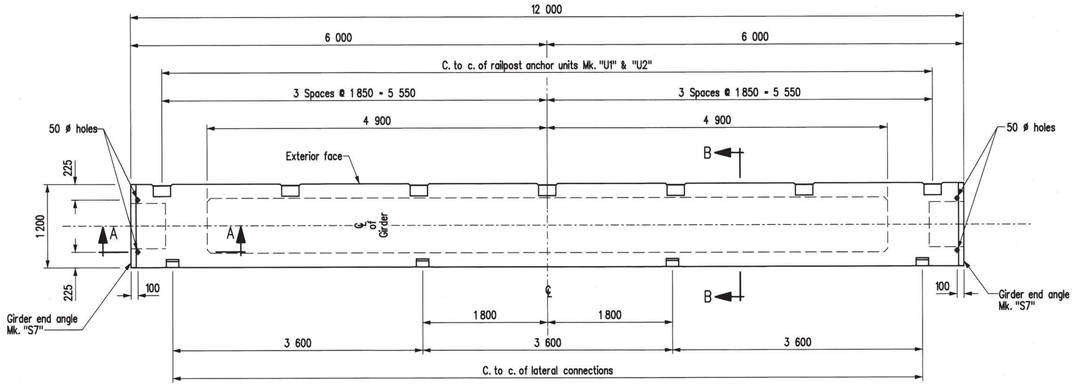
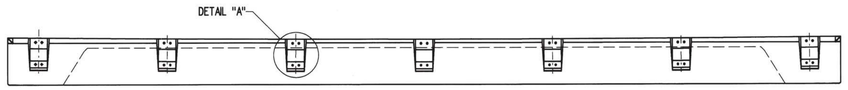
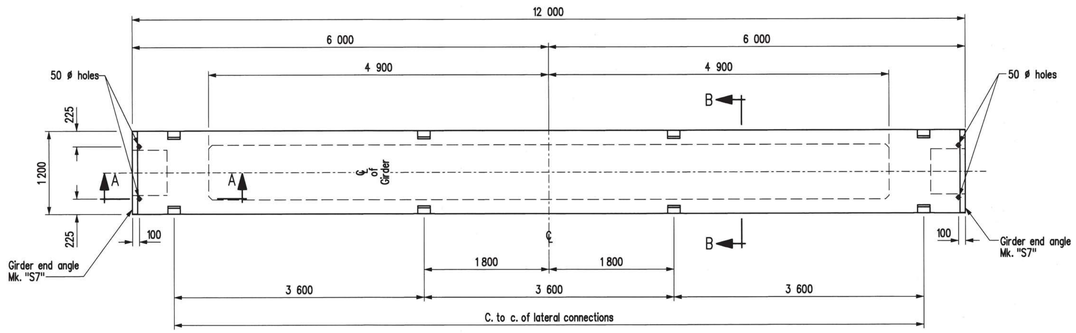


PLAN



EXTERIOR ELEVATION

EXTERIOR GIRDER MK. "G1"



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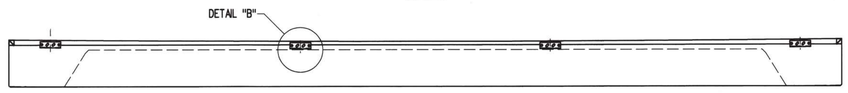
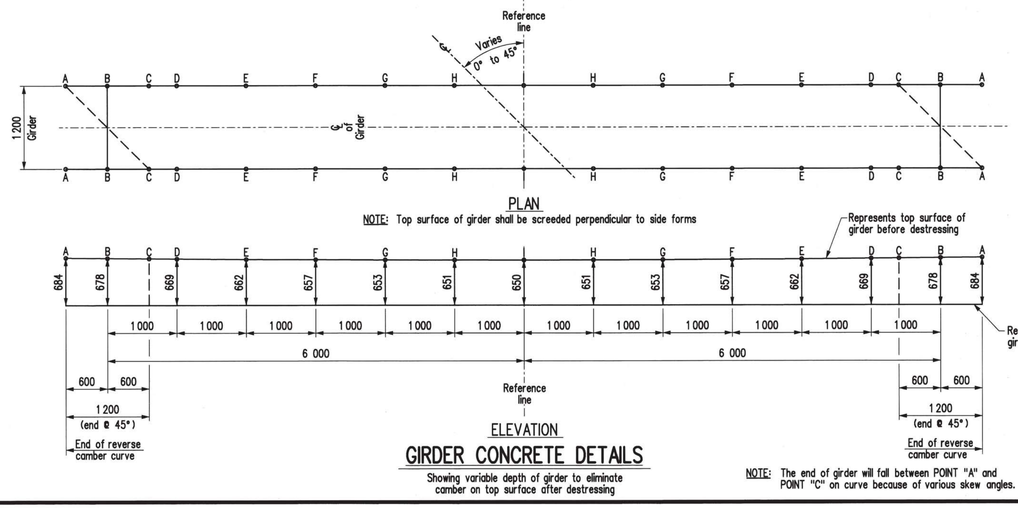


ELEVATION

INTERIOR GIRDER MK. "G2"

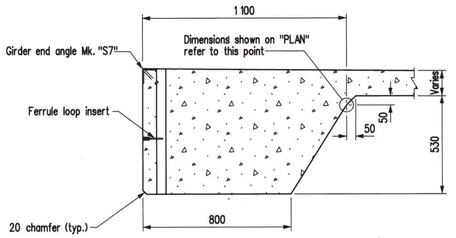


ELEVATION

GIRDER CONCRETE DETAILS

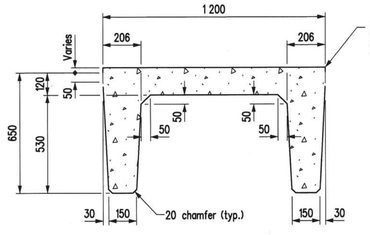
Showing variable depth of girder to eliminate camber on top surface after destressing

NOTE: The end of girder will fall between POINT "A" and POINT "C" on curve because of various skew angles.



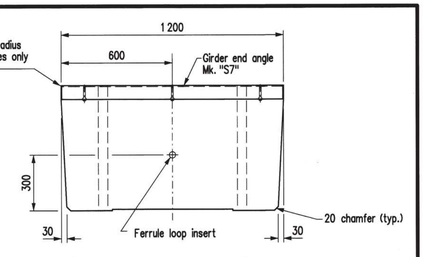
SECTION A-A

Typical at both ends of girders
Scale 1:15



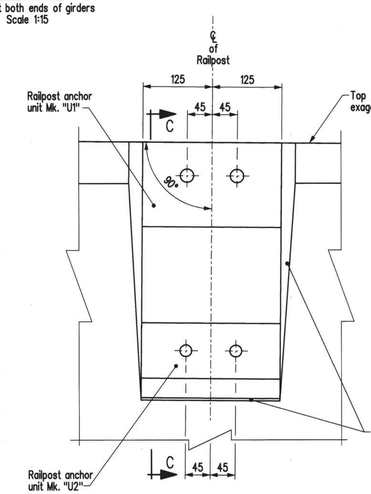
SECTION B-B

Scale 1:15

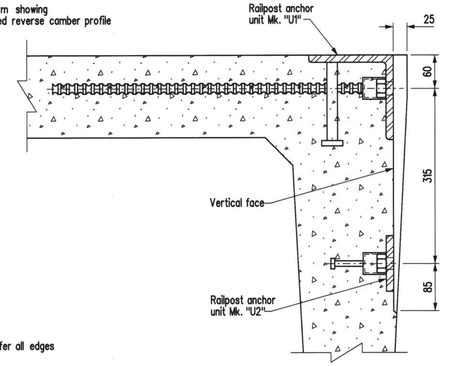


END VIEW

Scale 1:15



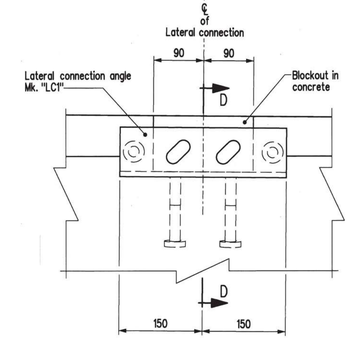
ELEVATION



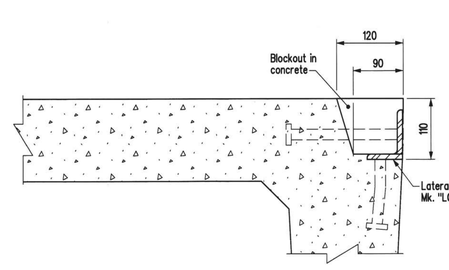
SECTION C-C

DETAIL "A"

Scale 1:5



ELEVATION



SECTION D-D

DETAIL "B"

Scale 1:5

NOTES:

1. Design in accordance with AASHTO LRFD Bridge Design Specifications, Seventh Edition, 2014.
2. Design Vehicular Live Load: Modified AASHTO HSS-25
   AASHTO LRFD "HL-93"
3. Design distribution factor = 0.5 lanes/girder.
4. Concrete strength: @ transfer, f'ci = 35 MPa
   @ 28 days, f'c = 45 MPa
5. Prestressing steel: 13 mm ø low relaxation strands
   Minimum ultimate strength, fpu = 1 860 MPa
   Jacking force/strand, fpj = 128.5 kN/strand
6. Girder dimensioning tolerances: Length 3 mm ±
   Cross section 2 mm ±
7. Approximate mass per girder = 12 000 kg

REVISIONS		
DATE	BY	DESCRIPTION

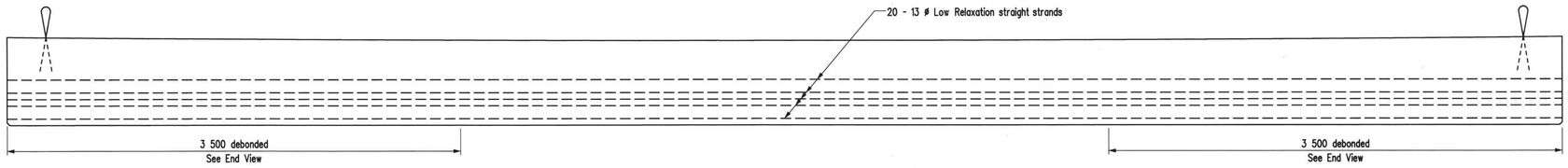
PRECAST PRESTRESSED CHANNEL GIRDER DETAILS

DESIGN SEAL	RECORD SEAL
Original signed and sealed by Andy Pankratz July 9, 2020	

Manitoba Infrastructure
Water Management and Structures

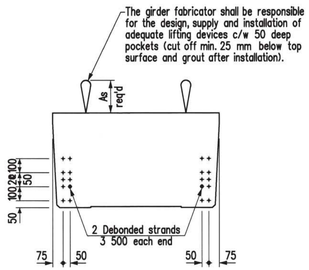
APPROVED BY:
Original signed by Micheal Hagos July 28, 2020
DIRECTOR OF STRUCTURES
DATE

DESIGN	BY: A.H.P.	SCALE: 1 : 40
	CHECKED: A.H.P.	SHEET No. 1 of 5
DETAILS	BY: K.P.	STD No. PPCC_PR_10.8_12m_GD03
	CHECKED: A.H.P.	



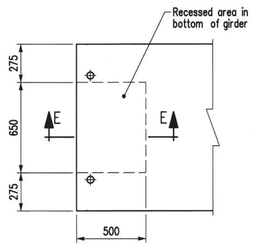
ELEVATION

GIRDER STRAND LAYOUT



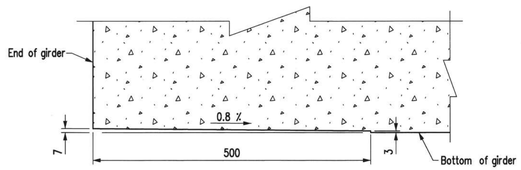
END VIEW

Typical layout of 20 - 13 ø
Low Relaxation straight strands



PART PLAN

Typical at both ends of girders



SECTION E-E

Scale 1:5

BEARING RECESS DETAILS

REVISIONS		
DATE	BY	DESCRIPTION

PRECAST PRESTRESSED CHANNEL GIRDER DETAILS

DESIGN SEAL	RECORD SEAL
Original signed and sealed by Andy Pankratz July 9, 2020	

Manitoba
Infrastructure
Water Management and Structures

APPROVED BY:
Original signed by Micheal Hagos July 28, 2020
DIRECTOR OF STRUCTURES
DATE

DESIGN	BY: A.H.P.	SCALE: 1 : 20 or as shown	SHEET No. 2 of 5
	CHECKED: A.H.P.		
DETAILS	BY: K.P.		STD No. PPCC_PR_10.8_12m_GD03
	CHECKED: A.H.P.		

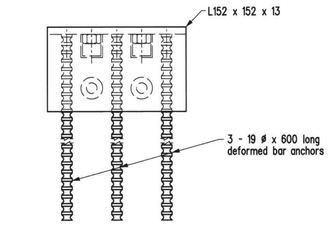
BILL OF MISCELLANEOUS METAL

for 12 m LONG GIRDERS
10 800 ROADWAY WIDTH - 3 SPAN

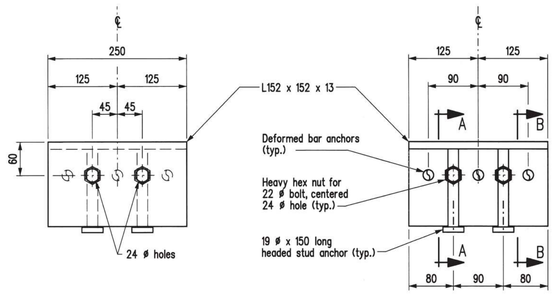
MARK No.	No.	DESCRIPTION	CORROSION PROTECTION	SIZE	LENGTH	REMARKS
U1	42	Railpost anchor unit	Hot dip galvanized			
		Each unit is fabricated from:				
		1 - Angle		L152x152x13	250	As detailed
		2 - Heavy hex. nuts		for 22 dia. bolt		Grade DH or 2H
		2 - Studs		19 dia.	150	Headed stud anchors, ASTM A108
		3 - Bars		for 19 dia. bolt	600	Deformed bar anchors
		2 - Tubes				Metal or plastic capped - As detailed
U2	42	Railpost anchor unit	Hot dip galvanized			
		Each unit is fabricated from:				
		1 - Plate		PL 13x100	250	As detailed
		2 - Heavy hex. nuts		for 19 dia. bolt		Grade DH or 2H
		3 - Studs		10 dia.	100	Headed stud anchors, ASTM A108
		2 - Tubes				Metal or plastic capped - As detailed
LC1	192	Lateral connection angle	Hot dip galvanized			
		Each unit is fabricated from:				
		1 - Angle		L89x64x9.5	300	As detailed
		2 - Studs		19 dia.	200	Headed stud anchors, ASTM A108
		2 - Studs		19 dia.	125	Headed stud anchors, ASTM A108
S7	54	Girder end angle	Hot dip galvanized			
		Each unit is fabricated from:				
		1 - Angle		L76x76x6.4	1 194	As detailed
		2 - Plates		PL 3x75	75	As detailed
		3 - Studs		10 dia.	100	Headed stud anchors, ASTM A108
	54	Ferrule loop insert	Stainless steel	for 13 dia. bolt		Richmond anchor, Type LF-W with mounting washer
TR2	18	Threaded rod	Stainless steel	13 dia.	250	c/w hex. nut
R27	84	A325 bolt c/w F436 hardened washer	Hot dip galvanized	22 dia.	229	Heavy hex. no nut, ASTM F3125
R28	84	A325 bolt c/w F436 hardened washer	Hot dip galvanized	19 dia.	64	Heavy hex. no nut, ASTM F3125

NOTES:

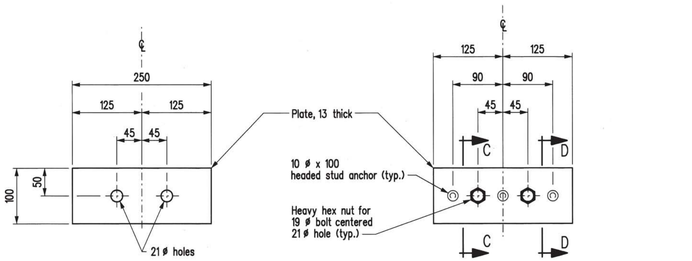
1. All material in the above Bill shall be supplied by the GIRDER CONTRACTOR.
2. All structural steel shall conform to CAN/CSA G40.21 Grade 300W.
3. All material noted in the above Bill shall be hot dip galvanized after fabrication in accordance with ASTM A123, A153 & A143 for a minimum net retention of 610 g/m^2 unless otherwise stated in the specified material ASTM standards. The fabricator and galvanizer shall safeguard against embrittlement using recommended practices from applicable standards.
4. Seal all welds prior to galvanizing.
5. Grade DH or 2H galvanized nuts for A325 bolts shall be overtapped to a minimum amount required for the fastener assembly in accordance with ASTM F3125. The nuts shall be lubricated with a lubricant containing a visible dye. The lubricant shall be clean and dry to the touch.
6. All bolts and inserts in the above Bill shall be Imperial thread.
7. Stainless steel shall conform to the requirements of ASTM A320, Class B8.
8. Contractor shall refer to Manitoba Infrastructure's Approved Products listing.



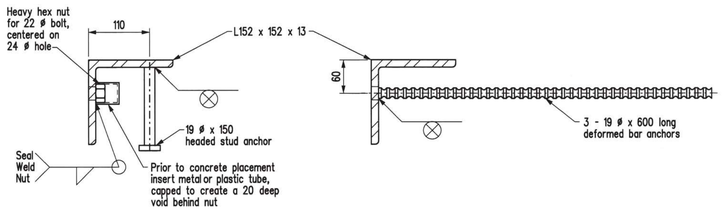
PLAN VIEW



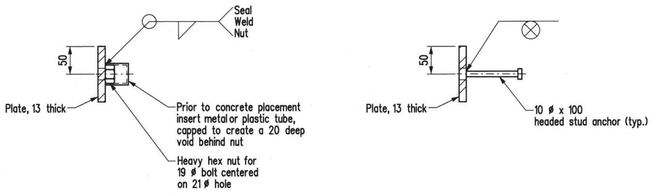
FRONT VIEW REAR VIEW



FRONT VIEW REAR VIEW



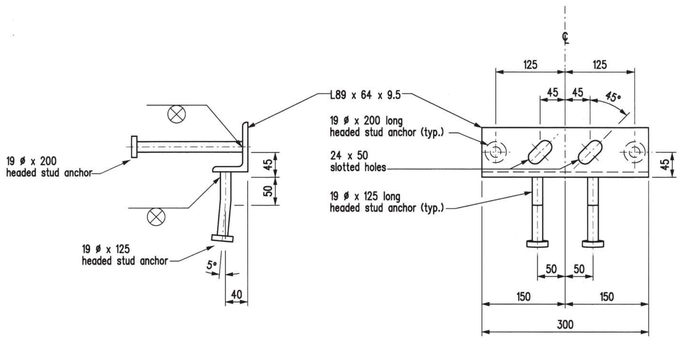
SECTION A-A SECTION B-B



SECTION C-C SECTION D-D

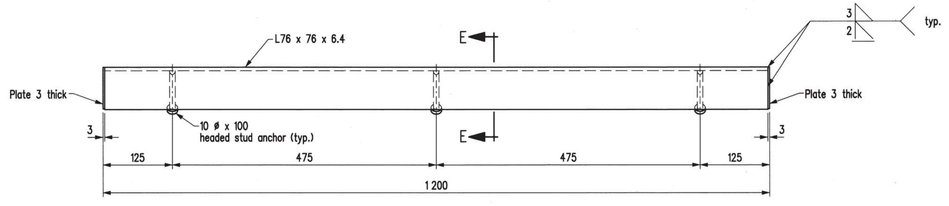
RAILPOST ANCHOR UNIT MK. "U1"

RAILPOST ANCHOR UNIT MK. "U2"

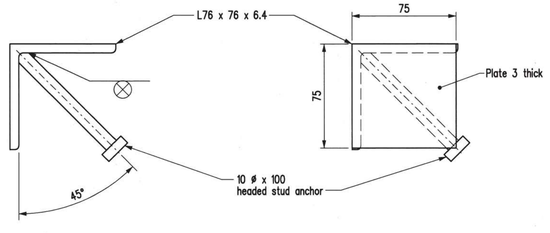


SIDE VIEW ELEVATION

LATERAL CONNECTION ANGLE MK. "LC1"



PLAN



SECTION E-E
Scale 1:2

END VIEW
Scale 1:2

GIRDER END ANGLE MK. "S7"

REVISIONS		
DATE	BY	DESCRIPTION

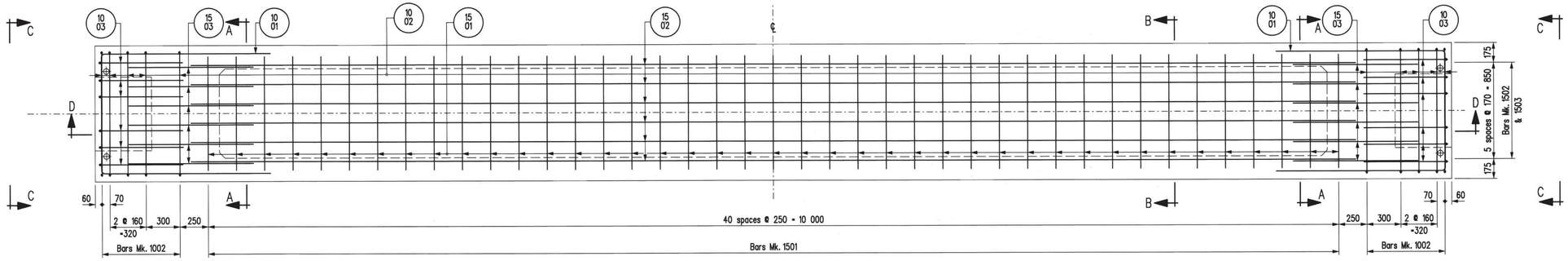
PRECAST PRESTRESSED CHANNEL GIRDER DETAILS

DESIGN SEAL	RECORD SEAL
Original signed and sealed by Andy Pankratz July 9, 2020	

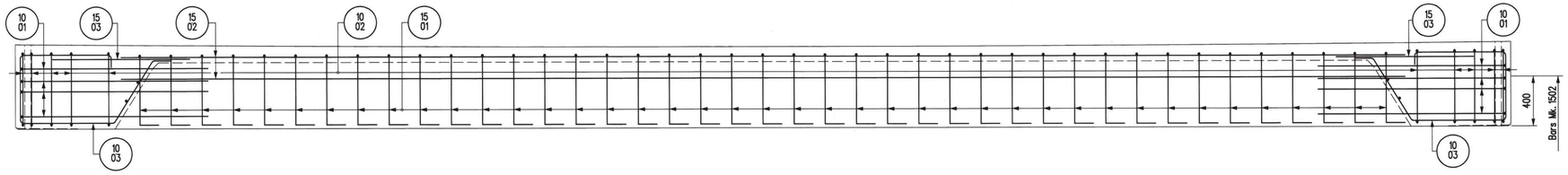
Manitoba Infrastructure
Water Management and Structures

APPROVED BY:
Original signed by Michael Hagos July 28, 2020
DIRECTOR OF STRUCTURES
DATE

DESIGN	BY: A.H.P.	SCALE: 1 : 5 or as shown
	CHECKED: A.H.P.	SHEET No. 3 of 5
DETAILS	BY: K.P./N.J.	STD No. PPCC-PR-10.8_12m_GD03
	CHECKED: A.H.P.	

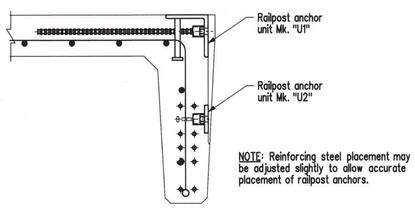


PLAN OF GIRDER



ELEVATION OF GIRDER

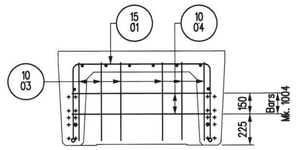
PART SECTION D-D



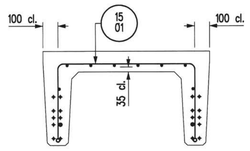
NOTE: Reinforcing steel placement may be adjusted slightly to allow accurate placement of railpost anchors.

DETAIL AT RAILPOST ANCHOR

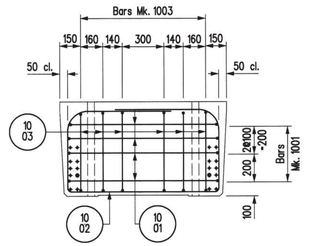
Scale 1:10



SECTION A-A



SECTION B-B



END VIEW C-C

NOTES:

1. Concrete cover shall be 25 mm unless noted otherwise.
2. Reinforcing details are typical for all 12 m girders unless noted otherwise.
3. See Bill of Reinforcing **PPCC_PR_10.8_12m_GD03 Sht 5 of 5.**

REVISIONS		
DATE	BY	DESCRIPTION

DESIGN SEAL	RECORD SEAL
Original signed and sealed by Andy Pankratz July 9, 2020	

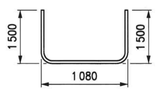
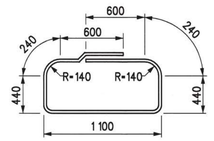
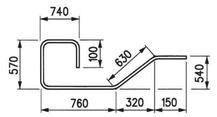
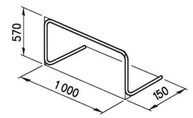
PRECAST PRESTRESSED CHANNEL GIRDER DETAILS

Manitoba Infrastructure
Water Management and Structures

APPROVED BY:
Original signed by Micheal Hagos July 28, 2020
DIRECTOR OF STRUCTURES
DATE

DESIGN	BY: A.H.P.	SCALE: 1:20 or as shown	SHEET No. 4 of 5
	CHECKED: A.H.P.		
DETAILS	BY: K.P./N.J.		STD No. PPCC_PR_10.8_12m_GD03
	CHECKED: A.H.P.		

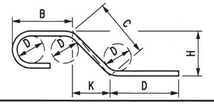
BILL OF REINFORCING STEEL - 12 M GIRDERS

MARK	TYPE	PIN DIAMETER	LENGTH	No. of BARS PER GIRDER	BENDING DIAGRAM
1001	BENT	45	4 080	8	
1002	BENT	45	3 660	10	
1003	BENT	45	2 950	12	
1004	STR		1 000	4	
1501	BENT	65	2 440	41	
1502	STR		10 300	8	
1503	STR		1 100	12	

Total volume of structural concrete per exterior girder	4.94 m³
Total volume of structural concrete per interior girder	4.93 m³
Number of Exterior girders Mk."G1"	6
Number of Interior girders Mk."G2"	21

NOTES:

1. All dimensions given in bending diagram are out to out, except radii and extensions on 90°, 135° & 180° hooks. Extensions on 90°, 135° & 180° hooks are the "A" or "G" dimensions for standard 90°, 135° & 180° hooks referenced from the RSIC "Manual of Standard Practice". Radii are inside dimensions. All reinforcing steel bends and hooks shall conform to Clause 6.6.2 of C.S.A. A23.1, unless noted otherwise in the BILL OF REINFORCING STEEL.
2. All reinforcing steel shall be deformed steel, unless noted otherwise in the BILL OF REINFORCING STEEL.
3. All reinforcing steel shall conform to CSA G30.18 "Billet Steel Bars for Concrete Reinforcement" Grade 400W, unless noted otherwise in the BILL OF REINFORCING STEEL.
4. Like bars shall be bundled, securely tied and identified as to Mark and Site No. by appropriate means. All other items to be identified in a similar fashion.
5. All bars shall be bent in accordance with the following detail:



REVISIONS		
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PRECAST PRESTRESSED CHANNEL GIRDER DETAILS

DESIGN SEAL	RECORD SEAL
Original signed and sealed by Andy Pankratz July 9, 2020	

Manitoba Infrastructure
Water Management and Structures

APPROVED BY:
Original signed by Micheal Hagos July 28, 2020
DIRECTOR OF STRUCTURES
DATE

DESIGN	BY: A.H.P.	SCALE:
	CHECKED: A.H.P.	SHEET No. 5 of 5
DETAILS	BY: K.P./N.J.	
	CHECKED: A.H.P.	STD No. PPCC_PR_10.8_12m_GD03