



# MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS

ENGINEERING BRANCH, TIMBER OPERATIONS, PRICING AND  
FIRST NATIONS DIVISION

## TIMBER DECK BRIDGE STANDARDS

ASSUME NOT TO SCALE

ORIGINAL SIGNED AND SEALED

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		



**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.

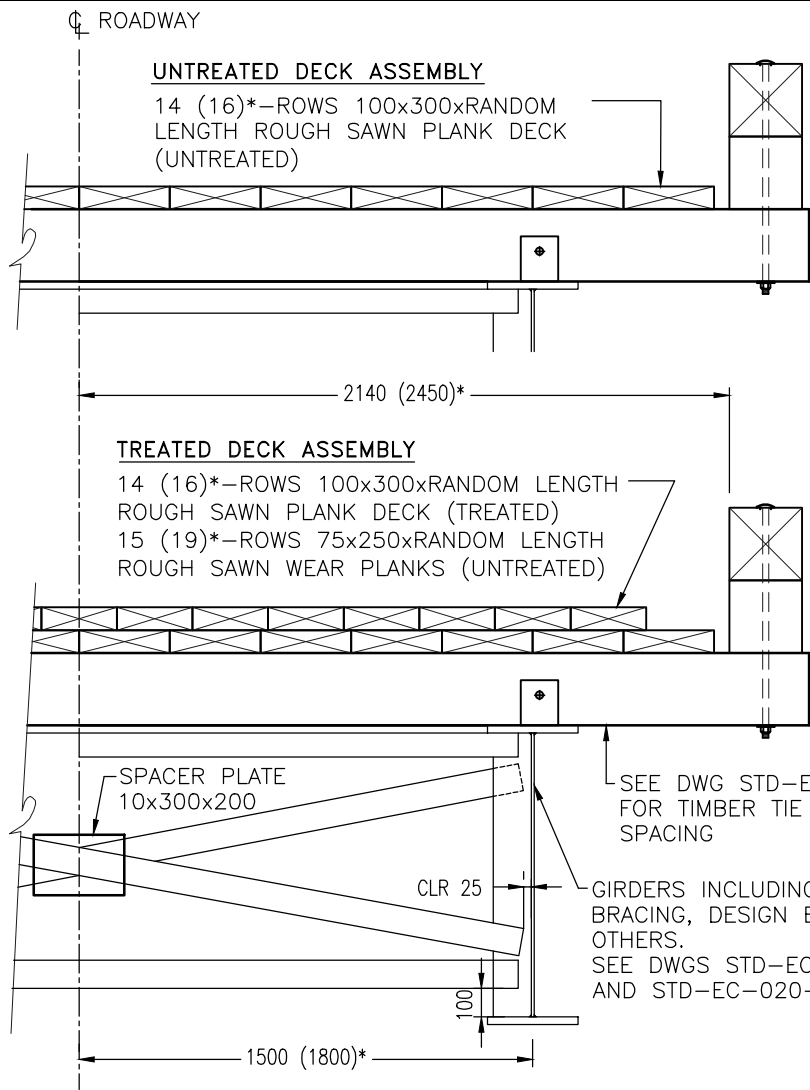
**ASSUME NOT TO SCALE**  
**ORIGINAL SIGNED AND SEALED**



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

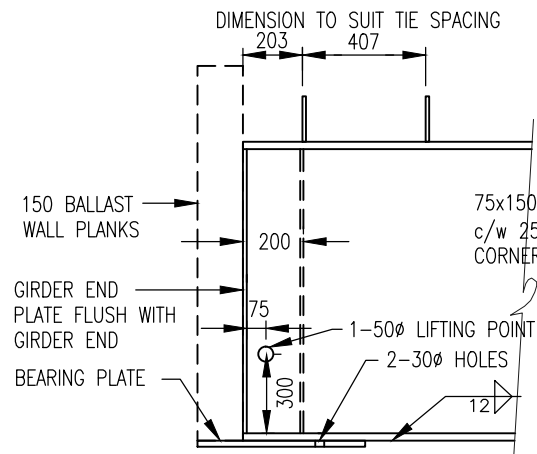
SCALE		AS SHOWN		Designed _____ Date: _____ Checked _____ Date: _____ Drawn _____ Date: _____		STANDARD BRIDGE DRAWING	
						<b>TIMBER DECK BRIDGES GENERAL NOTES – SHEET 2</b>	
Rev.	Date	DESCRIPTION	Init			ORIGINAL SIGNED and SEALED BY:	FLNR ENGINEER: DATE
						DESIGN ENGINEER	APPROVED BY: BRIAN CHOW, P.Eng. CHIEF ENGINEER
						DATE	DATE
				REVISIONS		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

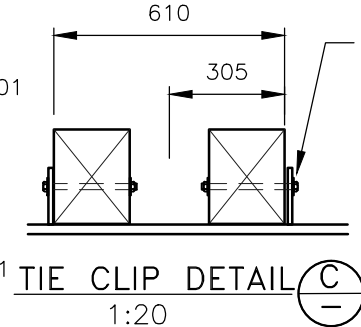


END GIRDER/TIE CLIP DETAIL **B**

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



TIE CLIP DETAIL **C**

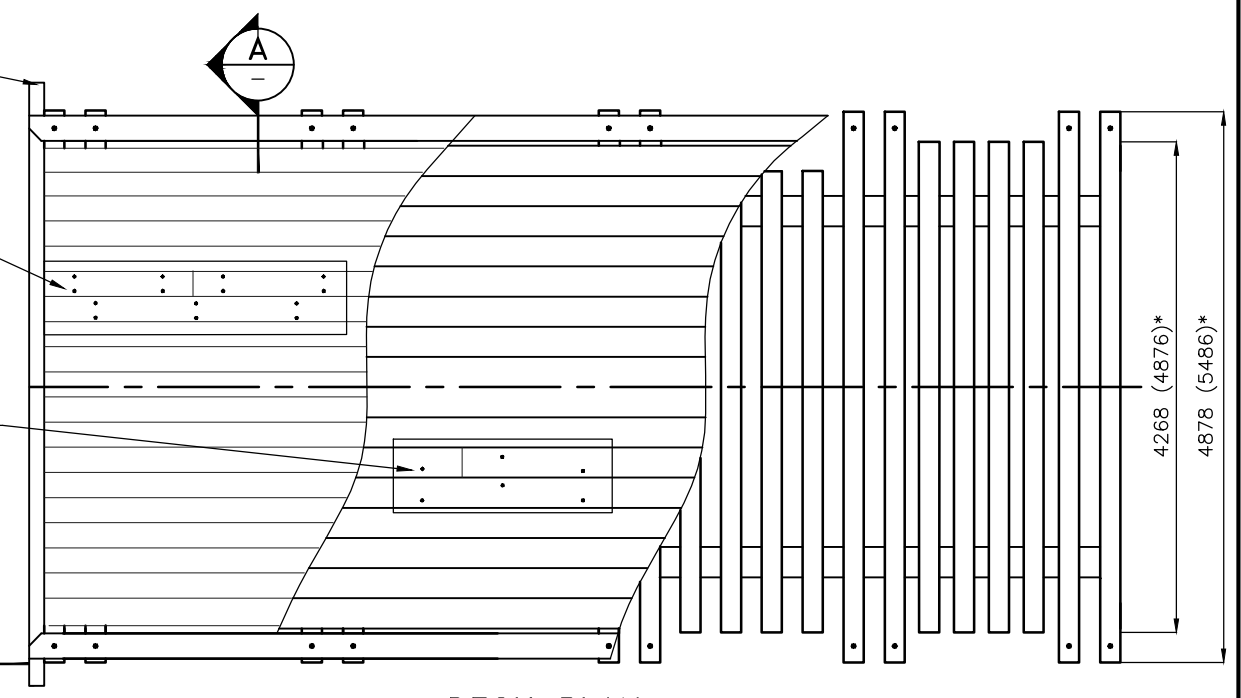
1:20

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

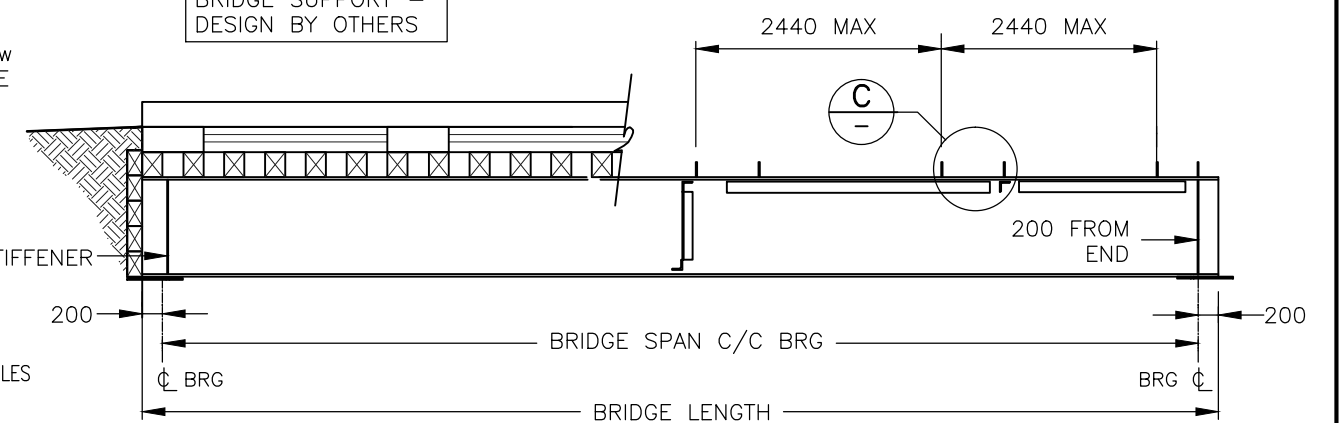
- DECK PLANKS NAILING PATTERN:
- DECK PLANKS TO CROSS-TIES
  - 200mm GALV. COMMON SPIKES
  - 1 SPIKE, CENTERED ON PLANK AND TIE AT EACH END; PRE-DRILL (6mm) TO PREVENT SPLITTING
  - 1 SPIKE EVERY TIE, STAGGERED SIDE TO SIDE @ 150 APART

**B**

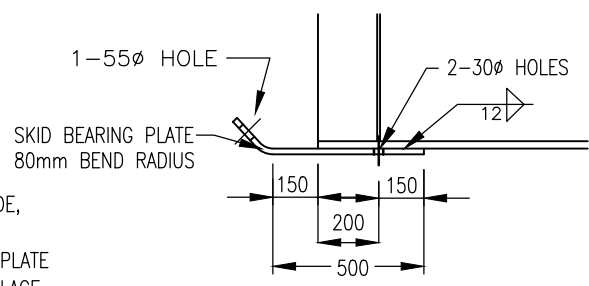


DECK PLAN  
1:75

STRUCTURAL STEEL SUPERSTRUCTURE & BRIDGE SUPPORT - DESIGN BY OTHERS



TYPICAL ELEVATION  
1:75



OPTIONAL SKID PLATE BEARING DETAIL  
1:25

ASSUME NOT TO SCALE  
ORIGINAL SIGNED AND SEALED

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:

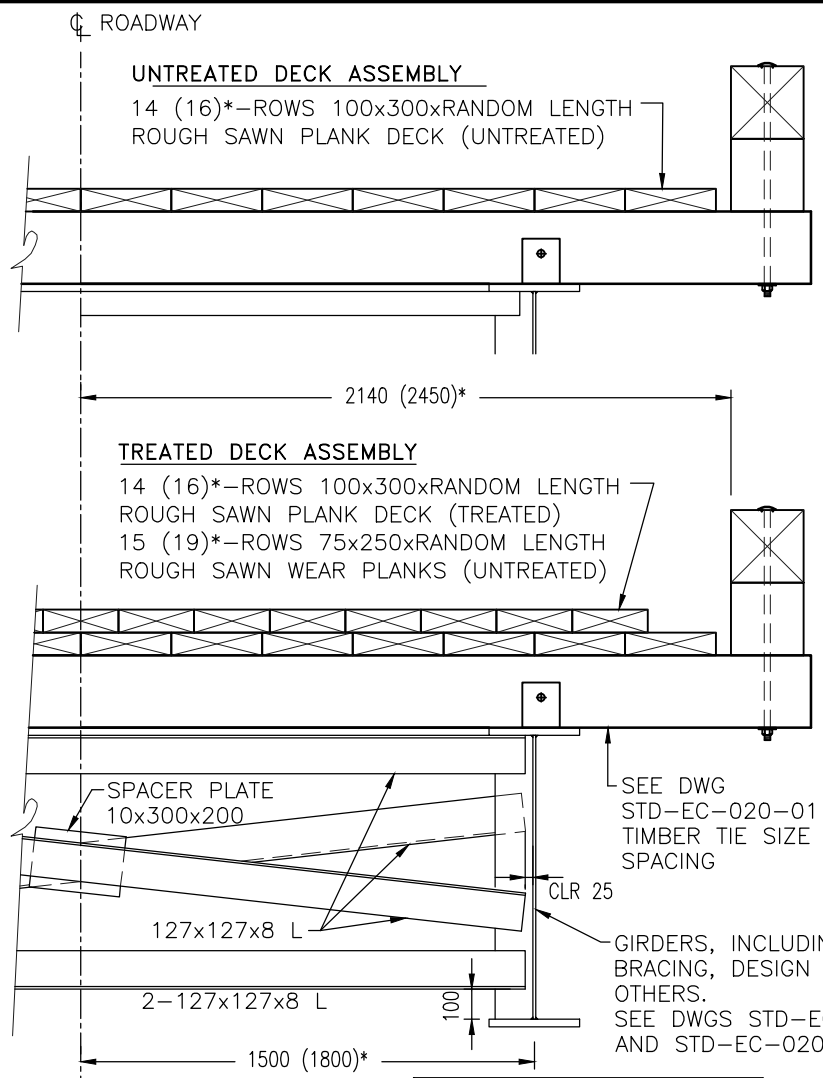
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DRAWING No.  
STD-EC-020-03

Rev	Date	DESCRIPTION	Init
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REVISIONS

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



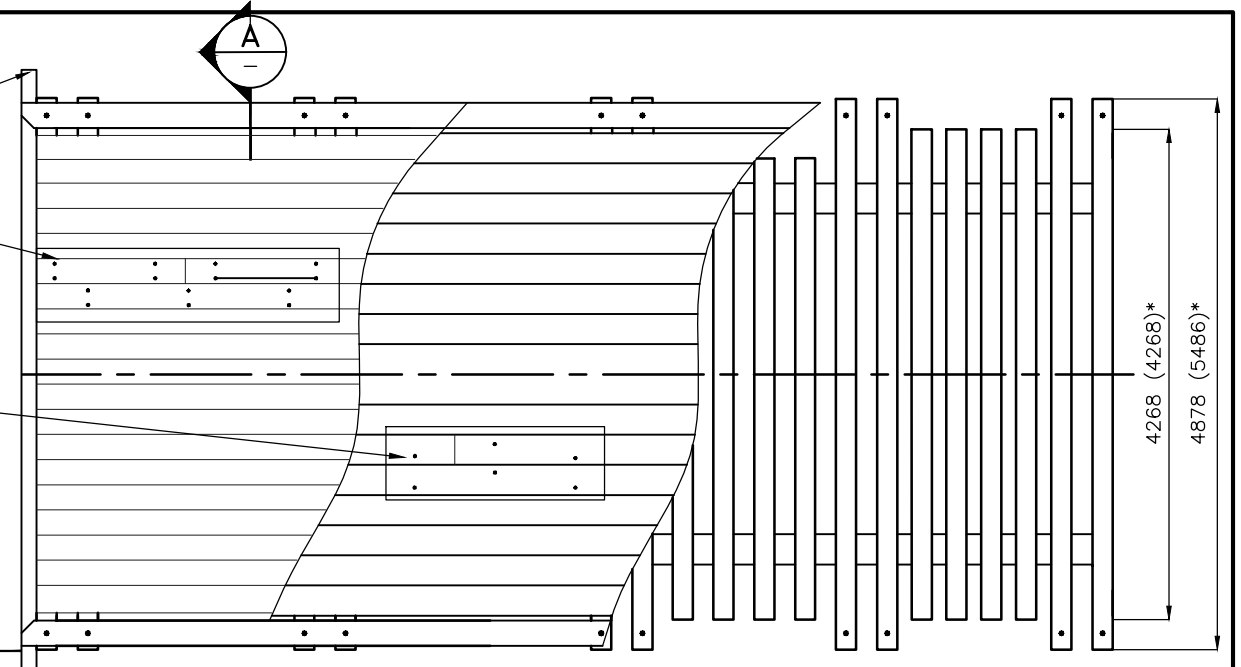
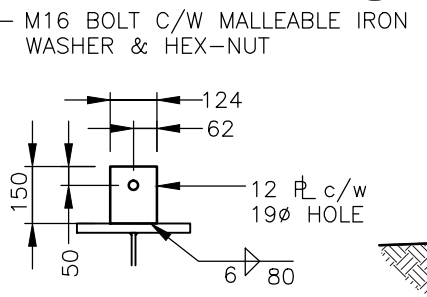
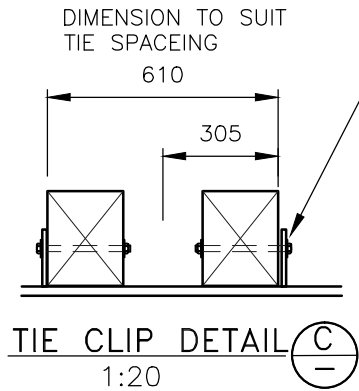
**A TYPICAL END DIAPHRAGM/DECK SECTION**  
1:25

- 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

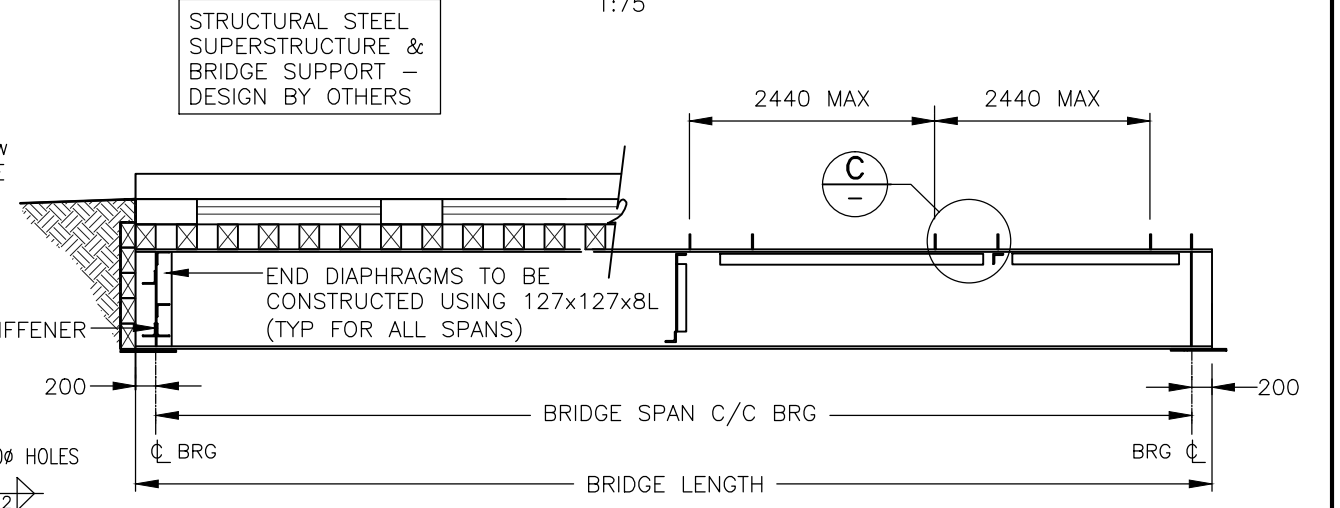
FOR PORTABLE BRIDGES BALLAST WALLS TO BE 150x300x6000 TREATED TIMBER BOLTED TO GIRDER END PL'S UNLESS SPECIFIED OTHERWISE.

- 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

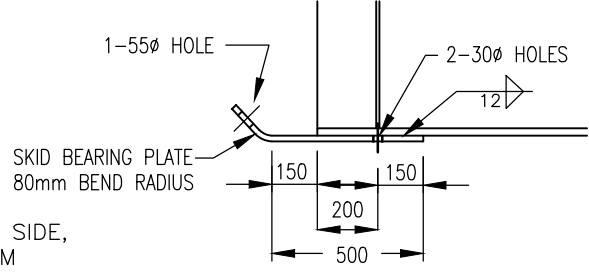
- DECK PLANKS NAILING PATTERN:
- DECK PLANKS TO CROSS-TIES
  - 200mm GALV. COMMON SPIKES
  - 1 SPIKE, CENTERED ON PLANK AND TIE AT EACH END; PRE-DRILL (6mm) TO PREVENT SPLITTING
  - 1 SPIKE EVERY TIE, STAGGERED SIDE TO SIDE @ 150 APART



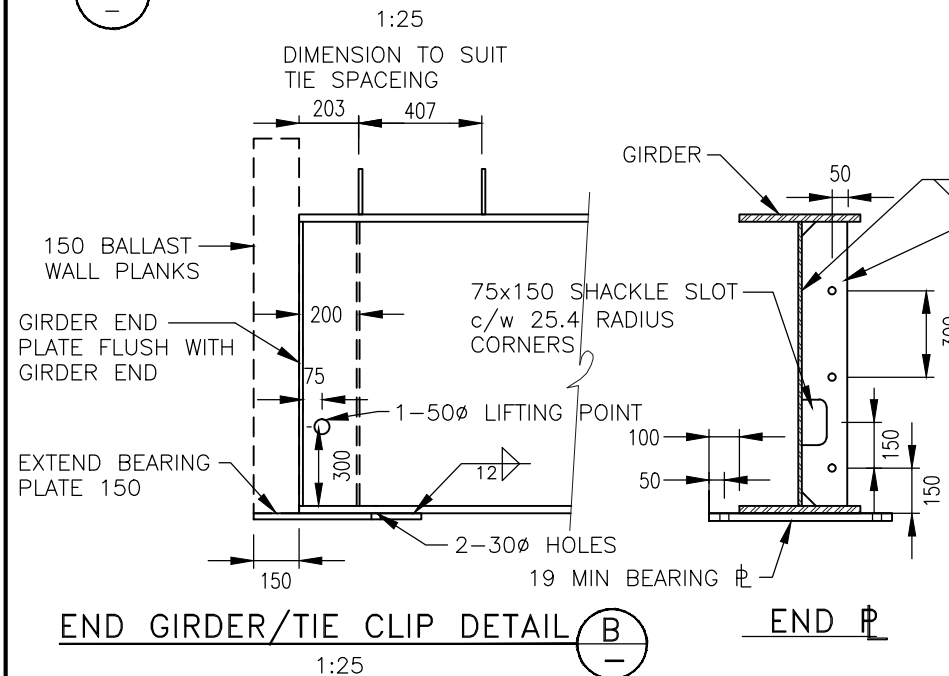
**DECK PLAN**  
1:75



**TYPICAL ELEVATION**  
1:75



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



**END GIRDER/TIE CLIP DETAIL**  
1:25

ASSUME NOT TO SCALE  
ORIGINAL SIGNED AND SEALED

**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

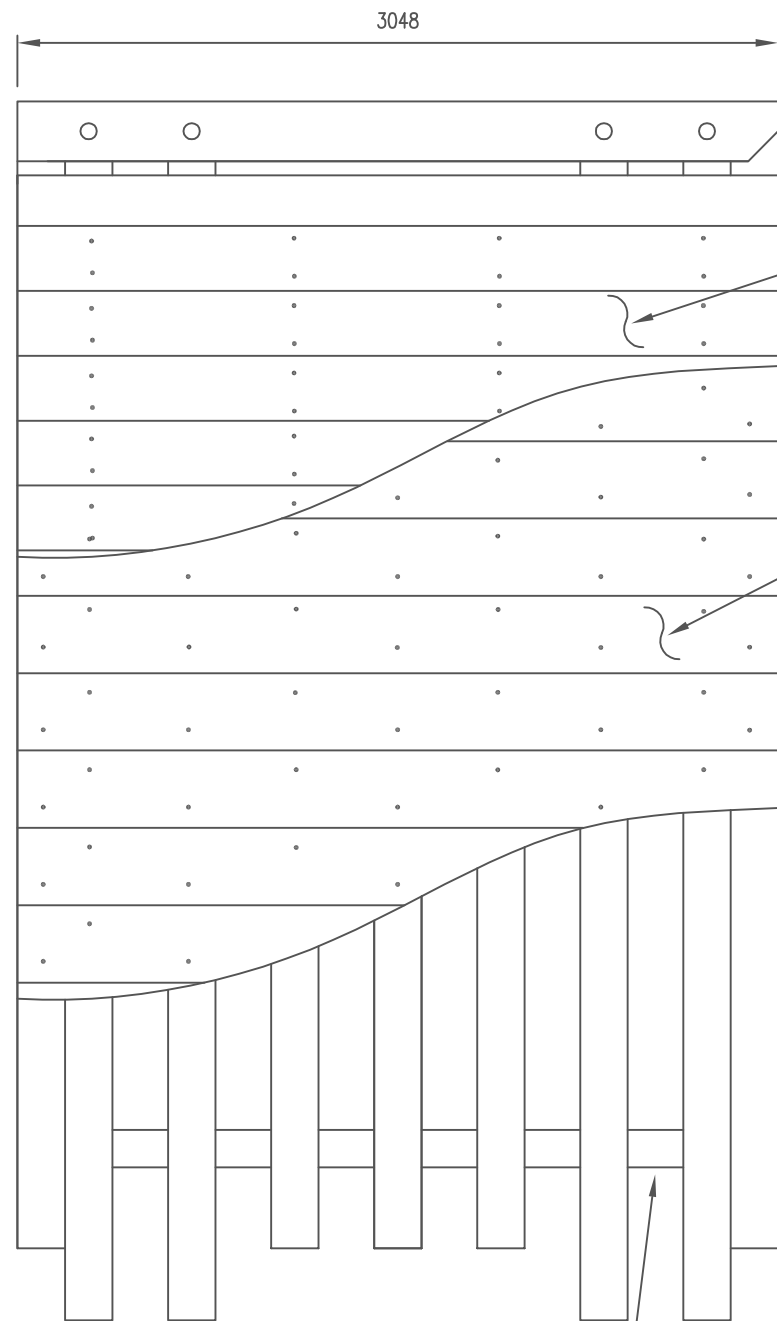
ORIGINAL SIGNED and SEALED BY:  
A.B. SWAN, PEng  
MFR ENGINEER:  
DATE

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-020-04

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REVISIONS



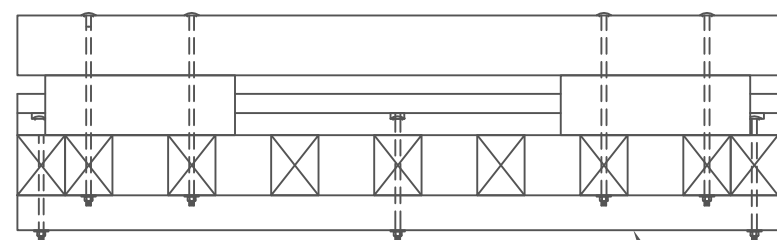
**DECK MODULE PLAN**  
1:30

125x125 CHAMFER ON CURB RAILS @ ENDS OF BRIDGE ONLY

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

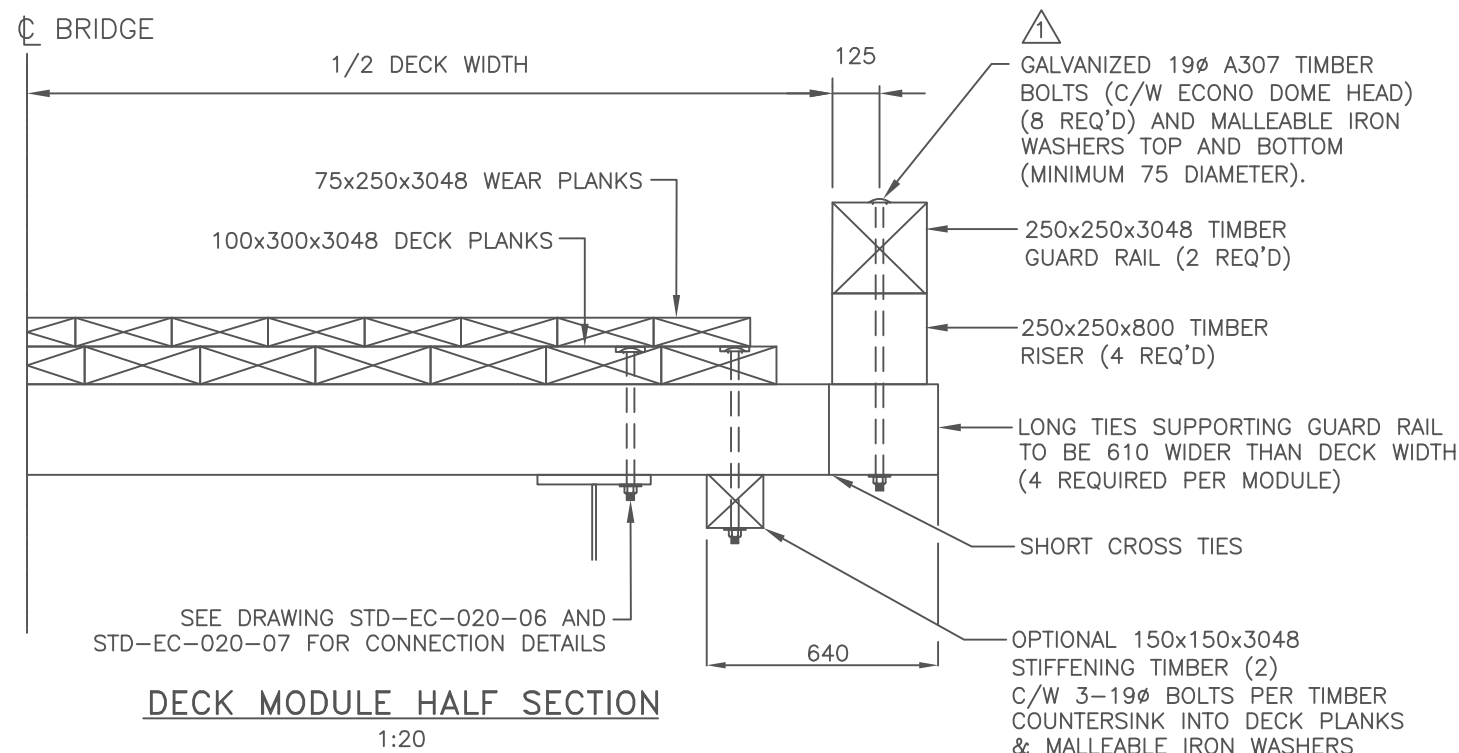
- DECK PLANKS NAILING PATTERN:
- DECK PLANKS TO CROSS-TIES
  - 200mm GALV. COMMON SPIKES
  - 1 SPIKE EVERY TIE, STAGGERED SIDE TO SIDE @150 APART
  - PRE-DRILL (6mm) PLANK END SPIKES TO PREVENT SPLITTING

OPTIONAL 150x150x3048 STIFFENING TIMBERS (2)



**DECK MODULE ELEVATION**  
1:30

OPTIONAL 150x150x3048 STIFFENING TIMBERS (2)



**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).

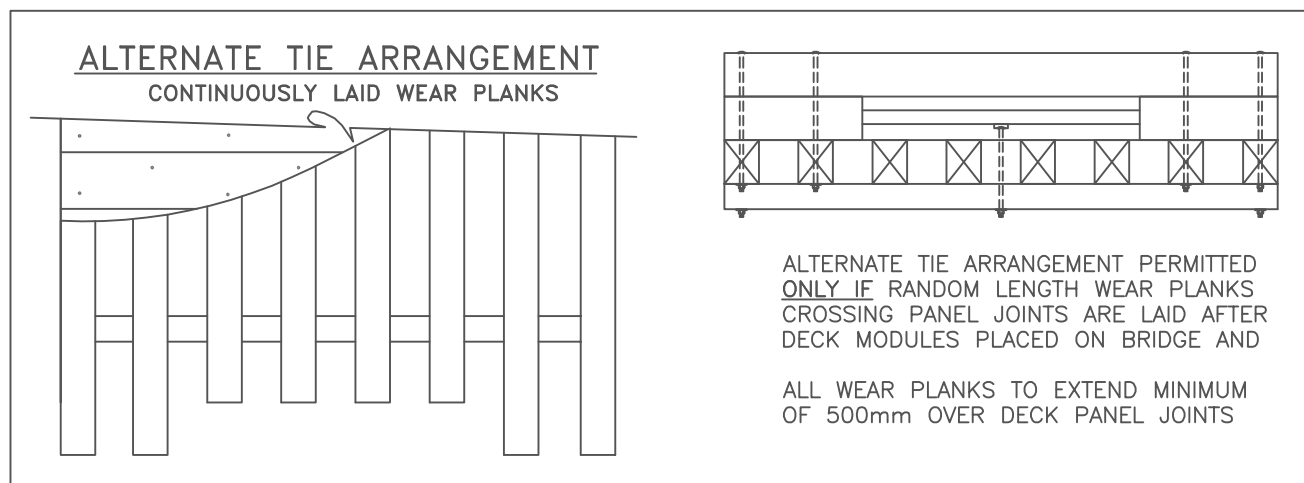
250x250x3048 TIMBER GUARD RAIL (2 REQ'D)

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



**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.



**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

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

MFR ENGINEER:  
DATE

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

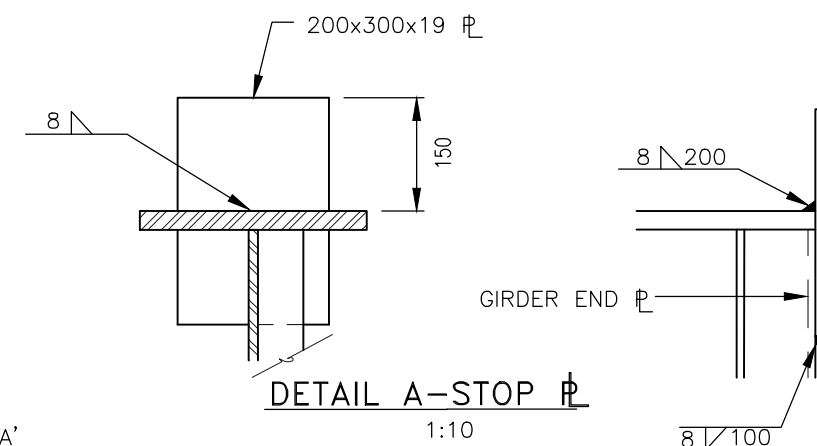
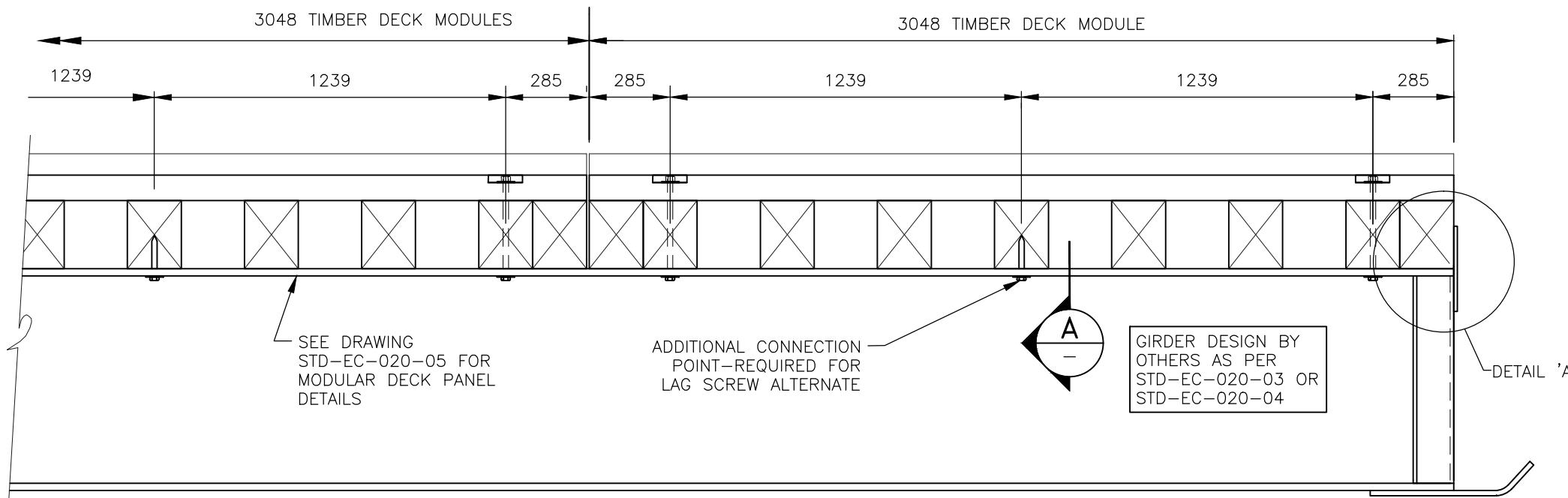
APPROVED BY: BRIAN CHOW, P.ENG, CHIEF ENGINEER  
DATE:

FILE No.

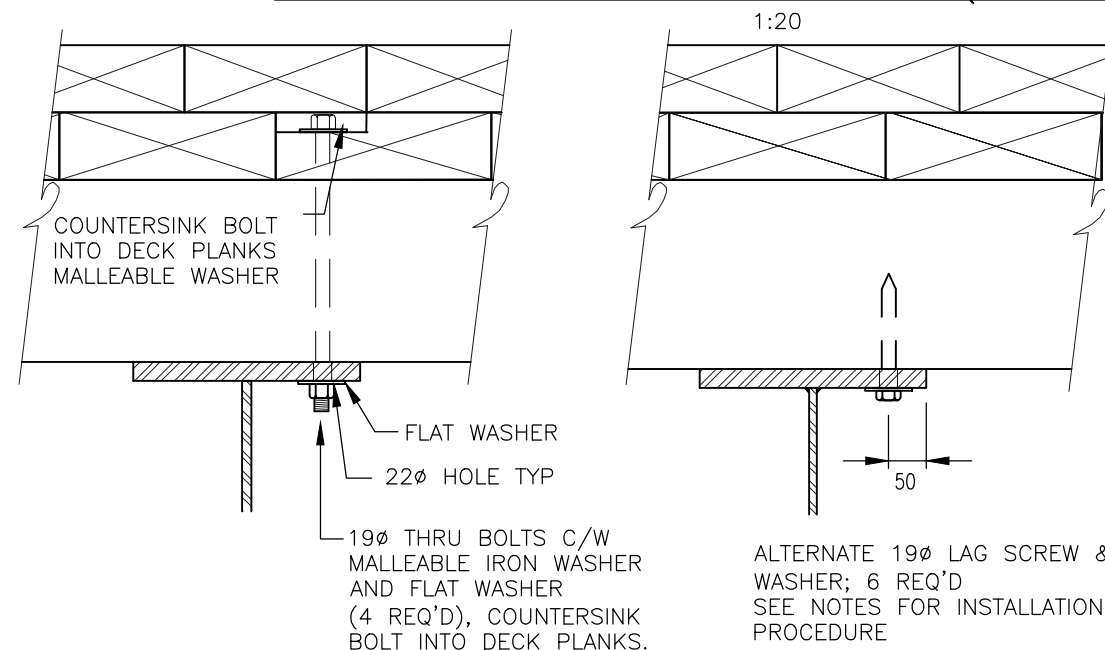
DRAWING No.  
STD-EC-020-05

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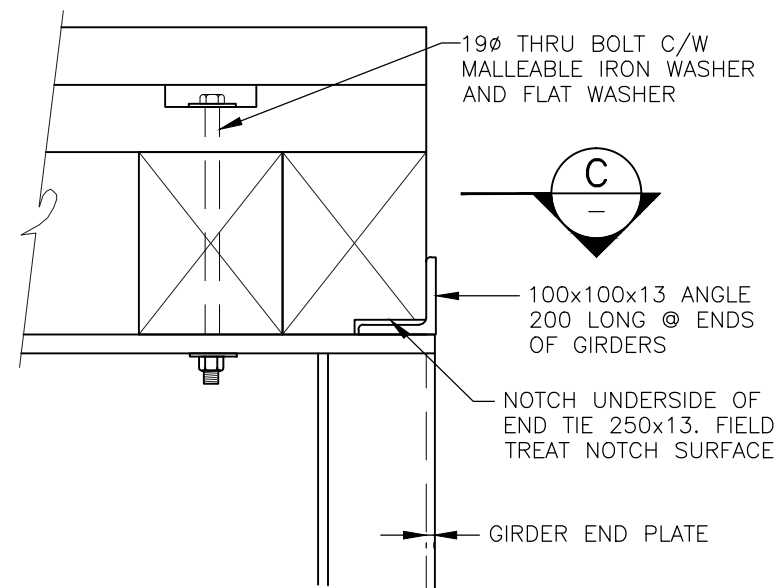
DIMENSIONS SHOWN FOR BCL-625 7 L-100; DIMENSIONS FOR L150/L165 TO BE ADJUSTED ACCORDINGLY



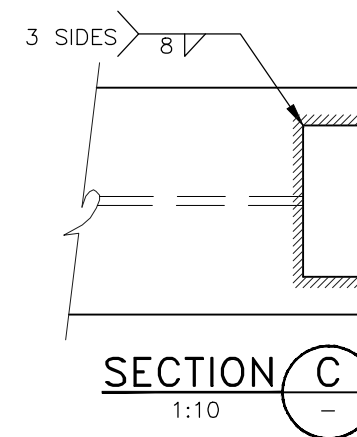
DECK PANEL TO GIRDER ATTACHMENT (NEW CONSTRUCTION)



SECTION A  
1:10



ALTERNATE DETAIL 'A' - ANGLE STOP  
1:10




SECTION C  
1:10

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

ASSUME NOT TO SCALE  
ORIGINAL SIGNED AND SEALED

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		
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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

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