A1 SIZE 594mm x 841mm

GENERAL

- THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH CONTRACT SPECIFICATIONS.
- GEOMETRY, REINFORCEMENT AND LAYOUT OF THE EXISTING STRUCTURE ARE BASED ON EXISTING DESIGN INFORMATION AND LIMITED FIELD SURVEY DATA. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ALL NECESSARY DIMENSIONS SUCH THAT WORK CAN BE CONSTRUCTED AS SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE CONTRACT ADMINISTRATOR PRIOR TO CONSTRUCTION.
- CONTRACTOR TO REFER TO REFERENCE DRAWINGS FOR DETAILS OF EXISTING CONSTRUCTION.
- WHOLE DIMENSIONS SHOWN ON THESE DRAWINGS ARE IN MILLIMETERS. DECIMAL DIMENSIONS ARE IN METRES. THE ORIGINAL BRIDGE STRUCTURE WAS CONSTRUCTED WITH IMPERIAL UNITS OF MEASURE (HARD UNIT CONVERSION WHERE APPLICABLE).
- THE SCALES SHOWN ON THESE DRAWINGS ARE CORRECT FOR A1 SIZED DRAWING SHEETS. DO NOT DETERMINE DIMENSIONS BY SCALING OFF DRAWINGS.
- THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE EXACT LOCATIONS OF ALL EXISTING ABOVE GROUND AND BELOW GROUND UTILITIES AND REPORTING ANY DISCREPANCIES OR CONFLICTS TO THE CONSULTANT PRIOR TO CONSTRUCTION.
- EXCEPT WHERE INDICATED OTHERWISE THESE DRAWINGS SHOW DETAILS FOR THE COMPLETED STRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR THE SAFETY OF WORKERS AND THE DESIGN AND STABILITY OF ANY TEMPORARY WORKS DURING CONSTRUCTION. CONSTRUCTION METHODS REQUIRING THE TEMPORARY INSTALLATION OF SHORING, SCAFFOLDING, BRACING, ETC. SHALL BE SUBMITTED TO THE CONTRACT ADMINISTRATOR FOR REVIEW AND ACCEPTANCE PRIOR TO PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL RETAIN A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA TO PERFORM AND TAKE RESPONSIBILITY FOR ANY SUCH DESIGNS NECESSARY TO COMPLETE THE CONSTRUCTION AND AS REQUIRED BY THE CONTRACT DOCUMENTS.

STRUCTURAL DESIGN DATA

- BRIDGE CONFIGURATION: 8.0 m CLEAR SPAN CAST-IN-PLACE SEMI-INTEGRAL CONCRETE SLAB BRIDGE SUPPORTED ON NATURAL RUBBER BEARING PADS, SUPPORTED ON CAST-IN-PLACE CONCRETE ABUTMENTS AND RETAINING WALLS SUPPORTED ON DRIVEN STEEL H-PILES.
- DESIGN SPECIFICATION: CAN/CSA-S6-14 “CANADIAN HIGHWAY BRIDGE DESIGN CODE”
- LIVE LOAD:
  - CL-625 TRUCK AND CL-625 LANE LOAD
  - SIDEWALK PEDESTRIAN LOADING PER CAN/CSA S6-14 Cl. 3.8.9
  - CONCRETE BARRIER COLLISION PERFORMANCE RATING TL-2
- WIND LOAD: q_{50} = 0.45 kPa

TRANSPORTATION DESIGN DATA

- DESIGN SPECIFICATIONS:
  - CITY OF WINNIPEG TRANSPORTATION STANDARDS (2012 UPDATE)
  - TRANSPORTATION ASSOCIATION OF CANADA GEOMETRIC DESIGN GUIDE FOR CANADIAN ROADS
- ROADWAY DESIGN CRITERIA:
  - ROADWAY CLASSIFICATION: INDUSTRIAL / COMMERCIAL LOCAL (NON-REGIONAL)
  - POSTED SPEED: 50 km/h; DESIGN SPEED: 60 km/h

GEOTECHNICAL DESIGN DATA

- A GEOTECHNICAL REPORT HAS BEEN PREPARED BY TREK GEOTECHNICAL TITLED "SASKATCHEWAN AVENUE BRIDGE OVER OMAND'S CREEK CULVERT REPLACEMENT GEOTECHNICAL INVESTIGATION" DATED SEPTEMBER 23, 2015. REFER TO GEOTECHNICAL REPORT FOR DETAILED DESIGN DATA AND RECOMMENDATIONS.
- SELECT GEOTECHNICAL DESIGN DATA:
  - MINIMUM FACTOR OF SAFETY AGAINST SLOPE FAILURE = 1.26
  - DESIGN CAPACITY OF ONE STEEL H-PILE (HP310x110) DRIVEN TO REFUSAL NEAR A DEPTH OF 215.0 m:
    - $P_{HP310X110\ @\ SLS}$ = 855 kN
    - $P_{HP310X110\ @\ ULS}$ = 1025 kN

HYDRAULIC DESIGN DATA

- A HYDRAULIC REPORT HAS BEEN PREPARED BY BRUCE HARDING CONSULTING LTD. TITLED "OMANDS CREEK AT SASKATCHEWAN AVENUE CROSSING REPLACEMENT HYDROLOGIC AND HYDRAULIC ASSESSMENT - REV 1" DATED SEPTEMBER 2015.
- SELECT HYDRAULIC DESIGN DATA:
  - DESIGN DISCHARGE - $Q_{2\%}$ = 20.5 m^3 @ EL. 233.63 m
  - VELOCITY AT DESIGN DISCHARGE - $V_{2\%}$ = 1.15 m/s
  - HEADLOSS DURING DESIGN DISCHARGE - 0.05 m
  - FISH PASSAGE VELOCITY - $V_{3DQ10\%}$ = 0.55 m/s
  - MINIMUM SOFFIT ELEVATION - TO MATCH EXISTING @ EL. 233.25 m

ENVIRONMENTAL PROTECTION

- NO IN-STREAM WORK IS PERMITTED BETWEEN APRIL 1 AND JUNE 15.
- IMPLEMENT ENVIRONMENTAL PROTECTION MEASURES AS DESCRIBED BY THE SPECIFICATIONS.

CP RAIL & CONTRACTOR DESIGN & CONSTRUCTION OF STAY-IN-PLACE SHORING

- THE CP RAIL (CPR) LINE AND BRIDGE IMMEDIATELY NORTH OF THE WORK SITE SHALL BE IN-SERVICE DURING CONSTRUCTION. THE RAIL LINE SERVICES LOCAL BUSINESSES. CPR INDICATES THAT THE FREQUENCY OF TRAINS ON THE BRIDGE IMMEDIATELY ADJACENT TO THE WORK ZONE IS TYPICALLY ONE PER DAY ON WEEKDAYS. THIS INFORMATION IS GIVEN TO PROVIDE THE CONTRACTOR WITH GENERAL INSIGHT INTO THE FREQUENCY OF RAIL TRAFFIC, AND DOES NOT IMPLY A CONTRACTUAL OBLIGATION FROM CPR.
- THE CONTRACTOR SHALL DESIGN AND CONSTRUCT SHORING TO ENSURE THE STABILITY OF THE CP RAIL SUBGRADE DURING CONSTRUCTION. THE SHORING SHALL REMAIN IN PLACE, AND SHALL BE BURIED DURING BACKFILLING OF THE BRIDGE EMBANKMENT EXCAVATION.
  - REFER TO THE GEOTECHNICAL REPORT FOR LATERAL EARTH PRESSURE DESIGN LOADS TO BE USED BY THE CONTRACTOR'S DELEGATED DESIGN ENGINEER.
  - DESIGN LIVE LOAD SURCHARGE: COOPER E80
  - ONE ACCEPTABLE STAY-IN-PLACE SHORING CONCEPT: SOLDIER PILE WALL W/ PRESSURE-TREATED TIMBER LAGGING.
  - ANY TIMBER TO REMAIN FOLLOWING CONSTRUCTION MUST BE PRESSURE TREATED.
  - SUBMIT SHOP DRAWINGS FOR REVIEW AND ACCEPTANCE.
- THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING FLAGGING SERVICES FROM CPR IF REQUIRED.

FEEDERMAIN PROTECTION

- A 900 FEEDERMAIN IS BURIED BELOW THE WORK ZONE. THE WESTEND FEEDERMAIN IS A CRITICAL COMPONENT OF THE CITY OF WINNIPEG REGIONAL WATER SUPPLY SYSTEM AND WORK IN CLOSE PROXIMITY TO THE PIPELINE SHALL BE UNDERTAKEN WITH AN ABUNDANCE OF CAUTION. THE PIPE CANNOT BE TAKEN OUT OF SERVICE TO FACILITATE CONSTRUCTION, AND INADVERTENT DAMAGE CASUED TO THE PIPE WOULD LIKELY HAVE CATASTROPHIC CONSEQUENCES.
- THE CONTRACTOR SHALL SUBMIT A CONSTRUCTION METHOD STATEMENT DEMONSTRATING ADHERENCE TO THE OPERATING CONSTRIANTS FOR WORK IN CLOSE PROXIMITY TO THE WESTEND FEEDERMAIN DESCRIBED IN DETAIL IN THE SPECIFICATIONS.

MATERIAL NOTES

CAST-IN-PLACE CONCRETE:

ITEM	CLASS OF EXPOSURE	CEMENT TYPE	MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS (MPa)	NOMINAL MAX SIZE OF AGGREGATE (mm)	AIR CONTENT (%)	SPECIAL REQUIREMENTS	MINIMUM POST RESIDUAL CRACKING INDEX
BRIDGE DECK SLAB, CONCRETE BARRIERS, APPROACH SLABS	C-1	TYPE GU	35	20	5-8	SYNTHETIC FIBRES	0.15
ABUTMENTS, WINGWALLS, RETAINING WALL	F-1 & S-1	TYPE GU	35	20	5-8	-	-

CLEAR COVER TO REINFORCING STEEL (mm) UNLESS NOTED OTHERWISE	LOCATION
50	BRIDGE DECK TOP, SOFFIT, AND EDGES; APPROACH SLAB TOP & BOTTOM; FRONT, ENDS, AND BACK SIDE OF CONCRETE BARRIERS
75	EARTH SIDE AND CREEK SIDE OF RETAINING WALL; APPROACH SLAB EDGES

- CONCRETE FINISHES - REFER TO SPECIFICATIONS
- ALL VISUALLY EXPOSED CONCRETE CORNERS SHALL HAVE A 20 mm CHAMFER UNLESS NOTED OTHERWISE.

REINFORCING STEEL

- ALL REINFORCING WITH SUFFIX "SS" SHALL BE STAINLESS STEEL CONFORMING TO THE REQUIREMENTS OF ASTM A955M, 300 SERIES, MINIMUM GRADE 420, OF ONE OF THE FOLLOWING UNS DESIGNATIONS: S31653, S31803, OR S32304.
- PLAIN REINFORCING STEEL TO CAN/CSA-G30.18-M92 GRADE 400W.
- REINFORCING STEEL SPLICES TO CAN/CSA S6-14 CLASS B.

LAP SPLICE TABLE		
BAR SIZE	HORIZONTAL LAP	VERTICAL LAP
16SS / 15M	700	550
19SS / 20M	850	650

ANCHOR RODS

- STAINLESS STEEL ANCHOR RODS TO ASTM A193 GRADE B8M WITH YIELD STRENGTH 517 MPa.

STRUCTURAL STEEL

- STRUCTURAL SHAPES AND PLATES, MATERIAL REQUIREMENTS TO CSA G40.20-04/G40.21-04 (r2009) GRADE 300W.
- WELDING SHALL CONFORM TO CURRENT AWS SPECIFICATION D1.5.

BEARING PAD

- NATURAL RUBBER BEARING PAD 55 DURO HARDNESS COMPIANT WITH CSA S6-14.
- MOVEMENT ALLOWANCE REQUIRED:
  - HORIZONTAL TRANSLATION (SHEAR DEFORMATION): ±12 mm
  - ROTATION ABOUT BEARING PAD LONG AXIS: ±0.015 RADIANS
- SHOP FABRICATE. DO NOT FIELD CUT.
- BASIS OF DESIGN: GOODCO Z-TECH SERIES E PLAIN BEARINGS.

PRECOMPRESSED FOAM JOINT FILLER

- PRECOMPRESSED FOAM JOINT FILLER SHALL BE ONE OF THE THREE FOLLOWING SYSTEMS, OR ACCEPTED EQUIVALENT IN ACCORDANCE WITH B7, AT LOCATIONS SPECIFIED. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
- BASIS OF DESIGN: EMSEAL 20H, EMSEAL BEJS SYSTEM, EMSEAL SUBMERSEAL

STRUCTURAL BACKFILL

- BACKFILL EXCAVATION BEHIND ABUTMENTS AND RETAINING WALLS WITH 50 mm MAX AGGREGATE SIZE GRANULAR BACKFILL
- SPECIAL COMPACTION REQUIREMENTS:
  - WITHIN 1.5 m OF RETAINING WALLS AND BRIDGE DECK SLAB CORBEL, INCLUDING BELOW APPROACH SLABS, LIGHTLY COMPACT GRANULAR BACKFILL TO 92% SPMDD.
  - AT ALL OTHER LOCATIONS COMPACT TO 98% SPMDD.

WORKING BASE

- LEAN MIX CONCRETE W/ MINIMUM COMPRESSIVE STRENGTH 20 MPa @ 28 DAYS

ASPHALT CONCRETE PAVEMENT

- ASPHALTIC CONCRETE PAVEMENT (TYPE 1A)

WATERPROOFING MEMBRANE

- HOT-POURED RUBBERIZED ASPHALT WATERPROOFING SYSTEM CONSISTING OF PRIMER, HOT APPLIED RUBBERIZED ASPHALT WATERPROOFING MEMBRANE, POLYESTER FABRIC AND PROTECTION BOARD.

CHAIN LINK FENCE

- CHAIN LINK FENCE SHALL CONFORM TO CITY OF WINNIPEG STANDARD SPECIFICATION CW 3550-R3. POSITION POSTS AS SHOWN ON THE DRAWINGS.
- FIT CHAIN LINK FENCE WITH TOP RAILS AND BOTTOM RAILS. CONNECT CHAIN MESH FABRIC TO TOP AND BOTTOM RAILS BY MEANS OF CONTINUOUS SPIRAL GALVANIZED TIE-WIRE, WITH AT LEAST ONE FULL WRAP AROUND THE SUPPORTING RAIL EVERY 150 mm.

LIST OF ACRONYMS & SYMBOLS*

N,S,E,W	COMPASS DIRECTIONS
ALT	ALTERNATE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWS	AMERICAN WELDING SOCIETY
BLL	BOTTOM LOWER LAYER
BRG	BEARING
BUL	BOTTOM UPPER LAYER
CB	CATCH BASIN
CL	CENTRELINE
CPR	CANADIAN PACIFIC RAILWAY
CSA	CANADIAN STANDARDS ASSOCIATION
C/W	COMPLETE WITH
EB	EASTBOUND
EL	ELEVATION
EX	EXISTING
FM	FEEDERMAIN
HWL	HIGH WATER LEVEL
MIN	MINIMUM
O/C	ON CENTRE
O/H	OVERHEAD
OHWL	ORDINARY HIGH WATER LEVEL
RSIC	REINFORCING STEEL INSTITUTE OF CANADA
SD	STANDARD DRAWING (CITY OF WINNIPEG STANDARD CONSTRUCTION SPECIFICATIONS)
SHLD	SHOULDER
SPMDD	STANDARD PROCTOR MODIFIED DRY DENSITY
TLL	TOP LOWER LAYER
TUL	TOP UPPER LAYER
TYP	TYPICAL
UNS	UNIFIED CLASSIFICATION SYSTEM
W/	WITH
WB	WESTBOUND
WL	WATER LEVEL
WM	WATER MAIN
@	AT
Ø	DIAMETER

*REFER ALSO TO TITLE BLOCK ON SELECT DRAWINGS

BID OPPORTUNITY No. 775-2015

APEGM Certificate of Authorization MORRISON HERSHFIELD No. 1736

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED
UNDERGROUND STRUCTURES
SUPR. U/G STRUCTURES COMMITTEE — DATE

NOTE:
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

BM ELEV

No.	REVISIONS	YY/MM/DD	BY
0	ISSUED FOR TENDER	15/10/22	DAN

MORRISON HERSHFIELD

DESIGNED BY	DAN	CHECKED BY	SAL
DRAWN BY	DML	APPROVED BY	BE
HOR. SCALE	AS SHOWN	ACCEPTED BY	DATE
VERT. SCALE	AS SHOWN	ORIGINAL DRAWING SIGNED BY: D.N. BURMEY, P.ENG.	15/10/22
DATE	15/04/24	D.N. BURMEY, P.ENG. BRIDGE PROJECTS ENGINEER	

PROFESSIONAL'S SEAL
PROVINCE OF MANITOBA — D.A. NEILSON — ORIGINAL SIGNED 15/10/22 — 37248 — REGISTERED PROFESSIONAL ENGINEER

CONSULTANT DRAWING No.
W150005-DWG-BRIDGE.dwg

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

SASKATCHEWAN AVENUE AT OMAND'S CREEK BRIDGE REPLACEMENT

GENERAL NOTES & DESIGN DATA

CITY DRAWING NUMBER: B144-16-02
SHEET 02 OF 18
DRAWING No. 02 REV 0

PLOT: 10/26/2015 2:47:44 PM

FILE NAME: W150005-DWG-BRIDGE.dwg Saved By: kberard