

3 QUARRY ROAD, DURAL

CIVIL ENGINEERING WORKS

DEVELOPMENT APPLICATION



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DRAWING SCHEDULE	
DRG No.	DRAWING TITLE
DAC01.01	COVER SHEET, DRAWING SCHEDULE AND LOCALITY PLAN
DAC01.11	GENERAL ARRANGMENT PLAN
DAC02.01	SPECIFICATION NOTES
DAC03.01	CONCEPT SEDIMENT AND SOIL EROSION CONTROL PLAN
DAC03.11	CONCEPT SEDIMENT AND SOIL EROSION CONTROL DETAILS
DAC04.01	CONCEPT SITEWORKS AND STORMWATER MANAGEMENT PLAN - SHEET 01
DAC04.02	CONCEPT SITEWORKS AND STORMWATER MANAGEMENT PLAN - SHEET 02
DAC04.03	CONCEPT SITEWORKS AND STORMWATER MANAGEMENT PLAN - SHEET 03
DAC05.01	CENTRAL CHANNEL PLAN AND LONGITUDINAL SECTION
DAC05.02	CENTRAL CHANNEL CROSS SECTIONS - SHEET 01
DAC05.03	CENTRAL CHANNEL CROSS SECTIONS - SHEET 02
DAC06.01	DETAIL - SHEET 01
DAC06.02	DETAIL - SHEET 02
DAC06.03	DETAIL - SHEET 03
DAC06.04	DETAIL - SHEET 04
DAC06.05	DETAIL - SHEET 05
DAC06.06	DETAIL - SHEET 06
DAC06.07	DETAIL - SHEET 07
DAC06.08	DETAIL - SHEET 08
DAC07.01	CATCHMENT PLAN

VERIFIER: J. GILLIGAN
JOB MANAGER: N. WACKER
DESIGNED: C. PASKE
DRAWN: C. PASKE

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
5	DRAFT WITHOUT PREJUDICE FOR S34 CONFERENCE	JO	-	NN	30.01.19
6	ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	22.02.19
7	RE-ISSUED FOR DEVELOPMENT APPLICATION	JO	-	NN	25.02.19
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9	RE-ISSUED FOR DEVELOPMENT APPLICATION	JO	-	NN	28.02.19
10	RE-ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	04.03.19

CLIENT	
ZHIVA LIVING	
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	SCALE 1:2000@A1

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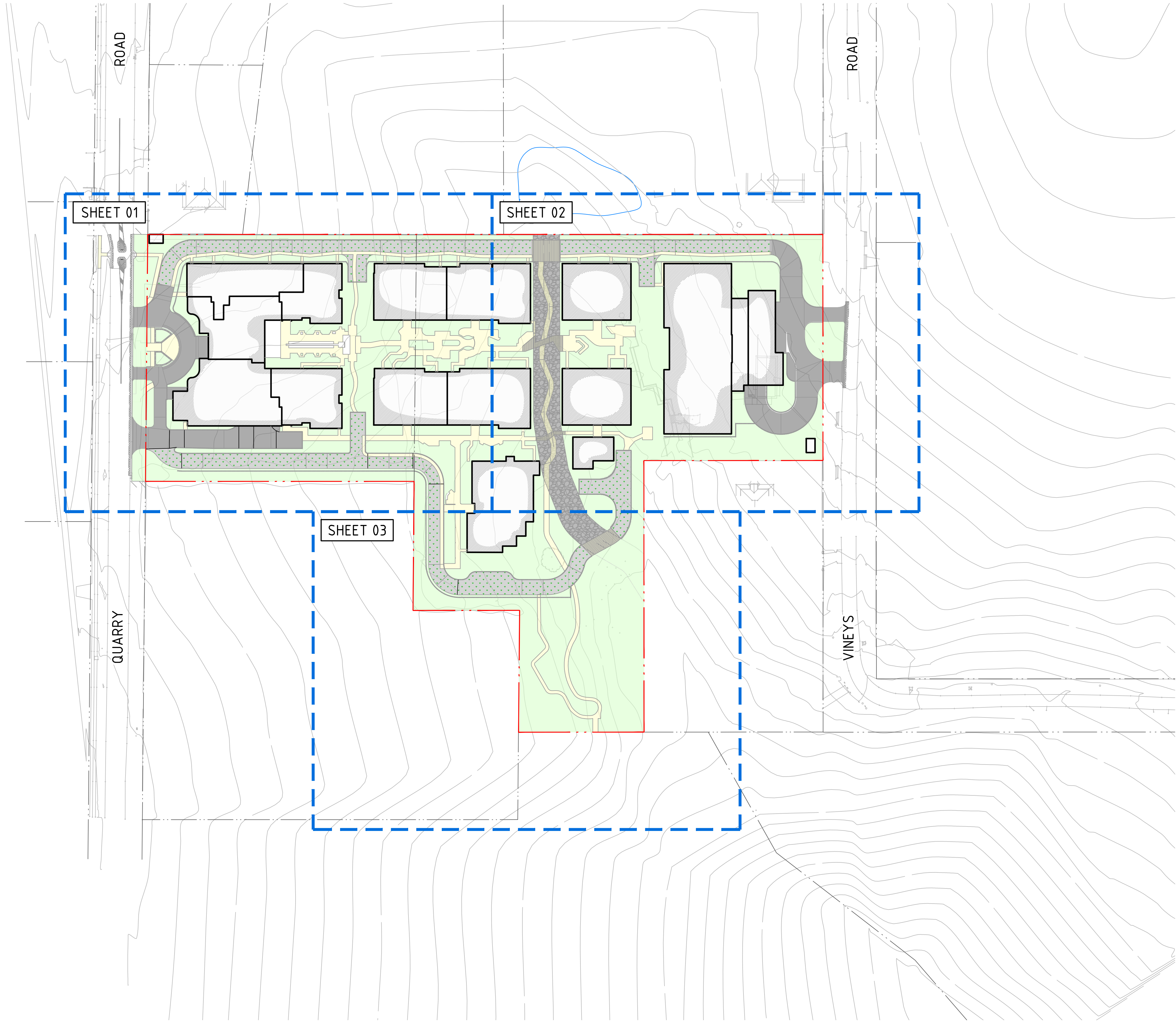
PROJECT
3 QUARRY ROAD, DURAL

DRAWING TITLE
CIVIL ENGINEERING WORKS DEVELOPMENT APPLICATION
COVER SHEET, DRAWING SCHEDULE AND LOCALITY PLAN

JOB NUMBER	
172490	
DRAWING NUMBER	REVISION
DAC01.01	10
DRAWING SHEET SIZE = A1	

NOT FOR CONSTRUCTION

DRAWN: C. PASKE
DESIGNED: N. MAICKER
JOB MANAGER: J. GILLIGAN
VERIFIER:



LEGEND	
	PROPOSED BOUNDARY LINE
	EXISTING BOUNDARY LINE
	EASEMENT LINE
	EXISTING CONTOURS
	SHEET EXTENTS

NOT FOR CONSTRUCTION

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PROJECT
3 QUARRY ROAD, DURAL

DRAWING TITLE
CIVIL ENGINEERING WORKS DEVELOPMENT APPLICATION
GENERAL ARRANGMENT PLAN

JOB NUMBER	
172490	
DRAWING NUMBER	REVISION
DAC01.11	10
DRAWING SHEET SIZE = A1	

NOTE: ALL CIVIL ENGINEERING CONSTRUCTION WORKS TO BE CARRIED OUT IN ACCORDANCE WITH HORSNBY SHIRE COUNCIL DEVELOPMENT GUIDELINES .THE AFOREMENTIONED GUIDELINES INCLUSIVE OF ALL SPECIFICATIONS TAKE PRECEDENCE OVER NOTES PROVIDED BELOW.

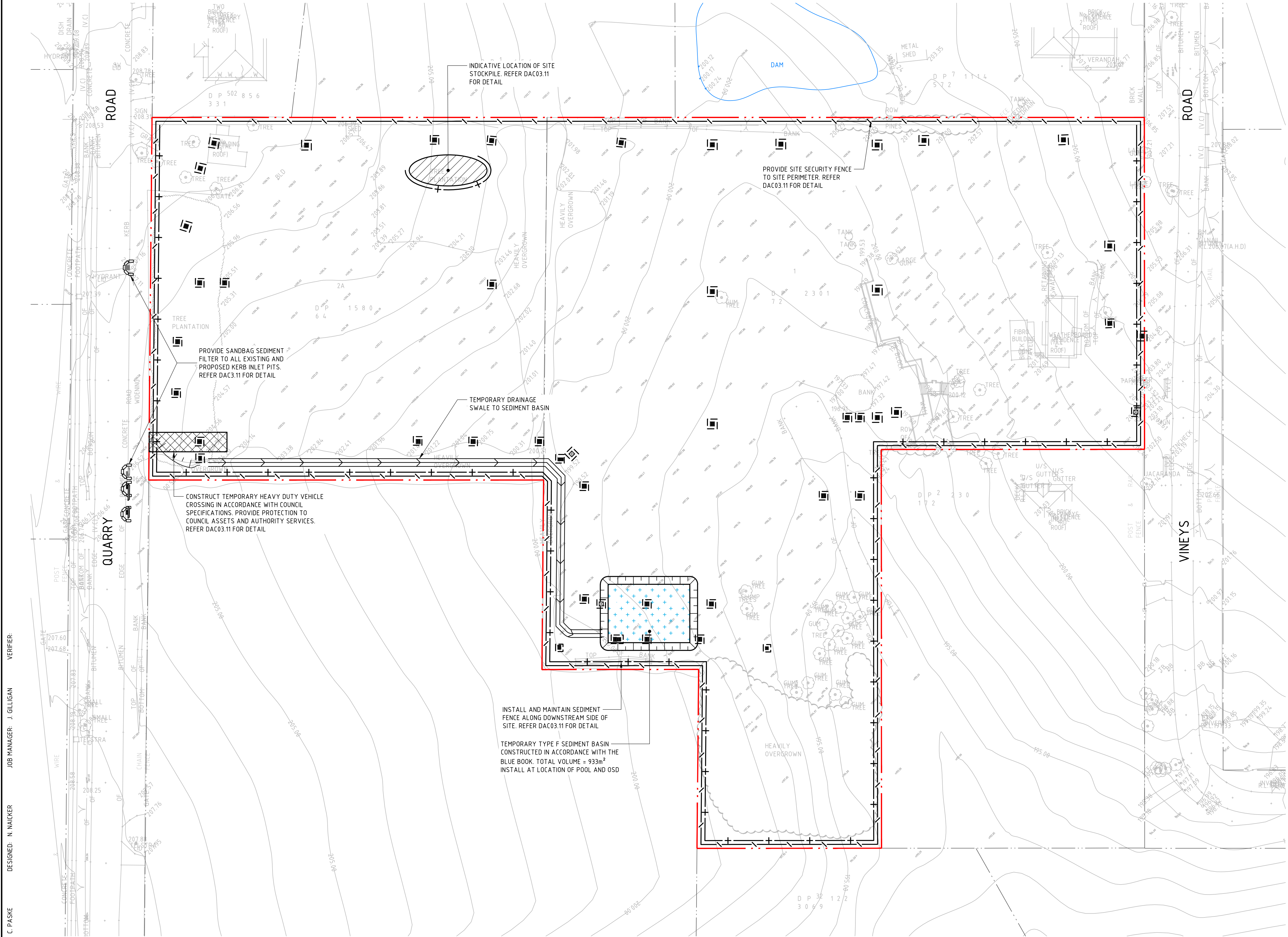
JOB MANAGER: J. GILLIGAN	DESIGNED: N. MAICKER	VERIFIER:	STORMWATER DRAINAGE									
			1. ALL PIPES SHALL BE CLASS 2 RUBBER-RING JOINTED RCP U.N.O. WHERE uPVC PIPES HAVE BEEN SPECIFIED, THE FOLLOWING CLASS PIPEWORK IS TO BE ADOPTED U.N.O. ø100mm OR LESS TO BE CLASS 'SN10' AND ABOVE ø100mm TO BE CLASS 'SN8'. 2. uPVC STORMWATER LINES PASSING UNDER FLOOR SLABS TO BE CONCRETE ENCASED. 3. FRC PIPES EQUAL TO THAT OF THE STEEL REINFORCED CONCRETE PIPE CLASS SPECIFIED ON THE DRAWINGS MAY BE USED SUBJECT TO APPROVAL FROM THE SUPERINTENDENT. 4. ALL PIPE ARE TO BE LAID AT 1.0% MIN GRADE U.N.O. 5. <u>COVERS</u> 5.1. USE HOT DIPPED GALVANISED COVERS AND GRATES COMPLYING WITH RELEVANT COUNCIL AND AUSTRALIAN STANDARDS. 5.2. ALL COVERS AND GRATES TO BE POSITION IN A FRAME AND MANUFACTURED AS A UNIT. 5.3. ALL COVERS AND GRATES TO BE FITTED WITH POSITIVE COVER LIFTING KEYS 5.4. OBTAIN SUPERINTENDENTS APPROVAL FOR THE USE OF CAST IRON SOLID COVERS AND GRATES. CAST IRON SOLID COVERS (IF APPROVED) TO CONSIST OF CROSS-WEBBED, CELLULAR CONSTRUCTION WITH THE RIBS UPPERMOST TO ALLOW INFILLING WITH CONCRETE. INSTALL POSITIVE COVER LIFTING KEYS AND PLASTIC PLUGS. 5.5. UNLESS DETAILED OR SPECIFIED OTHERWISE, COVERS AND GRATES TO BE CLASS 'D' IN VEHICULAR PAVEMENTS AND CLASS 'B' ELSEWHERE. 5.6. ALL GRATED TRENCH DRAINS SHOULD BE 'CLASS D' CAST IRON WITHIN VEHICULAR PAVEMENTS AND CLASS 'B' HEEL SAFE WITHIN PEDESTRIAN PAVEMENTS. 6. ALL PIPE BENDS, JUNCTIONS, ETC ARE TO BE PROVIDED USING PURPOSE MADE FITTINGS OR STORMWATER PITS. 7. ALL CONNECTIONS TO EXISTING DRAINAGE STRUCTURES SHALL BE MADE IN A TRADESMAN-LIKE MANNER AND CEMENT RENDERED TO ENSURE A SMOOTH FINISH. 8. STORMWATER PIPEWORK TO FINISH FLUSH WITH INTERNAL PIT WALLS AND MUST NOT PROTRUDE. CONNECTION TO BE NEATLY RENDER AND MADE NEAT. 9. THE CONTRACTOR SHALL SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION BETWEEN DISSIMILAR PIPEWORK. 10. U.N.O. MATERIAL USED FOR BEDDING OF PIPES SHALL BE APPROVED NON-COHESIVE GRANULAR MATERIAL HAVING HIGH PERMEABILITY AND HIGH STABILITY WHEN SATURATED AND FREE OF ORGANIC AND CLAY MATERIAL. 11. WHERE TRENCHES ARE IN ROCK, THE PIPE SHALL BE BEDDED ON A MIN 50mm CONCRETE BED (OR 75mm THICK BED OF 12mm BLUE METAL) UNDER THE BARREL OF THE PIPE. THE PIPE COLLAR AT NO POINT SHALL BEAR ON THE ROCK. 12. BEDDING SHALL BE U.N.O TYPE HS2 UNDER ROADS AND H2 UNDER GENERAL AREAS IN ACCORDANCE WITH CURRENT RELEVANT INDUSTRY STANDARDS AND GUIDELINES. 13. THE CONTRACTOR SHALL ENSURE AND PROTECT THE INTEGRITY OF ALL STORMWATER PIPES DURING CONSTRUCTION. ANY AND ALL DAMAGE TO THESE PIPES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR UNDER THE DIRECTION OF THE SUPERINTENDENT AND AT NO EXTRA COST. 14. NOTE THAT THE PIT COVER LEVEL NOMINATED IN GUTTERS ARE TO THE INVERT OF THE GUTTER WHICH ARE 40mm LOWER THAN THE PAVEMENT LEVEL AT LIP OF GUTTER. REFER KERB DETAILS FOR CONFIRMATION. <u>SUBSOIL DRAINAGE</u> 15. ø100mm SUBSOIL DRAINAGE LINES WITH NON-WOVEN GEOTEXTILE FILTER SOCK SURROUND SHALL BE CONNECTED TO A STORMWATER DRAINAGE PIT (AT MIN 1% LONGITUDINAL GRADE) AND PROVIDED IN THE FOLLOWING LOCATIONS; 15.1. THE HIGH SIDE OF PROPOSED TRAFFICKED PAVEMENT AREAS. 15.2. ALL PLANTER AND TREE BEDS PROPOSED ADJACENT TO PAVEMENT AREAS. 15.3. BEHIND RETAINING WALLS (IN ACCORDANCE WITH RETAINING WALL DETAILS). 15.4. ALL OTHER AREAS SHOWN ON DRAWINGS. 15.5. <u>CONTRACTOR IS TO MAKE ALLOWANCE IN BOTH TENDER AND CONSTRUCTION COSTING TO ALLOW FOR SUBSURFACE DRAINAGE BEHIND ALL RETAINING WALLS / ABOVE LOCATIONS AND TO MAKE CONNECTION TO STORMWATER SYSTEM.</u> 16. WHERE SUBSOIL DRAINAGE PASSES BENEATH BUILDINGS / PAVED AREAS AND/OR PAVEMENTS. CONTRACTOR TO ENSURE ø100mm CLASS 'SN10' uPVC DRAINAGE LINE IS USED AND THAT PROPRIETARY FITTINGS ARE USED TO RECONNECT SUBSOIL DRAINAGE LINE. 17. THE CONTRACTOR SHALL INSTALL INSPECTION OPENINGS / CLEAROUTS TO ALL SUBSOIL DRAINAGE LINES AND DOWNPIPE LINES AS SPECIFIED ON DRAWINGS AND IN ACCORDANCE WITH COUNCIL SPECIFICATIONS AT MAXIMUM 30m CENTRE AND AT ALL UPSTREAM ENDPOINTS. 18. PROVIDE 3.0m LENGTH OF ø100 SUBSOIL DRAINAGE LINE WRAPPED IN NON-WOVEN GEOTEXTILE FILTER FABRIC TO THE UPSTREAM SIDE OF STORMWATER PITS, LAID IN STORMWATER PIPE TRENCHES AND CONNECTED TO DRAINAGE PIT. 19. IN AREAS WHERE DUMPED / HAND PLACED ROCK IS USED AS A MEANS OF SCOUR PROTECTION, CONTRACTOR IS TO EXCAVATE A MINIMUM OF 100mm FROM PROPOSED SURFACE, LEVEL AND COMPACT SUBGRADE AS SPECIFIED. ROCK TO THEN BE PLACED ON GEOTEXTILE FILTER FABRIC.									
			RAINWATER RE-USE									
			THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH OTHER SUCH WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK. ALL DIMENSIONS ARE IN MILLIMETRES & ALL LEVELS ARE IN METRES, UNO (UNLESS NOTED OTHERWISE). NO DIMENSION SHALL BE OBTAINED BY SCALING THE DRAWINGS. ALL LEVELS AND SETTING OUT DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE CHECKED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORK. DETAIL SURVEY DATA WAS SUPPLIED BY HIGGINS SURVEYORS, DRAWING DATED 22/12/2016. EXISTING SERVICES WHERE SHOWN HAVE BEEN PLOTTED FROM SUPPLIED DATA AND SUCH THEIR ACCURACY CAN NOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK. ON COMPLETION OF STORMWATER INSTALLATION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL CONDITION, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS AND ROAD PAVEMENTS, UNLESS DIRECTED OTHERWISE.									
			ALL STORMWATER MANAGEMENT MEASURES SHOWN ON THESE DRAWINGS HAVE BEEN PREPARED FOR DEVELOPMENT APPLICATION PURPOSES TO DEMONSTRATE FEASIBILITY. ALL MEASURES WILL BE SUBJECT TO DETAIL DESIGN AT THE CONSTRUCTION CERTIFICATE STAGE AND MAY BE SUBJECT TO VARIATION PROVIDED THAT THE DESIGN INTENT IS MAINTAINED.									

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DESIGNED: N. WACKER
JOB MANAGER: J. GILLIGAN
VERIFIER:

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LEGEND	
	PROPOSED BOUNDARY LINE
	EXISTING BOUNDARY LINE
	EASEMENT LINE
	EXISTING CONTOURS
	SEDIMENT FENCE
	SECURITY FENCE
	MESH AND GRAVEL INLET FILTER
	GEOTEXTILE INLET FILTER
	DRAINAGE SWALE
	STABILISED SITE ACCESS
	STOCKPILE
	SEDIMENT BASIN

NOT FOR CONSTRUCTION

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	SCALE 1:500@A1 0 5 10 15 20 25m

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PROJECT	3 QUARRY ROAD, DURAL
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DRAWING TITLE	CIVIL ENGINEERING WORKS DEVELOPMENT APPLICATION
CONCEPT SEDIMENT AND SOIL EROSION CONTROL PLAN	

JOB NUMBER	172490
DRAWING NUMBER	DAC03.01
REVISION	9
DRAWING SHEET SIZE = A1	

STOCKPILES (SD 4-1)

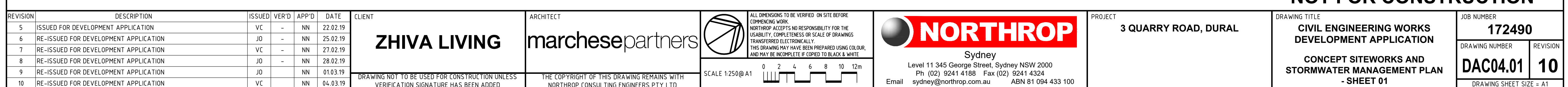
2. INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
3. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
4. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
5. PLACE THE FILTER AT THE OPENING LEAVING AT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

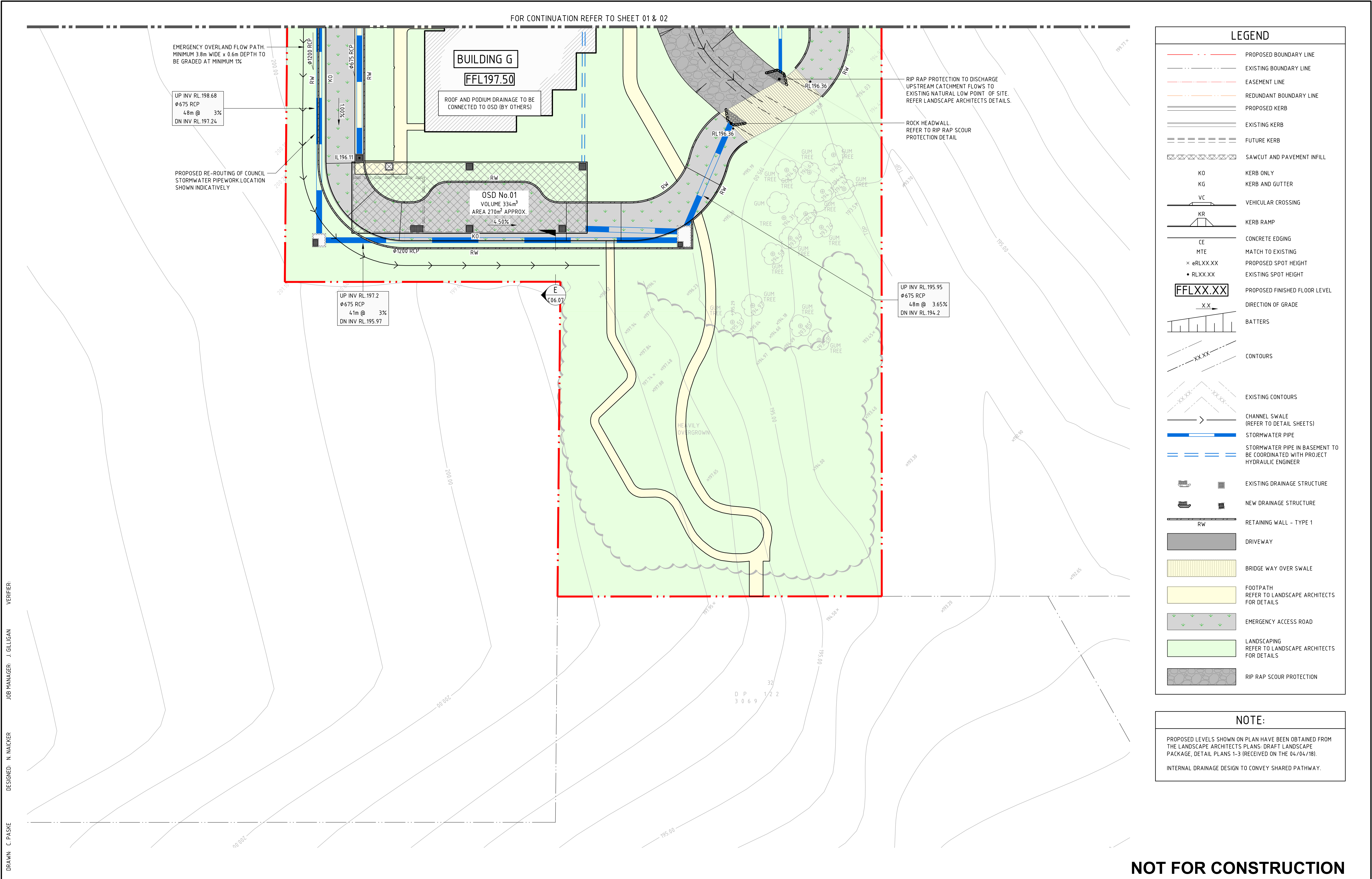
(APPLIES TO 'TYPE D' AND 'TYPE F' SOILS ONLY)
SEDIMENT BASIN - WET (SD 6-4)

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.

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.

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.



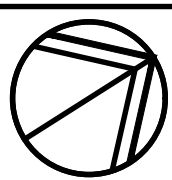


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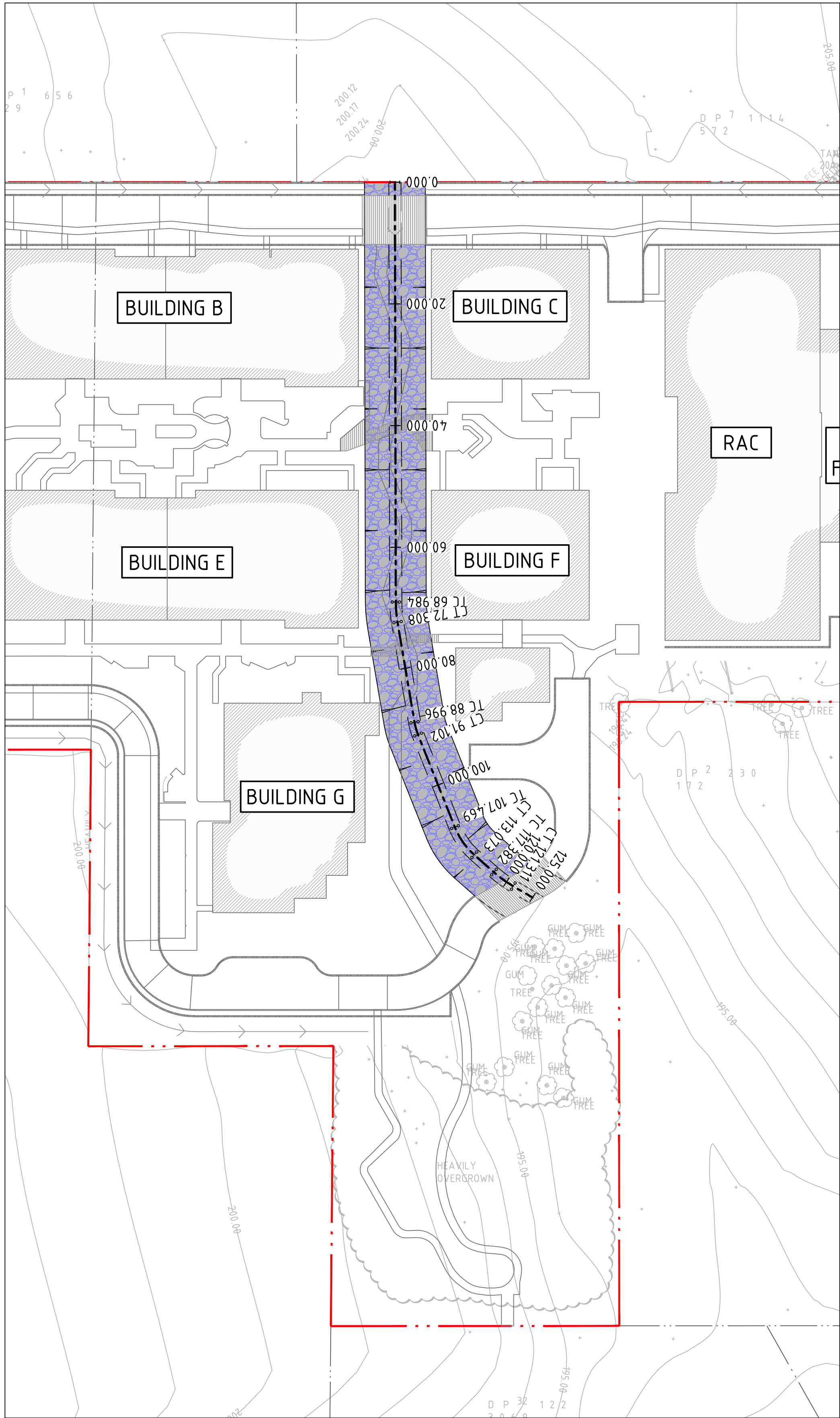
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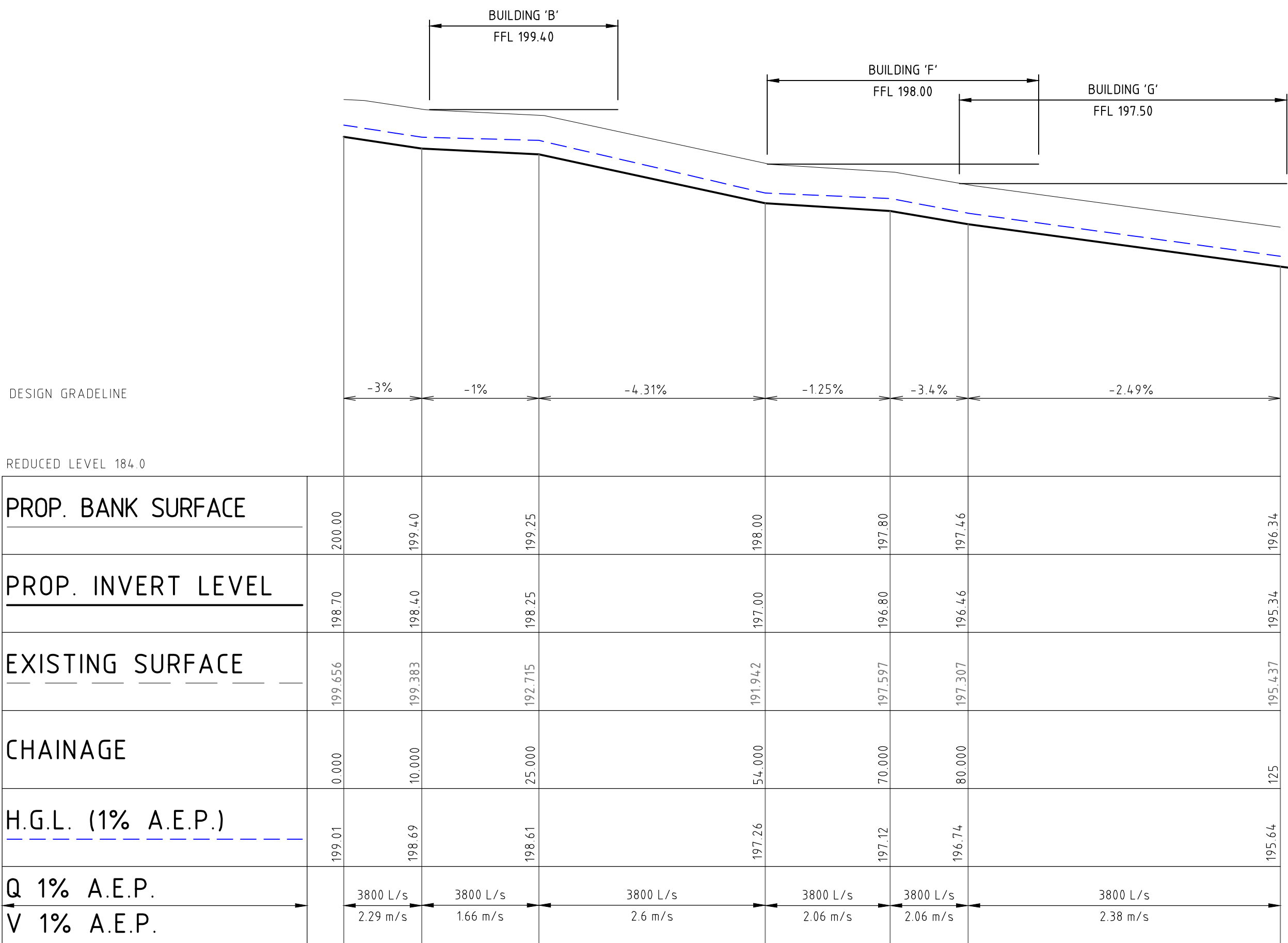
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DRAWING NUMBER	DAC04.03	REVISION	11	DRAWING SHEET SIZE	A1

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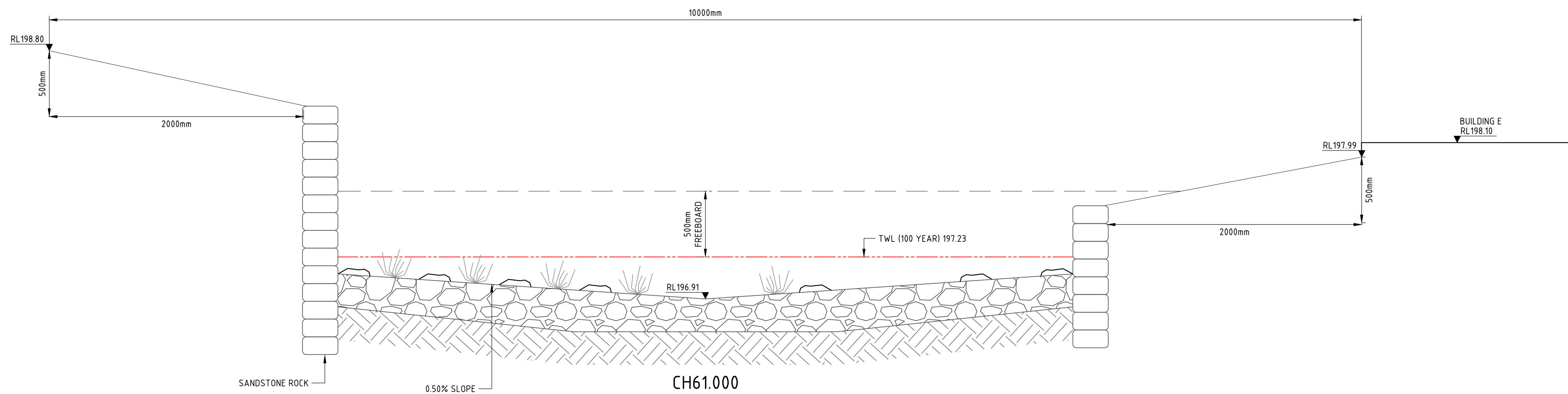
PLAN
SCALE 1:500



CENTRAL CHANNEL LONGITUDINAL SECTION
HORIZONTAL SCALE 1:500 @ A1
VERTICAL SCALE 1:100 @ A1

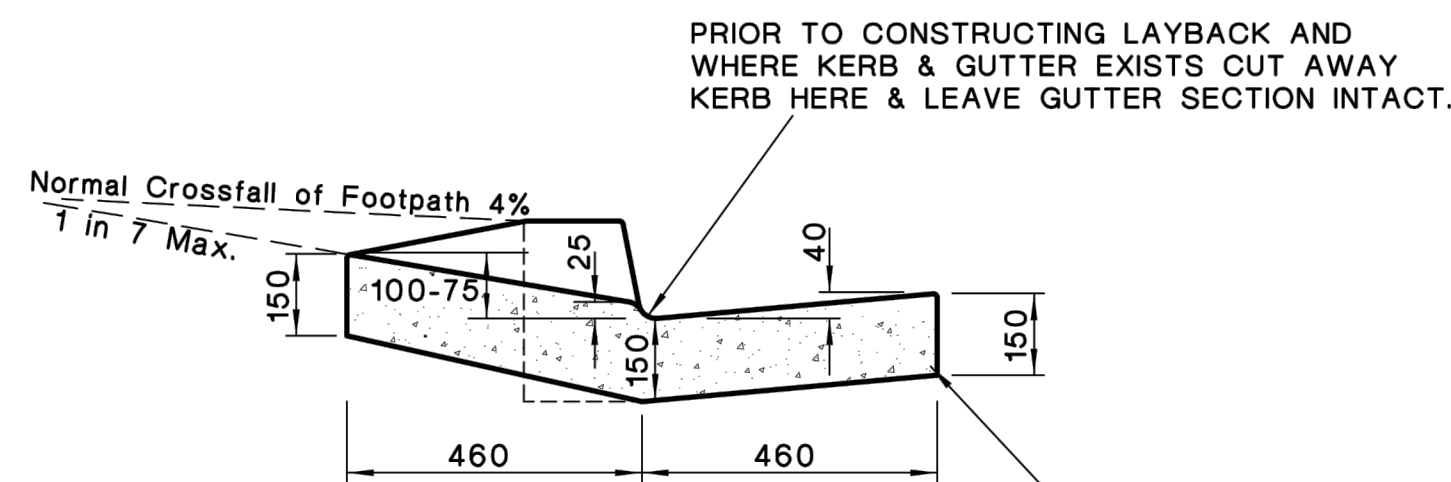
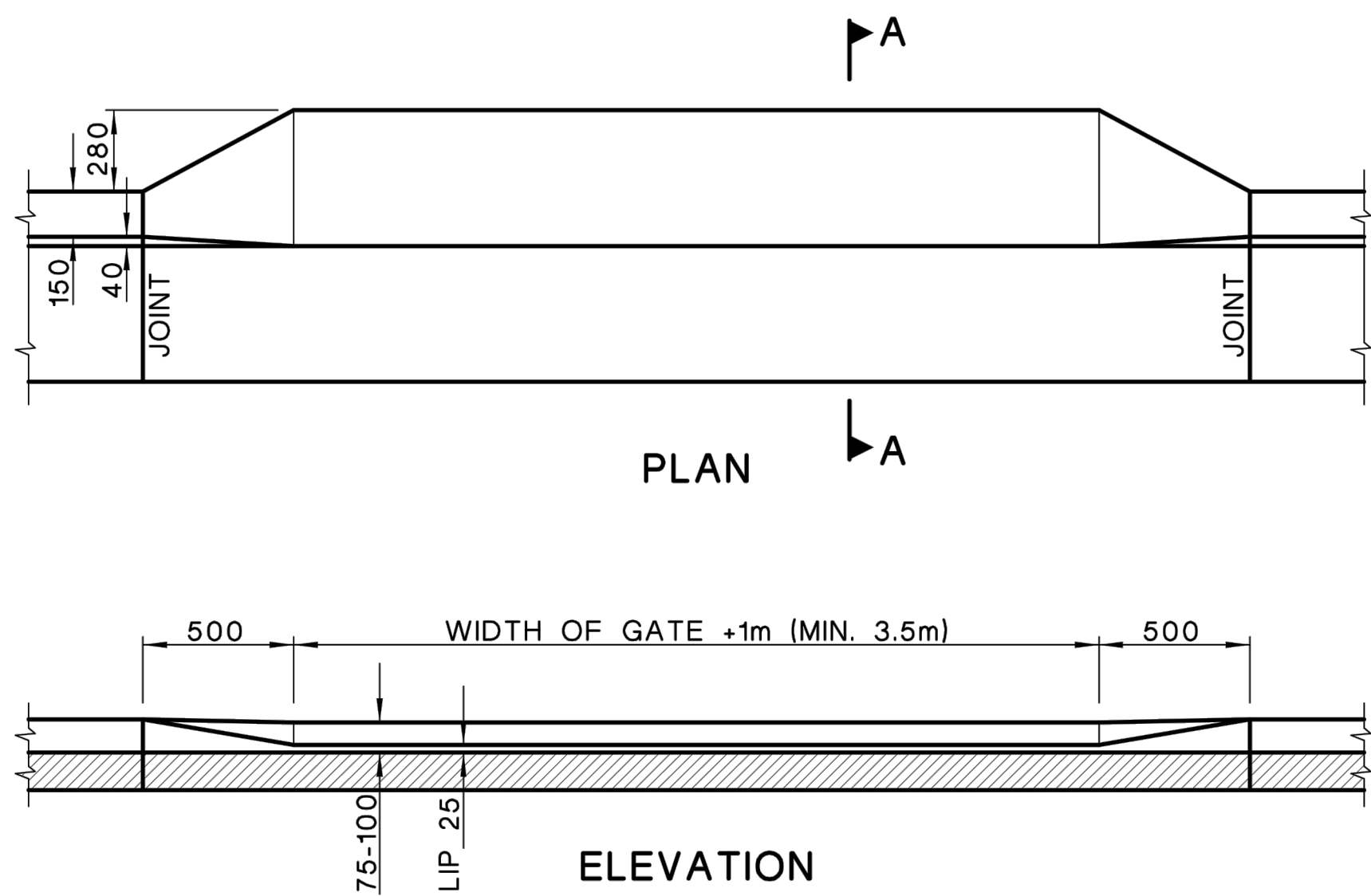
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10	RE-ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	04.03.19	DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED	THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD		CENTRAL CHANNEL PLAN AND LONGITUDINAL SECTION			



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1	ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	21.02.19	ZHIVA LIVING 	 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	3 QUARRY ROAD, DURAL	CIVIL ENGINEERING WORKS DEVELOPMENT APPLICATION CENTRAL CHANNEL CROSS SECTIONS - SHEET 01	172490 DRAWING NUMBER DAC05.02	REVISION 6
2	RE-ISSUED FOR DEVELOPMENT APPLICATION	JO	-	NN	25.02.19						
3	RE-ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	27.02.19						
4	RE-ISSUED FOR DEVELOPMENT APPLICATION	JO	-	NN	28.02.19						
5	RE-ISSUED FOR DEVELOPMENT APPLICATION	JO	-	NN	01.03.19						
6	RE-ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	04.03.19						
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 1:20 @ A1		DRAWING SHEET SIZE = A1		

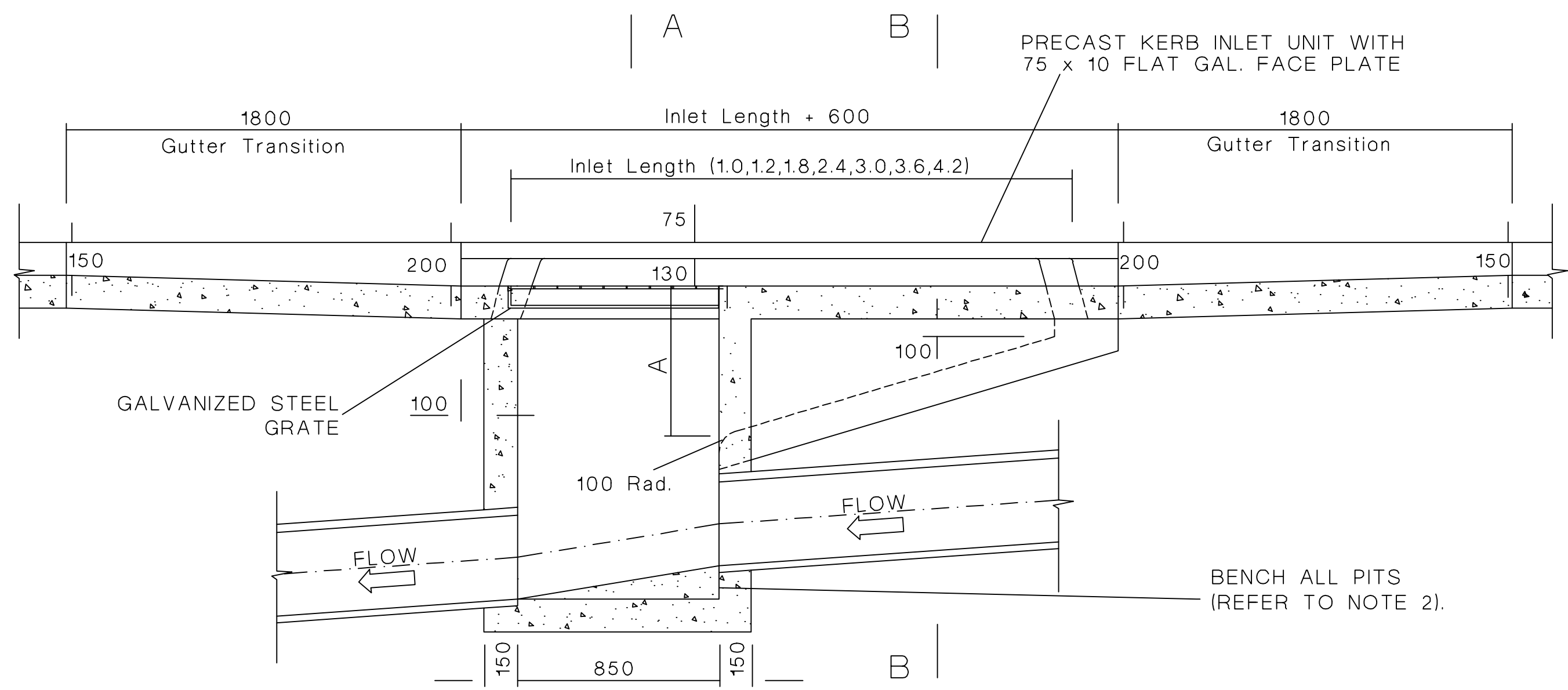
VERIFIER: J. GILLIGAN
JOB MANAGER: N. WACKER
DESIGNED: N. WACKER
DRAWN: C. PASKE



SECTION A-A
LAYBACK AND GUTTER SECTION

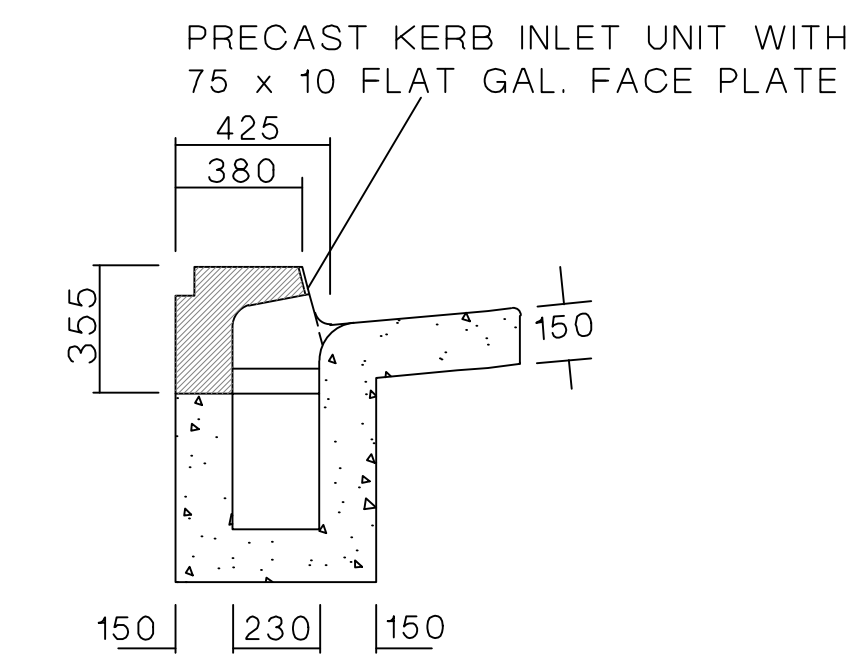
VEHICLE CROSSING 'VC'
HORNSBY SHIRE COUNCIL - 'STD DWG No.4'

REFER TO TABLE BELOW.

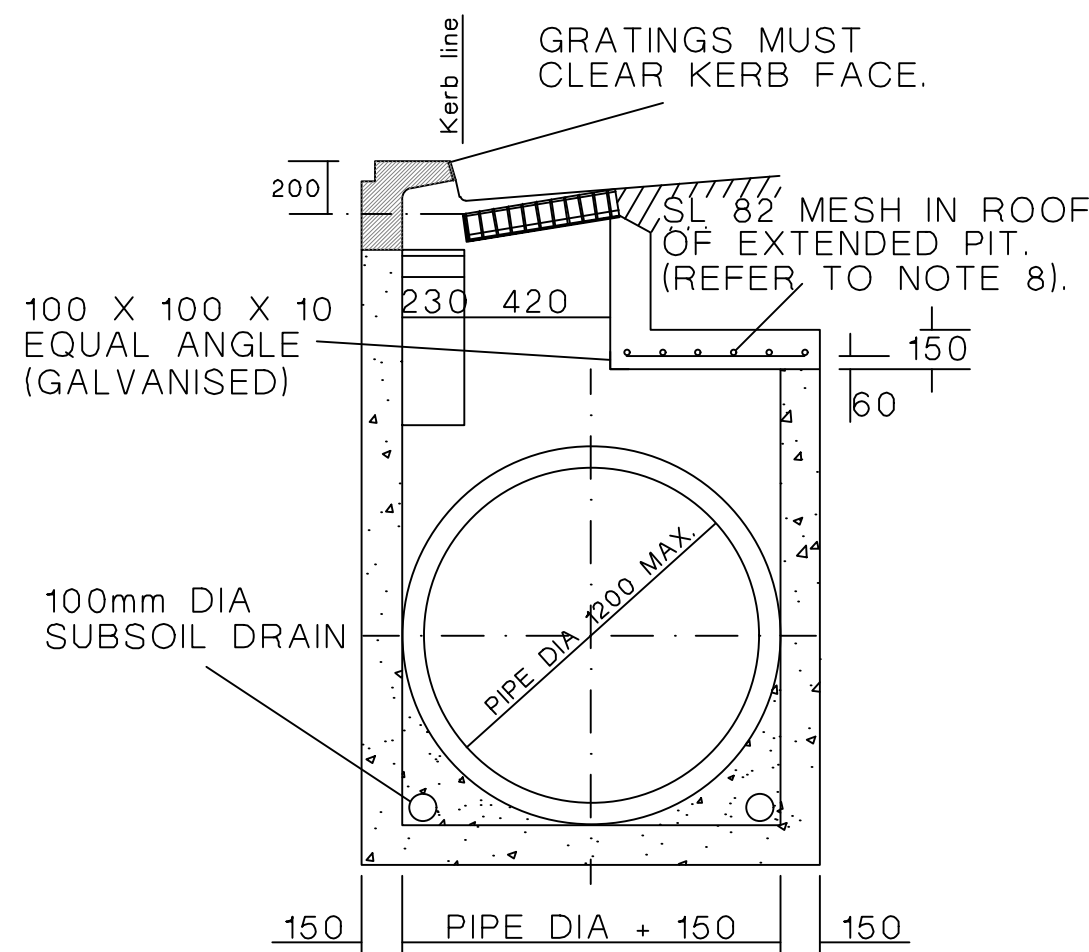
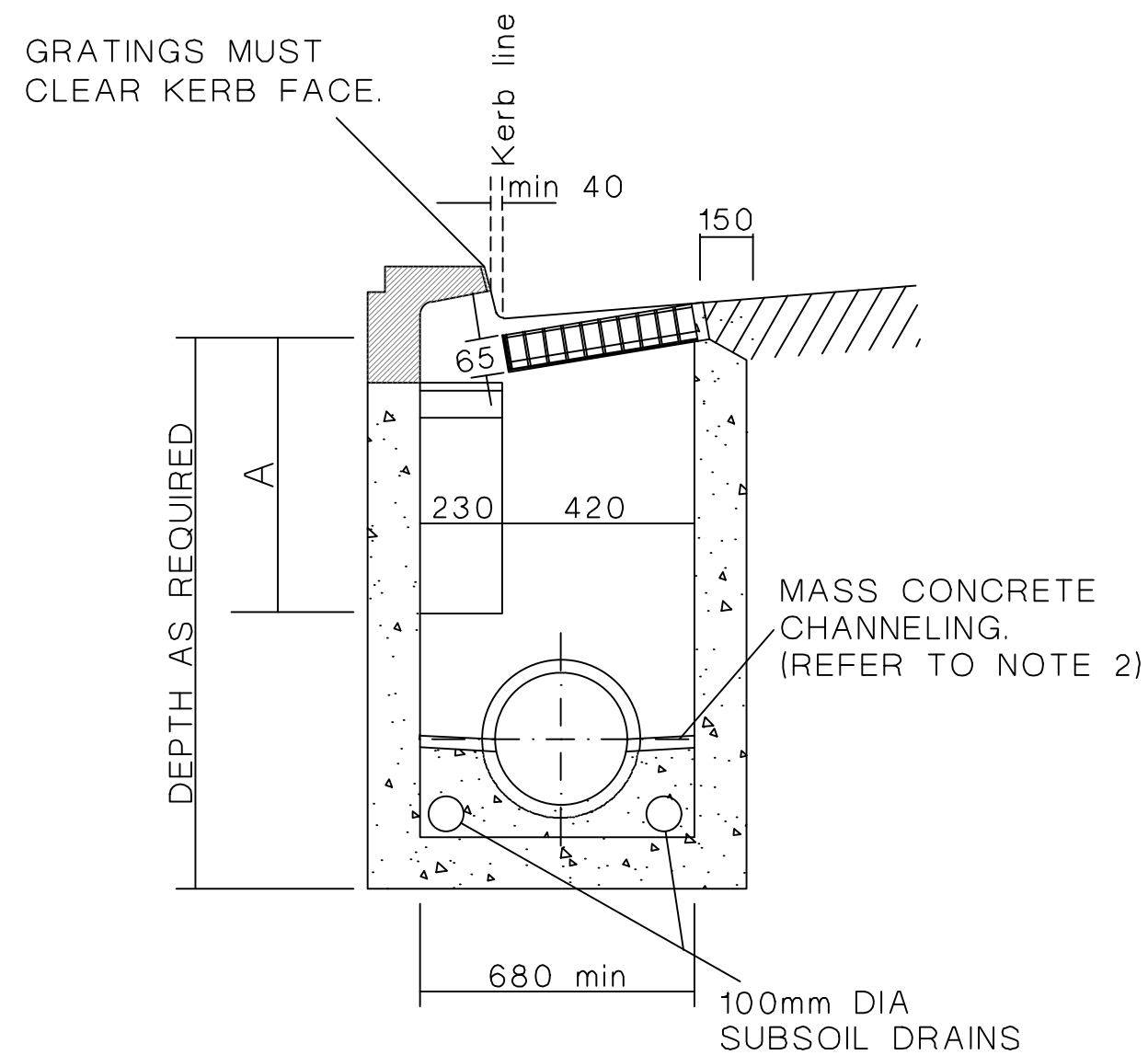
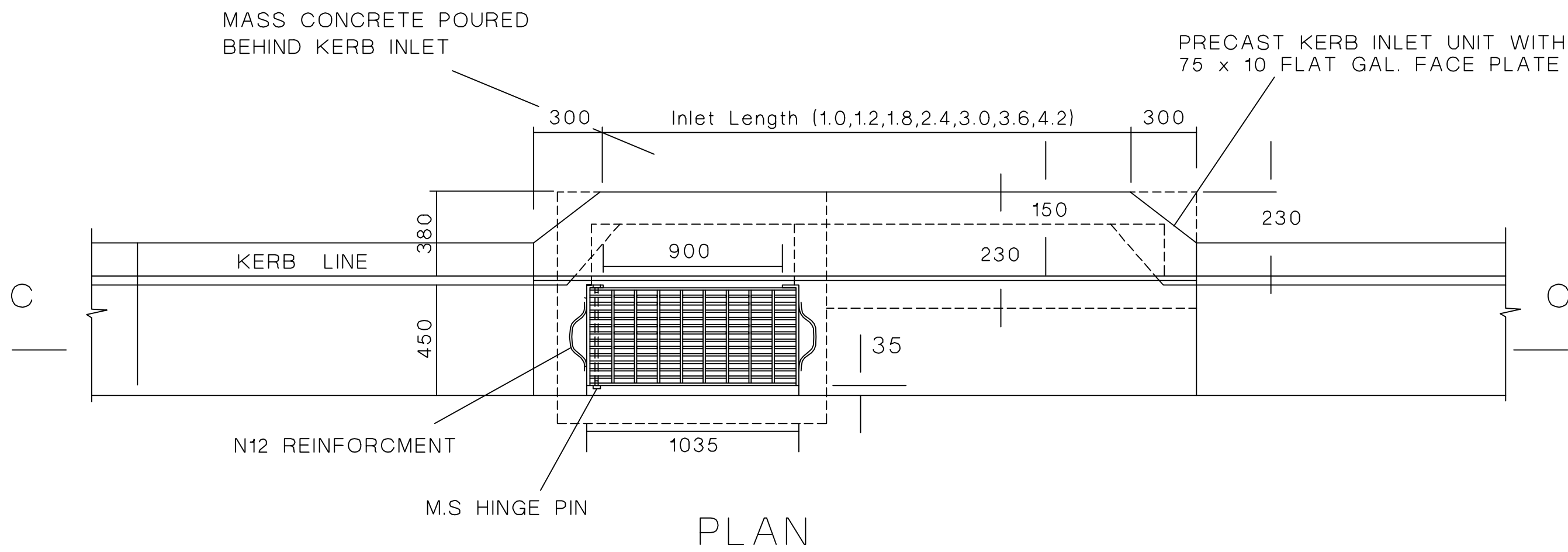


SECTION C-C

DIMENSION A (mm)	INLET LENGTH (m)
250	UP TO 1.8
300	2.4
350	3.0
400	3.6
450	4.2



SECTION B-B



NOTES:

1. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS TO BE 20MPa.
2. TOP OF BENCHING TO BE 1/2 OF OUTLET PIPE DIAMETER.
3. 100 DIA. SUBSOIL DRAINAGE PIPE 3m LONG WRAPPED IN FABRIC SOCK TO BE PROVIDED AT INVERT LEVEL EITHER SIDE OF INLET PIPES.
4. PROVIDE STEP IRONS WHERE PIT IS DEEPER THAN 1.0m AT 450 CENTRES.
5. FOR PIT DEPTHS GREATER THAN 3.0m SEPARATE DESIGN IS REQUIRED.
6. PROVIDE HOT DIPPED GALVANIZED FABRICATED STEEL GULLY GRATE AND FRAME OF CLASS D. GRATE AND FRAME MUST COMPLY WITH AS3996-2006. OUTSIDE EDGE OF THE FRAME TO BE FLUSH WITH THE LIP OF THE GUTTER.
7. ALL GRATINGS TO HAVE LOCKING CLIP.
8. WHERE CHAMBER WIDTH EXCEEDS 1.2m, ROOF REINFORCEMENT TO BE DESIGNED BY A CHARTERED PROFESSIONAL.

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
5	DRAFT WITHOUT PREJUDICE FOR S34 CONFERENCE	JO	-	NN	30.01.19
6	ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	22.02.19
7	RE-ISSUED FOR DEVELOPMENT APPLICATION	JO	-	NN	25.02.19
8	RE-ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	27.02.19
9	RE-ISSUED FOR DEVELOPMENT APPLICATION	JO	-	NN	28.02.19
10	RE-ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	04.03.19

ZHIVA LIVING
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marchese partners
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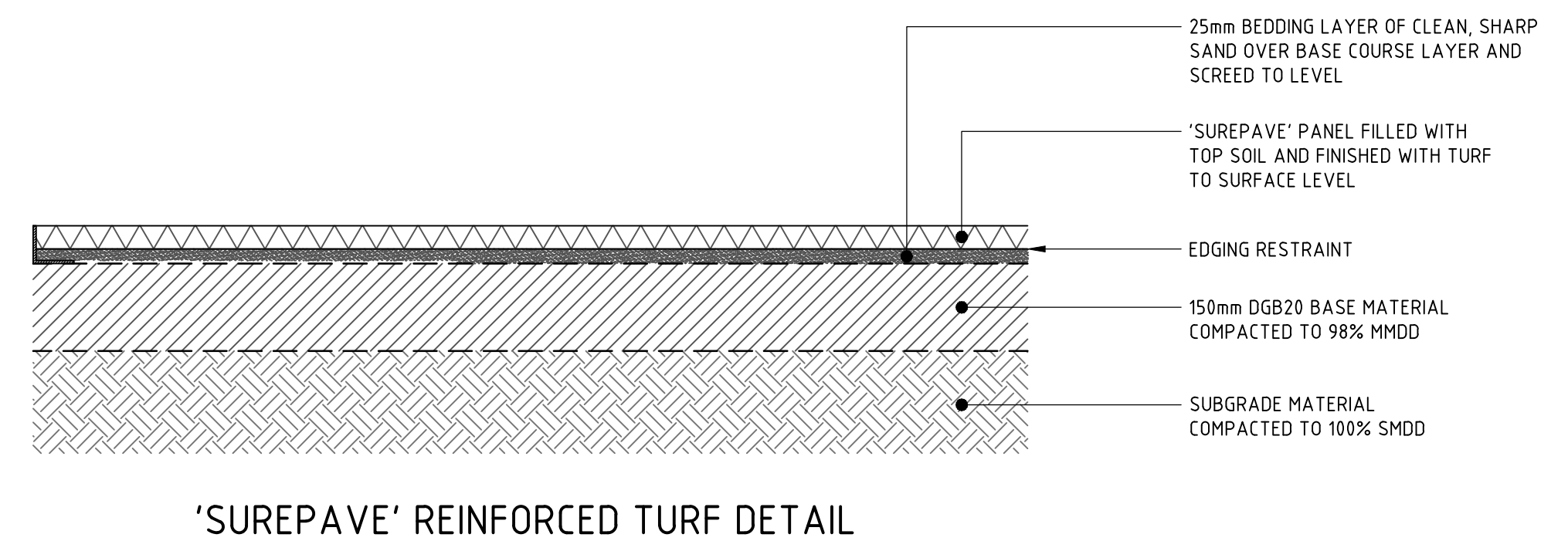
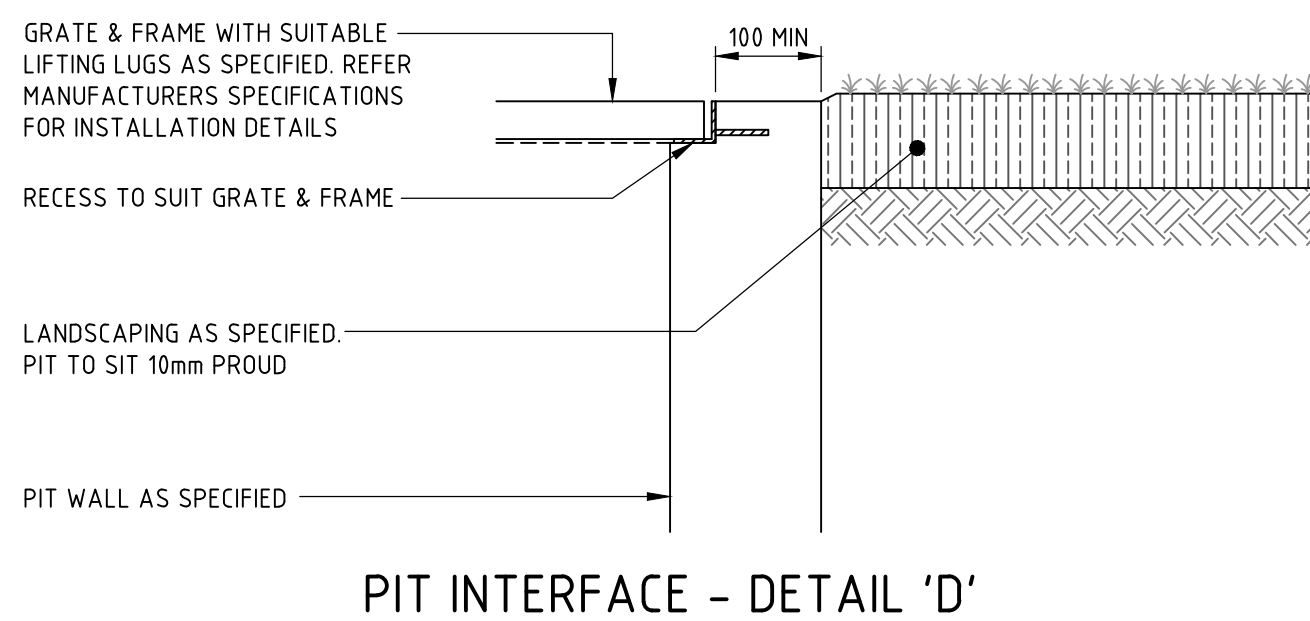
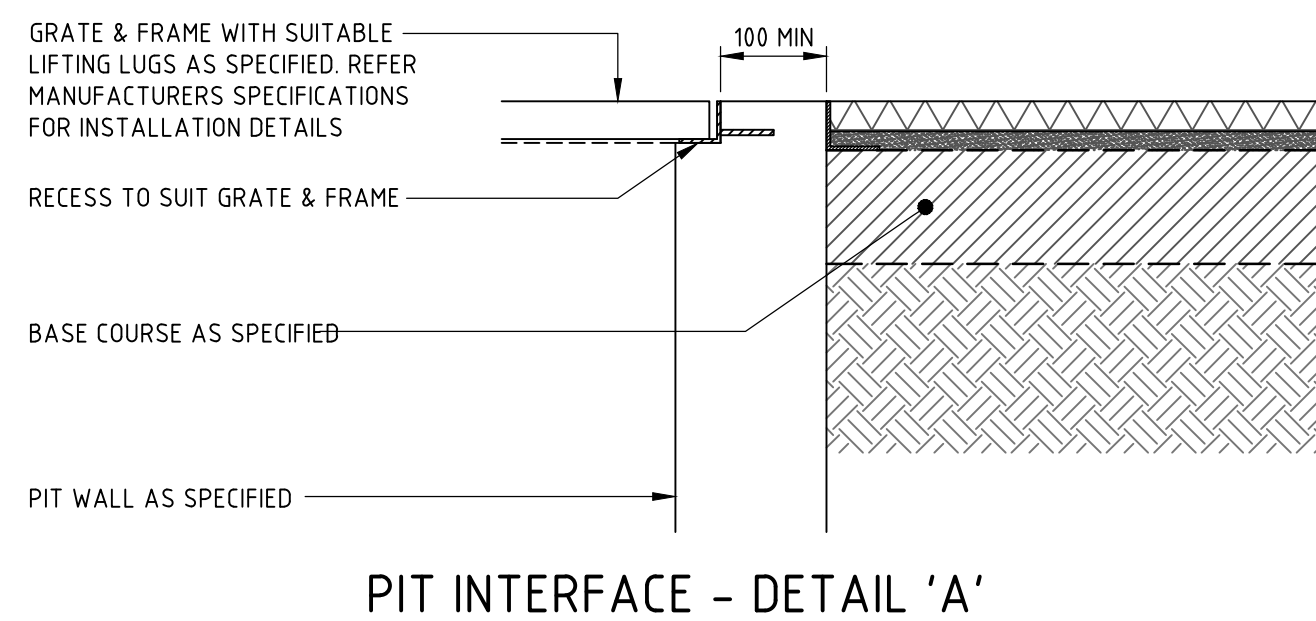
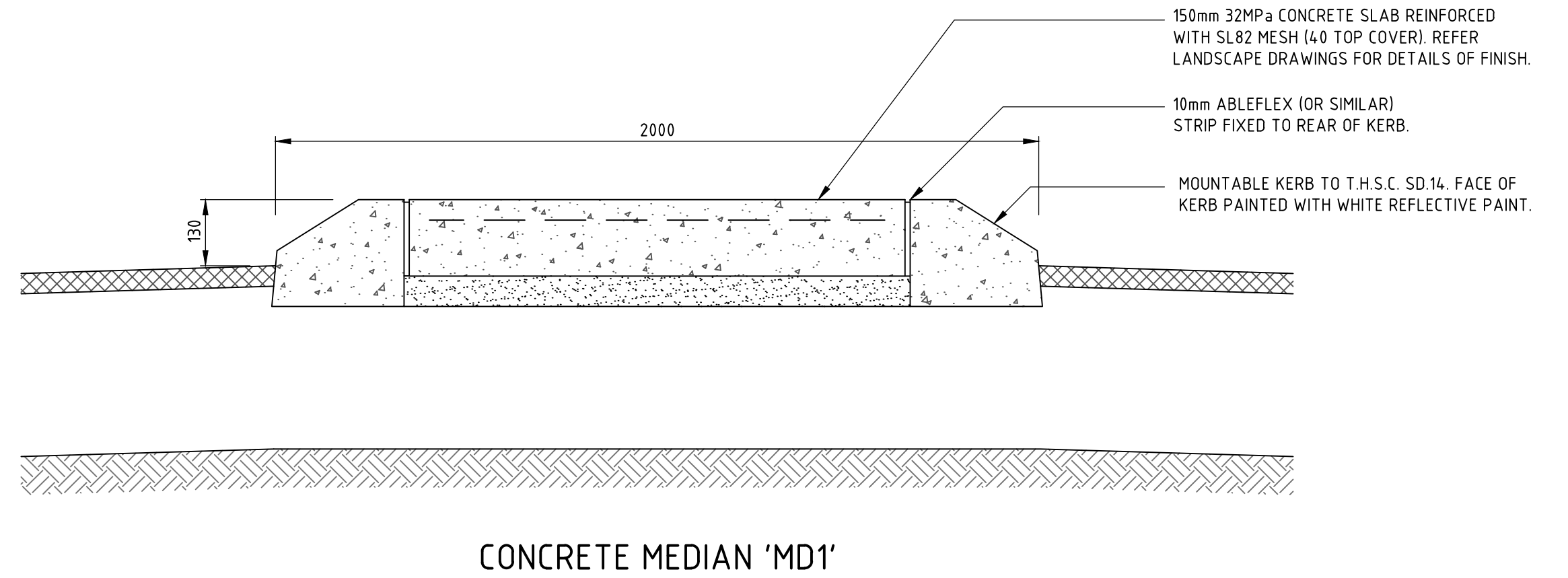
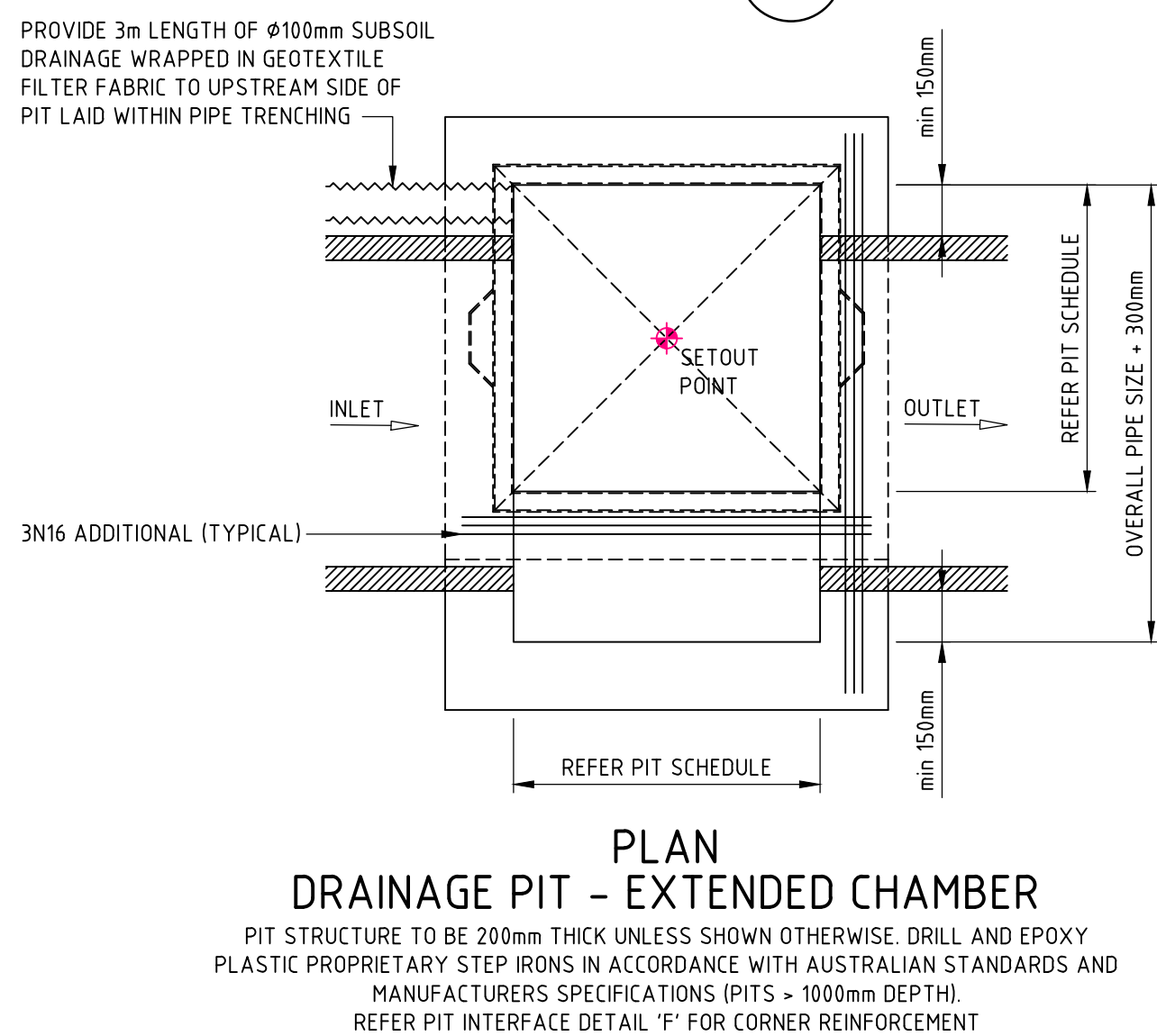
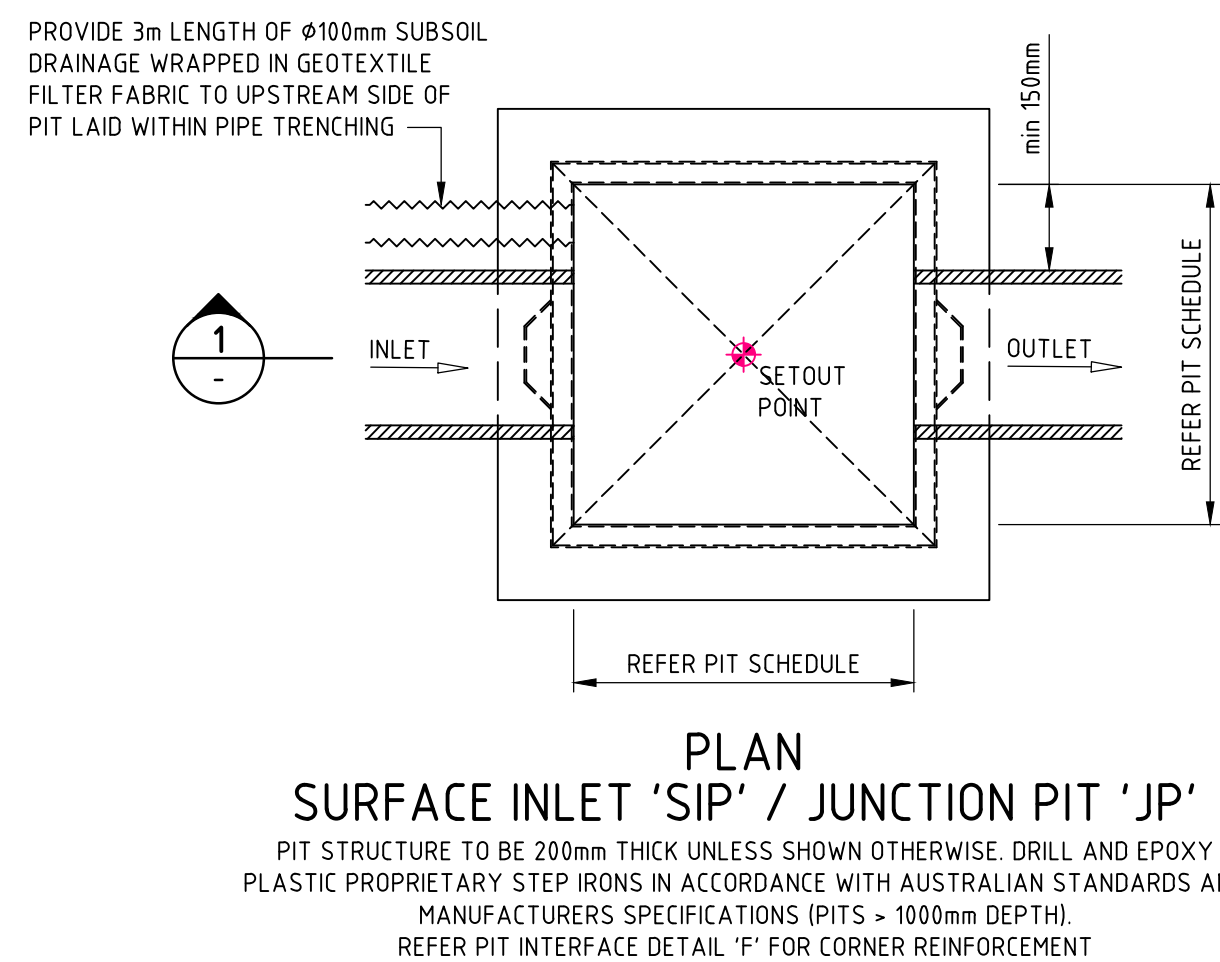
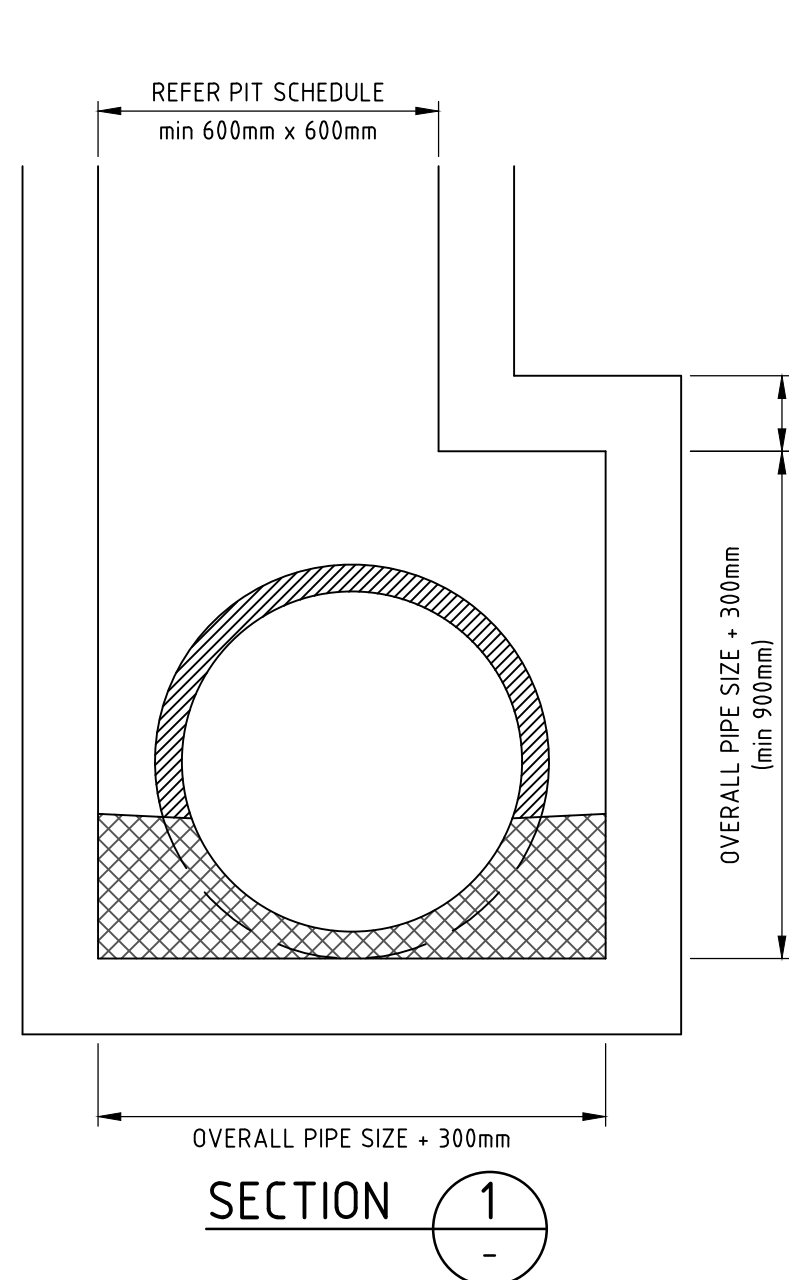
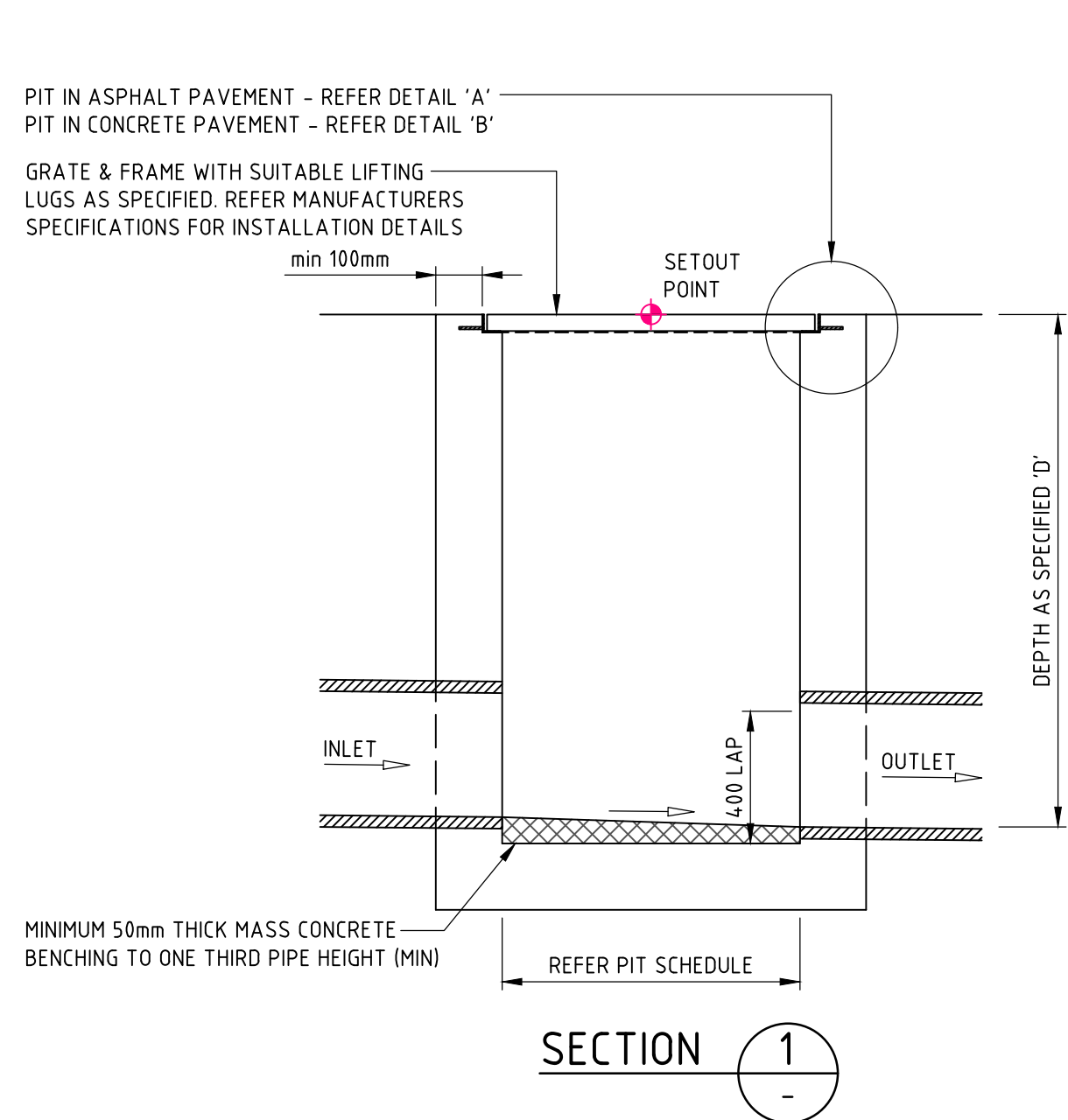
ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE.
SCALE VARIES

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PROJECT
3 QUARRY ROAD, DURAL

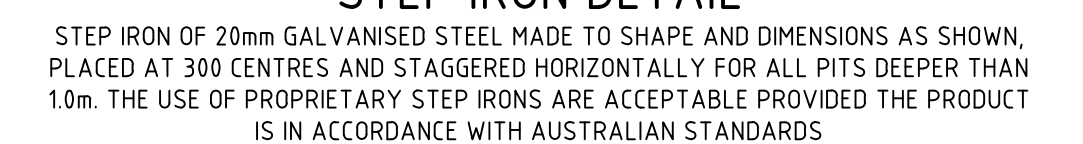
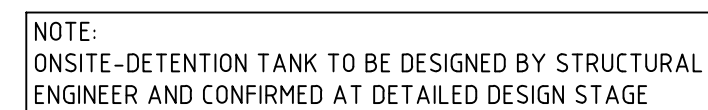
DRAWING TITLE
CIVIL ENGINEERING WORKS DEVELOPMENT APPLICATION
DETAIL - SHEET 01

JOB NUMBER
172490
DRAWING NUMBER
DAC06.01
REVISION
10
DRAWING SHEET SIZE = A1



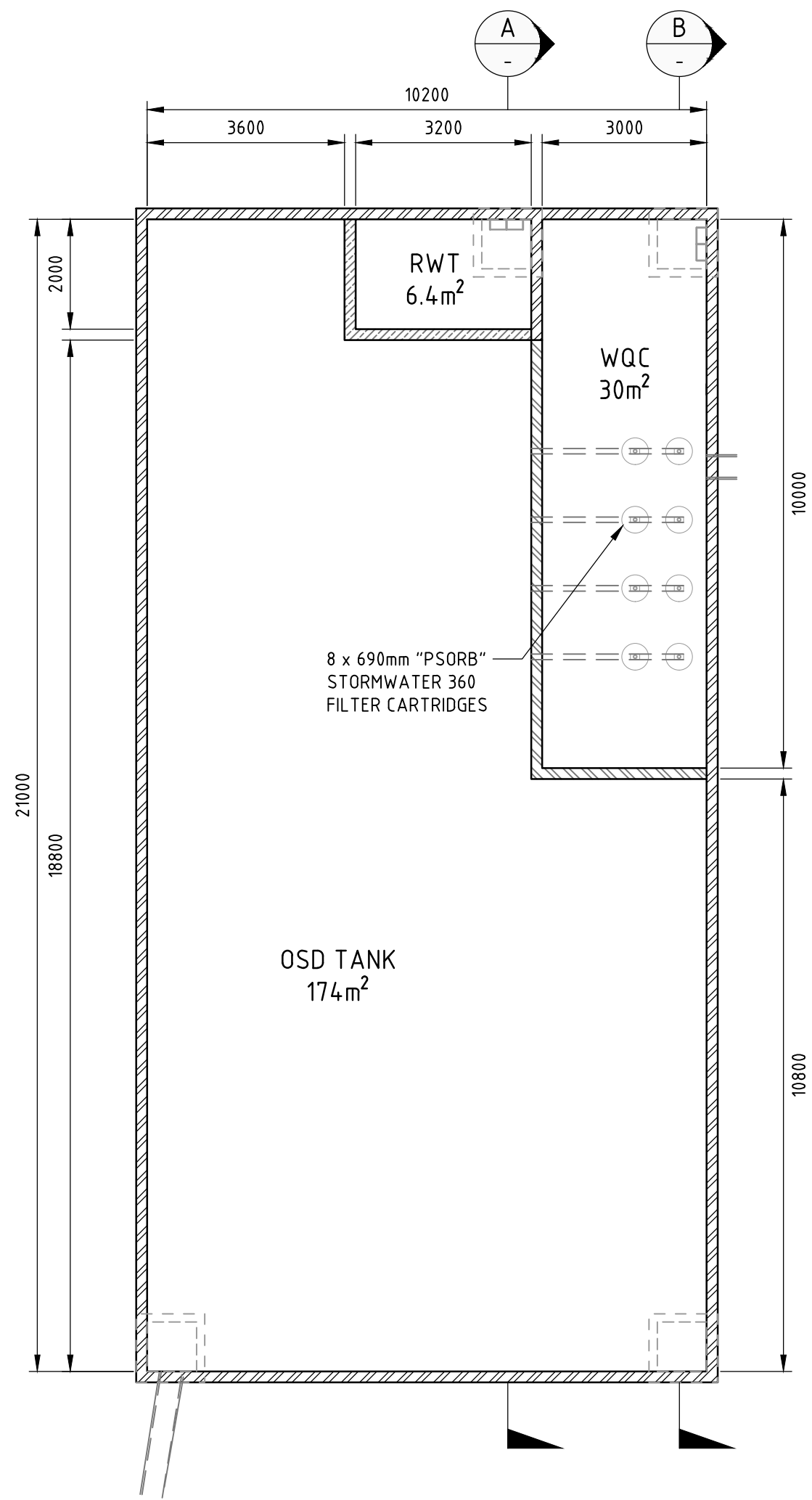
NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT		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.	PROJECT	DRAWING TITLE	JOB NUMBER		
5	DRAFT WITHOUT PREJUDICE FOR S34 CONFERENCE	JO	-	NN	30.01.19	ZHIVA LIVING	marchesepartners	 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	SCALE VARIES	3 QUARRY ROAD, DURAL	CIVIL ENGINEERING WORKS DEVELOPMENT APPLICATION	172490		
6	ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	22.02.19									
7	RE-ISSUED FOR DEVELOPMENT APPLICATION	JO	-	NN	25.02.19									
8	RE-ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	27.02.19									
9	RE-ISSUED FOR DEVELOPMENT APPLICATION	JO	-	NN	28.02.19									
10	RE-ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	04.03.19	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					DRAWING NUMBER DAC06.02	REVISION 10	
												DRAWING SHEET SIZE = A1		



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5	DRAFT WITHOUT PREJUDICE FOR S34 CONFERENCE	JD	-	NN	30.01.19	ZHIVA LIVING marchese partners	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.  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	3 QUARRY ROAD, DURAL	CIVIL ENGINEERING WORKS DEVELOPMENT APPLICATION	172490	
6	ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	22.02.19						
7	RE-ISSUED FOR DEVELOPMENT APPLICATION	JD	-	NN	25.02.19						
8	RE-ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	27.02.19						
9	RE-ISSUED FOR DEVELOPMENT APPLICATION	CP	-	NN	28.02.19						
10	RE-ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	04.03.19						
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS REVISION SIGNATURE HAS BEEN ADDED.						THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD	SCALE VARIES	DETAIL - SHEET 03	DRAWING NUMBER DAC06.03 REVISION 10		
DRAWING SHEET SIZE = A1											

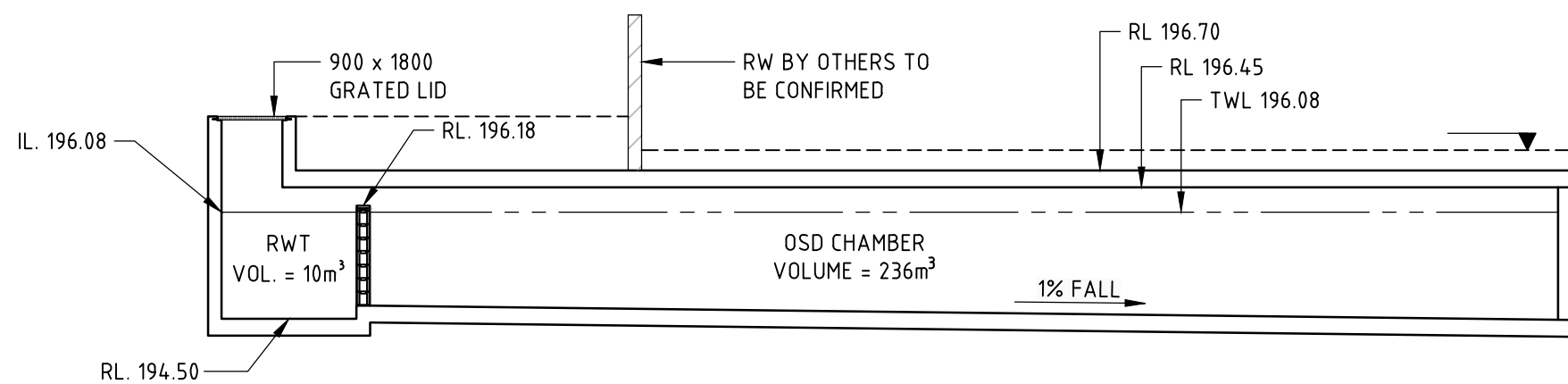
VERIFIER: J. GILLIGAN
JOB MANAGER: N. MACKER
DESIGNED: C. PASKE



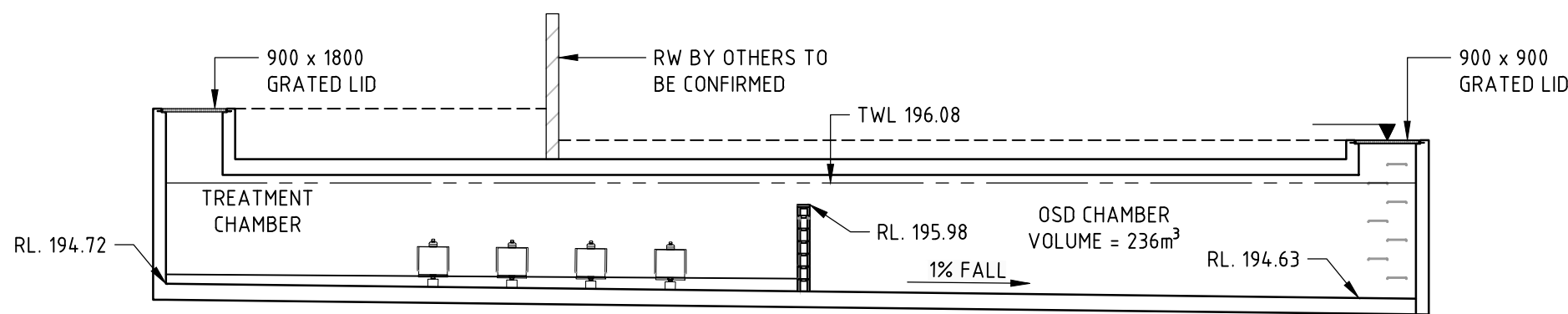
ON SITE DETENTION TANK 2
BASE PLAN DETAIL

SCALE: 100

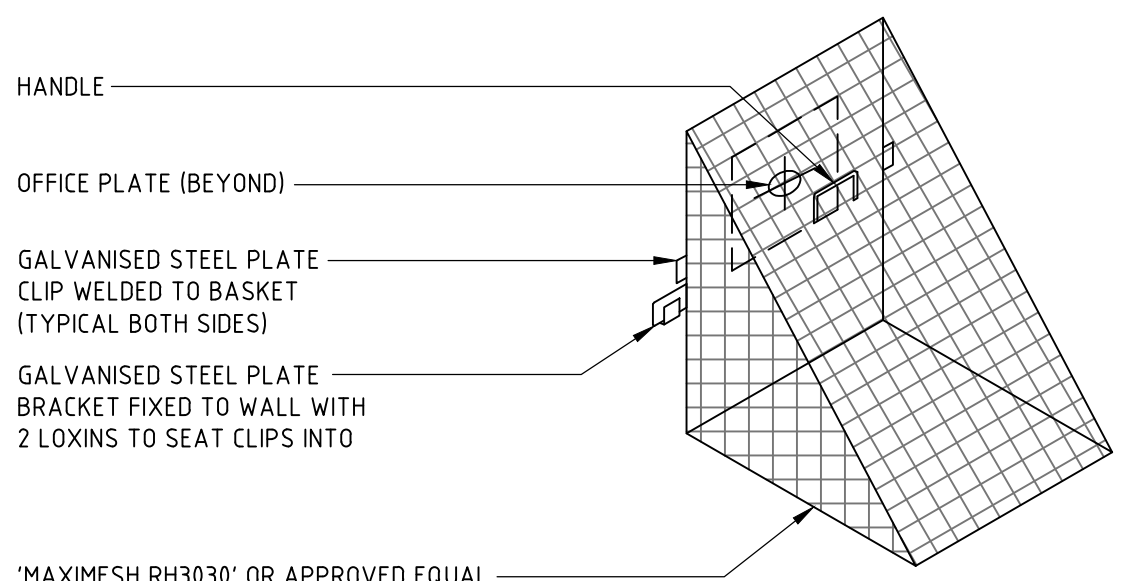
NOTE:
ONSITE-DETENTION TANK TO BE DESIGNED BY STRUCTURAL
ENGINEER AND CONFIRMED AT DETAILED DESIGN STAGE



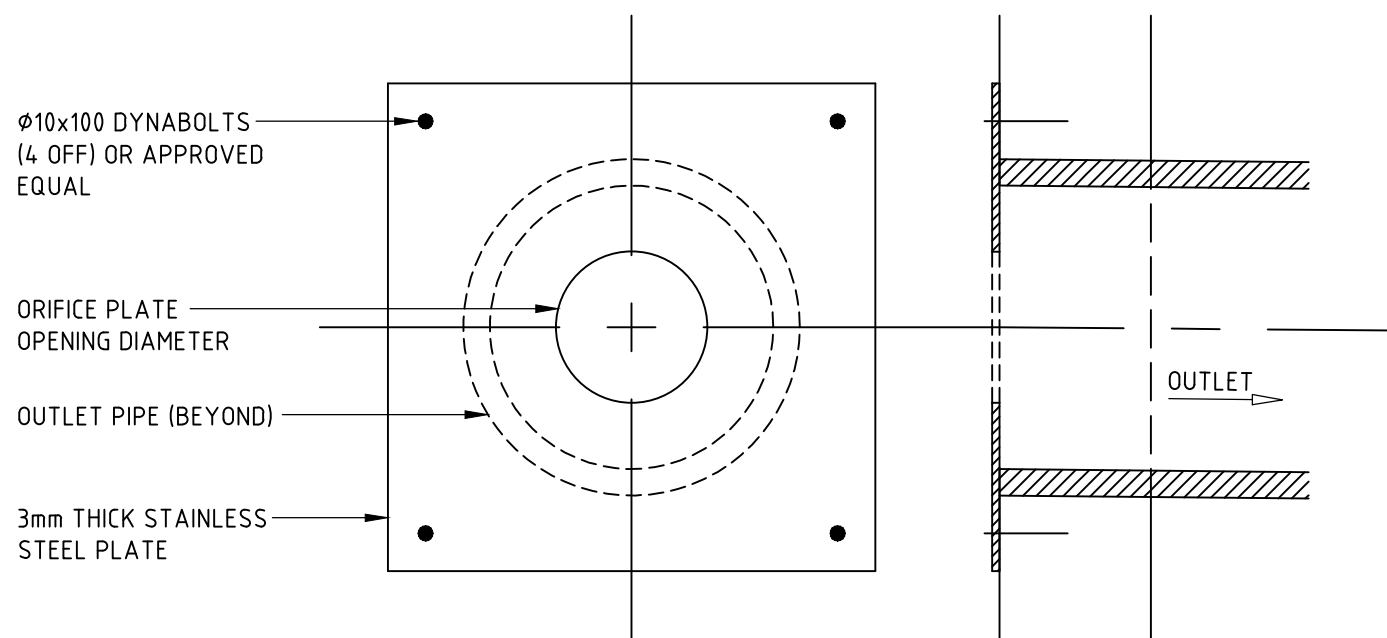
SECTION A
SCALE 1:100



SECTION B
SCALE 1:100

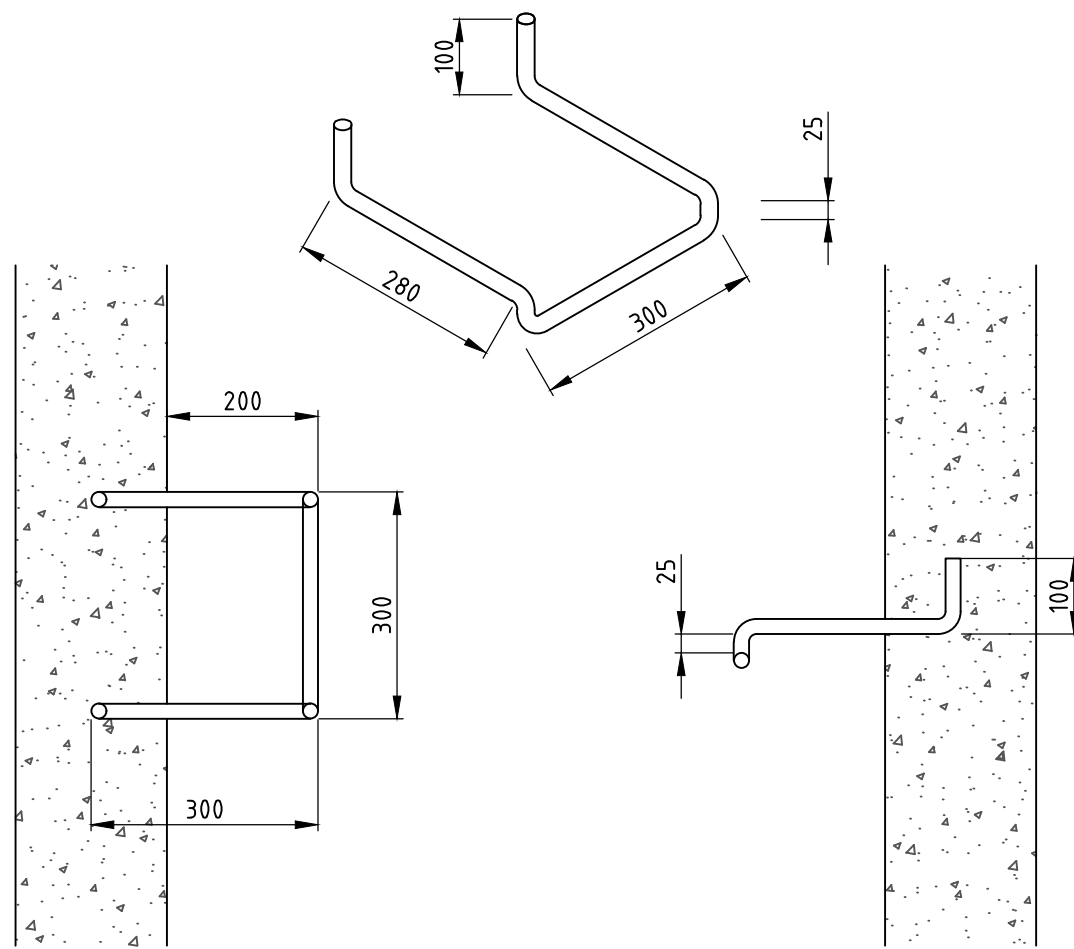


TRASH SCREEN DETAIL



ORIFICE PLATE DETAIL

• ORIFICE PLATE No 2 - Ø250mm



STEP IRON DETAIL

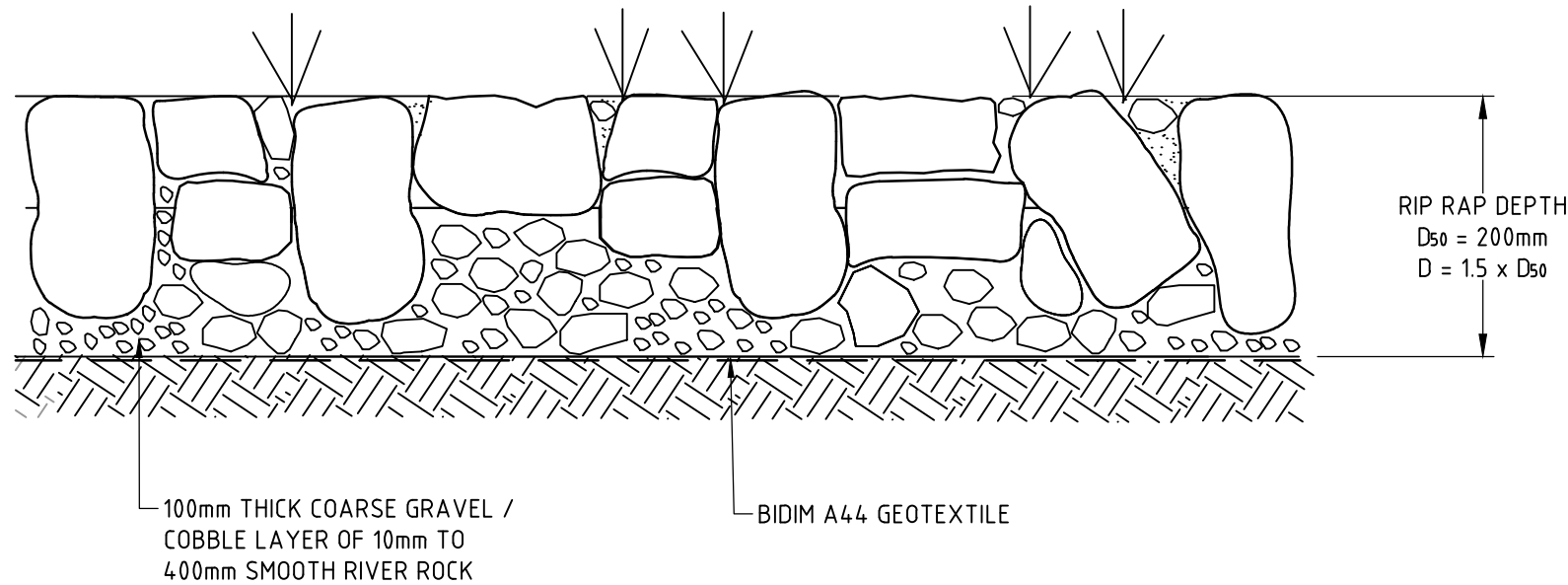
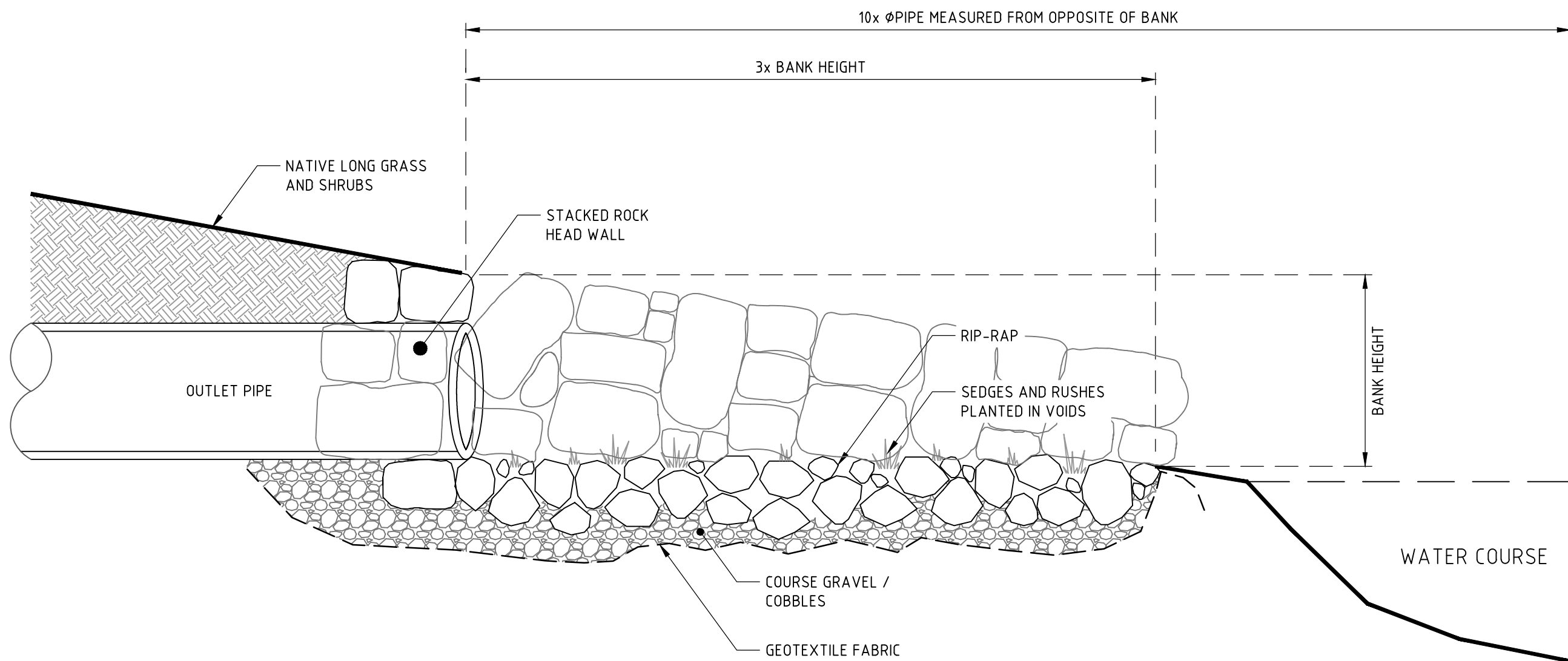
STEP IRON OF 20mm GALVANISED STEEL MADE TO SHAPE AND DIMENSIONS AS SHOWN,
PLACED AT 300 CENTRES AND STAGGERED HORIZONTALLY FOR ALL PITS DEEPER THAN
1.0m. THE USE OF PROPRIETARY STEP IRONS ARE ACCEPTABLE PROVIDED THE PRODUCT
IS IN ACCORDANCE WITH AUSTRALIAN STANDARDS

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT	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.	PROJECT	DRAWING TITLE	JOB NUMBER
3	DRAFT WITHOUT PREJUDICE FOR S34 CONFERENCE	JO	-	NN	30.01.19	ZHIVA LIVING	marchesepartners	SCALE VARIES	3 QUARRY ROAD, DURAL	CIVIL ENGINEERING WORKS DEVELOPMENT APPLICATION DETAIL - SHEET 04	172490
4	ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	22.02.19						
5	RE-ISSUED FOR DEVELOPMENT APPLICATION	JO	-	NN	25.02.19						DRAWING NUMBER
6	RE-ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	27.02.19						REVISION
7	RE-ISSUED FOR DEVELOPMENT APPLICATION	CP	-	NN	28.02.19						DAC06.04
8	RE-ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	04.03.19	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				8
											DRAWING SHEET SIZE = A1

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Email sydney@northrop.com.au ABN 81 094 433 100

VERIFIER: J. GILLIGAN
JOB MANAGER: N. WACKER
DESIGNED: C. PASKE



RIP-RAP SCOUR PROTECTION DETAIL
SCALE NTS

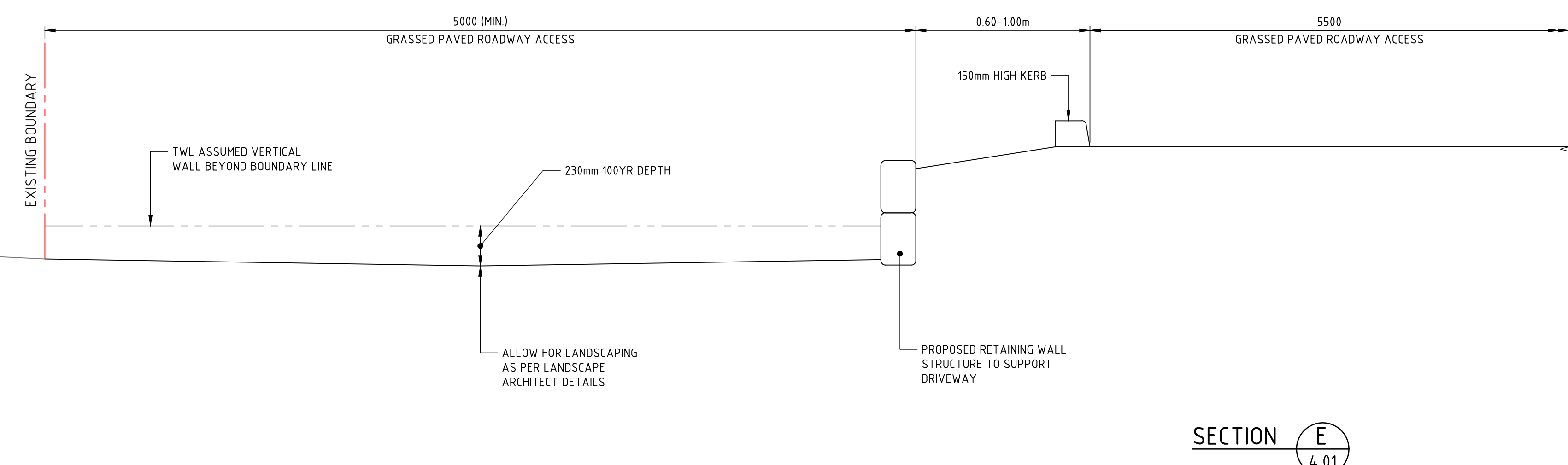
SPECIFICATIONS:

- ALL RIPRAP MUST CONSIST OF HARD, DURABLE ANGULAR RUN-OF-QUARRY SANDSTONE ROCK; RESISTANT TO WEATHERING & WATER ACTION; FREE FROM OVERBURDEN, SPOIL, SHALE & ORGANIC MATERIAL; & SHALL MEET THE GRADATION REQUIREMENTS SPECIFIED.
- ROUNDED STONES/BOULDERS WILL NOT BE ACCEPTABLE.
- SHALE & ROCK WITH SHALE SEAMS WILL NOT BE ACCEPTABLE.
- ALL ROCK & COBBLES TO BE PACKED WITH TOPSOIL. GAPS IN RIPRAP TO BE PLANTED AS SPECIFIED IN VMP, OR WITH SUITABLE NATIVE GRASSES/SEDGES.
- RIPRAP SHALL BE PLACED ON THE PREPARED SLOPE IN A MANNER THAT WILL PRODUCE A REASONABLY WELL GRADED MASS OF STONE WITH THE MINIMUM PRACTICAL PERCENTAGE OF VOIDS.
- LARGER STONES SHALL BE WELL DISTRIBUTED & THE ENTIRE MASS OF STONE SHALL CONFORM TO THE GRADATION SPECIFIED BY THE ENGINEERING PLANS.
- RIPRAP IS TO BE PLACED BY HAND AND CROW-BARRED INTO PLACE TO ENSURE FIT WITH MINIMUM VOIDS.
- THE MINIMUM THICKNESS OF THE RIPRAP LAYER IS TO BE 1.5 TIMES THE d50 ROCK SIZE & NOT BE LESS THAN 300mm FOR PRACTICAL PLACEMENT.
- ALL RIPRAP MUST BE PLACED OVER A 100mm COARSE GRAVEL / COBBLE LAYER OF 10mm TO 40mm SMOOTH RIVER ROCK. VOIDS ARE TO BE FILLED IN DURING PLACEMENT AND LIGHTLY WASHED IN TO THE ABOVE LAYER WITH TOPSOIL AS THE ROCK WORK IS BOUGHT
- ALL ROCK IS TO BE A HARD DURABLE ROCK WITH A POINT INDEX LOAD IS50 GREATER THAN 1.0MPa AS DETERMINED IN ACCORDANCE WITH AS4133.4.1 -2007
- THE MINIMUM DENSITY OF STONE USED SHALL NOT BE LESS THAN 2200 kg/cu.m. TYPICAL ROCK WEIGHT RANGES FOR RIPRAP ARE:

M₅₀ - 60kg (NOM 300MD)
M₁₅ - 25kg
M₁₀₀ - 120kg

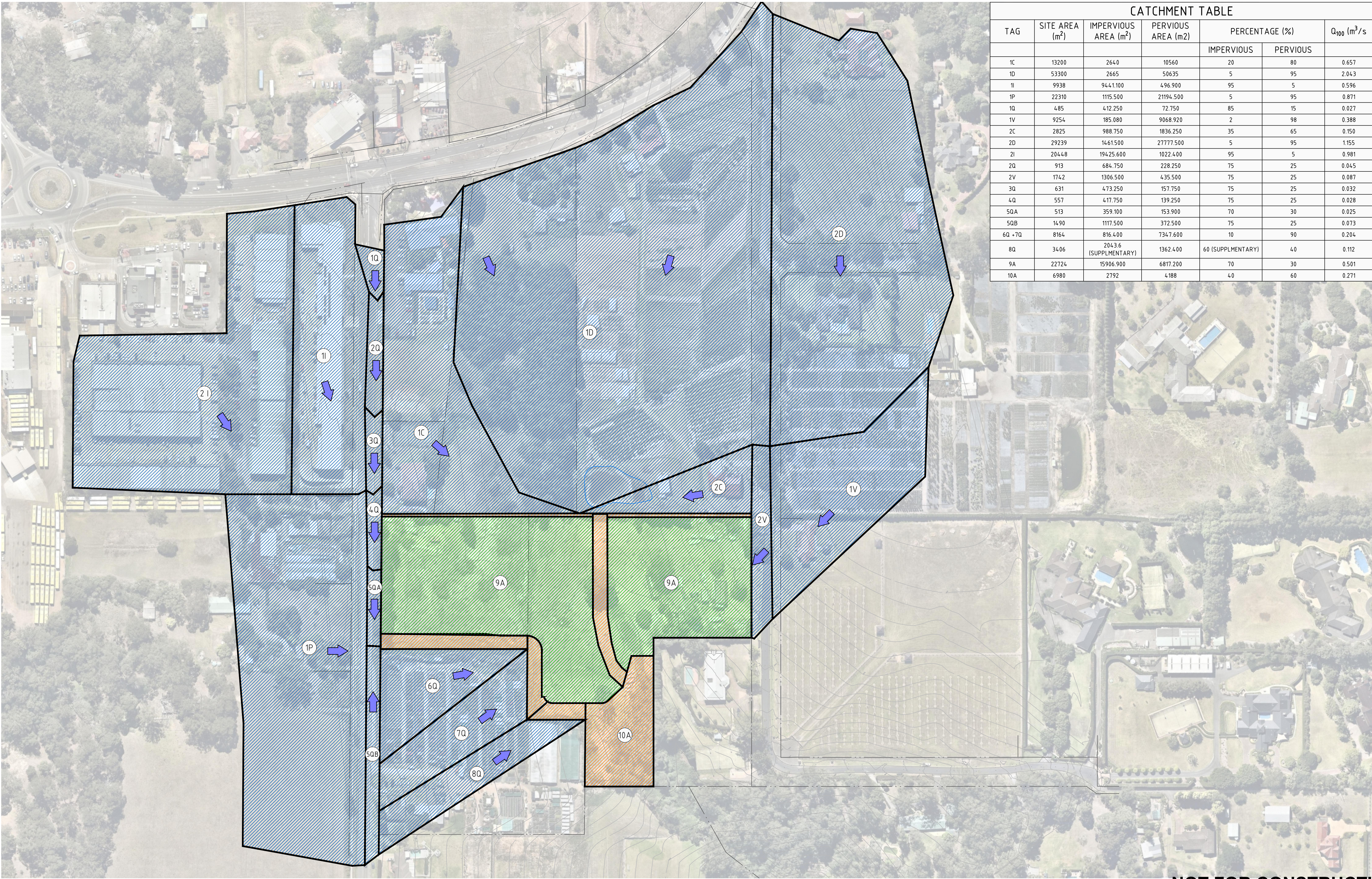
NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT	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.	 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	PROJECT 3 QUARRY ROAD, DURAL	DRAWING TITLE CIVIL ENGINEERING WORKS DEVELOPMENT APPLICATION DETAIL - SHEET 05	JOB NUMBER 172490	
3	DRAFT WITHOUT PREJUDICE FOR S34 CONFERENCE	JO	-	NN	30.01.19	ZHIVA LIVING	marchesepartners					DRAWING NUMBER	REVISION
4	ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	22.02.19							DAC06.05	8
5	RE-ISSUED FOR DEVELOPMENT APPLICATION	JO	-	NN	25.02.19							DRAWING SHEET SIZE = A1	
6	RE-ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	27.02.19								
7	RE-ISSUED FOR DEVELOPMENT APPLICATION	JO	-	NN	28.02.19								
8	RE-ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	04.03.19	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					



REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT	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	 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	PROJECT 3 QUARRY ROAD, DURAL	DRAWING TITLE CIVIL ENGINEERING WORKS DEVELOPMENT APPLICATION DETAIL - SHEET 07	JOB NUMBER 172490	
1	ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	22.02.19	ZHIVA LIVING	marchesepartners					DRAWING NUMBER	REVISION
2	RE-ISSUED FOR DEVELOPMENT APPLICATION	JO	-	NN	25.02.19							DAC06.07	5
3	RE-ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	27.02.19								
4	RE-ISSUED FOR DEVELOPMENT APPLICATION	JO	-	NN	28.02.19								
5	RE-ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	04.03.19								
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			

DRAWN: C. PASKE
DESIGNED: N. MACKER
JOB MANAGER: J. GILLIGAN
VERIFIER:



CATCHMENT TABLE						
TAG	SITE AREA (m²)	IMPERVIOUS AREA (m²)	PERVIOUS AREA (m²)	PERCENTAGE (%)		Q ₁₀₀ (m³/s)
				IMPERVIOUS	PERVIOUS	
1C	13200	2640	10560	20	80	0.657
1D	53300	2665	50635	5	95	2.043
1I	9938	9441.100	496.900	95	5	0.596
1P	22310	1115.500	21194.500	5	95	0.871
1Q	485	412.250	72.750	85	15	0.027
1V	9254	185.080	9068.920	2	98	0.388
2C	2825	988.750	1836.250	35	65	0.150
2D	29239	1461.500	27777.500	5	95	1.155
2I	204.48	19425.600	1022.400	95	5	0.981
2Q	913	684.750	228.250	75	25	0.045
2V	1742	1306.500	435.500	75	25	0.087
3Q	631	473.250	157.750	75	25	0.032
4Q	557	417.750	139.250	75	25	0.028
5QA	513	359.100	153.900	70	30	0.025
5QB	1490	1117.500	372.500	75	25	0.073
6Q + 7Q	8164	816.400	7347.600	10	90	0.204
8Q	34.06	2043.6 (SUPPLEMENTARY)	1362.400	60 (SUPPLEMENTARY)	40	0.112
9A	22724	15906.900	6817.200	70	30	0.501
10A	6980	2792	4188	40	60	0.271

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
5	DRAFT WITHOUT PREJUDICE FOR S34 CONFERENCE	JO	-	NN	30.01.19
6	ISSUED FOR COORDINATION	VC	-	NN	22.02.19
7	RE-ISSUED FOR DEVELOPMENT APPLICATION	JO	-	NN	25.02.19
8	RE-ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	27.02.19
9	RE-ISSUED FOR DEVELOPMENT APPLICATION	JO	-	NN	28.02.19
10	RE-ISSUED FOR DEVELOPMENT APPLICATION	VC	-	NN	04.03.19

ZHIVA LIVING

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CLIENT

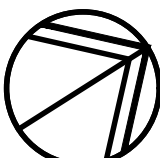
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ARCHITECT

marchesepartners

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SCALE 1:500@A1



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Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT

3 QUARRY ROAD, DURAL

DRAWING TITLE

CIVIL ENGINEERING WORKS
DEVELOPMENT APPLICATION

CATCHMENT PLAN

JOB NUMBER

172490

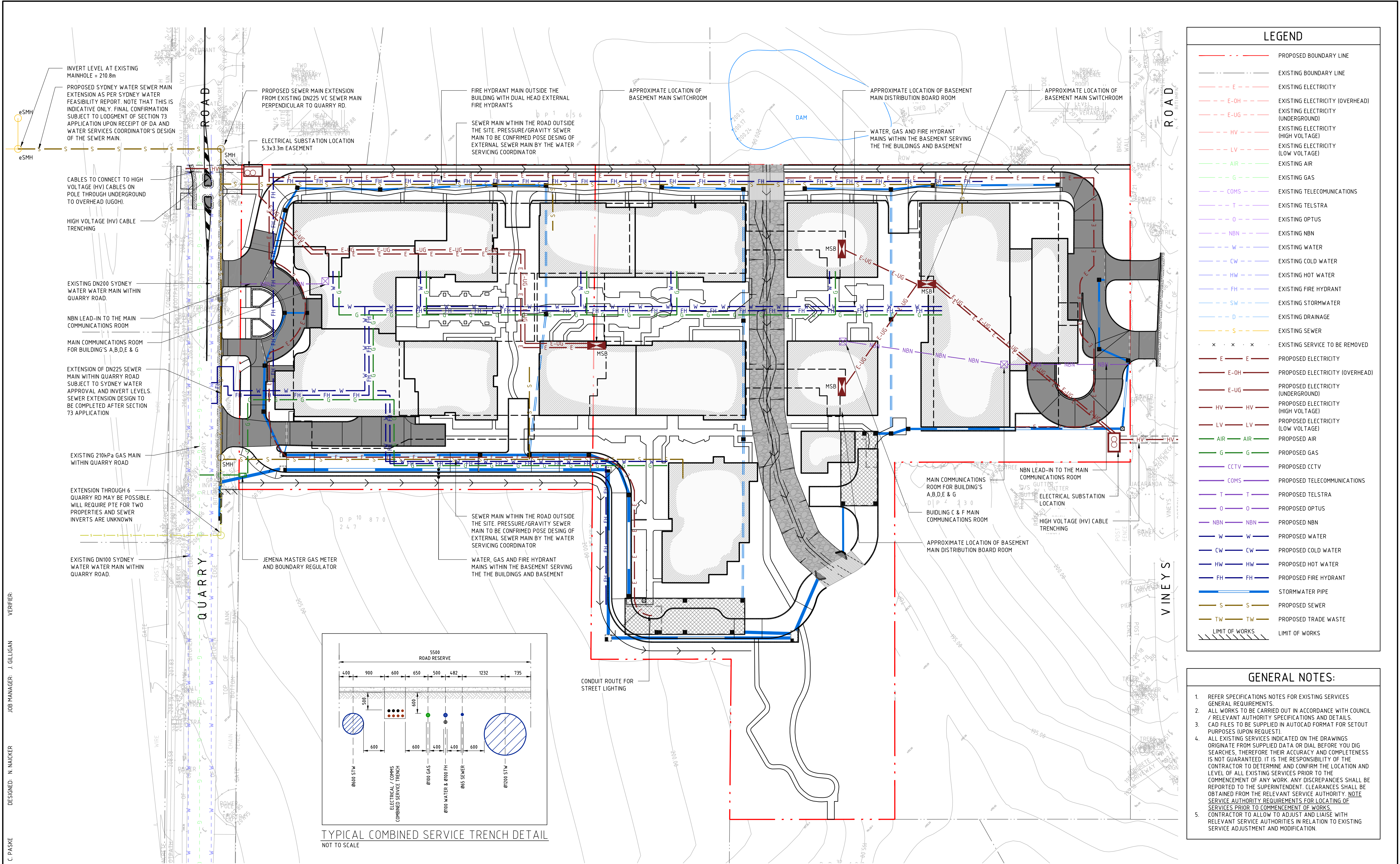
DRAWING NUMBER

DAC07.01

REVISION

10

DRAWING SHEET SIZE = A1



LEGEND	
	PROPOSED BOUNDARY LINE
	EXISTING BOUNDARY LINE
	EXISTING ELECTRICITY
	EXISTING ELECTRICITY (OVERHEAD)
	EXISTING ELECTRICITY (UNDERGROUND)
	EXISTING ELECTRICITY (HIGH VOLTAGE)
	EXISTING ELECTRICITY (LOW VOLTAGE)
	EXISTING AIR
	EXISTING GAS
	EXISTING TELECOMMUNICATIONS
	EXISTING TELSTRA
	EXISTING OPTUS
	EXISTING NBN
	EXISTING WATER
	EXISTING COLD WATER
	EXISTING HOT WATER
	EXISTING FIRE HYDRANT
	EXISTING STORMWATER
	EXISTING DRAINAGE
	EXISTING SEWER
	EXISTING SERVICE TO BE REMOVED
	PROPOSED ELECTRICITY
	PROPOSED ELECTRICITY (OVERHEAD)
	PROPOSED ELECTRICITY (UNDERGROUND)
	PROPOSED ELECTRICITY (HIGH VOLTAGE)
	PROPOSED ELECTRICITY (LOW VOLTAGE)
	PROPOSED AIR
	PROPOSED GAS
	PROPOSED CCTV
	PROPOSED TELECOMMUNICATIONS
	PROPOSED TELSTRA
	PROPOSED OPTUS
	PROPOSED NBN
	PROPOSED WATER
	PROPOSED COLD WATER
	PROPOSED HOT WATER
	PROPOSED FIRE HYDRANT
	STORMWATER PIPE
	PROPOSED SEWER
	PROPOSED TRADE WASTE
	LIMIT OF WORKS

- GENERAL NOTES:
- REFER SPECIFICATIONS NOTES FOR EXISTING SERVICES GENERAL REQUIREMENTS.
 - ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
 - CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
 - ALL EXISTING SERVICES INDICATED ON THE DRAWINGS ORIGINATE FROM SUPPLIED DATA OR DIAL BEFORE YOU DIG SEARCHES. THEREFORE THEIR ACCURACY AND COMPLETENESS IS NOT GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE AND CONFIRM THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY. NOTE: SERVICE AUTHORITY REQUIREMENTS FOR LOCATING OF SERVICES PRIOR TO COMMENCEMENT OF WORKS.
 - CONTRACTOR TO ALLOW TO ADJUST AND LIAISE WITH RELEVANT SERVICE AUTHORITIES IN RELATION TO EXISTING SERVICE ADJUSTMENT AND MODIFICATION.

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT		PROJECT	DRAWING TITLE	JOB NUMBER	
1	ISSUED FOR INFORMATION.	VC	-	NN	15.01.19	ZHIVA LIVING	marchesepartners	 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	3 QUARRY ROAD, DURAL	CIVIL ENGINEERING WORKS SKETCH	172490	
2	RE-ISSUED FOR INFORMATION.	JO	-	NN	30.01.19						DRAWING NUMBER	REVISION
3	RE-ISSUED FOR INFORMATION.	JDC	-	NN	15.02.19						SK06.01	6
4	RE-ISSUED FOR INFORMATION.	JO	-	NN	25.02.19						DRAWING SHEET SIZE = A1	
5	RE-ISSUED FOR INFORMATION.	JO	-	NN	28.02.19							
6	RE-ISSUED FOR INFORMATION.	VC	-	NN	04.03.19							
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