

enstruct

CIVIL ENGINEERING WORKS

WARRAWONG COMMUNITY HEALTH CENTRE

91 COWPER ST, WARRAWONG, NSW 2052



CIVIL ENGINEERING WORKS DRAWING LIST:

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rev	date	description	dwn	ch'k	

rev	date	description	dwn	ch'k	



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project	WARRAWONG COMMUNITY HEALTH CENTRE - REF SUBMISSION
	91 Cowper St, Warrawong, NSW 2052

drawing title	COVER SHEET
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status			
ISSUE FOR REF			
scale at A1	drawn	checked	approved
NTS	ALA	TAH	TAH
project no.	drawing no.	rev.	
5988	5988-CV-10000	02	

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DESIGN & CONSTRUCT DOCUMENTATION

- 1. The level of detail / design reflected in these documents is based on the understanding this will be built as part of a design & construct contract.
- 2. The contractor shall retain the responsibility to undertake detailed design, confirm compliance with relevant standards, concent conditions & the specification.
- 3. The contractor shall be responsible for ensuring the final design is co-ordinated fully with other consultants.
- 4. No variation will be accepted for design amendments required to meet the functional objective of this documentation.

GENERAL NOTES

- 1. Contractor must verify all dimensions and existing levels on site prior to commencement of works. Any discrepancies to be reported to the Engineer
- 2. Strip all topsoil from the construction area. All stripped topsoil shall be disposed of off-site unless directed otherwise.
- 3. Make smooth connection with all existing works.
- 4. Compact subgrade under buildings and pavements to minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1. Compaction under buildings to extend 2m minimum beyond building footprint.
- 5. All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority; the Contractor is to ensure that the drawings used for construction have been approved by all relevant authorities prior to commencement site.
- 6. All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority is to be carried out in accordance with the requirements of the relevant Authority. The Contractor shall obtain these requirements from the Authority. Where the requirements of the Authority are different to the drawings and specifications, the requirements of the Authority shall be applicable.
- 7. For all temporary batters refer to geotechnical recommendations.

SURVEY AND SERVICES INFORMATION

SURVEY
Origin of levels :
Datum of levels : A.H.D. AUSTRALIAN HEIGHT DATUM
Coordinate system : MGA2020
Survey prepared by : LANDTEAM AUSTRALIA
Setout Points : CONTACT THE SURVEYOR

enstruct does not guarantee that the survey information shown on these drawings is accurate and will accept no liability for any inaccuracies in the survey information provided to us from any cause whatsoever.

UNDERGROUND SERVICES - WARNING
The locations of underground services shown on enstruct drawings have been plotted from diagrams provided by service authorities. This information has been prepared solely for the authorities own use and may not necessarily be updated or accurate.
The position of services as recorded by the authority at the time of installation may not reflect changes in the physical environment subsequent to installation.
enstruct does not guarantee that the services information shown on these drawings shows more than the presence or absence of services, and will accept no liability for inaccuracies in the services information shown from any cause whatsoever.

The Contractor must confirm the exact location and extent of services prior to construction and notify any conflict with the drawings immediately to the Engineer/Superintendent.
The contractor is to get approval from the relevant state survey department, to remove/adjust any survey mark. This includes but is not limited to; State Survey Marks (SSM), Permanent Marks (PM), cadastral reference marks or any other survey mark which is to be removed or adjusted in any way.

enstruct plans do not indicate the presence of any survey mark. The contractor is to undertake their own search.

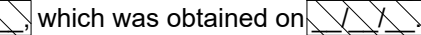

CIVIL SAFETY IN DESIGN

enstruct (NSW) Pty Ltd operates under Safe Work Australia's code of Conduct for the Safe Design of Structures.
These drawings shall be read in conjunction with the enstruct Civil risk and Solutions Register.
Under the Code of Conduct it is the Client's responsibility to provide a copy of the Civil Risk and Solutions Register to the Principal Contractor.
It is the Principal Contractor's responsibility to review the hazards and risks identified during the design process to ensure a safe workplace is maintained for the construction, maintenance and eventual demolition of the civil infrastructure.

SITeworks NOTES

- 1. All basecourse material to comply with RMS specification No 3051 and compacted to minimum 98% modified dry density in accordance with AS 1289 5.2.1.
- 2. All trench backfill material shall be compacted to the same density as the adjacent material.
- 3. All service trenches under vehicular pavements shall be backfilled with an approved select material and compacted to a minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1

DBYD SERVICES NOTE

"Public Service Utility information shown on plan has been complied from information received from Dial Before You Dig inquiry, reference Number  which was obtained on 
Unless specifically shown otherwise, this location and depth of services shown on this plan have not been verified.

The location of services shown on this drawing have been plotted as accurately as possible from diagrams provided by service authorities and should be confirmed by site inspection."

CONCRETE NOTES

EXPOSURE CLASSIFICATION : External 

CONCRETE

Place concrete of the following characteristic compressive strength f_c as defined in AS 1379.

Location	AS 1379 f _c MPa at 28 days	Specified Slump	Nominal Agg. Size
Kerbs	S20	80	20
Pavements	S32	80	20
Retaining wall footing	S40	80	20

- 1. Use Type 'GP' cement, unless otherwise specified.
- 2. All concrete shall be subject to project assessment and testing to AS 1379.
- 3. Consolidate by mechanical vibration. Cure all concrete surfaces as directed in the Specification.
- 4. For all falls in slab, drip grooves, reglets, chamfers etc. refer to Architects drawings and specifications.
- 5. The location of all construction joints shall be submitted to Engineer for review.
- 6. No holes or chases shall be made in the slab without the approval of the Engineer.
- 7. Slurry used to lubricate concrete pump lines is not to be used in any concrete members.
- 8. All building slabs cast on ground require sand blinding with a Concrete Underlay. Refer to structural drawings.

FORMWORK

- 1. The design, certification, construction and performance of the formwork, falsework and backpropping shall be the responsibility of the contractor. Proposed method of installation and removal of formwork is to be submitted to the superintendent for comment prior to work being carried out.

STORMWATER DRAINAGE NOTES

- 1. Stormwater Design Criteria :
(A) Average exceedance probability -
1% AEP for roof drainage to first external pit
5% AEP for paved and landscaped areas
(B) Rainfall intensities -
Time of concentration: 5 minutes
1% AEP = 306 mm/hr
5% AEP = 217 mm/hr
(C) Rainfall losses -
Impervious areas: IL= 1.0 mm , CL= 0 mm/hr
Pervious areas: IL= 16.5 mm, CL =1.56mm/hr
- 2. Pipes 300 dia and larger to be reinforced concrete Class "2" approved spigot and socket with rubber ring joints
U.N.O. Pipes in public roadways (including public domain) to be class "4" reinforced concrete.
- 3. Pipes up to 225 dia may be sewer grade uPVC with solvent welded joints, subject to approval by the engineer
- 5. Enlargers, connections and junctions to be manufactured fittings where pipes are less than 300 dia.
- 6. Pipes are to be installed in accordance with AS 3725. All bedding to be type H2 U.N.O.
- 7. Care is to be taken with invert levels of stormwater lines. Grades shown are not to be reduced without approval. Adopt invert levels for pipe installation (grades shown are only nominal).
- 8. All downpipe connections are to be 150mm DIA or the same size as the downpipe (whichever is larger) laid at 1% minimum fall connection to the nearest pit. Minimum cover 450mm in non-trafficable landscaped areas.
- 9. Pits in roadways (including public domain) are to be insitu to council details.
- 10. Pit grates and covers shall conform with AS3996-2006, and AS1428.1 for access requirements.

SUBSOIL NOTES

- 1. Subsoil drains to be slotted flexible uPVC U.N.O.
- 2. All subsoil drainage shall outlet to drainage pits or land drains.
- 3. Pavement subsoil drains are to be placed in accordance with standard drawings behind all kerb and gutter, on the low side of all pavements, and road crossings at sag vertical curves.
- 4. Where subsoil drains pass under floor slabs and/or vehicular pavements, unslotted uPVC sewer grade pipe is to be used.

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project

WARRAWONG COMMUNITY HEALTH CENTRE - REF SUBMISSION

91 Cowper St, Warrawong, NSW 2052

drawing title

NOTES SHEET

status

ISSUE FOR REF

scale at A1
NTS

drawn
ALA

checked
TAH

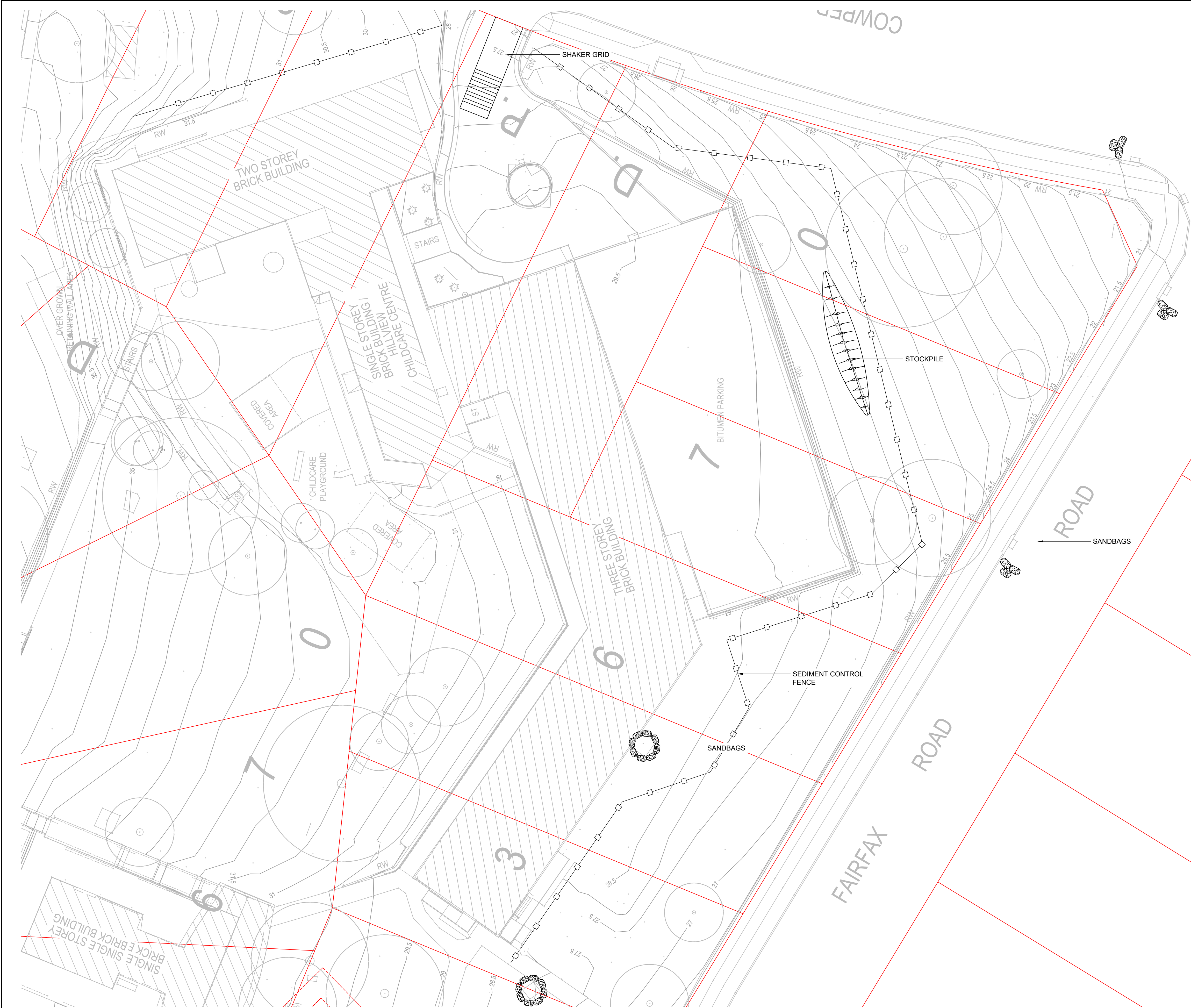
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project no.
5988

drawing no.
5988-CV-10001

rev.
02

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EROSION AND SEDIMENT CONTROL LEGEND

- Batter
- Siltation fence, with star pickets at max 2.5m centres (typ)
- Catch drain
- Overland flow path
- Tree to be removed
- Stockpile
- Stormwater pit, with Geotextile filter
- Straw bale barriers
- Sandbag sediment trap



EROSION AND SEDIMENT CONTROL NOTES

- All work shall be generally carried out in accordance with
(A) Local authority requirements,
(B) EPA - Pollution control manual for urban stormwater,
(C) LANDCOM NSW - Managing Urban Stormwater: Soils and Construction ("Blue Book")
- Erosion and sediment control drawings and notes are provided for the whole of the works. Should the Contractor stage these works then the design may be required to be modified. Variation to these details may require approval by the relevant authorities. The erosion and sediment control plan shall be implemented and adapted to meet the varying situations as work on site progresses.
- Maintain all erosion and sediment control devices to the satisfaction of the superintendent and the local authority.
- When stormwater pits are constructed prevent site runoff entering the pits unless silt fences are erected around pits.
- Minimise the area of site being disturbed at any one time.
- Protect all stockpiles of materials from scour and erosion. Do not stockpile loose material in roadways, near drainage pits or in watercourses.
- All soil and water control measures are to be put back in place at the end of each working day, and modified to best suit site conditions.
- Control water from upstream of the site such that it does not enter the disturbed site.
- All construction vehicles shall enter and exit the site via the temporary construction entry/exit.
- All vehicles leaving the site shall be cleaned and inspected before leaving.
- Maintain all stormwater pipes and pits clear of debris and sediment. Inspect stormwater system and clean out after each storm event.
- Clean out all erosion and sediment control devices after each storm event.

Sequence Of Works

- Prior to commencement of excavation the following soil management devices must be installed:
 - Construct silt fences below the site and across all potential runoff sites.
 - Construct temporary construction entry/exit and divert runoff to suitable control systems.
 - Construct measures to divert upstream clean flows into existing stormwater system.
 - Construct sedimentation traps/basin (if any) including outlet control and overflow; otherwise allocate a place for the runoff and temporary sediment storage.
 - Construct turf lined swales.
 - Provide sandbag sediment traps upstream of existing pits.
- Construct geotextile filter pit surround around all existing pits and proposed pits as they are constructed.
- On completion of pavement provide sand bag kerb inlet sediment traps around pits.
- Provide and maintain a strip of turf on both sides of all roads after the construction of kerbs.

WATER QUALITY TESTING REQUIREMENTS

Prior to discharge of site stormwater, groundwater and seepage water into council's stormwater system, contractors must undertake water quality tests in conjunction with a suitably qualified environment consultant outlining the following:

- Compliance with the criteria of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)
- If required subject to the environmental consultants advice, provide remedial measures to improve the quality of water that is to be discharged into Councils storm water drainage system. This should include comments from a suitably qualified environmental consultant confirming the suitability of these remedial measures to manage the water discharged from the site into Councils storm water drainage system. Outlining the proposed, ongoing monitoring, contingency plans and validation program that will be in place to continually monitor the quality of water discharged from this site. This should outline the frequency of water quality testing that will be undertaken by a suitably qualified environmental consultant.

rev	date	description	dm	ch/k
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rev	date	description	dm	ch/k



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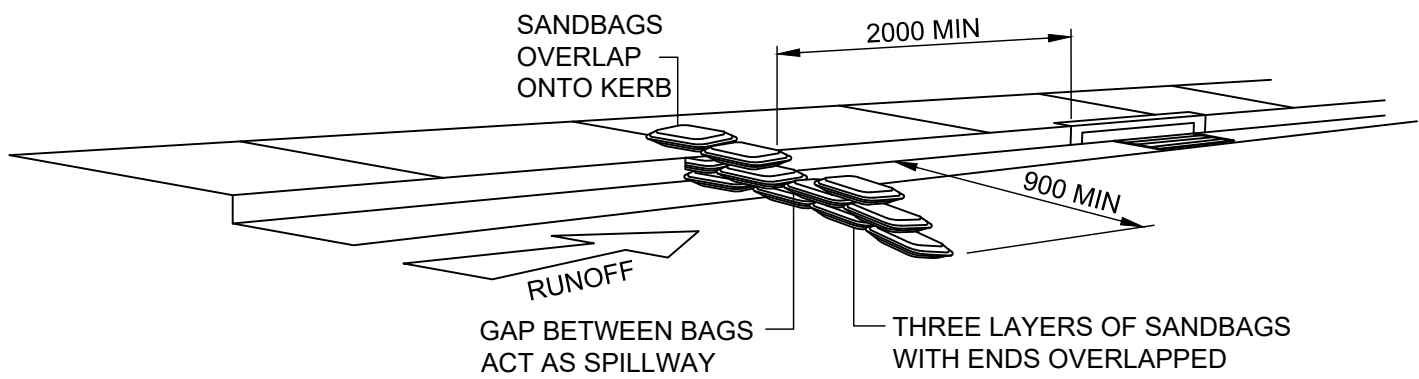
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	91 Cowper St, Warrawong, NSW 2052

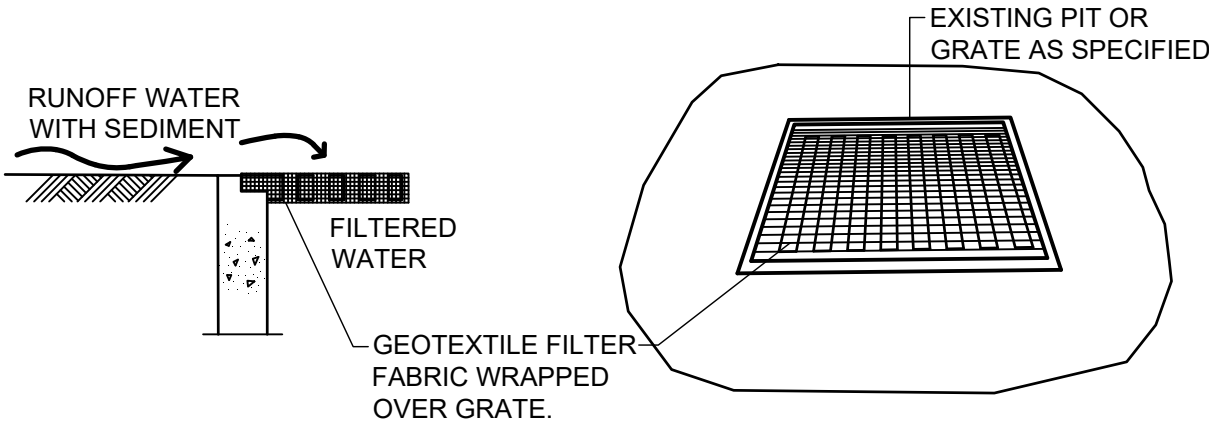
drawing title	EROSION AND SEDIMENT CONTROL PLAN

status				ISSUE FOR REF	
scale at A1 1:200	drawn ALA	checked TAH	approved TAH		
project no. 5988	drawing no. 5988-CV-10101		rev. 02		



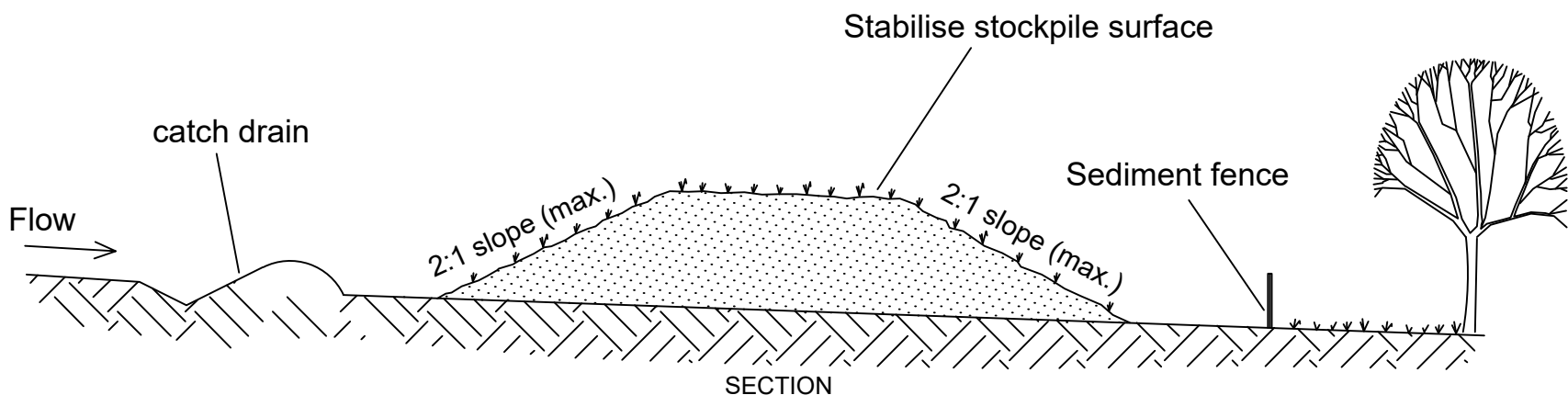
SANDBAG SEDIMENT TRAP FOR ON-GRADE KERB INLET PITS

NTS



GEOTEXTILE PIT FILTER

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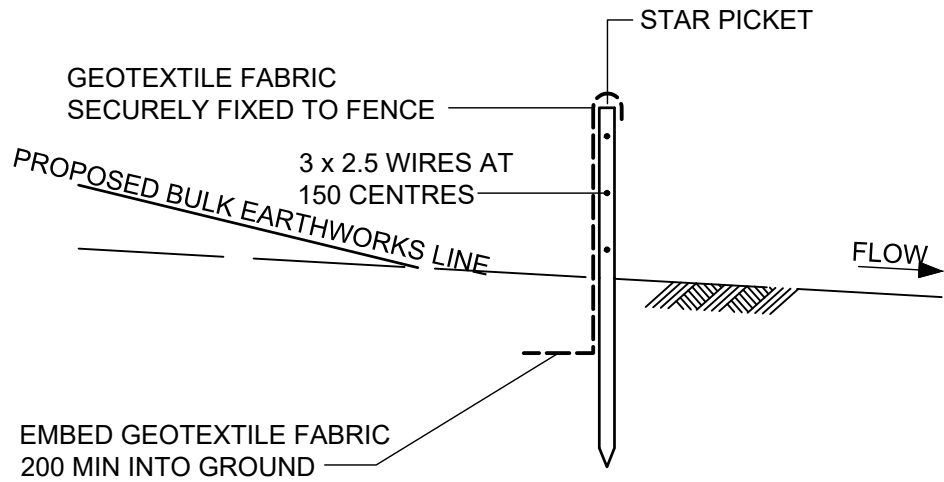


Construction Notes

- 1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5) METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS. COORDINATE WITH ARBORIST IF REQUIRED.
- 2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
- 3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METRES IN HEIGHT.
- 4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP
- 5. CONSTRUCT EARTH BANKS (TYP) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES (TYP) 1 TO 2 METRES DOWNSLOPE. REFER TO TYPICAL DETAILS

STOCKPILES

NTS



NOTE
ENDS OF SILTATION FENCE TO RETURNED
UP SLOPE TO PREVENT RUNOFF

SILTATION FENCE DETAIL

SCALE 1:20

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drawing title	EROSION AND SEDIMENT CONTROL DETAIL SHEET
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status	ISSUE FOR REF			
scale at A1 AS SHOWN	drawn ALA	checked TAH	approved TAH	
project no. 5988	drawing no. 5988-CV-10110	rev. 02		

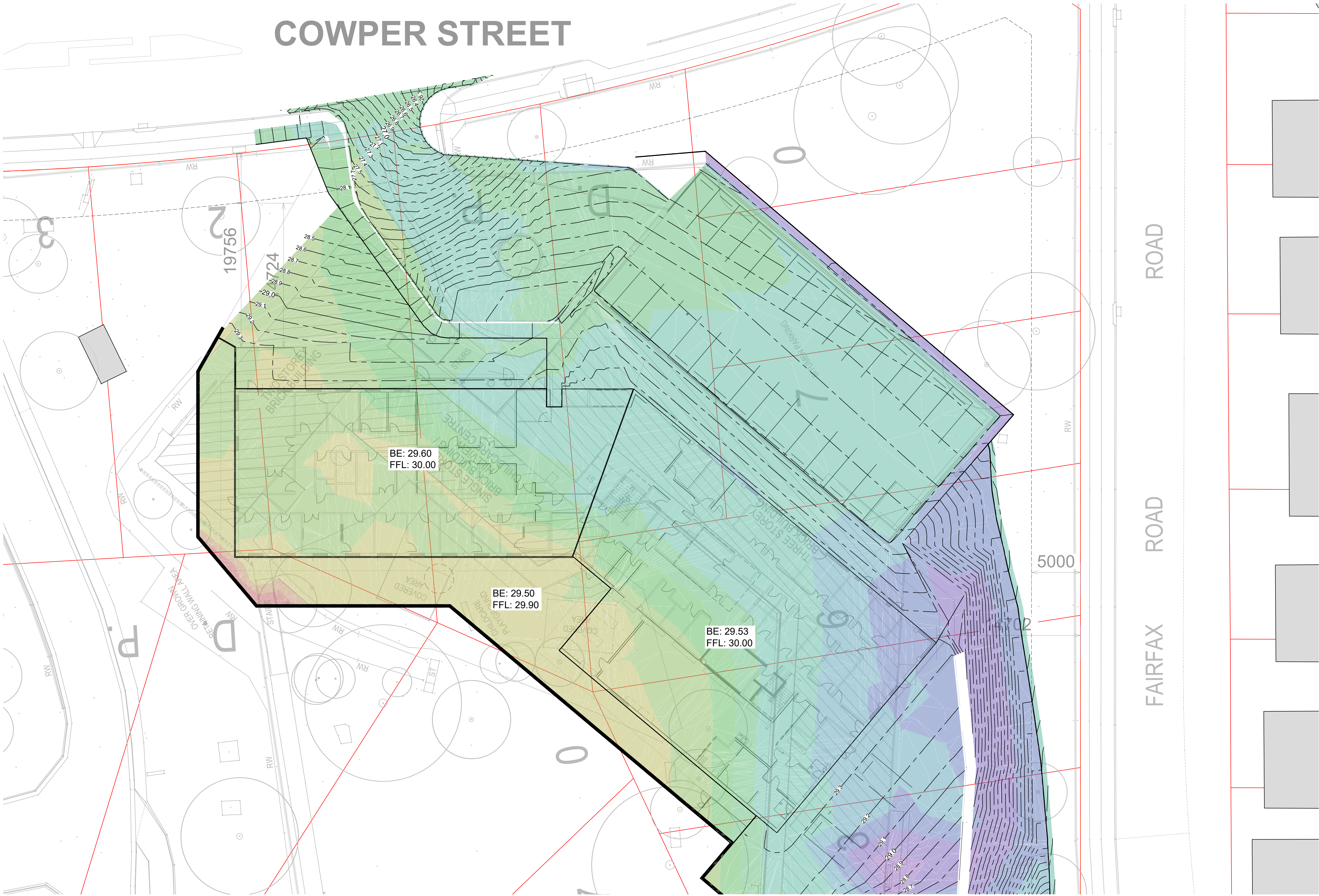
Cut/Fill Summary

Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
Surface Bulk Volumes_Warrawong	1.000	1.000	5825.315sq.m	4263.478 Cu. M.	679.658 Cu. M.	3583.820 Cu. M.<Cut>
Totals			5825.315sq.m	4263.478 Cu. M.	679.658 Cu. M.	3583.820 Cu. M.<Cut>

Surface Analysis: Elevation Ranges			
Number	Color	Minimum Elevation (m)	Maximum Elevation (m)
1		-4.000	-3.500
2		-3.500	-3.000
3		-3.000	-2.500
4		-2.500	-2.000
5		-2.000	-1.500
6		-1.500	-1.000
7		-1.000	-0.500
8		-0.500	0.000
9		0.000	0.500
10		0.500	1.000
11		1.000	1.500
12		1.500	2.000

BULK EARTHWORKS MODEL NOTES

- THIS DRAWING IS AN ESTIMATE FOR INFORMATION ONLY WHICH SHOULD NOT BE TAKEN AS AN ACCURATE MEASUREMENT AND SHOULD NOT BE USED FOR CONSTRUCTION.
- THIS MODEL REPRESENTS A LEVEL COMPARISON BETWEEN:
A) THE EXISTING SURFACE LEVELS, AND
B) THE FORMATION LEVELS OF THE PROPOSED DEVELOPMENT.
- THE FORMATION LEVELS ARE BASED ON PAVEMENT THICKNESSES AS ASSUMED THE EXISTING SURFACE LEVELS ARE BASED ON THE TIN MODEL FROM THE SURVEY FILE. REFER TO SURVEY NOTES. SURFACE LEVELS UNDER EXISTING BUILDINGS ARE BASED ON SURROUNDING SURFACE LEVELS AND A SUBFLOOR AREA OBSERVED ON SITE
- THIS ESTIMATE DOES NOT INCLUDE EXCAVATION FOR ANY BELOW GROUND SERVICES INCLUDING STORMWATER INFRASTRUCTURE.
- NO ALLOWANCE HAS BEEN CONSIDERED FOR SERVICE TRENCHES, IN GROUND TANKS, STRUCTURAL FOOTINGS, PILING, FLOOR SLABS OR LIFT PITS.
- NO BULKING FACTOR HAVE BEEN APPLIED TO THE BULK EXCAVATION VOLUMES.
- IT HAS BEEN ASSUMED THAT ALL EXCAVATED MATERIAL IS NOT CONTAMINATED AND CAN BE USED AS FILL MATERIAL ON SITE (NOT INCLUDING TOPSOIL). IF CONTAMINATION IS PRESENT, A SEPARATE ASSESSMENT SHOULD TAKE PLACE.
- ANY DAMAGE TO EXISTING ROADS OR EXISTING BUILDINGS WILL BE RECTIFIED BY THE CONTRACTOR AT HIS EXPENSE.
- ALL ENVIRONMENTAL MEASURES INCLUDING VEGETATION PROTECTION AND EROSION AND SEDIMENT CONTROLS SHALL BE PLACE PRIOR TO THE COMMENCEMENT OF ANY WORK.
- EROSION PLANS AND BUILDING REPRESENTATIVE FAMILIAR WITH THE PLAN MUST BE ON SITE AT ALL TIMES DURING CONSTRUCTION.
- ALL ARCHITECTURAL FINISHED SURFACE LEVELS SUPERSEDE THOSE INDICATED ON THE BULK EARTHWORKS PLAN. THE CONTRACTOR SHALL CONFIRM THE FINAL BUILDING PAD LEVEL REQUIRED TO SUIT THE STRUCTURAL DESIGN WITH THE STRUCTURAL DRAWINGS PRIOR TO COMMENCEMENT OF WORK.
- REFER GEOTECHNICAL REPORT / ENGINEER FOR SUITABILITY OF MATERIAL WON FROM EXCAVATION BACKFILL
- NOT TO BE USED FOR DETAILED EXCAVATION, WHICH INCLUDES: LIFT PITS, TRENCHING, FOOTINGS AND OTHER EXCAVATION OF SIMILAR NATURE
- NO ALLOWANCE HAS BEEN MADE FOR A PILING PAD IF REQUIRED



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	91 Cowper St, Warrawong, NSW 2052

drawing title	BULK EARTHWORKS SHEET 1
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status	ISSUE FOR REF			
scale at A1 1:200	drawn ALA	checked TAH	approved TAH	
project no. 5988	drawing no. 5988-CV-10201	rev. 02		

Cut/Fill Summary

Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
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12		1.500	2.000

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- NO BULKING FACTOR HAVE BEEN APPLIED TO THE BULK EXCAVATION VOLUMES.
- IT HAS BEEN ASSUMED THAT ALL EXCAVATED MATERIAL IS NOT CONTAMINATED AND CAN BE USED AS FILL MATERIAL ON SITE (NOT INCLUDING TOPSOIL). IF CONTAMINATION IS PRESENT, A SEPARATE ASSESSMENT SHOULD TAKE PLACE.
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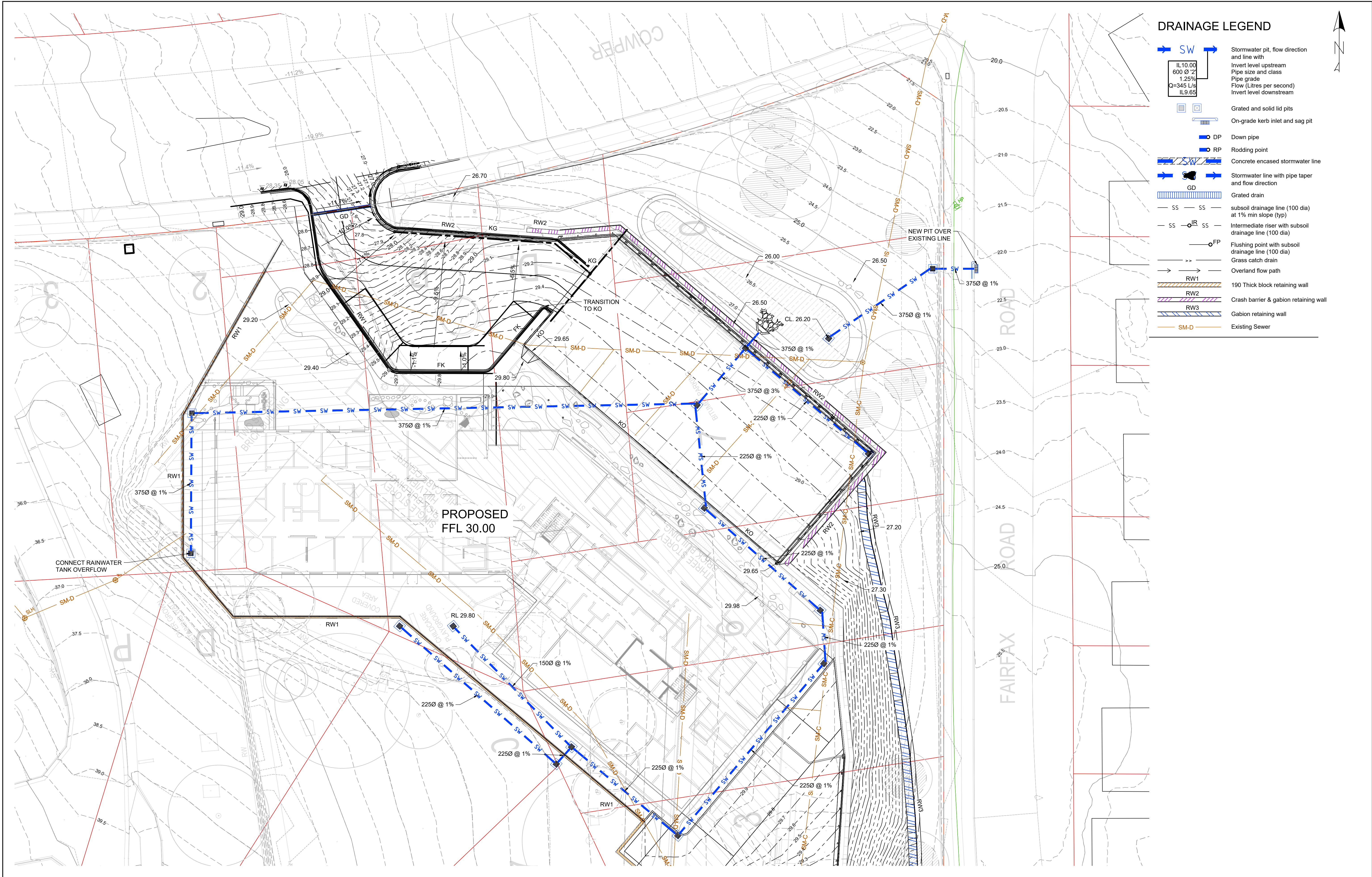
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drawing title	BULK EARTHWORKS SHEET 2
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status	ISSUE FOR REF			
scale at A1 1:200	drawn ALA	checked TAH	approved TAH	
project no. 5988	drawing no. 5988-CV-10202	rev. 02		



DRAINAGE LEGEND

SW

Stormwater pit, flow direction and line with

Invert level upstream
Pipe size and class
Pipe grade
Flow (Litres per second)
Invert level downstream

Grated and solid lid pits

On-grade kerb inlet and sag pit

Down pipe

Rodding point

Concrete encased stormwater line

Stormwater line with pipe taper and flow direction

Grated drain

subsoil drainage line (100 dia) at 1% min slope (typ)

Intermediate riser with subsoil drainage line (100 dia)

Flushing point with subsoil drainage line (100 dia)

Grass catch drain

Overland flow path

190 Thick block retaining wall

Crash barrier & gabion retaining wall

Gabion retaining wall

Existing Sewer

rev	date	description	dm	ch/k
02	18/03/24	ISSUE FOR REF	BEJ	TAH
01	15/12/23	ISSUE FOR REF	BEJ	TAH

rev	date	description	dm	ch/k

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WARRAWONG COMMUNITY
HEALTH CENTRE -
REF SUBMISSION

91 Cowper St, Warrawong, NSW 2052

drawing title

SITeworks PLAN
SHEET 1

status

ISSUE FOR REF

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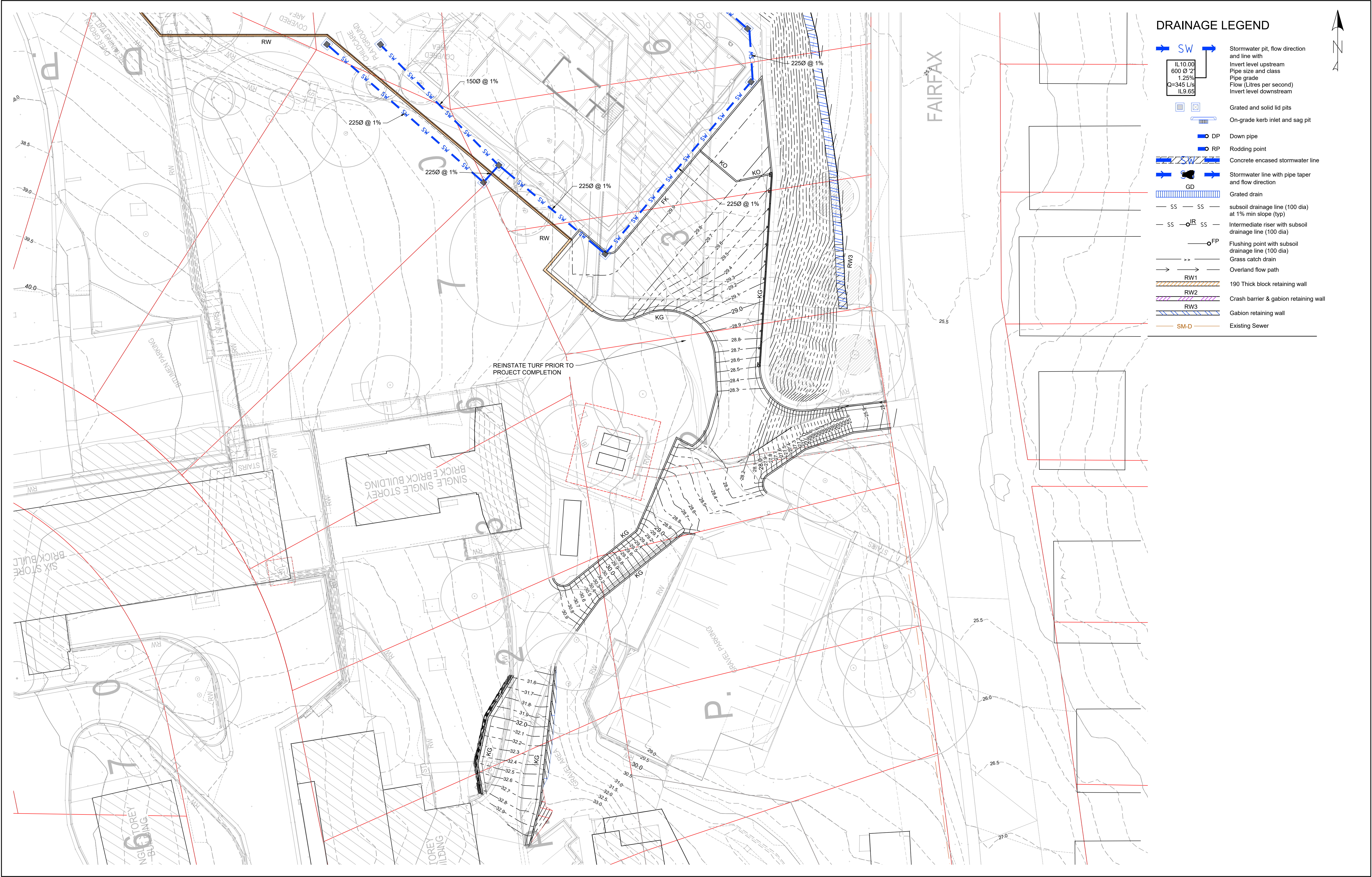
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approved
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project no.
5988

drawing no.
5988-CV-10301

rev.
02



DRAINAGE LEGEND

- SW Stormwater pit, flow direction and line with Invert level upstream Pipe size and class Pipe grade Flow (Litres per second) Invert level downstream
- Grated and solid lid pits
- On-grade kerb inlet and sag pit
- Down pipe
- Rodding point
- Concrete encased stormwater line
- Stormwater line with pipe taper and flow direction
- GD Grated drain
- SS subsoil drainage line (100 dia) at 1% min slope (typ)
- IR Intermediate riser with subsoil drainage line (100 dia)
- FP Flushing point with subsoil drainage line (100 dia)
- Grass catch drain
- Overland flow path
- RW1 190 Thick block retaining wall
- RW2 Crash barrier & gabion retaining wall
- RW3 Gabion retaining wall
- SM-D Existing Sewer



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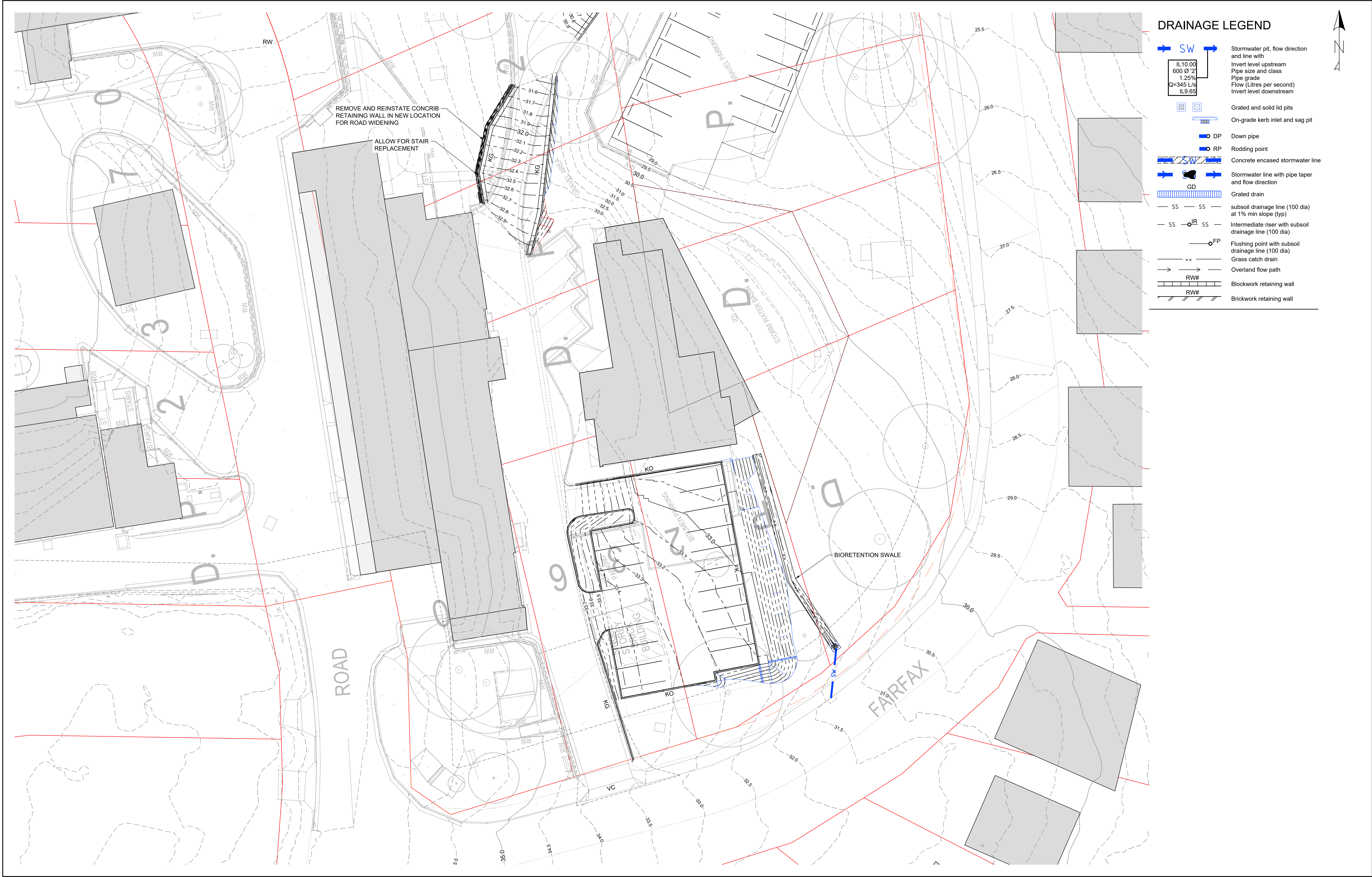


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91 Cowper St, Warrawong, NSW 2052	

drawing title	SITWORKS PLAN SHEET 2
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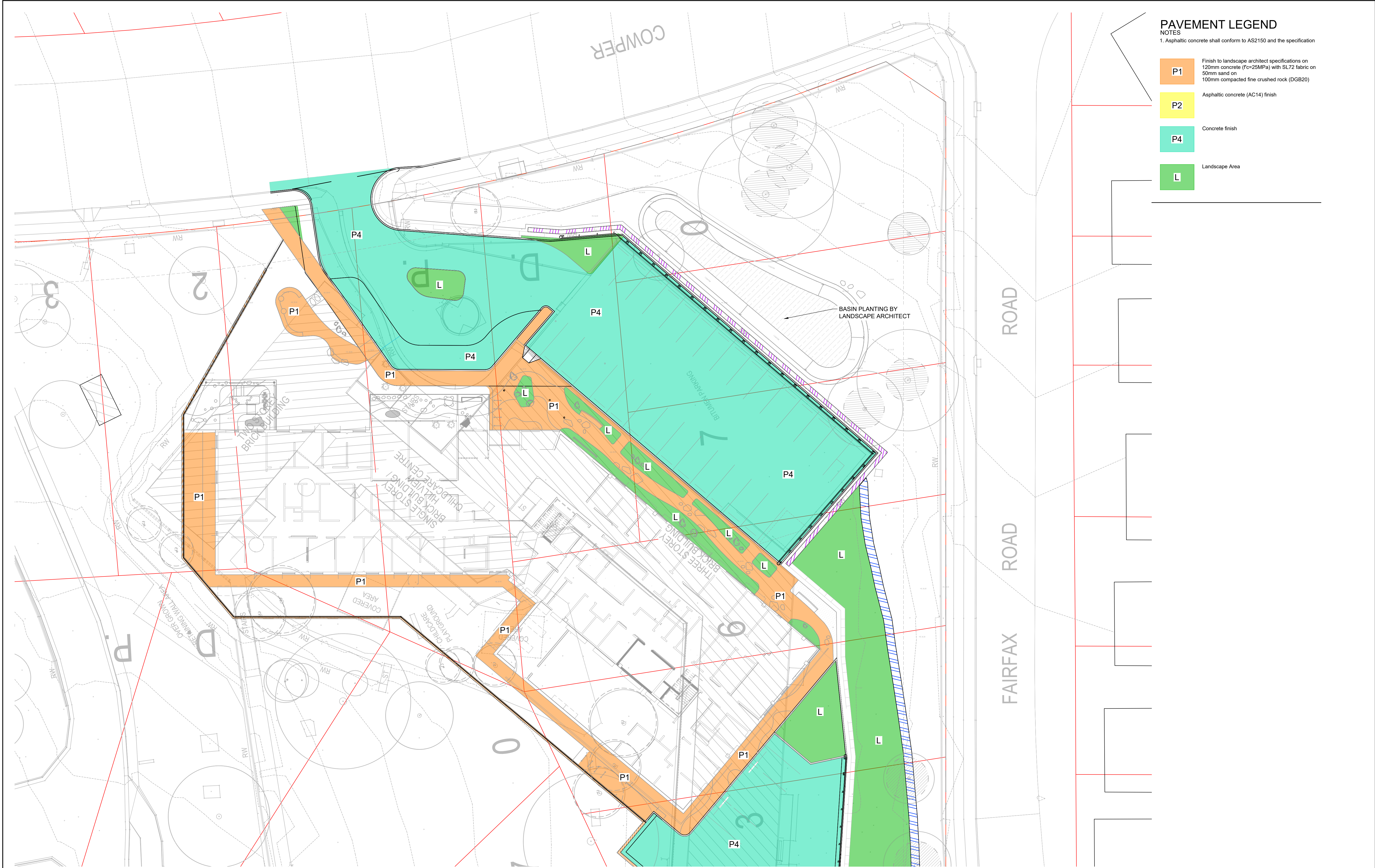
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SITeworks PLAN
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PAVEMENT LEGEND

NOTES
1. Asphaltic concrete shall conform to AS2150 and the specification

- P1** Finish to landscape architect specifications on 120mm concrete (f_c=25MPa) with SL72 fabric on 50mm sand on 100mm compacted fine crushed rock (DGB20)
- P2** Asphaltic concrete (AC14) finish
- P4** Concrete finish
- L** Landscape Area

rev	date	description	dm	ch/k
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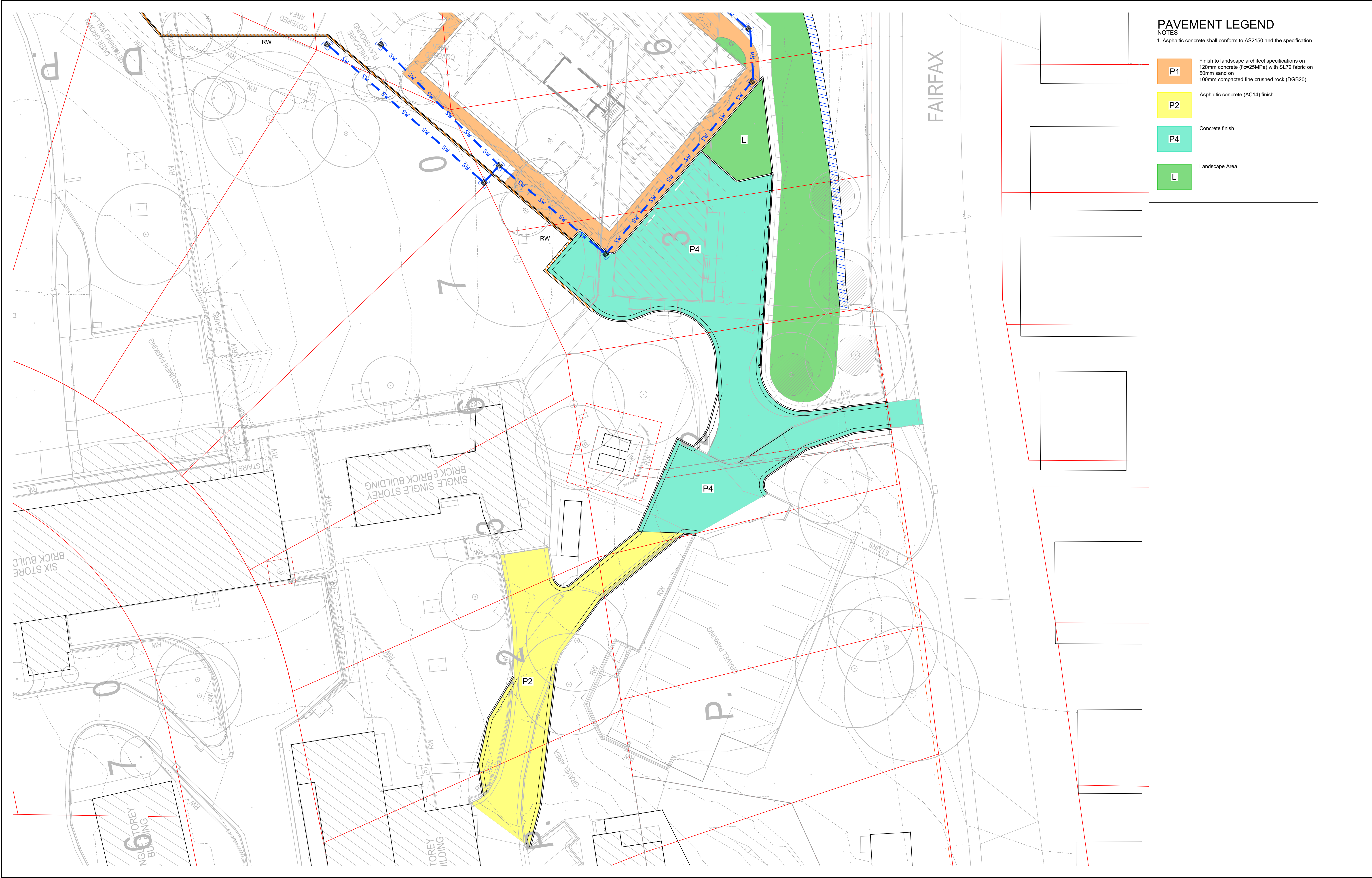
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	91 Cowper St, Warrawong, NSW 2052

drawing title	PAVEMENT PLAN SHEET 1
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project no.	drawing no.			rev.
5988	5988-CV-10401			03



PAVEMENT LEGEND

NOTES
1. Asphaltic concrete shall conform to AS2150 and the specification

- P1** Finish to landscape architect specifications on 120mm concrete (f_c=25MPa) with SL72 fabric on 50mm sand on 100mm compacted fine crushed rock (DGB20)
- P2** Asphaltic concrete (AC14) finish
- P4** Concrete finish
- L** Landscape Area

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rev	date	description	dm	ch/k	



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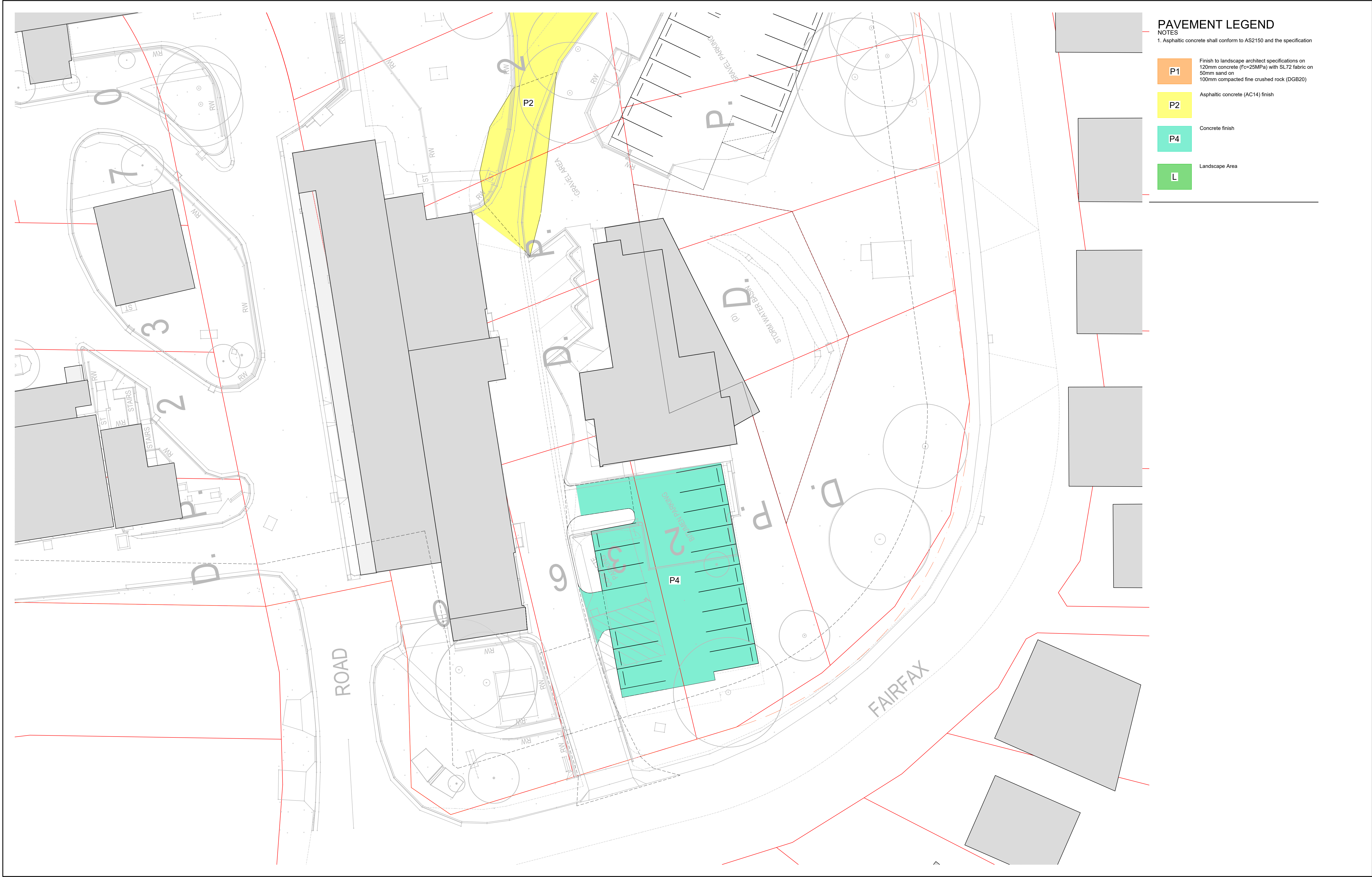


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	91 Cowper St, Warrawong, NSW 2052

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rev.	03

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PAVEMENT LEGEND
NOTES
1. Asphaltic concrete shall conform to AS2150 and the specification

P1

Finish to landscape architect specifications on 120mm concrete (f_c=25MPa) with SL72 fabric on 50mm sand on 100mm compacted fine crushed rock (DGB20)

P2

Asphaltic concrete (AC14) finish

P4

Concrete finish

L

Landscape Area

rev	date	description	dm	ch/k
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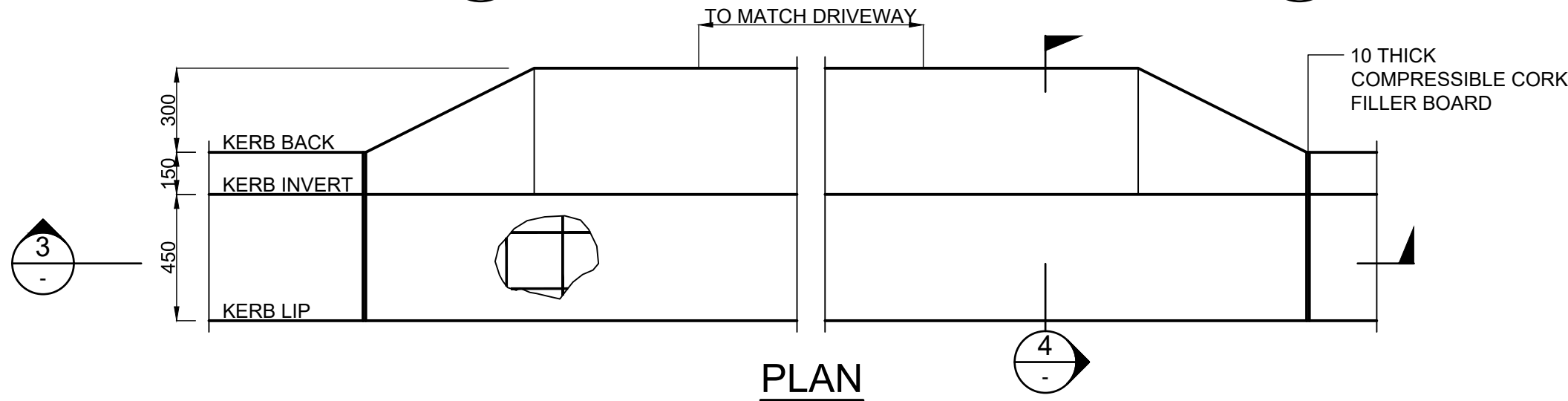
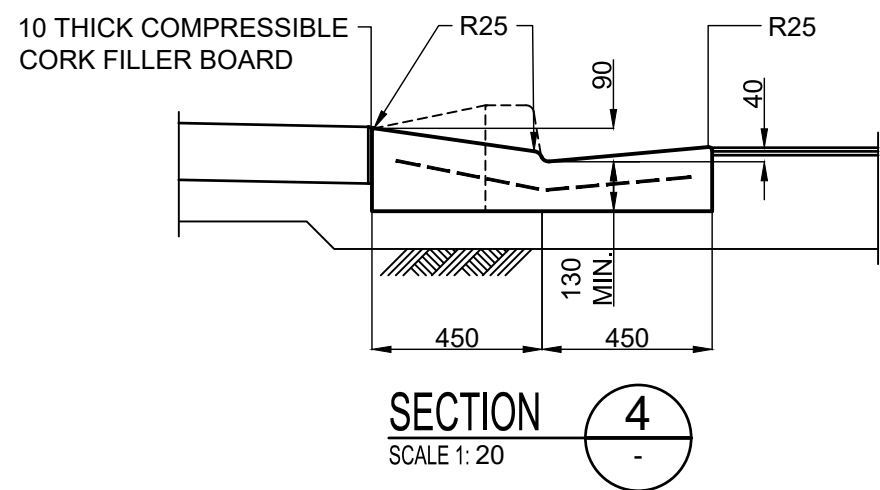
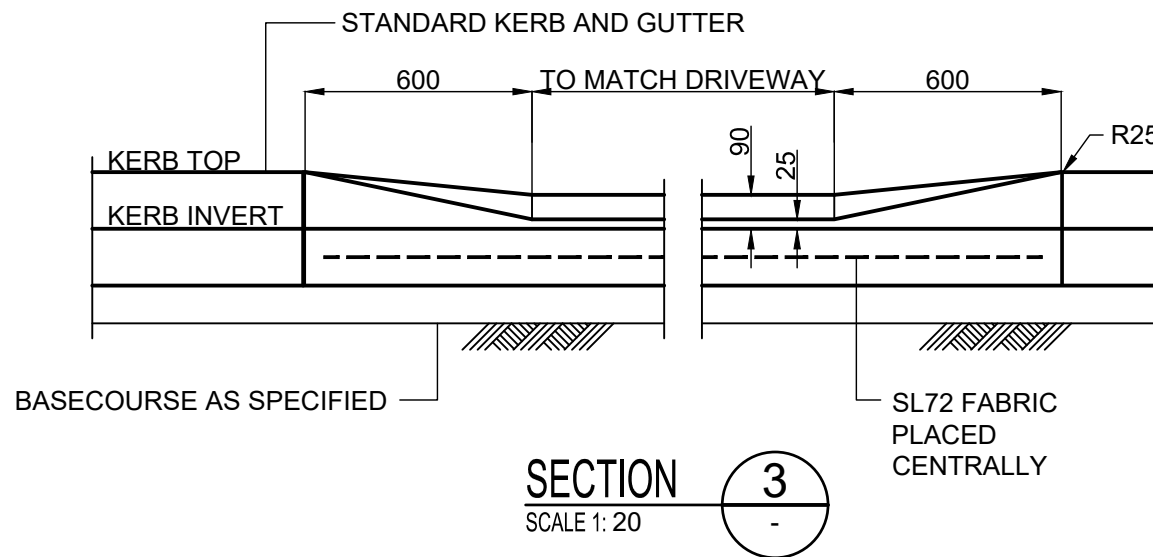
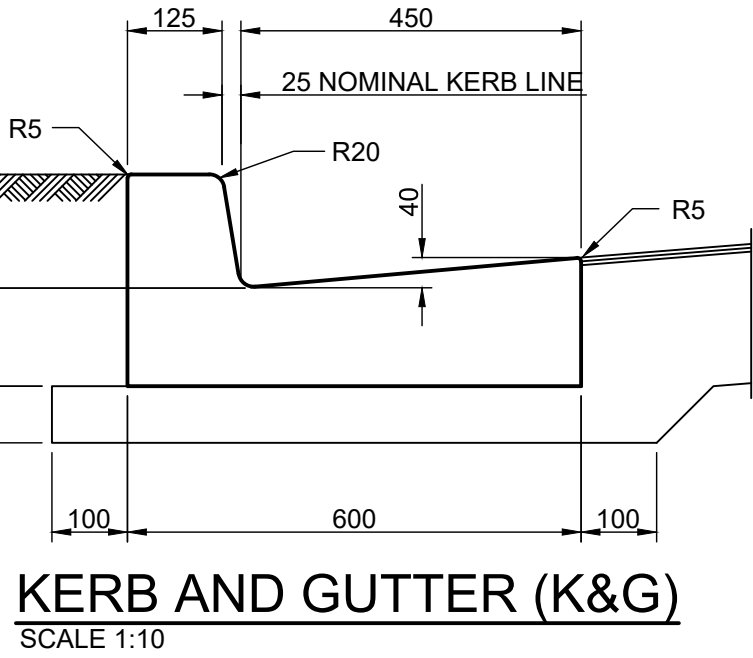
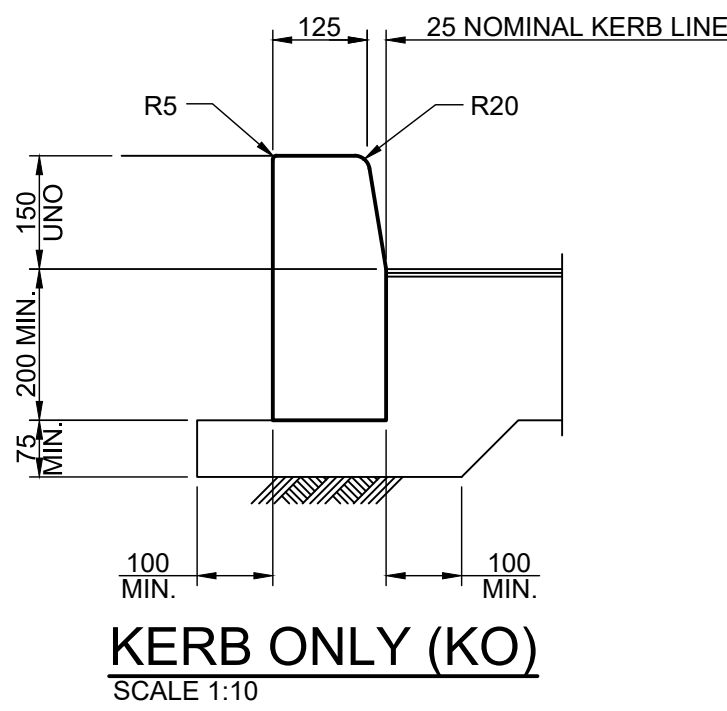
WARRAWONG COMMUNITY HEALTH CENTRE - REF SUBMISSION

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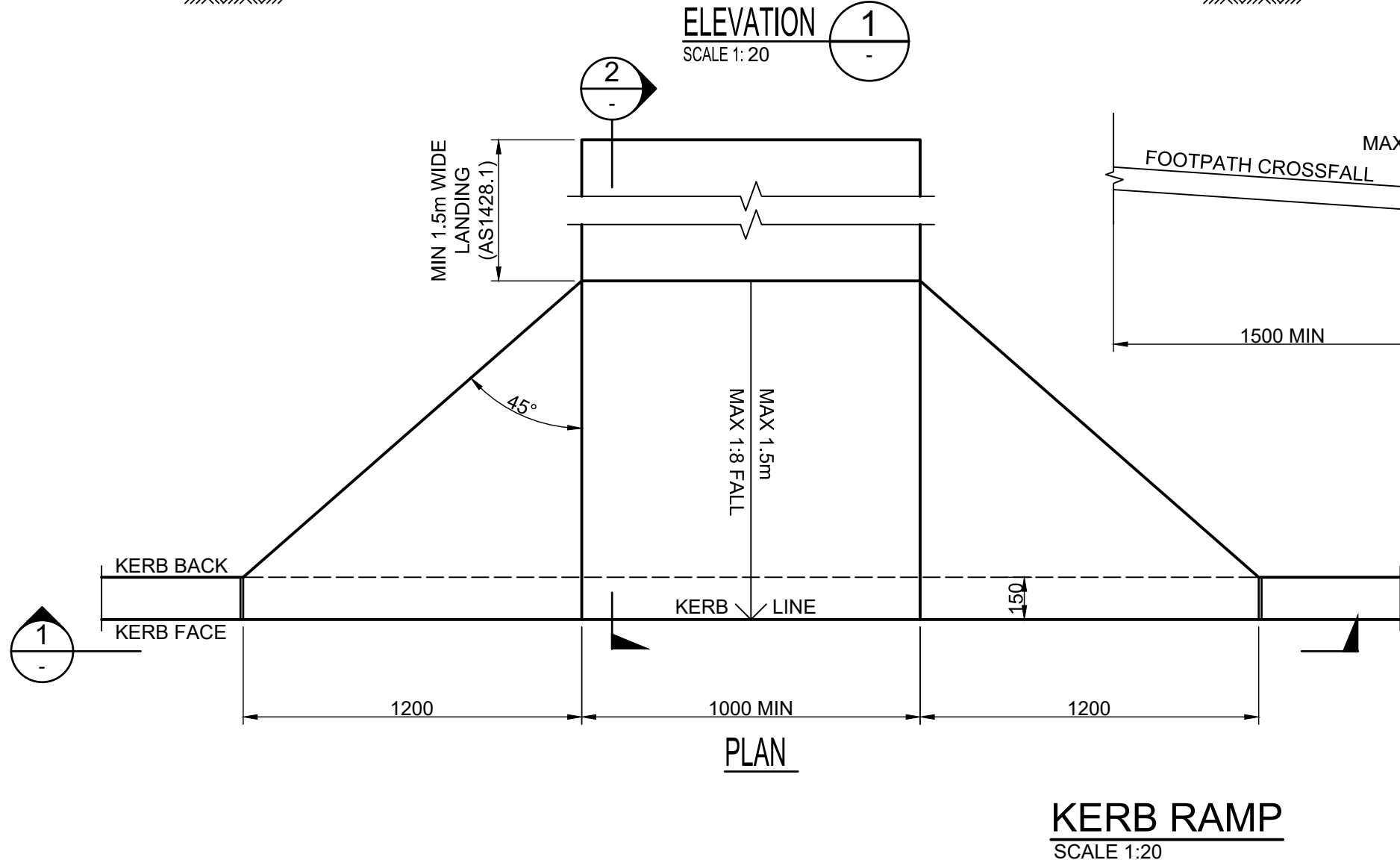
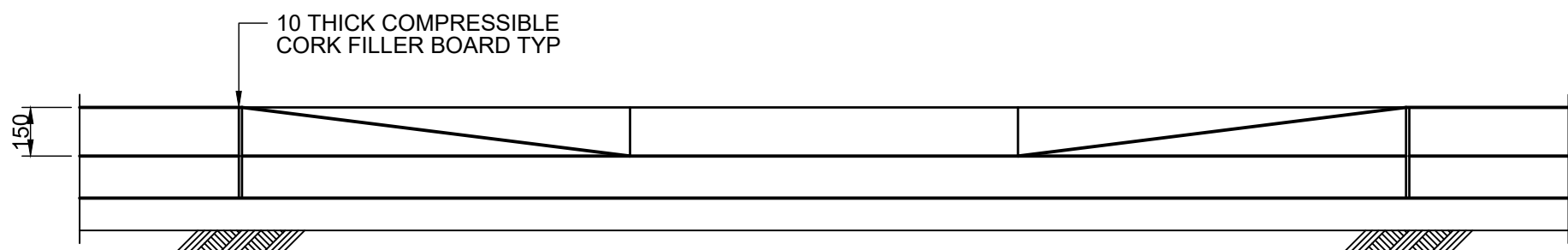
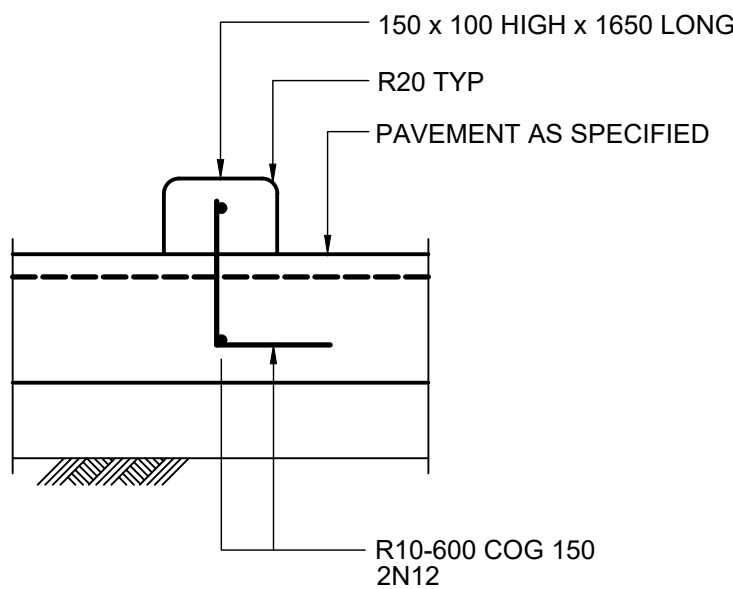
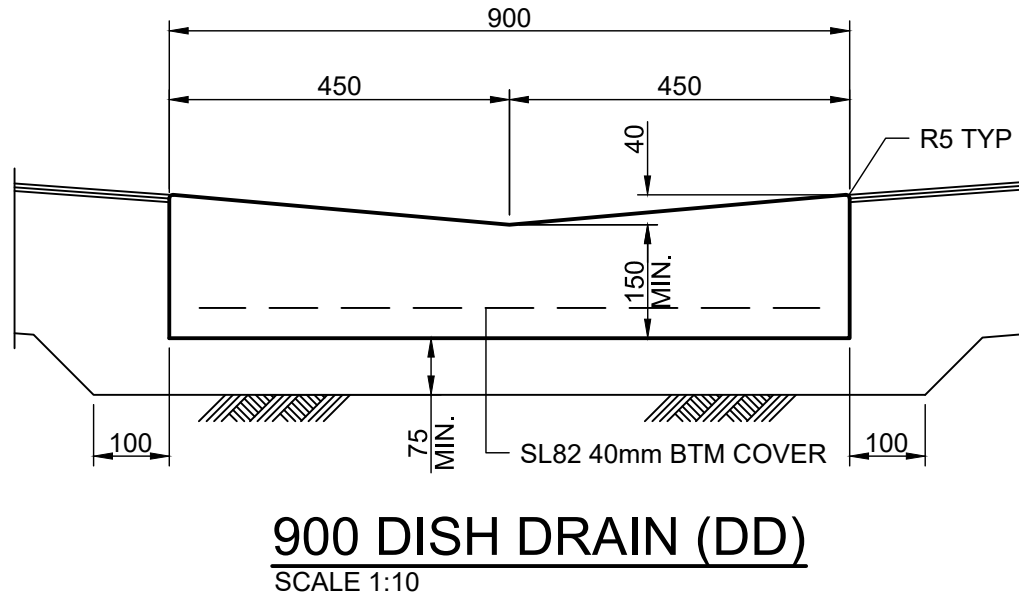
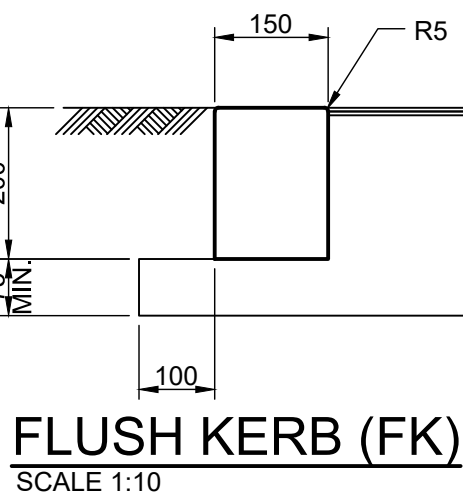
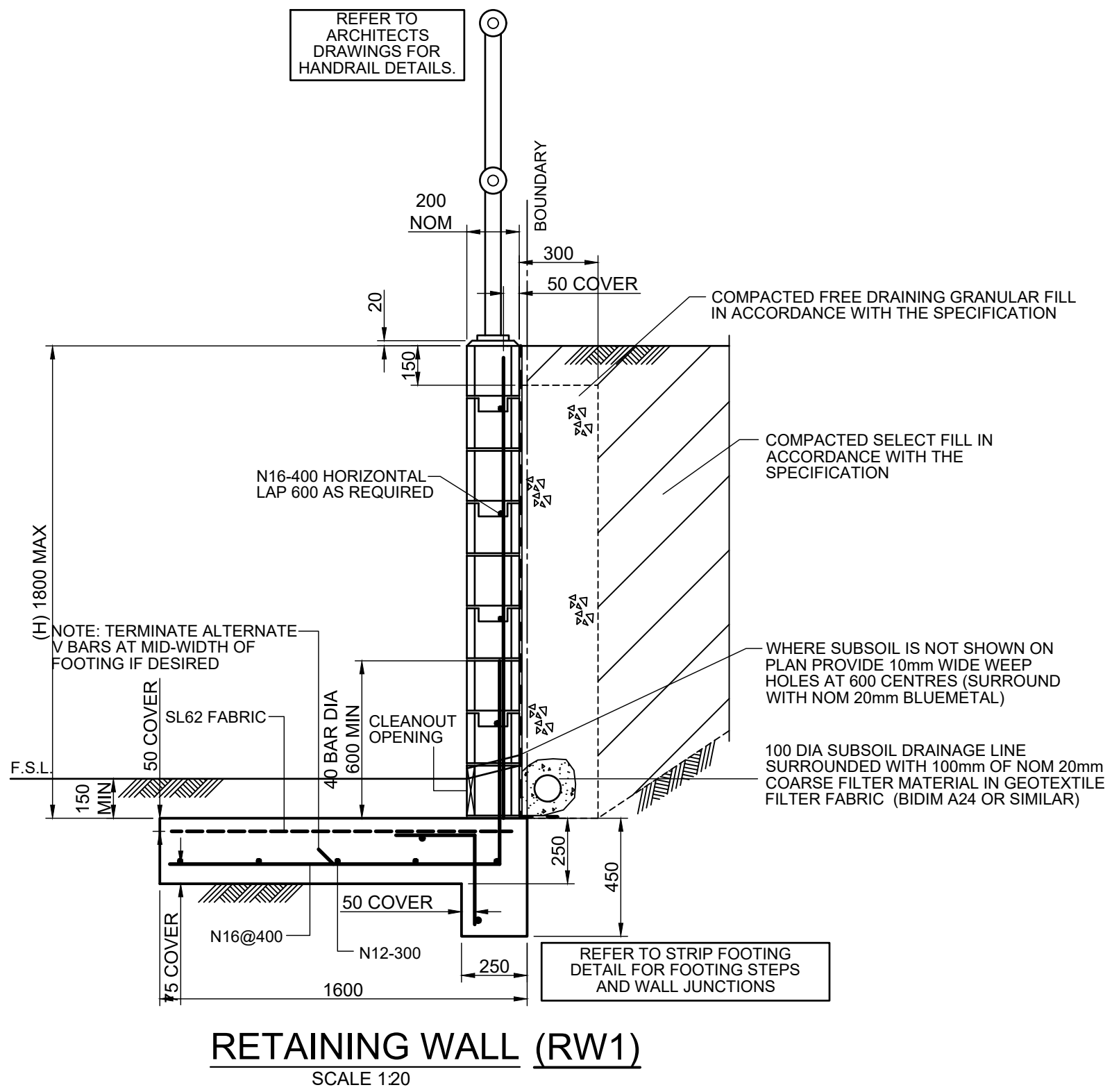
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PAVEMENT PLAN SHEET 3

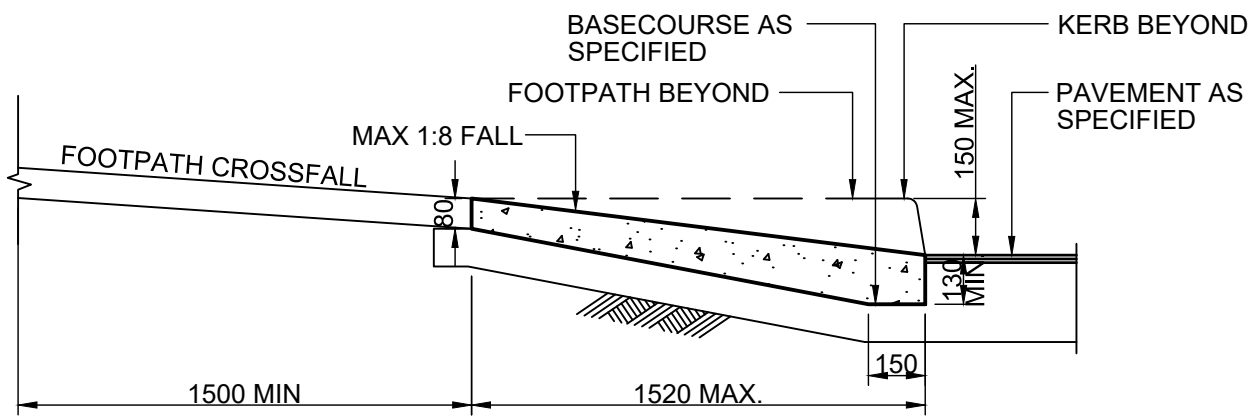
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project no. 5988	drawing no. 5988-CV-10403	rev. 03	



VEHICULAR CROSSING
SCALE 1:20

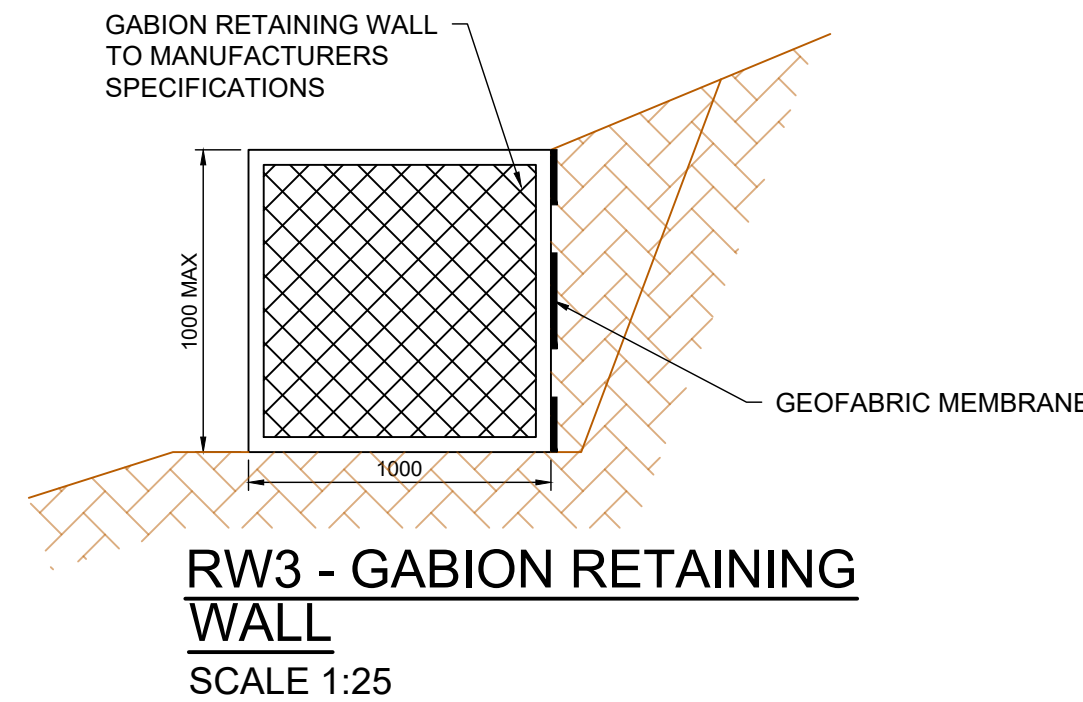
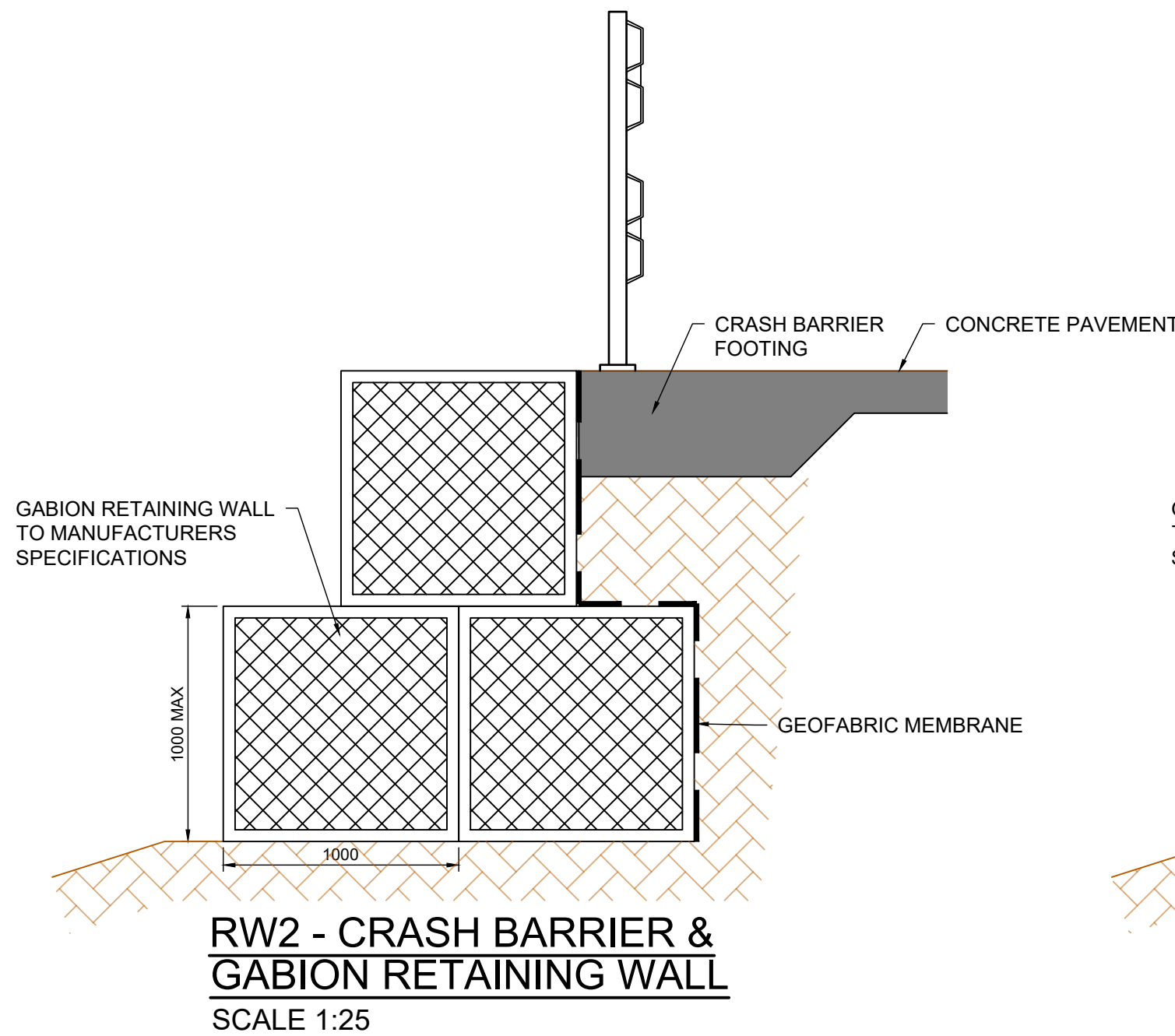


KERB RAMP
SCALE 1:20



SECTION 2
SCALE 1:20

TACTILES TO LANDSCAPE ARCHITECTS REQUIREMENTS AND AS1428.1



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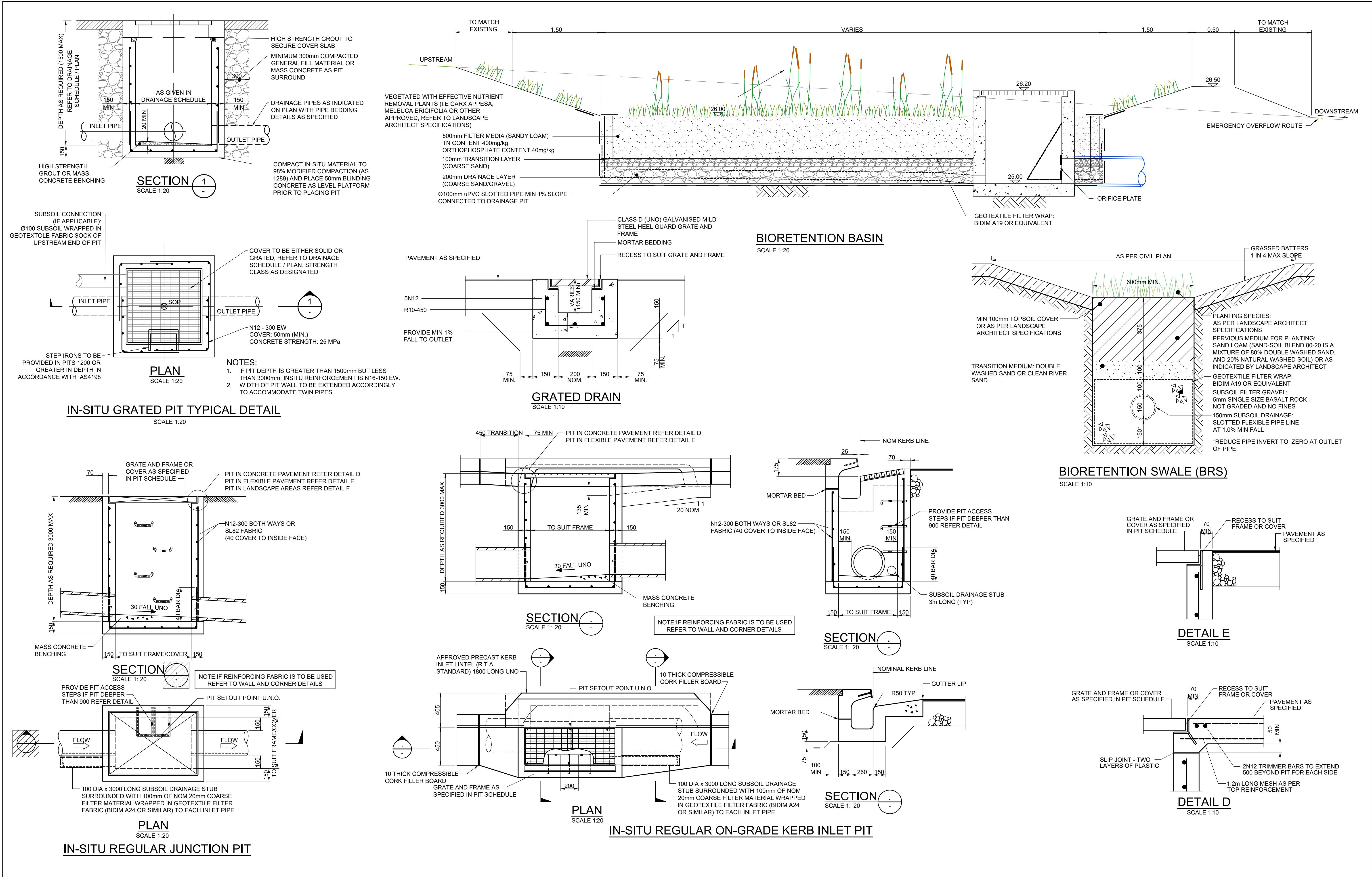
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drawing title	DETAIL SHEET 1
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status	ISSUE FOR REF
scale at A1	AS SHOWN
drawn	ALA
checked	TAH
approved	TAH
project no.	5988
drawing no.	5988-CV-10801
rev.	03



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drawing title	DETAIL SHEET 2
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checked TAH	approved TAH
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rev. 02	