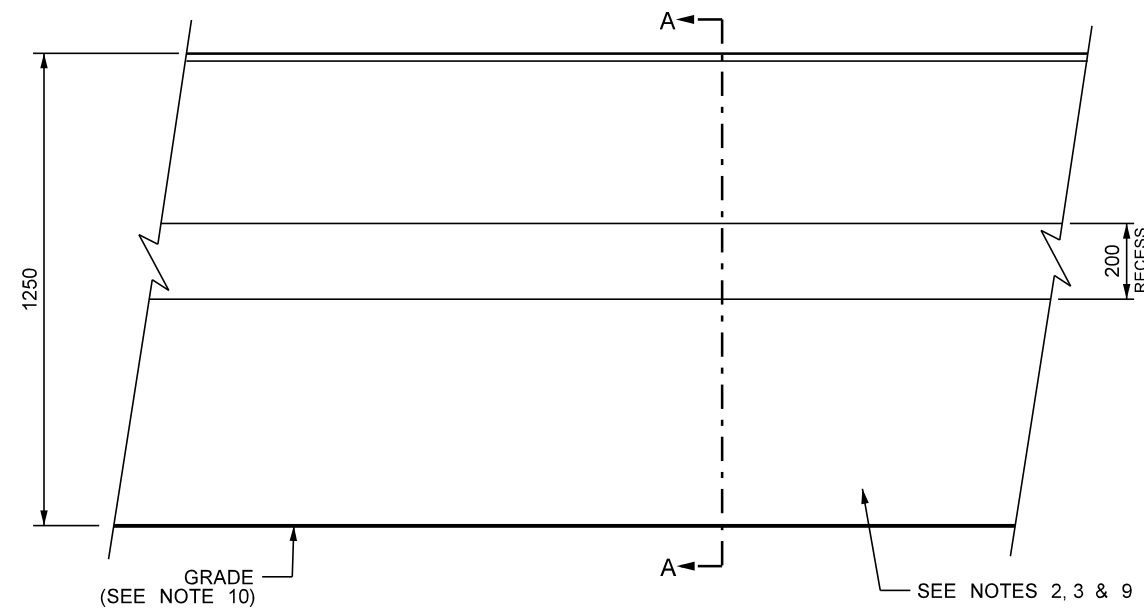
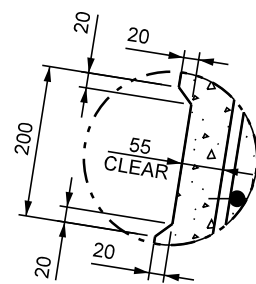


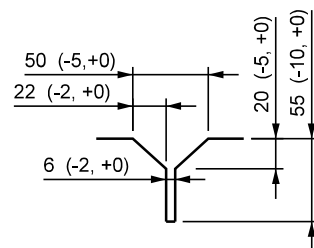
**SECTION 'A-A'**  
 INTERIOR SECTION  
 SCALE 1:20



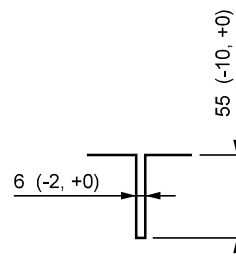
**ELEVATION**  
 SCALE 1:20



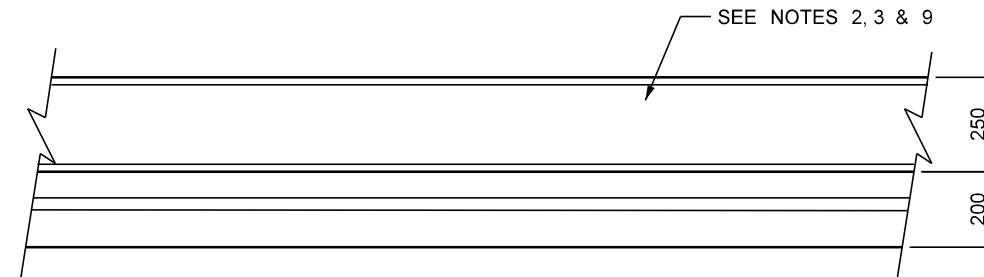
**DETAIL 'B'**  
 SCALE 1:10



**HAND FORMED BARRIER**  
 SCALE 1:5



**SLIP FORMED BARRIER (SAW CUT)**  
 SCALE 1:5



**PLAN**  
 SCALE 1:20

**NOTES:**

1. ALL SCALES ARE APPROXIMATE.
2. LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY.
3. FORMED OR CUT CONTRACTION JOINTS SHALL BE CREATED AT EACH PLACE WHERE THE BARRIER SHAPE CHANGES, TO MATCH ADJACENT PAVEMENT JOINT SPACING, OR AT A MAXIMUM SPACING OF 6000 mm.
4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED.
5. THE ORIGINAL SEALED AND SIGNED DRAWING IS IN TRAFFIC ENGINEERING.
6. ALL REINFORCING SHALL HAVE MINIMUM 75 MM COVER, UNLESS OTHERWISE NOTED.
7. CONCRETE: CSA A23.1, EXPOSURE CLASS C-1, AIR CONTENT CATEGORY 1, COMPRESSIVE STRENGTH: BARRIER ≥ 45 MPa AND FOOTING ≥ 35 MPa, AT 28 DAYS.
8. SEE SHEET 3 FOR REINFORCING DETAILS.
9. TRANSVERSE REINFORCING NOT SHOWN FOR CLARITY.
10. SEE SECTION 'A-A' FOR BELOW GRADE DESIGN OPTIONS.
11. NEW OR EXISTING REINFORCED CONCRETE FOOTING: CSA A23.1, EXPOSURE CLASS C-1, AIR CONTENT CATEGORY 1, COMPRESSIVE STRENGTH ≥ 35 MPa, AT 28 DAYS.
12. HOLES IN FOOTING SHALL BE DRILLED VERTICALLY 2 mm LARGER THAN REINFORCING.
13. HOLES IN FOOTING SHALL BE PREPARED FOR EPOXY (HILTI HIT RE 500, OR APPROVED ALTERNATIVE) AS DIRECTED BY MANUFACTURER.
14. STIRRUP SHALL BE SECURELY ATTACHED TO REBAR.

**CONTRACTION JOINT DETAILS**

**INTERIOR SECTION DETAILS**

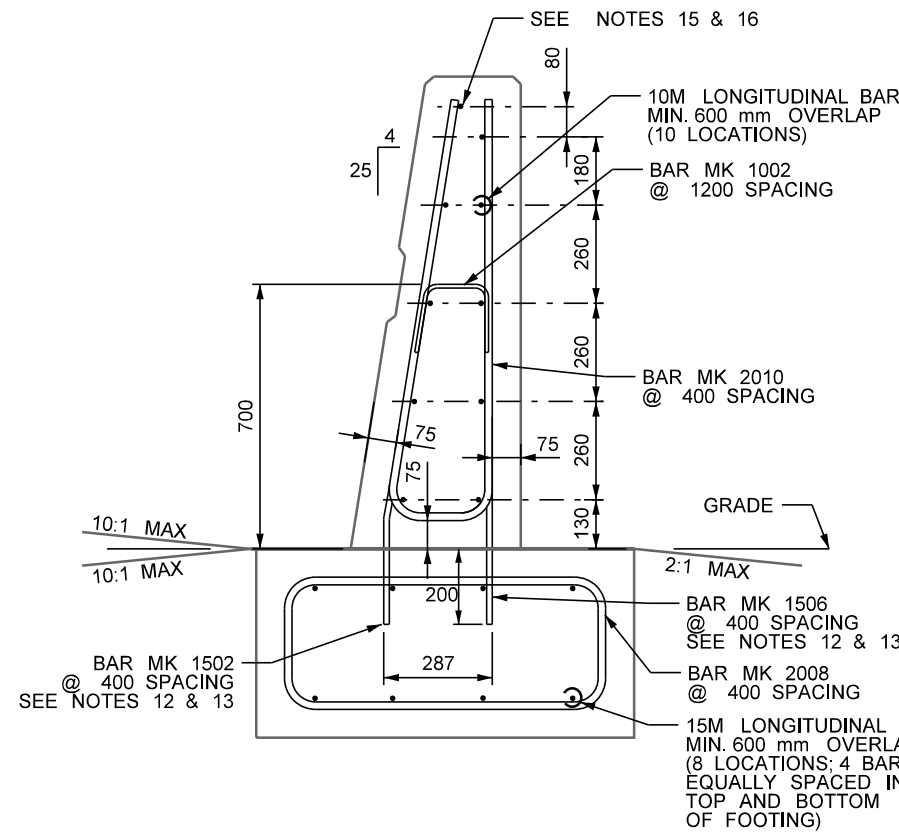
REVISIONS		
DATE	DESCRIPTION	BY



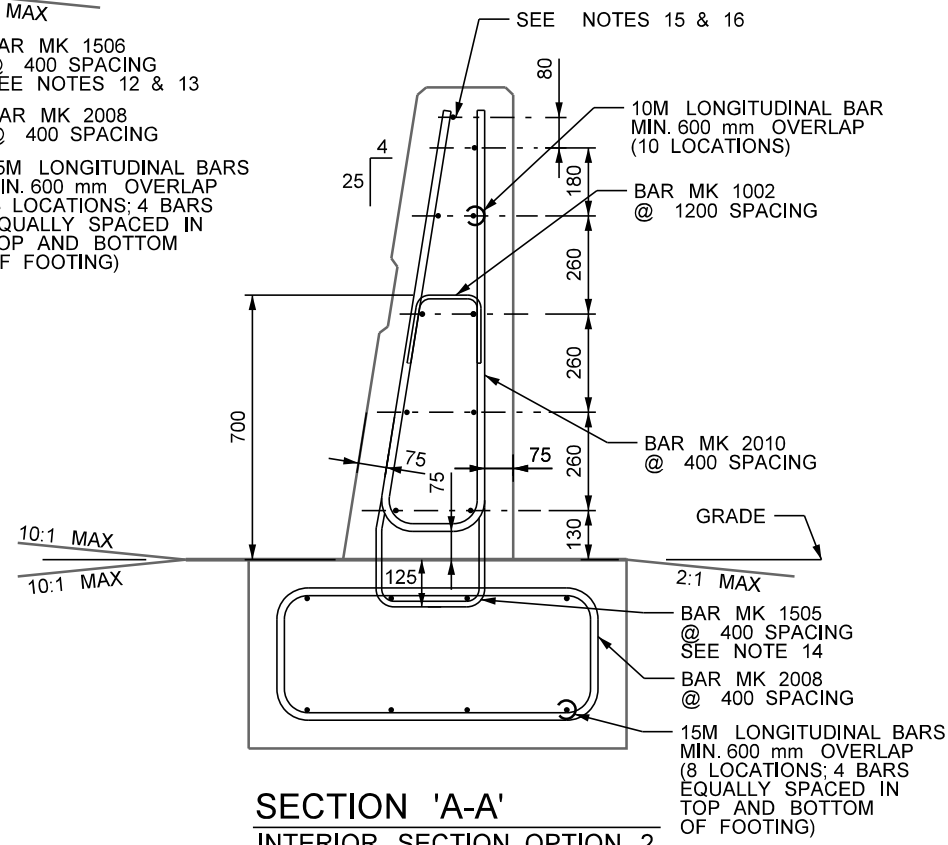
**MANITOBA  
 CONSTRAINED WIDTH  
 CONSTANT SLOPE  
 BARRIER - ROADSIDE  
 TL-5 AT 1250**

SHEET NO: 1 OF 5	DATE: 2020 - 08
DESIGNED BY:	H. LARSEN
DRAWN BY:	L. LIEBRECHT
REVIEWED BY:	N. JOYAL

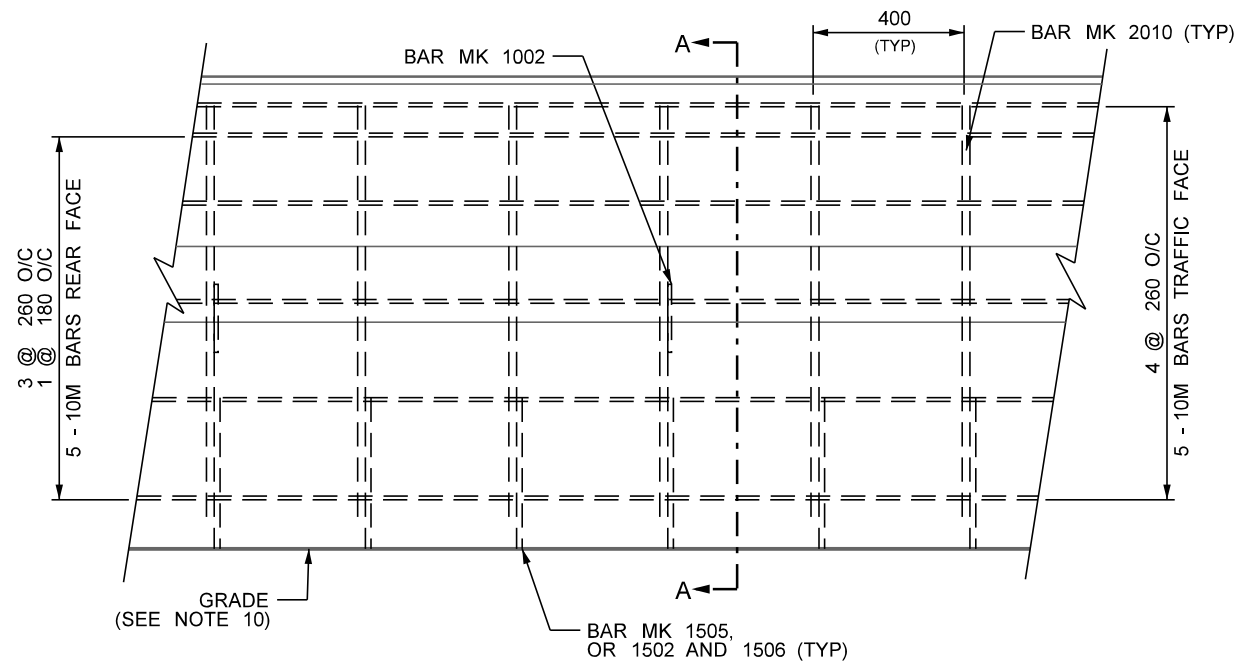
**TSGR99e**



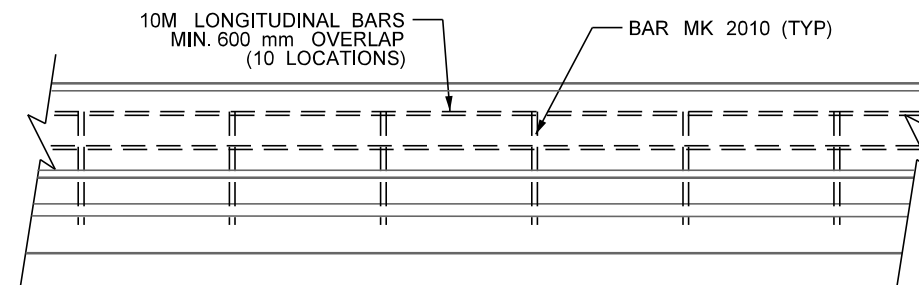
**SECTION 'A-A'**  
**INTERIOR SECTION, OPTION 1**  
 SCALE 1:20



**SECTION 'A-A'**  
**INTERIOR SECTION, OPTION 2**  
 SCALE 1:20



**ELEVATION**  
 SCALE 1:20



**PLAN**  
 SCALE 1:20

**INTERIOR SECTION DETAILS**

**NOTES:**

1. ALL SCALES ARE APPROXIMATE.
2. LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY.
3. FORMED OR CUT CONTRACTION JOINTS SHALL BE CREATED AT EACH PLACE WHERE THE BARRIER SHAPE CHANGES, TO MATCH ADJACENT PAVEMENT JOINT SPACING, OR AT A MAXIMUM SPACING OF 6000 mm.
4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED.
5. THE ORIGINAL SEALED AND SIGNED DRAWING IS IN TRAFFIC ENGINEERING.
6. ALL REINFORCING SHALL HAVE MINIMUM 75 MM COVER, UNLESS OTHERWISE NOTED.
7. CONCRETE: CSA A23.1, EXPOSURE CLASS C-1, AIR CONTENT CATEGORY 1, COMPRESSIVE STRENGTH: BARRIER ≥ 45 MPa AND FOOTING ≥ 35 MPa, AT 28 DAYS.
8. SEE SHEET 3 FOR REINFORCING DETAILS.
9. TRANSVERSE REINFORCING NOT SHOWN FOR CLARITY.
10. SEE SECTION 'A-A' FOR BELOW GRADE DESIGN OPTIONS.
11. NEW OR EXISTING REINFORCED CONCRETE FOOTING: CSA A23.1, EXPOSURE CLASS C-1, AIR CONTENT CATEGORY 1, COMPRESSIVE STRENGTH ≥ 35 MPa, AT 28 DAYS.
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13. HOLES IN FOOTING SHALL BE PREPARED FOR EPOXY (HILTI HIT RE 500, OR APPROVED ALTERNATIVE) AS DIRECTED BY MANUFACTURER. STIRRUP SHALL BE SECURELY ATTACHED TO REBAR.
14. ALTERNATE LONGITUDINAL REINFORCEMENT OF TOP TWO BARS MAY BE ONE (1) SINGLE 15M BAR.
15. LONGITUDINAL BARS SHALL BE SEPARATED FROM EACH OTHER A MINIMUM DISTANCE OF 1½ TIMES THE MAXIMUM AGGREGATE SIZE; ADJUST PLACEMENT AS REQUIRED.

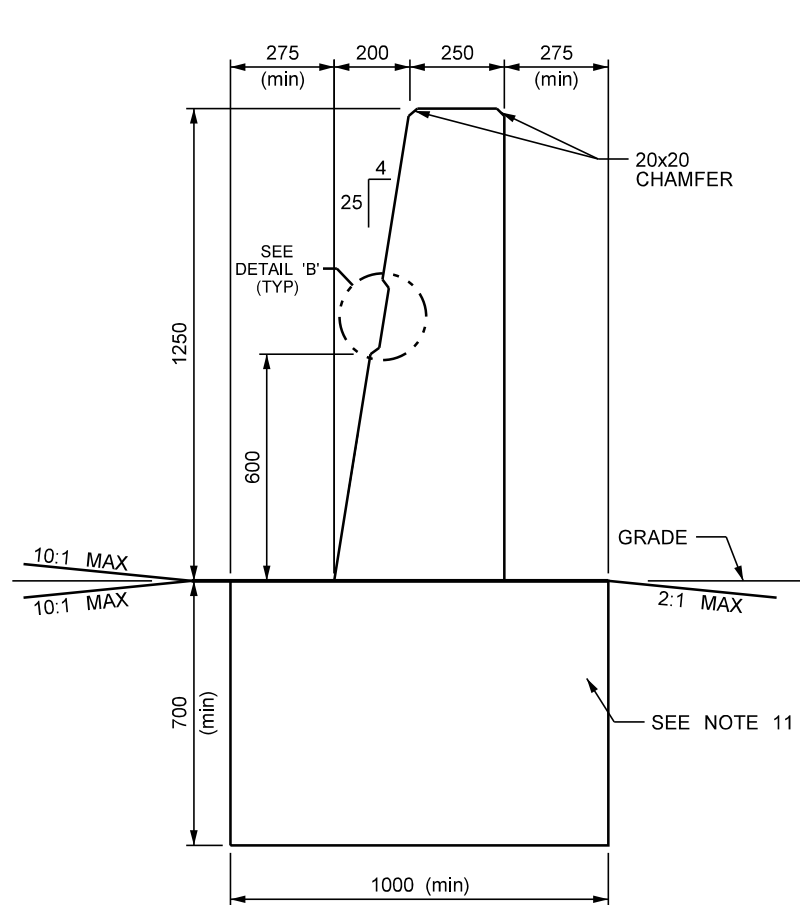
REVISIONS		
DATE	DESCRIPTION	BY



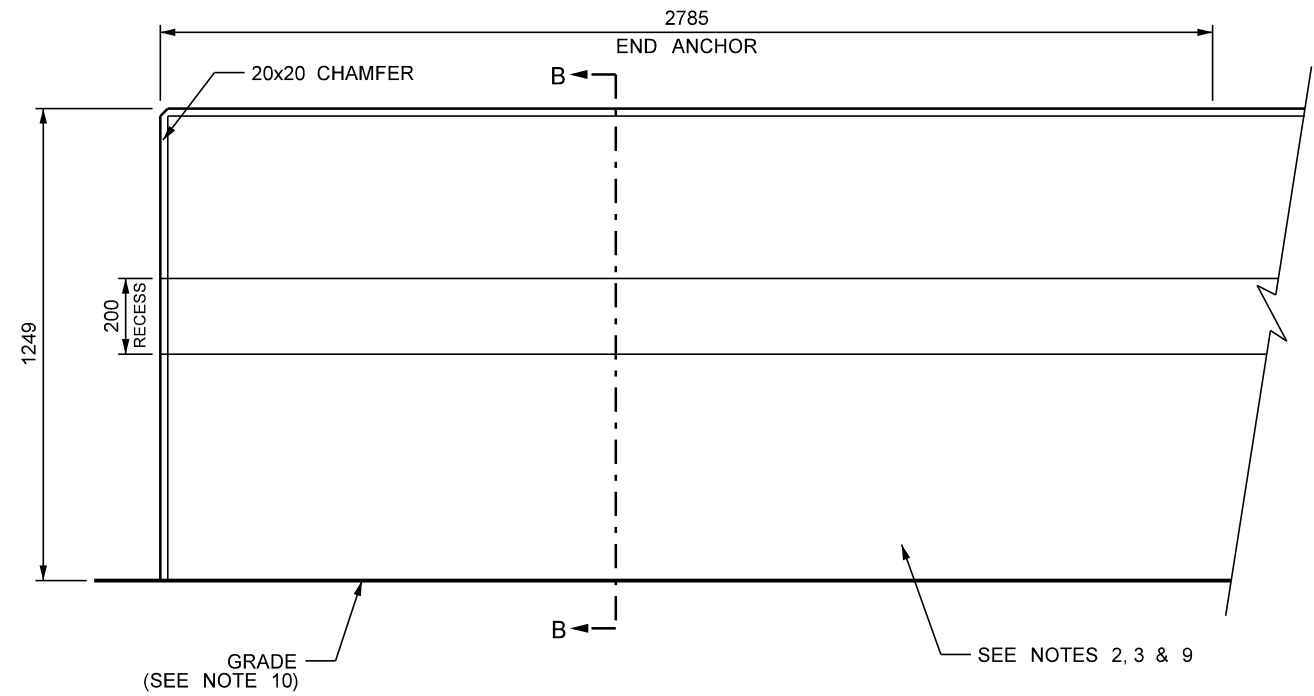
**MANITOBA**  
**CONSTRAINED WIDTH**  
**CONSTANT SLOPE**  
**BARRIER - ROADSIDE**  
**TL-5 AT 1250**

SHEET NO: 2 OF 5	DATE: 2020 - 08
DESIGNED BY:	H. LARSEN
DRAWN BY:	L. LIEBRECHT
REVIEWED BY:	N. JOYAL

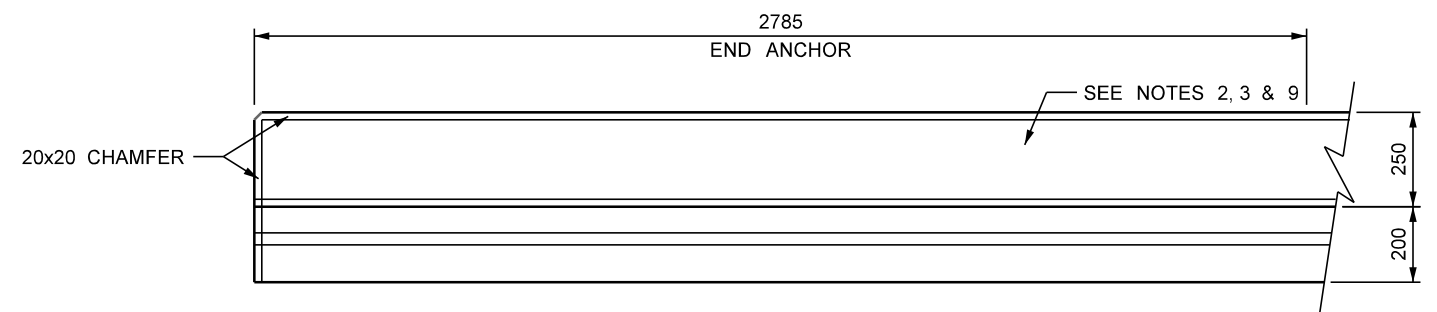
**TSGR99e**



**SECTION 'B-B'**  
END SECTION  
SCALE 1:20



**ELEVATION**  
SCALE 1:20



**PLAN**  
SCALE 1:20

**END SECTION DETAILS**

**NOTES:**

1. ALL SCALES ARE APPROXIMATE.
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3. FORMED OR CUT CONTRACTION JOINTS SHALL BE CREATED AT EACH PLACE WHERE THE BARRIER SHAPE CHANGES, TO MATCH ADJACENT PAVEMENT JOINT SPACING, OR AT A MAXIMUM SPACING OF 6000 mm.
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8. SEE SHEET 3 FOR REINFORCING DETAILS.
9. TRANSVERSE REINFORCING NOT SHOWN FOR CLARITY.
10. SEE SECTION 'B-B' FOR BELOW GRADE DESIGN OPTIONS.
11. NEW OR EXISTING REINFORCED CONCRETE FOOTING: CSA A23.1, EXPOSURE CLASS C-1, AIR CONTENT CATEGORY 1, COMPRESSIVE STRENGTH ≥ 35 MPa, AT 28 DAYS.
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13. HOLES IN FOOTING SHALL BE PREPARED FOR EPOXY (HILTI HIT RE 500, OR APPROVED ALTERNATIVE) AS DIRECTED BY MANUFACTURER.
14. STIRRUP SHALL BE SECURELY ATTACHED TO REBAR.

REVISIONS		
DATE	DESCRIPTION	BY

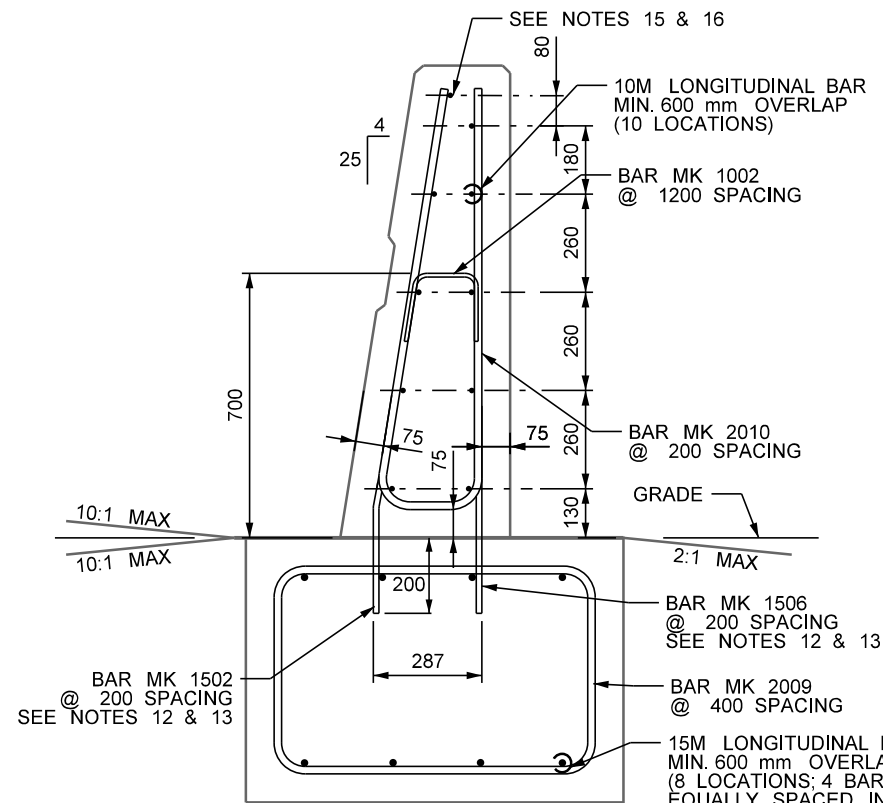
**Manitoba** Infrastructure  
Traffic Engineering



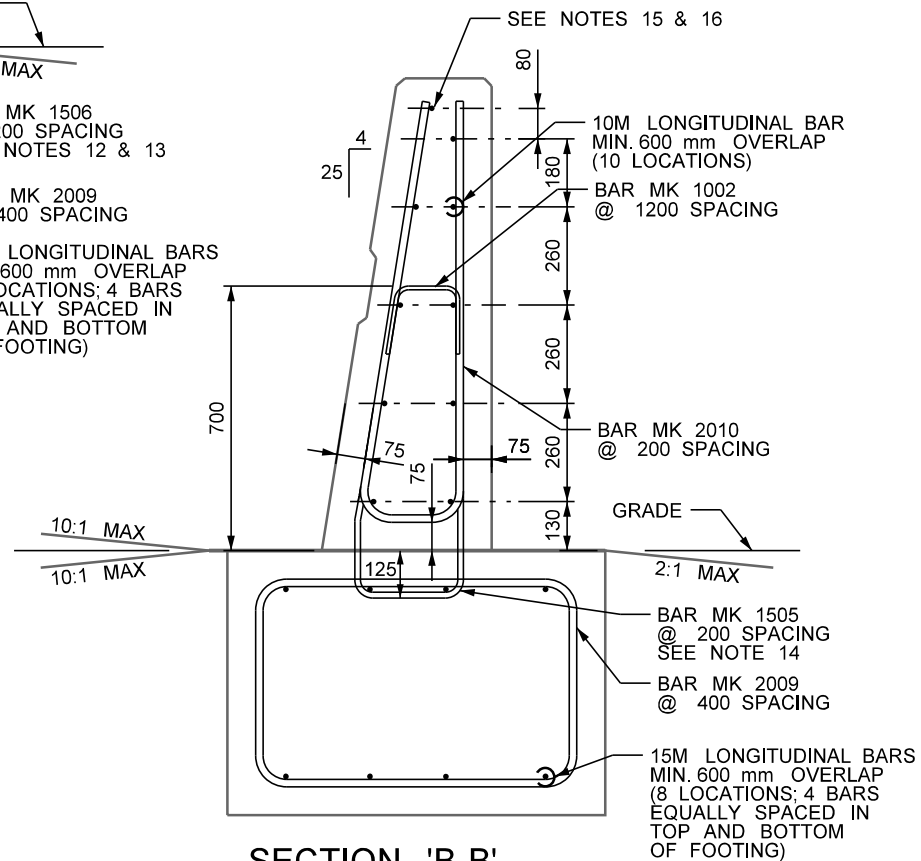
**MANITOBA**  
CONSTRAINED WIDTH  
CONSTANT SLOPE  
BARRIER - ROADSIDE  
TL-5 AT 1250

SHEET NO: 3 OF 5	DATE: 2020 - 08
DESIGNED BY:	H. LARSEN
DRAWN BY:	L. LIEBRECHT
REVIEWED BY:	N. JOYAL

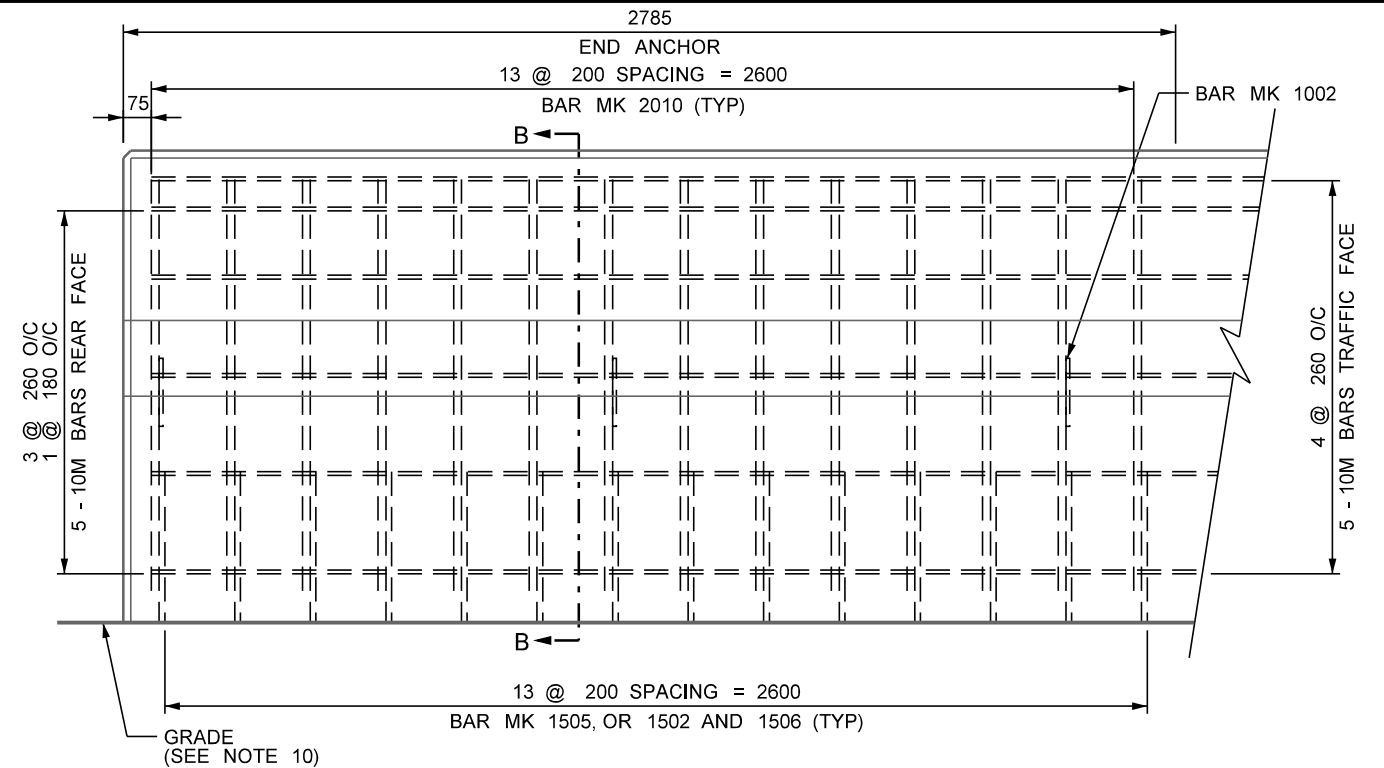
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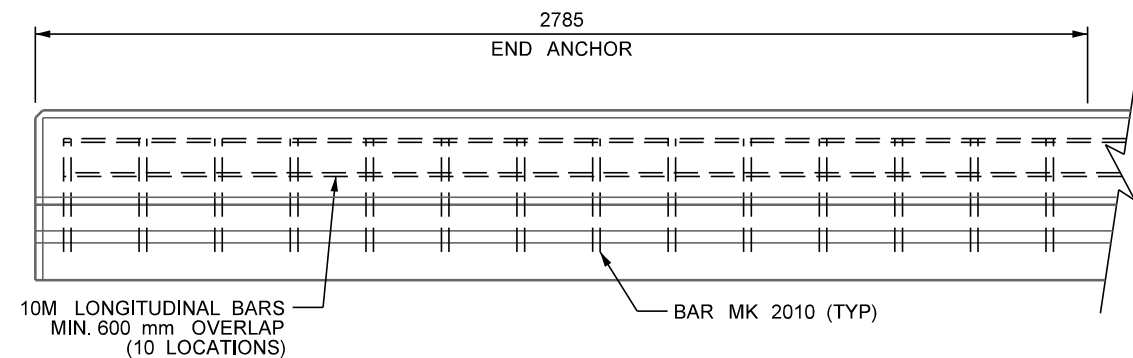
**SECTION 'B-B'**  
END SECTION, OPTION 1  
SCALE 1:20



**SECTION 'B-B'**  
END SECTION, OPTION 2  
SCALE 1:20



**ELEVATION**  
SCALE 1:20



**PLAN**  
SCALE 1:20

**END SECTION DETAILS**

**NOTES:**

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2. LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY.
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5. THE ORIGINAL SEALED AND SIGNED DRAWING IS IN TRAFFIC ENGINEERING.
6. ALL REINFORCING SHALL HAVE MINIMUM 75 MM COVER, UNLESS OTHERWISE NOTED.
7. CONCRETE: CSA A23.1, EXPOSURE CLASS C-1, AIR CONTENT CATEGORY 1, COMPRESSIVE STRENGTH: BARRIER  $\geq$  45 MPa AND FOOTING  $\geq$  35 MPa, AT 28 DAYS.
8. SEE SHEET 3 FOR REINFORCING DETAILS.
9. TRANSVERSE REINFORCING NOT SHOWN FOR CLARITY.
10. SEE SECTION 'A-A' FOR BELOW GRADE DESIGN OPTIONS.
11. NEW OR EXISTING REINFORCED CONCRETE FOOTING: CSA A23.1, EXPOSURE CLASS C-1, AIR CONTENT CATEGORY 1, COMPRESSIVE STRENGTH  $\geq$  35 MPa, AT 28 DAYS.
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13. HOLES IN FOOTING SHALL BE PREPARED FOR EPOXY (HILTI HIT RE 500, OR APPROVED ALTERNATIVE) AS DIRECTED BY MANUFACTURER.
14. STIRRUP SHALL BE SECURELY ATTACHED TO REBAR.
15. ALTERNATE LONGITUDINAL REINFORCEMENT OF TOP TWO BARS MAY BE ONE (1) SINGLE 15M BAR.
16. LONGITUDINAL BARS SHALL BE SEPARATED FROM EACH OTHER A MINIMUM DISTANCE OF  $1\frac{1}{2}$  TIMES THE MAXIMUM AGGREGATE SIZE; ADJUST PLACEMENT AS REQUIRED.

REVISIONS		
DATE	DESCRIPTION	BY



**MANITOBA**  
CONSTRAINED WIDTH  
CONSTANT SLOPE  
BARRIER - ROADSIDE  
TL-5 AT 1250

SHEET NO: 4 OF 5	DATE: 2020 - 08
DESIGNED BY:	H. LARSEN
DRAWN BY:	L. LIEBRECHT
REVIEWED BY:	N. JOYAL

**TSGR99e**

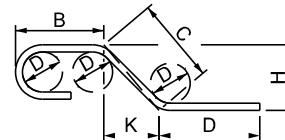
MARK	TYPE	PIN DIAMETER (mm)	TOTAL LENGTH (mm)	MASS			BENDING DIAGRAM
				kg	kg/m		
					INTERIOR SEC.	END SEC.	
1002	BENT	65	503	0.39	0.33	0.33	
1502	BENT	65	604	0.95	2.38	4.75	
1505	BENT	65	1300	2.04	5.10	10.20	
1506	STR	0	600	0.94	2.35	4.70	
2008	BENT	125	2885	6.79	16.98	--	
2009	BENT	125	3283	7.73	--	38.65	
2010	BENT	125	2415	5.69	14.23	28.45	

LONGITUDINAL REINFORCING - MASS (kg/m)

BAR	INTERIOR SECTION	END SECTION	FOOTING			
			OPTION 1	OPTION 2	OPTION 3	
10M	8.24	8.24	--	--	--	
15M	--	--	13.19	13.19	--	
20M	--	--	--	--	--	

NOTES:

- 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 THE 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 CSA A23.1 UNLESS NOTED OTHERWISE IN THE BILL OF REINFORCING STEEL.
- ALL REINFORCING STEEL SHALL BE DEFORMED STEEL UNLESS NOTED OTHERWISE IN THE BILL OF REINFORCING STEEL.
- ALL REINFORCING STEEL SHALL CONFORM TO CSA G30.18-M92 "BILLET STEEL BARS FOR CONCRETE REINFORCEMENT" GRADE 400W, UNLESS NOTED OTHERWISE IN THE BILL OF REINFORCING STEEL.
- LIKE BARS SHALL BE BUNDLED, SECURELY TIED, AND IDENTIFIED AS TO MARK No. BY APPROPRIATE MEANS. ALL OTHER ITEMS TO BE IDENTIFIED IN A SIMILAR FASHION.
- BARS MARKED WITH THE SUFFIX "P" SHALL BE PLAIN UNDEFORMED BARS IN ACCORDANCE WITH CAN/CSA G40.21-M92 GRADE 300W.
- ALL BARS SHALL BE BENT IN ACCORDANCE WITH THE FOLLOWING DETAIL:



REVISIONS		
DATE	DESCRIPTION	BY



MANITOBA  
CONSTRAINED WIDTH  
CONSTANT SLOPE  
BARRIER - ROADSIDE  
TL-5 AT 1250

SHEET NO: 5 OF 5	DATE: 2020 - 08
DESIGNED BY: H. LARSEN	
DRAWN BY: L. LIEBRECHT	
REVIEWED BY: N. JOYAL	

TSGR99e