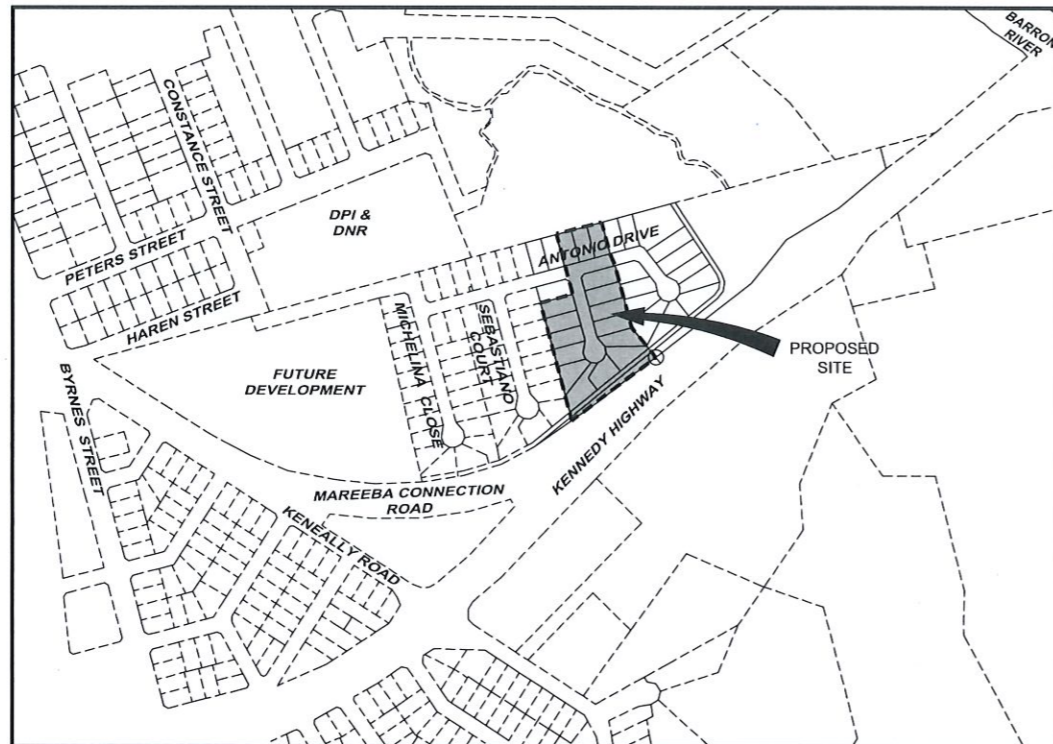


'THE EDGE' RESIDENTIAL ESTATE AT ANTONIO DRIVE STAGE 3



SITE PLAN
N.T.S.

PROJECT DRAWINGS


PROJECT No. 1450

- C 01 - SITE PLAN, TYPICAL CROSS SECTIONS, PAVEMENT DATA, DETAILS & NOTES
- C 02 - BULK EARTHWORKS PLAN
- C 03 - SOIL AND WATER MANAGEMENT PLAN
- C 04 - EARTHWORKS, ROADWORKS AND STORMWATER DRAINAGE PLAN
- C 05 - SEWERAGE RETICULATION PLAN
- C 06 - WATER RETICULATION PLAN
- C 07 - ANTONIO DRIVE - LONGITUDINAL SECTION
- C 08 - ANTONIO DRIVE - CROSS SECTIONS (SHEET 1 OF 2)
- C 09 - ANTONIO DRIVE - CROSS SECTIONS (SHEET 2 OF 2)
- C 10 - ROAD D - LONGITUDINAL SECTION, CUL DE SAC AND INTERSECTION DETAILS
- C 11 - ROAD D - CROSS SECTIONS (SHEET 1 OF 1)
- C 12 - OPEN DRAIN No. 1 - LONGITUDINAL SECTION
- C 13 - OPEN DRAIN No. 1 - CROSS SECTIONS (SHEET 1 OF 1)
- C 14 - SEWERAGE RETICULATION LONGITUDINAL SECTIONS AND SET OUT
- C 15 - STORMWATER DRAINAGE LONGITUDINAL SECTIONS, PIT SCHEDULE, SET OUT AND NOTES
- C 16 - STORMWATER DRAINAGE CATCHMENT PLAN
- C 17 - STORMWATER DRAINAGE CALCULATION SHEET.

J.T.SMITH & ASSOC. PTY. LTD.

CONSULTING ENGINEERS

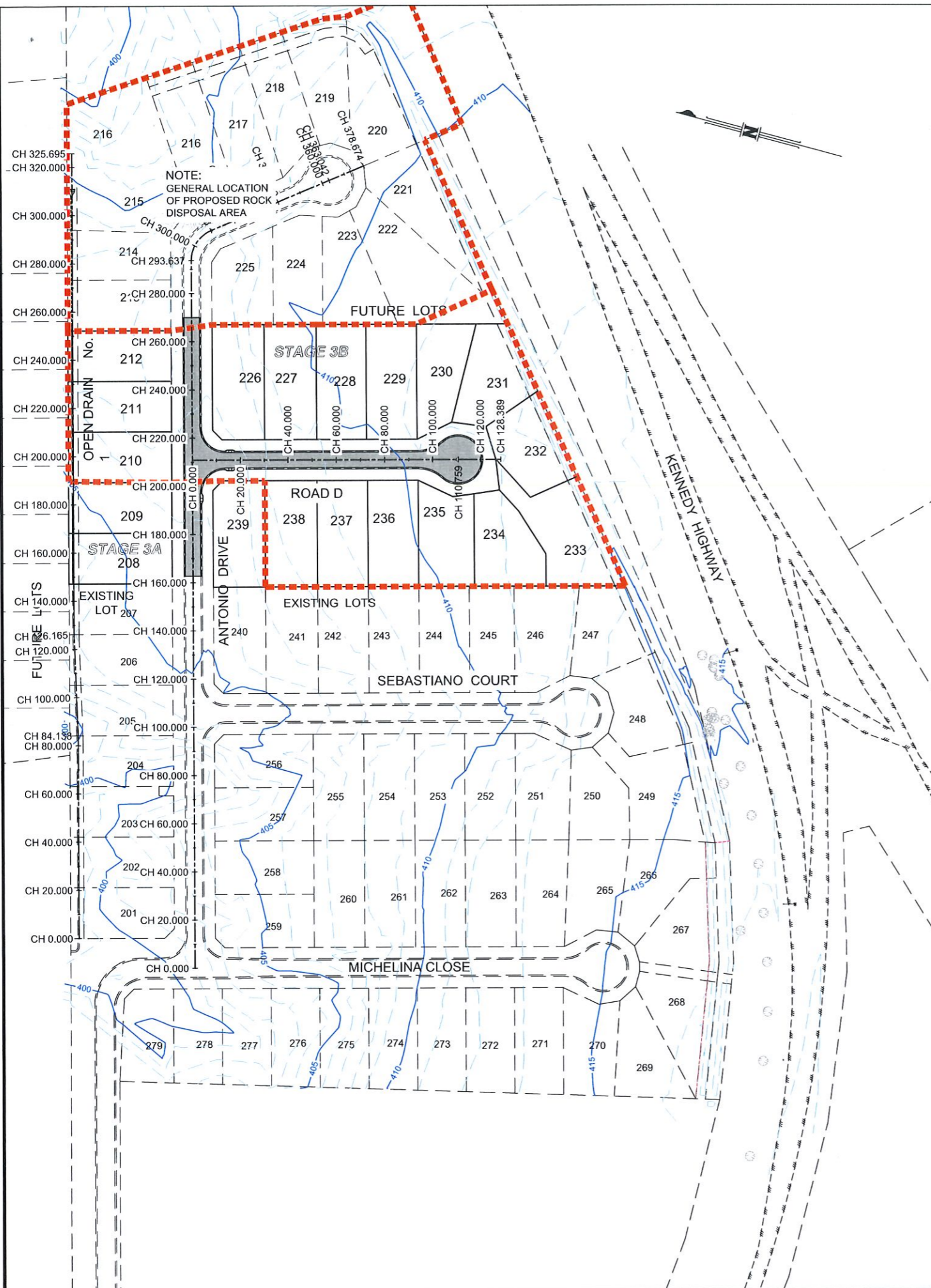
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PRE-START MEETING

THE CONTRACTOR SHALL PRODUCE THE FOLLOWING DOCUMENTS AT THE PRESTART MEETING:

- EVIDENCE OF PAYMENT OF Q LEAVE LEVY.
- TRAFFIC MANAGEMENT PLAN
- PRICED BILL OF QUANTITIES.
- CONTRACTOR'S EROSION AND SEDIMENT CONTROL PLAN.
- EVIDENCES OF INSURANCES:
 - PUBLIC LIABILITY
 - LOSS OR DAMAGE TO THE WORKS
 - WORKERS COMPENSATION
- NOTICE OF APPOINTMENT OF PRINCIPAL CONTRACTOR AS REQUIRED BY WORKPLACE, HEALTH AND SAFETY ACT.
- PROGRAMME OF WORKS

NOTES:

SURVEY CONTROL

ORIGIN OF LEVELS:
PM 1877761 RL 687.844 AHD der.

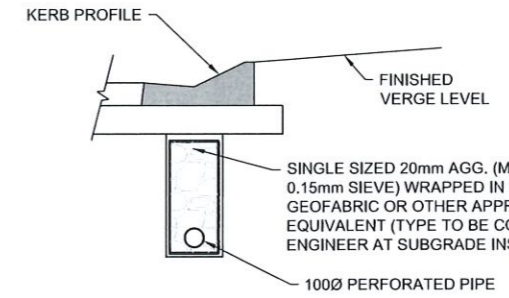
ORIGIN OF COORDINATES:
MGA 94 ZONE 55

CONTOUR INTERVAL EXISTING SURFACE:
0.50m INDEXED AT 0.5m INTERVALS.

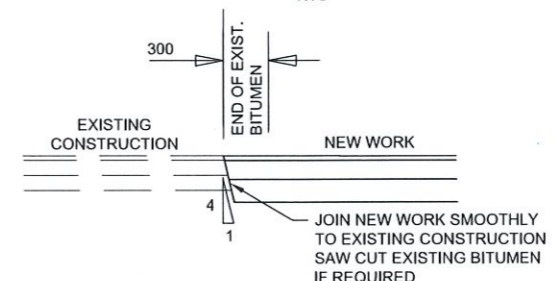
NOTES:

THE CONTRACTOR TO CONFIRM SURVEY DATUM WITH SURVEYOR PRIOR TO COMMENCEMENT OF WORK.

THE PRINCIPAL'S SURVEYOR SHALL PROVIDE INITIAL SURVEY DATA AND FINAL CADASTRAL SURVEY INFORMATION ONLY. THE CONTRACTOR IS RESPONSIBLE FOR ALL OTHER SURVEY DATA NECESSARY TO CONSTRUCT THE WORKS INCLUDING 'AS CONSTRUCTED' INFORMATION. THE COST OF PROVIDING THIS SURVEY SHALL FORM PART OF THE CONTRACT SUM.



SUB SURFACE DRAINAGE DETAIL



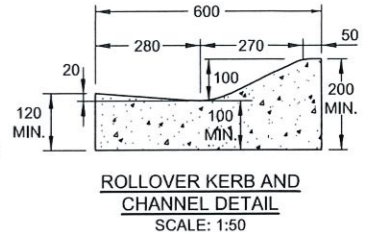
PAVEMENT JOINT DETAIL

NOTES:

FOOTPATHS TO BE DRILL SEEDED WITH GRASS SPECIES AS APPROVED BY THE SUPERINTENDENT.

ALL POSTS FOR STREET SIGNS SHALL HAVE AT THE BASE A MOWING STRIP AS SHOWN ON FNQROC STD. DRGS.

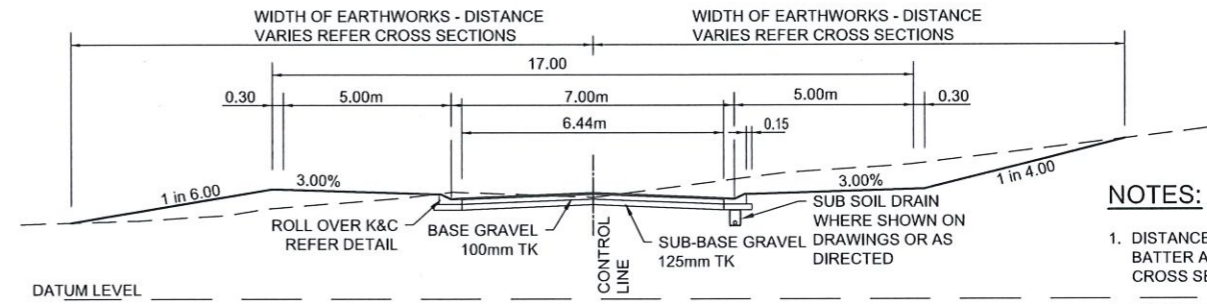
PRIOR TO THE COMMENCEMENT OF CONSTRUCTION THE PRINCIPAL SHALL COMPLETE AND SUBMIT TO THE LOCAL AUTHORITY A "NOTICE OF APPOINTMENT OF PRINCIPAL CONTRACTOR" WHICH IDENTIFIES THE PRINCIPAL CONTRACTOR.



RP DESCRIPTION
LOT 300 ON SP 323221
LOCAL AUTHORITY:
MAREEBA SHIRE COUNCIL

EXISTING SERVICES

- EXISTING SERVICES ARE PLOTTED FROM THE BEST INFORMATION AVAILABLE. NO RESPONSIBILITY IS TAKEN BY THE SUPERINTENDENT FOR THE ACCURACY AND COMPLETENESS OF THE INFORMATION SHOWN.
- PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR IS TO ESTABLISH ON SITE THE EXACT LOCATION OF ALL UNDERGROUND SERVICES IN THE PROPOSED WORKS AREA. METHODS TO ACHIEVE THIS WILL INCLUDE BUT NOT BE LIMITED TO:
 - CAREFUL EXAMINATION OF THE CONTRACT DRAWINGS
 - CONSULTATION WITH THE RELEVANT SERVICE AUTHORITIES
 - COMPREHENSIVELY SCANNING THE AFFECTED AREAS WITH A CABLE DETECTOR AND MARKING ON THE GROUND THE POSITION OF ALL SERVICES
 - HAND EXCAVATING TO EXPOSE ALL SERVICES WHICH MAY BE AFFECTED BY THE PROPOSED WORKS UNDER THE DIRECTION OF THE RELEVANT SERVICE AUTHORITY.
- THE CONTRACTOR SHALL BRING TO THE SUPERINTENDENTS ATTENTION ANY DISCREPANCIES BETWEEN THE EXISTING SERVICES THUS IDENTIFIED AND THE DOCUMENTED SERVICES WHICH MIGHT AFFECT THE PROPOSED WORKS. APPROPRIATE MEASURES TO RESOLVE ANY CONFLICTS WILL BE DOCUMENTED BY THE SUPERINTENDENT.



TYPICAL CROSS SECTION SEBASTIANO COURT
SCALE: 1:100

NOTES:

- DISTANCES FROM CL TO TOPS OF BATTER ARE SHOWN ON THE CROSS SECTIONS.
- REFER CROSS SECTIONS FOR ADDITIONAL BATTER SLOPES.

PAVEMENT NOTES

PROVISIONAL PAVEMENT DESIGN STATED HEREIN IS BASED ON A MINIMUM CBR UNDER SERVICE CONDITIONS OF 7. PAVEMENT DESIGN IS SUBJECT TO REVISION ON BASIS OF CONFIRMATORY CBR TESTS TAKEN AT THE TIME OF CONSTRUCTION, BASED ON THE INSITU CBR TEST RESULTS. THE FINAL PAVEMENT DESIGN SHALL APPROVED BY COUNCIL PRIOR TO CONSTRUCTION. THE COMPLETED PAVEMENT DESIGN SHALL GENERALLY COMPLY WITH AUSTRROADS OR DTMR PAVEMENT DESIGN MANUAL AS APPLICABLE.

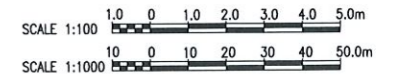
SUBGRADE - COMPACT TO 100% SRDD. SHOULD ANY SOFT OR UNSUITABLE MATERIAL BE IDENTIFIED SEEK ADVICE OF THE SUPERINTENDENT.

SUBBASE SHALL CONSIST OF TYPE 2 SUBTYPE 2.3 PAVEMENT MATERIAL ('B' OR 'C' GRADED) COMPACTED TO 100% SRDD IN ACCORDANCE WITH SPECIFICATION. DEPTH OF PAVEMENT 125mm.

BASE SHALL CONSIST OF TYPE 2 SUBTYPE 2.2 PAVEMENT MATERIAL ('B' OR 'C' GRADED) COMPACTED TO 100% SRDD IN ACCORDANCE WITH SPECIFICATION. DEPTH OF PAVEMENT 100mm

SEAL PAVEMENT AREAS WITH ASPHALT AS SHOWN ON THE DRAWINGS IN ACCORDANCE WITH THE SPECIFICATION. DEPTH OF ASPHALT SHALL BE 30mm UNLESS NOTED OTHERWISE ON THE DRAWINGS.

SURVEY MARKS				
Point #	Easting	Northing	Level	Description
1	332860.813	8118592.165	416.462	Survey Mark
2	332916.015	8118594.092	416.202	Survey Mark
3	332965.442	8118609.372	415.879	Survey Mark
4	333029.765	8118635.956	414.960	Survey Mark
5	333003.502	8118653.675	414.220	Survey Mark
6	333136.736	8118902.110	408.136	Survey Mark
7	333212.905	8118873.664	408.002	Survey Mark



amendments	
A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES 15.03.21

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"The Edge Mareeba" Stage 3
PROPOSED RESIDENTIAL SUBDIVISION AT ANTONIO DRIVE, MAREEBA
DRAWING TITLE: SITE PLAN, TYPICAL CROSS SECTION, PAVEMENT DATA, DETAILS AND NOTES

SCALE (AT A1 SIZE)	HOR:1000/100	VER: 1:100	DRAWN	J.P.
			DESIGNED	J.P.
			CHECKED	J.P.
DATE	MARCH 2021			
APPROVED	J. T SMITH RPEQ No. 2668			
DWG NUMBER	1450 - C01	AMDT	A	

DEFINITION OF ROCK
 ROCK IS NON-RIPPABLE MATERIAL AS DESCRIBED IN DTMR STANDARD SPECIFICATION 11.04 GENERAL EARTHWORKS WITH THE FOLLOWING ADDITIONAL QUALIFICATIONS:

- ALL MACHINERY USED MUST BE IN GOOD CONDITION AND OPERATED BY A COMPETENT OPERATOR
- INCLUDES 'FLOATING' BOULDERS WITH A VOLUME EXCEEDING 1.0m³

LEGEND	
	EXTENT OF CUT
	EXTENT OF FILL
	DESIGN CONTOURS (AT 0.5m, INDEXED AT 2.0m)
	EXISTING CONTOURS (AT 1.0m, INDEXED AT 5.0m)

BULK EARTHWORKS

PRIOR TO COMMENCEMENT OF WORKS, THE CONTRACTOR SHALL OBTAIN COUNCIL APPROVAL TO REMOVE ANY TREES.

SITE EARTHWORKS SHALL GENERALLY CONSIST OF CLEARANCE OF VEGETATION FOLLOWED BY EXCAVATION OF TOP SOILS AND CUTTING AND FILLING OF MATERIAL TO SUIT FINAL DESIGN LEVELS. TOP SOILS MAY BE STOCKPILED FOR REUSE LATER. THE LOCATION OF SUCH STOCKPILE SITES SHALL BE ON SITE AS DIRECTED BY THE SUPERINTENDENT AFTER CONSULTATION AND AGREEMENT WITH COUNCIL. STOCKPILE SITES SHALL BE PROTECTED BY DIVERSION DRAINS AND SILT FENCES AS APPROPRIATE.

THE EXPOSED SUBGRADE SHALL BE UNIFORMLY COMPACTED TO ACHIEVE A DRY DENSITY RATIO TO A DEPTH OF 250mm OF NOT LESS THAN 98% OF THE MAXIMUM SATURATED VIBRATED DENSITY (AS 1289 TESTS 5.3.1 AND 5.5.1). SUBGRADE COMPACTION SHALL BE ACCOMPANIED BY GENERAL INSPECTION TO ALLOW DETECTION AND RECTIFICATION OF ANY LOCALISED COMPRESSIBLE ZONES WHICH MAY EXIST.

ALL FILLING PLACED AREAS SHALL BE UNIFORMLY COMPACTED IN LAYERS OF NOT MORE THAN 200mm FINAL THICKNESS, UNDER LEVEL 2 SUPERVISION (AS 3798-1996 "GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENT") TO THE MAXIMUM DRY DENSITY RATIOS OF 98%. (EXPRESSED AS A PERCENTAGE OF THE MAXIMUM VIBRATED DENSITY ESTABLISHED BY TEST METHODS AS 1289 5.3.1, 5.4.1 AND 5.5.1 FOR COHESIONLESS (SAND) MATERIALS OR ALTERNATIVELY, STANDARD COMPACTION, IF APPROPRIATE).

CARE SHALL BE TAKEN TO ENSURE THAT ANY VIBRATORY ROLLING OR CONSTRUCTION ACTIVITIES DO NOT CAUSE DISTRESS (BY WAY OF INDUCED SETTLEMENT) TO ANY ADJACENT MOVEMENT-SENSITIVE FEATURES STRUCTURES ETC.

ANY IMPORTED FILL SHALL COMPRISE LOW PLASTICITY GRANULAR MATERIAL WITH A PLASTICITY INDEX NOT MORE THAN 15%.

ALL BATTERS SHALL BE PROTECTED FROM EROSION, BY HYDRAULIC WITH AN APPROVED SUITABLE GRASS SPECIES, AND MAINTAINED FOR THE REQUIRED MAINTENANCE PERIOD.

ON COMPLETION OF THE WORKS, TOP SOIL SHALL BE RE-SPREAD TO ALLOTMENTS, BATTERS AND FOOTPATHS AND FILL AREAS TO A DEPTH OF 75mm. (WITH AN ABSOLUTE MINIMUM DEPTH OF 40mm) THE FINISHED EARTHWORKS AREAS SHALL BE DRILL SEEDS AS SOON AS PRACTICABLE AFTER COMPLETION.

THE FINISHED LEVELS NOTED ON THE DRAWINGS ARE THE LEVELS TO BE ACHIEVED AFTER COMPLETION OF THE EARTHWORKS AND PRIOR TO PLACEMENT OF TOP SOIL IF ANY.



amendments	
A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES 15.03.21

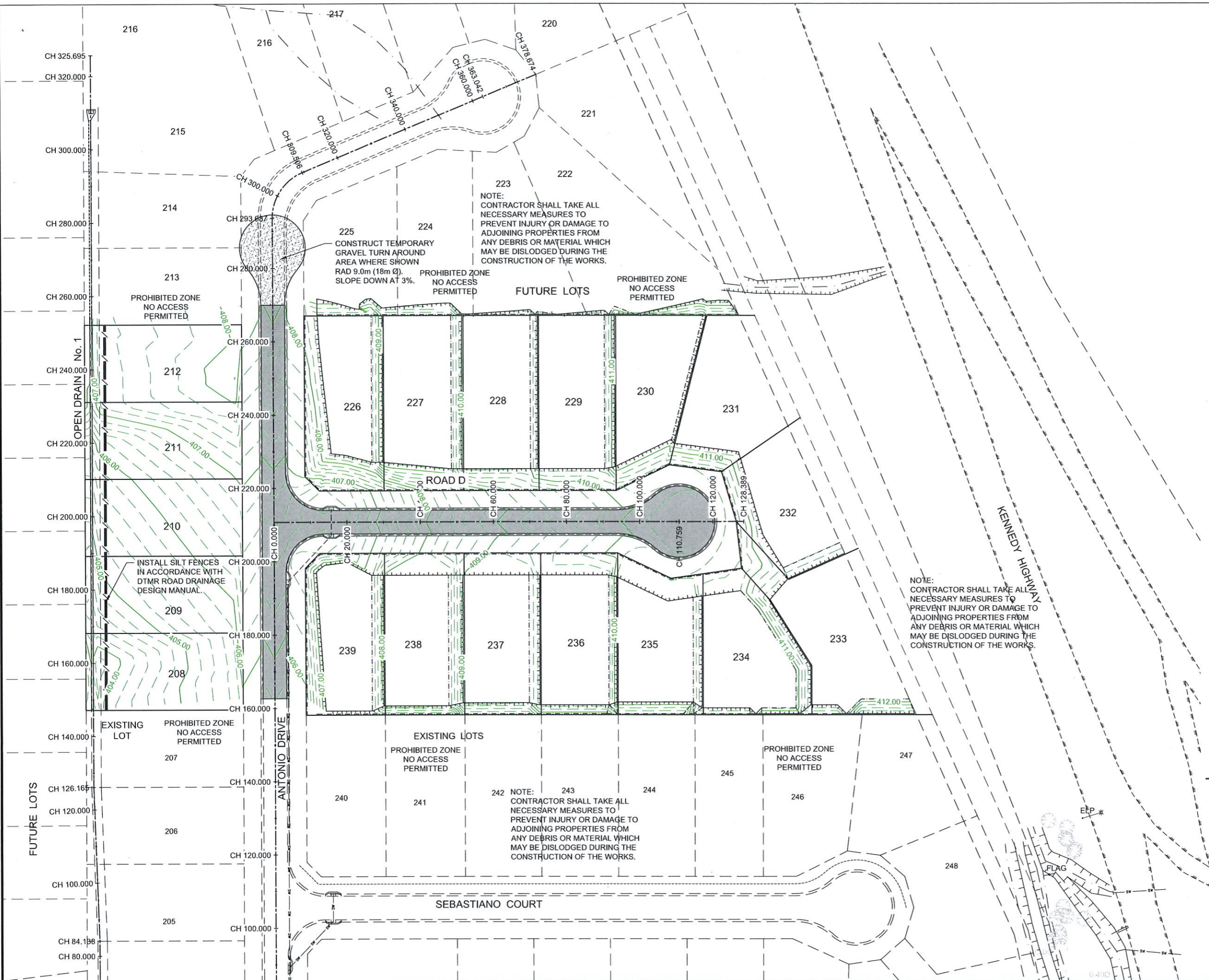
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"The Edge Mareeba" Stage 3
PROPOSED RESIDENTIAL SUBDIVISION
AT ANTONIO DRIVE, MAREEBA
 DRAWING TITLE: BULK EARTHWORKS PLAN

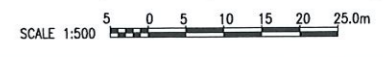
SCALE (AT A1 SIZE)	HOR 1:500	DRAWN	J.P.
DATE	VER	DESIGNED	J.P.
DATE	MARCH 2021	CHECKED	J.P.
APPROVED	J. T. SMITH RPEQ No. 2668		
DWG NUMBER	1450 - C02	AMDT	A



- ### SOIL AND WATER MANAGEMENT
1. THE CONTRACTOR SHALL PREPARE AN EROSION AND SEDIMENT CONTROL PLAN. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL DEVICES/MEASURES NECESSARY TO COMPLY WITH THE PROVISIONS OF THE FNQROC DEVELOPMENT MANUAL, THE ENVIRONMENTAL PROTECTION ACT AND THE REQUIREMENTS OF TABLELANDS REGIONAL COUNCIL.
 2. THE CONSTRUCTION AND PLACEMENT OF SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE CONTRACTOR'S SOIL AND WATER MANAGEMENT PLAN AND SHALL COMPLY WITH THE REQUIREMENTS OF THE FNQROC DEVELOPMENT MANUAL, TABLELANDS REGIONAL COUNCIL. OTHER SEDIMENT CONTROL MEASURES SHALL INSTALLED BE AS DIRECTED BY THE SUPERINTENDENT.
 3. ALL SEDIMENT CONTROL MEASURES ARE TO REMAIN IN PLACE UNTIL THE END OF THE MAINTENANCE PERIOD, UNLESS NOTED OTHERWISE. ALL SEDIMENT CONTROL DEVICES ARE TO BE FULLY MAINTAINED IN AN EFFECTIVE WORKING CONDITION DURING CONSTRUCTION AND DURING THE MAINTENANCE PERIOD. THE CONTRACTOR IS TO ENSURE THAT ALL SEDIMENT CONTROL DEVICES ARE KEPT FREE OF SEDIMENT BUILD-UP.
 4. SEDIMENT FENCES ARE TO BE INSTALLED SUCH THAT THE BASE OF THE FENCE IS PLACED 200mm MINIMUM BELOW GROUND LEVEL, AND ANCHORED SECURELY IN SUCH POSITION.
 5. STOCKPILE SITES SHALL BE LOCATED ON SITE AS DIRECTED BY THE SUPERINTENDENT AFTER CONSULTATION AND AGREEMENT WITH COUNCIL. ENCIRCLE ALL STOCKPILES WITH SILT FENCES AND COVER WITH VISQUEEN OR SIMILAR IN TIMES OF HIGH WIND FOR DUST CONTROL.
 6. ALL VEHICLES AND EQUIPMENT ENTRY/EXIT POINTS SHALL HAVE SHAKER GRIDS OR SIMILAR TO PREVENT VEHICLES FROM TRACKING SOIL AND MUD OFF SITE. LOCATION, DETAILS ETC SHALL BE SHOWN ON THE CONTRACTOR'S ESC PLAN.
 7. THE DEVICES AND MEASURES INDICATED ON THIS DRAWING ARE MINIMUM RECOMMENDATIONS ONLY.
 8. ALL KERB INLETS (INCLUDING FIELD INLETS) SHALL HAVE SEDIMENT TRAPS IN ACCORDANCE WITH CONTRACTORS ESCP PLAN.
 9. THE FOLLOWING MEASURES SHALL BE UNDERTAKEN IMMEDIATELY UPON COMPLETION OF EACH SECTION OF EARTHWORKS:
 - CUT AND FILL BATTERS >1V:4H TO BE HYDROMULCHED
 - ALL OTHER AREAS SHALL BE GRASS SEEDDED.
 - FOOTPATHS SHALL BE GRASS SEEDDED UPON COMPLETION OF FINAL TRIMMING AS REQUIRED BY THE CONTRACTOR'S ESCP.
 10. TURF STRIPS (400 WIDE) ARE TO BE PROVIDED ALONG THE BACK OF THE KERB AND CHANNEL.
 11. REVEGETATION SHALL BE WATERED AND MAINTAINED UNTIL GROWTH IS ESTABLISHED.

LEGEND

PROPOSED SILT FENCE
CONSTRUCTED IN ACCORDANCE
WITH DTMR ROAD DRAINAGE
DESIGN MANUAL.
EXTENT AS SHOWN ON PLAN



amendments	
A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES 15.03.21

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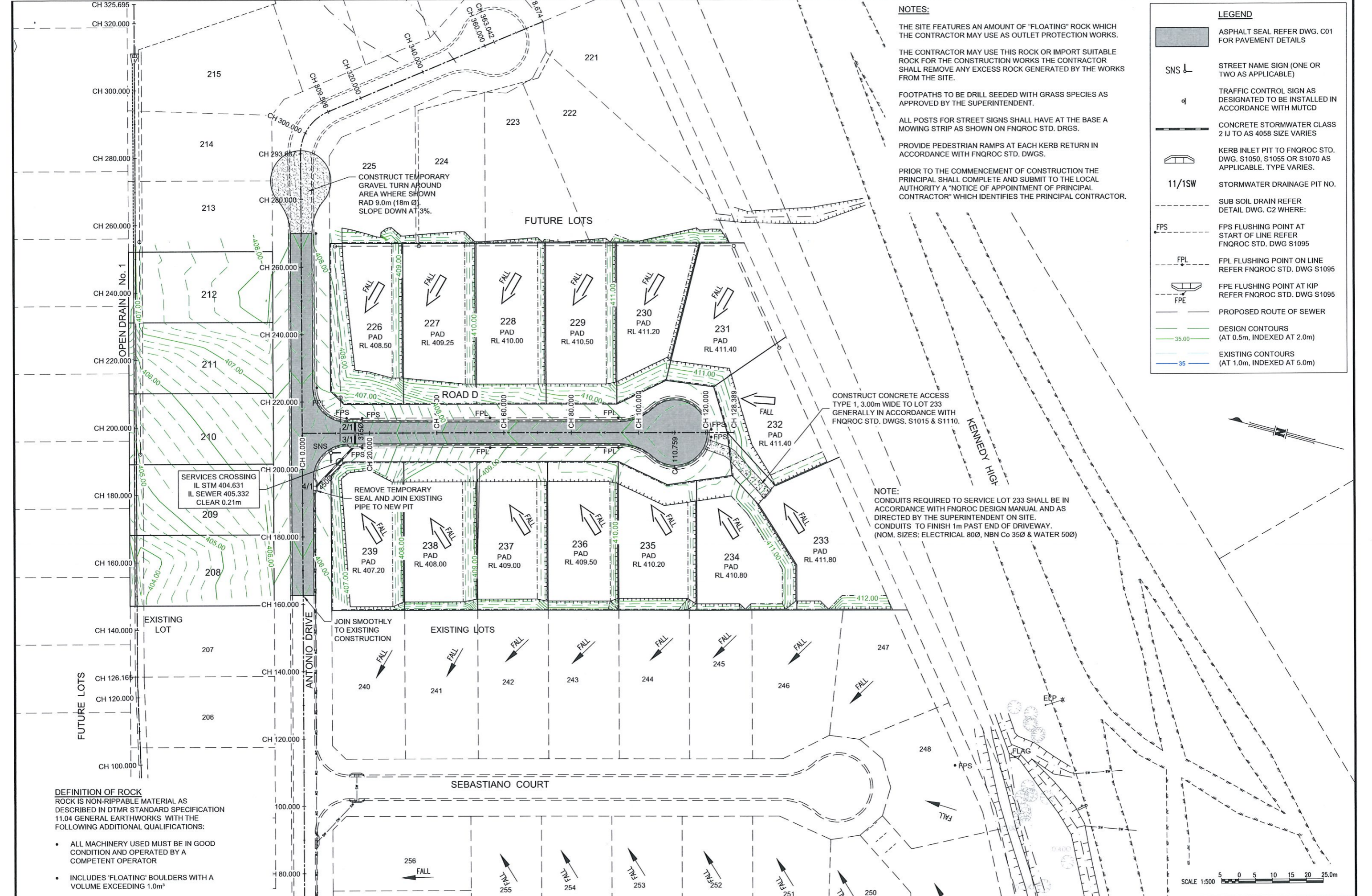
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"The Edge Mareeba" Stage 3
 PROPOSED RESIDENTIAL SUBDIVISION
 AT ANTONIO DRIVE, MAREEBA

DRAWING TITLE: SOIL AND WATER MANAGEMENT PLAN

SCALE (AT A1 SIZE)	HOR 1:500	DRAWN	J.P.
DATE	VER	DESIGNED	J.P.
DATE	MARCH 2021	CHECKED	J.P.
APPROVED	J. T. SMITH RPEQ No. 2668		
DWG NUMBER	1450 - C03	AMDT	A



NOTES:

THE SITE FEATURES AN AMOUNT OF "FLOATING" ROCK WHICH THE CONTRACTOR MAY USE AS OUTLET PROTECTION WORKS.

THE CONTRACTOR MAY USE THIS ROCK OR IMPORT SUITABLE ROCK FOR THE CONSTRUCTION WORKS THE CONTRACTOR SHALL REMOVE ANY EXCESS ROCK GENERATED BY THE WORKS FROM THE SITE.

FOOTPATHS TO BE DRILL SEEDED WITH GRASS SPECIES AS APPROVED BY THE SUPERINTENDENT.

ALL POSTS FOR STREET SIGNS SHALL HAVE AT THE BASE A MOWING STRIP AS SHOWN ON FNQROC STD. DRGS.

PROVIDE PEDESTRIAN RAMPS AT EACH KERB RETURN IN ACCORDANCE WITH FNQROC STD. DWGS.

PRIOR TO THE COMMENCEMENT OF CONSTRUCTION THE PRINCIPAL SHALL COMPLETE AND SUBMIT TO THE LOCAL AUTHORITY A "NOTICE OF APPOINTMENT OF PRINCIPAL CONTRACTOR" WHICH IDENTIFIES THE PRINCIPAL CONTRACTOR.

LEGEND

	ASPHALT SEAL REFER DWG. C01 FOR PAVEMENT DETAILS
	STREET NAME SIGN (ONE OR TWO AS APPLICABLE)
	TRAFFIC CONTROL SIGN AS DESIGNATED TO BE INSTALLED IN ACCORDANCE WITH MUTCD
	CONCRETE STORMWATER CLASS 2 U TO AS 4058 SIZE VARIES
	KERB INLET PIT TO FNQROC STD. DWG. S1050, S1055 OR S1070 AS APPLICABLE. TYPE VARIES.
	STORMWATER DRAINAGE PIT NO.
	SUB SOIL DRAIN REFER DETAIL DWG. C2 WHERE:
	FPS FLUSHING POINT AT START OF LINE REFER FNQROC STD. DWG S1095
	FPL FLUSHING POINT ON LINE REFER FNQROC STD. DWG S1095
	FPE FLUSHING POINT AT KIP REFER FNQROC STD. DWG S1095
	PROPOSED ROUTE OF SEWER
	DESIGN CONTOURS (AT 0.5m, INDEXED AT 2.0m)
	EXISTING CONTOURS (AT 1.0m, INDEXED AT 5.0m)

SERVICES CROSSING
IL STM 404.631
IL SEWER 405.332
CLEAR 0.21m

CONSTRUCT CONCRETE ACCESS
TYPE 1, 3.00m WIDE TO LOT 233
GENERALLY IN ACCORDANCE WITH
FNQROC STD. DWGS. S1015 & S1110.

NOTE:
CONDUITS REQUIRED TO SERVICE LOT 233 SHALL BE IN
ACCORDANCE WITH FNQROC DESIGN MANUAL AND AS
DIRECTED BY THE SUPERINTENDENT ON SITE.
CONDUITS TO FINISH 1m PAST END OF DRIVEWAY.
(NOM. SIZES: ELECTRICAL 80Ø, NBN Co 35Ø & WATER 50Ø)

DEFINITION OF ROCK
ROCK IS NON-RIPPABLE MATERIAL AS
DESCRIBED IN DTMR STANDARD SPECIFICATION
11.04 GENERAL EARTHWORKS WITH THE
FOLLOWING ADDITIONAL QUALIFICATIONS:

- ALL MACHINERY USED MUST BE IN GOOD CONDITION AND OPERATED BY A COMPETENT OPERATOR
- INCLUDES 'FLOATING' BOULDERS WITH A VOLUME EXCEEDING 1.0m³

amendments

A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES	15.03.21

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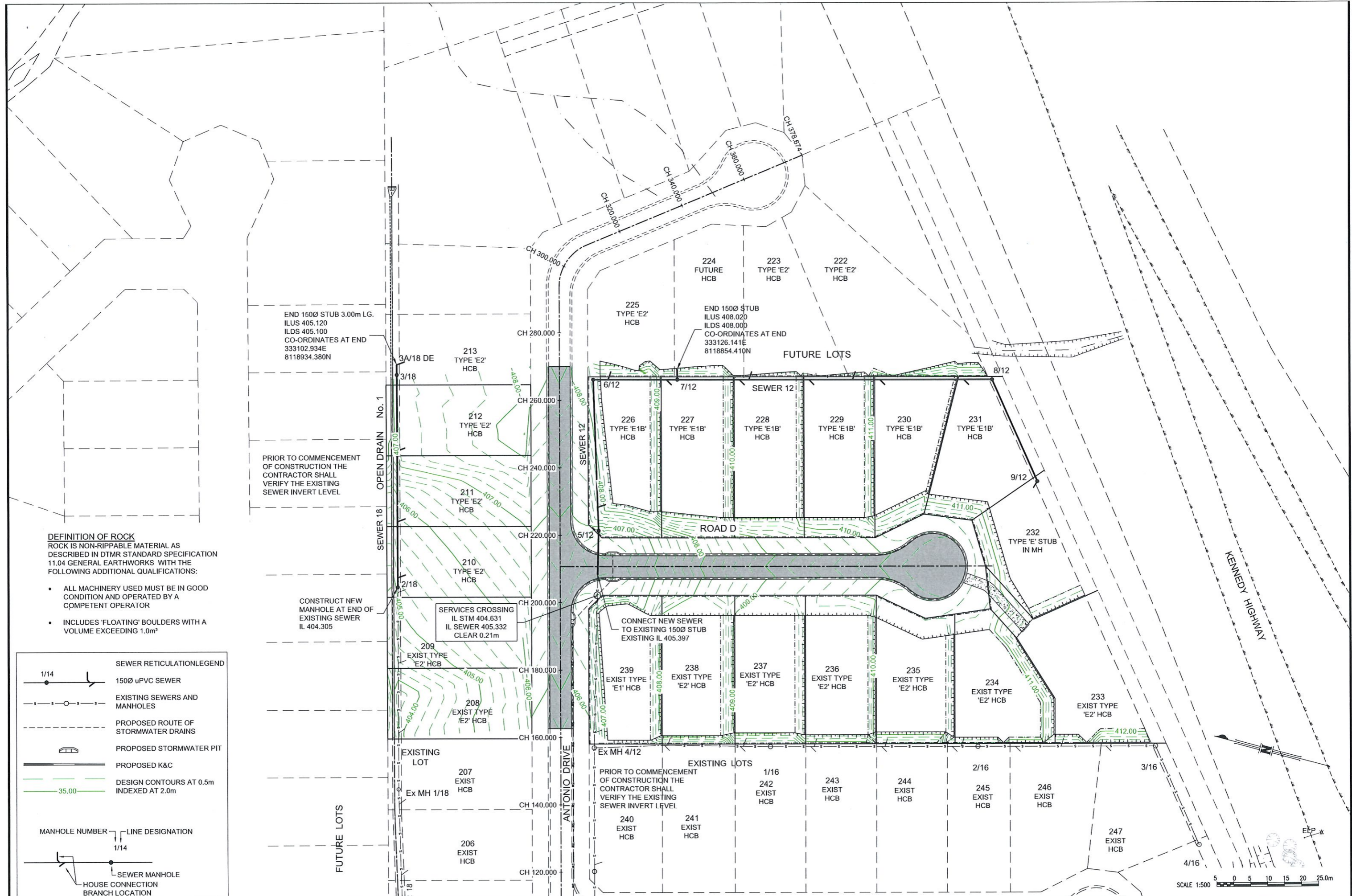
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"The Edge Mareeba" Stage 3
PROPOSED RESIDENTIAL SUBDIVISION
AT ANTONIO DRIVE, MAREEBA

DRAWING TITLE: EARTHWORKS, ROADWORKS AND STORMWATER DRAINAGE PLAN

SCALE (AT A1 SIZE)	HOR 1:500	DRAWN	J.P.
DATE	MARCH 2021	DESIGNED	J.P.
APPROVED		CHECKED	J.P.
DWG NUMBER	1450 - C04	AMDT	A



DEFINITION OF ROCK
 ROCK IS NON-RIPPABLE MATERIAL AS DESCRIBED IN DTRM STANDARD SPECIFICATION 11.04 GENERAL EARTHWORKS WITH THE FOLLOWING ADDITIONAL QUALIFICATIONS:

- ALL MACHINERY USED MUST BE IN GOOD CONDITION AND OPERATED BY A COMPETENT OPERATOR
- INCLUDES 'FLOATING' BOULDERS WITH A VOLUME EXCEEDING 1.0m³

SEWER RETICULATION LEGEND

- 1/14 1500 uPVC SEWER
- EXISTING SEWERS AND MANHOLES
- PROPOSED ROUTE OF STORMWATER DRAINS
- PROPOSED STORMWATER PIT
- PROPOSED K&C
- DESIGN CONTOURS AT 0.5m INDEXED AT 2.0m

MANHOLE NUMBER | LINE DESIGNATION
 1/14

SEWER MANHOLE
 HOUSE CONNECTION
 BRANCH LOCATION

amendments	DATE
A ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES	15.03.21

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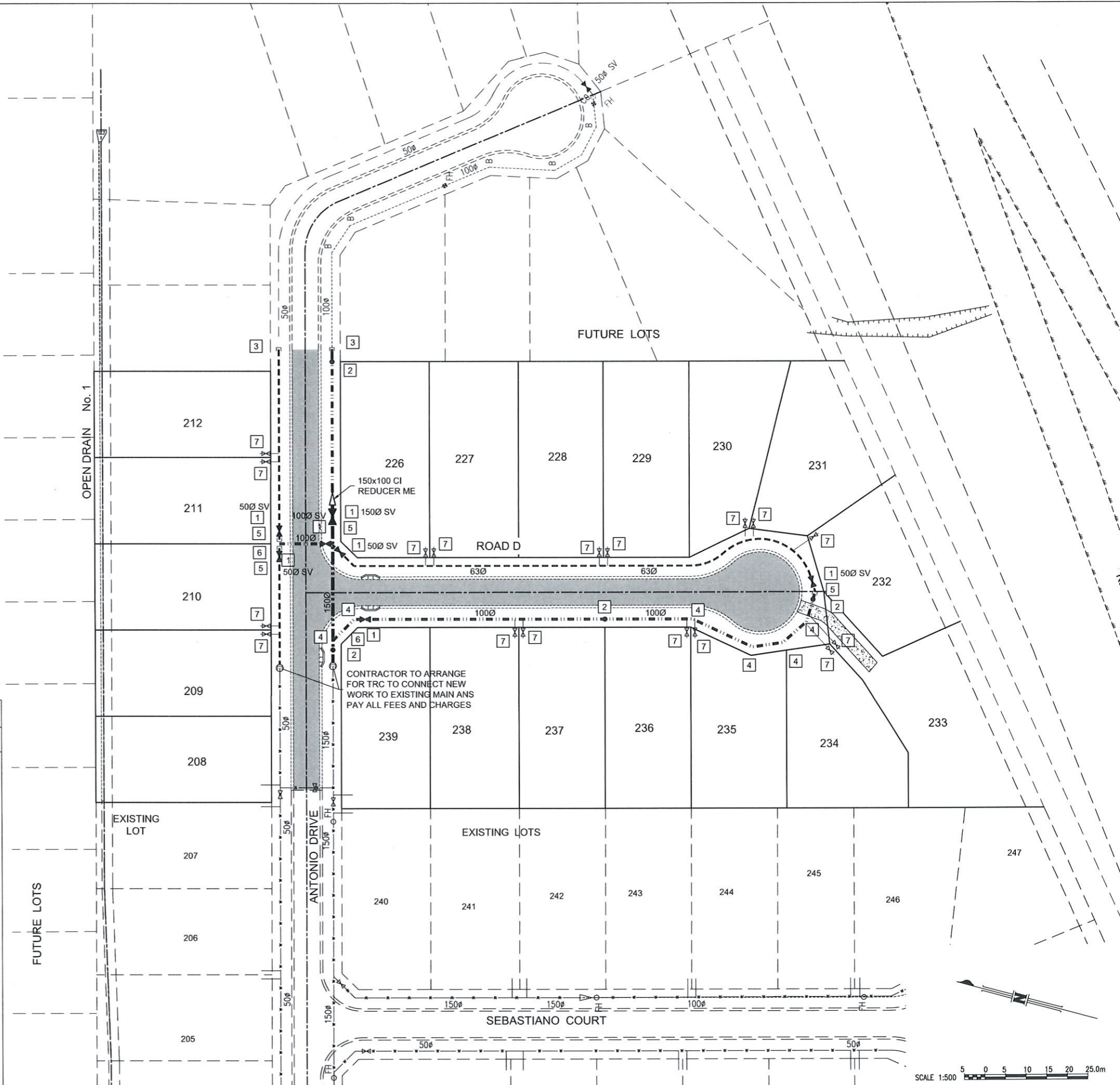
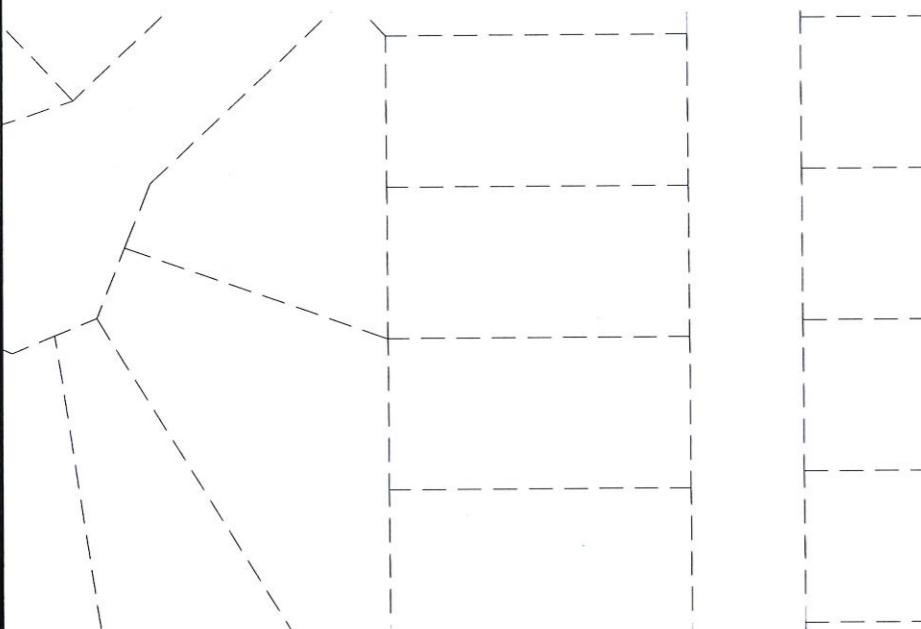
"The Edge Mareeba" Stage 3
PROPOSED RESIDENTIAL SUBDIVISION
AT ANTONIO DRIVE, MAREEBA

DRAWING TITLE: SEWERAGE RETICULATION PLAN

SCALE	HOR	DRAWN	J.P.
(AT A1 SIZE)	1:500	DESIGNED	J.P.
DATE	MARCH 2021	CHECKED	J.P.
APPROVED	J. T. SMITH RPEQ No. 2668		
DWG NUMBER	1450 - C05	AMDT	A

WATER RETICULATION NOTES

1. MATERIALS
630 - Polyethylene (630 OD) PN 16, PE80, SDR 9 TO AS 4130 COLOUR BLUE
1500 OR 1000 - uPVC PN 16 SERIES 2 RRJ TO AS 1477
2. VALVES AND HYDRANTS MUST BE LOCATED OPPOSITE BOUNDARY JUNCTIONS AND TRUNCATIONS AS APPROPRIATE.
3. ALIGNMENT OF WATER RETICULATION MAINS WITHIN ROAD RESERVES TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY. (2.00m IN MAREEBA)
4. INSTALLATION OF VALVES AND FIRE HYDRANTS TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY.
5. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH FNQROC DEVELOPMENT MANUAL INCLUDING STANDARD DRAWINGS AND SHALL COMPLY WITH SECTIONS S5.
6. WHERE NON-METALLIC PIPE IS LAID A CONTINUOUS STAINLESS STEEL OR COPPER WIRE 1.6mm DIA. SHALL BE LAID IMMEDIATELY ABOVE THE SAND FILL. THE WIRE SHALL BE WRAPPED ONCE AROUND ALL HYDRANTS AND SLUICE VALVES WITH SUFFICIENT SLACK FOR TESTING.
7. MINIMUM COVER TO ALL WATER MAINS UNDER KERBED ROAD SHALL BE 800mm.
8. MINIMUM TEST PRESSURE FOR ALL WATER MAINS SHALL BE 1250KPa. THE CONTRACTOR SHALL GIVE THE WATER OFFICER TWENTY FOUR (24) HOURS NOTICE PRIOR TO TESTING.
9. VALVES AND HYDRANTS SHALL BE MARKED IN ACCORDANCE WITH THE REQUIREMENTS OF FNQROC STD. DWG S2010



SCALE 1:500

WATER SUPPLY FITTING LIST

REF.	SYMBOL	DESCRIPTION
		1500 uPVC WATER MAIN
		1000 uPVC WATER MAIN
		630 POLY WATER MAIN
1		SLUICE VALVE TO AS 2638 COATED WITH A THERMOSETTING EPOXY POWDER, ME PN16 COMPLETE WITH C.I. COVER, BOX, ANCHOR, MARGIN & MARKER AS NOTED.
2		80 Ø SPRING HYDRANT (MAXI FLO TYPE) COMPLETE WITH C.I. TEE (ME), RISER, C.I. COVER, BOX, MARGIN & MARKER. ORIENTATE HYDRANT SUCH THAT BOLTS ARE PARALLEL TO WATER MAIN.
3		C.I. DEAD END CAP M.E., OR 630Ø DEAD END CAP WITH CONCRETE THRUST BLOCK.
4		C.I. BEND M.E. OR WYE ME TO SUIT WITH CONCRETE THRUST BLOCK. WHERE NO BENDS ARE SHOWN DEFLECT MAIN IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
5		1000Ø TO 630Ø CONNECTION IN ACCORDANCE WITH FNQROC STD. DWG. No. 2020
6		C.I. TEE, REDUCER OR WYE M.E. COMPLETE WITH CONCRETE THRUST BLOCK. SIZES AS NOTED
		EXISTING WATER MAIN AND FIXTURES - SIZES AND TYPES AS NOTED. THIS INFORMATION BASED ON 'AS CONSTRUCTED' DATA
7		200Ø WATER SUPPLY CONNECTION TO EACH LOT IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS AND AS SHOWN IN FNQROC STD. DWG. S2038. WATER SERVICE SHALL BE COMPLETE TO 200mm WITHIN THE PROPERTY.

amendments	
A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES 15.03.21

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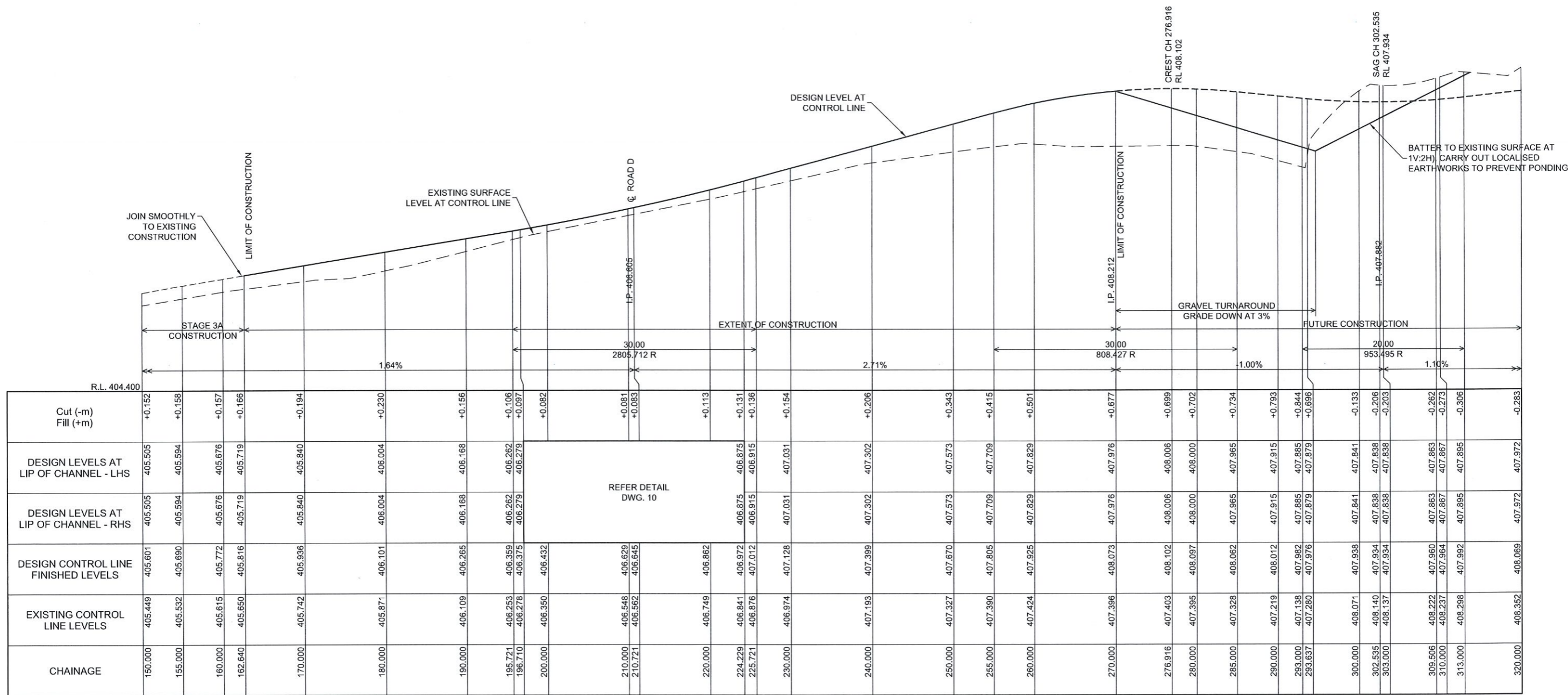
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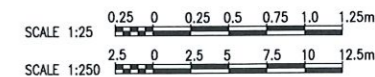
"The Edge Mareeba" Stage 3
PROPOSED RESIDENTIAL SUBDIVISION
AT ANTONIO DRIVE, MAREEBA
 DRAWING TITLE: WATER RETICULATION PLAN

SCALE	HOR	1:500	DRAWN	J.P.
(AT A1 SIZE)	VER	DESIGNED	J.P.	
DATE	MARCH 2021	CHECKED	J.P.	
APPROVED	J. T SMITH RPEQ No. 2668			
DWG NUMBER	1450 - C06	AMDT	A	

Antonio Drive					
	CHAINAGE	EASTING	NORTHING	RADII	BEARING
L#17	0.000 293.637	332857.085 333140.606	8118818.098 8118894.509		74°55'00" STRAIGHT 74°55'00" STRAIGHT
C# 8	293.637 309.506	333140.606 333154.796	8118894.509 8118889.736	13.500 13.500	74°55'00" ARC 142°16'00" ARC
L#18	309.506 363.042	333154.796 333187.559	8118889.736 8118847.396		142°16'00" STRAIGHT 142°16'00" STRAIGHT
L#19	363.042 378.674	333187.559 333197.125	8118847.396 8118835.034		142°16'00" STRAIGHT 142°16'00" STRAIGHT



LONGITUDINAL SECTION ANTONIO DRIVE
 SCALES: HOR: 1:250
 VER: 1:25



amendments	
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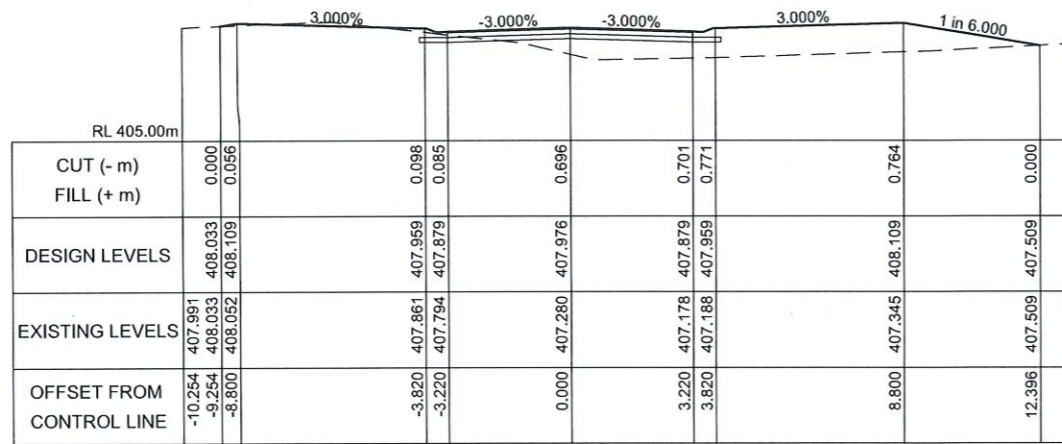
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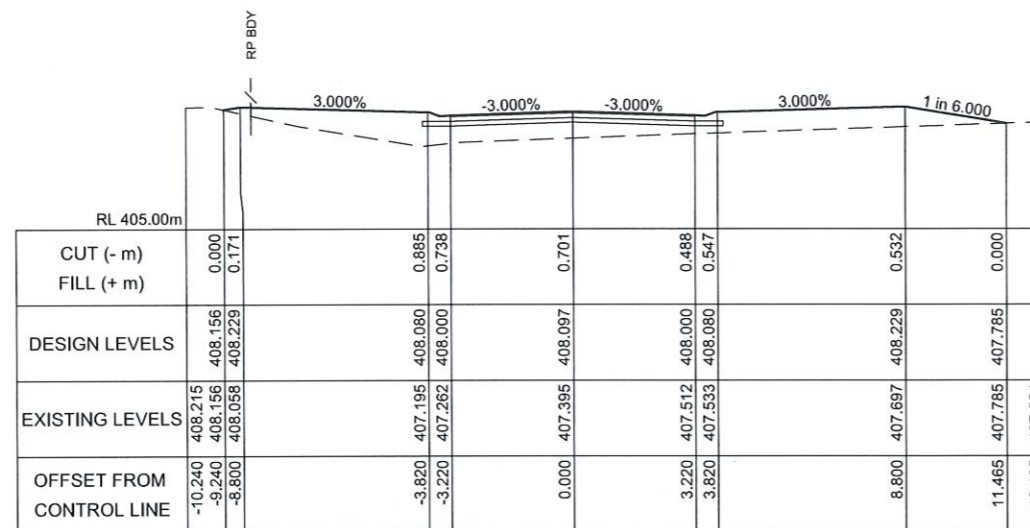
"The Edge Mareeba" Stage 3
 PROPOSED RESIDENTIAL SUBDIVISION
 AT ANTONIO DRIVE, MAREEBA

DRAWING TITLE: ANTONIO DRIVE - LONGITUDINAL SECTION

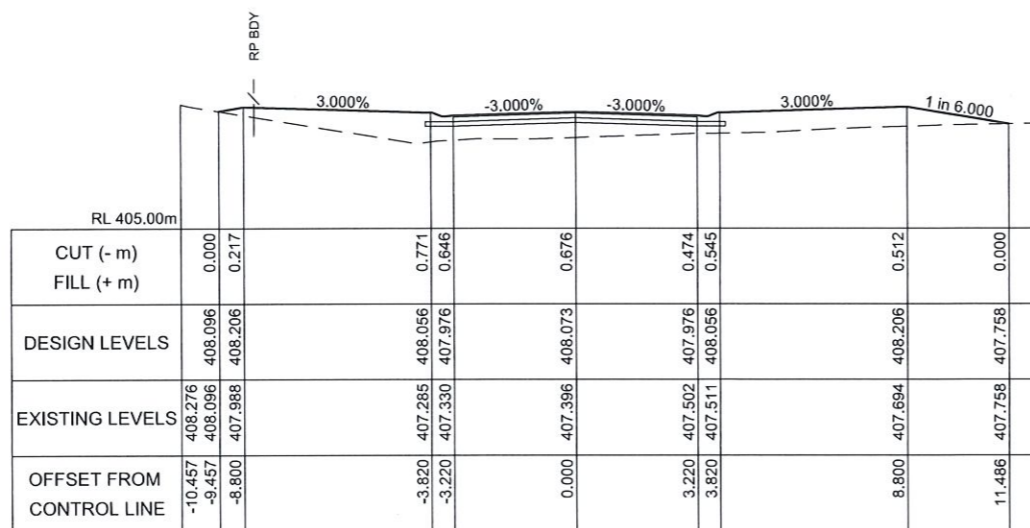
SCALE	HOR	VER	DRAWN	J.P.
(AT A1 SIZE)	1:250	1:25	DESIGNED	J.P.
DATE	MARCH 2021	CHECKED	J.P.	
APPROVED	J. T SMITH RPEQ No. 2668			
DWG NUMBER	1450 - C07	AMDT	A	



CH 293.637 m



CH 280.000 m



CH 270.000 m



amendments	
A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES 15.03.21

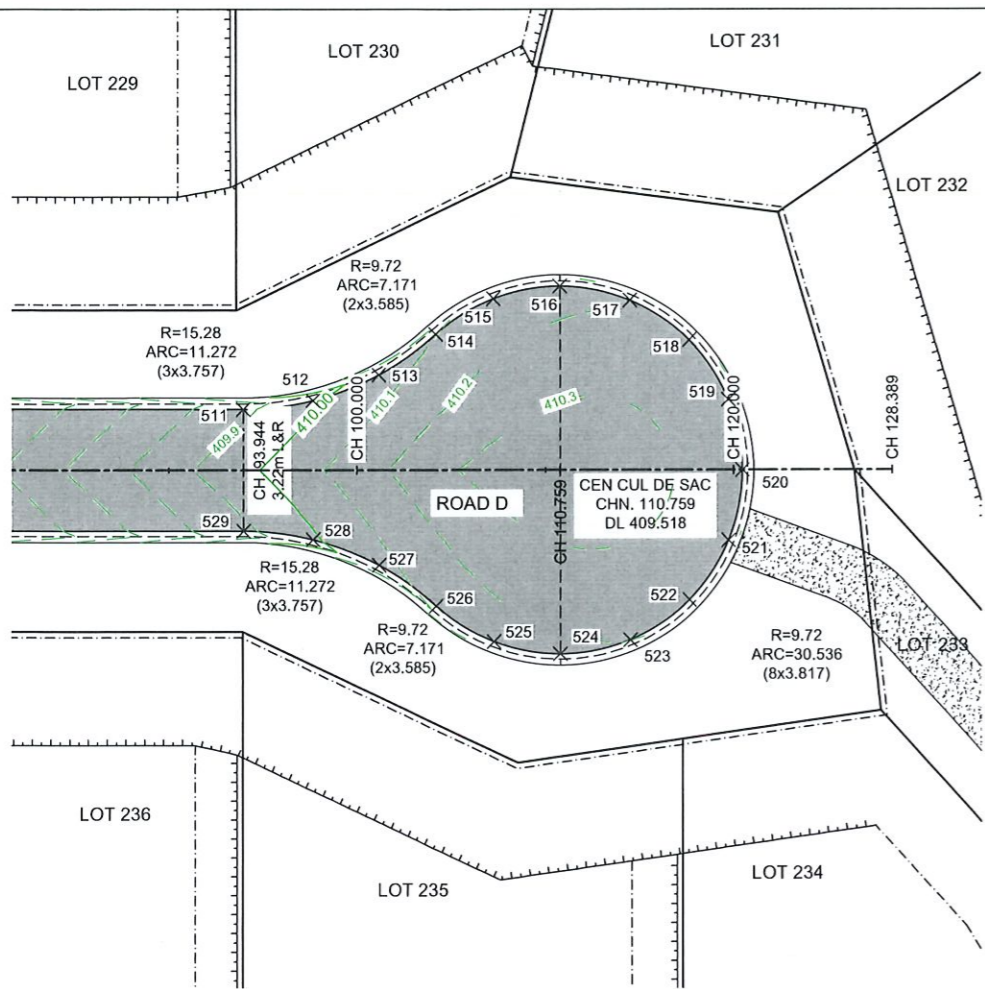
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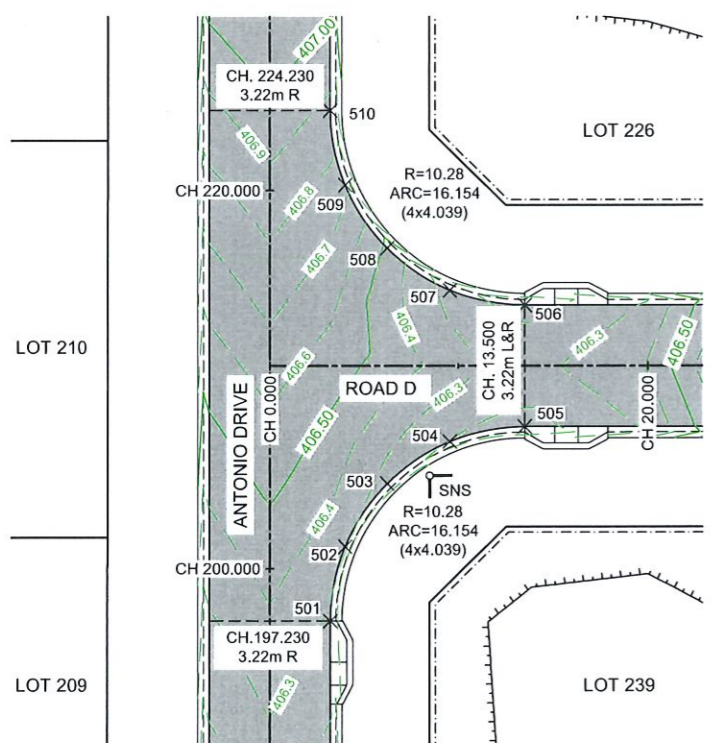


"The Edge Mareeba" Stage 3
 PROPOSED RESIDENTIAL SUBDIVISION
 AT ANTONIO DRIVE, MAREEBA
 DRAWING TITLE: ANTONIO DRIVE - CROSS SECTIONS (SHEET 2 OF 2)

SCALE (AT A1 SIZE)	HOR 1:100	DRAWN	J.P.
DATE	VER 1:100	DESIGNED	J.P.
APPROVED	MARCH 2021	CHECKED	J.P.
DWG NUMBER	J. T SMITH RPEQ No. 2668		AMDT A



DETAIL OF CUL DE SAC ROAD D
 SCALES: HOR. 1:200



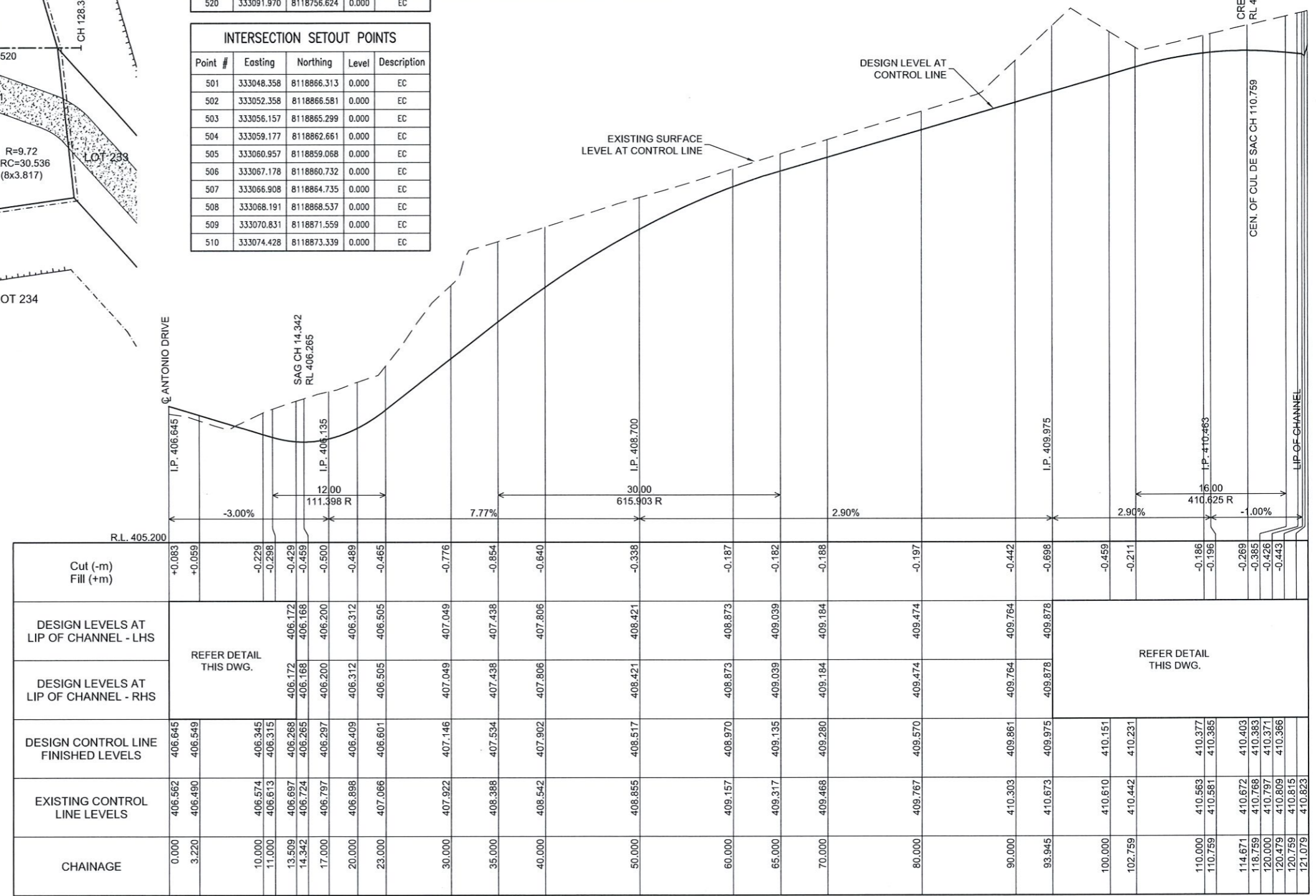
DETAIL OF ANTONIO DRIVE - ROAD D INTERSECTION
 SCALES: HOR. 1:200

INTERSECTION SETOUT POINTS				
Point #	Easting	Northing	Level	Description
511	333088.158	8118783.081	0.000	EC
512	333089.572	8118779.610	0.000	EC
513	333091.788	8118776.587	0.000	EC
514	333094.674	8118774.195	0.000	EC
515	333097.275	8118771.753	0.000	EC
516	333098.820	8118768.537	0.000	EC
517	333099.074	8118764.753	0.000	EC
518	333097.860	8118761.160	0.000	EC
519	333095.363	8118758.305	0.000	EC
520	333091.970	8118756.624	0.000	EC

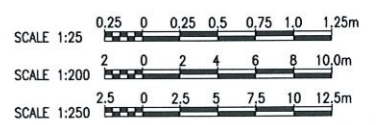
INTERSECTION SETOUT POINTS				
Point #	Easting	Northing	Level	Description
521	333088.180	8118756.369	0.000	EC
522	333084.587	8118757.583	0.000	EC
523	333081.732	8118760.080	0.000	EC
524	333080.050	8118763.479	0.000	EC
525	333079.769	8118767.030	0.000	EC
526	333080.786	8118770.443	0.000	EC
527	333082.074	8118773.963	0.000	EC
528	333082.467	8118777.690	0.000	EC
529	333081.940	8118781.403	0.000	EC

INTERSECTION SETOUT POINTS				
Point #	Easting	Northing	Level	Description
501	333048.358	8118866.313	0.000	EC
502	333052.358	8118866.581	0.000	EC
503	333056.157	8118865.299	0.000	EC
504	333059.177	8118862.661	0.000	EC
505	333060.957	8118859.068	0.000	EC
506	333067.178	8118860.732	0.000	EC
507	333066.908	8118864.735	0.000	EC
508	333068.191	8118868.537	0.000	EC
509	333070.831	8118871.559	0.000	EC
510	333074.428	8118873.339	0.000	EC

Road D					
	CHAINAGE	EASTING	NORTHING	RADII	BEARING
L#20	0.000 110.759	333060.547 333089.435	8118872.933 8118766.008		164°52'52" STRAIGHT 164°52'52" STRAIGHT
L#21	110.759 128.389	333089.435 333094.033	8118766.008 8118748.987		164°52'52" STRAIGHT 164°52'52" STRAIGHT



LONGITUDINAL SECTION - ROAD D
 SCALES: HOR. 1:500
 VER: 1:50



amendments	
A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES 15.03.21

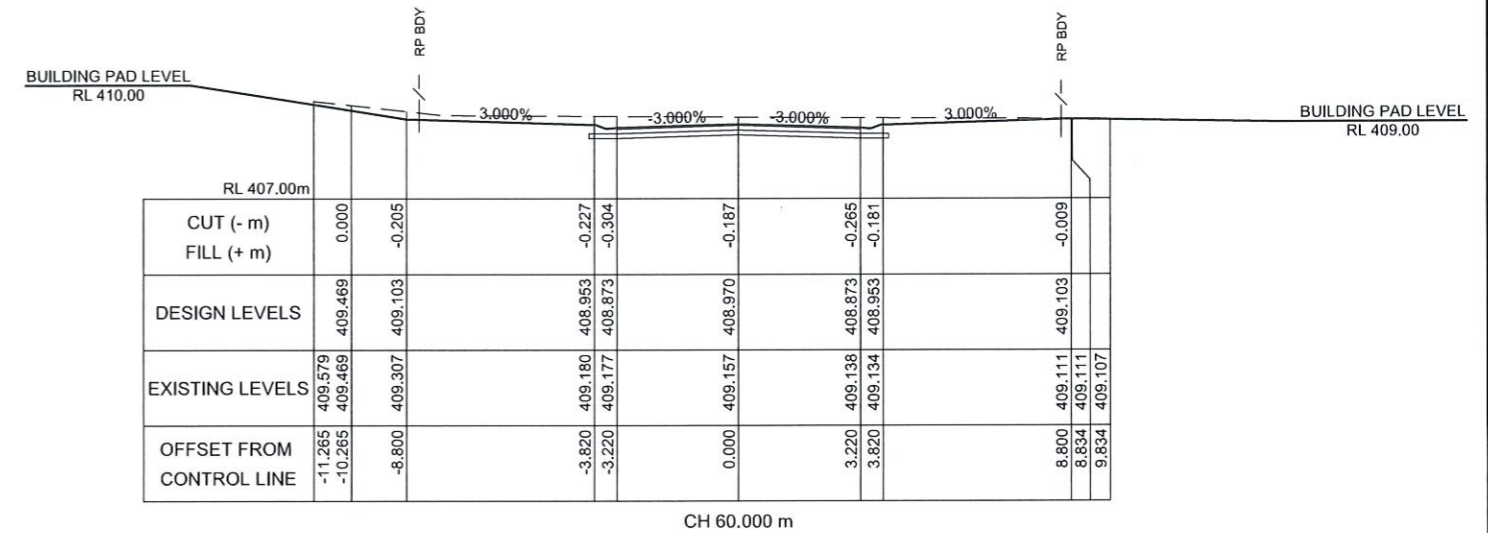
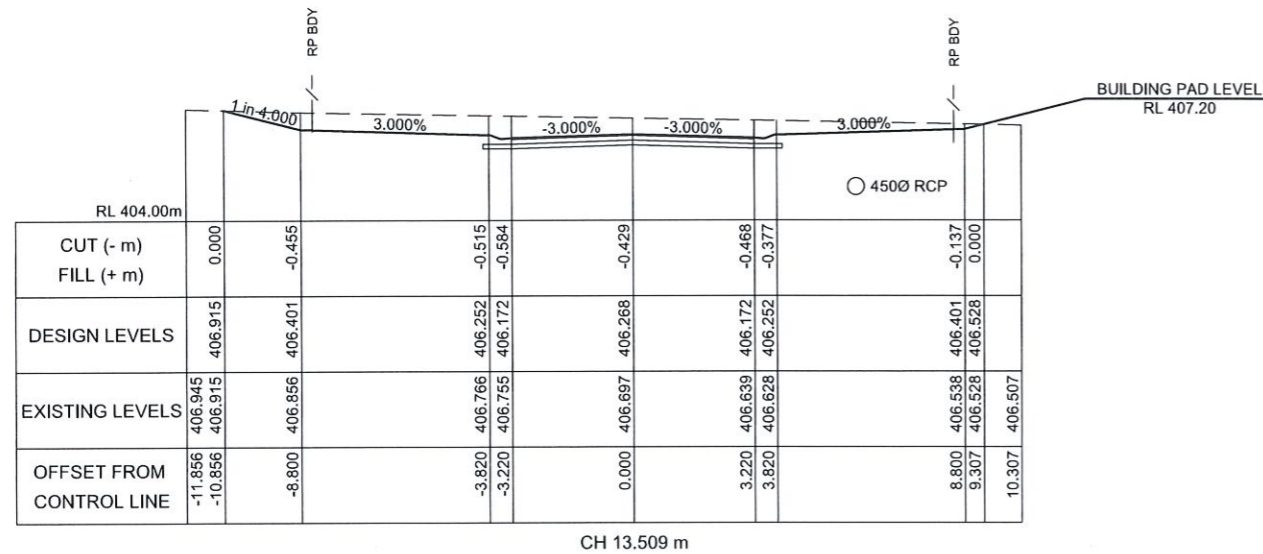
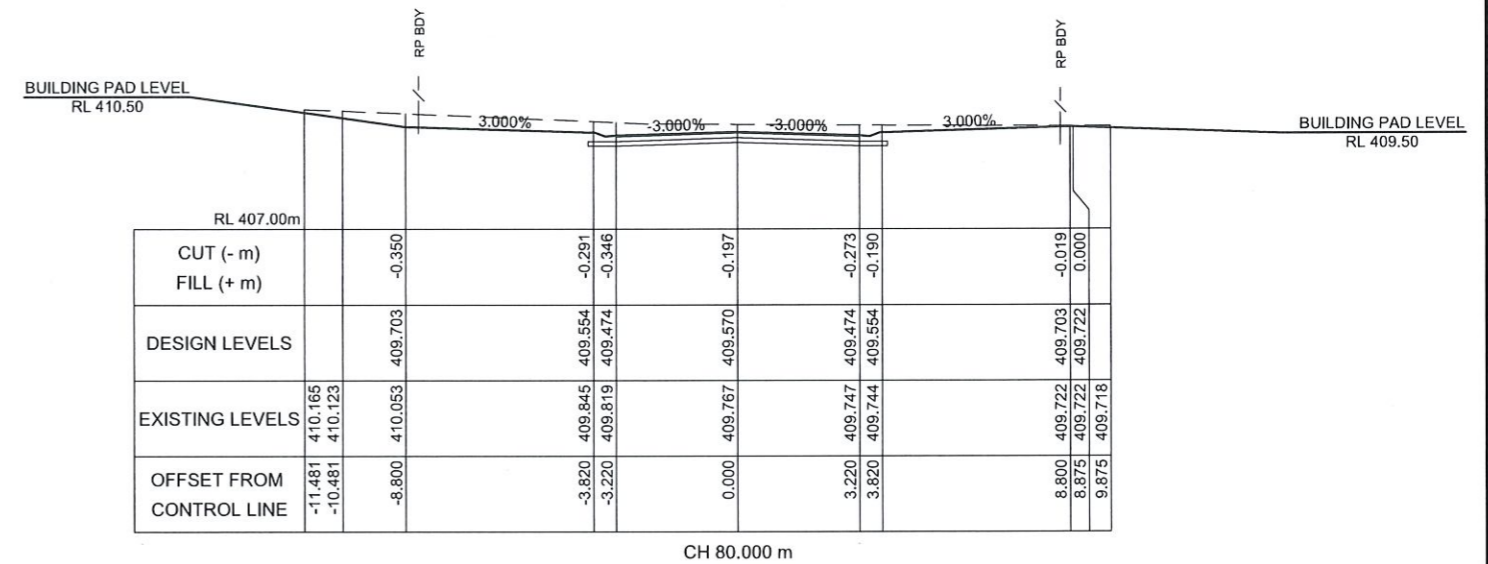
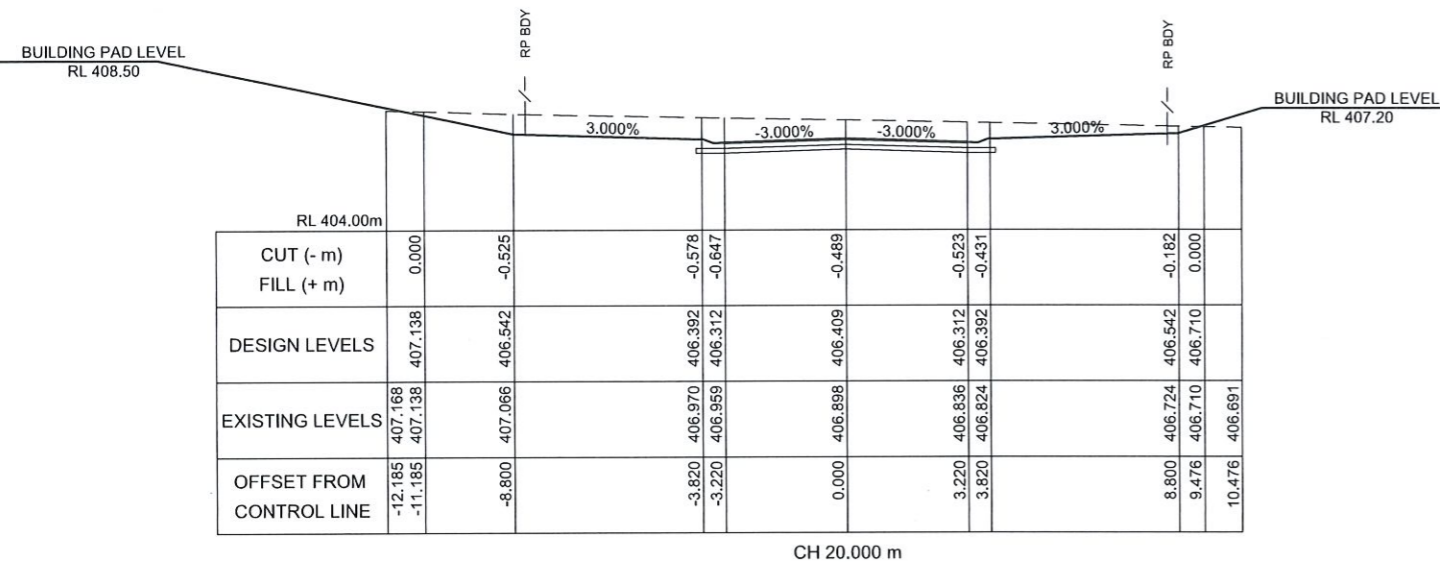
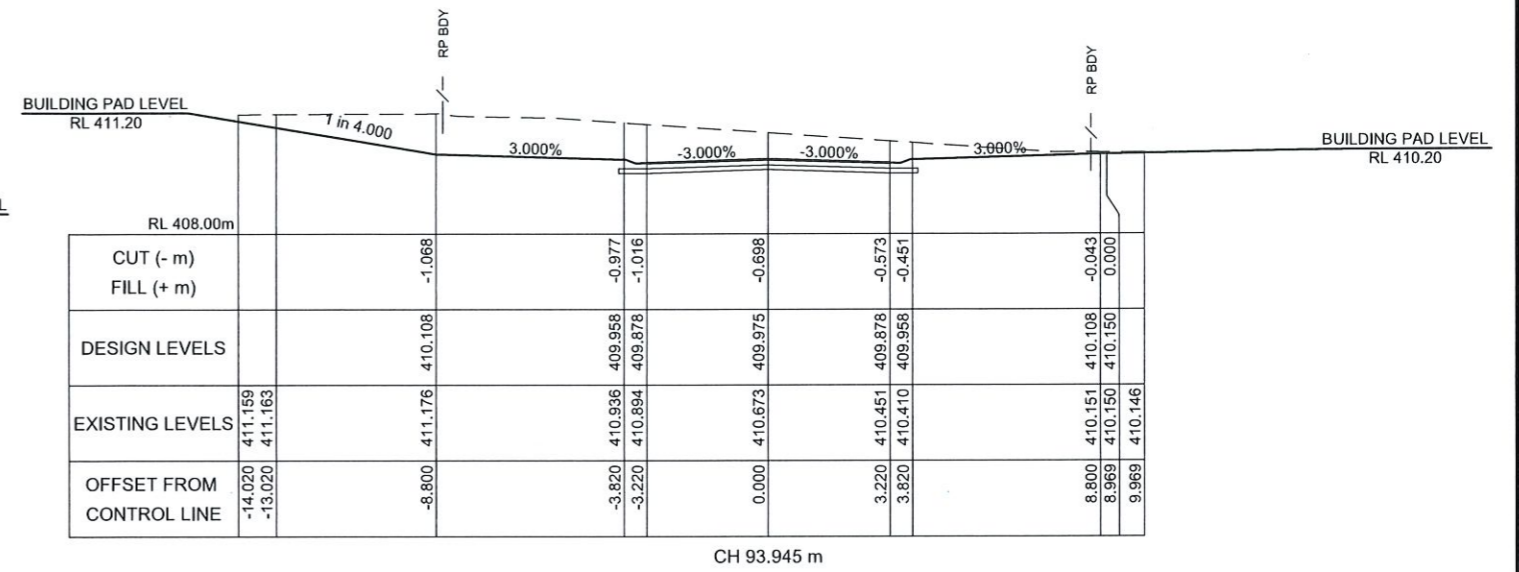
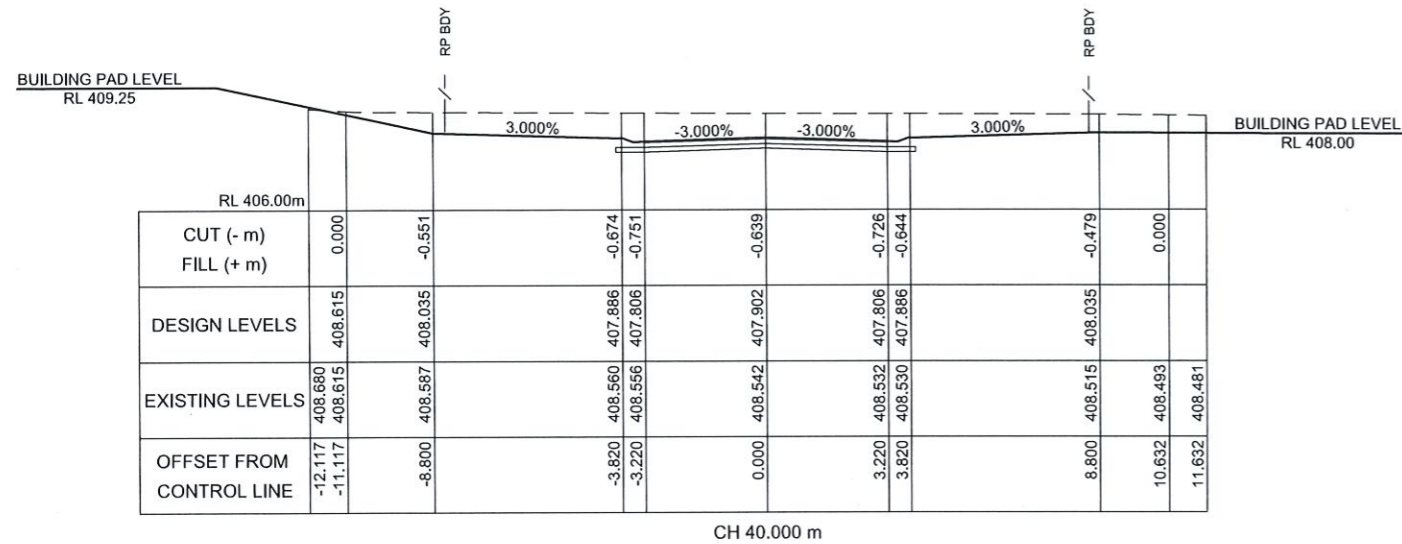
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"The Edge Mareeba" Stage 3 PROPOSED RESIDENTIAL SUBDIVISION AT ANTONIO DRIVE, MAREEBA
 DRAWING TITLE: ROAD D - LONGITUDINAL SECTION AND CUL DE SAC DETAIL

SCALE (AT A1 SIZE)	HOR 1:250/200	VER 1:25	DRAWN	J.P.
			DESIGNED	J.P.
DATE	MARCH 2021	CHECKED		J.P.
APPROVED	J. T. SMITH RPEQ No. 2668			
DWG NUMBER	1450 - C10	AMDT	A	



SCALE 1:100

amendments	
A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES
	15.03.21

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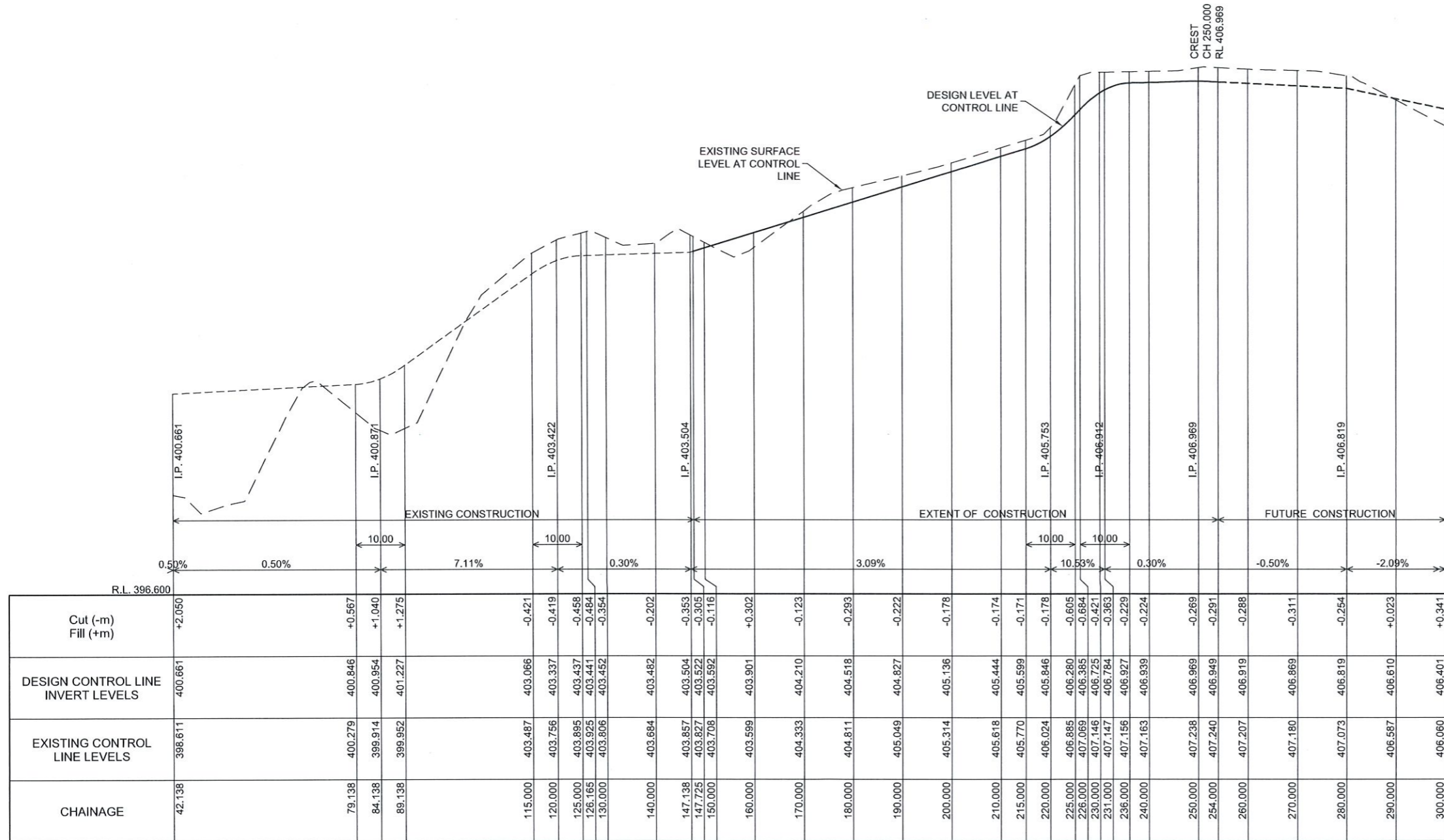


"The Edge Mareeba" Stage 3
 PROPOSED RESIDENTIAL SUBDIVISION
 AT ANTONIO DRIVE, MAREEBA

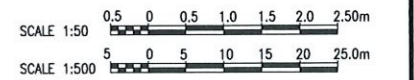
DRAWING TITLE: ROAD D - CROSS SECTIONS (SHEET 1 OF 1)

SCALE	HOR 1:100	DRAWN	J.P.
(AT A1 SIZE)	VER 1:100	DESIGNED	J.P.
DATE	MARCH 2021	CHECKED	J.P.
APPROVED	J. T SMITH RPEQ No. 2668		
DWG NUMBER	1450 - C11	AMDT	A

Open Drain No. 1					
	CHAINAGE	EASTING	NORTHING	RADII	BEARING
L#22	0.000	332856.664	8118867.697		74°55'00" STRAIGHT
	84.138	332937.903	8118889.592		74°55'00" STRAIGHT
L#23	84.138	332937.903	8118889.592		72°52'17" STRAIGHT
	126.165	332978.066	8118901.970		72°52'17" STRAIGHT
L#24	126.165	332978.066	8118901.970		74°55'00" STRAIGHT
	325.695	333170.722	8118953.892		74°55'00" STRAIGHT



LONGITUDINAL SECTION - OPEN DRAIN No. 1
 SCALES: HOR. 1:500
 VER: 1:50



amendments	
A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES 15.03.21

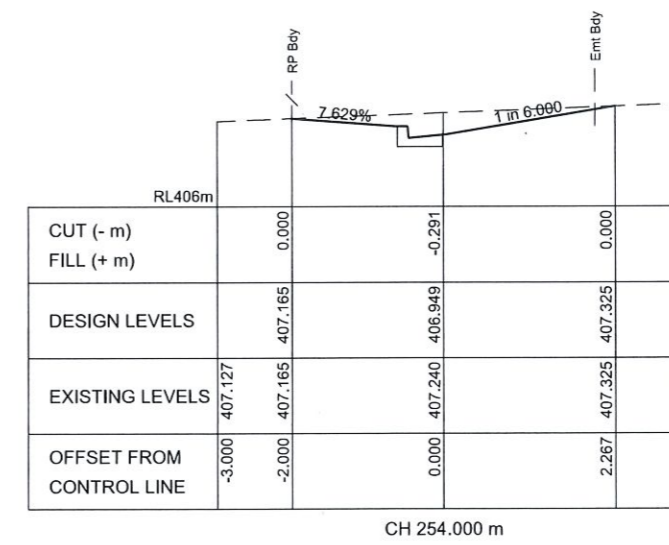
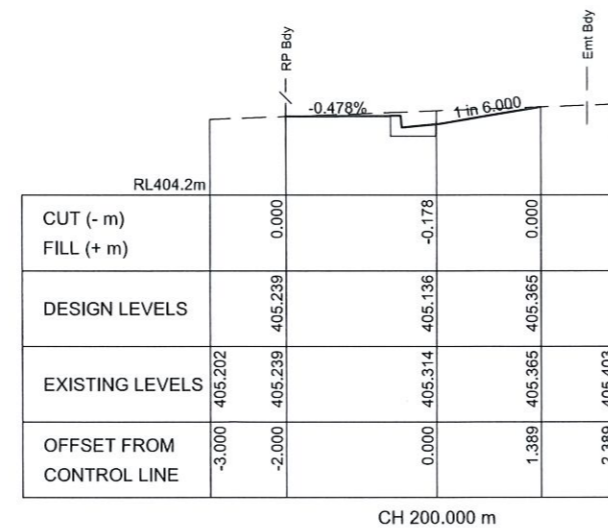
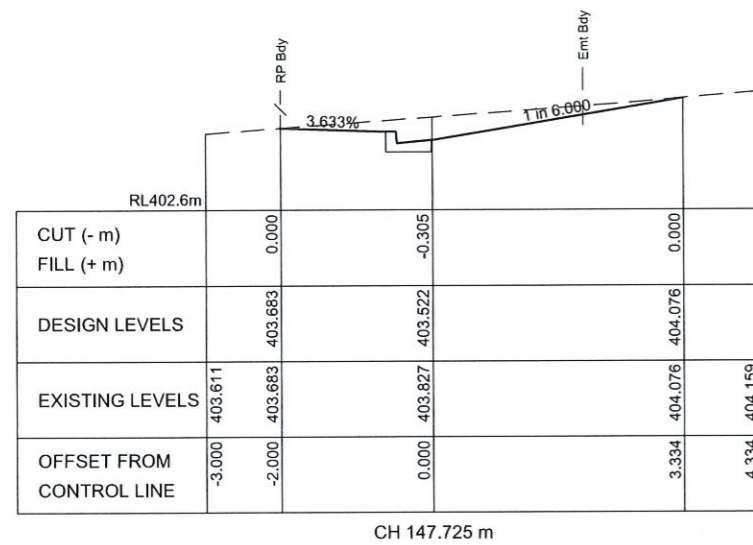
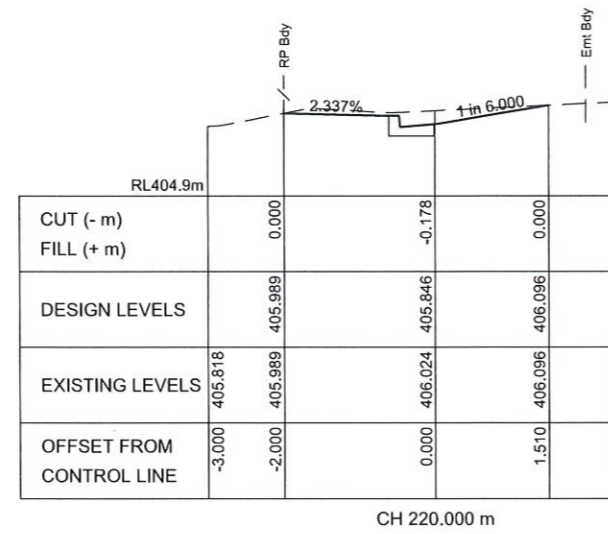
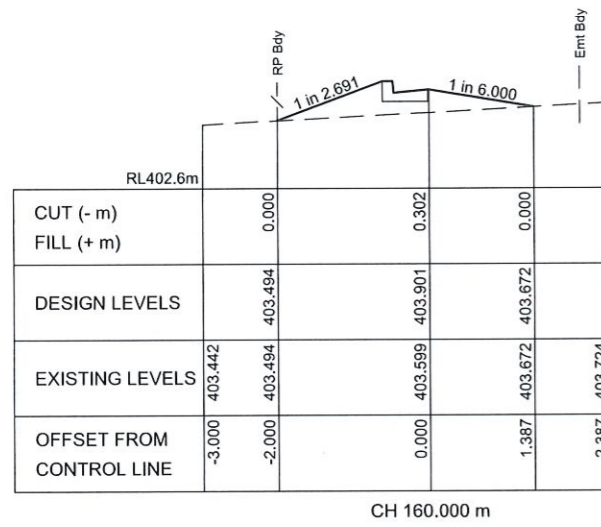
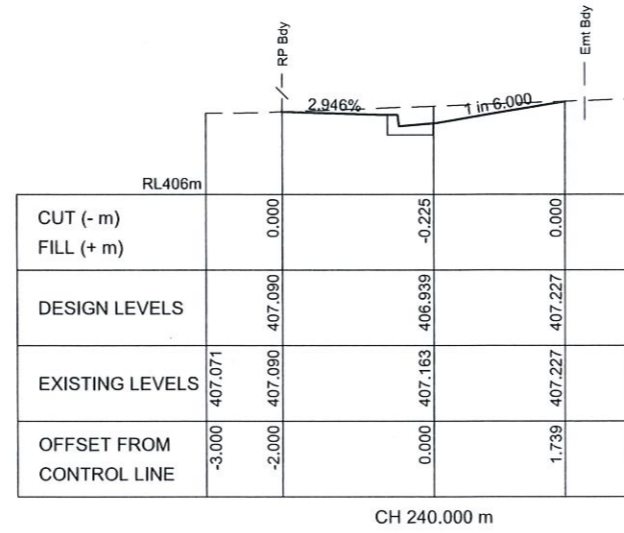
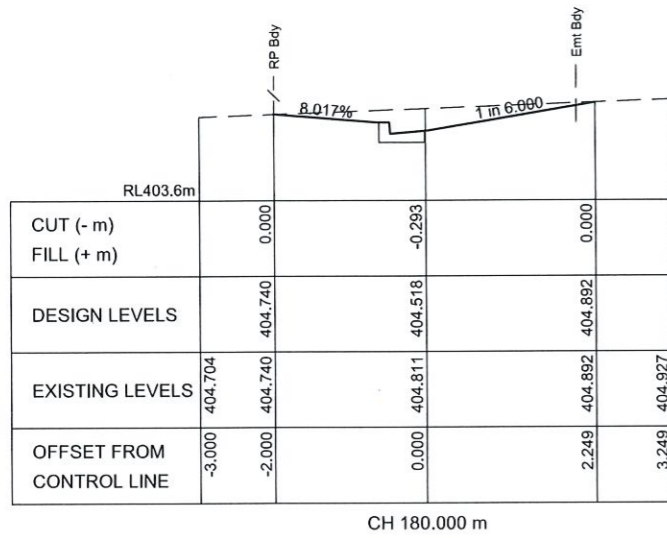
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"The Edge Mareeba" Stage 3
 PROPOSED RESIDENTIAL SUBDIVISION
 AT ANTONIO DRIVE, MAREEBA
 DRAWING TITLE: OPEN DRAIN No. 1 - LONGITUDINAL SECTION

SCALE (AT A1 SIZE)	HOR 1:500	VER 1:50	DRAWN	J.P.
DATE	MARCH 2021	CHECKED	J.P.	J.P.
APPROVED	J. T SMITH RPEQ No. 2668			
DWG NUMBER	1450 - C12	AMDT	A	



SCALE 1:50 0 0.5 1.0 1.5 2.0 2.50m

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A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES 15.03.21

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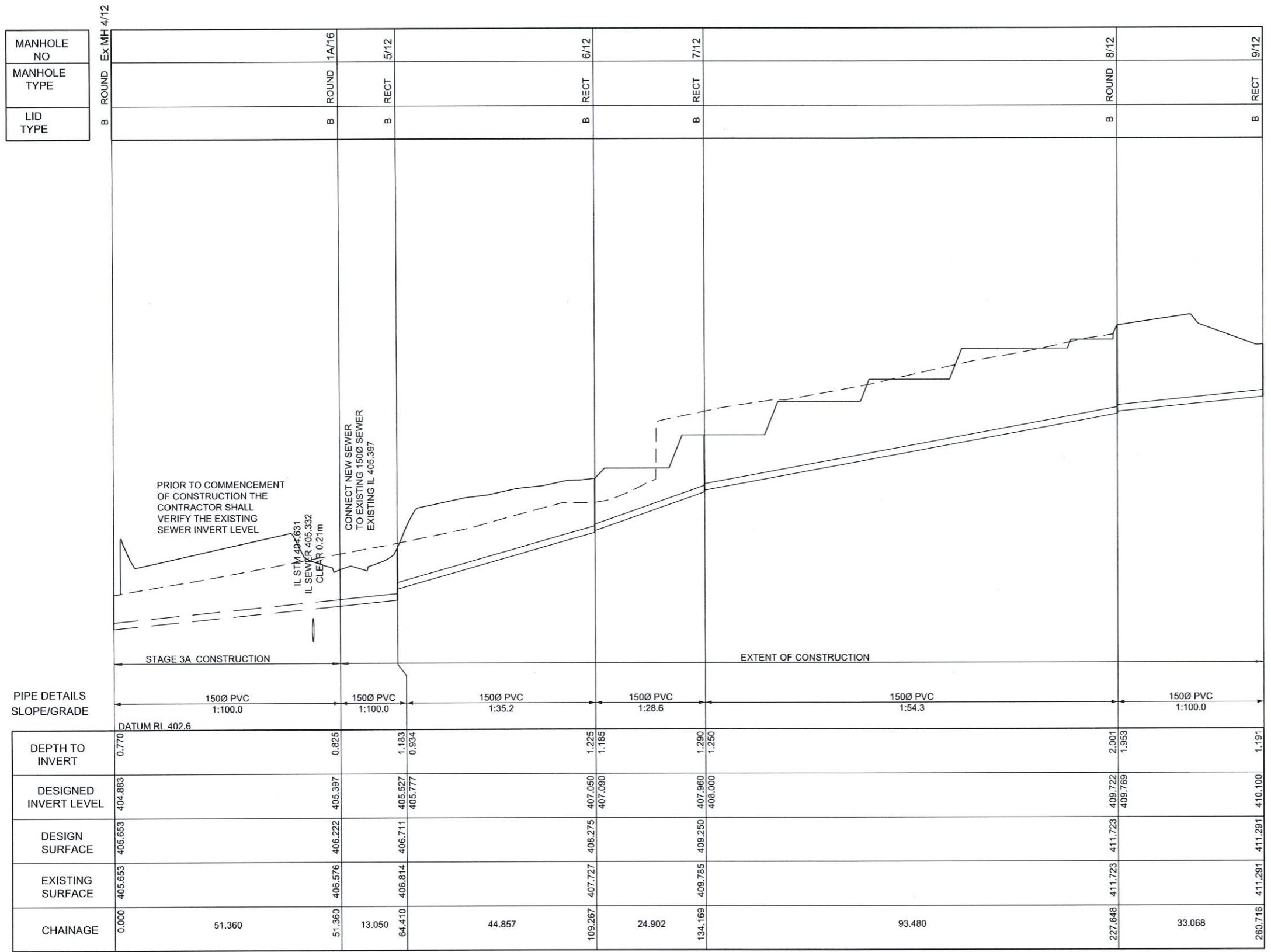
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"The Edge Mareeba" Stage 3
PROPOSED RESIDENTIAL SUBDIVISION
 AT ANTONIO DRIVE, MAREEBA
 DRAWING TITLE: OPEN DRAIN No. 1 - CROSS SECTIONS (SHEET 1 OF 1)

SCALE (AT A1 SIZE)	HOR 1:50	DRAWN	J.P.
DATE	VER 1:50	DESIGNED	J.P.
DATE	MARCH 2021	CHECKED	J.P.
APPROVED	J. T. SMITH RPEQ No. 2668		
DWG NUMBER	1450 - C13	AMDT	A

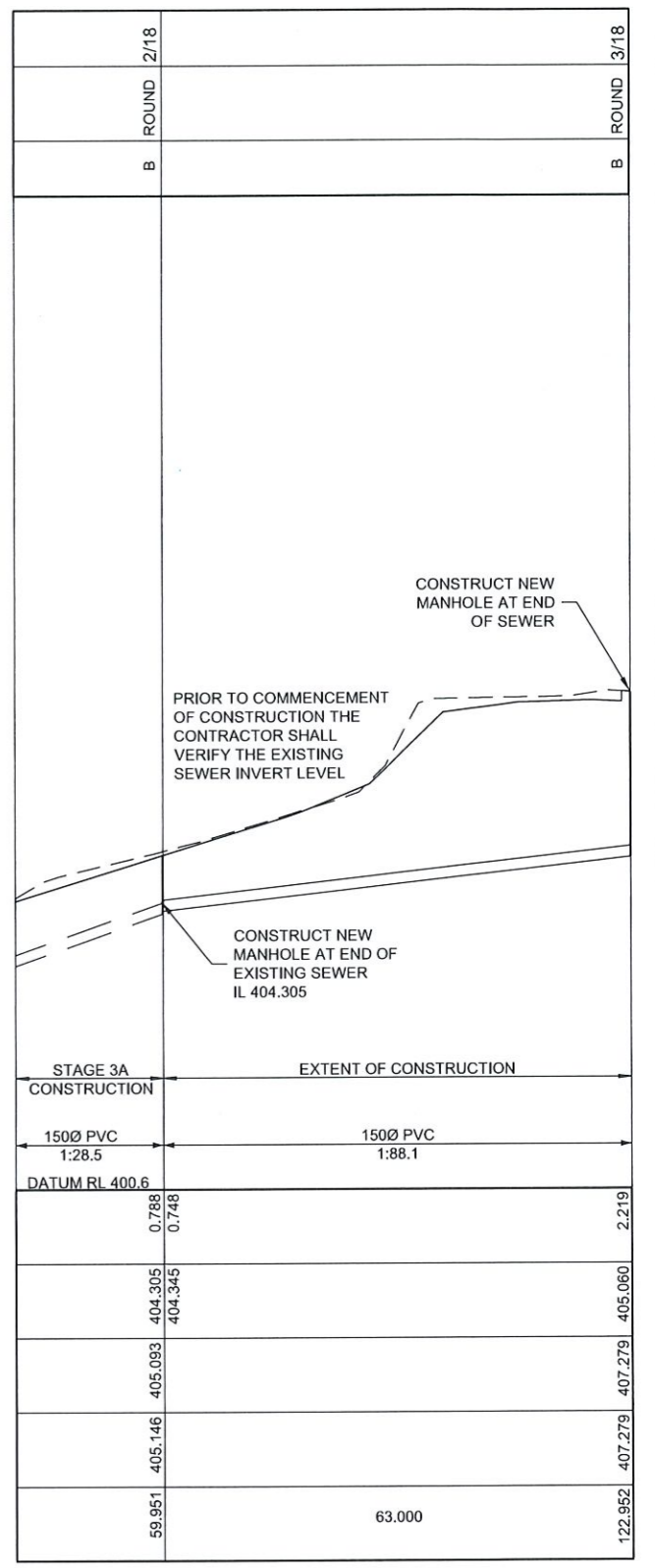
MANHOLE NO
MANHOLE TYPE
LID TYPE



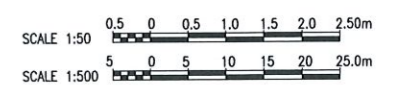
DEPTH TO INVERT	0.770	0.825	1.183	1.225	1.290	2.001	1.191
DESIGNED INVERT LEVEL	404.883	405.397	405.527	407.050	407.960	409.722	410.100
DESIGN SURFACE	405.653	406.222	406.711	408.275	409.250	411.723	411.291
EXISTING SURFACE	405.653	406.576	406.814	407.727	409.785	411.723	411.291
CHAINAGE	0.000	51.360	64.410	109.267	134.169	227.648	280.716

SEWER LONGITUDINAL SECTION FOR LINE SEWER 12
 SCALES: HORIZONTAL 1:500 VERTICAL 1:50

SEWER SETOUT POINTS				
Point #	Easting	Northing	Level	Description
542	333014.488	8118850.089	0.000	Ex. MH 4/12
543	333073.794	8118864.578	0.000	5/12
544	333116.709	8118877.632	0.000	6/12
545	333123.182	8118853.612	0.000	7/12
546	333147.508	8118763.353	0.000	8/12
547	333121.810	8118742.542	0.000	9/12



SEWER LONGITUDINAL SECTION FOR LINE SEWER 18
 SCALES: HORIZONTAL 1:500 VERTICAL 1:50



amendments	
A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES 15.03.21

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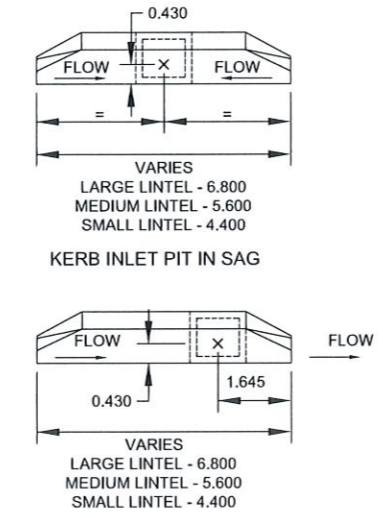
"The Edge Mareeba" Stage 3
PROPOSED RESIDENTIAL SUBDIVISION
AT ANTONIO DRIVE, MAREEBA
 DRAWING TITLE: SEWERAGE RETICULATION LONGITUDINAL SECTIONS AND SET OUT

SCALE (AT A1 SIZE)	HOR 1:500	DRAWN	J.P.
	VER 1:50	DESIGNED	J.P.
DATE	MAR 2021	CHECKED	J.P.
APPROVED	J. T. SMITH RPEQ No. 2668		
DWG NUMBER	1450 - C14	AMDT	A

STRUCTURE NAME	2/1	3/1	4/1	5/1
STRUCTURE DESCRIPTION	KERB INLET IN SAG SMALL LINTEL	KERB INLET IN SAG SMALL LINTEL	KERB PIT ON GRADE SMALL LINTEL	EXISTING KERB INLET ON GRADE
	IL STM 404.631 - IL SEWER 405.332 CLEAR 0.21m			
	REMOVE TEMPORARY SEAL AND JOIN EXISTING PIPE TO NEW PIT			
	EXTENT OF CONSTRUCTION		STAGE 3A CONSTRUCTION	PIPEWORK CONSTRUCTED IN PREVIOUS STAGES
PIPE SIZEmm (Class)	375(2)	450(2)		450(2)
PIPE GRADE %	0.58%	1.00%		2.15%
PIPE SLOPE 1 in X	171.56	100.28		46.46
FULL PIPE FLOW VELOCITY (m/s)	1.22	1.55		1.55
PART FULL FLOW VELOCITY (m/s)				2.76
	DATUM RL 397.0			
WATER LEVEL IN STRUCTURE	405.905	405.574	405.243	402.892
HYDRAULIC GRADE LEVEL	405.608	405.566	405.206	402.892
		405.334	404.961	402.087
PIPE FLOW (Cumecs)	0.140	0.255		0.255
PIPE CAPACITY AT GRADE (Cumecs)	0.140	0.296		0.436
DEPTH TO INVERT	1.345	1.386	1.685	1.420
	404.799	404.758	404.524	401.362
		404.698	404.504	2.297
INVERT LEVEL OF DRAIN				
DESIGN SURFACE LEVEL	406.144	406.144	406.209	403.659
ROAD CHAINAGE (OFFSET)	15.694 (3.220L)	15.694 (3.220R)	194.445 (3.220R)	89.206 (3.220R)
RUNNING CHAINAGE	0.000	7.110	17.450	129.800
				105.240

LINE

1



NOTES:

SET OUT POINT IS CENTRE OF GRATE

WIDTH IS DIMENSION PERPENDICULAR TO PRECAST BACKSTONE (i.e. TYPICALLY PERPENDICULAR TO THE KERB)

LENGTH IS DIMENSION PARALLEL TO KERB.

INSTALL 2.0m SUB SOIL DRAIN AS REQUIRED BY FNQROC. DWGS.

PIPE LENGTHS SHOWN ARE MEASURED FROM CENTRE OF GRATE TO CENTRE OF GRATE

ALL STORMWATER DRAIN PIPES SHALL BE R.C. PIPES CLASS 2 1J TO AS 4058

FSL NOTED IS THE EDGE OF THE KERB AND CHANNEL PERPENDICULAR TO THE SETOUT POINT.

STORMWATER DRAINAGE SET OUT

PIT SCHEDULE										
PIT No.	TYPE	INTERNAL		INLET		OUTLET		F.S.L.	PIT DEPTH	REMARKS
		WIDTH	LEN.	DIA.(CL)	INV R.L.	DIA.(CL)	INV R.L.			
2/1	KERB INLET IN SAG SMALL LINTEL	835	930			375(2)	404.799	406.144	1.34	CONSTRUCT PIT
3/1	KERB INLET IN SAG SMALL LINTEL	835	930	375(2)	404.758	450(2)	404.698	406.144	1.44	CONSTRUCT PIT
4/1	KERB INLET ON GRADE SMALL LINTEL	835	930	450(2)	404.524	450(2)	404.504	406.209	1.71	CONSTRUCT PIT

STORMWATER SETOUT POINTS				
Point #	Easting	Northing	Level	Description
561	333045.781	811885.173	406.209	4/1
562	333061.114	811885.832	406.144	3/1
563	333068.164	811885.732	406.144	2/1



amendments	
A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES 15.03.21

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"The Edge Mareeba" Stage 3
 PROPOSED RESIDENTIAL SUBDIVISION
 AT ANTONIO DRIVE, MAREEBA

DRAWING TITLE: STORMWATER DRAINAGE LONGITUDINAL SECTION, PIT SCHEDULE, SET OUT AND NOTES

SCALE (AT A1 SIZE)	HOR 1:500	VER 1:50	DRAWN	J.P.
			DESIGNED	J.P.
			CHECKED	J.P.
DATE	MARCH 2021			
APPROVED	J. T. SMITH RPEQ No. 2668			
DWG NUMBER	1450 - C15	AMDT	A	



amendments		
A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES	15.03.21

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"The Edge Mareeba" Stage 3
 PROPOSED RESIDENTIAL SUBDIVISION
 AT ANTONIO DRIVE, MAREEBA
 DRAWING TITLE: STORMWATER DRAINAGE CATCHMENT PLAN



SCALE (AT A1 SIZE)	HOR 1:1000	DRAWN	J.P.
		DESIGNED	J.P.
DATE	MARCH 2021	CHECKED	J.P.
APPROVED	J. T SMITH RPEQ No. 2668		
DWG NUMBER	1450 - C16	AMDT	A

LOCATION			SUB-CATCHMENT RUNOFF										INLET DESIGN										DRAIN DESIGN										HEADLOSSES										PART FULL												
DESIGN A.R.L.	STRUCTURE NO.	DRAIN SECTION	tc	I	I	A	Q	tc	I	Qt	Qm	Qs	Qo	L	S	V	t	v2/2g	Ku	hu	kl	hl	kw	hw	Sf	hf	DEPTH	VELOCITY	OBVERT U/S RL	DRAIN SECTION H.G.L.	U/S H.G.L.	W.S.E.	SURFACE OR K&C INVERT LEVEL	FREEBOARD	STRUCTURE No.																				
Years			min	mm/h	Ho	Ha	Ha	min	mm/h	Ho	Ha	Ha	Ha	m	%	m/sec	min	m	m	m	m	m	m	m	%	m	m	m	m	m	m	m	m	m	m																				
2	100	1/2 to 2/2	5.00	134	0.75	0.160	0.120	0.203	0.075	0.218	0.000	0.000	0.005	0.717	0.049	0.00	1/2	8150.095	0.075	0.000	5.00	134	0.202	0.218	7.965	0.143	0.075	8.890	0.45	375(2)	0.66	0.15	Qg 0.075 Qo 0.075 Do 375 CHRT 32: Vo2/2gDo 0.06 H/Do 0.44 Kg side flow 7.47 end flow 5.59	0.022	7.47	0.166			7.47	0.166	0.17	0.015			399.671	399.631	400.004	400.004	400.151	0.147	1/2				
2	100	2/2 to 3/2	5.00	134	0.75	0.130	0.098	0.143	0.053	0.154	0.019	0.000	0.005	0.679	0.047	0.00	2/2	8150.095	0.073	0.000	5.15	132	0.345	0.368	7.965	0.222	0.146	6.970	1.87	375(2)	1.28	0.09	Qg 0.071 Qo 0.146 Do 375 CHART 34 Angle 25 Case3 S/Do 2.5 Du/Do 1.00 Qg/Qo 0.49 K 1.64 S/Do 1.55 cor 0.50 Ku 2.14 Kw 2.14	0.084	2.14	0.179			2.14	0.179	0.63	0.044			399.611	399.481	399.823	399.823	400.166	0.343	2/2				
2	100	1/6 to 2/6	10.00	106	0.75	0.580	0.435	0.480	0.141	0.398	0.000	0.000	0.008	1.611	0.084	0.00	1/6	8150.095	0.141	0.000	10.00	106	0.480	0.398	0.916	0.257	0.141	8.110	1.42	375(2)	1.24	0.11	Qg 0.141 Qo 0.141 Do 375 CHRT 32: Vo2/2gDo 0.21 H/Do 0.26 Kg side flow 5.34 end flow 4.38	0.078	5.34	0.419			5.34	0.419	0.60	0.048			406.989	406.874	407.506	407.506	407.921	0.415	1/6				
2	100	2/6 to 3/6	5.00	134	0.75	0.030	0.023	0.083	0.031	0.089	0.000	0.000	0.008	0.132	0.025	0.00	2/6	8150.095	0.031	0.000	10.11	106	0.562	0.465	0.633	0.299	0.165	8.140	9.51	375(2)	1.45	0.37	Qg 0.024 Qo 0.165 Do 375 Angle 31 Chart 36 S/Do 2.5 chartdeg Du/Do 1.00 K0 1.51 K0.5 1.86 Qg/Qo 0.85 Cg 0.36 K 1.63 S/Do 2.0 K0 1.79 K0.5 2.07 K 1.89 S/Do 1.5 K0 2.11 K0.5 2.54 K 2.26	0.107	1.73	0.185	Interp CHART 35 val for S/Do 2.0 K0 1.75 K0.5 1.80 K 1.77 val for S/Do 1.81 Ku 1.73			2.18	0.234	0.82	0.261	0.141	4.29			406.854	406.826	407.039	407.088	407.806	0.718	2/6	
2	100	3/6 to 4/6	5.00	134	0.75	0.030	0.023	0.083	0.031	0.089	0.000	0.000	0.008	0.132	0.025	0.00	2/6	8150.095	0.031	0.000	10.11	106	0.562	0.465	0.633	0.299	0.165	8.140	9.51	375(2)	1.45	0.37	Qg 0.024 Qo 0.165 Do 375 Angle 31 Chart 36 S/Do 2.5 chartdeg Du/Do 1.00 K0 1.51 K0.5 1.86 Qg/Qo 0.85 Cg 0.36 K 1.63 S/Do 2.0 K0 1.79 K0.5 2.07 K 1.89 S/Do 1.5 K0 2.11 K0.5 2.54 K 2.26	0.107	0.58	0.062			0.80	0.085	0.82	0.048	0.128	4.94			403.806	402.991	403.868	403.892	407.470	3.578	3/6		
2	100	2/1 to 3/1	15.00	91	0.65	0.630	0.410	0.552	0.140	0.404	0.000	0.000	0.022	1.590	0.084	0.00	2/1	8150.095	0.140	0.000	15.00	91	0.552	0.404	1.496	0.264	0.140	7.110	0.58	375(2)	1.22	0.10	Qg 0.140 Qo 0.140 Do 375 CHRT 32: Vo2/2gDo 0.20 H/Do 1.12 Kg side flow 3.92 end flow 3.33	0.076	3.92	0.298			3.92	0.298	0.58	0.041			405.180	405.139	405.905	405.905	406.112	0.207	2/1				
2	100	3/1 to 4/1	15.00	91	0.65	0.700	0.455	0.455	0.115	0.333	0.000	0.000	0.022	1.270	0.071	0.00	3/1	8150.095	0.115	0.000	15.10	91	1.007	0.736	1.496	0.482	0.255	7.450	1.00	450(2)	1.55	0.19	Qg 0.115 Qo 0.255 Do 450 Angle 36 Chart 39 S/Do 2.5 chartdeg Du/Do 0.83 K0 1.80 K0.5 1.79 Qg/Qo 0.55 Cg 0.93 K 1.80 S/Do 2.0 K0 2.11 K0.5 1.90 K 1.92 S/Do 1.5 K0 2.51 K0.5 2.19 K 2.21	0.122	1.89	0.232	Interp CHART 38 val for S/Do 2.0 K0 1.84 K0.5 1.84 K 1.84 S/Do 1.5 K0 2.44 K0.5 2.09 K 2.11 Interp val for S/Do 1.81 Ku 1.89			1.86	0.240	0.74	0.128	2.78			405.155	404.981	405.566	405.574	406.112	0.538	3/1		
2	100	4/1 to 5/1	5.00	134	0.65	0.010	0.007	0.007	0.002	0.007	0.000	0.000	0.000	0.065	0.023	0.53	0.01	4/1	A1	0.002	0.000	15.29	15.29	1.013	0.737	2.858	0.483	0.255	10.240	2.15	450(2)	1.55	1.13	Qg 0.001 Qo 0.255 Do 450 Angle 44 Chart 39 S/Do 2.5 chartdeg Du/Do 1.00 K0 1.80 K0.5 1.91 Qg/Qo 1.00 Cg 0.01 K 1.80 S/Do 2.0 K0 1.98 K0.5 2.10 K 1.98 S/Do 1.5 K0 2.39 K0.5 2.52 K 2.39	0.122	2.00	0.245	Interp CHART 38 val for S/Do 2.0 K0 1.84 K0.5 1.84 K 1.83 S/Do 1.5 K0 2.05 K0.5 1.84 K 2.05 Interp val for S/Do 1.82 Ku 2.00			2.30	0.282	0.74	0.251	2.78			404.961	404.892	405.208	405.243	408.209	0.956	4/1	
2	100	1/5 to 2/5	15.00	91	0.65	0.810	0.527	0.774	0.196	0.566	0.000	0.000	0.50	2.212	0.108	0.00	1/5	8150.095	0.196	0.000	15.00	91	0.774	0.566	2.250	0.370	0.196	7.300	1.59	450(2)	1.20	0.10	Qg 0.196 Qo 0.349 Do 525 CHART 37 Angle 44 Case3 S/Do 2.5 Du/Do 0.86 Qg/Qo 0.44 K 1.69 S/Do 1.55 cor 0.45 Ku 2.14 Kw 2.14	0.073	2.00	0.147			2.00	0.147	0.44	0.032			403.347	403.231	403.622	403.622	403.769	0.083	1/5				
2	100	2/5 to 5/1	15.00	91	0.65	0.930	0.605	0.846	0.605	0.442	0.000	0.000	0.50	1.749	0.090	0.00	2/5	8150.095	0.153	0.000	15.10	91	1.379	1.007	2.250	0.658	0.349	7.460	0.40	525(2)	1.56	0.19	Qg 0.153 Qo 0.349 Do 525 CHART 37 Angle 44 Case3 S/Do 2.5 Du/Do 0.86 Qg/Qo 0.44 K 1.69 S/Do 1.55 cor 0.45 Ku 2.14 Kw 2.14	0.124	2.14	0.266			2.14	0.266	0.60	0.105			403.288	403.219	403.590	403.590	403.852	0.262	2/5				
2	100	5/1 to 6/1	5.00	134	0.65	0.010	0.007	0.007	0.002	0.007	0.000	0.000	3.26				5/1	A1	0.002	0.000	16.42	87	2.398	1.688	1.443	1.107	0.581	13.010	2.13	525(2)	2.59	0.47	Qg 0.001 Qo 0.581 Do 525 Flow 4/1 made eqv grate flow Flow 2/5 made eqv grate flow CHRT 32: Vo2/2gDo 0.64 H/Do 0.36 Kg side flow 3.21 and flow 2.92 K vals above for stepped pipes as grate flow grate flow decreased by 0.246 from 4/1 grate flow decreased by 0.334 from 2/5 Routine 2.1 CHART 48 Du/Do 0.86 Qg/Qo 0.42 K 1.52 g/Do 2.0 chrt Qg/Qo 0.00 Kg 0.00 g/Do 1.5 chrt Qg/Qo 0.00 Kg 0.00 g/Do 1.36 Interp value Kg 0.00	0.342	2.35	0.805	Ku=Kw=1.53 Combined pipes in line case Join Pipes: 4/1 and 2/5 Vel1 1.547 Vel2 1.541 Eq Dia 691 Angle 205 Flow 0.580 CHART 33 Angle 0 S/Do 2.5 Du/Do 1.32 Qg/Qo 0.00 K 0.24 S/Do 1.51 cor 0.00 Ku 0.24 Kw 0.24 Interpolated Ku=0.87 Kw=0.87 K vals step pipes as pipe flow Ku 0.87 Kw 0.87 Averaged Ku 2.35 Kw 2.35			2.35	0.805	1.67	1.218			401.896	400.344	402.087	402.892	402.892	403.659	403.659	407.767	5/1	
2	100	1/4 to 6/1	5.00	134	0.75	0.220	0.165	0.165	0.061	0.178	0.000	0.000	0.21	0.520	0.041	0.00	1/4	8150.095	0.061	0.000	5.00	134	0.165	0.178	1.443	0.116	0.061	7.300	2.37	375(2)	0.54	0.12	Qg 0.165 Qo 0.252 K 2.39	0.015	0.55	0.008			0.55	0.008	0.11	0.008			400.448	400.275	400.885	400.885	401.380	0.495	1/4				
2	100	6/1 to 7/1	15.00	91	0.65	0.330	0.215	0.280	0.071	0.204	0.049	0.000	0.21	1.331	0.073	0.00	6/1	8150.095	0.120	0.000	16.89	86	2.843	1.962	1.443	1.235	0.727	10.350	0.29	675(2)	1.97	0.17	Qg 0.113 Qo 0.272 Do 675 Routine 2.1 CHART 48 Du/Do 0.78 Qg/Qo 0.79 K -0.05 g/Do 2.0 chrt Qg/Qo 0.16 Kg 0.15 g/Do 1.5 chrt Qg/Qo 0.16 Kg 0.17 g/Do 1.83 Interp value Kg 0.16 Ku=Kw=0.11 Combined pipes in line case Join Pipes: 5/1 and 1/4 Vel1 2.653 Vel2 0.357 Eq Dia 558 Angle 174 Flow 0.614 CHART 33 Angle 0 S/Do 2.5 Du/Do 0.83 Qg/Qo 0.16 K 0.20 S/Do 1.91 cor 0.08 Ku 0.28 Kw 0.28 Interpolated Ku=0.11 Kw=0.11	0.198	0.11	0.022			0.11	0.022	0.69	0.141			400.275	400.215	400.869	400.869	401.380	0.511	6/1				
2	100	1/3 to 2/3	15.00	91	0.65	0.890	0.579	0.810	0.146	0.423	0.000	0.000	7.25	1.412	0.076	2.23	1/3	A1	0.098	0.795	0.048	15.00	91	0.579	0.810	0.423	0.325	0.098	7.890	6.34	375(2)	0.86	0.13	Qg 0.098 Qo 0.098 Do 375 CHRT 32: Vo2/2gDo 0.10 H/Do 0.00 Kg side flow 7.85 end flow 6.05	0.038	7.85	0.296			7.85	0.296	0.29	0.023	0.119	3.21			403.381	403.281	403.677	403.677	404.408	0.731	1/3	
2	100	2/3 to 7/1	15.00	91	0.65	0.900	0.585	0.585	0.148	0.428	0.000	0.000	7.25	1.419	0.077	2.23	2/3	A1	0.099	0.801	0.049	15.13	90	1.164	0.851	2.467	0.656	0.195	8.350	4.98	375(2)	1.71	0.33	Qg 0.098 Qo 0.195 Do 375 Flow 1/3 made eqv grate flow CHRT 32: Vo2/2gDo 0.39 H/Do 0.00 Kg side flow 4.30 end flow 3.69 K vals above for stepped pipes as grate flow grate flow decreased by 0.097 from 1/3 Angle 67 Chart 45 S/Do 2.5 chartdeg Du/Do 1.00 K0 2.16 K0.5 1.81 Qg/Qo 0.50 Cg 1.00 K 1.81	0.149	2.12	0.316	S/Do 2.0 K0 2.47 K0.5 2.34 K 2.34 S/Do 1.5 K0 2.74 K0.5 2.80 K 2.80 Interp val for S/Do 1.94 Kw 2.40 CHART 44 S/Do 2.0 K0 1.99 K0.5 2.11 K 2.11 S/Do 1.5 K0 2.12 K0.5 2.17 K 2.17 Interp val for S/Do 1.94 Ku 2.12 K vals step pipes as pipe flow Ku 2.12 Kw 2.40			2.40	0.358	1.14	0.381	0.185	3.53			402.771	401.101	403.087	403.129	404.190	1.061	2/3
2	100	7/1 to 8/1	15.00	91	0.65	0.180	0.117	0.164	0.030	0.086	0.049	0.000	7.07	1.042	0.062	1.92	7/1	A1	0.059	0.442	0.019	17.06	86	4.124	2.832	2.467	1.864	0.969	8.330	0.48	750(2)	2.12	0.42	Qg 0.056 Qo 0.969 Do 750 Flow 2/3 made eqv grate flow Angle 68 Chart 47 S/Do 2.5 chartdeg Du/Do 0.80 K0 1.98 K0.5 2.24 Qg/Qo 0.75 Cg 0.58 K 2.13 S/Do 2.0 K0 2.46 K0.5 2.40 K 2.43 S/Do 1.5 K0 2.69 K0.5 2.65 K 2.67	0.229	2.05	0.469	Interp CHART 46 val for S/Do 2.0 K0 2.01 K0.5 2.00 K 2.00 S/Do 1.5 K0 2.09 K0.5 2.31 K 2.22 Interp val for S/Do 1.90 Ku 2.05 K vals above for stepped pipes as grate flow			2.48	0.568	0.70	0.375			400.122	399.862	400.237	399.862	400.706	0.935	7/1		

NOTE: SHADED AREA REPRESENTS WORK WITHIN STAGE 3

amendments</	
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