



# MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS

ENGINEERING BRANCH, TIMBER OPERATIONS, PRICING AND  
FIRST NATIONS DIVISION

## TIMBER DECK BRIDGE STANDARDS

DRAWING SCHEDULE			
DRAWING No.	DESCRIPTION	REV.	DATE
STD-EC-020-01	TIMBER DECK BRIDGES, GENERAL NOTES – SHEET 1		
STD-EC-020-02	TIMBER DECK BRIDGES, GENERAL NOTES – SHEET 2		
STD-EC-020-03	PERMANENT, CONTINUOUS TIMBER DECK BRIDGE – GENERAL ARRANGEMENT		
STD-EC-020-04	PORTABLE, CONTINUOUS TIMBER DECK BRIDGE – GENERAL ARRANGEMENT		
STD-EC-020-05	MODULAR TIMBER DECK BRIDGE, GENERAL ARRANGEMENT & DETAILS		
STD-EC-020-06	MODULAR TIMBER BRIDGE DECK, ATTACHMENT DETAILS - NEW BRIDGES		
STD-EC-020-07	MODULAR TIMBER BRIDGE DECK, ATTACHMENT DETAILS – FIELD RETROFIT TO EXISTING BRIDGES		

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

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  $\leq$  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	
<b>TIMBER DECK BRIDGES GENERAL NOTES – SHEET 1</b>	
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

**3. MATERIALS AND FABRICATION**

3.1 ALL MATERIALS UTILIZED IN FABRICATION SHALL BE NEW, NOT PREVIOUSLY USED IN ANY APPLICATION

3.2 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 MINISTRY APPROVAL.. IF NON WEATHERING STEEL IS APPROVED BY THE MINISTRY, A CORROSION PROTECTION SYSTEM APPROVED BY THE MINISTRY 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
- 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 THROUGHOUT THE DURATION OF THE PROJECT
- 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, 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
- SHOP TRIAL FIT ALL FIELD SPLICES UNLESS CNC EQUIPMENT IS USED

3.3 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

3.4 GALVANIZING:

- ALL ITEMS SPECIFIED AS GALVANIZED ARE TO BE GALVANIZED TO CSA G164

3.5 BEARINGS:

- TO CAN/CSA-S6: OZONE RESISTING NATURAL RUBBER (NATURAL POLYISOPRENE)
- WHERE EXPANSION JOINTS ARE USED, ENGINEER TO INCLUDE SUFFICIENT INFORMATION TO FACILITATE INSTALLATION AT VARIOUS TEMPERATURES

3.6 TIMBER DECK MATERIALS:

- ALLOWABLE WOOD SPECIES, LUMBER GRADES, GRADING CRITERIA AND REQUIRED DOCUMENTATION SHALL BE AS PER MINISTRY: *BRIDGE TIMBER AND LUMBER MATERIAL STANDARD*

3.8 TIMBER DECK HARDWARE:

- LAG SCREWS, BOLTS, NUTS, WASHERS TO BE ASTM A307 (GALVANIZED)
- DECK NAILING PATTERN TO BE AS SHOWN ON DRAWINGS

3.9 TIMBER PRESERVATIVE TREATMENT:

- ALL TREATED WOOD SHALL BE COASTAL DOUGLAS-FIR, TREATED USING CHROMATE COPPER ARSENATE (CCA) TREATMENT, AND THIRD PARTY INSPECTED, IN ACCORDANCE WITH THE MINISTRY *PROCESS SPECIFICATION FOR CCA TREATMENT OF COASTAL DOUGLAS-FIR WOOD*

**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.

**5. STEEL CERTIFICATION AND QUALITY CONTROL**

5.1 PROVIDE MILL CERTIFICATES FOR ALL STEEL MATERIAL.

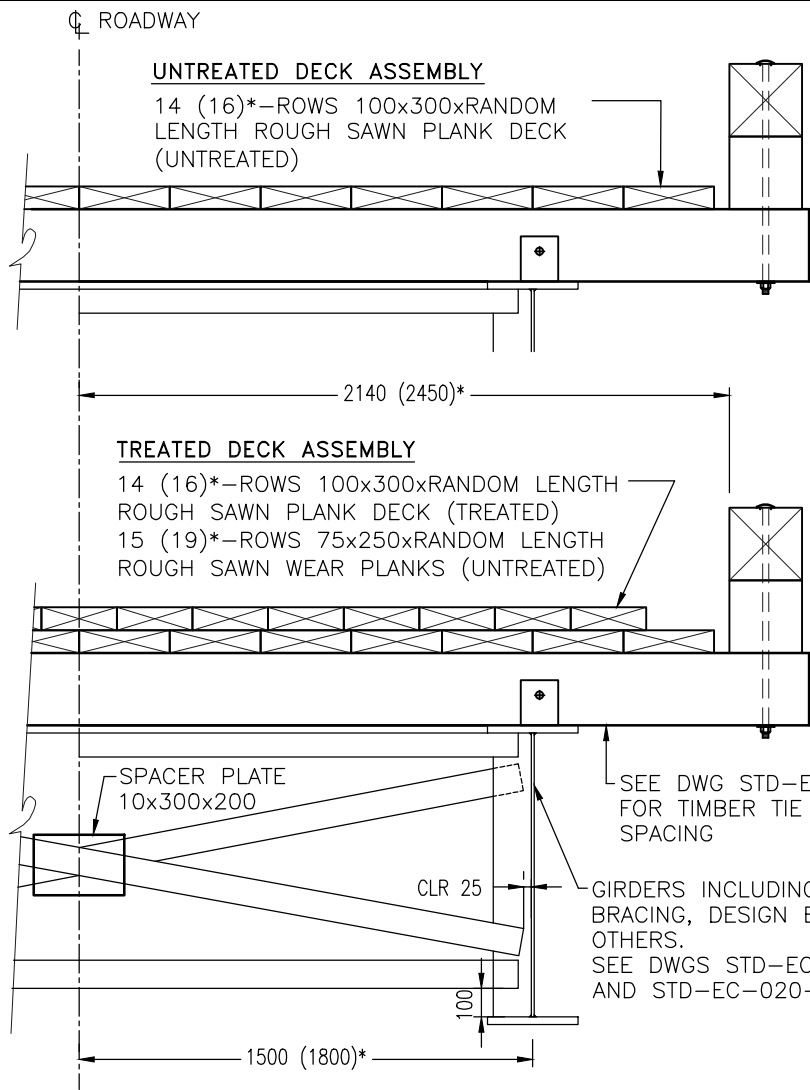


**MINISTRY OF FORESTS, LANDS AND NATURAL  
RESOURCE OPERATIONS**  
ENGINEERING BRANCH

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

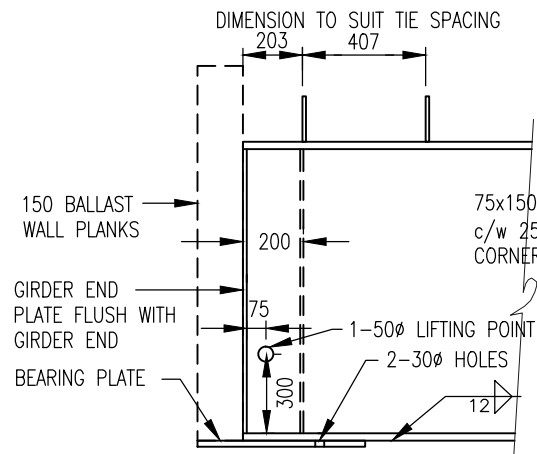
STANDARD BRIDGE DRAWING	
<b>TIMBER DECK BRIDGES GENERAL NOTES – SHEET 2</b>	
ORIGINAL SIGNED and SEALED BY:	FLNR ENGINEER: DATE
DESIGN ENGINEER	APPROVED BY: BRIAN CHOW, P.Eng. CHIEF ENGINEER
DATE	DATE
FILE No.	DRAWING No.
	STD-EC-020-02

2009/02/19 \\STUDY-PC\Public\Documents\ACAD Dwg



**A** TYPICAL DIAPHRAGM/DECK SECTION  
4268 (4876)\* WIDE DECK

1:25

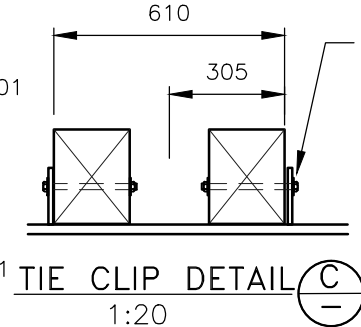


**B** END GIRDER/TIE CLIP DETAIL

1:25

- GUARD RAILS SHALL ONLY BE BOLTED TO TIES THAT ARE BOLTED TO GIRDERS
- ALL TIMBER CROSS TIES TO BE INSTALLED WITH LONG SIDES VERTICAL
- DECK PLANK BUTT JOINTS SHALL BE CENTERED ON CROSS TIES. JOINTS IN ADJACENT LINES OF PLANKS SHALL BE STAGGERED A MINIMUM OF 2 TIE SPACES

DIMENSION TO SUITE TIE SPACING



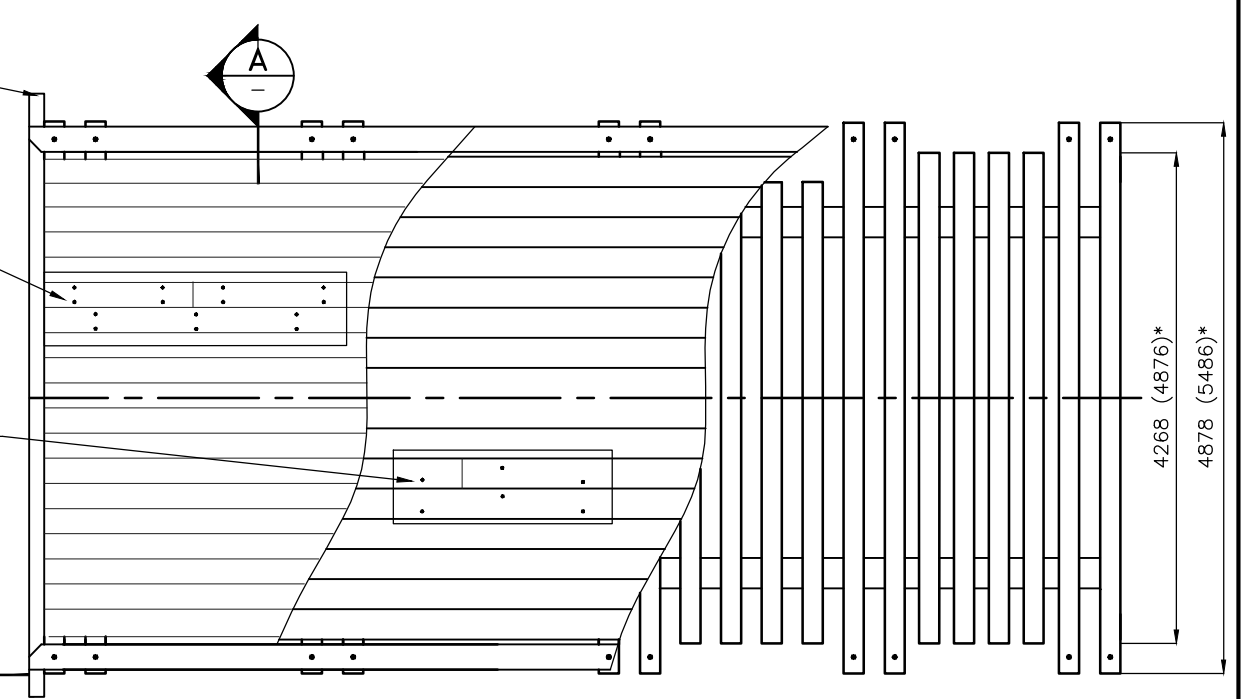
1:20

FOR PERMANENT BRIDGES, BALLAST WALLS TO BE 150x300x6000 TREATED TIMBER BOLTED TO GIRDER END P's UNLESS SPECIFIED OTHERWISE.

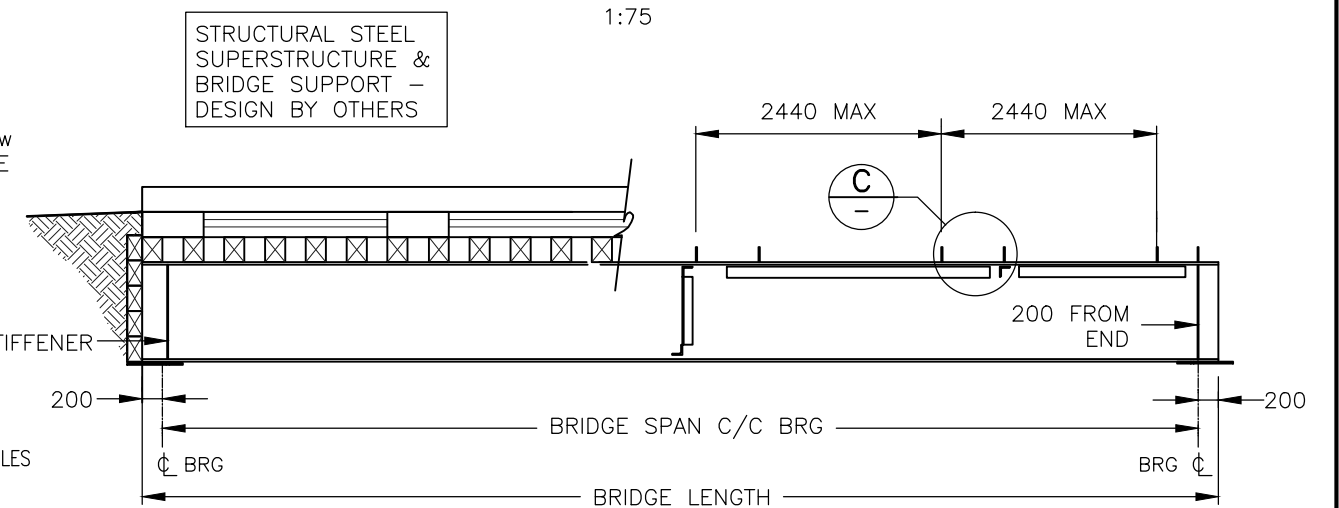
- WEAR PLANKS NAILING PATTERN:**
- WEAR PLANKS TO DECK PLANKS
  - 150mm GALV. COMMON SPIKES
  - 2 @ 150 APART 300 FROM ENDS
  - 2 @ 150 APART @ +/-1000mm O/C TYPICAL

- DECK PLANKS NAILING PATTERN:**
- DECK PLANKS TO CROSS-TIES
  - 200mm GALV. COMMON SPIKES
  - 1 SPIKE, CENTERED ON PLANK AND TIE AT EACH END; PRE-DRILL (6mm) TO PREVENT SPLITTING
  - 1 SPIKE EVERY TIE, STAGGERED SIDE TO SIDE @ 150 APART

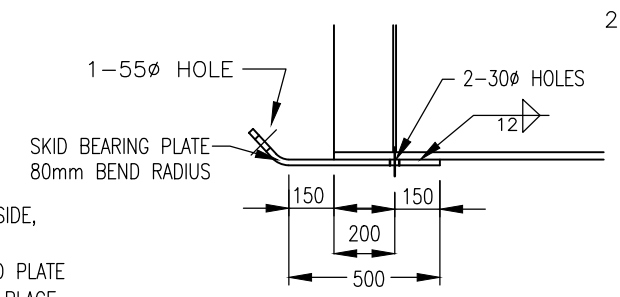
**B**



**DECK PLAN**  
1:75



**TYPICAL ELEVATION**  
1:75



**OPTIONAL SKID PLATE BEARING DETAIL**  
1:25

**BRITISH COLUMBIA**

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

ENGINEERING BRANCH

STANDARD BRIDGE DRAWING

**PERMANENT, CONTINUOUS TIMBER DECK BRIDGE**  
**GENERAL ARRANGEMENT**

ORIGINAL SIGNED and SEALED BY:  
A.B. SWAN, PEng

MFR ENGINEER:  
DATE

DESIGN ENGINEER: A.B. SWAN P.ENG  
DATE: MARCH 26, 2012

APPROVED BY: BRIAN CHOW, P.ENG, CHIEF ENGINEER  
DATE:

FILE No.

DRAWING No.  
STD-EC-020-03

Rev	Date	DESCRIPTION	Init
-	-	-	-

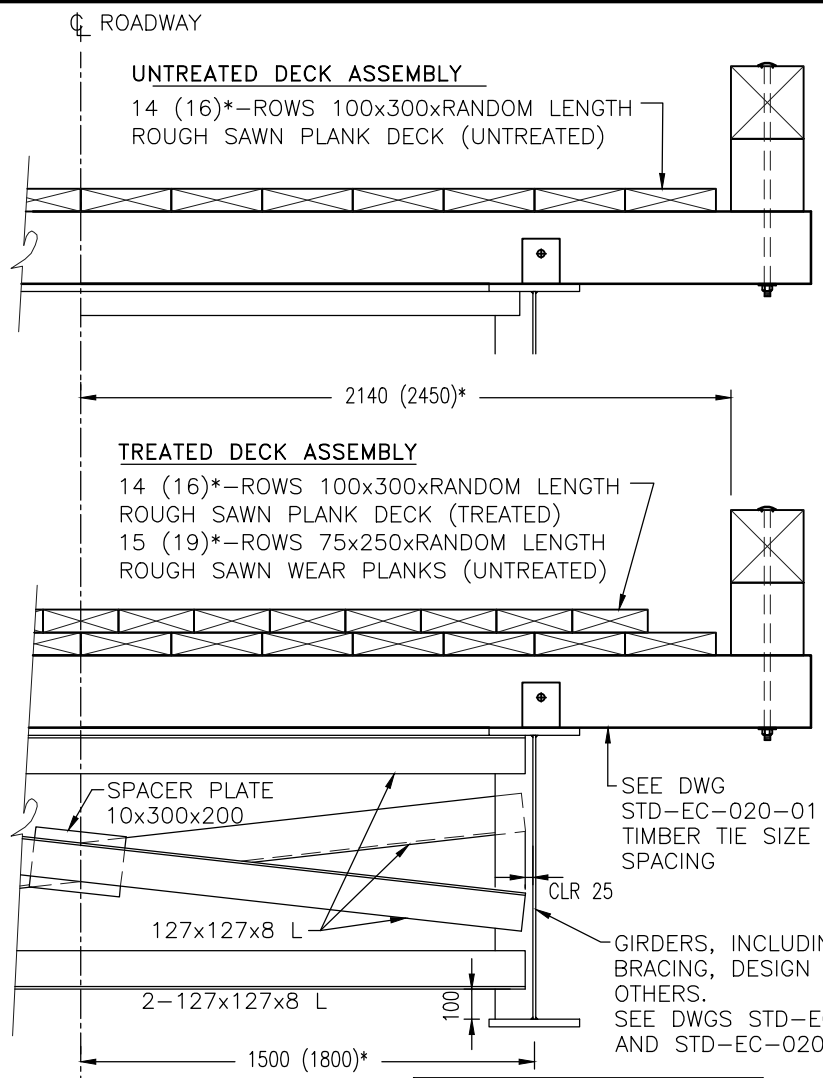
SCALE AS SHOWN

Designed ABS Date 2012/03/12

Checked LT Date 2012/03/20

Drawn ABS Date 2012/03/12

REVISIONS



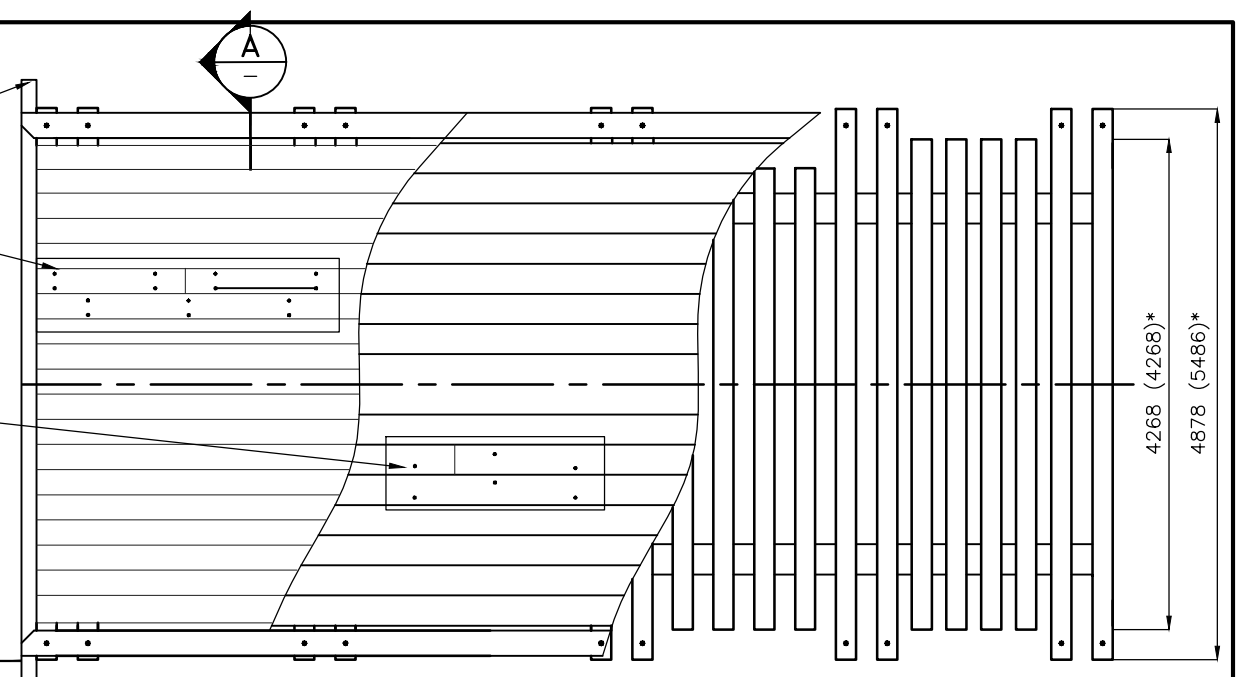
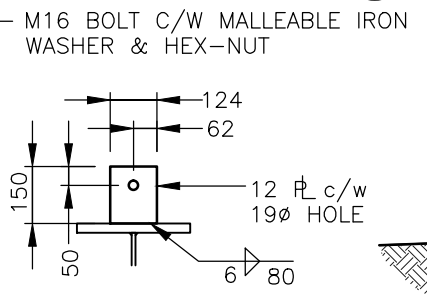
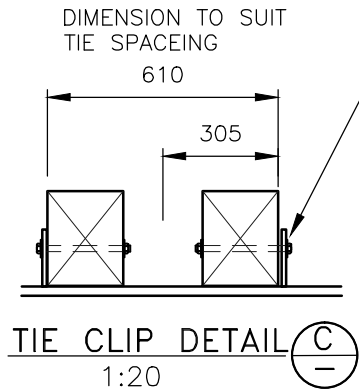
**A TYPICAL END DIAPHRAGM/DECK SECTION**  
1:25

- GUARD RAILS SHALL ONLY BE BOLTED TO TIES THAT ARE BOLTED TO GIRDERS
- ALL TIMBER CROSS TIES TO BE INSTALLED WITH LONG SIDES VERTICAL
- DECK PLANK BUTT JOINTS SHALL BE CENTERED ON CROSS TIES. JOINTS IN ADJACENT LINES OF PLANKS SHALL BE STAGGERED A MINIMUM OF 2 TIE SPACES

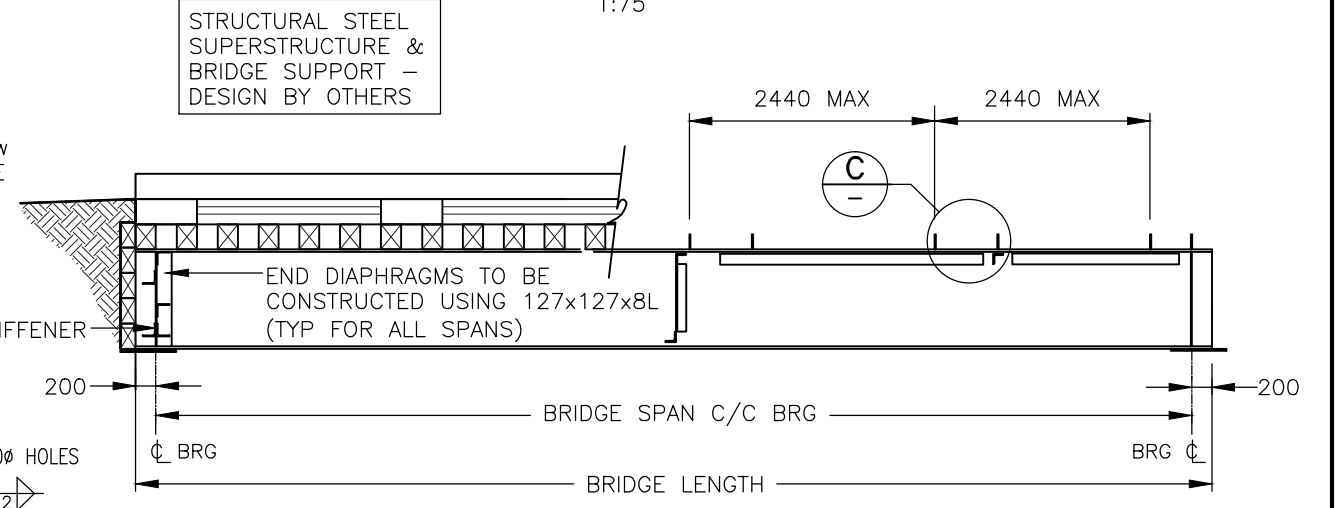
FOR PORTABLE BRIDGES BALLAST WALLS TO BE 150x300x6000 TREATED TIMBER BOLTED TO GIRDER END PL'S UNLESS SPECIFIED OTHERWISE.

- WEAR PLANKS NAILING PATTERN:
- WEAR PLANKS TO DECK PLANKS
  - 150mm GALV. COMMON SPIKES
  - 2@150 APART 300 FROM ENDS
  - 2@150 APART @ +/- 1000mm O/C TYPICAL

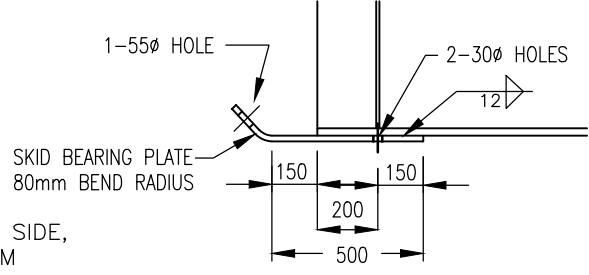
- DECK PLANKS NAILING PATTERN:
- DECK PLANKS TO CROSS-TIES
  - 200mm GALV. COMMON SPIKES
  - 1 SPIKE, CENTERED ON PLANK AND TIE AT EACH END; PRE-DRILL (6mm) TO PREVENT SPLITTING
  - 1 SPIKE EVERY TIE, STAGGERED SIDE TO SIDE @ 150 APART



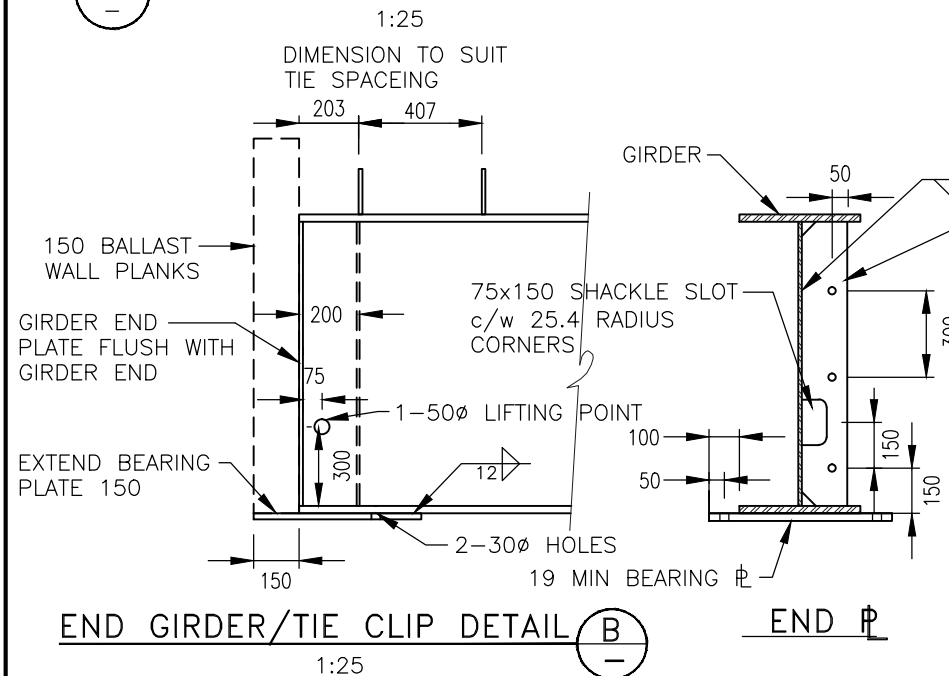
**DECK PLAN**  
1:75



**TYPICAL ELEVATION**  
1:75



**OPTIONAL SKID PLATE BEARING DETAIL**  
1:25



**END GIRDER/TIE CLIP DETAIL (B)**  
1:25

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

STANDARD BRIDGE DRAWING

**PORTABLE, CONTINUOUS TIMBER DECK BRIDGE**  
GENERAL ARRANGEMENT

SCALE AS SHOWN  
Designed ABS Date 2012/03/12  
Checked LT Date 2012/03/20  
Drawn ABS Date 2012/03/12

ORIGINAL SIGNED and SEALED BY:  
A.B. SWAN, PEng

DESIGN ENGINEER: A.B. SWAN P.ENG  
DATE: MARCH 26, 2012

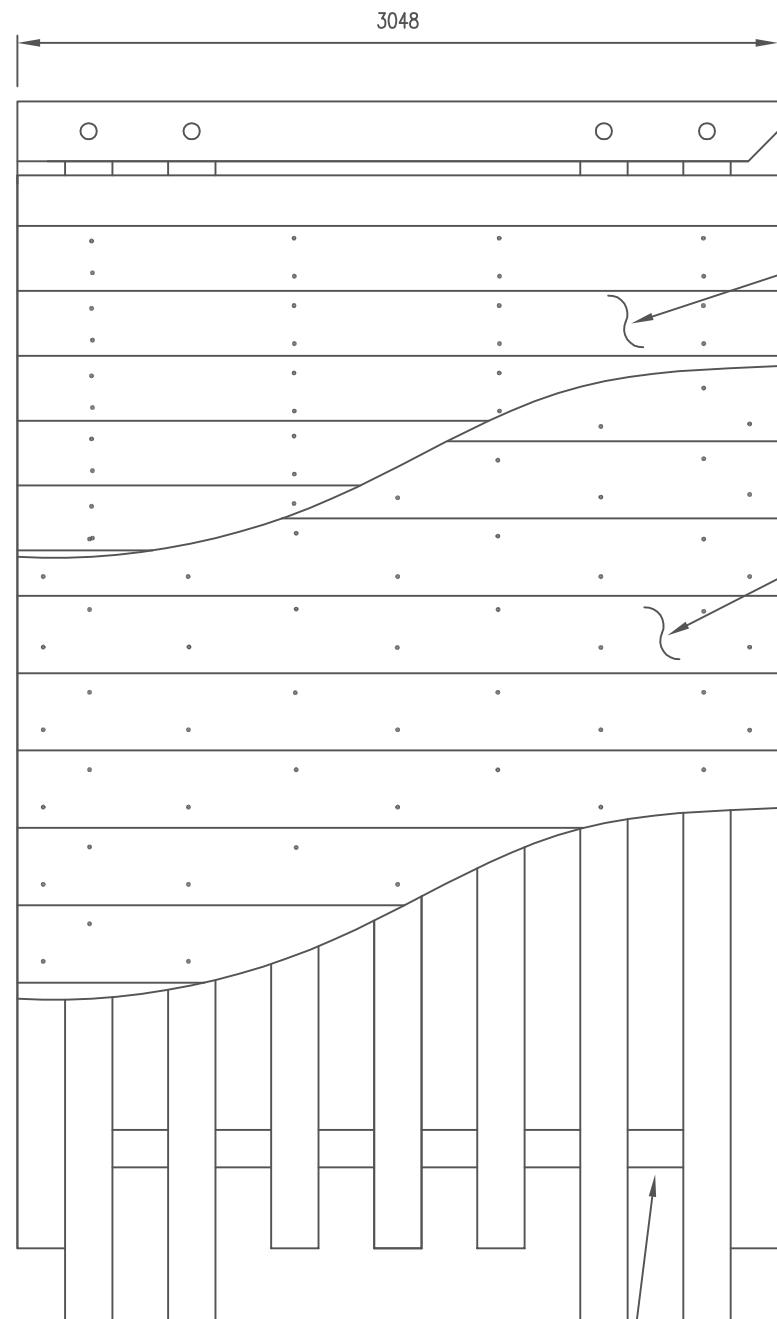
MFR ENGINEER:  
DATE

APPROVED BY: BRIAN CHOW, P.ENG, CHIEF ENGINEER  
DATE:

FILE No. DRAWING No.  
STD-EC-020-04

Rev	Date	DESCRIPTION	Init
-	-	-	-

REVISIONS



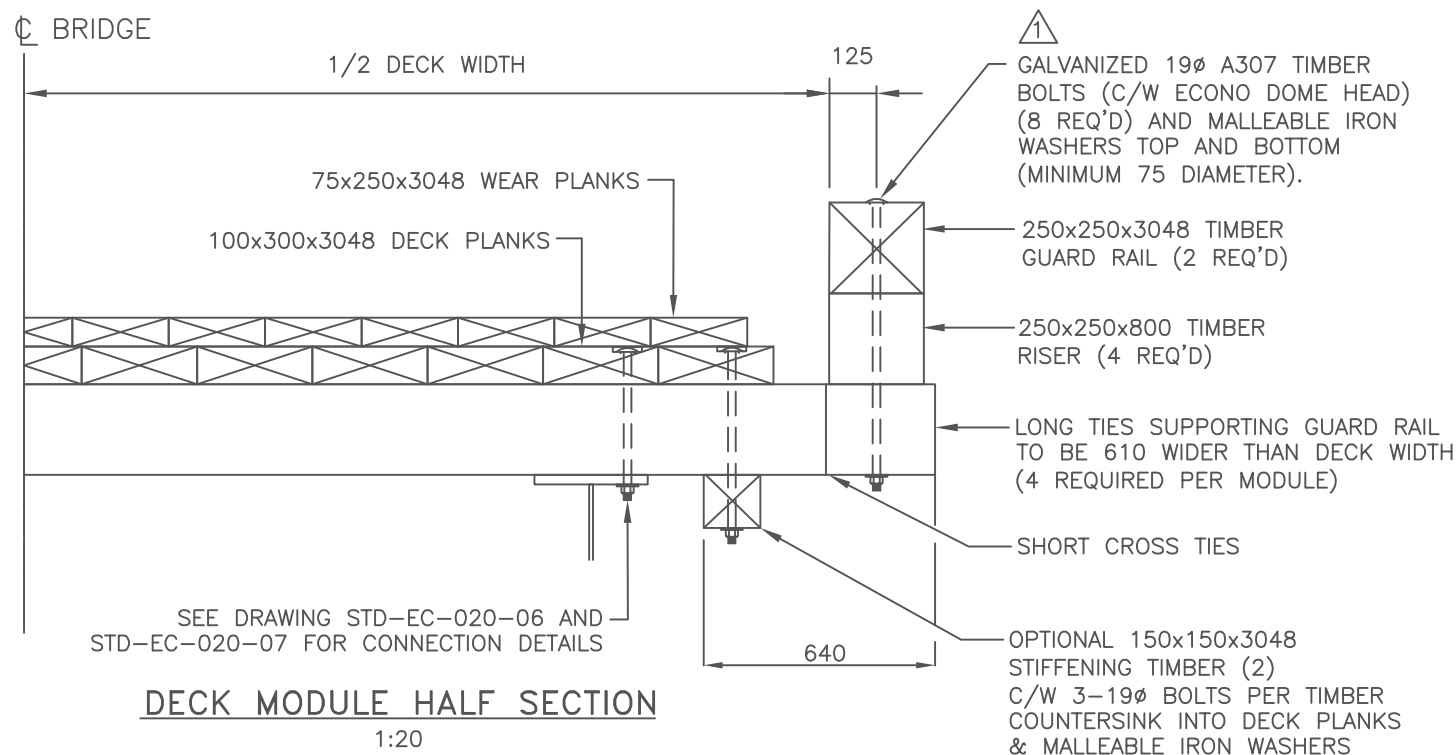
**DECK MODULE PLAN**  
1:30

OPTIONAL 150x150x3048 STIFFENING TIMBERS (2)

125x125 CHAMFER ON CURB RAILS @ ENDS OF BRIDGE ONLY

- WEAR PLANKS NAILING PATERN:
- WEAR PLANKS TO DECK PLANKS
  - 150mm GALV. COMMON SPIKES
  - 2 SPIKES @ 150 APART, 300 FROM ENDS
  - 2 SPIKES @ 150 APART @ +/-800mm O/C TYPICAL

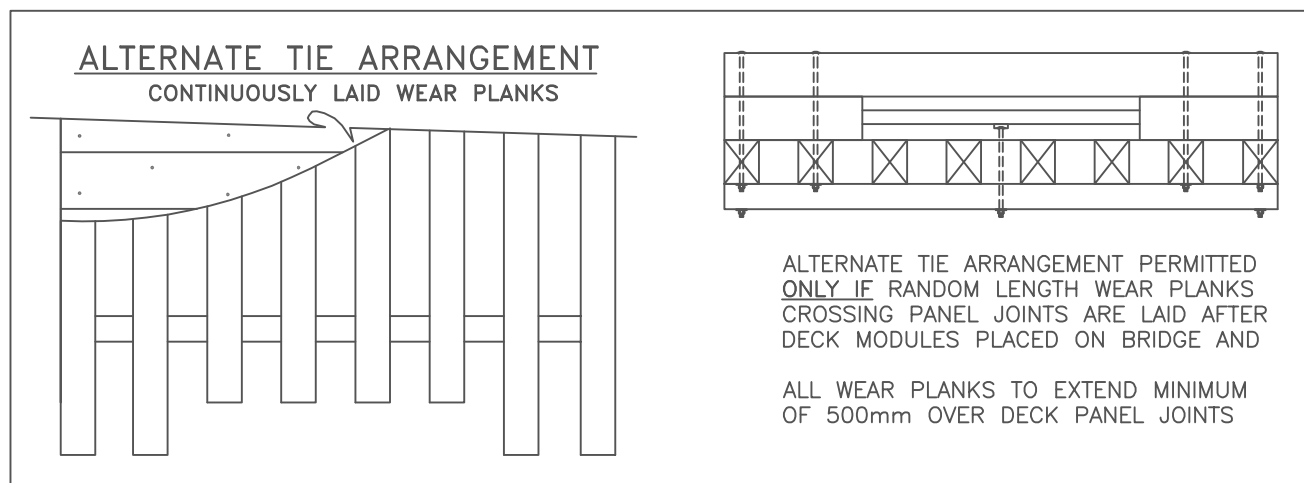
- DECK PLANKS NAILING PATERN:
- DECK PLANKS TO CROSS-TIES
  - 200mm GALV. COMMON SPIKES
  - 1 SPIKE EVERY TIE, STAGGERED SIDE TO SIDE @150 APART
  - PRE-DRILL (6mm) PLANK END SPIKES TO PREVENT SPLITTING



**DECK MODULE HALF SECTION**  
1:20

SEE DRAWING STD-EC-020-06 AND STD-EC-020-07 FOR CONNECTION DETAILS

- GALVANIZED 19Ø A307 TIMBER BOLTS (C/W ECONO DOME HEAD) (8 REQ'D) AND MALLEABLE IRON WASHERS TOP AND BOTTOM (MINIMUM 75 DIAMETER).
- 250x250x3048 TIMBER GUARD RAIL (2 REQ'D)
- 250x250x800 TIMBER RISER (4 REQ'D)
- LONG TIES SUPPORTING GUARD RAIL TO BE 610 WIDER THAN DECK WIDTH (4 REQUIRED PER MODULE)
- SHORT CROSS TIES
- OPTIONAL 150x150x3048 STIFFENING TIMBER (2) C/W 3-19Ø BOLTS PER TIMBER COUNTERSINK INTO DECK PLANKS & MALLEABLE IRON WASHERS

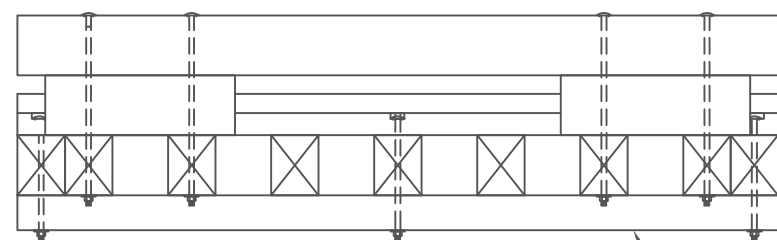


**ALTERNATE TIE ARRANGEMENT**  
CONTINUOUSLY LAID WEAR PLANKS

ALTERNATE TIE ARRANGEMENT PERMITTED ONLY IF RANDOM LENGTH WEAR PLANKS CROSSING PANEL JOINTS ARE LAID AFTER DECK MODULES PLACED ON BRIDGE AND ALL WEAR PLANKS TO EXTEND MINIMUM OF 500mm OVER DECK PANEL JOINTS

**NOTES**

- SEE DRAWING STD-EC-020-02 FOR TIMBER CROSS TIE SIZES AND SPACINGS.
- SEE DRAWING STD-EC-020-06 FOR NEW BRIDGE DECK MODULE CONNECTION DETAILS.
- SEE DRAWING STD-EC-020-07 FOR RETROFIT DECK MODULE CONNECTION DETAILS.
- WHEN TREATED MODULE SPECIFIED, ALL TIMBERS SHALL BE TREATED EXCEPT FOR WEAR PLANKS.



**DECK MODULE ELEVATION**  
1:30

OPTIONAL 150x150x3048 STIFFENING TIMBERS (2)

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

STANDARD BRIDGE DRAWING

MODULAR TIMBER DECK PANEL  
GENERAL ARRANGEMENT & DETAILS

SCALE AS SHOWN  
Designed: ABS Date 2012/03/12  
Checked: LT Date 2012/03/20  
Drawn: ABS Date 2012/03/12

Rev	Date	DESCRIPTION	Init
1	JAN-17-14	REVISED BOLT AND WASHER DETAILS	JV
-	-	-	-

REVISIONS

ORIGINAL SIGNED and SEALED BY:  
A.B. SWAN, PEng

MFR ENGINEER:  
DATE

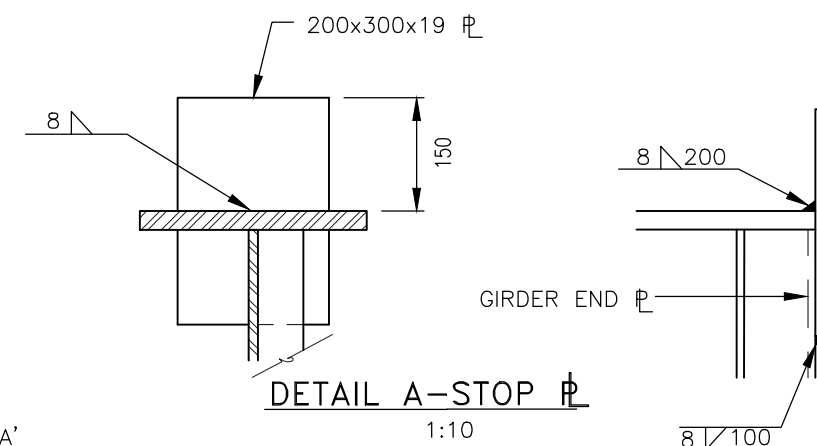
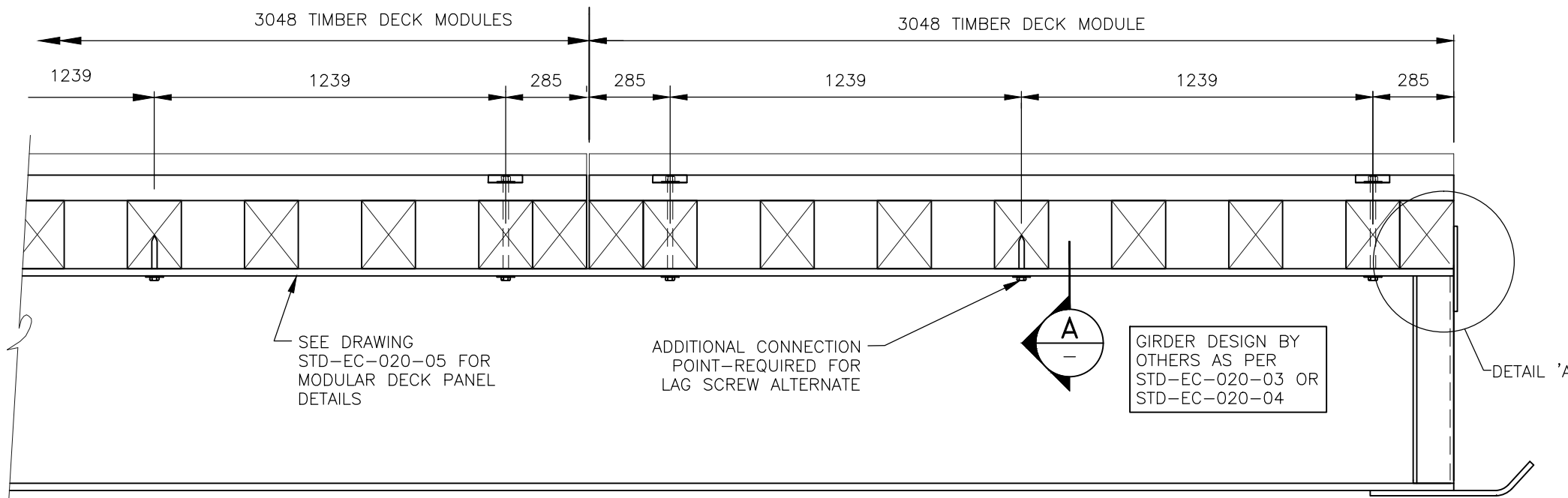
DESIGN ENGINEER: A.B. SWAN P.ENG  
DATE: MARCH 26, 2012

APPROVED BY: BRIAN CHOW, P.ENG, CHIEF ENGINEER  
DATE:

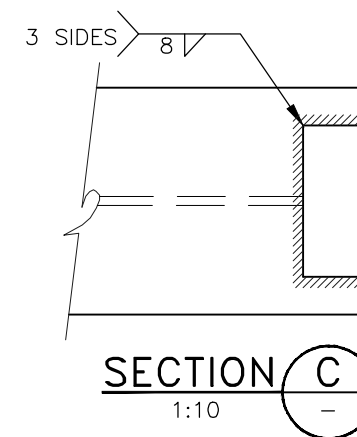
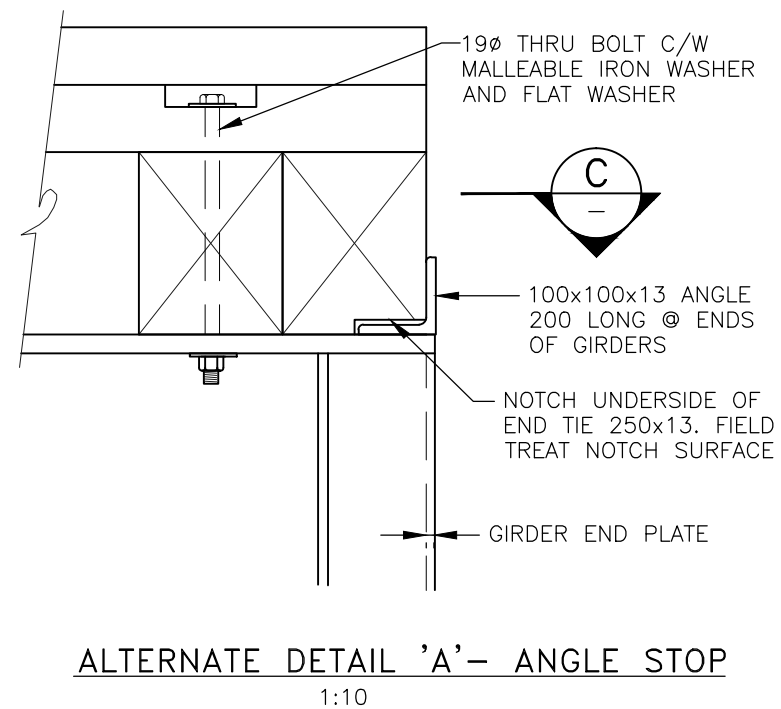
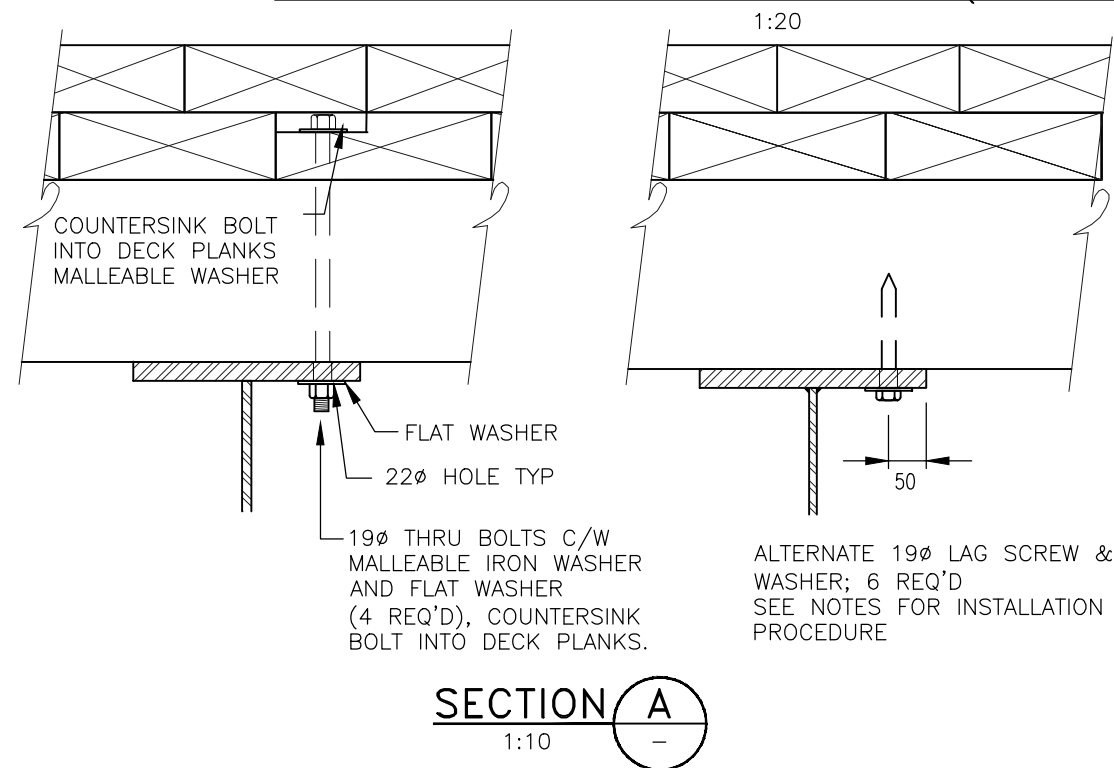
FILE No.

DRAWING No.  
STD-EC-020-05

DIMENSIONS SHOWN FOR BCL-625 7 L-100; DIMENSIONS FOR L150/L165 TO BE ADJUSTED ACCORDINGLY




DECK PANEL TO GIRDER ATTACHMENT (NEW CONSTRUCTION)



ALTERNATE LAG SCREW INSTALLATION NOTES:

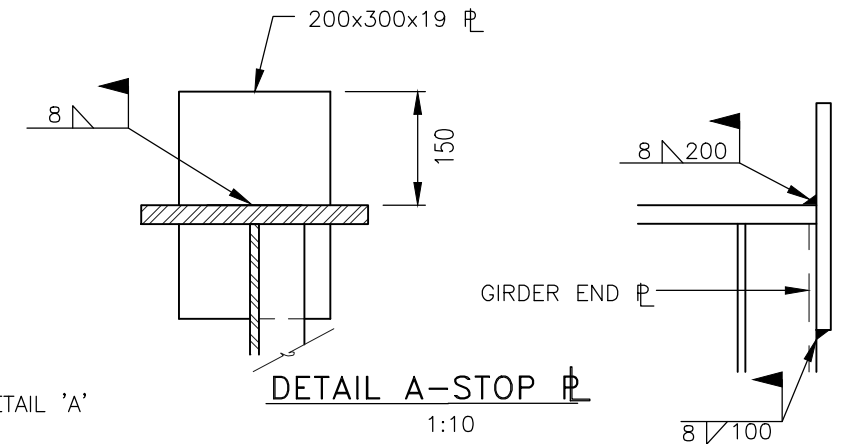
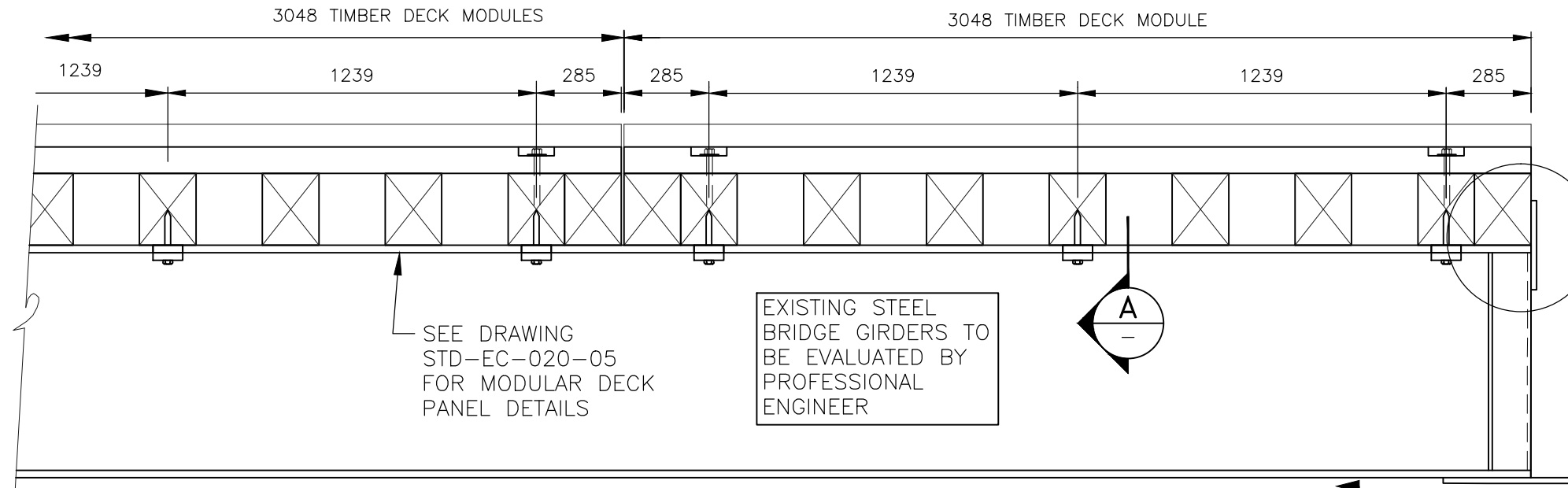
- LAG SCREWS SHALL 19mm DIA x 200mm LONG (6 REQUIRED)
- PRE-DRILLING FOR LAG SCREW HOLES SHALL BE AS FOLLOWS:
  - 19 mm DIA HOLE FOR SHANK PENETRATION LENGTH INTO CROSSTIE ONLY
  - 12.5 mm DIA HOLE FOR FULL PENETRATION LENGTH INTO CROSSTIE ONLY
- A NON-PETROLEUM LUBRICANT (IE .SOAP) MAY BE USED TO FACILITATE INSTALLATION
- IF LAG SCREWS HAVE BEEN INSTALLED MORE THAN TWO TIMES OR IF LAG SCREWS ARE STRIPPED, USE BOLT THROUGH OPTION

SCALE	AS SHOWN	Designed	ABS	Date	2012/03/12
		Checked	LT	Date	2012/03/20
		Drawn	ABS	Date	2012/03/12
Rev	Date	DESCRIPTION	Init		
-	-	-	-	-	-
REVISIONS					

 <b>MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS</b> ENGINEERING BRANCH	
STANDARD BRIDGE DRAWING	
<b>MODULAR TIMBER DECK PANELS, ATTACHMENT DETAILS-NEW BRIDGES</b>	
ORIGINAL SIGNED and SEALED BY: A.B. SWAN, PEng	MFR ENGINEER: DATE
DESIGN ENGINEER: A.B. SWAN P.ENG DATE: MARCH 26, 2012	APPROVED BY: BRIAN CHOW, P.ENG, CHIEF ENGINEER DATE:
FILE No.	DRAWING No. STD-EC-020-06

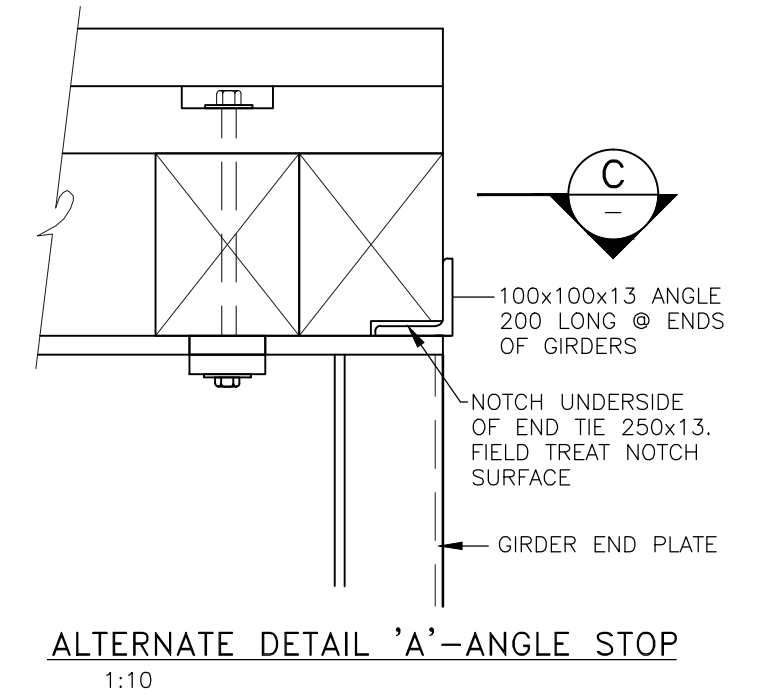
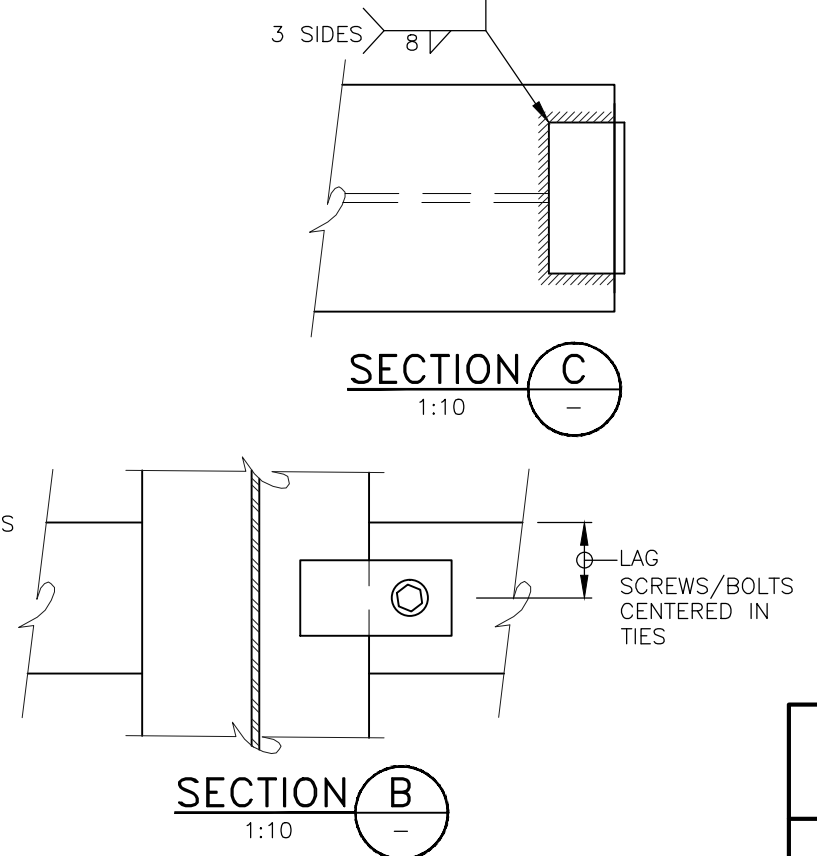
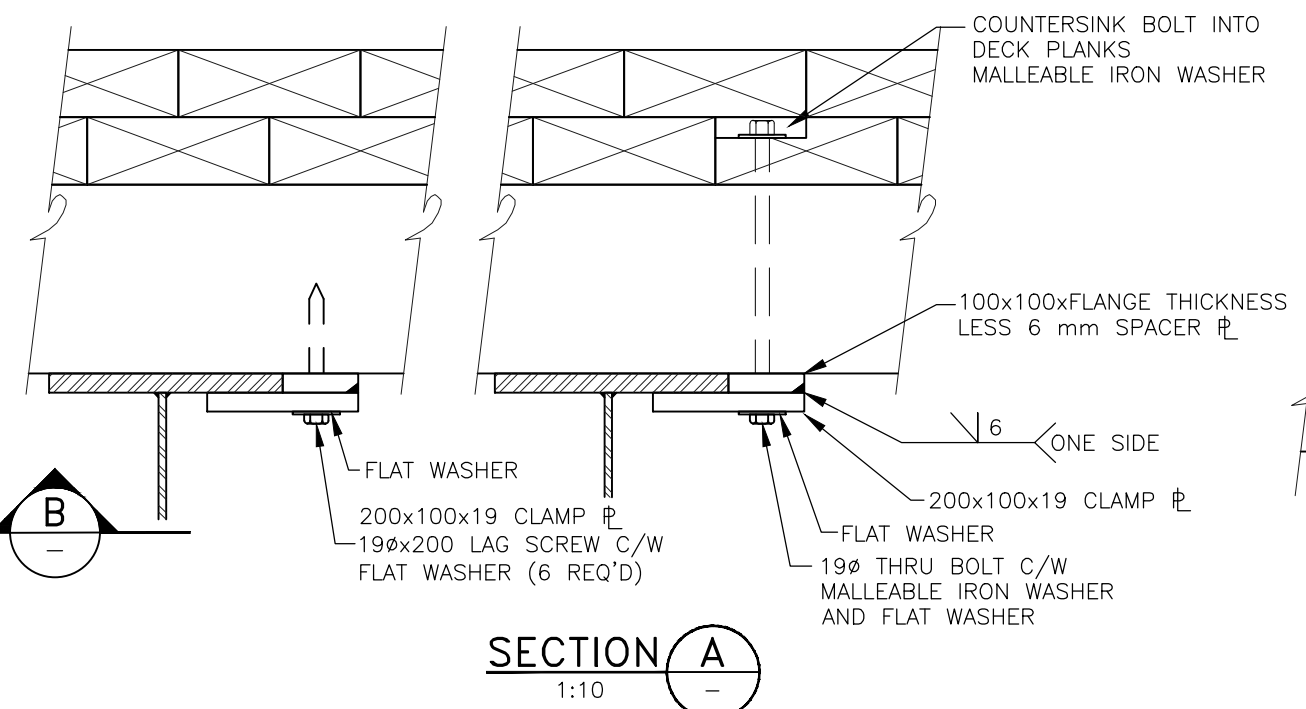
2009/02/19 \\STUDY-PC\Public\Documents\ACAD Dwgs

DIMENSIONS SHOWN FOR BCL-625 & L-100; DIMENSIONS FOR L150/L165 TO BE ADJUSTED ACCORDINGLY



**DECK CLAMPED TO GIRDER: RETROFIT APPLICATIONS**

1:20



- ALTERNATE LAG SCREW INSTALLATION NOTES:**
- LAG SCREWS SHALL 19mm DIA x 200mm LONG (6 REQUIRED)
  - PRE-DRILLING FOR LAG SCREW HOLES SHALL BE AS FOLLOWS:
    - 19 mm DIA HOLE FOR SHANK PENETRATION LENGTH INTO CROSSTIE ONLY
    - 12.5 mm DIA HOLE FOR FULL PENETRATION LENGTH INTO CROSSTIE ONLY
  - A NON-PETROLEUM LUBRICANT (IE .SOAP) MAY BE USED TO FACILITATE INSTALLATION
  - IF LAG SCREWS HAVE BEEN INSTALLED MORE THAN TWO TIMES OR IF LAG SCREWS ARE STRIPPED, USE BOLT THROUGH OPTION

SCALE AS SHOWN

Designed ABS Date 2012/03/12

Checked LT Date 2012/03/20

Drawn ABS Date 2012/03/12

Rev	Date	DESCRIPTION	Init
-	-	-	-

REVISIONS

**BRITISH COLUMBIA**

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

ENGINEERING BRANCH

STANDARD BRIDGE DRAWING

**MODULAR TIMBER DECK PANELS, ATTACHMENT DETAILS  
FIELD RETROFIT TO EXISTING BRIDGES**

ORIGINAL SIGNED and SEALED BY: A.B. SWAN, PEng	MFR ENGINEER: DATE
DESIGN ENGINEER: A.B. SWAN P.ENG DATE: MARCH 26, 2012	APPROVED BY: BRIAN CHOW, P.ENG, CHIEF ENGINEER DATE:
FILE No.	DRAWING No. STD-EC-020-07

\\STUDY-PC\Public\Documents\ACAD Dwg