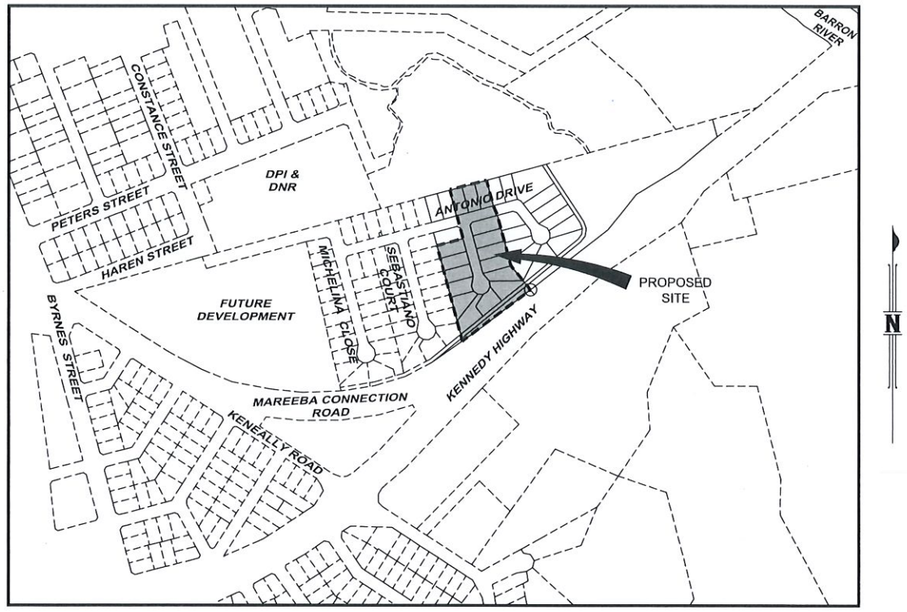
'THE EDGE' RESIDENTIAL ESTATE AT ANTONIO DRIVE STAGE 3



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.

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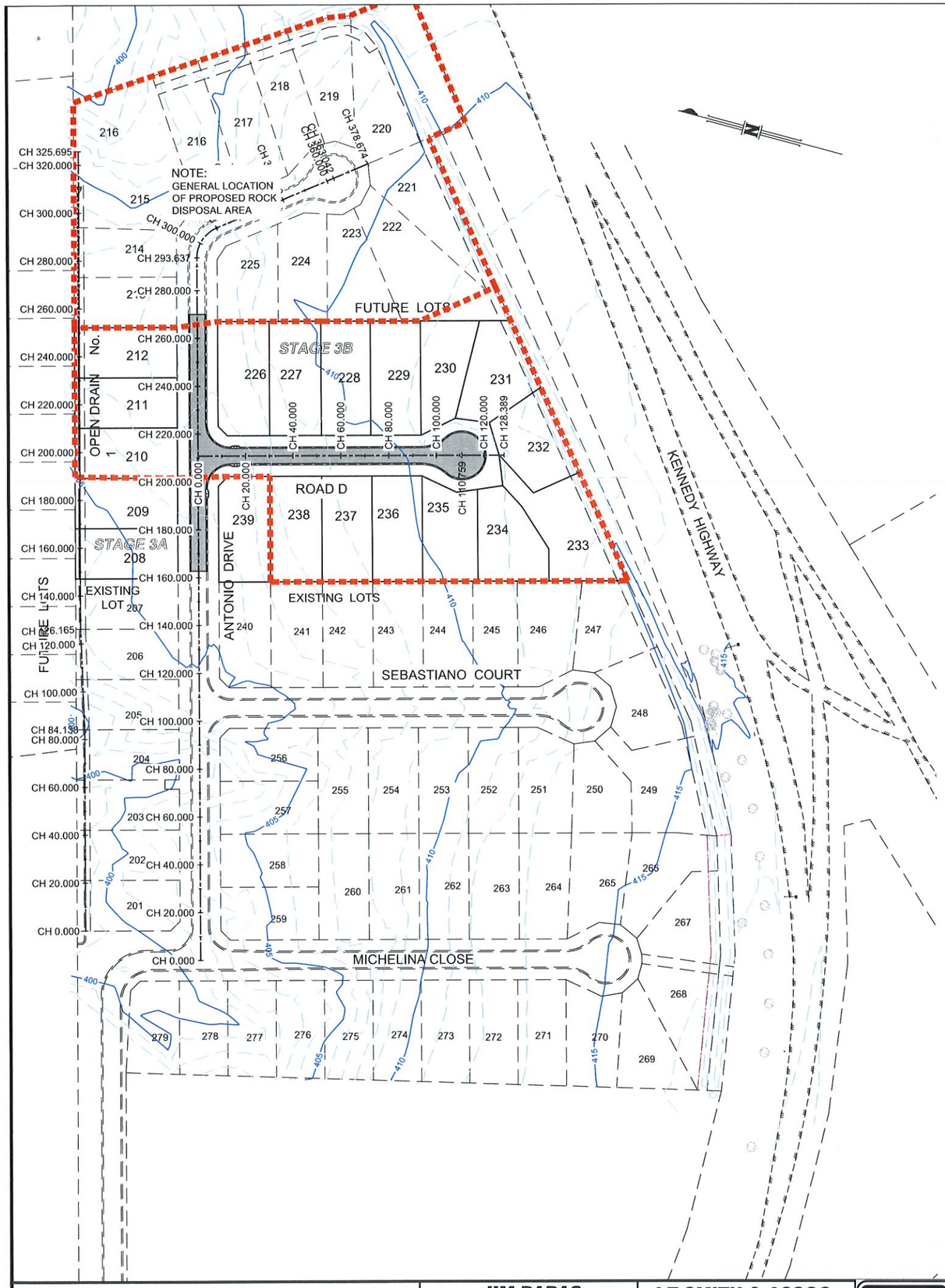


PRE-START MEETING

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

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

NOTES:

SURVEY CONTROL

ORIGIN OF LEVELS:
PM 1877761 RL 687.844 AHD der.

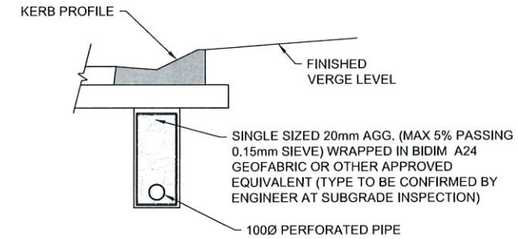
ORIGIN OF COORDINATES:
MGA 94 ZONE 55

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

NOTES:

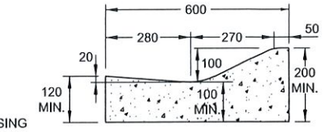
THE CONTRACTOR TO CONFIRM SURVEY DATUM WITH SURVEYOR PRIOR TO COMMENCEMENT OF WORK.

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

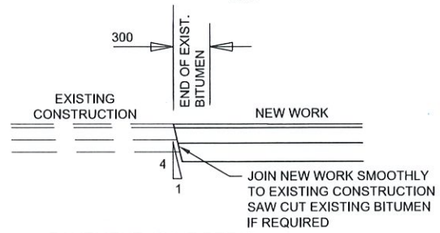
NTS



ROLLOVER KERB AND CHANNEL DETAIL
SCALE: 1:50

RP DESCRIPTION
LOT 300 ON SP 323221

LOCAL AUTHORITY:
MAREEBA SHIRE COUNCIL



PAVEMENT JOINT DETAIL

N.T.S.

NOTES:

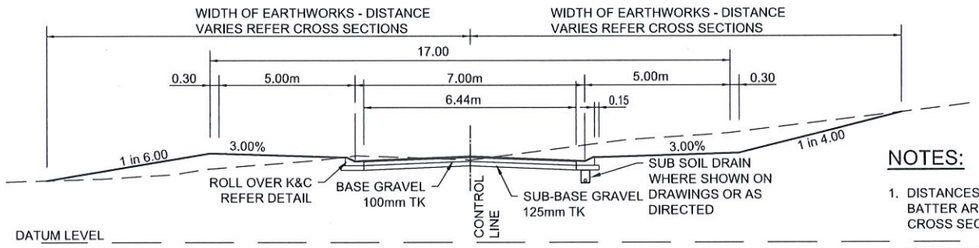
FOOTPATHS TO BE DRILL SEEDED WITH GRASS SPECIES AS APPROVED BY THE SUPERINTENDENT.

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.

EXISTING SERVICES

1. 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.
2. 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.
3. 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:

1. DISTANCES FROM ℄ TO TOPS OF BATTER ARE SHOWN ON THE CROSS SECTIONS.
2. 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 AUSTROADS 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

SCALE 1:100 1.0 0 1.0 2.0 3.0 4.0 5.0m
SCALE 1:1000 10 0 10 20 30 40 50.0m

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)	HOR1:1000/100	DRAWN	J.P.
	VER 1:100	DESIGNED	J.P.
DATE	MARCH 2021	CHECKED	J.P.
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) — 35.00
- EXISTING CONTOURS (AT 1.0m, INDEXED AT 5.0m) — 35

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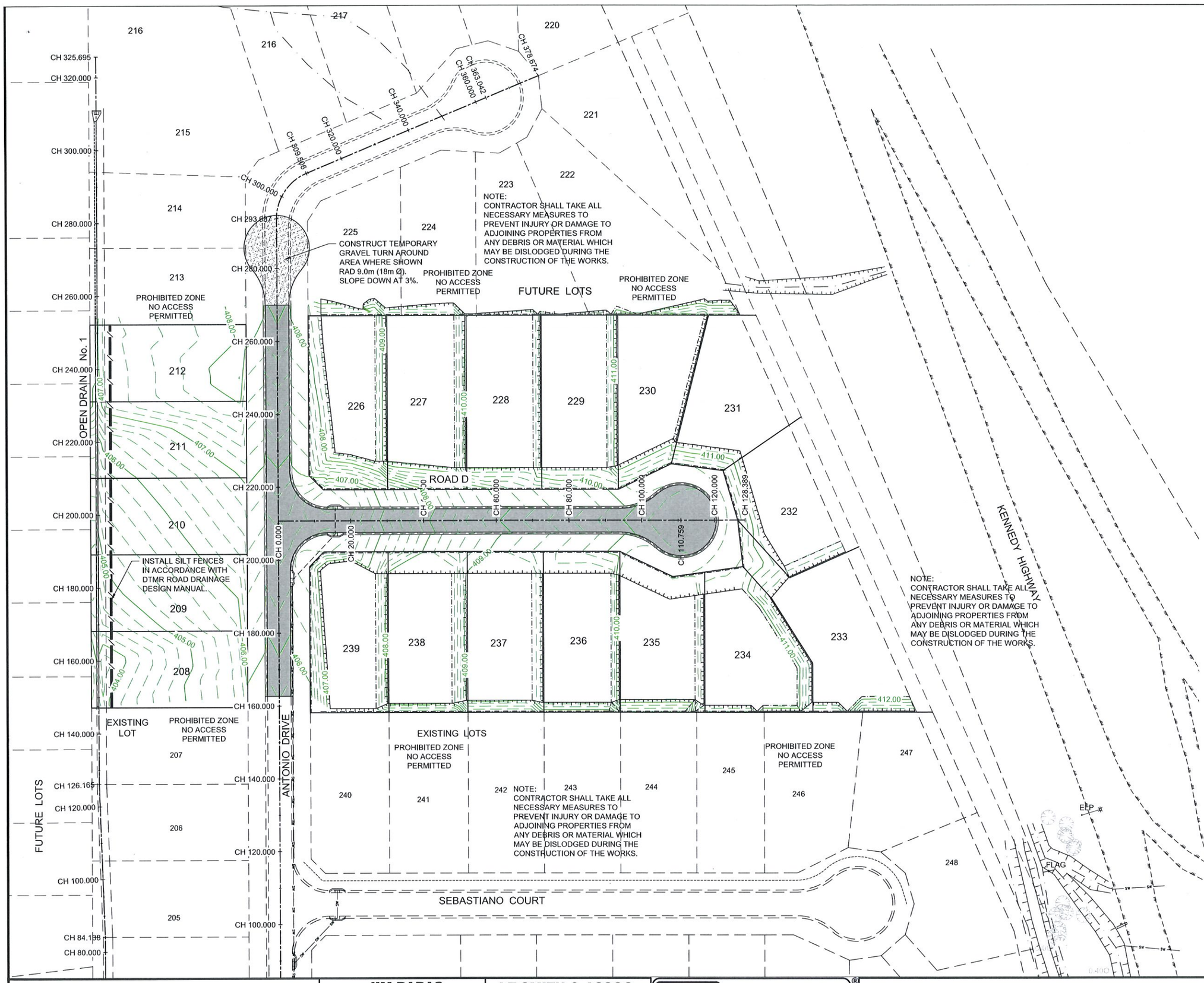
"The Edge Mareeba" Stage 3
PROPOSED RESIDENTIAL SUBDIVISION
AT ANTONIO DRIVE, MAREEBA

DRAWING TITLE: BULK EARTHWORKS PLAN

SCALE (AT A1 SIZE)	HOR 1:500	DRAWN	J.P.
	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 SEEDED.
   - FOOTPATHS SHALL BE GRASS SEEDED 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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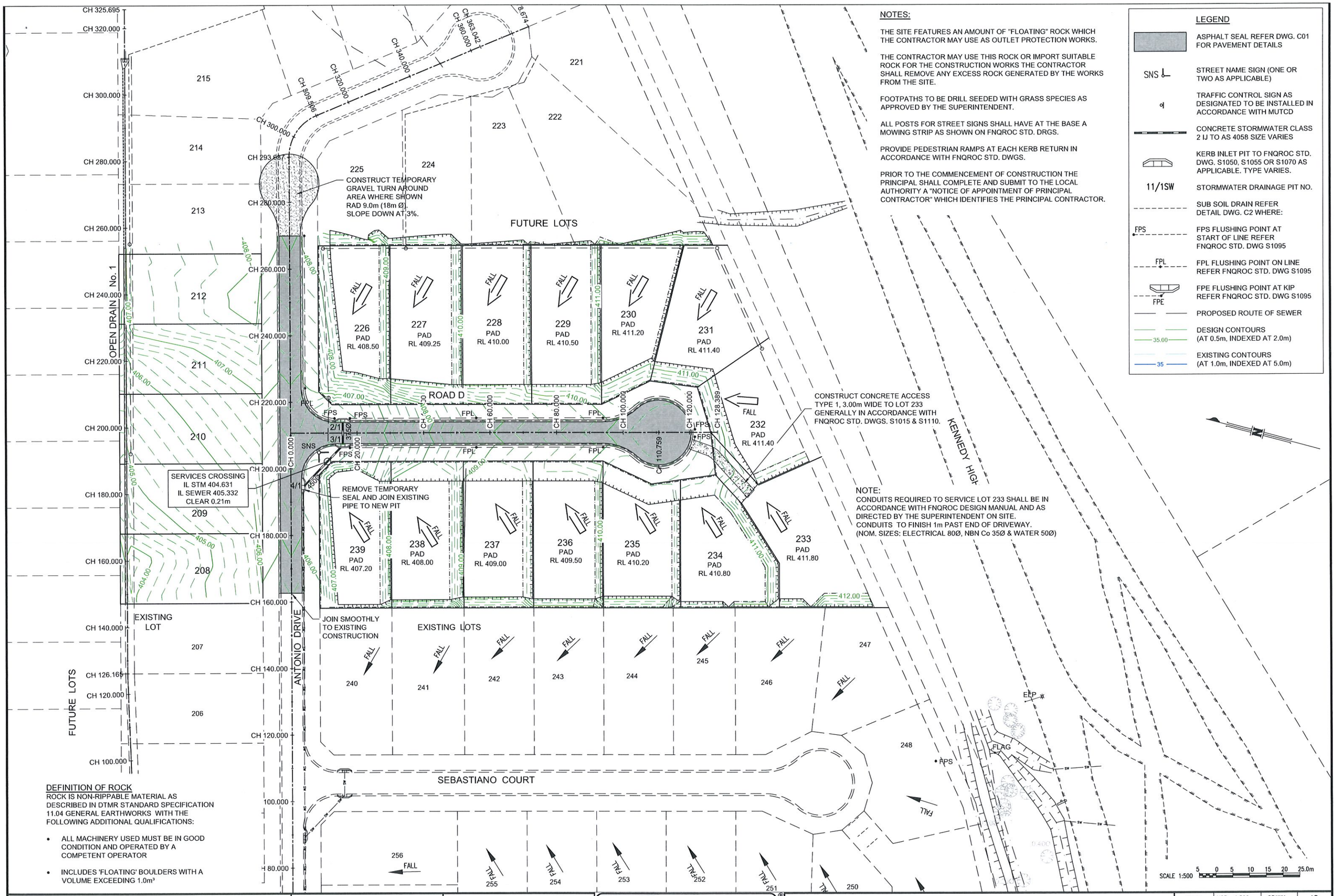
"The Edge Mareeba" Stage 3
PROPOSED RESIDENTIAL SUBDIVISION
AT ANTONIO DRIVE, MAREEBA

DRAWING TITLE: SOIL AND WATER MANAGEMENT PLAN

SCALE (AT A1 SIZE)	HOR 1:500	DRAWN	J.P.
	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
- SNS — STREET NAME SIGN (ONE OR TWO AS APPLICABLE)
- TRAFFIC CONTROL SIGN AS DESIGNATED TO BE INSTALLED IN ACCORDANCE WITH MUTCD
- CONCRETE STORMWATER CLASS 2 IJ TO AS 4058 SIZE VARIES
- KERB INLET PIT TO FNQROC STD. DWG. S1050, S1055 OR S1070 AS APPLICABLE. TYPE VARIES.
- 11/1SW — STORMWATER DRAINAGE PIT NO.
- SUB SOIL DRAIN REFER DETAIL DWG. C2 WHERE:
- FPS — FPS FLUSHING POINT AT START OF LINE REFER FNQROC STD. DWG S1095
- FPL — FPL FLUSHING POINT ON LINE REFER FNQROC STD. DWG S1095
- FPE — FPE FLUSHING POINT AT KIP REFER FNQROC STD. DWG S1095
- PROPOSED ROUTE OF SEWER
- DESIGN CONTOURS (AT 0.5m, INDEXED AT 2.0m)
- 35.00 — EXISTING CONTOURS (AT 1.0m, INDEXED AT 5.0m)

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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"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.
	VER	DESIGNED	J.P.
DATE	MARCH 2021	CHECKED	J.P.
APPROVED	J. T SMITH RPEQ No. 2668		
DWG NUMBER	1450 – C04	AMDT	A

END 150Ø STUB 3.00m LG.
ILUS 405.120
ILDS 405.100
CO-ORDINATES AT END
333102.934E
8118934.380N

PRIOR TO COMMENCEMENT OF CONSTRUCTION THE CONTRACTOR SHALL VERIFY THE EXISTING SEWER INVERT LEVEL

CONSTRUCT NEW MANHOLE AT END OF EXISTING SEWER IL 404.305

SERVICES CROSSING
IL STM 404.631
IL SEWER 405.332
CLEAR 0.21m

END 150Ø STUB
ILUS 408.020
ILDS 408.000
CO-ORDINATES AT END
333126.141E
8118854.410N

CONNECT NEW SEWER TO EXISTING 150Ø STUB EXISTING IL 405.397

PRIOR TO COMMENCEMENT OF CONSTRUCTION THE CONTRACTOR SHALL VERIFY THE EXISTING SEWER INVERT LEVEL

FUTURE LOTS

EXISTING LOTS

EXISTING LOT

ROAD D

SEWER 12

SEWER 18

OPEN DRAIN No. 1

ANTONIO DRIVE

KENNEDY HIGHWAY

CH 120.000
CH 140.000
CH 160.000
CH 180.000
CH 200.000
CH 220.000
CH 240.000
CH 260.000
CH 280.000
CH 300.000
CH 320.000
CH 340.000
CH 360.000
CH 378.674

206 EXIST HCB
207 EXIST HCB
208 EXIST TYPE 'E2' HCB
209 EXIST TYPE 'E2' HCB
210 TYPE 'E2' HCB
211 TYPE 'E2' HCB
212 TYPE 'E2' HCB
213 TYPE 'E2' HCB
222 TYPE 'E2' HCB
223 TYPE 'E2' HCB
224 FUTURE HCB
225 TYPE 'E2' HCB
226 TYPE 'E1B' HCB
227 TYPE 'E1B' HCB
228 TYPE 'E1B' HCB
229 TYPE 'E1B' HCB
230 TYPE 'E1B' HCB
231 TYPE 'E1B' HCB
232 TYPE 'E' STUB IN MH
233 EXIST TYPE 'E2' HCB
234 EXIST TYPE 'E2' HCB
235 EXIST TYPE 'E2' HCB
236 EXIST TYPE 'E2' HCB
237 EXIST TYPE 'E2' HCB
238 EXIST TYPE 'E2' HCB
239 EXIST TYPE 'E1' HCB
240 EXIST HCB
241 EXIST HCB
242 EXIST HCB
243 EXIST HCB
244 EXIST HCB
245 EXIST HCB
246 EXIST HCB
247 EXIST HCB

3A/18 DE
3/18
2/18
5/12
6/12
7/12
8/12
9/12
1/16
2/16
3/16
4/16
Ex MH 1/18
Ex MH 4/12
EEP

SCALE 1:500 5 0 5 10 15 20 25.0m

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

SEWER RETICULATIONLEGEND

- 1/14 — 150Ø uPVC SEWER
- EXISTING SEWERS AND MANHOLES
- PROPOSED ROUTE OF STORMWATER DRAINS
- PROPOSED STORMWATER PIT
- PROPOSED K&C
- 35.00 — DESIGN CONTOURS AT 0.5m INDEXED AT 2.0m

MANHOLE NUMBER — LINE DESIGNATION
1/14
SEWER MANHOLE
HOUSE CONNECTION BRANCH LOCATION

amendments		
A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES	15.03.21

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"The Edge Mareeba" Stage 3

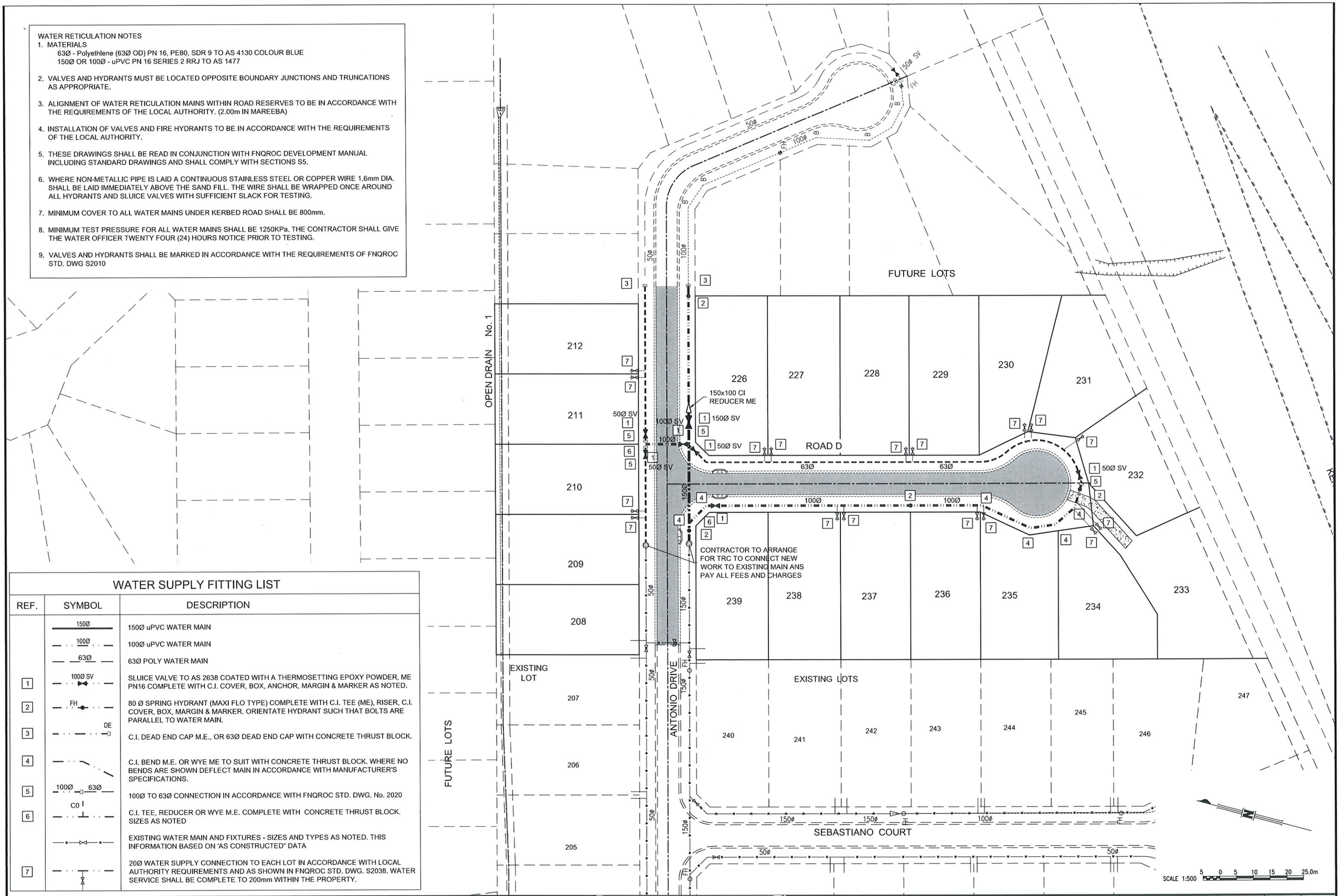
PROPOSED RESIDENTIAL SUBDIVISION AT ANTONIO DRIVE, MAREEBA

DRAWING TITLE: SEWERAGE RETICULATION PLAN

SCALE (AT A1 SIZE)	HOR 1:500	DRAWN	J.P.
	VER	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
   63Ø - Polyethlene (63Ø OD) PN 16, PE80, SDR 9 TO AS 4130 COLOUR BLUE
   150Ø OR 100Ø - 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



WATER SUPPLY FITTING LIST

REF.	SYMBOL	DESCRIPTION
	150Ø	150Ø uPVC WATER MAIN
	100Ø	100Ø uPVC WATER MAIN
	63Ø	63Ø POLY WATER MAIN
1	100Ø SV	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	FH	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	DE	C.I. DEAD END CAP M.E., OR 63Ø 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	100Ø 63Ø	100Ø TO 63Ø CONNECTION IN ACCORDANCE WITH FNQROC STD. DWG. No. 2020
6	CO	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		20Ø 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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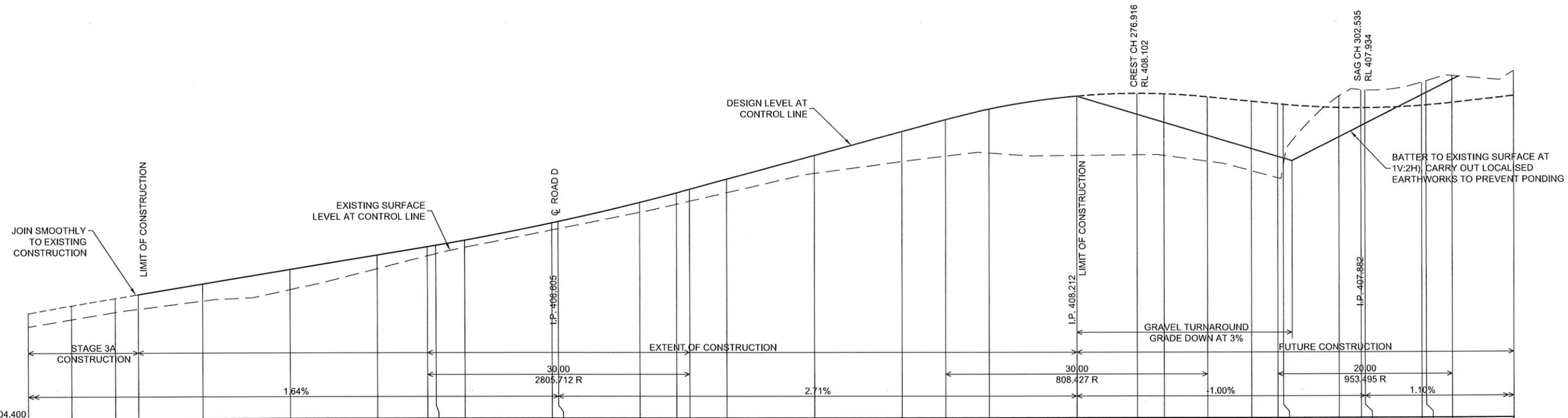
"The Edge Mareeba" Stage 3
PROPOSED RESIDENTIAL SUBDIVISION
AT ANTONIO DRIVE, MAREEBA

DRAWING TITLE: WATER RETICULATION PLAN

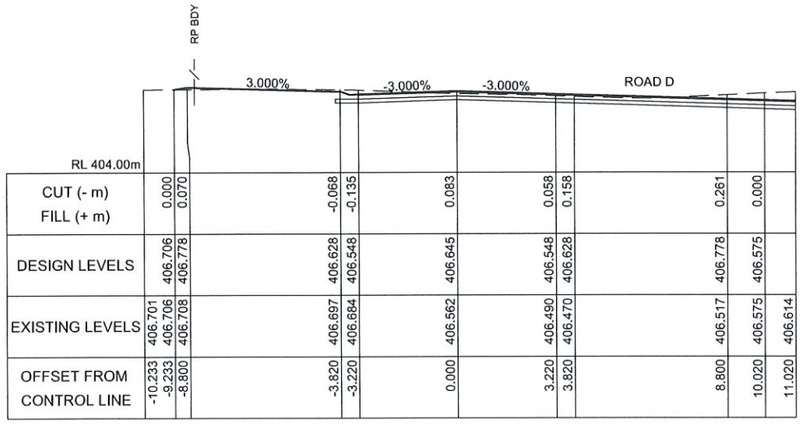
SCALE (AT A1 SIZE)	HOR 1:500	DRAWN	J.P.
	VER	DESIGNED	J.P.
DATE	MARCH 2021	CHECKED	J.P.
APPROVED		J. T SMITH RPEQ No. 2668	
DWG NUMBER	1450 – C06	AMDT	A

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



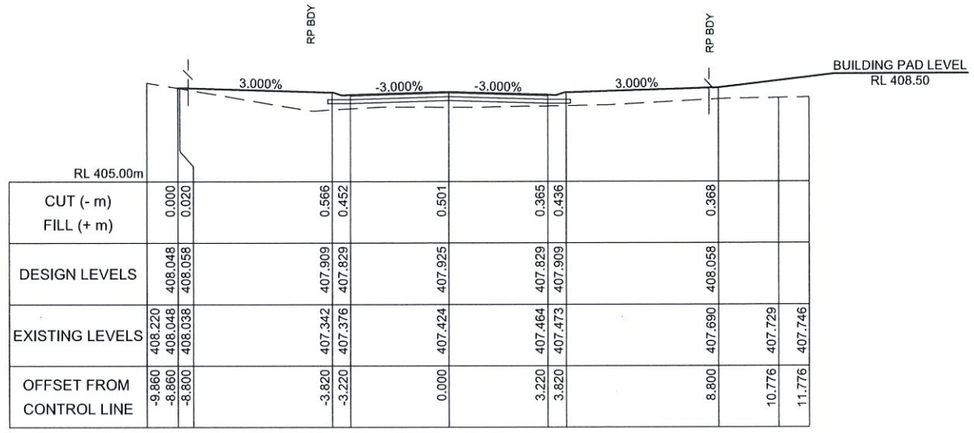
R.L. 404.400

| | | | | |



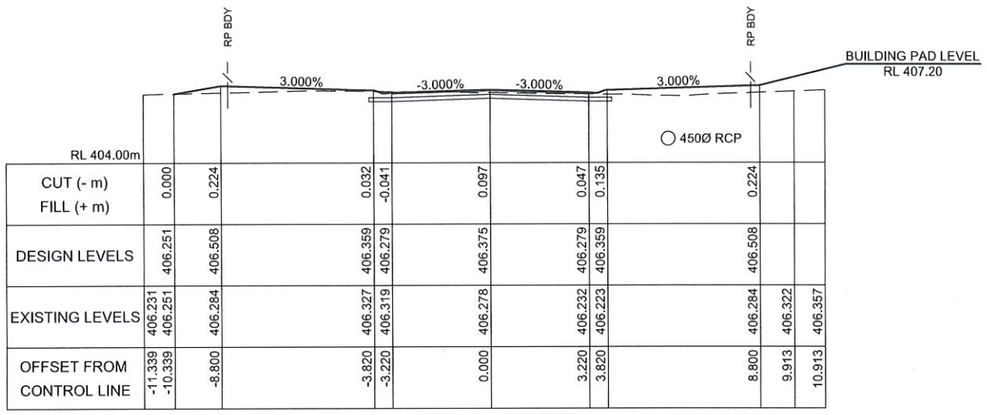
CUT (- m)	0.000	0.070	-0.068	-0.135	0.083	0.058	0.158	0.261	0.000					
FILL (+ m)														
DESIGN LEVELS	406.706	406.778	406.628	406.548	406.645	406.548	406.628	406.778	406.575					
EXISTING LEVELS	406.701	406.706	406.697	406.684	406.562	406.490	406.470	406.517	406.575	406.614				
OFFSET FROM CONTROL LINE	-10.233	-9.233	-8.800	-3.820	-3.220	0.000	3.220	3.820	8.800	10.020	11.020			

CH 210.721 m



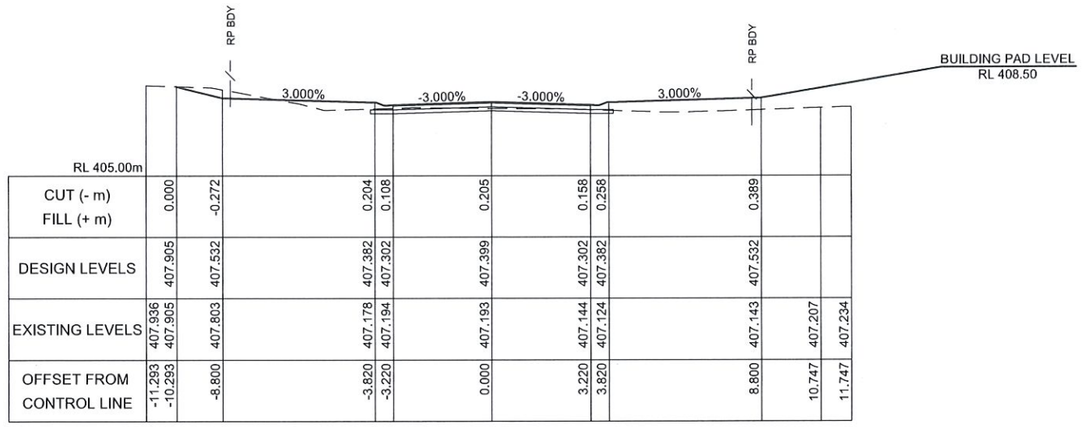
CUT (- m)	0.000	0.020	0.566	0.452	0.501	0.365	0.436	0.368						
FILL (+ m)														
DESIGN LEVELS	408.048	408.058	407.909	407.829	407.925	407.829	407.909	408.058						
EXISTING LEVELS	408.220	408.048	408.038	407.342	407.376	407.424	407.464	407.473	407.690	407.729	407.746			
OFFSET FROM CONTROL LINE	-9.860	-8.860	-8.800	-3.820	-3.220	0.000	3.220	3.820	8.800	10.776	11.776			

CH 260.000 m



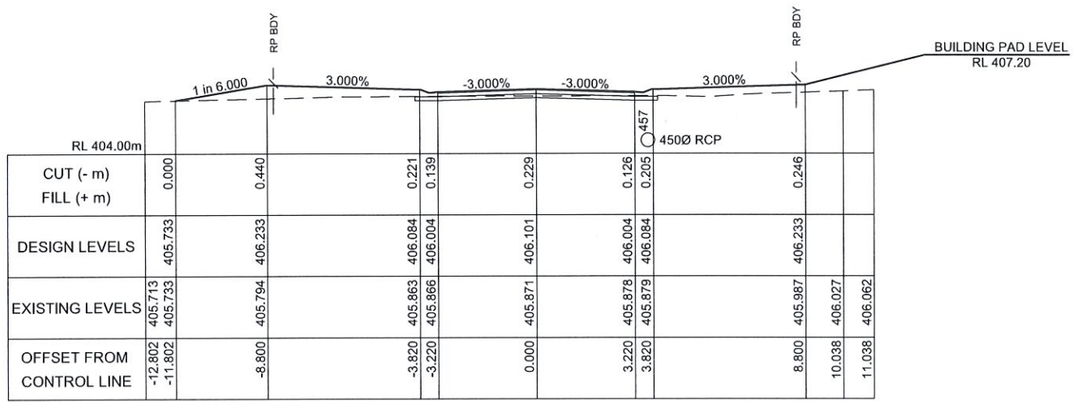
CUT (- m)	0.000	0.224	0.032	-0.041	0.097	0.047	0.135	0.224						
FILL (+ m)														
DESIGN LEVELS	406.251	406.508	406.359	406.279	406.375	406.279	406.359	406.508						
EXISTING LEVELS	406.231	406.251	406.284	406.327	406.319	406.278	406.232	406.223	406.284	406.322	406.357			
OFFSET FROM CONTROL LINE	-11.339	-10.339	-8.800	-3.820	-3.220	0.000	3.220	3.820	8.800	9.913	10.913			

CH 196.710 m



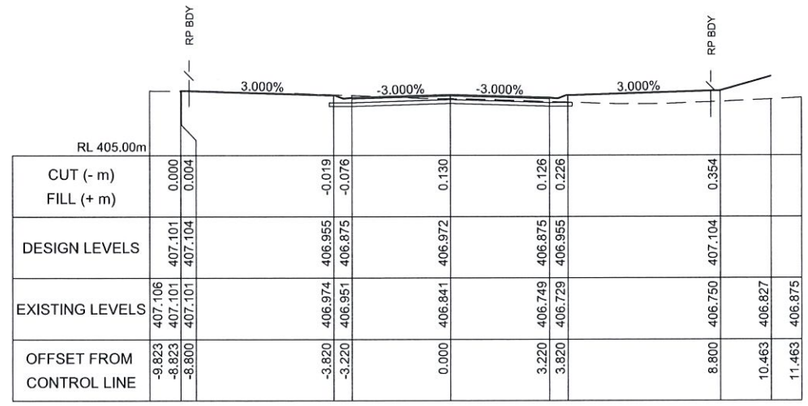
CUT (- m)	0.000	-0.272	0.204	0.108	0.205	0.158	0.258	0.389						
FILL (+ m)														
DESIGN LEVELS	407.905	407.532	407.382	407.302	407.399	407.302	407.382	407.532						
EXISTING LEVELS	407.936	407.905	407.803	407.178	407.194	407.193	407.144	407.124	407.143	407.207	407.234			
OFFSET FROM CONTROL LINE	-11.293	-10.293	-8.800	-3.820	-3.220	0.000	3.220	3.820	8.800	10.747	11.747			

CH 240.000 m



CUT (- m)	0.000	0.440	0.221	0.139	0.229	0.126	0.205	0.246						
FILL (+ m)														
DESIGN LEVELS	405.733	406.233	406.084	406.004	406.101	406.004	406.084	406.233						
EXISTING LEVELS	405.713	405.733	405.794	405.863	405.866	405.871	405.878	405.879	405.987	406.027	406.062			
OFFSET FROM CONTROL LINE	-12.802	-11.802	-8.800	-3.820	-3.220	0.000	3.220	3.820	8.800	10.038	11.038			

CH 180.000 m



CUT (- m)	0.000	0.004	-0.019	-0.076	0.130	0.126	0.226	0.354						
FILL (+ m)														
DESIGN LEVELS	407.101	407.104	406.955	406.875	406.972	406.875	406.955	407.104						
EXISTING LEVELS	407.106	407.101	407.101	406.974	406.951	406.841	406.749	406.729	406.750	406.827	406.875			
OFFSET FROM CONTROL LINE	-9.823	-8.823	-8.800	-3.820	-3.220	0.000	3.220	3.820	8.800	10.463	11.463			

CH 224.229 m

SCALE 1:100 1 0 1 2 3 4 5.0m

amendments		
A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES	15.03.21

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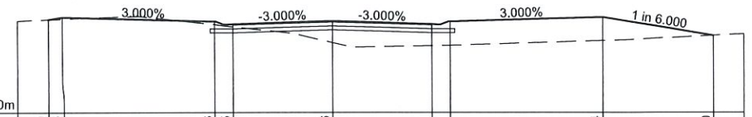
"The Edge Mareeba" Stage 3
PROPOSED RESIDENTIAL SUBDIVISION
AT ANTONIO DRIVE, MAREEBA

DRAWING TITLE: ANTONIO DRIVE – CROSS SECTIONS (SHEET 1 OF 2)

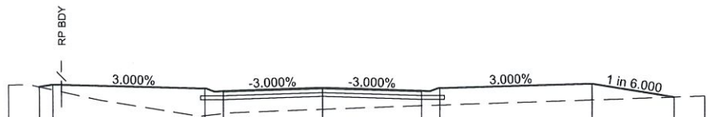
SCALE (AT A1 SIZE)	HOR 1:100	DRAWN	J.P.
	VER 1:100	DESIGNED	J.P.
DATE	MARCH 2021	CHECKED	J.P.
APPROVED	J. T SMITH RPEQ No. 2668		
DWG NUMBER	1450 – C08	AMDT	A



RL 405.00m

CUT (- m) FILL (+ m)	0.000	0.056	0.098	0.085	0.696	0.701	0.771	0.764	0.000
DESIGN LEVELS	408.033	408.109	407.959	407.879	407.976	407.879	407.959	408.109	407.509
EXISTING LEVELS	407.991	408.033	408.052	407.861	407.794	407.280	407.178	407.188	407.345	407.509	407.560
OFFSET FROM CONTROL LINE	-10.254	-9.254	-8.800	-3.820	-3.220	0.000	3.220	3.820	8.800	12.396	13.396

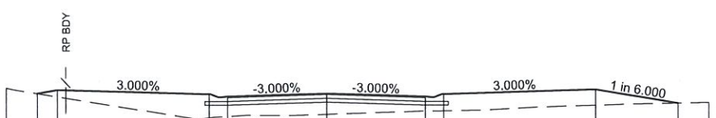
CH 293.637 m



RL 405.00m

CUT (- m) FILL (+ m)	0.000	0.171	0.885	0.738	0.701	0.488	0.547	0.532	0.000
DESIGN LEVELS	408.156	408.229	408.080	408.000	408.097	408.000	408.080	408.229	407.785
EXISTING LEVELS	408.215	408.156	408.058	407.195	407.262	407.395	407.512	407.533	407.697	407.785	407.824
OFFSET FROM CONTROL LINE	-10.240	-9.240	-8.800	-3.820	-3.220	0.000	3.220	3.820	8.800	11.465	12.465

CH 280.000 m



RL 405.00m

CUT (- m) FILL (+ m)	0.000	0.217	0.771	0.646	0.676	0.474	0.545	0.512	0.000
DESIGN LEVELS	408.096	408.206	408.056	407.976	408.073	407.976	408.056	408.206	407.758
EXISTING LEVELS	408.276	408.096	407.988	407.285	407.330	407.396	407.502	407.511	407.694	407.758	407.775
OFFSET FROM CONTROL LINE	-10.457	-9.457	-8.800	-3.820	-3.220	0.000	3.220	3.820	8.800	11.486	12.486

CH 270.000 m

SCALE 1:100 1 0 1 2 3 4 5.0m

amendments		
A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES	15.03.21

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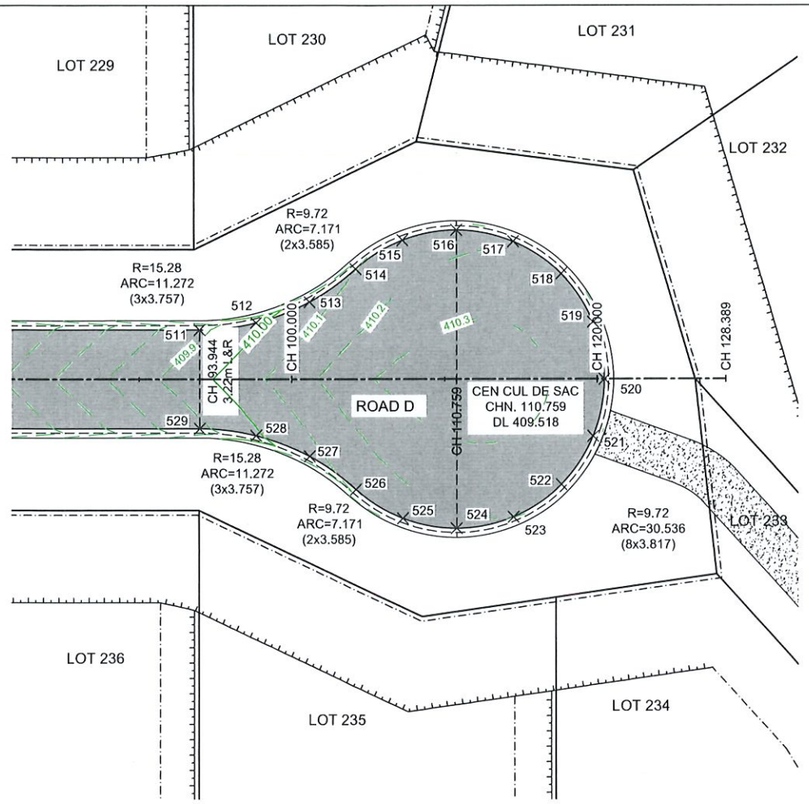
"The Edge Mareeba" Stage 3
PROPOSED RESIDENTIAL SUBDIVISION
AT ANTONIO DRIVE, MAREEBA

DRAWING TITLE: ANTONIO DRIVE – CROSS SECTIONS (SHEET 2 OF 2)

SCALE (AT A1 SIZE)	HOR 1:100	DRAWN	J.P.
	VER 1:100	DESIGNED	J.P.
DATE	MARCH 2021	CHECKED	J.P.
APPROVED	J. T SMITH RPEQ No. 2668		
DWG NUMBER	1450 – C09	AMDT	A



DETAIL OF CUL DE SAC ROAD D

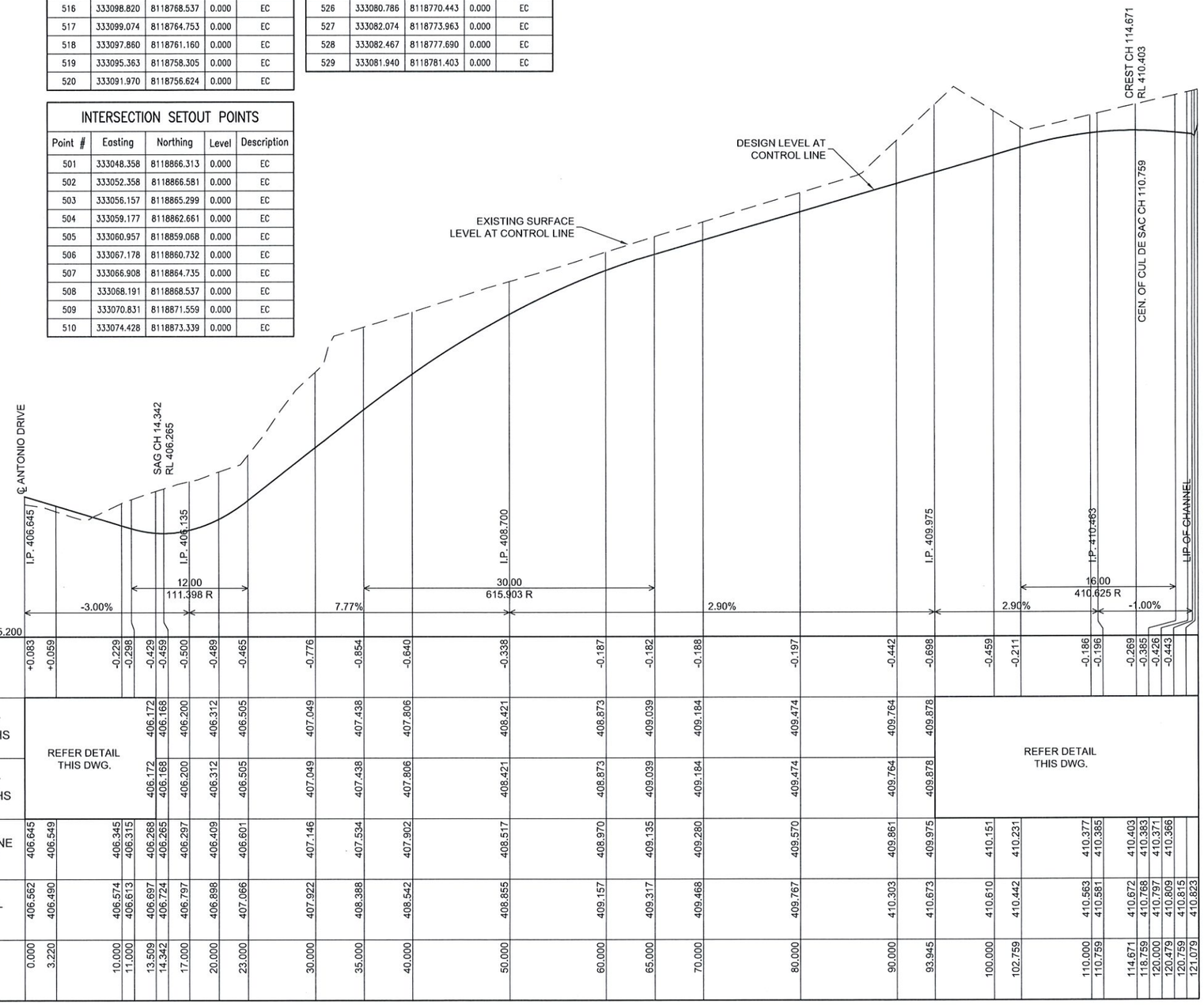
SCALES: HOR. 1:200

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

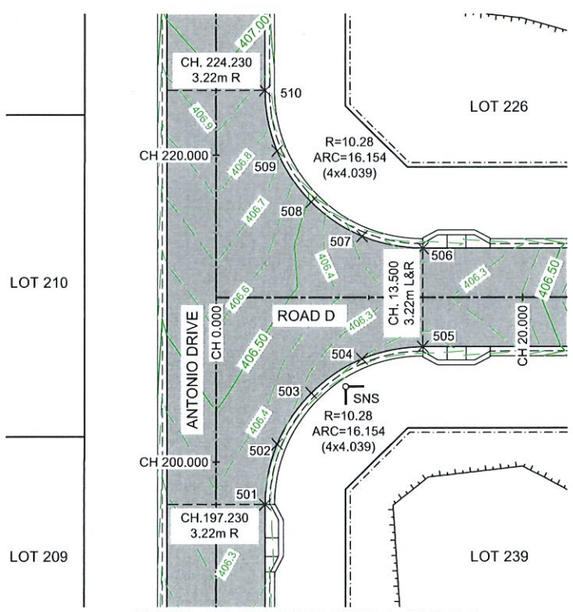
Road D					
	CHAINAGE	EASTING	NORTHING	RADII	BEARING
L#20	0.000 110.759	333060.547 333089.435	8118872.933 8118766.008		164°52'52" STRAIGHT 164°52'52" STRAIGHT
L#21	110.759 128.389	333089.435 333094.033	8118766.008 8118748.987		164°52'52" STRAIGHT 164°52'52" STRAIGHT



CHAINAGE	Cut (-m) Fill (+m)	DESIGN LEVELS AT LIP OF CHANNEL - LHS	DESIGN LEVELS AT LIP OF CHANNEL - RHS	DESIGN CONTROL LINE FINISHED LEVELS	EXISTING CONTROL LINE LEVELS
0.000	+0.083	REFER DETAIL THIS DWG.	REFER DETAIL THIS DWG.	406.645	406.562
3.220	+0.059			406.549	406.490
10.000	-0.229			406.345	406.574
11.000	-0.298			406.315	406.613
13.509	-0.429	406.172	406.172	406.268	406.697
14.342	-0.459	406.168	406.168	406.265	406.724
17.000	-0.500	406.200	406.200	406.297	406.797
20.000	-0.489	406.312	406.312	406.409	406.898
23.000	-0.465	406.505	406.505	406.601	407.066
30.000	-0.776	407.049	407.049	407.146	407.922
35.000	-0.854	407.438	407.438	407.534	408.388
40.000	-0.640	407.806	407.806	407.902	408.542
50.000	-0.338	408.421	408.421	408.517	408.855
60.000	-0.187	408.873	408.873	408.970	409.157
65.000	-0.182	409.039	409.039	409.135	409.317
70.000	-0.188	409.184	409.184	409.280	409.468
80.000	-0.197	409.474	409.474	409.570	409.767
90.000	-0.442	409.764	409.764	409.861	410.303
93.945	-0.698	409.878	409.878	409.975	410.673
100.000	-0.459	REFER DETAIL THIS DWG.	REFER DETAIL THIS DWG.	410.151	410.610
102.759	-0.211			410.231	410.442
110.000	-0.186			410.377	410.563
110.759	-0.196			410.385	410.581
114.671	-0.269			410.403	410.672
118.759	-0.385			410.383	410.768
120.000	-0.426			410.371	410.797
120.479	-0.443			410.366	410.809
120.759					410.815
121.079					410.823

LONGITUDINAL SECTION - ROAD D

SCALES: HOR. 1:500
VER: 1:50



DETAIL OF ANTONIO DRIVE - ROAD D INTERESCTION

SCALES: HOR. 1:200

SCALE 1:25 — 0.25 0 0.25 0.5 0.75 1.0 1.25m
SCALE 1:200 — 2 0 2 4 6 8 10.0m
SCALE 1:250 — 2.5 0 2.5 5 7.5 10 12.5m

amendments		
A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES	15.03.21

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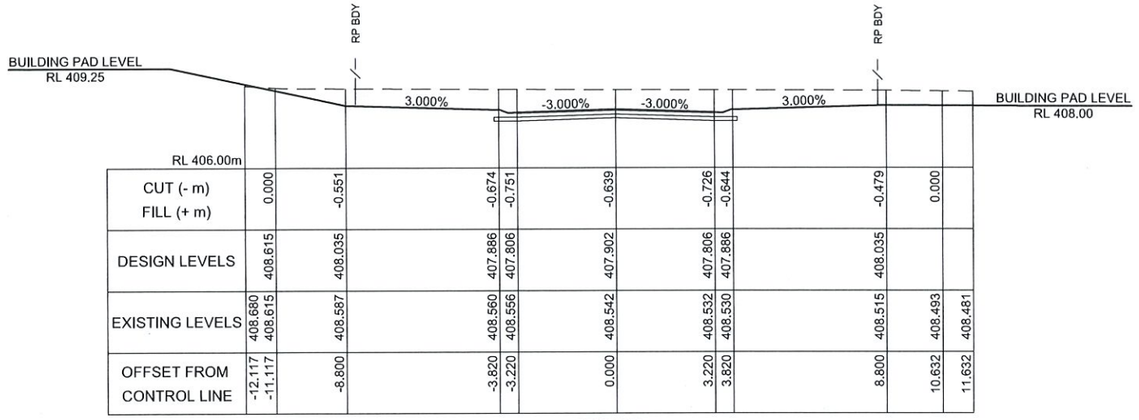
"The Edge Mareeba" Stage 3
PROPOSED RESIDENTIAL SUBDIVISION
AT ANTONIO DRIVE, MAREEBA

DRAWING TITLE: ROAD D – LONGITUDINAL SECTION AND CUL DE SAC DETAIL

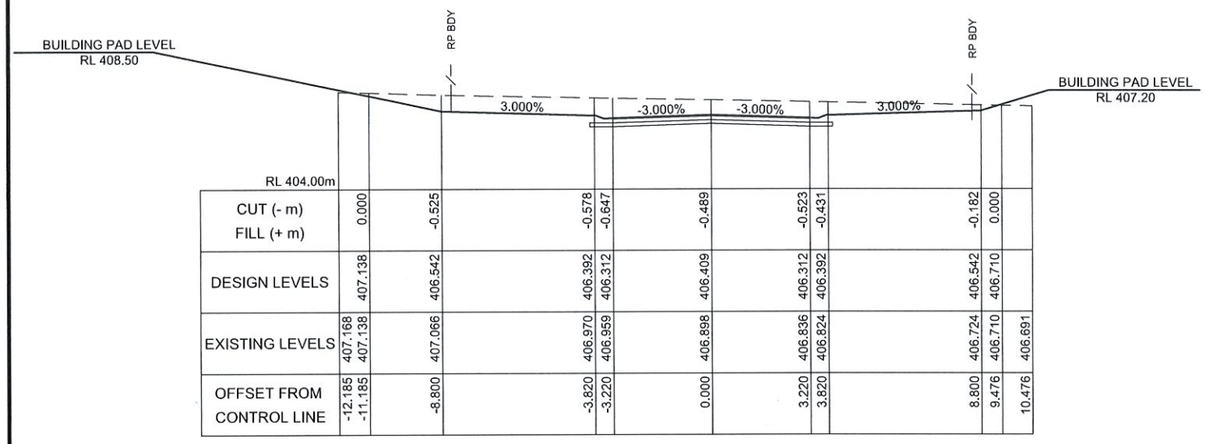
SCALE (AT A1 SIZE)	HOR 1:250/200	DRAWN	J.P.
	VER 1:25	DESIGNED	J.P.
DATE	MARCH 2021	CHECKED	J.P.
APPROVED	J. T SMITH RPEQ No. 2668		
DWG NUMBER	1450 – C10	AMDT	A



RL 406.00m

CUT (- m) FILL (+ m)	0.000	-0.551	-0.674	-0.751	-0.639	-0.726	-0.644	-0.479	0.000			
DESIGN LEVELS	408.615	408.035	407.886	407.806	407.902	407.806	407.886	408.035				
EXISTING LEVELS	408.680	408.587	408.560	408.556	408.542	408.532	408.530	408.515	408.493	408.481		
OFFSET FROM CONTROL LINE	-12.117	-8.800	-3.820	-3.220	0.000	3.220	3.820	8.800	10.632	11.632		
	-11.117											

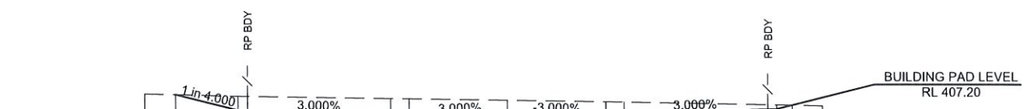
CH 40.000 m



RL 404.00m

CUT (- m) FILL (+ m)	0.000	-0.525	-0.578	-0.647	-0.489	-0.523	-0.431	-0.182	0.000			
DESIGN LEVELS	407.138	406.542	406.392	406.312	406.409	406.312	406.392	406.542	406.710			
EXISTING LEVELS	407.168	407.066	406.970	406.959	406.898	406.836	406.824	406.724	406.710	406.691		
OFFSET FROM CONTROL LINE	-12.185	-8.800	-3.820	-3.220	0.000	3.220	3.820	8.800	9.476	10.476		
	-11.185											

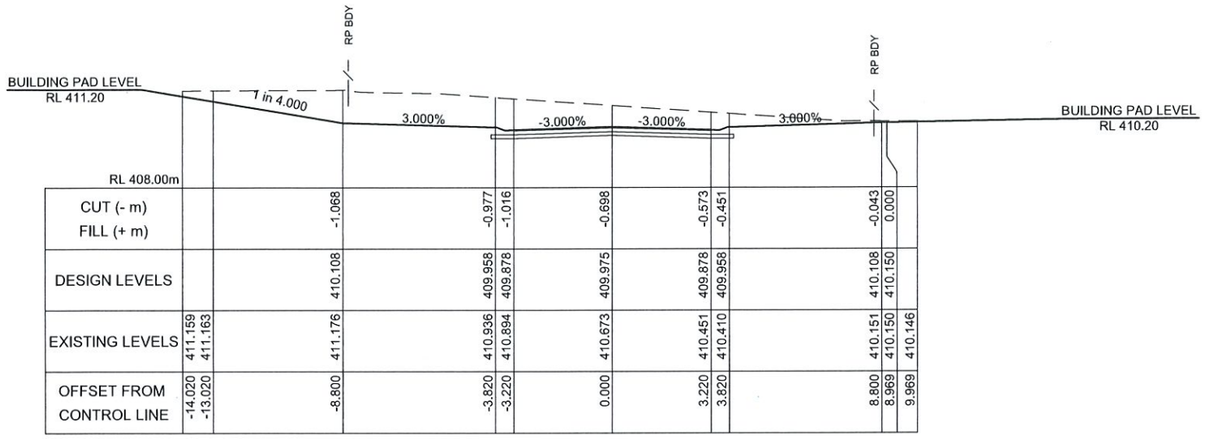
CH 20.000 m



RL 404.00m

CUT (- m) FILL (+ m)	0.000	-0.455	-0.515	-0.584	-0.429	-0.468	-0.377	-0.137	0.000			
DESIGN LEVELS	406.915	406.401	406.252	406.172	406.268	406.172	406.252	406.401	406.528			
EXISTING LEVELS	406.945	406.856	406.766	406.755	406.697	406.639	406.628	406.538	406.528	406.507		
OFFSET FROM CONTROL LINE	-11.856	-8.800	-3.820	-3.220	0.000	3.220	3.820	8.800	9.307	10.307		
	-10.856											

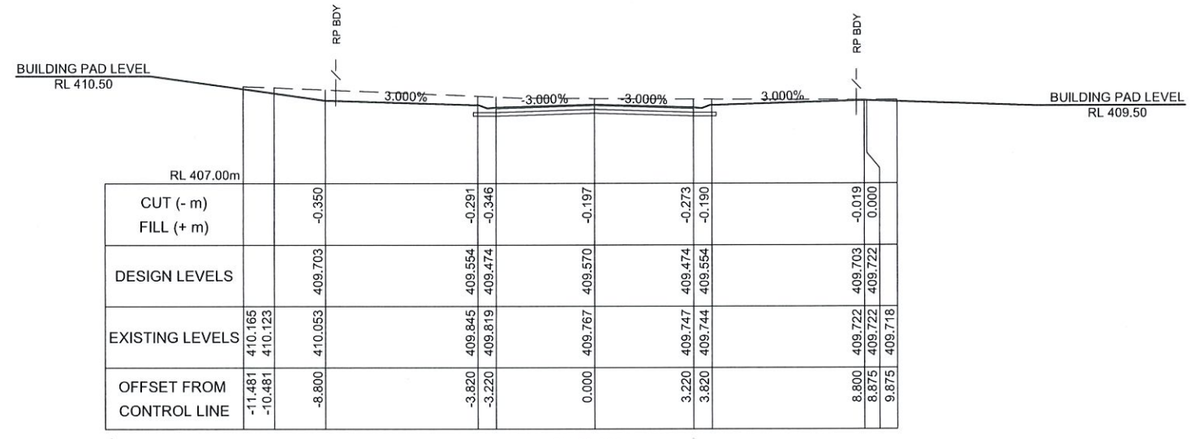
CH 13.509 m



RL 408.00m

CUT (- m) FILL (+ m)		-1.068	-0.977	-1.016	-0.698	-0.573	-0.451	-0.043	0.000			
DESIGN LEVELS		410.108	409.958	409.878	409.975	409.878	409.958	410.108	410.150			
EXISTING LEVELS	411.159	411.176	410.936	410.894	410.673	410.451	410.410	410.151	410.150	410.146		
OFFSET FROM CONTROL LINE	-14.020	-8.800	-3.820	-3.220	0.000	3.220	3.820	8.800	8.969	9.969		
	-13.020											

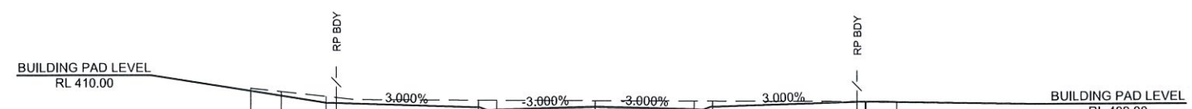
CH 93.945 m



RL 407.00m

CUT (- m) FILL (+ m)		-0.350	-0.291	-0.346	-0.197	-0.273	-0.190	-0.019	0.000			
DESIGN LEVELS		409.703	409.554	409.474	409.570	409.474	409.554	409.703	409.722			
EXISTING LEVELS	410.165	410.053	409.845	409.819	409.767	409.747	409.744	409.722	409.722	409.718		
OFFSET FROM CONTROL LINE	-11.481	-8.800	-3.820	-3.220	0.000	3.220	3.820	8.800	8.875	9.875		
	-10.481											

CH 80.000 m



RL 407.00m

CUT (- m) FILL (+ m)	0.000	-0.205	-0.227	-0.304	-0.187	-0.265	-0.181	-0.009				
DESIGN LEVELS	409.469	409.103	408.953	408.873	408.970	408.873	408.953	409.103				
EXISTING LEVELS	409.579	409.307	409.180	409.177	409.157	409.138	409.134	409.111	409.111	409.107		
OFFSET FROM CONTROL LINE	-11.265	-8.800	-3.820	-3.220	0.000	3.220	3.820	8.800	8.834	9.834		
	-10.265											

CH 60.000 m

SCALE 1:100 1 0 1 2 3 4 5.0m

amendments

A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES	15.03.21

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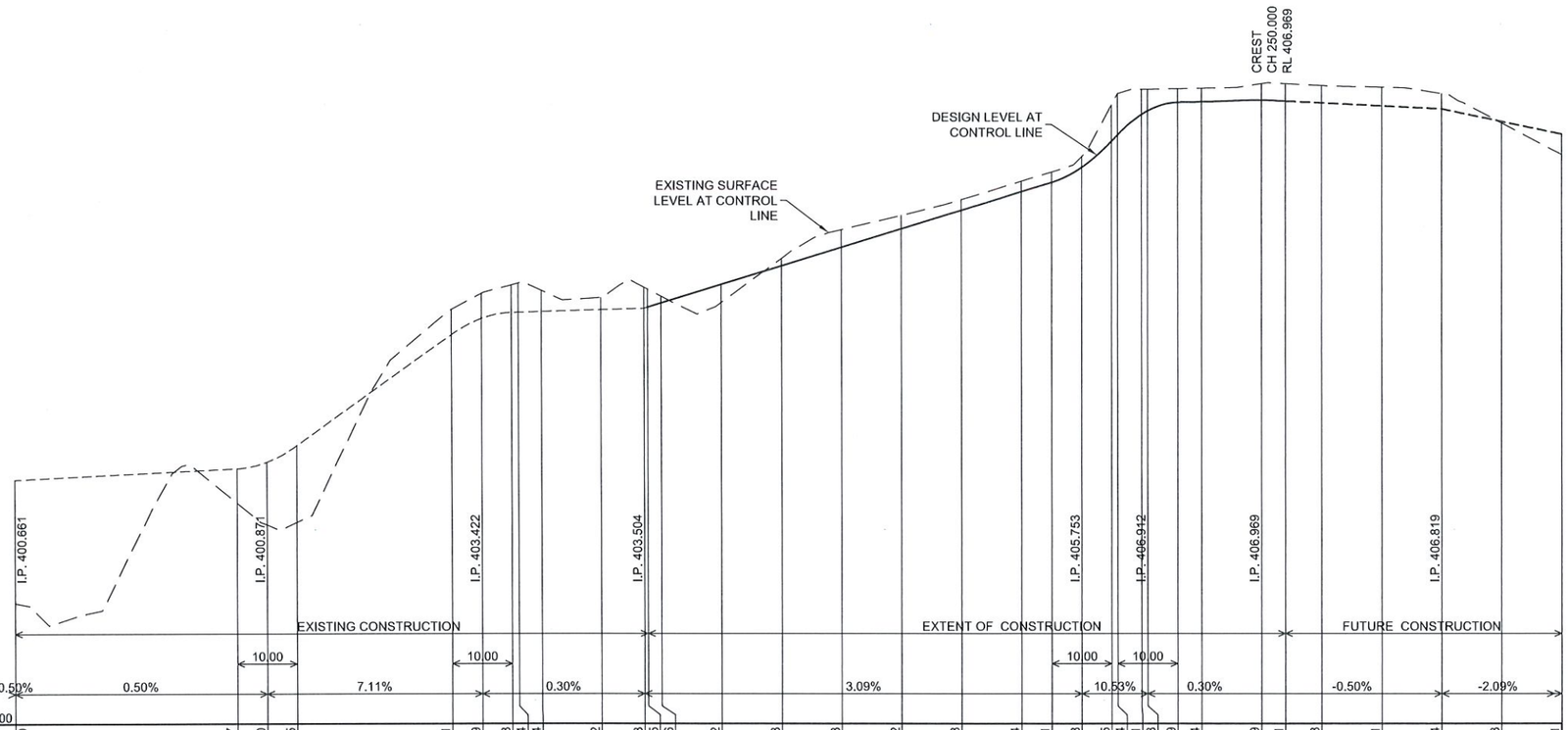
"The Edge Mareeba" Stage 3
PROPOSED RESIDENTIAL SUBDIVISION
AT ANTONIO DRIVE, MAREEBA

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

SCALE (AT A1 SIZE)	HOR 1:100	DRAWN	J.P.
	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 84.138	332856.664 332937.903	8118867.697 8118889.592		74°55'00" STRAIGHT 74°55'00" STRAIGHT
L#23	84.138 126.165	332937.903 332978.066	8118889.592 8118901.970		72°52'17" STRAIGHT 72°52'17" STRAIGHT
L#24	126.165 325.695	332978.066 333170.722	8118901.970 8118953.892		74°55'00" STRAIGHT 74°55'00" STRAIGHT



Cut (-m) Fill (+m)	+2.050	+0.567	+1.040	+1.275	-0.421	-0.419	-0.458	-0.484	-0.354	-0.202	-0.353	-0.305	-0.116	+0.302	-0.123	-0.293	-0.222	-0.178	-0.174	-0.171	-0.178	-0.605	-0.684	-0.421	-0.363	-0.229	-0.224	-0.269	-0.291	-0.288	-0.311	-0.254	+0.023	+0.341
DESIGN CONTROL LINE INVERT LEVELS	400.661	400.846	400.954	401.227	403.066	403.337	403.437	403.441	403.452	403.482	403.504	403.522	403.592	403.901	404.210	404.518	404.827	405.136	405.444	405.599	405.846	406.280	406.385	406.725	406.784	406.927	406.939	406.969	406.949	406.919	406.869	406.819	406.610	406.401
EXISTING CONTROL LINE LEVELS	398.611	400.279	399.914	399.952	403.487	403.756	403.895	403.925	403.806	403.684	403.857	403.827	403.708	403.599	404.333	404.811	405.049	405.314	405.618	405.770	406.024	406.885	407.069	407.146	407.147	407.156	407.163	407.238	407.240	407.207	407.180	407.073	406.587	406.060
CHAINAGE	42.138	79.138	84.138	89.138	115.000	120.000	125.000	126.165	130.000	140.000	147.138	147.725	150.000	160.000	170.000	180.000	190.000	200.000	210.000	215.000	220.000	225.000	226.000	230.000	231.000	236.000	240.000	250.000	254.000	260.000	270.000	280.000	290.000	300.000

LONGITUDINAL SECTION - OPEN DRAIN No. 1

SCALES: HOR. 1:500
VER: 1:50

SCALE 1:50 0.5 0 0.5 1.0 1.5 2.0 2.50m

SCALE 1:500 5 0 5 10 15 20 25.0m

amendments		
A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES	15.03.21

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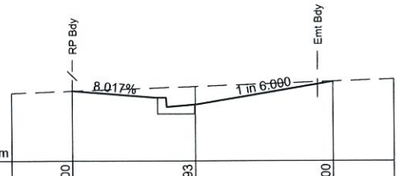
PROPOSED RESIDENTIAL SUBDIVISION
AT ANTONIO DRIVE, MAREEBA

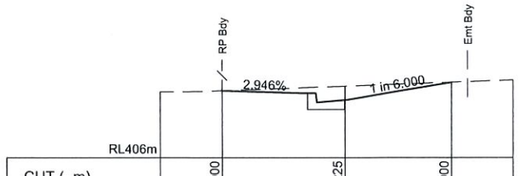
DRAWING TITLE: OPEN DRAIN No. 1 – LONGITUDINAL SECTION

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



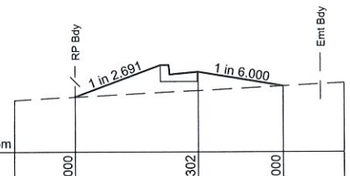
RL403.6m					
CUT (- m) FILL (+ m)		0.000	-0.293	0.000	
DESIGN LEVELS		404.740	404.518	404.892	
EXISTING LEVELS	404.704	404.740	404.811	404.892	404.927
OFFSET FROM CONTROL LINE	-3.000	-2.000	0.000	2.249	3.249

CH 180.000 m



RL406m					
CUT (- m) FILL (+ m)		0.000	-0.225	0.000	
DESIGN LEVELS		407.090	406.939	407.227	
EXISTING LEVELS	407.071	407.090	407.163	407.227	407.263
OFFSET FROM CONTROL LINE	-3.000	-2.000	0.000	1.739	2.739

CH 240.000 m

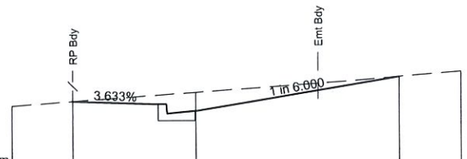


RL402.6m					
CUT (- m) FILL (+ m)		0.000	0.302	0.000	
DESIGN LEVELS		403.494	403.901	403.672	
EXISTING LEVELS	403.442	403.494	403.599	403.672	403.724
OFFSET FROM CONTROL LINE	-3.000	-2.000	0.000	1.387	2.387

CH 160.000 m

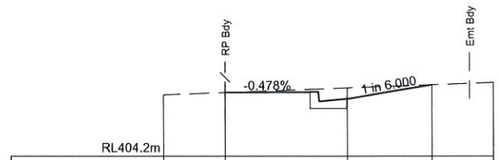
RL404.9m					
CUT (- m) FILL (+ m)		0.000	-0.178	0.000	
DESIGN LEVELS		405.989	405.846	406.096	
EXISTING LEVELS	405.818	405.989	406.024	406.096	406.144
OFFSET FROM CONTROL LINE	-3.000	-2.000	0.000	1.510	2.510

CH 220.000 m



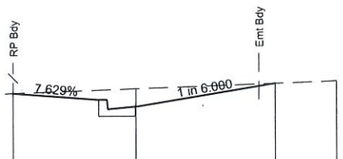
RL402.6m					
CUT (- m) FILL (+ m)		0.000	-0.305	0.000	
DESIGN LEVELS		403.683	403.522	404.076	
EXISTING LEVELS	403.611	403.683	403.827	404.076	404.159
OFFSET FROM CONTROL LINE	-3.000	-2.000	0.000	3.334	4.334

CH 147.725 m



RL404.2m					
CUT (- m) FILL (+ m)		0.000	-0.178	0.000	
DESIGN LEVELS		405.239	405.136	405.365	
EXISTING LEVELS	405.202	405.239	405.314	405.365	405.403
OFFSET FROM CONTROL LINE	-3.000	-2.000	0.000	1.389	2.389

CH 200.000 m



RL406m					
CUT (- m) FILL (+ m)		0.000	-0.291	0.000	
DESIGN LEVELS		407.165	406.949	407.325	
EXISTING LEVELS	407.127	407.165	407.240	407.325	407.363
OFFSET FROM CONTROL LINE	-3.000	-2.000	0.000	2.267	3.267

CH 254.000 m

SCALE 1:50 0.5 0 0.5 1.0 1.5 2.0 2.50m

amendments		
A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES	15.03.21

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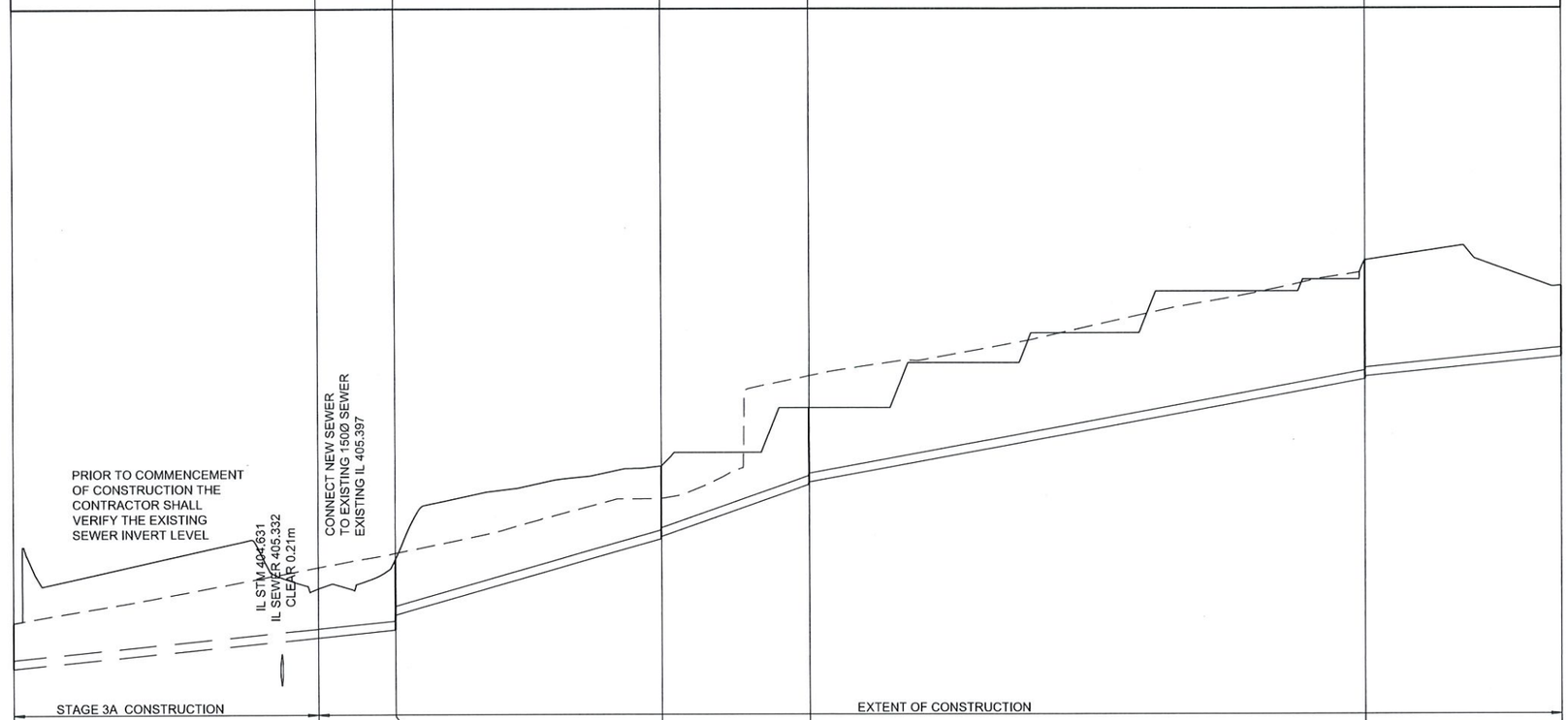
"The Edge Mareeba" Stage 3
PROPOSED RESIDENTIAL SUBDIVISION
AT ANTONIO DRIVE, MAREEBA

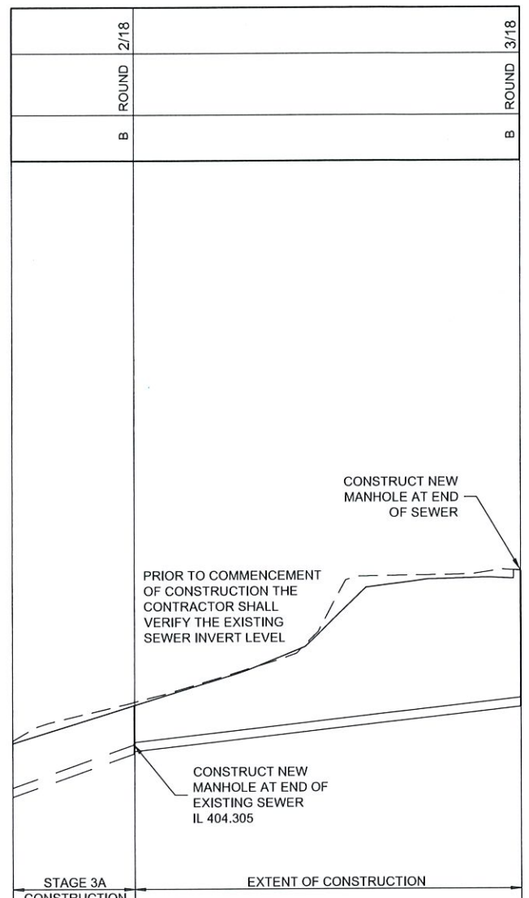
DRAWING TITLE: OPEN DRAIN No. 1 – CROSS SECTIONS (SHEET 1 OF 1)

SCALE (AT A1 SIZE)	HOR 1:50	DRAWN	J.P.
	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	Ex MH 4/12	1A/16	5/12	6/12	7/12	8/12	9/12
MANHOLE TYPE	ROUND	ROUND	RECT	RECT	RECT	ROUND	RECT
LID TYPE	B	B	B	B	B	B	B
PIPE DETAILS SLOPE/GRADE	DATUM RL 402.6	150Ø PVC 1:100.0	150Ø PVC 1:100.0	150Ø PVC 1:35.2	150Ø PVC 1:28.6	150Ø PVC 1:54.3	150Ø PVC 1:100.0
DEPTH TO INVERT	0.770	0.825	1.183 0.934	1.225 1.185	1.290 1.250	2.001 1.953	1.191
DESIGNED INVERT LEVEL	404.883	405.397	405.527 405.777	407.050 407.090	407.960 408.000	409.722 409.769	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 51.360	13.050 64.410	44.857 109.267	24.902 134.169	93.480 227.648	33.068 260.716

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



	2/18	3/18
	ROUND	ROUND
	B	B
	150Ø PVC 1:28.5	150Ø PVC 1:88.1
	DATUM RL 400.6	
DEPTH TO INVERT	0.788 0.748	2.219
DESIGNED INVERT LEVEL	404.305 404.345	405.060
DESIGN SURFACE	405.093	407.279
EXISTING SURFACE	405.146	407.279
CHAINAGE	59.951	63.000 122.952

SEWER LONGITUNDINAL SECTION FOR LINE SEWER 18
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

SCALE 1:50 0.5 0 0.5 1.0 1.5 2.0 2.50m
SCALE 1:500 5 0 5 10 15 20 25.0m

amendments

A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES	15.03.21

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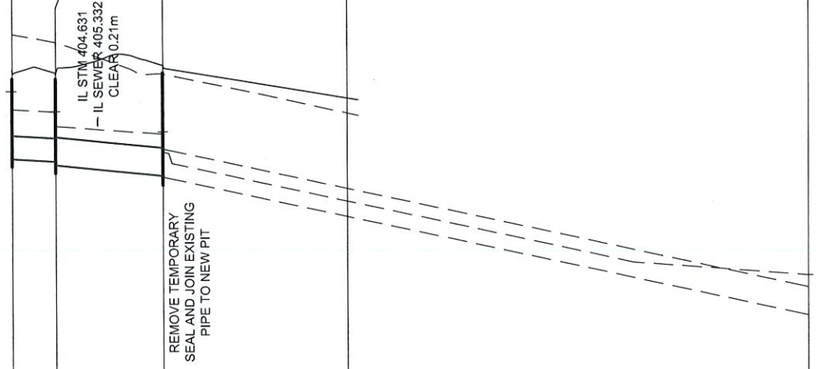
"The Edge Mareeba" Stage 3
PROPOSED RESIDENTIAL SUBDIVISION
AT ANTONIO DRIVE, MAREEBA

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	MARCH 2021	CHECKED	J.P.
APPROVED	J. T SMITH RPEQ No. 2668		
DWG NUMBER	1450 – C14	AMDT	A

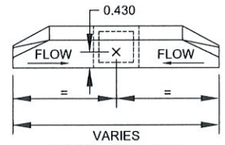
STRUCTURE NAME	2/1	3/1	4/1		5/1
STRUCTURE DESCRIPTION	KERB INLET IN SAG SMALL LINTEL	KERB INLET IN SAG SMALL LINTEL	KERB PIT ON GRADE SMALL LINTEL		EXISTING KERB INLET ON GRADE



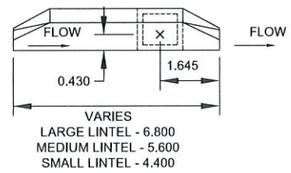
	EXTENT OF CONSTRUCTION		STAGE 3A CONSTRUCTION		PIPEWORK CONSTRUCTED IN PREVIOUS STAGES
PIPE SIZEmm (Class)	375(2)	450(2)			450(2)
PIPE GRADE %	0.58%	1.00%			2.15%
PIPE SLOPE 1 in X	171.56	100.28			46.46
FULL PIPE FLOW VELOCITY (m/s)	1.22	1.55			1.55
PART FULL FLOW VELOCITY (m/s)					2.76
	DATUM RL 397.0				

WATER LEVEL IN STRUCTURE	405.905	405.574		405.243				402.892		
HYDRAULIC GRADE LEVEL	405.905	405.608	405.566	405.334	405.206	404.961		402.892	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	1.446	1.685	1.705		1.420	2.297	
INVERT LEVEL OF DRAIN		404.799	404.758	404.698	404.524	404.504		402.239	401.362	
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	7.110	17.450	24.560		105.240	129.800		

LINE 1



KERB INLET PIT IN SAG



KERB INLET PIT ON GRADE

STORMWATER DRAINAGE SET OUT

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.

PIT SCHEDULE

PIT No.	TYPE	INTERNAL WIDTH	INTERNAL LEN.	INLET DIA.(CL)	INLET INV R.L.	OUTLET DIA.(CL)	OUTLET INV R.L.	F.S.L.	PIT DEPTH	REMARKS
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	8118865.173	406.209	4/1
562	333061.114	8118856.832	406.144	3/1
563	333068.164	8118858.732	406.144	2/1

SCALE 1:50 0.5 0 0.5 1.0 1.5 2.0 2.50m

SCALE 1:500 5 0 5 10 15 20 25.0m

amendments		
A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES	15.03.21

JIM PAPAS CIVIL ENGINEERING DESIGNER PTY. LTD.
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Email: timsmithco@bigpond.com

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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	DRAWN	J.P.
	VER 1:50	DESIGNED	J.P.
DATE	MARCH 2021	CHECKED	J.P.
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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CONSULTING ENGINEERS
Melba Close, Malanda Q 4885
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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.
	VER	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								
				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									
DESIGN A.R.I.	STRUCTURE NO.	DRAIN SECTION	SUB-CATCHMENTS CONTRIBUTING	SUB-CATCHMENT TIME OF CONCENTRATION	RAINFALL INTENSITY	COEFFICIENT OF RUNOFF	SUB-CATCHMENT AREA	EQUIVALENT AREA	SUM OF CONTRIBUTING EQUIVALENT AREAS	SUB-CATCHMENT DISCHARGE	FLOW PAST PREVIOUS GULLIES	FLOW IN K&C (INCLUDING BYPASS)	ROAD GRADE AT INLET	FLOW WIDTH	FLOW DEPTH AT INVERT	GUTTER FLOW VELOCITY	dg x Vg	INLET NUMBER	INLET TYPE	FLOW INTO INLET	WIDTH OF FLOW D/S OF INLET	BYPASS FLOW	CRITICAL TIME OF CONCENTRATION	RAINFALL INTENSITY	TOTAL CONTRIBUTING EQUIVALENT AREA	MAJOR TOTAL FLOW	MAJOR SURFACE FLOW CAPACITY	MAJOR SURFACE FLOW	FLOW IN PIPE	REACH LENGTH	PIPE GRADE	PIPE / BOX DIMENSIONS	FLOW VELOCITY FULL (PIPE GRADE VELOCITY)	TIME OF FLOW IN REACH	STRUCTURE RATIOS FOR 'K' VALUE CALCULATIONS	VELOCITY HEAD	U/S HEADLOSS COEFFICIENT	U/S PIPE STRUCTURE HEADLOSS	LATERAL HEADLOSS COEFFICIENT	LATERAL PIPE STRUCTURE HEADLOSS	W.S.E. COEFFICIENT	CHANGE IN W.S.E	FRICTION SLOPE	PIPE FRICTION HEADLOSS	DEPTH	VELOCITY	OBVERT LEVELS U/S RL D/S RL	DRAIN SECTION H.G.L. U/S RL D/S RL	U/S H.G.L	W.S.E.	SURFACE OR K&C INVERT LEVEL	FREEBOARD	STRUCTURE No.
Years				min	mm/h		Ha	Ha	Ha	cumecs	cumecs	cumecs		m	m	m/sec	m/sec			cumecs	m	cumecs	min	mm/h	Ha	cumecs	cumecs	cumecs	cumecs	m	%	mm	m/sec	min		m		m	m	m		m	%	m	m	m/sec	m	m	m	m	m	m	
2 100	1/2	1/2 to 2/2	2/2	5.00 5.00	134 291	0.75 0.75 1.00 1.00	0.160 0.110 0.160 0.110	0.120 0.083 0.160 0.110	0.203 0.270	0.075 0.218	0.000	0.000	0.05	0.717	0.049	0.00	0.00	1/2	B1S0.095	0.075		0.000 2/2	5.00 5.00	134 291	0.202 0.270	0.218	7.965	0.143 (Pipe flow= Grate flow)	0.075	8.890	0.45	375(2)	0.66 (1.08)	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	399.838 399.823	400.004	400.004	400.151	0.147	1/2
2 100	2/2	2/2 to 3/2	2/2;3/2	5.00 5.00	134 291	0.75 0.75 1.00 1.00	0.130 0.060 0.130 0.060	0.098 0.045 0.130 0.060	0.143 0.190	0.053 0.154	0.019	0.000	0.05	0.679	0.047	0.00	0.00	2/2	B1S0.095	0.073		0.000	5.15 5.15	132 288	0.345 0.460	0.368	7.965	0.222 (Pipe flow= Sum upstream flows)	0.146	6.970	1.87	375(2)	1.28 (2.19)	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 1.56 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	399.644 399.600	399.823	399.823	400.166	0.343	2/2
2 100	1/6	1/6 to 2/6	1/6	10.00 10.00	106 224	0.75 0.75 1.00 1.00	0.580 0.060 0.580 0.060	0.435 0.045 0.580 0.060	0.480 0.640	0.141 0.398	0.000	0.000	0.08	1.611	0.084	0.00	0.00	1/6	B1S0.095	0.141		0.000 2/6	10.00 10.00	106 224	0.480 0.640	0.398	0.916	0.257 (Pipe flow= Grate flow)	0.141	8.110	1.42	375(2)	1.24 (1.91)	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	407.088 407.039	407.506	407.506	407.921	0.415	1/6
2 100	2/6	2/6 to 3/6	1/6;2/6	5.00 5.00	134 291	0.75 0.75 1.00 1.00	0.030 0.080 0.030 0.080	0.023 0.060 0.030 0.080	0.083 0.110	0.031 0.089	0.000	0.000	0.08	0.132	0.025	0.00	0.00	2/6	B1S0.095	0.031		0.000	10.11 10.11	106 223	0.562 0.750	0.465	0.633	0.299 (Pipe flow= Sum upstream flows)	0.165	31.840	9.51	375(2)	1.45 (4.94)	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 Qu/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 S/Do S/Do Interp	val for 35 2.0 K0 1.5 K0 val for	2.18 S/Do 1.55 K0.5 1.75 K0.5 S/Do 1.61 Ku	0.234 61 Kw 1.74 1.80 1.73	0.82 2.18 K 1.62 K 1.77	0.261	0.141	4.29	406.854 403.826	406.854 403.868	407.039	407.088	407.806	0.718	2/6
2 100	3/6	3/6 to 4/6	1/6;2/6															3/6	24				10.48 10.48	104 220	0.562 0.750	0.458		(Pipe flow= Sum upstream flows)	0.165	5.820	14.01	375(2)	1.45 (6.00)	0.07	Qo 0.165 Do 375 CHART 50 Du/Do1.00 alpha 20 Kw 0.21 Vu 1.50 WSE 0.09 Ku 0.58 Kw 0.80	0.107	0.58	0.062			0.80	0.086	0.82	0.048	0.128	4.94	403.806 402.991	403.806 402.991	403.868	403.892	407.470	3.578	3/6
2 100	2/1	2/1 to 3/1	2/1	15.00 15.00	91 188	0.65 0.65 0.91 0.91	0.630 0.220 0.630 0.220	0.410 0.143 0.573 0.200	0.552 0.774	0.140 0.404	0.000	0.000	0.22	1.590	0.084	0.00	0.00	2/1	B1S0.095	0.140		0.000 3/1	15.00 15.00	91 188	0.552 0.773	0.404	1.496	0.264 (Pipe flow= Grate flow)	0.140	7.110	0.58	375(2)	1.22 (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	405.608 405.566	405.905	405.905	406.112	0.207	2/1
2 100	3/1	3/1 to 4/1	2/1;3/1	15.00 15.00	91 188	0.65 0.91	0.700 0.700	0.455 0.637	0.455 0.637	0.115 0.333	0.000	0.000	0.22	1.270	0.071	0.00	0.00	3/1	B1S0.095	0.115		0.000 4/1	15.10 15.10	91 188	1.007 1.410	0.736	1.496	0.482 (Pipe flow= Sum upstream flows)	0.255	7.450	1.00	450(2)	1.55 (1.81)	0.19	Qg 0.115 Qo 0.255 Do 450 Angle 36 Chart 39 S/Do 2.5 chartdeg Du/Do 0.83 K0 1.90 K0.5 1.79 Qu/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 S/Do S/Do Interp	val for 38 2.0 K0 1.5 K0 val for	1.96 S/Do 2.10 K0.5 2.44 K0.5 S/Do 1.92 Ku	0.240 92 Kw 1.83 2.09 1.89	0.74 1.96 K 1.84 K 2.11	0.128			405.155 404.981	405.334 405.206	405.566	405.574	406.112	0.538	3/1
2 100	4/1	4/1 to 5/1	2/1;3/1;4/1	5.00 5.00	134 291	0.65 0.91	0.010 0.010	0.007 0.009	0.007 0.009	0.002 0.007	0.000	0.000	1.64	0.065	0.023	0.53	0.01	4/1	A1	0.002		0.000 1/5	15.29 15.29	90 187	1.013 1.419	0.737	2.858	0.483 (Pipe flow= Sum upstream flows)	0.255	105.240	2.15	450(2)	1.55 (2.66)	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 Qu/Qo 1.00 Cg 0.01 K 1.60 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 S/Do S/Do Interp	val for 38 2.0 K0 1.5 K0 val for	2.30 S/Do 1.84 K0.5 2.05 K0.5 S/Do 1.62 Ku	0.282 62 Kw 1.75 1.84 2.00	0.74 2.30 K 1.83 K 2.05	0.774	0.251	2.78	404.951 402.698	404.981 402.892	405.206	405.243	406.209	0.966	4/1
2 100	1/5	1/5 to 2/5	1/5	15.00 15.00	91 188	0.65 0.65 0.91 0.91	0.810 0.380 0.810 0.380	0.527 0.247 0.737 0.346	0.774 1.083	0.196 0.566	0.000	0.000	0.50	2.212	0.108	0.00	0.00	1/5	B1S0.095	0.196		0.000 2/5	15.00 15.00	91 188	0.774 1.083	0.566	2.250	0.370 (Pipe flow= Grate flow)	0.196	7.300	1.59	450(2)	1.20 (2.28)	0.10		0.073	2.00	0.147			2.00	0.147	0.44	0.032			403.347 403.231	403.622 403.590	403.769	403.769	403.852	0.083	1/5
2 100	2/5	2/5 to 5/1	1/5;2/5	15.00 15.00	91 188	0.65 0.91	0.930 0.930	0.605 0.846	0.605 0.846	0.153 0.442	0.000	0.000	0.50	1.749	0.090	0.00	0.00	2/5	B1S0.095	0.153		0.000 5/1	15.10 15.10	91 188	1.379 1.929	1.007	2.250	0.658 (Pipe flow= Sum upstream flows)	0.349	7.460	0.40	525(2)	1.56 (1.26)	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 1.56 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	403.324 403.219	403.590	403.590	403.852	0.262	2/5
2 100	5/1	5/1 to 6/1	2/1;3/1;4/1; 1/5;2/5;5/1	5.00 5.00	134 291	0.65 0.91	0.010 0.010	0.007 0.009	0.007 0.009	0.002 0.007	0.000	0.000	3.26					5/1	A1	0.002		0.000 6/1	16.42 16.42	87 181	2.398 3.357	1.688	1.443	1.107 (Pipe flow= Sum upstream flows)	0.581	73.010	2.13	525(2)	2.59 (2.93)	0.47	Qg 0.001 Qo 0.581 Do 525 Flow 4/1 mode eqv grate flow Flow 2/5 mode eqv grate flow CHRT 32: Vo2/2gDo 0.64 H/Do 0.36 Kg side flow 3.21 end 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 Qu/Qo 0.42 K 1.52 d/Do 2.0 chrt Qg/Qo 0.00 Kg 0.00 d/Do 1.5 chrt Qg/Qo 0.00 Kg 0.00 d/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	402.087 400.869	402.892	402.892	403.659	0.767	5/1
2 100	1/4	1/4 to 6/1	1/4	5.00 5.00	134 291	0.75 1.00	0.220 0.220	0.165 0.220	0.165 0.220	0.061 0.178	0.000	0.000	0.21	0.520	0.041	0.00	0.00	1/4	B1S0.095	0.061		0.000	5.00 5.00	134 291	0.165 0.220	0.178	1.443	0.116 (Pipe flow= Grate flow)	0.061	7.300	2.37	375(2)	0.54 (2.47)	0.12		0.015	0.55	0.008			0.55	0.008	0.11	0.008			400.448 400.275	400.877 400.869	400.885	400.885	401.380	0.495	1/4
2 100	6/1	6/1 to 7/1	2/1;3/1;4/1; 1/5;2/5;5/1; 1/4;6/1	15.00 15.00	91 188	0.65 0.65 0.91 0.91	0.330 0.100 0.330 0.100	0.215 0.065 0.300 0.091	0.280 0.391	0.071 0.204	0.049	0.000	0.21	1.331	0.073	0.00	0.00	6/1	B1S0.095	0.120		0.000	16.89 16.89	86 178	2.843 3.968	1.962	1.443	1.235 (Pipe flow= Sum upstream flows)	0.727	20.350	0.29	675(2)	1.97 (1.29)	0.17	Qg 0.113 Qo 0.727 Do 675 Routine 2.1 CHART 48 Du/Do 0.78 Qu/Qo 0.79 K -0.05 d/Do 2.0 chrt Qg/Qo 0.16 Kg 0.15 d/Do 1.5 chrt Qg/Qo 0.16 Kg 0.17 d/Do 1.83 Interp value Kg 0.16 Ku=Kw= 0.11 Combined pipes in line case Join Pipes:	0.198	0.11	0.022	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					0.11	0.022	0.69	0.141			400.275 400.215	400.847 400.706	400.869	400.869	401.380	0.511	6/1
2 100	1/3	1/3 to 2/3	1/3	15.00 15.00	91 188	0.65 0.91	0.890 0.890	0.579 0.810	0.579 0.810	0.146 0.423	0.000	0.000	7.25	1.412	0.076	2.23	0.17	1/3	A1	0.098	0.795	0.048 6/1	15.00 15.00	91 188	0.579 0.810	0.423	2.406	0.325 (Pipe flow= Grate flow)	0.098	7.890	6.34	375(2)	0.86 (4.04)	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 8.05	0.038	7.85	0.296			7.85	0.296	0.29	0.023	0.119	3.21	403.381 402.881	403.381 403.087	403.677	403.677	404.408	0.731	1/3
2 100	2/3	2/3 to 7/1	1/3;2/3	15.00 15.00	91 188	0.65 0.91	0.900 0.900	0.585 0.819	0.585 0.819	0.148 0.428	0.000	0.000	7.25	1.419	0.077	2.23	0.17	2/3	A1	0.099	0.801	0.049 7/1	15.13 15.13	90 188	1.164 1.629	0.851	2.467	0.656 (Pipe flow= Sum upstream flows)	0.195	53.560	4.98	375(2)	1.71 (3.58)	0.33	Qg 0.098 Qo 0.195 Do 375 Flow 1/3 mode 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 Qu/Qo 0.50 Cg 1.00 K 1.81	0.149	2.12	0.316	S/Do S/Do Interp CHART S/Do S/Do Interp K vals	2.0 K0 1.5 K0 val for 44 2.0 K0 1.5 K0 val for step pipes	2.40 2.47 K0.5 2.74 K0.5 S/Do 1.94 Kw 1.99 K0.5 2.12 K0.5 S/Do 1.94 Ku as pipe flow Ku	0.358 2.34 2.80 2.40 2.11 2.17 2.12 2.12 Kw	1.14 K 2.34 K 2.80 K 2.11 K 2.17 2.40	0.381	0.185	3.53	402.771 401.101	402.771 401.101	403.087	403.129	404.190	1.061	2/3
2 100	7/1	7/1 to 8/1	2/1;3/1;4/1; 1/5;2/5;5/1; 1/4;6/1;1/3; 2/3;7/1	15.00 15.00	91 188	0.65 0.91	0.180 0.180	0.117 0.164	0.117 0.164	0.030 0.086	0.049	0.000	7.07	1.042	0.062	1.92	0.12	7/1	A1	0.059	0.442	0.019 2/2	17.06 17.06	86 177	4.124 5.761	2.832	2.467	1.864 (Pipe flow= Sum upstream flows)	0.969	53.830	0.48	750(2)	2.12 (1.77)	0.42	Qg 0.056 Qo 0.969 Do 750 Flow 2/3 mode eqv grate flow Angle 88 Chart 47 S/Do 2.5 chartdeg Du/Do 0.90 K0 1.98 K0.5 2.24 Qu/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 S/Do S/Do Interp K vals	val for 46 2.0 K0 1.5 K0 val for above for	2.48 S/Do 1.90 Kw 2.01 K0.5 2.09 K0.5 S/Do 1.90 Ku stepped pipes	0.568 2.48 2.00 2.31 2.05 as grate flow	0.70 K 2.00 K 2.22	0.375			400.122 399.862	400.237 399.862	400.706	400.805	401.740	0.935	7/1

NOTE: SHADED AREA REPRESENTS WORK WITHIN STAGE 3

amendments		
A	ISSUED FOR OPERATIONAL WORKS APPLICATION AND TENDER PURPOSES	15.03.21

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DRAWING TITLE: STORMWATER DRAINAGE CALCULATION SHEET

SCALE (AT A1 SIZE)	HOR N.T.S.	DRAWN	J.P.
	VER	DESIGNED	J.P.
DATE	MARCH 2021	CHECKED	J.P.
APPROVED	J. T SMITH RPEQ No. 2668		
DWG NUMBER	1450 – C17	AMDT	A