ISO A1 - 594mm x 841mm

DRAWING LIST

SHEET No.	CITY DWG No.	DESCRIPTION
01	C315-21-01	COVER SHEET AND LOCATION PLAN
02	C315-21-02	DRAWING LIST AND GENERAL NOTES
03	C315-21-03	BORE HOLE LOGS
04	C315-21-04	EXISTING CONDITIONS AND SITE PLAN
05	C315-21-05	GENERAL ARRANGEMENT AND SCOPE OF WORK
06	C315-21-06	REBAR COVER SURVEY
07	C315-21-07	CONCRETE REMOVALS
08	C315-21-08	PILE LAYOUT AND DETAILS
09	C315-21-09	SHEAR KEY PLAN AND SECTION
10	C315-21-10	PLAN AND PROFILE EAST BARRIER WALL
11	C315-21-11	PLAN AND PROFILE WEST BARRIER WALL
12	C315-21-12	CONCRETE DETAILS 1 OF 2
13	C315-21-13	CONCRETE DETAILS 2 OF 2
14	C315-21-14	REINFORCING DETAILS 1 OF 2
15	C315-21-15	REINFORCING DETAILS 2 OF 2
16	C315-21-16	BILL OF REINFORCING PILE CAP BEAM, BARRIER, SIDEWALK
17	C315-21-17	APPROACH SLAB DETAILS 1 OF 2
18	C315-21-18	APPROACH SLAB DETAILS 2 OF 2
19	C315-21-19	BILL OF REINFORCING APPROACH SLABS
20	C315-21-20	CULVERT REPAIRS 1 OF 3
21	C315-21-21	CULVERT REPAIRS 2 OF 3
22	C315-21-22	CULVERT REPAIRS 3 OF 3
23	C315-21-23	ALUMINUM BARRIER DETAILS
24	C315-21-24	PAVING AND GRADING - KING EDWARD STREET AND DUBLIN AVENUE
25	C315-21-25	TRAFFIC STAGING & TEMPORARY SIGNAGE - STAGE 1
26	C315-21-26	TRAFFIC STAGING & TEMPORARY SIGNAGE - STAGE 2
27	C315-21-27	TRAFFIC STAGING & TEMPORARY SIGNAGE - STAGE 3

REFERENCE DRAWINGS

- ROUTE 90 CULVERT AT OMAND'S CREEK, TOP SLAB REHABILITATION, STRUCTURAL STRENGTHENING AND RELATED WORKS P.D. NO. 85-104, DRAWING No. C315-85-01 THRU C315-85-09

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 THE 1985 REHABILITATION REFERENCE DRAWINGS FOR DETAILS OF EXISTING CONSTRUCTION.
- WHOLE DIMENSIONS SHOWN ON THESE DRAWINGS ARE IN MILLIMETERS. DECIMAL DIMENSIONS ARE IN METRES. THE ORIGINAL CULVERT 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 CONTRACT ADMINISTRATOR 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

- CULVERT CONFIGURATION: TWO CELL CAST IN PLACE CONCRETE BOX CULVERT WITH STRUCTURAL APPROACH SLABS, AND AN EXPOSED ROOF SLAB WITH A CONCRETE OVERLAY.
- DESIGN SPECIFICATION: CAN/CSA-S6-19 "CANADIAN HIGHWAY BRIDGE DESIGN CODE"
- LIVE LOAD:
  - CL-625 TRUCK AND CL-625 LANE LOAD
  - SIDEWALK PEDESTRIAN LOADING PER CAN/CSA S6-19 CI. 3.8.9
  - CONCRETE BARRIER COLLISION PERFORMANCE RATING TL-4
  - 70% CL-625 TRUCK LOAD ON SIDEWALK
- WIND LOAD: q_{50} = 0.45 kPa

GEOTECHNICAL DESIGN DATA

- A GEOTECHINCAL REPORT HAS BEEN PREPARED BY TREK GEOTECHINCAL TITLED ROUTE 90 CULVERT REHABILITATION OVER OMAND'S CREEK (RFP No. 381-2021), WINNIPEG, MB GEOTECHINCAL INVESTIGATION REPORT - DATED APRIL 1, 2022.
- THE SOUTHEAST CULVERT CORNER SLOPE IS REQUIRED TO BE STABILIZED BY A ROCK FILLED SHEAR KEY.
  - FACTOR OF SAFETY = 1.29
- THE SOUTHWEST CULVERT CORNER SLOPE IS REQUIRED TO BE STABILIZED BY RIP RAP PLACEMENT.
  - FACTOR OF SAFETY = 1.34
- CAST IN PLACE PILES DESIGNED TO BEAR ON VERY DENSE TILL LAYER.
  - ULS BEARING CAPACITY = 980 kPa
  - SLS BEARING CAPACITY = 720 kPa

HYDRAULIC DESIGN DATA

- A DESKTOP HYDROTECHNICAL REVIEW WAS PREPARED BY TREK GEOTECHNICAL TITLED REHABILITATION OF ROUTE 90 CULVERT AT OMAND'S CREEK DESKTOP REVIEW OF FISH PASSAGE VELOCITY REDUCTION MEASURES - DATED FEBRUARY 2022.
- SELECT HYDRAULIC DESIGN DATA:
  - DESIGN DISCHARGE - Q2% = 15.8 m^3/S @ EL. 234.55 m
  - SUMMER WATER LEVEL - Q50% = 3.8 m^3/S @ EL. 233.40 m
- FISH PASSAGE:
  - THE PROPOSED WORKS WILL NOT SUBSTANTIALLY ALTER THE GEOMETRY OF THE CREEK CROSS-SECTION, AND WILL NOT SUBSTANTIALLY AFFECT RIVER FLOWS.

ENVIRONMENTAL PROTECTION

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

EXISTING UTILITY PROTECTION

- SEVERAL UTILITIES ARE BURIED BELOW THE WORK ZONE AS SHOWN ON THE EXISTING CONDITIONS AND SITE PLAN DRAWING, SHEET No. 04.
- CONTRACTOR SHALL VERIFY ALL EXISTING ABOVE GROUND AND BELOW GROUND UTILITIES AND REPORT ANY DISCREPANCIES OR CONFLICTS TO THE CONTRACT ADMINISTRATOR PRIOR TO CONSTRUCTION. ANY DAMAGE TO EXISTING STRUCTURES AND UTILITIES BY THE CONTRACTOR'S OPERATIONS MUST BE REPAIRED BY THE CONTRACTOR AT THEIR OWN COST.
- THE CONTRACTOR SHALL SUBMIT A CONSTRUCTION METHOD STATEMENT DEMONSTRATING ADHERENCE TO THE OPERATING CONSTRAINTS FOR WORK IN CLOSE PROXIMITY TO ALL BURIED AND OVERHEAD UTILITIES.

MATERIAL NOTES

CAST-IN-PLACE CONCRETE:

ITEM	CLASS OF EXPOSURE	CEMENT TYPE	MINIMUM COMPRESSIVE STRENGTH (MPa)	NOMINAL MAX SIZE OF AGGREGATE (mm)	AIR CONTENT (%)	SPECIAL REQUIREMENTS	MINIMUM POST RESIDUAL CRACKING INDEX
PILE CAP, REINFORCED SIDEWALK, TRAFFIC BARRIERS, BARRIER CURBS, MEDIAN, APPROACH SLABS, AND CULVERT OVERLAY	C-XL	TYPE GU	50 @ 56 DAYS	20	5-8	SYNTHETIC FIBRES	0.15
CULVERT REPAIRS	C-1	TYPE GU	35 @ 28 DAYS	10	6-9	-	-
CAST-IN-PLACE PILES	F-1 & S-1	HS, HSb, HSe	35 @ 28 DAYS	20	5-8	-	-

CLEAR COVER TO REINFORCING STEEL (mm) UNLESS NOTED OTHERWISE	LOCATION
30	ROOF SLAB OVERLAY WELDED WIRE MESH
50	SOFFIT OF SIDEWALK
100	CAST-IN-PLACE PILES
70	ALL OTHER STRUCTURAL COMPONENTS

- 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 UNS DESIGNATIONS: S31653, S31803, OR S32304, AS DESCRIBED IN THE SPECIFICATIONS.
- STAINLESS STEEL WELDED WIRE MESH CONFORMING TO AISI 304
- PLAIN REINFORCING STEEL TO CAN/CSA-G30.18-M92 GRADE 400W.
- REINFORCING STEEL SPLICES TO CAN/CSA S6-19 CLASS B.

STAINLESS STEEL LAP SPLICE TABLE		
BAR SIZE	HORIZONTAL LAP	VERTICAL LAP
16SS	750	550
19SS	900	700

BLACK STEEL LAP SPLICE TABLE		
BAR SIZE	HORIZONTAL LAP	VERTICAL LAP
15M	550	450
20M	700	550

PRECOMPRESSED FOAM JOINT FILLER

- PRECOMPRESSED FOAM JOINT FILLER SHALL BE THE FOLLOWING SYSTEM, OR ACCEPTED EQUIVALENT AT LOCATIONS SPECIFIED. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
- BASIS OF DESIGN: EMSEAL BEJS SYSTEM

WORKING BASE FOR MUD SLABS

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

CHAIN LINK FENCE

- CHAIN LINK FENCE SHALL CONFORM TO CW 3550-R3. POSITION POSTS AS SHOWN ON THE DRAWINGS.
- FIT MESH ON THE SIDE OF THE CULVERT HEADWALLS WHERE EARTH IS RETAINED, OR ON THE SIDE OF THE FENCE FACING THE SIDEWALK.
- 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.
- FIELD-APPLIED GALVANIZING, TOUCH-UP, AND WELD GALVANIZING SHALL BE DONE WITH SELF-FLUXING, LOW TEMPERATURE, ZINC-BASED ALLOY RODS IN ACCORDANCE WITH ASTM A780-01. GALVALLOY OR WELCO GAL-VIZ GALVANIZING ALLOY, OR ACCEPTED EQUIVALENT.

PROJECT HORIZONTAL AND VERTICAL CONTROL POINTS					NAD83 DATUM	
CONTROL POINT	LOCATION	NORTHING	EASTING	ELEVATION	NORTHING	EASTING
#1	SURVEY BAR @ W PL SHERWIN AND S PL NOTRE DAME AVE	10506.303	10010.822	234.267 m	5530860.524	628407.691
#2	SURVEY BAR @ E PL SHERWIN RD AND N PL SASKATCHEWAN AVE	9319.578	10009.663	234.285 m	5529674.072	630543.852
THE PROJECT DRAWINGS HAVE A SCALE FACTOR OF 1.0002299860 APPLIED TO CITY OF WINNIPEG GIS INFORMATION TO MATCH LOCAL SURVEYED PROJECT COORDINATES						

BACKFILL MATERIAL

1. BACKFILL SHALL BE SUPPLIED, PLACED, AND COMPACTED IN AN UNFROZEN CONDITION.
2. BACKFILL AROUND BOX CULVERT
   a. BACKFILL SUM-BASE GRANULAR BACKFILL PER CW 3110 WITH REQUIREMENTS AS MODIFIED IN THE SPECIFICATIONS.
   b. MAXIMUM LIFT HEIGHT 150 mm.
   c. MAXIMUM IMBALANCE IN LIFT HEIGHT ACROSS CULVERT WIDTH DURING BACKFILLING 200 mm.
   d. WITHIN 1.5 m OF CULVERT, INCLUDING BELOW APPROACH SLABS, LIGHTLY COMPACT GRANULAR BACKFILL TO 92% SPMDD.
   e. AT ALL OTHER LOCATIONS COMPACT TO 98% SPMDD.
3. BACFILL AT RETAINING WALLS AND WINGWALLS
   a. BACKFILL GRADED GRANULAR FILL MEETING THE REQUIREMENTS AS MODIFIED IN THE SPECIFICATIONS.
   b. MAXIMUM LIFT HEIGHT 150 mm.
   c. WITHIN 1.5 m OF RETAINING WALL AND WINGWALLS, LIGHTLY COMPACT GRANULAR BACKFILL TO 92% SPMDD.
   d. AT ALL OTHER LOCATIONS COMPACT TO 98% SPMDD.

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
BML	BOTTOM MIDDLE LAYER
BUL	BOTTOM UPPER LAYER
CB	CATCH BASIN
CL	CENTRELINE
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
TML	TOP MIDDLE LAYER
TUL	TOP UPPER LAYER
TS	TRAFFIC SIGNAL
TYP	TYPICAL
UNS	UNIFIED CLASSIFICATION SYSTEM
W/	WITH
WB	WESTBOUND
WL	WATER LEVEL
WM	WATER MAIN
@	AT
Ø	DIAMETER

SECTION & DETAIL SYMBOLS

SECTION LETTER / DETAIL NUMBER
DRAWING No. WHERE SECTION / DETAIL IS DRAWN
DRAWING No. WHERE SECTION / DETAIL IS TAKEN

REINFORCING STEEL CODE LEGEND

1 - A2501 (1)

SUBSET No.
IDENTIFICATION No.
SIZE OF BAR
LOCATION CODE
No. OF BARS

ENGINEERS GEOSCIENTISTS MANITOBA
Certificate of Authorization
MORRISON HERSHFIELD
No. 1736

TENDER No. 971-2022

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 23-018
ELEV 235.300 m
S.E. Cor. Notre Dame Ave. & Sherwin Rd., Tblt. in W. Conc. foundation No. 2070 Notre Dame Ave., 0.8 m S. & 0.7 m below Conc. block of N.W. Cor. of bldg.

No.	REVISIONS	YY/MM/DD	BY
0	ISSUED FOR TENDER	22/12/16	AGG

MORRISON HERSHFIELD

DESIGNED BY	AGG	CHECKED BY	TH
DRAWN BY	AH	APPROVED BY	BE
HOR SCALE / VERT SCALE	AS SHOWN	RELEASED FOR CONSTRUCTION BY: VAIBHAV BANTHIA, P.ENG.	
DATE	22/03/14	DATE	22/12/16

PROFESSIONAL'S SEAL
PROVINCE OF MANITOBA
A.D.G. GILARSKI
Member
32144
2022-12-16
REGISTERED PROFESSIONAL ENGINEER

CONSULTANT FILE NAME
220042500-Rte 90-GN.dwg

Winnipeg
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

REHABILITATION OF ROUTE 90 CULVERT OVER OMAND'S CREEK

DRAWING LIST AND GENERAL NOTES

CITY DRAWING NUMBER: C315-21-02
SHEET 02 OF 27
DRAWING NUMBER: 02

X:\Proj\2022\220042500-CstW Rte 90 Culvert Over Omands Cre\09. CAD\07 Sheets\220042500-Rte 90-GN.dwg Last Saved: 12/15/2022 5:47 PM by AHeppner Plotted: 12/15/2022 5:54 PM by Alex Heppner