

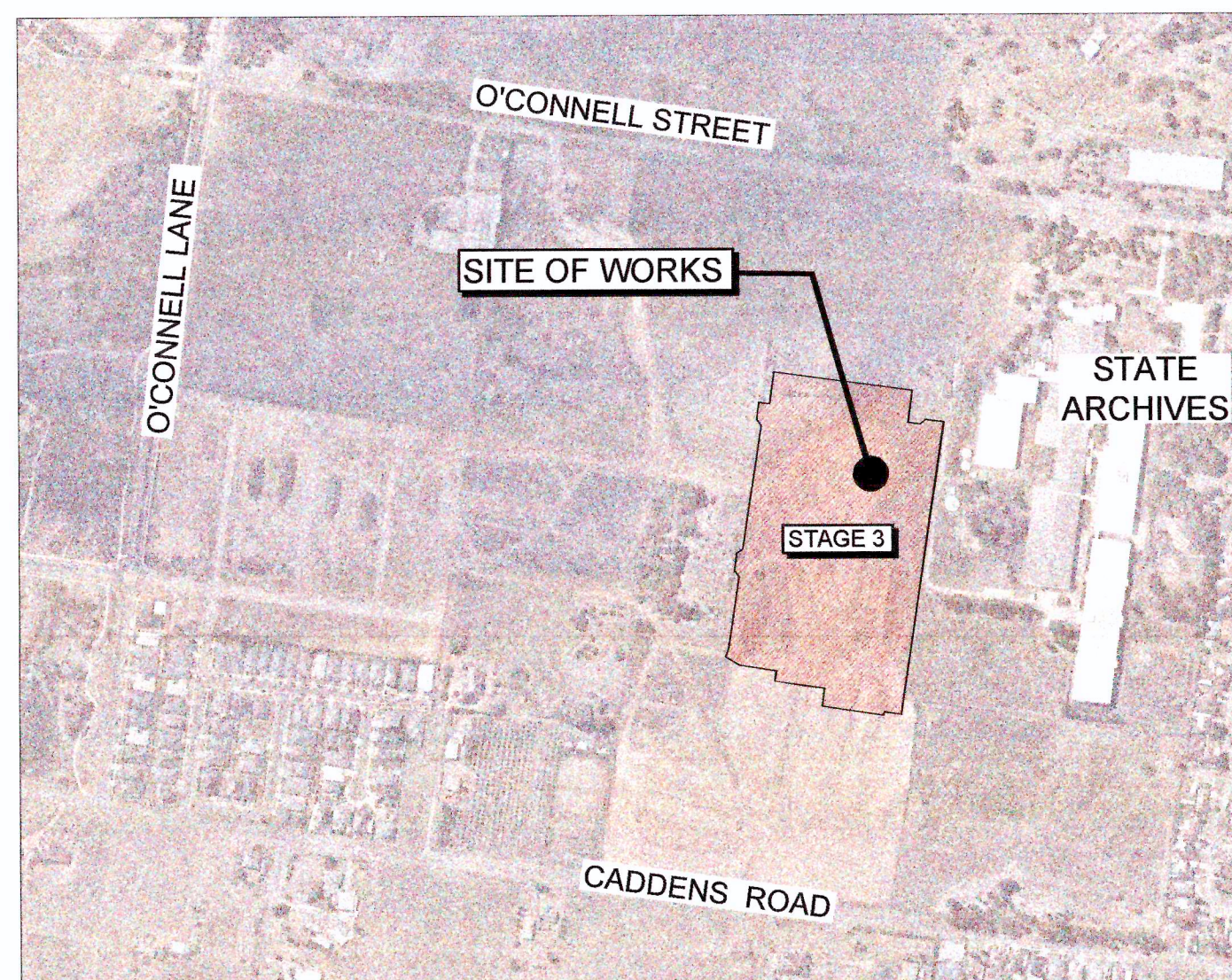


LEGACYPROPERTY

CADDENS HILL - STAGE 3 CONSTRUCTION CERTIFICATE

PROPOSED ROAD & DRAINAGE WORKS

DA 16/1166



WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: *Peter Robert Warwick*
PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 21/3/18 REF: 20467/3

LOCALITY SKETCH

Prepared By:

J. WYNDHAM PRINCE

**CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS**

PO Box 4366 PENRITH WESTFIELD NSW 2750

P 02 4720 3300 F 02 4720 3399

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These plans are referred to in
certificate no. **14403** approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPS 2418
Categories: B1, C1, C2, C3, C4, C6, C15 & D1
LAND DEVELOPMENT CERTIFICATES
www.ldcerts.com.au

ISSUED FOR CONSTRUCTION APPROVAL

PLAN No.
110358/CC300 **B**
FILE No. 110358CC300

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
150Ø	1.5m
225Ø	2.0m
300Ø	2.0m
375Ø	2.5m
450Ø	2.5m
545Ø	2.5m
600Ø	2.5m
675Ø	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 WITH 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 BAYS/BINS SO AS TO ALLOW FOR THE SEPARATION OF WASTES, AND ARE TO BE FULLY ENCLOSED WHEN SITE IS UNATTENDED.

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 - IL DATE: 10/08/16

SURVEY BY:

SDG LAND DEVELOPMENT SOLUTIONS
UNIT 7 1B KLEINS ROAD
NORTHMEAD 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.

IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE DETAILED PIT DRAWINGS AND STRUCTURAL CERTIFICATION IF INSITU PITS ARE TO BE CONSTRUCTED.

These plans are referred to in certificate no. **14403** approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPB 2416
Categories: B1,C1,C2,C3,C4,C5,C15 & D1

LAND DEVELOPMENT CERTIFICATES
www.ldcerts.com.au

DRAWING INDEX		
Drawing Number	Drawing Title	Revision Number
110358/CC300	COVER SHEET	B
110358/CC301	GENERAL NOTES, INDEX & LEGEND	D
110358/CC302	SITE LAYOUT PLAN	A
110358/CC303	ROAD SETOUT PLAN	A
110358/CC304	ENGINEERING PLAN	C
110358/CC305	ROAD No.7 LONGITUDINAL SECTION	B
110358/CC306	ROAD No.12 LONGITUDINAL SECTION	B
110358/CC307	ROAD No.14 LONGITUDINAL SECTION	B
110358/CC308	ROAD No.15 LONGITUDINAL SECTION	B
110358/CC309	ROAD 7 CROSS SECTIONS	B
110358/CC310	ROAD No.12 CROSS SECTIONS	B
110358/CC311	ROAD No.14 CROSS SECTIONS	B
110358/CC312	ROAD No.15 CROSS SECTIONS	B
110358/CC313	KERB RETURNS	B
110358/CC314	KERB RETURNS	A
110358/CC315	CATCHMENT PLAN	A
110358/CC316	PIT DETAILS & PIT SCHEDULE	B
110358/CC317	DRAINAGE LONG SECTION	A
110358/CC318	DRAINAGE LONG SECTION	A
110358/CC319	DRAINAGE LONG SECTION	A
110358/CC320	DRAINAGE LONG SECTION	A
110358/CC321	DRAINAGE LONG SECTION	A
110358/CC322	DRAINAGE LONG SECTION	A
110358/CC323	DRAINAGE LONG SECTION	A
110358/CC324	DRAINAGE LONG SECTION	B
110358/CC325	DRAINAGE LONG SECTION	B
110358/CC326	DRAINAGE CALCULATIONS	A
110358/CC327	DRAINAGE CALCULATIONS	A
110358/CC328	DRAINAGE CALCULATIONS	A
110358/CC329	DRAINAGE CALCULATIONS	A
110358/CC330	RETAINING WALL PLAN & DETAILS	D
110358/CC331	RETAINING WALL SECTION	A
110358/CC332	RETAINING WALL SECTION	A
110358/CC333	RETAINING WALL SECTION	A
110358/CC334	RETAINING WALL SECTION	A
110358/CC335	RETAINING WALL SECTION	A
110358/CC336	RETAINING WALL SECTION	C
110358/CC337	RETAINING WALL SECTION	A
110358/CC338	SOIL AND WATER MANAGEMENT PLAN	B
110358/CC339	SOIL AND WATER MANAGEMENT PLAN NOTES	B

WORKS AS EXECUTED SHOWN IN RED

SIGNATURE:

PETER ROBERT WARWICK
Registered Land Surveyor

VINCE MORGAN SURVEYORS PTY LTD
DATE: 9/3/18 REF: 20467/3



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

D	CERTIFIER COMMENTS	JT	JT	RT	MS	14/07/17
C	CERTIFIER COMMENTS	JT	JT	AM	MS	11/07/17
B	CERTIFIER COMMENTS - NOTE AMENDED	JT	JT	RT	MS	28/06/17
A	ISSUE FOR CONSTRUCTION APPROVAL	JT	NM	RT	MS	30/05/17
	AMENDMENT	DES	DRN	CKD	APR	DATE

J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS

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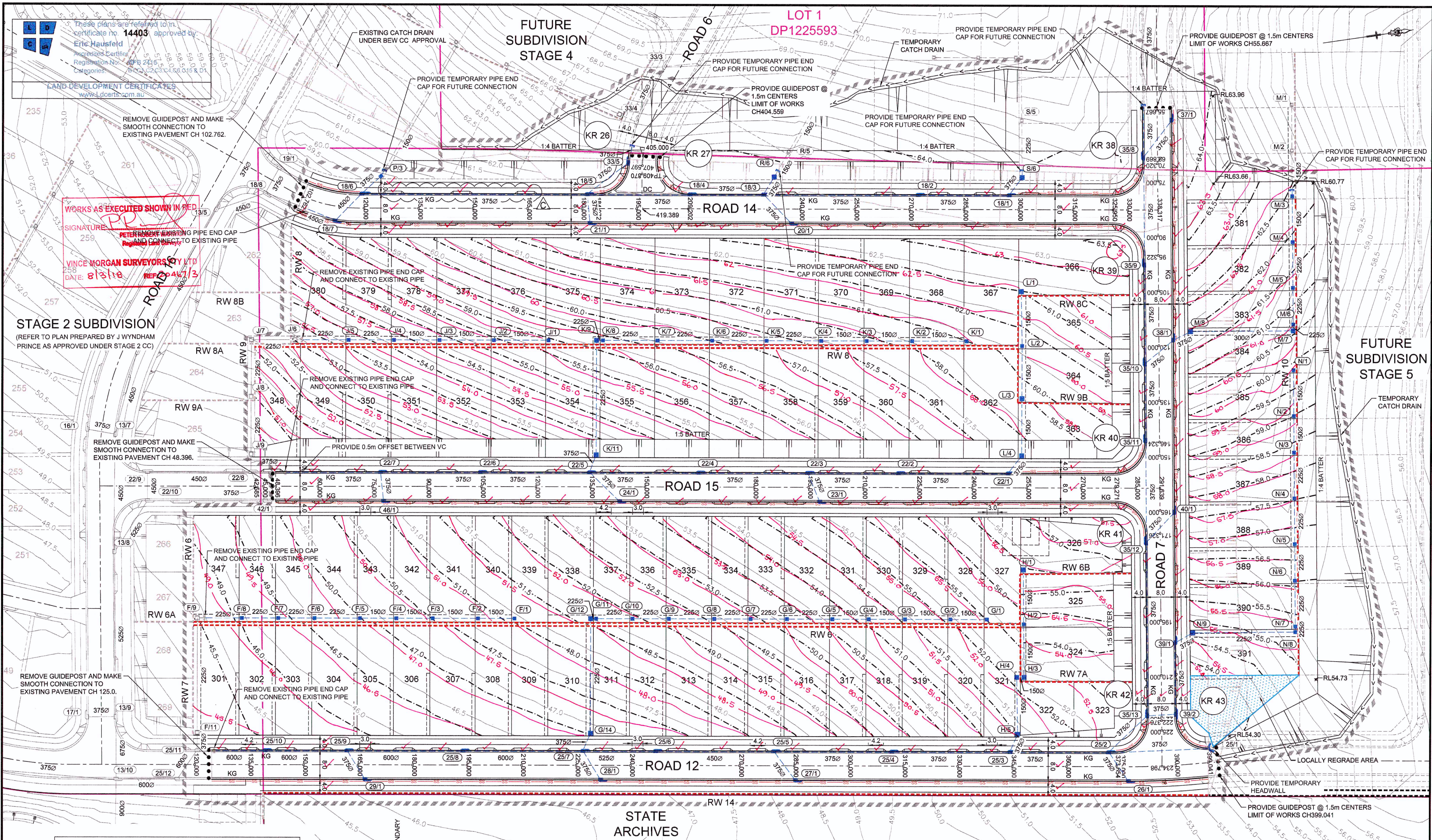
AZIMUTH:
MGA
DATUM:
AFD
ORIGIN:

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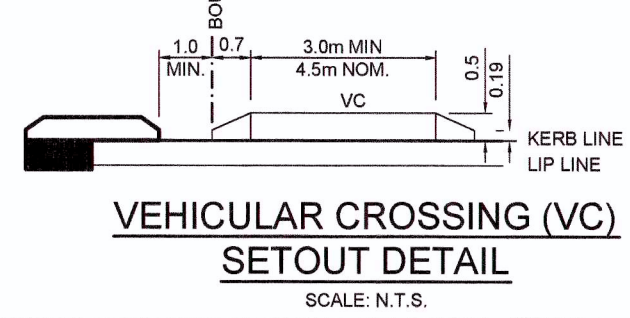
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**CADDENS HILL
STAGE 3**
GENERAL NOTES, INDEX & LEGEND

PLAN No:
110358/CC301 **D**
FILE No: 110358CC301
SHEET SIZE: A1 ORIGINAL



- 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



PLAN
SCALE 1:500

RETAINING WALL 14 IS PART OF STAGE 3 APPROVAL

RETAINING WALL LOCATIONS ARE FOR INFORMATION ONLY AND ARE SUBJECT TO A SEPARATE APPROVAL

RETAINING WALL PLAN AND SECTIONS REFER TO PLANS CC330 - CC335

AMENDMENT	DES	DRN	CKD	APR	DATE
C	CERTIFIER COMMENTS - LAYBACK & DRAINAGE PITS REVISED	JT	JT	AM	MS 11/07/17
C	CERTIFIER COMMENTS - LOT B'DY DEFINED & RD 12 PATH EXTENDED	JT	JT	RT	MS 28/08/17
A	ISSUE FOR CONSTRUCTION APPROVAL	JT	NM	RT	MS 30/05/17

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AZIMUTH:
MGA
DATUM:
AHD
ORIGIN:

CLIENT:

LEGACYPROPERTY

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**CADDENS HILL
STAGE 3
ENGINEERING PLAN**

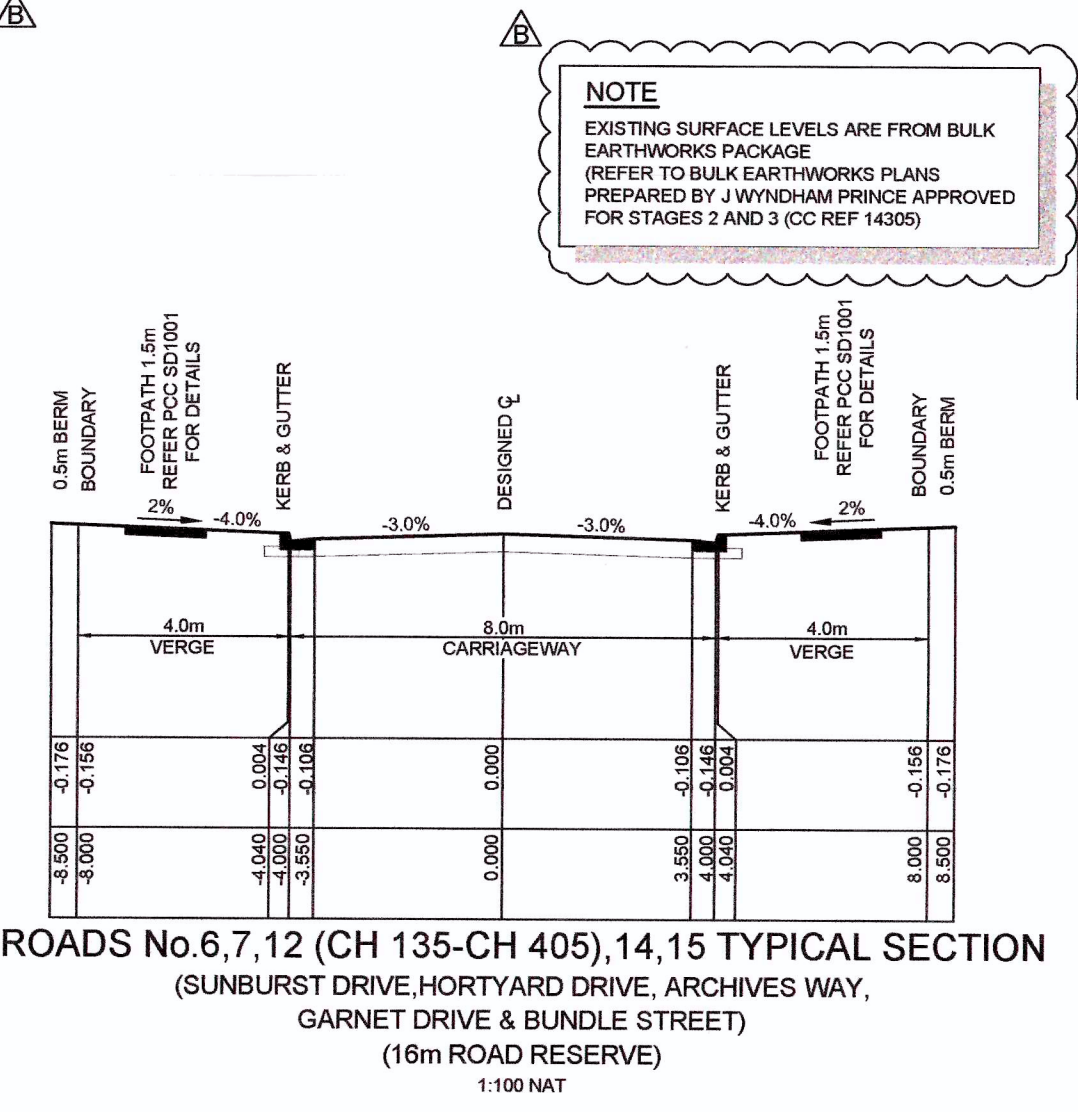
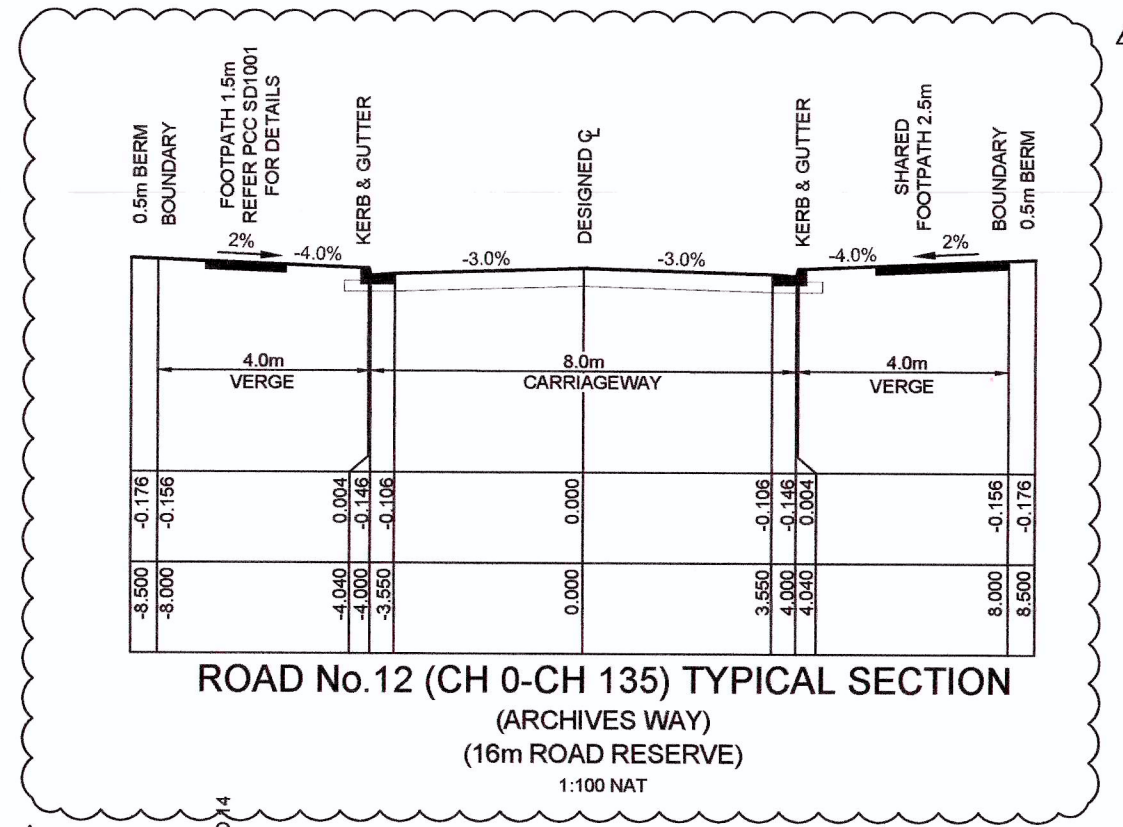
PLAN No:
110358/CC304

FILE No: 110358CC304

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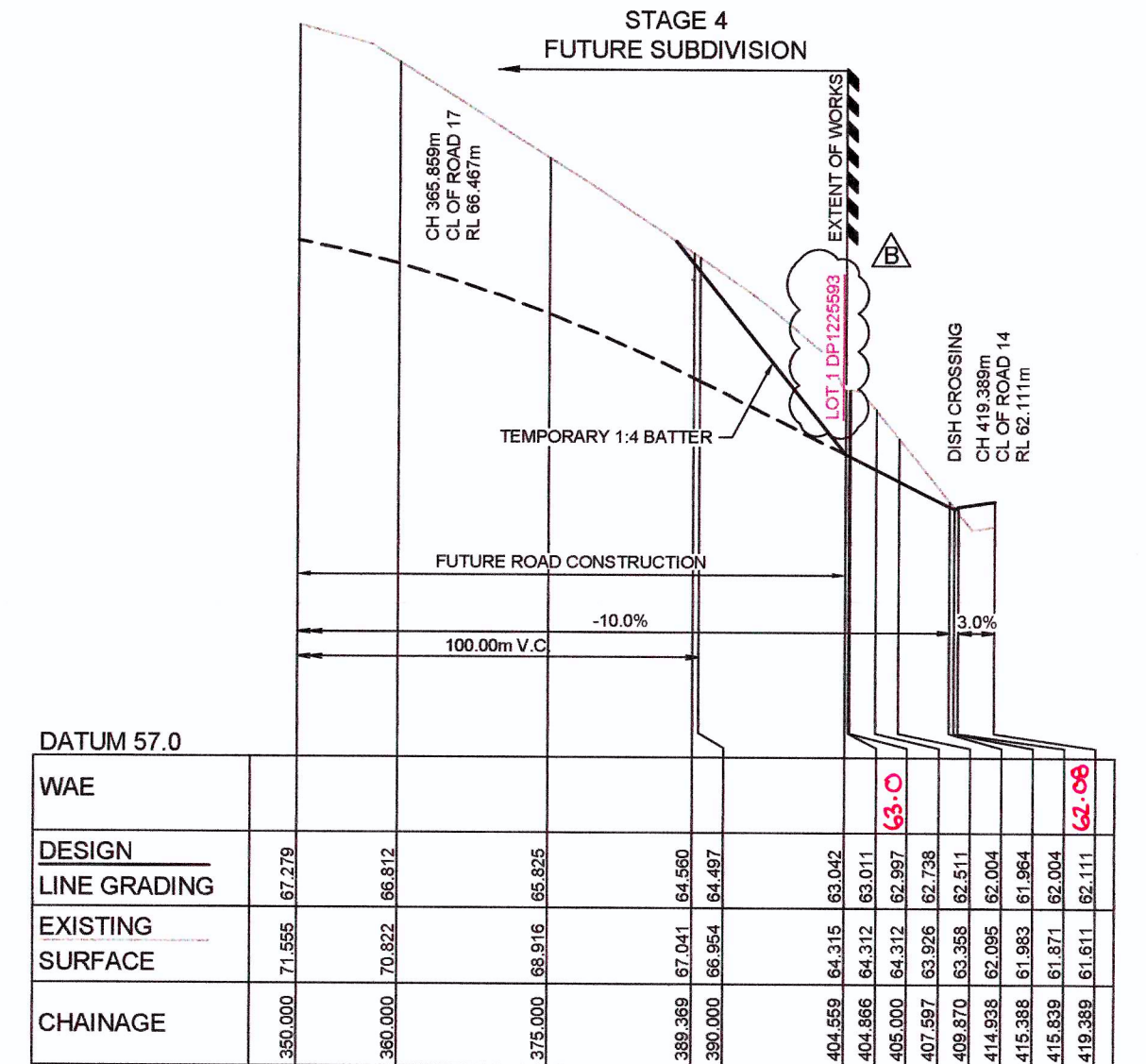
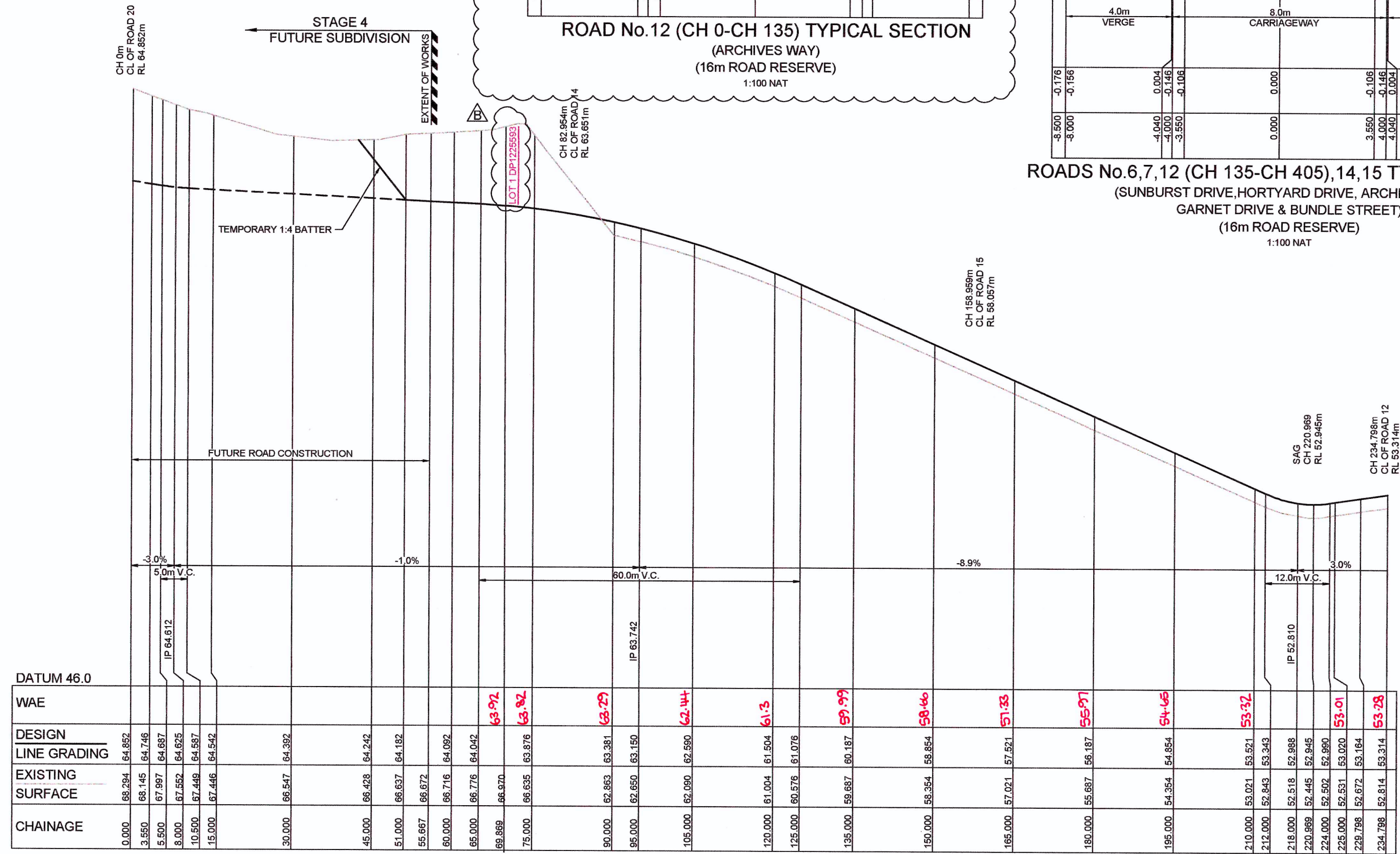
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WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: *P.R.*
PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 8/3/18 REF: 20467/3

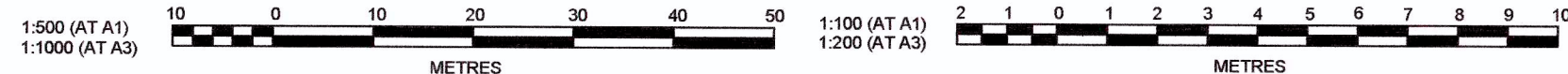


PAVEMENT NOTES ROAD No.6,7,12,14 & 15
ACCESS STREET 5x10⁴
50mm MINIMUM THICKNESS (AC10) 2 x LAYERS 25mm (AC10)
*FINAL AC LAYER TO BE DEFERRED & BONDED
SINGLE COAT FLUSH SEAL
150mm THICK BASECOURSE (DGB20)
175mm THICK SUB BASE (DGS40)
COMPACTED SUBGRADE
REFER TO REPORT BY GEOTECH TESTING PTY LTD REF 8611/1-AA-R1

NOTE
FURTHER GEOTECHNICAL TESTING SHALL BE UNDERTAKEN UPON COMPLETION OF BULK EARTHWORKS FOR STAGE 3 TO CONFIRM CBR VALUES MEET THE DESIGN CBR AS SPECIFIED IN THE PAVEMENT DESIGN INVESTIGATION PREPARED BY GEOTECH TESTING PTY LTD. JOB No. 8011/1, DATE 25 MAY 2017



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AZIMUTH: MGA
DATUM: AHD
ORIGIN:

CLIENT: LEGACYPROPERTY
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ISSUED FOR CONSTRUCTION APPROVAL
CADDENS HILL STAGE 3
ROAD No.7 LONGITUDINAL SECTION
PLAN No: 110358/CC305
FILE No: 110358CC305
SHEET SIZE: A1 ORIGINAL

EXISTING SURFACE LEVELS ARE FROM BULK
EARTHWORKS PACKAGE
(REFER TO BULK EARTHWORKS PLANS
PREPARED BY J WYNDHAM PRINCE APPROVED
FOR STAGES 2 AND 3 (CC REF 14305)

SIGNATURE: P. R. Warwick
PETER ROBERT WARWICK
Registered Land Surveyor

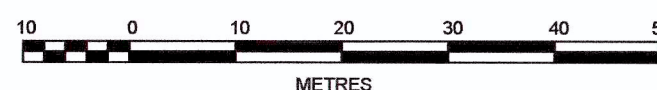
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1:500 (AT A1)
1:1000 (AT A3)



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



CLIENT



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CADDENS HILL
STAGE 3
ROAD No.12 LONGITUDINAL SECTION

PLAN No:
110358/CC306

FILE No: 110358CC306

SHEET SIZE: A1 ORIGINAL

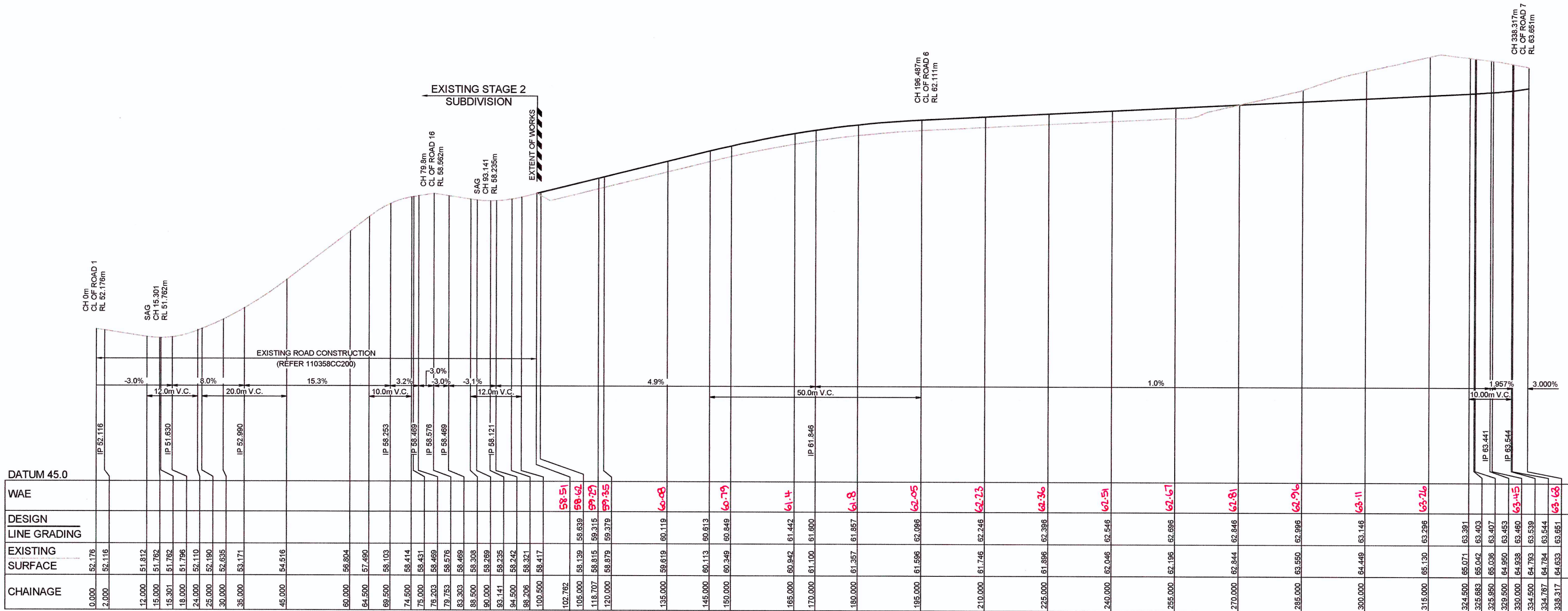
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& PROJECT MANAGERS

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B	CERTIFIER COMMENTS - NOTE AMENDED	JT	JT	RT	MS	28/06/1
A	ISSUE FOR CONSTRUCTION APPROVAL	JT	NM	RT	MS	30/05/1
	AMENDMENT	DES	DRN	CKD	APR	DATE

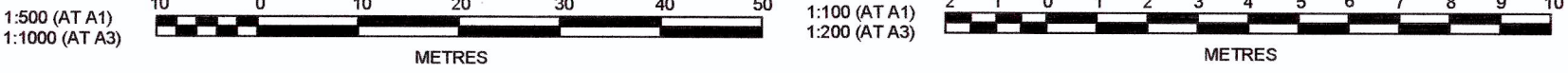
NOTE
EXISTING SURFACE LEVELS ARE FROM BULK
EARTHWORKS PACKAGE
(REFER TO BULK EARTHWORKS PLANS
PREPARED BY J WYNDHAM PRINCE APPROVED
FOR STAGES 2 AND 3 (CC REF 14305)

WORKS AS EXECUTED SHOWN IN RED
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ROAD 14 LONGITUDINAL SECTION
(GARNET DRIVE)
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100

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CADDENS HILL
STAGE 3
ROAD No.14 LONGITUDINAL SECTION

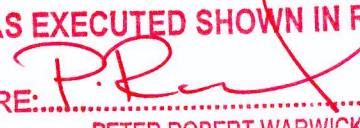
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110358/CC307
FILE No: 110358CC307
SHEET SIZE: A1 ORIGINAL

AMENDMENT	DES	DRN	CKD	APR	DATE
B CERTIFIER COMMENTS - NOTE AMENDED	JT	JT	RT	MS	28/06/17
A ISSUE FOR CONSTRUCTION APPROVAL	JT	NM	RT	MS	30/05/17

NOTE

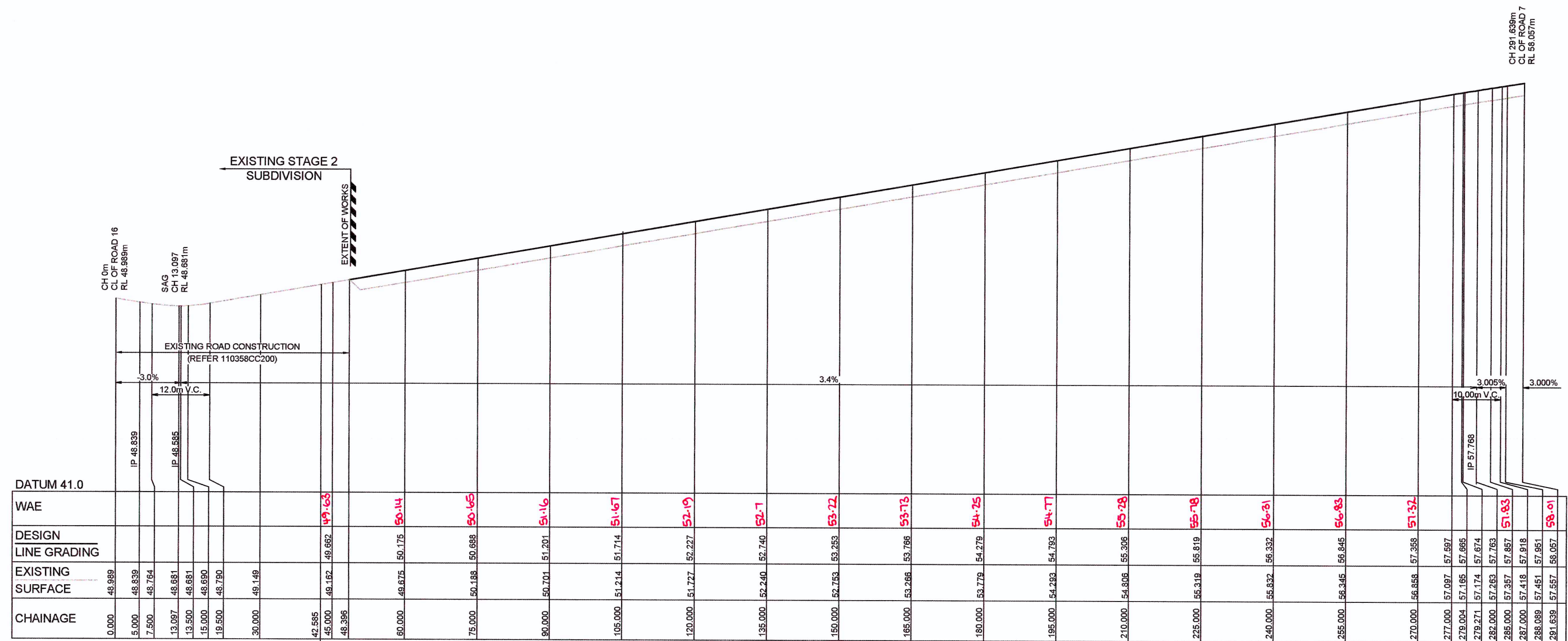
EXISTING SURFACE LEVELS ARE FROM BULK
EARTHWORKS PACKAGE
(REFER TO BULK EARTHWORKS PLANS
PREPARED BY J WYNDHAM PRINCE APPROVED
FOR STAGES 2 AND 3 (CC REF 14305)

WORKS AS EXECUTED SHOWN IN RED

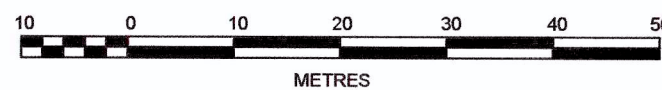
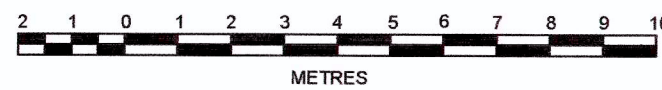
SIGNATURE: PETER ROBERT WARWICK
Registered Land Surveyor

VINCE MORGAN SURVEYORS PTY LTD

DATE: 01/3/18 REF: 20467/3



ROAD 15 LONGITUDINAL SECTION
(BUNDLE STREET)
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100

1:500 (AT A1)
1:1000 (AT A3)1:100 (AT A1)
1:200 (AT A3)

CLIENT:



LEGACYPROPERTY

AZIMUTH:
MGADATUM:
AHD

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 3
ROAD No.15 LONGITUDINAL SECTIONPLAN No:
110358/CC308

FILE No: 110358CC308

SHEET SIZE: A1 ORIGINAL

J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERSPO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

B CERTIFIER COMMENTS - NOTE AMENDED

A ISSUE FOR CONSTRUCTION APPROVAL

AMENDMENT

JT JT RT MS 28/06/17
JT NM RT MS 30/05/17
DES DRN CKD APR DATE

NOTE

EXISTING SURFACE LEVELS ARE FROM BULK
EARTHWORKS PACKAGE
(REFER TO BULK EARTHWORKS PLANS
PREPARED BY J WYNDHAM PRINCE APPROVED
FOR STAGES 2 AND 3 (CC REF 14305))

NOTE

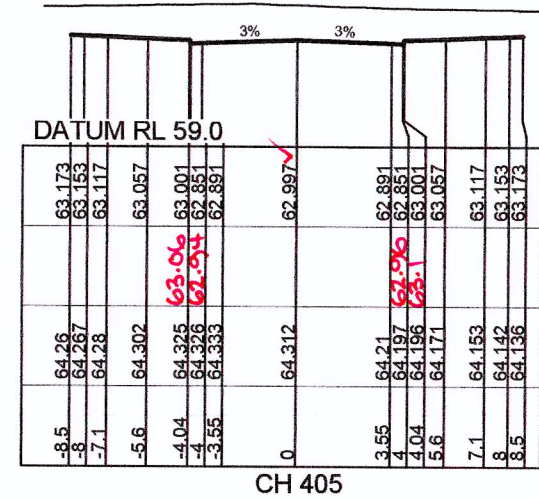
* FOR LOT GRADING
REFER TO PLANS CC304

WORKS AS EXECUTED SHOWN IN RED

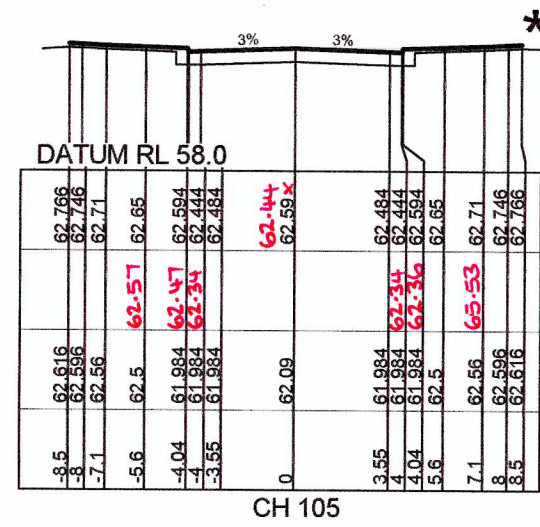
SIGNATURE: *P.R.*
PETER ROBERT WARWICK
Registered Land Surveyor

VINCE MORGAN SURVEYORS PTY LTD

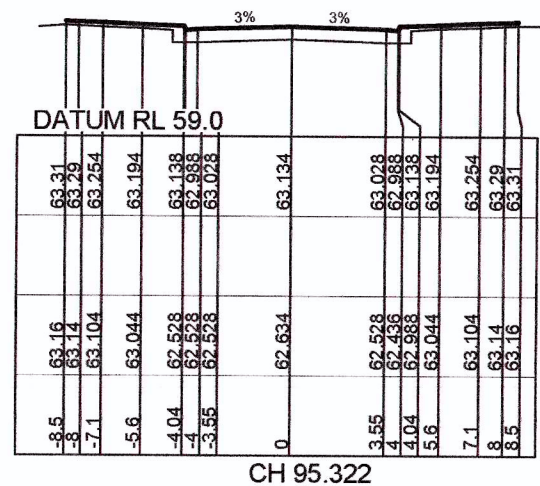
DATE: 8/3/18 REF: 20467/3



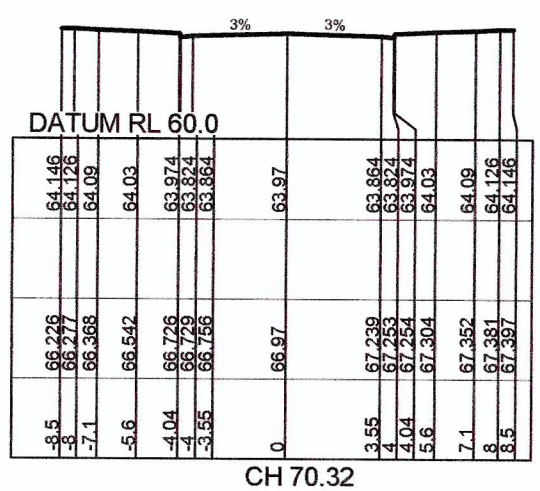
CH 405



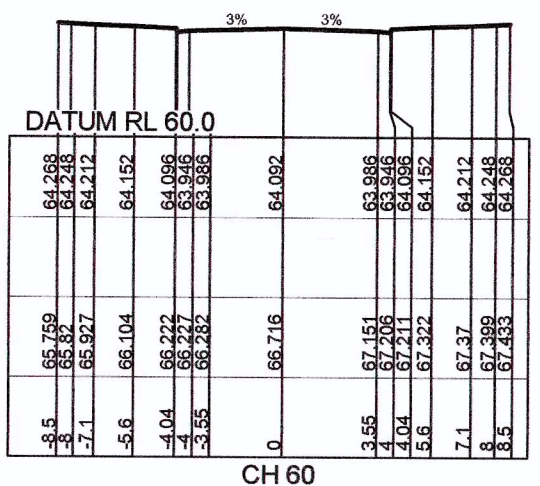
CH 105



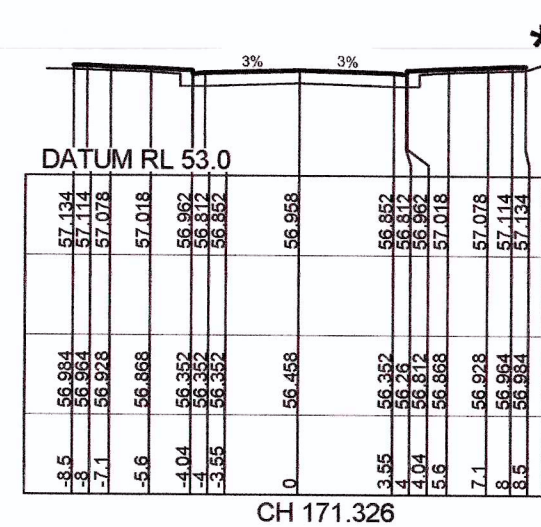
CH 95.322



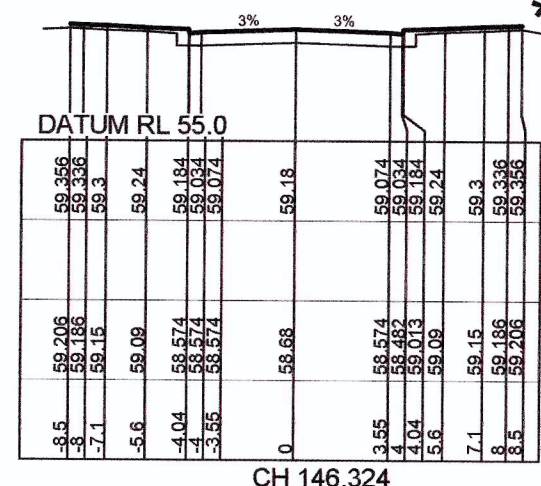
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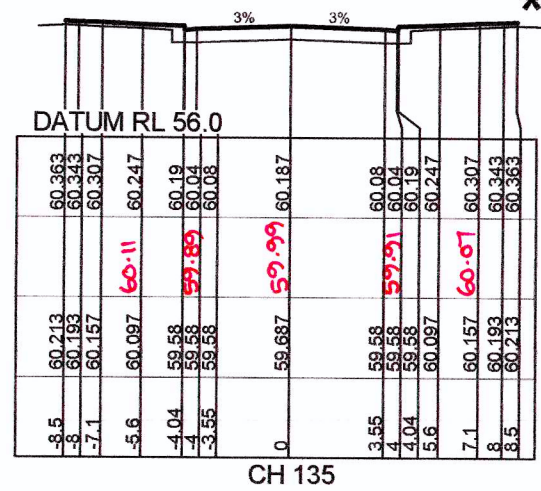
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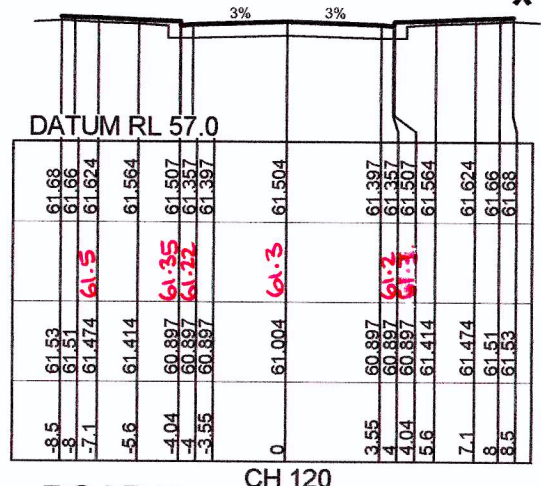
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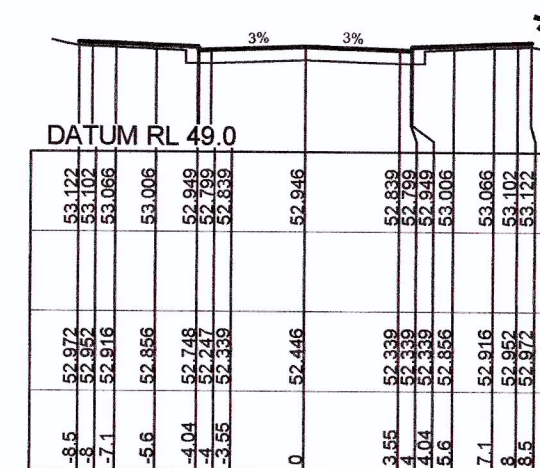
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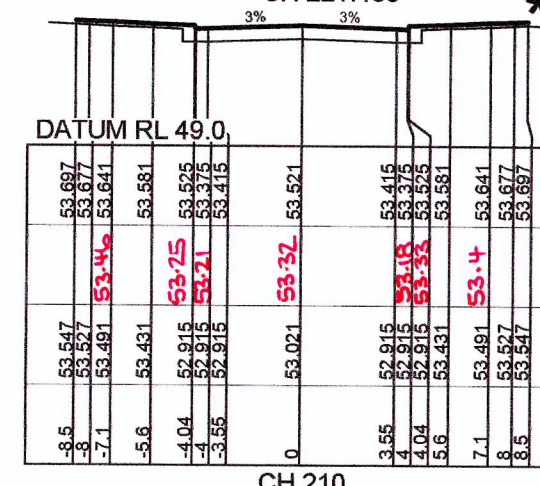
CH 135



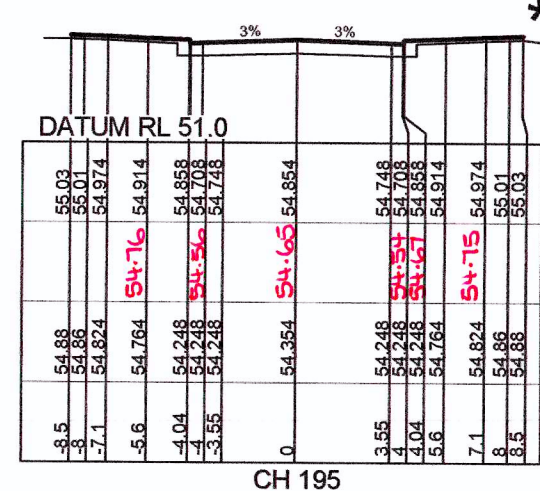
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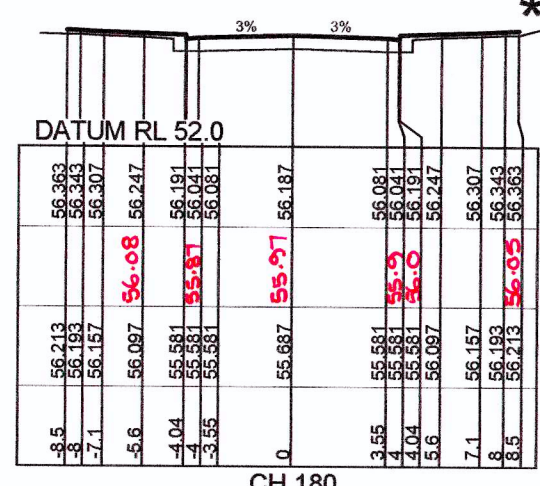
CH 221.456



CH 210



CH 195

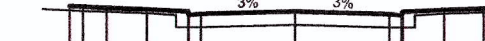
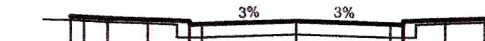
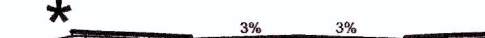
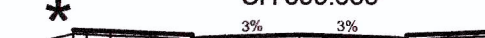
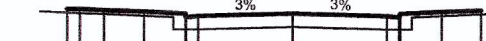
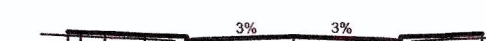
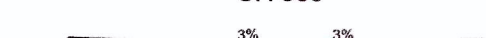
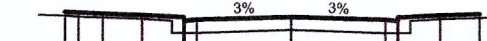
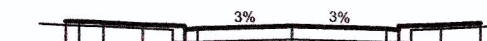
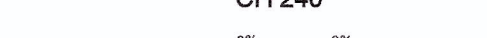
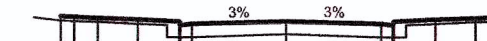
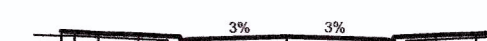
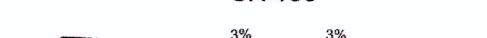
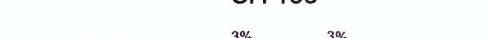


CH 180

DATUM RL 61.0			
DESIGN SURFACE LEVEL		64.736	
		64.618 <td></td>	
		64.636 <td></td>	
WAE			
EXISTING SURFACE LEVEL		66.318	
		66.437	
		66.585	
		66.697	
		66.739	
		66.739	
OFFSET			
		-3.5	
		-7.1	
		-5.6	
		-4.04	
		-3.55	
		-3.55	
		0	
		67.041	
		64.56	
		64.563	
		64.413	
		64.563	
		64.62	
		64.66	

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DATE: 8/3/18 REF: 20467/3

CH 106.881

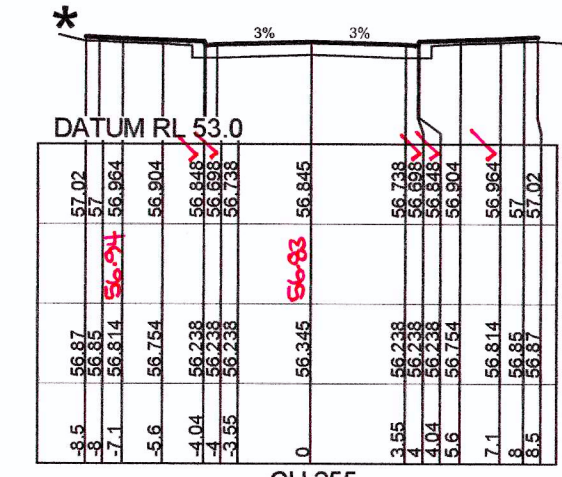
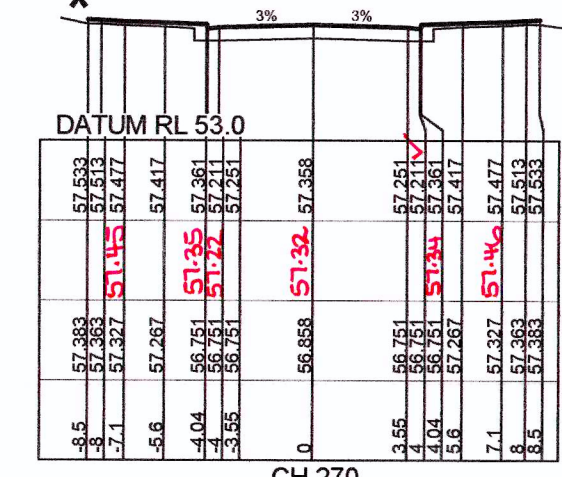
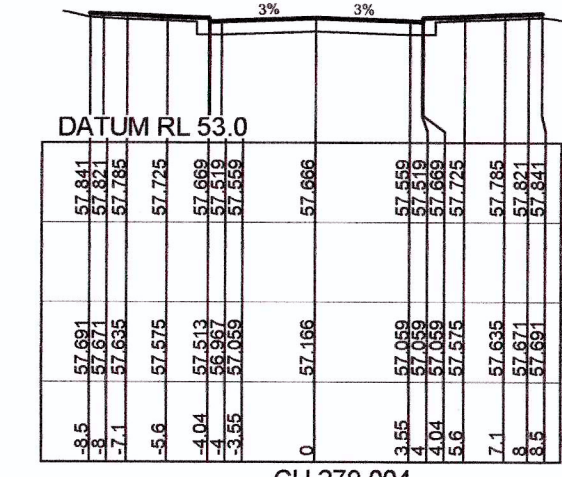
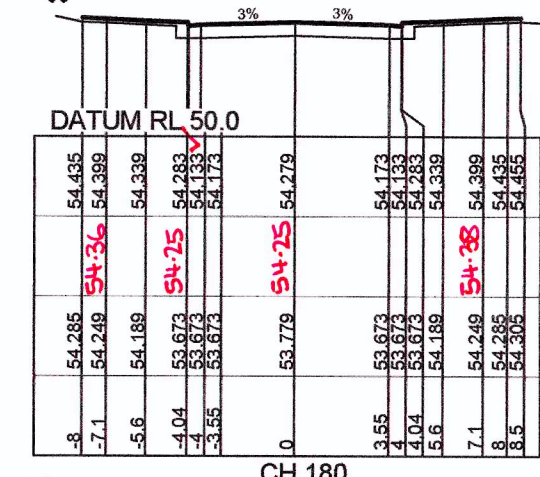
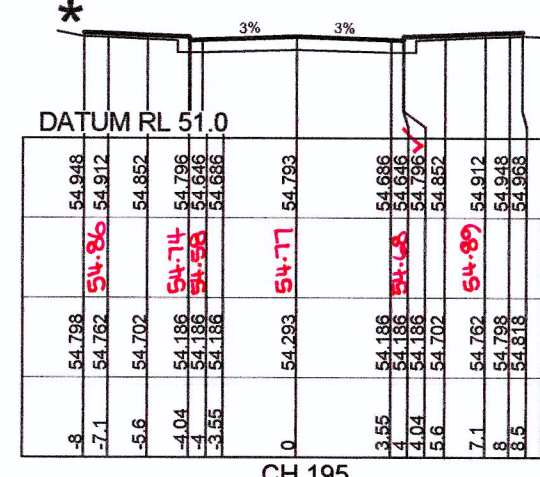
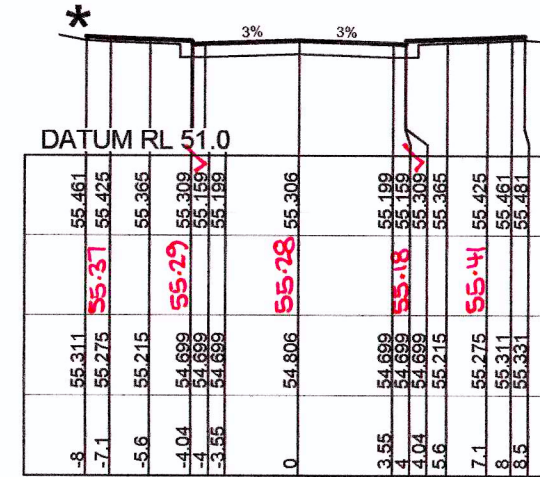
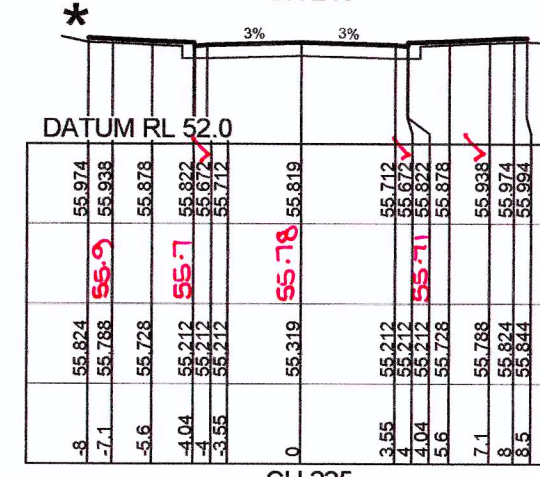
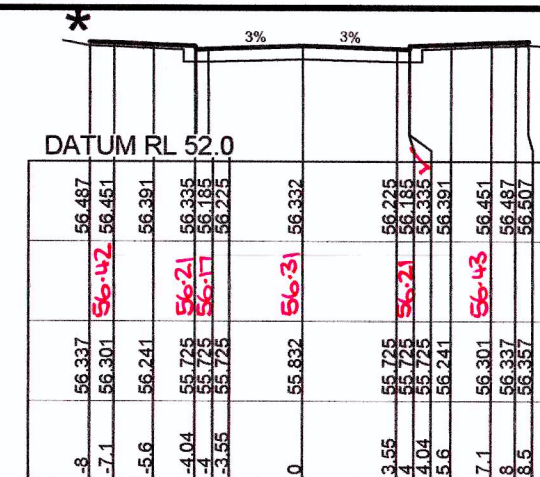
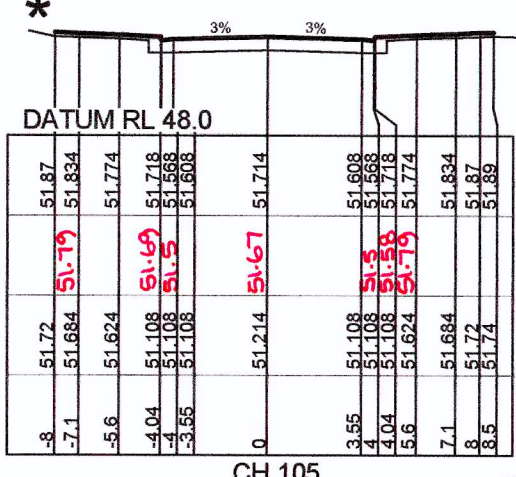
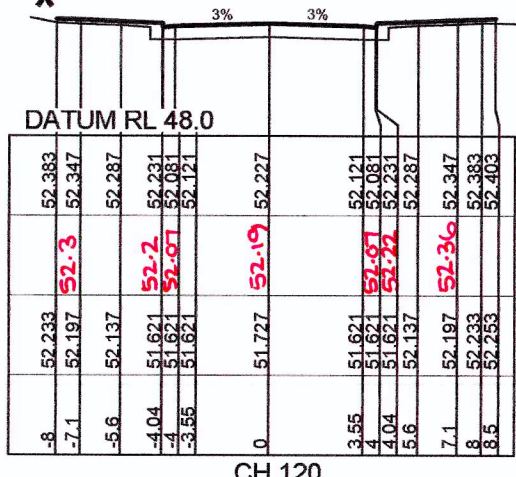
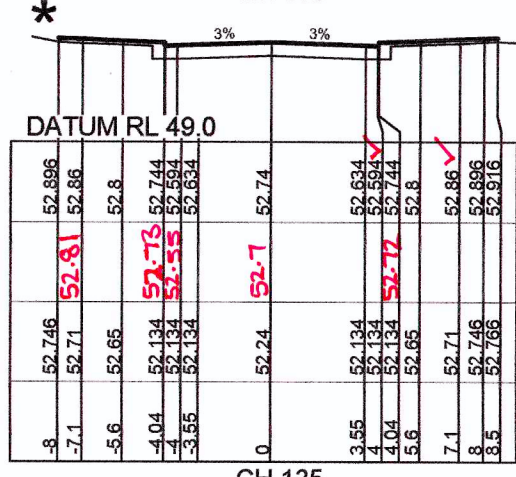
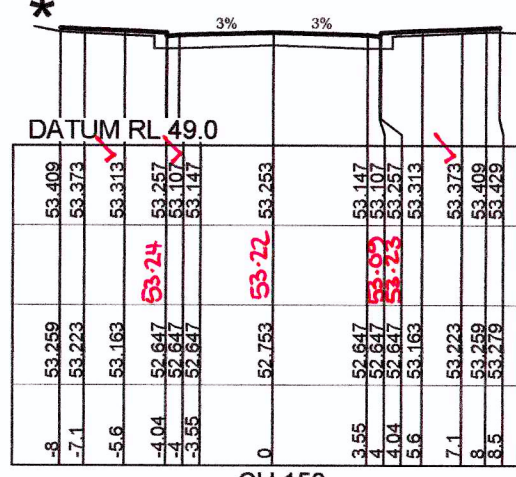
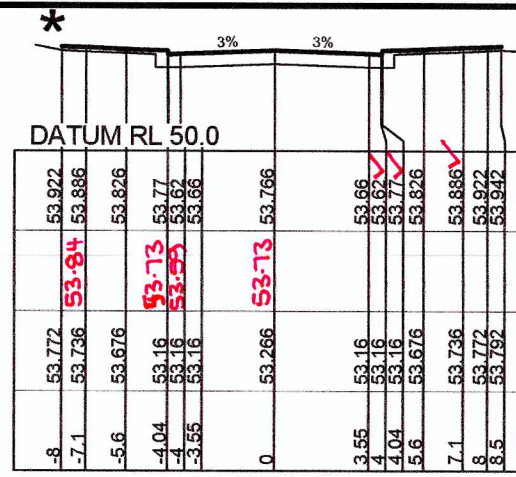
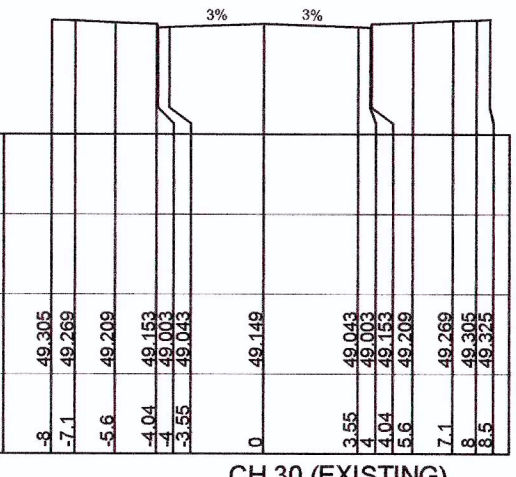
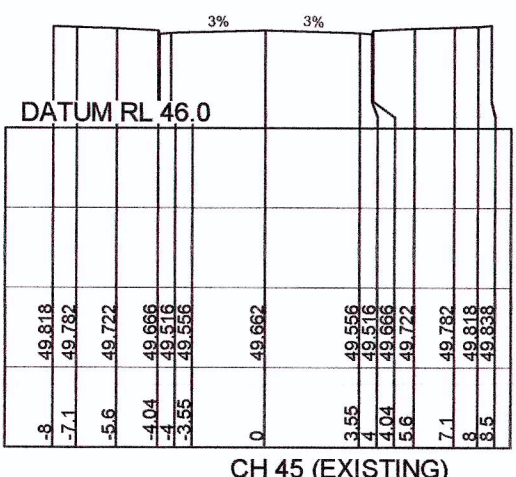
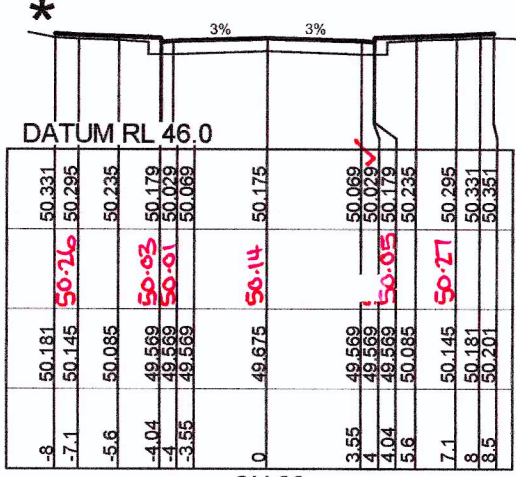
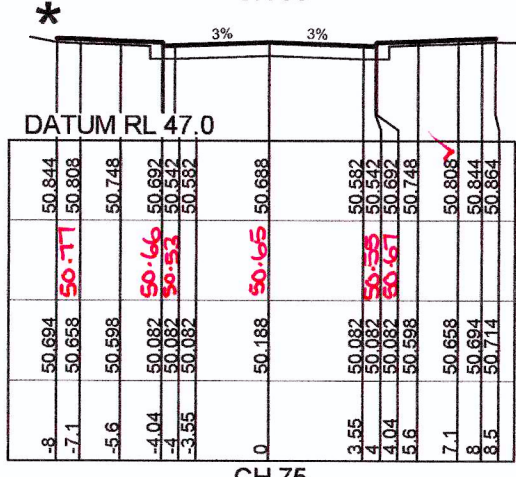
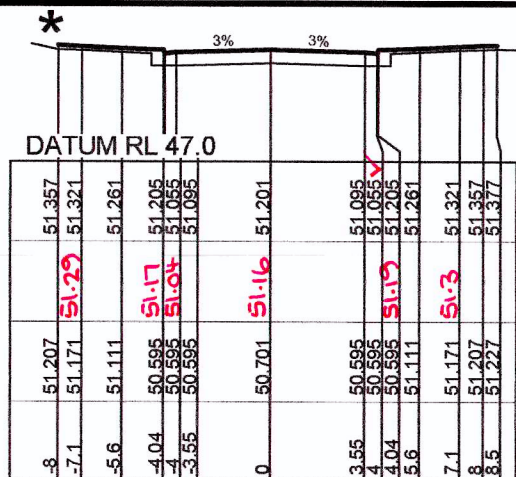


NOTE
* FOR LOT GRADING
REFER TO PLANS CC304



PLAN No:	110358/CC310
FILE No:	110358CC310
SHEET SIZE:	A1 ORIGINAL

DATUM RL 45.0	
DESIGN SURFACE LEVEL	
WAE	
EXISTING SURFACE LEVEL	
OFFSET	

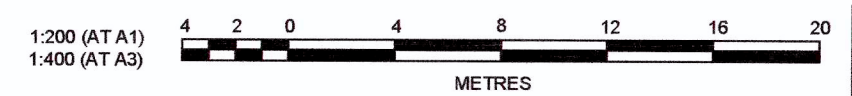


NOTE
EXISTING SURFACE LEVELS ARE FROM BULK
EARTHWORKS PACKAGE
(REFER TO BULK EARTHWORKS PLANS
PREPARED BY J WYNDHAM PRINCE APPROVED
FOR STAGES 2 AND 3 (CC REF 14305))

NOTE
* FOR LOT GRADING
REFER TO PLANS CC304

WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: *P. R. Warwick*
PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 8/3/18 REF: 20467/3

These plans are referred to in
certificate no. 14403 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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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 jwpr@jwprince.com.au

AZIMUTH:
MGA
DATUM:
AHD
ORIGIN:

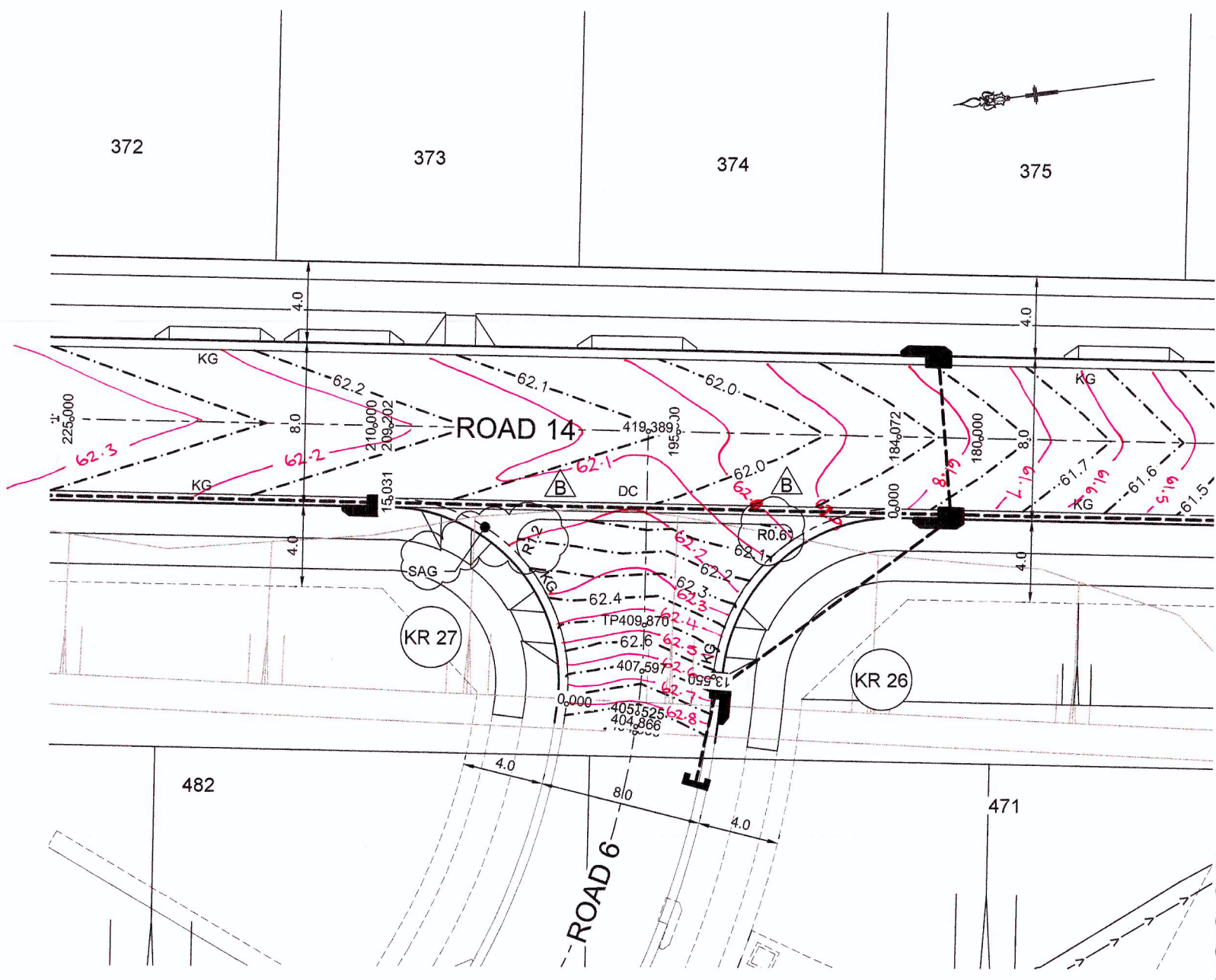
LEGACYPROPERTY
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CONSTRUCTION UNLESS SIGNED AS PART OF AN
APPROVED CONSTRUCTION CERTIFICATE

ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 3
ROAD No.15 CROSS SECTIONS

PLAN No:
110358/CC312
FILE No: 110358CC312
SHEET SIZE: A1 ORIGINAL

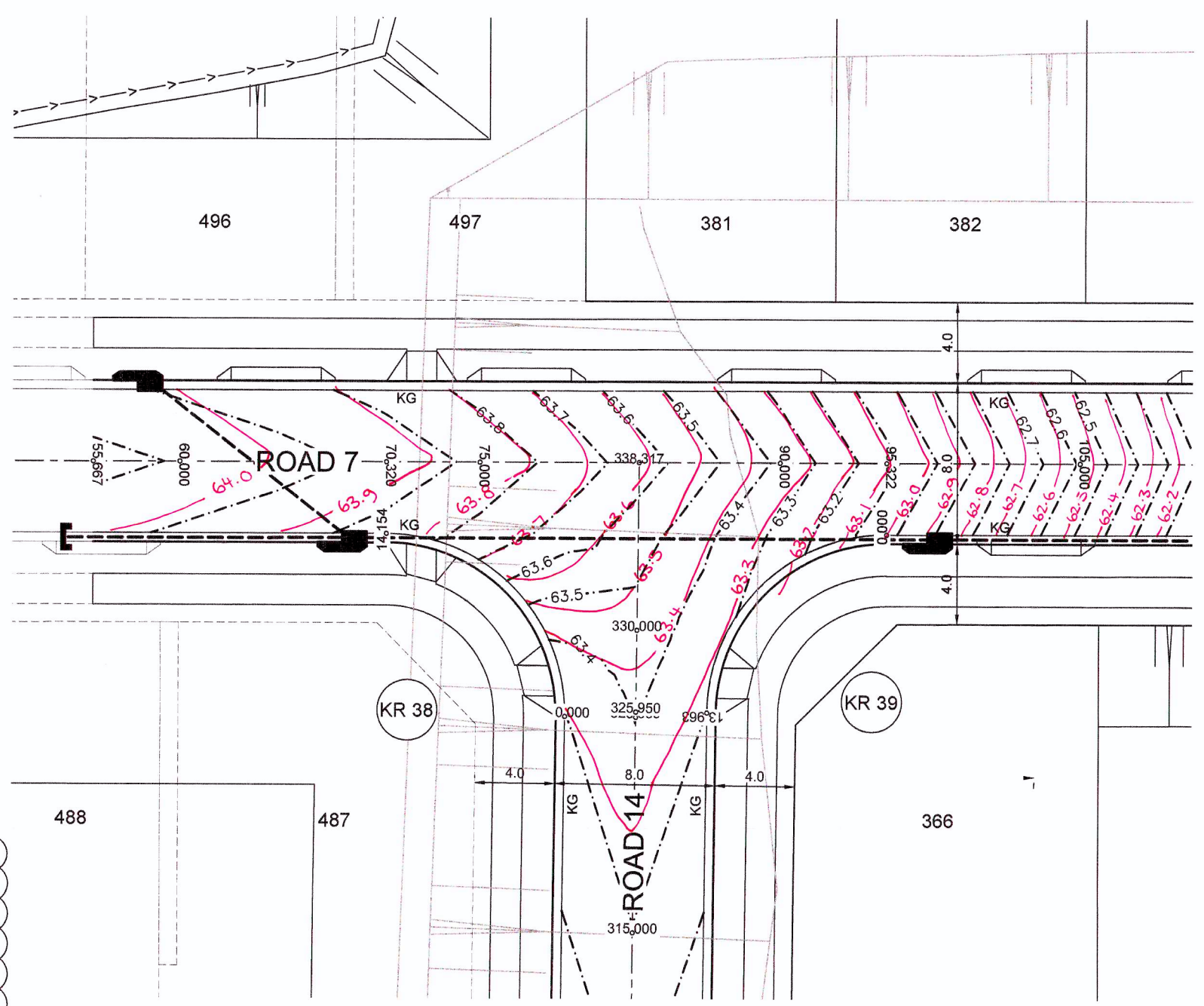
DESIGN LEVELS AND SETOUT
ARE TO LIP OF GUTTER



PLAN
SCALE 1:200

WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: *PR*
PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 21/3/18 REF: 20467/3

DISH CROSSING TO BE IN ACCORDANCE
WITH PCC CONSTRUCTION SPECIFICATION
STANDARD DRAWING SD1003/2 UNLESS
DIRECTED OTHERWISE BY COUNCIL
ENGINEER



PLAN
SCALE 1:200

DESIGN GRADELINE
VERTICAL GEOMETRY

	IP 61.896		IP 62.293
	1.860%	5.851%	9.996%
	6.78m V.C.		
DATUM 60.0			
DESIGN			
LIP GRADING	61.91	61.93	62.08
ROAD CHAINAGE	184.072	61.833	62.328
CHAINAGE	0	3.388	6.775

KR 26
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50

CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPRAL	A.LENGTH
0	290606.93	6260530.51	8°26'12.25"		
6.78	290608.17	6260538.87		-8.95	13.55
13.55	290599.89	6260540.59	281°41'30.20"		

DESIGN GRADELINE
VERTICAL GEOMETRY

	IP 61.987		
	-10.842%	2.000%	
	5.00m V.C.		
DATUM 60.0			
DESIGN			
LIP GRADING	62.9	62.33	62.08
ROAD CHAINAGE	405.525	62.838	62.258
CHAINAGE	0	5.35	7.85

KR 27
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50

CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPRAL	A.LENGTH
0	290598.91	6260548.12	105°36'13.32"		
7.59	290608.68	6260545.4		-8.95	15.18
15.18	290610.17	6260555.43	8°26'12.25"		

DESIGN GRADELINE
VERTICAL GEOMETRY

	IP 63.332		IP 63.804
	1.000%	6.667%	1.699%
	7.08m V.C.		
DATUM 61.0			
DESIGN			
LIP GRADING	63.382	63.569	63.74
ROAD CHAINAGE	325.702	63.286	63.76
CHAINAGE	0	3.539	7.077

KR 38
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50

CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPRAL	A.LENGTH
0	290627.7	6260670.59	8°26'12.25"		
7.08	290629.03	6260679.54		-8.95	14.15
14.15	290620.07	6260680.77	277°49'30.00"		

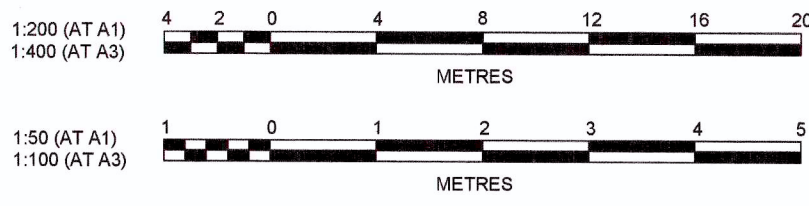
DESIGN GRADELINE
VERTICAL GEOMETRY

	IP 63.202		IP 63.334
	4.988%	1.889%	-1.000%
	6.98m V.C.		
DATUM 61.0			
DESIGN			
LIP GRADING	63.028	63.175	63.25
ROAD CHAINAGE	95.323	63.028	63.268
CHAINAGE	0	3.491	6.982

KR 39
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50

CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPRAL	A.LENGTH
0	290644.84	6260677.36	277°49'30.00"		
6.98	290636.07	6260678.57		-8.95	13.96
13.96	290634.77	6260669.81	188°26'12.25"		

These plans are referred to in
certificate no. **14403** 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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APPROVED CONSTRUCTION CERTIFICATE.

ISSUED FOR CONSTRUCTION APPROVAL

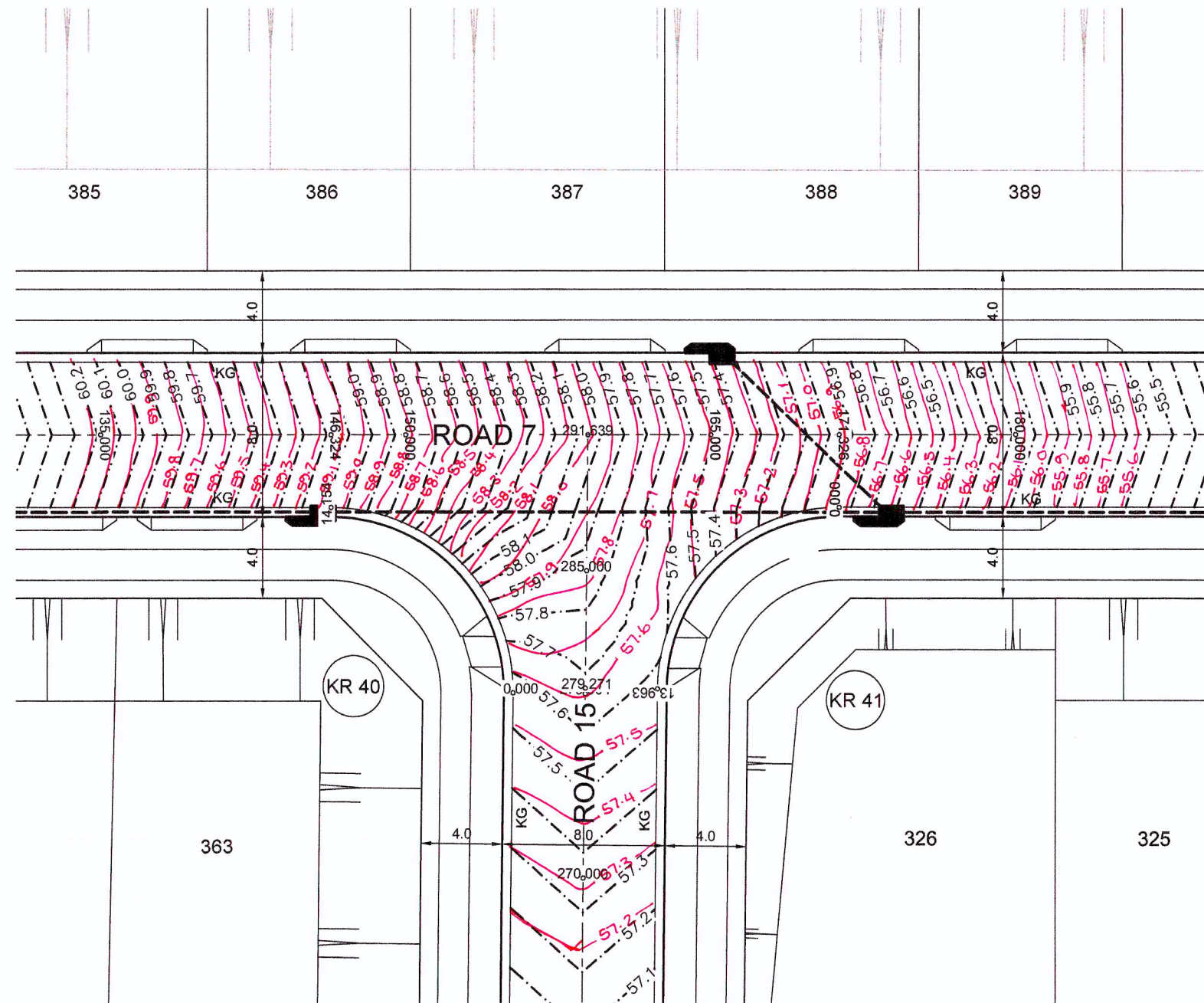
CADDENS HILL
STAGE 3
KERB RETURNS

PLAN No:
110358/CC313
FILE No: 110358CC313
SHEET SIZE: A1 ORIGINAL

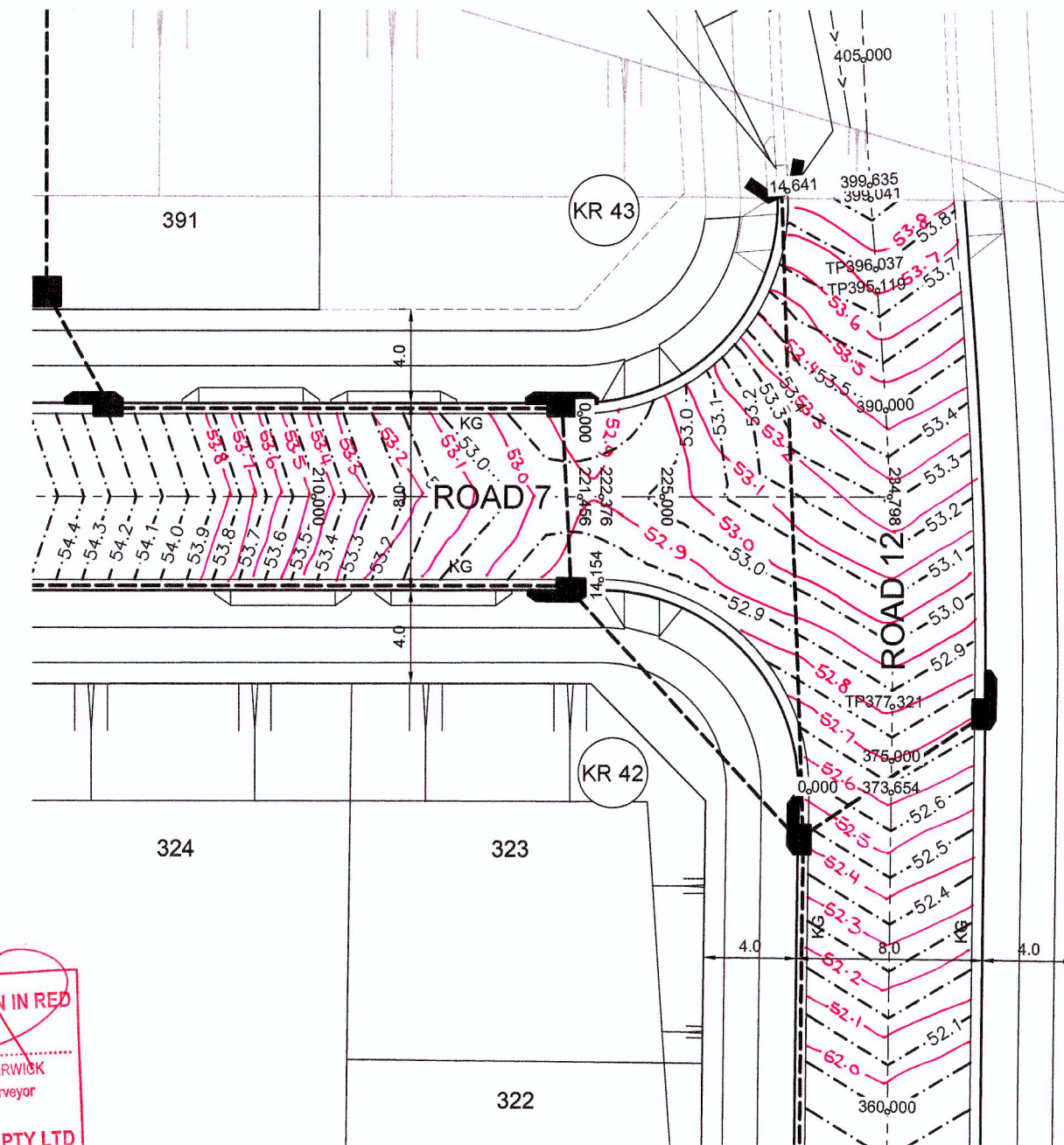
J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
& PROJECT MANAGERS
PO Box 4366 PENRITH WESTFIELD NSW 2750
P 02 4720 3300 F 02 4720 3399 W www.jwprince.com.au E jwp@jwprince.com.au

Printed: 28 June, 2017 9:52:58 AM File Name: J110358 - O'Connell Lane, Caddens03 - Stage 2/CD/CC/STAGE 3/110358CC313.dwg

DESIGN LEVELS AND SETOUT
ARE TO LIP OF GUTTER

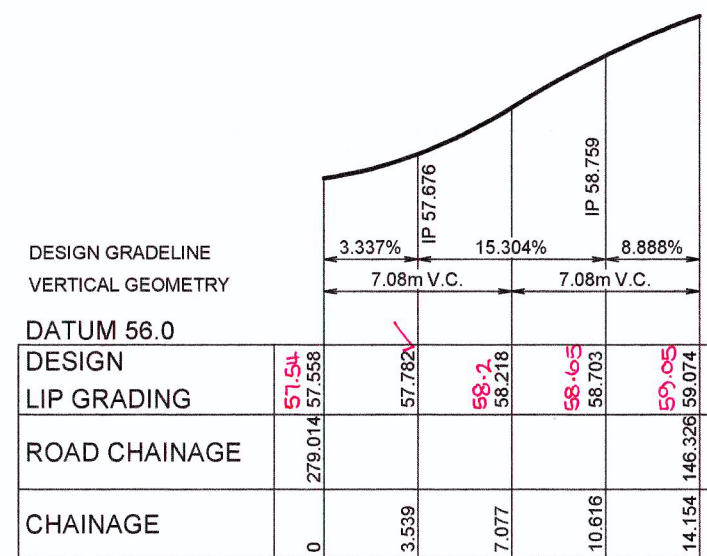


PLAN
SCALE 1:200



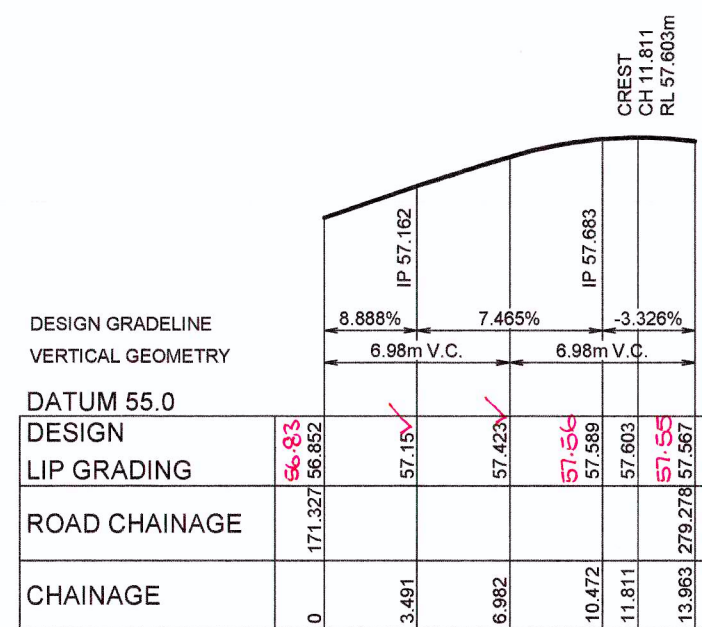
PLAN
SCALE 1:200

WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 8/3/18 REF: 204713



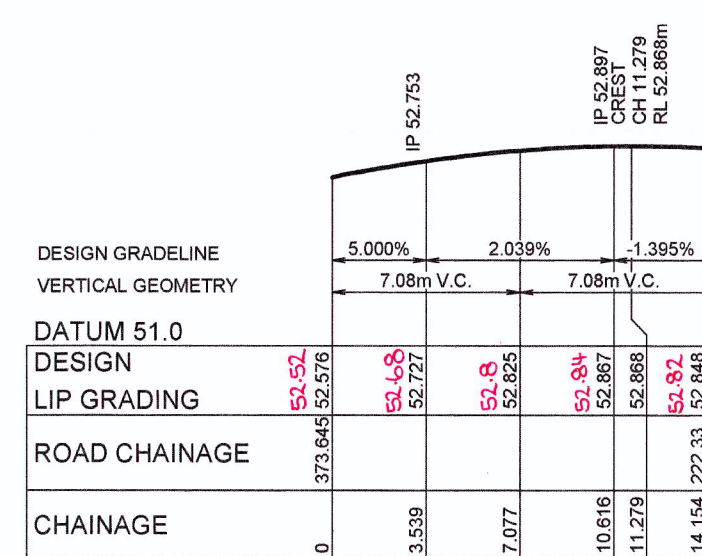
KR 40
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50

CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPHAL	A LENGTH
0	290703	6260660.24	8°26'12.14"	-8.95	14.15
7.08	290704.33	6260669.19			
14.15	290695.37	6260670.42	277°49'30.00"		



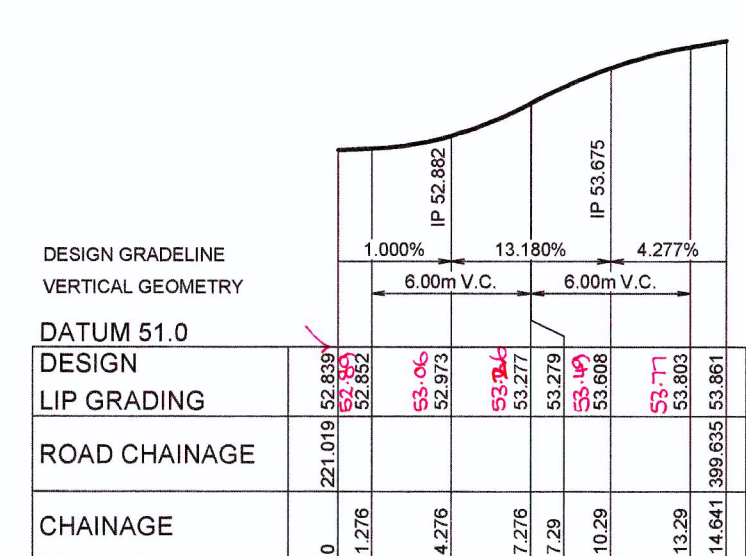
KR 41
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50

CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPHAL	A LENGTH
0	290720.13	6260667.02	277°49'30.00"	-8.95	13.96
6.98	290711.36	6260668.22			
13.96	290710.06	6260659.46	188°26'12.14"		



KR 42
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50

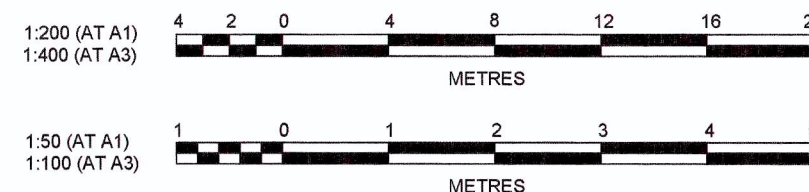
CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPHAL	A LENGTH
0	290778.34	6260649.89	8°26'12.57"	-8.95	14.15
7.08	290779.67	6260658.83			
14.15	290770.71	6260660.08	277°49'30.00"		



KR 43
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:50

CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPHAL	A LENGTH
0	290770.78	6260667.22	97°49'30.00"	-8.95	14.64
7.32	290780.23	6260665.92			
14.64	290780.91	6260675.45	4°05'57.69"		

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

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CADDENS HILL
STAGE 3
KERB RETURNS

PLAN No:
110358/CC314

FILE No: 110358CC314

SHEET SIZE: A1 ORIGINAL

PIT SCHEDULE

PIT NAME (-)	PIT TYPE (-)	PIT EASTING (m)	PIT NORTHING (m)	PIT DEPTH (m)	COMMENTS
18/1	1.8 m lintel	290623.118	6260642.736	1.522	
18/2	1.8 m lintel	290619.446	6260617.978	1.552	
18/3	1.8 m lintel	290613.206	6260575.91	1.582	
18/4	1.8 m lintel	290610.238	6260555.904	1.612	
18/5	1.8 m lintel	290606.092	6260527.949	1.568	
18/6	2.4 m lintel	290596.993	6260466.601	1.587	
18/7	1.8 m lintel	290603.325	6260458.224	1.666	
18/8	1.8 m lintel	290593.052	6260440.368	1.659	EXISTING PIT
20/1	1.8 m lintel	290622.251	6260582.368	1.466	
21/1	1.8 m lintel	290614.12	6260527.543	1.45	
22/1	1.8 m lintel	290698.282	6260631.499	1.552	
22/2	1.8 m lintel	290693.862	6260601.697	1.552	
22/3	1.8 m lintel	290690.194	6260576.97	1.552	
22/4	1.8 m lintel	290685.794	6260547.3	1.552	
22/5	1.8 m lintel	290681.39	6260517.611	1.552	
22/6	1.8 m lintel	290676.991	6260487.952	1.552	
22/7	1.8 m lintel	290672.951	6260460.715	1.554	
22/8	1.8 m lintel	290667.721	6260425.455	1.686	EXISTING PIT
23/1	1.8 m lintel	290698.595	6260579.08	1.466	
24/1	1.8 m lintel	290690.523	6260524.655	1.488	
25/1	1.8 m lintel	290780.497	6260675.984	1.679	TEMPORARY HEADWALL
25/2	1.8 m lintel	290777.597	6260647.921	1.646	
25/3	1.8 m lintel	290773.606	6260621.01	1.571	
25/4	1.8 m lintel	290768.837	6260588.859	1.619	
25/5	1.8 m lintel	290764.069	6260556.712	1.702	
25/6	1.8 m lintel	290759.3	6260524.563	1.698	
25/7	1.8 m lintel	290756.365	6260504.777	1.764	
25/8	1.8 m lintel	290751.521	6260472.116	1.764	
25/9	1.8 m lintel	290746.834	6260440.513	1.764	
25/10	1.8 m lintel	290743.529	6260418.231	1.764	
25/11	1.8 m lintel	290740.789	6260399.759	1.774	EXISTING PIT
26/1	1.8 m lintel	290786.308	6260652.126	1.488	
27/1	1.8 m lintel	290772.861	6260561.461	1.485	
28/1	1.8 m lintel	290764.996	6260508.44	1.463	
29/1	1.8 m lintel	290755.481	6260444.289	1.463	
33/4	1.8 m lintel	290588.647	6260544.073	1.609	FUTURE PIT
33/5	1.8 m lintel	290599.392	6260540.23	1.503	FUTURE PIT
35/7	1.8 m lintel	290566.383	6260687.691	1.522	
35/8	1.8 m lintel	290618.436	6260680.537	1.54	
35/9	1.8 m lintel	290647.404	6260676.556	1.574	
35/10	1.8 m lintel	290674.178	6260672.877	1.824	
35/11	1.8 m lintel	290694.912	6260670.027	1.669	
35/12	1.8 m lintel	290722.608	6260666.206	1.871	
35/13	1.8 m lintel	290769.354	6260659.756	1.967	
37/1	1.8 m lintel	290609.384	6260689.856	1.471	
38/1	1.8 m lintel	290668.841	6260681.685	2.217	
39/1	1.8 m lintel	290750.705	6260670.435	1.777	
39/2	2.4 m lintel sag	290770.061	6260667.775	1.687	
40/1	1.8 m lintel	290715.449	6260675.28	1.536	
46/1	1.8 m lintel	290680.986	6260460.359	1.452	
F/1	GSIP 600x600 IAD			0.764	
F/2	GSIP 600x600 IAD			0.771	
F/3	GSIP 600x600 IAD			0.77	
F/4	GSIP 600x600 IAD			0.77	
F/5	GSIP 600x600 IAD			0.839	
F/6	GSIP 600x600 IAD			0.846	
F/7	GSIP 600x600 IAD			0.846	
F/8	GSIP 600x600 IAD			0.847	
F/9	GSIP 900x900 IAD			3.929	EXISTING PIT
G/1	GSIP 600x600 IAD			0.772	
G/2	GSIP 600x600 IAD			0.771	
G/3	GSIP 600x600 IAD			0.771	
G/4	GSIP 600x600 IAD			0.773	
G/5	GSIP 600x600 IAD			0.85	
G/6	GSIP 600x600 IAD			0.847	
G/7	GSIP 600x600 IAD			0.845	
G/8	GSIP 600x600 IAD			0.847	
G/9	GSIP 600x600 IAD			0.849	
G/10	GSIP 600x600 IAD			0.848	
G/11	GSIP 600x600 IAD			0.845	
G/12	GSIP 900x900 IAD			3.972	DROP UNDER PIT
G/14	JP			1.541	
H/1	GSIP 900x900 IAD			1.638	DROP UNDER PIT
H/2	GSIP 600x600 IAD			0.817	
H/3	GSIP 900x900 IAD			2.127	DROP UNDER PIT
H/4	JP			0.8	
H/5	JP			1.547	
J/1	GSIP 600x600 IAD			0.766	
J/2	GSIP 600x600 IAD			0.769	
J/3	GSIP 600x600 IAD			0.772	
J/4	GSIP 600x600 IAD			0.848	
J/5	GSIP 600x600 IAD			0.846	
J/6	JP			1.428	
K/1	GSIP 600x600 IAD			0.766	
K/2	GSIP 600x600 IAD			0.777	
K/3	GSIP 600x600 IAD			0.763	
K/4	GSIP 600x600 IAD			0.838	
K/5	GSIP 600x600 IAD			0.838	

PIT SCHEDULE

PIT NAME (-)	PIT TYPE (-)	PIT EASTING (m)	PIT NORTHING (m)	PIT DEPTH (m)	COMMENTS
K/6	GSIP 600x600 IAD			0.849	
K/7	GSIP 600x600 IAD			0.837	
K/8	GSIP 600x600 IAD			0.846	
K/9	JP			4.098	DROP UNDER PIT
K/11	JP			1.658	
L/1	GSIP 900x900 IAD			2.273	DROP UNDER PIT
L/2	GSIP 600x600 IAD			0.8	
L/3	GSIP 900x900 IAD			2.377	DROP UNDER PIT
L/4	JP			1.594	
M/3	GSIP 600x600 IAD			0.77	
M/4	GSIP 600x600 IAD			0.848	
M/5	GSIP 600x600 IAD			0.851	
M/6	GSIP 600x600 IAD			0.883	
M/7	JP			0.875	
M/8	JP			2.603	
N/1	GSIP 600x600 IAD			0.787	
N/2	GSIP 600x600 IAD			0.813	
N/3	GSIP 600x600 IAD			0.861	
N/4	GSIP 600x600 IAD			0.892	
N/5	GSIP 600x600 IAD			0.87	
N/6	GSIP 900x900 IAD			0.932	
N/7	GSIP 900x900 IAD			0.897	
N/8	GSIP 900x900 IAD			0.904	
N/9	JP			1.557	
P/3	JP			1.601	
R/5	GSIP 600x600 IAD			0.793	
R/6	JP			1.578	
S/6	JP			1.578	

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

ALL SAG PITS TO HAVE WELDLICK GGSB 94 5D GRATES

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

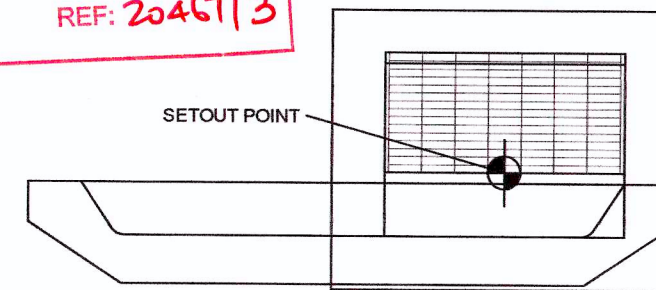
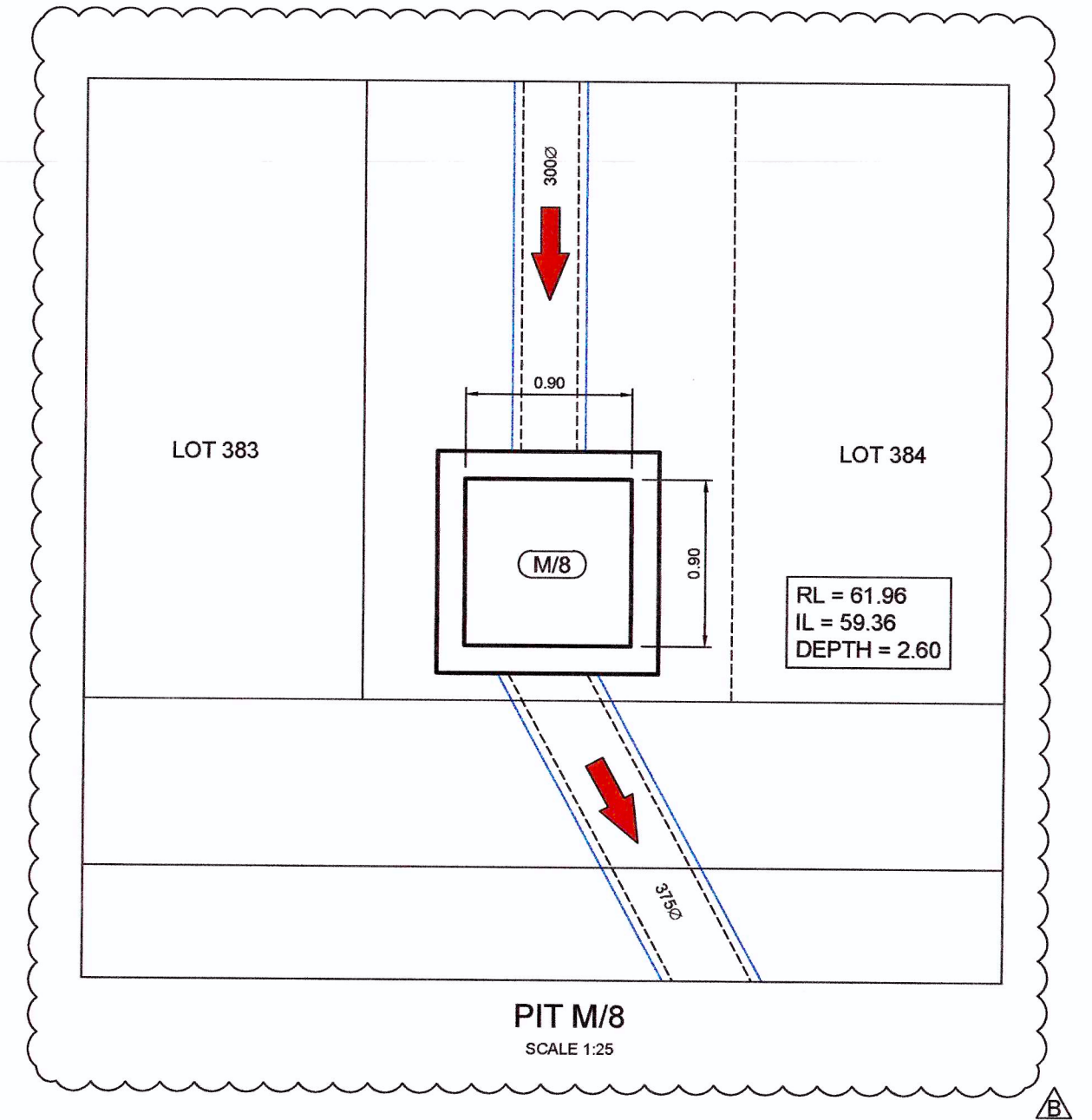
ANY INTER-ALLOTMENT PIT GREATER THAN 900mm DEEP SHALL HAVE A CONCRETE LID REFER PCC CONSTRUCTION SPEC SECTION 6.7.

ALL JUNCTION PITS SHALL HAVE A CONCRETE LID
FOR PITS >2m SHALL BE STRUCTURALLY CERTIFIED AND CERTIFIED

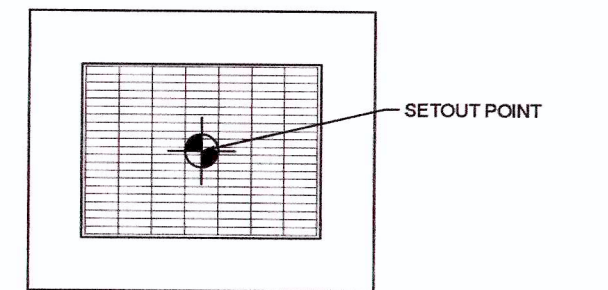
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SIGNATURE: PETER ROBERT WARWICK
Registered Land Surveyor

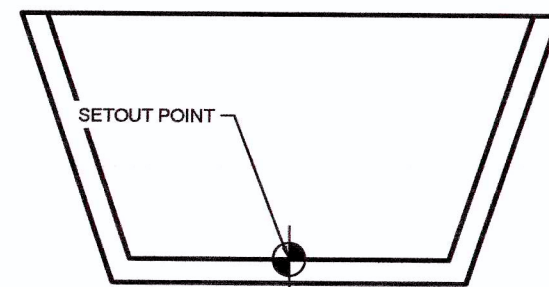
VINCE MORGAN SURVEYORS PTY LTD
DATE: 8/3/18 REF: 20467/3



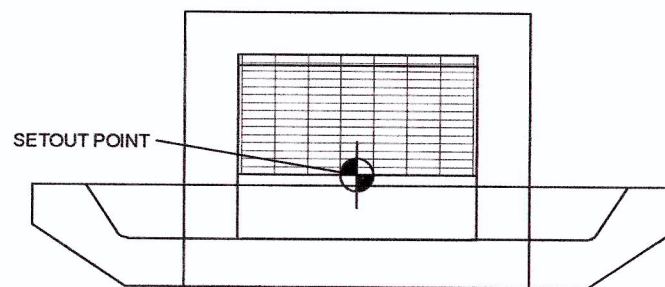
SETOUT DETAIL KERB INLET PIT (LINTEL)
SCALE 1:20



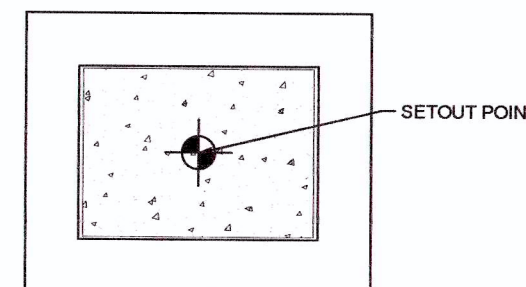
GRATED SURFACE INLET PIT (GSIP)
SCALE 1:20



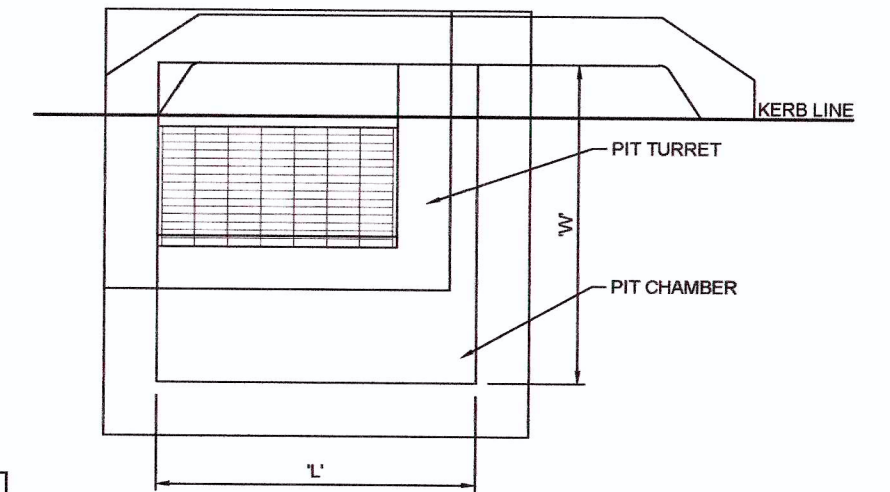
SETOUT DETAIL HEADWALL
SCALE 1:20



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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Eric Hausfeld
Accredited Certifier
Registration No: BPB 2416
Categories: B1, C1, C2, C3, C4, C8, C15 & D1
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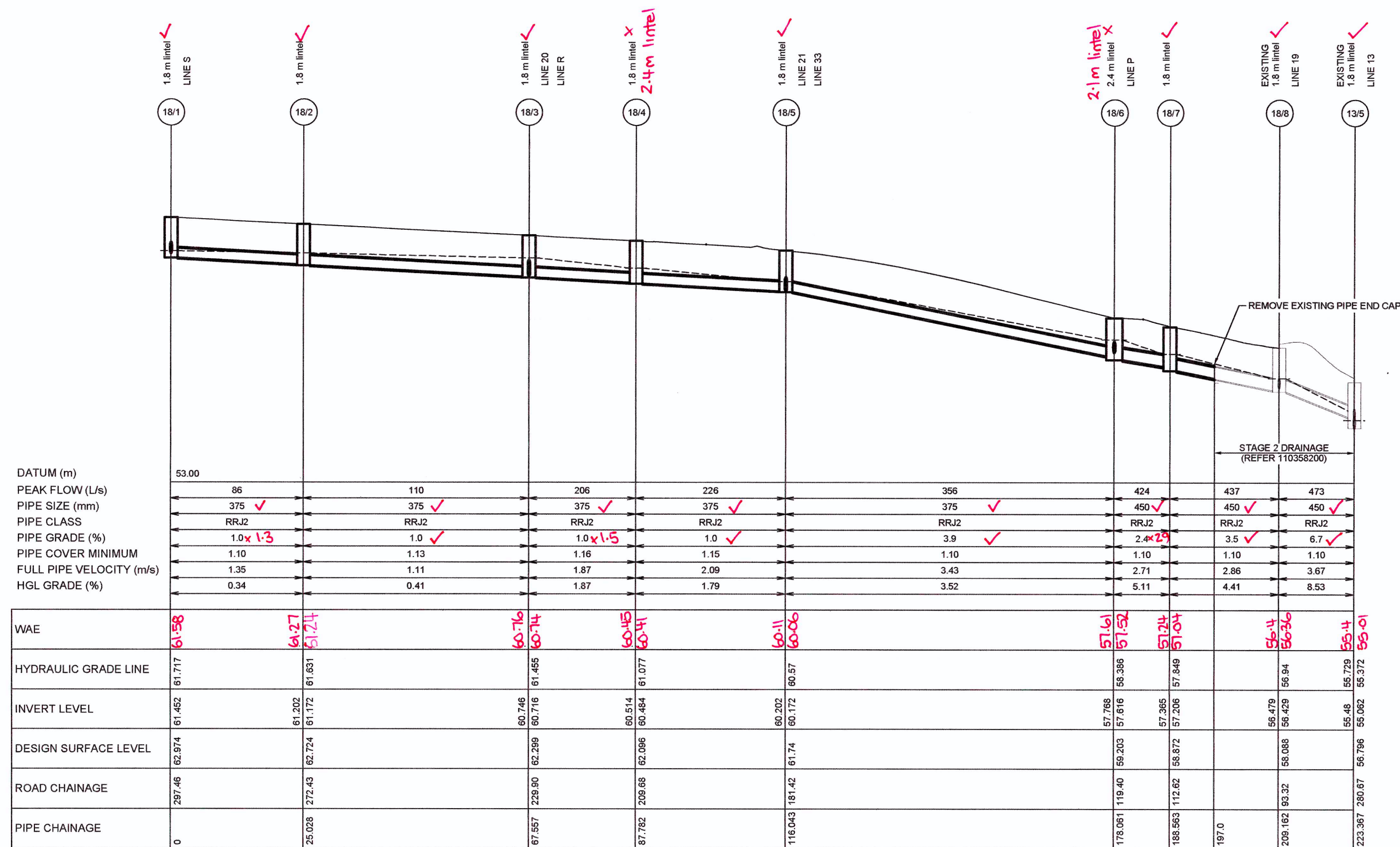
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CADDENS HILL
STAGE 3
PIT DETAILS & PIT SCHEDULE

PLAN No:
110358/CC316
FILE No: 110358CC316
SHEET SIZE: A1 ORIGINAL

DRAINAGE PIPE SYSTEM CATERS FOR 5YR ARI UNLESS OTHERWISE NOTED



WORKS AS EXECUTED SHOWN IN RED

SIGNATURE: *P.R.*

PETER ROBERT WARWICK
Registered Land Surveyor

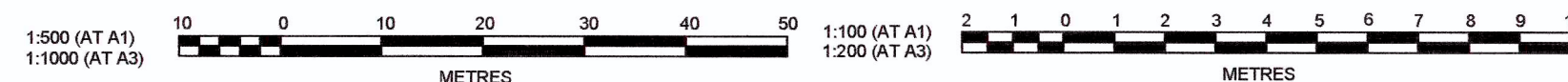
VINCE MORGAN SURVEYORS PTY LTD

DATE: 8/3/18 REF: 20467/3

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A	ISSUE FOR CONSTRUCTION APPROVAL	JT	NM	RT	MS	30/05/19		
	AMENDMENT	DES	DRN	CKD	APR	DATE		

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CADDENS HILL
STAGE 3
DRAINAGE LONG SECTION

PLAN No:
110358/CC317

FILE No: 110358CC317

SHEET SIZE: A1 ORIGINAL

Plotted: 28 June, 2017 10:03:36 AM File Name: J:\110358 - Caddens Hill, Caddens03 - Stage 2\CD\CC\STAGE 3\110358CC318.dwg

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

WAE	60.92	60.73	60.74
HYDRAULIC GRADE LINE	61.461	60.573	61.455
INVERT LEVEL	60.91	60.799	60.716
DESIGN SURFACE LEVEL	62.376	62.299	62.289
ROAD CHAINAGE	237.62	229.90	62.289
PIPE CHAINAGE	0	11.114	229.90

LINE 20

LINE 21

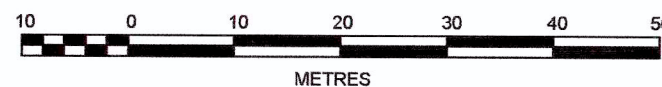
LINE 22

LINE 23

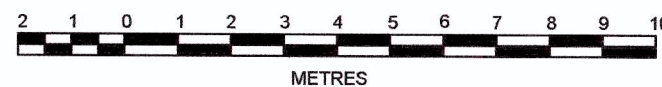
LINE 24



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



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



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CADDENS HILL
STAGE 3
DRAINAGE LONG SECTION

PLAN No:
110358/CC318

FILE No: 110358CC318

SHEET SIZE: A1 ORIGINAL

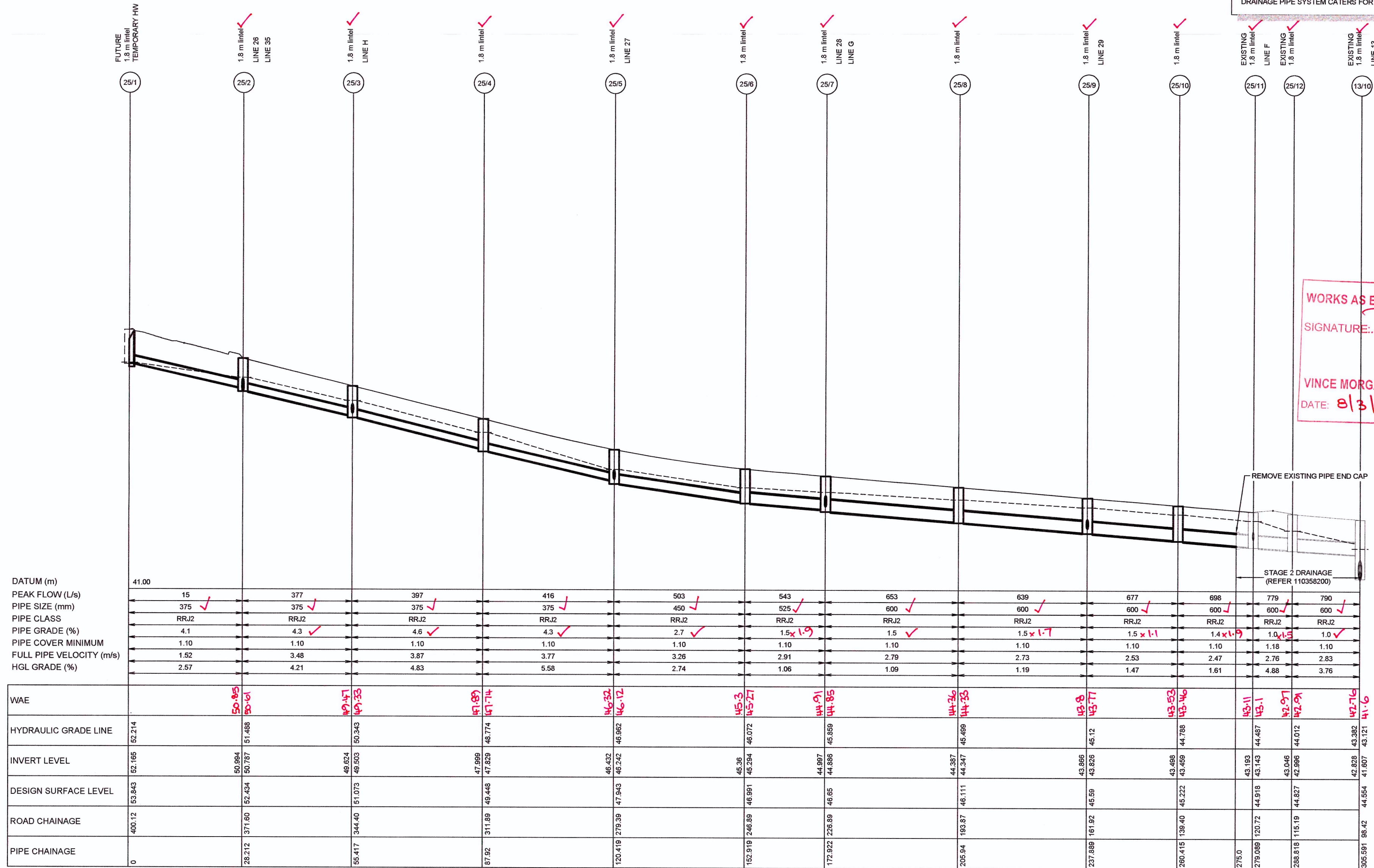
DRAINAGE PIPE SYSTEM CATER FOR 5YR ARI UNLESS OTHERWISE NOTED

WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: *P.R.*
PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 8/3/18 REF: 20467/3

REMOVE EXISTING PIPE END CAP

STAGE 2 DRAINAGE
(REFER 110358200)

Plotted: 28 June, 2017 10:05:06 AM File Name: J:\110358 - O'Connell Lane, Caddens\03 - Stage 2\CD\CC\STAGE 3\110358CC319.dwg



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Eric Hausfeld

Accredited Certifier

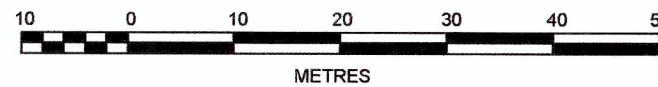
Registration No: BPB 2416

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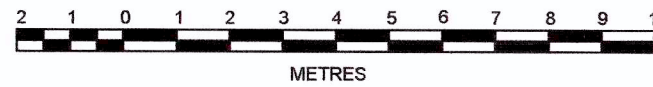
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1:500 (AT A1)
1:1000 (AT A3)



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



LINE 25

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ORIGIN:

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CADDENS HILL
STAGE 3
DRAINAGE LONG SECTION

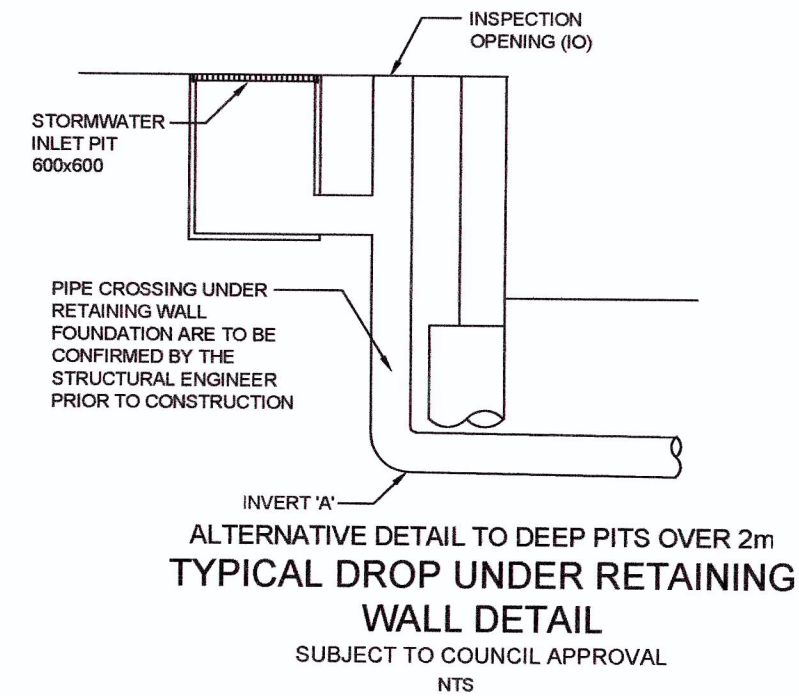
PLAN No:
110358/CC319

FILE No: 110358CC319

SHEET SIZE: A1 ORIGINAL

Plotted: 28 June, 2017 10:06:37 AM File Name: J:\110358 - Caddens Hill, Caddens\03 - Stage 2\OD\CC\STAGE 3\110358CC320.dwg

DRAINAGE PIPE SYSTEM CATERES 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	51.12	50.85	50.61	44.18	43.71	60.06
HYDRAULIC GRADE LINE	51.482	51.488	51.488	45.124	45.124	60.06
INVERT LEVEL	51.218	51.014	51.014	45.173	44.114	60.33
DESIGN SURFACE LEVEL	52.705	52.434	52.434	46.65	45.59	61.74
ROAD CHAINAGE	377.04	371.60	371.60	226.89	161.92	181.42
PIPE CHAINAGE	0	9.673	9.673	9.376	9.436	64.803

LINE 26

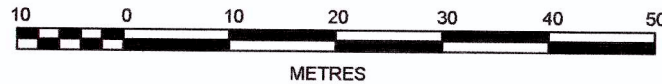
LINE 27

LINE 28

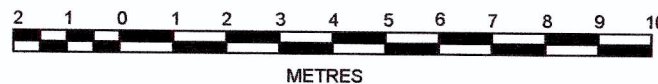
LINE 29

LINE 33

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



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



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SIGNATURE: *P. R. Warwick*
PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 8/3/18 REF: 20461/3

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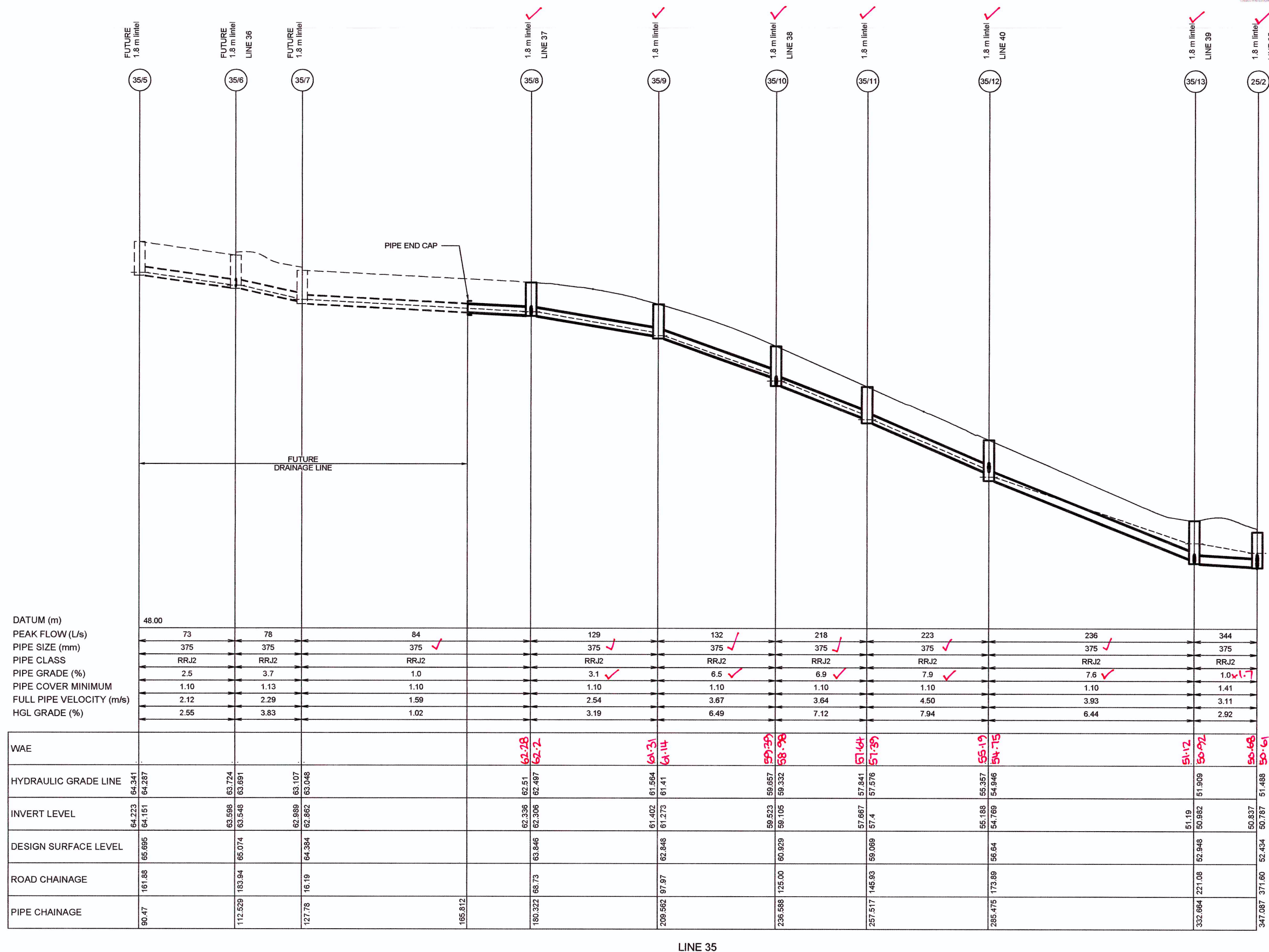
CADDENS HILL
STAGE 3
DRAINAGE LONG SECTION

PLAN No:
110358/CC320 A

FILE No: 110358CC320

SHEET SIZE: A1 ORIGINAL

DRAINAGE PIPE SYSTEM CATERS FOR 5YR ARI UNLESS OTHERWISE NOTED



WORKS AS EXECUTED SHOWN IN RECORD

SIGNATURE: P.R.

PETER ROBERT WARWICK
Registered Land Surveyor

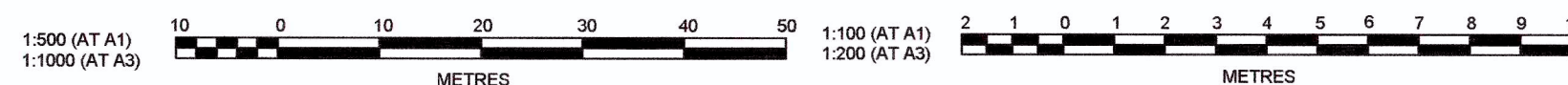
VINCE MORGAN SURVEYORS PTY LTD

DATE: 8/3/18 REF: 204712

These plans are referred to in certificate no. **14403** approved by:

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

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A	ISSUE FOR CONSTRUCTION APPROVAL	JT	NM	RT	MS
	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.fwprince.com.au E fwpr@fwprince.com.au

AZIMUTH:
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DATUM:
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ORIGIN:



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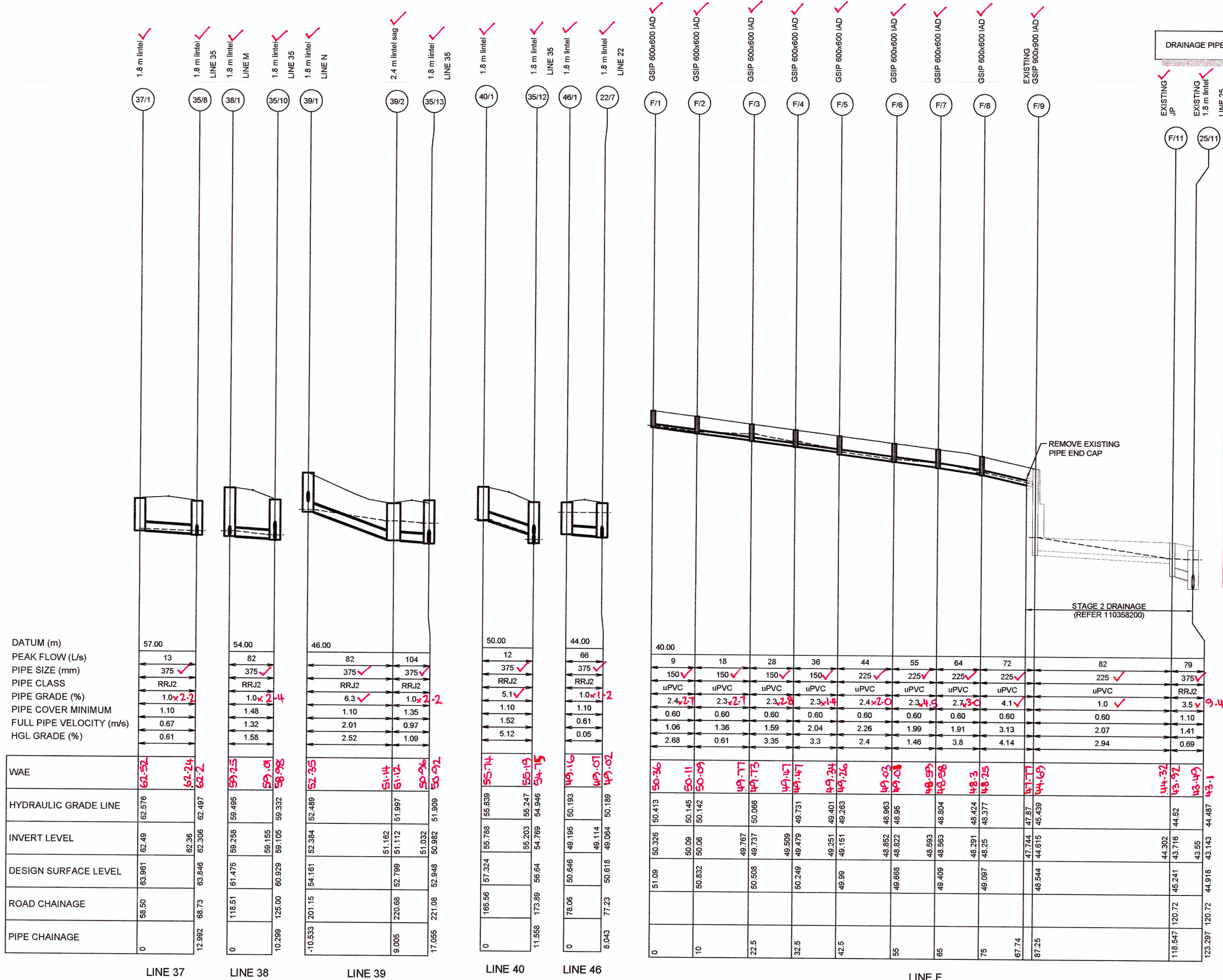
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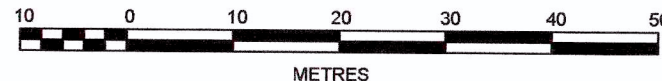
CADDENS HILL
STAGE 3
DRAINAGE LONG SECTION

PLAN No:	110358/CC321	A
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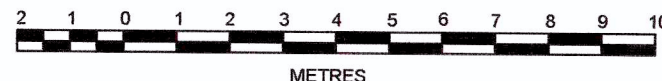
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1:1000 (AT A3)



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



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DATUM:
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ORIGIN:

CLIENT:



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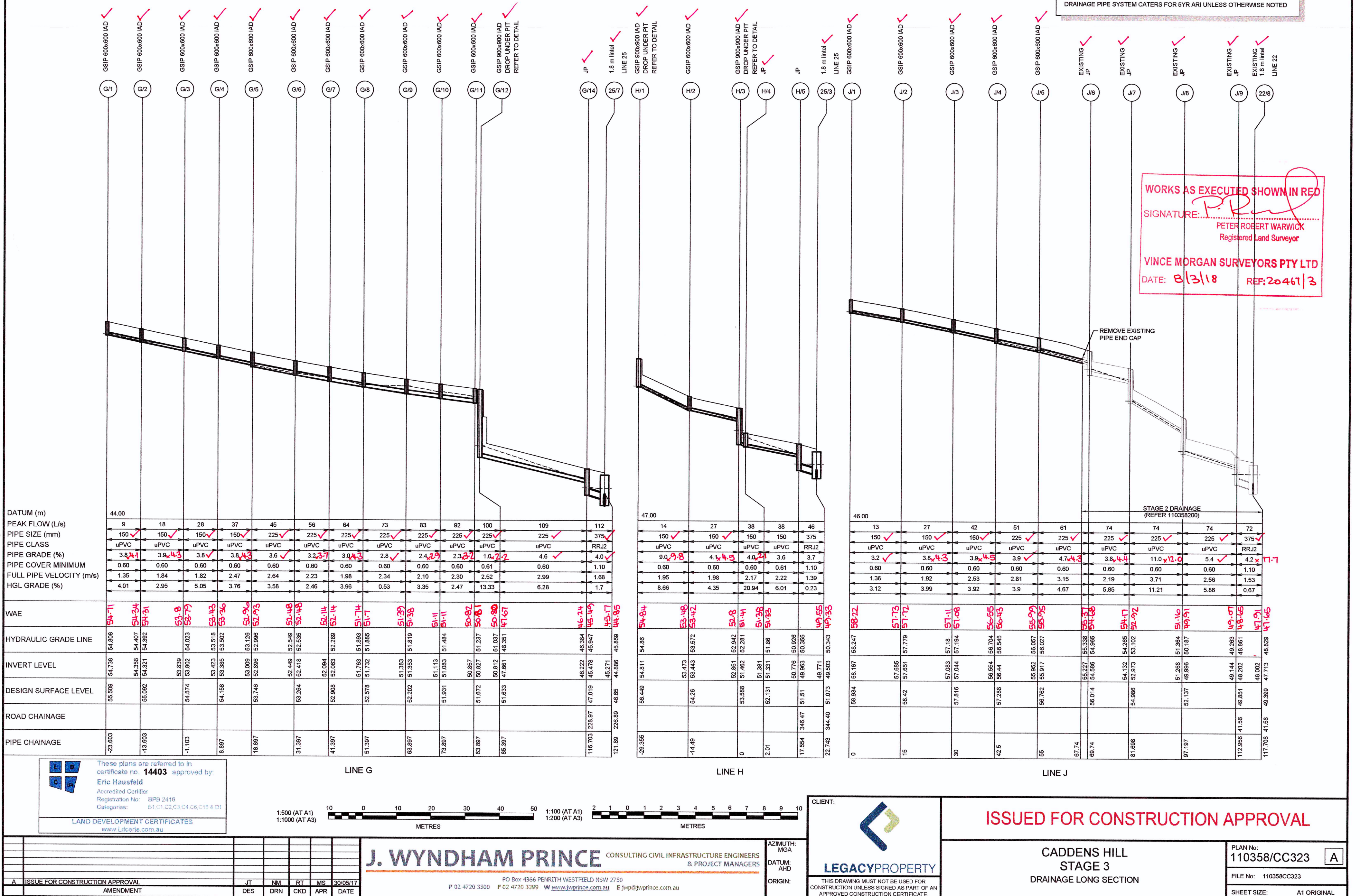
CADDENS HILL
STAGE 3
DRAINAGE LONG SECTION

PLAN No:
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FILE No: 110358CC322

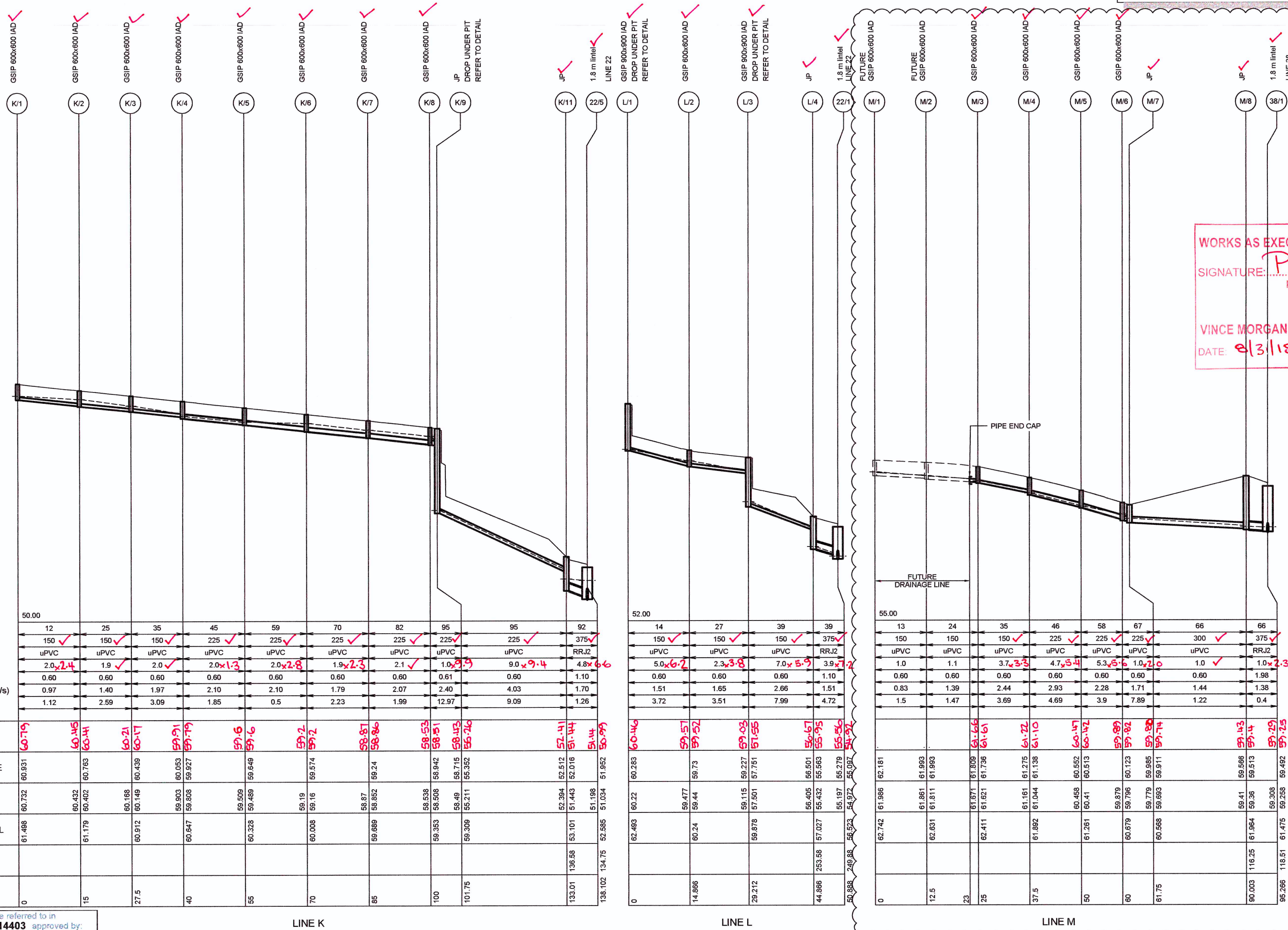
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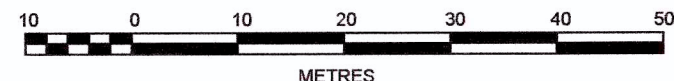
DRAINAGE PIPE SYSTEM CATERES FOR 5YR ARI UNLESS OTHERWISE NOTED



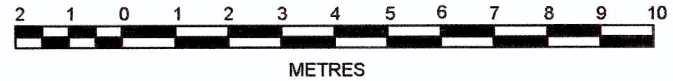
WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: *P.R.*
PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 2/3/18 REF: 20467/3

These plans are referred to in certificate no. 14403 approved by:
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)



CLIENT:



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CADDENS HILL
STAGE 3
DRAINAGE LONG SECTION

PLAN No: 110358/CC324
File No: 110358CC324
SHEET SIZE: A1 ORIGINAL

AMENDMENT	DES	DRN	CKD	APR	DATE
B	JT	JT	RT	MS	28/06/17
A	JT	NM	RT	MS	30/05/17

J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS
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AZIMUTH: MGA
DATUM: AHD
ORIGIN:

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DESIGN STORM 1:5yr ARI HYDROLOGIC RESULTS

PIT NAME	PIT TYPE	CATCHMENT AREA	PERCENT IMPERVIOUS	Tc IMP (min)	Tc PERV (min)	CRITICAL STORM	APPROACH FLOW (L/s)	CAPTURED FLOW (L/s)	UNCAPTURED FLOW (L/s)	GRATE DEPTH	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 (-)
18/1	1.8 m lintel	0.084	85	6	6	25	27	27	1	77	1	3	18/2	31	1.73	0.05	2.02	0.04	
18/2	1.8 m lintel	0.101	85	6	6	25	31	29	2	86	1	3	18/3	45	2.03	0.06	2.03	0.06	
18/3	1.8 m lintel	0.141	85	6	6	25	45	38	7	72	1	3	18/4	24	1.57	0.04	1.57	0.04	
18/4	1.8 m lintel	0.061	85	6	6	25	24	23	1	57	1	3	18/5	12	1.02	0.03	1.71	0.02	
18/5	1.8 m lintel	0.058	95	6	6	25	19	19	0	77	2	3	18/6	61	1.71	0.1	1.71	0.1	
18/6	2.4 m lintel	0.201	85	6	6	25	61	57	4	55	4.9	3	19/1	22	1	0.06	1	0.06	
18/7	1.8 m lintel	0.056	95	6	6	15	17	17	0	30	4.5	3.1	18/8	4	0.34	0.02	0.34	0.02	
18/8	1.8 m lintel	0.017	95	6	6	15	4	4	0	29	0.6	3	13/5	5	0.34	0.03	1.1	0.01	
20/1	1.8 m lintel		0	6	6	15	24	23	1	60	1	3	21/1	14	1.15	0.03	1.15	0.03	
21/1	1.8 m lintel	0.044	95	6	6	25	14	14	0	52	2	3	18/7	17	0.9	0.05	0.9	0.05	
22/1	1.8 m lintel	0.086	85	6	6	25	26	26	1	68	3.4	3	22/2	36	1.4	0.07	1.4	0.07	
22/2	1.8 m lintel	0.117	85	6	6	25	36	34	2	65	3.4	3	22/3	32	1.31	0.07	1.41	0.06	
22/3	1.8 m lintel	0.097	85	6	6	25	32	30	1	68	3.4	3	22/4	37	1.42	0.07	1.43	0.07	
22/4	1.8 m lintel	0.117	85	6	6	25	37	35	2	69	3.4	3	22/5	38	1.44	0.07	1.45	0.07	
22/5	1.8 m lintel	0.117	85	6	6	25	38	35	3	69	3.4	3	22/6	39	1.46	0.07	1.46	0.07	
22/6	1.8 m lintel	0.117	85	6	6	25	39	36	3	67	3.4	3	22/7	35	1.38	0.07	1.58	0.06	
22/7	1.8 m lintel	0.107	85	6	6	25	35	33	3	73	3.4	3	22/8	47	1.59	0.08	1.59	0.08	
22/8	1.8 m lintel	0.146	85	6	6	25	47	40	7	62	3.4	3	22/9	25	1.19	0.06	1.19	0.06	
23/1	1.8 m lintel		0	6	6	15	22	22	0	50	3.4	3	24/1	14	0.83	0.04	0.89	0.04	
24/1	1.8 m lintel	0.044	95	6	6	25	14	14	0	53	3.4	3	46/1	16	0.92	0.04	0.92	0.04	
25/1	1.8 m lintel	0.047	85	6	6	25	15	15	0	41	4.2	3	39/2	12	0.52	0.05	0.6	0.05	
25/2	1.8 m lintel	0.008	95	6	6	25	0	0	0	54	5	3	25/3	21	0.99	0.06	1.32	0.04	
25/3	1.8 m lintel	0.068	85	6	6	25	21	21	0	65	5	3	25/4	39	1.32	0.08	1.39	0.08	
25/4	1.8 m lintel	0.127	85	6	6	25	39	36	3	67	5	3	25/5	42	1.39	0.08	1.55	0.07	
25/5	1.8 m lintel	0.127	85	6	6	25	42	38	4	72	4	3	25/6	42	1.58	0.07	1.58	0.07	
25/6	1.8 m lintel	0.127	85	6	6	25	42	38	4	69	2.1	3	25/7	27	1.45	0.05	1.72	0.04	
25/7	1.8 m lintel	0.078	85	6	6	25	27	26	1	77	1.6	3	25/8	39	1.72	0.06	1.79	0.06	
25/8	1.8 m lintel	0.127	85	6	6	25	39	35	5	79	1.6	3	25/9	43	1.79	0.06	1.79	0.06	
25/9	1.8 m lintel	0.127	85	6	6	25	43	37	6	73	1.6	3	25/10	32	1.59	0.05	1.59	0.05	
25/10	1.8 m lintel	0.088	85	6	6	25	32	31	1	69	1.6	3	25/11	27	1.47	0.05	1.47	0.05	
25/11	1.8 m lintel	0.086	85	6	6	25	27	26	1	59	1.6	3	13/9	21	1.11	0.05	1.11	0.05	
26/1	1.8 m lintel		0	6	6	15	15	15	0	55	4.9	3	27/1	22	1	0.06	1	0.06	
27/1	1.8 m lintel	0.071	95	6	6	15	22	22	0	50	4.3	3	28/1	12	0.83	0.04	1.09	0.03	
28/1	1.8 m lintel	0.042	95	6	6	25	12	12	0	58	1.6	3	29/1	15	1.09	0.04	1.09	0.04	
29/1	1.8 m lintel	0.05	95	6	6	15	15	15	0	55	1.6	3	25/12	13	1	0.03	1	0.03	
33/4	1.8 m lintel	0.014	95	6	6	10	4	4	0	23	9.1	3.2	33/5	3	0.26	0.02	0.4	0.01	
33/5	1.8 m lintel	0.009	95	6	6	15	3	3	0	34	9.1	3.3	18/5	7	0.4	0.03	1.71	0.01	
35/7	1.8 m lintel	0.019	95	6	6	25	6	6	0	81	1.1	3	35/8	36	1.84	0.05	1.84	0.05	
35/8	1.8 m lintel	0.121	85	6	6	25	36	34	2	67	1.3	3	18/1	27	1.39	0.05	1.73	0.04	
35/9	1.8 m lintel		0	6	6	15	3	3	0	32	5.3	3	35/10	7	0.38	0.03	0.38	0.03	
35/10	1.8 m lintel	0.021	95	6	6	15	7	7	0	28	8.6	3	35/11	5	0.32	0.03	1.03	0.01	
35/11	1.8 m lintel	0.016	95	6	6	25	5	5	0	57	8.9	3	22/1	26	1.03	0.07	1.39	0.05	
35/12	1.8 m lintel		0	6	6	25	3	3	0	41	8.9	3	35/13	13	0.51	0.05	0.51	0.05	
35/13	1.8 m lintel	0.047	95	6	6	15	13	13	0	13	0.9	3	25/2	2					
37/1	1.8 m lintel		0	6	6	15	13	13	0	50	1	3	38/1	15	0.81	0.05	0.81	0.05	
38/1	1.8 m lintel	0.048	95	6	6	15	15	15	0	39	7.9	3	40/1	12	0.47	0.05	0.47	0.05	
39/1	1.8 m lintel	0.028	95	6	6	25	9	9	0	48	8.9	3	39/2	17	0.73	0.06	0.73	0.06	
39/2	2.4 m lintel sag	0.096	85	6	6	10	32	34	0	44	3.4	3	35/13	0	5.32		5.32		
40/1	1.8 m lintel	0.038	95	6	6	15	12	12	0	34	8.9	3	39/1	9	0.41	0.04	0.73	0.03	
46/1	1.8 m lintel	0.052	95	6	6	15	16	16	0	40	3.4	3	42/1	8	0.5	0.03	0.5	0.03	
BP13/1	BYPASS NODE	0.047	85	6	6	25	15	0	0	48	4.9	3	26/1	15	0.75	0.05	0.97	0.04	
BP13/2	BYPASS NODE						0	0	0	0									
BP14/1	BYPASS NODE	0.043	85	6	6	15	13	0	0	60	1	3	37/1	13	1.15	0.03	1.15	0.03	
BP14/2	BYPASS NODE						0	0	0	0									
BP15/1	BYPASS NODE	0.071	85	6	6	25	22	0	0	58	3.4	3	23/1	22	1.08	0.05	1.08	0.05	
BP15/2	BYPASS NODE						0	0	0	0									
BP16/1	BYPASS NODE	0.076	85	6	6	25	24	0	0	72	1	3	20/1	24	1.55	0.04	1.55	0.04	
BP16/2	BYPASS NODE						0	0	0	0									
BP17/1	BYPASS NODE	0.009	85	6	6	15	3	0	0	25	2.7	1.9	35/9	3	0.29	0.02	0.38	0.01	
BP17/2	BYPASS NODE						0	0	0	0									
BP18/1	BYPASS NODE	0.008	85	6	6	25	3	0	0	22	8.1	-0.2	35/12	3	0.26	0.02	0.51	0.01	
BP18/2	BYPASS NODE						0	0	0	0									
F/1	GSIP 600x600 IAD	0.029	75	6	6	25	9	9	0	0									
F/2	GSIP 600x600 IAD	0.029	75	6	6	25	9	9	0	0									
F/3	GSIP 600x600 IAD	0.036	75	6	6	25	11	11	0	0									
F/4	GSIP 600x600 IAD	0.029	75	6	6	25	9	9	0	0									
F/5	GSIP 600x600 IAD	0.029	75	6	6	25	9	9	0	0									
F/6	GSIP 600x600 IAD	0.036	75	6	6	25	11	11	0	0									
F/7	GSIP 600x600 IAD	0.029	75	6	6	25	9	9	0	0									
F/8	GSIP 600x600 IAD	0.029	75	6	6	25	9	9	0	0									
F/9	GSIP 900x900 IAD	0.036	75	6	6	25	11	11	0	0									
G/1	GSIP 600x600 IAD	0.029	75	6	6	25	9	9	0	0									
G/2	GSIP 600x600 IAD	0.029	75	6	6	25	9	9	0	0									
G/3	GSIP 600x600 IAD	0.036	75	6	6	25	11	11	0	0									
G/4	GSIP 600x600 IAD	0.029	75	6	6	25	9	9	0	0									
G/5	GSIP 600x600 IAD	0.029	75	6	6	25	9	9	0	0									
G/6	GSIP 600x600 IAD	0.036	75	6	6	25	11	11	0	0									
G/7	GSIP 600x600 IAD	0.029	75	6	6	25	9	9	0	0									
G/8	GSIP 600x600 IAD	0.029	75	6	6	25	9	9	0	0									
G/9	GSIP 600x600 IAD	0.036	75	6	6	25	11	11	0	0									
G/10	GSIP 600x600 IAD	0.029	75	6	6	25	9	9	0	0									
G/11	GSIP 600x600 IAD	0.029	75	6	6	25	9	9	0	0									
G/12	GSIP 900x900 IAD	0.036	75	6	6	25	11	11	0	0									
G/14	JP		0	6	6		0	0	0	0									
H/1	GSIP 900x900 IAD	0.045	75	6	6	25	14	14	0	0									
H/2	GSIP 600x600 IAD	0.045	75	6	6	25	14												

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 2m IN GUTTERS HAVE GENERALLY BEEN ADOPTED HOWEVER EXTENDED TO 2.2m IN SOME LOCATIONS TO REDUCE THE NUMBER OF PITS REQUIRED DUE TO FLAT ROAD GRADES.

WORKS AS EXECUTED SHOWN IN RED

SIGNATURE: P.R.

PETER ROBERT WARWICK
Registered Land Surveyor

VINCE MORGAN SURVEYORS PTY LTD

DATE 8/3/18 REF: 24673



These plans are referred to in certificate no. **14403** 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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Plotted: 28 June , 2017 10:15:16 AM File Name: J:\110358 - OConnell Lane, Caddens\03 - Stage 2\CD\CC\STAGE 3\110358CC326.dwg

A	ISSUE FOR CONSTRUCTION APPROVAL	JT	NM	RT	MS
	AMENDMENT	DES	DRN	CKD	APR
					30/05/17
					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:



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CADDENS HILL STAGE 3 DRAINAGE CALCULATIONS

PLAN No:	
110358/CC326	A
FILE No: 110358CC326	
SHEET SIZE:	A1 ORIGINAL

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)	(-)
J/5	GSIP 600x600 IAD	0.036	75	6	6	25	11	11	0	0									
J/6	JP	0.046	75	6	6	25	14	14	0	0									
K/1	GSIP 600x600 IAD	0.044	75	6	6	25	13	13	0	0									
K/2	GSIP 600x600 IAD	0.043	75	6	6	25	13	13	0	0									
K/3	GSIP 600x600 IAD	0.036	75	6	6	25	11	11	0	0									
K/4	GSIP 600x600 IAD	0.036	75	6	6	25	11	11	0	0									
K/5	GSIP 600x600 IAD	0.043	75	6	6	25	13	13	0	0									
K/6	GSIP 600x600 IAD	0.044	75	6	6	25	13	13	0	0									
K/7	GSIP 600x600 IAD	0.043	75	6	6	25	13	13	0	0									
K/8	GSIP 600x600 IAD	0.043	75	6	6	25	13	13	0	0									
K/9	JP		0	6	6		0	0	0	0									
K/11	JP		0	6	6		0	0	0	0									
L/1	GSIP 900x900 IAD	0.045	75	6	6	25	14	14	0	0									
L/2	GSIP 600x600 IAD	0.045	75	6	6	25	14	14	0	0									
L/3	GSIP 900x900 IAD	0.045	75	6	6	25	14	14	0	0									
L/4	JP		0	6	6		0	0	0	0									
M/2	GSIP 600x600 IAD	0.038	75	6	6	15	11	11	0	0									
M/3	GSIP 600x600 IAD	0.038	75	6	6	15	11	11	0	0									
M/4	GSIP 600x600 IAD	0.038	75	6	6	15	11	11	0	0									
M/5	GSIP 600x600 IAD	0.038	75	6	6	15	11	11	0	0									
M/6	GSIP 600x600 IAD	0.03	75	6	6	25	9	9	0	0									
M/7	JP		0	6	6		0	0	0	0									
M/8	JP		0	6	6		0	0	0	0									
N/1	GSIP 600x600 IAD	0.038	75	6	6	15	11	11	0	0									
N/2	GSIP 600x600 IAD	0.038	75	6	6	15	11	11	0	0									
N/3	GSIP 600x600 IAD	0.03	75	6	6	25	9	9	0	0									
N/4	GSIP 600x600 IAD	0.038	75	6	6	15	11	11	0	0									
N/5	GSIP 600x600 IAD	0.038	75	6	6	15	11	11	0	0									
N/6	GSIP 900x900 IAD	0.03	75	6	6	25	9	9	0	0									
N/7	GSIP 900x900 IAD	0.038	75	6	6	15	11	11	0	0									
N/8	GSIP 900x900 IAD		0	6	6		0	0	0	0									
N/9	JP		0	6	6		0	0	0	0									
P/2	GSIP 600x600 IAD	0.045	75	6	6	25	14	14	0	0									
P/3	JP		0	6	6		0	0	0	0									
R/5	GSIP 600x600 IAD	0.037	75	6	6	15	11	11	0	0									
R/6	JP		0	6	6		0	0	0	0									
S/5	GSIP 600x600 IAD	0.038	75	6	6	15	11	11	0	0									
S/6	JP		0	6	6		0	0	0	0									

HYDROLOGY NOTES:

1. STORMWATER SYSTEM DESIGNED USING 12D DYNAMIC (LSAX) 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 2m IN GUTTERS HAVE GENERALLY BEEN ADOPTED HOWEVER EXTENDED TO 2.2m IN SOME LOCATIONS TO REDUCE THE NUMBER OF PITS REQUIRED DUE TO FLAT ROAD GRADES.

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 (-)
18/1	1.8 m Intel	0.084	85	6	6	15	63	42	21	99	1	3	18/2	71	2.45	0.07	2.81	0.06	
18/2	1.8 m Intel	0.101	85	6	6	15	71	43	28	110	1	3	18/3	100	2.81	0.09	3.9	0.09	
18/3	1.8 m Intel	0.141	85	6	6	15	100	48	207	142	1	3	18/4	230	3.9	0.14	3.9	0.14	
18/4	1.8 m Intel	0.081	85	6	6	15	230	59	59	135	1	3	18/5	218	3.66	0.14	3.66	0.14	
18/5	1.8 m Intel	0.058	95	6	6	15	229	80	107	118	2	3	18/6	254	3.08	0.2	3.2	0.2	
18/6	2.4 m Intel	0.201	85	6	6	15	254	104	89	121	4.9	3	19/1	297	3.2	0.23	5.46	0.12	
18/7	1.8 m Intel	0.056	95	6	6	15	94	58	36	69	4.5	3.1	18/8	41	1.45	0.08	2.34	0.07	
18/8	1.8 m Intel	0.017	95	6	6	5	309	135	160	96	0.6	3	13/5	177	2.34	0.19	2.34	0.19	
20/1	1.8 m Intel		0	6	6	15	40	28	12	79	1	3	21/1	35	1.79	0.05	2.06	0.05	
21/1	1.8 m Intel	0.044	95	6	6	15	35	23	74	87	2	3	18/7	94	2.07	0.12	2.07	0.12	
22/1	1.8 m Intel	0.086	85	6	6	15	46	34	13	83	3.4	3	22/2	72	1.91	0.1	1.94	0.1	
22/2	1.8 m Intel	0.117	85	6	6	15	72	47	25	84	3.4	3	22/3	75	1.94	0.1	2.06	0.09	
22/3	1.8 m Intel	0.097	85	6	6	15	75	49	26	87	3.4	3	22/4	86	2.06	0.11	2.12	0.11	
22/4	1.8 m Intel	0.117	85	6	6	15	86	54	32	89	3.4	3	22/5	92	2.13	0.11	3.09	0.11	
22/5	1.8 m Intel	0.117	85	6	6	15	92	47	176	118	3.4	3	22/6	233	3.09	0.19	3.42	0.17	
22/6	1.8 m Intel	0.117	85	6	6	15	233	58	38	127	3.4	3	22/7	301	3.42	0.21	3.48	0.21	
22/7	1.8 m Intel	0.107	85	6	6	15	301	61	249	129	3.4	3	22/8	316	3.48	0.22	3.92	0.2	
22/8	1.8 m Intel	0.146	85	6	6	15	316	76	93	142	3.4	3	22/9	405	3.92	0.25	6.04	0.14	
23/1	1.8 m Intel		0	6	6	15	37	27	10	65	3.4	3	24/1	32	1.32	0.07	1.36	0.06	
24/1	1.8 m Intel	0.044	95	6	6	15	32	25	8	66	3.4	3	46/1	34	1.36	0.07	2.04	0.07	
25/1	1.8 m Intel	0.047	85	6	6	15	24	19	5	55	4.2	3	39/2	26	1	0.07	6.37	0.04	
25/2	1.8 m Intel	0.008	95	6	6	15	158	59	37	106	5	3	25/3	203	2.71	0.19	3.01	0.17	
25/3	1.8 m Intel	0.068	85	6	6	15	203	30	11	115	5	3	25/4	265	3.01	0.22	3.36	0.19	
25/4	1.8 m Intel	0.127	85	6	6	15	265	45	28	126	5	3	25/5	336	3.37	0.24	3.65	0.23	
25/5	1.8 m Intel	0.127	85	6	6	15	336	94	141	134	4	3	25/6	330	3.65	0.22	3.96	0.21	
25/6	1.8 m Intel	0.127	85	6	6	15	330	97	119	143	2.1	3	25/7	311	3.96	0.19	4.11	0.18	
25/7	1.8 m Intel	0.078	85	6	6	15	311	53	32	148	1.6	3	25/8	335	4.11	0.19	4.23	0.19	
25/8	1.8 m Intel	0.127	85	6	6	15	335	52	43	152	1.6	3	25/9	363	4.23	0.2	4.46	0.19	
25/9	1.8 m Intel	0.127	85	6	6	15	363	52	263	161	1.6	3	25/10	440	4.46	0.23	4.46	0.23	
25/10	1.8 m Intel	0.088	85	6	6	15	440	74	61	161	1.6	3	25/11	437	4.45	0.23	4.45	0.23	
25/11	1.8 m Intel	0.086	85	6	6	15	437	140	298	134	1.6	3	13/9	319	3.64	0.21	8	0.11	
26/1	1.8 m Intel		0	6	6	15	25	19	5	67	4.9	3	27/1	42	1.38	0.08	1.4	0.08	
27/1	1.8 m Intel	0.071	95	6	6	15	42	30	11	68	4.3	3	28/1	32	1.41	0.06	1.59	0.05	
28/1	1.8 m Intel	0.042	95	6	6	15	32	24	9	73	1.6	3	29/1	33	1.59	0.06	1.83	0.06	
29/1	1.8 m Intel	0.05	95	6	6	15	33	24	9	81	1.6	3	25/12	45	1.83	0.07	1.83	0.07	
33/4	1.8 m Intel	0.014	95	6	6	15	16	13	3	33	9.1	3.2	33/5	8	0.39	0.04	0.61	0.03	
33/5	1.8 m Intel	0.009	95	6	6	15	8	6	2	44	9.1	3.3	18/5	13	0.61	0.05	3.08	0.01	
35/7	1.8 m Intel	0.019	95	6	6	15	12	10	2	95	1.1	3	35/8	63	2.33	0.07	2.33	0.07	
35/8	1.8 m Intel	0.121	85	6	6	15	63	42	21	86	1.3	3	18/1	63	2.02	0.08	2.45	0.07	
35/9	1.8 m Intel		0	6	6	15	4	1	41	5.3	3	35/10	12	0.51	0.05	0.51	0.05		
35/10	1.8 m Intel	0.021	95	6	6	5	12	10	2	37	8.6	3	35/11	11	0.45	0.05	1.38	0.02	
35/11	1.8 m Intel	0.016	95	6	6	15	11	8	2	67	8.9	3	22/1	46	1.39	0.09	1.91	0.06	
35/12	1.8 m Intel		0	6	6	15	4	4	1	51	8.9	3	35/13	22	0.85	0.07	2.12	0.07	
35/13	1.8 m Intel	0.047	95	6	6	5	77	47	30	89	0.9	3	25/2	42	2.17	0.16	2.17	0.16	
37/1	1.8 m Intel		0	6	6	15	22	18	5	62	1	3	38/1	29	1.2	0.07	1.2	0.07	
38/1	1.8 m Intel	0.048	95	6	6	15	29	23	6	52	7.9	3	40/1	25	0.91	0.07	0.91	0.07	
39/1	1.8 m Intel	0.028	95	6	6	15	20	16	4	59	8.9	3	39/2	32	1.1	0.08	6.37	0.04	
39/2	2.4 m Intel sag	0.096	85	6	6	5	66	160	0	237	3.4	3	35/13	57	8.07	0.02	7.93	0.02	
40/1	1.8 m Intel	0.038	95	6	6	15	25	20	5	48	8.9	3	39/1	20	0.73	0.07	1.1	0.05	
49/1	1.8 m Intel	0.052	95	6	6	15	34	23	77	87	3.4	3	42/1	85	2.05	0.11	2.05	0.11	

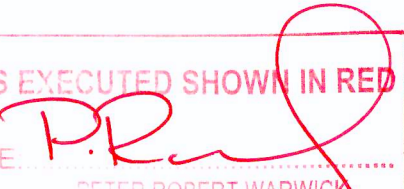
DESIGN STORM 1:5yr ARI HYDRAULIC RESULTS

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.Vhead)	WSE LOSS (Kw.Vhead)	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)	
18/1 to 18/2	375	RRJ2	25.03	1	25	86	0.45	1.35	61.452	61.202	0.03	1.9	2.03	0.17	0.19	61.717	61.63	0.35	1.1	1.257	
18/2 to 18/3	375	RRJ2	42.53	1	25	110	0.58	1.11	61.172	60.746	0.03	7	7	0.1	0.1	61.63	61.455	0.41	1.13	1.093	
18/3 to 18/4	375	RRJ2	20.23	1	25	206	1.08	1.87	60.716	60.514	0.03	1.29	1.29	0.15	0.15	61.455	61.076	1.87	1.16	0.844	
18/4 to 18/5	375	RRJ2	28.26	1	25	226	1.19	2.09	60.484	60.202	0.03	0.85	0.65	0.13	0.13	61.076	60.569	1.79	1.15	1.02	
18/5 to 18/6	375	RRJ2	62.02	3.88	25	356	0.95	3.43	60.172	57.768	0.152	0.58	0.58	0.3	0.3	60.569	58.386	3.52	1.1	1.17	
18/6 to 18/7	450	RRJ2	10.5	2.39	25	424	0.89	2.71	57.616	57.365	0.16	9.29	9.29	0.36	0.36	58.386	57.849	5.11	1.1	0.817	
18/7 to 18/8	450	RRJ2	20.6	3.53	25	437	0.75	2.86	57.206	56.479	0.05	1.57	1.7	0.55	0.59	57.849	56.94	4.41	1.1	1.023	
18/8 to 13/5	450	RRJ2	14.21	6.68	25	473	0.59	3.68	56.429	55.48	0.417	0.57	0.57	0.39	0.39	56.94	55.729	8.53	1.1	1.148	
20/1 to 18/3	375	RRJ2	11.11	1	25	30	0.16	0.67	60.91	60.799	0.082	4.5	4.5	0.1	0.1	61.461	61.455	0.05	1.1	0.915	
21/1 to 18/5	375	RRJ2	8.04	1	25	18	0.09	0.44	60.306	60.225	0.054	4.5	4.5	0.05	0.05	60.572	60.569	0.04	1.1	1.183	
22/1 to 22/2	375	RRJ2	30.13	3.14	25	64	0.19	2.15	54.972	54.024	0.083	2.11	2.23	0.49	0.52	55.097	54.135	3.19	1.1	1.426	
22/2 to 22/3	375	RRJ2	25	3.09	25	97	0.29	2.32	53.941	53.169	0.083	1.65	1.65	0.44	0.44	54.107	53.308	3.2	1.1	1.386	
22/3 to 22/4	375	RRJ2	29.99	3.14	25	148	0.44	2.66	53.086	52.143	0.083	1.2	1.2	0.42	0.42	53.29	52.318	3.24	1.1	1.348	
22/4 to 22/5	375	RRJ2	30.01	3.14	15	184	0.55	2.72	52.06	51.117	0.083	7	7	0.42	0.42	52.29	51.946	1.15	1.1	1.322	
22/5 to 22/6	375	RRJ2	29.98	3.14	120	299	0.89	2.89	51.034	50.091	0.083	6.97	6.97	0.39	0.39	51.946	51.08	2.89	1.1	0.639	
22/6 to 22/7	375	RRJ2	27.53	3.12	120	332	0.99	3.08	50.008	49.15	0.085	7	7	0.4	0.4	51.08	50.178	3.28	1.1	0.48	
22/7 to 22/8	375	RRJ2	35.65	3.18	25	348	1.03	3.15	49.064	47.931	0.217	7	7	0.42	0.42	50.178	48.822	3.8	1.1	0.44	
22/8 to 22/9	450	RRJ2	28.46	2.87	25	439	0.84	2.76	47.713	46.898	0.05	7	7	0.34	0.34	48.822	48.061	2.67	1.1	0.577	
23/1 to 22/3	375	RRJ2	8.66	1	25	21	0.11	0.78	53.285	53.199	0.113	4.5	4.5	0.14	0.14	53.422	53.29	1.52	1.1	1.329	
24/1 to 22/5	375	RRJ2	11.53	1.94	25	42	0.16	0.83	51.381	51.157	0.123	4.5	4.5	0.16	0.16	51.951	51.946	0.04	1.1	0.919	
25/1 to 25/2	375	RRJ2	28.21	4.15	25	15	0.04	1.51	52.165	50.994	0.207	4.5	4.5	0.52	0.52	52.214	51.645	2.02	1.1	1.629	
25/2 to 25/3	375	RRJ2	27.21	4.28	15	380	0.97	3.5	50.787	49.624	0.121	0.56	0.56	0.35	0.35	51.645	50.454	4.38	1.1	0.789	
25/3 to 25/4	375	RRJ2	32.5	4.63	10	398	0.97	3.91	49.503	47.999	0.17	7	7	0.37	0.37	50.454	48.846	4.95	1.1	0.619	
25/4 to 25/5	375	RRJ2	32.5	4.3	25	421	1.07	3.82	47.829	46.432	0.19	7	7	0.58	0.58	48.846	46.999	5.68	1.1	0.602	
25/5 to 25/6	450	RRJ2	32.5	2.71	20	507	1	3.24	46.242	45.36	0.066	7	7	0.37	0.37	46.999	46.099	2.77	1.1	0.944	
25/6 to 25/7	525	RRJ2	20	1.48	25	546	0.96	2.93	45.294	44.997	0.111	7	7	0.2	0.2	46.099	45.881	1.09	1.1	0.893	
25/7 to 25/8	600	RRJ2	33.02	1.51	20	669	0.82	2.79	44.886	44.387	0.04	0.48	0.48	0.17	0.17	45.881	45.518	1.1	1.1	0.769	
25/8 to 25/9	600	RRJ2	31.95	1.51	15	640	0.78	2.73	44.347	43.866	0.04	7	7	0.21	0.21	45.518	45.135	1.2	1.1	0.593	
25/9 to 25/10	600	RRJ2	22.53	1.46	25	681	0.85	2.59	43.826	43.498	0.04	7	7	0.19	0.19	45.135	44.8	1.49	1.1	0.455	
25/10 to 25/11	600	RRJ2	18.67	1.42	25	702	0.89	2.48	43.459	43.193	0.05	7	7	0.16	0.16	44.8	44.496	1.63	1.1	0.423	
25/11 to 25/12	600	RRJ2	9.73	1	25	783	1.18	2.77	43.143	43.046	0.05	1.01	1.05	0.34	0.36	44.496	44.018	4.91	1.18	0.421	
26/1 to 25/2	375	RRJ2	9.67	2.1	25	28	0.1	0.96	51.218	51.014	0.227	4.5	4.5	0.21	0.21	51.648	51.645	0.03	1.1	1.058	
27/1 to 25/5	375	RRJ2	9.99	1.82	20	33	0.13	0.97	46.698	46.516	0.275	4.5	4.5	0.22	0.22	47.005	46.999	0.06	1.1	1.178	
28/1 to 25/7	375	RRJ2	9.38	1	25	-39	-0.2	0.76	45.267	45.173	0.287	4.5	4.5	0.13	0.13	45.885	45.881	0.04	1.1	0.845	
29/1 to 25/9	375	RRJ2	9.44	1	20	-70	-0.37	0.82	44.208	44.114	0.288	4.5	4.5	0.15	0.15	45.138	45.135	0.03	1.1	0.533	
33/4 to 33/5	375	RRJ2	11.41	7.19	25	113	0.22	3.25	62.061	61.241	0.115	0.67	0.67	0.36	0.36	62.206	61.361	7.4	1.1	1.465	
33/5 to 18/5	375	RRJ2	13.99	5.69	25	124	0.27	3.26	61.126	60.33	0.159	0.67	0.67	0.35	0.35	61.275	60.569	5.05	1.1	1.354	
35/7 to 35/8	375	RRJ2	52.54	1	25	101	0.53	1.67	62.862	62.336	0.03	0.76	0.76	0.11	0.11	63.071	62.531	1.03	1.1	1.313	
35/8 to 35/9	375	RRJ2	29.24	3.09	25	147	0.44	2.62	62.306	61.402	0.129	5.9	5.9	0.44	0.44	62.512	61.576	3.2	1.1	1.334	
35/9 to 35/10	375	RRJ2	27.03	6.48	25	149	0.31	3.79	61.273	59.523	0.418	7	7	0.21	0.21	61.42	59.666	6.49	1.1	1.428	
35/10 to 35/11	375	RRJ2	20.93	6.87	25	235	0.47	3.64	59.105	57.667	0.267	1.31	1.39	0.85	0.91	59.349	57.848	7.17	1.1	1.581	
35/11 to 35/12	375	RRJ2	27.96	7.91	25	240	0.45	4.57	57.4	55.188	0.419	0.31	0.31	0.32	0.32	57.585	55.364	7.94	1.1	1.484	
35/12 to 35/13	375	RRJ2	47.19	7.59	25	253	0.48	3.96	54.769	51.19	0.208	1.57	1.7	1.25	1.36	54.953	52.083	6.08	1.1	1.687	
35/13 to 25/2	375	RRJ2	14.42	1	25	353	1.86	3.2	50.982	50.837	0.05	9.7	9.7	0.13	0.13	52.083	51.645	3.04	1.41	0.865	
37/1 to 35/8	375	RRJ2	12.99	1	25	13	0.07	0.65	62.49	62.36	0.054	4.5	4.5	0.1	0.1	62.576	62.512	0.49	1.1	1.385	
38/1 to 35/10	375	RRJ2	10.3	1	25	81	0.43	1.29	59.258	59.155	0.05	9.7	9.7	0.1	0.1	59.492	59.349	1.39	1.48	1.982	
39/1 to 39/2	375	RRJ2	19.54	6.25	25	82	0.17	2.01	52.384	51.162	0.05	2.16	2.66	0.44	0.55	52.489	52.16	1.68	1.1	1.672	
39/2 to 35/13	375	RRJ2	8.05	1	25	101	0.53	0.96	51.112	51.032	0.05	9.7	9.7	0.15	0.15	52.16	52.083	0.96	1.35	0.639	
40/1 to 35/12	375	RRJ2	11.56	5.06	15	12	0.03	1.53	55.788	55.203	0.434	4.5	4.5	0.55	0.55	55.839	55.247	5.12	1.1	1.485	
46/1 to 22/7	375	RRJ2	8.04	1	25	65	0.34	0.61	49.195	49.114	0.05	4.5	4.5	0.09	0.09	50.182	50.178	0.05	1.1	0.464	
BP13/1 to BP13/2	2	No Flow	5.09	8.94	10	0	0	0	52.672	52.216		0	0	0	0	52.672	52.216	8.96	0.6	0.482	
BP14/1 to BP14/2	2	No Flow	5.24	1	10	0	0	0	63.631	63.578		0	0	0	0	63.631	63.578	1.01	0.6	0.448	
BP15/1 to BP15/2	2	No Flow	5.14	1	10	0	0	0	54.622	54.57		0	0	0	0	54.622	54.57	1.01	0.6	0.447	
BP16/1 to BP16/2	2	No Flow	5.37	1	10	0	0	0	62.019	61.966		0	0	0	0	62.019	61.966	0.99	0.6	0.448	
BP17/1 to BP17/2	2	No Flow	4.87	1	10	0	0	0	62.719	62.671		0	0	0	0	62.719	62.671	0.98	0.6	0.448	
BP18/1 to BP18/2	2	No Flow	5.01	1	10	0	0	0	56.762	56.712		0	0	0	0	56.762	56.712	1	0.6	0.448	
F1 to F/2	150	uPVC	10	2.36	25	9	0.29	1.06	50.326	50.09	0.03	4.5	4.5	0.26	0.26	50.413	50.145	2.68	0.6	0.677	
F2 to F/3	150	uPVC	12.5	2.34	25	18	0.58	1.36	50.06	49.767	0.03	0	0	0	0	50.142	50.066	0.61	0.6	0.69	
F3 to F/4	150	uPVC	10	2.28	25	28	0.92	1.59	49.737	49.509	0.03	9.7	9.7	0.22	0.22	50.066	49.731	3.35	0.6	0.441	
F4 to F/5	150	uPVC	10	2.29	25	36	1.2	2.04	49.479	49.251	0.099	0	0	0	0	49.731	49.401	3.3	0.6	0.518	
F5 to F/6	225																				

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,Vhead)	WSE LOSS (Kw,Vhead)	U/S PIPE HGL	D/S PIPE HGL	HGL GRADE	MINIMUM COVER	MINIMUM FREEBOARD	COMMENTS
K/5 to K/6	225	uPVC	15	2	25	59	0.71	2.1	59.489	59.19	0.03	0	0	0	0	59.649	59.574	0.5	0.6	0.679	
K/6 to K/7	225	uPVC	15	1.93	25	70	0.87	1.79	59.16	58.87	0.018	9.7	9.7	0.2	0.2	59.574	59.24	2.23	0.6	0.434	
K/7 to K/8	225	uPVC	15	2.1	25	82	0.97	2.07	58.852	58.538	0.03	0	0	0	0	59.24	58.942	1.99	0.6	0.449	
K/8 to K/9	225	uPVC	1.75	1	25	95	1.63	2.4	58.508	58.49	5.784	0.79	0.79	0.18	0.18	58.942	58.715	12.97	0.61	0.412	
K/9 to K/11	225	uPVC	31.26	1	25	94	1.61	2.36	52.706	52.394	0.951	1.88	2.61	0.43	0.54	53.858	52.619	3.96	0.6	5.451	
K/11 to 22/5	375	RRJ2	5.09	4.8	25	91	0.22	1.7	51.443	51.198	0.165	2.09	3.24	0.31	0.48	52.015	51.946	1.36	1.1	1.086	
L/1 to L/2	150	uPVC	14.87	5	25	14	0.31	1.51	60.22	59.477	0.037	4.5	4.5	0.52	0.52	60.283	59.73	3.72	0.6	2.21	
L/2 to L/3	150	uPVC	14.35	2.26	25	27	0.91	1.65	59.44	59.115	1.614	2.52	2.52	0.23	0.23	59.73	59.227	3.51	0.6	0.51	
L/3 to L/4	150	uPVC	15.65	7	25	39	0.74	2.66	57.501	56.405	0.973	2.02	2.43	0.62	0.77	57.751	56.501	7.99	0.6	2.127	
L/4 to 22/1	375	RRJ2	6.02	3.9	25	39	0.1	1.51	55.432	55.197	0.226	2.09	3.24	0.24	0.38	55.563	55.279	4.72	1.1	1.464	
M/2 to M/3	150	uPVC	12.5	1.12	25	24	1.16	1.39	61.811	61.671	0.05	0	0	0	0	61.993	61.809	1.47	0.6	0.638	
M/3 to M/4	150	uPVC	12.5	3.68	25	35	0.93	2.44	61.621	61.161	0.117	0	0	0	0	61.736	61.275	3.69	0.6	0.676	
M/4 to M/5	225	uPVC	12.5	4.69	25	46	0.37	2.93	61.044	60.458	0.048	7	7	0.24	0.24	61.138	60.552	4.69	0.6	0.754	
M/5 to M/6	225	uPVC	10	5.31	25	58	0.43	2.28	60.41	59.879	0.082	0	0	0	0	60.513	60.123	3.9	0.6	0.748	
M/6 to M/7	225	uPVC	1.75	1	25	67	1.15	1.71	59.796	59.779	0.086	0.81	0.81	0.11	0.11	60.123	59.985	7.89	0.6	0.555	
M/7 to M/8	300	uPVC	28.25	1	25	66	0.53	1.44	59.693	59.41	0.05	2.09	2.76	0.22	0.29	59.911	59.566	1.22	0.6	0.656	
M/8 to 38/1	375	RRJ2	5.26	1	25	66	0.35	1.38	59.36	59.308	0.05	0	0	0	0	59.513	59.492	0.4	1.98	2.45	
N/1 to N/2	150	uPVC	12.5	6.35	25	11	0.23	1.9	59.069	58.275	0.087	4.5	4.5	0.83	0.83	59.132	58.324	6.46	0.6	0.724	
N/2 to N/3	150	uPVC	10	6.1	25	23	0.46	2.72	58.188	57.578	0.105	0	0	0	0	58.26	57.65	6.1	0.6	0.741	
N/3 to N/4	225	uPVC	12.5	6	25	32	0.22	2.87	57.474	56.724	0.085	7	7	0.23	0.23	57.547	56.797	6	0.6	0.788	
N/4 to N/5	225	uPVC	12.5	5.74	25	43	0.31	3.01	56.639	55.921	0.05	0	0	0	0	56.725	56.018	5.66	0.6	0.806	
N/5 to N/6	225	uPVC	10	5.45	25	54	0.4	2.46	55.871	55.327	0.142	1.15	1.15	0.35	0.35	56.018	55.425	5.93	0.61	0.744	
N/6 to N/7	225	uPVC	12.5	5.71	25	63	0.45	2.02	55.185	54.47	0.05	0	0	0	0	55.291	54.972	2.55	0.6	0.826	
N/7 to N/8	225	uPVC	1.5	1	25	73	1.26	1.85	54.42	54.405	0.05	0.89	0.89	0.11	0.11	54.972	54.841	8.73	0.67	0.366	
N/8 to N/9	225	uPVC	28.24	1.76	25	73	0.94	1.96	54.355	53.858	0.692	2.08	2.63	0.31	0.38	54.841	54.031	2.87	0.61	0.438	
N/9 to 39/1	375	RRJ2	5.44	5.21	25	73	0.17	1.75	53.166	52.882	0.498	2.09	3.24	0.32	0.5	53.364	52.986	6.95	1.1	1.359	
P/2 to P/3	150	uPVC	42.03	10.5	25	27	0.42	3.38	63.632	59.22	0.986	2.96	2.97	1.12	1.28	63.703	59.287	10.51	0.6	2.517	
P/3 to 18/6	375	RRJ2	7.09	4.44	20	31	0.08	1.53	58.234	57.919	0.303	2.09	3.24	0.25	0.39	58.398	58.386	0.17	1.1	1.437	
R/5 to R/6	150	uPVC	7.95	12.68	25	54	0.77	3.48	63.065	62.056	0.933	9.67	9.67	0.65	0.65	63.523	62.155	17.2	0.6	0.335	
R/6 to 18/3	375	RRJ2	5.62	2.65	25	54	0.17	1.31	61.123	60.974	0.258	2.09	3.24	0.18	0.28	61.484	61.455	0.52	1.1	1.217	
S/5 to S/6	225	uPVC	15.51	6.63	25	60	0.4	3.13	63.702	62.675	0.871	1.08	1.08	0.52	0.52	63.822	62.773	6.76	0.6	0.724	
S/6 to 18/1	375	RRJ2	5.92	2.64	25	60	0.19	1.39	61.803	61.647	0.195	2.09	3.24	0.21	0.32	62.001	61.759	4.09	1.1	1.381	

WORKS AS EXECUTED SHOWN IN RED

SIGNATURE:  PETER ROBERT WARWICKS
Registered Land Surveyor

VINCE MORGAN SURVEYORS PTY LTD

DATE 8/3/18 REF 2046713

DESIGN STORM 1:100yr ARI HYDRAULIC RESULTS

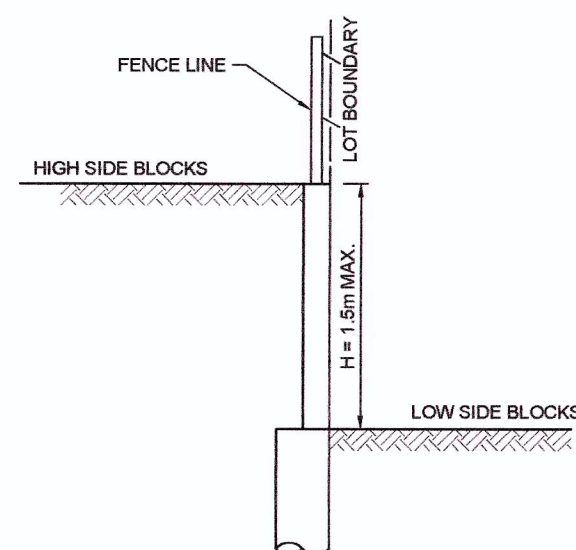
PIPE NAME	PIPE DIAMETER	PIPE TYPE	PIPE LENGTH	PIPE GRADE	CRITICAL STORM	PEAK FLOW	CAPACITY RATIO	PEAK VELOCITY	PIPE U/S IL	PIPE D/S IL	PIPE D/S DROP	U/S PIT Ku	D/S PIT Kw	PIT LOSS (Ku Vhead)	WSE LOSS (Kw Vhead)	U/S PIPE HGL	D/S PIPE HGL	HGL GRADE	MINIMUM COVER	MINIMUM FREEBOARD	COMMENTS
(-)	(mm)	(-)	(m)	(%)	(min)	(L/s)	(-)	(m/s)	(m)	(m)	(m)	(-)	(-)	(m)	(m)	(m)	(m)	(%)	(m)	(m)	
18/1 to 18/2	375	RRJ2	25.03	1	25	129	0.68	1.4	61.452	61.202	0.03	1.93	2.06	0.19	0.21	63.057	62.833	0.89	1.1	0.001	
18/2 to 18/3	375	RRJ2	42.53	1	15	161	0.85	1.46	61.172	60.746	0.03	7	7	0.1	0.1	62.833	62.44	0.92	1.13	-0.11	
18/3 to 18/4	375	RRJ2	20.23	1	5	221	1.16	2	60.716	60.514	0.03	1.13	1.13	0.16	0.16	62.44	62.231	1.03	1.16	-0.142	
18/4 to 18/5	375	RRJ2	28.26	1	5	260	1.37	2.36	60.484	60.202	0.03	0.93	0.93	0.17	0.17	62.231	61.857	1.32	1.15	-0.135	
18/5 to 18/6	375	RRJ2	62.02	3.88	45	384	1.03	3.48	60.172	57.768	0.152	0.95	0.95	0.48	0.48	61.857	59.324	4.08	1.1	-0.118	
18/6 to 18/7	450	RRJ2	10.5	2.39	45	480	1.01	3.02	57.616	57.365	0.16	1.13	1.13	0.49	0.49	59.324	58.904	4	1.1	-0.121	
18/7 to 18/8	450	RRJ2	20.6	3.53	120	528	0.91	3.32	57.206	56.479	0.05	1.58	1.71	0.69	0.71	58.904	58.184	3.5	1.1	0.005	
18/8 to 13/5	450	RRJ2	14.21	6.68	60	753	0.94	4.75	56.429	55.48	0.417	1.1	1.1	0.78	0.78	58.184	56.881	9.17	1.1	-0.096	
20/1 to 18/3	375	RRJ2	11.11	1	5	46	0.24	0.68	60.91	60.799	0.082	4.5	4.5	0.11	0.11	62.455	62.44	0.13	1.1	-0.079	
21/1 to 18/5	375	RRJ2	8.04	1	10	54	0.28	0.49	60.306	60.225	0.054	4.5	4.5	0.05	0.05	61.843	61.857	-0.17	1.1	-0.087	
22/1 to 22/2	375	RRJ2	30.13	3.14	15	94	0.28	2.33	54.972	54.024	0.083	2.06	2.18	0.55	0.58	55.131	54.159	3.23	1.1	1.392	
22/2 to 22/3	375	RRJ2	25	3.09	20	164	0.49	2.42	53.941	53.169	0.083	1.69	1.69	0.48	0.48	54.158	53.883	1.1	1.1	1.335	
22/3 to 22/4	375	RRJ2	29.99	3.14	5	230	0.68	2.71	53.086	52.143	0.083	1.34	1.34	0.48	0.48	53.883	53.395	1.63	1.1	0.755	
22/4 to 22/5	375	RRJ2	30.01	3.14	20	249	0.74	2.68	52.06	51.117	0.083	7	7	0.53	0.53	53.395	52.703	2.31	1.1	0.217	
22/5 to 22/6	375	RRJ2	29.98	3.14	10	313	0.93	2.9	51.034	50.091	0.083	1.23	1.23	0.41	0.41	52.703	51.687	3.39	1.1	-0.118	
22/6 to 22/7	375	RRJ2	27.53	3.12	45	333	0.99	3.08	50.008	49.15	0.085	7	7	0.43	0.43	51.687	50.747	3.41	1.1	-0.127	
22/7 to 22/8	375	RRJ2	35.65	3.18	60	351	1.04	3.18	49.064	47.931	0.217	7	7	0.49	0.49	50.747	49.541	3.38	1.1	-0.129	
22/8 to 22/9	450	RRJ2	28.46	2.87	90	463	0.88	2.91	47.713	46.898	0.05	1.49	1.49	0.37	0.37	49.541	48.758	2.75	1.1	-0.142	
23/1 to 22/3	375	RRJ2	8.66	1	25	32	0.17	0.81	53.285	53.199	0.113	4.5	4.5	0.15	0.15	53.895	53.883	0.14	1.1	0.856	
24/1 to 22/5	375	RRJ2	11.53	1.94	5	70	0.26	0.99	51.381	51.157	0.123	4.5	4.5	0.23	0.23	52.755	52.703	0.45	1.1	0.114	
25/1 to 25/2	375	RRJ2	28.21	4.15	15	-56	-0.15	1.62	52.165	50.994	0.207	4.5	4.5	0.6	0.6	52.661	52.54	0.43	1.1	1.182	
25/2 to 25/3	375	RRJ2	27.21	4.28	60	382	0.97	3.51	50.787	49.624	0.121	1.17	1.17	0.53	0.53	52.54	51.189	4.97	1.1	-0.106	
25/3 to 25/4	375	RRJ2	32.5	4.63	5	410	1	3.87	49.503	47.999	0.17	7	7	0.45	0.45	51.189	49.574	4.97	1.1	-0.115	
25/4 to 25/5	375	RRJ2	32.5	4.3	5	437	1.11	3.96	47.829	46.432	0.19	7	7	0.75	0.75	49.574	48.077	4.61	1.1	-0.126	
25/5 to 25/6	450	RRJ2	32.5	2.71	10	508	1	3.29	46.242	45.36	0.066	7	7	0.45	0.45	48.077	47.135	2.9	1.1	-0.134	
25/6 to 25/7	525	RRJ2	20	1.48	10	561	0.99	2.9	45.294	44.997	0.111	7	7	0.23	0.23	47.135	46.798	1.68	1.1	-0.143	
25/7 to 25/8	600	RRJ2	33.02	1.51	10	715	0.87	2.76	44.886	44.387	0.04	0.8	0.8	0.22	0.22	46.798	46.263	1.62	1.1	-0.148	
25/8 to 25/9	600	RRJ2	31.95	1.51	10	732	0.9	2.73	44.347	43.866	0.04	7	7	0.23	0.23	46.263	45.751	1.6	1.1	-0.152	
25/9 to 25/10	600	RRJ2	22.53	1.46	10	769	0.96	2.72	43.826	43.498	0.04	7	7	0.23	0.23	45.751	45.383	1.63	1.1	-0.161	
25/10 to 25/11	600	RRJ2	18.67	1.42	10	811	1.02	2.87	43.459	43.193	0.05	7	7	0.22	0.22	45.383	44.983	2.14	1.1	-0.161	
25/11 to 25/12	600	RRJ2	9.73	1	15	926	1.39	3.27	43.143	43.046	0.05	1.08	1.09	0.56	0.56	44.983	44.26	7.43	1.18	0.005	
26/1 to 25/2	375	RRJ2	9.67	2.1	10	55	0.2	1	51.218	51.014	0.227	4.5	4.5	0.23	0.23	52.549	52.54	0.09	1.1	0.157	
27/1 to 25/5	375	RRJ2	9.99	1.82	10	38	0.15	1.04	46.698	46.516	0.275	4.5	4.5	0.25	0.25	48.092	48.077	0.15	1.1	0.091	
28/1 to 25/7	375	RRJ2	9.38	1	5	-82	-0.43	0.81	45.267	45.173	0.287	4.5	4.5	0.15	0.15	46.802	46.798	0.04	1.1	-0.072	
29/1 to 25/9	375	RRJ2	9.44	1	5	-103	-0.54	1	44.208	44.114	0.288	4.5	4.5	0.16	0.16	45.752	45.751	0.01	1.1	-0.081	
33/4 to 33/5	375	RRJ2	11.41	7.19	15	240	0.47	3.72	62.061	61.241	0.115	0.89	0.89	0.55	0.55	62.275	62.049	1.98	1.1	1.395	
33/5 to 18/5	375	RRJ2	13.99	5.69	5	178	0.39	3.46	61.126	60.33	0.159	0.71	0.71	0.42	0.42	62.049	61.857	1.37	1.1	0.58	
35/7 to 35/8	375	RRJ2	52.54	1	15	113	0.59	1.69	62.862	62.336	0.03	6.97	6.97	0.13	0.13	63.09	62.544	1.04	1.1	1.293	
35/8 to 35/9	375	RRJ2	29.24	3.09	15	171	0.51	2.65	62.306	61.402	0.129	7	7	0.64	0.64	62.542	61.592	3.25	1.1	1.304	
35/9 to 35/10	375	RRJ2	27.03	6.48	15	174	0.36	3.93	61.273	59.523	0.418	6.92	6.92	0.26	0.26	61.434	59.679	6.49	1.1	1.413	
35/10 to 35/11	375	RRJ2	20.93	6.87	15	309	0.62	3.66	59.105	57.667	0.267	1.27	1.34	0.84	0.89	59.438	57.881	7.44	1.1	1.491	
35/11 to 35/12	375	RRJ2	27.96	7.91	15	317	0.59	4.79	57.4	55.188	0.419	0.35	0.35	0.38	0.38	57.626	55.396	7.98	1.1	1.443	
35/12 to 35/13	375	RRJ2	47.19	7.59	15	339	0.65	3.93	54.769	51.19	0.208	1.59	1.74	1.24	1.36	55.04	52.922	4.49	1.1	1.6	
35/13 to 25/2	375	RRJ2	14.42	1	5	392	2.06	3.55	50.982	50.837	0.05	9.7	9.7	0.16	0.16	52.922	52.54	2.65	1.41	0.027	
37/1 to 35/8	375	RRJ2	12.99	1	15	17	0.09	0.71	62.49	62.36	0.054	4.5	4.5	0.12	0.12	62.6	62.542	0.45	1.1	1.36	
38/1 to 35/10	375	RRJ2	10.3	1	15	128	0.67	1.4	59.258	59.155	0.05	1.11	1.11	0.11	0.11	59.593	59.438	1.5	1.48	1.881	
39/1 to 39/2	375	RRJ2	19.54	6.25	15	105	0.22	2.26	52.384	51.162	0.05	2.16	2.66	0.55	0.68	53.163	53.036	0.65	1.1	0.998	
39/2 to 35/13	375	RRJ2	8.05	1	20	195	1.03	1.76	51.112	51.032	0.05	9.7	9.7	0.28	0.3	53.036	52.922	1.42	1.35	-0.237	
40/1 to 35/12	375	RRJ2	11.56	5.06	15	20	0.05	1.64	55.788	55.203	0.434	4.5	4.5	0.61	0.61	55.859	55.258	5.2	1.1	1.465	
46/1 to 22/7	375	RRJ2	8.04	1	5	93	0.49	0.84	49.195	49.114	0.05	4.5	4.5	0.16	0.16	50.733	50.747	-0.17	1.1	-0.087	

RETAINING WALL PROFILES SHOWN ARE INDICATIVE ONLY.

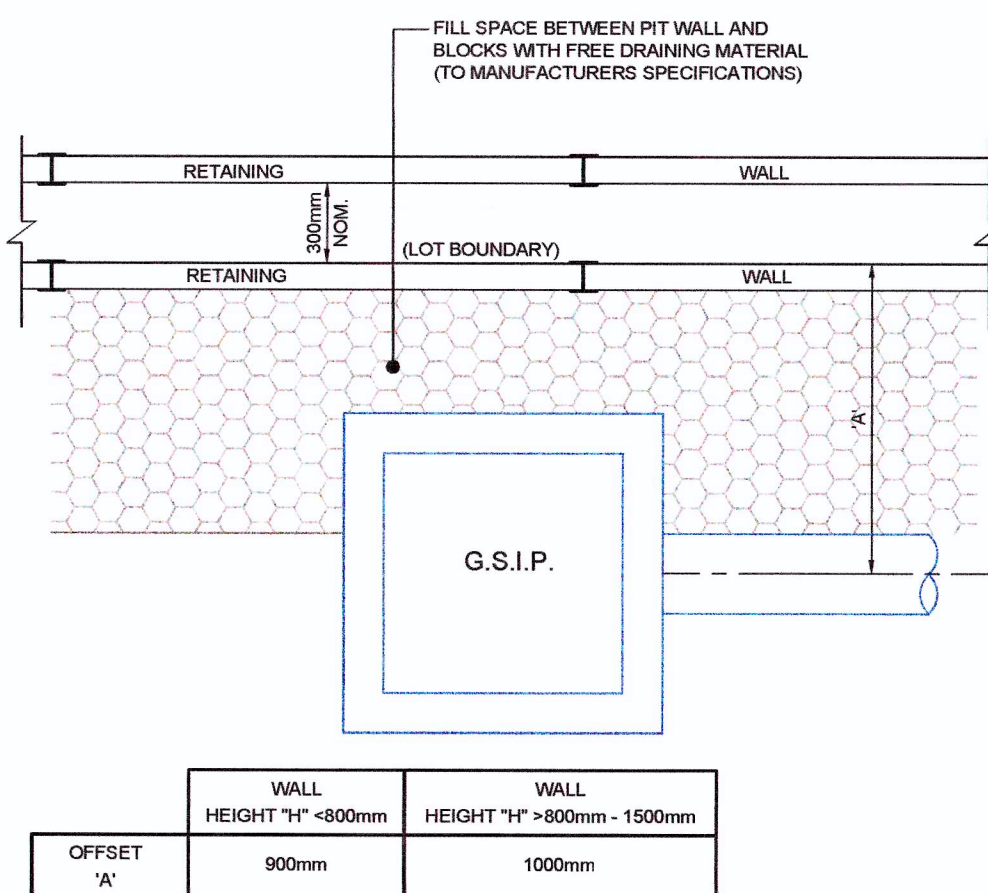
REFER TO DESIGN & CONSTRUCT CONTRACT BY OTHERS.

SUBJECT TO SEPARATE STRUCTURAL PLANS & CERTIFICATIONS

NOT APPROVED

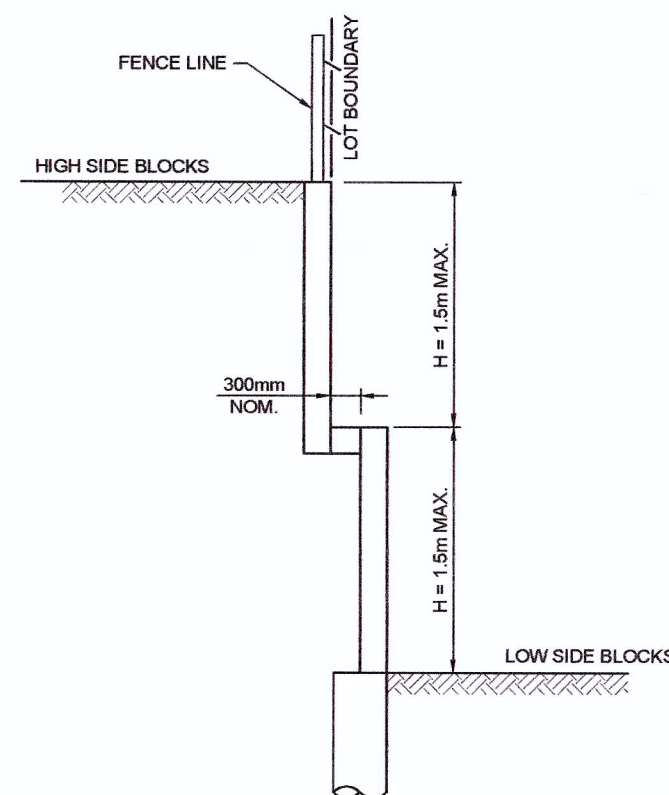


TYPICAL DETAIL CONCRIB RETAINING WALL
SCALE 1:20



TYPICAL INTERALLOTMENT PIT SETBACK
SCALE 1:20

Retaining wall 14 is approved as part of the stage 3 CC 14403 (as clouded in red). All works outside the clouded area are subject to a separate approval.



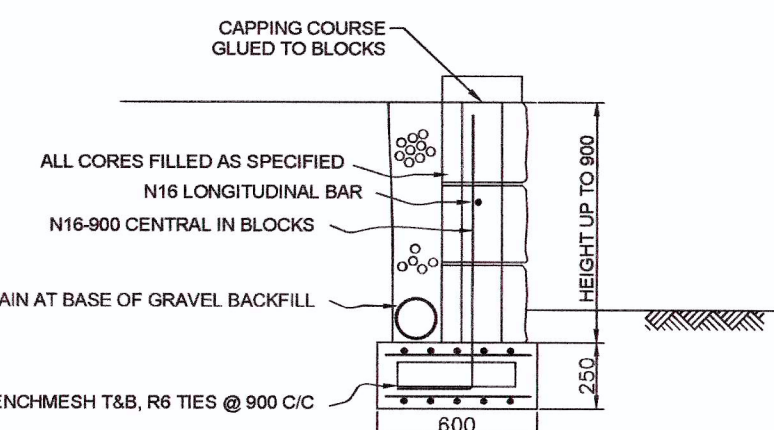
TYPICAL DETAIL CONCRIB RETAINING WALL
SCALE 1:20

PLAN
SCALE 1:1000

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

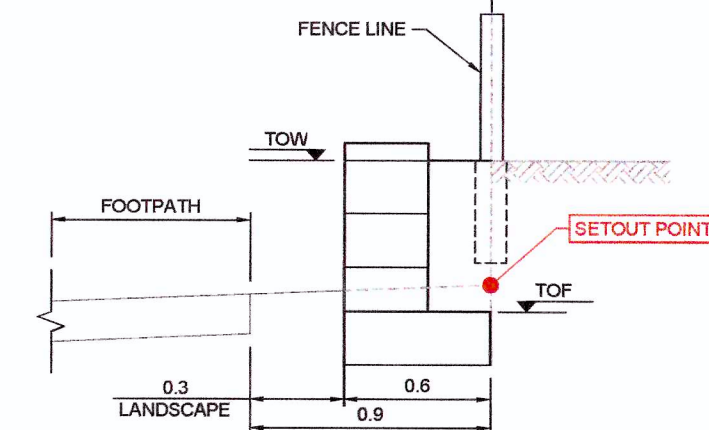
NOTE:

- TOW LEVELS SHOWN ARE TO UNDERSIDE OF CAPPING
- WALL TYPE IS FLUSH FACE KEYSTONE CHARCOAL COLOUR (SUBJECTED TO CLIENT CONFIRMATION).
- WALL CONSTRUCTION IS SUBJECTED TO MANUFACTURER'S CONSTRUCTION GUIDELINES AND SPECIFICATION



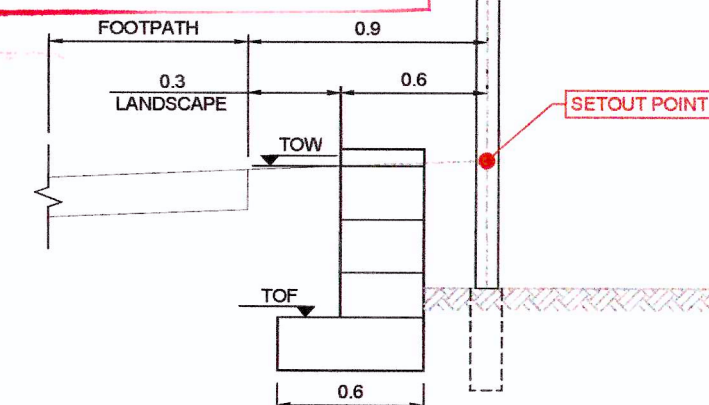
DETAIL- RETAINING WALL UP TO 0.9m HIGH

These plans are referred to in certificate no. 14403 approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPS 2416
Categories: B1, C1, C2, C3, C4, C6, C15 & D1
LAND DEVELOPMENT CERTIFICATES
www.ldcerts.com.au



TYPICAL DETAIL RETAINING WALL (CUT) LOCATION
SCALE 1:20

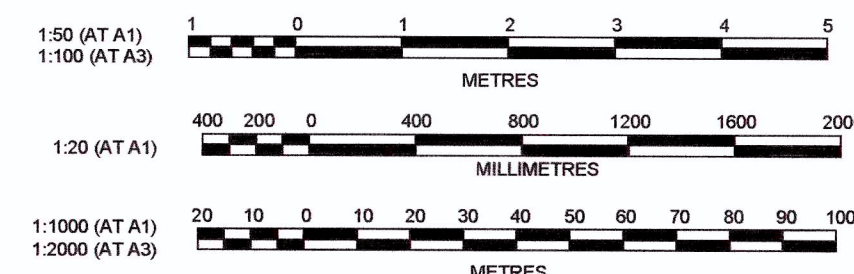
WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: *P. R. Warwick*
PETER ROBERT WARWICK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 8/3/18 REF 20467/3



TYPICAL DETAIL RETAINING WALL (FILL) LOCATION
SCALE 1:20

RETAINING WALL NOTES

- FOOTING CONCRETE TO BE 25MPa PLACED AT 80mm SLUMP AND THOROUGHLY COMPACTED USING VIBRATOR.
- GROUT TO BE 35MPa PLACED AT 110mm SLUMP AND MAXIMUM 10mm AGGREGATE, COMPACTED USING VIBRATOR.
- SUBSOIL DRAINS MUST FALL TO AN ATMOSPHERIC OUTLET OR INTO A SEALED DRAINAGE SYSTEM AT 50m INTERVALS ALONG WALL.
- BACKFILL TO BE CAREFULLY PLACED AND COMPACTED TO 95% STANDARD DENSITY, MAX PARTICLE SIZE 75mm.
- REFER TO PLANS AND ELEVATIONS FOR LEVELS, STEP LOCATIONS AND POSITION OF WALLS ETC.
- ENTIRE WIDTH OF FOOTING MUST BEAR ON STIFF NATURAL UNDISTURBED GROUND HAVING AT LEAST 200kPa SAFE BEARING CAPACITY, AND POSITION TO FOLLOW ROCK BEARING AS NECESSARY.
- WHERE THE REQUIRED BEARING IS NOT AVAILABLE, PROVIDE 600mm DIAMETER MASS CONCRETE PIERS AT 2.0m MAXIMUM CENTRES. PIER REQUIREMENTS TO BE SET OUT ON SITE AFTER EXCAVATION OF BASE SLAB.



D	CERTIFIER COMMENTS - RETAINING WALL NOTE ADDED	JT	JT	RT	MS	14/07/17			
C	CERTIFIER COMMENTS - RW DETAILS ADDED (RW14)	JT	JT	AM	MS	11/07/17			
B	CERTIFIER COMMENTS - RW DETAILS ADDED (RW14)	JT	JT	RT	MS	28/06/17			
A	ISSUE FOR CONSTRUCTION APPROVAL	JT	NM	RT	MS	30/05/17			
	AMENDMENT	DES	DRN	CKD	APR	DATE			

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AZIMUTH:
MGA:
DATUM:
AHD
ORIGIN:

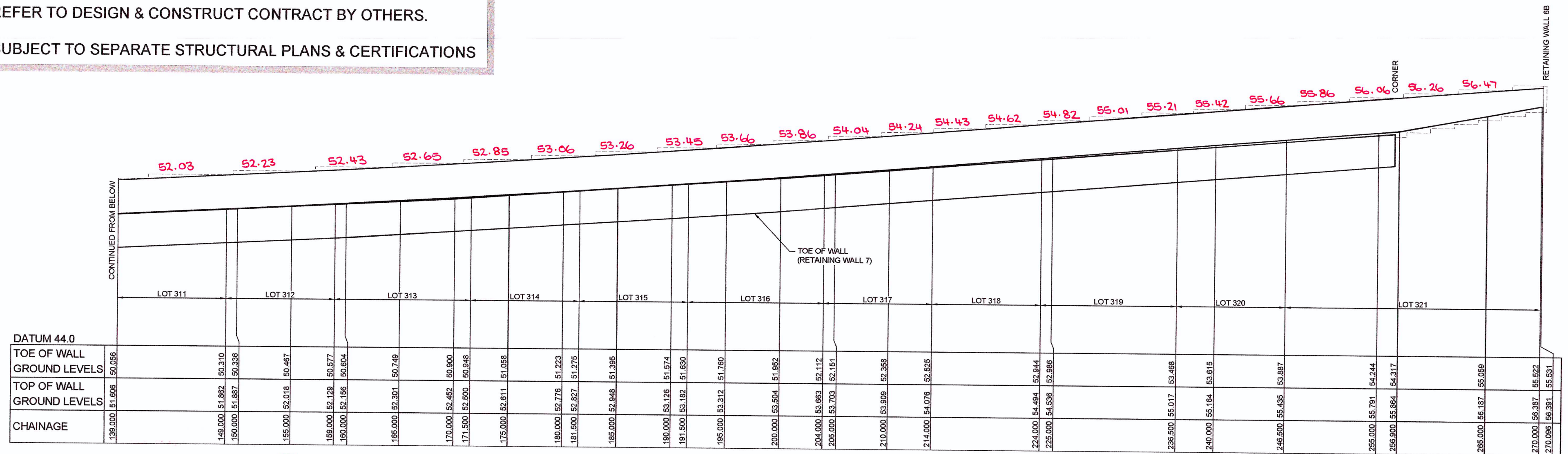


ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 3
RETAINING WALL PLAN & DETAILS

PLAN No:
110358/CC330
FILE No: 110358CC330
SHEET SIZE: A1 ORIGINAL

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LONGITUDINAL SECTION - RETAINING WALL 6
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100

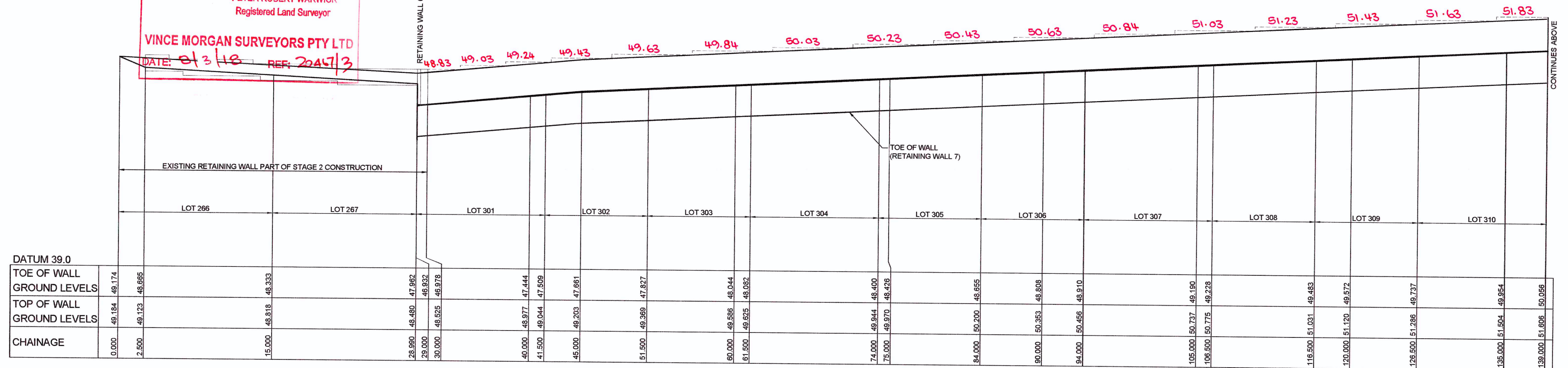
WORKS AS EXECUTED SHOWN IN RED

SIGNATURE: P.R.

PETER ROBERT WARWICK
Registered Land Surveyor

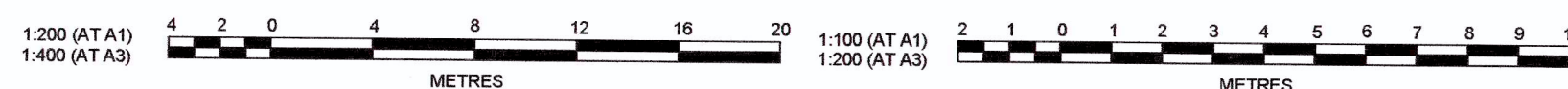
VINCE MORGAN SURVEYORS PTY LTD

DATE: 01/3/18 REF: 2047/3



LONGITUDINAL SECTION - RETAINING WALL 6
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100

NOT APPROVED



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CLIENT:

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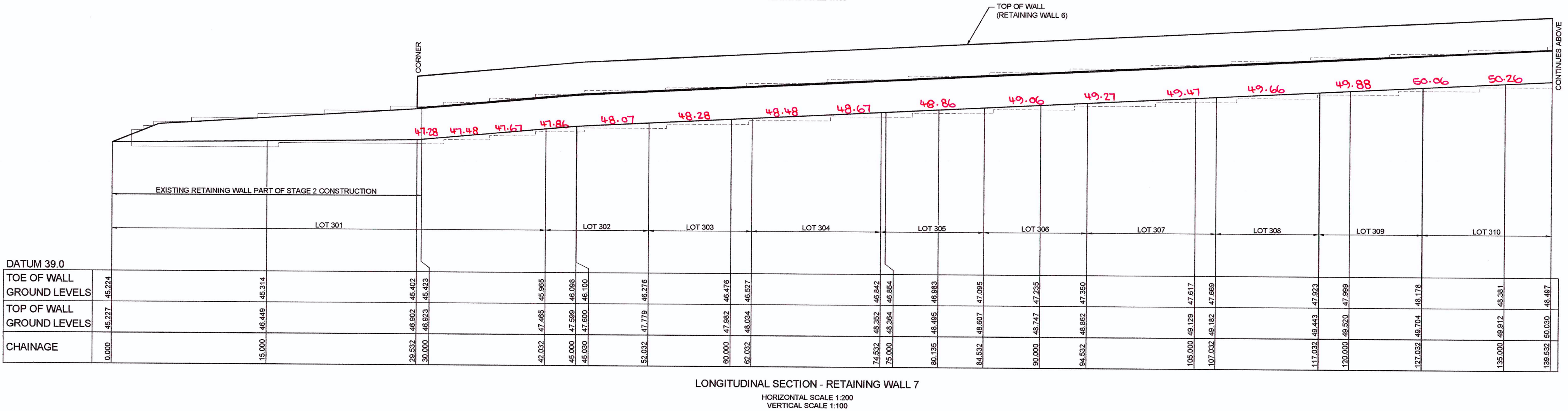
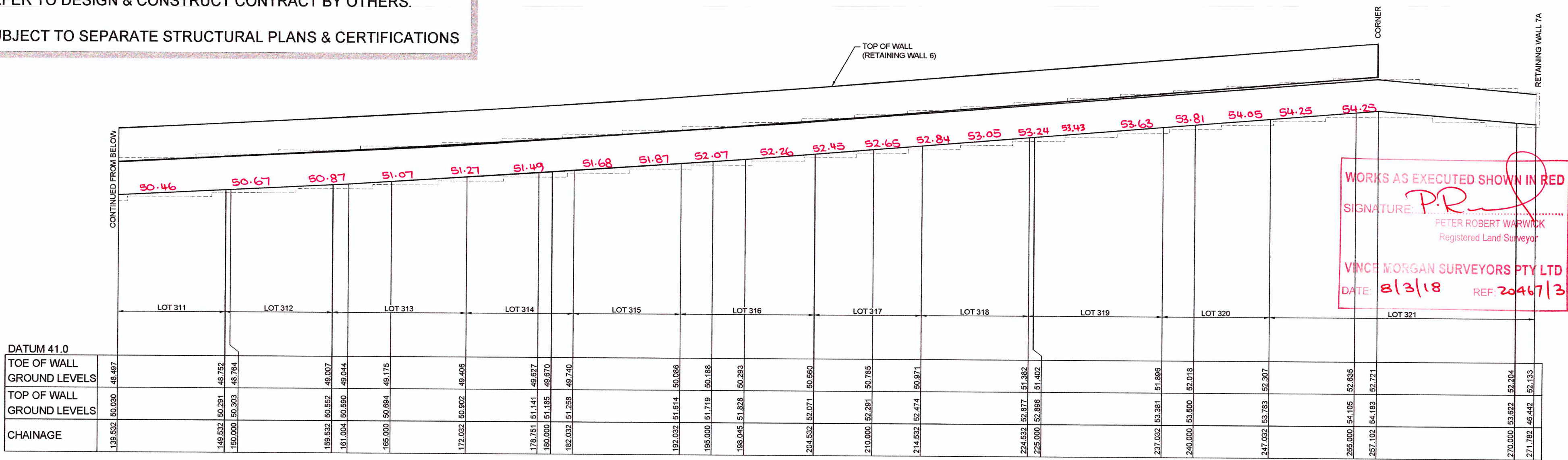
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CADDENS HILL
STAGE 3
RETAINING WALL SECTION

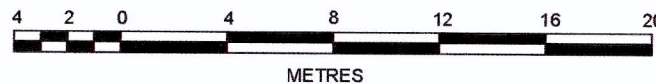
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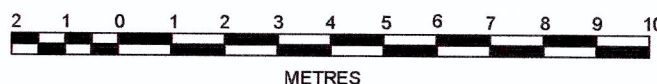


NOT APPROVED

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



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



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CADDENS HILL
STAGE 3
RETAINING WALL SECTION

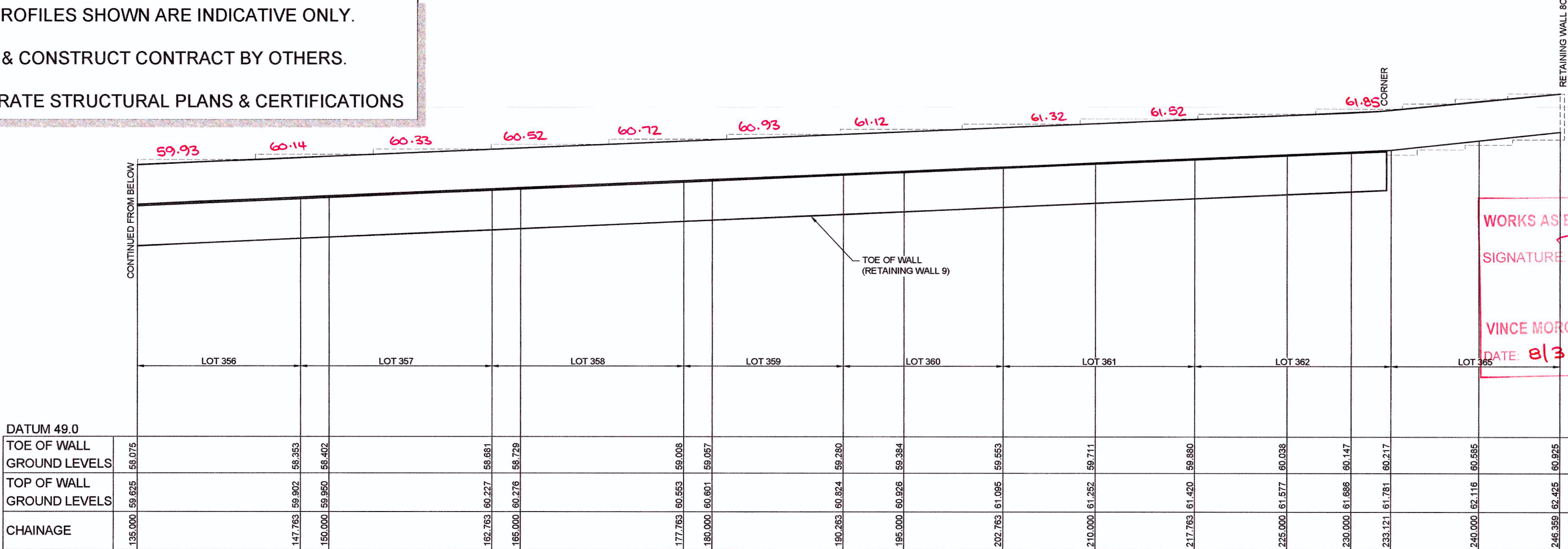
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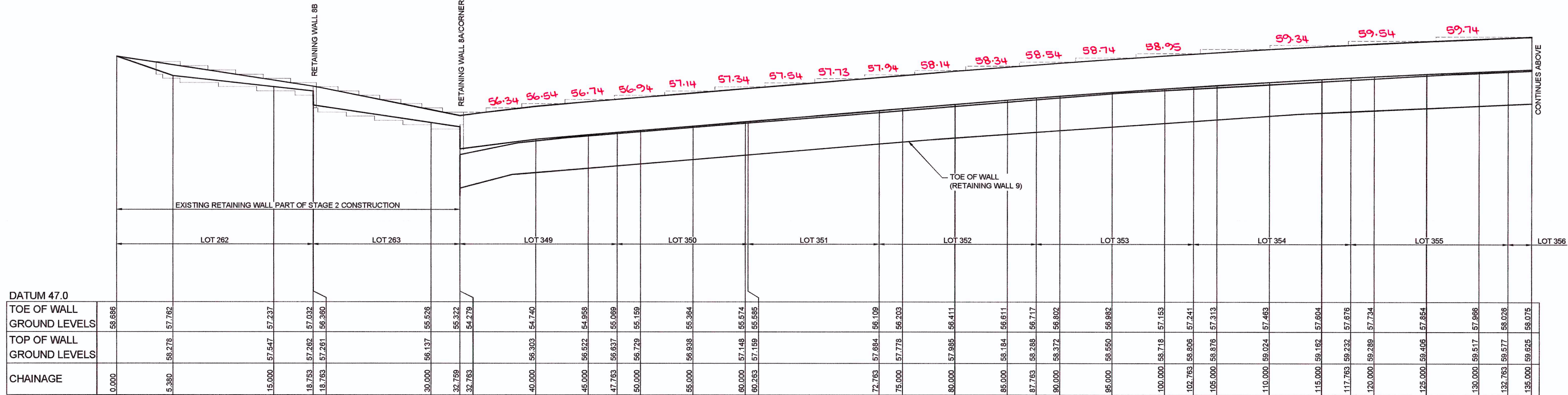
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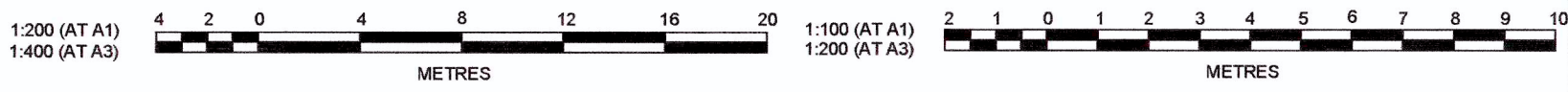
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SIGNATURE: *P. R. W.*
PETER ROBERT WARYNCK
Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 8/3/18 REF: 20461/3



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AZIMUTH: MGA
DATUM: AHD
ORIGIN:

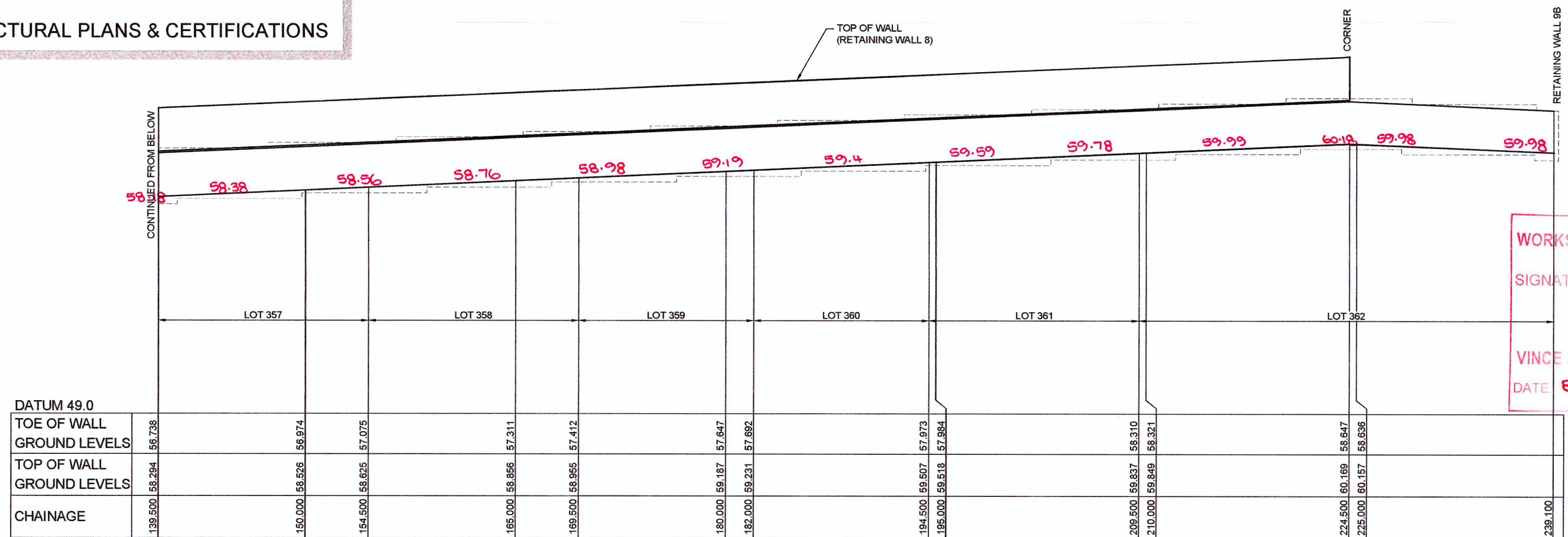


ISSUED FOR CONSTRUCTION APPROVAL

CADDENS HILL
STAGE 3
RETAINING WALL SECTION

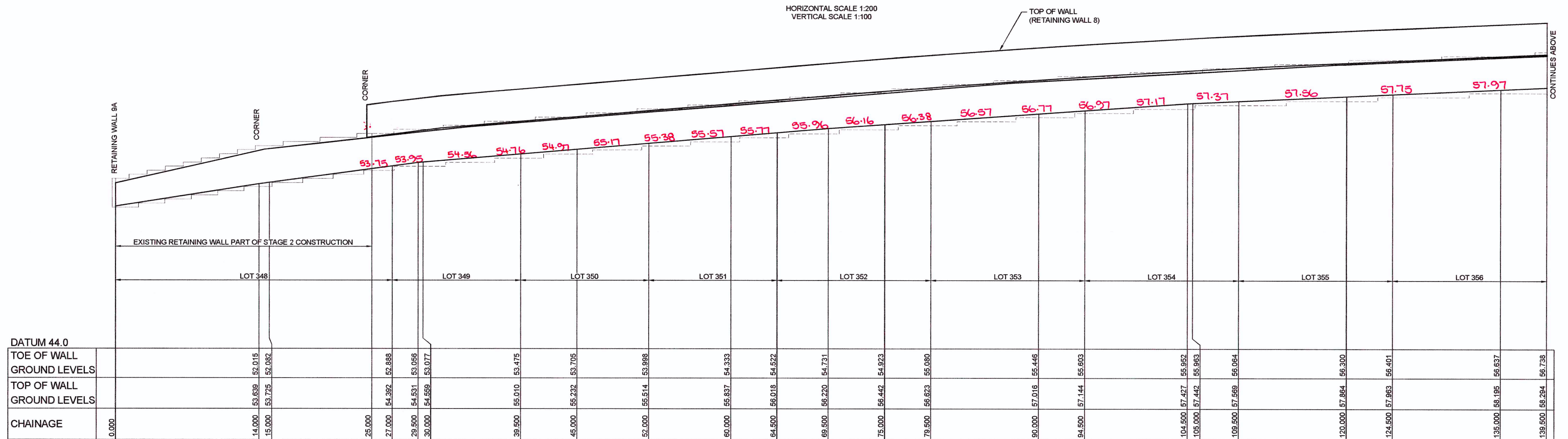
PLAN No: 110358/CC333
FILE No: 110358CC333
SHEET SIZE: A1 ORIGINAL

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LONGITUDINAL SECTION - RETAINING WALL 9

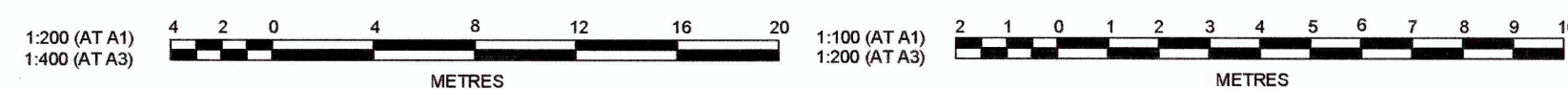
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100



LONGITUDINAL SECTION - RETAINING WALL 9

HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100

NOT APPROVED



A	ISSUE FOR CONSTRUCTION APPROVAL	JT	NM	RT	MS	30/05/1
	AMENDMENT	DES	DRN	CKD	APR	DATE

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CADDENS HILL
STAGE 3
RETAINING WALL SECTION

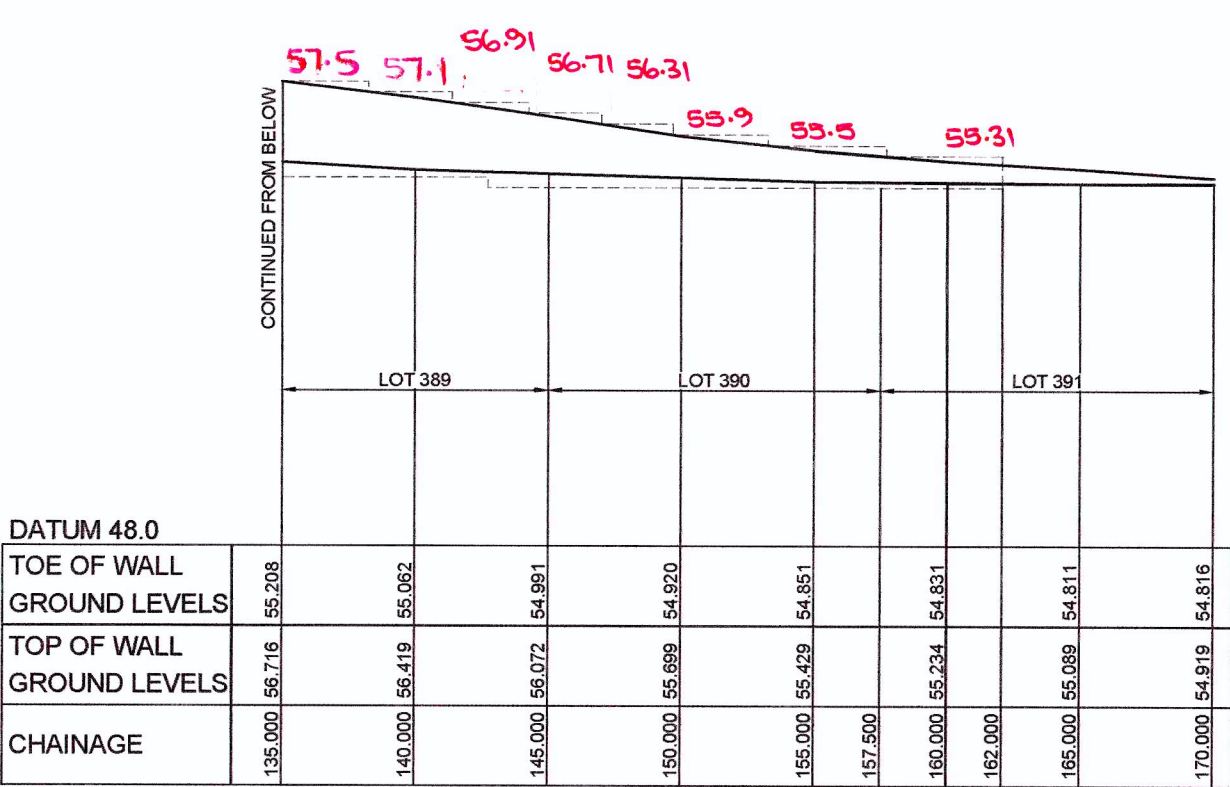
PLAN No:
110358/CC334

FILE No: 110358CC334

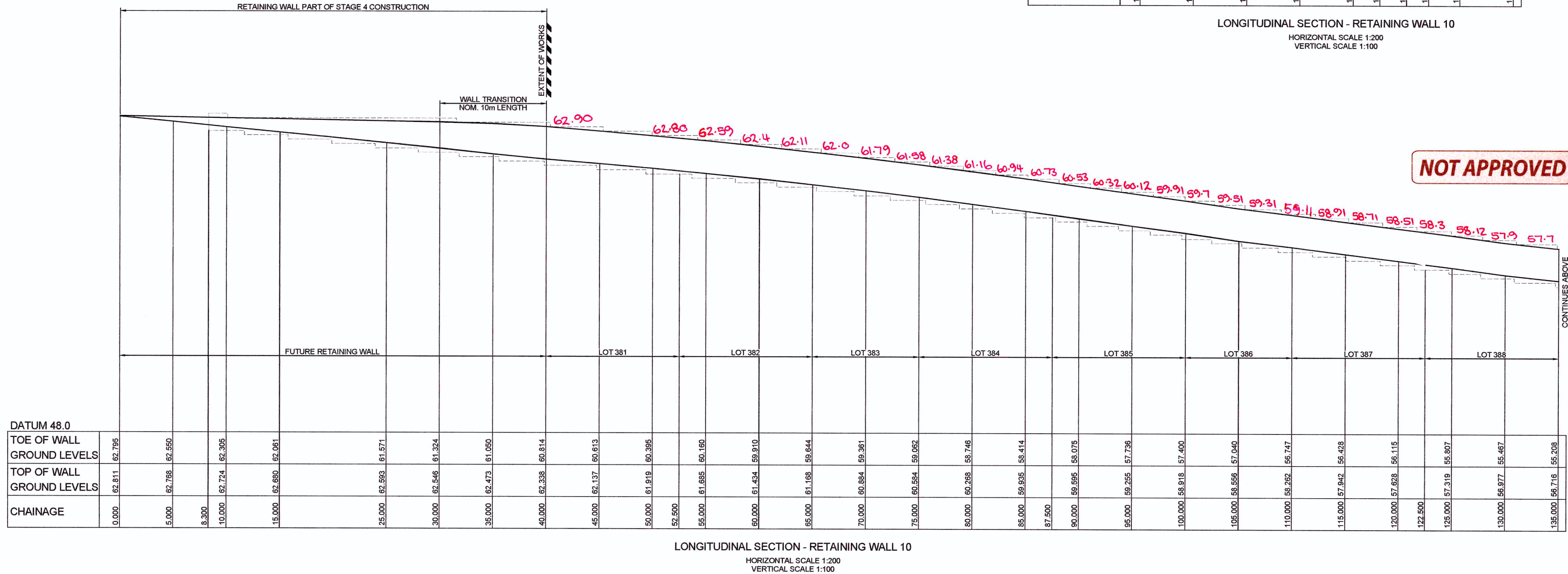
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Registered Land Surveyor
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DATE: 8/3/18 REF: 20467/3



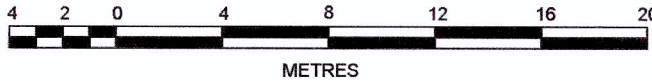
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HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100



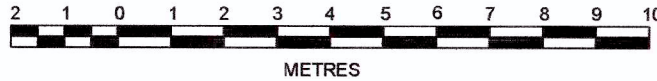
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Plotted: 28 June, 2017 10:33:00 AM File Name: J1110358 - Caddens Hill, Caddens 03 - Stage 2/CD/CC/STAGE 3/110358CC335.dwg

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



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



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CADDENS HILL
STAGE 3
RETAINING WALL SECTION

PLAN No:
110358/CC335

FILE No: 110358CC335

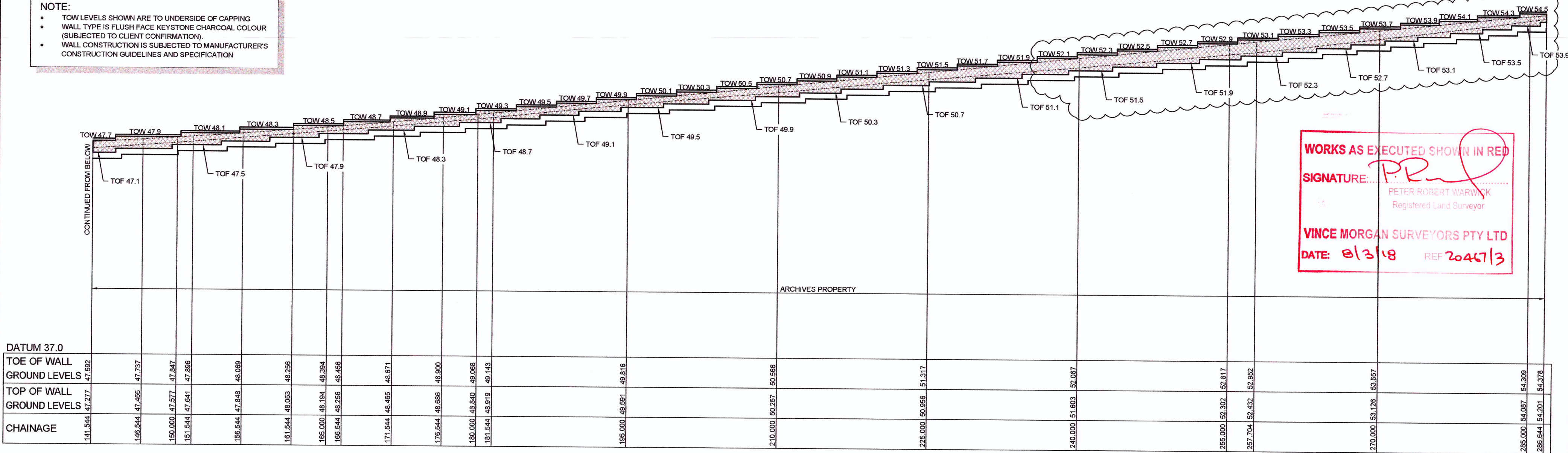
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RETAINING WALL 14 IS PART OF STAGE 3 APPROVAL

EXTENT & TYPE OF RETAINING WALL TO BE CONFIRMED

NOTE:

- TOW LEVELS SHOWN ARE TO UNDERSIDE OF CAPPING
- WALL TYPE IS FLUSH FACE KEYSTONE CHARCOAL COLOUR (SUBJECT TO CLIENT CONFIRMATION)
- WALL CONSTRUCTION IS SUBJECT TO MANUFACTURER'S CONSTRUCTION GUIDELINES AND SPECIFICATION

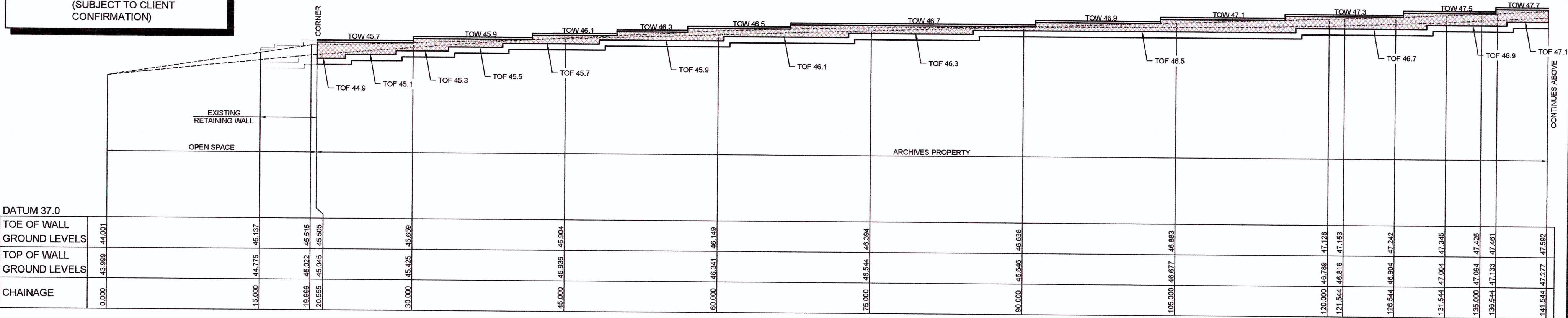


WORKS AS EXECUTED SHOWN IN RED
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Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 8/3/18 REF: 2047/13

LEGEND

TYPE 1 - BORAL FLUSHFACE
KEYSTONE CHARCOAL
COLOUR RETAINING WALL
(SUBJECT TO CLIENT
CONFIRMATION)

NOTE: T.O.W LEVELS SHOWN
ARE TO UNDERSIDE OF CAPPING



These plans are referred to in
certificate no. **14403** approved by:
Eric Hausfeld
Accredited Certifier
Registration No: BPS 2416
Categories: B1, C1, C2, C3, C4, C5, C15 & D1

LAND DEVELOPMENT CERTIFICATES
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1:200 (AT A1)
1:400 (AT A3)

4 2 0 4 8 12 16 20
METRES

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

2 1 0 1 2 3 4 5 6 7 8 9 10
METRES

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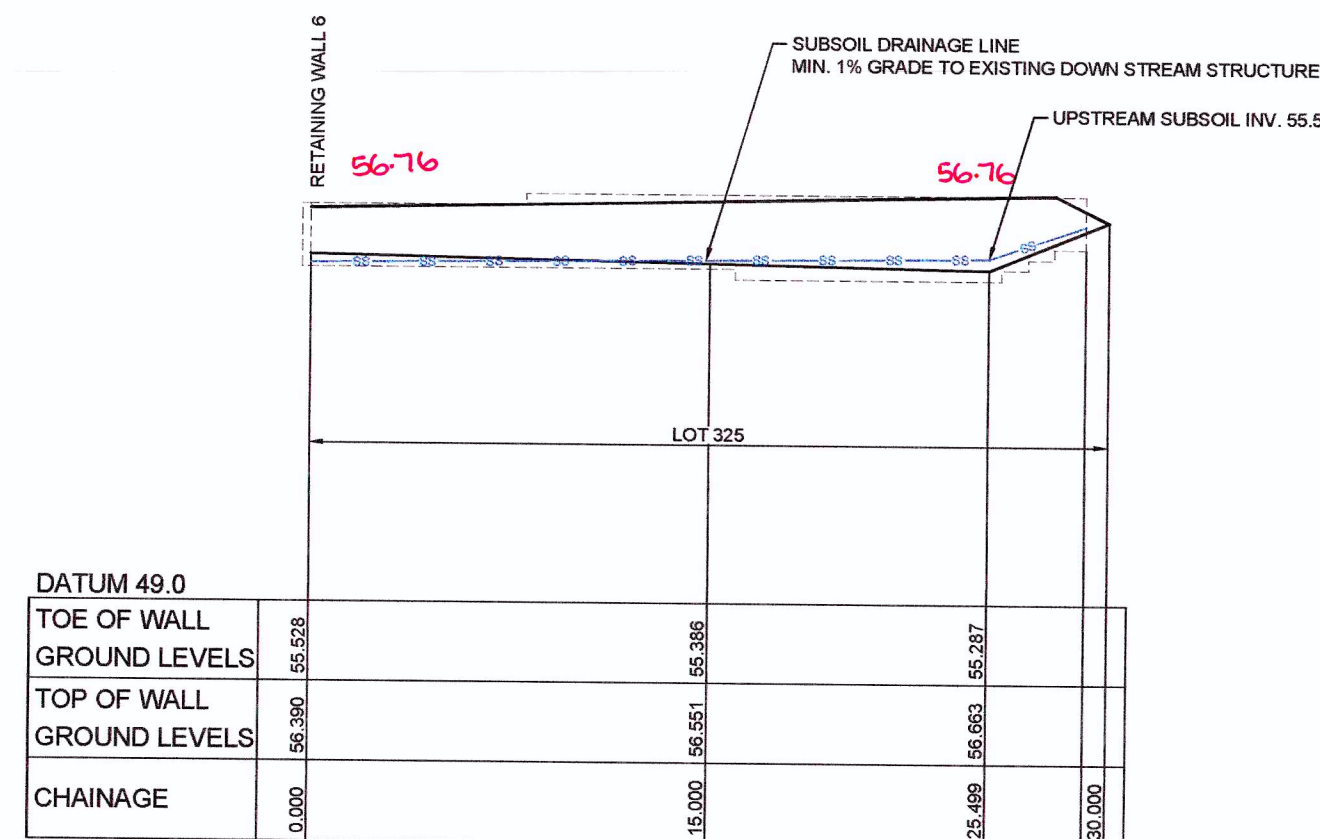
**CADDENS HILL
STAGE 3
RETAINING WALL SECTION**

PLAN No:
110358/CC336

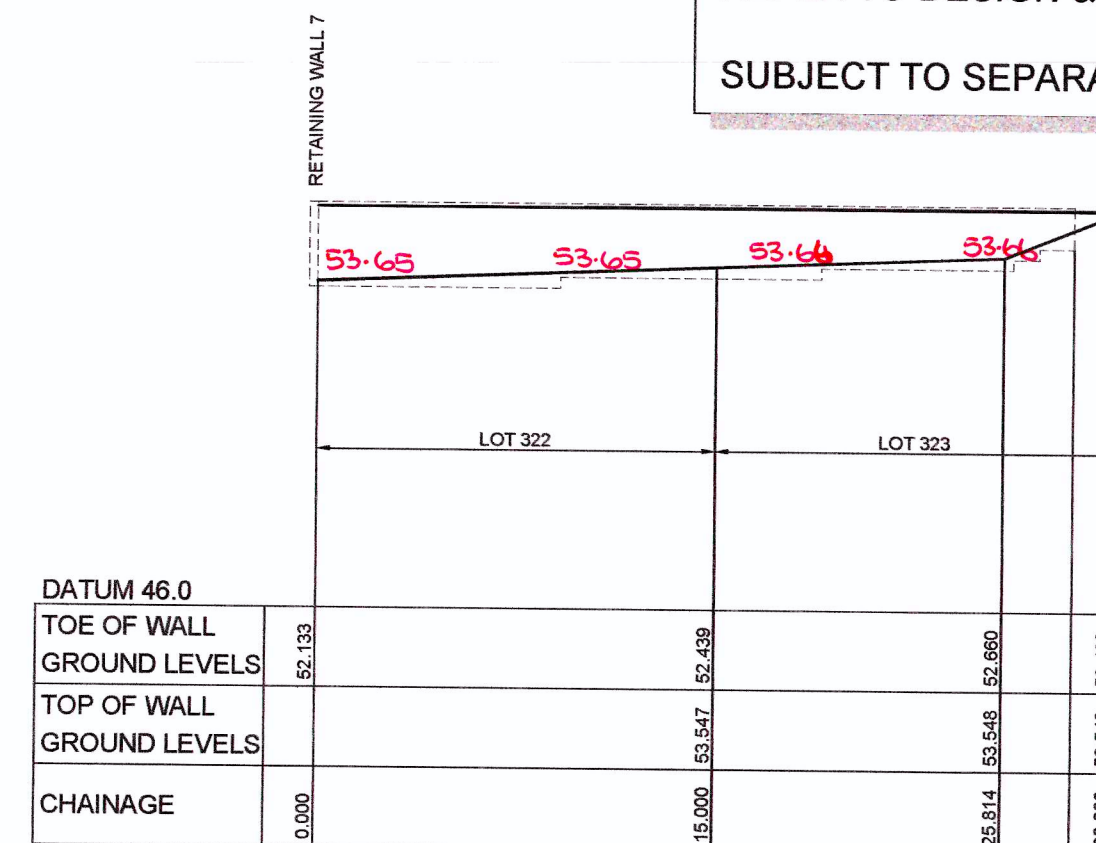
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SHEET SIZE: A1 ORIGINAL

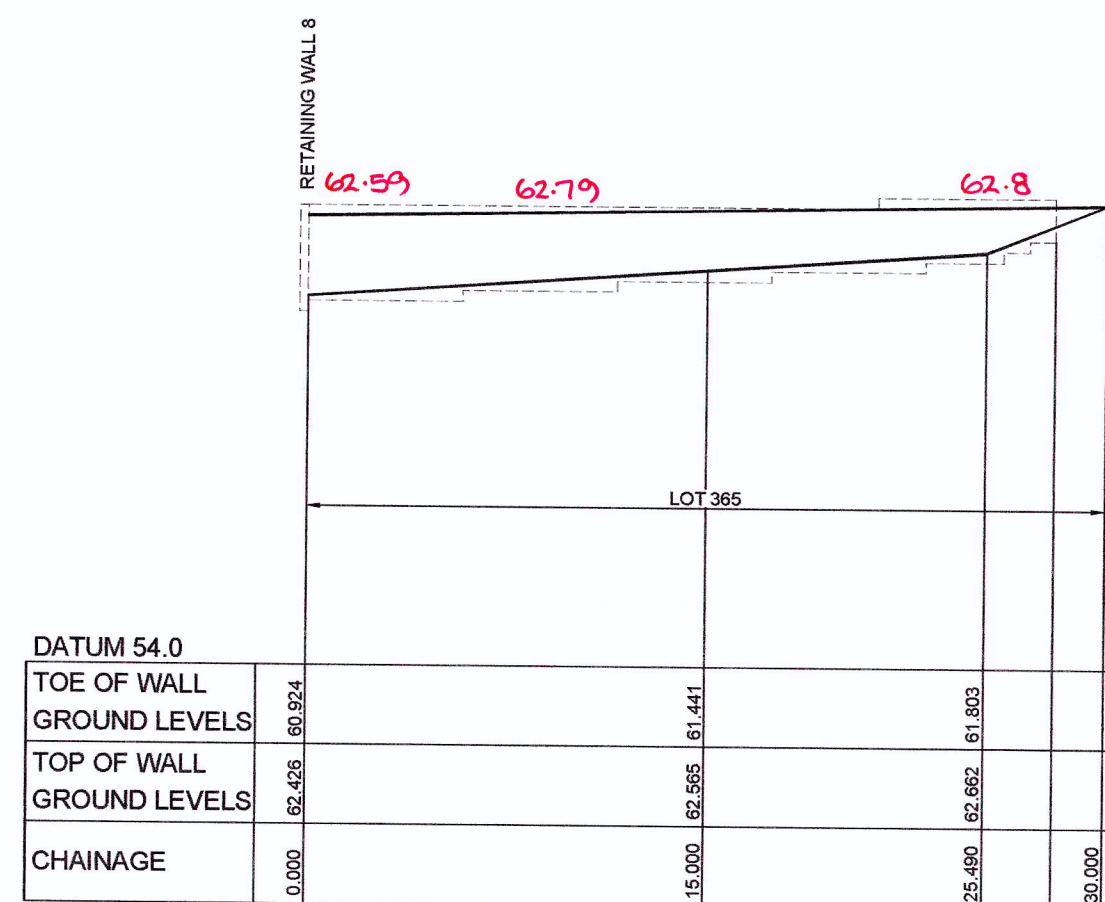
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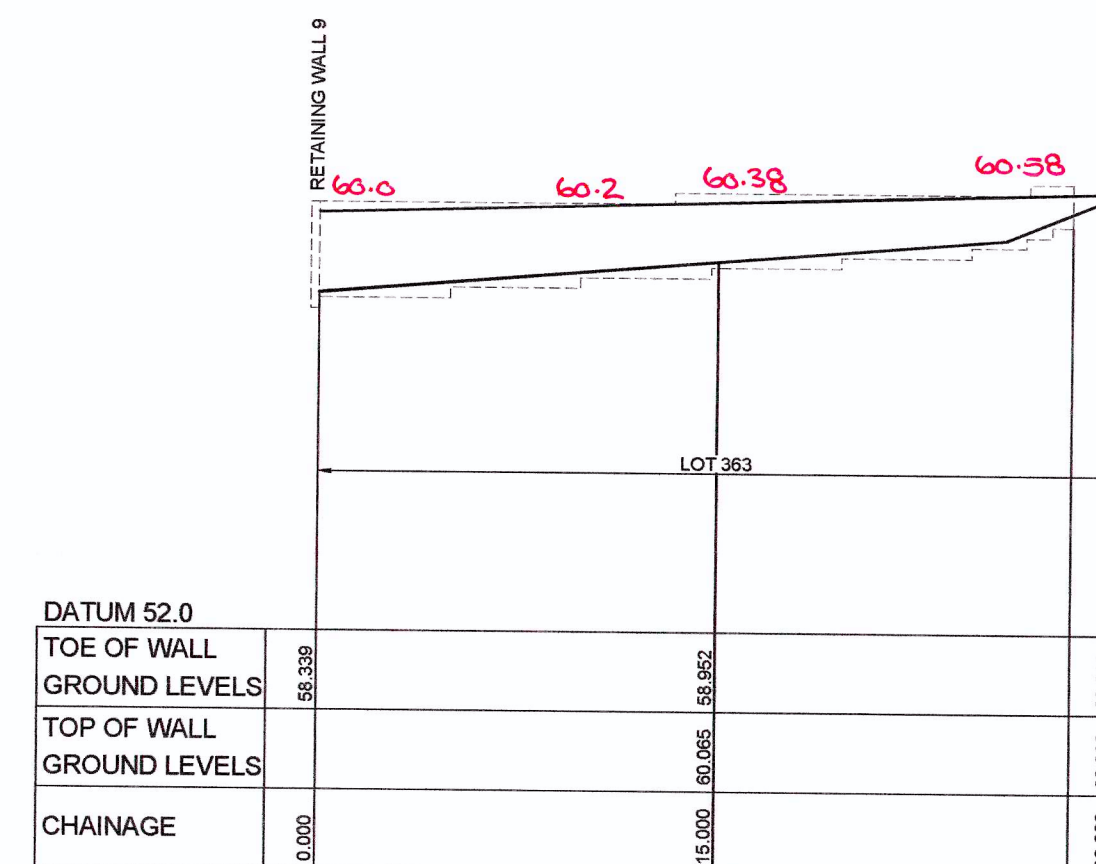
LONGITUDINAL SECTION - RETAINING WALL 6B
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100



LONGITUDINAL SECTION - RETAINING WALL 7A
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100



LONGITUDINAL SECTION - RETAINING WALL 8C
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100

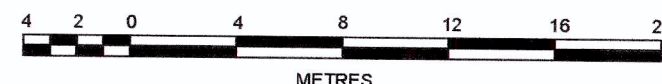


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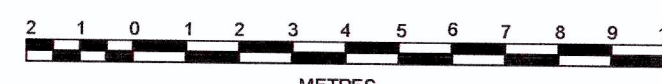
WORKS AS EXECUTED SHOWN IN RED
SIGNATURE: *P.R.*
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Registered Land Surveyor
VINCE MORGAN SURVEYORS PTY LTD
DATE: 8/3/18 REF 20467/3

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



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



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DATUM:
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CLIENT:



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CADDENS HILL
STAGE 3
RETAINING WALL SECTION

PLAN No:
110358/CC337

FILE No: 110358CC337

SHEET SIZE: A1 ORIGINAL

GENERAL NOTES:

- | 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. |

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.

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

B	CERTIFIER COMMENTS - NOTES AMENDED	JT	JT	RT	MS
A	ISSUE FOR CONSTRUCTION APPROVAL	JT	NM	RT	MS
	AMENDMENT	DES	DRN	CKD	APR
					DATE

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- 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.

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

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:-

- AT LEAST WEEKLY
- IMMEDIATELY BEFORE SITE CLOSURE
- 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. 2hrs 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/USLOPE
 - 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 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.

DATE: 8/3/18 REF: 204671



SOIL AND WATER MANAGEMENT SHALL BE READ IN CONJUNCTION
WITH CADDENS HILL STAGES 2 & 3 BULK EARTHWORKS CC APPROVAL
- REF CC 14305 SOIL & WATER MANAGEMENT

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AZIMUTH:
MGA:
DATUM:
AHD:
ORIGIN:

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CADDENS HILL
STAGE 3

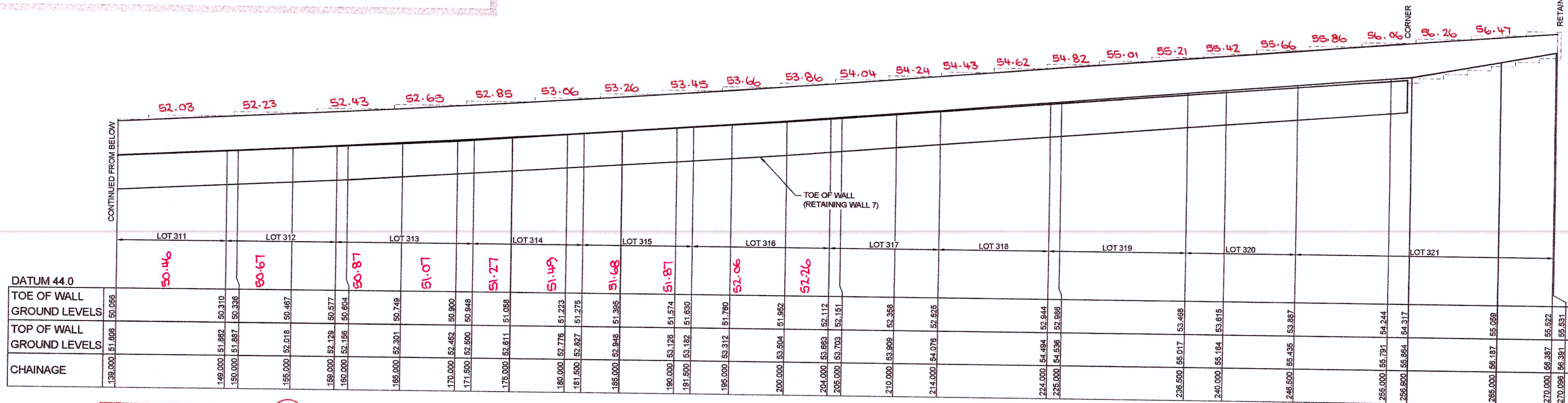
SOIL AND WATER MANAGEMENT PLAN NOTES

PLAN No:
110358/CC339

FILE No: 110358CC339

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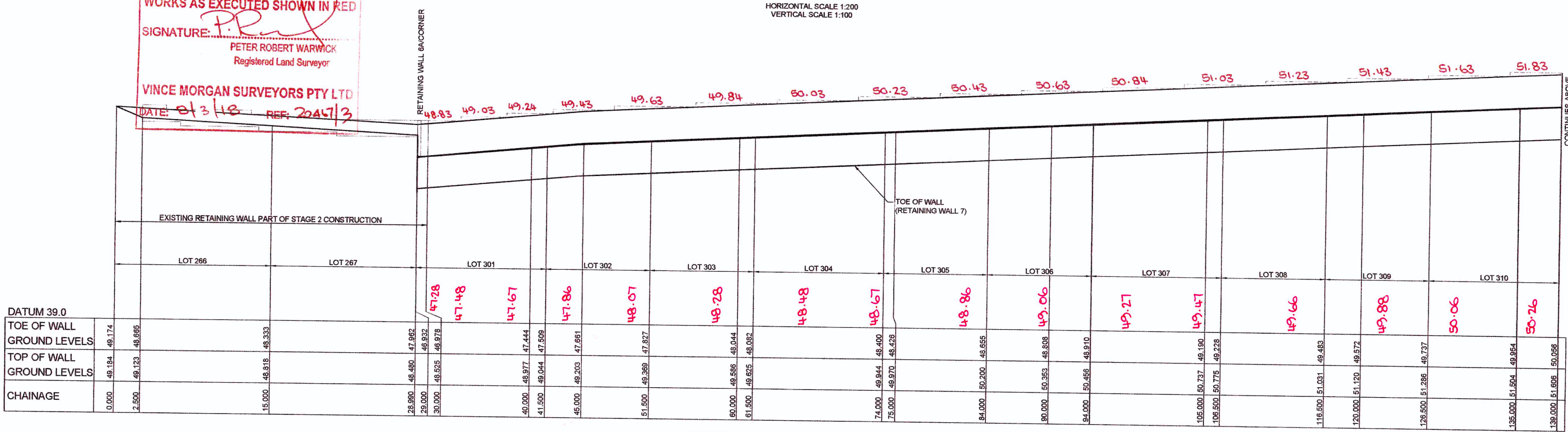
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SIGNATURE: *P. R. Warwick*

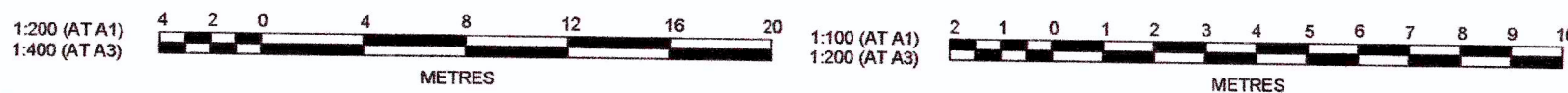
PETER ROBERT WARWICK
Registered Land Surveyor

VINCE MORGAN SURVEYORS PTY LTD

DATE: 21/3/18 REF: 2047/3



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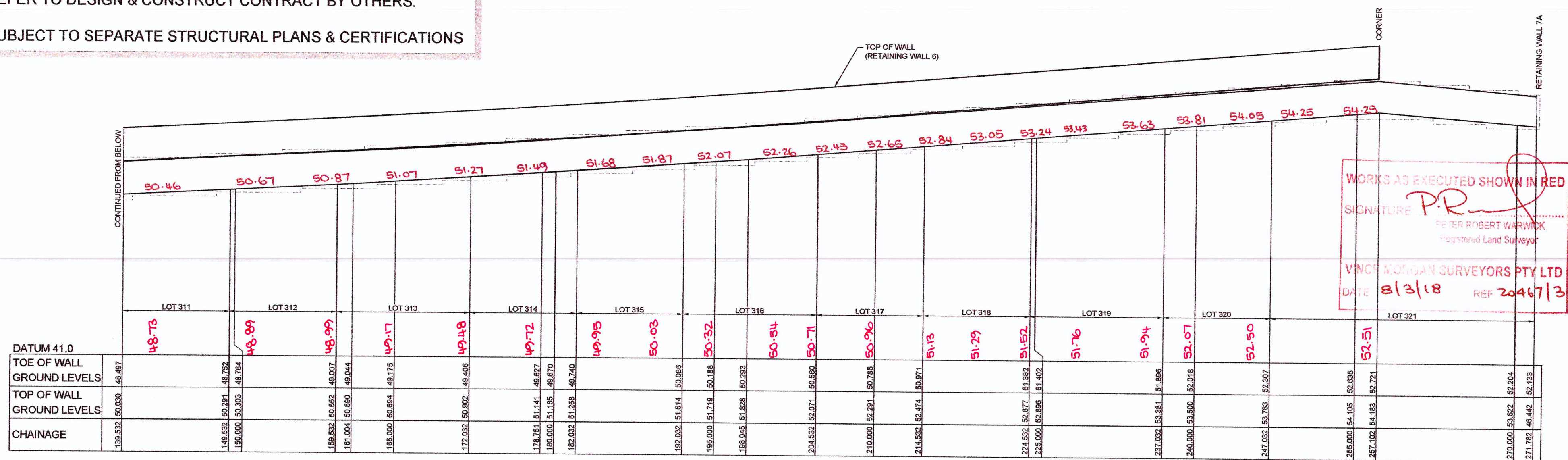
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CADDENS HILL
STAGE 3
RETAINING WALL SECTION

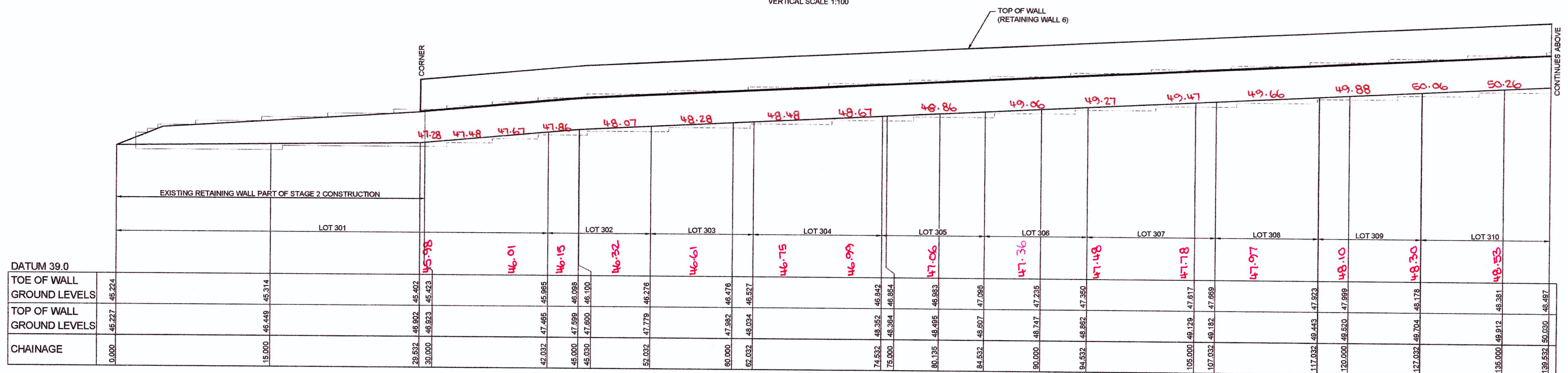
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LONGITUDINAL SECTION - RETAINING WALL 7

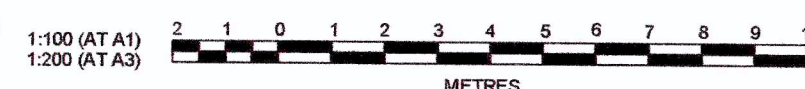
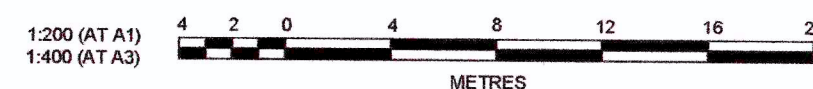
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LONGITUDINAL SECTION - RETAINING WALL 7

HORIZONTAL SCALE 1:200
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CADDENS HILL
STAGE 3
RETAINING WALL SECTION

PLAN No:
110358/CC332

FILE No: 110358CC332

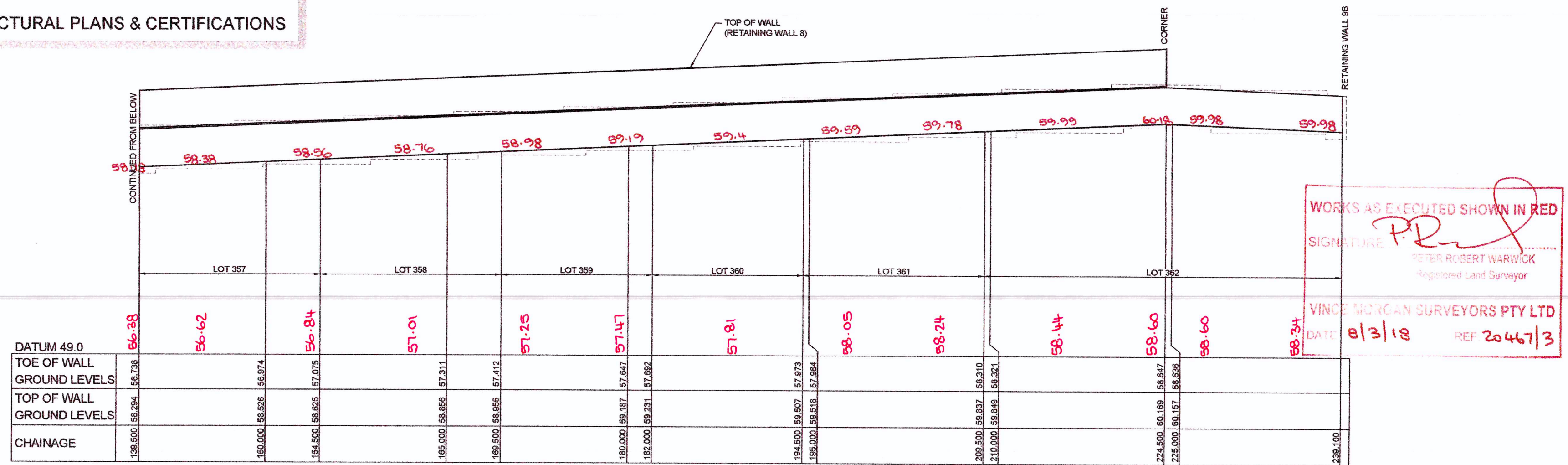
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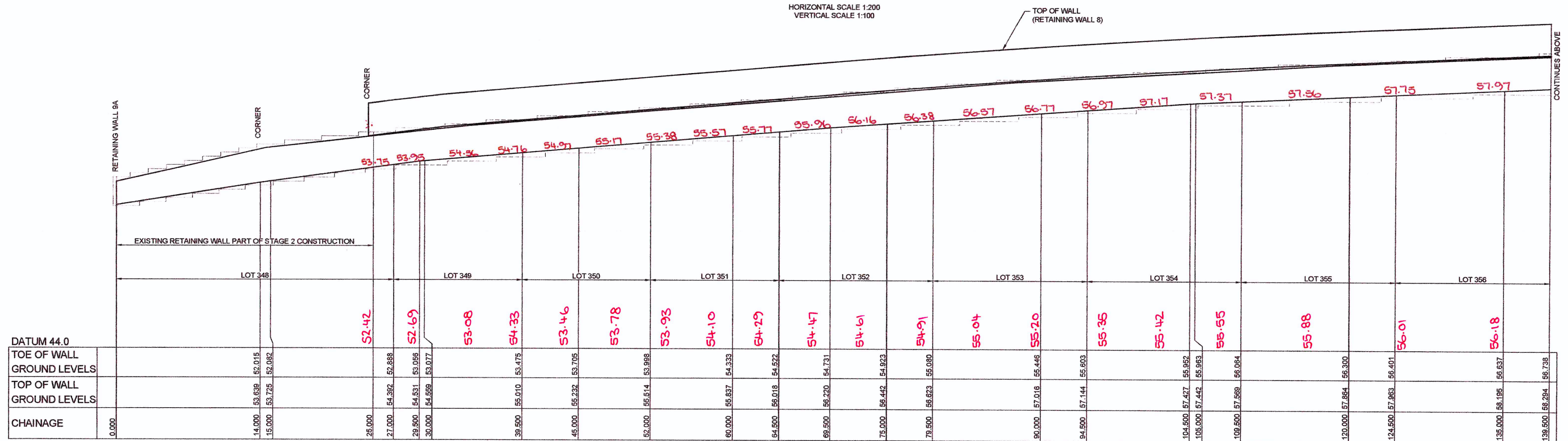
A	ISSUE FOR CONSTRUCTION APPROVAL AMENDMENT								JT DES	NM DRN	RT CKD	MS APR	30/05/17 DATE

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LONGITUDINAL SECTION - RETAINING WALL 9

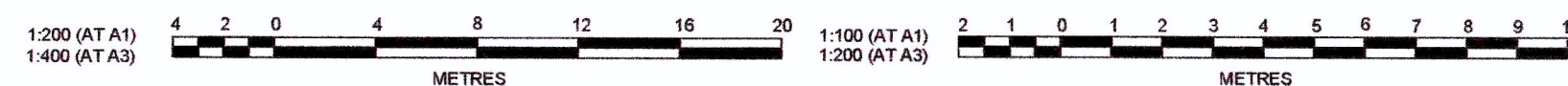
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LONGITUDINAL SECTION - RETAINING WALL 9

HORIZONTAL SCALE 1:200
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CADDENS HILL
STAGE 3
RETAINING WALL SECTION

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110358/CC334

FILE No: 110358CC334

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