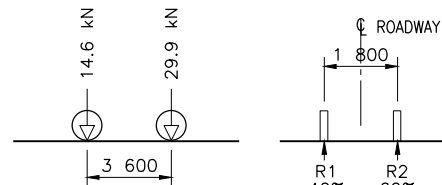
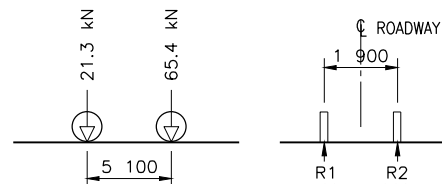


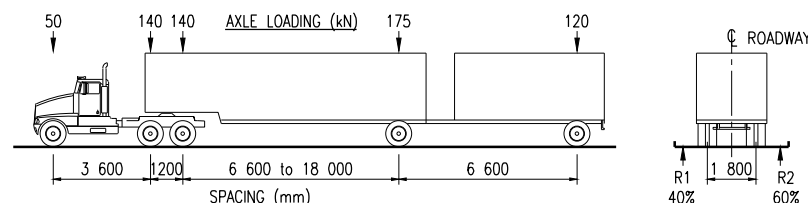
ATV LOADING GVW 1,835 kg



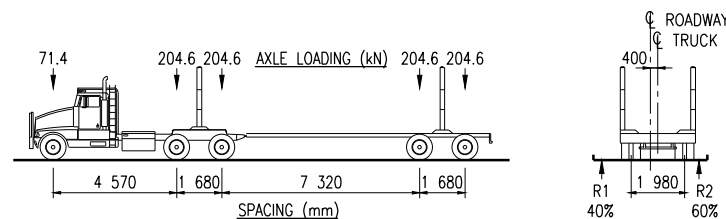
RANGE VEHICLE TYPE 1 GVW 4,500 kg



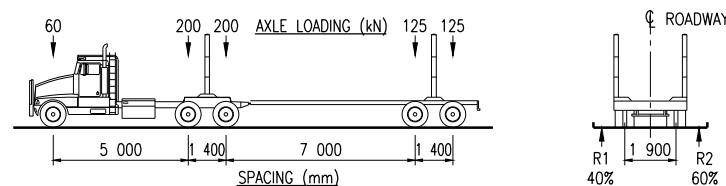
RANGE VEHICLE TYPE 2 GVW 8,850 kg



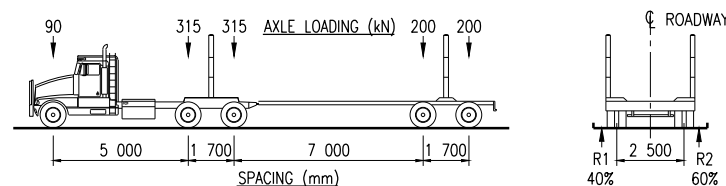
BCL-625 TRUCK GVW 63,710 KG



L-100 (OFF-HIGHWAY) GVW 90,680 kg



LIGHT OFF-HIGHWAY GVW 72,375 kg



HEAVY OFF-HIGHWAY GVW 114,200 kg

## DESIGN VEHICLES

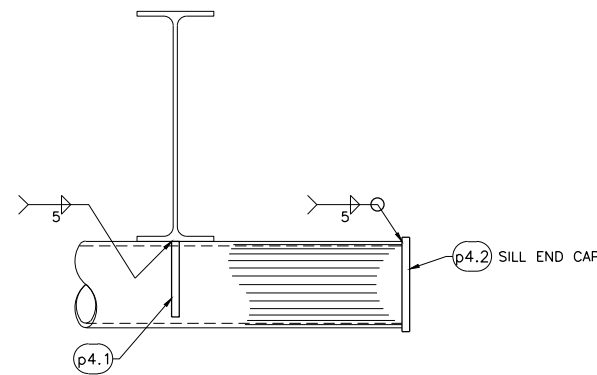
(NOT TO SCALE)

## DESIGN NOTES:

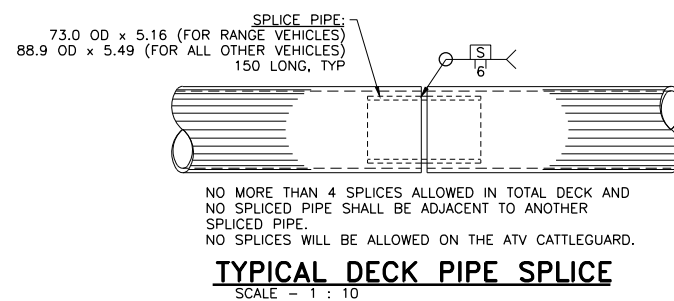
1. DESIGNED IN ACCORDANCE WITH CAN/CSA-S6-06 AND THE REQUIREMENTS OF MINISTRY OF FORESTS AND RANGE/MINISTRY OF TRANSPORTATION 'CATTLEGUARD STANDARDS AND SPECIFICATIONS' DATED NOVEMBER 21, 2008, WITH THE EXCEPTION OF RUNNING STRIPS.
2. CATTLEGUARDS ARE DESIGNED FOR VEHICLE LOADING(S) SHOWN ON THIS DRAWING. DESIGN LIVE LOADING CYCLES = 100,000. IMPACT FACTOR = 1.4. MULTI-LANE LOAD COMBINATIONS CONSIDERED ARE SHOWN ON EACH CATTLEGUARD DRAWING.
3. THE ALLOWABLE BEARING PRESSURE OF SOIL SUPPORTING THE CATTLEGUARDS IS ASSUMED TO BE 200 kPa.

## STRUCTURAL STEEL NOTES:

1. ALL STEELWORK SHALL CONFORM TO CSA-G40.20/G40.21 GRADE 300W, EXCEPT ROUND STEEL PIPE WHICH SHALL CONFORM TO ASTM STANDARD A53 Grade B (MINIMUM YIELD STRENGTH OF 241 MPa).
2. ALL WELDING SHALL BE UNDERTAKEN BY A COMPANY CERTIFIED BY THE CANADIAN WELDING BUREAU TO THE REQUIREMENTS OF CSA W47.1 DIVISION 3 OR BETTER AND ALL WELDING SHALL CONFORM TO THE CURRENT CSA STANDARD W59.
3. SEE TYPICAL DECK PIPE SPlice DETAIL FOR SPlicing LIMITS.
4. CATTLEGUARDS SHALL BE PAINTED WITH A SINGLE COAT OF INORGANIC, ZINC-RICH PRIMER AT A DRY FILM THICKNESS (DFT) OF 50-75 MICRONS OVER THE PROFILE. THE ZINC-RICH PRIMER SHALL BE CHOSEN FROM THE APPROVED PRIMER LIST SPECIFIED IN BC MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE RECOGNIZED PRODUCTS LIST FOR SYSTEM 'SS1'. SURFACE PREPARATION PRIOR TO PAINTING SHALL MEET THE REQUIREMENTS OF SSPC SP10 - NEAR WHITE METAL ABRASIVE BLAST WITH A SHARP 50-75 MICRON PROFILE.
5. FINISHED CATTLEGUARDS SHALL BE IDENTIFIED WITH A NAME OR TRADEMARK OF MANUFACTURER, MODEL TYPE, DESIGN LOAD AND "MONTH/YEAR" OF MANUFACTURE STAMPED OR WELDED ON EXTERIOR FACE OF EXTERIOR STRINGER AT MIDSPAN. ALL LETTERING TO BE A MINIMUM OF 25 mm HIGH.

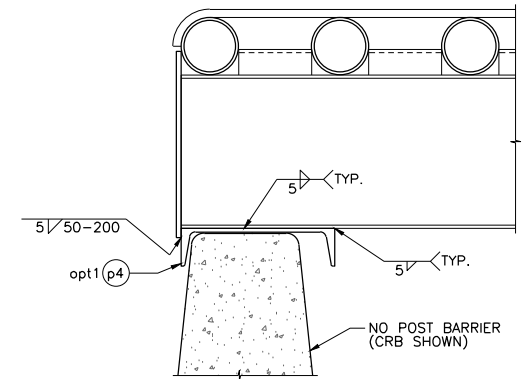


SILL END CAP DETAIL  
SCALE - 1 : 10 (SILL OPTION 3 ONLY)

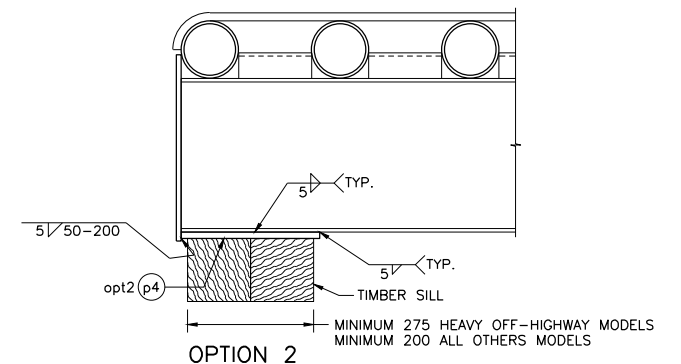


NO MORE THAN 4 SPLICES ALLOWED IN TOTAL DECK AND NO SPLICED PIPE SHALL BE ADJACENT TO ANOTHER SPLICED PIPE.  
NO SPLICES WILL BE ALLOWED ON THE ATV CATTLEGUARD.

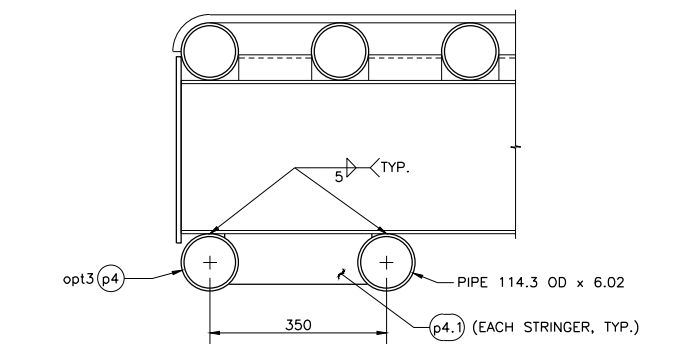
TYPICAL DECK PIPE SPlice  
SCALE - 1 : 10



OPTION 1



OPTION 2



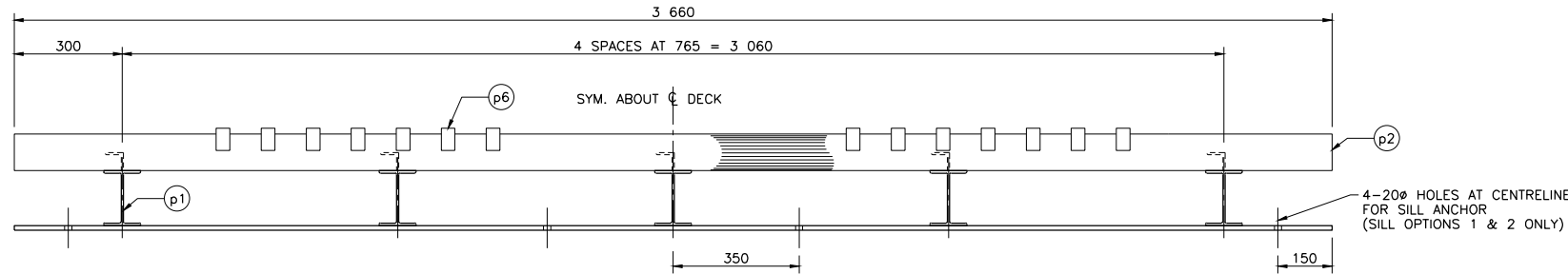
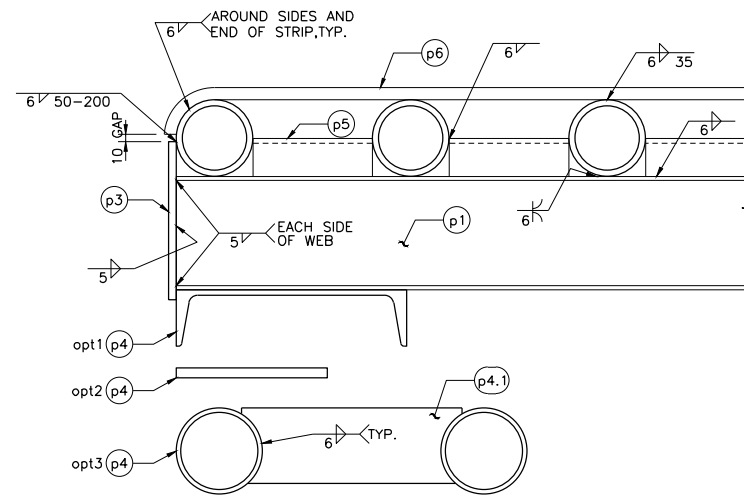
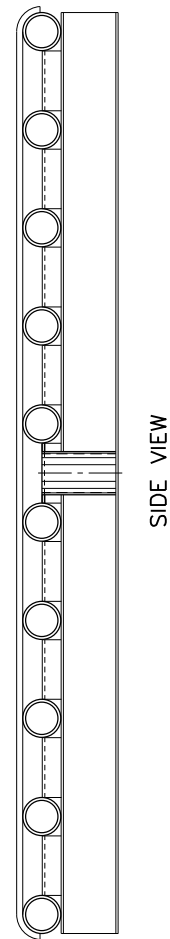
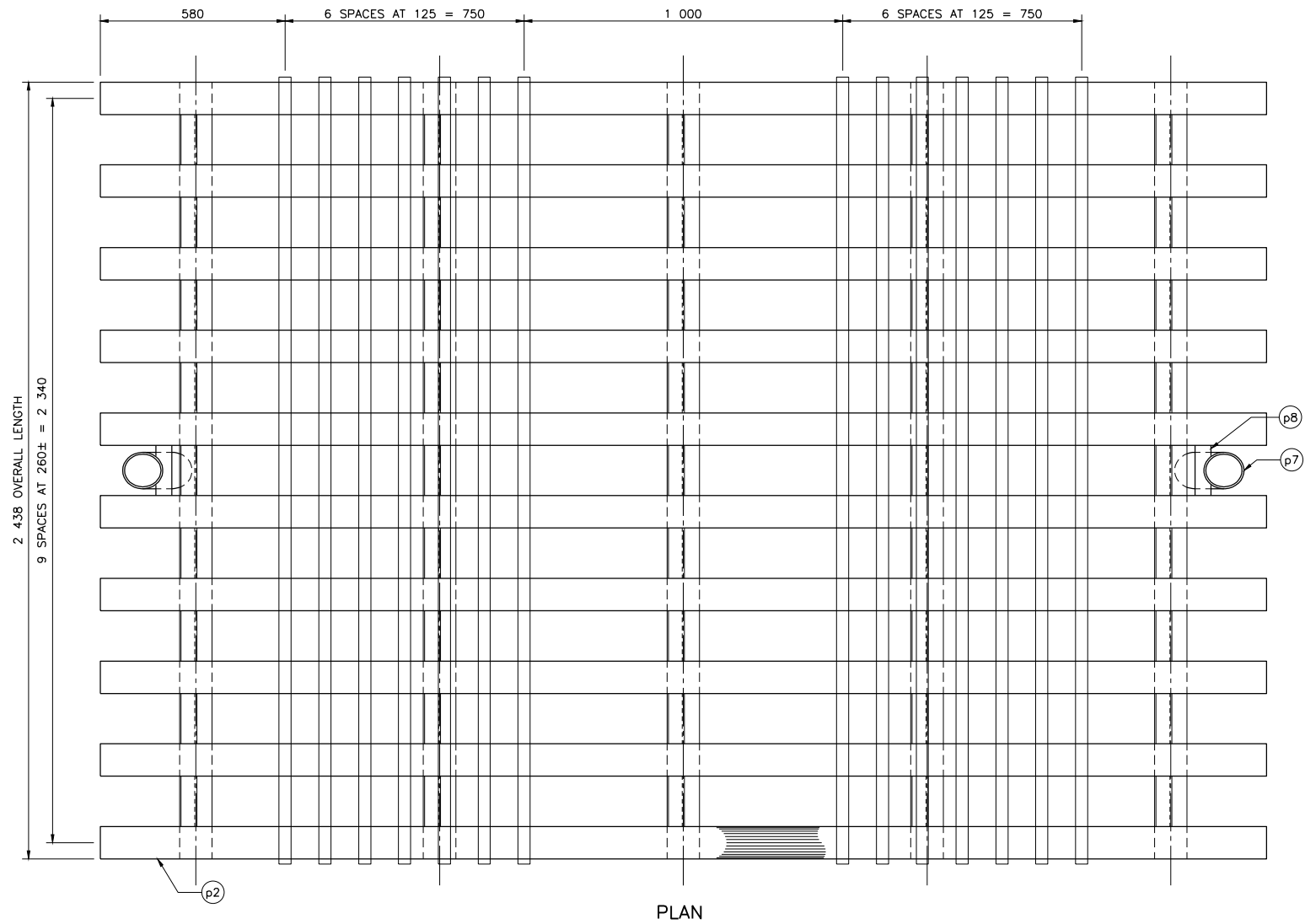
OPTION 3

## SILL OPTIONS

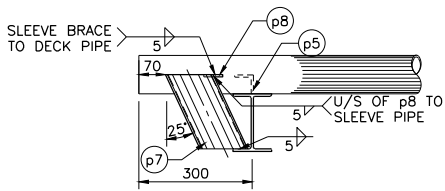
NOT TO SCALE

3 PIPE SILL FOR HEAVY OFF-HIGHWAY VEHICLES ONLY  
SEE DWG. No. STD-ECAT-010-05 AND STD-ECAT-010-06

<b>McElhanney</b> McElhanney Consulting Services Ltd. SUITE 500, 3960 QUADRA STREET VICTORIA B.C. V8X 4A3 PH (250) 370-9221 FAX (250) 370-9223				<b>Ministry of Forests and Range</b> Engineering Branch, Field Operations Division <b>BRITISH COLUMBIA</b> The Best Place on Earth			
SCALE AS SHOWN Designed: DAN Checked: EYW Drawn: DRM Date: 2010/06/03 Date: 2010/06/03 Date: 2010/06/03				CATTLEGUARD NOTES AND STANDARD DETAILS			
Rev Date DESCRIPTION Init				ORIGINAL SIGNED AND SEALED BY: Ernie Wong, P.Eng.		MFR CHIEF ENGINEER: Brian Chow, P.Eng.	
A 2015/02/06 RANGE VEHICLES TYPE 1 & 2 ADDED SEM				DESIGN ENGINEER: Ernie Wong, P.Eng. DATE: JUNE 3, 2010		DATE:	
REVISIONS				FILE No.		DRAWING No. STD-ECAT-010-01	



END VIEW (END PLATE NOT SHOWN FOR CLARITY)  
**PIPE DECK 3.66 m WIDE CATTLEGUARD**  
SCALE - 1 : 20



END VIEW  
**FENCE POST BRACE**  
SCALE - 1 : 20  
(WELDS SHOWN ARE TYPICAL FOR EACH ITEM)

### NOTES:

- SEE DRAWING No. STD-ECAT-010-01 FOR DESIGN NOTES, STRUCTURAL STEEL NOTES, SILL OPTIONS AND SPLICE DETAILS.
- NO MORE THAN 4 SPLICES ALLOWED IN TOTAL DECK AND NO SPLICED PIPE SHALL BE ADJACENT TO ANOTHER SPLICED PIPE.
- MODEL TYPE ECAT-010-11.

### MATERIAL LIST

PIECE	QTY	DESCRIPTION	LENGTH mm	WEIGHT kg
p1	5	W150 x 18 STRINGER	2 438	219.4
p2	10	DECK PIPE 101.6 OD x 8.08	3 660	680.8
p3	2	PL10 x 205 END PLATE	3 660	117.8
opt1 p4	2	C310 x 31 MUDSILL	3 660	224.7
opt2 p4	2	PL13 x 200 MUDSILL	3 660	149.4
opt3 p4	4	PIPE 114.3 OD x 6.02 MUDSILL	3 660	235.7
opt3 p4.1	10	PL10 x 100 STIFFENER PLATE	290	22.8
opt3 p4.2	4	PL10 x 125 END CAP	475	18.6
p5	45	L51 x 51 x 6.4 SPACER ANGLES	172	36.8
p6	14	PL16 x 38 RUNNING STRIPS	2 504	167.3
p7	2	PIPE 114.3 OD x 6.02 FENCE POST SLEEVE	210	6.8
p8	2	PL6 x 50 SLEEVE BRACE	172	0.8
			opt1	1 454.4 kg

### END PLATE AND SILL DETAIL

SCALE - 1 : 10  
(WELDS SHOWN ARE TYPICAL FOR EACH ITEM)  
(SEE DRAWING No. STD-ECAT-010-01  
FOR SILL OPTIONS AND WELD DETAILS)

 McElhanney Consulting Services Ltd. SUITE 500, 3060 QUADRA STREET VICTORIA B.C. V8X 4A3 PH (250) 370-9221 FAX (250) 370-9223		 Ministry of Forests and Range Engineering Branch, Field Operations Division The Best Place on Earth	
SCALE AS SHOWN		Designed: DAN Checked: EYW Drawn: SEM Date: 2015/02/06 Date: 2015/02/06 Date: 2015/02/06	
Rev	Date	DESCRIPTION	Init
REVISIONS		CATTLEGUARD 3.66 m x 2.438 m LONG FOR RANGE VEHICLE TYPE 1 G.V.W. 4,500 kg	
ORIGINAL SIGNED and SEALED BY: Ernie Wong, P.Eng.		MFR CHIEF ENGINEER: Brian Chow, P.Eng.	
DESIGN ENGINEER: Ernie Wong, P.Eng. DATE: FEB. 06, 2015		DATE	
FILE No.		DRAWING No. STD-ECAT-010-11	

