

**BILL OF TIMBER**  
FOR EAST AND WEST ABUTMENTS, DECK AND GUARDRAILS

MARK	No. [EXTRA]	DESCRIPTION	SIZE	LENGTH (m)
<b>BACKWALL:</b>				
B1	14	*GLU-LAM TIMBER BACKWALL	130 x 460 x 8800	123.20
B2	6	TIMBER BACKWALL CAP	64 x 184 x 8800	52.80
B3	3	TREATED PLYWOOD SHIM	10 x 460 x 8800	26.40
B4	4	BRACE STRUT	152 x 305 x 1050	4.20
B5	2	TRANSOM BOLSTER	360 x 360 x CUT TO FIT (-350)	0.70
B6	28	WINGWALL PLANKS	76 x 305 x 4000	112.00
<b>DECK:</b>				
T1	24	NAILER	152 x 152 x 3048	73.15
T2	2	END FILLER	152 x 152 x 5330	10.66
T3	124 [1]	CROSS TIE	64 x 184 x 5330	660.92
T4	50	CURB BLOCKING	203 x 203 x 760	38.00
T5	255 [3]	RUNNING PLANKS	64 x 184 x 3660	933.33
T6	24	CURB	203 x 203 x 3048	73.15
<b>GUARDRAILS:</b>				
G4	24	TIMBER BLOCK	64 x 184 x 550	13.20
G5	26	TIMBER BLOCK	64 x 184 x 1312	34.11

**NOTE:**  
1. \*GLU-LAM TIMBER BACKWALL PLANKS SHALL BE EWS 24F-V4 DF/DF.  
2. ALL DIMENSIONS SHOWN IN THE ABOVE BILL OF TIMBER ARE ACTUAL DIMENSIONS REQUIRED.

**BILL OF MISCELLANEOUS METAL**  
FOR PRECAST APPROACH BARRIER UNIT

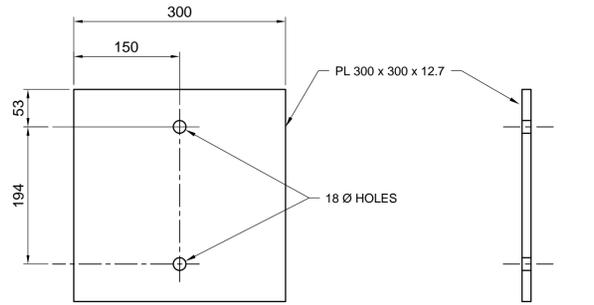
MARK	No.	DESCRIPTION	SIZE
<b>APPROACH BARRIER UNIT:</b>			
	24	4 - RICHMOND EC-2W INSERTS FOR 25Ø LEB	25Ø
		4 - RICHMOND LEB EYE BOLT C/W 2 PLATE WASHERS	25Ø x 75 LG.
		1 - STEEL RETAINING PIN	38Ø x 750 LG.
		1 - MACHINE BOLT	12Ø x 30 LG.

**NOTE:**  
1. CONCRETE COVER TO BE 50mm CLEAR, UNLESS NOTED OTHERWISE.  
2. MAXIMUM SIZE OF AGGREGATE IS 20mm.  
3. MINIMUM 28 DAY CONCRETE COMPRESSIVE STRENGTH = 40 MPa.  
4. STEEL FORM FINISH.  
5. NORMAL PORTLAND CEMENT TO BE USED.  
6. CONCRETE MIX DESIGN SHALL CONFORM TO CAN/CSA-A23.1 EXPOSURE CLASS C-1.  
7. UNITS TO BE CONNECTED BY HAVING ENDS "ONE" AND "TWO" ADJACENT.  
8. MINIMUM CHAMFER ON ALL EDGES TO BE 20mm.  
9. ALL REINFORCING STEEL SHALL BE DEFORMED REINFORCING STEEL UNLESS NOTED OTHERWISE.  
10. ALL REINFORCING STEEL SHALL CONFORM TO CAN/CSA-G30.18 GRADE 400W.  
11. ALL MATERIAL IN THE ABOVE BILL OF MISCELLANEOUS METAL SCHEDULE TO BE GALVANIZED AFTER FABRICATION.

**BILL OF REINFORCING STEEL**  
FOR PRECAST APPROACH BARRIER UNIT

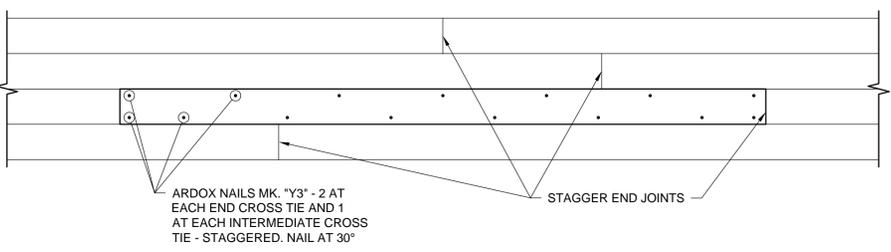
MARK	TYPE	PIN Ø	LENGTH	No. /UNIT	BENDING DIAGRAM
B1501	BENT	65	1650	8	
B1502	STR		2950	8	
MASS OF REINF. STEEL PER UNIT (kg)				48.5	
VOLUME OF CONCRETE PER UNIT (m3)				0.77	
MASS OF EACH UNIT (kg)				1903	

**NOTE:**  
1. ALL DIMENSIONS GIVEN EXCEPT RADIUS ARE OUT TO OUT. RADIUS IS INSIDE DIMENSION.  
2. ALL REINFORCING STEEL SHALL BE DEFORMED REINFORCING STEEL UNLESS NOTED OTHERWISE IN ABOVE "BILL OF REINFORCING STEEL".  
3. ALL REINFORCING STEEL SHALL CONFORM TO CAN/CSA-G30.18 GRADE 400R.

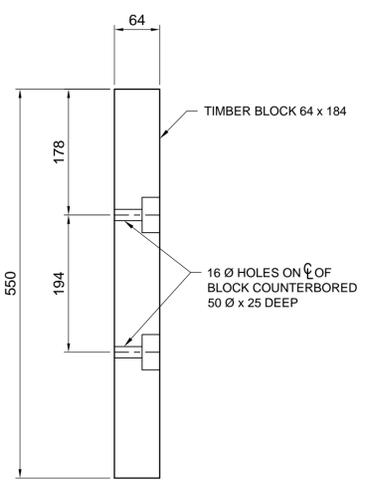


REAR VIEW SIDE VIEW

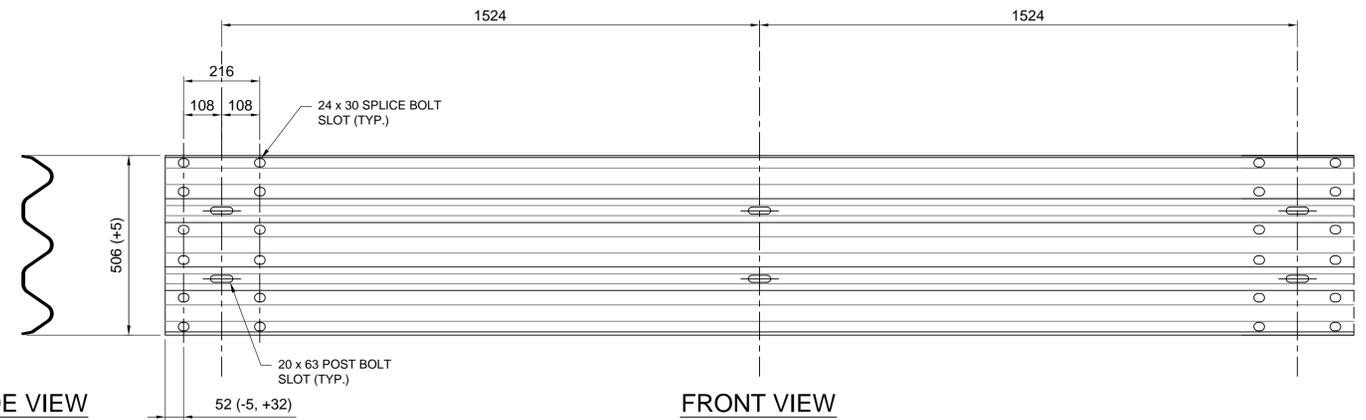
STEEL PLATE MK. "G1"  
1:5



RUNNING PLANK NAILING PATTERN - PARTIAL PLAN  
1:20



BLOCK MK. "G4"  
1:5



SIDE VIEW FRONT VIEW  
THREE BEAM GUARDRAIL  
1:10

**BILL OF MISCELLANEOUS METAL**  
FOR EAST AND WEST ABUTMENTS, DECK AND GUARDRAILS

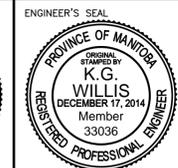
MARK	No. [Extra]	DESCRIPTION	SIZE	REMARKS	UNIT MASS	TOTAL MASS
<b>ABUTMENTS:</b>						
BP1	4	BEARING BASE PLATE	PL 500 x 1350 x 25	AS DETAILED	132.470	529.88
BP2	24	SS EXPANSION ANCHOR C/W WASHER & NUT	25Ø x 300	BASE PLATE MK. "BP1" TO ABUTMENT	1.623	38.95
BP3	4	SS EXPANSION ANCHOR C/W WASHER & NUT	16Ø x 150	TRANSOM BOLSTER RETAINING ANGLE MK. "BR2" TO ABUTMENT	0.358	1.43
BP4	32	SS EXPANSION ANCHOR C/W WASHER & NUT	25Ø x 250	FOR BRACE MK. "S1" TO ABUTMENT	1.414	45.25
BR1	4	EXPANSION BEARING RETAINING ANGLE	L 76 x 76 x 9.5 x 305 LG.	FOR EXPANSION BEARINGS ONLY (EAST ABUTMENT) AS DETAILED	3.264	13.05
BR2	2	TRANSOM BOLSTER RETAINING ANGLE	L 76 x 76 x 9.5 x 305 LG.	FOR TRANSOM BOLSTERS AS DETAILED	3.264	6.53
S1	4	GALVANIZED STEEL ANGLE BRACE UNIT AS DETAILED	AS DETAILED	AS DETAILED	92.95	371.80
S2	24	GALVANIZED LAG SCREWS	16Ø x 250	BRACE STRUT MK. "B4" TO BACKWALL	0.397	9.53
S3	20	GALVANIZED LAG SCREWS	16Ø x 100	BRACE MK. "S1" TO BRACE STRUT MK. "B4" AND RETAINING ANGLE MK. "BR2" TO TRANSOM BOLSTER MK. "B5"	0.161	3.22
S4	38	GALVANIZED THREADED ROD C/W NUTS AND WASHER AS DETAILED	25Ø x 1300	AS DETAILED	4.890	185.82
W1	4	WINGWALL RETAINING ANGLE	L 152 x 152 x 13 x 2190 LONG	AS DETAILED	63.51	254.04
W2	196	GALVANIZED LAG SCREWS	16Ø x 75	WINGWALL PLANKS TO PILES AND ANGLE	0.116	22.73
W3	24	GALVANIZED BOLT C/W WASHER AND NUT	25Ø x 525	RETAINING ANGLE TO BACKWALL	2.750	66.00
W4	24	GALVANIZED PLATE WASHER	100 x 100 WITH 28Ø HOLE	FOR BOLT MK. "W3"	0.746	17.90
W5	24	SS EXPANSION ANCHOR C/W WASHER AND NUT	25Ø x 300	RETAINING ANGLE TO ABUTMENT	1.623	38.95
<b>DECK:</b>						
PL1	2	EXPANSION PLATE	19 x 500 x 4750	AS DETAILED	356.241	712.48
PL2	32	LAG SCREWS FOR EXPANSION PLATE	10Ø x 125 LONG	AS DETAILED	0.071	2.27
Y2	500 [8]	ARDOX NAILS, GALVANIZED	7Ø x 200 LONG	CROSS TIE MK. "T3" TO NAILER MK. "T1"	0.060	30.00
Y3	3800 [20]	ARDOX NAILS, GALVANIZED	7Ø x 125 LONG	RUNNING PLANKS MK. "T5" TO CROSS TIE MK. "T3"	0.038	144.40
R8	100	THREADED ROD C/W 2 HEX NUTS, 2 - 50Ø WASHERS & 2 - 75Ø WASHERS	19Ø x 720 LONG	AS DETAILED	2.089	208.90
<b>GUARDRAILS:</b>						
G1	26	PLATE	300 x 300 x 12.7 THICK	FOR THRIE BEAM RAILING SEE DETAILS	8.973	180.12
G2	48	GUARDRAIL BOLT C/W WASHER & NUT	16Ø x 70 LONG	BLOCKS MK. "G4" TO THRIE BEAM AT PANEL INTERMEDIATE VERTICL BARS	0.194	9.31
G3	52	GUARDRAIL BOLT C/W WASHER & NUT	16Ø x 225 LONG	CHANNEL MK. "G1" TO PANEL END VERTICAL BARS TO BLOCKS MK. "G5" TO THRIE BEAM	0.395	20.54
					TOTAL MASS (kg)	2 913.10

**NOTES:**  
1. [EXTRA] REFERS TO THE NUMBER OF UNITS IN THE BASE NUMBER THAT ARE EXTRA TO THAT ACTUALLY REQUIRED IN CASE OF LOSS OR INADEQUATE QUALITY OF SOME UNITS. CONTRACTOR MAY ORDER MORE AT HIS DISCRETION AND COST.  
2. BOLTS ARE TO BE GRADE 307 STEEL.  
3. ALL MISCELLANEOUS METALS SHALL BE GALVANIZED IN ACCORDANCE WITH TS 362 UNLESS NOTED OTHERWISE.  
4. THRIE BEAM TO BE FIELD DRILLED AS REQUIRED.  
5. ALL MISCELLANEOUS METAL IN THE ABOVE BILL SHALL BE GALVANIZED IN ACCORDANCE WITH TS 362 UNLESS NOTED OTHERWISE.

G:\CAD\138363\11-Structural\01-Contract\138363-09\_DECK AND GUARDRAIL DETAILS 2.dwg



B.M. ELEV.	DESIGNED BY	GCL
	DRAWN BY	JLD
	CHECKED BY	MBL
	APPROVED BY	MBL
	HOR. SCALE	RELEASED FOR CONSTRUCTION
	VERTICAL	DATE
0	ISSUED FOR TENDER	14/12/17 GCL
NO.	REVISIONS	DATE BY DATE 2014/12/17



BRIDGE OVER THE FALCON RIVER DIVERSION & ASSOCIATED ROADWORKS	CITY DRAWING NUMBER ----
DECK AND GUARDRAIL DETAILS 2 OF 2	SHEET 10 OF 13
	CONSULTANT DRAWING NUMBER

CONSULTANT PROJECT NUMBER  
**13-8363**

WHOLE NUMBERS INDICATE MILLIMETRES  
DECIMALIZED NUMBERS INDICATE METRES