GENERAL NOTES

1. THESE DRAWINGS READ IN CONJUNCTION WITH THE CONTRACT SPECIFICATIONS.
2. CONTRACTOR SHALL SITE VERIFY ALL EXISTING DIMENSIONS.

DESIGN DATA

SPECIFICATIONS:

1. AREMA MANUAL FOR RAILWAY ENGINEERING, 2025.
   a. CHAPTER 8: CONCRETE STRUCTURES AND FOUNDATIONS.
   b. CHAPTER 15: STEEL STRUCTURES
2. CAN/CSA–A23.3:24 DESIGN OF CONCRETE STRUCTURES.
3. CSA W59:24 WELDED STEEL CONSTRUCTION.
4. RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS (RCSC) SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH STRENGTH BOLTS, 2020.

LIVE LOADING

1. COOPER E–80 LOAD UNLESS DIRECTED BY GWWD.
2. CITY OF WINNIPEG GWWD EXISTING ROLLING STOCK.

FOUNDATIONS:

1. THE FOUNDATION DESIGN IS BASED ON A GEOTECHNICAL DESIGN REPORT DATED AUGUST 15, 2025 BY STANTEC.
2. THE GEOTECHNICAL REPORT IS AVAILABLE FOR VIEWING FOLLOWING COMPLETION OF A NON–DISCLOSURE AGREEMENT.

STEEL H–PILES:

1. STEEL H–PILES TO CAN/CSA G40.21M, GRADE 350W.
2. PILES DRIVEN TO THE REFUSAL IN ACCORDANCE WITH THE SPECIFICATIONS.
3. BATTERED PILES ARE NOT TO BE JACKED OR PULLED INTO THEIR FINAL POSITION.

	S.U.I/S.U.2
	PRIMARY LOADS
MAXIMUM SERVICE LOAD (kN)	650
MAXIMUM ALLOWABLE RESISTANCE (kN)	1050

STRUCTURAL STEEL:

1. STRUCTURAL STEEL SHALL MEET THE MINIMUM REQUIREMENTS OF CSA G40.20–13 / G40.21–13 (R 2023) GENERAL REQUIREMENTS FOR ROLLED OR WELDED STRUCTURAL QUALITY STEEL.
2. COILED STEEL IS NOT PERMITTED.
3. STEEL STRUCTURAL MEMBERS DESIGNATED AS FRACTURE CRITICAL MEMBERS (FCM) SHALL MEET THE REQUIREMENTS OF CSA G40.21 GRADE 350AT CATEGORY 5.
4. STEEL STRUCTURAL MEMBERS DESIGNATED AS PRIMARY MEMBERS (PM) SHALL MEET THE REQUIREMENTS OF CSA G40.21 GRADE 350AT CATEGORY 3.
5. STEEL STRUCTURAL MEMBERS OTHER THAN FCM AND PM SHALL MEET THE REQUIREMENTS OF CSA G40.21 GRADE 350A.
6. GRADE 350AT MINIMUM IMPACT TEST REQUIREMENTS SHALL BE:
   – CATEGORY 5: 34J AT A TEST TEMPERATURE OF –30°C
   – CATEGORY 3: 27J AT A TEST TEMPERATURE OF –30°C
7. FLANGE PLATES IN EXCESS OF 38 mm SHALL BE NORMALIZED UNLESS THE STEEL MANUFACTURER SUPPLIED EVIDENCE TO, AND OBTAINED APPROVAL FROM THE CITY OF WINNIPEG THAT CONTROLLED PLATE ROLLING PROCEDURES MET CITY OF WINNIPEG REQUIREMENTS.
8. FABRICATION IN ACCORDANCE WITH AREMA CHAPTER 15 PART 3.
9. MILL CERTIFICATES FOR ALL STEEL BRIDGE COMPONENTS SUBMITTED TO AND APPROVED BY THE CITY OF WINNIPEG OR ITS CONTRACT ADMINISTRATOR PRIOR TO FABRICATION.
10. SHOP DRAWINGS SUBMITTED TO AND REVIEWED BY THE CITY OF WINNIPEG'S CONSULTANT PRIOR TO FABRICATION.
11. SHOP INSPECTION OF FABRICATION OF STRUCTURAL STEEL BRIDGE SPANS IN ACCORDANCE WITH THE REQUIREMENTS OF THE TECHNICAL SPECIFICATION.
12. FULL SHOP ASSEMBLY OF ALL FCM AND PM STRUCTURAL STEEL COMPONENTS INSPECTED PRIOR TO SHIPPING.

CONCRETE:

1. CONCRETE TO CSA A23.1:24 / A23.2:24 CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION/TEST METHODS AND STANDARD PRACTICES FOR CONCRETE.
2. SUBSTRUCTURE
   a. f'c=35 MPa
   b. EXPOSURE CLASS C–1
   c. CATEGORY 1 AIR ENTRAINMENT
   d. 20 mm NOMINAL AGGREGATE.
3. GROUT, NON–SHRINK, NON–METALLIC, f'c=35 MPa.
4. CONCRETE COVER 75 mm UNLESS NOTED OTHERWISE.

REINFORCING STEEL:

1. REINFORCING STEEL INSTALLATION DEVELOPMENT LENGTH AND SPLICING TO AREMA CHAPTER 8.
2. ALL LAP SPLICES SHALL BE CLASS B.
3. REINFORCING STEEL FOR DEFORMED BARS TO CAN/CSA G30.18:21 CARBON–STEEL BARS FOR CONCRETE REINFORCEMENT, GRADE 400W.

BAR SIZE	CLASS B SPLICE
15M	550
20M	650
25M	1000
30M	1200

MISCELLANEOUS STEEL:

1. MISCELLANEOUS STEEL TO CSA G40.20–13 / G40.21–13 (R 2023) GENERAL REQUIREMENTS FOR ROLLED OR WELDED STRUCTURAL QUALITY STEEL.
2. STEEL PLATE GRADE 300W.
3. STOCK SECTIONS TO GRADE 350W.
4. HOLLOW STRUCTURAL STEEL SECTIONS TO GRADE 350W CLASS C.
5. ALL GALVANIZED.

WELDING:

1. CSA W59 WELDED STEEL CONSTRUCTION, 2024.
2. SHOP INSPECTION OF WELDING AND WELD PROPERTIES FOR STRUCTURAL STEEL BRIDGE SPANS IN ACCORDANCE WITH CSA W59 BY FABRICATORS CERTIFIED TO MINIMUM DIVISION 1 OR 2 OF CSA W47.1:19 CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL STRUCTURES.
3. WELD METAL HAS CORROSION RESISTANT PROPERTIES TO THOSE OF THE PARENT MATERIALS.
4. MINIMUM 6 mm FILLET WELDS UNLESS NOTED OTHERWISE, COMPATIBLE WITH BASE METAL THICKNESS.
5. SUBMERGED–ARC WELDING (SAW) IS REQUIRED FOR WELDS IN FCM.
6. WELD PROCEDURES FOR FCM WELDS INCLUDE SUPPLEMENTAL IMPACT TESTING TO LEVEL 1 IN ACCORDANCE WITH CSA W47.1.
7. FLUX CORED WELDING (FCAW) PERMITTED FOR NON–FCM PROVIDED ELECTRODES WITH A DESIGNATION OF H8 OR LOWER.
8. FLANGE TO WEB TEE JOINTS ON THROUGH PLATE GIRDERS SHALL BE CANADIAN WELDING BUREAU (CWB) PREQUALIFIED FILLET WELDED JOINTS.
9. ALL BUTT JOINTS SHALL BE CWB PREQUALIFIED COMPLETE JOINT PENETRATION WELDED JOINTS.
10. ALL BUTT JOINTS IN FLANGES SHALL BE STRESS–RELIEF HEAT TREATED IN ACCORDANCE WITH CSA W59.
11. ALL FLANGE TO WEB FILLET WELDS AND 25% BY LENGTH OF ALL OTHER WELDS ARE TESTED BY MAGNETIC PARTICLE METHOD.
12. SHOP SPLICES OF THE WEBS AND FLANGES OF THE THROUGH PLATE GIRDERS SHALL BE COMPLETED BEFORE THE WEBS AND FLANGES ARE JOINED TO EACH OTHER,
13. ALL BUTT JOINTS IN FLANGES AND WEBS TESTED BY RADIOGRAPHIC METHOD.
14. ALL FCM WELDS CONSIDERED AS CYCLICALLY LOADED TENSILE WELDS FOR WELD QUALITY TESTING IN ACCORDANCE WITH CSA W59.

BOLTING:

1. RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS (RCSC) "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH STRENGTH BOLTS, 2020.
2. BOLTS SHALL MEET THE MINIMUM REQUIREMENTS OF ASTM F3125 GRADE A325 TYPE 3 C/W ASTM A563 GRADE C3 OR DH3 HEAVY HEX NUTS AND ASTM F436 TYPE 3 HARDENED STEEL WASHERS.
3. MANUFACTURER'S COMPLIANCE CERTIFICATES FOR BOLTS, NUTS AND WASHERS SHALL BE SUBMITTED TO, AND APPROVED BY THE CITY OF WINNIPEG'S CONSULTANT PRIOR TO SUPPLY.
4. BOLT SIZE SHALL BE 22 mm AND HOLES SHALL BE 2 mm LARGER IN DIAMETER THAN THE BOLT UNLESS NOTED OTHERWISE.
5. BOLTS, NUTS AND WASHERS SHALL BE SUPPLIED AS A PRE–ASSEMBLED UNIT.
6. ALL BOLTS SHALL BE INSTALLED BY THE TURN–OF–NUT METHOD, UNLESS NOTED OTHERWISE.
7. ONLY BOLTS AND NUTS FABRICATED IN CANADA OR UNITED STATES OF AMERICA ARE PERMITTED.
8. FAYING SURFACE FOR ALL BOLTED CONNECTIONS SHALL CONFORM TO CLASS B WITH MINIMUM SLIP COEFFICIENT OF 0.50.

BEARINGS:

1. BEARING ARE ELASTOMERIC BEARING AS DETAILED ON THE DRAWINGS BY GOODCO OR APPROVED EQUAL IN ACCORDANCE WITH B7.
2. BEARING HARDNESS SHALL BE
   EXPANSION: SHORE A 60 DUROMETER
   FIXED: SHORE A 60 DUROMETER
3. ANCHOR BOLTS SHALL MEET THE MINIMUM REQUIREMENTS OF ASTM F1554 GRADE 105

PROTECTIVE COATINGS:

2

1. GALVANIZED TO CAN/CSA G164 HOT–DIP GALVANIZING OF IRREGULARLY SHAPED ARTICLES. DAMAGED GALVANIZING TO ASTM A780 STANDARD PRACTICE FOR REPAIR OF DAMAGED AND UNCOATED AREAS OF HOT–DIP GALVANIZED COATINGS. ALL MATERIALS FIT AFTER GALVANIZING.
2. MINIMUM DRY FILM ZINC THICKNESS SHALL BE 150 MICROMETRES.

BACKFILL AND COMPACTION:

1. COMPACT GRANULAR BACKFILL TO 100% OF STANDARD PROCTOR DENSITY AT OPTIMUM MOISTURE CONTENT.
2. COMPACT COMMON COHESIVE BACKFILL TO 98% OF STANDARD PROCTOR DENSITY IN OPTIMUM MOISTURE CONTENT.
3. THE ZONES OF COMPACTION ARE AS SHOWN ON THE DRAWINGS.

TEMPORARY SITE DRAINAGE:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND IMPLEMENTATION OF A TEMPORARY DRAINAGE SYSTEM FOR DEWATERING THE SUBSTRUCTURE EXCAVATIONS.

SUPERSTRUCTURE SHIPPING, ASSEMBLY AND INSTALLATION:

1. FABRICATOR SHALL BE RESPONSIBLE FOR SHIPPING ALL MATERIAL UNASSEMBLED FOB TO SITE. LIFTING POINTS AS REQUIRED FOR THE LOADING OF STRUCTURAL STEEL FOR SHIPPING WAS DESIGNED BY THE FABRICATOR.
2. ERECTION MARKS SHALL BE PAINTED ON ALL MEMBERS, AND FOR WEATHERING STEEL PLACED IN SUITABLE INCONSPICUOUS PLACES.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE ASSEMBLY AND INSTALLATION.

MISCELLANEOUS NOTES:

1. THE DRAWING NOTES REPRESENT A SUMMARY OF REQUIREMENTS AND ALL ASSOCIATED SPECIFICATIONS AND DOCUMENTS SHALL BE REFFERED AND ADHERED TO AS REQUIRED.

FCM IDENTIFICATION TABLE

MARK	DESCRIPTION
G1	EXTERIOR GIRDER
G2	EXTERIOR GIRDER

PM IDENTIFICATION TABLE

MARK	DESCRIPTION
FB1	FLOOR BEAM
FB2	FLOOR BEAM
FB3	FLOOR BEAM
ST1	STRINGER
ST2	STRINGER
ST3	STRINGER BEAM END

RAIL MATERIALS:

1. REMOVALS OF EXISTING BALLAST, TIES, RAIL AND OTM TO BE PROPERLY DISPOSED OF OFF SITE BY THE CONTRACTOR.
2. 115RE AND 100RE RAIL MUST MEET AREMA AND CN ENGINEERING SPECIFICATIONS, INCLUDING PROPER HANDLING AND STORAGE OR RAIL.
3. COMPROMISE JOINT BARS SHALL BE MINIMUM 36" IN LENGTH WITH AT LEAST 6 HOLES AS PER AREMA. COMPROMISE JOINT BARS WILL BE REQUIRED TO TRANSITION FROM 115RE TO 100RE AND 100RE TO 85RE AT BOTH THE EAST AND WEST ENDS OF THE NEW TRACK INSTALLATION.
4. BALLAST AND SUB–BALLAST MUST COMPLY WITH AREMA AND LOCAL STANDARDS INCLUDING CN ENGINEERING SPECIFICATIONS.
5. ALL OTHER TRACK MATERIALS (OTM) SHALL COMPLY WITH CN ENGINEERING SPECIFICATIONS AND AREMA.
6. TIES AND TRANSITION TIES MUST COMPLY WITH AREMA AND CN ENGINEERING SPECIFICATIONS.

LIST OF ABBREVIATIONS

AREMA	AMERICAN RAILWAY ENGINEERING & MAINTENANCE–OF–WAY ASSOCIATION
@	AT
ALT	ALTERNATE
ALUM	ALUMINIUM
APPROX	APPROXIMATE
AVE	AVENUE
BM	BENCHMARK
BOT	BOTTOM
B/O	BOTTOM OF
BRG	BEARING
BW	BOTH WAYS
C	CENTER LINE
CIP	CAST–IN–PLACE
CJ	CONSTRUCTION JOINT
CLR	CLEAR
CONC	CONCRETE
CONT	CONTINUE
CSP	CORRUGATED STEEL PIPE
C/W	COMPLETE WITH
CWB	CANADIAN WELDING BUREAU
ø	DIAMETER
DBL	DOUBLE
DET	DETAIL
DWG	DRAWING
EA	EACH
EC	EDGE OF CURVE
EE	EACH END
EF	EACH FACE
EL	ELEVATION
EQ	EQUAL
EQL SP	EQUAL SPACE
EW	EACH WAY
EXST	EXISTING
FF	FAR FACE
FIN GR	FINISHED GRADE
G	GIRDER
GALV	GALVANIZED
HORIZ	HORIZONTAL
IB	IRON BAR
IF	INSIDE FACE
LG	LONG
m	METRE
MAX	MAXIMUM
MIN	MINIMUM
MK	MARK
mm	MILLIMETRE
NTS	NOT TO SCALE
No	NUMBER
O/C	ON CENTRE
O/O	OUT TO OUT
OF	OUTSIDE FACE
OPH	OPPOSITE HAND
PL	PLATE
PM	PRIMARY MEMBER
QTY	QUANTITY
R	RADIUS
REINF	REINFORCE
ROW	RIGHT OF WAY
SHT	SHEET
SP	SPACING
SPCS	STRUCTURAL PLATE CORRUGATED STEEL
SS	STAINLESS STEEL
STD	STANDARD
STR	STRAIGHT
SU	SUBSTRUCTURE UNIT
SYMM	SYMMETRICAL
T&B	TOP & BOTTOM
T/O	TOP OF
THK	THICKNESS
TYP	TYPICAL
UC (1)	USE CATEGORY
UNO	UNLESS NOTED OTHERWISE
U/S	UNDERSIDE
VERT	VERTICAL
WP	WORKING POINT
W/	WITH

REINFORCING MARK NUMBERING SYSTEM

eg: A 25 15

- 15 – MARK
- 25 – SIZE OF BAR
- A – LOCATION PREFIX

SECTION AND DETAILS

- A – SECTION NUMBER OR DETAIL LETTER
- B – DRAWING WHERE SECTION OR DETAIL IS TAKEN
- C – DRAWING WHERE SECTION OR DETAIL IS DRAWN

METRIC

WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

B.M.
ELEV.

NO.	REVISIONS	DATE	BY
2	ISSUED FOR ADDENDUM No.3	26.03.25	J.M.B.
1	ISSUED FOR ADDENDUM No.2	26.03.23	J.M.B.
0	ISSUED FOR TENDER	26.02.13	J.M.B.

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DESIGNED BY	S.S.Y.	CHECKED BY	Y.M.S.
DRAWN BY	J.M.B.	APPROVED BY	E.R.T.
HOR. SCALE: VERTICAL:		RELEASED FOR CONSTRUCTION:	
DATE	2026-03-25	DATE	

ENGINEER'S SEAL

CONSULTANT DRAWING NO. G-002

Winnipeg
THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT
ENGINEERING DIVISION

GREATER WINNIPEG WATER DISTRICT
RAILWAY BRIDGE REPLACEMENT AT MILE 41.3
GENERAL NOTES

SHEET 2 OF 17

CAD FILE DRAWING NUMBER 33942g-002-m41.3.dwg

CITY DRAWING NUMBER 1-0754R-D0005-001