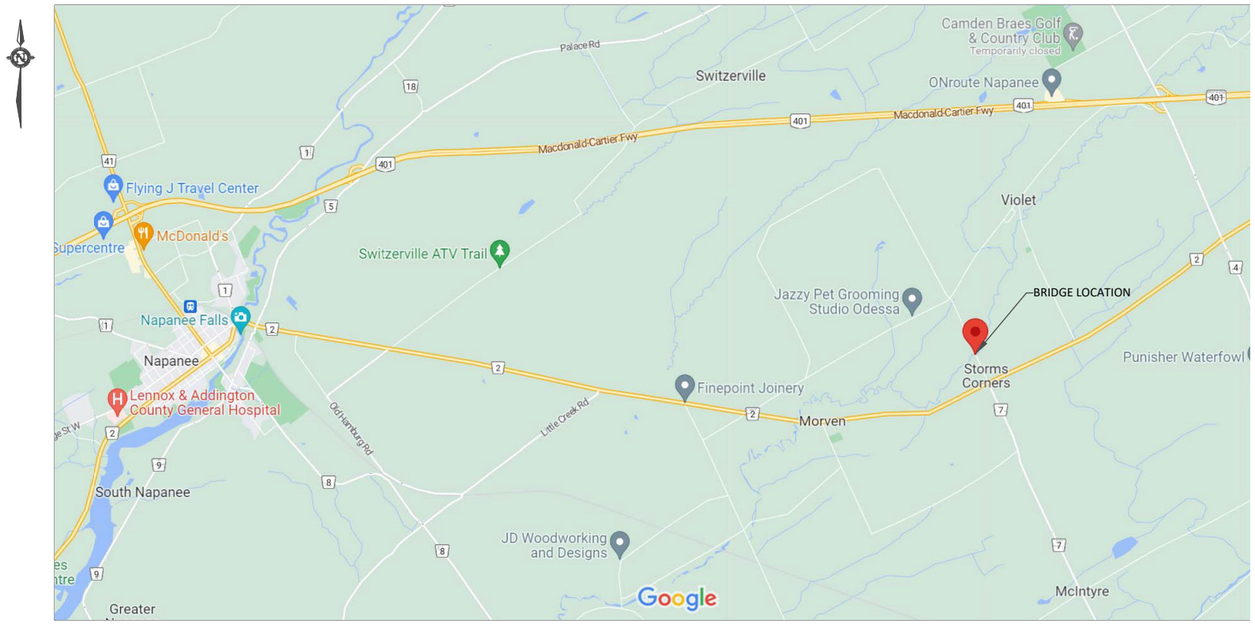
LOYALIST TOWNSHIP



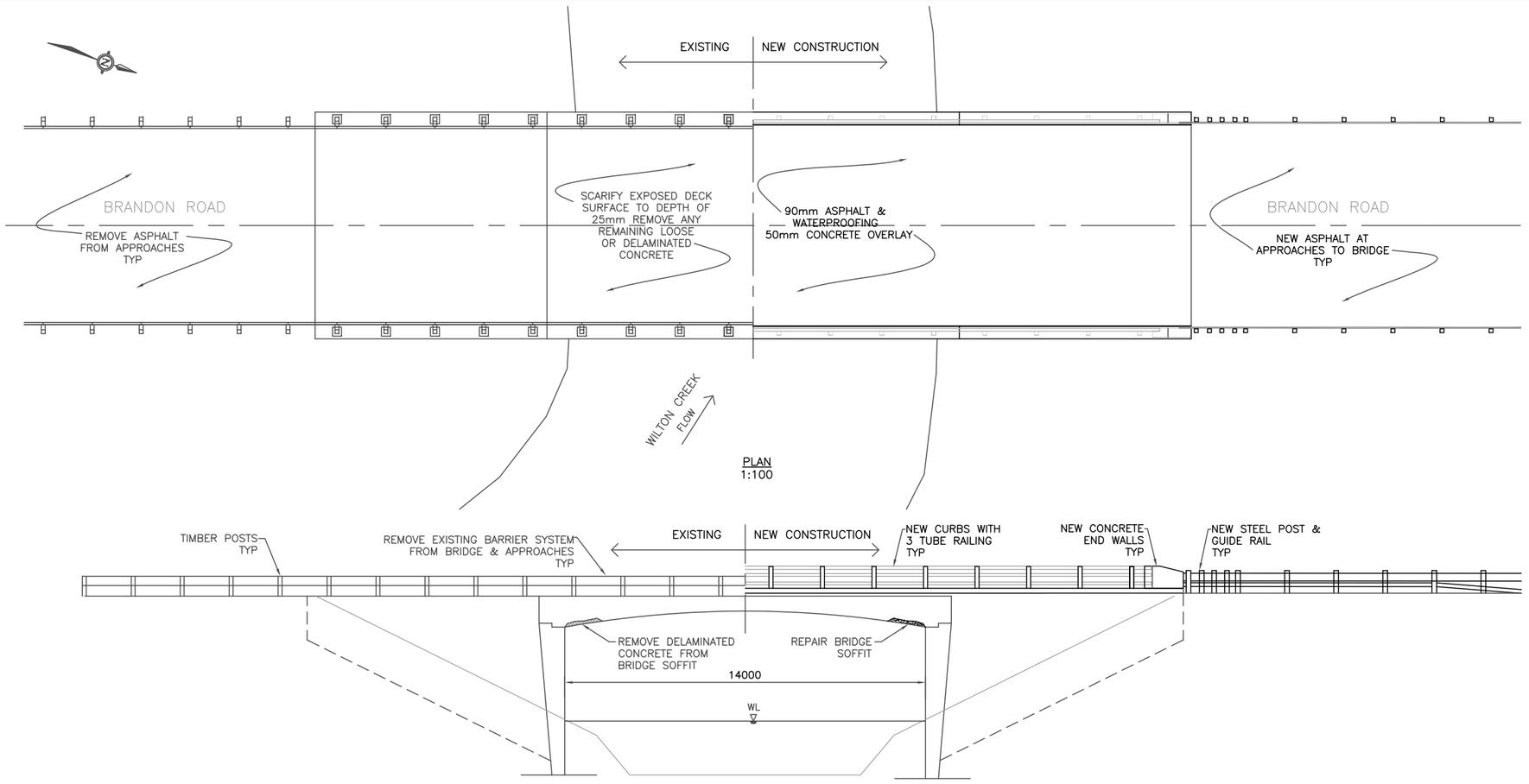
LIST OF DRAWINGS

1. GENERAL ARRANGEMENT
2. TRAFFIC MANAGEMENT PLAN
3. ENVIRONMENTAL MANAGEMENT PLAN, ROADWORKS
4. TYPICAL CONCRETE REPAIR DETAILS, CURB DETAILS
5. SS110–39 THREE TUBE RAILING ON CURB – TL4 (WITH CONCRETE ENDWALL)
6. SS110–66 CONCRETE ENDWALL FOR BOX BEAM RAILING
7. POST AND RAILING LAYOUT

Keystone Bridge Management Corp.

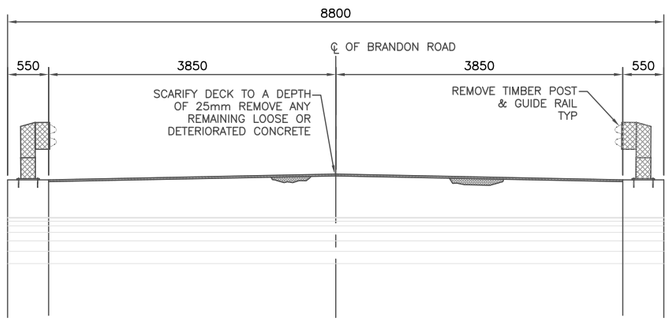
MENORE BRIDGE REHABILITATION

CONTRACT NO. 2025-02

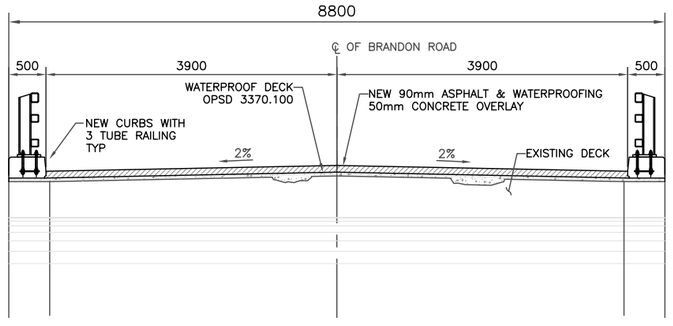


PLAN
1:100

ELEVATION
1:100



EXISTING SECTION
1:50



REHABILITATED SECTION
1:50

Loyalist Township

CONT No. 2025-02

MENORE BRIDGE
GENERAL ARRANGEMENT

SHEET 1

Keystone Bridge Management Corp.

GENERAL NOTES

THE CONTRACTOR SHALL ENSURE THAT NO DELETERIOUS MATERIALS RESULTING FROM CONSTRUCTION ACTIVITIES ENTERS THE WATERCOURSE.

THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE OWNER BEFORE PROCEEDING WITH THE WORK. DIMENSIONS OF EXISTING STRUCTURE ARE APPROXIMATE ONLY.

CLASS OF CONCRETE ..... 35MPa CLASS C-1

CLEAR COVER TO BLACK REINFORCING STEEL SHALL BE 70 ± 20
CLEAR COVER TO GALVANIZED REINFORCING STEEL SHALL BE MIN 35mm

REINFORCING STEEL SHALL BE GRADE 400W UNLESS OTHERWISE NOTED
TENSION LAP SPICES SHALL BE CLASS B

CHAMFER ALL CONCRETE CORNERS 20x20

SCOPE OF WORK

1. INSTALL ALL TEMPORARY SIGNAGE AND BARRICADES AS REQUIRED TO ESTABLISH DETOUR AROUND BRIDGE. CLOSE BRIDGE TO TRAFFIC.
2. INSTALL LIGHT DUTY SILT FENCING AT BRIDGE ENDS.
3. SCARIFY EXISTING BRIDGE DECK TOP AND REMOVE TIMBER POST AND GUIDE RAIL FROM BRIDGE AND APPROACHES.
4. REMOVE ALL REMAINING LOOSE AND DETERIORATED CONCRETE FROM DECK SURFACE.
5. REMOVE ALL DELAMINATED CONCRETE FROM BRIDGE SOFFIT.
6. REPAIR AREAS OF BRIDGE SOFFIT.
7. CONSTRUCT NEW CONCRETE CURBS AND END WALLS.
8. PLACE CONCRETE OVERLAY ON BRIDGE DECK.
9. INSTALL POST AND RAILINGS ON BRIDGE CURBS.
10. WATERPROOF BRIDGE DECK.
11. PAVE BRIDGE AND APPROACHES.
12. INSTALL GUIDE RAIL TO BRIDGE APPROACHES.
13. REMOVE ALL TEMPORARY DETOUR SIGNAGE AND OPEN BRIDGE TO TRAFFIC.

LIST OF APPLICABLE STANDARD DRAWINGS

OPSD 219.110 LIGHT DUTY SILT FENCE BARRIER

OPSD 912.130 GUIDE RAIL SYSTEM, STEEL BEAM STEEL POST WITH OFFSET BLOCK ASSEMBLY INSTALLATION SINGLE RAIL

OPSD 912.430 GUIDE RAIL SYSTEM, STEEL BEAM STRUCTURE CONNECTION

OPSD 912.235 GUIDE RAIL SYSTEM, STEEL BEAM LEAVING END TREATMENT INSTALLATION

OPSD 922.186 ENERGY ATTENUATOR, END TREATMENT STEEL BEAM ENERGY ATTENUATING TERMINAL MASH SEQUENTIAL KINKING TERMINAL SYSTEM – INSTALLATION

LICENSED PROFESSIONAL ENGINEER
H. S. KLEYWEGT
2025-01-06
PROVINCE OF ONTARIO

REVISIONS		
		DESCRIPTION

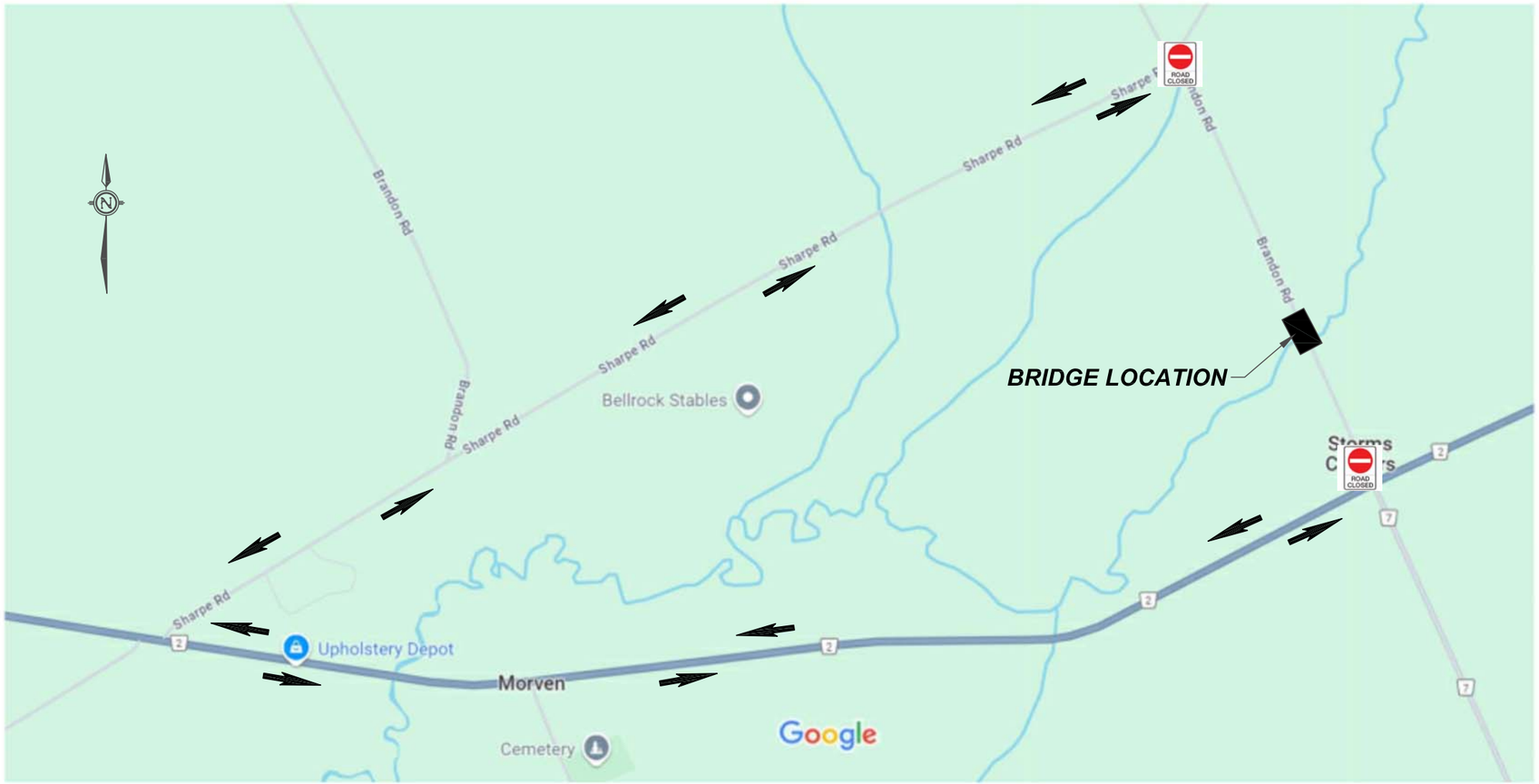
DESIGN HK	CHK	CODE CHBDC-14		DATE JAN 2024
DRAWN SR	CHK HK	SITE OSIM106		DWG 1

CONT No. 2025–02

MENORE BRIDGE
TRAFFIC MANAGEMENT PLAN

SHEET
2

Keystone Bridge Management Corp.



ROAD CLOSURE NOTES

1. ALL SIGNAGE TO BE SUPPLIED, INSTALLED, MAINTAINED AND REMOVED BY THE CONTRACTOR.
2. ALL SIGNAGE AND SETUP PROCEDURE SHALL BE IN COMPLIANCE WITH THE ONTARIO TRAFFIC MANUAL TEMPORARY CONDITIONS, BOOK 7. THE CONTRACTOR SHALL MAINTAIN SIGNS FOR THE DURATION OF CONSTRUCTION.
3. BRANDON ROAD SHALL BE CLOSED BETWEEN SHARPE ROAD AND COUNTY ROAD 2.
4. CONTRACTOR TO PROVIDE ADVANCE WARNING SIGNS

TC–67'S SHALL READ

"BRANDON ROAD
WILL BE CLOSED
DATE TO DATE"

LEGEND

TC 67 IMAGE IS ONLY REPRESENTATIVE — ROAD CLOSED

DETOUR DIRECTION →

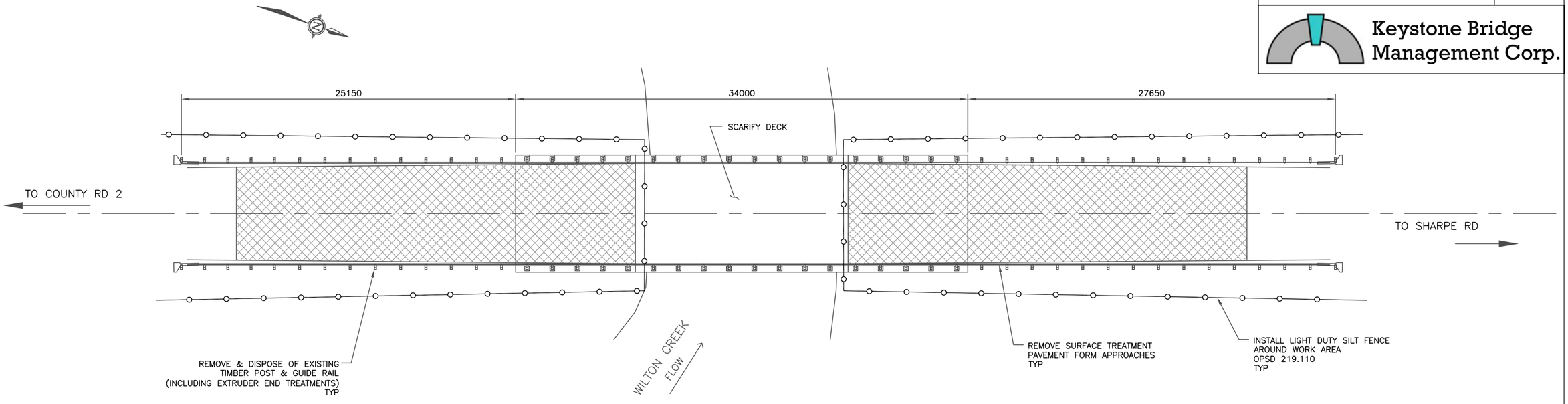
REVISIONS			DESCRIPTION		
DESIGN HK	CHK			DATE JAN 2024	
DRAWN SR	CHK HK	SITE OSIM106		DWG 2	

CONT No. 2025–02

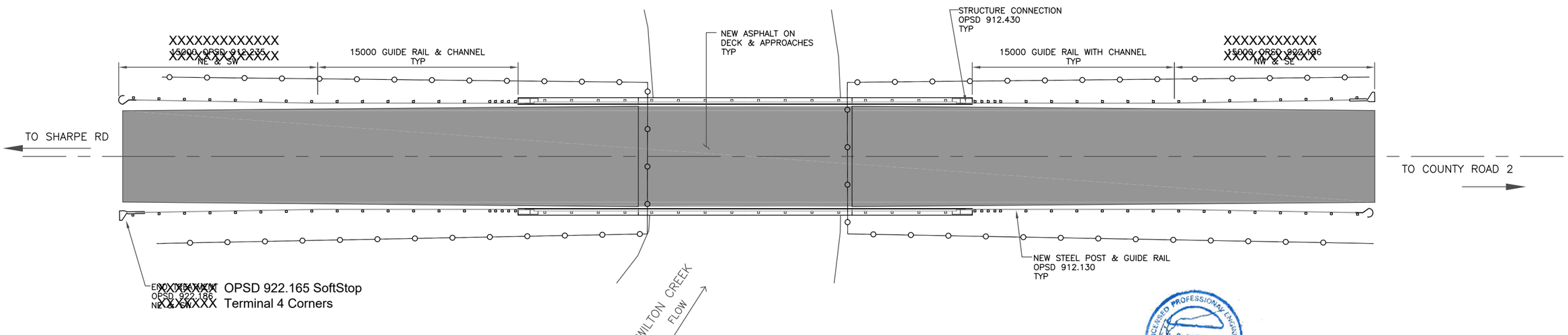
MENORE BRIDGE
ENVIRONMENTAL PROTECTION PLAN
ROADWORKS

SHEET 3

Keystone Bridge Management Corp.



PLAN VIEW EXISTIMG
1:150



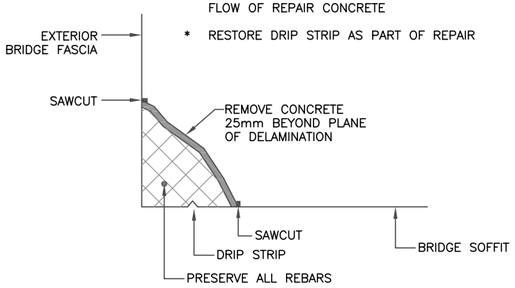
PLAN NEW CONSTRUCTION
1:150

LICENSED PROFESSIONAL ENGINEER
H. S. KLEYWEGT
2025-01-06
PROVINCE OF ONTARIO

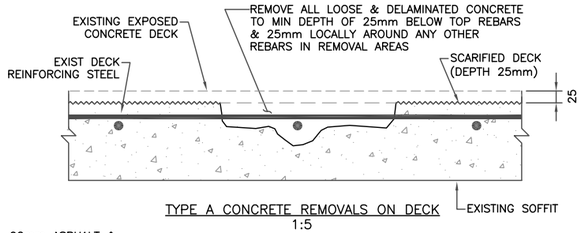
REVISIONS				
		DESCRIPTION		
DESIGN HK	CHK			DATE JAN 2024
DRAWN SR	CHK HK	SITE OSIM106		DWG 3

NOTE SOFFIT REPAIR:

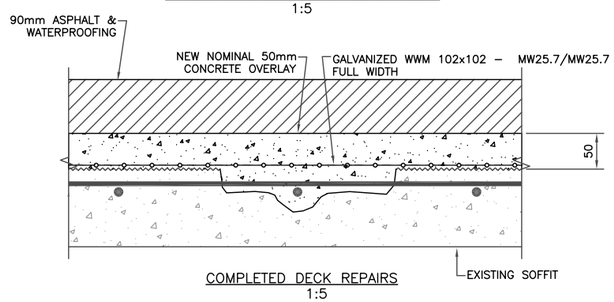
* USE LETTER BOX FORMS TO PLACE REPAIR CONCRETE
* FINISH CONCRETE FLUSH WITH FASCIA
* REPAIR CONCRETE 35 MPa WITH 12mm AGGREGATE
* SLOPE & SIZE REMOVALS TO ENSURE PROPER FLOW OF REPAIR CONCRETE
* RESTORE DRIP STRIP AS PART OF REPAIR



SOFFIT REPAIRS
1:10

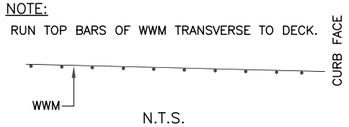


TYPE A CONCRETE REMOVALS ON DECK
1:5

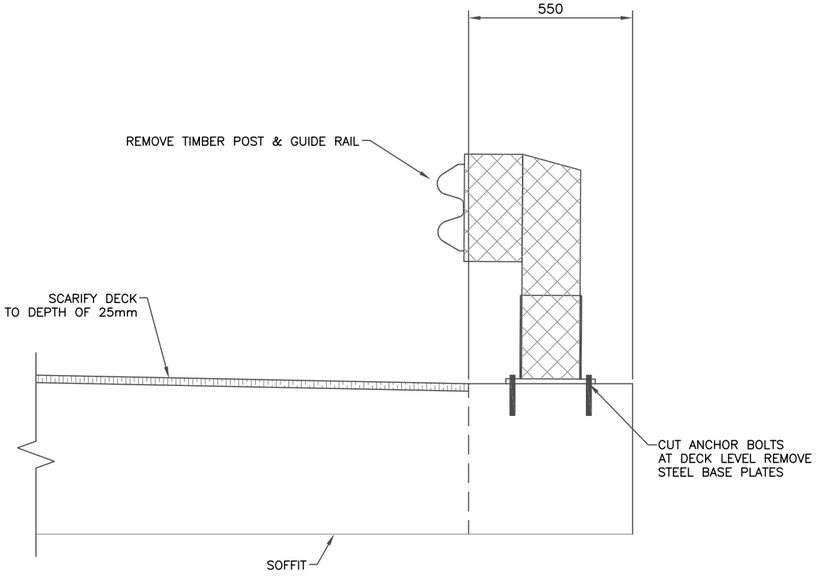


COMPLETED DECK REPAIRS
1:5

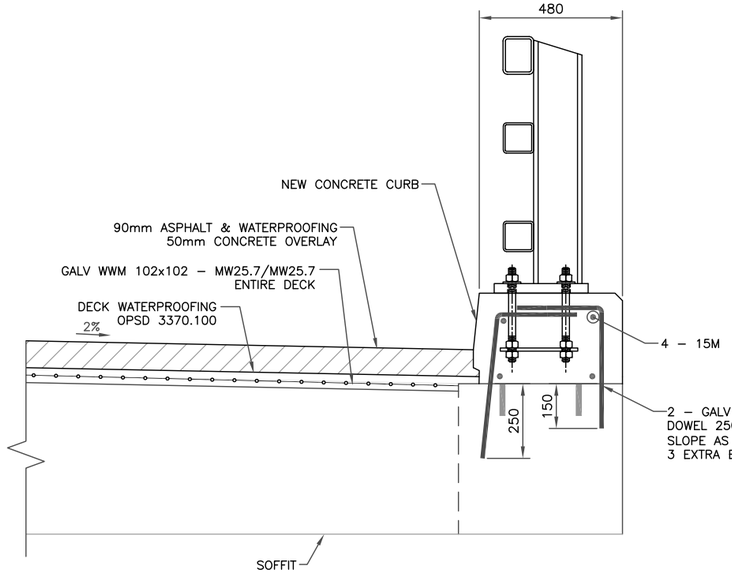
NOTE:
RUN TOP BARS OF WWM TRANSVERSE TO DECK.



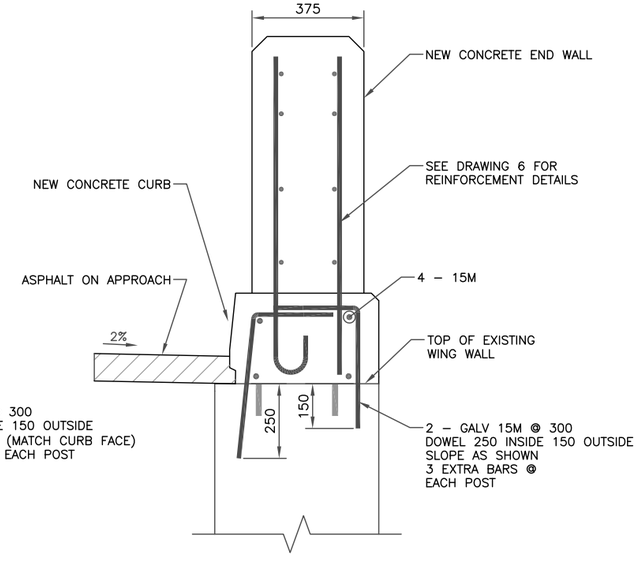
N.T.S.



EXISTING CURB DETAIL
1:10



RECONSTRUCTED CURB DETAIL
1:10



RECONSTRUCTED CURB ON WING WALL DETAIL
1:10

Loyalist Township

CONT No. 2025–02

MENORE BRIDGE
TYPICAL CONCRETE REPAIR DETAILS
CURB DETAILS

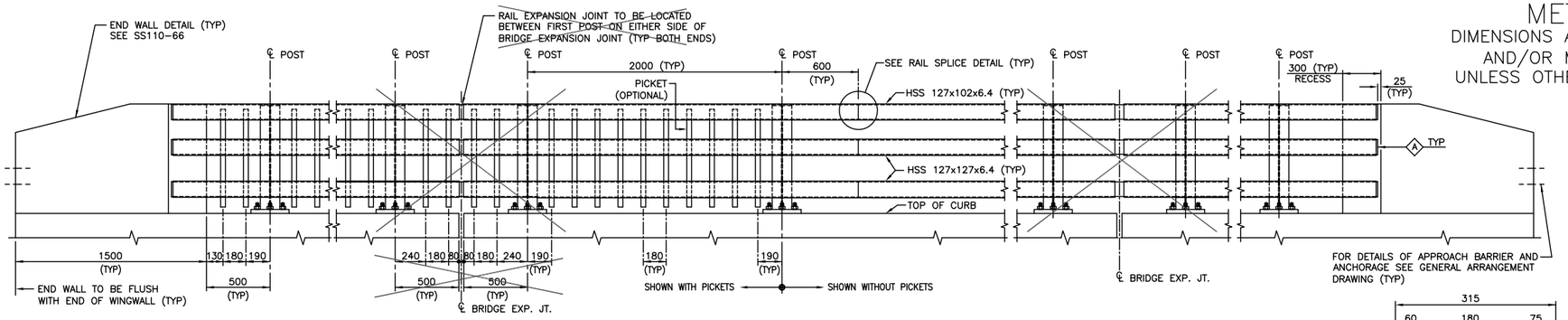
SHEET 4

Keystone Bridge Management Corp.

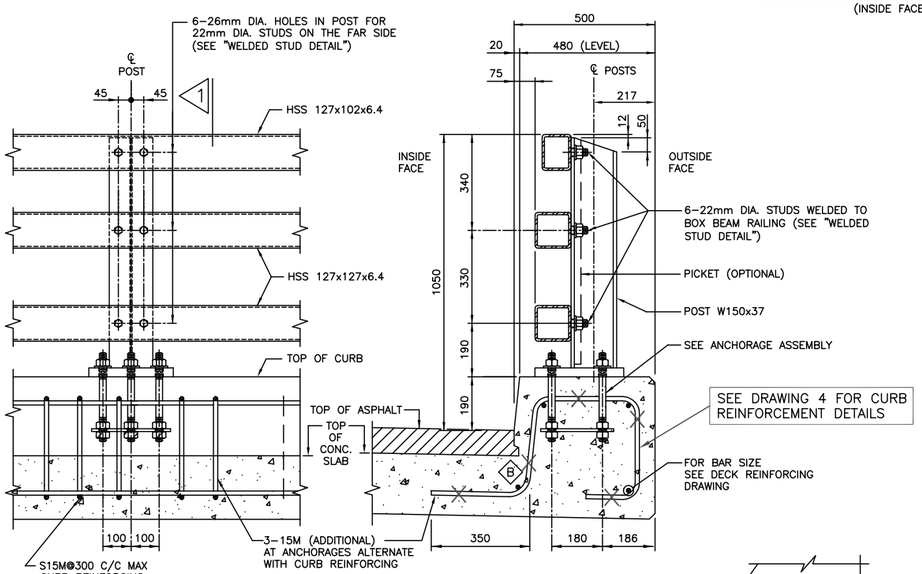
LICENSED PROFESSIONAL ENGINEER
H. S. KLEYWEGT
2025-01-09
PROVINCE OF ONTARIO

REVISIONS			DESCRIPTION	
DESIGN HK	CHK	CODE CHBDC–14		DATE JAN 2024
DRAWN SR	CHK HK	SITE OSIM106		DWG 4

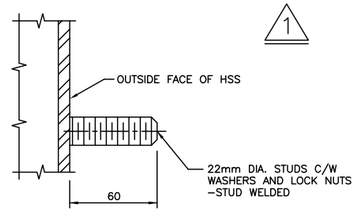
METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN



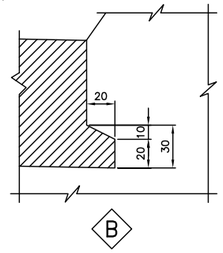
ELEVATION – RAILING ON CURB
(INSIDE FACE SHOWN)



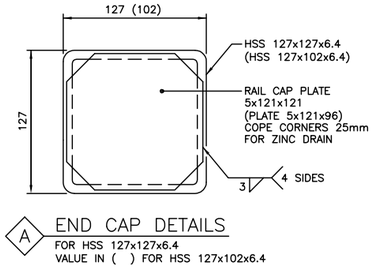
RAIL POST ELEVATION
(INSIDE FACE SHOWN)



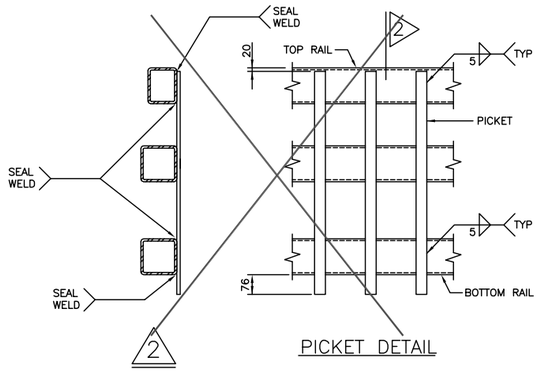
WELDED STUD DETAIL
FULL–THREAD WELDED STUD



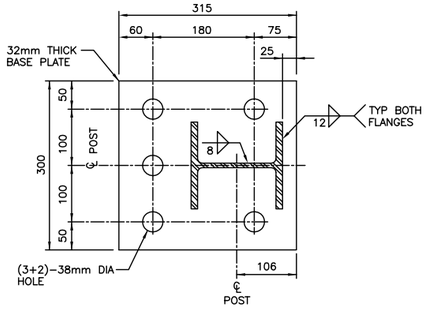
CHASE DETAIL



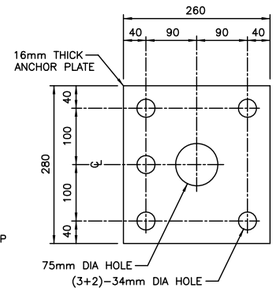
A END CAP DETAILS
FOR HSS 127x127x6.4
VALUE IN ( ) FOR HSS 127x102x6.4



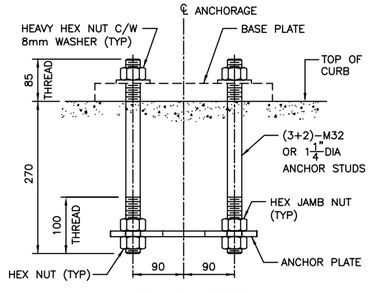
PICKET DETAIL



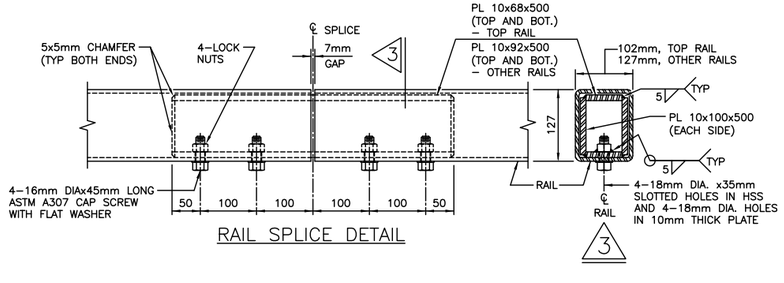
BASE PLATE



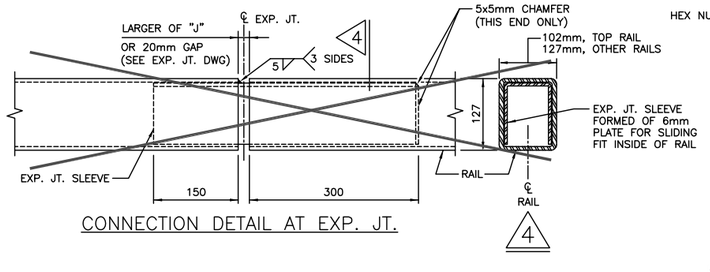
ANCHOR PLATE



ANCHORAGE ASSEMBLY



RAIL SPLICE DETAIL



CONNECTION DETAIL AT EXP. JT.

DRAWING NOT TO BE SCALED
100 mm ON ORIGINAL DRAWING

NOTES:

1. SYSTEM CONFIGURATION MEETS THE REQUIREMENTS OF NCHRP 350.
2. RAIL ELEMENTS SHALL BE HOLLOW STRUCTURAL SECTIONS GRADE 350WT, CLASS C. RAIL ELEMENT SHALL MEET THE LONGITUDINAL CHARPY V–NOTCH IMPACT TEST REQUIREMENTS OF 27 JOULES AT TEST TEMPERATURE OF _____ °C. (ASTM A500 GRADE B OR C STEEL MAY BE SUBSTITUTED FOR GRADE 350WT PROVIDED THAT THE CHARPY V–NOTCH IMPACT TEST REQUIREMENTS ARE VERIFIED BY THE SUBMISSION OF TEST DOCUMENTATION).
3. POSTS AND PLATES SHALL BE GRADE 350WT.
4. THE NOTCH TOUGHNESS REQUIREMENTS FOR POSTS AND PLATES SHALL BE THE SAME AS THOSE SPECIFIED IN NOTE 2.
5. ANCHOR STUDS, WASHERS AND NUTS SHALL CONFORM TO ASTM A449.
6. FULL THREAD STUDS, WASHERS AND NUTS FOR FASTENING GUIDE RAILS TO POST SHALL CONFORM TO ASTM A108.
7. RAILS SHALL BE SUPPLIED IN LENGTHS TO BE ATTACHED TO A MINIMUM OF THREE (3) RAIL POSTS EXCEPT WHEN THE WINGWALL LENGTH OF A BRIDGE WITH EXPANSION JOINTS DOES NOT PERMIT THIS. IN THIS CASE, THE RAIL LENGTH SHALL BE ATTACHED TO TWO (2) POSTS ON THE WINGWALL.
8. GALVANIZING ON MATING SURFACES OF RAILS TO HAVE UNIFORM THICKNESS NOT EXCEEDING 0.15mm TO ENSURE SLIDING FIT.
9. RAILS, POSTS, RAIL SPLICES AND END CAPS SHALL BE HOT–DIP GALVANIZED AFTER FABRICATION.
10. BOLTS, ANCHOR STUDS, PLATES, WASHERS AND NUTS SHALL BE HOT–DIP GALVANIZED. LOCK NUTS SHALL BE ZINC PLATED ACCORDING TO ASTM–B695.
11. RAILS SHALL BE PREBENT TO FOLLOW ROAD CURVATURE WHERE RADIUS IS LESS THAN 150m.
12. RAIL POSTS SHALL BE SET PERPENDICULAR TO GRADE.
13. RAILS MAY BE CUT AS REQUIRED IN THE FIELD, CUT TO BE SURFACE TREATED WITH A ZINC TOUCH–UP SOLDER, GALVAGUARD OR AN APPROVED EQUIVALENT.
14. WHEN CONNECTING TO EXISTING RAILING, RAILS MUST BE MADE CONTINUOUS AND POST SPACINGS TO BE DETERMINED WITH REFERENCE TO EXISTING POSTS.
15. GROUT SHALL NOT BE USED UNDER BASE PLATES. A THIN PAD OF EPOXY GROUT MAY BE USED WHEN REQUIRED FOR FILLING THE VOIDS UNDER THE BASE PLATE.
16. POST ANCHORING NUTS SHALL BE TIGHTENED TO A SNUG FIT CONDITION AND GIVEN AN ADDITIONAL 1/3 OF A TURN.
17. BOLTS IN RAIL SPLICES SHALL BE TIGHTENED TO A CONDITION THAT WILL ALLOW RAIL MOVEMENT.
18. ~~STAINLESS STEEL BARS SHALL BE TYPE 316 LN OR DUPLEX 2205 WITH A MINIMUM YIELD STRENGTH OF 500 MPA.~~
19. CHASES ARE REQUIRED ON HIGH AND LOW SIDE OF CROSS FALL.

~~ADDITIONAL NOTES FOR PICKET:~~

1. PICKET SHALL BE ~~38x12 STEEL BAR GRADE 300W.~~
2. ~~HOT DIP GALVANIZING OF RAILING SHALL BE AFTER ADDITION OF PICKET.~~

Loyalist Township

CONT No. 2025–02

MENORE BRIDGE
THREE TUBE RAILING ON CURB – TL4
(WITH CONCRETE ENDWALL)

SHEET 5

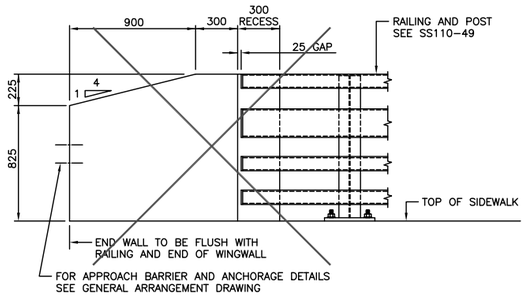
Keystone Bridge Management Corp.

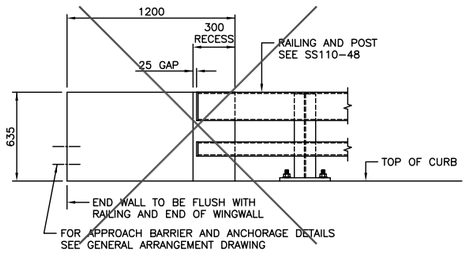
MODIFIED

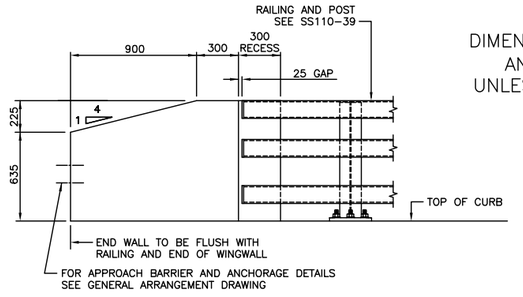
STANDARD DRAWING MARCH 2016	SS110–39
THREE TUBE RAILING ON CURB – TL4 (WITH CONCRETE END WALL)	

LICENSED PROFESSIONAL ENGINEER
H. S. KLEYWEGT
2025-01-08
PROVINCE OF ONTARIO

REVISIONS			DESCRIPTION		
DESIGN	CHK	CODE CHBDC–14		DATE	JAN 2024
DRAWN SR	CHK HK	SITE OSIM106		DWG	5







METRIC
DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN

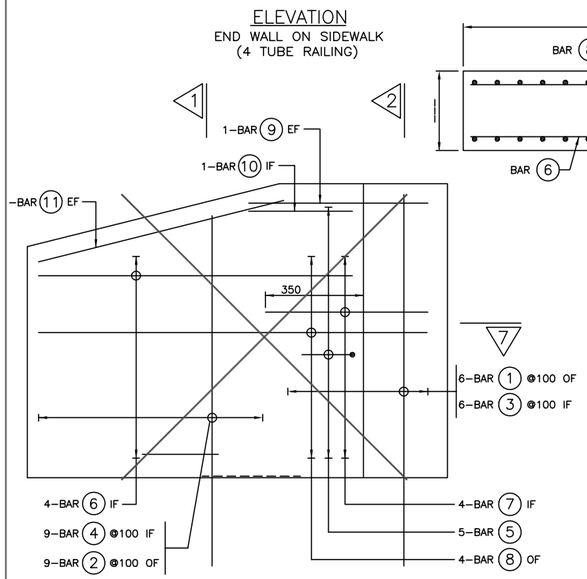
CONT No. 2025-02

MENORE BRIDGE
CONCRETE ENDWALL
FOR BOX BEAM RAILING

SHEET 6

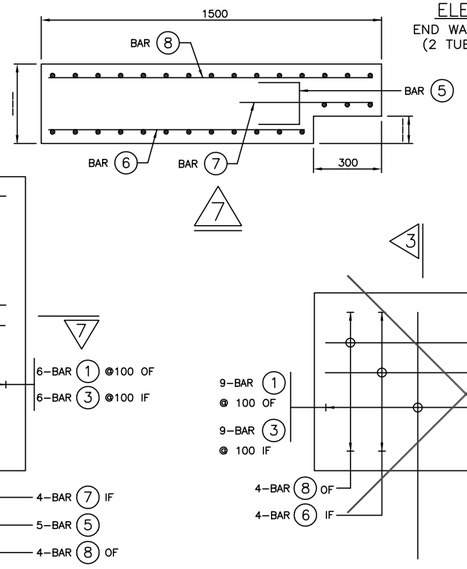
Keystone Bridge Management Corp.

ELEVATION
END WALL ON SIDEWALK
(4 TUBE RAILING)



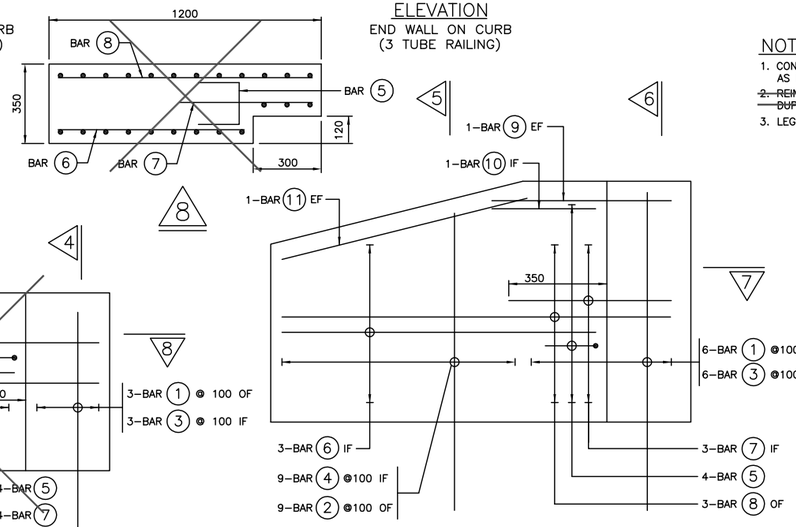
REINFORCING ARRANGEMENT – 4 TUBE RAILING

ELEVATION
END WALL ON CURB
(2 TUBE RAILING)



REINFORCING ARRANGEMENT – 2 TUBE RAILING

ELEVATION
END WALL ON CURB
(3 TUBE RAILING)

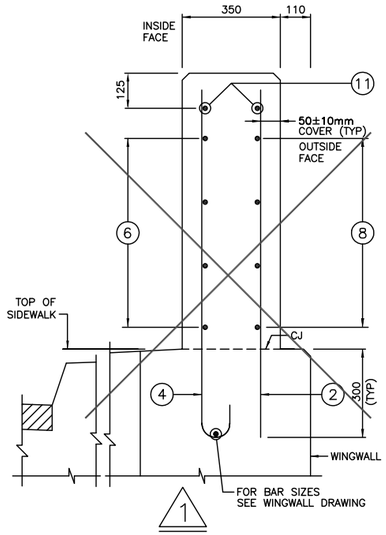


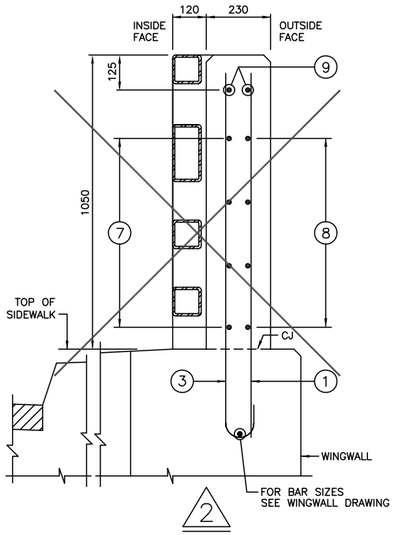
REINFORCING ARRANGEMENT – 3 TUBE RAILING

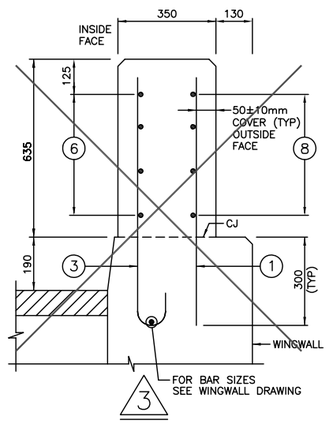
NOTES:

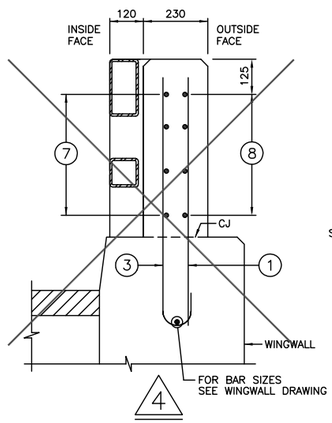
1. CONCRETE COVER TO REINFORCING STEEL 60±10mm EXCEPT AS NOTED.
2. ~~REINFORCING STEEL SHALL BE STAINLESS TYPE 316LN OR DUPLEX 2205 WITH A MINIMUM YIELD STRENGTH OF 500 MPa.~~
3. LEGEND: EF – DENOTES EACH FACE
   IF – DENOTES INSIDE FACE
   OF – DENOTES OUTSIDE FACE
   CJ – DENOTES CONSTRUCTION JOINT

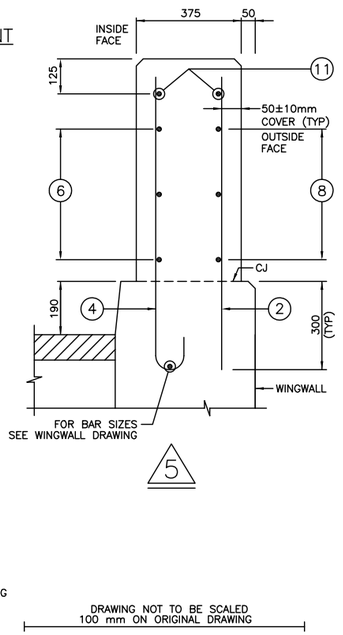
BAR MARK	SIZE	SHAPE
1	10M	STRAIGHT
2	10M	STRAIGHT VARIES
3	15M	130, 65
4	15M	130, 65, VARIES
5	15M	180
6	15M	STRAIGHT
7	15M	STRAIGHT
8	15M	STRAIGHT
9	15M	STRAIGHT
10	15M	STRAIGHT
11	15M	STRAIGHT

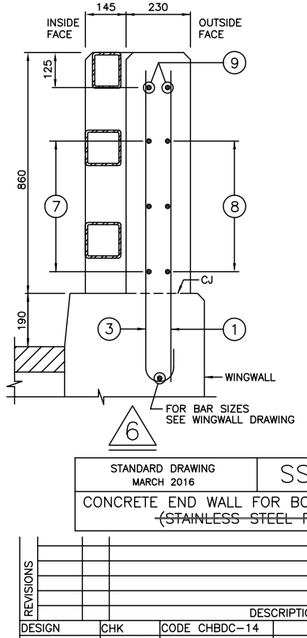












STANDARD DRAWING MARCH 2016	SS110-66
CONCRETE END WALL FOR BOX BEAM RAILING ~~(STAINLESS STEEL REBAR)~~	

DRAWING NOT TO BE SCALED
100 mm ON ORIGINAL DRAWING

REVISIONS		DESCRIPTION		
DESIGN	CHK	CODE CHBDC-14		DATE JAN 2024
DRAWN SR	CHK HK	SITE OSIM106		DWG 6

Loyalist TOWNSHIP

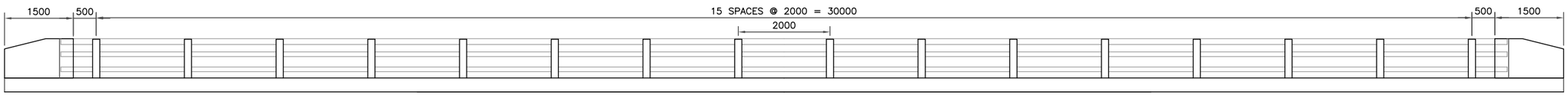
CONT No. 2025–02

MENORE BRIDGE
POST AND RAILING LAYOUT

SHEET
7

Keystone Bridge Management Corp.

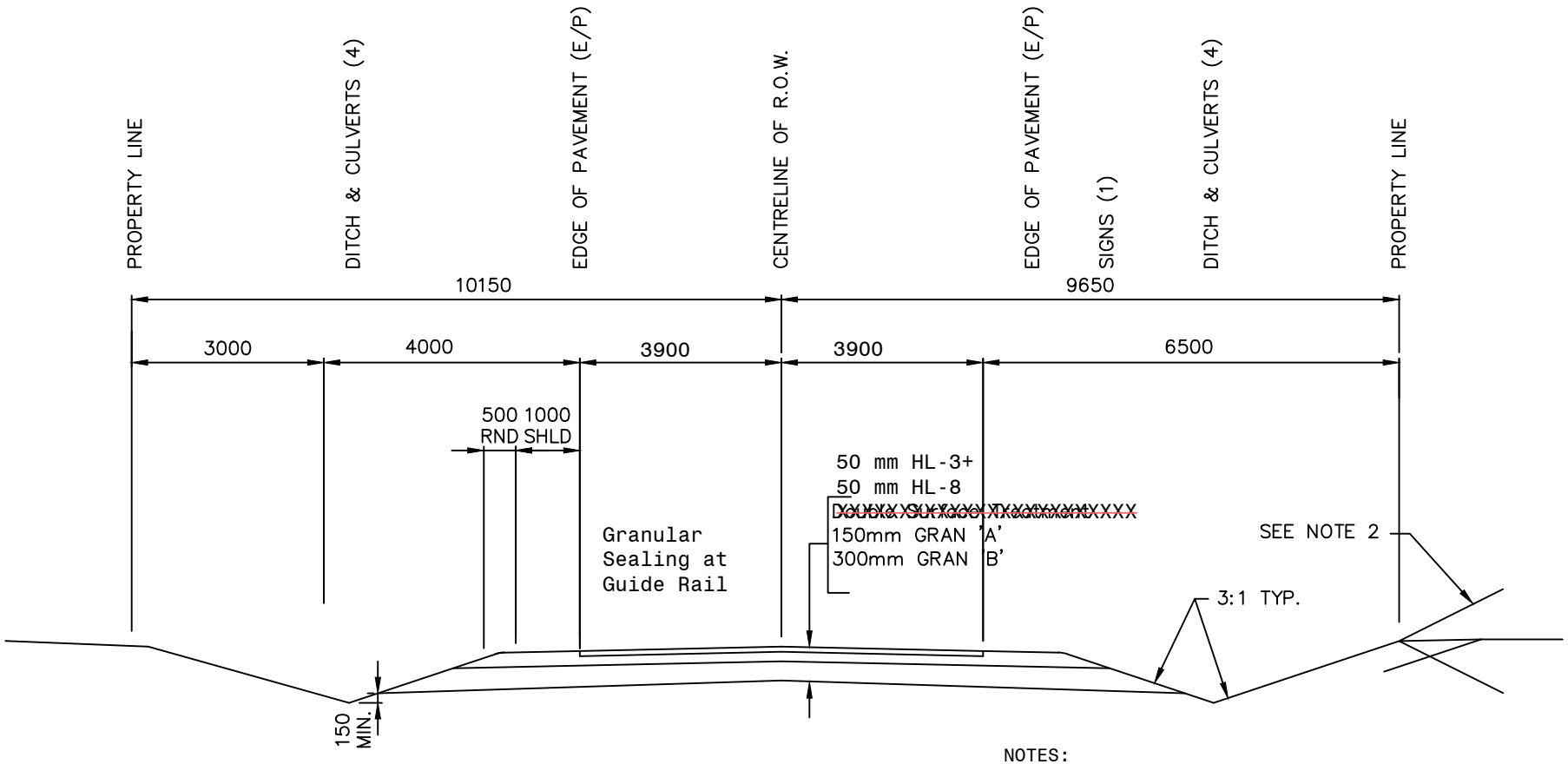
TYPICAL POST LAYOUT PLAN VIEW
EAST SIDE SHOWN WEST SIMILAR
1:50



TYPICAL POST LAYOUT ELEVATION VIEW
EAST SIDE SHOWN WEST SIMILAR
1:50

LICENSED PROFESSIONAL ENGINEER
H. S. KLEYWEGT
2025-01-06
PROVINCE OF ONTARIO

REVISIONS			
			DESCRIPTION
DESIGN HK	CHK	CODE	DATE JAN 2024
DRAWN SR	CHK HK	SITE OSIM106	DWG 7



NOTES:

1. SIGNS TO BE 1200mm BEHIND E/P.
2. PROVIDE TEMPORARY 2:1 SIDE SLOPES TO EXISTING GROUND.
3. RURAL ENTRANCES TO BE CONSTRUCTED IN ACCORDANCE TO OPSDs 301.010 TO 301.030.
4. MINIMUM CULVERT SIZE IS 375mm WITH A MIN. OF 300mm COVER.
5. PROVIDE FROST TAPERS IN ACCORDANCE WITH OPSD FOR ALL CULVERTS

LOYALIST TOWNSHIP
ENGINEERING DEPARTMENT
P.O. BOX 70, 263 MAIN ST.,
ODESSA, ONTARIO
K0H 2H0
(613) 386-7351 Ext. 115

TITLE:

TYPICAL ROAD CROSS-SECTION AT MENORE BRIDGE

DATE:	
SCALE:	1:1000m
DRAWN BY:	
CHECKED BY:	
DRAWING NO.:	R-6 Modified