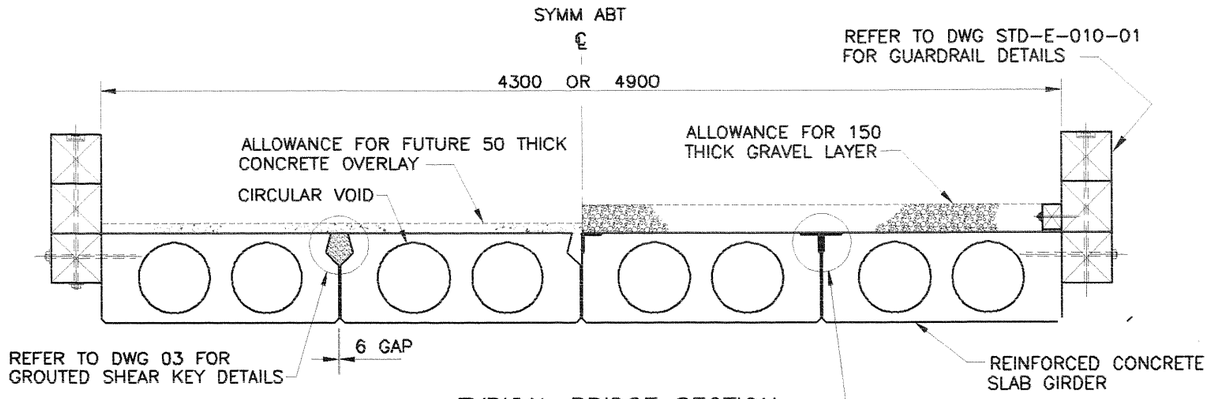

TYPICAL BRIDGE SECTION

1:30

1. GENERAL

1.1 THESE PRESTRESSED CONCRETE SLAB GIRDER DRAWINGS ILLUSTRATE THE FOLLOWING PRIMARY GIRDER VARIATION (ALL BRIDGES HAVE 4 GIRDERS):

- BRIDGE WIDTH: 4.3m OR 4.9m
- SHEAR KEYS: GROUTED OR FIELD WELDED OR NO SHEAR KEYS.

1.2 ALL GIRDERS HAVE TWO VOIDS/GIRDER.

1.3 BRIDGE TO BE CLEARLY AND PERMANENTLY IDENTIFIED IN ACCORDANCE WITH SECTION 4.3 OF FOREST SERVICE BRIDGE DESIGN AND CONSTRUCTION MANUAL. LETTERING TO BE AT LEAST 50mm HIGH.

2. DESIGN CRITERIA

2.1 DESIGN CONFORMS TO CAN/CSA-S6-88 "DESIGN OF HIGHWAY BRIDGES" WITH VARIATIONS LIMITED TO SECTION 3 OF FOREST SERVICE BRIDGE DESIGN AND CONSTRUCTION HANDBOOK.

2.2 DESIGN VEHICLES ARE L-75, L-100 L-150 OR L-165 DESIGN LOGGING TRUCKS. REFER TO FOREST SERVICE BRIDGE DESIGN AND CONSTRUCTION MANUAL FOR DESIGN VEHICLE LOADING DETAILS.

2.3 DESIGN VEHICLES HAVE TWO LIMITING LATERAL ECCENTRICITIES:

- E1: 400mm OFF CENTERLINE
- E2: OUTSIDE WHEEL 600mm FROM GUARDRAIL

2.4 LIMIT STATE LOAD CASES FOR E1 AND E2:

- SERVICEABILITY: E1 (EXCEPT FATIGUE)
- ULTIMATE: E1 AND E2

2.5 ONE LINE OF WHEELS ASSUMED TO BE 60% OF TOTAL AXLE WEIGHT FOR E1 AND E2.

2.6 DYNAMIC LOAD ALLOWANCE 30%.

2.7 FATIGUE DESIGN IS FOR 500,000 CYCLES OF DESIGN VEHICLE ON BRIDGE CENTRELINE WITH BALANCED LOADING (50/50 WHEELS).

2.8 MAXIMUM GIRDER LIVE LOAD SERVICEABILITY LIMIT STATE DEFLECTION SPAN/350. MAXIMUM DIFFERENTIAL DEFLECTION BETWEEN ADJACENT GIRDERS WITH NO SHEAR KEYS IS 30mm.

2.9 MAXIMUM SERVICEABILITY REINFORCEMENT FATIGUE STRESS RANGE 161 MPa (ONTARIO HIGHWAY BRIDGE DESIGN CODE CLAUSE C8-5.3.1 THIRD EDITION)

2.10 NO TENSILE IN-SERVICE STRESSES PERMITTED IN TOP FLANGE.

2.11 GIRDERS WITH WELDED SHEAR KEYS DESIGNED TO CARRY ONE LINE OF WHEELS (60% TOTAL AXLE WEIGHT) IN THE EVENT OF FAILURE OF SHEAR KEY WELDS.

2.12 THE SERVICEABILITY LIFE OF THE WELDED SHEAR KEYS IS UNCERTAIN AND WILL PROBABLY BE LESS THAN 50 YEARS. WELDS SHOULD BE INSPECTED REGULARLY AND WELD FAILURES REPAIRED.

ASSUME NOT TO SCALE

3. CONCRETE

3.1 REFER TO TABLE 2 (DWG 03), TABLE 10 (DWG 04) AND TABLE 18 (DWG 05). FOR CONCRETE STRENGTH AT 28 DAYS.

3.2 MINIMUM CONCRETE STRENGTH IS 30 MPa FOR RELEASE OF STRANDS, ERECTION OF GIRDERS OR PASSAGE OF UNLOADED LOGGING TRUCKS.

3.3 BOTTOM EDGES OF GIRDERS CHAMFERED 20mm.

3.4 TOP OF GIRDERS TO HAVE TRANSVERSE BROOM FINISH OR FLOAT FINISH AS SPECIFIED.

3.5 GIRDER ERECTION WEIGHTS BASED ON AVERAGE DENSITY OF 2500 kg/m^3.

3.6 HARDWARE GALVANIZING (WHERE SPECIFIED) - 2 COATS OF GALVACON.

4. GROUT

4.1 GROUT TO BE NON-SHRINK WITH MINIMUM 28 DAY STRENGTH OF 30 MPa.

4.2 USE TARGET PORTLAND EXPANDING GROUT OR APPROVED EQUAL FOR NORMAL TEMPERATURES (10 DEG C OR WARMER).

4.3 USE EMACO T415 GROUT OR APPROVED EQUAL FOR COLDER TEMPERATURES (COLDER THAN 10 DEG C).

4.4 GROUT TO BE PREBAGGED AND MIXED AND PLACED IN ACCORDANCE WITH MANUFACTURER'S PROCEDURES.

4.5 MAXIMUM AGGREGATE SIZE 10mm.

5. PRESTRESSING STEEL

5.1 ALL STRANDS TO BE 13mm DIA LOW RELAXATION STRAND, 1862 MPa GRADE.

5.2 MINIMUM STRAND ULTIMATE TENSILE STRENGTH 184 KN/STRAND.

5.3 STRAND FORCE IMMEDIATELY AFTER RELEASE 138 KN/STRAND.

5.4 FULLY BONDED STRANDS USED. DEBONDING MAY BE USED WHEN APPROVED.

5.5 EXPOSED ENDS OF STRAND TO BE COATED WITH TWO COATS OF GALVACON.

6. REINFORCING STEEL

6.1 REINFORCING STEEL TO BE DEFORMED BARS CONFORMING TO CSA G30.18 GRADE 400.

6.2 NO WELDING OR MECHANICAL SPLICING OF REINFORCING PERMITTED.

6.3 LONGITUDINAL BAR SPLICES TO BE STAGGERED SO THAT NO MORE THAN EVERY THIRD BAR IS SPLICED AT ANY GIVEN SECTION.

7. TRANSPORTATION AND ERECTION

7.1 GIRDERS TRANSPORTED AND HANDLED WITH GIRDER TOP FLANGE (SHEAR KEYS) ALWAYS FACING UPWARDS. MANUFACTURER TO CHECK HANDLING STRESSES.

7.2 GIRDERS MUST BE SUPPORTED WITHIN 1 METRE OF BEARING LOCATIONS DURING TRANSPORTATION, STORAGE AND ERECTION (NO LAUNCHING).

7.3 LIFTING DEVICES SHALL COMPRISE LIFTING LOOPS OF 13mm DIA PRESTRESSING STRAND, 1862 MPa GRADE. STRAND TO BE CUT OFF 50mm BELOW CONCRETE SURFACE AND COATED WITH TWO COATS OF GALVACON. HOLE AROUND STRAND TO BE GROUTED. ALTERNATIVE LIFTING DEVICES MUST BE APPROVED PRIOR TO USE.

7.4 ONLY LOW IMPACT LIFTS ARE PERMITTED. ANGLE OF LIFT MUST NOT EXCEED 30 DEGREES FROM VERTICAL.

Rev	Date	Description	Init

ISSUE RECORD

SCALE

DESIGNED GWT DATE MAR/99
CHECKED GWT DATE MAR/99
DRAWN DG DATE MAR/99

Rev	Date	Description	Init

REVISIONS

Province of British Columbia
MINISTRY OF FORESTS
RESOURCE TENURES AND ENGINEERING BRANCH

STANDARD BRIDGE DRAWING

PRECAST PRESTRESSED CONCRETE SLAB GIRDERS
GENERAL NOTES

ORIGINAL SIGNED AND SEALED BY: GRAHAM W. TAYLOR, P.ENG.
DESIGN ENGINEER GRAHAM W. TAYLOR, P.ENG.
DATE
FILE No.

APPROVED BY:
MOF ENGINEER
DATE
DRAWING No. STD-E-080-01 A

CANCEL PRINTS BEARING PREVIOUS LETTER