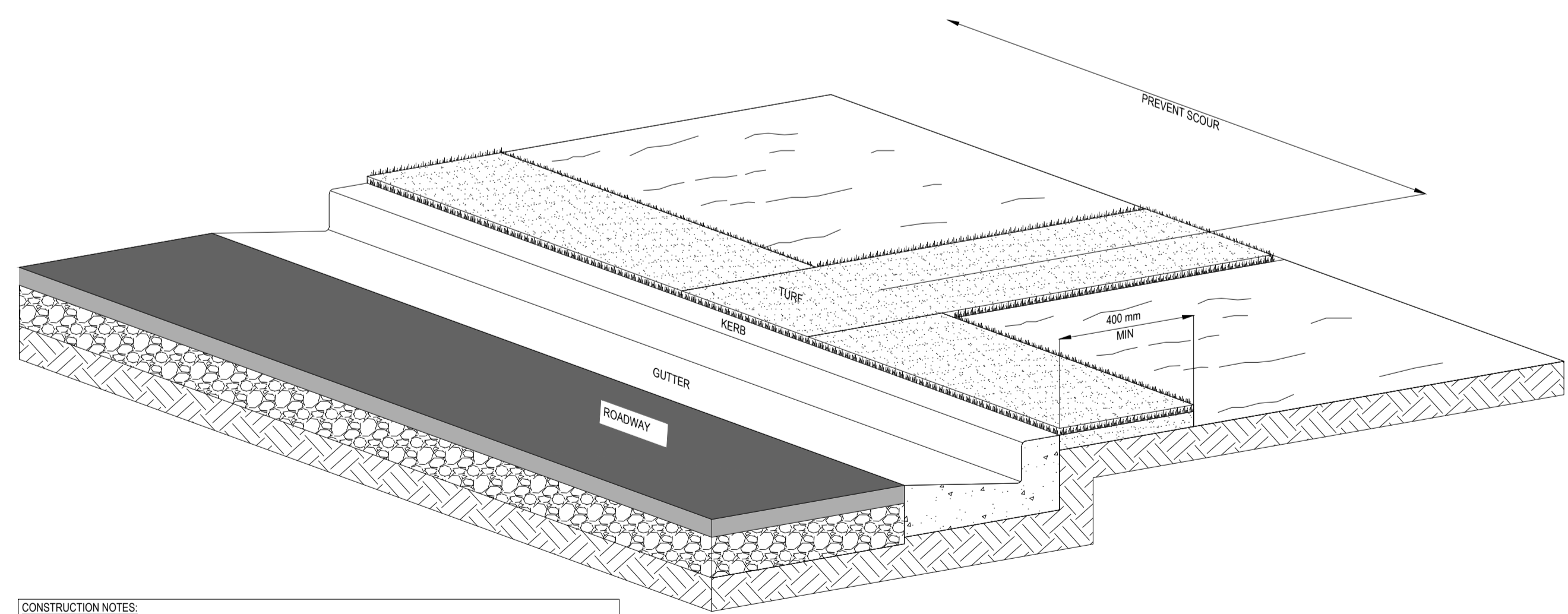
NOTES:

- Kerb and gutter shall be poured in **PLAIN CONCRETE** and finished with a steel trowel. Minimum compressive strength of concrete shall be 25MPa at 28 days.
- The subgrade shall be thoroughly compacted by the use of vibratory compaction equipment until it shows no signs of movement, or as directed by Council.
- Where Council or an Accredited Certifier (Civil Woks) directs that the gutter be retained, the contractor shall place a 75mm deep saw cut in the gutter invert and remove kerb and/or layback.
- Where Council or an Accredited Certifier (Civil Woks) directs that the gutter be removed, a Road Opening Permit must be obtained from Council's Customer Service Centre prior to commencing work. Once the permit is established the contractor may commence vehicle crossing works. Upon completion of the works, temporary restoration shall be provided as set out in the 'Specification For Trench Construction Within Council Roads'.
- The construction of all vehicle crossings and associated works on the road reserve must be completed by a Council approved concrete contractor.

THIS DRAWING & DETAILS ARE TAKEN FROM COUNCIL DRAWING No. A4 2276/A



KERB & GUTTER (KG) NTS



- CONSTRUCTION NOTES:**
- INSTALL A 400mm MINIMUM WIDE ROLL OF TURF ON THE FOOTPATH NEXT TO THE KERB AND AT THE SAME LEVEL AS THE TOP OF THE KERB
 - LAY 1.4m LONG TURF STRIPS NORMAL TO THE KERB EVERY 10m
 - REHABILITATE DISTURBED SOIL BEHIND THE KERB

KERBSIDE TURF STRIP NOT TO SCALE TYPICAL DETAIL FOR ILLUSTRATION

FORMWORK

THE FORMS SHALL BE ALIGNED TRUE TO GRADE AND WITH OUT IRREGULARITIES. THE TOLERANCE SHALL BE ±15mm PROVIDED THAT VARIATIONS IN LEVELS ARE NOT LOCAL AND ORE OVER LENGTH OF 3 METERS OR MORE.

FORMS SHALL BE CONSTRUCTED SO THAT THEY CAN BE REMOVED WITHOUT DAMAGING THE CONCRETE AND SHALL BE ADEQUATELY BRACED. THE INNER SURFACE OF FORMS SHALL BE ADEQUATELY OILED TO ENSURE THE NON-ADHESION OF THE CONCRETE. THE MATERIAL USED FOR FORMS FOR THE EXPOSED SURFACES SHALL BE DRESSED SOFT WOOF TIMBER.

TIMBER PEGS OF 50mm x 50mm-DIMENSION MINIMUM MUST BE PROVIDED FOR THE SUPPORT OF ALL FORMWORK. THE USE OF STEEL PEGS FOR THE SUPPORT OF FORMWORK IS PROHIBITED.

MATERIALS

READY MIXED CONCRETE SHALL CONFORM TO THE PROVISIONS OF AS 1379 - 2007 " READY MIXED CONCRETE"

THE MINIMUM COMPRESSIVE STRENGTH F_c OF THE CONCRETE SHALL BE 25 MPa AT 28 DAYS IN ACCORDANCE WITH AS 3600 - 2009 " CONCRETE STRUCTURES"

JOINTS

FOR HAND PLACED KERB AND GUTTER EXPANSION JOINT 10mm THICK FOR THE FULL DEPTH OF THE KERB AND GUTTER SHALL BE PROVIDED AT INTERVALS NOT EXCEEDING 6m.

FOR MACHINE PLACED KERB AND GUTTER, EXPANSION JOINTS 6mm THICK SHALL BE PROVIDED AT INTERVALS OF 6m AND CONSTRUCTION JOINTS SHALL BE FORMED EVERY 3m FOR THE FULL DEPTH OF THE KERB AND GUTTER.

JOINTS ARE ALSO REQUIRED WHERE THE GUTTER ABUTS GULLY PITS AND GUTTER CROSSINGS. EXPANSION JOINTS SHALL CONSIST OF PERFORMED JOINTING MATERIAL BITUMINOUS FIBERBOARD.

TOLERANCE

TOLERANCE ON THE LEVEL OF KERB AND GUTTER CONSTRUCTION BOTH HORIZONTAL AND VERTICAL SHALL BE PLUS OR MINUS 10mm.

KERB AND GUTTER

THE CONSTRUCTION OF CONCRETE KERB AND GUTTER IS TO BE IN ACCORDANCE WITH AS 2876 - 2000 " CONCRETE KERBS AND CHANNELS (GUTTERS) - MANUALLY OR MACHINE PLACED " UNLESS OTHERWISE INDICATED BELOW.

KERB AND GUTTER DETAIL KERB AND GUTTER SHALL BE IN ACCORDANCE WITH COUNCIL DRAWING NUMBER A4 2267/A/ AS DOCUMENTED BELOW.

LEVELS

DESIGN PLAN ARE TO BE PREPARED BY THE APPLICANT AND APPROVED BY THE COUNCIL PRIOR TO CONSTRUCTION.

PLACING CONCRETE

THE CONCRETE SHALL BE PLACED SO AS TO AVOID SEGREGATION AND SHALL BE ADEQUATELY COMPACTED. CARE SHALL BE TAKEN TO FILL EVERY PART OF THE FORMS AND TO WORK TO COARSER AGGREGATE BACK FROM THE FACE. EXPOSED SURFACES SHALL BE FINISHED WITH A STEEL FLOAT, AND CORNERS AND EDGES SHALL BE NEATLY ROUNDED WITH A NOISING TOOL. CONCRETE SHALL NOT BE DISTURBED AFTER IT HAS BEEN IN THE FORMS FOR TWENTY (20) MINUTES.

FINISH

AFTER REMOVAL OF THE FORMS, MINOR OR POROUS SECTIONS OR HOLES SHALL BE REPAIRED WITH A 3 TO 1 SAND AND CEMENT MORTAR MIX. THE EXPOSED SURFACES SHALL THEN BE RUBBED WITH A WOODEN FLOAT AND CLEAN WATER TO LEAVE THE SURFACES SMOOTH AND UNIFORM IN COLOR AND APPEARANCE.

BACKFILLING

AFTER REMOVAL OF FORMWORK THE FOOTWAY BEHIND THE KERB SHALL BE NEATLY TRIMMED, FILLED AND OR TURFED TO MAKE A SMOOTH CONNECTION TO THE UNDISTURBED NATURE STRIP.

ISSUE FOR DA

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00	29.09.2020	ISSUE FOR DISCUSSION	AC				12/09/2020		1:100	
01	02.10.2020	ISSUE FOR DEVELOPMENT APPLICATION	DESIGNED:				PROJECT No:		REVISION:	
02	09.10.2020	ISSUE FOR DEVELOPMENT APPLICATION	HR	2290	02					
			DRAWN:	PROJECT:						
			RQ	PROPOSED CARPARK A7. 33 CONSUL ROAD, BROOKVALE						
				DRAWING No:		C202				