

INNER SYDNEY HIGH SCHOOL

CIVIL ENGINEERING PACKAGE

STATE SIGNIFICANT DEVELOPMENT APPLICATION



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DRAWING SCHEDULE	
DRG NO.	DRAWING TITLE
DA-C1.01	COVER SHEET, DRAWING SCHEDULE AND LOCALITY PLAN
DA-C3.01	CONCEPT SEDIMENT AND EROSION CONTROL PLAN
DA-C3.02	CONCEPT SEDIMENT AND EROSION CONTROL DETAILS
DA-C4.01	CONCEPT SITEWORKS AND STORMWATER MANAGEMENT PLAN
DA-C4.31	DRIVEWAY LONGITUDINAL SECTIONS
DA-C9.01	DETAILS SHEET 1
DA-C9.02	DETAILS SHEET 2
DA-C10.01	CATCHMENT PLAN

DRAWN: C. PASKE
DESIGNED: D. GHASHIGHAIE
JOB MANAGER: D. GHASHIGHAIE
VERIFIER: A. DAWES


REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR SSDA	CP		DG	12.05.17
2	ISSUED FOR SSDA	JT	AD	DG	09.06.17

**NSW**
GOVERNMENT

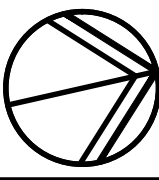
Education

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ARCHITECT



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PROJECT

INNER SYDNEY HIGH SCHOOL

**STATE SIGNIFICANT
DEVELOPMENT APPLICATION**

DRAWING TITLE

CIVIL ENGINEERING PACKAGE

**COVER SHEET, DRAWING
SCHEDULE AND LOCALITY PLAN**

JOB NUMBER

166175

DRAWING NUMBER

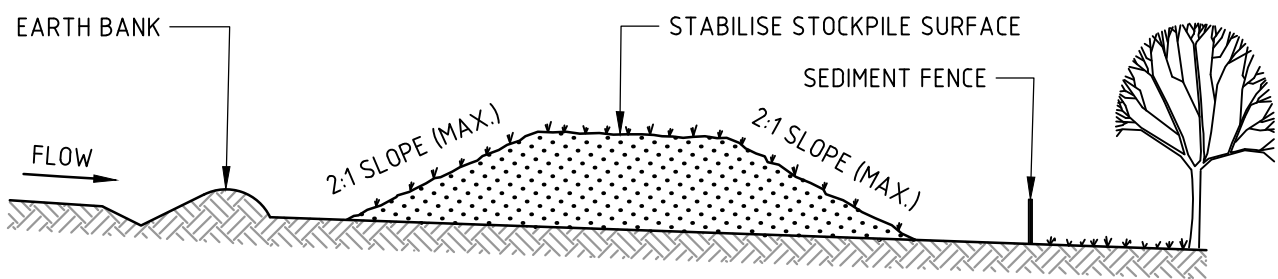
DA-C1.01

REVISION

2

DRAWING SHEET SIZE = A1

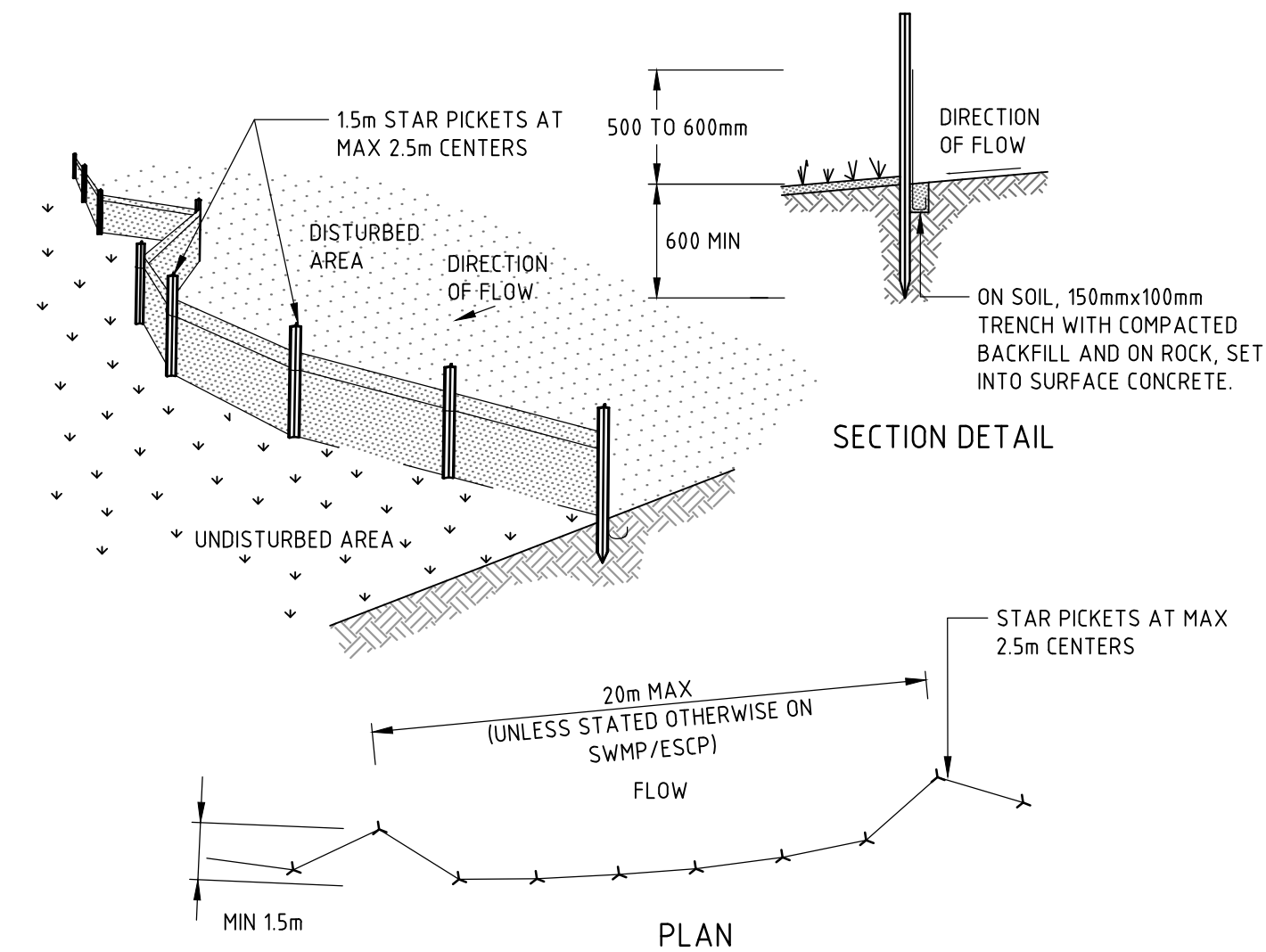
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VERIFIER: A. DAWES



CONSTRUCTION NOTES

1. PLACE STOCKPILES MORE THAN 2m (PREFERABLY 5m) FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES (STANDARD DRAWING 6-8) 1 TO 2m DOWNSLOPE.

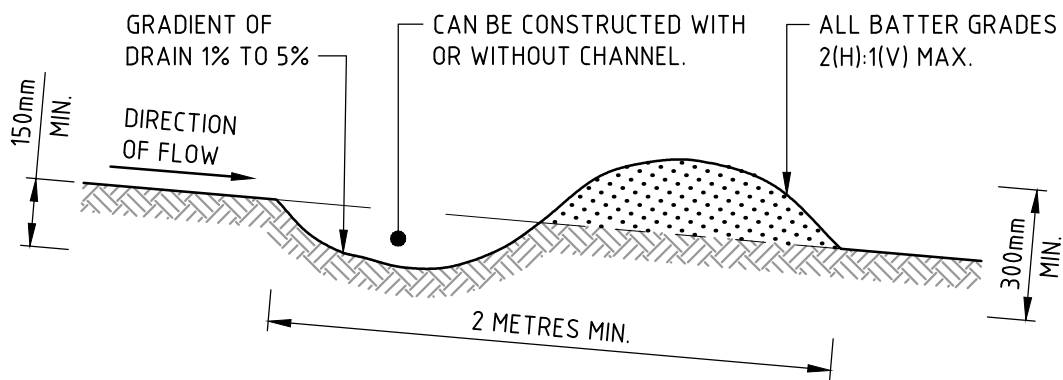
STOCKPILES (SD 4-1)



CONSTRUCTION NOTES

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 15 METRE LONG STAR PICKETS INTO GROUND AT 2.5 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

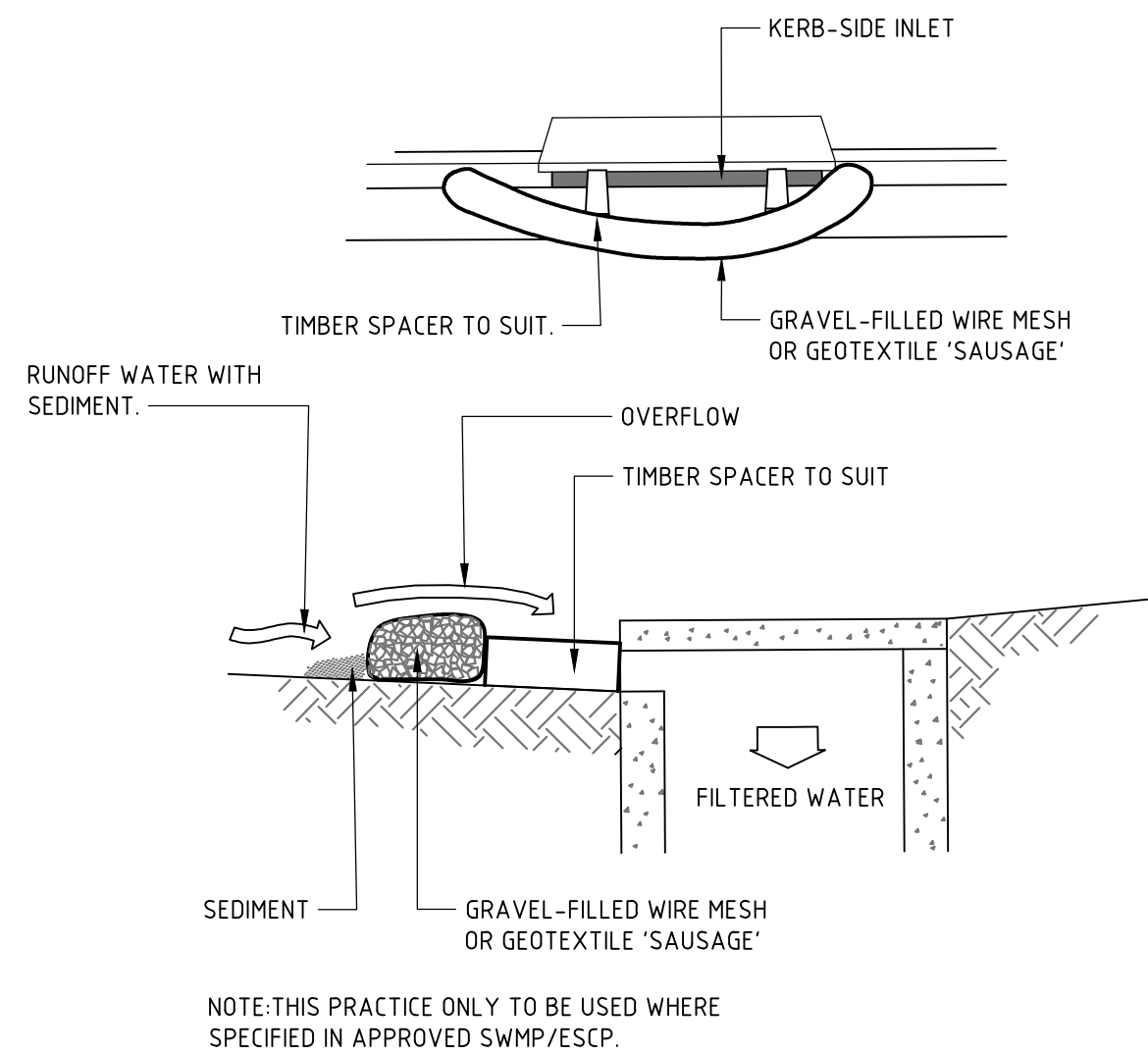
SEDIMENT FENCE (SD 6-8)



CONSTRUCTION NOTES

1. BUILD WITH GRADIENTS BETWEEN 1 AND 5 PERCENT.
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.

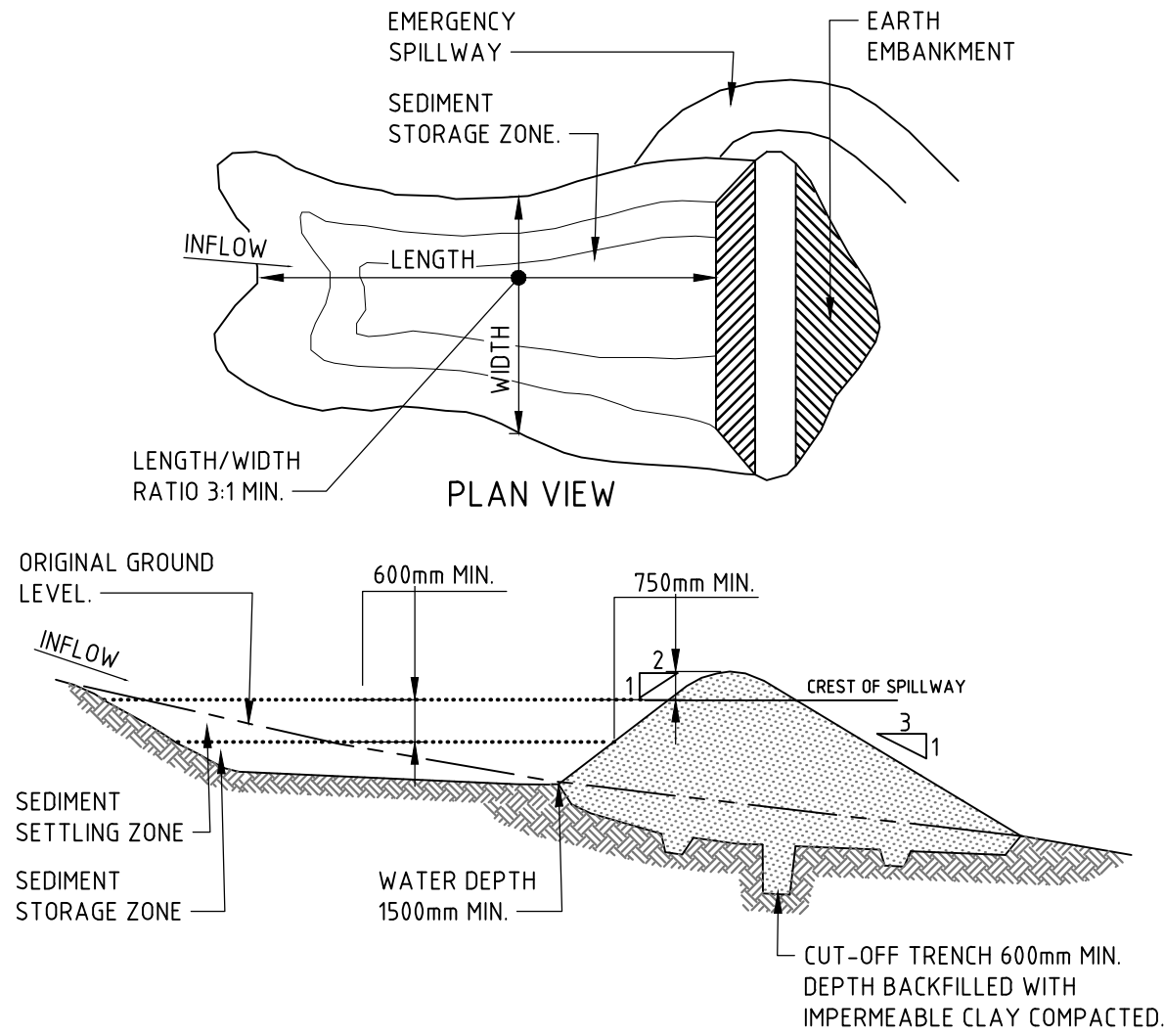
NOTE: ONLY TO BE USED AS TEMPORARY BANK WHERE MAXIMUM UPSLOPE LENGTH IS 80 METRES.
EARTH BANK - LOW FLOW (SD 5-5)



CONSTRUCTION NOTES

1. INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
2. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
4. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
5. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
6. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.

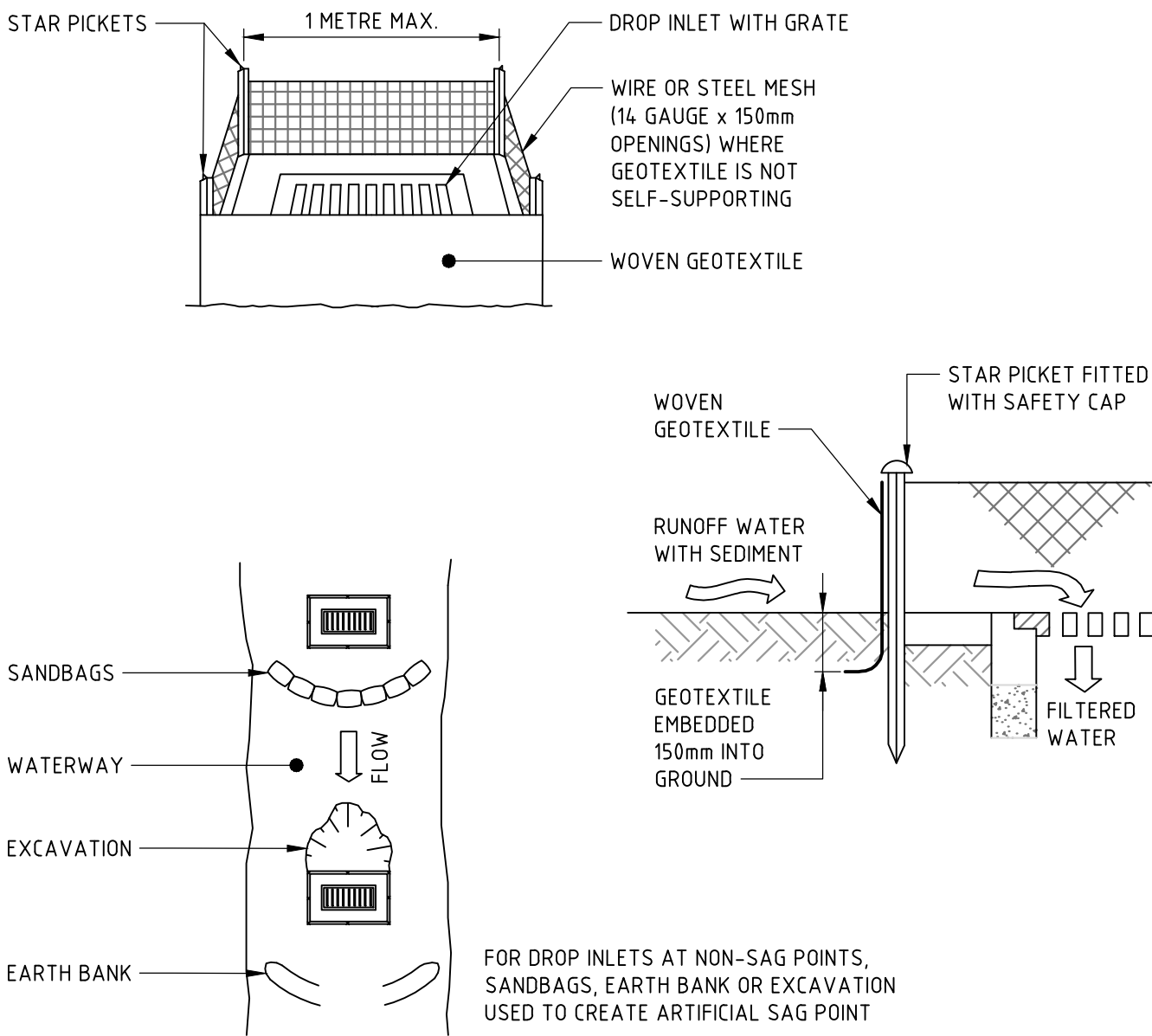
WIRE MESH AND GRAVEL INLET FILTER (SD 6-11)



CONSTRUCTION NOTES

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

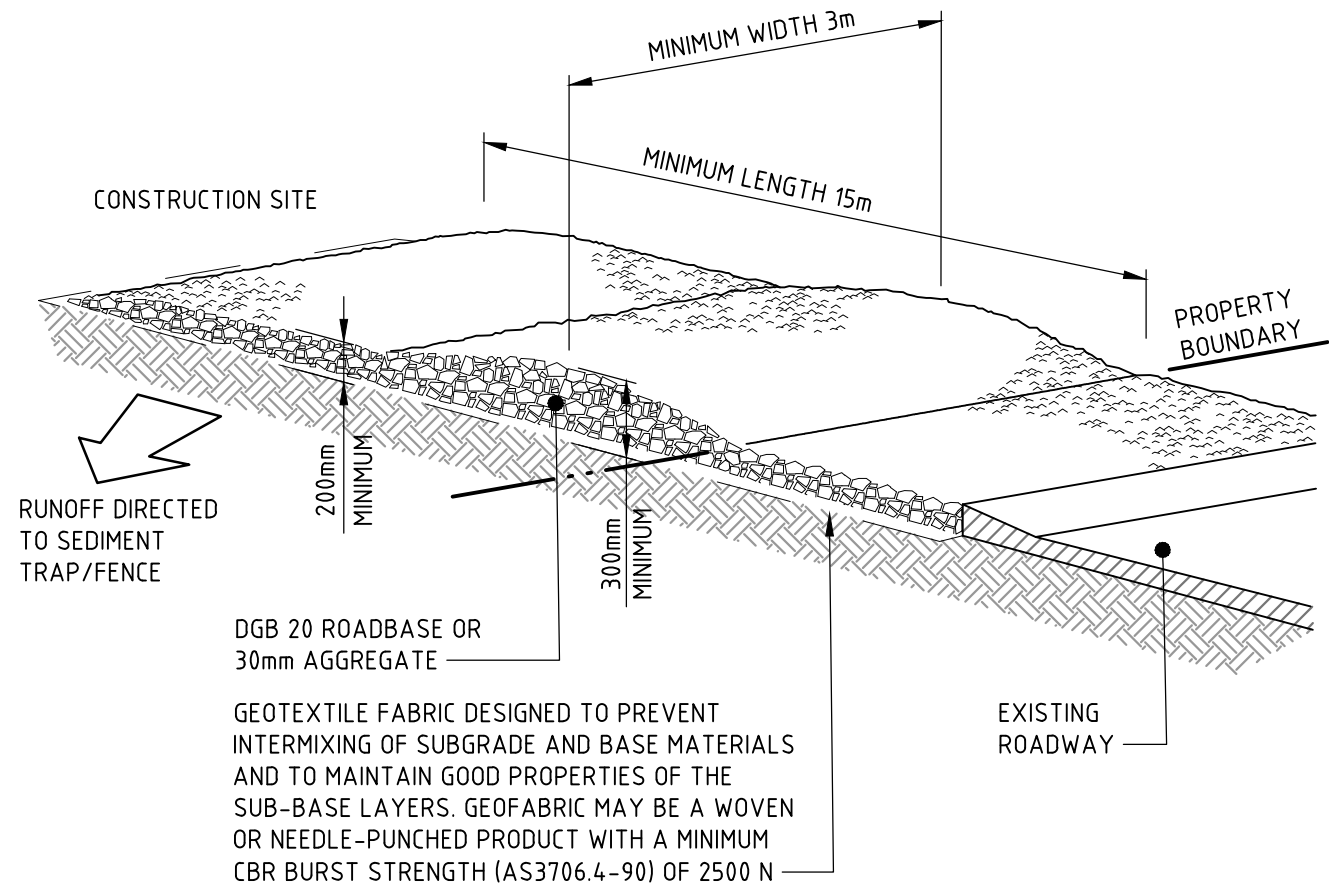
(APPLIES TO 'TYPE D' AND 'TYPE F' SOILS ONLY)
EARTH BASIN - WET (SD 6-4)



CONSTRUCTION NOTES

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. FOLLOW STANDARD DRAWING 6-7 AND STANDARD DRAWING 6-8 FOR INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 1 METRE CENTRES.
3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
4. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER (SD 6-12)






CONSTRUCTION NOTES

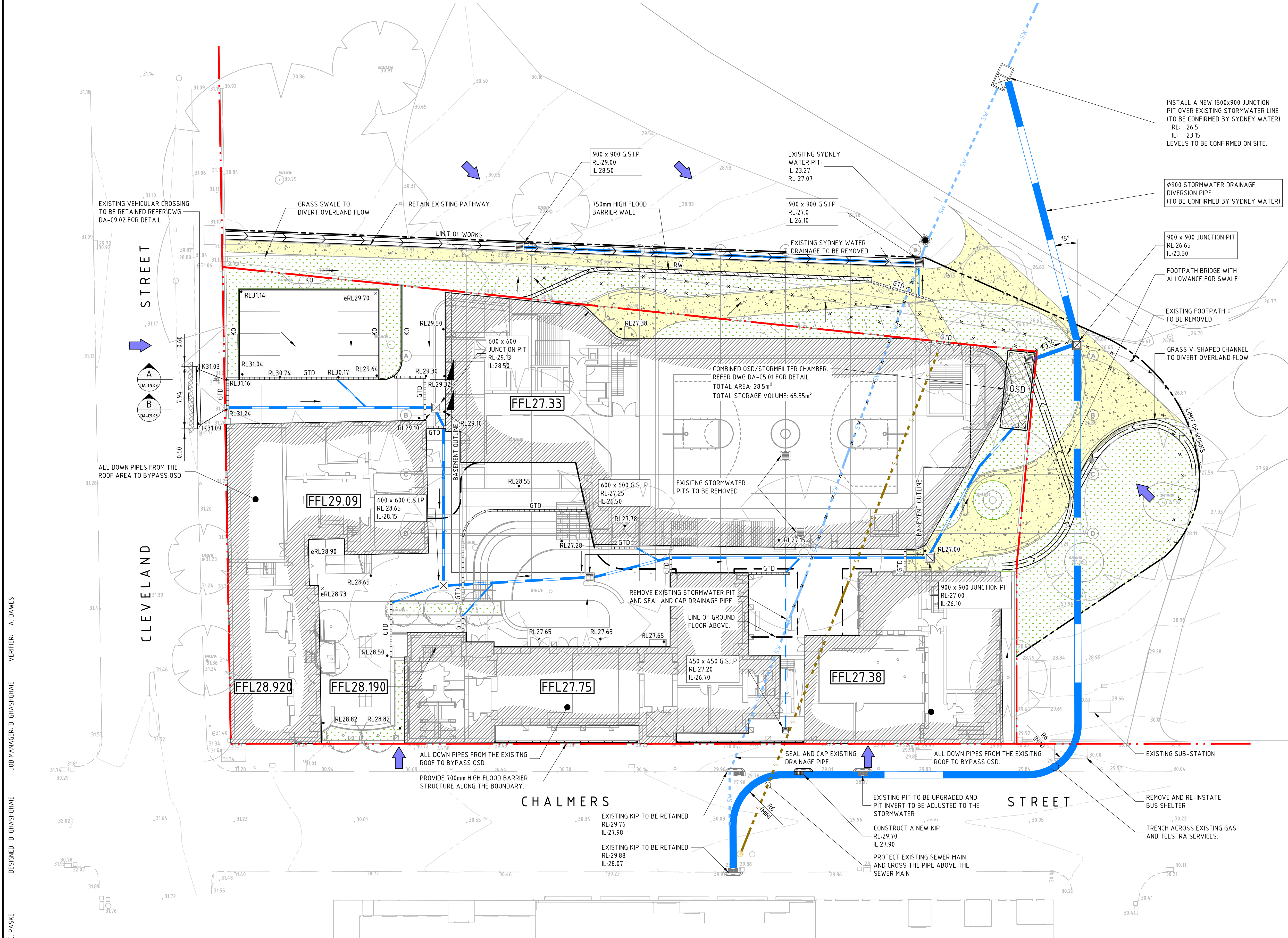
1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm AGGREGATE.
4. ENSURE THE STRUCTURE IS AT LEAST 15 METRES LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3 METRES WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.

STABILISED SITE ACCESS (SD 6-14)

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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT		PROJECT	DRAWING TITLE	JOB NUMBER		
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2	ISSUED FOR SSDA	JT	AD	DG	09.06.17							DRAWING NUMBER	REVISION
												DA-C3.02	2
						DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED	THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD	SCALE VARIES	DRAWING SHEET SIZE = A1				

DESIGNED: D. GHASHGHAIE
JOB MANAGER: D. GHASHGHAIE
VERIFIER: A. DAWES
DRAWN: C. PASKE



LEGEND

PROPOSED BOUNDARY LINE

BUILDING OUTLINE

BASEMENT OUTLINE

STORMWATER PIPE

STORMWATER PIPE TO BE REMOVED

EXISTING SEWER

EXISTING STORMWATER

DRAINAGE STRUCTURE WITH EXTENDED CHAMBER (NEW / EXTG)

GRATED INLET PIT (NEW / EXTG)

JUNCTION PIT (NEW / EXTG)

KERB INLET PIT (NEW / EXTG)

GTD

GRATED TRENCH DRAIN

CONTOURS OVERLAND FLOW

EXISTING CONTOURS

LIMIT OF WORKS

GRASS SWALE

DIRECTION OF FLOW

RETAINING WALL

PROPOSED SPOT HEIGHT

EXISTING SPOT HEIGHT

BUILDING OUTLINE

LANDSCAPING (REFER TO LANDSCAPE ARCHITECT FOR DETAIL)

PROPOSED FOOTPATH

- STORMWATER DRAINAGE SUMMARY**
1. ALL DRAINAGE LINES SHALL BE UPVC (CLASS SN4) SEWER GRADE DRAINAGE PIPE, UNO.

2. ALL DRAINAGE LINES SHALL BE LAID AT 1% MIN. FALL, UNO.

3. ALL LEVELS ARE AUSTRALIAN HEIGHT DATUM (AHD).

4. ALL DOWNPIPES GUTTERS TO BE DESIGNED IN ACCORDANCE WITH AS/NZS 3500.3.2 - 2003 'STORMWATER' DRAINAGE.

5. THE STORMWATER DRAINAGE DESIGN HAS BEEN CARRIED OUT IN ACCORDANCE WITH AS/NZS 3500.3.2-2003 'STORMWATER' DRAINAGE.

6. ANY VARIATIONS TO THE NOMINATED LEVELS SHALL BE REFERRED TO ENGINEER IMMEDIATELY.

7. SUBSOIL DRAINAGE SHALL BE PROVIDED TO ALL RETAINING WALLS & EMBANKMENTS, WITH THE LINES FEEDING INTO THE STORMWATER DRAINAGE SYSTEM.

8. ALL GRATES TO BE GALVANISED STEEL WITH HINGES AND CHILD PROOF LOCK.

9. ALL GRATES TO BE HEEL SAFE WITHIN AGED CARE DEVELOPMENTS.

10. THE STORMWATER DRAINAGE IS DESIGNED IN ACCORDANCE WITH COUNCIL'S STORMWATER CODE.]

11. REFER HYDRAULIC ENGINEERS / ARCHITECTS DRAWINGS FOR DOWNPIPE LOCATIONS AND SIZING.

12. ALL STORMWATER INLET PITS TO BE FITTED WITH 'ENVIROPOD' INSERT AND 200 MICRON FILTER.

DRAINAGE CALCULATIONS

PRE-DEVELOPED RUNOFF CALCULATED USING DRAINS IN ACCORDANCE WITH SYDNEY WATER'S 'POLICY FOR STORMWATER MANAGEMENT':
A= CATCHMENT AREA (m²)= 5694 m²

PRE-DEVELOPED RUNOFF = 389 L/s
POST-DEVELOPED RUNOFF CALCULATED USING 'DRAINS'
POST-DEVELOPED RUNOFF = 257 L/s

STORMWATER DRAINAGE REQUIREMENTS HAVE BEEN CALCULATED IN ACCORDANCE WITH SYDNEY WATER'S 'POLICY FOR STORMWATER MANAGEMENT'.

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SCALE 1:250 @ A1

0 2 4 6 8 10 12m

NORTHROP

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PROJECT

INNER SYDNEY HIGH SCHOOL

STATE SIGNIFICANT DEVELOPMENT APPLICATION

DRAWING TITLE

CIVIL ENGINEERING PACKAGE

CONCEPT SITEWORKS AND STORMWATER MANAGEMENT PLAN

JOB NUMBER

166175

DRAWING NUMBER

DA-C4.01

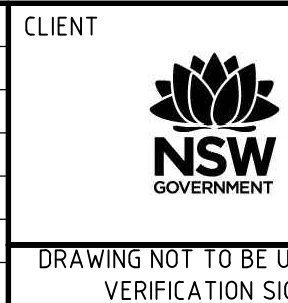
REVISION

2

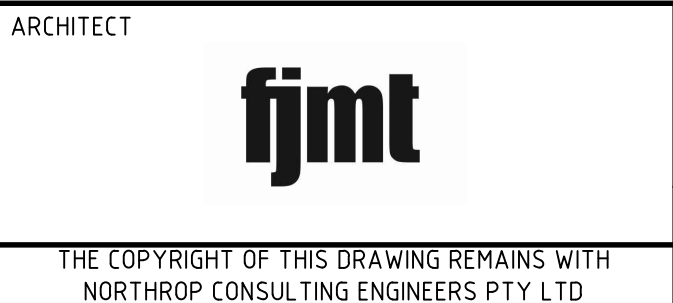
DRAWING SHEET SIZE = A1

DRAWN: C. PASKE
DESIGNED: D. GASHGHAIE
JOB MANAGER: D. GASHGHAIE
VERIFIER:

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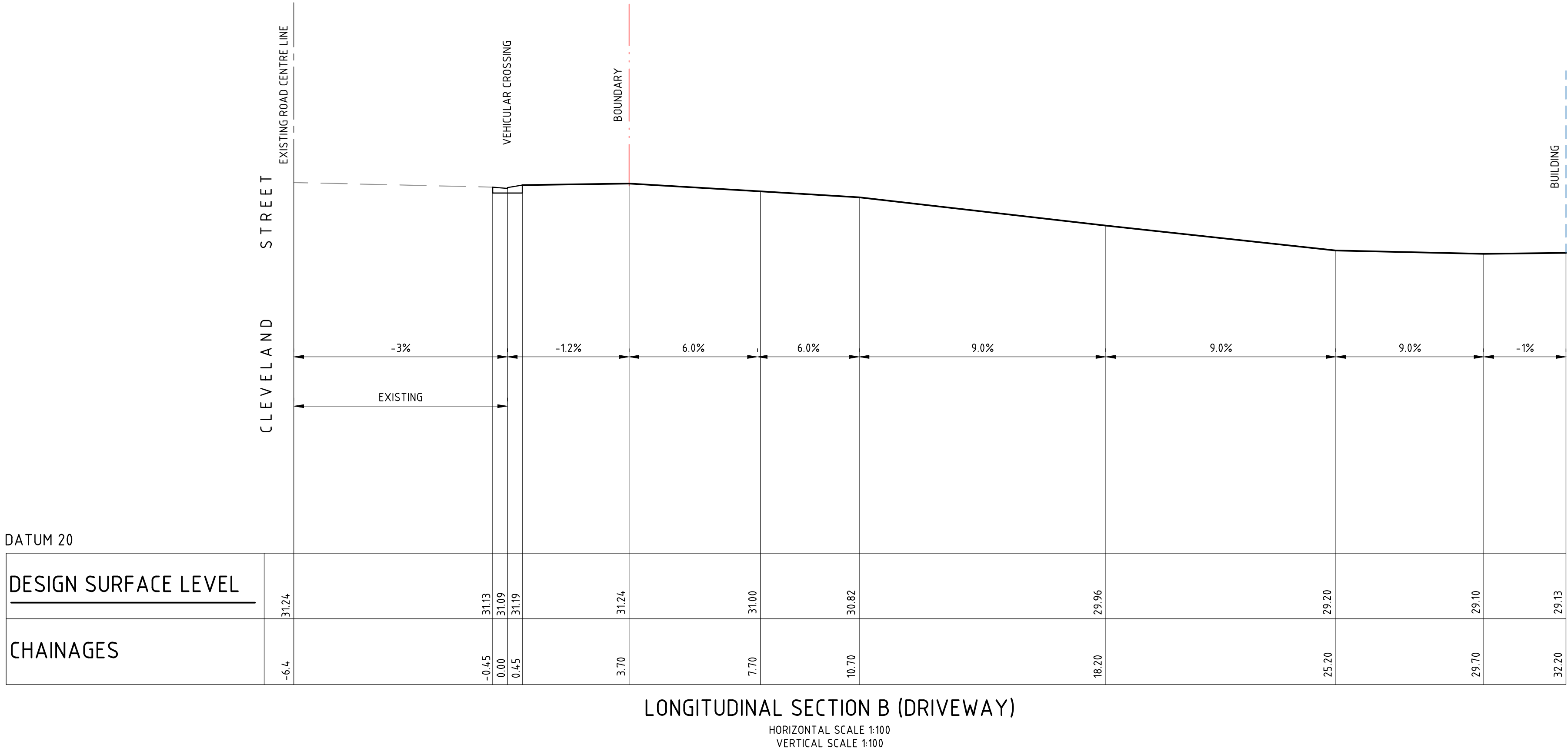
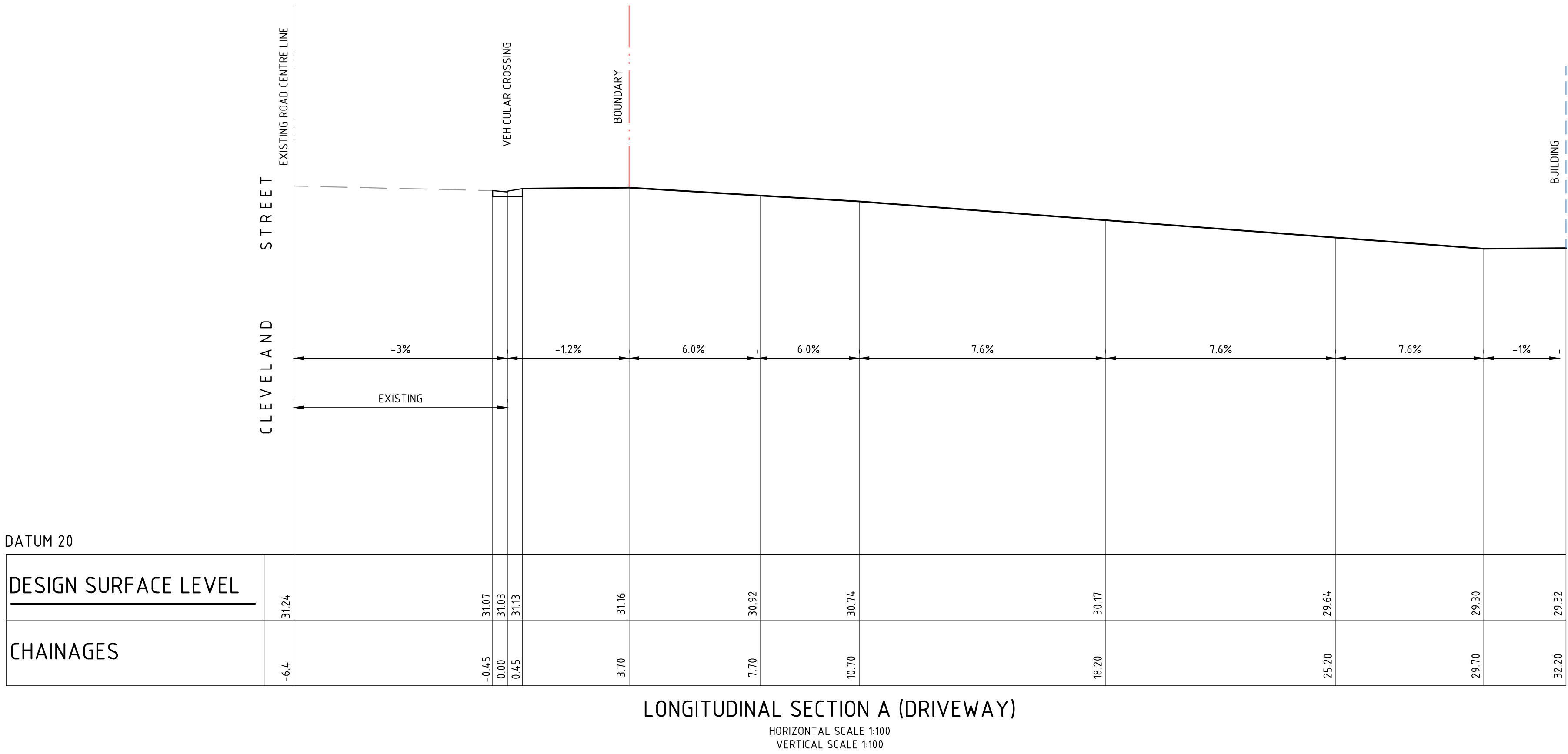
SCALE 1:100 @ A1



PROJECT
INNER SYDNEY HIGH SCHOOL
STATE SIGNIFICANT DEVELOPMENT APPLICATION

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
DRIVEWAY LONGITUDINAL SECTIONS

JOB NUMBER 166175	
DRAWING NUMBER DA-C4.31	REVISION 2
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SCALE VARIES



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STATE SIGNIFICANT
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DRAWING TITLE

CIVIL ENGINEERING PACKAGE
DETAILS SHEET 1

JOB NUMBER

166175

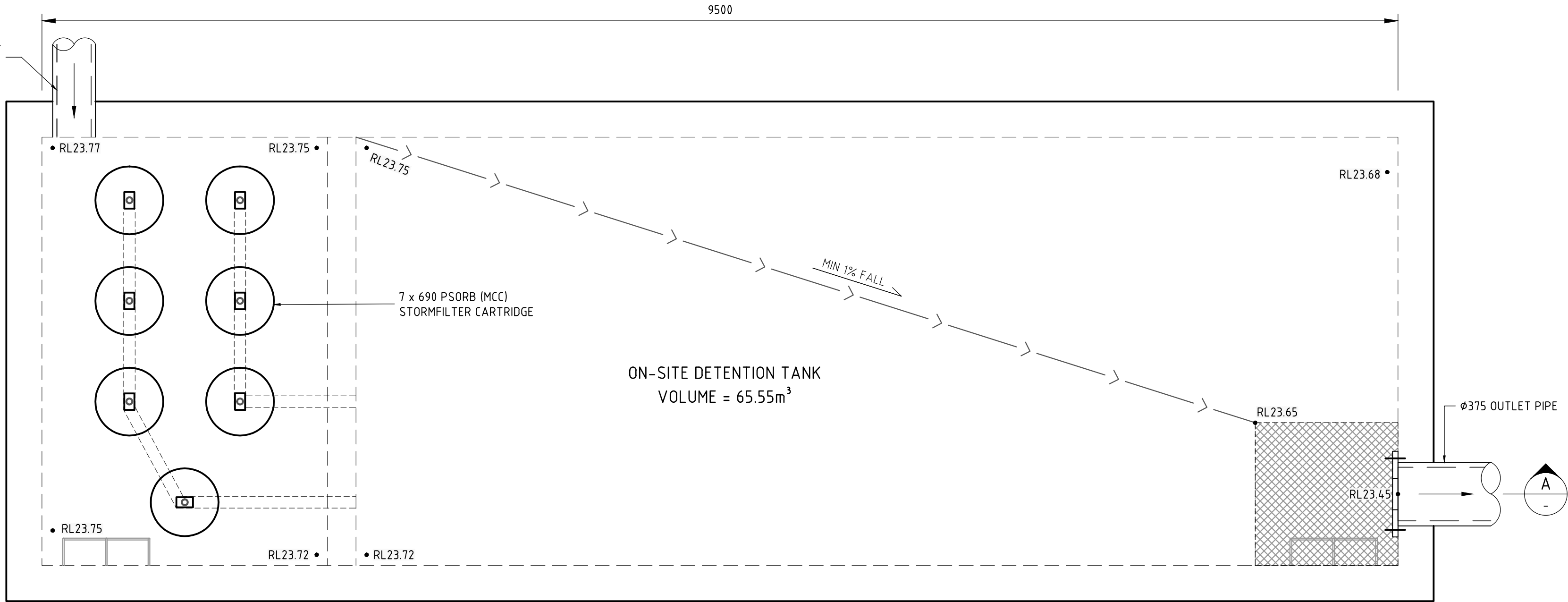
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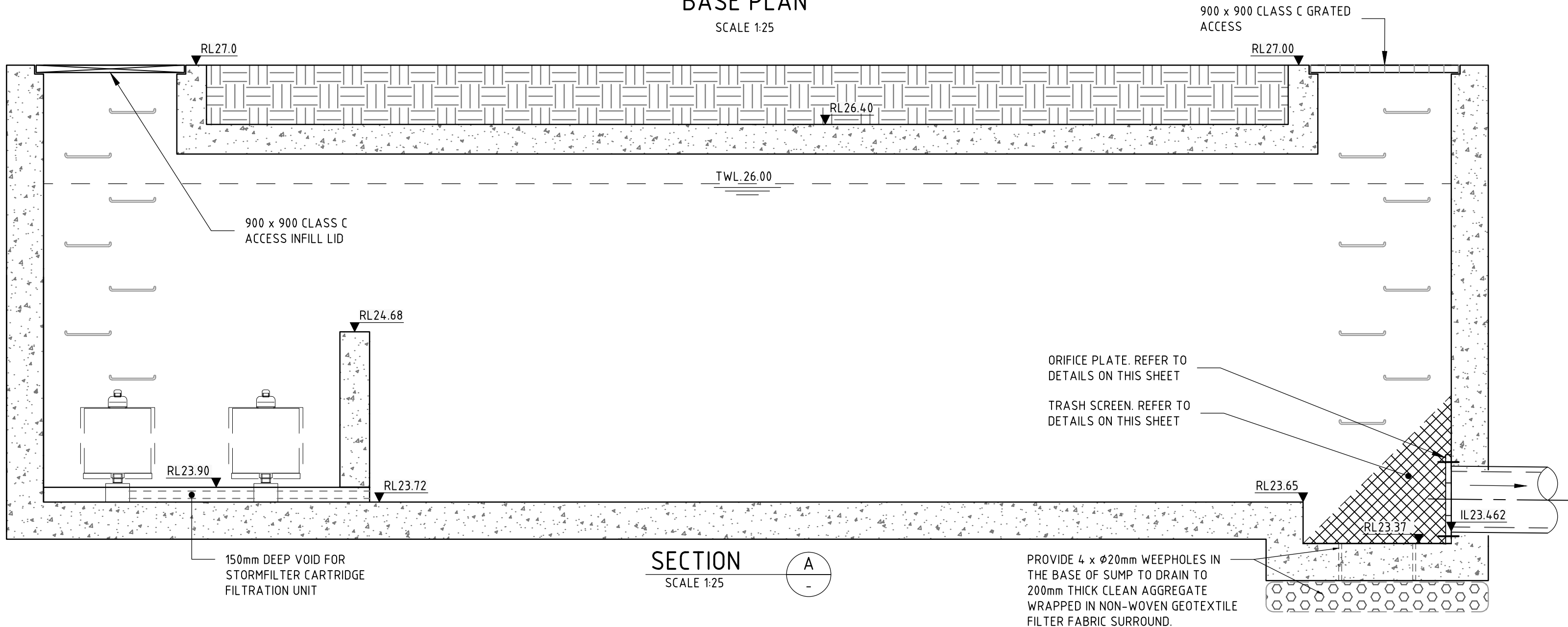
REVISION

2

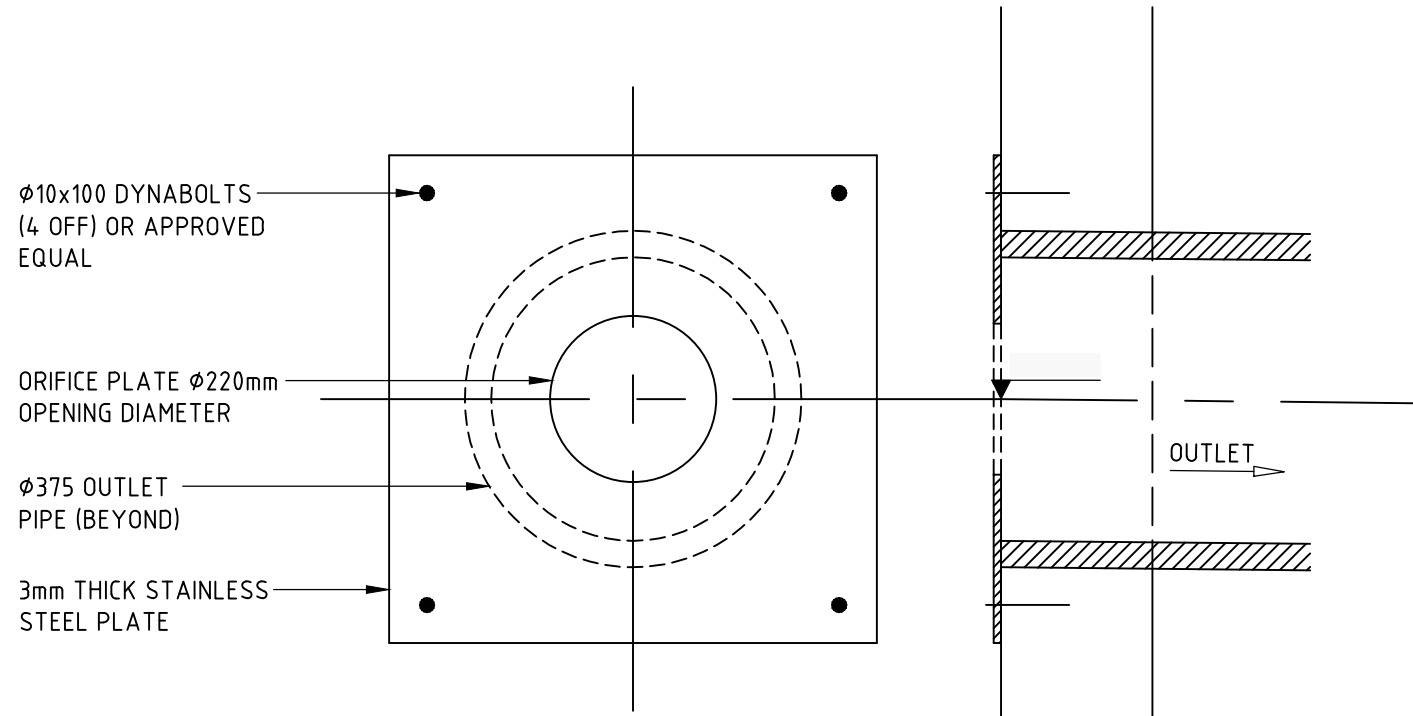
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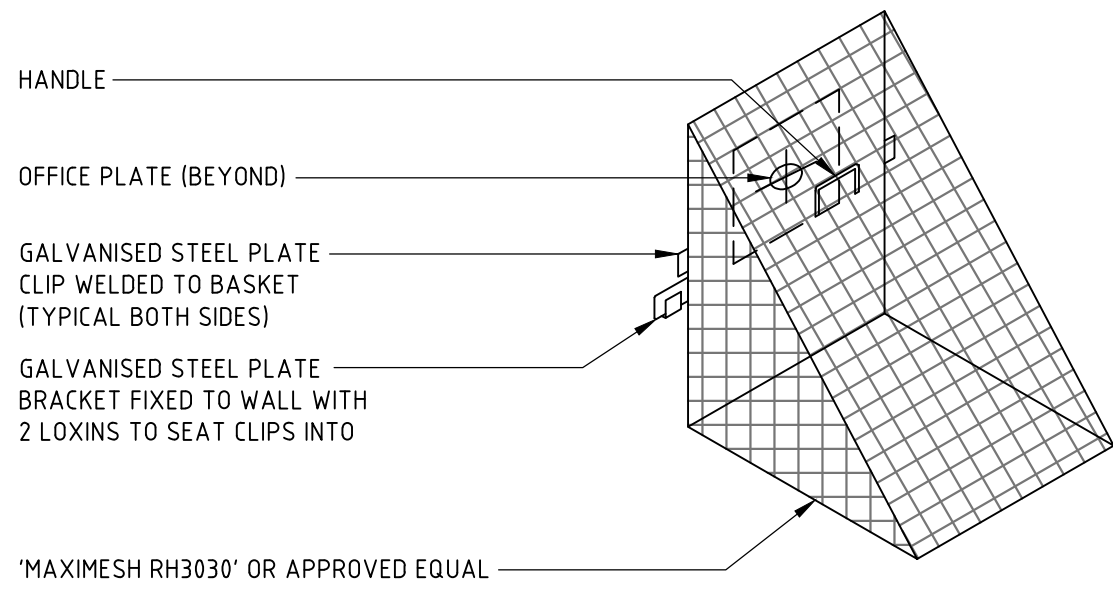
STORMWATER TANK AND WATER QUALITY CHAMBER
BASE PLAN
SCALE 1:25



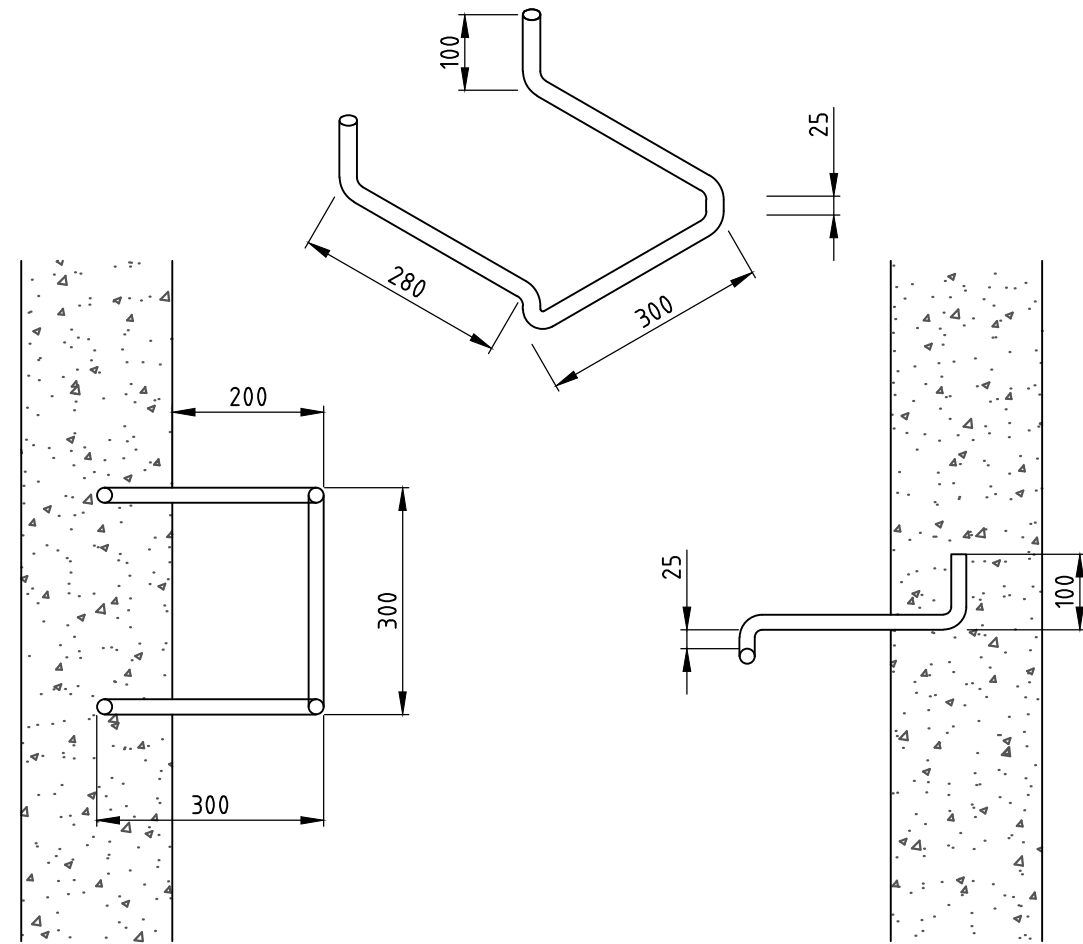
SECTION
SCALE 1:25



ORIFICE PLATE DETAIL



TRASH SCREEN DETAIL



STEP IRON DETAIL

STEP IRON OF 20mm GALVANISED STEEL MADE TO SHAPE AND DIMENSIONS AS SHOWN, PLACED AT 300 CENTRES AND STAGGERED HORIZONTALLY FOR ALL PITS DEEPER THAN 1.0m. THE USE OF PROPRIETARY STEP IRONS ARE ACCEPTABLE PROVIDED THE PRODUCT IS IN ACCORDANCE WITH AUSTRALIAN STANDARDS

DESIGN SUMMARY

TOWN CENTRE = CITY OF SYDNEY
CATCHMENT NAME = BLACK WATTLE

CATCHMENT CALCULATIONS:

REFER TO CATCHMENT PLAN	PRE-DEVELOPMENT	POST-DEVELOPMENT
TOTAL AREA	5694m ²	5694m ²
IMPERVIOUS AREA	5309m ² (93%)	5300m ² (93%)
PERVIOUS AREA	385m ² (7%)	392m ² (7%)

SITE DISCHARGE CALCULATIONS:

	5 YEAR ARI	100 YEAR ARI
PRE-DEVELOPMENT	253	389
POST-DEVELOPMENT	196	257

ON-SITE DETENTION:

DESIGN BASIS:
• PRESCRIBED RATE PROVIDED BY SYDNEY WATER

SITE STORAGE REQUIREMENT = 65m³

BYPASS AREA/PERCENTAGE = 29%
THEREFORE PERMITTED SITE DISCHARGE = 148L/s

ON-SITE DETENTION SUMMARY:
• BELOW GROUND BLOCK WORK TANK

TOP WATER LEVEL = RL26.00
OVERFLOW LEVEL = RL26.80
ORIFICE CENTERLINE = RL23.65
ORIFICE DIAMETER = Ø220mm

WATER QUALITY:

MUSIC MODEL SUMMARY (REFER NORTHROP REPORT FOR FURTHER DETAILS)

MUSIC MODEL SUMMARY:

SOURCE NODE	CATCHMENT	AREA
URBAN	ROOF AREA 1 (PROPOSED BUILDING)	1933m ²
FOREST	PERVIOUS GROUND LEVEL	392m ²
PAVED	PAVED AREA	1292m ²
USER DEFINED	DRIVEWAY AREA	435m ²
BYPASS	ROOF AREA	1641m ²
		TOTAL 5694m ²

TREATMENT NODES:

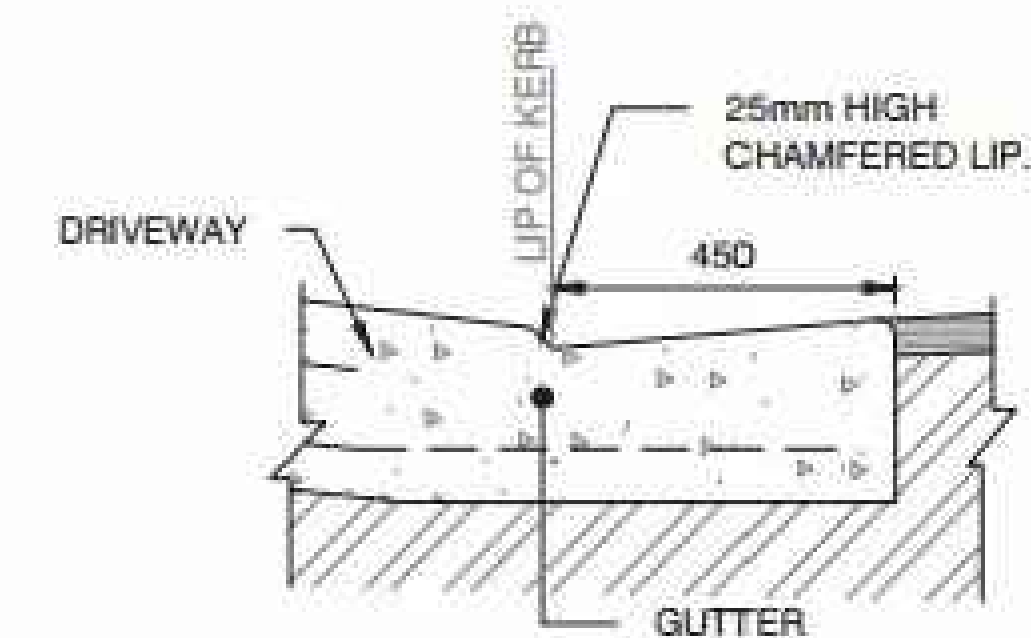
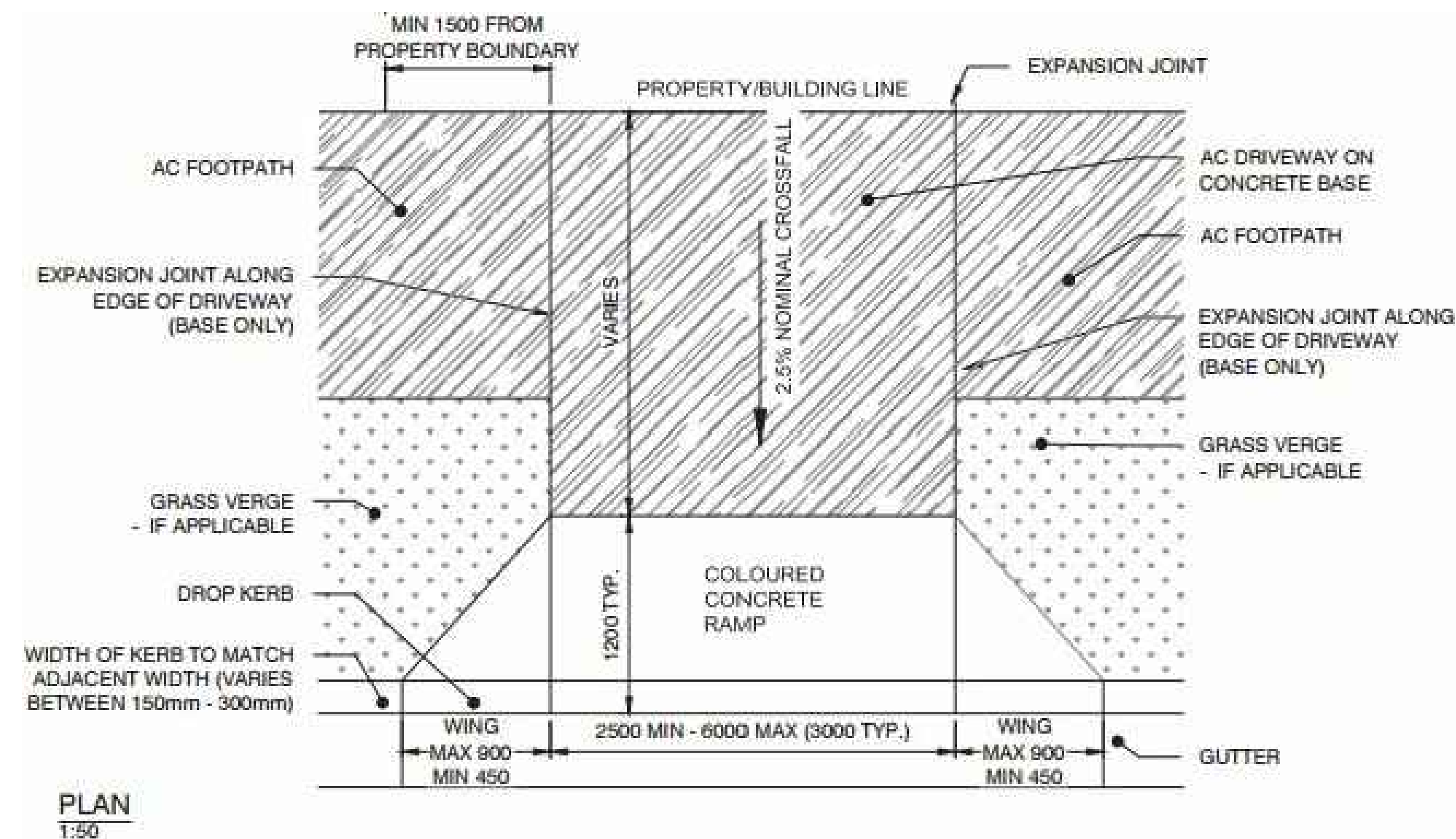
- STORMWATER 360 'STORMFILTER' CARTRIDGE
- ENVIROPODS

TREATMENT STANDARDS:

POLLUTANT	REDUCTION STANDARDS	REDUCTION ACHIEVED
GROSS POLLUTANTS	90%	100%
TOTAL SUSPENDED SOLIDS	85%	88.4%
TOTAL PHOSPHORUS	65%	66.6%
TOTAL NITROGEN	45%	47.3%

MUSIC MODEL PARAMETERS IN ACCORDANCE WITH CITY OF SYDNEY COUNCIL'S MUSIC MODELLING GUIDELINES 2012
MUSIC MODEL PARAMETERS IN ACCORDANCE WITH THE DRAFT NSW MUSIC MODELLING GUIDELINES REF: R.B1704/8.001.01 DATED AUGUST 2010.

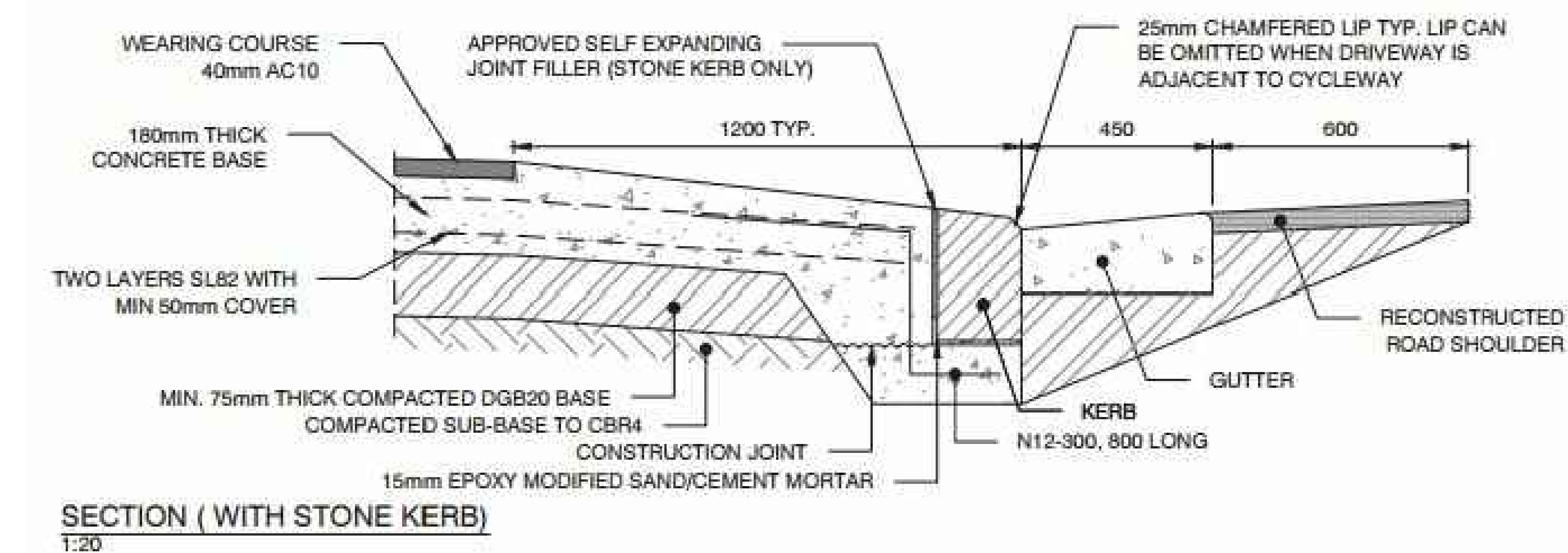
NOT FOR CONSTRUCTION






- SECTION (WITH CONCRETE KERB)**
1:20

- NOTES:

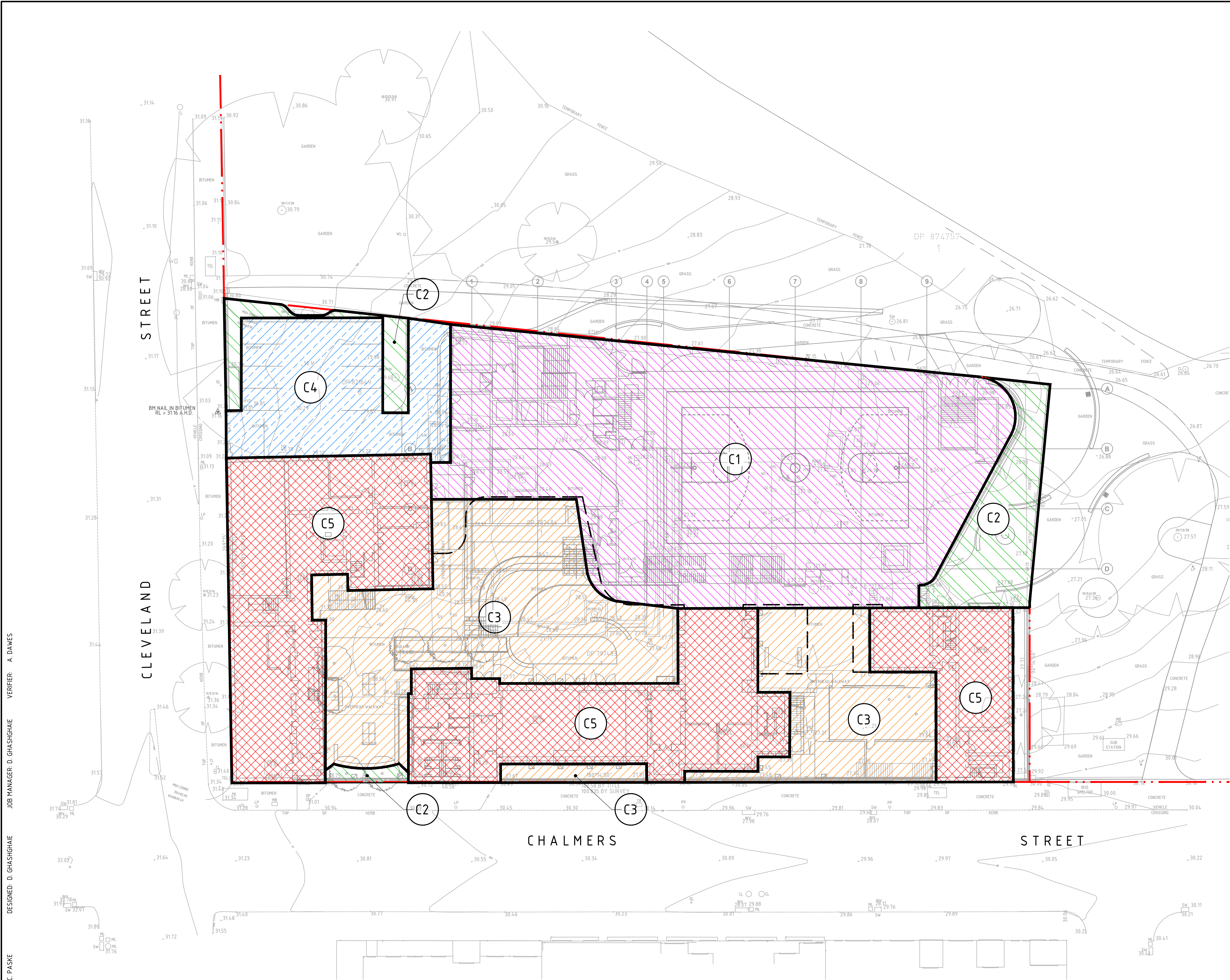
1. THIS DRIVEWAY SUIT COMMERCIAL VEHICULAR CROSSINGS. SUBJECTED TO AXLE LOADING OF 10 TONNES OR LIGHTER.
2. DRIVEWAY TO BE GENERALLY PERPENDICULAR TO KERB LINE, UNLESS APPROVED OTHERWISE.
3. VERTICAL AND HORIZONTAL CLEARANCE SHALL BE CHECKED BY THE DESIGNER IN ACCORDANCE WITH AS2890.1.
4. FOR NARROW FOOTPATHS, LENGTH OF RAMP TO BE REDUCED TO 900mm, OR LAYBACK ONLY TO BE USED IN APPROVED APPLICATIONS.
5. FOR DRIVEWAYS WIDER THAN 6.0m A TOOL JOINT SHALL BE PROVIDED ALONG THE CENTRE OF THE CONCRETE DRIVEWAY.
6. CONCRETE TO BE MINIMUM 32MPa.
7. TYPE OF KERB TO SUIT SYDNEY STREET CODE.



NOT FOR CONSTRUCTION

REVISION		DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT		PROJECT	DRAWING TITLE	JOB NUMBER		
1	ISSUED FOR SSDA		CP		DG	12.05.17			<div>ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE.</div>	 <div>Sydney Level 11 345 George Street, Sydney NSW 2000 Ph (02) 9241 4188 Fax (02) 9241 4324 Email sydney@northrop.com.au ABN 81 094 433 100</div>	INNER SYDNEY HIGH SCHOOL STATE SIGNIFICANT DEVELOPMENT APPLICATION	CIVIL ENGINEERING PACKAGE DETAILS SHEET 2	166175	
2	ISSUED FOR SSDA		JT	AD	DG	09.06.17							DRAWING NUMBER	REVISION
													DA-C9.02	2
													DRAWING SHEET SIZE = A1	
							DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS REPERCUSSION SIGNATURE HAS BEEN ADDED.	THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD.	SCALE VARIES					

DESIGNED: D. GHASHGHAIE
DRAWN: C. PASKE
JOB MANAGER: D. GHASHGHAIE
VERIFIER: A. DAWES



LEGEND	
	PROPOSED BOUNDARY LINE
	PROPOSED ROOF AREA DISCHARGING TO OSD (C1)
	PROPOSED LANDSCAPING AREA DISCHARGING TO OSD (C2)
	PROPOSED PAVED AREA DISCHARGING TO OSD (C3)
	PROPOSED DRIVEWAY DISCHARGING TO OSD (C4)
	EXISTING ROOF AREA BYPASSING OSD (C5)

SUBCATCHMENT AREA CALCULATIONS			
CATCHMENT TAG	DESCRIPTION	POST-DEVELOPMENT	UNITS
-	TOTAL SITE AREA	5694	m ²
C1	PROPOSED ROOF AREA	1933	m ²
C2	PROPOSED LANDSCAPED AREA	392	m ²
C3	PROPOSED PAVED AREA	1292	m ²
C4	DRIVEWAY AREA	435	m ²
C5	EXISTING ROOF BYPASSING OSD	1641	m ²
-	TOTAL IMPERVIOUS AREA	5308	m ²
-	TOTAL IMPERVIOUS AREA PERCENTAGE	93%	

AREA CALCULATIONS FOR OSD		
TOTAL RE-DEVELOPED AREA	4046	
PRE-DEVELOPED IMPERVIOUS AREA	3610	89%
POST-DEVELOPED IMPERVIOUS AREA	3660	90%

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SCALE 1:250@A1

PROJECT

INNER SYDNEY HIGH SCHOOL

STATE SIGNIFICANT DEVELOPMENT APPLICATION

DRAWING TITLE

CIVIL ENGINEERING PACKAGE

CATCHMENT PLAN

JOB NUMBER

166175

DRAWING NUMBER

DA-C10.01

REVISION

2

DRAWING SHEET SIZE = A1