ALL STEEL PORTABLE STRUCTURE

1. DESIGN USAGE

1.1 ALL STEEL PORTABLE BRIDGES, AS SHOWN IN THESE CONCEPTUAL STANDARD DRAWINGS, ARE INTENDED TO BE USED ONLY FOR TEMPORARY BRIDGING APPLICATIONS, WITH MINIMAL BRIDGE DECK GRADES, WHERE BRAKING AND TURNING VEHICLE ACTIONS ARE NOT ANTICIPATED, AND WHERE TRAFFIC SPEEDS ARE LOW. OTHER STRUCTURE CONFIGURATIONS ARE RECOMMENDED FOR CROSSINGS THAT ARE REQUIRED FOR LONGER TIME FRAMES, HAVE STEEP GRADES, OR REQUIRE VEHICLE BRAKING OR TURNING ACTION ON THE STRUCTURE, AND HIGHER TRAFFIC SPEEDS.

2. DEFINITIONS

2.1 DESIGN ENGINEER: PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF BRITISH COLUMBIA EXPERIENCED IN THE DESIGN OF STEEL PORTABLE BRIDGES FOR INDOOR AND OUTDOOR USE.

2.2 MINISTRY REGIONAL ENGINEER: PROFESSIONAL ENGINEER DESIGNATED BY THE MINISTRY OF FORESTS AND RANGE.

3. GENERAL

3.1 DETAIL STRUCTURAL ENGINEERING TO BE COMPLETED BY DESIGN ENGINEER, DOCUMENTED CONCEPT REVIEW IN ACCORDANCE WITH APEDIC B(2).1(14) SHALL BE UPON REQUEST BY MINISTRY OF FOREST AND RANGE BE PROVIDED TO THE MINISTRY REGIONAL ENGINEER.

3.2 NO TRUSS OR OPEN WEB TYPE BRIDGES WILL BE ACCEPTED UNLESS APPROVED BY MINISTRY REGIONAL ENGINEER.

3.3 SIGN PLATES TO BE PROVIDED AT BEARING LOCATION IF REQUIRED BY CONTRACT SPECIFICATIONS.

3.4 DELEMATORS TO BE PROVIDED AS REQUIRED BY CONTRACT SPECIFICATIONS.

3.5 ALL BRIDGES TO BE SUPPLIED WITH PUNTIFFY LIFTING BRACKETS (INCL. SHOVELS) TO ALLOW BRIDGE TO BE LIFTED BY EXCAVATOR.

3.6 NAME PLATE: ALL BRIDGES SHALL HAVE THEIR STRUCTURE NUMBER, MODULE WEIGHT, DATE OF FABRICATION, LOAD RATING, MANUFACTURER'S NAME AND MINISTRY OF FOREST AND RANGE PERMANENTLY MARKED ON EACH MODULE, MIN. HEIGHT OF LETTERING 50 MM.

3.7 WHERE WEB INCLINATION EXCEEDS 20 DEGREE FROM THE VERTICAL, PRIOR APPROVAL IS REQUIRED FROM THE MINISTRY REGIONAL ENGINEER.

3.8 LOADING AS DEFINED IN CONTRACT SPECIFICATIONS AND IN ACCORDANCE WITH CAN/CSA-S6 AND MINISTRY SERVICE BRIDGE DESIGN AND CONSTRUCTION MANUAL, 1989.

3.9 LIVE LOAD:

- CLASS: AS SPECIFIED BY CAN/CSA-S6-89
- KEPS, L1, L2, AND L1L1 AS SPECIFIED BY MINISTRY SERVICE BRIDGE DESIGN AND CONSTRUCTION SPECIFICATIONS, 1995.

3.10 FATIGUE:

- BASED ON 400,000 LOADED CYCLES CROSSING STRUCTURE ACTUAL NUMBER OF STRESS CYCLES DEPENDANT ON ELEMENT BEING EVALUATED, DESIGN ENGINEER TO DETERMINE ACTUAL NUMBER OF STRESS CYCLES.
- FATIGUE EVALUATION COMPLETED ASSUMING 50-50 LOAD DISTRIBUTION AND TRUCK CENTRED ON ROADWAY.
- FOR BRIDGES DESIGNED TO CLASS FATIGUE EVALUATION TO BE BASED ON 100% OF CLASS DESIGN VEHICLE AND 50-50 STRESS RANGES.
- FOR BRIDGES DESIGNED TO BOIL'S L100 AND L150 FATIGUE EVALUATION TO BE BASED ON 100% OF DESIGN VEHICLE AND 50-50 STRESS RANGES.
- FOR BRIDGES DESIGNED TO BOIL'S L150 FATIGUE EVALUATION TO BE COMPLETED USING BOIL'S L150 AS NOTED ABOVE.

3.11 MAXIMUM LIVE LOAD DEFLECTION: SPAN 390 FRAME, CENTERED IN ROADWAY: 50-50 LOAD DISTRIBUTION, INCLUDES OLA DEFLECTION TO BE CALCULATED USING SPECIFIED DESIGN VEHICLE EXCEPT FOR BOIL'S L150 WHERE DEFLECTION TO BE CALCULATED USING BOIL'S L150.

4. MATERIALS & FABRICATION

4.1 STEEL FABRICATION: FABRICATOR TO BE CERTIFIED FOR DIVISION 1 OR 2 IN ACCORDANCE WITH CSA-W171.

4.2 STEEL: CSA G40.21M GRADE 350 (C350 T3 STEEL PLATE) GRADE 350 (ROLLED SECTIONS) GRADE 350 (TUBE) HSS

4.3 BOLTS: ASTM A325 TYPE 3

4.4 WELDING:

- ALL WELDS TO CONFORM TO CSA W59

- WELD SYMBOLS SHOWN AS PER SPECIFICATIONS

- WELD TYPES, WELD SIZE TO BE DETERMINED BY DESIGN ENGINEER

- INSPECTION OF WELDING SHALL MEET THE REQUIREMENTS OF CSA W59

- ALL BUTT WELDS ON THE FLANGE, WEB, & DECK SHALL BE RADIAGRAPHIC OR ULTRASONIC TESTED IN ACCORDANCE WITH CSA W59

- THE WELDING PROCEDURE DATA SHEETS, AS PER CSA W59, SHALL BE AVAILABLE FOR REVIEW PRIOR TO FABRICATION.

- THE DESIRED OBJECTIVE FOR FLANGE TO WEB WELDS IS THAT THEY BE MADE AS CONTINUOUS, UNINTERRUPTED, AND UNIFORM WELDS FREE OF ABNORMALITIES THAT COULD RESULT IN STRESS CONCENTRATIONS.

- GENERALLY WEB TO FLANGE WELDS SHALL BE MADE CONTINUOUSLY BY MACHINE OR AUTOMATIC WELDING USING SUBMERGED ARC WELDING, TIG WELDING, FLUX CORED ARC WELDING OR METAL CORED ARC WELDING.

- THERE MAY BE INSTANCES WHERE THE MINISTRY MAY ACCEPT ANDER WELDS TO PLANGE WELDS WITH STOPS AND STARTS IN THE DEPOSITION OF WELD MATERIAL (E.G. AT PLATE DIAPHRAGM LOCATIONS ON BOX GIRDERS, AT CERTAIN ENDS OF GIRD OR LOCATIONS WITH LIMITED ACCESS, OR UPON OCCASIONS OF UNEXPECTED POWER OUTAGES); HOWEVER, CONTINUOUS WELDS MADE BY AUTOMATIC OR MACHINE METHODS ARE REQUIRED WHENEVER IT IS REASONABLY PHYSICALLY POSSIBLE (E.G. WELDS MADE ON THE OUTSIDE OF ALL STEEL PORTABLE BOX GIRDERS, AND INTERIOR WELDS ON ALL STEEL PORTABLE BOX GIRDERS EXCEPT AS PREVIOUSLY NOTED IN THIS MANUAL).

- WELDS REQUIRING REPAIRS, THEMAY BE REPAIRED USING A SEMI-AUTOMATIC OR MANUAL PROCESS, BUT THE REPAIRED WELD SHALL BE SMOOTH WITH THE ADJACENT WELDS. WELD REPAIRS SHALL BE UNDERTAKEN IN ACCORDANCE WITH CSA W59.

4.5 WEARING SURFACE: SURFACE PREPARATION (SAND/BLAST) TO SSPC-SP11, COATING AMERILOK 400 EQUVALENT EPOXY COATING APPROVED BY MINISTRY REGIONAL ENGINEER (GW 402 GRIT SAND TO PROVIDE ANTI-SKID WEARING SURFACE.

4.6 GUARD RAILS & FOOTPLATES: SURFACE PREPARATION AND PAINTING AS PER MINISTRY SPECIFICATIONS.

4.7 WEARING PLATE TO BE DESIGNED TO ALLOW BRIDGE TO BE SUPPORTED ON FULL WIDTH DPFR NO. 2 TIMBER SLAB (MIN. WIDTH 400 MM).

ASSUME NOT TO SCALE
NOT FOR CONSTRUCTION

MADE AS SHOWN

TYPICAL ALL STEEL PORTABLE SUPERSTRUCTURE
CONCEPTUAL GENERAL ARRANGEMENT SHEET 2 OF 2

RESOURCE TERRITORY & ENGINEERING BRANCH

PROVINCE OF BRITISH COLUMBIA

STANDARD BRIDGE DRAWING

DATE: JUNE 2018

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MILE 06-090-02-0

REV. 01

TYPICAL ALL STEEL PORTABLE SUPERSTRUCTURE
CONCEPTUAL GENERAL ARRANGEMENT SHEET 2 OF 2

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