

1. **GENERAL**
 1.1 THESE STANDARD DRAWINGS APPLY TO THE DESIGN AND SUPPLY OF SIMPLE SPAN SINGLE LANE STEEL GIRDER BRIDGES WITH TIMBER DECKS. THE STANDARD DRAWINGS PROVIDE DESIGN GUIDELINES AND STANDARD DETAILS.

1.2 VARIATIONS FROM THE STANDARD DESIGN REQUIREMENTS MAY BE ACCEPTABLE IN CERTAIN SPECIAL SITUATIONS. ALL SUCH VARIATIONS SHALL BE DOCUMENTED AND REQUIRE APPROVAL FROM THE MINISTRY PRIOR TO USE.

1.3 A PROFESSIONAL ENGINEER REGISTERED TO PRACTICE IN THE PROVINCE OF BRITISH COLUMBIA SHALL DESIGN ALL BRIDGE GIRDER ELEMENTS.

1.4 DEFINITIONS
 - ENGINEER:
 - A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF BRITISH COLUMBIA EXPERIENCED IN THE DESIGN OF TIMBER DECK ON STEEL GIRDER BRIDGES, WHO IS RESPONSIBLE FOR THE DETAILED STRUCTURAL DESIGN OF A BRIDGE IN CONFORMANCE WITH THESE DRAWINGS
 - MINISTRY ENGINEER
 - A PROFESSIONAL ENGINEER DESIGNATED BY THE MINISTRY

1.5 APPLICABLE OVERALL BRIDGE GIRDER LENGTH (OUT-TO-OUT):
 - TYPICAL APPLICABLE OVERALL TIMBER DECK ON STEEL GIRDER BRIDGE GIRDER LENGTH IS 6.096 m (20 FEET) TO 30.48 m (100 FEET)
 - OVERALL BRIDGE GIRDER LENGTHS GREATER THAN 30.48M OR CONTINUOUS MULTI-SPAN BRIDGES WILL REQUIRE SPECIAL INVESTIGATION DETAILS TO BE APPROVED BY THE MINISTRY PRIOR TO DESIGN AND USE.

1.6 STANDARD DECK WIDTHS
 - THE FOLLOWING TABLE SPECIFIES STANDARD DECK WIDTHS FOR THE DESIGNATED DESIGN VEHICLES

DESIGN VEHICLE	STANDARD DECK WIDTH (mm)
BCL625, L100	4268 (14 FEET)
L150, L165	4876 (16 FEET)

1.7 STANDARD GIRDER SPACINGS
 - THE FOLLOWING TABLE SPECIFIES STANDARD GIRDER SPACINGS FOR SEVERAL DECK WIDTHS

DECK WIDTH mm (FEET)	STANDARD GIRDER SPACING (mm)
4268 (14 FEET)	3000
4876 (16 FEET)	3600

1.8 TIMBER DECK CROSS TIE DIMENSIONS:

Load Type	Girder Spacing (mm)	Tie Size (mm X mm)	Maximum Tie Spacing (mm)
BCL-625	3000	200x250	406
BCL-625	3600	200x250	406
L-100	3000	200x300	406
L-100	3600	200x300	406
L-150	3000	250x300	406
L-150	3600	250x300	406
L-165	3000	250x300	305
L-165	3600	250x300	305

1.9 SUPERSTRUCTURE IDENTIFICATION MARKING:
 - PER MINISTRY BRIDGE IDENTIFICATION STANDARD

ASSUME NOT TO SCALE
ORIGINAL SIGNED AND SEALED

1.10 BOLTED GIRDER FIELD SPLICES:
 - PROVIDE BOLTED FIELD SPLICES ON ALL BRIDGE SPANS PROCURED THROUGH A DESIGN/SUPPLY CONTRACT FOR GIRDERS WITH AN OVERALL LENGTH (OUT-TO-OUT) LENGTH > 24.384 m (80 FEET) UNLESS APPROVED BY THE MINISTRY
 - WHERE THE CONTRACT IS DESIGN/SUPPLY AND INSTALL, BOLTED FIELD SPLICES SHALL BE PROVIDED AT THE DISCRETION OF THE ENGINEER

1.11 DIAPHRAGMS:
 - PROVIDE DIAPHRAGMS AT BEARING LOCATIONS
 - PROVIDE INTERNAL DIAPHRAGMS AS REQUIRED. MAXIMUM SPACING OF INTERNAL DIAPHRAGMS NOT TO EXCEED 8.0 m

1.12 PLAN BRACING:
 - PROVIDE CONTINUOUS PLAN BRACING ON ALL BRIDGES.

1.13 COMPONENT WEIGHTS
 - THE FOLLOWING COMPONENT WEIGHTS SHALL BE SPECIFIED ON THE DESIGN DRAWING:
 - GIRDER WEIGHT – SINGLE GIRDER
 - ASSEMBLED STEEL GIRDERS PLUS BRACING, DIAPHRAGMS AND BEARING/SKID PLATES – TOTAL WEIGHT
 - TIMBER COMPONENT WEIGHTS (DECK, BALLAST WALL, CAPS AND FOOTINGS)

2. **GIRDER DESIGN**

2.1 DESIGN LIFE: BRIDGE DESIGN LIFE: 45 YEARS

2.2 DESIGN CODE AND THE MINISTRY REFERENCE STANDARDS:
 - DESIGN IN ACCORDANCE WITH CAN/CSA-S6 & VARIATIONS TO COMPENSATE FOR PECULIARITIES OF LOGGING TRUCK LOADS
 - MINISTRY BRIDGE DESIGN AND CONSTRUCTION MANUAL
 - MINISTRY BRIDGE DESIGN GUIDELINES

2.3 DESIGN VEHICLES
 - REFER TO MINISTRY STANDARD DRAWING STD-EC-000-01 TO STC-EC-000-02
 - THE DESIGN DRAWINGS SHALL CLEARLY SPECIFY THE DESIGN VEHICLE THAT WAS USED FOR THE BRIDGE DESIGN

2.4 MULTI-LANE LOADING
 - WHERE A BRIDGE IS ABLE TO SIMULTANEOUSLY SUPPORT MORE THAN ONE LANE OF TRAFFIC, THE DESIGNER SHOULD SEEK CLARIFICATION FROM THE MINISTRY ON HOW TO ACCOUNT FOR MULTI-LANE LOADING.

2.5 DYNAMIC LOAD ALLOWANCE:
 - DYNAMIC LOAD ALLOWANCE SHALL BE APPLIED IN ACCORDANCE WITH CAN/CSA-S6.

2.6 FATIGUE DESIGN FOR STEEL GIRDERS
 - FATIGUE DESIGN TO BE COMPLETED IN ACCORDANCE WITH CAN/CSA-S6 WITH THE FOLLOWING MODIFICATIONS:
 - DESIGN VEHICLE:
 - AS PER PROJECT SPECIFICATIONS
 - FOR L165 USE L150 FOR FATIGUE DESIGN LOAD
 - FATIGUE DESIGN VEHICLE TO BE CENTERED ON BRIDGE
 - LATERAL WHEEL LOAD DISTRIBUTION: 50% - 50%
 - FATIGUE STRESS RANGE
 $f_{sr} < FSR$
 WHERE:
 f_{sr} = THE CALCULATED STRESS RANGE AT THE DETAIL DUE TO THE PASSAGE OF THE DESIGN VEHICLE
 FSR = FATIGUE STRESS RANGE RESISTANCE
 - NUMBER OF DESIGN CYCLES:
 - 500 000 FOR SPANS > 12 m
 - 1 000 000 FOR SPANS ≤ 12 m

2.7 FRACTURE CRITICAL AND PRIMARY TENSION COMPONENTS
 - ENGINEER TO SPECIFY FRACTURE CRITICAL AND PRIMARY TENSION COMPONENTS ON THE DESIGN DRAWINGS

2.8 MAXIMUM LIVE LOAD DEFLECTION OF STEEL GIRDERS:
 - BRIDGES MUST BE DESIGNED SO THAT LIVE LOAD DEFLECTION (CALCULATED AS THAT CAUSED BY ONE TRUCK ONLY, PLACED AT THE CENTRE LINE OF THE TRAVELLED ROADWAY, DYNAMIC LOAD ALLOWANCE INCLUDED) DOES NOT EXCEED L/450. WHERE USING THE L165 DESIGN VEHICLE, THE DEFLECTION SHALL BE CALCULATED USING THE L150 DESIGN VEHICLE

2.9 SEISMIC DESIGN:
 - SEISMIC DESIGN NOT REQUIRED UNLESS OTHERWISE SPECIFIED.

2.10 CONSTRUCTION LOAD:
 - ENGINEER MUST CONSIDER THE WEIGHT OF MATERIALS, WORK CREWS AND EQUIPMENT SUPPORTED DURING CONSTRUCTION WHEN DESIGNING THE BRIDGE. ENGINEER MUST SPECIFY MAXIMUM PERMISSIBLE CONSTRUCTION EQUIPMENT LOADS ON THE DRAWINGS
 - WHERE A BRIDGE WILL BE INSTALLED UNDER A SEPARATE CONTRACT FROM THE DESIGN/SUPPLY CONTRACT FOR THE MAIN BRIDGE COMPONENTS, AS A MINIMUM, UNLESS OTHERWISE SPECIFIED BY THE MINISTRY, THE DESIGNER SHALL CONSIDER THE FOLLOWING MINIMUM CONSTRUCTION LOADS:
 - SELF WEIGHT OF THE STRUCTURE, SUPPORTED AT THE BEARINGS, INCLUDING DECK
 - A VERTICAL LIVE LOAD OF 445 KN (40 TON EQUIPMENT + 10 TON LOAD) DISTRIBUTED OVER A LENGTH OF 4 m, POSITIONED ON THE BRIDGE TO PRODUCE THE MAXIMUM EFFECT; ECCENTRICITY = 100 mm
 - LOAD FACTORS IN ACCORDANCE WITH CAN/CSA-S6-06
 - MIN DLA = 10% (ASSUMED DESIGN SPEED = 10 Km /hr)



**MINISTRY OF FORESTS, LANDS AND NATURAL
 RESOURCE OPERATIONS
 ENGINEERING BRANCH**

SCALE		AS SHOWN		Designed _____ Date: _____	
				Checked _____ Date: _____	
				Drawn _____ Date: _____	
Rev.	Date	DESCRIPTION	Init		
REVISIONS					

STANDARD BRIDGE DRAWING	
TIMBER DECK BRIDGES GENERAL NOTES – SHEET 1	
ORIGINAL SIGNED and SEALED BY:	FLNR ENGINEER: DATE
DESIGN ENGINEER	APPROVED BY: BRIAN CHOW, P.Eng. CHIEF ENGINEER
DATE	DATE
FILE No.	DRAWING No.
	STD-EC-020-01