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Calibre
Attention: Adam Suter/Stanley Lu

Document Register/Issue: B1849-DI-08

Date: 04 August 2023

Footbridge over Main Southern Railway

Document number	Title	Rev	Issued to Calibre		Issued to Mirvac	
			Format	No	Format	No
B1849-D-101	Cover Sheet	A3	A3	pdf	A3	pdf
B1849-D-102	General Arrangement	A3	A3	pdf	A3	pdf
B1849-D-103	Substructure And Piling - Setout And Details	A3	A3	pdf	A3	pdf
B1849-D-104	Abutments - Reinforced Concrete Details	A3	A3	pdf	A3	pdf
B1849-D-105	Prestressed Beam - Concrete Details - Sheet A	A3	A3	pdf	A3	pdf
B1849-D-106	Prestressed Beam - Concrete Details - Sheet B	A3	A3	pdf	A3	pdf
B1849-D-107	Prestressed Beam - Reinforcement Details - Sheet A	A3	A3	pdf	A3	pdf
B1849-D-108	Prestressed Beam - Reinforcement Details - Sheet B	A3	A3	pdf	A3	pdf
B1849-D-109	Prestressed Beam - Reinforcement Details - Sheet C	A3	A3	pdf	A3	pdf
B1849-D-110	Deck - Reinforced Concrete Details	A3	A3	pdf	A3	pdf
B1849-D-111	Protection Screen - Steelwork Details	A3	A3	pdf	A3	pdf
B1849-D-112	Bearings And Miscellaneous Steelwork Details	A3	A3	pdf	A3	pdf
B1849-D-113	Approaches – Steelwork Details	A4	A3	pdf	A3	pdf

			Issued to Calibre		Issued to Mirvac	
Document number	Title	Rev	Format	No	Format	No
B1849-D-114	Reinforcement - Bar Shapes	A3	A3	pdf	A3	pdf

Notes

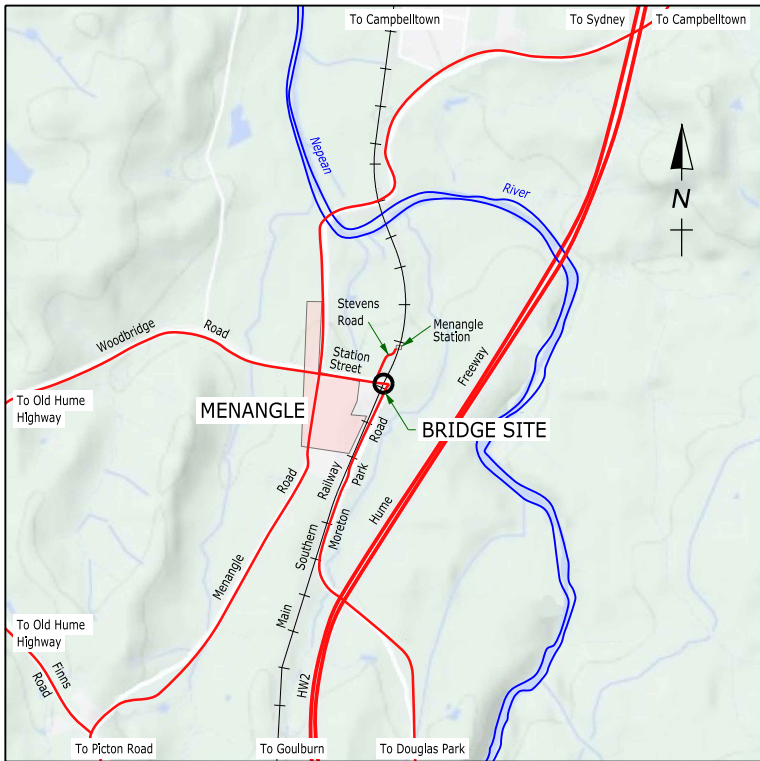
- Highlighted drawings are included in this issue
- Darker Highlight drawings are new in this issue

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14/10/2022 2:41:48 PM Jim

...Drafting\B1849 0101 Cover.dgn

FOOTBRIDGE OVER RAILWAY LINE ON STATION STREET AT 0.45km EAST OF MENANGLE ROAD AUTHORITY - WOLLONDILLY SHIRE COUNCIL



LOCATION
1:50 000
Latitude - 34.1277° S
Longitude - 150.7431° E

DRAWING LIST

- D101 COVER SHEET
- D102 GENERAL ARRANGEMENT
- D103 SUBSTRUCTURE AND PILING - SETOUT AND DETAILS
- D104 ABUTMENTS - REINFORCED CONCRETE DETAILS
- D105 PRESTRESSED BEAM - CONCRETE DETAILS - SHEET A
- D106 PRESTRESSED BEAM - CONCRETE DETAILS - SHEET B
- D107 PRESTRESSED BEAM - REINFORCEMENT DETAILS - SHEET A
- D108 PRESTRESSED BEAM - REINFORCEMENT DETAILS - SHEET B
- D109 PRESTRESSED BEAM - REINFORCEMENT DETAILS - SHEET C
- D110 DECK - REINFORCED CONCRETE DETAILS
- D111 PROTECTION SCREEN - STEELWORK DETAILS
- D112 BEARINGS AND MISCELLANEOUS STEELWORK DETAILS
- D113 APPROACHES - STEELWORK DETAILS
- D114 REINFORCEMENT - BAR SHAPES

New bridge - 2022.
Bridge design to AS 5100-2017.
Pedestrian live loading: 5 kPa.
Ultimate design wind speed 43m/s.
Collision loading (vertical/horizontal) 500kN.



SAFETY IN DESIGN

The design of the works shown on these drawings does not present hazards that are not usually encountered in this type of construction.

Note that any work in the rail corridor requires compliance with all the requirements of the ARTC.

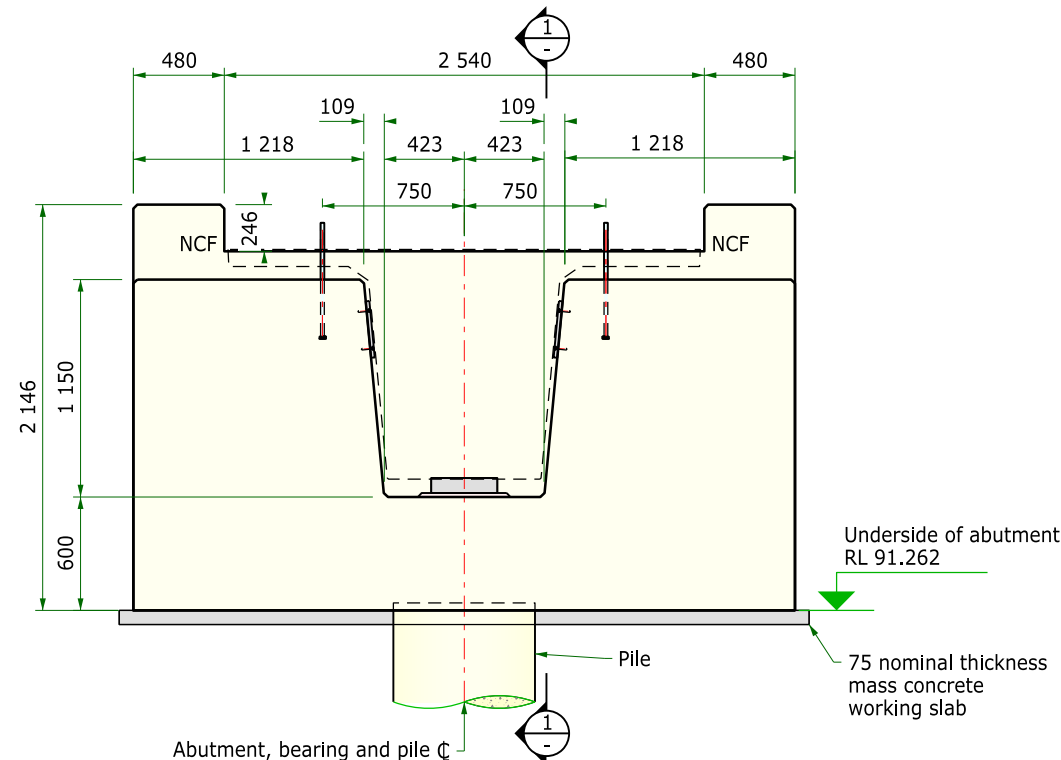
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DRAWING SCALES TRUE AT A3

 PO Box 9140, Wyoming, NSW 2250 ph 02 4322 0011 ABN 63 145 429 063	 CONSULT AUSTRALIA Member Firm	DESIGN: JRA	MANAGER, BRIDGE DESIGN PTY LTD	Station Street FOOTBRIDGE OVER MAIN SOUTHERN RAILWAY at 0.43km east of Menangle Road COVER SHEET	JOB NUMBER B1849
		VERIFIED: JWS			DOCUMENT NUMBER D101
CHECKED: JRA	THIS DRAWING IS NOT APPROVED FOR CONSTRUCTION UNLESS SIGNED DIGITALLY ON THIS SHEET OR THE FIRST SHEET IN THIS SET OF DRAWINGS.	SHEET OF 1 14	REVISION A3		

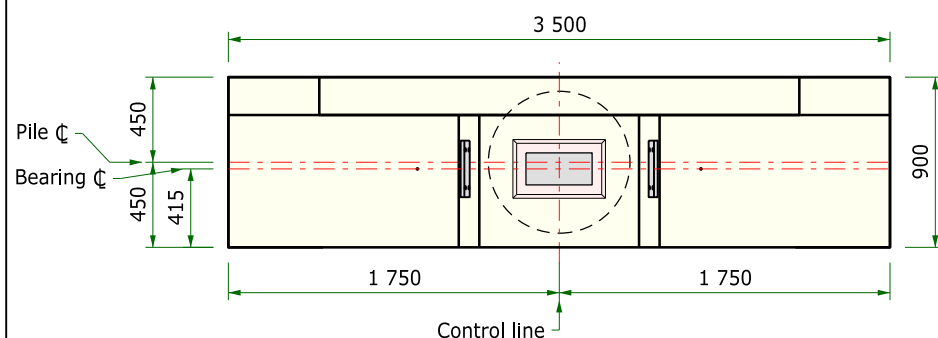
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200mm on original



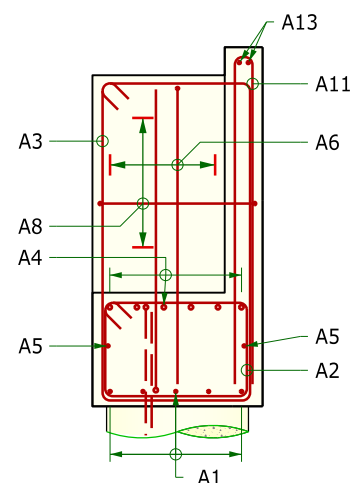
ELEVATION - CONCRETE

1:40



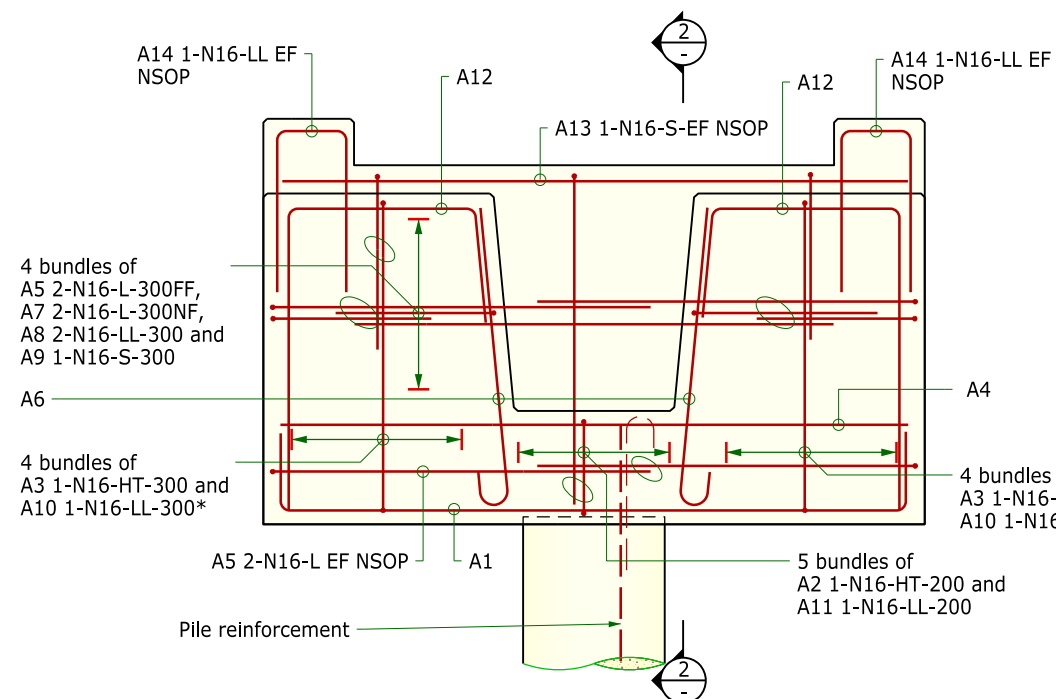
PLAN - CONCRETE

1:40



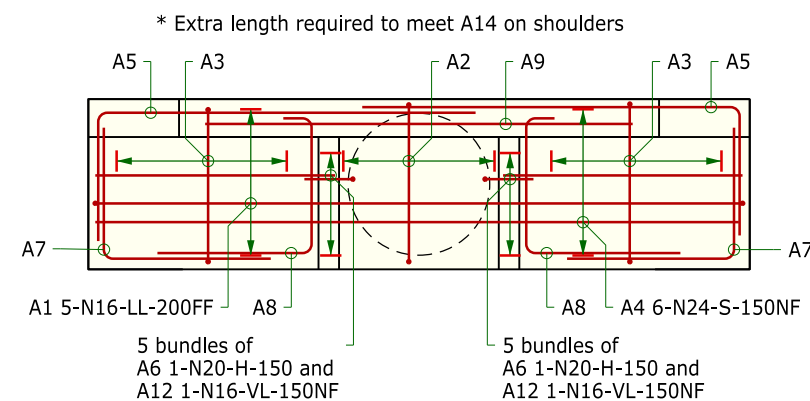
VIEW 2

1:40



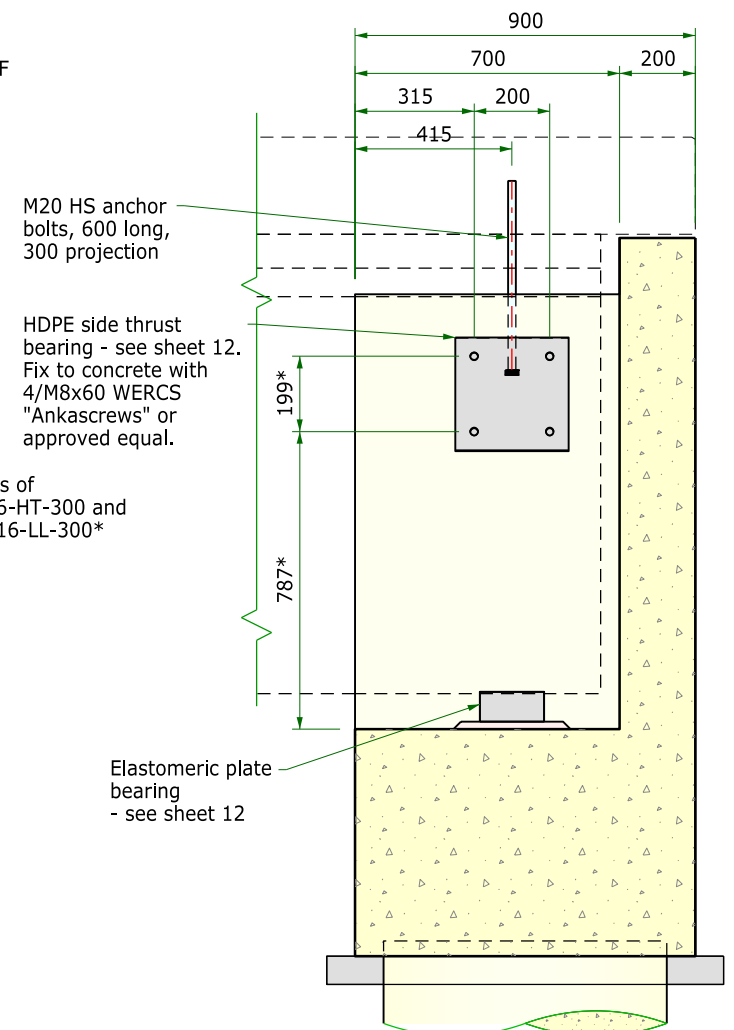
ELEVATION - REINFORCEMENT

1:40



PLAN - REINFORCEMENT

1:40



SECTION 1

1:20

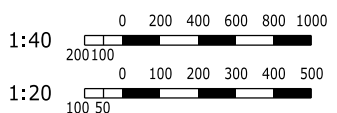
* vertical dimensions

General Notes

Dimensions in millimetres.
SOP denotes set out point
Concrete exposure classification B1.
Minimum 28 day compressive strength of concrete 40MPa.
Chamfer edges 20x20 and fillet re-entrant angles 20x20 USO.
Clear cover to reinforcement nearest to the concrete surface 45mm USO.
FF far face NF near face
EF each face LV length varies
NCF no chamfer or fillet
NSOP not shown on plan
USO unless specified otherwise.
Lap lengths to be as follows USO:

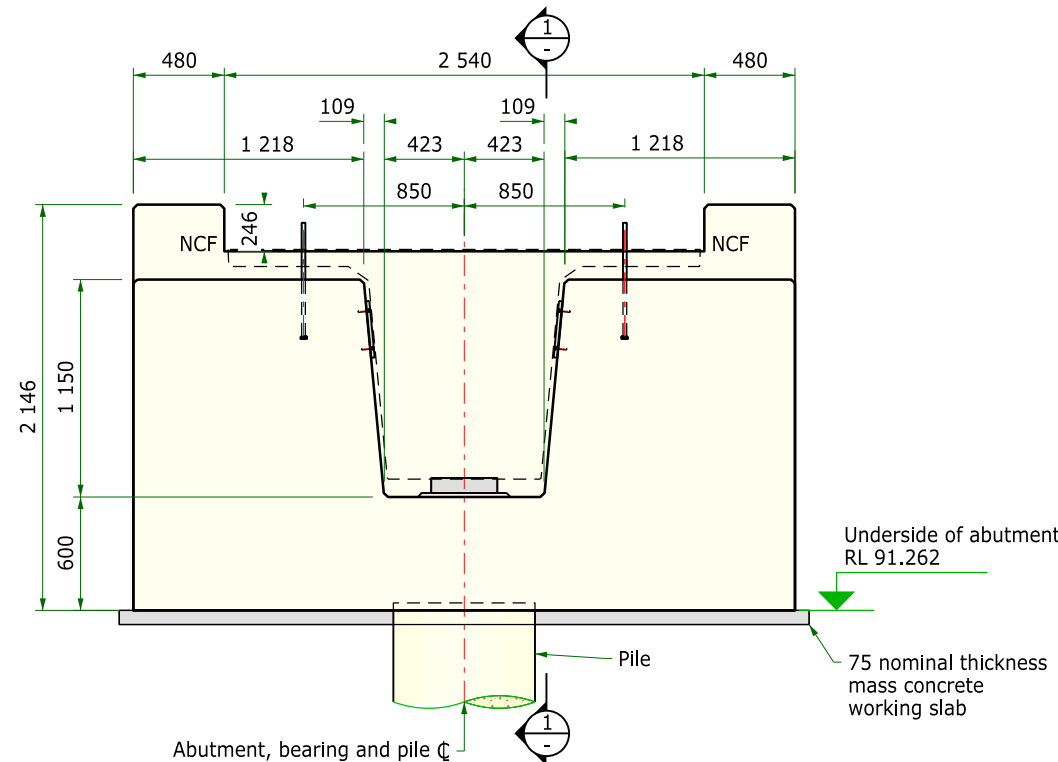
Bar size	N12	N16	N20	N24	N28	N32
Horizontal bars with >300mm of concrete cast below the bar	450	600	810	1000	...	...
Other bars	350	470	620	770	...	...

HS denotes bolting category 8.8/S to AS5100.6
All bolts and other fixings hot dip galvanised.



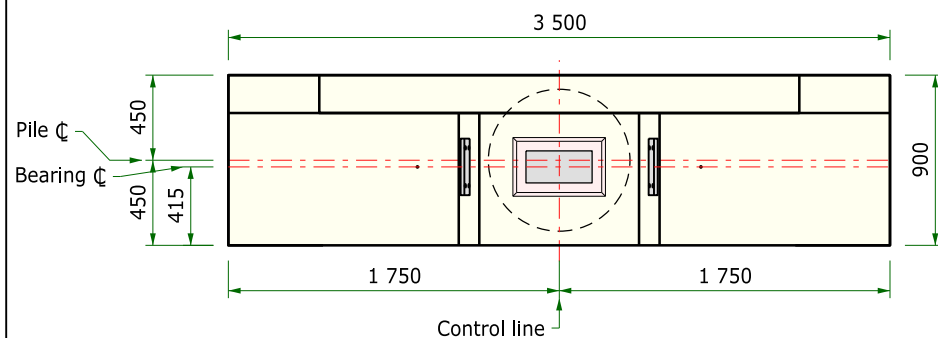
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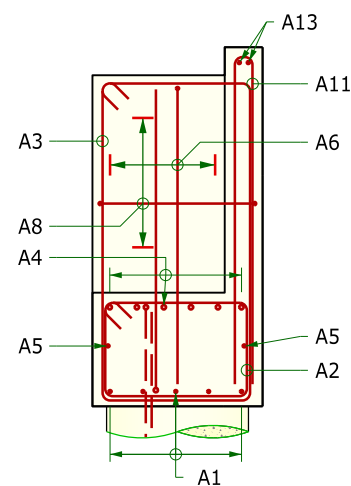
ELEVATION - CONCRETE

1:40



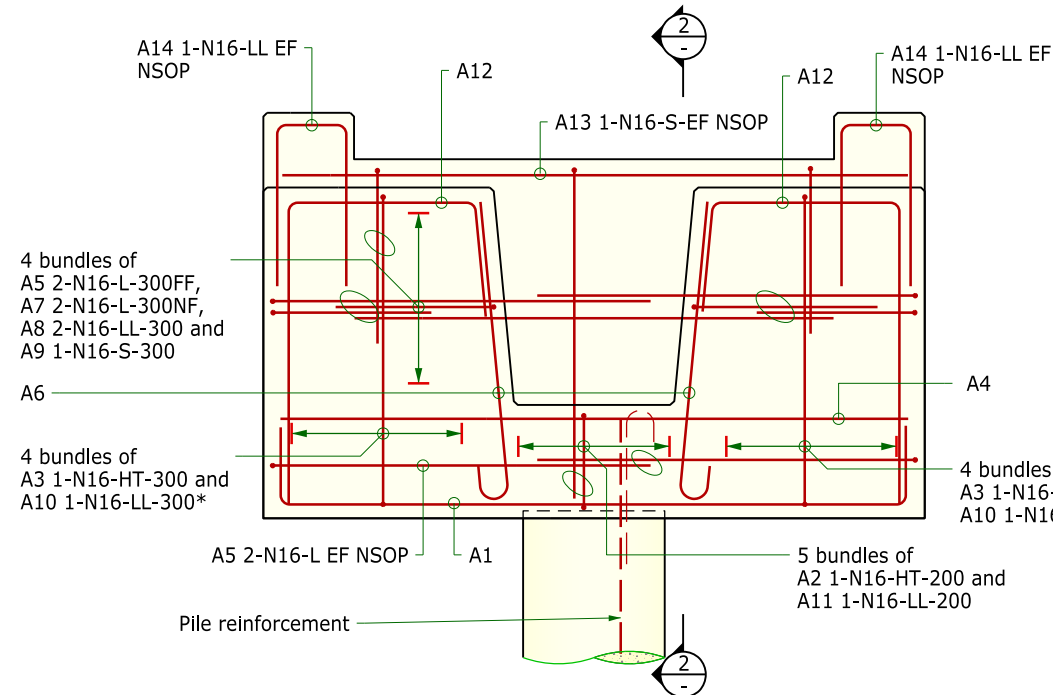
PLAN - CONCRETE

1:40



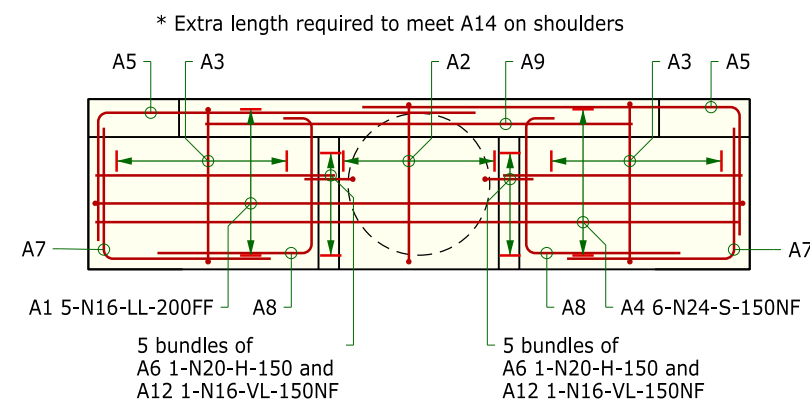
VIEW 2

1:40



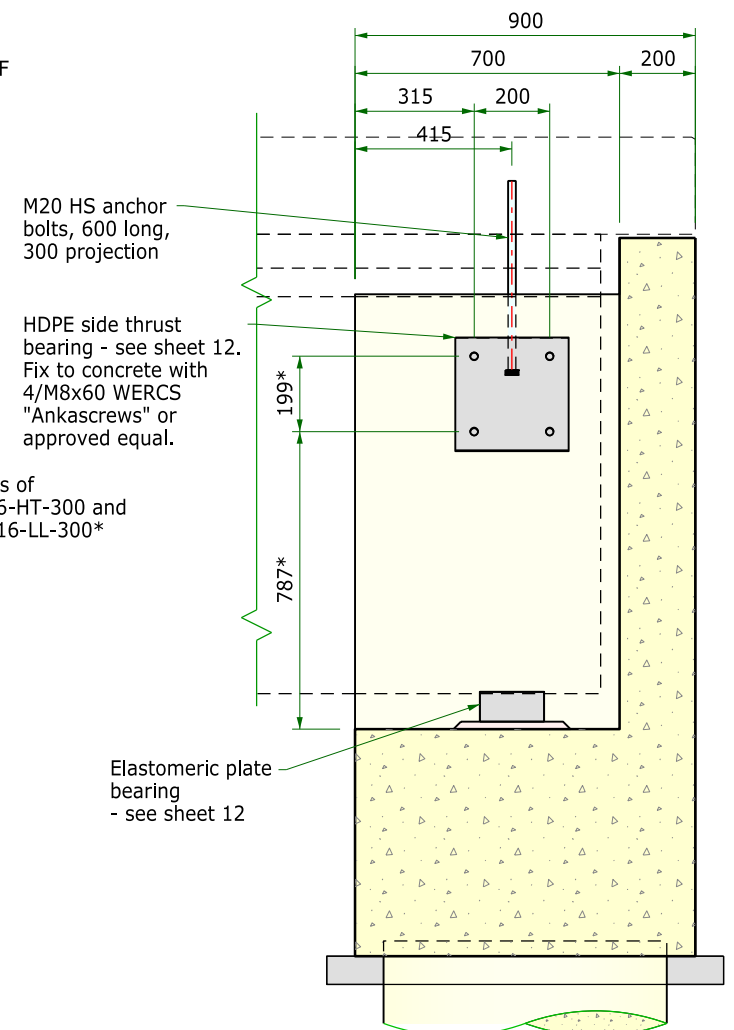
ELEVATION - REINFORCEMENT

1:40



PLAN - REINFORCEMENT

1:40



SECTION 1

1:20

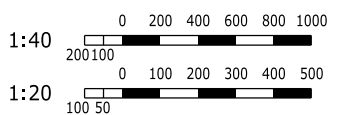
* vertical dimensions

General Notes

Dimensions in millimetres.
SOP denotes set out point
Concrete exposure classification B1.
Minimum 28 day compressive strength of concrete 40MPa.
Chamfer edges 20x20 and fillet re-entrant angles 20x20 USO.
Clear cover to reinforcement nearest to the concrete surface 45mm USO.
FF far face NF near face
EF each face LV length varies
NCF no chamfer or fillet
NSOP not shown on plan
USO unless specified otherwise.
Lap lengths to be as follows USO:

Bar size	N12	N16	N20	N24	N28	N32
Horizontal bars with >300mm of concrete cast below the bar	450	600	810	1000	...	...
Other bars	350	470	620	770	...	...

HS denotes bolting category 8.8/S to AS5100.6
All bolts and other fixings hot dip galvanised.



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DRAWING: WJS
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Station Street
FOOTBRIDGE OVER MAIN SOUTHERN RAILWAY
at 0.43km east of Menangle Road
ABUTMENTS
REINFORCED CONCRETE DETAILS

Wollondilly Shire Council
JOB NUMBER **B1849**
DOCUMENT NUMBER **D104**
SHEET 4 OF 14
REVISION **A3**

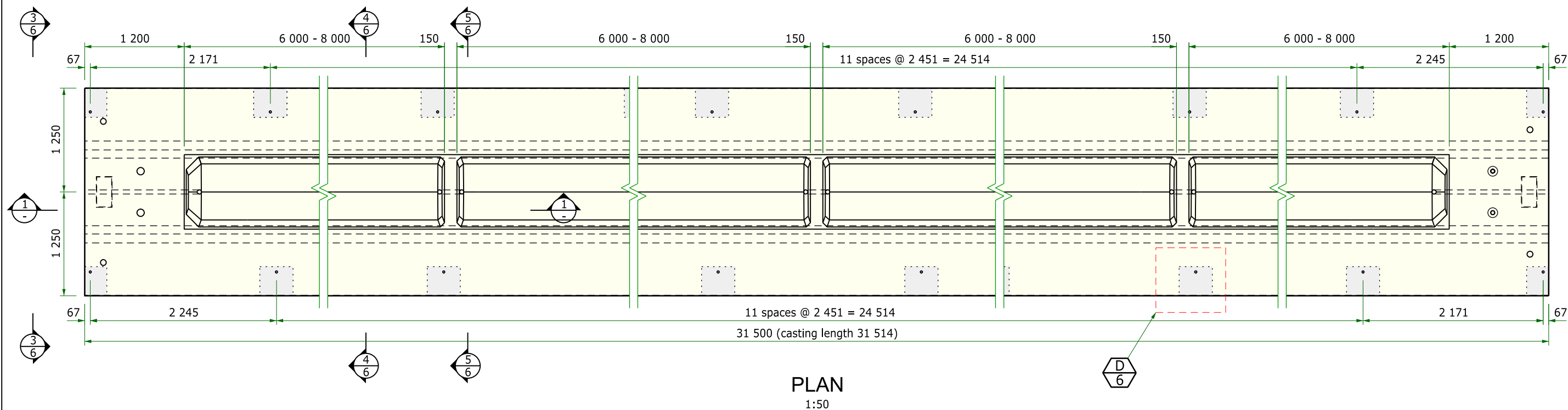
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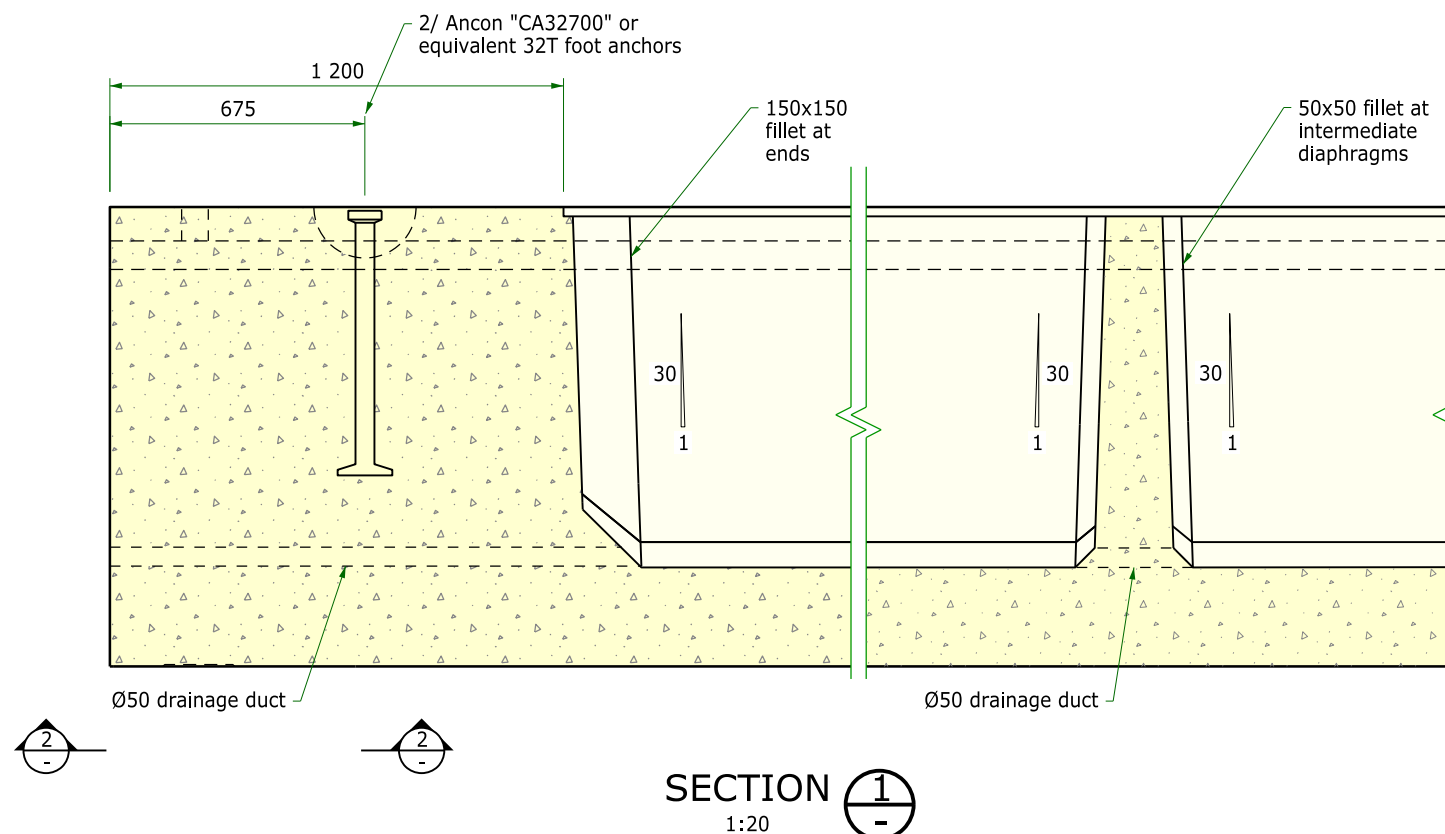
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21/10/2022 10:53:55 AM jim

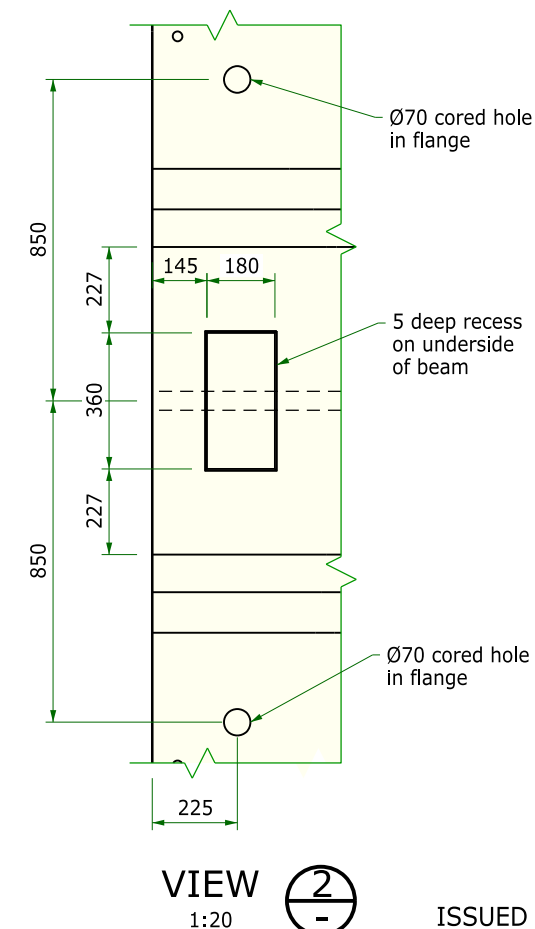
...B1849 of 05 Girder Concrete Adgn



PLAN
1:50



SECTION 1
1:20



VIEW 2
1:20

General Notes

Scales as shown.
Concrete exposure classification:
- External faces B1
- Internal faces A.
Minimum 28 day compressive strength of concrete 50MPa.
Minimum compressive strength of concrete at transfer 35MPa.
Maximum aggregate size 14mm.
Edges of soffits and end edges only chamfered 20x20 USO.
During storage, transport and handling, keep beams upright and supported at not more than 2500mm from the nearest end.

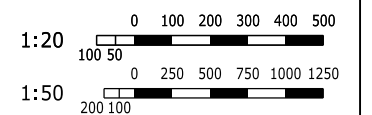
Prestressing Notes

Strands shall be AS/NZS 4672.1- 7 wire ordinary - 15.2 - 1830 - relax 2.
Stress to produce a force in each strand immediately after release of 188 kN.
Release strands symmetrically about the girder centreline.
Cut or trim strands flush with the end of the beam and seal exposed strands against corrosion with 3 thick epoxy resin - MEGAPOXY H THIXOTROPIC or equivalent.
The calculated hog of the beams at release is 43mm, increasing to 52mm at 28 days, assuming:-
- Density = 2.55t/m³
- Elastic modulus at transfer = 25,000MPa.
- Steam curing in accordance with TfNSW B80.
- Storage in open air, after steam curing, at 20°C.
- Average temperature and relative humidity in the range of 50%-75%.
- No loads except beam self weight.
The anticipated slope at the bearing points at 28 days is +0.3 % towards beam centre.

Lifting Notes

Approximate mass = 52.9 tonnes.
When signed, this drawing is a certification of the capacity of any lifting device shown, subject to:-
- sling angles not greater than 60°.
- dynamic factor < 1.25 (crane lift).
- oiled steel forms.
- concrete strength at lift at least 32MPa.

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Station Street
FOOTBRIDGE OVER MAIN SOUTHERN RAILWAY
at 0.43km east of Menangle Road
PRESTRESSED BEAMS
CONCRETE DETAILS - SHEET A

Wollondilly Shire Council
JOB NUMBER **B1849**
DOCUMENT NUMBER **D105**
SHEET 5 OF 14
REVISION **A3**

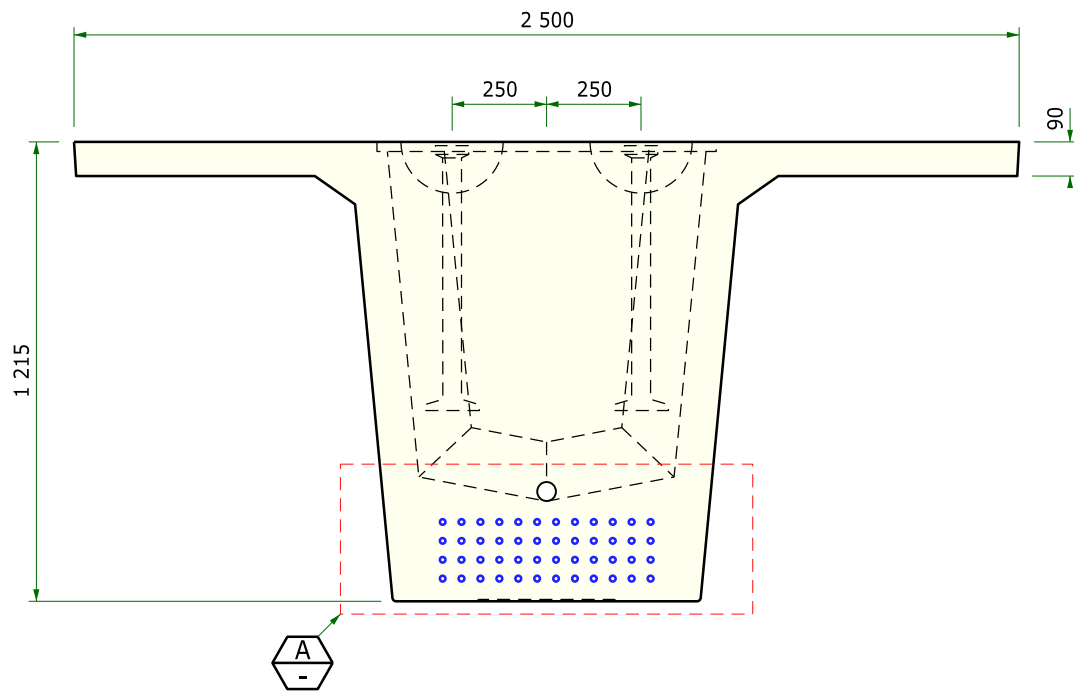
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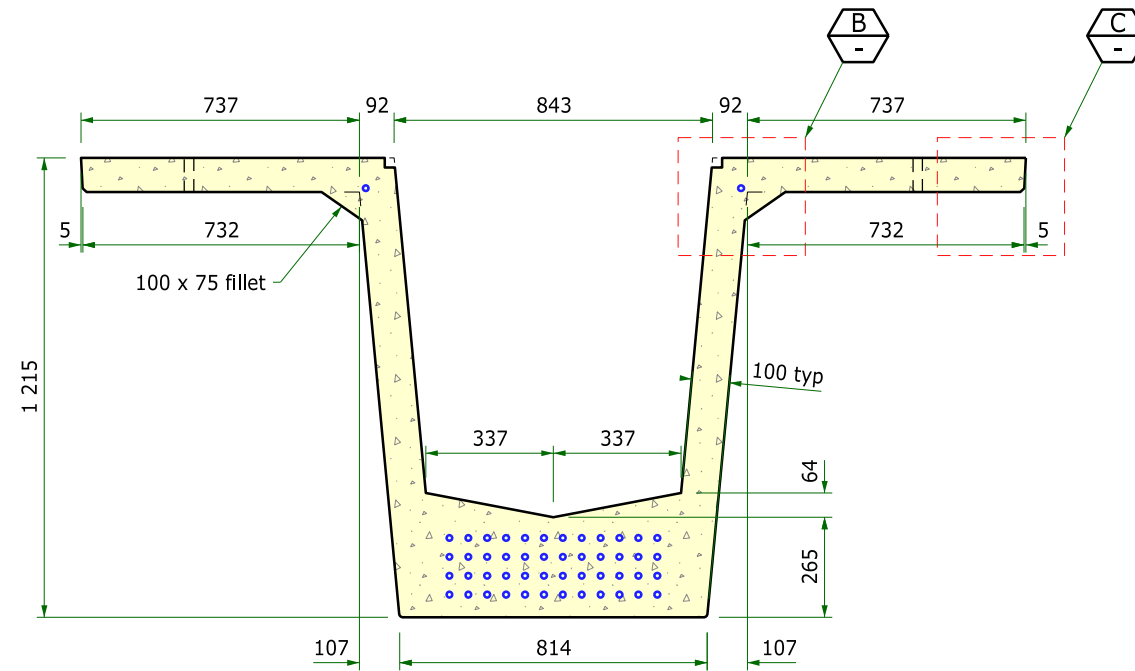
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17/10/2022 2:29:02 PM jim

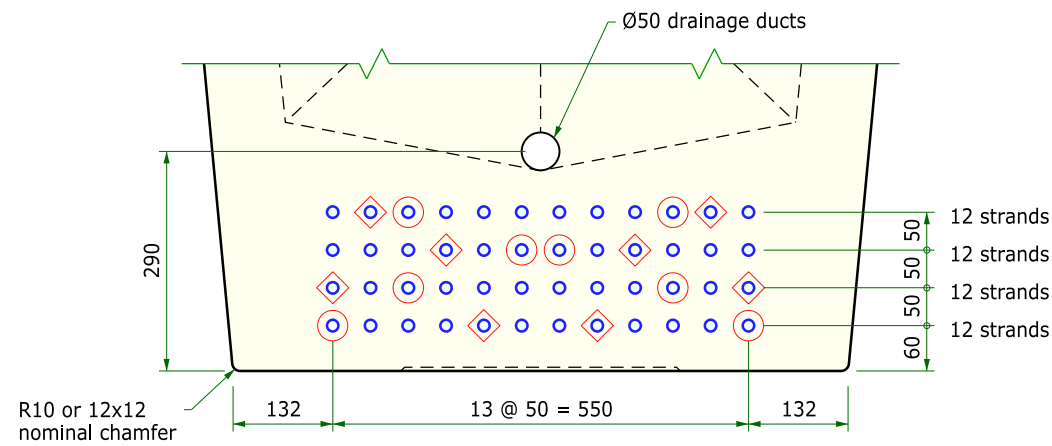
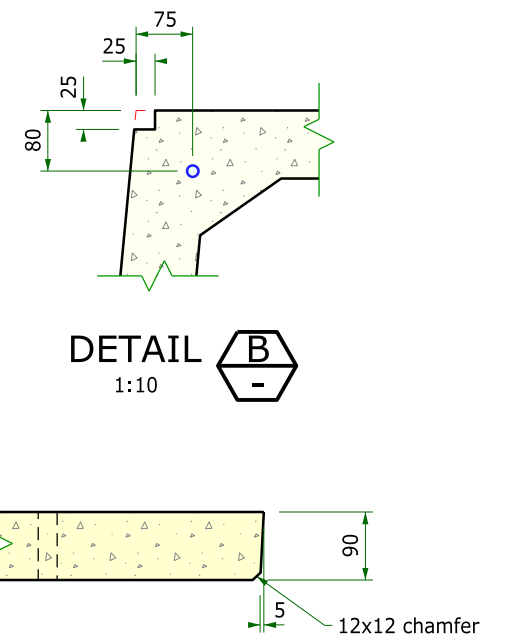
...B1849 of 06 Girders Concrete B.dgn



VIEW 1:20 $\frac{3}{5}$



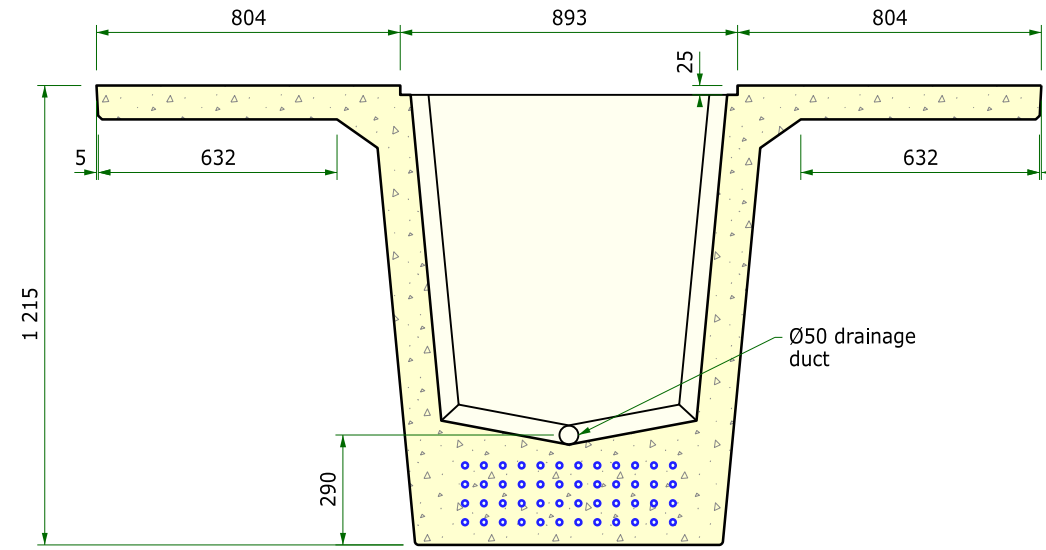
SECTION 1:20 $\frac{4}{5}$



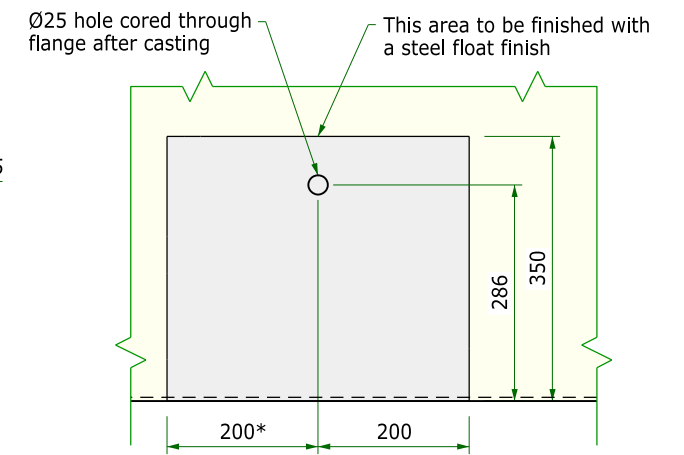
DETAIL 1:10 $\frac{A}{-}$

- Debonded 6 000
- ◇ Debonded 3 600

Total strands : 50 (including top strands)



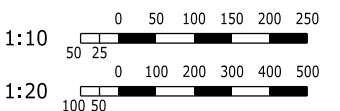
SECTION 1:20 $\frac{5}{5}$



DETAIL 1:10 $\frac{D}{5}$

* 67 at ends

For general notes, see sheet 5



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DRAWING: BNC
CHECKED: AJF

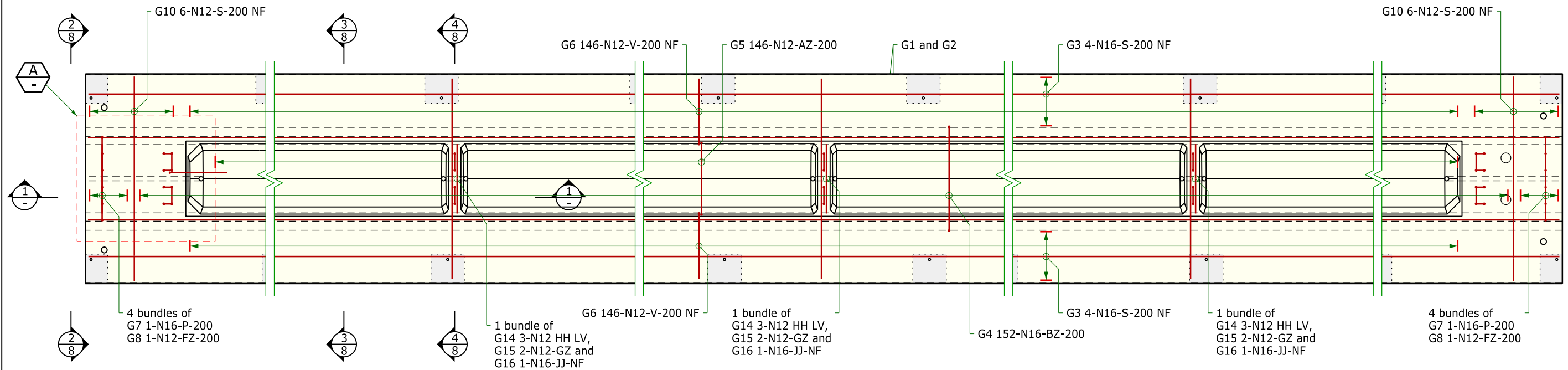
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Station Street
FOOTBRIDGE OVER MAIN SOUTHERN RAILWAY
at 0.43km east of Menangle Road
PRESTRESSED BEAMS
CONCRETE DETAILS - SHEET B

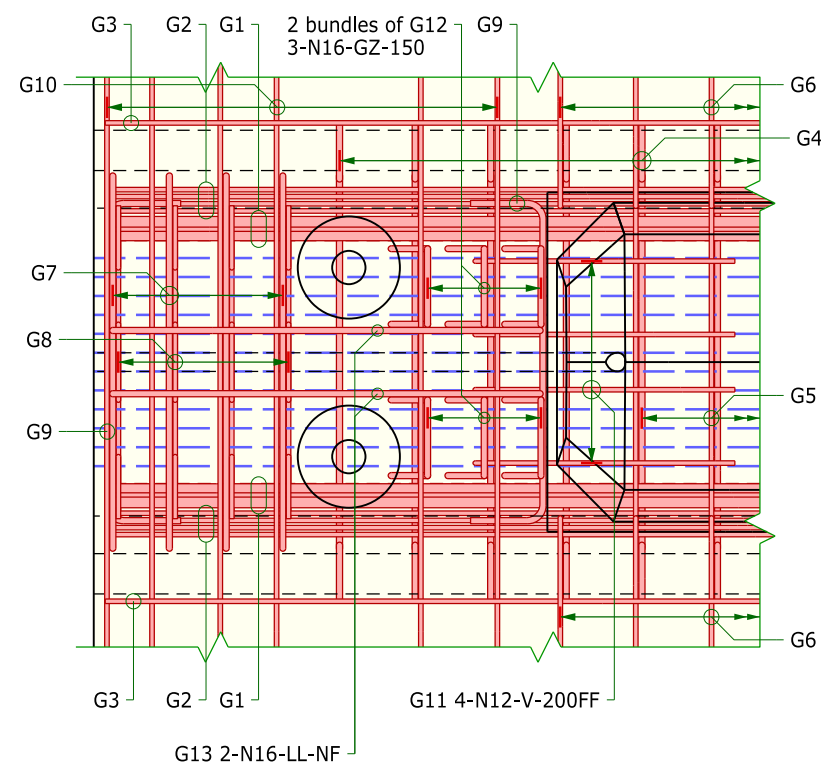
Wollondilly Shire Council
JOB NUMBER **B1849**
DOCUMENT NUMBER **D106**
SHEET 6 OF 14
REVISION **A3**

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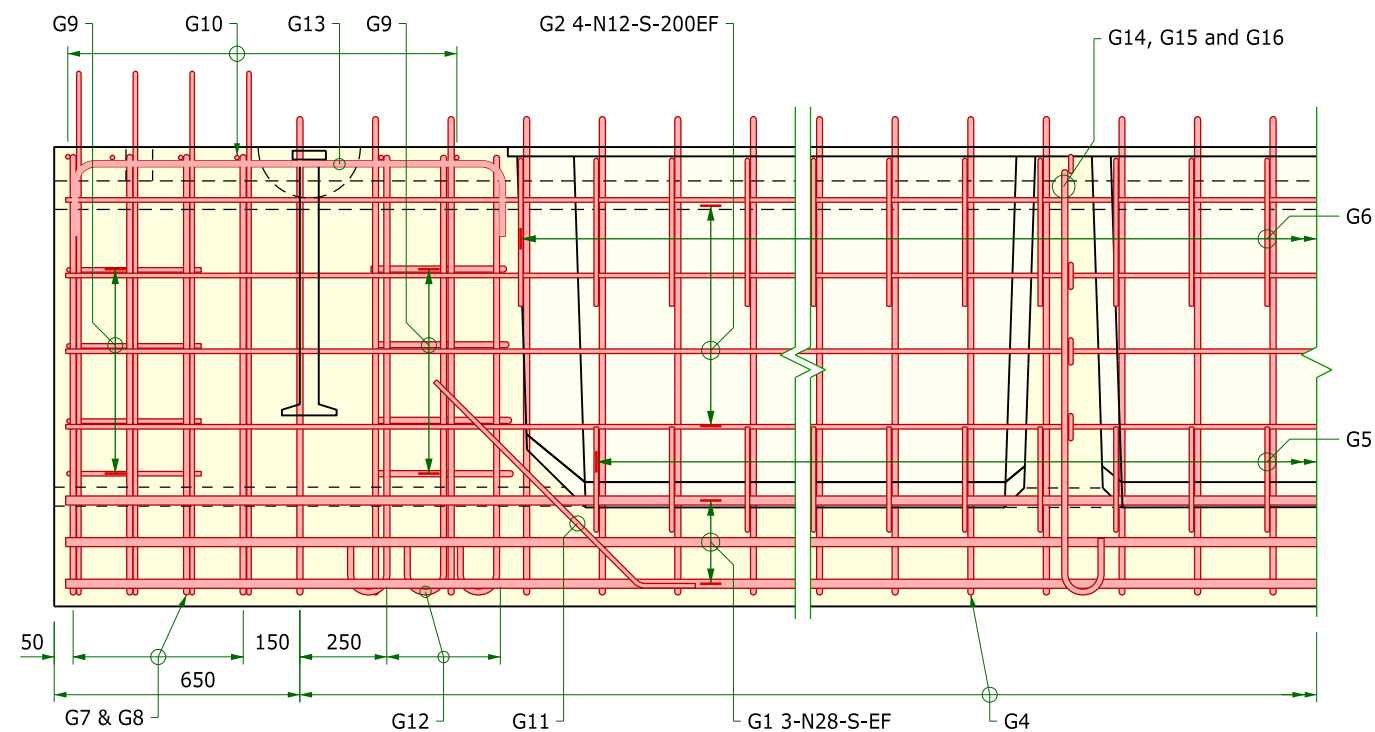
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PLAN
1:50



DETAIL
1:20



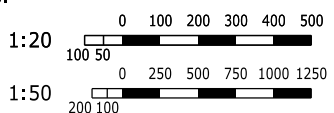
SECTION
1:20

General Notes

Dimensions in millimetres.
Nominal cover to reinforcement nearest to:-
exterior (bottom and side) surfaces 30mm.
interior and top surfaces 25mm.
Use rigid forms and internse compaction.
FF far face NF near face
EF each face LV length varies.
USO unless specified otherwise.
Bar lap lengths to be as follows USO:

Bar size	N12	N16	N20	N24	N28	N32
Horizontal bars with >300mm of concrete cast below the bar	460	690	...	...	...	...
Other bars	350	530	...	...	1050	...

Development length to be 100% of lap length USO.
Reinforcement may be displaced slightly to clear embedded objects, holes and recesses.



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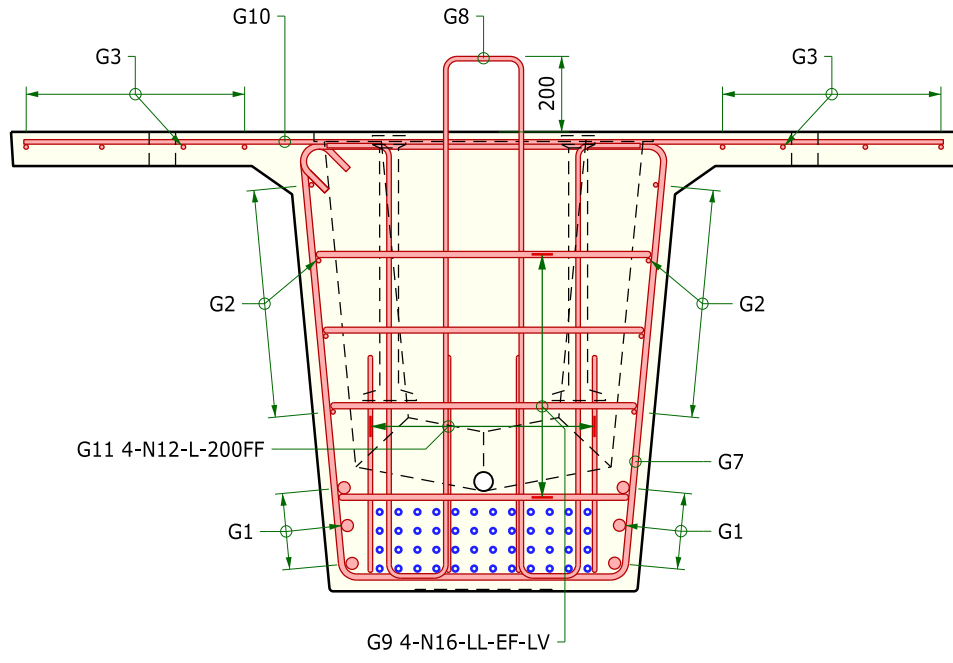
Station Street
FOOTBRIDGE OVER MAIN SOUTHERN RAILWAY
at 0.43km east of Menangle Road
PRESTRESSED BEAMS
REINFORCEMENT DETAILS - SHEET A

Wollondilly Shire Council
JOB NUMBER **B1849**
DOCUMENT NUMBER **D107**
SHEET 7 OF 14
REVISION **A3**

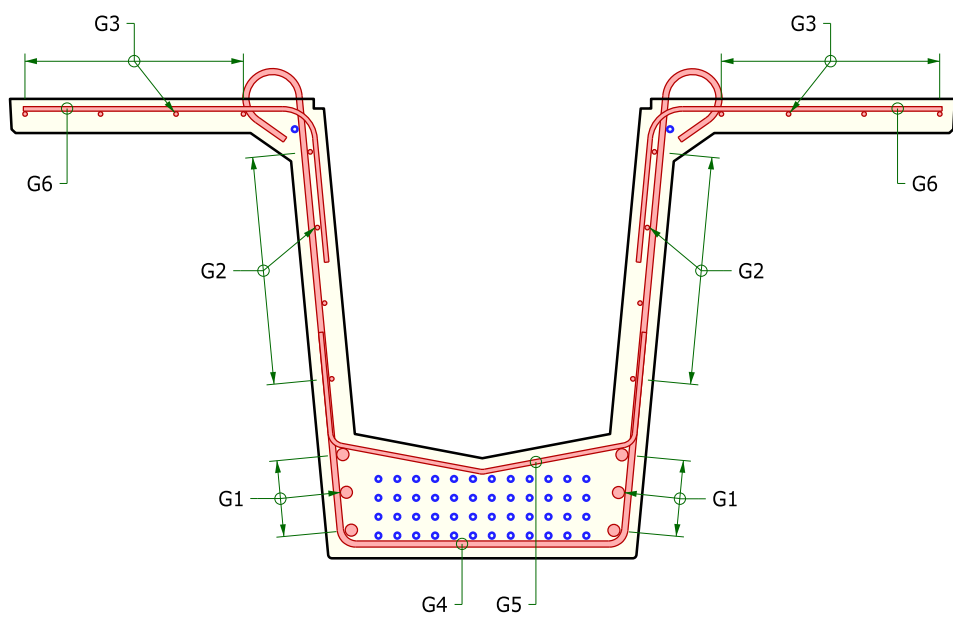
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23/10/2022 4:39:40 PM jim

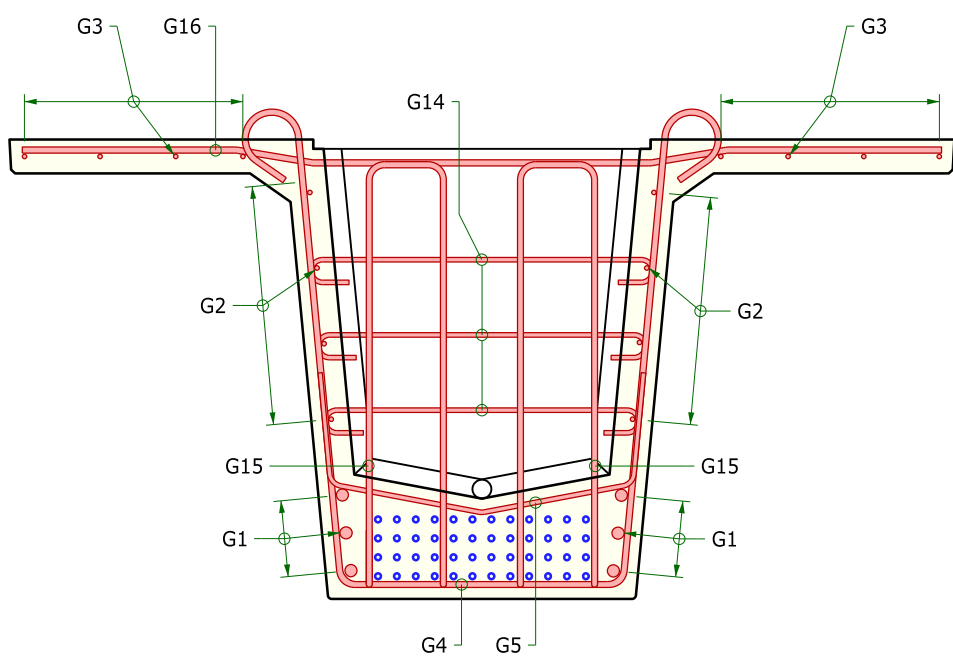
...B1849 of 08 Girder Reo B.dgn



VIEW 1:20 (2/7)



SECTION 1:20 (3/7)



SECTION 1:20 (4/7)

For general notes, see sheet 7

1:20 0 100 200 300 400 500

100 50

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 PO Box 9140, Wyoming, NSW 2250 ph 02 4322 0011 ABN 63 145 429 063	DESIGN: JRA VERIFIED: DRAWING: BNC CHECKED: AJF	MANAGER, BRIDGE DESIGN PTY LTD <small>THIS DRAWING IS NOT APPROVED FOR CONSTRUCTION UNLESS SIGNED DIGITALLY ON THIS SHEET OR THE FIRST SHEET IN THIS SET OF DRAWINGS.</small>	Station Street FOOTBRIDGE OVER MAIN SOUTHERN RAILWAY at 0.43km east of Menangle Road PRESTRESSED BEAMS REINFORCEMENT DETAILS - SHEET B	Wollondilly Shire Council							
	<table><tr><td>JOB NUMBER</td><td>B1849</td></tr><tr><td>DOCUMENT NUMBER</td><td>D108</td></tr><tr><td>SHEET OF</td><td>8 14</td></tr><tr><td>REVISION</td><td>A3</td></tr></table>				JOB NUMBER	B1849	DOCUMENT NUMBER	D108	SHEET OF	8 14	REVISION
JOB NUMBER	B1849										
DOCUMENT NUMBER	D108										
SHEET OF	8 14										
REVISION	A3										

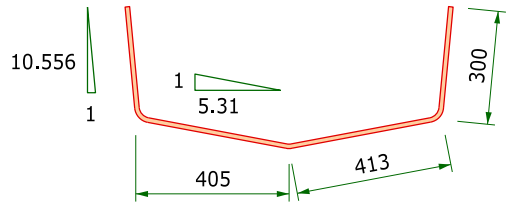
100mm on original

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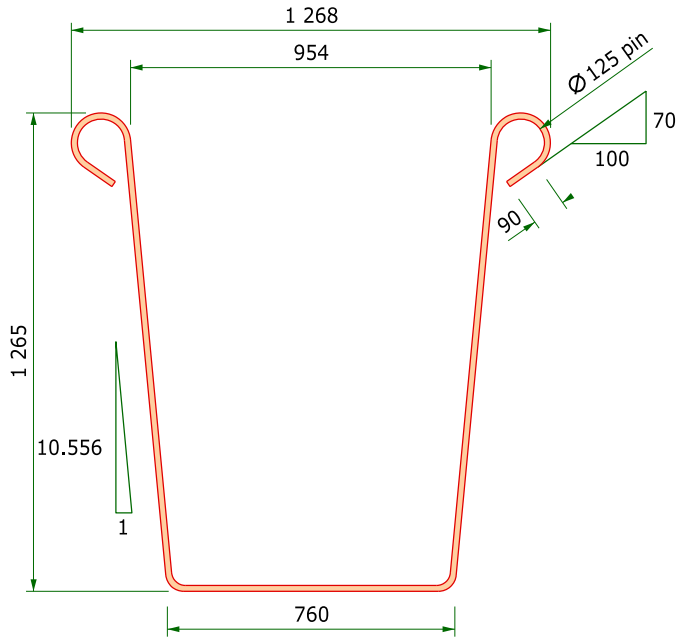
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23/10/2022 4:19:37 PM Jim

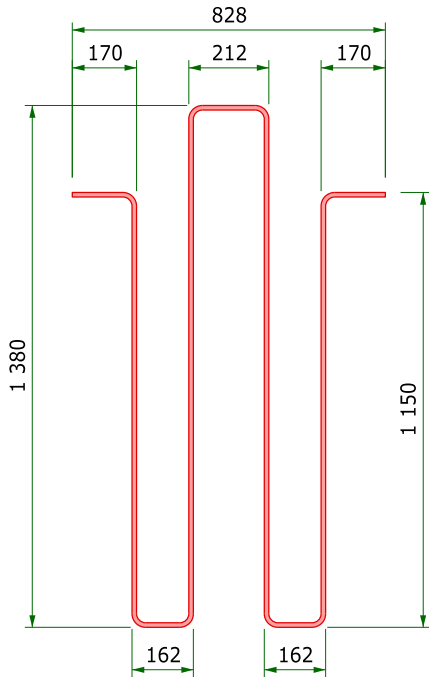
...B1849 D109 Gider Reo C.dgn



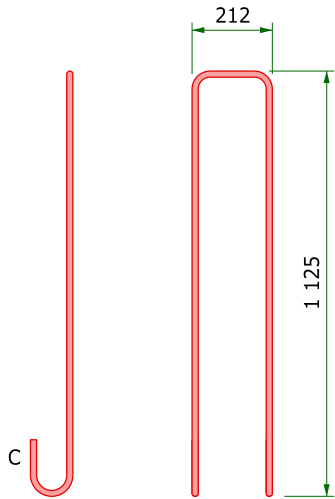
AZ Fitment bends



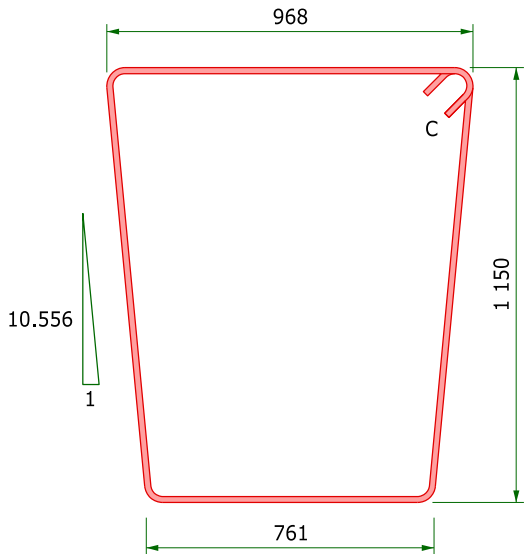
BZ Fitment bends USO



FZ Fitment bends



GZ Fitment bends
C = hook length



HZ Fitment bends
C = hook length

Alternately shape can be welded into a closed loop

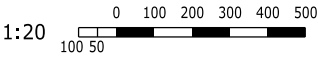
NON STANDARD BAR SHAPES

All shapes horizontally symmetrical

Note - the above dimensions are correct dimensions. They differ slightly from the dimensions given in standard TfNSW drawing B0213. If tooling is set to the TfNSW dimensions the RMS dimensions may be substituted for the above.

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For general notes, see sheet 7



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FOOTBRIDGE OVER MAIN SOUTHERN RAILWAY
at 0.43km east of Menangle Road
PRESTRESSED BEAMS
REINFORCEMENT DETAILS - SHEET C

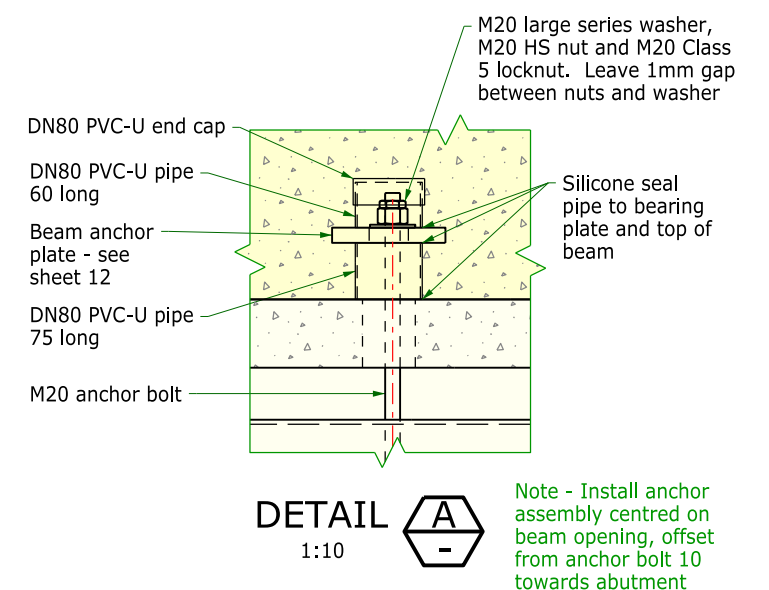
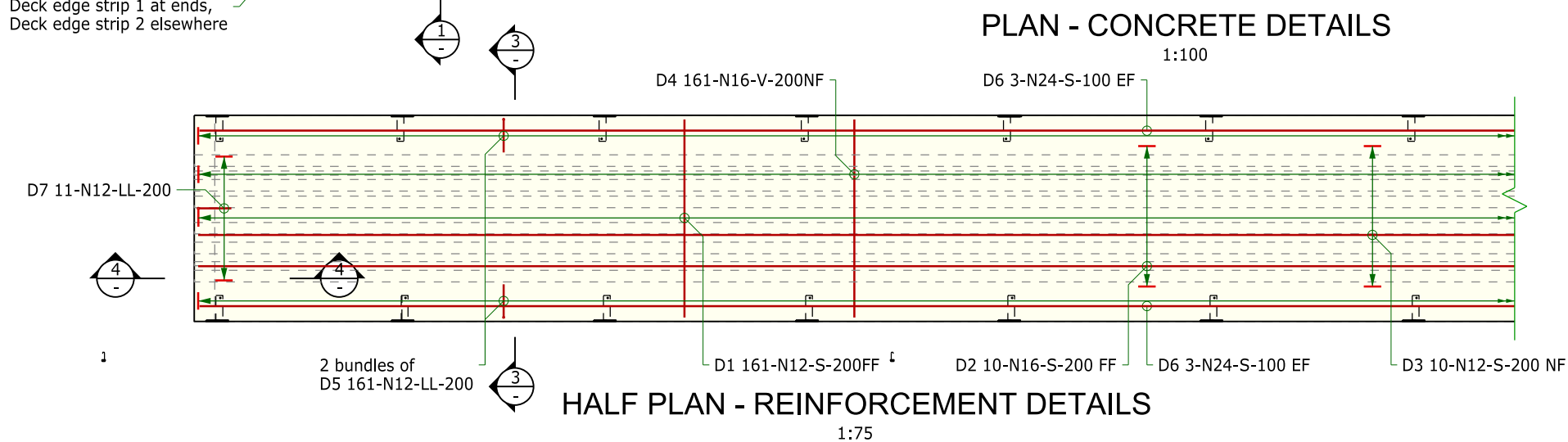
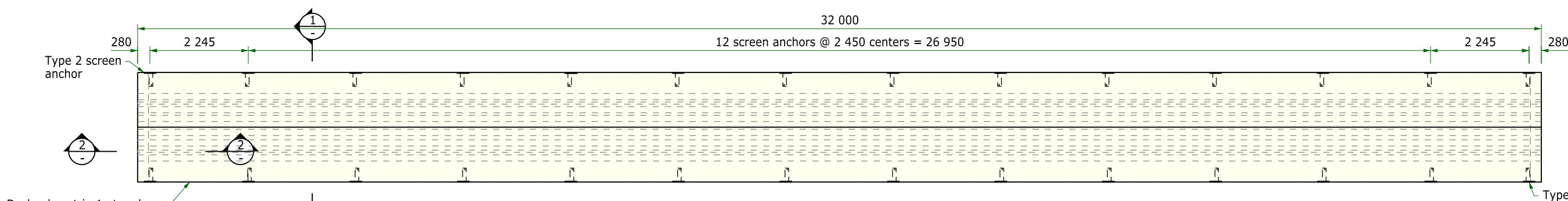
JOB NUMBER	B1849
DOCUMENT NUMBER	D109
SHEET OF	9 OF 14
REVISION	A3

100mm on original

200mm on original

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jlm
3:20:52 PM
20/10/2022
...B1849 D110 Deck slab.dgn

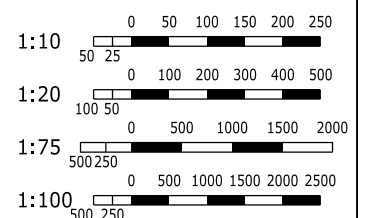


General Notes

Dimensions in millimetres.
Concrete exposure classification B1.
Minimum 28 day compressive strength of concrete 40MPa.
Chamfer edges 20x20 and fillet re-entrant angles 20x20 USO.
NCF denotes no chamfer or fillet.
Nominal cover to reinforcement nearest to the concrete surface 45mm USO.
FF far face NF near face
EF each face LV length varies.
USO unless specified otherwise.
NSOP not shown on plan.
Lap lengths to be as follows USO:

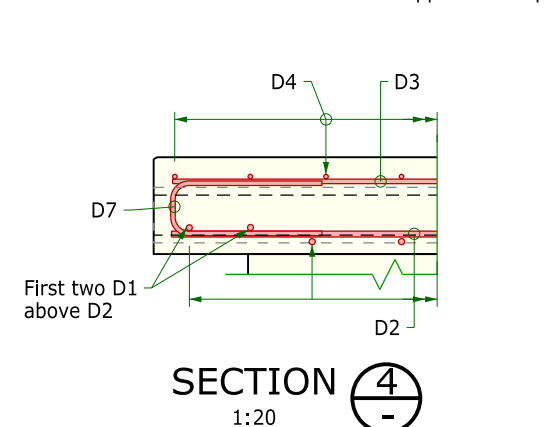
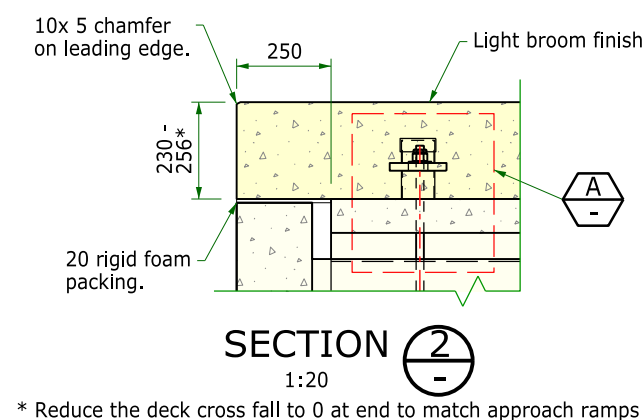
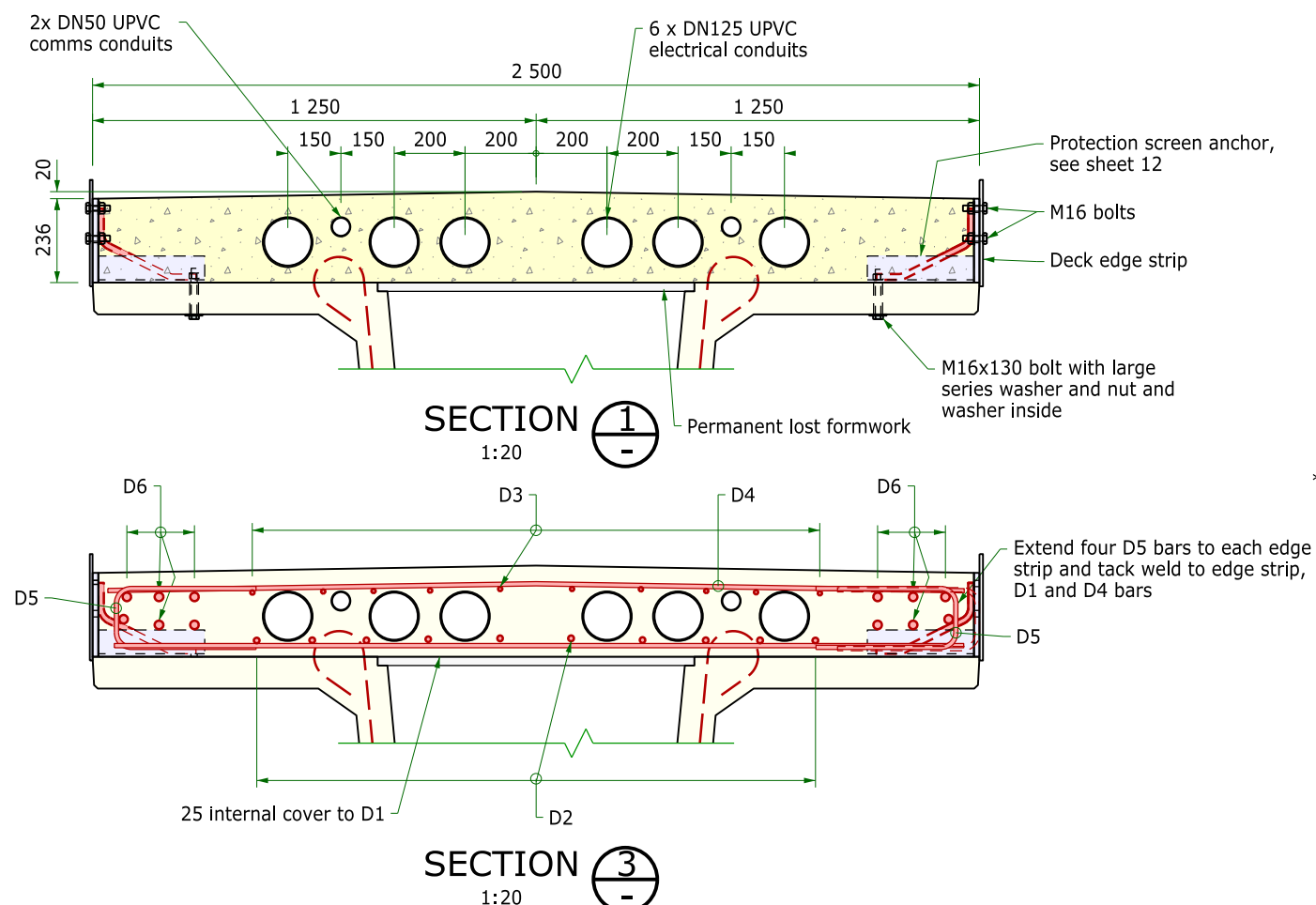
Bar size	N12	N16	N20	N24	N28	N32
Horizontal bars with >300mm of concrete cast below the bar	450	600	...	...	...	...
Other bars	350	470	...	...	...	...

Development length to be 100% of the lap length above USO.
Reinforcement may be displaced slightly to clear embedded objects, holes and recesses.
Bolting category 8.8/S to AS5100.6 USO.
All fixings to be hot dip galvanised.
Calculated capacities of composite beam at midspan:-
- positive bending 10200mNm
- negative bending 5400kNm
- lateral bending 4020kNm



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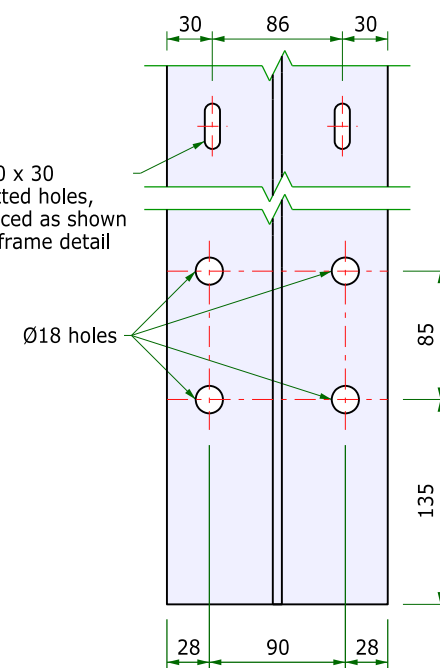
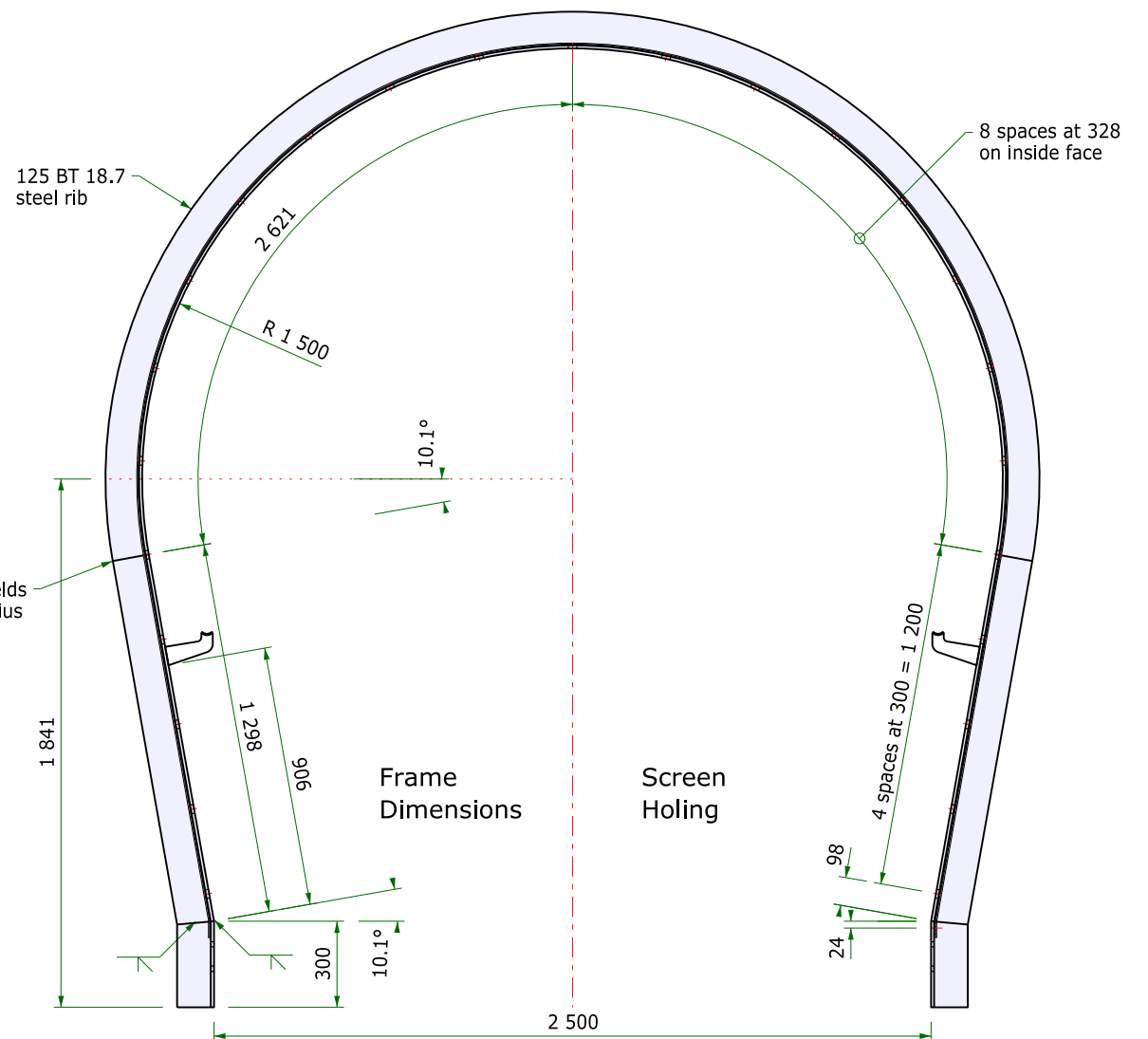
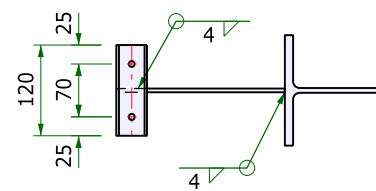
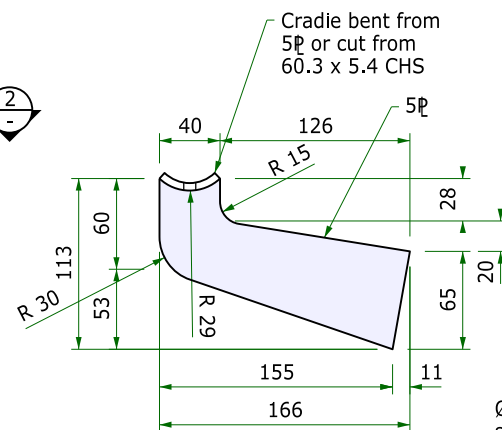
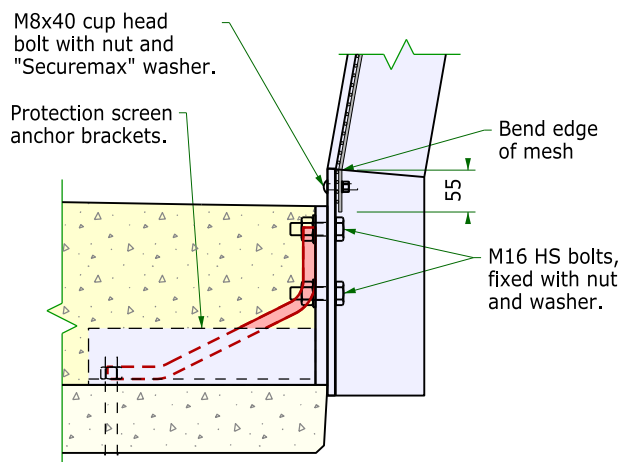
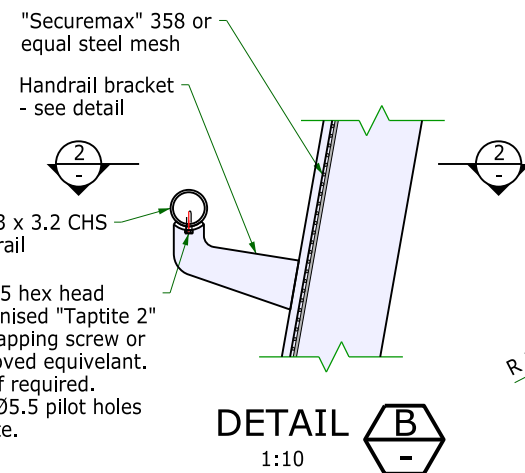
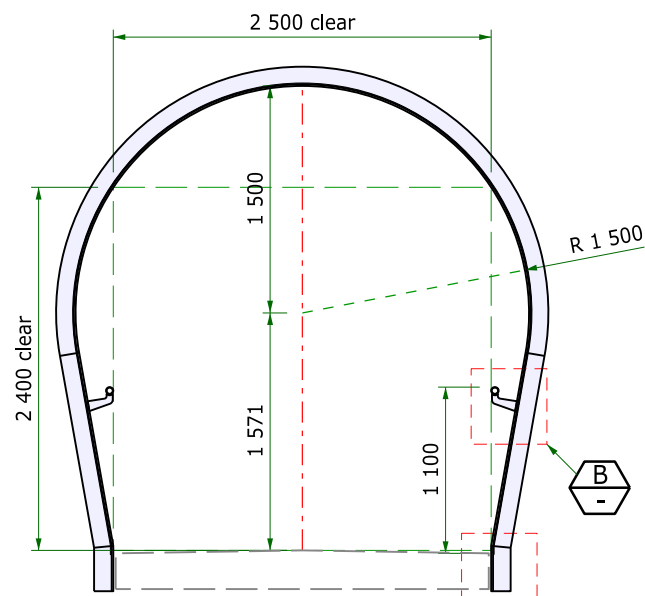
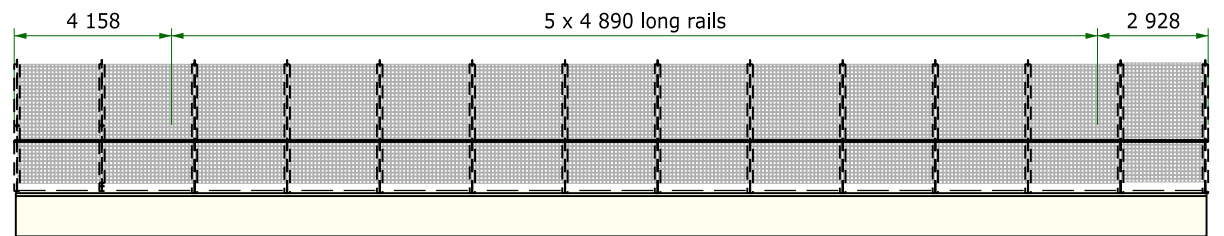
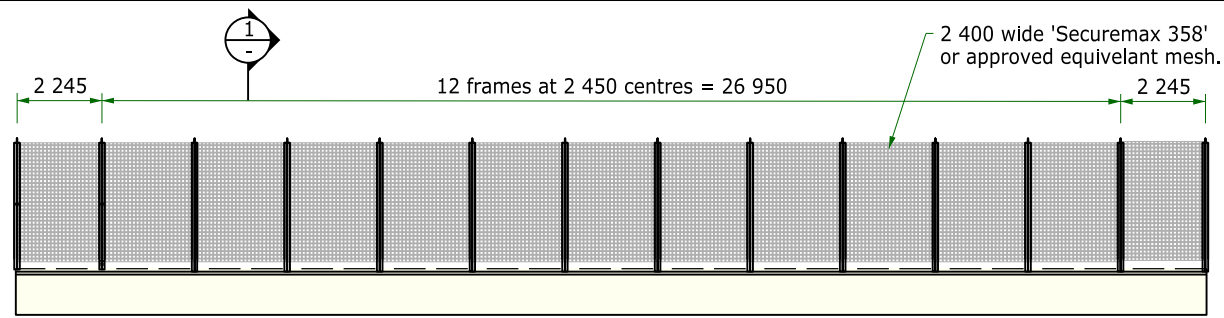
Station Street
FOOTBRIDGE OVER MAIN SOUTHERN RAILWAY
at 0.43km east of Menangle Road
DECK
REINFORCED CONCRETE DETAILS

Wollondilly Shire Council
JOB NUMBER **B1849**
DOCUMENT NUMBER **D110**
SHEET 10 OF 14
REVISION **A3**

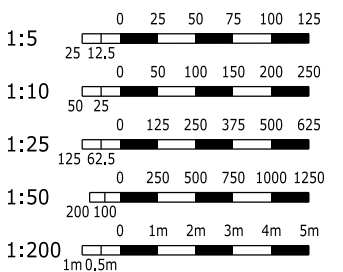
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23/10/2022 5:04:39 PM jim

...B1849 d111 protection screen.dgn



General Notes
Dimensions in millimeters.
Steel sections grade 300 to AS3679.1.
Steel plate minimum grade 250 to AS3678.
Cold rolled hollow sections grade 350LO to AS1163 USO.
Bolting category 4.6/S to AS5100.6 USO.
HS denotes bolting category 8.8/TB to AS5100.6.
Welding electrodes E48xx or W50x.
Welding symbols to AS1101.3.
Surface protection - Hot dip galvanising.
Hot dip bolts etc. to AS1214.
Construction Category CC2.
Welding category SP.
USO - unless specified otherwise.



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Station Street
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at 0.43km east of Menangle Road
**PROTECTION SCREEN
STEELWORK DETAILS**

Wollondilly Shire Council

JOB NUMBER **B1849**
DOCUMENT NUMBER **D111**
SHEET 11 OF 14 REVISION **A3**

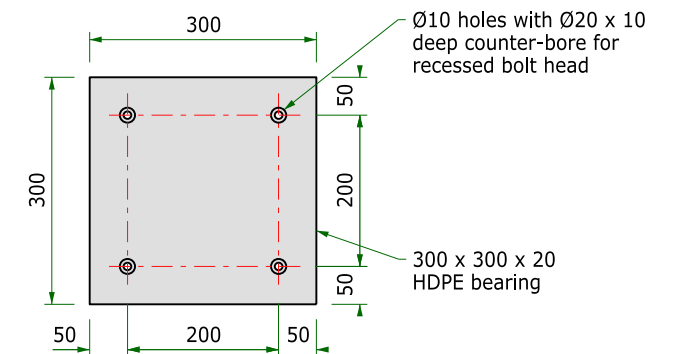
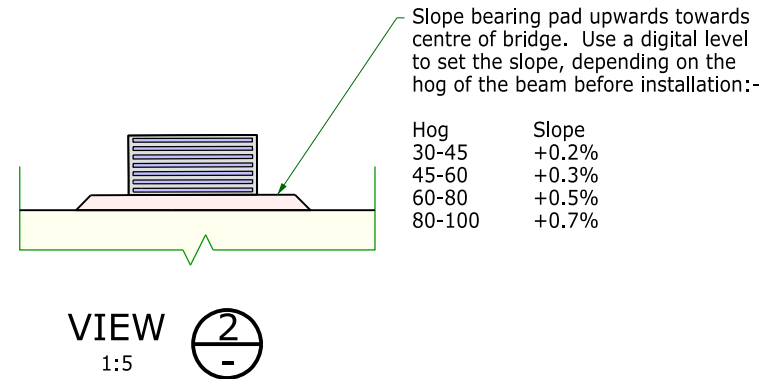
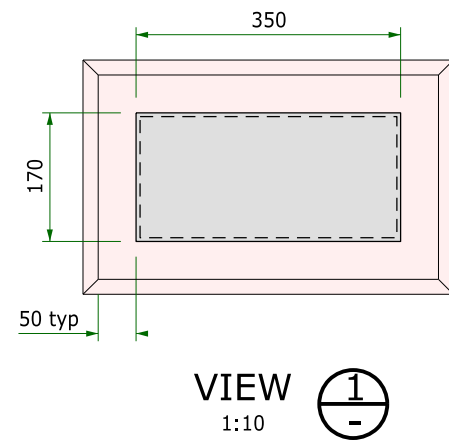
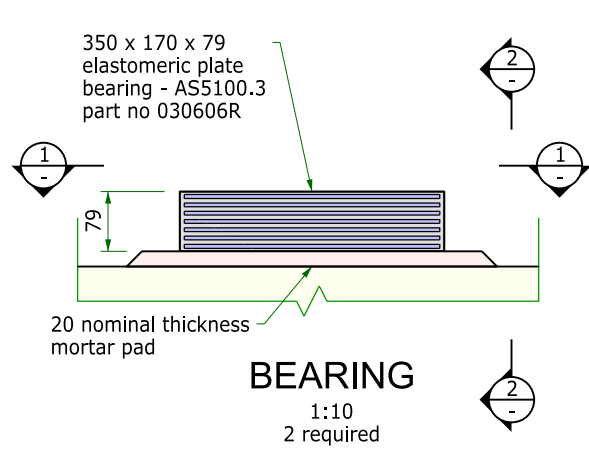
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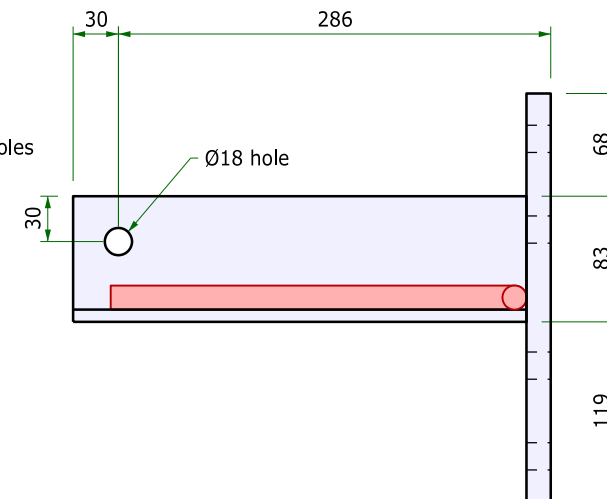
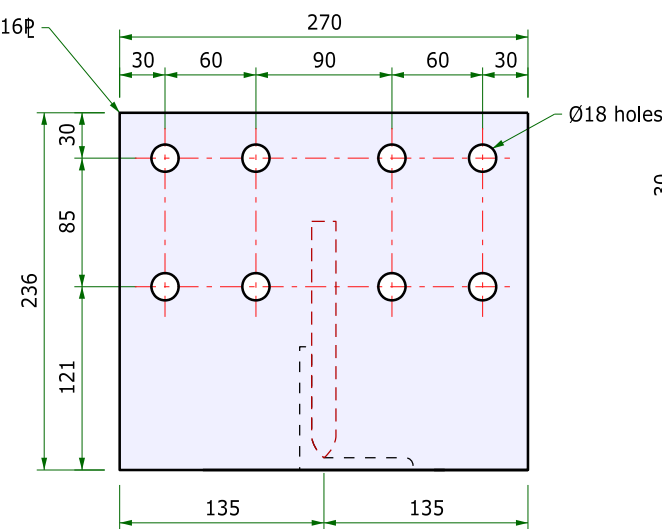
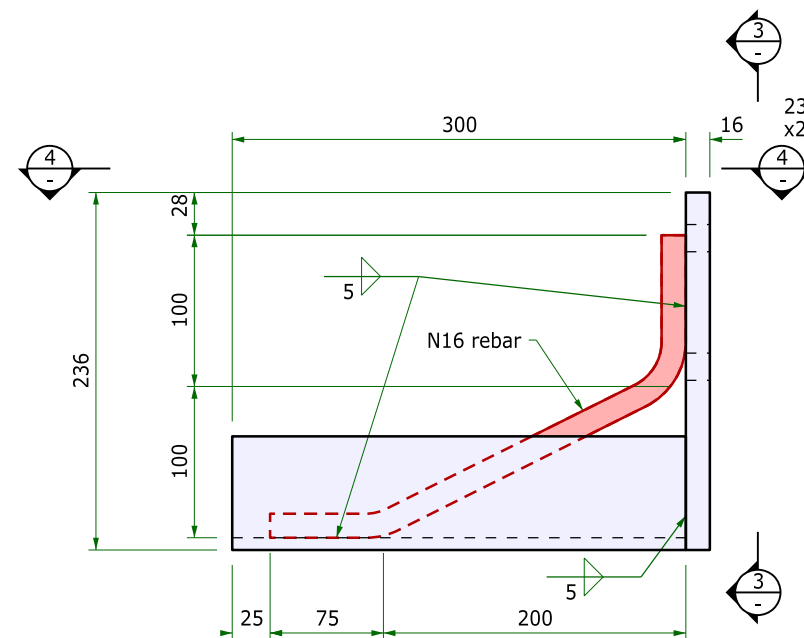
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20/10/2022 2:56:29 PM jim

...B1849 d112 miscellaneous.dgn



HDPE SIDE THRUST BEARING
1:10
4 off required

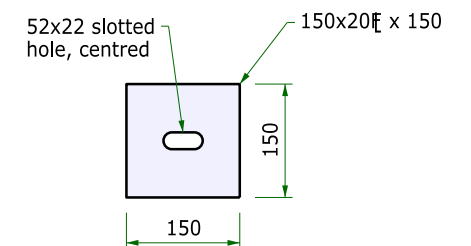


VIEW 3
1:5

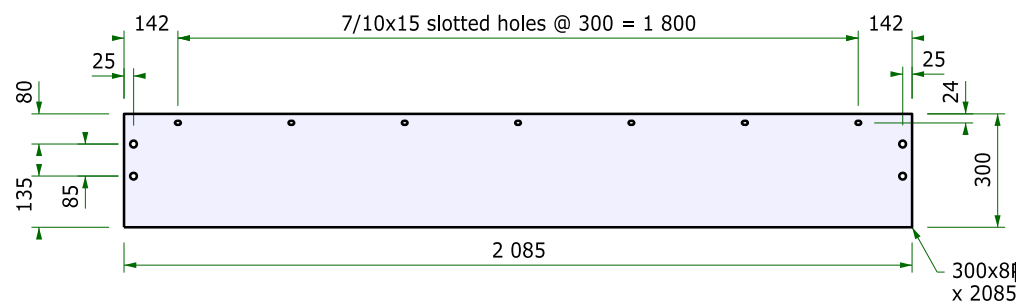
VIEW 4
1:5

**PROTECTION SCREEN
ANCHORAGE**

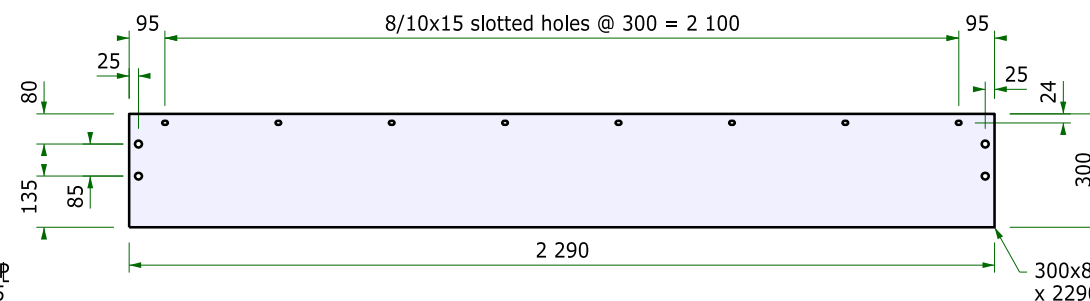
1:5 24 off Type 1 required as shown
2 off Type 2 required opposite hand



BEAM BEARING PLATE
1:10
4 off required



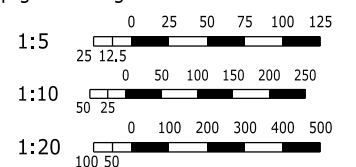
DECK EDGE STRIP 1 4 off required
1:20



DECK EDGE STRIP 2 22 off required
1:20

General Notes

Dimensions are in millimetres.
Steel sections grade 300 to AS3679.1.
Steel plate minimum grade 250 to AS3678 USO.
Rebar grade D500N to AS4671.
Welding electrodes E48xx or W50x.
Welding symbols to AS1101.3.
Surface protection - hot dip galvanizing USO.
HDPE



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FOOTBRIDGE OVER MAIN SOUTHERN RAILWAY
at 0.43km east of Menangle Road
**BEARINGS AND MISCELLANEOUS STEELWORK
DETAILS**

Wollondilly Shire Council
JOB NUMBER **B1849**
DOCUMENT NUMBER **D112**
SHEET 12 OF 14
REVISION **A3**

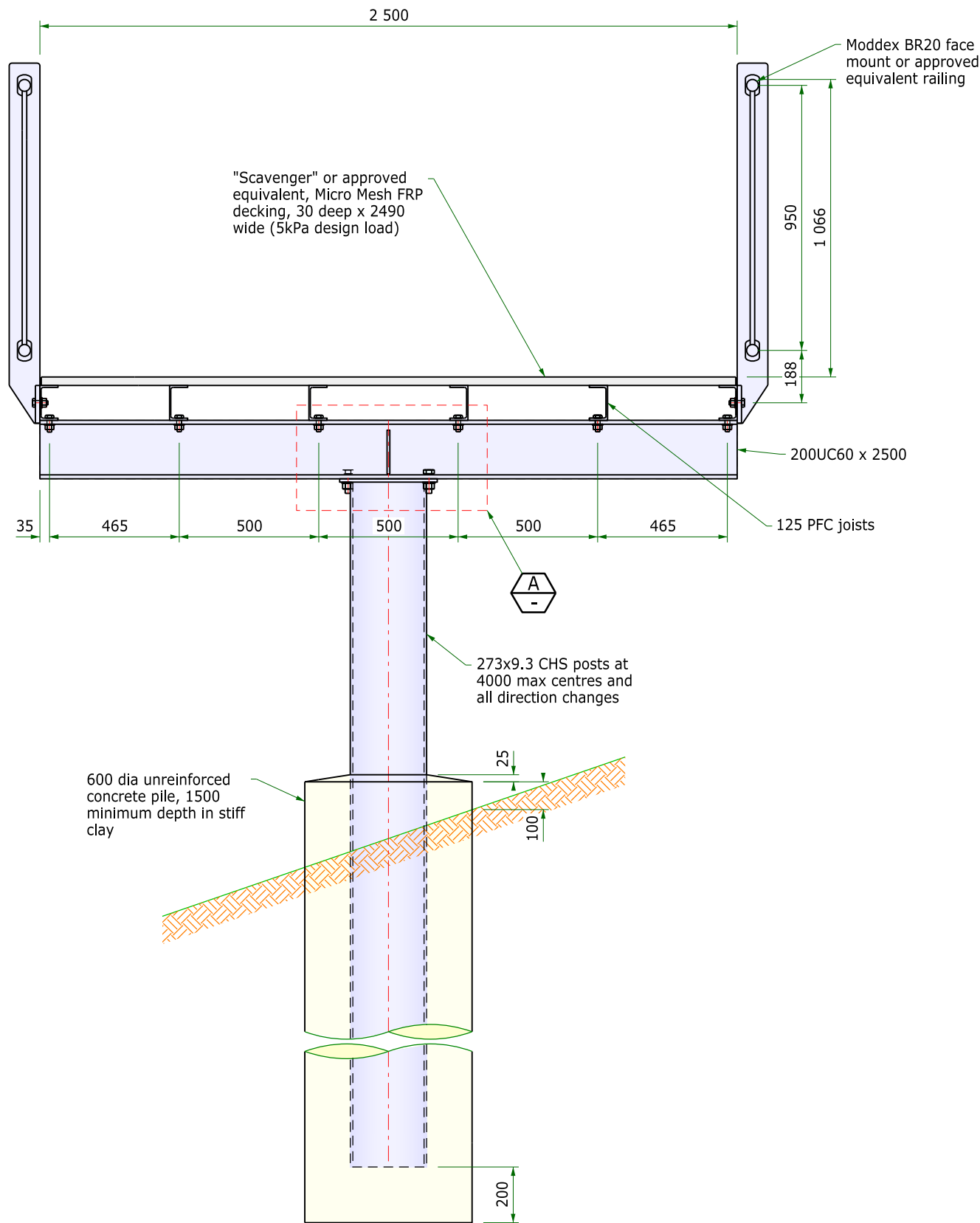
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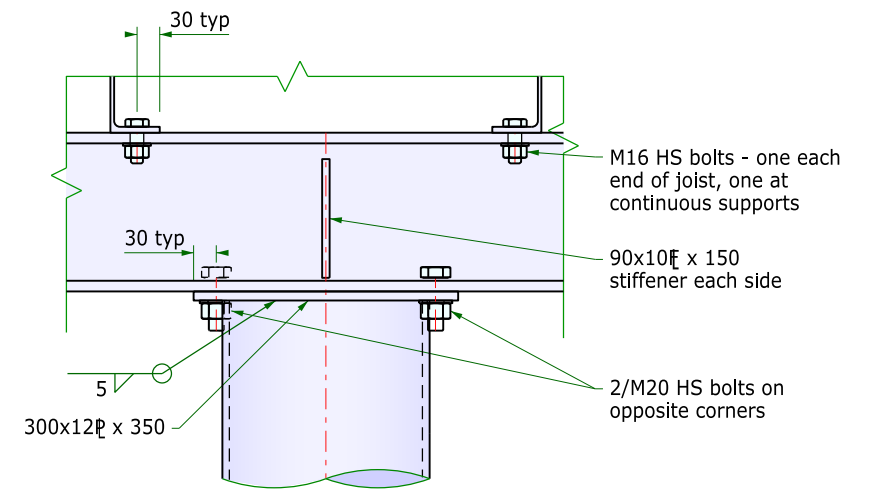
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4/08/2023 10:42:16 AM jjm

...B1849 D113 Steelwork Details approaches.dgn



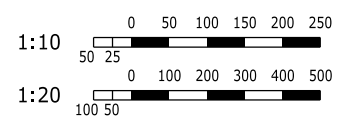
APPROACH RAMPS - TYPICAL SECTION
1:20



DETAIL A
1:10

General Notes

Dimensions in millimetres.
Dimensions are given to the nearest millimetre after fabrication.
Steel plates minimum grade 250 to AS3678.
Steel sections minimum grade 300 to AS 3679.1.
Steel circular hollow sections grade C250L0 or C350L0 to AS1163.
Bolting category 8.8/TB to AS 5100.6.
Bolts, nuts and washers hot dip galvanised to AS 1214.
Surface treatment: Hot dip galvanised.
Round edges to be protective treated to a radius of 1.5mm after fabrication.
Welding symbols to AS1101.3.
Welding electrodes E48xx or W50x.
Welding category SP to AS 1554.1 USO.
Welds to be 5mm continuous fillet USO.
USO denotes unless specified otherwise.



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FOOTBRIDGE OVER MAIN SOUTHERN RAILWAY
at 0.43km east of Menangle Road
APPROACHES
STEELWORK DETAILS

Wollondilly Shire Council

JOB NUMBER
B1849

DOCUMENT NUMBER
D113

SHEET 13
OF 14

REVISION
A4

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23/10/2022 4:26:13 PM jim

...B1849 d114 Bar Shapes.dgn

Shape Code	Australian Standard Bar Shape	Shape Code	Australian Standard Bar Shape	Shape Code	Australian Standard Bar Shape	Shape Code	Non standard shape - TfNSW Code	Shape Code	Non standard shape
S		RC		LH		Q			
L		VL		SP		W			
LL		VV				Y			
H		J		B					
HH		LJ		C			SEE SHEET 9 FOR NON STANDARD SHAPES IN BEAMS		
F		JJ		E					
V		A		G					
U		R		K					
T		HT		M					
SH		XT		N					
CC		CT		P					

GENERAL NOTES

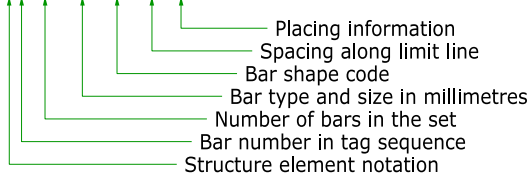
Australian standard bar shapes are in accordance with AS1100.501.
Bar size is the nominal diameter in millimetres or the AS4671 fabric size.

Bars shall be deformed bar grade D500N to AS4671 USO.

W denotes plain bar grade D500L to AS4671.
R denotes plain bar grade R250N to AS4671.
RL and SL denotes welded reinforcing fabric, rectangular and square respectively.

Bar Marking

The reinforcement on the drawings is described by the following notation:
A2 10-N16-S-300FF



Structure element notations:

- Q - Piles
- A - Abutments/ Abutment A
- B - Abutment B
- P - Pier
- G - Girder
- D - Deck

Welding of Reinforcement

Welding required to develop full strength laps to AS1554.3
Section 3.2 and Table F4.
Weld material; E48xx, W50x or W50xx minimum.
Throat depth is minimum and includes "S" plus reinforcement. For "S" and "W" refer to AS1554.3
Testing - 100% visual. Inspect each layer of multi-pass welds.

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Station Street
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at 0.43km east of Menangle Road
REINFORCEMENT
BAR SHAPES

JOB NUMBER	B1849
DOCUMENT NUMBER	D114
SHEET OF	14 OF 14
REVISION	A3

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