

3 MATERIALS AND FABRICATION

- 3.1 STRUCTURAL STEEL:
- TO CAN/CSA-G40.21M
 - STEEL GIRDER FLANGES AND WEB PLATES: GRADE 350AT CATEGORY 3
 - OTHER STEEL PLATE: 350A
 - BRACING (DIAPHRAGMS AND PLAN BRACING): GRADE 350A.
 - ANY REQUIRED VARIATIONS REQUIRE MFR APPROVAL. IF NON WEATHERING STEEL IS APPROVED BY MFR, A CORROSION PROTECTION SYSTEM WILL BE REQUIRED.
 - COMPLETE ALL WELDS IN ACCORDANCE WITH CSA W59. WELD METAL OF PRIMARY TENSION MEMBERS AND FRACTURE CRITICAL MEMBERS SHALL MEET THE CVN TOUGHNESS REQUIREMENTS OF TABLE 10.14 OF CAN/CSA S6-06.
 - INSPECT ALL BUTT WELDS BY ULTRASONIC OR X-RAY EXAMINATION IN ACCORDANCE WITH CSA W59.
 - FABRICATOR TO BE CERTIFIED FOR DIVISION 1 OR 2 IN ACCORDANCE WITH CSA W47.1
 - FIELD WELDING BY COMPANY CERTIFIED TO CSA W47.1 DIVISION 1,2 OR 3
 - FABRICATE GIRDERS AS FRACTURE CRITICAL MEMBERS IN ACCORDANCE WITH CAN/CSA-S6-06, AS NOTED ON DESIGN DRAWINGS. STEEL PLATES FOR BOTTOM FLANGES AND WEBS SHALL CONFORM TO THE REQUIREMENTS FOR FRACTURE CRITICAL IN ACCORDANCE WITH CAN/CSA-S6-06 EXCEPT THAT CHARPY V-NOTCH TESTING RESULTS ARE ONLY REQUIRED ON A PER HEAT FREQUENCY.
 - MAKE ALL I-GIRDER FLANGE TO WEB WELDS USING SUBMERGED ARC WELDING.
 - WHERE SPECIFIED BY MFR, PAINT STEEL GIRDERS IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:
 - SURFACE PREPARATION: BLAST CLEAN TO SSPC SP-6
 - PAINT: HIGH SOLIDS, SELF-PRIMING EPOXY OR MOISTURE CURE URETHANE. SPECIFIC PAINT PRODUCT TO BE AMERLOCK 400 OR ALTERNATE EQUIVALENT PRODUCT. EQUIVALENT PRODUCTS MUST BE APPROVED BY MFR PRIOR TO USAGE.
 - PAINT SHALL BE UTILIZED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS
 - MINIMUM 2 COATS
 - MINIMUM 8 MILS DRY FILM THICKNESS
 - COLOUR BY MFR
 - SHOP TRIAL FIT ALL FIELD SPLICES UNLESS CNC EQUIPMENT IS USED.
- 3.2 STRUCTURAL BOLTS:
- ALL BOLTS INCORPORATED INTO STEEL GIRDER CONNECTIONS (BOLTED FIELD SPLICES, DIAPHRAGMS AND BRACING) TO BE ASTM A325 TYPE 3 M22 U.N.O. INSTALLED IN ACCORDANCE WITH CAN/CSA-S6-06
- 3.3 STUDS:
- SHEAR STUDS SHALL MEET THE REQUIREMENTS OF CSA W59 APPENDIX H FOR TYPE A AND B STUDS
 - ASTM A108 GRADE 1015, 1018, 1020
- 3.4 GALVANIZING:
- ALL ITEMS SPECIFIED AS GALVANIZED ARE TO BE GALVANIZED TO CSA G164.
- 3.5 REINFORCING:
- TO CAN/CSA G30.18M GRADE 400R
 - REINFORCING STEEL MUST NOT BE WELDED OR TACK WELDED
- 3.6 PRECAST CONCRETE:
- CSA A23.1 EXPOSURE CLASS C1, $f_c = 35 \text{ MPa}$ AT 28 DAYS
 - PRECAST CONCRETE TO BE FABRICATED IN ACCORDANCE WITH CSA A23.4 BY A PLANT CERTIFIED IN ACCORDANCE WITH CSA A23.4
 - FABRICATION TOLERANCES TO CSA-A23.4
 - FINISH TO BE TRANSVERSE BROOM TO TOP OF DECK PANELS, OTHERWISE TO CSA-A23.1 AND A23.4.
 - ALL CORNERS TO COME WITH 20X20 CHAMFER U.N.O. ON THE APPLICABLE STANDARD DRAWING.
- 3.7 GROUT:
- GROUT MIN $f_c = 35 \text{ MPa}$ AT 28 DAYS, INSTALLED ACCORDING TO MANUFACTURER'S INSTRUCTIONS
 - GROUT FOR BLOCK-OUTS SHALL BE TARGET TRAFFIC PATCH WITH FINE AGGREGATE, OR ALTERNATE EQUIVALENT PRODUCT. EQUIVALENT PRODUCTS MUST BE APPROVED BY MFR PRIOR TO USE.
 - COLD WEATHER GROUTING:
 - WHERE IT IS ANTICIPATED THAT THE TEMPERATURE SHALL DROP BELOW 5°C DURING GROUTING, THE CONTRACTOR SHALL IMPLEMENT COLD WEATHER CONCRETING PROCEDURES IN ACCORDANCE WITH CAN/CSA A23.1. PRIOR TO COMMENCING THE GROUTING OPERATION, THE CONTRACTOR SHALL PROVIDE MFR WITH WRITTEN COLD WEATHER CONCRETING PROCEDURES.
- 3.8 BEARINGS:
- TO CAN/CSA-S6-06: OZONE RESISTING NATURAL RUBBER, (NATURAL POLYISOPRENE).
 - WHERE EXPANSION JOINTS ARE USED, ENGINEER TO INCLUDE SUFFICIENT INFORMATION TO FACILITATE INSTALLATION AT VARIOUS TEMPERATURES.
- 3.9 COUPLERS
- COUPLERS SHALL CONFORM TO ASTM A563 GRADE A MIN TENSILE STRENGTH OF 120% OF THE YIELD STRENGTH OF THE ELEMENTS BEING CONNECTED OR AS SPECIFIED ON THE STANDARD DRAWINGS.

4 TRANSPORTATION AND ERECTION OF BRIDGES

- 4.1 SUPPORT STEEL GIRDERS IN SUCH A WAY THAT THEY SUSTAIN NO DAMAGE DURING TRANSPORTATION. WHEN TRANSPORTING STEEL GIRDERS ON THE FLAT, PROVIDE A TRANSPORTATION PLAN PREPARED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF BRITISH COLUMBIA.
- 4.2 LIFTING DEVICES:
- ALL PRECAST COMPONENTS (EXCEPT CONCRETE ROADSIDE BARRIERS AND UNREINFORCED INTERLOCKING CONCRETE BLOCKS) MUST UTILIZE BURKE LIFTING INSERTS (OR PREAPPROVED EQUIVALENT) AS LIFTING DEVICES. GROUT RECESS AFTER INSTALLATION.
 - ENGINEER TO DESIGN LIFTING INSERTS TO FACILITATE LIFTING USING FOUR EQUAL LENGTH SLINGS/CHAINS.
 - ONLY LOW IMPACT LIFTS ARE PERMITTED. ANGLE OF LIFT MUST NOT EXCEED 30 DEGREES FROM VERTICAL.
- 4.3 STEEL GIRDERS SHALL BE CLEAN AND FREE OF SHOP MARKS.

5 CERTIFICATION AND QUALITY CONTROL

- 5.1 PROVIDE CONCRETE TEST RESULTS BY AN APPROVED TESTING LABORATORY FOR ALL PRECAST CONCRETE COMPONENTS AND FOR FIELD GROUTING.
- 5.2 FIELD GROUT SAMPLES FOR THE BLOCKOUTS CAN COMPRISE 50 mm CUBE SAMPLES OR 50 mm DIAMETER X 100 mm CYLINDERS.
- 5.3 PROVIDE MILL CERTIFICATES FOR ALL STEEL INCORPORATED INTO THE STRUCTURE.
- 5.4 CERTIFICATION TO CSA STANDARDS FOR THE STEEL AND PRECAST CONCRETE MANUFACTURERS MUST BE IN EFFECT AT THE TIME OF TENDER OPENING AND THROUGHOUT THE MANUFACTURING PERIOD.

**ASSUME NOT TO SCALE
NOT FOR CONSTRUCTION**



SCALE AS SHOWN		Designed <u>J.H.</u>	Date <u>MAR 2010</u>	STANDARD BRIDGE DRAWING STANDARD STEEL GIRDER BRIDGE WITH NON-COMPOSITE DECK GENERAL NOTES - SHEET 2	
		Checked <u>D.J.H.</u>	Date <u>MAR 2010</u>		
		Drawn <u>W.R.</u>	Date <u>MAR 2010</u>	ORIGINAL SIGNED and SEALED BY:	
				JULIEN HENLEY	
				APPROVED BY:	
				MOF ENGINEER	
				DATE	
				JULIEN HENLEY	
				DATE	
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