

A1 SIZE (594 mm x 841 mm) | Plot: November 24, 2017 at 10:20:37 AM | Last saved by: Paterson, C. | File: P:\2017\17M-00806-00 - Truro Creek Culvert Replacements\MM Drawings\17M-00806-00 Truro Creek Culvert Replacements DD Winchester 02 general notes.dwg | Layout: 2 Design Data and General Notes

GENERAL

- THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH CONTRACT SPECIFICATIONS.
- THE METRIC SYSTEM OF MEASUREMENT IS USED ON ALL DRAWINGS. ELEVATIONS AND STATIONS ARE SHOWN IN METERS AND ALL OTHER DIMENSIONS ARE SHOWN IN MILLIMETERS.
- CONTRACTOR MUST VERIFY ALL EXISTING GEOMETRY AS WELL AS PROPOSED DIMENSIONS AND LAYOUT IN THE FIELD PRIOR TO FABRICATION AND CONSTRUCTION. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE CONTRACT ADMINISTRATOR PRIOR TO CONSTRUCTION.
- ALL REFERENCES TO CODES, STANDARDS, SPECIFICATIONS, GUIDELINES, ETC., SHALL MEAN THE LATEST EDITION.
- THE CONTRACTOR IS RESPONSIBLE FOR SAFETY IN AND ABOUT THE JOB SITE DURING CONSTRUCTION. EXCEPT WHERE INDICATED OTHERWISE, THESE DRAWINGS SHOW DETAILS FOR THE COMPLETED STRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR DESIGN AND STABILITY OF ANY TEMPORARY WORKS DURING CONSTRUCTION. CONSTRUCTION METHODS REQUIRING THE TEMPORARY INSTALLATION OF COFFER DAMS, 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

- DESIGN SPECIFICATION:
CAN/CSA-S6-14 "CANADIAN HIGHWAY BRIDGE DESIGN CODE"
- LIVE LOAD:
CL-625 TRUCK AND CL-625 LANE LOAD
- DESIGN LIFE:
75 YEARS
- CONCRETE BARRIER COLLISION PERFORMANCE RATING:
TL-2

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: LOCAL RESIDENTIAL
POSTED SPEED: 50 km/h
DESIGN SPEED: 50 km/h

GEOTECHNICAL DESIGN DATA

- A GEOTECHNICAL REPORT HAS BEEN PREPARED BY KGS GROUP CONSULTING ENGINEERS TITLED "TRURO CREEK CULVERT REPLACEMENT GEOTECHNICAL INVESTIGATION AND ASSESSMENT" DATED JULY 2017. REFER TO GEOTECHNICAL REPORT FOR DETAILED DESIGN DATA AND RECOMMENDATIONS.
- EXCAVATION SLOPES SHOWN BASED ON PRELIMINARY ENGINEERING FOR THE PURPOSE OF SCOPING WORK AND DEVELOPING QUANTITIES.
- THE CONTRACTOR SHALL SUBMIT AN EXCAVATION AND DEMOLITION PLAN WHICH INCLUDES A DESCRIPTION OF THE EXCAVATION METHODOLOGY AND EQUIPMENT, STOCKPILING LOCATIONS, AND THE PROCESS AND RATE OF REMOVALS OF EXCAVATED AND DEMOLISHED MATERIAL. THE SUBMITTAL SHALL INCLUDE AN ASSESSMENT OF THE IMPACT OF SURCHARGE LOADS INTRODUCED BY CONSTRUCTION ACTIVITIES ON THE STABILITY OF THE EXCAVATION, AND SHALL INCLUDE SLOPE STABILITY ANALYSIS SIGNED AND SEALED BY A GEOTECHNICAL ENGINEER LICENSED TO PRACTICE IN THE PROVINCE OF MANITOBA.
- BEARING CAPACITY:
ULTIMATE LIMIT STATES BEARING CAPACITY = 200 kPa
SERVICEABILITY LIMIT STATES BEARING CAPACITY = 80 kPa
- EARTH LOAD:
ACTIVE EARTH PRESSURE COEFFICIENT, K_a = 0.27
AT REST EARTH PRESSURE COEFFICIENT, K_o = 0.43
- DESIGN BACKFILL SOIL DENSITY ASSUMED TO BE 22.5 kN/m³.

HYDRAULIC DESIGN DATA

- A HYDRAULIC REPORT HAS BEEN PREPARED BY KGS GROUP CONSULTING ENGINEERS TITLED "TRURO CREEK CULVERTS ON WINCHESTER ST., LINWOOD ST. AND NESS AVE. HYDRAULIC DESIGN REPORT" DATED JULY 2017. REFER TO HYDRAULIC REPORT FOR DETAILED DESIGN DATA AND RECOMMENDATIONS.
- SELECT HYDRAULIC DESIGN DATA:
DESIGN FLOW = 6.0 m³/s
3Q10 = 1.2 m³/s
DESIGN VELOCITY = 1.0 m/s

ENVIRONMENTAL PROTECTION

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

EXISTING UTILITY PROTECTION

- SEVERAL UTILITIES ARE BURIED BELOW THE WORK ZONE, INCLUDING BUT NOT LIMITED TO: 50 GAS, 150 PVC WATER MAIN, UNKNOWN COMBINED SEWER, 250 CONCRETE COMBINED SEWER, STREET LIGHTING POWERLINES.
- 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 HIS 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.

CAST IN PLACE CONCRETE

- TO BE READ IN CONJUNCTION WITH CW 2160 AND AS AMENDED IN ACCORDANCE WITH THESE NOTES.
- CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF CSA A23.1.
- ALL CEMENTITIOUS MATERIAL SHALL BE IN ACCORDANCE WITH CSA A3001-13.
- ALL CAST-IN-PLACE CONCRETE SHALL HAVE THE FOLLOWING PROPERTIES:

SUBSTRUCTURE: (BELOW CONSTRUCTION JOINT AT TOP OF WALLS)	35 MPa AT 28 DAYS CSA A23.1-14 EXPOSURE CLASS S-1 CEMENT TYPE HS CATEGORY 2 AIR ENTRAINMENT
SUPERSTRUCTURE: (ALL OTHER)	35 MPa AT 28 DAYS CSA A23.1-14 EXPOSURE CLASS C-1 CEMENT TYPE GU CATEGORY 1 AIR ENTRAINMENT

- CONCRETE CLEAR COVER TO REINFORCING STEEL SHALL BE AS FOLLOWS:

BOTTOM OF CULVERT FLOOR SLAB, BOTTOM OF APPROACH SLABS, BACKFILL FACE AND BOTTOM FACE OF WING WALLS AND HEAD WALLS	75 mm
ALL OTHER UNLESS NOTED OTHERWISE	60 mm
- ALL EXTERIOR CORNERS SHALL BE CHAMFERED 20 mm.
- WORKING BASE SHALL BE LEAN MIX CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 20 MPa AT 28 DAYS.

REINFORCING STEEL

- TO BE READ IN CONJUNCTION WITH CW 2160 AND AS AMENDED IN ACCORDANCE WITH THESE NOTES.
- ALL REINFORCING STEEL SHALL CONFORM TO CSA G30.18M, GRADE 400W.
- THE MINIMUM LAP LENGTH FOR ALL REINFORCING STEEL SHALL MEET CAN/CSA S6, CLASS B.

BAR SIZE	LAP LENGTH
15M	740
20M	900
25M	1 450
- REINFORCING STEEL LAPS SHALL BE STAGGERED UNLESS NOTED OTHERWISE.

MISCELLANEOUS METAL

- EXTRUDED ALUMINUM SHAPES AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM B221, ALLOY 6061-T6 OR ALLOY 6351-T5 (MINIMUM ELONGATION 10%).
- THE STAINLESS STEEL HEX HEAD AND SOCKET HEAD CAP SCREWS SHALL MEET THE REQUIREMENTS OF ASTM A276, TYPE 430, AND THE DIMENSIONAL REQUIREMENTS OF ANSI B18.3.
- DIMENSIONAL TOLERANCES NOT SHOWN OR IMPLIED ARE INTENDED TO BE THOSE CONSISTENT WITH THE PROPER FUNCTIONING OF THE PART, INCLUDING ITS APPEARANCE, AND ACCEPTED MANUFACTURING PRACTICES.
- THE ALUMINUM POST SHAFTS SHALL BE MADE FROM A SINGLE CHANNEL-SHAPE EXTRUSION AND WELDED TO A PLATE SHAPE. THE POST BASE AND SHAFT SHALL THEN BE WELDED TOGETHER.
- WELDING SHALL CONFORM TO THE REQUIREMENTS OF CSA S244 (LATEST EDITION), WELDED ALUMINUM DESIGN AND WORKMANSHIP AND W47.2-11 (R2015), ALUMINUM WELDING QUALIFICATION CODES. ALUMINUM FILLER ALLOY SHALL BE ONE OF THE FOLLOWING: ER4043, ER5183, ER5356, ER5554, ER5556 AND ER5654.
- THE CONTRACTOR SHALL SUBMIT COMPLETE SHOP DRAWINGS CONSISTING OF THREE PRINTS AND ONE REPRODUCIBLE SEPIA TO THE CONTRACT ADMINISTRATOR FOR APPROVAL PRIOR TO FABRICATION OF ALUMINUM TRAFFIC BARRIER COMPONENTS.
- ANIT-SIZE COATING TO BE APPLIED TO ALL THREADED COMPONENTS WHEN BEING ASSEMBLED [I.E., LPS-3-MANUFACTURED BY HOLT-LLOYD (CANADA) LTD. MARKHAM, ONTARIO, L3R-2Z3].

BACKFILL MATERIAL

- BACKFILL SHALL BE SUPPLIED, PLACED, AND COMPACTED IN AN UNFROZEN CONDITION.
- BACKFILL AROUND CAST-IN-PLACE BOX CULVERT SHALL BE:
 - FLOWABLE CEMENT STABILIZED-FILL PER CW 2030 AND TABLE CW 2160.1 OF CW 2160, WITH REQUIREMENTS AS MODIFIED IN THE SPECIFICATIONS.
 - PLACED EVENLY ON BOTH SIDES OF CULVERT AS WORK PROGRESSES.
- BACKFILL BELOW CULVERT INFILL SLAB SHALL BE:
 - TYPE 2 MODIFIED GRANULAR BACKFILL PER CW 2030, WITH REQUIREMENTS AS MODIFIED IN THE SPECIFICATIONS.
 - COMPACTED TO MAXIMUM 92% SPMD USING LIGHT HAND-OPERATED VIBRATING PLATE COMPACTOR.
- DRAINAGE BACKFILL ON OUTSIDE WALLS OF CULVERT AND INTERIOR FACE OF RETAINING WALL SHALL BE:
 - TYPE 3 MODIFIED GRANULAR BACKFILL FOR DRAINAGE PER CW 2030, WITH REQUIREMENTS AS MODIFIED IN THE SPECIFICATIONS.
- CULVERT GRANULAR INFILL SHALL BE:
 - 300 NOMINAL DIAMETER RANDOM STONE.
 - SPARSELY PLACED AS PER THE SPECIFICATIONS.

RIP RAP

- CLASS 350 RIP RAP SHALL BE AS DESCRIBED IN THE SPECIFICATIONS.
- INSTALL ON NON-WOVEN GEOTEXTILE KEYED MINIMUM 450 mm VERTICALLY AS SHOWN.

GEOTEXTILE

- GEOTEXTILE FOR RIP RAP SHALL BE NON-WOVEN GEOTEXTILE IN ACCORDANCE WITH CW 3120 AND CW 3130.

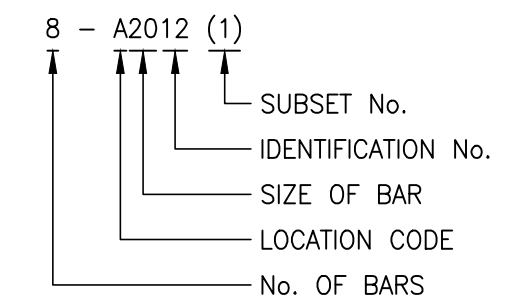
EROSION CONTROL BLANKET

- EROSION CONTROL BLANKET SHALL BE MACHINE PRODUCED 100% COCONUT FIBRE MATRIX MEETING THE REQUIREMENTS OF THE SPECIFICATIONS.

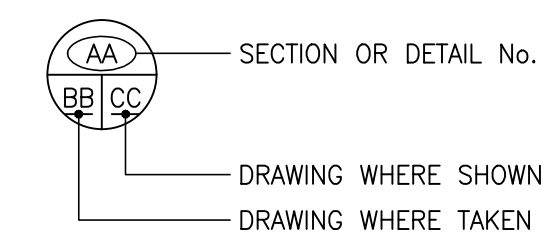
ABBREVIATIONS

⊙	AT	K	K VALUE
ABUT.	ABUTMENT	LDS	LAND DRAINAGE SYSTEM
ALT.	ALTERNATING	LVC	LENGTH OF VERTICAL CURVE
APPROX.	APPROXIMATELY	MAX.	MAXIMUM
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	MIN.	MINIMUM
B.C.	BEGIN CURVE	MK.	MARK
BLL	BOTTOM LOWER LAYER	N.F.	NEAR FACE
BLVD.	BOULEVARD	NB	NORTHBOUND
B.O.	BOTTOM OF BEARING	No.	NUMBER
BRG.	BOTH SIDES	N.S.W.L.	NORMAL SUMMER WATER LEVEL
B.S.	BOTTOM	N.T.S.	NOT TO SCALE
BTM.	BOTTOM UPPER LAYER	PCS.	PIECES
BUL	BEGIN VERTICAL CURVE ELEVATION	O.C.	ON CENTER
BVCE	BEGIN VERTICAL CURVE STATION	O.D.	OUTSIDE DIAMETER
BVCS	CATCH BASIN	O.F.	OUTSIDE FACE
CB	CATCH BASIN	O/H	OVERHEAD
C/C	CENTER TO CENTER	O/O	OUT TO OUT
℄	CENTER LINE	OPP.	OPPOSITE
CONC.	CONCRETE	℄	PLATE
CONT.	CONTINUOUS	PNT.	POINT
CMP	CORRUGATED METAL PIPE	PVI	POINT OF VERTICAL INTERSECTION
CS	COMBINED SEWER	REINF.	REINFORCING
CSA	CANADIAN STANDARDS ASSOCIATION	R.C.	REINFORCED CONCRETE
C/W	COMPLETE WITH	REQ'D	REQUIRED
DIA.	DIAMETER	R.O.W.	RIGHT OF WAY
∅	DIAMETER	SB	SOUTHBOUND
D.L.	DEAD LOAD	SD	STANDARD DRAWING (CITY OF WINNIPEG STANDARD SPECIFICATION)
DWL.	DOWEL		
EB	EASTBOUND	SHLD.	SHOULDER
E.C.	END CURVE	SL	STREET LIGHT
E.F.	EACH FACE	SP	SPACES
ELEV.	ELEVATION	SPDD	STANDARD PROCTOR DRY DENSITY
EL	ELEVATION	S.S.	STAINLESS STEEL
EVCE	END VERTICAL CURVE ELEVATION	STA.	STATION
EVCS	END VERTICAL CURVE STATION	TC	TANGENT TO CURVE
EXP.	EXPANSION	TLL	TOP LOWER LAYER
EXIST.	EXISTING	THK.	THICK
EXT.	EXTERIOR	T.O.	TOP OF
F.F.	FAR FACE	TUL	TOP UPPER LAYER
FM	FEEDERMAIN	TYP.	TYPICAL
FTG.	FOOTING	VERT.	VERTICAL
GALV.	GALVANIZED	U/G	UNDERGROUND
G.B.M.	GEODETIC BENCH MARK	U.N.O.	UNLESS NOTED OTHERWISE
HORIZ.	HORIZONTAL	U/S	UNDERSIDE
H.W.L.	HEAD WATER LEVEL	WB	WESTBOUND
I.F.	INSIDE FACE	W.O.	WORKING POINT
INT.	INTERIOR	WM	WATER MAIN
INV.	INVERT	W.W.S.	WASTE WATER SEWER

REINFORCING STEEL CODE LEGEND



SECTION AND DETAIL SYMBOLS LEGEND

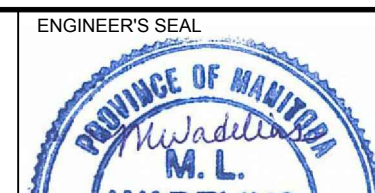


METRIC

WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES



LOCATIONS APPROVED UNDERGROUND STRUCTURES		G.B.M. = TOP NUT OF FIRST HYDRANT SOUTH OF INTERSECTION BETWEEN NESS AVENUE AND LINWOOD STREET		ELEV. = 233.659	
SIGNED BY: _____ DATE: _____		DESIGNED BY: MLW		CHECKED BY: WC	
DRAWN BY: _____		DRAWN BY: CP		APPROVED BY: JL	
HOR. SCALE: N.T.S.		HOR. SCALE: N.T.S.		RELEASED FOR CONSTRUCTION	
VERTICAL: N.T.S.		VERTICAL: N.T.S.		DATE: 17.11.23	
0 ISSUED FOR TENDER		DATE: 17.11.23		DATE: _____	
No. REVISIONS		DATE		BY	



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CONSULTANT PROJECT No.
17M-00806-00

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

Winnipeg

TRURO CREEK CULVERT REPLACEMENT AT WINCHESTER STREET

CITY DRAWING NUMBER: C322-17-02
BID OPPORTUNITY NUMBER: 1014-2017
SHEET OF: 2 OF 25
REV 0

DESIGN DATA AND GENERAL NOTES

NOTE: These design documents are prepared solely for the use by the party with whom the design professional has entered into a contract and there are no representations of any kind made by the design professional to any party with whom the design professional has not entered into a contract.