

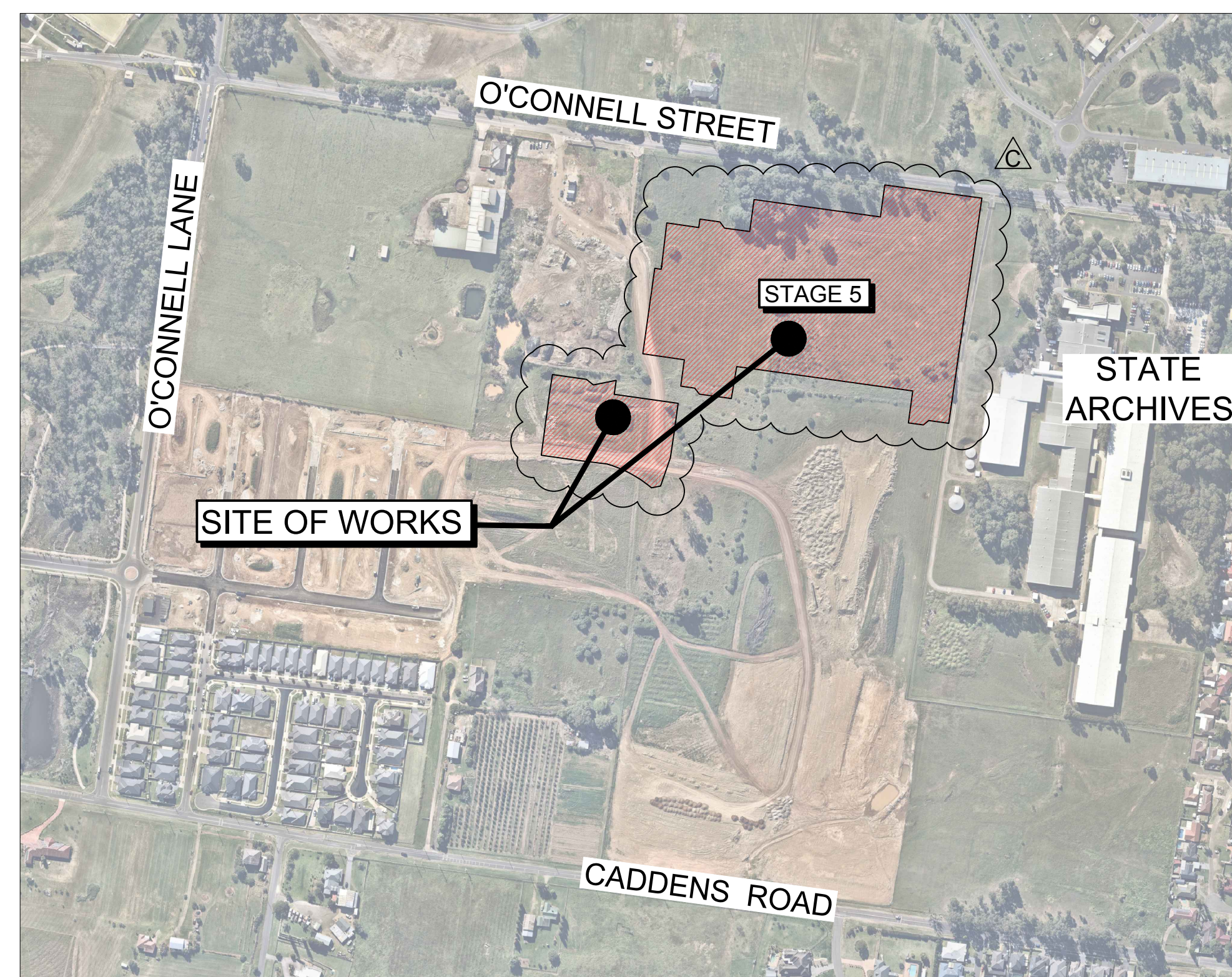


LEGACYPROPERTY

CADDENS HILL - STAGE 5 CONSTRUCTION CERTIFICATE

PROPOSED ROAD & DRAINAGE WORKS

DA 17/0099



LOCALITY SKETCH

Prepared By:

J. WYNDHAM PRINCE

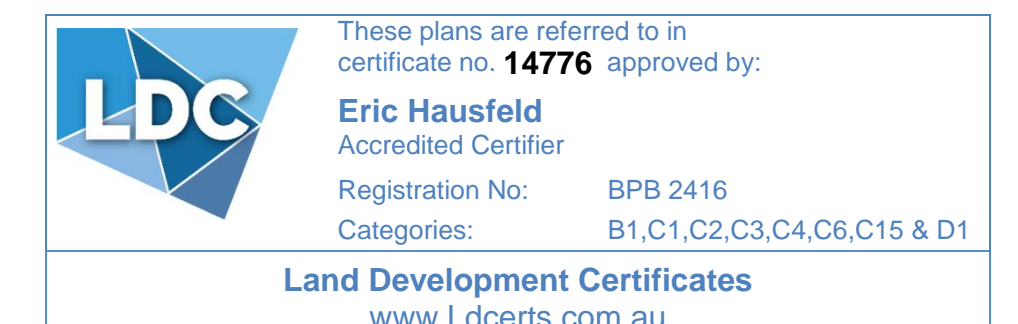
**CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS**

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ISSUED FOR CONSTRUCTION APPROVAL

PLAN No.
110358/CC500 **C**
FILE No. 110358CC500

Plotted: 29 March, 2018 10:16:15 AM File Name: J:\110358 - OConnell Lane Caddens\04 - Stage 5\CD\CC\STAGE 5\110358CC501.dwg

LEGEND			
DESCRIPTION	PROPOSED	EXISTING	FUTURE
EXTENT OF WORKS			
KERB & GUTTER			
PRAM RAMP			
DRAINAGE LINE, PIT & EASEMENT			
DRAINAGE LINE & PIT			
HEADWALL			
GUIDE POSTS			
EXTENT OF FILL			
EXTENT OF CUT			
CONTOURS			
CATCH DRAIN			
KERB RETURN No			
ELECTRICITY, POWER POLE			
TELECOM, BOX			
WATER, STOP VALVE, HYDRANT			
SEWER, MANHOLE			
GAS			
TREES TO BE RETAINED			
TREES TO BE REMOVED			
STREET NAME SIGNS			
SURVEY MARKS - BENCH MARKS			
STATE SURVEY MARKS			
RECOVERY PEGS			
STAGE BOUNDARY			
STABILISED SITE ACCESS			
SEDIMENT FENCE			
STRAW BALE BARRIER			
STOCKPILE			
PROTECTIVE FENCING			
MESH AND GRAVEL INLET FILTER			
GEOTEXTILE INLET FILTER			

GENERAL NOTES:

- ALL WORKS ARE TO BE IN ACCORDANCE WITH PENRITH CITY COUNCILS "DESIGN GUIDELINES FOR ENGINEERING WORKS FOR SUBDIVISIONS AND DEVELOPMENTS" & "ENGINEERING CONSTRUCTION SPECIFICATION FOR CIVIL WORKS".
- SURVEY MARKS:-
 - STATE SURVEY MARKS LOCATIONS TO BE FIXED BY PROJECT SURVEYOR DURING WORK AS EXECUTED SURVEY OF SUBDIVISION.
 - SURVEY MARKS SHOWN THUS ▲ SHALL BE RETAINED AT ALL TIMES. WHERE RETENTION IS NOT POSSIBLE THE SUPERINTENDENT MUST BE NOTIFIED AND CONSENT RECEIVED PRIOR TO THEIR REMOVAL.
- THE CONTRACTOR SHALL LOCATE AND LEVEL ALL EXISTING SERVICES PRIOR TO COMMENCING CONSTRUCTION AND MAKE ARRANGEMENTS WITH THE RELEVANT AUTHORITY TO RELOCATE OR ADJUST IF NECESSARY.
- THE CONTRACTOR SHALL NOT ENTER UPON NOR DO ANY WORK WITHIN ADJACENT LANDS WITHOUT THE WRITTEN PERMISSION OF THE OWNERS. TO BE PROVIDED PRIOR TO THE APPROVAL OF THE PLANS.
- THE CONTRACTOR SHALL MAINTAIN SERVICES AND ALL WEATHER ACCESS AT ALL TIMES TO ADJOINING PROPERTIES.
- NO TREE SHALL BE FELLED, LOPPED OR REMOVED WITHOUT THE PRIOR APPROVAL OF COUNCIL'S ENGINEER.
- TREES TO BE RETAINED ON SITE SHALL BE PROTECTED BY SUITABLE STURDY APPROVED PROTECTIVE FENCING PRIOR TO COMMENCEMENT OF SITE WORKS.
- THE CONTRACTOR SHALL CLEAR THE SITE BY REMOVING ALL RUBBISH, FENCES OUT-HOUSES, CAR BODIES AND DEBRIS ETC.
- EXISTING SEDIMENT BASINS SHALL BE DEWATERED AND DESILTED. LEVELS SHALL BE OBTAINED ON SOUND MATERIAL PRIOR TO FILLING.
- FILLING IS TO BE FROM A NOMINATED SOURCE, OF SOUND CLEAN MATERIAL, FREE FROM LARGE ROCK, STUMPS, CONTAMINATED MATTER, INDUSTRIAL AND BUILDING WASTE, ORGANIC MATTER AND OTHER DEBRIS. PLACING OF FILLING ON THE PREPARED AREAS SHALL NOT COMMENCE UNTIL THE AUTHORITY TO DO SO HAS BEEN OBTAINED FROM THE COUNCIL.
- SITE FILL AREAS:- THE CONTRACTOR SHALL TAKE LEVELS OF EXISTING SURFACE AFTER STRIPPING TOPSOIL AND PRIOR TO COMMENCING FILL OPERATIONS.
- ALL SITE FILLING TO BE COMPACTED TO 95% STANDARD COMPACTION AND SHALL BE CONTROLLED BY A REGISTERED SOIL LABORATORY IN ACCORDANCE WITH COUNCIL'S "ENGINEERING CONSTRUCTION SPECIFICATION FOR CIVIL WORKS".
- ALL SITE REGRADING AREAS SHALL BE GRADED AT A MINIMUM 1% TO THE ENGINEERS. REQUIREMENTS.
- SURPLUS EXCAVATED MATERIAL SHALL BE PLACED WHERE DIRECTED BY THE SUPERINTENDENT.
- EASEMENT WIDTHS SHALL BE IN ACCORDANCE WITH 3.11 DRAINAGE EASEMENTS OF PENRITH CITY COUNCIL'S DESIGN GUIDELINES FOR ENGINEERING WORKS FOR SUBDIVISION AND DEVELOPMENTS.

PIPE DIA.	EASEMENT WIDTH
1500	1.5m
2250	2.0m
3000	2.0m
3750	2.5m
4500	2.5m
5450	2.5m
6000	2.5m
6750	3.0m
- DRAINAGE LINES UNDER ROADS SHALL BE BACKFILLED WITH NON-COHESIVE SAND AND HAVE 3m OF SUBSOIL DRAIN WRAPPED IN APPROVED FILTER SOCK, DISCHARGING INTO DOWN STREAM PITS. PIPE CLASS INDICATED ARE FOR REINFORCED CONCRETE PIPES (RCP) IF FIBRE REINFORCED CONCRETE PIPES (FRC) REFER TO PENRITH CITY COUNCIL "ENGINEERING CONSTRUCTION SPECIFICATION FOR CIVIL WORKS"
- ALL CONDUITS AND MAINS SHALL BE LAID PRIOR TO LAYING FINAL ASPHALTIC CONCRETE SEAL.
- VEHICULAR CROSSINGS SHALL BE CONSTRUCTED IN KERB AND GUTTER WHERE SHOWN IN ACCORDANCE WITH PCC STANDARD DRAWING SD1004.
- PRAM CROSSINGS SHALL BE CONSTRUCTED IN KERB AND GUTTER IN ACCORDANCE WITH COUNCIL'S STANDARD DRAWING SD1002.
- STREET NAME SIGNS SHALL BE ERECTED, WHERE SHOWN, IN ACCORDANCE WITH COUNCIL'S STANDARD SD1006/1 AND SD1006/2.
- ALL NEW WORKS SHALL MAKE A SMOOTH JUNCTION WITH EXISTING CONDITIONS.
- ALL INTERALLOTMENT DRAINAGE LINES SHALL BE LAID AT A MINIMUM GRADE OF 1% UNLESS OTHERWISE INDICATED.
- DRAINAGE LINES ON PLANS ARE DIAGRAMMATIC ONLY AND PIPE CENTRELINES SHALL ENTER AND EXIT PITS AT THE CENTRE OF THE RESPECTIVE PIT WALLS.
- DIMENSIONS OF ANY DETAIL SHALL NOT BE SCALED - DIMENSIONS, IF IN DOUBT, SHALL BE VERIFIED BY THE SUPERINTENDENT.
- ALL CONSTRUCTION AND RESTORATION WORK ON COUNCIL'S ROAD AND FOOTPATH AREA ARE TO BE CARRIED OUT IN ACCORDANCE WITH THE APPROVED DRAWINGS AND COUNCIL'S STANDARD SPECIFICATIONS AND APPROVED BY PENRITH CITY COUNCIL THROUGH A S138 ROADS ACT APPROVAL.
- ALL LAND THAT HAS BEEN DISTURBED BY EARTHWORKS IS TO BE SPRAY GRASSED OR SIMILARLY TREATED TO ESTABLISH A GRASS COVER.
- NO FILL MATERIAL IS TO BE IMPORTED TO THE SITE WITHOUT THE PRIOR APPROVAL OF PCC IN ACCORDANCE WIT H SYDNEY REGIONAL ENVIRONMENTAL PLAN No.20 (HAWKESBURY-NEPEAN RIVER) (No.2-1997). NO RECYCLING OF MATERIAL FOR USE OF FILL MATERIAL SHALL BE CARRIED OUT ON THE SITE WITHOUT THE PRIOR APPROVAL OF COUNCIL.
- ALL EARTHWORKS SHALL BE UNDERTAKEN IN ACCORDANCE WITH AS3798 AND PCC DESIGN GUIDELINES FOR ENGINEERING WORKS FOR SUBDIVISIONS AND DEVELOPMENTS AND ENGINEERING CONSTRUCTION SPECIFICATIONS FRO CIVIL WORKS.
- VEHICLE CROSSINGS TO BE LOCATED 1.0m CLEAR OF ANY LINTELS.
- ALL VERGE AREAS EXTEND FROM BACK OF KERB TO PROPERTY BOUNDARY TO BE TURFED.
- ALL STORMWATER PITS WITH DEPTHS GREATER THAN 1.0m TO HAVE GALVANISED OR OTHERWISE APPROVED STEP IRONS AT 300mm SPACING INSTALLED.
- KERB TYPES USED IN SITE ARE KERB AND GUTTER UNLESS OTHERWISE NOTED. FOR DETAILS REFER TO PENRITH CITY COUNCIL "ENGINEERING CONSTRUCTION SPECIFICATION FOR CIVIL WORKS" STANDARD SD1003/1 & SD1003/2.
- KERB ADAPTORS SHALL BE PROVIDED FOR ALL LOTS DRAINING TO THE STREET. FOR DETAIL REFER TO PENRITH CITY COUNCIL "ENGINEERING CONSTRUCTION SPECIFICATION FOR CIVIL WORKS"
- ALL WASTE MATERIAL STORED ON-SITE ARE TO BE CONTAINED WITHIN A DESIGNATED AREA SUCH AS A WASTE BAY OR BIN. CONTRACTOR TO ENSURE THAT NO WASTE MATERIALS ARE ALLOWED TO ENTER THE STORMWATER SYSTEM OR NEIGHBOURING PROPERTIES. THE DESIGNATED WASTE STORAGE AREAS SHALL PROVIDE AT LEAST TWO WASTE BAY/BINS SO AS TO ALLOW FOR THE SEPARATION OF WASTES, AND ARE TO BE FULLY ENCLOSED WHEN SITE IS UNATTENDED.
- AN APPROPRIATE QUALIFIED PERSON/S SHALL SUPERVISE ALL FILLING WORKS.

SURVEY SET OUT INFORMATION NOTES:

- ALL SITE SET OUT AND CONTROL POINTS ARE TO BE CERTIFIED BY A REGISTERED SURVEYOR.
- THE INFORMATION DETAILED ON THE CERTIFIED CONSTRUCTION CERTIFICATE PLANS TAKES PRECEDENCE OVER ALL ELECTRONIC INFORMATION PROVIDED. THE ORDER OF PRIORITY FOR USE OF ALL INFORMATION PROVIDED IS AS FOLLOWS:
 - CERTIFIED CONSTRUCTION CERTIFICATE DRAWINGS
 - 2D DRAFTING BASE (ELECTRONIC FILE)
 - 3D DTM (ELECTRONIC FILE)
- ANY DISCREPANCY BETWEEN ANY OF THE INFORMATION CONTAINED WITHIN THESE FILES IS TO BE BROUGHT TO THE ATTENTION OF THE SUPERINTENDENT PRIOR TO CONSTRUCTION WHO WILL SEEK CLARIFICATION AND ISSUE INSTRUCTIONS ON THE APPROPRIATE COURSE OF ACTION.

LOT CALCULATIONS BY:

VINCE MORGAN (SURVEYORS) PTY. LTD.
CONSULTING SURVEYORS
P.O. Box 227, Penrith. 2751
Ph. (02) 4721 5293
FILE: 20467 - 5L(A) DATE: 18/02/17

SURVEY BY:

SDG LAND DEVELOPMENT SOLUTIONS
UNIT 7 1B KLEINS ROAD
NORTHMEND 2152
Ph. (02) 9630 7955
FILE: 6072 CONTOUR ISSUE D.DWG DATE: 22/4/16

Survey By:

VINCE MORGAN (SURVEYORS) PTY. LTD.
CONSULTING SURVEYORS
P.O. Box 227, Penrith. 2751
Ph. (02) 4721 5293

Date: 21/09/16 File Name: 20467-L2.dwg
Date: 21/09/16 File Name: 210916topo.dxf

CUSTOM MADE PRECAST PIT NOTES:

- DESIGN DOCUMENTATION REFLECTS PRECAST DRAINAGE PITS BEING USED FOR THE SITE. UNLESS NOTED OTHERWISE.
- AUSPITS CUSTOM MADE PRECAST PITS TO BE USED.
- PITS TO COMPLY WITH THE FOLLOWING PARAMETERS:
 - ARE SPECIFICALLY MANUFACTURED FOR THE PROJECT.
 - EACH PIT IS ACCOMPANIED BY A CERTIFICATE OF STRUCTURAL ADEQUACY SIGNED BY A NPER ENGINEER (STRUCTURAL)
 - THE STRUCTURAL CERTIFICATION OF THE PITS SHOULD INCLUDE ANY ADDITIONAL PRECAST ELEMENTS REQUIRED TO BRING THE PIT UP TO FINAL LEVELS ON SITE.
 - PITS MUST BE FIRMLY BEDDED ON SOUND MATERIAL.
 - CONCRETE IS TO BE POURED AROUND THE BASE TO AID IN STABILISATION OF THE PIT.
 - PIT FLOORS ARE TO HAVE A 1% FALL TOWARDS THE OUTLET PIPE.
 - ANY PIT REQUIRING MODIFICATION AFTER IT HAS BEEN POURED IN THE FACTORY OR DAMAGED IN TRANSPORT CANNOT BE USED.
 - ALL WORK TO BE TO THE SATISFACTION OF COUNCIL'S DEVELOPMENT INSPECTORS.

ALL CAST INSITU PITS TO BE IN ACCORDANCE WITH PCC STANDARD DRAWINGS SD2001/1, SD2001/2 AND SD2001/3. ANY PIT GREATER THAN 2m DEEP WILL REQUIRE SEPARATE APPROVAL.

DRAWING INDEX

Drawing Number	Drawing Title	Revision Number
110358/CC500	COVER SHEET	C
110358/CC501	LEGEND, NOTES & INDEX	G
110358/CC502	SITE LAYOUT PLAN	B
110358/CC503	ROAD SETOUT PLAN	B
110358/CC504	ENGINEERING PLAN	E
110358/CC505	ENGINEERING PLAN	E
110358/CC506	ROAD No.9 & 11 LONGITUDINAL & TYPICAL SECTION	D
110358/CC507	ROAD No.12 & 13 LONGITUDINAL & TYPICAL SECTION	E
110358/CC508	ROAD No.13 ROAD LONGITUDINAL SECTION	D
110358/CC509	ROAD No.20 LONGITUDINAL & TYPICAL SECTION	D
110358/CC510	ROAD No.9 CROSS SECTIONS	B
110358/CC511	ROAD No.11 CROSS SECTIONS	C
110358/CC512	ROAD No.12 CROSS SECTIONS	B
110358/CC513	ROAD NO.13 CROSS SECTIONS	C
110358/CC514	ROAD No.20 CROSS SECTIONS	A
110358/CC515	KERB RETURNS	B
110358/CC516	KERB RETURNS	B
110358/CC517	KERB RETURNS	B
110358/CC518	CATCHMENT PLAN	D
110358/CC519	PIT DETAILS & PIT SCHEDULE	B
110358/CC520	DRAINAGE LONG SECTIONS	D
110358/CC521	DRAINAGE LONG SECTIONS	E
110358/CC522	DRAINAGE LONG SECTIONS	C
110358/CC523	DRAINAGE LONG SECTIONS	C
110358/CC524	DRAINAGE LONG SECTIONS	D
110358/CC525	DRAINAGE LONG SECTIONS	C
110358/CC526	DRAINAGE LONG SECTIONS	B
110358/CC527	DRAINAGE CALCULATIONS	C
110358/CC528	DRAINAGE CALCULATIONS	B
110358/CC529	DRAINAGE CALCULATIONS	D
110358/CC530	DRAINAGE CALCULATIONS	C
110358/CC531	DRAINAGE CALCULATIONS	B
110358/CC532	DRAINAGE CALCULATIONS	C
110358/CC533	DRAINAGE CALCULATIONS	C
110358/CC534	DRAINAGE CALCULATIONS	D
110358/CC535	RETAINING WALL PLAN	F
110358/CC536	RETAINING WALL SECTION	B
110358/CC537	RETAINING WALL SECTION	C
110358/CC538	RETAINING WALL SECTION	B
110358/CC539	BASIN PLAN	E
110358/CC540	BASIN RETAINING WALL PLAN	D
110358/CC541	BASIN SECTIONS	C
110358/CC542	BASIN DETAILS	D
110358/CC543	BASIN B OUTLET DETAILS	C
110358/CC544	SOIL & WATER MANAGEMENT PLAN	E
110358/CC545	SOIL & WATER MANAGEMENT NOTES	C
110358/CC550	BASIN & O'CONNELL STREET INTERFACING PLAN SHEET 01 OF 02	B
110358/CC551	BASIN & O'CONNELL STREET INTERFACING PLAN SHEET 02 OF 02	C



These plans are referred to in certificate no. **14776** approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPB 2416
Categories: B1,C1,C2,C3,C4,C6,C15 & D1
Land Development Certificates
www.Ldcerts.com.au



UTILITIES SHOWN ARE DIAGRAMMATIC ONLY. CONTRACTORS ARE RESPONSIBLE TO LOCATE AND AVOID DAMAGE TO THEM.

NOTE: UTILITIES SHOWN MAY NOT INCLUDE ALL SERVICES WITHIN THE LIMIT OF WORKS

G	DRAWING INDEX UPDATED	JT	NAF	MS	RO	29/03/18
F	DRAWING INDEX UPDATED	JT	JT	MS	RO	19/03/18
E	DRAWING INDEX UPDATED	JT	JT	RT	MS	14/12/17
D	DRAWING INDEX UPDATED	JT	JT	RT	MS	08/12/17
C	CERTIFIER COMMENTS - NOTES REVISED	JT	JT	RT	MS	04/12/17
B	CERTIFIER COMMENTS - NOTES REVISED	JT	JT	RT	MS	20/10/17
A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17
	AMENDMENT	DES	DRN	CKD	APR	DATE

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AZIMUTH: M.G.A
DATUM: A.H.D
ORIGIN:



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ISSUED FOR CONSTRUCTION APPROVAL

**CADDENS HILL
STAGE 5**

LEGEND, NOTES & INDEX

PLAN No:	110358/CC501	G
FILE No:	110358CC501	
SHEET SIZE:	A1 ORIGINAL	

Plotted: 19 March 2018 3:49:45 PM File Name: J:\110358 - O'Connell Lane Caddens\04 - Stage 5\CD\CC\STAGE 5\110358CC503.dwg



ROAD 9					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A.LENGTH
0	290463.72	6260628.92	8°01'22.92"		
64.53	290472.73	6260692.82	8°01'22.92"		
75.72	290474.33	6260704.2		-40	22.39
86.91	290469.65	6260714.69	335°57'29.45"		
95.21	290466.27	6260722.27	335°57'29.45"		

ROAD 11			
CHAINAGE	EASTING	NORTHING	BEARING
0	290483.72	6260779.8	97°49'28.28"
312.25	290793.07	6260737.29	97°49'28.28"

ROAD 12					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A.LENGTH
0	290704.66	6260286.76	27°57'29.68"		
52.09	290729.09	6260332.77	27°57'29.68"		
69.13	290737.15	6260347.97		-100	34.07
86.16	290739.67	6260354.98	8°26'12.57"		
377.32	290782.39	6260652.99	8°26'12.57"		
386.22	290783.7	6260661.8		-190	17.8
395.12	290784.18	6260670.69	3°04'11.25"		
396.04	290784.23	6260671.61	3°04'11.25"		
405.38	290784.73	6260680.95		200	18.69
414.73	290786.1	6260690.2	8°25'30.32"		
526.71	290802.5	6260800.98	8°25'30.32"		
535.8	290804.21	6260812.47		-11.5	18.18
544.9	290792.69	6260814.05	277°49'33.98"		
767.56	290572.1	6260844.37	277°49'33.98"		

ROAD 13					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A.LENGTH
0	290362.88	6260733.38	97°50'22.43"		
93.24	290455.26	6260720.66	97°50'22.43"		
108.92	290475.01	6260717.94		-20	31.35
124.6	290477.79	6260737.68	8°01'22.92"		
321.14	290505.22	6260932.3	8°01'22.92"		

ROAD 20					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A.LENGTH
0	290466.16	6260521.69	37°48'06.09"		
93.95	290523.75	6260595.92	37°48'06.09"		
119.93	290540.04	6260616.93		-100	51.97
145.92	290543.75	6260643.25	8°01'23.02"		
427.25	290583.02	6260921.83	8°01'23.02"		

BENCH MARK LOCATION

△ SSM112646
E 290687.2140
N 6260213.3860

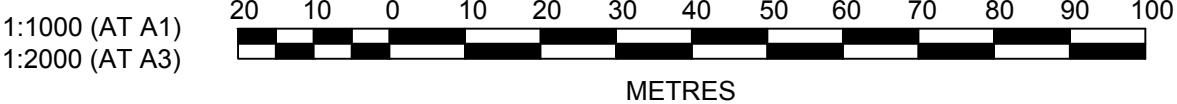


WARNING!
UNDERGROUND SERVICE CABLES IN VICINITY. EXERCISE EXTREME CAUTION DURING EXCAVATION. CONTACT "DIAL BEFORE YOU DIG" PRIOR TO ANY CONSTRUCTION WORK

UTILITIES SHOWN ARE DIAGRAMMATIC ONLY. CONTRACTORS ARE RESPONSIBLE TO LOCATE AND AVOID DAMAGE TO THEM AS SPECIFIED BY EACH UTILITIES EXCAVATION GUIDE LINES & STANDARDS. NOTE: UTILITIES SHOWN MAY NOT INCLUDE ALL SERVICES WITHIN THE LIMIT OF WORKS



These plans are referred to in certificate no. **14776** approved by:
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B	SPILLWAY LOCATION REVISED	JT	JT	MS	RO	19/03/18			
A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17			
	AMENDMENT	DES	DRN	CKD	APR	DATE			

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ORIGIN:



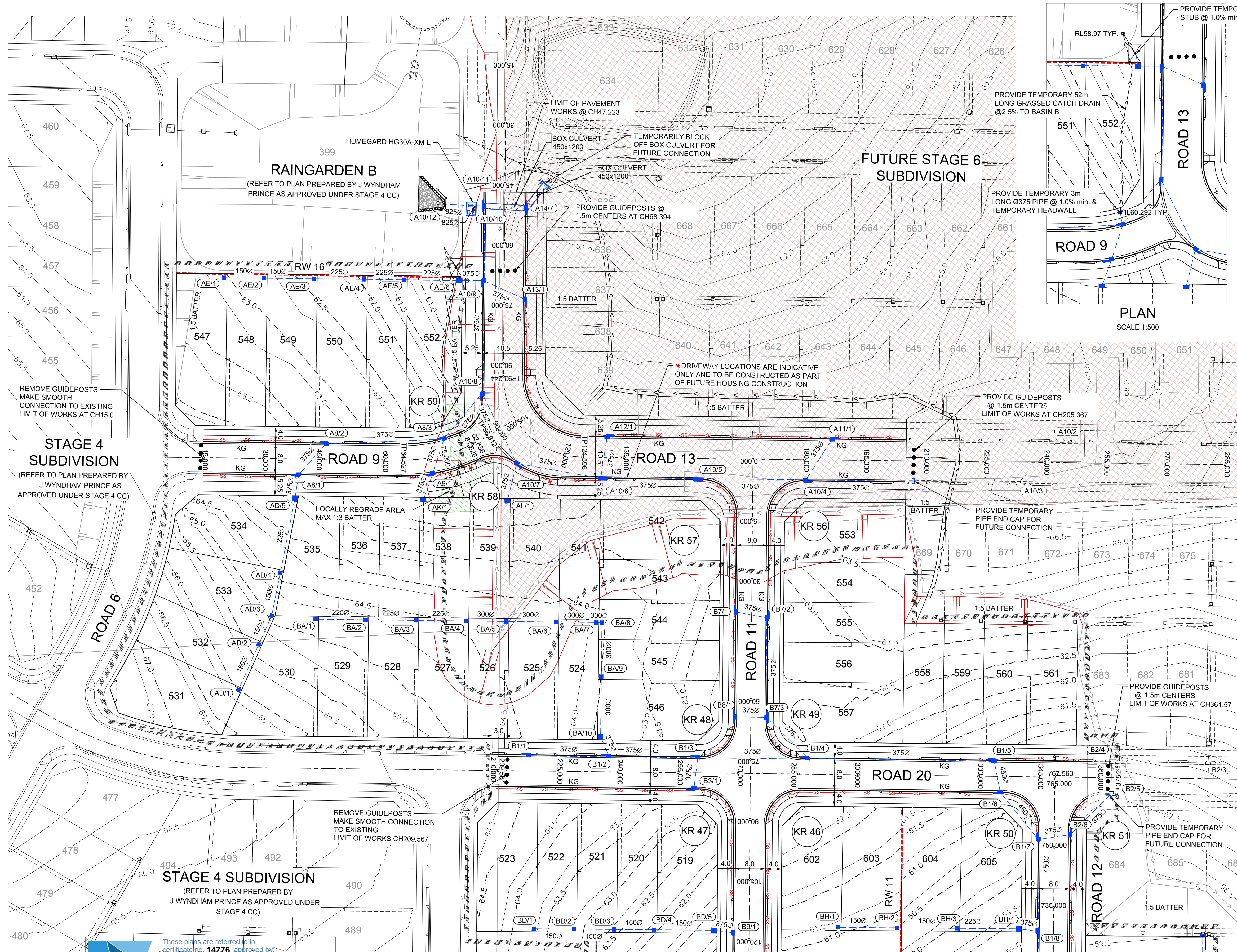
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ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 5

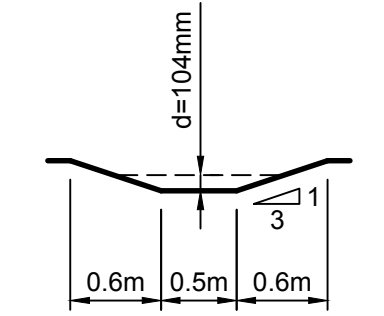
ROAD SETOUT PLAN

PLAN No:	110358/CC503	B
FILE No:	110358CC503	
SHEET SIZE:	A1 ORIGINAL	



THIS CC DOES NOT INCLUDE ANY WORKS WITHIN LOT 11 DP522660. WORKS WITHIN LOT 11 IS SUBJECT TO A SEPARATE CC

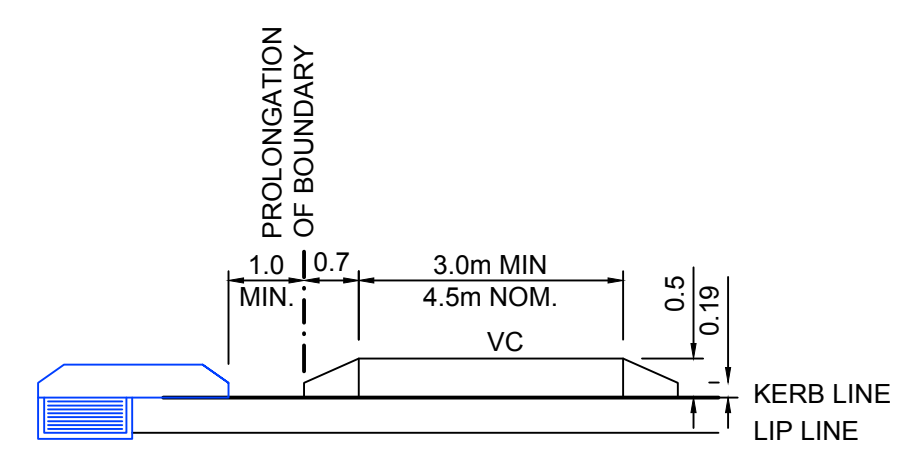
CATCH DRAIN SIZING PARAMETERS
 $S_{min} = 2.5\%$
 $n = 0.035$
 $Q_s = 75L/s$ depth $d_s = 0.1m$ vel = $0.9m/s$



TEMPORARY CATCH DRAIN
NOT TO SCALE

TEMPORARY CATCH DRAIN TO BE TURFED WITH 75mm TOPSOIL

RETAINING WALL PLAN AND SECTIONS REFER TO PLANS CC535 - CC538



VEHICULAR CROSSING (VC)
SETOUT DETAIL
SCALE: N.T.S.

- ALL VEHICULAR CROSSING (VC) WIDTHS ARE 4.5m WIDE UNLESS OTHERWISE NOTED ON PLAN
- VC MUST HAVE A MIN STRAIGHT OF 3m PER P.C.C. STANDARD DETAIL
- VC'S TO BE IN ACCORDANCE WITH SD1004 OF P.C.C. ENGINEERING CONSTRUCTION SPECIFICATION FOR CIVIL WORKS

LDC
These plans are related to in certificate no. **14776** approved by:
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Registration No: BPB 2416
Categories: B1,C1,C2,C3,C4,C6,C15 & D1
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PLAN
SCALE 1:500
1:500 (AT A1)
1:1000 (AT A3)
10 0 10 20 30 40 50
METRES

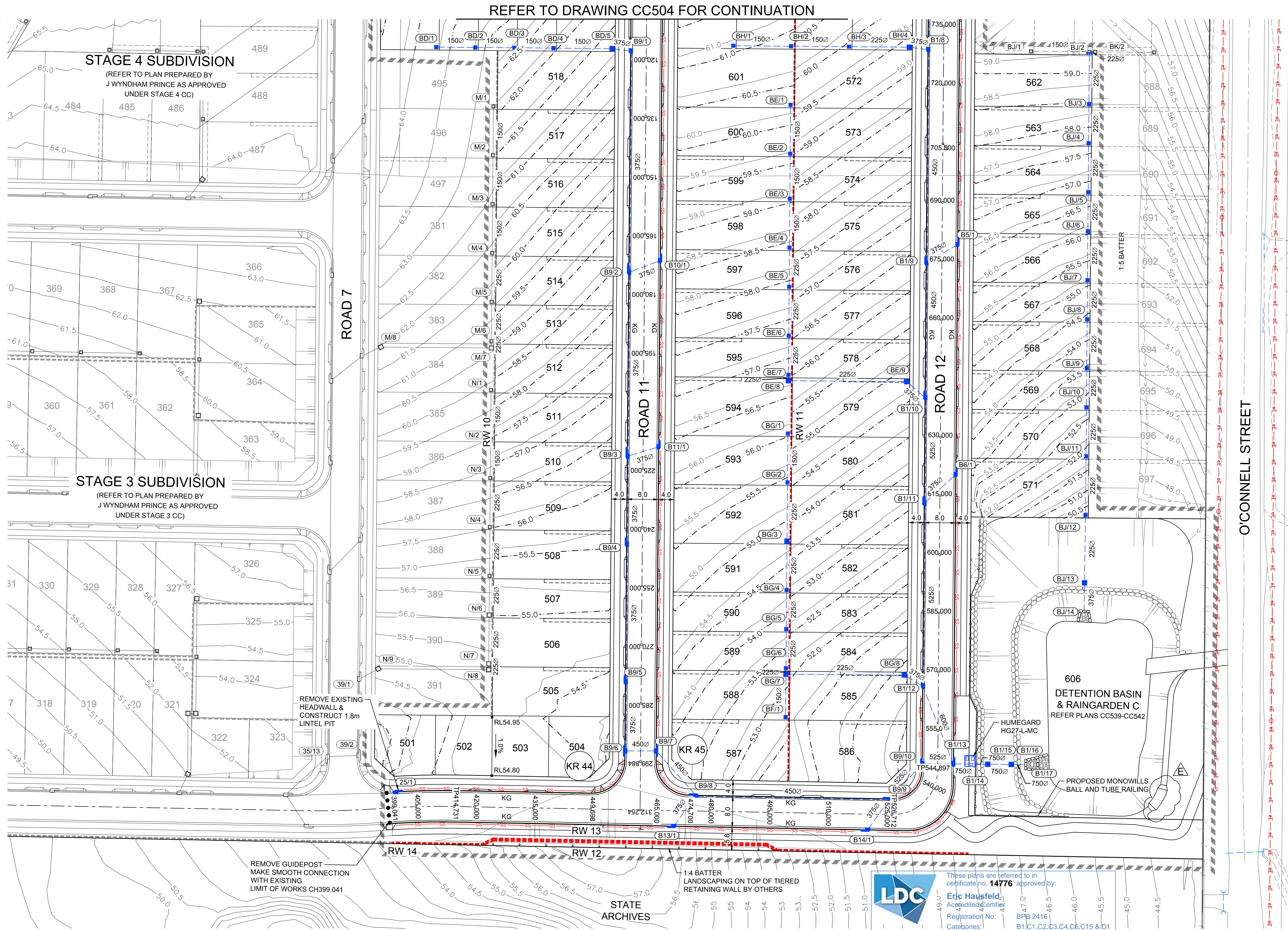
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CLIENT:
LEGACYPROPERTY
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ISSUED FOR CONSTRUCTION APPROVAL
CADDENS HILL
STAGE 5
ENGINEERING PLAN
PLAN No: 110358/CC504
FILE No: 110358CC504
SHEET SIZE: A1 ORIGINAL

Plotted: 29 March 2018 10:15:01 AM File Name: J1110358 - OConnell Lane Caddens04 - Stage 5 CC505 STAGE 5 110358CC504.dwg

E	CERTIFIER COMMENTS - NOTE REMOVED	JT	NAF	MS	RO	29/03/18
D	CERTIFIER COMMENTS - WORKS WITHIN LOT 11 REMOVED	JT	JT	RT	MS	14/12/17
C	CERTIFIER COMMENTS - WORKS WITHIN LOT 11 REMOVED	JT	JT	RT	MS	04/12/17
B	CERTIFIER COMMENTS - LOT GRADING AND SUBSOILS AMENDED	JT	JT	RT	MS	20/10/17
A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17
	AMENDMENT	DES	DRN	CKD	APR	DATE



FOR RETAINING WALL STRUCTURAL DETAILS
REFER TO CC APPROVED STRUCTURAL CERTIFIED PLANS
PREPARED BY UNITED CRIB BLOCKS CONSTRUCTIONS PTY LTD

E	SPILLWAY LOCATION REVISED	JT	JT	MS	RO	19/03/18
D	CERTIFIER COMMENTS - RETAINING WALL NOTE REVISED	JT	JT	RT	MS	14/12/17
C	CERTIFIER COMMENTS - NOTE REVISED	JT	JT	RT	MS	04/12/17
B	CERTIFIER COMMENTS - LOT GRADING AND SUBSOILS AMENDED	JT	JT	RT	MS	20/10/17
A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17
AMENDMENT		DES	DRN	CKD	APR	DATE

J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS

PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

AZIMUTH:
M.G.A
DATUM:
A.H.D
ORIGIN:



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ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 5

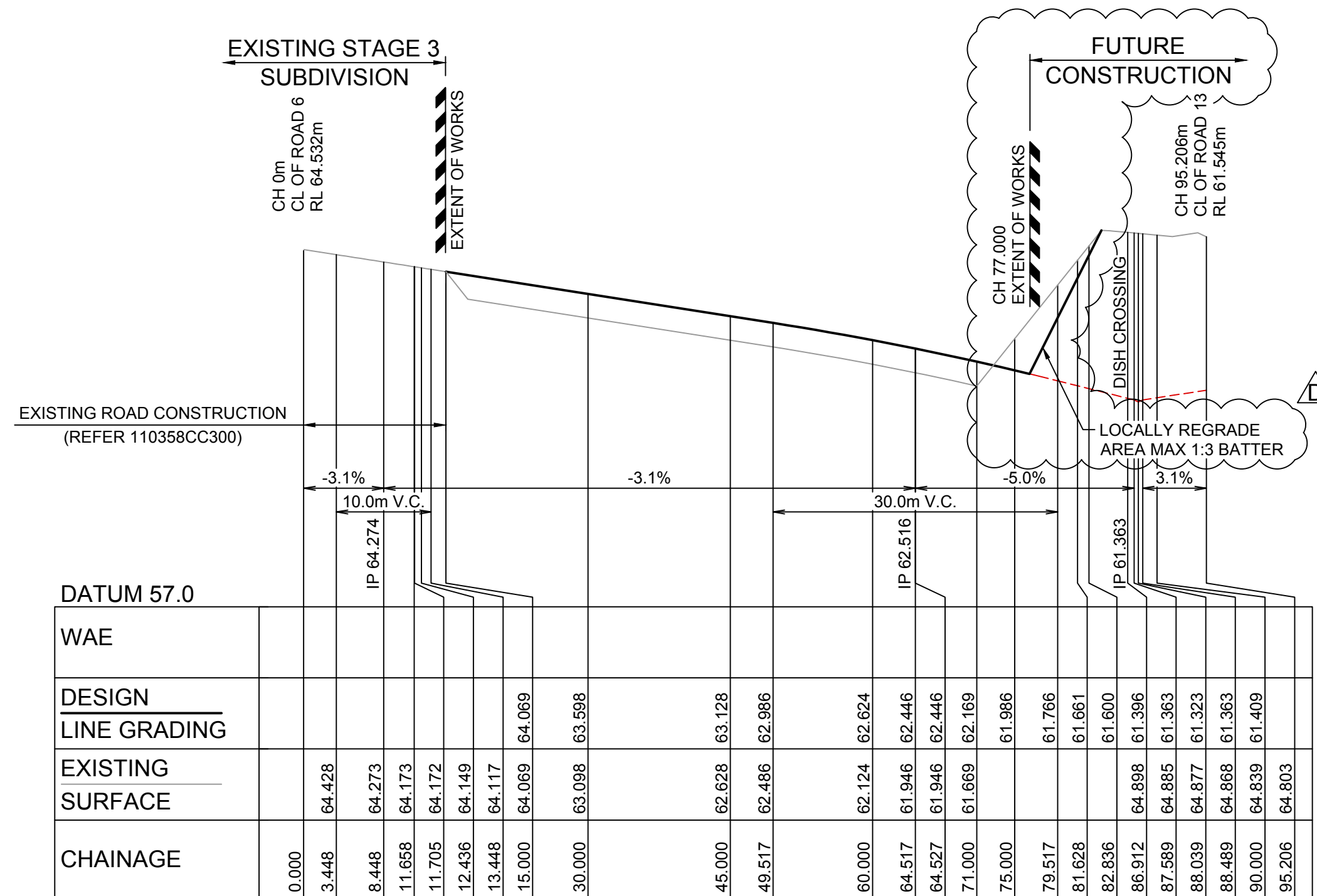
ENGINEERING PLAN

PLAN No:
110358/CC505 E

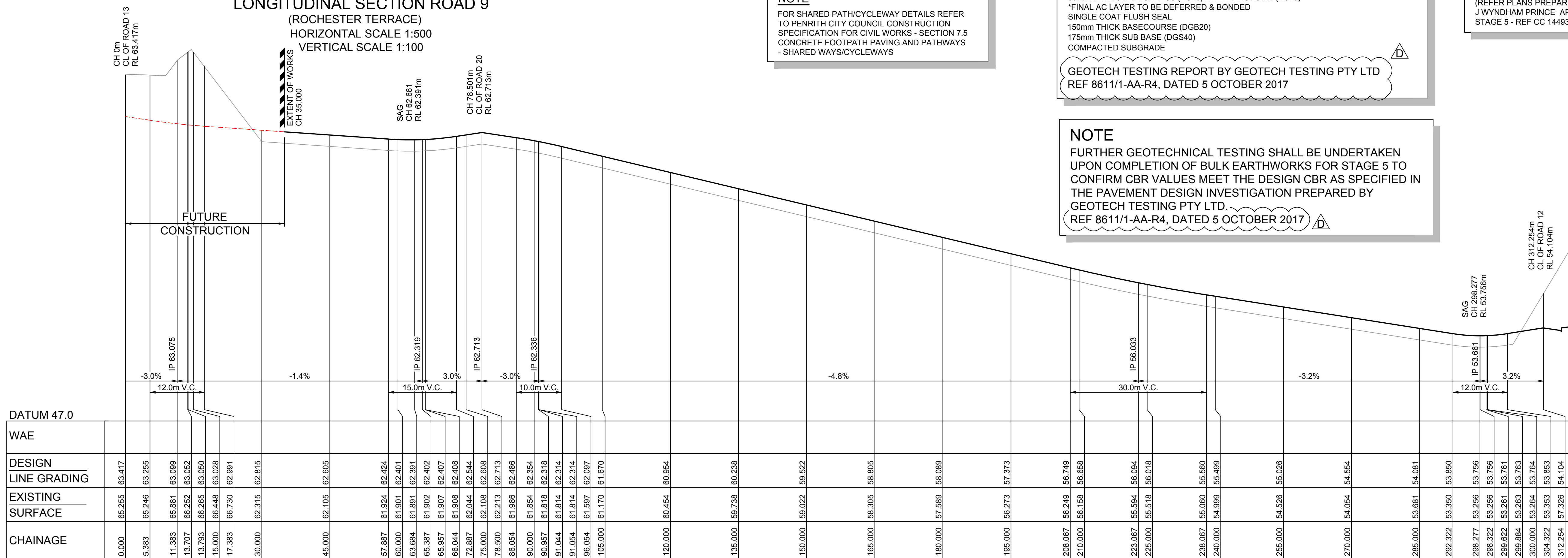
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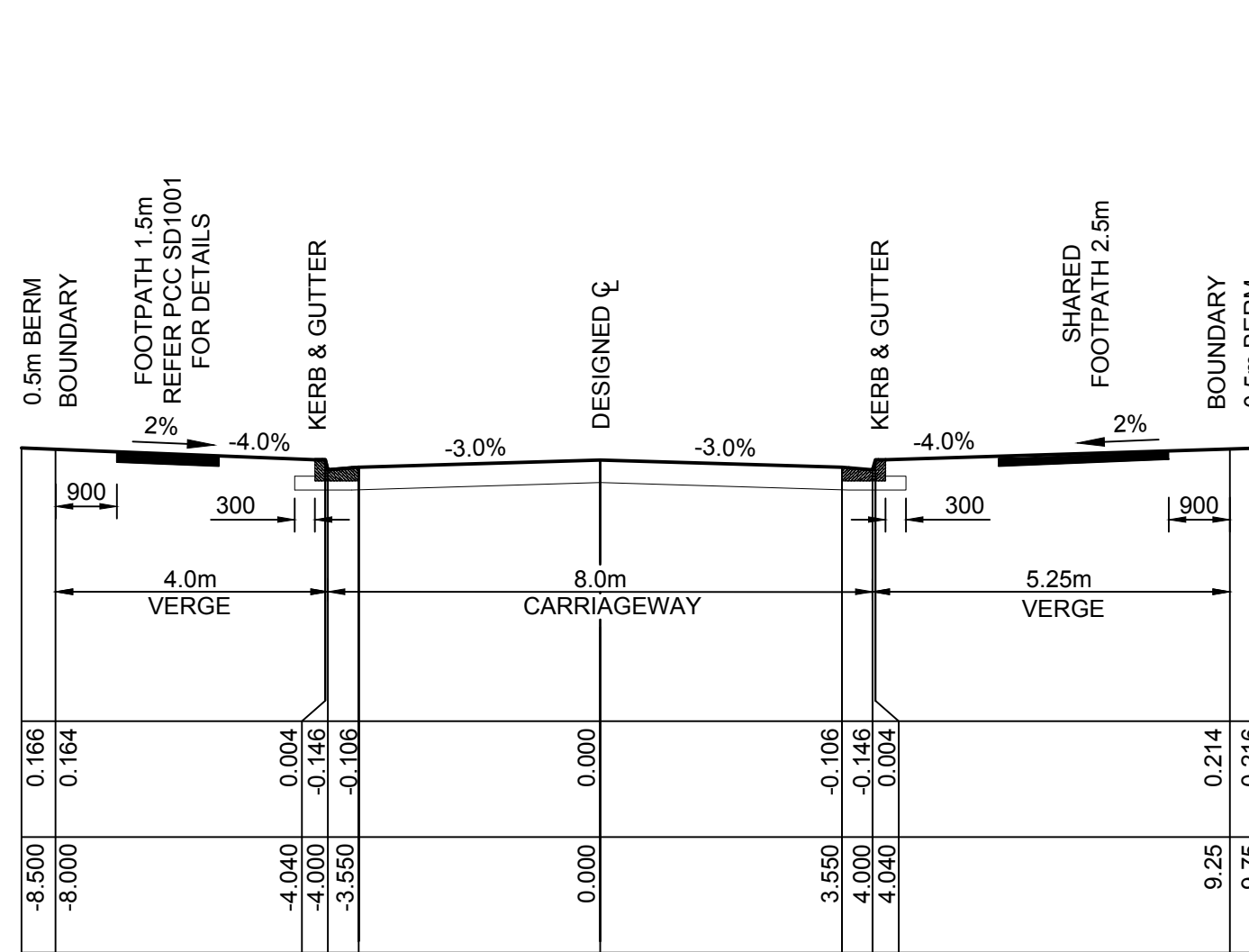
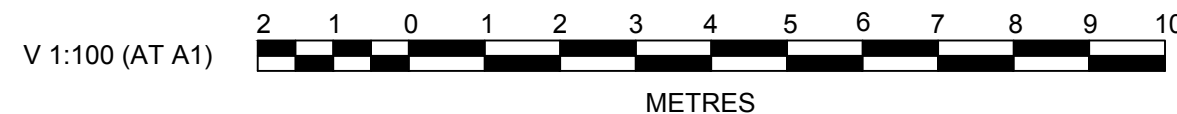
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LONGITUDINAL SECTION ROAD 9 (ROCHESTER TERRACE)
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100

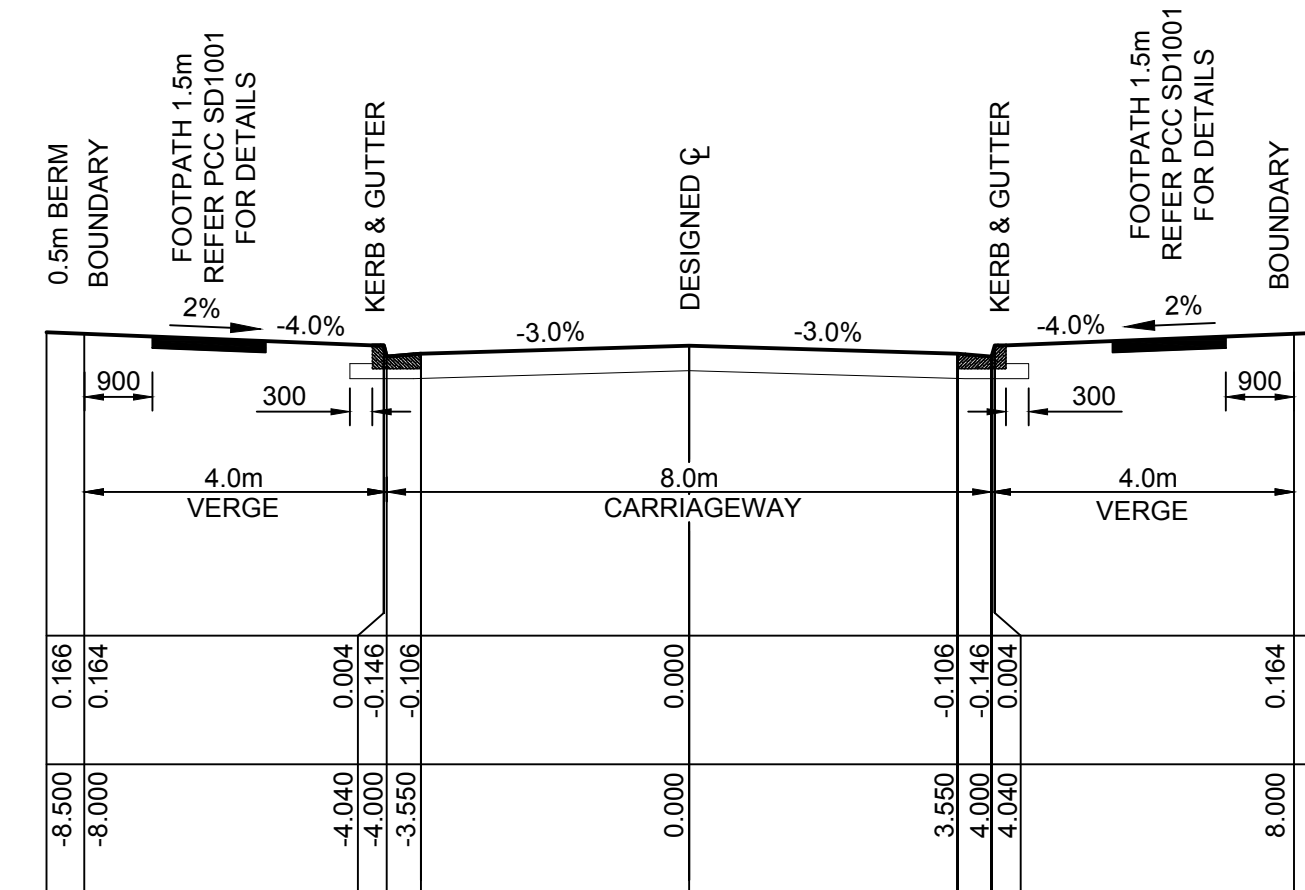


LONGITUDINAL SECTION ROAD 11 (VANDALAY ROAD)
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100



ROAD No.9 TYPICAL SECTION (ROCHESTER TERRACE)
(17.25m ROAD RESERVE)
1:100 NAT

NOTE
FOR SHARED PATH/CYCLEWAY DETAILS REFER TO PENRITH CITY COUNCIL CONSTRUCTION SPECIFICATION FOR CIVIL WORKS - SECTION 7.5 CONCRETE FOOTPATH PAVING AND PATHWAYS - SHARED WAYS/CYCLEWAYS



ROAD No.11,12 & 20 TYPICAL SECTION (VANDALAY ROAD, ARCHIVES WAY (CH 540 - END) & MIDNIGHT AVENUE)
(16m ROAD RESERVE)
1:100 NAT

PAVEMENT NOTES ROAD No.9,11,12 & 20

ACCESS STREET 5x10⁴
50mm MINIMUM THICKNESS (AC10) 2 x LAYERS 25mm (AC10)
*FINAL AC LAYER TO BE DEFERRED & BONDED
SINGLE COAT FLUSH SEAL
150mm THICK BASECOURSE (DGB20)
175mm THICK SUB BASE (DGS40)
COMPACTED SUBGRADE

GEOTECH TESTING REPORT BY GEOTECH TESTING PTY LTD
REF 8611/1-AA-R4, DATED 5 OCTOBER 2017

NOTE

FURTHER GEOTECHNICAL TESTING SHALL BE UNDERTAKEN UPON COMPLETION OF BULK EARTHWORKS FOR STAGE 5 TO CONFIRM CBR VALUES MEET THE DESIGN CBR AS SPECIFIED IN THE PAVEMENT DESIGN INVESTIGATION PREPARED BY GEOTECH TESTING PTY LTD.
REF 8611/1-AA-R4, DATED 5 OCTOBER 2017

NOTE

EXISTING SURFACE LEVELS ARE FROM BULK EARTHWORKS PACKAGE (REFER PLANS PREPARED BY J WYNHAM PRINCE APPROVED FOR STAGE 5 - REF CC 14493)

LDC

These plans are referred to in certificate no. **14776** approved by:

Eric Hausfeld
Accredited Certifier

Registration No: BPB 2416
Categories: B1,C1,C2,C3,C4,C6,C15 & D1

Land Development Certificates
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CLIENT:



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CADDENS HILL
STAGE 5

PLAN No:
110358/CC506

FILE No: 110358CC506

SHEET SIZE: A1 ORIGINAL

ROAD No.9 & 11 LONGITUDINAL & TYPICAL SECTION

J. WYNHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS

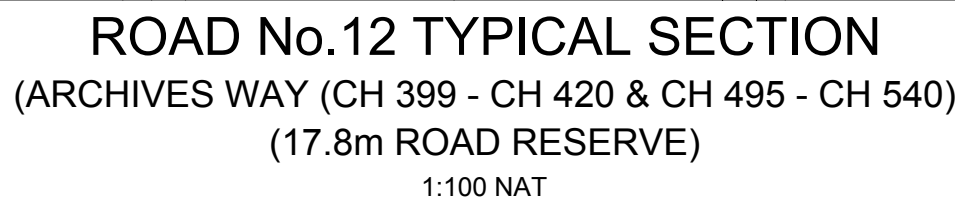
PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

AZIMUTH:
M.G.A

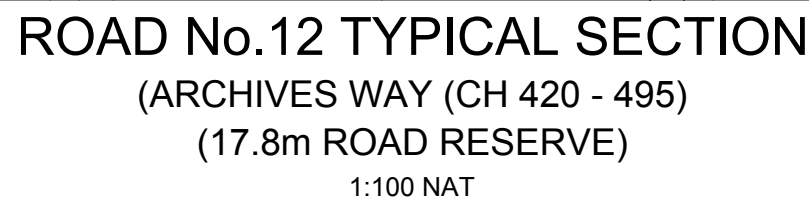
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A.H.D

ORIGIN:

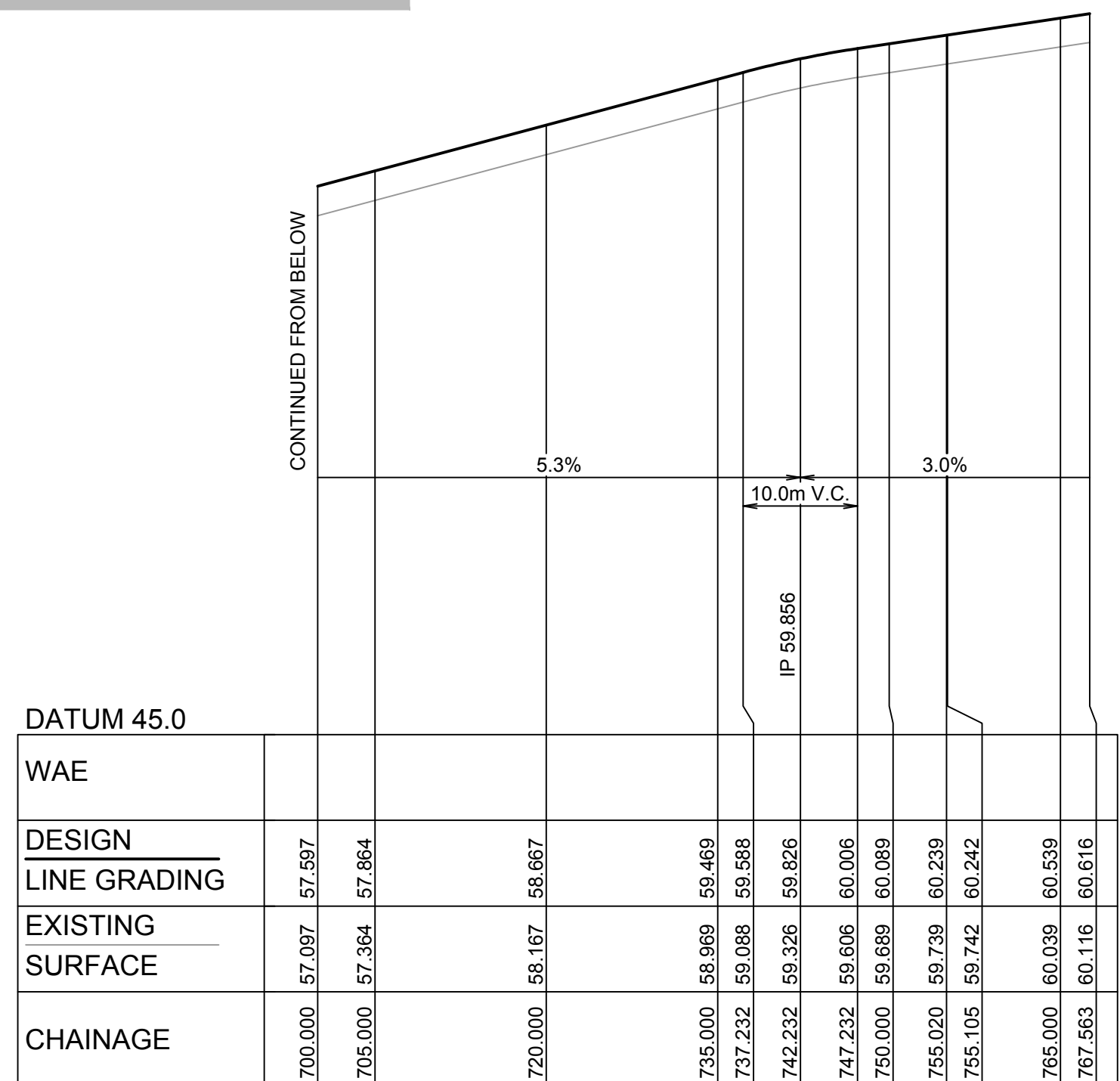
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D	CERTIFIER COMMENTS - WORKS WITHIN LOT 11 REMOVED	JT	JT	RT	MS	14/12/17
C	CERTIFIER COMMENTS - WORKS WITHIN LOT 11 REMOVED	JT	JT	RT	MS	04/12/17
B	O'CONNELL STREET INTERFACE AMENDMENTS	JT	JT	RT	MS	20/10/17
A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17



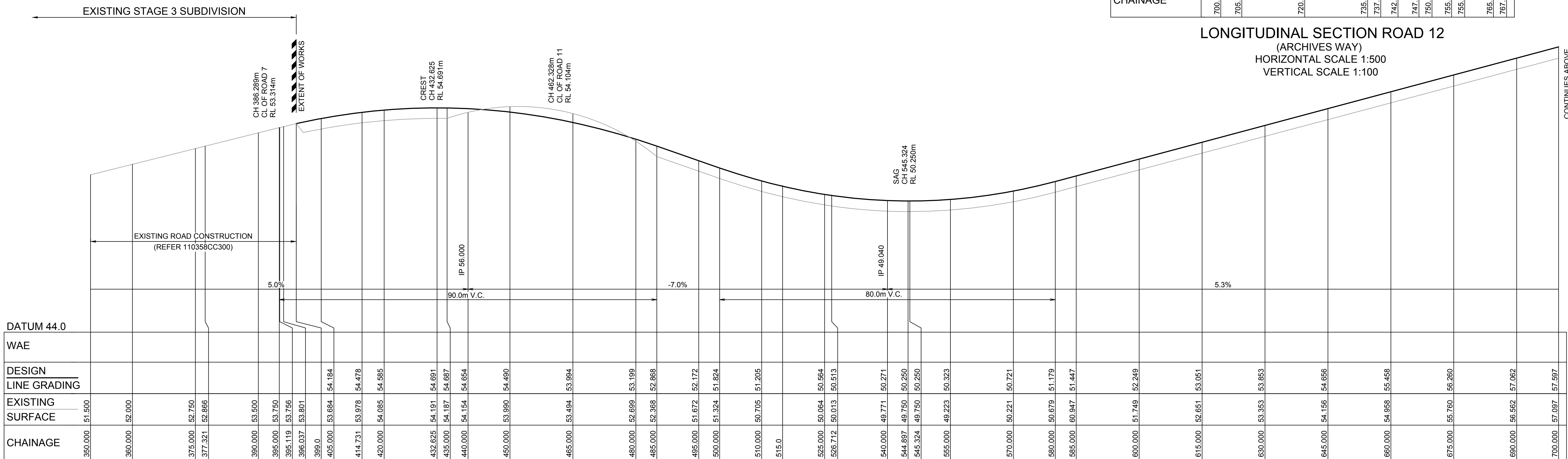
NOTE
FURTHER GEOTECHNICAL TESTING SHALL BE UNDERTAKEN
UPON COMPLETION OF BULK EARTHWORKS FOR STAGE 5 TO
CONFIRM CBR VALUES MEET THE DESIGN CBR AS SPECIFIED IN
THE PAVEMENT DESIGN INVESTIGATION PREPARED BY
GEOTECH TESTING PTY LTD.
(REF 8611/1-AA-R4, DATED 5 OCTOBER 2017)



NOTE
EXISTING SURFACE LEVELS ARE FROM
BULK EARTHWORKS PACKAGE
(REFER PLANS PREPARED BY
J WYNDHAM PRINCE APPROVED FOR
STAGE 5 - REF CC 14493)



LONGITUDINAL SECTION ROAD 12
(ARCHIVES WAY)
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100



LONGITUDINAL SECTION ROAD 12
(ARCHIVES WAY)
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100



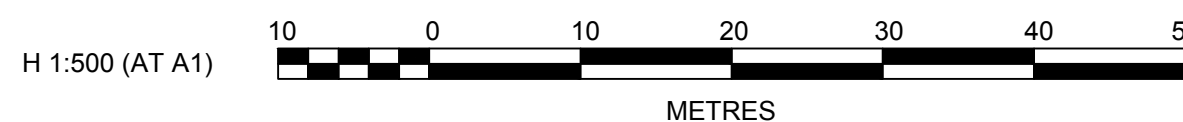
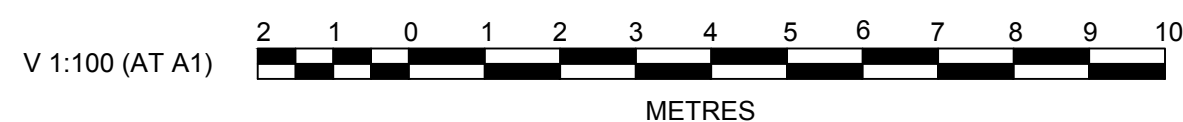
These plans are referred to in certificate no. **14776** approved by:

Eric Hausfeld
Accredited Certifier

Registration No: **BPB 2416**
Categories: **B1,C1,C2,C3,C4,C6,C15 & D1**

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E	CERTIFIER COMMENTS - REFERERNECE REVISED	JT	JT	RT	MS	14/12/17
D	TYPICAL RETAINING WALL DETAIL REVISED	JT	JT	RT	MS	08/12/17
C	CERTIFIER COMMENTS - GEOTECH REPORT REVISED	JT	JT	RT	MS	04/12/17
B	O'CONNELL STREET INTERFACE AMENDMENTS	JT	JT	RT	MS	20/10/17
A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17
	AMENDMENT	DES	DRN	CKD	APR	DATE

J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS

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AZIMUTH
M.G.A
DATUM:
A.H.D
ORIGIN:



LEGACYPROPERTY

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CADDENS HILL
STAGE 5

ROAD No.12 & 13 LONGITUDINAL & TYPICAL SECTION

PLAN No:
110358/CC507

FILE No: 110358CC507

SHEET SIZE: A1 ORIGINAL

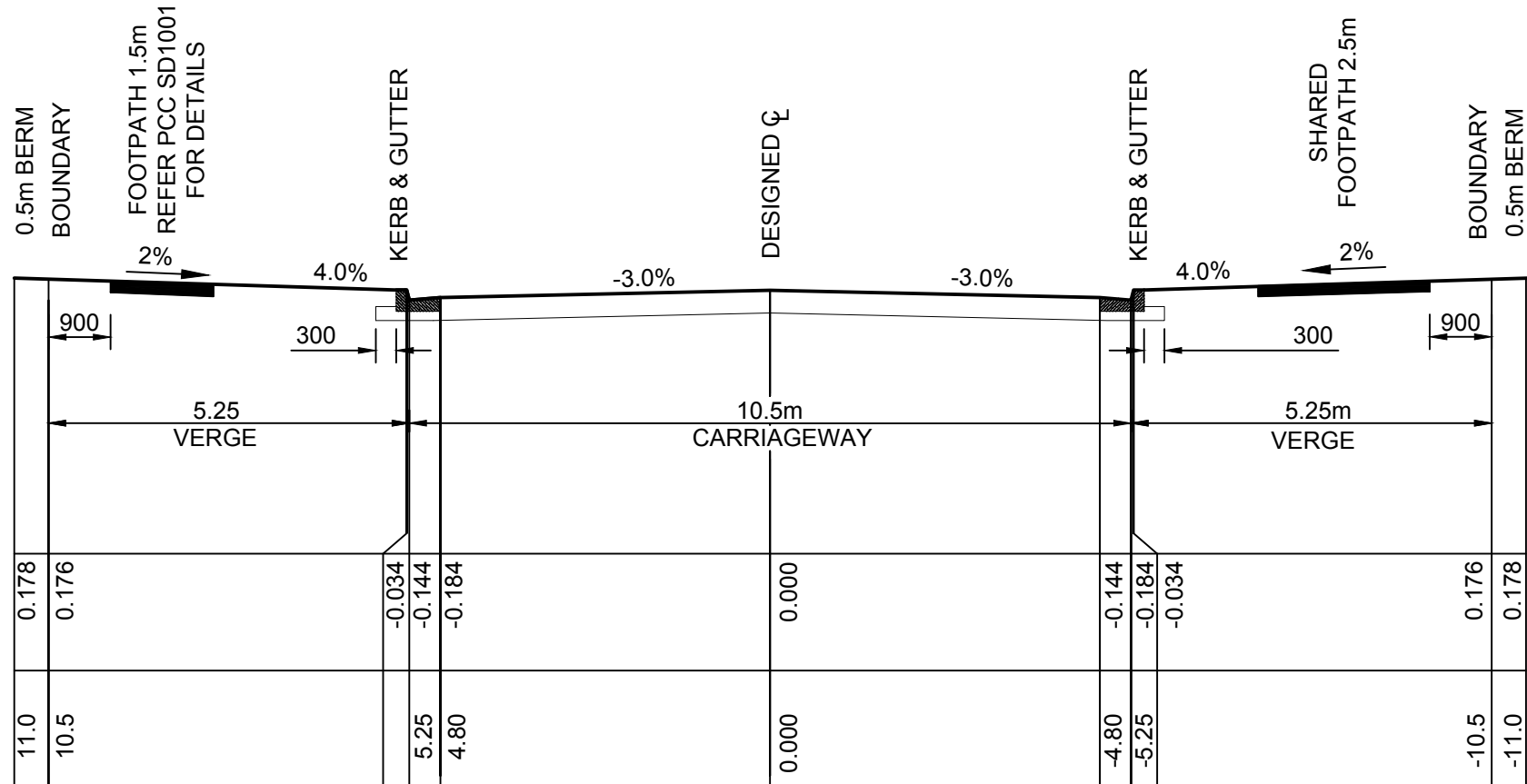
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NOTE

FURTHER GEOTECHNICAL TESTING SHALL BE UNDERTAKEN UPON COMPLETION OF BULK EARTHWORKS FOR STAGE 5 TO CONFIRM CBR VALUES MEET THE DESIGN CBR AS SPECIFIED IN THE PAVEMENT DESIGN INVESTIGATION PREPARED BY GEOTECH TESTING PTY LTD.
REF 8611/1-AA-R4, DATED 5 OCTOBER 2017

NOTE

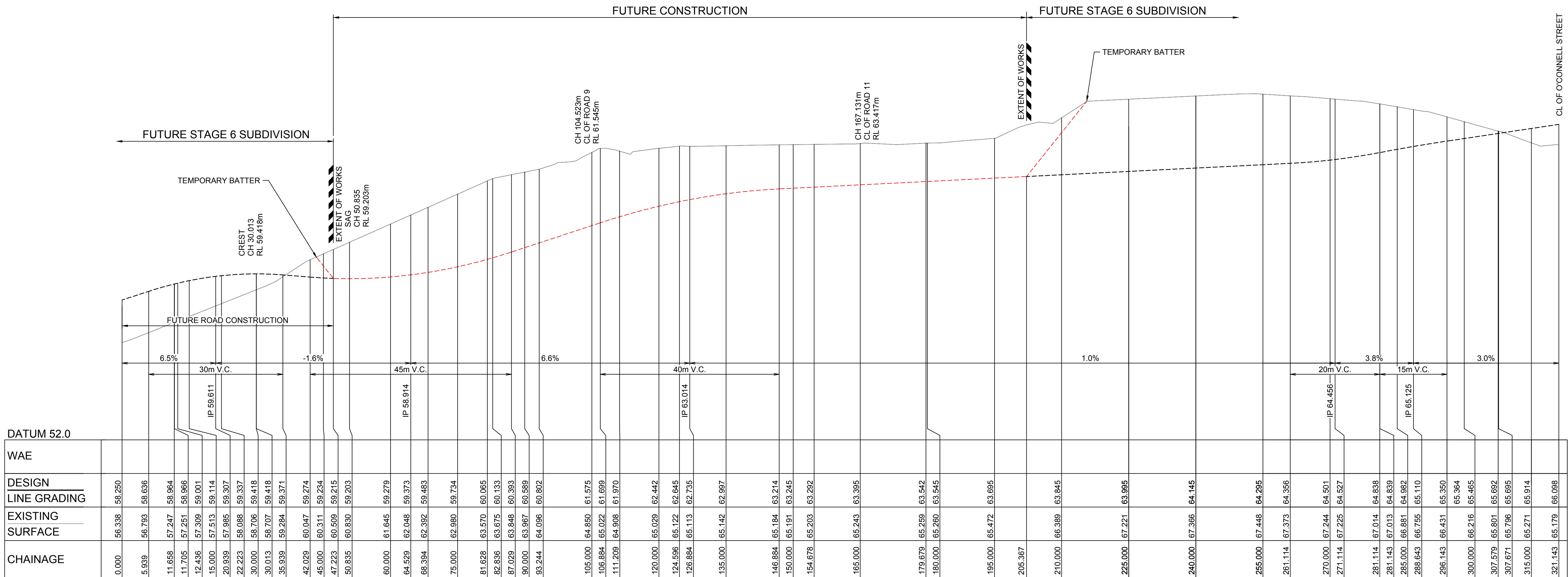
EXISTING SURFACE LEVELS ARE FROM BULK EARTHWORKS PACKAGE (REFER PLANS PREPARED BY J WYNDHAM PRINCE APPROVED FOR STAGE 5 - REF CC 14493)



PAVEMENT NOTES ROAD No.13

ACCESS STREET 5x10⁵
50mm MINIMUM THICKNESS (AC10) 2 x LAYERS 25mm (AC10)
*FINAL AC LAYER TO BE DEFERRED & BONDED
SINGLE COAT FLUSH SEAL
150mm THICK BASECOURSE (DGB20)
270mm THICK SUB BASE (DGS40)
COMPACTED SUBGRADE

REFER TO REPORT BY GEOTECH TESTING PTY LTD REF 8611/1-AA-R4



LONGITUDINAL SECTION ROAD 13
(STARLINE DRIVE)
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100

NOT APPROVED

	AMENDMENT	DES	DRN	CKD	APR	DATE
D	CERTIFIER COMMENTS - REFERENCE REVISED	JT	JT	RT	MS	14/12/17
C	CERTIFIER COMMENTS - WORKS WITHIN LOT 11 REMOVED	JT	JT	RT	MS	04/12/17
B	O'CONNELL STREET INTERFACE AMENDMENTS	JT	JT	RT	MS	20/10/17
A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17

J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS

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AZIMUTH:
M.G.A
DATUM:
A.H.D
ORIGIN:

CLIENT:



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ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 5

ROAD No.13 ROAD LONGITUDINAL SECTION

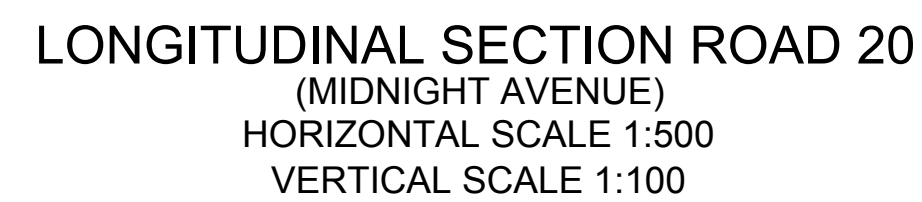
PLAN No:
110358/CC508

FILE No: 110358CC508

SHEET SIZE: A1 ORIGINAL

FURTHER GEOTECHNICAL TESTING SHALL BE UNDERTAKEN UPON COMPLETION OF BULK EARTHWORKS FOR STAGE 5 TO CONFIRM CBR VALUES MEET THE DESIGN CBR AS SPECIFIED IN THE PAVEMENT DESIGN INVESTIGATION PREPARED BY GEOTECH TESTING PTY LTD.

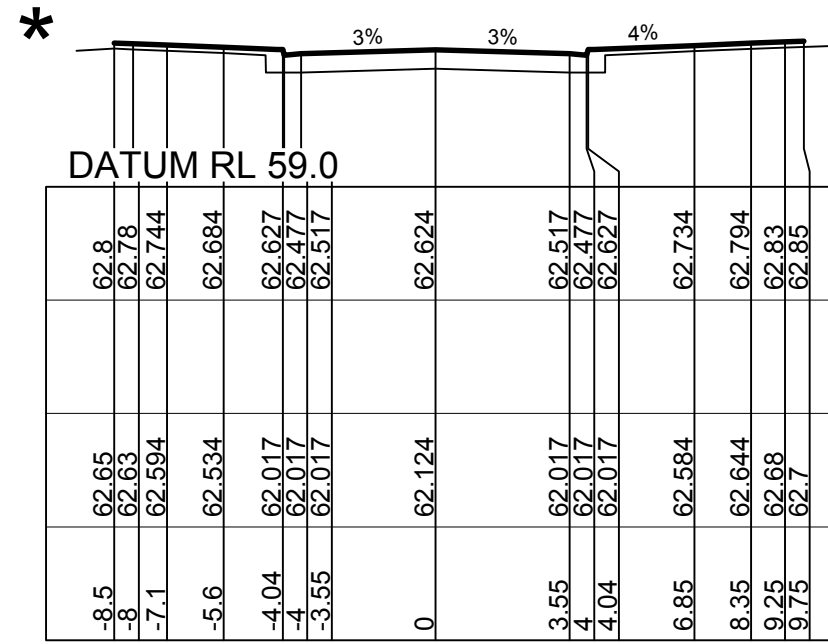
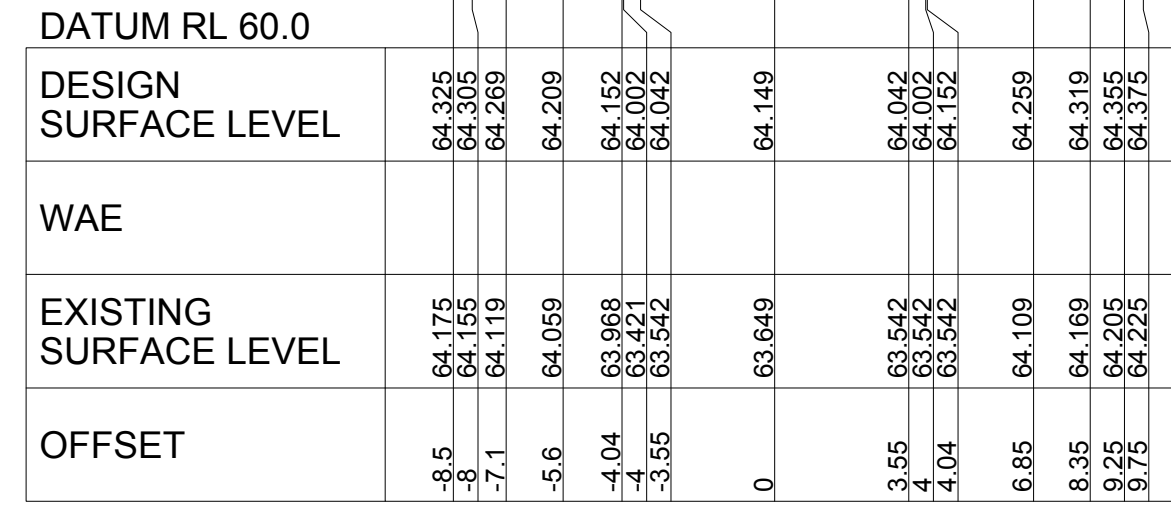
EXISTING SURFACE LEVELS ARE FROM
BULK EARTHWORKS PACKAGE
(REFER PLANS PREPARED BY
J WYNDHAM PRINCE APPROVED FOR
STAGE 5 - REF CC 14493)



D	CERTIFIER COMMENTS - REFERENCE REVISED	JT	JT	RT	MS
C	CERTIFIER COMMENTS - INTERFACE WITH O'CONNELL ST REVISED	JT	JT	RT	MS
B	O'CONNELL STREET INTERFACE AMENDMENTS	JT	JT	RT	MS
A	ISSUE FOR APPROVAL	JT	NM	RT	MS
	AMENDMENT	DES	DRN	CKD	APR
					DATE

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ORIGIN:

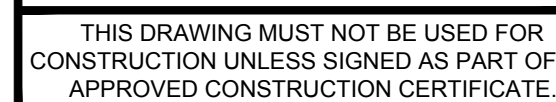


1:200 (AT A1)
1:400 (AT A3)

4 2 0 4 8 12 16 20

METRES

CLIENT:



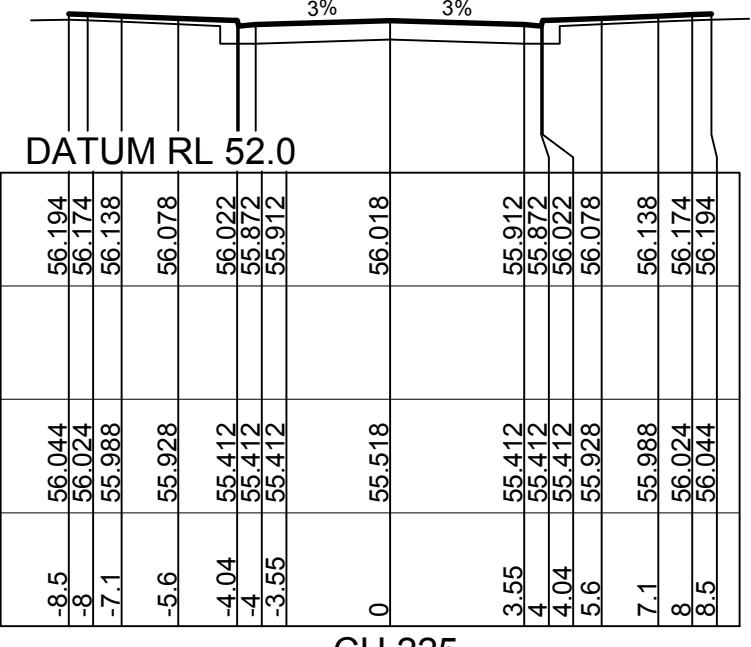
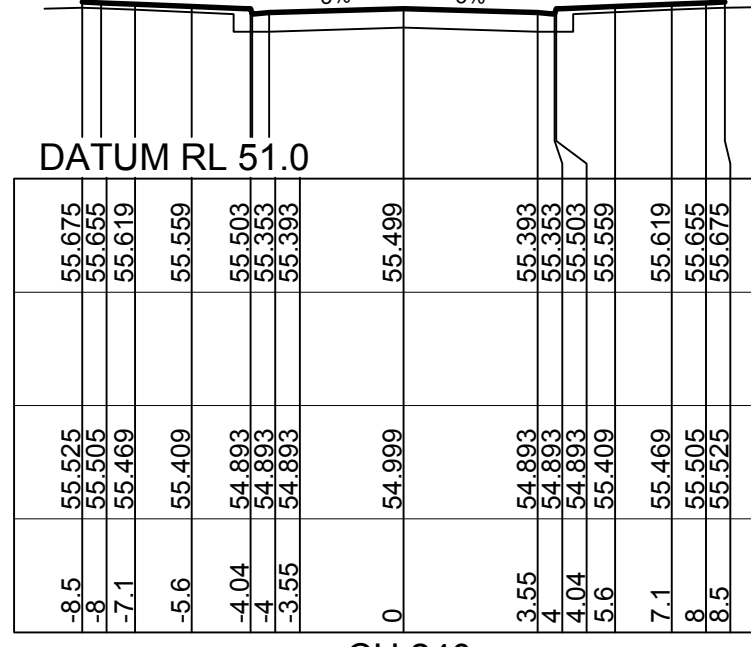
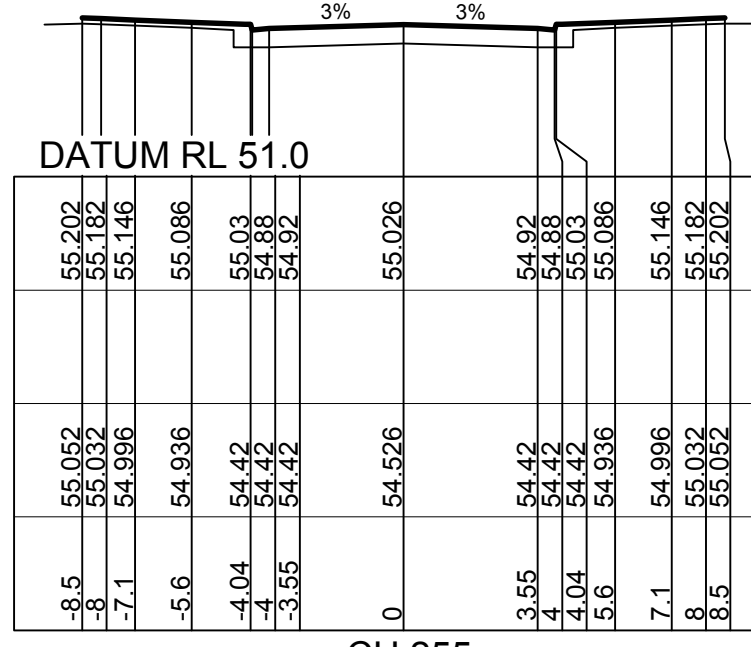
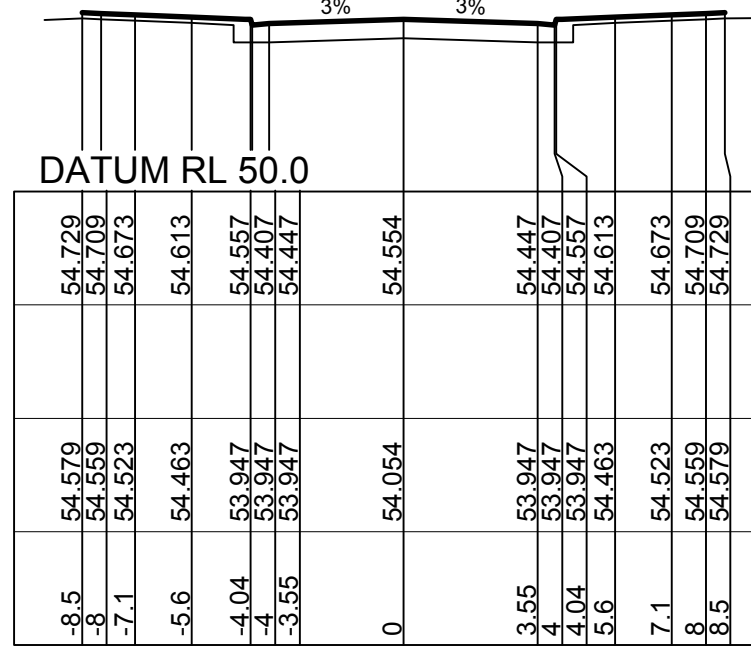
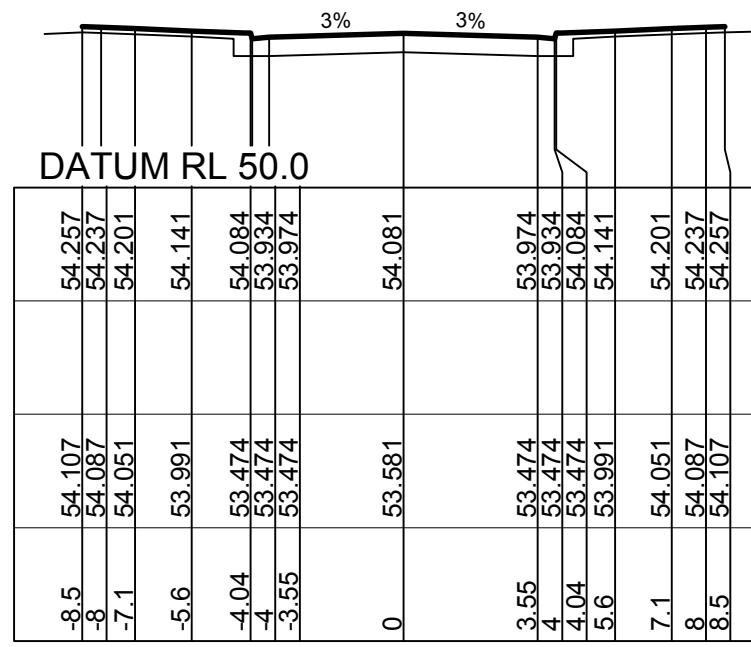
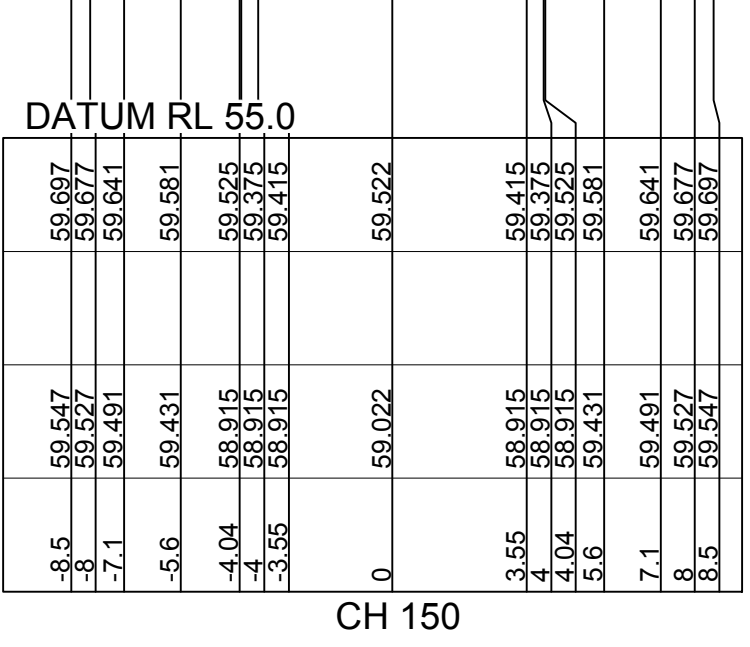
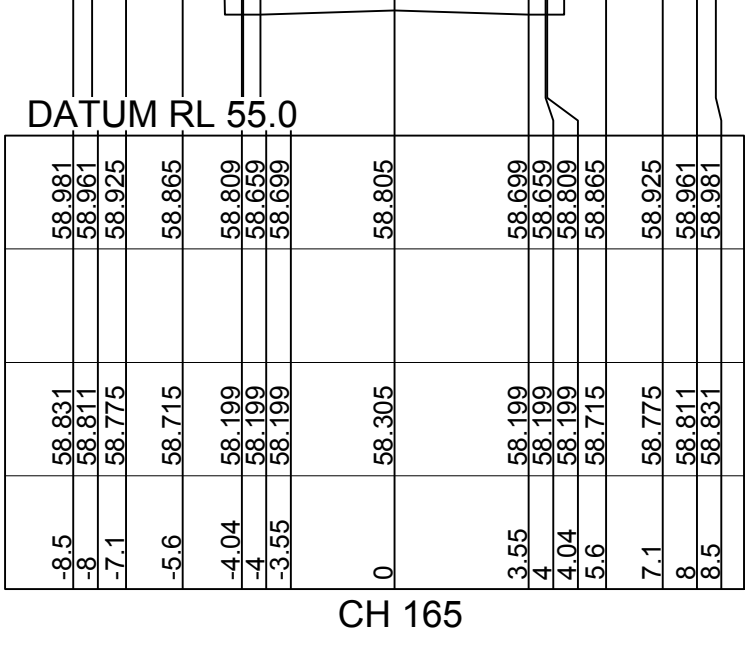
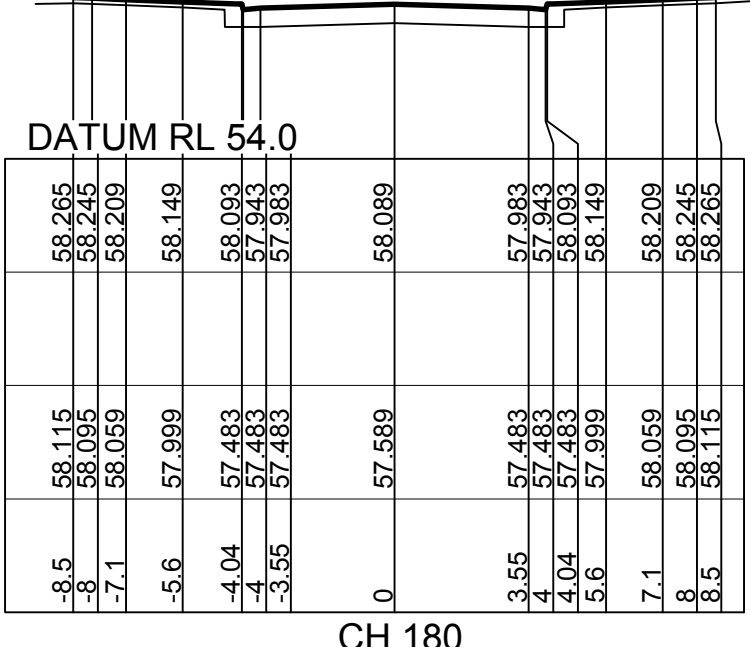
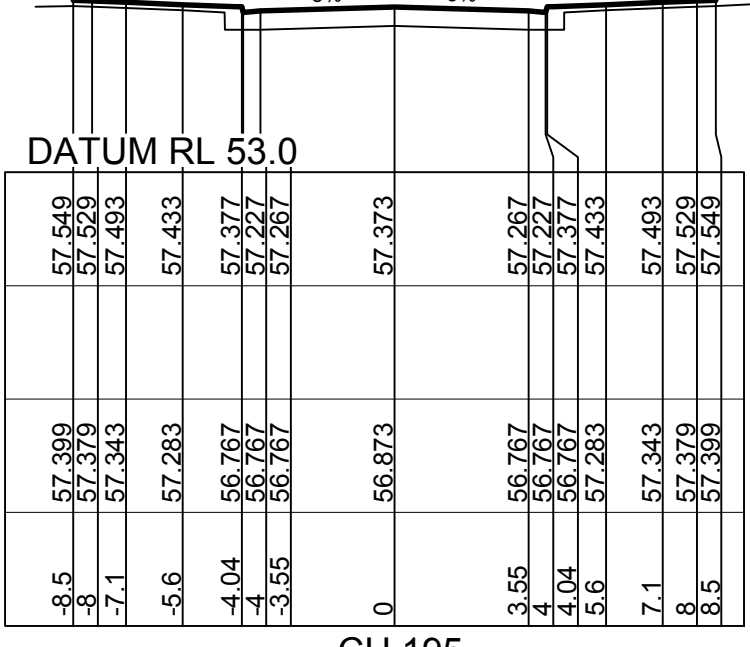
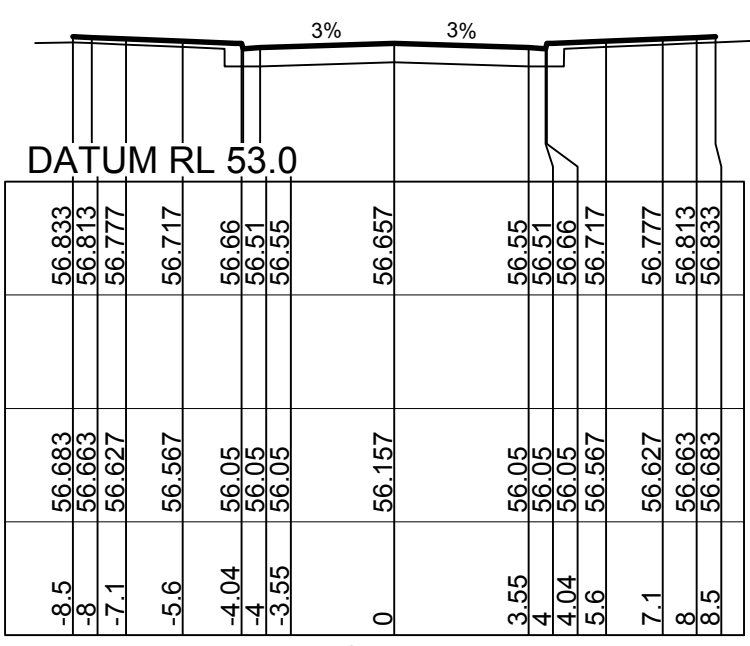
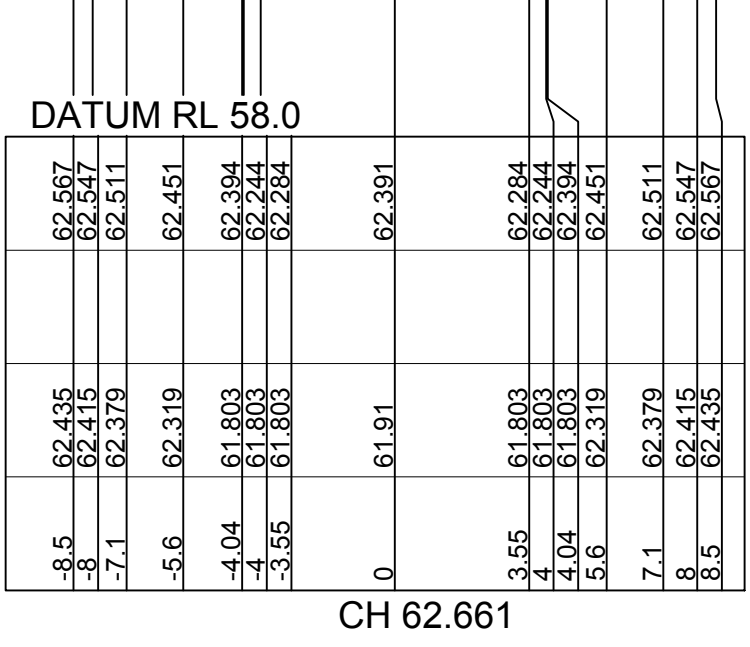
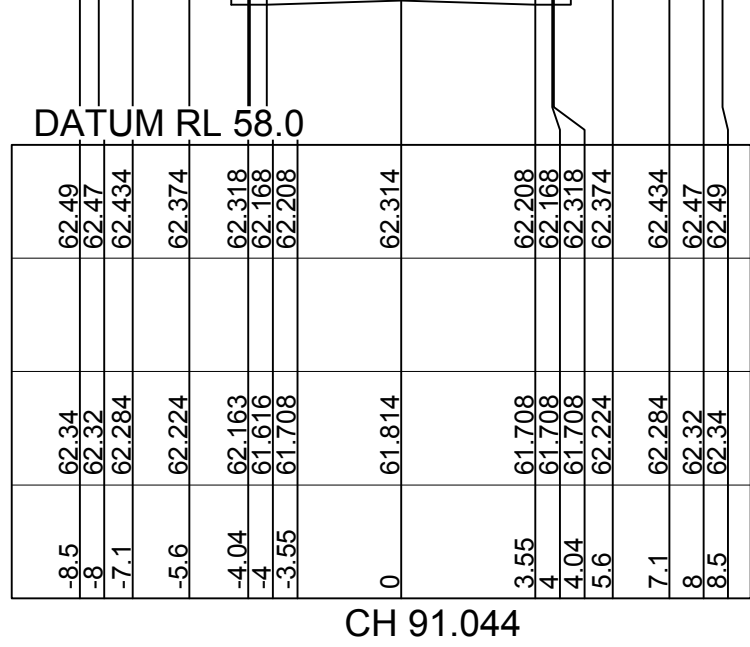
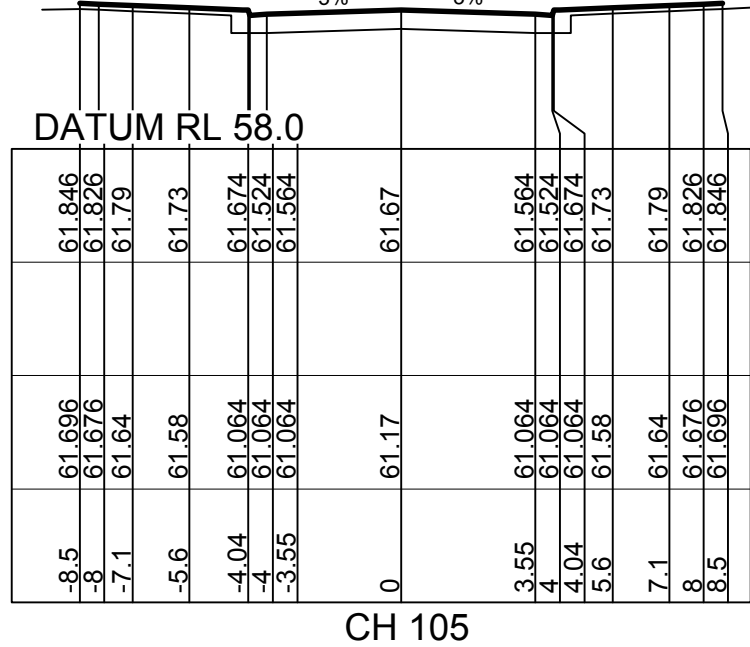
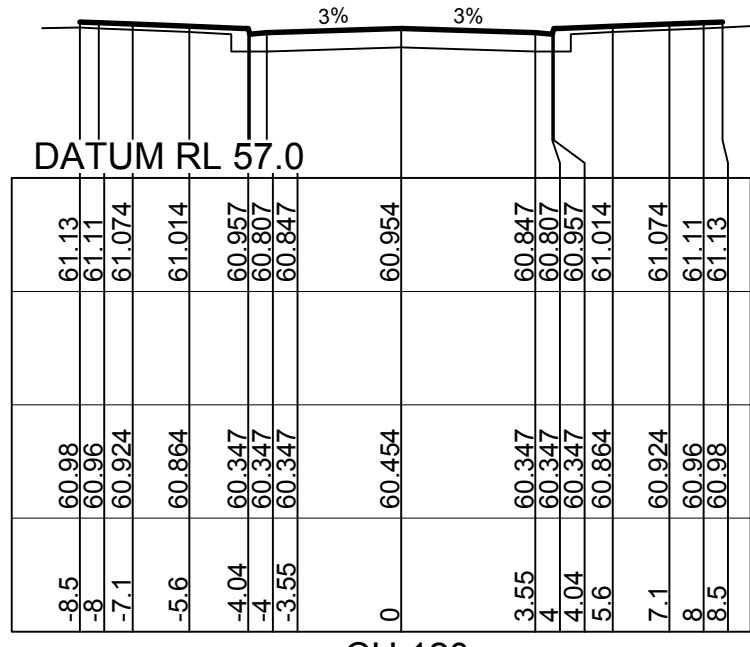
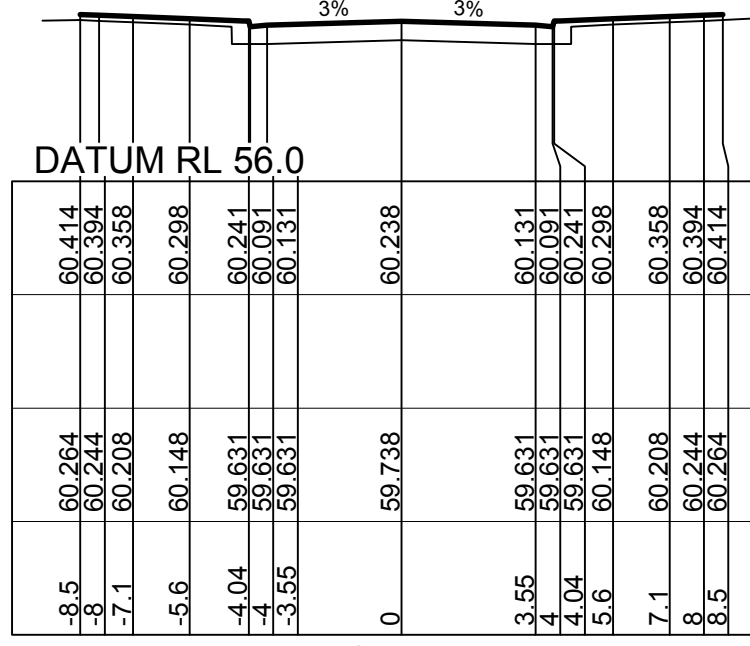
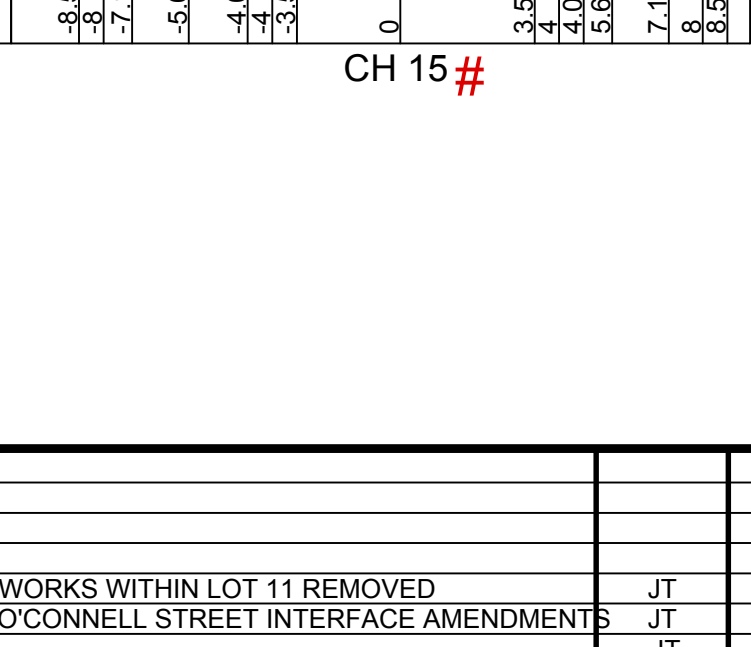
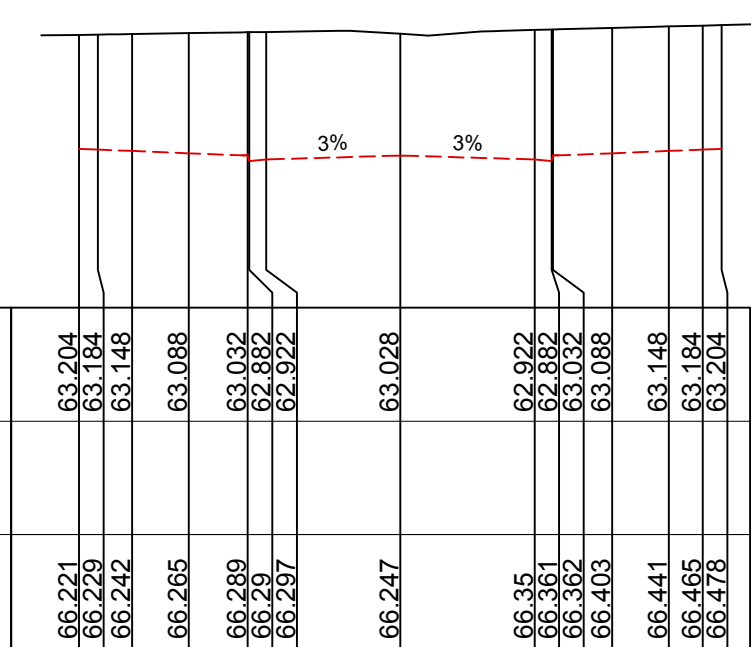
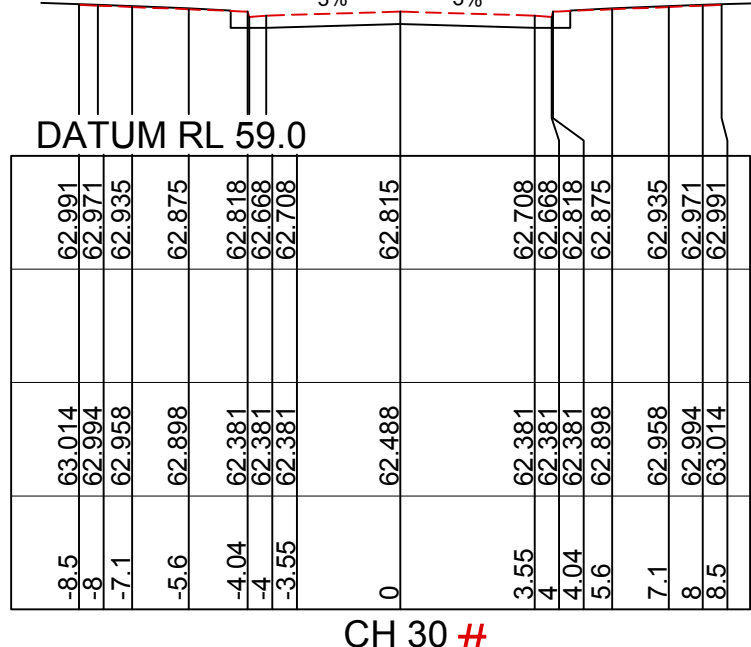
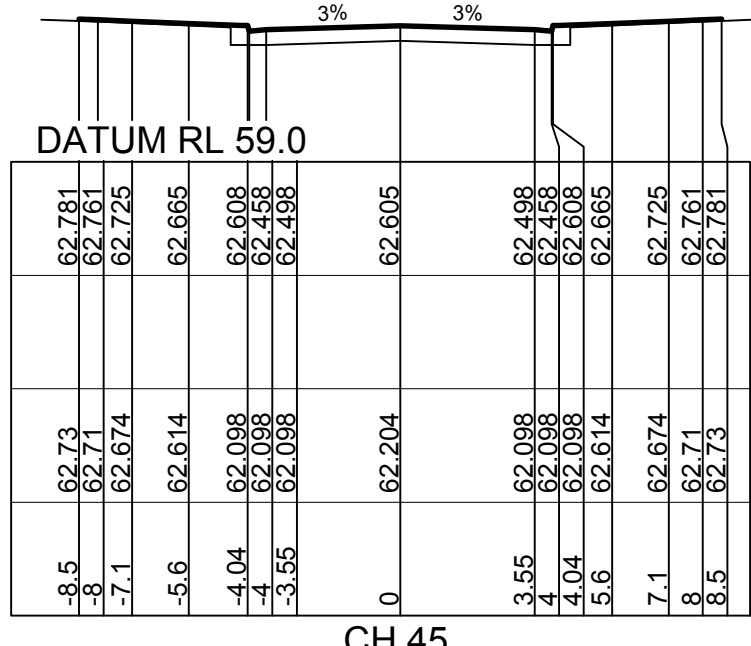
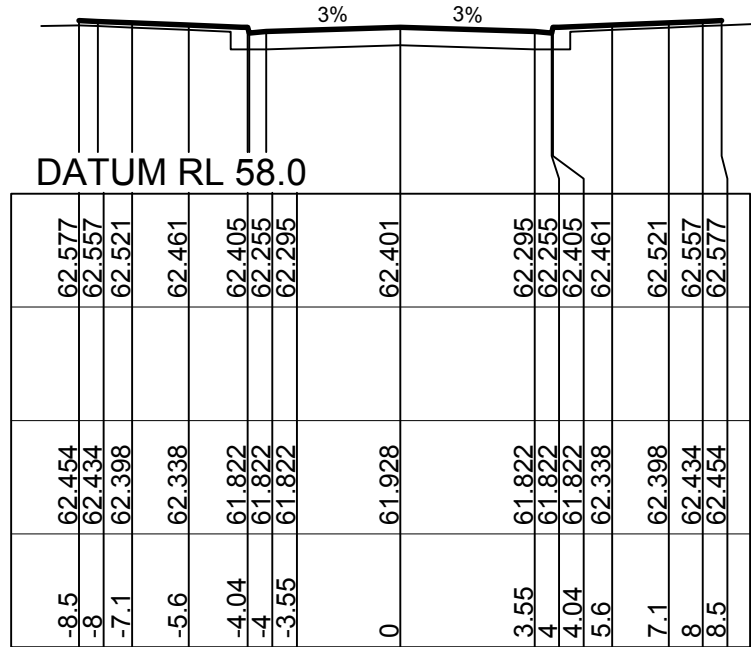
ROAD No.9 CROSS SECTIONS

PLAN No:		B
110358/CC510		
FILE No: 110358CC510		
SHEET SIZE:		A1 ORIGINAL

FUTURE CONSTRUCTION PART OF A SEPARATE CC APPROVAL

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DESIGN SURFACE LEVEL	63.204 63.204 63.148 63.148
WAE	
EXISTING SURFACE LEVEL	66.221 66.221 66.242 66.242
OFFSET	66.265 66.265 66.269 66.269
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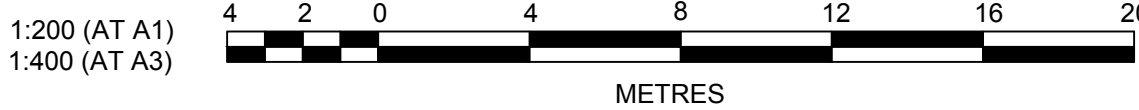
NOTE
EXISTING SURFACE LEVELS ARE FROM
BULK EARTHWORKS PACKAGE
(REFER PLANS PREPARED BY
J WYNDHAM PRINCE APPROVED FOR
STAGE 5 - REF CC 14493)

* NOTE
FOR LOT GRADING
REFER TO PLANS CC504 - CC505

FUTURE CONSTRUCTION PART
OF A SEPARATE CC APPROVAL



These plans are referred to in
certificate no **14776** approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPB 2416
Categories: B1,C1,C2,C3,C4,C6,C15 & D1
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CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS
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AZIMUTH:
M.G.A
DATUM:
A.H.D
ORIGIN:



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CADDENS HILL
STAGE 5

ROAD No.11 CROSS SECTIONS

PLAN No:
110358/CC511
FILE No: 110358CC511
SHEET SIZE: A1 ORIGINAL

NOTE

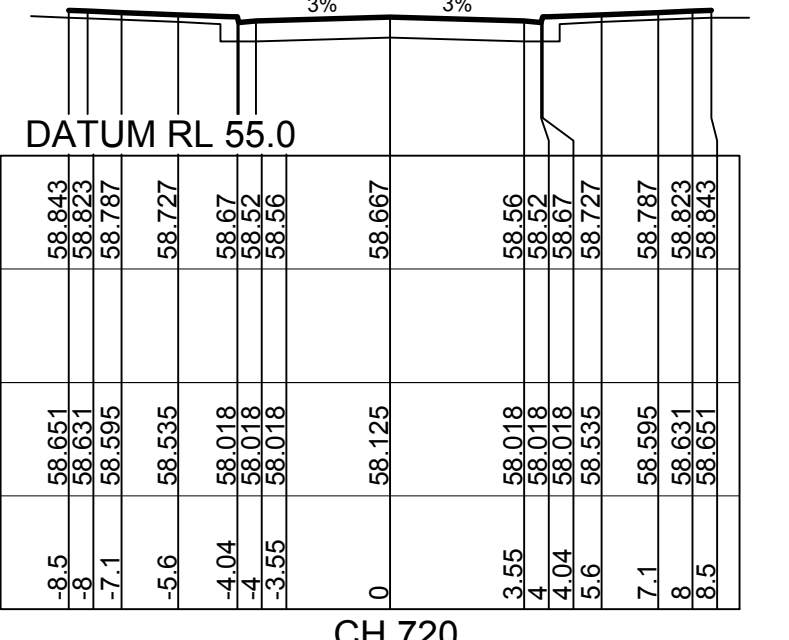
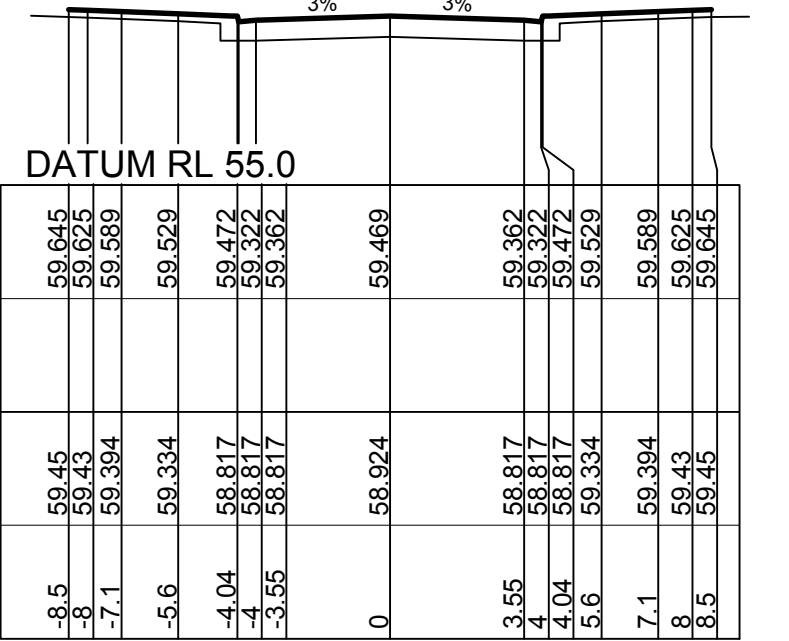
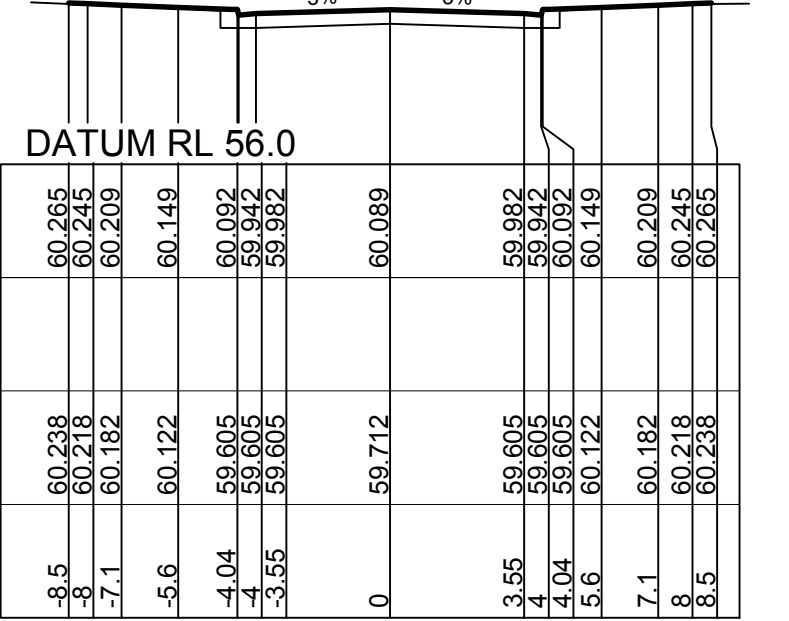
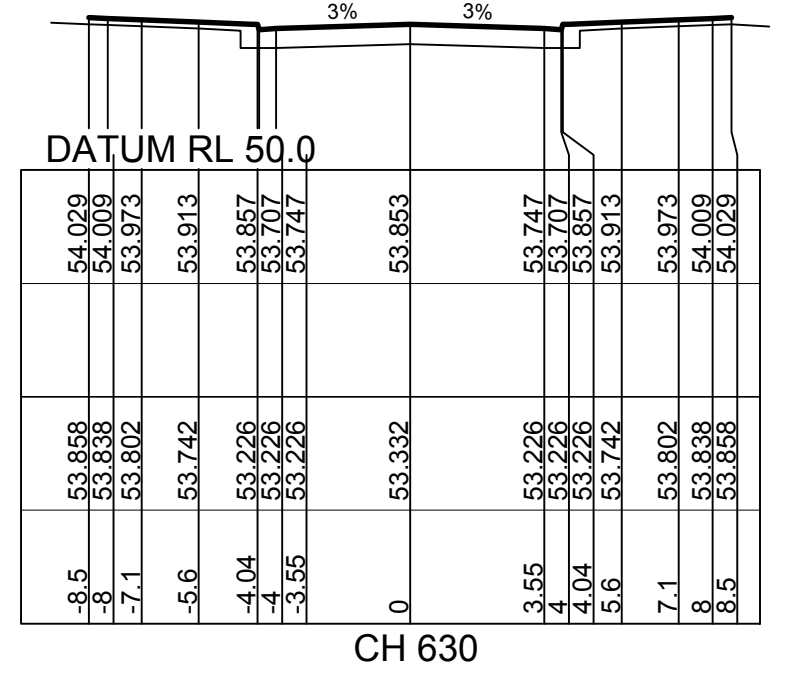
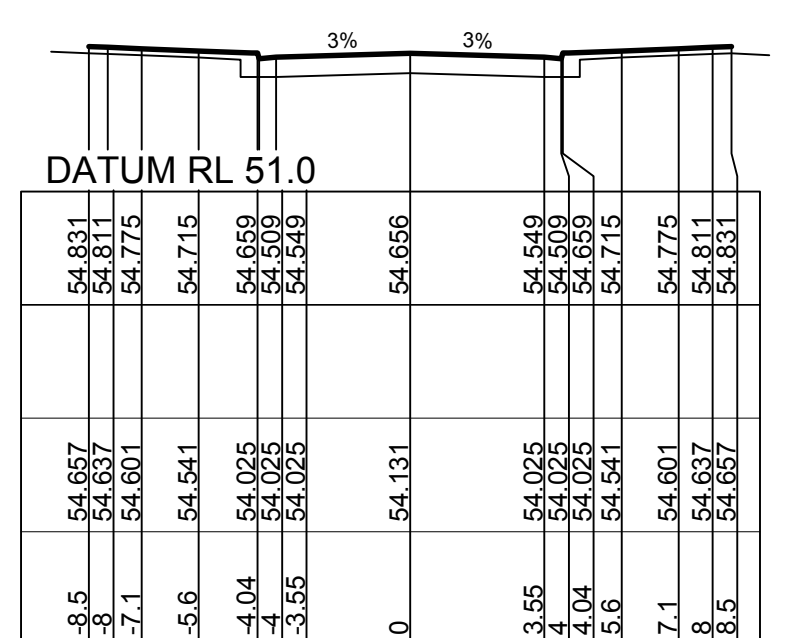
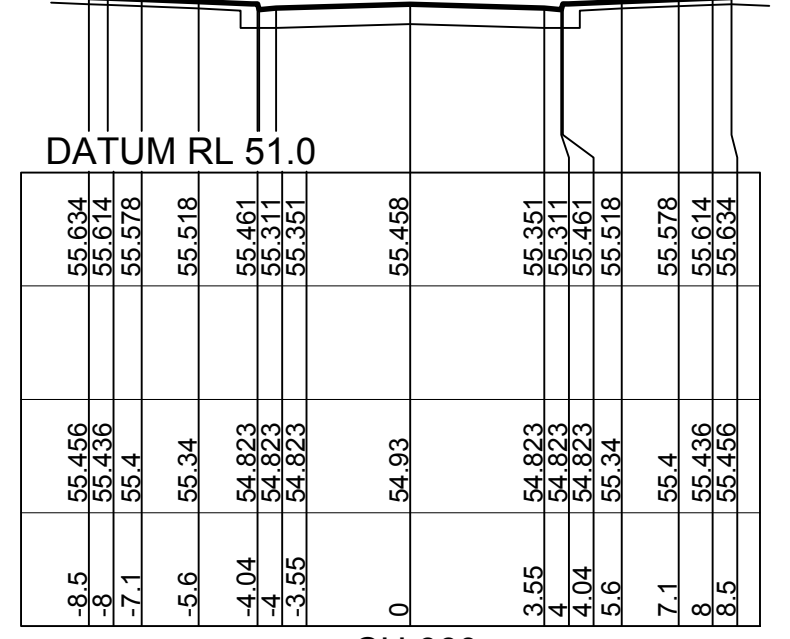
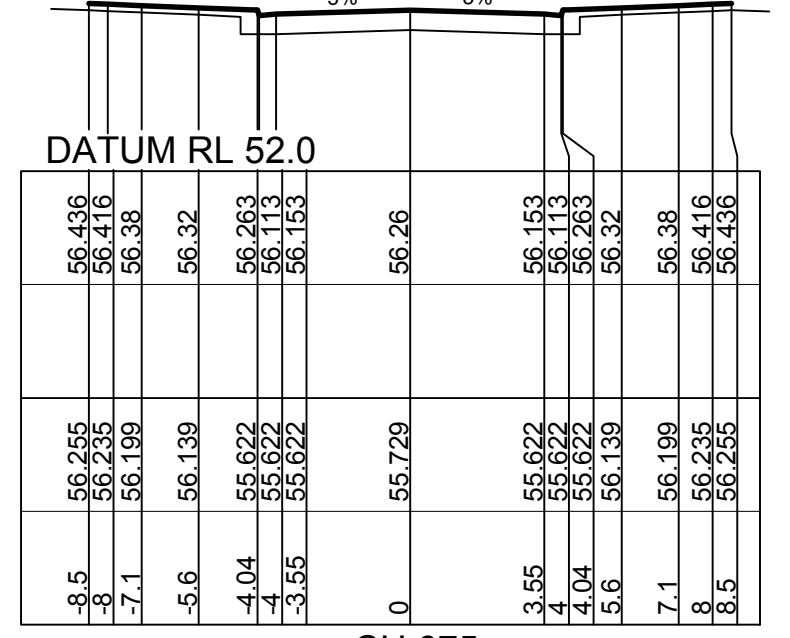
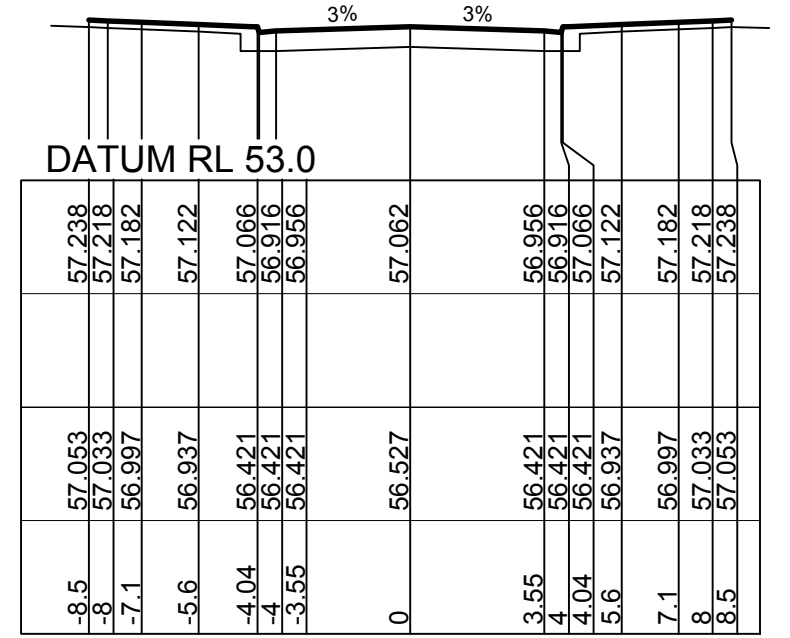
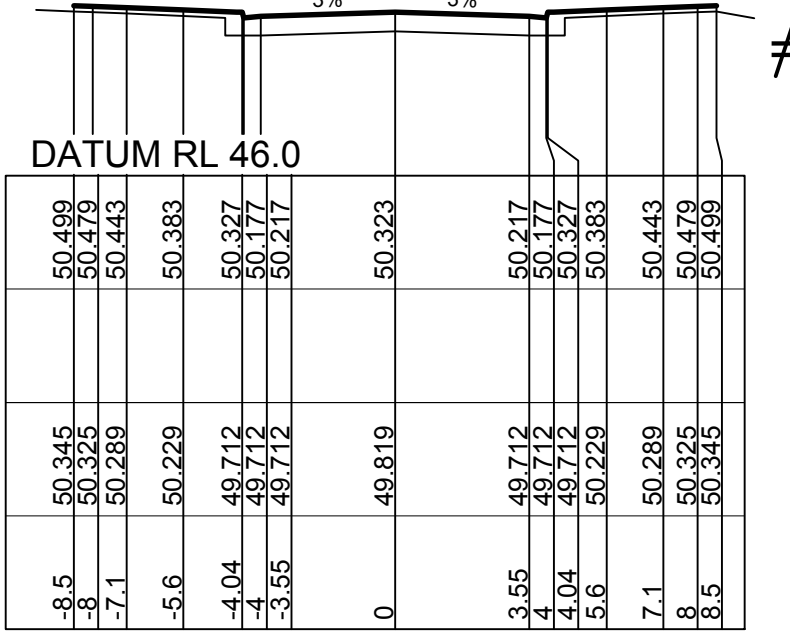
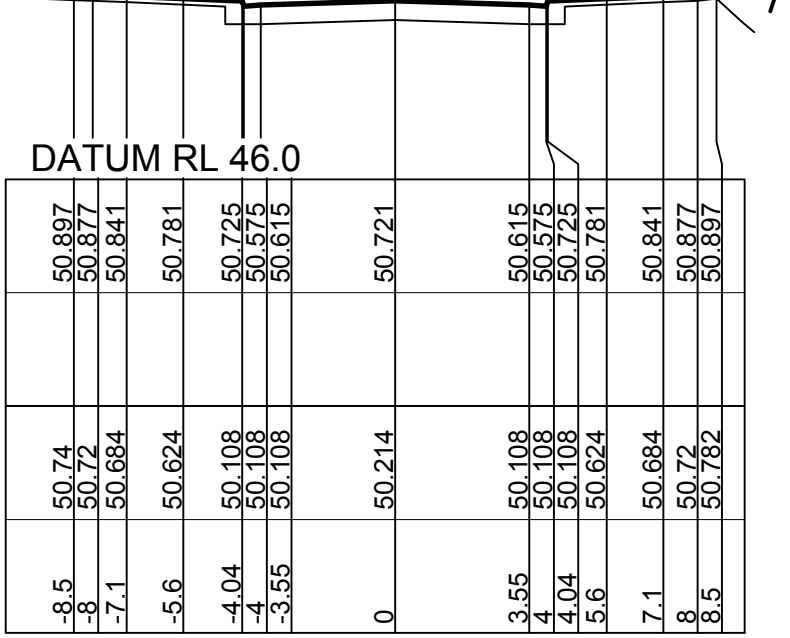
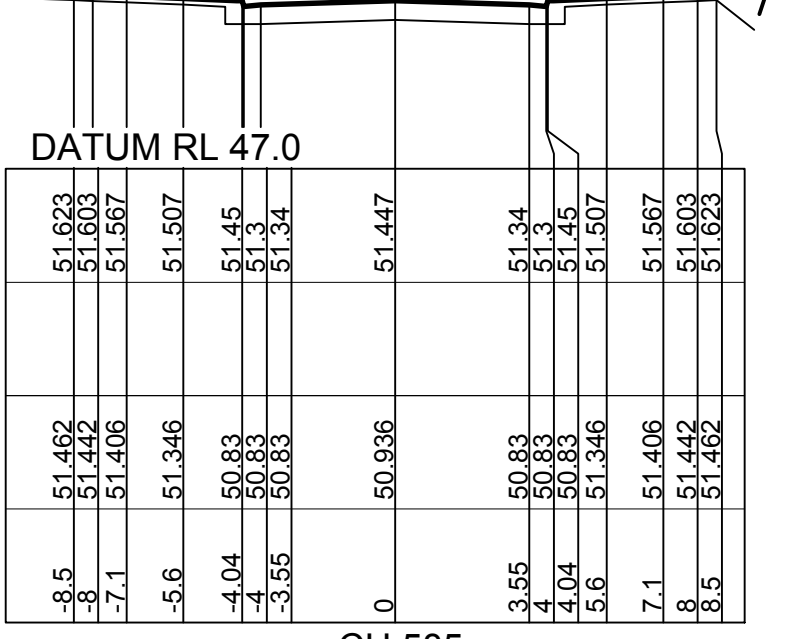
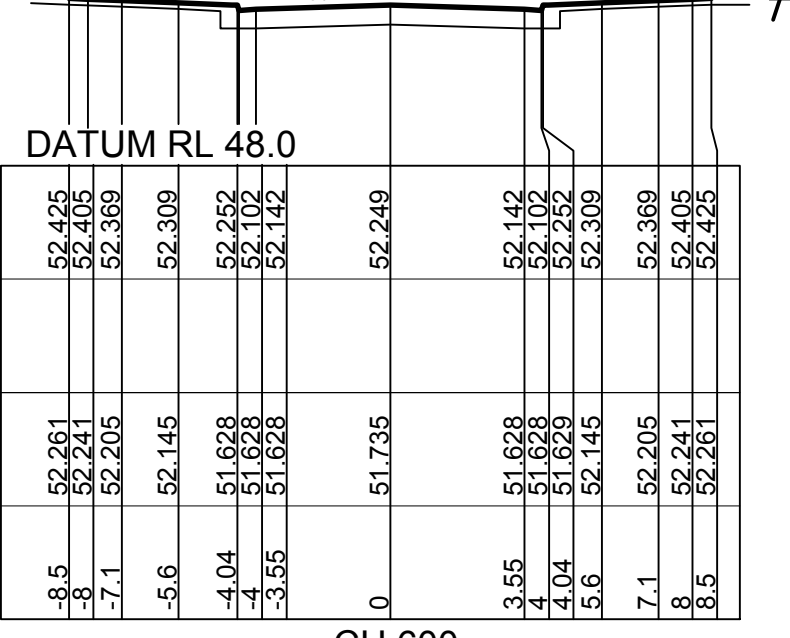
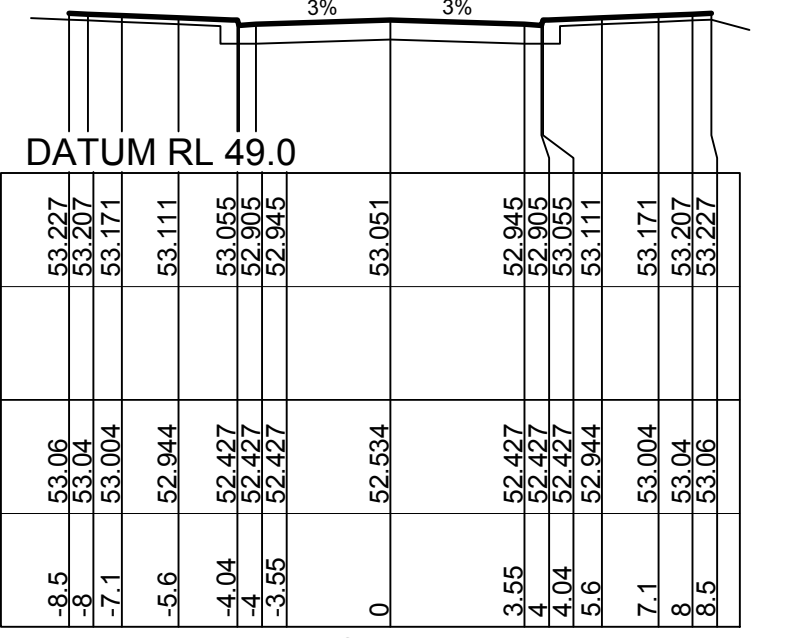
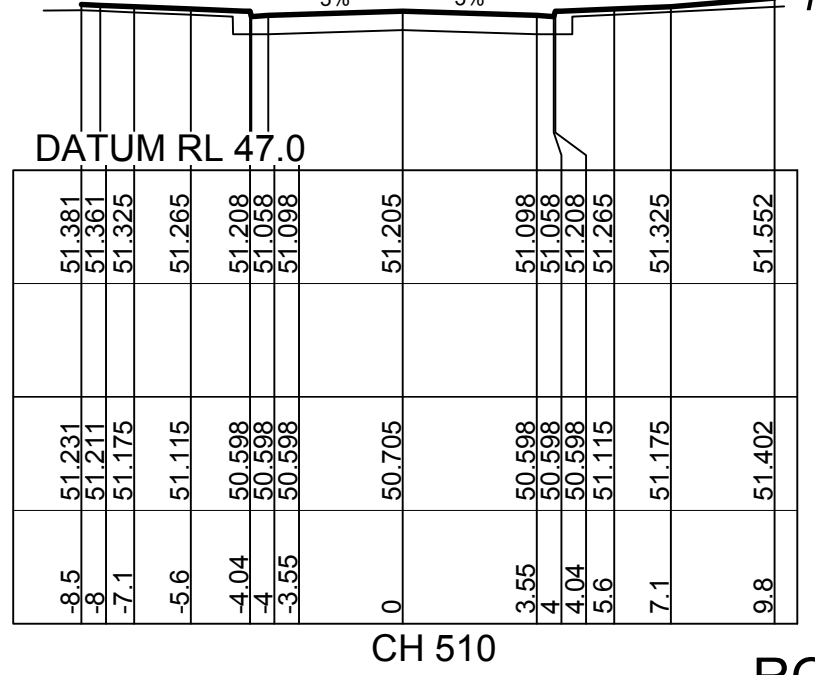
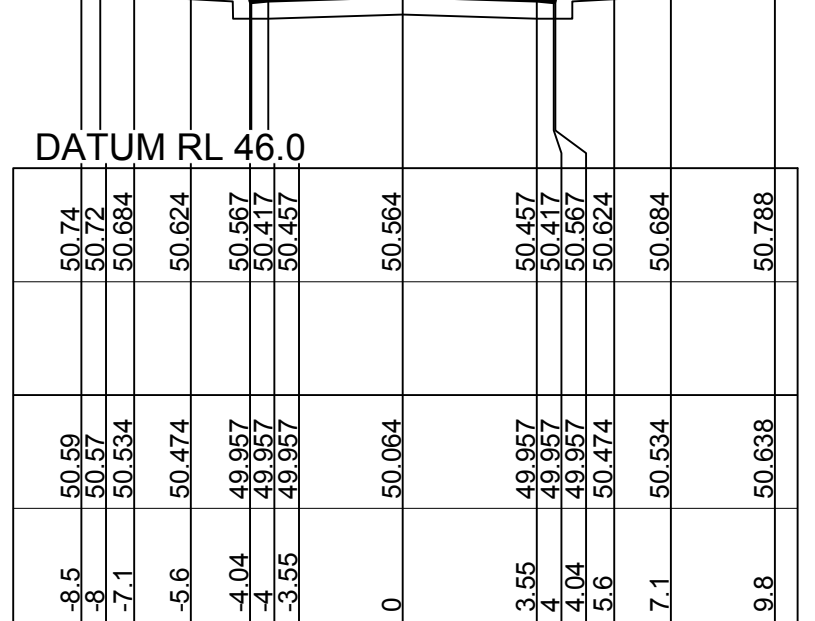
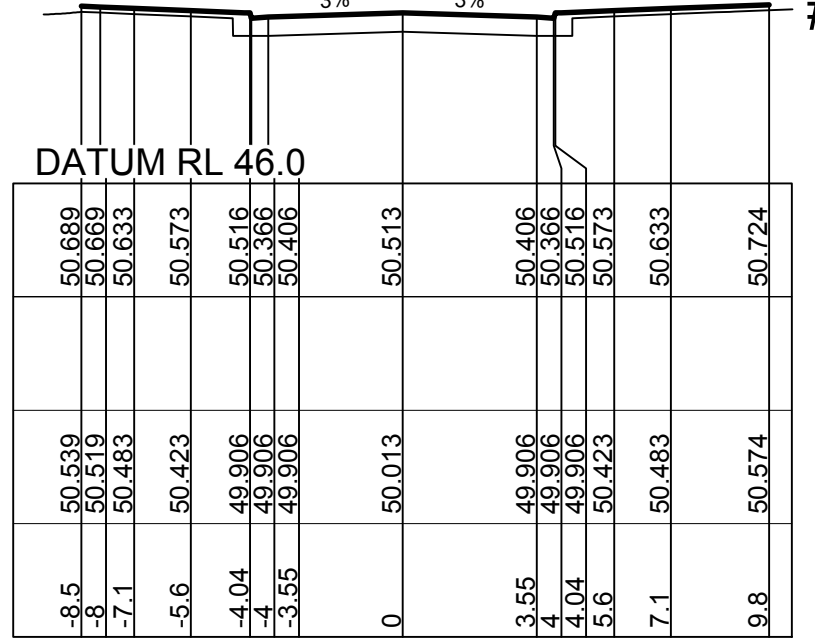
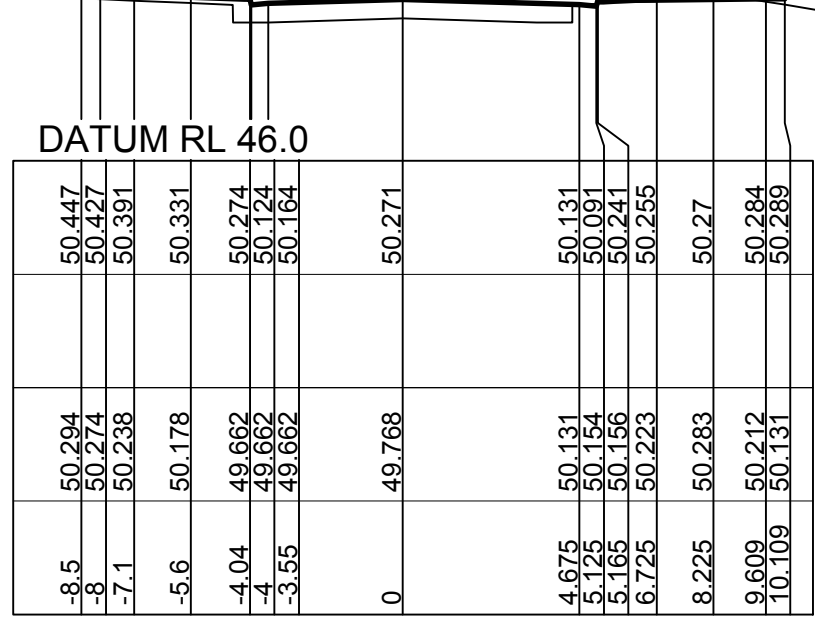
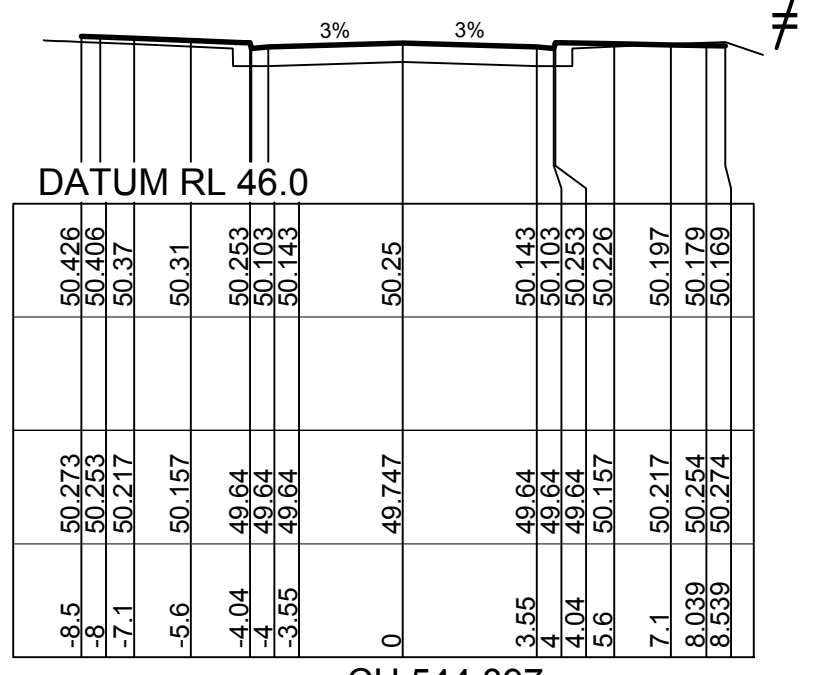
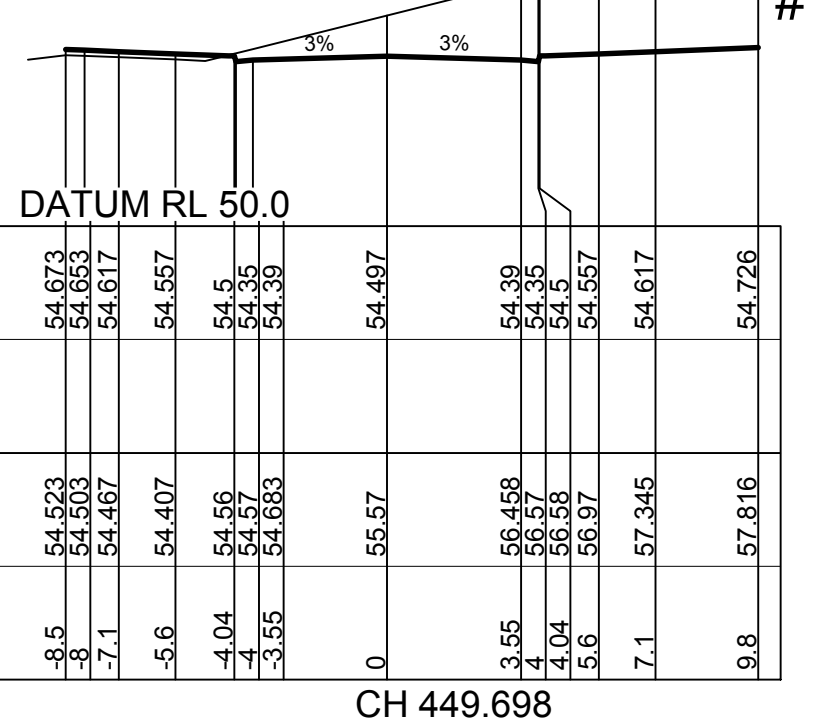
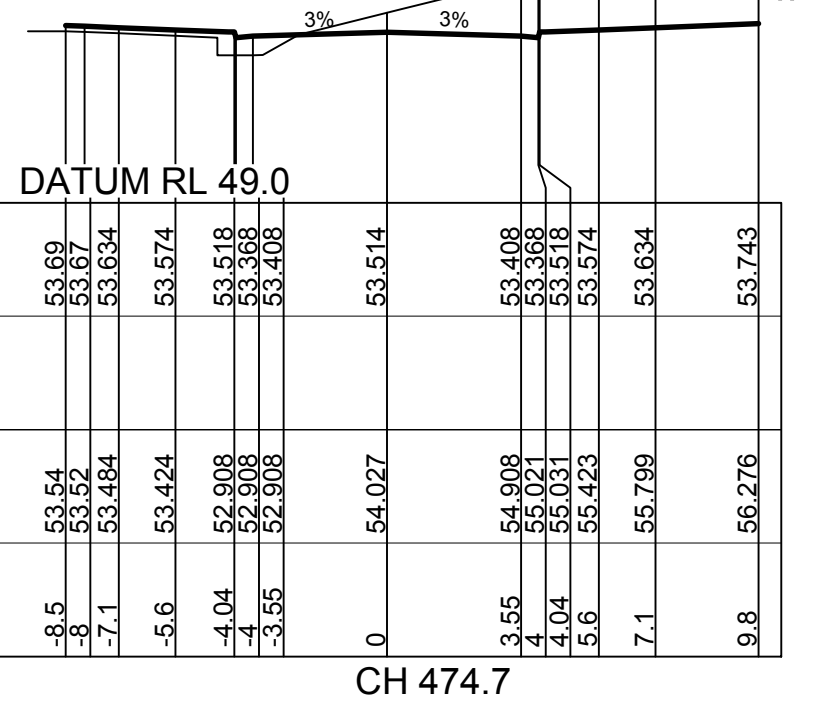
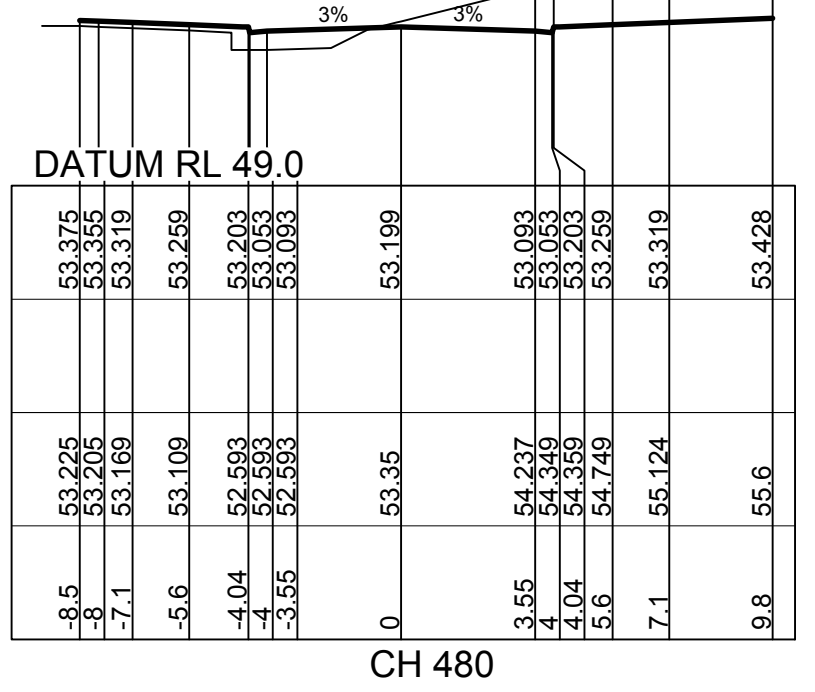
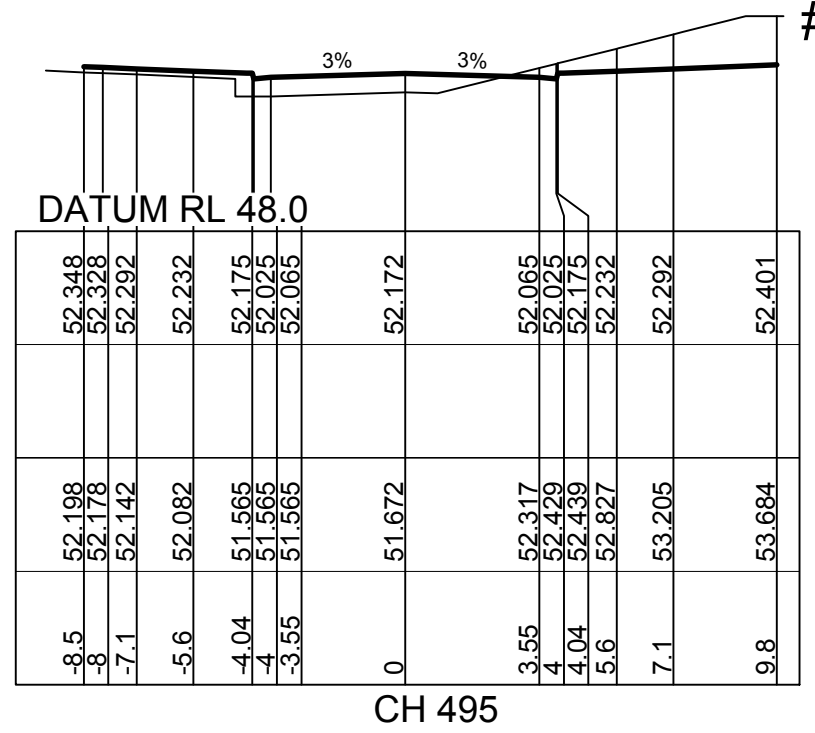
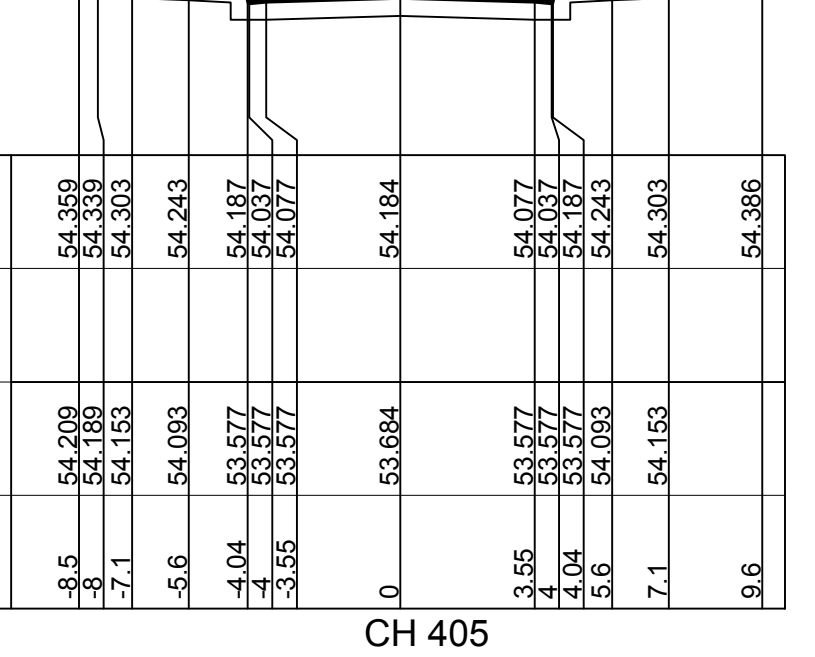
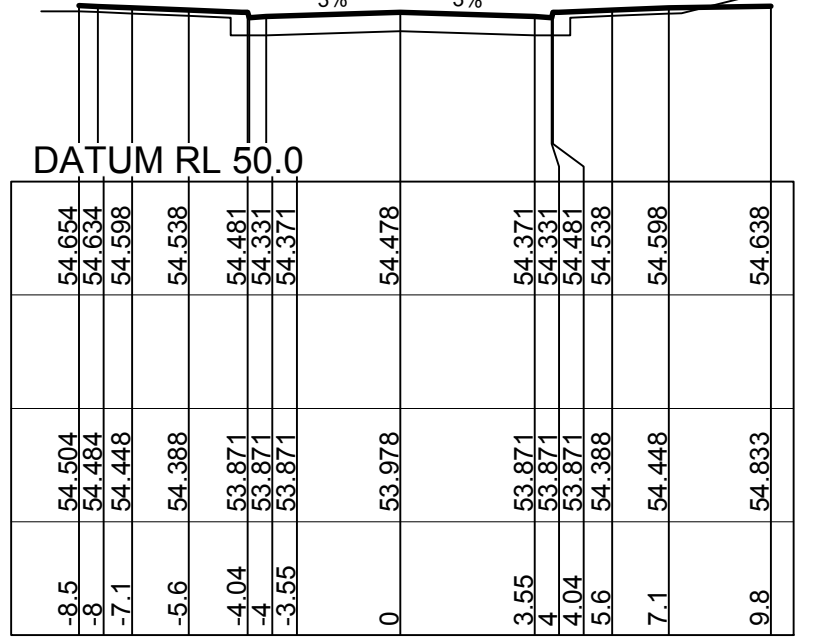
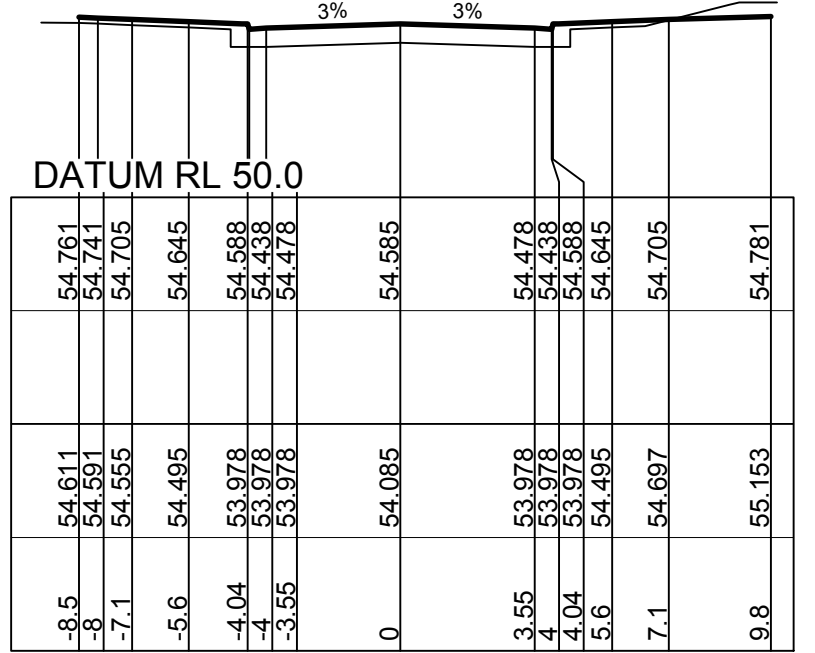
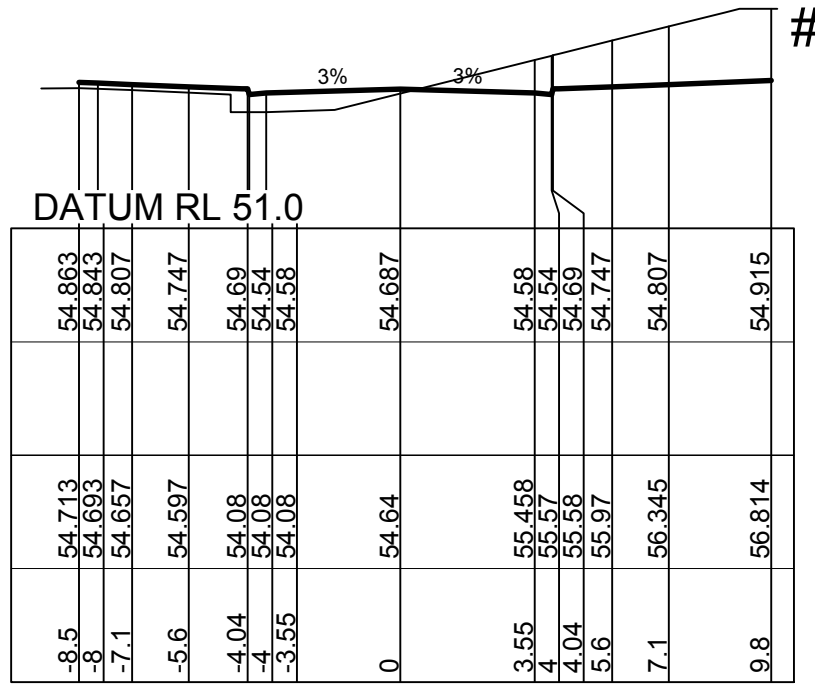
EXISTING SURFACE LEVELS ARE FROM
BULK EARTHWORKS PACKAGE
(REFER PLANS PREPARED BY
J WYNDHAM PRINCE APPROVED FOR
STAGE 5 - REF CC 14493)

* NOTE

FOR LOT GRADING
REFER TO PLANS CC504 - CC505

DENOTES RETAINING WALL

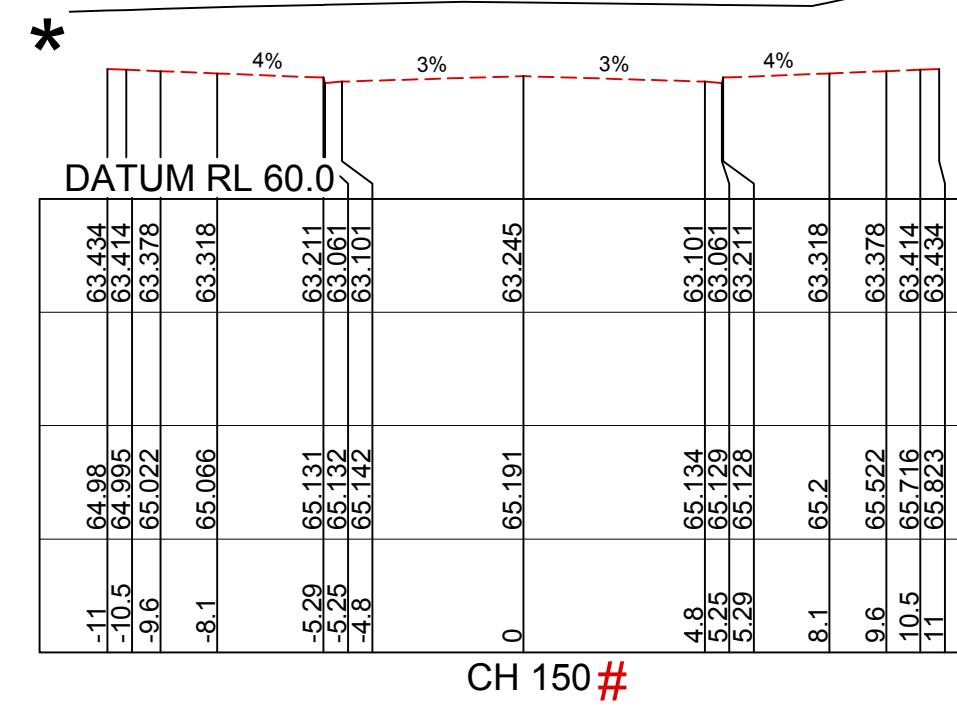
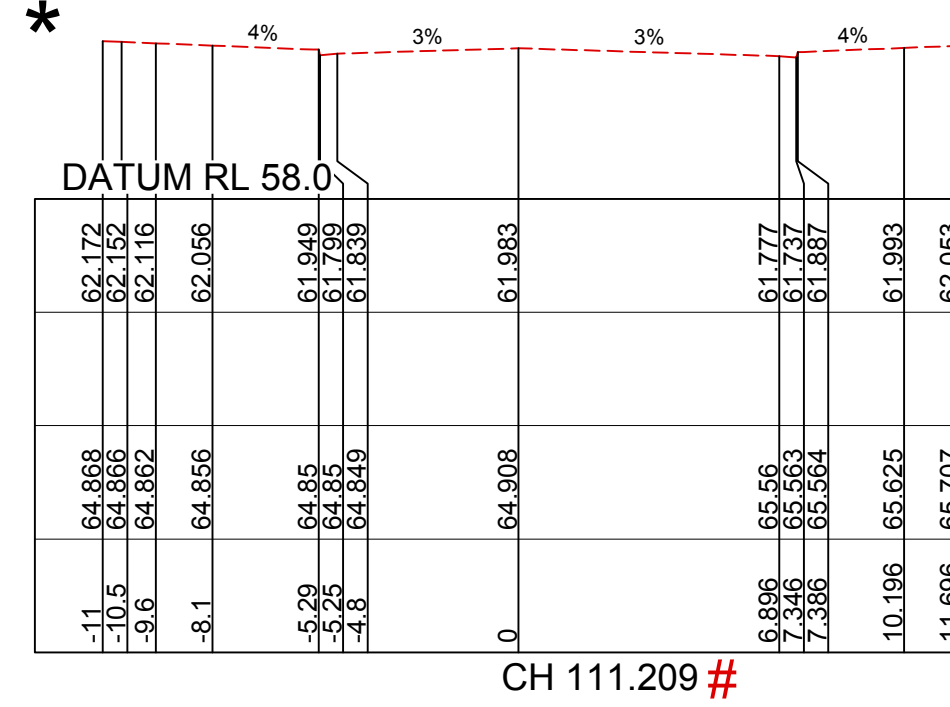
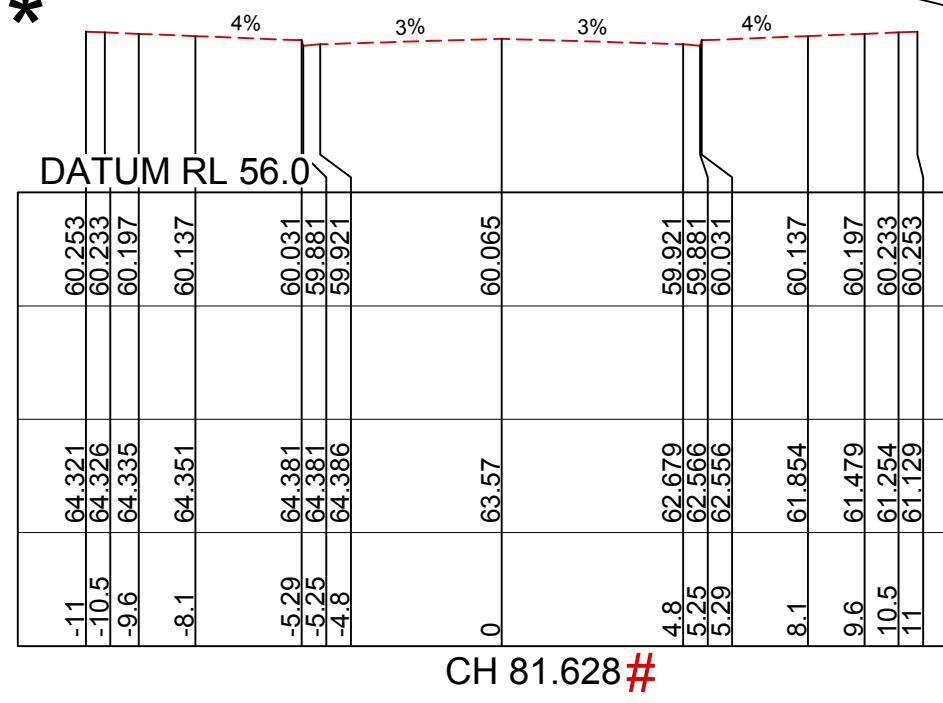
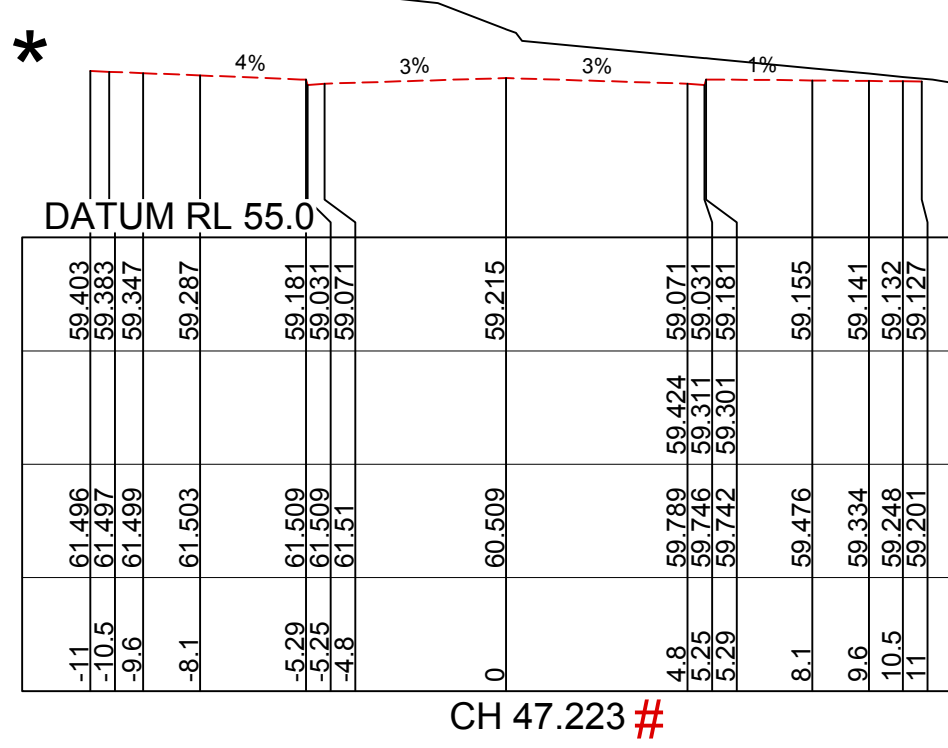
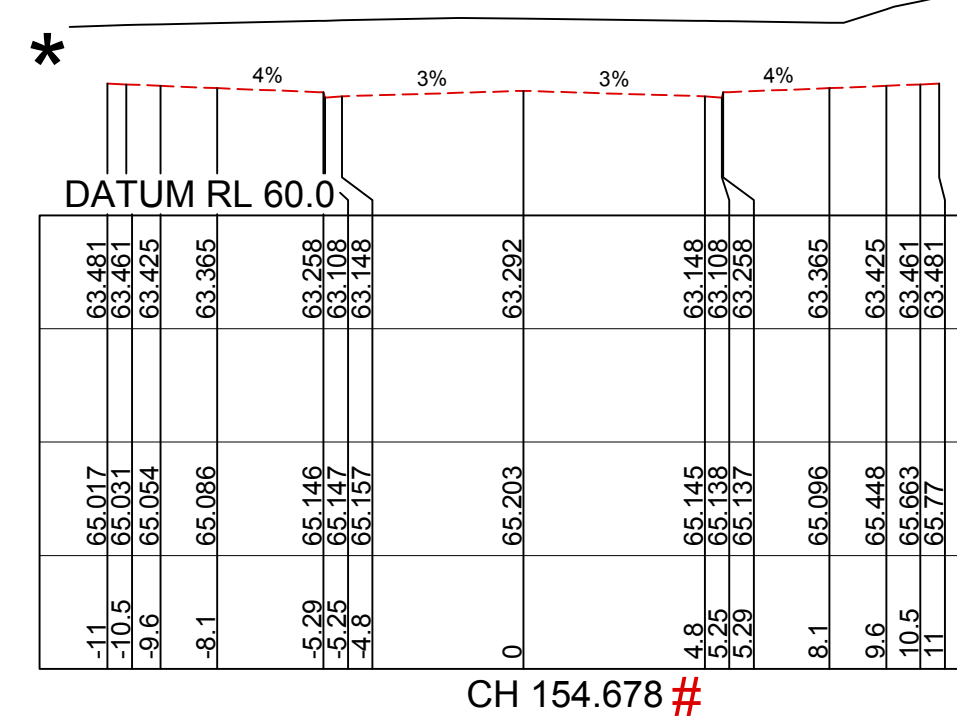
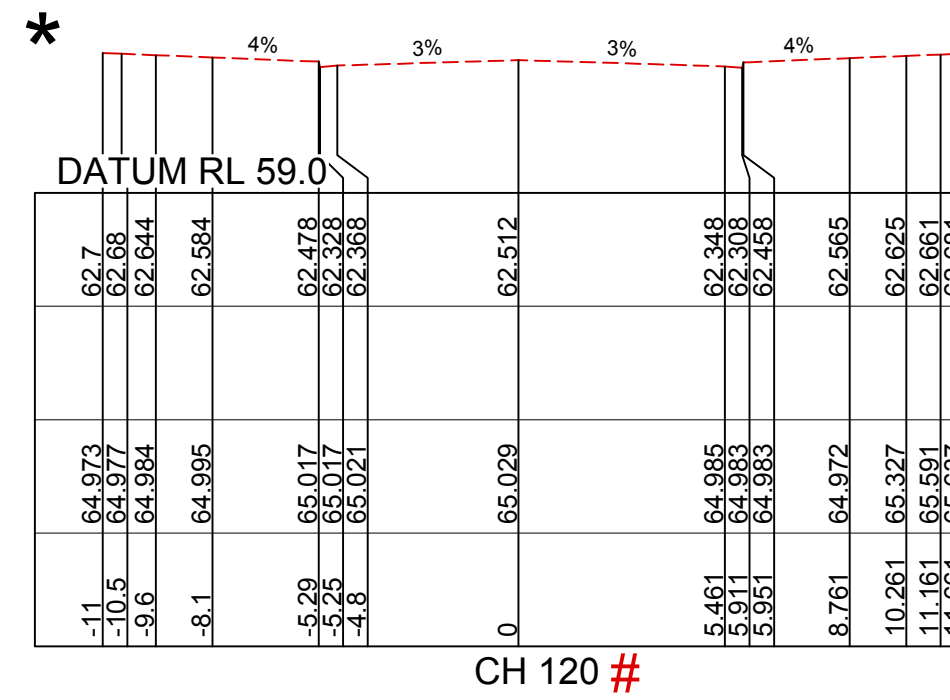
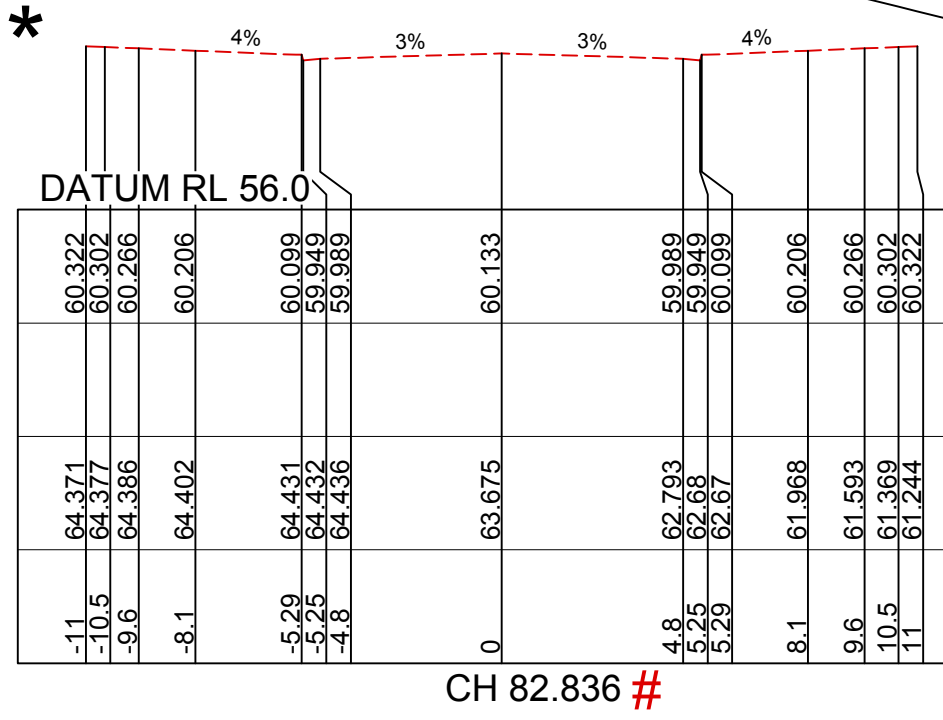
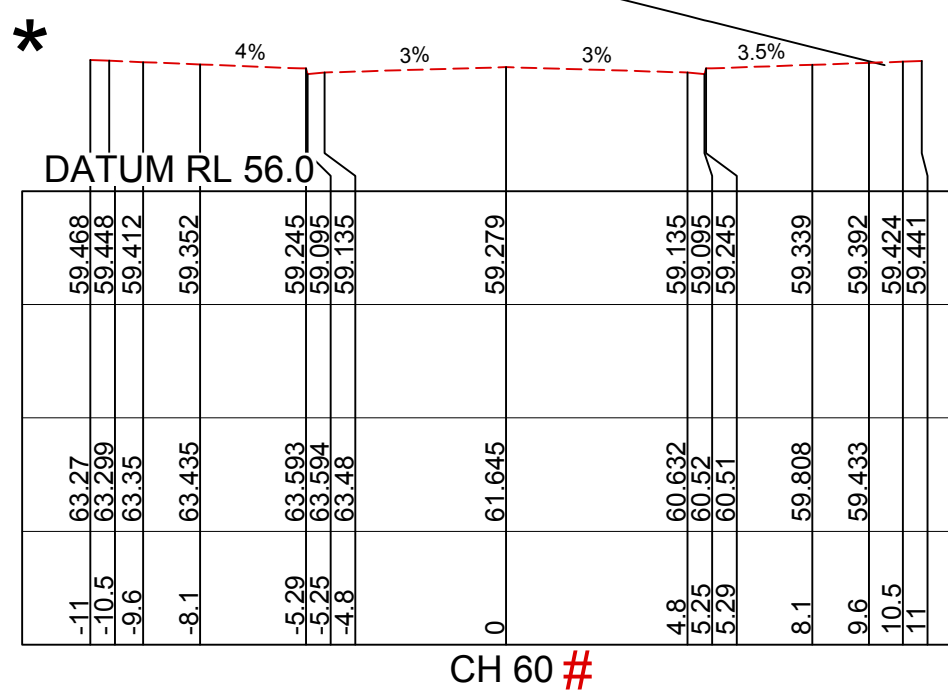
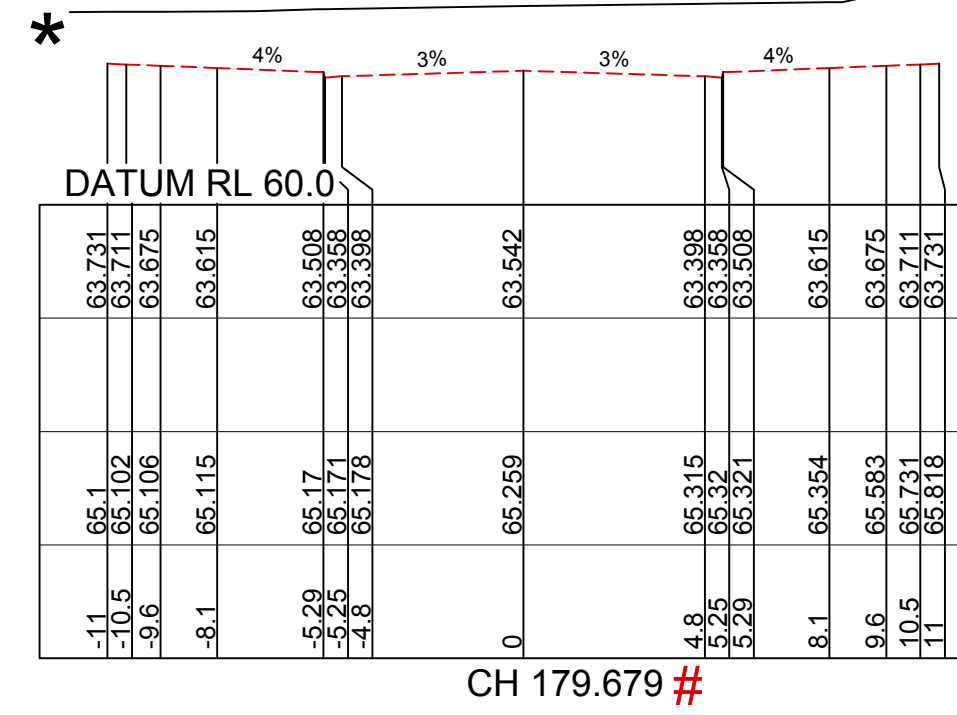
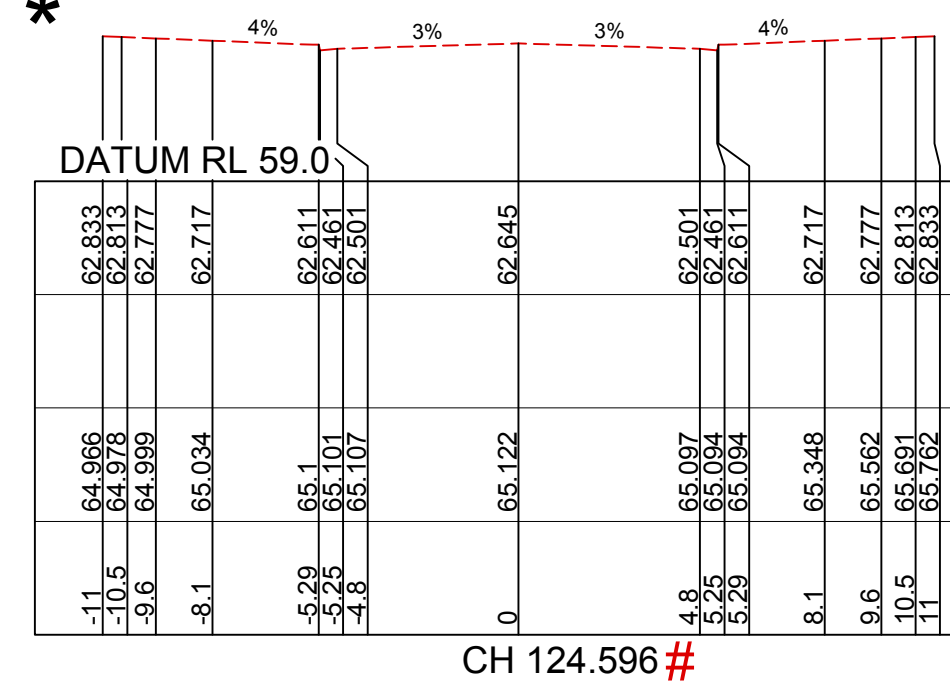
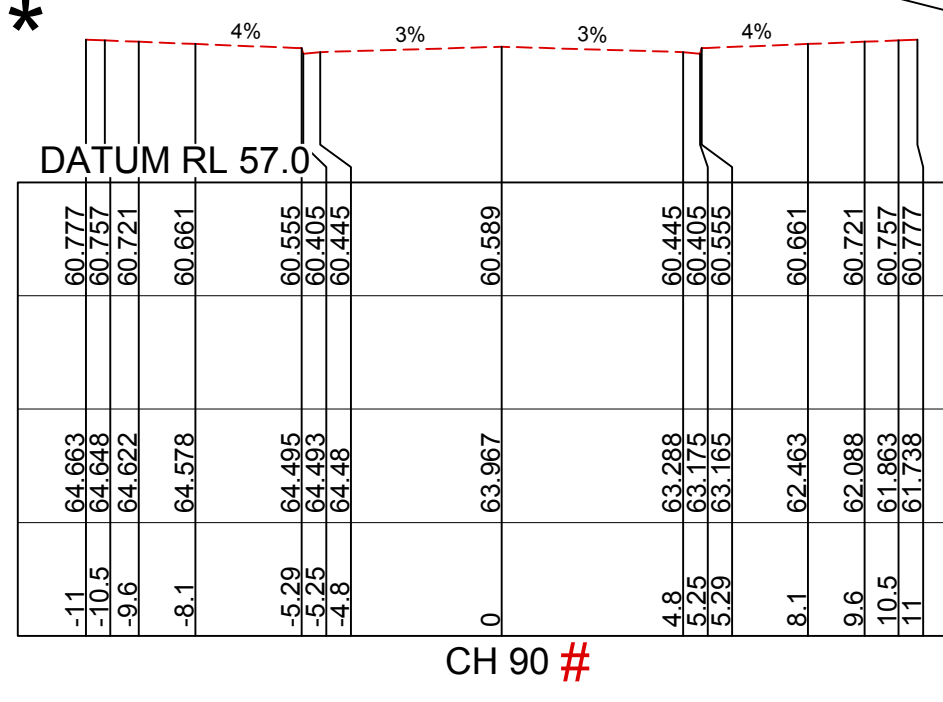
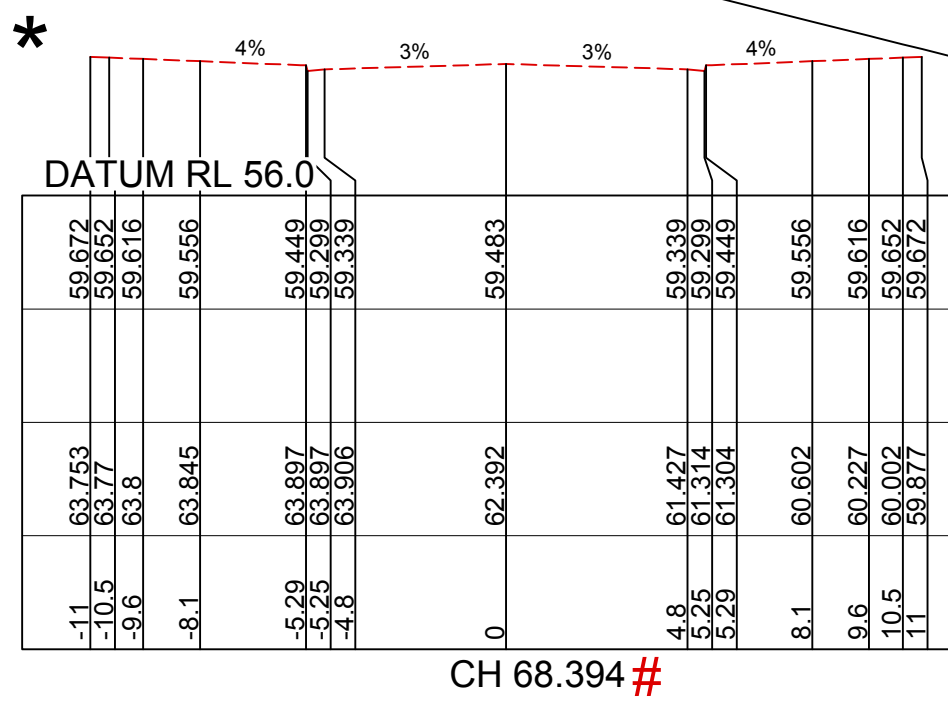
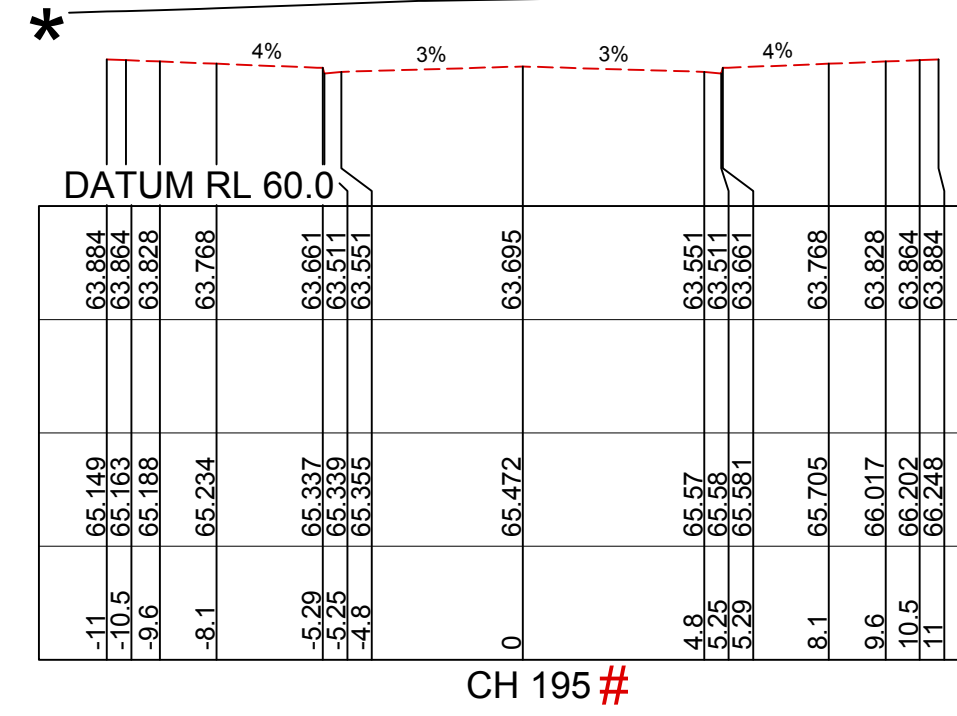
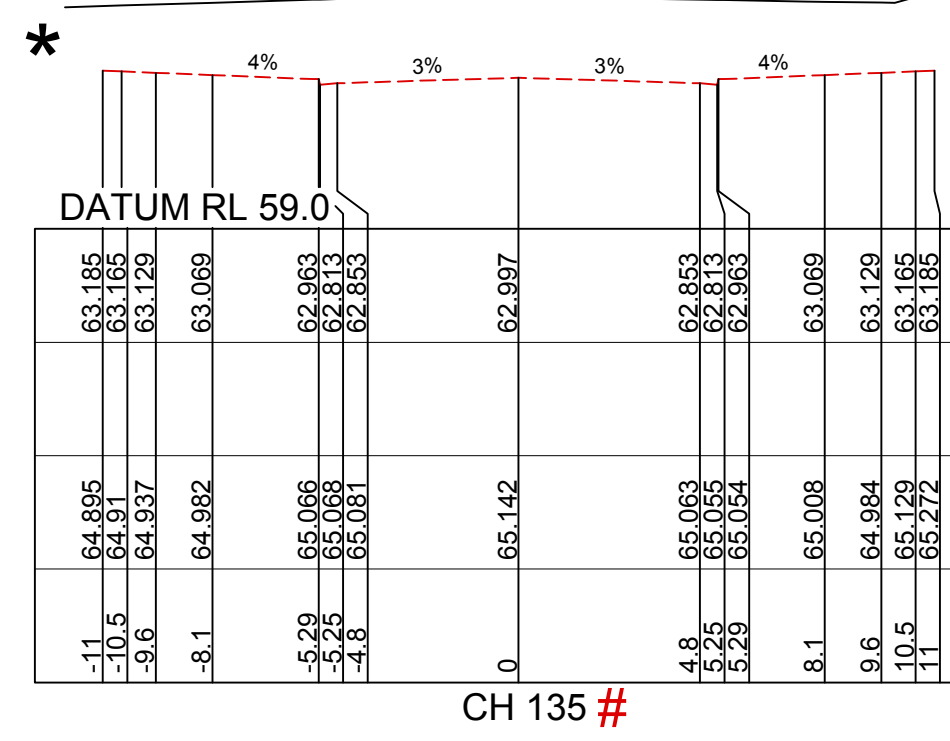
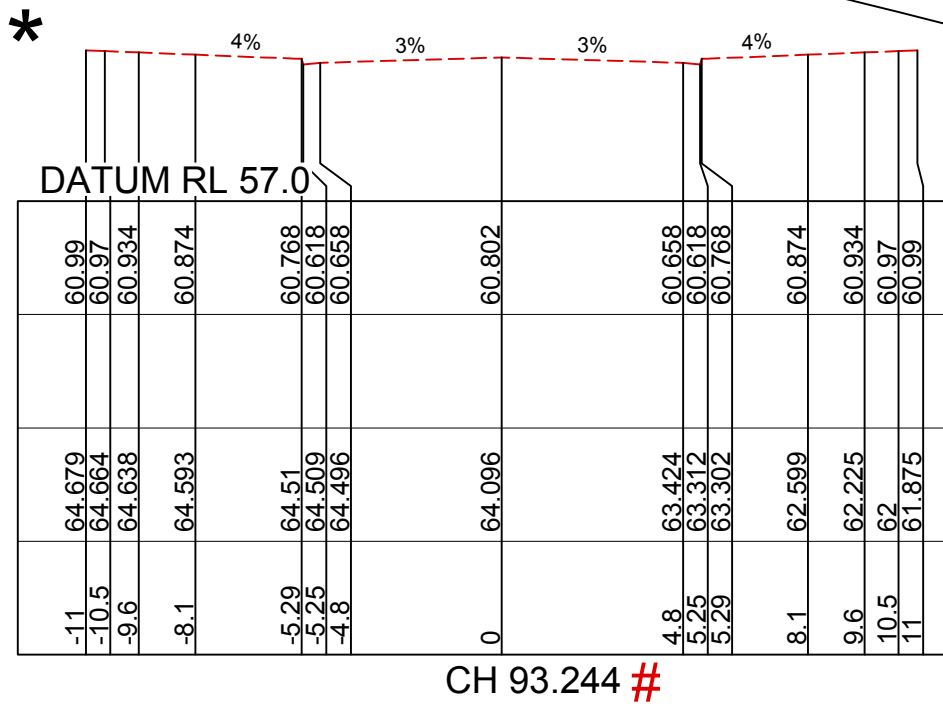
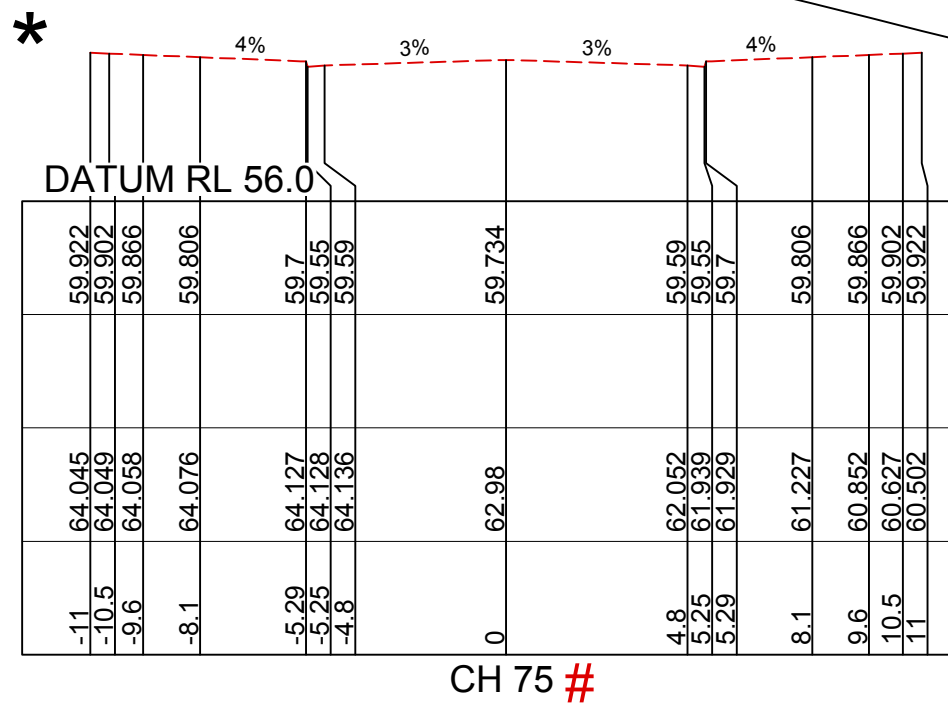
≠ DENOTES BASIN



NOTE
EXISTING SURFACE LEVELS ARE FROM
BULK EARTHWORKS PACKAGE
(REFER PLANS PREPARED BY
J WYNDHAM PRINCE APPROVED FOR
STAGE 5 - REF CC 14493)

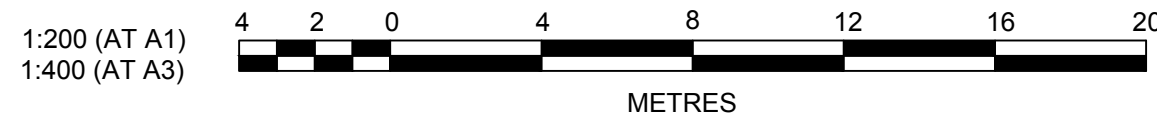
* NOTE
FOR LOT GRADING
REFER TO PLANS
CC504 - CC505

FUTURE CONSTRUCTION PART
OF A SEPARATE CC APPROVAL



NOT APPROVED

ROAD 13
(STARLINE DRIVE)



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AZIMUTH:
M.G.A
DATUM:
A.H.D
ORIGIN:

CLIENT:



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ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 5

ROAD NO.13 CROSS SECTIONS

PLAN No:
110358/CC513

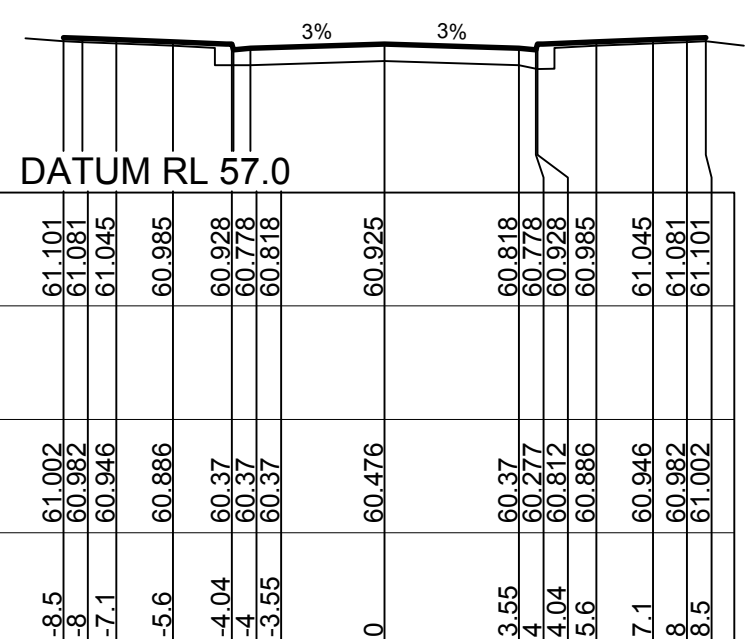
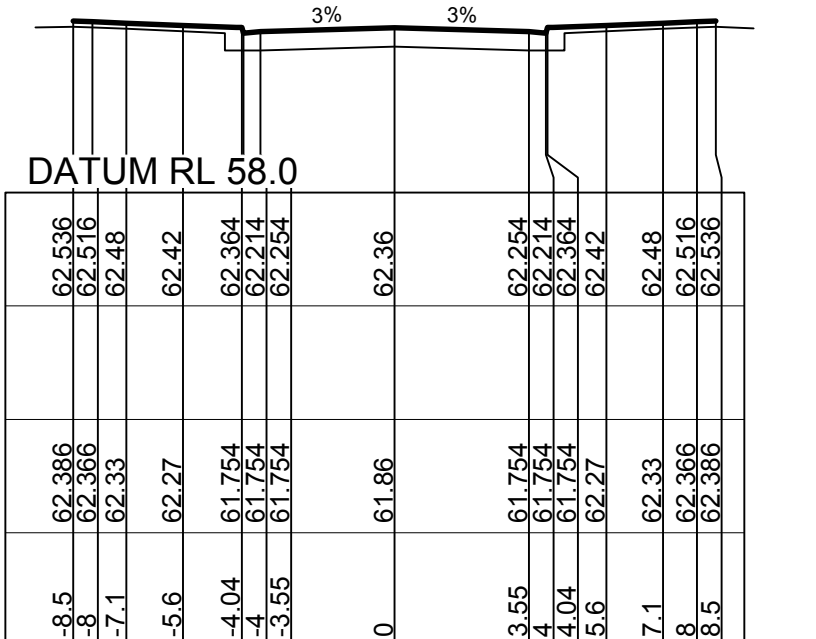
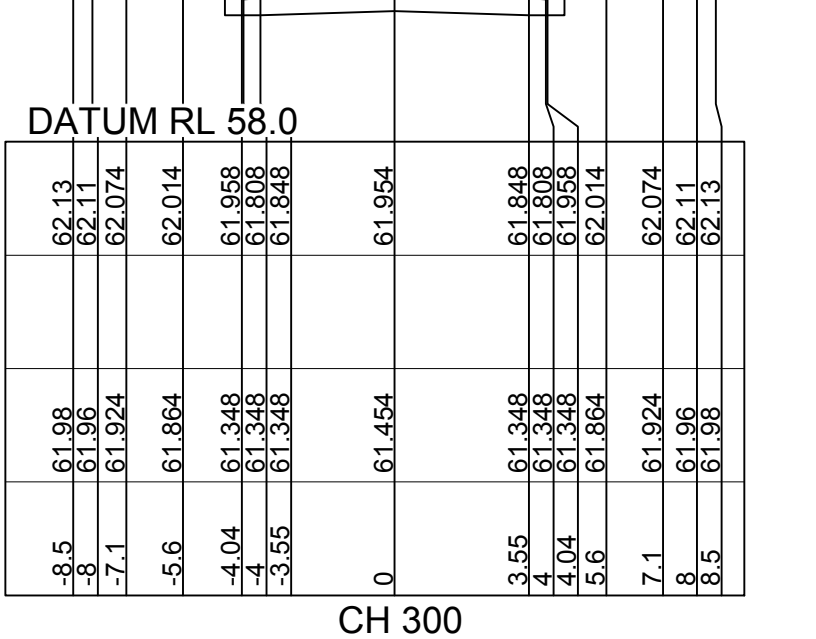
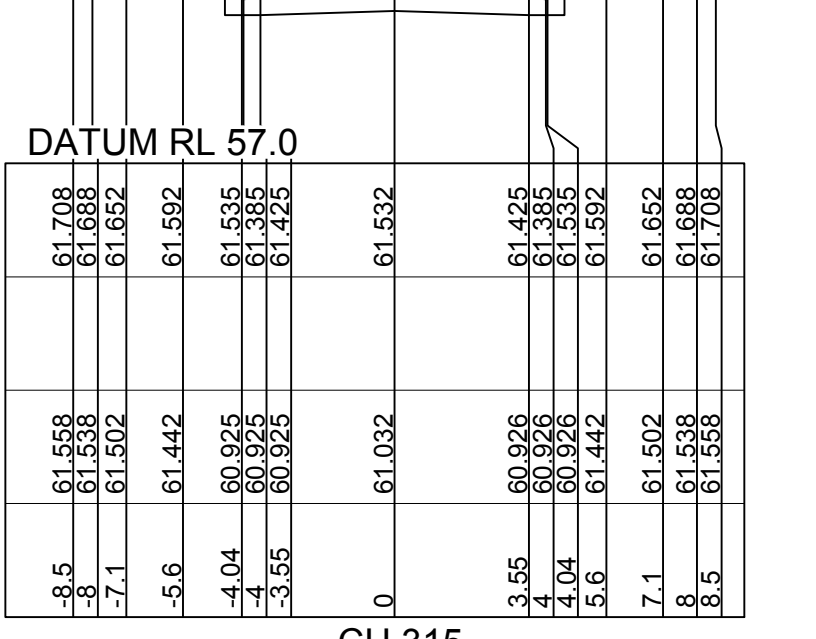
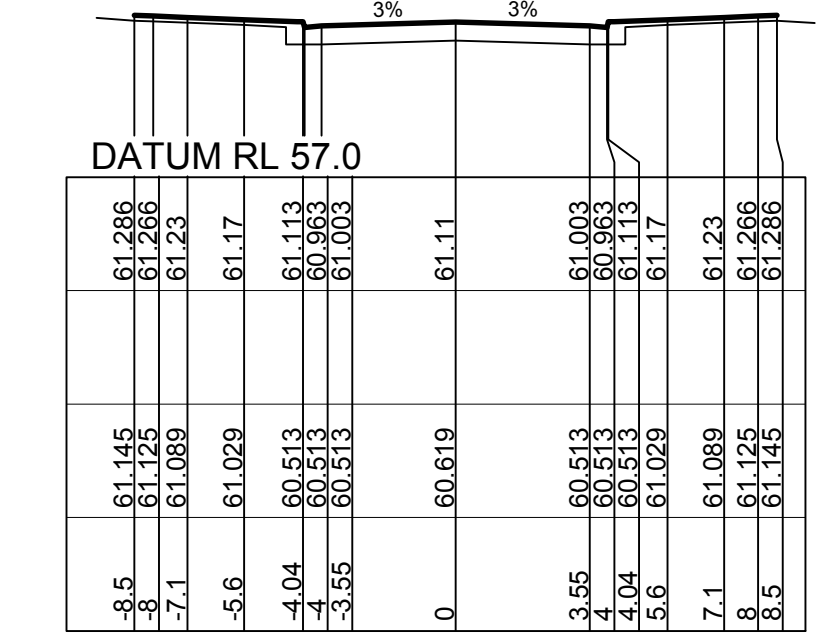
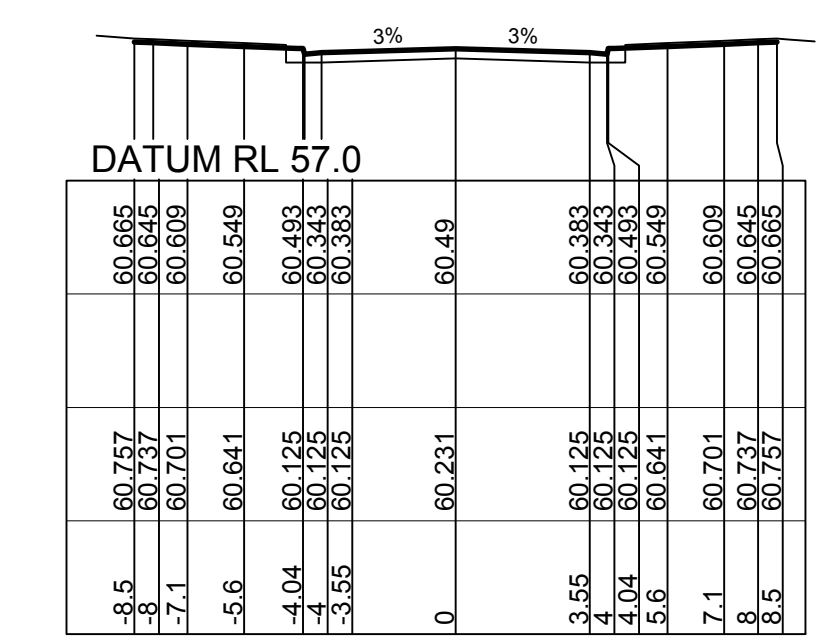
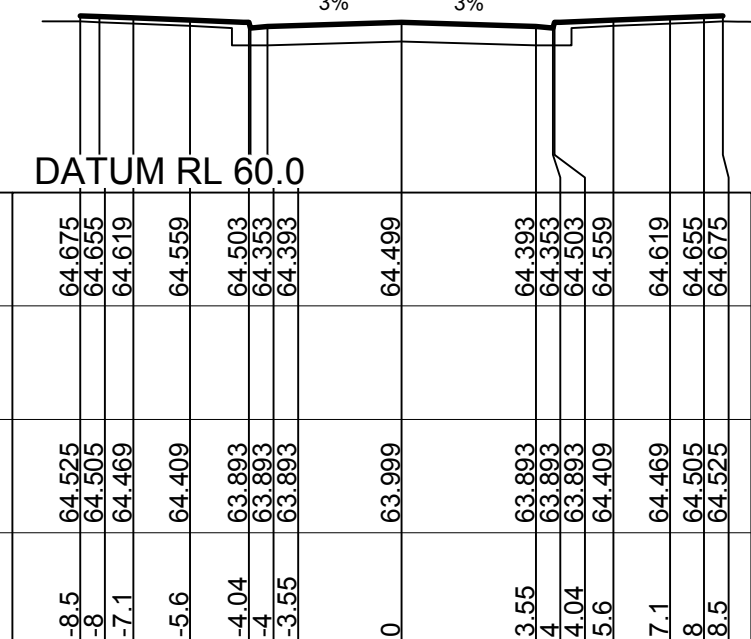
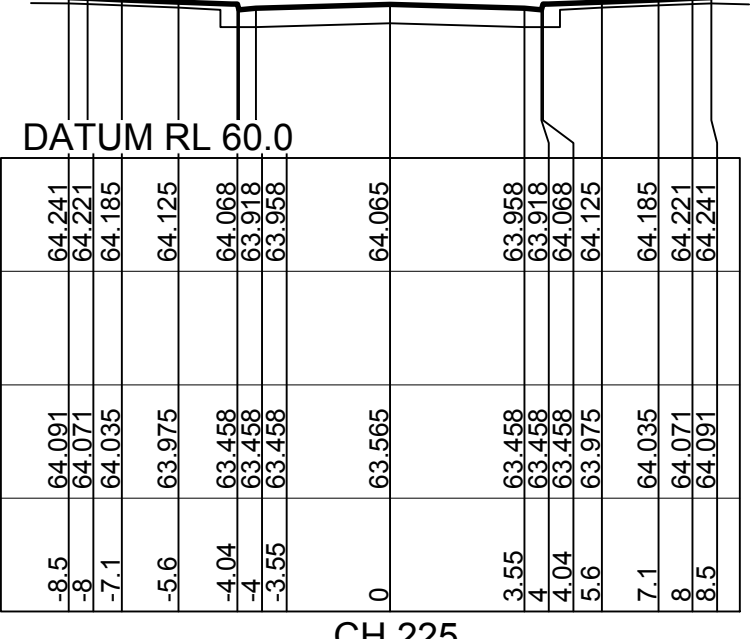
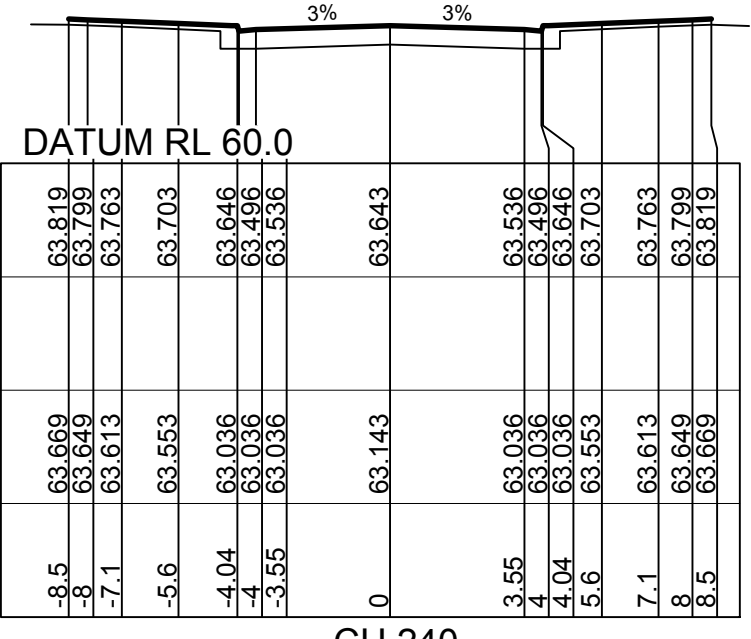
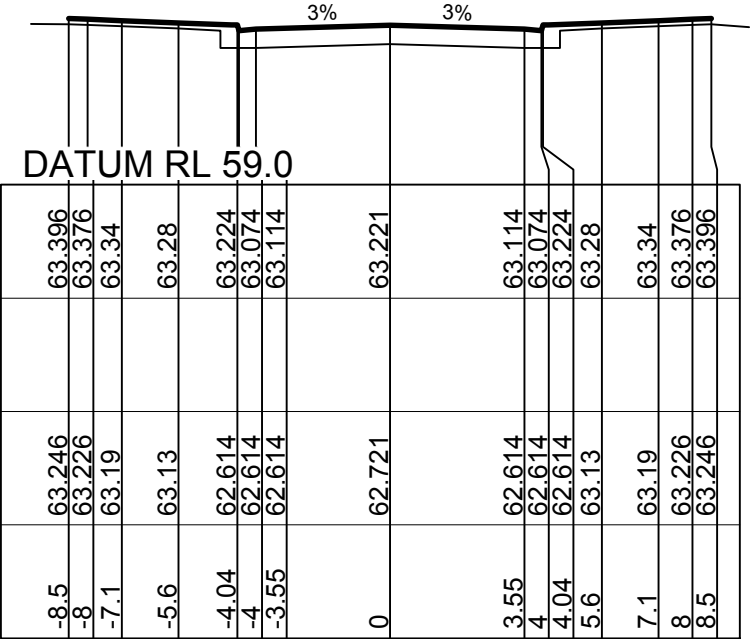
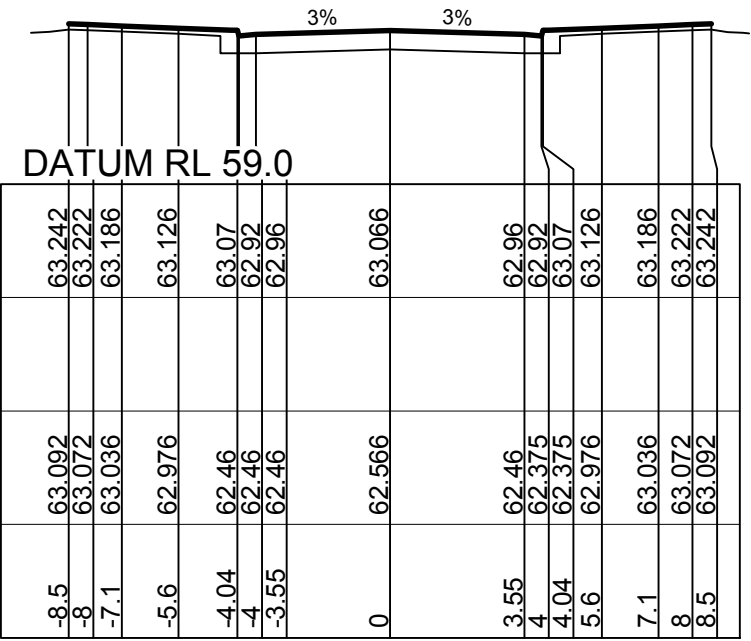
FILE No: 110358CC513

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B	CERTIFIER COMMENTS / O'CONNELL STREET INTERFACE AMENDMENTS	JT	JT	RT	MS	20/10/17
A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17
	AMENDMENT	DES	DRN	CKD	APR	DATE

Plotted: 15 December, 2017 9:05:53 AM File Name: J:\110358 - OConnell Lane Caddens\04 - Stage 5\CDCC\STAGE 5\110358CC514.dwg

DESIGN SURFACE LEVEL	
WAE	
EXISTING SURFACE LEVEL	
OFFSET	



NOTE

EXISTING SURFACE LEVELS ARE FROM
BULK EARTHWORKS PACKAGE
(REFER PLANS PREPARED BY
J WYNNDHAM PRINCE APPROVED FOR
STAGE 5 - REF CC 14493)

* NOTE

FOR LOT GRADING
REFER TO PLANS CC504 - CC505



These plans are referred to in
certificate no. **14776** approved by:

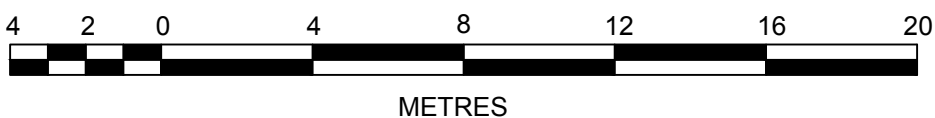
Eric Hausfeld
Accredited Certifier

Registration No: BPB 2416

Categories: B1,C1,C2,C3,C4,C6,C15 & D1

Land Development Certificates
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1:200 (AT A1)
1:400 (AT A3)



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AZIMUTH:
M.G.A

DATUM:
A.H.D

ORIGIN:



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CADDENS HILL
STAGE 5

ROAD No.20.CROSS SECTIONS

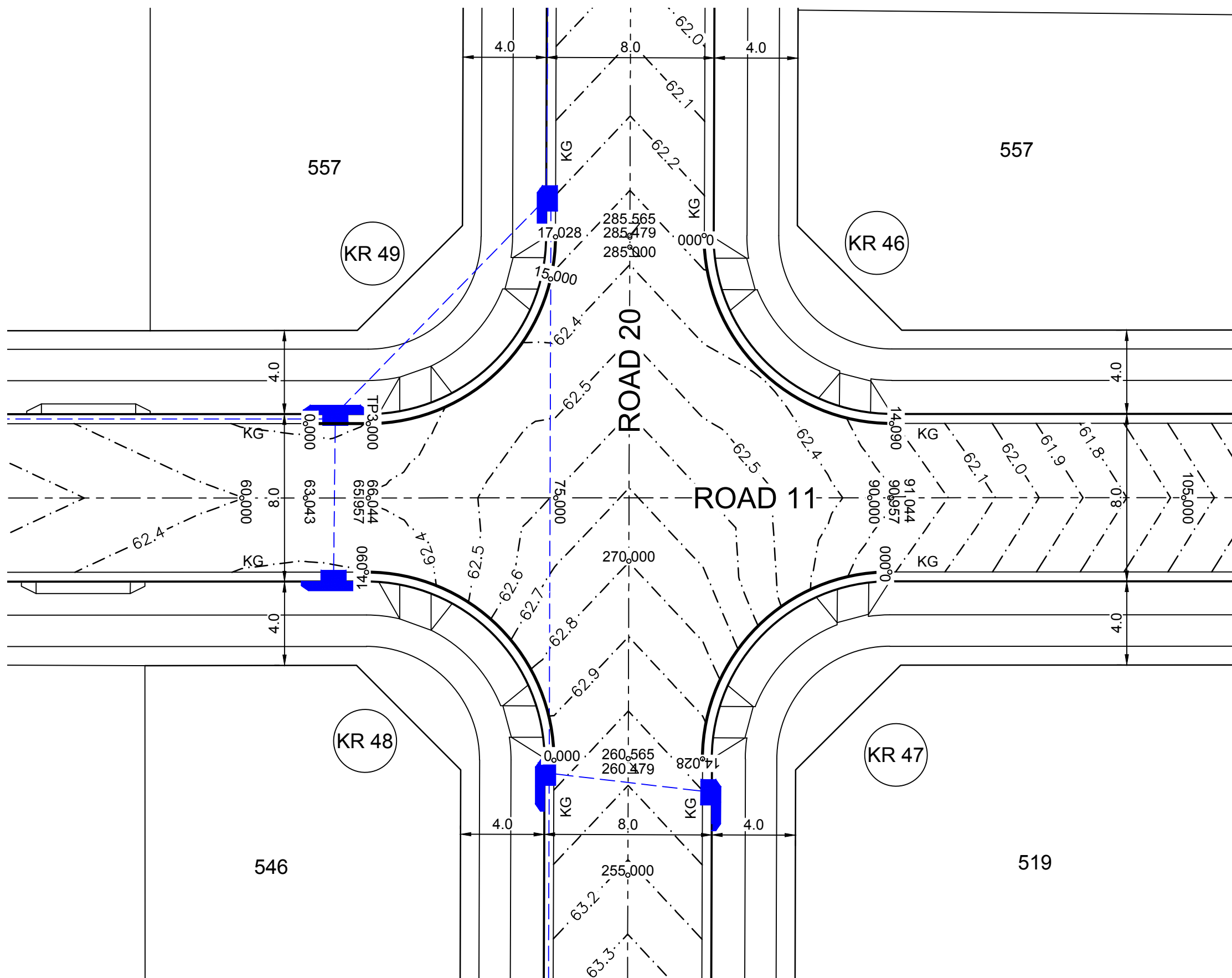
PLAN No:
110358/CC514

A

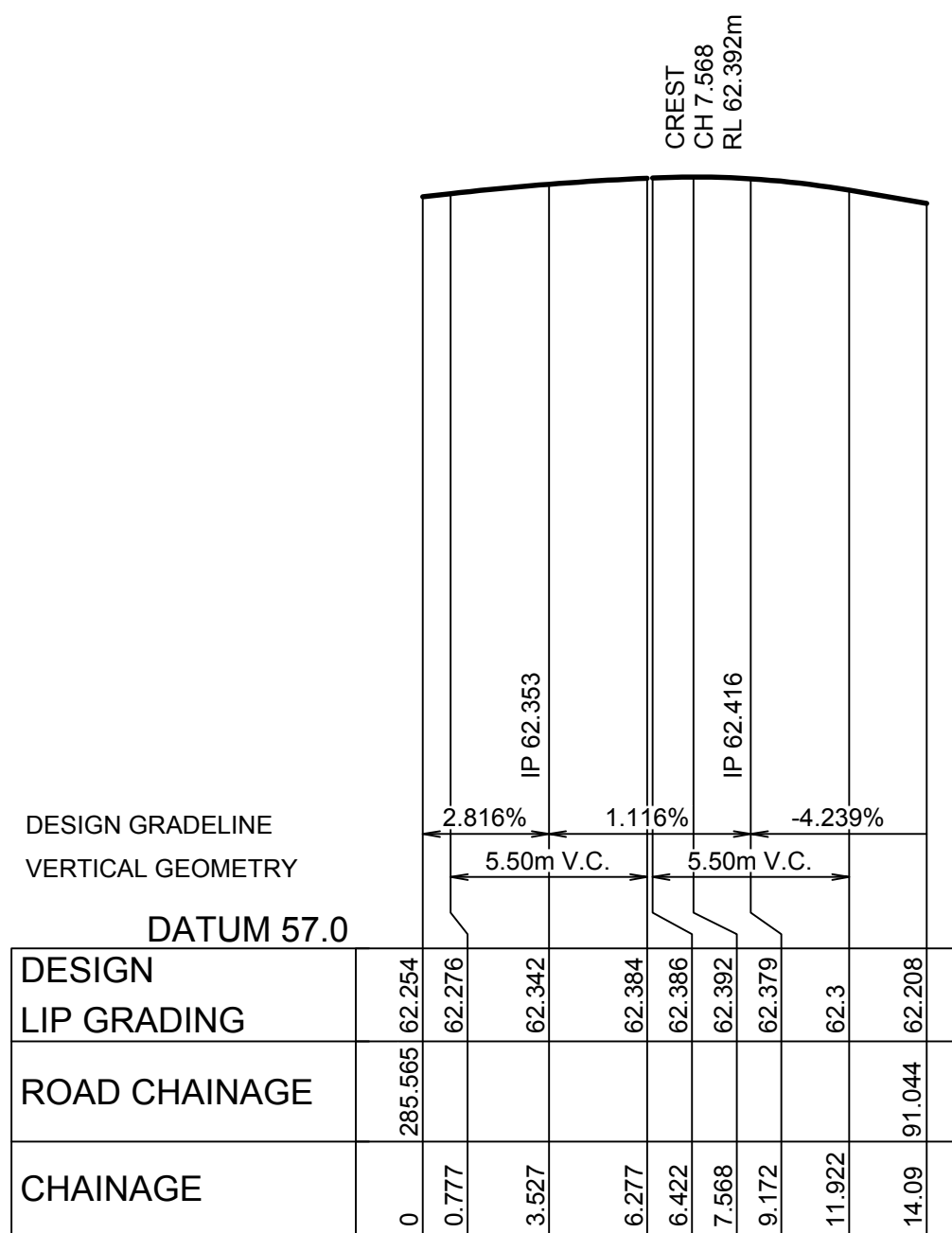
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SHEET SIZE: A1 ORIGINAL

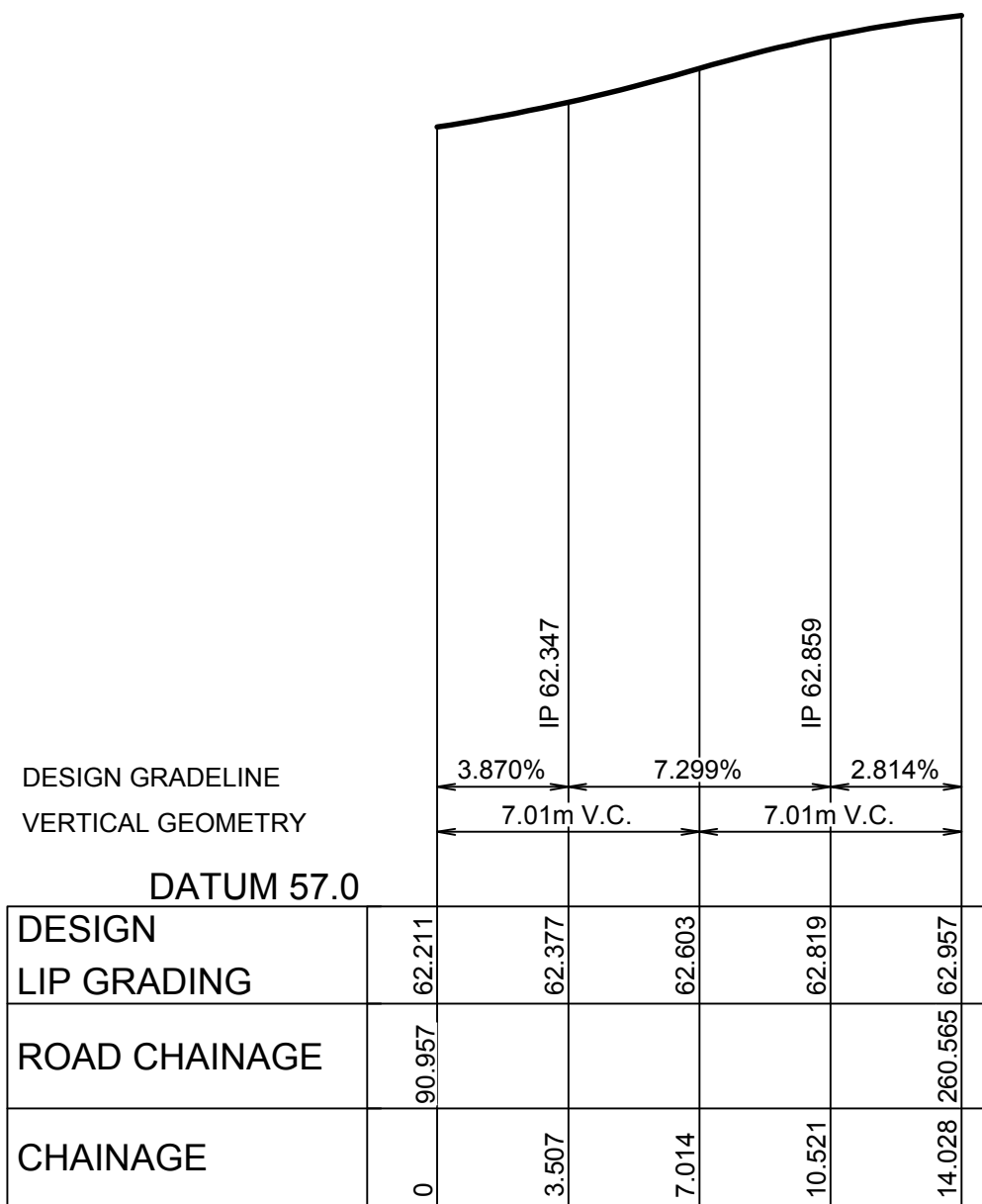
DESIGN LEVELS AND SETOUT
ARE TO LIP OF GUTTER



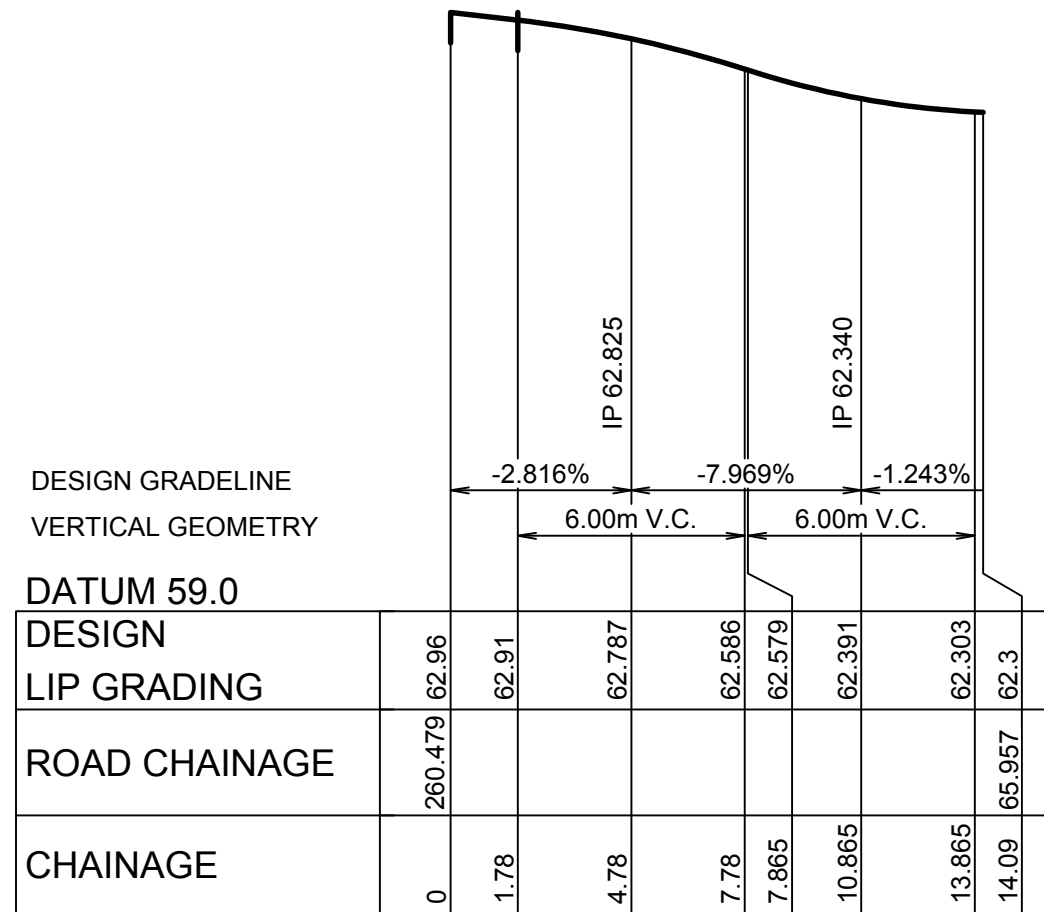
PLAN
SCALE 1:200



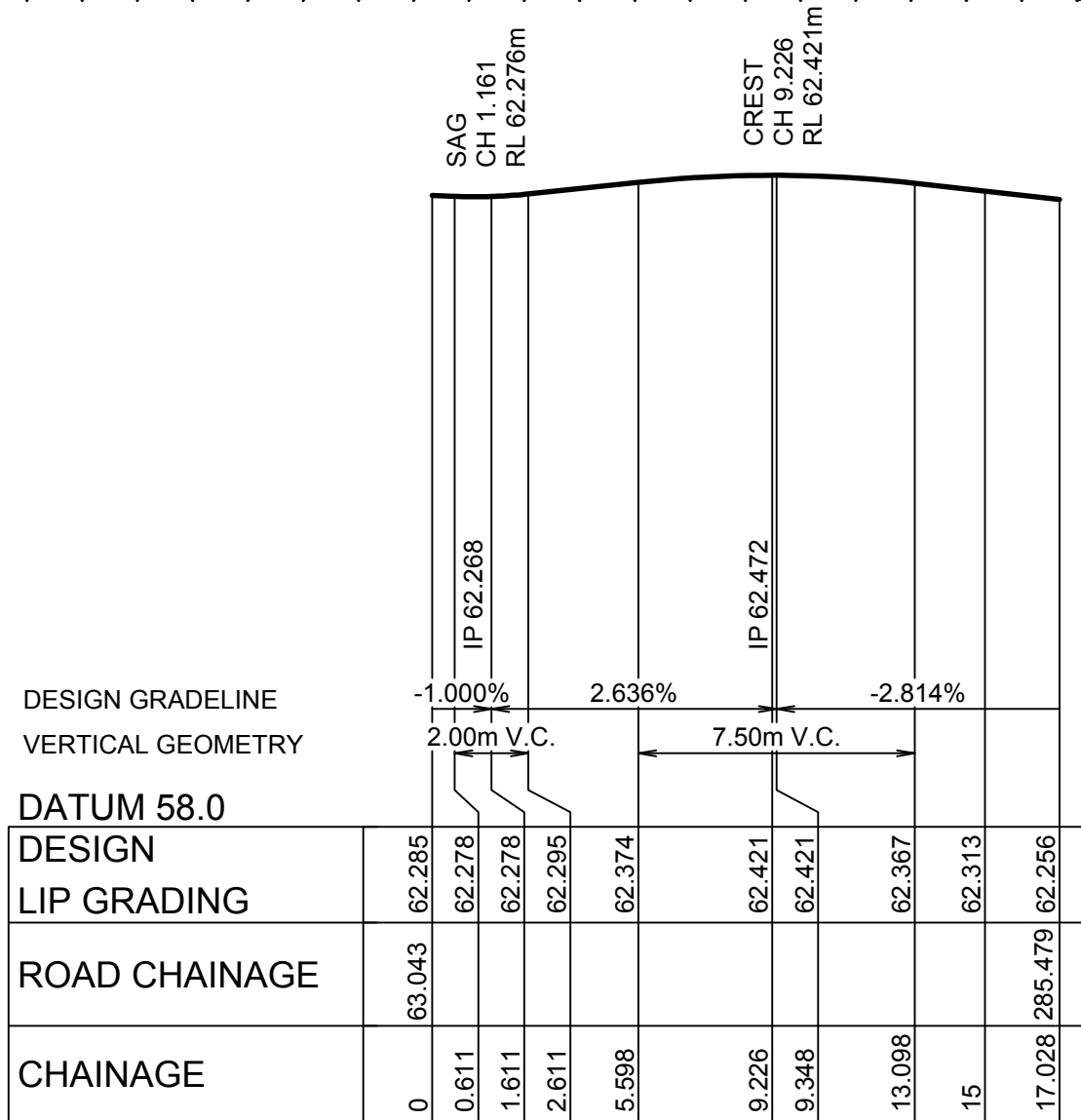
KR 46
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50



KR 47
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50



KR 48
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50



KR 49
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50

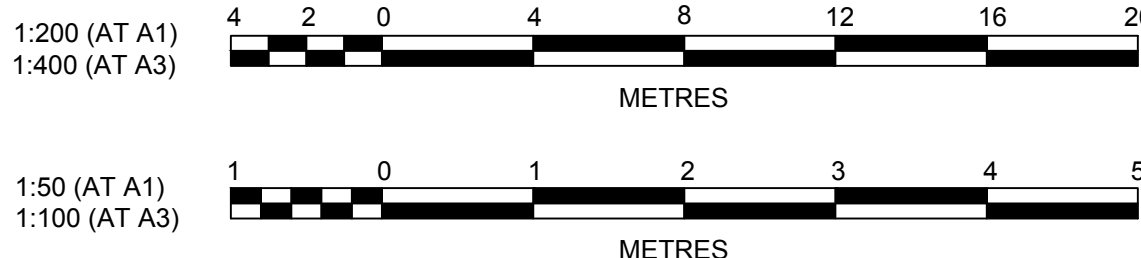


These plans are referred to in
certificate no. **14776** approved by:

Eric Hausfeld
Accredited Certifier

Registration No: BPB 2416
Categories: B1,C1,C2,C3,C4,C6,C15 & D1

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CLIENT:



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CADDENS HILL
STAGE 5

KERB RETURNS

PLAN No:
110358/CC515

FILE No: 110358CC515

SHEET SIZE: A1 ORIGINAL

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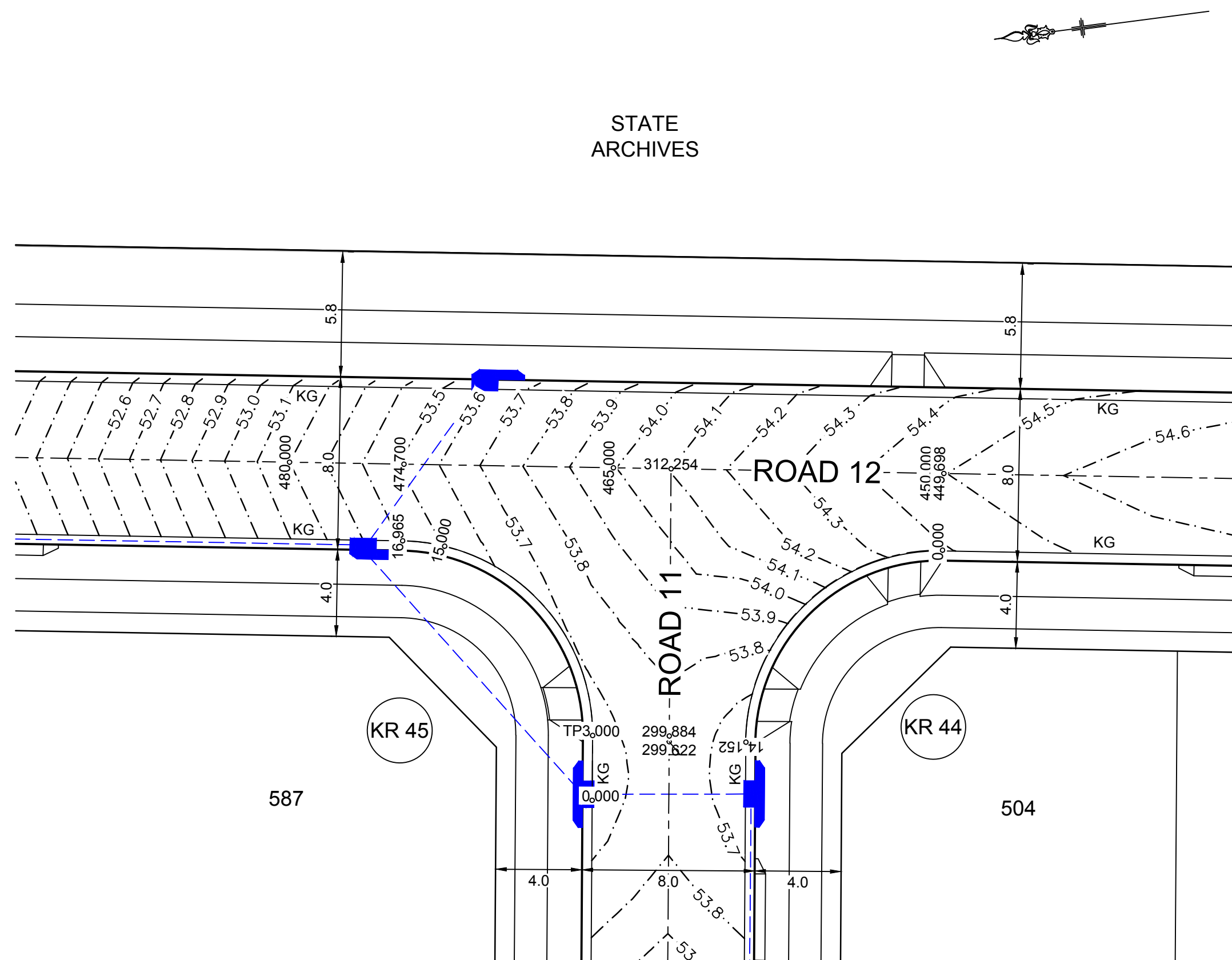
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AZIMUTH:
M.G.A

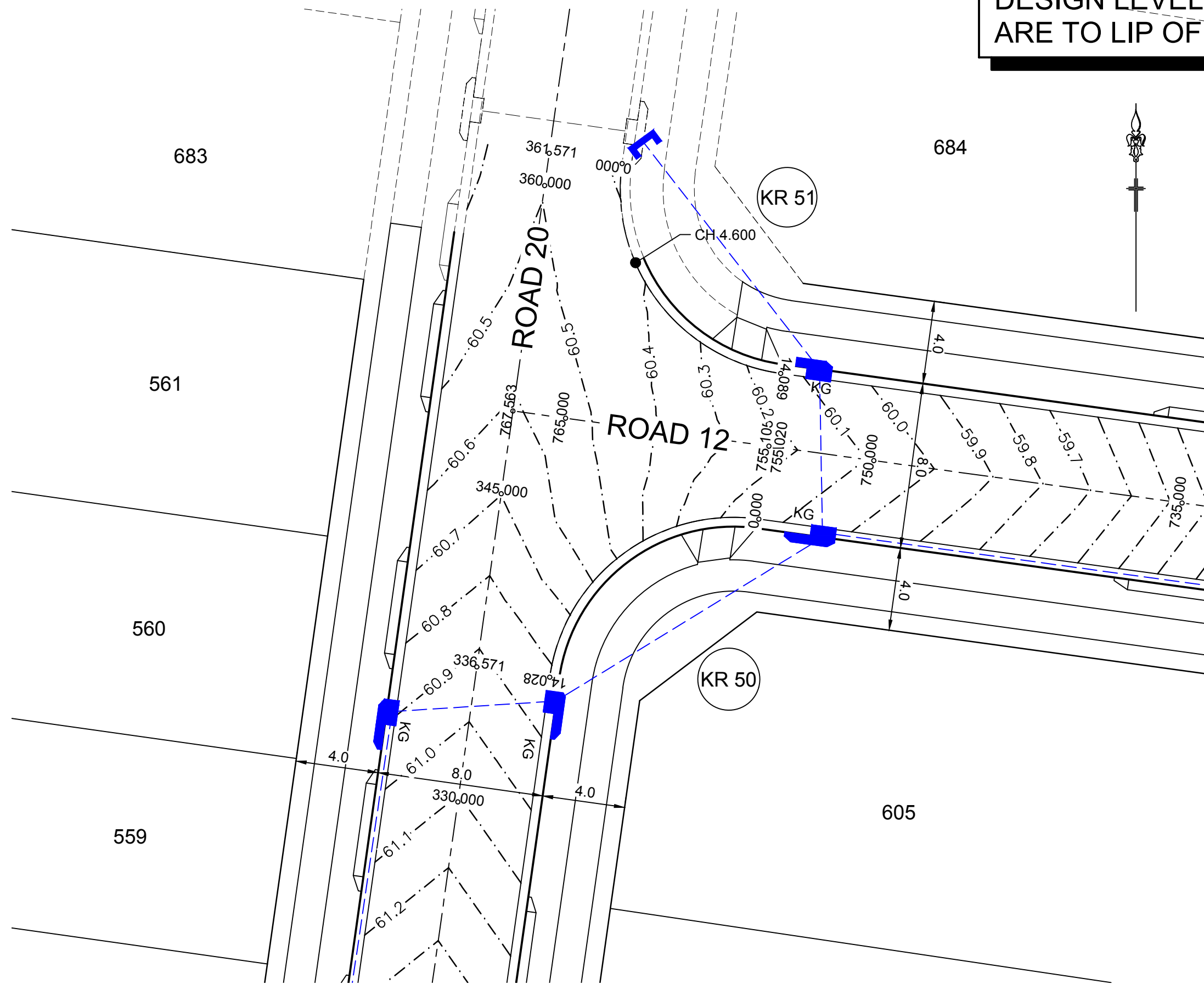
DATUM:
A.H.D

ORIGIN:

DESIGN LEVELS AND SETOUT
ARE TO LIP OF GUTTER

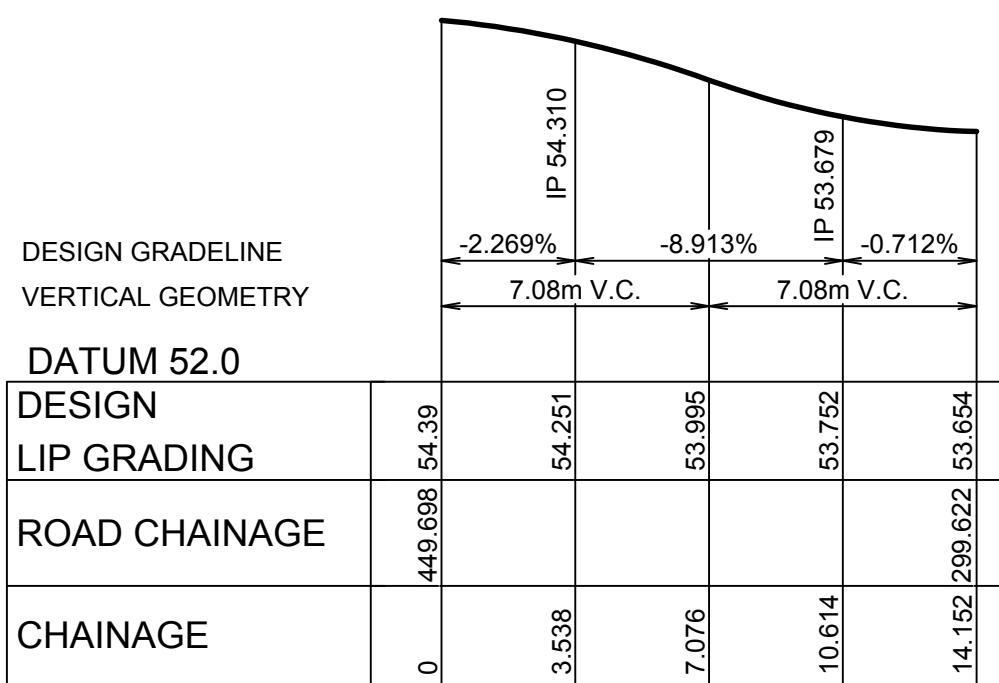


PLAN
SCALE 1:200



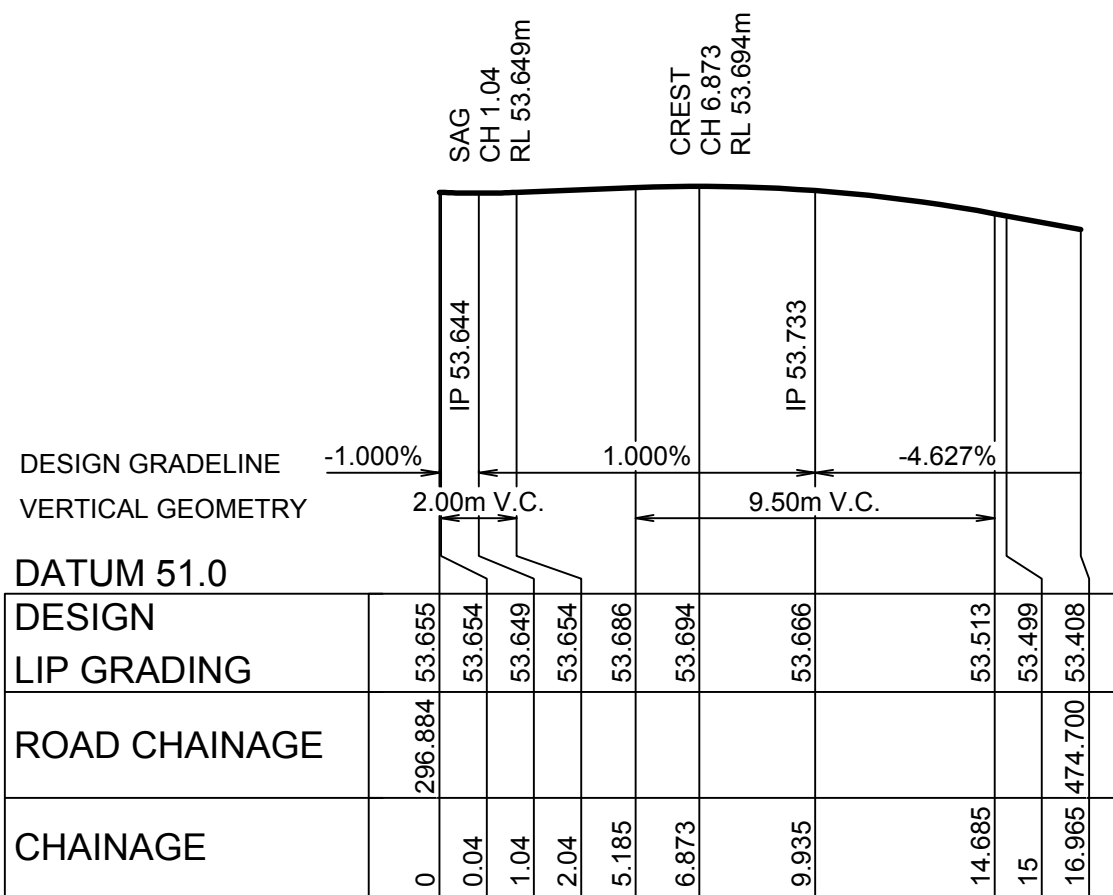
PLAN
SCALE 1:200

LDC These plans are referred to in certificate no. **14776** approved by:
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Accredited Certifier
Registration No: BPB 2416
Categories: B1,C1,C2,C3,C4,C6,C15 & D1
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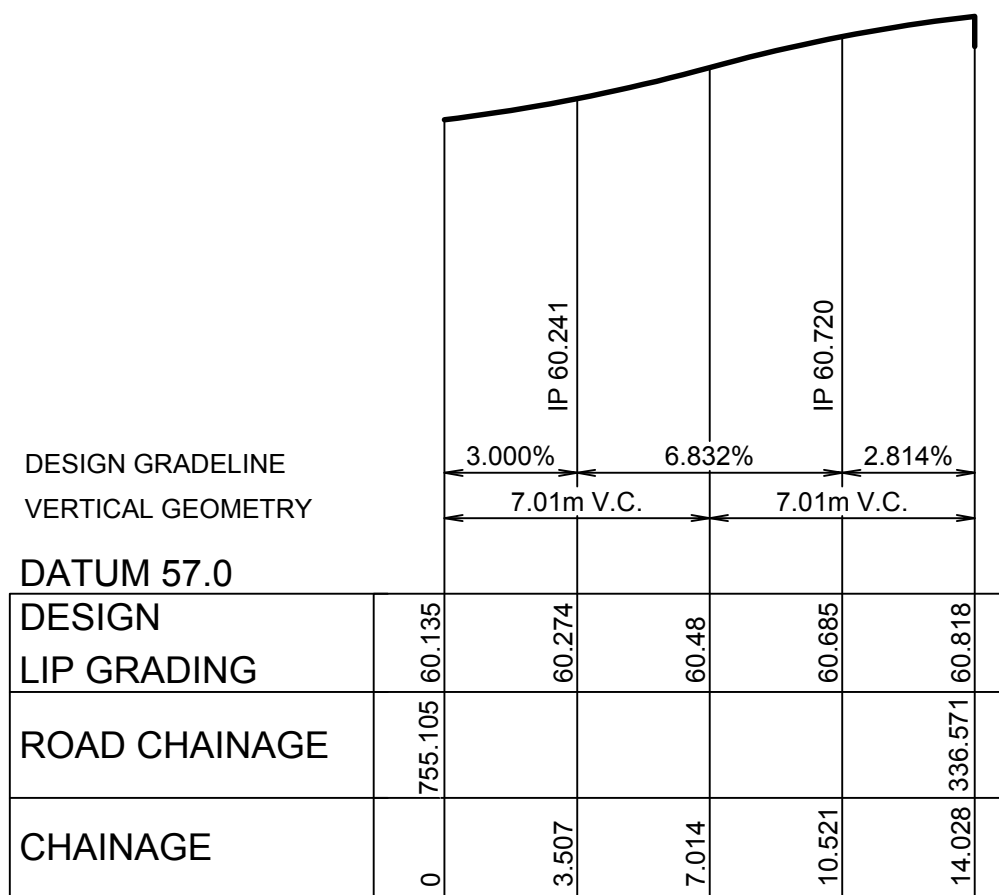
KR 44
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50

CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A.LENGTH
0	290787.71	6260725.31	8°25'30.32"		
7.08	290789.03	6260734.26		-8.95	14.15
14.15	290780.07	6260735.49	277°49'28.28"		



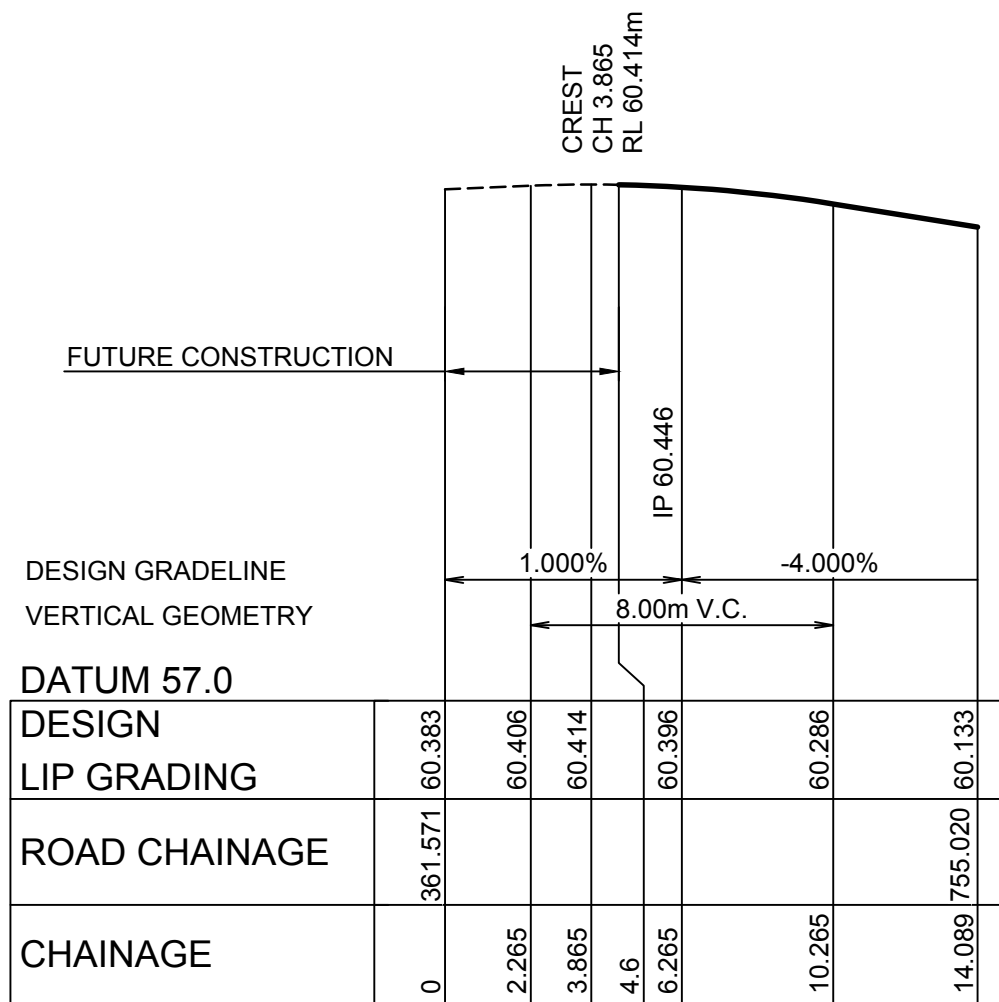
KR 45
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50

CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A.LENGTH
0	290778.33	6260742.9	97°49'28.27"		
3	290781.3	6260742.49	97°49'28.27"		
9.98	290790.07	6260741.28		-8.95	13.96
16.97	290791.37	6260750.05	8°25'30.32"		



KR 50
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50

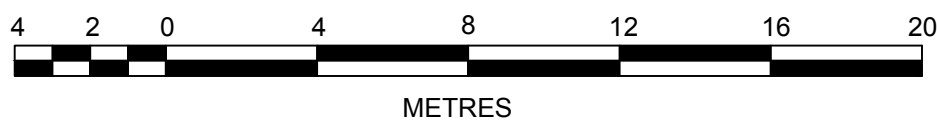
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A.LENGTH
0	290583.96	6260839.16	277°49'33.98"		
7.01	290575.12	6260840.38		-8.95	14.03
14.03	290573.88	6260831.54	188°01'23.02"		



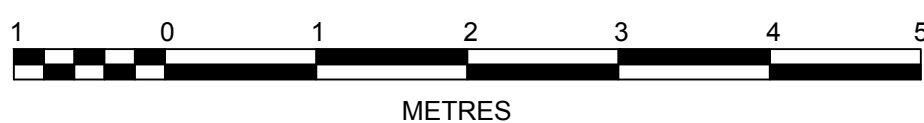
KR 51
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50

CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A.LENGTH
0	290577.37	6260856.3	188°01'23.02"		
7.04	290576.11	6260847.41		-8.95	14.09
14.09	290585.01	6260846.18	97°49'33.98"		

1:200 (AT A1)
1:400 (AT A3)



1:50 (AT A1)
1:100 (AT A3)



AMENDMENT	DES	DRN	CKD	APR	DATE
B					
A					
O'CONNELL STREET INTERFACE AMENDMENTS	JT	JT	RT	MS	20/10/17
ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17

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AZIMUTH:
M.G.A
DATUM:
A.H.D
ORIGIN:

CLIENT:
LEGACYPROPERTY
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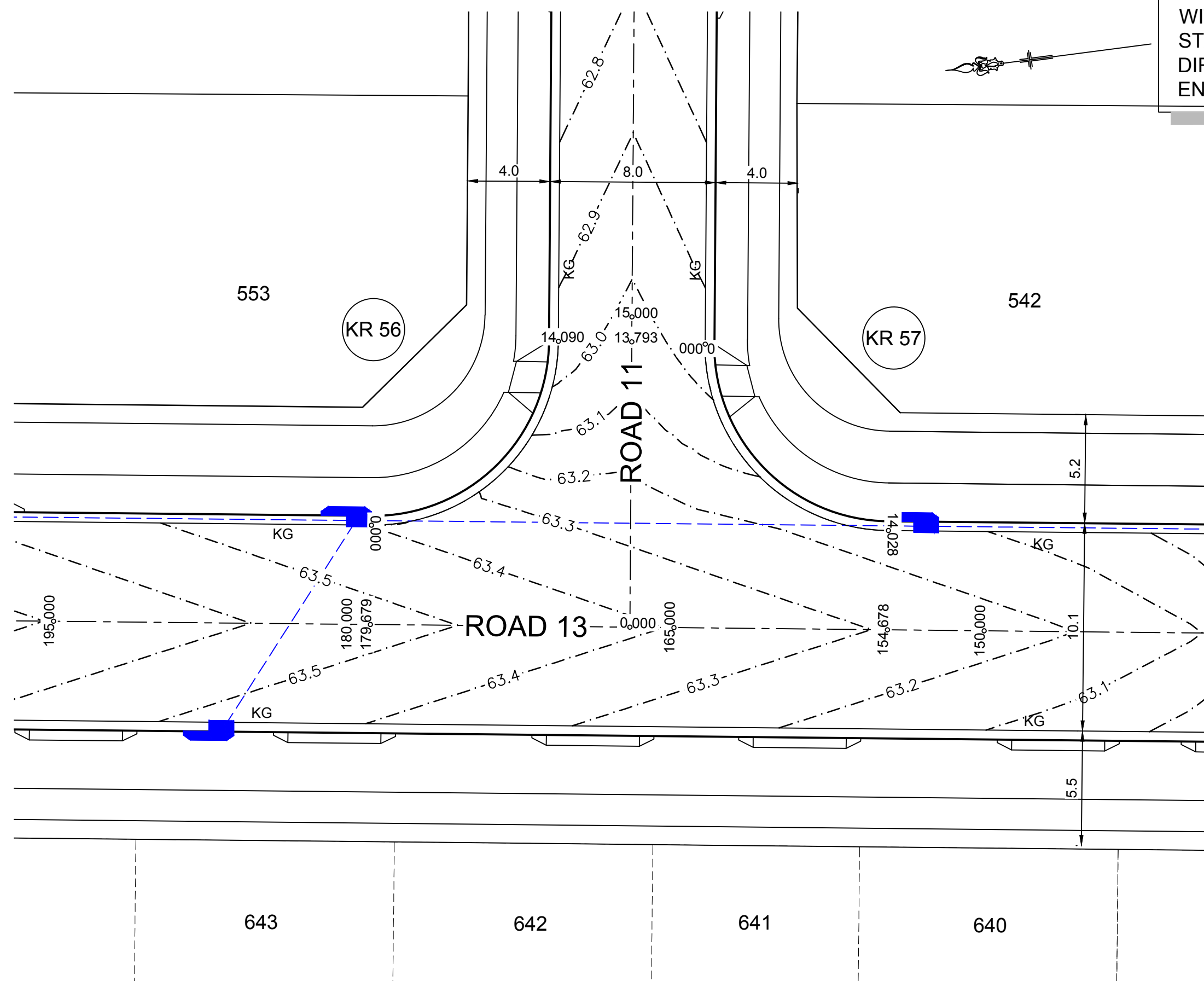
ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 5

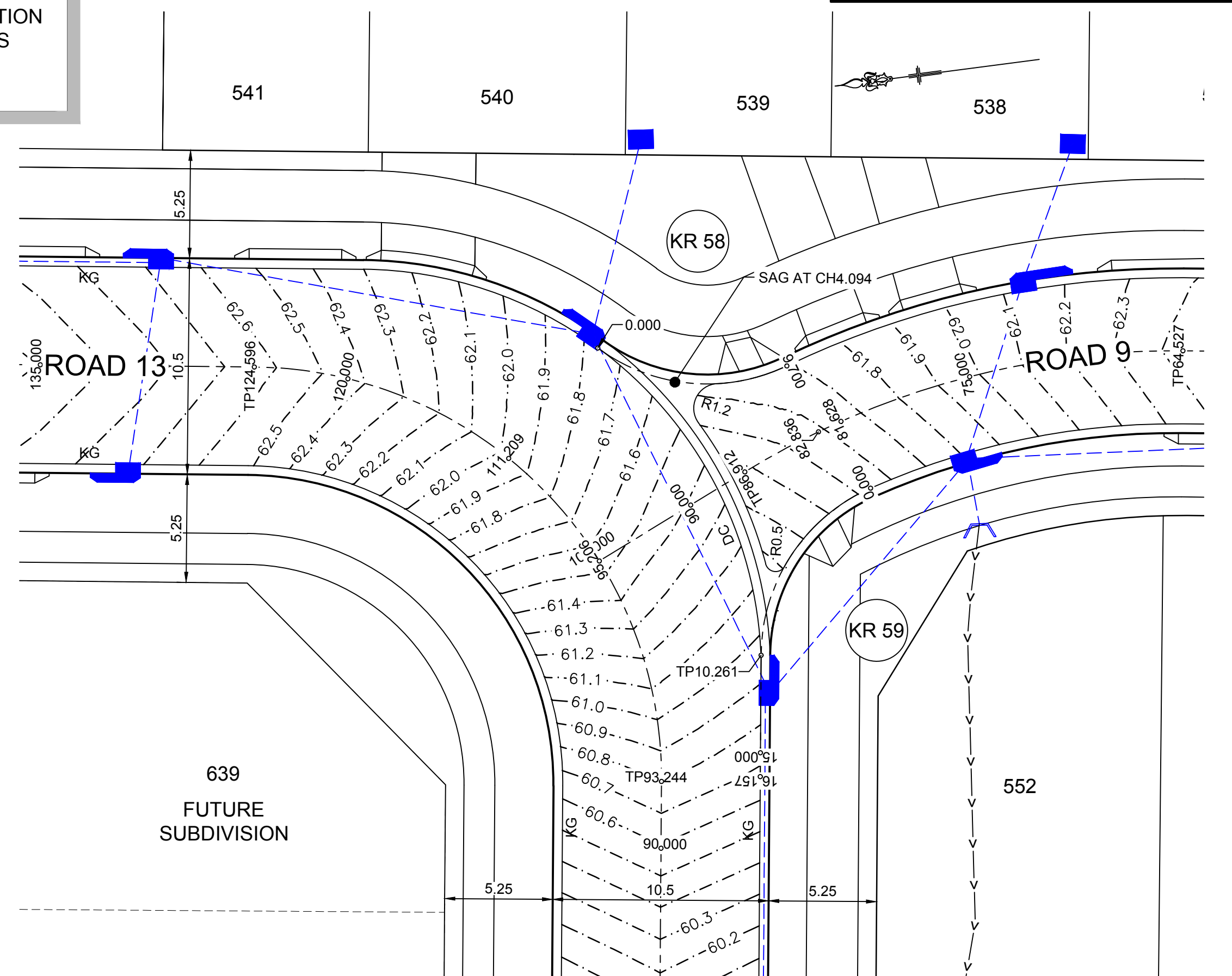
KERB RETURNS

PLAN No:
110358/CC516
FILE No: 110358CC516
SHEET SIZE: A1 ORIGINAL

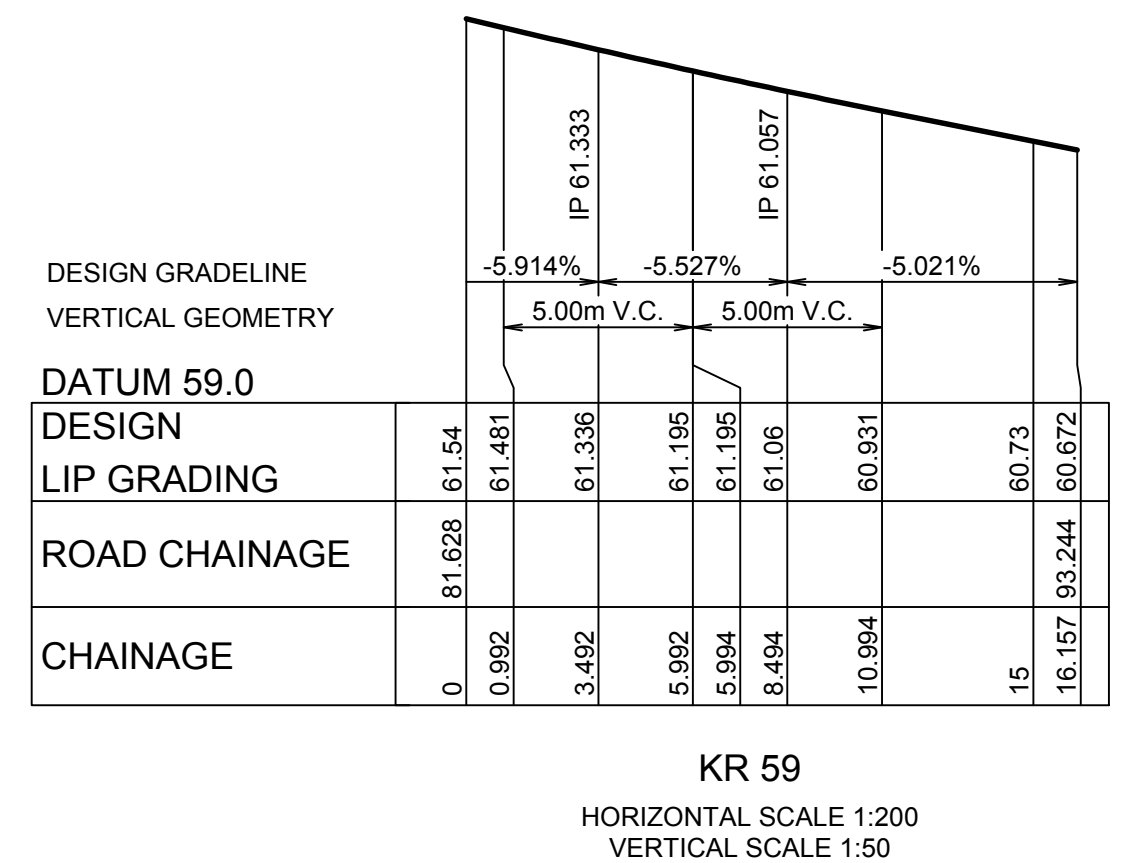
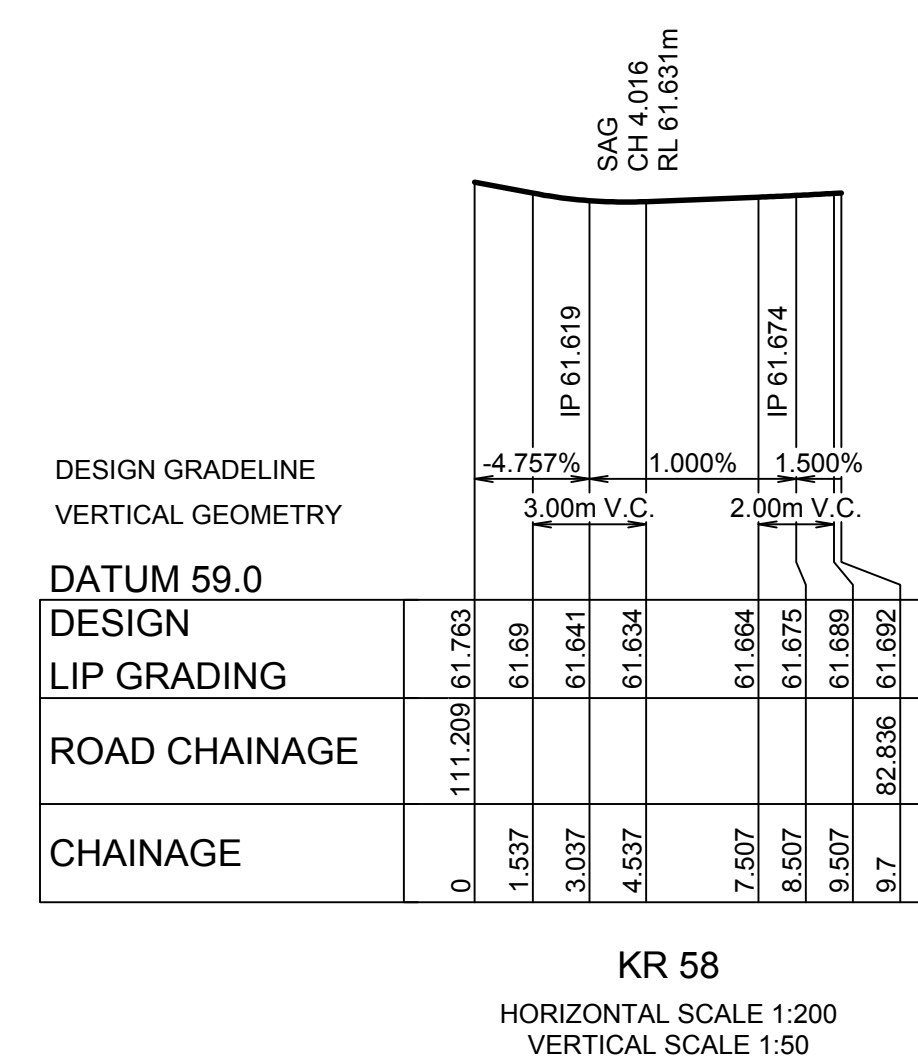
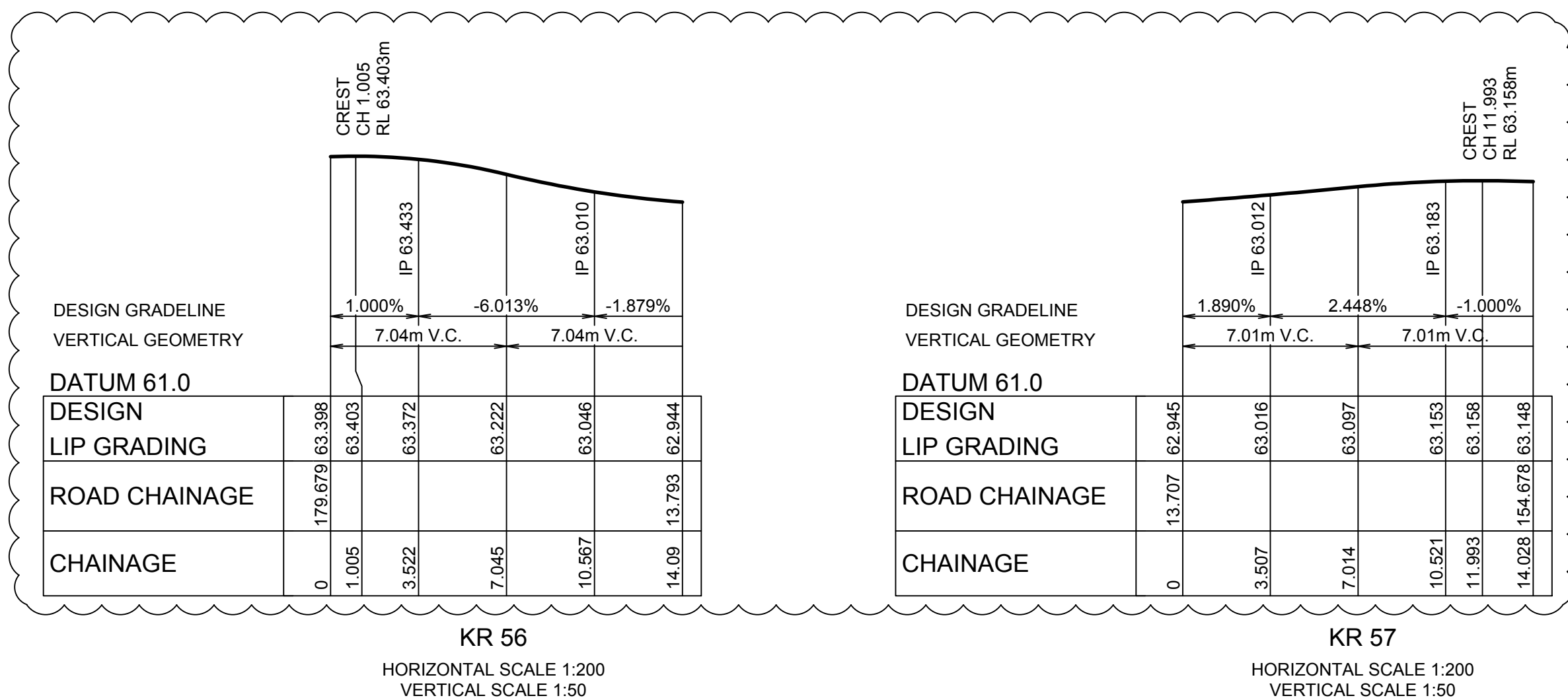
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PLAN
SCALE 1:200



PLAN
SCALE 1:200

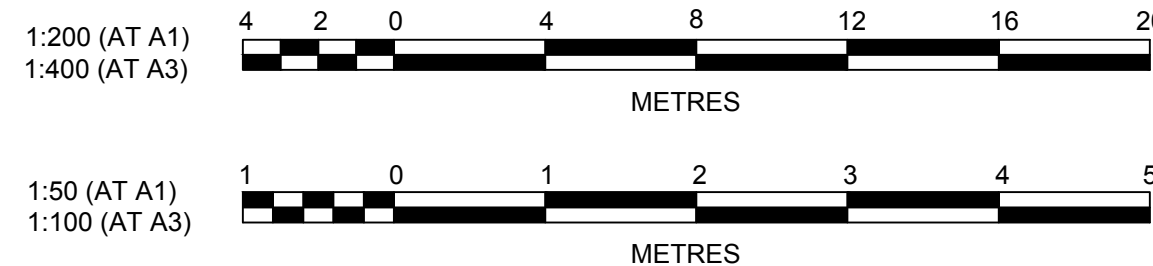


KR 56					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A.LENGTH
0	290490.23	6260791.55	188°01'22.92"	-8.95	14.09
7.04	290488.98	6260782.66			
14.09	290497.87	6260781.44	97°49'28.28"		

KR 57					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A.LENGTH
0	290496.82	6260774.42	277°49'28.28"	-8.95	14.03
7.01	290487.98	6260775.63			
14.03	290486.74	6260766.8	188°01'22.92"		

KR 58					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A.LENGTH
0	290476.54	6260721	223°53'28.29"	-8.95	9.7
4.85	290472.81	6260717.12			
9.7	290474.49	6260712	161°47'49.37"		

KR 59					
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A.LENGTH
0	290468.07	6260708.73	343°31'37.17"	-8.95	10.26
5.13	290466.43	6260714.27			
10.26	290460.71	6260715.06	277°50'22.43"		
16.16	290454.87	6260715.87	277°50'22.43"		



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AZIMUTH:
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DATUM:
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ORIGIN:

CLIENT:



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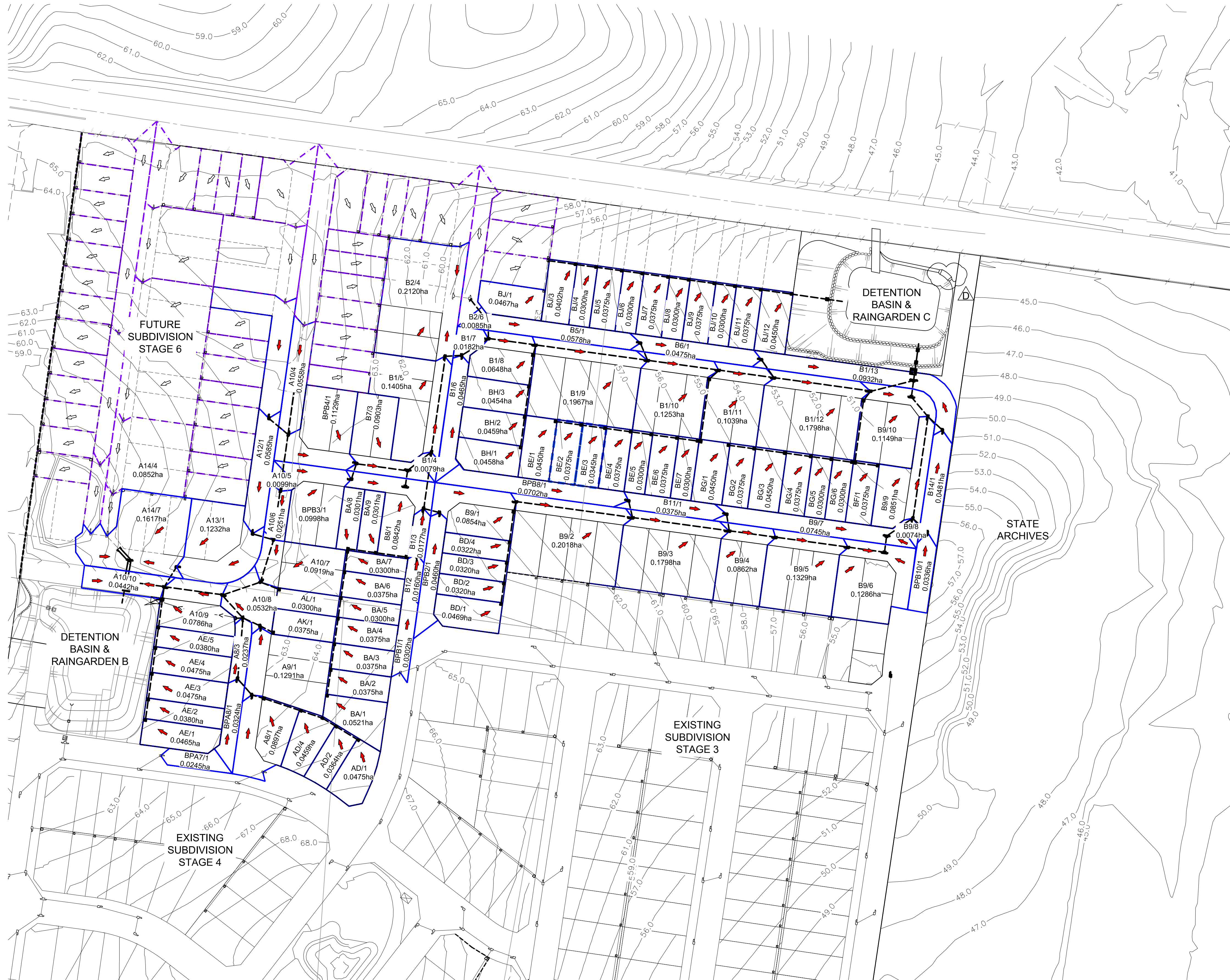
CADDENS HILL
STAGE 5

KERB RETURNS

PLAN No:
110358/CC517 B
FILE No: 110358CC517
SHEET SIZE: A1 ORIGINAL

NOT APPROVED

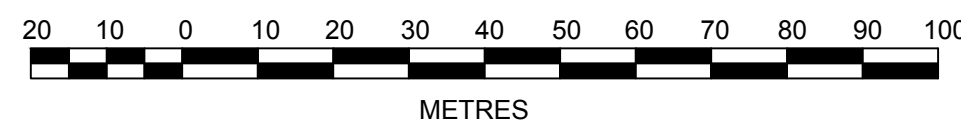
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PLAN

SCALE 1:1000

1:1000 (AT A1)
1:2000 (AT A3)



D	SPILLWAY LOCATION REVISED	JT	JT	MS	RO	19/03/18
C	CERTIFIER COMMENTS - CATCHMENT AREA REVISED	JT	JT	RT	MS	04/12/17
B	CERTIFIER COMMENTS / O'CONNELL STREET INTERFACE AMENDMENTS	JT	JT	RT	MS	20/10/17
A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17
AMENDMENT		DES	DRN	CKD	APR	DATE

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CADDENS HILL
STAGE 5

CATCHMENT PLAN



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Accredited Certifier
Registration No: BPB 2416
Categories: B1,C1,C2,C3,C4,C6,C15 & D1
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PLAN No:
110358/CC518 **D**

FILE No: 110358CC518

SHEET SIZE: A1 ORIGINAL

DRAINAGE SYSTEM B

PIT SCHEDULE

PIT NAME	PIT TYPE	PIT EASTING	PIT NORTHING	PIT DEPTH	COMMENTS
(-)	(-)	(m)	(m)	(m)	
B1/1	1.8 m lintel	290549.8	6260714.807	1.544	
B1/2	1.8 m lintel	290552.592	6260734.611	1.544	
B1/3	1.8 m lintel	290555.699	6260756.659	1.556	
B1/4	1.8 m lintel	290559.528	6260783.823	1.703	
B1/5	1.8 m lintel	290566.019	6260829.872	1.537	
B1/6	1.8 m lintel	290574.171	6260830.391	1.622	
B1/7	1.8 m lintel	290587.032	6260838.284	1.746	
B1/8	1.8 m lintel	290609.752	6260835.162	1.657	
B1/9	1.8 m lintel	290663.758	6260827.739	1.657	
B1/10	1.8 m lintel	290697.919	6260823.043	1.731	
B1/11	1.8 m lintel	290724.606	6260819.375	1.817	
B1/12	2.4 m lintel	290770.934	6260813.008	1.75	
B1/13	3.0 m lintel sag	290791.671	6260818.232	2.573	STRUCTURAL CERT.
B1/14	GPT	290792.114	6260821.45	2.755	HUMEGARD HG27-L-MC
B1/15	JP	290792.867	6260826.931	2.625	STRUCTURAL CERT.
B1/16	JP	290793.685	6260832.882	2.65	STRUCTURAL CERT.
B1/17	H.W.	290794.116	6260836.015	0.827	
B10/1	2.4 m lintel	290655.15	6260760.28	1.461	
B11/1	1.8 m lintel	290701.636	6260753.892	1.464	
B13/1	1.8 m lintel	290798.301	6260745.297	1.49	
B14/1	1.8 m lintel	290805.565	6260794.344	1.478	
B2/5	2.4 m lintel sag	290578.034	6260857.796	1.762	FUTURE
B2/6	1.8 m lintel	290586.883	6260846.38	1.653	
B3/1	1.8 m lintel	290563.493	6260754.638	1.451	
B5/1	1.8 m lintel	290660.135	6260836.312	1.485	
B6/1	1.8 m lintel	290718.38	6260828.306	1.501	
B7/1	1.8 m lintel	290521.022	6260770.636	1.451	
B7/2	1.8 m lintel	290523.528	6260778.367	1.562	
B7/3	2.4 m lintel sag	290548.138	6260774.985	1.584	
B8/1	2.4 m lintel sag	290546.962	6260767.072	1.438	
B9/1	1.8 m lintel	290600.381	6260759.731	1.568	
B9/2	2.4 m lintel	290656.441	6260752.027	1.613	
B9/3	2.4 m lintel	290703.019	6260745.626	1.593	
B9/4	1.8 m lintel	290725.28	6260742.567	1.548	
B9/5	1.8 m lintel	290760.137	6260737.777	1.573	
B9/6	2.4 m lintel sag	290777.637	6260735.372	1.569	
B9/7	2.4 m lintel sag	290778.659	6260743.307	1.698	
B9/8	1.8 m lintel	290791.195	6260751.92	1.905	
B9/9	1.8 m lintel	290798.459	6260800.966	1.845	
B9/10	2.4 m lintel sag	290790.585	6260810.307	1.74	
BA/1	GSIP 600x600 IAD			0.832	
BA/2	GSIP 600x600 IAD			0.857	
BA/3	GSIP 600x600 IAD			0.882	
BA/4	GSIP 600x900 IAD			0.91	
BA/5	GSIP 600x900 IAD			0.935	
BA/6	GSIP 600x900 IAD			0.961	
BA/7	GSIP 600x900 IAD			0.991	
BA/8	GSIP 600x900 IAD			1.005	
BA/9	GSIP 600x900 IAD			1.112	
BA/10	JP			1.532	
BD/1	GSIP 600x600 IAD			0.777	
BD/2	GSIP 600x600 IAD			0.786	
BD/3	GSIP 600x600 IAD			0.776	
BD/4	GSIP 600x600 IAD			0.776	
BD/5	JP			1.541	
BE/1	GSIP 600x600 IAD			0.775	
BE/2	GSIP 600x600 IAD			0.775	
BE/3	GSIP 600x600 IAD			0.775	
BE/4	GSIP 600x600 IAD			0.85	
BE/5	GSIP 600x600 IAD			0.85	
BE/6	GSIP 600x600 IAD			0.85	
BE/7	GSIP 600x600 IAD			0.85	
BE/8	JP			1.595	
BE/9	JP			1.561	
BF/1	GSIP 600x600 IAD			0.738	
BG/1	GSIP 600x600 IAD			0.779	
BG/2	GSIP 600x600 IAD			0.855	
BG/3	BYPASS NODE			0.852	
BG/4	GSIP 600x600 IAD			0.846	
BG/5	GSIP 600x600 IAD			0.871	
BG/6	GSIP 600x600 IAD			0.853	
BG/7	JP			1.927	
BG/8	JP			1.546	
BH/1	GSIP 600x600 IAD			0.759	
BH/2	GSIP 600x900 IAD			1.14	
BH/3	GSIP 600x600 IAD			0.844	
BH/4	JP			1.537	
BJ/3	GSIP 600x600 IAD			0.911	
BJ/4	GSIP 600x600 IAD			0.895	
BJ/5	GSIP 600x600 IAD			0.864	
BJ/6	GSIP 600x600 IAD			0.892	
BJ/7	GSIP 600x900 IAD			0.911	
BJ/8	GSIP 600x600 IAD			0.895	
BJ/9	GSIP 600x600 IAD			0.864	
BJ/10	GSIP 600x600 IAD			0.891	
BJ/11	GSIP 600x600 IAD			0.866	
BJ/12	GSIP 600x600 IAD			0.889	
BJ/13	JP	290750.044	6260857.401	3.043	STRUCTURAL CERT.
BJ/14	H.W.	290757.381	6260856.339	0.358	

DRAINAGE SYSTEM A

PIT SCHEDULE

PIT NAME	PIT TYPE	PIT EASTING	PIT NORTHING	PIT DEPTH	COMMENTS
(-)	(-)	(m)	(m)	(m)	
A10/3	1.8 m lintel	290498.169	6260844.665	1.668	FUTURE
A10/4	1.8 m lintel	290490.758	6260792.086	1.698	
A10/5	1.8 m lintel	290486.93	6260764.926	1.728	
A10/6	1.8 m lintel	290483.627	6260741.491	1.558	
A10/7	1.8 m lintel	290477.237	6260721.152	1.519	
A10/8	1.8 m lintel	290458.836	6260714.867	1.505	
A10/9	1.8 m lintel	290430.867	6260718.717	1.441	
A10/10	2.4 m lintel sag	290412.427	6260721.256	1.366	
A10/11	GPT	290411.736	6260716.96	1.528	HUMEGARD HG30A-XM-L
A10/12	H.W.	290410.643	6260711.047	0.825	
A11/1	1.8 m lintel	290481.276	6260800.043	1.459	
A12/1	1.8 m lintel	290473.439	6260744.441	1.453	
A13/1	1.8 m lintel	290436.886	6260728.487	1.455	
A14/7	2.4 m lintel sag	290414.298	6260731.598	1.212	
AB/1	1.8 m lintel	290473.101	6260666.814	1.481	
AB/2	1.8 m lintel	290466.142	6260674.759	1.481	
AB/3	1.8 m lintel	290468.676	6260704.019	1.468	
A9/1	2.4 m lintel	290477.085	6260700.09	1.497	
AD/1	GSIP 600x600 IAD			0.776	
AD/2	GSIP 600x600 IAD			0.78	
AD/3	GSIP 600x600 IAD			0.79	
AD/4	GSIP 600x600 IAD			0.847	
AD/5	JP			1.537	
AE/1	GSIP 600x600 IAD			0.772	
AE/2	GSIP 600x600 IAD			0.775	
AE/3	GSIP 600x600 IAD			0.84	
AE/4	GSIP 600x600 IAD			0.857	
AE/5	GSIP 600x600 IAD			0.857	
AE/6	JP			1.599	
AK/1	GSIP 900x900 IAD			1.6	
AL/1	GSIP 900x900 IAD			1.709	

NOTES:
ALL GRATED PIT COVERS IN ROADS ARE TO BE BICYCLE SAFE.

ALL SAG PITS TO HAVE WELDLCK GGSB 94 5D GRATES

FOR ALL PITS <2m DEEP REFER TO PENRITH CITY COUNCIL STANDARD PIT DRAWINGS SD 2002.

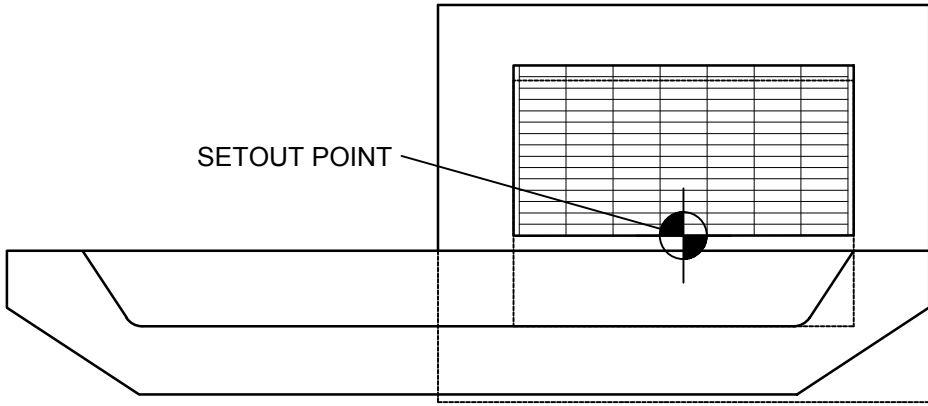
ANY INTER-ALLOTMENT PIT GREATER THAN 900mm DEEP SHALL HAVE A CONCRETE LID REFER PCC CONSTRUCTION SPEC SECTION 6.7.

ALL JUNCTION PITS SHALL HAVE A CONCRETE LID

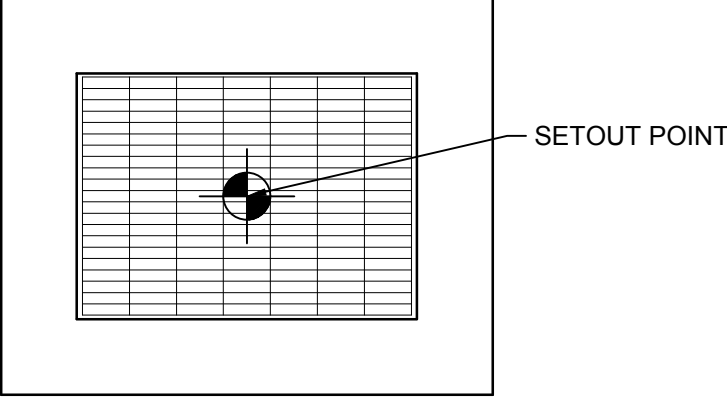
FOR PITS >2m SHALL BE STRUCTURALLY CERTIFIED



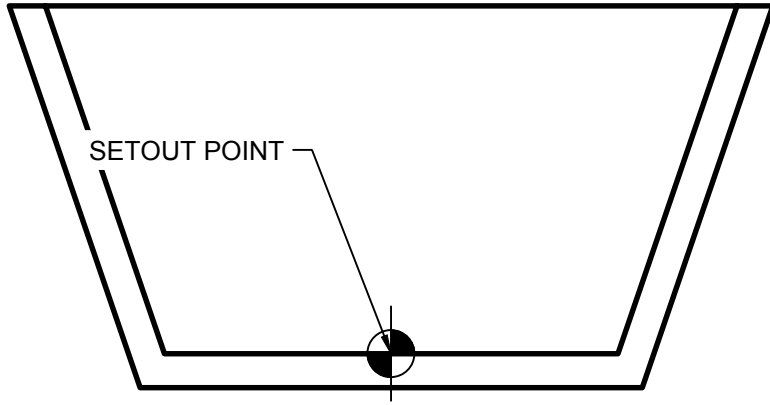
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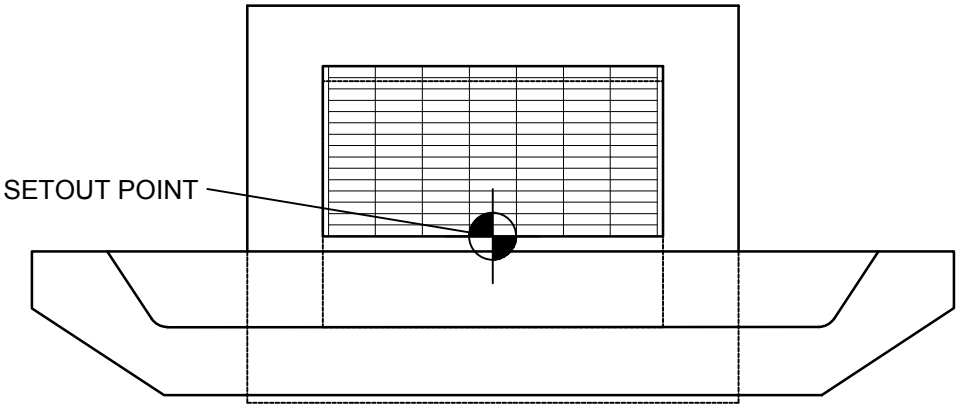
SETOUT DETAIL KERB INLET PIT (LINTEL)
SCALE 1:20



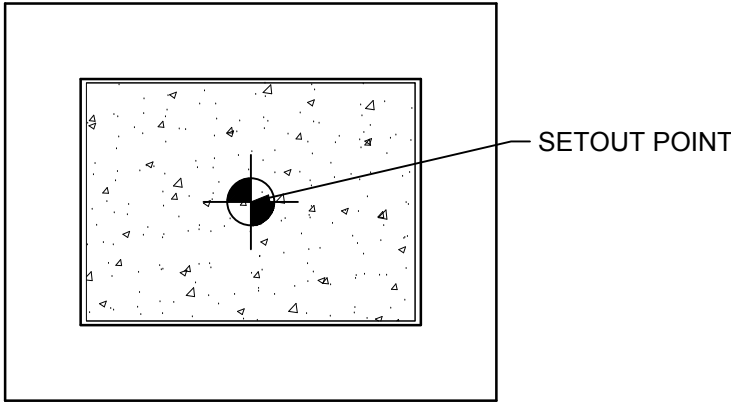
GRATED SURFACE INLET PIT (GSIP)
SCALE 1:20



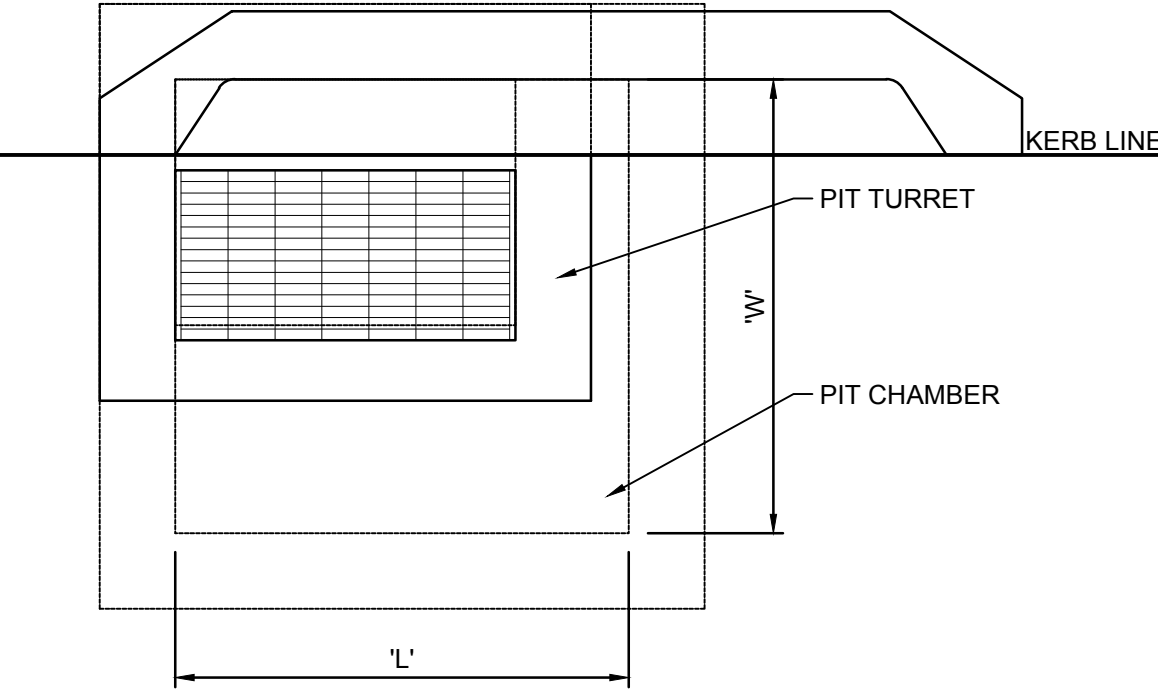
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SCALE 1:20



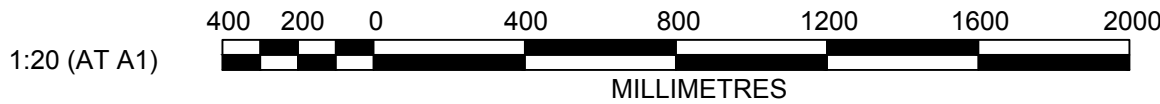
SETOUT DETAIL KERB INLET PIT (SAG)
(LINTEL CENTERED UNLESS NOTED ON PLAN)
SCALE 1:20



IAD - JUNCTION PIT (JP)
SCALE 1:20



PIT CHAMBER DIMENSION (TYPICAL)
SCALE 1:20



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CADDENS HILL
STAGE 5

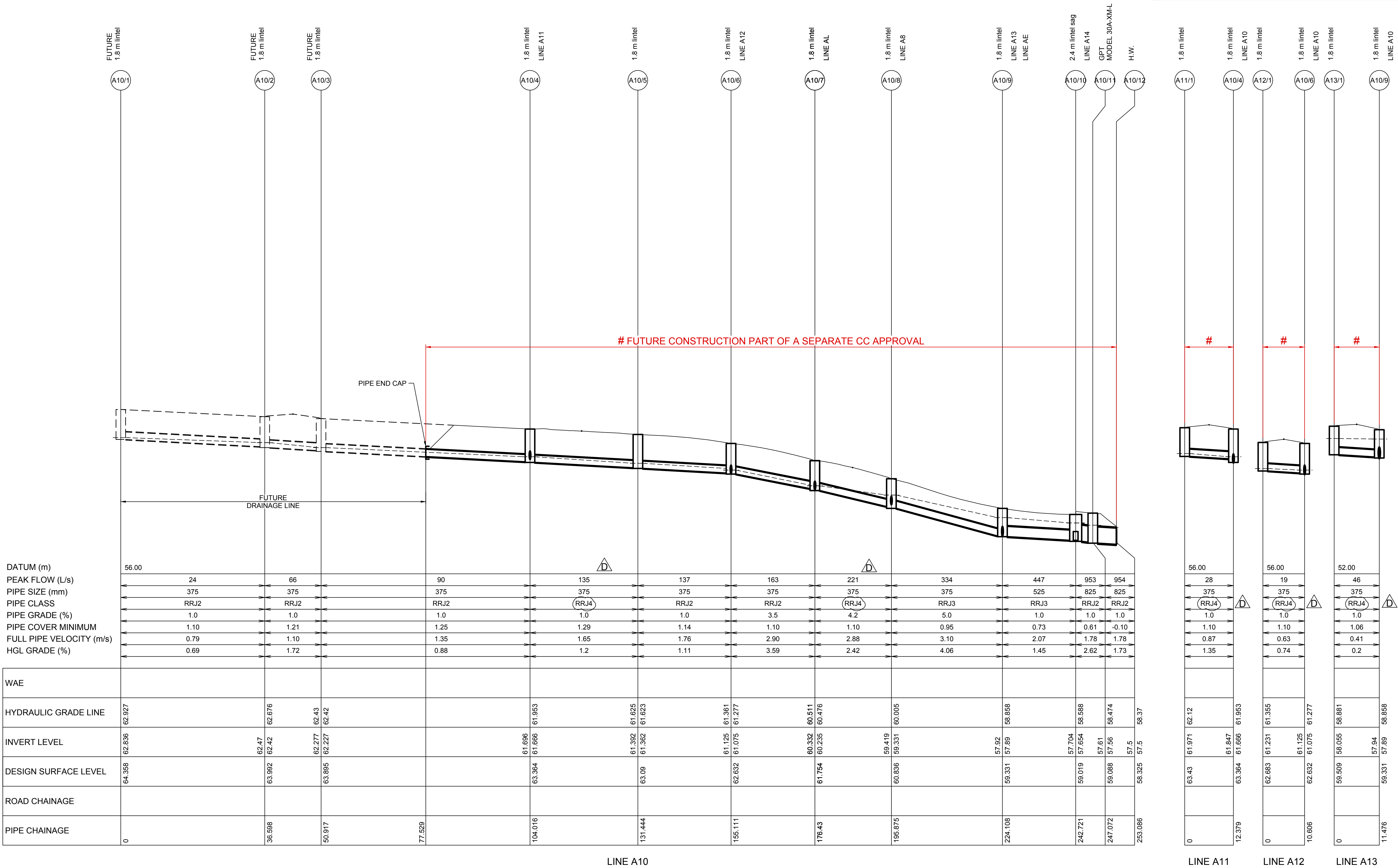
PIT DETAILS & PIT SCHEDULE

PLAN No:
110358/CC519 B
FILE No: 110358CC519
SHEET SIZE: A1 ORIGINAL

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A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17	
	AMENDMENT	DES	DRN	CKD	APR	DATE	

Plotted: 29 March 2018 10:18:41 AM File Name: J:\110358 - O'Connell Lane Caddens\04 - Stage 5\DC\CC\STAGE 5\110358CC520.dwg

DRAINAGE PIPE SYSTEM Caters FOR 5YR ARI UNLESS OTHERWISE NOTED

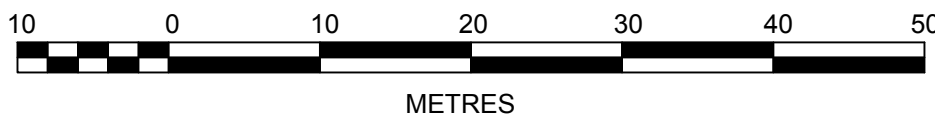


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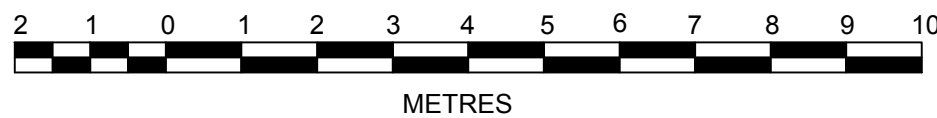
Eric Hausfeld
Accredited Certifier
Registration No: BPB 2416
Categories: B1,C1,C2,C3,C4,C6,C15 & D1

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1:500 (AT A1)
1:1000 (AT A3)



1:100 (AT A1)
1:200 (AT A3)



LINE A10

LINE A11

LINE A12

LINE A13

D	CERTIFIER COMMENTS - PIPE CLASS REVISED	JT	NAF	MS	RO
C	CERTIFIER COMMENTS - WORKS WITHIN LOT 11 REMOVED	JT	JT	RT	MS
B	O'CONNELL STREET INTERFACE AMENDMENTS	JT	JT	RT	MS
A	ISSUE FOR APPROVAL	JT	NM	RT	MS
	AMENDMENT	DES	DRN	CKD	APR
					DATE

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**CADDENS HILL
STAGE 5**

DRAINAGE LONG SECTIONS

PLAN No:
110358/CC520

FILE No: 110358CC520

SHEET SIZE: A1 ORIGINAL

Plotted: 29 March, 2018 10:19:02 AM File Name: J:\110358 - O'Connell Lane Caddens\04 - Stage 5\CD\CC\STAGE 5\110358CC521.dwg

FUTURE CONSTRUCTION PART OF A SEPARATE CC APPROVAL

DRAINAGE PIPE SYSTEM CATERS FOR 5YR ARI UNLESS OTHERWISE NOTED

DATUM (m)
PEAK FLOW (L/s)
PIPE SIZE (mm)
PIPE CLASS
PIPE GRADE (%)
PIPE COVER MINIMUM
FULL PIPE VELOCITY (m/s)
HGL GRADE (%)

WAE			
HYDRAULIC GRADE LINE	61.9	61.662	60.587
INVERT LEVEL	61.694	61.528	60.47
DESIGN SURFACE LEVEL	63.175	62.959	61.763
ROAD CHAINAGE			
PIPE CHAINAGE	0	10.562	39.031

LINE A8

LINE A9

LINE A14

LINE AD

LINE AE

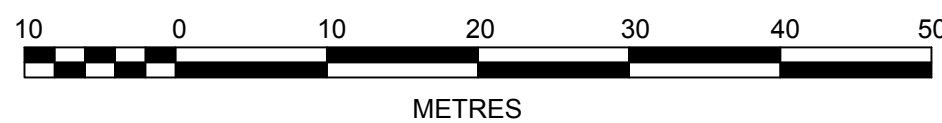
LINE AK

LINE AL

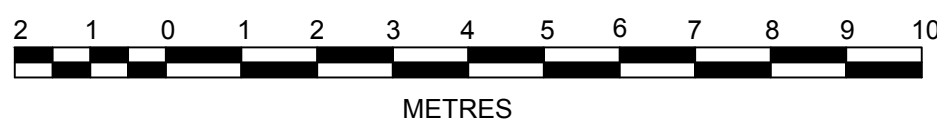
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1:500 (AT A1)
1:1000 (AT A3)



1:100 (AT A1)
1:200 (AT A3)



E	CERTIFIER COMMENTS - PIPE CLASS REVISED	JT	NAF	MS	RO	29/03/18
D	CERTIFIER COMMENTS - WORKS WITHIN LOT 11 REMOVED	JT	JT	RT	MS	14/12/17
C	CERTIFIER COMMENTS - WORKS WITHIN LOT 11 REMOVED	JT	JT	RT	MS	04/12/17
B	O'CONNELL STREET INTERFACE AMENDMENTS	JT	JT	RT	MS	20/10/17
A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17
	AMENDMENT	DES	DRN	CKD	APR	DATE

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CADDENS HILL
STAGE 5

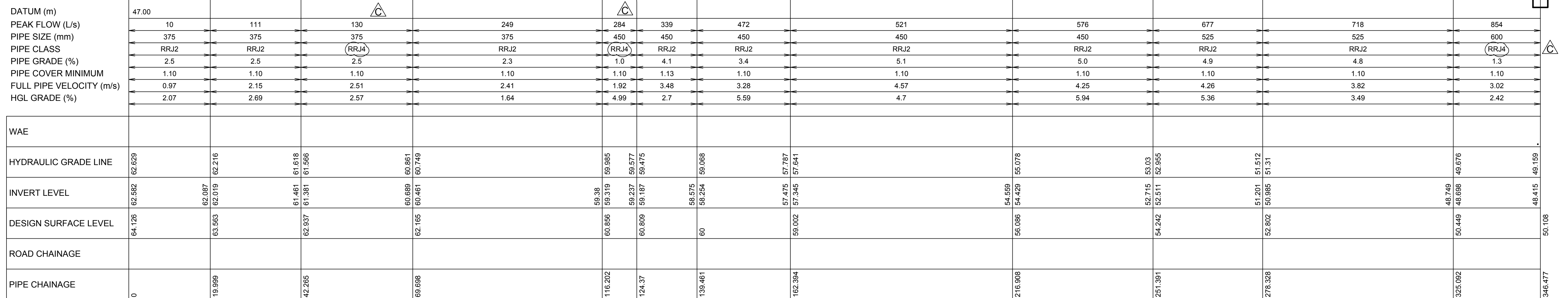
DRAINAGE LONG SECTIONS

PLAN No:
110358/CC521

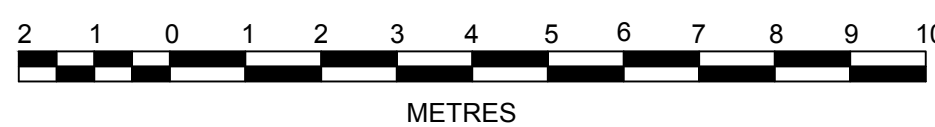
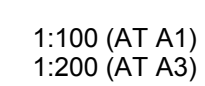
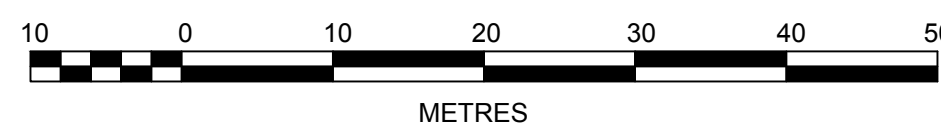
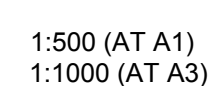
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SHEET SIZE: A1 ORIGINAL

DRAINAGE PIPE SYSTEM CATERERS FOR 5YR ARI UNLESS OTHERWISE NOTED



LINE B1



CLIENT:



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CADDENS HILL
STAGE 5

DRAINAGE LONG SECTIONS

PLAN No:
110358/CC522

FILE No: 110358CC522

SHEET SIZE:	A1 ORIGINAL
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& PROJECT MANAGERS

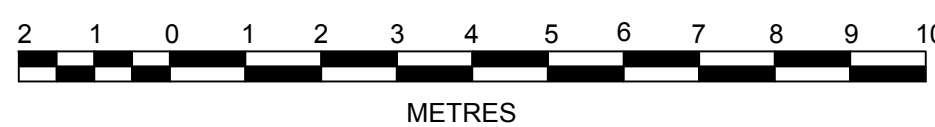
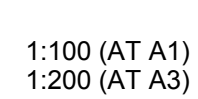
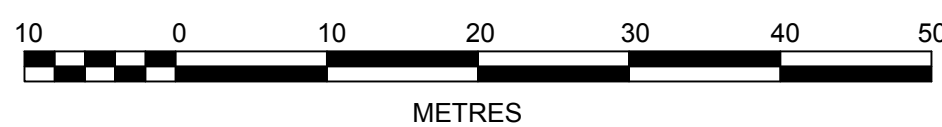
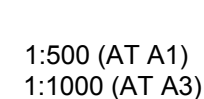
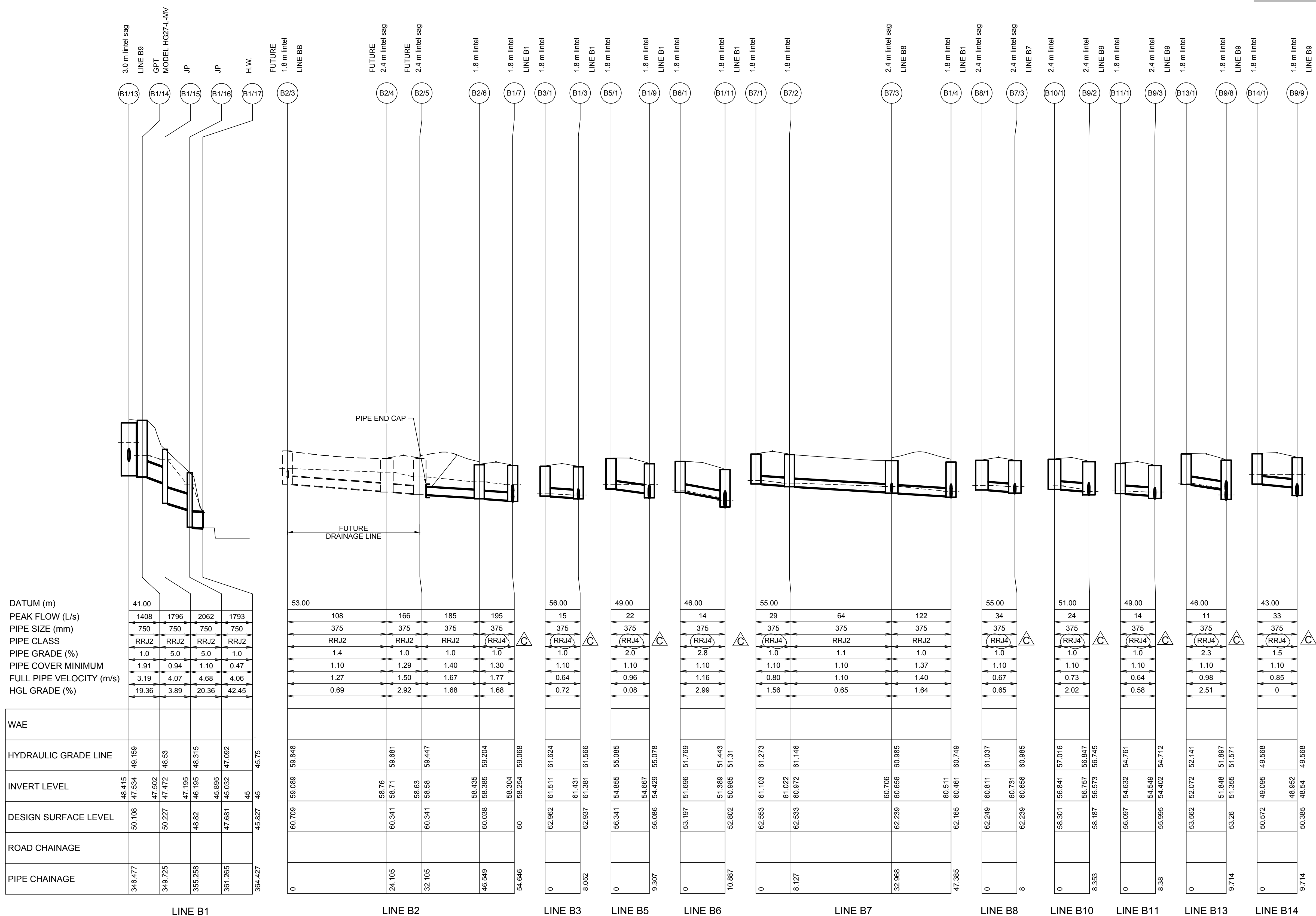
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AZIMUTH:
M.G.A

DATUM:
A.H.D

ORIGIN:

DRAINAGE PIPE SYSTEM CATERS FOR 5YR ARI UNLESS OTHERWISE NOTED



CLIENT:



LEGACYPROPERTY

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CADDENS HILL
STAGE 5

DRAINAGE LONG SECTIONS

PLAN No:
110358/CC523

FILE No: 110358CC523

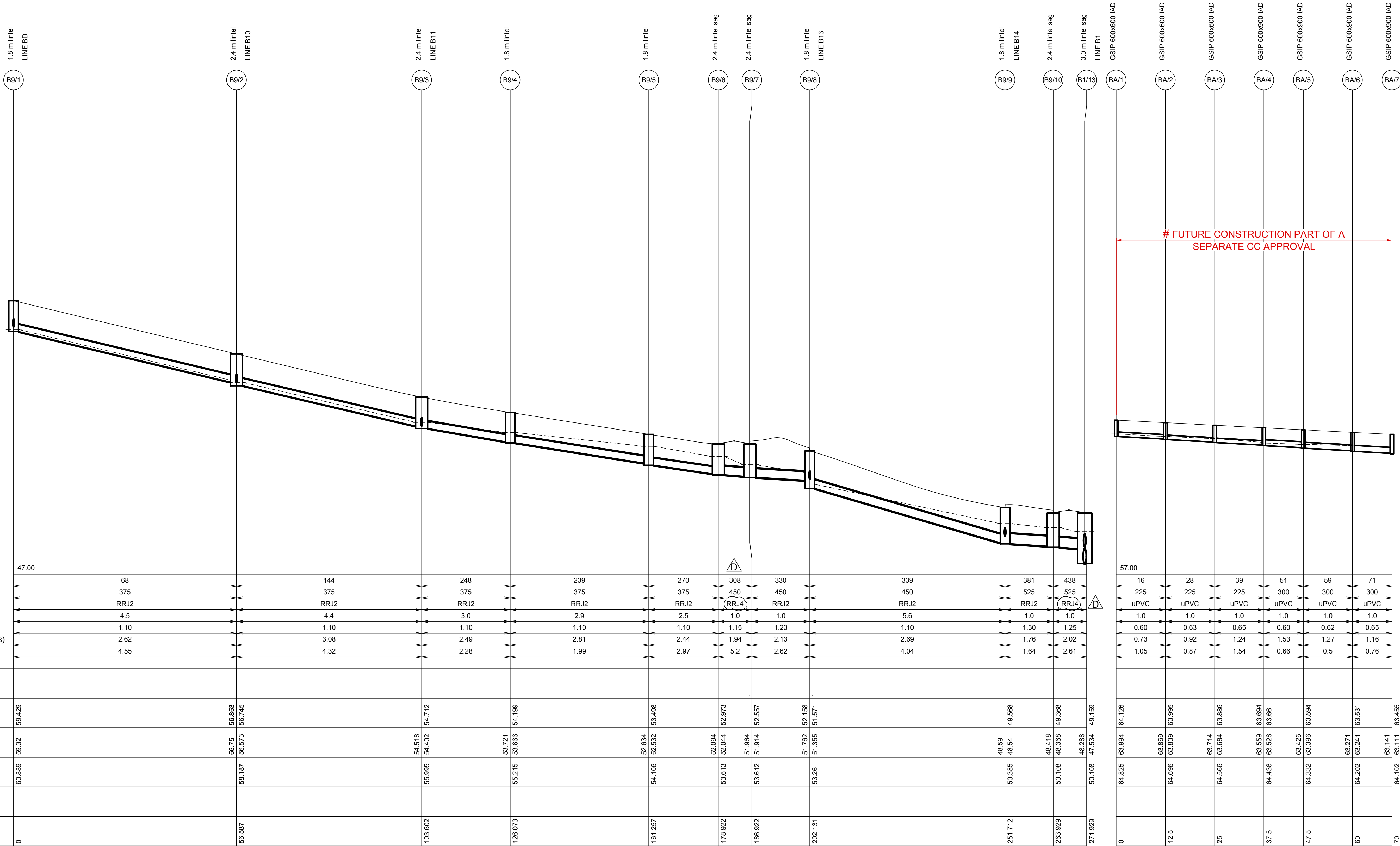
SHEET SIZE: A1 ORIGINAL

	<p>These plans are referred to in certificate no. 14776 approved by:</p> <p>Eric Hausfeld Accredited Certifier</p> <p>Registration No: BPB 2416</p> <p>Categories: B1,C1,C2,C3,C4,C6,C15 and D1</p>
<p align="center">Land Development Certificates www.Ldcerts.com.au</p>	

Plotted: 29 March, 2018 10:19:42 AM File Name: J:\110358 - OConnell Lane Caddens\04 - Stage 5\CD\CC\STAGE 5\110358CC523.dwg

Plotted: 29 March - 2018 10:20:02 AM File Name: J:\110358 - O'Connell Lane Caddens\04 - Stage 5\CD\CC\STAGE 5\110358CC524.dwg

DRAINAGE PIPE SYSTEM CATERES FOR 5YR ARI UNLESS OTHERWISE NOTED



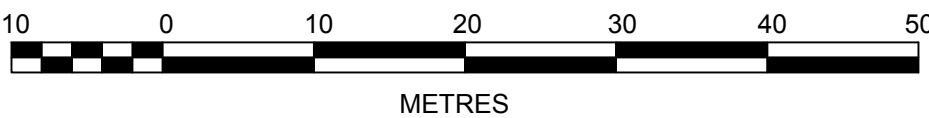
LINE B9

LINE BA

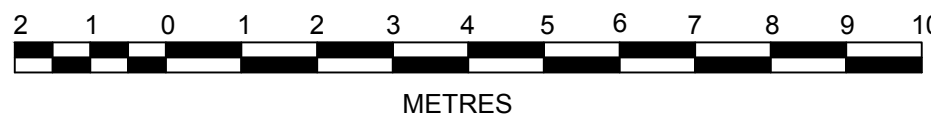


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1:500 (AT A1)
1:1000 (AT A3)



1:100 (AT A1)
1:200 (AT A3)



D	CERTIFIER COMMENTS - PIPE CLASS REVISED	JT	NAF	MS	RO
C	CERTIFIER COMMENTS - WORKS WITHIN LOT 11 REMOVED	JT	JT	RT	MS
B	O'CONNELL STREET INTERFACE AMENDMENTS	JT	JT	RT	MS
A	ISSUE FOR APPROVAL	JT	NM	RT	MS
	AMENDMENT	DES	DRN	CKD	APR
					DATE

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AZIMUTH:
M.G.A
DATUM:
A.H.D
ORIGIN:

CLIENT:



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CADDENS HILL
STAGE 5

DRAINAGE LONG SECTIONS

PLAN No:
110358/CC524

D

FILE No: 110358CC524

SHEET SIZE: A1 ORIGINAL

Plotted: 15 December, 2017 9:13:41 AM File Name: J:\110358 - O'Connell Lane Caddens\04 - Stage 5\CD\CC\STAGE 5\110358CC525.dwg

FUTURE CONSTRUCTION PART OF A
SEPARATE CC APPROVAL

DATUM (m)
PEAK FLOW (L/s)
PIPE SIZE (mm)
PIPE CLASS
PIPE GRADE (%)
PIPE COVER MINIMUM
FULL PIPE VELOCITY (m/s)
HGL GRADE (%)

WAE

HYDRAULIC GRADE LINE
INVERT LEVEL
DESIGN SURFACE LEVEL
ROAD CHAINAGE
PIPE CHAINAGE

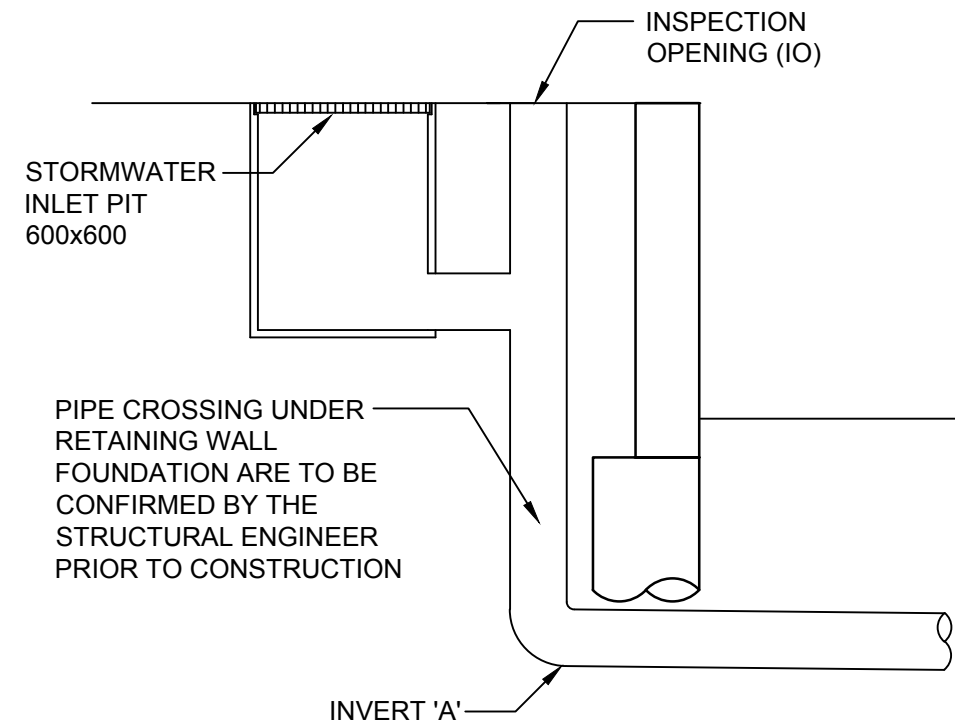
LINE BA

LINE BD

LINE BE

LINE BF

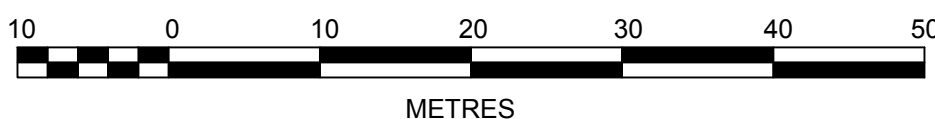
DRAINAGE PIPE SYSTEM CATERES FOR 5YR ARI UNLESS OTHERWISE NOTED



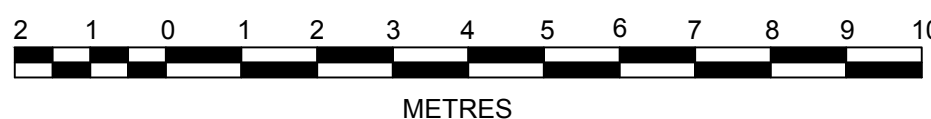
ALTERNATIVE DETAIL TO DEEP PITS OVER 2m
TYPICAL DROP UNDER RETAINING
WALL DETAIL
SUBJECT TO COUNCIL APPROVAL
NTS

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1:500 (AT A1)
1:1000 (AT A3)



1:100 (AT A1)
1:200 (AT A3)



C	CERTIFIER COMMENTS - WORKS WITHIN LOT 11 REMOVED	JT	JT	RT	MS
B	O'CONNELL STREET INTERFACE AMENDMENTS	JT	JT	RT	MS
A	ISSUE FOR APPROVAL	JT	NM	RT	MS
	AMENDMENT	DES	DRN	CKD	APR
					DATE

J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS

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AZIMUTH:
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DATUM:
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ORIGIN:

CLIENT:



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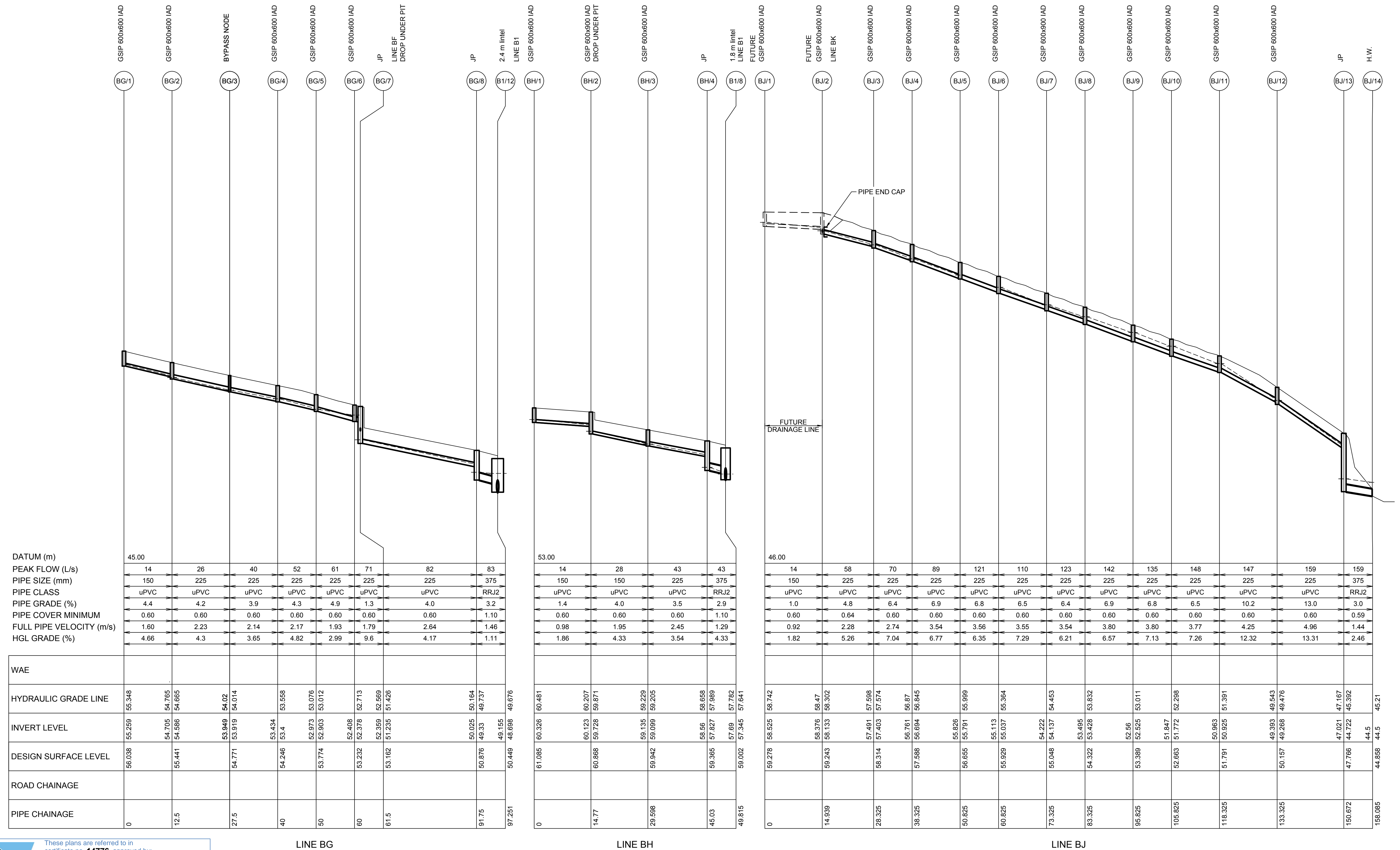
CADDENS HILL
STAGE 5

DRAINAGE LONG SECTIONS

PLAN No:
110358/CC525

FILE No: 110358CC525

SHEET SIZE: A1 ORIGINAL



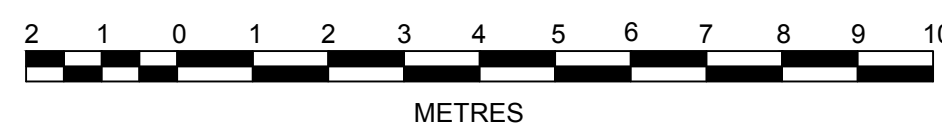
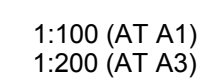
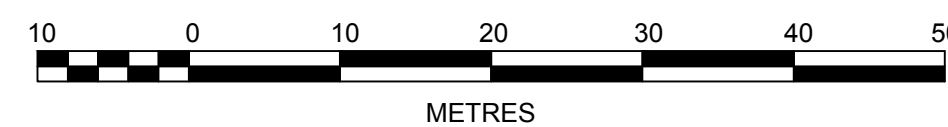
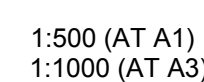
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Registration No: BPB 2416

Categories: B1,C1,C2,C3,C4,C6,C15 & D1

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CADDENS HILL
STAGE 5

DRAINAGE LONG SECTIONS

PLAN No:
110358/CC526

FILE No: 110358CC526

SHEET SIZE: A1 ORIGINAL

DRAINAGE SYSTEM A

DESIGN STORM 1:5yr ARI HYDROLOGIC RESULTS

PIT NAME	PIT TYPE	CATCHMENT AREA	PERCENT IMPERVIOUS	Tc IMP	Tc PERV	CRITICAL STORM	APPROACH FLOW	CAPTURED FLOW	UNCAPTURED FLOW	GRATE DEPTH	ROAD GRADE	ROAD CROSSFALL	BYPASS PIT	BYPASS CHANNEL FLOW	U/S FLOW WIDTH	U/S VxD	D/S FLOW WIDTH	D/S VxD	COMMENTS
(-)	(-)	(Ha)	(%)	(min)	(min)	(min)	(L/s)	(L/s)	(L/s)	(mm)	(%)	(%)	(-)	(L/s)	(m)	(m/s^2)	(m)	(m/s^2)	(-)
A10/3	1.8 m lintel		0	6	6	25	26	25	1	67	1	3	A10/4	18	1.36	0.04	1.36	0.04	
A10/4	1.8 m lintel	0.056	95	6	6		18	18	0	0	1	3	LOST	0					
A10/5	1.8 m lintel	0.01	95	6	6	15	3	3	0	45	1	3	A10/6	8	0.63	0.03	1.16	0.02	
A10/6	1.8 m lintel	0.025	95	6	6	25	8	8	0	61	3	3	A10/7	28	1.21	0.06	1.21	0.06	
A10/7	1.8 m lintel	0.092	85	6	6	15	28	27	1	33	4.4	3.1	A10/8	6	0.38	0.03	0.99	0.02	
A10/8	1.8 m lintel	0.053	95	6	6	25	21	21	0	56	5	3.4	A10/9	23	0.99	0.06	0.99	0.06	
A10/9	1.8 m lintel	0.079	85	6	6	15	23	23	0	50	3.9	3	A10/10	9	0.79	0.03	0.79	0.03	
A10/10	2.4 m lintel sag	0.044	95	6	6		9	9	0	18	0.4	3	A10/11	0					
A10/11	GPT		0	6	6		0	0	0	0	0.4	1.8	LOST	0					
A10/12	H.W.						0	0	0	0									
A11/1	1.8 m lintel	0.088	85	6	6	25	30	28	2	65	1	3	A12/1	20	1.32	0.04	1.32	0.04	
A12/1	1.8 m lintel	0.058	95	6	6	25	20	20	0	62	3	3	A13/1	38	1.26	0.08	1.26	0.08	
A13/1	1.8 m lintel	0.123	85	6	6	25	38	35	3	58	4.6	3	A14/7	17	1.09	0.04	1.09	0.04	
A14/7	2.4 m lintel sag	0.162	85	6	6	15	51	55	0	58	0.4	3	A10/10	0					
A8/1	1.8 m lintel	0.09	85	6	6	25	27	27	1	70	3.1	3	A9/1	40	1.52	0.07	1.52	0.07	
A8/2	1.8 m lintel		0	6	6	25	10	10	0	38	3.1	3	A8/3	7	0.45	0.03	0.45	0.03	
A8/3	1.8 m lintel	0.024	95	6	6	15	7	7	0	27	5.3	2.9	A10/8	4	0.31	0.02	1	0.01	
A9/1	2.4 m lintel	0.129	85	6	6	15	40	36	4	46	3.3	0.1	A10/8	11	0.67	0.04	1	0.03	
AD/1	GSIP 600x600 IAD	0.047	75	6	6	25	14	14	0	0									
AD/2	GSIP 600x600 IAD	0.036	75	6	6	25	11	11	0	0									
AD/3	GSIP 600x600 IAD		0	6	6		0	0	0	0									
AD/4	GSIP 600x600 IAD	0.046	75	6	6	25	14	14	0	0									
AD/5	JP		0	6	6		0	0	0	0									
AE/1	GSIP 600x600 IAD	0.046	75	6	6	25	14	14	0	0									
AE/2	GSIP 600x600 IAD	0.038	75	6	6	25	12	12	0	0									
AE/3	GSIP 600x600 IAD	0.047	75	6	6	25	14	14	0	0									
AE/4	GSIP 600x600 IAD	0.047	75	6	6	25	14	14	0	0									
AE/5	GSIP 600x600 IAD	0.038	75	6	6	25	12	12	0	0									
AE/6	JP		0	6	6		0	0	0	0									
AK/1	GSIP 900x900 IAD	0.037	75	6	6	15	11	11	0	0									
AL/1	GSIP 900x900 IAD	0.03	75	6	6	25	9	9	0	0									
BPA8/1	BYPASS NODE	0.032	85	6	6	15	10	0	0	46	3.1	3	A8/2	10	0.65	0.04	0.65	0.04	
BPA8/2	BYPASS NODE						0	0	0	0									

HYDROLOGY NOTES:

1. STORMWATER SYSTEM DESIGNED USING 12D DYNAMIC (ILSAX) SYSTEM.
2. BP LINES ARE DUMMY PITS AND ARE USED TO MORE ACCURATELY DETERMINE APPROACH FLOWS AT UPSTREAM PITS AND SAG LOCATIONS. RESULTS ON THESE DUMMY LINES MAY NOT BE VALID/RELEVANT.
3. MAXIMUM FLOW WIDTHS OF 2.5m IN GUTTERS HAVE GENERALLY BEEN ADOPTED.
4. SYSTEM A HYDROLOGIC TABLE REFER TO CC531

FOR CONTINUATION REFER CC528

DRAINAGE SYSTEM B

DESIGN STORM 1:5yr ARI HYDROLOGIC RESULTS

PIT NAME	PIT TYPE	CATCHMENT AREA	PERCENT IMPERVIOUS	Tc IMP	Tc PERV	CRITICAL STORM	APPROACH FLOW	CAPTURED FLOW	UNCAPTURED FLOW	GRATE DEPTH	ROAD GRADE	ROAD CROSSFALL	BYPASS PIT	BYPASS CHANNEL FLOW	U/S FLOW WIDTH	U/S VxD	D/S FLOW WIDTH	D/S VxD	COMMENTS
(-)	(-)	(Ha)	(%)	(min)	(min)	(min)	(L/s)	(L/s)	(L/s)	(mm)	(%)	(%)	(-)	(L/s)	(m)	(m/s^2)	(m)	(m/s^2)	(-)
BJ/13	JP		0	5	6		0	0	0	0									
BJ/14	H.W.						0	0	0	0									
BPB1/1	BYPASS NODE	0.03	95	5	6	15	10	0	0	46	2.8	3	B1/1	10	0.67	0.04	0.67	0.04	
BPB1/2	BYPASS NODE						0	0	0	0									
BPB10/1	BYPASS NODE	0.034	95	5	6	15	11	0	0	43	4.6	3	B13/1	11	0.57	0.04	0.72	0.04	
BPB10/2	BYPASS NODE						0	0	0	0									
BPB2/1	BYPASS NODE	0.046	95	5	6	15	15	0	0	54	2.8	3	B3/1	15	0.97	0.04	1.1	0.04	
BPB2/2	BYPASS NODE						0	0	0	0									
BPB3/1	BYPASS NODE	0.1	85	5	6	25	32	0	0	75	1.4	3	B7/1	32	1.63	0.05	1.63	0.05	
BPB3/2	BYPASS NODE						0	0	0	0									
BPB4/1	BYPASS NODE	0.113	85	5	6	25	37	0	0	77	1.4	3	B7/2	36	1.72	0.06	1.72	0.06	
BPB4/2	BYPASS NODE						0	0	0	0									
BPB8/1	BYPASS NODE	0.07	95	5	6	15	23	0	0	57	4.8	3	B10/1	23	1.02	0.06	1.02	0.06	
BPB8/2	BYPASS NODE						0	0	0	0									



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C	CERTIFIER COMMENTS - BP NODE REMOVED	JT	JT	RT	MS
B	O'CONNELL STREET INTERFACE AMENDMENTS	JT	JT	RT	MS
A	ISSUE FOR APPROVAL	JT	NM	RT	MS
	AMENDMENT	DES	DRN	CKD	APR
					DATE

J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS

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CADDENS HILL
STAGE 5

DRAINAGE CALCULATIONS

PLAN No:
110358/CC527

C

FILE No: 110358CC527

SHEET SIZE: A1 ORIGINAL

DRAINAGE SYSTEM B

DESIGN STORM 1:5yr ARI HYDROLOGIC RESULTS

PIT NAME	PIT TYPE	CATCHMENT AREA	PERCENT IMPERVIOUS	Tc IMP	Tc PERV	CRITICAL STORM	APPROACH FLOW	CAPTURED FLOW	UNCAPTURED FLOW	GRATE DEPTH	ROAD GRADE	ROAD CROSSFALL	BYPASS PIT	BYPASS CHANNEL FLOW	U/S FLOW WIDTH	U/S VxD	D/S FLOW WIDTH	D/S VxD	COMMENTS
(-)	(-)	(Ha)	(%)	(min)	(min)	(min)	(L/s)	(L/s)	(L/s)	(mm)	(%)	(%)	(-)	(L/s)	(m)	(m/s^2)	(m)	(m/s^2)	(-)
B1/1	1.8 m lintel		0	5	6	15	10	10	0	35	2.8	3	B1/2	5	0.42	0.03	0.43	0.02	
B1/2	1.8 m lintel	0.016	95	5	6	15	5	5	0	37	2.8	3	B1/3	6	0.44	0.03	0.54	0.02	
B1/3	1.8 m lintel	0.018	95	5	6	15	6	6	0	42	2.8	3	B8/1	10	0.54	0.04	0.65	0.04	
B1/4	1.8 m lintel	0.008	95	5	6	25	0	0	0	75	2.8	3	B1/5	46	1.63	0.07	1.76	0.07	
B1/5	1.8 m lintel	0.14	95	5	6	25	46	39	7	79	2.8	3	B2/4	43	1.76	0.06	1.76	0.07	
B1/6	1.8 m lintel	0.047	95	5	6	25	16	16	0	34	2.8	3	B1/7	6	0.4	0.03	0.97	0.02	
B1/7	1.8 m lintel	0.018	95	5	6	25	6	6	0	55	3	3	B1/8	21	0.99	0.06	1.63	0.03	
B1/8	1.8 m lintel	0.065	85	5	6	25	21	21	0	75	5.3	3	B1/9	63	1.63	0.1	1.63	0.1	
B1/9	1.8 m lintel	0.197	85	5	6	25	63	51	11	70	5.3	3	B1/10	51	1.49	0.09	1.49	0.09	
B1/10	1.8 m lintel	0.125	85	5	6	25	51	46	4	64	5.3	3	B1/11	37	1.27	0.08	1.59	0.06	
B1/11	1.8 m lintel	0.104	85	5	6	25	37	36	1	74	5.3	3	B1/12	58	1.59	0.1	1.59	0.1	
B1/12	2.4 m lintel	0.18	85	5	6	25	58	54	5	67	3.4	3	B9/10	25	1.38	0.05	1.38	0.05	
B1/13	3.0 m lintel sag	0.093	95	5	6		27	26	0	33	0.4	3	B1/14	0					
B1/14	GPT		0	5	6		0	0	0	0	0.4	-1	B1/15	0					
B1/15	JP		0	5	6		0	0	0	0	0.4		B1/16	0					
B1/16	JP		0	5	6		0	0	0	0			LOST	0					
B1/17	H.W.						0	0	0	0									
B10/1	2.4 m lintel		0	5	6	15	23	23	0	45	4.8	3	B11/1	12	0.63	0.04	1.1	0.03	
B11/1	1.8 m lintel	0.037	95	5	6	15	12	12	0	59	4.3	3	B9/7	22	1.1	0.05	1.09	0.05	
B13/1	1.8 m lintel		0	5	6	15	11	11	0	48	4.8	3	B14/1	16	0.72	0.05	0.78	0.05	
B14/1	1.8 m lintel	0.048	95	5	6	15	16	16	0	49	4.3	3	B1/13	8	0.78	0.03	0.78	0.03	
B2/5	2.4 m lintel sag		0	5	6	15	19	21	0	34	0.1	3	B2/6	0					
B2/6	1.8 m lintel	0.008	95	5	6	15	0	0	0	52	3	3	B5/1	19	0.91	0.05	0.91	0.05	
B3/1	1.8 m lintel		0	5	6	25	15	15	0	59	2.8	3	B9/1	27	1.1	0.07	1.69	0.04	
B5/1	1.8 m lintel	0.058	95	5	6	15	19	19	0	47	5.3	3	B6/1	15	0.71	0.05	0.94	0.04	
B6/1	1.8 m lintel	0.047	95	5	6	15	15	15	0	54	5.3	3	B1/13	19	0.99	0.05	0.99	0.05	
B7/1	1.8 m lintel		0	5	6	25	32	30	3	66	1.4	3	B8/1	19	1.34	0.04	1.34	0.04	
B7/2	1.8 m lintel		0	5	6	25	36	33	4	72	1.4	3	B7/3	26	1.55	0.04	1.55	0.04	
B7/3	2.4 m lintel sag	0.09	85	5	6	15	26	27	0	40	1.3	3.2	B1/4	0					
B8/1	2.4 m lintel sag	0.084	85	5	6	15	29	36	0	45	0.8	3	B7/3	0					
B9/1	1.8 m lintel	0.085	85	5	6	25	27	27	1	77	4.8	3	B9/2	65	1.69	0.1	1.7	0.1	
B9/2	2.4 m lintel	0.202	85	5	6	25	65	56	9	77	4.8	3	B9/3	65	1.7	0.1	1.7	0.1	
B9/3	2.4 m lintel	0.18	85	5	6	25	65	56	9	67	4	3	B9/4	35	1.38	0.07	1.56	0.06	
B9/4	1.8 m lintel	0.086	85	5	6	25	35	33	2	73	3.2	3	B9/5	44	1.58	0.08	1.58	0.08	
B9/5	1.8 m lintel	0.133	85	5	6	25	44	40	4	60	3.2	3	B9/6	22	1.13	0.05	1.13	0.05	
B9/6	2.4 m lintel sag	0.129	85	5	6	10	44	46	0	52	1.2	3	B9/7	0					
B9/7	2.4 m lintel sag	0.074	95	5	6	15	22	23	0	36	1	3	B9/8	0	0.13		0.86		
B9/8	1.8 m lintel	0.008	95	5	6	15	0	0	0	58	6	3	B9/9	28	1.06	0.07	1.07	0.07	
B9/9	1.8 m lintel	0.085	95	5	6	25	28	26	2	58	3	3	B9/10	16	1.07	0.04	1.07	0.04	
B9/10	2.4 m lintel sag	0.115	85	5	6	10	41	43	0	50	0.4	3	B1/13	0					
BA/1	GSIP 600x600 IAD	0.052	75	5	6	25	16	16	0	0									
BA/2	GSIP 600x600 IAD	0.037	75	5	6	25	12	12	0	0									
BA/3	GSIP 600x600 IAD	0.038	75	5	6	25	12	12	0	0									
BA/4	GSIP 600x900 IAD	0.038	75	5	6	25	12	12	0	0									
BA/5	GSIP 600x900 IAD	0.03	75	5	6	15	9	9	0	0									
BA/6	GSIP 600x900 IAD	0.038	75	5	6	25	12	12	0	0									
BA/7	GSIP 600x900 IAD	0.03	75	5	6	15	9	9	0	0									
BA/8	GSIP 600x900 IAD	0.03	75	5	6	25	10	10	0	0									
BA/9	GSIP 600x900 IAD	0.03	75	5	6	25	10	10	0	0									
BA/10	JP		0	5	6		0	0	0	0									
BD/1	GSIP 600x600 IAD	0.047	75	5	6	25	15	15	0	0									
BD/2	GSIP 600x600 IAD	0.032	75	5	6	25	10	10	0	0									
BD/3	GSIP 600x600 IAD	0.032	75	5	6	25	10	10	0	0									
BD/4	GSIP 600x600 IAD	0.032	75	5	6	15	10	10	0	0									
BD/5	JP		0	5	6		0	0	0	0									
BE/1	GSIP 600x600 IAD	0.045	75	5	6	25	14	14	0	0									
BE/2	GSIP 600x600 IAD	0.038	75	5	6	25	12	12	0	0									
BE/3	GSIP 600x600 IAD	0.034	75	5	6	25	11	11	0	0									
BE/4	GSIP 600x600 IAD	0.037	75	5	6	25	12	12	0	0									
BE/5	GSIP 600x600 IAD	0.03	75	5	6	15	9	9	0	0									
BE/6	GSIP 600x600 IAD	0.037	75	5	6	25	12	12	0	0									
BE/7	GSIP 600x600 IAD	0.03	75	5	6	15	9	9	0	0									
BE/8	JP		0	5	6		0	0	0	0									
BE/9	JP		0	5	6		0	0	0	0									
BF/1	GSIP 600x600 IAD	0.037	75	5	6	25	12	12	0	0									
BG/1	GSIP 600x600 IAD	0.045	75	5	6	25	14	14	0	0									
BG/2	GSIP 600x600 IAD	0.037	75	5	6	25	12	12	0	0									
BG/3	BYPASS NODE	0.045	75	5	6	25	14	14	0	0									
BG/4	GSIP 600x600 IAD	0.037	75	5	6	25	12	12	0	0									
BG/5	GSIP 600x600 IAD	0.03	75	5	6	15	9	9	0	0									
BG/6	GSIP 600x600 IAD	0.03	75	5	6	15	9	9	0	0									
BG/7	JP		0	5	6		0	0	0	0									
BG/8	JP		0	5	6		0	0	0	0									
BH/1	GSIP 600x600 IAD	0.046	75	5	6	15	14	14	0	0									
BH/2	GSIP 600x900 IAD	0.046	75	5	6	25	15	15	0	0									
BH/3	GSIP 600x600 IAD	0.045	75	5	6	25	14	14	0	0									
BH/4	JP		0	5	6		0	0	0	0									
BJ/3	GSIP 600x600 IAD	0.04	75	5	6	25	13	13	0	0									
BJ/4	GSIP 600x600 IAD	0.03	75	5	6	25	10	10	0	0									
BJ/5	GSIP 600x600 IAD	0.038	75	5	6	25	12	12	0	0									
BJ/6	GSIP 600x600 IAD	0.03	75	5	6	25	9	9	0	0									
BJ/7	GSIP 600x900 IAD	0.038	75	5	6	25	12	12	0	0									
BJ/8	GSIP 600x600 IAD	0.03	75	5	6	15	9	9	0	0									
BJ/9	GSIP 600x600 IAD	0.038	75	5	6	25	12	12	0	0									
BJ/10	GSIP 600x600 IAD	0.03	75	5	6	15	9	9	0	0									
BJ/11	GSIP 600x600 IAD	0.038	75	5	6	25	12	12	0	0									
BJ/12	GSIP 600x600 IAD	0.045	75	5	6	25	14	14	0	0									

FOR CONTINUATION REFER CC527

- HYDROLOGY NOTES:
1. STORMWATER SYSTEM DESIGNED USING 12D DYNAMIC (ILSAX) SYSTEM.
 2. BP LINES ARE DUMMY PITS AND ARE USED TO MORE ACCURATELY DETERMINE APPROACH FLOWS AT UPSTREAM PITS AND SAG LOCATIONS. RESULTS ON THESE DUMMY LINES MAY NOT BE VALID/RELEVANT.
 3. MAXIMUM FLOW WIDTHS OF 2.5m IN GUTTERS HAVE GENERALLY BEEN ADOPTED
 4. CONTINUATION OF HYDROLOGIC TABLE REFER TO CC532

LDC

These plans are referred to in certificate no. **14776** approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPB 2416
Categories: B1,C1,C2,C3,C4,C6,C15 & D1
Land Development Certificates
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DRAINAGE SYSTEM A

DESIGN STORM 1:5yr ARI HYDRAULIC RESULTS

	PIPE NAME	PIPE DIAMETER	PIPE TYPE	PIPE LENGTH	PIPE GRADE	CRITICAL STORM	PEAK FLOW	CAPACITY RATIO	PEAK VELOCITY	PIPE U/S IL	PIPE D/S IL	PIPE D/S DROP	U/S PIT Ku	D/S PIT Kw	PIT LOSS (Ku.V/head)	WSE LOSS (Kw.V/head)	U/S PIPE HGL	D/S PIPE HGL	HGL GRADE	MINIMUM COVER	MINIMUM FREEBOARD	COMMENTS
	(-)	(mm)	(-)	(m)	(%)	(min)	(L/s)	(-)	(m/s)	(m)	(m)	(m)	(-)	(-)	(m)	(m)	(m)	(m)	(%)	(m)	(m)	
D	A10/3 to A10/4	375	RRJ2	53.1	1	25	90	0.47	1.35	62.227	61.696	0.03	7	7	0.22	0.22	62.42	61.953	0.88	1.25	1.475	
	A10/4 to A10/5	375	RRJ4	27.43	1	25	135	0.71	1.65	61.666	61.392	0.03	0.97	0.97	0.12	0.12	61.953	61.625	1.2	1.29	1.411	
	A10/5 to A10/6	375	RRJ2	23.67	1	25	137	0.72	1.76	61.362	61.125	0.051	7	7	0.07	0.07	61.623	61.361	1.11	1.14	1.467	
D	A10/6 to A10/7	375	RRJ2	21.32	3.48	25	163	0.46	2.9	61.075	60.332	0.097	7	7	0.25	0.25	61.277	60.511	3.59	1.1	1.356	
	A10/7 to A10/8	375	RRJ4	19.45	4.19	25	221	0.57	2.88	60.235	59.419	0.088	9.7	6.58	0.66	0.66	60.476	60.005	2.42	1.1	1.278	
	A10/8 to A10/9	375	RRJ3	28.23	5	25	334	0.79	3.1	59.331	57.92	0.03	0.71	0.71	0.31	0.31	60.005	58.858	4.06	0.95	0.831	
D	A10/9 to A10/10	525	RRJ3	18.61	1	25	447	0.96	2.07	57.89	57.704	0.05	0.5	0.5	0.1	0.1	58.858	58.588	1.45	0.73	0.473	
	A10/10 to A10/11	825	RRJ2	4.35	1	25	953	0.61	1.78	57.654	57.61	0.05	0.61	0.61	0.1	0.1	58.588	58.474	2.62	0.61	0.431	
	A10/11 to A10/12	825	RRJ2	6.01	1	25	954	0.61	1.78	57.56	57.5		0.5	0.5	0.08	0.08	58.474	58.37	1.73	-0.1	0.614	
D	A11/1 to A10/4	375	RRJ4	12.38	1	25	28	0.15	0.87	61.971	61.847	0.181	4.5	4.5	0.17	0.17	62.12	61.953	1.35	1.1	1.309	
	A12/1 to A10/6	375	RRJ4	10.61	1	25	19	0.1	0.63	61.231	61.125	0.05	4.5	4.5	0.09	0.09	61.355	61.277	0.74	1.1	1.328	
	A13/1 to A10/9	375	RRJ4	11.48	1	25	46	0.24	0.41	58.055	57.94	0.05	4.5	4.5	0.04	0.04	58.881	58.858	0.2	1.06	0.628	
D	A14/7 to A10/10	1200x450	Box Culvert	10.51	1	25	499	0.37	0.92	57.809	57.704	0.05	1.28	1.34	0.05	0.05	58.653	58.588	0.62	0.83	0.367	
	A8/1 to A8/2	375	RRJ4	10.56	1.58	25	65	0.27	1.34	61.694	61.528	0.05	2.08	2.08	0.19	0.19	61.9	61.662	2.25	1.1	1.275	
	A8/2 to A8/3	375	RRJ2	29.37	3.43	25	75	0.21	2.39	61.478	60.47	0.175	1.24	1.25	0.35	0.36	61.605	60.587	3.47	1.1	1.354	
D	A8/3 to A10/8	375	RRJ2	14.65	5.13	25	158	0.37	3.17	60.295	59.544	0.212	0.77	0.77	0.36	0.36	60.462	60.005	3.12	1.1	1.301	
	A9/1 to A8/3	375	RRJ4	9.28	2.72	25	47	0.15	1.25	60.598	60.345	0.05	7.38	7.38	0.48	0.48	60.787	60.462	3.5	1.1	1.308	
	AD/1 to AD/2	150	uPVC	12.5	4.96	25	15	0.33	1.66	65.238	64.617	0.052	4.5	4.5	0.63	0.63	65.307	64.725	4.66	0.6	0.707	
	AD/2 to AD/3	150	uPVC	7.8	4.52	25	25	0.59	1.75	64.565	64.213	0.057	9.24	9.24	0.3	0.3	64.725	64.296	5.5	0.6	0.62	
	AD/3 to AD/4	150	uPVC	10.95	4.34	25	25	0.6	2.34	64.156	63.681	0.097	0.24	0.24	0.07	0.07	64.247	63.765	4.4	0.6	0.699	
	AD/4 to AD/5	225	uPVC	18.81	4.25	25	39	0.32	2.59	63.584	62.784	0.737	9.7	9.7	0.45	0.45	63.678	62.872	4.29	0.6	0.754	
	AD/5 to A8/1	375	RRJ2	6.06	3.09	25	39	0.12	1.37	62.048	61.861	0.166	2.09	3.24	0.2	0.31	62.188	61.947	3.98	1.1	1.396	
	AE/1 to AE/2	150	uPVC	10	2.62	25	14	0.43	1.08	62.267	62.005	0.03	4.5	4.5	0.27	0.27	62.39	62.188	2.02	0.6	0.648	
	AE/2 to AE/3	150	uPVC	12.5	2.67	25	25	0.77	1.59	61.975	61.641	0.101	9.36	9.36	0.26	0.26	62.188	61.74	3.58	0.6	0.561	
	AE/3 to AE/4	225	uPVC	12.5	3.38	25	39	0.37	2.26	61.539	61.118	0.06	9.7	9.7	0.3	0.3	61.651	61.212	3.51	0.6	0.729	
	AE/4 to AE/5	225	uPVC	10	6.1	25	54	0.37	2.54	61.057	60.447	0.06	1.38	1.38	0.44	0.44	61.199	60.542	6.57	0.6	0.715	
	AE/5 to AE/6	225	uPVC	13.68	9.67	25	65	0.36	3.68	60.387	59.064	0.883	1.01	1.01	0.68	0.68	60.499	59.157	9.81	0.6	0.745	
	AE/6 to A10/9	375	RRJ2	6	2.85	25	64	0.2	0.58	58.181	58.01	0.121	2.09	3.24	0.03	0.05	58.888	58.858	0.5	1.1	0.892	
	AK/1 to A9/1	375	RRJ2	7.1	3.46	25	11	0.03	1.13	61.047	60.801	0.203	4.5	4.5	0.3	0.3	61.112	60.847	3.73	1.1	1.535	
	AL/1 to A10/7	375	RRJ2	9.75	6.63	25	9	0.02	1.33	60.953	60.306	0.071	4.5	4.5	0.4	0.4	60.989	60.476	5.26	1.1	1.673	
	BPA8/1 to BPA8/2	2	No Flow	5.43	1	10	0	0	0	62.775	62.72		0	0	0	0	62.775	62.721	0.99	0.6	0.447	

FOR CONTINUATION REFER CC530

DRAINAGE SYSTEM B

DESIGN STORM 1:5yr ARI HYDRAULIC RESULTS

PIPE NAME	PIPE DIAMETER	PIPE TYPE	PIPE LENGTH	PIPE GRADE	CRITICAL STORM	PEAK FLOW	CAPACITY RATIO	PEAK VELOCITY	PIPE U/S IL	PIPE D/S IL	PIPE D/S DROP	U/S PIT Ku	D/S PIT Kw	PIT LOSS (Ku.V/head)	WSE LOSS (Kw.V/head)	U/S PIPE HGL	D/S PIPE HGL	HGL GRADE	MINIMUM COVER	MINIMUM FREEBOARD	COMMENTS
(-)	(mm)	(-)	(m)	(%)	(min)	(L/s)	(-)	(m/s)	(m)	(m)	(m)	(-)	(-)	(m)	(m)	(m)	(m)	(%)	(m)	(m)	
BJ/7 to BJ/8	225	uPVC	10	6.42	120	123	0.83	3.54	54.137	53.495	0.068	0.77	0.77	0.41	0.41	54.453	53.832	6.21	0.6	0.595	
BJ/8 to BJ/9	225	uPVC	12.5	6.94	25	142	0.92	3.8	53.428	52.56	0.036	0.61	0.61	0.41	0.41	53.832	53.011	6.57	0.6	0.49	
BJ/9 to BJ/10	225	uPVC	10	6.78	20	135	0.89	3.8	52.525	51.847	0.075	0.63	0.63	0.39	0.39	53.011	52.298	7.13	0.6	0.378	
BJ/10 to BJ/11	225	uPVC	12.5	6.47	20	148	0.99	3.77	51.772	50.963	0.038	0.58	0.58	0.35	0.35	52.298	51.391	7.26	0.6	0.366	
BJ/11 to BJ/12	225	uPVC	15	10.21	25	147	0.78	4.25	50.925	49.393	0.124	0.63	0.63	0.53	0.53	51.391	49.543	12.32	0.6	0.4	
BJ/12 to BJ/13	225	uPVC	17.35	12.95	25	159	0.75	4.96	49.268	47.021	2.299	0.66	0.66	0.71	0.71	49.476	47.167	13.31	0.6	0.681	
BJ/13 to BJ/14	375	RRJ2	7.41	3	25	159	0.48	1.44	44.722	44.5		1.88	3.12	0.13	0.31	45.392	45.21	2.46	0.59	2.374	
BPB1/1 to BPB1/2	2	No Flow	5.12	1	10	0	0	0	63.882	63.831		0	0	0	0	63.882	63.831	1	0.6	0.448	
BPB10/1 to BPB10/2	2	No Flow	6.19	1	10	0	0	0	53.3	53.238		0	0	0	0	53.3	53.239	0.99	0.6	0.447	
BPB2/1 to BPB2/2	2	No Flow	5.01	1	10	0	0	0	62.748	62.698		0	0	0	0	62.748	62.698	1	0.6	0.448	
BPB3/1 to BPB3/2	2	No Flow	5.34	1	10	0	0	0	62.224	62.171		0	0	0	0	62.225	62.171	1.01	0.6	0.447	
BPB4/1 to BPB4/2	2	No Flow	5.34	1	10	0	0	0	62.246	62.192		0	0	0	0	62.246	62.192	1.01	0.6	0.448	
BPB8/1 to BPB8/2	2	No Flow	5.15	1	10	0	0	0	58.421	58.37		0	0	0	0	58.421	58.37	0.99	0.6	0.448	
BPB9/1 to BPB9/2	2	No Flow	5.57	1	10	0	0	0	54.014	53.959		0	0	0	0	54.014	53.959	0.99	0.6	0.447	



These plans are referred to in certificate no. **14776** approved by:

Eric Hausfeld
Accredited Certifier

Registration No: BPB 2416
Categories: B1,C1,C2,C3,C4,C6,C15 & D1

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D	CERTIFIER COMMENTS - PIPE CLASS REVISED	JT	NAF	MS	RO	29/03/18
C	CERTIFIER COMMENTS - BP NODE REMOVED	JT	JT	RT	MS	04/12/17
B	O'CONNELL STREET INTERFACE AMENDMENTS	JT	JT	RT	MS	20/10/17
A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17
	AMENDMENT	DES	DRN	CKD	APR	DATE

J. WYNDHAM PRINCE

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M.G.A

DATUM:
A.H.D

ORIGIN:



THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS PART OF AN APPROVED CONSTRUCTION CERTIFICATE.

ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 5

DRAINAGE CALCULATIONS

PLAN No:
110358/CC529

D

FILE No: 110358CC529

SHEET SIZE: A1 ORIGINAL

DRAINAGE SYSTEM B

DESIGN STORM 1:5yr ARI HYDRAULIC RESULTS

	PIPE NAME	PIPE DIAMETER	PIPE TYPE	PIPE LENGTH	PIPE GRADE	CRITICAL STORM	PEAK FLOW	CAPACITY RATIO	PEAK VELOCITY	PIPE U/S IL	PIPE D/S IL	PIPE D/S DROP	U/S PIT Ku	D/S PIT Kw	PIT LOSS (Ku.V/head)	WSE LOSS (Kw.V/head)	U/S PIPE HGL	D/S PIPE HGL	HGL GRADE	MINIMUM COVER	MINIMUM FREEBOARD	COMMENTS
	(-)	(mm)	(-)	(m)	(%)	(min)	(L/s)	(-)	(m/s)	(m)	(m)	(m)	(-)	(-)	(m)	(m)	(m)	(m)	(%)	(m)	(m)	
	B1/1 to B1/2	375	RRJ2	20	2.47	15	10	0.03	0.97	62.582	62.087	0.068	4.5	4.5	0.22	0.22	62.629	62.216	2.07	1.1	1.497	
	B1/2 to B1/3	375	RRJ2	22.27	2.51	25	111	0.37	2.15	62.019	61.461	0.08	1.34	1.43	0.32	0.34	62.216	61.618	2.69	1.1	1.347	
△	B1/3 to B1/4	375	RRJ4	27.43	2.52	25	130	0.43	2.51	61.381	60.689	0.227	0.48	0.48	0.14	0.14	61.566	60.861	2.57	1.1	1.371	
△	B1/4 to B1/5	375	RRJ2	46.5	2.33	25	249	0.86	2.41	60.461	59.38	0.061	0.27	0.27	0.08	0.08	60.749	59.985	1.64	1.1	1.416	
	B1/5 to B1/6	450	RRJ4	8.17	1	25	284	0.92	1.92	59.319	59.237	0.05	1.78	2.24	0.3	0.36	59.985	59.577	4.99	1.1	0.871	
	B1/6 to B1/7	450	RRJ2	15.09	4.06	20	339	0.54	3.48	59.187	58.575	0.321	9.7	9.7	0.52	0.52	59.475	59.068	2.7	1.13	1.334	
	B1/7 to B1/8	450	RRJ2	22.93	3.4	25	472	0.83	3.28	58.254	57.475	0.13	1.34	1.42	0.51	0.54	59.068	57.787	5.59	1.1	0.933	
	B1/8 to B1/9	450	RRJ2	54.51	5.11	25	521	0.75	4.57	57.345	54.559	0.13	0.47	0.47	0.45	0.45	57.641	55.078	4.7	1.1	1.361	
	B1/9 to B1/10	450	RRJ2	34.48	4.97	25	576	0.84	4.25	54.429	52.715	0.204	7	7	0.75	0.75	55.078	53.03	5.94	1.1	1.009	
	B1/10 to B1/11	525	RRJ2	26.94	4.87	25	677	0.66	4.26	52.511	51.201	0.216	0.62	0.62	0.49	0.49	52.955	51.512	5.36	1.1	1.288	
△	B1/11 to B1/12	525	RRJ2	46.76	4.78	25	718	0.7	3.82	50.985	48.749	0.051	7	7	0.46	0.46	51.31	49.676	3.49	1.1	1.491	
	B1/12 to B1/13	600	RRJ4	21.39	1.33	25	854	1.11	3.02	48.698	48.415	0.881	9.7	9.7	0.28	0.28	49.676	49.16	2.41	1.1	0.773	
	B1/13 to B1/14	750	RRJ2	3.25	1	25	1409	1.17	3.2	47.534	47.502	0.03	2.06	2.55	0.85	1.02	49.16	48.533	19.3	1.91	0.947	
	B1/14 to B1/15	750	RRJ2	5.53	5	25	1804	0.67	4.09	47.472	47.195	1	0.5	0.5	0.43	0.43	48.533	48.326	3.74	0.94	1.694	
	B1/15 to B1/16	750	RRJ2	6.01	5	25	2069	0.77	4.69	46.195	45.895	0.863	2.09	2.65	1.7	2.15	48.326	47.098	20.44	1.1	0.494	
	B1/16 to B1/17	750	RRJ2	3.16	1	25	1796	1.49	4.07	45.032	45		1.63	1.82	1.05	1.15	47.098	45.75	42.64	0.47	0.583	
	B10/1 to B9/2	375	RRJ4	8.35	1	25	24	0.12	0.73	56.841	56.757	0.184	9.7	9.7	0.21	0.21	57.016	56.847	2.02	1.1	1.286	
△	B11/1 to B9/3	375	RRJ4	8.38	1	15	14	0.08	0.64	54.632	54.549	0.146	9.7	9.7	0.16	0.16	54.761	54.712	0.58	1.1	1.336	
	B13/1 to B9/8	375	RRJ4	9.71	2.31	15	11	0.04	0.98	52.072	51.848	0.492	4.5	4.5	0.22	0.22	52.141	51.897	2.51	1.1	1.422	
	B14/1 to B9/9	375	RRJ4	9.71	1.47	25	33	0.14	0.85	49.095	48.952	0.412	4.5	4.5	0.17	0.17	49.568	49.568	0	1.1	1.004	
	B2/5 to B2/6	375	RRJ2	14.44	1	25	185	0.97	1.67	58.58	58.435	0.05	9.7	9.7	0.18	0.18	59.447	59.204	1.68	1.4	0.895	
△	B2/6 to B1/7	375	RRJ2	8.1	1	25	195	1.03	1.77	58.385	58.304	0.05	0.47	0.47	0.07	0.07	59.204	59.068	1.68	1.3	0.834	
	B3/1 to B1/3	375	RRJ4	8.05	1	25	15	0.08	0.64	61.511	61.431	0.05	4.5	4.5	0.09	0.09	61.624	61.566	0.72	1.1	1.338	
	B5/1 to B1/9	375	RRJ2	9.31	2.02	25	22	0.08	0.96	54.855	54.667	0.238	4.5	4.5	0.21	0.21	55.085	55.078	0.08	1.1	1.255	
	B6/1 to B1/11	375	RRJ2	10.89	2.82	15	14	0.05	1.16	51.696	51.389	0.404	4.5	4.5	0.31	0.31	51.769	51.443	2.99	1.1	1.427	
	B7/1 to B7/2	375	RRJ2	8.13	1	25	29	0.15	0.8	61.103	61.022	0.05	4.5	4.5	0.15	0.15	61.273	61.146	1.56	1.1	1.28	
	B7/2 to B7/3	375	RRJ2	24.84	1.07	25	64	0.32	1.1	60.972	60.706	0.05	7	6.72	0.23	0.23	61.146	60.985	0.65	1.1	1.387	
	B7/3 to B1/4	375	RRJ2	14.42	1	25	122	0.64	1.4	60.656	60.511	0.05	1.58	1.58	0.16	0.16	60.985	60.749	1.64	1.37	1.254	
	B8/1 to B7/3	375	RRJ4	8	1	25	34	0.18	0.67	60.811	60.731	0.076	4.5	4.5	0.1	0.1	61.037	60.985	0.65	1.1	1.212	
	B9/1 to B9/2	375	RRJ2	56.59	4.54	25	68	0.17	2.62	59.32	56.75	0.176	2.18	2.57	0.76	0.9	59.429	56.853	4.55	1.1	1.459	
	B9/2 to B9/3	375	RRJ2	47.01	4.38	25	144	0.36	3.08	56.573	54.516	0.113	1.92	1.92	0.88	0.88	56.745	54.712	4.32	1.1	1.442	
	B9/3 to B9/4	375	RRJ2	22.47	3.03	25	248	0.75	2.49	54.402	53.721	0.055	7	7	0.48	0.48	54.712	54.199	2.28	1.1	1.283	
	B9/4 to B9/5	375	RRJ2	35.18	2.93	25	239	0.73	2.81	53.666	52.634	0.102	0.82	0.82	0.32	0.32	54.199	53.498	1.99	1.1	1.015	
	B9/5 to B9/6	375	RRJ2	17.66	2.48	25	270	0.9	2.44	52.532	52.094	0.05	7	7	0.37	0.37	53.498	52.973	2.97	1.1	0.608	
	B9/6 to B9/7	450	RRJ4	8	1	25	308	1	1.94	52.044	51.964	0.05	2.14	2.68	0.34	0.4	52.973	52.557	5.2	1.15	0.64	
	B9/7 to B9/8	450	RRJ2	15.21	1	25	330	1.07	2.13	51.914	51.762	0.407	1	1.03	0.22	0.22	52.557	52.158	2.62	1.23	1.055	
	B9/8 to B9/9	450	RRJ2	49.58	5.58	25	339	0.46	2.69	51.355	48.59	0.05	1.79	2.11	0.6	0.67	51.571	49.568	4.04	1.1	1.689	
	B9/9 to B9/10	525	RRJ2	12.22	1	25	381	0.82	1.76	48.54	48.418	0.05	9.7	9.7	0.19	0.19	49.568	49.368	1.64	1.3	0.817	
	B9/10 to B1/13	525	RRJ4	8	1	25	439	0.94	2.03	48.368	48.288	0.754	9.7	1.21	0.2	0.2	49.368	49.16	2.6	1.25	0.739	
	BA/1 to BA/2	225	uPVC	12.5	1	25	16	0.28	0.73	63.994	63.869	0.03	4.5	4.5	0.12	0.12	64.126	63.995	1.05	0.6	0.699	
	BA/2 to BA/3	225	uPVC	12.5	1	25	28	0.48	0.92	63.839	63.714	0.03	9.7	9.7	0.12	0.12	63.995	63.886	0.87	0.63	0.7	
	BA/3 to BA/4	225	uPVC	12.5	1	25	39	0.68	1.24	63.684	63.559	0.032	9.7	9.7	0.12	0.12	63.886	63.694	1.54	0.65	0.68	
	BA/4 to BA/5	300	uPVC	10	1	25	51	0.4	1.53	63.526	63.426	0.03	9.7	9.7	0.1	0.1	63.68	63.594	0.66	0.6	0.776	
	BA/5 to BA/6	300	uPVC	12.5	1	25	59	0.47	1.27	63.396	63.271	0.03	9.7	9.7	0.1	0.1	63.594	63.531	0.5	0.62	0.738	
	BA/6 to BA/7	300	uPVC	10	1	25	71	0.56	1.16	63.241	63.141	0.03	9.7	9.7	0.11	0.11	63.531	63.455	0.76	0.65	0.671	
	BA/7 to BA/8	300	uPVC	1.5	1	25	79	0.63	1.12	63.111	63.096	0.05	9.7	9.7	0.05	0.05	63.455	63.403	3.47	0.68	0.647	
	BA/8 to BA/9	300	uPVC	13.5	1	25	88	0.7	1.31	63.046	62.911	0.03	2.14	2.66	0.18	0.22	63.403	63.155	1.84	0.7	0.648	
	BA/9 to BA/10	300	uPVC	15	1	25	97	0.77	1.63	62.881	62.731	0.319	7	7	0.09	0.09	63.155	62.929	1.51	0.81	0.838	
	BA/10 to B1/2	375	RRJ2	5.19	3.12	25	97	0.29	2.11	62.413	62.251	0.232	0	0	0	0	62.604	62.389	4.15	1.1	1.341	
	BD/1 to BD/2	150	uPVC	10	5.1	25	15	0.33	1.61	62.925	62.415	0.059	4.5	4.5	0.59	0.59	63.02	62.474	5.46	0.6	0.682	
	BD/2 to BD/3	150	uPVC	10	4.9	90	30	0.68	2.08	62.356	61.866	0.04	1.98	1.98	0.36	0.36	62.464	62.136	3.28	0.6	0.677	
	BD/3 to BD/4	150	uPVC	10	4.91	120	35	0.79	2.16	61.825	61.334	0.049	9.44	9.44	0.33	0.33	62.136	61.696	4.4	0.6	0.466	
	BD/4 to BD/5	150	uPVC	15	5.02	25	42	0.95	2.54	61.285	60.532	0.821	9.7	9.7	0.35	0.35	61.696	60.649	6.98	0.6	0.366	
	BD/5 to B9/1	375	RRJ2	4.78	2.82	25	42	0.13	1.28	59.711	59.576	0.255	2.09	3.24	0.18	0.27	59.872	59.668	4.27	1.1	1.379	
	BE/1 to BE/2	150	uPVC	12.5	4.67	25	14	0.33	1.65	59.484	58.901	0.045	4.5	4.5	0.62	0.62	59.571	58.96	4.89	0.6	0.688	
	BE/2 to BE/3	150	uPVC	11.5	4.63	20	26	0.61	1.99	58.856	58.323	0.045	2.01	2.01	0.37	0.37	58.952	58.571	3.31	0.6	0.678	
	BE/3 to BE/4	150	uPVC	12.5	4.66	25	36	0.83	2.23	58.277	57.694	0.12	1.52	1.52	0.32	0.32	58.571	57.799	6.18	0.6	0.482	
	BE/4 to BE/5	225	uPVC	10	4.57	25	47	0.38	2.92	57.574	57.116	0.045	7	7	0.23	0.23	57.669	57.213	4.56	0.6	0.754	
	BE/5 to BE/6	225	uPVC	12.5																		

DRAINAGE SYSTEM A

HYDROLOGY NOTES:

1. STORMWATER SYSTEM DESIGNED USING 12D DYNAMIC (ILSAX) SYSTEM.
2. BP LINES ARE DUMMY PITS AND ARE USED TO MORE ACCURATELY DETERMINE APPROACH FLOWS AT UPSTREAM PITS AND SAG LOCATIONS. RESULTS ON THESE DUMMY LINES MAY NOT BE VALID/RELEVANT.
3. MAXIMUM FLOW WIDTHS OF 2.5m IN GUTTERS HAVE GENERALLY BEEN ADOPTED.

DESIGN STORM 1:100yr ARI HYDROLOGIC RESULTS

PIT NAME (-)	PIT TYPE (-)	CATCHMENT AREA (Ha)	PERCENT IMPERVIOUS (%)	Tc IMP (min)	Tc PERV (min)	CRITICAL STORM (min)	APPROACH FLOW (L/s)	CAPTURED FLOW (L/s)	UNCAPTURED FLOW (L/s)	GRATE DEPTH (mm)	ROAD GRADE (%)	ROAD CROSSFALL (%)	BYPASS PIT (-)	BYPASS CHANNEL FLOW (L/s)	U/S FLOW WIDTH (m)	U/S VxD (m/s^2)	D/S FLOW WIDTH (m)	D/S VxD (m/s^2)	COMMENTS (-)
A10/3	1.8 m lintel		0	6	6	15	44	30	14	85	1	3	A10/4	42	1.99	0.06	1.99	0.06	
A10/4	1.8 m lintel	0.056	95	6	6		42	31	11	56	1	3	LOST	10	1.01	0.03	1.01	0.03	
A10/5	1.8 m lintel	0.01	95	6	6	15	5	4	1	56	1	3	A10/6	14	0.99	0.04	1.54	0.02	
A10/6	1.8 m lintel	0.025	95	6	6	15	14	11	3	72	3	3	A10/7	50	1.55	0.09	1.55	0.09	
A10/7	1.8 m lintel	0.092	85	6	6	5	50	36	14	56	4.4	3.1	A10/8	22	1	0.06	2.42	0.04	
A10/8	1.8 m lintel	0.053	95	6	6	15	78	47	124	98	5	3.4	A10/9	159	2.42	0.17	3.66	0.11	
A10/9	1.8 m lintel	0.079	85	6	6	15	159	40	241	135	3.9	3	A10/10	253	3.66	0.17	6.93	0.1	
A10/10	2.4 m lintel sag	0.044	95	6	6		427	240	185	210	0.4	3	A10/11	185	13.89	0.02	13.89	0.05	
A10/11	GPT		0	6	6		185	0	0	132	0.4	1.8	LOST	185	3.58	0.12	3.58	0.12	
A10/12	H.W.						0	0	0	0									
A11/1	1.8 m lintel	0.088	85	6	6	15	77	46	30	89	1	3	A12/1	58	2.14	0.07	2.14	0.07	
A12/1	1.8 m lintel	0.058	95	6	6	15	58	38	21	78	3	3	A13/1	82	1.76	0.12	1.91	0.11	
A13/1	1.8 m lintel	0.123	85	6	6	15	82	49	33	83	4.6	3	A14/7	57	1.93	0.08	7.56	0.04	
A14/7	2.4 m lintel sag	0.162	85	6	6	15	200	202	0	234	0.4	3	A10/10	188	14.51	0.02	15.14	0.07	
A8/1	1.8 m lintel	0.09	85	6	6	15	49	33	16	87	3.1	3	A9/1	82	2.05	0.1	2.05	0.1	
A8/2	1.8 m lintel		0	6	6	15	17	14	3	51	3.1	3	A8/3	16	0.87	0.05	0.87	0.05	
A8/3	1.8 m lintel	0.024	95	6	6	5	16	12	3	38	5.3	2.9	A10/8	9	0.46	0.04	2.44	0.01	
A9/1	2.4 m lintel	0.129	85	6	6	15	82	47	35	72	3.3	0.1	A10/8	47	1.57	0.08	2.44	0.07	
BPA8/1	BYPASS NODE	0.032	85	6	6	15	17	0	0	55	3.1	3	A8/2	17	1.01	0.05	1.01	0.05	
BPA8/2	BYPASS NODE						0	0	0	0									



These plans are referred to in certificate no. **14776** approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPB 2416
Categories: B1,C1,C2,C3,C4,C6,C15 & D1
Land Development Certificates
www.Ldcerts.com.au

B	O'CONNELL STREET INTERFACE AMENDMENTS	JT	JT	RT	MS	20/10/17
A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17
	AMENDMENT	DES	DRN	CKD	APR	DATE

J. WYNDHAM PRINCE

CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS

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AZIMUTH:
M.G.A
DATUM:
A.H.D
ORIGIN:

CLIENT:

**LEGACYPROPERTY**

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS PART OF AN APPROVED CONSTRUCTION CERTIFICATE.

ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 5
DRAINAGE CALCULATIONS

PLAN No:
110358/CC531
FILE No: 110358CC531
SHEET SIZE: A1 ORIGINAL

Plotted: 15 December , 2017 9:15:52 AM File Name: J:\110358 - O'Connell Lane Caddens\04 - Stage 5\CD\CC\STAGE 5\110358CC532.dwg

DRAINAGE SYSTEM B

DESIGN STORM 1:100yr ARI HYDROLOGIC RESULTS

PIT NAME (-)	PIT TYPE (-)	CATCHMENT AREA (Ha)	PERCENT IMPERVIOUS (%)	Tc IMP (min)	Tc PERV (min)	CRITICAL STORM (min)	APPROACH FLOW (L/s)	CAPTURED FLOW (L/s)	UNCAPTURED FLOW (L/s)	GRATE DEPTH (mm)	ROAD GRADE (%)	ROAD CROSSFALL (%)	BYPASS PIT (-)	BYPASS CHANNEL FLOW (L/s)	U/S FLOW WIDTH (m)	U/S Vx D (m/s^2)	D/S FLOW WIDTH (m)	D/S Vx D (m/s^2)	COMMENTS (-)
B1/1	1.8 m lintel		0	5	6	5	17	14	3	49	2.8	3	B1/2	12	0.79	0.04	0.79	0.04	
B1/2	1.8 m lintel	0.016	95	5	6	5	12	9	2	49	2.8	3	B1/3	12	0.78	0.04	0.94	0.03	
B1/3	1.8 m lintel	0.018	95	5	6	5	12	9	2	54	2.8	3	B8/1	19	0.98	0.05	2.56	0.03	
B1/4	1.8 m lintel	0.008	95	5	6	5	0	0	0	87	2.8	3	B1/5	76	2.03	0.1	2.42	0.08	
B1/5	1.8 m lintel	0.14	95	5	6	5	76	45	31	98	2.8	3	B2/4	92	2.42	0.1	7.89	0.06	
B1/6	1.8 m lintel	0.047	95	5	6	5	27	20	6	51	2.8	3	B1/7	16	0.84	0.05	1.35	0.03	
B1/7	1.8 m lintel	0.018	95	5	6	5	16	13	3	66	3	3	B1/8	38	1.35	0.08	2.11	0.05	
B1/8	1.8 m lintel	0.065	85	5	6	5	38	28	10	89	5.3	3	B1/9	115	2.12	0.14	2.14	0.14	
B1/9	1.8 m lintel	0.197	85	5	6	5	115	61	53	90	5.3	3	B1/10	119	2.15	0.14	2.15	0.14	
B1/10	1.8 m lintel	0.125	85	5	6	5	119	69	50	87	5.3	3	B1/11	105	2.04	0.13	2.3	0.12	
B1/11	1.8 m lintel	0.104	85	5	6	5	105	63	42	95	5.3	3	B1/12	137	2.3	0.15	3.21	0.15	
B1/12	2.4 m lintel	0.18	85	5	6	5	137	82	55	122	3.4	3	B9/10	186	3.21	0.14	4.91	0.09	
B1/13	3.0 m lintel sag	0.093	95	5	6		229	175	4	154	0.4	3	B1/14	4	6.24		7.98		
B1/14	GPT		0	5	6		4	0	0	18	0.4	-1	B1/15	3	0.24	0.02	0.24	0.02	
B1/15	JP		0	5	6		3	0	618	74	0.4		B1/16	60	1.61	0.14	1.55	0.13	
B1/16	JP		0	5	6		61	0	0	72			LOST	24	1.56	0.04	1.56	0.04	
B1/17	H.W.						0	0	0	0									
B10/1	2.4 m lintel		0	5	6	5	40	31	9	60	4.8	3	B11/1	29	1.15	0.07	1.51	0.05	
B11/1	1.8 m lintel	0.037	95	5	6	5	29	22	6	71	4.3	3	B9/7	41	1.53	0.07	2.1	0.07	
B13/1	1.8 m lintel		0	5	6	5	19	15	4	59	4.8	3	B14/1	30	1.1	0.07	1.32	0.07	
B14/1	1.8 m lintel	0.048	95	5	6	5	30	23	7	66	4.3	3	B1/13	21	1.38	0.04	4.28	0.04	
B2/5	2.4 m lintel sag		0	5	6	5	72	73	0	101	0.1	3	B2/6	3	0.33	0.02	1.44	0.01	
B2/6	1.8 m lintel	0.008	95	5	6	5	3	2	1	61	3	3	B5/1	31	1.17	0.07	1.17	0.07	
B3/1	1.8 m lintel		0	5	6	5	26	20	6	72	2.8	3	B9/1	52	1.54	0.09	2.22	0.06	
B5/1	1.8 m lintel	0.058	95	5	6	5	31	24	6	61	5.3	3	B6/1	31	1.16	0.07	1.37	0.06	
B6/1	1.8 m lintel	0.047	95	5	6	5	31	24	7	67	5.3	3	B1/13	38	1.37	0.08	4.29	0.07	
B7/1	1.8 m lintel		0	5	6	5	54	35	19	86	1.4	3	B8/1	47	2	0.06	2.56	0.05	
B7/2	1.8 m lintel		0	5	6	5	61	38	23	92	1.4	3	B7/3	59	2.19	0.07	2.22	0.07	
B7/3	2.4 m lintel sag	0.09	85	5	6	5	59	63	0	92	1.3	3.2	B1/4	0					
B8/1	2.4 m lintel sag	0.084	85	5	6	5	66	75	0	103	0.8	3	B7/3	0					
B9/1	1.8 m lintel	0.085	85	5	6	5	52	35	17	92	4.8	3	B9/2	123	2.22	0.14	2.4	0.13	
B9/2	2.4 m lintel	0.202	85	5	6	5	123	70	54	98	4.8	3	B9/3	147	2.4	0.16	2.4	0.16	
B9/3	2.4 m lintel	0.18	85	5	6	5	147	77	70	95	4	3	B9/4	114	2.3	0.13	2.38	0.12	
B9/4	1.8 m lintel	0.086	85	5	6	5	114	65	49	97	3.2	3	B9/5	118	2.38	0.13	2.88	0.13	
B9/5	1.8 m lintel	0.133	85	5	6	5	118	66	50	112	3.2	3	B9/6	180	2.88	0.15	4.6	0.09	
B9/6	2.4 m lintel sag	0.129	85	5	6	5	209	164	45	166	1.2	3	B9/7	47	5.74	0.01	8.9	0.01	
B9/7	2.4 m lintel sag	0.074	95	5	6	5	82	59	20	89	1	3	B9/8	22	0.97	0.05	1.06	0.05	
B9/8	1.8 m lintel	0.008	95	5	6	5	22	18	5	68	6	3	B9/9	48	1.41	0.09	2.97	0.08	
B9/9	1.8 m lintel	0.085	95	5	6	5	48	32	143	115	3	3	B9/10	162	2.97	0.13	4.91	0.07	
B9/10	2.4 m lintel sag	0.115	85	5	6	5	328	170	155	178	0.4	3	B1/13	175	13.23	0.02	15.89	0.05	
BPB1/1	BYPASS NODE	0.03	95	5	6	5	17	0	0	56	2.8	3	B1/1	17	0.99	0.05	0.99	0.05	
BPB1/2	BYPASS NODE						0	0	0	0									
BPB10/1	BYPASS NODE	0.034	95	5	6	5	19	0	0	53	4.6	3	B13/1	19	0.94	0.05	1.09	0.05	
BPB10/2	BYPASS NODE						0	0	0	0									
BPB2/1	BYPASS NODE	0.046	95	5	6	5	26	0	0	63	2.8	3	B3/1	26	1.24	0.06	1.52	0.05	
BPB2/2	BYPASS NODE						0	0	0	0									
BPB3/1	BYPASS NODE	0.1	85	5	6	5	54	0	0	87	1.4	3	B7/1	54	2.04	0.07	2.04	0.07	
BPB3/2	BYPASS NODE						0	0	0	0									
BPB4/1	BYPASS NODE	0.113	85	5	6	5	62	0	0	90	1.4	3	B7/2	61	2.16	0.07	2.19	0.07	
BPB4/2	BYPASS NODE						0	0	0	0									
BPB8/1	BYPASS NODE	0.07	95	5	6	5	40	0	0	66	4.8	3	B10/1	40	1.35	0.08	1.35	0.08	
BPB8/2	BYPASS NODE						0	0	0	0									

- HYDROLOGY NOTES:
1. STORMWATER SYSTEM DESIGNED USING 12D DYNAMIC (ILSAX) SYSTEM.
 2. BP LINES ARE DUMMY PITS AND ARE USED TO MORE ACCURATELY DETERMINE APPROACH FLOWS AT UPSTREAM PITS AND SAG LOCATIONS. RESULTS ON THESE DUMMY LINES MAY NOT BE VALID/RELEVANT.
 3. MAXIMUM FLOW WIDTHS OF 2.5m IN GUTTERS HAVE GENERALLY BEEN ADOPTED.

C	CERTIFIER COMMENTS - BP NODE REMOVED	JT	JT	RT	MS	04/12/17
B	O'CONNELL STREET INTERFACE AMENDMENTS	JT	JT	RT	MS	20/10/17
A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17
	AMENDMENT	DES	DRN	CKD	APR	DATE

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AZIMUTH: M.G.A
DATUM: A.H.D
ORIGIN:



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ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 5

DRAINAGE CALCULATIONS

PLAN No:
110358/CC532

C

FILE No: 110358CC532

SHEET SIZE: A1 ORIGINAL



These plans are referred to in certificate no. 14776 approved by:

Eric Hausfeld
Accredited Certifier

Registration No: BPP 2416
Categories: B1,C1,C2,C3,C4,C6,C15 & D1

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Plotted: 29 March 2018 10:21:15 AM File Name: J:\110358 - O'Connell Lane Caddens\04 - Stage 5\CD\CC\STAGE 5\110358CC533.dwg

DRAINAGE SYSTEM A

DESIGN STORM 1:100yr ARI HYDRAULIC RESULTS

	PIPE NAME	PIPE DIAMETER	PIPE TYPE	PIPE LENGTH	PIPE GRADE	CRITICAL STORM	PEAK FLOW	CAPACITY RATIO	PEAK VELOCITY	PIPE U/S IL	PIPE D/S IL	PIPE D/S DROP	U/S PIT Ku	D/S PIT Kw	PIT LOSS (Ku.V'head)	WSE LOSS (Kw.V'head)	U/S PIPE HGL	D/S PIPE HGL	HGL GRADE	MINIMUM COVER	MINIMUM FREEBOARD	COMMENTS
	(-)	(mm)	(-)	(m)	(%)	(min)	(L/s)	(-)	(m/s)	(m)	(m)	(m)	(-)	(-)	(m)	(m)	(m)	(m)	(%)	(m)	(m)	
△	A10/3 to A10/4	375	RRJ2	53.1	1	15	110	0.58	1.33	62.227	61.696	0.03	7	7	0.28	0.28	62.533	62.346	0.35	1.25	1.362	
	A10/4 to A10/5	375	RRJ4	27.43	1	20	187	0.99	1.75	61.666	61.392	0.03	1.13	1.13	0.16	0.16	62.346	62.059	1.05	1.29	1.018	
	A10/5 to A10/6	375	RRJ2	23.67	1	15	182	0.96	1.82	61.362	61.125	0.051	7	7	0.08	0.08	62.059	61.852	0.87	1.14	1.031	
△	A10/6 to A10/7	375	RRJ2	21.32	3.48	20	208	0.59	2.97	61.075	60.332	0.097	7	7	0.34	0.34	61.852	61.525	1.53	1.1	0.78	
	A10/7 to A10/8	375	RRJ4	19.45	4.19	20	247	0.64	2.79	60.235	59.419	0.088	9.01	9.01	0.79	0.79	61.525	60.935	3.03	1.1	0.229	
	A10/8 to A10/9	375	RRJ3	28.23	5	60	386	0.91	3.49	59.331	57.92	0.03	0.86	0.86	0.44	0.44	60.935	59.466	5.2	0.95	-0.098	
	A10/9 to A10/10	525	RRJ3	18.61	1	45	523	1.12	2.41	57.89	57.704	0.05	0.77	0.77	0.18	0.18	59.466	59.152	1.69	0.73	-0.135	
	A10/10 to A10/11	825	RRJ2	4.35	1	120	1245	0.8	2.33	57.654	57.61	0.05	1.2	1.2	0.3	0.3	59.152	58.842	7.12	0.61	0.003	
	A10/11 to A10/12	825	RRJ2	6.01	1	120	1245	0.8	2.33	57.56	57.5		0.5	0.5	0.14	0.14	58.842	58.66	3.03	-0.1	0.246	
△	A11/1 to A10/4	375	RRJ4	12.38	1	15	46	0.24	0.9	61.971	61.847	0.181	4.5	4.5	0.19	0.19	62.381	62.346	0.28	1.1	1.049	
	A12/1 to A10/6	375	RRJ4	10.61	1	20	34	0.18	0.75	61.231	61.125	0.05	4.5	4.5	0.13	0.13	61.877	61.852	0.24	1.1	0.807	
	A13/1 to A10/9	375	RRJ4	11.48	1	10	54	0.28	0.49	58.055	57.94	0.05	4.5	4.5	0.05	0.05	59.513	59.466	0.41	1.06	0.009	
△	A14/7 to A10/10	1200x450	Box Culvert	10.51	1	20	696	0.52	1.29	57.809	57.704	0.05	1.39	1.41	0.1	0.11	59.255	59.152	0.98	0.83	-0.234	
	A8/1 to A8/2	375	RRJ4	10.56	1.58	15	98	0.41	1.47	61.694	61.528	0.05	1.93	1.93	0.2	0.2	61.963	61.695	2.54	1.1	1.212	
	A8/2 to A8/3	375	RRJ2	29.37	3.43	10	114	0.32	2.55	61.478	60.47	0.175	1.2	1.21	0.4	0.4	61.628	61.165	1.58	1.1	1.33	
△	A8/3 to A10/8	375	RRJ2	14.65	5.13	5	183	0.43	3.21	60.295	59.544	0.212	0.77	0.77	0.4	0.4	61.165	60.935	1.57	1.1	0.597	
	A9/1 to A8/3	375	RRJ4	9.28	2.72	45	66	0.21	1.27	60.598	60.345	0.05	9.7	9.7	0.49	0.49	61.245	61.165	0.86	1.1	0.85	
	BPA8/1 to BPA8/2	2	No Flow	5.43	1	5	0	0	0	62.775	62.72		0	0	0	0	62.775	62.721	0.99	0.6	0.447	



These plans are referred to in certificate no. **14776** approved by:

Eric Hausfeld
Accredited Certifier

Registration No: BPB 2416
Categories: B1,C1,C2,C3,C4,C6,C15 & D1

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C	CERTIFIER COMMENTS - PIPE CLASS REVISED	JT	NAF	MS	RO	29/03/18
B	O'CONNELL STREET INTERFACE AMENDMENTS	JT	JT	RT	MS	20/10/17
A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17
	AMENDMENT	DES	DRN	CKD	APR	DATE

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M.G.A
DATUM:
A.H.D
ORIGIN:

CLIENT:


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ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 5
DRAINAGE CALCULATIONS

PLAN No:
110358/CC533
FILE No: 110358CC533
SHEET SIZE: A1 ORIGINAL

Plotted: 29 March, 2018 10:21:38 AM File Name: J:\110358 - O'Connell Lane Caddens\04 - Stage 5\CD\CC\STAGE 5\110358CC534.dwg

DRAINAGE SYSTEM B

DESIGN STORM 1:100yr ARI HYDRAULIC RESULTS

	PIPE NAME (-)	PIPE DIAMETER (mm)	PIPE TYPE (-)	PIPE LENGTH (m)	PIPE GRADE (%)	CRITICAL STORM (min)	PEAK FLOW (L/s)	CAPACITY RATIO (-)	PEAK VELOCITY (m/s)	PIPE U/S IL (m)	PIPE D/S IL (m)	PIPE D/S DROP (m)	U/S PIT Ku (-)	D/S PIT Kw (-)	PIT LOSS (Ku.V/head) (m)	WSE LOSS (Kw.V/head) (m)	U/S PIPE HGL (m)	D/S PIPE HGL (m)	HGL GRADE (%)	MINIMUM COVER (m)	MINIMUM FREEBOARD (m)	COMMENTS
	B1/1 to B1/2	375	RRJ2	20	2.47	5	13	0.04	0.95	62.582	62.087	0.068	4.5	4.5	0.21	0.21	62.636	62.344	1.46	1.1	1.49	
△	B1/2 to B1/3	375	RRJ2	22.27	2.51	15	196	0.65	2.23	62.019	61.461	0.08	1.39	1.49	0.35	0.37	62.344	62.099	1.1	1.1	1.22	
	B1/3 to B1/4	375	RRJ4	27.43	2.52	5	198	0.66	2.66	61.381	60.689	0.227	0.49	0.49	0.17	0.17	62.099	61.858	0.88	1.1	0.837	
△	B1/4 to B1/5	375	RRJ2	46.5	2.33	20	304	1.05	2.75	60.461	59.38	0.061	0.47	0.47	0.14	0.14	61.858	60.573	2.76	1.1	0.307	
	B1/5 to B1/6	450	RRJ4	8.17	1	15	342	1.11	2.19	59.319	59.237	0.05	1.74	2.23	0.37	0.44	60.573	60.161	5.04	1.1	0.283	
	B1/6 to B1/7	450	RRJ2	15.09	4.06	5	407	0.65	3.47	59.187	58.575	0.321	9.7	9.7	0.61	0.61	60.161	59.857	2.01	1.13	0.649	
	B1/7 to B1/8	450	RRJ2	22.93	3.4	20	606	1.06	3.81	58.254	57.475	0.13	1.17	1.23	0.67	0.69	59.857	58.573	5.6	1.1	0.144	
	B1/8 to B1/9	450	RRJ2	54.51	5.11	10	672	0.96	4.62	57.345	54.559	0.13	0.52	0.52	0.53	0.53	58.573	56.074	4.58	1.1	0.429	
	B1/9 to B1/10	450	RRJ2	34.48	4.97	20	724	1.05	4.56	54.429	52.715	0.204	7	7	0.91	0.91	56.074	53.961	6.13	1.1	0.013	
	B1/10 to B1/11	525	RRJ2	26.94	4.87	20	955	0.93	4.82	52.511	51.201	0.216	0.92	0.92	0.62	0.62	53.961	52.73	4.57	1.1	0.281	
△	B1/11 to B1/12	525	RRJ2	46.76	4.78	25	925	0.91	4.27	50.985	48.749	0.051	7	7	0.6	0.6	52.73	50.571	4.62	1.1	0.072	
	B1/12 to B1/13	600	RRJ4	21.39	1.33	60	1062	1.39	3.76	48.698	48.415	0.881	0.58	0.58	0.36	0.36	50.571	49.817	3.53	1.1	-0.122	
	B1/13 to B1/14	750	RRJ2	3.25	1	20	1714	1.42	3.88	47.534	47.502	0.03	2.04	2.47	1.15	1.44	49.817	48.945	26.85	1.91	0.29	
	B1/14 to B1/15	750	RRJ2	5.53	5	25	2235	0.83	5.07	47.472	47.195	1	0.5	0.5	0.65	0.65	48.945	48.894	0.92	0.94	1.282	
	B1/15 to B1/16	750	RRJ2	6.01	5	10	2353	0.87	5.34	46.195	45.895	0.863	2.06	2.56	2.2	2.78	48.894	47.407	24.75	1.1	-0.074	
	B1/16 to B1/17	750	RRJ2	3.16	1	10	1975	1.64	4.47	45.032	45		1.58	1.75	1.27	1.38	47.407	45.75	52.41	0.47	0.275	
	B10/1 to B9/2	375	RRJ4	8.35	1	5	30	0.16	0.83	56.841	56.757	0.184	9.7	9.7	0.23	0.23	57.048	56.858	2.27	1.1	1.253	
△	B11/1 to B9/3	375	RRJ4	8.38	1	10	52	0.27	0.85	54.632	54.549	0.146	9.7	9.7	0.16	0.16	55.966	55.96	0.07	1.1	0.131	
	B13/1 to B9/8	375	RRJ4	9.71	2.31	25	19	0.06	1.02	52.072	51.848	0.492	4.5	4.5	0.24	0.24	52.315	52.313	0.02	1.1	1.247	
	B14/1 to B9/9	375	RRJ4	9.71	1.47	5	-55	-0.24	0.94	49.095	48.952	0.412	4.5	4.5	0.2	0.2	50.516	50.5	0.16	1.1	0.056	
	B2/5 to B2/6	375	RRJ2	14.44	1	20	256	1.35	2.32	58.58	58.435	0.05	9.7	9.7	0.29	0.29	60.428	60.035	2.72	1.4	0.001	
	B2/6 to B1/7	375	RRJ4	8.1	1	20	273	1.44	2.47	58.385	58.304	0.05	0.47	0.47	0.15	0.15	60.035	59.857	2.2	1.3	0.009	
△	B3/1 to B1/3	375	RRJ4	8.05	1	20	28	0.15	0.64	61.511	61.431	0.05	4.5	4.5	0.09	0.09	62.102	62.099	0.04	1.1	0.86	
	B5/1 to B1/9	375	RRJ4	9.31	2.02	25	-49	-0.18	0.98	54.855	54.667	0.238	4.5	4.5	0.22	0.22	56.082	56.074	0.09	1.1	0.259	
	B6/1 to B1/11	375	RRJ4	10.89	2.82	20	-98	-0.31	1.24	51.696	51.389	0.404	4.5	4.5	0.35	0.35	52.739	52.73	0.08	1.1	0.458	
	B7/1 to B7/2	375	RRJ4	8.13	1	25	36	0.19	0.8	61.103	61.022	0.05	4.5	4.5	0.15	0.15	62.084	62.072	0.15	1.1	0.469	
	B7/2 to B7/3	375	RRJ2	24.84	1.07	20	76	0.38	1.12	60.972	60.706	0.05	7	7	0.27	0.27	62.072	62.038	0.14	1.1	0.461	
△	B7/3 to B1/4	375	RRJ2	14.42	1	20	183	0.96	1.66	60.656	60.511	0.05	2.06	2.06	0.2	0.2	62.038	61.858	1.25	1.37	0.201	
	B8/1 to B7/3	375	RRJ4	8	1	15	58	0.31	0.7	60.811	60.731	0.076	4.5	4.5	0.11	0.11	62.095	62.038	0.71	1.1	0.154	
	B9/1 to B9/2	375	RRJ2	56.59	4.54	15	86	0.21	2.79	59.32	56.75	0.176	2.19	2.58	0.87	1.02	59.445	56.866	4.56	1.1	1.444	
	B9/2 to B9/3	375	RRJ2	47.01	4.38	20	183	0.46	3.08	56.573	54.516	0.113	7	7	0.9	0.9	56.792	55.96	1.77	1.1	1.394	
	B9/3 to B9/4	375	RRJ2	22.47	3.03	25	257	0.78	2.46	54.402	53.721	0.055	7	7	0.54	0.54	55.96	55.311	2.89	1.1	0.035	
	B9/4 to B9/5	375	RRJ2	35.18	2.93	15	297	0.91	2.75	53.666	52.634	0.102	1.15	1.15	0.43	0.43	55.311	54.218	3.11	1.1	-0.097	
△	B9/5 to B9/6	375	RRJ2	17.66	2.48	45	315	1.05	2.85	52.532	52.094	0.05	7	7	0.46	0.46	54.218	53.761	2.59	1.1	-0.112	
	B9/6 to B9/7	450	RRJ4	8	1	15	418	1.35	2.63	52.044	51.964	0.05	2.14	2.66	0.62	0.66	53.761	53.05	8.89	1.15	0.001	
	B9/7 to B9/8	450	RRJ2	15.21	1	15	460	1.49	2.9	51.914	51.762	0.407	1.02	1.04	0.41	0.42	53.05	52.313	4.85	1.23	0.562	
	B9/8 to B9/9	450	RRJ2	49.58	5.58	20	479	0.66	3.01	51.355	48.59	0.05	1.73	2.01	0.69	0.77	52.313	50.5	3.66	1.1	0.947	
△	B9/9 to B9/10	525	RRJ2	12.22	1	30	505	1.08	2.33	48.54	48.418	0.05	9.7	9.7	0.21	0.21	50.5	50.286	1.75	1.3	-0.115	
	B9/10 to B1/13	525	RRJ4	8	1	15	605	1.3	2.79	48.368	48.288	0.754	1.33	1.35	0.44	0.44	50.286	49.817	5.86	1.25	-0.178	
	BPB1/1 to BPB1/2	2	No Flow	5.12	1	5	0	0	0	63.882	63.831		0	0	0	0	63.882	63.831	1	0.6	0.448	
	BPB10/1 to BPB10/2	2	No Flow	6.19	1	5	0	0	0	53.3	53.238		0	0	0	0	53.3	53.239	0.99	0.6	0.447	
	BPB2/1 to BPB2/2	2	No Flow	5.01	1	5	0	0	0	62.748	62.698		0	0	0	0	62.748	62.698	1	0.6	0.448	
	BPB3/1 to BPB3/2	2	No Flow	5.34	1	5	0	0	0	62.224	62.171		0	0	0	0	62.225	62.171	1.01	0.6	0.447	
	BPB4/1 to BPB4/2	2	No Flow	5.34	1	5	0	0	0	62.246	62.192		0	0	0	0	62.246	62.192	1.01	0.6	0.448	
	BPB8/1 to BPB8/2	2	No Flow	5.15	1	5	0	0	0	58.421	58.37		0	0	0	0	58.421	58.37	0.99	0.6	0.448	
	BPB9/1 to BPB9/2	2	No Flow	5.57	1	5	0	0	0	54.014	53.959		0	0	0	0	54.014	53.959	0.99	0.6	0.447	



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Accredited Certifier

Registration No: BPB 2416
Categories: B1,C1,C2,C3,C4,C6,C15 & D1

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D	CERTIFIER COMMENTS - PIPE CLASS REVISED	JT	NAF	MS	RO	29/03/18
C	CERTIFIER COMMENTS - BP NODE REMOVED	JT	JT	RT	MS	04/12/17
B	O'CONNELL STREET INTERFACE AMENDMENTS	JT	JT	RT	MS	20/10/17
A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17
	AMENDMENT	DES	DRN	CKD	APR	DATE

J. WYNDHAM PRINCE

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AZIMUTH:
M.G.A

DATUM:
A.H.D

ORIGIN:

CLIENT:



LEGACYPROPERTY

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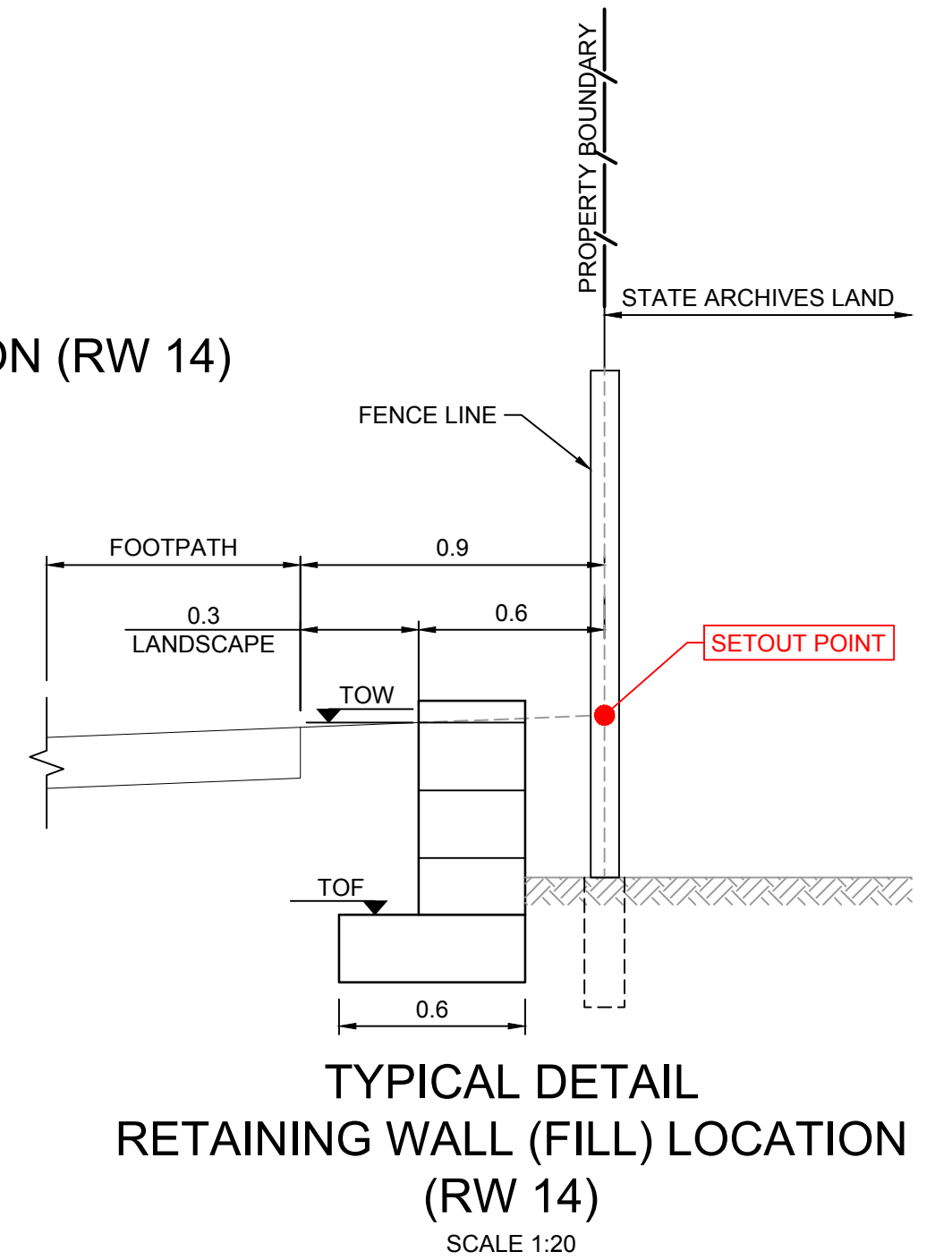
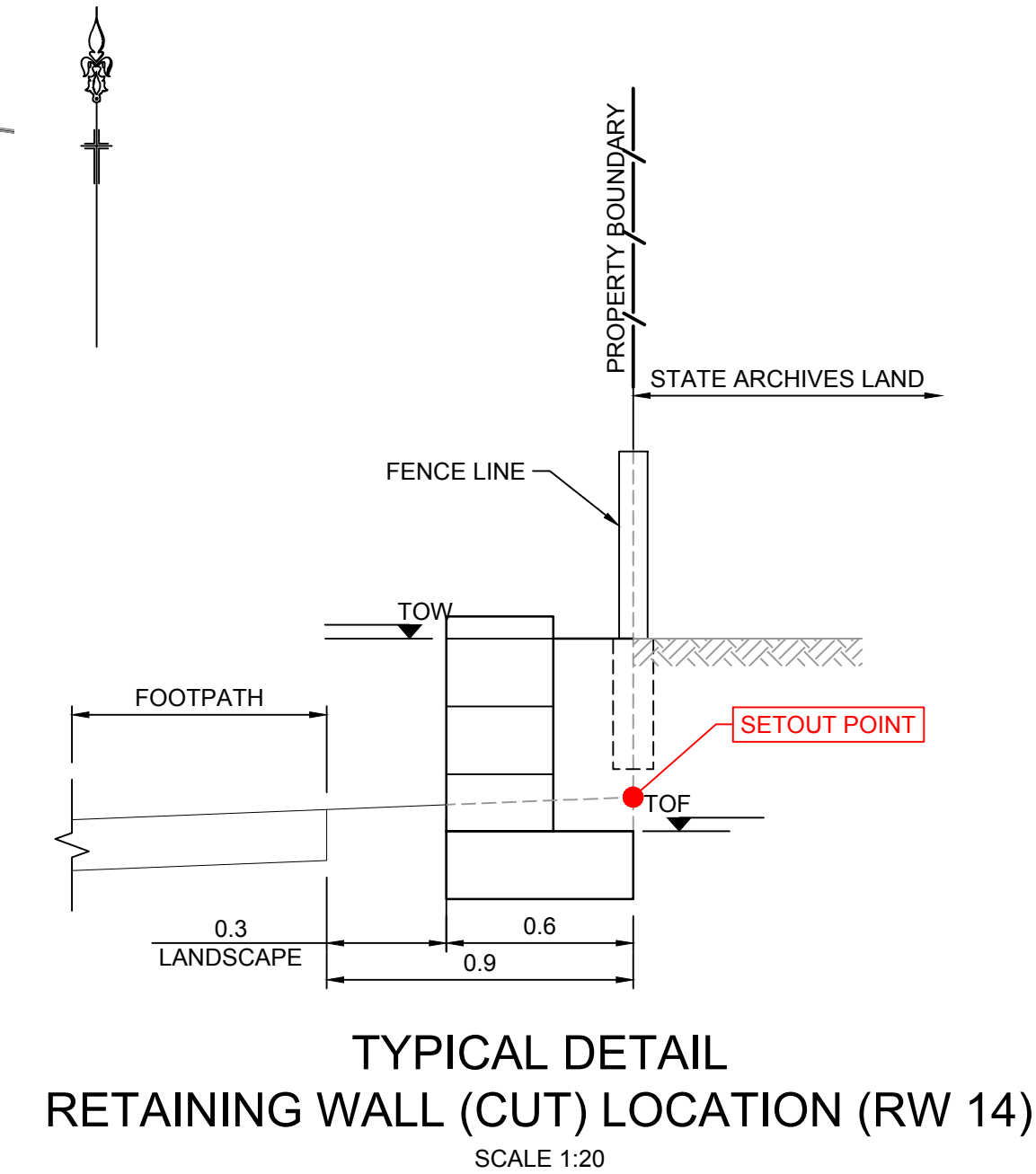
ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 5

DRAINAGE CALCULATIONS

PLAN No:	110358/CC534	D
FILE No:	110358CC534	
SHEET SIZE:	A1 ORIGINAL	

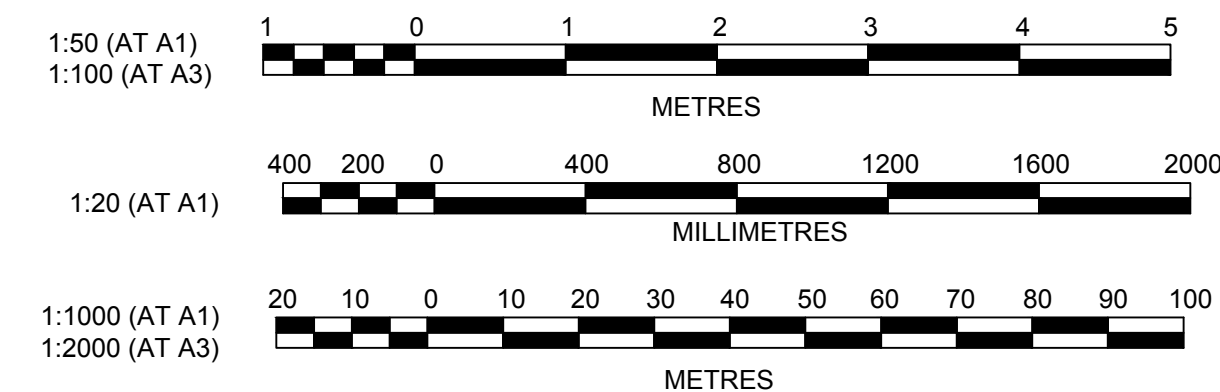
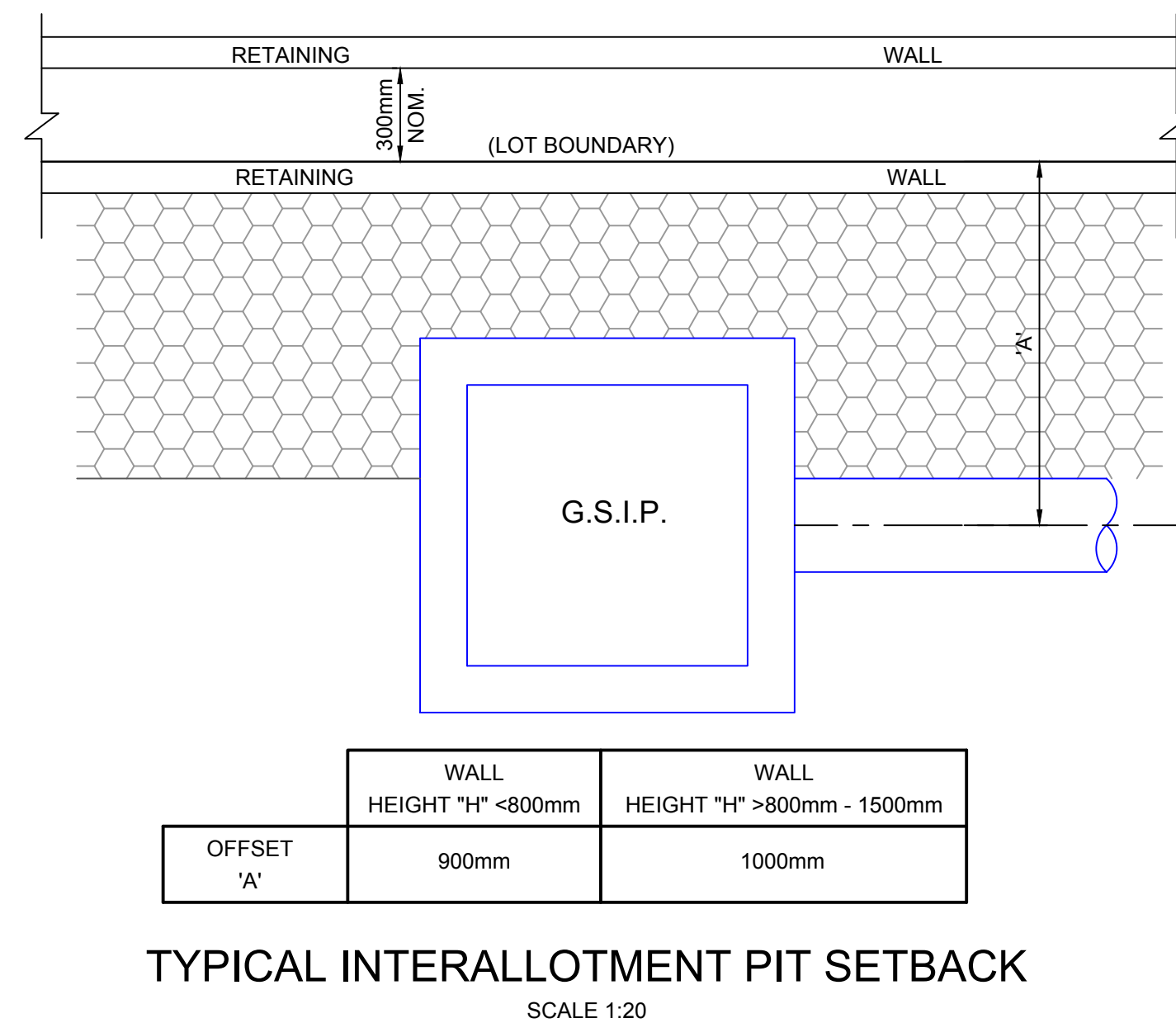
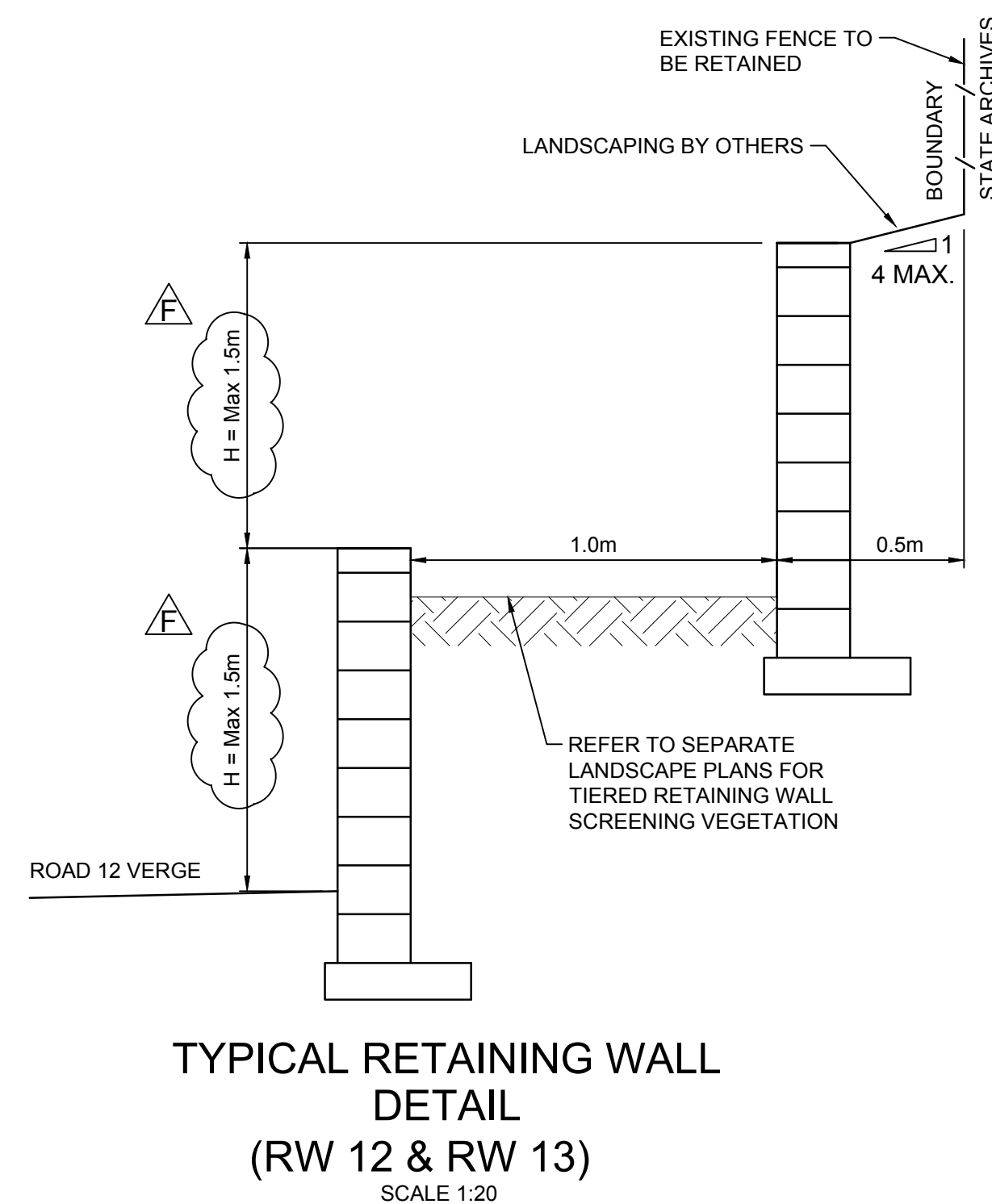
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TYPICAL RETAINING WALL
DETAIL
(RW 11 AND RW 16)
SCALE 1:20

THE LOCATION OF THE RETAINING WALL
14 IS TO BE CONFIRMED ONSITE IN
CONSULTATION WITH THE PCA

FOR RW 11, RW 12, RW 13, RW14 AND RW 16
REFER TO CC APPROVED STRUCTURAL
CERTIFIED PLANS PREPARED BY UNITED
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LDC

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Categories: **B1,C1,C2,C3,C4,C6,C15 & D1**

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F	CERTIFIER COMMENTS - DETAILS REVISED	JT	NAF	MS	RO	29/03/18
E	SPILLWAY LOCATION REVISED	JT	JT	MS	RO	19/03/18
D	TYPICAL RETAINING WALL DETAIL REVISED	JT	JT	RT	MS	08/12/17
C	CERTIFIER COMMENTS - RETAINING WALL DETAILS & NOTES REVISED	JT	JT	RT	MS	04/12/17
B	CERTIFIER COMMENTS - RW CHAINAGES ADDED	JT	JT	RT	MS	20/10/17
A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17
	AMENDMENT	DES	DRN	CKD	APR	DATE

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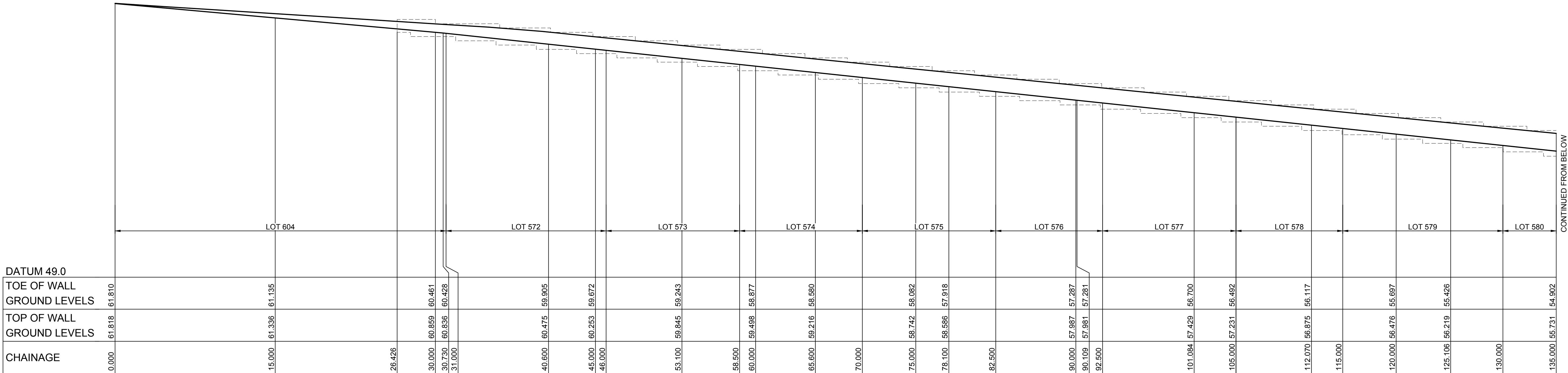
CADDENS HILL
STAGE 5

RETAINING WALL PLAN

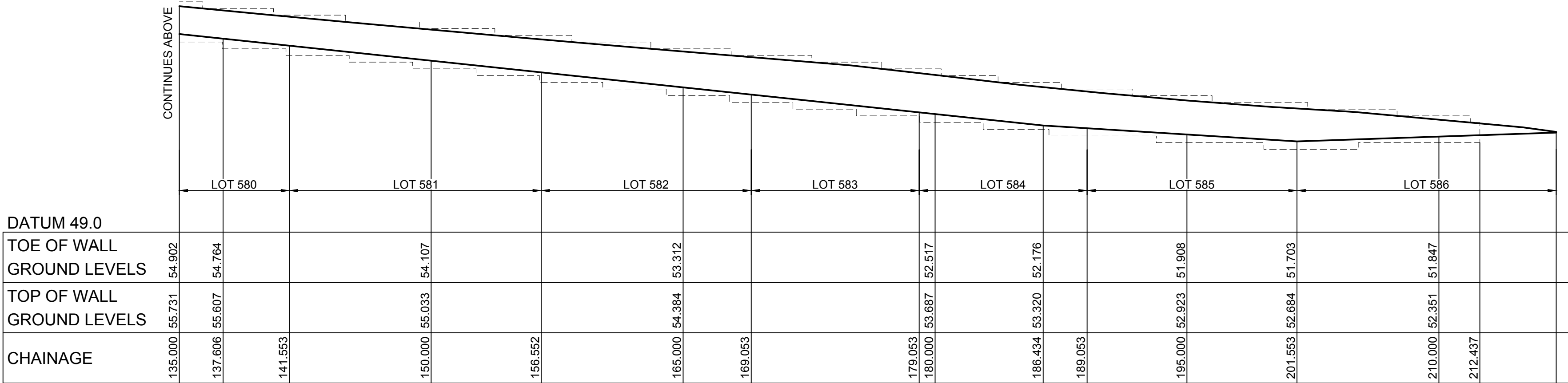
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FILE No:	110358CC535	
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FOR RW 11, RW 12, RW 13, RW 14 AND RW 16
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LONGITUDINAL SECTION - RETAINING WALL 11
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100

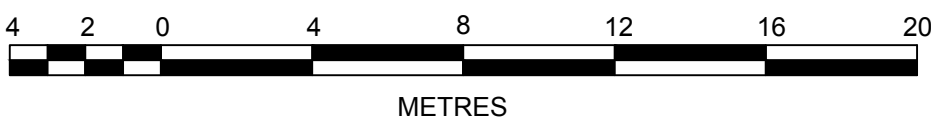


LONGITUDINAL SECTION - RETAINING WALL 11
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100

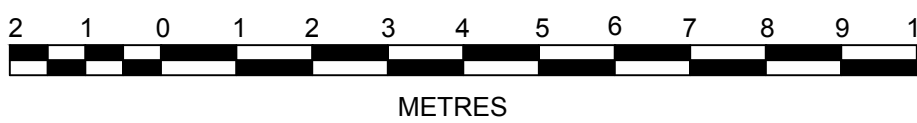


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1:200 (AT A1)
1:400 (AT A3)



1:100 (AT A1)
1:200 (AT A3)



B	CERTIFIER COMMENTS - ANNOTATION REVISED	JT	JT	RT	MS	04/12/17
A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17
	AMENDMENT	DES	DRN	CKD	APR	DATE

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CADDENS HILL
STAGE 5

RETAINING WALL SECTION

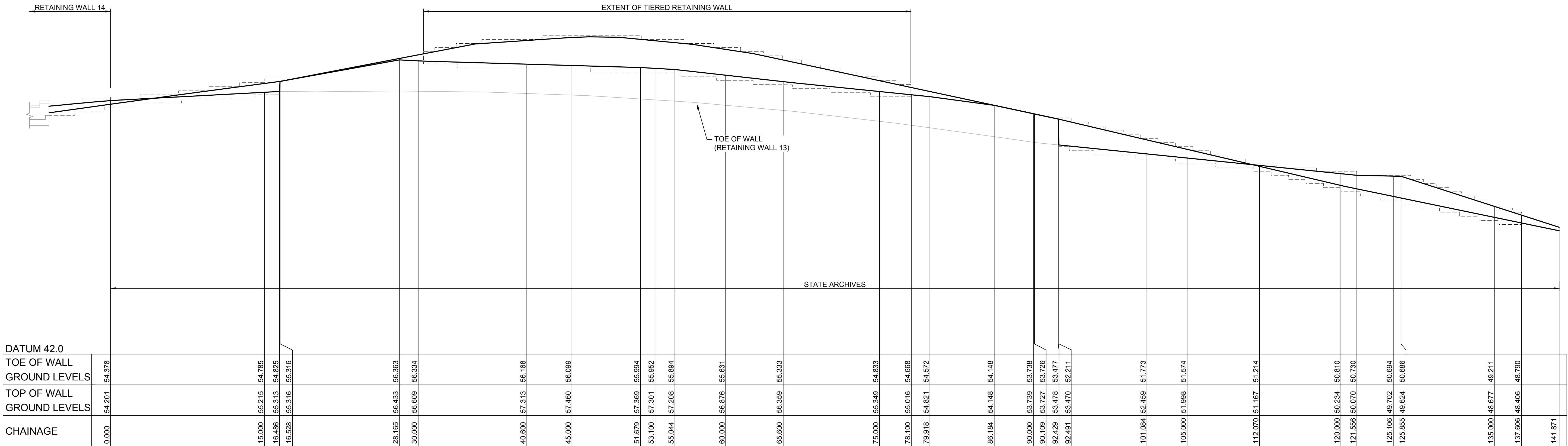
PLAN No:
110358/CC536

B

FILE No: 110358CC536

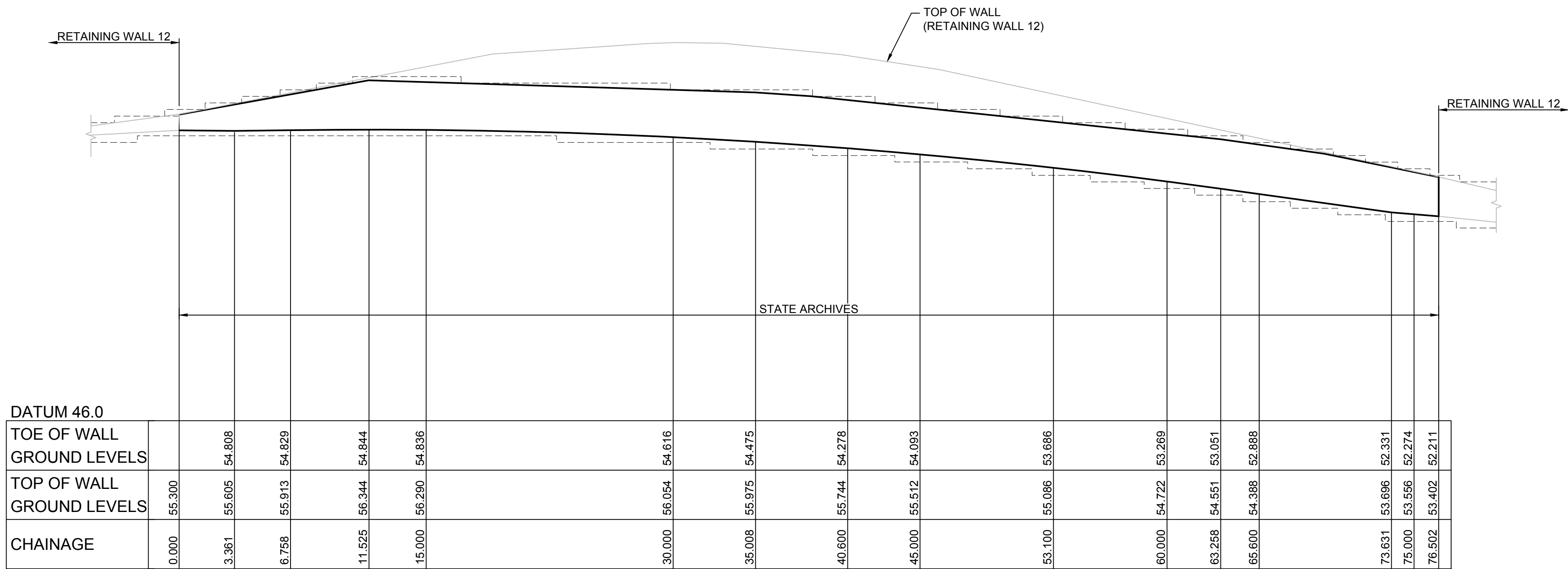
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Plotted: 15 December, 2017 9:17:33 AM File Name: J:\110358 - OConnell Lane Caddens\04 - Stage 5\CDCC\STAGE 5\110358CC537.dwg



LONGITUDINAL SECTION - RETAINING WALL 12

HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100



LONGITUDINAL SECTION - RETAINING WALL 13

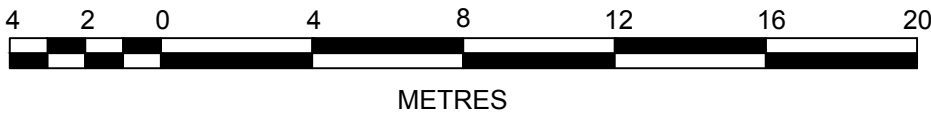
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100



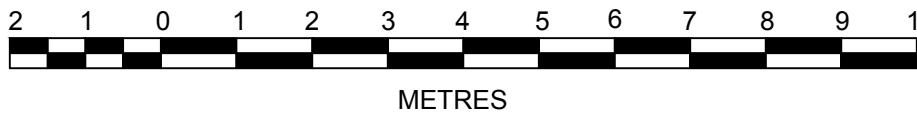
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FOR RW 11, RW 12, RW 13, RW 14 AND RW 16
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1:200 (AT A1)
1:400 (AT A3)



1:100 (AT A1)
1:200 (AT A3)



C	CERTIFIER COMMENTS - RETAINING WALL PROFILE REVISED	JT	JT	RT	MS	04/12/17	
B	CERTIFIER COMMENTS - RW DETAILED	JT	JT	RT	MS	20/10/17	
A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17	
	AMENDMENT	DES	DRN	CKD	APR	DATE	

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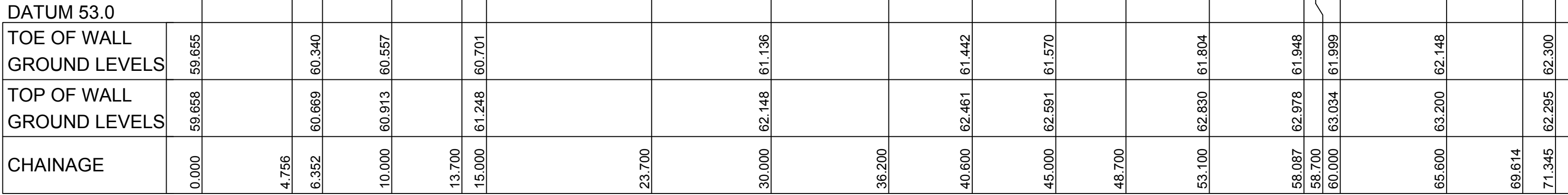
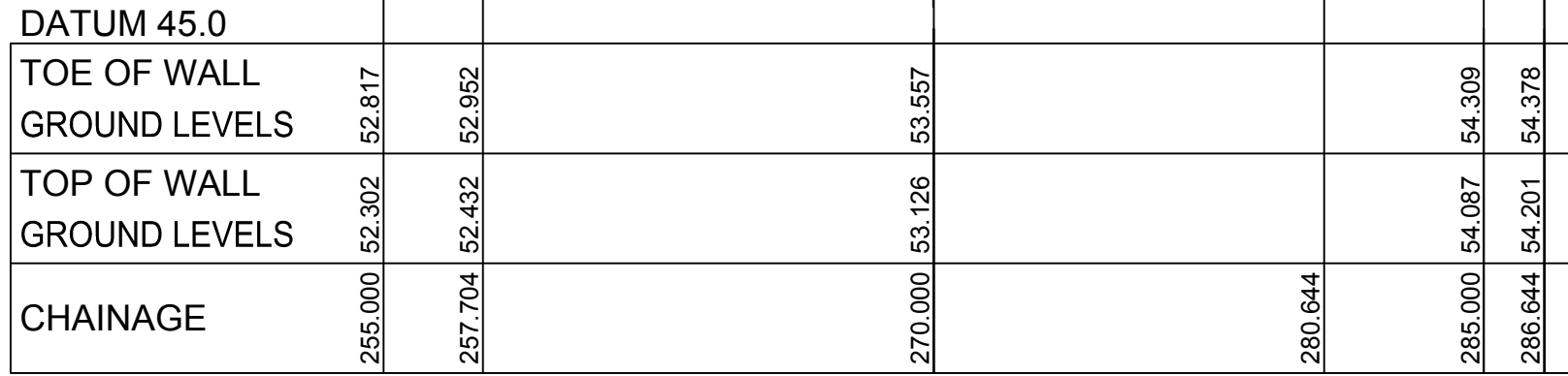
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CADDENS HILL
STAGE 5

RETAINING WALL SECTION

PLAN No:	110358/CC537	C
FILE No:	110358CC537	
SHEET SIZE:	A1 ORIGINAL	

FOR RW 11, RW 12, RW 13, RW 14 AND RW 16
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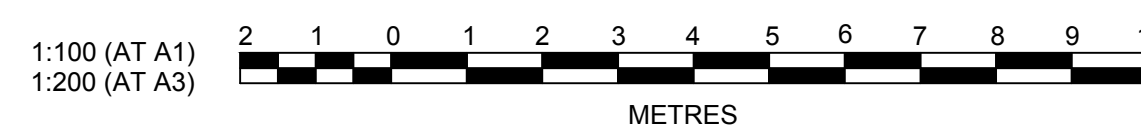
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B	CERTIFIER COMMENTS - ANNOTATION REVISED	JT	JT	RT	MS
A	ISSUE FOR APPROVAL	JT	NM	CKD	MS
	AMENDMENT	DES	DRN	CDK	DATE

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CADDENS HILL
STAGE 5

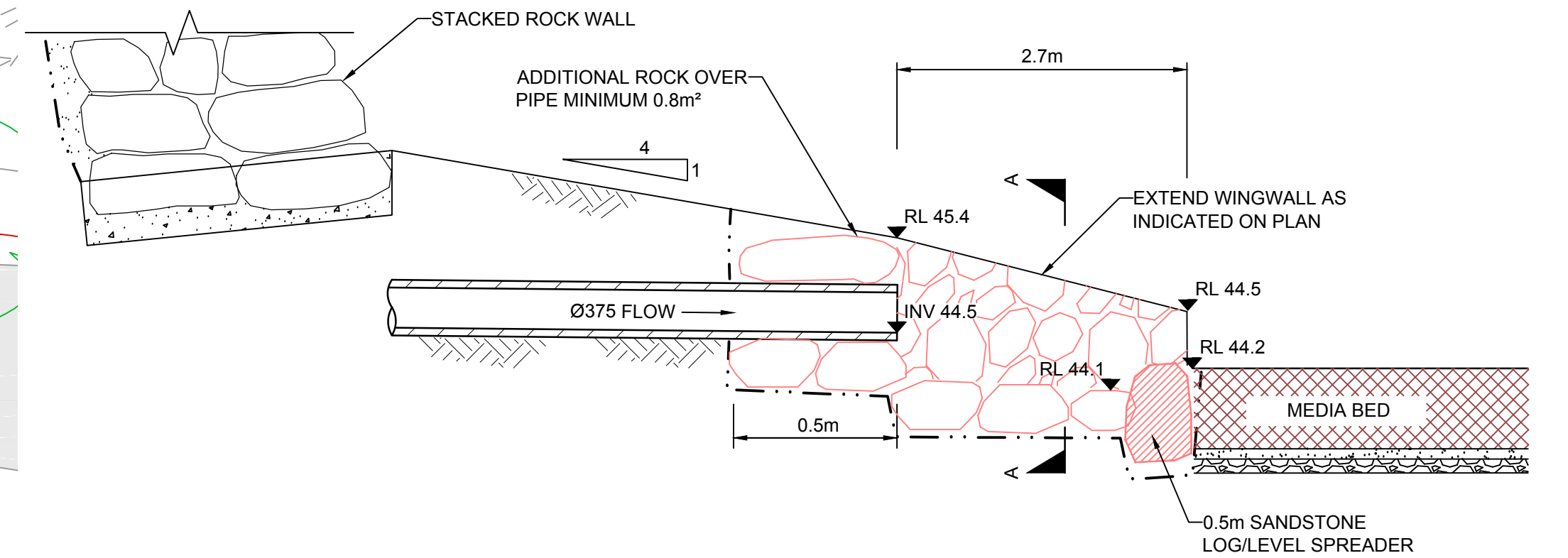
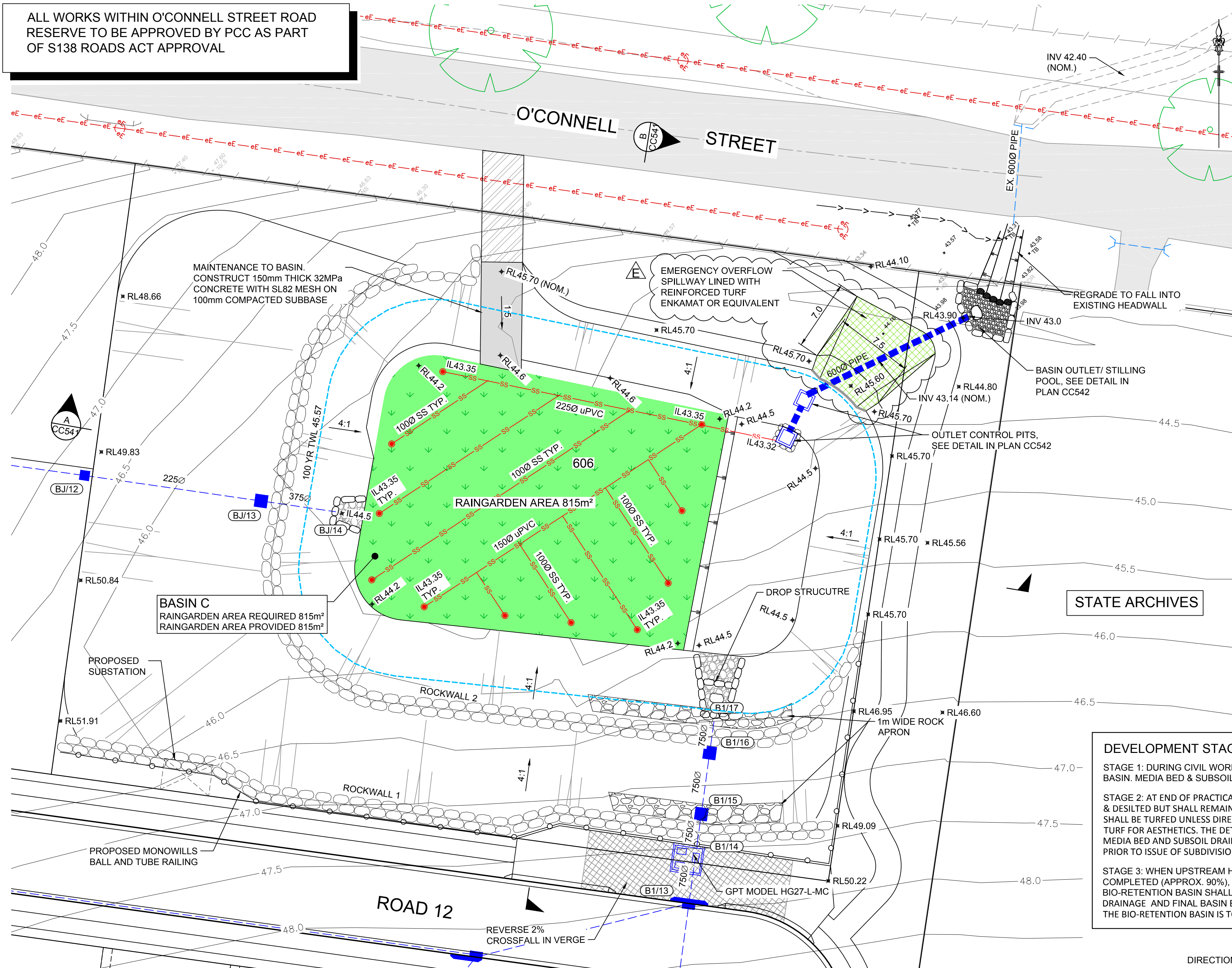
RETAINING WALL SECTION

PLAN No:
110358/CC538

FILE No: 110358CC538

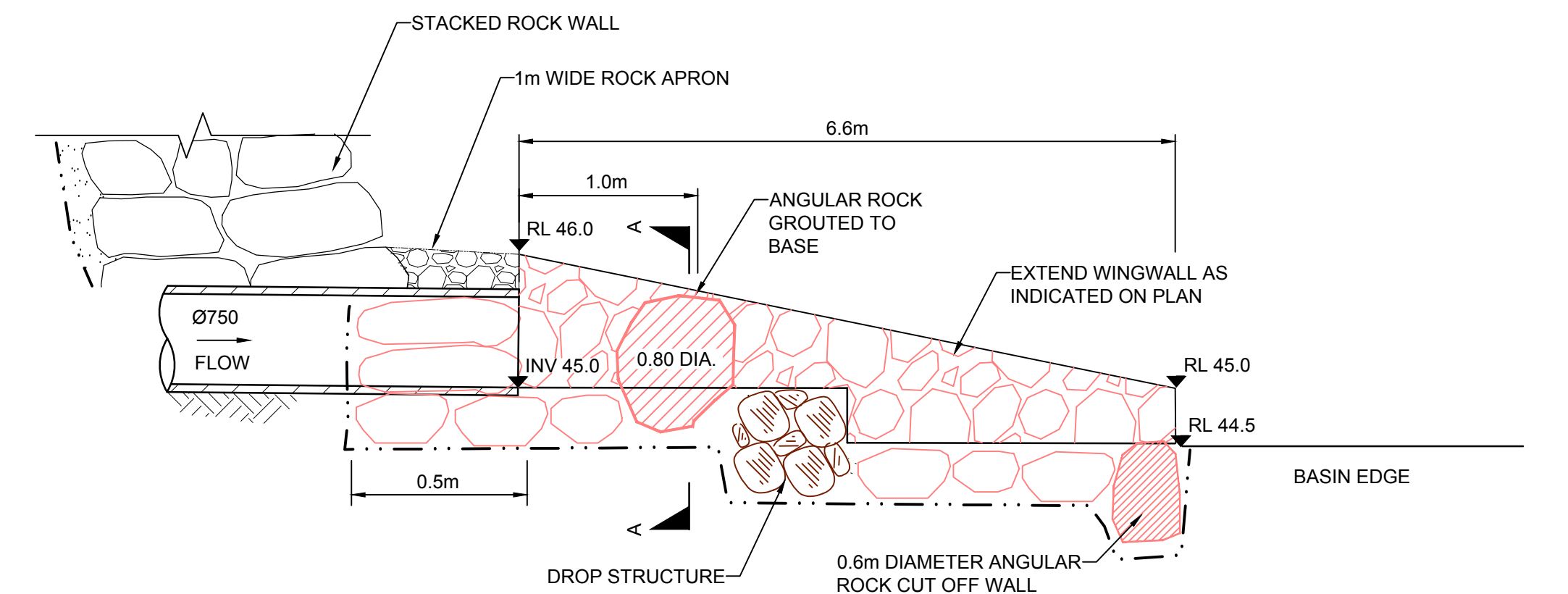
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ALL WORKS WITHIN O'CONNELL STREET ROAD RESERVE TO BE APPROVED BY PCC AS PART OF S138 ROADS ACT APPROVAL



RAINGARDEN INLET 1 (PIT BJ/14)

SCALE N.T.S.



RAINGARDEN INLET 2 (PIT B1/17)

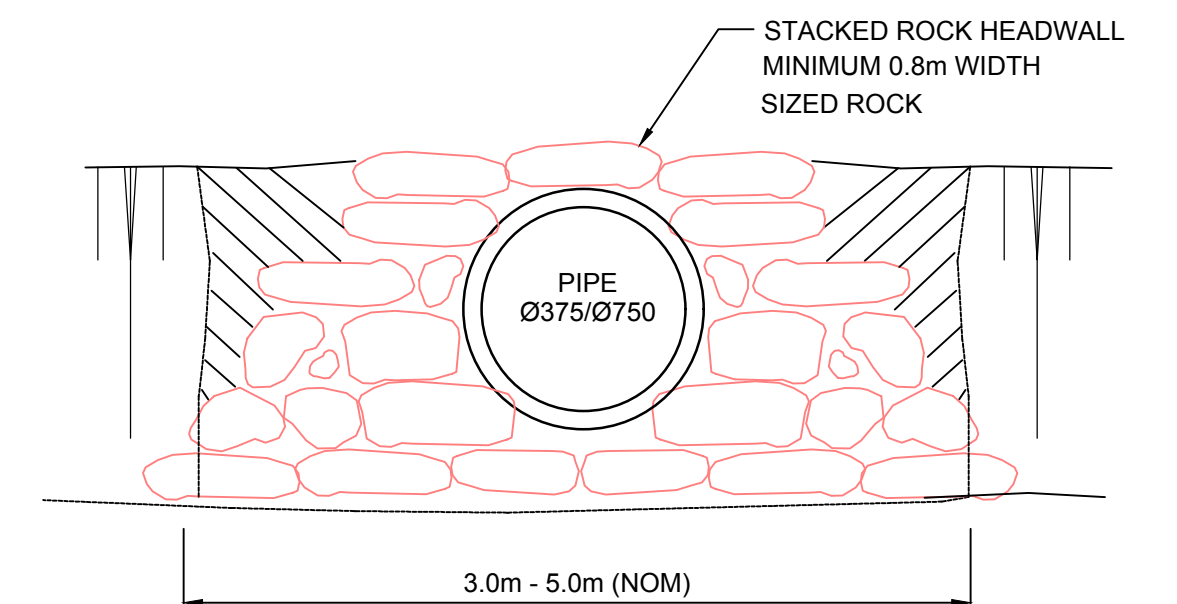
SCALE N.T.S.

DEVELOPMENT STAGES OF RAINGARDEN & DETENTION BASIN

STAGE 1: DURING CIVIL WORKS CONSTRUCTION, RETAIN EXISTING FORMED SEDIMENT BASIN. MEDIA BED & SUBSOIL DRAINAGE ARE NOT INSTALLED AT THIS STAGE.

STAGE 2: AT END OF PRACTICAL COMPLETION SEDIMENT BASIN BOTTOM SHALL BE DEWATERED & DESILTED BUT SHALL REMAIN TO OPERATE AS A SEDIMENT BASIN. BASIN BATTERS SHALL BE SHALL BE TURFED UNLESS DIRECTED OTHERWISE. BASIN BASE CAN BE LINED WITH A SACRIFICIAL TURF FOR AESTHETICS. THE DETENTION FUNCTION OF THE BASIN SHOULD BE OPERATIONAL. MEDIA BED AND SUBSOIL DRAINAGE ARE NOT INSTALLED AT THIS STAGE. GPT TO BE CLEANED PRIOR TO ISSUE OF SUBDIVISION CERTIFICATE.

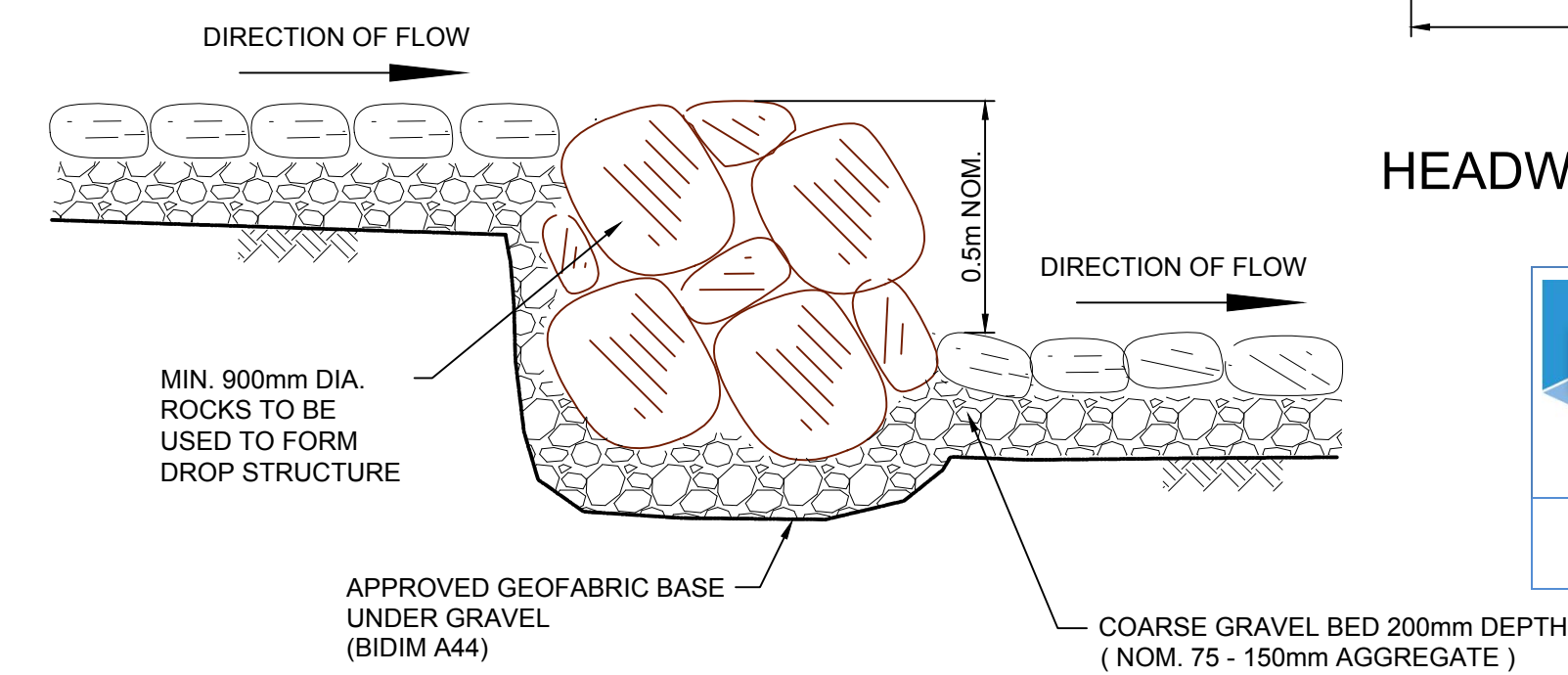
STAGE 3: WHEN UPSTREAM HOUSE BUILDING ACTIVITIES HAVE BEEN SUBSTANTIALLY COMPLETED (APPROX. 90%), THE SEDIMENT BASIN SHALL BE DECOMMISSIONED AND THE BIO-RETENTION BASIN SHALL BE COMPLETED. (SILT REMOVED, MEDIA BED, SUBSOIL DRAINAGE AND FINAL BASIN BASE PLANTING INSTALLED). THE BIO-RETENTION BASIN IS TO BE MAINTAINED FOR 3 YEARS PRIOR TO HANDOVER.



SECTION A-A HEADWALL INLET STRUCTURE

N.T.S.

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TYPICAL DROP STRUCTURE DETAIL

SCALE N.T.S.

THIS PLAN SHOULD BE READ IN CONJUNCTION WITH LANDSCAPE PLANS BY PLACE DESIGN GROUP, PLAN REF L000-5 TO L954-5 (SUBJECT TO SEPARATE CC APPROVAL)

BASIN PERFORMANCE TABLE

AEP	PEAK INFLOW MAX FLOW (m³/sec)	PEAK OUTFLOW MAX FLOW (m³/sec)	STORAGE USED (m³)	TOP WATER LEVEL
1%	2.92	1.67	1574	45.56
20%	1.79	0.55	982	45.21

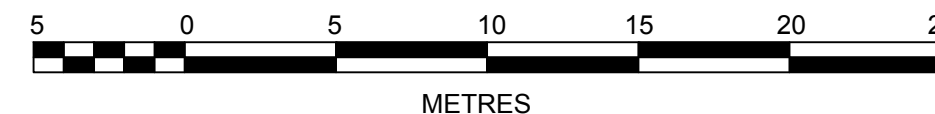
ON SITE DETENTION CONSTRUCTION TOLERANCES

THE OPERATION OF THE ON SITE DETENTION SYSTEM IS HIGHLY SENSITIVE TO THE FOLLOWING ELEMENTS WITHIN EACH OF THE BASINS. THE CONTRACTOR IS TO ENSURE THAT:

	TOLERANCE
WEIR LEVELS	+25mm, -0mm
WEIR LENGTHS	±50mm
PIT LEVELS	±15mm
PIPE LEVELS AND GRADES	±15mm, ±0.2%
FINISHED FLOOR LEVELS	+25mm, -0mm

A REGISTERED SURVEYOR SHALL BE USED TO SET OUT THE CONSTRUCTION OF THESE ELEMENTS FOR BOTH LINE AND LEVEL AND IS REQUIRED TO PROVIDE A DETAILED WORK AS EXECUTED SURVEY IN ORDER TO CONFIRM THAT THE CRITICAL ELEMENTS COMPLY WITH THE INTENT OF THE DESIGN.

1:250 (AT A1)
1:500 (AT A3)



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ORIGIN:

CLIENT:



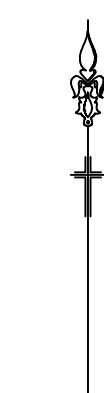
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CADDENS HILL
STAGE 5

BASIN PLAN

PLAN No:
110358/CC539 **E**
FILE No: 110358CC539
SHEET SIZE: A1 ORIGINAL



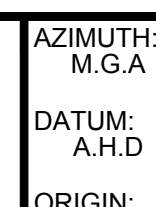
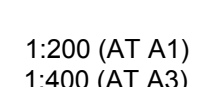
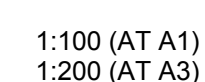
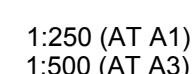
D



HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100

DATUM 39.0

HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100



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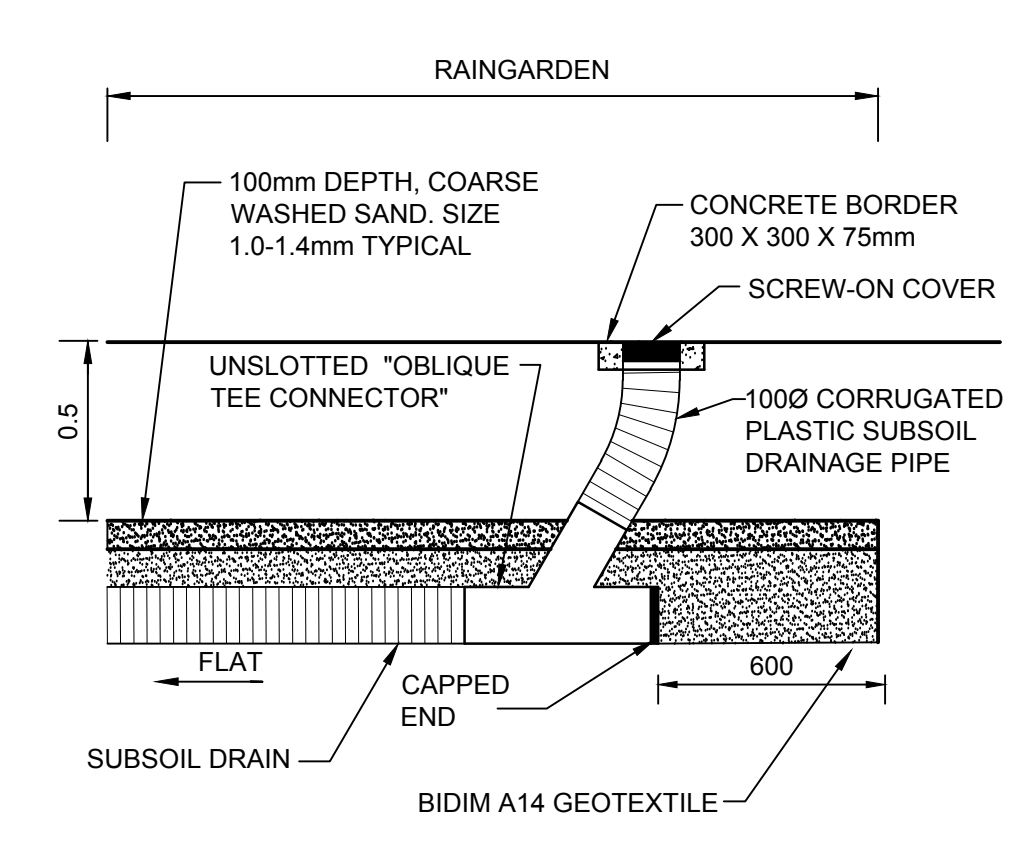
PLAN No:
110358/CC540

SHEET SIZE: A1 ORIGINAL

BASIN RETAINING WALL PLAN

[illegible]

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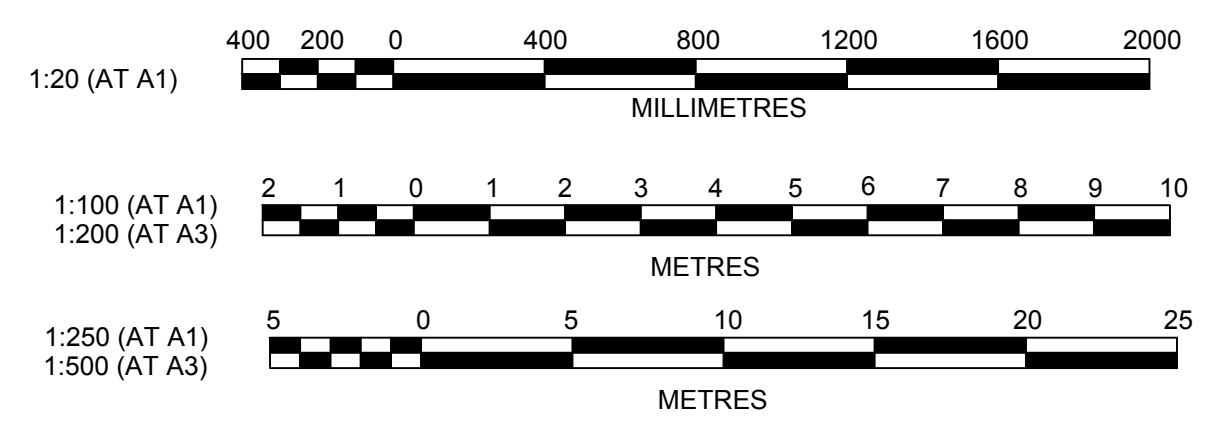
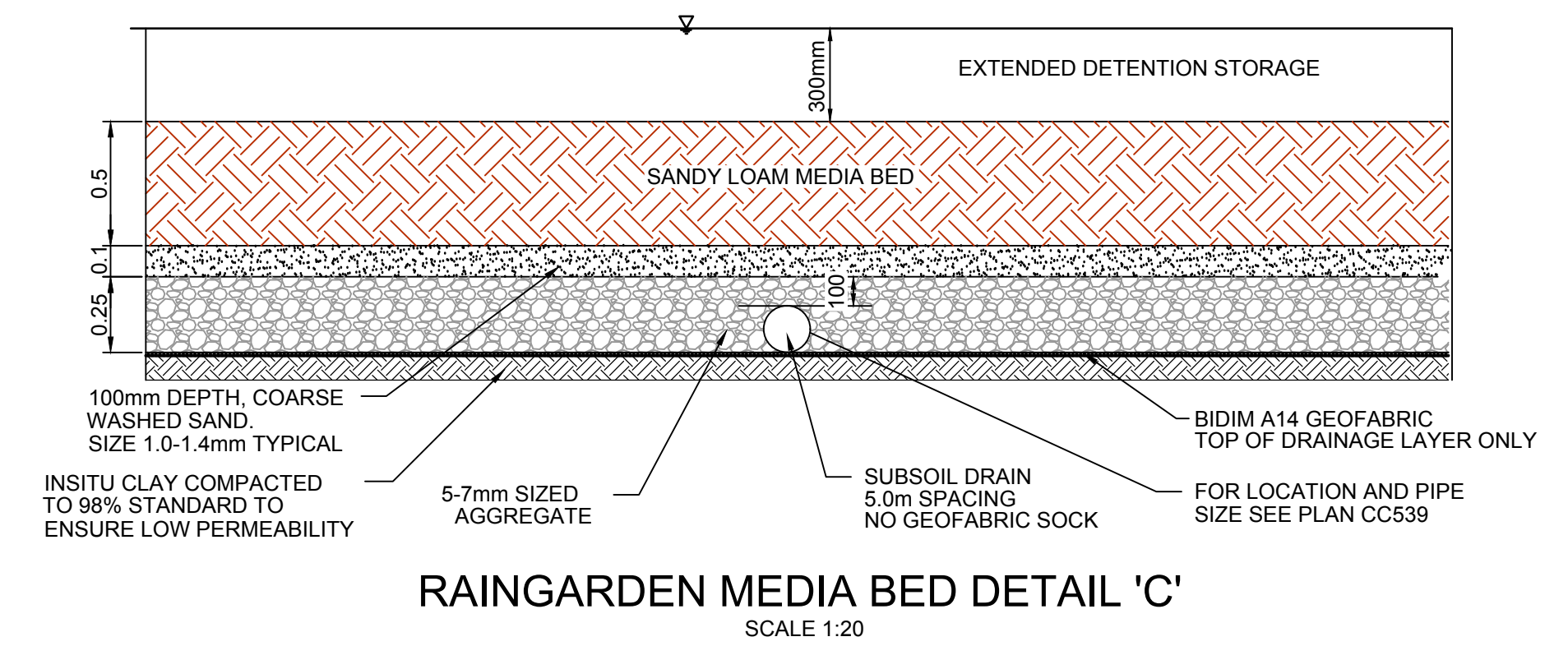
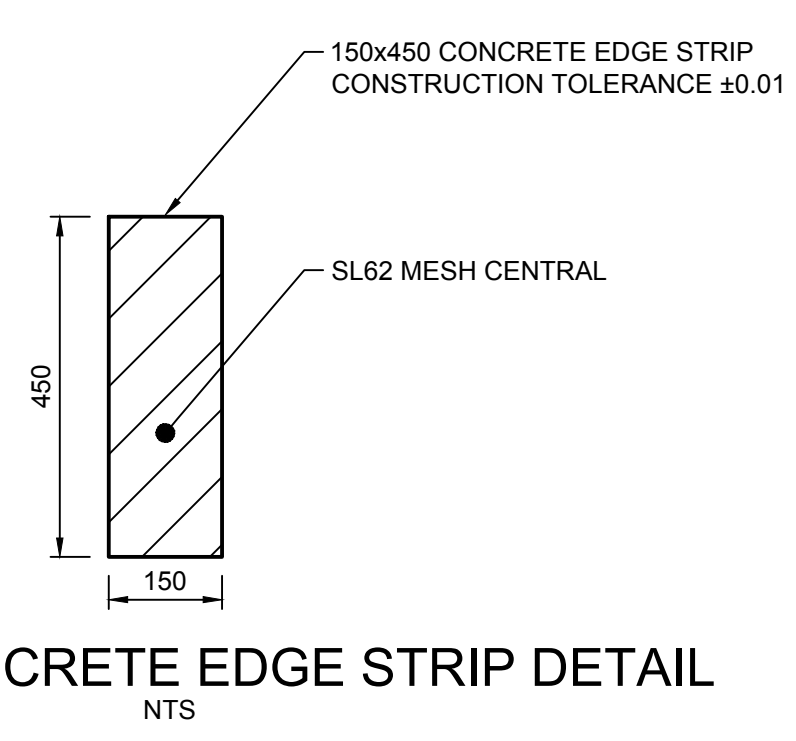



IN REFERENCE TO ABOVE MIX TABLE, THE FOLLOWING PERFORMANCE PARAMETERS SHALL BE APPLIED.

- HYDRAULIC CONDUCTIVITY ≥ 100 mm/HR
 - DETERMINED BY THE MCINTYRE AND JAKOBSEN TEST METHOD (1993) AND CARRIED OUT BY AN INDEPENDENT NATA REGISTERED SOIL LABORATORY
 - &/OR THE PREDICTED AND ACTUAL VALUES USING USDA OR ASTM F1815-06 STANDARD TESTING PROCEDURES
- ELECTRICAL CONDUCTIVITY ≤ 1.2 ds/m
- PHOSPHORUS CONCENTRATION <20 mg/kg FOR P SENSITIVE PLANTS (FOR VERY P SENSITIVE PLANTS USED: P ≤ 5 mg/kg)
- NITROGEN DRAWDOWN >0.5
- CIRCUMNEUTRAL pH
- SANDY LOAM TO LOAMY SAND TEXTURE
- GYPSUM APPLIED AT 2kg/cu.m
- BULK DENSITY TO BE BETWEEN 1.1 g/cm 3 & 1.8 g/cm 3
- FREE OF STONES, STUMPS, ROOTS, OR OTHER WOODY MATERIAL OVER 25mm DIAMETER
- FREE OF BRUSH OR SEED FROM WEEDS

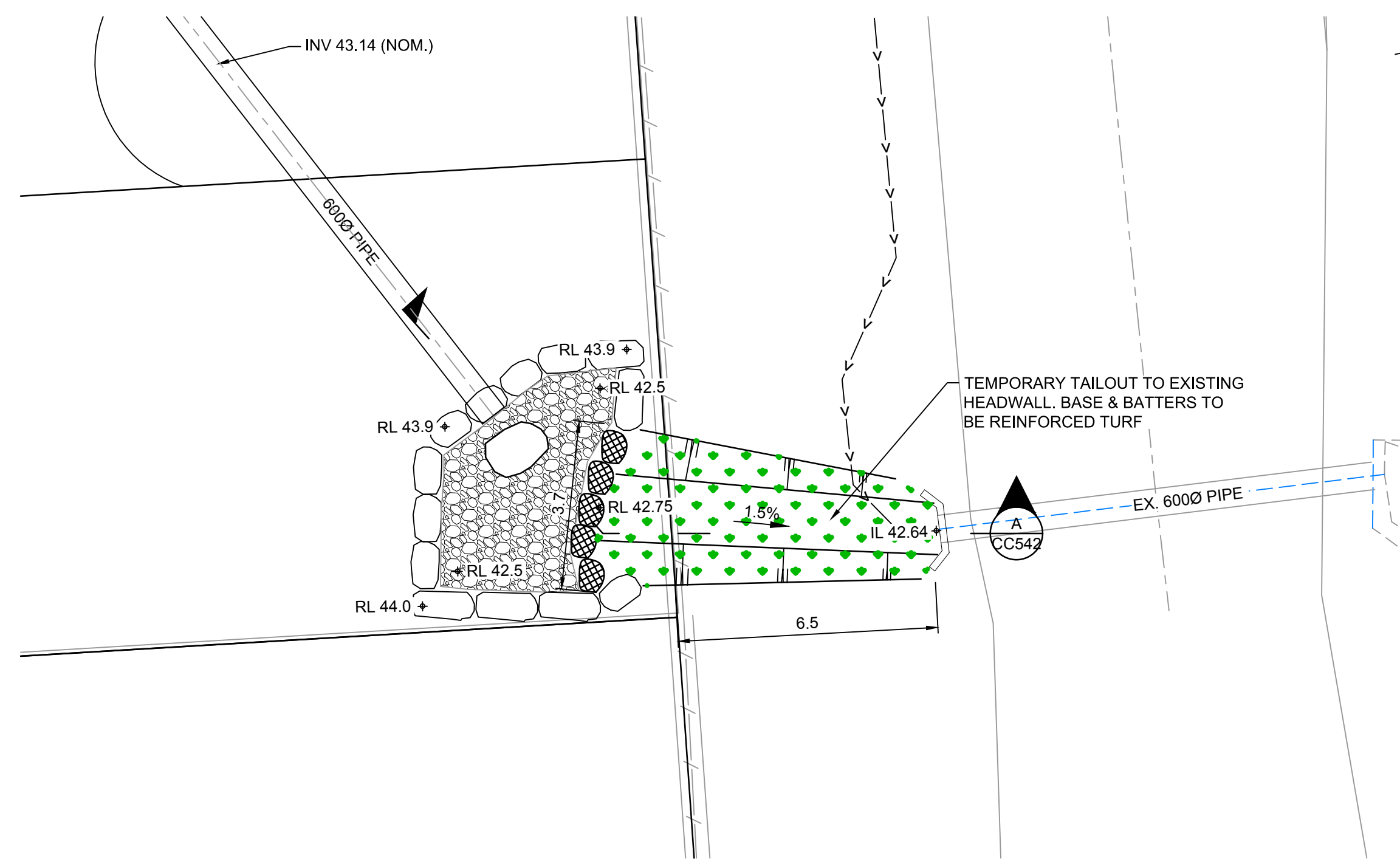
Benedict Sand & Gravel Bio-Retention Filter Media M165 generally complies with FAWB specification and is considered "fit for purpose" as a suitable filter media for use within a Bio-Filtration stormwater treatment practice.

PLACEMENT:
THE MEDIA SHALL BE PLACED IN 300mm LIFTS AND LOOSELY COMPACTED.



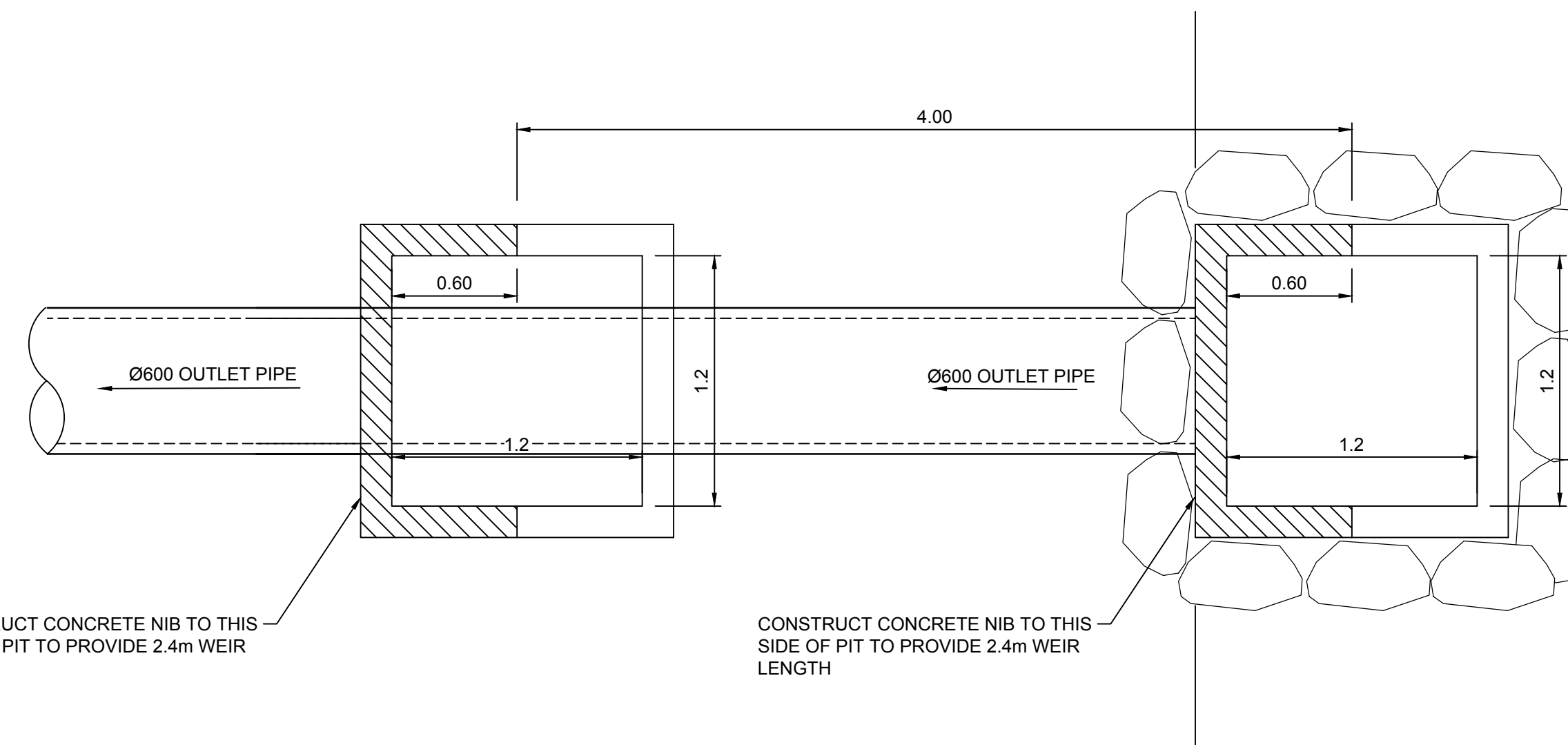
AZIMUTH: M.G.A. DATUM: A.H.D. ORIGIN:		CADDENS HILL STAGE 5 BASIN SECTIONS	PLAN No: 110358/CC541 <div style="border: 1px solid black; width: 20px; height: 20px; text-align: center; line-height: 20px; float: right;">C</div>
	THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS PART OF AN APPROVED CONSTRUCTION CERTIFICATE.		FILE No: 110358CC541
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Plotted: 15 December, 2017 9:20:35 AM File Name: J:\110358 - O'Connell Lane Caddens\04 - Stage 5\CD\CC\STAGE 5\110358CC542.dwg

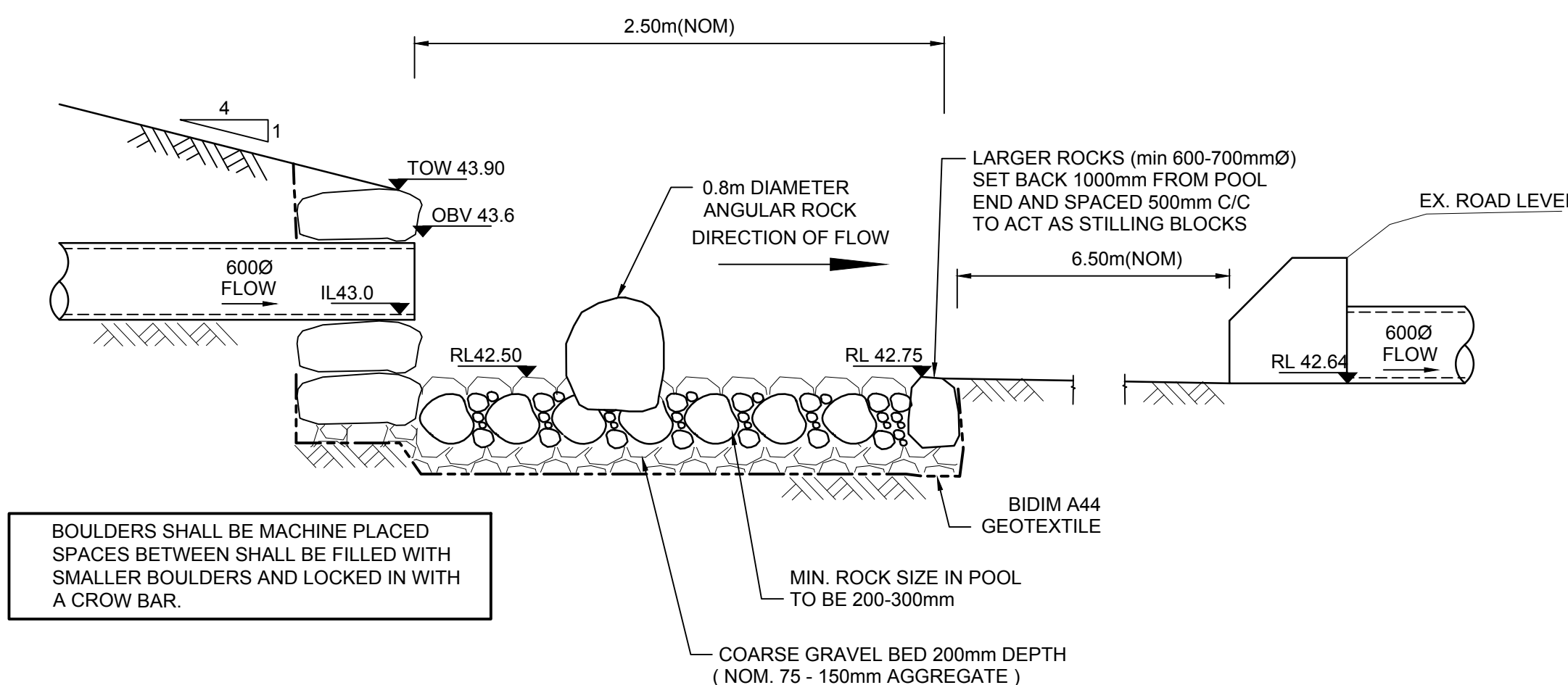


BASIN OUTLET PLAN
SCALE 1:100

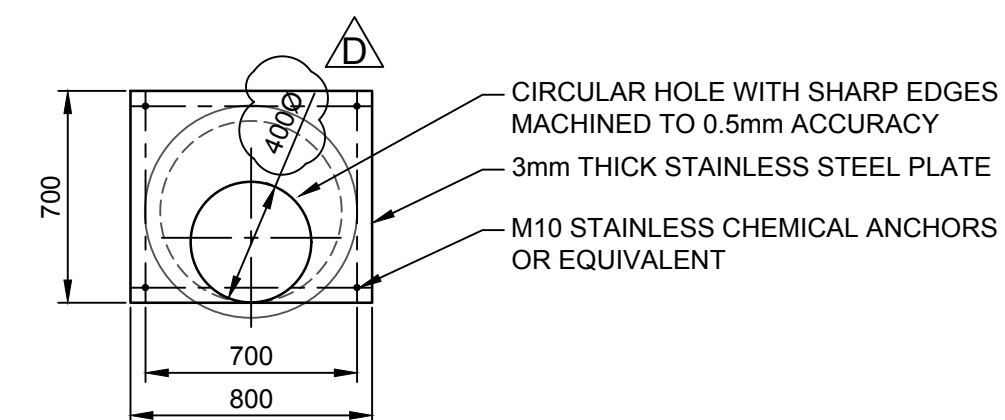
ALL WORKS WITHIN O'CONNELL STREET ROAD RESERVE TO BE APPROVED BY PCC AS PART OF S138 ROADS ACT APPROVAL



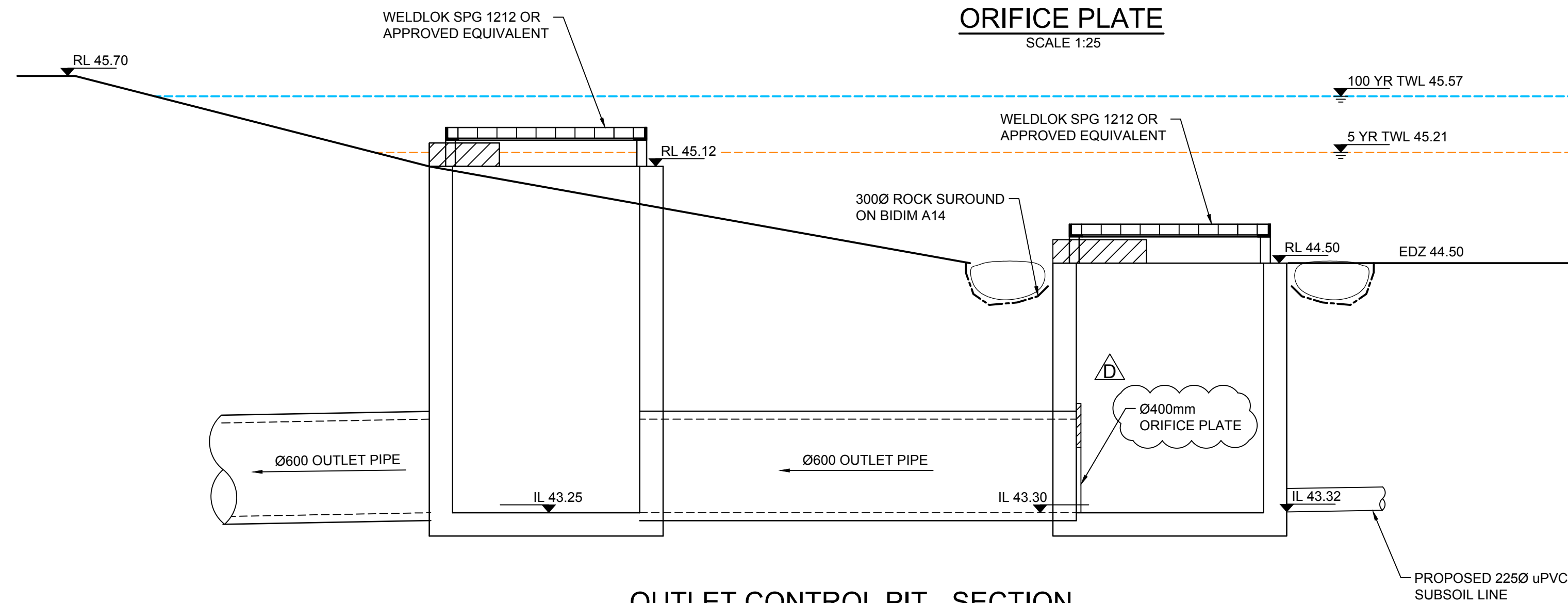
OUTLET CONTROL PIT DETAIL
SCALE 1:25



SECTION A-A
BASIN OUTLET DETAIL
N. T. S.

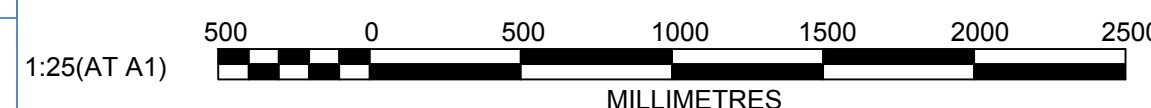


ORIFICE PLATE
SCALE 1:25



OUTLET CONTROL PIT - SECTION
SCALE 1:25

LDC These plans are referred to in certificate no. **14776** approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPB 2416
Categories: B1,C1,C2,C3,C4,C6,C15 & D1
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CADDENS HILL
STAGE 5

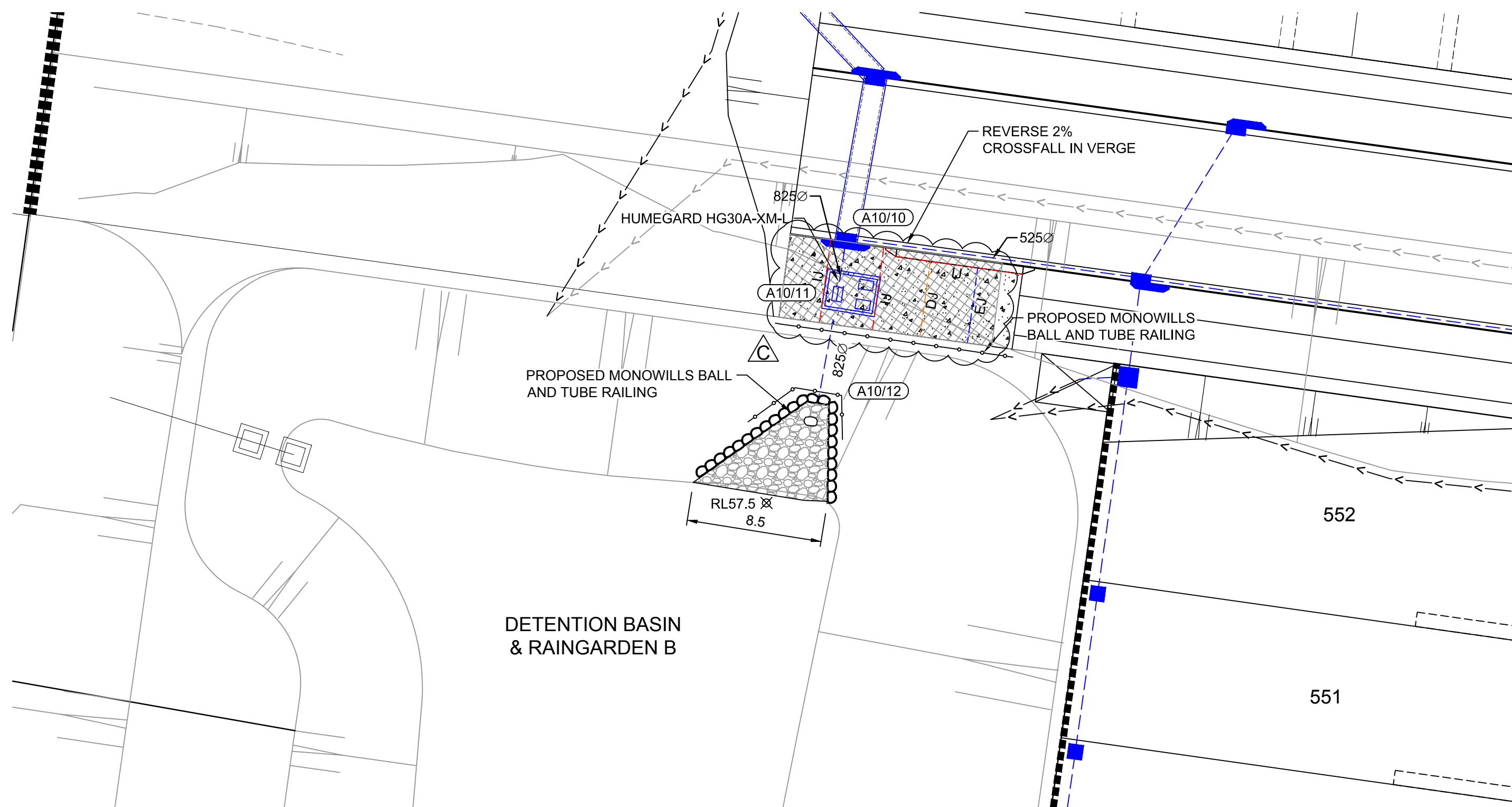
BASIN DETAILS

PLAN No:
110358/CC542 **D**
FILE No: 110358CC542
SHEET SIZE: A1 ORIGINAL

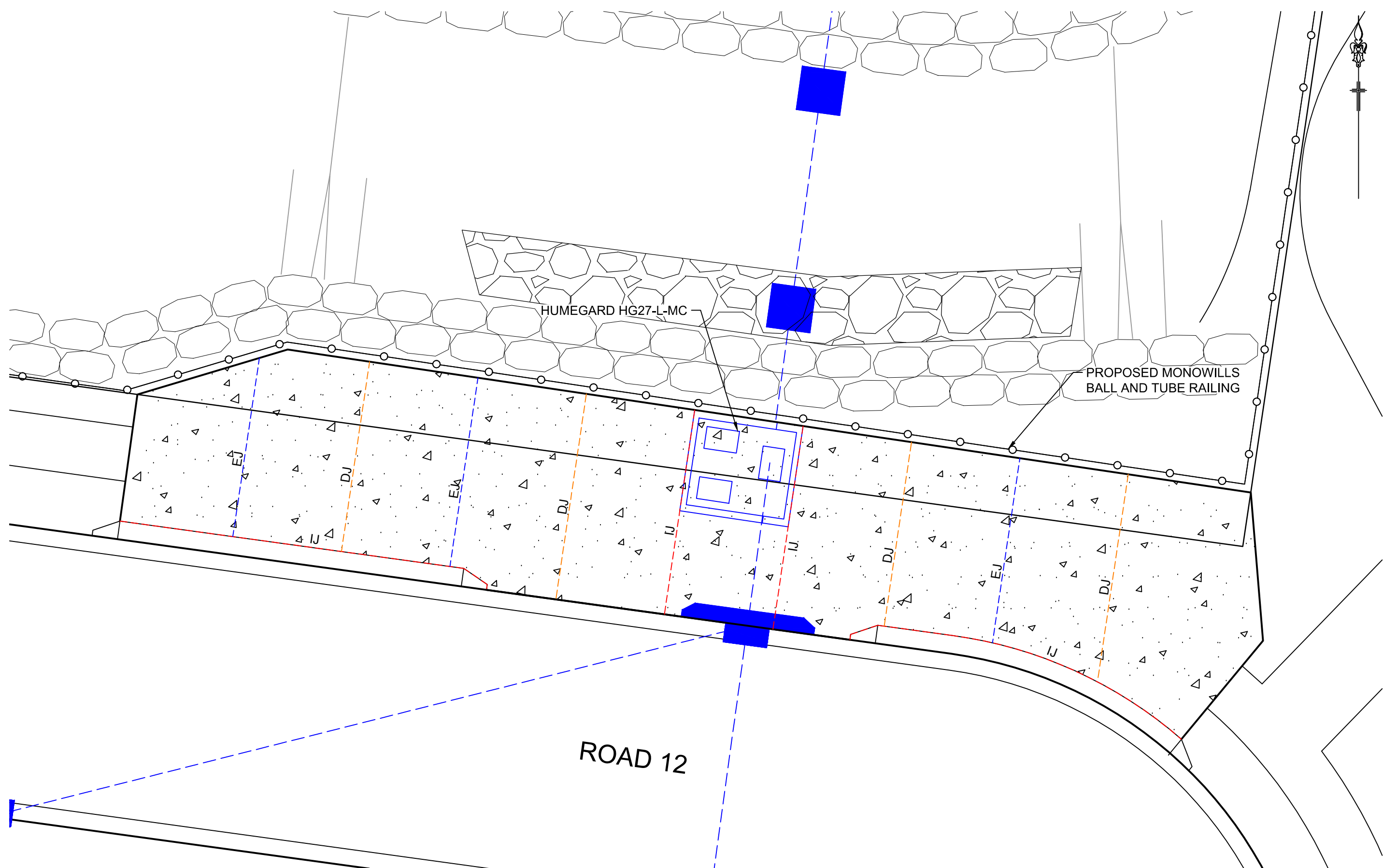
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B	CERTIFIER COMMENTS - OUTLET DETAIL AMENDED	JT	JT	RT	MS	20/10/17
A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17
	AMENDMENT	DES	DRN	CKD	APR	DATE

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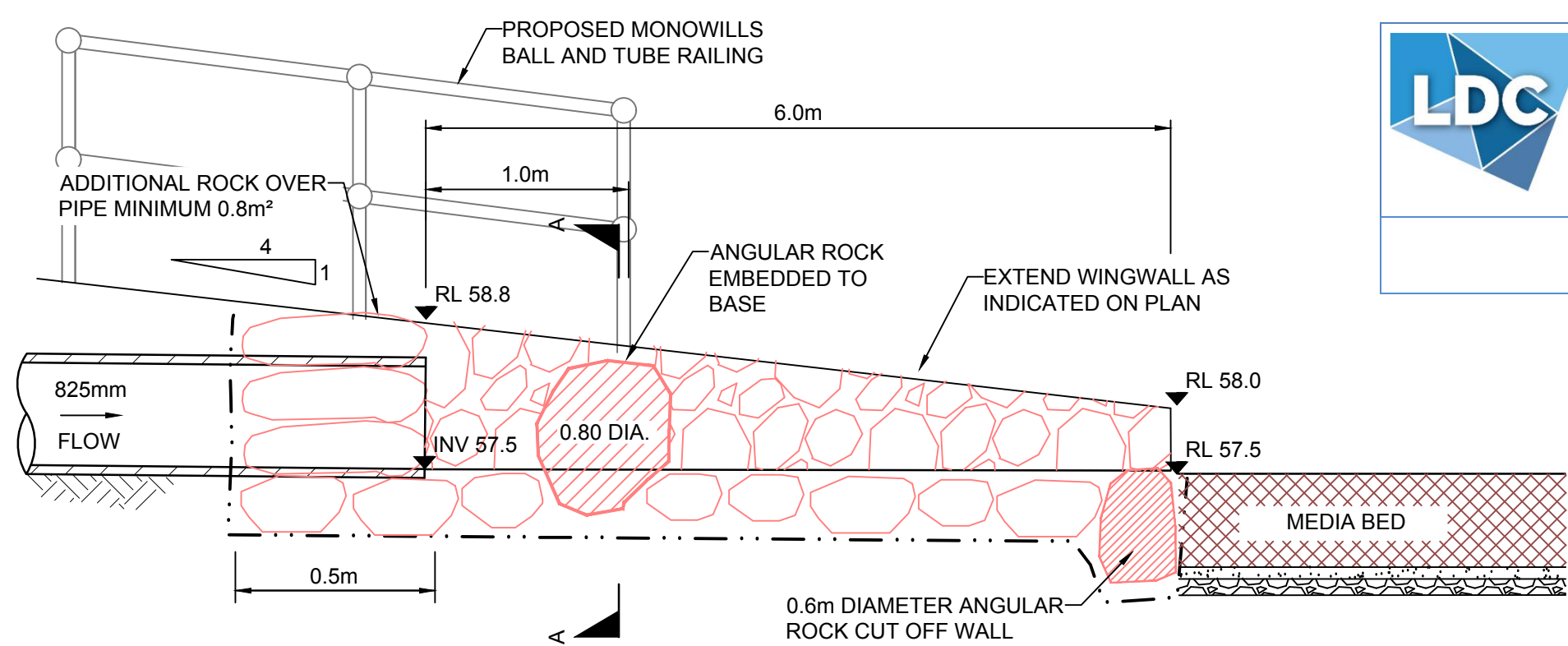
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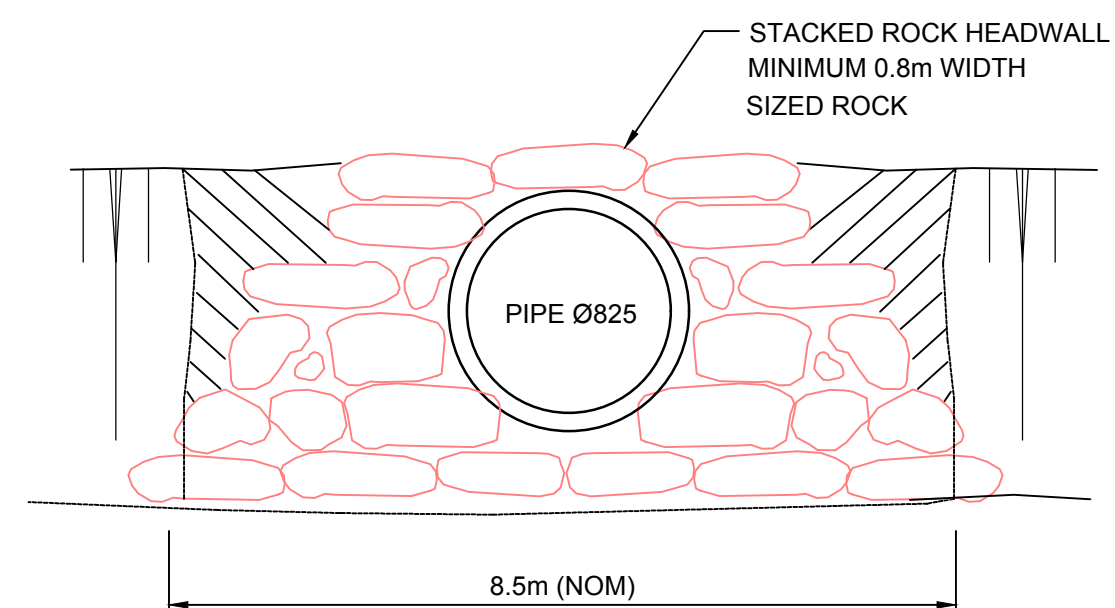
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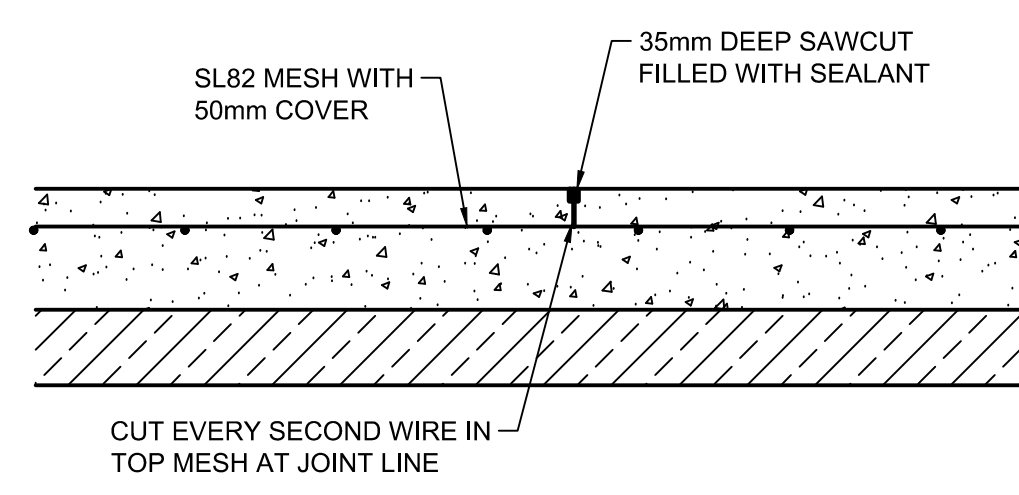
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SCALE 1:100



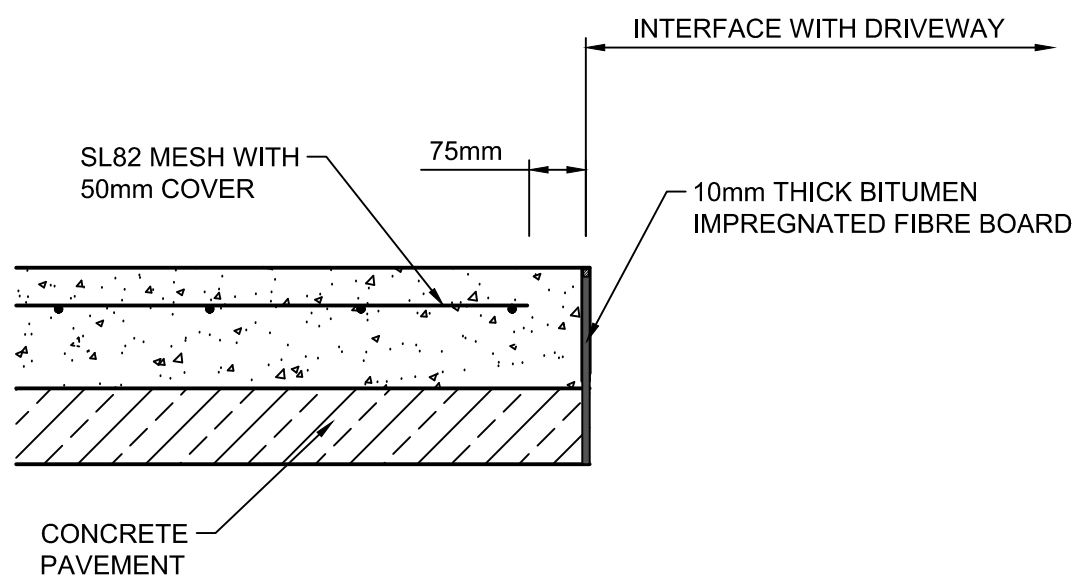
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SCALE N.T.S.



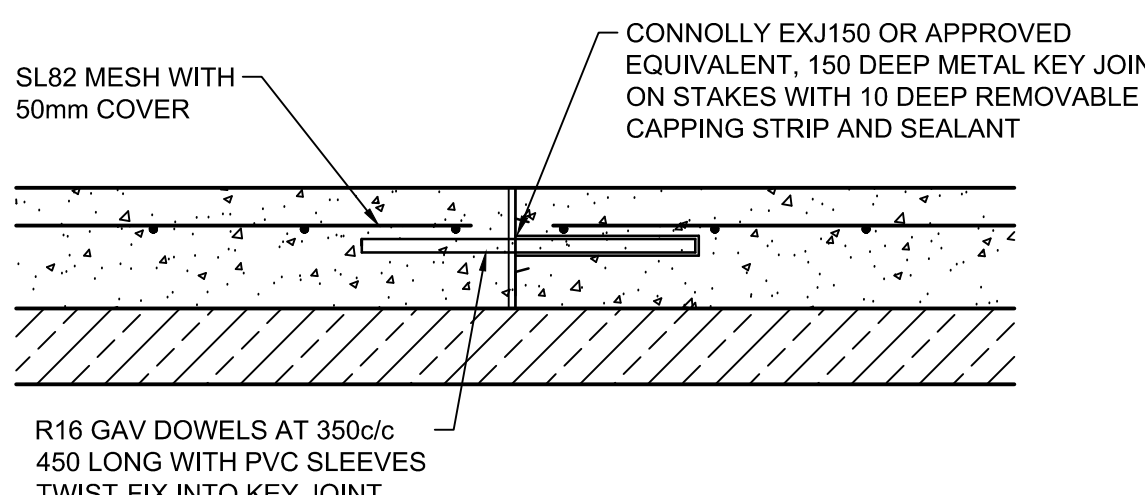
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HEADWALL INLET STRUCTURE
N.T.S.



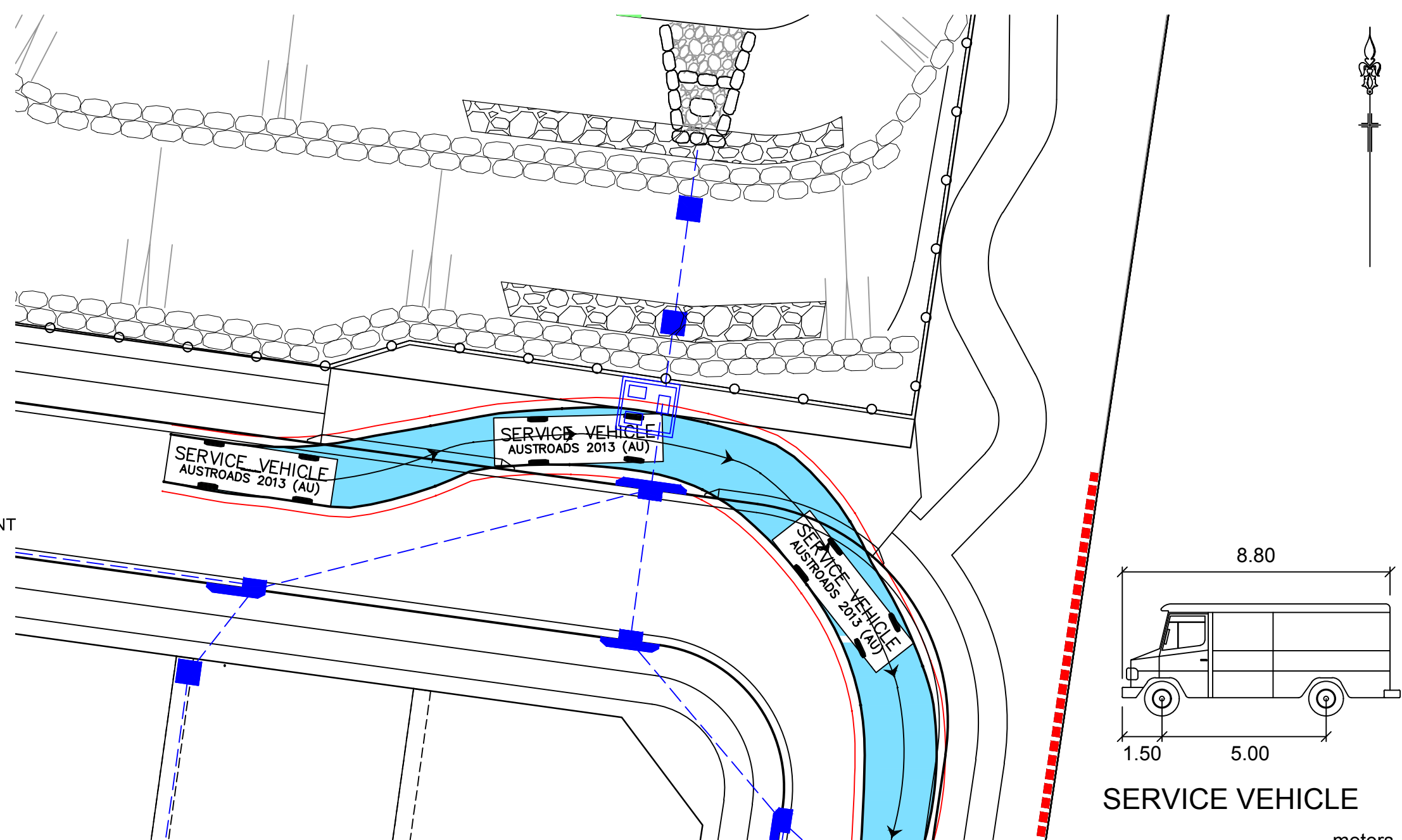
DETAIL - SAWN JOINT (SJ)
SAWCUTS ARE TO BE MADE WITHIN 12-18 HOURS OF FINAL SCREEDING OF SLAB
MAXIMUM 6m SPACING, REFER TO PLAN



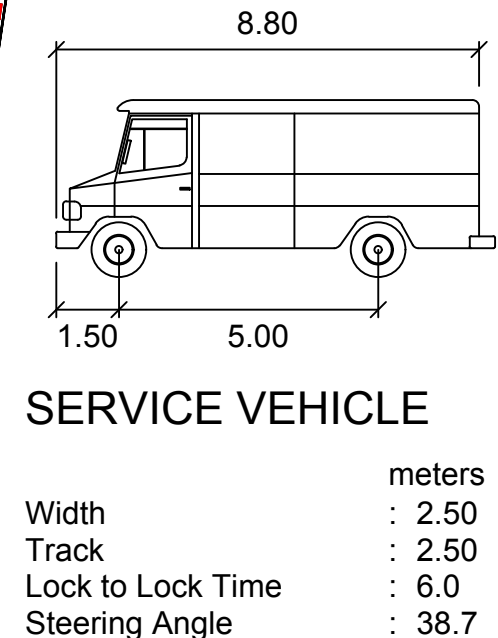
ISOLATION JOINT (IJ)



EXPANSION JOINT (EJ)
MAXIMUM 20m SPACING, REFER TO PLAN



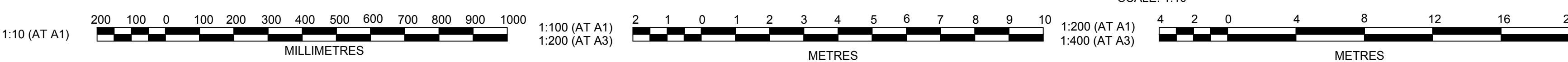
SWEEP PATH PLAN
SCALE 1:250



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LEGEND
EJ = DENOTES EXPANSION KEY JOINTS
DJ = DENOTES DUMMY JOINTS
IJ = DENOTES ISOLATION JOINTS

JOINTING DETAILS
SCALE: 1:10



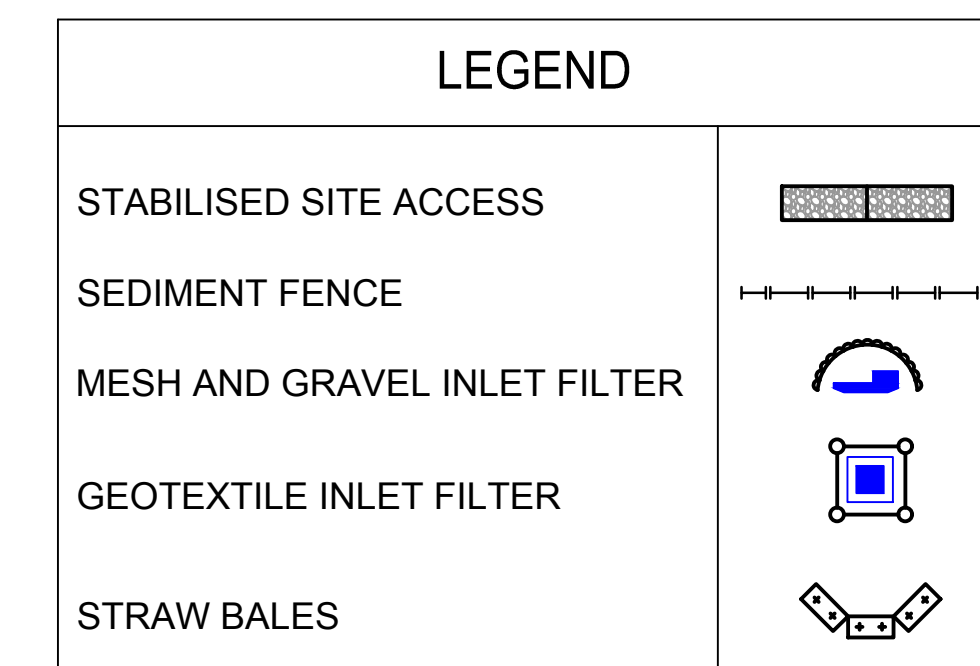
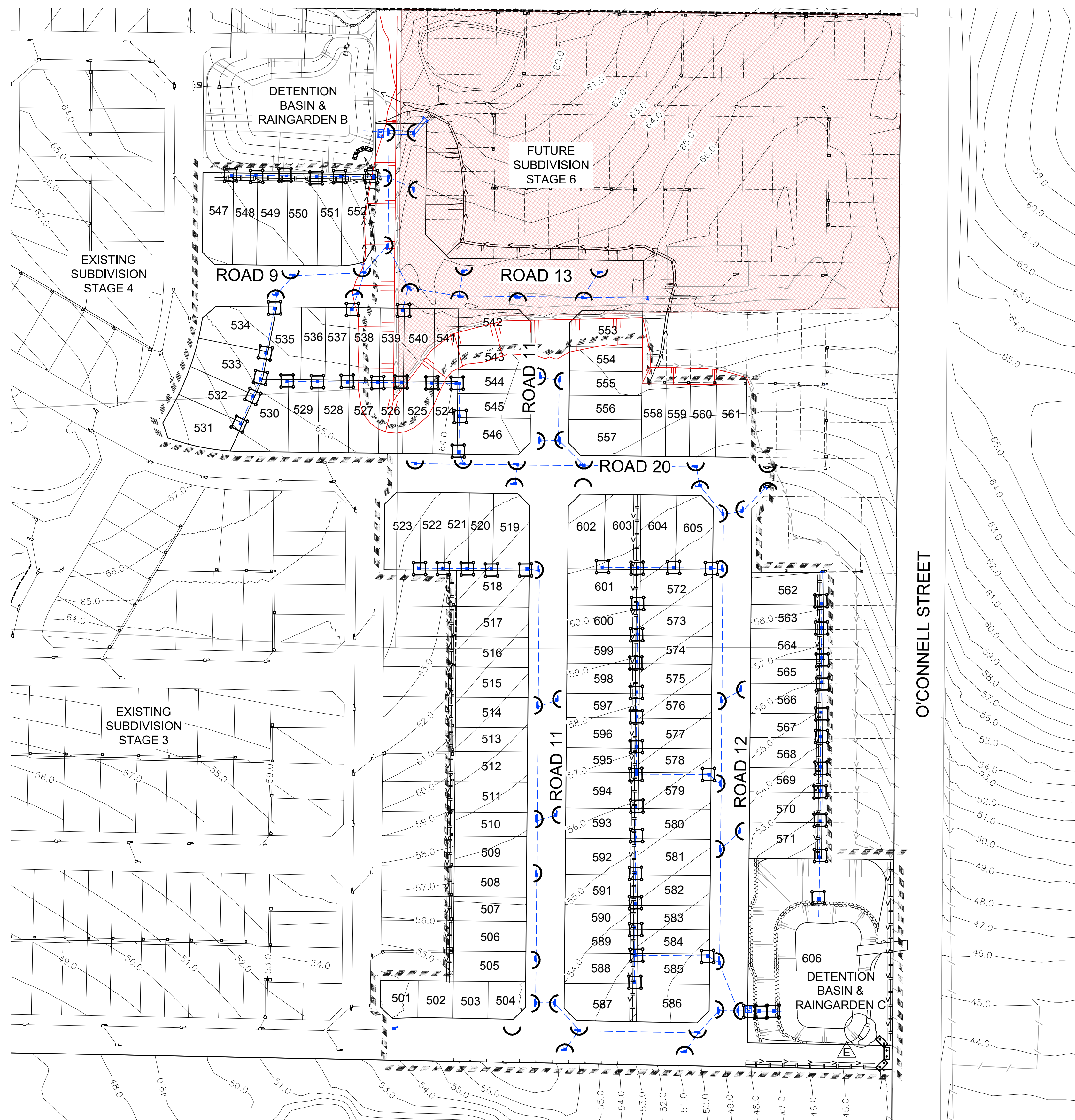
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B	CERTIFIER COMMENTS - BASIN B OUTLET DETAIL AMENDED	JT	JT	RT	MS	20/10/17
A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17
	AMENDMENT	DES	DRN	CKD	APR	DATE


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AZIMUTH: M.G.A
DATUM: A.H.D
ORIGIN:

CLIENT: **LEGACYPROPERTY**
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CADDENS HILL STAGE 5
BASIN B OUTLET DETAILS
PLAN No: 110358/CC543
FILE No: 110358CC543
SHEET SIZE: A1 ORIGINAL



 THIS CC DOES NOT INCLUDE ANY
WORKS WITHIN LOT 11 DP522660.
WORKS WITHIN LOT 11 IS
SUBJECT TO A SEPARATE CC

[illegible]

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CADDENS HILL
STAGE 5

SOIL & WATER MANAGEMENT PLAN

PLAN No:	110358/CC544	E
FILE No:	110358CC544	
SHEET SIZE:	A1 ORIGINAL	

SOIL AND WATER MANAGEMENT NOTES

GENERAL NOTES:

1.

ALL EROSION AND SEDIMENT CONTROL MEASURES AND STANDARD DRAWINGS, INCLUDING REVEGETATION AND STORAGE OF SOIL AND TOPSOIL, SHALL BE IMPLEMENTED TO THE REQUIREMENTS OF THE " SOILS AND CONSTRUCTION " VOLUME 1, 4TH EDITION, MARCH 2004 " .
2.

TOPSOIL FROM ALL AREAS TO BE DISTURBED SHALL BE STOCKPILED AND LATER RESPREAD TO AID REVEGETATION IN THOSE AREAS.
3.

ALL DRAINAGE WORKS SHALL BE CONSTRUCTED AND STABILISED AS EARLY AS POSSIBLE DURING DEVELOPMENT.
4.

ALL TAIL-OUT DRAINS SHALL BE COUCH GRASSED AND TRAPEZOIDAL IN SECTION. STRAW BALES SHALL BE PLACED AS A SEDIMENT CONTROL DEVICE WHERE REQUIRED.
5.

VEHICULAR TRAFFIC SHALL BE CONTROLLED DURING DEVELOPMENT CONFINING ACCESS WHERE POSSIBLE TO PROPOSED OR EXISTING ROAD ALIGNMENTS. AREAS TO BE LEFT UNDISTURBED SHALL BE MARKED OFF.
6.

ROADS SHALL BE PAVED AS EARLY AS POSSIBLE AFTER FORMATION.
7.

DISTURBANCE OF VEGETATION SHALL BE LIMITED TO FILL AREAS, ROADWAYS AND DRAINAGE LINES. NO LOT GRADING SHALL BE CARRIED OUT IN UNDISTURBED AREAS WITHOUT CONSULTATION WITH COUNCIL'S ENGINEER.
8.

ALL DISTURBED AREAS SHALL BE REVEGETATED AS SOON AS THE RELEVANT WORKS ARE COMPLETED.
9.

ALL SEDIMENT BASINS AND TRAPS SHALL BE CLEANED WHEN THE STRUCTURES ARE A MAXIMUM 60% FULL OF SOLID MATERIALS, INCLUDING DURING THE MAINTENANCE PERIOD.
10.

THE SOIL AND WATER MANAGEMENT PLAN IS TO BE READ IN CONJUNCTION WITH THE ENGINEERING PLANS, AND COUNCIL'S WRITTEN GUIDELINES FOR THE DEVELOPMENT OF LAND.
11.

CONTRACTORS SHALL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE UNDERTAKEN AS SPECIFIED ON THE PLAN AND IN ACCORDANCE WITH THE GUIDELINES SHOWN IN "MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION 4TH EDITION" ("THE BLUE BOOK").
12.

ALL CONTRACTORS AND SUBCONTRACTORS ARE RESPONSIBLE FOR REDUCING THE SOIL EROSION AND POLLUTION OF DOWNSLOPE AREAS.
13.

THE SOIL EROSION HAZARD ON THE SITE IS TO BE KEPT AS LOW AS POSSIBLE AND GENERALLY IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:

LAND USE	LIMITATION	COMMENTS
CONSTRUCTION AREAS	DISTURBANCE TO BE NO FURTHER THAN 5m (PREF 2m) FROM THE EDGE OF ANY ESSENTIAL ENGINEERING ACTIVITY AS SHOWN ON THESE PLANS	ALL SITE WORKERS WILL CLEARLY RECOGNISE THESE ZONES - WHERE APPROPRIATE THE CONSTRUCTION AREAS ARE TO BE IDENTIFIED WITH BARRIER FENCING (DOWNSLOPE) OR SIMILAR MATERIAL.
ACCESS AREAS	LIMITED TO A MAXIMUM WIDTH OF 10m	THE SITE MANAGER SHALL DETERMINE AND MARK THE LOCATION OF THESE ZONES ONSITE. THEY CAN VARY IN POSITION TO BEST CONSERVE THE EXISTING VEGETATION AND PROTECT DOWNSTREAM AREAS WHILE BEING CONSIDERATE OF THE NEEDS OF EFFICIENT WORKS ACTIVITIES. ALL SITE WORKERS SHALL CLEARLY RECOGNISE THEIR BOUNDARIES. WHERE APPROPRIATE THE ACCESS AREAS ARE TO BE MARKED WITH BARRIER MESH, SEDIMENT FENCING OR SIMILAR MATERIALS.
REMAINING LANDS	ENTRY PROHIBITED EXCEPT FOR ESSENTIAL THINNING OF PLANT GROWTH	THINNING OF GROWTH MAY BE REQUIRED FOR FIRE HAZARD REDUCTION.

NOTE:
WORKS WITHIN WATERWAYS AND CREEKS SHALL BE RESTRICTED AS DIRECTED - ALL LANDS WITHIN CREEKS AND WATERWAYS SHALL HAVE C-FACTORS BELOW 0.05 FROM 1st JANUARY TO 15th MAY USING MATERIALS THAT CAN CATER FOR CONCENTRATED FLOWS.

14.

WORKS ARE TO BE UNDERTAKEN IN THE FOLLOWING SEQUENCE. EACH SUBSEQUENT STAGE IS NOT TO COMMENCE UNTIL THE PREVIOUS ONE IS COMPLETE:-

a.

INSTALL ALL BARRIER AND SEDIMENT FENCING WHERE SHOWN ON THE PLAN AND TO DETAIL(SD) 6-8.

b.

CONSTRUCT STABILISED SITE ACCESS AS SHOWN ON THE PLAN AND TO DETAIL (SD) 6-14.

c.

CONSTRUCT LOW FLOW EARTH BANKS WHERE SHOWN ON THE PLAN AND TO DETAIL (SD) 5-5.

d.

PROVIDE TEMP. ACCESS TO THE SEDIMENT BASIN(S)AND PROTECT THIS WITH SEDIMENT FENCING (SD) 6-8 OR BARRIER FENCING AND EARTH BANKS (SD) 5-5.

e.

PLACE SEDIMENT FENCING (SD) 6-8 DOWNSLOPE OF LANDS TO BE DISTURBED FOR CONSTRUCTION OF THE SEDIMENT BASINS.

f.

CONSTRUCT SEDIMENT BASIN(S) GENERALLY IN ACCORDANCE WITH (SD) 6-4

g.

STABILISE LAND SURFACES DISTURBED BY CONSTRUCTION OF THE SEDIMENT BASIN(S) AS SOON AS FINAL LEVELS ARE ESTABLISHED

h.

CLEAR THE SITE AND STRIP AND STOCKPILE THE TOPSOIL IN THE LOCATIONS SHOWN ON THE PLAN OR AS DIRECTED BY THE SITE SUPERINTENDENT TO DETAIL (SD) 4-1.

i.

UNDERTAKE ALL ESSENTIAL CONSTRUCTION WORKS.

j.

GRADE LOT AREAS TO FINAL GRADES AND APPLY PERMANENT STABILISATION (LANDSCAPING) WITHIN 14 DAYS OF COMPLETION OF CONSTRUCTION WORKS.

k.

REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER THE PERMANENT LANDSCAPING HAS BEEN COMPLETED.
15.

CLEARLY VISIBLE BARRIER FENCING SHALL BE INSTALLED WHERE DIRECTED BY THE SITE SUPERINTENDENT TO CONTROL AND PROHIBIT UNNECESSARY SITE DISTURBANCE
16.

EARTH BATTERS SHALL BE CONSTRUCTED WITH AS LOW A GRADIENT AS PRACTICABLE BUT NO STEEPER THAN:-

a.

2(h) - 1(v) WHERE SLOPE LENGTH IS LESS THAN 7m

b.

2.5(h) - 1(v) WHERE SLOPE LENGTH IS BETWEEN 7m AND 10m

c.

3(h) - 1(v) WHERE SLOPE LENGTH IS BETWEEN 10m AND 12m

d.

4(h) - 1(v) WHERE SLOPE LENGTH IS BETWEEN 12m AND 18m

e.

5(h) - 1(v) WHERE SLOPE LENGTH IS BETWEEN 18m AND 27m

f.

6(h) - 1(v) WHERE SLOPE LENGTH IS GREATER THAN 27m

SLOPE LENGTHS CAN BE SHORTENED BY USING LOW FLOW EARTH BANKS AS CATCH DRAINS ABOVE THE EARTH BATTER AREA.

17.

PROTECTION FROM EROSION FORCES SHALL BE UNDERTAKEN ON ALL LANDS TO MEET THE REQUIREMENTS OF TABLE J3-3 "MAXIMUM ACCEPTABLE C-FACTORS AT NOMINATED TIMES DURING WORKS" FROM "MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION 4TH EDITION"
18.

TEMPORARY GROUND COVER IN SHEET FLOW AREAS IS TO BE IN ACCORDANCE WITH TABLE J3-4 "PLANT SPECIES FOR GROUND COVER" FROM "MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION 4TH EDITION" WHERE PRACTICAL FOOT AND VEHICULAR TRAFFIC SHALL BE KEPT AWAY FROM REHABILITATED AREAS
19.

WHERE POSSIBLE THE CONSTRUCTION PROGRAM IS TO BE SCHEDULED SO THAT THE TIME FROM STARTING LAND DISTURBANCE ACTIVITIES TO STABILISATION IS A DURATION OF LESS THAN 6 MONTHS - THIS MEANS ACHIEVING A C-FACTOR OF LESS THAN 0.1 AND SETTING IN MOTION A PROGRAM THAT ENSURES THAT IT DROPS PERMANENTLY, (BY VEGETATION, PAVING, ARMOURING etc.) TO LESS THAN 0.05 WITHIN A FURTHER 60 DAYS. LOCAL WATER RESTRICTIONS PERMITTING, LANDS THAT HAVE BEEN NEWLY PLANTED WITH GRASS SPECIES SHALL BE WATERED REGULARLY UNTIL AN EFFECTIVE COVER HAS BEEN ESTABLISHED AND PLANTS ARE GROWING VIGOROUSLY. FOLLOW-UP SEED AND FERTILISER SHALL BE APPLIED AS NECESSARY IN AREAS OF MINOR SOIL EROSION AND/OR INADEQUATE VEGETATIVE PROTECTION. NOTWITHSTANDING THIS SCHEDULE WORKS SO THAT THE DURATION FROM THE CONCLUSION OF LAND SHAPING TO THE COMPLETION OF FINAL STABILISATION IS LESS THAN 20 WORKING DAYS.
20.

SEDIMENT FENCES (SD) 6-8 SHALL:-

a.

BE INSTALLED WHERE SHOWN ON THE PLAN AND AS DIRECTED AT THE DISCRETION OF THE SITE SUPERINTENDENT DURING THE COURSE OF CONSTRUCTION TO CONTAIN THE COARSER SEDIMENT FRACTIONS AS NEAR AS POSSIBLE TO THEIR SOURCE.

b.

HAVE A CATCHMENT AREA NOT EXCEEDING 720sq.m. AND A STORAGE DEPTH OF AT LEAST 0.6m.

c.

PROVIDE AN UPSLOPE RETURN OF 1m AT INTERVALS ALONG THE FENCE WHERE THE CATCHMENT AREA EXCEEDS 720sq.m. TO LIMIT THE DISCHARGE REACHING EACH SECTION TO 50litres/sec IN A MAX. 10yr To DISCHARGE.
21.

STOCKPILES (SD) 4-1 SHALL BE LOCATED AS SHOWN ON THE PLANS AND AT THE DISCRETION OF THE SITE SUPERINTENDENT.
22.

DURING WINDY WEATHER LARGE UNPROTECTED AREAS ARE TO BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL. IN THE EVENT WATER IS NOT AVAILABLE IN SUFFICIENT QUANTITIES SOIL BINDERS AND/OR DUST RETARDANTS SHALL BE USED OR THE SURFACE SHALL BE LEFT IN A CLODDY STATE THAT RESISTS REMOVAL BY WIND.
23.

STOCKPILES SHALL NOT BE LOCATED WITHIN 5m OF HAZARD AREAS, INCLUDING LIKELY AREAS OF HIGH VELOCITY FLOWS SUCH AS WATERWAYS, PAVED AREAS OR DRIVEWAYS.
24.

THE SEDIMENT RETENTION BASINS (SD) 6-4 SHALL:-

a.

BE CONSTRUCTED WHERE SHOWN ON THE PLANS.

b.

BE FLOCCULATED (APPENDIX E MANAGING URBAN STORMWATER SOILS & CONSTRUCTION 4TH ED.) BEFORE DISCHARGE OCCURS (UNLESS THE DESIGN STORM EVENT IS EXCEEDED)

c.

HAVE ONE OR MORE PEGS PLACED ON THE FLOOR TO CLEARLY INDICATE THE LEVEL AT WHICH DESIGN CAPACITY OCCURS AND WHEN SEDIMENT SHALL BE REMOVED.
25.

STORED CONTENTS OF THE BASINS SHALL BE TREATED WITH GYPSUM (APPENDIX E MANAGING URBAN STORMWATER SOILS & CONSTRUCTION 4TH ED.) OR OTHER FLOCCULATING AGENTS WHERE THEY CONTAIN MORE THAN 50mg/litre OF SUSPENDED SOLIDS. TREATMENT SHALL BE AS FOLLOWS:-

a.

LOWER SUSPENDED SOLIDS TO LESS THAN 50mg/litre WITHIN 24hrs OF FILLING

b.

THE BASINS SHALL THEN BE ALLOWED TO STAND 36 TO 48hrs FOR FLOCCULATED PARTICLES TO SETTLE

c.

THE BASINS SHALL THEN BE DRAINED SO THAT FULL STORAGE CAPACITY IS REGAINED WITHOUT DISCHARGING SEDIMENT FROM THE SITE.
26.

SEDIMENT REMOVED FROM ANY TRAPPING DEVICE SHALL BE DISPOSED IN LOCATIONS WHERE FURTHER EROSION AND CONSEQUENT POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS SHALL NOT OCCUR.
27.

WATER SHALL BE PREVENTED FROM DIRECTLY ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE (ie THE CATCHMENT HAS BEEN LANDSCAPED AND/OR ANY LIKELY SEDIMENT HAS BEEN TREATED IN AN APPROVED DEVICE) NEVERTHELESS STORMWATER INLETS SHALL BE PROTECTED (SD) 6-11 & 6-12.
28.

TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES SHALL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE STABILISED.
29.

ACCEPTABLE BINS SHALL BE PROVIDED FOR ANY CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHTWEIGHT WASTE MATERIALS AND LITTER. CLEARANCE SERVICES SHALL BE PROVIDED AT LEAST ONCE A WEEK.

STOCKPILE NOTES:

1.

SPOIL AND TOPSOIL STOCKPILES SHALL BE LOCATED AWAY FROM DRAINAGE LINES AND AREAS WHERE WATER MAY CONCENTRATE.
2.

IF STOCKPILES ARE TO BE IN PLACE FOR LONGER THAN 14 DAYS THEN THEY SHALL BE STABILIZED BY COVERING WITH A MULCH OR WITH TEMPORARY VEGETATION.
3.

FOLLOWING CONSTRUCTION, TOPSOIL SHALL BE RESPREAD TO A MINIMUM DEPTH OF 100mm ON THE BARE SOIL SURFACES AND REVEGETATED.

SEDIMENTATION CONTROL DEVICES:

1.

ALL STRAW BALES SHALL BE BOUND WITH WIRE. STRAW BALES SHALL BE PLACED END TO END IN A SINGLE ROW AND EMBEDDED INTO THE SOIL TO A DEPTH OF 100mm. EACH BALE SHALL BE SECURELY ANCHORED WITH TWO STEEL STAKES DRIVEN 600mm INTO THE GROUND AND LOCKED ON THE BALE CENTRELINE.
2.

SILT FENCES SHALL BE CONSTRUCTED BY STRETCHING A FILTER FABRIC (PROPEX OR SIMILAR) BETWEEN POSTS AT 2.5m CENTRES. FABRIC SHALL BE BURIED 150mm ALONG ITS LOWER EDGE.
3.

PROVIDE STRIP OF TURF MIN. 300mm WIDE BEHIND KERB + 1m WIDE AROUND ALL SURFACE INLET PITS

SITE INSPECTION AND MAINTENANCE:

1.

A SELF-AUDITING PROGRAM SHALL BE ESTABLISHED BASED ON A INSPECTION TEST PLAN (ITP) OR LOG BOOK. A SITE INSPECTION USING THE ITP SHALL BE MADE BY THE SITE MANAGER:-

a.

AT LEAST WEEKLY

b.

IMMEDIATELY BEFORE SITE CLOSURE

c.

IMMEDIATELY FOLLOWING RAINFALL EVENTS IN EXCESS OF 5mm IN ANY 24hr PERIOD.

THE SELF AUDIT SHALL INCLUDE:-

- a.

RECORDING THE CONDITION OF EVERY 'BEST MANAGEMENT PRACTICE' EMPLOYED
- b.

RECORDING MAINTENANCE REQUIREMENTS (IF ANY) FOR EACH 'BEST MANAGEMENT PRACTICE'
- c.

RECORDING THE VOLUMES OF SEDIMENT REMOVED FROM SEDIMENT RETENTION SYSTEMS WHERE APPLICABLE
- d.

RECORDING THE SITE WHERE SEDIMENT IS DISPOSED
- e.

FORWARDING A SIGNED DUPLICATE OF THE COMPLETED CHECK SHEET TO THE PROJECT MANAGER/DEVELOPER FOR THEIR INFORMATION.
2.

IN ADDITION A SUITABLY QUALIFIED PERSON SHALL BE RESPONSIBLE FOR OVERSEEING THE INSTALLATION AND MAINTENANCE OF ALL SOIL AND WATER MANAGEMENT WORKS ON THE SITE. THE PERSON SHALL BE REQUIRED TO SPEND A MINIMUM OF:-

- a.

2 hrs ONSITE EACH FORTNIGHT UP UNTIL COMPLETION OF ROAD AND DRAINAGE WORKS AND/OR THE COMMISSIONING OF SEDIMENT BASIN(S)/WATER QUALITY CONTROL FACILITIES, AND DURING THE DECOMMISSIONING OF SAME AND/OR FINAL SITE STABILISATION. TO PROVIDE A SHORT MONTHLY WRITTEN REPORT.
- b.

ONE HOUR ONSITE EACH 2 MONTHS DURING THAT PHASE WHERE THE DEVELOPERS RESPONSIBILITIES ARE LIMITED TO MAINTENANCE OF THE SDS DEVICES AND/OR SEDIMENT BASINS (ie DURING THE STAGE WHEN BUILDING WORKS CAN BE UNDERTAKEN) TO PROVIDE A SHORT WRITTEN REPORT EACH 4 MONTHS

THE RESPONSIBLE PERSON SHALL ENSURE THAT:-

- a.

THIS PLAN IS BEING IMPLEMENTED CORRECTLY
- b.

REPAIRS ARE BEING UNDERTAKEN AS REQUIRED
- c.

ESSENTIAL MODIFICATIONS TO THIS PLAN ARE BEING MADE IF AND WHEN NECESSARY. EACH REPORT SHALL CERTIFY THAT WORKS HAVE BEEN CARRIED OUT ACCORDING TO THE APPROVED PLANS.
3.

WASTE BINS SHALL BE EMPTIED AS NECESSARY, DISPOSAL OF WASTE SHALL BE IN A MANNER APPROVED BY THE SITE SUPERINTENDENT
4.

PROPER DRAINAGE OF THE SITE SHALL BE MAINTAINED. DRAINS (INCLUDING INLET AND OUTLET WORKS) SHALL BE CHECKED TO ENSURE THAT THEY ARE OPERATING AS INTENDED,ESPECIALLY THAT:-

a.

NO LOW POINTS EXIST WHICH CAN OVERTOP IN A LARGE STORM EVENT.

b.

AREAS OF EROSION ARE REPAIRED (e.g LINED WITH SUITABLE MATERIAL) AND/OR VELOCITY OF FLOW IS REDUCED APPROPRIATELY THROUGH CONSTRUCTION OF SMALL CHECK DAMS OR INSTALLING ADDITIONAL DIVERSIONS UPSLOPE

c.

BLOCKAGES ARE CLEARED (THESE MIGHT OCCUR BECAUSE OF SEDIMENT POLLUTION, SAND/SOIL/SPOIL BEING DEPOSITED IN OR TOO CLOSE TO THEM, BREACHED BY VEHICLE WHEELS etc)
5.

SAND/SOIL/SPOIL MATERIALS PLACED CLOSER THAN 2m FROM HAZARD AREAS SHALL BE REMOVED SUCH HAZARD AREAS INCLUDE ANY AREAS OF HIGH VELOCITY WATER FLOWS (eg WATERWAYS AND GUTTERS) PAVED AREAS AND DRIVEWAYS.
6.

RECENTLY STABILISED LANDS SHALL BE CHECKED TO ENSURE THAT THE EROSION HAZARD HAS BEEN EFFECTIVELY REDUCED. ANY REPAIRS SHALL BE INITIATED AS APPROPRIATE.
7.

EXCESSIVE VEGETATIVE GROWTH SHALL BE CONTROLLED THROUGH MOWING OR SLASHING.
8.

ALL SEDIMENT DETENTION SYSTEMS SHALL BE KEPT IN GOOD WORKING CONDITION. IN PARTICULAR ATTENTION SHALL BE GIVEN TO:-

a.

RECENT WORKS TO ENSURE THAT THEY HAVE NOT RESULTED IN DIVERSION OF SEDIMENT LADEN WATER AWAY FROM THEM.

b.

DEGRADABLE PRODUCTS TO ENSURE THAT THEY ARE REPLACED AS REQUIRED

c.

SEDIMENT REMOVAL TO ENSURE THE DESIGN CAPACITY OR LESS REMAINS IN THE SETTLING ZONE.
9.

ADDITIONAL EROSION AND/OR SEDIMENT CONTROL WORKS SHALL BE CONSTRUCTED AS MIGHT BECOME NECESSARY TO ENSURE THE DESIRED PROTECTION IS GIVEN TO DOWNSLOPE LANDS AND WATERWAYS (ie MAKE ONGOING CHANGES TO THIS PLAN WHERE IT PROVES INADEQUATE IN PRACTICE OR IS SUBJECTED TO CHANGES IN CONDITIONS AT THE WORKS SITE OR ELSEWHERE IN THE CATCHMENT .
10.

EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN A FUNCTIONING CONDITION UNTIL ALL EARTHWORKS ACTIVITIES ARE COMPLETED AND THE SITE STABILISED.
11.

WATERS IN SEDIMENT RETENTION BASIN(S) THAT OCCUPY MORE THAN 1/4 OF THE DESIGN CAPACITY DURING THAT STAGE OF THE WORKS UP UNTIL COMMISSIONING OF THE BASIN(s) SHALL BE:-

a.

TREATED WITH A FLOCCULATING AGENT (APPENDIX E MANAGING URBAN STORMWATER SOILS & CONSTRUCTION 4TH ED.)

b.

DISCHARGED WITHIN 5 days FROM THE CONCLUSION OF ANY STORM EVENT LARGE ENOUGH TO FILL THE BASIN TO THAT LEVEL.
12.

LITTER, DEBRIS AND COARSE SEDIMENT SHALL BE REMOVED FROM THE GROSS POLLUTANT TRAPS AND TRASH RACKS AS REQUIRED.

SOIL AND WATER MANAGEMENT SHALL BE READ IN CONJUNCTION WITH CADDENS HILL STAGES 4 & 5 BULK EARTHWORKS CC APPROVAL
- REF STAGE 4 BEW CC 14576 SOIL & WATER MANAGEMENT
- REF STAGE 5 BEW CC 14493 SOIL & WATER MANAGEMENT

C	CERTIFIER COMMENTS - NOTES REVISED	JT	JT	RT	MS	04/12/17
B	CERTIFIER COMMENTS - NOTES REVISED	JT	JT	RT	MS	20/10/17
A	ISSUE FOR APPROVAL	JT	NM	RT	MS	23/08/17
	AMENDMENT	DES	DRN	CKD	APR	DATE

J. WYNDHAM PRINCE

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PO Box 4366 PENRITH WESTFIELD NSW 2750

AZIMUTH:
M.G.A
DATUM:
A.H.D
ORIGIN:

CLIENT:

LEGACYPROPERTY

ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 5

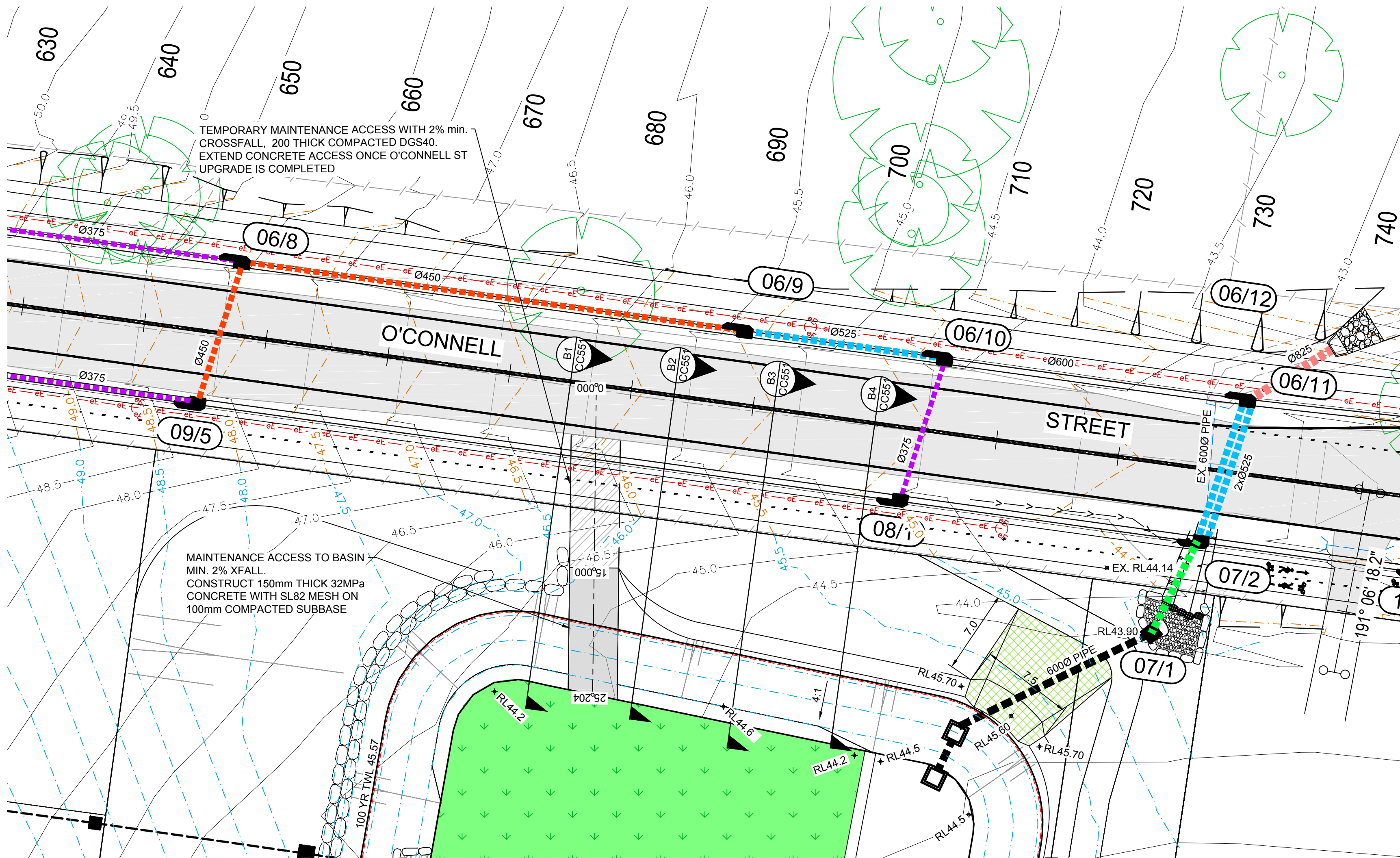
SOIL & WATER MANAGEMENT NOTES

PLAN No:
110358/CC545

C

FILE No: 110358CC545

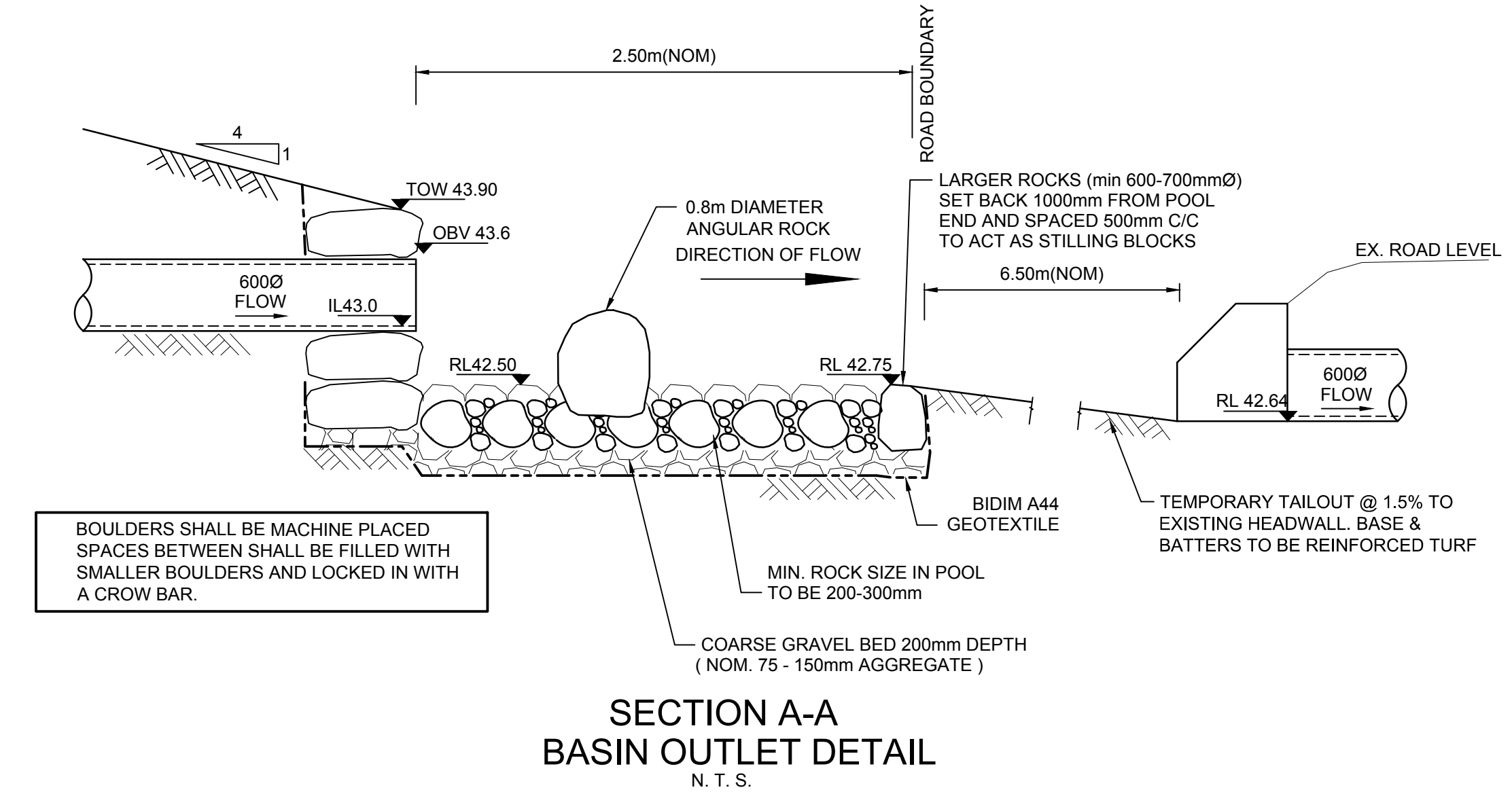
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LEGEND

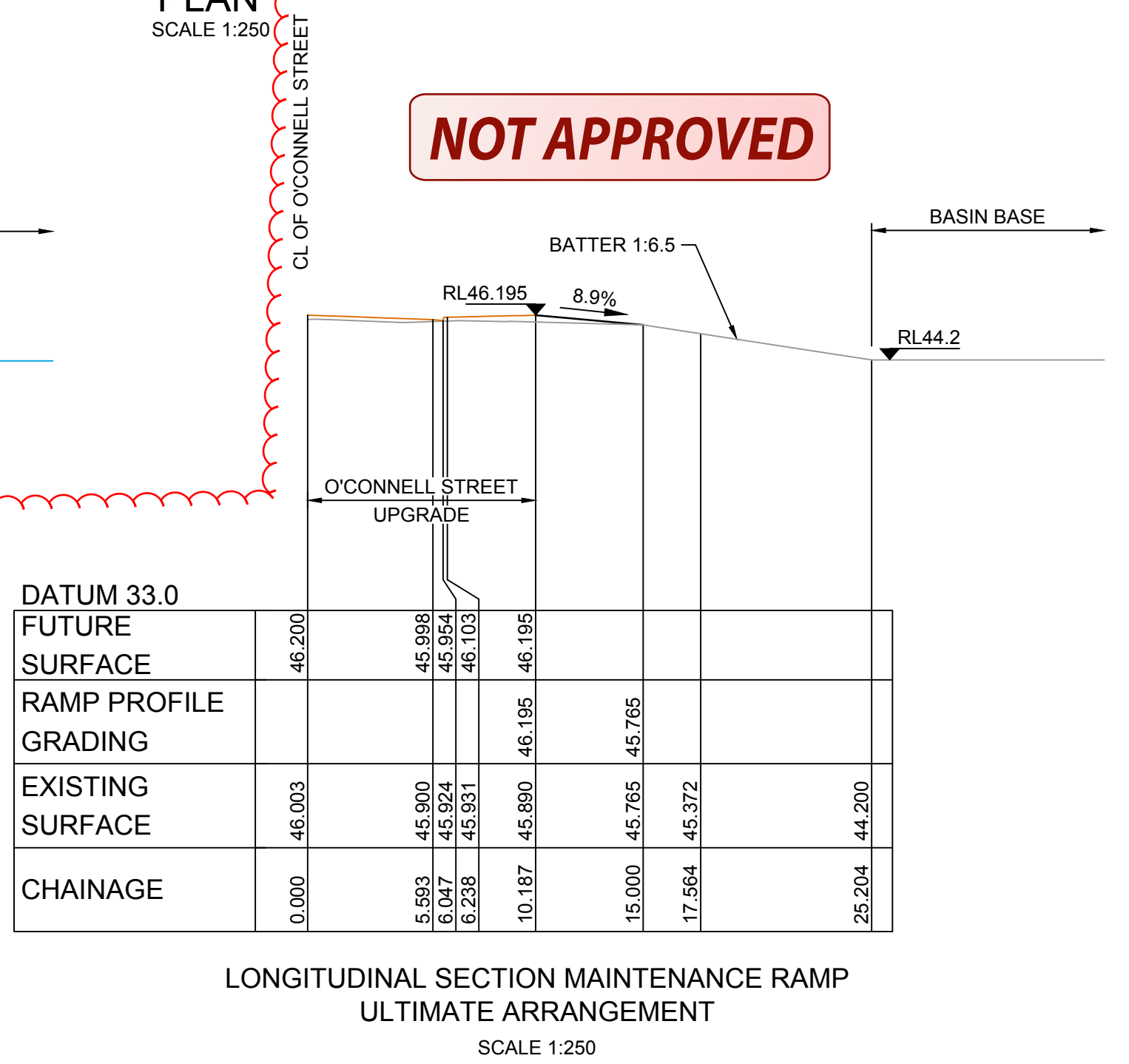
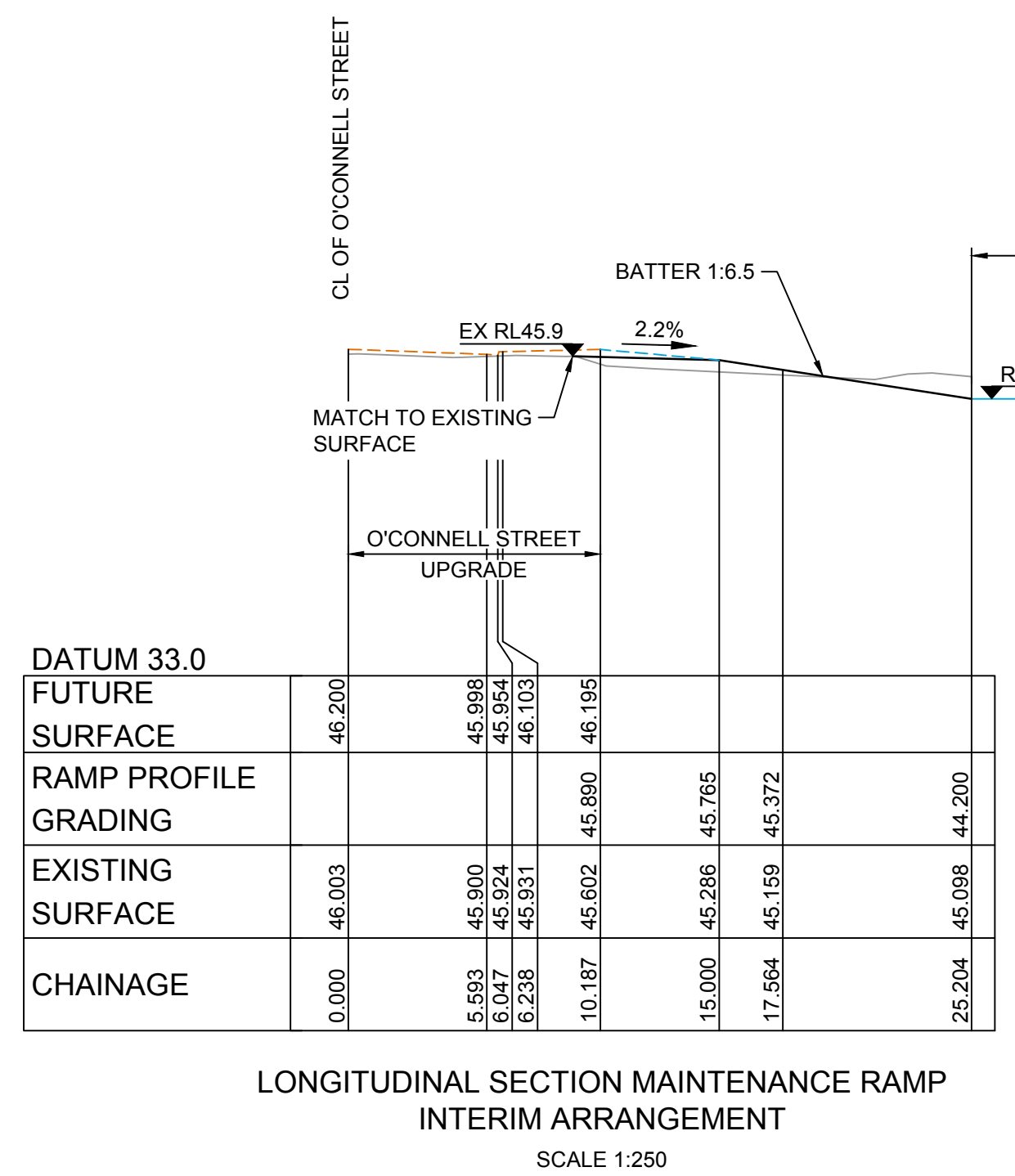
- 45.0- SUBDIVISION CONTOURS
- 45.0- O'CONNELL STREET UPGRADE CONTOURS
- 45.0- EXISTING CONTOURS

LDC These plans are referred to in certificate no. **14776** approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPB 2416
Categories: B1,C1,C2,C3,C4,C6,C15 & D1
Land Development Certificates
www.Ldcerts.com.au

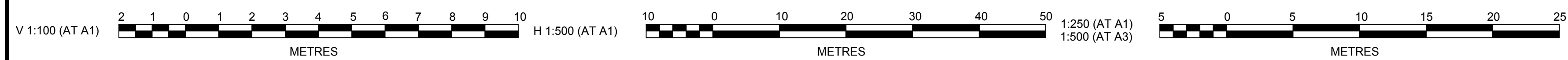
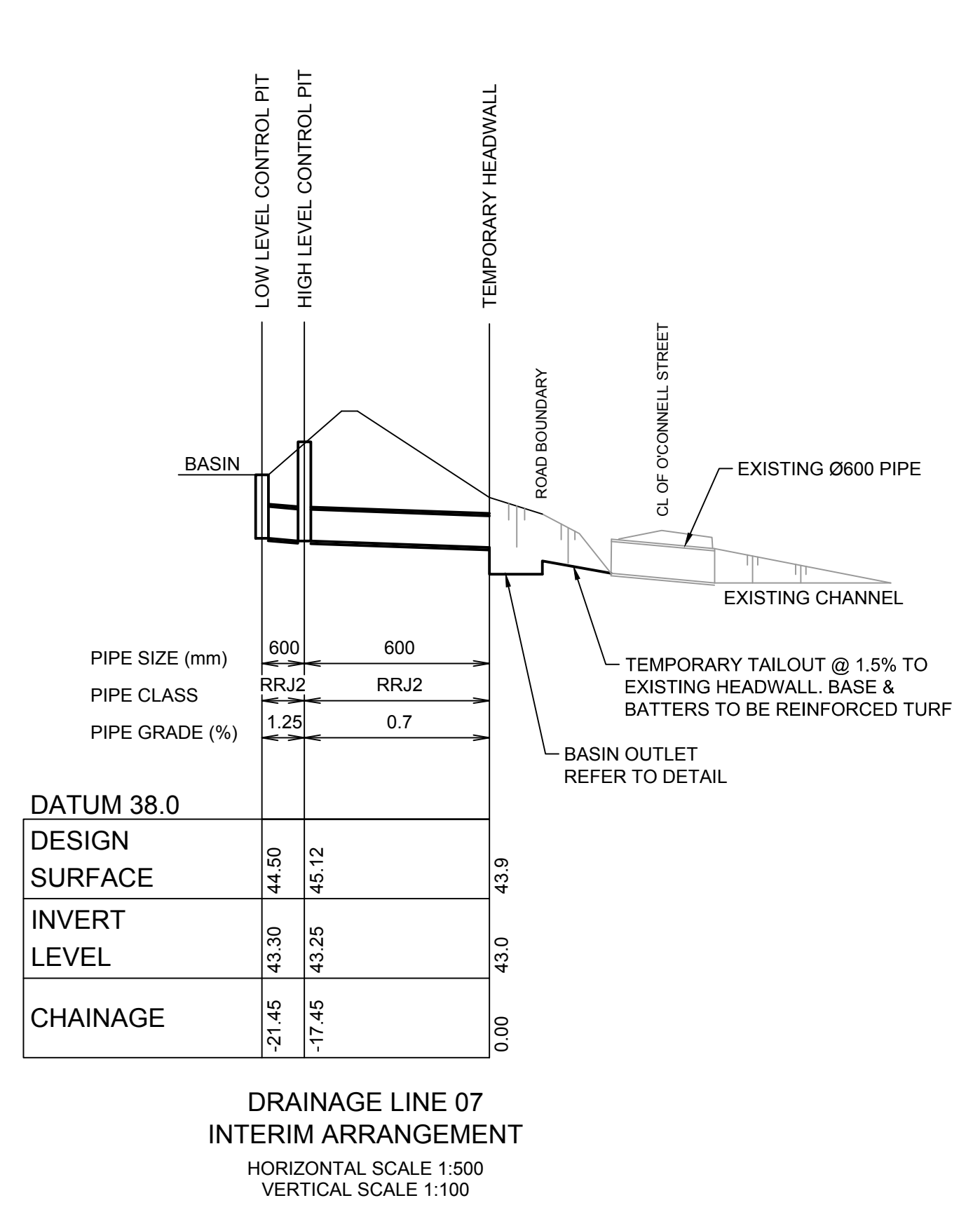
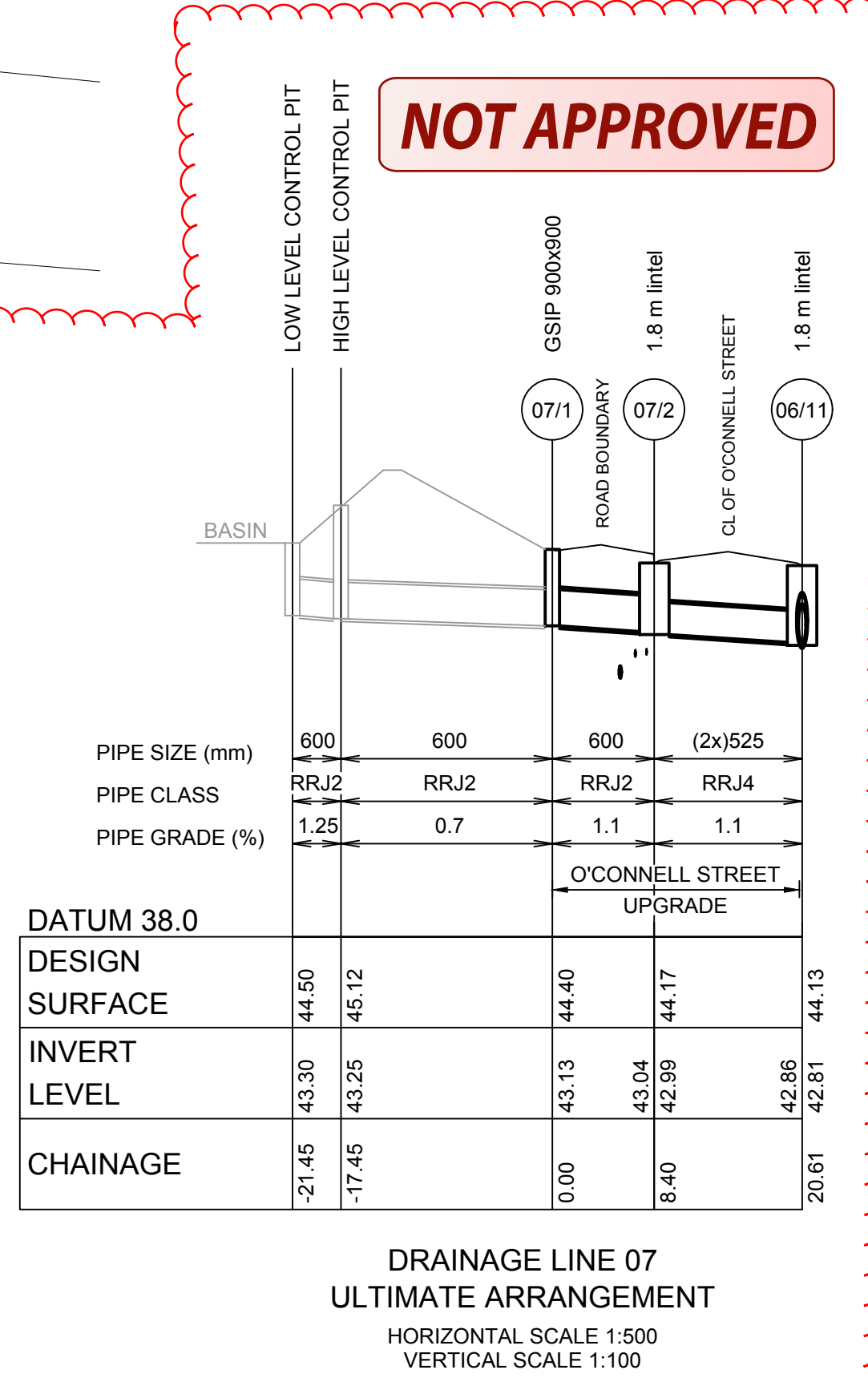


PLAN
SCALE 1:250

NOT APPROVED



NOT APPROVED



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AMENDMENT	DES	DRN	CKD	APR	DATE
B					08/03/18
A					21/02/18

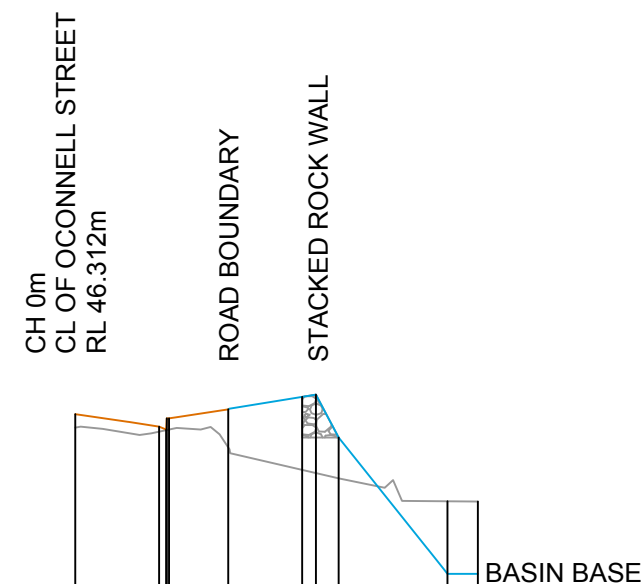
CLIENT: **LEGACYPROPERTY**

ISSUED FOR INFORMATION ONLY

CADDENS HILL STAGE 5
BASIN & O'CONNELL STREET INTERFACING PLAN
SHEET 01 OF 02

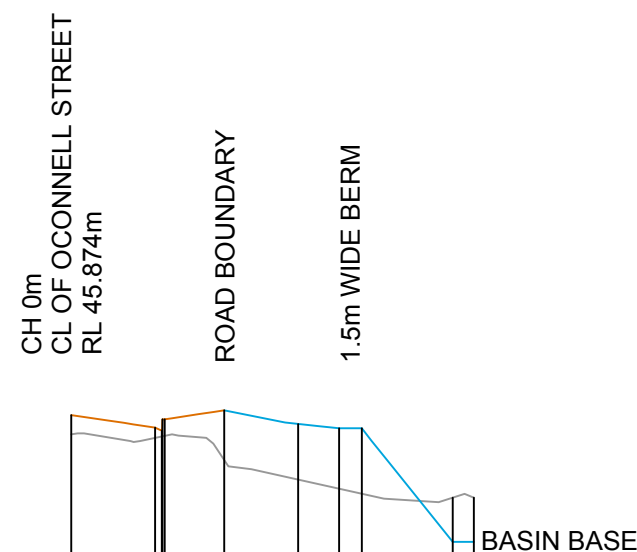
PLAN No: 110358/CC550 **B**
FILE No: 110358CC550
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SECTIONS ARE NOT PART OF CC APPROVAL.
FUTURE WORKS FOR INFORMATION PURPOSES.



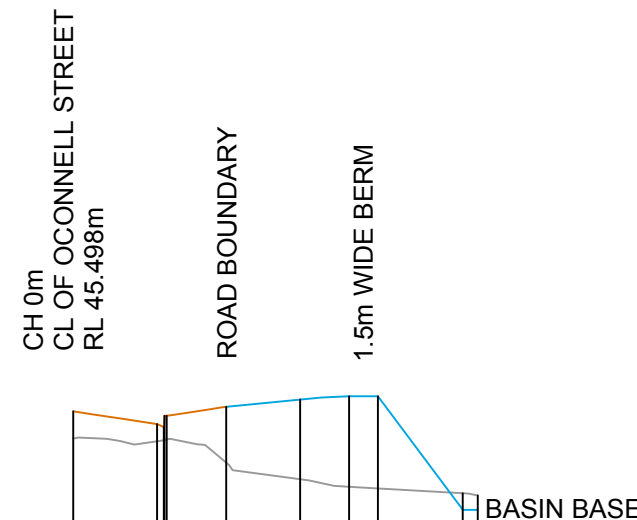
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DESIGN SURFACE	46.146
EXISTING SURFACE	46.133
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	5.999
	6.040
	6.190
	10.110
	15.000
	15.916
	17.407
	24.622
	26.634

SECTION B1
SCALE H 1:500
V 1:100
CC500



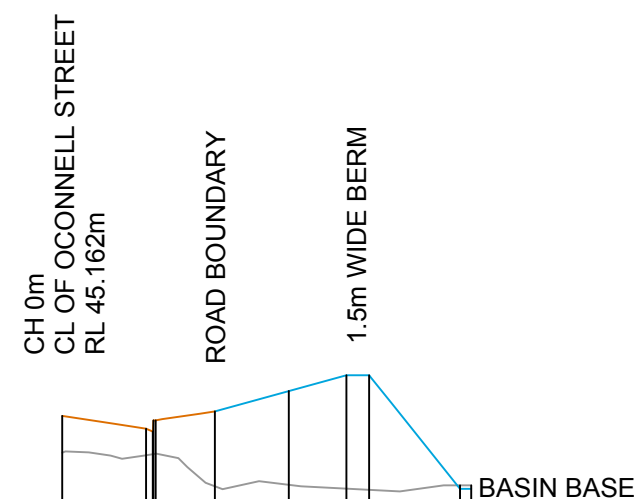
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DESIGN SURFACE	45.709
EXISTING SURFACE	45.620
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	6.000
	6.040
	6.190
	10.110
	15.000
	17.708
	19.211
	25.225
	26.634

SECTION B2
SCALE H 1:500
V 1:100
CC500



DATUM 38.0	
FUTURE SURFACE	45.500
DESIGN SURFACE	45.334
EXISTING SURFACE	45.141
CHAINAGE	0.000
	5.550
	6.000
	6.040
	6.190
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	18.253
	20.167
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	26.765

SECTION B3
SCALE H 1:500
V 1:100
CC500

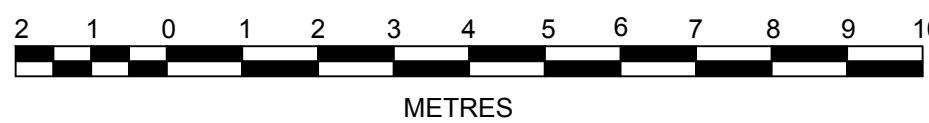


DATUM 38.0	
FUTURE SURFACE	45.162
DESIGN SURFACE	44.996
EXISTING SURFACE	44.677
CHAINAGE	0.000
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	6.040
	6.190
	10.110
	15.000
	18.807
	20.310
	25.323
	27.062

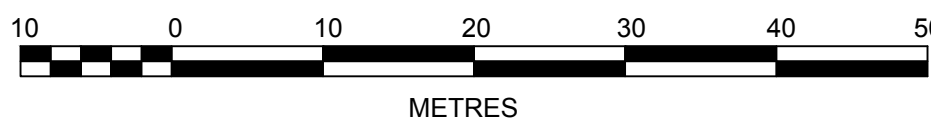
SECTION B4
SCALE H 1:500
V 1:100
CC500

NOT APPROVED

V 1:100 (AT A1)



H 1:500 (AT A1)



C	CERTIFIER COMMENTS - NOTE ADDED	JT	NAF	MS	RO	29/03/18
B	ISSUE FOR APPROVAL	JT	JT	RT	MS	08/03/18
A	ISSUE FOR APPROVAL	JT	JT	RT	MS	21/02/18
	AMENDMENT	DES	DRN	CKD	APR	DATE

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AZIMUTH:
M.G.A
DATUM:
A.H.D
ORIGIN:

CLIENT:



THIS DRAWING MUST NOT BE USED FOR
CONSTRUCTION UNLESS SIGNED AS PART OF AN
APPROVED CONSTRUCTION CERTIFICATE.

ISSUED FOR INFORMATION ONLY

CADDENS HILL
STAGE 5
BASIN & O'CONNELL STREET INTERFACING PLAN
SHEET 02 OF 02

PLAN No:
110358/CC551
FILE No: 110358CC551
SHEET SIZE: A1 ORIGINAL