BRITISH COLUMBIA

Ministry of Forests

STANDARD BRIDGE DRAWINGS:

STEEL GIRDER CONCRETE DECK

DRAWING SCHEDULE			
DRAWING NUMBER	DRAWING TITLE	REV.	DATE
STD-EC-030-01	GENERAL NOTES	1	JUNE 12, 2024
STD-EC-030-02	GENERAL ARRANGEMENT	1	JUNE 12, 2024
STD-EC-030-03	STEEL DETAILS	1	JUNE 12, 2024
STD-EC-030-04	DECK PANEL - TYPES	0	DECEMBER 4, 2023
STD-EC-030-05	REINFORCING PLAN - SQUARE & FLARED PANELS	0	DECEMBER 4, 2023
STD-EC-030-06	REINFORCING PLAN - SKEWED PANELS	0	DECEMBER 4, 2023
STD-EC-030-07	MISC. PANEL DETAILS	0	DECEMBER 4, 2023
STD-EC-030-08	PANEL BLOCKOUT & TRANSVERSE DECK JOINT DETAILS	0	DECEMBER 4, 2023
STD-EC-030-09	DECK END JOINT DETAILS	0	DECEMBER 4, 2023
STD-EC-030-10	DECK END ARMOUR OPTIONS	0	DECEMBER 4, 2023

1. GENERAL NOTES

1.1 THESE STANDARD DRAWINGS APPLY TO SINGLE LANE STEEL GIRDER BRIDGES WITH COMPOSITE (COMP.) OR NON-COMPOSITE (NON-COMP.) PRECAST CONCRETE DECK PANELS.

1.2 APPLICABLE BRIDGE GIRDER LENGTH (OUT-TO-OUT):
- COMPOSITE: 9.14 m (30') TO 39.624 m (130');
- NON-COMPOSITE: 6.1 m (20') TO 39.624 m (130').

1.3 SPECIAL INVESTIGATION AND MINISTRY ENGINEER APPROVAL WILL BE REQUIRED FOR UNUSUAL SITUATIONS INCLUDING BUT NOT LIMITED TO:
- GIRDER LENGTHS > THOSE SPECIFIED ABOVE;
- BRIDGE WIDTHS > STD. SINGLE LANE WIDTHS;
- MULTI-SPAN BRIDGES.

1.4 UNLESS OTHERWISE SPECIFIED ON THESE DRAWINGS, ALL WORK ASSOCIATED WITH THESE DRAWINGS SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE MINISTRY BRIDGE STANDARDS MANUAL (BSM) INCLUDING BUT NOT LIMITED TO:
- DESIGN;
- MATERIALS AND FABRICATION;
- LIFTING, TRANSPORTATION AND INSTALLATION; AND
- CERTIFICATION AND QUALITY CONTROL.

1.5 WHERE APPLICABLE, BARRIERS AND SUBSTRUCTURE COMPONENTS SHALL BE DETAILED IN ACCORDANCE WITH THE FOLLOWING MINISTRY STANDARD DRAWINGS:
- BARRIERS (STD-EC-010 SERIES); AND
- SUBSTRUCTURES (STD-EC-050 SERIES).

1.6 ALL DIMENSIONS IN mm UNLESS NOTED OTHERWISE.

1.7 NON-COMPOSITE BRIDGES ARE INTENDED TO BE USED AT MULTIPLE SITES OVER THEIR DESIGN LIFE. SQUARE PANELS ARE TO BE USED FOR NON-COMPOSITE BRIDGES SO THE BRIDGE WILL BE MOST ADAPTABLE FOR USE AT FUTURE BRIDGE SITES.

1.8 WHEN THESE DRAWINGS REFER TO DECK PANELS, "SQUARE" INDICATES THAT PANELS ARE NOT SKEWED OR FLARED. IT DOES NOT MEAN THAT ALL 4 SIDES OF A PANEL ARE EQUAL LENGTH.

1.9 THESE DRAWINGS HAVE COMBINED 2 PREVIOUSLY SEPARATE STANDARD DRAWING SETS (ONE FOR COMPOSITE BRIDGES AND ONE FOR NON-COMPOSITE BRIDGES) AND MOVED THE PREVIOUSLY SEPARATE STEEL ARMOUR FOR DECK ENDS STANDARD DRAWING INTO THIS SET.

1.10 THE ENGINEERS SPECIFIED IN THE TITLE BLOCK HAVE WORKED IN ACCORDANCE WITH THEIR FIRMS' ENGINEERS AND GEOSCIENTISTS BC PERMITS TO PRACTICE IN COMBINING THE PREVIOUS SETS AND UPDATING CERTAIN ASPECTS BUT HAVE NOT UNDERTAKEN DETAILED REVIEW OF ALL ASPECTS OF THE DRAWINGS. ENGINEERS SPECIFIED IN TITLE BLOCKS OF PREVIOUS DRAWING SETS WERE RESPONSIBLE FOR WORK RELATING TO ASPECTS OF THESE DRAWINGS THAT HAVE NOT BEEN REVISED. THE MINISTRY OWNS, AND RETAINS FULL OVERALL RESPONSIBILITY FOR, THESE DRAWINGS AND RETAINS THE SUPERSEDED DRAWINGS IN MINISTRY FILES.

1.11 SIGNIFICANT CHANGES MADE IN THIS STANDARD DRAWING SET ARE DESCRIBED IN THE BSM REVISION HISTORY.

1.12 MINISTRY STANDARD BRIDGE DRAWINGS PROVIDE STANDARDS THAT SHALL BE USED, WHERE APPROPRIATE, BY ENGINEERS RESPONSIBLE FOR SPECIFIC FOREST SERVICE ROAD (FSR) BRIDGE PROJECTS.

1.13 STANDARD BRIDGE DRAWINGS ARE NOT TO BE USED DIRECTLY FOR CONSTRUCTION (I.E.; FABRICATION AND/OR INSTALLATION.) PROJECT SPECIFIC GENERAL ARRANGEMENT AND STRUCTURAL DESIGN DRAWINGS SHALL BE PREPARED AND AUTHENTICATED BY AN ENGINEER.

1.14 ENGINEERS INVOLVED WITH SPECIFIC PROJECTS SHALL DETERMINE WHETHER STANDARD DRAWING REQUIREMENTS ARE APPROPRIATE FOR THEIR PROJECT. IF THEY DETERMINE THAT CERTAIN REQUIREMENTS ARE INAPPROPRIATE, THEY SHALL PROPOSE VARIATIONS FOR APPROVAL BY THE MINISTRY ENGINEER.

REV #	DATE	REVISION DESCRIPTION	DRAFTING	DESIGN	CHECK / REVIEW	APPROVAL
0	DEC. 4, 2023	UPDATED & COMBINED COMP. & NON-COMP. DWG. SETS.	N.HARVEY (CREEKSIDE)	M. PENNER (MINISTRY)	J. HENLEY (ASSOC. ENG.)	J. HARVEY (MINISTRY)
1	JUNE 12, 2024	MINOR REVISIONS	N.HARVEY (CREEKSIDE)	M. PENNER (MINISTRY)	J. HENLEY (ASSOC. ENG.)	J. HARVEY (MINISTRY)

BRITISH COLUMBIA | Ministry of Forests

STANDARD BRIDGE DRAWING

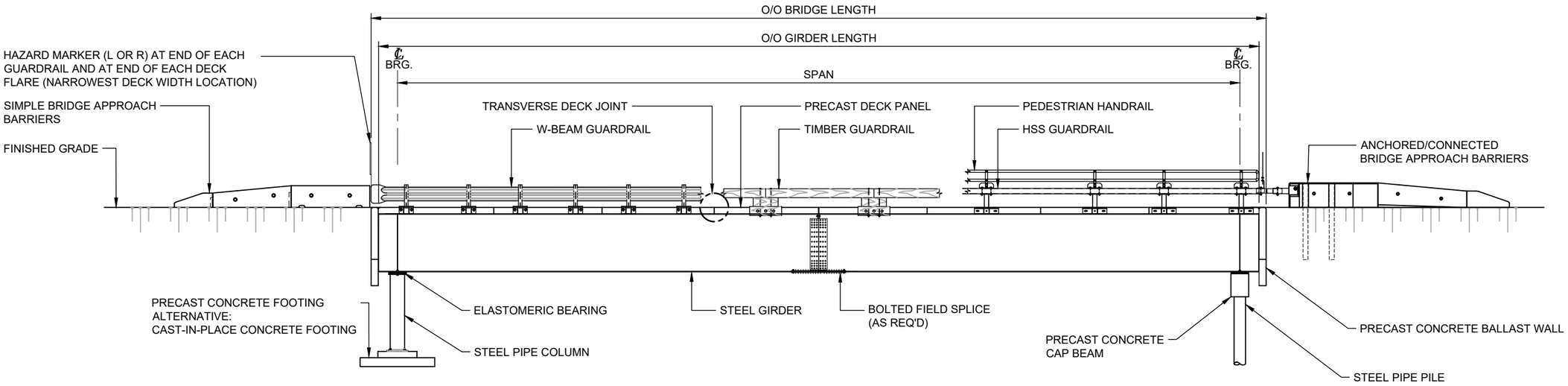
STEEL GIRDER CONCRETE DECK

SHEET 01 OF 10

GENERAL NOTES

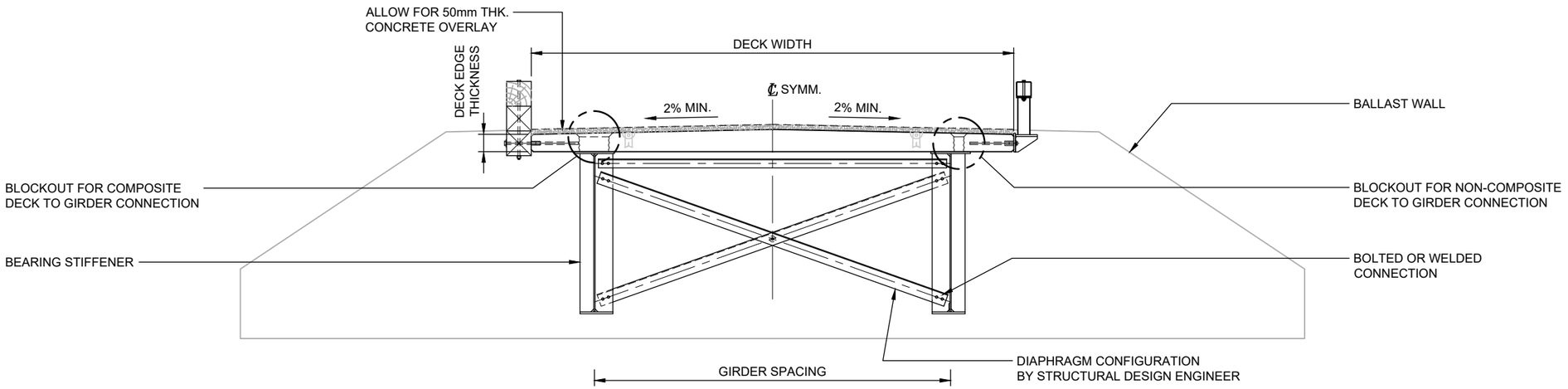
DWG #: STD-EC-030-01

NOT FOR CONSTRUCTION
ASSUME NOT TO SCALE



BRIDGE ELEVATION (SHOWING SOME TYPICAL STANDARD COMPONENTS AND OPTIONS)

1:125



BRIDGE SECTION (SHOWING SOME TYPICAL STANDARD COMPONENTS AND OPTIONS)

1:50

NOT FOR CONSTRUCTION
ASSUME NOT TO SCALE

REV #	DATE	REVISION DESCRIPTION	DRAFTING	DESIGN	CHECK / REVIEW	APPROVAL
0	DEC. 4, 2023	UPDATED & COMBINED COMP. & NON-COMP. DWG. SETS.	N.HARVEY (CREEKSIDE)	M. PENNER (MINISTRY)	J. HENLEY (ASSOC. ENG.)	J. HARVEY (MINISTRY)
1	JUNE 12, 2024	MINOR DRAFTING CHANGES	N.HARVEY (CREEKSIDE)	M. PENNER (MINISTRY)	J. HENLEY (ASSOC. ENG.)	J. HARVEY (MINISTRY)

BRITISH COLUMBIA | Ministry of Forests

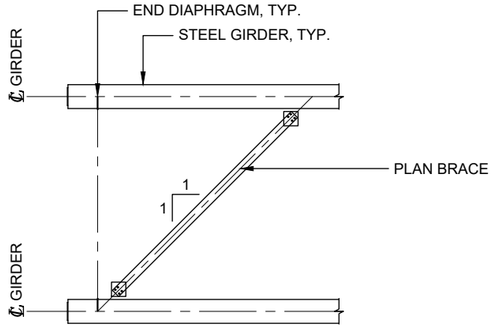
STANDARD BRIDGE DRAWING

STEEL GIRDER CONCRETE DECK

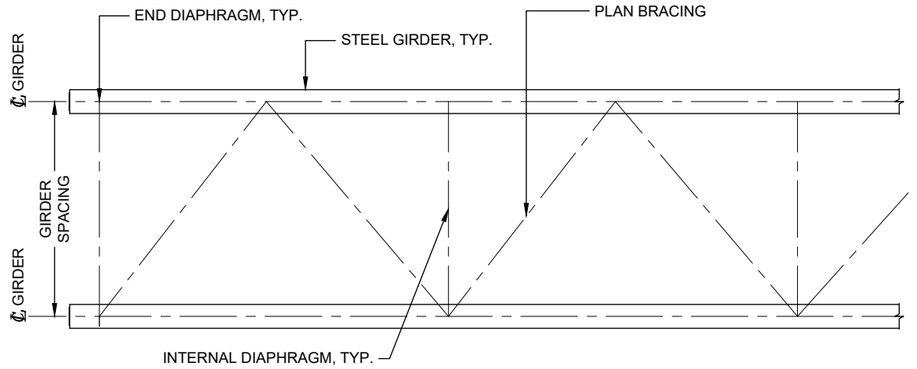
SHEET 02 OF 10

GENERAL ARRANGEMENT

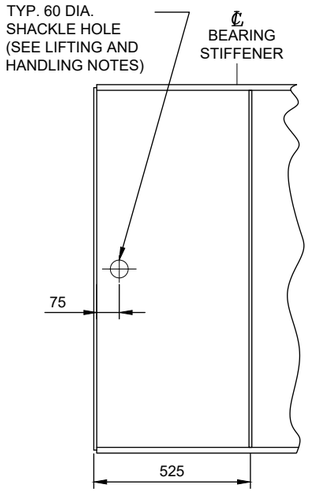
DWG #: STD-EC-030-02



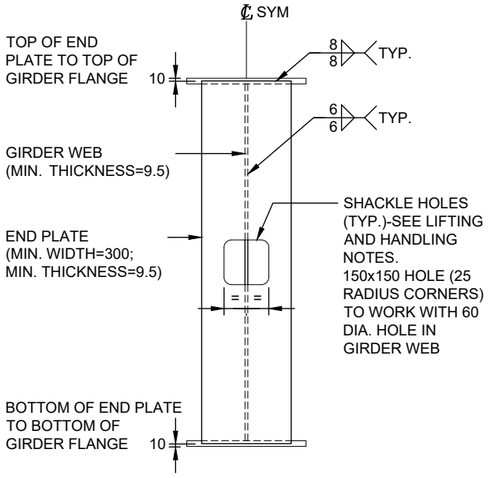
SINGLE PLAN BRACE OPTION (COMP.)
1:100



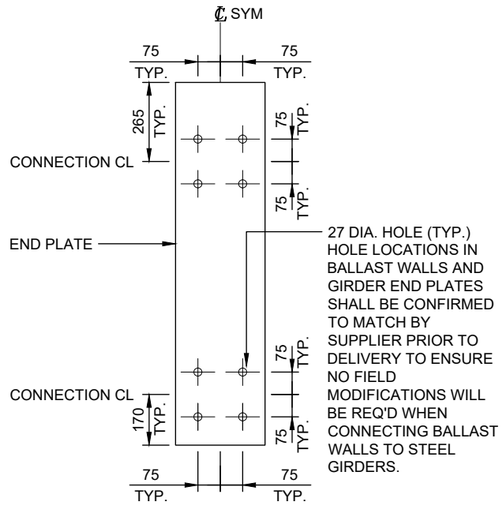
CONTINUOUS PLAN BRACING OPTION
1:100



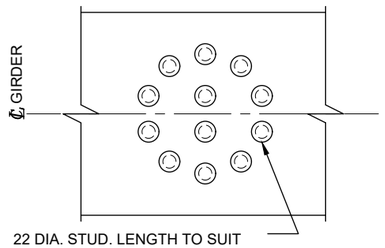
GIRDER END ELEV.
1:20



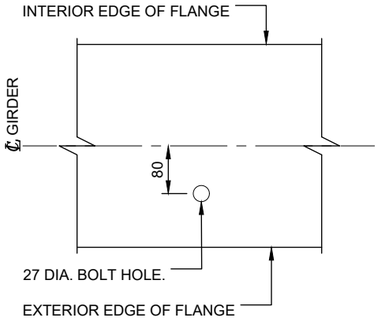
TYP. GIRDER END PLATE DETAILS
1:20



END PLATE BOLT HOLES (NON-COMP.)
(ONLY REQ'D IF BALLAST WALL IS TO BE BOLTED DIRECTLY TO THE GIRDER END PLATE. REFER TO STD. SUBSTRUCTURE DWGS. (STD-EC-050 SERIES) BALLAST WALL ALT. BOLTED CONNECTION OPTION 1)
1:20



EXAMPLE STUD GROUP ON GIRDER TOP FLANGE FOR PANEL TO GIRDER CONNECTION (COMP.)
1:10



BOLT HOLE IN GIRDER TOP FLANGE FOR PANEL TO GIRDER CONNECTION (NON-COMP.)
1:10

LIFTING AND HANDLING NOTES

- STRUCTURAL DESIGN ENGINEER (SDE) TO SPECIFY LIFTING, LAUNCHING AND HANDLING PROCEDURES AND LIMITATIONS FOR THE STEEL SUPERSTRUCTURE ON THE STRUCTURAL DESIGN DRAWINGS (SDD);
- GIRDER END PLATE SHACKLE HOLES TO BE SHOWN ON THE SDD UNLESS OTHERWISE SPECIFIED BY THE MINISTRY;
- SDE SHALL LOCATE SHACKLE HOLES AT APPROPRIATE HEIGHTS ON GIRDER END PLATES AND DESIGN GIRDERS TO SUIT LIFTING AND HANDLING REQUIREMENTS.

NOT FOR CONSTRUCTION
ASSUME NOT TO SCALE

REV #	DATE	REVISION DESCRIPTION	DRAFTING	DESIGN	CHECK / REVIEW	APPROVAL
0	DEC. 4, 2023	UPDATED & COMBINED COMP. & NON-COMP. DWG. SETS.	N.HARVEY (CREEKSIDE)	M. PENNER (MINISTRY)	J. HENLEY (ASSOC. ENG.)	J. HARVEY (MINISTRY)
1	JUNE 12, 2024	ADDED LIFTING, HANDLING AND GIRDER END DETAILS	N.HARVEY (CREEKSIDE)	M. PENNER (MINISTRY)	J. HENLEY (ASSOC. ENG.)	J. HARVEY (MINISTRY)

BRITISH COLUMBIA | Ministry of Forests

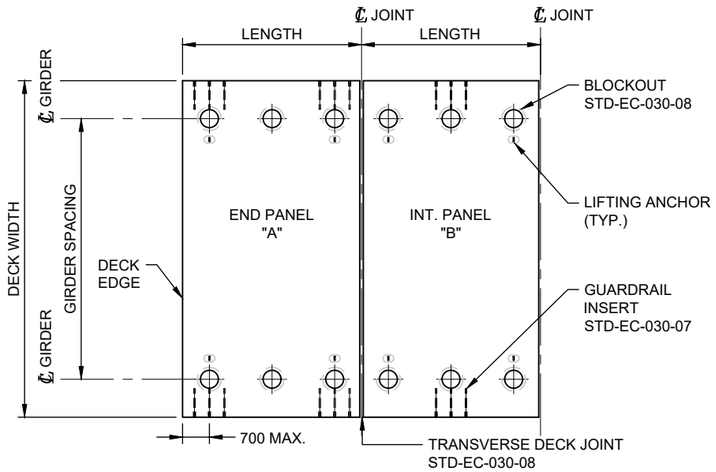
STANDARD BRIDGE DRAWING

STEEL GIRDER CONCRETE DECK

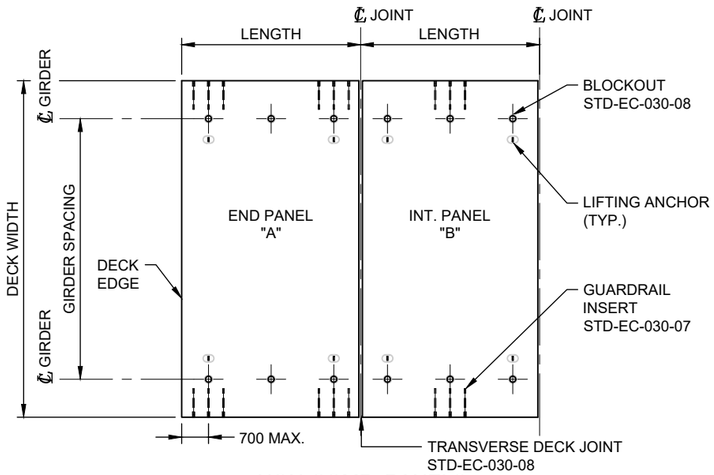
SHEET 03 OF 10

STEEL DETAILS

DWG #: STD-EC-030-03

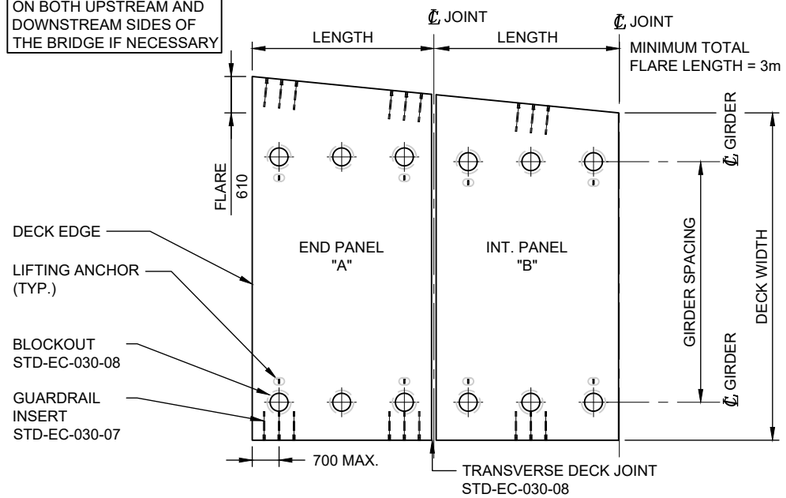


ALL PANELS SQUARE (COMP.)
1:100

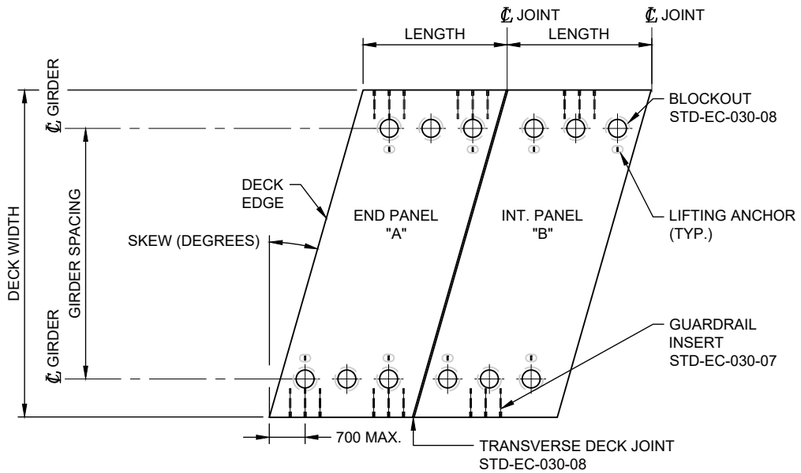


NON-COMP. PANELS
1:100

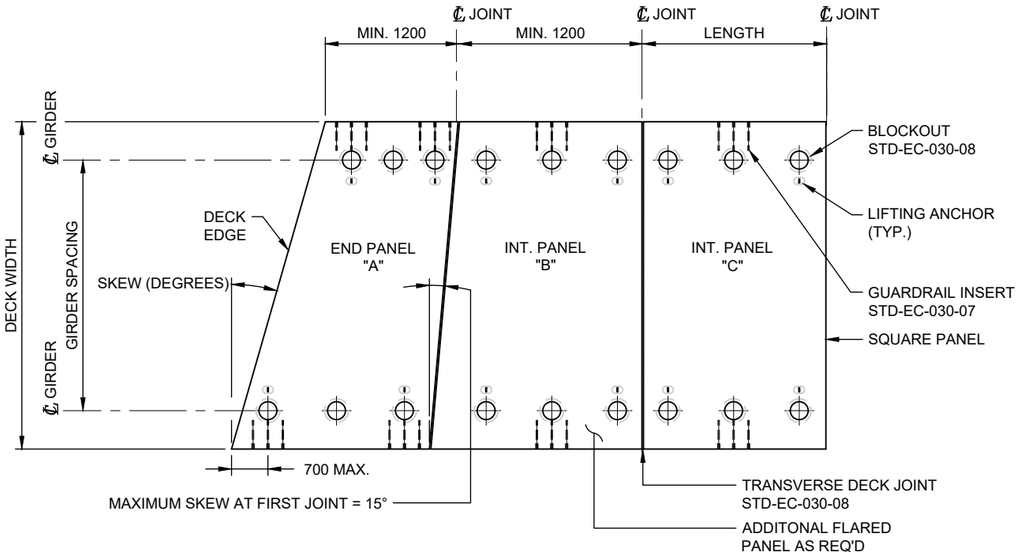
NOTE:
A PANEL MAY BE FLARED ON BOTH UPSTREAM AND DOWNSTREAM SIDES OF THE BRIDGE IF NECESSARY



FLARED PANELS AT BRIDGE ENDS (COMP.)
1:100



ALL PANELS SKEWED (COMP.)
1:100



SKEWED PANELS AT BRIDGE ENDS (COMP.)
1:100

NOT FOR CONSTRUCTION
ASSUME NOT TO SCALE

REV #	DATE	REVISION DESCRIPTION	DRAFTING	DESIGN	CHECK / REVIEW	APPROVAL
0	DEC. 4, 2023	UPDATED & COMBINED COMP. & NON-COMP. DWG. SETS.	N.HARVEY (CREEKSIDE)	M. PENNER (MINISTRY)	J. HENLEY (ASSOC. ENG.)	J. HARVEY (MINISTRY)

BRITISH COLUMBIA | Ministry of Forests

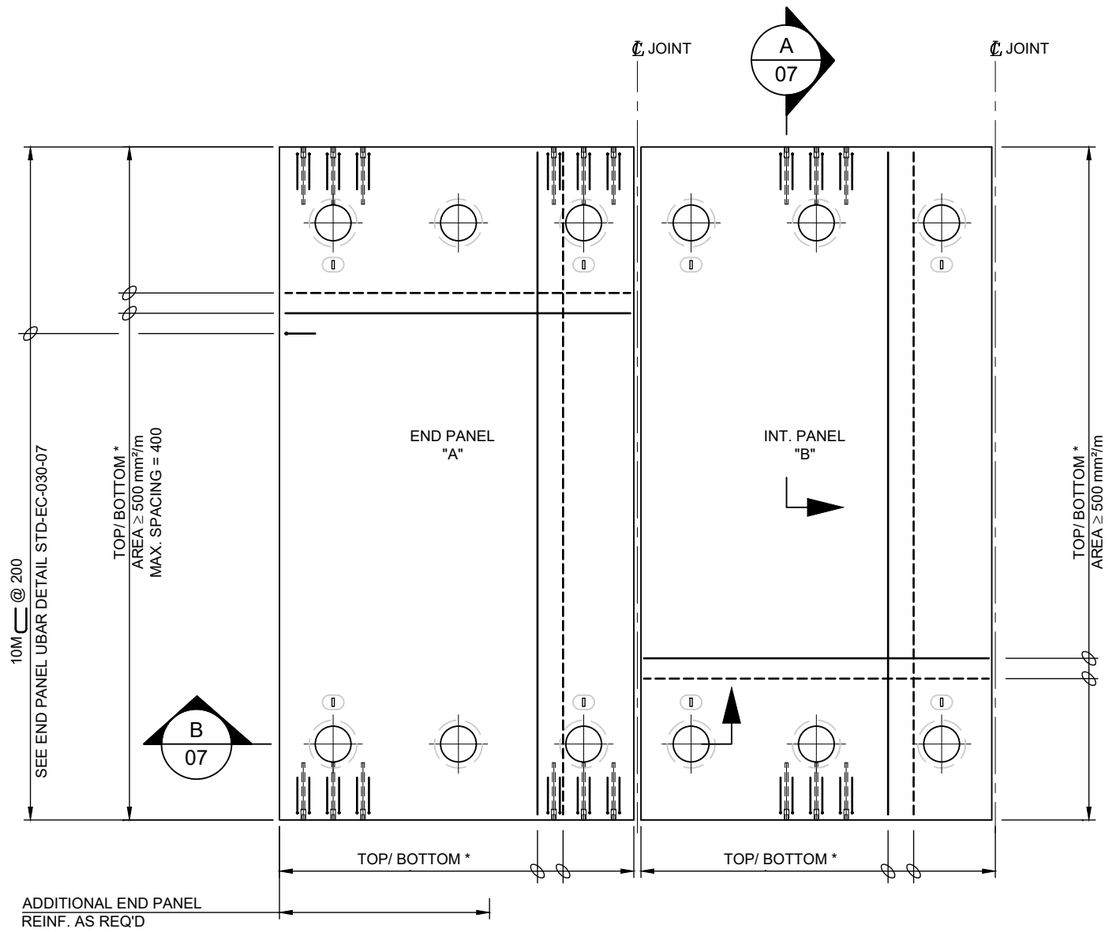
STANDARD BRIDGE DRAWING

STEEL GIRDER CONCRETE DECK

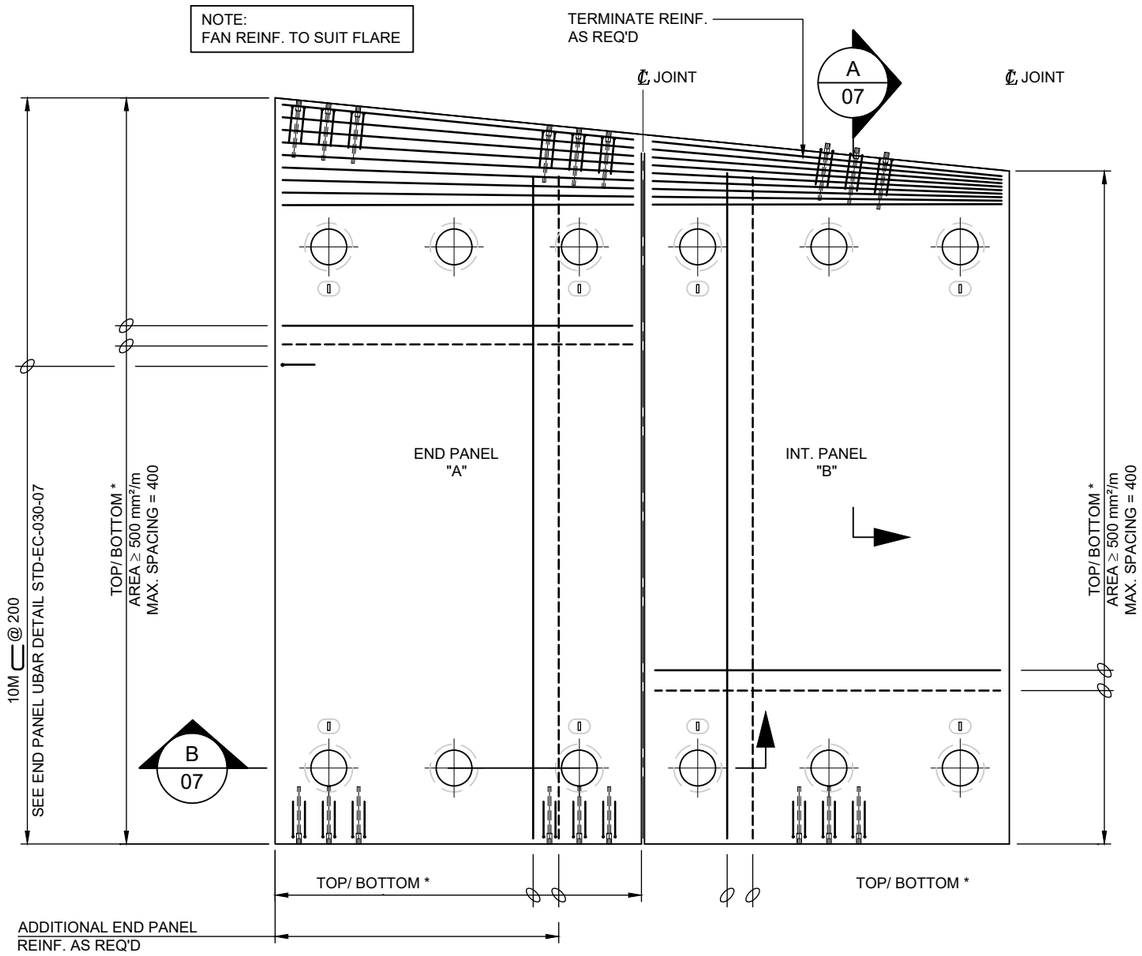
SHEET 04 OF 10

DECK PANEL - TYPES

DWG #: STD-EC-030-04



REINFORCING PLAN - SQUARE PANELS
1:50
(BLOCKOUTS SHOWN ARE FOR COMP. BRIDGES. FOR NON-COMP. BRIDGES USE NON-COMP. BLOCKOUTS)



REINFORCING PLAN - FLARED PANELS (COMP.)
1:50

* SIZE, NUMBER AND OR SPACING BY STRUCTURAL DESIGN ENGINEER

REV #	DATE	REVISION DESCRIPTION	DRAFTING	DESIGN	CHECK / REVIEW	APPROVAL
0	DEC. 4, 2023	UPDATED & COMBINED COMP. & NON-COMP. DWG. SETS.	N.HARVEY (CREEKSIDE)	M. PENNER (MINISTRY)	J. HENLEY (ASSOC. ENG.)	J. HARVEY (MINISTRY)

BRITISH COLUMBIA | Ministry of Forests

STANDARD BRIDGE DRAWING

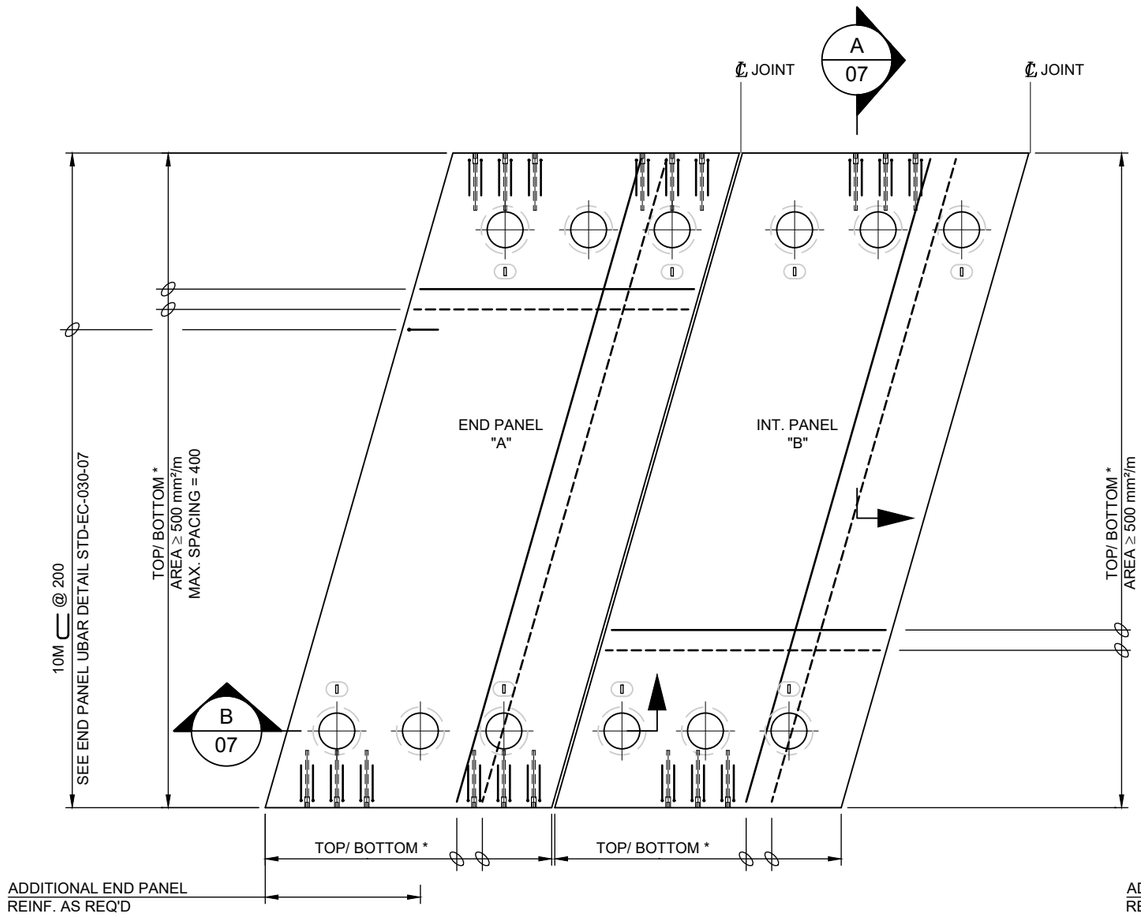
STEEL GIRDER CONCRETE DECK

SHEET 05 OF 10

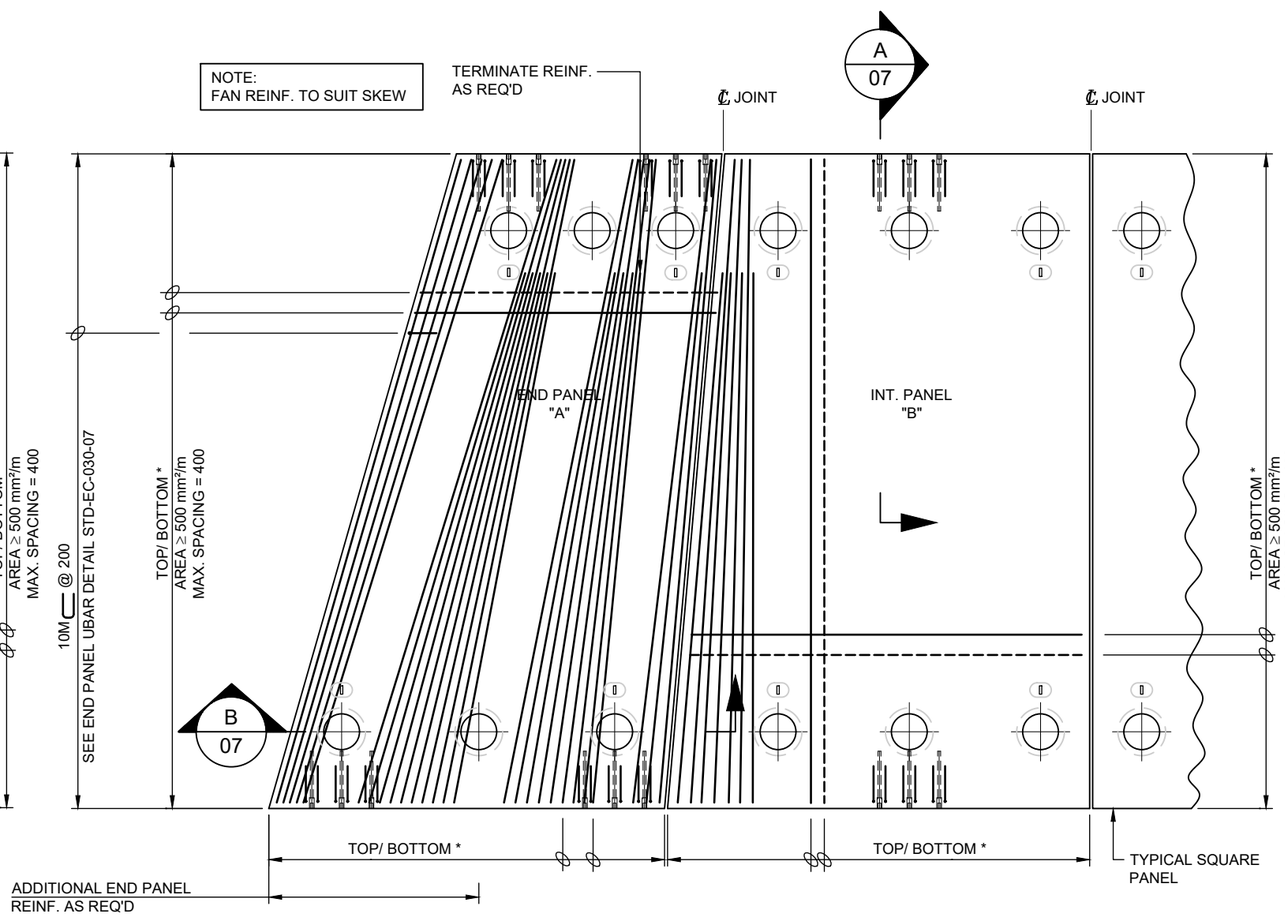
REINFORCING PLAN - SQUARE & FLARED PANELS

DWG #: STD-EC-030-05

NOT FOR CONSTRUCTION
ASSUME NOT TO SCALE



REINFORCING PLAN - ALL PANELS SKEWED (COMP.)
1:50



REINFORCING PLAN - SKEWED PANELS AT BRIDGE ENDS (COMP.)
1:50

* SIZE, NUMBER AND OR SPACING BY
STRUCTURAL DESIGN ENGINEER

REV #	DATE	REVISION DESCRIPTION	DRAFTING	DESIGN	CHECK / REVIEW	APPROVAL
0	DEC. 4, 2023	UPDATED & COMBINED COMP. & NON-COMP. DWG. SETS.	N.HARVEY (CREEKSIDE)	M. PENNER (MINISTRY)	J. HENLEY (ASSOC. ENG.)	J. HARVEY (MINISTRY)

NOT FOR CONSTRUCTION
ASSUME NOT TO SCALE

BRITISH COLUMBIA | Ministry of Forests

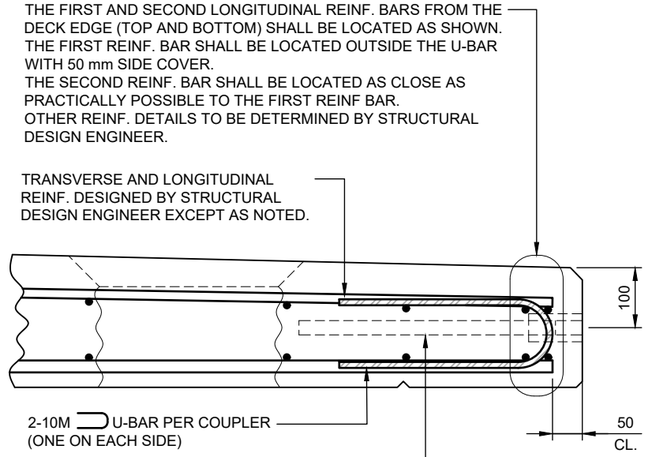
STANDARD BRIDGE DRAWING

STEEL GIRDER CONCRETE DECK

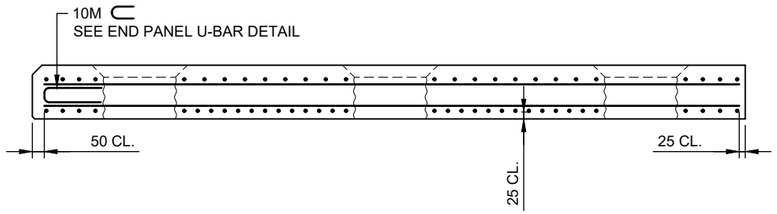
SHEET 06 OF 10

REINFORCING PLAN - SKEWED PANELS

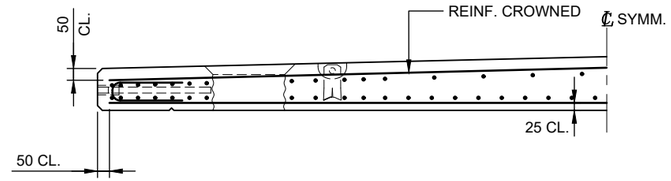
DWG #: STD-EC-030-06



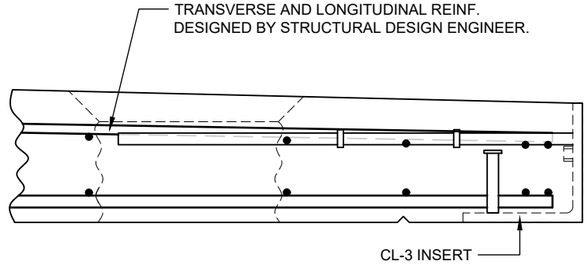
INSERT AND EDGE REBAR DETAIL FOR CL-1 AND CL-2 GUARDRAILS
1:10



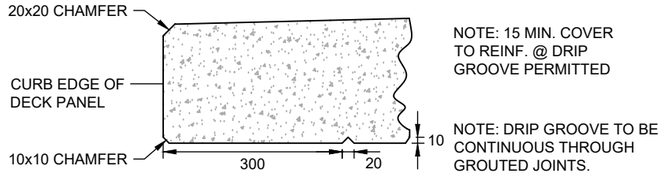
SECTION B B / 05 06
1:25



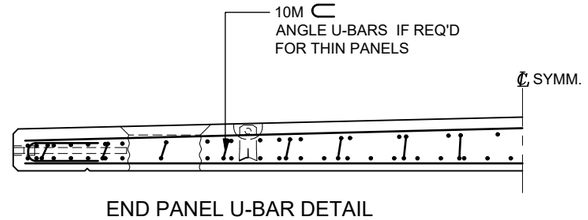
SECTION A A / 05 06 CROWNED TOP REINF.
1:25



INSERT AND EDGE REBAR DETAIL FOR CL-3 GUARDRAILS
1:10



PANEL SIDE CHAMFERS & DRIP GROOVE
1:10



END PANEL U-BAR DETAIL
1:25

NOTES FOR PANELS WITH CL-3 GUARDRAILS

- REFER TO THE STANDARD BARRIER DRAWINGS (STD-EC-010 SERIES) FOR INSERT DETAILS.
- CL-3 INSERT MODIFICATIONS MAY BE REQUIRED TO ACCOMMODATE FLARED OR SKEWED DECK PANELS TO ADDRESS CONFLICT WITH THE DECK REINFORCEMENT, STUD POCKETS AND BALLAST WALL. MODIFICATIONS TO BE APPROVED BY MINISTRY ENGINEER.
- STANDARD BAR SPACING REQ'MENTS SHALL BE MET, CONSIDERING THE DEFORMED BARS AND STACKED STUDS TO BE EQUIVALENT TO REBAR.
- U-BARS REQ'D FOR CL-1 & CL-2 ARE NOT REQ'D FOR CL-3.

GENERAL NOTE

BLOCKOUTS SHOWN ON THIS SHEET ARE FOR COMP. BRIDGES. USE NON-COMP. BLOCKOUTS FOR NON-COMP. BRIDGES.

NOT FOR CONSTRUCTION
ASSUME NOT TO SCALE

REV #	DATE	REVISION DESCRIPTION	DRAFTING	DESIGN	CHECK / REVIEW	APPROVAL
0	DEC. 4, 2023	UPDATED & COMBINED COMP. & NON-COMP. DWG. SETS.	N.HARVEY (CREEKSIDE)	M. PENNER (MINISTRY)	J. HENLEY (ASSOC. ENG.)	J. HARVEY (MINISTRY)

BRITISH COLUMBIA | Ministry of Forests

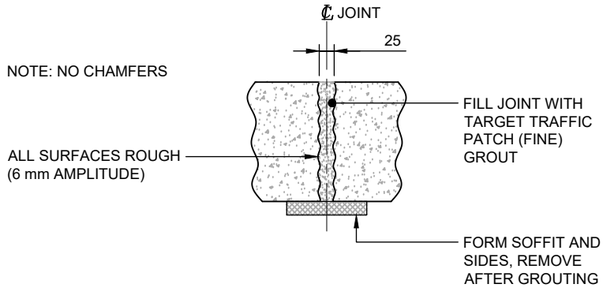
STANDARD BRIDGE DRAWING

STEEL GIRDER CONCRETE DECK

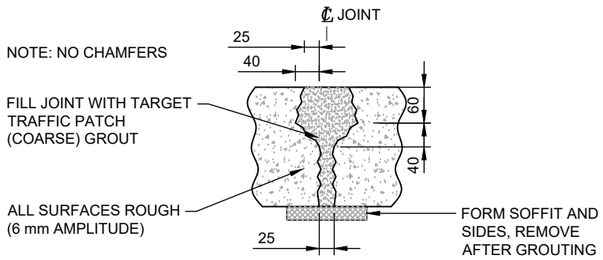
SHEET 07 OF 10

MISC. PANEL DETAILS

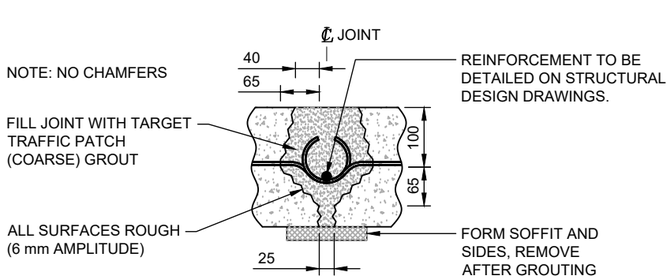
DWG #: STD-EC-030-07



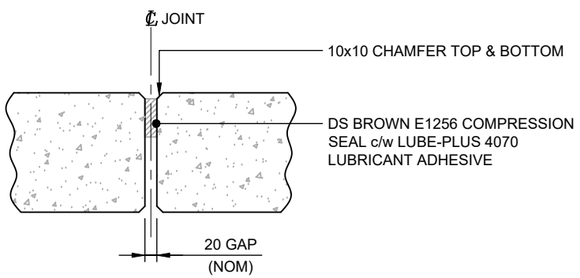
VERTICAL FACE GROUTED JOINT OPTION (COMP.)
1:10



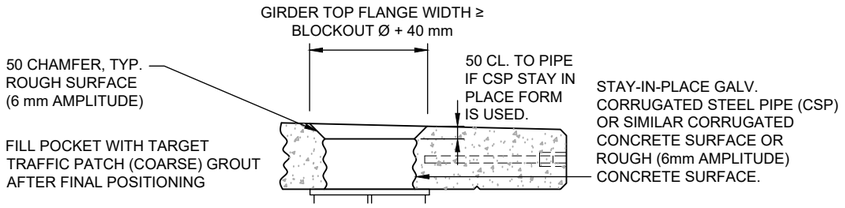
ANGULAR SHEAR KEY GROUTED JOINT OPTION (COMP.)
1:10



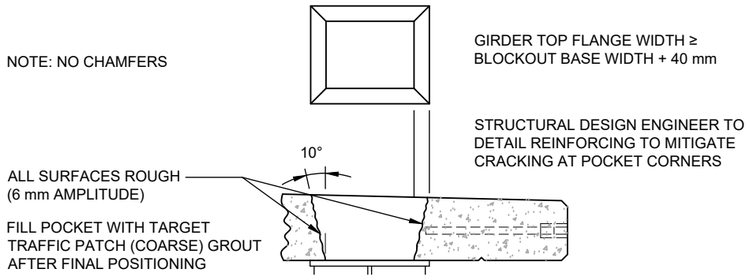
REINFORCED SHEAR KEY GROUTED JOINT OPTION (COMP.)
1:10



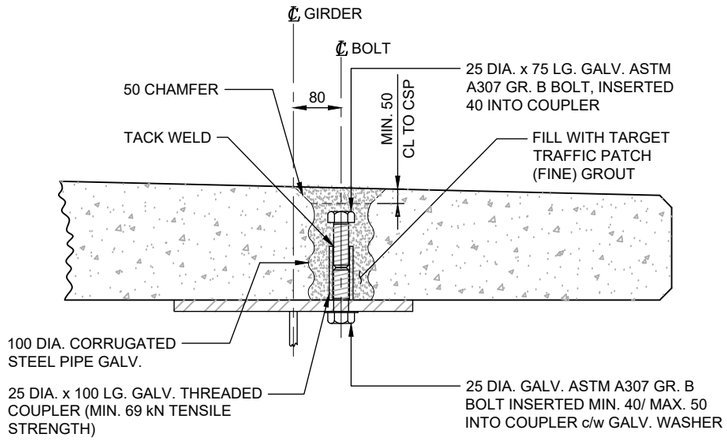
COMPRESSION SEAL JOINT (NON-COMP.)
1:10



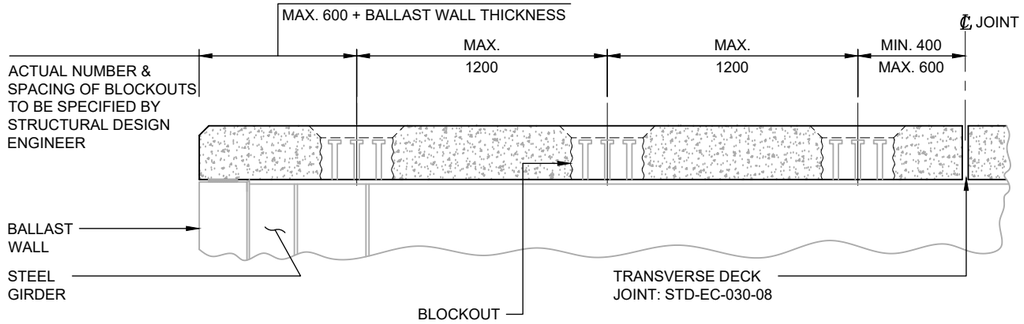
CIRCULAR BLOCKOUT OPTION (COMP.)
1:20



RECTANGULAR BLOCKOUT OPTION (COMP.)
1:20



BLOCKOUT AND CONNECTION DETAILS (NON-COMP.)
1:10



BLOCKOUT SPACING
1:25
(BLOCKOUTS SHOWN ARE FOR COMP. BRIDGES. FOR NON-COMP. BRIDGES USE NON-COMP. BLOCKOUTS)

NOT FOR CONSTRUCTION
ASSUME NOT TO SCALE

REV #	DATE	REVISION DESCRIPTION	DRAFTING	DESIGN	CHECK / REVIEW	APPROVAL
0	DEC. 4, 2023	UPDATED & COMBINED COMP. & NON-COMP. DWG. SETS.	N.HARVEY (CREEKSIDE)	M. PENNER (MINISTRY)	J. HENLEY (ASSOC. ENG.)	J. HARVEY (MINISTRY)

BRITISH COLUMBIA | Ministry of Forests

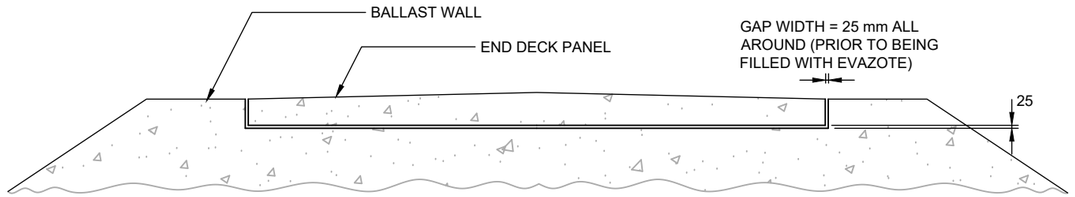
STANDARD BRIDGE DRAWING

STEEL GIRDER CONCRETE DECK

SHEET 08 OF 10

PANEL BLOCKOUT & TRANSVERSE DECK JOINT DETAILS

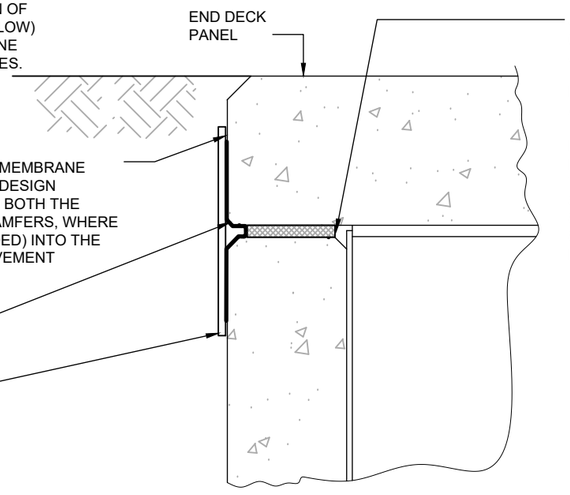
DWG #: STD-EC-030-08



DECK END JOINT OUTLINE

1:50

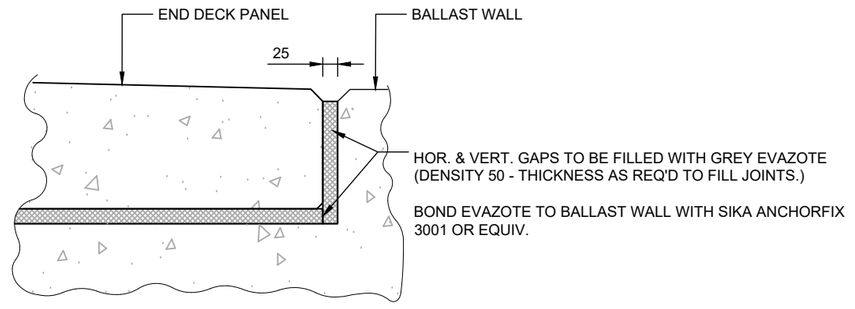
NOTE: JOINT WATERPROOFING AND PROTECTION OF WATERPROOFING REQUIRED (AS DESCRIBED BELOW) FOR NON-COMP. BRIDGES INTENDED TO BE AT ONE SITE FOR > 10 YEARS AND FOR ALL COMP. BRIDGES.



NOTE: WITH THIS JOINT THE BALLAST WALL DOES NOT PROVIDE VERTICAL SUPPORT TO THE DECK PANEL. IF NECESSARY THE STRUCTURAL DESIGN DRAWINGS SHALL SHOW ALTERNATE DETAILS THAT PROVIDE SUPPORT TO THE DECK PANEL FROM THE BALLAST WALL.

DECK END JOINT - SECTION

1:10



DECK END JOINT AT CORNER OF DECK PANEL

1:10

REV #	DATE	REVISION DESCRIPTION	DRAFTING	DESIGN	CHECK / REVIEW	APPROVAL
0	DEC. 4, 2023	UPDATED & COMBINED COMP. & NON-COMP. DWG. SETS.	N.HARVEY (CREEKSIDE)	M. PENNER (MINISTRY)	J. HENLEY (ASSOC. ENG.)	J. HARVEY (MINISTRY)

NOT FOR CONSTRUCTION
ASSUME NOT TO SCALE

BRITISH COLUMBIA | Ministry of Forests

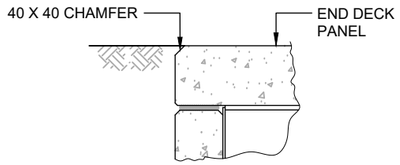
STANDARD BRIDGE DRAWING

STEEL GIRDER CONCRETE DECK

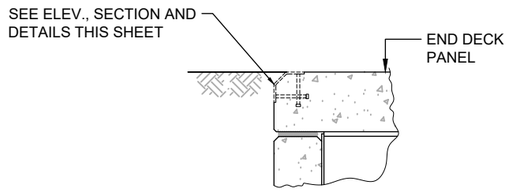
SHEET 09 OF 10

DECK END JOINT DETAILS

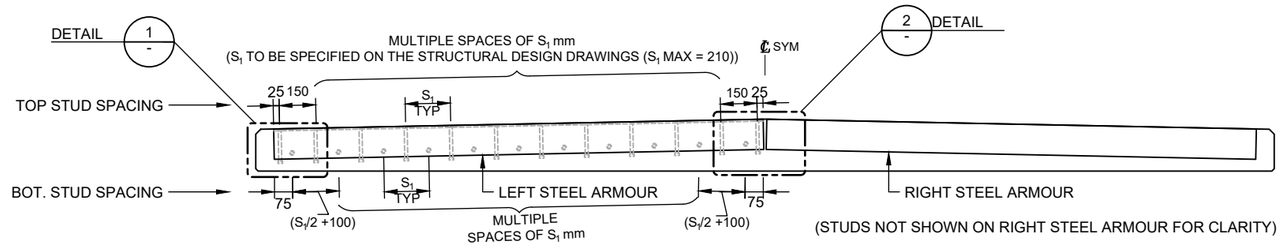
DWG #: STD-EC-030-09



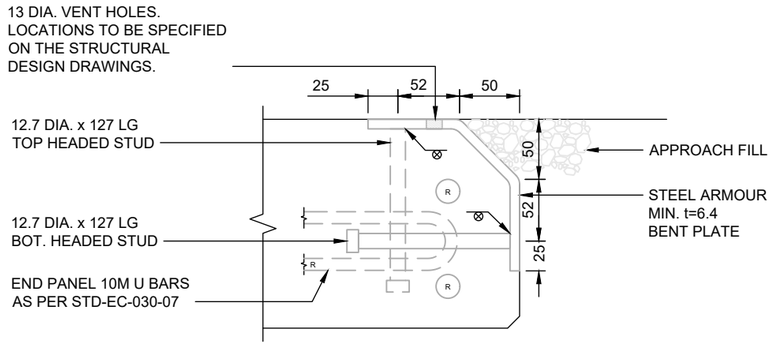
UNARMOURED DECK END OPTION
1:25



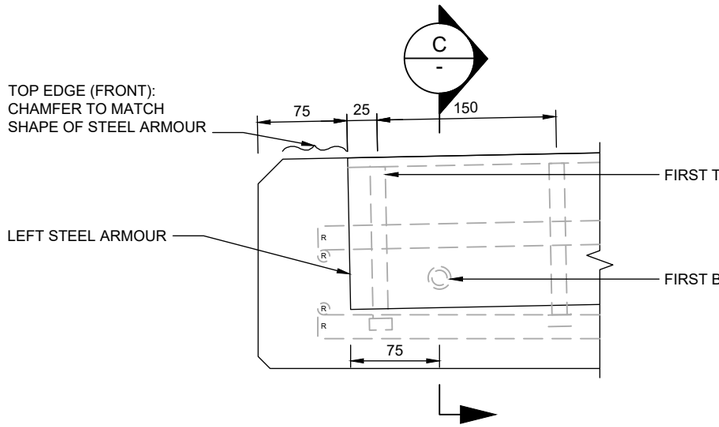
STEEL ARMOUR DECK END OPTION
1:25



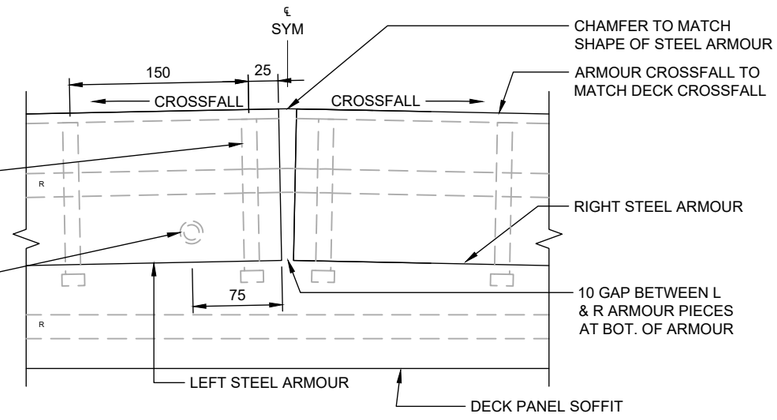
STEEL ARMOUR: DECK END ELEV.
1:25



SECTION C - STEEL ARMOUR
1:5



DETAIL 1 - STEEL ARMOUR
1:5



DETAIL 2 - STEEL ARMOUR
1:5

NOTES FOR STEEL ARMOUR

GENERAL

- STEEL ARMOUR IS INTENDED TO ASSIST IN PROTECTING DECK PANEL CONCRETE FROM MINOR SPALLING/CHIPPING AT THE TOP EDGE OF THE END PANEL AT THE APPROACH FILL INTERFACE.
- REINFORCEMENT NOTED ON THIS DRAWING WITH AN "R" DEPICTS SOME, BUT NOT ALL, TYPICAL LOCATIONS OF DECK PANEL REBAR. THIS REBAR HAS BEEN SHOWN FOR INFORMATION PURPOSES ONLY TO ASSIST IN VISUALIZING THE INTENDED LOCATION OF HEADED STUDS.
- BCL-625 DECK EXAMPLE SHOWN (STEEL ARMOUR IDENTICAL FOR L100, L150 & L165 DECKS.)

MATERIAL & FABRICATION

- FABRICATOR SHALL TAKE APPROPRIATE MEASURES TO ENSURE NO CONCRETE VOIDS EXIST UNDERNEATH THE ARMOUR, AND SHALL INSPECT FOR VOIDS BY HAMMER SOUNDING.

NOT FOR CONSTRUCTION
ASSUME NOT TO SCALE

REV #	DATE	REVISION DESCRIPTION	DRAFTING	DESIGN	CHECK / REVIEW	APPROVAL
0	DEC. 4, 2023	UPDATED & COMBINED COMP. & NON-COMP. DWG. SETS.	N.HARVEY (CREEKSIDE)	M. PENNER (MINISTRY)	J. HENLEY (ASSOC. ENG.)	J. HARVEY (MINISTRY)

BRITISH COLUMBIA | Ministry of Forests

STANDARD BRIDGE DRAWING

STEEL GIRDER CONCRETE DECK

SHEET 10 OF 10

DECK END ARMOUR OPTIONS

DWG #: STD-EC-030-10