





DRG No.	DRAWING TITLE
C001-DA	COVER SHEET, LOCALITY PLAN AND DRAWING SCHEDULE
C100-DA	SOIL AND WATER MANAGEMENT PLAN
C101-DA	SOIL AND WATER MANAGEMENT DETAILS
C102-DA	SOIL AND WATER MANAGEMENT NOTES
C200-DA	BULK EARTHWORKS PLAN
C300-DA	CIVIL WORKS ARRANGEMENT PLAN
C400-DA	ROAD SETOUT PLAN
C401-DA	ROAD TYPICAL SECTIONS
C501-DA	ROAD LONG SECTIONS - SHEET 1
C502-DA	ROAD LONG SECTIONS - SHEET 2
C503-DA	ROAD LONG SECTIONS - SHEET 3

DRAWN: L STEEL      DESIGNED: S SPURR      JOB MANAGER: C SMITH      VERIFIER: C SMITH

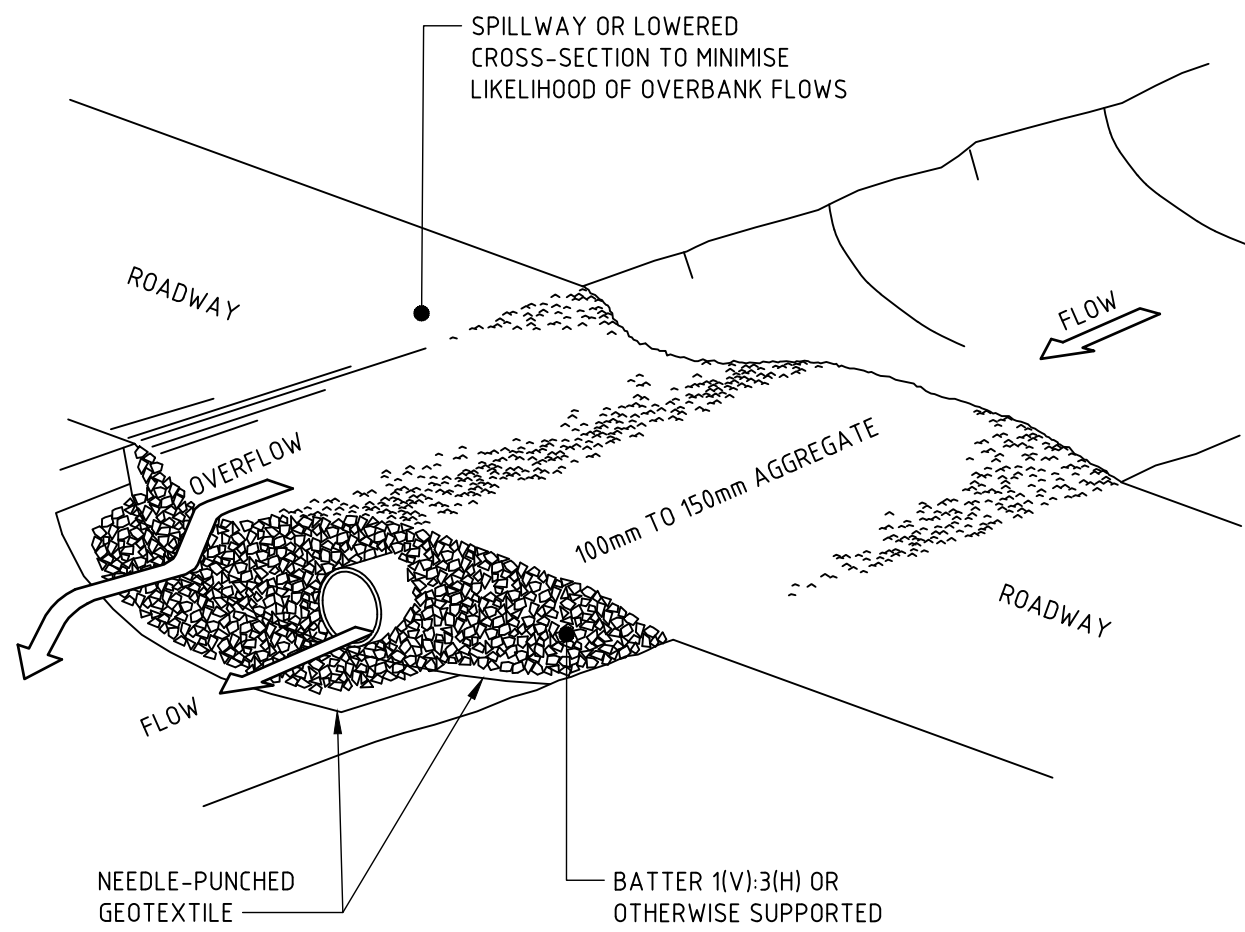
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2	ISSUED FOR REVIEW	LS		CS	09.11.20	 		 <p>Newcastle</p> <p>Suite 4, 215 Pacific Hwy, Charlestown NSW 2290 P.O. Box 180, Charlestown NSW 2290 Ph: (02) 4943 1777 Fax: (02) 4943 1577 Email: newcastle@northrop.com.au ABN 81 094 433 100</p>	<b>JOHN HUNTER HEALTH AND INNOVATION PRECINCT</b>  <b>LOOKOUT ROAD, NEW LAMBTON HEIGHTS N.S.W</b>	<b>CIVIL ENGINEERING PACKAGE COVER SHEET, LOCALITY PLAN AND DRAWING SCHEDULE</b>	<b>NL191366</b>
3	ISSUED FOR SCHEMATIC DESIGN	LS		CS	29.01.21						
4	ISSUED FOR DRAFT SSDA	LS		CS	25.02.21						
5	ISSUED FOR DRAFT SSDA	LS		CS	09.03.21						
6	ISSUED FOR SSDA	LS		CS	31.03.21						
7	ISSUED FOR SSDA	LS		CS	30.07.21	DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED	THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD			DRAWING NUMBER <b>C001-DA</b>	REVISION <b>7</b>
											DRAWING SHEET SIZE = A1







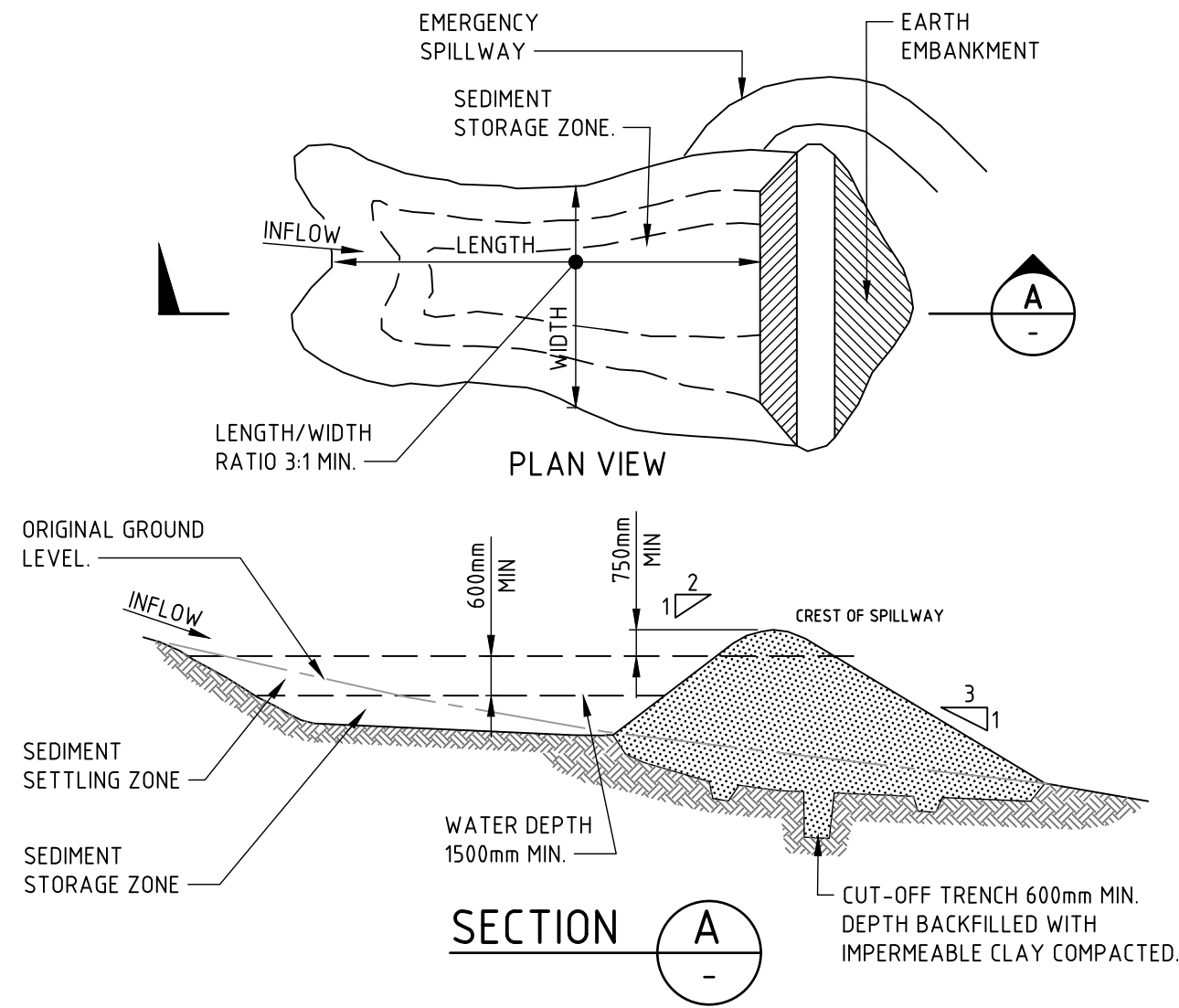
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JOB MANAGER: CSMITH  
DESIGNED: S.SPURR  
DRAWN: L.STEEL



#### CONSTRUCTION NOTES

1. PROHIBIT ALL TRAFFIC UNTIL THE ACCESS WAY IS CONSTRUCTED.
2. STRIP ANY TOPSOIL AND PLACE A NEEDLE-PUNCHED TEXTILE OVER THE BASE OF THE CROSSING.
3. PLACE CLEAN, RIGID, NON POLLUTING AGGREGATE OR GRAVEL IN THE 100mm to 150mm SIZE CLASS OVER THE FABRIC TO A MINIMUM DEPTH OF 200mm.
4. PROVIDE A 3m WIDE CARRIAGEWAY WITH SUFFICIENT LENGTH OF CULVERT PIPE TO ALLOW LESS THAN A 3(H): 1 (V) SLOPE ON SIDE BATTERS.
5. INSTALL A LOWER SECTION TO ACT AS AN EMERGENCY SPILLWAY IN GREATER THAN DESIGN STORM EVENTS.
6. ENSURE THAT CULVERT OUTLETS EXTEND BEYOND THE TOE OF FILL EMBANKMENTS.

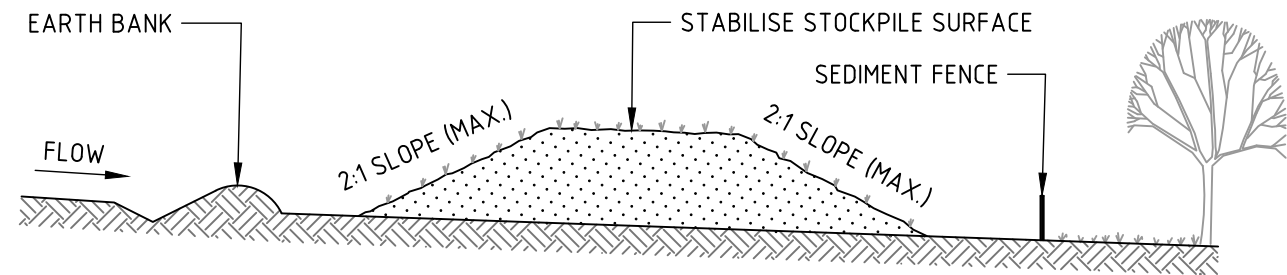
#### TEMPORARY WATERWAY CROSSING (SD 5-1)



#### CONSTRUCTION NOTES

1. REMOVE ALL VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA.
2. CONSTRUCT A CUT-OFF TRENCH 500mm DEEP AND 1200mm WIDE ALONG THE CENTRELINE OF THE EMBANKMENT EXTENDING TO A POINT ON THE GULLY WALL LEVEL WITH THE RISER CREST.
3. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT AS SPECIFIED IN THE SWMP TO 95 PER CENT STANDARD PROCTOR DENSITY.
4. SELECT FILL FOLLOWING THE SWMP THAT IS FREE OF ROOTS, WOOD, ROCK, LARGE STONE OR FOREIGN MATERIAL.
5. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING TO AT LEAST 100mm TO HELP BOND COMPACTED FILL TO THE EXISTING SUBSTRATE.
6. SPREAD THE FILL IN 100mm TO 150mm LAYERS AND COMPACT IT AT OPTIMUM MOISTURE CONTENT FOLLOWING THE SWMP.
7. CONSTRUCT THE EMERGENCY SPILLWAY.
8. REHABILITATE THE STRUCTURE FOLLOWING THE SWMP.

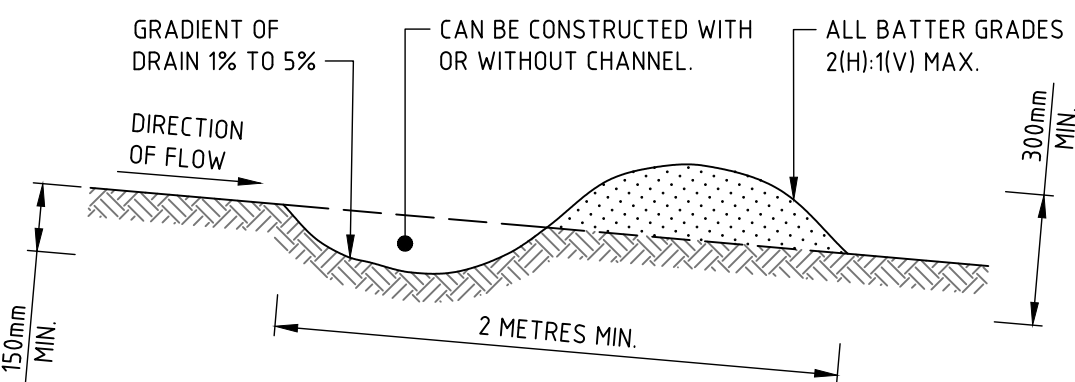
(APPLIES TO 'TYPE D' AND 'TYPE F' SOILS ONLY)  
**EARTH BASIN - WET (SD 6-4)**



#### CONSTRUCTION NOTES

1. PLACE STOCKPILES MORE THAN 2m (PREFERABLY 5m) FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES (STANDARD DRAWING 6-8) 1 TO 2m DOWNSLOPE.

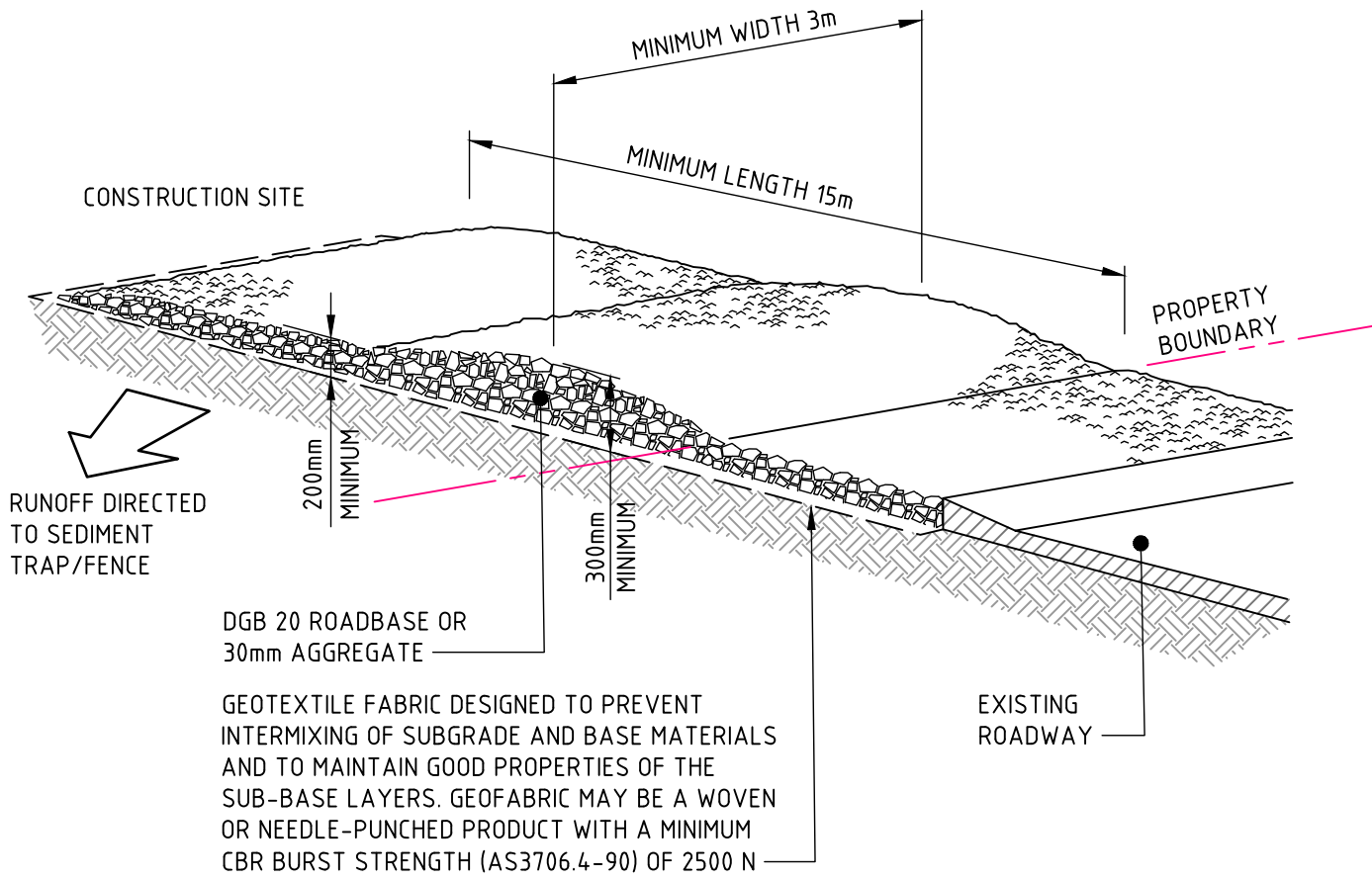
#### STOCKPILES (SD 4-1)



#### CONSTRUCTION NOTES

1. BUILD WITH GRADIENTS BETWEEN 1 AND 5 PERCENT.
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM.
3. ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER FLOW.
4. BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED.
5. ENSURE THE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE.
6. COMPLETE PERMANENT OR TEMPORARY STABILISATION WITHIN 10 DAYS OF CONSTRUCTION.

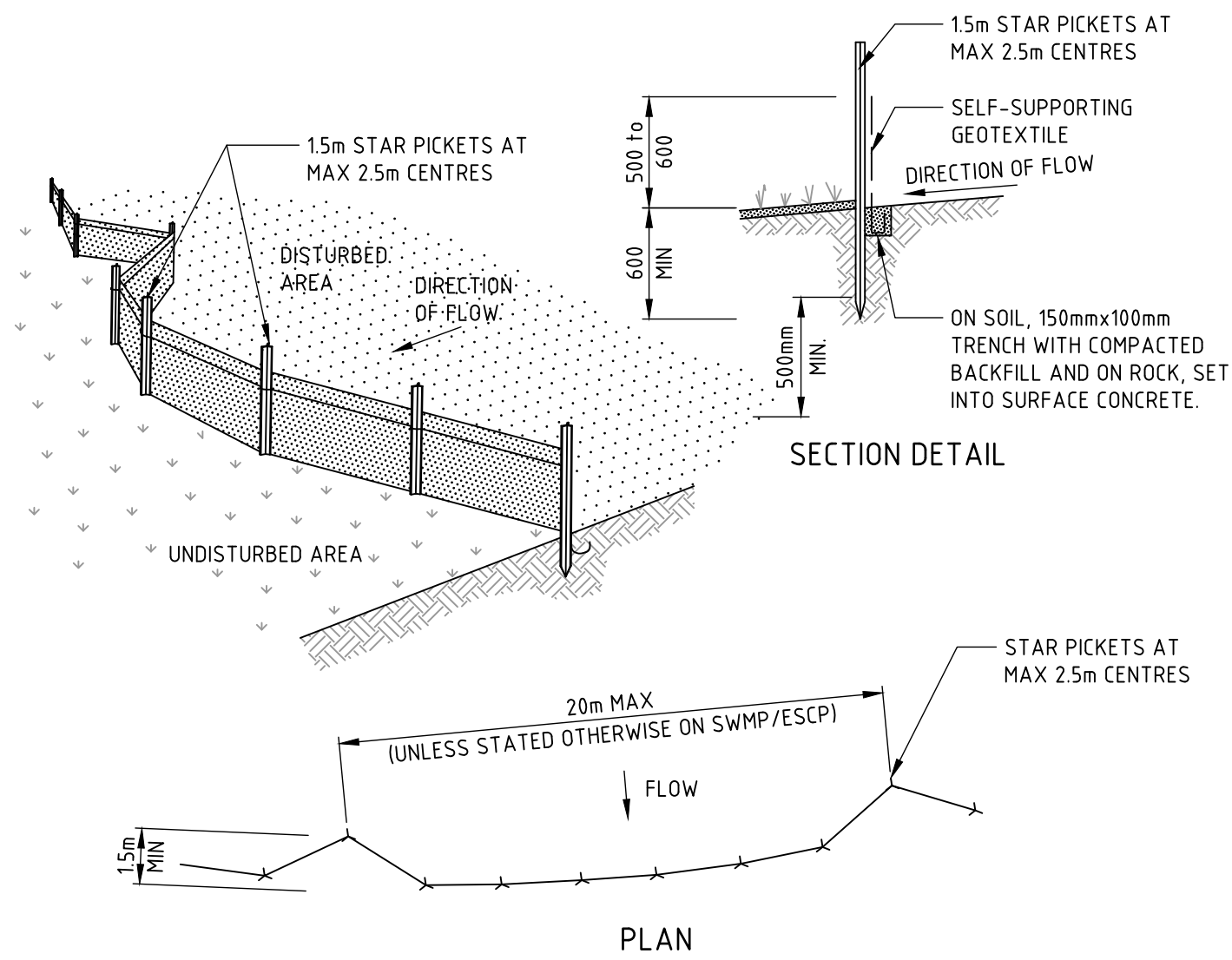
NOTE: ONLY TO BE USED AS TEMPORARY BANK  
WHERE MAXIMUM UPSLOPE LENGTH IS 80 METRES.  
**EARTH BANK - LOW FLOW (SD 5-5)**



#### CONSTRUCTION NOTES

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm AGGREGATE.
4. ENSURE THE STRUCTURE IS AT LEAST 15 METRES LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3 METRES WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.

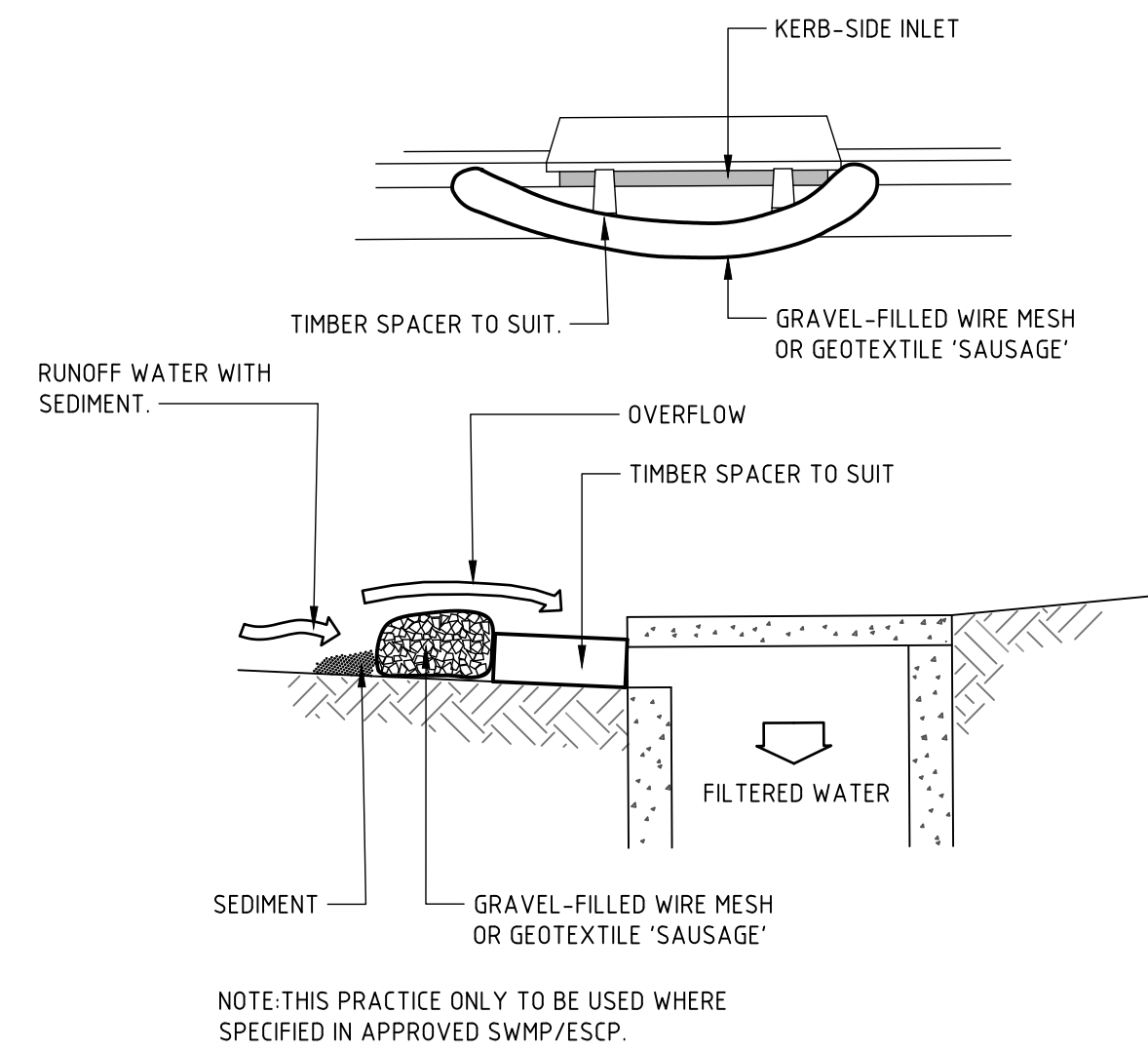
#### STABILISED SITE ACCESS (SD 6-14)



#### CONSTRUCTION NOTES

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 15 METRE LONG STAR PICKETS INTO GROUND AT 2.5 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

#### SEDIMENT FENCE (SD 6-8)



#### CONSTRUCTION NOTES

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

#### MESH AND GRAVEL INLET FILTER (SD 6-11)

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6	ISSUED FOR SSDA	LS		CS	30.07.21

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SCALE 1:1250 @ A1	 0 10 20 30 40 50 60m

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PROJECT	JOHN HUNTER HEALTH AND INNOVATION PRECINCT
LOOKOUT ROAD, NEW LAMBTON HEIGHTS N.S.W	

DRAWING TITLE	CIVIL ENGINEERING PACKAGE
SOIL AND WATER MANAGEMENT DETAILS	

JOB NUMBER	NL191366
DRAWING NUMBER	REVISION
C101-DA	6
DRAWING SHEET SIZE = A1	



DRAWN: L.STEEL      DESIGNED: S.SPIRR      JOB MANAGER: C.SMITH      VERIFIER: C.SMITH

- JOB MANAGER:** C.SMITH

## DESIGNED: S.SPURR

DRAWN: L.STEEL

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- | REVISION | DESCRIPTION                 | ISSUED | VER'D | APP'D | DATE     |
|----------|-----------------------------|--------|-------|-------|----------|
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| 6        | ISSUED FOR SSDA             | LS     |       | CS    | 30.07.21 |

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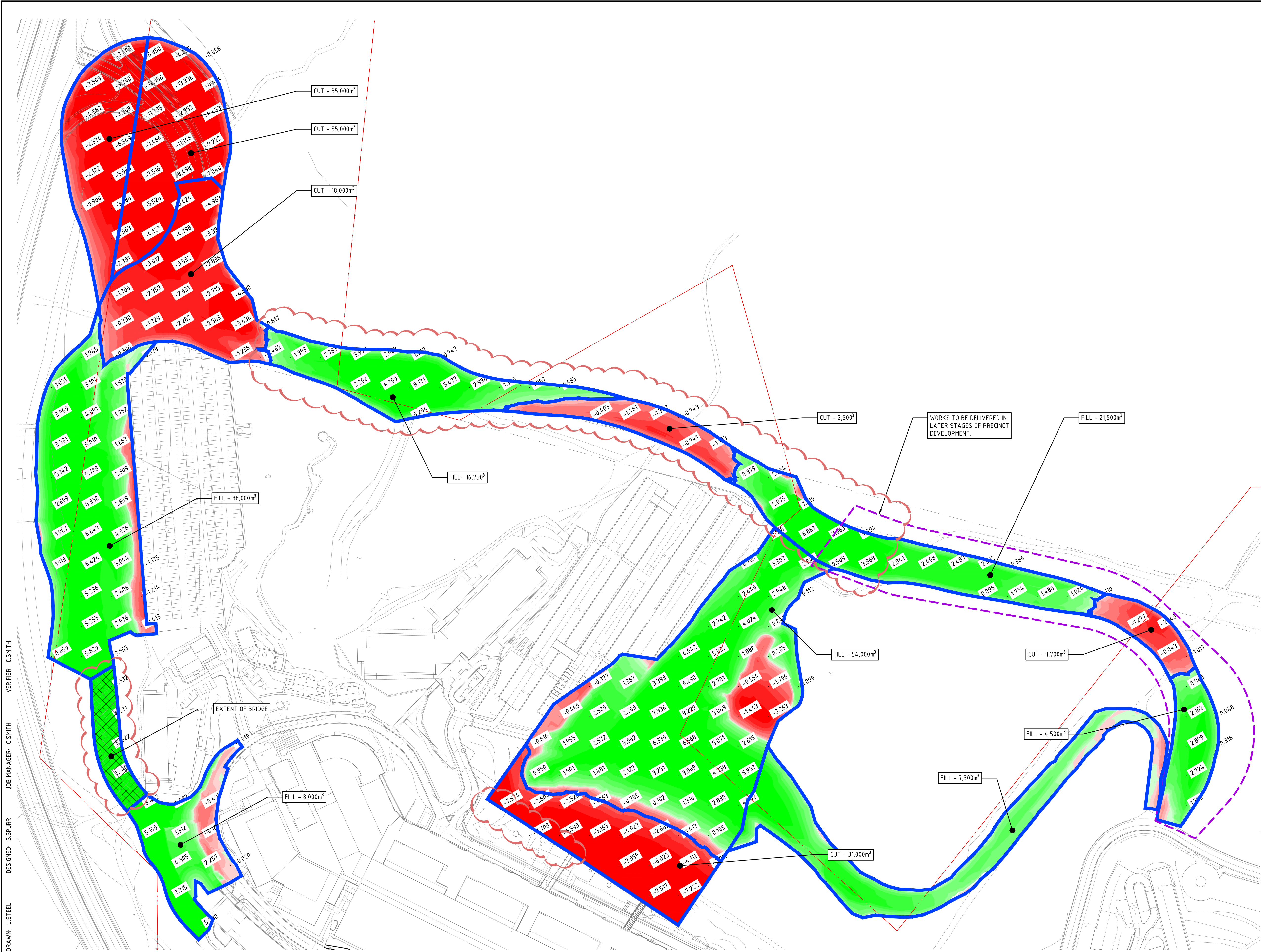
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1	ISSUED FOR REVIEW	LS	CS		09.11.20	 <b>Health Infrastructure</b>		 <b>NORTHROP</b> Newcastle Suite 4, 215 Pacific Hwy, Charlestown NSW 2290 P.O. Box 180, Charlestown NSW 2290 Ph (02) 4943 1777 Fax (02) 4943 1577 Email northrop@northrop.com.au ABN 81 094 433 100	<b>JOHN HUNTER HEALTH AND INNOVATION PRECINCT</b>	<b>CIVIL ENGINEERING PACKAGE</b>	<b>NL191366</b>
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										REVISION	<b>6</b>





**LEGEND**

--- DENOTES BOUNDARY LINE

• -155 DENOTES DEPTH OF FILL REQUIRED

• -150 DENOTES AREA OF CUT REQUIRED

**DEPTH OF CUT**

[Red Box]	- 20m TO - 3.0m
[Red Box]	- 3.0m TO - 2.0m
[Red Box]	- 2.0m TO - 1.5m
[Red Box]	- 1.5m TO - 1.0m
[Red Box]	- 1.0m TO - 0.5m
[Red Box]	- 0.5m TO - 0.25m
[Red Box]	- 0.25m TO - 0.1m
[Red Box]	- 0.1m TO - 0.0m

**DEPTH OF FILL**

[Green Box]	0.0m TO 0.1m
[Green Box]	0.1m TO 0.25m
[Green Box]	0.25m TO 0.5m
[Green Box]	0.5m TO 1.0m
[Green Box]	1.0m TO 1.5m
[Green Box]	1.5m TO 2.0m
[Green Box]	2.0m TO 3.0m
[Green Box]	3.0m TO 20m

**SITE EARTHWORKS NOTES**

PRIOR TO COMMENCEMENT OF EARTHWORKS ENSURE THAT ALL SEDIMENT AND EROSION CONTROL MEASURES ARE INSTALLED AS PER SOIL AND WATER MANAGEMENT GUIDELINES.

THE APPROXIMATE SITE EARTHWORKS VOLUMES ARE BASED ON FINISHED SURFACE TO NATURAL SURFACE.

- CUT: 163,200m³
- FILL: 150,050m³
- NET: 6850m³ (FILL)

**NOTE:**

IT IS ANTICIPATED IN EXCESS OF 10,000m³ OF SPOIL WILL BE AVAILABLE FROM DETAILED EXCAVATION AND SERVICE TRENCH INSTALLATION, AS SUCH TOTAL NET CUT/FILL IS EXPECTED TO YIELD A SITE WIDE BALANCE.

THE ABOVE VOLUMES ARE BASED ON SUPPLIED SURVEY DATA AND ASSUMED PAVEMENT AND BULK EARTHWORKS DEPTHS, AS SUCH ARE APPROXIMATE ONLY, THE CONTRACTOR SHALL SATISFY THEMSELVES AS TO THEIR ACCURACY.

THE ABOVE VOLUMES DO NOT INCLUDE A STRIPPING ALLOWANCE, SERVICE TRENCHING OR DETAILED EXCAVATION.

VERIFIER: CSMITH  
JOB MANAGER: CSMITH  
DESIGNED: S.SPURR  
DRAWN: L.STEEL

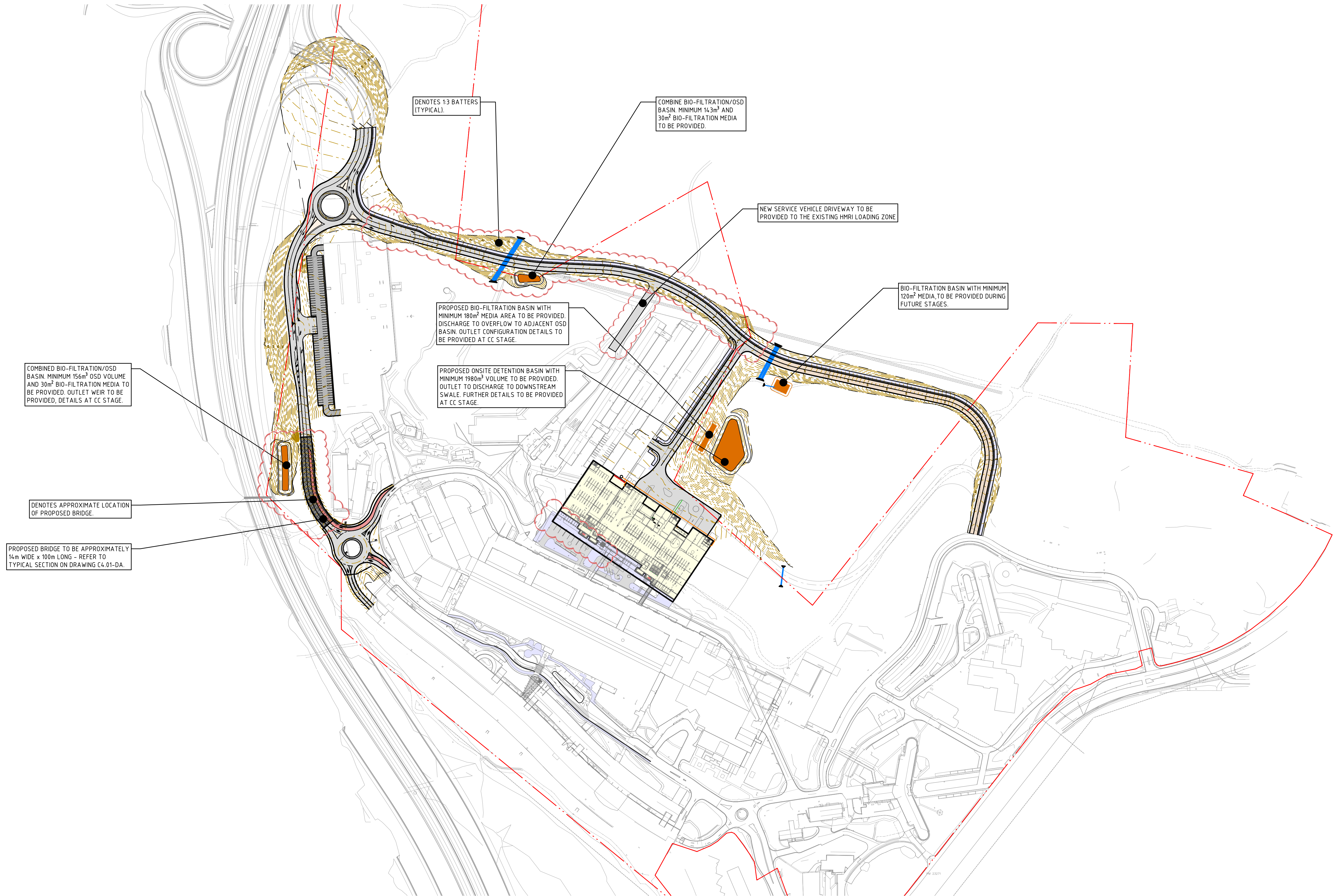
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		<p><b>NORTHROP</b> Newcastle</p> <p>Suite 4, 215 Pacific Hwy, Charlestown NSW 2290 P.O. Box 180, Charlestown NSW 2290 Ph: (02) 4943 1777 Fax: (02) 4943 1577 Email: newcastle@northrop.com.au ABN 81 094 433 100</p>	<p>PROJECT</p> <p><b>JOHN HUNTER HEALTH AND INNOVATION PRECINCT</b></p> <p><b>LOOKOUT ROAD, NEW LAMBTON HEIGHTS N.S.W</b></p>	<p>DRAWING TITLE</p> <p><b>CIVIL ENGINEERING PACKAGE</b></p> <p><b>BULK EARTHWORKS PLAN</b></p>	<p>JOB NUMBER</p> <p><b>NL191366</b></p>

DRAWING SHEET SIZE = A1



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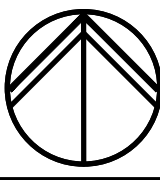


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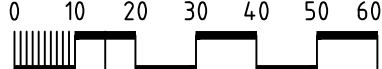


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PROJECT

JOHN HUNTER HEALTH AND  
INNOVATION PRECINCT

LOOKOUT ROAD, NEW  
LAMBTON HEIGHTS N.S.W

DRAWING TITLE

CIVIL ENGINEERING PACKAGE  
CIVIL WORKS  
ARRANGEMENT PLAN

JOB NUMBER

NL191366

DRAWING NUMBER

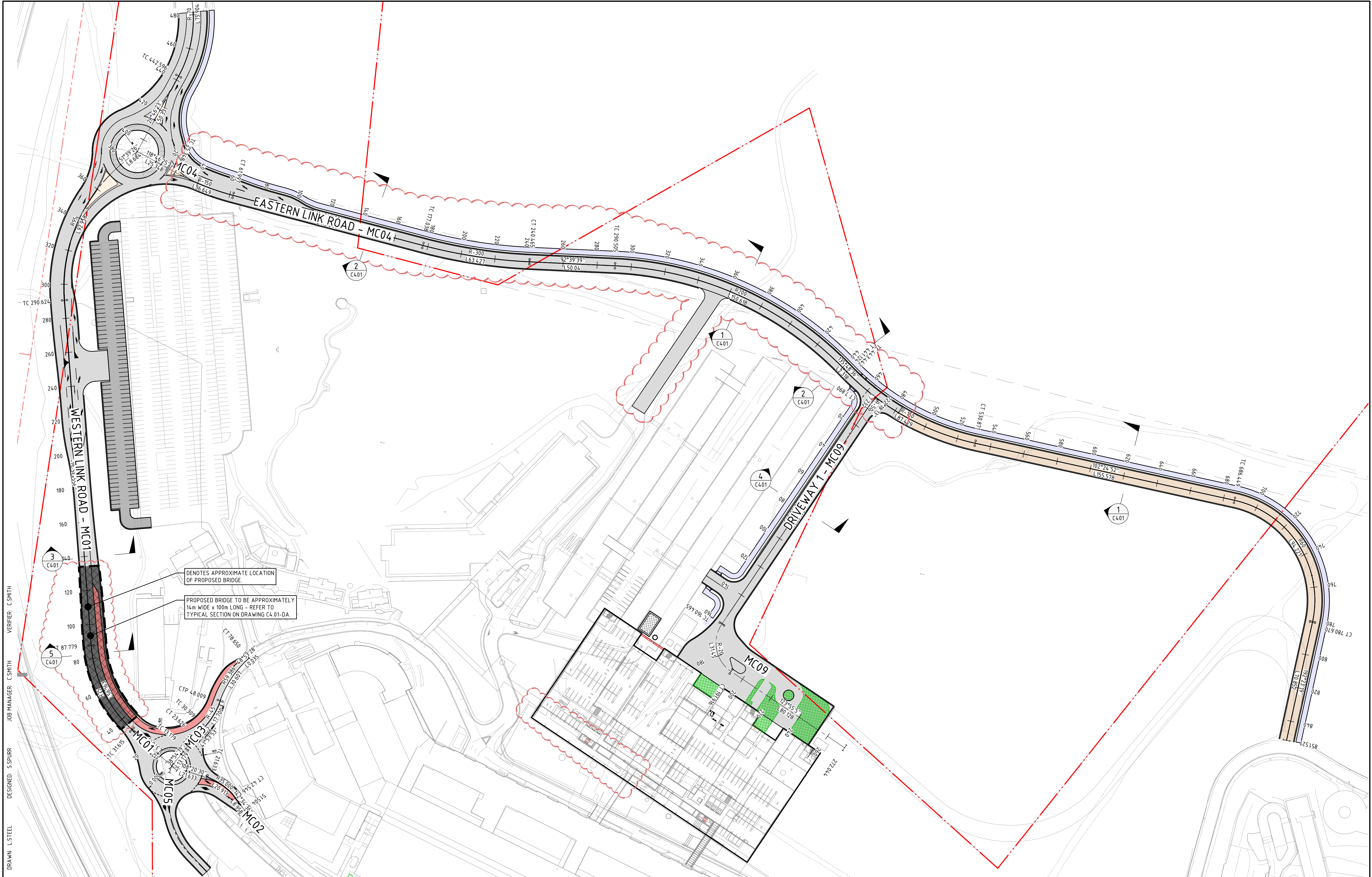
C300-DA

REVISION

8

DRAWING SHEET SIZE = A1






DRAWN: L STEEL  
DESIGNED: S SPURR  
JOB MANAGER: C SMITH  
VERIFIER: C SMITH

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8	ISSUED FOR SSDA	LS		CS	02.08.21

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SCALE 1:1000 @ A1

0 10 20 30 40 50m

  
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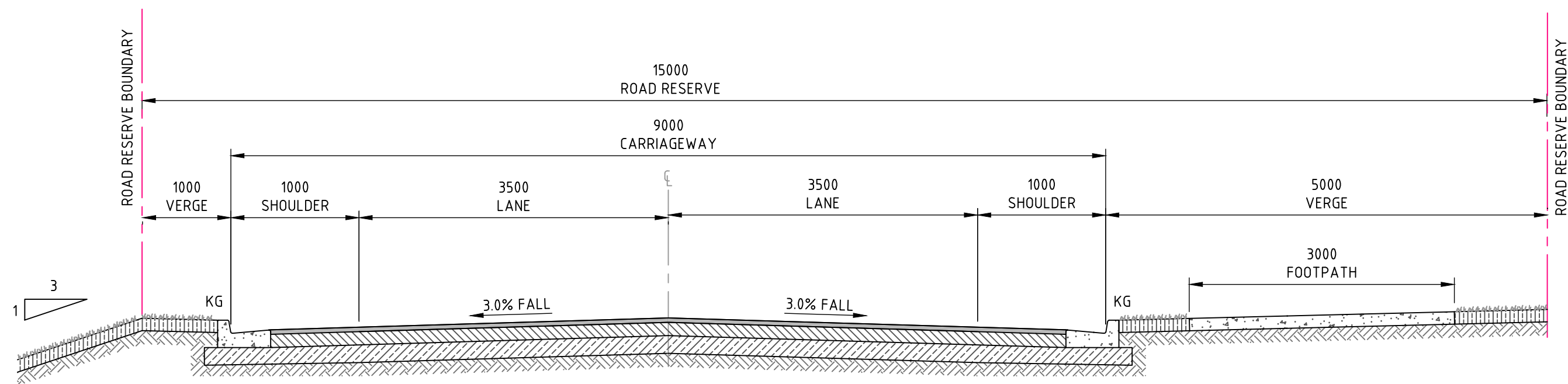
PROJECT: **JOHN HUNTER HEALTH AND INNOVATION PRECINCT**  
**LOOKOUT ROAD, NEW LAMBTON HEIGHTS N.S.W**

DRAWING TITLE: **CIVIL ENGINEERING PACKAGE**  
**ROAD SETOUT PLAN**

JOB NUMBER: **NL191366**  
DRAWING NUMBER: **C400-DA** REVISION: **8**  
DRAWING SHEET SIZE = A1

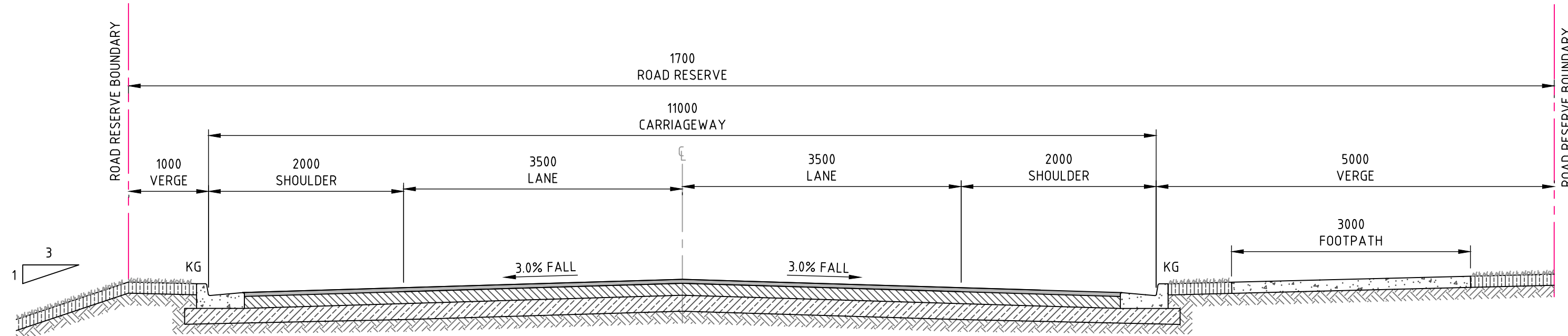


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DRAWN: L.STEEL



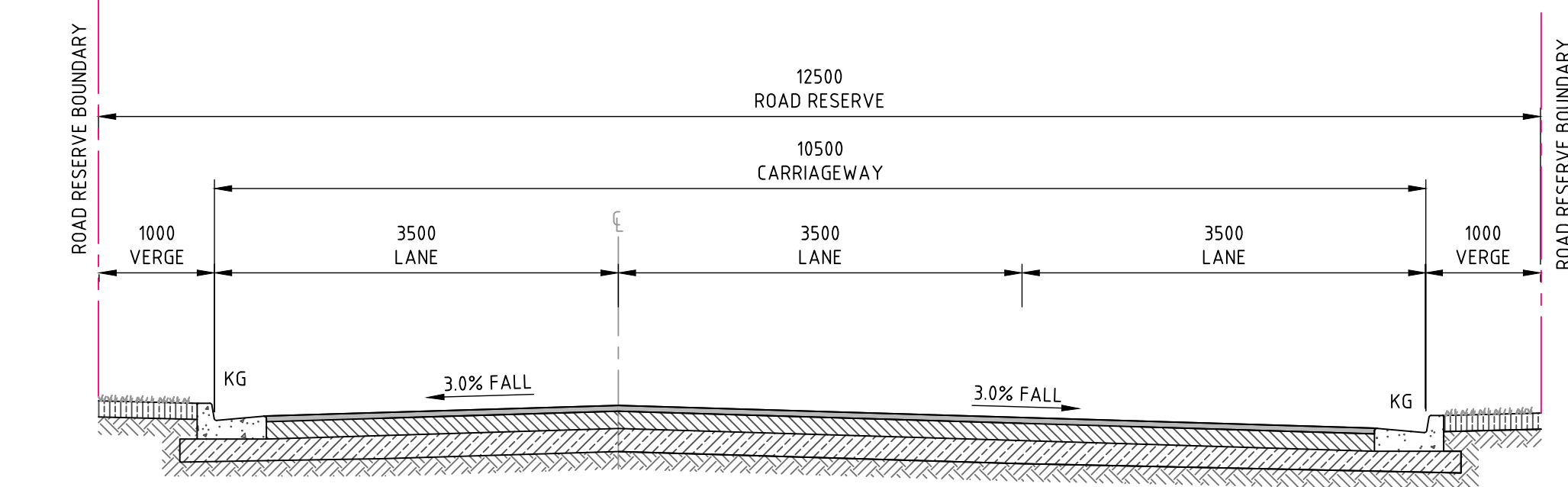
NORTHERN LINK ROAD - SECTION 1

SECTION 1  
SCALE 1:50  
C400



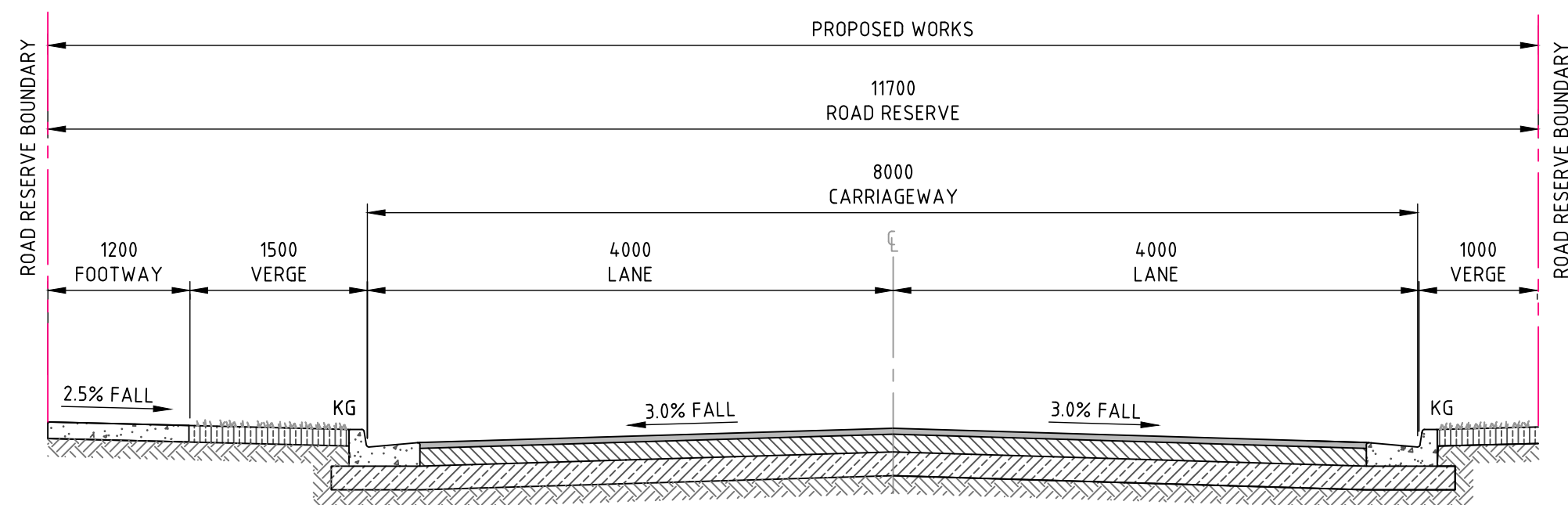
NORTHERN LINK ROAD - SECTION 2

SECTION 2  
SCALE 1:50  
C400



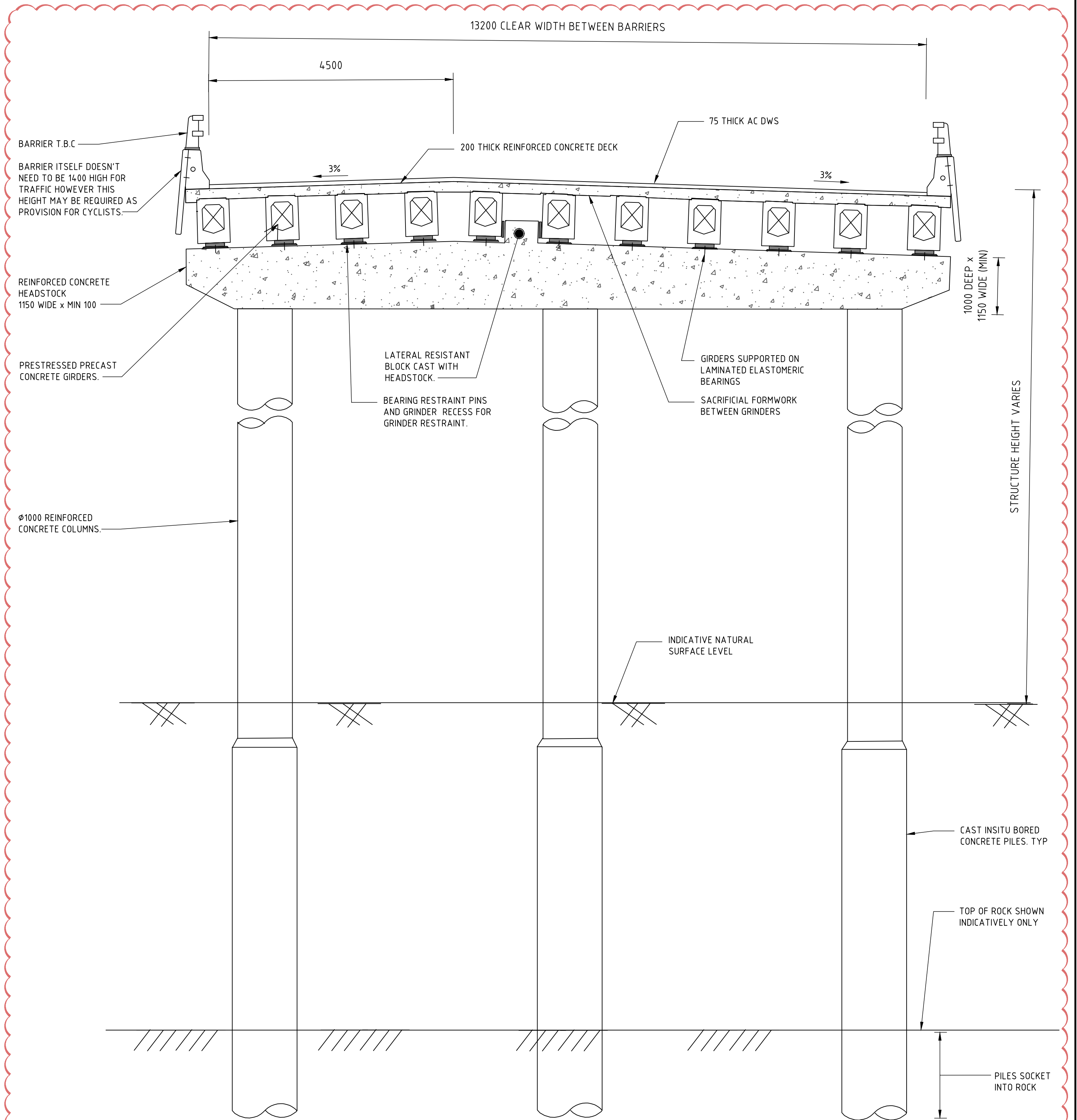
WESTERN LINK ROAD

SECTION 3  
SCALE 1:50  
C400



DRIVEWAY 1

SECTION 4  
SCALE 1:50  
C400



TYPICAL BRIDGE SECTION DETAIL

NOTE:  
THIS CROSS SECTION IS INDICATIVE  
ONLY AND IS INTENDED TO SHOW A  
TYPICAL CONFIGURATION ONLY

SECTION 5  
SCALE 1:50  
C400

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
2	ISSUED FOR REVIEW	LS		CS	09.11.20
3	ISSUED FOR SCHEMATIC DESIGN	LS		CS	29.01.21
4	ISSUED FOR DRAFT SSDA	LS		CS	25.02.21
5	ISSUED FOR DRAFT SSDA	LS		CS	09.03.21
6	ISSUED FOR SSDA	LS		CS	31.03.21
7	ISSUED FOR SSDA	LS		CS	30.07.21

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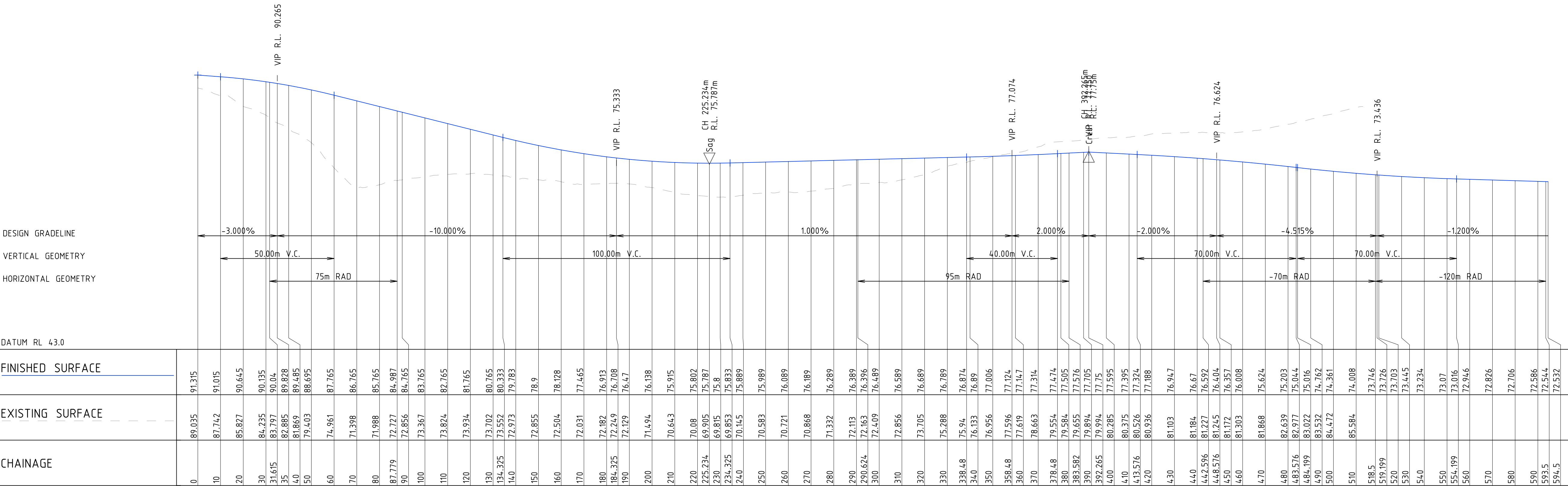
PROJECT <b>JOHN HUNTER HEALTH AND INNOVATION PRECINCT</b>  <b>LOOKOUT ROAD, NEW LAMBTON HEIGHTS N.S.W</b>
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DRAWING TITLE <b>CIVIL ENGINEERING PACKAGE</b>  <b>ROAD TYPICAL SECTIONS</b>
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JOB NUMBER <b>NL191366</b>	DRAWING NUMBER <b>C401-DA</b>	REVISION <b>7</b>
DRAWING SHEET SIZE = A1		

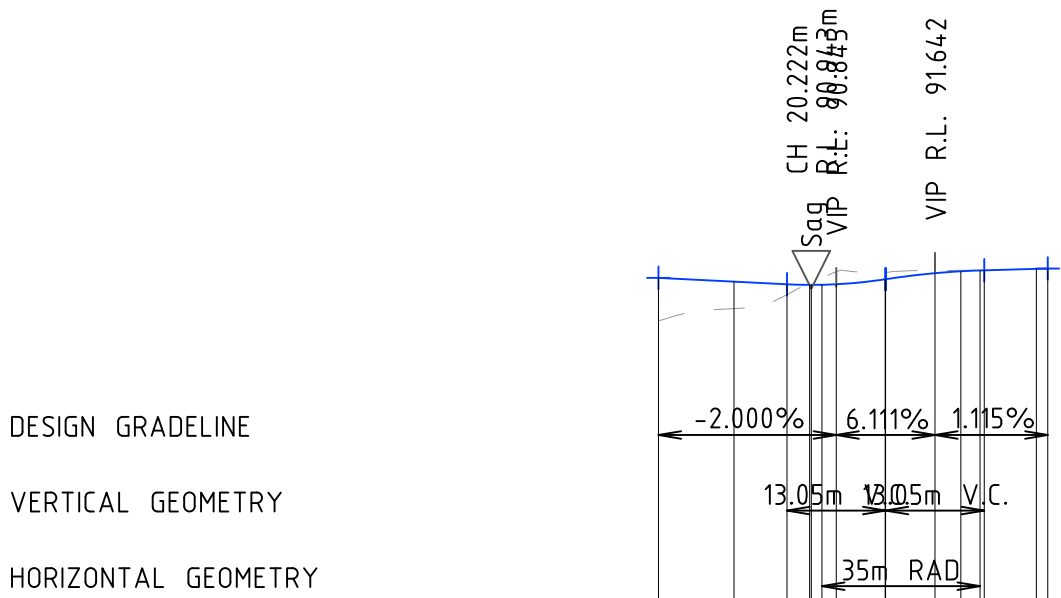


VERIFIER: CSMITH  
JOB MANAGER: CSMITH  
DESIGNED: S.SPURR  
DRAWN: L.STEEL



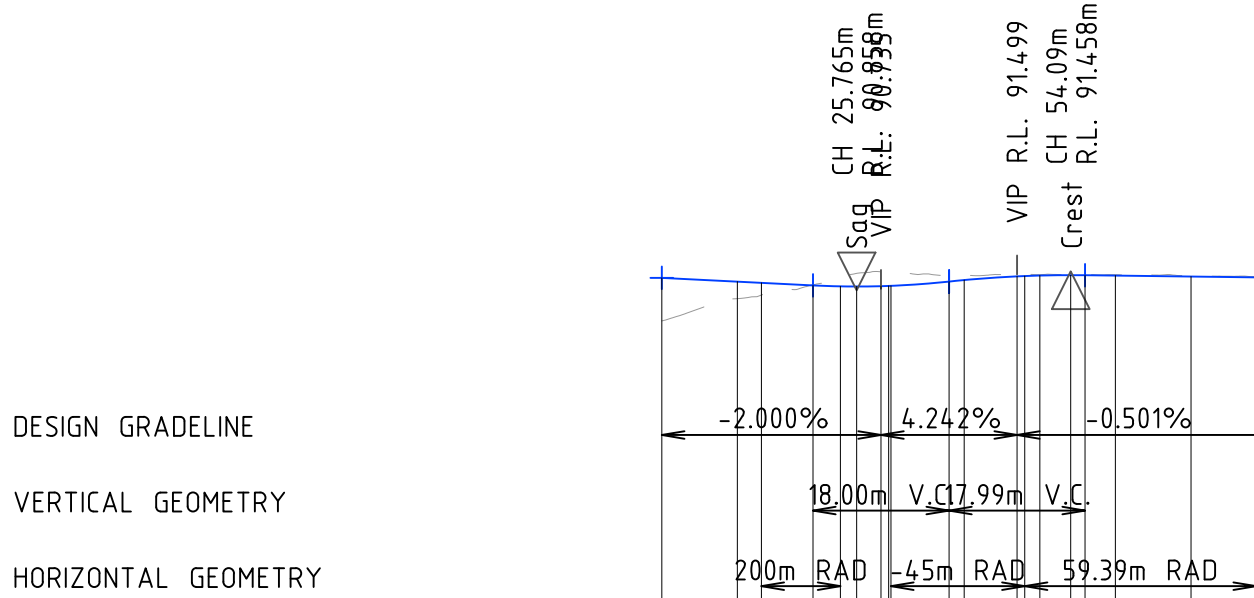
LONGITUDINAL SECTION ALONG MC01

HORIZONTAL SCALE 1:1000@A1  
VERTICAL SCALE 1:400@A1



LONGITUDINAL SECTION ALONG MC02

HORIZONTAL SCALE 1:1000@A1  
VERTICAL SCALE 1:400@A1




LONGITUDINAL SECTION ALONG MC03

HORIZONTAL SCALE 1:1000@A1  
VERTICAL SCALE 1:400@A1

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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5	ISSUED FOR DRAFT SSDA	LS		CS	09.03.21
6	ISSUED FOR SSDA	LS		CS	31.03.21
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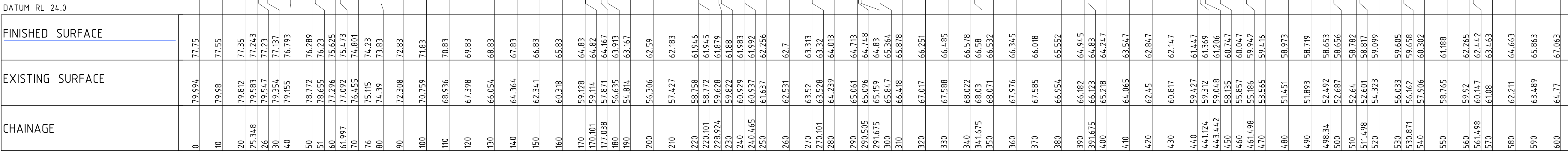
PROJECT	JOHN HUNTER HEALTH AND INNOVATION PRECINCT
LOOKOUT ROAD, NEW LAMBTON HEIGHTS N.S.W	

DRAWING TITLE	CIVIL ENGINEERING PACKAGE ROAD LONG SECTIONS SHEET 1
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JOB NUMBER	NL191366
DRAWING NUMBER	C501-DA
REVISION	7
DRAWING SHEET SIZE = A1	



DRAWN: L STEEL      DESIGNED: S SPURR      JOB MANAGER: C SMITH      VERIFIER: C SMITH



LONGITUDINAL SECTION ALONG MC04

HORIZONTAL SCALE 1:1000@A1  
VERTICAL SCALE 1:400@A1

DESIGN GRADELINE

VERTICAL GEOMETRY

HORIZONTAL GEOMETRY

DATUM RL 35.0

FINISHED SURFACE	EXISTING SURFACE	CHAINAGE
64.063	61.634	575
64.663	62.211	580
65.863	63.489	590
67.063	64.77	600
68.263	66.084	610
69.463	67.716	620
70.663	69.224	630
71.863	70.29	640
73.063	71.601	650
74.263	73.203	660
75.463	74.816	670
76.663	76.697	680
77.437	77.783	686.449
77.863	78.315	690
79.063	80.395	700
80.263	81.812	710
81.463	83.498	720
82.663	84.37	730
83.863	85.264	740
85.063	85.614	750
85.915	85.695	757.1
86.258	85.876	760
87.369	86.173	770
88.368	86.755	780
88.431	86.776	780.67
89.254	87.464	790
89.815	88.264	797.1
90.028	88.634	800
90.689	89.572	810
91.237	90.445	820
91.673	91.127	830
91.915	91.766	837.1
92.002	92.075	840
92.302	92.442	850
92.347	92.267	851.521

LONGITUDINAL SECTION ALONG MC04

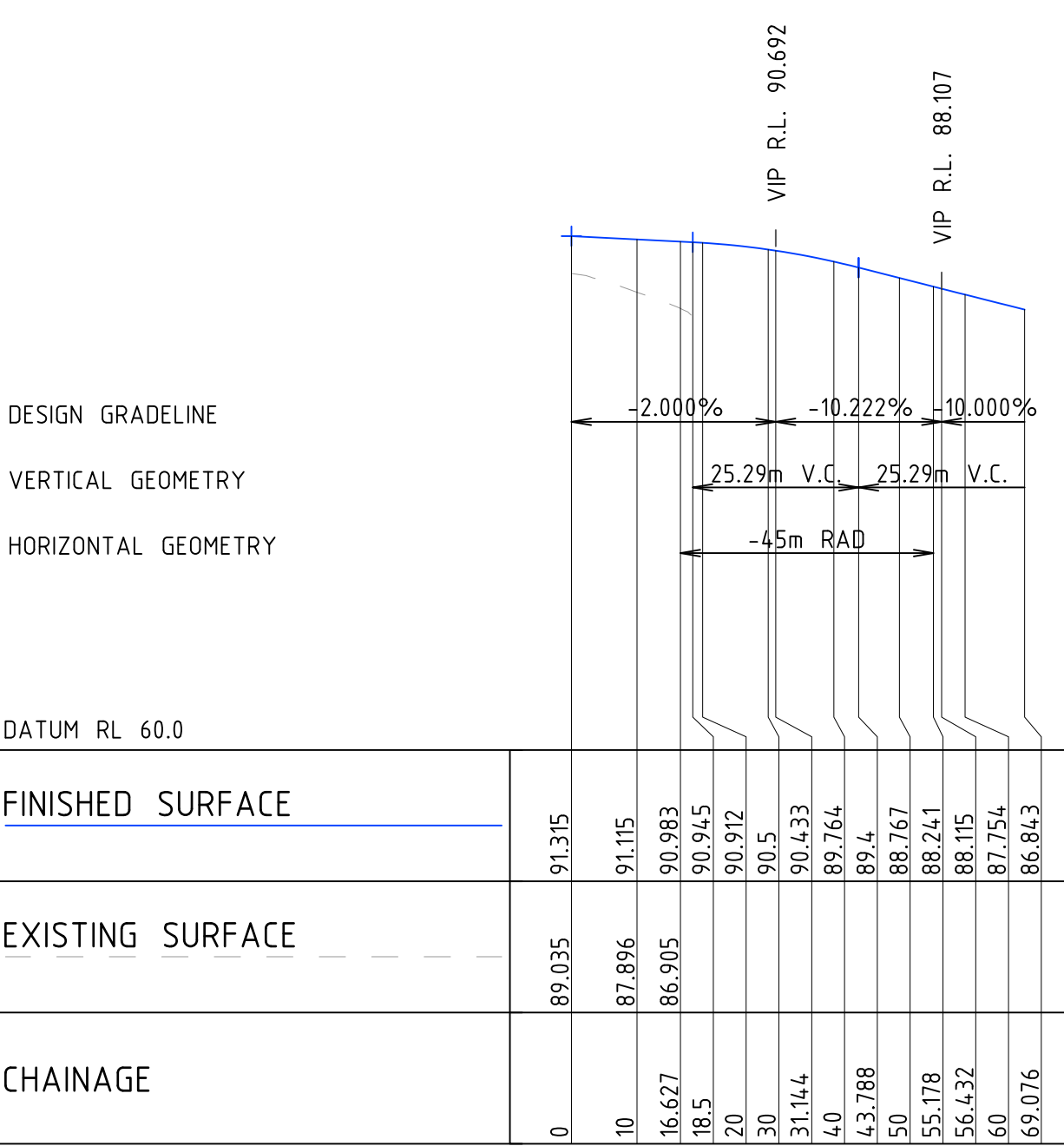
HORIZONTAL SCALE 1:1000@A1  
VERTICAL SCALE 1:400@A1

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
2	ISSUED FOR REVIEW	LS		CS	09.11.20
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5	ISSUED FOR DRAFT SSDA	LS		CS	09.03.21
6	ISSUED FOR SSDA	LS		CS	31.03.21
7	ISSUED FOR SSDA	LS		CS	30.07.21

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						DRAWING NUMBER <b>C502-DA</b>	REVISION <b>7</b>
DRAWING SHEET SIZE = A1							

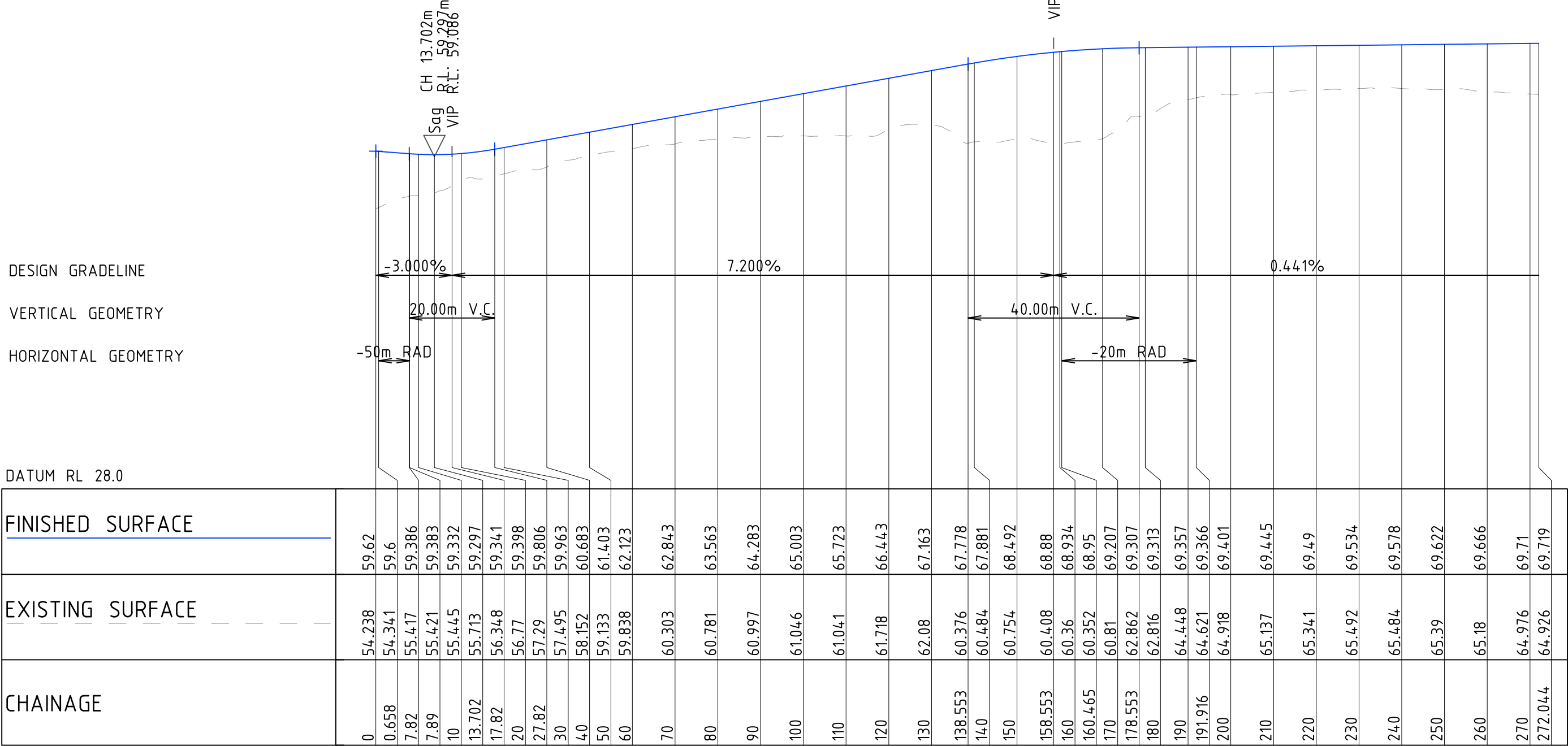


DRAWN: L STEEL  
DESIGNED: S SPURR  
JOB MANAGER: C SMITH  
VERIFIER: C SMITH



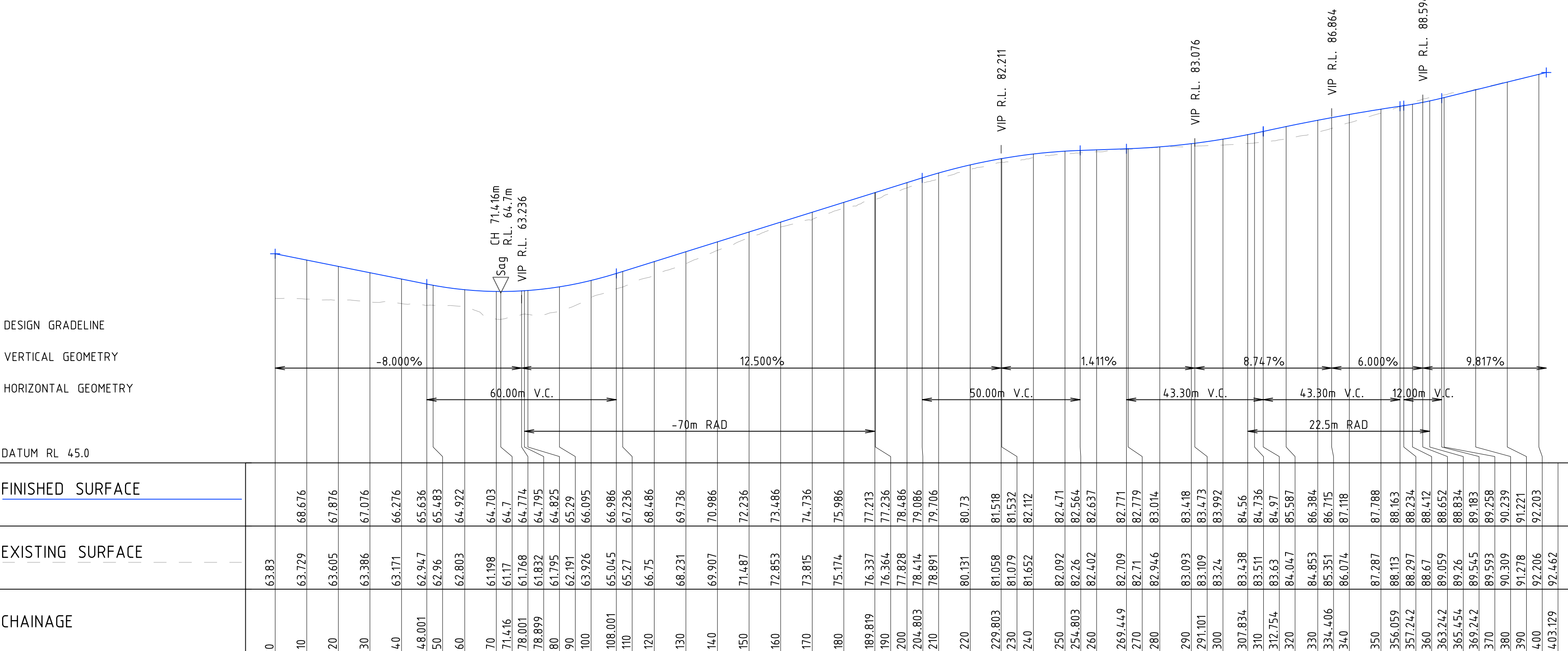
LONGITUDINAL SECTION ALONG MC05

HORIZONTAL SCALE 1:1000@A1  
VERTICAL SCALE 1:400@A1



LONGITUDINAL SECTION ALONG MC09

HORIZONTAL SCALE 1:1000@A1  
VERTICAL SCALE 1:400@A1



LONGITUDINAL SECTION ALONG MCT01

HORIZONTAL SCALE 1:1000@A1  
VERTICAL SCALE 1:400@A1


REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
2	ISSUED FOR REVIEW	LS		CS	09.11.20
3	ISSUED FOR SCHEMATIC DESIGN	LS		CS	29.01.21
4	ISSUED FOR DRAFT SSDA	LS		CS	25.02.21
5	ISSUED FOR DRAFT SSDA	LS		CS	09.03.21
6	ISSUED FOR SSDA	LS		CS	31.03.21
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PROJECT

JOHN HUNTER HEALTH AND  
INNOVATION PRECINCT

LOOKOUT ROAD, NEW  
LAMBTON HEIGHTS N.S.W

DRAWING TITLE

CIVIL ENGINEERING PACKAGE  
ROAD LONG SECTIONS  
SHEET 3

JOB NUMBER

NL191366

DRAWING NUMBER

C503-DA

REVISION

7

DRAWING SHEET SIZE = A1