

METROLINK (S.C.R.R.A.) ENGINEERING STANDARDS NO. 8 DOUBLE SLIP CROSSING

BILL OF MATERIAL	
QTY.	DESCRIPTION
2 EACH	SOLID MANGANESE CENTER FROG
4 EACH	"D" STRAPS WITH BOLTS
4 EACH	27'-8 ⁷ / ₈ " EXTENDED FIELD WELDED TYPE SWITCH POINTS
4 EACH	27'-2 ³ / ₈ " STRAIGHT STOCK RAIL
4 EACH	31'-2 ⁷ / ₁₆ " CURVED STOCK RAIL
4 EACH	23'-3 ⁷ / ₁₆ " SWITCH POINTS
1EACH	No. 1A SMJ TYPE SWITCH ROD W/BASKET (INSULATED)
1EACH	No. 1B SMJ TYPE SWITCH ROD W/BASKET (INSULATED)
2 EACH	No. 2 SMJ TYPE SWITCH ROD W/BASKET (INSULATED)
2 EACH	No. 3 SMJ TYPE SWITCH ROD W/BASKET (INSULATED)
28 EACH	SLIDE PLATE S-5P
20 EACH	SLIDE PLATE S-8P
2 EACH	INSULATED GAGE PLATE No. DS-GP-1
1EACH	GAGE PLATE No. DS-GP-2 AND DS-GP3
2 EACH	SWITCH PLATE DS-1R,DS-1L,DS-2R,DS-2L,DS-3R & DS-3L
4 EACH	SWITCH PLATE DS-4P
8 EACH	SWITCH PLATE DS-5P
2 EACH	SWITCH PLATES DS-6P THRU DS-15P
2 EACH	SWITCH PLATE DS-18P AND DS-19P
2 EACH	FROG PLATES F-1 THRU F-14
2 EACH	FROG GAGE PLATES DS-FGP-1 THRU DS-FGP-3
2 EACH	No.8 R.B.M. FROG ~ 18'-0"
1EACH	FROG PLATES No. FP-23-R THRU FP-26-R
1EACH	FROG PLATES No. FCP-1 THRU FCP-3
1EACH	FROG GAGE PLATES FGP-1 THRU FGP-3
4 EACH	13'-0" U-69 ADJUSTABLE GUARD RAIL W/PLATES
2 EACH	D.I. RAIL HOLD DOWN CLIPS E-3706
6 EACH	D.I. RAIL HOLD DOWN CLIPS E-3708
8 EACH	D.I. RAIL HOLD DOWN CLIPS E-3709
2 EACH	D.I. RAIL HOLD DOWN CLIPS E-3710
12 PCS.	BOLTLESS ADJUSTABLE BRACE ASSEMBLY
20 PCS.	SCRRA ES1406 "PANDROL", OR EQUAL "E" - CLIP 6" TIE PLATE
224 PCS.	CLIP TYPE E-2055 (GALVANIZED)
24 PCS.	CLIP TYPE E-2063 (GALVANIZED)
720 PCS.	SCREW SPIKES ¹ / ₁₆ " DIA. X 6" No. 5760
4 EA.	EPOXY BONDED PREFABRICATED INSULATED JOINT KITS

DRAWING INDEX

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NOTES:

- ENTIRE DOUBLE SLIP CROSSING TO BE FABRICATED FROM 136 LB. HEAD HARDENED RAIL.
- LOCATIONS OF INSULATED JOINTS ARE AS SHOWN ON ES2901-02.IT WILL BE SATISFACTORY TO RELOCATE THE INSULATED JOINT IN THE FIELD UP TO 12" SO AS TO PROVIDE A SUITABLE SUSPENDED JOINT,PROVIDED THE STAGGER OF THE INSULATED JOINTS DOES NOT EXCEED 4'-6". SUSPENDED INSULATED JOINTS MUST BE LOCATED IN A CRIB AREA BETWEEN TIES, A MINIMUM DISTANCE OF 4" FROM EDGE OF NEAREST TIE PLATE.
- ALL INSULATED JOINTS ARE TO BE ADHESIVE BONDED INSULATED JOINTS UNLESS OTHERWISE SPECIFIED.
- ALL MATERIALS REQUIRED FOR HAND OR MACHINE OPERATED SWITCH OPERATION WILL BE FURNISHED PER REQUIREMENTS OF THE S.C.R.R.A. DIRECTOR OF ENGINEERING AND CONSTRUCTION.
- MATERIALS AND WORKMANSHIP, ALSO ANY CONSTRUCTION DETAILS NOT SHOWN, SHALL BE PER CURRENT A.R.E.M.A. "TRACKWORK PLANS AND SPECIFICATIONS" UNLESS OTHERWISE SPECIFIED.
- WHERE REQUIRED, ALL IDENTIFICATION SYMBOLS TO BE PLAINLY STAMPED.
- GAGE PLATES WILL BE FURNISHED INSULATED. SWITCH RODS WILL BE FURNISHED INSULATED UNLESS OTHERWISE SPECIFIED.
- MANUFACTURER SHALL SUBMIT TWO COPIES OF SHOP DRAWINGS TO THE S.C.R.R.A. DIRECTOR OF ENGINEERING AND CONSTRUCTION FOR APPROVAL PRIOR TO FABRICATION OF TURNOUT. SHOP DRAWINGS THAT CHANGE DETAILS OF THESE STANDARDS MUST CLEARLY SPECIFY SUCH PROPOSED CHANGES.
- THE MATERIAL INCLUDED IN THE PURCHASE OF A "DOUBLE SLIP CROSSING COMPLETE" IS EVERYTHING LISTED IN THE BILL OF MATERIALS. TO CONSTRUCT A COMPLETE TURNOUT, SWITCH TIES (PER LIST ON THIS SHEET) AND INSULATED JOINTS, FIELD WELDS, RUNNING RAIL AND CLOSURE RAIL IDENTIFIED ON SUBSEQUENT SHEETS MUST ALSO BE SUPPLIED.
- TIE PLATES SHALL CONFORM TO S.C.R.R.A STANDARD ES2454.
- SCREW SPIKES (15/16 " X 6-2 TPI) SHALL CONFORM TO S.C.R.R.A. STANDARD ES2357. PLATE HOLES SHALL BE 1" DIAMETER. PILOT HOLES IN TIES SHALL BE 5/8 " DIAMETER. SCREW SPIKES SHALL BE SCREWED INTO WOOD (NOT DRIVEN).
- MANUFACTURER SHALL BEVEL RAIL ENDS PER CURRENT A.R.E.M.A. PLAN NO. 1005.
- THE 27'-8 7/8 " SWITCH POINT, MADE FROM 40'-0" RAIL PER ES2901-07 IS TO BE FURNISHED WITH SWITCH RODS NO. 1A AND 1B PER ES2901-13 AND ES2901-14.
- FOR CROSSING DATA FOR A NO. 8 DOUBLE SLIP CROSSOVER 136 LB. R.E. RAIL SEE CHART ON SHEET 2.
- GAGE PLATES FOR SWITCH AND FROG, SWITCH HEEL PLATE (FOR BOTH R.H. OR L.H. TURNOUTS) AND PLATES P-10 THRU P-24 ARE DESIGNED TO BE PERPENDICULAR TO THE MAIN LINE THRU RUN RAILS.
- UPON COMPLETION OF TURNOUT INSTALLATION, RUNNING RAIL MUST BE ADJUSTED TO SCRRA NEUTRAL RAIL TEMPERATURE.
- ENTIRE CROSSOVER TO BE FULLY FLOOR ASSEMBLED INCLUDING END FROGS AND HF GUARD RAILS.
- ALL E-CLIPS TO BE GALVANIZED.

BILL OF SWITCH TIES			
PIECES	SIZE	LENGTH	BOARD FEET
10	7" x 9"	11'-0"	577.50
16	7" x 9"	12'-0"	1008.00
12	7" x 9"	13'-0"	819.00
16	7" x 9"	14'-0"	1176.00
0	7" x 9"	15'-0"	0
6	7" x 9"	16'-0"	504.00
TOTAL			TOTAL
60			4084.50

FOR MAINTENANCE ONLY

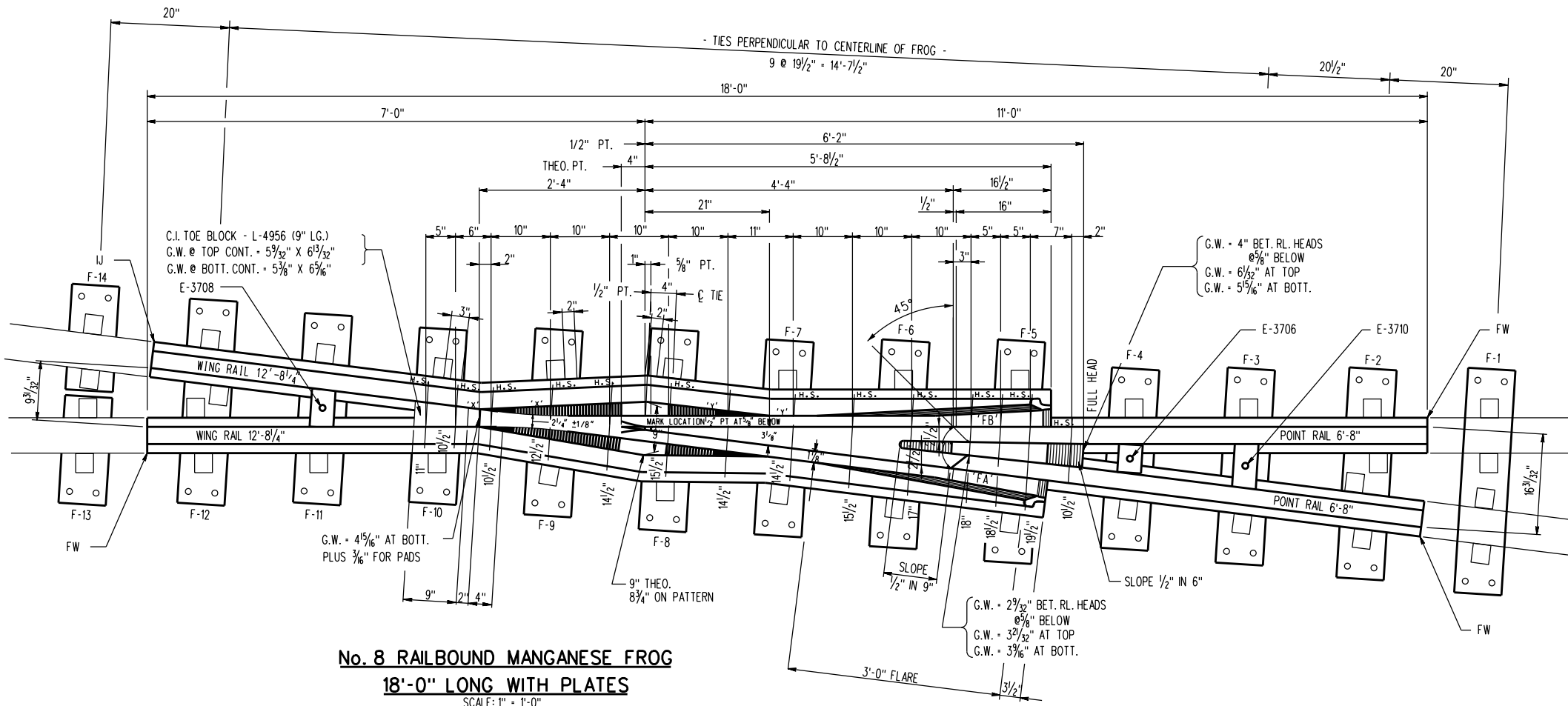
				DRAWN BY: A. CARLOS	DATE: 03/31/2011	SCRRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRRA APPROVED USES ONLY. FOR NON-SCRRRA APPROVED USES: SCRRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRRA. ALL RIGHTS RESERVED.	 METROLINK [®] SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	ENGINEERING STANDARDS		STANDARD	
								2901			
								SCALE:	NONE		
								REVISION	SHEET		
								-	1 OF 14		
								CADD FILE:	ES2901-01		
X	XX-XX-XX	REVISION	XX	XX							
REV.	DATE	DESCRIPTION	DES.	ENG.							

1. SEE COVER SHEET FOR NOTES, BILL OF MATERIAL AND DRAWING INDEX.

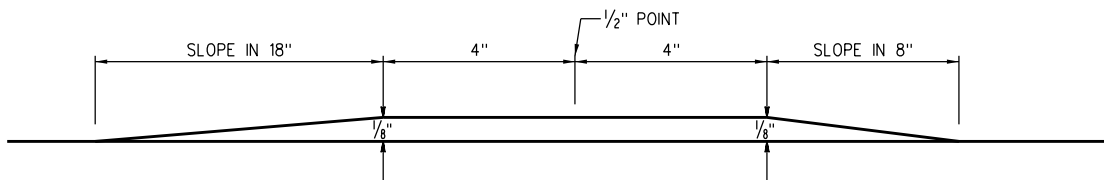


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		DRAWN BY: A. CARLOS		DATE: 03/31/2011		SCRA ENGINEERING STANDARDS ARE INTENDED FOR SCRA APPROVED USES ONLY. FOR NON-SCRA APPROVED USES SCRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRA. ALL RIGHTS RESERVED.		 METROLINK®		ENGINEERING STANDARDS		STANDARD 2901	
		 ASSISTANT DIRECTOR: STANDARDS & DESIGN						SCALE: 1/4" = 1'-0"		REVISION SHEET		2 OF 14	
		 DIRECTOR OF ENGINEERING AND CONSTRUCTION						NO. 8, 136 LB. DOUBLE SLIP CROSSING WITH SOLID MANGANESE FROG LAYOUT AND CROSSING DATA		CADD FILE: ES2901-02			
X XX-XX-XX		REVISION		XX XX									
REV. DATE		DESCRIPTION		DES. ENG.									

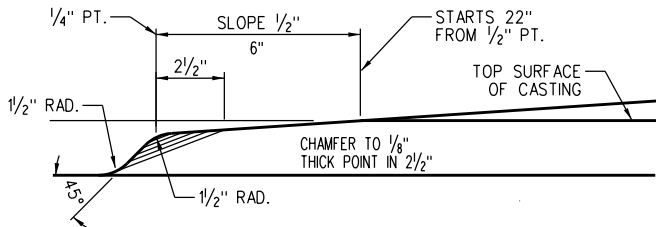


No. 8 RAILBOUND MANGANESE FROG
18'-0" LONG WITH PLATES
SCALE: 1" = 1'-0"

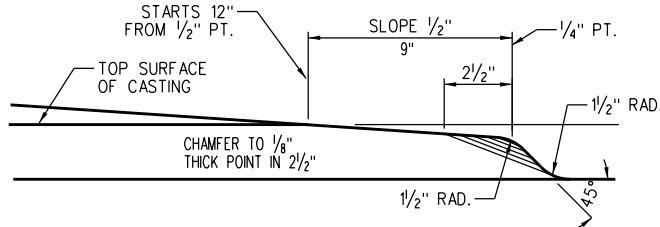


DETAIL OF WING WHEEL RISER
(NOT TO SCALE)

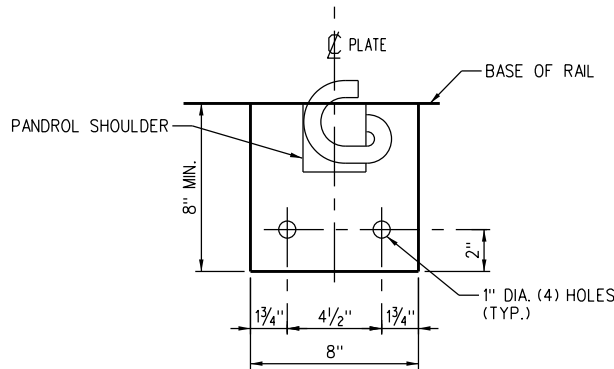
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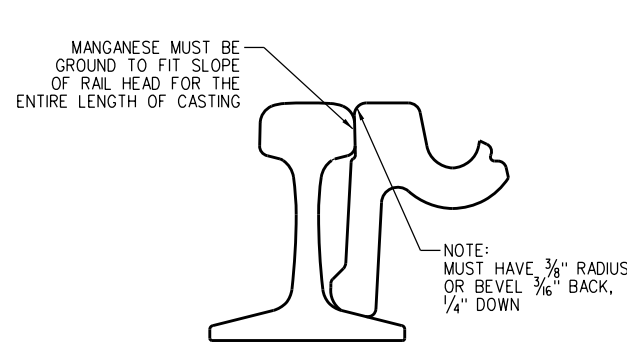
SLOPE ON MANGANESE @ SECTION "X" - "X"
SCALE: NONE



SLOPE ON MANGANESE @ SECTION "Y" - "Y"
SCALE: NONE



TYPICAL PLATE PUNCHING DETAIL
SCALE: NONE



DETAIL OF FROG
CASTING / RAIL FIT
SCALE: NONE

NOTES:

1. FROG ANGLE 7°-09'-10".
2. RAIL USED TO FABRICATE FROG IS TO BE 136 LB. HIGH STRENGTH.
3. RAIL BOUND MANGANESE FROG PER CURRENT A.R.E.M.A. PLAN NO. 775, 1012 AN M2.7 WITH EXPLOSIVE HARDENED MANGANESE HIGH INTEGRITY CASTING PER CURRENT A.R.E.M.A. SPECIFICATIONS AND MODIFIED FOR ARM LENGTHS AND PLATES WITH "PANDROL" FASTENERS.
4. ALL FROG PLATES SHALL BE STAMPED IN 1/2" CHARACTERS TO INDICATE MFG., FROG NO., R.H., RAIL SECTION AND PLATE NUMBER. MARK TO BE STAMPED ON SAME END OF ALL FROG PLATES.
5. FOR DETAILS OF FROG GAGE PLATES SEE SHEET ES2901-11. FOR DETAILS OF FROG PLATES F-1 THRU F-4 SEE SHEET ES2901-12.
6. WORKMANSHIP AND MATERIALS SHALL BE PER CURRENT A.R.E.M.A. "SPECIFICATIONS FOR SPECIAL TRACKWORK", EXCEPT AS OTHERWISE SPECIFIED.
7. ANY CONSTRUCTION DETAILS NOT SHOWN SHALL BE IN ACCORDANCE WITH CURRENT A.R.E.M.A. RECOMMENDED PRACTICE.
8. FROG PLATES ARE DESIGNED TO BE INSTALLED PERPENDICULAR TO MAIN TRACK.
9. BODY BOLTS, 1 1/8" DIA., H.T.C.S. - PER A.R.E.M.A. SPECIFICATIONS.
10. TOE AND HEEL BLOCKS AND BOLTS PER A.R.E.M.A. SPECIFICATIONS.
11. PLATES TO BE MADE OF MILD ROLLED STEEL.
12. THE PLATES AS SHOWN ARE FOR A 136 LB., NO. 8, DOUBLE SLIP CROSSING.
13. THE "PANDROL" TYPE, OR APPROVED EQUAL, WELD - ON PRESSED STEEL SHOULDER, MADE OF MILD STEEL AND MEETING "PANDROL'S" DESIGN SPECIFICATIONS SHALL BE USED. THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO ALL PLATES WITH A MINIMUM 2 PASS 3/8" * FILLET WELD ALONG BEVELED GROOVES OF THE SHOULDER. ANY WELD PROJECTING BEYOND THE VERTICAL FACE OF THE SHOULDER IN THE AREA OF THE BASE OF RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.
14. MANUFACTURER OF FROG PLATES SHALL USE COMPLETED FROG TO VERIFY LOCATION OF ADJUSTABLE CLAMPS ON FROG PLATES F-1, F-2 AND F-3 TO INSURE PROPER FIT. FROG PLATES WILL BE WELDED TO THE GAGE PLATES IN THE FIELD WITH A 3 PASS 1/2" * FILLET WELD. PLATES WILL BE WELDED ONLY AFTER THE GAGE PLATES ARE SECURED IN THE PROPER LOCATION ON THE TIE WITH THE FROG IN PLACE AT PROPER ALIGNMENT.
15. GUARD RAIL PLATES ARE TO BE INSTALLED AND WELDED TO THE FROG GAGE PLATES IN THE FIELD WITH A 3 PASS 1/2" * FILLET WELD CONTINUOUS ON BOTH ENDS OF THE PLATE. PLATES ARE TO BE WELDED ONLY AFTER THE GAGE PLATE AND THE FROG IS SECURED IN THE PROPER LOCATION ON THE TIE WITH PROPER ALIGNMENT.
16. IDENTIFICATION TAG WITH RAISED METAL CHARACTERS TO BE APPLIED WHICH WILL STATE WEIGHT OF RAIL, FROG NO., MANUFACTURER AND YEAR MANUFACTURED.

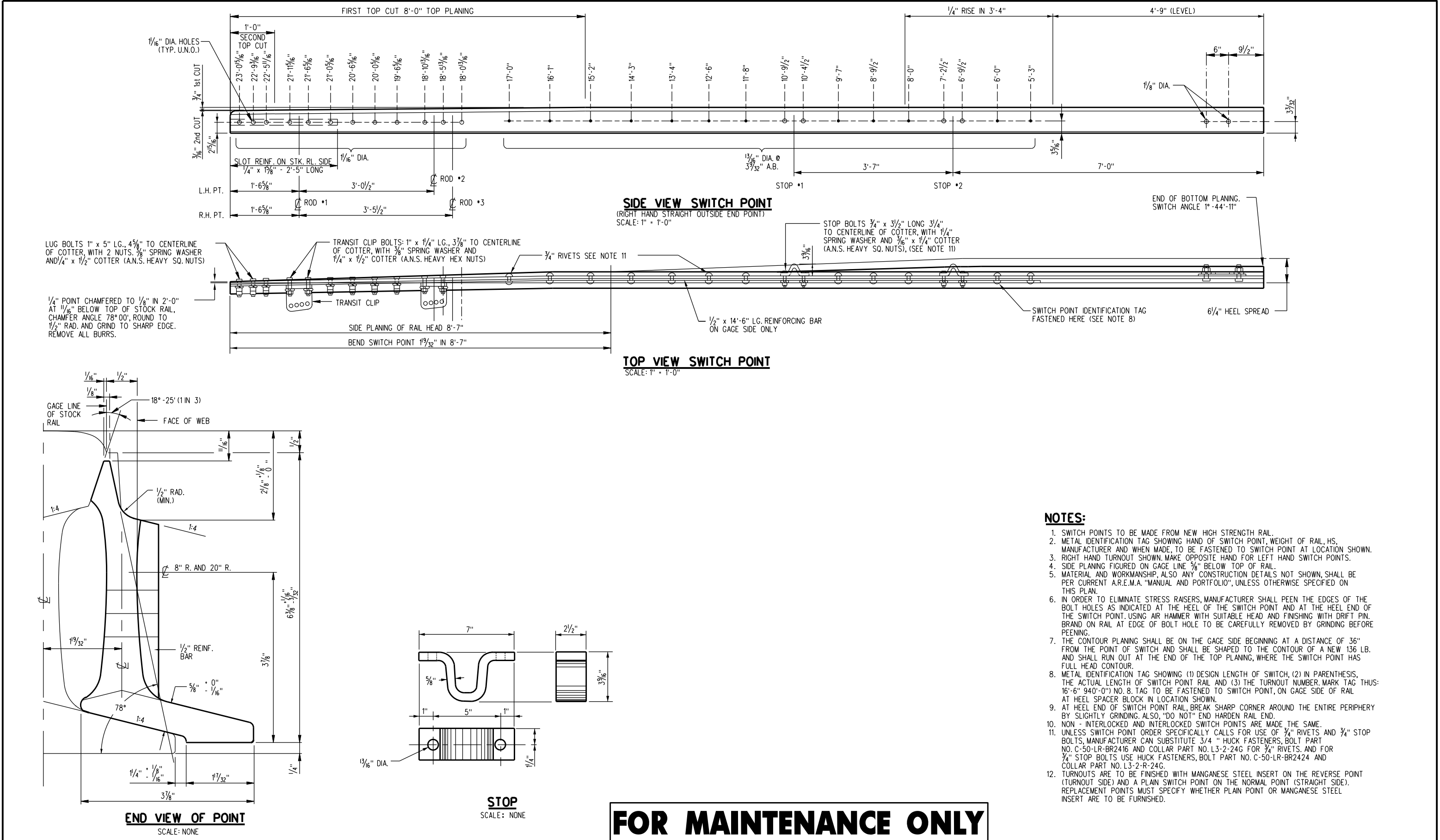
WELDING OF GAGE PLATE & GUARD RAIL:

1. POSITION GAGE PLATES AT DESIGNATED TIE LOCATIONS AND ANCHOR IN PLACE.
2. CHECK TRACK FOR CORRECT GAGE.
3. STARTING WITH ONE GAGE PLATE, PLACE FROG PLATES WITH ADJUSTABLE BRACES AND SECURE TO FROG AND GUARD RAIL WITH "PANDROL" CLIPS.
4. RECHECK TRACK GAGE AND CORRECT IF NECESSARY.
5. CAREFULLY WELD FROG PLATE AND GUARD RAIL PLATE TO FROG GAGE PLATES WITH 3 PASS 1/2" * FILLET WELD. FOR WELDING USE THE FOLLOWING:
 - A. ELECTRODE, 5/32 INCH, WELDING SPEC. 7018XLM.
 - B. ELECTRODE, 3/16 INCH, WELDING SPEC. 7018XLM.
 - C. WIRE, 3/32 INCH, NR203, 1% NICKEL FLUX CORE.OTHER WIRE OR ELECTRODES MEETING SPECIFICATIONS AS CALLED FOR AND APPROVED BY S.C.R.R.A. DIRECTOR OF ENGINEERING.

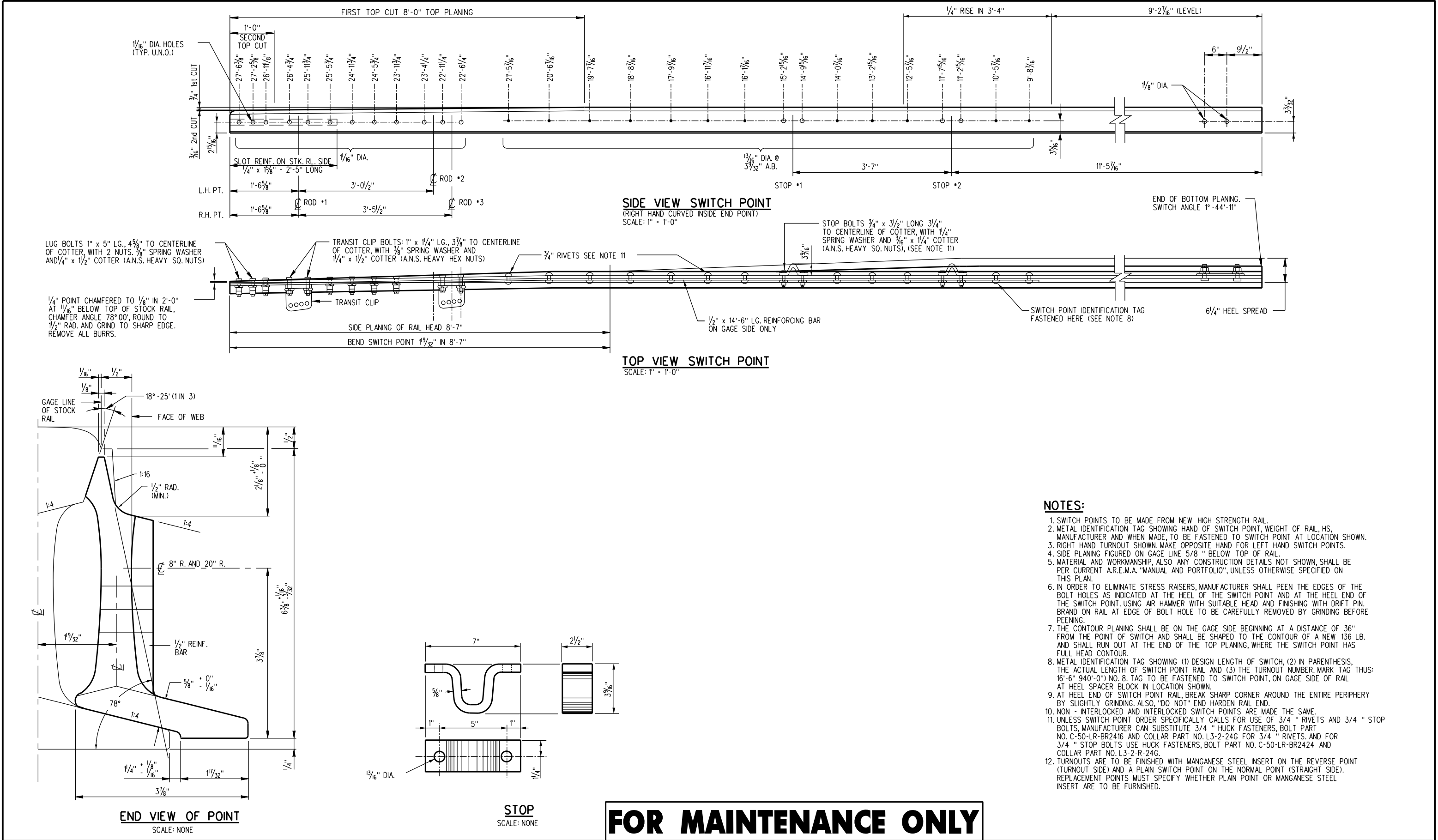
REFERENCE DWGS.

LAYOUT - No.8 DOUBLE SLIP CROSSING - 136 lb. ----- No. 2901-02
U-69 GUARD RAIL - 136 lb. ----- No. 2901-04

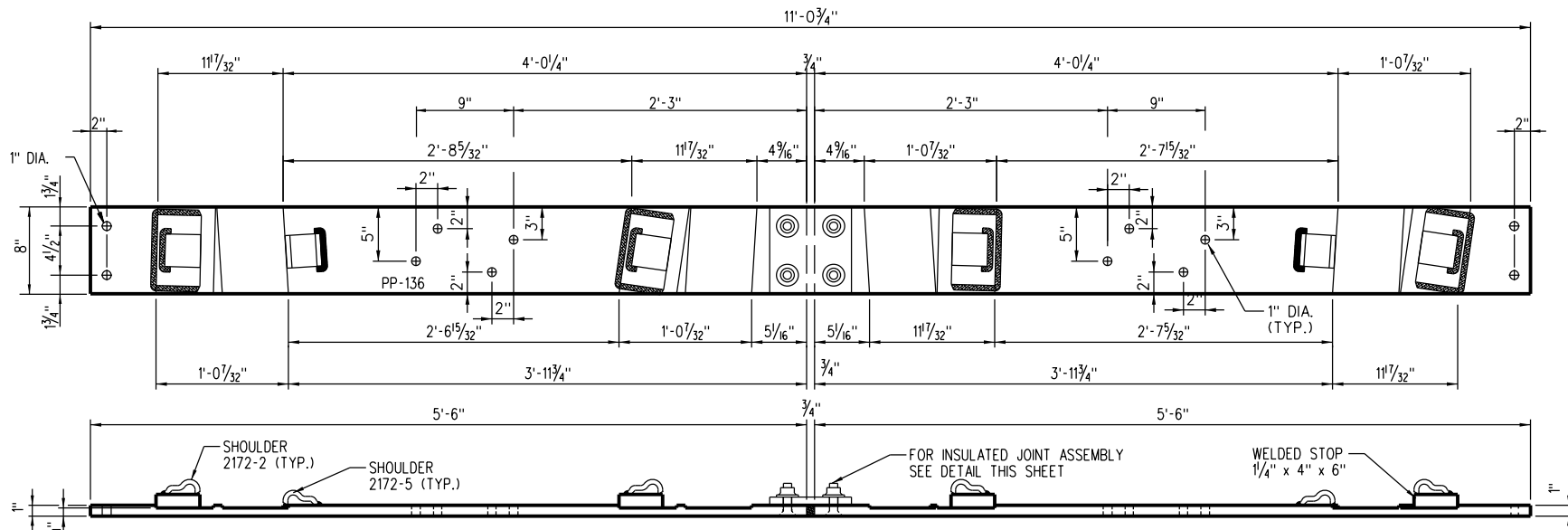
				DRAWN BY: A. CARLOS DATE: 03/31/2011		SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.		 METROLINK SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012		ENGINEERING STANDARDS		STANDARD 2901	
				 ASSISTANT DIRECTOR: STANDARDS & DESIGN						SCALE: AS NOTED		REVISION SHEET	
				 DIRECTOR OF ENGINEERING AND CONSTRUCTION						NO. 8 RAILBOUND MANGANESE STEEL FROG WITH PANDROLIZED PLATES FOR A 136 LB. DOUBLE SLIP CROSSING		3 OF 14	
										CADD FILE: ES2901-03			
X	XX-XX-XX	REVISION	XX	XX									
REV.	DATE	DESCRIPTION	DES.	ENG.									



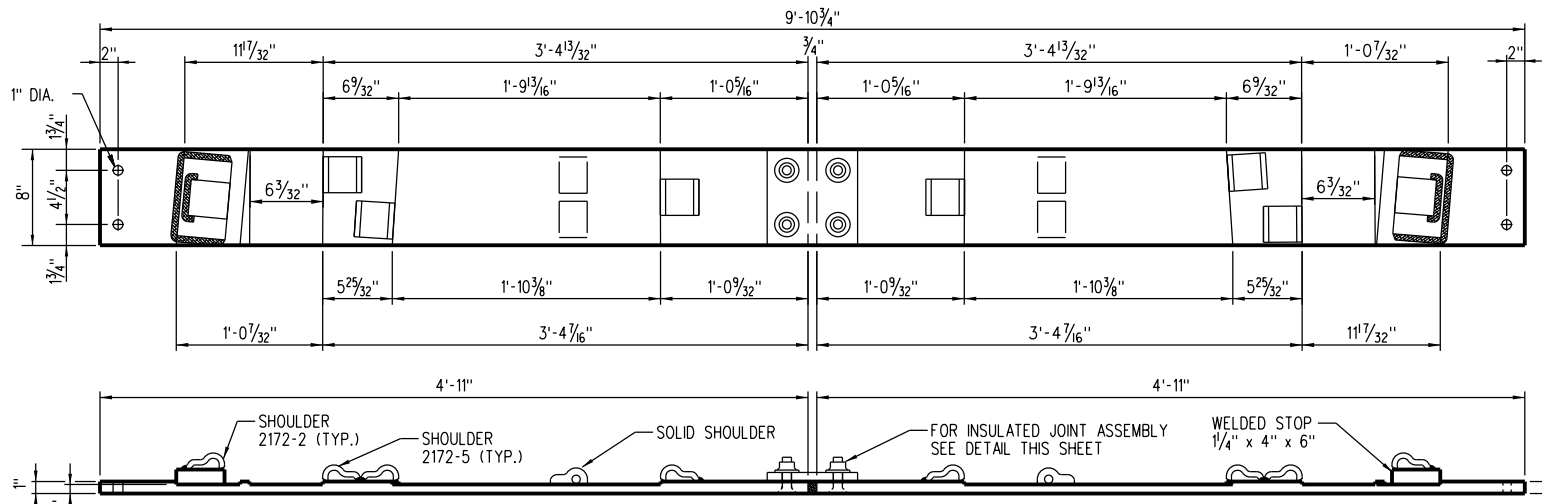
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				Assistant Director: STANDARDS & DESIGN				SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY						136 LB. 23'-3 $\frac{3}{16}$ " STRAIGHT SWITCH POINT		SCALE: AS NOTED	
				Director of Engineering and Construction				ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012						MADE FROM 40'-0" LONG RAIL		REVISION SHEET	
														NO. 8 DOUBLE SLIP CROSSING		- 6 OF 14	
																CADD FILE: ES2901-06	



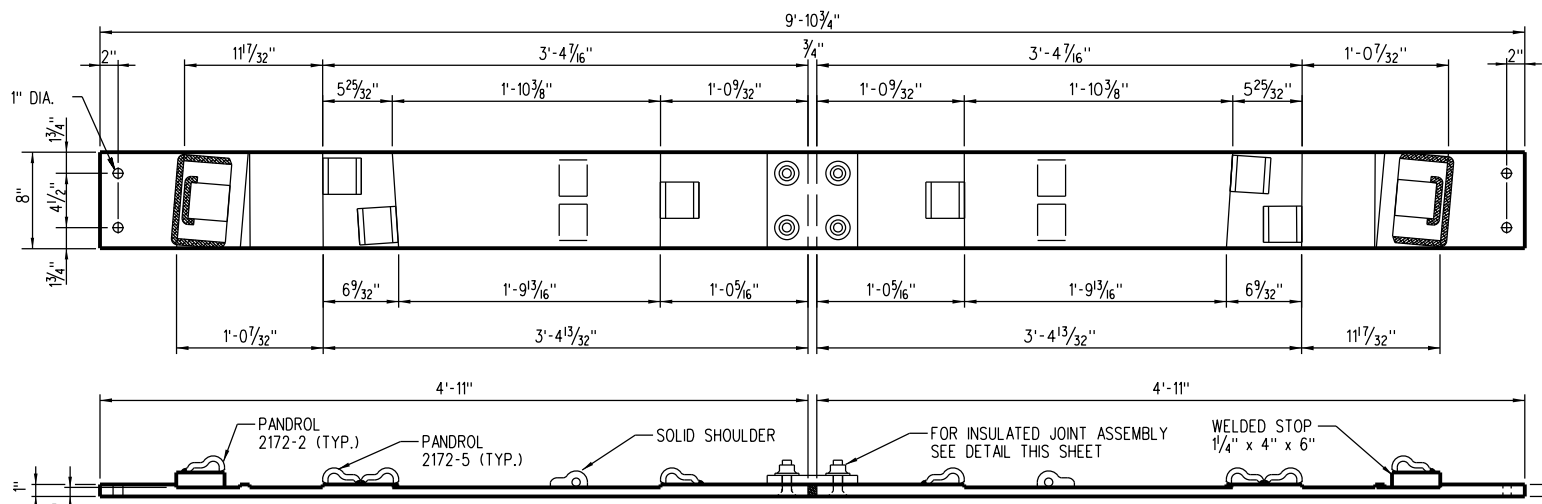
				DRAWN BY: A. CARLOS		DATE: 03/31/2011		SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.	 METROLINK SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	ENGINEERING STANDARDS		STANDARD 2901			
						ASSISTANT DIRECTOR: STANDARDS & DESIGN				136 LB. 27'-8 ⁷ / ₈ " CURVED SWITCH POINT				SCALE: AS NOTED	
						DIRECTOR OF ENGINEERING AND CONSTRUCTION		MADE FROM 40'-0" LONG RAIL				REVISION SHEET			
				X XX-XX-XX		REVISION		XX XX		NO. 8 DOUBLE SLIP CROSSING				7 OF 14	
				REV.		DATE		DESCRIPTION		DES.		ENG.		CADD FILE: ES2901-07	



INSULATED SLIDE GAGE PLATE DS-GP-1
1" x 8" - MILLED - (1 PC. REQ'D AS SHOWN)



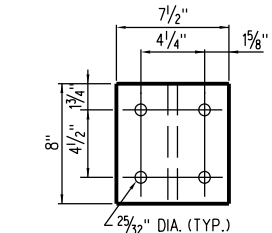
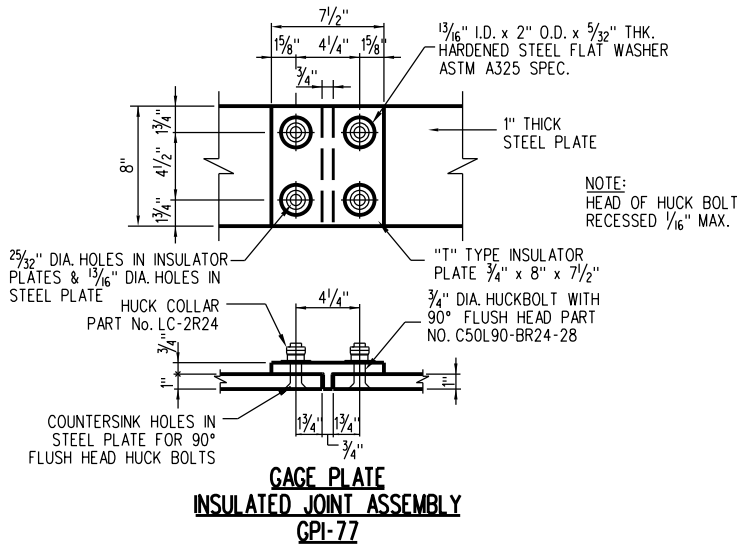
INSULATED SLIDE GAGE PLATE DS-GP-2
1" x 8" - MILLED - (1 PC. REQ'D AS SHOWN)



INSULATED SLIDE GAGE PLATE DS-GP-3
1" x 8" - MILLED - (1 PC. REQ'D AS SHOWN)

- NOTES:**
1. PLATES TO BE MADE OF MILD ROLLED STEEL.
 2. THE PLATES AS SHOWN ARE FOR A 136 LB., NO. 8 DOUBLE SLIP CROSSING.
 3. THE "PANDROL" TYPE, OR APPROVED EQUAL, WELD - ON PRESSED STEEL SHOULDER, MADE OF MILD ROLLED STEEL AND MEETING "PANDROL'S" DESIGN SPECIFICATIONS SHALL BE USED.
 4. THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO GAGE PLATES. ANY WELD PROJECTING BEYOND THE VERTICAL FACE OF SHOULDER IN THE AREA OF THE RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.

FOR MAINTENANCE ONLY



DETAIL "A"
INSULATION AT GAGE PLATES
(SCALE: NONE)

REFERENCE DRAWINGS

LAYOUT - No.8, DOUBLE SLIP CROSSING - 136 lb. ----- SHEET No. 2901-02

REV.	DATE	DESCRIPTION	DES.	ENG.
X	XX-XX-XX	REVISION	XX	XX

DRAWN BY:	A. CARLOS	DATE:	03/31/2011
ASSISTANT DIRECTOR: STANDARDS & DESIGN			
DIRECTOR OF ENGINEERING AND CONSTRUCTION			

SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.



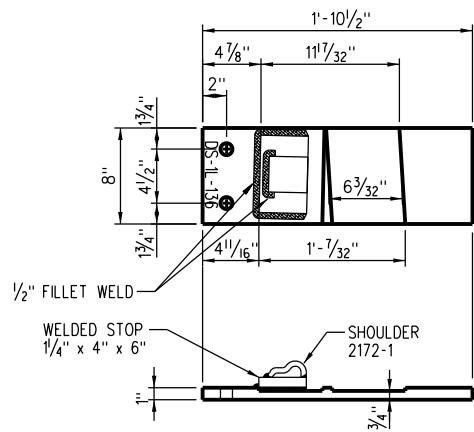
METROLINK

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS

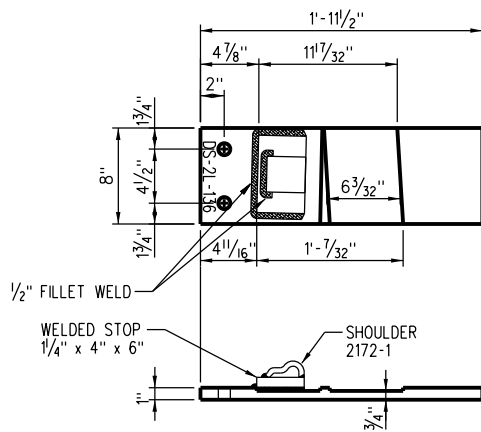
INSULATED GAGE PLATE DETAILS
DS-GP-1, DS-GP-2 AND DS-GP-3
136 LB. NO. 8 DOUBLE SLIP CROSSING

STANDARD	2901
SCALE:	1 1/2" = 1'-0"
REVISION	SHEET
-	8 OF 14
CADD FILE:	ES2901-08



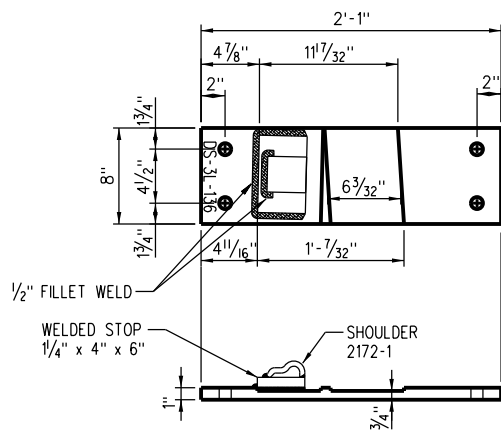
BRACE PLATE - DS-1L

1" x 8" x 1'-10 1/2" LG. - MILLED - W/ADJ. RAIL BRACE



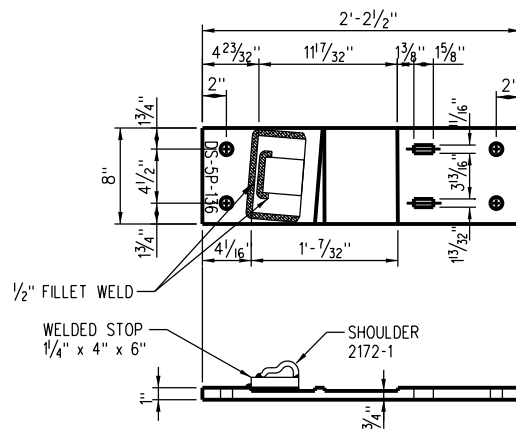
BRACE PLATE - DS-2L

1" x 8" x 1'-11 1/2" LG. - MILLED - W/ADJ. RAIL BRACE



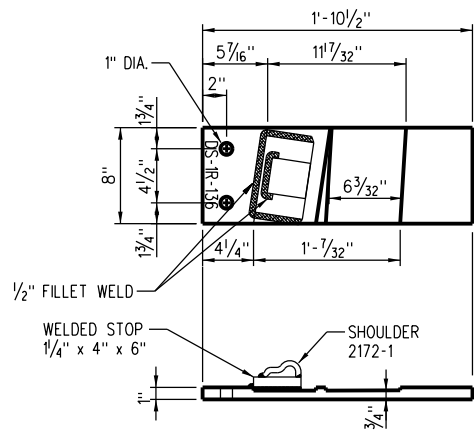
BRACE PLATE - DS-3L

1" x 8" x 2'-1" LG. - MILLED - W/ADJ. RAIL BRACE



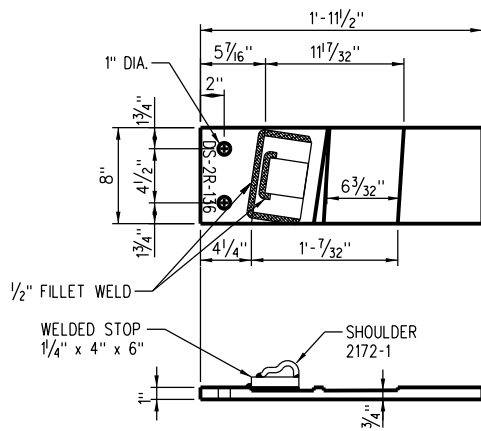
BRACE SLIDE PLATE - DS-5P

1" x 8" x 2'-2 1/2" LG. - MILLED - W/ADJ. RAIL BRACE



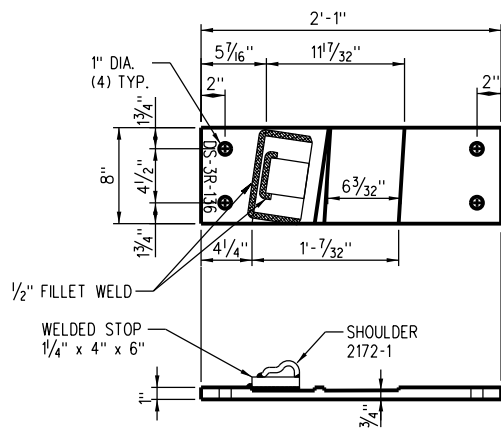
BRACE PLATE - DS-1R

1" x 8" x 1'-10 1/2" LG. - MILLED - W/ADJ. RAIL BRACE



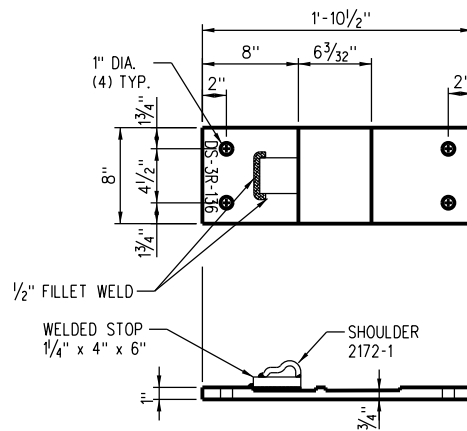
BRACE PLATE - DS-2R

1" x 8" x 1'-11 1/2" LG. - MILLED - W/ADJ. RAIL BRACE



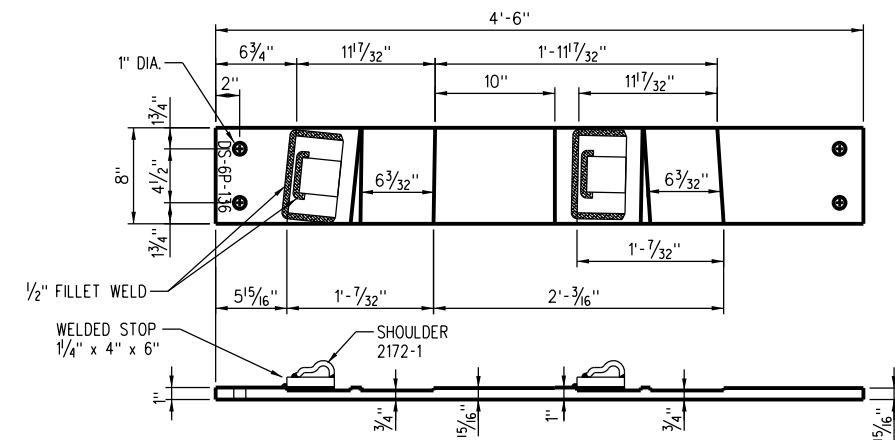
BRACE PLATE - DS-3R

1" x 8" x 2'-1" LG. - MILLED - W/ADJ. RAIL BRACE



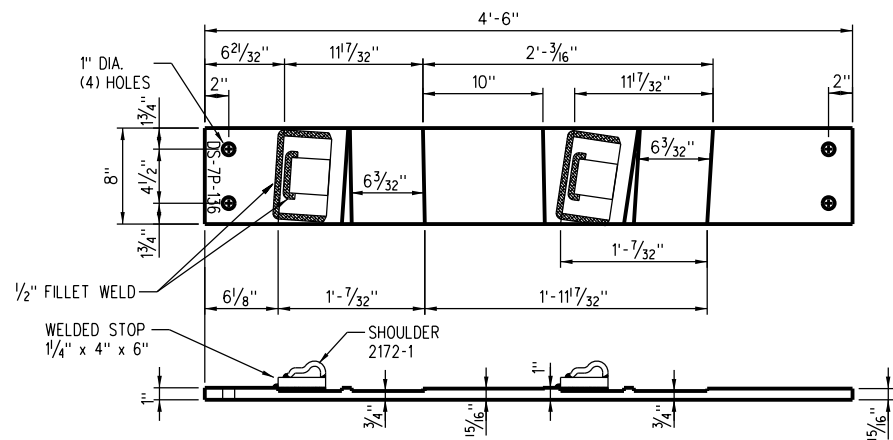
SLIDE PLATE - DS-4P

1" x 8" x 1'-10 1/2" LG. - MILLED - W/ADJ. RAIL BRACE



BRACE PLATE - DS-6P

1" x 8" x 4'-6" LG. - MILLED - W/ADJ. RAIL BRACE



BRACE PLATE - DS-7P

1" x 8" x 4'-6" LG. - MILLED - W/ADJ. RAIL BRACE

FOR MAINTENANCE ONLY

NOTES:

1. PLATES TO BE MADE OF MILD ROLLED STEEL.
2. EACH SHOULDER TO BE PLAINLY STAMPED WITH PLATE NO. AND 136 (WEIGHT OF RAIL) & HAND OF TURNOUT (R.H. OR L.H.).
3. THE PANDROL TYPE, OR APPROVED EQUAL, WELD - ON PRESSED STEEL SHOULDER, MADE FROM MILD STEEL, AND MEETING PANDROL'S DESIGN SPECIFICATIONS, SHALL BE USED.
4. THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO THE PLATE. ANY WELD PROJECTING BEYOND THE VERTICAL FACE OF SHOULDER IN THE AREA OF THE RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.
5. THE PLATES AS SHOWN ARE FOR A 136 LB., NO. 8 DOUBLE SLIP CROSSING.

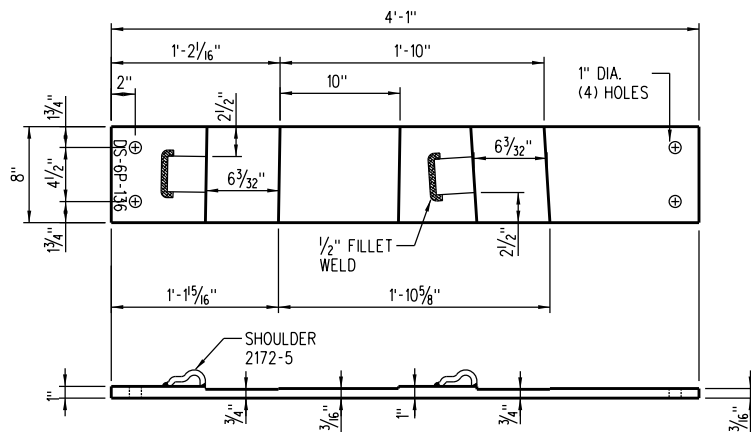
WELDING SPECIFICATIONS:

1. SET PRESSED STEEL SHOULDER FLUSH AGAINST LINE OF BASE OF RAIL OR SHOULDER OF MILLED PLATE AS SHOWN AND WELD WITH 2 - PASS 3/8" - WELD.
2. STOP PLATE FOR ADJUSTABLE RAIL BRACE TO BE SET FLUSH WITH SHOULDER OF MILLED PLATE AS SHOWN AND WELD WITH 3 - PASS 1/2" - FILLET WELD.
3. SHOULDER AND STOPS ARE TO BE CAREFULLY WELDED TO PLATE. NO WELD SHALL PROJECT BEYOND THE VERTICAL EDGE OF THE UNWELDED FOURTH SIDE OF THE STOP PLATE OR VERTICAL FACE OF SHOULDER IN THE AREA OF THE RAIL SEAT. ANY WELD PROJECTING BEYOND THE FACE OF THE STOP OR SHOULDER MUST BE MACHINED OFF TO PROVIDE CLEAR DIMENSION CALLED FOR.
4. FOR WELDING PRESSED STEEL SHOULDER OR PLATE STOPS FOR ADJUSTABLE USE THE FOLLOWING:
 - A. ELECTRODE 1 3/32", WELDING SPEC. 7018XLM.
 - B. ELECTRODE 3/16", WELDING SPEC. 7018XLM.
 - C. WIRE, WELDING 3/32", NR203, 1/2 NICKEL FLUX CORE.OTHER WIRE OR ELECTRODES MEETING SPECIFICATIONS AS CALLED FOR, APPROVED BY DIRECTOR OF ENGINEERING, MAY BE USED.

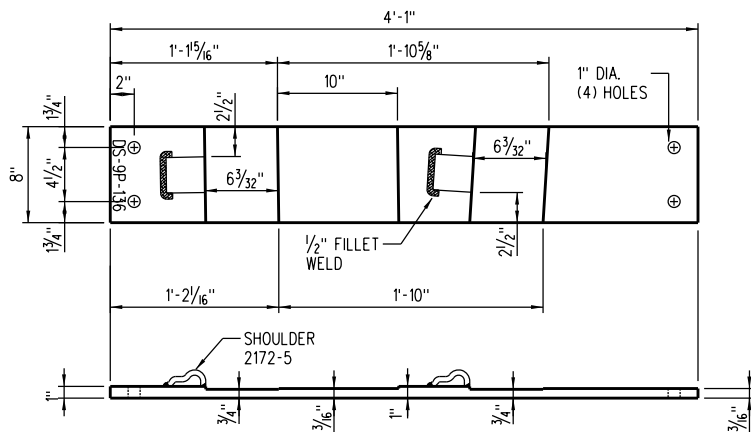
REFERENCE DWGS.

LAYOUT - No.8, DOUBLE SLIP CROSSING - 136 lb. ----- SHEET No. 2901-02

				DRAWN BY: A. CARLOS		DATE: 03/31/2011		SCRRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRRA APPROVED USES ONLY. FOR NON-SCRRRA APPROVED USES, SCRRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRRA. ALL RIGHTS RESERVED.				 METROLINK SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012		ENGINEERING STANDARDS		STANDARD 2901	
				ASSISTANT DIRECTOR: STANDARDS & DESIGN										SCALE: 1 1/2" = 1'-0"		REVISION SHEET	
				DIRECTOR OF ENGINEERING AND CONSTRUCTION										9 OF 14			
														CADD FILE:		ES2901-09	



SWITCH SLIDE PLATE - DS-8P
1" x 8" x 4'-1" LG. - MILLED - W/ADJ. RAIL BRACE



SWITCH SLIDE PLATE - DS-9P
1" x 8" x 4'-1" LG. - MILLED - W/ADJ. RAIL BRACE

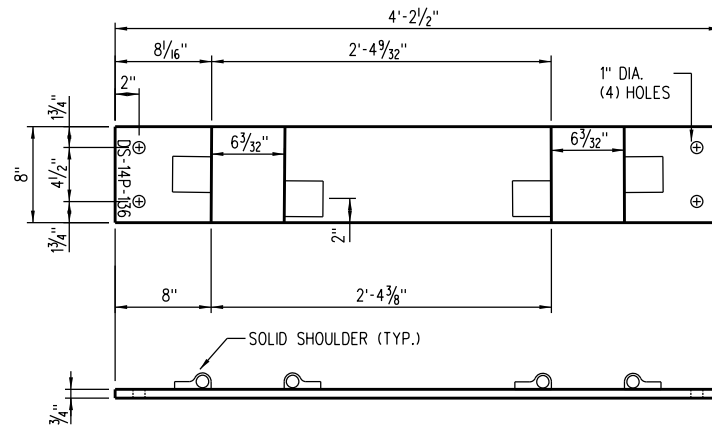


PLATE - DS-14P
1" x 8" x 4'-2 1/2" LG. - FLAT

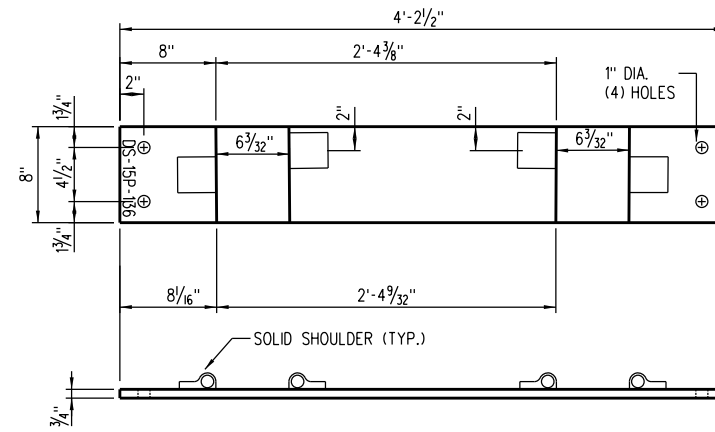
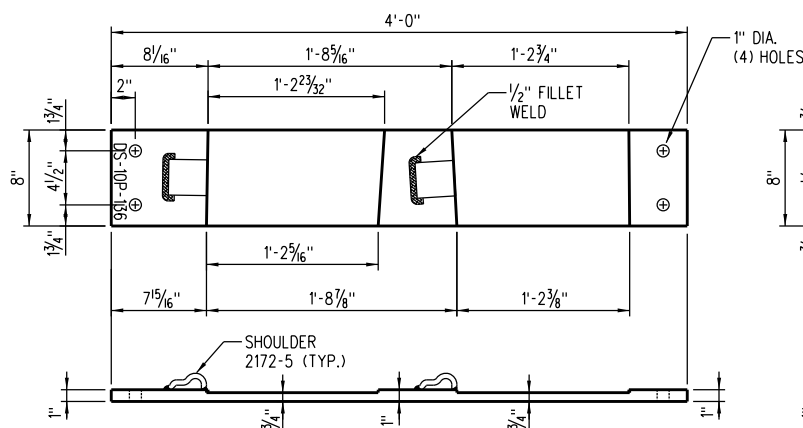
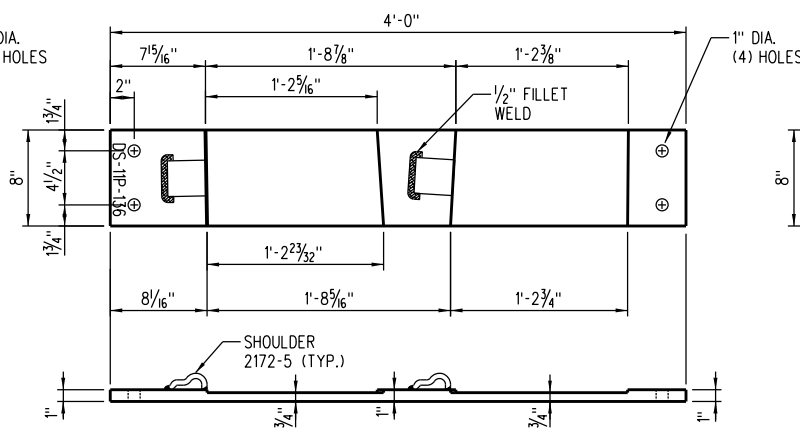


PLATE - DS-15P
1" x 8" x 4'-2 1/2" LG. - FLAT



SWITCH SLIDE PLATE - DS-10P
1" x 8" x 4'-0" LG. - MILLED - W/ADJ. RAIL BRACE



SWITCH SLIDE PLATE - DS-11P
1" x 8" x 4'-0" LG. - MILLED - W/ADJ. RAIL BRACE

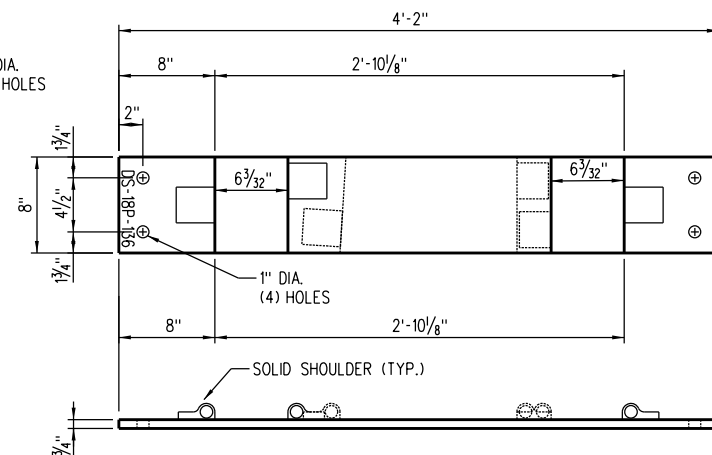


PLATE - DS-18P
3/4" x 8" x 4'-2" LG. - FLAT

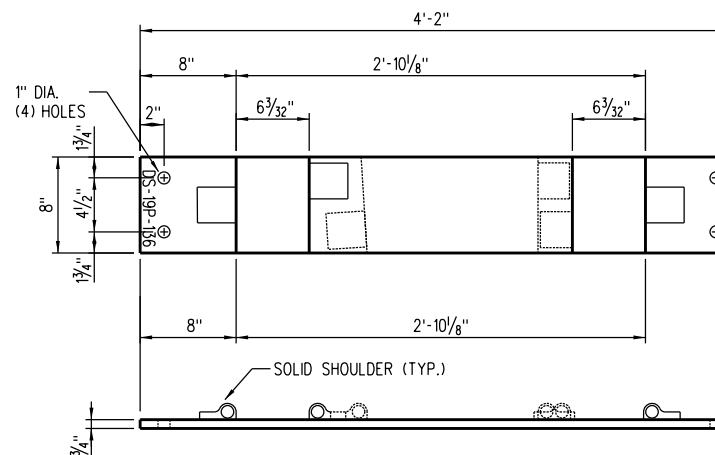
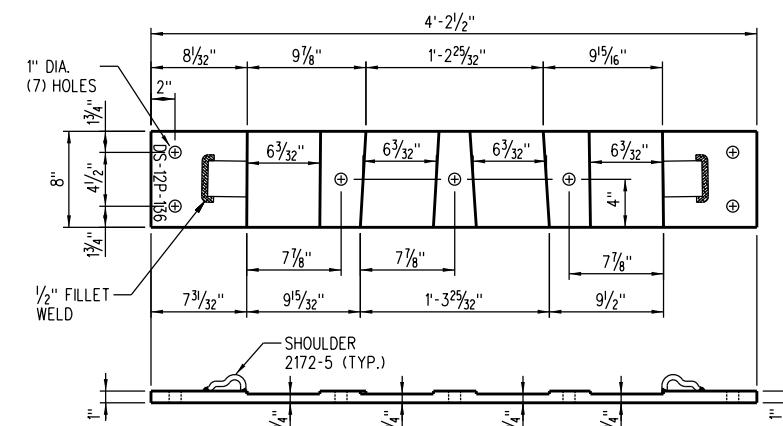
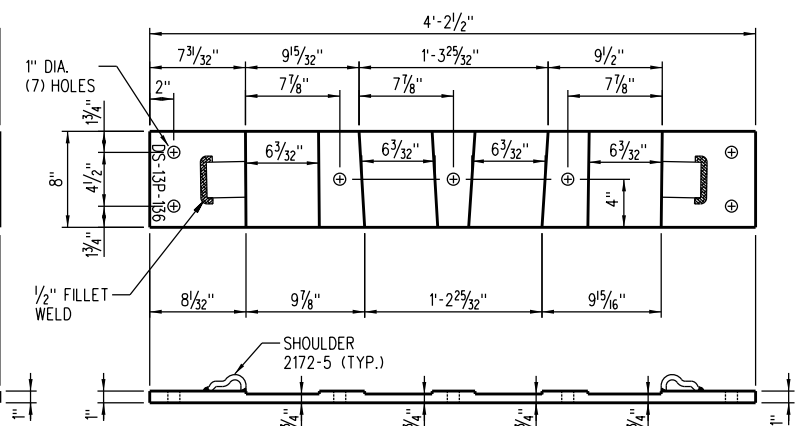


PLATE - DS-19P
3/4" x 8" x 4'-2" LG. - FLAT



SWITCH HEEL PLATE - DS-12P
1" x 8" x 4'-2 1/2" LG. - MILLED - W/ADJ. RAIL BRACE



SWITCH HEEL PLATE - DS-13P
1" x 8" x 4'-2 1/2" LG. - MILLED - W/ADJ. RAIL BRACE

FOR MAINTENANCE ONLY

REFERENCE DWGS.

LAYOUT - No.8, DOUBLE SLIP CROSSING - 136 lb. ----- SHEET No. 5100-02

REV.	DATE	DESCRIPTION	DES.	ENG.
X	XX-XX-XX	REVISION	XX	XX

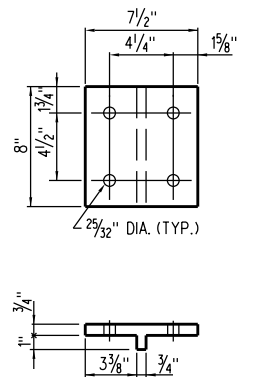
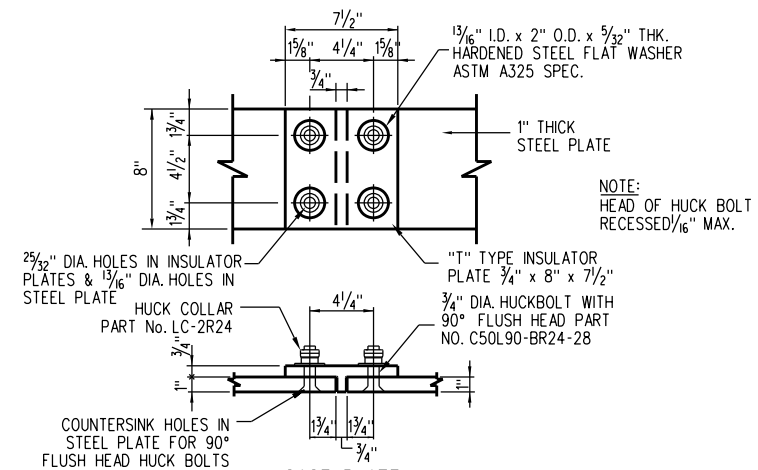
DRAWN BY:	A. CARLOS	DATE:	03/31/2011
<i>Nancy D. Pae</i> ASSISTANT DIRECTOR: STANDARDS & DESIGN			
<i>William D. Davis</i> DIRECTOR OF ENGINEERING AND CONSTRUCTION			

SCRRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRRA APPROVED USES ONLY. FOR NON-SCRRRA APPROVED USES, SCRRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRRA. ALL RIGHTS RESERVED.

**METROLINK**
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS	
SWITCH SLIDE PLATE AND SWITCH HEEL PLATE DETAILS NO. 8, 136 LB. DOUBLE SLIP CROSSING	

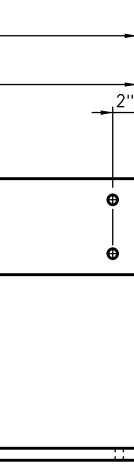
STANDARD	2901
SCALE:	1 1/2" = 1'-0"
REVISION	SHEET
-	10 OF 14
CADD FILE:	ES2901-10



GAGE PLATE
INSULATED JOINT ASSEMBLY
GPI-77

DETAIL OF INSULATION BLOCK
POLYESTER COATED STEEL CORE
W/ BUSHINGS, PORTEC •127-07547-01
OR FIBERGLASS REINFORCED THERMOSET RESIN.
PURCHASE PART NO. GPI52P05

DETAIL "A"
INSULATION AT GAGE PLATES
(SCALE: NONE)

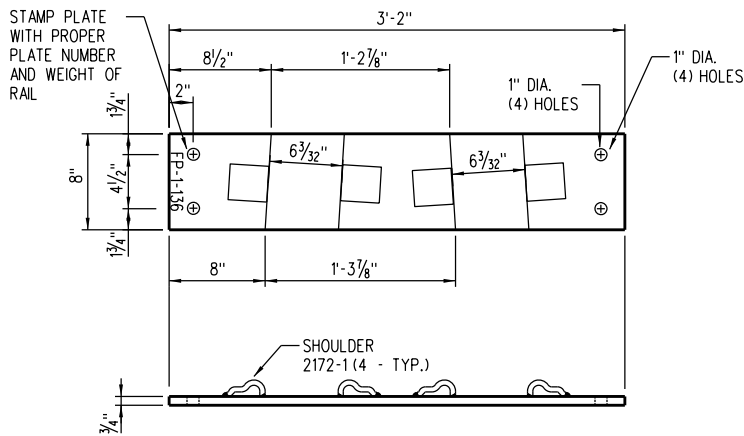


FOR MAINTENANCE ONLY

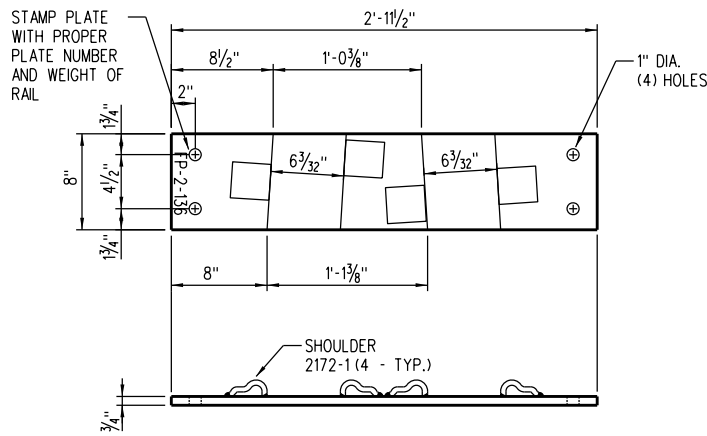
REFERENCE DWGS.

LAYOUT - No.8, DOUBLE SLIP CROSSING - 136 lb. ----- SHEET No. 2901-02

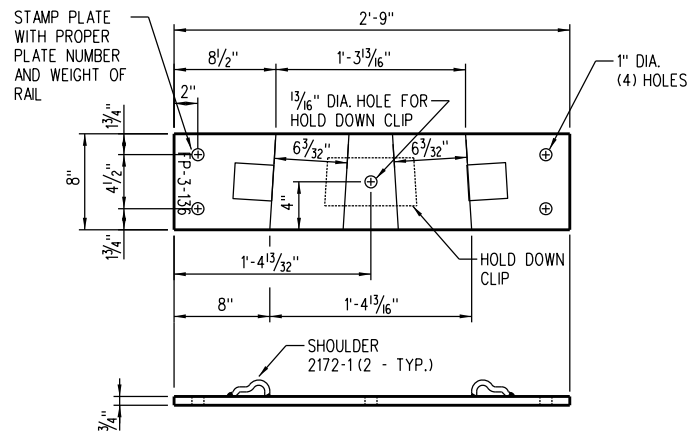
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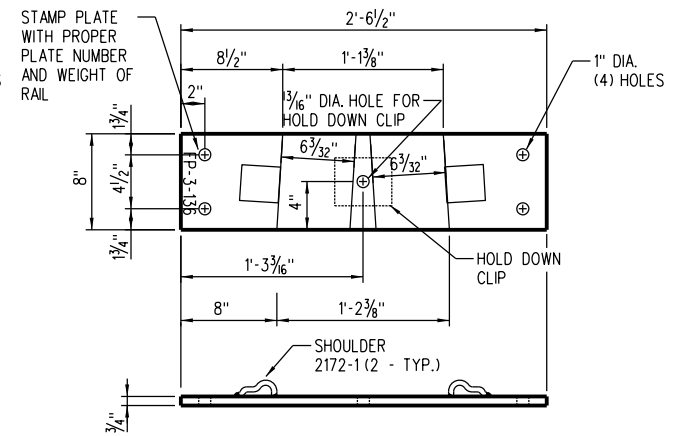
FROG PLATE - F-1
3/4" x 8" x 3'-2" LG. - FLAT



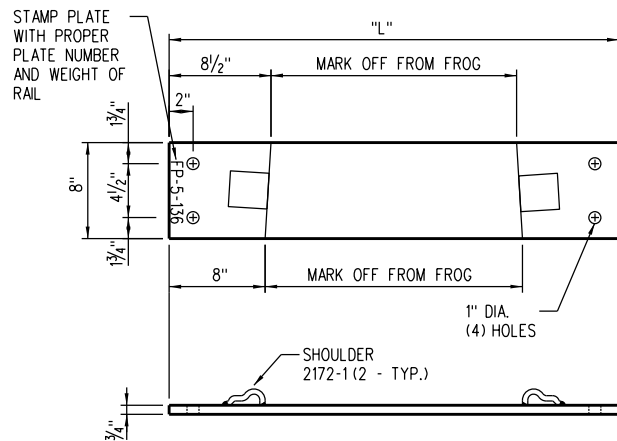
FROG PLATE - F-2
3/4" x 8" x 2'-11 1/2" LG. - FLAT



FROG PLATE - F-3
3/4" x 8" x 2'-9" LG. - FLAT

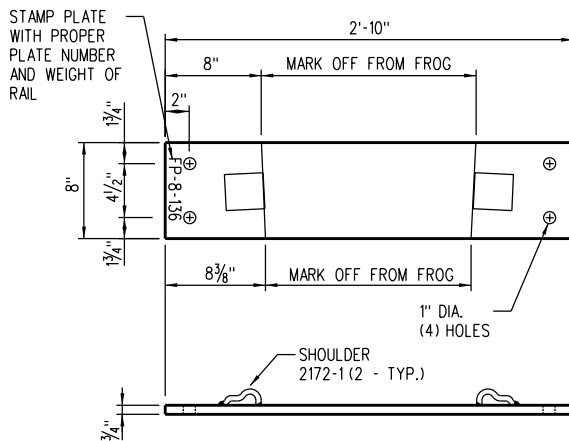


FROG PLATE - F-4
3/4" x 8" x 2'-6 1/2" LG. - FLAT

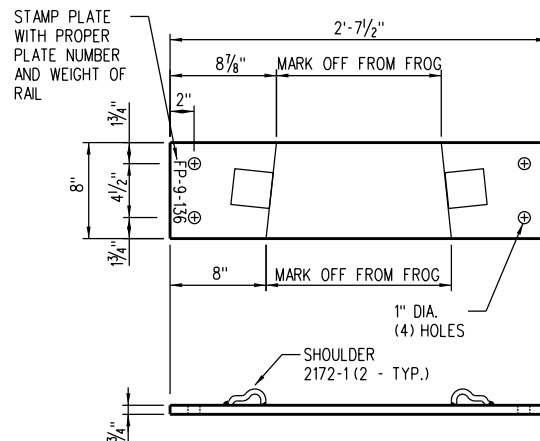


FROG PLATE - F-5, F-6 AND F-7
3/4" x 8" - FLAT (SEE TABLE FOR LENGTHS)

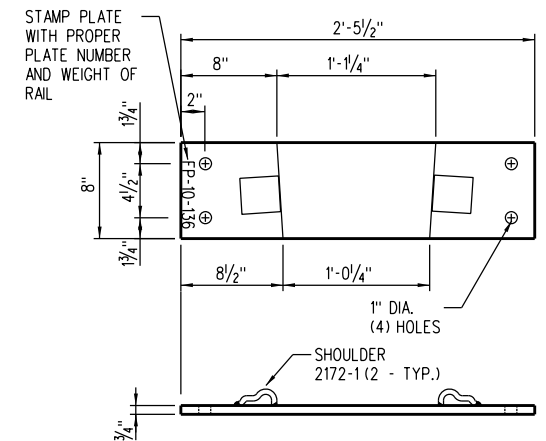
DIMENSION TABLE		
PLATE	"L"	NO. REQ'D
F-5	3'-11 1/2"	1
F-6	2'-11"	1
F-7	2'-9"	1



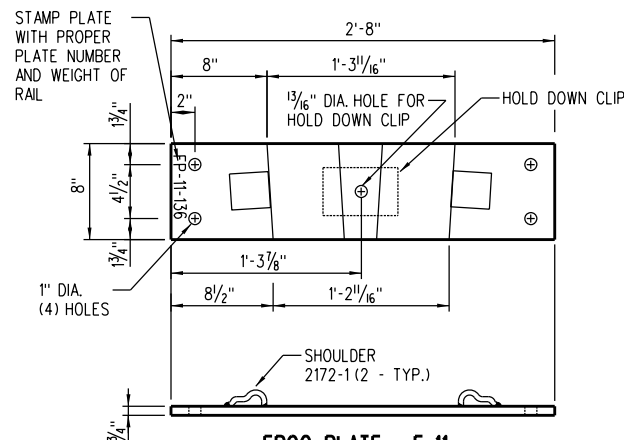
FROG PLATE - F-8
3/4" x 8" x 2'-10" - FLAT



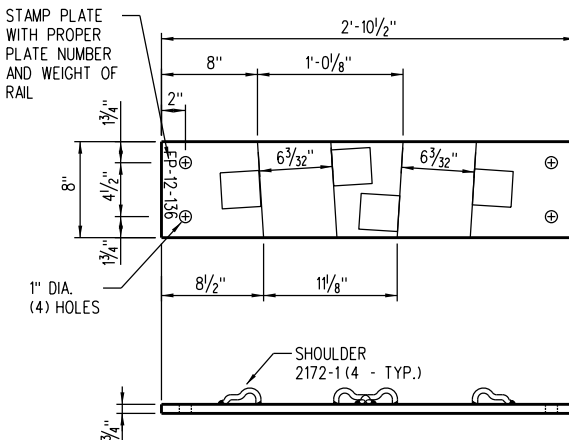
FROG PLATE - F-9
3/4" x 8" x 2'-7 1/2" - FLAT



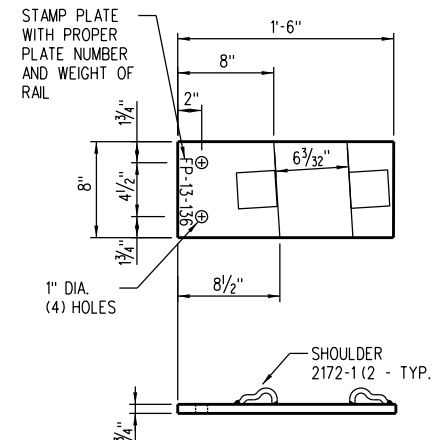
FROG PLATE - F-10
3/4" x 8" x 2'-5 1/2" - FLAT



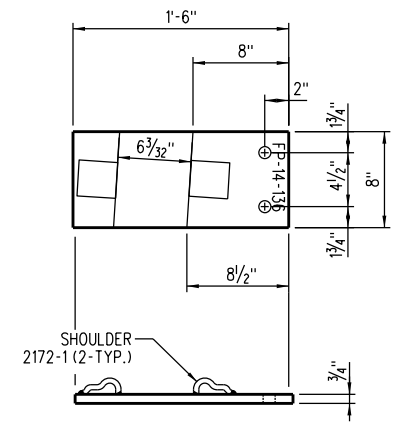
FROG PLATE - F-11
3/4" x 8" x 2'-8" - FLAT



FROG PLATE - F-12
3/4" x 8" x 2'-10 1/2" LG. - FLAT



FROG PLATE - F-13
3/4" x 8" x 1'-6" LG. - FLAT



FROG PLATE - F-14
3/4" x 8" x 1'-6" LG. - FLAT

FOR MAINTENANCE ONLY

REFERENCE DWGS.

LAYOUT - No.8, DOUBLE SLIP CROSSING - 136 lb. ----- SHEET No. 2901-02

REV.	DATE	DESCRIPTION	DES.	ENG.
X	XX-XX-XX	REVISION	XX	XX

DRAWN BY:	A. CARLOS	DATE:	03/31/2011
<i>Nancy D. Pate</i>			
ASSISTANT DIRECTOR: STANDARDS & DESIGN			
<i>William D. Davis</i>			
DIRECTOR OF ENGINEERING AND CONSTRUCTION			

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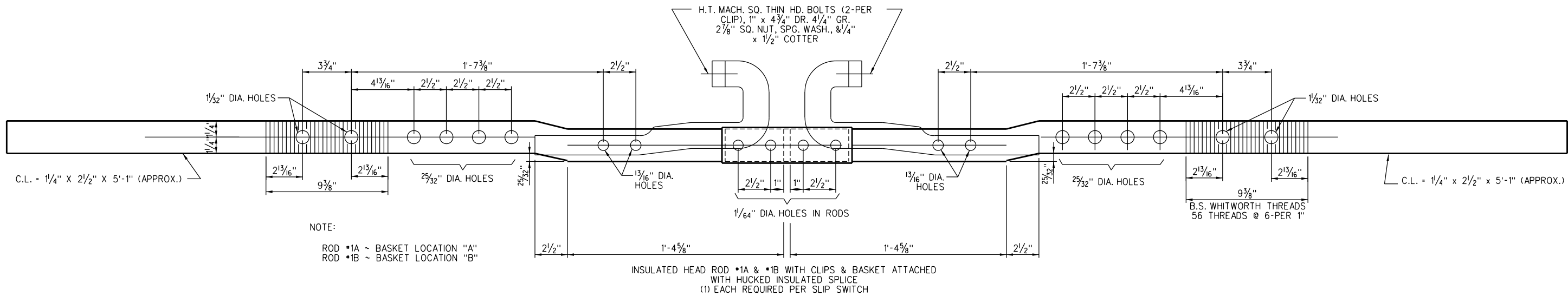
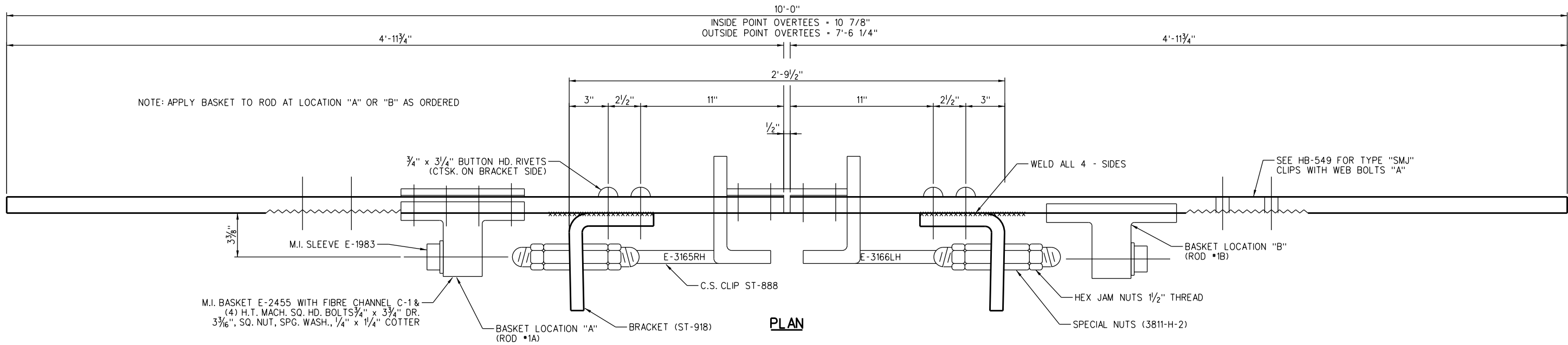
METROLINK

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS

FROG PLATE DETAILS
NO. 8, 136 LB. DOUBLE SLIP CROSSING

STANDARD	2901
SCALE:	1 1/2" = 1'-0"
REVISION	SHEET
-	12 OF 14
CADD FILE:	ES2901-12



INSULATION MATERIAL CONSISTS OF:

- (1) FIBRE CHANNEL C-1
- (2) FIBRE ANGLE PLATE AP-34
- (4) FIBRE BUSHINGS B-11
- (1) STEEL SPLICE PLATE ST-684
- (1) STEEL CHANNEL ST-568
- (4) 3/4" HUCK BOLTS C50LR-BR24-36
- (4) HUCK COLLARS LC2R-24G

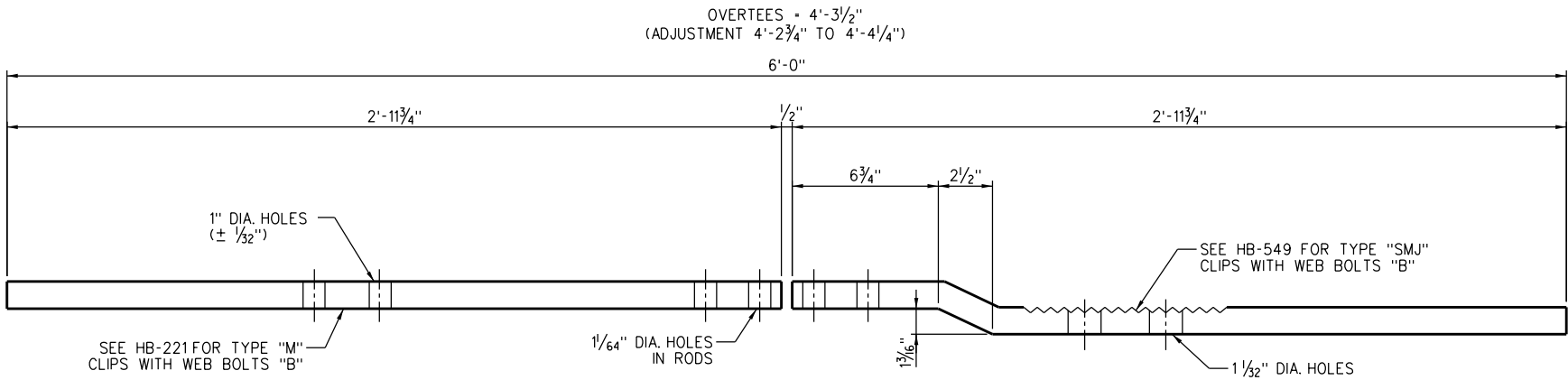
SWITCH INFORMATION

GAGE = 4'-8 5/8".
THROW AT POINT = 4" MIN. ~ 4 1/2" MAX.
"E" DIST. = 19 3/32".
PT. = 0" SAMSON.
REINF. = 1/2" "D" BOTH SIDES (SLOT 1/4" STK. SIDE).
ROD SPACING = 18 5/8".
BREAK ALL SHARP CORNERS.
DEBURR ALL HOLES.

FOR MAINTENANCE ONLY

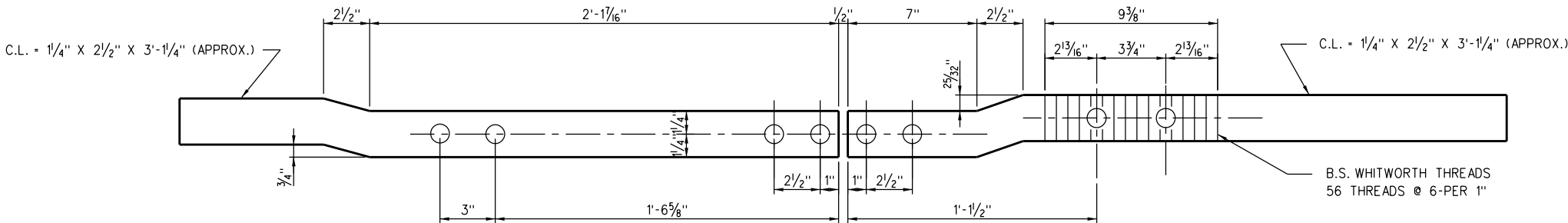
STAMP RODS WITH "RESP. ROD. •, 136RE, •8 DSS"

				DRAWN BY: A. CARLOS		DATE: 03/31/2011		SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.				 METROLINK®				ENGINEERING STANDARDS				STANDARD 2901	
				 ASSISTANT DIRECTOR: STANDARDS & DESIGN								SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY				INSULATED HEAD ROD NO.1 FOR END POINTS				SCALE: 3" = 1'-0"	
				 DIRECTOR OF ENGINEERING AND CONSTRUCTION								ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012				NO. 8, 136 LB. DOUBLE SLIP CROSSING				REVISION SHEET 13 OF 14	
																				CADD FILE: ES2901-13	
X		XX-XX-XX		REVISION		XX		XX													
REV.		DATE		DESCRIPTION		DES.		ENG.													



PLAN

NOTE: TYPE "M" CLIP MUST BE WELDED TO ROD
ALONG BOTH SIDES OF BOTTOM OF CLIPS



ELEVATION

INSULATED SPREAD RODS NO. 2 OR 3 WITH
CLIPS AND BOLTS ATTACHED WITH HUCKED
INSULATED SPLICE, (2) EACH REQUIRED PER
SLIP SWITCH

STAMP ROD WITH "RESP. NO., 136RE, *8 DSS"

**INSULATION MATERIAL
CONSISTS OF:**

- (1) FIBRE CHANNEL C-1.
- (2) FIBRE ANGLE PLATE AP-34.
- (4) FIBRE BUSHINGS B-11.
- (1) STEEL SPLICE PLATE ST-684.
- (1) STEEL CHANNEL ST-568.
- (4) 3/4" HUCK BOLTS C50LR-BR24-36.
- (4) HUCK COLLARS LC2R-24G.

SWITCH INFORMATION

GAGE = 4'-8 5/8"
THROW AT POINT = 4" MIN. ~ 4 1/2" MAX.
"E" DIST. = 1'9 1/32"
PT. = 0" SAMSON
REINF. = 1/2" "D" BOTH SIDES (SLOT 1/4" STK. SIDE)
ROD SPACING = 18 5/8" x 3'-0 1/2" (*2 ROD)
ROD SPACING = 18 5/8" x 3'-5 1/2" (*3 ROD)

FOR MAINTENANCE ONLY

						DRAWN BY: A. CARLOS	DATE: 03/31/2011	
X	XX-XX-XX	REVISION	XX	XX				
REV.	DATE	DESCRIPTION	DES.	ENG.				

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METROLINK

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS

INSULATED SPREAD RODS
NO. 2 & 3 FOR END POINTS
NO. 8, 136 LB. DOUBLE SLIP CROSSING

STANDARD	2901
SCALE:	3" = 1'-0"
REVISION	SHEET
-	14 OF 14
CADD FILE:	ES2901-14

METROLINK (S.C.R.R.A.)
ENGINEERING STANDARDS
NO. 10 DOUBLE SLIP CROSSING

BILL OF MATERIAL	
QTY.	DESCRIPTION
2 EACH	SOLID MANGANESE CENTER FROG
4 EACH	"D" STRAPS WITH BOLTS
4 PAIR	34'-7 ¹¹ / ₁₆ " EXTENDED FIELD WELDED TYPE SWITCH POINT
2 EACH	No. 1A & 1B HEAD ROD FOR END POINTS
2 EACH	No. 2 & 3 SPREAD RODS FOR END POINTS
2 EACH	No. 4 & 5 HEAD RODS FOR MOVEABLE CENTER POINTS
4 EACH	SLIDE PLATE S-5P
28 EACH	SLIDE PLATE S-8P
2 EACH	BRACE SLIDE PLATES 1A & 1B THRU 4A & 4B
2 EACH	BRACE SLIDE PLATES 5C
8 EACH	BRACE SLIDE PLATES 6A & 7A
2 EACH	GAGE PLATE No. GP-1 THRU GP-6
2 EACH	SWITCH PLATE 14-L & 14-R THRU 19-L & 19-R
2 EACH	FROG PLATES F-1 THRU F-15A & 15B
2 EACH	INSULATED FROG GAGE PLATES FGP-1 THRU FGP-3
2 EACH	No.10 RAIL BOUND MANGANESE FROG ~ 21'-2 ¹ / ₂ "
4 EACH	16'-0" U-69 ADJUSTABLE GUARD RAIL W/PLATES
2 EACH	D.I. RAIL HOLD DOWN CLIPS E-3707
4 EACH	D.I. RAIL HOLD DOWN CLIPS E-3709
12 PCS.	BOLTLESS ADJUSTABLE BRACE ASSEMBLY
20 PCS.	SCRRA ES1406 "PANDROL", OR EQUAL "E" - CLIP 6" TIE PLATE
356 PCS.	E-CLIP TYPE E-2055 (GALVANIZED)
24 PCS.	E-CLIP TYPE E-2063 (GALVANIZED)
924 PCS.	SCREW SPIKES ¹⁵ / ₁₆ " DIA. X 6" No. 5760
2 EACH	STRAIGHT STOCK RAIL 25'-0 ¹⁵ / ₁₆ " LONG
4 EACH	BRACE RAIL - 5'-11 ¹ / ₄ " LONG
4 EACH	M MOVEABLE POINT RAIL - 13'-1 ¹ / ₄ " LONG
2 EACH	OUTER SLIP RAIL - 20'-7 ⁷ / ₈ " LONG
4 EACH	SWITCH POINT RAIL - 22'-8 ¹ / ₂ " LONG
2 EACH	KNUCKLE RAIL - 23'-11" LONG
2 EACH	STRAIGHT STOCK RAIL - 25'-0 ¹¹ / ₁₆ " LONG
4 EACH	CURVED STOCK RAIL - 28'-2 ³ / ₄ " LONG
4 EACH	CURVED SWITCH POINT RAIL - 34'-7 ³ / ₄ " LONG
4 EA.	EPOXY BONDED PREFABRICATED INSULATED JOINT KITS

DRAWING INDEX

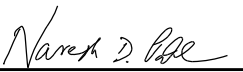
BILL OF MATERIAL & GENERAL NOTES	No. 2902-01
136 lb. - NO. 10 - DOUBLE SLIP CROSSING	No. 2902-02
CROSSING GEOMETRY NO. 10 DOUBLE SLIP CROSSING	No. 2902-03
136 LB. - NO. 10 - SOLID MANGANESE FROG WITH PLATES	No. 2902-04
136 lb. - U-69 GUARD RAIL WITH PLATES	No. 2902-05
NO. 10 DOUBLE SLIP CROSSING - CENTER SECTION LAYOUT	No. 2902-06
22'-8 ¹ / ₂ " SWITCH POINT DETAILS	No. 2902-07
34'-7 ³ / ₄ " SWITCH POINT DETAILS	No. 2902-08
136 LB MOVEABLE CENTER POINT	No. 2902-09
136 LB UNDERCUT STOCK RAILS	No. 2902-10
INSULATED GAGE PLATE DETAILS	No. 2902-11
INSULATED GAGE PLATE & BRACE PLATE DETAILS	No. 2902-12
BRACE PLATE & SLIDE PLATE DETAILS	No. 2902-13
BRACE SLIDE PLATE & INSULATED SLIDE PLATE DETAILS	No. 2902-14
INSULATED FROG GAGE PLATE DETAILS	No. 2902-15
FROG PLATE DETAILS	No. 2902-16
INSULATED HEAD ROD NO. 1 FOR END POINTS	No. 2902-17
INSULATED SPREAD ROD NO. 2 & 3 FOR END POINTS	No. 2902-18
INSULATED HEAD ROD NO. 4 FOR MOVEABLE CENTER POINTS	No. 2902-19
INSULATED HEAD ROD NO. 5 FOR MOVEABLE CENTER POINTS	No. 2902-20

NOTES:

- ENTIRE DOUBLE SLIP CROSSING TO BE FABRICATED FROM 136 LB. HEAD HARDENED RAIL.
- LOCATIONS OF INSULATED JOINTS ARE AS SHOWN ON ES2902-02. IT WILL BE SATISFACTORY TO RELOCATE THE INSULATED JOINT IN THE FIELD UP TO 12" SO AS TO PROVIDE A SUITABLE SUSPENDED JOINT, PROVIDED THE STAGGER OF THE INSULATED JOINTS DOES NOT EXCEED 4'-6". SUSPENDED INSULATED JOINTS MUST BE LOCATED IN A CRIB AREA BETWEEN TIES, A MINIMUM DISTANCE OF 4" FROM EDGE OF NEAREST TIE PLATE.
- ALL INSULATED JOINTS ARE TO BE ADHESIVE BONDED INSULATED JOINTS UNLESS OTHERWISE SPECIFIED.
- ALL MATERIALS REQUIRED FOR HAND OR MACHINE OPERATED SWITCH OPERATION WILL BE FURNISHED PER REQUIREMENTS OF THE S.C.R.R.A. DIRECTOR OF ENGINEERING AND CONSTRUCTION.
- MATERIALS AND WORKMANSHIP, ALSO ANY CONSTRUCTION DETAILS NOT SHOWN, SHALL BE PER CURRENT A.R.E.M.A. "TRACKWORK PLANS AND SPECIFICATIONS" UNLESS OTHERWISE SPECIFIED.
- WHERE REQUIRED, ALL IDENTIFICATION SYMBOLS TO BE PLAINLY STAMPED.
- GAGE PLATES WILL BE FURNISHED INSULATED. SWITCH RODS WILL BE FURNISHED INSULATED UNLESS OTHERWISE SPECIFIED.
- MANUFACTURER SHALL SUBMIT TWO COPIES OF SHOP DRAWINGS TO THE S.C.R.R.A. DIRECTOR OF ENGINEERING AND CONSTRUCTION FOR APPROVAL PRIOR TO FABRICATION OF TURNOUT. SHOP DRAWINGS THAT CHANGE DETAILS OF THESE STANDARDS MUST CLEARLY SPECIFY SUCH PROPOSED CHANGES.
- THE MATERIAL INCLUDED IN THE PURCHASE OF A "DOUBLE SLIP CROSSING COMPLETE" IS EVERYTHING LISTED IN THE BILL OF MATERIALS. TO CONSTRUCT A COMPLETE TURNOUT, SWITCH TIES (PER LIST ON THIS SHEET) AND INSULATED JOINTS, FIELD WELDS, RUNNING RAIL AND CLOSURE RAIL IDENTIFIED ON SUBSEQUENT SHEETS MUST ALSO BE SUPPLIED.
- TIE PLATES SHALL CONFORM TO S.C.R.R.A. STANDARD ES2454.
- SCREW SPIKES (¹⁵/₁₆" X 6-2 TPI) SHALL CONFORM TO S.C.R.R.A. STANDARD ES2357. PLATE HOLES SHALL BE 1" DIAMETER. PILOT HOLES IN TIES SHALL BE ⁵/₈" DIAMETER. SCREW SPIKES SHALL BE SCREWED INTO WOOD (NOT DRIVEN).
- MANUFACTURER SHALL BEVEL RAIL ENDS PER CURRENT A.R.E.M.A. PLAN NO. 1005.
- THE 34'-7 ³/₄" SWITCH POINT, MADE FROM 40'-0" RAIL PER ES2902-08 IS TO BE FURNISHED WITH SWITCH RODS NO. 1A, 1B, AND 2 THRU 5 PER ES2902-17 THRU ES2902-20
- FOR CROSSING DATA FOR A NO. 10 DOUBLE SLIP Crossover 136 LB. R.E. RAIL SEE CHART ON SHEET 3.
- GAGE PLATES FOR SWITCH AND FROG, SWITCH HEEL PLATE (FOR BOTH R.H. AND L.H. TURNOUTS) AND PLATES 14 THRU 19 ARE DESIGNED TO BE PERPENDICULAR TO THE CENTRAL AXIS OF THE SWITCH
- UPON COMPLETION OF TURNOUT INSTALLATION, RUNNING RAIL MUST BE ADJUSTED TO S.C.R.R.A. NEUTRAL RAIL TEMPERATURE.
- ENTIRE CROSSOVER TO BE FULLY FLOOR ASSEMBLED INCLUDING END FROGS AND HF GUARD RAILS.
- ALL E-CLIPS TO BE GALVANIZED.

BILL OF SWITCH TIES			
PIECES	SIZE	LENGTH	BOARD FEET
24	7" x 9"	11'-0"	1386.00
18	7" x 9"	12'-0"	1134.00
12	7" x 9"	13'-0"	819.00
12	7" x 9"	14'-0"	882.00
4	7" x 9"	15'-0"	294.00
4	7" x 9"	16'-0"	336.00
TOTAL			TOTAL
74			4851.00

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					DRAWN BY: A. CARLOS	DATE: 03/31/2011	SCRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRA APPROVED USES ONLY. FOR NON-SCRRA APPROVED USES: SCRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRA. ALL RIGHTS RESERVED.	 METROLINK [®]	ENGINEERING STANDARDS	STANDARD 2902
									NO. 10, 136 LB. DOUBLE SLIP CROSSING WITH MOVEABLE POINT FROG	SCALE: NONE
								SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	BILL OF MATERIAL AND GENERAL NOTES	REVISION SHEET - 1 OF 20
										CADD FILE: ES2902-01

See cover sheet for notes, bill of material and crossing data.



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STANDARD	2902
SCALE:	$\frac{1}{2}" = 1'-0"$
REVISION	SHEET
-	2 OF 20
CADD FILE:	ES2902-02

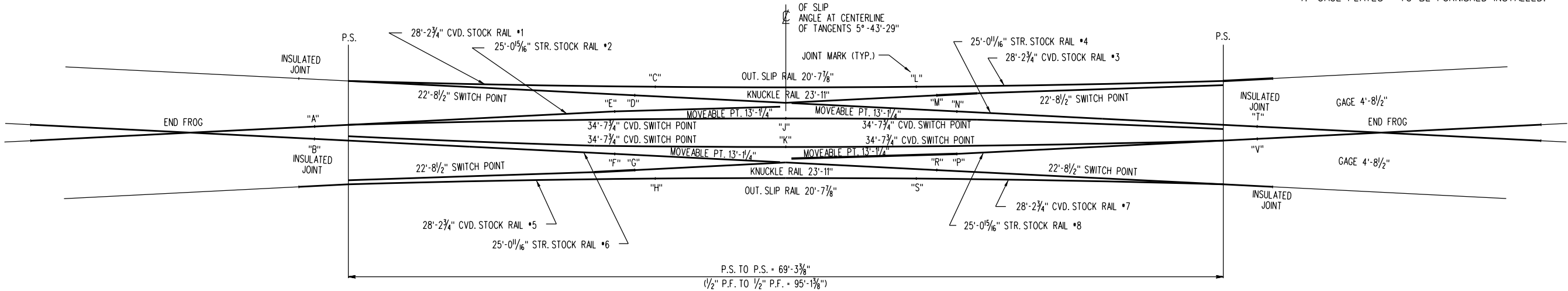
CROSSING DATA			
BETWEEN THEO. PTS. OF END FROGS	94'-3 ³ / ₈ "	ANGLE OF CROSSING	5° -43'-29"
BETWEEN THEO. PT. OF END FROG & CENTER FROG	47'-2 ⁷ / ₁₆ "	DEGREE OF CURVATURE	4° -48'-09"
FROM INSIDE SW. PTS. TO THEO. PT. END FROG	12'-6 ³ / ₁₆ "	GAGE LINE RADIUS	1193.4206'
FROM THEO. PT. OF CTR. FROG TO HEEL JT.	10'-4 ¹ / ₈ "	THROW AT END PT.	4"
LENGTH OF INSIDE SAMSON STOCK RAIL	23'-9 ¹ / ₁₆ " 23'-9 ³ / ₁₆ "	GAGE ON STRAIGHT TRACK	4'-8 ¹ / ₂ "
LENGTH OF OUTSIDE SAMSON STOCK RAIL	28'-2 ³ / ₄ "	GAGE ON CURVED TRACK	4'-8 ⁹ / ₁₆ "
LENGTH OF FROG FROM THEO. PT. TO TOE	8'-1 ¹ / ₂ "	SWITCH ANGLE @ END POINTS	1° -11'-56"
LENGTH OF FROG FROM THEO. PT. TO HEEL	12'-3"	HEEL SPREAD OUTSIDE SW. PTS. 5 11/16" B.C. 8 9/32" A.C.	
LENGTH OF OUTSIDE SAM. END SW. PTS. (0" SAMSON)	22'-8 ¹ / ₂ "	HEEL SPREAD INSIDE SW. PTS. 6 1/32" B.C. 14 3/4" A.C.	
LENGTH OF INSIDE SAM. END SW. PTS. (0" SAMSON)	34'-7 ³ / ₄ "		

NOTES:

- ALL MEASUREMENTS GIVEN AT 5/8" BELOW TOP OF RAIL AND TO 1/2" POINT OF END OF FROG.
- ALL RAILS TO BE FULLY HEAT TREATED - BRINELL 341-388.
- JOINT GAPS: 1/8" STANDARD: 3/8" INSULATED.
- JOINT DRILLING: ALL FIELD WELDED RAILS: 9 1/2" - 6" @ 3 3/32" A.B., 1/8" DIA. HOLES.
- ALL INSULATED JOINT RAILS: 3 1/2" - 6" - 6" @ 3 3/32" A.B., 1/4" DIA. HOLES.
- PROPER LOCATION OF EDGE OF PLATES TO BE MARKED WITH WHITE PAINT ON OUTER FLANGE OF RAIL.
- MATCH MARK ALL RAIL ENDS AS SHOWN.
- ENTIRE CROSSOVER TO BE FULLY FLOOR ASSEMBLED INCLUDING END FROGS AND HF GUARD RAILS.

SPECIFICATIONS:

- CROSSING TYPE - •10 DOUBLE SLIP, GENERALLY PER A.R.E.M.A. PLAN NO. 814. RAIL: 136RE HEAT TREATED.
- FROG - •10 RAIL BOUND MANGANESE FROG, 136RE, 22'-6" LONG WITH PANDROL PLATES - MANGANESE CASTING TO BE EXPLOSIVE HARDENED.
- SWITCH POINTS - 22'-8 1/2" & 34'-7 3/4" LONG, CURVED AND STRAIGHT, SAMSON PLANING A.R.E.M.A. DETAIL 5100. CURVED POINTS TO BE EQUIPED WITH REPLACEABLE MANGANESE INSERTS.
- CLIPS AND RODS - VERTICAL RODS WITH "SMJ" CLIPS.
- ADJUSTABLE BRACES - BOLTLESS WITH SPRING CLIPS.
- GUARD RAILS - U-69 SECTION 16'-0" RAISED GUARD RAIL WITH BRACES AND PLATES.
- GAGE PLATES - TO BE FURNISHED INSTALLED.



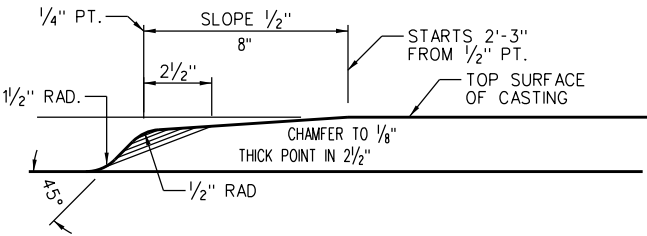
CROSSING DATA

REFERENCE DRAWING

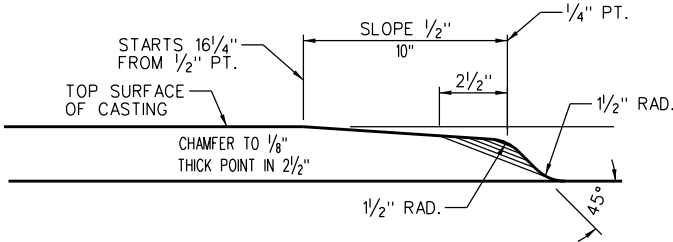
136 lb. - NO. 10 - DOUBLE SLIP CROSSING SHEET No. 2902-02

FOR MAINTENANCE ONLY

				DRAWN BY: A. CARLOS		DATE: 03/31/2011		SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.		 METROLINK SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012		ENGINEERING STANDARDS		STANDARD 2902						
				<i>Nancy D. Pae</i> ASSISTANT DIRECTOR: STANDARDS & DESIGN <i>William D. Davis</i> DIRECTOR OF ENGINEERING AND CONSTRUCTION		CROSSING GEOMETRY AND CROSSING DATA NO. 10, 136 LB. DOUBLE SLIP CROSSING						SCALE: NONE								
												REVISION SHEET								
												- 3 OF 20								
REV. DATE DESCRIPTION DES. ENG.												CADD FILE: ES2902-03								

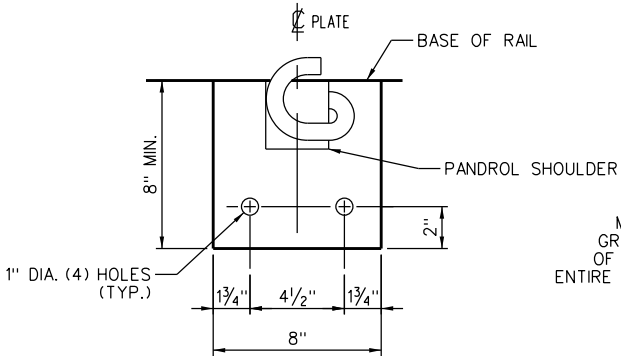


SLOPE ON MANGANESE @ SECTION "X" - "X"



SLOPE ON MANGANESE @ SECTION "Y" - "Y"

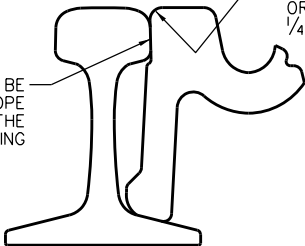
SCALE: NONE



TYPICAL PLATE PUNCHING DETAIL

SCALE: NONE

MANGANESE MUST BE
GROUND TO FIT SLOPE
OF RAIL HEAD FOR THE
ENTIRE LENGTH OF CASTING



DETAIL OF FROG
CASTING / RAIL FIT

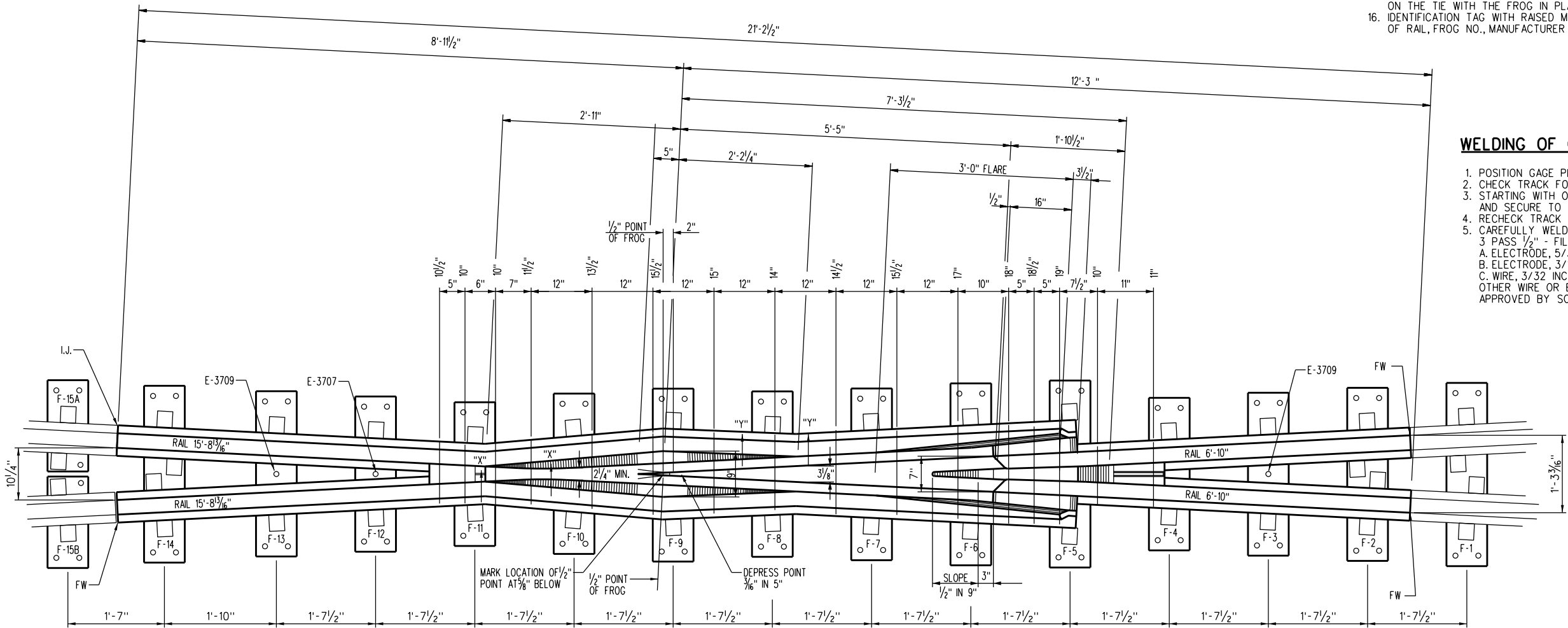
SCALE: NONE

NOTES:

1. FROG ANGLE 5° - 43° - 29°.
2. RAIL USED TO FABRICATE FROG IS TO BE 136 LB. HIGH STRENGTH.
3. RAIL BOUND MANGANESE STEEL FROG PER CURRENT A.R.E.M.A. PLAN NO. 621 & 625 WITH EXPLOSIVE HARDENED MANGANESE HIGH INTEGRITY CASTING PER CURRENT A.R.E.M.A. SPECIFICATIONS AND MODIFIED FOR ARM LENGTHS AND PLATES WITH "PANDROL" FASTENERS.
4. ALL FROG PLATES SHALL BE STAMPED IN 1/2" CHARACTERS TO INDICATE MFG., FROG NO., R.H., RAIL SECTION AND PLATE NUMBER. MARK TO BE STAMPED ON SAME END OF ALL FROG PLATES.
5. FOR DETAILS OF FROG PLATES FP-1 THRU FP-15, SEE SHEET ES2902-16.
6. WORKMANSHIP AND MATERIALS SHALL BE PER CURRENT A.R.E.M.A. SPECIFICATIONS FOR "SPECIAL TRACKWORK", EXCEPT AS OTHERWISE SPECIFIED.
7. ANY CONSTRUCTION DETAILS NOT SHOWN SHALL BE IN ACCORDANCE WITH CURRENT A.R.E.M.A. RECOMMENDED PRACTICE.
8. FROG PLATES ARE DESIGNED TO BE INSTALLED PERPENDICULAR TO MAIN TRACK.
9. BODY BOLTS 1 5/8" DIAMETER, H.T.C.S. - PER A.R.E.M.A. SPECIFICATIONS.
10. TOE AND HEEL BLOCKS AND BOLTS PER A.R.E.M.A. SPECIFICATIONS.
11. PLATES TO BE MADE OF MILD ROLLED STEEL.
12. THE PLATES AS SHOWN ARE FOR A 136 LB., NO. 10, DOUBLE SLIP CROSSING, MACHINE OPERATED TURNOUT.
13. THE "PANDROL" TYPE WELD - ON PRESSED STEEL SHOULDER, MADE OF MILD STEEL, TO BE PURCHASED FROM "PANDROL INTERNATIONAL", OR APPROVED ALTERNATE MEETING "PANDROL'S" DESIGN SPECIFICATIONS. THE PRESSED STEEL SHOULDER MUST BE CAFULLY WELDED TO ALL PLATES WITH A MINIMUM 2 PASS 3/8" + FILLET WELD ALONG THE BEVELED GROOVES OF THE SHOULDER. ANY WELD PROJECTING BEYOND THE VERTICAL FACE OF SHOULDER IN THE AREA OF THE BASE OF RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.
14. MANUFACTURER OF FROG PLATES SHALL USE COMPLETED FROG TO VERIFY LOCATION OF ADJUSTABLE CLAMPS ON FROG PLATES FP-1, FP-2 AND FP-3 TO INSURE PROPER FIT. FROG PLATES WILL BE WELDED TO THE GAGE PLATES IN THE FIELD WITH A 3 PASS 1/2" + FILLET WELD. PLATES WILL BE WELDED ONLY AFTER THE GAGE PLATES ARE SECURED IN THE PROPER LOCATION ON THE TIE WITH THE FROG IN PLACE AT PROPER ALIGNMENT.
15. GUARD RAIL PLATES ARE TO BE INSTALLED AND WELDED TO THE FROG GAGE PLATES IN THE FIELD WITH A 3 PASS 1/2" + FILLET WELD CONTINUOUS ON BOTH ENDS OF THE PLATE. PLATES ARE TO BE WELDED ONLY AFTER THE GAGE PLATE AND THE FROG IS SECURED IN THE PROPER LOCATION ON THE TIE WITH THE FROG IN PLACE AT PROPER ALIGNMENT.
16. IDENTIFICATION TAG WITH RAISED METAL CHARACTERS TO BE APPLIED WHICH WILL STATE WEIGHT OF RAIL, FROG NO., MANUFACTURER AND YEAR MANUFACTURED.

WELDING OF GAGE PLATE & GUARD RAIL:

1. POSITION GAGE PLATES AT DESIGNATED TIE LOCATIONS AND ANCHOR IN PLACE.
2. CHECK TRACK FOR CORRECT GAGE.
3. STARTING WITH ONE GAGE PLATE, PLACE FROG PLATES WITH ADJUSTABLE BRACES AND SECURE TO FROG AND GUARD RAIL WITH "PANDROL" CLIPS.
4. RECHECK TRACK GAGE AND CORRECT IF NECESSARY.
5. CAREFULLY WELD FROG PLATE AND GUARD RAIL PLATE TO FROG GAGE PLATES WITH 3 PASS 1/2" - FILLET WELD. FOR WELDING USE THE FOLLOWING:
 - A. ELECTRODE, 5/32 INCH, WELDING SPEC. 7018XLM.
 - B. ELECTRODE, 3/16 INCH, WELDING SPEC. 7018XLM.
 - C. WIRE, 3/32 INCH, NR203, 1% NICKEL FLUX CORE.OTHER WIRE OR ELECTRODES MEETING SPECIFICATIONS AS CALLED FOR AND APPROVED BY SCRRRA DIRECTOR OF ENGINEERING MAY BE USED.



No. 10 RAILBOUND MANGANESE FROG

21'-2 1/2" LONG WITH PLATES

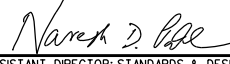
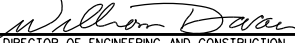
SCALE: 1" = 1'-0"

FOR MAINTENANCE ONLY

REFERENCE DWGS.

LAYOUT - No.10 DOUBLE SLIP CROSSING - 136 lb. ----- No. 2902-02

REV.	DATE	DESCRIPTION	DES.	ENG.
X	XX-XX-XX	REVISION	XX	XX

DRAWN BY:	A. CARLOS	DATE:	03/31/2011
			
ASSISTANT DIRECTOR: STANDARDS & DESIGN			
			
DIRECTOR OF ENGINEERING AND CONSTRUCTION			

SCRRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRRA APPROVED USES ONLY.
FOR NON-SCRRRA APPROVED USES:
SCRRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRRA. ALL RIGHTS RESERVED.



METROLINK®

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS

NO. 10 RAILBOUND MANGANESE STEEL FROG
WITH PANDROLIZED PLATES FOR A
NO. 10, 136 LB. DOUBLE SLIP CROSSING

STANDARD	2902
SCALE:	AS NOTED
REVISION	SHEET
-	4 OF 20
CADD FILE:	ES2902-04

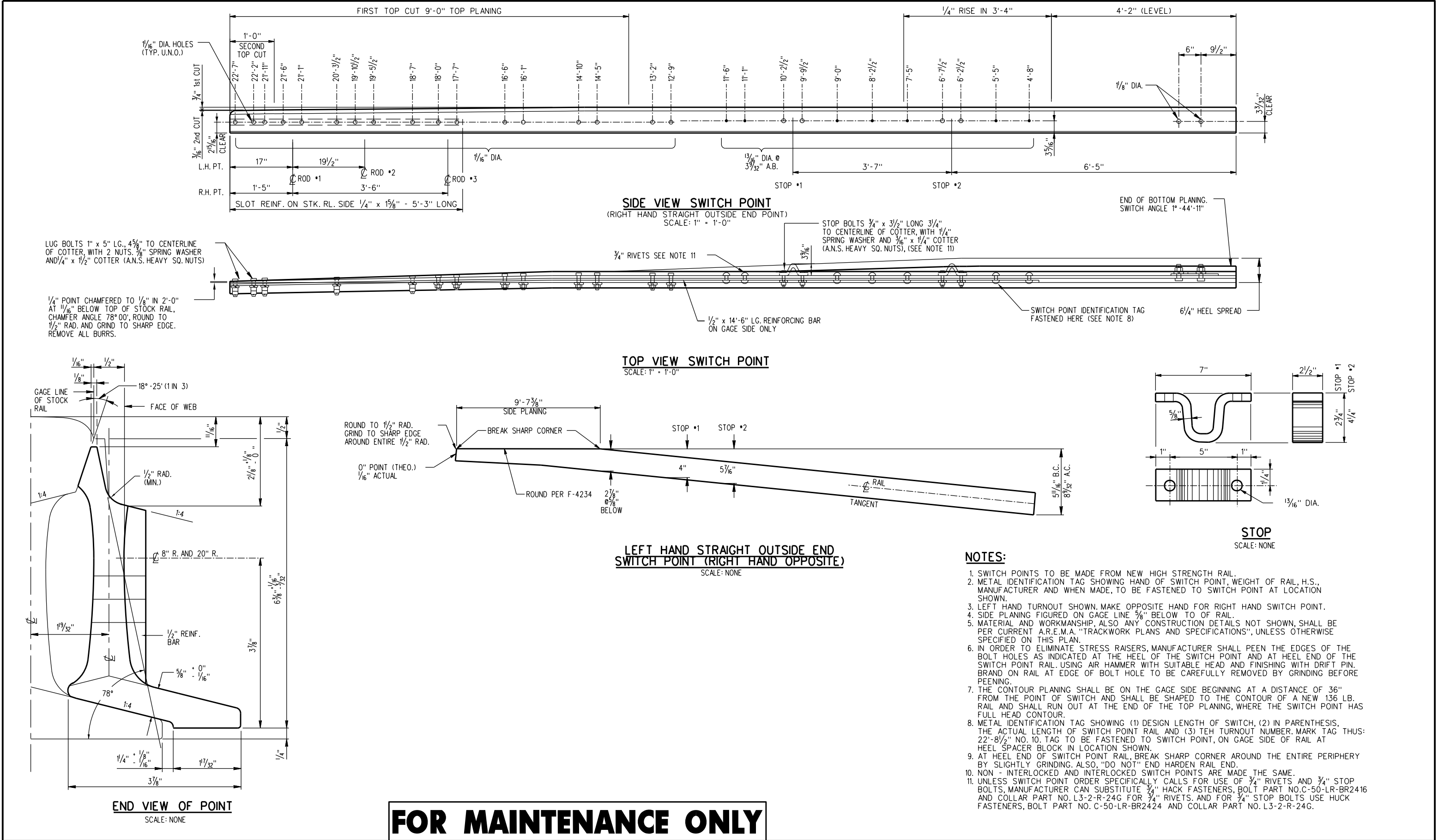
1. D.I. HOLD DOWN CLIPS TO BE INTALLED IN THE FIELD.



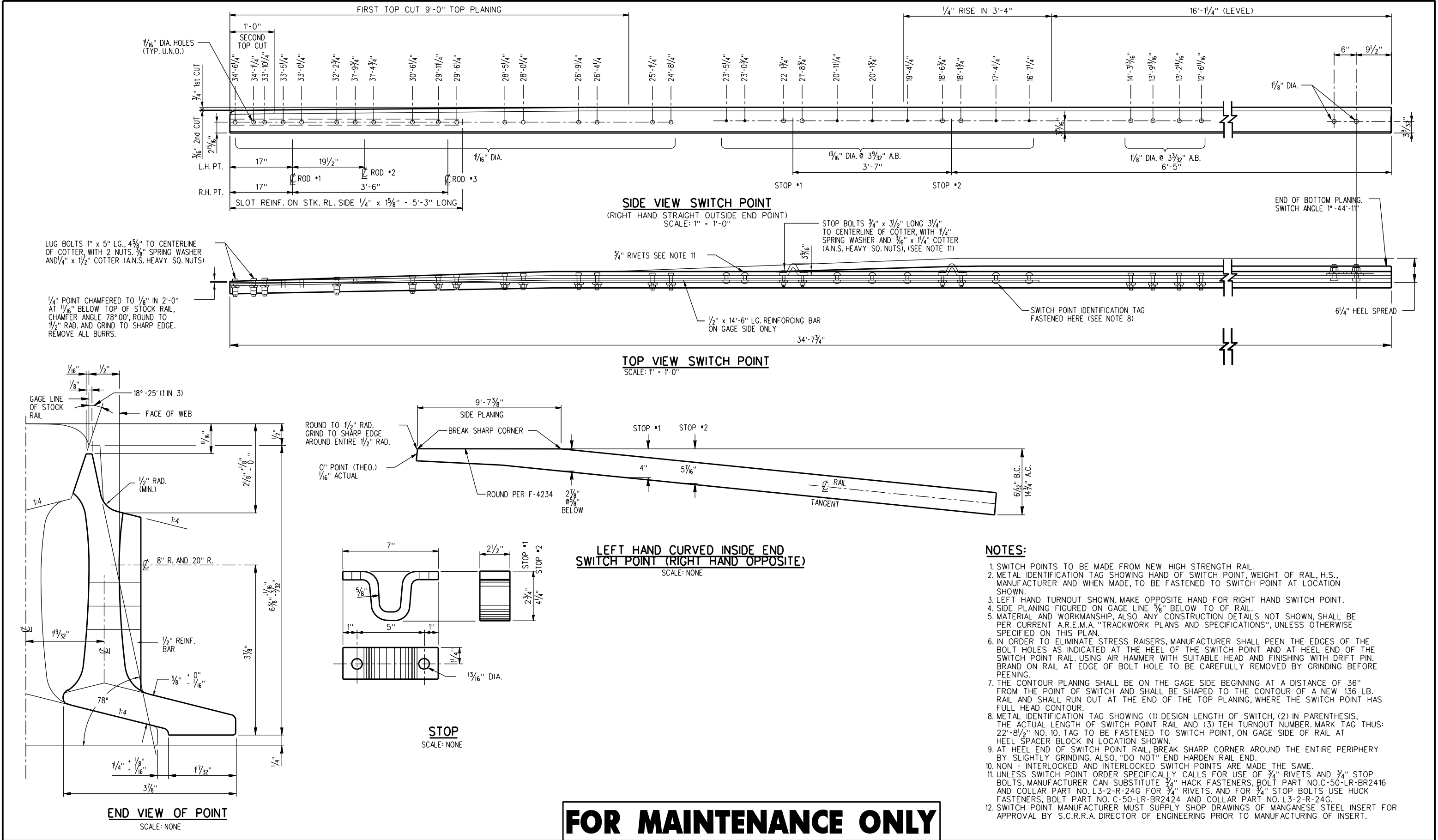
REFERENCE DRAWING:

LAYOUT - NO. 10 DOUBLE SLIP CROSSING - 136 LB ————— ES2902-02

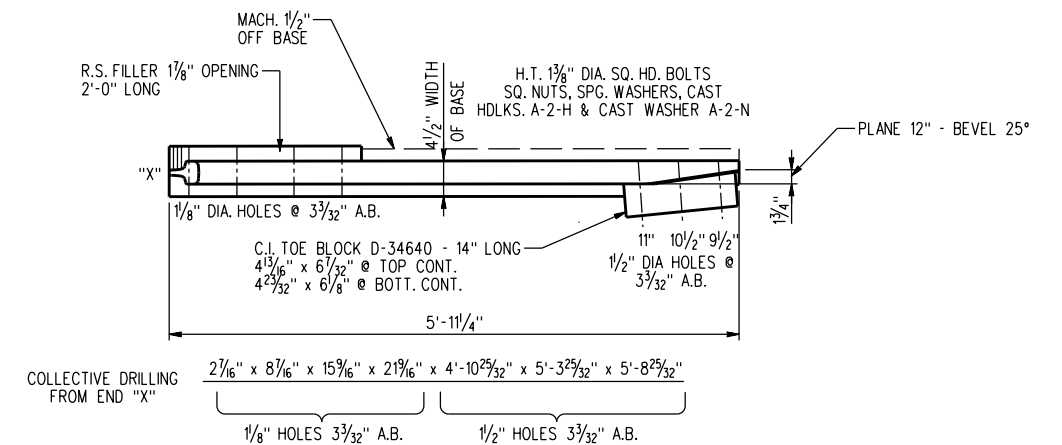
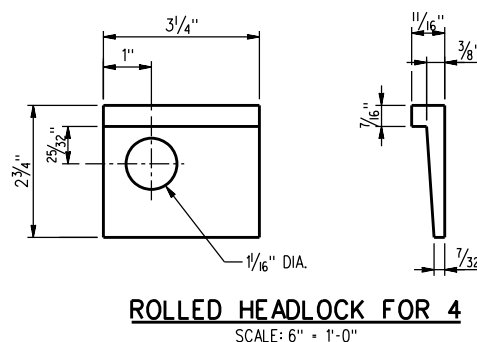
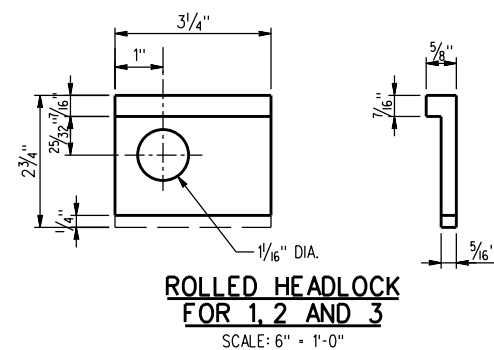
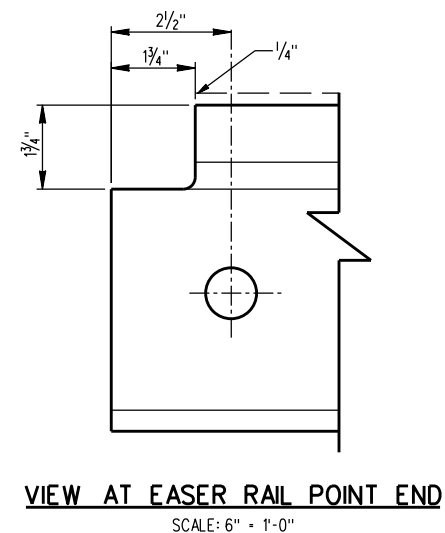
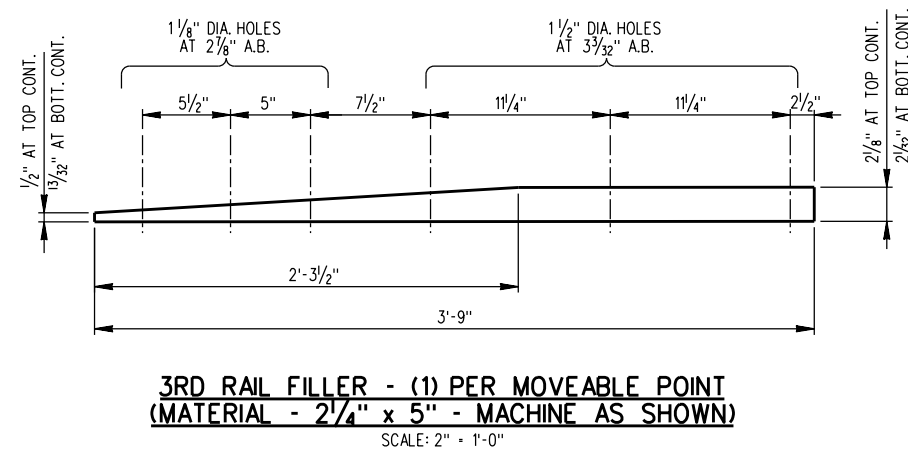
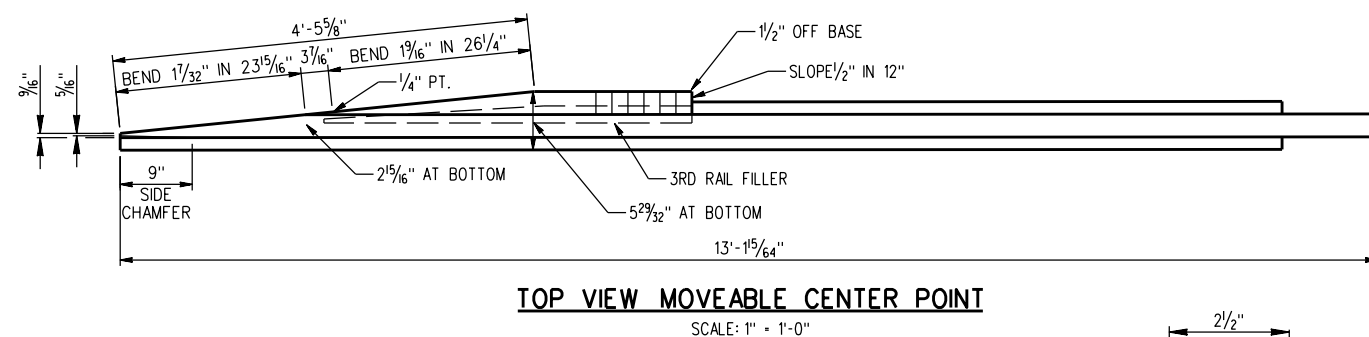
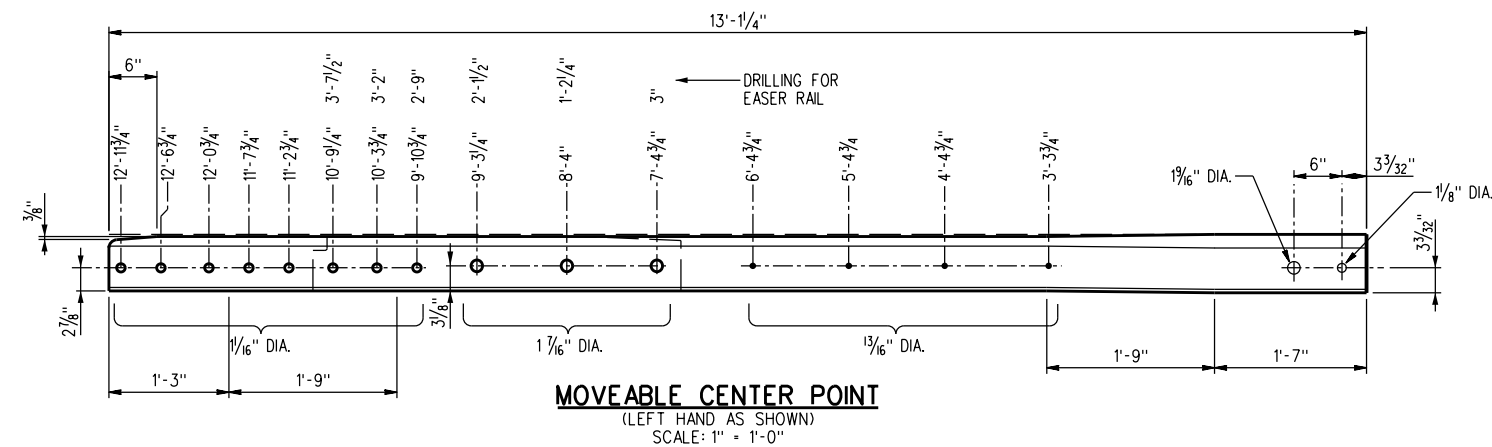
		DRAWN BY: A. CARLOS		DATE: 03/31/2011		SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.		 METROLINK®		ENGINEERING STANDARDS		STANDARD 2902	
		 Narex D. Pae ASSISTANT DIRECTOR: STANDARDS & DESIGN						SCALE: 3/4" = 1'-0"		REVISION SHEET 6 OF 20		CADD FILE: ES2902-06	
		 Wilton Davis DIRECTOR OF ENGINEERING AND CONSTRUCTION				SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012		CENTER SECTION LAYOUT NO. 10, 136 LB. DOUBLE SLIP CROSSING					
X XX-XX-XX		REVISION		XX XX									
REV.		DATE		DESCRIPTION		DES.		ENG.					



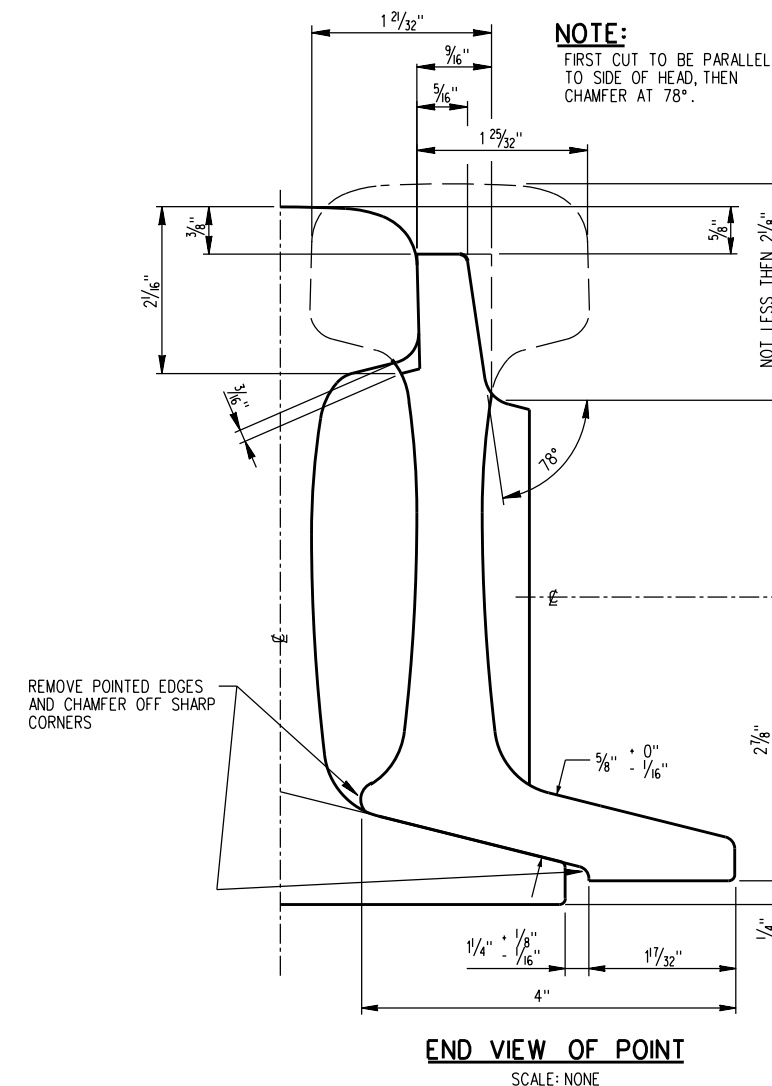
				DRAWN BY: A. CARLOS		DATE: 03/31/2011		SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.	 METROLINK SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	ENGINEERING STANDARDS		STANDARD 2902									
						ASSISTANT DIRECTOR: STANDARDS & DESIGN				136 LB. 22'-8½" STRAIGHT SWITCH POINT FOR NO. 10, 136 LB. DOUBLE SLIP CROSSING				SCALE: AS NOTED							
						DIRECTOR OF ENGINEERING AND CONSTRUCTION								REVISION SHEET 7 OF 20							
														CADD FILE: ES2902-07							
X	XX-XX-XX	REVISION		XX	XX																
REV.	DATE	DESCRIPTION		DES.	ENG.																



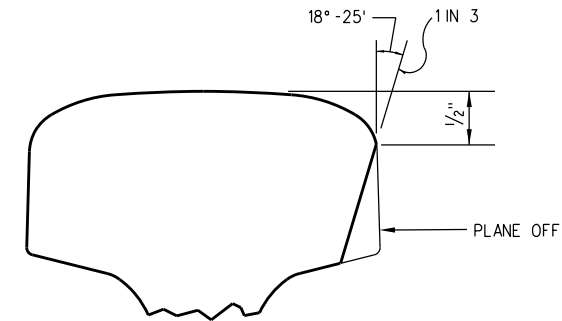
				DRAWN BY: A. CARLOS		DATE: 03/31/2011		SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.	 METROLINK® SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	ENGINEERING STANDARDS		STANDARD 2902	
						ASSISTANT DIRECTOR: STANDARDS & DESIGN				SCALE: AS NOTED			
						DIRECTOR OF ENGINEERING AND CONSTRUCTION		REVISION SHEET 8 OF 20					
								CADD FILE: ES2902-08					
X		XX-XX-XX		REVISION		XX XX				136 LB. 34'-7 ³ / ₄ " CURVED SWITCH POINT			
REV.		DATE		DESCRIPTION		DES. ENG.				NO. 10, 136 LB. DOUBLE SLIP CROSSING			



FOR MAINTENANCE ONLY

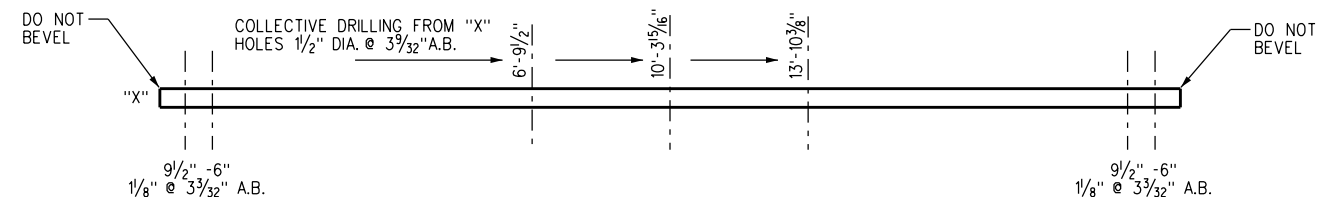


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LENGTHS B, C, & D FOR 136 LB. RAIL						
Sw. Pl. LENGTH	T.O. No.	STOCK RAIL	B	FOR FIRST (NEW) INSTALL.		
				C	D	END DRILL. SEE NO. 10
22'-8 $\frac{1}{2}$ "	10	STR.	11'-0"	3'-11"	25'-0 $\frac{15}{16}$ "	NONE
22'-8 $\frac{1}{2}$ "	10	BENT	11'-0"	3'-11"	28'-2 $\frac{3}{4}$ "	HEEL END ONLY

Sw. Length	BEND ANGLE	V (Vertex Dist.)
22'-8½"	1° -44'-11" or 1" in 2'-9"	105⅝"



FOR MAINTENANCE ONLY

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REFERENCE DRAWINGS

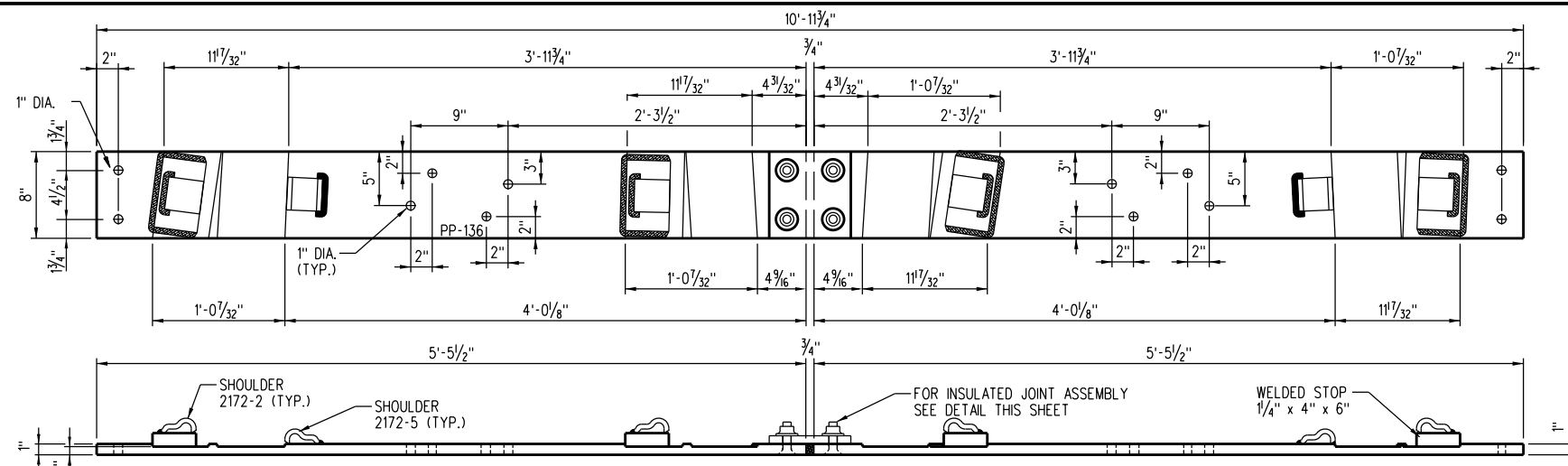
LAYOUT - No.10, DOUBLE SLIP CROSSING - 136 lb. ----- SHEET No. 2902-02

NOTES: (For Frog Gage Plates)

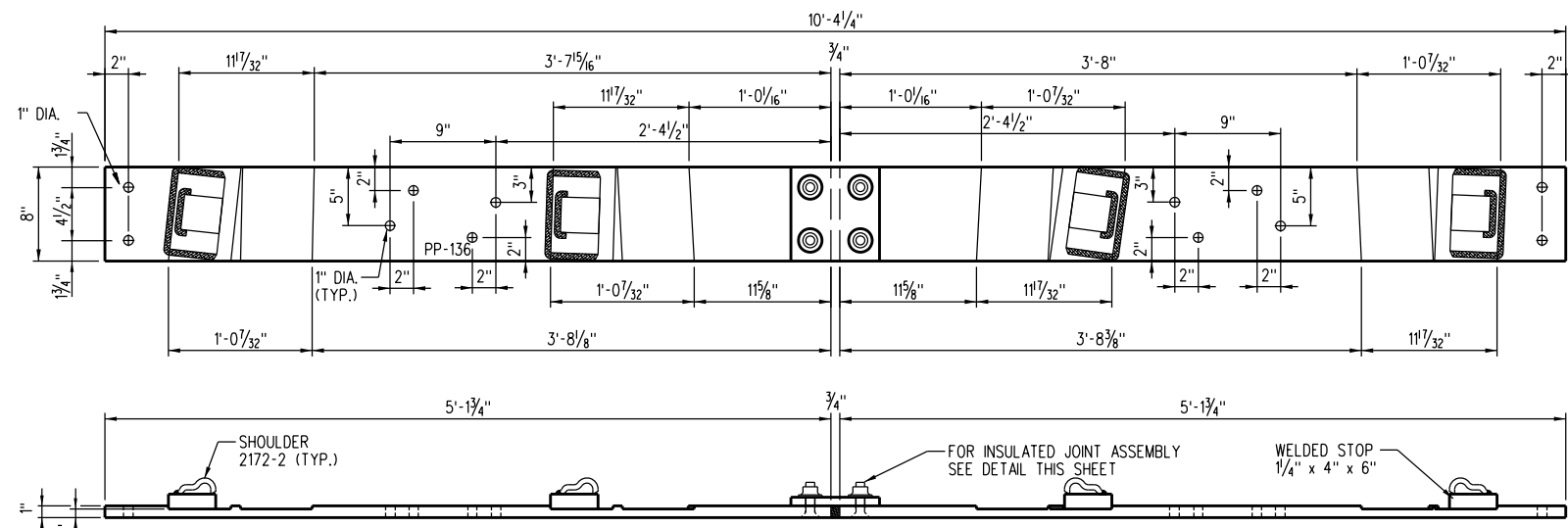
1. PLATES TO BE MADE OF MILD ROLLED STEEL.
2. THE PLATES AS SHOWN ARE FOR A 136 LB., NO. 10 DOUBLE SLIP CROSSING.
3. GUARD RAIL PLATES ARE TO BE INSTALLED AND WELDED TO THE FROG GAGE PLATES IN THE FIELD ON BOTH ENDS OF THE PLATE. PLATES ARE TO BE WELDED ONLY AFTER THE GAGE PLATE AND THE FROG IS SECURED IN THE PROPER LOCATION ON THE TIE WITH PROPER ALIGNMENT.
4. FROG BASE PLATES FP-1, FP-4 AND FP-7 ARE TO BE WELDED TO THE FROG GAGE PLATES IN THE FIELD WITH A PASS 1/2" - FILLET WELD CONTINUOUS ON BOTH ENDS OF THE PLATE. PLATES ARE TO BE WELDED ONLY AFTER THE GAGE PLATE AND THE FROG IS SECURED IN THE PROPER LOCATION ON THE TIE WITH PROPER ALIGNMENT.

NOTES: (For Switch Gage Plates)

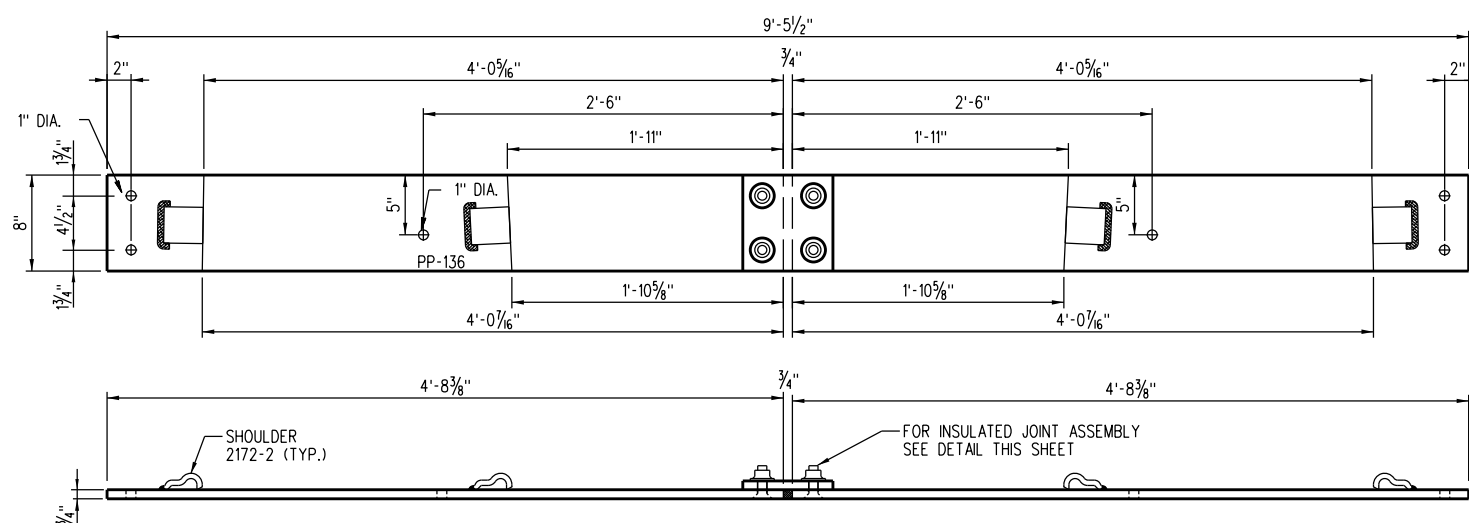
1. PLATES TO BE MADE OF MILD ROLLED STEEL.
2. THE WELD - ON PRESSED STEEL SHOULDER, PURCHASED FROM "PANDROL INTERNATIONAL", TO BE MILD STEEL, OTHER APPROVED WELD - ON PRESSED STEEL SHOULDERS MEETING "PANDROL'S" DESIGN SPECIFICATIONS MAY BE USED.
3. THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO GAGE PLATES, ANY WELD PROJECTING BEYOND THE VERTICAL FACE OF SHOULDER IN THE AREA OF THE RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.
4. THE PLATES AS SHOWN ARE FOR A 136 LB..NO.10 DOUBLE SLIP CROSSING.



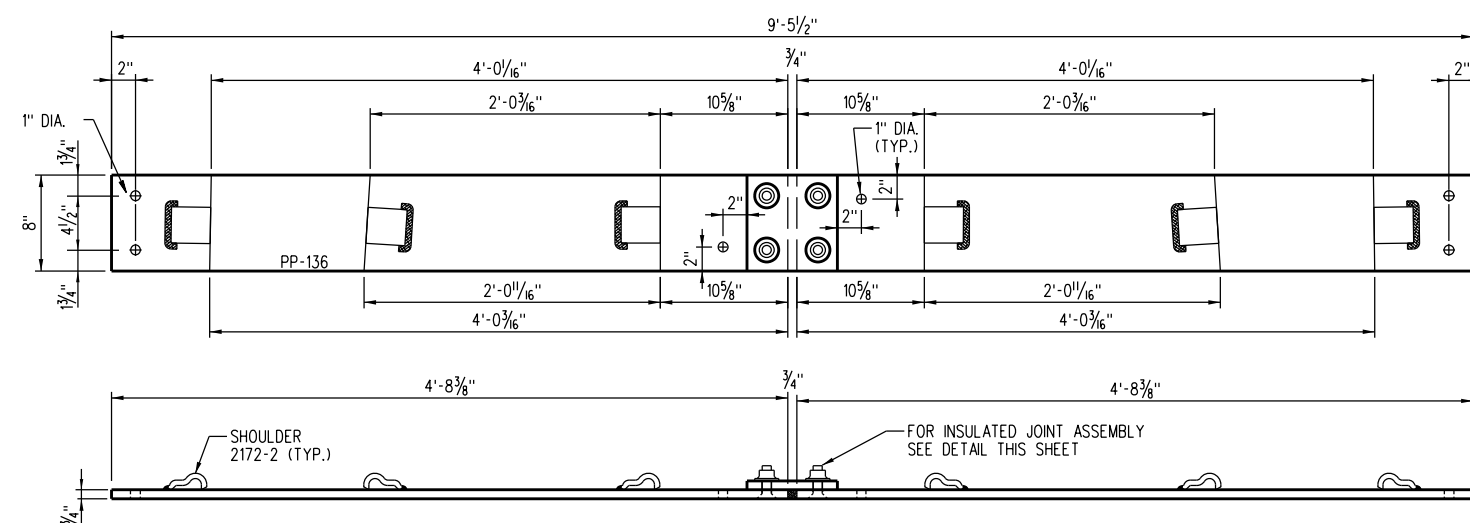
INSULATED SLIDE GAGE PLATE GP-1
1" x 8" - MILLED - (2 EACH REQ'D AS SHOWN)



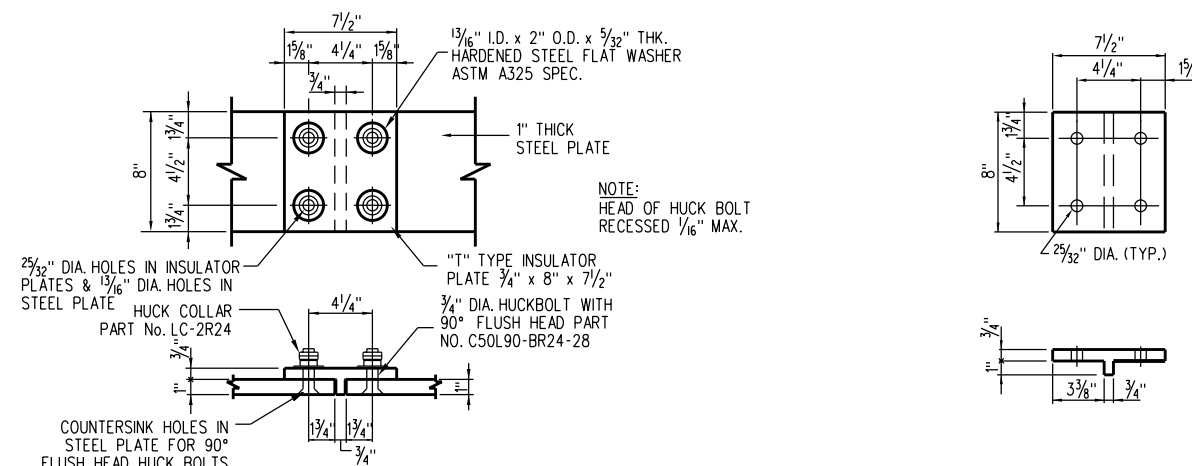
INSULATED SLIDE GAGE PLATE GP-2
1" x 8" - MILLED - (2 EACH REQ'D AS SHOWN)



INSULATED SLIDE GAGE PLATE GP-3
 $\frac{3}{4}$ " x 8" - FLAT - (2 EACH REQ'D AS SHOWN)



INSULATED SLIDE GAGE PLATE GP-4
 $\frac{3}{4}$ " x 8" - FLAT - (2 EACH REQ'D AS SHOWN)



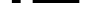
GAGE PLATE
INSULATED JOINT ASSEMBLY
GPI-77

DETAIL "A"
INSULATION AT GAGE PLATES
(SCALE: NONE)

DETAIL OF INSULATION BLOCK
POLYESTER COATED STEEL CORE
W/ BUSHINGS, PORTEC •127-07547-01
OR FIBERGLASS REINFORCED THERMOSET RESIN.
PURCHASE PART NO. GP152P05

						DRAWN BY:	A. CARLOS	DATE:	03/31/20
						 ASSISTANT DIRECTOR- STANDARDS & DESIGN			
X	XX-XX-XX		REVISION	XX	XX	 DIRECTOR OF ENGINEERING AND CONSTRUCTION			
REV.	DATE		DESCRIPTION	DES.	ENG.				

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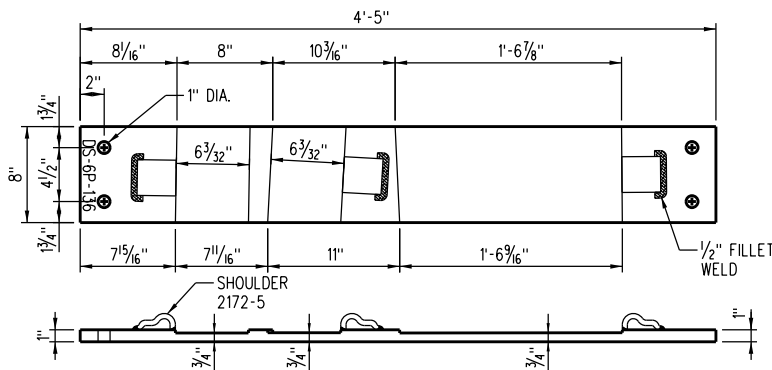
METROLINK®

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA. 90012

ENGINEERING STANDARDS

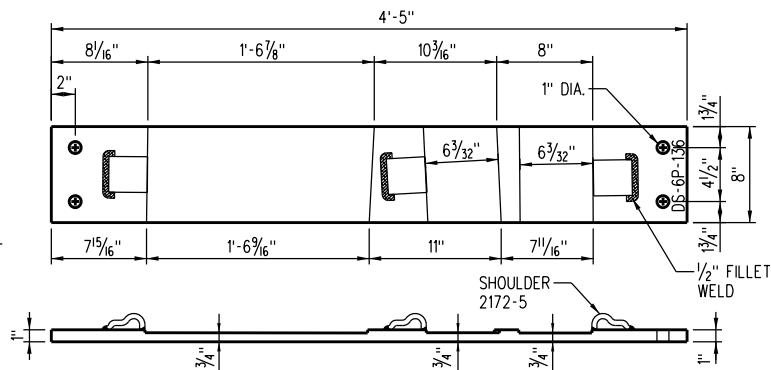
INSULATED GAGE PLATE DETAILS
DS-GP-1, DS-GP-2, DS-GP-3 AND DS-GP-4
NO. 10, 136 LB. DOUBLE SLIP CROSSING

STANDARD	2902
SCALE:	$1\frac{1}{2}" = 1'-0"$
REVISION	SHEET
-	11 OF 20
CADD FILE:	ES2902-11



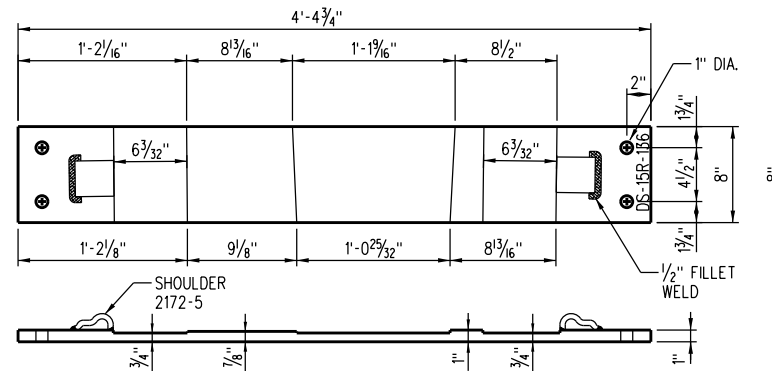
BRACE PLATE - 14R

1" x 8" x 4'-5" LG. - MILLED - W/ADJ. RAIL BRACE
(2 REQUIRED PER SLIP SWITCH)



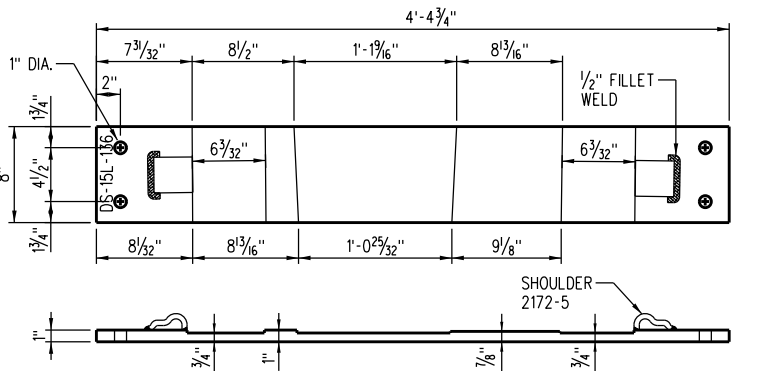
BRACE PLATE - 14L

1" x 8" x 4'-5" LG. - MILLED - W/ADJ. RAIL BRACE
(2 REQUIRED PER SLIP SWITCH)



BRACE PLATE - 15R

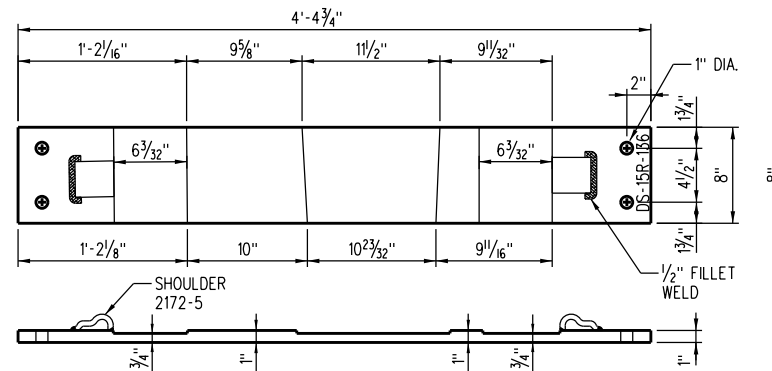
1" x 8" x 4'-4 3/4" LG. - MILLED - W/ADJ. RAIL BRACE
(2 REQUIRED PER SLIP SWITCH)



BRACE PLATE - 15L

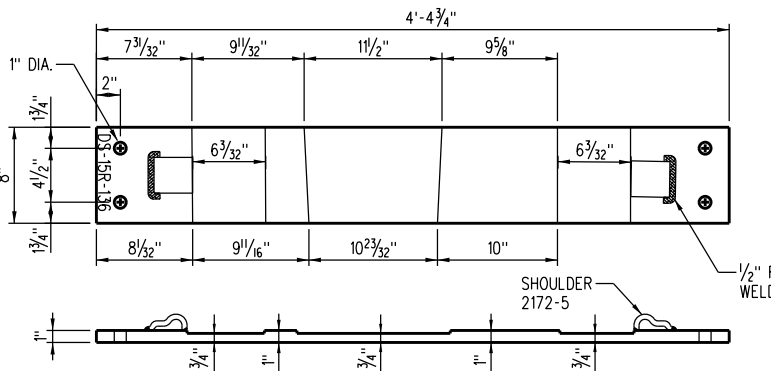
1" x 8" x 4'-4 3/4" LG. - MILLED - W/ADJ. RAIL BRACE
(2 REQUIRED PER SLIP SWITCH)

FOR MAINTENANCE ONLY



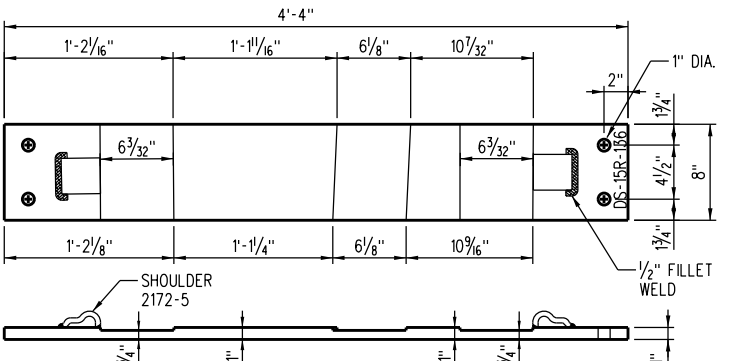
BRACE PLATE - 16R

1" x 8" x 4'-4 3/4" LG. - MILLED - W/ADJ. RAIL BRACE
(2 REQUIRED PER SLIP SWITCH)



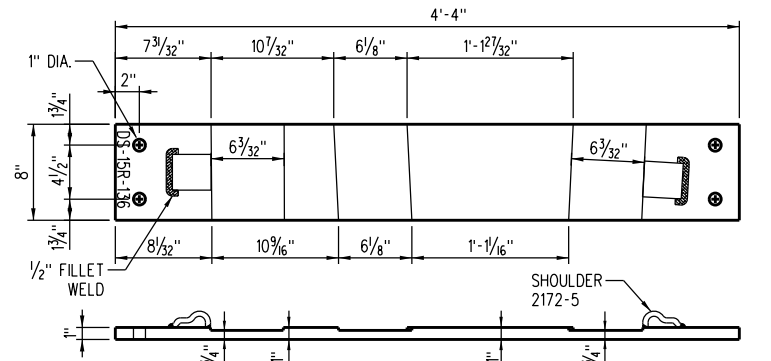
BRACE PLATE - 16L

1" x 8" x 4'-4 3/4" LG. - MILLED - W/ADJ. RAIL BRACE
(2 REQUIRED PER SLIP SWITCH)



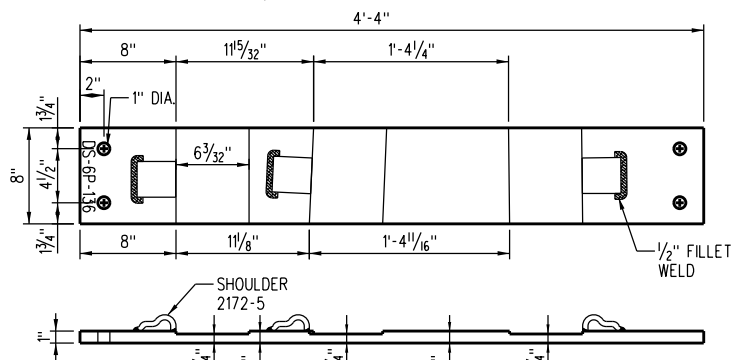
BRACE PLATE - 17R

1" x 8" x 4'-4" LG. - MILLED - W/ADJ. RAIL BRACE
(2 REQUIRED PER SLIP SWITCH)



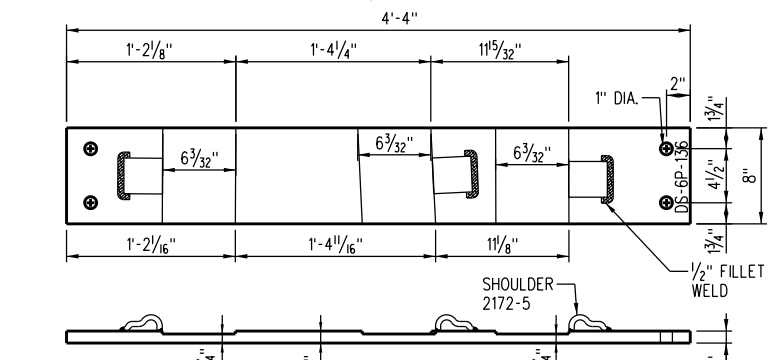
BRACE PLATE - 17L

1" x 8" x 4'-4" LG. - MILLED - W/ADJ. RAIL BRACE
(2 REQUIRED PER SLIP SWITCH)



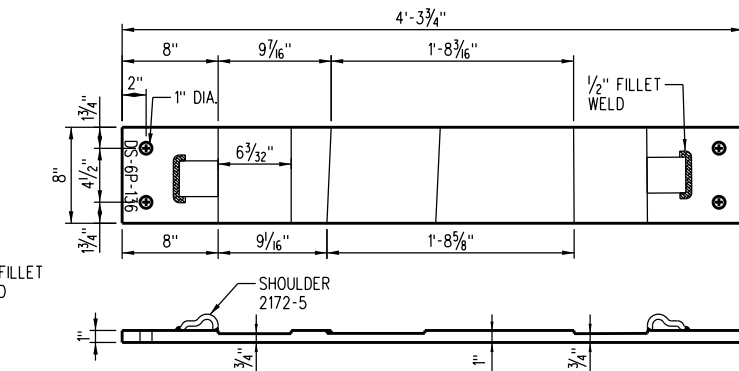
BRACE PLATE - 18R

1" x 8" x 4'-4" LG. - MILLED - W/ADJ. RAIL BRACE
(2 REQUIRED PER SLIP SWITCH)



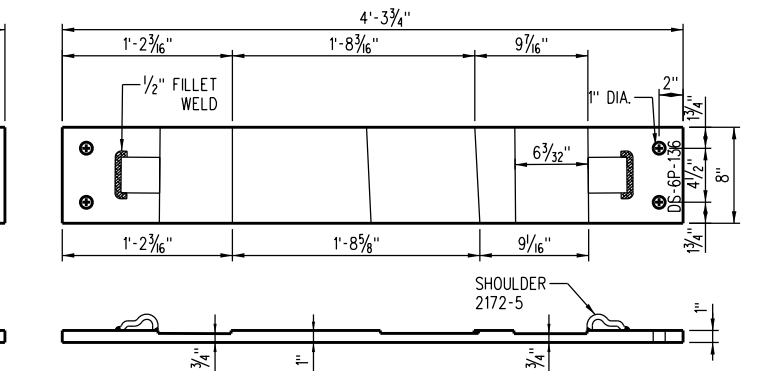
BRACE PLATE - 18L

1" x 8" x 4'-4" LG. - MILLED - W/ADJ. RAIL BRACE
(2 REQUIRED PER SLIP SWITCH)



BRACE PLATE - 19R

1" x 8" x 4'-3 3/4" LG. - MILLED - W/ADJ. RAIL BRACE
(2 REQUIRED PER SLIP SWITCH)



BRACE PLATE - 19L

1" x 8" x 4'-3 3/4" LG. - MILLED - W/ADJ. RAIL BRACE
(2 REQUIRED PER SLIP SWITCH)

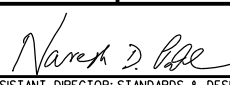
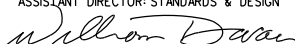
REFERENCE DWGS.

LAYOUT - No.10, DOUBLE SLIP CROSSING - 136 lb. ----- SHEET No.2902-02

NOTES:

1. PLATES TO BE MADE OF MILD ROLLED STEEL.
2. EACH PLATE TO BE PLAINLY STAMPED WITH PLATE NO. AND 136 (WEIGHT OF RAIL) & HAND OF TURNOUT (R.H. OR L.H.)
3. THE PANDROL TYPE WELD - ON PRESSED STEEL SHOULDER, MADE FROM MILD STEEL, TO BE PURCHASED FROM PANDROL INTERNATIONAL OR APPROVED ALTERNATE MEETING PANDROL'S DESIGN SPECIFICATIONS.
4. THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO THE PLATE. ANY WELD PROJECTING BEYOND THE VERTICAL FACE OF SHOULDER IN THE AREA OF THE RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.
5. THE PLATES AS SHOWN ARE FOR A 136 LB., NO. 10 DOUBLE SLIP CROSSING.

X	XX-XX-XX	REVISION	XX	XX	
REV.	DATE	DESCRIPTION	DES.	ENG.	

DRAWN BY:	A. CARLOS	DATE:	03/31/2011
			
ASSISTANT DIRECTOR: STANDARDS & DESIGN			
			
DIRECTOR OF ENGINEERING AND CONSTRUCTION			

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SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS		STANDARD	2902
BRACE PLATE AND SLIDE PLATE DETAILS NO. 10, 136 LB. DOUBLE SLIP CROSSING		SCALE:	1 1/2" = 1'-0"
		REVISION	SHEET
		-	13 OF 20
		CADD FILE:	ES2902-13

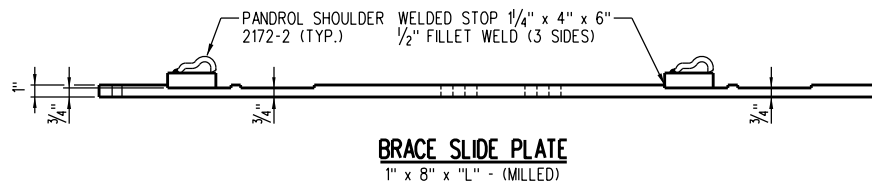


PLATE	"A"	"B"	"L"	NUMBER REQUIRED
1-A	3'-4 $\frac{3}{4}$ "	3'-5 $\frac{1}{8}$ "	5'-4 $\frac{1}{4}$ "	2
2-A	3'-3 $\frac{3}{8}$ "	3'-3 $\frac{3}{4}$ "	5'-4 $\frac{1}{4}$ "	2
3-A	3'-1 $\frac{1}{2}$ "	3'-2 $\frac{1}{4}$ "	5'-3 $\frac{3}{4}$ "	2

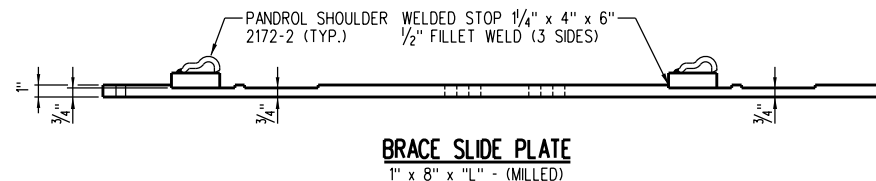
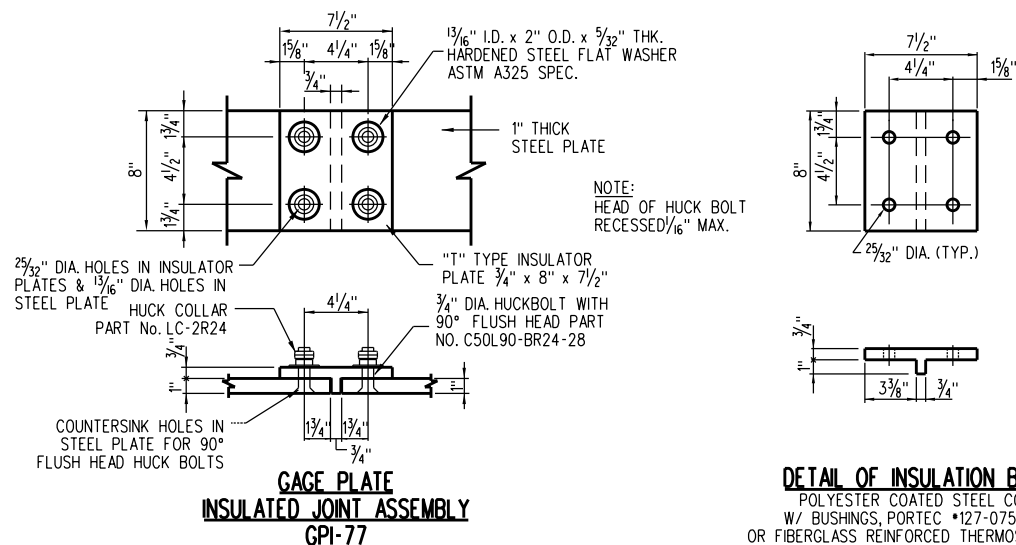
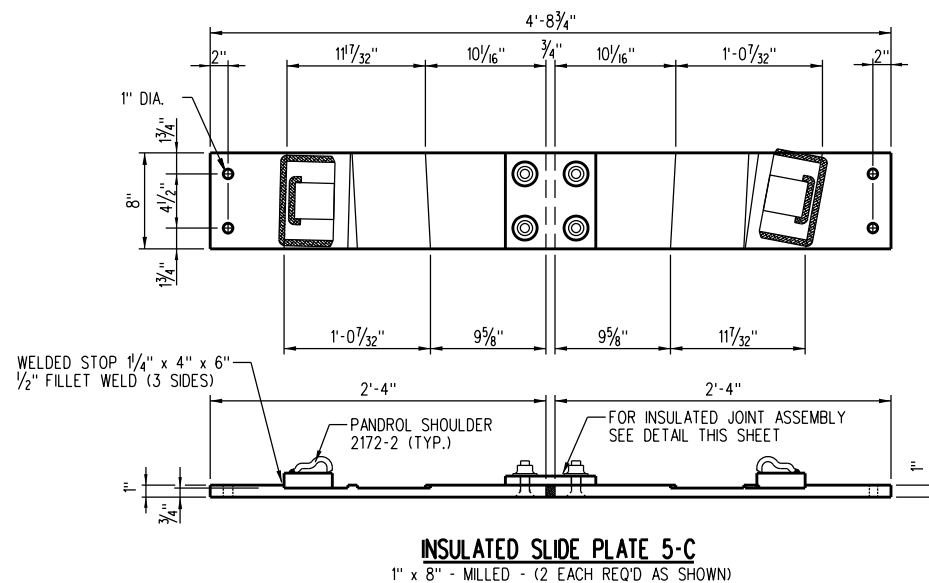


PLATE	"A"	"B"	"C"	NUMBER REQUIRED
1-B	3'-4 $\frac{3}{4}$ "	3'-5 $\frac{5}{16}$ "	5'-4 $\frac{3}{4}$ "	2
2-B	3'-3 $\frac{3}{8}$ "	3'-3 $\frac{3}{4}$ "	5'-4 $\frac{1}{4}$ "	2
3-B	3'-1 $\frac{3}{4}$ "	3'-2 $\frac{1}{4}$ "	5'-3 $\frac{3}{4}$ "	2



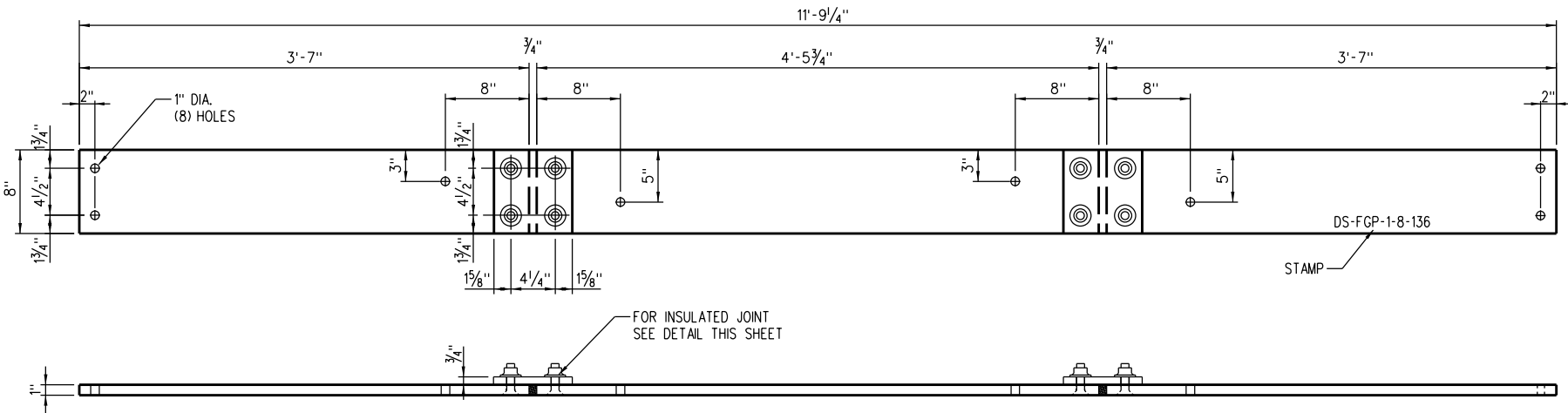
DETAIL "A"
INSULATION AT GAGE PLATES
(SCALE: NONE)

1. PLATES TO BE MADE OF MILD ROLLED STEEL.
2. EACH PLATE TO BE PLAINLY STAMPED WITH PLATE NO. AND 136 (WEIGHT OF RAIL) & HAND OF TURNOUT (R.H. OR L.H.)
3. THE PANDROL TYPE WELD - ON PRESSED STEEL SHOULDER, MADE FROM MILD STEEL, TO BE PURCHASED FROM PANDROL INTERNATIONAL OR APPROVED ALTERNATE MEETING PANDROL'S DESIGN SPECIFICATIONS.
4. THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO THE PLATE. ANY WELD PROJECTING BEYOND THE VERTICAL FACE OF SHOULDER IN THE AREA OF THE RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.
5. THE PLATES AS SHOWN ARE FOR A 136 LB., NO. 10 DOUBLE SLIP CROSSING.

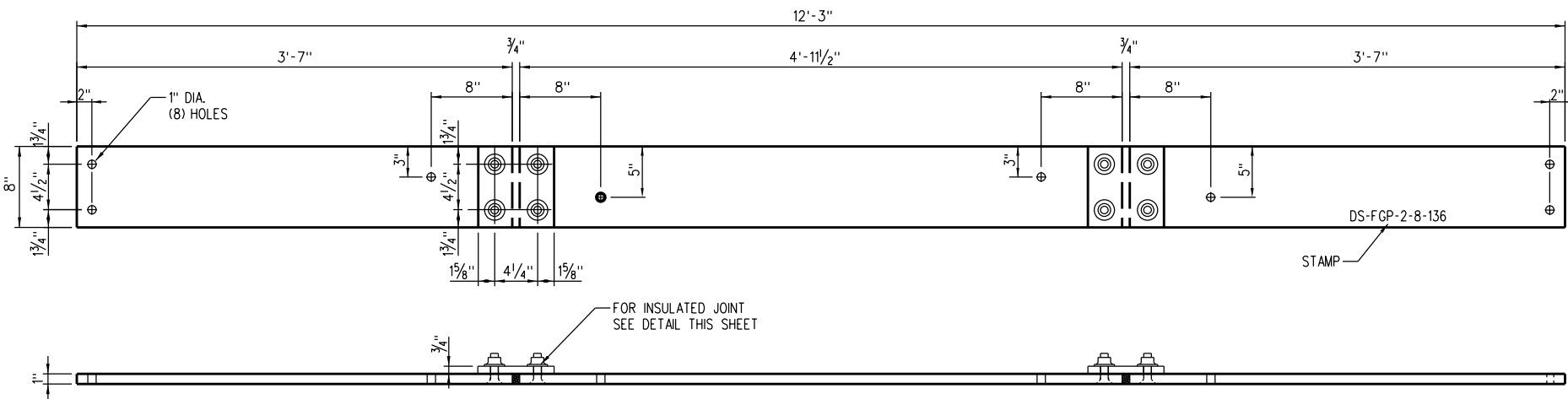
FOR MAINTENANCE ONLY

LAYOUT - No.10, DOUBLE SLIP CROSSING - 136 lb. ----- SHEET No. 2902-02

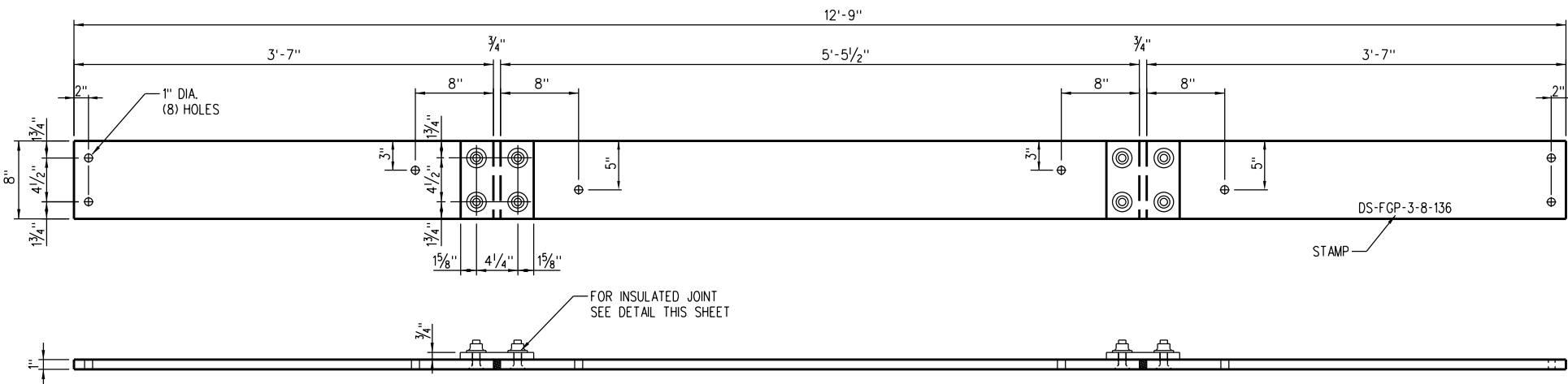
		DRAWN BY: A. CARLOS		DATE: 03/31/2011		SCRRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRRA APPROVED USES ONLY. FOR NON-SCRRRA APPROVED USES: SCRRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRRA. ALL RIGHTS RESERVED.		 METROLINK® SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012		ENGINEERING STANDARDS BRACE SLIDE PLATES AND INSULATED SLIDE PLATE DETAILS NO. 10, 136 LB. DOUBLE SLIP CROSSING		STANDARD 2902 SCALE: 1/2" = 1'-0" REVISION SHEET - 14 OF 20 CADD FILE: ES2902-14	
		 ASSISTANT DIRECTOR: STANDARDS & DESIGN											
		 DIRECTOR OF ENGINEERING AND CONSTRUCTION											
X	XX-XX-XX	REVISION		XX	XX								
REV.	DATE	DESCRIPTION		DES.	ENG.								



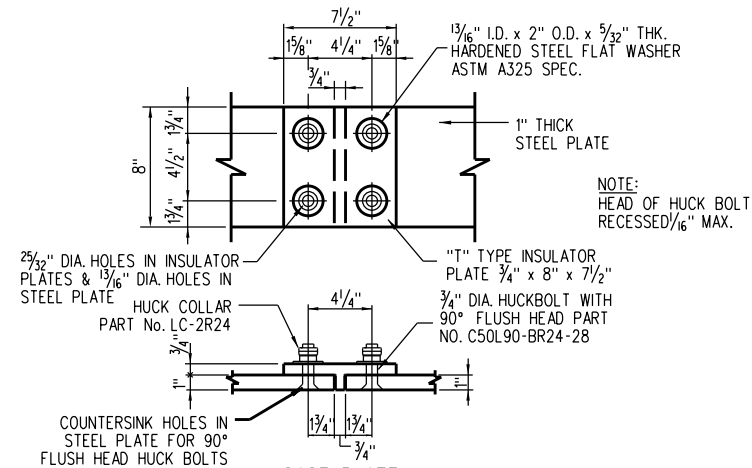
INSULATED FROG GAGE PLATE FGP-1
1" x 8" - FLAT



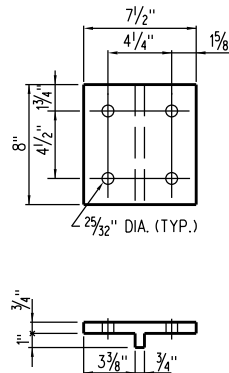
INSULATED FROG GAGE PLATE FGP-2
1" x 8" - FLAT



INSULATED FROG GAGE PLATE FGP-3
1" x 8" - FLAT



**GAGE PLATE
INSULATED JOINT ASSEMBLY
GPI-77**



DETAIL OF INSULATION BLOCK
POLYESTER COATED STEEL CORE
W/ BUSHINGS, PORTEC #127-07547-01
OR FIBERGLASS REINFORCED THERMOSET RESIN.
PURCHASE PART NO. GPI52P05

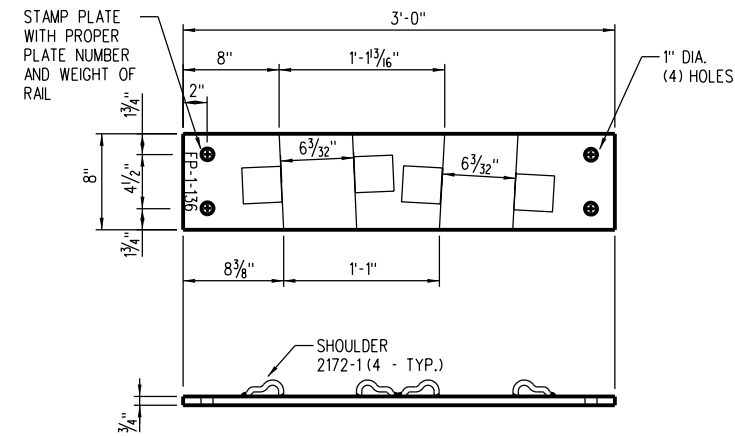
**DETAIL "A"
INSULATION AT GAGE PLATES**
(SCALE: NONE)

FOR MAINTENANCE ONLY

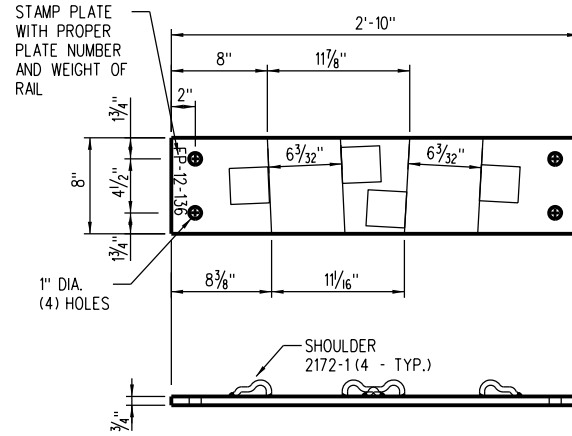
REFERENCE DWGS.

LAYOUT - No.10, DOUBLE SLIP CROSSING - 136 lb. ----- SHEET No. 2902-02

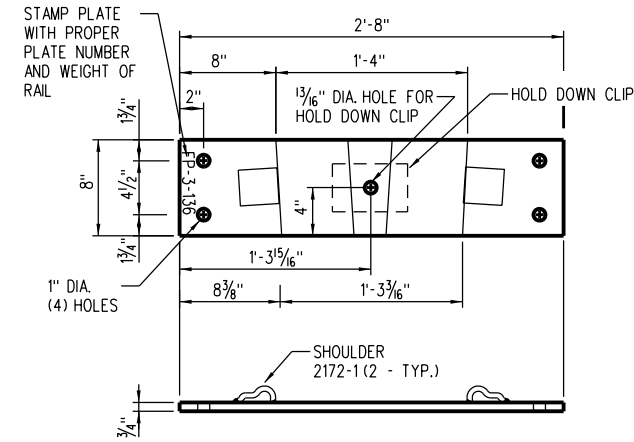
				DRAWN BY: A. CARLOS		DATE: 03/31/2011	SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.	METROLINK SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	ENGINEERING STANDARDS		STANDARD
									2902		
									SCALE: 1 1/2" = 1'-0"		
									REVISION SHEET		
									- 15 OF 20		
									CADD FILE:		
									ES2902-15		



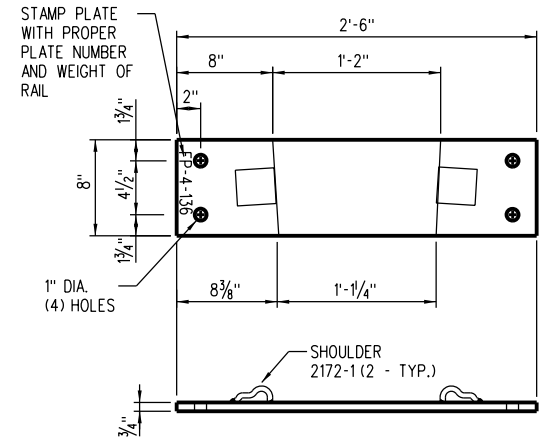
FROG PLATE - F-1
3/4" x 8" x 3'-0" LG. - FLAT
(2 REQUIRED)



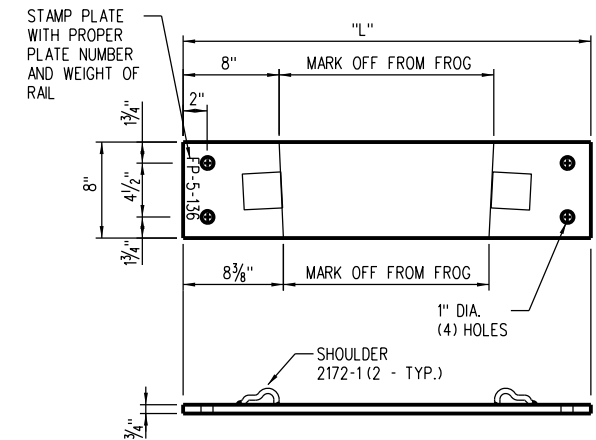
FROG PLATE - F-2
3/4" x 8" x 2'-10" LG. - FLAT
(2 REQUIRED)



FROG PLATE - F-3
3/4" x 8" x 2'-8" LG. - FLAT
(2 REQUIRED)

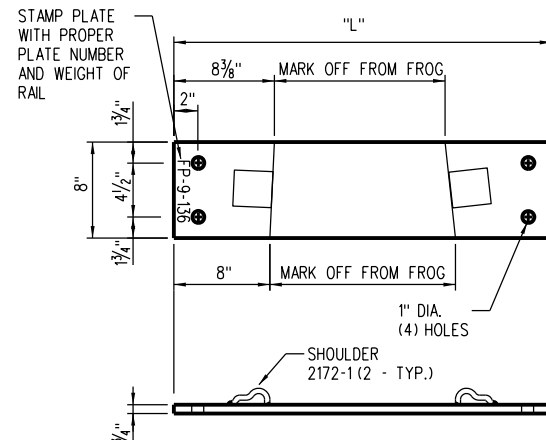


FROG PLATE - F-4
3/4" x 8" x 2'-6" LG. - FLAT
(2 REQUIRED)



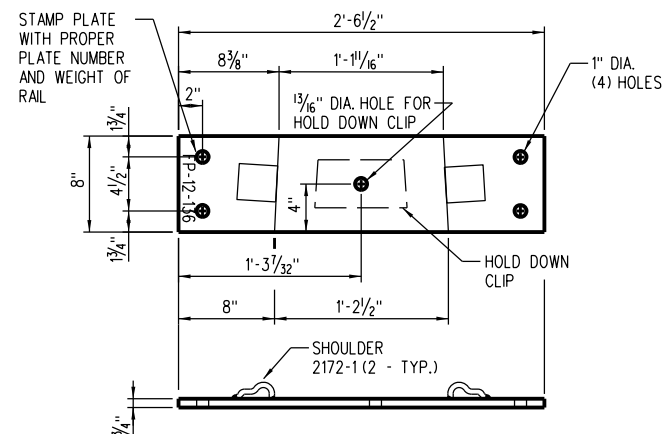
FROG PLATE - F-5 THRU F-7 AND F-10
3/4" x 8" - FLAT (SEE TABLE FOR LENGTHS)

DIMENSION TABLE		
PLATE	"L"	NO. REQ'D
F-5	3'-0 3/4"	2
F-6	2'-11 3/4"	2
F-7	2'-9 3/4"	2
F-10	2'-7 1/2"	2

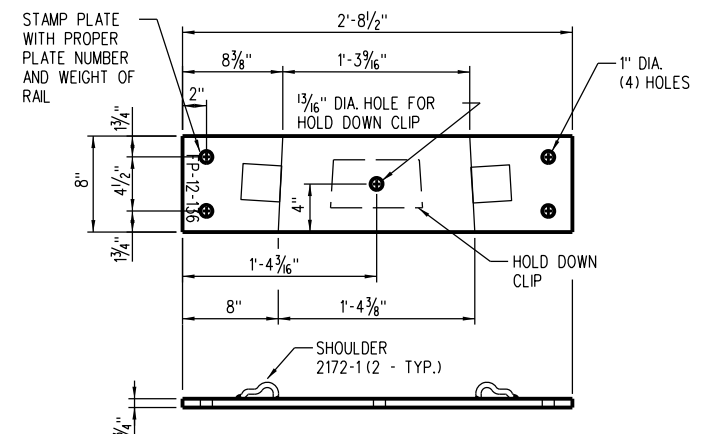


FROG PLATE - F-8, F-9 AND F-11
3/4" x 8" - FLAT (SEE TABLE FOR LENGTHS)

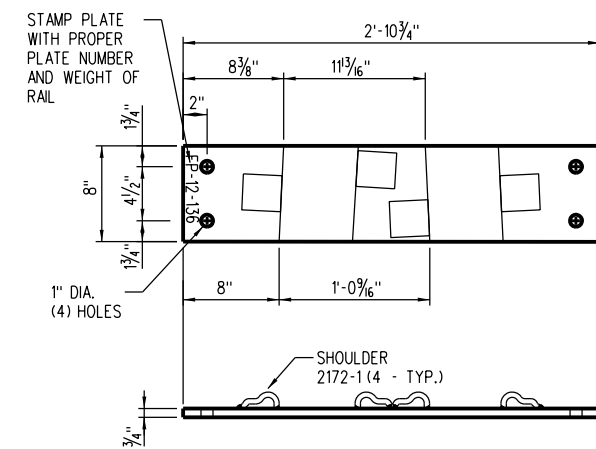
DIMENSION TABLE		
PLATE	"L"	NO. REQ'D
F-8	2'-8 1/2"	2
F-9	2'-10"	2
F-11	2'-4 1/4"	2



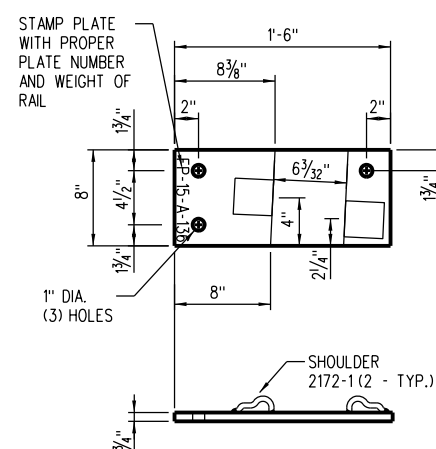
FROG PLATE - F-12
3/4" x 8" x 2'-6 1/2" - FLAT
(2 REQUIRED)



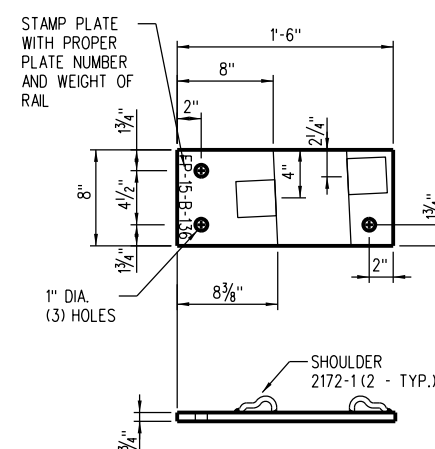
FROG PLATE - F-13
3/4" x 8" x 2'-8 1/2" - FLAT
(2 REQUIRED)



FROG PLATE - F-14
3/4" x 8" x 2'-10 3/4" LG. - FLAT
(2 REQUIRED)



FROG PLATE - F-15-A
3/4" x 8" x 1'-6" LG. - FLAT
(2 REQUIRED)



FROG PLATE - F-15-B
3/4" x 8" x 1'-6" LG. - FLAT
(2 REQUIRED)

FOR MAINTENANCE ONLY

REFERENCE DWGS.

LAYOUT - No.10, DOUBLE SLIP CROSSING - 136 lb. ----- SHEET No. 2902-02

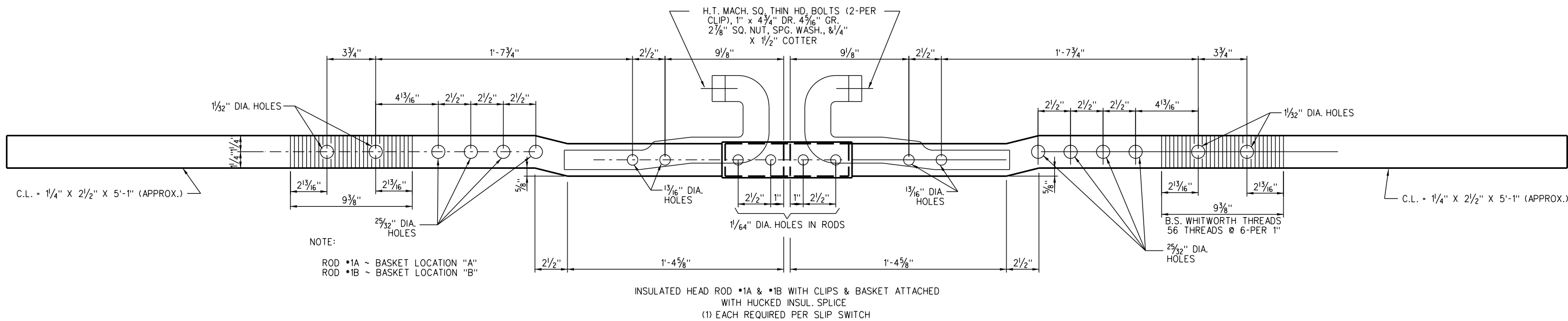
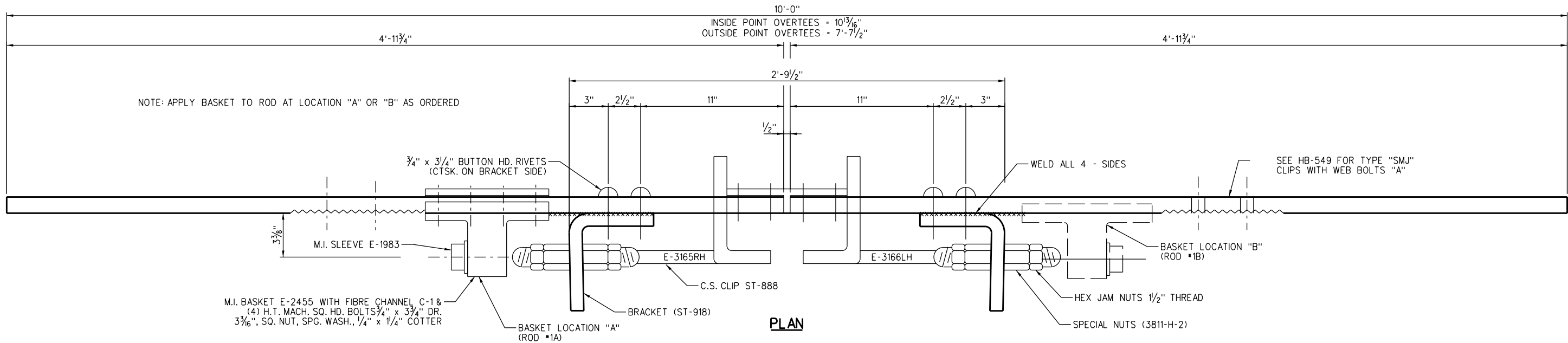
REV.	DATE	DESCRIPTION	DES.	ENG.
X	XX-XX-XX	REVISION	XX	XX

DRAWN BY:	A. CARLOS	DATE:	03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN			
 DIRECTOR OF ENGINEERING AND CONSTRUCTION			

SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.

METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS		STANDARD
FROG PLATE DETAILS NO. 10, 136 LB. DOUBLE SLIP CROSSING		2902
SCALE: 1 1/2" = 1'-0"		
REVISION	SHEET	
-	16 OF 20	
CADD FILE:		ES2902-16



INSULATION MATERIAL CONSISTS OF:

- (1) FIBRE CHANNEL C-1
- (2) FIBRE ANGLE PLATE AP-34
- (4) FIBRE BUSHINGS B-11
- (1) STEEL SPLICE PLATE ST-684
- (1) STEEL CHANNEL ST-568
- (4) 3 $\frac{3}{8}$ " HUCK BOLTS C50LR-BR24-36
- (4) HUCK COLLARS LC2R-24G

SWITCH INFORMATION

GAGE = 4'-8 $\frac{5}{8}$ "

THROW AT POINT = 4" MIN. ~ 4 $\frac{1}{2}$ " MAX.

"E" DIST. = 1 $\frac{9}{32}$ "

PT. = 0" SAMSON.

REINF. 1 $\frac{1}{2}$ " "D" BOTH SIDES (SLOT 1 $\frac{1}{4}$ " STK. SIDE).

ROD SPACING = 17"

BREAK ALL SHARP CORNERS.

DEBURR ALL HOLES.

FOR MAINTENANCE ONLY

STAMP RODS WITH "RESP. ROD. #, 136RE, #8 DSS"

						DRAWN BY:	A. CARLOS	DATE:	03/31/2011						
X	XX-XX-XX		REVISION		XX	XX									
REV.	DATE		DESCRIPTION		DES.	ENG.									

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METROLINK®

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS

INSULATED HEAD ROD NO.1 FOR END POINTS
NO. 10, 136 LB. DOUBLE SLIP CROSSING

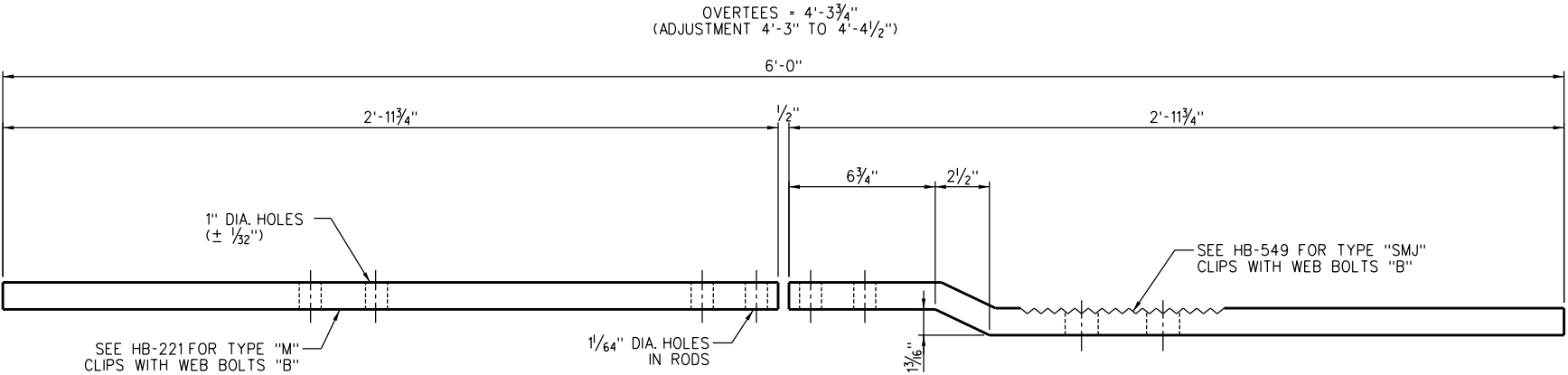
STANDARD	2902
SCALE:	3" = 1'-0"
REVISION	SHEET
-	17 OF 20
CADD FILE:	ES2902-17

INSULATION MATERIAL
CONSISTS OF:

- (1) FIBRE CHANNEL C-1.
- (2) FIBRE ANGLE PLATE AP-34.
- (4) FIBRE BUSHINGS B-11.
- (1) STEEL SPLICE PLATE ST-684.
- (1) STEEL CHANNEL ST-568.
- (4) 3/4" HUCK BOLTS C50LR-BR24-36.
- (4) HUCK COLLARS LC2R-24G.

SWITCH INFORMATION

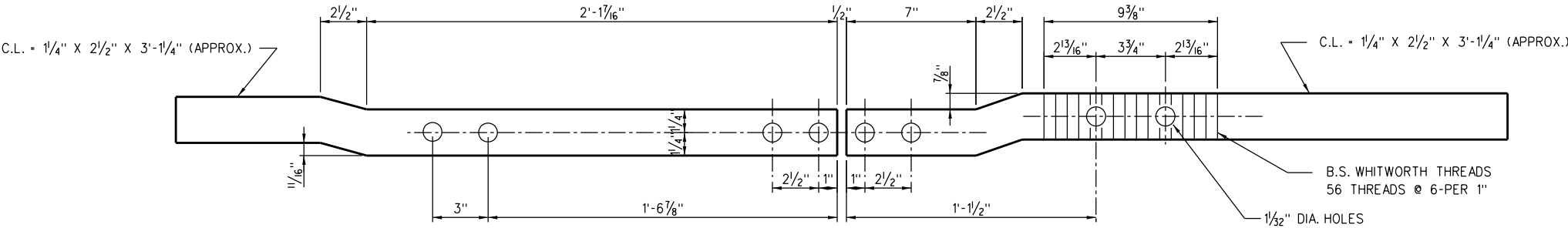
GAGE = 4'-8 5/8"
THROW AT POINT = 4" MIN. ~ 4 1/2" MAX.
"E" DIST. = 1 9/32"
PT. = 0" SAMSON
REINF. - 1/2" "D" BOTH SIDES (SLOT 1/4" STK. SIDE
NO. 2 ROD ONLY)
ROD SPACING = 17" x 19 1/2" (*2 ROD ONLY)
ROD SPACING = 17" x 3'-6" (*3 ROD ONLY)



PLAN

NOTE:

TYPE "M" CLIP MUST BE WELDED TO ROD
ALONG BOTH SIDES OF BOTTOM CLIPS



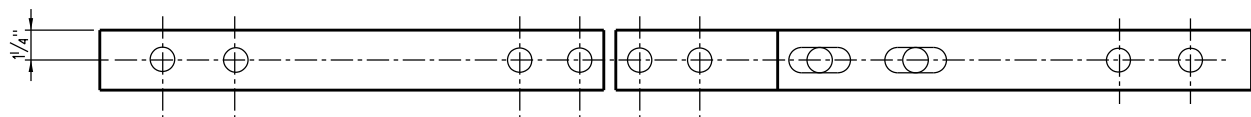
ELEVATION

INSULATED SPREA RODS NO. 2 OR 3 WITH
CLIPS AND BOLTS ATTACHED WITH HUCKED
INSULATED SPLICE, (2) EACH REQUIRED PER
SLIP SWITCH

STAMP ROD WITH "RESP. NO., 136RE, *10 DSS"

FOR MAINTENANCE ONLY

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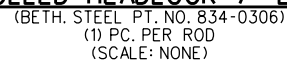
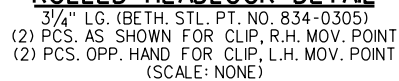
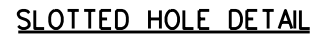
(2) REQUIRED PER SLIP SWITCH
WITH HUCKED INSULATED SPLICE
(SCALE: 3" = 1'-0")

STAMP RODS WITH "RESP. ROD. •. 136RE. •10 DSS"

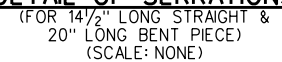
(1) FIBRE CHANNEL C-1.
(2) FIBRE ANGLE PLATE AP-34.
(4) FIBRE BUSHINGS B-11.
(1) STEEL SPLICE PLATE ST-684.
(1) STEEL CHANNEL ST-568.
(4) 3/4" HUCK BOLTS C50LR-BR24-36.
(4) HUCK COLLARS LC2R-24G.

GAGE = 4'-8⁹/₁₆"
THROW AT POINT = 4"
"E" DIST. = 12¹/₃₂"
POINT = 9¹/₁₆"
REINF. = 1¹/₂" "D" GAGE SIDE
ROD SPACING = 15" x 21"
HEEL SPREAD = 7¹/₂"

TYPE "M" CLIP MUST BE WELDED TO ROD ALONG
BOTH SIDES OF BOTTOM OF CLIPS.
DEBURR ALL HOLES.



DR. 4/16" GR. 2 5/8", EA. WITH SLOTTED HEX NUT
PER BP-10003-BN, SPRING WASHER (N.C.G.)
& 1/4" X 1 3/4" COTTER

[illegible]

EQUIVALENT CURVE DATA

CURVE	9.5077'
RADIUS	602.62'
DELTA	7.152'
TANGENT (T)	37.66'
LENGTH (L)	75.22'
EXTERNAL	1.17'

CROSSOVER DATA

LEAD	68.000'
PC TO PS	7.66'
PS TO PI	30.00'
PI TO 1/2" PF	38.00'
LENGTH OF TURNOUT	97.43'
PS TO PT	67.57'

FROG DATA

FROG NUMBER	8
FROG ANGLE	7° -09'-10"

SWITCH DATA

SWITCH LENGTH	16'-6"
HEEL SPREAD	6 1/4"
HEEL ANGLE	N/A
SWITCH ANGLE	1° -44'-11"
RADIUS OF CENTER LINE - SWITCH	N/A
TANGENT LENGTH SWITCH	N/A
CENTRAL ANGLE OF CLOSURE CURVE-SWITCH	N/A
DEGREE OF CURVE - SWITCH	N/A

TURNOUT DATA

RADIUS OF CENTER LINE - TURNOUT	487.28'
TANGENT LENGTH - TURNOUT	23.0'
CENTRAL ANGLE OF CLOSURE CURVE - TURNOUT	5° - 24' - 46"
DEGREE OF CURVE - TURNOUT	11° - 46' - 44"

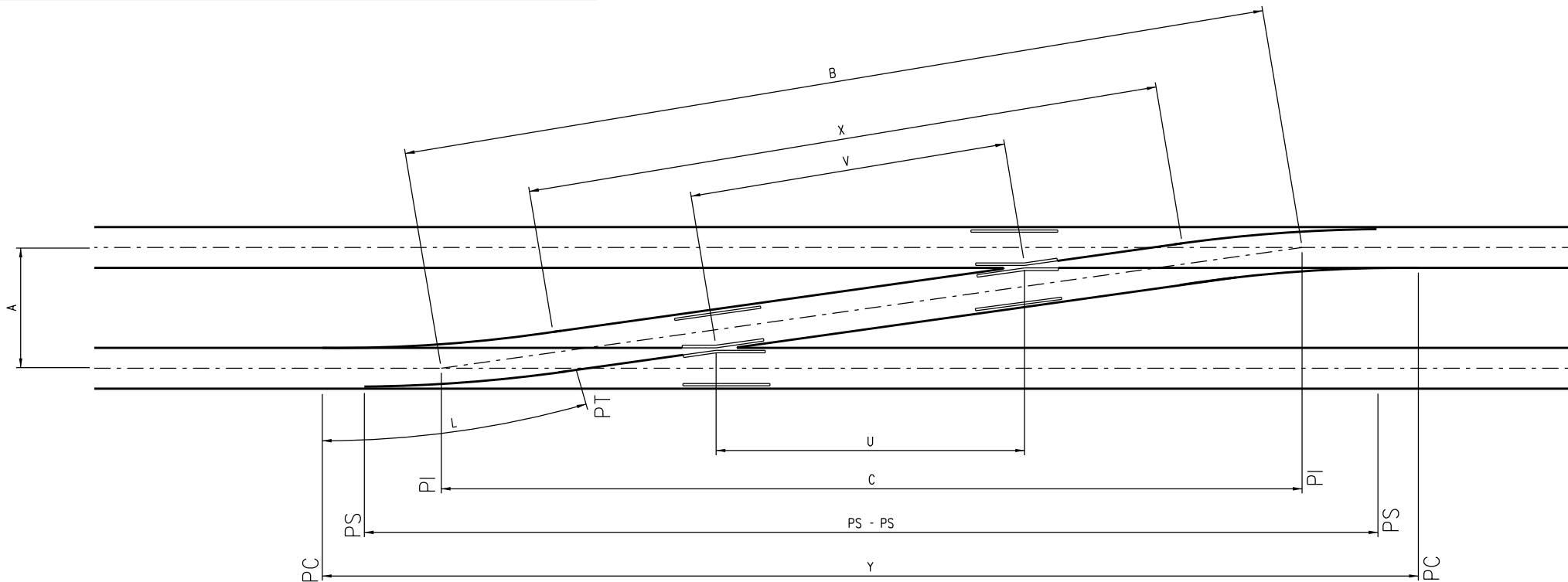
CROSSOVER DATA TABLE

A	B	C	X	Y	2L·X	2L·X+ 2(PC·PS)	PS TO PS	U	V
13	104.42	103.60	29.10	178.92	179.54	164.23	163.61	27.61	28.42
14	112.45	111.57	37.13	186.89	187.57	172.26	171.58	35.58	36.45
15	120.48	119.54	45.16	194.86	195.61	180.29	179.55	43.55	44.48
16	128.51	127.51	53.19	202.83	203.64	188.32	187.52	51.52	52.51
17	136.54	135.48	61.22	210.80	211.67	196.35	195.49	59.49	60.54
18	144.58	143.45	69.26	218.77	219.70	204.39	203.46	67.46	63.58
19	152.61	151.42	77.29	226.74	227.73	212.42	211.43	75.43	76.61
20	160.64	159.39	85.32	234.71	235.77	220.45	219.40	83.40	84.64
21	168.67	167.36	93.35	242.68	243.80	228.48	227.36	91.36	92.67
22	176.70	175.33	101.38	250.65	251.83	236.51	235.33	99.33	100.70
23	184.74	183.30	109.41	258.62	259.86	244.55	243.30	107.30	108.74
24	192.77	191.27	117.45	266.59	267.93	252.58	251.27	115.27	116.77
25	200.80	199.24	125.48	274.56	275.93	260.61	259.24	123.24	124.80
26	208.83	207.21	133.51	282.53	283.96	268.64	267.21	131.21	132.83
27	216.86	215.18	141.54	290.50	291.99	276.67	275.18	139.18	140.86
28	224.90	223.15	149.57	298.47	300.02	284.71	283.15	147.15	148.90
29	232.93	231.12	157.61	306.44	308.05	292.74	291.12	155.12	156.93
30	240.96	239.09	165.64	314.41	316.09	300.77	299.09	163.09	164.96
31	248.99	247.05	173.67	322.38	324.12	308.80	307.06	171.06	172.99
32	257.02	255.02	181.70	330.35	332.15	316.83	315.03	179.03	181.02

DRAWING INDEX

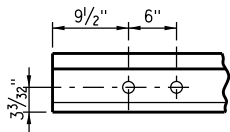
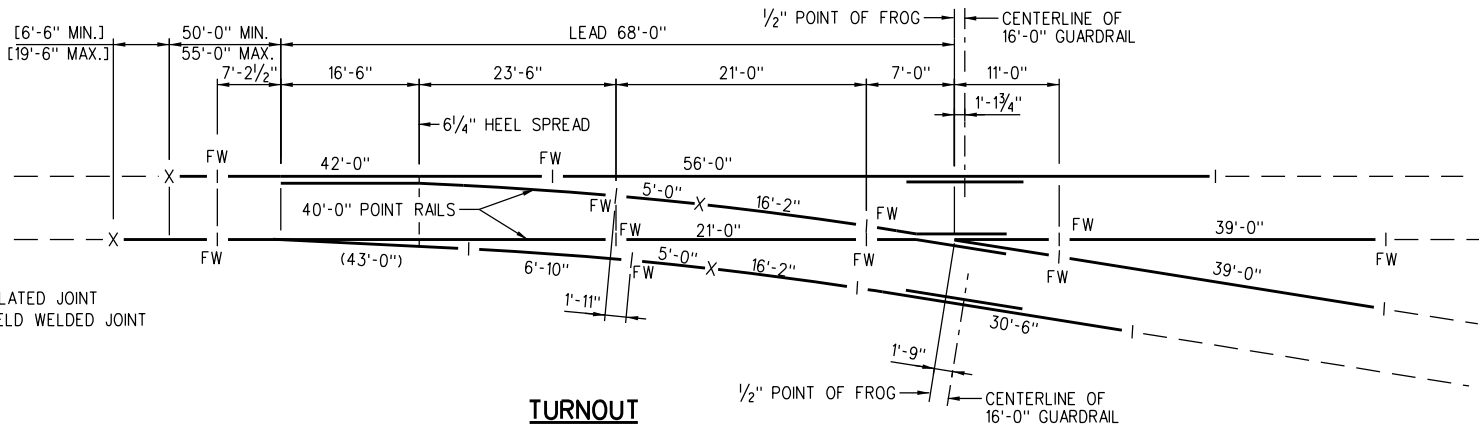
TURNOUT AND CROSSOVER GENERAL NOTES AND DATA	ES2911-01
TURNOUT AND CROSSOVER JOINT LOCATIONS	ES2911-02
TURNOUT LAYOUT	ES2911-03
TURNOUT BILL OF MATERIALS	ES2911-04
CROSSOVER LAYOUT AND BILL OF MATERIALS	ES2911-05
FROG LAYOUT	ES2911-06
FROG GAGE PLATE DETAILS	ES2911-07
FROG GUARD RAIL DETAILS	ES2911-08
SPLIT SWITCH POINT DETAILS	ES2911-09
STRAIGHT OR CURVED UNDERCUT STOCK RAILS	ES2911-10
SWITCH ROD DETAILS	ES2911-11
SWITCH ROD MISCELLANEOUS DETAILS	ES2911-12
EXTENSIONS PLATE AND DAP TIE DETAILS FOR M-23A SWITCH MACHINE	ES2911-13
TURNOUT AND SWITCH PLATE DETAILS	ES2911-14
SWITCH PLATE DETAILS	ES2911-15
INSULATED GAGE PLATE DETAILS	ES2911-16

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CROSSOVER LAYOUT

						DRAWN BY: A. CARLOS	DATE: 03/31/2011	SCRRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRRA APPROVED USES ONLY. FOR NON-SCRRRA APPROVED USES: SCRRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRRA. ALL RIGHTS RESERVED.	 METROLINK® SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	ENGINEERING STANDARDS		STANDARD	2911	
						<i>Narex D. Pote</i>					SCALE:	NONE	REVISION	SHEET
X	XX-XX-XX	REVISION	XX	XX	ASSISTANT DIRECTOR: STANDARDS & DESIGN							-	1 OF 16	
					<i>William Davan</i>							CADD FILE:	ES2911-01	
REV.	DATE	DESCRIPTION	DES.	ENG.	DIRECTOR OF ENGINEERING AND CONSTRUCTION									



DETAIL "A"

SEE NOTE 4 (b)

(DRILLED HOLES NOT NECESSARY
IF TEMPORARY BOLTED JOINTS
ARE NOT REQUIRED)

21'-2" LONG ADHESIVE BONDED PREFABRICATED MITRE CUT INSULATED RAIL JOINT ASSEMBLY

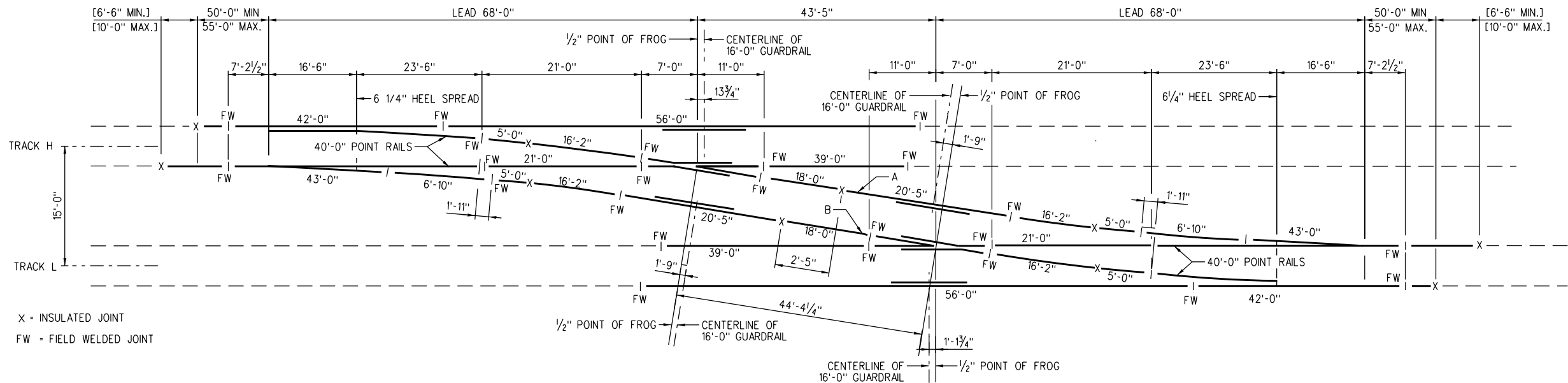
(SEE NOTE 5) BOTH ENDS SHALL BE LEFT BLANK
FOR WELDING IN THE FIELD

38'-5" LONG ADHESIVE BONDED PREFABRICATED MITRE CUT INSULATED RAIL JOINT ASSEMBLY

(SEE NOTE 5) BOTH ENDS SHALL BE LEFT BLANK
FOR WELDING IN THE FIELD

NOTES:

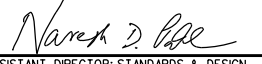
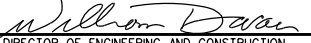
1. THE PERMISSIBLE VARIATION IN STANDARD LENGTHS OF RAILS, FROGS AND SWITCH POINTS IS GREATER THAN THE NORMAL EXPANSION GAPS AT RAIL JOINTS AND THICKNESS OF FIBRE END POST IN INSULATED JOINTS, NO ALLOWANCE HAS BEEN MADE FOR EXPANSION GAPS AND FIBRE END POSTS IN COMPUTING LENGTHS OF RAILS SHOWN. DIMENSIONS OF TURNOUT AND ALL COMPONENTS IS FOR A THERMAL, STRESS - FREE CONDITION OF 110° F. ACTUAL EXACT LENGTHS OF RAILS TO BE INSTALLED IS TO BE FIELD - ADJUSTED TO FIT OVERALL TURNOUT DIMENSIONS, THERMAL ADJUSTMENTS, THICKNESS OF WELDS AND VARIATIONS IN COMPONENT RAIL LENGTH.
2. RAIL LAYOUT SHOWN FOR TURNOUT IS TO BE USED IN ALL CASES, EXCEPT WHERE COMPROMISE JOINTS ARE REQUIRED BETWEEN THE FROGS IN A CROSSOVER TRACK. WHEN COMPROMISE JOINTS ARE TO BE USED TO JOIN DIFFERENT RAIL WEIGHTS, THE INSULATED JOINTS IN THE CROSSOVER TRACK SHALL ALWAYS BE OF THE HEAVIER RAIL SECTION. THE DISCRPTIONS OF THE CHANGES IN RAIL LAYOUT WHEN COMPROMISE JOINTS ARE REQUIRED IN THE CROSSOVER TRACK ARE BASED ON AN ASSUMPTION THAT TRACK "H" IS LAID WITH HEAVIER RAIL THAN TRACK "L". CROSSOVER ON 15'-0" TRACK CENTERS; AT LOCATION "A" THE 20'-5" RAIL SHALL BE REPLACED WITH 8'-0" OF THE HEAVIER RAIL AND 12'-5" OF THE LIGHTER RAIL. AT LOCATION "B" THE 18'-0" RAIL SHALL BE REPLACED WITH 7'-0" OF THE HEAVIER RAIL AND 11'-0" OF THE LIGHTER RAIL.
3. IN ADDITION TO NOTE 1, NO ALLOWANCE HAS BEEN MADE IN RAIL LENGTHS TO PROVIDE GAPS NEEDED TO MAKE FIELD WELDS. IN THE FIELD IT MAY BE NECESSARY TO CUT RAIL ENDS TO PROVIDE CORRECT GAPS FOR FIELD WELDS.
4. FURNISH ALL RAIL SHOWN IN SOLID LINES ON THIS DRAWING:
(A.) RAILS LONGER THAN 39'-0" SHALL BE CONTINUOUS WELDED RAIL (CWR), TO BE FURNISHED WITH BOTH ENDS LEFT BLANK FOR WELDING IN THE FIELD.
(B.) ALL OTHER RAILS SHALL BE 39'-0" AND SHORTER AS SPECIFIED ON THE DRAWING, WITH BOTH ENDS DRILLED PER DETAIL "A".
5. ALL RAIL FURNISHED FOR TURNOUT AND CROSSOVERS SHALL BE "HIGH STRENGTH" EXCEPT GUARD RAILS.
6. LOCATIONS OF INSULATED JOINTS ARE SHOWN ON TURNOUT AND CROSSOVER DIAGRAMS WITHOUT TOLERANCES, OR IF TOLERANCES ARE PERMISSABLE, WITH (+ OR -).
7. ALL INSULATED JOINTS ARE TO BE PROPERLY SUSPENDED IN CRIB AREA BETWEEN TWO TIES LOCATED 4" MINIMUM FROM EDGE OF NEAREST TIE TO EDGE OF INSULATED JOINT.
8. INSULATED JOINT MUST BE INTALLED TO BE CENTERED BETWEEN TWO (2) TIES.
9. FIELD WELDED JOINTS DESIGNATED "FW" SHOULD BE IN CRIB AREA BETWEEN TWO TIES LOCATED 4" MINIMUM FROM EDGE OF NEAREST TIE AND WELDED JOINT.
10. DIMENSIONS SHOWN IN PARENTHESIS (0'-0") ARE EXACT. RAILS FURNISHED FOR THESE LOCATIONS ARE LONGER AND MUST BE FIELD ADJUSTED (CUT) WITHIN TOLERANCES SHOWN IN BRACKETS [0'-0"].
11. WHEN INSULATED JOINTS WITH TOLERANCES AND FIELD WELDED JOINTS FALL SHORT OF MINIMUM CLEARANCE FROM TIE OR TIE PLATE THE JOINT MAY BE MOVED WITHIN TOLERANCE LIMITS. BONDED INSULATED JOINT ASSEMBLIES AND STOCK RAILS ARE FURNISHED LONGER THAN SHOWN IN PARENTHESIS ON LAYOUT. THESE OR THEIR ADJACENT CONNECTING RAILS MUST BE TRIMMED IN THE FIELD TO FIT.



FOR MAINTENANCE ONLY

CROSSOVER 15'-0" TRACK CENTERS

X	XX-XX-XX	REVISION	XX	XX	
REV.	DATE	DESCRIPTION	DES.	ENG.	

DRAWN BY:	A. CARLOS	DATE:	08X30X20M
			
ASSISTANT DIRECTOR: STANDARDS & DESIGN			
			
DIRECTOR OF ENGINEERING AND CONSTRUCTION			

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METROLINK®

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS		STANDARD	2911
NO. 8 136 LB. R.H. RBM FROG TURNOUT AND CROSSOVER JOINTS LOCATIONS		SCALE:	NONE
		REVISION	SHEET
		-	2 OF 16
		CADD FILE:	ES2911-02

1. SEE SHEET NO. 1 FOR NOTES AND TURNOUT DATA
2. SEE SHEET NO. 4 FOR BILL OF MATERIALS
3. SEE SHEET NO. 5 FOR CROSSOVER

IF CONCRETE TIES ARE INSTALLED
AHEAD OF SWITCH POINT, TIE GAGE
PLATE PP (3 EACH) AND S-4P
(2 EACH) WILL NOT BE INSTALLED.



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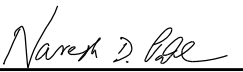


16 |

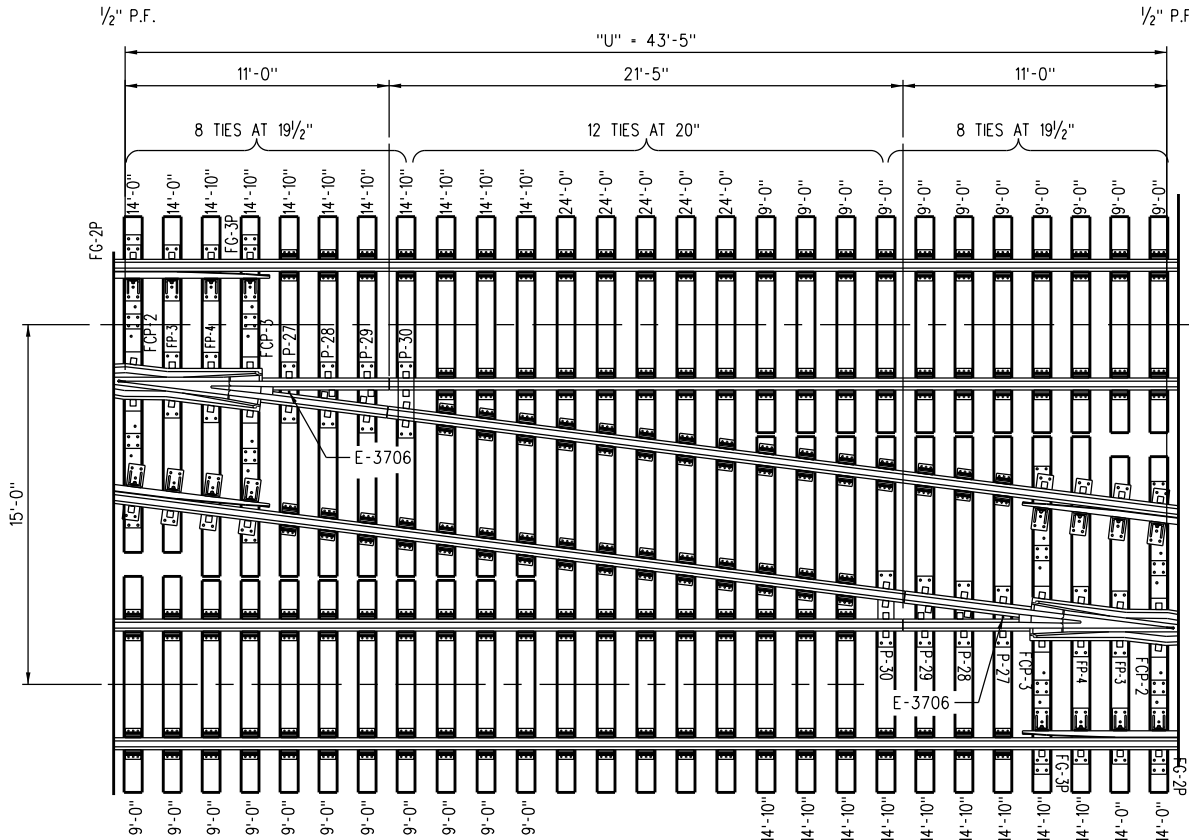
BILL OF MATERIAL FOR LATERAL TURNOUT	
QTY.	DESCRIPTION
	16'-6" EXTENDED FIELD WELDED TYPE SWITCH POINTS (40'-0")
1 PAIR	R.H. CURVED SAMSON STOCK RAILS 43'-0"
1 EACH	L.H. STRAIGHT SAMSON STOCK RAILS 42'-0"
1 EACH	21'-0" RAIL (SRAIGHT)
1 EACH	56'-0" RAIL (STRAIGHT)
1 EACH	39'-0" RAIL
2 EACH	30'-6" RAIL (CURVED)
1 EACH	6'-10" RAIL (CURVED)
1 EACH	NO 1 SMJ TYPE SWITCH ROD W/BASKET
1 EACH	VERTICAL SWITCH ROD WITH SMJ CLIPS
1 EACH	GAGE PLATE No. P-P
3 EACH	GAGE PLATE No. G-1P-R AND G-2P-R
1 EACH	SLIDE PLATE S-8P
6 EACH	SLIDE PLATE S-8P
4 EACH	SLIDE PLATE S-9P
4 EACH	BRACE SLIDE PLATE S-5P
2 EACH	BRACE SLIDE PLATE S-7P
2 EACH	BRACE SLIDE PLATE S-4P
2 EACH	HEEL PLATE P5-RH
2 EACH	TURNOUT PLATES P-10-R THRU P-19-R
1 EACH	TURNOUT PLATES P-10-R THRU P-19-R
1 EACH	No.8 R.B.M.FROG ~ 18'-0"
1 EACH	FROG PLATES No.FP-23-R THRU FP-26-R
1 EACH	FROG PLATES No.FP-23-R THRU FP-26-R
1 EACH	FROG GAGE PLATES FGP-1 THRU FGP-3
2 EACH	13'-0" U-69 ADJUSTABLE GUARD RAIL W/PLATES
5 EACH	D.I.RAIL HOLD DOWN CLIPS E-3706
2 EACH	D.I.RAIL HOLD DOWN CLIPS E-3707
2 EACH	D.I.RAIL HOLD DOWN CLIPS E-3708
716 PCS.	"PANDROL", OR EQUAL, SCREW SPIKES 19/16" DIA. X 6" No. 5760
12 PCS.	BOLTLESS ADJUSTABLE BRACE ASSEMBLY
384 PCS.	"PANDROL", OR EQUAL, E-CLIP TYPE E-2055 (GALVANIZED)
8 PCS.	"PANDROL", OR EQUAL, E-CLIP TYPE E-2063 (GALVANIZED)
102 PCS.	SCRRRA ES1406 "PANDROL", OR EQUAL, "E"-CLIP 6" TIE PLATE
2 EA	EPOXY BONDED PREFABRICATED MITRE CUT INSULATED JOINT 21'-2"

BILL OF SWITCH TIES FOR TURNOUT			
PIECES	SIZE	LENGTH	BOARD FEET
12	7" x 9"	9'-0"	630.00
8	7" x 9"	10'-0"	420.00
6	7" x 9"	11'-0"	346.50
6	7" x 9"	12'-0"	378.00
4	7" x 9"	13'-0"	273.00
2	10" x 9"	14'-0" DAP TIES	147.00
5	7" x 9"	14'-0"	367.50
5	7" x 9"	15'-0"	393.75
8	7" x 9"	16'-0"	672.00
TOTAL			TOTAL
54			3470.25

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					 ASSISTANT DIRECTOR: STANDARDS & DESIGN				NO. 8 136 LB. R.H. RBM FROG TURNOUT BILL OF MATERIALS	SCALE: NONE
X	XX-XX-XX	REVISION	XX	XX	 DIRECTOR OF ENGINEERING AND CONSTRUCTION					REVISION SHEET - 4 OF 16
REV.	DATE	DESCRIPTION	DES.	ENG.						CADD FILE: ES2911-04

BILL OF MATERIAL	
QTY.	DESCRIPTION
2 PAIR	16'-6" EXTENDED FIELD WELDED TYPE SWITCH POINTS (40'-0" RAIL)
2 EACH	R.H. CURVED SAMSON STOCK RAILS 43'-0"
2 EACH	L.H. STRAIGHT SAMSON STOCK RAILS 42'-0"
2 EACH	21'-0" RAIL (STRAIGHT)
2 EACH	56'-0" RAIL (STRAIGHT)
2 EACH	6'-10" RAIL (CURVED)
2 EACH	39'-0" RAIL (STRAIGHT)
2 EACH	No. 1 SMJ TYPE SWITCH ROD W/BASKET
2 EACH	VERTICAL SWITCH ROD WITH SMJ CLIPS
6 EACH	GAGE PLATE No. P-P
2 EACH	GAGE PLATE No. GP-1 AND GP-2
12 EACH	SLIDE PLATE S-8P
8 EACH	SLIDE PLATE S-9P
8 EACH	BRACE SLIDE PLATE S-5P
4 EACH	BRACE SLIDE PLATE S-7P
4 EACH	BRACE SLIDE PLATE S-4P
4 EACH	HEEL PLATE P5-RH
4 EACH	TURNOUT PLATES P-10-R THRU P-19-R
2 EACH	PLATES P-20-R THRU P-22-R & P-27-R THRU P-30-R
2 EACH	No. 8 R.B.M. FROG ~ 18'-0"
2 EACH	FROG PLATES No. FP-1-R THRU FP-4-R
2 EACH	FROG PLATES No. FCP-1 THRU FCP-3
2 EACH	FROG GAGE PLATES FGP-1 THRU FGP-3
4 EACH	13'-0" U-69 ADJUSTABLE GUARD RAIL W/PLATES
10 EACH	D.I. RAIL HOLD DOWN CLIPS E-3706
4 EACH	D.I. RAIL HOLD DOWN CLIPS E-3707
4 EACH	D.I. RAIL HOLD DOWN CLIPS E-3708
384 PCS.	PANDROL SCREW SPIKES 15/16" DIA. X 6" No. 5760
12 PCS.	BOLTLESS ADJUSTABLE BRACE ASSEMBLY
192 PCS.	"PANDROL", OR EQUAL, CLIP TYPE E-2055 (GALVANIZED)
24 PCS.	"PANDROL", OR EQUAL, CLIP TYPE E-2063 (GALVANIZED)
96 PCS.	SCRRA ES1406 "PANDROL", OR EQUAL, "E"- CLIP 6" TIE PLATE
4 EACH	EPOXY BONDED PREFABRICATED MITRE CUT INSULATED JOINT (21'-2")
2 EACH	EPOXY BONDED PREFABRICATED MITRE CUT INSULATED JOINT (38'-5")



NO. 8 RIGHT HAND CROSSOVER

NOTES:

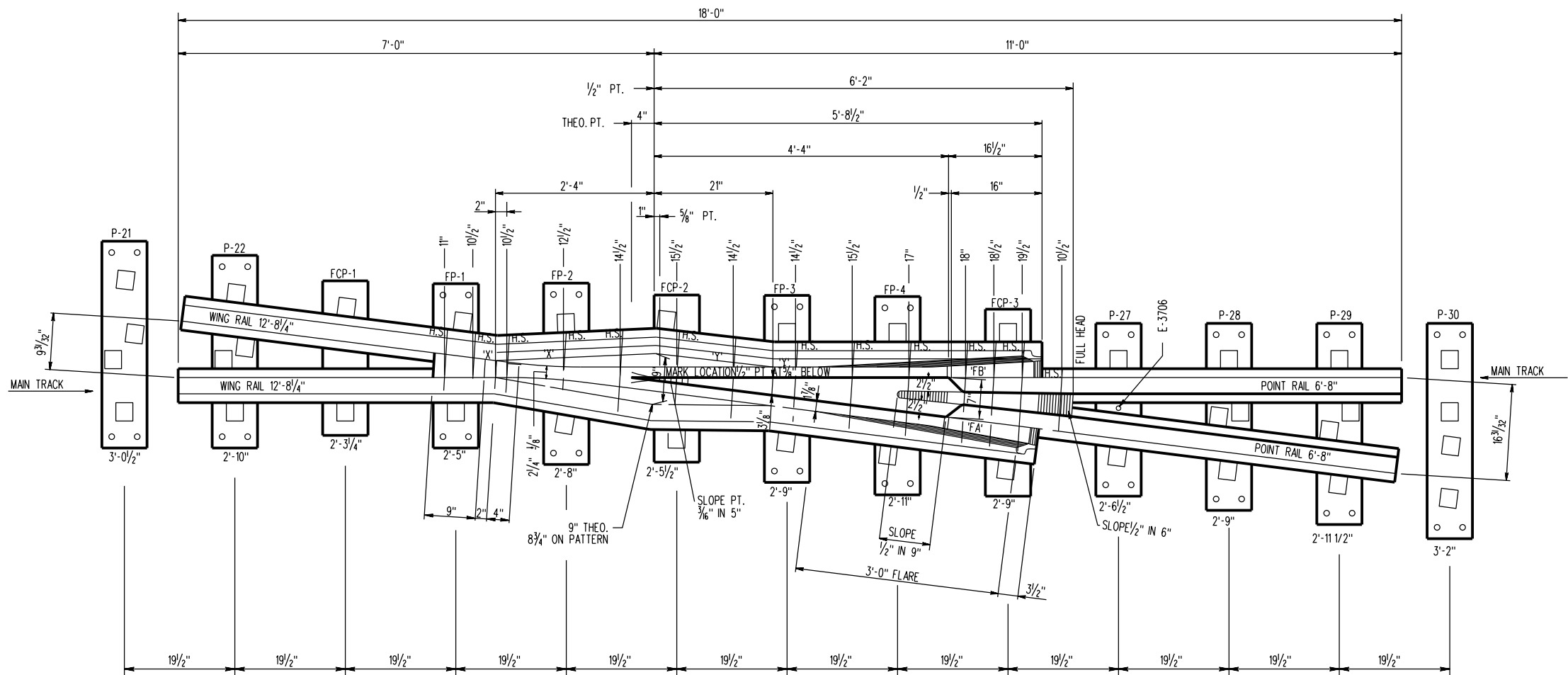
1. SEE SHEET 2911-01 FOR NOTES.
2. SEE SHEET 2911-03 FOR NO. 8 R. H. RAIL BOUND MANGANESE FROG TURNOUT.
3. CROSSOVER FOR 15'-0" TRACK CENTERS IS SHOWN. FOR 16'-0" OR GREATER TRACK CENTERS, USE TWO TURNOUTS PER ES2911-03. FOR OTHER TRACK CENTER SPACING, MANUFACTURER TO FURNISH SHOP DRAWINGS DETAILING RAIL AND TIE LAYOUT AND DIMENSIONS THAT FOLLOW THESE EXAMPLES.

CROSSOVER DATA	
FROG NUMBER	8
FROG ANGLE	7° -09'-10"
FROG LENGTH	18'-0"
FROG TOE LENGTH	7'-0"
FROG HEEL LENGTH	11'-0"
SWITCH POINT LENGTH 40'-0"	16'-6" AL.
HEEL SPREAD OF SWITCH	6 1/4"
SWITCH ANGLE	1° -44'-11"
LEAD	68'-0"
RADIUS OF TURNOUT CURVE C/L	487.28'
DEGREE OF TURNOUT CURVE C/L	11° -46'-44"
CENTRAL ANGLE OF TURNOUT CURVE	5° -24'-46"
STRAIGHT CLOSURE LENGTH	44'-6"
CURVED CLOSURE LENGTH	44'-8 1/8"

BILL OF SWITCH TIES			
PIECES	SIZE	LENGTH	BOARD FEET
46	7" x 9"	9'-0"	2173.50
16	7" x 9"	10'-0"	840.00
12	7" x 9"	11'-0"	693.00
12	7" x 9"	12'-0"	756.00
8	7" x 9"	13'-0"	546.00
10	7" x 9"	14'-0"	735.00
4	10" x 9"	14'-0"	294.00
16	7" x 9"	14'-10"	1260.00
5	7" x 9"	24'-0"	630.00
TOTAL			TOTAL
129			7927.50

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				 ASSISTANT DIRECTOR: STANDARDS & DESIGN					
				 DIRECTOR OF ENGINEERING AND CONSTRUCTION					
X	XX-XX-XX	REVISION	XX	XX					
REV.	DATE	DESCRIPTION	DES.	ENG.					



**No. 8 RAILBOUND MANGANESE STEEL FROG
WITH PANDROLIZED PLATES
R.H. TURNOUT SHOWN - LH OPPOSITE PLATE ORIENTATION**

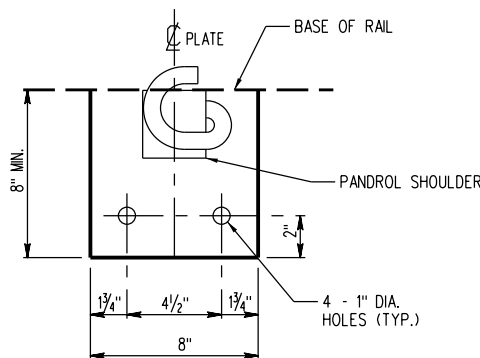
NOTES:

1. FROG ANGEL 7°-09'-10".
2. RAIL USED TO FABRICATE FROG IS TO BE 136 LB. HIGH STRENGTH.
3. RAIL BOUND MANGANESE STEEL FROG PER CURRENT AREMA PLAN NO. 621 & 625 WITH EXPLOSIVE HARDENED MANGANESE HIGH INTEGRITY CASTING PER CURRENT AREMA SPECIFICATIONS AND MODIFIED FOR ARM LENGTHS AND PLATES WITH "PANDROL" FASTENERS.
4. ALL FROG PLATES SHALL BE STAMPED IN 1/2" CHARACTERS TO INDICATE MFG., FROG NO., R.H., RAIL SECTION AND PLATE NUMBER. MARK TO BE STAMPED ON SAME END OF ALL FROG PLATES.
5. FOR DETAILS OF FROG PLATES FP-1 THRU FP-4 AND PCP-1 THRU FCP-3 SEE SHEET ES2911-07. FOR PLATES P-21, P-22 AND P-27 THRU P-30 SEE SHEET ES2911-16.
6. WORKMANSHIP AND MATERIALS SHALL BE PER CURRENT AREMA SPECIFICATIONS FOR SPECIAL TRACKWORK, EXCEPT AS OTHERWISE SPECIFIED.
7. ANY CONSTRUCTION DETAILS NOT SHOWN SHALL BE IN ACCORDANCE WITH CURRENT AREMA RECOMMENDED PRACTICES.
8. FROG PLATES ARE DESIGNED TO BE INSTALLED PERPENDICULAR TO MAIN TRACK.
9. BODY BOLTS 1 1/8" DIA., H.T.C.S. - PER AREMA SPECIFICATIONS.
10. TOE AND HEEL BLOCKS AND BOLTS PER AREMA SPECIFICATIONS.
11. PLATES TO BE MADE OF MILD ROLLED STEEL.
12. THE PLATES AS SHOWN ARE FOR A 136 LB. NO. 8, RIGHT HAND, HAND OPERATED TURNOUT. FOR A LEFT HAND TURNOUT, PLATES ARE TO BE OPPOSITE.
13. THE "PANDROL" TYPE WELD-ON PRESSED STEEL SHOULDER, MADE OF MILD ROLLED STEEL, TO BE PURCHASED FROM PANDROL INTERNATIONAL OR APPROVED ALTERNATE MEETING "PANDROL'S" DESIGN SPECIFICATIONS. THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO ALL PLATES WITH A MINIMUM 2 PASS 3/8" • FILLET WELD ALONG THE BEVELED GROOVES OF THE SHOULDER. ANY WELD PROJECTING BEYOND THE VERTICAL FACE OF SHOULDER IN THE AREA OF THE BASE OF RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.
14. MANUFACTURER OF FROG PLATES SHALL USE COMPLETED FROG TO VERIFY LOCATION OF ADJUSTABLE CLAMPS ON FROG PLATES FCP-1, FCP-2 AND FCP-3 TO INSURE PROPER FIT. FROG PLATES WILL BE WELDED TO THE GAGE PLATES IN THE FIELD WITH A 3 PASS 1/2" • FILLET WELD. PLATES WILL BE WELDED ONLY AFTER THE GAGE PLATES ARE SECURED IN THE PROPER LOCATION ON THE TIE WITH THE FROG IN PLACE AT PROPER ALIGNMENT.
15. GUARD RAIL PLATES ARE TO BE INSTALLED AND WELDED TO THE FROG GAGE PLATES IN THE FIELD WITH A 3 PASS 1/2" • FILLET WELD CONTINUOUS ON BOTH ENDS OF THE PLATE. PLATES ARE TO BE WELDED ONLY AFTER THE GAGE PLATE AND THE FROG IS SECURED IN THE PROPER LOCATION ON THE TIE WITH THE FROG IN PLACE AT PROPER ALIGNMENT.
16. IDENTIFICATION TAG WITH RAISED METAL CHARACTERS TO BE APPLIED WHICH WILL STATE WEIGHT OF RAIL, FROG NO., MANUFACTURER AND YEAR MANUFACTURED.
17. RAIL ENDS TO BE CUT AT 45 DEGREE ANGLE AT JOINT WITH FROG CASTING.

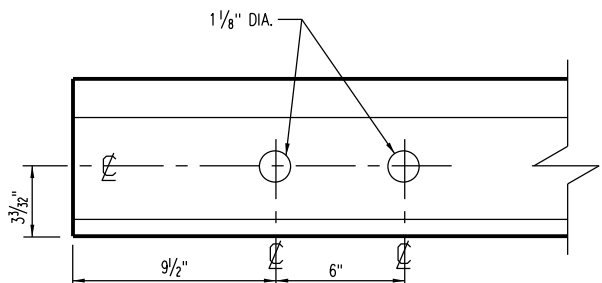
WELDING OF GAGE PLATE & GUARD RAIL:

1. POSITION GAGE PLATES AT DESIGNATED TIE LOCATIONS AND ANCHOR IN PLACE.
2. CHECK TRACK FOR CORRECT GAGE.
3. STARTING WITH ONE GAGE PLATE, PLACE FROG PLATES WITH ADJUSTABLE BRACES AND SECURE TO FROG AND GUARD RAIL WITH "PANDROL" CLIPS.
4. RECHECK TRACK GAGE AND CORRECT IF NECESSARY.
5. CAREFULLY WELD FROG PLATE AND GUARD RAIL PLATE TO FROG GAGE PLATES WITH 3 PASS 1/2" • FILLET WELD. FOR WELDING USE THE FOLLOWING:
 - A. ELECTRODE, 5/32" INCH, WELDING SPEC. 7018XLM.
 - B. ELECTRODE, 3/16" INCH, WELDING SPEC. 7018XLM.
 - C. WIRE, 3/32" INCH, NR203, 1/2 NICKEL FLUX CORE.OTHER WIRE OR ELECTRODES MEETING SPECIFICATIONS AS CALLED FOR AND APPROVED BY DIRECTOR OF ENGINEERING MAY BE USED.

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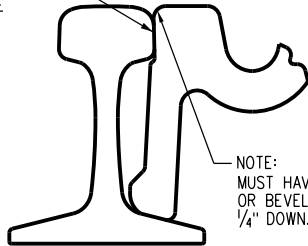


TYPICAL PLATE PUNCHING DETAIL



RAIL END DRILLING

MANG. MUST BE GROUND TO FIT SLOPE OF RAIL HEAD FOR THE ENTIRE LENGTH OF CASTING.



DETAIL OF FROG CASTING / RAIL FIT

SCALE: NONE

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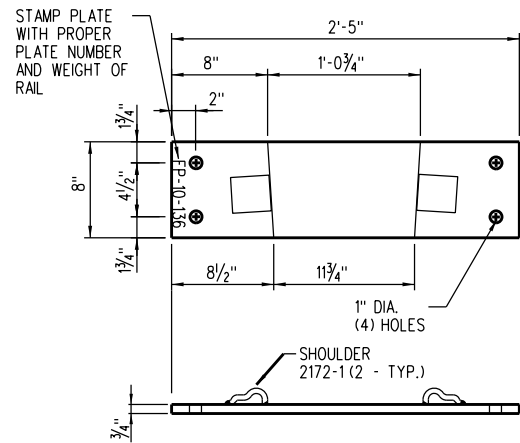
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
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ENGINEERING STANDARDS

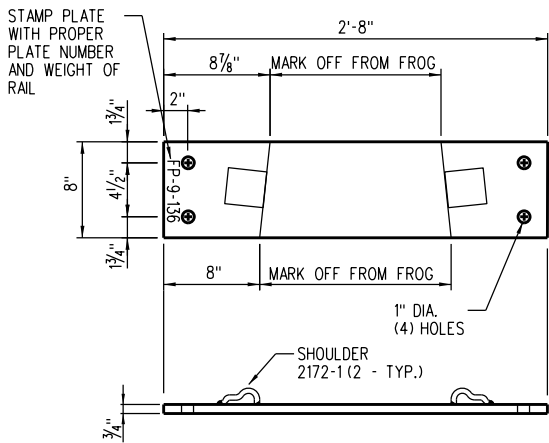
NO. 8 136 LB. R.H. RBM FROG
LAYOUT

STANDARD	2911
SCALE:	1" = 1'-0"
REVISION	SHEET
-	6 OF 16
CADD FILE:	ES2911-06

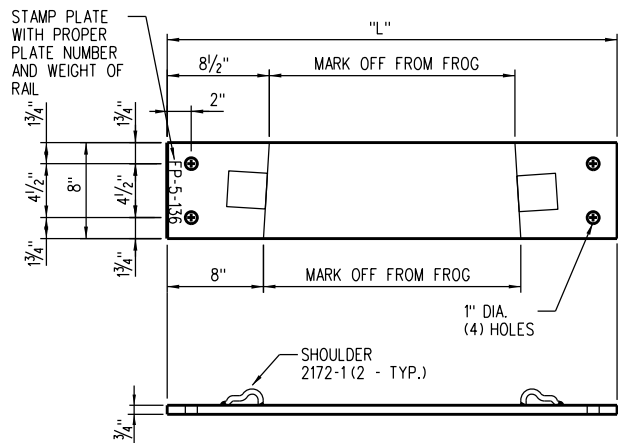
NOTE:
FOR NO. 8 FROG AND PLATE LOCTIONS SEE SHEET 6.



FROG PLATE - FP-1
3/4" x 8" x 2'-5" - FLAT

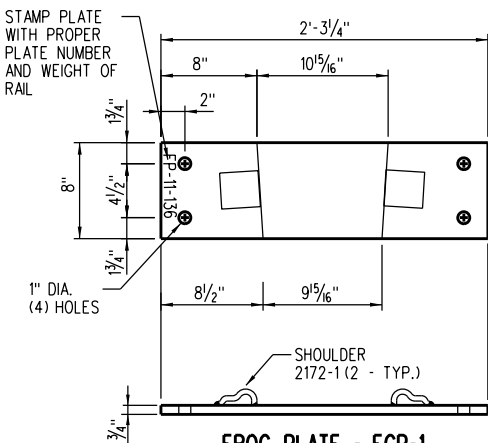


FROG PLATE - FP-2
3/4" x 8" x 2'-8" - FLAT

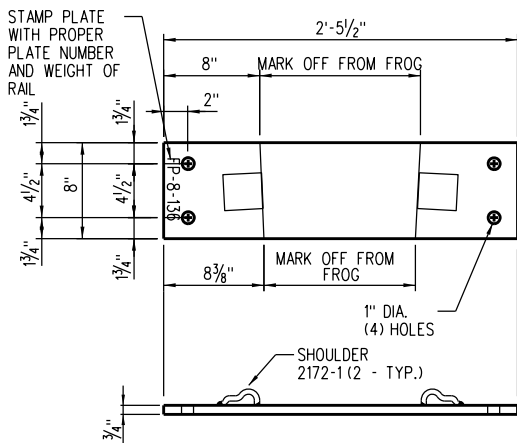


FROG PLATE - FCP-3, FP-3 AND FP-4
3/4" x 8" - FLAT (SEE TABLE FOR LENGTHS)

DIMENSION TABLE		
PLATE	"L"	NO. REQ'D
FCP-3	2'-9"	1
FP-4	2'-11"	1
FP-3	2'-9"	1



FROG PLATE - FCP-1
3/4" x 8" x 2'-3 1/4" - FLAT



FROG PLATE - FCP-2
3/4" x 8" x 2'-5 1/2" - FLAT

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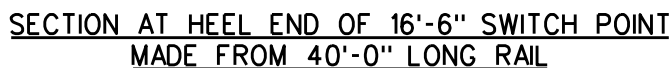
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ENGINEERING STANDARDS

NO. 8 136 LB. R.H. RBM FROG PLATE DETAILS

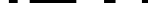
STANDARD	2911
SCALE:	1 1/2" = 1'-0"
REVISION	SHEET
-	7 OF 16
CADD FILE:	ES2911-07



1. SWITCH POINTS TO BE MADE FROM NEW HIGH STRENGTH RAIL.
2. LEFT HAND POINT SHOWN. MAKE OPPOSITE HAND FOR RIGHT HAND SWITCH POINTS.
3. SIDE PLANING FIGURED ON GAGE LINE $\frac{3}{8}$ " BELOW TOP OF RAIL.
4. MATERIALS AND WORKMANSHIP, ALSO ANY CONSTRUCTION DETAILS NOT SHOWN, SHALL BE PER CURRENT AREMA "MANUAL AND PORTFOLIO", UNLESS OTHERWISE SPECIFIED ON THIS PLAN.
5. IN ORDER OF ELIMINATE STRESS RAISERS, MANUFACTURER SHALL PEEN THE EDGES OF THE BOLT HOLES AS INDICATED AT THE HEEL OF THE SWITCH POINT AND AT THE HEEL END OF THE SWITCH POINT RAIL USING AIR HAMMER WITH SUITABLE HEAD AND FINISHING WITH DRIFT PIN. BRAND ON RAIL AT EDGE OF BOLT HOLE TO BE CAREFULLY REMOVED BY GRINDING BEFORE PEENING.
6. THE FOLLOWING MATERIAL IS INCLUDED FOR THE TERMS SHOWN. IF ANY PART IS TO BE OMITTED, REQUISITIONS AND ORDERS SHALL STATE DEFINELY WHAT IS WANTED.
SWITCH POINT: ONE PAIR SWITCH POINTS WITH REINFORCING BARS, TRANSIT CLIPS, STOPS AND FLOATING HEEL SEPARATOR BLOCK FASTENED TO POINT.
STATE "RIGHT HAND" OR "LEFT HAND".
7. THE CONTOUR PLANING SHALL BE ON THE GAGE SIDE BEGINNING AT A DISTANCE OF 36" FROM THE POINT OF SWITCH AND SHALL BE SHAPED TO THE CONTOUR OF A NEW 136 LB. RAIL AND SHALL RUN OUT AT THE END OF TOP PLANING, WHERE THE SWITCH POINT HAS FULL HEAD CONTOUR.
8. METAL IDENTIFICATION TAG SHOWING (1) DESIGN LENGTH OF SWITCH, (2) IN PARENTHESIS, THE ACTUAL LENGTH OF SWITCH POINT RAIL AND (3) THE TURNOUT NUMBER. MARK TAG THUS: 16'-6" (40'-0") NO. 8. TAG TO BE FASTENED TO SWITCH POINT, ON GAGE SIDE OF RAIL AT HEEL SPACER BLOCK IN LOCATION SHOWN.
9. AT HEEL END OF SWITCH POINT RAIL, BREAK SHARP CORNER AROUND THE ENTIRE PERIPHERY BY SLIGHTLY GRINDING. ALSO, "DO NOT" HEN HARDEN RAIL END.
10. UNLESS SWITCH POINT ORDER SPECIFICALLY CALLS FOR USE OF $\frac{3}{4}$ " RIVETS AND $\frac{3}{4}$ " STOP BOLTS, MANUFACTURER CAN SUBSTITUTE $\frac{3}{4}$ " HUCK FASTENERS, BOLT PART NO. C-50-LR-BR2416 AND COLLAR PART NO. L3-2-R-24G FOR $\frac{3}{4}$ " RIVETS. AND FOR $\frac{3}{4}$ " STOP BOLTS USE HUCK FASTENERS, BOLT PART NO. C-50-LR-BR2424 AND COLLAR PART NO. L3-2-R-24G.
11. TURNOUTS ARE TO BE FURNISHED WITH MANGANESE STEEL INSERT ON THE DIVERGING POINT (TURNOUT SIDE) AND A PLAIN SWITCH POINT ON THE NORMAL POINT (STRAIGHT SIDE). REPLACEMENT POINTS MUST SPECIFY WHETHER PLAIN POINT OR MANGANESE STEEL INSERT ARE TO BE FINISHED.

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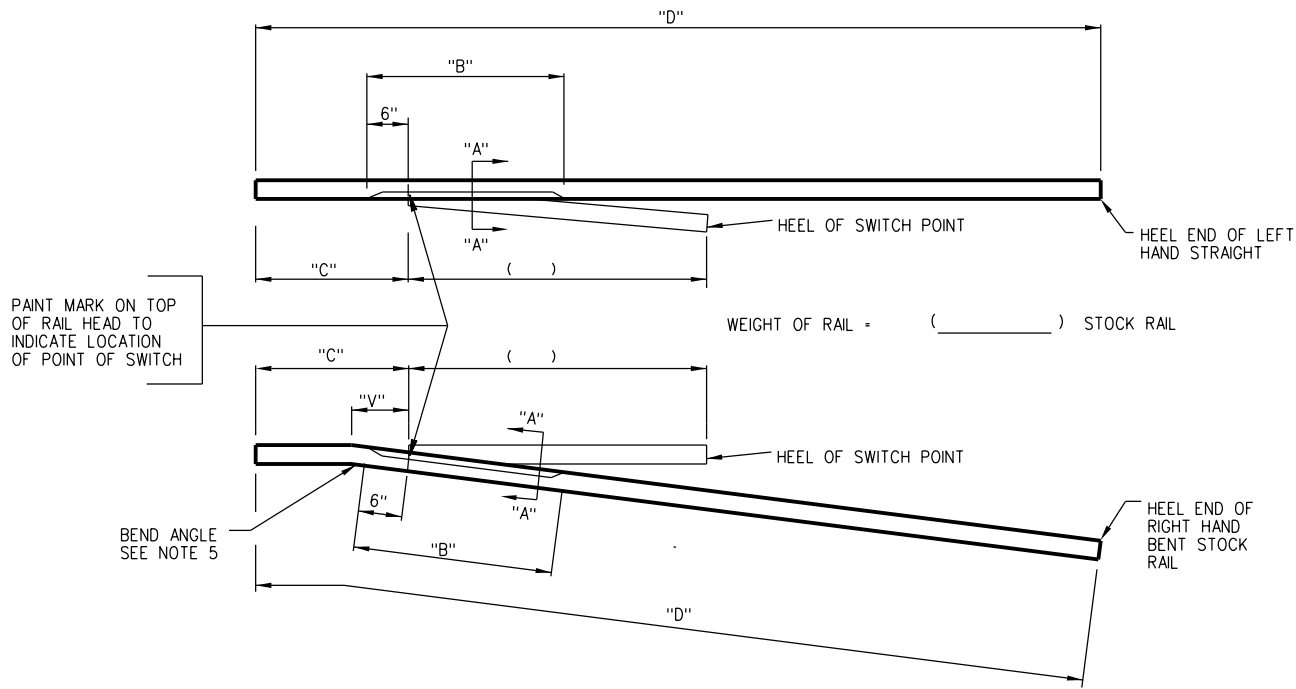
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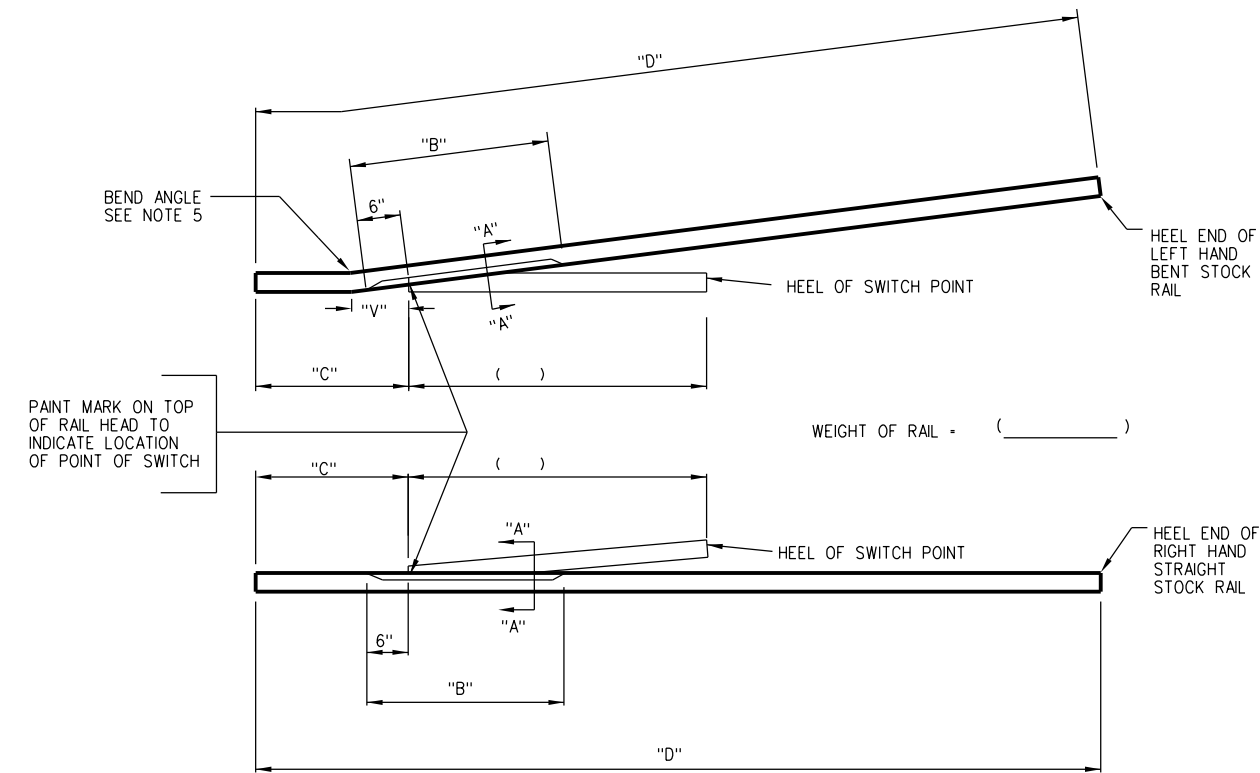
ENGINEERING STANDARDS

NO. 8 SPLIT SWITCH POINT DETAILS

STANDARD		2911
SCALE:		$\frac{3}{4}" = 1'-0"$
REVISION	SHEET	
-	9 OF 16	
CADD FILE:		ES2911-09



STOCK RAILS ARE SHOWN FOR "RIGHT HAND TURNOUT"



STOCK RAILS ARE SHOWN FOR "LEFT HAND TURNOUT"

NOTES:

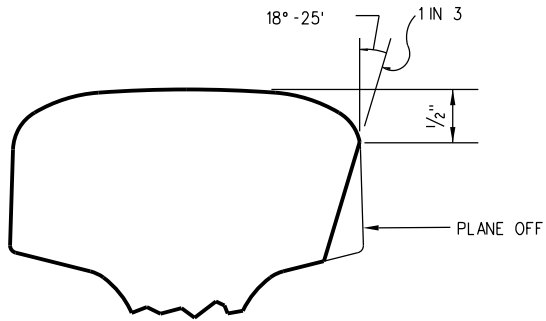
1. INFORMATION OR DIMENSIONS NOTED THUS (), TO BE FURNISHED BY FIELD FORCES FOR CORRECT ORDERING OF REPLACEMENT STOCK RAILS.
2. LENGTH OF SWITCH POINT.
3. UNDERCUT STOCK RAILS TO BE MADE OF HIGH STRENGTH RAIL WITH ENDS BEVELED PER CURRENT A.R.E.M.A. PLAN NO. 1005.
4. FOR STOCK RAIL UNDERCUT LENGTH "B", PER SECTION "A-A", LENGTH "C" AND LENGTH "D" FOR NEW SAMSON SWITCH INSTALLATIONS OR REPLACEMENT ORDERS SEE TABLE BELOW.

LENGTHS B,C & D FOR 136 LB. RAIL									
Sw. Pt. LENGTH	T.O. No.	STOCK RAIL	B	FOR FIRST (NEW) INSTALL.			FOR REPLACE. ORDERS ONLY		
				C	D	END DRILL. SEE NO. 10	C	D	END DRILL. SEE NO. 10
16'-6"	8	STR.	9'-6"	7'-2 1/2"	40'-0"	NONE	10'-0"	50'-0"	NONE
16'-6"	8	BENT	9'-6"	7'-2 1/2"	40'-0"	HEEL END ONLY	9'-6"	46'-0"	HEEL END ONLY

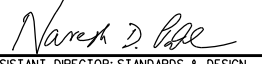
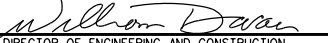
5. BEND ANGLE IN BENT STOCK RAIL TO BE AS FOLLOW:

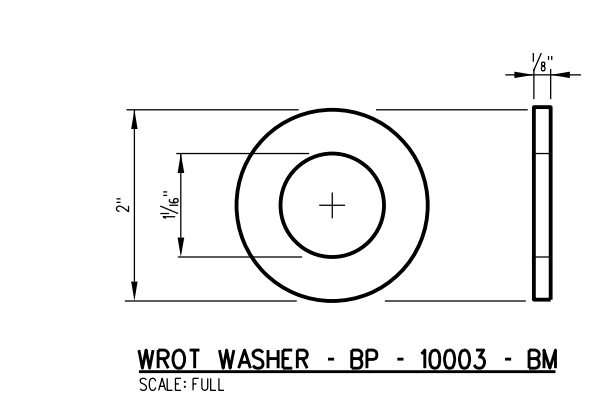
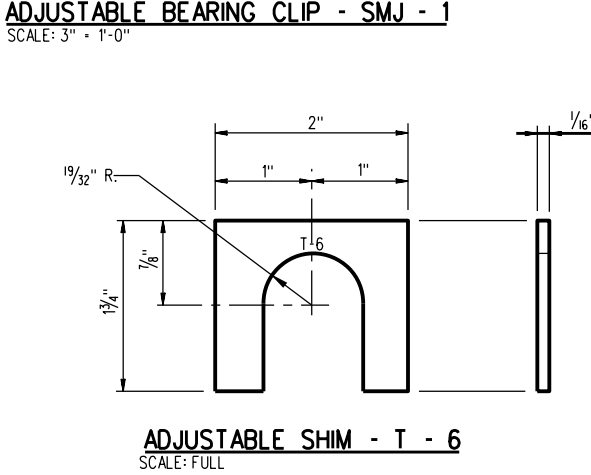
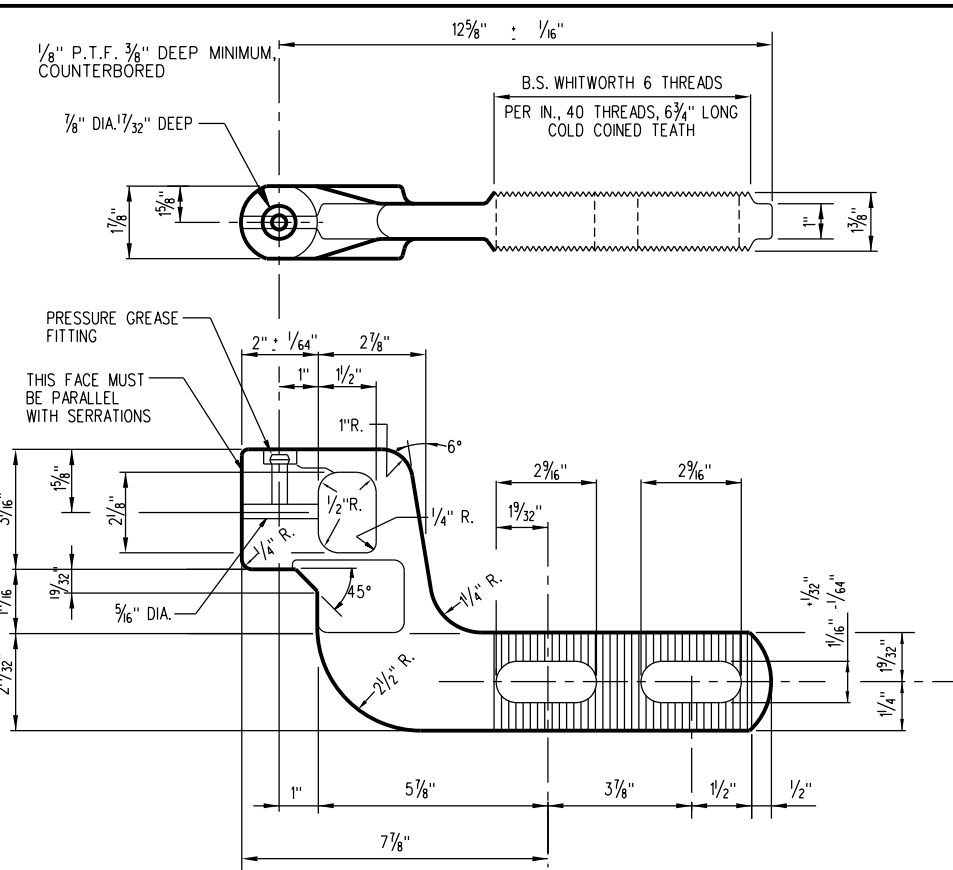
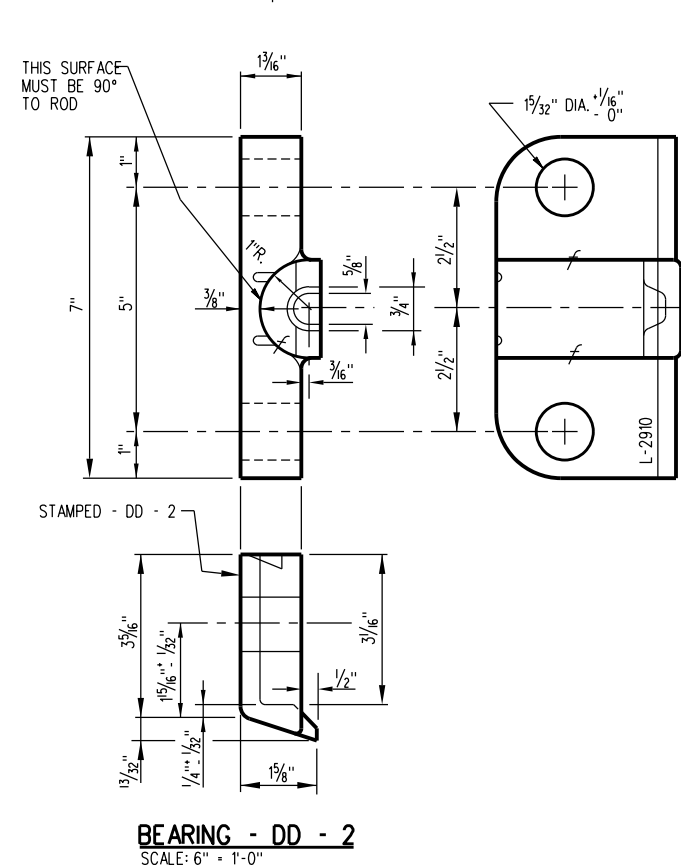
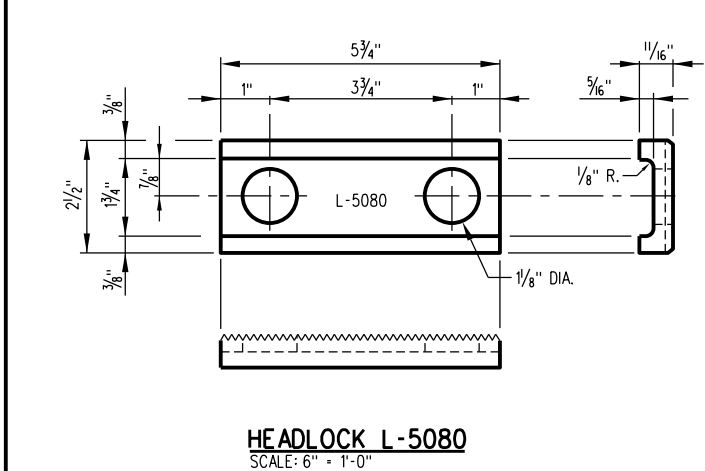
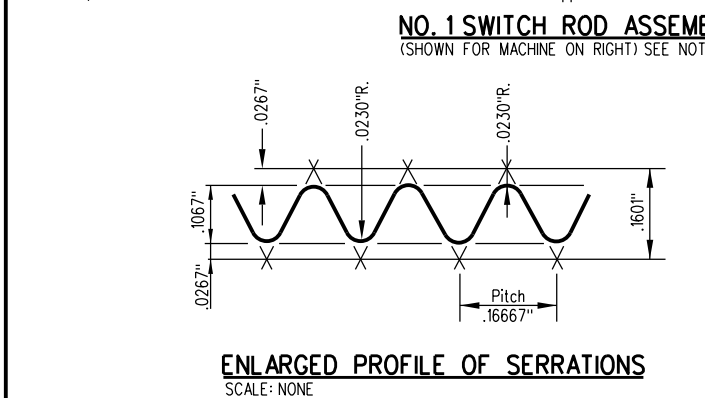
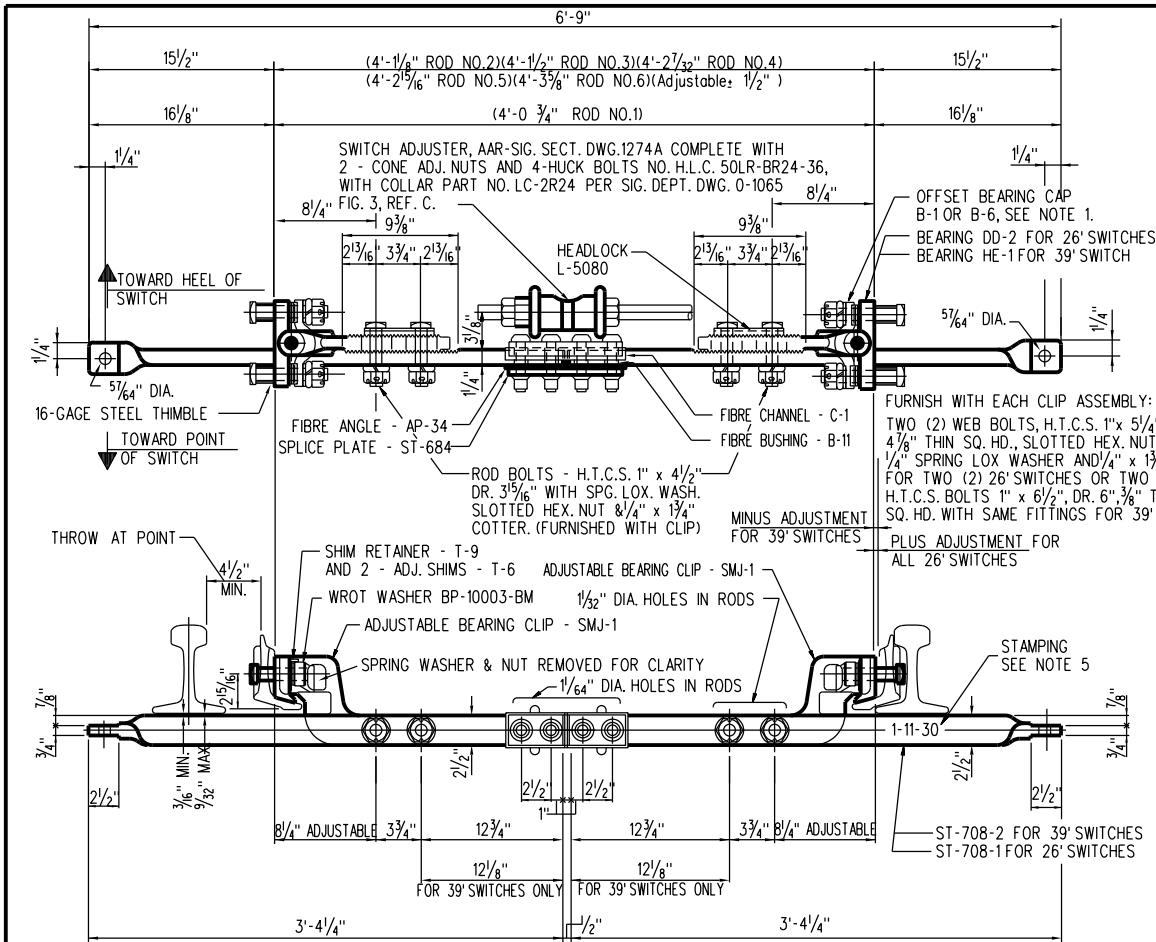
Sw. Length	BEND ANGLE	V (Vertex Dist.)
16'-6"	1° -44'-11" or 1' in 2'-9"	10 5/16"

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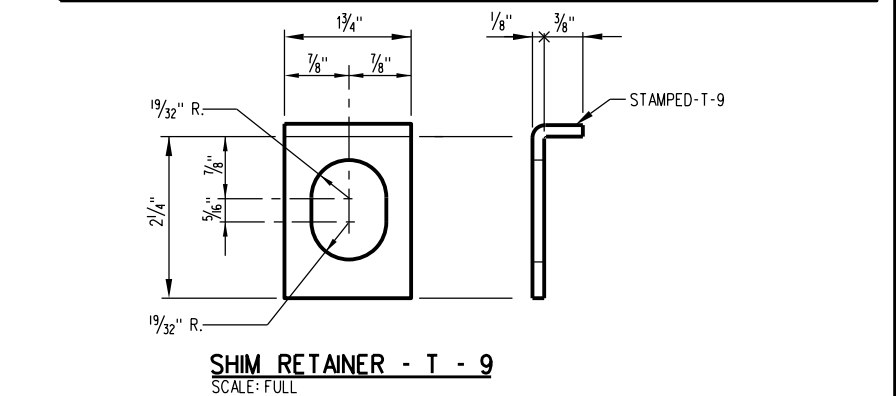
SECTION "A - A"

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				 ASSISTANT DIRECTOR: STANDARDS & DESIGN						SCALE: NONE		REVISION SHEET
				 DIRECTOR OF ENGINEERING AND CONSTRUCTION						10 OF 16		CADD FILE:
												ES2911-10



LENGTH OF SWITCH	BILL OF MATERIAL FOR 1 TYPE "SMJ" SWITCH ROD ASSEMBLY				
	QTY.	PART NUMBER	MATERIAL SPECIF.	DESCRIPTION	DETAIL REMARKS
All	2	SMJ-1	S.A.E.1020-For.Stl.	Bearing Clip	MACHINED PER DETAIL
All	4		H.T.C.S.	Web Bolt	SEE NOTE
26'	2	DD-2	Malleable Iron	Bearing	PAT. NO. L-2910, MACHINED PER DETAIL
39'	2	HE-1	Malleable Iron	Bearing	PAT. NO. L-2915, MACHINED PER DETAIL
26'	2	B-1	S.A.E.1045-For.Stl.	Offset Bearing Cap	HEAT TREATED - BRINELL -.225 to .250
39'	2	B-6	S.A.E.1045-For.Stl.	Offset Bearing Cap	HEAT TREATED - BRINELL -.225 to .250
26'	2	B-6	S.A.E.1045-For.Stl.	Offset Bearing Cap	HEAT TREATED - BRINELL -.225 to .250
All	4	T-9	S.A.E.1020	Shim Retainer	1/8" x 1 1/4" x 2 1/4"
All	12	T-6	Stainless Steel	Adjustment Shim	1/16" x 2" x 1 1/8"
All	4	BP-10003-BM	Wrot Iron	Wrot Washer	1 1/16" I.D. x 2" O.D. x 1/8" THICK
All	4		H.T.C.S.	Rod Bolt	1" x 4 1/2" DR. 3/16" REG. SQ. HD. SLOTTED HEX NUT
All	4		Steel	Spg. Lox Washer	For 1" Rod Bolts
All	4		Steel	Cotter	1/4" x 1 1/4" FOR ROD BOLTS
All	2		Steel	Grease Fitting	PRESSURE - FOR BEARING CLIP
All	2	L-5080	Malleable Iron	Headlock	FOR ROD BOLTS
26'	2		16-Gage Steel	Thimble	1 1/2" LONG - FOR SHIPPING
39'	2		16-Gage Steel	Thimble	2 1/2" LONG - FOR SHIPPING

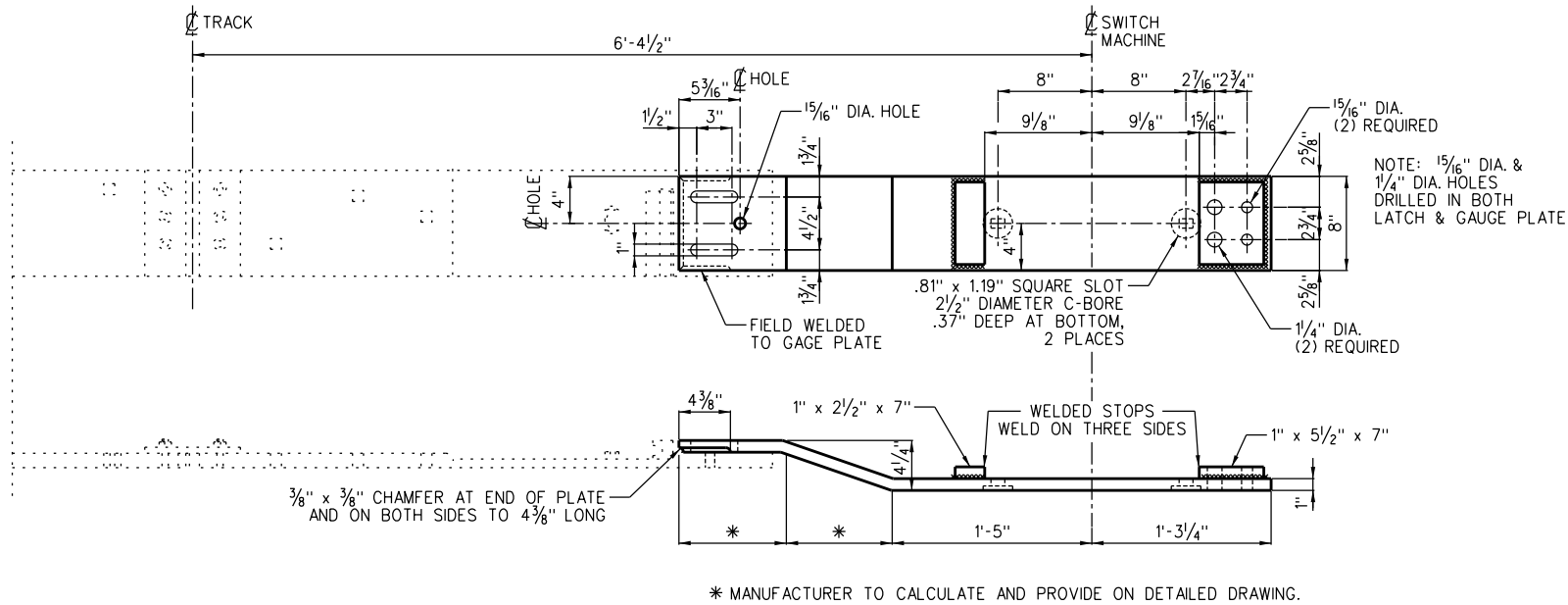
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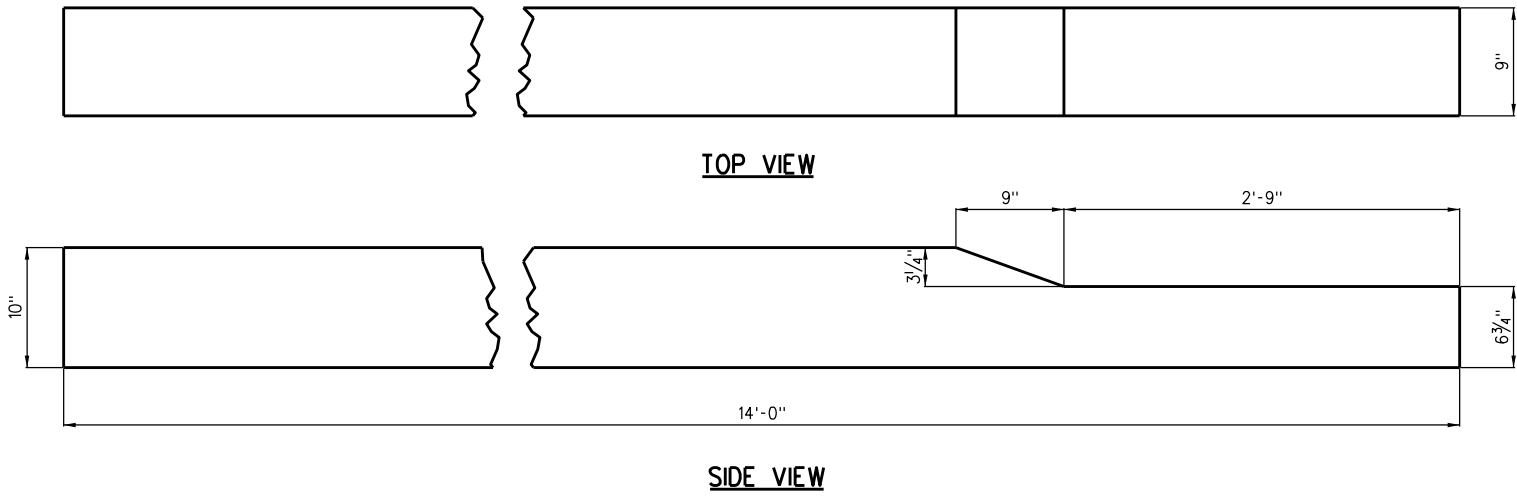
- NOTES:**
- WHILE THIS PLAN SHOWS BEARING CLIPS ASSEMBLED TO SWITCH ROD, THIS CLIP ASSEMBLY MAY BE REQUISITIONED AND ORDERED SEPARATELY. WHEN A BEARING CLIP ASSEMBLY ONLY IS WANTED, REQUISITIONS AND ORDERS SHALL SPECIFY, RAIL SECTION AND LENGTH OF SWITCH. ALL PARTS SHOWN IN BILL OF MATERIAL SHALL BE FURNISHED WITH THESE CLIP ASSEMBLIES. WHEN AN INDIVIDUAL PART IS REQUIRED IT SHALL BE ORDERED BY PART NUMBER.
 - WHEN COMPLETED RODS ARE ORDERED THEY SHALL BE ASSEMBLED AND INCLUDE ALL PARTS SHOWN IN THE BILL OF MATERIAL. REQUISITIONS AND ORDERS SHALL SPECIFY RAIL SECTION AND LENGTH OF SWITCH. ON INTERLOCKED SWITCHES WITH AUXILIARY THROW ROD, MACHINE SIDE (RIGHT OR LEFT) SHOULD ALSO BE SPECIFIED.
 - TWO WEB BOLTS SHALL BE FURNISHED WITH EACH CLIP ASSEMBLY AS CALLED FOR BY NOTE IN TOP VIEW OF ROD ASSEMBLY. WHEN ROD IS USED ON 11'-0" AND 16'-6" SWITCHES THE 1/4" THICK SPRING WASHER SHOULD BE REPLACED WITH A 3/8" THICK SPRING WASHER BY THE STOREKEEPER OR FIELD FORCES, TO BRING COTTER WITHIN THE LIMITS OF SLOT IN WEB BOLT NUTS.
 - MATERIALS AND WORKMANSHIP SHALL MEET CURRENT A.R.E.M.A. SPECIFICATIONS FOR "SPECIAL TRACKWORK" UNLESS OTHERWISE SPECIFIED.
 - VERTICAL SWITCH ROD SHALL BE PLAINLY STAMPED TO INDICATE SWITCH THAT ROD ASSEMBLY CAN BE USED UPON. IDENTIFICATION MARKING WILL BE AS FOLLOWS:
1-39 FOR USE ON 39'-0" SWITCHES, 132 LB. AND 136 LB. RAIL SECTIONS.
1-11-30 FOR USE ON 11'-0" TO 30'-0" SWITCHES, 115 LB., 119 LB., 131 LB., 132 LB., AND 136 LB. R.E. RAIL SECTIONS.

DRAWN BY: A. CARLOS DATE: 03/31/2011				SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.			
REVISION				METROLINK®			
NO. 8 SWITCH ROD DETAILS				SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY			
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012				ENGINEERING STANDARDS			
STANDARD				2911			
SCALE:				AS NOTED			
REVISION				SHEET			
11 OF 16				CADD FILE:			
ES2911-11							

NOTE:
SEE SHEET NO. 15 FOR NOTES.



EXTENSION PLATE
(2 PCS. REQ'D. AS SHOWN)



TIES SHALL BE MADE OF DOUGLAS FIR OR GUM AND TREATED AFTER FRAMING.

DAP TIE
(2 PCS. REQ'D. AS SHOWN)

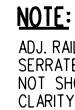
US&S M23-A SWITCH MACHINE MUST BE FURNISHED WITH FINISHED MOUNTING LUGS.

FOR MAINTENANCE ONLY

				DRAWN BY: A. CARLOS		DATE: 03/31/2011	SCRRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRRA APPROVED USES ONLY. FOR NON-SCRRRA APPROVED USES, SCRRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRRA. ALL RIGHTS RESERVED.	METROLINK[®] SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	ENGINEERING STANDARDS		STANDARD
									2911		
									SCALE: 1/2" = 1'-0"		
									REVISION	SHEET	
									-	13 OF 16	
									CADD FILE:		
									ES2911-13		

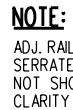
X	XX-XX-XX	REVISION	XX	XX
REV.	DATE	DESCRIPTION	DES.	ENG.

Nancy D. Rose ASSISTANT DIRECTOR: STANDARDS & DESIGN		William D. Davis DIRECTOR OF ENGINEERING AND CONSTRUCTION	
--	--	---	--



1" x 8" x 2'-2" LG. ~ MILLED ~ W/ADJ. RAIL BRACE
2 - S-4P PLATES REQUIRED AS SHOWN

LAYOUT - No.8, R.H., H.O. TURNOUT - 136 lb. ----- SHEET No. 2911-02



1" X 8" X 2'-4 $\frac{1}{2}$ " LG. - MILLED - W/ADJ. RAIL BRACE

4 - S-5P PLATES REQUIRED AS SHOWN

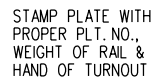
2 - S-7P PLATES REQUIRED AS SHOWN

1" X 8" X 2'-0 1/2" LG. - MILLED - W/PANDROL CLIP
6 - S-8P PLATES REQUIRED AS SHOWN (1/4" RISER)
4 - S-9P PLATES REQUIRED AS SHOWN (0" RISER)

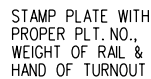
1" X 8" X 2'-4 1/2" LG. - MILLED - W/PANDROL CLIPS
2 - P5-RH PLATES REQUIRED AS SHOWN FOR R.H. T.O.

STAMP PLATE WITH
PROPER PLT. NO.,
WEIGHT OF RAIL &
HAND OF TURNOUT

1" x 8" x DIM "L" - MILLED - W/ PANDROLS



3/4" x 8" x DIM "L" - FLAT - W/ PANDROL CLIPS



3/4" x 8" x DIM "L" - FLAT - W/ PANDROL CLIPS

DIMENSION TABLE

PLATE	DIM "A"	DIM "B"	DIM "C"	DIM "L"	PITS REQ'D.	CLIPS REQ'D.
P-10	13 $\frac{1}{16}$ "	13 $\frac{5}{32}$ "	14 $\frac{7}{8}$ "	2'-5"	2 EA.	2 EA.
P-11	14 $\frac{1}{16}$ "	13 $\frac{7}{8}$ "	15"	2'-6"	2 EA.	2 EA.
P-12	15"	14 $\frac{11}{16}$ "	15 $\frac{5}{8}$ "	2'-7"	2 EA.	2 EA.
P-13	15 $\frac{23}{32}$ "	15 $\frac{1}{32}$ "	15 $\frac{15}{16}$ "	2'-8"	2 EA.	2 EA.
P-27	14 $\frac{1}{4}$ "	13 $\frac{1}{4}$ "	14 $\frac{3}{4}$ "	2'-6 $\frac{1}{2}$ "	1 EA.	1 EA.

DIMENSION TABLE

PLATE	DIM "A"	DIM "B"	DIM "L"	Pits REQ'D.	CLIPS REQ'D.
P-14	16 $\frac{1}{32}$ "	16 $\frac{1}{32}$ "	2'-9"	2 EA.	2 EA.
P-15	17 $\frac{1}{32}$ "	17 $\frac{1}{16}$ "	2'-10"	2 EA.	2 EA.
P-16	18 $\frac{1}{32}$ "	18 $\frac{3}{32}$ "	2'-11"	2 EA.	2 EA.
P-21	19 $\frac{1}{16}$ "	20 $\frac{9}{32}$ "	3'-0 $\frac{1}{2}$ "	1 EA.	1 EA.
P-22	17 $\frac{1}{4}$ "	18 $\frac{1}{4}$ "	2'-10"	1 EA.	1 EA.
P-28	15 $\frac{1}{16}$ "	16 $\frac{1}{16}$ "	2'-9"	1 EA.	1 EA.
P-29	18 $\frac{1}{16}$ "	19 $\frac{1}{16}$ "	2'-11 $\frac{1}{2}$ "	1 EA.	1 EA.

DIMENSION TABLE

PLATE	DIM "A"	DIM "B"	DIM "L"	Pits REQ'D.
P-17	20 $\frac{1}{8}$ "	19 $\frac{2}{32}$ "	3'-0"	2 EA.
P-18	21 $\frac{1}{8}$ "	20 $\frac{1}{8}$ "	3'-1"	2 EA.
P-19	22 $\frac{2}{32}$ "	20 $\frac{1}{32}$ "	3'-2 $\frac{1}{2}$ "	2 EA.
P-20	22 $\frac{1}{16}$ "	21 $\frac{25}{32}$ "	3'-2 $\frac{1}{2}$ "	1 EA.
P-30	21 $\frac{1}{2}$ "	20 $\frac{2}{32}$ "	3'-2"	1 EA.



HOLD DOWN CLIP FOR PLATES P-10 THRU P-15
HOLD DOWN CLIP FOR PLATES P-24 THRU P-26

UserName=> carlosa

Date Plotted: 10/5/2011 2:38:48 PM

Plot Driver-> S:\Plot Drivers\pdf.plt

FileName=> s:\V8EngStds\2000\Turnouts\Maintenance Only Standards\ES2911-14.dgn

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ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS

NO. 8 TURNOUT AND SWITCH PLATE DETAILS

STANDARD

291

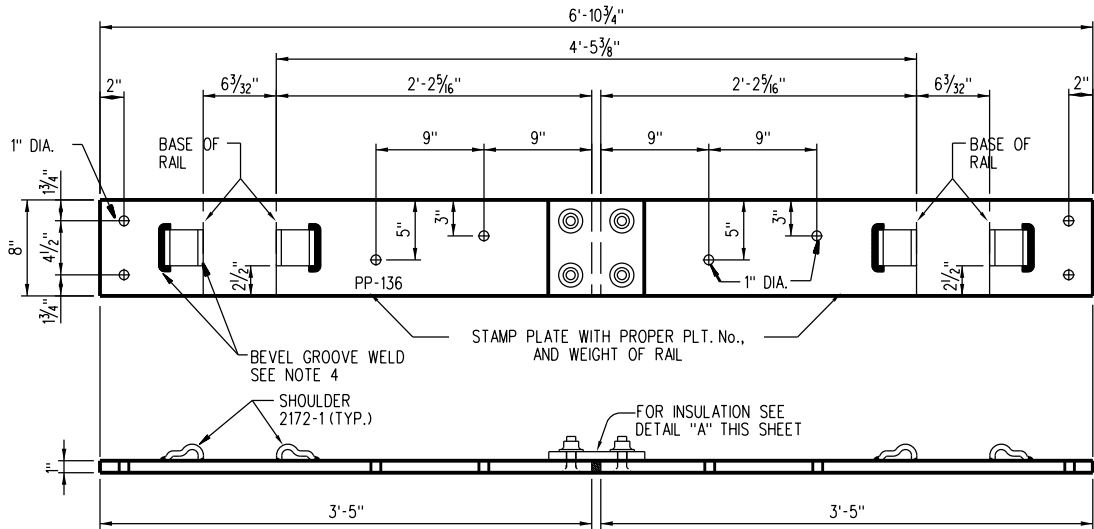
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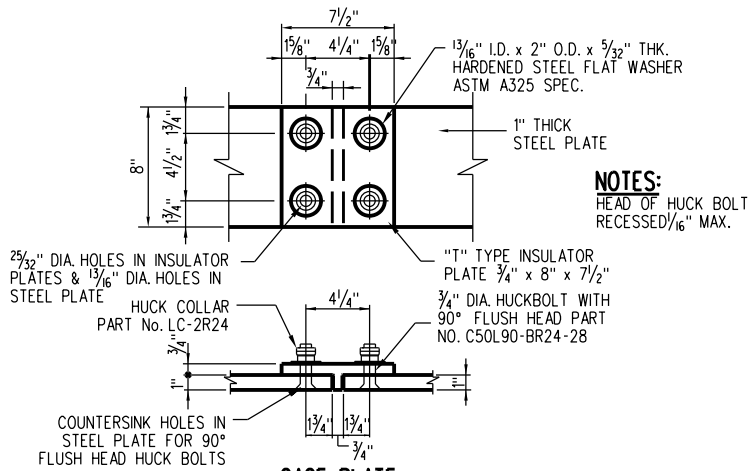
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14 OF 16
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ES2011_14

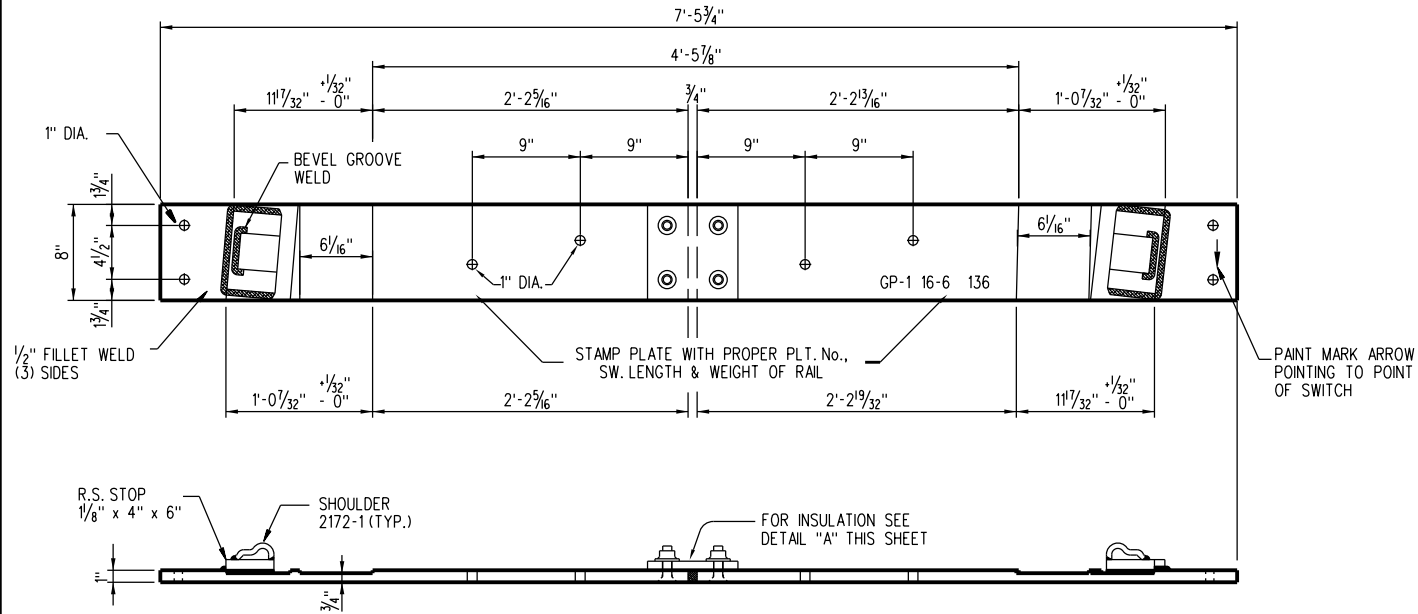


INSULATED GAGE PLATE P-P
1" x 8" - FLAT - W/ INSULATION
(3 PC. REQ'D AS SHOWN)

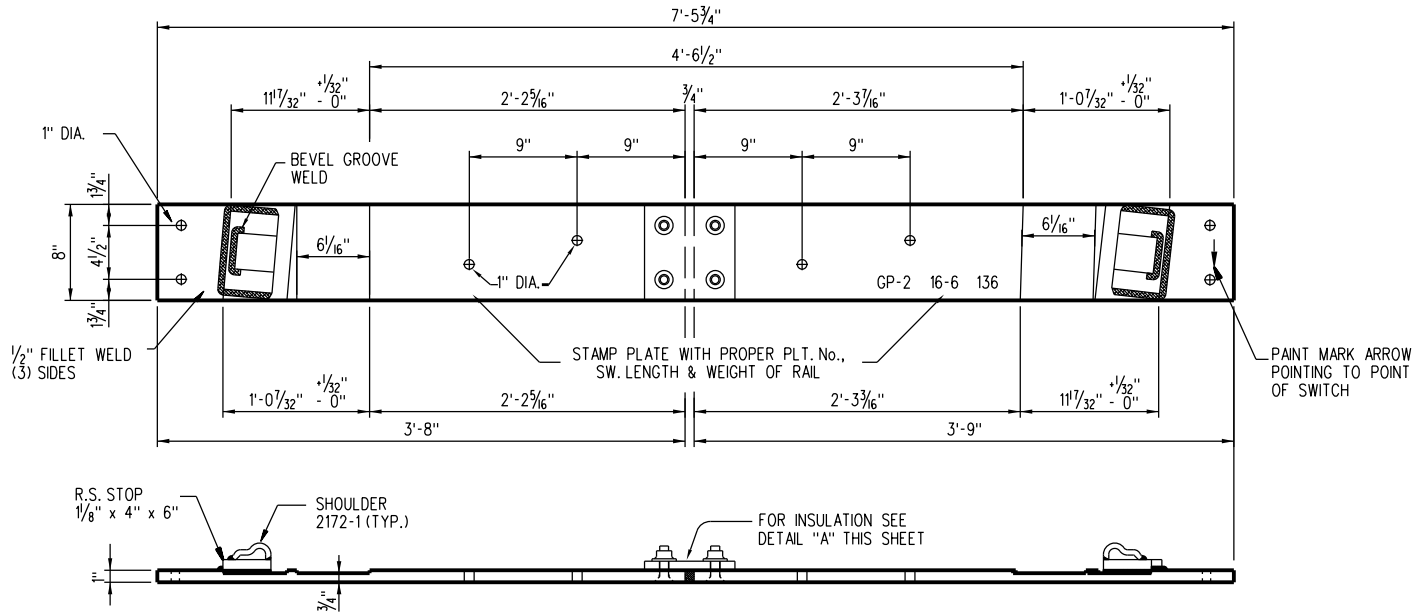


**GAGE PLATE
INSULATED JOINT ASSEMBLY
GPI-77**

**DETAIL "A"
INSULATION AT GAGE PLATES**
(SCALE: NONE)



INSULATED GAGE PLATE GP-1 - USED AT POINT OF SWITCH
1" x 8" - MILLED - W/ INSULATION & ADJ. RAIL BRACES
(1 PC. REQ'D AS SHOWN)



INSULATED GAGE PLATE GP-2 - USED AT POINT OF SWITCH
1" x 8" - MILLED - W/ INSULATION & ADJ. RAIL BRACES
(1 PC. REQ'D AS SHOWN)

NOTE:
SERRATED WASHER AND BRACE PLATE
NOT SHOWN FOR CLARITY.

NOTE:
SERRATED WASHER AND BRACE PLATE
NOT SHOWN FOR CLARITY.

FOR MAINTENANCE ONLY

						DRAWN BY: A. CARLOS	DATE: 03/31/2011		
X	XX-XX-XX	REVISION	XX	XX					
REV.	DATE	DESCRIPTION	DES.	ENG.					

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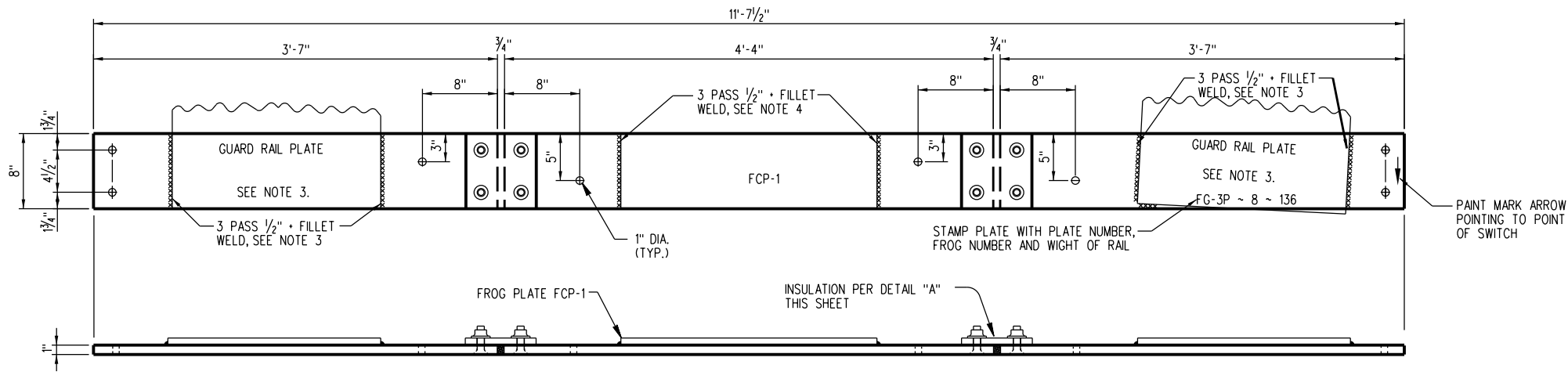
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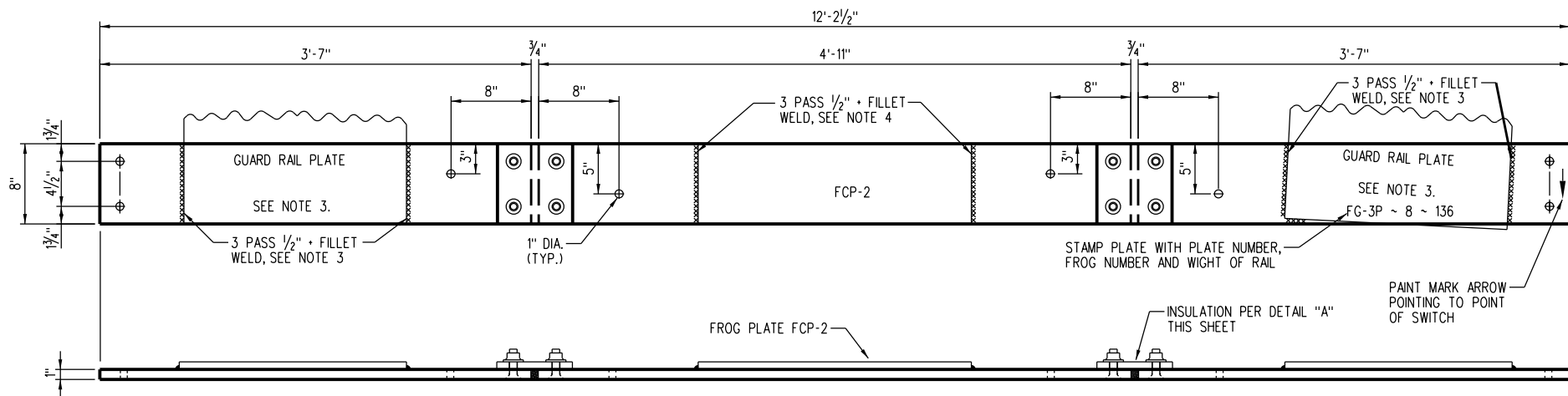
ENGINEERING STANDARDS

NO. 8 SWITCH PLATE DETAILS

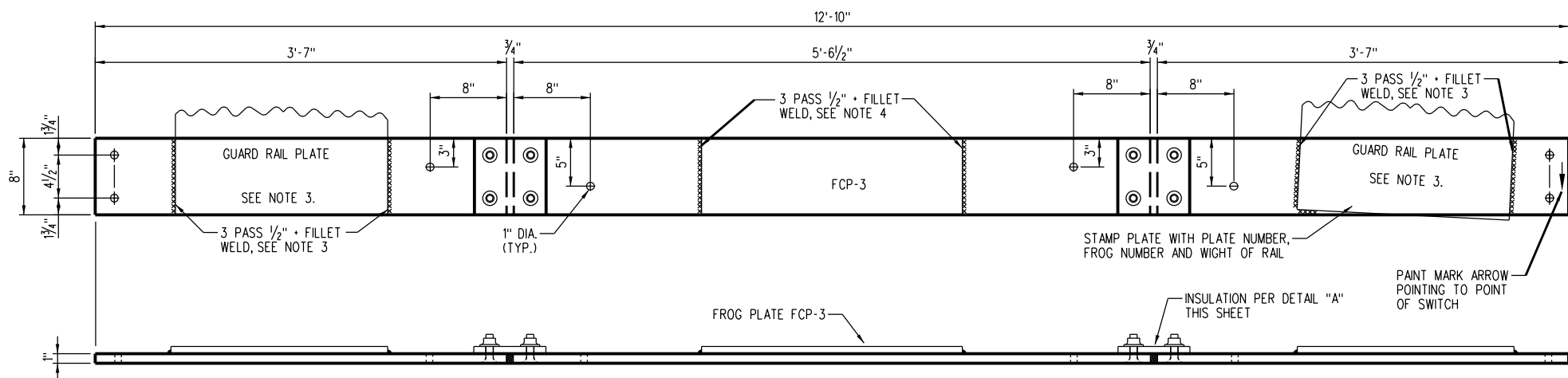
STANDARD	2911
SCALE:	1/2" = 1'-0"
REVISION	SHEET
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INSULATED FROG GAGE PLATE - FG-1P
3/4" x 8" - FLAT - W/ INSULATION (1PC. REQ'D AS SHOWN)



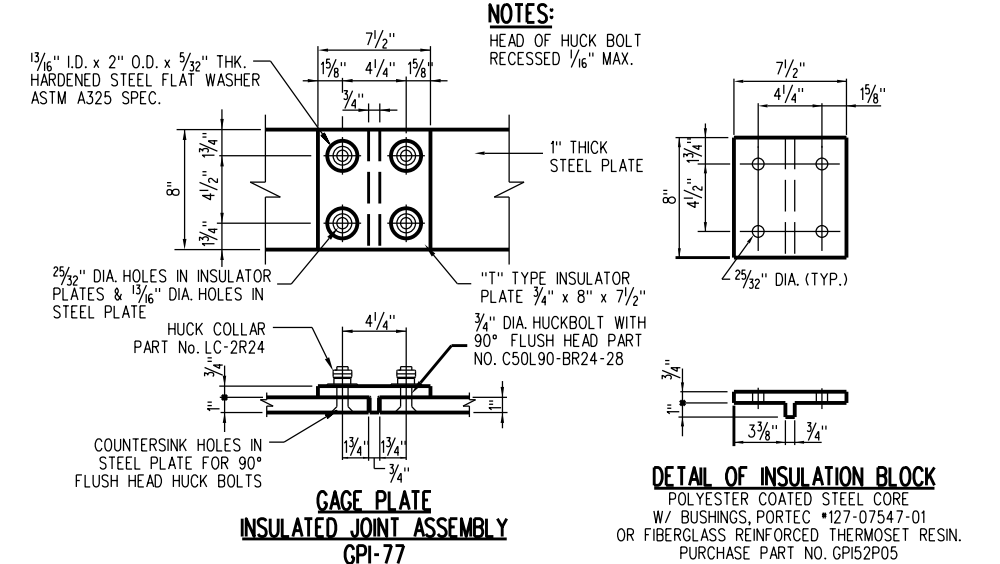
INSULATED FROG GAGE PLATE - FG-2P
3/4" x 8" - FLAT - W/ INSULATION (1PC. REQ'D AS SHOWN)
(THIS DETAIL NOT TO SCALE)



INSULATED FROG GAGE PLATE - FG-3P
3/4" x 8" - FLAT - W/ INSULATION (1PC. REQ'D AS SHOWN)
(THIS DETAIL NOT TO SCALE)

NOTES:

1. PLATES TO BE MADE OF MILD ROLLED STEEL.
2. THE PLATES AS SHOWN ARE FOR A 136 LB., NO. 8, RIGHT HAND, HAND OPERATED TURNOUT. FOR A LEFT HAND TURNOUT PLATES ARE TO BE OPPOSITE.
3. GUARD RAIL PLATES SHALL BE INSTALLED AND WELDED TO THE FROG GAGE PLATES IN THE FIELD WITH A 3 PASS 1/2" + FILLET WELD CONTINUOUS ON BOTH ENDS OF THE PLATE. PLATES ARE TO BE WELDED ONLY AFTER THE GAGE PLATE AND THE FROG IS SECURED IN THE PROPER LOCATION ON THE TIE WITH PROPER ALIGNMENT.
4. FROG BASE PLATES FP-1, FP-4 AND FP-7 ARE TO BE WELDED TO THE FROG GAGE PLATES IN THE FIELD WITH A 3 PASS 1/2" + FILLET WELD CONTINUOUS ON BOTH ENDS OF THE PLATE. PLATES ARE TO BE WELDED ONLY AFTER THE GAGE PLATE AND THE FROG IS SECURED IN THE PROPER LOCATION ON THE TIE WITH PROPER ALIGNMENT.



DETAIL "A"
INSULATION AT GAGE PLATES
(SCALE: NONE)

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				REVISION		XX XX	NO. 8 INSULATED GAGE PLATE DETAILS		SCALE: 1/2" = 1'-0"		REVISION SHEET		16 OF 16	
				DESCRIPTION		DES. ENG.					CADD FILE:		ES2911-16	

EQUIVALENT CURVE DATA	
CURVE	6.0850'
RADIUS	941.60'
DELTA	5.724'
TANGENT (T)	47.07'
LENGTH (L)	94.07'
EXTERNAL	1.17'
CROSSOVER DATA	
LEAD	80.500'
PC TO PS	14.07'
PS TO PI	33.00'
PI TO 1/2" PF	47.50'
LENGTH OF TURNOUT	117.28'
PS TO PT	80.00'

FROG DATA	
FROG NUMBER	10
FROG ANGLE	5° -43'-29"
SWITCH DATA	
SWITCH LENGTH	16'-6"
HEEL SPREAD	6 1/4"
HEEL ANGLE	N/A
SWITCH ANGLE	1° -44'-11"
RADIUS OF CENTER LINE - SWITCH	N/A
TANGENT LENGTH SWITCH	N/A
CENTRAL ANGLE OF CLOSURE CURVE-SWITCH	N/A
DEGREE OF CURVE - SWITCH	N/A
TURNOUT DATA	
RADIUS OF CENTER LINE - TURNOUT	742.29'
TANGENT LENGTH - TURNOUT	25.84'
CENTRAL ANGLE OF CLOSURE CURVE - TURNOUT	3° -59'-18"
DEGREE OF CURVE - TURNOUT	7° -43'-29"

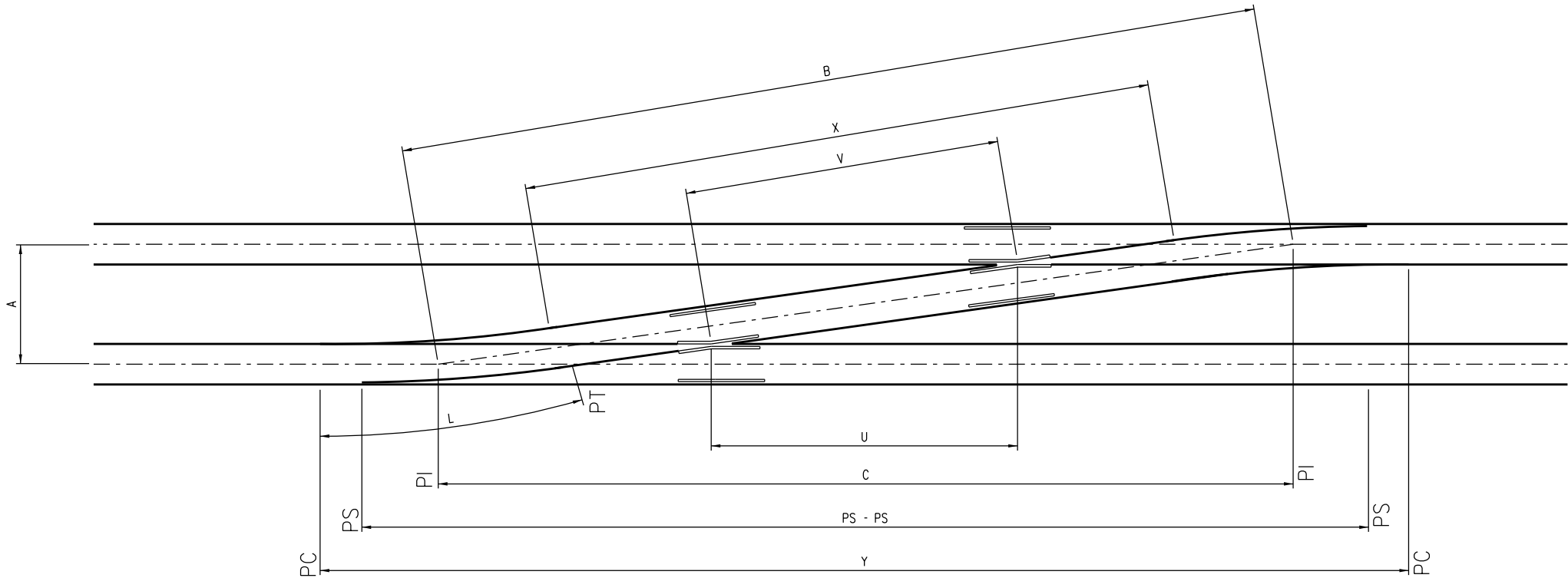
CROSSOVER DATA TABLE									
A	B	C	X	Y	2L+X	2L+X- 2(PC-PS)	PS TO PS	U	V
13	130.34	129.69	36.20	223.84	224.33	196.19	195.70	34.70	35.35
14	140.37	139.67	46.22	233.82	234.36	206.22	205.68	44.68	45.37
15	150.40	149.65	56.25	243.79	244.39	216.25	215.65	54.65	55.40
16	160.42	159.62	66.28	253.77	254.41	226.27	225.63	64.63	65.43
17	170.45	169.60	76.30	263.75	264.44	236.60	235.61	74.61	75.45
18	180.48	179.58	86.33	273.72	274.47	246.33	245.58	84.58	85.48
19	190.50	189.55	96.36	283.70	284.49	256.65	255.56	94.56	95.50
20	200.53	199.53	106.38	293.68	294.52	266.38	265.54	104.54	105.53
21	210.55	209.50	116.41	303.65	304.54	276.40	275.51	114.51	115.56
22	220.58	219.48	126.43	313.63	314.57	286.43	285.49	124.49	125.58
23	230.61	229.46	136.46	323.60	324.60	296.46	295.46	134.46	135.61
24	240.63	239.43	146.49	333.58	334.62	306.48	305.44	144.44	145.64
25	250.66	249.41	156.51	343.56	344.65	316.51	315.42	154.42	155.66
26	260.69	259.39	166.54	353.53	354.68	326.54	325.39	164.39	165.69
27	270.71	269.36	176.57	363.51	364.70	336.56	335.37	174.37	175.72
28	280.77	279.34	186.59	373.49	374.73	346.59	345.35	184.35	185.74
29	290.77	289.32	196.62	383.46	384.76	356.62	355.32	194.32	195.77
30	300.79	299.29	206.65	393.44	394.78	366.64	365.30	204.30	205.79
31	310.82	309.27	216.67	403.42	404.81	376.67	375.28	214.28	215.82
32	320.85	319.25	226.70	413.39	414.84	386.70	385.25	224.25	225.85

DRAWING INDEX

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CROSSOVER LAYOUT AND BILL OF MATERIALS	ES2921-05
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NOTES:

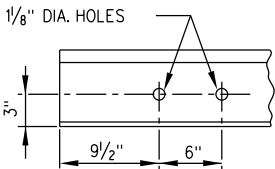
- TURNOUT TO BE FABRICATED FROM 136 LB. HEAD HARDENED RAIL, FROM POINT END TO LAST LONG SWITCH TIE.
- LOCATION OF INSULATED JOINTS IS DETERMINED BY DRAWING NUMBER ES2921-02.
IT WILL BE SATISFACTORY TO RELOCATE THE INSULATED JOINT IN THE FIELD UP TO 12"
SO AS TO PROVIDE A SUITABLE SUSPENDED JOINT, PROVIDED THE STAGGER OF INSULATED JOINTS DOES NOT EXCEED 4'-6". SUSPENDED INSULATED JOINTS MUST BE LOCATED IN A CRIB AREA BETWEEN TIES, A MINIMUM DISTANCE OF 4" FROM EDGE OF NEAREST TIE PLATE.
- ALL INSULATED JOINTS ARE TO BE ADHESIVE BONDED PREFABRICATED MITRE CUT INSULATED JOINTS PER ES2504 UNLESS OTHERWISE SPECIFIED.
- ALL MATERIALS REQUIRED FOR HAND OR MACHINE OPERATED SWITCH OPERATION WILL BE FURNISHED PER REQUIREMENTS OF THE SCRRRA DIRECTOR OF ENGINEERING AND CONSTRUCTION.
- MATERIALS AND WORKMANSHIP, ALSO ANY CONSTRUCTION DETAILS NOT SHOWN, SHALL BE PER CURRENT AREMA "MANUAL AND PORTFOLIO" UNLESS OTHERWISE SPECIFIED.
- WHERE REQUIRED, ALL IDENTIFICATION SYMBOLS TO BE PLAINLY STAMPED.
- GAGE PLATES WILL BE FURNISHED INSULATED. SWITCH RODS WILL BE FURNISHED INSULATED UNLESS OTHERWISE SPECIFIED.
- MANUFACTURER SHALL SUBMIT TWO COPIES OF SHOP DRAWINGS TO THE SCRRRA DIRECTOR OF ENGINEERING AND CONSTRUCTION FOR APPROVAL PRIOR TO FABRICATION OF TURNOUT. SHOP DRAWINGS THAT CHANGE DETAILS OF THESE STANDARDS MUST CLEARLY SPECIFY SUCH PROPOSED CHANGES.
- THE MATERIAL INCLUDED IN A "TURNOUT COMPLETE" IS EVERYTHING LISTED IN THE BILL OF MATERIALS. TO CONSTRUCT A COMPLETE TURNOUT, SWITCH TIES (PER LIST ON THIS SHEET) AND INSULATED JOINTS, FIELD WELDS, RUNNING RAIL, AND CLOSURE RAIL IDENTIFICATION ON SHEET ES2921-02 MUST ALSO BE SUPPLIED. THE MATERIAL FOR A "CROSSOVER COMPLETE" IS IDENTIFIED ON SHEET ES2921-05.
- TIE PLATES SHALL CONFORM TO SCRRRA ENGINEERING STANDARD ES2454.
- SCREW SPIKES (5/16" X 6-2 TPI) SHALL CONFORM TO SCRRRA ENGINEERING STANDARD ES2357.
- PLATE HOLES SHALL BE 1" DIAMETER. PILOT HOLES IN TIES SHALL BE 5/16" DIAMETER. SCREW SPIKES SHALL BE SCREWED INTO WOOD (NOT DRIVEN).
- MANUFACTURER SHALL BEVEL RAIL ENDS PER CURRENT AREMA. PLAN NO. 1005.
- THE 16'-6" SWITCH POINT, MADE FROM 40'-0" RAIL PER ES2921-10 SHALL BE FURNISHED WITH SWITCH RODS NO. 1 AND 2 PER ES2921-11 AND ES2921-12.
- FOR LOCATION OF INSULATED AND COMPROMISE JOINTS FOR NO. 10 TURNOUT AND CROSSOVER, SEE DRAWING NO. ES2921-02.
- GAGE PLATES FOR SWITCH AND FROG, SWITCH HEEL PLATE (FOR BOTH R.H. AND L.H. TURNOUTS) AND PLATES P-10 THRU P-24 ARE DESIGNED TO BE PERPENDICULAR TO THE MAIN LINE THRU RUN RAILS.
- UPON COMPLETION OF TURNOUT INSTALLATION, RUNNING RAIL MUST BE ADJUSTED TO SCRRRA NEUTRAL RAIL TEMPERATURE.
- ALL E-CLIPS SHALL BE GALVANIZED.
- SWITCH POINTS SHALL BE FABRICATED PER AREMA SPECIFICATION NO. 9-28-92 AND ES2921-09.
- THE TOLERANCE FOR SPACING OF SWITCH TIES IS +/- 1/2" RELATIVE TO ADJACENT TIES AND 1/4" RELATIVE TO CUMULATIVE DIMENSION FROM THE POINT OF SWITCH (PS).



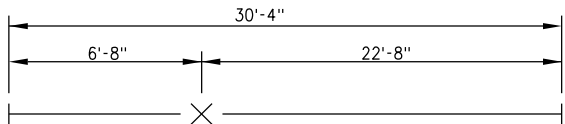
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CROSSOVER LAYOUT

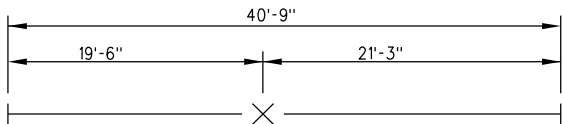
				DRAWN BY: A. CARLOS		DATE: 03/31/2011		SCRRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRRA APPROVED USES ONLY. FOR NON-SCRRRA APPROVED USES: SCRRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRRA. ALL RIGHTS RESERVED.		 METROLINK SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012		ENGINEERING STANDARDS		STANDARD 2921			
												SCALE: NONE					
														REVISION SHEET		1 OF 15	
																CADD FILE: ES2921-01	
X	XX-XX-XX	REVISION		XX	XX												
REV.	DATE	DESCRIPTION		DES.	ENG.												



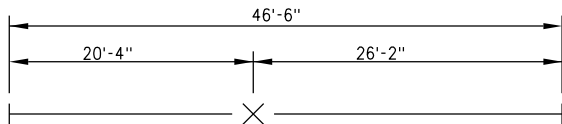
SEE NOTE 4 (b)
(DRILLED HOLES NOT NECESSARY
IF TEMPORARY BOLTED JOINTS
ARE NOT REQUIRED)



(SEE NOTE 6) BOTH ENDS SHALL BE LEFT BLANK
FOR WELDING IN THE FIELD



(SEE NOTE 6) BOTH ENDS SHALL BE LEFT BLANK
FOR WELDING IN THE FIELD



(SEE NOTE 6) BOTH ENDS SHALL BE LEFT BLANK
FOR WELDING IN THE FIELD

1. THE PERMISSIBLE VARIATION IN STANDARD LENGTHS OF RAILS, FROGS AND SWITCH POINTS IS GREATER THAN THE NORMAL EXPANSION GAPS AT RAIL JOINTS AND THICKNESS OF FIBRE END POST IN INSULATED JOINTS, NO ALLOWANCE HAS BEEN MADE FOR EXPANSION GAPS AND FIBRE END POSTS IN COMPUTING LENGTHS OF RAILS SHOWN, DIMENSIONS OF TURNOUT AND ALL COMPONENTS IS FOR A THERMAL, STRESS - FREE CONDITION OF 110° F. ACTUAL EXACT LENGTHS OF RAILS TO BE INSTALLED IS TO BE FIELD - ADJUSTED TO FIT OVERALL TURNOUT DIMENSIONS, THERMAL ADJUSTMENTS, THICKNESS OF WELDS AND VARIATIONS IN COMPONENT RAIL LENGTH.
2. RAIL LAYOUT SHOWN FOR TURNOUT IS TO BE USED IN ALL CASES, EXCEPT WHERE COMPROMISE JOINTS ARE REQUIRED BETWEEN THE FROGS IN A CROSSOVER TRACK. WHEN COMPROMISE JOINTS ARE TO BE USED TO JOIN DIFFERENT RAIL WEIGHTS, THE INSULATED JOINTS IN THE CROSSOVER TRACK SHALL ALWAYS BE OF THE HEAVIER RAIL SECTION. THE DISRUPTIONS OF THE CHANGES IN RAIL LAYOUT WHEN COMPROMISE JOINTS ARE REQUIRED IN THE CROSSOVER TRACK ARE BASED ON AN ASSUMPTION THAT TRACK "H" IS LAID WITH HEAVIER RAIL THAN TRACK "L". CROSSOVER ON 15'-0" TRACK CENTERS; AT LOCATION "A" THE 19'-6" RAIL SHALL BE REPLACED WITH 8'-0" OF THE HEAVIER RAIL AND 11'-6" OF THE LIGHTER RAIL. AT LOCATION "B" THE 21'-3" RAIL SHALL BE REPLACED WITH 7'-0" OF THE HEAVIER RAIL AND 14'-3" OF THE LIGHTER RAIL.
3. IN ADDITION TO NOTE 1, NO ALLOWANCE HAS BEEN MADE IN RAIL LENGTHS TO PROVIDE GAPS NEEDED TO MAKE FIELD WELDS. IN THE FIELD IT MAY BE NECESSARY TO CUT RAIL ENDS TO PROVIDE CORRECT GAPS FOR FIELD WELDS.
4. FURNISH ALL RAIL SHOWN IN SOLID LINES ON THIS DRAWING:
 - (A.) RAILS LONGER THAN 39'-0" SHALL BE CONTINUOUS WELDED RAIL (CWR), TO BE FURNISHED WITH BOTH ENDS LEFT BLANK FOR WELDING IN THE FIELD.
 - (B.) ALL OTHER RAILS SHALL BE 39'-0" OF SHORTER AS SPECIFIED ON THE DRAWING, WITH BOTH ENDS DRILLED PER DETAIL "A".
5. ALL RAIL FURNISHED FOR TURNOUT AND CROSSOVERS SHALL BE "HEAD HARDENED" EXCEPT GUARD RAILS.
6. LOCATIONS OF INSULATED JOINTS ARE SHOWN ON TURNOUT AND CROSSOVER DIAGRAMS WITHOUT TOLERANCES, OR IF TOLERANCES ARE PERMISSIBLE, WITH (+ OR -). ALL INSULATED JOINTS ARE TO BE PROPERLY SUSPENDED IN CRIB AREA BETWEEN TWO TIES LOCATED 4" MINIMUM FROM EDGE OF NEAREST TIE TO EDGE OF INSULATED JOINT. INSULATED JOINT MUST BE INTALLED TO BE CENTERED BETWEEN TWO (2) TIES. FIELD WELDED JOINTS DESIGNATED "FW" SHOULD BE IN CRIB AREA BETWEEN TWO TIES LOCATED 4" MINIMUM FROM EDGE OF NEAREST TIE AND WELDED JOINT. DIMENSIONS SHOWN IN PARENTHESIS (0'-0") ARE EXACT. RAILS FURNISHED FOR THESE LOCATIONS ARE LONGER AND MUST BE FIELD ADJUSTED (CUT) WITHIN TOLERANCES SHOWN IN BRACKETS [0'-0"]. WHEN INSULATED JOINTS WITH TOLERANCES AND FIELD WELDED JOINTS FILL SHORT OF MINIMUM CLEARANCE FROM TIE OR TIE PLATE THE JOINT MAY BE MOVED WITHIN TOLERANCE LIMITS. BONDED INSULATED JOINT ASSEMBLIES AND STOCK RAILS ARE FURNISHED LONGER THAN SHOWN IN PARENTHESIS ON LAYOUT. THESE OR THEIR ADJACENT CONNECTING RAILS MUST BE TRIMMED IN THE FIELD TO FIT.



X	XX-XX-XX	REVISION	XX	XX
REV.	DATE	DESCRIPTION	DES.	ENG.

DRAWN BY: A. CARLOS DATE: 03/31/2011

Narek D. Poo
ASSISTANT DIRECTOR: STANDARDS & DESIGN

William Dacan
DIRECTOR OF ENGINEERING AND CONSTRUCTION

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SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

NO. 10 136 LB. R.H. RBM FROG
TURNOUT AND CROSSOVER
JOINTS LOCATIONS

STANDARD		2921
SCALE:		NONE
REVISION	SHEET	
—	2 OF 15	
CADD FILE:		ES2921-02

IF CONCRETE TIES ARE INSTALLED
AHEAD OF SWITCH POINT, HEAD
BLOCK TIE GAGE PLATE PP WILL
NOT BE INSTALLED.



1. SEE SHEET ES2921-01 FOR TURNOUT DATA AND NOTES
2. SEE SHEET ES2921-04 FOR BILL OF MATERIALS
3. SEE SHEET ES2921-03 FOR TURNOUT



CROSSOVER DATA		
MAIN TRACKS - TANGENT AND PARALLEL CROSSOVER - TANGENT BETWEEN FROGS		
TRACK CENTERS "T"	DISTANCE BETWEEN 1/2" FROG PTS.	
	ON MAIN TRACK "U"	ON CROSSOVER "V"
15'-0"	54'-7 11/16"	55'-4 11/16"
EACH 1"	0.831'	0.835'



BILL OF SWITCH TIES			
PIECES	SIZE	LENGTH	BOARD FEET
24	7" x 9"	9'-0"	1134.00
32	7" x 9"	10'-0"	1680.00
22	7" x 9"	11'-0"	1270.50
16	7" x 9"	12'-0"	1008.00
14	7" x 9"	13'-0"	955.50
16	7" x 9"	14'-0"	1176.00
4	10" x 9"	14'-0" DAP TIES	336.00
24	7" x 9"	14'-10"	1890.00
6	7" x 9"	24'-0"	756.00
TOTAL			TOTAL
158			10206.00

BILL OF MATERIAL	
QTY.	DESCRIPTION
2 PAIR	16'-6" EXTENDED FIELD WELDED TYPE SWITCH POINTS (40'-0" RAIL)
1 PAIR	R.H. SAMSON STOCK RAILS (30'-0")
1 PAIR	L.H. SAMSON STOCK RAILS (40'-0")
2 EACH	NO. 1 SMJ TYPE SWITCH ROD W/BASKET
2 EACH	VERTICAL SWITCH ROD WITH SMJ CLIPS
6 EACH	GAGE PLATE No. P-P
2 EACH	GAGE PLATE No. G-1P
2 EACH	GAGE PLATE No. G-2P
12 EACH	SLIDE PLATE S-8P
8 EACH	SLIDE PLATE S-9P
8 EACH	BRACE SLIDE PLATE S-5P
4 EACH	BRACE SLIDE PLATE S-7P
4 EACH	BRACE SLIDE PLATE S-4P
4 EACH	HEEL PLATE P-5RH
4 EACH	TURNOUT PLATES P-10 THRU P-21
2 EACH	PLATES P-22 THRU P-29
2 EACH	No.10 R.B.M. FROG - 22'-6"
2 EACH	FROG PLATES No. FP-1 THRU FP-9
2 EACH	FROG PLATES No. FCP-1 THRU FCP-3
2 EACH	FROG GAGE PLATES FG-1P THRU FG-3P
4 EACH	16'-0" U-69 ADJUSTABLE GUARD RAIL W/PLATES
10 EACH	D.I. RAIL HOLD DOWN CLIPS E-3706
4 EACH	D.I. RAIL HOLD DOWN CLIPS E-3707
4 EACH	D.I. RAIL HOLD DOWN CLIPS E-3708
228 PCS.	TIE PLATES
912 PCS.	"PANDROL", OR EQUAL, SCREW SPIKES 15/16 " DIA. X 6" No. 5760
456 PCS.	"PANDROL", OR EQUAL, "E"-CLIP TYPE E-2055 (GALVANIZED)
24 PCS.	"PANDROL", OR EQUAL, "E"-CLIP TYPE E-2063 (GALVANIZED)
12 PCS.	BOLTLESS ADJUSTABLE BRACE ASSEMBLY
2 EACH	23'-6" RAIL
2 EACH	30'-2" RAIL
6 EACH	39'-0" RAIL
2 EACH	EPOXY BONDED PREFABRICATED MITRE CUT INSULATED JOINT (30'-4")
2 EACH	EPOXY BONDED PREFABRICATED MITRE CUT INSULATED JOINT (40'-9")
2 EACH	EPOXY BONDED PREFABRICATED MITRE CUT INSULATED JOINT (46'-6")

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		 ASSISTANT DIRECTOR: STANDARDS & DESIGN						SCALE: $\frac{3}{16}" = 1'-0"$		REVISION SHEET	
		 DIRECTOR OF ENGINEERING AND CONSTRUCTION						NO. 10 136 LB. R.H. RBM FROG CROSSOVER		4 OF 15	
								LAYOUT AND BILL OF MATERIALS		CADD FILE: ES2921-04	
X XX-XX-XX		REVISION		XX XX							
REV. DATE		DESCRIPTION		DES. ENG.							

1. FROG ANGLE 5'43'-29".
2. RAIL USED IN FABRICATION OF FROG TO BE 136 LB. "HIGH STRENGTH".
3. RAILBOUND MANGANESE STEEL FROG PER CURRENT AREMA. PLAN NUMBERS 621 AND 623 WITH EXPLOSIVE HARDENED MANGANESE HIGH INTEGRITY CASTING PER CURRENT AREMA. SPECIFICATIONS AND MODIFIED FOR ARM LENGTHS AND PLATES WITH PANDROL TYPE FASTENERS.
4. ALL FROG PLATES SHALL BE STAMPED IN 1/2" CHARACTERS TO INDICATE MANUFACTURER, FROG NUMBER, HAND OF TURNOUT, RAIL SECTION AND PLATE NUMBER. MARK TO BE STAMPED ON SAME END OF ALL FROG PLATES.
5. FOR DETAILS OF FROG PLATES SEE ES2921-07.
6. WORKMANSHIP AND MATERIALS SHALL BE PER CURRENT AREMA. SPECIFICATIONS FOR "SPECIAL TRACKWORK", EXCEPT AS OTHERWISE SPECIFIED.
7. ANY CONSTRUCTION DETAILS NOT SHOWN SHALL BE IN ACCORDANCE WITH CURRENT AREMA. RECOMMENDED PRACTICE.
8. FROG PLATES ARE DESIGNED TO BE INSTALLED PERPENDICULAR TO MAIN TRACK.
9. BODY BOLTS TO BE 1 7/8" DIA. H.T.C.S. PER AREMA SPECIFICATIONS.
10. TOE AND HEEL BLOCKS AND BOLTS PER AREMA SPECIFICATIONS.
11. RAIL ENDS TO BE CUT AT 45 DEGREE ANGLE AT JOINT WITH FROG CASTING.



NOTE:
MUST HAVE
OR BEVEL
1/4" DOWN

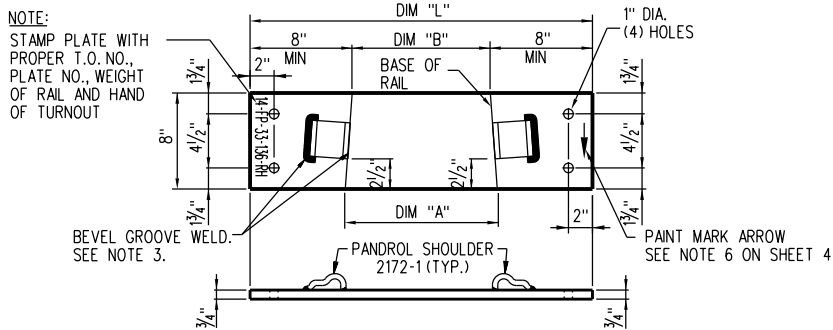
— NOTE:
MUST HAVE $\frac{3}{8}$ " RADIUS
OR BEVEL $\frac{3}{16}$ " BACK,
 $\frac{1}{4}$ " DOWN.

SCALE: NONE

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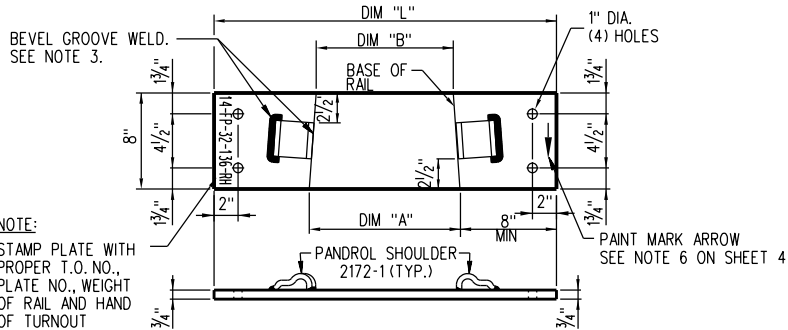


STANDARD		2921
SCALE:		1" = 1'-0"
REVISION	SHEET	
-	5 OF 15	
CADD FILE:		ES2921-05



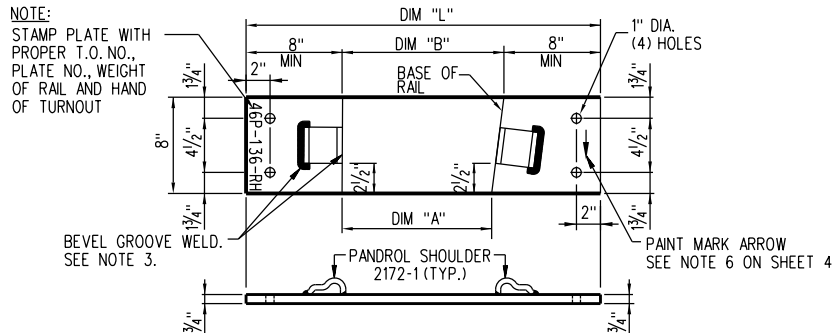
FROG PLATE - FP-1

3/4" x 8" x DIM "L" - FLAT - W/PANDROL CLIPS



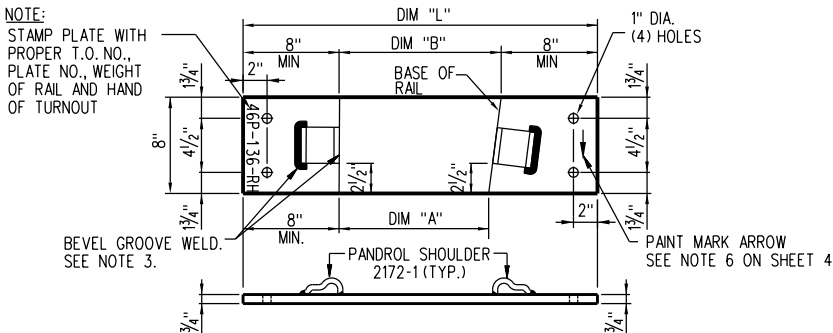
FROG PLATE - FP-4

3/4" x 8" x DIM "L" - FLAT - W/PANDROL CLIPS



FROG PLATE - FP-2 & FP-3

3/4" x 8" x DIM "L" - FLAT - W/PANDROL CLIPS



FROG PLATE - FP-5 THRU FP-9

3/4" x 8" x DIM "L" - FLAT - W/PANDROL CLIPS

NOTE:

1. FOR FROG DETAILS AND NOTES SEE SHEET 8.

NOTE "A"

PLATES FP-1 THRU FP-9 ARE TO BE LAYED OUT AND PROPERLY SPACED AND MARKED OFF FROM UNDER FROG TO INSURE LOCATION OF PANDROL SHOULDERS

NOTE "B"

SPECIAL FROG PLATES FP-1, FP-4 AND FP-7 ARE DESIGNED TO BE WELDED TO FROG GAGE PLATES. FOR MANUFACTURING DETAILS AND INSTALLATION PROCEDURES SEE DWG. NO. 2921-16

DIMENSION TABLE

• PLATE	DIM "A"	DIM "B"	DIM "L"	Pits REQ'D.
• FP-1	SEE NOTE "A"		2'-6½"	1 EA.
• FP-2	SEE NOTE "A"		2'-4½"	1 EA.
• FP-3	SEE NOTE "A"		2'-8"	1 EA.
• FP-4	SEE NOTE "A"		2'-9½"	1 EA.
• FP-5	SEE NOTE "A"		2'-8"	1 EA.
• FP-6	SEE NOTE "A"		2'-10"	1 EA.
• FP-7	SEE NOTE "A"		3'-0"	1 EA.
• FP-8	SEE NOTE "A"		2'-4½"	1 EA.
• FP-9	SEE NOTE "A"		2'-6½"	1 EA.

*NOTES: DIMENSIONS FOR LOCATION OF PRESSED STEEL SHOULDERS TO BE VERIFIED USING FINISHED FROG AS A TEMPLATE BEFORE WELDING SHOULDERS IN PLACE.

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						DRAWN BY: A. CARLOS	DATE: 03/31/2011		
X	XX-XX-XX	REVISION	XX	XX					
REV.	DATE	DESCRIPTION	DES.	ENG.					

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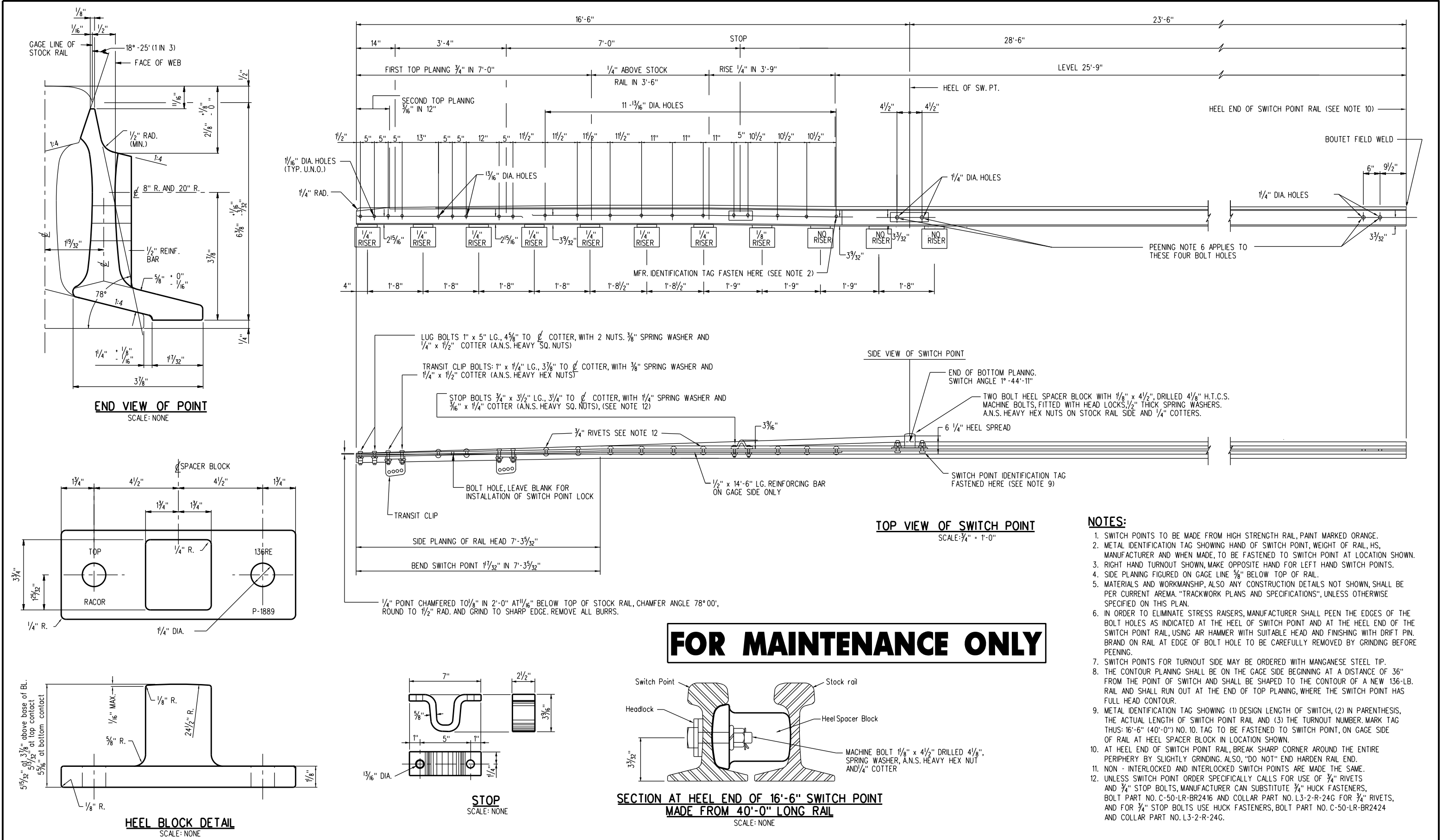
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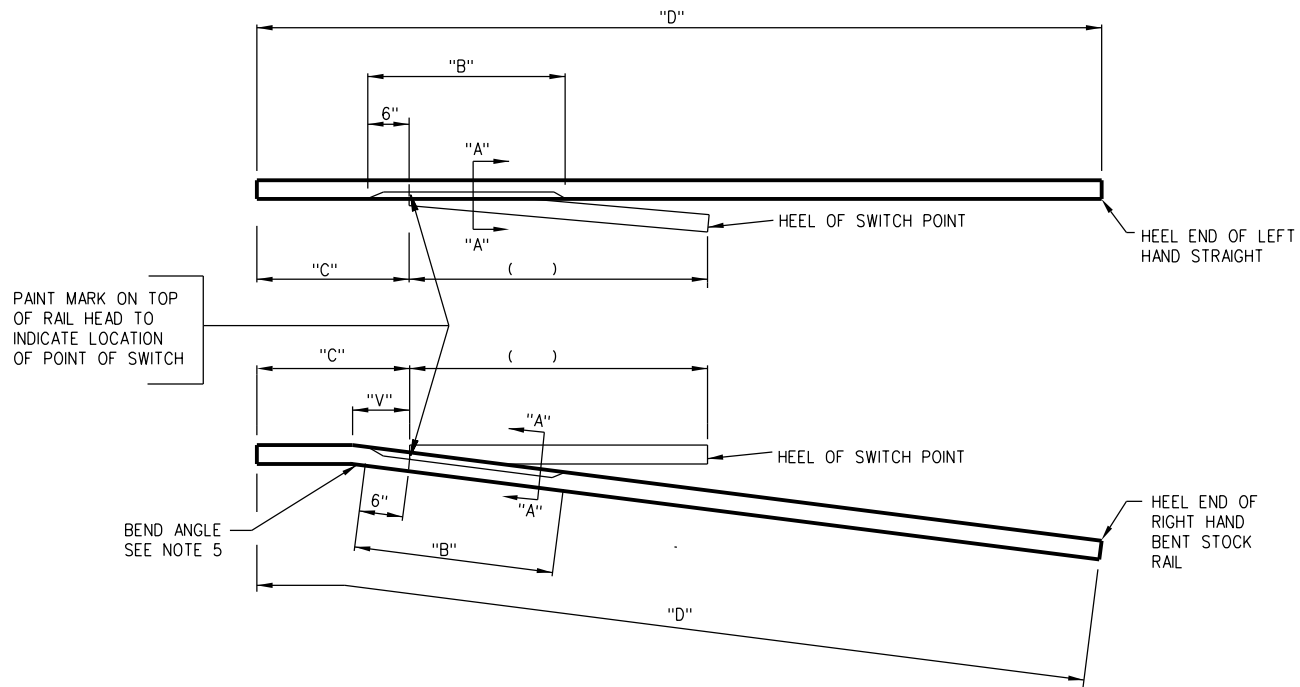
ENGINEERING STANDARDS

NO. 10 136 LB. R.H. RBM FROG
GAGE PLATE DETAILS AND DIMENSION TABLE

STANDARD	2921
SCALE:	1 1/2" = 1'-0"
REVISION	SHEET
-	6 OF 15
CADD FILE:	ES2921-06



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						ASSISTANT DIRECTOR: STANDARDS & DESIGN				SCALE: AS NOTED			
						DIRECTOR OF ENGINEERING AND CONSTRUCTION				NO. 10 SPLIT SWITCH POINT DETAILS		REVISION SHEET - 8 OF 15	
				X XX-XX-XX		REVISION				XX XX		CADD FILE: ES2921-08	
				REV.		DATE		DESCRIPTION		DES.		ENG.	



STOCK RAILS SHOWN ARE FOR "RIGHT HAND TURNOUT"

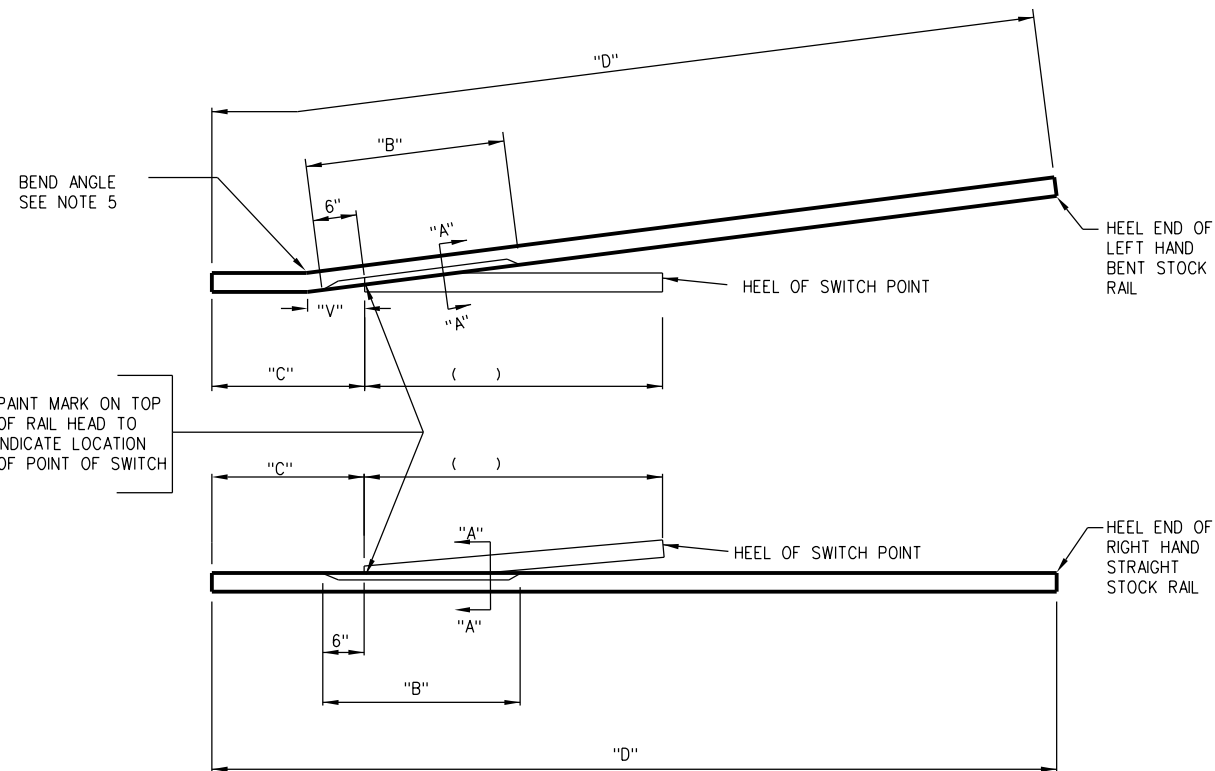
NOTES:

1. INFORMATION OR DIMENSIONS NOTED THUS, () TO BE FURNISHED BY FIELD FORCES FOR CORRECT ORDERING OF REPLACEMENT STOCK RAILS.
2. UNDERCUT STOCK RAILS TO BE MADE OF HIGH STRENGTH RAIL WITH ENDS BEVELED PER CURRENT AREMA PLAN NO. 1005.
3. FOR STOCK RAIL UNDERCUT LENGTH "B", PER SECTION "A-A", LENGTH "C" AND LENGTH "D" FOR NEW SAMSON SWITCH INSTALLATIONS OR REPLACEMENT ORDERS SEE TABLE BELOW

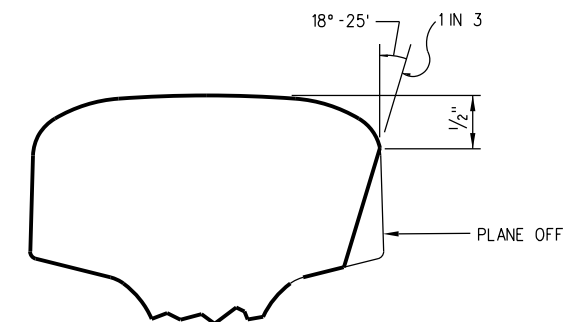
LENGTHS B, C, & D FOR 136 LB. RAIL									
Sw. Pt. LENGTH	T.O. No.	STOCK RAIL	B	FOR FIRST (NEW) INSTALL.			FOR REPLACE. ORDERS ONLY		
				C	D	END DRILL. SEE NO. 10	C	D	END DRILL. SEE NO. 10
16'-6"	10	STR.	9'-6"	10'-0"	40'-0"	NONE	10'-0"	52'-0"	NONE
16'-6"	10	BENT	9'-6"	10'-0"	40'-0"	HEEL END ONLY	10'-0"	52'-0"	HEEL END ONLY

4. BEND ANGLE IN BENT STOCK RAIL TO BE AS FOLLOWS:

Sw. Length	BEND ANGLE	V (Vertex Dist.)
16'-6"	1° -44'-11" or 1" in 2'-9"	10 ⁵ / ₁₆ "

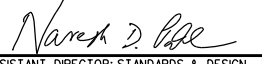
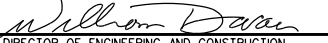


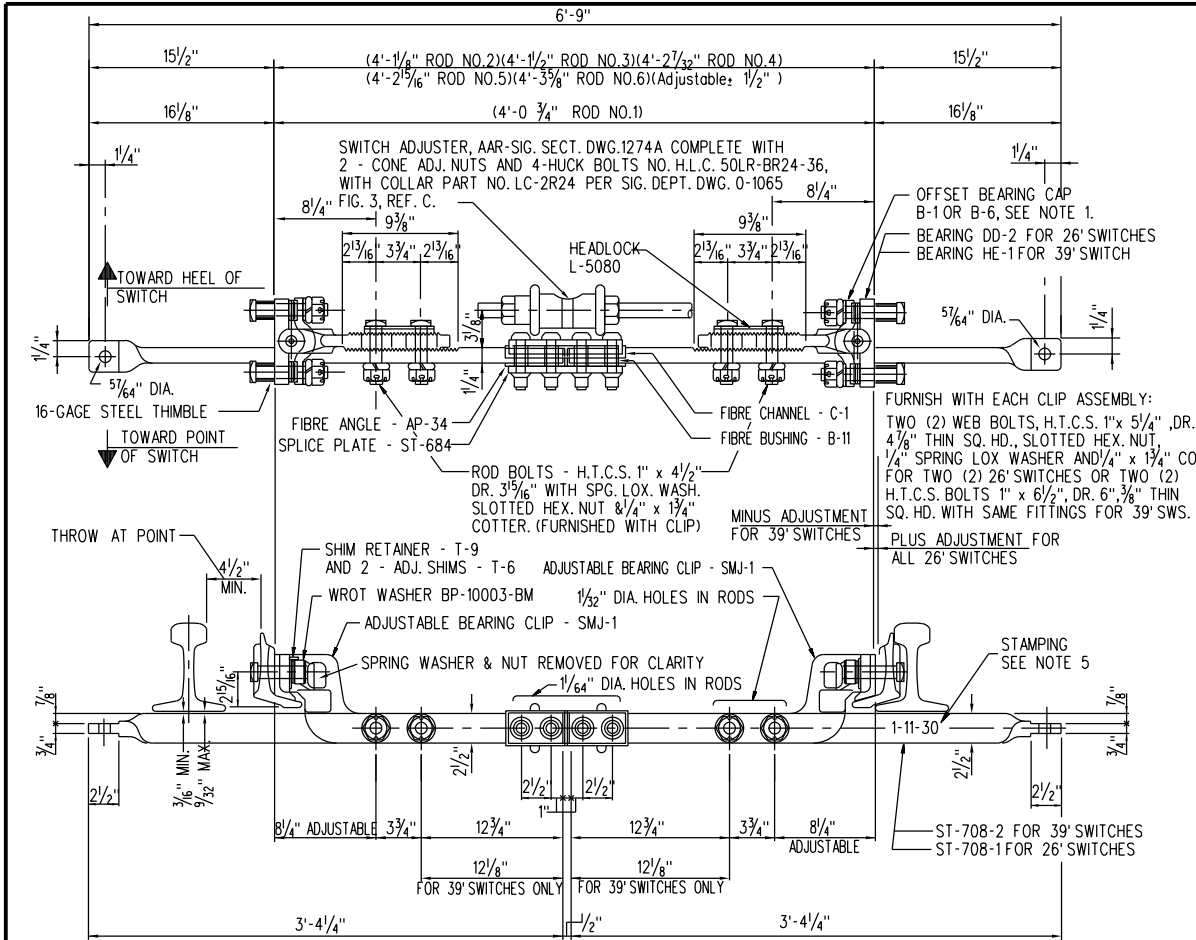
STOCK RAILS SHOWN ARE FOR "LEFT HAND TURNOUT"



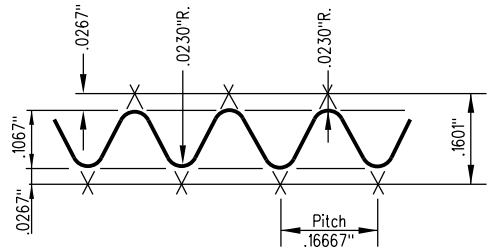
SECTION "A-A"

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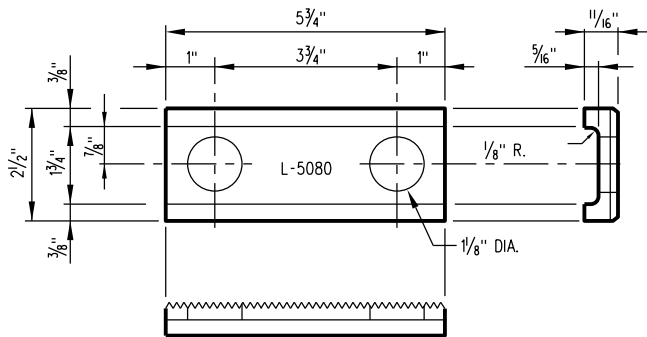
				DRAWN BY: A. CARLOS	DATE: 03/31/2011	SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.		 METROLINK SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012		ENGINEERING STANDARDS		STANDARD 2921
				 ASSISTANT DIRECTOR: STANDARDS & DESIGN						SCALE: NONE		REVISION SHEET
				 DIRECTOR OF ENGINEERING AND CONSTRUCTION						NO. 10 STRAIGHT OR CURVED UNDERCUT STOCK RAILS		9 OF 15
												CADD FILE: ES2921-09



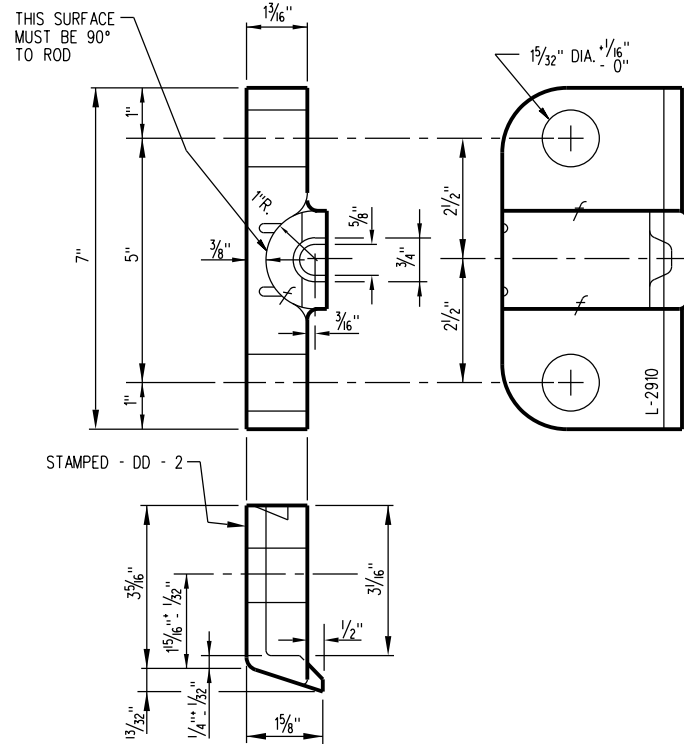
NO. 1 SWITCH ROD ASSEMBLY
(SHOWN FOR MACHINE ON RIGHT) SEE NOTE 2



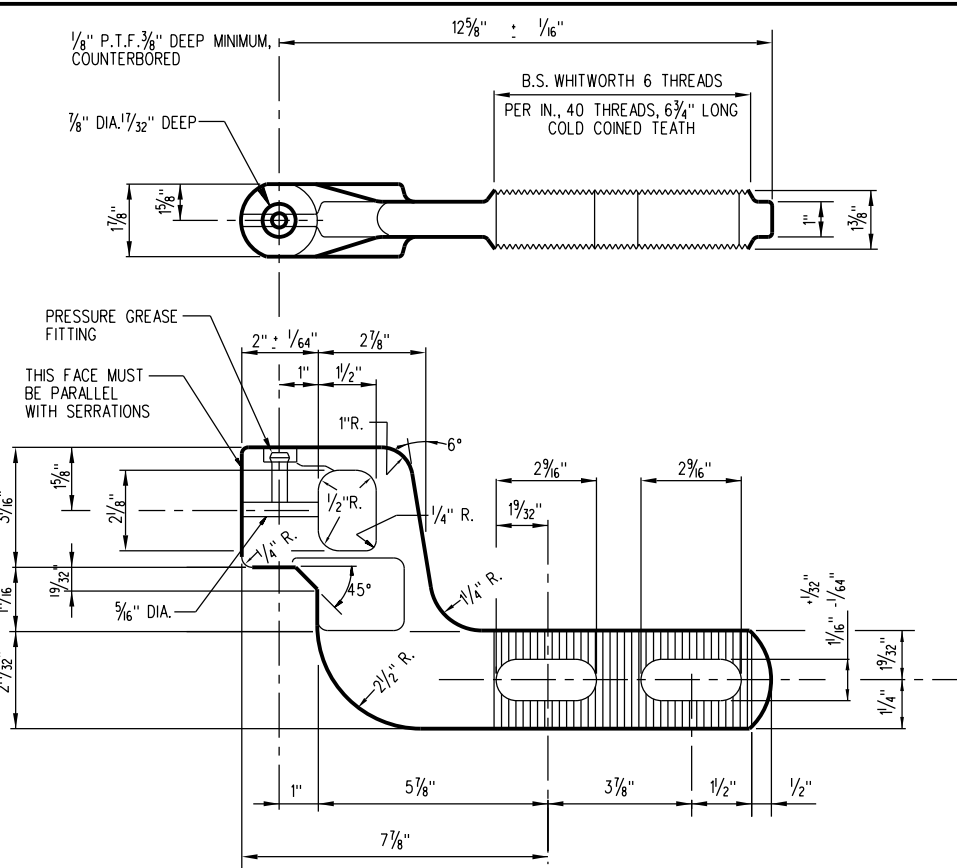
ENLARGED PROFILE OF SERRATIONS
SCALE: NONE



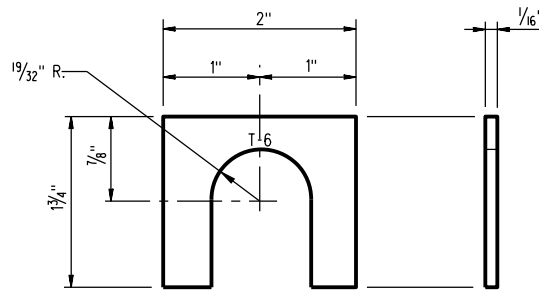
HEADLOCK L-5080
SCALE: 6" = 1'-0"



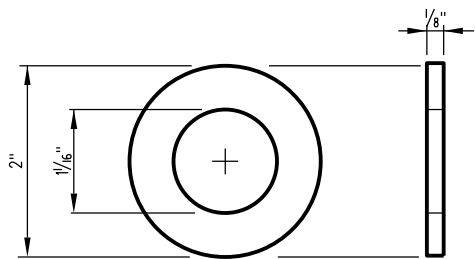
BEARING - DD - 2
SCALE: 6" = 1'-0"



ADJUSTABLE BEARING CLIP - SMJ - 1
SCALE: 3" = 1'-0"



ADJUSTABLE SHIM - T - 6
SCALE: FULL



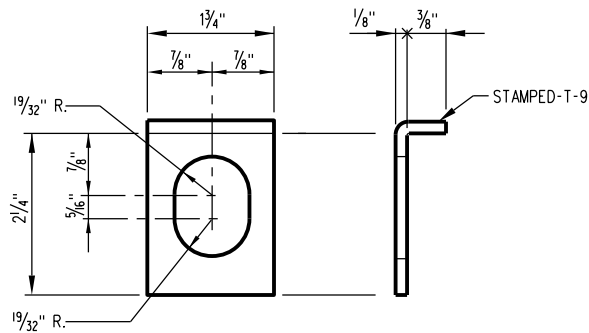
WROT WASHER - BP - 10003 - BM
SCALE: FULL

LENGTH OF SWITCH	BILL OF MATERIAL FOR 1 TYPE "SMJ" SWITCH ROD ASSEMBLY				
	QTY.	PART NUMBER	MATERIAL SPECIF.	DESCRIPTION	DETAIL REMARKS
All	2	SMJ-1	S.A.E.1020-For.Stl.	Bearing Clip	MACHINED PER DETAIL
All	4		H.T.C.S.	Web Bolt	SEE NOTE
26'	2	DD-2	Malleable Iron	Bearing	PAT. NO. L-2910, MACHINED PER DETAIL
39'	2	HE-1	Malleable Iron	Bearing	PAT. NO. L-2915, MACHINED PER DETAIL
26'	2	B-1	S.A.E.1045-For.Stl.	Offset Bearing Cap	HEAT TREATED - BRINELL -.225 to .250
39'	2	B-6	S.A.E.1045-For.Stl.	Offset Bearing Cap	HEAT TREATED - BRINELL -.225 to .250
26'	2	B-6	S.A.E.1045-For.Stl.	Offset Bearing Cap	HEAT TREATED - BRINELL -.225 to .250
All	4	T-9	S.A.E.1020	Shim Retainer	1/8" x 1 3/4" x 2 1/4"
All	12	T-6	Stainless Steel	Adjustment Shim	1/16" x 2" x 1 1/8"
All	4	BP-10003-BM	Wrot Iron	Wrot Washer	1 1/16" I.D. x 2" O.D. x 1/8" THICK
All	4		H.T.C.S.	Rod Bolt	1" x 4 1/2" DR. 3 3/8" REG. SQ. HD. SLOTTED HEX NUT
All	4		Steel	Spg. Lox Washer	For 1" Rod Bolts
All	4		Steel	Cotter	1/4" x 1 3/4" FOR ROD BOLTS
All	2		Steel	Grease Fitting	PRESSURE - FOR BEARING CLIP
All	2	L-5080	Malleable Iron	Headlock	FOR ROD BOLTS
26'	2		16-Gage Steel	Thimble	1 1/2" LONG - FOR SHIPPING
39'	2		16-Gage Steel	Thimble	2 1/2" LONG - FOR SHIPPING

Material for Vertical Rod

16'-6"	1			Vertical Rod	Use one-ST-708-1
39'	1			Vertical Rod	Use one-ST-708-1 TWIST, MACHINE AND DRILL END HOLE
					Use one-ST-708-2
					Use one-ST-708-2 TWIST, MACHINE AND DRILL END HOLE

All	4		High Strength Steel	Conn. & Insul. Bolt	HIGH FASTENER NO. HLC-50LR- BR24-36
All	4		Low Carbon Steel	Collar	HUCK FASTENER NO. LC-2R24
All	1	ST-684	H.R. Mild Steel	Splice Plate	1/2" x 2 1/2" x 9/2" FOR INSULATION
All	2	AP-34	AAR-Sig.Sec.13-52	Angle	1/2" x 2 1/2" x 4 1/8" HARD FIBRE - PARAFIN COATED
All	4	B-11	AAR-Sig.Sec.13-52	Bushing	1" O.D. HARD FIBRE - PARAFIN COATED
All	1	C-1	AAR-Sig.Sec.13-52	Channel	1/8" x 1" x 10" HARD FIBRE - PARAFIN COATED
All	1		Malleable Iron	Switch Adjuster	
All	2		Malleable Iron	Cone Adj. Nut	FOR 1/4" THROW RODS



SHIM RETAINER - T - 9
SCALE: FULL

NOTES:

- WHILE THIS PLAN SHOWS BEARING CLIPS ASSEMBLED TO SWITCH ROD, THIS CLIP ASSEMBLY MAY BE REQUISITIONED AND ORDERED SEPARATELY. WHEN A BEARING CLIP ASSEMBLY ONLY IS WANTED, REQUISITIONS AND ORDERS SHALL SPECIFY RAIL SECTION AND LENGTH OF SWITCH. ALL PARTS SHOWN IN BILL OF MATERIAL SHALL BE FURNISHED WITH THESE CLIP ASSEMBLIES. WHEN AN INDIVIDUAL PART IS REQUIRED IT SHALL BE ORDERED BY PART NUMBER.
- WHEN COMPLETED RODS ARE ORDERED THEY SHALL BE ASSEMBLED AND INCLUDE ALL PARTS SHOWN IN BILL OF MATERIAL. REQUISITIONS AND ORDERS SHALL SPECIFY RAIL SECTION AND LENGTH OF SWITCH. ON INTERLOCKED SWITCHES WITH AUXILIARY THROW ROD, MACHINE SIDE (RIGHT OF LEFT) SHOULD ALSO BE SPECIFIED.
- TWO WEB BOLTS SHALL BE FURNISHED WITH EACH CLIP ASSEMBLY AS CALLED FOR BY NOTE IN TOP VIEW OF ROD ASSEMBLY. WHEN ROD IS USED ON 11'-0" AND 16'-6" SWITCHES THE 1/4" THICK SPRING WASHER SHOULD BE REPLACED WITH A 3/8" THICK SPRING WASHER BY THE STOREKEEPER OR FIELD FORCES, TO BRING COTTER WITHIN THE LIMITS OF SLOT IN WEB BOLT NUTS.
- MATERIALS AND WORKMANSHIP SHALL MEET CURRENT AREMA SPECIFICATIONS FOR SPECIAL TRACKWORK UNLESS OTHERWISE SPECIFIED.
- VERTICAL SWITCH ROD SHALL BE PLAINLY STAMPED TO INDICATE SWITCH THAT ROD ASSEMBLY CAN BE USED UPON. IDENTIFICATION MARKING WILL BE AS FOLLOWS:
1-39 FOR USE ON 39'-0" SWITCHES, 132 LB. AND 136 LB. RE RAIL SECTIONS.
1-11-30 FOR USE ON 11'-0" TO 30'-0" SWITCHES, 115 LB., 119 LB., 131 LB., 132 LB. AND 136 LB. RE RAIL SECTIONS.

FOR MAINTENANCE ONLY

ENGINEERING STANDARDS

STANDARD 2921

NO. 10 SWITCH ROD DETAILS

SCALE: AS NOTED

REVISION SHEET 10 OF 15

CADD FILE: ES2921-10

REV.	DATE	DESCRIPTION	DES.	ENG.
X	XX-XX-XX	REVISION	XX	XX

DRAWN BY: A. CARLOS	DATE: 03/31/2011
ASSISTANT DIRECTOR: STANDARDS & DESIGN	
DIRECTOR OF ENGINEERING AND CONSTRUCTION	

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ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012



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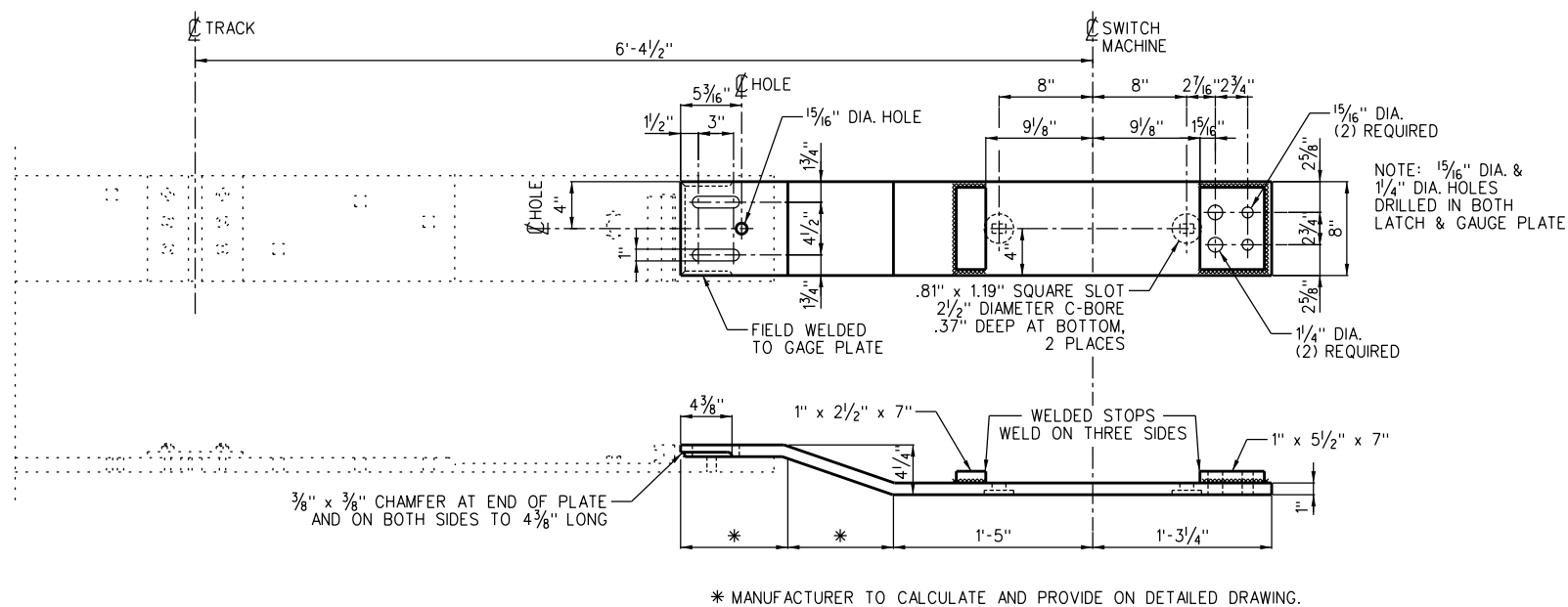
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ENGINEERING STANDARDS

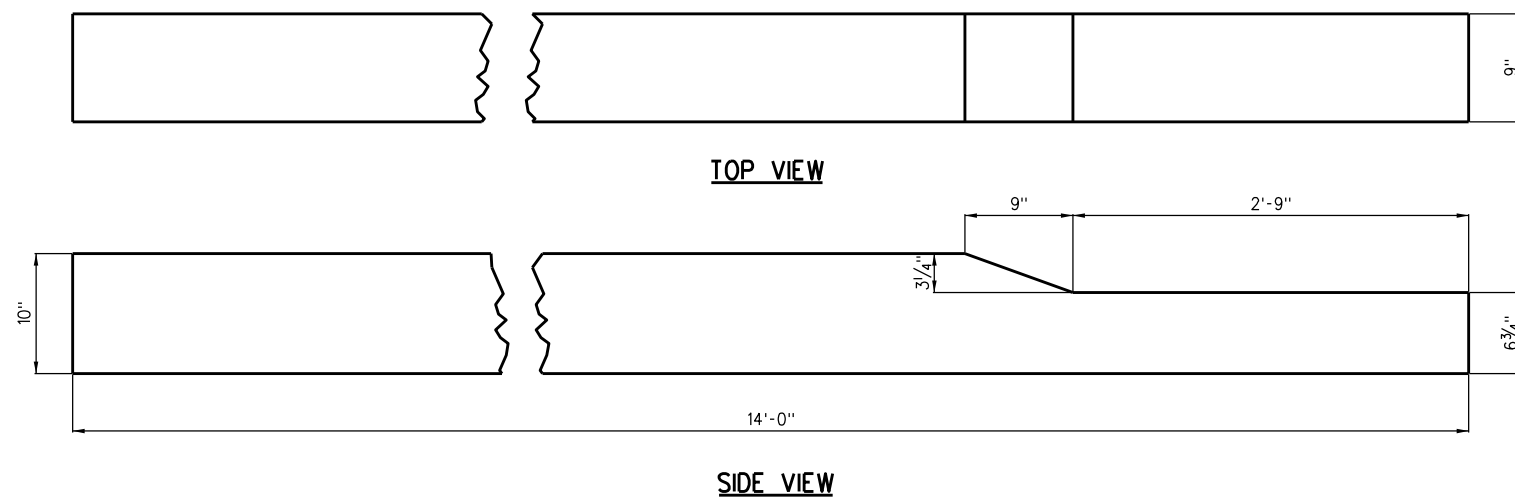
NO. 10 SWITCH ROD MISCELLANEOUS DETAILS

STANDARD		2921
SCALE: 6" = 1'-0"		
REVISION	SHEET	
-	11 OF 15	
CADD FILE:		ES2921-11

NOTE:
SEE SHEET 15 FOR NOTES.



EXTENSION PLATE
(2 PCS. REQ'D. AS SHOWN)



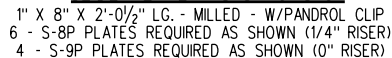
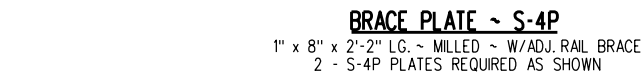
TIES SHALL BE MADE OF DOUGLAS FIR OR GUM AND TREATED AFTER FRAMING.

DAP TIE
(2 PCS. REQ'D. AS SHOWN)

US&S M23-A SWITCH MACHINE MUST BE FURNISHED
WITH FINISHED MOUNTING LUGS.

FOR MAINTENANCE ONLY

				DRAWN BY: A. CARLOS DATE: 03/31/2011		SCERRA ENGINEERING STANDARDS ARE INTENDED FOR SCERRA APPROVED USES ONLY. FOR NON-SCERRA APPROVED USES: SCERRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCERRA. ALL RIGHTS RESERVED.		 METROLINK®		ENGINEERING STANDARDS		STANDARD 292	
				 ASSISTANT DIRECTOR: STANDARDS & DESIGN						SCALE: 1/2" = 1'-0"		292	
				 DIRECTOR OF ENGINEERING AND CONSTRUCTION						NO.10 EXTENSION PLATE AND DAP TIE DETAILS FOR M-23A SWITCH MACHINE		REVISION SHEET	
X XX-XX-XX		REVISION		XX XX								12 OF 15	
REV. DATE		DESCRIPTION		DES. ENG.								CADD FILE: ES2921-12	



SWITCH PLATES

FOR MAINTENANCE ONLY



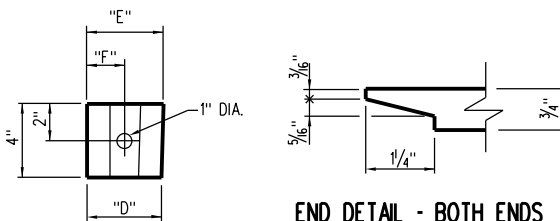
1. PLATES TO BE MADE OF MILD ROLLED STEEL.
2. EACH PLATE TO BE PLAINLY STAMPED WITH PLATE NO. AND 136 (WEIGHT OF RAIL) & HAND OF TURNOUT (R.H. OR L.H.)
3. THE PANDROL TYPE WELD - ON PRESSED STEEL SHOULDER, MADE FROM MILD STEEL, TO BE PURCHASED FROM PANDROL INTERNATIONAL OR APPROVED ALTERNATE MEETING PANDROL'S DESIGN SPECIFICATIONS.
4. THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO THE PLATE. ANY WELD PROJECTING BEYOND THE VERTICAL FACE OF SHOULDER IN THE AREA OF THE RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.
5. THE PLATES AS SHOWN ARE FOR A 136 LB., NO. 10 RIGHT HAND TURNOUT. FOR A LEFT HAND TURNOUT, PLATES P-10 THRU P-29 INCLUSIVE AND FROG PLATES AND GAGE PLATES FG-1P THRU FG-3P ARE TO BE OPPOSITE.
6. DIRECTION OF ARROW SHOWN IS AN EXAMPLE ONLY. USING SHEET NO. 2921-03 AS A GUIDE, PAINT MARK EACH PLATE WITH AN ARROW POINTING TOWARD SWITCH POINT.

1. SET PRESSED STEEL SHOULDER FLUSH AGAINST LINE OF BASE OF RAIL OR SHOULDER OF MILLED PLATE AS SHOWN AND WELD WITH
2. - PASS $\frac{3}{8}$ " - WELD.
STOP PLATE FOR ADJUSTABLE RAIL BRACE TO BE SET FLUSH WITH
3. SHOULDER OF MILLED PLATE AS SHOWN AND WELD WITH 3 - PASS $\frac{1}{2}$ " - FILLET WELD.
SHOULDERS AND STOPS ARE TO BE CAREFULLY WELDED TO PLATE. NO WELD SHALL PROJECT BEYOND THE VERTICAL EDGE OF THE UNWELDED FOURTH SIDE OF THE STOP PLATE OR VERTICAL FACE
4. OF SHOULDER IN THE AREA OF THE RAIL SEAT. ANY WELD PROJECTING BEYOND THE FACE OF THE STOP OR SHOULDER MUST BE MACHINED OFF TO PROVIDE CLEAR DIMENSION CALLED FOR.
FOR WELDING PRESSED STEEL SHOULDERS OR PLATE STOPS USE THE FOLLOWING:
 - A. ELECTRODE $\frac{15}{32}$ INCH, WELDING SPEC. 7018XLM.
 - B. ELECTRODE $\frac{3}{16}$ INCH, WELDING SPEC. 7018XLM.

C. WIRE, WELDING $\frac{3}{32}$ INCH, NR203, $\frac{1}{2}$ NICKEL FLUX CORE.
OTHER WIRE OR ELECTRODES MEETING SPECIFICATIONS AS CALLED FOR, APPROVED BY DIRECTOR OF ENGINEERING, MAY BE USED.

PLATE	DIM "A"	DIM "B"	DIM "L"	Pits REQ'D.
P-16	17 $\frac{1}{2}$ "	17 $\frac{1}{2}$ "	2'-9 $\frac{1}{2}$ "	2 EA.
P-17	17 $\frac{15}{16}$ "	18 $\frac{1}{4}$ "	2'-10"	2 EA.
P-18	18 $\frac{29}{32}$ "	19 $\frac{3}{32}$ "	2'-11"	2 EA.
P-24	17 $\frac{1}{2}$ "	18 $\frac{1}{4}$ "	2'-10 $\frac{1}{2}$ "	1EA.
P-27	17 $\frac{3}{8}$ "	18 $\frac{3}{16}$ "	2'-10 $\frac{1}{2}$ "	1EA.
P-28	19 $\frac{1}{32}$ "	20 $\frac{5}{8}$ "	3'-0"	1EA.

PLATE	DIM "A"	DIM "B"	DIM "L"	Pits REQ'D.
P-19	20 $\frac{1}{32}$ "	19 $\frac{1}{32}$ "	3'-0"	2 EA.
P-20	21 $\frac{1}{8}$ "	20 $\frac{1}{4}$ "	3'-1"	2 EA.
P-21	22 $\frac{1}{32}$ "	21 $\frac{1}{4}$ "	3'-2"	2 EA.
P-22	22 $\frac{1}{16}$ "	21 $\frac{1}{16}$ "	3'-2 $\frac{1}{2}$ "	1 EA.
P-23	20 $\frac{1}{16}$ "	19 $\frac{1}{16}$ "	3'-0 $\frac{1}{2}$ "	1 EA.
P-29	22 $\frac{1}{32}$ "	21 $\frac{1}{32}$ "	3'-2"	1 EA.



END DETAIL - BOTH ENDS

HOLD DOWN CLIP FOR PLATES P-10 THRU P-15
HOLD DOWN CLIP FOR PLATES P-24 THRU P-26

					DRAWN BY:	A. CARLOS	DATE:	03/31/2011
					 ASSISTANT DIRECTOR: STANDARDS & DESIGN			
X	XX-XX-XX	REVISION	XX	XX	 DIRECTOR OF ENGINEERING AND CONSTRUCTION			
REV.	DATE	DESCRIPTION	DES.	ENG.				

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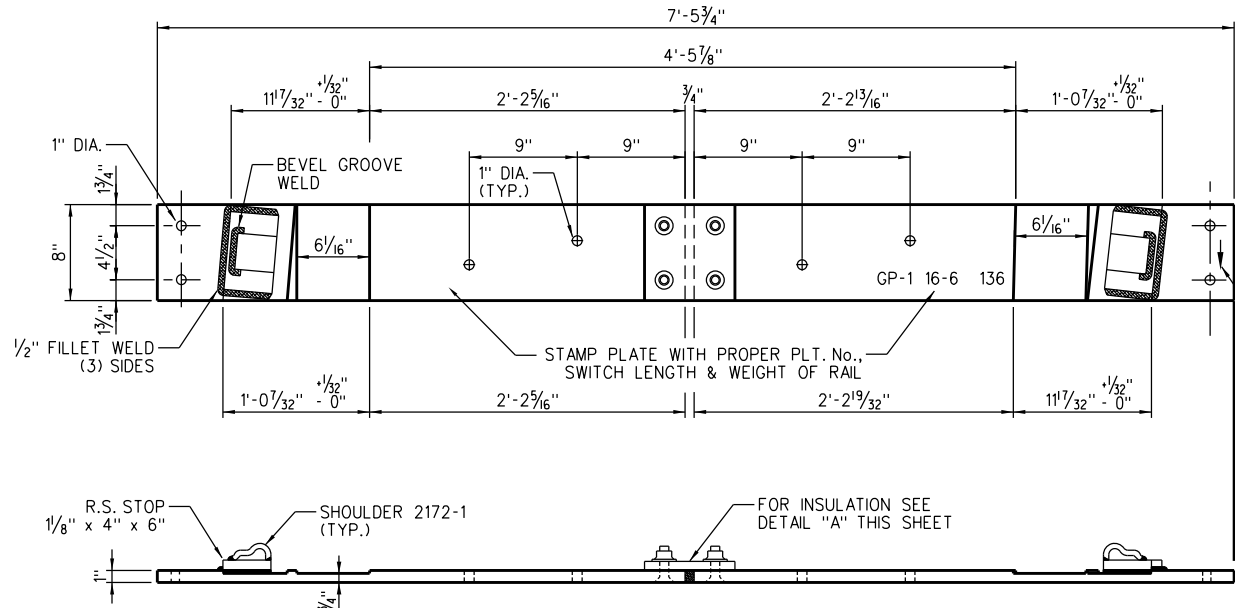
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS

NO. 10 TURNOUT AND SWITCH PLATE DETAILS

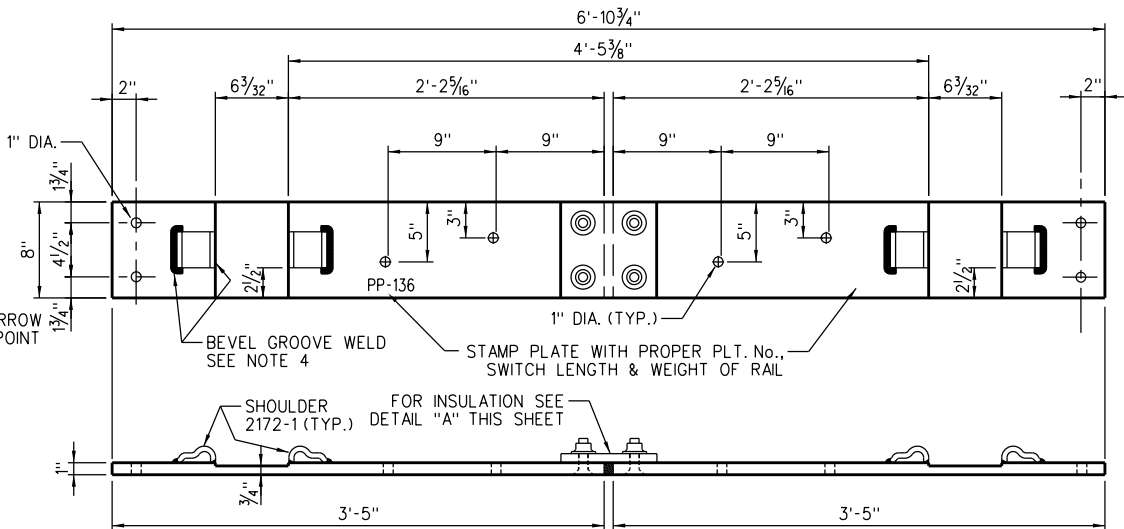
STANDARD		2921
SCALE:		$1\frac{1}{2}'' = 1'-0''$
REVISION	SHEET	
-	13 OF 15	
CADD FILE:		ES2921-13

- NOTES:**
1. PLATES TO BE MADE OF MILD ROLLED STEEL.
 2. THE PANDROL TYPE WELD - ON, PRESSED STEEL SHOULDER, MADE OF MILD STEEL TO BE PURCHASED FROM APPROVED SUPPLIER MEETING DESIGN SPECIFICATIONS.
 3. THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO GAGE PLATES. ANY WELD PROJECTING BEYOND THE VERTICAL FACE OF SHOULDER IN THE AREA OF THE RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.
 4. THE PLATES AS SHOWN FOR A 136 LB., NO. 10 RIGHT HAND HAND OPERATED TURNOUT. FOR A LEFT HAND TURNOUT, PLATES ARE TO BE OPPOSITE.
 5. FOR EXTENSION PLATE AND DAP TIE DETAILS SEE SHEET 2921-13.

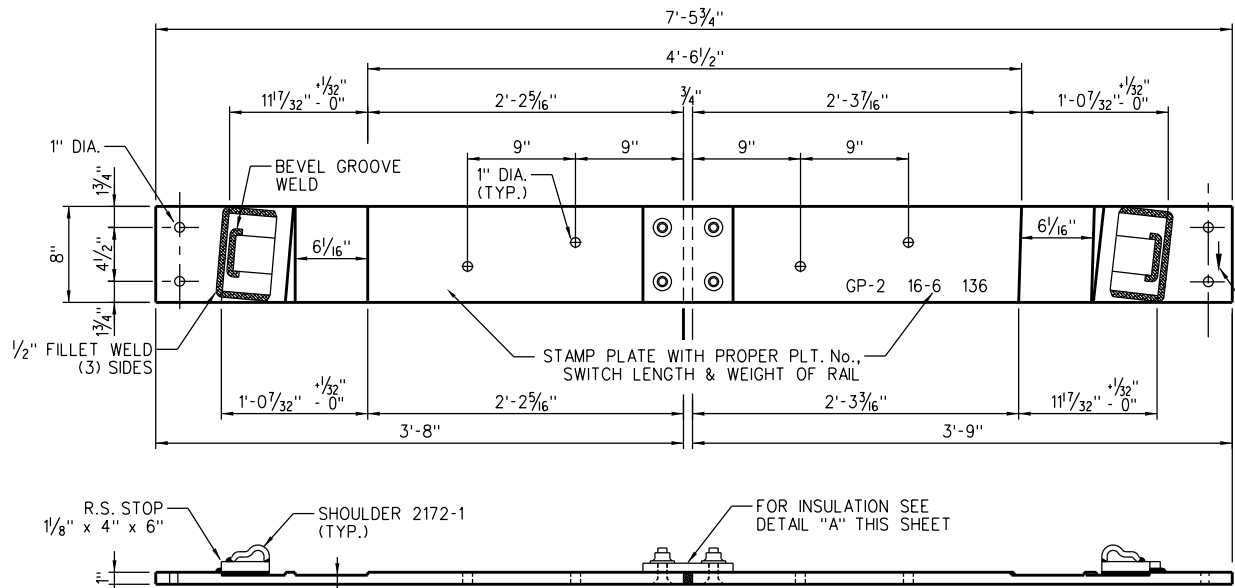


INSULATED GAGE PLATE GP-1 - USED AT POINT OF SWITCH
1" x 8" - MILLED - W/ INSULATION & ADJ. RAIL BRACES
(1 PC. REQ'D AS SHOWN) (SCALE: 1/2" = 1'-0")

NOTE:
SERRATED WASHER AND BRACE PLATE
NOT SHOWN FOR CLARITY.

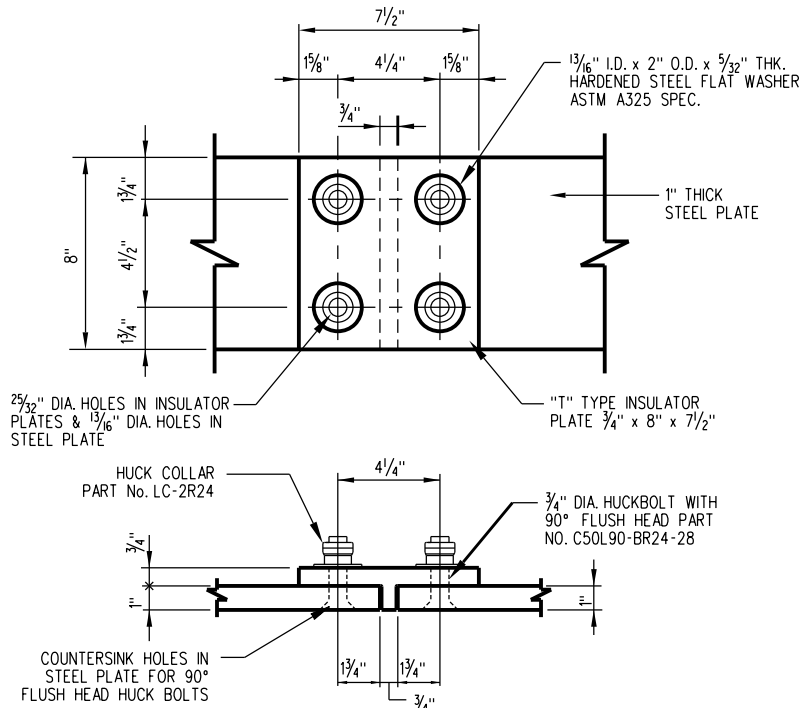


PANDROLIZED INSULATED GAGE PLATE PP
1" x 8" - FLAT - W/ INSULATION (3 PC. REQ'D AS SHOWN)
(SCALE: 1/2" = 1'-0")

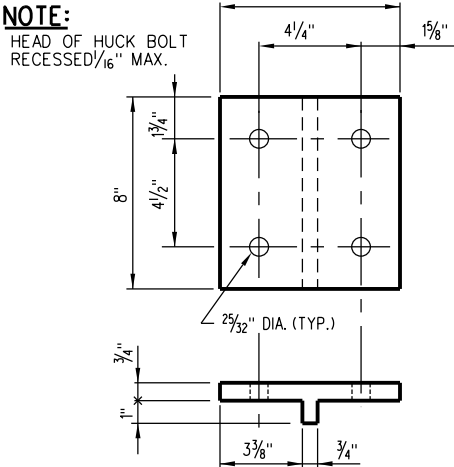


INSULATED GAGE PLATE GP-2 - USED AT POINT OF SWITCH
1" x 8" - MILLED - W/ INSULATION & ADJ. RAIL BRACES
(1 PC. REQ'D AS SHOWN) (SCALE: 1/2" = 1'-0")

NOTE:
SERRATED WASHER AND BRACE PLATE
NOT SHOWN FOR CLARITY.



**GAGE PLATE
INSULATED JOINT ASSEMBLY
GPI-77**



DETAIL OF INSULATION BLOCK
POLYESTER COATED STEEL CORE
W/ BUSHINGS, PORTEC •127-07547-01
OR FIBERGLASS REINFORCED THERMOSET RESIN.
PURCHASE PART NO. GPI52P05

**DETAIL "A"
INSULATION AT PLATES**
(SCALE: 3" = 1'-0")

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DRAWN BY: A. CARLOS DATE: 03/31/2011				SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.				ENGINEERING STANDARDS				STANDARD
REVISION				SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY				NO. 10 SWITCH PLATE DETAILS				2921
REV. DATE DESCRIPTION DES. ENG.				ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012								SCALE: AS NOTED
												REVISION SHEET
												14 OF 15
												CADD FILE: ES2921-14



1. PLATES TO BE MADE OF MILD ROLLED STEEL.
2. THE PLATES AS SHOWN ARE FOR A 136 LB., NO. 10, RIGHT HAND, HAND OPERATED TURNOUT. FOR A LEFT HAND TURNOUT, PLATES ARE TO BE OPPOSITE.
3. GUARD RAIL PLATES ARE TO BE INSTALLED AND WELDED TO THE FROG GAGE PLATES IN THE FIELD WITH A 3 PASS $\frac{1}{2}$ " FILLET WELD CONTINUOUS ON BOTH ENDS OF THE PLATE. PLATES ARE TO BE WELDED ONLY AFTER THE GAGE PLATE AND THE FROG IS SECURED IN THE PROPER LOCATION ON THE TIE WITH PROPER ALIGNMENT.
4. FROG BASE PLATES FP-1, FP-4 AND FP-7 ARE TO BE WELDED TO THE FROG GAGE PLATES IN THE FIELD WITH A 3 PASS $\frac{1}{2}$ " FILLET WELD CONTINUOUS ON BOTH ENDS OF THE PLATE. PLATES ARE TO BE WELDED ONLY AFTER THE GAGE PLATE AND THE FROG IS SECURED IN THE PROPER LOCATION ON THE TIE WITH PROPER ALIGNMENT.

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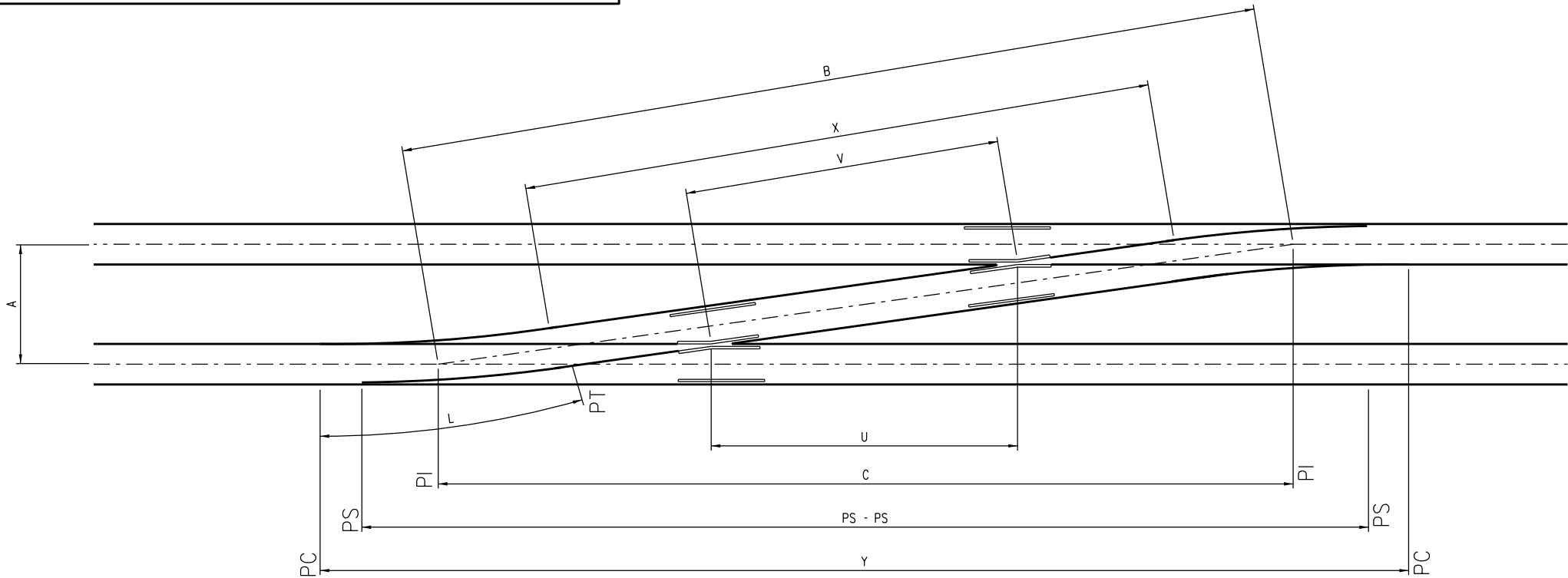
		DRAWN BY: A. CARLOS		DATE: 03/31/2011		SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. AND NON-SCRR APPROVED USES. SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.				ENGINEERING STANDARDS		STANDARD 2921	
										SCALE: 1/2" = 1'-0"		SHEET 15 OF 15	
		ASSISTANT DIRECTOR: STANDARDS & DESIGN								NO. 10 INSULATED GAGE PLATE DETAILS		CADD FILE: ES2921-15	
X XX-XX-XX		REVISION		XX XX									
REV. DATE		DESCRIPTION		DES. ENG.									
													
		DIRECTOR OF ENGINEERING AND DESIGN											

EQUIVALENT CURVE DATA	
CURVE	6.0850'
RADIUS	941.60'
DELTA	5.724'
TANGENT (T)	47.07'
LENGTH (L)	94.07'
EXTERNAL	1.17'
CROSSOVER DATA	
LEAD	80.500'
PC TO PS	14.07'
PS TO PI	33.00'
PI TO 1/2" PF	47.50'
LENGTH OF TURNOUT	117.28'
PS TO PT	80.00'

FROG DATA	
FROG NUMBER	10
FROG ANGLE	5° -43'-29"
SWITCH DATA	
SWITCH LENGTH	16'-6"
HEEL SPREAD	6 1/4"
HEEL ANGLE	N/A
SWITCH ANGLE	1° -44'-11"
RADIUS OF CENTER LINE - SWITCH	N/A
TANGENT LENGTH SWITCH	N/A
CENTRAL ANGLE OF CLOSURE CURVE-SWITCH	N/A
DEGREE OF CURVE - SWITCH	N/A
TURNOUT DATA	
RADIUS OF CENTER LINE - TURNOUT	736.76'
TANGENT LENGTH - TURNOUT	25.65'
CENTRAL ANGLE OF CLOSURE CURVE - TURNOUT	3° -59'-18"
DEGREE OF CURVE - TURNOUT	7° -46'-58"

CROSSOVER DATA TABLE									
A	B	C	X	Y	2L+X	2L+X- 2(PC-PS)	PS TO PS	U	V
13	130.34	129.69	36.20	223.84	224.33	196.19	195.70	34.70	35.35
14	140.37	139.67	46.22	233.82	234.36	206.22	205.68	44.68	45.37
15	150.40	149.65	56.25	243.79	244.39	216.25	215.65	54.65	55.40
16	160.42	159.62	66.28	253.77	254.41	226.27	225.63	64.63	65.43
17	170.45	169.60	76.30	263.75	264.44	236.60	235.61	74.61	75.45
18	180.48	179.58	86.33	273.72	274.47	246.33	245.58	84.58	85.48
19	190.50	189.55	96.36	283.70	284.49	256.65	255.56	94.56	95.50
20	200.53	199.53	106.38	293.68	294.52	266.38	265.54	104.54	105.53
21	210.55	209.50	116.41	303.65	304.54	276.40	275.51	114.51	115.56
22	220.58	219.48	126.43	313.63	314.57	286.43	285.49	124.49	125.58
23	230.61	229.46	136.46	323.60	324.60	296.46	295.46	134.46	135.61
24	240.63	239.43	146.49	333.58	334.62	306.48	305.44	144.44	145.64
25	250.66	249.41	156.51	343.56	344.65	316.51	315.42	154.42	155.66
26	260.69	259.39	166.54	353.53	354.68	326.54	325.39	164.39	165.69
27	270.71	269.36	176.57	363.51	364.70	336.56	335.37	174.37	175.72
28	280.77	279.34	186.59	373.49	374.73	346.59	345.35	184.35	185.74
29	290.77	289.32	196.62	383.46	384.76	356.62	355.32	194.32	195.77
30	300.79	299.29	206.65	393.44	394.78	366.64	365.30	204.30	205.79
31	310.82	309.27	216.67	403.42	404.81	376.67	375.28	214.28	215.82
32	320.85	319.25	226.70	413.39	414.84	386.70	385.25	224.25	225.85

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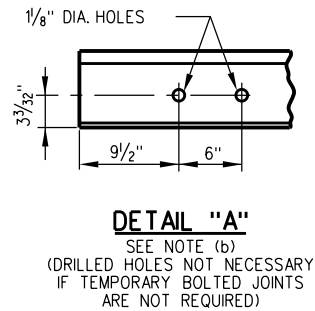
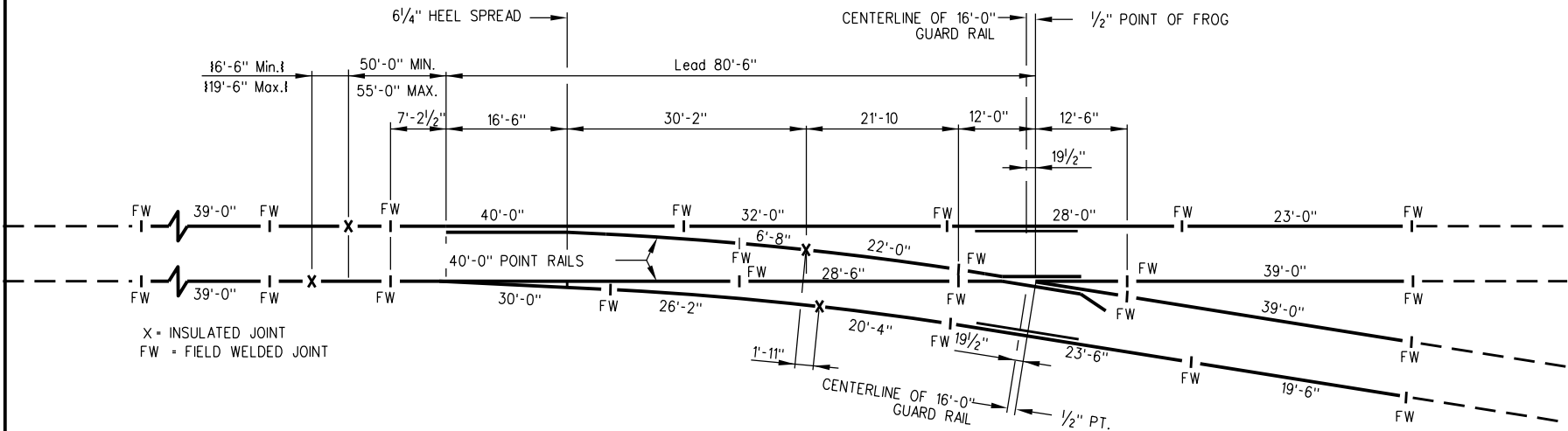


CROSSOVER LAYOUT

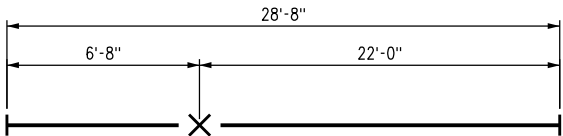
NOTES:

- TURNOUT TO BE FABRICATED FROM 136 LB. HEAD HARDENED RAIL, FROM POINT END TO LAST LONG SWITCH TIE.
- LOCATION OF INSULATED JOINTS IS DETERMINED BY DRAWING NUMBER ES2922-02.
IT WILL BE SATISFACTORY TO RELOCATE THE INSULATED JOINT IN THE FIELD UP TO 12"
SO AS TO PROVIDE A SUITABLE SUSPENDED JOINT, PROVIDED THE STAGGER OF INSULATED
JOINTS DOES NOT EXCEED 4'-6". SUSPENDED INSULATED JOINTS MUST BE LOCATED IN A CRIB
AREA BETWEEN TIES, A MINIMUM DISTANCE OF 4" FROM EDGE OF NEAREST TIE PLATE.
- ALL INSULATED JOINTS ARE TO BE ADHESIVE BONDED PREFABRICATED MITRE CUT INSULATED JOINTS
PER ES2504 UNLESS OTHERWISE SPECIFIED.
- ALL MATERIALS REQUIRED FOR HAND OR MACHINE OPERATED SWITCH OPERATION WILL BE FURNISHED PER
REQUIREMENTS OF THE SCRRRA DIRECTOR OF ENGINEERING AND CONSTRUCTION.
- MATERIALS AND WORKMANSHIP, ALSO ANY CONSTRUCTION DETAILS NOT SHOWN, SHALL BE PER CURRENT
A.R.E.M.A. "MANUAL AND PORTFOLIO" UNLESS OTHERWISE SPECIFIED.
- WHERE REQUIRED, ALL IDENTIFICATION SYMBOLS TO BE PLAINLY STAMPED.
- GAGE PLATES WILL BE FURNISHED INSULATED. SWITCH RODS WILL BE FURNISHED INSULATED UNLESS
OTHERWISE SPECIFIED.
- MANUFACTURER SHALL SUBMIT TWO COPIES OF SHOP DRAWINGS TO THE SCRRRA DIRECTOR OF ENGINEERING
AND CONSTRUCTION FOR APPROVAL PRIOR TO FABRICATION OF TURNOUT. SHOP DRAWINGS THAT CHANGE DETAILS
OF THESE STANDARDS MUST CLEARLY SPECIFY SUCH PROPOSED CHANGES.
- THE MATERIAL INCLUDED IN A "TURNOUT COMPLETE" IS EVERYTHING LISTED IN THE BILL OF MATERIALS.
TO CONSTRUCT A COMPLETE TURNOUT, SWITCH TIES (PER LIST ON THIS SHEET) AND INSULATED JOINTS,
FIELD WELDS, RUNNING RAIL, AND CLOSURE RAIL IDENTIFICATION ON SHEET ES2922-02 MUST ALSO BE
SUPPLIED. THE MATERIAL FOR A "CROSSOVER COMPLETE" IS IDENTIFIED ON SHEET ES2922-05.
- TIE PLATES SHALL CONFORM TO SCRRRA ENGINEERING STANDARD ES2454.
- SCREW SPIKES (15/16" X 6-2 TPI) SHALL CONFORM TO SCRRRA ENGINEERING STANDARD ES2357.
PLATE HOLES SHALL BE 1" DIAMETER. PILOT HOLES IN TIES SHALL BE 5/16" DIAMETER. SCREW SPIKES
SHALL BE SCREWED INTO WOOD (NOT DRIVEN).
- MANUFACTURER SHALL BEVEL RAIL ENDS PER CURRENT AREMA PLAN NO. 1005.
- THE 16'-6" SWITCH POINT, MADE FROM 40'-0" RAIL PER ES2922-09 SHALL BE FURNISHED WITH SWITCH
RODS NO. 1 AND 2 PER ES2922-11 AND ES2922-04.
- FOR LOCATION OF INSULATED AND COMPROMISE JOINTS FOR NO. 8 TURNOUT AND CROSSOVER, SEE DRAWING
NO. ES2922-02.
- GAGE PLATES FOR SWITCH AND FROG, SWITCH HEEL PLATE (FOR BOTH R.H. AND L.H. TURNOUTS) AND PLATES
P-10 THRU P-24 ARE DESIGNED TO BE PERPENDICULAR TO THE MAIN LINE THRU RUN RAILS.
- UPON COMPLETION OF TURNOUT INSTALLATION, RUNNING RAIL MUST BE ADJUSTED TO SCRRRA NEUTRAL
RAIL TEMPERATURE.
- ALL E-CLIPS SHALL BE GALVANIZED.
- SWITCH POINTS SHALL BE FABRICATED PER AREMA SPECIFICATION NO. 9-28-92 AND PER ES2922-09.
- THE TOLERANCE FOR SPACING OF SWITCH TIES IS +/-1/2" RELATIVE TO ADJACENT TIES AND 1/4" RELATIVE
TO CUMULATIVE DIMENSION FROM THE POINT OF SWITCH (PS).

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										NO. 10 136 LB. R.H. SR FROG TURNOUT AND CROSSOVER GENERAL NOTES AND DATA	SCALE: NONE
											REVISION SHEET - 1 OF 15
											CADD FILE: ES2922-01

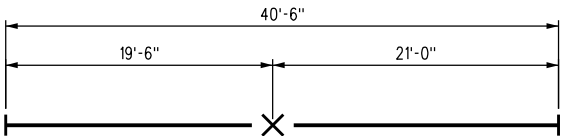


TURNOUT



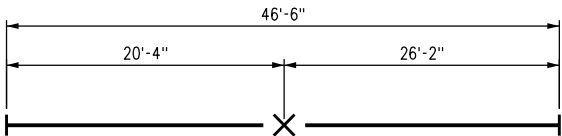
28'-8" LONG ADHESIVE BONDED PREFABRICATED MITRE CUT INSULATED RAIL JOINT ASSEMBLY

(SEE NOTE 5) BOTH ENDS SHALL BE LEFT BLANK FOR WELDING IN THE FIELD



40'-6" LONG ADHESIVE BONDED PREFABRICATED MITRE CUT INSULATED RAIL JOINT ASSEMBLY

(SEE NOTE 5) BOTH ENDS SHALL BE LEFT BLANK FOR WELDING IN THE FIELD

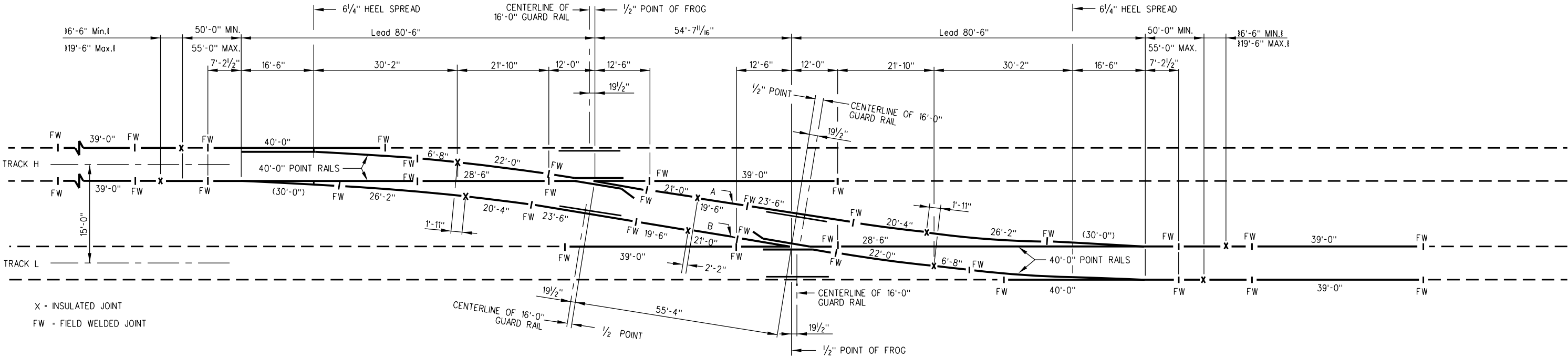


46'-6" LONG ADHESIVE BONDED PREFABRICATED MITRE CUT INSULATED RAIL JOINT ASSEMBLY

(SEE NOTE 5) BOTH ENDS SHALL BE LEFT BLANK FOR WELDING IN THE FIELD

NOTES:

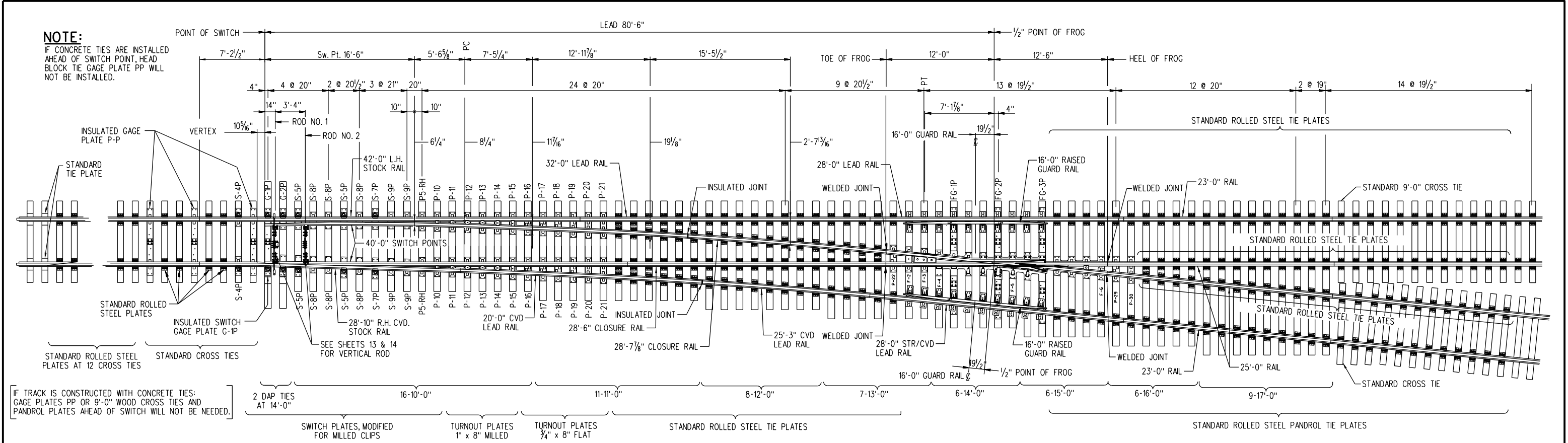
1. THE PERMISSIBLE VARIATION IN STANDARD LENGTHS OF RAILS, FROGS AND SWITCH POINTS IS GREATER THAN THE NORMAL EXPANSION GAPS AT RAIL JOINTS AND THICKNESS OF FIBRE END POST IN INSULATED JOINTS, NO ALLOWANCE HAS BEEN MADE FOR EXPANSION GAPS AND FIBRE END POSTS IN COMPUTING LENGTHS OF RAILS SHOWN. DIMENSIONS OF TURNOUT AND ALL COMPONENTS IS FOR A THERMAL, STRESS - FREE CONDITION OF 110° F. ACTUAL EXACT LENGTHS OF RAILS TO BE INSTALLED IS TO BE FIELD - ADJUSTED TO FIT OVERALL TURNOUT DIMENSIONS, THERMAL ADJUSTMENTS, THICKNESS OF WELDS AND VARIATIONS IN COMPONENT
2. RAIL LENGTH. RAIL LAYOUT SHOWN FOR TURNOUT IS TO BE USED IN ALL CASES, EXCEPT WHERE COMPROMISE JOINTS ARE REQUIRED BETWEEN THE FROGS IN A CROSSOVER TRACK. WHEN COMPROMISE JOINTS ARE TO BE USED TO JOIN DIFFERENT RAIL WEIGHTS, THE INSULATED JOINTS IN THE CROSSOVER TRACK SHALL ALWAYS BE OF THE HEAVIER RAIL SECTION. THE DESCRIPTIONS OF THE CHANGES IN RAIL LAYOUT WHEN COMPROMISE JOINTS ARE REQUIRED IN THE CROSSOVER TRACK ARE BASED ON AN ASSUMPTION THAT TRACK "H" IS LAID WITH HEAVIER RAIL THAN TRACK "L". CROSSOVER ON 15'-0" TRACK CENTERS: AT LOCATION "A" THE 19'-6" RAIL SHALL BE REPLACED WITH 8'-0" OF THE HEAVIER RAIL AND 11'-6" OF THE LIGHTER RAIL. AT LOCATION "B" THE 21'-3" RAIL SHALL BE REPLACED WITH 7'-0" OF THE HEAVIER RAIL AND 14'-3" OF THE LIGHTER RAIL.
4. IN ADDITION TO NOTE 1. NO ALLOWANCE HAS BEEN MADE IN RAIL LENGTHS TO PROVIDE GAPS NEEDED TO MAKE FIELD WELDS. IN THE FIELD IT MAY BE NECESSARY TO CUT RAIL ENDS TO PROVIDE CORRECT GAPS FOR FIELD WELDS. FURNISH ALL RAIL SHOWN IN SOLID LINES ON THIS DRAWING: (A.) RAILS LONGER THAN 39'-0" SHALL BE CONTINUOUS WELDED RAIL (CWR), TO BE FURNISHED WITH BOTH ENDS LEFT BLANK FOR WELDING IN THE FIELD. (B.) ALL OTHER RAILS SHALL BE 39'-0" OF SHORTER AS SPECIFIED ON THE DRAWING, WITH BOTH ENDS DRILLED PER DETAIL "A". ALL RAIL FURNISHED FOR TURNOUT AND CROSSOVERS SHALL BE "HIGH STRENGTH" EXCEPT GUARD RAILS. LOCATIONS OF INSULATED JOINTS ARE SHOWN ON TURNOUT AND CROSSOVER DIAGRAMS WITHOUT TOLERANCES, OR IF TOLERANCES ARE PERMISSABLE, WITH (+ OR -). ALL INSULATED JOINTS ARE TO BE PROPERLY SUSPENDED IN CRIB AREA BETWEEN TWO TIES LOCATED 4" MINIMUM FROM EDGE OF NEAREST TIE TO EDGE OF INSULATED JOINT. INSULATED JOINT MUST BE INTALLED TO BE CENTERED BETWEEN TWO (2) TIES. FIELD WELDED JOINTS DESIGNATED "FW" SHOULD BE IN CRIB AREA BETWEEN TWO TIES LOCATED 4" MINIMUM FROM EDGE OF NEAREST TIE AND WELDED JOINT. DIMENSIONS SHOWN IN PARENTHESIS (0'-0") ARE EXACT. RAILS FURNISHED FOR THESE LOCATIONS ARE LONGER AND MUST BE FIELD ADJUSTED (CUT) WITHIN TOLERANCES SHOWN IN BRACKETS (0'-0").
7. WHEN INSULATED JOINTS WITH TOLERANCES AND FIELD WELDED JOINTS FALL SHORT OF MINIMUM CLEARANCE FROM TIE OR TIE PLATE THE JOINT MAY BE MOVED WITHIN TOLERANCE LIMITS. BONDED INSULATED JOINT ASSEMBLIES AND STOCK RAILS ARE FURNISHED LONGER THAN SHOWN IN PARENTHESIS ON LAYOUT. THESE OR THEIR ADJACENT CONNECTING RAILS MUST BE TRIMMED IN THE FIELD TO FIT. ORDER POINT END AND HEEL END OF STOCK RAIL DRILLED AND PEENED.



CROSSOVER
15'-0" TRACK CENTERS

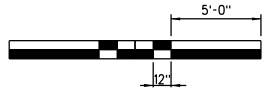
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				ASSISTANT DIRECTOR: STANDARDS & DESIGN				SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY				NO. 10 136 LB. R.H. SR FROG		SCALE: NONE	
				DIRECTOR OF ENGINEERING AND CONSTRUCTION				ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012				TURNOUT AND CROSSOVER		REVISION SHEET	
												JOINTS LOCATIONS		- 2 OF 15	
														CADD FILE: ES2922-02	
X	XX-XX-XX	REVISION		XX	XX										
REV.	DATE	DESCRIPTION		DES.	ENG.										



BILL OF MATERIAL FOR LATERAL TURNOUT	
QTY.	DESCRIPTION
1 PAIR	16'-6" EXTENDED FIELD WELDED TYPE SWITCH POINTS (40'-0" RAIL)
1 EACH	R.H. SAMSON STOCK RAILS 30'-0"
1 EACH	L.H. SAMSON STOCK RAILS 40'-0"
1 EACH	NO.1 SMJ TYPE SWITCH ROD W/BASKET
1 EACH	VERTICAL SWITCH ROD WITH SMJ CLIPS
3 EACH	GAGE PLATE NO. P-P
1 EACH	GAGE PLATE NO. G-1P
1 EACH	GAGE PLATE NO. G-2P
6 EACH	SLIDE PLATE S-8P
4 EACH	SLIDE PLATE S-9P
4 EACH	BRACE SLIDE PLATE S-5P
2 EACH	BRACE SLIDE PLATE S-7P
2 EACH	BRACE SLIDE PLATE S-4P
2 EACH	HEEL PLATE P-5RH
2 EACH	TURNOUT PLATES P-10 THRU P-21
1 EACH	PLATES P-22 THRU P-29
1 EACH	NO.10 SPRING RAIL FROG - 22'-6"
1 EACH	FROG PLATES No. FP-1 THRU FP-9
1 EACH	FROG PLATES No. FCP-1 THRU FCP-3
1 EACH	FROG GAGE PLATES FG-1P THRU FG-3P
2 EACH	16'-0" U-69 ADJUSTABLE GUARD RAIL W/PLATES
5 EACH	D.I. RAIL HOLD DOWN CLIPS E-3706
2 EACH	D.I. RAIL HOLD DOWN CLIPS E-3707
2 EACH	D.I. RAIL HOLD DOWN CLIPS E-3708
138 PCS.	TIE PLATES
552 PCS.	"PANDROL", OR EQUAL, SCREW SPIKES 1/6" DIA. X 6" No. 5760
276 PCS.	"PANDROL", OR EQUAL, E-CLIP TYPE E-2055 (GALVANIZED)
8 PCS.	"PANDROL", OR EQUAL, E-CLIP TYPE E-2063 (GALVANIZED)
12 PCS.	BOLTLESS ADJUSTABLE BRACE ASSEMBLY
1 EACH	19'-6" RAIL
1 EACH	23'-6" RAIL
1 EACH	28'-6" RAIL
1 EACH	23'-0" RAIL
1 EACH	28'-0" RAIL
1 EACH	32'-0" RAIL
4 EACH	39'-0" RAIL
1 EACH	EPOXY BONDED PREFABRICATED MITRE CUT INSULATED JOINT (28'-8")
1 EACH	EPOXY BONDED PREFABRICATED MITRE CUT INSULATED JOINT (46'-6")

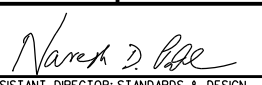
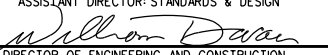
•10 RIGHT HAND TURNOUT



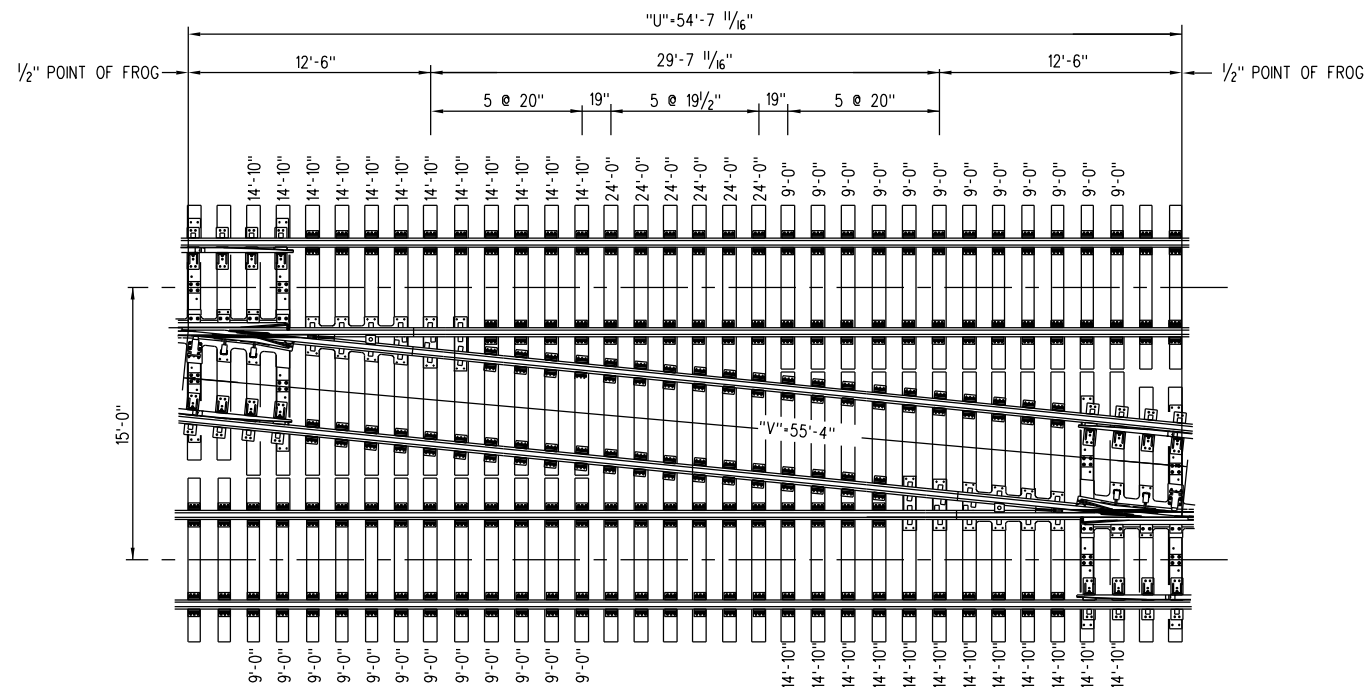
GRAPHIC SCALE

BILL OF SWITCH TIES			
PIECES	SIZE	LENGTH	BOARD FEET
16	7" x 9"	10'-0"	840.00
11	7" x 9"	11'-0"	635.25
8	7" x 9"	12'-0"	504.00
7	7" x 9"	13'-0"	477.75
6	7" x 9"	14'-0"	441.00
2	10" x 9"	14'-0" DAP TIES	147.00
6	7" x 9"	15'-0"	472.50
6	7" x 9"	16'-0"	504.00
9	7" x 9"	17'-0"	803.25
TOTAL			TOTAL
71			4824.75

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				 ASSISTANT DIRECTOR: STANDARDS & DESIGN				NO. 10 136 LB. R.H. SR FROG TURNOUT LAYOUT & BILL OF MATERIALS		SCALE: 3/16" = 1'-0"		REVISION SHEET
				 DIRECTOR OF ENGINEERING AND CONSTRUCTION						3 OF 15		CADD FILE: ES2922-03
X	XX-XX-XX	REVISION		XX	XX							
REV.	DATE	DESCRIPTION		DES.	ENG.							

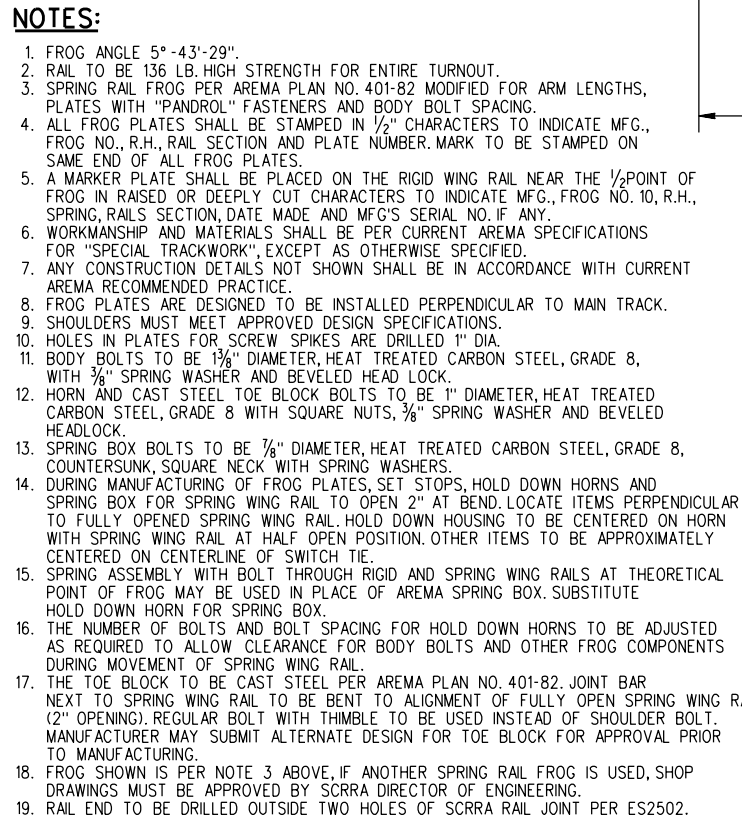
BILL OF SWITCH TIES			
PIECES	SIZE	LENGTH	BOARD FEET
24	7" x 9"	9'-0"	1134.00
32	7" x 9"	10'-0"	1680.00
22	7" x 9"	11'-0"	1270.50
16	7" x 9"	12'-0"	1008.00
14	7" x 9"	13'-0"	955.50
16	7" x 9"	14'-0"	1176.00
4	10" x 9"	14'-0" DAP TIES	294.00
24	7" x 9"	14'-10"	1890.00
6	7" x 9"	24'-0"	756.00
TOTAL			TOTAL
158			10164.00



BILL OF MATERIAL	
QTY.	DESCRIPTION
2 PAIR	16'-6" EXTENDED FIELD WELDED TYPE SWITCH POINTS (40'-0" RAIL)
1 PAIR	R.H. SAMSON STOCK RAILS (30'-0")
1 PAIR	L.H. SAMSON STOCK RAILS (40'-0")
2 EACH	No. 1 SMJ TYPE SWITCH ROD W/BASKET
2 EACH	VERTICAL SWITCH ROD WITH SMJ CLIPS
6 EACH	GAGE PLATE No. P-P
2 EACH	GAGE PLATE No. G-1P
2 EACH	GAGE PLATE No. G-2P
12 EACH	SLIDE PLATE S-8P
8 EACH	SLIDE PLATE S-9P
8 EACH	BRACE SLIDE PLATE S-5P
4 EACH	BRACE SLIDE PLATE S-7P
4 EACH	BRACE SLIDE PLATE S-4P
4 EACH	HEEL PLATE P-5RH
4 EACH	TURNOUT PLATES P-10 THRU P-21
2 EACH	PLATES P-22 THRU P-29
2 EACH	No.10 SPRING RAIL FROG - 24'-6"
2 EACH	FROG PLATES No. FP-1 THRU FP-9
2 EACH	FROG PLATES No. FCP-1 THRU FCP-3
2 EACH	FROG GAGE PLATES FG-1P THRU FG-3P
4 EACH	16'-0" U-69 ADJUSTABLE GUARD RAIL W/PLATES
10 EACH	D.I. RAIL HOLD DOWN CLIPS E-3706
4 EACH	D.I. RAIL HOLD DOWN CLIPS E-3707
4 EACH	D.I. RAIL HOLD DOWN CLIPS E-3708
228 PCS.	TIE PLATES
912 PCS.	"PANDROL", OR EQUAL, SCREW SPIKES 15/16" DIA. X 6" No. 5760
456 PCS.	"PANDROL", OR EQUAL, E-CLIPS TYPE E-2055 (GALVANIZED)
24 PCS.	"PANDROL", OR EQUAL, E-CLIPS TYPE E-2063 (GALVANIZED)
12 PCS.	BOLTLESS ADJUSTABLE BRACE ASSEMBLY
2 EACH	23'-6" RAIL
2 EACH	28'-6" RAIL
6 EACH	39'-0" RAIL
2 EACH	EPOXY BONDED PREFABRICATED MITRE CUT INSULATED JOINT (28'-6")
2 EACH	EPOXY BONDED PREFABRICATED MITRE CUT INSULATED JOINT (40'-6")
2 EACH	EPOXY BONDED PREFABRICATED MITRE CUT INSULATED JOINT (46'-6")

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				 ASSISTANT DIRECTOR: STANDARDS & DESIGN						REVISION XX XX	
				 DIRECTOR OF ENGINEERING AND CONSTRUCTION						REVISION XX XX	
X	XX-XX-XX	REVISION		XX	XX						
REV.	DATE	DESCRIPTION		DES.	ENG.						



NOTE:

ON SPRING RAIL FROGS, BONDS TO BE INSTALLED ON RIGID WING RAIL SIDE. DISTANCE BETWEEN TERMINALS IS SHOWN AS 1". THIS DIMENSION MAY DECREASE, WHEN NECESSARY, DUE TO LIMITED DISTANCE FROM BOLT TO END OF RAIL.

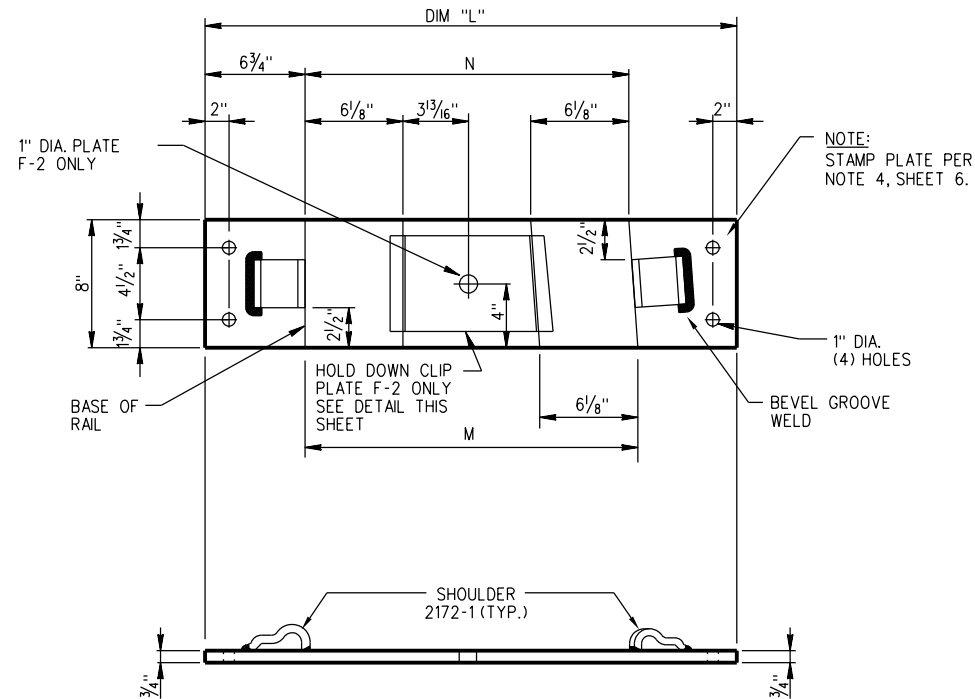
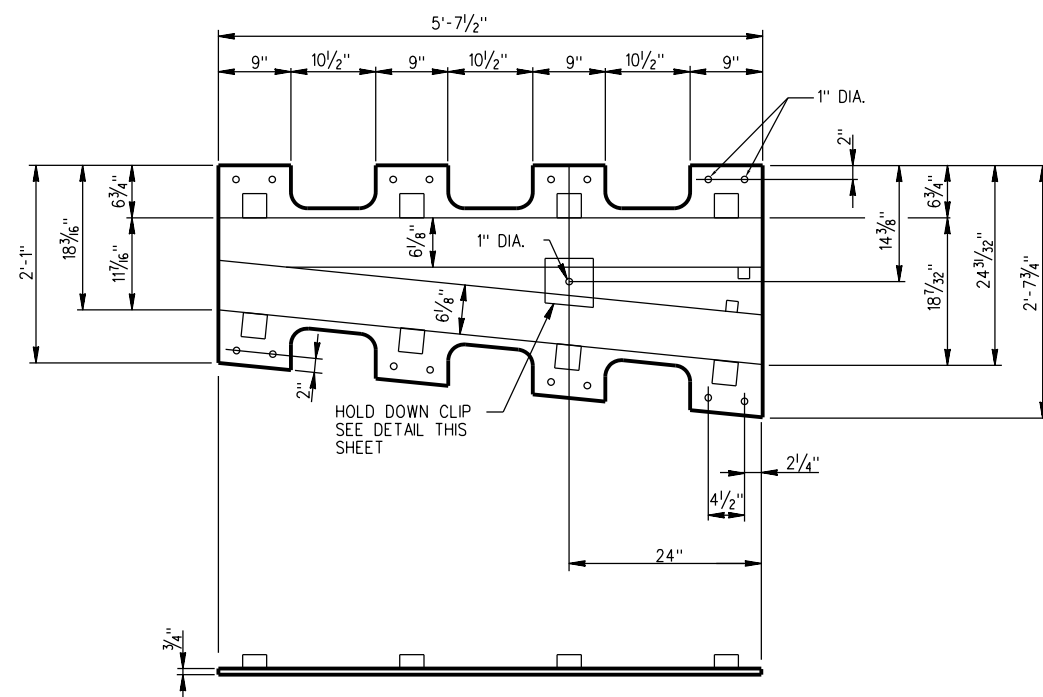
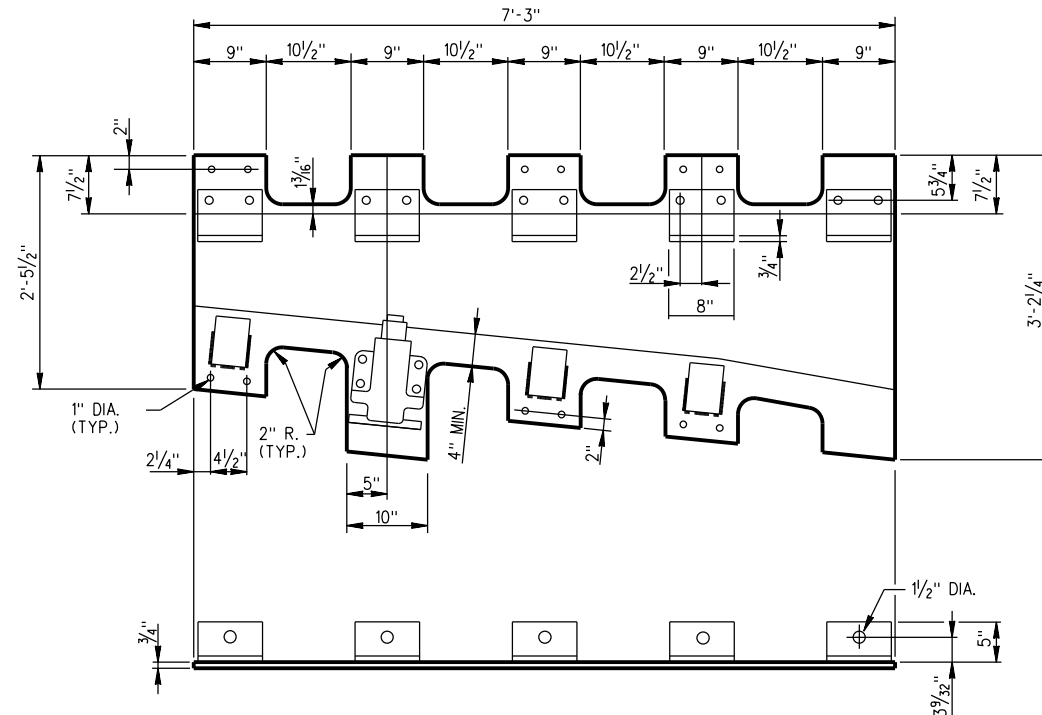
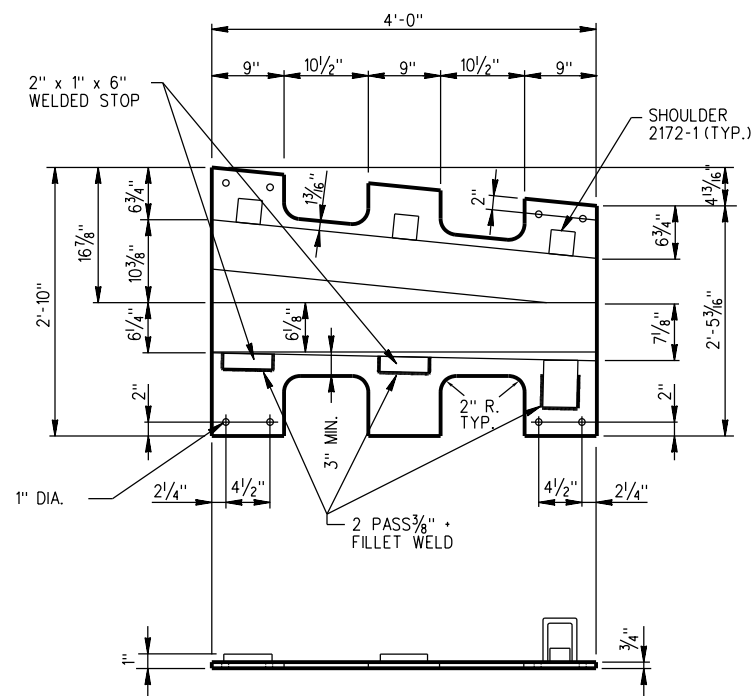
WHEN A PLATE CLIP ON SPRING RAIL FROGS INTERFERES WITH APPLICATION OF BONDS AS SHOWN HEREON, THE PLATE CLIP SHOULD BE ALTERED TO PERMIT PROPER INSTALLATION OF THE BONDS.

USE A 12" BOND OF WELDED OR PLUG - IN TYPE.

FROG TO BE INSTALLED WITH FIELD WELDS ON MAIN TRACK (STRAIGHT) SIDE IN ALL CASES.
FIELD WELDS ARE USED ON TURNOUT (CURVED) SIDE IF USED BY THROUGH TRAFFIC OR MORE THAN ONCE PER DAY.
BOLTED JOINTS PER ES1202 ARE TO BE USED ON TURNOUT SIDE IF TURNOUT USE DOES NOT EXCEED ABOVE LIMITS.

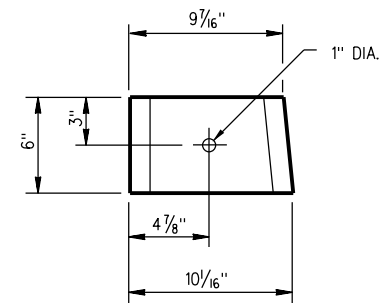
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				DRAWN BY: A. CARLOS DATE: 03/31/2011		SCRRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRRA APPROVED USES ONLY. FOR NON-SCRRRA APPROVED USES: SCRRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRRA. ALL RIGHTS RESERVED.		 METROLINK®		ENGINEERING STANDARDS		STANDARD 2922											
				 ASSISTANT DIRECTOR: STANDARDS & DESIGN						SCALE: 1" = 1'-0"													
				 DIRECTOR OF ENGINEERING AND CONSTRUCTION						NO. 10 136 LB. R.H. SR FROG LAYOUT		REVISION SHEET											
												- 5 OF 15											
												CADD FILE: ES2922-05											
<table><tr><th>X</th><th>XX-XX-XX</th><th>REVISION</th><th>XX</th><th>XX</th></tr><tr><td>REV.</td><td>DATE</td><td>DESCRIPTION</td><td>DES.</td><td>ENG.</td></tr></table>				X	XX-XX-XX	REVISION	XX	XX	REV.	DATE	DESCRIPTION	DES.	ENG.										
X	XX-XX-XX	REVISION	XX	XX																			
REV.	DATE	DESCRIPTION	DES.	ENG.																			

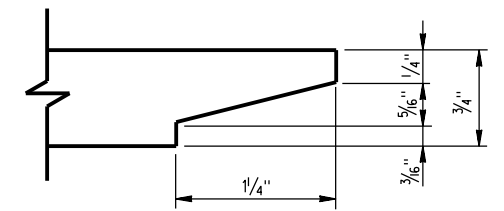


NOTE:

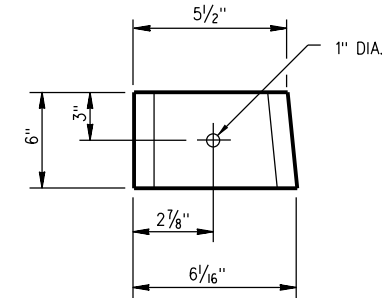
FOR NOTES AND FROG LAYOUT SEE DRAWING ES2922-06.



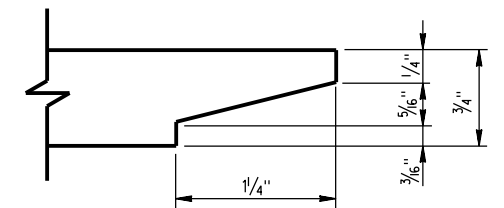
HOLD DOWN CLIP
FOR PLATE - F-2
SCALE: NONE



END DETAIL - BOTH ENDS
SCALE: NONE



**HOLD DOWN CLIP
FOR PLATE - F-6**
SCALE: NONE



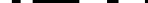
END DETAIL - BOTH ENDS
SCALE: NONE

PLATE	DIM "L"	DIM "M"	DIM "N"	Pits REQ'D.
F-2	2'-9 ³ / ₄ "	20 ¹ / ₄ "	19 ¹ / ₂ "	1 EA.
F-3	2'-8"	18 ³ / ₄ "	17 ⁵ / ₈ "	1 EA.

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							 ASSISTANT DIRECTOR: STANDARDS & DESIGN  DIRECTOR OF ENGINEERING AND CONSTRUCTION			
X	XX-XX-XX		REVISION		XX	XX				
REV.	DATE		DESCRIPTION		DES.	ENG.				

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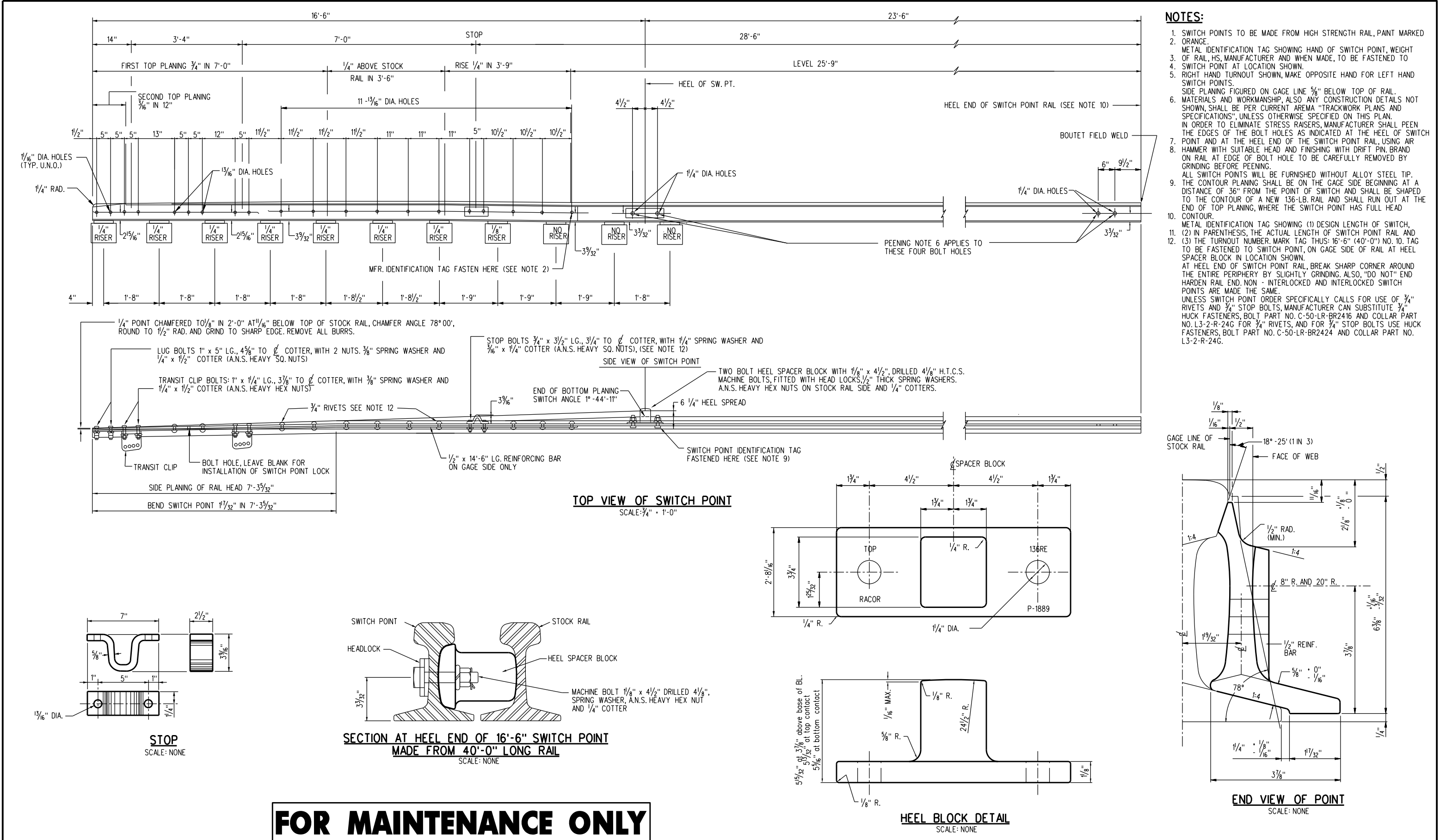
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ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

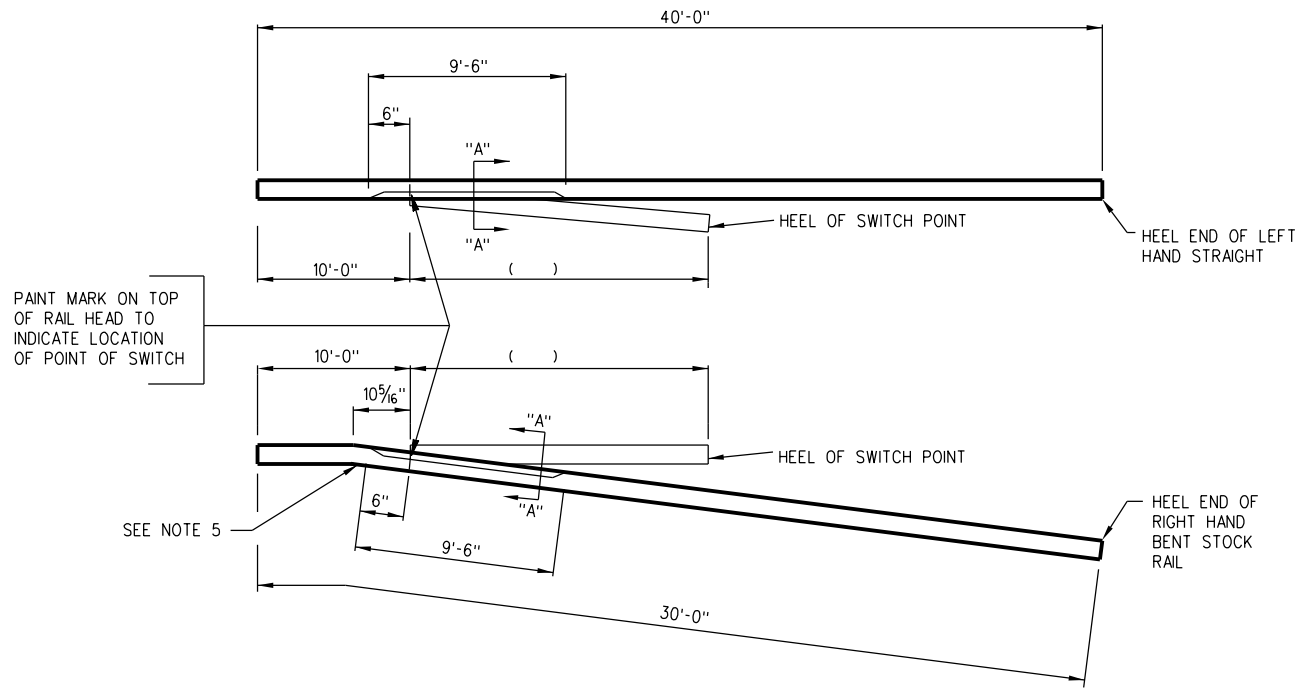
ENGINEERING STANDARDS

NO.10 136 LB. R.H. SR FROG PLATE
DETAILS AND DIMENSION TABLE

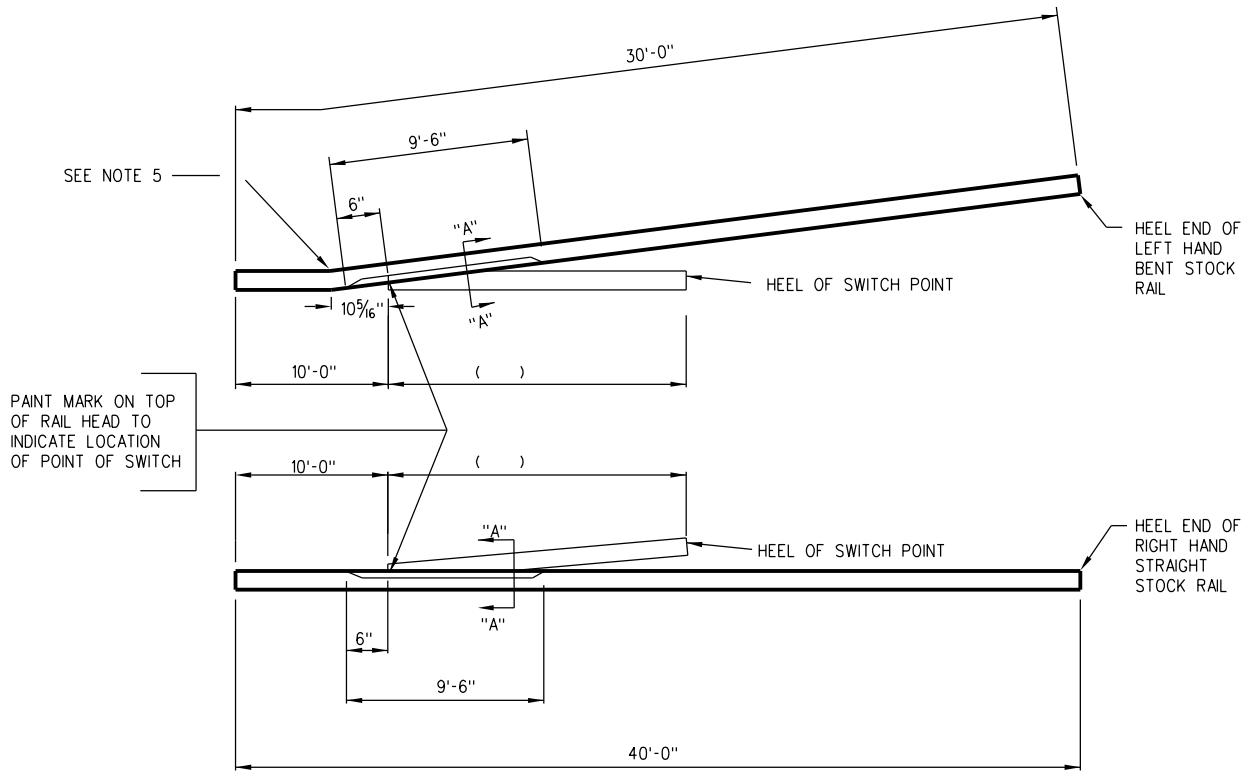
STANDARD		2922
SCALE:		1" = 1'-0"
REVISION	SHEET	
-	6 OF 15	
CADD FILE:		ES2922-06



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				Assistant Director: STANDARDS & DESIGN				SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY						NO. 10 SPLIT SWITCH POINT DETAILS		SCALE: AS NOTED	
				Director of Engineering and Construction				ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012								REVISION SHEET	
																8 OF 15	
																CADD FILE: ES2922-08	



STOCK RAILS SHOWN ARE FOR "RIGHT HAND TURNOUT"



STOCK RAILS SHOWN ARE FOR "LEFT HAND TURNOUT"

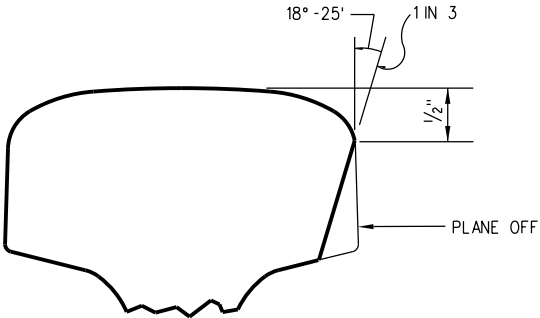
NOTES:

1. INFORMATION OR DIMENSIONS NOTED THUS, () TO BE FURNISHED BY FIELD FORCES FOR CORRECT ORDERING OF REPLACEMENT STOCK RAILS.
2. UNDERCUT STOCK RAILS TO BE MADE OF HIGH STRENGTH RAIL WITH ENDS BEVELED PER CURRENT AREMA PLAN NO. 1005.
3. FOR STOCK RAIL UNDERCUT LENGTH "B", PER SECTION "A-A", LENGTH "C" AND "D" FOR NEW SAMSON SWITCH INSTALLATIONS OR REPLACEMENT ORDERS SEE TABLE BELOW.

LENGTHS B, C, & D FOR 136 LB. RAIL									
Sw. Pt. Length	T.O. No.	STOCK RAIL	B	FOR FIRST (NEW) INSTALL.			FOR REPLACE. ORDERS ONLY		
				C	D	END DRILL. SEE NO. 10	C	D	END DRILL. SEE NO. 10
16'-6"	10	STR.	9'-6"	10'-0"	40'-0"	NONE	10'-0"	52'-0"	NONE
16'-6"	10	BENT	9'-6"	10'-0"	30'-0"	HEEL END ONLY	10'-0"	52'-0"	HEEL END ONLY

4. BEND ANGLE IN BENT STOCK RAIL TO BE AS FOLLOWS:

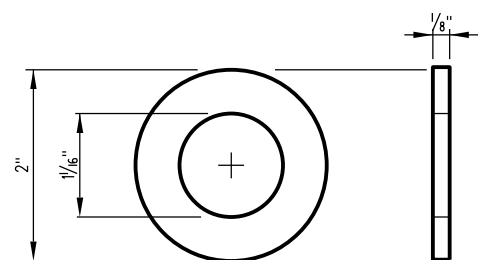
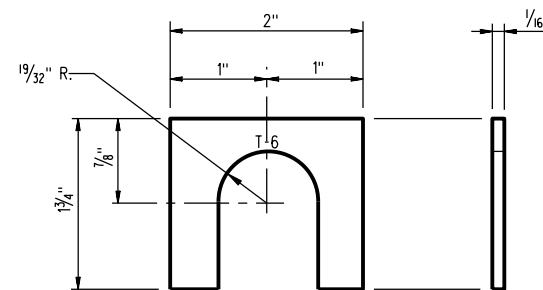
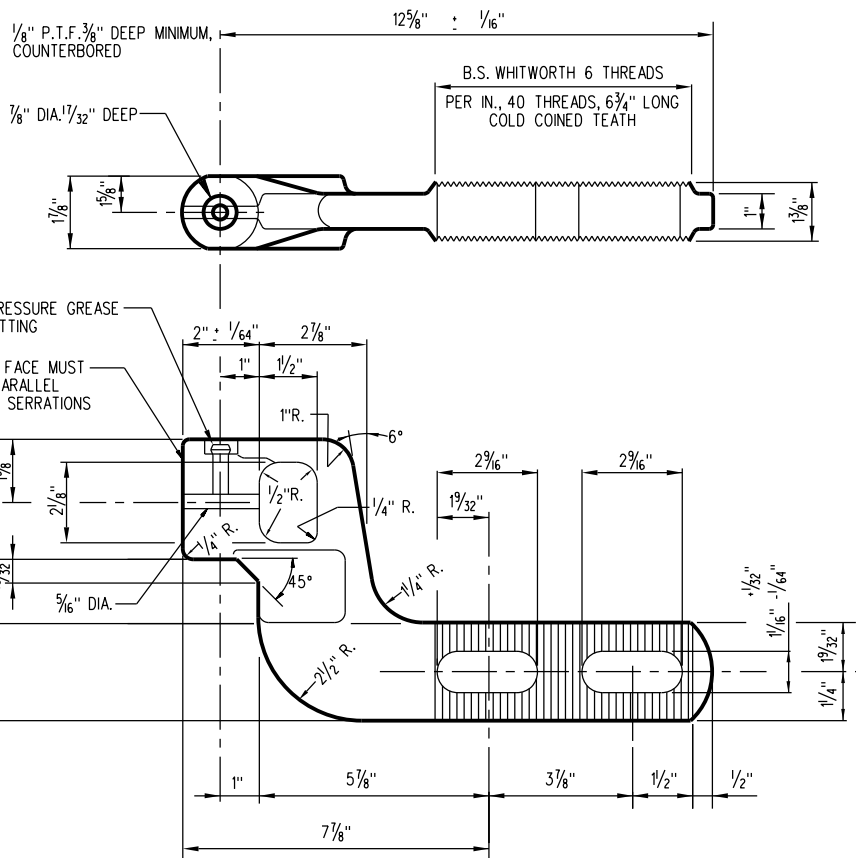
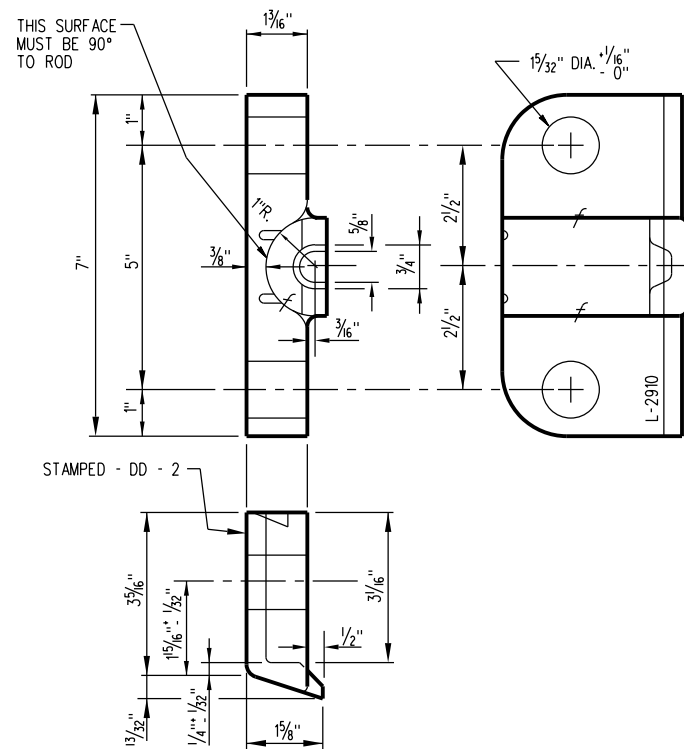
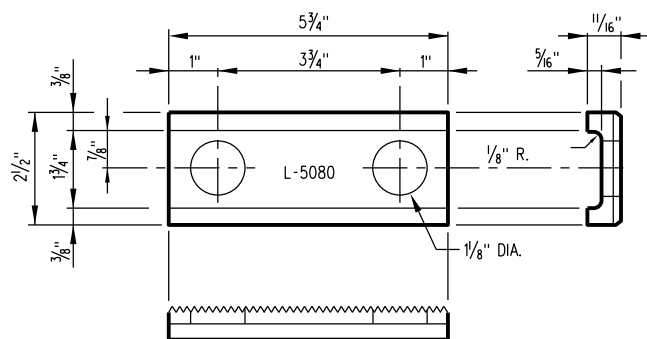
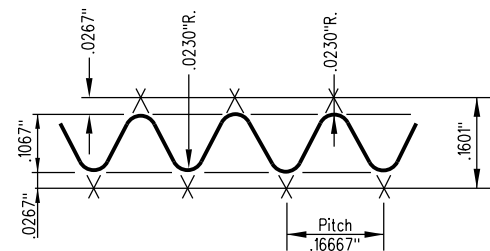
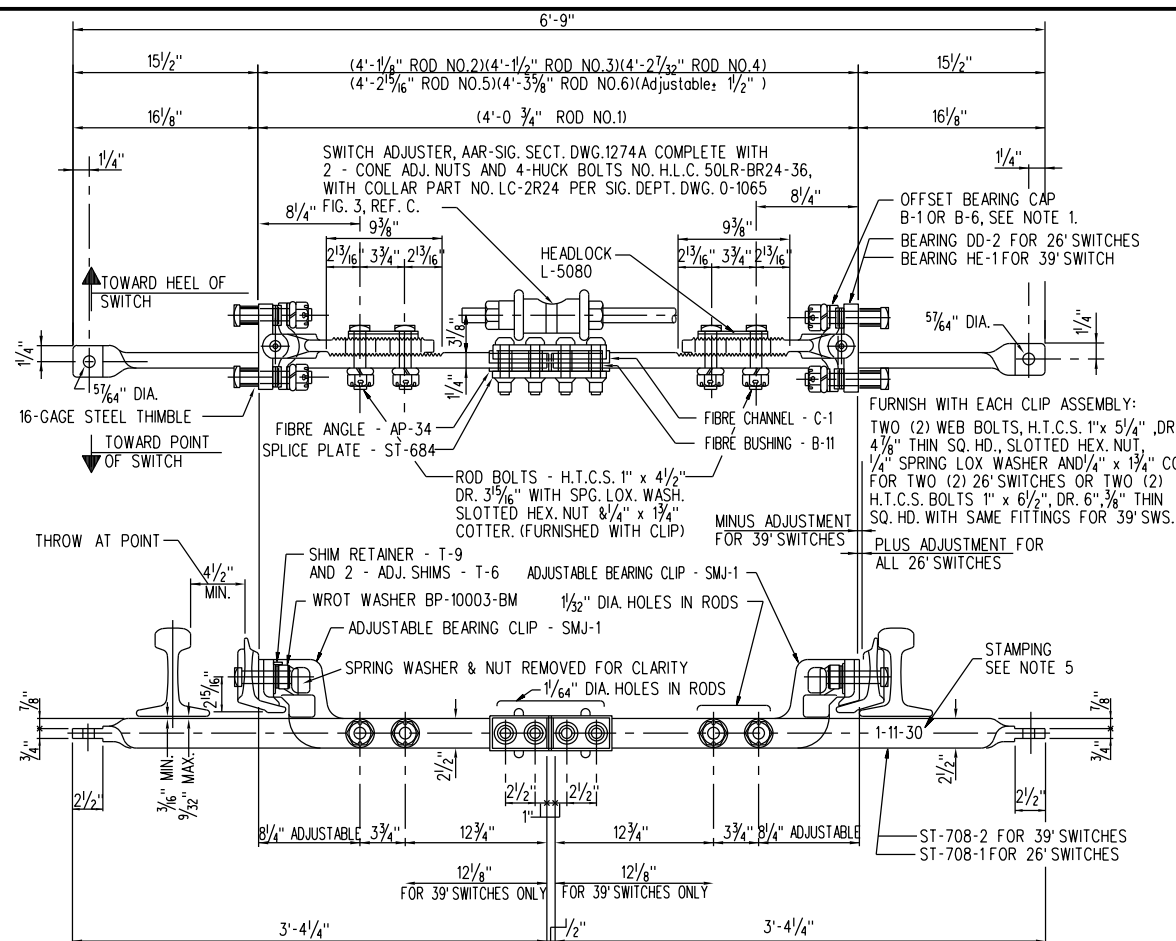
Sw. Length	BEND ANGLE	V (Vertex Dist.)
16'-6"	1° - 44'-11" or 1" in 2'-9"	10 ⁵ / ₁₆ "



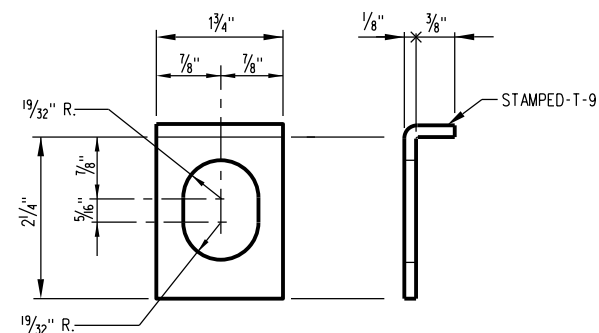
SECTION "A-A"

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				DRAWN BY: A. CARLOS		DATE: 03/31/2011		SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES: SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.		 METROLINK [®]		ENGINEERING STANDARDS		STANDARD 2922	
				ASSISTANT DIRECTOR: STANDARDS & DESIGN				SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY				NO. 10 STRAIGHT OR CURVED UNDERCUT STOCK RAILS		SCALE: NONE	
				DIRECTOR OF ENGINEERING AND CONSTRUCTION				ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012						REVISION SHEET 9 OF 15	
														CADD FILE: ES2922-09	



LENGTH OF SWITCH	BILL OF MATERIAL FOR 1 TYPE "SMJ" SWITCH ROD ASSEMBLY				
	MATERIAL FOR CLIP ASSEMBLIES				
	QTY.	PART NUMBER	MATERIAL SPECIF.	DESCRIPTION	DETAIL REMARKS
All	2	SMJ-1	S.A.E.1020 -For.Stl.	Bearing Clip	MACHINED PER DETAIL
All	4		H.T.C.S.	Web Bolt	SEE NOTE
26'	2	DD-2	Malleable Iron	Bearing	PAT. NO. L-2910, MACHINED PER DETAIL
39'	2	HE-1	Malleable Iron	Bearing	PAT. NO. L-2915, MACHINED PER DETAIL
26'	2	B-1	S.A.E.1045 -For.Stl.	Offset Bearing Cap	HEAT TREATED - BRINELL - .225 to .250
39'	2	B-6	S.A.E.1045 -For.Stl.	Offset Bearing Cap	HEAT TREATED - BRINELL - .225 to .250
26'	2	B-6	S.A.E.1045 -For.Stl.	Offset Bearing Cap	HEAT TREATED - BRINELL - .225 to .250
All	4	T-9	S.A.E.1020	Shim Retainer	$\frac{1}{8}" \times 1\frac{3}{4}" \times 2\frac{1}{4}"$
All	12	T-6	Stainless Steel	Adjustment Shim	$\frac{1}{16}" \times 2" \times \frac{1}{8}"$
All	4	BP-10003-BM	Wrot Iron	Wrot Washer	$1\frac{1}{16}"$ I.D. x $2"$ O.D. x $\frac{1}{8}"$ THICK
All	4		H.T.C.S.	Rod Bolt	$1" \times 4\frac{1}{2}"$ DR. $3\frac{1}{16}"$ REG. SQ. HD. SLOTTED HEX NUT
All	4		Steel	Spg. Lox Washer	FOR 1" Rod Bolts
All	4		Steel	Cotter	$\frac{1}{4}" \times 1\frac{3}{4}"$ FOR ROD BOLTS
All	2		Steel	Greose Fitting	PRESSURE - FOR BEARING CLIP
All	2	L-5080	Malleable Iron	Headlock	FOR ROD BOLTS
26'	2		16-Gage Steel	Thimble	$1\frac{1}{2}"$ LONG - FOR SHIPPING
39'	2		16-Gage Steel	Thimble	$2\frac{1}{2}"$ LONG - FOR SHIPPING
Material for Vertical Rod					
16'-6"	1			Vertical Rod	Use one-ST-708-1
					Use one-ST-708-1 TWIST, MACHINE AND DRILL END HOLE
39'	1			Vertical Rod	Use one-ST-708-2
					Use one-ST-708-2 TWIST, MACHINE AND DRILL END HOLE
All	4		High Strength Steel	Conn.& Insul.Bolt	HIGH FASTENER NO. HLC-50LR- BR24-36
All	4		Low Carbon Steel	Collar	HUCK FASTENER NO. LC-2R24
All	1	ST-684	H.R. Mild Steel	Splice Plate	$\frac{1}{2}" \times 2\frac{1}{2}" \times 9\frac{1}{2}"$ FOR INSULATION
All	2	AP-34	AAR-Sig.Sec.13-52	Angle	$\frac{1}{2}" \times 2\frac{1}{2}" \times 4\frac{1}{16}"$ HARD FIBRE - PARAFIN COATED
All	4	B-11	AAR-Sig.Sec.13-52	Bushing	1" O.D. HARD FIBRE - PARAFIN COATED
All	1	C-1	AAR-Sig.Sec.13-52	Channel	$\frac{1}{8}" \times 1" \times 10"$ HARD FIBRE - PARAFIN COATED
All	1		Malleable Iron	Switch Adjuster	
All	2		Malleable Iron	Cone Adj. Nut	FOR $\frac{1}{4}"$ THROW RODS



NOTES:

1. WHILE THIS PLAN SHOWS BEARING CLIPS ASSEMBLED TO SWITCH ROD, THIS CLIP ASSEMBLY MAY BE REQUISITIONED AND ORDERED SEPARATELY. WHEN A BEARING CLIP ASSEMBLY ONLY IS WANTED, REQUISITIONS AND ORDERS SHALL SPECIFY, RAIL SECTION AND LENGTH OF SWITCH. ALL PARTS SHOWN IN BILL OF MATERIAL SHALL BE FURNISHED WITH THESE CLIP ASSEMBLIES. WHEN AN INDIVIDUAL PART IS REQUIRED, IT SHALL BE ORDERED BY PART NUMBER.
2. WHEN COMPLETED RODS ARE ORDERED THEY SHALL BE ASSEMBLED AND INCLUDE ALL PARTS SHOWN IN BILL OF MATERIAL. REQUISITIONS AND ORDERS SHALL SPECIFY RAIL SECTION AND LENGTH OF SWITCH ON INTERLOCKED SWITCHES WITH AUXILIARY THROW ROD, MACHINE SIDE (RIGHT OR LEFT) SHOULD ALSO BE SPECIFIED.
3. TWO WEB BOLTS SHALL BE FURNISHED WITH EACH CLIP ASSEMBLY AS CALLED FOR BY NOTE IN TOP VIEW OF ROD ASSEMBLY. WHEN ROD IS USED ON 11'-0" AND 16'-6" SWITCHES THE 1/4" THICK SPRING WASHER SHOULD BE REPLACED WITH A 3/8" THICK SPRING WASHER BY THE STOREKEEPER OR FIELD FORCES, TO BRING COTTER WITHIN THE LIMITS OF SLOT IN WEB BOLT NUTS.
4. MATERIALS AND WORKMANSHIP SHALL MEET CURRENT A.R.E.M.A. SPECIFICATIONS FOR SPECIAL TRACKWORK UNLESS OTHERWISE SPECIFIED.
5. VERTICAL SWITCH ROD SHALL BE PLAINLY STAMPED TO INDICATE SWITCH THAT ROD ASSEMBLY CAN BE USED UPON. IDENTIFICATION MARKING WILL BE AS FOLLOWS:
1-39 FOR USE ON 39'-0" SWITCHES, 132 LB., AND 136 LB. RE RAIL SECTIONS.
1-11-30 FOR USE ON 11'-0" TO 30'-0" SWITCHES, 115 LB., 119 LB., 131 LB., 132 LB. AND 136 LB. RE RAIL SECTIONS.

						DRAWN BY:	A. CARLOS	DATE:	03/31/2017
						 ASSISTANT DIRECTOR: STANDARDS & DESIGN			
X	XX-XX-XX		REVISION	XX	XX	 DIRECTOR OF ENGINEERING AND CONSTRUCTION			
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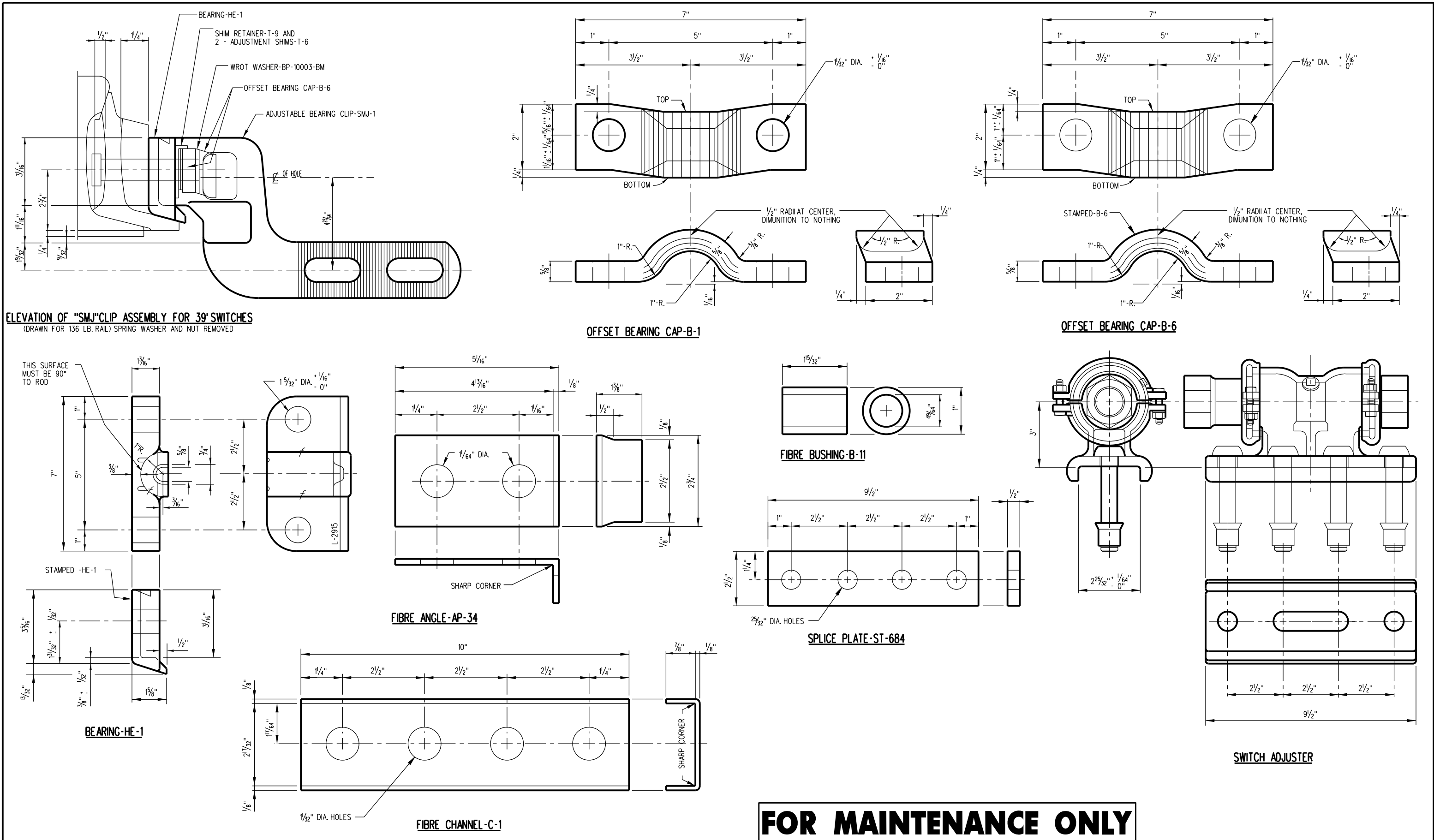
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ENGINEERING STANDARDS

NO. 10 SWITCH ROD DETAILS

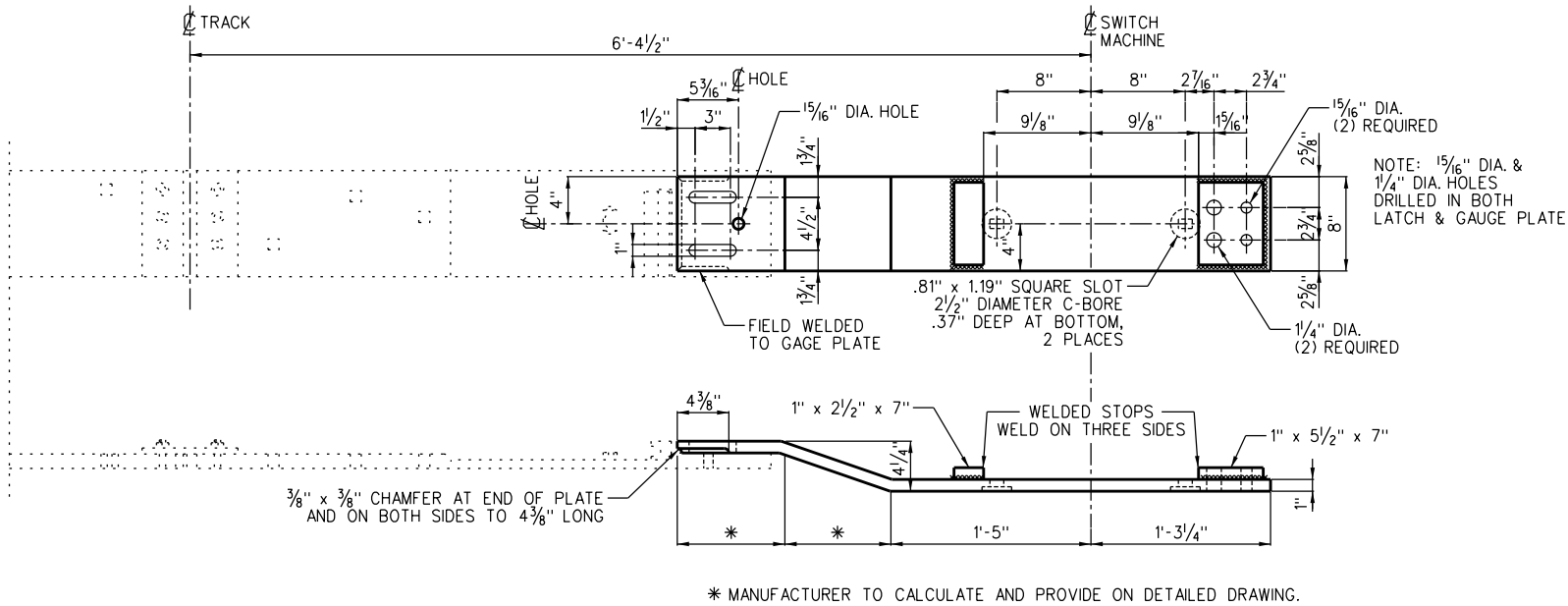
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REVISION	SHEET		
—	10	OF 15	
CADD FILE:		ES2922-10	



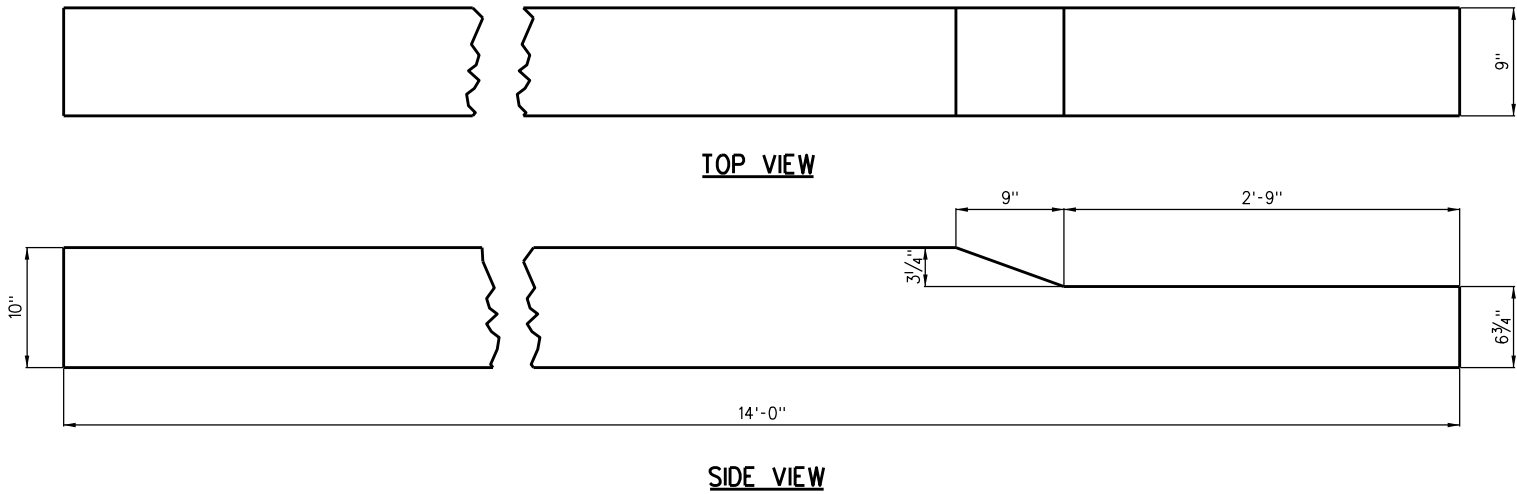
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REVISION				SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY				NO. 10 SWITCH ROD MISCELLANEOUS DETAILS				SCALE: 6" = 1'-0"
REV. DATE DESCRIPTION DES. ENG.				ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012				11 OF 15				SHEET
								ES2922-11				CADD FILE:

NOTE:
SEE SHEET 15 FOR NOTES.



EXTENSION PLATE
(2 PCS. REQ'D. AS SHOWN)

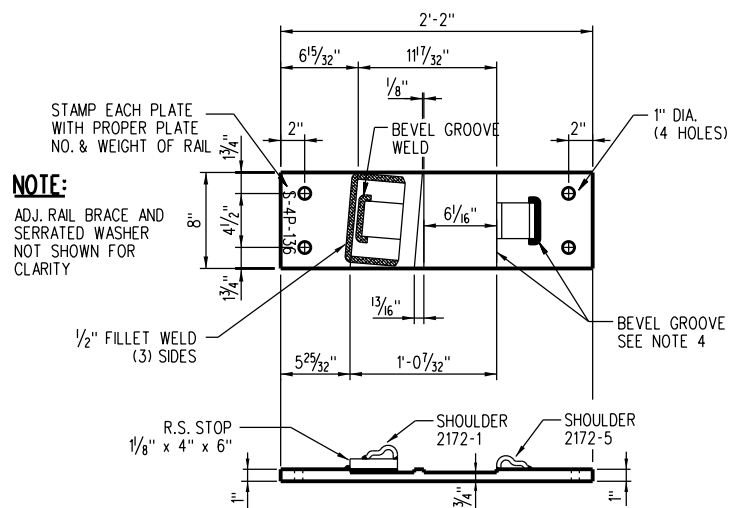


DAP TIE
(2 PCS. REQ'D. AS SHOWN)

US&S M23-A SWITCH MACHINE MUST BE FURNISHED
WITH FINISHED MOUNTING LUGS.

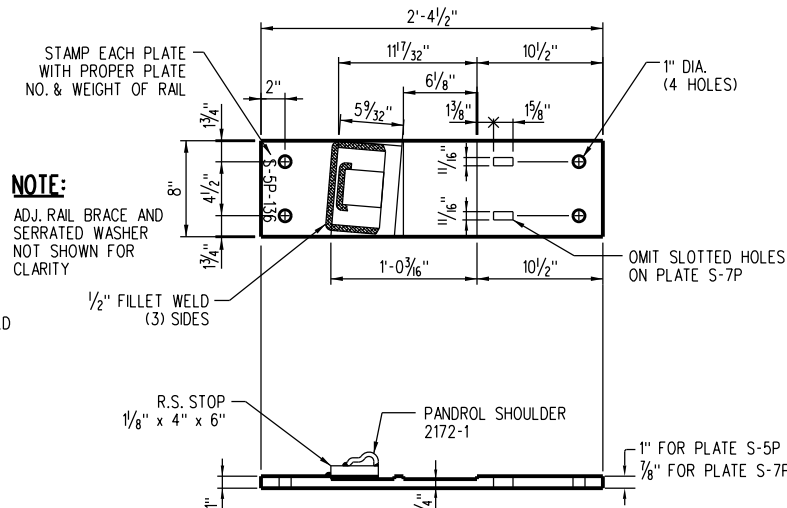
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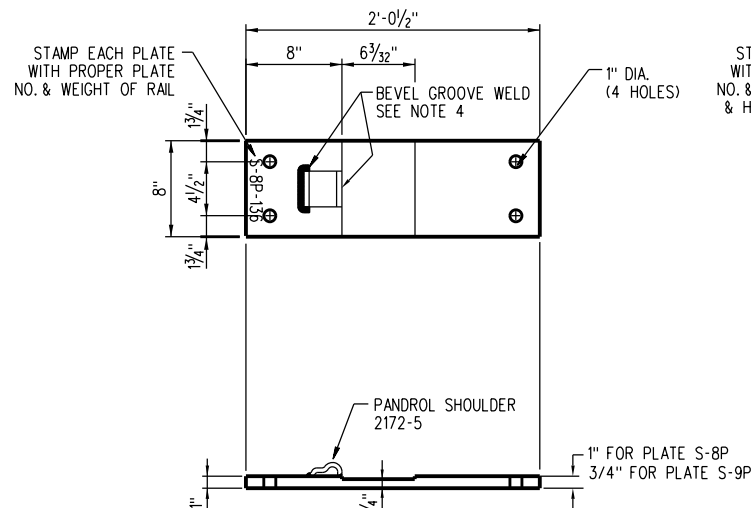
BRACE PLATE ~ S-4P

1" x 8" x 2'-2" LG. ~ MILLED ~ W/ADJ. RAIL BRACE
2 - S-4P PLATES REQUIRED AS SHOWN



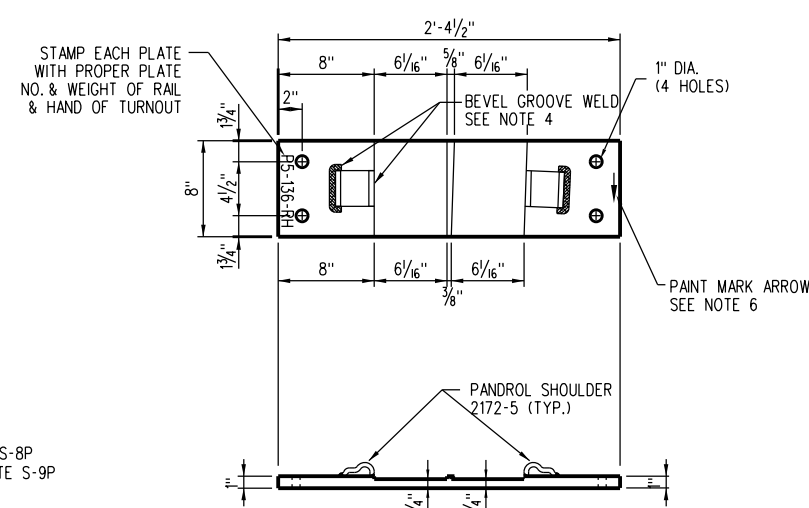
BRACE SLIDE PLATE ~ S-5P & S-7P

1" x 8" x 2'-4 1/2" LG. ~ MILLED ~ W/ADJ. RAIL BRACE
4 - S-5P PLATES REQUIRED AS SHOWN
2 - S-7P PLATES REQUIRED AS SHOWN



SLIDE PLATE - S-8P & S-9P

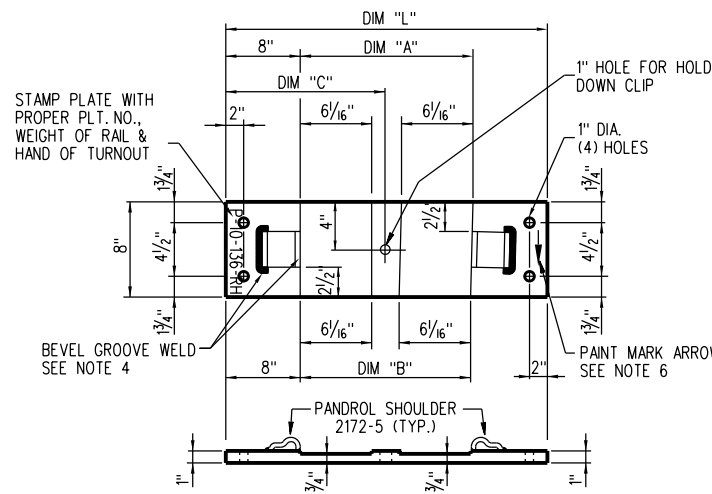
1" x 8" x 2'-0 1/2" LG. ~ MILLED ~ W/PANDROL CLIP
6 - S-8P PLATES REQUIRED AS SHOWN (1/4" RISER)
4 - S-9P PLATES REQUIRED AS SHOWN (0" RISER)



HEEL PLATE - P5 - RH

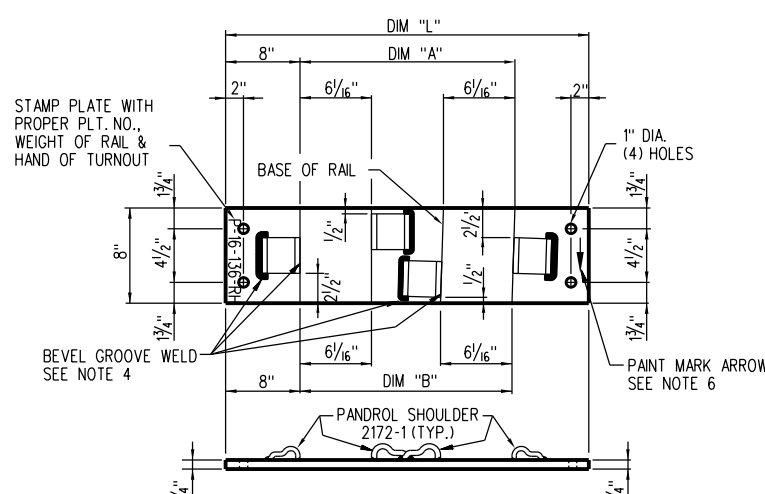
1" x 8" x 2'-4 1/2" LG. ~ MILLED ~ W/PANDROL CLIPS
2 - P5-RH PLATES REQUIRED AS SHOWN FOR R.H. T.O.

SWITCH PLATES



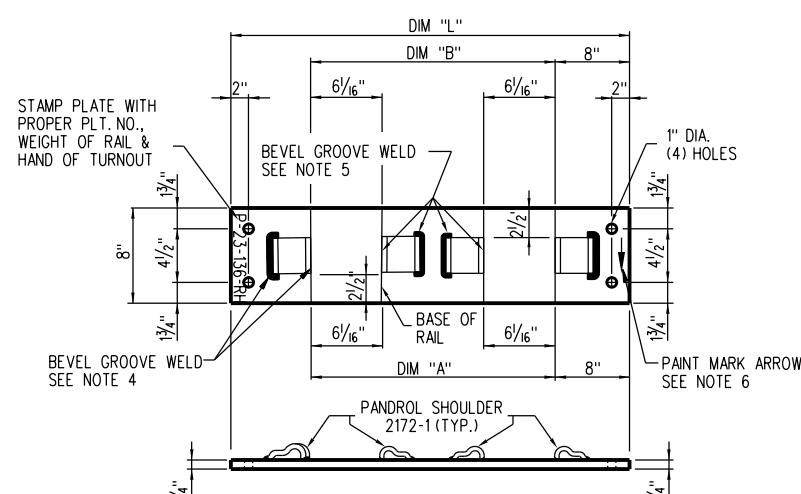
TURNOUT PLATES - P-10 THRU P-15

1" x 8" x DIM "L" - MILLED - W/ PANDROLS



TURNOUT PLATES - P-16 THRU P-18 & P-29

3/4" x 8" x DIM "L" - FLAT - W/ PANDROL CLIPS



TURNOUT PLATES - P-19 THRU P-22 & P-30

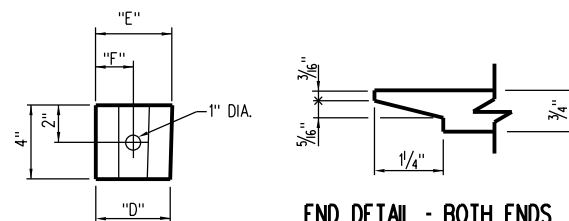
3/4" x 8" x DIM "L" - FLAT - W/ PANDROL CLIPS

NOTES:

- PLATES TO BE MADE OF MILD ROLLED STEEL.
- EACH PLATE TO BE PLAINLY STAMPED WITH PLATE NO. AND 136 (WEIGHT OF RAIL) & HAND OF TURNOUT (R.H. OR L.H.)
- THE PANDROL TYPE WELD - ON PRESSED STEEL SHOULDER, MADE FROM MILD STEEL, TO BE PURCHASED FROM PANDROL INTERNATIONAL OR APPROVED ALTERNATE MEETING PANDROL'S DESIGN SPECIFICATIONS.
- THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO THE PLATE. ANY WELD PROJECTING BEYOND THE VERTICAL FACE OF SHOULDER IN THE AREA OF THE RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.
- THE PLATES AS SHOWN ARE FOR A 136 LB., NO. 10 RIGHT HAND TURNOUT. FOR A LEFT HAND TURNOUT, PLATES P-10 THRU P-29 INCLUSIVE AND FROG PLATES AND GAGE PLATES FG-1P THRU FG-3P ARE TO BE OPPOSITE.
- DIRECTION OF ARROW SHOWN IS AN EXAMPLE ONLY. USING SHEET NO. 2922-03 AS A GUIDE, PAINT MARK EACH PLATE WITH AN ARROW POINTING TOWARD SWITCH POINT.

WELDING SPECIFICATIONS

- SET PRESSED STEEL SHOULDER FLUSH AGAINST LINE OF BASE OF RAIL OR SHOULDER OF MILLED PLATE AS SHOWN AND WELD WITH 2 - PASS 3/8" WELD.
- STOP PLATE FOR ADJUSTABLE RAIL BRACE TO BE SET FLUSH WITH SHOULDER OF MILLED PLATE AS SHOWN AND WELD WITH 3 - PASS 1/2" FILLET WELD.
- SHOULDERS AND STOPS ARE TO BE CAREFULLY WELDED TO PLATE. NO WELD SHALL PROJECT BEYOND THE VERTICAL EDGE OF THE UNWELDED FOURTH SIDE OF THE STOP PLATE OR VERTICAL FACE OF SHOULDER IN THE AREA OF THE RAIL SEAT. ANY WELD PROJECTING BEYOND THE FACE OF THE STOP OR SHOULDER MUST BE MACHINED OFF TO PROVIDE CLEAR DIMENSION CALLED FOR.
- FOR WELDING PRESSED STEEL SHOULDERS OR PLATE STOPS USE THE FOLLOWING:
 - ELECTRODE 1/32" INCH, WELDING SPEC. 7018XLM.
 - ELECTRODE 3/16" INCH, WELDING SPEC. 7018XLM.
 - WIRE, WELDING 3/32" INCH, NR203, 1/2" NICKEL FLUX CORE.
 OTHER WIRE OR ELECTRODES MEETING SPECIFICATIONS AS CALLED FOR, APPROVED BY DIRECTOR OF ENGINEERING, MAY BE USED.



HOLD DOWN CLIP FOR PLATES P-10 THRU P-15

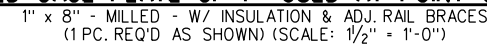
DIMENSION TABLE								
PLATE	DIM "A"	DIM "B"	DIM "C"	DIM "L"	PLTs REQ'D.	DIM "D"	DIM "E"	CLIPS REQ'D.
P-10	13 1/8"	13 3/8"	14 19/32"	2'-5"	2 E.A.	3 7/8"	3 7/8"	2 E.A.
P-11	13 23/32"	13 5/16"	14 1/8"	2'-6"	2 E.A.	3 23/32"	3 15/32"	2 E.A.
P-12	14 11/32"	14 19/32"	15 3/16"	2'-6 1/2"	2 E.A.	4 11/32"	4 9/16"	2 E.A.
P-13	15"	15 1/4"	15 1/2"	2'-7 1/2"	2 E.A.	4 31/32"	5 1/32"	2 E.A.
P-14	15 11/16"	15 3/32"	15 23/32"	2'-8"	2 E.A.	5 21/32"	5 15/16"	2 E.A.
P-15	16 13/32"	16 23/32"	16 1/32"	2'-8 1/2"	2 E.A.	6 3/8"	6 11/16"	2 E.A.

DIMENSION TABLE				
PLATE	DIM "A"	DIM "B"	DIM "L"	PLTs REQ'D.
P-16	17 1/8"	17 1/8"	2'-9 1/2"	2 E.A.
P-17	17 5/16"	18 1/4"	2'-10"	2 E.A.
P-18	18 23/32"	19 3/32"	2'-11"	2 E.A.
P-29	19 11/32"	20 7/8"	3'-0"	1 E.A.

DIMENSION TABLE				
PLATE	DIM "A"	DIM "B"	DIM "L"	PLTs REQ'D.
P-19	20 5/32"	19 25/32"	3'-0"	2 E.A.
P-20	21 1/4"	20 3/4"	3'-1"	2 E.A.
P-21	22 23/32"	21 3/4"	3'-2"	2 E.A.
P-22	22 3/16"	21 1/16"	3'-2 1/2"	1 E.A.
P-30	22 25/32"	21 11/32"	3'-2"	1 E.A.

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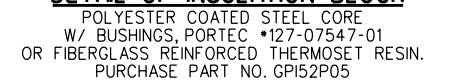
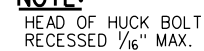
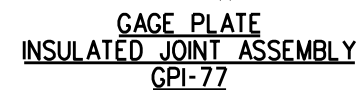
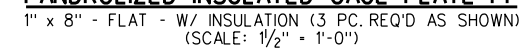
				DRAWN BY: A. CARLOS DATE: 03/31/2011		SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES:		ENGINEERING STANDARDS		STANDARD 2922	
				Narex D. Pae		SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.		NO. 10 TURNOUT AND SWITCH PLATE DETAILS		SCALE: 1/2" = 1'-0"	
				Wilton Davis		SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY				REVISION SHEET	
				DIRECTOR OF ENGINEERING AND CONSTRUCTION		ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012				- 13 OF 15	
										CADD FILE:	
										ES2922-13	



SERRATED WASHER AND BRACE PLATE
NOT SHOWN FOR CLARITY.



SERRATED WASHER AND BRACE PLATE
NOT SHOWN FOR CLARITY.



DETAIL "A"
INSULATION AT PLATES
(SCALE: 3" = 1'-0")

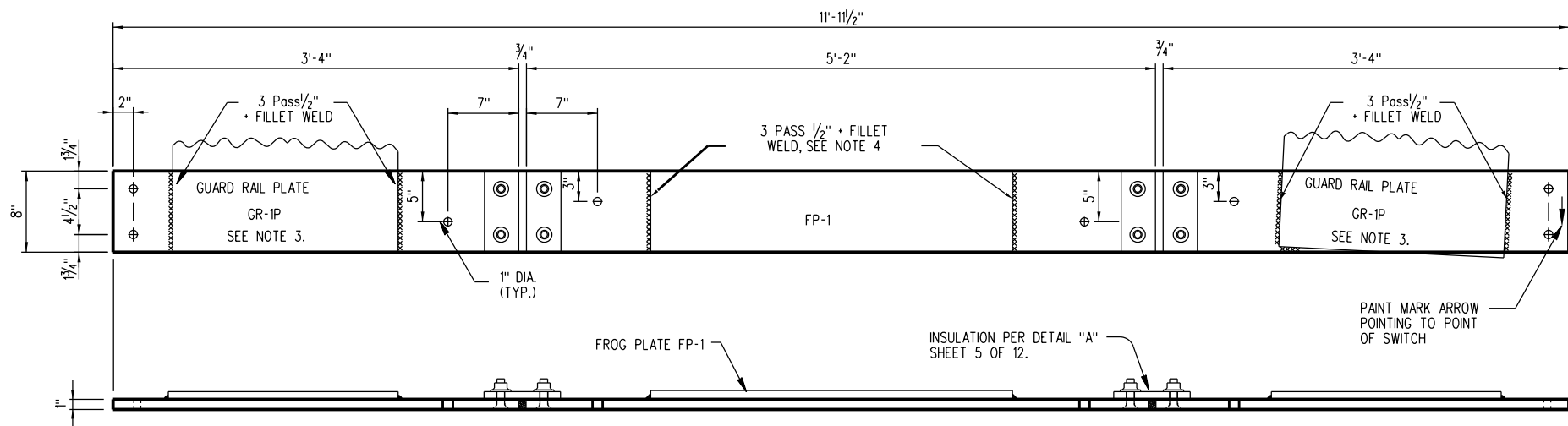
1 SCRA ENGINEERING STANDARDS ARE INTENDED FOR SCRA APPROVED USES ONLY.
2 FOR NON-SCRA APPROVED USES
3 SCRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF
4 THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE
5 STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED
6 WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES
7 AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF
8 THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH
9 USE. USE OF THESE STANDARDS SHOULD BE REDUCED OR DISTRIBUTED IN
10 ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRA.
11 ALL RIGHTS RESERVED.



SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

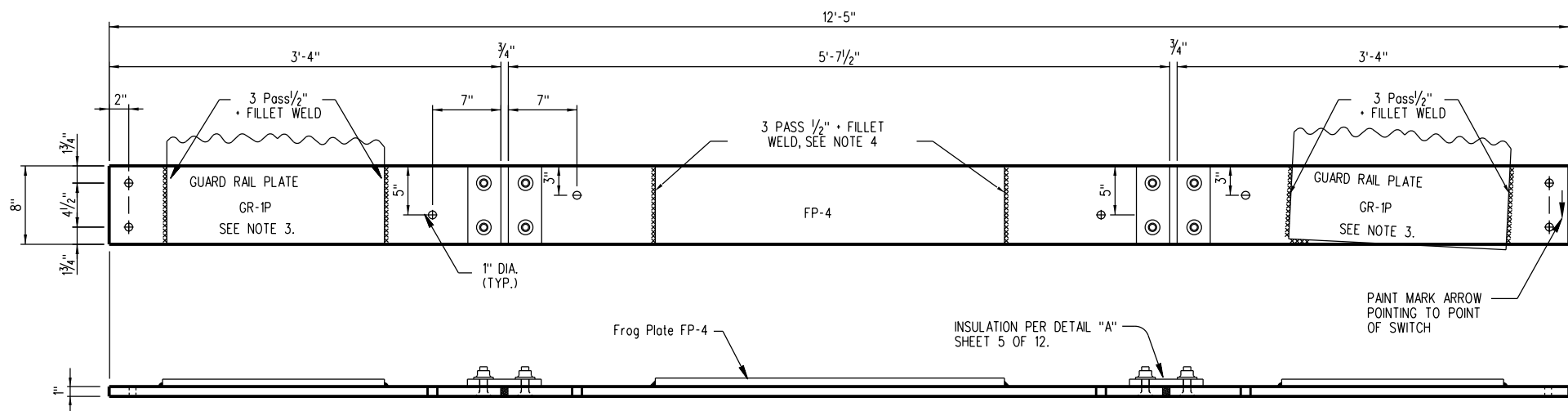
NO.10 SWITCH PLATE DETAILS

STANDARD		2922
SCALE:		
AS NOTED		
REVISION	SHEET	
-	14 OF 15	
CADD FILE:		
ES2922-14		



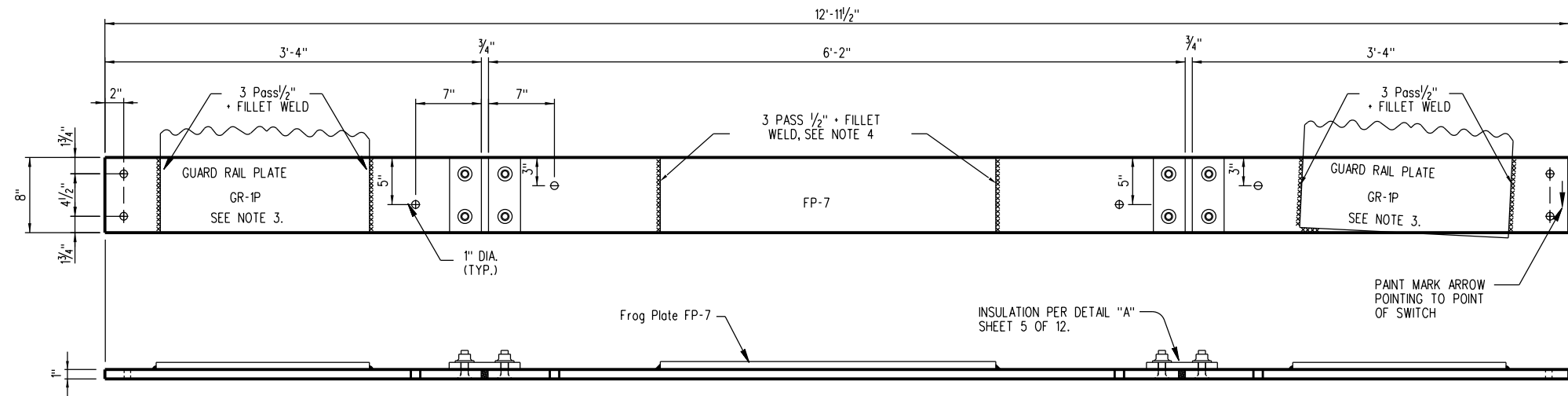
INSULATED FROG GAGE PLATE - FG-1P

3/4" x 8" - FLAT - W/ INSULATION (1 PC. REQ'D AS SHOWN)



INSULATED FROG GAGE PLATE - FG-2P

3/4" x 8" - FLAT - W/ INSULATION (1 PC. REQ'D AS SHOWN)



INSULATED FROG GAGE PLATE - FG-3P

3/4" x 8" - FLAT - W/ INSULATION (1 PC. REQ'D AS SHOWN)

NOTES:

1. PLATES TO BE MADE OF MILD ROLLED STEEL.
2. THE PLATES AS SHOWN ARE FOR A 136 LB., NO. 10, RIGHT HAND, HAND OPERATED TURNOUT. FOR A LEFT HAND TURNOUT, PLATES ARE TO BE OPPOSITE.
3. GUARD RAIL PLATES ARE TO BE INSTALLED AND WELDED TO THE FROG GAGE PLATES IN THE FIELD WITH A 3 PASS 1/2" + FILLET WELD CONTINUOUS ON BOTH ENDS OF THE PLATE. PLATES ARE TO BE WELDED ONLY AFTER THE GAGE PLATE AND THE FROG PLATE IS SECURED IN THE PROPER LOCATION ON THE TIE WITH PROPER ALIGNMENT.
4. FROG BASE PLATES FP-1, FP-4 AND FP-7 ARE TO BE WELDED TO THE FROG GAGE PLATES IN THE FIELD WITH A 3 PASS 1/2" + FILLET WELD CONTINUOUS ON BOTH ENDS OF THE PLATE. PLATES ARE TO BE WELDED ONLY AFTER THE GAGE PLATE AND THE FROG IS SECURED IN THE PROPER LOCATION ON THE TIE WITH PROPER ALIGNMENT.

FOR MAINTENANCE ONLY

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EQUIVALENT CURVE DATA	
CURVE	3.1046'
RADIUS	1845.54'
DELTA	4.091'
TANGENT (T)	65.91'
LENGTH (L)	131.77'
EXTERNAL	1.18'
CROSSOVER DATA	
LEAD	108.625'
PC TO PS	23.78'
PS TO PI	42.13'
PI TO 1/2" PF	66.50'
LENGTH OF TURNOUT	160.12'
PS TO PT	107.99'

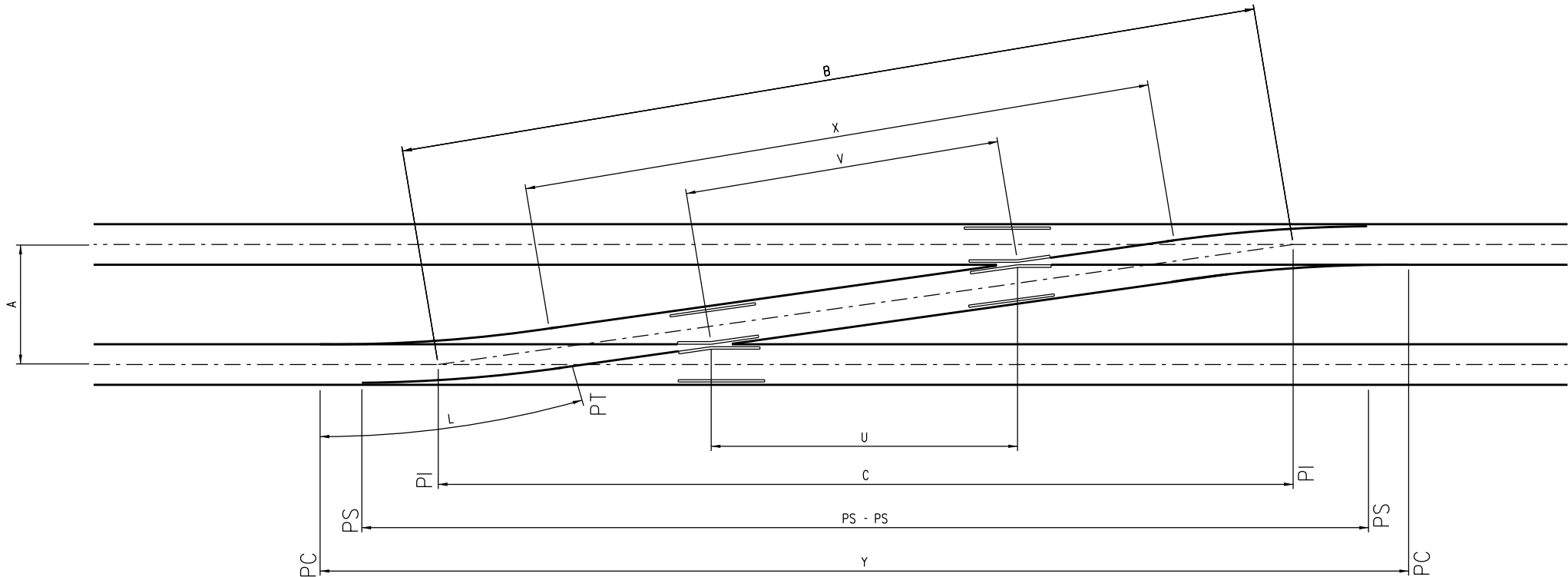
FROG DATA	
FROG NUMBER	14
FROG ANGLE	4° -05'-27"
SWITCH DATA	
SWITCH LENGTH	26'-0"
HEEL SPREAD	6 1/4"
HEEL ANGLE	1° -27'-00"
SWITCH ANGLE	0° -50'-44"
RADIUS OF CENTER LINE - SWITCH	2,462.20'
TANGENT LENGTH SWITCH	12.98'
CENTRAL ANGLE OF CLOSURE CURVE-SWITCH	0° -36'-16"
DEGREE OF CURVE - SWITCH	2° -38'-45"
TURNOUT DATA	
RADIUS OF CENTER LINE - TURNOUT	1,576.40'
TANGENT LENGTH - TURNOUT	44.51'
CENTRAL ANGLE OF CLOSURE CURVE - TURNOUT	3° -14'-07"
DEGREE OF CURVE - TURNOUT	3° -38'-07"

CROSSOVER DATA TABLE									
A	B	C	X	Y	2L+X	2L+X- 2(PC-PS)	PS TO PS	U	V
13	182.23	181.77	50.41	313.59	313.94	266.38	266.03	48.78	49.24
14	196.25	195.75	64.42	327.57	327.96	280.40	280.01	62.76	63.26
15	210.27	209.73	78.44	341.56	341.98	294.41	293.99	76.74	77.27
16	224.28	223.71	92.46	355.54	365.00	308.43	307.97	90.72	91.29
17	238.30	237.70	106.48	369.52	370.01	322.45	321.95	104.70	105.31
18	252.32	251.68	120.50	383.50	384.03	336.47	335.94	118.69	119.33
19	266.34	265.55	134.51	397.48	398.05	350.49	349.92	132.67	133.34
20	280.36	279.64	158.53	411.47	412.07	364.50	363.90	146.65	147.36
21	294.37	293.62	162.55	425.45	426.09	378.52	377.88	160.63	161.38
22	308.39	307.61	176.57	439.43	440.10	392.54	391.87	174.62	175.40
23	322.41	321.59	190.58	453.41	454.12	406.56	405.85	188.60	189.42
24	336.43	335.57	204.60	467.39	468.14	420.57	419.83	202.58	203.43
25	350.45	349.55	218.32	481.38	482.16	434.59	433.81	216.56	217.45
26	364.46	363.53	232.64	495.36	496.18	448.61	447.78	230.54	231.47
27	378.48	377.52	246.66	509.34	510.19	462.63	461.78	244.53	245.49
28	392.50	391.50	260.67	523.32	524.21	476.65	475.76	258.51	259.50
29	406.52	405.48	274.69	537.31	538.23	490.66	489.74	272.49	273.52
30	420.53	419.46	288.71	551.29	552.25	504.68	503.72	286.47	287.54
31	434.55	433.44	302.73	565.27	566.26	518.70	517.70	300.45	301.56
32	448.57	447.43	316.75	579.25	580.28	532.72	531.69	314.44	315.58

DRAWING INDEX

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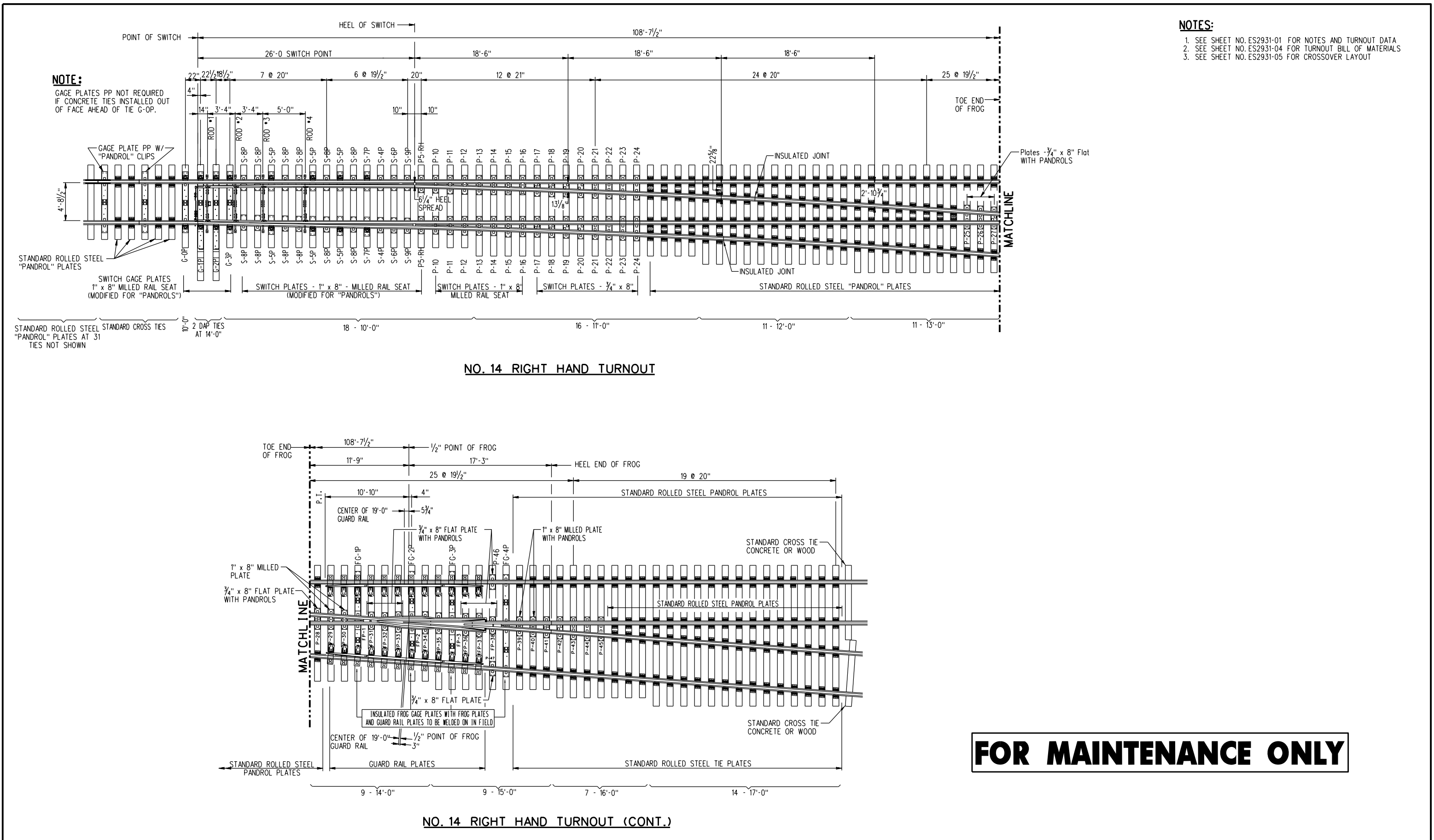


CROSSOVER LAYOUT

NOTES:

- TURNOUT TO BE FABRICATED FROM 136 LB. HEAD HARDENED RAIL, FROM POINT END TO LAST LONG SWITCH TIE.
- LOCATION OF INSULATED JOINTS IS DETERMINED BY DRAWING NUMBER ES2931-02.
IT WILL BE SATISFACTORY TO RELOCATE THE INSULATED JOINT IN THE FIELD UP TO 12"
SO AS TO PROVIDE A SUITABLE SUSPENDED JOINT, PROVIDED THE STAGGER OF INSULATED
JOINTS DOES NOT EXCEED 4'-6". SUSPENDED INSULATED JOINTS MUST BE LOCATED IN A CRIB
AREA BETWEEN TIES, A MINIMUM DISTANCE OF 4" FROM EDGE OF NEAREST TIE PLATE.
- ALL INSULATED JOINTS ARE TO BE ADHESIVE BONDED PREFABRICATED MITRE CUT INSULATED JOINTS
PER ES2504 UNLESS OTHERWISE SPECIFIED.
- ALL MATERIALS REQUIRED FOR HAND OR MACHINE OPERATED SWITCH OPERATION WILL BE FURNISHED PER
REQUIREMENTS OF THE SCRRA DIRECTOR OF ENGINEERING AND CONSTRUCTION.
- MATERIALS AND WORKMANSHIP, ALSO ANY CONSTRUCTION DETAILS NOT SHOWN, SHALL BE PER CURRENT
AREMA "MANUAL AND PORTFOLIO" UNLESS OTHERWISE SPECIFIED.
- WHERE REQUIRED, ALL IDENTIFICATION SYMBOLS TO BE PLAINLY STAMPED.
- GAGE PLATES WILL BE FURNISHED INSULATED. SWITCH RODS WILL BE FURNISHED INSULATED UNLESS
OTHERWISE SPECIFIED.
- MANUFACTURER SHALL SUBMIT TWO COPIES OF SHOP DRAWINGS TO THE SCRRA DIRECTOR OF ENGINEERING
AND CONSTRUCTION FOR APPROVAL PRIOR TO FABRICATION OF TURNOUT. SHOP DRAWINGS THAT CHANGE DETAILS
OF THESE STANDARDS MUST CLEARLY SPECIFY SUCH PROPOSED CHANGES.
- THE MATERIAL INCLUDED IN A "TURNOUT COMPLETE" IS EVERYTHING LISTED IN THE BILL OF MATERIALS.
TO CONSTRUCT A COMPLETE TURNOUT, SWITCH TIES (PER LIST ON THIS SHEET) AND INSULATED JOINTS,
FIELD WELDS, RUNNING RAIL, AND CLOSURE RAIL IDENTIFICATION ON SHEET ES2931-02 MUST ALSO BE
SUPPLIED. THE MATERIAL FOR A "CROSSOVER COMPLETE" IS IDENTIFIED ON SHEET ES2931-05.
- TIE PLATES SHALL CONFORM TO SCRRA ENGINEERING STANDARD ES2454.
- SCREW SPIKES (5/16" X 6-2 TPI) SHALL CONFORM TO SCRRA ENGINEERING STANDARD ES2357.
PLATE HOLES SHALL BE 1" DIAMETER. PILOT HOLES IN TIES SHALL BE 3/16" DIAMETER. SCREW SPIKES
SHALL BE SCREWED INTO WOOD (NOT DRIVEN).
- MANUFACTURER SHALL BEVEL RAIL ENDS PER CURRENT AREMA PLAN NO. 1005.
- THE 26'-0" SWITCH POINT, MADE FROM 40'-0" RAIL PER ES2931-09 SHALL BE FURNISHED WITH SWITCH
RODS NO. 1 AND 2 PER ES2931-11 AND ES2931-12.
- FOR LOCATION OF INSULATED AND COMPROMISE JOINTS FOR NO. 14 TURNOUT AND CROSSOVER, SEE DRAWING
NO. ES2931-02.
- GAGE PLATES FOR SWITCH AND FROG, SWITCH HEEL PLATE (FOR BOTH R.H. AND L.H. TURNOUTS) AND PLATES
P-10 THRU P-45 ARE DESIGNED TO BE PERPENDICULAR TO THE MAIN LINE THRU RUN RAILS.
- UPON COMPLETION OF TURNOUT INSTALLATION, RUNNING RAIL MUST BE ADJUSTED TO SCRRA NEUTRAL
RAIL TEMPERATURE.
- ALL E-CLIPS SHALL BE GALVANIZED.
- SWICH POINTS SHALL BE FABRICATED PER AREMA SPECIFICATION NO. 9-28-92 AND ES2931-09.
- THE TOLERANCE FOR SPACING OF SWITCH TIES IS +/- 1/2" RELATIVE TO ADJACENT TIES AND 1/4" RELATIVE
TO CUMULATIVE DIMENSION FROM POINT OF SWITCH (PS).

				DRAWN BY: A. CARLOS		DATE: 03/31/2011		SCRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRA APPROVED USES ONLY. FOR NON-SCRRA APPROVED USES: SCRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRA. ALL RIGHTS RESERVED.		 METROLINK [®]		ENGINEERING STANDARDS		STANDARD 2931	
												SCALE: NONE			
				ASSISTANT DIRECTOR: STANDARDS & DESIGN										REVISION SHEET	
														- 1 OF 16	
				DIRECTOR OF ENGINEERING AND CONSTRUCTION										CADD FILE: ES2931-01	
X XX-XX-XX				REVISION		XX XX						NO. 14 136 LB. R.H. RBM FROG TURNOUT AND CROSSOVER GENERAL NOTES AND DATA			
REV.				DATE		DESCRIPTION		DES.		ENG.					



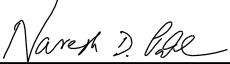
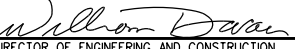
				DRAWN BY: A. CARLOS		DATE: 03/31/2011	SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.	 METROLINK SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	ENGINEERING STANDARDS		STANDARD 2931		
				NO. 14 136 LB. R.H. RBM FROG TURNOUT LAYOUT		SCALE: 3/16" = 1'-0"			REVISION SHEET		3 OF 16		
									CADD FILE:		ES2931-03		
X	XX-XX-XX	REVISION	XX	XX									
REV.	DATE	DESCRIPTION	DES.	ENG.									

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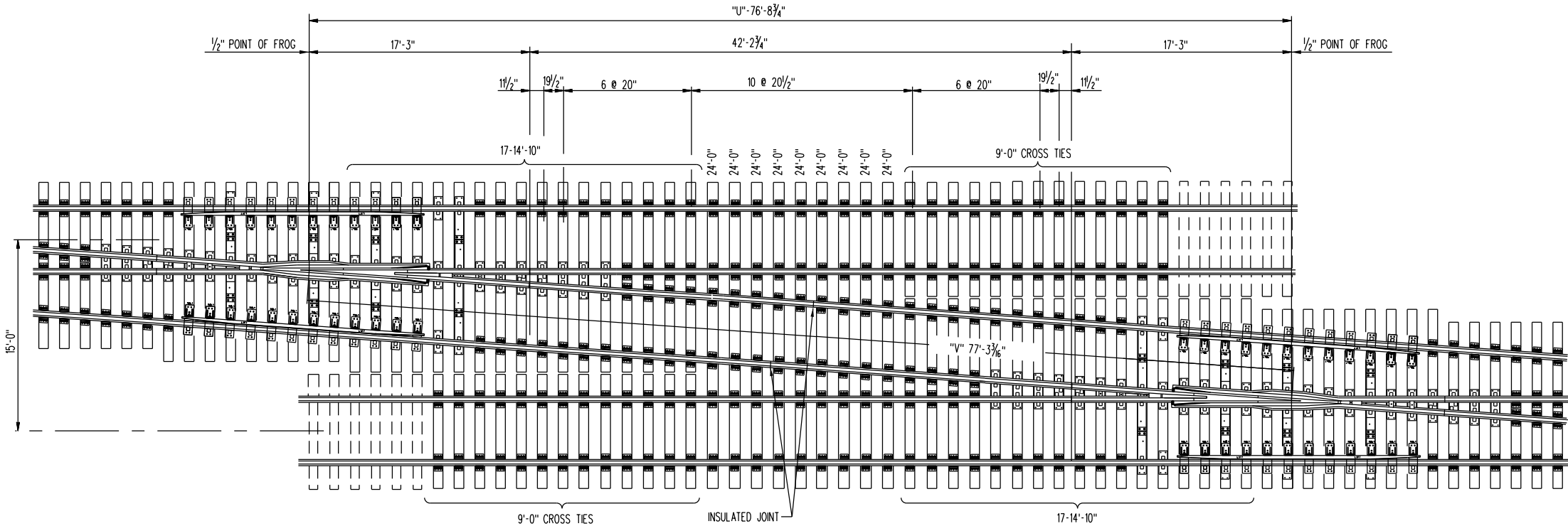
BILL OF MATERIAL FOR LATERAL TURNOUT	
QTY.	DESCRIPTION
1	NO.14 RAIL BOUND MANGANESE FROG
2	19'-0" "U-69" ADJUSTABLE GUARD RAIL W/ PLATES
1 PAIR	26'-0" EXTENDED FIELD WELDED TYPE SWITCH POINTS (40'-0" RAIL)
1 EACH	R.H. & L.H. SAMSON STOCK RAILS (40'-0")
1	"MF" TYPE FRONT ROD W/ "MF" CLIPS
1	NO.1 SMJ TYPE SWITCH ROD W/ BASKET
1 EACH	NO.2 THRU NO. 4 SMJ TYPE SWITCH ROD W/ BASKET
1	VERTICAL SWITCH ROD ASSEMBLY W/ SMJ CLIPS
2	SWITCH GAGE PLATE P-P
1 EACH	SWITCH GAGE PLATES G-OP THRU G-3P
2 EACH	TURNOUT PLATES P-10 THRU P-24
1 EACH	TURNOUT PLATES P-25 THRU P-30
1 EACH	TURNOUT PLATES P-39 THRU P-45
1 EACH	SINGLE RAIL PLATES P-46 AND P-47
1 EACH	FROG GAGE PLATES FG-1P THRU FG-4P
1 EACH	FROG PLATES FP-31 THRU FP-38
1 EACH	FROG CLAMP PLATES FCP-1 THRU FCP-3
2	SLIDE PLATE S-4P
6	SLIDE PLATE S-5P
2	SLIDE PLATE S-6P
2	SLIDE PLATE S-7P
12	SLIDE PLATE S-8P
2	SLIDE PLATES S-9P
2	HEEL PLATE P5-RH
4	D.I. RAIL HOLD DOWN CLIPS E-3706
6	D.I. RAIL HOLD DOWN CLIPS E-3708
2	D.I. RAIL HOLD DOWN CLIPS E-3709
4	D.I. RAIL HOLD DOWN CLIPS E-3710
16	BOLTLESS ADJUSTABLE BRACE ASSEMBLY
144	"PANDROL", OR EQUAL, TYPE PLATES
288	"PANDROL", OR EQUAL, CLIP TYPE E-2055
8	"PANDROL", OR EQUAL, CLIP TYPE E-2063
576	"PANDROL", OR EQUAL, 15/16" DIA. No. 5760 SCREW SPIKES
1 EACH	16'-0" RAIL
1 EACH	24'-6" RAIL
1 EACH	24'-10" RAIL
4 EACH	39'-0" RAIL
2 EACH	45'-0" RAIL
1 EACH	48'-9" RAIL
1 EACH	56'-10 1/2" RAIL
2 EA.	EPOXY BONDED PREFABRICATED MITRE CUT INSULATED JOINT 16'-6"

BILL OF SWITCH TIES FOR TURNOUT			
PIECES	SIZE	LENGTH	BOARD FEET
1	7" x 9"	10'-0"	52.50
2	7" x 9"	15'-0"	136.50
18	7" x 9"	10'-0"	945.00
16	7" x 9"	11'-0"	924.00
11	7" x 9"	12'-0"	693.00
11	7" x 9"	13'-0"	750.75
9	7" x 9"	14'-0"	661.50
2	10" x 9"	14'-0" DAP TIES	147.00
7	7" x 9"	15'-0"	551.25
7	7" x 9"	16'-0"	588.00
14	7" x 9"	17'-0"	1249.50
TOTAL			TOTAL
98			6699.00

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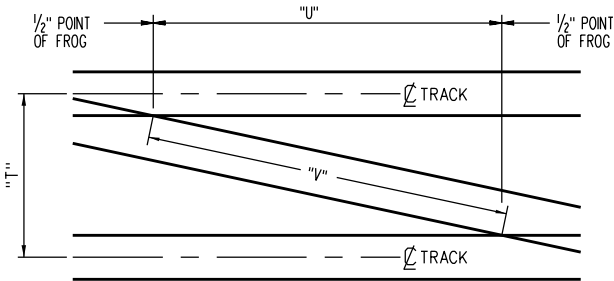
					DRAWN BY: A. CARLOS	DATE: 03/31/2011	SCRRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRRA APPROVED USES ONLY. FOR NON-SCRRRA APPROVED USES: SCRRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRRA. ALL RIGHTS RESERVED.	 METROLINK® SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	ENGINEERING STANDARDS	NO. 14 136 LB. R.H. RBM FROG TURNOUT BILL OF MATERIALS	STANDARD 2931 SCALE: NONE REVISION SHEET - 4 OF 16 CADD FILE: ES2931-04	
					 ASSISTANT DIRECTOR: STANDARDS & DESIGN  DIRECTOR OF ENGINEERING AND CONSTRUCTION							
X	XX-XX-XX	REVISION	XX	XX								
REV.	DATE	DESCRIPTION	DES.	ENG.								

- NOTES:
1. SEE SHEET NO. ES2931-01 FOR TURNOUT NOTES AND DATA
 2. SEE SHEET NO. ES2931-04 FOR BILL OF MATERIALS
 3. SEE SHEET NO. ES2931-03



BILL OF MATERIAL	
QTY.	DESCRIPTION
2	NO. 14 RAIL BOUND MANGANESE FROG
4	19'-0" "U-69" ADJUSTABLE GUARD RAIL W/ PLATES
2	"MF" TYPE FRONT ROD W/ "MF" CLIPS
2	NO. 1 SMJ TYPE SWITCH ROD W/ BASKET
2 EACH	NO. 2 THRU NO. 4 SMJ TYPE SWITCH ROD W/ BASKET
2	VERTICAL SWITCH ROD ASSEMBLY W/ SMJ CLIPS
4	SWITCH GAGE PLATE P-P
2 EACH	SWITCH GAGE PLATES G-OP THRU G-3P
4 EACH	TURNOUT PLATES P-10 THRU P-24
2 EACH	TURNOUT PLATES P-25 THRU P-30
2 EACH	TURNOUT PLATES P-39 THRU P-45
2 EACH	SINGLE RAIL PLATES P-46 AND P-47
2 EACH	FROG GAGE PLATES FG-1P THRU FG-4P
2 EACH	FROG PLATES FP-31 THRU FP-38
2 EACH	FROG CLAMP PLATES FCP-1 THRU FCP-3
4	SLIDE PLATE S-4P
12	SLIDE PLATE S-5P
4	SLIDE PLATE S-6P
4	SLIDE PLATE S-7P
24	SLIDE PLATE S-8P
4	SLIDE PLATES S-9P
4	HEEL PLATE P5-RH
8	D.I. RAIL HOLD DOWN CLIPS E-3706
12	D.I. RAIL HOLD DOWN CLIPS E-3708
4	D.I. RAIL HOLD DOWN CLIPS E-3709
8	D.I. RAIL HOLD DOWN CLIPS E-3710
32	BOLTLESS ADJUSTABLE BRACE ASSEMBLY
186	"PANDROL", OR EQUAL, TYPE PLATES
372	"PANDROL", OR EQUAL, CLIP TYPE E-2055
24	"PANDROL", OR EQUAL, CLIP TYPE E-2063
744	"PANDROL", OR EQUAL, 15/16" DIA. No. 5760 SCREW SPIKES

CROSSOVER



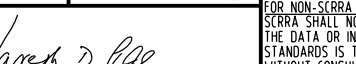
CROSSOVER DATA DETAIL

CROSSOVER DATA		
MAIN TRACKS - TANGENT AND PARALLEL		
CROSSOVER - TANGENT BETWEEN FROGS		
Track Centers "T"	DISTANCE BETWEEN 1/2" FROG POINTS	
	ON MAIN TRACK "U"	ON CROSSOVER "V"
14'-0"	62'-9"	63'-3"
15'-0"	76'-8 3/4"	77'-3 3/8"
16'-0"	90'-8 1/2"	91'-3 3/8"
17'-0"	104'-8 3/8"	105'-3 1/2"
Each 1"	1.165'	1.168'

BILL OF MATERIAL (CONT.)	
QTY.	DESCRIPTION
2 EACH	16'-0" RAIL
2 EACH	16'-11 3/4" RAIL
2 EACH	24'-6" RAIL
2 EACH	24'-10" RAIL
2 EACH	39'-0" RAIL
2 EACH	45'-0" RAIL
2 EACH	48'-9" RAIL
2 EACH	56'-10 1/2" RAIL
6 EACH	EPOXY BONDED PREFABRICATED MITRE CUT INSULATED JOINTS (16'-6")
2 PAIR	26'-0" EXTENDED FIELD WELDED TYPE SWITCH POINTS (40'-0" RAIL)
2 PAIR	R.H. & L.H. SAMSON STOCK RAILS (40'-0" RAIL)

BILL OF SWITCH TIES			
PIECES	SIZE	LENGTH	BOARD FEET
34	7" x 9"	9'-0"	1606.50
38	7" x 9"	10'-0"	1995.00
32	7" x 9"	11'-0"	1848.00
22	7" x 9"	12'-0"	1386.00
20	7" x 9"	13'-0"	1365.00
18	7" x 9"	14'-0"	1323.00
4	10" x 9"	14'-0" DAP TIES	294.00
34	7" x 9"	14'-10"	2677.50
9	7" x 9"	24'-0"	1134.00
TOTAL			TOTAL
207			13629.00

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				 ASSISTANT DIRECTOR: STANDARDS & DESIGN					SCALE: $\frac{3}{16}" = 1'-0"$			
				 DIRECTOR OF ENGINEERING AND CONSTRUCTION					REVISION SHEET			
									- 5 OF 16			
									CADD FILE: ES2931-05			
X		XX-XX-XX		REVISION		XX XX				NO. 14 136 LB. R.H. RBM FROG CROSSOVER LAYOUT AND BILL OF MATERIALS		
REV.		DATE		DESCRIPTION		DES. ENG.						



1. PLATES TO BE MADE OF MILD ROLLED STEEL.
2. THE PLATES AS SHOWN ARE FOR A 136 LB. NO. 14, RIGHT HAND TURNOUT, FOR A LEFT HAND TURNOUT PLATES ARE TO BE OPPOSITE.
3. THE "PANDROL" TYPE WELD-ON PRESSED STEEL SHOULDER, MADE OF MILD STEEL, TO BE PURCHASED FROM "PANDROL INTERNATIONAL" OR APPROVED ALTERNATE MEETING "PANDROL'S" DESIGN SPECIFICATIONS. THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO ALL PLATES WITH A MINIMUM 2 PASS $\frac{3}{4}$ " + FILLET WELD ALONG THE BEVELED GROOVES OF THE SHOULDER. ANY WELD PROJECTING BEYOND THE VERTICAL FACE OF THE SHOULDER IN THE AREA OF THE BASE OF RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.
4. MANUFACTURER OF FROG PLATES SHALL USE COMPLETED FROG TO VERIFY LOCATION OF SHOULDERS ON FROG PLATES FP-1, FP-2 AND FP-3 TO INSURE PROPER FIT. FROG PLATES WILL BE WELDED TO THE GAGE PLATES IN THE FIELD WITH A 3 PASS $\frac{1}{2}$ " + FILLET WELD. PLATES WILL BE WELDED ONLY AFTER THE GAGE PLATES ARE SECURED IN THE PROPER LOCATION ON THE TIE WITH THE FROG IN PLACE AT PROPER ALIGNMENT.
5. GUARD RAIL PLATES ARE TO BE INSTALLED AND WELDED TO THE FROG GAGE PLATES IN THE FIELD WITH A 3 PASS $\frac{1}{2}$ " + FILLET WELD CONTINUOUS ON BOTH ENDS OF THE PLATE. PLATES ARE TO BE WELDED ONLY AFTER THE GAGE PLATE AND THE FROG IS SECURED IN THE PROPER LOCATION ON THE TIE WITH PROPER ALIGNMENT.

1. POSITION GAGE PLATES AT DESIGNATED TIE LOCATIONS AND ANCHOR IN PLACE.
2. CHECK TRACK FOR CORRECT GAGE.
3. STARTING WITH ONE GAGE PLATE, PLACE FROG PLATES WITH ADJUSTABLE BRACES AND SECURE TO FROG AND GUARD RAIL WITH "PANDROL" CLIPS.
4. RECHECK TRACK GAGE AND CORRECT IF NECESSARY.
5. CAREFULLY WELD FROG PLATE AND GUARD RAIL PLATE TO FROG GAGE PLATES WITH 3 PASS $\frac{1}{2}$ " * FILLET WELD. FOR WELDING USE THE FOLLOWING:
 - A. ELECTRODE, $\frac{5}{32}$ INCH, WELDING SPEC. 7018XLM.
 - B. ELECTRODE, $\frac{3}{16}$ INCH, WELDING SPEC. 7018XLM.
 - C. WIRE, $\frac{3}{32}$ INCH, NR203, 1% NICKEL FLUX CORE.

OTHER WIRE OR ELECTRODES MEETING SPECIFICATIONS AS CALLED FOR AND APPROVED BY SCRR DIRECTOR OF ENGINEERING MAY BE USED.

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						 ASSISTANT DIRECTOR: STANDARDS & DESIGN  DIRECTOR OF ENGINEERING AND CONSTRUCTION			
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REV.	DATE		DESCRIPTION	DES.	ENG.				

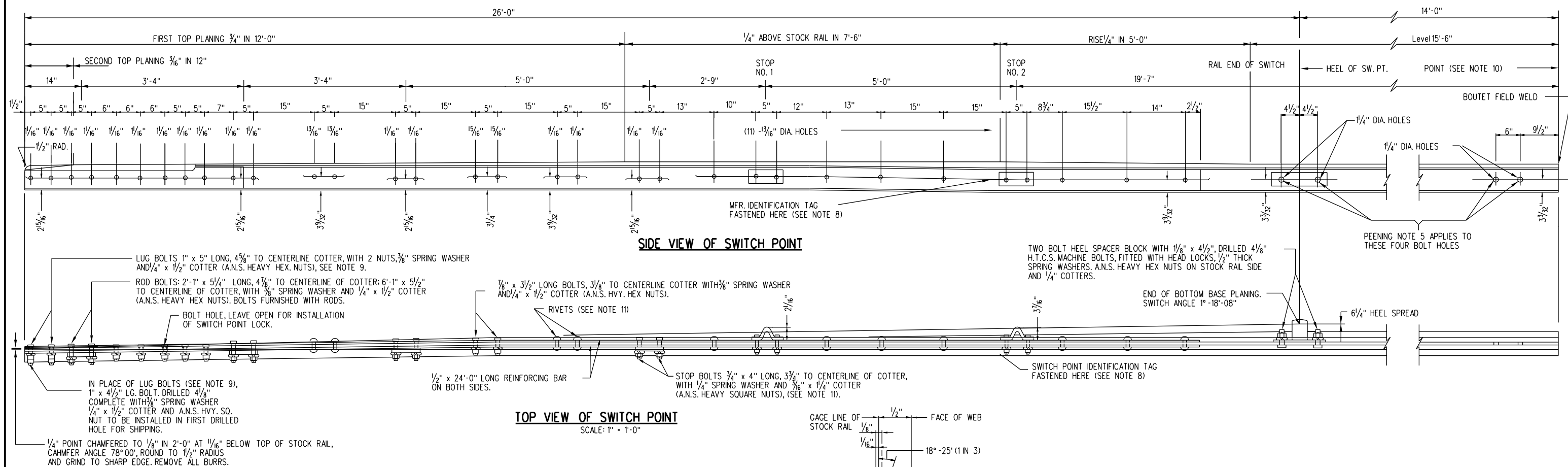
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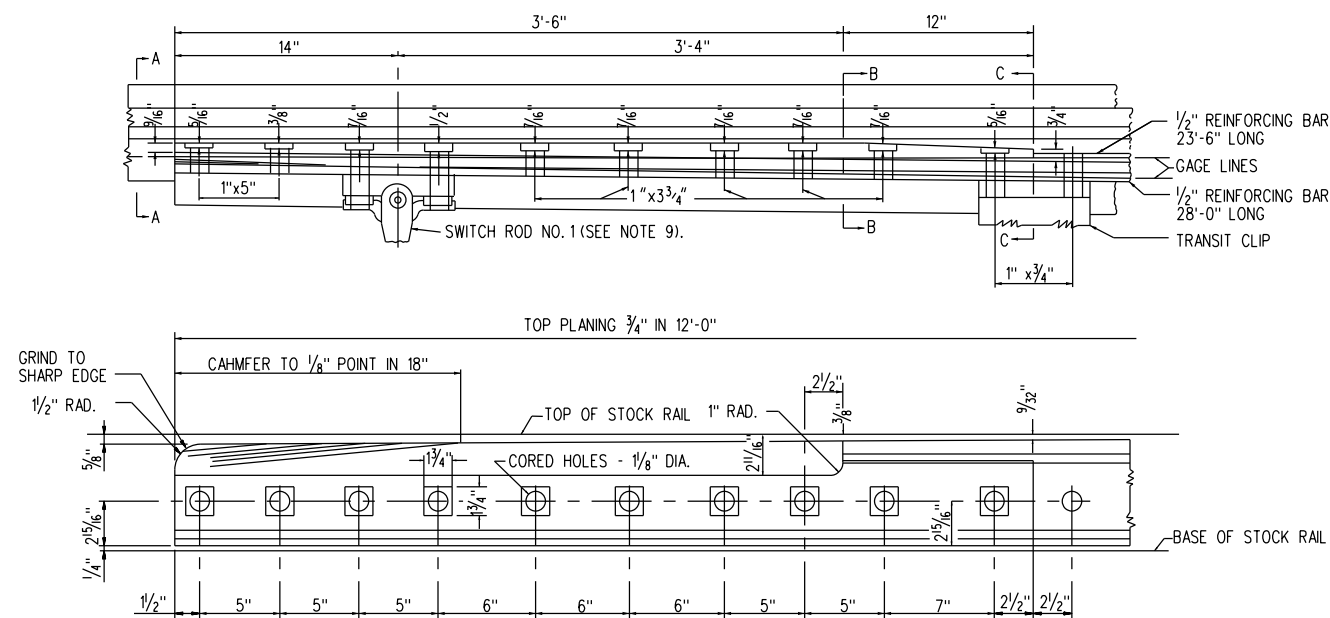
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA. 90012

NO. 14 136 LB. R.H. RBM FROG
GAGE PLATE DETAILS

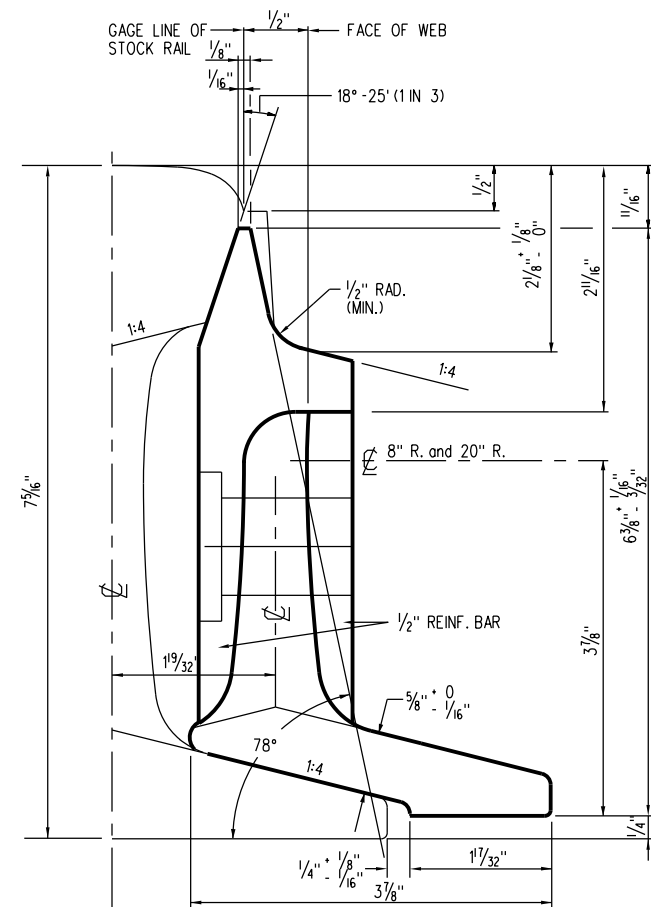
STANDARD		2931
SCALE:		1" = 1'-0"
REVISION	SHEET	
-	7 OF 16	
CADD FILE:		ES2931-07



FOR MAINTENANCE ONLY



26'-0" SWITCH POINT WITH OPTIONAL
MANGANESE OR ALLOY STEEL TIP
SCALE: NONE



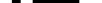
END VIEW OF POINT
WITH ALLOY STEEL TIP
SCALE: NONE

NOTES:

1. SWITCH POINTS TO BE MADE FROM NEW HIGH STRENGTH RAIL.
2. CURVED LEFT HAND SWITCH POINT FOR RIGHT HAND TURNOUT SHOWN. MAKE OPPOSITE HAND POINT FOR RIGHT AND LEFT HAND SWITCH POINTS FOR LEFT HAND TURNOUT.
3. SIDE PLANING FIGURED ON GAGE LINE $\frac{3}{8}$ " BELOW TOP OF RAIL.
4. MATERIALS AND WORKMANSHIP ALSO ANY CONSTRUCTION DETAILS NOT SHOWN, SHALL BE PER CURRENT AREMA "PORTFOLIO OF TRACKWORK PLANS" AND THE AREMA "MANUAL OF RAILWAY ENGINEERING", UNLESS OTHERWISE SPECIFIED ON THIS PLAN.
5. IN ORDER TO ELIMINATE STRESS RAISERS, MANUFACTURERS SHALL PEEN THE EDGES OF THE BOLT HOLES AS INDICATED AT THE HEEL OF SWITCH POINT AND AT THE HEEL END OF THE SWITCH POINT RAIL, USING AIR HAMMER WITH SUITABLE HEAD AND FINISHING WITH DRIFT PIN. BRAND ON RAIL AT EDGE OF BOLT HOLE TO BE CAREFULLY REMOVED BY GRINDING BEFORE PEENING.
6. SWITCH POINTS FOR TURNOUT SIDE MAY BE FURNISHED WITH ALLOY STEEL TIP.
7. THE CONTOUR PLANING SHALL BE ON THE GAGE SIDE BEGINNING AT A DISTANCE OF 36" FROM THE POINT OF SWITCH AND SHALL BE SHAPED TO THE CONTOUR OF A NEW 136-LB. RAIL AND SHALL RUN OUT AT THE END OF TOP PLANING, WHERE THE SWITCH POINT HAS FULL HEEL CONTOUR.
8. METAL IDENTIFICATION TAG SHOWING (1) DESIGN LENGTH OF SWITCH, (2) IN PARENTHESIS: THE ACTUAL LENGTH OF SWITCH POINT RAIL AND (3) THE TURNOUT NUMBER. MARK TAG THUS: 26'-0" (40'-0") NO. 14. TAG TO BE FASTENED TO SWITCH POINT, ON GAGE SIDE OF RAIL AT HEEL SPACER BLOCK IN LOCATION SHOWN.
A SECOND METAL IDENTIFICATION TAG SHOWING HAND OF SWITCH POINT, WEIGHT OF RAIL, HS, MANUFACTURER AND WHEN MADE, TO BE FASTENED TO SWITCH POINT AT LOCATION SHOWN.
9. UNLESS SPECIFIED ON ORDER, FRONT ROD LUG BOLTS AND TRANSIT CLIPS FOR SWITCH RODS NO. 1,2,3, AND 4 COMPLETE WITH BOLTS WILL NOT BE FURNISHED WITH SWITCH POINTS.
10. AT HEEL END OF SWITCH POINT RAIL, BREAK SHARP CORNER AROUND THE ENTIRE PERIPHERY BY SLIGHTLY GRINDING. ALSO, "DO NOT" END HARDEN RAIL END.
11. UNLESS SWITCH POINT ORDER SPECIFICALLY CALLS FOR USE OF $\frac{3}{4}$ " RIVETS AND $\frac{3}{4}$ " STOP BOLTS, MANUFACTURER CAN SUBSTITUTE $\frac{3}{4}$ " HUCK FASTENERS, BOLT PART NO. C-50-LR-BR2416 AND COLLAR PART NO. L3-2-R-24G FOR $\frac{3}{4}$ " RIVETS, AND FOR $\frac{3}{4}$ " STOP BOLTS USE HUCK FASTENERS, BOLT NO. C-50-LR-BR2424 AND COLLAR PART NO. L3-2-R-24G.

						DRAWN BY:	A. CARLOS	DATE:	03/31/2017
						 ASSISTANT DIRECTOR: STANDARDS & DESIGN			
X	XX-XX-XX		REVISION	XX	XX	 DIRECTOR OF ENGINEERING AND CONSTRUCTION			
REV.	DATE		DESCRIPTION	DES.	ENG.				

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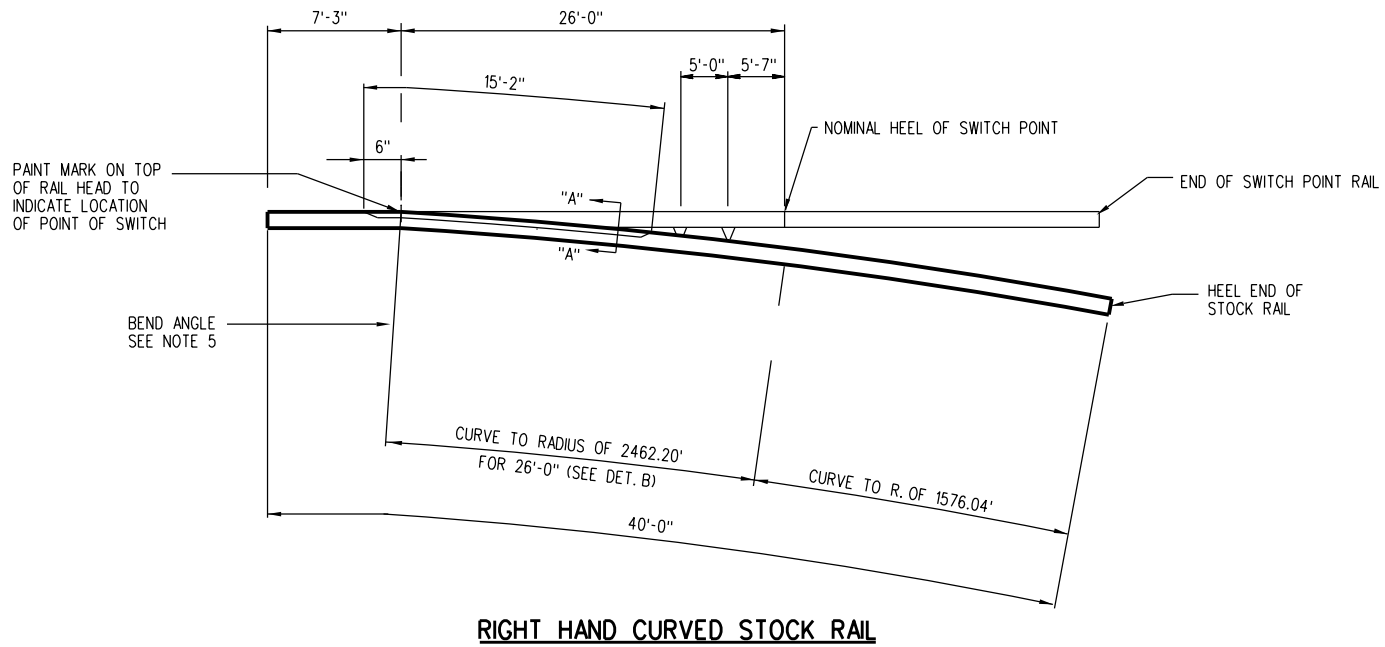
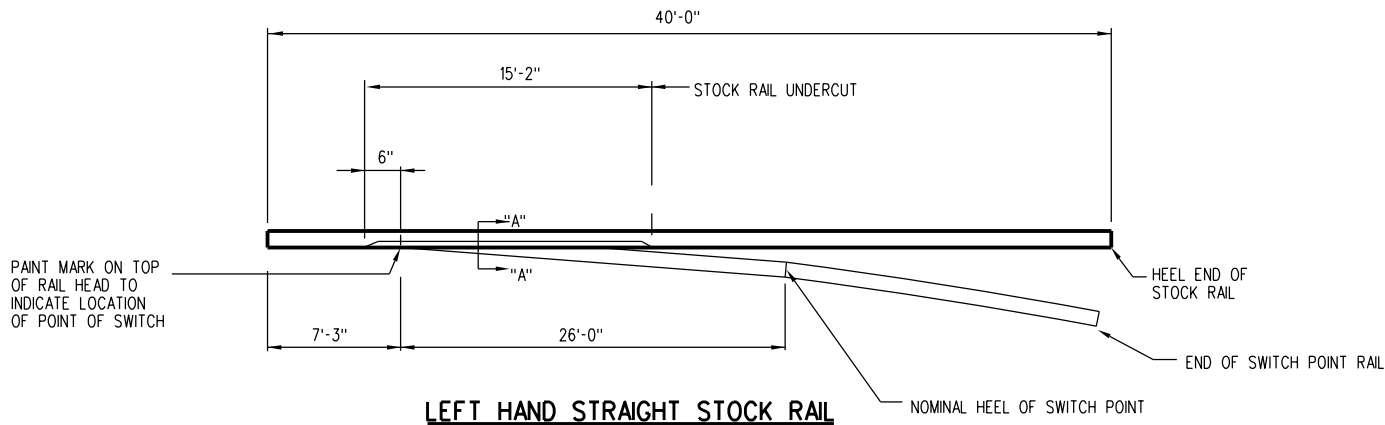
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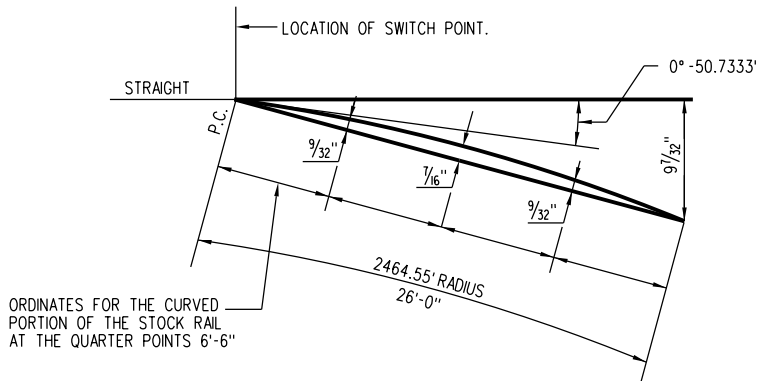
ENGINEERING STANDARDS

NO.14 SPLIT SWITCH POINT DETAILS

STANDARD		2931
SCALE:		1" = 1'-0"
REVISION	SHEET	
-	9 OF 16	
CADD FILE:		ES2931-09



STOCK RAILS SHOWN ARE FOR " RIGHT HAND TURNOUT".
FOR LEFT HAND TURNOUT, STOCK RAILS ARE OPPOSITE HAND,
BEING LEFT HAND CURVED STOCK RAIL AND
RIGHT HAND STRIAIGHT STOCK RAIL

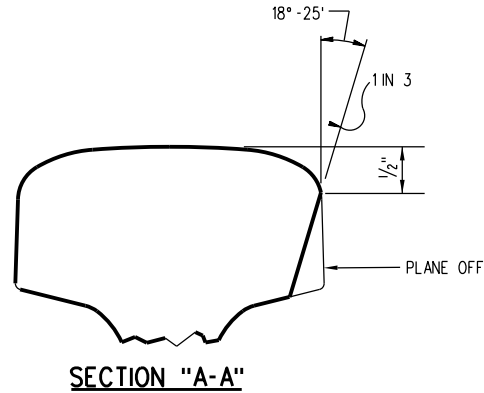


DETAIL "B"

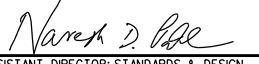
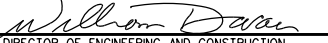
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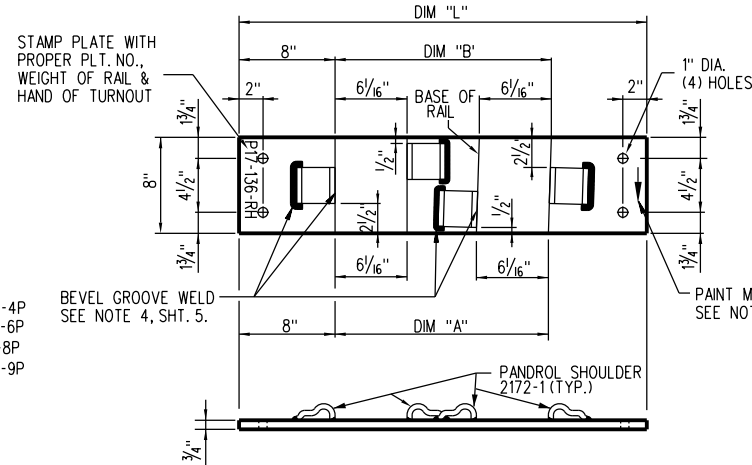
1. INFORMATION OR DIMENSIONS NOTED THUS, () TO BE FURNISHED BY FIELD FORCES FOR CORRECT ORDERING OF REPLACEMENT STOCK RAILS.
2. LENGTH OF SWITCH POINT (26'-0").
3. UNDERCUT STOCK RAILS TO BE MADE OF HIGH STRENGTH RAIL WITH ENDS BEVELED PER CURRENT AREMA PLAN NO. 1005.
4. FOR STOCK RAIL UNDERCUT LENGTH "B", PER SECTION "A-A", LENGTH "C" AND LENGTH "D" FOR NEW SAMSON SWITCH INSTALLATIONS OR REPLACEMENT ORDERS SEE TABLE BELOW.
5. BEND ANGLE IN BENT STOCK RAIL TO BE AS FOLLOWS: 0° -50.7333' OR 1" IN 5'-7 3/4 ".
6. THE CURVED PORTION OF THE CURVED STOCK RAIL SHALL BE CURVED PER DETAIL "B".

LENGTHS B, C, & D FOR 136 LB. RAIL									
SW. PT. LENGTH	T.O. NO.	STOCK RAIL	B	FOR FIRST (NEW) INSTALL.			FOR FIRST (NEW) INSTALL.		
				C	D	END DRILL. SEE NO. 10	C	D	END DRILL. SEE NO. 10
26'-0"	14	STR.	15'-2"	7'-3"	40'-0"	NONE	10'-0"	43'-0"	NONE
26'-0"	14	CURVED	15'-2"	7'-3"	40'-0"	NONE	12'-0"	43'-0"	NONE

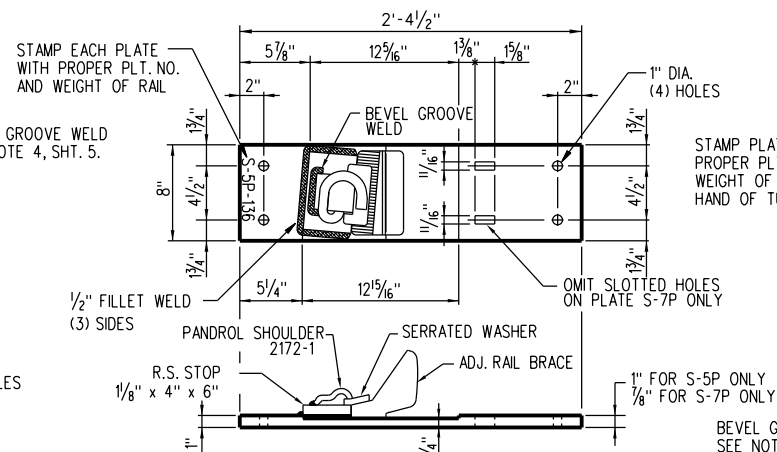


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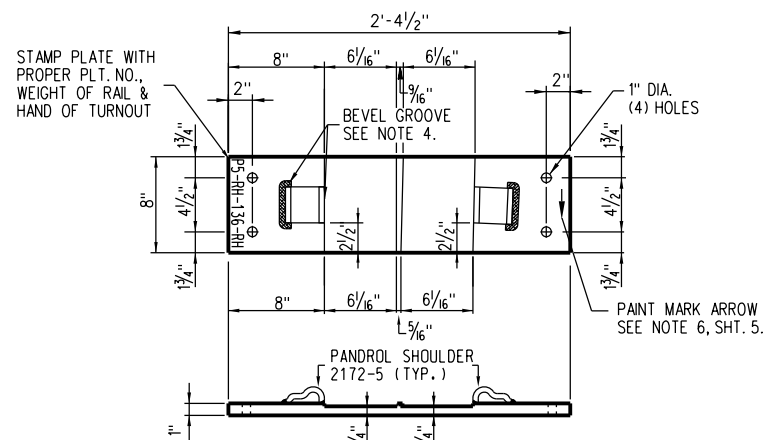
				DRAWN BY: A. CARLOS	DATE: 03/31/2011	SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.		ENGINEERING STANDARDS		STANDARD 2931
				 ASSISTANT DIRECTOR: STANDARDS & DESIGN		 METROLINK SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012		NO. 14 STRAIGHT OR CURVED UNDERCUT STOCK RAILS		SCALE: NONE
				 DIRECTOR OF ENGINEERING AND CONSTRUCTION						REVISION SHEET 10 OF 16
										CADD FILE: ES2931-10
X	XX-XX-XX	REVISION		XX	XX					
REV.	DATE	DESCRIPTION		DES.	ENG.					



1" x 8" x 2'-0 $\frac{1}{2}$ " L.G. - MILLED - W/PANDROL CLIP
2 - S-4P PLATES REQUIRED AS SHOWN
2 - S-6P PLATES REQUIRED AS SHOWN
2 - S-8P PLATES REQUIRED AS SHOWN
2 - S-9P PLATES REQUIRED AS SHOWN

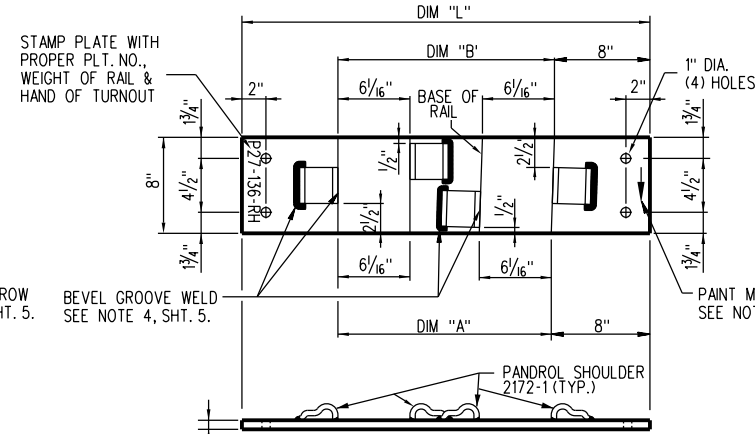


TURNOUT PLATES - P-46
1 EA. - 3/4" x 8" x 22" LG. - FLAT - W/PANDROL CLIPS



1" x 8" x 2'-4 1/2" LG. - MILLED - W/PANDROL CLIPS
2 - P5-RH PLATES REQUIRED AS SHOWN FOR R.H. T.O.

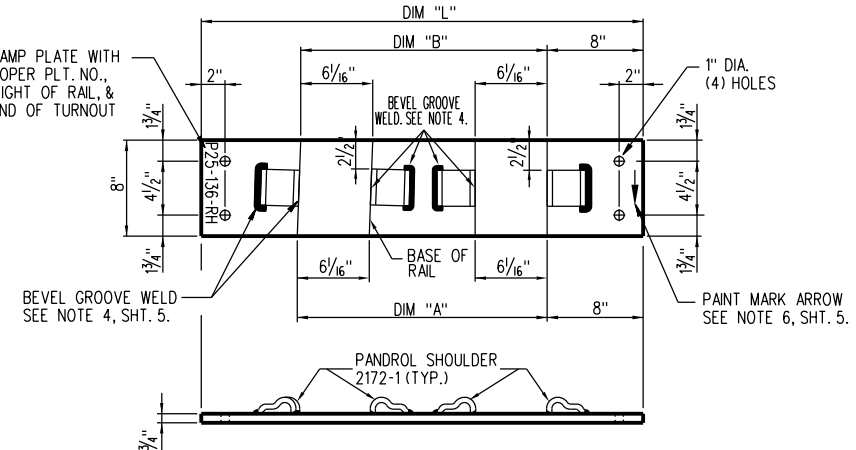
1" x 8" x 2'-4 1/2" LG. - MILLED - W/PANDROL CLIPS
2 - P6-RH PLATES REQUIRED AS SHOWN,
EXCEPT OPPOSITE FOR L.H. T.O.



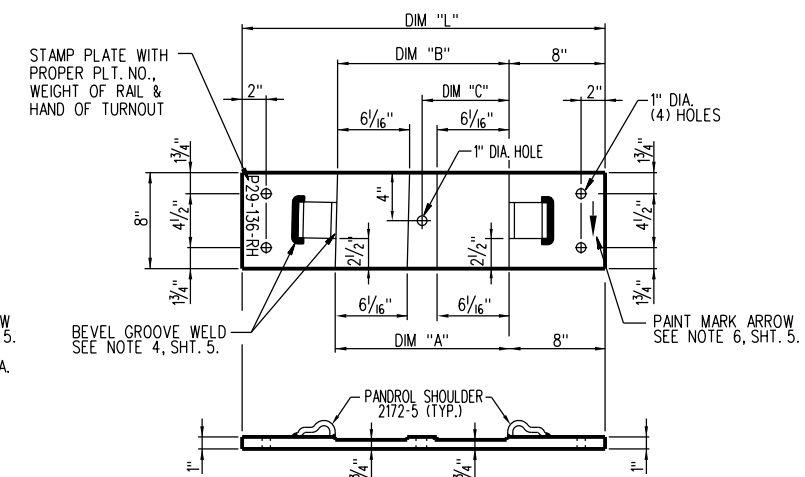
3/4" x 8" x DIM "L" - FLAT - W/PANDROL CLIPS

[illegible]

3/4" x 8" x DIM "L" - FLAT - W/PANDROL CLIPS

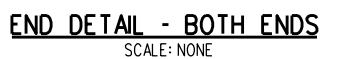


3/4" x 8" x DIM "L" ~ FLAT ~ W/PANDROL CLIPS



1" x 8" x DIM "L" - MILLED - W/PANDROLS

1. SEE SHEET NO. ES2931-15 FOR DIMENSION TABLE AND NOTES



DRAWN BY:	A. CARLOS	DATE:	03/31/21
 ASSISTANT DIRECTOR: STANDARDS & DESIGN			
 DIRECTOR OF ENGINEERING AND CONSTRUCTION			

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SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

NO. 14 TURNOUT AND FROG PLATE DETAILS

STANDARD		2931
SCALE:		$1\frac{1}{2}" = 1'-0"$
REVISION	SHEET	
-	14 OF 16	
CADD FILE:		ES2931-14

NOTES:

1. PLATES TO BE MADE OF MILD ROLLED STEEL.
2. EACH PLATE TO BE PLAINLY STAMPED WITH PLATE NO. AND 136 (WEIGHT OF RAIL) AND HAND OF TURNOUT (R.H. OR L.H.)
3. THE WELD-ON PRESSED STEEL SHOULDER, MADE OF MILD STEEL, TO BE PURCHASED FROM PANDROL INTERNATIONAL OR APPROVED ALTERNATE MEETING PANDROL'S DESIGN SPECIFICATIONS. MINIMUM 3/8" WELD ALONG BEVELED GROOVE OF THE SHOULDER. SEE WELD SPECIFICATIONS.
4. THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO THE PLATE. ANY WELD PROJECTING BEYOND THE VERTICAL FACE OF SHOULDER IN THE AREA OF THE RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.
5. THE PLATES AS SHOWN ARE FOR A 136 LB., NO. 14, RIGHT HAND, MACHINE OPERATED TURNOUT. FOR A LEFT HAND TURNOUT, PLATES P-13 THRU P-65 INCLUSIVE AND FROG GAGE PLATES FG-1P THRU FG-4P ARE TO BE OPPOSITE.
6. ARROW SHOWN ON DETAIL IS FOR EXAMPLE ONLY. USING DWG. NO. 2931-03 AS A GUIDE, PAINT MARK EACH PLATE WITH AN ARROW POINTING TOWARDS SWITCH POINT.

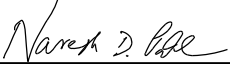
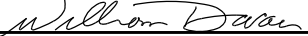
BILL OF FROG PLATES AND DIMENSION TABLE					
PLATE	DIM "A"	DIM "B"		DIM "L"	Pits REQ'D.
P-17	17 ¹¹ / ₃₂ "	17 ¹³ / ₁₆ "		2'-10"	2 EA.
P-18	18 ⁹ / ₃₂ "	18 ⁹ / ₁₆ "		2'-10 ¹ / ₂ "	1 EA.
P-19	19 ⁵ / ₃₂ "	19 ⁵ / ₁₆ "		2'-11 ¹ / ₂ "	1 EA.
P-20	19 ²⁷ / ₃₂ "	20 ⁵ / ₃₂ "		3'-0"	1 EA.
P-21	20 ² / ₃₂ "	20 ³ / ₃₂ "		3'-1"	2 EA.
P-22	20 ⁷ / ₁₆ "	21 ³ / ₄ "		3'-2"	2 EA.
P-23	22 ¹ / ₄ "	22 ¹⁹ / ₃₂ "		3'-2 ¹ / ₂ "	2 EA.
P-24	23 ³ / ₃₂ "	23 ³ / ₁₆ "		3'-3 ¹ / ₂ "	2 EA.
P-25	22 ¹⁹ / ₃₂ "	22 ²⁷ / ₃₂ "		3'-3"	2 EA.
P-26	20 ² / ₃₂ "	20 ⁵ / ₁₆ "		3'-1"	2 EA.
P-27	19 ⁹ / ₁₆ "	19 ⁵ / ₃₂ "		2'-11 ¹ / ₂ "	1 EA.
P-28	18 ¹ / ₄ "	17 ¹¹ / ₁₆ "		2'-10 ¹ / ₂ "	1 EA.
P-41	17 ¹⁹ / ₃₂ "	18 ⁹ / ₃₂ "		2'-10 ¹ / ₂ "	1 EA.
P-42	18 ³ / ₃₂ "	19 ⁹ / ₁₆ "		2'-11 ¹ / ₂ "	1 EA.
P-43	20 ³ / ₈ "	20 ¹⁵ / ₁₆ "		3'-1"	1 EA.
P-44	21 ¹³ / ₁₆ "	23 ³ / ₈ "		3'-2 ¹ / ₂ "	1 EA.
P-45	23 ¹ / ₄ "	23 ³ / ₁₆ "		3'-3 ¹ / ₂ "	1 EA.

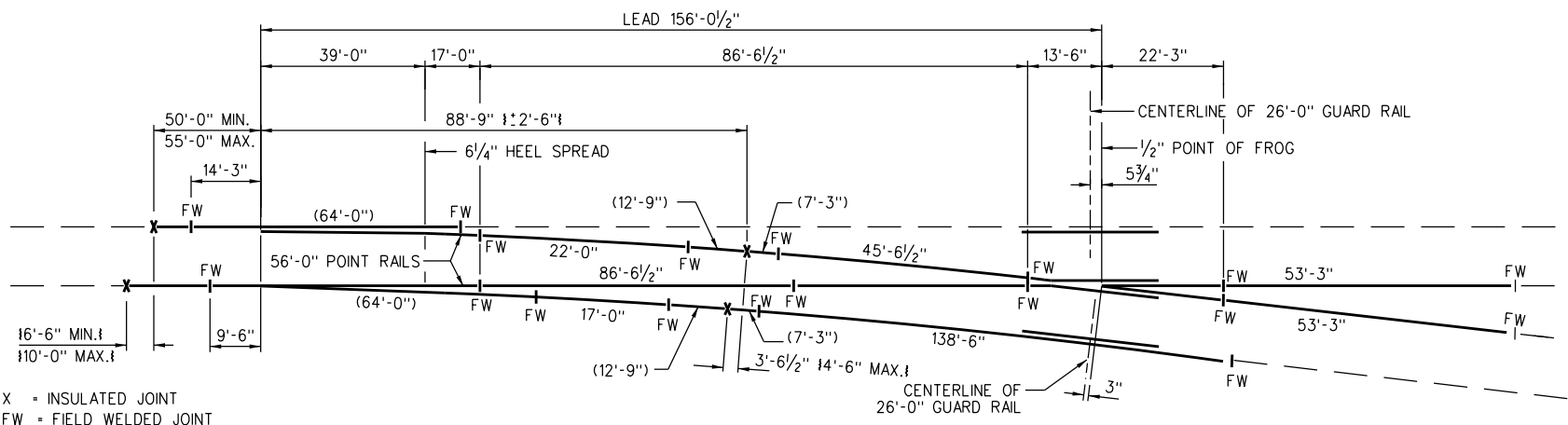
WELDING SPECIFICATIONS:

1. WHEN FIELD WELDING SHOULDERS OR STOPS TO GAGE PLATES, THE GAGE PLATES MUST BE PROPERLY POSITIONED AND SECURED IN PLACE BEFORE WELDING.
2. CHECK TRACK FOR CORRECT GAGE.
3. START WITH ONE GAGE PLATE. PLACE PANDROL SHOULDERS TIGHT AGAINST BASE OF RAIL AND WELD IN PLACE WHILE SIMULTANEOUSLY CONTROLLING CORRECT GAGE.
 - A. THE PRESSED STEEL SHOULDERS MUST BE CAREFULLY WELDED TO THE PLATE WITH 2 PASS 3/8" • FILLET OR BEVEL GROOVE WELD. ANY WELD PROJECTING BEYOND THE VERTICAL FACE OF SHOULDER IN THE AREA OF THE RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.
 - B. THE 1/8" X 6" STOPS MUST BE SET FLUSH AGAINST SHOULDER OF MILLED PALTE AND CENTERED FOR WELDING. THE PLATES SHALL BE WELDED ON THREE SIDES ONLY WITH 3 PASS 1/2 " • FILLET WELD AND NO WELD SHALL PROJECT BEYOND THE VERTICAL EDGE OF THE UNWELDED FOURTH SIDE.
4. WHEN WELDING PRESSED STEEL SHOULDERS, STOPS OR PLATES TO GAGE PLATES USE ONE OF THE FOLLOWING:
 - A. ELECTRODES, 5/32 INCH, WELDING SPEC. 7018XLM.
 - B. ELECTRODES, 3/16 INCH, WELDING SPEC. 7018XLM.
 - C. WIRE, WELDING 7/32 INCH, NR-203, 1% NICKEL FLUX CORE.OTHER ELECTRODES OR WIRE MEETING SPECIFICATIONS CALLED FOR MAY BE USED UPON APPROVAL BY THE DIRECTOR OF ENGINEERING.

BILL OF FROG PLATES AND DIMENSION TABLE									
PLATE	DIM "A"	DIM "B"	DIM "C"	DIM "L"	Pits REQ'D.	DIM "D"	DIM "E"	DIM "F"	Clips REQ'D.
P-10	13 ⁵ / ₃₂ "	13 ¹ / ₄ "	6 ¹⁹ / ₃₂ "	2'-5 ¹ / ₂ "	2 EA.	3 ¹ / ₃₂ "	3 ¹ / ₄ "	1 ⁹ / ₁₆ "	2
P-11	13 ¹⁹ / ₃₂ "	13 ² / ₃₂ "	6 ¹ / ₈ "	2'-6"	2 EA.	3 ¹⁹ / ₃₂ "	3 ² / ₃₂ "	1 ¹ / ₈ "	2
P-12	14 ⁷ / ₃₂ "	14 ¹ / ₁₆ "	7 ³ / ₃₂ "	2'-6 ¹ / ₂ "	2 EA.	4 ⁷ / ₃₂ "	4 ⁷ / ₃₂ "	2 ³ / ₃₂ "	2
P-13	14 ¹³ / ₁₆ "	15 ¹ / ₁₆ "	7 ¹⁵ / ₃₂ "	2'-7"	2 EA.	4 ¹³ / ₁₆ "	4 ³ / ₃₂ "	2 ¹⁵ / ₃₂ "	2
P-14	15 ¹⁹ / ₃₂ "	15 ² / ₃₂ "	7 ¹³ / ₁₆ "	2'-8"	2 EA.	5 ¹⁹ / ₃₂ "	5 ² / ₃₂ "	2 ¹³ / ₁₆ "	2
P-15	16 ¹ / ₈ "	16 ⁵ / ₁₆ "	8 ¹ / ₈ "	2'-8 ¹ / ₂ "	2 EA.	6 ¹ / ₈ "	6 ³ / ₈ "	3 ¹ / ₈ "	2
P-16	16 ¹ / ₁₆ "	17 ³ / ₃₂ "	8 ¹ / ₂ "	2'-9"	2 EA.	6 ¹⁹ / ₁₆ "	7 ³ / ₃₂ "	3 ¹ / ₂ "	2
P-29	16 ¹ / ₈ "	16 ⁵ / ₁₆ "	8 ⁵ / ₁₆ "	2'-9"	1 EA.	6 ² / ₃₂ "	6 ⁹ / ₃₂ "	3 ⁹ / ₃₂ "	1
P-30	15 ¹ / ₂ "	14 ² / ₃₂ "	7 ⁵ / ₈ "	2'-7 ¹ / ₂ "	1 EA.	5 ¹⁹ / ₃₂ "	4 ¹ / ₈ "	2 ¹⁹ / ₃₂ "	1
P-39	14 ¹³ / ₁₆ "	15 ³ / ₈ "	7 ⁹ / ₁₆ "	2'-7 ¹ / ₂ "	1 EA.	4 ² / ₃₂ "	5 ¹³ / ₃₂ "	2 ⁹ / ₁₆ "	1
P-40	16 ³ / ₁₆ "	16 ³ / ₄ "	8 ¹ / ₄ "	2'-9"	1 EA.	6 ³ / ₃₂ "	6 ² / ₃₂ "	3 ¹ / ₄ "	1

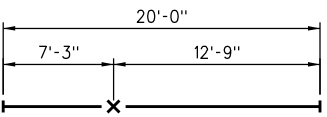
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						DRAWN BY: A. CARLOS	DATE: 03/31/2011	SCRRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRRA APPROVED USES ONLY. FOR NON-SCRRRA APPROVED USES, SCRRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRRA. ALL RIGHTS RESERVED.	 METROLINK® SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	ENGINEERING STANDARDS	STANDARD 2931
						 ASSISTANT DIRECTOR- STANDARDS & DESIGN					SCALE: NONE
						 DIRECTOR OF ENGINEERING AND CONSTRUCTION					REVISION SHEET 15 OF 16
											CADD FILE: ES2931-15
X	XX-XX-XX		REVISION	XX	XX						
REV.	DATE		DESCRIPTION	DES.	ENG.						

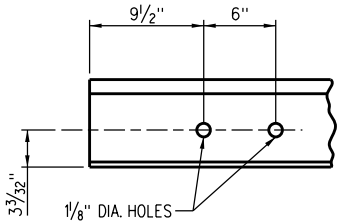


X = INSULATED JOINT
FW = FIELD WELDED JOINT

TURNOUT
SCALE: NONE



**20'-0" LONG ADHESIVE BONDED PREFABRICATED
MITRE CUT INSULATED RAIL JOINT ASSEMBLY**
(SEE NOTE 6) BOTH ENDS SHALL BE LEFT BLANK FOR
WELDING IN THE FIELD. (SCALE: NONE)

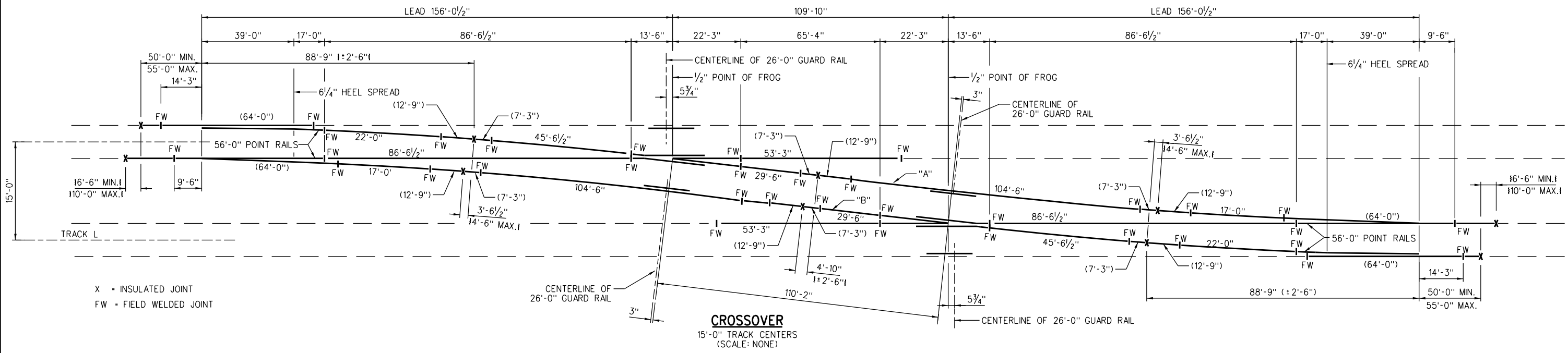


DETAIL "A"
SEE NOTE 4 (b)
SCALE: 1/2" = 1'-0"

NOTES:

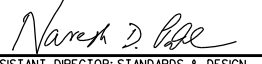
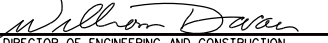
1. SINCE THE PERMISSIBLE VARIATION IN STANDARD LENGTHS OF RAILS, FROGS AND SWITCH POINTS IS GREATER THAN THE NORMAL EXPANSION GAPS AT RAIL JOINTS AND THICKNESS OF FIBRE END POST IN INSULATED JOINTS, NO ALLOWANCE HAS BEEN MADE FOR EXPANSION GAPS AND FIBRE END POSTS IN COMPUTING LENGTHS OF RAILS SHOWN.
2. RAIL LAYOUT SHOWN FOR CROSSOVERS IS TO BE USED IN ALL CASES, EXCEPT WHERE COMPROMISE JOINTS ARE REQUIRED BETWEEN THE FROGS IN THE CROSSOVER TRACK. (COMPROMISE JOINTS CAN BE USED IN A TEMPORARY CONDITION.) WHEN COMPROMISE WELDS ARE REQUIRED THE INSULATED JOINTS IN THE CROSSOVER TRACK SHALL ALWAYS BE OF THE HEAVIER RAIL SECTION AND THE RAIL LAYOUT SHALL BE CHANGED TO LOCATE COMPROMISE JOINTS AS DESCRIBED BELOW:
THE DESCRIPTIONS OF THE CHANGES IN RAIL LAYOUT WHEN COMPROMISE JOINTS ARE REQUIRED IN THE CROSSOVER TRACK ARE BASED ON ASSUMPTION THAT TRACK H IS LAID WITH THE HEAVIER RAIL THAN TRACK L.
3. CROSSOVER ON 15'-0" TRACK CENTERS: AT LOCATION A THE 104'-6" RAIL SHALL BE REPLACED WITH 16'-6" OF THE HEAVIER RAIL AND 88'-6" OF THE LIGHTER RAIL. AT LOCATION B THE 29'-6" RAIL SHALL BE REPLACED WITH 10'-0" OF THE HEAVIER RAIL AND 19'-6" OF THE LIGHTER RAIL.
4. IN ADDITION TO NOTE 1, NO ALLOWANCE HAS BEEN MADE IN THE RAIL LENGTHS TO PROVIDE GAPS NEEDED TO MAKE FIELD WELDS. IN THE FIELD IT WILL BE NECESSARY TO CUT RAILS ENDS TO PROVIDE CORRECT GAPS FOR FIELD WELDS.
5. FURNISH ALL RAIL SHOWN IN SOLID LINES ON THIS DRAWING:
(A.) RAILS LONGER THAN 39'-0" SHALL BE CONTINUOUS WELDED RAIL (CWR), TO BE FURNISHED WITH BOTH ENDS LEFT BLANK FOR WELDING IN THE FIELD.
(B.) ALL OTHER RAILS 39'-0" OR SHORTER AS SPECIFIED ON THE DRAWING, WITH BOTH ENDS DRILLED PER DETAIL "A", IF SO REQUIRED.
6. ALL RAIL FURNISHED FOR TURNOUT AND CROSSOVER SHALL BE "HIGH STRENGTH" EXCEPT GUARD RAILS.
7. LOCATIONS OF INSULATED JOINTS ARE SHOWN ON TURNOUT AND CROSSOVER DIAGRAMS WITHOUT TOLERANCES, OR IF TOLERANCES ARE PERMISSABLE, WITH (+ OR -). ALL INSULATED JOINTS ARE TO BE PROPERLY SUSPENDED IN CRIB AREA BETWEEN TWO TIES LOCATED 4" MINIMUM FROM EDGE OF NEAREST TIE TO EDGE OF INSULATED JOINT.
8. INSULATED JOINT MUST BE INSTALLED TO BE CENTERED BETWEEN TWO (2) TIES.
9. FIELD WELDED JOINTS DESIGNATED "FW" SHOULD BE IN CRIB AREA BETWEEN TWO TIES LOCATED 4" MINIMUM BETWEEN NEAREST TIE AND WELDED JOINT. DIMENSIONS SHOWN IN PARENTHESIS (0'-0") ARE EXACT. RAILS FURNISHED FOR THESE LOCATIONS ARE LARGER AND MUST BE FIELD ADJUSTED (CUT) WITHIN TOLERANCES SHOWN IN BRACKETS 10'-0".
10. WHEN INSULATED JOINTS WITH TOLERANCES AND FIELD WELDED JOINTS FALL SHORT OF MINIMUM CLEARANCE FROM TIE OR TIE PLATE THE JOINT MAY BE MOVED WITHIN TOLERANCE LIMITS. BONDED INSULATED JOINT ASSEMBLIES AND STOCK RAILS ARE FURNISHED LONGER THAN SHOWN IN PARENTHESIS ON LAYOUT. THESE RAILS OR THEIR ADJACENT CONNECTING RAILS MUST BE TRIMMED IN THE FIELD TO FIT.
11. INSULATED JOINTS SHALL HAVE 45° MITRE CUT RAIL ENDS.

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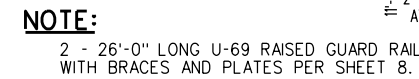
X = INSULATED JOINT
FW = FIELD WELDED JOINT

CROSSOVER
15'-0" TRACK CENTERS
SCALE: NONE

				DRAWN BY: A. CARLOS		DATE: 03/31/2011		SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.				 METROLINK SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012		ENGINEERING STANDARDS		STANDARD 2941	
				 ASSISTANT DIRECTOR: STANDARDS & DESIGN		 DIRECTOR OF ENGINEERING AND CONSTRUCTION								NO. 20 136 LB. R.H. RBM FROG TURNOUT AND CROSSOVER JOINTS LOCATIONS		SCALE: NONE	
				X XX-XX-XX		REVISION		XX XX						REVISION SHEET		2 OF 15	
				REV. DATE		DESCRIPTION		DES. ENG.						CADD FILE:		ES2941-02	

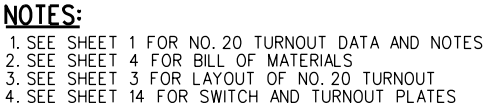
IF CONCRETE TIES ARE INSTALLED
AHEAD OF SWITCH POINT, HEAD BLOCK
TIE GAGE PLATE PP WILL NOT BE
INSTALLED.

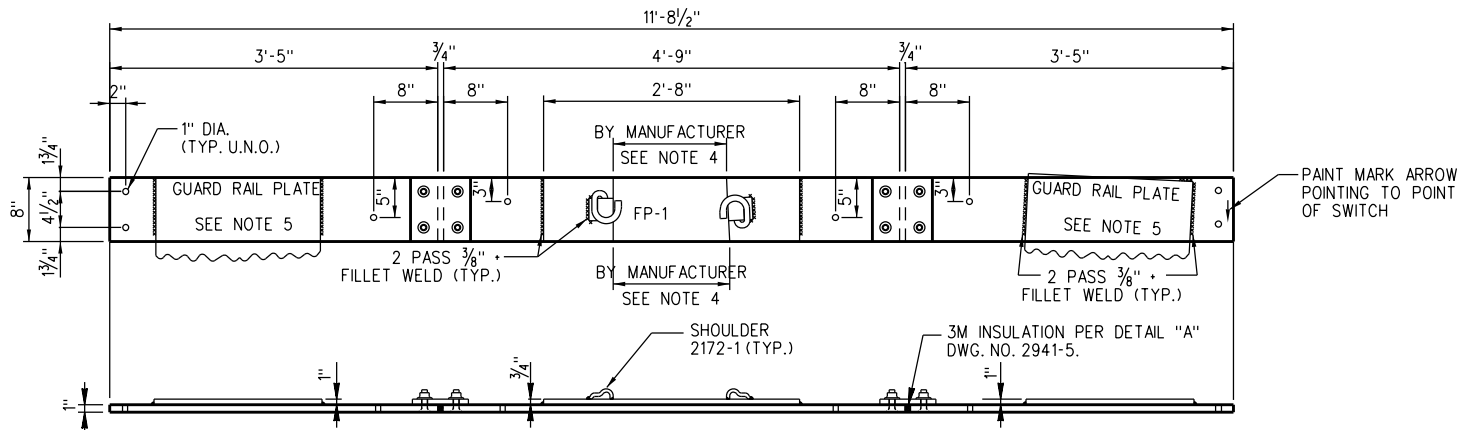
1. SEE SHEET NO. 1 FOR NOTES AND TURNOUT DATA
2. SEE SHEET NO. 4 FOR BILL OF MATERIAL
3. SEE SHEET NO. 5 FOR CROSSOVER



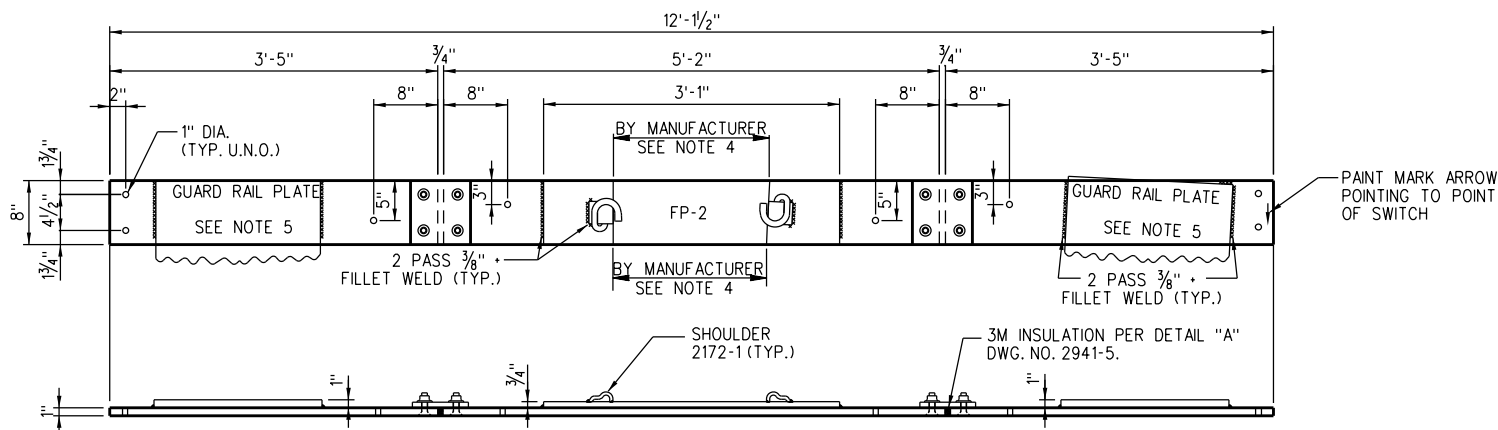
TURNOUT CONTINUED

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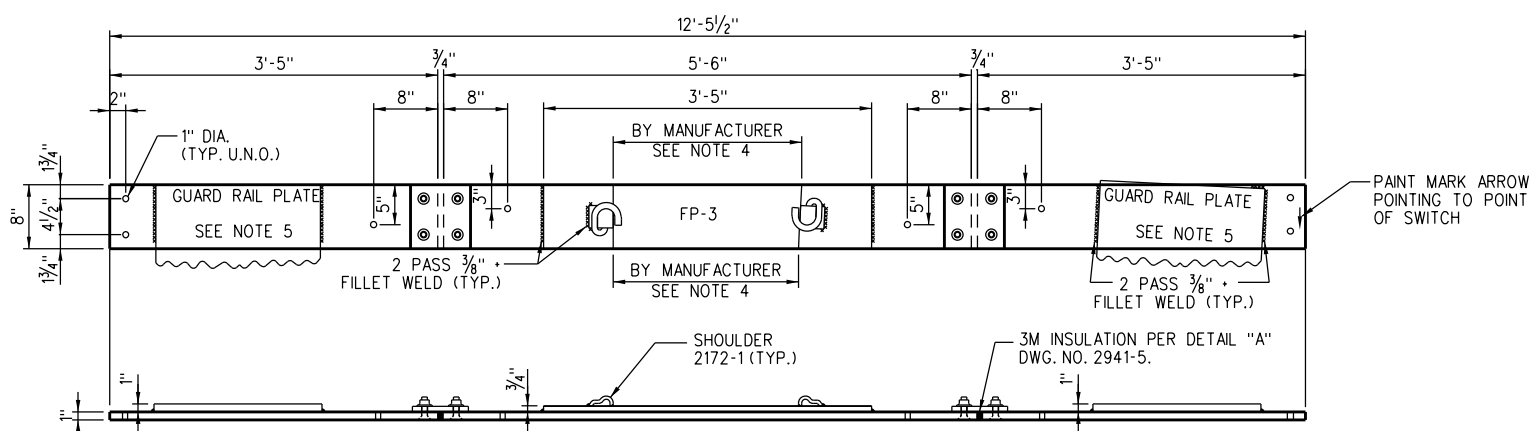




INSULATED FROG GAGE PLATE - FG-1P
1" x 8" - FLAT - W/3M INSULATION (1 PC. REQ'D. AS SHOWN)



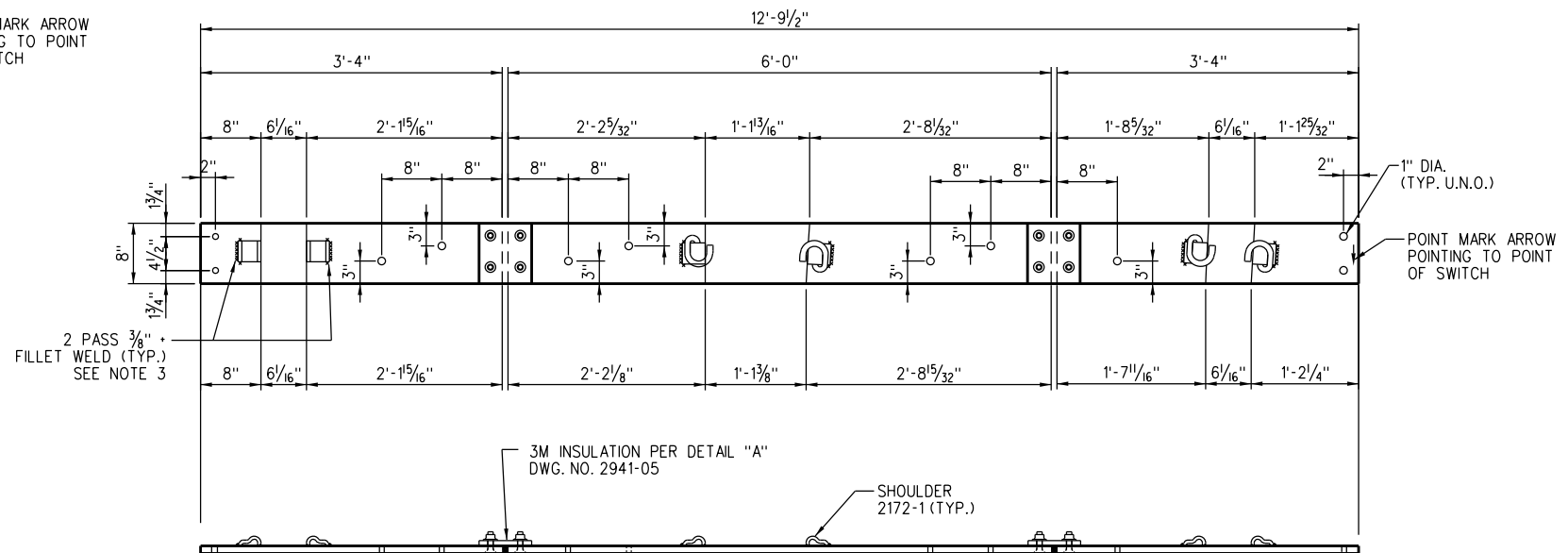
INSULATED FROG GAGE PLATE - FG-2P
1" x 8" - FLAT - W/3M INSULATION (1 PC. REQ'D. AS SHOWN)



INSULATED FROG GAGE PLATE - FG-3P
1" x 8" - FLAT - W/3M INSULATION (1 PC. REQ'D. AS SHOWN)

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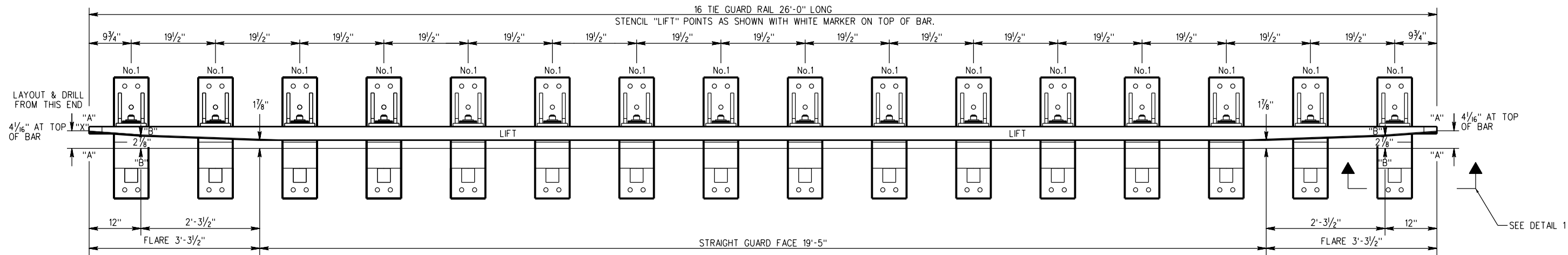
1. PLATES TO BE MADE OF MILD ROLLED STEEL.
2. THE PLATES AS SHOWN ARE FOR A 136 LB., NO. 20, RIGHT HAND, MACHINE OPERATED TURNOUT. FOR A LEFT HAND TURNOUT, PLATES ARE TO BE OPPOSITE.
3. THE PANDROL TYPE OR APPROVED EQUAL WELD-ON PRESSED STEEL SHOULDER, MADE OF MILD STEEL, AND MEETING PANDROL'S DESIGN SPECIFICATIONS SHALL BE USED. THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO ALL PLATES WITH A MINIMUM 2 PASS 3/8" + FILLET WELD ALONG THE BEVELED GROOVES OF THE SHOULDER. ANY WELD PROJECTING BEYOND THE VERTICAL FACE OF THE SHOULDER IN THE AREA OF THE BASE OF RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.
4. MANUFACTURER OF FROG PLATES SHALL USE COMPLETED FROG TO VERIFY LOCATION OF ADJUSTABLE CLAMPS ON FROG PLATES FP-1, FP-2, AND FP-3 TO INSURE PROPER FIT. FROG PLATES WILL BE WELDED TO THE GAGE PLATES IN THE FIELD WITH A 3 PASS 1/2" + FILLET WELD. PLATES WILL BE WELDED ONLY AFTER THE GAGE PLATES ARE SECURED IN THE PROPER LOCATION ON THE TIE WITH THE FROG IN PLACE AT PROPER ALIGNMENT.
5. GUARD RAIL PLATES ARE TO BE INSTALLED AND WELDED TO THE FROG GAGE PLATES IN THE FIELD WITH A 3 PASS 1/2" + FILLET WELD CONTINUOUS ON BOTH ENDS OF THE PLATE. PLATES ARE TO BE WELDED ONLY AFTER THE GAGE PLATE AND THE FROG IS SECURED IN THE PROPER LOCATION ON THE TIE WITH PROPER ALIGNMENT.



INSULATED FROG GAGE PLATE - FG-4P
1" x 8" - FLAT - W/3M INSULATION (1 PC. REQ'D. AS SHOWN)

FOR MAINTENANCE ONLY

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COLLECTIVE DRILLING FROM END OF GUARD BAR MARKED "X"

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HOLES 1" DIA. ~ 1 3/8" A.B.

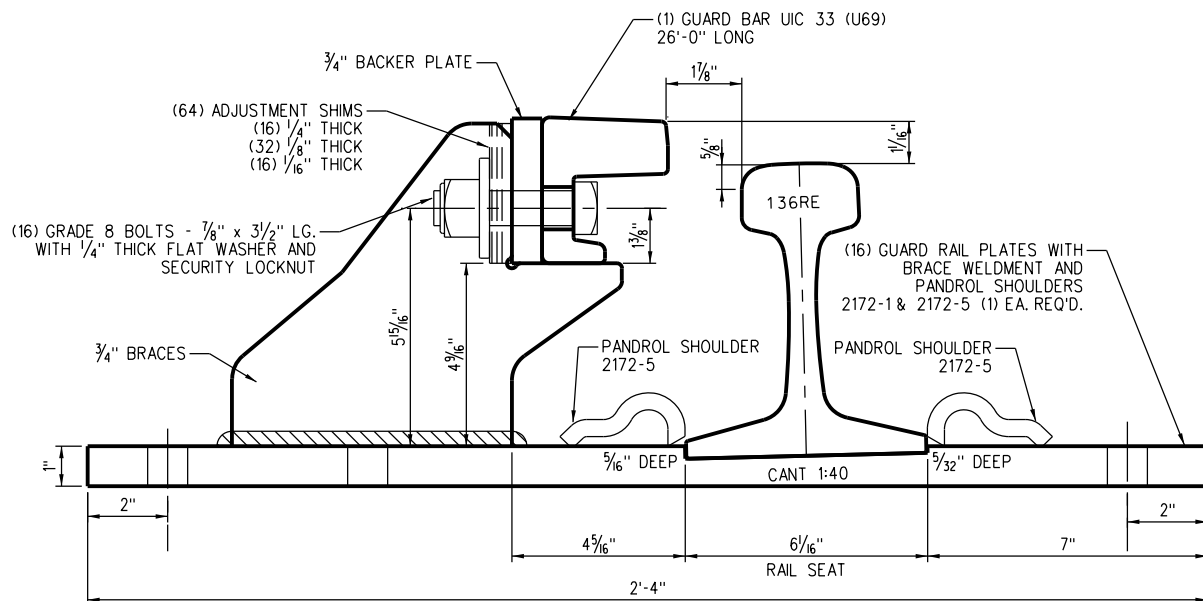
ASSEMBLED 26'-0" GUARD RAIL

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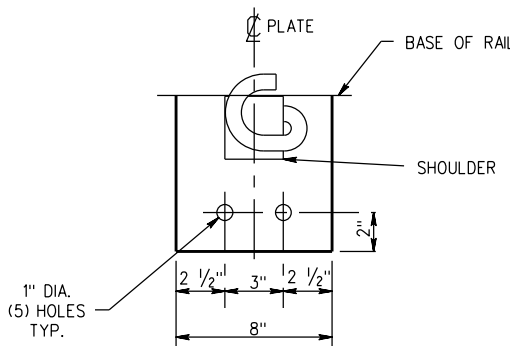
- GUARD RAIL SECTION U.I.C. 33; (U69) UIC 860.0 GRADE 90A (GUARD FACE BRINELL 319 MIN.)
- BASE PLATE, BRACKET AND SHIMS MILD STEEL PER AREMA SPECIFICATION M7.
- GUARD RAIL BOLT AND NUT PER AREMA SPECIFICATION M11. EXCEPT BOLT TO GRADE 8 AND NUT TO BE SECURITY LOCKNUT.
- WORKMANSHIP AND TOLERANCES PER AREMA SPECIFICATIONS FOR SPECIAL TRACKWORK.
- WELDING PER ANSI-AWS D1.1-92 OR LATEST REVISION.

FOR MAINTENANCE ONLY



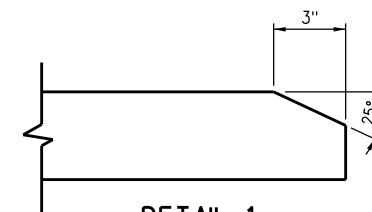
TYPICAL PLATE DETAIL

SCALE: NONE



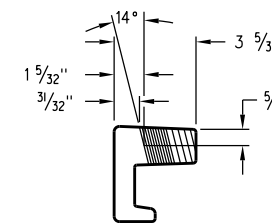
TYPICAL PLATE PUNCHING DETAIL

SCALE: NONE



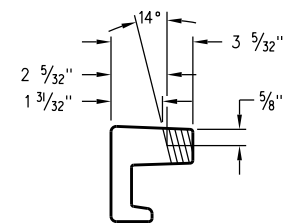
DETAIL 1

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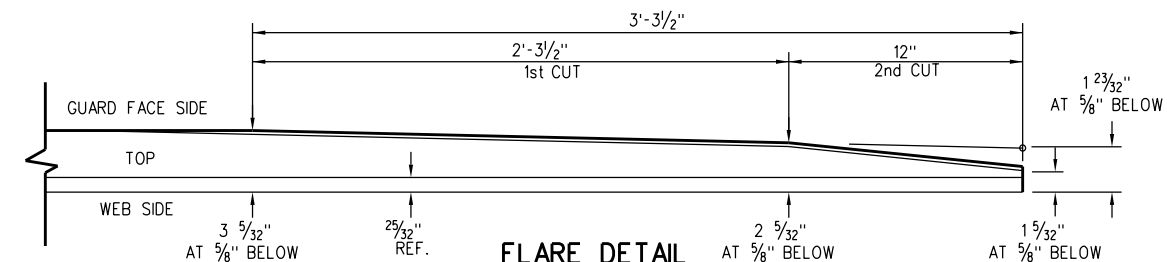
SECTION A-A

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SECTION B-B

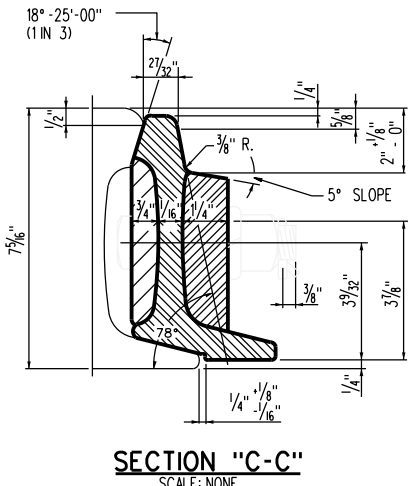
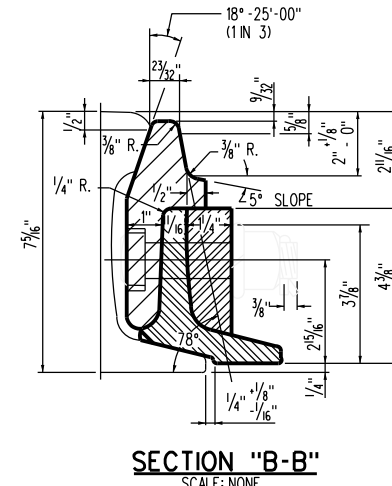
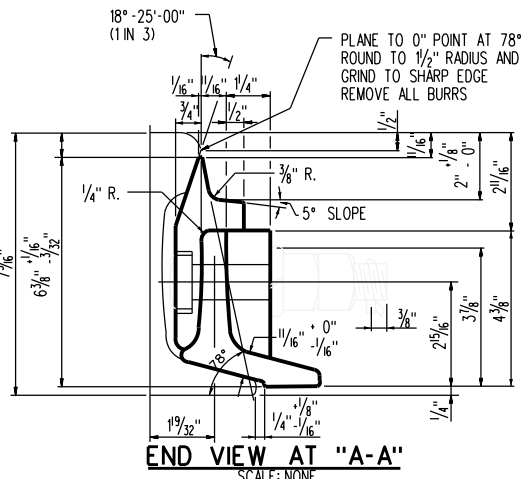
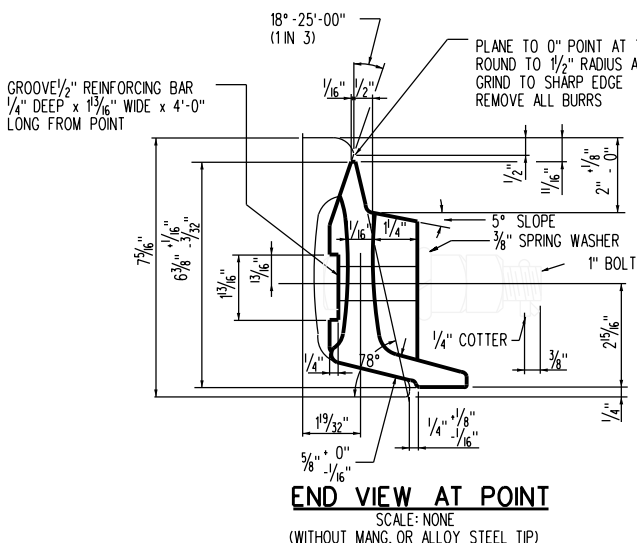
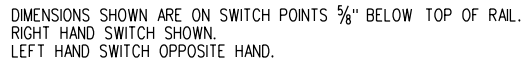
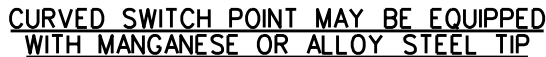
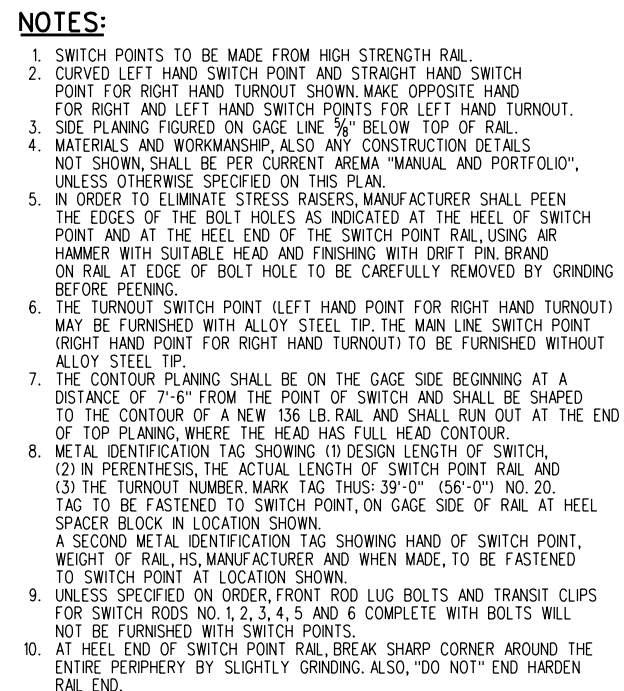
SCALE: NONE



FLARE DETAIL

SCALE: NONE
BREAK SHARP CORNERS
OF ALL MACHINED SURFACES

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						DRAWN BY:	DRAFTER	DATE:	03/31/20
X	XX-XX-XX		REVISION		XX	XX			
REV.	DATE		DESCRIPTION		DES.	ENG.			

Narek D. Bole
ASSISTANT DIRECTOR: STANDARDS & DESIGN

William Davan
DIRECTOR OF ENGINEERING AND CONSTRUCTION

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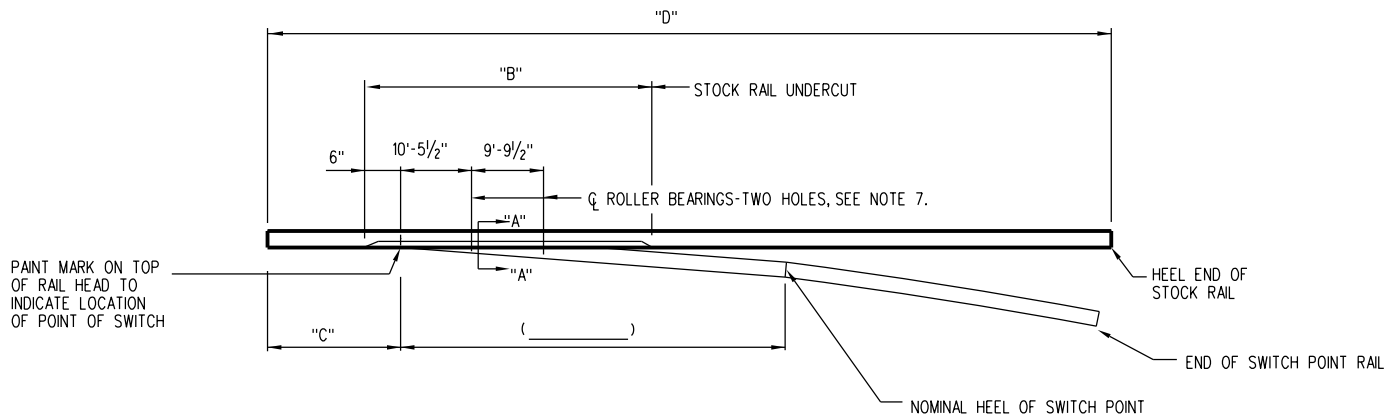
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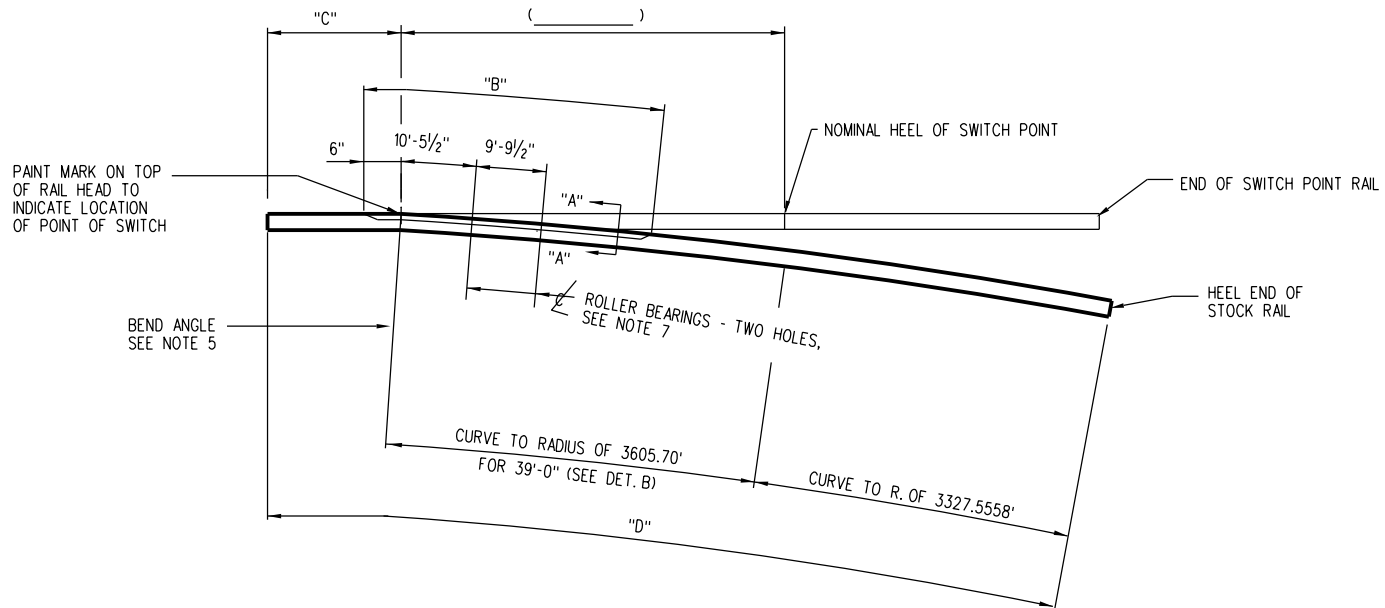
ENGINEERING STANDARDS

NO. 20 SPLIT SWITCH POINT DETAILS

STANDARD		2941
SCALE: AS NOTED		
REVISION	SHEET	
—	9 OF 15	
CADD FILE: ES2941-09		

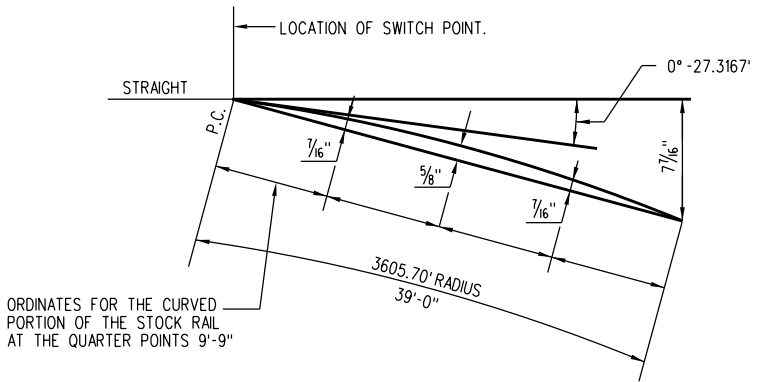


LEFT HAND STRAIGHT STOCK RAIL



RIGHT HAND CURVED STOCK RAIL

STOCK RAILS SHOWN ARE FOR "RIGHT HAND TURNOUT".
FOR LEFT HAND TURNOUT, STOCK RAILS ARE OPPOSITE HAND,
BEING LEFT HAND CURVED STOCK RAIL AND
RIGHT HAND STRIAIGHT STOCK RAIL

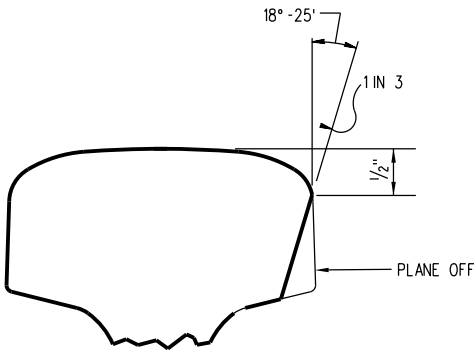


DETAIL "B"

NOTES:

1. INFORMATION OR DIMENSIONS SHOWN THUS () TO BE FURNISHED BY FIELD FORCES FOR CORRECT ORDERING OF REPLACEMENT STOCK RAILS.
2. CROSS OUT ONE - FOR JOINTED RAIL TURNOUT.
3. UNDERCUT STOCK RAILS TO BE MADE OF HIGH STRENGTH RAIL WITH ENDS BEVELED PER CURRENT AREMA PLAN NO. 1005.
4. FOR STOCK RAIL UNDERCUT LENGTH "B", PER SECTION "A-A" LENGTH "C" AND LENGTH "D" FOR NEW SAMSON SWITCH INSTALLATIONS OR REPLACEMENT ORDERS SEE TABLE BELOW.
5. BEND ANGLE IN BENT STOCK RAIL TO BE AS FOLLOWS: 0° -27.3167' OR 1" IN 10'-5 7/32".
6. THE CURVED PORTION OF THE CURVED STOCK RAIL SHALL BE CURVED PER DETAIL "B".
7. FOR ROLLER BEARINGS: DRILL TWO HOLES, 1 5/16" DIA. 3/4" ABOVE BASE OF RAIL. PERMISSIBLE VARIATIONS: DIA. 0" UNDER, 7/32" OVER. LOCATION 7/32" OVER OR UNDER.

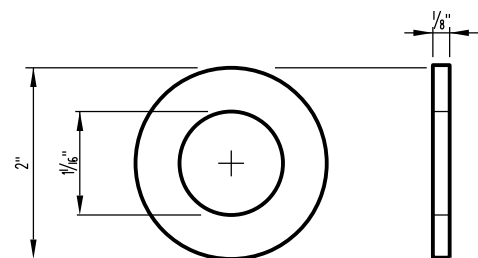
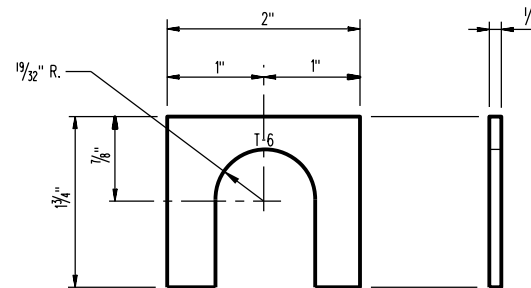
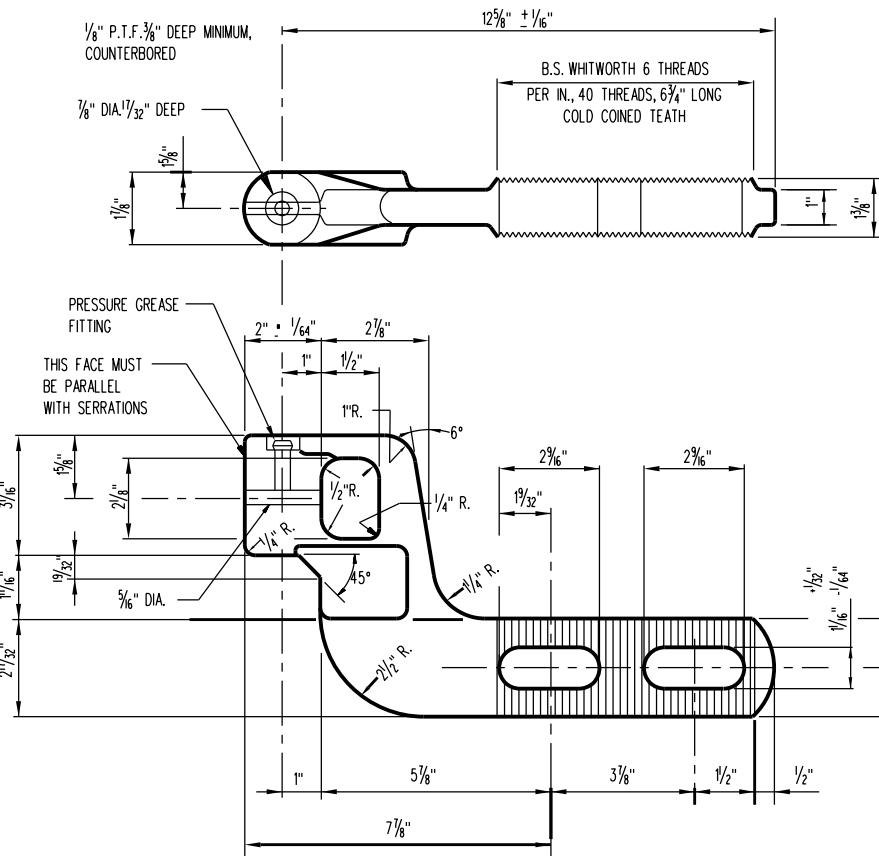
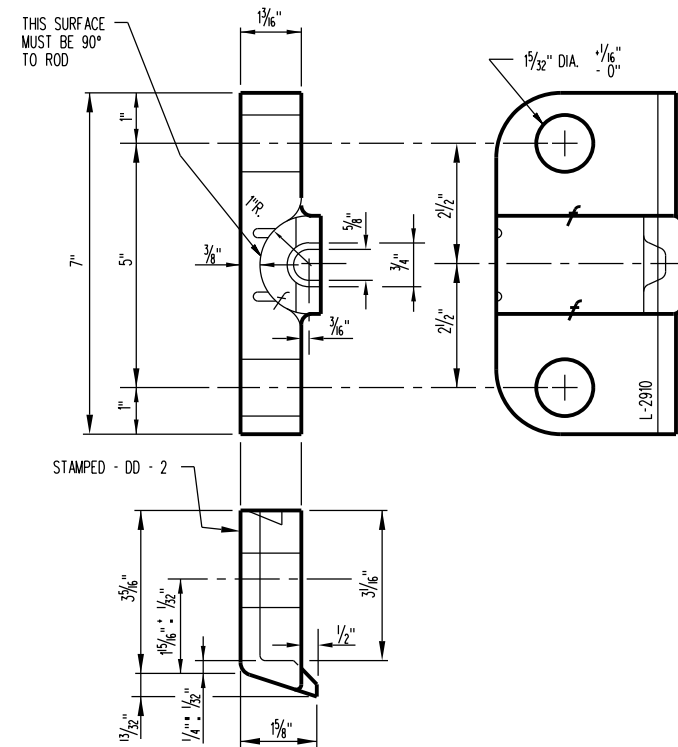
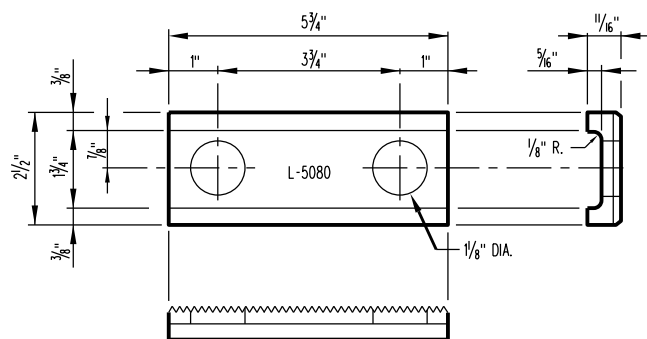
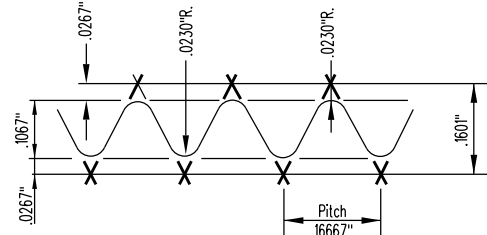
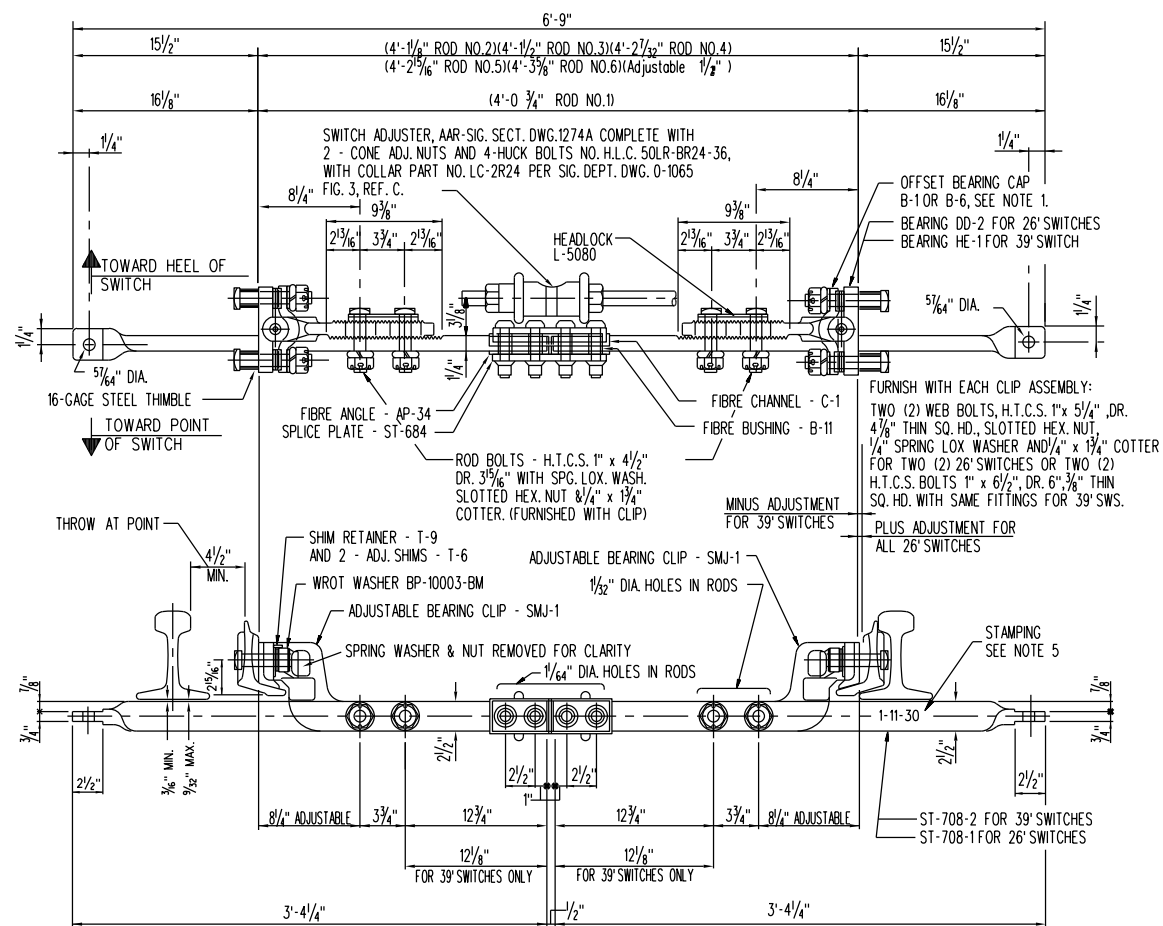
LENGTHS B, C, & D FOR 136 LB. RAIL									
Sw. Pt. LENGTH	T.O. NO.	STOCK RAIL	B	FOR FIRST (NEW) INSTALL.			FOR REPLACE. ORDERS ONLY		
				C	D	END DRILL SEE NO. 10	C	D	END DRILL SEE NO. 10
39'-0'	20	STR.	23'-6"	10'-0"	67'-0"	NONE	10'-0"	70'-0"	NONE
39'-0"	20	CURVED	23'-6"	12'-0"	67'-0"	NONE	12'-0"	70'-0"	NONE



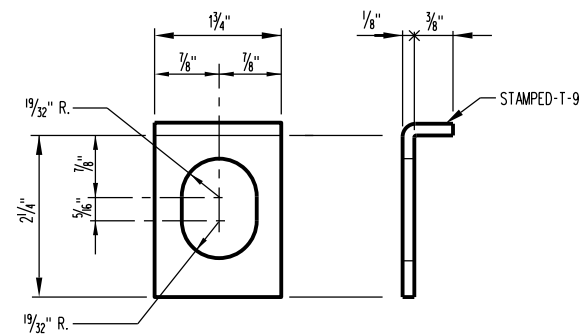
SECTION "A-A"

FOR MAINTENANCE ONLY

				DRAWN BY: A. CARLOS		DATE: 03/31/2011		SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.		ENGINEERING STANDARDS		STANDARD 2941	
				ASSISTANT DIRECTOR: STANDARDS & DESIGN				SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY		NO. 20 STRAIGHT OR CURVED UNDERCUT STOCK RAILS		SCALE: NONE	
				DIRECTOR OF ENGINEERING AND CONSTRUCTION				ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012				REVISION SHEET 10 OF 15	
												CADD FILE: ES2941-10	



LENGTH OF SWITCH		BILL OF MATERIAL FOR 1 TYPE "SMJ" SWITCH ROD ASSEMBLY			
		MATERIAL FOR CLIP ASSEMBLIES			
QTY.	PART NUMBER	MATERIAL SPECIF.	DESCRIPTION	DETAIL REMARKS	
All	2	SMJ-1	S.A.E.1020-For.Stl.	Bearing Clip	MACHINED PER DETAIL
All	4		H.T.C.S.	Web Bolt	SEE NOTE
26'	2	DD-2	Malleable Iron	Bearing	PAT. NO. L-2910, MACHINED PER DETAIL
39'	2	HE-1	Malleable Iron	Bearing	PAT. NO. L-2915, MACHINED PER DETAIL
26'	2	B-1	S.A.E.1045-For.Stl.	Offset Bearing Cap	HEAT TREATED - BRINELL -.225 to .250
39'	2	B-6	S.A.E.1045-For.Stl.	Offset Bearing Cap	HEAT TREATED - BRINELL -.225 to .250
26'	2	B-6	S.A.E.1045-For.Stl.	Offset Bearing Cap	HEAT TREATED - BRINELL -.225 to .250
All	4	T-9	S.A.E.1020	Shim Retainer	1/8" x 1 3/4" x 2 1/4"
All	12	T-6	Stainless Steel	Adjustment Shim	1/16" x 2" x 1 1/8"
All	4	BP-10003-BM	Wrot Iron	Wrot Washer	1 1/16" I.D. x 2" O.D.x 1/8" THICK
All	4		H.T.C.S.	Rod Bolt	1"x4 1/2" DR.3 1/16" REG.SQ.HD.SLOTTED HEX NUT
All	4		Steel	Spg. Lox Washer	For 1" Rod Bolts
All	4		Steel	Cotter	1/4" x 1 3/4" FOR ROD BOLTS
All	2		Steel	Grease Fitting	PRESSURE - FOR BEARING CLIP
All	2	L-5080	Malleable Iron	Headlock	FOR ROD BOLTS
26'	2		16-Gage Steel	Thimble	1 1/2" LONG - FOR SHIPPING
39'	2		16-Gage Steel	Thimble	2 1/2" LONG - FOR SHIPPING
Material for Vertical Rod					
16'-6"	1			Vertical Rod	Use one-ST-708-1 Use one-ST-708-1 TWIST, MACHINE AND DRILL END HOLE
39'	1			Vertical Rod	Use one-ST-708-2 Use one-ST-708-2 TWIST, MACHINE AND DRILL END HOLE
All	4		High Strength Steel	Conn.& Insul.Bolt	HIGH FASTENER NO. HLC-50LR- BR24-36
All	4		Low Carbon Steel	Collar	HUCK FASTENER NO. LC-2R24
All	1	ST-684	H.R. Mild Steel	Splice Plate	1/2" x 2 1/2" x 9 1/2" FOR INSULATION
All	2	AP-34	AAR-Sig.Sec.13-52	Angle	1/2" x 2 1/2" x 4 1/16" HARD FIBRE - PARAFIN COATED
All	4	B-11	AAR-Sig.Sec.13-52	Bushing	1" O.D. HARD FIBRE - PARAFIN COATED
All	1	C-1	AAR-Sig.Sec.13-52	Channel	1/8" x 1" x 10" HARD FIBRE - PARAFIN COATED
All	1		Malleable Iron	Switch Adjuster	
All	2		Malleable Iron	Cone Adj. Nut	FOR 1/4" THROW RODS



NOTES:

1. WHILE THIS PLAN SHOWS BEARING CLIPS ASSEMBLED TO SWITCH ROD THIS CLIP ASSEMBLY MAY BE REQUESTIONED AND ORDERED SEPARATELY. WHEN A BEARING CLIP ASSEMBLY ONLY IS WANTED, REQUESTIONS AND ORDERS SHALL SPECIFY, RAIL SECTION AND LENGTH OF SWITCH. ALL PARTS SHOWN IN BILL OF MATERIAL SHALL BE FURNISHED WITH THESE CLIP ASSEMBLIES. WHEN AN INDIVIDUAL PART IS REQUIRED IT SHALL BE ORDERED BY PART NUMBER.
2. WHEN COMPLETED RODS ARE ORDERED THEY SHALL BE ASSEMBLED AND INCLUDE ALL PARTS SHOWN IN BILL OF MATERIAL. REQUESTIONS AND ORDERS SHALL SPECIFY RAIL SECTION AND LENGTH OF SWITCH ON INTERLOCKED SWITCHES WITH AUXILIARY THROW ROD, MACHINE SIDE (RIGHT OR LEFT) SHOULD ALSO BE SPECIFIED.
3. TWO WEB BOLTS SHALL BE FURNISHED WITH EACH CLIP ASSEMBLY AS CALLED FOR BY NOTE IN TOP VIEW OF ROD ASSEMBLY. WHEN ROD IS USED ON 11'-0" AND 16'-6" SWITCHES THE 1/4" THICK SPRING WASHER SHOULD BE REPLACED WITH A 3/8" THICK SPRING WASHER BY THE STOREKEEPER OR FIELD FORCES, TO BRING COTTER WITHIN THE LIMITS OF SLOT IN WEB BOLT NUTS.
4. MATERIALS AND WORKMANSHIP SHALL MEET CURRENT AREMA SPECIFICATIONS FOR SPECIAL TRACKWORK UNLESS OTHERWISE SPECIFIED.
5. VERTICAL SWITCH ROD SHALL BE PLAINLY STAMPED TO INDICATE SWITCH THAT ROD ASSEMBLY CAN BE USED UPON. IDENTIFICATION MARKING WILL BE AS FOLLOWS:
1-39 FOR USE ON 39'-0" SWITCHES, 132-LB. AND 136-LB. R.E. RAIL SECTIONS.
1-11-30 FOR USE ON 11'-0" TO 30'-0" SWITCHES, 115-LB., 119-LB., 131-LB., 132-LB. AND 136-LB. R.E. RAIL SECTIONS

FOR MAINTENANCE ONLY

ENGINEERING STANDARDS

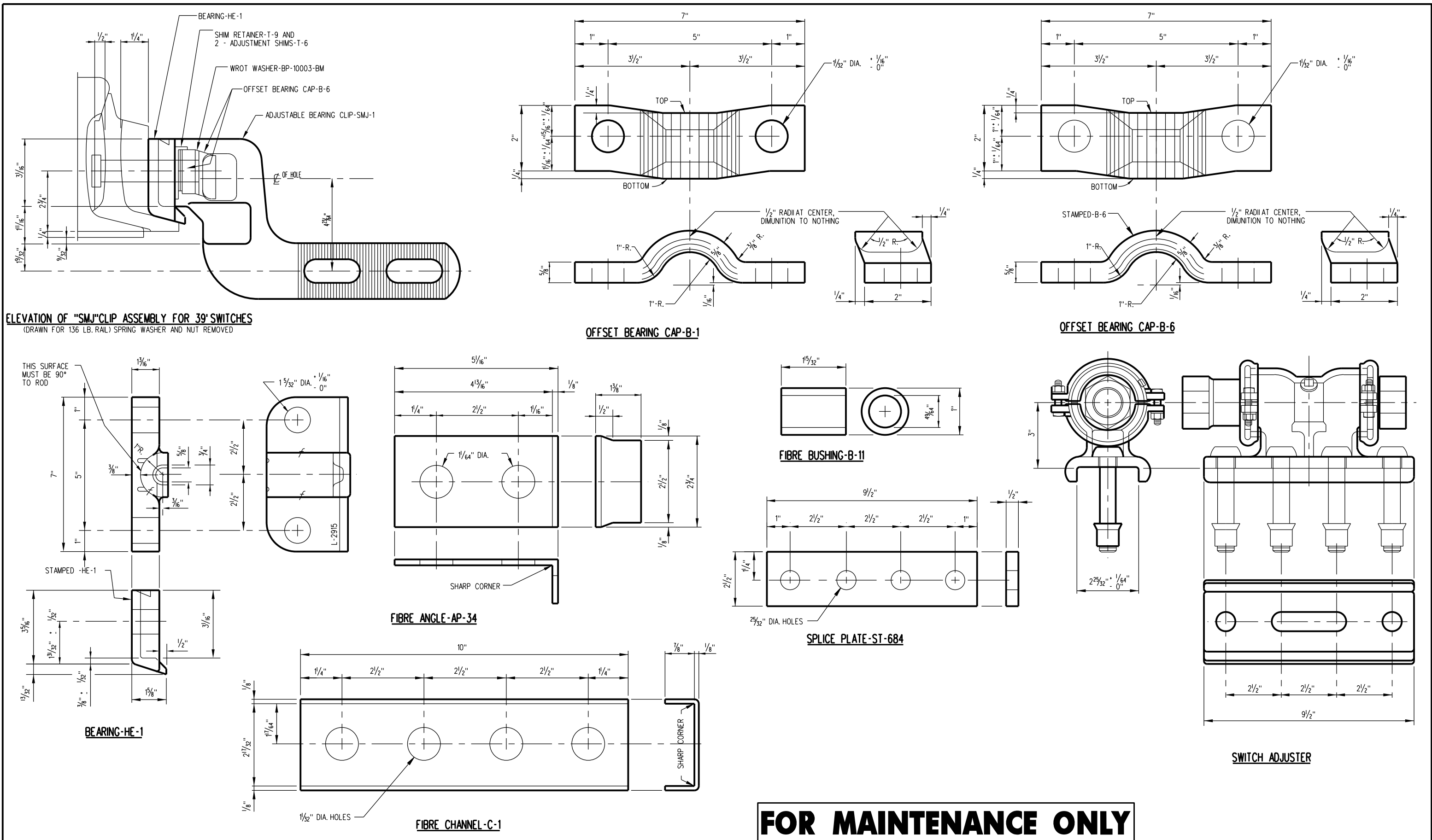
NO. 20 SWITCH ROD DETAILS

STANDARD	2041
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SCALE: AS NOTED

REVISION	SHEET
	11 OF 15

-	11 OF 15
CADD FILE:	
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FOR MAINTENANCE ONLY

				DRAWN BY: A. CARLOS DATE: 03/31/2011		SCRRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRRA APPROVED USES ONLY. FOR NON-SCRRRA APPROVED USES: SCRRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRRA. ALL RIGHTS RESERVED.  METROLINK[®] SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	ENGINEERING STANDARDS		STANDARD 2941							
				 ASSISTANT DIRECTOR: STANDARDS & DESIGN			SCALE: AS NOTED		REVISION SHEET							
				 DIRECTOR OF ENGINEERING AND CONSTRUCTION			NO. 20 SWITCH ROD MISCELLANEOUS DETAILS		12 OF 15							
									CADD FILE: ES2941-12							
X	XX-XX-XX	REVISION	XX	XX												
REV.	DATE	DESCRIPTION	DES.	ENG.												

STAMP EACH PLATE WITH PROPER PLT. NO. AND WEIGHT OF RAIL

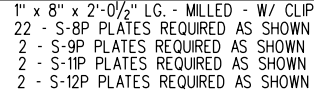
5 $\frac{7}{8}$ " 12 $\frac{5}{16}$ " 1 $\frac{3}{8}$ " 1 $\frac{5}{8}$ "

2" 2" 1" DIA. (4) HOLES

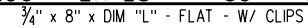


STAMP EACH PLATE WITH PROPER PLT. NO. AND WEIGHT OF RAIL

8" 6 1/16" 2" 1" DIA. (4 HOLES)



STAMP PLATE WITH
PROPER PLT. NO.,
WEIGHT OF RAIL &
HAND OF TURNOUT



FOR BILL OF TURNOUT PLATES AND DIMENSION TABLES
SEE DRAWING 2941-05.

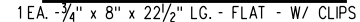


STAMP EACH PLATE WITH PROPER PLT. NO. AND WEIGHT OF RAIL

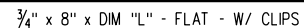
8" 6 1/16" 2" BEVEL GROOVE WELD SEE NOTE 3 SHT 5



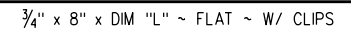
STAMP EACH PLATE
WITH PROPER PLT. No.
& WEIGHT OF RAIL



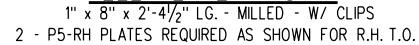
STAMP PLATE WITH
PROPER PLT. NO.,
WEIGHT OF RAIL, &
HAND OF TURNOUT



STAMP PLATE WITH
PROPER PLT. NO.,
WEIGHT OF RAIL, &
HAND OF TURNOUT



STAMP PLATE WITH
PROPER PLT. NO.,
WEIGHT OF RAIL &
HAND OF TURNOUT



1" x 8" x 2'-4 1/2" LG. - MILLED - W/ CLIPS
2 - P6-RH PLATES REQUIRED AS SHOWN,
EXCEPT OPPOSITE FOR L.H. T.O.

STAMP PLATE WITH
PROPER PLT. NO.,
WEIGHT OF RAIL &
HAND OF TURNOUT



STAMP PLATE WITH
PROPER PLT. NO.,
WEIGHT OF RAIL &
HAND OF TURNOUT



STANDARD		2941
SCALE: $1\frac{1}{2}" = 1'-0"$		
REVISION	SHEET	
-	14 OF 15	
CADD FILE:		ES2941-14

EQUIVALENT CURVE DATA	
CURVE	1.0564'
RADIUS	5423.62'
DELTA	2.386'
TANGENT (T)	112.95'
LENGTH (L)	225.86'
EXTERNAL	1.18'
CROSSOVER DATA	
LEAD	205.000'
PC TO PS	21.94'
PS TO PI	91.01'
PI TO 1/2" PF	113.99'
LENGTH OF TURNOUT	293.28'
PS TO PT	203.92'

FROG DATA	
FROG NUMBER	24
FROG ANGLE	2° -23'-13"
SWITCH DATA	
SWITCH LENGTH	61'-8"
HEEL SPREAD	6 1/4"
HEEL ANGLE	0° -59'-02"
SWITCH ANGLE	0° -08'-00"
RADIUS OF CENTER LINE - SWITCH	4817.35'
TANGENT LENGTH SWITCH	77.36'
CENTRAL ANGLE OF CLOSURE CURVE-SWITCH	1° -50'-27"
DEGREE OF CURVE - SWITCH	1° -11'-22"
TURNOUT DATA	
RADIUS OF CENTER LINE - TURNOUT	4815.00'
TANGENT LENGTH - TURNOUT	101.20'
CENTRAL ANGLE OF CLOSURE CURVE - TURNOUT	1° -50'-27"
DEGREE OF CURVE - TURNOUT	1° -11'-24"

CROSSOVER DATA TABLE									
A	B	C	X	Y	2L+X	2L+X- 2(PC-PS)	PS TO PS	U	V
13	312.26	311.99	86.37	537.88	538.09	494.21	494.01	84.01	84.28
14	336.28	335.99	110.39	561.88	562.11	518.23	518.01	108.01	108.30
15	360.30	359.99	134.41	585.88	586.13	542.25	542.01	132.01	132.32
16	384.32	383.99	158.43	609.88	610.15	566.27	566.01	156.01	156.34
17	408.34	407.99	182.45	633.88	634.17	590.29	590.01	180.01	180.36
18	432.36	431.99	206.47	657.88	658.19	614.32	614.01	204.01	204.38
19	456.38	455.99	230.49	681.88	682.21	638.34	638.01	228.01	228.40
20	480.41	479.99	254.51	705.88	706.23	662.36	662.00	252.00	252.42
21	504.43	503.99	278.53	729.88	730.25	686.38	686.00	276.00	276.44
22	528.45	527.99	302.55	753.88	754.27	710.40	710.00	300.00	300.46
23	552.47	551.99	326.57	777.88	778.29	734.42	734.00	324.00	324.48
24	576.49	575.99	350.59	801.88	802.31	758.44	758.00	348.00	348.50
25	600.51	599.99	374.62	825.88	826.33	782.46	782.00	372.00	372.52
26	624.53	623.99	398.64	849.88	850.35	806.48	806.00	396.00	396.54
27	648.55	647.98	422.66	873.88	874.37	830.50	830.00	420.00	420.56
28	672.57	671.98	446.68	897.88	898.39	854.52	854.00	444.00	444.58
29	696.59	695.98	470.70	921.87	922.41	878.54	878.00	468.00	468.60
30	720.61	719.98	494.72	945.87	946.43	902.56	902.00	492.00	492.62
31	744.63	743.98	518.74	969.87	970.45	926.58	926.00	516.00	516.64
32	768.65	767.98	542.76	993.87	994.47	950.60	950.00	540.00	540.66

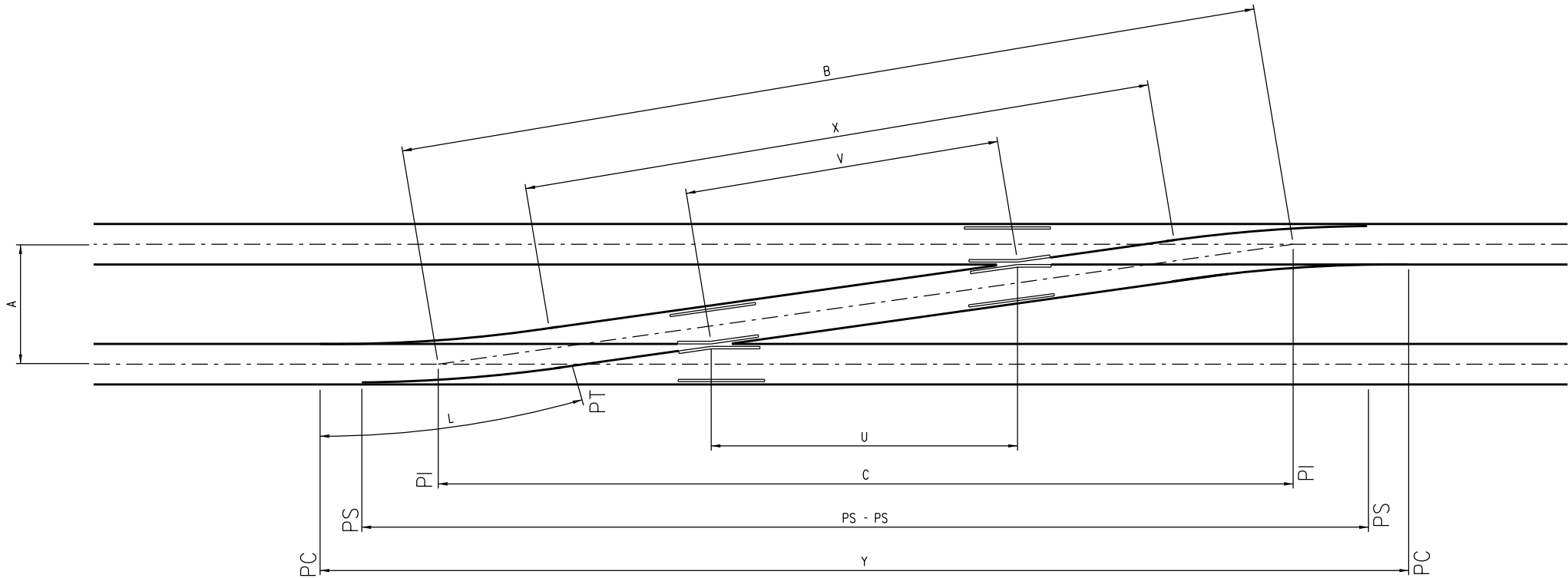
DRAWING INDEX

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NOTES:

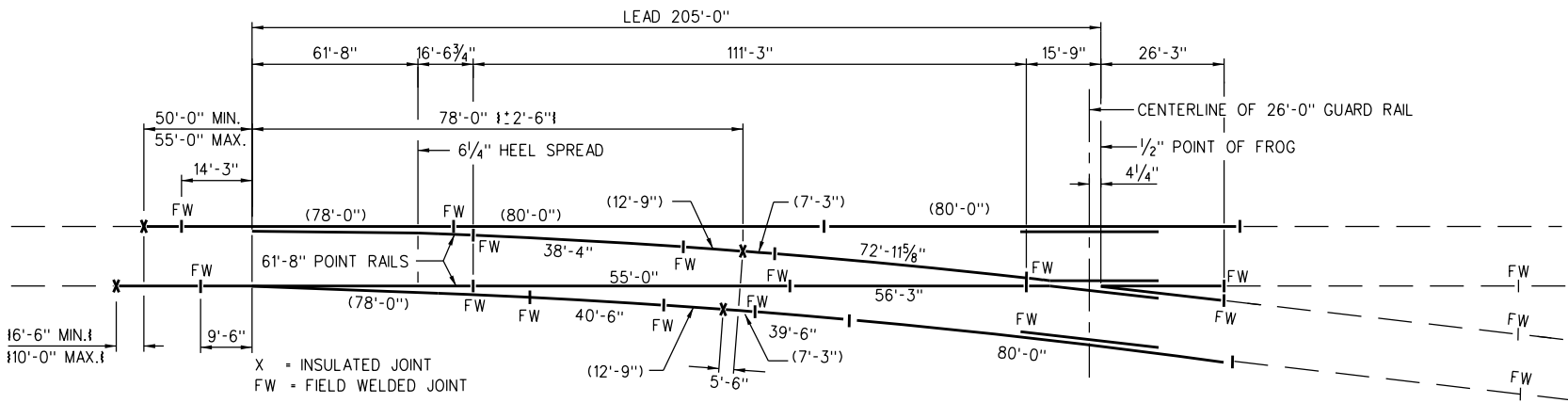
- TURNOUT TO BE FABRICATED FROM 136 LB. HEAD HARDENED RAIL, FROM POINT END TO LAST LONG SWITCH TIE.
- LOCATION OF INSULATED JOINTS IS DETERMINED BY DRAWING NUMBER ES2951-02. IT WILL BE SATISFACTORY TO RELOCATE THE INSULATED JOINT IN THE FIELD UP TO 12" SO AS TO PROVIDE A SUITABLE SUSPENDED JOINT, PROVIDED THE STAGGER OF INSULATED JOINTS DOES NOT EXCEED 4'-6". SUSPENDED INSULATED JOINTS MUST BE LOCATED IN A CRIB AREA BETWEEN TIES, A MINIMUM DISTANCE OF 4" FROM EDGE OF NEAREST TIE PLATE.
- ALL INSULATED JOINTS ARE TO BE ADHESIVE BONDED PREFABRICATED MITRE CUT INSULATED JOINTS PER ES2504 UNLESS OTHERWISE SPECIFIED.
- ALL MATERIALS REQUIRED FOR HAND OR MACHINE OPERATED SWITCH OPERATION WILL BE FURNISHED PER REQUIREMENTS OF THE SCRRRA DIRECTOR OF ENGINEERING AND CONSTRUCTION.
- MATERIALS AND WORKMANSHIP, ALSO ANY CONSTRUCTION DETAILS NOT SHOWN, SHALL BE PER CURRENT AREMA "MANUAL AND PORTFOLIO" UNLESS OTHERWISE SPECIFIED.
- WHERE REQUIRED, ALL IDENTIFICATION SYMBOLS TO BE PLAINLY STAMPED.
- GAGE PLATES WILL BE FURNISHED INSULATED. SWITCH RODS WILL BE FURNISHED INSULATED UNLESS OTHERWISE SPECIFIED.
- MANUFACTURER SHALL SUBMIT TWO COPIES OF SHOP DRAWINGS TO THE SCRRRA DIRECTOR OF ENGINEERING AND CONSTRUCTION FOR APPROVAL PRIOR TO FABRICATION OF TURNOUT. SHOP DRAWINGS THAT CHANGE DETAILS OF THESE STANDARDS MUST CLEARLY SPECIFY SUCH PROPOSED CHANGES.
- THE MATERIAL INCLUDED IN A "TURNOUT COMPLETE" IS EVERYTHING LISTED IN THE BILL OF MATERIALS. TO CONSTRUCT A COMPLETE TURNOUT, SWITCH TIES (PER LIST ON THIS SHEET) AND INSULATED JOINTS, FIELD WELDS, RUNNING RAIL, AND CLOSURE RAIL IDENTIFICATION ON SHEET ES2951-02 MUST ALSO BE SUPPLIED. THE MATERIAL FOR A "CROSSOVER COMPLETE" IS IDENTIFIED ON SHEET ES2951-05.
- TIE PLATES SHALL CONFORM TO SCRRRA ENGINEERING STANDARD ES2454.
- SCREW SPIKES (1 5/16" X 6-2 TPI) SHALL CONFORM TO SCRRRA ENGINEERING STANDARD ES2357.
- PLATE HOLES SHALL BE 1" DIAMETER. PILOT HOLES IN TIES SHALL BE 5/16" DIAMETER. SCREW SPIKES SHALL BE SCREWED INTO WOOD (NOT DRIVEN).
- MANUFACTURER SHALL BEVEL RAIL ENDS PER CURRENT AREMA PLAN NO. 1005.
- THE 61'-8" SWITCH POINT, PER ES2951-09 & ES2951-10 SHALL BE FURNISHED WITH "MF" FRONT ROD PER SCRRRA SIGNALS DEPARTMENT. "SMJ" NO. 1, 5 & 7 SWITCH RODS PER ES2951-11 & ES2951-12 AND SWITCH RODS NO. 2, 3, 4 AND 6 SHALL BE SIMILAR TO NO. 1 SWITCH ROD AND WILL BE FURNISHED WITHOUT BASKET ADJUSTMENT.
- FOR LOCATION OF INSULATED AND COMPROMISE JOINTS FOR NO. 24 TURNOUT AND CROSSOVER, SEE DRAWING NO. ES2951-02.
- GAGE PLATES FOR SWITCH AND FROG, SWITCH HEEL PLATE (FOR BOTH R.H. AND L.H. TURNOUTS) AND PLATES P-13 THRU P-37 ARE DESIGNED TO BE PERPENDICULAR TO THE MAIN LINE THRU RUN RAILS.
- UPON COMPLETION OF TURNOUT INSTALLATION, RUNNING RAIL MUST BE ADJUSTED TO SCRRRA NEUTRAL RAIL TEMPERATURE.
- ALL E-CLIPS SHALL BE GALVANIZED.
- SWITCH POINTS SHALL BE FABRICATED PER AREMA SPECIFICATION NO. 9-28-92 AND ES2951-09 & ES2951-10.
- THE TOLERANCE FOR SPACING OF SWITCH TIES IS +/- 1/2" RELATIVE TO ADJACENT TIES AND 1/4" RELATIVE TO CUMULATIVE DIMENSION FROM THE POINT OF SWITCH (PS).
- SWITCH POINT ROLLER BEARINGS AND SWITCH PLATES WITH POINT ROLLER RISERS SHALL BE AS APPROVED BY THE SCRRRA DIRECTOR OF ENGINEERING AND CONSTRUCTION, SUBMITTED AS SHOP DRAWINGS PER NOTE 8 ABOVE.
- SWITCH POINT ROLLER BEARINGS WILL BE MOUNTED ABOVE PLATE AND WILL NOT BE LOCATED BETWEEN SWITCH TIES.
- HELPER THROW ROD ASSEMBLIES SHALL CONFORM TO ES2951-11.

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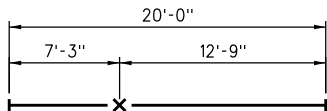


CROSSOVER LAYOUT

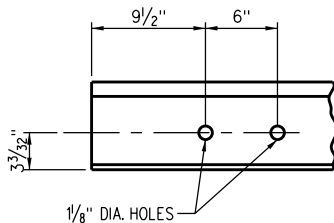
				DRAWN BY: A. CARLOS		DATE: 03/31/2011		SCRRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRRA APPROVED USES ONLY. FOR NON-SCRRRA APPROVED USES, SCRRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRRA. ALL RIGHTS RESERVED.		 METROLINK SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012		ENGINEERING STANDARDS		STANDARD 2951	
				 ASSISTANT DIRECTOR: STANDARDS & DESIGN								SCALE: NONE		REVISION SHEET	
X XX-XX-XX				REVISION		XX XX								1 OF 16	
REV.		DATE		DESCRIPTION		DES.		ENG.				CADD FILE:		ES2951-01	
						DIRECTOR OF ENGINEERING AND CONSTRUCTION									



TURNOUT
SCALE: NONE



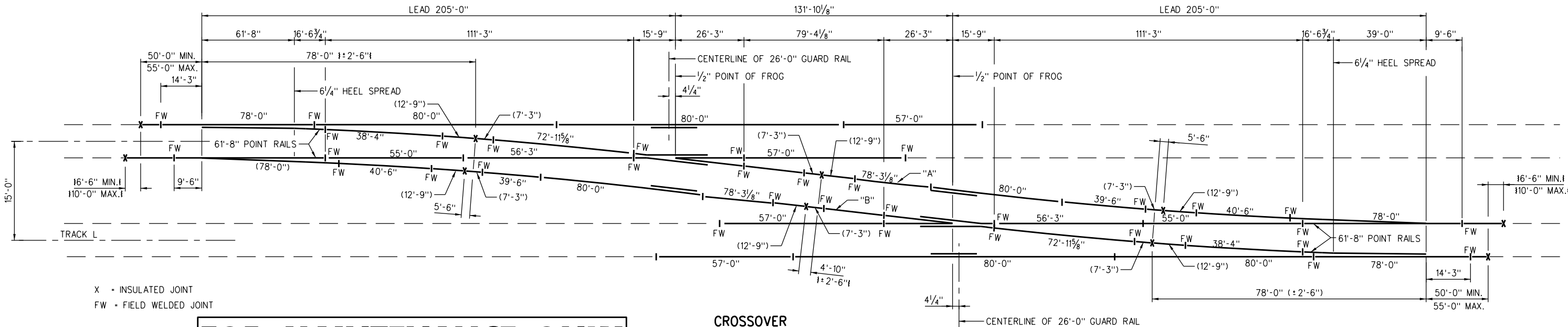
**20'-0" LONG ADHESIVE BONDED PREFABRICATED
MITRE CUT INSULATED RAIL JOINT ASSEMBLY**
(SEE NOTE 6) BOTH ENDS SHALL BE LEFT BLANK FOR
WELDING IN THE FIELD. (SCALE: NONE)



DETAIL "A"
SEE NOTE 4 (b)
SCALE: 1/2" = 1'-0"

NOTES:

1. SINCE THE PERMISSIBLE VARIATION IN STANDARD LENGTHS OF RAILS, FROGS AND SWITCH POINTS IS GREATER THAN THE NORMAL EXPANSION GAPS AT RAIL JOINTS AND THICKNESS OF FIBRE END POST IN INSULATED JOINTS, NO ALLOWANCE HAS BEEN MADE FOR EXPANSION GAPS AND FIBRE END POSTS IN COMPUTING LENGTHS OF RAILS SHOWN.
2. RAIL LAYOUT SHOWN FOR CROSSOVERS IS TO BE USED IN ALL CASES, EXCEPT WHERE COMPROMISE JOINTS ARE REQUIRED BETWEEN THE FROGS IN THE CROSSOVER TRACK. (COMPROMISE JOINTS CAN BE USED IN A TEMPORARY CONDITION.) WHEN COMPROMISE WELDS ARE REQUIRED, THE INSULATED JOINTS IN THE CROSSOVER TRACK SHALL ALWAYS BE OF THE HEAVIER RAIL SECTION AND THE RAIL LAYOUT SHALL BE CHANGED TO LOCATE COMPROMISE JOINTS AS DESCRIBED BELOW:
THE DESCRIPTIONS OF THE CHANGES IN RAIL LAYOUT WHEN COMPROMISE JOINTS ARE REQUIRED IN THE CROSSOVER TRACK ARE BASED ON ASSUMPTION THAT TRACK H IS LAID WITH THE HEAVIER RAIL THAN TRACK L.
CROSSOVER ON 15'-0" TRACK CENTERS: AT LOCATION A THE 80'-0" RAIL SHALL BE REPLACED WITH 16'-6" OF THE HEAVIER RAIL AND 63'-6" OF THE LIGHTER RAIL. AT LOCATION B THE 78'-3/8" RAIL SHALL BE REPLACED WITH 10'-0" OF THE HEAVIER RAIL AND 68'-3/8" OF THE LIGHTER RAIL.
3. IN ADDITION TO NOTE 1, NO ALLOWANCE HAS BEEN MADE IN THE RAIL LENGTHS TO PROVIDE GAPS NEEDED TO MAKE FIELD WELDS. IN THE FIELD IT WILL BE NECESSARY TO CUT RAILS ENDS TO PROVIDE CORRECT GAPS FOR FIELD WELDS.
4. FURNISH ALL RAIL SHOWN IN SOLID LINES ON THIS DRAWING:
(A.) RAILS LONGER THAN 39'-0" SHALL BE CONTINUOUS WELDED RAIL (CWR), TO BE FURNISHED WITH BOTH ENDS LEFT BLANK FOR WELDING IN THE FIELD.
(B.) ALL OTHER RAILS 39'-0" OR SHORTER AS SPECIFIED ON THE DRAWING, WITH BOTH ENDS DRILLED PER DETAIL "A", IF SO REQUIRED.
5. ALL RAIL FURNISHED FOR TURNOUT AND CROSSOVER SHALL BE "HIGH STRENGTH" EXCEPT GUARD RAILS.
6. LOCATIONS OF INSULATED JOINTS ARE SHOWN ON TURNOUT AND CROSSOVER DIAGRAMS WITHOUT TOLERANCES, OR IF TOLERANCES ARE PERMISSABLE, WITH (+ OR -). ALL INSULATED JOINTS ARE TO BE PROPERLY SUSPENDED IN CRIB AREA BETWEEN TWO TIES LOCATED 4" MINIMUM FROM EDGE OF NEAREST TIE TO EDGE OF INSULATED JOINT.
7. INSULATED JOINT MUST BE INSTALLED TO BE CENTERED BETWEEN TWO (2) TIES.
8. FIELD WELDED JOINTS DESIGNATED "FW" SHOULD BE IN CRIB AREA BETWEEN TWO TIES LOCATED 4" MINIMUM BETWEEN NEAREST TIE AND WELDED JOINT. DIMENSIONS SHOWN IN PARENTHESIS (0'-0") ARE EXACT. RAILS FURNISHED FOR THESE LOCATIONS ARE LARGER AND MUST BE FIELD ADJUSTED (CUT) WITHIN TOLERANCES SHOWN IN BRACKETS 10'-0".
9. WHEN INSULATED JOINTS WITH TOLERANCES AND FIELD WELDED JOINTS FALL SHORT OF MINIMUM CLEARANCE FROM TIE OR TIE PLATE THE JOINT MAY BE MOVED WITHIN TOLERANCE LIMITS. BONDED INSULATED JOINT ASSEMBLIES AND STOCK RAILS ARE FURNISHED LONGER THAN SHOWN IN PARENTHESIS ON LAYOUT. THESE RAILS OR THEIR ADJACENT CONNECTING RAILS MUST BE TRIMMED IN THE FIELD TO FIT.
10. INSULATED JOINTS SHALL HAVE 45° MITRE CUT RAIL ENDS.



X = INSULATED JOINT
FW = FIELD WELDED JOINT

CROSSOVER
15'-0" TRACK CENTERS
(SCALE: NONE)

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				ASSISTANT DIRECTOR: STANDARDS & DESIGN				SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY						NO. 24 136 LB. RH. RBM FROG		SCALE: AS NOTED	
				DIRECTOR OF ENGINEERING AND CONSTRUCTION				ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012						TURNOUT AND CROSSOVER		REVISION SHEET	
														JOINTS LOCATIONS		- 2 OF 16	
																CADD FILE: ES2951-02	

1. SEE COVER SHEET FOR NOTES, BILL OF MATERIAL AND TURNOUT DATA.
2. SEE SHEET 2951-05 FOR CROSSOVER AND CROSSOVER DATA.



IF CONCRETE TIES ARE INSTALLED AHEAD OF
SWITCH POINT, HEAD BLOCK TIE GAGE PLATE
PP WILL NOT BE INSTALLED



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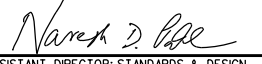
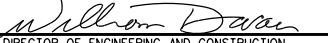
			DRAWN BY:	A. CARLOS	DATE:	03/31/2011	SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES: SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.	 METROLINK® SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	ENGINEERING STANDARDS	STANDARD 2951
X	XX-XX-XX	REVISION	XX	XX					SCALE: $\frac{3}{16}" = 1'-0"$	REVISION SHEET
REV.	DATE	DESCRIPTION	DES.	ENG.					-	3 OF 16
					Narek D. Bese	ASSISTANT DIRECTOR: STANDARDS & DESIGN			CADD FILE:	ES2951-03
					William Davis	DIRECTOR OF ENGINEERING AND CONSTRUCTION				

BILL OF MATERIAL FOR LATERAL TURNOUT	
QTY.	DESCRIPTION
1 EACH	No.24 RAILBOUND MANGANESE FROG ~ 42'-0" LONG
1 EACH	FROG PLATES No. F-1 THRU F-40
1 EACH	FROG GAGE PLATES FGP-1 THRU FGP-5
2 EACH	26'-0" U-69 ADJUSTABLE GUARD RAIL W/ PLATES
1 PAIR	61'-8" EXTENDED FIELD WELDED TYPE SWITCH POINTS (78'-0" RAIL)
1 EACH	R.H. & L.H. CURVED STOCK RAILS - 78'-0"
2 EACH	STRAIGHT LEAD RAILS - 80'-0"
1 EACH	CURVED LEAD RAILS - 39'-6" & 40'-6"
1 EACH	R.H. CURVED COLSURE RAIL - 38'-4" & 72'-11 ⁵ / ₈ "
1 EACH	R.H. PART CURVED RAIL - 80'-0"
1 EACH	STRAIGHT CLOSURE RAIL - 55'-0"
1 EACH	STRAIGHT CLOSURE RAIL - 56'-3"
12 PCS	RACOR SWITCH POINT ROLLER ASSEMBLIES
3 EACH	D.I. RAIL HOLD DOWN CLIP - E-3706
8 EACH	D.I. RAIL HOLD DOWN CLIP - E-3707
6 EACH	D.I. RAIL HOLD DOWN CLIP - E-3708
4 EACH	D.I. RAIL HOLD DOWN CLIP - E-3709
4 EACH	D.I. RAIL HOLD DOWN CLIP - E-3710
32 PCS.	BOLTLESS ADJUSTABLE BRACE ASSEMBLIES
748 PCS	"PANDROL", OR EQUAL, CLIP TYPE E-2055
8 PCS	"PANDROL", OR EQUAL, CLIP TYPE E-2063 (USE AT INSUL. JTS.)
16 PCS	"PANDROL", OR EQUAL, SHOULDER PR-2172-1 (USE ON FGP-4 & FGP-5)
1496 PCS	"PANDROL", OR EQUAL, SCREW SPIKES, 1 ⁵ / ₈ " D. X 6" LONG
374 PCS	"PANDROL", OR EQUAL, STANDARD TIE PLATES
1 EACH	HELPER ROD ASSEMBLY
2 EACH	THERMAL STRESS BLOCK ASSEMBLY
1 EACH	R.H. & L.H. SAMSON STOCK RAILS
1 EACH	No. 1 SMJ TYPE SWITCH ROD
1 EACH	SWITCH RODS No.2 THRU 7 - SMJ TYPE
2 EACH	GAGE PLATE No. P-P
1 EACH	GAGE PLATE No. GP-0-P
1 EACH	GAGE PLATE No. GP-1-R OR GP-1-L
1 EACH	GAGE PLATE No. GP-2-R OR GP-2-L
1 EACH	GAGE PLATE No. GP-3-R OR GP-3-L
40 EACH	SLIDE PLATE S-8P
2 EACH	SLIDE PLATE S-9P
2 EACH	SLIDE PLATE S-11P
2 EACH	SLIDE PLATE S-12P
16 EACH	BRACE SLIDE PLATE S-5P
2 EACH	BRACE SLIDE PLATE S-7P
2 EACH	ROLLER BEARING BRACE PLATES RBP-1, RBP-2, & RBP-3
2 EACH	HEEL PLATE HP-5 & TURNOUT PLATES P-13 THRU P-37
2 EACH	EPOXY BONDED PREFABRICATED MITRE CUT INSULATED JOINT 20'-0"

BILL OF MATERIAL FOR HELPER ASSEMBLY	
QTY.	DESCRIPTION
11	COTTER PIN, 3⁄16" x 1¾" LG
4	PIPE COUPLER
1	JAW PIN
9	COTTER PIN, 3⁄16" x 1½"
6	BOLT, 3⁄4" - 10 X 3" LG, HVY HEX
8	PIN, PIPE CARRIER ROLLER
12	FLAT WASHER, 3⁄4" , USS
12	LOCK WASHER, 3⁄4" , HVY
6	NUT, 3⁄4" - 10, HEAVY SQUARE
12	NUT, 3⁄4" - 10, HEAVY HEX
6	RETAINER, BOLT
6	STUD, 3⁄4"x14" W/3 - 3⁄4" - 10 THREAD BOTH ENDS
1	ROD OPERATING - No. 7 HELPER
1	ROD OPERATING - No. 5 HELPER
2	ASSY - SWITCH POINT ADJUSTER
8	ROLLER, PIPE CARRIER
8	STAND, PIPE CARRIER
8	3⁄4" x 5" LG LAG BOLT
16	½" x 4" LG LAG BOLT
8	RIVET, ¼" x 1½", ROUND, STEEL
4	CONE NUT, SWITCH POINT ADJUSTER
4	LOCK WASHER, 1¼" HEAVY
8	NUT, 1¼" - 7, HEAVY HEX, JAMB
2	PIPE - SCHEDULE 80 x 148 ⁷ / ₈ " LG
2	PIPE - SCHEDULE 80 x 212 ⁷ / ₈ " LG
1	CLEVIS
4	SCREW JAW ROD
4	SOLID JAW
11	JAW PIN
4	SCREW JAW, 1¼" - 7" x 6½" LG
3	CRANK STAND PIN
1	ADJUSTABLE LINK
1	CRANK, 3 ARM, STAGE 3
1	CRANK, 3 ARM, STAGE 2
1	CRANK, 3 ARM, STAGE 1
3	CRANK STAND
1	CRANK PLATE, STAGE 3
1	CRANK PLATE, STAGE 2
1	CRANK PLATE, STAGE 1

BILL OF SWITCH TIES FOR TURNOUT			
PIECES	SIZE	LENGTH	BOARD FEET
42	7" x 9"	10'-0"	1680.00
20	7" x 9"	11'-0"	1155.00
16	7" x 9"	12'-0"	1008.00
14	7" x 9"	13'-0"	955.50
13	7" x 9"	14'-0"	955.50
2	10" x 9"	14'-0" DAP TIES	147.00
25	7" x 9"	15'-0"	1968.75
14	7" x 9"	16'-0"	1176.00
13	7" x 9"	17'-0"	1160.25
TOTAL			TOTAL
159			10192.00

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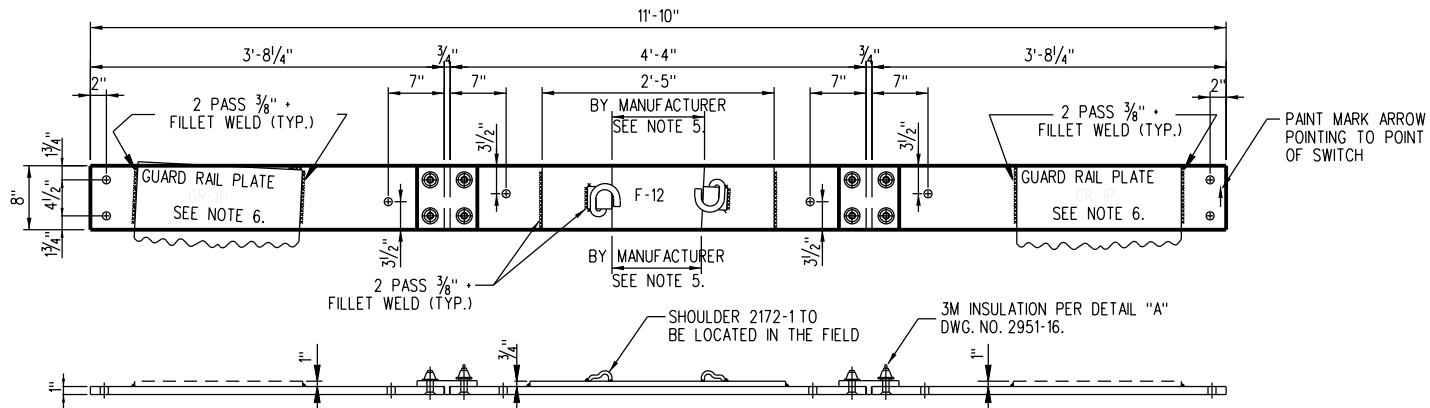
						DRAWN BY: A. CARLOS	DATE: 03/31/2011	SCRRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRRA APPROVED USES ONLY. FOR NON-SCRRRA APPROVED USES: SCRRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRRA. ALL RIGHTS RESERVED.	 METROLINK SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	ENGINEERING STANDARDS	STANDARD 2951
						 ASSISTANT DIRECTOR: STANDARDS & DESIGN				NO. 24, 136 LB. RH RBM FROG TURNOUT BILL OF MATERIALS	SCALE: NONE
						 DIRECTOR OF ENGINEERING AND CONSTRUCTION					REVISION SHEET - 4 OF 16
											CADD FILE: ES2951-04

1. FROG ANGLE 2° -23'-13".
2. RAIL USED TO FABRICATE FROG IS TO BE 136 LB. HIGH STRENGTH.
3. RAIL BOUND MANGANESE STEEL FROG PER CURRENT AREMA PLAN NO. 621 & 625 WITH EXPLOSIVE HARDENED MANGANESE HIGH INTEGRITY CASTING PER CURRENT AREMA SPECIFICATIONS AND MODIFIED FOR ARM LENGTHS AND PLATES WITH PANDROL FASTENERS.
4. ALL FROG PLATES SHALL BE STAMPED IN 1/2" CHARACTERS TO INDICATE MFG., FROG NO., R.H., RAIL SECTION AND PLATE NUMBER. MARK TO BE STAMPED ON SAME END OF ALL FROG PLATES.
5. FOR DETAILS OF FROG PLATES SEE SHEET 2951-14.
6. WORKMANSHIP AND MATERIALS SHALL BE PER CURRENT "AREMA SPECIFICATIONS FOR SPECIAL TRACKWORK", EXCEPT AS OTHERWISE SPECIFIED.
7. ANY CONSTRUCTION DETAILS NOT SHOWN SHALL BE IN ACCORDANCE WITH CURRENT AREMA RECOMMENDED PRACTICE.
8. FROG PLATES ARE DESIGNED TO BE INSTALLED PERPENDICULAR TO MAIN TRACK.
9. BODY BOLTS 1 3/8" DIA., H.T.C.S. - PER AREMA SPECIFICATIONS.
10. TOE AND HEEL BLOCKS & BOLTS PER AREMA SPECIFICATIONS.
11. PLATES TO BE MADE OF MILD ROLLED STEEL.

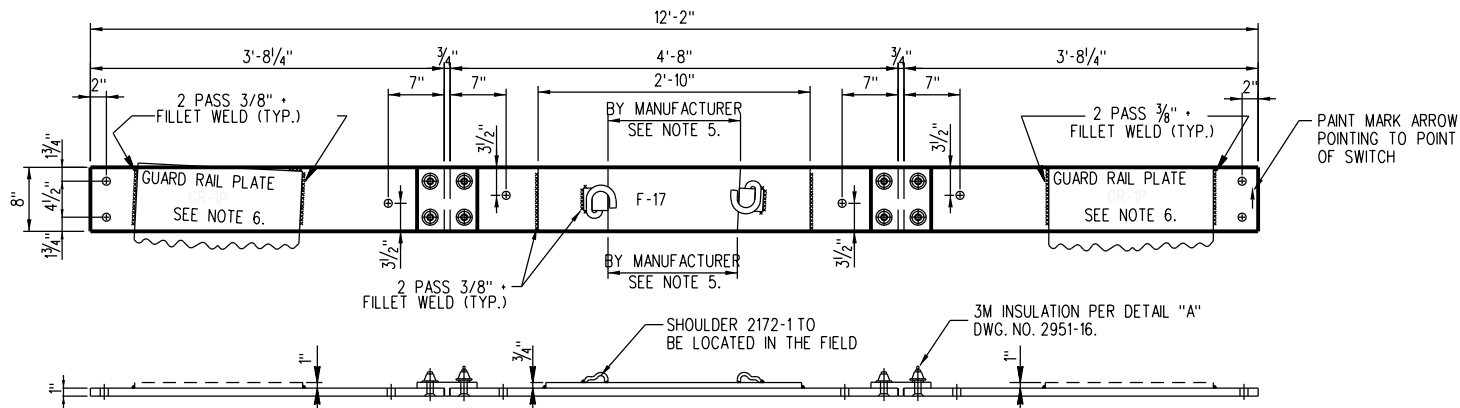
12. THE PLATES AS SHOWN ARE FOR A 136 LB., NO. 24, RIGHT HAND TURNOUT.
13. FOR A LEFT HAND TURNOUT, PLATES ARE TO BE OPPOSITE.
14. THE "PANDROL", OR APPROVED EQUAL, TYPE WELD-ON PRESSED STEEL SHOULDER, MADE OF MILD STEEL AND MEETING "PANDROL'S" DESIGN SPECIFICATIONS SHALL BE USED.
15. THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO ALL PLATES WITH A MINIMUM 2 PASS 3/8" * FILLET WELD ALONG THE BEVELED GROOVES OF THE SHOULDER. ANY WELD PROJECTING BEYOND THE VERTICAL FACE OF THE SHOULDER IN THE AREA OF THE BASE OF RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.
16. MANUFACTURER OF FROG PLATES SHALL USE COMPLETED FROG TO VERIFY LOCATION OF ADJUSTABLE CLAMPS ON FROG GAGE PLATES FGP-1, FGP-2, AND FGP-3 TO INSURE PROPER FIT. FROG PLATES WILL BE WELDED TO THE GAGE PLATES IN THE FIELD WITH A 3 PASS 1/2" * FILLET WELD. PLATES WILL BE WELDED ONLY AFTER THE GAGE PLATES ARE SECURED IN THE PROPER LOCATION ON THE TIE WITH THE FROG IN PLACE AT PROPER ALIGNMENT.
17. GUARD RAIL PLATES ARE TO BE INSTALLED AND WELDED TO THE FROG GAGE PLATES IN THE FIELD WITH A 3 PASS 1/2" * FILLET WELD CONTINUOUS ON BOTH ENDS OF THE PLATE. PLATES ARE TO BE WELDED ONLY AFTER THE GAGE PLATE AND THE FROG IS SECURED IN THE PROPER LOCATION ON THE TIE WITH PROPER ALIGNMENT.
18. IDENTIFICATION TAG WITH RAISED METAL CHARACTERS TO BE APPLIED WHICH WILL STATE WEIGHT OF RAIL, FROG NO., MANUFACTURER AND YEAR MANUFACTURED.
19. RAIL ENDS TO BE CUT AT 45 DEGREE ANGLE AT JOINT WITH FROG CASTING.

PLATES F-12, F-17 AND F-22 ARE TO BE LAYED OUT AND MARKED OFF FROM UNDER FROG TO INSURE PROPER LOCATION OF PANDROL SHOULDERS.

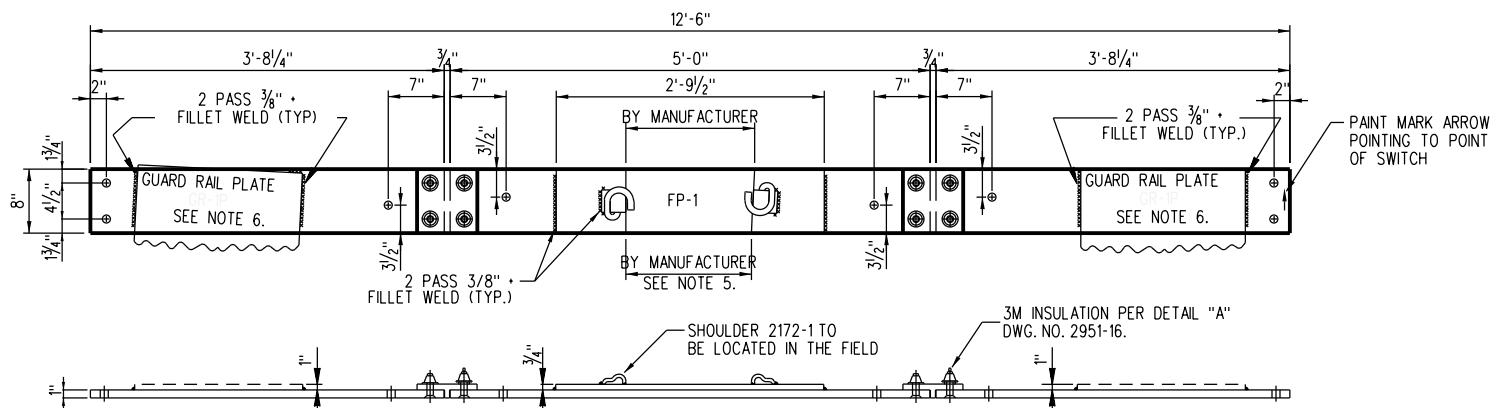
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INSULATED FROG GAGE PLATE - FGP-1
1" x 8" - FLAT - W/3M INSULATION (1 PC. REQ'D. AS SHOWN)



INSULATED FROG GAGE PLATE - FGP-2
1" x 8" - FLAT - W/3M INSULATION (1 PC. REQ'D. AS SHOWN)



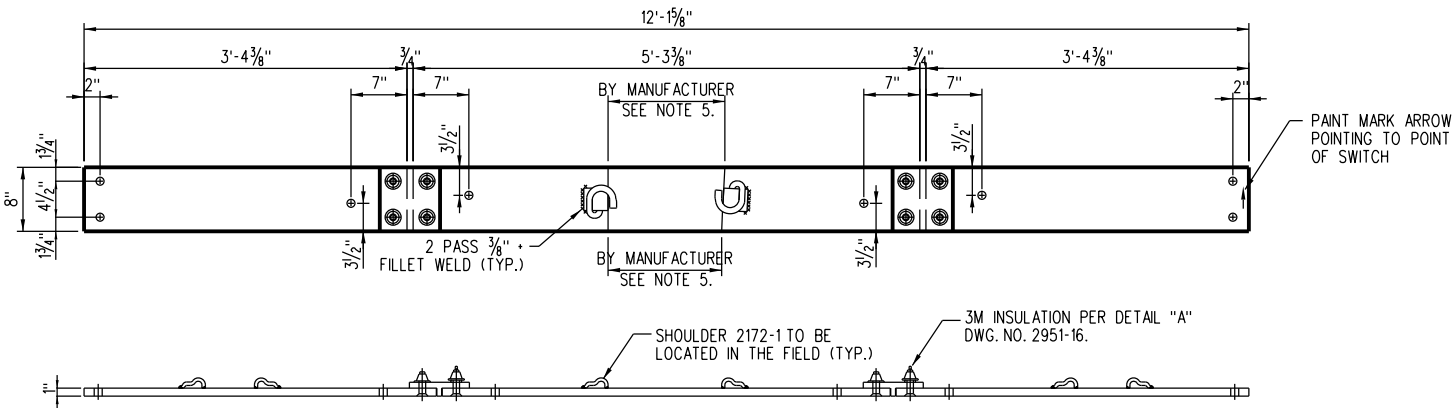
INSULATED FROG GAGE PLATE - FGP-3
1" x 8" - FLAT - W/3M INSULATION (1 PC. REQ'D. AS SHOWN)

NOTES:

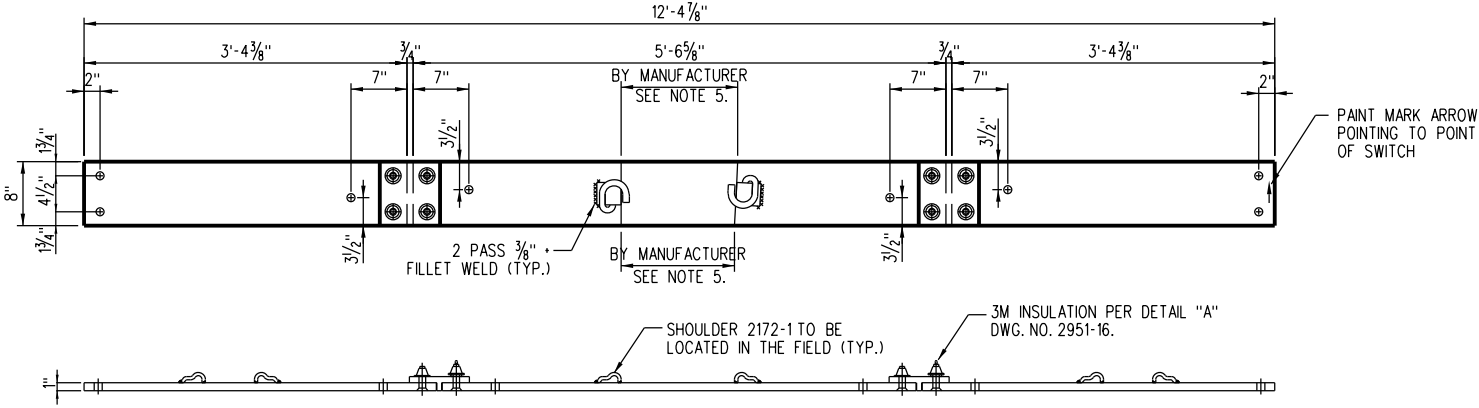
1. PLATES TO BE MADE OF MILD ROLLED STEEL.
2. THE PLATES AS SHOWN ARE FOR A 136 LB., NO. 24, RIGHT HAND, MACHINE OPERATED TURNOUT. FOR A LEFT HAND TURNOUT, PLATES ARE TO BE OPPOSITE.
3. THE PANDROL TYPE, OR APPROVED EQUAL WELD-ON PRESSED STEEL SHOULDER, MADE OF MILD STEEL, AND MEETING PANDROLS DESIGN SPECIFICATIONS SHALL BE USED.
4. THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO ALL PLATES WITH A MINIMUM 2 PASS 3/8" + FILLET WELD ALONG THE BEVELED GROOVES OF THE SHOULDER. ANY WELD PROJECTING BEYOND THE VERTICAL FACE OF THE SHOULDER IN THE AREA OF THE BASE OF RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.
5. MANUFACTURER OF FROG PLATES SHALL USE COMPLETED FROG TO VERIFY LOCATION OF SHOULDERS ON FROG PLATES FGP-1, FGP-2, AND FGP-3 TO INSURE PROPER FIT. FROG PLATES WILL BE WELDED TO THE GAGE PLATES IN THE FIELD WITH A 3 PASS 1/2" FILLET WELD. PLATES WILL BE WELDED ONLY AFTER THE GAGE PLATES ARE SECURED IN THE PROPER LOCATION ON THE TIE WITH THE FROG IN PLACE AT PROPER ALIGNMENT.
6. GUARD RAIL PLATES ARE TO BE INSTALLED AND WELDED TO THE FROG GAGE PLATES IN THE FIELD WITH A 3 PASS 1/2" FILLET WELD CONTINUOUS ON BOTH ENDS OF THE PLATE. PLATES ARE TO BE WELDED ONLY AFTER THE GAGE PLATE AND THE FROG IS SECURED IN THE PROPER LOCATION ON THE TIE WITH PROPER ALIGNMENT.

**INSTRUCTIONS FOR WELDING
GUARD RAILS TO GAGE PLATES:**

1. POSITION GAGE PLATES AT DESIGNATED TIE LOCATIONS AND ANCHOR IN PLACE.
2. CHECK TRACK FOR CORRECT GAGE.
3. STARTING WITH ONE GAGE PLATE, PLACE FROG PLATES WITH ADJUSTABLE BRACES AND SECURE TO FROG AND GUARD RAIL WITH PANDROL CLIPS.
4. RECHECK TRACK GAGE AND CORRECT IF NECESSARY.
5. CAREFULLY WELD FROG PLATE AND GUARD RAIL PLATE TO FROG GAGE PLATES WITH 3 PASS 1/2" + FILLET WELD. FOR WELDING USE THE FOLLOWING:
 - A. ELECTRODE, 3/32 INCH, WELDING SPEC. 7018XLM.
 - B. ELECTRODE, 3/16 INCH, WELDING SPEC. 7018XLM.
 - C. WIRE, 3/32 INCH, NR203, 1/2 NICKEL FLUX COREOTHER WIRE OR ELECTRODES MEETING SPECIFICATIONS AS CALLED FOR AND APPROVED BY SCRRRA DIRECTOR OF ENGINEERING MAY BE USED.



INSULATED FROG GAGE PLATE - FGP-4
1" x 8" - FLAT - W/3M INSULATION (1 PC. REQ'D. AS SHOWN)



INSULATED FROG GAGE PLATE - FGP-5
1" x 8" - FLAT - W/3M INSULATION (1 PC. REQ'D. AS SHOWN)

FOR MAINTENANCE ONLY

				DRAWN BY:	A. CARLOS	DATE:	03/31/2011
X	XX-XX-XX	REVISION	XX	XX			
REV.	DATE	DESCRIPTION	DES.	ENG.			

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FOR NON-SCRRRA APPROVED USES:
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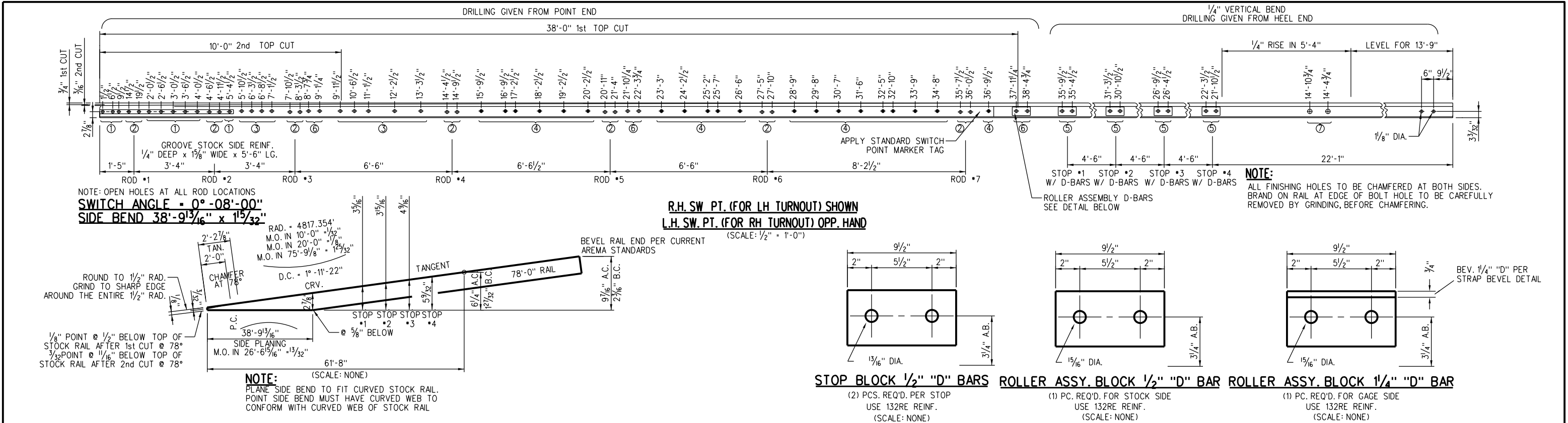
METROLINK

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS

NO. 24 136 LB. R.H. RBM FROG
GAGE PLATE DETAILS

STANDARD	2951
SCALE:	1" = 1'-0"
REVISION	SHEET
-	7 OF 16
CADD FILE:	ES2951-07

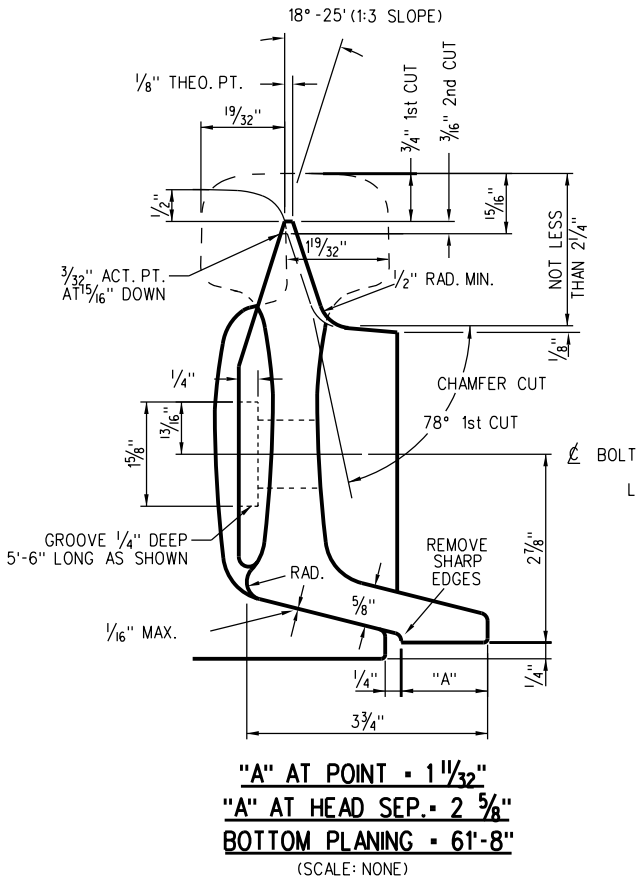
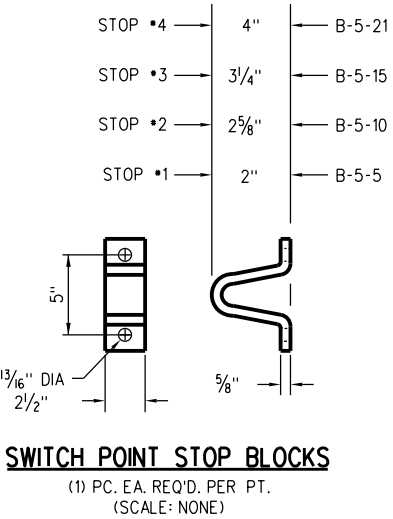


QUANTITIES SHOWN FOR (1) SWITCH POINT			
REIN. BARS	GAGE SIDE	1¼" "D" x 37'-0" LG.	} USE 132RE REINF.
	STOCK RAIL SIDE	½" "D" x 37'-0" LG.	
CLIPS	HEAD ROD	TYPE "MJS" (FURNISHED WITH ROD)	
	BACK RODS	TYPE "MJS" (FURNISHED WITH ROD)	
WEB BOLTS	HEAD ROD	1" DIA. (FURNISHED WITH ROD)	
	BACK ROD	1" DIA. (FURNISHED WITH ROD)	
ROD BOLTS	HEAD ROD	1" DIA. (FURNISHED WITH ROD)	
	BACK ROD	1" DIA. (FURNISHED WITH ROD)	
STOP BOLTS	SEE BOLT TABLE		
REIN BAR	HUCKS - SEE BOLT TABLE BOLTS - SEE BOLT TABLE		
INSTRUCTIONS	RAIL TO BE 136RE HEAD HARDENED		

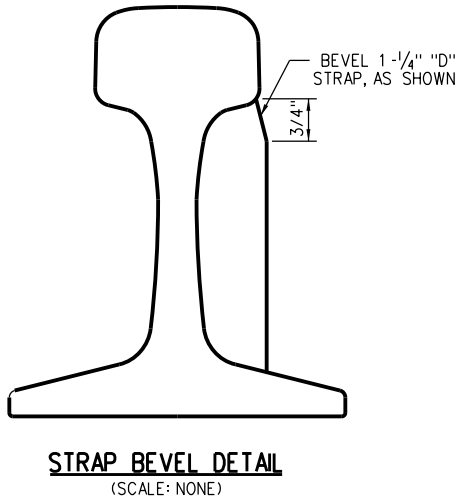
- HUCKS
- BOLTS

BOLT TABLE

BOLT #	BOLT DESCRIPTION	QTY.	HOLE DIA.	A.B.
1	H.T. MACH., TH. SQ. HD., 1" x 4 1/2", DR. 4", W/SQ. NUT, SPRG. WASH. & 1/4" COTT.	9	1 1/16"	2 7/8"
2	NONE - OPEN TYPE "MJS" CLIP HOLES	—	1 1/16"	2 7/8"
3	H.T. MACH., TH. SQ. HD., 1" x 4 3/4", DR. 4 1/4", W/SQ. NUT, SPRG. WASH. & 1/4" COTT.	9	1 1/16"	3 1/4"
4	HUCK PIN C50LR-BR-24-36 WITH COLLAR LC-2R-24	20	13/16"	3 1/4"
5	H.T. MACH., SQ. HD., 3/4" x 4 1/4", DR. 3 3/4", W/SQ. NUT, SPRG. WASH. & 1/4" COTT.	8	13/16"	3 1/4"
6	NONE - OPEN ROLLER HOLES	—	15/16"	3 1/4"
7	NONE - OPEN THERMAL STRESS BLOCK HOLES	—	1 1/2"	3 1/4"

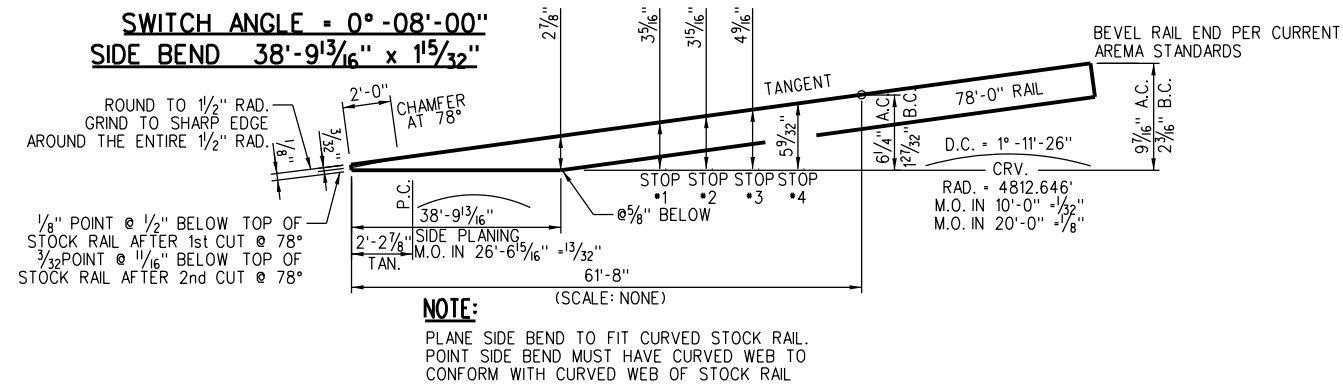
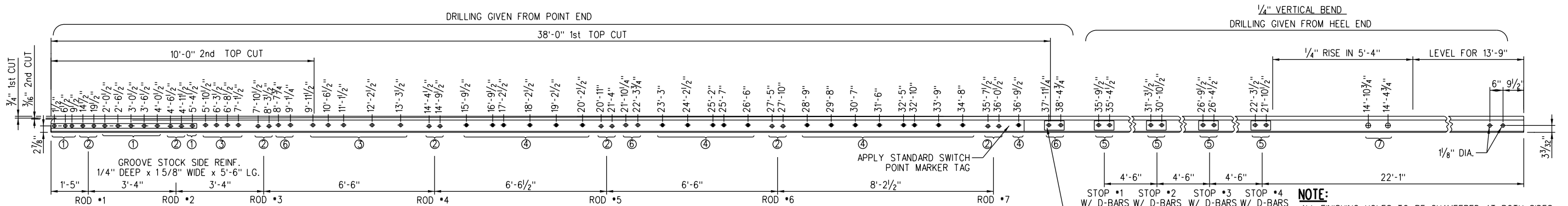


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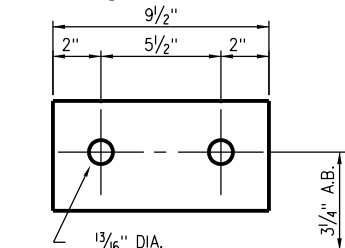


- NOTES:**
- SWITCH POINTS TO BE MADE FROM NEW HIGH STRENGTH RAIL.
 - CURVED LEFT HAND SWITCH POINT AND STRAIGHT HAND SWITCH POINT FOR RIGHT HAND TURNOUT SHOWN. MAKE OPPOSITE HAND FOR RIGHT AND LEFT HAND SWITCH POINTS FOR LEFT HAND TURNOUT.
 - SIDE PLANING FIGURED ON GAGE LINE 5/8" BELOW TOP OF RAIL.
 - MATERIALS AND WORKMANSHIP, ALSO ANY CONSTRUCTION DETAILS NOT SHOWN, SHALL BE PER CURRENT AREMA "MANUAL AND PORTFOLIO", UNLESS OTHERWISE SPECIFIED ON THIS PLAN.
 - IN ORDER TO ELIMINATE STRESS RAISERS, MANUFACTURER SHALL PEEN THE EDGES OF THE BOLT HOLES AS INDICATED AT THE HEEL OF SWITCH POINT AND AT THE HEEL END OF THE SWITCH POINT RAIL, USING AIR HAMMER WITH SUITABLE HEAD AND FINISHING WITH DRIFT PIN. BRAND ON RAIL AT EDGE OF BOLT HOLE TO BE CAREFULLY REMOVED BY GRINDING BEFORE PEENING.
 - THE CONTOUR PLANING SHALL BE ON THE GAGE SIDE BEGINNING AT A DISTANCE OF 7'-6" FROM THE POINT OF SWITCH AND SHALL BE SHAPED TO THE CONTOUR OF A NEW 136 LB. RAIL AND SHALL RUN OUT AT THE END OF TOP PLANING, WHERE THE HEAD HAS FULL HEAD CONTOUR.
 - METAL IDENTIFICATION TAG SHOWING (1) DESIGN LENGTH OF SWITCH, (2) IN PERENTHESIS, THE ACTUAL LENGTH OF SWITCHPOINT RAIL AND (3) THE TURNOUT NUMBER. MARK TAG THUS: 61'-8" (78'-0") NO. 24. TAG TO BE FASTENED TO SWITCH POINT, ON GAGE SIDE OF RAIL AT HEEL SPACER BLOCK IN LOCATION SHOWN. A SECOND METAL IDENTIFICATION TAG SHOWING HAND OF SWITCH POINT, WEIGHT OF RAIL, HS, MANUFACTURER AND WHEN MADE, TO BE FASTENED TO SWITCH POINT AT LOCATION SHOWN.
 - UNLESS SPECIFIED ON ORDER, FRONT ROD LUG BOLTS AND TRANSIT CLIPS FOR SWITCH RODS NO. 1, 2, 3, 4, 5 AND 6 COMPLETE WITH BOLTS WILL NOT BE FURNISHED WITH SWITCH POINTS.
 - AT HEEL END OF SWITCH POINT RAIL, BREAK SHARP CORNER AROUND THE ENTIRE PERIPHERY BY SLIGHTLY GRINDING. ALSO, "DO NOT" END HARDEN RAIL END.
 - MANGANESE TIP SHALL BE USED ON DIVERGING POINTS.

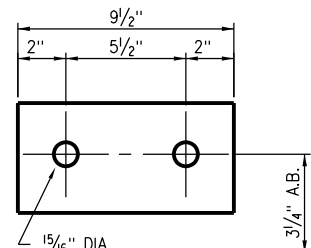
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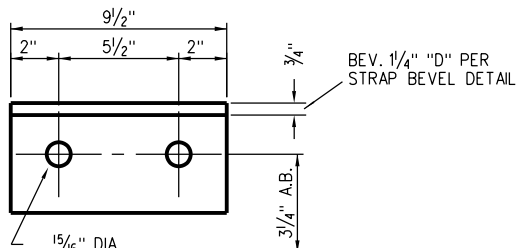
R.H. SW. PT. (FOR RH TURNOUT) SHOWN
L.H. SW. PT. (FOR LH TURNOUT) OPP. HAND
(SCALE: 1/2" = 1'-0")



STOP BLOCK 1/2" "D" BARS
(2) PCS. REQ'D. PER STOP
USE 132RE REINF.
(SCALE: NONE)

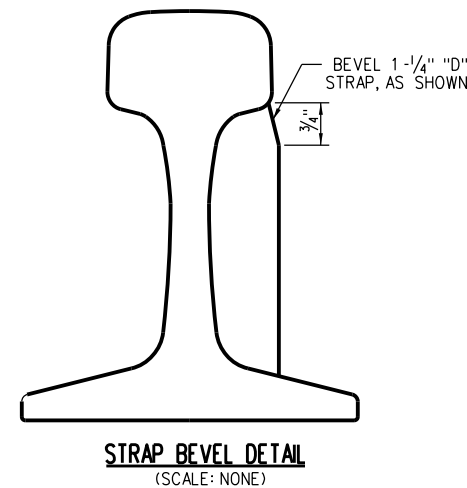
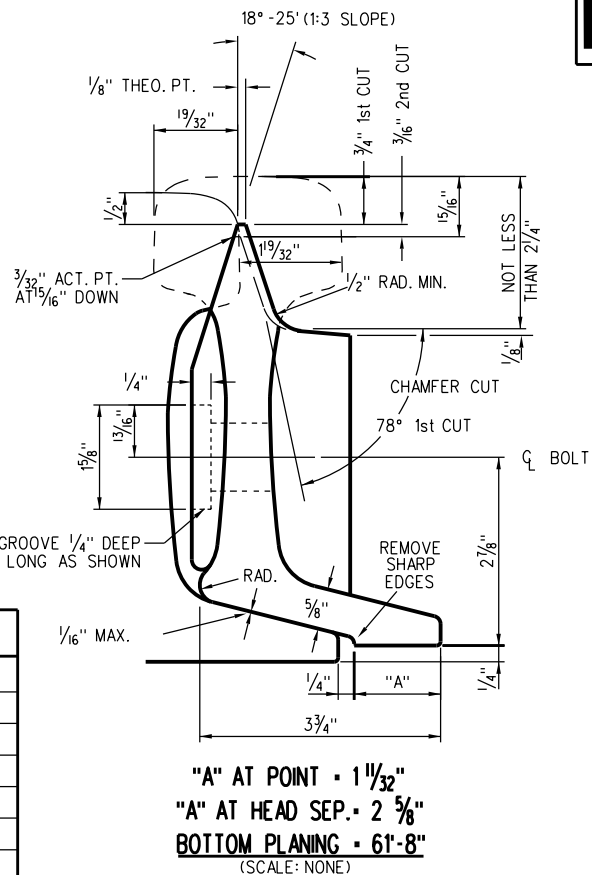
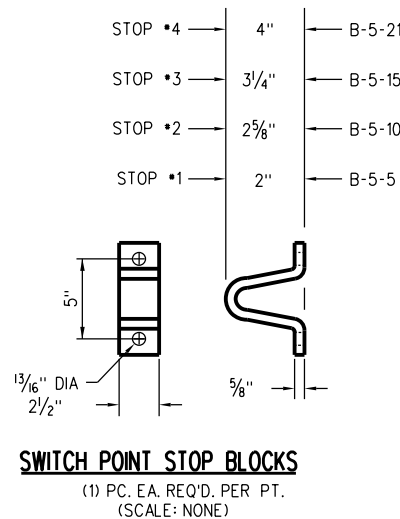


ROLLER ASSY. BLOCK 1/2" "D" BAR
(1) PC. REQ'D. FOR STOCK SIDE
USE 132RE REINF.
(SCALE: NONE)



ROLLER ASSY. BLOCK 1 1/4" "D" BAR
(1) PC. REQ'D. FOR GAGE SIDE
USE 132RE REINF.
(SCALE: NONE)

QUANTITIES SHOWN FOR (1) SWITCH POINT			
REIN. BARS	GAGE SIDE	1¼" "D" x 37'-0" LG.	} USE 132RE REINF.
	STOCK RAIL SIDE	½" "D" x 37'-0" LG.	
CLIPS	HEAD ROD	TYPE "MJS" (FURNISHED WITH ROD)	
	BACK RODS	TYPE "MJS" (FURNISHED WITH ROD)	
WEB BOLTS	HEAD ROD	1" DIA. (FURNISHED WITH ROD)	
	BACK ROD	1" DIA. (FURNISHED WITH ROD)	
ROD BOLTS	HEAD ROD	1" DIA. (FURNISHED WITH ROD)	
	BACK ROD	1" DIA. (FURNISHED WITH ROD)	
STOP BOLTS	SEE BOLT TABLE		
REIN BAR	HUCKS - SEE BOLT TABLE		
	BOLTS - SEE BOLT TABLE		
INSTRUCTIONS	RAIL TO BE 136RE HEAD HARDENED		



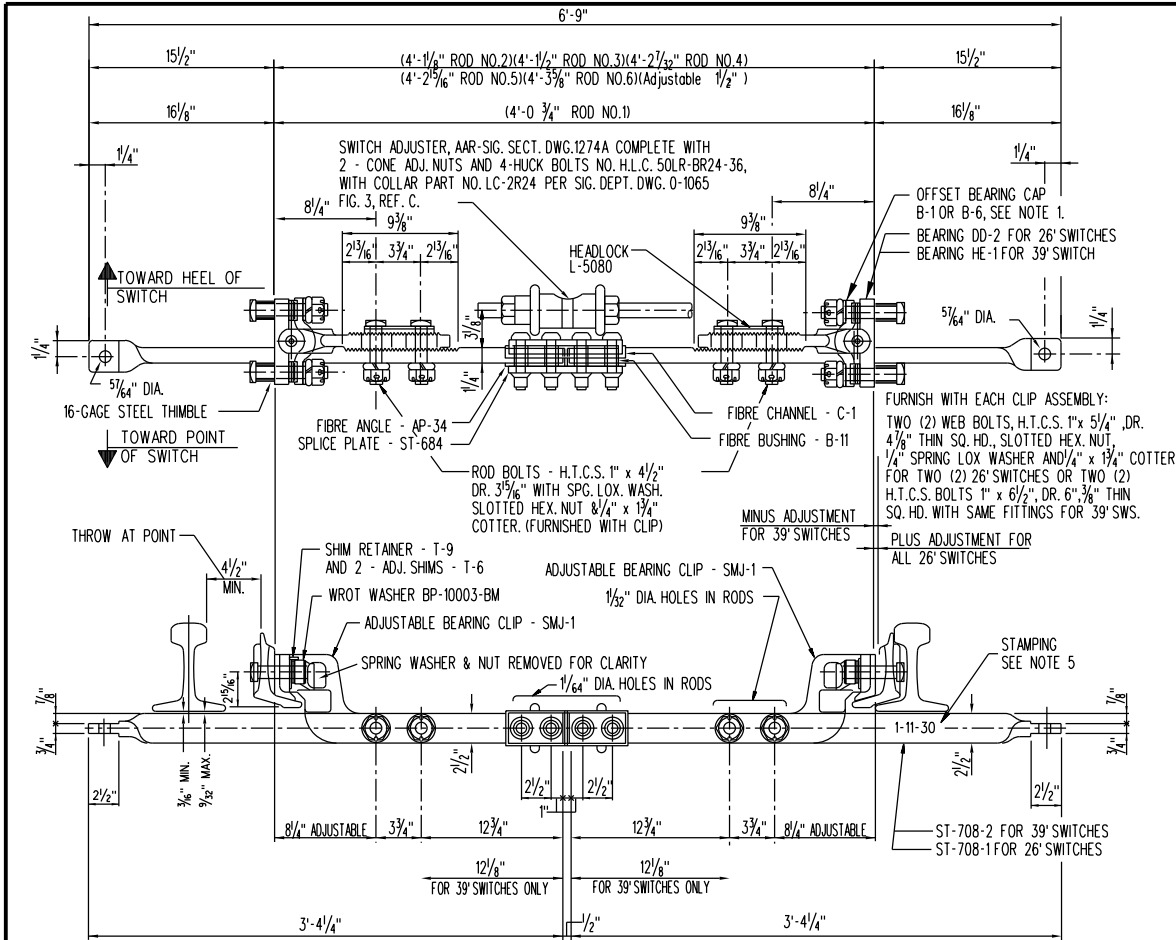
- NOTES:**
- SWITCH POINTS TO BE MADE FROM NEW HIGH STRENGTH RAIL.
 - CURVED LEFT HAND SWITCH POINT AND STRAIGHT HAND SWITCH POINT FOR RIGHT HAND TURNOUT SHOWN. MAKE OPPOSITE HAND FOR RIGHT AND LEFT HAND SWITCH POINTS FOR LEFT HAND TURNOUT.
 - SIDE PLANING FIGURED ON GAGE LINE 5/8" BELOW TOP OF RAIL.
 - MATERIALS AND WORKMANSHIP, ALSO ANY CONSTRUCTION DETAILS NOT SHOWN, SHALL BE PER CURRENT AREMA "MANUAL AND PORTFOLIO", UNLESS OTHERWISE SPECIFIED ON THIS PLAN.
 - IN ORDER TO ELIMINATE STRESS RAISERS, MANUFACTURER SHALL PEEN THE EDGES OF THE BOLT HOLES AS INDICATED AT THE HEEL OF SWITCH POINT AND AT THE HEEL END OF THE SWITCH POINT RAIL, USING AIR HAMMER WITH SUITABLE HEAD AND FINISHING WITH DRIFT PIN. BRAND ON RAIL AT EDGE OF BOLT HOLE TO BE CAREFULLY REMOVED BY GRINDING BEFORE PEENING.
 - THE CONTOUR PLANING SHALL BE ON THE GAGE SIDE BEGINNING AT A DISTANCE OF 7'-6" FROM THE POINT OF SWITCH AND SHALL BE SHAPED TO THE CONTOUR OF A NEW 136 LB. RAIL AND SHALL RUN OUT AT THE END OF TOP PLANING, WHERE THE HEAD HAS FULL HEAD CONTOUR.
 - METAL IDENTIFICATION TAG SHOWING (1) DESIGN LENGTH OF SWITCH, (2) IN PERENTHESIS, THE ACTUAL LENGTH OF SWITCHPOINT RAIL AND (3) THE TURNOUT NUMBER. MARK TAG THUS: 61'-8" (78'-0") NO. 24. TAG TO BE FASTENED TO SWITCH POINT, ON GAGE SIDE OF RAIL AT HEEL SPACER BLOCK IN LOCATION SHOWN. A SECOND METAL IDENTIFICATION TAG SHOWING HAND OF SWITCH POINT, WEIGHT OF RAIL, HS, MANUFACTURER AND WHEN MADE, TO BE FASTENED TO SWITCH POINT AT LOCATION SHOWN.
 - UNLESS SPECIFIED ON ORDER, FRONT ROD LUG BOLTS AND TRANSIT CLIPS FOR SWITCH RODS NO. 1, 2, 3, 4, 5 AND 6 COMPLETE WITH BOLTS WILL NOT BE FURNISHED WITH SWITCH POINTS.
 - AT HEEL END OF SWITCH POINT RAIL, BREAK SHARP CORNER AROUND THE ENTIRE PERIPHERY BY SLIGHTLY GRINDING. ALSO, "DO NOT" END HARDEN RAIL END.
 - MANGANESE TIP SHALL BE USED ON DIVERGING POINTS.

- HUCKS
- BOLTS

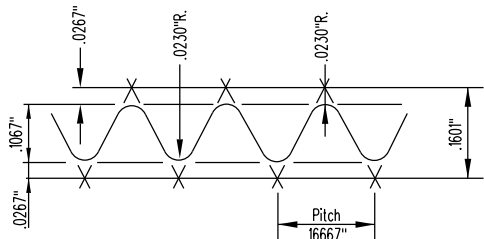
BOLT TABLE

BOLT #	BOLT DESCRIPTION	QTY.	HOLE DIA.	A.B.
1	H.T. MACH., TH. SQ. HD., 1" x 4 1/2", DR. 4", W/SQ. NUT, SPRG. WASH. & 1/4" COTT.	9	1 1/16"	2 7/8"
2	NONE - OPEN TYPE "MJS" CLIP HOLES	—	1 1/16"	2 7/8"
3	H.T. MACH., TH. SQ. HD., 1" x 4 3/4", DR. 4 1/4", W/SQ. NUT, SPRG. WASH. & 1/4" COTT.	9	1 1/16"	3 1/4"
4	HUCK PIN C50LR-BR-24-36 WITH COLLAR LC-2R-24	20	1 3/16"	3 1/4"
5	H.T. MACH., SQ. HD., 3/4" x 4 1/4", DR. 3 3/4", W/SQ. NUT, SPRG. WASH. & 1/4" COTT.	8	1 3/16"	3 1/4"
6	NONE - OPEN ROLLER HOLES	—	15/16"	3 1/4"
7	NONE - OPEN THERMAL STRESS BLOCK HOLES	—	1 1/2"	3 1/4"

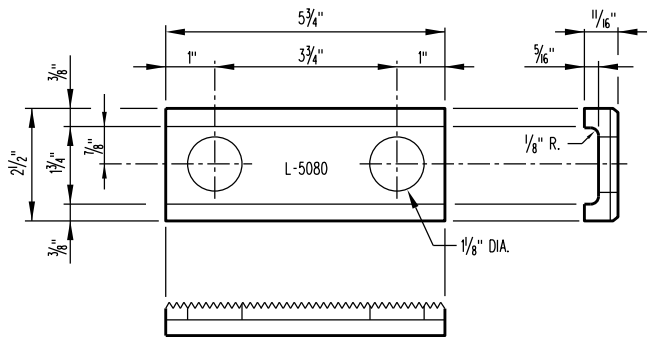
DRAWN BY: A. CARLOS DATE: 03/31/2011				SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.			
ASSISTANT DIRECTOR: STANDARDS & DESIGN				METROLINK®			
DIRECTOR OF ENGINEERING AND CONSTRUCTION				SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY			
				ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012			
				ENGINEERING STANDARDS			
				NO. 24 STRAIGHT SPLIT SWITCH POINT DETAILS			
				STANDARD 2951			
				SCALE: AS NOTED			
				REVISION SHEET 10 OF 16			
				CADD FILE: ES2951-10			



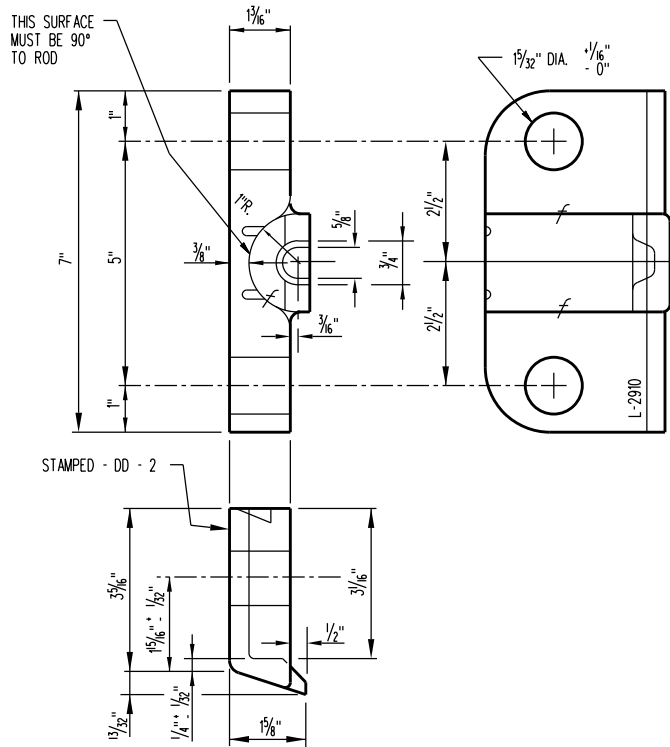
NO. 1 SWITCH ROD ASSEMBLY
(SHOWN FOR MACHINE ON RIGHT) SEE NOTE 2



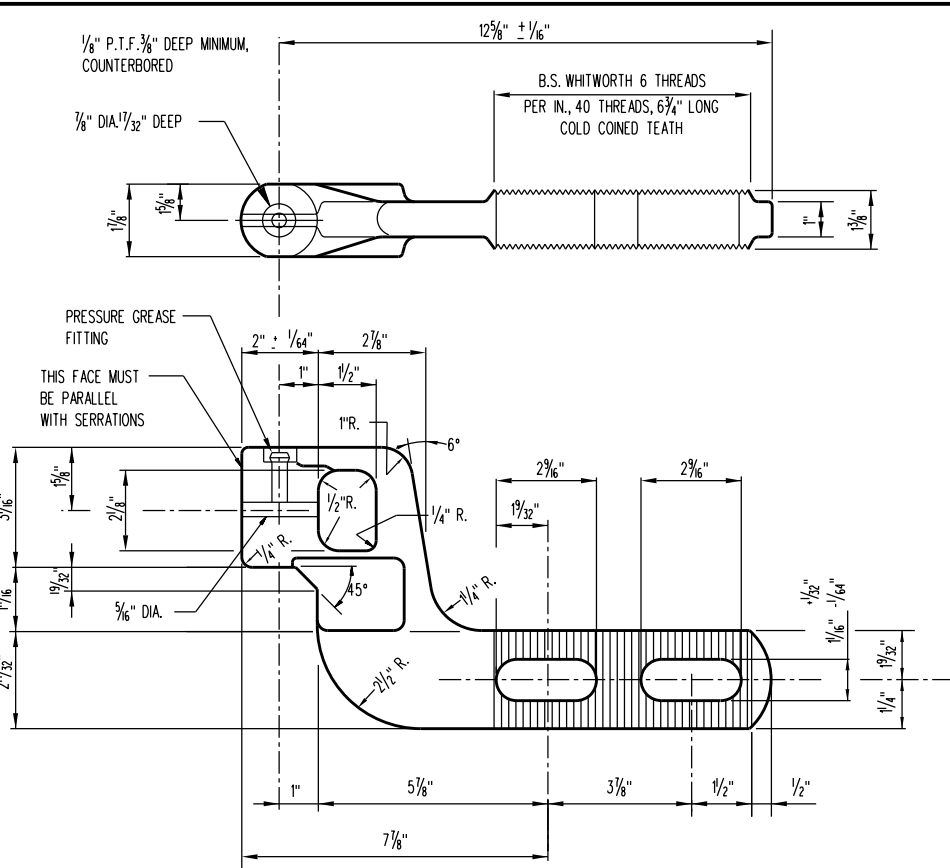
ENLARGED PROFILE OF SERRATIONS
SCALE: NONE



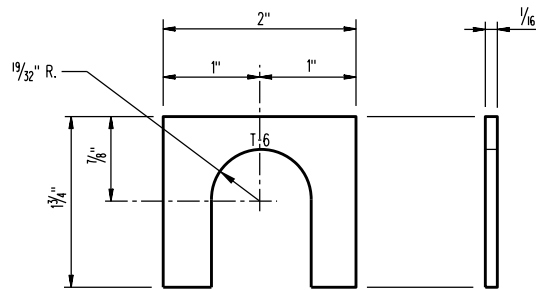
HEADLOCK L-5080
SCALE: 6\"/>



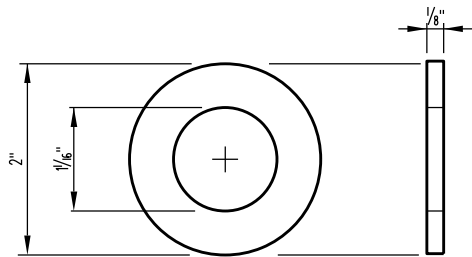
BEARING - DD - 2
SCALE: 6\"/>



ADJUSTABLE BEARING CLIP - SMJ - 1
SCALE: 3\"/>

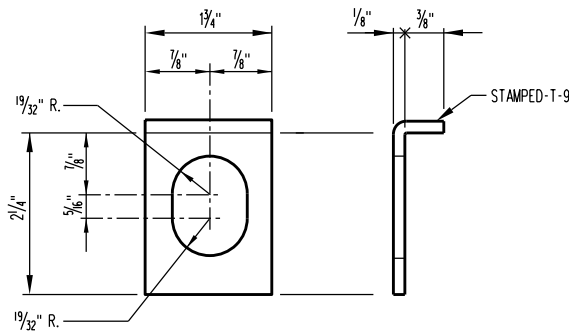


ADJUSTABLE SHIM - T - 6
SCALE: FULL



WROT WASHER - BP - 10003 - BM
SCALE: FULL

LENGTH OF SWITCH	BILL OF MATERIAL FOR 1 TYPE "SMJ" SWITCH ROD ASSEMBLY				
	MATERIAL FOR CLIP ASSEMBLIES				
	QTY.	PART NUMBER	MATERIAL SPECIF.	DESCRIPTION	DETAIL REMARKS
All	2	SMJ-1	S.A.E.1020-For.Stl.	Bearing Clip	MACHINED PER DETAIL
All	4		H.T.C.S.	Web Bolt	SEE NOTE
26'	2	DD-2	Malleable Iron	Bearing	PAT. NO. L-2910, MACHINED PER DETAIL
39'	2	HE-1	Malleable Iron	Bearing	PAT. NO. L-2915, MACHINED PER DETAIL
26'	2	B-1	S.A.E.1045-For.Stl.	Offset Bearing Cap	HEAT TREATED - BRINELL -.225 to .250
39'	2	B-6	S.A.E.1045-For.Stl.	Offset Bearing Cap	HEAT TREATED - BRINELL -.225 to .250
26'	2	B-6	S.A.E.1045-For.Stl.	Offset Bearing Cap	HEAT TREATED - BRINELL -.225 to .250
All	4	T-9	S.A.E.1020	Shim Retainer	1/8\"/>



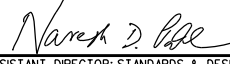
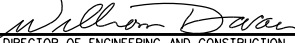
SHIM RETAINER - T - 9
SCALE: FULL

NOTES:

- WHILE THIS PLAN SHOWS BEARING CLIPS ASSEMBLED TO SWITCH ROD THIS CLIP ASSEMBLY MAY BE REQUISITIONED AND ORDERED SEPARATELY. WHEN A BEARING CLIP ASSEMBLY ONLY IS WANTED, REQUISITIONS AND ORDERS SHALL SPECIFY, RAIL SECTION AND LENGTH OF SWITCH. ALL PARTS SHOWN IN BILL OF MATERIAL SHALL BE FURNISHED WITH THESE CLIP ASSEMBLIES. WHEN AN INDIVIDUAL PART IS REQUIRED IT SHALL BE ORDERED BY PART NUMBER.
- WHEN COMPLETED RODS ARE ORDERED THEY SHALL BE ASSEMBLED AND INCLUDE ALL PARTS SHOWN IN BILL OF MATERIAL. REQUISITIONS AND ORDERS SHALL SPECIFY RAIL SECTION AND LENGTH OF SWITCH. ON INTERLOCKED SWITCHES WITH AUXILIARY THROW ROD, MACHINE SIDE (RIGHT OR LEFT) SHOULD ALSO BE SPECIFIED.
- TWO WEB BOLTS SHALL BE FURNISHED WITH EACH CLIP ASSEMBLY AS CALLED FOR BY NOTE IN TOP VIEW OF ROD ASSEMBLY. WHEN ROD IS USED ON 11'-0\"/>

FOR MAINTENANCE ONLY

REV.	DATE	DESCRIPTION	DES.	ENG.
X	XX-XX-XX	REVISION	XX	XX

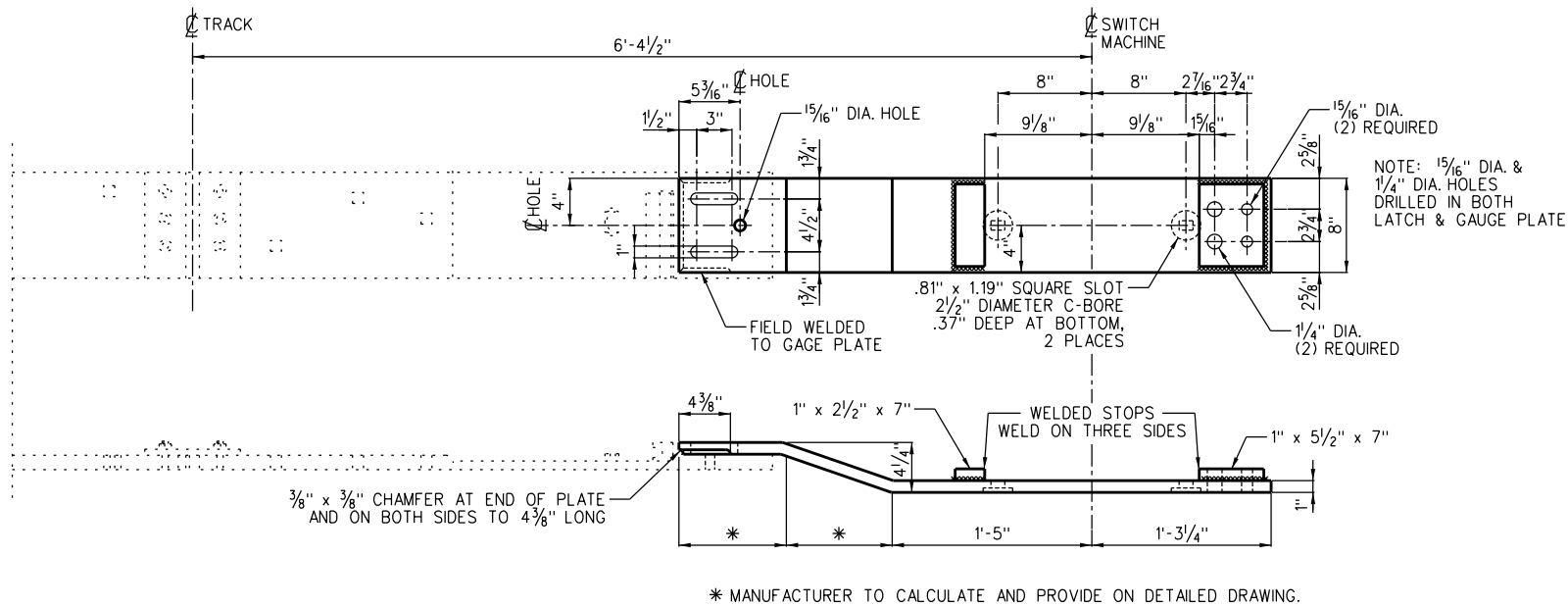
DRAWN BY:	A. CARLOS	DATE:	03/31/2011
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 DIRECTOR OF ENGINEERING AND CONSTRUCTION			

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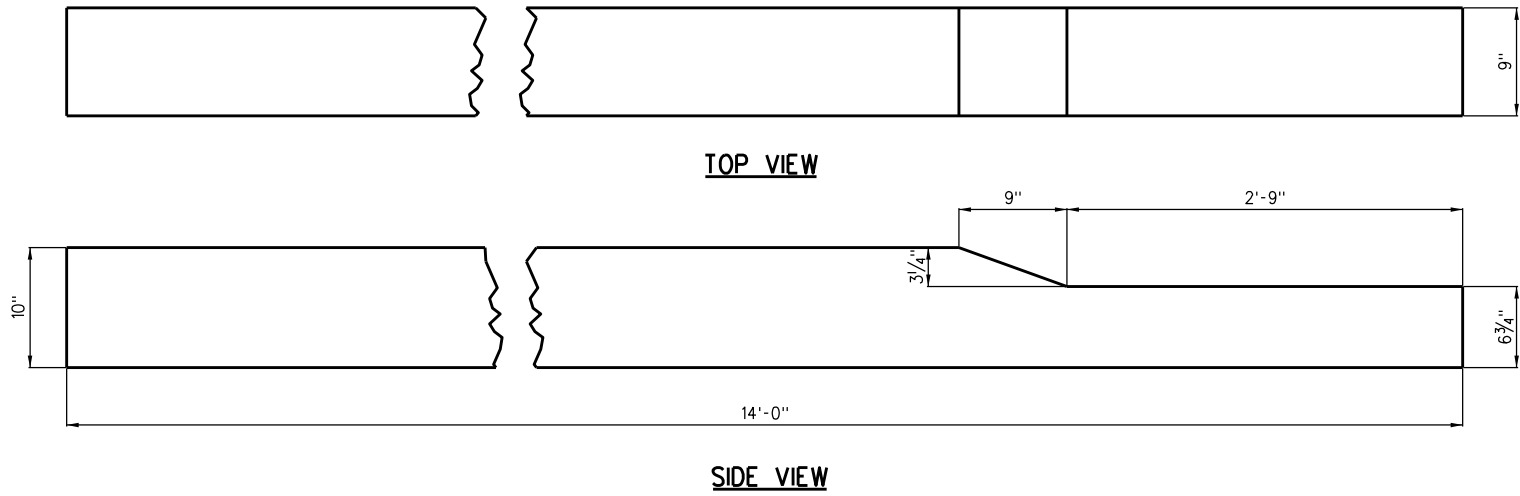

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ENGINEERING STANDARDS		STANDARD
		2951
		SCALE: AS NOTED
		REVISION SHEET
		- 11 OF 16
		CADD FILE: ES2951-11



EXTENSION PLATE
(2 PCS. REQ'D. AS SHOWN)

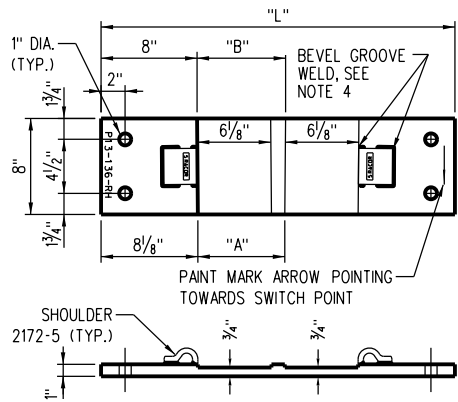


DAP TIE
(2 PCS. REQ'D. AS SHOWN)

**US&S M23-A SWITCH MACHINE MUST BE FURNISHED
WITH FINISHED MOUNTING LUGS.**

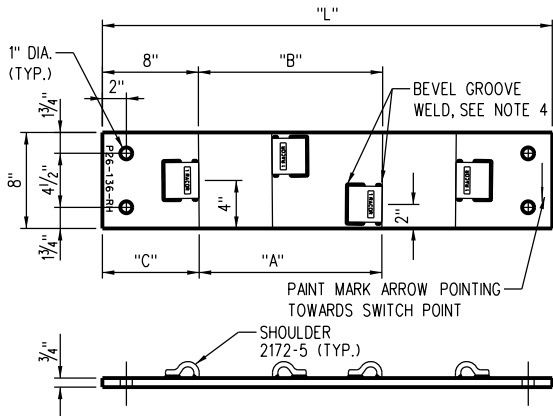
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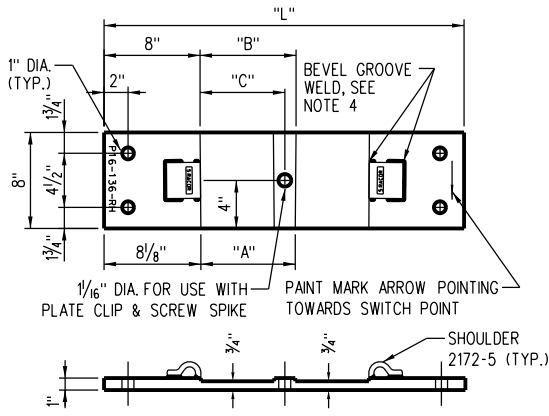
HEEL PLATE H-5P
TURNOUT PLATES P-13 THRU P-15
1' x 8' x 'L' LONG

PLATE	"A"	"B"	"L"	QTY.
*H-5P	6 11/32"	6 15/32"	2'-5"	2
*P-13	6 5/8"	6 3/4"	2'-5"	2
*P-14	6 15/16"	7 1/16"	2'-5"	2
*P-15	7 1/4"	7 3/8"	2'-5 1/2"	2



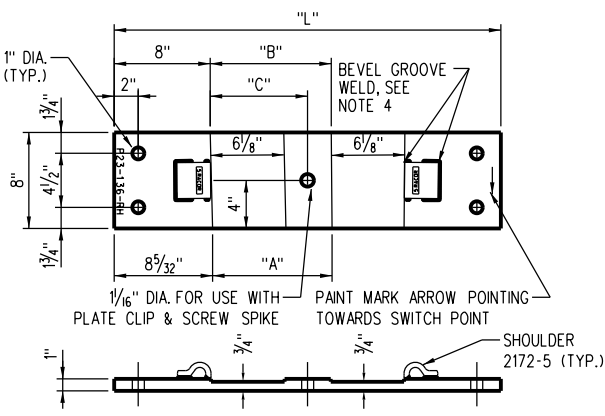
TURNOUT PLATES P-26 THRU P-37
1' x 8' x 'L' LONG

PLATE	"A"	"B"	"C"	"L"	QTY.
*P-26	11 1/16"	11 7/32"	8 5/32"	2'-9 1/2"	2
*P-27	11 15/32"	11 5/8"	8 5/32"	2'-9 1/2"	2
*P-28	11 7/8"	12 1/32"	8 5/32"	2'-10"	2
*P-29	12 9/32"	12 7/16"	8 5/32"	2'-10 1/2"	2
*P-30	12 11/16"	12 27/32"	8 5/32"	2'-11"	2
*P-31	13 1/8"	13 9/32"	8 5/32"	2'-11 1/2"	2
*P-32	13 17/32"	13 23/32"	8 3/16"	3'-0"	2
*P-33	13 31/32"	14 5/32"	8 3/16"	3'-0"	2
*P-34	14 13/32"	14 19/32"	8 3/16"	3'-1"	2
*P-35	14 7/8"	15 1/16"	8 3/16"	3'-1"	2
*P-36	15 5/16"	15 1/2"	8 3/16"	3'-1 1/2"	2
*P-37	15 25/32"	15 31/32"	8 3/16"	3'-2"	2

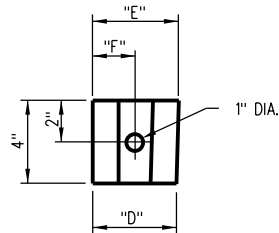


TURNOUT PLATES ~ P-16 THRU P-22
1' x 8' x 'L' LONG

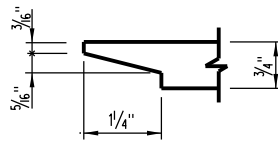
PLATE	"A"	"B"	"C"	"L"	QTY.
*P-16	7 17/32"	7 21/32"	6 7/8"	2'-6"	2
*P-17	7 7/8"	8"	7 1/16"	2'-6"	2
*P-18	8 3/16"	8 5/16"	7 7/32"	2'-7"	2
*P-19	8 17/32"	8 21/32"	7 13/32"	2'-7"	2
*P-20	8 7/8"	9"	7 9/16"	2'-7"	2
*P-21	9 7/32"	9 11/32"	7 3/4"	2'-8"	2
*P-22	9 9/16"	9 11/16"	7 29/32"	2'-8"	2
*P-23	9 15/16"	10 3/32"	8 3/32"	2'-8"	2
*P-24	10 5/16"	10 15/32"	8 9/32"	2'-8 1/2"	2
*P-25	10 11/16"	10 27/32"	8 15/32"	2'-9"	2



TURNOUT PLATES ~ P-23 THRU P-25
1' x 8' x 'L' LONG



HOLD DOWN CLIP DETAIL



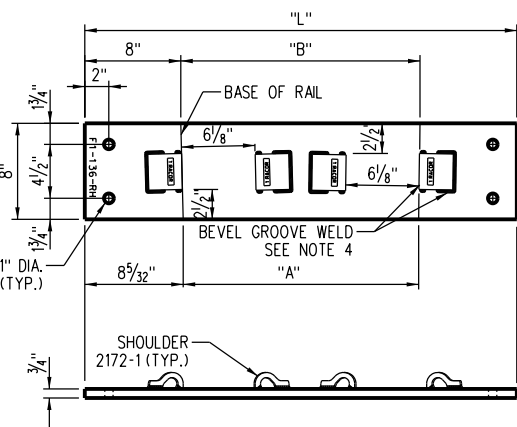
END DETAIL - BOTH ENDS

NOTES:

1. PLATES TO BE MADE OF MILD ROLLED STEEL.
2. EACH PLATE TO BE PLAINLY STAMPED WITH PLATE NUMBER AND 136 (WEIGHT OF RAIL) AND HAND OF TURNOUT (R.H. OR L.H.)
3. THE "PANDROL" TYPE OR APPROVED EQUIV WELD ON PRESSED SHOULDER, MADE OF MILD STEEL, AND MEETING "PANDROL'S" DESIGN SPECIFICATIONS SHALL BE USED.
4. THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO ALL PLATES WITH A MINIMUM 2 PASS 3/8" • FILLET WELD ALONG THE BEVELED GROOVES OF THE SHOULDER. ANY WELD PROJECTING BEYOND THE VERTICAL FACE OF THE SHOULDER IN THE AREA OF THE BASE OF THE RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.
5. THE PLATES AS SHOWN ARE FOR A 136 LB. NO. 24 RIGHT HAND TURNOUT. FOR A LEFT HAND TURNOUT PLATES P-13 THRU P-37 INCLUSIVE AND FROG PLATE F-1 THRU F-36 ARE TO OPPOSITE.
6. DIRECTION OF ARROW SHOWN IS AN EXAMPLE ONLY. USING SHEET 2951-03 AS A GUIDE, PAINT MARK EACH PLATE WITH AN ARROW POINTING TOWARD SWITCH POINT.

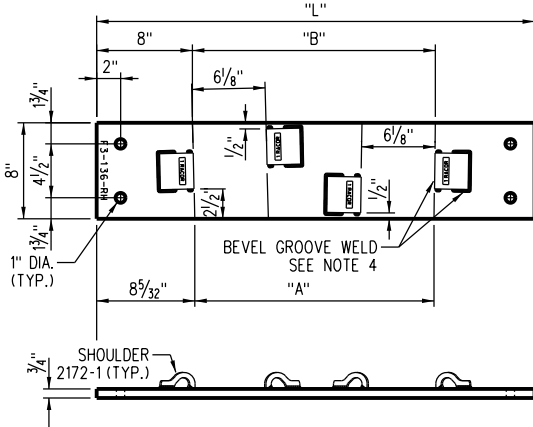
WELDING SPECIFICATIONS:

1. SET PRESSED STEEL SHOULDER FLUSH AGAINST LINE OF BASE OF RAIL OR SHOULDER OF MILLED PLATE AS SHOWN AND WELD WITH 2 - PASS 3/8" • WELD.
2. STOP PLATE FOR ADJUSTABLE RAIL BRACE TO BE SET FLUSH WITH SHOULDER OF MILLED PLATE AS SHOWN AND WELD WITH 3 - PASS 1/2" • FILLET WELD.
3. SHOULDERS AND STOPS ARE TO BE CAREFULLY WELDED TO PLATE. NO WELD SHALL PROJECT BEYOND THE VERTICAL EDGE OF THE UNWELDED FOURTH SIDE OF THE STOP PLATE OR VERTICAL FACE OF SHOULDER IN THE AREA OF THE RAIL SEAT. ANY WELD PROJECTING BEYOND THE FACE OF THE STOP OR SHOULDER MUST BE MACHINED OFF TO PROVIDE CLEAR DIMENSION CALLED FOR.
4. FOR WELDING PRESSED STEEL SHOULDERS OR PLATE STOPS FOR ADJUSTABLE USE THE FOLLOWING:
 - A. ELECTRODE 1 5/32 INCH, WELDING SPEC. 7018XLM.
 - B. ELECTRODE 3/16 INCH, WELDING SPEC. 7018XLM.
 - C. WIRE, WELDING 3/32 INCH, NR203, 1% NICKEL FLUX CORE.OTHER WIRE OR ELECTRODES MEETING SPECIFICATIONS AS CALLED FOR, APPROVED BY DIRECTOR OF ENGINEERING, MAY BE USED.



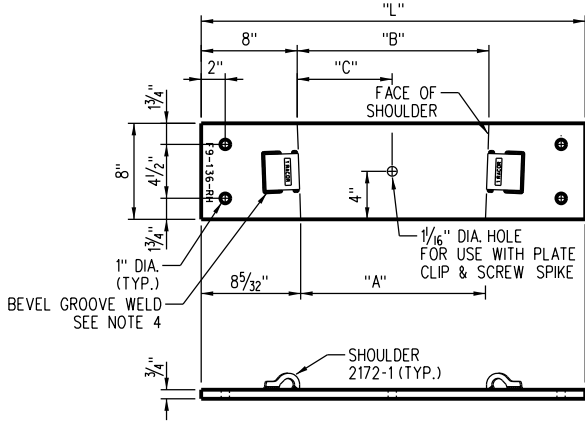
FROG PLATES ~ F-1 AND F-2 AND F-37 THRU F-40
3/4" x 8" x 'L' LONG

PLATE	"A"	"B"	"L"	QTY.
*F-1	21 1/32"	21 2/32"	3'-2"	1
*F-2	20 2/32"	21 1/32"	3'-1"	1
*F-37	19 5/8"	19 5/16"	3'-0"	1
*F-38	20 1/16"	20 3/4"	3'-1"	1
*F-39	21 9/32"	21 9/32"	3'-1 1/2"	1
*F-40	22 1/8"	9 11/32"	3'-2"	1



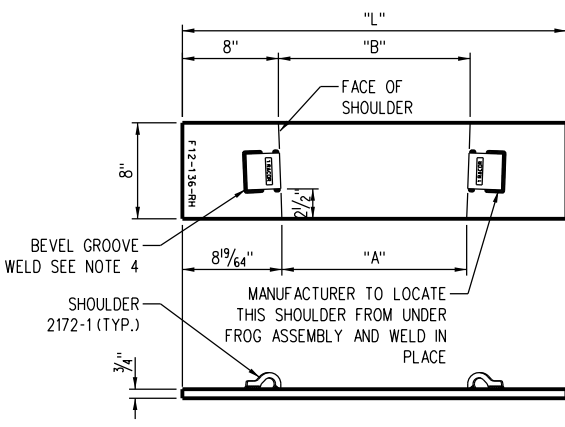
FROG PLATES ~ F-3 THRU F-8 AND F-33 THRU F-36
3/4" x 8" x 'L' LONG

PLATE	"A"	"B"	"L"	QTY.
*F-3	19 29/32"	20 1/32"	3'-0 1/2"	1
*F-4	19 3/32"	19 13/32"	2'-11 1/2"	1
*F-5	18 5/16"	18 5/16"	2'-10 1/2"	1
*F-6	17 1/2"	17 13/16"	2'-10"	1
*F-7	16 23/32"	17 1/32"	2'-9"	1
*F-8	15 29/32"	16 1/32"	2'-8 1/2"	1
*F-33	16 1/32"	16 2/32"	2'-9"	1
*F-34	17 5/32"	17 15/32"	2'-9 1/2"	1
*F-35	17 3/32"	18 7/32"	2'-10 1/2"	1
*F-36	18 29/32"	19 3/32"	2'-11"	1



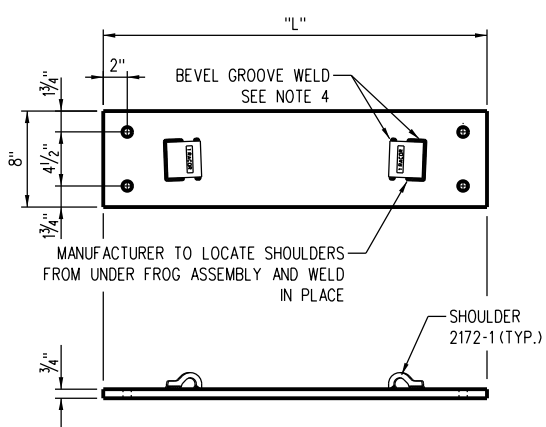
FROG PLATES ~ F-9 THRU F-11, F-13, F-27 THRU F-29, F-31 AND F-32
3/4" x 8" x 'L' LONG

PLATE	"A"	"B"	"C"	"L"	QTY.
*F-9	15 3/32"	15 13/32"	7 23/32"	2'-7 1/2"	1
*F-10	14 9/32"	14 19/32"	7 5/16"	2'-6 1/2"	1
*F-11	13 15/32"	13 29/32"	6 29/32"	2'-6"	1
*F-13	11 27/32"	12 5/32"		2'-4"	1
*F-27	11 15/32"	11 29/32"		2'-4"	1
*F-28	12 9/32"	12 19/32"		2'-4 1/2"	1
*F-29	13 3/32"	13 13/32"		2'-5 1/2"	1
*F-31	14 23/32"	15 1/32"	7 11/32"	2'-7"	1
*F-32	15 17/32"	15 2/32"	7 15/16"	2'-8"	1



FROG PLATES ~ F-12, F-17 AND F-22
3/4" x 8" x 'L' LONG

PLATE	"A"	"B"	"L"	QTY.
*F-12	12 2/32"	12 3/32"	2'-5"	2
*F-17	--	--	2'-10"	2
*F-22	--	--	2'-9 1/2"	2



FROG PLATES ~ F-14 THRU F-16, F-18 THRU F-21 AND F-23 THRU F-25
3/4" x 8" x 'L' LONG

PLATE	"L"
F-14	2'-6"
F-15	2'-8 1/2"
F-16	2'-9"
F-18	2'-11"
F-19	2'-11 1/2"
F-20	2'-11"
F-21	2'-8 1/2"
F-23	2'-10"
F-24	2'-11"
F-25	2'-11 1/2"

FOR MAINTENANCE ONLY

X	XX-XX-XX	REVISION	XX	XX	
REV.	DATE	DESCRIPTION	DES.	ENG.	

DRAWN BY:	A. CARLOS	DATE:	03/31/2011
	<i>Nancy D. Bae</i>		
	ASSISTANT DIRECTOR- STANDARDS & DESIGN		
	<i>William D. Davis</i>		
	DIRECTOR OF ENGINEERING AND CONSTRUCTION		

SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRR. ALL RIGHTS RESERVED.



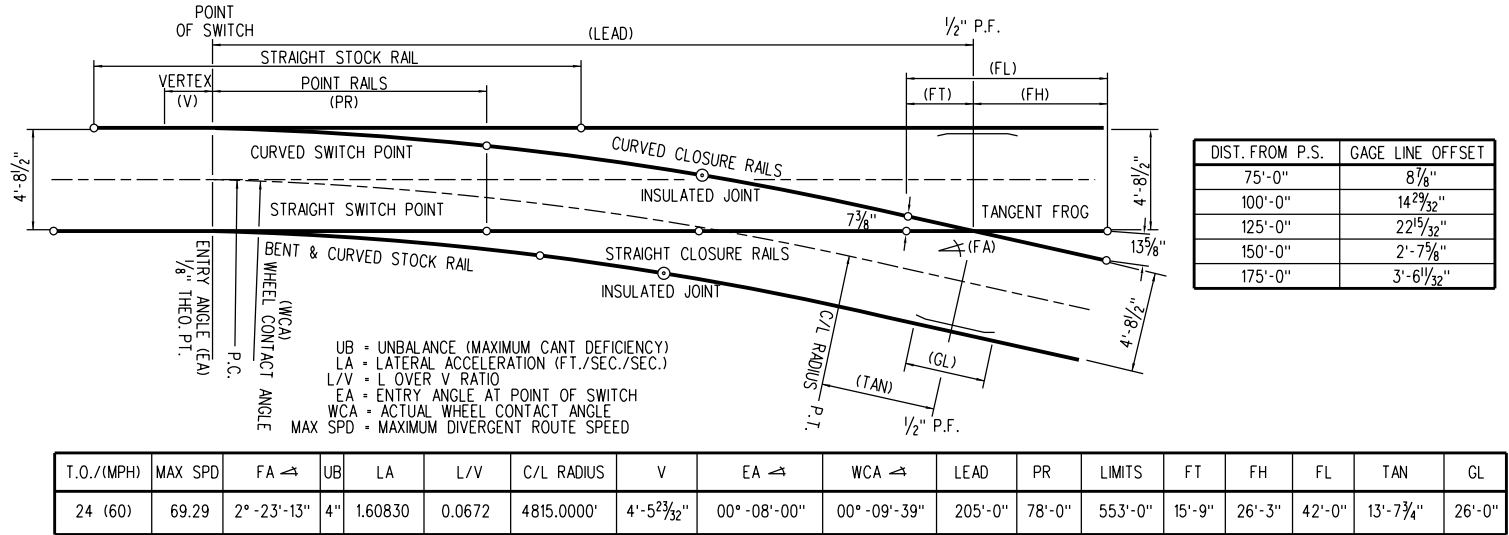
METROLINK

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS

NO. 24 TURNOUT AND FROG PLATE DETAILS

STANDARD	2951
SCALE:	1 1/2" = 1'-0"
REVISION	SHEET
-	14 OF 16
CADD FILE:	ES2951-14



NO. 24 TANGENTIAL TURNOUT GEOMETRY
(SCALE: NONE)

SPECIFICATIONS:

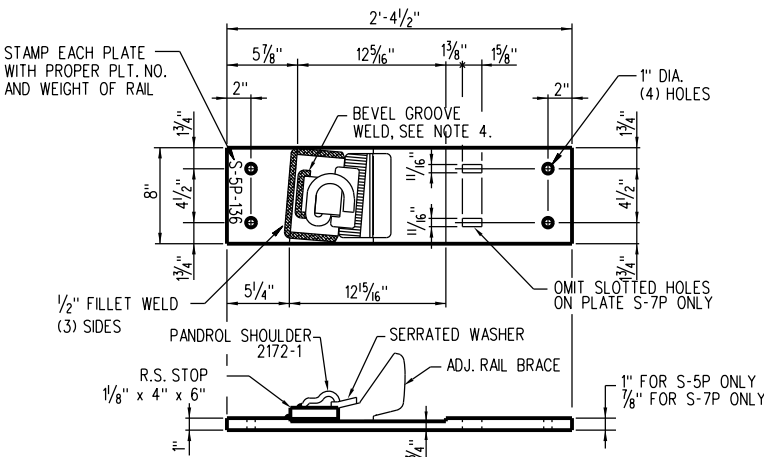
TURNOUT & FROG ANGLE : STD. No.24 - 2°-23'-13"
RAIL: 136RE HEAD HARDENED
FLANGEWAYS: 1¹/₈" WIDE x 1¹/₈" DEEP (MIN. DEPTH)
JOINT DRILLING: 9¹/₂" x 6" - 1¹/₄" DIA. - 3³/₃₂" A.B.
EXCEPT INSULATED JOINTS: 3¹/₂" x 6" x 6" - 1¹/₈" DIA. - 3³/₃₂" A.B.
JOINT GAPS: 0" STD. - ³/₁₆" INSUL.
SWITCH POINTS: 61'-8" LONG TANGENTIAL ALIGNMENT (78'-0" LONG RAIL), POINT DETAIL PER A.R.E.M.A. 5100
STOCK RAILS: 78'-0" SAMSON UNDERCUT
SWITCH RODS: VERTICAL TYPE WITH "SMJ" CLIPS - 1¹/₄" x 2¹/₂"
SWITCH PLATES: INSUL. GAGE PLATES - 1" x 8" MILLED WITH BOLTLESS ADJUSTABLE BRACE
SLIDE PLATES - 1" x 8" MILLED WITH PANDROL CLIPS
BRACE PLATES - 1" x 8" MILLED WITH BOLTLESS ADJUSTABLE BRACE
ROLLER ASSY. PLATES - 1" x 8" MILLED WITH PANDROL CLIPS & ROLLER ASSY.
TURNOUT PLATES *HP-5 & *P-13 TO *P-25 - 1" x 8" FLAT WITH PANDROL CLIPS & PLATE CLIPS (WHERE SHOWN)
TURNOUT PLATES *P-26 TO P-37 - ³/₄" x 8" FLAT WITH PANDROL CLIPS
GUARD RAILS: H.T. UIC-33 (U-69) - 26'-0" LONG ADJUSTABLE GUARD RAIL - ¹/₂" RAISED
GUARD RAIL PLATES: ³/₄" x 8" FLAT WITH PANDROL CLIPS & WELDED BRACKETS - PLT. "G"
STANDARD TIE PLATES: PANDROL ROLLED SHOULDER
FROG: NO. 24 RACOR RAILBOUND MANG. FROG - 42'-0" LG. - HI-INTEGRITY - MITERED HEEL - EXPLOSION HARDENED
FROG PLATES: TIE PLATES - ³/₄" x 8" FLAT WITH PANDROL CLIPS
INSUL GAGE PLATES - 1" x 8" FLAT WITH PANDROL CLIPS

NOTES:

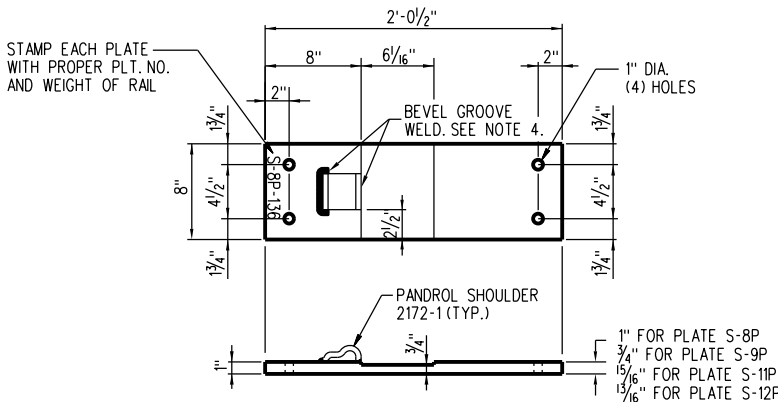
1. PLATES TO BE MADE OF MILD ROLLED STEEL.
2. EACH PLATE TO BE PLAINLY STAMPED WITH PLATE NUMBER AND 136 (WEIGHT OF RAIL) AND HAND OF TURNOUT (R.H. OR L.H.)
3. THE "PANDROL" TYPE OR APPROVED EQUAL WELD ON PRESSED SHOULDER, MADE OF MILD STEEL, AND MEETING "PANDROL'S" DESIGN SPECIFICATIONS SHALL BE USED.
4. THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO ALL PLATES WITH A MINIMUM 2 PASS ³/₁₆" + FILLET WELD ALONG THE BEVELED GROOVES OF THE SHOULDER. ANY WELD PROJECTING BEYOND THE VERTICAL FACE OF THE SHOULDER IN THE AREA OF THE BASE OF THE RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.
5. THE PLATES AS SHOWN ARE FOR A 136 LB. NO. 24 RIGHT HAND TURNOUT. FOR A LEFT HAND TURNOUT PLATES P-13 THRU P-37 INCLUSIVE AND FROG PLATE F-1 THRU F-36 ARE TO BE OPPOSITE.
6. DIRECTION OF ARROW SHOWN IS AN EXAMPLE ONLY. USING SHEET 2951-03 AS A GUIDE, PAINT MARK EACH PLATE WITH AN ARROW POINTING TOWARD SWITCH POINT.

WELDING SPECIFICATIONS:

1. SET PRESSED STEEL SHOULDER FLUSH AGAINST LINE OF BASE OF RAIL OR SHOULDER OF MILLED PLATE AS SHOWN AND WELD WITH 2 - PASS ³/₁₆" + WELD.
2. STOP PLATE FOR ADJUSTABLE RAIL BRACE TO BE SET FLUSH WITH SHOULDER OF MILLED PLATE AS SHOWN AND WELD WITH 3 - PASS ¹/₂" + FILLET WELD.
3. SHOULDERS AND STOPS ARE TO BE CAREFULLY WELDED TO PLATE. NO WELD SHALL PROJECT BEYOND THE VERTICAL EDGE OF THE UNWELDED FOURTH SIDE OF THE STOP PLATE OR VERTICAL FACE OF SHOULDER IN THE AREA OF THE RAIL SEAT. ANY WELD PROJECTING BEYOND THE FACE OF THE STOP OR SHOULDER MUST BE MACHINED OFF TO PROVIDE CLEAR DIMENSION CALLED FOR.
4. FOR WELDING PRESSED STEEL SHOULDERS OR PLATE STOPS USE THE FOLLOWING:
 - A. ELECTRODE 1¹/₃₂" INCH, WELDING SPEC. 7018XLM.
 - B. ELECTRODE ³/₁₆" INCH, WELDING SPEC. 7018XLM.
 - C. WIRE, WELDING ³/₃₂" INCH, NR203, 1¹/₂ NICKEL FLUX CORE.OTHER WIRE OR ELECTRODES MEETING SPECIFICATIONS, AS CALLED FOR, APPROVED BY DIRECTOR OF ENGINEERING, MAY BE USED.



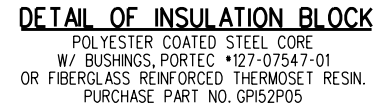
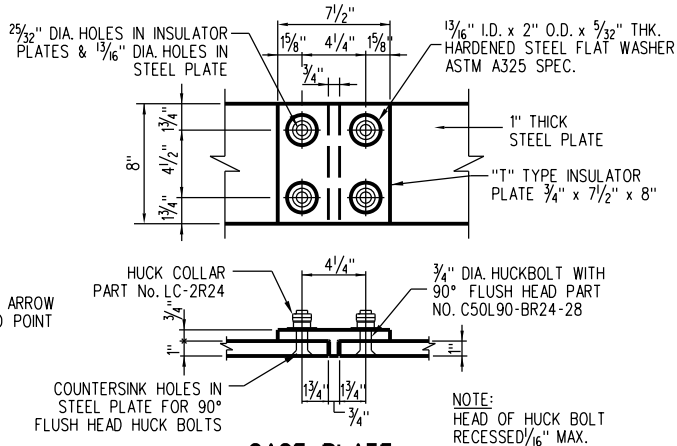
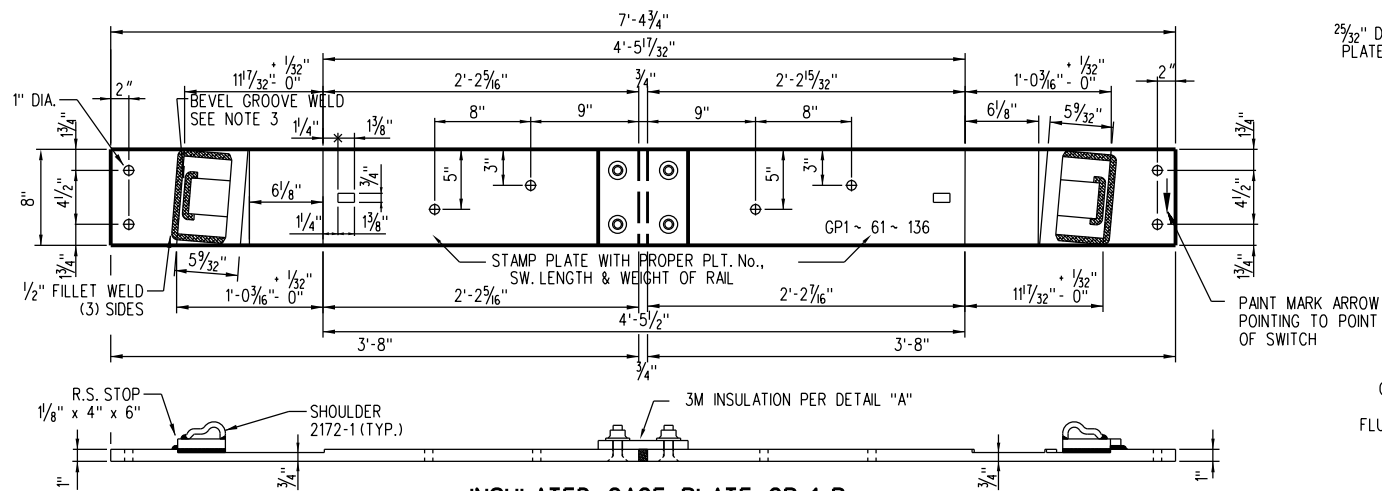
BRACE SLIDE PLATE - S-5P & S-7P
1" x 8" x 2'-4¹/₂" LG. - MILLED - W/ADJ. RAIL BRACE
16 - S-5P PLATES REQUIRED AS SHOWN
2 - S-7P PLATES REQUIRED AS SHOWN
(SCALE: NONE)



SLIDE PLATE - S-8P, S-9P, S-11P & S-12P
1" x 8" x 2'-0¹/₂" LG. - MILLED - W/PANDROL CLIP
40 - S-8P PLATES REQUIRED AS SHOWN
2 - S-9P PLATES REQUIRED AS SHOWN
2 - S-11P PLATES REQUIRED AS SHOWN
2 - S-12P PLATES REQUIRED AS SHOWN
(SCALE: NONE)

FOR MAINTENANCE ONLY

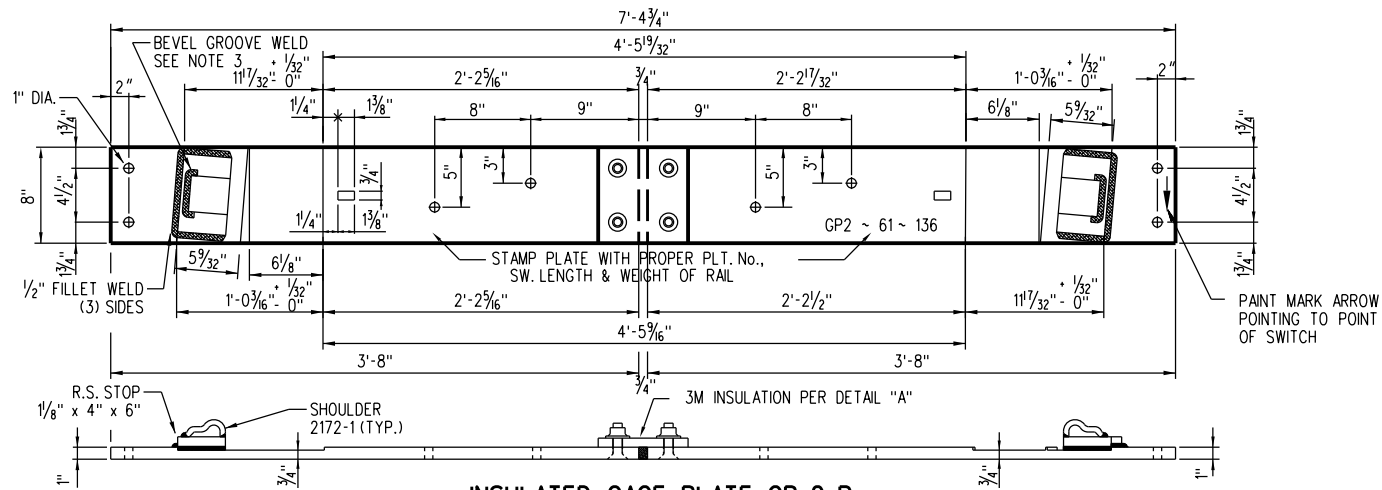
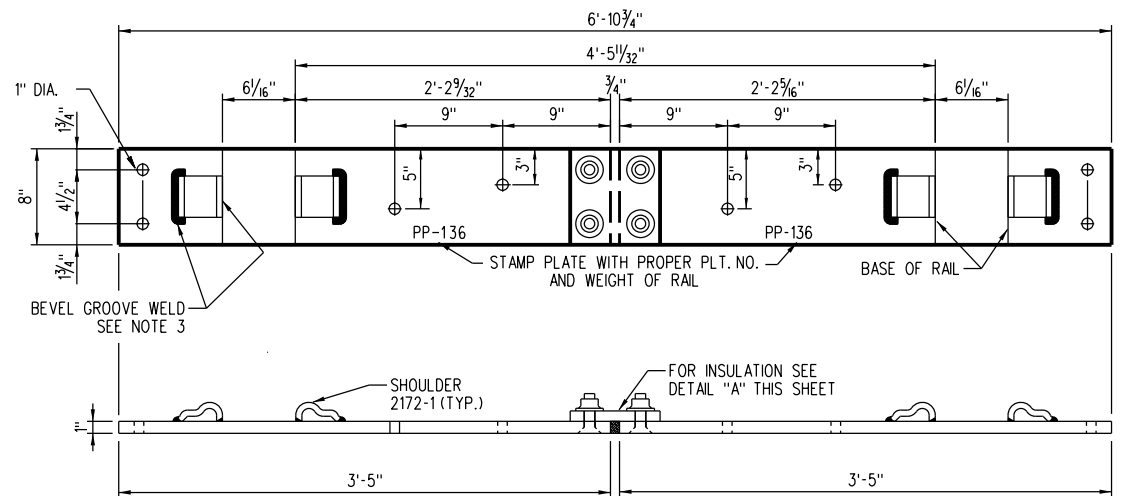
				DRAWN BY: A. CARLOS		DATE: 03/31/2011		SCRRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRRA APPROVED USES ONLY. FOR NON-SCRRRA APPROVED USES, SCRRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRRA. ALL RIGHTS RESERVED.				STANDARD 2951			
				ASSISTANT DIRECTOR: STANDARDS & DESIGN				SCALE: NONE				REVISION SHEET			
				DIRECTOR OF ENGINEERING AND CONSTRUCTION				NO. 24 SWITCH PLATE DETAILS & TRACK GEOMETRY				15 OF 16			
								CADD FILE: ES2951-15							



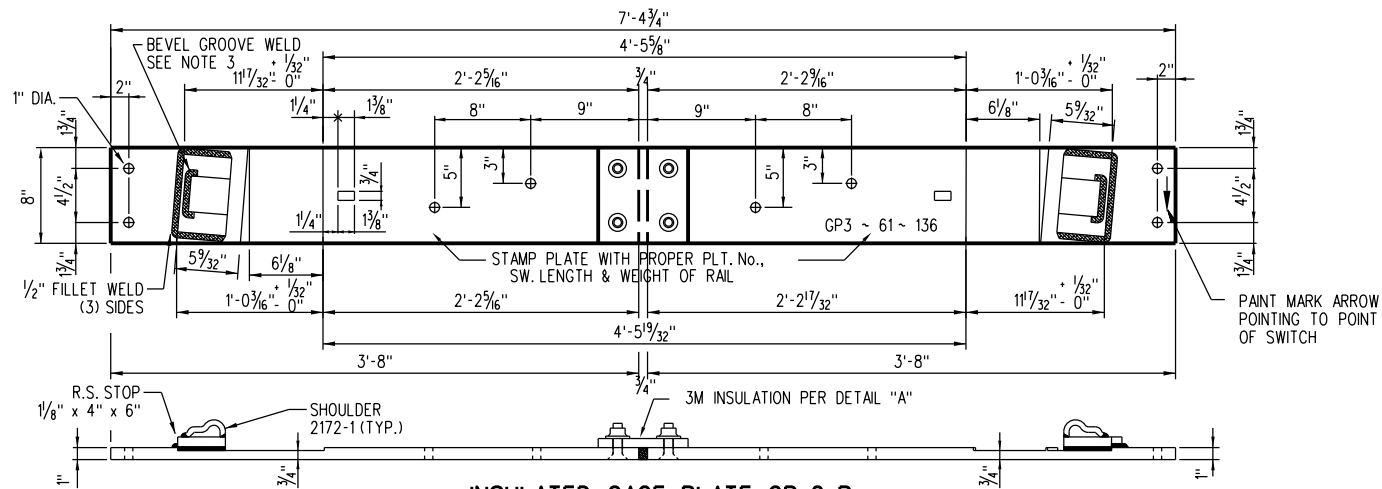
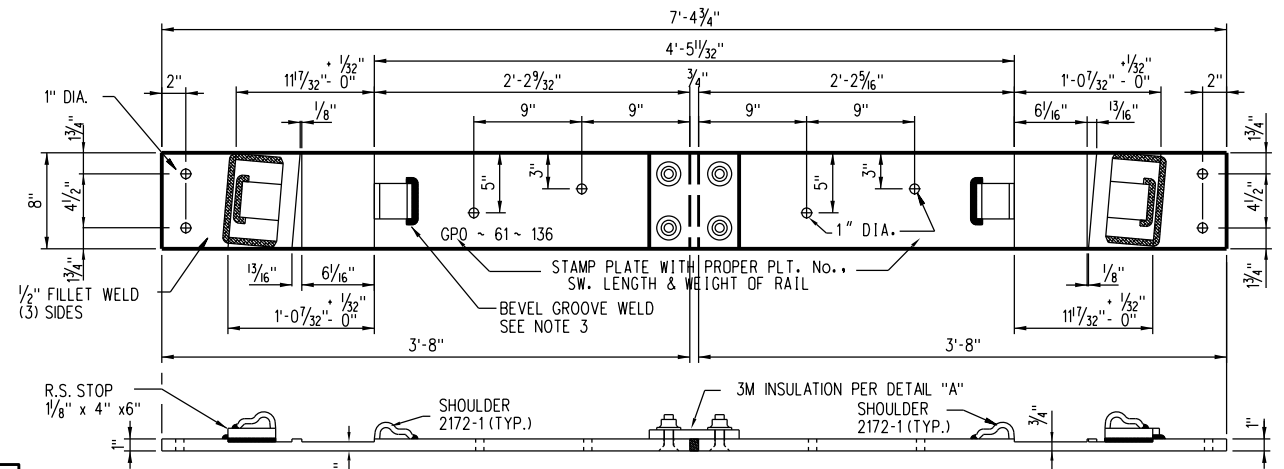
NOTES:

1. PLATES TO BE MADE OF MILD ROLLED STEEL.
2. THE PANDROL TYPE, OR APPROVED EQUAL, WELD - ON PRESSED STEEL SHOULDER, MADE OF MILD STEEL, AND MEETING PANDROLS DESIGN SPECIFICATIONS SHALL BE USED.
3. THE PRESSED STEEL SHOULDER MUST BE CAREFULLY WELDED TO GAGE PLATES WITH A MINIMUM 3/8" WELD ALONG THE BEVELED GROOVES OF THE SHOULDER. ANY WELD PROJECTING BEYOND THE VERTICAL FACE OF SHOULDER IN THE AREA OF THE RAIL SEAT MUST BE MACHINED OUT TO PROVIDE A CLEAR RAIL SEAT DIMENSION AS CALLED FOR.
4. SWITCH GAGE PLATES FOR RIGHT HAND TURNOUT, MACHINE ON RIGHT, ELECTRICALLY INTERLOCKED FOR U.S. & S.CO'S STYLE M23A MACHINE. IF OTHER SWITCH MACHINE IS USED, SWITCH GAGE PLATES GP-1-R AND GP-2-R MAY VARY AND SHOULD BE MODIFIED AS REQUIRED BY SWITCH MANUFACTURER TO PROVIDE PROPER SEATING.

DETAIL "A" INSULATION AT GAGE PLATES (SCALE: NONE)



INSULATED GAGE PLATE PP WITH PANDROL CLIPS 1' x 8' "FLAT" W/3M INSULATION (2 PC. REQ'D. AS SHOWN)



INSULATED GAGE PLATE GP-0-P 1' x 8' 'MILLED' W/3M INSULATION & ADJ. RAIL BRACES (1 PC. REQ'D. AS SHOWN)

FOR MAINTENANCE ONLY

REV.	DATE	DESCRIPTION	DES.	ENG.
X	XX-XX-XX	REVISION	XX	XX
REV.	DATE	DESCRIPTION	DES.	ENG.

DRAWN BY:	A. CARLOS	DATE:	03/31/2011
ASSISTANT DIRECTOR: STANDARDS & DESIGN	Nancy D. Bae		
DIRECTOR OF ENGINEERING AND CONSTRUCTION	William D. Bae		

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METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS	STANDARD	2951
NO. 24 INSULATED GAGE PLATE DETAILS	SCALE:	1 1/2" = 1'-0"
	REVISION	SHEET
	-	16 OF 16
	CADD FILE:	ES2951-16