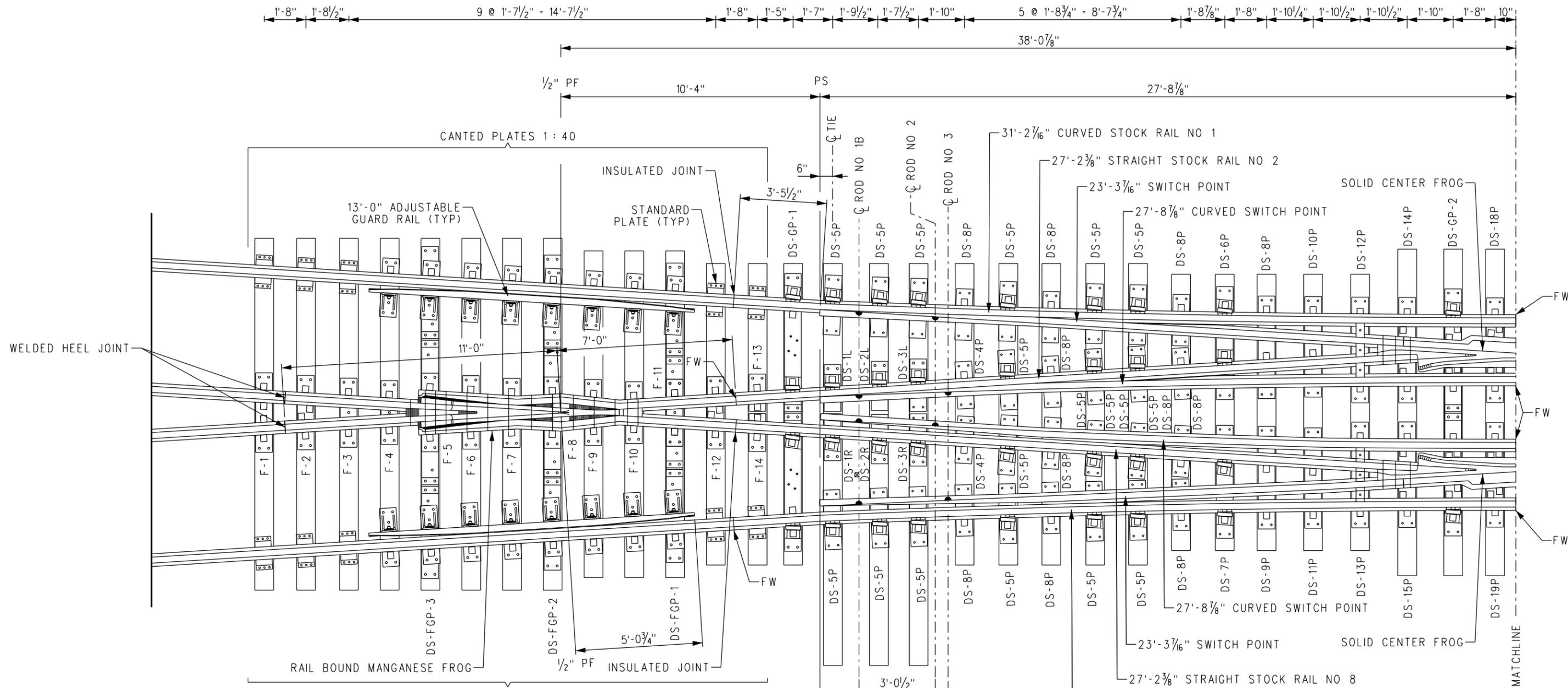


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Updating the contents of the manual is a continued process, and revisions/replacements are issued periodically. Questions, comments, and proposed recommendations for changes may be sent to SCRRA at 279 E. Arrow Highway, Suite A, San Dimas, CA 91773.



NOTE:

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

CROSSING DATA

BETWEEN THEORETICAL POINTS OF END FROGS	75'-5 ³ / ₄ "	ANGLE OF CROSSING	7° -09' -10"
BETWEEN THEORETICAL POINTS OF END FROG & CENTER FROG	37'-9 ³ / ₄ "	DEGREE OF CURVATURE	8° -26' -53"
FROM INSIDE SWITCH POINTS TO THEORETICAL POINT END FROG	10'-0 ¹ / ₄ "	GAUGE LINE RADIUS	678.8314'
FROM THEORETICAL POINT OF CENTER FROG TO HEEL JOINT	7'-6 ¹ / ₁₆ "	THROW AT END PT	4" MIN, 4 ¹ / ₂ " MAX
LENGTH OF INSIDE SAMSON STOCK RAILS	SEE ABOVE	GAUGE ON STRAIGHT TRACK	4'-8 ¹ / ₂ "
LENGTH OF OUTSIDE SAMSON STOCK RAILS	31'-2 ⁷ / ₁₆ "	GAUGE ON CURVED TRACK	4'-8 ⁵ / ₈ "
LENGTH OF FROG FROM THEORETICAL POINT TO TOE	6'-8"	GAUGE ON SWITCH PT	4'-8 ¹ / ₂ "
LENGTH OF FROG FROM THEORETICAL POINT TO HEEL	11'-4"	SWITCH ANGLE	1° -14' -04"
LENGTH OF OUTSIDE SAMSON END SWITCH POINTS (0" SAMSON)	23'-3 ³ / ₁₆ "	HEEL SPREAD OUTSIDE SWITCH POINTS 6 ¹ / ₃₂ " BC, 10 ¹³ / ₁₆ " AC	-
LENGTH OF INSIDE SAMSON END SWITCH POINTS (0" SAMSON)	27'-8 ⁷ / ₈ "	HEEL SPREAD INSIDE SWITCH POINTS 7 ³ / ₁₆ " BC, 14" AC	-

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

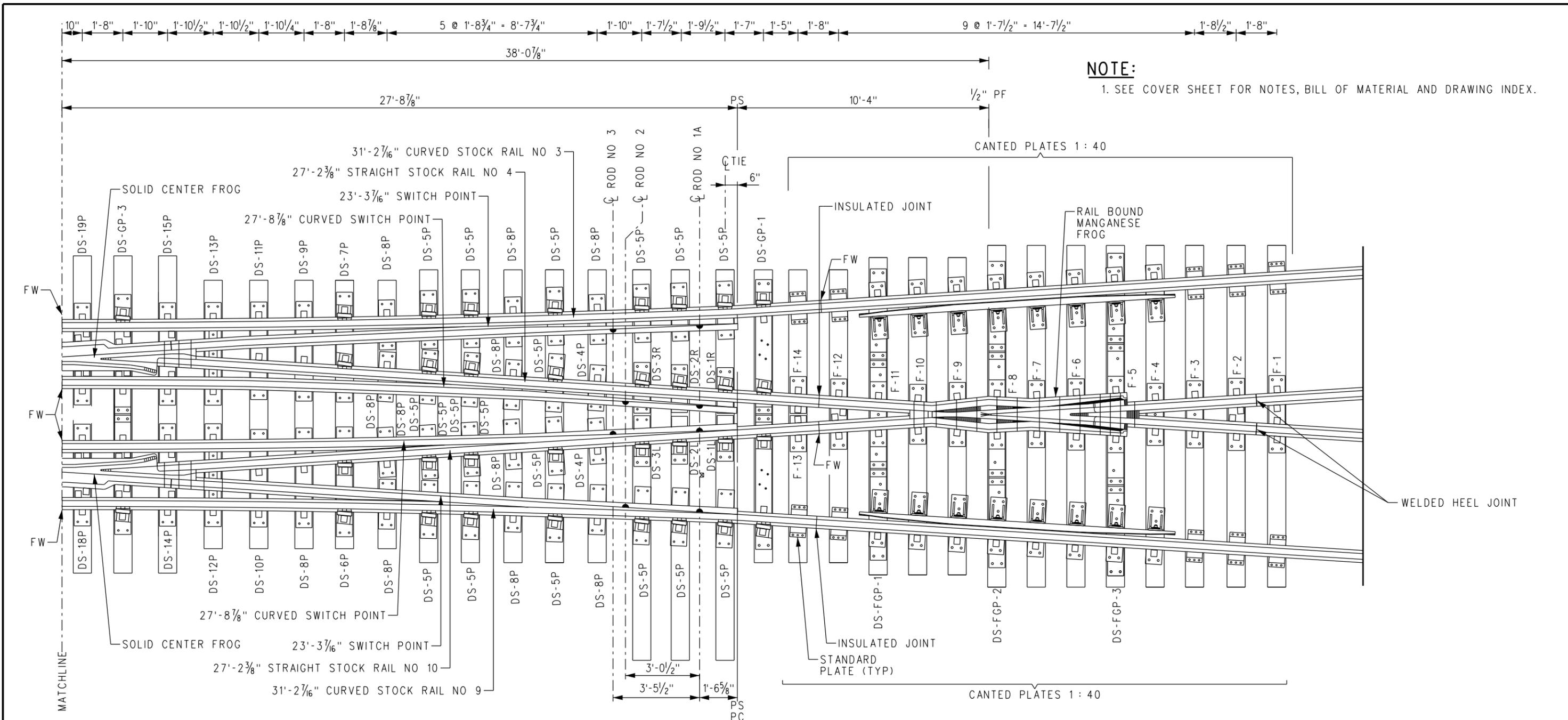
DRAWN BY: A. CARLOS DATE: 03/31/2011
 Assistant Director: Standards & Design
 Director of Engineering and Construction

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ENGINEERING STANDARDS
 NO 8 136 LB RE DOUBLE SLIP CROSSING
 WITH SOLID MANGANESE FROG
 LAYOUT AND CROSSING DATA

STANDARD	2840
SCALE:	NTS
REVISION SHEET	1 OF 2
CADD FILE:	ES2840-02



CROSSING DATA

BETWEEN THEORETICAL POINTS OF END FROGS	75'-5 ³ / ₄ "	ANGLE OF CROSSING	7°-09'-10"
BETWEEN THEORETICAL POINTS OF END FROG & CENTER FROG	37'-9 ³ / ₄ "	DEGREE OF CURVATURE	8°-26'-53"
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FROM THEORETICAL POINT OF CENTER FROG TO HEEL JOINT	7'-6 ¹ / ₁₆ "	THROW AT END PT	4" MIN, 4 ¹ / ₂ " MAX
LENGTH OF INSIDE SAMSON STOCK RAILS	SEE ABOVE	GAUGE ON STRAIGHT TRACK	4'-8 ¹ / ₂ "
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REV.	DATE	DESCRIPTION	DES.	ENG.
X	XX-XX-XX	REVISION	XX	XX

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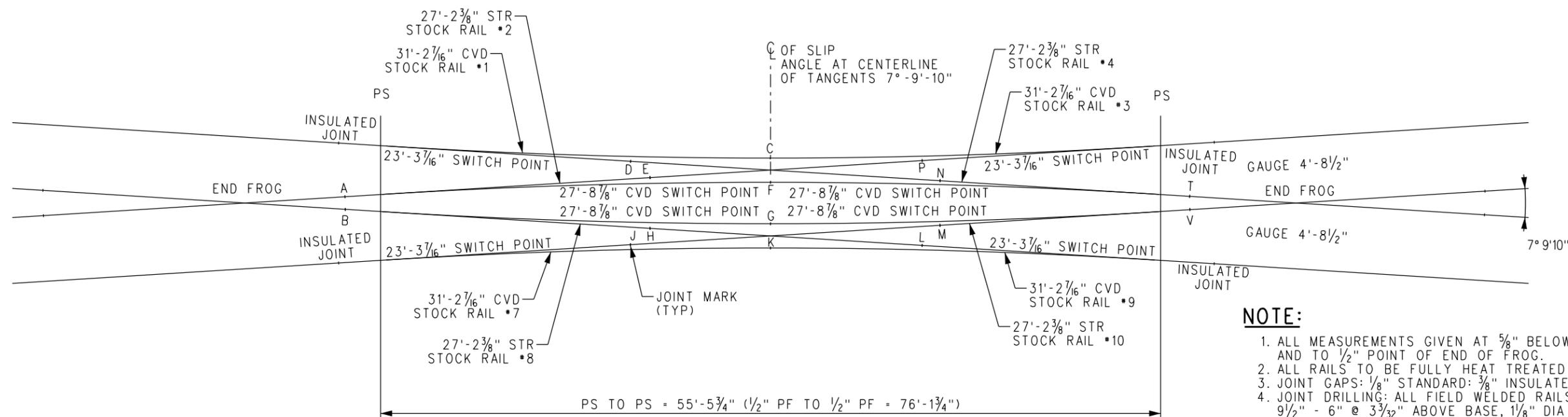
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ENGINEERING STANDARDS
 NO 8 136 LB RE DOUBLE SLIP CROSSING
 WITH SOLID MANGANESE FROG
 LAYOUT AND CROSSING DATA

STANDARD	2840
SCALE:	NTS
REVISION SHEET	2 OF 2
CADD FILE:	ES2840-03

CROSSING DATA			
BETWEEN THEORETICAL POINTS OF END FROGS	75'-5 ³ / ₄ "	ANGLE OF CROSSING	7° -09'-10"
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LENGTH OF INSIDE SAMSON END SWITCH POINTS (0" SAMSON)	27'-8 ⁷ / ₈ "	HEEL SPREAD INSIDE SWITCH POINTS 7 ³ / ₁₆ " BC, 14" AC	-



CROSSING DATA

NOTE:

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

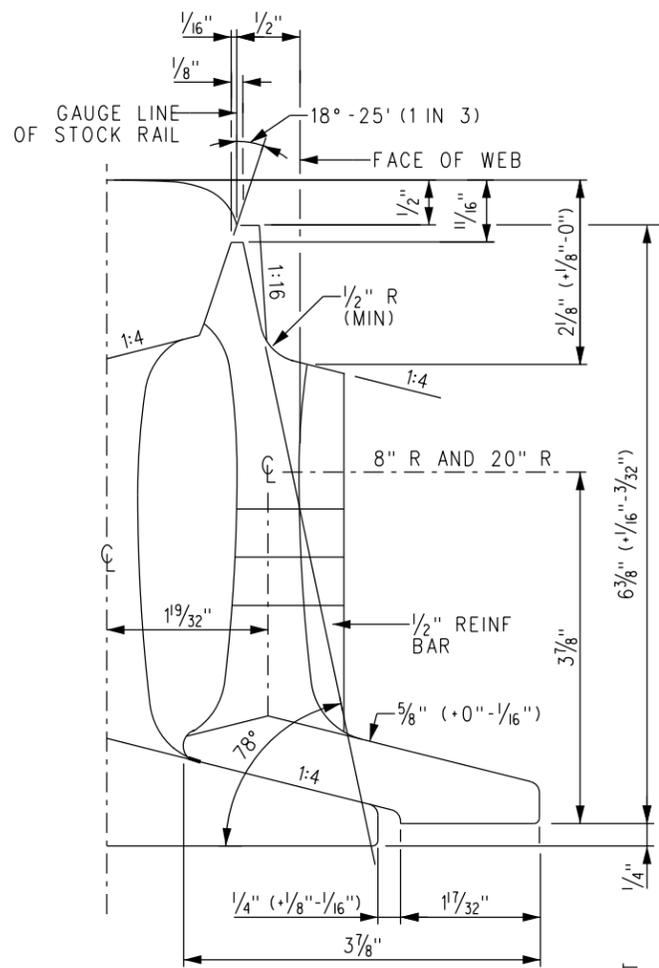
SPECIFICATIONS:

1. CROSSING TYPE - NO 8 DOUBLE SLIP, GENERALLY PER AREMA PLAN. RAIL: 136 LB RE HEAT TREATED.
2. FROG - NO 8 RAIL BOUND MANGANESE FROG, 136 LB RE, 18'-0" LONG WITH PANDROL PLATES - MANGANESE CASTING TO BE EXPLOSIVE HARDENED.
3. SWITCH POINTS - 27'-8 7/8" & 23'-3 7/16" LONG, CURVED AND STRAIGHT, SAMSON PLANING AREMA DETAIL 5100. CURVED POINTS TO BE EQUIPPED WITH REPLACEABLE MANGANESE INSERTS PER 2840-11 & 2840-12.
4. CLIPS AND RODS - VERTICAL RODS WITH "SMJ" CLIPS.
5. ADJUSTABLE BRACES - BOLTLESS WITH SPRING CLIPS.
6. GUARD RAILS - U-69 SECTION 13'-0" RAISED GUARD RAIL WITH BRACES AND PLATES.
7. GAUGE PLATES - TO BE FURNISHED INSTALLED.

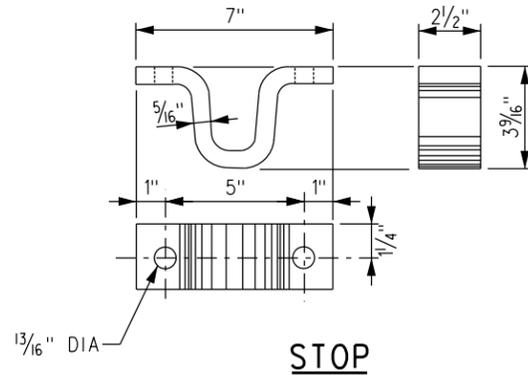
REFERENCE DRAWING

LAYOUT - NO 8, DOUBLE SLIP CROSSING - 136 LB ----- SHEET NO 2840-02

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.		<p>SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012</p>	ENGINEERING STANDARDS	STANDARD 2840
 ASSISTANT DIRECTOR: STANDARDS & DESIGN		 DIRECTOR OF ENGINEERING AND CONSTRUCTION		CROSSING GEOMETRY AND CROSSING DATA NO 8 136 LB RE DOUBLE SLIP CROSSING		SCALE: NTS	REVISION SHEET 1 OF 1
REV.	DATE	DESCRIPTION	DES.	ENG.			ES2840-04



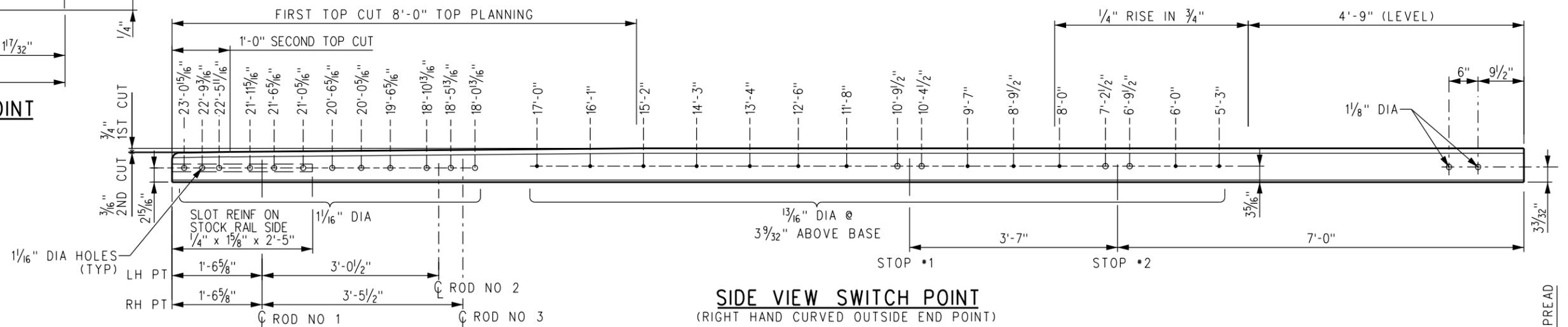
END VIEW OF POINT



STOP

NOTES:

- SWITCH POINTS TO BE MADE FROM NEW HEAD HARDENED RAIL.
- METAL IDENTIFICATION TAG SHOWING HAND OF SWITCH POINT, WEIGHT OF RAIL, MANUFACTURER AND WHEN MADE, TO BE FASTENED TO SWITCH POINT AT LOCATION SHOWN.
- RIGHT HAND TURNOUT SHOWN. MAKE OPPOSITE HAND FOR LEFT HAND SWITCH POINTS.
- SIDE PLANING FIGURED ON GAUGE LINE 5/8" BELOW TOP OF RAIL.
- MATERIAL 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 THE SWITCH POINT AND AT THE HEEL END OF THE SWITCH POINT. 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 GAUGE SIDE BEGINNING AT A DISTANCE OF 3'-0" FROM THE POINT OF SWITCH AND SHALL BE SHAPED TO THE CONTOUR OF A NEW 136 LB RE AND SHALL RUN OUT AT THE END OF THE TOP PLANING, WHERE THE SWITCH POINT HAS FULL HEAD CONTOUR.
- 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 GAUGE SIDE OF RAIL AT HEEL SPACER BLOCK IN LOCATION SHOWN.
- AT HEEL END OF SWITCH POINT RAIL, BREAK SHARP CORNER AROUND THE ENTIRE PERIPHERY BY SLIGHTLY GRINDING. ALSO, "DO NOT" END HARDEN RAIL END.
- NON - INTERLOCKED AND INTERLOCKED SWITCH POINTS ARE MADE THE SAME.
- UNLESS SWITCH POINT ORDER SPECIFICALLY CALLS FOR USE OF 3/4" RIVETS AND 3/4" STOP BOLTS, MANUFACTURER CAN SUBSTITUTE 3/4" HUCK FASTENERS, BOLT PART NO C-50-LR-BR2416 AND COLLAR PART NO L3-2-24G FOR 3/4" RIVETS. FOR 3/4" STOP BOLTS USE HUCK FASTENERS, BOLT PART NO C-50-LR-BR2424 AND COLLAR PART NO L3-2-R-24G.
- TURNOUTS ARE TO BE FINISHED WITH MANGANESE STEEL INSERT ON THE REVERSE 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 FURNISHED.



SIDE VIEW SWITCH POINT
(RIGHT HAND CURVED OUTSIDE END POINT)

LUG BOLTS 1" x 5" LG, 4 5/8" TO CENTERLINE OF COTTER, WITH 2 NUTS. 3/8" SPRING WASHER AND 1/4" x 1/2" COTTER (HEAVY SQ NUTS)

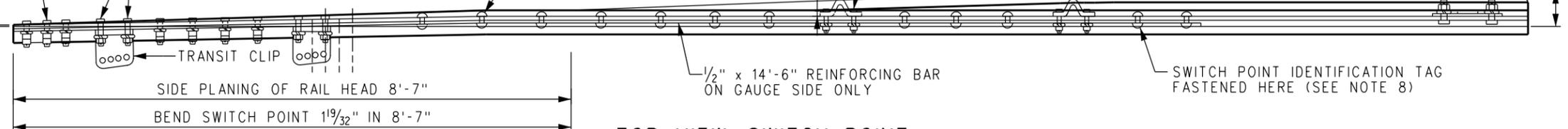
TRANSIT CLIP BOLTS: 1" x 1/4" LG, 3 3/8" TO CENTERLINE OF COTTER, WITH 3/8" SPRING WASHER AND 1/4" x 1/2" COTTER (HEAVY HEX NUTS)

3/4" RIVETS (TYP) SEE NOTE 11

STOP BOLTS 3/4" x 3 1/2", 3 1/4" TO CENTERLINE OF COTTER, WITH 1/4" SPRING WASHER AND 3/16" x 1/4" COTTER (HEAVY SQ NUTS), (SEE NOTE 11)

END OF BOTTOM PLANING. SWITCH ANGLE 1°-44'-11"

1/4" POINT CHAMFERED TO 1/8" IN 2'-0" AT 1/16" BELOW TOP OF STOCK RAIL. CHAMFER ANGLE 78°00', ROUND TO 1/2" R AND GRIND TO SHARP EDGE. REMOVE ALL BURRS.



TOP VIEW SWITCH POINT

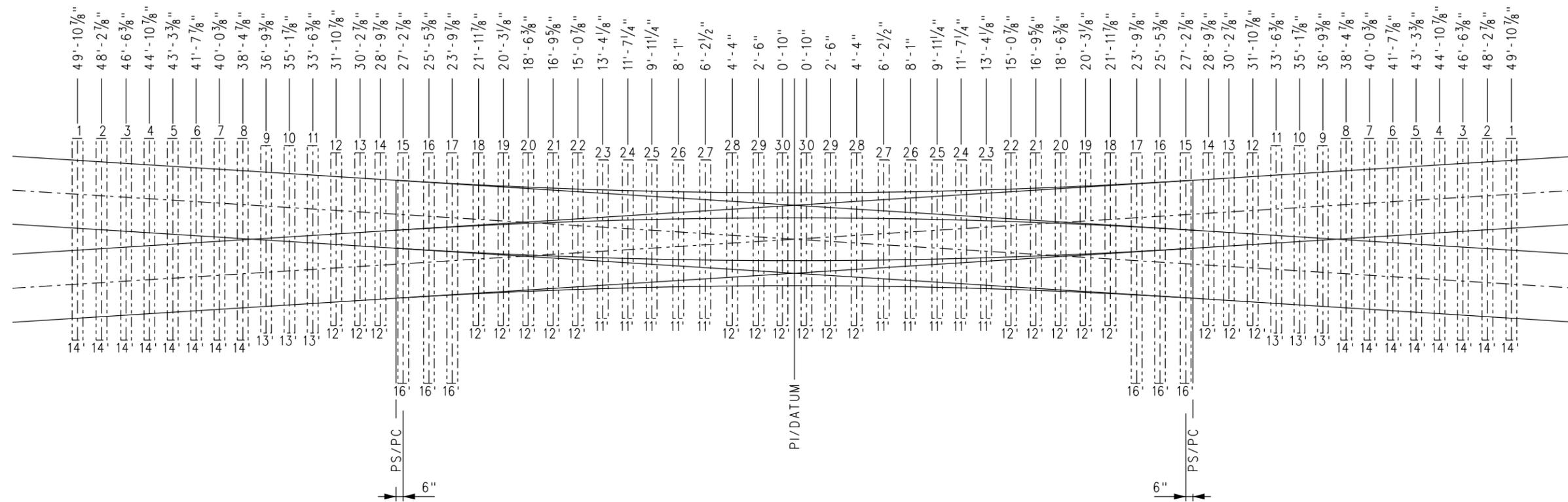
REV.	DATE	DESCRIPTION	DES.	ENG.
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DRAWN BY: A. CARLOS DATE: 03/31/2011 Assistant Director: Standards & Design Director of Engineering and Construction				

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ENGINEERING STANDARDS
136 LB RE 23'-3 7/16" STRAIGHT SWITCH POINT
MADE FROM 40'-0" LONG RAIL
NO 8 DOUBLE SLIP CROSSING

STANDARD	2840
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2840-11



BILL OF SWITCH TIES			
PIECES	SIZE	LENGTH	BOARD FEET
10	7"x9"	11'-0"	577.5
22	7"x9"	12'-0"	1386.0
6	7"x9"	13'-0"	409.5
16	7"x9"	14'-0"	1176.0
0	7"x9"	15'-0"	0
6	7"x9"	16'-0"	504.0
TOTAL		TOTAL	
60		4053	

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

DRAWN BY: *Nareh D. Papp* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Dava
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

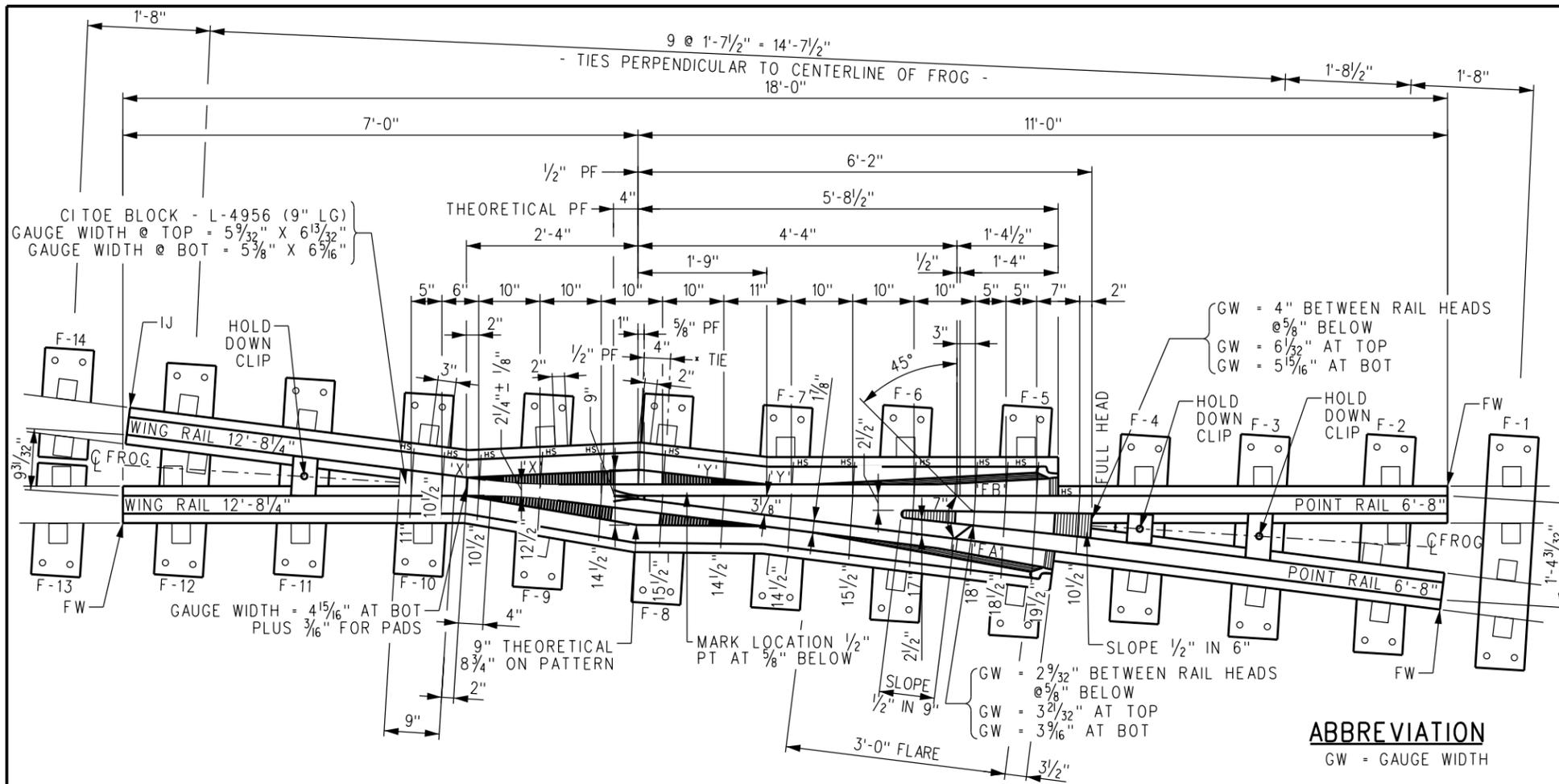
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ENGINEERING STANDARDS
 NO 8 136 LB RE DOUBLE SLIP CROSSING
 TIMBER TIE LAYOUT

STANDARD	2840
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2840-30



NOTES:

1. FROG ANGLE 7° - 09' - 10".
2. RAIL USED TO FABRICATE FROG IS TO BE 136 LB HEAD HARDENED.
3. RAIL BOUND MANGANESE FROG PER CURRENT AREMA PLAN NO 775, 1012 AN M2.7 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, RH, RAIL SECTION AND PLATE NUMBER. MARK TO BE STAMPED ON SAME END OF ALL FROG PLATES.
5. FOR DETAILS OF FROG GAUGE PLATES SEE SHEET ES2840-47. FOR DETAILS OF FROG PLATES F-1 THRU F-4 SEE SHEET ES2840-48.
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 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, 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 GAUGE PLATES IN THE FIELD WITH A 3 PASS 1/2" + FILLET WELD. PLATES WILL BE WELDED ONLY AFTER THE GAUGE 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 GAUGE 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 GAUGE 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.

ABBREVIATION
GW = GAUGE WIDTH

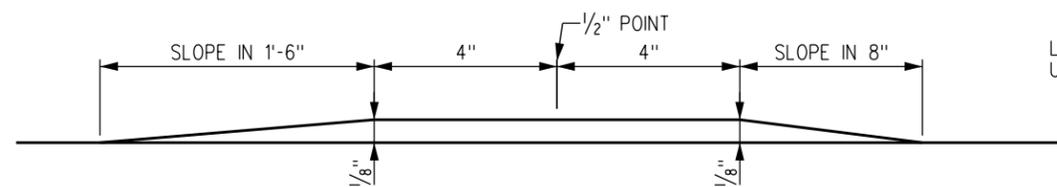
**NO 8 RAILBOUND MANGANESE FROG
18'-0" LONG WITH PLATES**

REFERENCE DRAWINGS

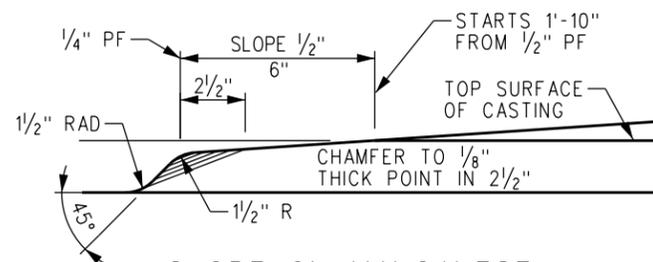
LAYOUT - NO 8, DOUBLE SLIP CROSSING - 136 LB ----- NO 2840-02
U-69 GUARD RAIL - 136 LB ----- NO 2840-60

WELDING OF GAUGE PLATE & GUARD RAIL:

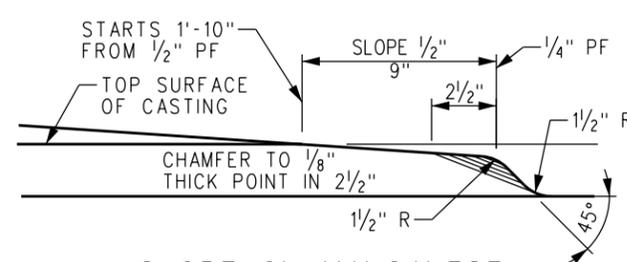
1. POSITION GAUGE PLATES AT DESIGNATED TIE LOCATIONS AND ANCHOR IN PLACE.
2. CHECK TRACK FOR CORRECT GAUGE.
3. STARTING WITH ONE GAUGE PLATE, PLACE FROG PLATES WITH ADJUSTABLE BRACES AND SECURE TO FROG AND GUARD RAIL WITH "PANDROL" CLIPS.
4. RECHECK TRACK GAUGE AND CORRECT IF NECESSARY.
5. CAREFULLY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



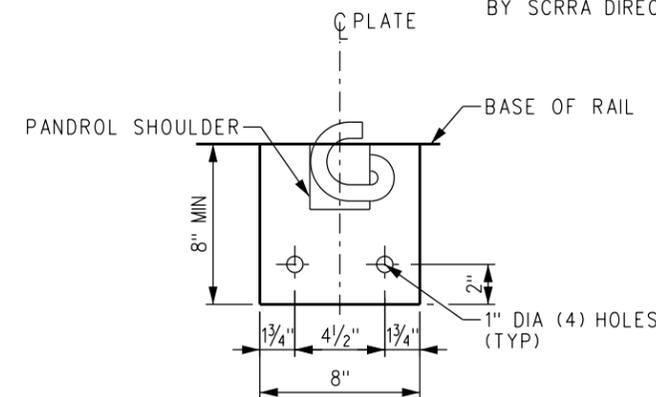
DETAIL OF WING WHEEL RISER



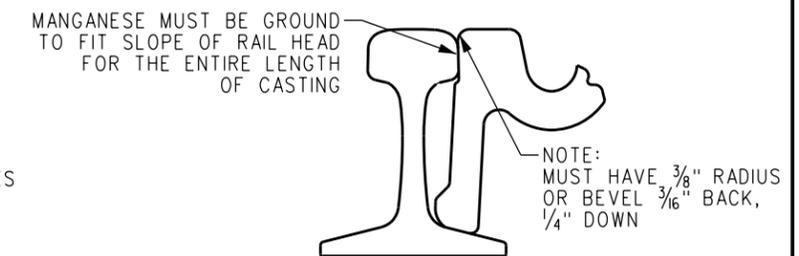
**SLOPE ON MANGANESE
AT SECTION "X" - "X" ON WING RAIL**



**SLOPE ON MANGANESE
AT SECTION "Y" - "Y" ON WING RAIL**



TYPICAL PLATE PUNCHING DETAIL



**DETAIL OF FROG
CASTING / RAIL FIT**

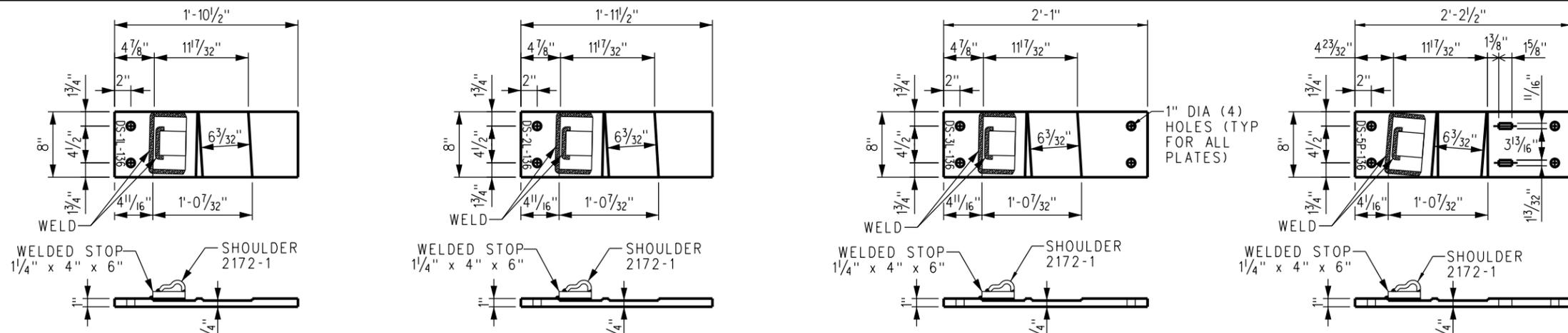
REV.	DATE	DESCRIPTION	DES.	ENG.
X	XX-XX-XX	REVISION	XX	XX
DRAWN BY: A. CARLOS DATE: 03/31/2011 Assistant Director: Standards & Design Director of Engineering and Construction				

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

ENGINEERING STANDARDS
NO 8 RAILBOUND MANGANESE STEEL FROG WITH PANDROLIZED PLATES FOR A 136 LB RE DOUBLE SLIP CROSSING

STANDARD	2840
SCALE	NTS
REVISION	SHEET 1 OF 1
CADD FILE	ES2840-40



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 (RH OR LH)
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.
6. HOLES IN PLATES ARE 1" IN DIA UNLESS OTHERWISE NOTED.

BRACE PLATE - DS-1L

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

BRACE PLATE - DS-2L

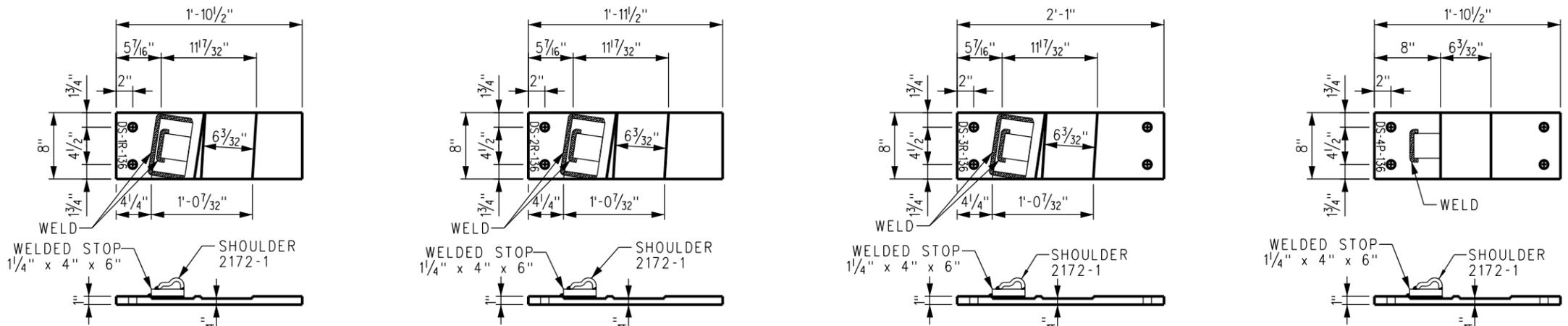
1" x 8" x 1'-11 1/2"
MILLED W/ADJ RAIL BRACE

BRACE PLATE - DS-3L

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

BRACE SLIDE PLATE - DS-5P

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



BRACE PLATE - DS-1R

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

BRACE PLATE - DS-2R

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

BRACE PLATE - DS-3R

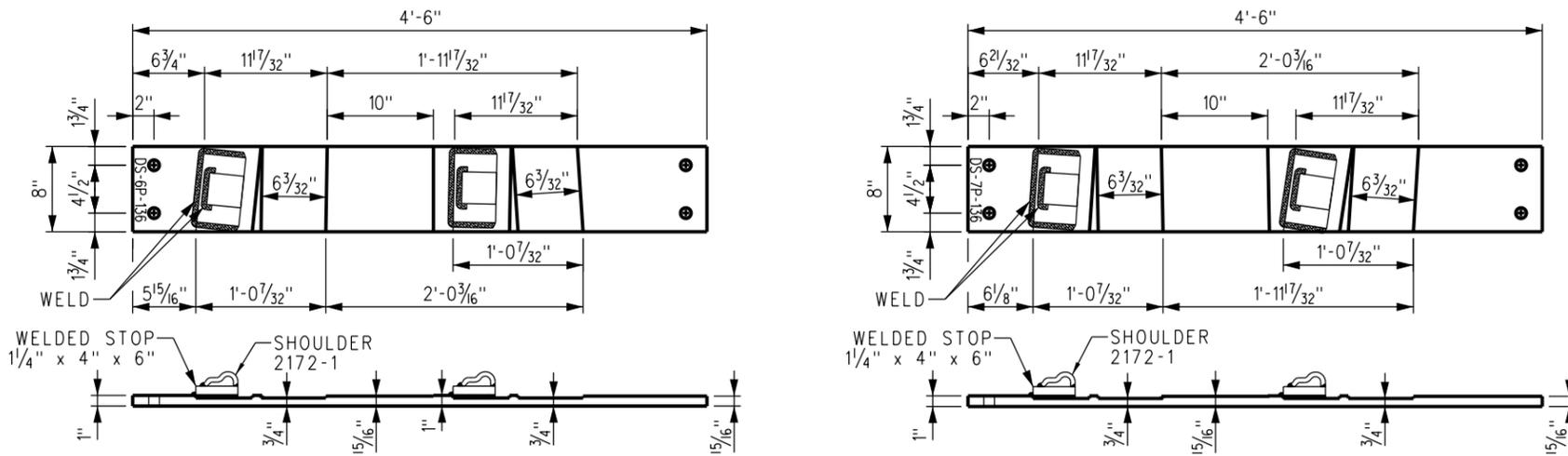
1" x 8" x 2'-1"
MILLED W/ADJ RAIL BRACE

SLIDE PLATE - DS-4P

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

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 1/8", 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.



BRACE PLATE - DS-6P

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

BRACE PLATE - DS-7P

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

REFERENCE DRAWINGS

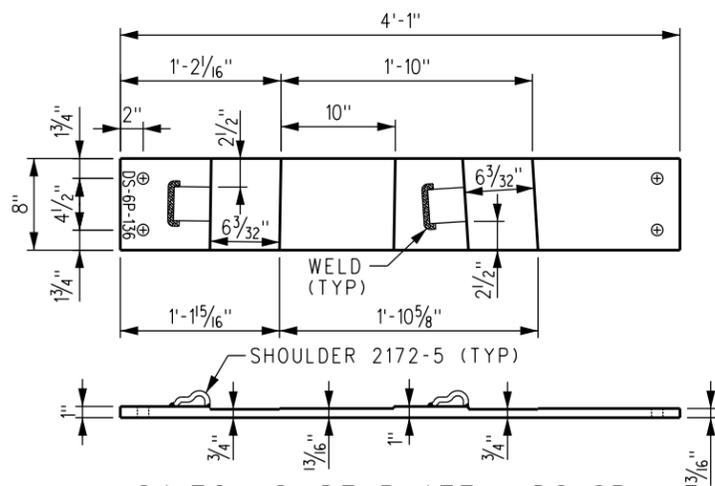
LAYOUT - NO 8, DOUBLE SLIP CROSSING - 136 LB ----- SHEET NO 2840-02

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				

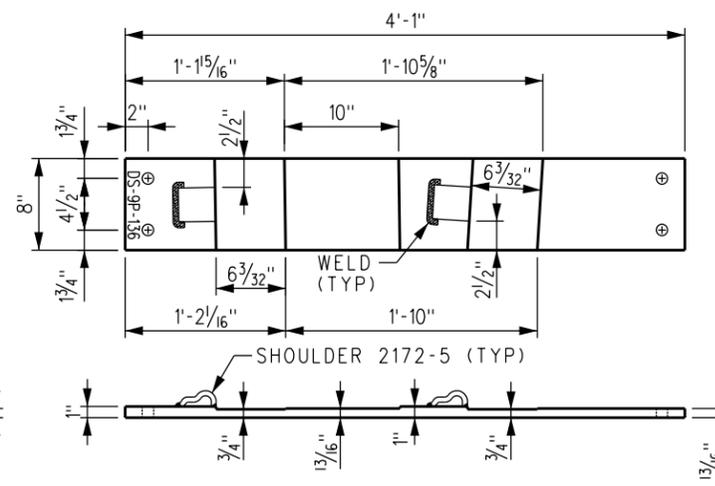
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SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS		STANDARD	2840
BRACE PLATE AND SLIDE PLATE DETAILS NO 8 136 LB RE DOUBLE SLIP CROSSING		SCALE:	NTS
REVISION	SHEET	1 OF 1	
CADD FILE:	ES2840-45		



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



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

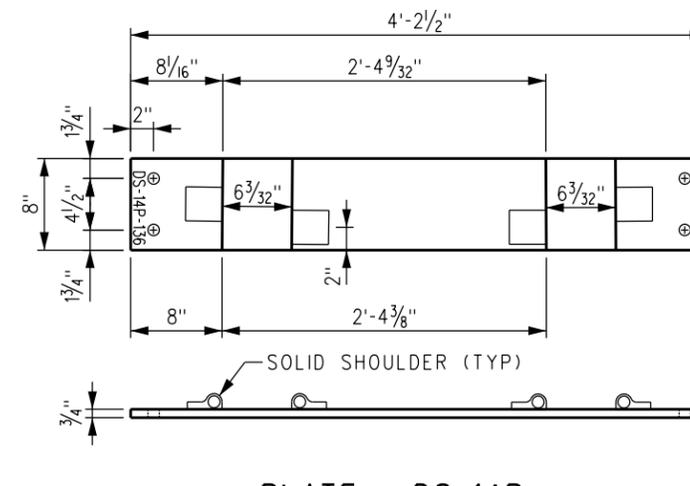


PLATE - DS-14P
3/4" x 8" x 4'-2 1/2" - FLAT

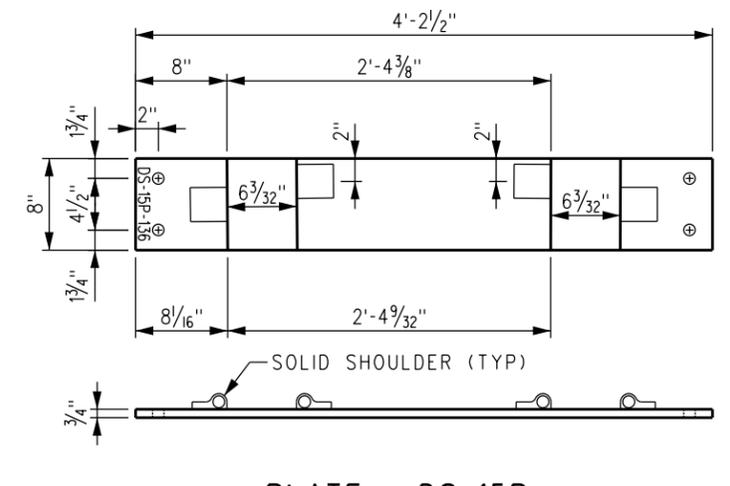
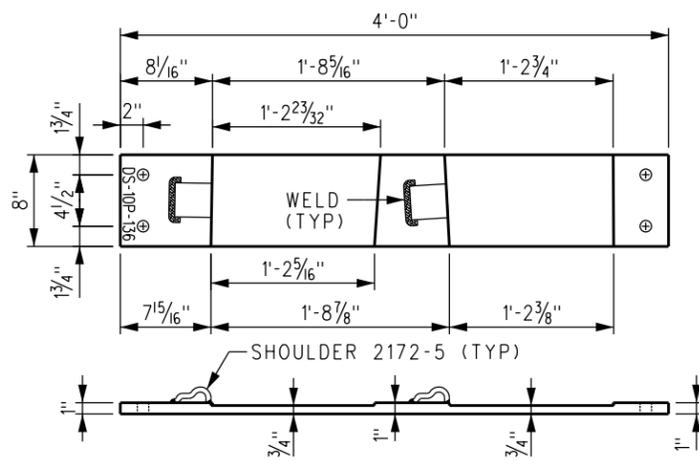
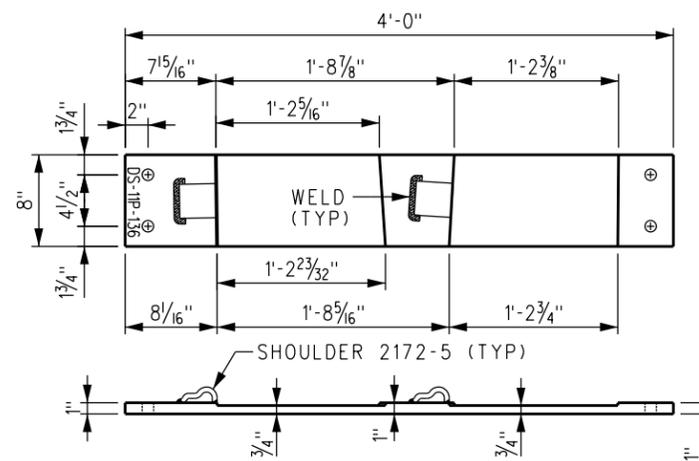


PLATE - DS-15P
3/4" x 8" x 4'-2 1/2" - FLAT



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



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

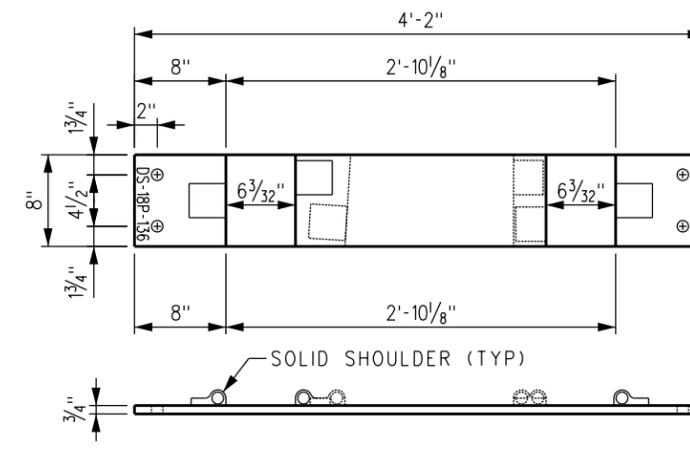


PLATE - DS-18P
3/4" x 8" x 4'-2" - FLAT

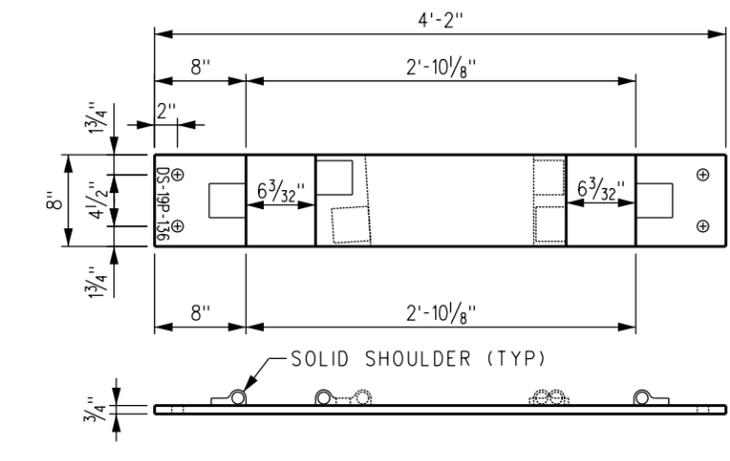
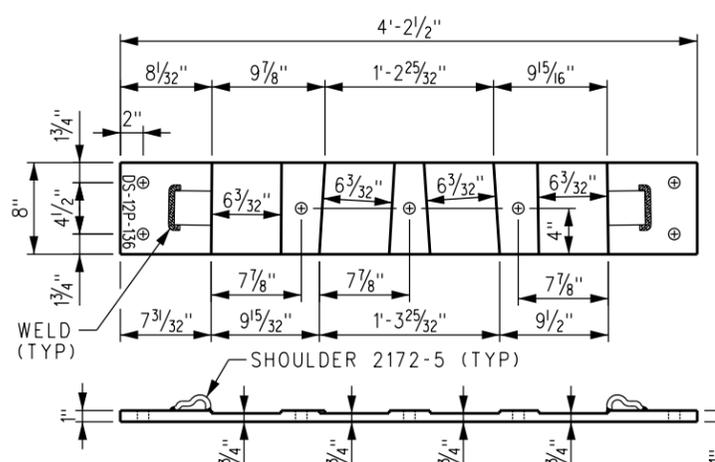
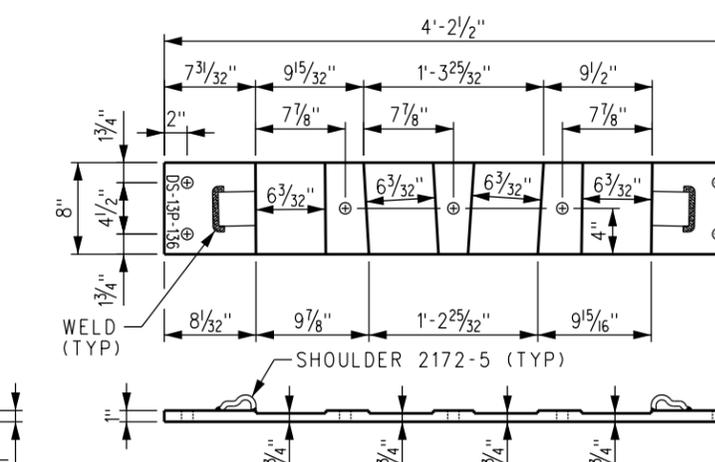


PLATE - DS-19P
3/4" x 8" x 4'-2" - FLAT



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



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

NOTES:

1. STAMP PLATE WITH PROPER PLATE NUMBER AND WEIGHT OF RAIL.
2. ALL WELDS ARE 1/2" FILLET WELDS UNLESS OTHERWISE NOTED.
3. HOLES IN PLATES ARE 1" IN DIA UNLESS OTHERWISE NOTED.

REFERENCE DRAWINGS

LAYOUT - NO 8, DOUBLE SLIP CROSSING - 136 LB ----- SHEET NO 2840-02

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

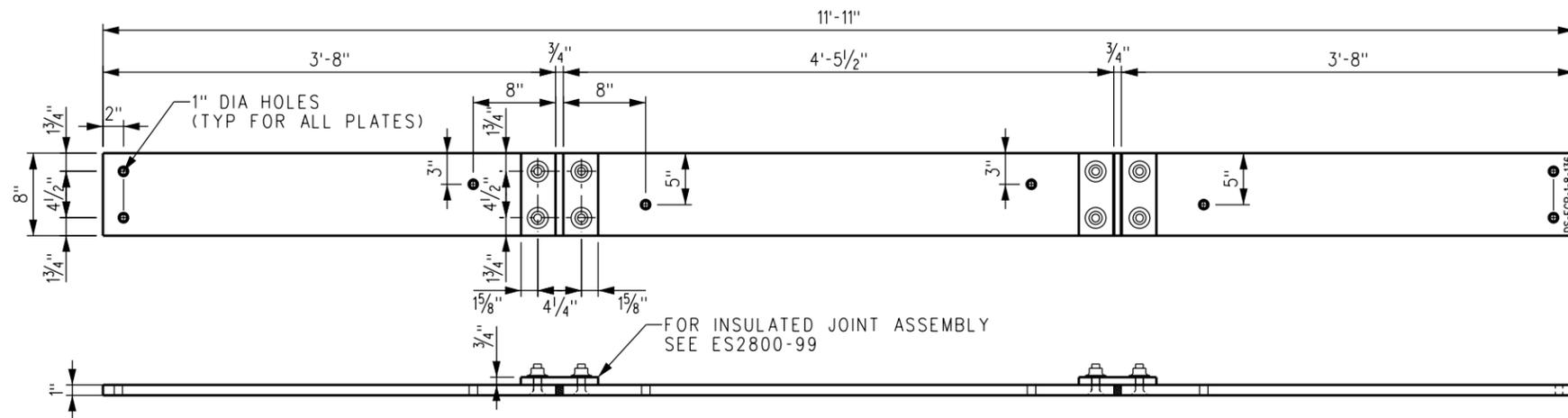
DRAWN BY: A. CARLOS DATE: 03/31/2011
Nareh D. Papp
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William D. Davis
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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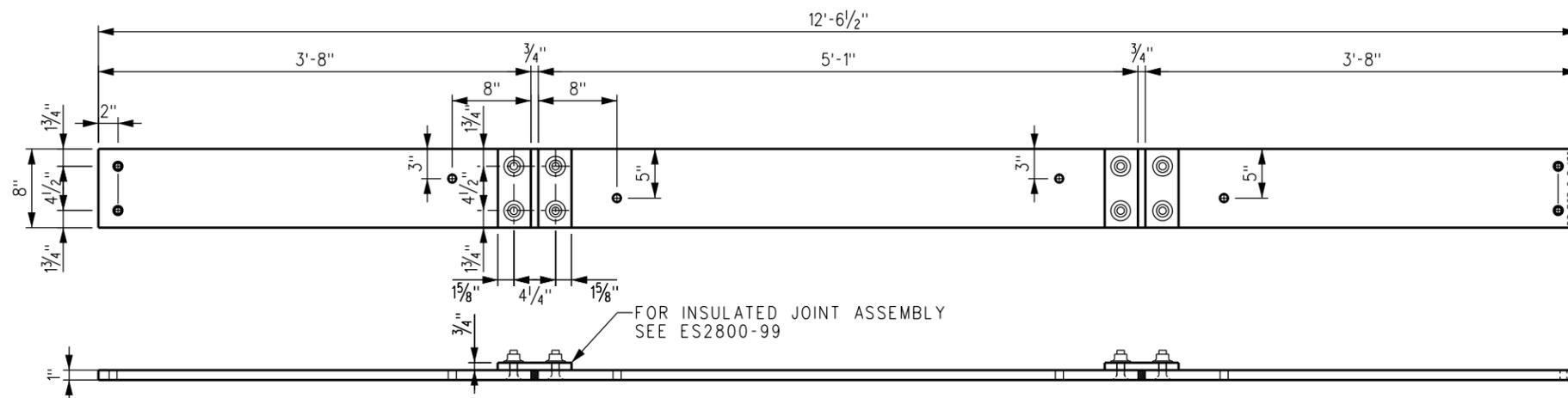
ENGINEERING STANDARDS
 SWITCH SLIDE PLATE AND
 SWITCH HEEL PLATE DETAILS
 NO 8 136 LB RE DOUBLE SLIP CROSSING

STANDARD	2840
SCALE	NTS
REVISION	SHEET 1 OF 1
CADD FILE	ES2840-46



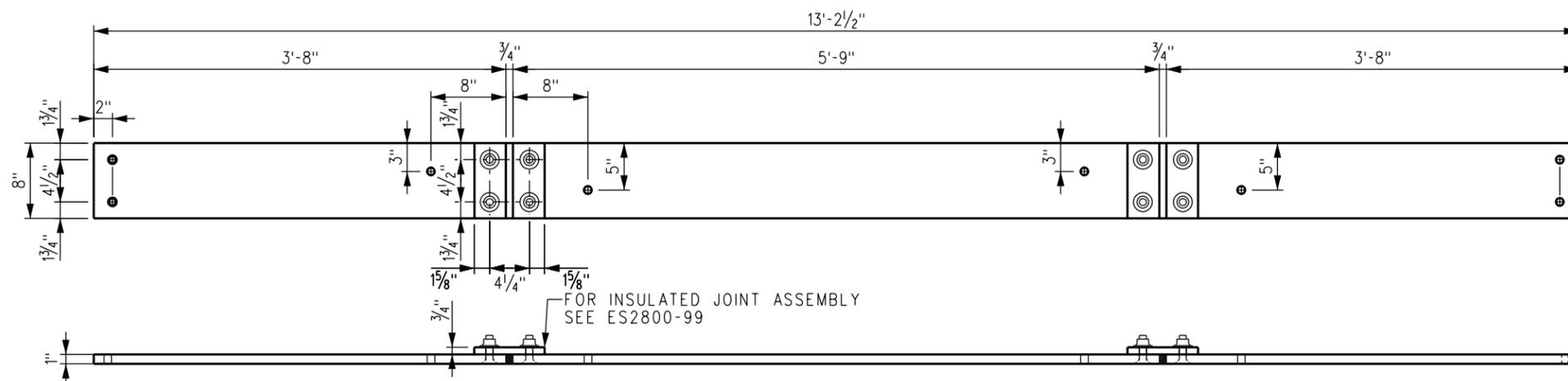
INSULATED FROG GAUGE PLATE DS-FGP-1

1" x 8" - FLAT



INSULATED FROG GAUGE PLATE DS-FGP-2

1" x 8" - FLAT



INSULATED FROG GAUGE PLATE DS-FGP-3

1" x 8" - FLAT

REFERENCE DRAWINGS

LAYOUT - NO 8, DOUBLE SLIP CROSSING - 136 LB ----- SHEET NO 2840-02

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

DRAWN BY: A. CARLOS DATE: 03/31/2011
Nareh D. Papp
 ASSISTANT DIRECTOR- STANDARDS & DESIGN
William Dava
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

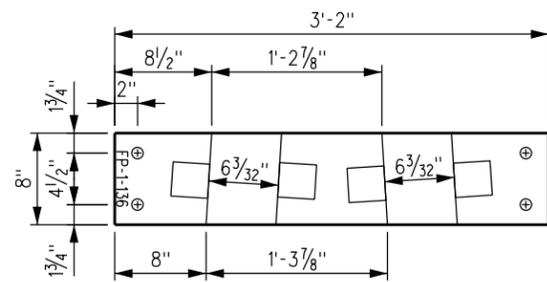
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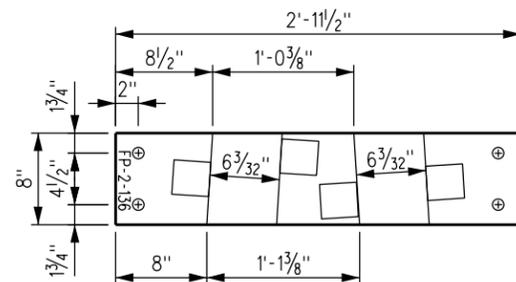
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 DETAILS
 INSULATED FROG GAUGE PLATES
 NO 8 136 LB RE DOUBLE SLIP CROSSING

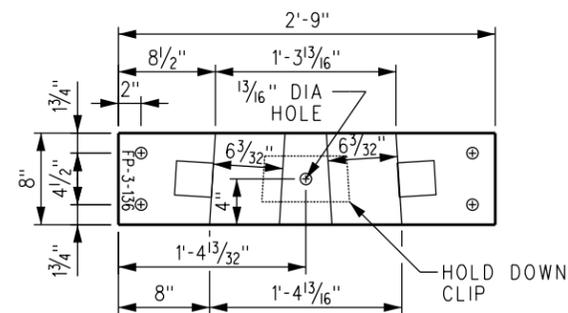
STANDARD	2840
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2840-47



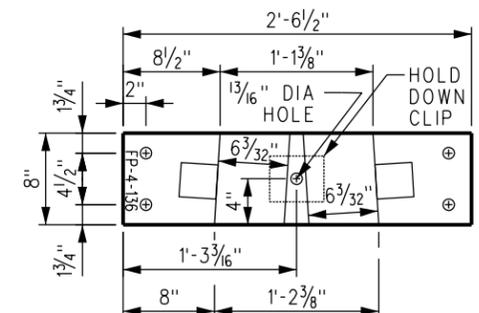
FROG PLATE - F-1
3/4" x 8" x 3'-2" - FLAT



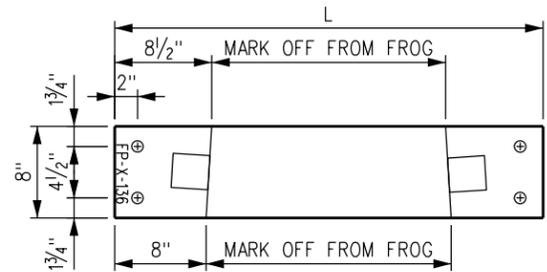
FROG PLATE - F-2
3/4" x 8" x 2'-11 1/2" - FLAT



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

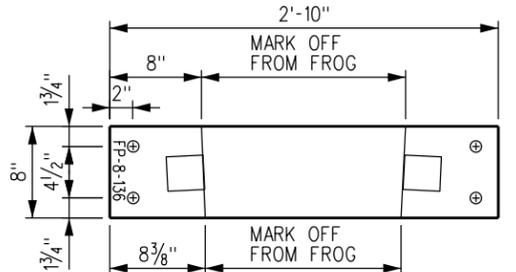


FROG PLATE - F-4
3/4" x 8" x 2'-6 1/2" - FLAT

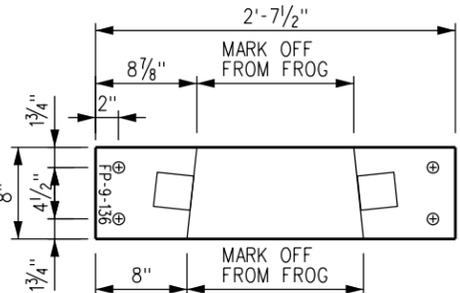


FROG PLATE - F-5, F-6 AND F-7
3/4" x 8" x L - FLAT (SEE TABLE FOR LENGTHS)

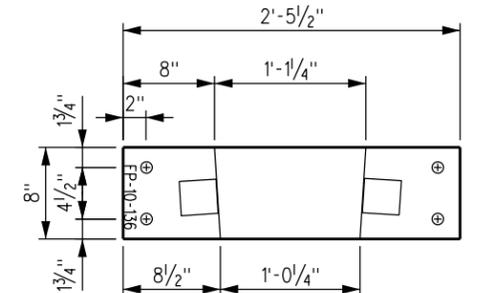
DIMENSION TABLE		
PLATE	L	NO REQ'D
F-5	3'-1 1/2"	1
F-6	2'-11"	1
F-7	2'-9"	1



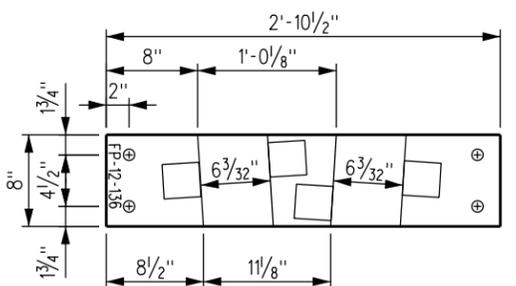
FROG PLATE - F-8
3/4" x 8" x 2'-10" - FLAT



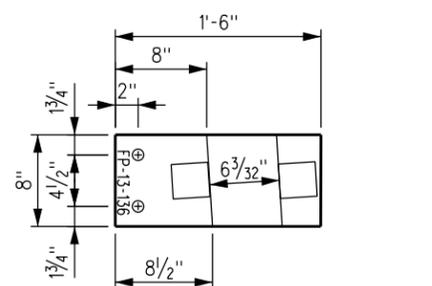
FROG PLATE - F-9
3/4" x 8" x 2'-7 1/2" - FLAT



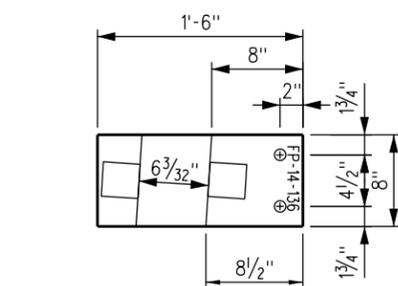
FROG PLATE - F-10
3/4" x 8" x 2'-5 1/2" - FLAT



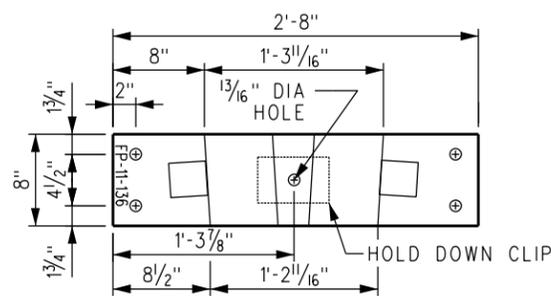
FROG PLATE - F-12
3/4" x 8" x 2'-10 1/2" - FLAT



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



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



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

NOTES:

1. STAMP PLATE WITH PROPER PLATE NUMBER AND WEIGHT OF RAIL.
2. HOLES IN PLATES ARE 1" IN DIA UNLESS OTHERWISE NOTED.

REFERENCE DRAWINGS

LAYOUT - NO 8, DOUBLE SLIP CROSSING - 136 LB ----- SHEET NO 2840-02

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

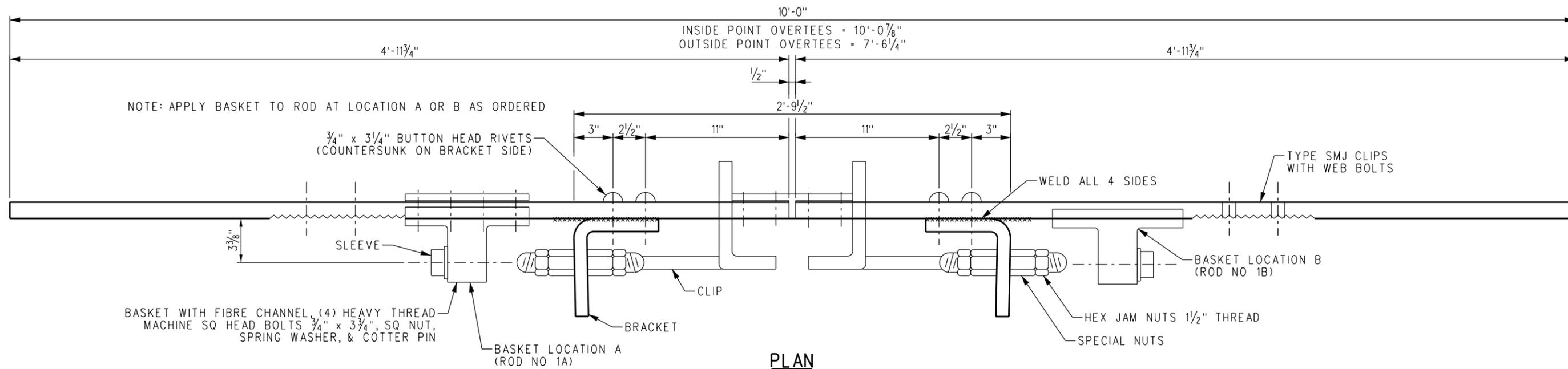
DRAWN BY: A. CARLOS DATE: 03/31/2011
Narek D. Pape
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Dava
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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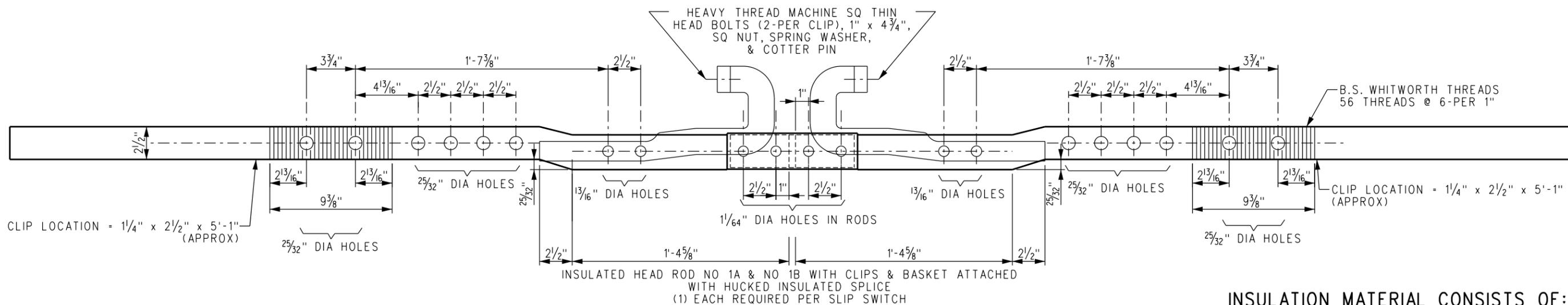
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 FROG PLATE DETAILS
 NO 8 136 LB RE DOUBLE SLIP CROSSING

STANDARD	2840
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2840-48



PLAN



ELEVATION

NOTES:

ROD NO 1A, BASKET LOCATION A
ROD NO 1B, BASKET LOCATION B

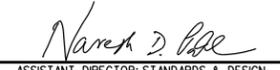
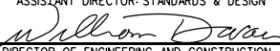
INSULATION MATERIAL CONSISTS OF:

- (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

GAUGE = 4'-8 5/8"
THROW AT POINT = 4" MIN, 4 1/2" MAX
E DISTANCE = 1' 9/32"
PT = 0" SAMSON
REINF = 1/2" D BOTH SIDES (SLOT 1/4" STOCK SIDE)
ROD SPACING = 1'-6 9/8"
BREAK ALL SHARP CORNERS
DEBURR ALL HOLES

STAMP RODS WITH "RESPECTIVE ROD NO-136-DSS"

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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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 8 136 LB RE DOUBLE SLIP CROSSING

STANDARD	2840
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2840-49

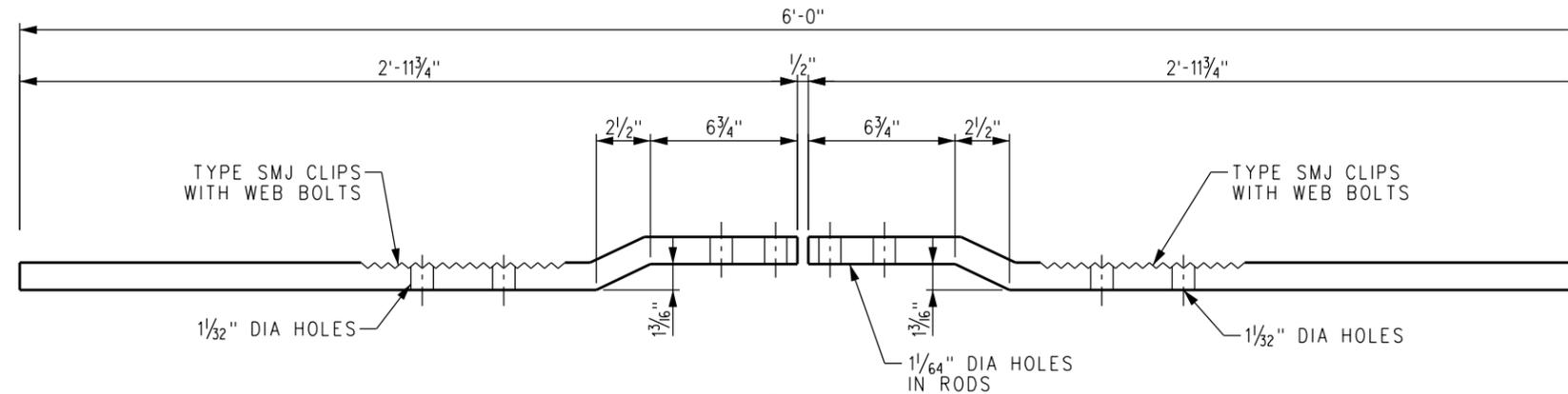
**INSULATION MATERIAL
CONSISTS OF:**

- (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

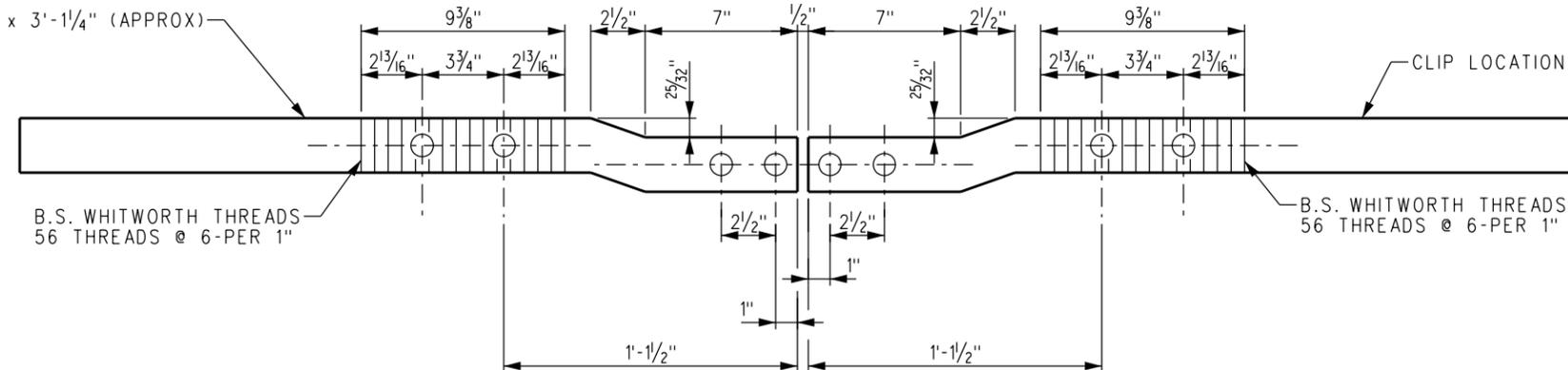
- GAUGE = 4'-8 5/8"
- THROW AT POINT = 4" MIN, 4 1/2" MAX
- E DISTANCE = 1 9/32"
- PT = 0" SAMSON
- REINF = 1/2" D BOTH SIDES (SLOT 1/4" STOCK SIDE)
- ROD SPACING = 1'-6 5/8" x 3'-0 1/2" (NO 2 ROD)
- ROD SPACING = 1'-6 5/8" x 3'-5 1/2" (NO 3 ROD)

OVERTEES = 4'-3 1/2"
(ADJUSTMENT 4'-2 3/4" TO 4'-4 1/4")



PLAN

CLIP LOCATION = 1/4" x 2 1/2" x 3'-1 1/4" (APPROX)



ELEVATION

NOTES:

1. INSULATED SPREAD RODS NO 2 OR 3 WITH CLIPS AND BOLTS ATTACHED WITH HUCKED INSULATED SPLICE, (2) EACH REQUIRED PER SLIP SWITCH
2. STAMP ROD WITH "RESPECTIVE ROD NO-136-DSS"

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

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

ASSISTANT DIRECTOR: STANDARDS & DESIGN
Nareh D. Pape

DIRECTOR OF ENGINEERING AND CONSTRUCTION
William D. Davis

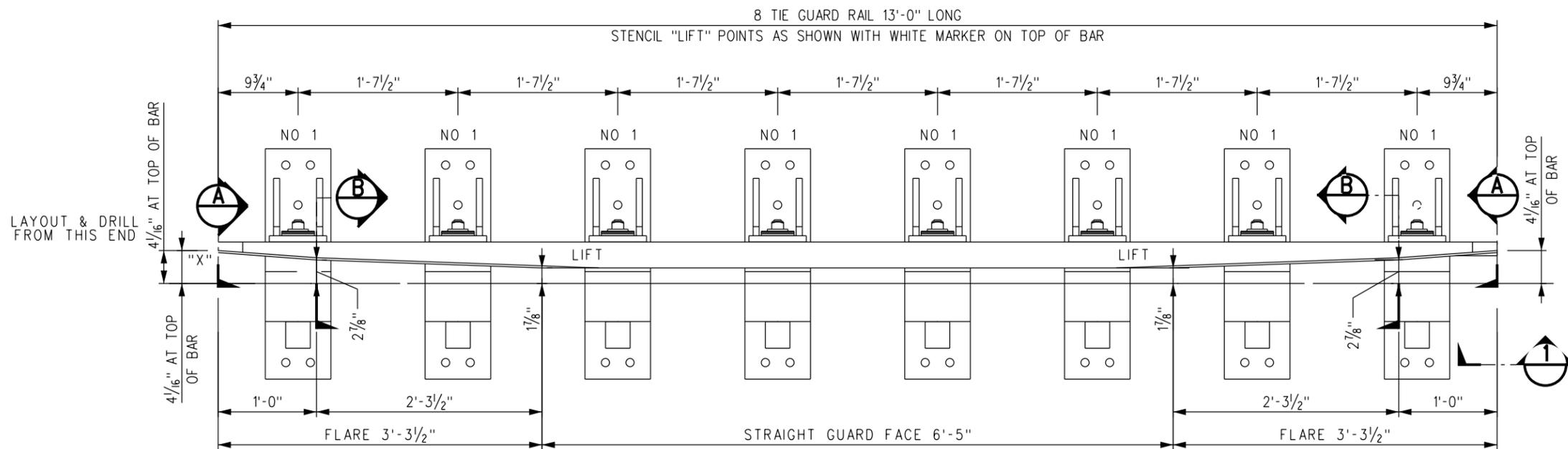
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METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS

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

STANDARD	2840
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2840-50

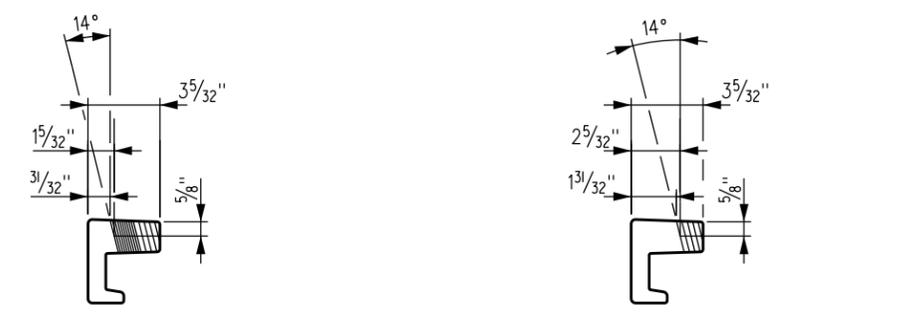


- NOTES:**
1. GUARD RAIL SECTION UIC 33, (U69) UIC 860.0 GRADE 90A (GUARD FACE BRINELL 319 MIN).
 2. BASE PLATE, BRACKET AND SHIMS MADE FROM MILD STEEL PER AREMA SPECIFICATION M7.
 3. GUARD RAIL BOLT AND NUT PER AREMA SPECIFICATION M11 EXCEPT BOLT TO BE GRADE 8 AND NUT TO BE SECURITY LOCKNUT.
 4. WORKMANSHIP AND TOLERANCES PER AREMA "SPECIFICATIONS FOR SPECIAL TRACKWORK".
 5. WELDING PER ANSI \ AWS D1.1-92 OR LATEST REVISION.

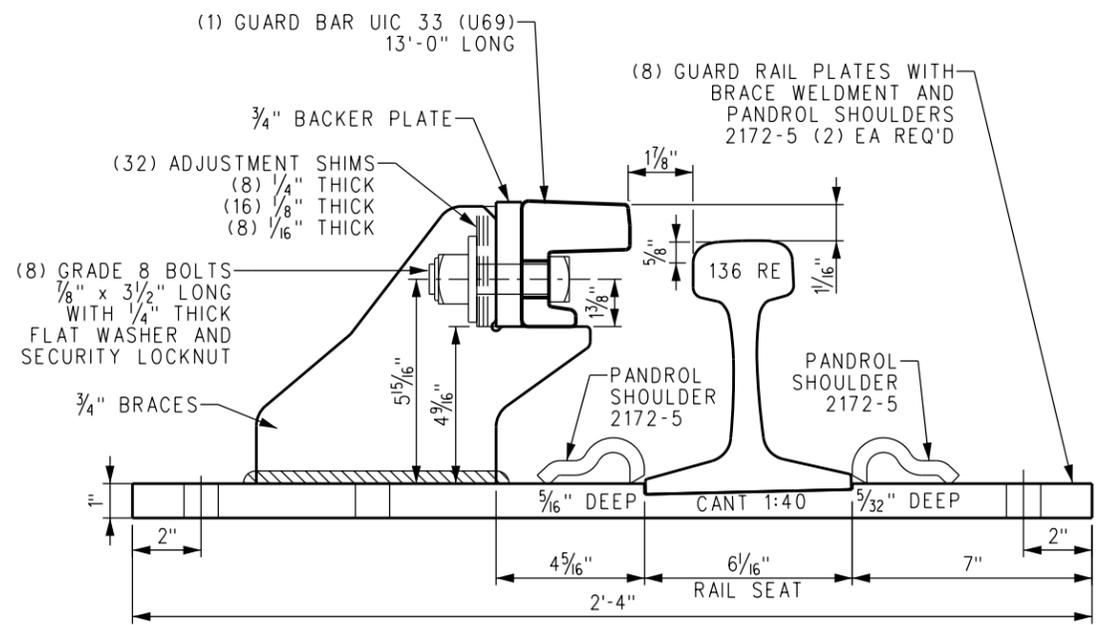
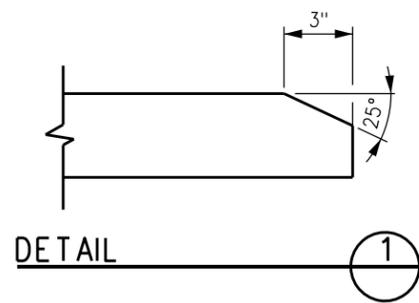
COLLECTIVE DRILLING FROM END OF GUARD BAR MARKED "X"

"X" 9 3/4" x 2'-5 1/4" x 4'-0 3/4" x 5'-8 1/4" x 7'-3 3/4" x 8'-11 1/4" x 10'-6 3/4" x 12'-2 1/4"

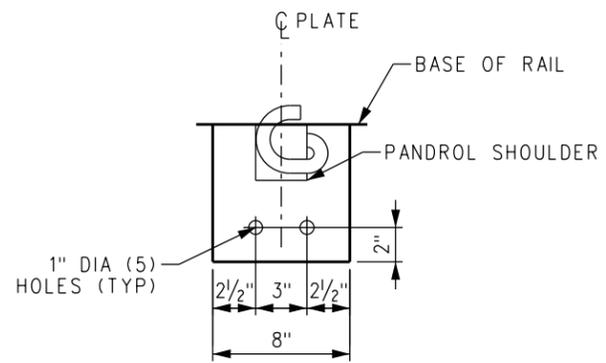
HOLES 1" DIA - 1 3/8" ABOVE BASE



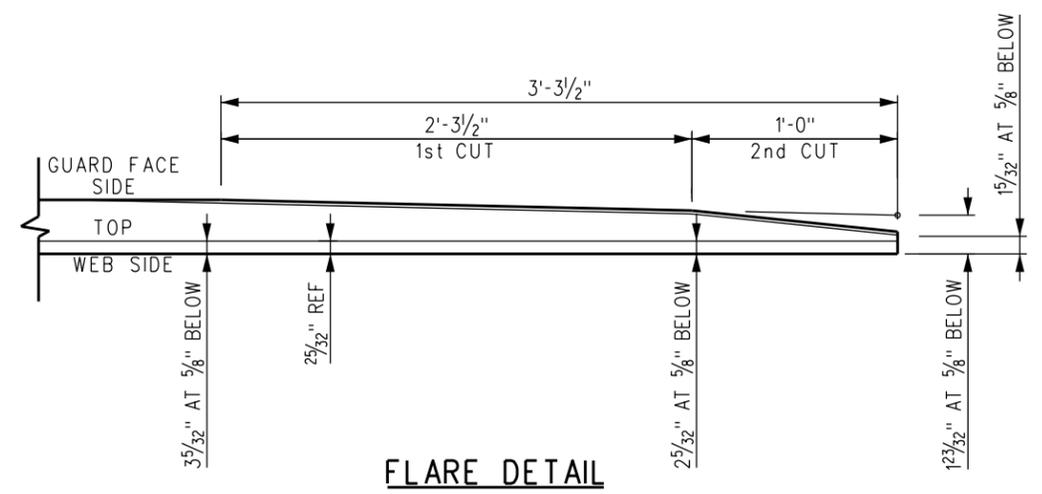
ASSEMBLED 13'-0" GUARD RAIL



TYPICAL PLATE DETAIL



TYPICAL PLATE PUNCHING DETAIL



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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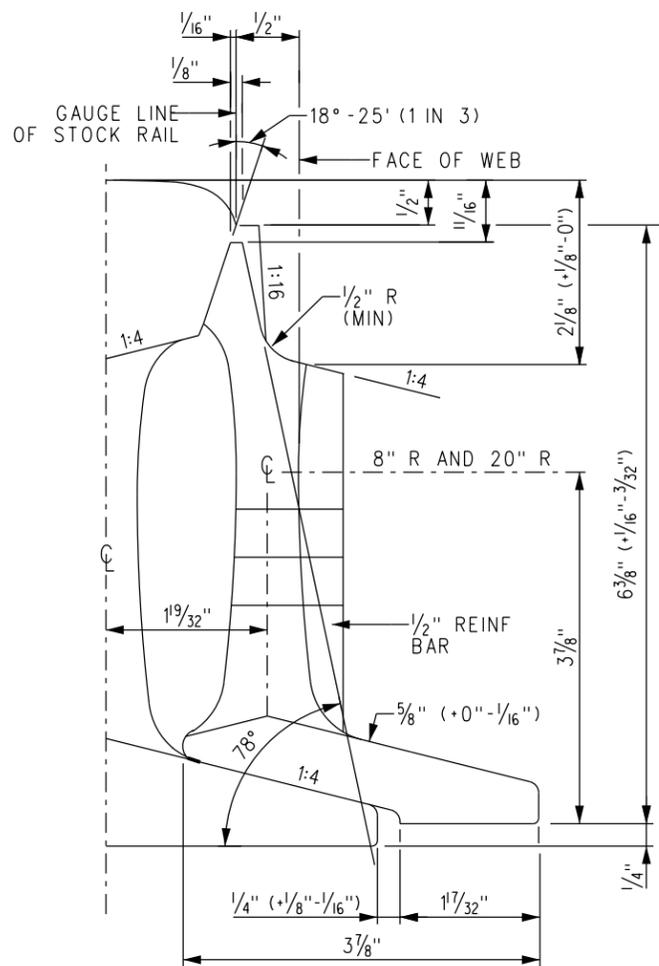
METROLINK

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

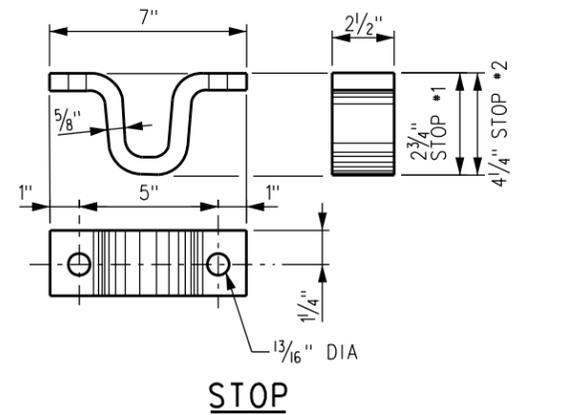
ENGINEERING STANDARDS

GUARD RAIL DETAILS
13'-0" LONG

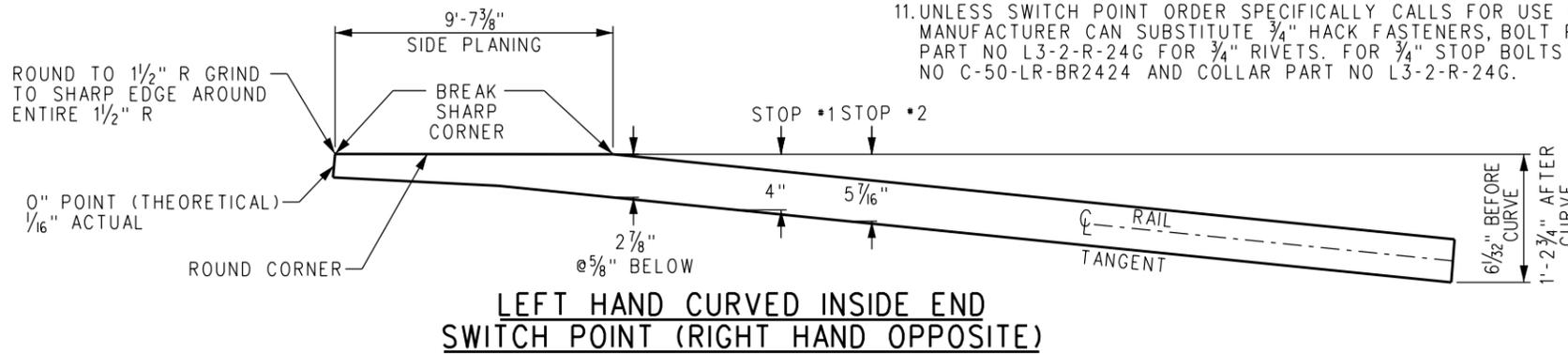
STANDARD	2840
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2840-60



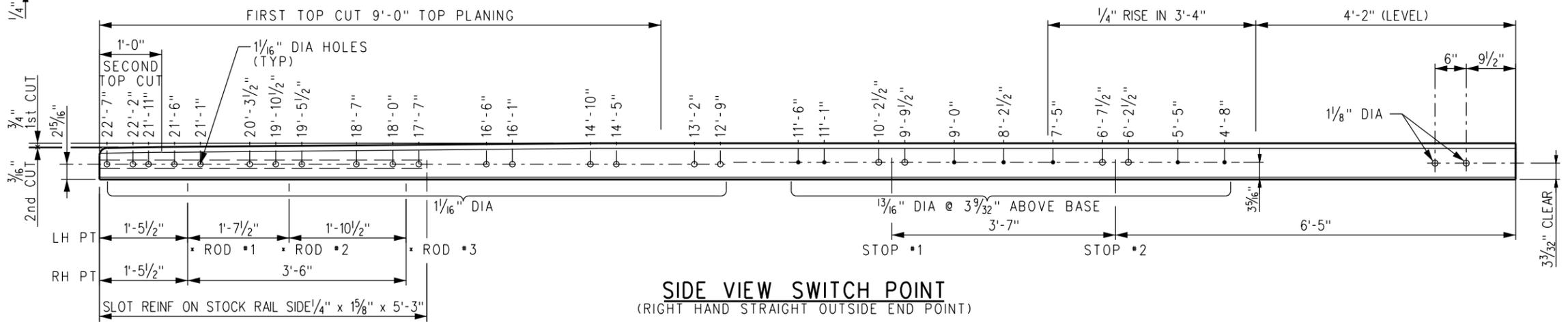
END VIEW OF POINT



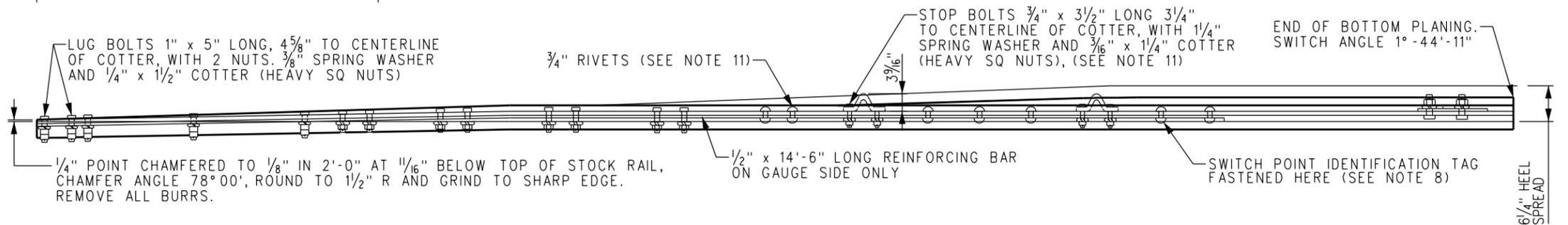
STOP



LEFT HAND CURVED INSIDE END SWITCH POINT (RIGHT HAND OPPOSITE)



SIDE VIEW SWITCH POINT (RIGHT HAND STRAIGHT OUTSIDE END POINT)



TOP VIEW SWITCH POINT

NOTES:

1. SWITCH POINTS TO BE MADE FROM NEW HIGH STRENGTH RAIL.
2. 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.
3. LEFT HAND TURNOUT SHOWN. MAKE OPPOSITE HAND FOR RIGHT HAND SWITCH POINT.
4. SIDE PLANING FIGURED ON GAUGE LINE 5/8" BELOW TOP OF RAIL.
5. MATERIAL AND WORKMANSHIP, ALSO ANY CONSTRUCTION DETAILS NOT SHOWN, SHALL BE PER CURRENT AREMA "TRACKWORK PLANS AND SPECIFICATIONS", UNLESS OTHERWISE SPECIFIED ON THIS PLAN.
6. IN ORDER TO ELIMINATE STRESS RAISERS, MANUFACTURER SHALL PEEN THE EDGES OF THE BOLT HOLES AS INDICATED AT THE HEEL OF THE SWITCH POINT AND AT 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.
7. THE CONTOUR PLANING SHALL BE ON THE GAUGE SIDE BEGINNING AT A DISTANCE OF 3'-0" FROM THE POINT OF SWITCH AND SHALL BE SHAPED TO THE CONTOUR OF A NEW 136 LB RE RAIL AND SHALL RUN OUT AT THE END OF THE TOP PLANING, WHERE THE SWITCH POINT HAS FULL HEAD CONTOUR.
8. METAL IDENTIFICATION TAG SHOWING (1) DESIGN LENGTH OF SWITCH, (2) IN PARENTHESES, THE ACTUAL LENGTH OF SWITCH POINT RAIL AND (3) THE TURNOUT NUMBER. MARK TAG THUS: 22'-8 1/2" NO 10. TAG TO BE FASTENED TO SWITCH POINT, ON GAUGE 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 END HARDEN RAIL END.
10. NON - INTERLOCKED AND INTERLOCKED SWITCH POINTS ARE MADE THE SAME.
11. UNLESS SWITCH POINT ORDER SPECIFICALLY CALLS FOR USE OF 3/4" RIVETS AND 3/4" STOP BOLTS, MANUFACTURER CAN SUBSTITUTE 3/4" HACK FASTENERS, BOLT PART NOC-50-LR-BR2416 AND COLLAR PART NO L3-2-R-24G FOR 3/4" RIVETS. FOR 3/4" STOP BOLTS USE HUCK FASTENERS, BOLT PART NO C-50-LR-BR2424 AND COLLAR PART NO L3-2-R-24G.

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

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

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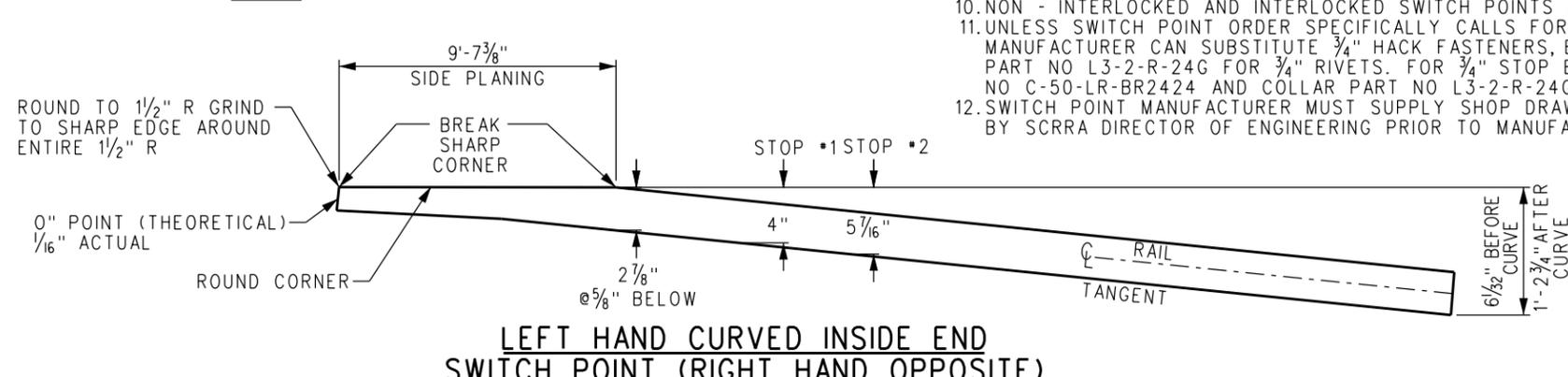
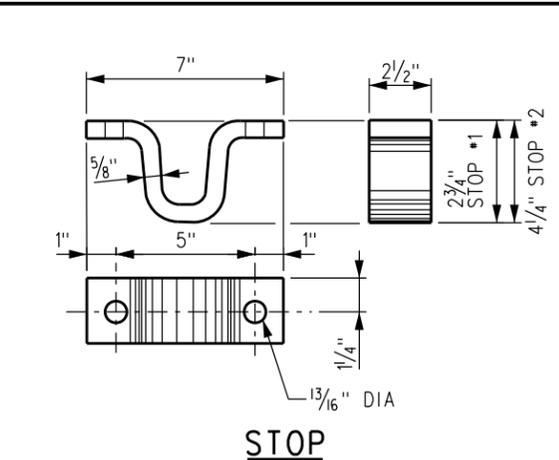
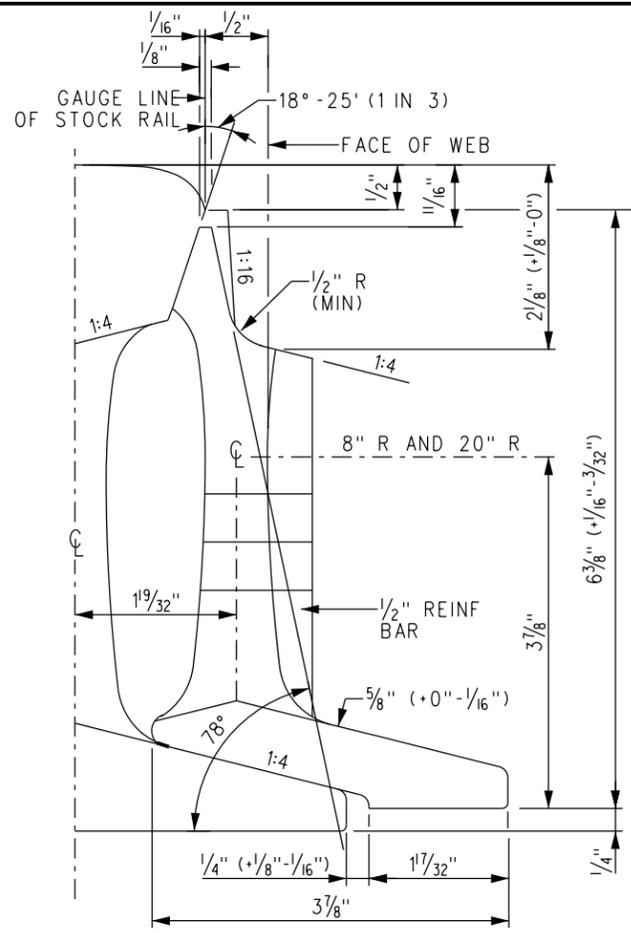
METROLINK

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

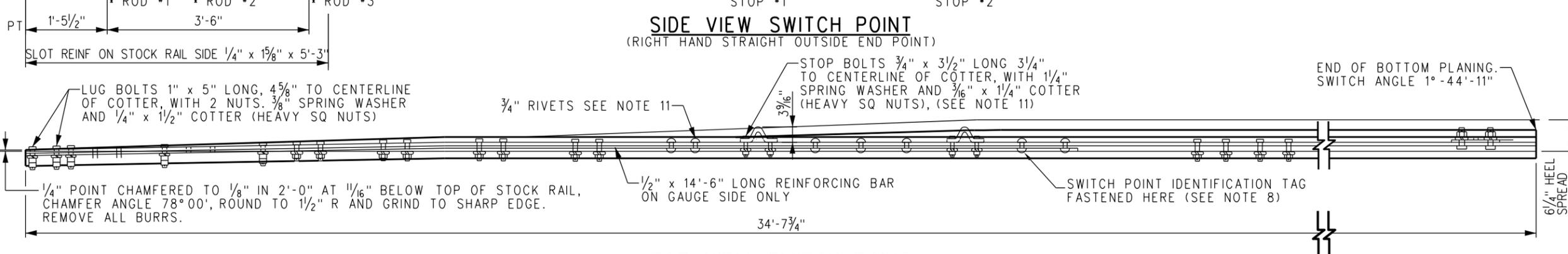
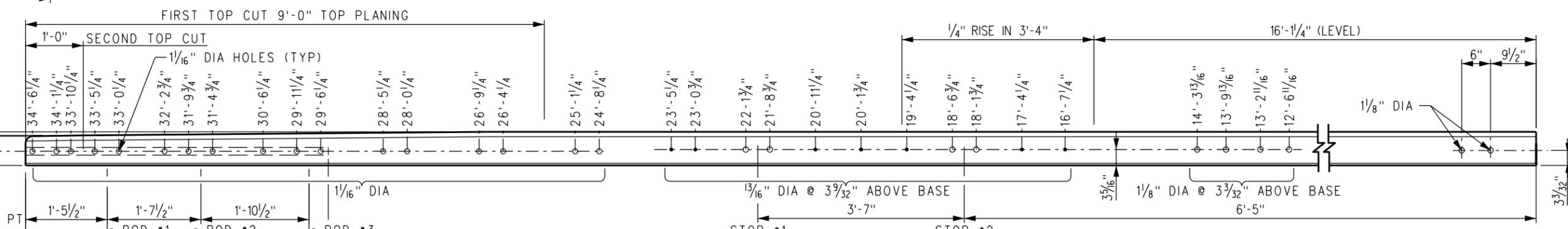
ENGINEERING STANDARDS

136 LB RE 22'-8 1/2" STRAIGHT SWITCH POINT
 NO 10 DOUBLE SLIP CROSSING

STANDARD	2841
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2841-11



- NOTES:**
- SWITCH POINTS TO BE MADE FROM NEW HIGH STRENGTH RAIL.
 - 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.
 - LEFT HAND TURNOUT SHOWN. MAKE OPPOSITE HAND FOR RIGHT HAND SWITCH POINT.
 - SIDE PLANING FIGURED ON GAUGE LINE $\frac{5}{8}$ " BELOW TOP OF RAIL.
 - MATERIAL AND WORKMANSHIP, ALSO ANY CONSTRUCTION DETAILS NOT SHOWN, SHALL BE PER CURRENT AREMA "TRACKWORK PLANS AND SPECIFICATIONS", 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 THE SWITCH POINT AND AT 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 GAUGE SIDE BEGINNING AT A DISTANCE OF 3'-0" 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 THE TOP PLANING, WHERE THE SWITCH POINT HAS FULL HEAD CONTOUR.
 - METAL IDENTIFICATION TAG SHOWING (1) DESIGN LENGTH OF SWITCH, (2) IN PARENTHESES, THE ACTUAL LENGTH OF SWITCH POINT RAIL AND (3) THE TURNOUT NUMBER. MARK TAG THUS: 22'-8 $\frac{1}{2}$ " NO 10. TAG TO BE FASTENED TO SWITCH POINT, ON GAUGE SIDE OF RAIL AT HEEL SPACER BLOCK IN LOCATION SHOWN.
 - AT HEEL END OF SWITCH POINT RAIL, BREAK SHARP CORNER AROUND THE ENTIRE PERIPHERY BY SLIGHTLY GRINDING. ALSO, DO NOT END HARDEN RAIL END.
 - NON - INTERLOCKED AND INTERLOCKED SWITCH POINTS ARE MADE THE SAME.
 - UNLESS SWITCH POINT ORDER SPECIFICALLY CALLS FOR USE OF $\frac{3}{4}$ " RIVETS AND $\frac{3}{4}$ " STOP BOLTS, MANUFACTURER CAN SUBSTITUTE $\frac{3}{4}$ " HACK FASTENERS, BOLT PART NO C-50-LR-BR2416 AND COLLAR PART NO L3-2-R-24G FOR $\frac{3}{4}$ " RIVETS. FOR $\frac{3}{4}$ " STOP BOLTS USE HUCK FASTENERS, BOLT PART NO C-50-LR-BR2424 AND COLLAR PART NO L3-2-R-24G.
 - SWITCH POINT MANUFACTURER MUST SUPPLY SHOP DRAWINGS OF MANGANESE STEEL INSERT FOR APPROVAL BY SCRRRA DIRECTOR OF ENGINEERING PRIOR TO MANUFACTURING OF INSERT.



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

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

Narek D. Pape
ASSISTANT DIRECTOR: STANDARDS & DESIGN

William D. Davis
DIRECTOR OF ENGINEERING AND CONSTRUCTION

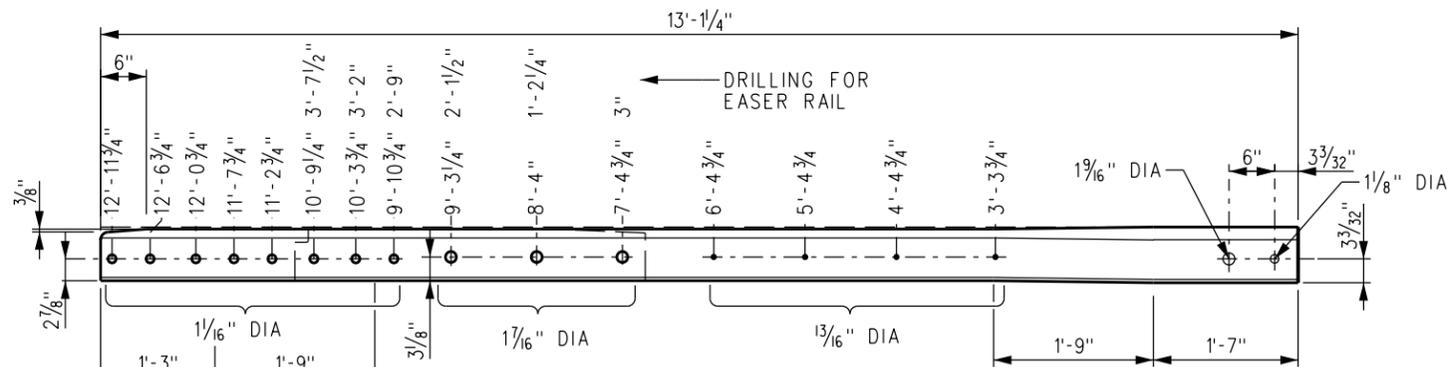
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ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

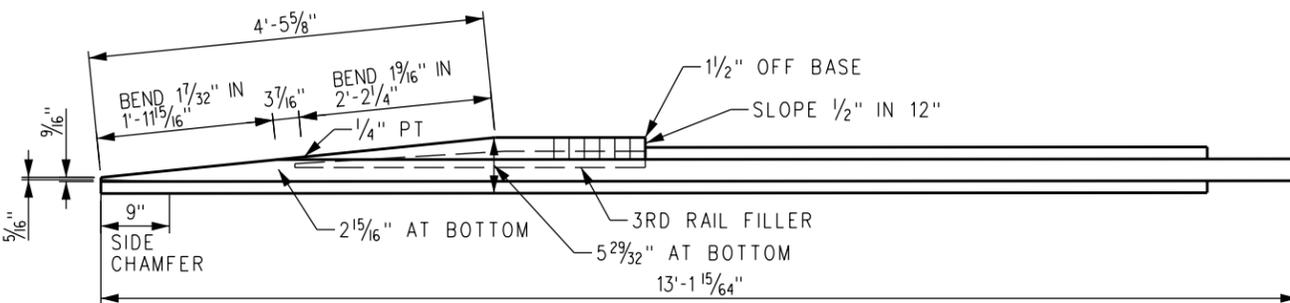
ENGINEERING STANDARDS

136 LB RE 34'-7 $\frac{3}{4}$ " CURVED SWITCH POINT
NO 10 DOUBLE SLIP CROSSING

STANDARD 2841
SCALE: NTS
REVISION SHEET 1 OF 1
CADD FILE: ES2841-12

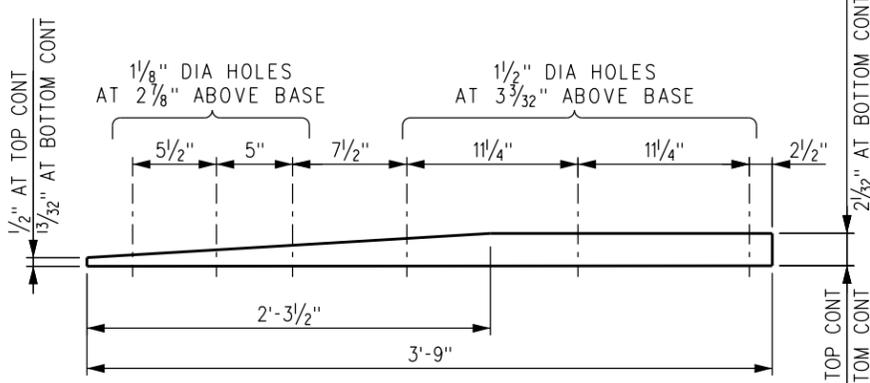


MOVEABLE CENTER POINT
(LEFT HAND AS SHOWN)

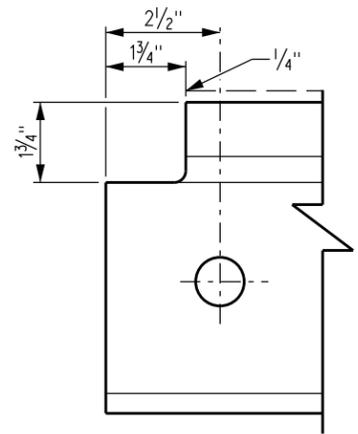


TOP VIEW MOVEABLE CENTER POINT

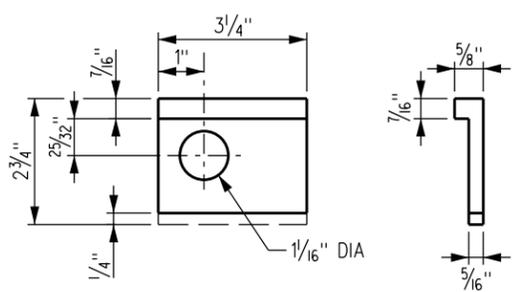
ABBREVIATIONS:
CONT = CONTOUR



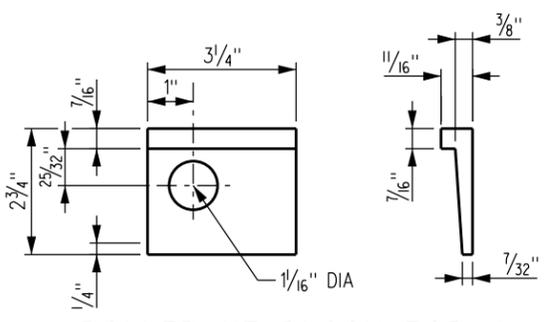
3RD RAIL FILLER - (1) PER MOVEABLE POINT
(MATERIAL - 2 1/4" x 5" - MACHINE AS SHOWN)



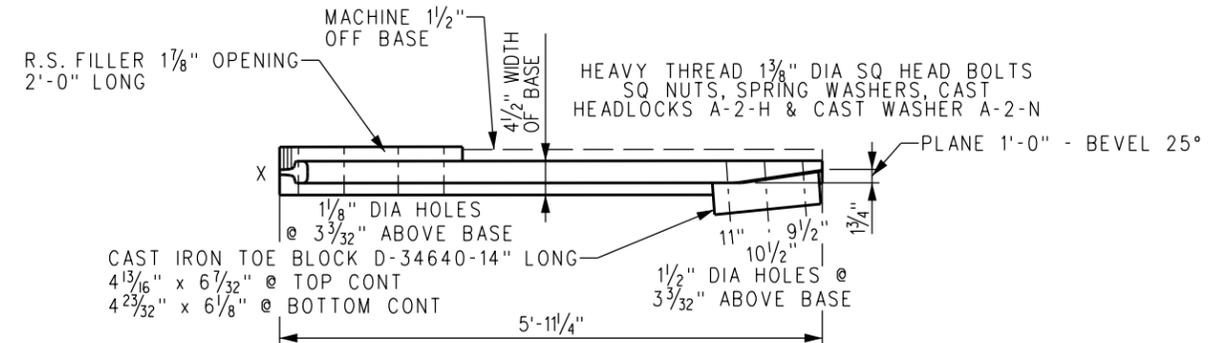
VIEW AT EASER RAIL POINT END



ROLLED HEADLOCK FOR 1, 2 AND 3



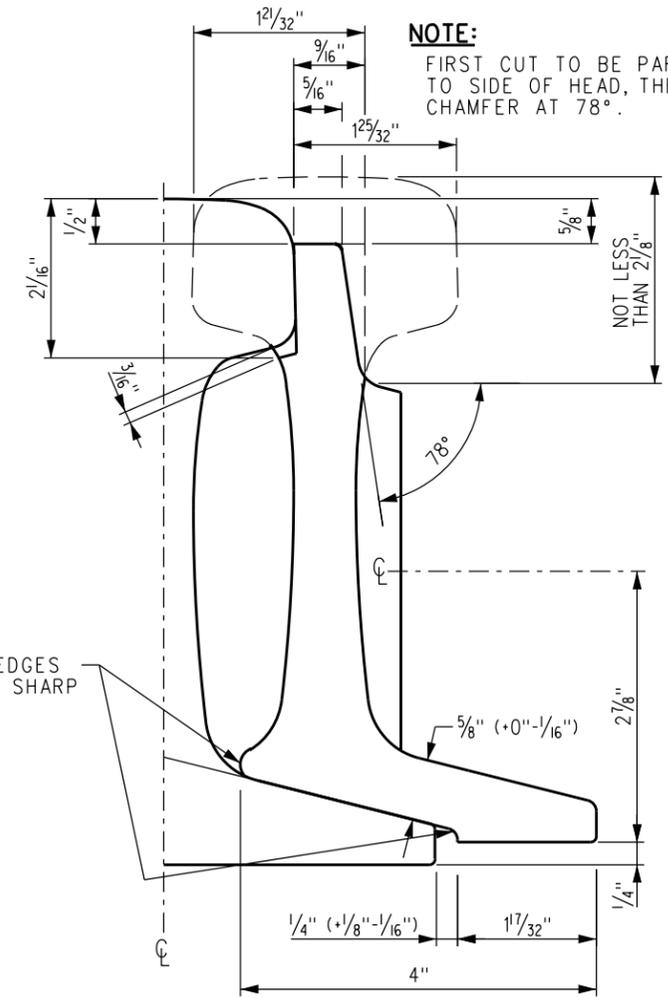
ROLLED HEADLOCK FOR 4



RIGHT HAND BRACE RAIL 5'-11 1/4\" (STRAIGHT)
(TWO REQUIRED)

COLLECTIVE DRILLING FROM END X
2 7/16" x 8 7/16" x 1'-3 9/16" x 1'-9 9/16" x 4'-10 25/32" x 5'-3 25/32" x 5'-8 25/32"

NOTE:
FIRST CUT TO BE PARALLEL TO SIDE OF HEAD, THEN CHAMFER AT 78°.



END VIEW OF POINT

REMOVE POINTED EDGES AND CHAMFER OFF SHARP CORNERS

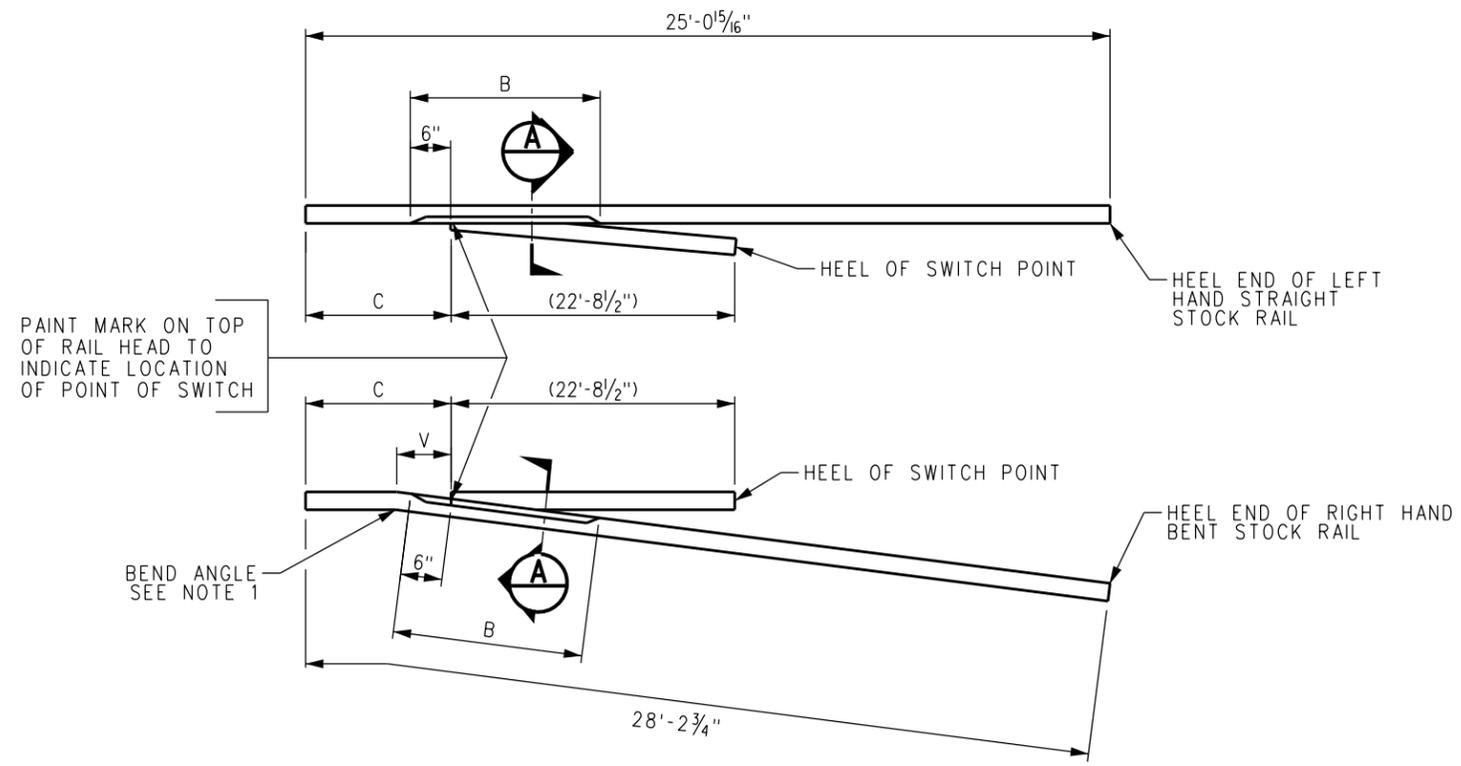
REV.	DATE	DESCRIPTION	DES.	ENG.
X	XX-XX-XX	REVISION	XX	XX
DRAWN BY: A. CARLOS DATE: 03/31/2011 Assistant Director: Standards & Design Director of Engineering and Construction				

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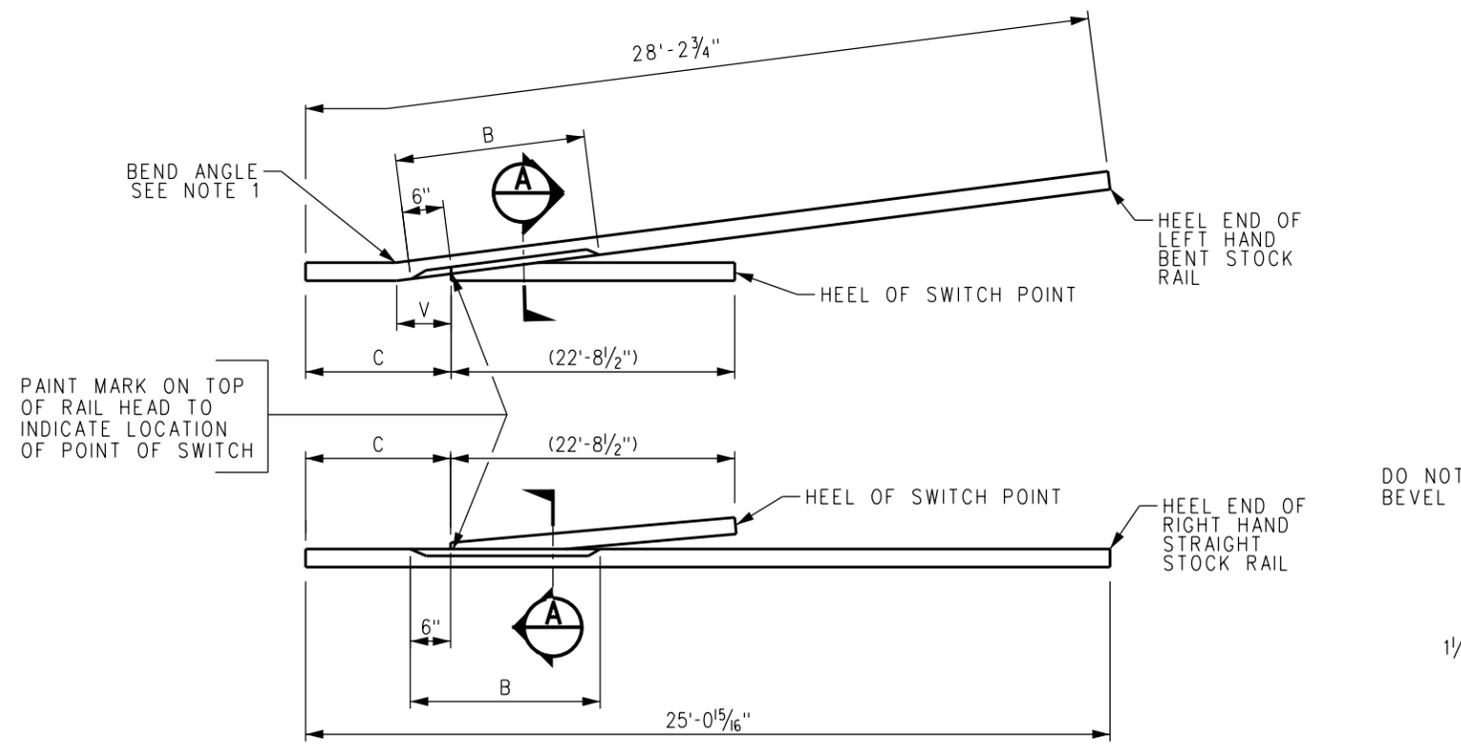
METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
136 LB RE MOVEABLE CENTER POINT,
3RD RAIL FILLER AND BRACE RAIL DETAILS
NO 10 DOUBLE SLIP CROSSING

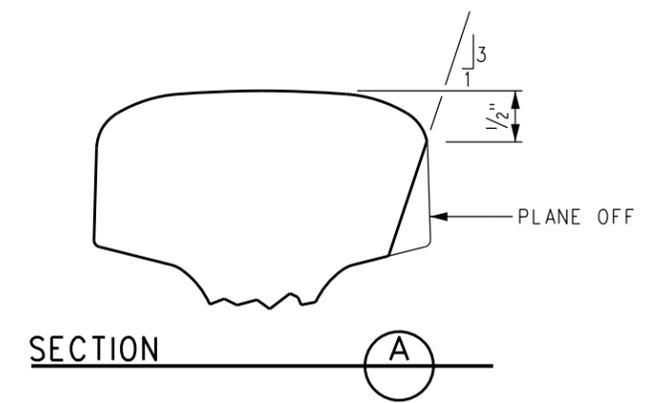
STANDARD	2841
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2841-13



STOCK RAILS ARE SHOWN FOR "RIGHT HAND TURNOUT"



STOCK RAILS ARE SHOWN FOR "LEFT HAND TURNOUT"

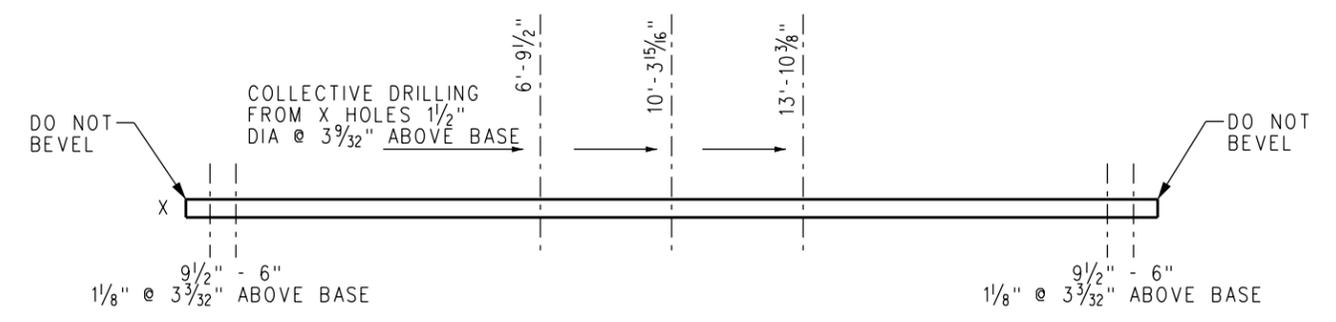


LENGTHS B, C, & D FOR 136 LB RAIL						
SW PT LENGTH	TO NO	STOCK RAIL	B	FOR NEW INSTALLATION		
				C	D	END DRILL SEE NO 10
22'-8 1/2"	10	STR	11'-0"	3'-11"	25'-0 15/16"	NONE
22'-8 1/2"	10	BENT	11'-0"	3'-11"	28'-2 3/4"	HEEL END ONLY

NOTE:

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

SW LENGTH	BEND ANGLE	V (VERTEX DIST)
22'-8 1/2"	1° - 44' - 11" OR 1" IN 2'-9"	10 5/16"



OUTSIDE SLIP RAIL - 20'-7 7/8" LONG

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

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

Nareh D. Pae
ASSISTANT DIRECTOR: STANDARDS & DESIGN

William D. Davis
DIRECTOR OF ENGINEERING AND CONSTRUCTION

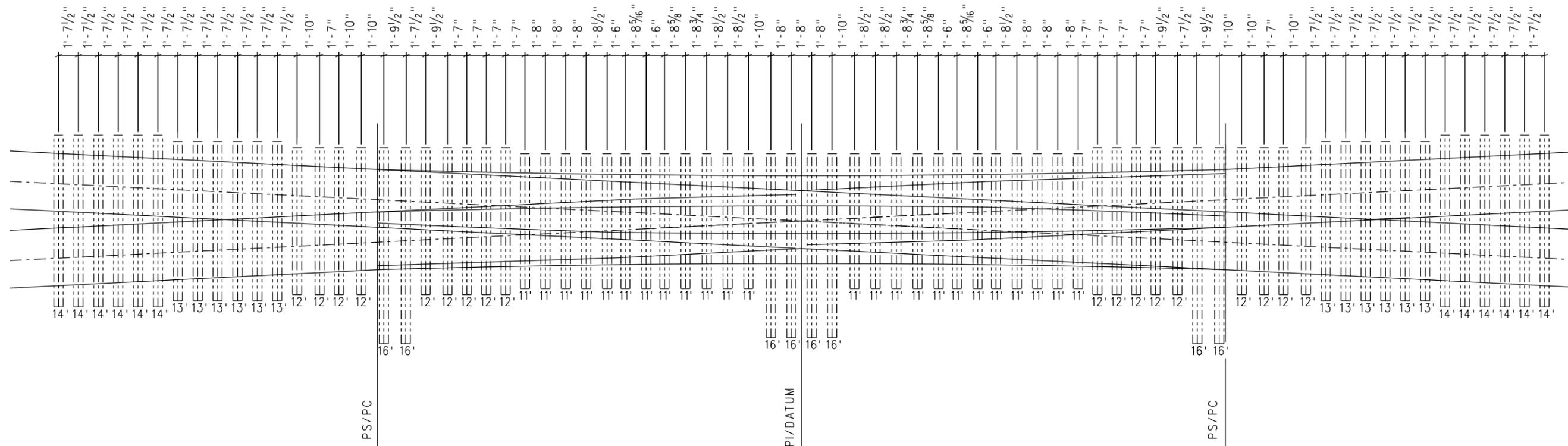
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METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS

UNDERCUT STOCK RAILS FOR
22'-8 1/2" SWITCH POINTS FOR
NO 10 DOUBLE SLIP CROSSING

STANDARD	2841
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2841-14



BILL OF SWITCH TIES			
PIECES	SIZE	LENGTH	BOARD FEET
24	7"x9"	11'-0"	1386
18	7"x9"	12'-0"	1134
12	7"x9"	13'-0"	819
12	7"x9"	14'-0"	882
0	7"x9"	15'-0"	0
8	7"x9"	16'-0"	672
TOTAL			TOTAL
74			4,893

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

DRAWN BY: *Nareh D. Papp* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Dava
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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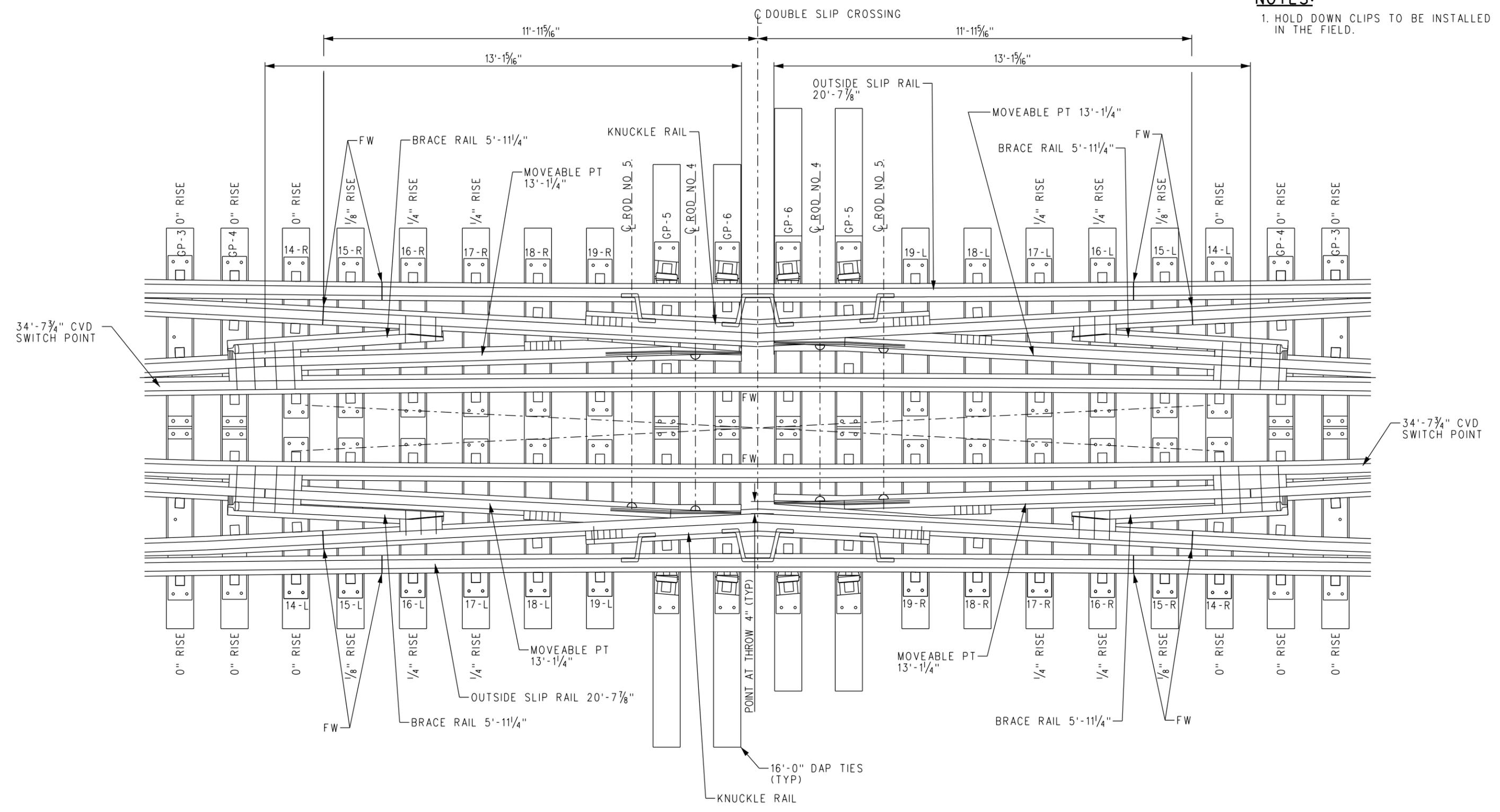
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 NO 10 136 LB RE DOUBLE SLIP CROSSING
 TIMBER TIE LAYOUT

STANDARD	2841
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2841-30

NOTES:

1. HOLD DOWN CLIPS TO BE INSTALLED IN THE FIELD.



NO 10 DOUBLE SLIP CROSSING

REFERENCE DRAWING:

LAYOUT - NO 10, DOUBLE SLIP CROSSING - 136 LB RE RAIL - SHEET NO 2841-02

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

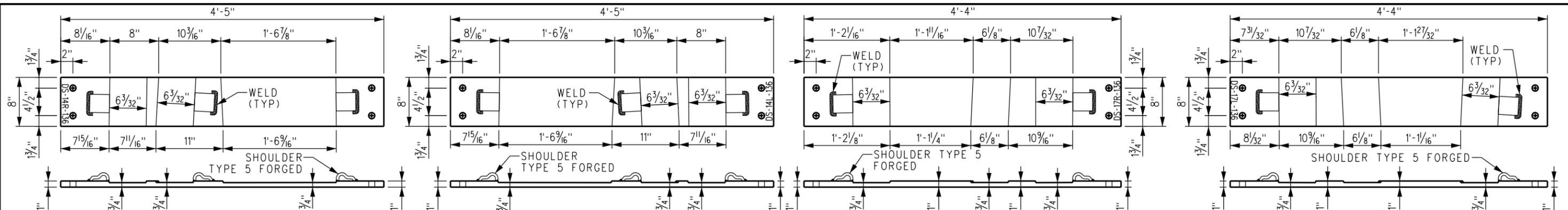
DRAWN BY: A. CARLOS DATE: 03/31/2011
 Assistant Director: Standards & Design
 Director of Engineering and Construction

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

ENGINEERING STANDARDS
 NO 10 DOUBLE SLIP CROSSING
 CENTER SECTION LAYOUT
 136 LB RE RAIL

STANDARD	2841
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2841-41

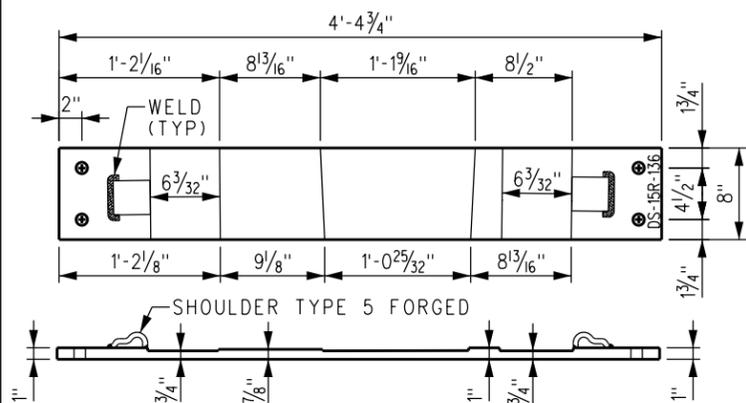


BRACE PLATE - 14R
 1" x 8" x 4'-5" - MILLED - W/ADJ RAIL BRACE
 (2 REQUIRED PER SLIP SWITCH)

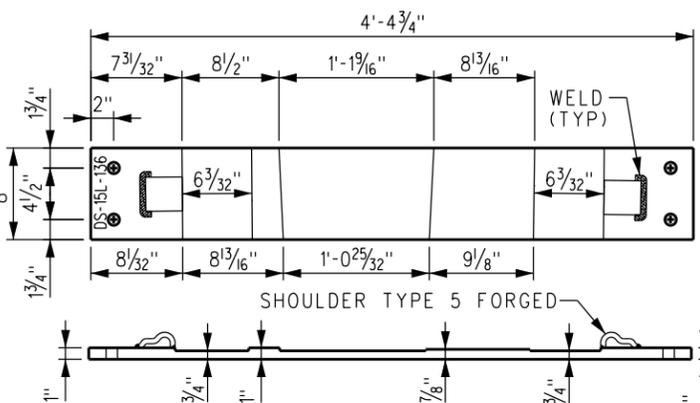
BRACE PLATE - 14L
 1" x 8" x 4'-5" - MILLED - W/ADJ RAIL BRACE
 (2 REQUIRED PER SLIP SWITCH)

BRACE PLATE - 17R
 1" x 8" x 4'-4" - MILLED - W/ADJ RAIL BRACE
 (2 REQUIRED PER SLIP SWITCH)

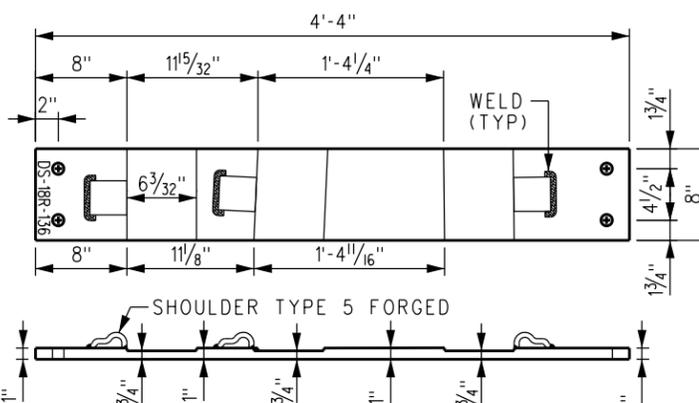
BRACE PLATE - 17L
 1" x 8" x 4'-4" - MILLED - W/ADJ RAIL BRACE
 (2 REQUIRED PER SLIP SWITCH)



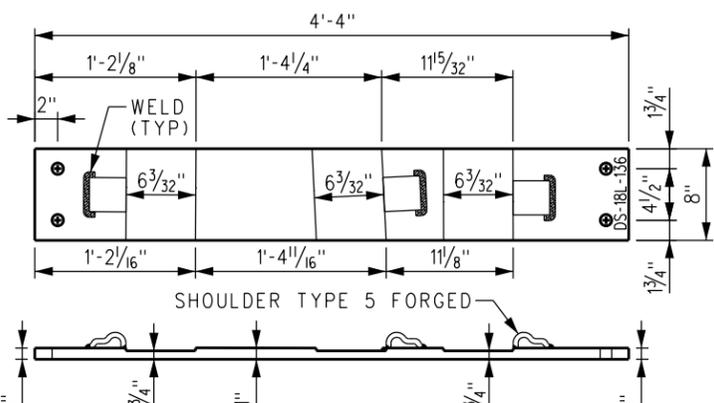
BRACE PLATE - 15R
 1" x 8" x 4'-4 3/4" - MILLED - W/ADJ RAIL BRACE
 (2 REQUIRED PER SLIP SWITCH)



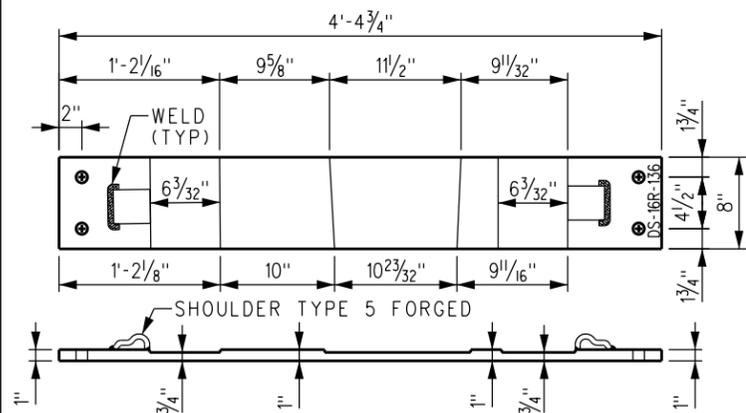
BRACE PLATE - 15L
 1" x 8" x 4'-4 3/4" - MILLED - W/ADJ RAIL BRACE
 (2 REQUIRED PER SLIP SWITCH)



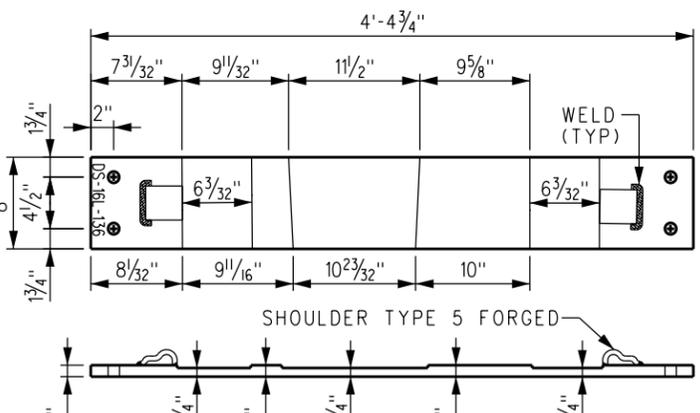
BRACE PLATE - 18R
 1" x 8" x 4'-4" - MILLED - W/ADJ RAIL BRACE
 (2 REQUIRED PER SLIP SWITCH)



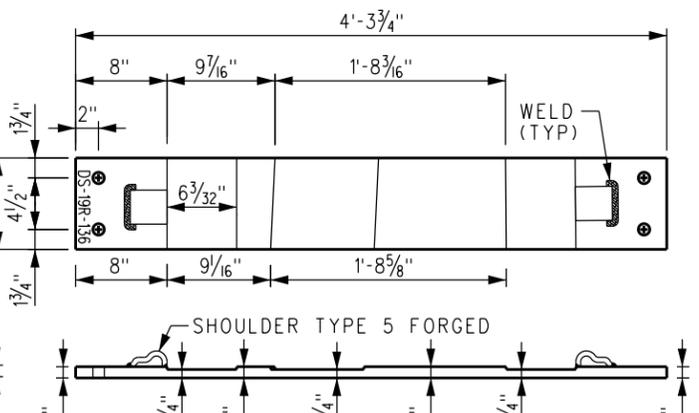
BRACE PLATE - 18L
 1" x 8" x 4'-4" - MILLED - W/ADJ RAIL BRACE
 (2 REQUIRED PER SLIP SWITCH)



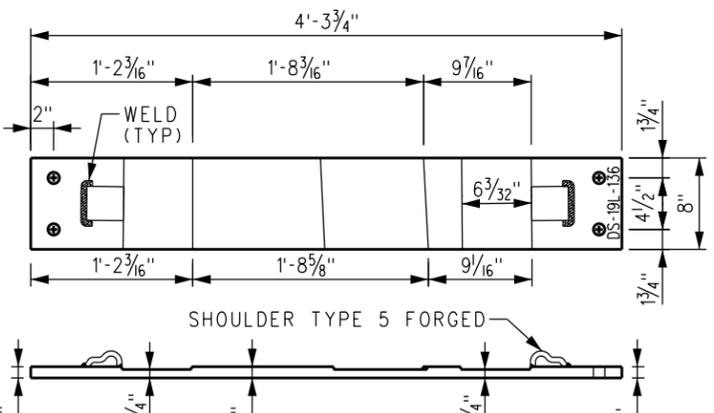
BRACE PLATE - 16R
 1" x 8" x 4'-4 3/4" - MILLED - W/ADJ RAIL BRACE
 (2 REQUIRED PER SLIP SWITCH)



BRACE PLATE - 16L
 1" x 8" x 4'-4 3/4" - MILLED - W/ADJ RAIL BRACE
 (2 REQUIRED PER SLIP SWITCH)



BRACE PLATE - 19R
 1" x 8" x 4'-3 3/4" - MILLED - W/ADJ RAIL BRACE
 (2 REQUIRED PER SLIP SWITCH)



BRACE PLATE - 19L
 1" x 8" x 4'-3 3/4" - MILLED - W/ADJ RAIL BRACE
 (2 REQUIRED PER SLIP SWITCH)

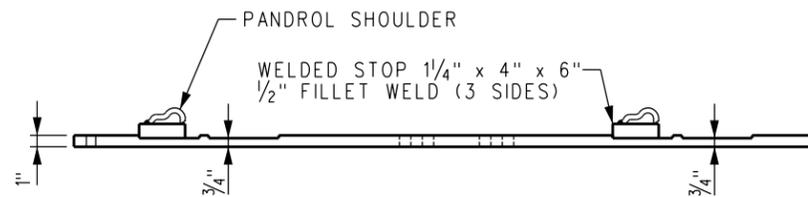
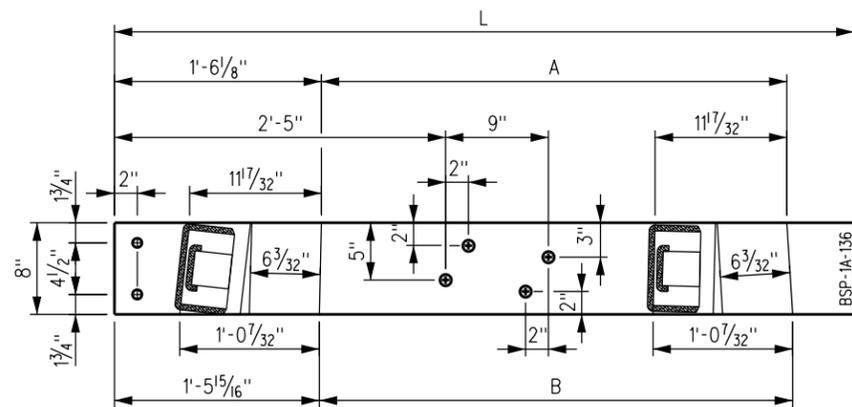
NOTES:

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 (RH OR LH).
3. PANDROL SHOULDER TO BE TYPE 5 FORGED.
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.
6. ALL WELDS ARE 1/2" FILLET WELDS UNLESS OTHERWISE NOTED.
7. HOLES IN PLATES ARE 1" IN DIA UNLESS OTHERWISE NOTED.

REFERENCE DRAWING

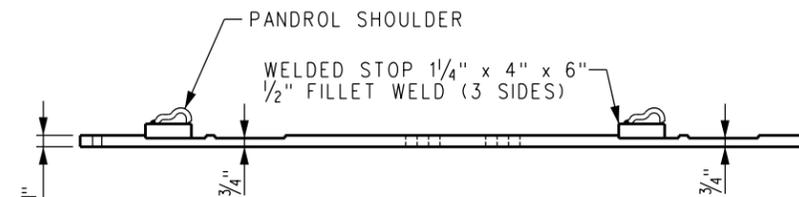
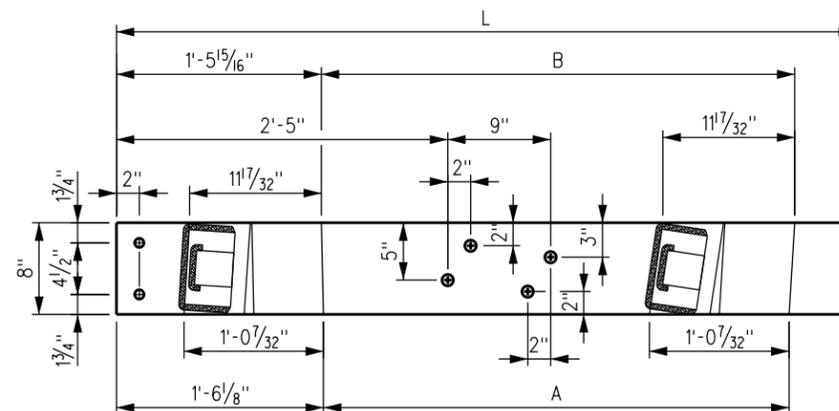
LAYOUT - NO 10, DOUBLE SLIP CROSSING - 136 LB ----- SHEET NO 2841-02

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.		<p>METROLINK SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012</p>		ENGINEERING STANDARDS		STANDARD
 ASSISTANT DIRECTOR: STANDARDS & DESIGN		 DIRECTOR OF ENGINEERING AND CONSTRUCTION		BRACE PLATE AND SLIDE PLATE DETAILS NO 10 136 LB RE DOUBLE SLIP CROSSING				2841		
REV.	DATE	DESCRIPTION	DES.	ENG.			SCALE:	NTS		
X	XX-XX-XX		XX	XX			REVISION SHEET	1 OF 1		
							CADD FILE:	ES2841-46		



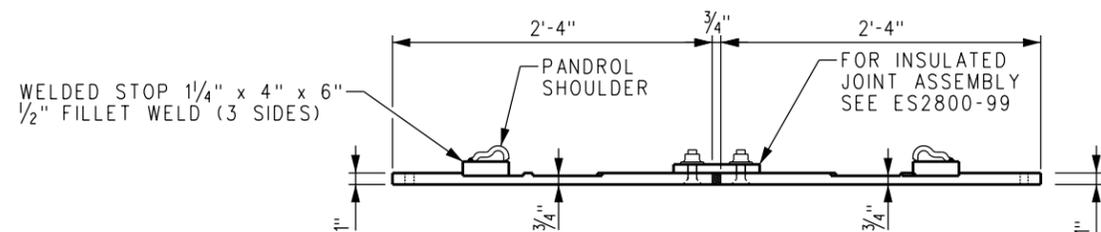
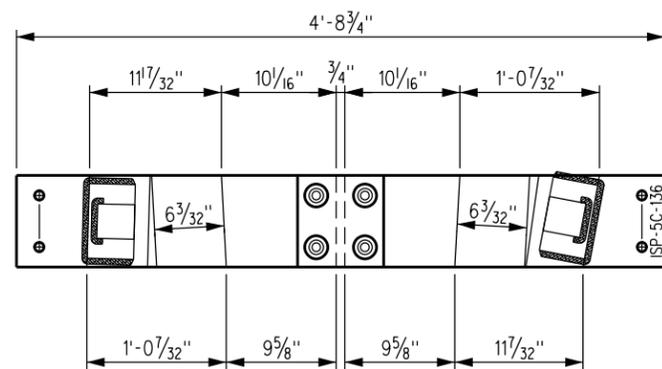
BRACE SLIDE PLATE
1" x 8" x L - (MILLED)

DIMENSION TABLE				
PLATE	A	B	L	NO REQ'D
1-A	3'-4 3/4"	3'-5 7/16"	5'-4 3/4"	2
2-A	3'-3 1/8"	3'-3 3/4"	5'-4 1/4"	2
3-A	3'-1 3/4"	3'-2 1/4"	5'-3 3/4"	2



BRACE SLIDE PLATE
1" x 8" x L - (MILLED)

DIMENSION TABLE				
PLATE	A	B	L	NO REQ'D
1-B	3'-4 3/4"	3'-5 7/16"	5'-4 3/4"	2
2-B	3'-3 1/8"	3'-3 3/4"	5'-4 1/4"	2
3-B	3'-1 3/4"	3'-2 1/4"	5'-3 3/4"	2



INSULATED SLIDE PLATE 5-C
1" x 8" - MILLED - (2 EACH REQ'D AS SHOWN)

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 (RH OR LH)
3. PANDROL SHOULDER TO BE TYPE 1 FORGED.
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.

REFERENCE DRAWING

LAYOUT - NO 10, DOUBLE SLIP CROSSING - 136 LB ----- SHEET NO 2841-02

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

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

 ASSISTANT DIRECTOR: STANDARDS & DESIGN

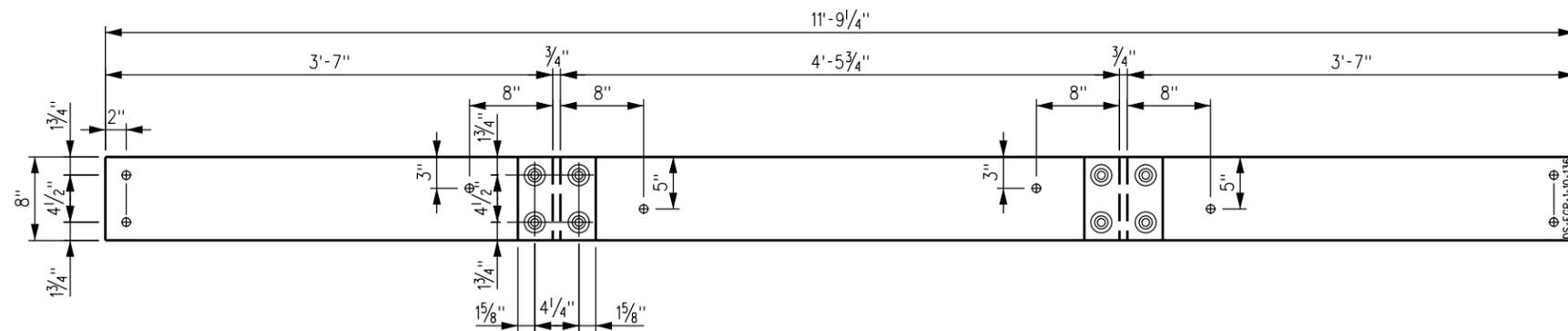
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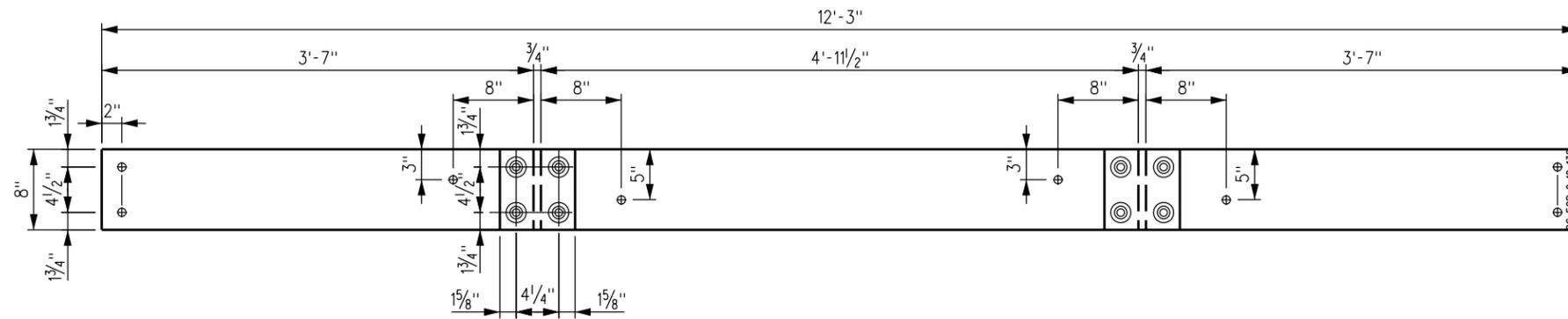
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 BRACE SLIDE PLATES
 AND INSULATED SLIDE PLATE DETAILS
 NO 10 136 LB RE DOUBLE SLIP CROSSING

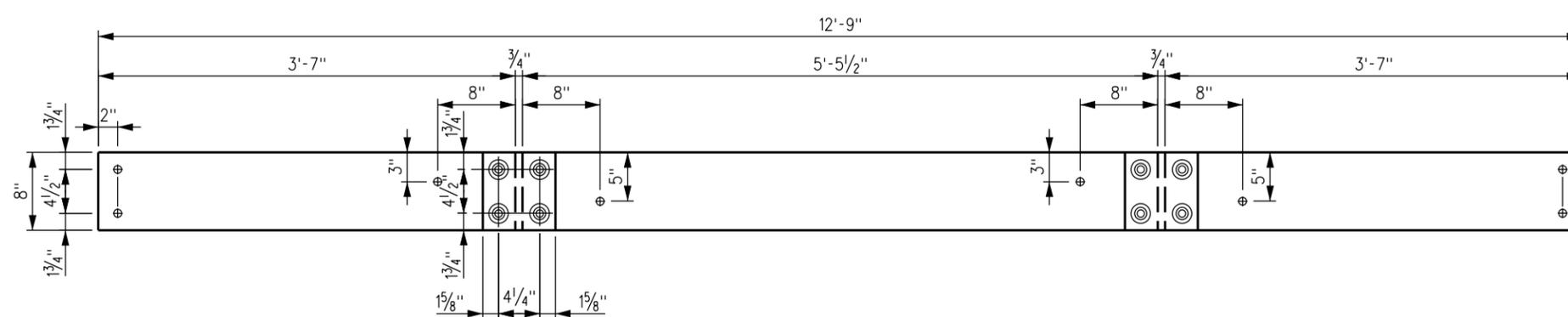
STANDARD	2841
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2841-47



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



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



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

NOTES:

1. STAMP PLATE WITH PROPER PLATE NUMBER AND WEIGHT OF RAIL.
2. HOLES IN PLATES ARE 1" IN DIA UNLESS OTHERWISE NOTED.

REFERENCE DRAWING

LAYOUT - NO 10, DOUBLE SLIP CROSSING - 136 LB ----- SHEET NO 2841-02

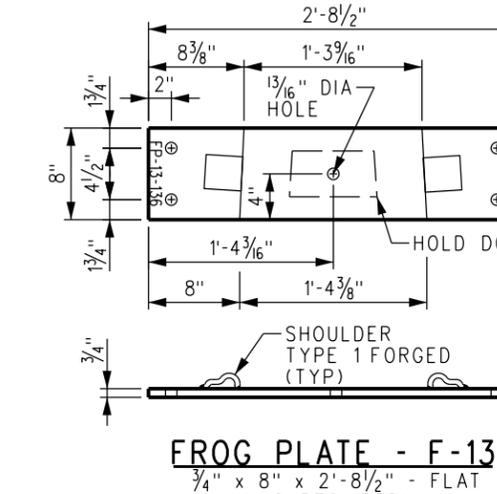
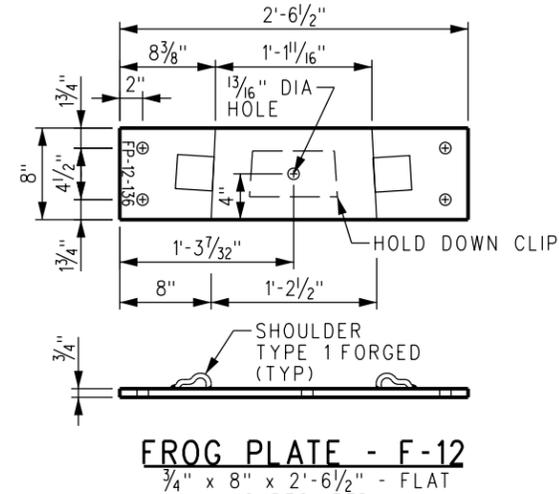
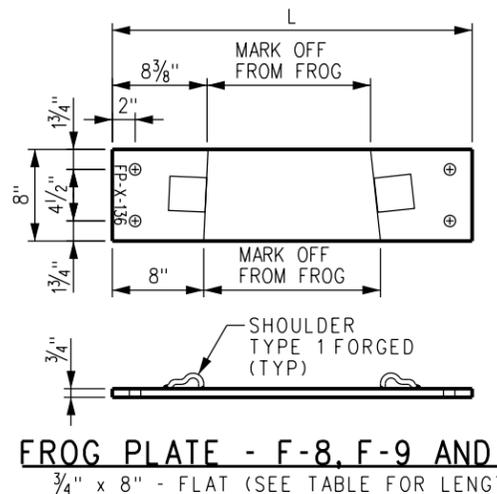
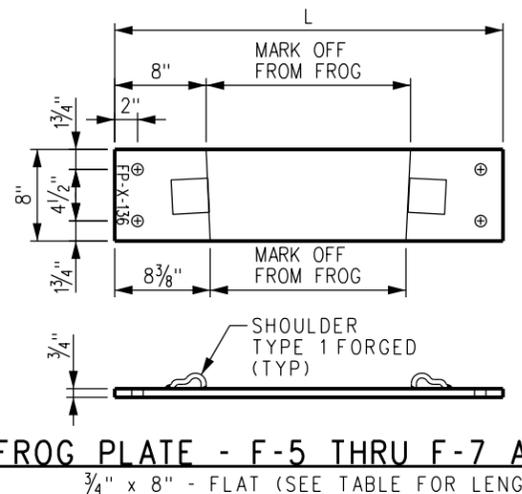
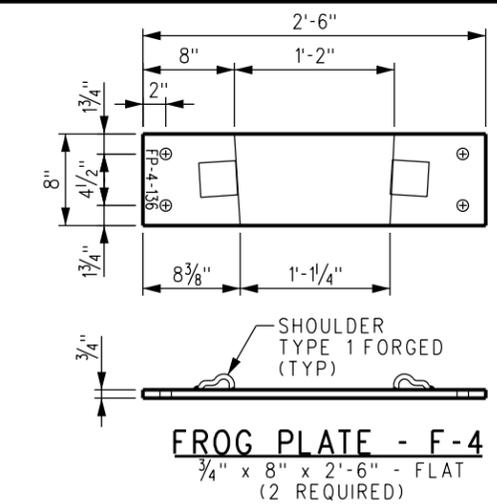
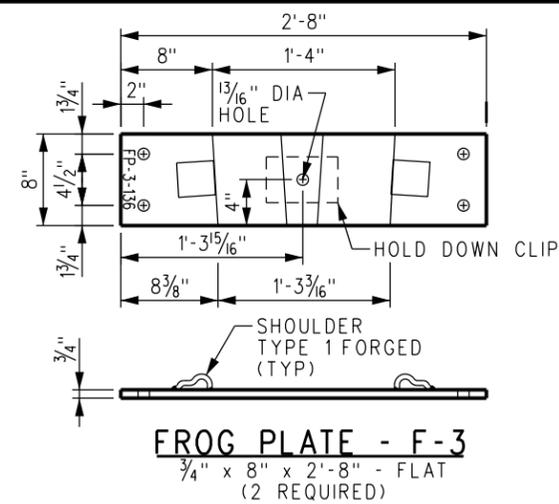
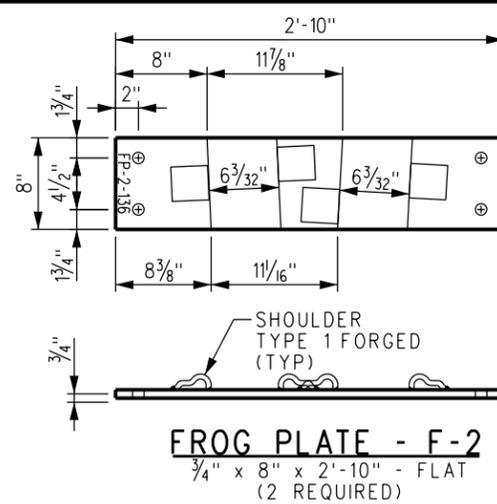
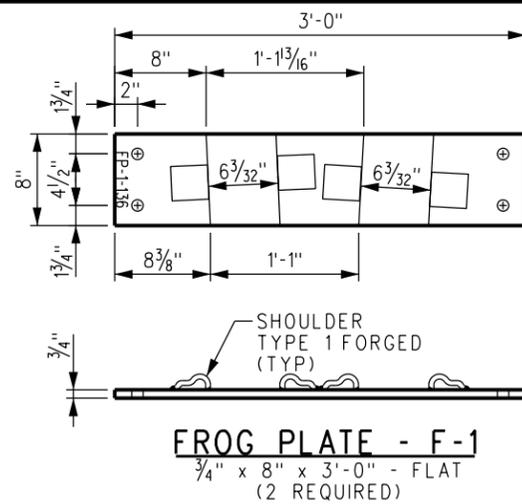
DRAWN BY: A. CARLOS DATE: 03/31/2011
Narek D. Pape
 ASSISTANT DIRECTOR- STANDARDS & DESIGN
William Dava
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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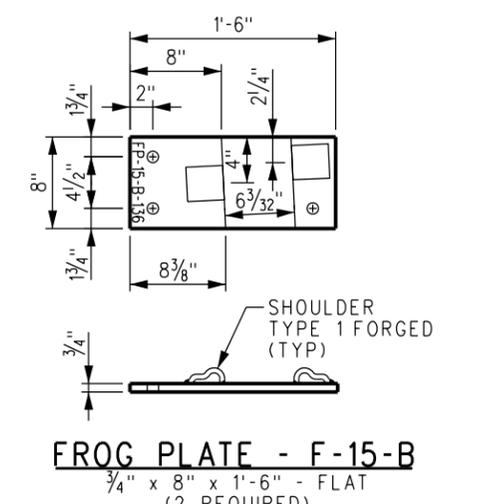
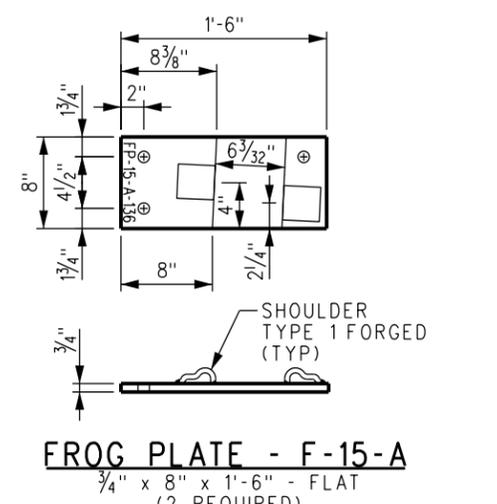
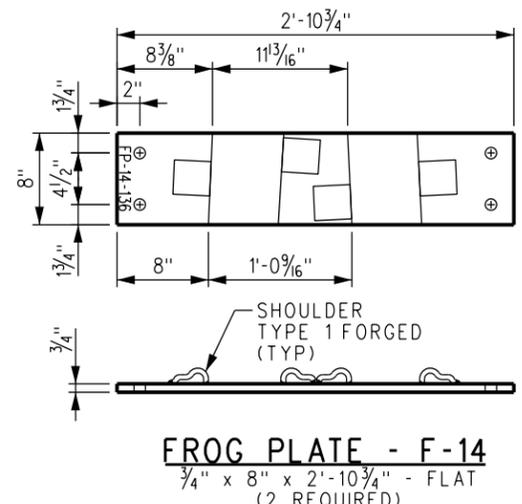
ENGINEERING STANDARDS
 DETAILS
 INSULATED FROG GAUGE PLATE
 NO 10 136 LB RE DOUBLE SLIP CROSSING

STANDARD	2841
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2841-48



DIMENSION TABLE		
PLATE	A	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

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

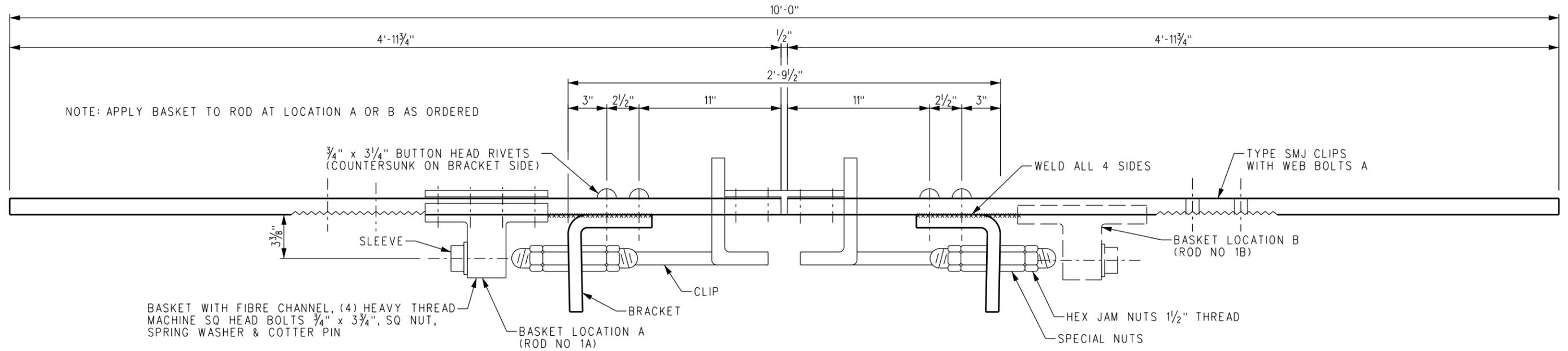


NOTES:
 1. STAMP PLATE WITH PROPER PLATE NUMBER AND WEIGHT OF RAIL.
 2. HOLES IN PLATES ARE 1" IN DIA UNLESS OTHERWISE NOTED.

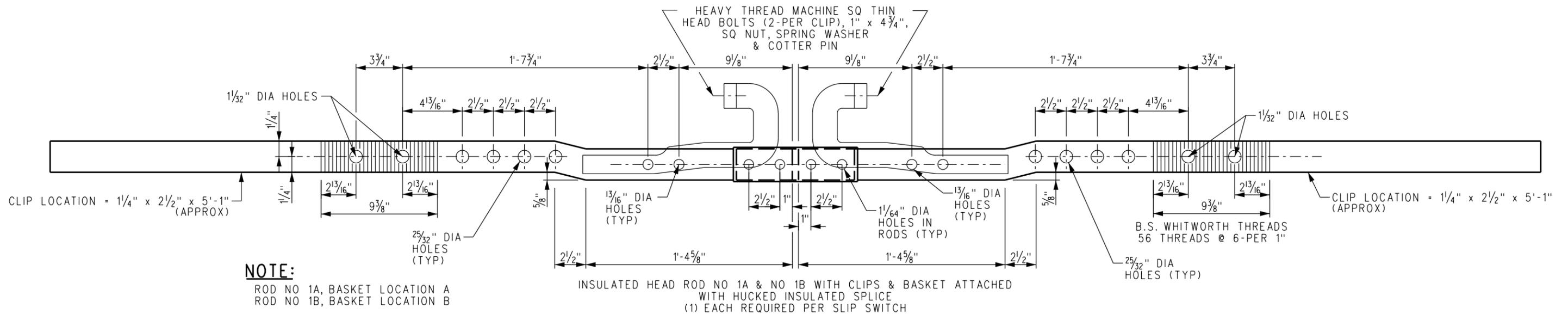
REFERENCE DRAWING
 LAYOUT - NO 10, DOUBLE SLIP CROSSING - 136 LB ----- SHEET NO 2841-02

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.		ENGINEERING STANDARDS FROG PLATE DETAILS NO 10 136 LB RE DOUBLE SLIP CROSSING	STANDARD: 2841
Nareh D. Papp ASSISTANT DIRECTOR: STANDARDS & DESIGN William Davan DIRECTOR OF ENGINEERING AND CONSTRUCTION					SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012
REV.	DATE	DESCRIPTION	DES.	ENG.	

INSIDE POINT OVERTEES = 10¹³/₁₆"
 OUTSIDE POINT OVERTEES = 7'-7¹/₂"



PLAN



ELEVATION

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

GAUGE = 4'-8 5/8"
 THROW AT POINT = 4" MIN, 4 1/2" MAX
 E DISTANCE = 1 19/32"
 PT = 0" SAMSON
 REINF = 1/2" D BOTH SIDES (SLOT 1/4" STOCK SIDE)
 ROD SPACING = 1'-6 5/8"
 BREAK ALL SHARP CORNERS
 DEBURR ALL HOLES

STAMP RODS WITH "RESPECTIVE ROD NO, 136, NO 10 DSS"

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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METROLINK

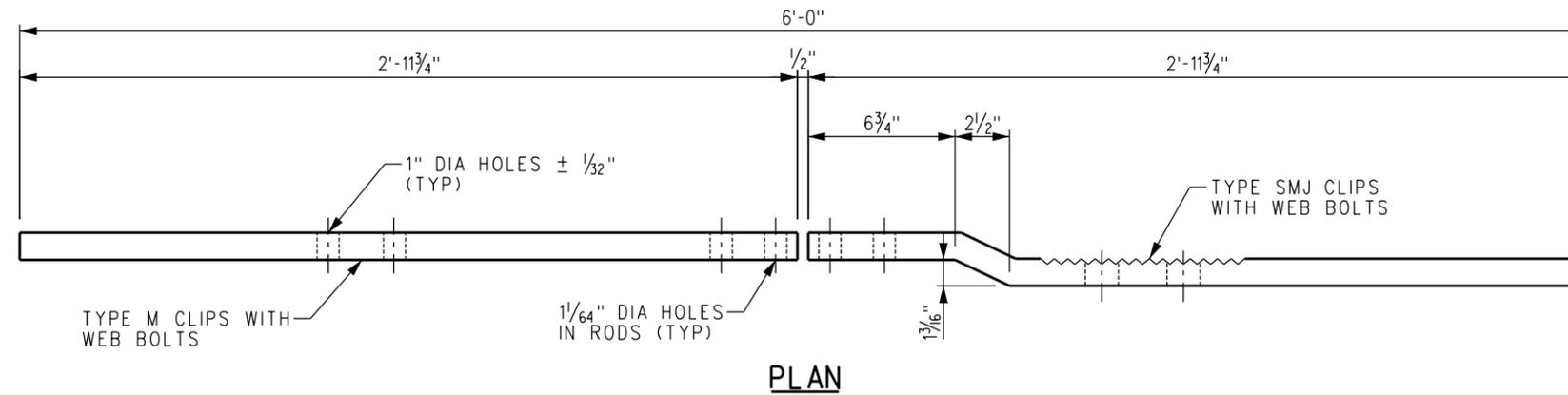
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS

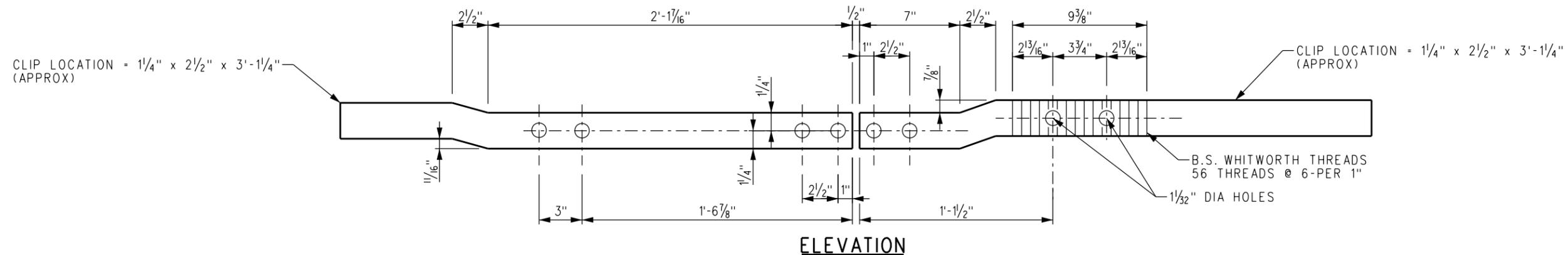
INSULATED HEAD ROD NO 1 FOR END POINTS
 NO 10 136 LB RE DOUBLE SLIP CROSSING

STANDARD	2841
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2841-50

OVERTEES = 4'-3³/₄"
(ADJUSTMENT 4'-3" TO 4'-4¹/₂")



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



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

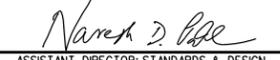
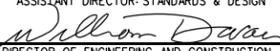
STAMP ROD WITH "RESPECTIVE ROD NO, 136, NO 10 DSS"

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

- GAUGE = 4'-8⁵/₈"
- THROW AT POINT = 4" MIN, 4 1/2" MAX
- E DISTANCE = 1¹⁹/₃₂"
- PT = 0" SAMSON
- REINF = 1/2" D BOTH SIDES (SLOT 1/4" STOCK)
- SIDE NO 2 ROD ONLY)
- ROD SPACING = 1'-6⁵/₈" x 3'-0 1/2" (NO 2 ROD)
- ROD SPACING = 1'-6⁵/₈" x 3'-5 1/2" (NO 3 ROD)

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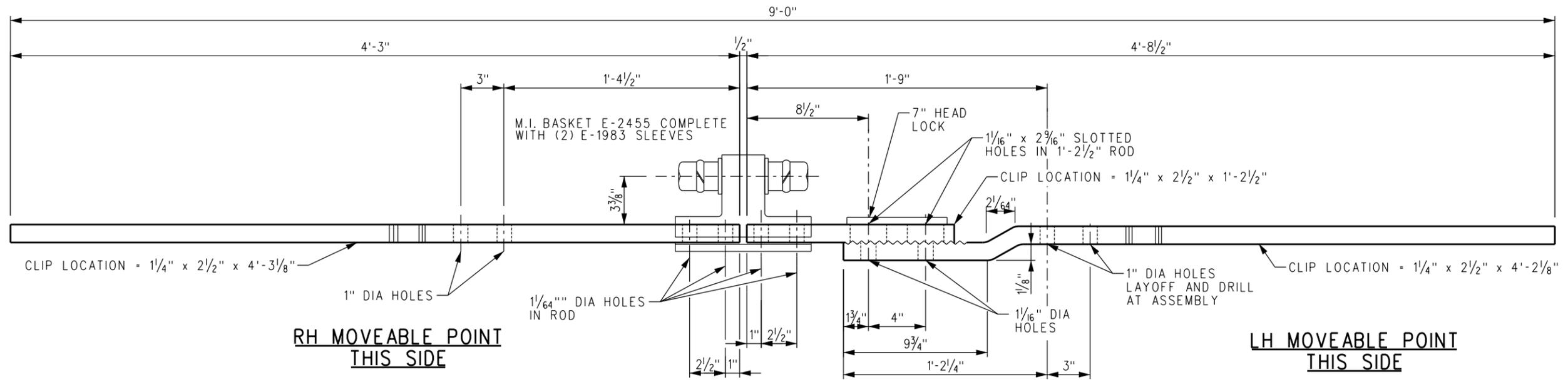
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS

INSULATED SPREAD RODS
NO 2 & 3 FOR END POINTS
NO 10 136 LB RE DOUBLE SLIP CROSSING

STANDARD	2841
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2841-51

OVERTEES = 4'-3 3/4" (ADJUSTMENT 4'-3" TO 4'-4 1/2")

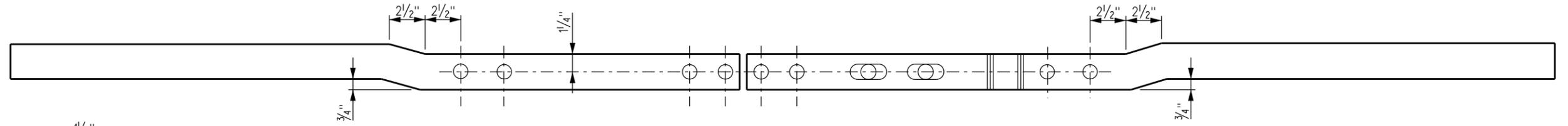


CLIP LOCATION = 1/4" x 2 1/2" x 4'-3 1/8"

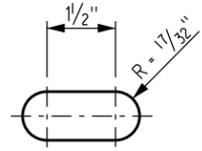
**RH MOVEABLE POINT
THIS SIDE**

**LH MOVEABLE POINT
THIS SIDE**

B.S. WHITWORTH THREADS
56 THREADS @ 6-PER 1"
FOR 8 3/4"

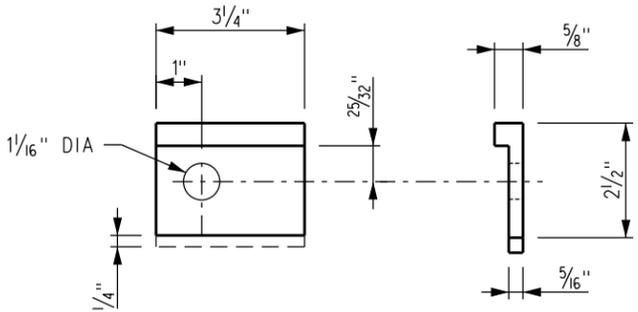


NO 4 HEAD ROD
(TWO REQUIRED PER CROSSING)



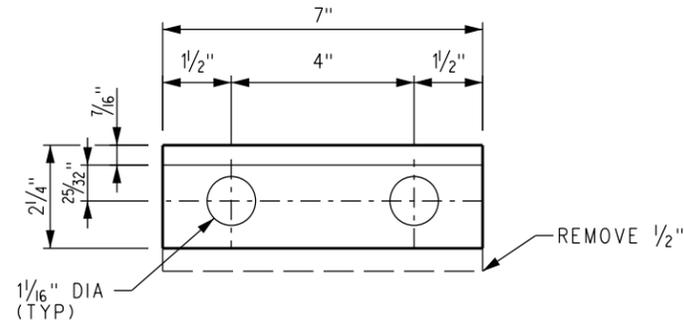
SLOTTED HOLE DETAIL
(1/16" x 2 9/16")

NOTE:
STAMP RODS WITH "RESPECTIVE ROD NO, 136, NO 10 DSS"



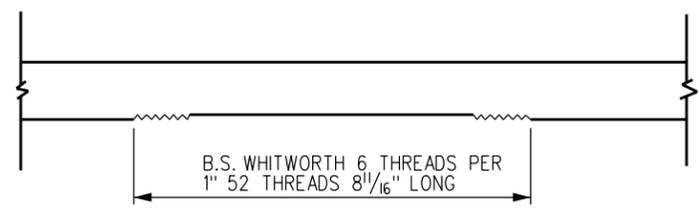
ROLLED HEADLOCK DETAIL

3/4" LONG (BETHLEHEM STEEL PART NO 834-0306)
(2) PIECES AS SHOWN FOR CLIP, LH MOVEABLE POINT
(2) PIECES OPPOSITE HAND FOR CLIP, RH MOVEABLE POINT



ROLLED HEADLOCK 7" LONG

(BETHLEHEM STEEL PART NO 834-0306)
(1) PIECE PER ROD
FURNISH: (2) HEAVY THREAD MACHINE SQ HEAD
BOLTS, 1" x 4 1/2" WITH SLOTTED HEX NUT,
SPRING WASHER & COTTER PIN



DETAIL OF SERRATIONS

(FOR 1'-2 1/2" LONG STRAIGHT &
4'-2 1/8" LONG BENT PIECE)

INSULATION MATERIAL

PER SRI-30 WITH COTTER, SLEEVE NUT
WITHOUT 1/4" SPACING WASHERS & 1/4" HEX NUTS.
TYPE M CLIP MUST BE WELDED TO ROD ALONG
BOTH SIDES OF BOTTOM OF CLIPS.
DEBURR ALL HOLES.

SWITCH INFORMATION

GAUGE = 4'-8 9/16"
THROW AT POINT = 4"
E DISTANCE = 12 7/32"
POINT = 9/16"
REINF = 1/2" D GAUGE SIDE
ROD SPACING = 1'-3"
HEEL SPREAD = 7 1/2"

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

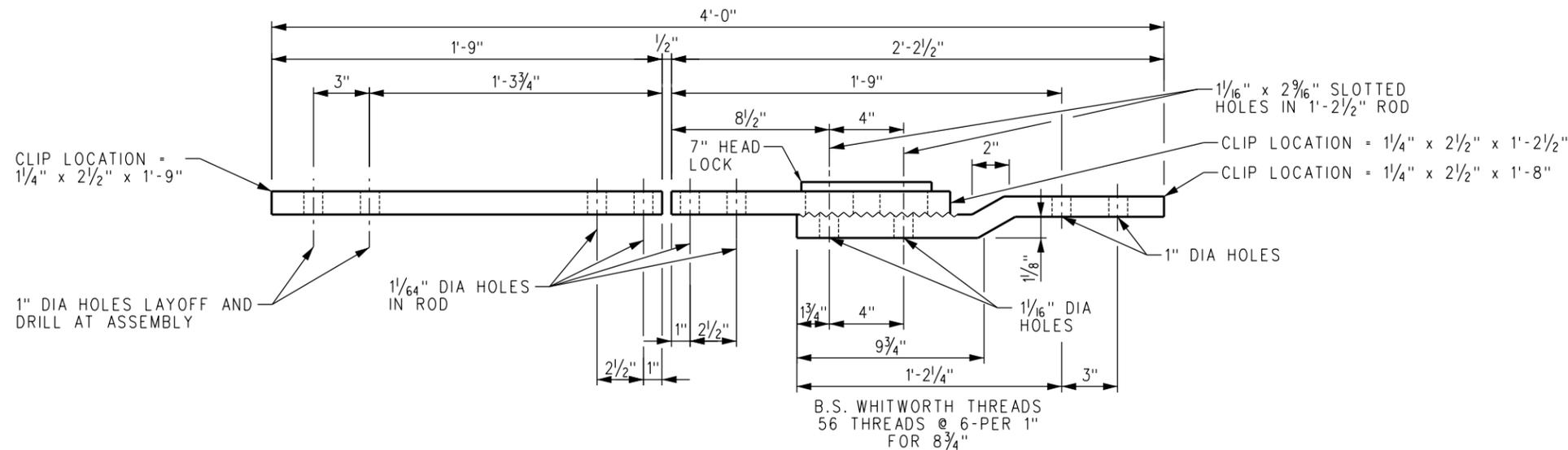
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ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
INSULATED HEAD ROD NO 4
FOR MOVEABLE CENTER POINTS
NO 10 136 LB RE DOUBLE SLIP CROSSING

STANDARD	2841
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2841-52

OVERTEES = 4'-3" (ADJUSTMENT 4'-2 1/4" TO 4'-3 3/4")



NOTE:

STAMP RODS WITH "RESPECTIVE ROD NO, 136, NO 10 DSS"

INSULATION MATERIAL

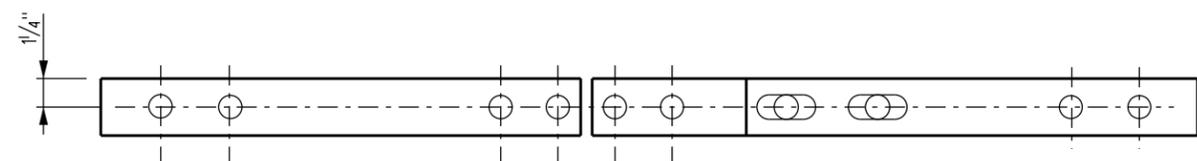
- (1) FIBRE CHANNEL C-1.
- (2) FIBRE ANGLE PLATE AP-34.
- (4) FIBRE BUSHINGS B-11.
- (1) STEEL SPLICE PLATE ST-684.
- (1) STEEL CHANNEL ST-568.
- (4) 3/4" HUCK BOLTS C50LR-BR24-36.
- (4) HUCK COLLARS LC2R-24G.

SWITCH INFORMATION

- GAUGE = 4'-8 3/16"
- THROW AT POINT = 4"
- E DISTANCE = 12 7/32"
- POINT = 9/16"
- REINF = 1/2" D GAGE SIDE
- ROD SPACING = 1'-3" x 1'-9"
- HEEL SPREAD = 7 1/2"

**RH MOVEABLE POINT
THIS SIDE**

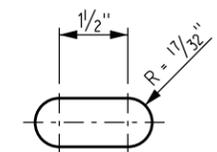
**LH MOVEABLE POINT
THIS SIDE**



INSULATED SPREAD ROD NO 5

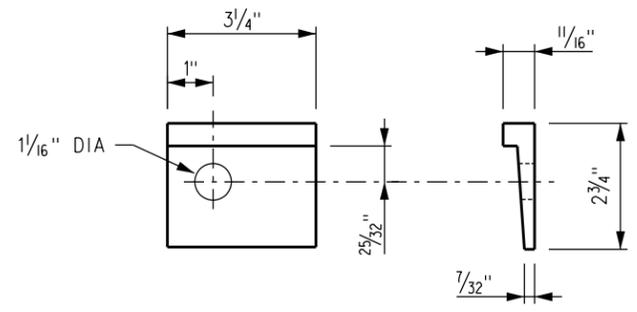
(2) REQUIRED PER SLIP SWITCH
WITH HUCKED INSULATED SPLICE

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



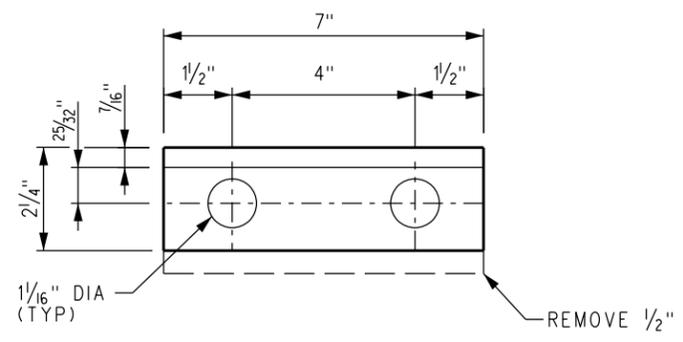
SLOTTED HOLE DETAIL

(1 1/16" x 2 3/16")



ROLLED HEADLOCK DETAIL

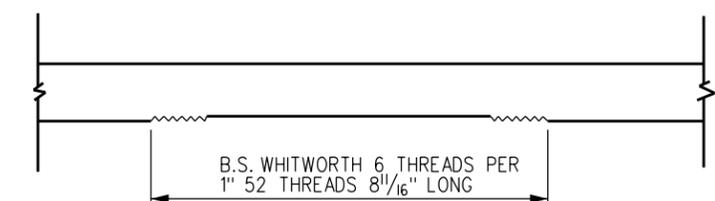
3/4" LONG (BETHLEHEM STEEL PART NO 834-0305)
(2) PIECES AS SHOWN FOR CLIP, RH MOVEABLE POINT
(2) PIECES OPPOSITE HAND FOR CLIP, LH MOVEABLE POINT



ROLLED HEADLOCK 7" LONG

(BETHLEHEM STEEL PART NO 834-0306)
(1) PIECE PER ROD

FURNISH: (2) HEAVY THREAD MACHINE SQ HEAD BOLTS, 1" x 4 1/2" WITH SLOTTED HEX NUT, SPRING WASHER & COTTER PIN



DETAIL OF SERRATIONS

(FOR 1'-2 1/2" LONG STRAIGHT & 1'-8" LONG BENT PIECE)

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

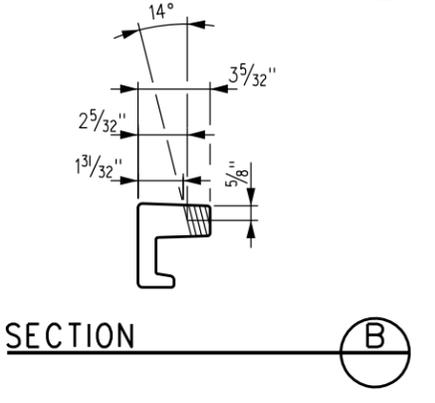
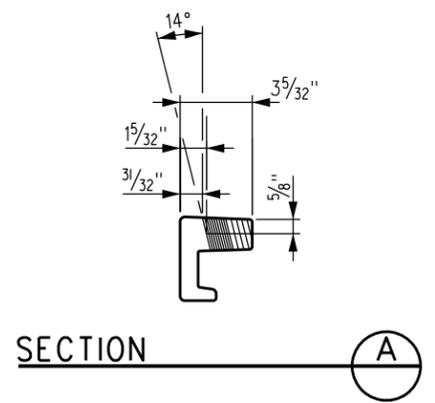
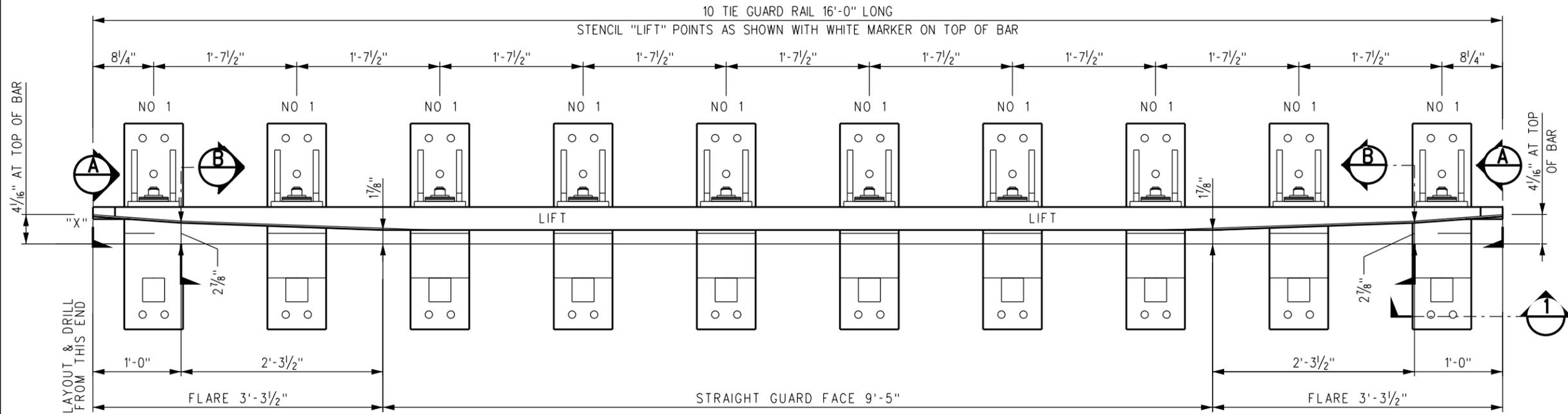
DRAWN BY: A. CARLOS DATE: 03/31/2011
Nareh D. Papp
 ASSISTANT DIRECTOR- STANDARDS & DESIGN
William D. Davis
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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

ENGINEERING STANDARDS
 INSULATED HEAD ROD NO 5
 FOR MOVEABLE CENTER POINTS
 NO 10 136 LB RE DOUBLE SLIP CROSSING

STANDARD	2841
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2841-53



ASSEMBLED 16'-0" GUARD RAIL

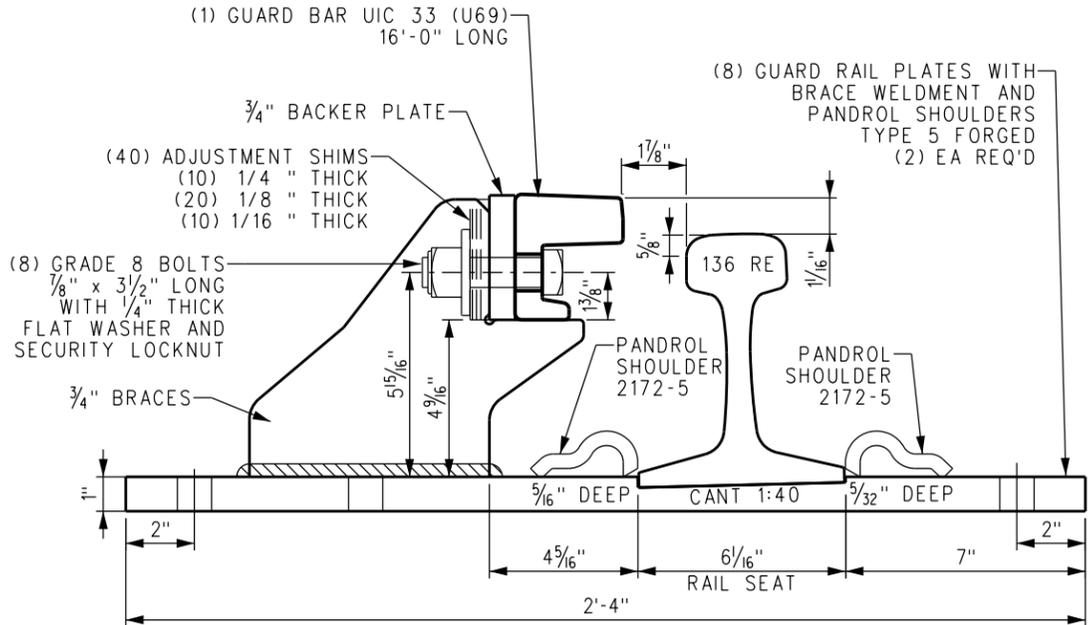
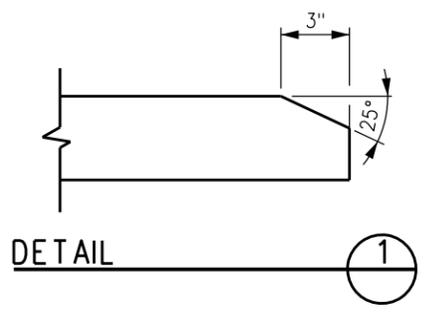
COLLECTIVE DRILLING FROM END OF GUARD BAR MARKED "X"

"X" 8 1/4" x 2'-3 3/4" x 3'-11 1/4" x 5'-6 3/4" x 7'-2 1/4" x 8'-9 3/4" x 10'-5 1/4" x 12'-0 3/4" x 13'-8 1/4" x 15'-3 3/4"

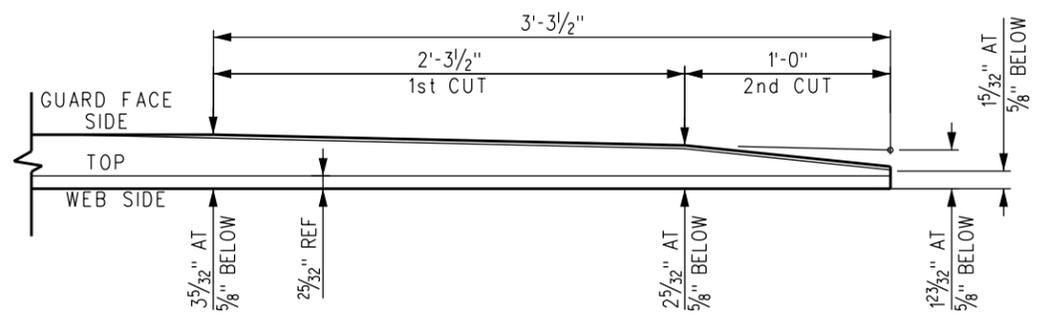
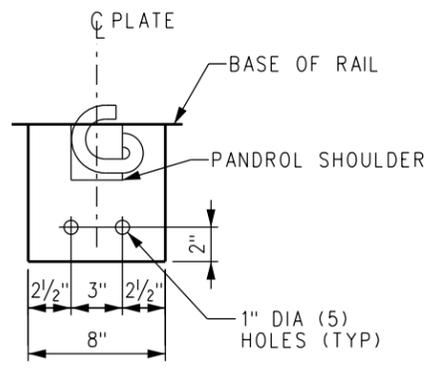
HOLES 1" DIA - 1 3/8" ABOVE BASE

NOTES:

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



TYPICAL PLATE PUNCHING DETAIL



FLARE DETAIL
BREAK SHARP CORNERS OF ALL MACHINED SURFACES

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

ENGINEERING STANDARDS	
GUARD RAIL DETAILS 16'-0" LONG	

STANDARD	2841
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2841-60