

**LEGEND**



**GENERAL NOTES**

- DIMENSIONS IN MILLIMETRES.
- ELEVATIONS IN METRES.
- READ STRUCTURAL DRAWINGS IN CONJUNCTION WITH ALL RELATED CIVIL, MECHANICAL, PROCESS, AND ELECTRICAL DRAWINGS AND OTHER CONTRACT DOCUMENTS.
- FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, AND DETAILS OF EXISTING STRUCTURES PRIOR TO FABRICATION AND CONSTRUCTION OF ADJACENT FRAMING OR CONNECTIONS OR SUPPORTS THAT ARE AFFECTED BY EXISTING STRUCTURES. REPORT TO CONTRACT ADMINISTRATOR ANY DISCREPANCIES OR UNSATISFACTORY CONDITIONS WHICH MAY ADVERSELY AFFECT THE PROPER COMPLETION OF THE WORK BEFORE PROCEEDING WITH THE WORK.
- DESIGN DETAILS, SECTIONS, AND STANDARD DETAILS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO SIMILAR SITUATIONS AND LOCATIONS OCCURRING THROUGHOUT THE PROJECT, WHETHER OR NOT THEY ARE INDIVIDUALLY CALLED OUT ON DRAWINGS.
- TYPICAL STRUCTURAL DETAILS SHOWN ON DRAWINGS SHALL GOVERN THE WORK. IF DETAILS DIFFER ON OTHER DRAWINGS OR SPECIFICATIONS, THE MOST STRINGENT SHALL GOVERN.
- DESIGN LOADS INDICATED ON DRAWINGS ARE SERVICES LOADS (UNFACTORED). DESIGN LOADS INDICATED ON DRAWINGS WITH SUBSCRIPT "f" ARE FACTORED LOADS.
- DO NOT EXCEED DESIGN LOADS NOTED ON DRAWINGS DURING CONSTRUCTION.
- SEE OTHER CONTRACT DRAWINGS AND COORDINATE FOR ACTUAL SIZES, LOCATIONS AND DETAILS OF OPENINGS FOR PIPES, SLEEVES, DUCTS, FLOOR DRAINS, CONDUITS, AND OTHER PENETRATIONS NOT SHOWN ON STRUCTURAL DRAWINGS.
- SEE MECHANICAL AND/OR PROCESS DRAWINGS AND COORDINATE FOR ACTUAL SIZES, LOCATIONS AND DETAILS OF EQUIPMENT BASES, AND SIMILAR ITEMS.
- SEE ELECTRICAL DRAWINGS FOR SIZES, REINFORCING, AND LOCATIONS OF CONCRETE ENCASED CABLES, CONDUITS, DUCT BANKS, AND CONCRETE PADS FOR ELECTRICAL EQUIPMENT NOT SHOWN ON STRUCTURAL DRAWINGS.
- STRUCTURAL MEMBERS SHALL NOT BE CUT OR MODIFIED UNLESS SPECIFICALLY DETAILED OR APPROVED IN WRITING BY THE CONTRACT ADMINISTRATOR.

**DESIGN CRITERIA**

- APPLICABLE CODE 2010 NATIONAL BUILDING CODE.
- IMPORTANCE CATEGORY: NORMAL
  - $I_s$  (ULS) = 1.0
  - $I_s$  (SLS) = 0.9
  - $I_e$  (ULS) = 1.0
  - $I_w$  (ULS) = 1.0
  - $I_w$  (SLS) = 0.75
- SITE LOCATION: BRADY ROAD, WINNIPEG, MB
- SNOW LOAD DATA:
  - GROUND SNOW LOADING
  - ASSOCIATED RAIN LOADING
  - $S_g$  = 1.9 kPa
  - $S_r$  = 0.2 kPa
- RAIN LOAD DATA:
  - ONE DAY RAINFALL
  - EXPOSURE CATEGORY
  - 108 mm
  - OPEN TERRAIN
- SEISMIC DATA:
  - HORIZONTAL SPECTRAL ACCELERATION VALUES
  - $S_a$  (0.2) = 0.095
  - $S_a$  (0.5) = 0.057
  - $S_a$  (1.0) = 0.026
  - $S_a$  (2.0) = 0.008
  - PEAK GROUND ACCELERATION (PGA) 2% PROBABILITY IN 1/50 YEARS = 0.036
- WIND LOAD DATA:
  - 1 IN 50 YEAR HOURLY WIND PRESSURE 0.45 kPa
- CONCRETE SLAB LIVE LOAD 75 kN (WHEEL LOAD FROM JOHN DEERE 644K WHEEL LOADER)

**FOUNDATIONS**

- REFER TO GEOTECHNICAL REPORT "BRADY ROAD LEAF AND YARD WASTE AND PILOT BIOSOLIDS COMPOSTING" PREPARED BY TREK GEOTECHNICAL DATED SEPTEMBER 19, 2012.
- DESIGN GROUND WATER LEVEL ELEVATION: 231.5 m
- DESIGN FROST DEPTH: 2.5 m
- SITE CLASS: C
- REFER TO DRAWING S-231 FOR ALL ADDITIONAL CONCRETE EQUIPMENT PADS REQUIRED.
- FOUNDATIONS SUBGRADE TO BE A MINIMUM OF 400mm THICK CRUSHED LIMESTONE (300mm OF 50mm UNDERLYING 100mm OF 19mm) COMPACTED TO 98% SPMDD OVERLYING GEOTEXTILE AND 98% SPMDD COMPACTED CLAY MAXIMUM LIFTS OF 150mm.
- PROVIDE SUBGRADE BEARING CAPACITY OF 150 kPa (SLS). GEOTECH TO CONFIRM PRIOR TO POURING FOUNDATIONS.
- ALL FOUNDATION BEARING SURFACES SHALL BE INSPECTED BY THE CONTRACT ADMINISTRATOR PRIOR TO PLACEMENT OF REINFORCING STEEL.
- PROVIDE 75mm RIGID INSULATION UNDER ALL CONCRETE SLAB FOUNDATIONS AND EXTEND BEYOND THICKENED EDGE BY 2000mm.
- REFER TO CIVIL DRAWINGS FOR GENERAL SITE LAYOUT, GRADINGS AND SUB-FOUNDATION PREPARATION.

**CONCRETE AND CONCRETE REINFORCING**

- CONCRETE 56-DAY COMPRESSIVE STRENGTH (MIN):
 

TYPE - A	STRENGTH (mPa)	CLASS OF EXPOSURE
	32	S-2
- REINFORCING BARS: CAN/CSA-G30.18-M92 (R2007), GRADE 400R, GRADE 400W FOR WELDED REBARS.
- REFERENCE CODES AND STANDARDS:
  - CSA A23.1-09 CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION
  - CSA A23.2-09 METHODS OF TEST AND STANDARD PRACTICES FOR CONCRETE
  - CSA A23.3-09 DESIGN OF CONCRETE STRUCTURES
- FABRICATE AND PLACE REINFORCING STEEL IN ACCORDANCE WITH RSIC MANUAL OF STANDARD PRACTICE, UNLESS NOTED OTHERWISE.
- CONTINUOUS WATERSTOP AS SPECIFIED SHALL BE INSTALLED AS SHOWN IN DRAWINGS.
- CONTROL JOINTS INDICATED ARE SUGGESTED LOCATIONS. CONTRACTOR MAY REVISE LOCATION OF JOINT SUBJECT TO SPECIFIED REQUIREMENTS. ADDITIONAL CONTROL AND CONSTRUCTION JOINT LOCATIONS, INCLUDING ADDITIONAL REQUIRED FOR CONSTRUCTION SHALL BE SUBMITTED FOR REVIEW.
- COORDINATE PLACEMENT OF OPENINGS, CURBS, DOWELS, SLEEVES CONDUITS, BOLTS, INSERTS, ETC. PRIOR TO PLACEMENT OF CONCRETE.
- PROVIDE CHAMFER TO ALL EXPOSED CORNERS.
- PROVIDE DOWELS FROM FOOTINGS, SLABS, WALLS OR BEAMS TO WALLS SIMILAR IN NUMBERS, SIZE AND SPACING TO THE VERTICAL STEEL IN THE WALLS ABOVE UNLESS NOTED OTHERWISE.
- PROVIDE STEEL TROWEL FINISH AND APPLY CLEAR FLOOR HARDENER TO TOP SURFACE OF ALL SLABS ON GRADE REFER TO SPECIFICATION SECTION 03345.
- BLOCKOUTS AND PENETRATIONS IN CONCRETE NOT SHOWN IN THEIR ENTIRETY. FINAL LOCATIONS TO BE CO-ORDINATED WITH OTHER CONTRACT DRAWINGS.

**STRUCTURAL STEEL AND METAL FABRICATIONS**

- MATERIAL SHALL CONFORM TO THE FOLLOWING:
 

STRUCTURAL STEEL	CAN/CSA G40.20/G40.21, GRADE 350W FOR ALL W AND H SECTIONS, GRADE 300W FOR OTHERS
HOLLOW STRUCTURAL SECTION	CAN/CSA G40.20/G40.21, GRADE 350W, CLASS C
HIGH STRENGTH BOLTS	ASTM A325
PRIMER	SEE SPECIFICATION
ALUMINUM	CAN/CSA S157/S157.1, ALLOY 6351-T6 FOR STRUCTURAL EXTRUDED SHAPES
STAINLESS STEEL	ASTM A666, TYPE 316/316L WITH MINIMUM YIELD STRESS $F_y$ = 207 MPa (30 ksi)
ANCHOR BOLTS	ASTM A307; GRADE 248 MPa
- REFERENCE CODES:
 

STRUCTURAL STEEL	CAN/CSA-S16 LIMIT STATES DESIGN OF STEEL STRUCTURES
ALUMINUM	CAN/CSA S157/S157.1 STRENGTH DESIGN IN ALUMINUM/COMMENTARY ON CSA S157
STAINLESS STEEL	ASTM A666 STANDARD SPECIFICATION FOR ANNEALED OR COLD-WORKED AUSTENITIC STAINLESS STEEL SHEET, STRIP, PLATE, AND FLAT BAR
	ASTM A276 STANDARD SPECIFICATION FOR STAINLESS STEEL BARS AND SHAPES
	CSA S136 NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS
WELDING	
CARBON STEEL	CSA W59 WELD STEEL CONSTRUCTION (METAL ARC WELDING)
ALUMINUM	CSA W59.2-M1991 WELDED ALUMINUM CONSTRUCTION
STAINLESS STEEL	AMERICAN WELDING SOCIETY AWS D1.6/D1.6M: STRUCTURAL WELDING CODE - STAINLESS STEEL
- ALL EXTERIOR EXPOSED STEEL SHALL BE HOT-DIP GALVANIZED.
- REFER TO SPECIFICATION SECTION 05500, METAL FABRICATIONS.
- ALL SHOP CONNECTIONS SHALL BE WELDED. ALL FIELD CONNECTIONS SHALL BE WELDED OR BOLTED USING HIGH STRENGTH BOLTS, BEARING TYPE WITH THREADS INCLUDED IN THE SHEAR PLANE.
- BEAM CONNECTIONS SHALL BE C.I.S.C. DOUBLE ANGLE CONNECTIONS USING A325 BOLTS AND E480xx FILLET WELDS, MINIMUM SIZE OF BOLTS SHALL BE 19mm DIAMETER.
- ALL MOMENT CONNECTIONS SHALL BE DESIGNED FOR 90% MOMENT CAPACITY OF THE MEMBER. THE WEB CONNECTIONS SHALL BE DESIGNED FOR THE SHEAR CAPACITY OF THE MEMBER.
- ALL DIAGONAL BRACING CONNECTIONS AND MOMENT CONNECTIONS SHALL BE PRETENSIONED BEARING TYPE CONNECTIONS USING HIGH STRENGTH BOLTS.
- PROVIDE MINIMUM 20mm THICK BASE PLATE AND 4-19mm DIAMETER ANCHOR BOLTS TO ALL COLUMNS UNO.
- BRACING MEMBERS SHALL BE CONNECTED FOR THE FOLLOWING (WHICHEVER IS LARGER):
  - 50% OF THE FACTORED TENSILE RESISTANCE OF THE MEMBER BASED ON THE GROSS AREA OF THE MEMBER
  - FORCES AS SHOWN ON THE DRAWINGS
  - A MINIMUM OF TWO BOLTS
  - CROSS BRACE SHALL BE CONNECTED AT CENTRE.
- WELD SIZES SHALL BE DETERMINED BY THE THICKEST MEMBER JOINED, MINIMUM WELD SIZE SHALL BE 5mm FILLET FOR MATERIAL THICKNESSES UP TO AND INCLUDING 15mm, 6mm FILLET WELD FOR THICKNESSES OVER 15mm TO 20mm, AND 8mm FILLET FOR THICKNESSES OVER 20mm. ALL WELDS SHALL BE SINGLE PASS WELDS.

**FRAMED FABRIC STRUCTURES**

- DESIGN BUILDING AS SPECIFIED USING DESIGN CRITERIA SHOWN. REFER TO SPECIFICATION SECTION 13122.
- ANCHOR BOLTS FOR ANCHORING THE STRUCTURES TO CONCRETE FOUNDATIONS TO BE DESIGNED BY THE BUILDING MANUFACTURER. ANCHORAGE DESIGN SHALL INCLUDE DETERMINATION OF ANCHOR BOLT DIAMETERS, EMBEDMENT DEPTHS EDGE DISTANCES AND LAYOUTS.
- CONTRACTOR TO VERIFY THAT CONCRETE FOUNDATION WALLS SHOWN ON THE DRAWINGS HAVE ADEQUATE DIMENSION TO ACCOMMODATE STRUCTURAL FRAME BASE PLATES SUPPLIED BY MANUFACTURER.
- REFER TO MECHANICAL AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR EQUIPMENT TO BE SUPPORTED BY FRAMED FABRIC STRUCTURE. COORDINATE LOADING AND CONNECTION DETAILS WITH EQUIPMENT MANUFACTURERS.



B.M. ELEV.			
CONSTRUCTION COMPLETION DATE: YYYY MM DD			
DESIGNED BY	KS	CHECKED BY	RP
DRAWN BY	JK	APPROVED BY	BM
SCALE:		RELEASED FOR CONSTRUCTION	
HORIZONTAL	AS SHOWN	DATE	
VERTICAL	AS SHOWN	DATE	
0	ISSUED FOR CONSTRUCTION	13/01/25	JK
NO.	REVISIONS	DATE	BY

**CH2MHILL**

DESIGNED BY: KS, CHECKED BY: RP, DRAWN BY: JK, APPROVED BY: BM

SCALE: HORIZONTAL AS SHOWN, VERTICAL AS SHOWN

DATE: 2013 01 25

PLOT DATE: 2013 02 12

ENGINEER'S SEAL

CONSULTANT DRAWING NUMBER: S-001

THE CITY OF WINNIPEG  
WATER AND WASTE DEPARTMENT  
ENGINEERING DIVISION

BRADY ROAD RESOURCE MANAGEMENT FACILITY  
LEAF AND YARD WASTE AND PILOT BIOSOLIDS COMPOSTING

STRUCTURAL GENERAL NOTES

SHEET 16 OF 45  
CITY DRAWING NUMBER  
1-0400B-S0001-001-00