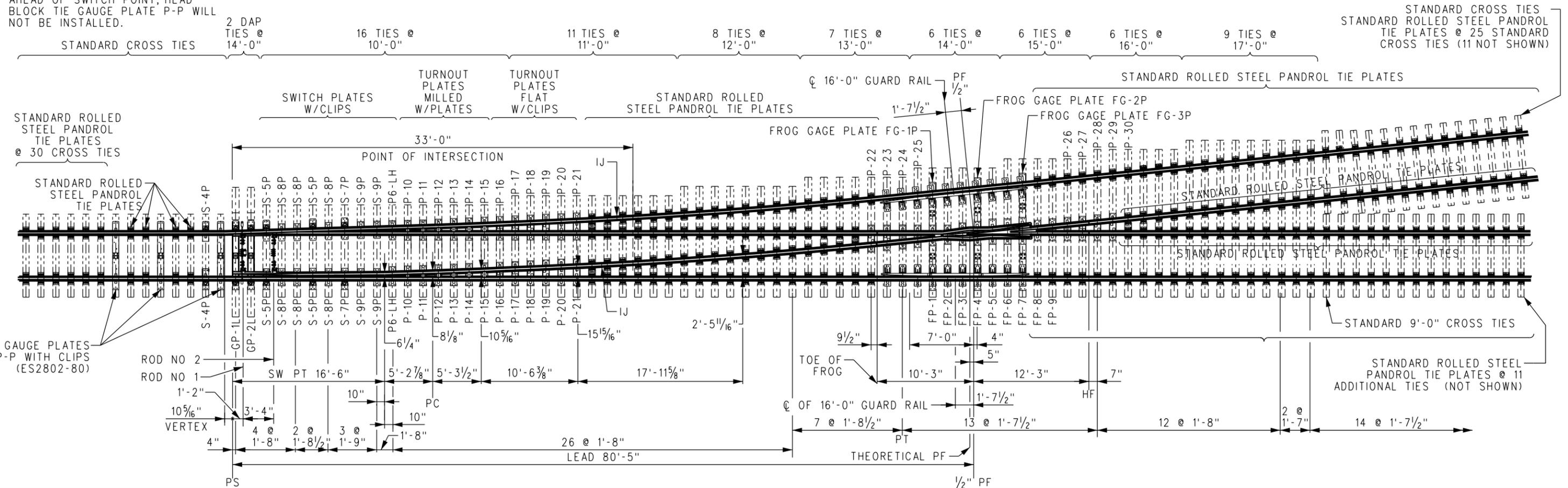


BILL OF MATERIAL				
ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	2	16'-6" EXTENDED FIELD WELDED TYPE SWITCH POINTS (40'-0" RAIL)	ES2802-24	
2	1	LH SAMSON STOCK RAILS 40'-0"	ES2802-25	
3	1	RH SAMSON STOCK RAILS 40'-0"	ES2802-25	
4	1	NO 1 SMJ TYPE SWITCH ROD WITH BASKET	ES2802-26	
5	1	VERTICAL SWITCH ROD WITH SMJ CLIPS	ES2802-26	
6	3	GAUGE PLATE P-P	ES2802-80	
7	1	GAUGE PLATE GP-1L	ES2802-81	
8	1	GAUGE PLATE GP-2L	ES2802-82	
9	6	SLIDE PLATE S-8P	ES2802-86	
10	4	SLIDE PLATE S-9P	ES2802-86	
11	4	BRACE SLIDE PLATE S-5P	ES2802-85	
12	2	BRACE SLIDE PLATE S-7P	ES2802-85	
13	2	BRACE SLIDE PLATE S-4P	ES2802-88	
14	2	HEEL PLATE P6-LH	ES2802-83	
15	2	TURNOUT PLATES P-10 THROUGH P-23	ES2802-91	
16	1	PLATES P-29 AND P-30	ES2802-91	
17	1	NO 10 RBM FROG 22'-6"	ES2802-42	
18	1	FROG PLATES NO FP-1 THROUGH FP-9	ES2802-44	
19	-			
20	1	FROG GAUGE PLATES FG-1P THROUGH FG-3P	ES2802-45	
21	2	16'-0" U-69 ADJUSTABLE GUARD RAIL WITH PLATES	ES2802-50	
22	5	DIRAIL HOLD DOWN CLIPS E-3706	-	
23	2	DIRAIL HOLD DOWN CLIPS E-3707	-	

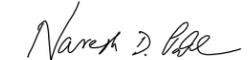
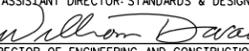
BILL OF MATERIAL				
ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
24	2	DIRAIL HOLD DOWN CLIPS E-3708	-	
25	138	TIE PLATES	ES2454	
26	552	PANDROL OR EQUAL SCREW SPIKES 5/16" DIA x 6" NO 2355	-	
27	276	PANDROL OR EQUAL E-CLIP TYPE E-2055	-	
28	8	PANDROL OR EQUAL E-CLIP TYPE E-2063	-	
29	12	BOLTLESS ADJUSTABLE BRACE ASSEMBLY	-	
30	1	DRILLED RAIL, 136 LB RE, 19'-6" LONG	-	
31	1	DRILLED RAIL, 136 LB RE, 23'-0" LONG	-	
32	1	DRILLED RAIL, 136 LB RE, 23'-6" LONG	-	
33	1	DRILLED RAIL, 136 LB RE, 28'-0" LONG	-	
34	1	DRILLED RAIL, 136 LB RE, 28'-6" LONG	-	
35	1	DRILLED RAIL, 136 LB RE, 32'-0" LONG	-	
36	4	DRILLED RAIL, 136 LB RE, 39'-0" LONG	-	
37	1	EPOXY BONDED PREFABRICATED MITRE CUT INSULATED JOINT (28'-8")	-	
38	1	EPOXY BONDED PREFABRICATED MITRE CUT INSULATED JOINT (46'-6")	-	
39	16	TIE, HARDWOOD, TREATED, 7" x 9" x 10'	-	
40	11	TIE, HARDWOOD, TREATED, 7" x 9" x 11'	-	
41	8	TIE, HARDWOOD, TREATED, 7" x 9" x 12'-0"	-	
42	7	TIE, HARDWOOD, TREATED, 7" x 9" x 13'-0"	-	
43	6	TIE, HARDWOOD, TREATED, 7" x 9" x 14'-0"	-	
44	2	TIE, HARDWOOD, TREATED, 10" x 9" x 14'-0", DAP	-	
45	6	TIE, HARDWOOD, TREATED, 7" x 9" x 15'-0"	-	
46	6	TIE, HARDWOOD, TREATED, 7" x 9" x 16'-0"	-	
47	9	TIE, HARDWOOD, TREATED, 7" x 9" x 17'-0"	-	

NOTE:

IF CONCRETE TIES ARE INSTALLED AHEAD OF SWITCH POINT, HEAD BLOCK TIE GAUGE PLATE P-P WILL NOT BE INSTALLED.



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

TURNOUT LAYOUT
NO 10-136 LB RE LH RBM FROG TURNOUT
TIMBER TIES, SWITCH STAND ON EITHER SIDE

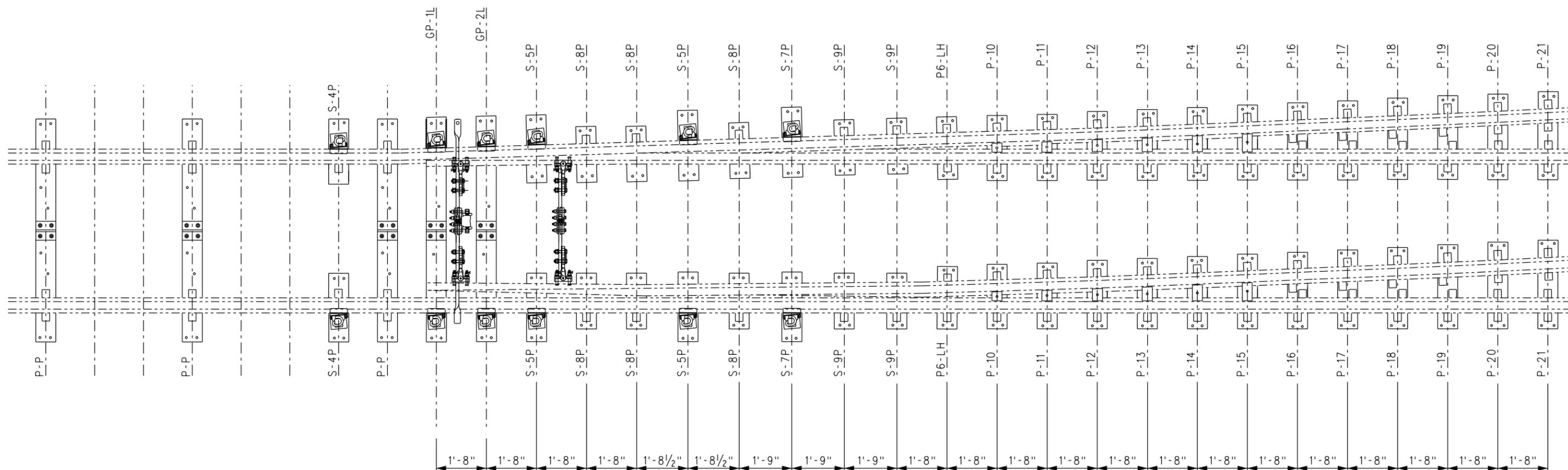
STANDARD	2802
SCALE:	NTS
REVISION	SHEET
-	1 OF 1
CADD FILE:	ES2802-01

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	3	GAUGE PLATES P-P	ES2802-80	
2	1	GP-1L	ES2802-81	
3	1	GP-2L	ES2802-82	
4	4	S-5P	ES2802-85	
5	6	S-8P	ES2802-86	
6	2	S-7P	ES2802-85	

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
7	4	S-9P	ES2802-86	
8	2	P6-LH	ES2802-83	
9	2	PLATES P-10 THROUGH P-21	ES2802-91	
10	2	S-4P	ES2802-88	
11	-	-	-	
12	-	-	-	



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

DRAWN BY: *Narek D. B...*
 DRAFTER: *Narek D. B...*
 DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
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ENGINEERING STANDARDS
 NO 10-136 LB RE LH SWITCH PACK,
 TIMBER TIES,
 SWITCH CONTROL ON EITHER SIDE

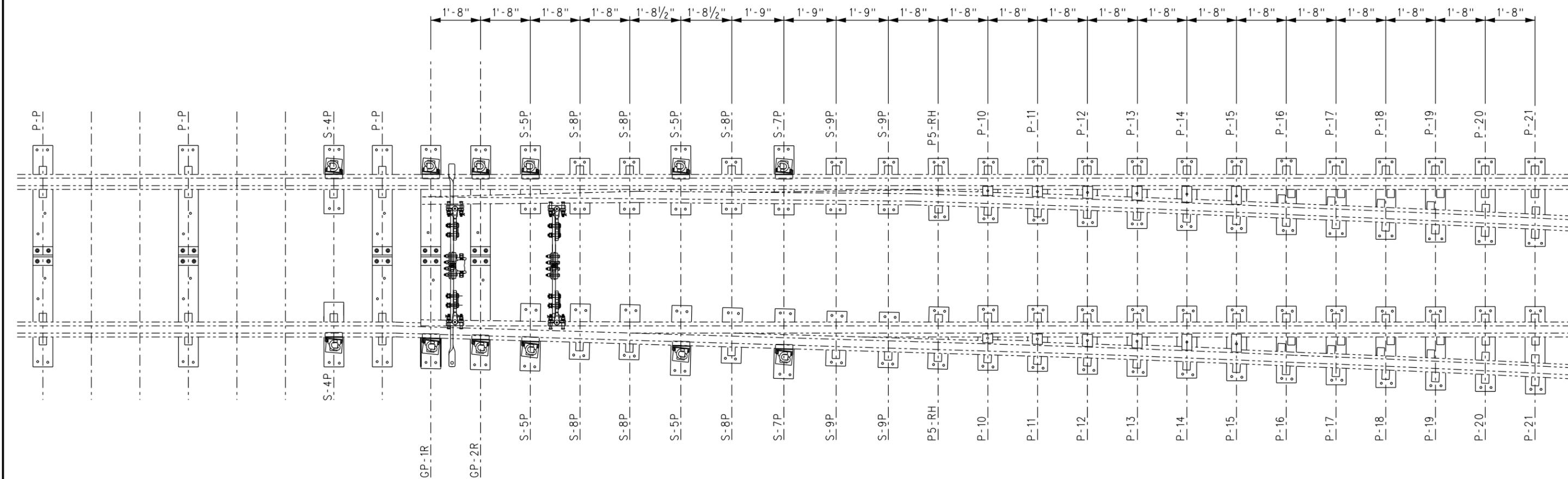
STANDARD	2802
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2802-11

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	3	GAUGE PLATES P-P	ES2802-80	
2	1	GP-1R	ES2802-81	
3	1	GP-2R	ES2802-82	
4	4	S-5P	ES2802-85	
5	6	S-8P	ES2802-86	
6	2	S-7P	ES2802-85	

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
7	4	S-9P	ES2802-86	
8	2	P5-RH	ES2802-84	
9	2	PLATES P-10 THROUGH P-21	ES2802-92	
10	2	S-4P	ES2802-88	
11	-	-	-	
12	-	-	-	



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

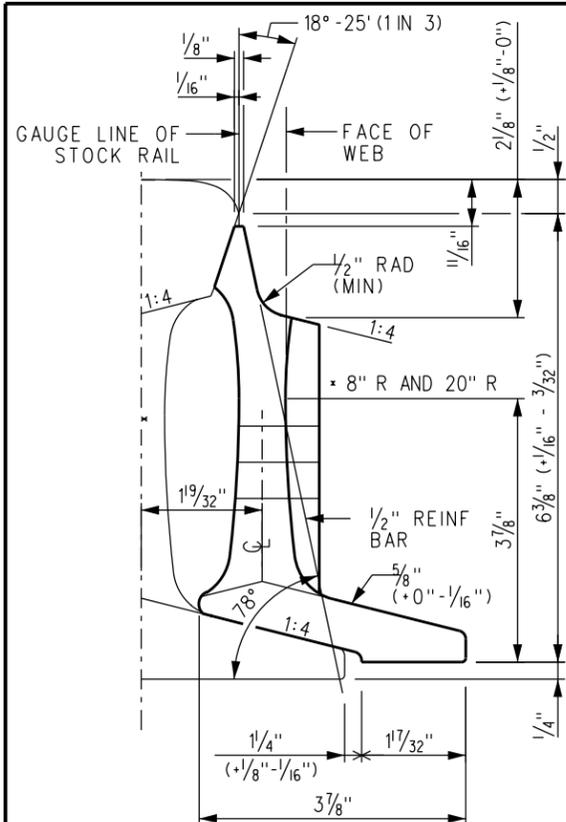
DRAWN BY: *Nareh D. Papp* HDR DATE: 03/31/2011
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William Dava
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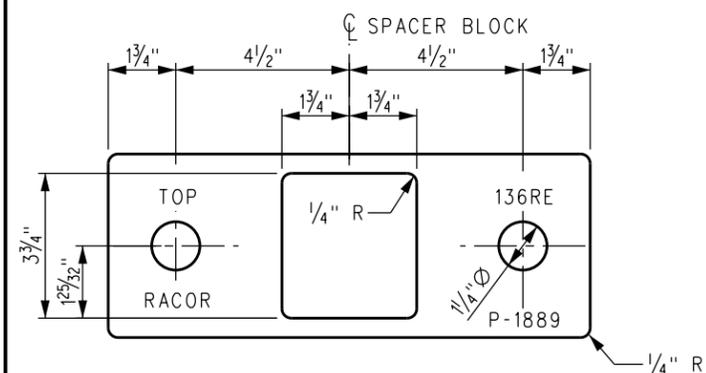


ENGINEERING STANDARDS
 NO 10-136 LB RE RH SWITCH PACK,
 TIMBER TIES,
 SWITCH CONTROL ON EITHER SIDE

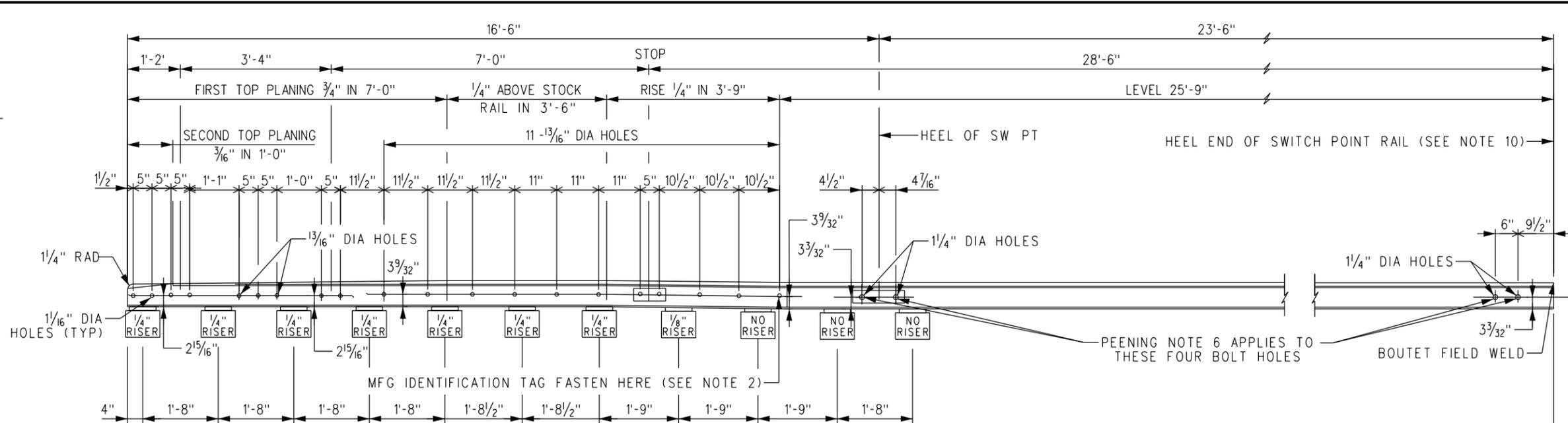
STANDARD	2802
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2802-12



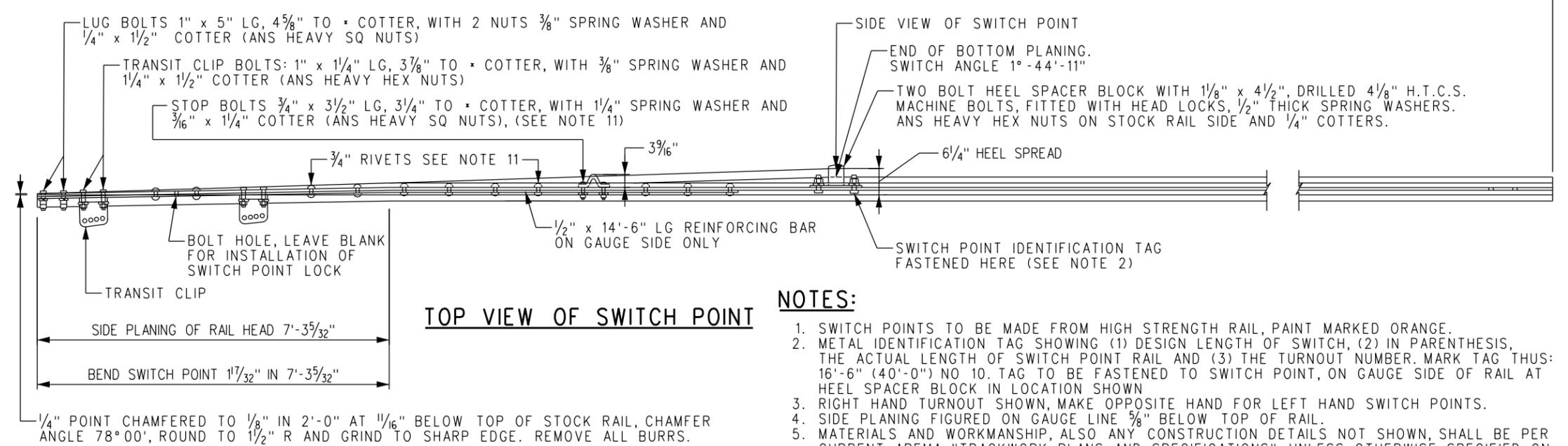
END VIEW OF POINT



HEEL BLOCK DETAIL

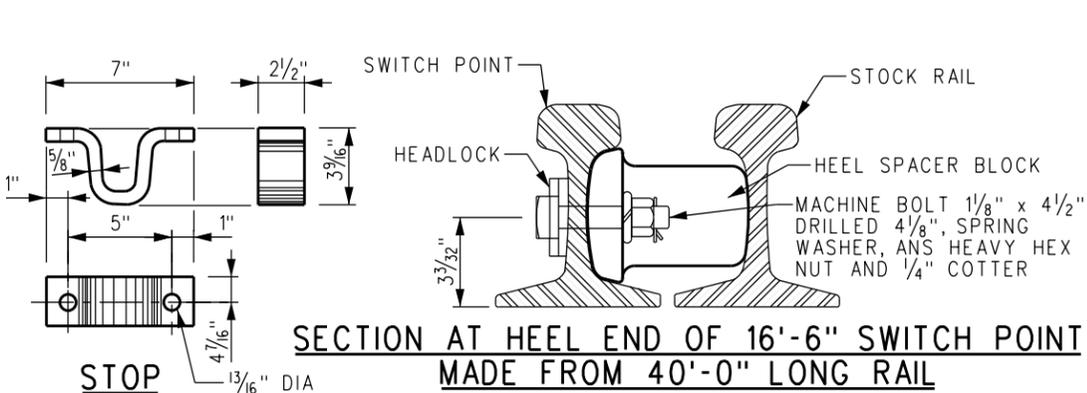


TOP VIEW OF SWITCH POINT



NOTES:

- SWITCH POINTS TO BE MADE FROM HIGH STRENGTH RAIL, PAINT MARKED ORANGE.
- 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 10. TAG TO BE FASTENED TO SWITCH POINT, ON GAUGE SIDE OF RAIL AT HEEL SPACER BLOCK IN 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.
- MATERIALS 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 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.
- SWITCH POINTS FOR TURNOUT SIDE MAY BE ORDERED WITH MANGANESE STEEL TIP.
- 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 TOP PLANING, WHERE THE SWITCH POINT HAS FULL HEAD CONTOUR.
- 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-R-24G FOR 3/4" RIVETS, AND FOR 3/4" STOP BOLTS USE HUCK FASTENERS, BOLT PART NO C-50-LR-BR2424 AND COLLAR PART NO L3-2-R-24G.



SECTION AT HEEL END OF 16'-6" SWITCH POINT MADE FROM 40'-0" LONG RAIL

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

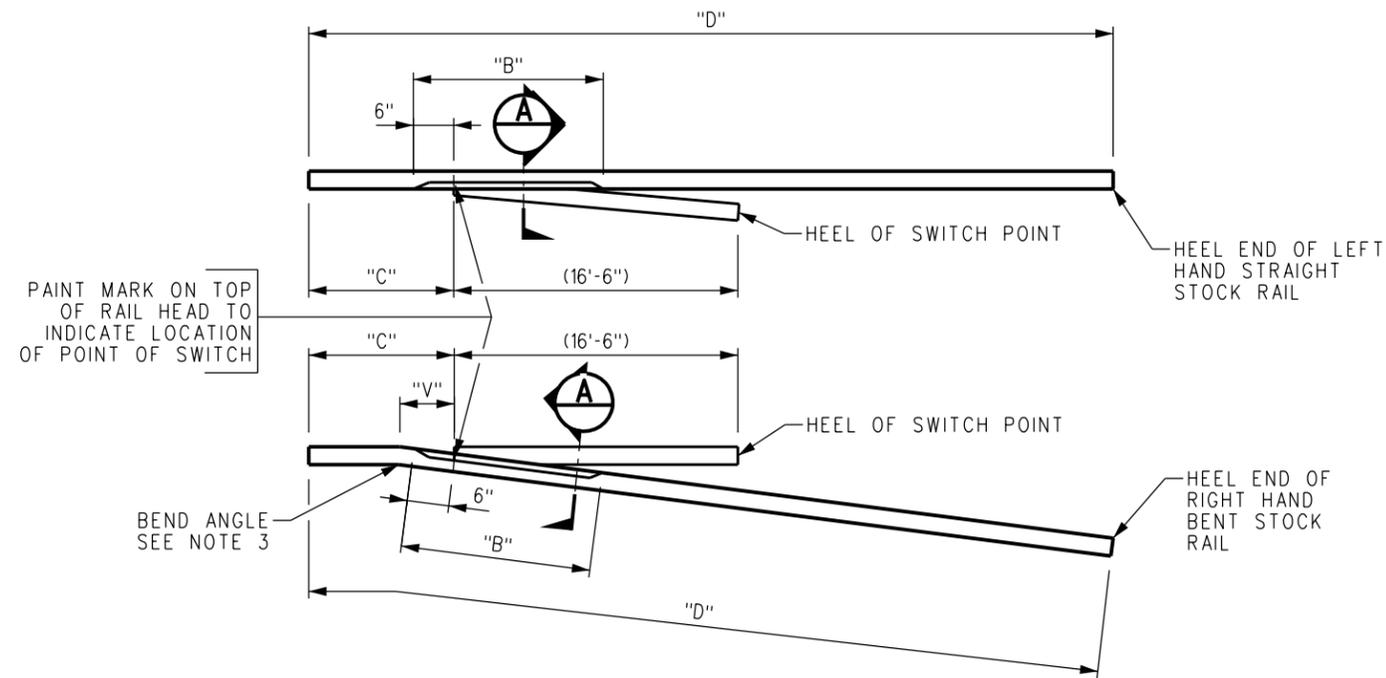
DRAWN BY: A. CARLOS DATE: 03/31/2011
Nareh D. Papp
 ASSISTANT DIRECTOR STANDARDS & DESIGN
William D. Davis
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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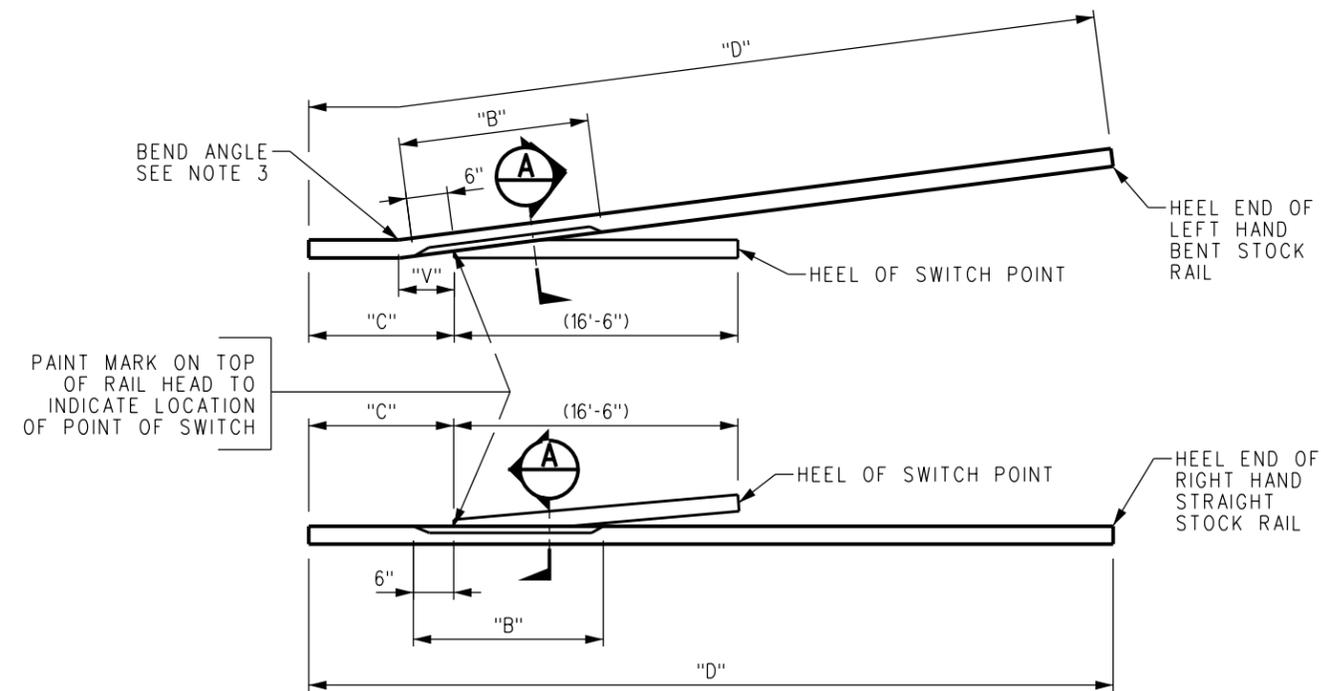
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 NO 10 SPLIT SWITCH POINT DETAILS

STANDARD	2802
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2802-24



STOCK RAILS SHOWN ARE FOR "RIGHT HAND TURNOUT"



STOCK RAILS SHOWN ARE FOR "LEFT HAND TURNOUT"

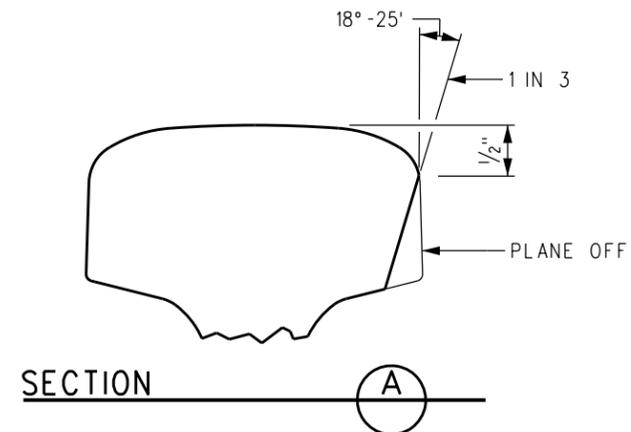
NOTES:

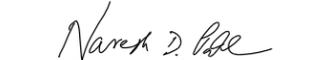
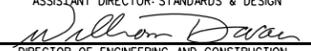
1. UNDERCUT STOCK RAILS TO BE MADE OF HIGH STRENGTH RAIL WITH ENDS BEVELED PER CURRENT AREMA PLAN NO 1005.
2. FOR STOCK RAIL UNDERCUT LENGTH "B", PER SECTION "A", LENGTH "C" AND LENGTH "D" FOR NEW SAMSON SWITCH INSTALLATIONS OR REPLACEMENT ORDERS SEE TABLE BELOW.

LENGTHS B, C, & D FOR 136 LB RAIL									
SW PT LENGTH	TO NO	STOCK RAIL	B	FOR FIRST (NEW) INSTALL			FOR REPLACEMENT 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

3. 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 "



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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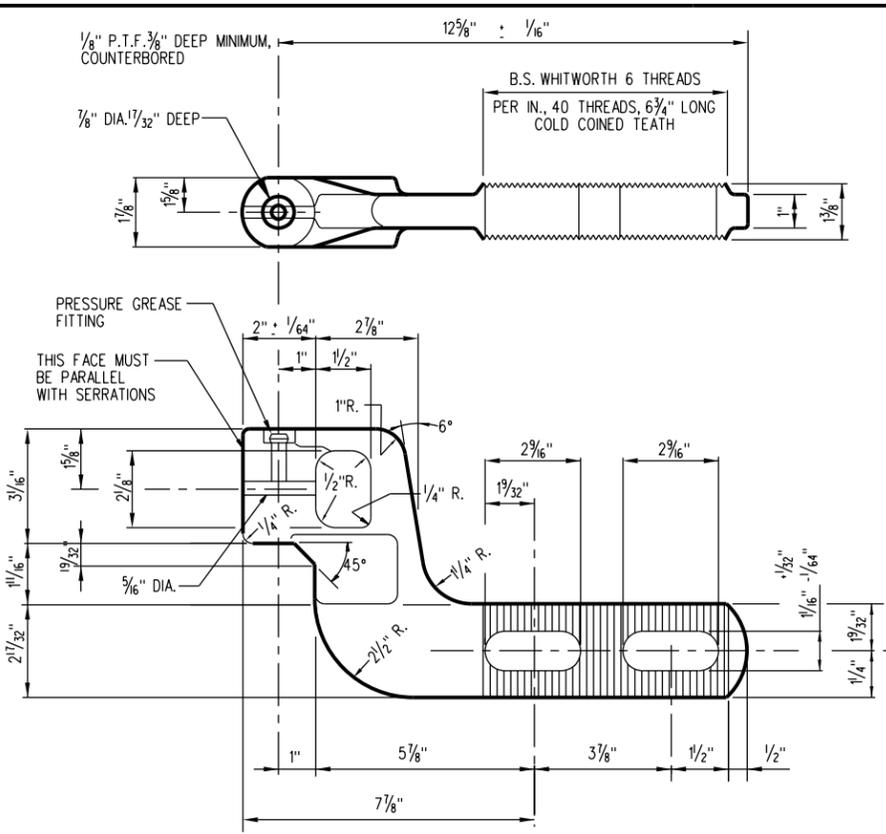
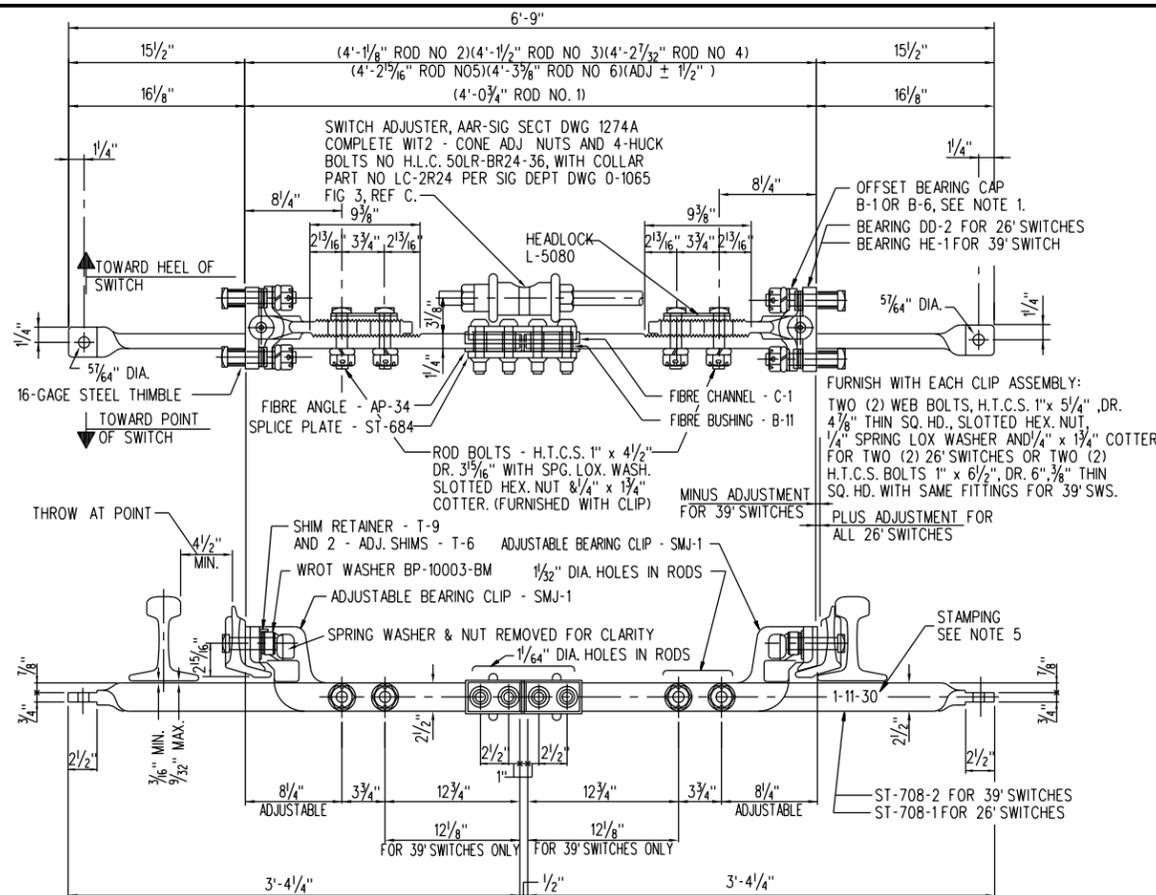


SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

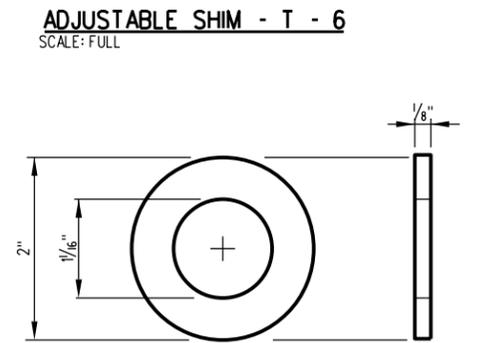
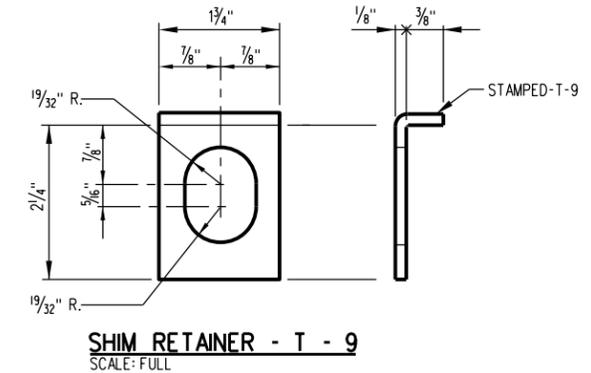
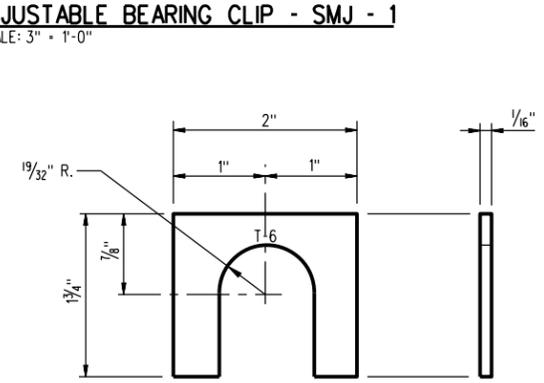
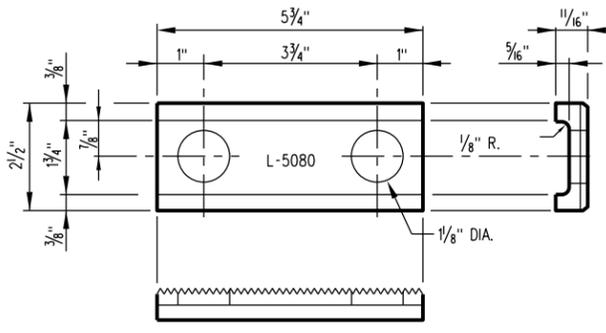
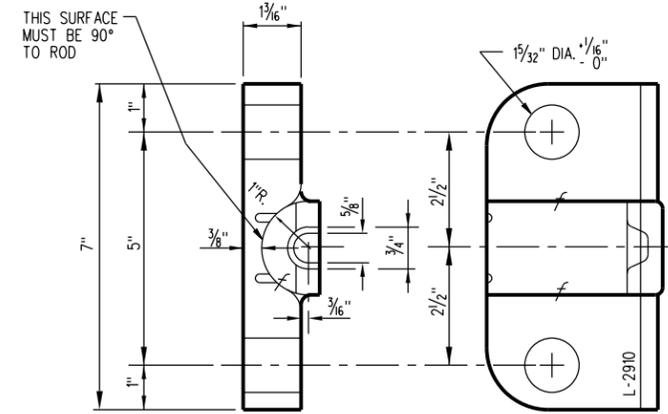
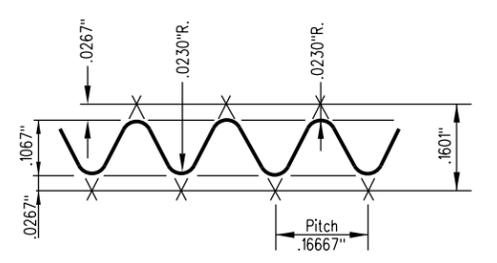
ENGINEERING STANDARDS

NO 10 STRAIGHT OR CURVED UNDERCUT STOCK RAILS

STANDARD	2802
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2802-25

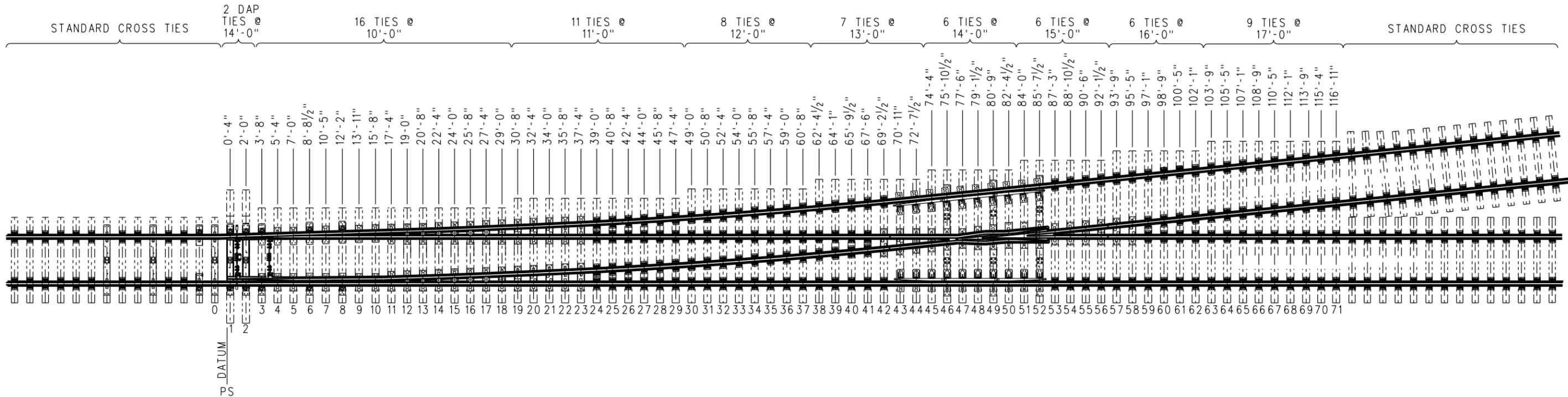


BILL OF MATERIAL FOR 1 TYPE "SMJ" SWITCH ROD ASSEMBLY					
LENGTH OF SWITCH	MATERIAL FOR CLIP ASSEMBLIES				
	QTY.	PART NUMBER	MATERIAL SPECIF.	DESCRIPTION	DETAIL REMARKS
All	2	SMJ-1	S.A.E.1020-For.Stl.	Bearing Clip	MACHINED PER DETAIL
All	4		H.T.C.S.	Web Bolt	SEE NOTE
26'	2	DD-2	Malleable Iron	Bearing	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	1/6" x 2" x 1 1/8"
All	4	BP-10003-BM	Wrot Iron	Wrot Washer	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 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 1/8" 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



- 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.

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 NO 10 SWITCH ROD DETAILS		STANDARD 2802
 ASSISTANT DIRECTOR: STANDARDS & DESIGN		 DIRECTOR OF ENGINEERING AND CONSTRUCTION				SCALE: NTS	REVISION SHEET 1 OF 1	
X	XX-XX-XX	REVISION	XX	XX			CADD FILE: ES2802-26	
REV.	DATE	DESCRIPTION	DES.	ENG.				



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	210.00
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			4887.75

DRAWN BY: <i>Nareh D. Papp</i>		HDR:	DATE: 03/31/2011
ASSISTANT DIRECTOR: STANDARDS & DESIGN			
<i>William Davan</i>		DIRECTOR OF ENGINEERING AND CONSTRUCTION	
XX	XX-XX-XX	REVISION	XX XX
REV.	DATE	DESCRIPTION	DES. ENG.

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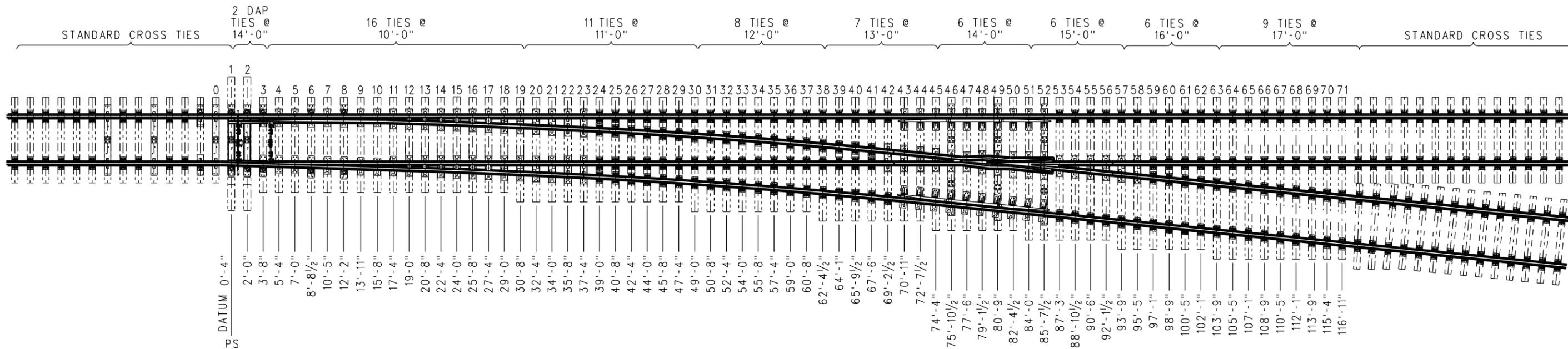


METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS

TIMBER TIE LAYOUT
NO 10-136 LB RE RBM FROG LH TURNOUT
MANUAL SWITCH MACHINE ON EITHER SIDE

STANDARD	2802
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2802-31



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	210.00
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			4887.75

DRAWN BY: <i>Nareh D. Papp</i>		HDR:	DATE: 03/31/2011
REVISION		XX	XX
REV.	DATE	DESCRIPTION	DES. ENG.

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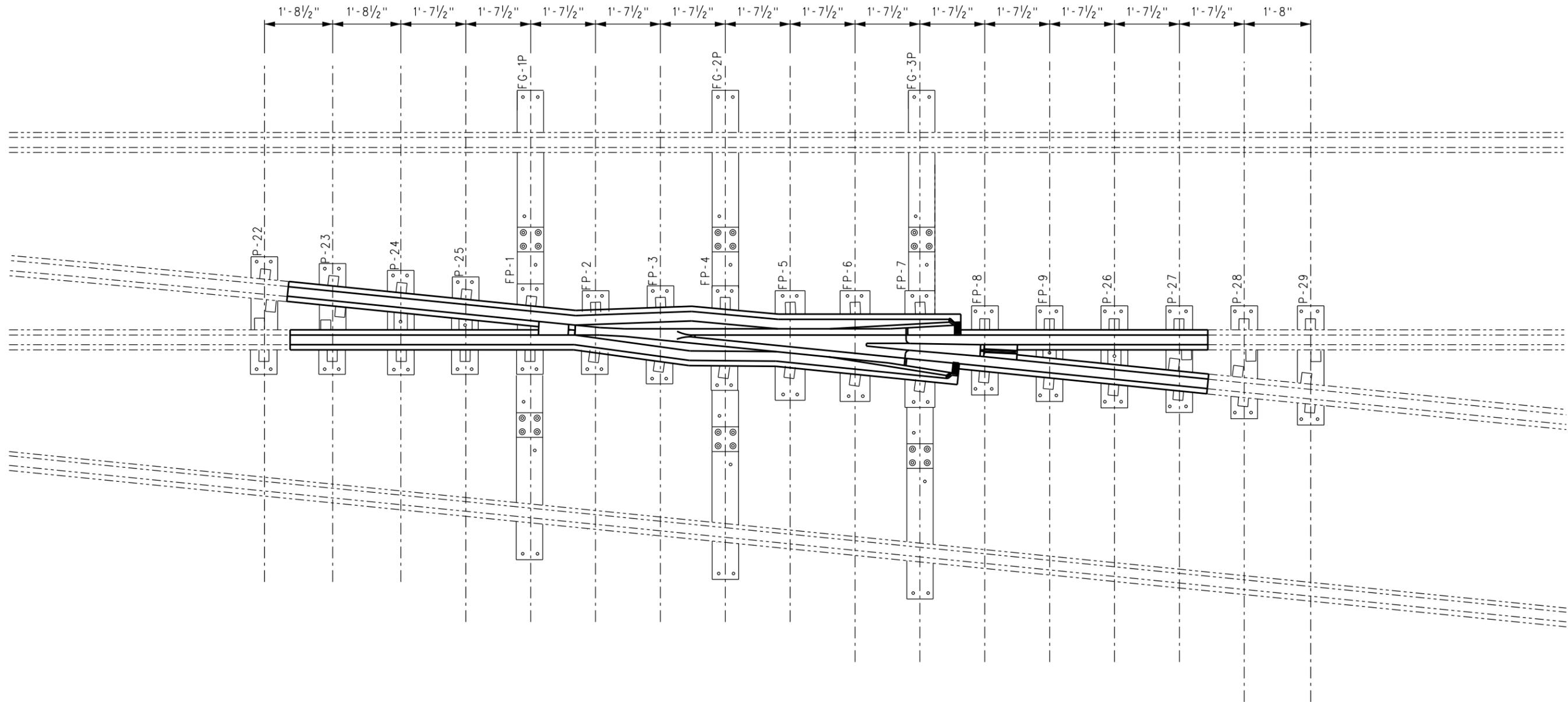


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ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
TIMBER TIE LAYOUT
NO 10-136 LB RE RBM FROG RH TURNOUT
MANUAL SWITCH MACHINE ON EITHER SIDE

STANDARD	2802
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2802-32

ITEM	QTY	DESCRIPTION	DWG NO	SCRRRA PART NO
1	1	NO 10 136 LB RE RH RBM FROG LAYOUT	ES2802-42	



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

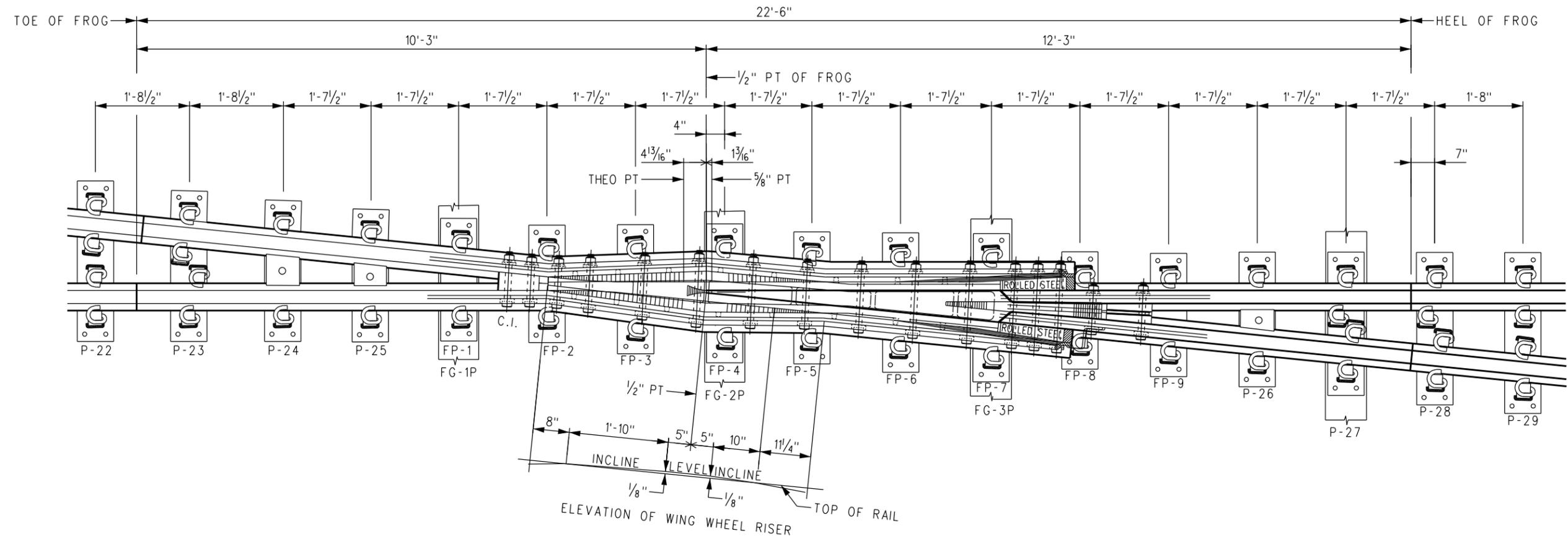
DRAWN BY: *Nareh D. Bae* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Davan
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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ENGINEERING STANDARDS
 NO 10 RBM FROG RH
 FROG ASSEMBLY PLAN VIEW AND FROG PACK
 TIMBER TIES-136 LB RE RAIL

STANDARD	2802
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2802-40

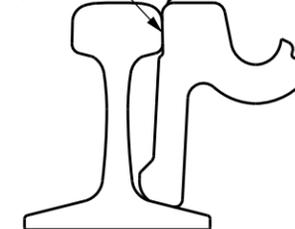


NO 10 RAILBOUND MANGANESE STEEL FROG
ANGLE 5°-43'-29"

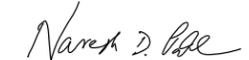
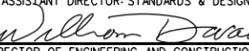
NOTES:

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 ES2802-44.
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 3/8" 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:
MANG MUST BE GROUND TO FIT SLOPE OF RAIL HEAD FOR THE ENTIRE LENGTH OF CASTING.
MUST HAVE 3/8" RADIUS OR BEVEL 3/16" BACK, 1/4" DOWN.



DETAIL OF FROG CASTING/RAIL FIT

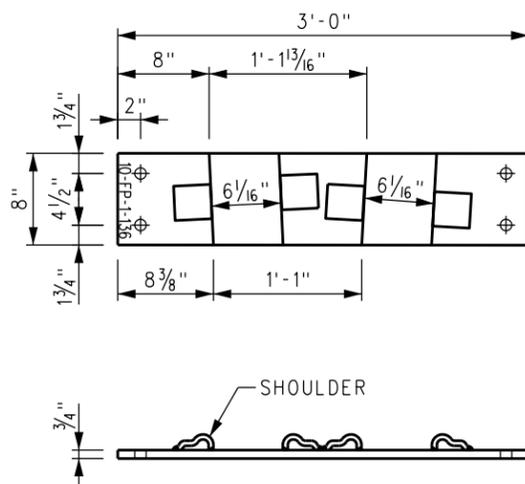
DRAWN BY: A. CARLOS		DATE: 03/31/2011	
 ASSISTANT DIRECTOR: STANDARDS & DESIGN		 DIRECTOR OF ENGINEERING AND CONSTRUCTION	
REV.	DATE	DES.	ENG.
X	XX-XX-XX	XX	XX
	REVISION		
	DESCRIPTION		

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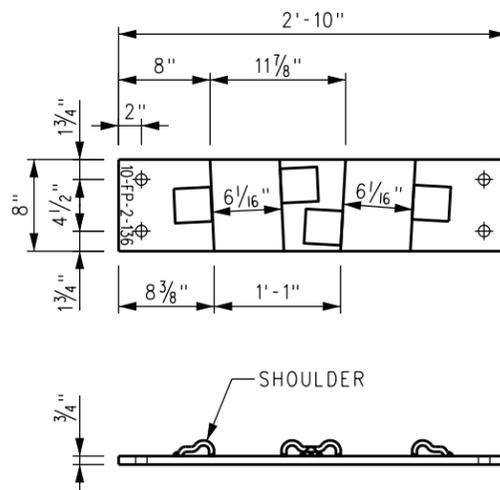
ENGINEERING STANDARDS
 NO 10 136 LB RE
 RH RBM FROG LAYOUT

STANDARD	2802
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2802-42



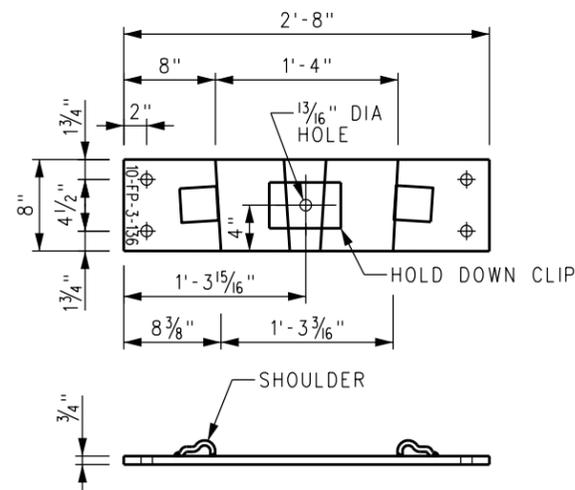
FROG PLATE - FP-1

3/4" x 8" x 3'-0" - FLAT
(2 REQUIRED)



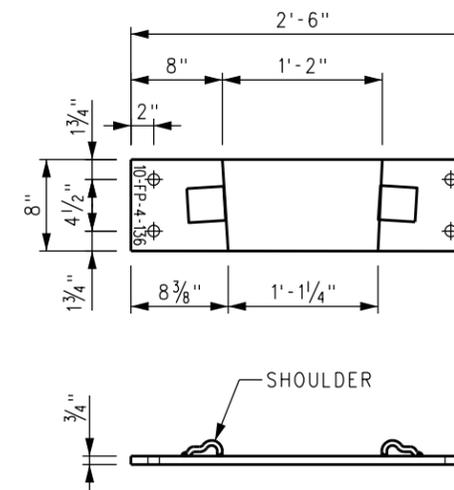
FROG PLATE - FP-2

3/4" x 8" x 2'-10" - FLAT
(2 REQUIRED)



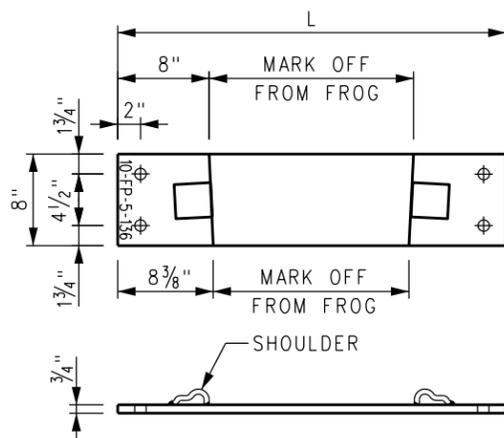
FROG PLATE - FP-3

3/4" x 8" x 2'-8" - FLAT
(2 REQUIRED)

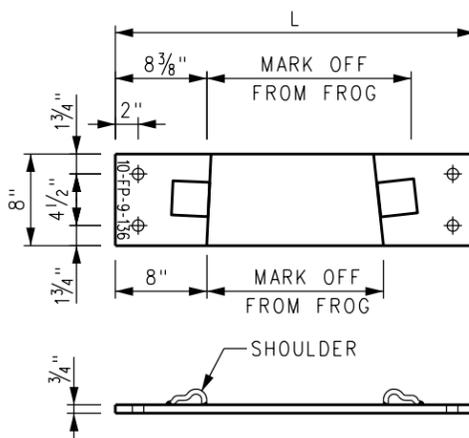


FROG PLATE - FP-4

3/4" x 8" x 2'-6" - FLAT
(2 REQUIRED)



FROG PLATE - FP-5 THRU FP-7



FROG PLATE - FP-8 AND FP-9

3/4" x 8" - FLAT (SEE TABLE FOR LENGTHS)

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

DIMENSION TABLE		
PLATE	L	NO REQ'D
FP-8	2'-8 1/2"	2
FP-9	2'-10"	2

NOTES:

1. STAMP PLATE WITH PROPER PLATE NUMBER AND WEIGHT OF RAIL.
2. HOLES IN PLATES ARE 1" IN DIA UNLESS OTHERWISE NOTED.
3. ALL SHOULDERS ARE PANDROL TYPE 1 FORGED.

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

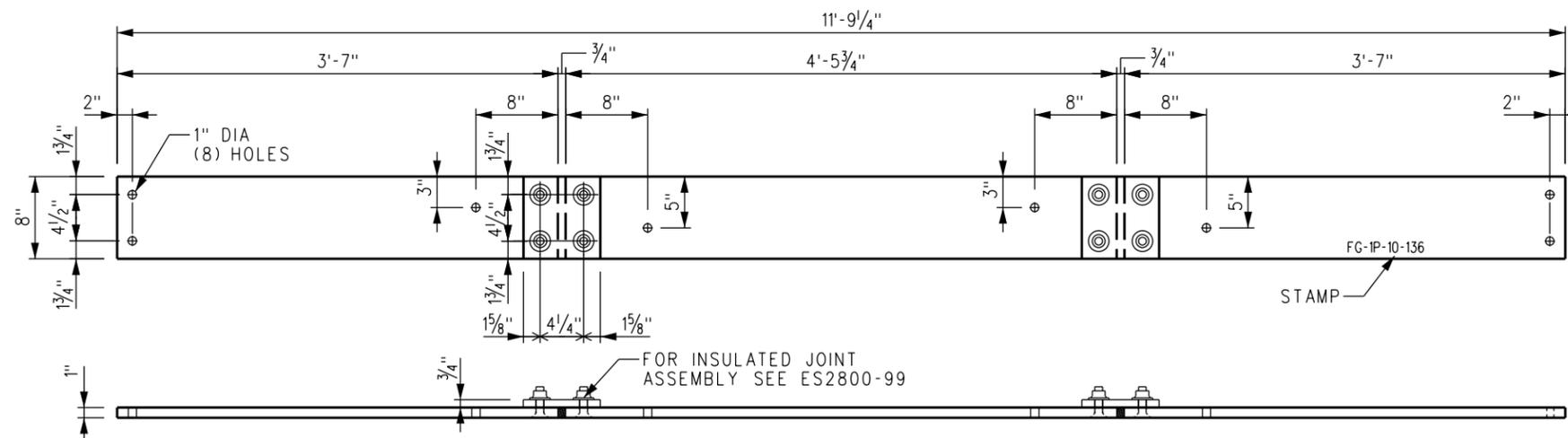
DRAWN BY: A. CARLOS DATE: 03/31/2011
Nareh D. Papp
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Dava
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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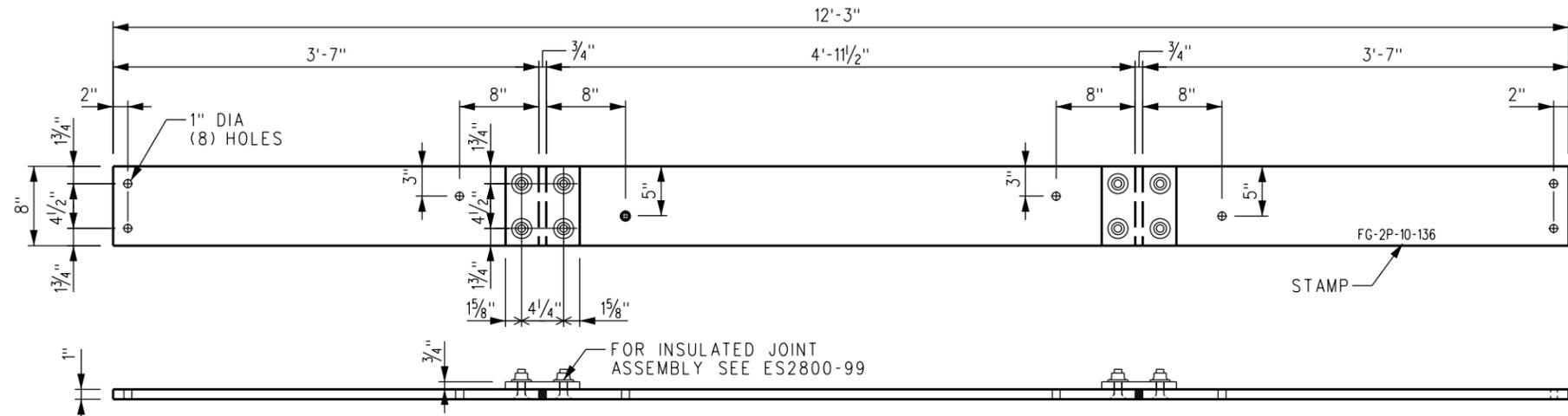
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 FROG PLATE DETAILS
 NO 10-136 LB TIMBER TIE RBM

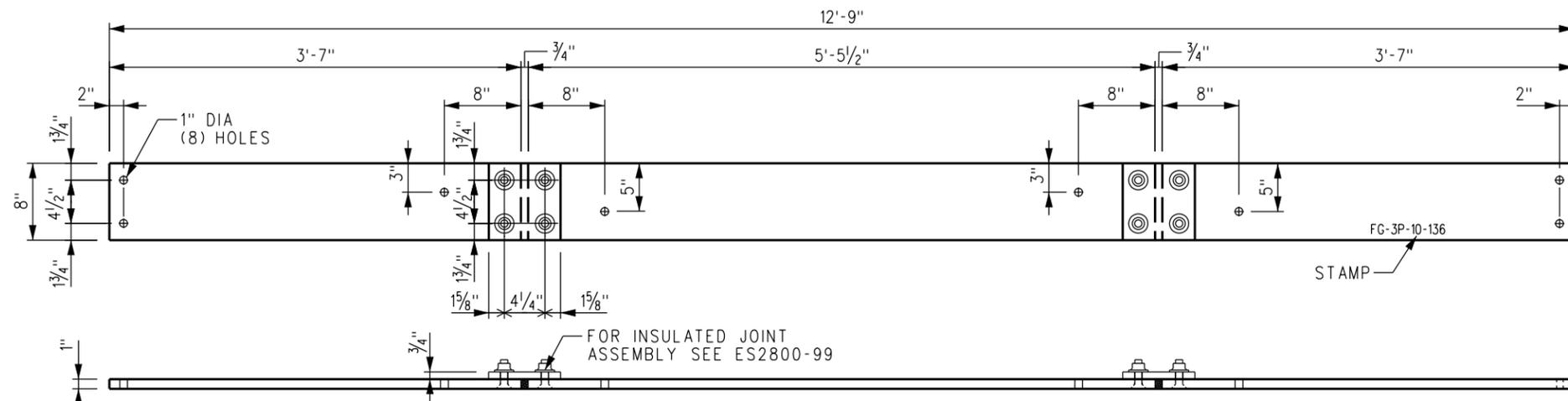
STANDARD	2802
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2802-44



INSULATED FROG GAUGE PLATE FG-1P
1" x 8" - FLAT



INSULATED FROG GAUGE PLATE FG-2P
1" x 8" - FLAT



INSULATED FROG GAUGE PLATE FG-3P
1" x 8" - FLAT

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

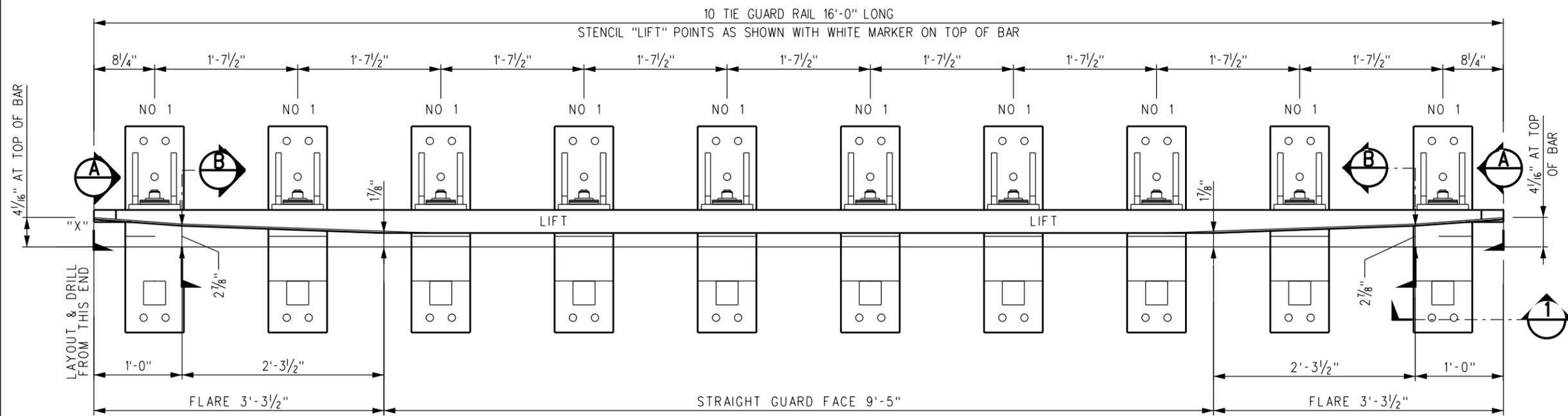
DRAWN BY: A. CARLOS DATE: 03/31/2011
Nareh D. Papp
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William D. Davis
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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ENGINEERING STANDARDS
 NO 10-136 LB RE
 INSULATED FROG GAUGE PLATE DETAILS
 TIMBER TIE TURNOUT

STANDARD	2802
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2802-45



ASSEMBLED 16'-0" GUARD RAIL

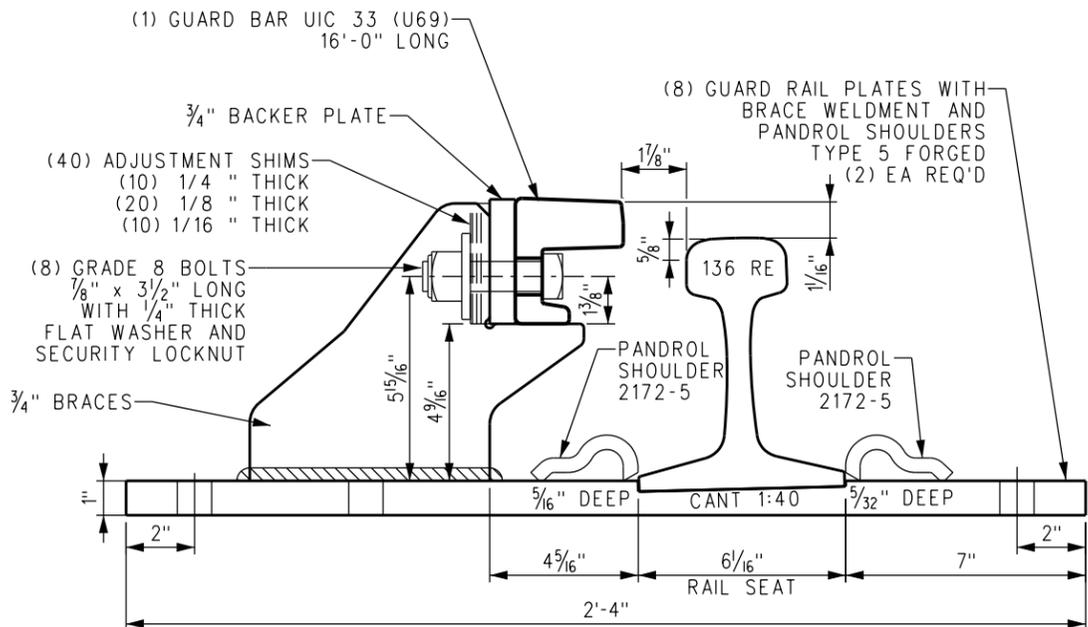
COLLECTIVE DRILLING FROM END OF GUARD BAR MARKED "X"

"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"

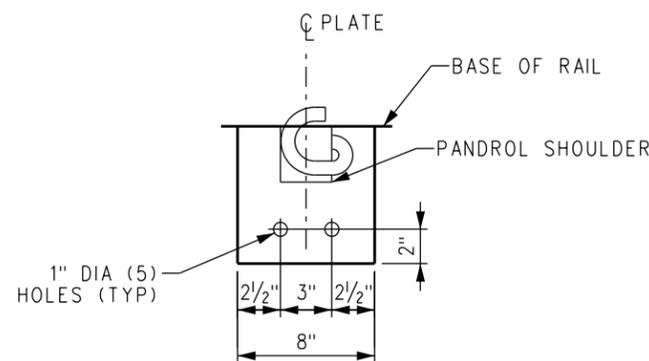
HOLES 1" DIA - 1 3/8" ABOVE BASE

NOTES:

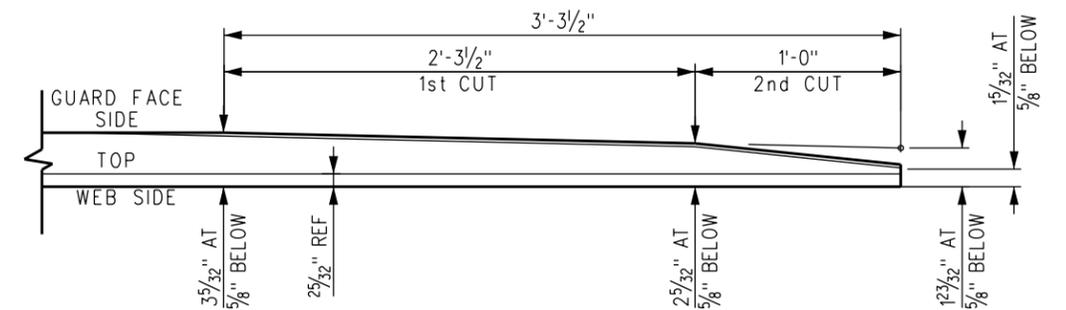
1. GUARD RAIL SECTION U.I.C. 33: (U69) UIC 860.0 GRADE 90A (GUARD FACE BRINELL 319 MIN)
2. BASE PLATE, BRACKET AND SHIMS MILD STEEL PER AREMA SPECIFICATION M7.
3. GUARD RAIL BOLT AND NUT PER AREMA SPECIFICATION M11, EXCEPT BOLT TO GRADE 8 AND NUT TO BE SECURITY LOCKNUT.
4. WORKMANSHIP AND TOLERANCES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



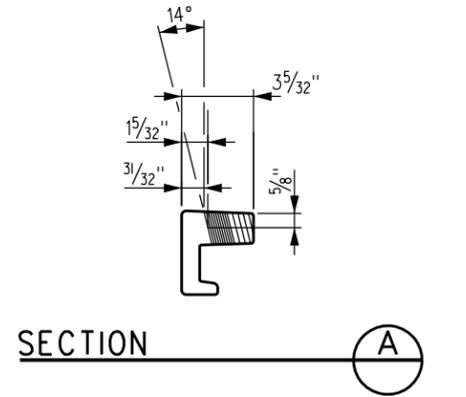
TYPICAL PLATE DETAIL



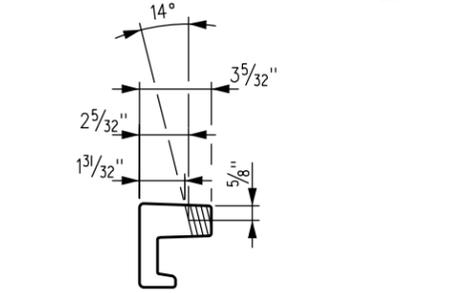
TYPICAL PLATE PUNCHING DETAIL



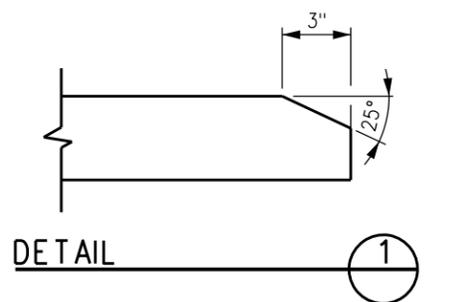
FLARE DETAIL
BREAK SHARP CORNERS OF ALL MACHINED SURFACES



SECTION A-A



SECTION B-B



DETAIL 1

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

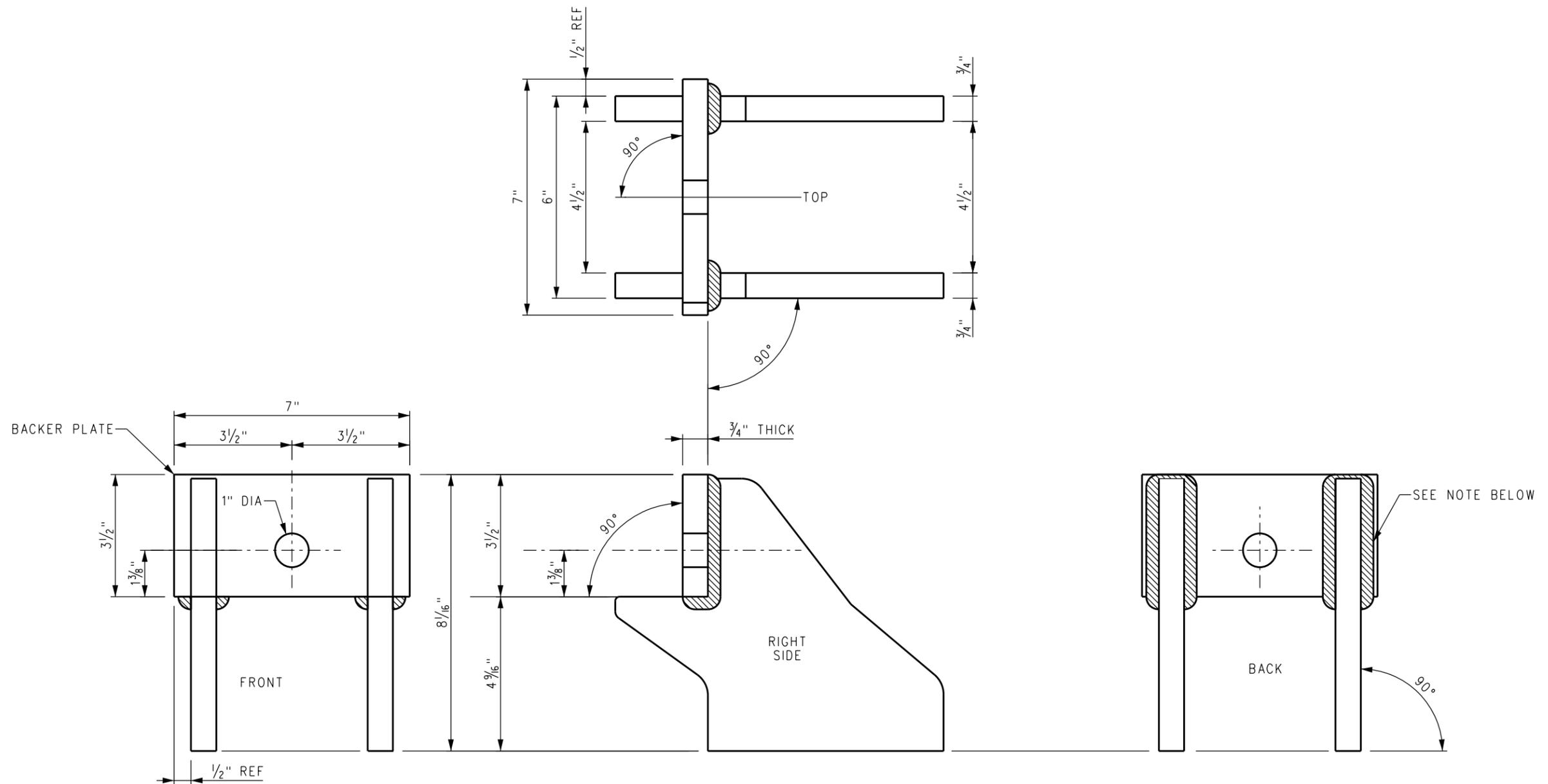
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ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS

NO 10 136 LB RE RBM FROG
GUARD RAIL DETAILS

STANDARD	2802
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2802-50



BRACE WELDMENT ASSEMBLY
BRACE WELDMENT ASSEMBLY

BRACE BOTTOMS TO BE STRAIGHT AND TRUE
AND MUST BE ALIGNED

NOTES:

1. SEE ES2802-55 FOR BRACE DETAIL DIMENSIONS.
2. BACKER PLATE MATERIAL: HR STEEL ASTM A663 GRADE 60 (GRADE A-36 ACCEPTABLE)

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

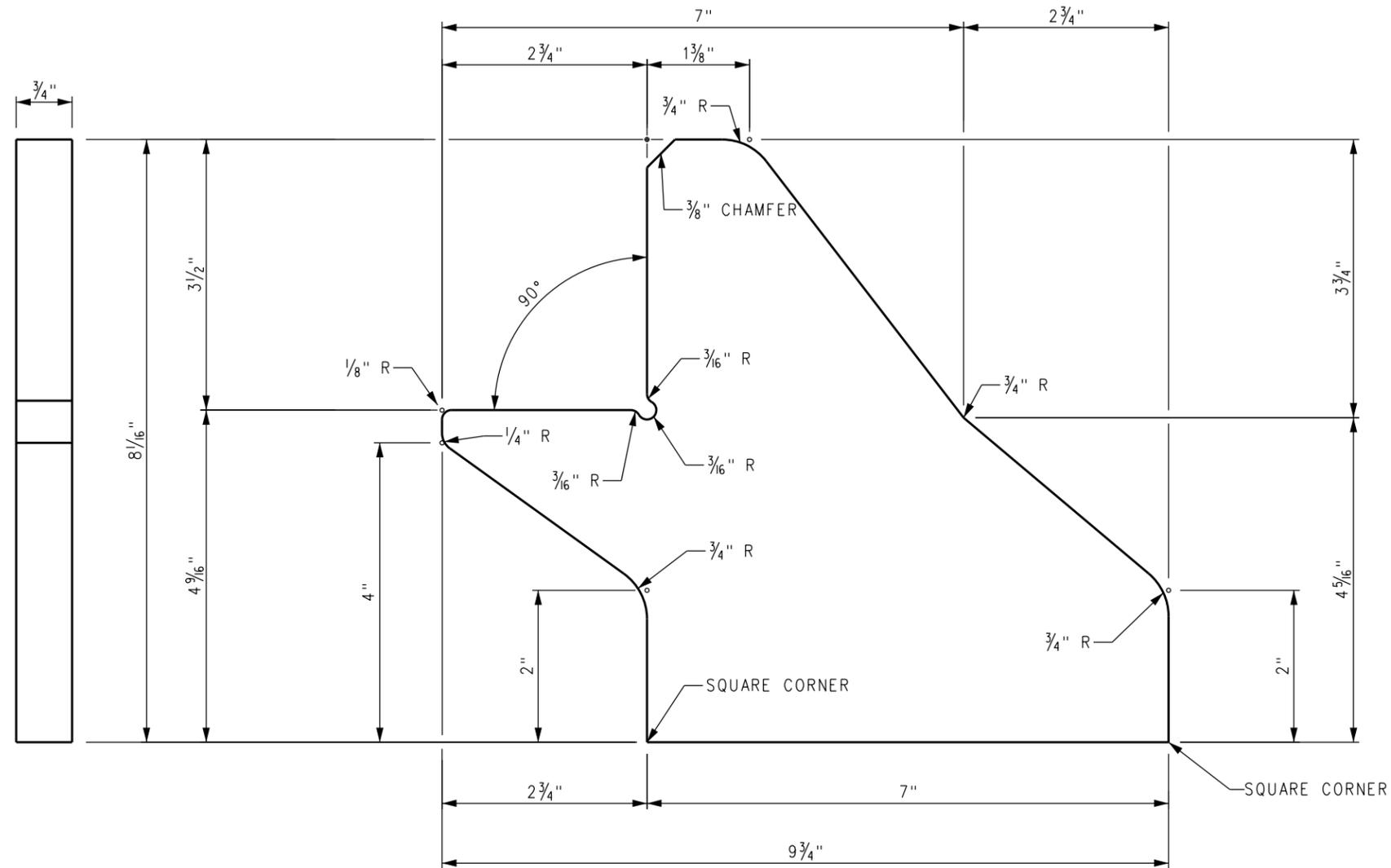
DRAWN BY: *Nareh D. Papp* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William D. Davis
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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

ENGINEERING STANDARDS
 NO 10-136 LB RE 1:40 CANTED,
 BACKER PLATE AND BRACE WELDMENT
 FOR RAISED U69 GUARD RAIL

STANDARD	2802
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2802-54



BRACE DETAIL

(2) PIECES REQ'D PER PLATE ASSEMBLY

NOTES:

1. MATERIAL: HR STEEL ASTM A663 GRADE 60 (GRADE A-36 ACCEPTABLE).

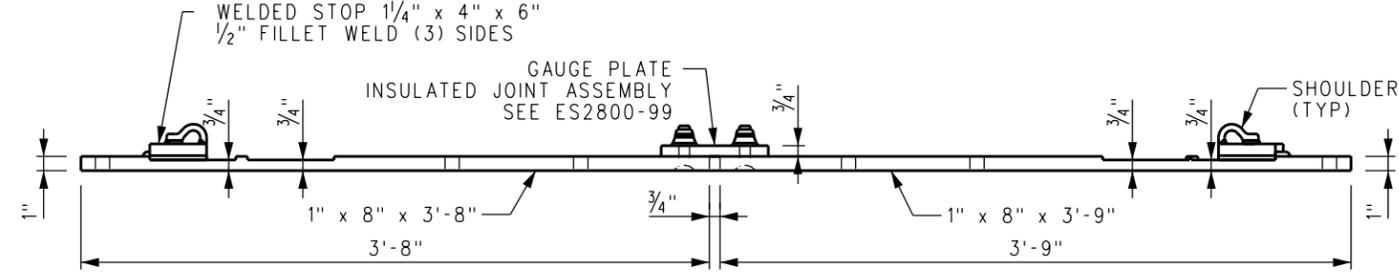
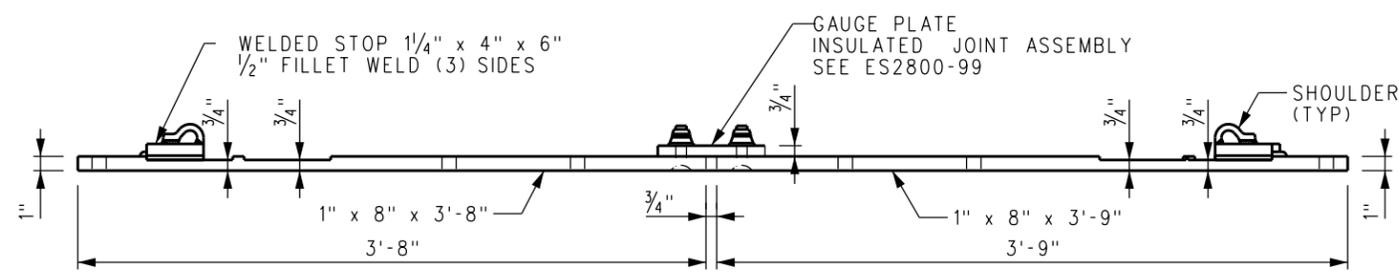
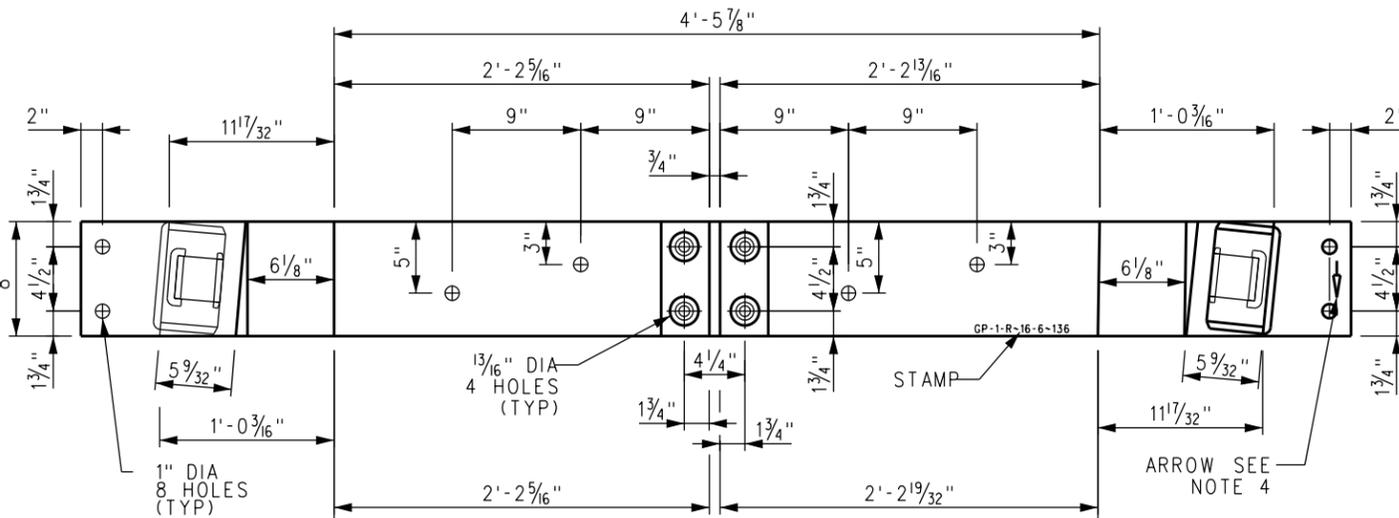
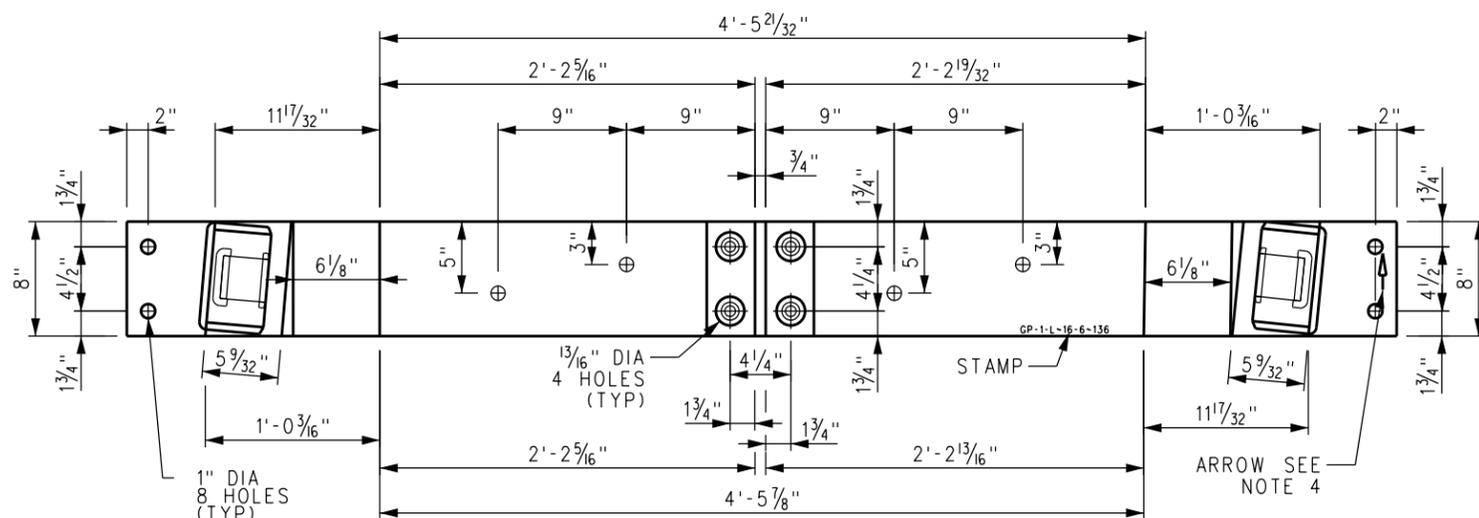
REV.	DATE	DESCRIPTION	DES.	ENG.
X	XX-XX-XX	REVISION	XX	XX
DRAWN BY: <i>Nareh D. Bze</i> HDR DATE: 03/31/2011 ASSISTANT DIRECTOR: STANDARDS & DESIGN <i>William Dava</i> DIRECTOR OF ENGINEERING AND CONSTRUCTION				

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

ENGINEERING STANDARDS
 NO 10-136 LB RE 1:40 CANTED,
 BRACE DETAIL
 FOR RAISED U69 GUARD RAIL

STANDARD	2802
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2802-55



**INSULATED SLIDE GAUGE PLATE GP-1L ~ 1" x 8" ~ MILLED,
W/ BETHLEHEM BOLTLESS BRACES**

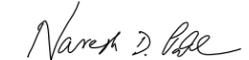
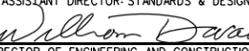
GAUGE AT PT = 4'-8 1/2", HEEL SPREAD = 6 1/4", PT = 0"
GAUGE PLATE INSULATED JOINT TO BE "3M" TYPE, HUCKED TO PLATE.

**INSULATED SLIDE GAUGE PLATE GP-1R ~ 1" x 8" ~ MILLED
W/ BETHLEHEM BOLTLESS BRACES**

GAUGE AT PT = 4'-8 1/2", HEEL SPREAD = 6 1/4", PT = 0"
GAUGE PLATE INSULATED JOINT TO BE "3M" TYPE, HUCKED TO PLATE.

NOTES:

1. METAL AREAS TO BE PAINTED MUST BE CLEANED OF ALL IMPURITIES.
2. ANCHOR HOLE SIZE IS 1" DIA ± 1/32"
3. STAMP PLATE AS SHOWN W/ PROPER PL NO ~ SWITCH LENGTH & WEIGHT OF RAIL.
4. PAINT MARK EACH PLATE WITH AN ARROW POINTING TOWARDS SWITCH POINT.
5. ALL SHOULDERS ARE PANDROL TYPE 1 FORGED.
6. FURNISH THE FOLLOWING WITH EACH PLATE:
 - (2) BETHLEHEM BRACES
 - (2) BETHLEHEM SERRATED WASHERS
 - (2) PANDROL CLIP ES2362.

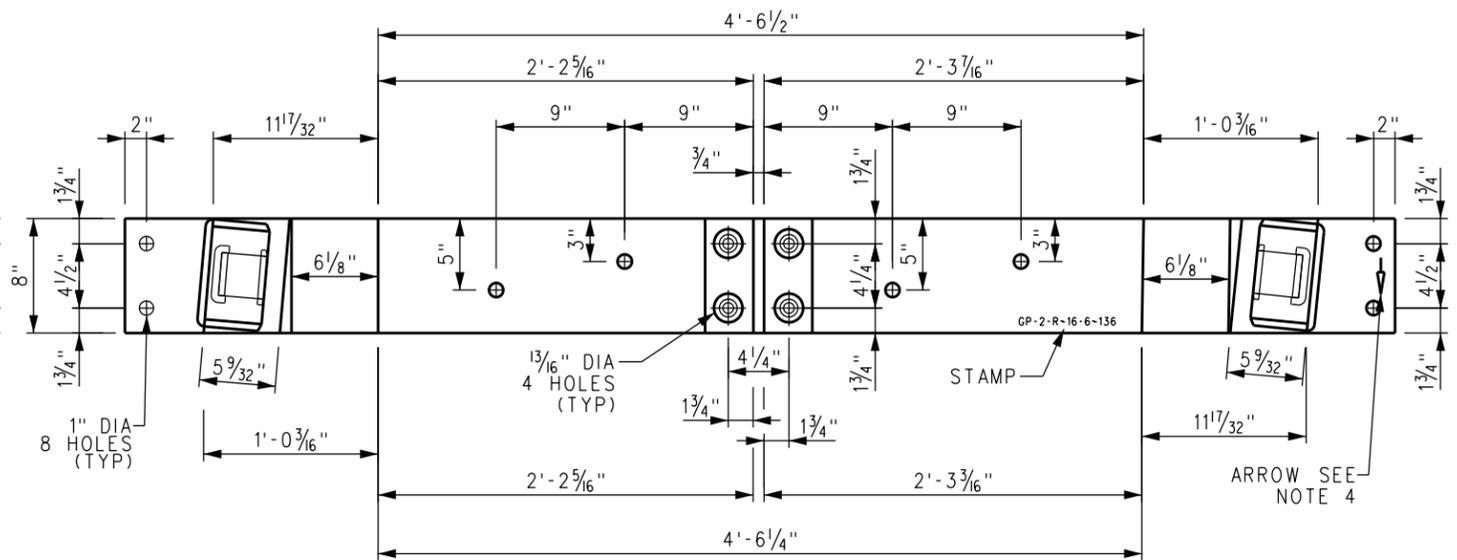
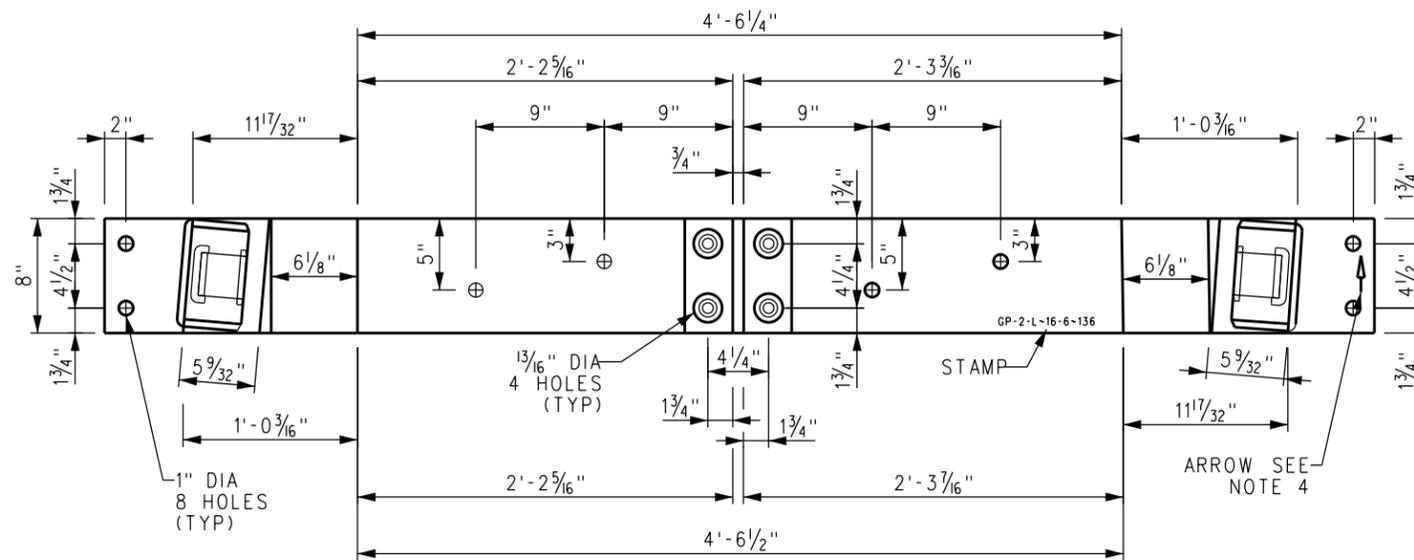
REV.	DATE	DESCRIPTION	DES.	ENG.
X	XX-XX-XX	REVISION	XX	XX
DRAWN BY: A. CARLOS DATE: 03/31/2011  ASSISTANT DIRECTOR: STANDARDS & DESIGN  DIRECTOR OF ENGINEERING AND CONSTRUCTION				

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ENGINEERING STANDARDS
NO 10-136 LB RE
INSULATED GAUGE PLATE GP-1L AND GP-1R

STANDARD	2802
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2802-81



**INSULATED SLIDE GAUGE PLATE GP-2L ~ 1" x 8" ~ MILLED,
W/ BETHLEHEM BOLTLESS BRACES**

GAUGE AT PT = 4'-8 1/2", HEEL SPREAD = 6 1/4", PT = 1/4"
GAUGE PLATE INSULATED JOINT TO BE "3M" TYPE, HUCKED TO PLATE

**INSULATED SLIDE GAUGE PLATE GP-2R ~ 1" x 8" ~ MILLED,
W/ BETHLEHEM BOLTLESS BRACES**

GAUGE AT PT = 4'-8 1/2", HEEL SPREAD = 6 1/4", PT = 1/4"
GAUGE PLATE INSULATED JOINT TO BE "3M" TYPE, HUCKED TO PLATE

NOTES:

1. METAL AREAS TO BE PAINTED MUST BE CLEANED OF ALL IMPURITIES.
2. ANCHOR HOLE SIZE IS 1" DIA ± 1/32".
3. STAMP PLATE AS SHOWN W/ PROPER PL NO ~ SWITCH LENGTH & WEIGHT OF RAIL.
4. PAINT MARK EACH PLATE WITH AN ARROW POINTING TOWARDS SWITCH POINT.
5. FURNISH THE FOLLOWING WITH EACH PLATE:
 - (2) BETHLEHEM BRACES
 - (2) BETHLEHEM SERRATED WASHERS
 - (2) PANDROL CLIP ES2362.
6. SHOULDERS TO PANDROL TYPE 1 FORGED.

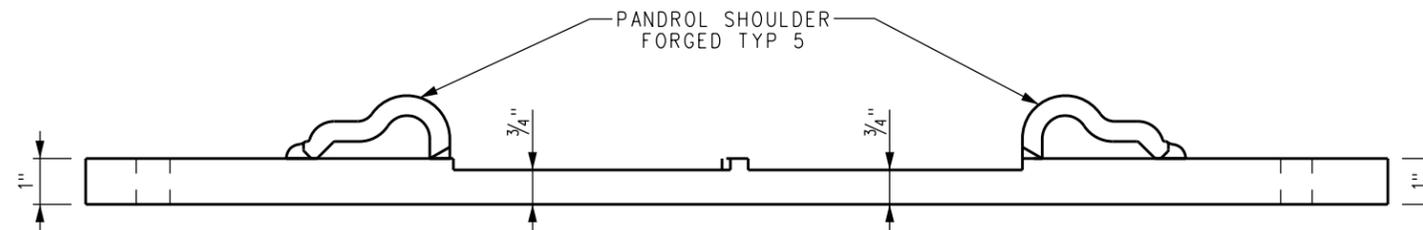
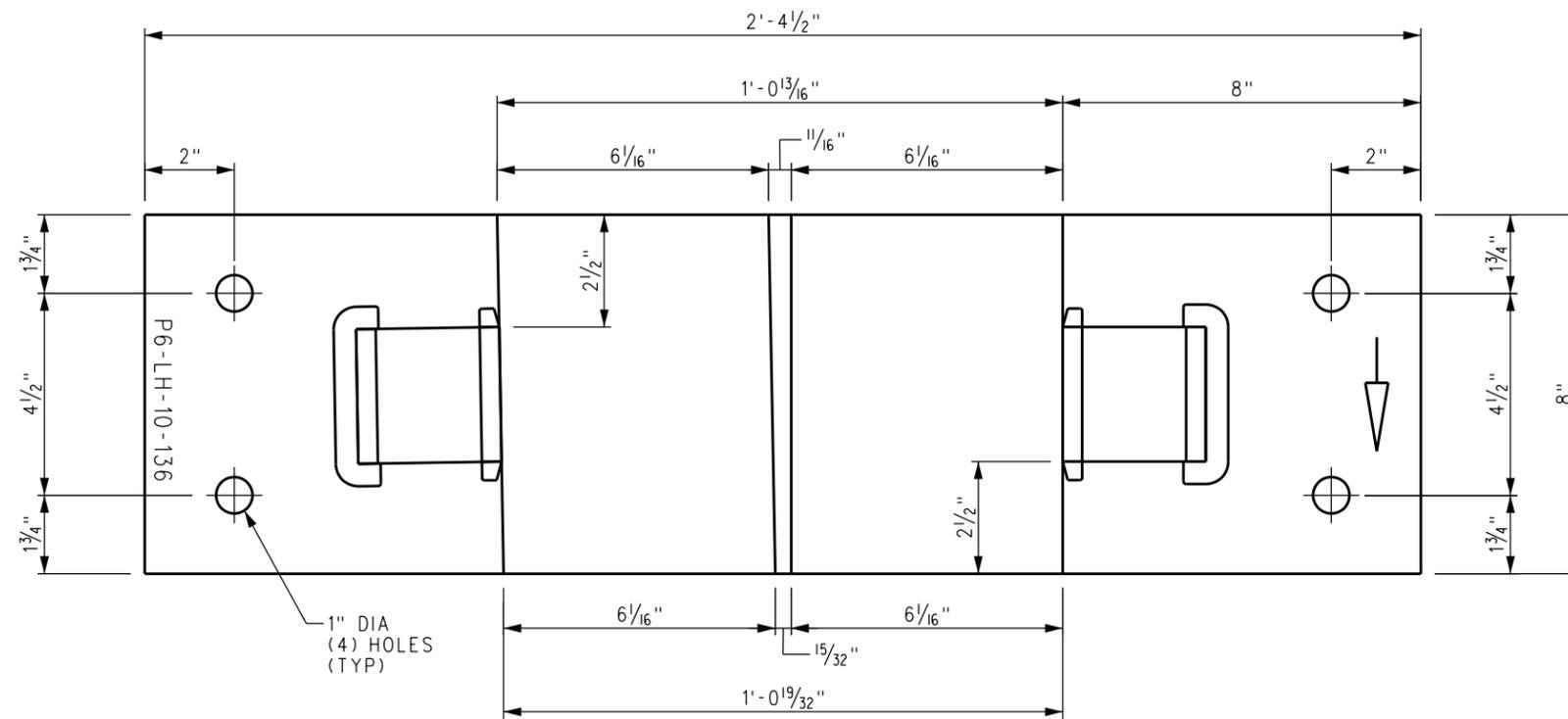
REV.	DATE	DESCRIPTION	DES.	ENG.
X	XX-XX-XX	REVISION	XX	XX
DRAWN BY: A. CARLOS DATE: 03/31/2011 Assistant Director: STANDARDS & DESIGN Director of Engineering and Construction				

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

ENGINEERING STANDARDS
NO 10-136 LB RE
INSULATED GAUGE PLATE GP-2L AND GP-2R

STANDARD	2802
SCALE	NTS
REVISION SHEET	1 OF 2
CADD FILE	ES2802-82



HEEL PLATE P6-LH

1" x 8" x 2'-4 1/2" (MILLED) ~ W/ PANDROLS
(2 EA) FOR LEFT HAND TURNOUT

NOTES:

1. STAMP PLATE: "RESPECTIVE PLATE NUMBER, NO 10, 136".
2. ANCHOR HOLE SIZE IS 1" DIA ± 1/32".
3. PAINT MARK EACH PLATE WITH ARROW POINTING TOWARDS SWITCH POINT.

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

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

Assistant Director: Standards & Design
William D. Davis
 Director of Engineering and Construction

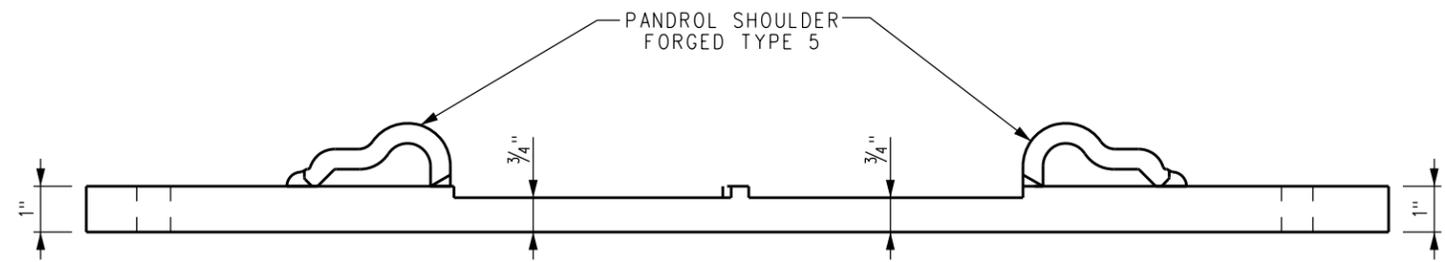
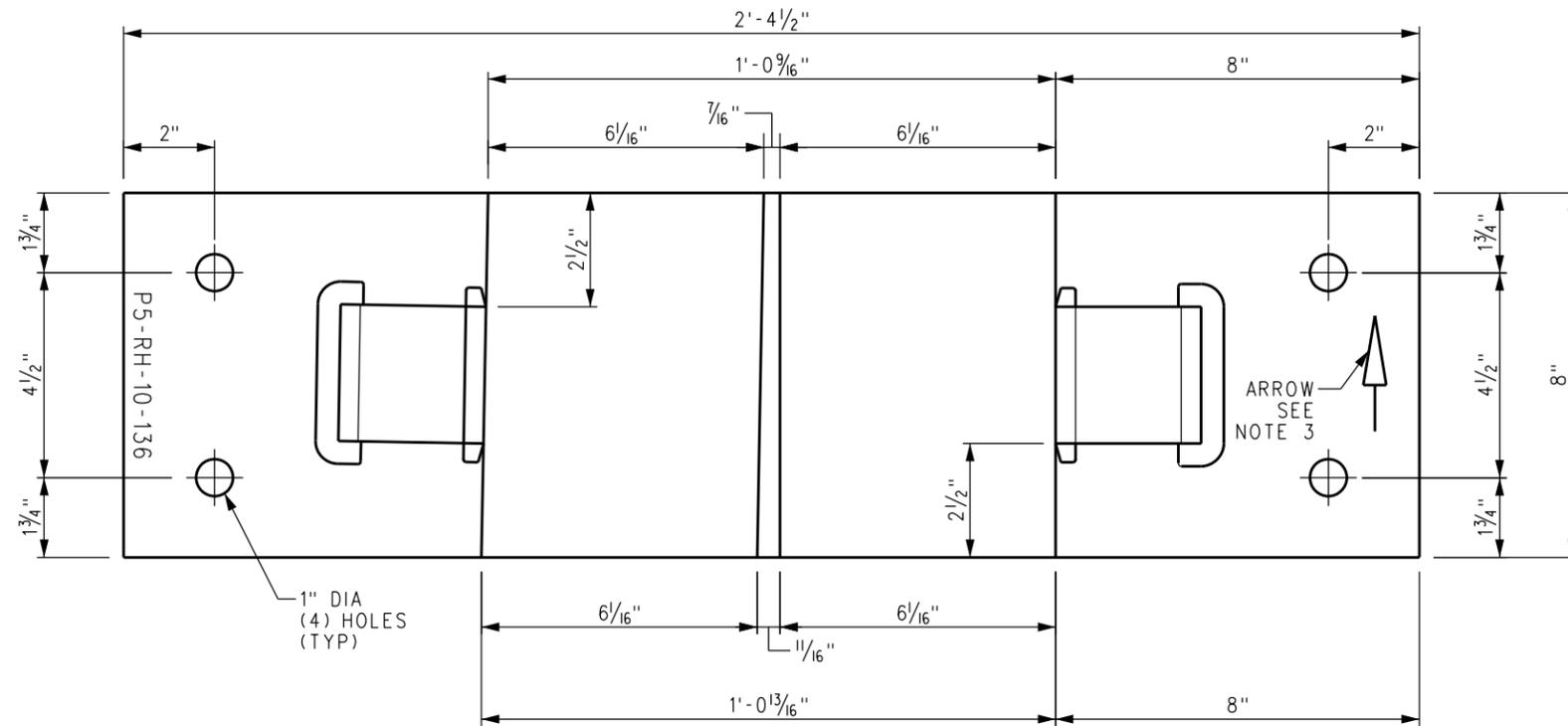
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 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS

NO 10-136 LB RE WOOD TIE TURNOUT
 HEEL PLATE P6-LH

STANDARD	2802
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2802-83



HEEL PLATE P5-RH
 1" x 8" x 2'-4 1/2" (MILLED) ~ W/ PANDROLS
 (2 EA) FOR RIGHT HAND TURNOUT

- NOTES:**
1. STAMP PLATE: "RESPECTIVE PLATE NUMBER, NO 10, 136".
 2. ANCHOR HOLE SIZE IS 1" DIA ± 1/32".
 3. PAINT MARK EACH PLATE WITH ARROW POINTING TOWARDS SWITCH POINT.

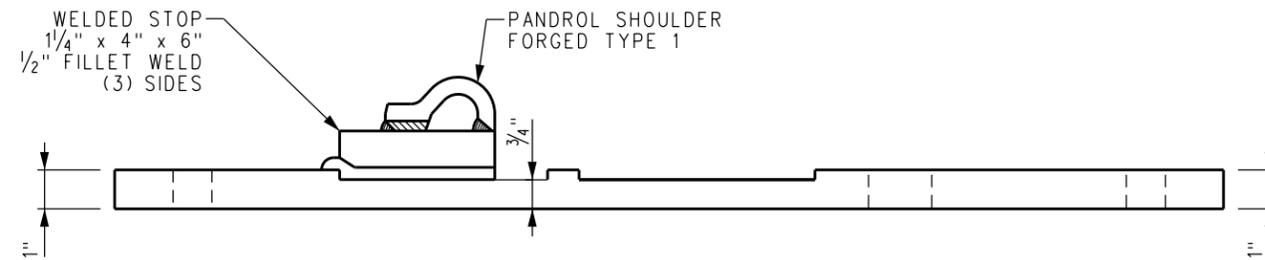
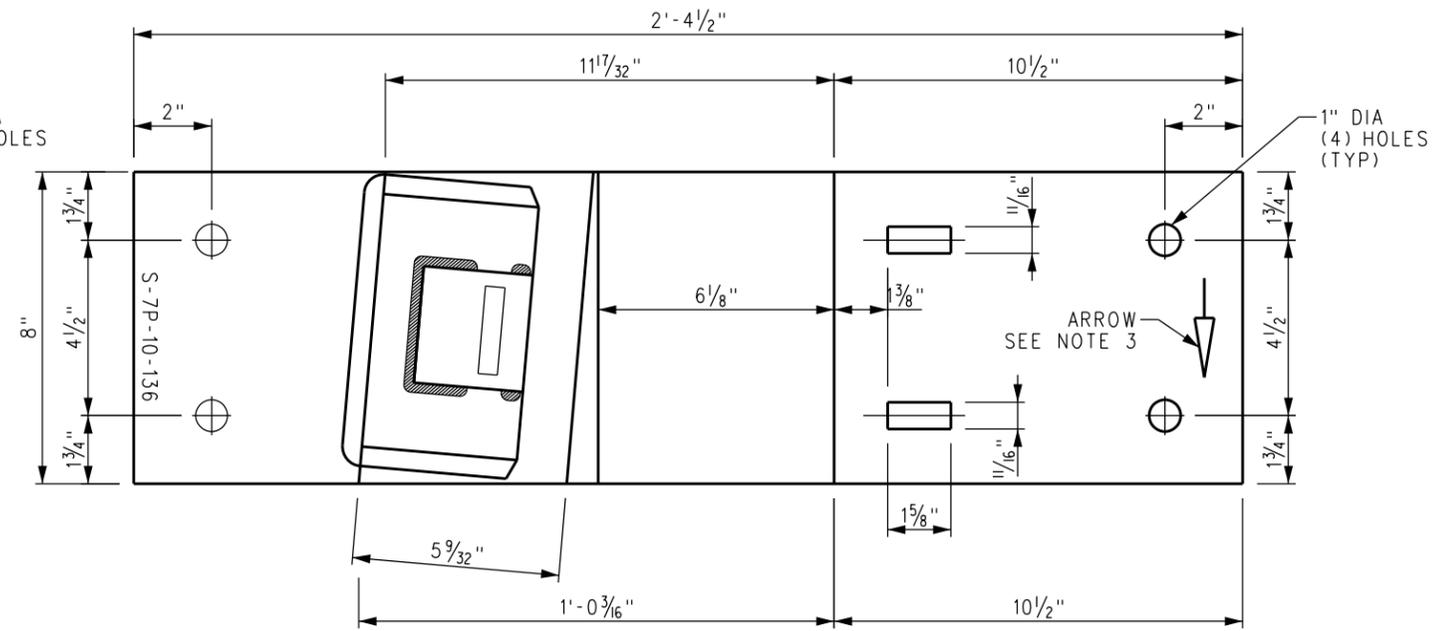
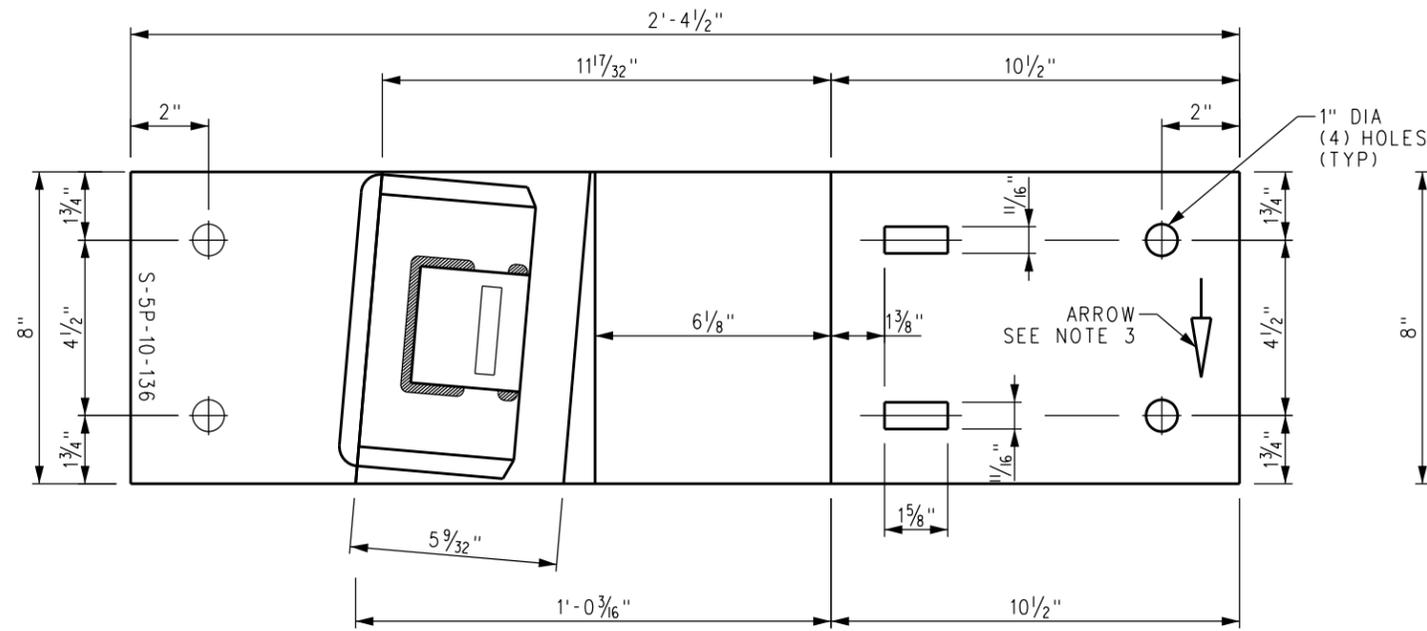
REV.	DATE	DESCRIPTION	DES.	ENG.
X	XX-XX-XX	REVISION	XX	XX
DRAWN BY: A. CARLOS		DATE: 03/31/2011	SCERRA ENGINEERING STANDARDS ARE INTENDED FOR SCERRA APPROVED USES ONLY. FOR NON-SCERRA APPROVED USES SCERRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. 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.	
ASSISTANT DIRECTOR: STANDARDS & DESIGN <i>Nareh D. Pappas</i>		DIRECTOR OF ENGINEERING AND CONSTRUCTION <i>William D. Davis</i>		

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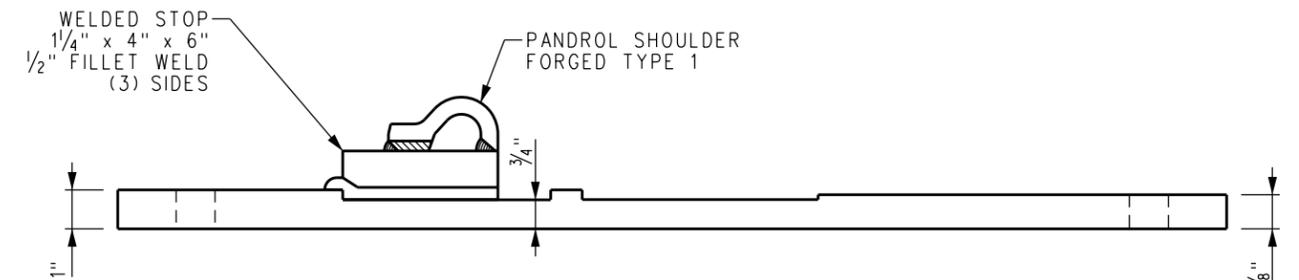
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 NO 10-136 LB RE WOOD TIE TURNOUT
 HEEL PLATE P5-RH

STANDARD	2802
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2802-84



BRACE SLIDE PLATE S-5P
1" x 8" x 2'-4 1/2" (MILLED)
1/8" RISER



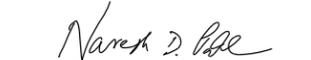
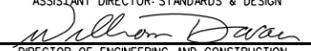
BRACE SLIDE PLATE S-7P
1" x 8" x 2'-4 1/2" (MILLED)
7/8" RISER

FURNISH:

- BETHLEHEM BOLTLESS ADJUSTABLE BRACE, CONSISTING OF:
(1) BETHLEHEM BRACE.
(1) BETHLEHEM SERRATED WASHER.

NOTES:

1. STAMP PLATE: "RESPECTIVE PLATE NUMBER, NO 10, 136".
2. ANCHOR HOLE SIZE IS 1" DIA ± 1/32".
3. PAINT MARK EACH PLATE WITH ARROW POINTING TOWARDS SWITCH POINT.

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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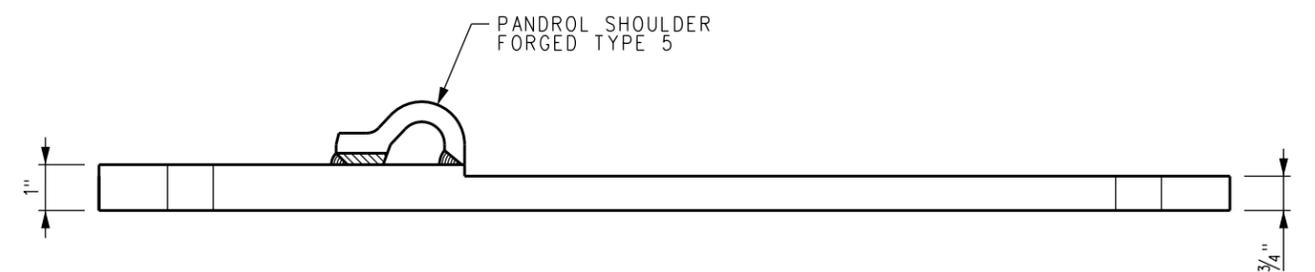
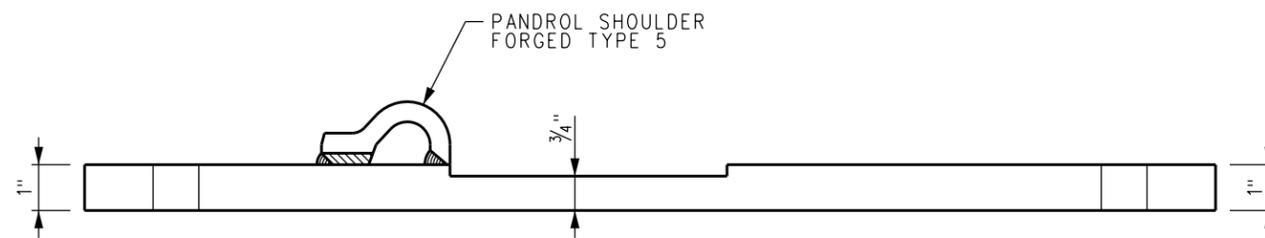
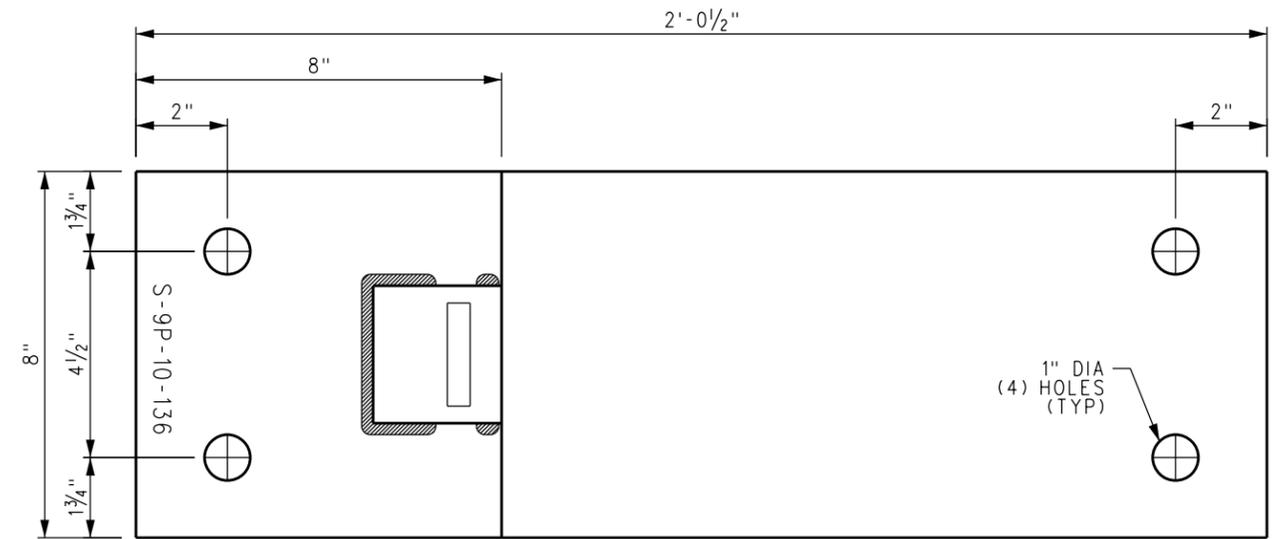
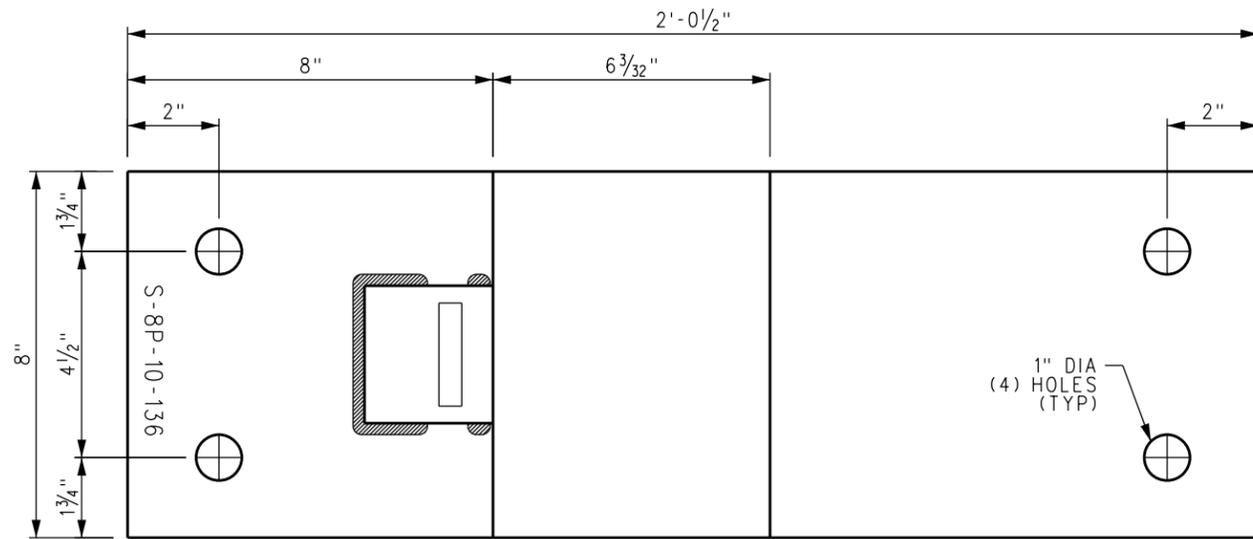


SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS

NO 10-136 LB RE
BRACE SLIDE PLATE
S-5P AND S-7P

STANDARD	2802
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2802-85

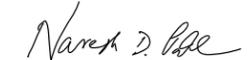
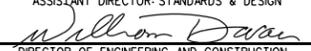


SLIDE PLATE S-8P
1" x 8" x 2'-0 1/2" (MILLED)
0" RISER

SLIDE PLATE S-9P
1" x 8" x 2'-0 1/2" (MILLED)
0" RISER

NOTES:

1. STAMP PLATE: "RESPECTIVE PLATE NUMBER, NO 10, 136".
2. ANCHOR HOLE SIZE IS 1" DIA ± 1/32".

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

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

ENGINEERING STANDARDS

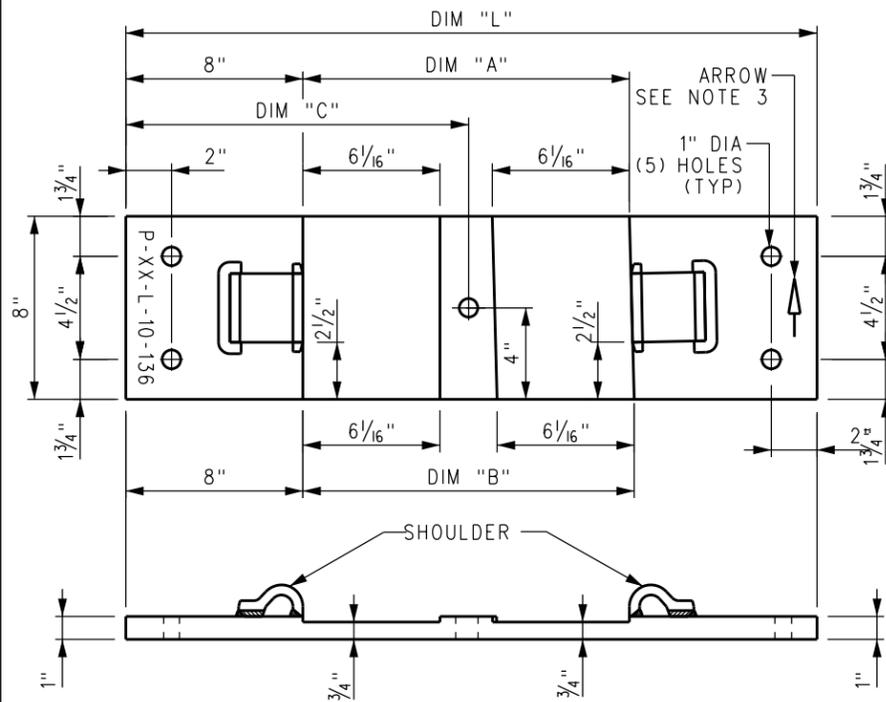
NO 10-136 LB RE
SLIDE PLATES S-8P AND S-9P
FOR RH OR LH WOOD TIE TURNOUTS

STANDARD	2802
SCALE:	NTS
REVISION SHEET	1 OF 2
CADD FILE:	ES2802-86

DIMENSION TABLE					
PLATE	DIM "A"	DIM "B"	DIM "C"	DIM "L"	PL REQ'D
P-10-L	1'-1 1/8"	1'-1 3/8"	1'-2 19/32"	2'-5"	2 EA
P-11-L	1'-1 23/32"	1'-1 5/16"	1'-2 7/8"	2'-6"	2 EA
P-12-L	1'-2 11/32"	1'-2 19/32"	1'-3 3/16"	2'-6 1/2"	2 EA
P-13-L	1'-3"	1'-3 1/4"	1'-3 1/2"	2'-7 1/2"	2 EA
P-14-L	1'-3 11/16"	1'-3 31/32"	1'-3 27/32"	2'-8"	2 EA
P-15-L	1'-3 13/32"	1'-4 23/32"	1'-4 7/32"	2'-8 1/2"	2 EA

DIMENSION TABLE				
PLATE	DIM "A"	DIM "B"	DIM "L"	PL REQ'D
P-16-L	1'-5 1/8"	1'-5 7/16"	2'-9 1/2"	2 EA
P-17-L	1'-5 15/16"	1'-6 1/4"	2'-10"	2 EA
P-18-L	1'-6 25/32"	1'-7 5/32"	2'-11"	2 EA
P-23-L	1'-7 7/16"	1'-8 7/32"	2'-11"	1 EA
P-29-L	1'-7 11/32"	1'-8 1/8"	3'-0"	1 EA

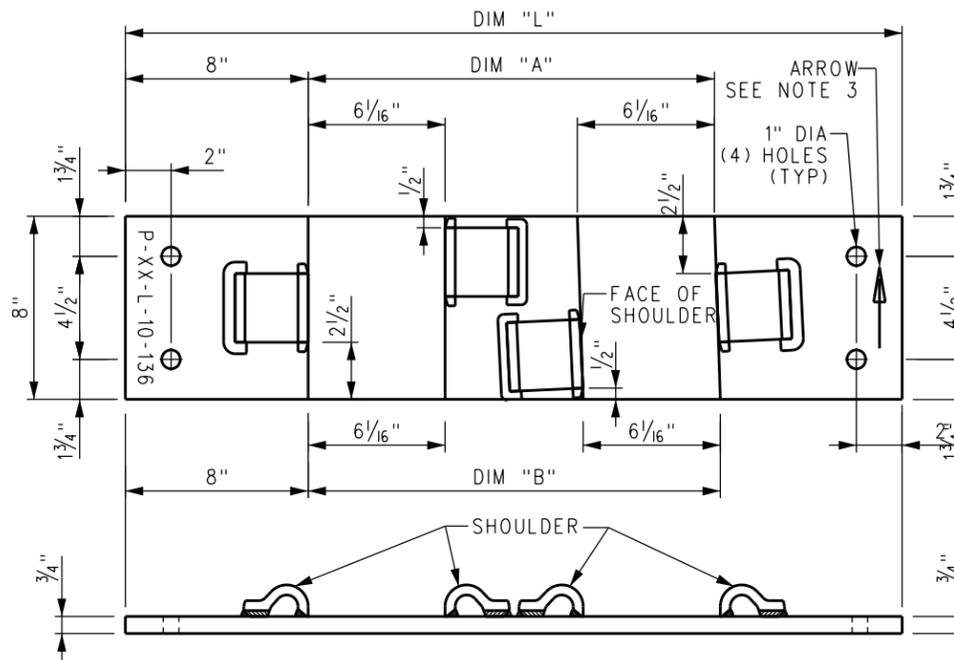
DIMENSION TABLE				
PLATE	DIM "A"	DIM "B"	DIM "L"	PL REQ'D
P-19-L	1'-8 5/32"	1'-7 25/32"	3'-0"	2 EA
P-20-L	1'-9 1/8"	1'-8 3/4"	3'-1"	2 EA
P-21-L	1'-10 5/32"	1'-9 3/4"	3'-2"	2 EA
P-22-L	1'-10 3/16"	1'-9 1/16"	3'-2"	1 EA
P-30-L	1'-10 5/32"	1'-9 11/32"	3'-2"	1 EA



TURNOUT PLATES
P-10-L THRU P-15-L
 1" x 8" x DIM "L" (MILLED) ~ W/PANDROLS
 FOR LEFT HAND TURNOUT ONLY

NOTE: FURNISH WITH EACH PLATE

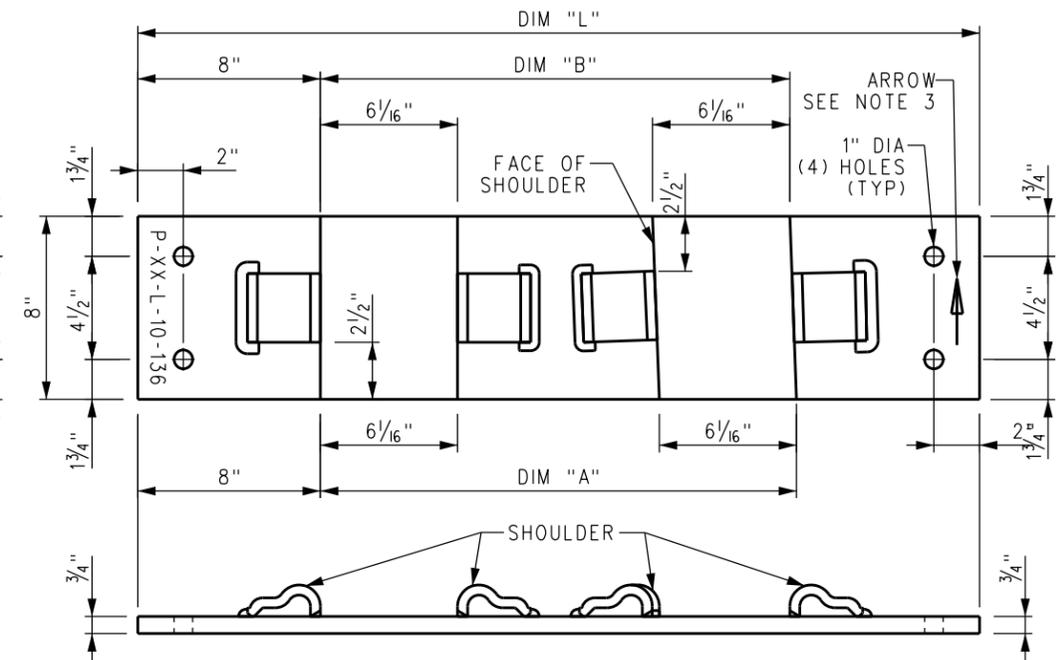
- (2) PANDROL SHOULDER TYPE 5 FORGED
- (2) PANDROL CLIP ES2362
- (1) DIRAIL HOLD-DOWN CLIP (SEE CLIP TABLE)



TURNOUT PLATES
P-16-L THRU P-18-L & P-23-L & P-29-L
 3/4" x 8" x DIM "L" (FLAT) ~ W/ PANDROLS
 FOR LEFT HAND TURNOUT ONLY

NOTE: FURNISH WITH EACH PLATE

- (4) PANDROL SHOULDER TYPE 1 FORGED
- (4) PANDROL CLIP ES2362



TURNOUT PLATES
P-19-L THRU P-22-L & P-30-L
 3/4" x 8" x DIM "L" (FLAT) ~ W/ PANDROLS
 FOR LEFT HAND TURNOUT ONLY

NOTE: FURNISH WITH EACH PLATE

- (4) PANDROL SHOULDER TYPE 1 FORGED
- (4) PANDROL CLIP ES2362

NOTES:

1. STAMP PLATE: "RESPECTIVE PLATE NO, NO 10, 136 RE".
2. ANCHOR HOLE SIZE IS 1" DIA ± 1/32".
3. PAINT MARK EACH PLATE WITH ARROW POINTING TOWARDS SWITCH POINT.

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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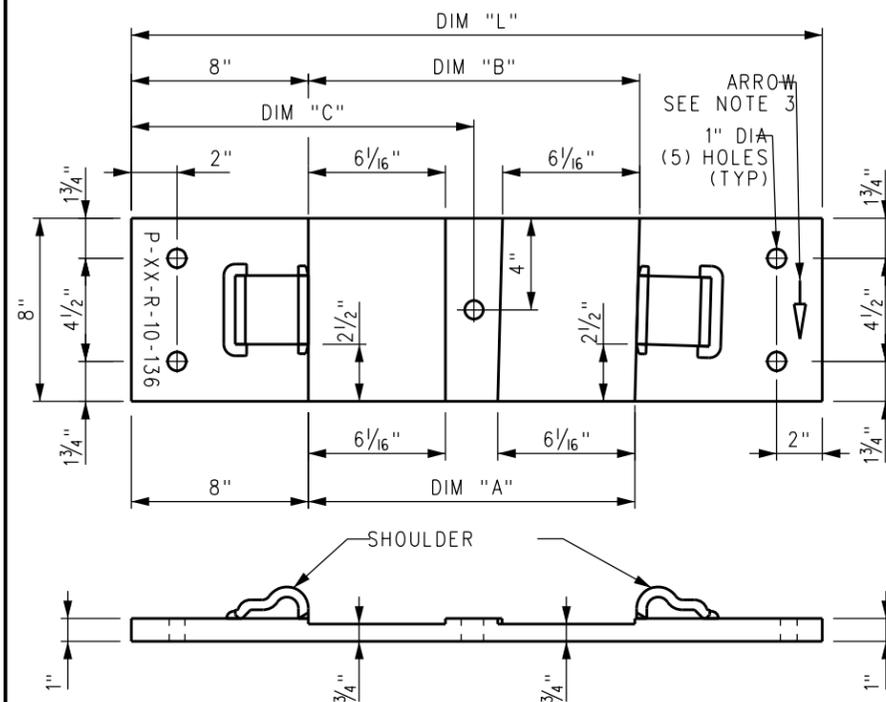
ENGINEERING STANDARDS
 NO 10-136 LB RE TURNOUT PLATES
 P-10-L THRU P-23-L, P-29-L & P-30-L,
 WOOD TIE TURNOUT W/SPRING FROG
 FOR 16'-6" SWITCH (40'-0" RAIL)

STANDARD	2802
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2802-91

DIMENSION TABLE					
PLATE	DIM "A"	DIM "B"	DIM "C"	DIM "L"	PL REQ'D
P-10-R	1'-1 ¹ / ₈ "	1'-1 ³ / ₈ "	1'-2 ¹⁹ / ₃₂ "	2'-5"	2 EA
P-11-R	1'-1 ²³ / ₃₂ "	1'-1 ¹⁵ / ₁₆ "	1'-2 ⁷ / ₈ "	2'-6"	2 EA
P-12-R	1'-2 ¹ / ₃₂ "	1'-2 ¹⁹ / ₃₂ "	1'-3 ³ / ₁₆ "	2'-6 ¹ / ₂ "	2 EA
P-13-R	1'-3"	1'-3 ¹ / ₄ "	1'-3 ¹ / ₂ "	2'-7 ¹ / ₂ "	2 EA
P-14-R	1'-3 ¹¹ / ₁₆ "	1'-3 ³¹ / ₃₂ "	1'-3 ²⁷ / ₃₂ "	2'-8"	2 EA
P-15-R	1'-4 ¹³ / ₃₂ "	1'-4 ²³ / ₃₂ "	1'-4 ⁷ / ₃₂ "	2'-8 ¹ / ₂ "	2 EA

DIMENSION TABLE				
PLATE	DIM "A"	DIM "B"	DIM "L"	PL REQ'D
P-16-R	1'-5 ¹ / ₈ "	1'-5 ⁷ / ₁₆ "	2'-9 ¹ / ₂ "	2 EA
P-17-R	1'-5 ¹⁵ / ₁₆ "	1'-6 ¹ / ₄ "	2'-10"	2 EA
P-18-R	1'-6 ²⁵ / ₃₂ "	1'-7 ⁵ / ₃₂ "	2'-11"	2 EA
P-23-R	1'-7 ⁷ / ₁₆ "	1'-8 ⁷ / ₃₂ "	2'-11"	1 EA
P-29-R	1'-7 ¹¹ / ₃₂ "	1'-8 ¹ / ₈ "	3'-0"	1 EA

DIMENSION TABLE				
PLATE	DIM "A"	DIM "B"	DIM "L"	PL REQ'D
P-19-R	1'-8 ⁵ / ₃₂ "	1'-7 ²⁵ / ₃₂ "	3'-0"	2 EA
P-20-R	1'-9 ¹ / ₈ "	1'-8 ³ / ₄ "	3'-1"	2 EA
P-21-R	1'-10 ⁵ / ₃₂ "	1'-9 ³ / ₄ "	3'-2"	2 EA
P-22-R	1'-10 ³ / ₁₆ "	1'-9 ⁷ / ₁₆ "	3'-2"	1 EA
P-30-R	1'-10 ⁵ / ₃₂ "	1'-9 ¹¹ / ₃₂ "	3'-2"	1 EA

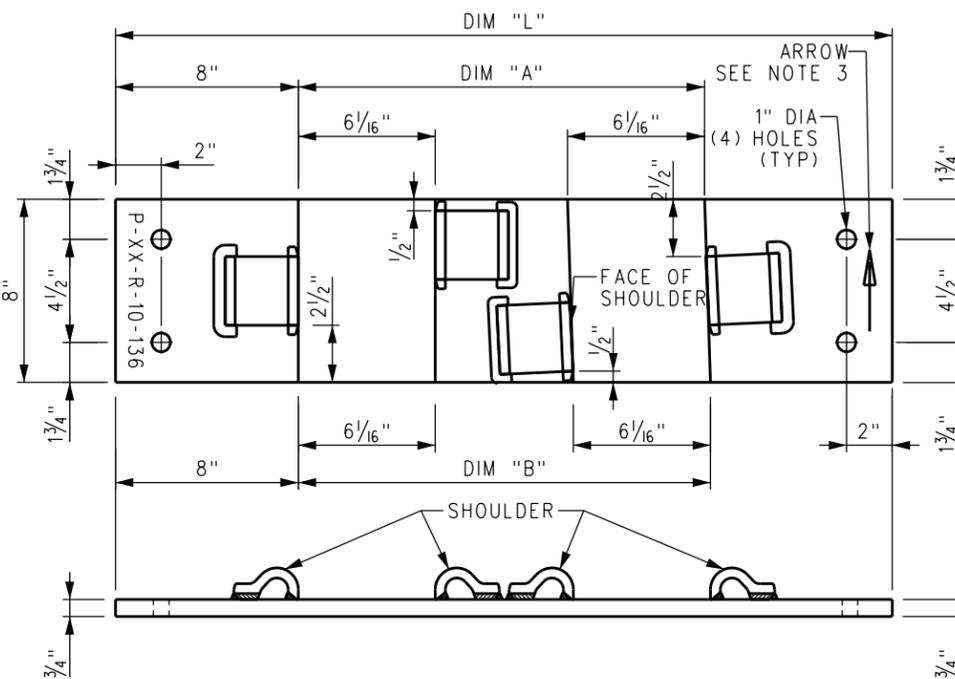


TURNOUT PLATES
P-10-R THRU P-15-R

1" x 8" x DIM "L" (MILLED) ~ W/PANDROLS
FOR RIGHT HAND TURNOUT

NOTE: FURNISH WITH EACH PLATE

- (2) PANDROL SHOULDER ES2362
- (2) PANDROL CLIP ES2362
- (1) DIRAIL HOLD-DOWN CLIP (SEE CLIP TABLE)



TURNOUT PLATES
P-16-R THRU P-18-R & P-23-R & P-29-R

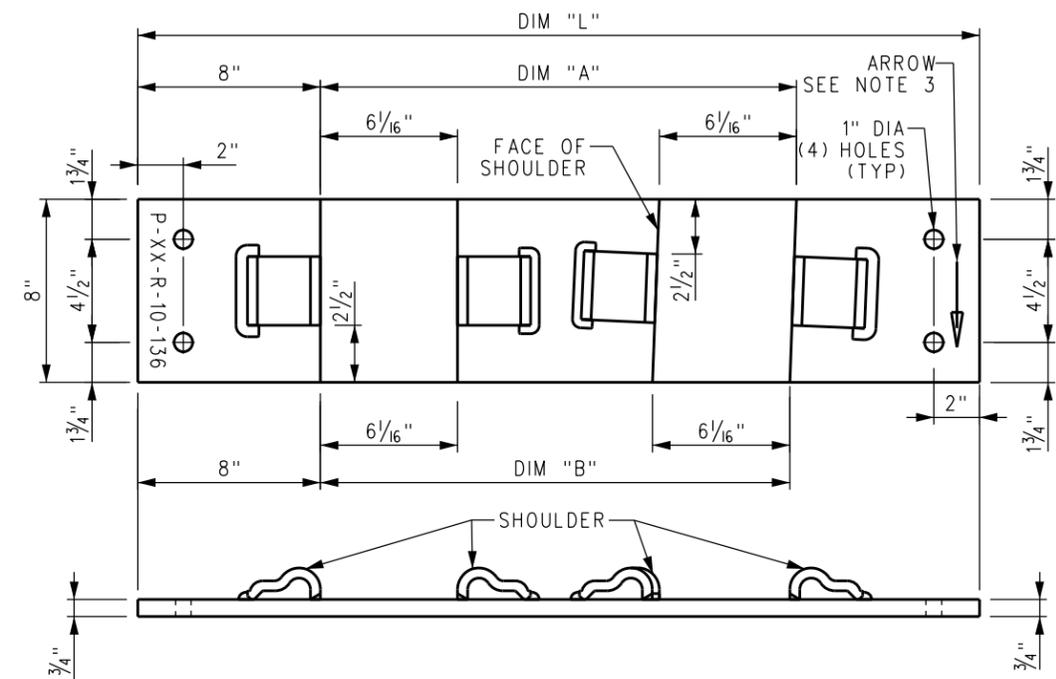
3/4" x 8" x DIM "L" (FLAT) ~ W/ PANDROLS
FOR RIGHT HAND TURNOUT ONLY

NOTE: FURNISH WITH EACH PLATE

- (4) PANDROL SHOULDER TYPE 1 FORGED
- (4) PANDROL CLIP ES2362

NOTES:

1. STAMP PLATE: "RESPECTIVE PLATE NO, NO 10, 136 RE".
2. ANCHOR HOLE SIZE IS 1" DIA ± 1/32".
3. PAINT MARK EACH PLATE WITH ARROW POINTING TOWARDS SWITCH POINT.



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

3/4" x 8" x DIM "L" (FLAT) ~ W/PANDROLS
FOR RIGHT HAND TURNOUT ONLY

NOTE: FURNISH WITH EACH PLATE

- (4) PANDROL SHOULDER TYPE 1 FORGED
- (4) PANDROL CLIP ES2362

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

DRAWN BY: HDR DATE: 03/31/2011

Narek D. Papp
ASSISTANT DIRECTOR: STANDARDS & DESIGN

William Davan
DIRECTOR OF ENGINEERING AND CONSTRUCTION

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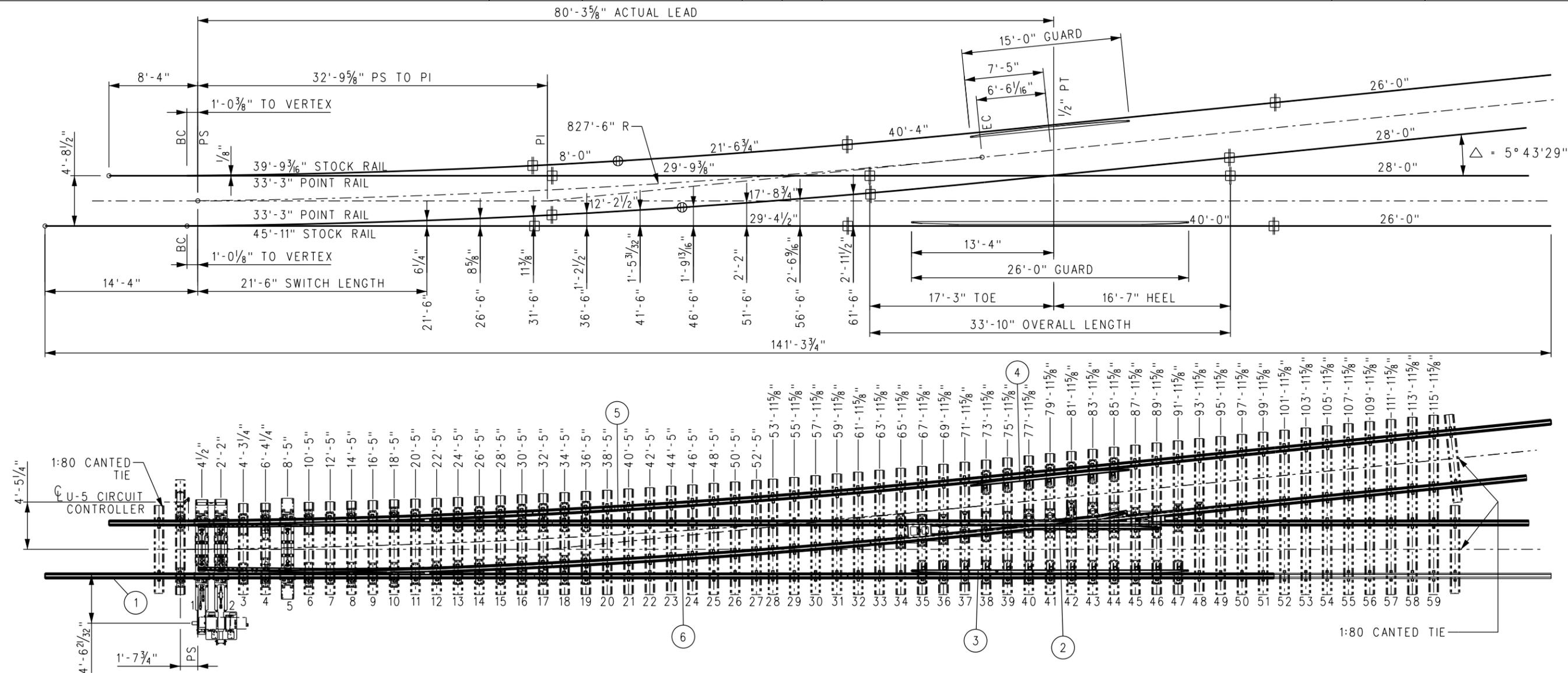


SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS	
NO 10-136 LB RE TURNOUT PLATES P-10-R THRU P-23-R, P-29-R & P-30-R, WOOD TIE TURNOUT W/SPRING FROG FOR 16'-6" SWITCH (40'-0" RAIL)	

STANDARD	2802
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2802-92

BILL OF MATERIAL				BILL OF MATERIAL					
ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO	ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	1	SWITCH PACK, NO 10-136 LB RE MODIFIED TANGENTIAL, LH, HST	ES2803-13		12	1	DRILLED RAIL, 136 LB RE, 40'-4" LONG	-	
2	1	FROG PACK, NO 10-136 LB RE WSM, LH	ES2803-41		13	276	TIE SCREW, CONCRETE 1/8" DIAMETER x 6" HEX HEAD	-	
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'-0" LG, 136 LB RE RAISED 1", STRAIGHT	ES2800-50		14	276	WASHER FLAT 1/8" TYPE A NARROW 15/16" x 1 3/4" x 0.134"	-	
4	1	GUARD RAIL ASSEMBLY BOLTLESS, 15'-0" LG, 136 LB RE RAISED 1", LH	ES2803-51		15	276	SPRING WASHER, DOUBLE COIL (Fe6)	-	
5	1	INSULATED RAIL ASSEMBLY, 29'-6 3/4" C/W BONDED INSULATED JOINT	-		16	1	CONCRETE TIE SET, 0-59 + (3) 1:80 TIES, PLATE PADS, LH	-	
6	1	INSULATED RAIL ASSEMBLY, 29'-11 1/4" C/W BONDED INSULATED JOINT	-		17	224	CLIP PANDROL E2055	-	
7	2	DRILLED RAIL, 136 LB RE, 26'-0" LONG	-		18	224	INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD-10	-	
8	2	DRILLED RAIL, 136 LB RE, 28'-0" LONG	-		19	8	CLIP PANDROL E2063	-	
9	1	DRILLED RAIL, 136 LB RE, 29'-4 1/2" LONG	-		20	8	INSULATION, PANDROL NYLON 6790	-	
10	1	DRILLED RAIL, 136 LB RE, 29'-9 3/8" LONG	-		21	116	TIE PAD PANDROL 6993SR	-	
11	1	DRILLED RAIL, 136 LB RE, 40'-0" LONG	-		22	138	SHIM, TO REDUCE PLATE FLEXURE	-	



NOTES:

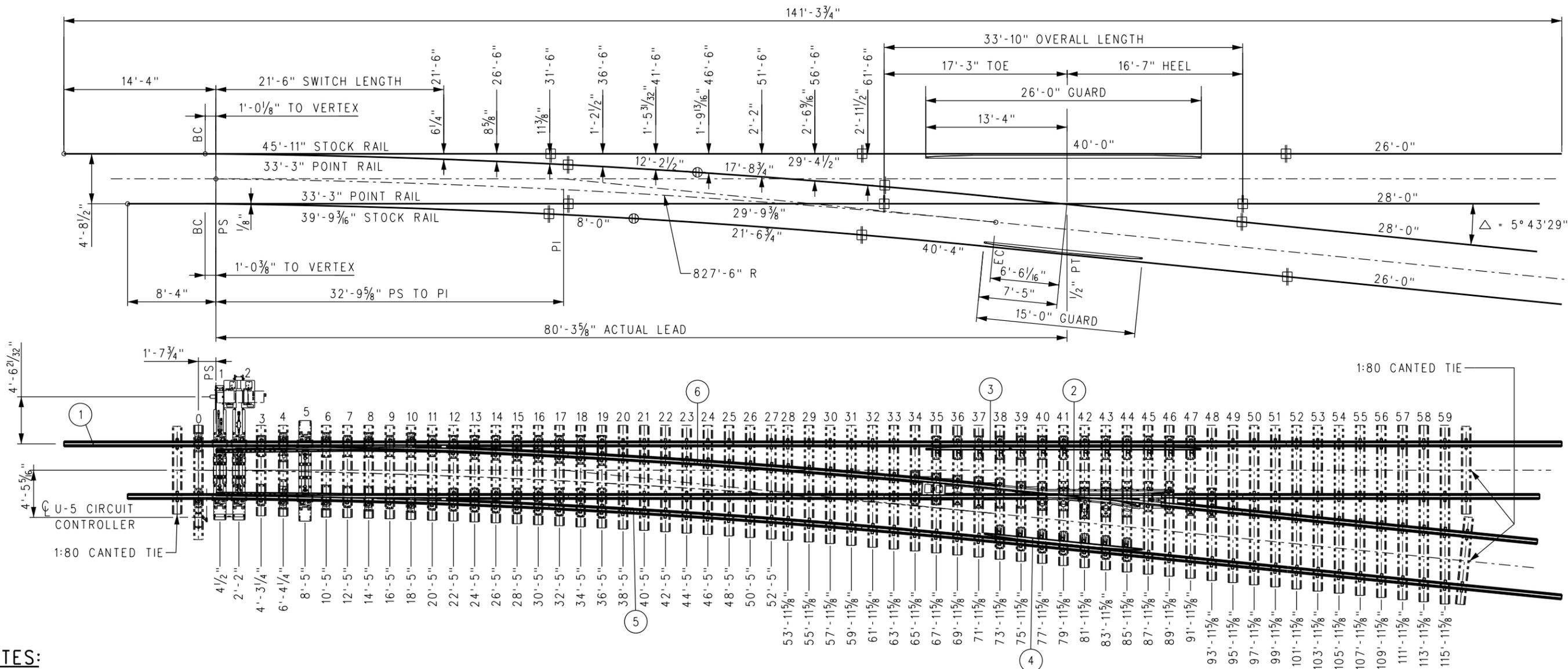
- ALL RAILS SHALL HAVE IDENTIFICATION COLOR CODE PAINTED ON WEB, CLEAR OF JOINT AREA.
- RAIL LENGTHS ALLOW 1/8" GAP BETWEEN RAIL JOINTS FOR WELDING.
- GUARD RAILS ARE RAISED 1" AND FORM A 1 7/8" FLANGWAY.
- SWITCH MACHINE AND MACHINE PLATE (NIC) MUST BE COORDINATED WITH SCRR.
- ALL LENGTHS SHALL INCLUDE 1'-9" FROM TIE ENDS TO RAIL CENTERLINE, EXCEPT AS NOTED AND 1:80 CANTED TIES.
- TIGHTEN TIE SCREW WITH DOUBLE COIL SPRING WASHER IN PLACE.
- ⊕ = INSULATED JOINT ⊕ = WELDED JOINT

TURNOUT DATA:

FROG NO 10	Δ = 5° 43' 29"	SWITCH LENGTH OF POINTS:	21'-6" / 33'-3"	ACTUAL LEAD:	80'-3 5/8"
TOE LENGTH:	17'-3"	ENTRY ANGLE:	0° 37' 11"	CLOSURE AREA	
HEEL LENGTH:	16'-7"	VERTEX DISTANCE:	VARIES PER SIDE	CENTERLINE RADIUS:	827'-6"
TOTAL LENGTH:	33'-10"	THICKNESS AT POINT:	1/8"	DEGREE OF CURVE:	6° 55' 41"
		CENTERLINE RADIUS:	827'-6"	DESIGN SPEEDS	
		THROW AT ROD *1:	4 3/4"	25 MPH PASSENGER @ 3" UNBALANCE	
				15 MPH FREIGHT @ 2" UNBALANCE	

DRAWN BY: <i>Nareh D. Papp</i>		HDR: <i>Willson Davan</i>		DATE: 03/31/2011	<small>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.</small>		ENGINEERING STANDARDS		STANDARD: 2803
ASSISTANT DIRECTOR: STANDARDS & DESIGN <i>Willson Davan</i> DIRECTOR OF ENGINEERING AND CONSTRUCTION		SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA. 90012		TURNOUT LAYOUT NO 10-136 LB RE LH WSM FROG TURNOUT HST, SWITCH MACHINE ON MAINLINE SIDE			SCALE: NTS	REVISION SHEET: 1 OF 1	CADD FILE: ES2803-01

BILL OF MATERIAL				BILL OF MATERIAL					
ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO	ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	1	SWITCH PACK, NO 10-136 LB RE MODIFIED TANGENTIAL, RH, HST	ES2803-14		12	1	DRILLED RAIL, 136 LB RE, 40'-4" LONG	-	
2	1	FROG PACK, NO 10-136 LB RE WSM, RH	ES2803-40		13	276	TIE SCREW, CONCRETE 1/8" DIAMETER x 6" HEX HEAD	-	
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'-0" LG, 136 LB RE RAISED 1", STRAIGHT	ES2800-50		14	276	WASHER FLAT 1/8" TYPE A NARROW 15/16" x 1 3/4" x 0.134"	-	
4	1	GUARD RAIL ASSEMBLY BOLTLESS, 15'-0" LG, 136 LB RE RAISED 1", RH	ES2803-52		15	276	SPRING WASHER, DOUBLE COIL (Fe6)	-	
5	1	INSULATED RAIL ASSEMBLY, 29'-6 3/4" C/W BONDED INSULATED JOINT	-		16	1	CONCRETE TIE SET, 0-59 + (3) 1:80 TIES, PLATE PADS, RH	-	
6	1	INSULATED RAIL ASSEMBLY, 29'-11 1/4" C/W BONDED INSULATED JOINT	-		17	224	CLIP PANDROL E2055	-	
7	2	DRILLED RAIL, 136 LB RE, 26'-0" LONG	-		18	224	INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD-10	-	
8	2	DRILLED RAIL, 136 LB RE, 28'-0" LONG	-		19	8	CLIP PANDROL E2063	-	
9	1	DRILLED RAIL, 136 LB RE, 29'-4 1/2" LONG	-		20	8	INSULATION, PANDROL NYLON 6790	-	
10	1	DRILLED RAIL, 136 LB RE, 29'-9 3/8" LONG	-		21	116	TIE PAD PANDROL 6993SR	-	
11	1	DRILLED RAIL, 136 LB RE, 40'-0" LONG	-		22	138	SHIM, TO REDUCE PLATE FLEXURE	-	



NOTES:

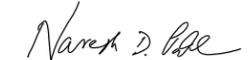
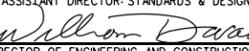
1. ALL RAILS SHALL HAVE IDENTIFICATION COLOR CODE PAINTED ON WEB, CLEAR OF JOINT AREA.
2. RAIL LENGTHS ALLOW 1/8" GAP BETWEEN RAIL JOINTS FOR WELDING.
3. GUARD RAILS ARE RAISED 1" AND FORM A 1/8" FLANGWAY.
4. SWITCH MACHINE AND MACHINE PLATE (NIC) MUST BE COORDINATED WITH SCRR.
5. ALL LENGTHS SHALL INCLUDE 1'-9" FROM TIE ENDS TO RAIL CENTERLINE, EXCEPT AS NOTED AND 1:80 CANTED TIES.
6. TIGHTEN TIE SCREW WITH DOUBLE COIL SPRING WASHER IN PLACE.
7. ⊕ = INSULATED JOINT ⊕ = WELDED JOINT

TURNOUT DATA:

FROG
NO 10 Δ = 5° 43' 29"
TOE LENGTH: 17'-3"
HEEL LENGTH: 16'-7"
TOTAL LENGTH: 33'-10"

SWITCH
LENGTH OF POINTS: 21'-6" / 33'-3"
ENTRY ANGLE: 0° 37' 11"
VERTEX DISTANCE: VARIES PER SIDE
THICKNESS AT POINT: 1/8"
CENTERLINE RADIUS: 827'-6"
THROW AT ROD #1: 4 3/4"

ACTUAL LEAD: 80'-3 5/8"
CLOSURE AREA
CENTERLINE RADIUS: 827'-6"
DEGREE OF CURVE: 6° 55' 41"
DESIGN SPEEDS
25 MPH PASSENGER @ 3" UNBALANCE
15 MPH FREIGHT @ 2" UNBALANCE

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

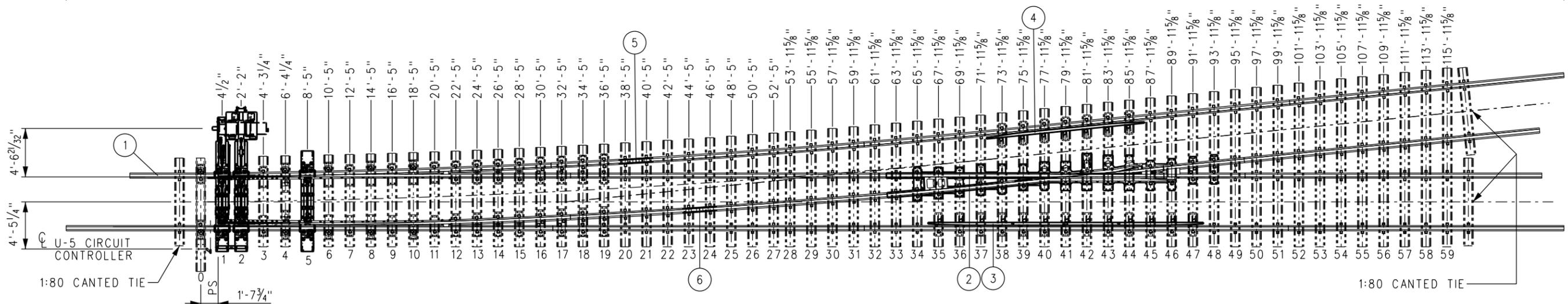
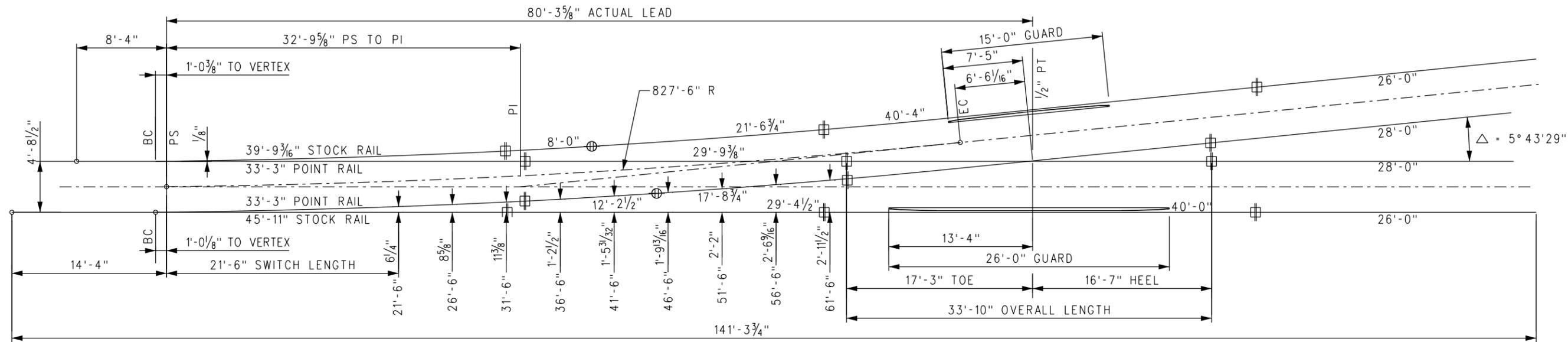
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SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS		STANDARD
TURNOUT LAYOUT		2803
NO 10-136 LB RE RH WSM FROG TURNOUT		SCALE: NTS
HST, SWITCH MACHINE ON MAINLINE SIDE		REVISION SHEET
		1 OF 1
		CADD FILE: ES2803-02

BILL OF MATERIAL				BILL OF MATERIAL					
ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO	ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	1	SWITCH PACK, NO 10-136 LB RE MODIFIED TANGENTIAL, LH, HST	ES2803-15		12	1	DRILLED RAIL, 136 LB RE, 40'-4" LONG	-	
2	1	FROG PACK, NO 10-136 LB RE WSM, LH	ES2803-41		13	276	TIE SCREW, CONCRETE 7/8" DIAMETER x 6" HEX HEAD	-	
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'-0" LONG, 136 LB RE RAISED 1", STRAIGHT	ES2800-50		14	276	WASHER FLAT 7/8" TYPE A NARROW 15/16" x 1 3/4" x 0.134"	-	
4	1	GUARD RAIL ASSEMBLY BOLTLESS, 15'-0" LONG, 136 LB RE RAISED 1", LH	ES2803-51		15	276	SPRING WASHER, DOUBLE COIL (Fe6)	-	
5	1	INSULATED RAIL ASSEMBLY, 29'-6 3/4" C/W BONDED INSULATED JOINT	-		16	1	CONCRETE TIE SET, 0-59 + (3) 1:80 TIES, PLATE PADS, LH	-	
6	1	INSULATED RAIL ASSEMBLY, 29'-11 1/4" C/W BONDED INSULATED JOINT	-		17	224	CLIP PANDROL E2055	-	
7	2	DRILLED RAIL, 136 LB RE, 26'-0" LONG	-		18	224	INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD-10	-	
8	2	DRILLED RAIL, 136 LB RE, 28'-0" LONG	-		19	8	CLIP PANDROL E2063	-	
9	1	DRILLED RAIL, 136 LB RE, 29'-4 1/2" LONG	-		20	8	INSULATION, PANDROL NYLON 6790	-	
10	1	DRILLED RAIL, 136 LB RE, 29'-9 3/8" LONG	-		21	116	TIE PAD PANDROL 6993SR	-	
11	1	DRILLED RAIL, 136 LB RE, 40'-0" LONG	-		22	138	SHIM, TO REDUCE PLATE FLEXURE	-	



NOTES:

- ALL RAILS SHALL HAVE IDENTIFICATION COLOR CODE PAINTED ON WEB, CLEAR OF JOINT AREA.
- RAIL LENGTHS ALLOW 1/8" GAP BETWEEN RAIL JOINTS FOR WELDING.
- GUARD RAILS ARE RAISED 1" AND FORM A 1 1/8" FLANGWAY.
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- TIGHTEN TIE SCREW WITH DOUBLE COIL SPRING WASHER IN PLACE.
- ⊕ = INSULATED JOINT ⊕ = WELDED JOINT

TURNOUT DATA:

FROG NO 10	Δ = 5° 43' 29"	LENGTH OF POINTS:	21'-6" / 33'-3"	ACTUAL LEAD:	80'-3 5/8"
TOE LENGTH:	17'-3"	ENTRY ANGLE:	0° 37' 11"	CLOSURE AREA:	
HEEL LENGTH:	16'-7"	VERTEX DISTANCE:	VARIABLES PER SIDE	CENTERLINE RADIUS:	827'-6"
TOTAL LENGTH:	33'-10"	THICKNESS AT POINT:	1/8"	DEGREE OF CURVE:	6° 55' 41"
		CENTERLINE RADIUS:	827'-6"	DESIGN SPEEDS:	25 MPH PASSENGER @ 3" UNBALANCE 15 MPH FREIGHT @ 2" UNBALANCE
		THROW AT ROD #1:	4 3/4"		

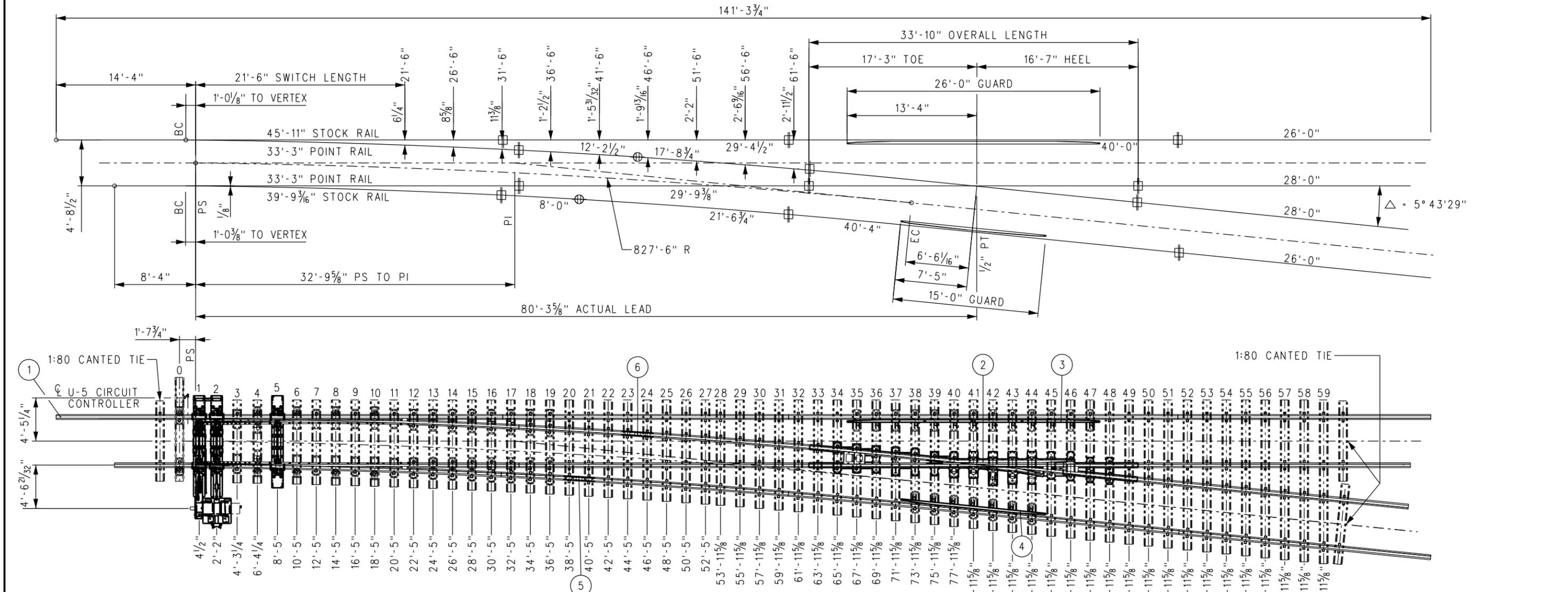
DRAWN BY: <i>Narek D. Pape</i> HDR DATE: 03/31/2011		<p>SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA. 90012</p>	ENGINEERING STANDARDS		STANDARD 2803
 ASSISTANT DIRECTOR: STANDARDS & DESIGN DIRECTOR OF ENGINEERING AND CONSTRUCTION			TURNOUT LAYOUT		SCALE: NTS
REVISION: XX XX DATE: DESCRIPTION DES. ENG.		NO 10-136 LB RE LH WSM FROG TURNOUT HST, SWITCH MACHINE ON TURNOUT SIDE		REVISION SHEET 1 OF 1	CADD FILE: ES2803-03

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	1	SWITCH PACK, NO 10-136 LB RE MODIFIED TANGENTIAL, RH, HST	ES2803-16	
2	1	FROG PACK, NO 10-136 LB RE WSM, RH	ES2803-40	
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'-0" LG, 136 LB RE RAISED 1", STRAIGHT	ES2800-50	
4	1	GUARD RAIL ASSEMBLY BOLTLESS, 15'-0" LG, 136 LB RE RAISED 1", RH	ES2803-52	
5	1	INSULATED RAIL ASSEMBLY, 29'-6 ³ / ₄ " C/W BONDED INSULATED JOINT	-	
6	1	INSULATED RAIL ASSEMBLY, 29'-11 ¹ / ₄ " C/W BONDED INSULATED JOINT	-	
7	2	DRILLED RAIL, 136 LB RE, 26'-0" LONG	-	
8	2	DRILLED RAIL, 136 LB RE, 28'-0" LONG	-	
9	1	DRILLED RAIL, 136 LB RE, 29'-4 ¹ / ₂ " LONG	-	
10	1	DRILLED RAIL, 136 LB RE, 29'-9 ³ / ₈ " LONG	-	
11	1	DRILLED RAIL, 136 LB RE, 40'-0" LONG	-	

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
12	1	DRILLED RAIL, 136 LB RE, 40'-4" LONG	-	
13	276	TIE SCREW, CONCRETE 1/8" DIAMETER x 6" HEX HEAD	-	
14	276	WASHER FLAT 1/8" TYPE A NARROW 15/16" x 1 3/4" x 0.134"	-	
15	276	SPRING WASHER, DOUBLE COIL (Fe6)	-	
16	1	CONCRETE TIE SET, 0-59 + (3) 1:80 TIES, PLATE PADS, RH	-	
17	224	CLIP PANDROL E2055	-	
18	224	INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD-10	-	
19	8	CLIP PANDROL E2063	-	
20	8	INSULATION, PANDROL NYLON 6790	-	
21	116	TIE PAD PANDROL 6993SR	-	
22	138	SHIM, TO REDUCE PLATE FLEXURE	-	



NOTES:

- ALL RAILS SHALL HAVE IDENTIFICATION COLOR CODE PAINTED ON WEB, CLEAR OF JOINT AREA.
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- GUARD RAILS ARE RAISED 1" AND FORM A 1/8" FLANGEWAY.
- SWITCH MACHINE AND MACHINE PLATE (NIC) MUST BE COORDINATED WITH SCRR.
- ALL LENGTHS SHALL INCLUDE 1'-9" FROM TIE ENDS TO RAIL CENTERLINE, EXCEPT AS NOTED AND 1:80 CANTED TIES.
- TIGHTEN TIE SCREW WITH DOUBLE COIL SPRING WASHER IN PLACE.
- ⊕ = INSULATED JOINT ⊕ = WELDED JOINT

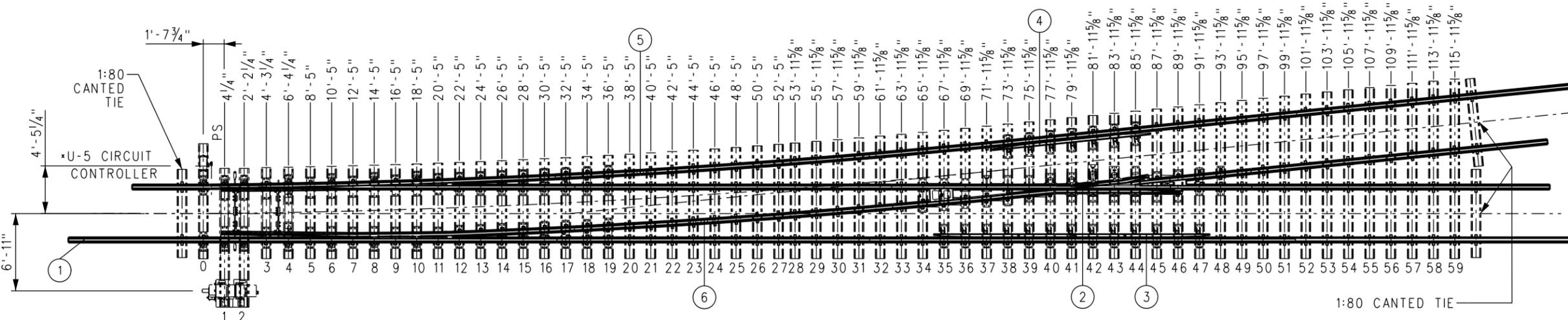
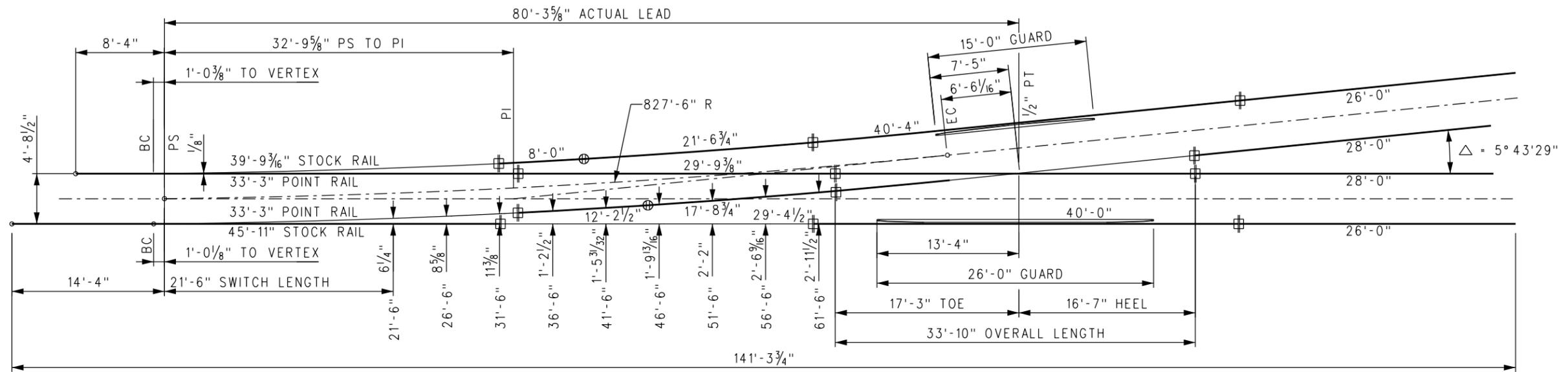
TURNOUT DATA:

FROG NO 10	Δ = 5° 43' 29"	SWITCH LENGTH OF POINTS: 21'-6" / 33'-3"	ACTUAL LEAD: 80'-3 5/8"
TOE LENGTH: 17'-3"	HEEL LENGTH: 16'-7"	ENTRY ANGLE: 0° 37' 11"	CLOSURE AREA
HEEL LENGTH: 16'-7"	TOTAL LENGTH: 33'-10"	VERTEX DISTANCE: VARIES PER SIDE	CENTERLINE RADIUS: 827'-6"
TOTAL LENGTH: 33'-10"		THICKNESS AT POINT: 1/8"	DEGREE OF CURVE: 6° 55' 41"
		CENTERLINE RADIUS: 827'-6"	DESIGN SPEEDS
		THROW AT ROD *1: 4 3/4"	25 MPH PASSENGER @ 3" UNBALANCE
			15 MPH FREIGHT @ 2" UNBALANCE

DRAWN BY: HDR 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 TURNOUT LAYOUT NO 10-136 LB RE RH WSM FROG TURNOUT HST, SWITCH MACHINE ON TURNOUT SIDE		STANDARD 2803 SCALE: NTS REVISION SHEET 1 OF 1 CADD FILE: ES2803-04
<i>Nareh D. Papp</i> ASSISTANT DIRECTOR: STANDARDS & DESIGN		<i>William Davan</i> DIRECTOR OF ENGINEERING AND CONSTRUCTION						
REV. DATE	DESCRIPTION	DES.	ENG.					

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH PACK, NO 10-136 LB RE MODIFIED TANGENTIAL, LH	ES2803-17
2	1	FROG PACK, NO 10-136 LB RE WSM, LH	ES2803-41
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'-0" LG, 136 LB RE RAISED 1", STRAIGHT	ES2800-50
4	1	GUARD RAIL ASSEMBLY BOLTLESS, 15'-0" LG, 136 LB RE RAISED 1", LH	ES2803-51
5	1	INSULATED RAIL ASSEMBLY, 29'-6 ³ / ₄ " C/W BONDED INSULATED JOINT	-
6	1	INSULATED RAIL ASSEMBLY, 29'-11 ¹ / ₄ " C/W BONDED INSULATED JOINT	-
7	2	DRILLED RAIL, 136 LB RE, 26'-0" LONG	-
8	2	DRILLED RAIL, 136 LB RE, 28'-0" LONG	-
9	1	DRILLED RAIL, 136 LB RE, 29'-4 ¹ / ₂ " LONG	-
10	1	DRILLED RAIL, 136 LB RE, 29'-9 ³ / ₈ " LONG	-
11	1	DRILLED RAIL, 136 LB RE, 40'-0" LONG	-

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
12	1	DRILLED RAIL, 136 LB RE, 40'-4" LONG	-
13	300	TIE SCREW, CONCRETE 1/8" DIAMETER x 6" HEX HEAD	-
14	300	WASHER FLAT 1/8" TYPE A NARROW 15/16" x 1 3/4" x 0.134"	-
15	300	SPRING WASHER, DOUBLE COIL (Fe6)	-
16	1	CONCRETE TIE SET, 0-59 + (3) 1:80 TIES, PLATE PADS, LH	-
17	1	HEADBLOCK TIE LAYOUT	-
18	224	CLIP PANDROL E2055	-
19	224	INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD-10	-
20	8	CLIP PANDROL E2063	-
21	8	INSULATION, PANDROL NYLON 6790	-
22	116	TIE PAD PANDROL 6993SR	-
23	150	SHIM, TO REDUCE PLATE FLEXURE	-

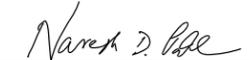
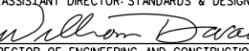


NOTES:

- ALL RAILS SHALL HAVE IDENTIFICATION COLOR CODE PAINTED ON WEB, CLEAR OF JOINT AREA.
- RAIL LENGTHS ALLOW 1/8" GAP BETWEEN RAIL JOINTS FOR WELDING.
- GUARD RAILS ARE RAISED 1" AND FORM A 1/8" FLANGWAY.
- SWITCH MACHINE AND MACHINE PLATE (NIC) MUST BE COORDINATED WITH SCRR.
- ALL LENGTHS SHALL INCLUDE 1'-9" FROM TIE ENDS TO RAIL CENTERLINE, EXCEPT AS NOTED AND 1:80 CANTED TIES.
- TIGHTEN TIE SCREW WITH DOUBLE COIL SPRING WASHER IN PLACE.
- ⊕ = INSULATED JOINT ⊕ = WELDED JOINT

TURNOUT DATA:

FROG NO 10	Δ = 5° 43' 29"	LENGTH OF POINTS:	21'-6" / 33'-3"	ACTUAL LEAD:	80'-3 ⁵ / ₈ "
TOE LENGTH:	17'-3"	ENTRY ANGLE:	0° 37' 11"	CLOSURE AREA:	
HEEL LENGTH:	16'-7"	VERTEX DISTANCE:	VARIABLES PER SIDE	CENTERLINE RADIUS:	827'-6"
TOTAL LENGTH:	33'-10"	THICKNESS AT POINT:	1/8"	DEGREE OF CURVE:	6° 55' 41"
		CENTERLINE RADIUS:	827'-6"	DESIGN SPEEDS:	
		THROW AT ROD #1:	4 3/4"	25 MPH PASSENGER @ 3" UNBALANCE	
				15 MPH FREIGHT @ 2" UNBALANCE	

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

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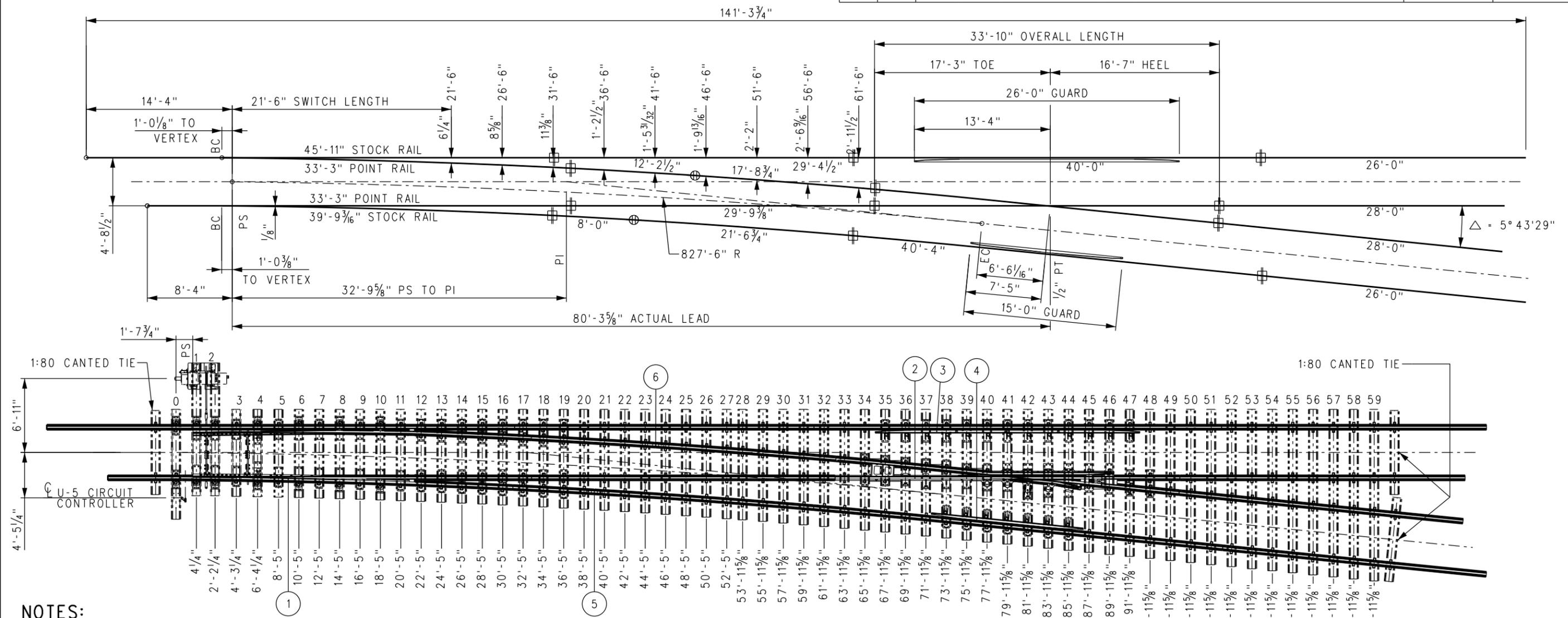


SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS		STANDARD	2803
TURNOUT LAYOUT		SCALE:	NTS
NO 10-136 LB RE LH WSM FROG TURNOUT CONCRETE TIES, SWITCH MACHINE ON MAINLINE SIDE		REVISION SHEET	1 OF 1
		CADD FILE:	ES2803-05

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH PACK, NO 10-136 LB RE MODIFIED TANGENTIAL, RH	ES2803-18
2	1	FROG PACK, NO 10-136 LB RE WSM, RH	ES2803-40
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'-0" LG, 136 LB RE RAISED 1", STRAIGHT	ES2800-50
4	1	GUARD RAIL ASSEMBLY BOLTLESS, 15'-0" LG, 136 LB RE RAISED 1", RH	ES2803-52
5	1	INSULATED RAIL ASSEMBLY, 29'-6 ³ / ₄ " C/W BONDED INSULATED JOINT	-
6	1	INSULATED RAIL ASSEMBLY, 29'-11 ¹ / ₄ " C/W BONDED INSULATED JOINT	-
7	2	DRILLED RAIL, 136 LB RE, 26'-0" LONG	-
8	2	DRILLED RAIL, 136 LB RE, 28'-0" LONG	-
9	1	DRILLED RAIL, 136 LB RE, 29'-4 ¹ / ₂ " LONG	-
10	1	DRILLED RAIL, 136 LB RE, 29'-9 ³ / ₈ " LONG	-
11	1	DRILLED RAIL, 136 LB RE, 40'-0" LONG	-

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
12	1	DRILLED RAIL, 136 LB RE, 40'-4" LONG	-
13	300	TIE SCREW, CONCRETE 1/8" DIAMETER x 6" HEX HEAD	-
14	300	WASHER FLAT 1/8" TYPE A NARROW 15/16" x 1 3/4" x 0.134"	-
15	300	SPRING WASHER, DOUBLE COIL (Fe6)	-
16	1	CONCRETE TIE SET, 0-59 + (3) 1:80 TIES, PLATE PADS, RH	-
17	1	HEADBLOCK TIE LAYOUT	-
18	224	CLIP PANDROL E2055	-
19	224	INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD-10	-
20	8	CLIP PANDROL E2063	-
21	8	INSULATION, PANDROL NYLON 6790	-
22	116	TIE PAD PANDROL 6993SR	-
23	150	SHIM, TO REDUCE PLATE FLEXURE	-



- NOTES:**
1. ALL RAILS SHALL HAVE IDENTIFICATION COLOR CODE PAINTED ON WEB, CLEAR OF JOINT AREA.
 2. RAIL LENGTHS ALLOW 1/8" GAP BETWEEN RAIL JOINTS FOR WELDING.
 3. GUARD RAILS ARE RAISED 1" AND FORM A 1/8" FLANGEWAY.
 4. SWITCH MACHINE AND MACHINE PLATE (NIC) MUST BE COORDINATED WITH SCRR.
 5. ALL LENGTHS SHALL INCLUDE 1'-9" FROM TIE ENDS TO RAIL CENTERLINE, EXCEPT AS NOTED AND 1:80 CANTED TIES.
 6. TIGHTEN TIE SCREW WITH DOUBLE COIL SPRING WASHER IN PLACE.
 7. ⊕ = INSULATED JOINT ⊞ = WELDED JOINT

TURNOUT DATA:

FROG NO 10	Δ = 5° 43' 29"	LENGTH OF POINTS: 21'-6" / 33'-3"	ACTUAL LEAD: 80'-3 5/8"
TOE LENGTH: 17'-3"		ENTRY ANGLE: 0° 37' 11"	CLOSURE AREA
HEEL LENGTH: 16'-7"		VERTEX DISTANCE: VARIES PER SIDE	CENTERLINE RADIUS: 827'-6"
TOTAL LENGTH: 33'-10"		THICKNESS AT POINT: 1/8"	DEGREE OF CURVE: 6° 55' 41"
		CENTERLINE RADIUS: 827'-6"	DESIGN SPEEDS
		THROW AT ROD #1: 4 3/4"	25 MPH PASSENGER @ 3" UNBALANCE
			15 MPH FREIGHT @ 2" UNBALANCE

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

DRAWN BY: *Narek D. Pape* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN

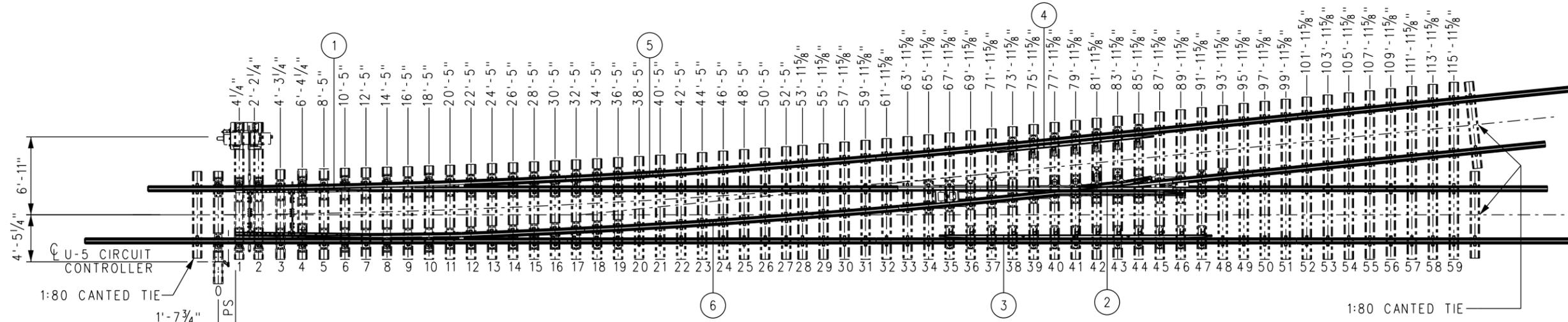
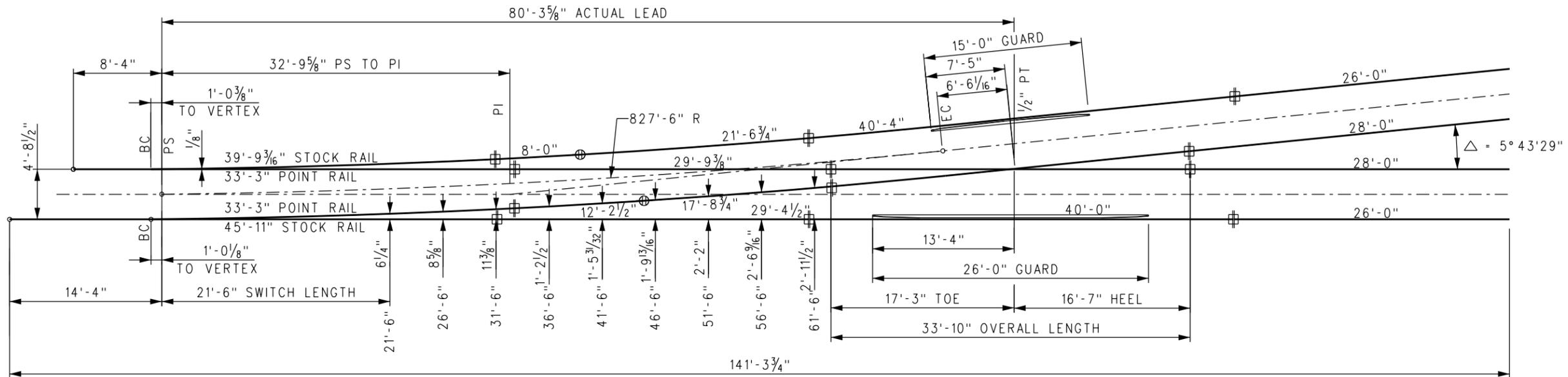
William Davan
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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

ENGINEERING STANDARDS		STANDARD
TURNOUT LAYOUT		2803
NO 10-136 LB RE RH WSM FROG TURNOUT		SCALE: NTS
CONCRETE TIES, SWITCH MACHINE ON MAINLINE SIDE		REVISION SHEET
		1 OF 1
		CADD FILE: ES2803-06

BILL OF MATERIAL				BILL OF MATERIAL					
ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO	ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	1	SWITCH PACK, NO 10-136 LB RE MODIFIED TANGENTIAL, LH	ES2803-19		12	1	DRILLED RAIL, 136 LB RE, 40'-4" LONG	-	
2	1	FROG PACK, NO 10-136 LB RE WSM, LH	ES2803-41		13	300	TIE SCREW, CONCRETE 1/8" DIAMETER x 6" HEX HEAD	-	
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'-0" LG, 136 LB RE RAISED 1", STRAIGHT	ES2800-50		14	300	WASHER FLAT 1/8" TYPE A NARROW 15/16" x 1 3/4" x 0.134"	-	
4	1	GUARD RAIL ASSEMBLY BOLTLESS, 15'-0" LG, 136 LB RE RAISED 1", LH	ES2803-51		15	300	SPRING WASHER, DOUBLE COIL (Fe6)	-	
5	1	INSULATED RAIL ASSEMBLY, 29'-6 3/4" C/W BONDED INSULATED JOINT	-		16	1	CONCRETE TIE SET, 0-59 + (3) 1:80 TIES, PLATE PADS, LH	-	
6	1	INSULATED RAIL ASSEMBLY, 29'-11 1/4" C/W BONDED INSULATED JOINT	-		17	224	CLIP PANDROL E2055	-	
7	2	DRILLED RAIL, 136 LB RE, 26'-0" LONG	-		18	224	INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD-10	-	
8	2	DRILLED RAIL, 136 LB RE, 28'-0" LONG	-		19	8	CLIP PANDROL E2063	-	
9	1	DRILLED RAIL, 136 LB RE, 29'-4 1/2" LONG	-		20	8	INSULATION, PANDROL NYLON 6790	-	
10	1	DRILLED RAIL, 136 LB RE, 29'-9 3/8" LONG	-		21	116	TIE PAD PANDROL 6993SR	-	
11	1	DRILLED RAIL, 136 LB RE, 40'-0" LONG	-		22	150	SHIM, TO REDUCE PLATE FLEXURE	-	



NOTES:

- ALL RAILS SHALL HAVE IDENTIFICATION COLOR CODE PAINTED ON WEB, CLEAR OF JOINT AREA.
- RAIL LENGTHS ALLOW 1/8" GAP BETWEEN RAIL JOINTS FOR WELDING.
- GUARD RAILS ARE RAISED 1" AND FORM A 1/8" FLANGEWAY.
- SWITCH MACHINE AND MACHINE PLATE (NIC) MUST BE COORDINATED WITH SCRR.
- ALL LENGTHS SHALL INCLUDE 1'-9" FROM THE TIE ENDS TO RAIL CENTERLINE, EXCEPT AS NOTED AND 1:80 CANTED TIES.
- TIGHTEN TIE SCREW WITH DOUBLE COIL SPRING WASHER IN PLACE.
- ⊕ = INSULATED JOINT ⊕ = WELDED JOINT

TURNOUT DATA:

FROG NO 10	Δ = 5° 43' 29"	LENGTH OF POINTS:	21'-6" / 33'-3"	ACTUAL LEAD:	80'-3 5/8"
TOE LENGTH:	17'-3"	ENTRY ANGLE:	0° 37' 11"	CLOSURE AREA:	
HEEL LENGTH:	16'-7"	VERTEX DISTANCE:	VARIABLE PER SIDE	CENTERLINE RADIUS:	827'-6"
TOTAL LENGTH:	33'-10"	THICKNESS AT POINT:	1/8"	DEGREE OF CURVE:	6° 55' 41"
		CENTERLINE RADIUS:	827'-6"	DESIGN SPEEDS:	25 MPH PASSENGER @ 3" UNBALANCE 15 MPH FREIGHT @ 2" UNBALANCE
		THROW AT ROD #1:	4 3/4"		

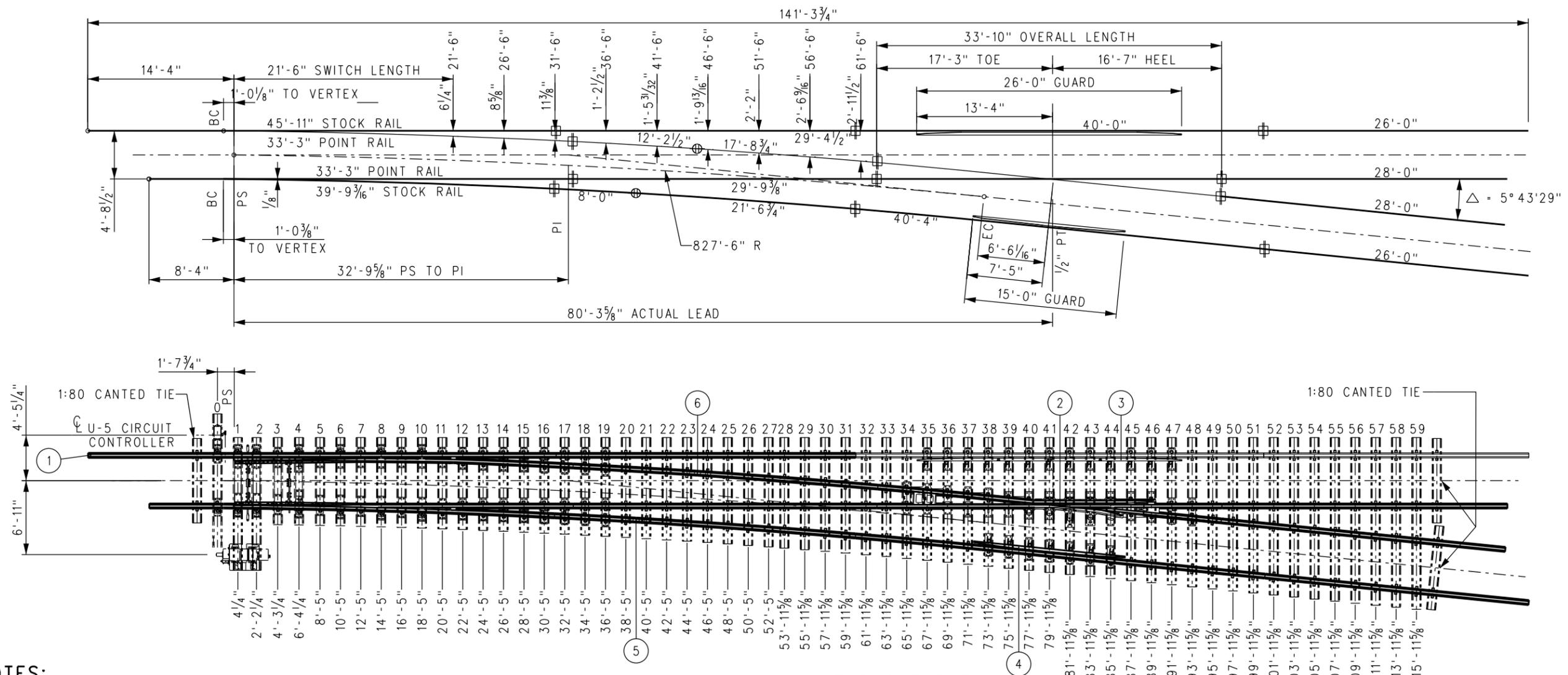
DRAWN BY: <i>Narek D. Pape</i>		HDR: <i>Willson Davan</i>		DATE: 03/31/2011	
ASSISTANT DIRECTOR: STANDARDS & DESIGN		DIRECTOR OF ENGINEERING AND CONSTRUCTION			
XX-XX-XX	REVISION	XX	XX		
REV.	DATE	DESCRIPTION	DES.	ENG.	

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

ENGINEERING STANDARDS		STANDARD	2803
TURNOUT LAYOUT		SCALE:	NTS
NO 10-136 LB RE LH WSM FROG TURNOUT		REVISION	SHEET
CONCRETE TIES, SWITCH MACHINE ON TURNOUT SIDE		-	1 OF 1
		CADD FILE:	ES2803-07

BILL OF MATERIAL				BILL OF MATERIAL					
ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO	ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	1	SWITCH PACK, NO 10-136 LB RE MODIFIED TANGENTIAL, RH	ES2803-20		12	1	DRILLED RAIL, 136 LB RE, 40'-4" LONG	-	
2	1	FROG PACK, NO 10-136 LB RE WSM, RH	ES2803-40		13	300	TIE SCREW, CONCRETE 1/8" DIAMETER x 6" HEX HEAD	-	
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'-0" LG, 136 LB RE RAISED 1", STRAIGHT	ES2800-50		14	300	WASHER FLAT 7/8" TYPE A NARROW 15/16" x 1 3/4" x 0.134"	-	
4	1	GUARD RAIL ASSEMBLY BOLTLESS, 15'-0" LG, 136 LB RE RAISED 1", RH	ES2803-52		15	300	SPRING WASHER, DOUBLE COIL (Fe6)	-	
5	1	INSULATED RAIL ASSEMBLY, 29'-6 3/4" C/W BONDED INSULATED JOINT	-		16	1	CONCRETE TIE SET, 0-59 + (3) 1:80 TIES, PLATE PADS, RH	-	
6	1	INSULATED RAIL ASSEMBLY, 29'-11 1/4" C/W BONDED INSULATED JOINT	-		17	1	HEADBLOCK TIE LAYOUT	-	
7	2	DRILLED RAIL, 136 LB RE, 26'-0" LONG	-		18	224	CLIP PANDROL E2055	-	
8	2	DRILLED RAIL, 136 LB RE, 28'-0" LONG	-		19	224	INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD-10	-	
9	1	DRILLED RAIL, 136 LB RE, 29'-4 1/2" LONG	-		20	8	CLIP PANDROL E2063	-	
10	1	DRILLED RAIL, 136 LB RE, 29'-9 3/8" LONG	-		21	8	INSULATION, PANDROL NYLON 6790	-	
11	1	DRILLED RAIL, 136 LB RE, 40'-0" LONG	-		22	116	TIE PAD PANDROL 6993SR	-	
					23	150	SHIM, TO REDUCE PLATE FLEXURE	-	



NOTES:

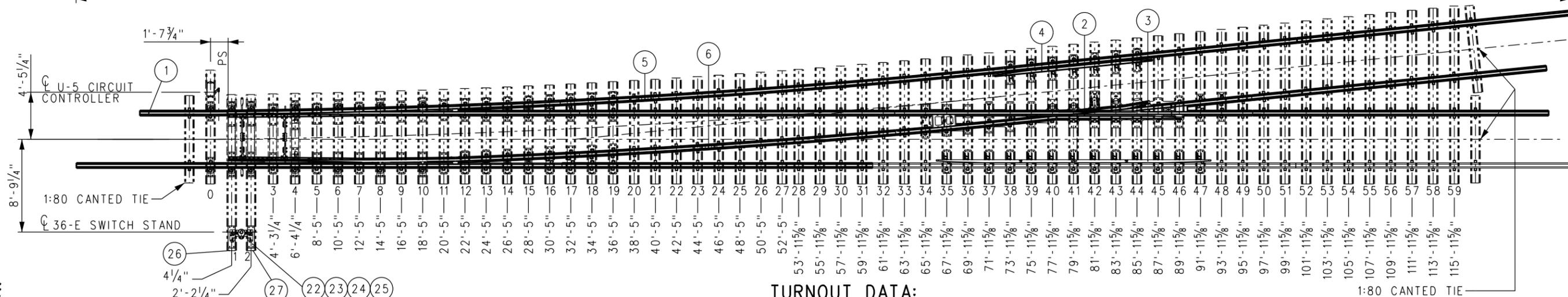
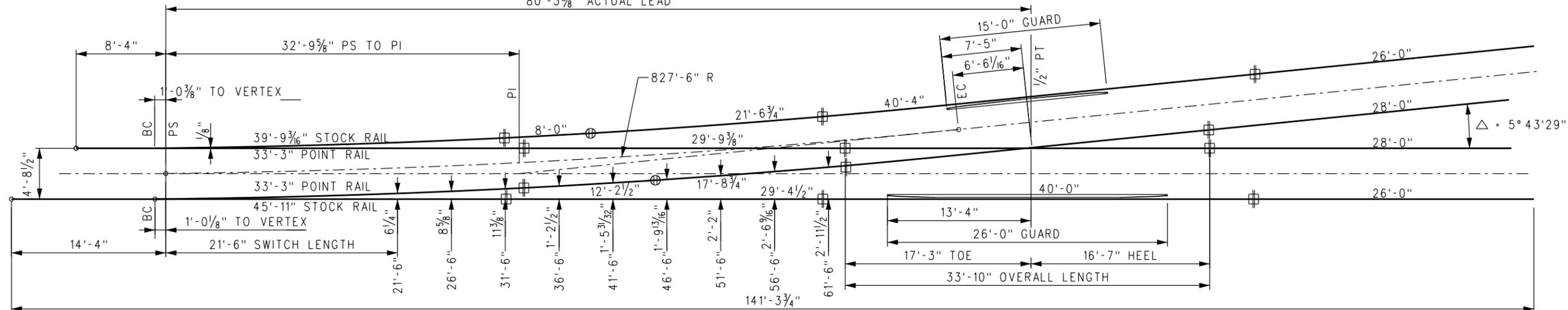
- ALL RAILS SHALL HAVE IDENTIFICATION COLOR CODE PAINTED ON WEB, CLEAR OF JOINT AREA.
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- TIGHTEN TIE SCREW WITH DOUBLE COIL SPRING WASHER IN PLACE.
- ⊕ = INSULATED JOINT ⊕ = WELDED JOINT

DRAWN BY: <i>Narek D. Pape</i>		DRAFTER: <i>Narek D. Pape</i>		DATE: 08/31/2011		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
REVISION		REVISION		REVISION		TURNOUT LAYOUT				ES2803		
NO 10-136 LB RE RH WSM FROG TURNOUT		NO 10-136 LB RE RH WSM FROG TURNOUT		NO 10-136 LB RE RH WSM FROG TURNOUT		CONCRETE TIES, SWITCH MACHINE ON TURNOUT SIDE		SCALE:	NTS			
REV. DATE		REV. DATE		REV. DATE				REVISION SHEET	1 OF 1			
								CADD FILE:	ES2803-08			

BILL OF MATERIAL				
ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	1	SWITCH PACK, NO 10-136 LB RE MODIFIED TANGENTIAL, LH	ES2803-17	
2	1	FROG PACK, NO 10-136 LB RE WSM, LH	ES2803-41	
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'-0" LG, 136 LB RE RAISED 1", STRAIGHT	ES2800-50	
4	1	GUARD RAIL ASSEMBLY BOLTLESS, 15'-0" LG, 136 LB RE RAISED 1", LH	ES2803-51	
5	1	INSULATED RAIL ASSEMBLY, 29'-6 ³ / ₄ " C/W BONDED INSULATED JOINT	-	
6	1	INSULATED RAIL ASSEMBLY, 29'-11 ¹ / ₄ " C/W BONDED INSULATED JOINT	-	
7	2	DRILLED RAIL, 136 LB RE, 26'-0" LONG	-	
8	2	DRILLED RAIL, 136 LB RE, 28'-0" LONG	-	
9	1	DRILLED RAIL, 136 LB RE, 29'-4 ¹ / ₂ " LONG	-	
10	1	DRILLED RAIL, 136 LB RE, 29'-9 ³ / ₈ " LONG	-	
11	1	DRILLED RAIL, 136 LB RE, 40'-0" LONG	-	
12	1	DRILLED RAIL, 136 LB RE, 40'-4" LONG	-	
13	300	TIE SCREW, CONCRETE ⁷ / ₈ " DIAMETER x 6" HEX HEAD	-	
14	300	WASHER FLAT ⁷ / ₁₆ " TYPE A NARROW ¹⁵ / ₁₆ " x 1 ³ / ₄ " x 0.134"	-	

BILL OF MATERIAL				
ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
15	300	SPRING WASHER, DOUBLE COIL (Fe6)	-	
16	1	CONCRETE TIE SET, 0-59 + (3) 1:80 TIES, PLATE PADS, LH	-	
17	224	CLIP PANDROL E2055	-	
18	224	INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD-10	-	
19	8	CLIP PANDROL E2063	-	
20	8	INSULATION, PANDROL NYLON 6790	-	
21	116	TIE PAD PANDROL 6993SR	-	
22	10	PLOW BOLT, ³ / ₄ " DIA x 3 ¹ / ₂ " LONG, ROUND HEAD, SQ NECK, GR 8	-	
23	10	WASHER, ³ / ₄ " DIA, PLAIN, TYPE 'A' WIDE, ¹³ / ₁₆ " x 2" x 0.148" THICK	-	
24	10	SPRING WASHER, ³ / ₄ " DIA, ⁷ / ₁₆ " THICK	-	
25	10	NUT, ³ / ₄ " DIA, HEAVY HEX, GR 8	-	
26	1	SWITCH STAND MOUNTING PLATE, LOCK1-RH	-	
27	1	SWITCH STAND MOUNTING PLATE, LOCK2-RH	-	
28	150	SHIM, TO REDUCE PLATE FLEXURE	-	
29	1	SWITCH STAND ASSY NO 36E WITH ROD, TARGET AND BALL HANDLE	-	

80'-3⁵/₈" ACTUAL LEAD



NOTES:

- ALL RAILS SHALL HAVE IDENTIFICATION COLOR CODE PAINTED ON WEB, CLEAR OF JOINT AREA.
- RAIL LENGTHS ALLOW ¹/₈" GAP BETWEEN RAIL JOINTS FOR WELDING.
- GUARD RAILS ARE RAISED 1" AND FORM A ¹/₈" FLANGEWAY.
- SWITCH MACHINE AND MACHINE PLATE (NIC) MUST BE COORDINATED WITH SCRR.
- ALL LENGTHS SHALL INCLUDE 1'-9" FROM TIE ENDS TO RAIL CENTERLINE, EXCEPT AS NOTED AND 1:80 CANTED TIES.
- TIGHTEN TIE SCREW WITH DOUBLE COIL SPRING WASHER IN PLACE.
- ⊕ = INSULATED JOINT ⊞ = WELDED JOINT

TURNOUT DATA:

FROG NO 10	Δ = 5° 43' 29"	SWITCH LENGTH OF POINTS:	21'-6" / 33'-3"	ACTUAL LEAD:	80'-3 ⁵ / ₈ "
TOE LENGTH:	17'-3"	ENTRY ANGLE:	0° 37' 11"	CLOSURE AREA:	
HEEL LENGTH:	16'-7"	VERTEX DISTANCE:	VARIABLES PER SIDE	CENTERLINE RADIUS:	827'-6"
TOTAL LENGTH:	33'-10"	THICKNESS AT POINT:	¹ / ₈ "	DEGREE OF CURVE:	6° 55' 41"
		CENTERLINE RADIUS:	827'-6"	DESIGN SPEEDS:	25 MPH PASSENGER @ 3" UNBALANCE 15 MPH FREIGHT @ 2" UNBALANCE
		THROW AT ROD #1:	4 ³ / ₄ "		

DRAWN BY: HDR DATE: 03/31/2011		REVISION	
<i>Nareh D. Papp</i>		XX	XX
ASSISTANT DIRECTOR: STANDARDS & DESIGN		REV.	DATE
<i>William Davan</i>		DESCRIPTION	DES.
DIRECTOR OF ENGINEERING AND CONSTRUCTION			ENG.

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.

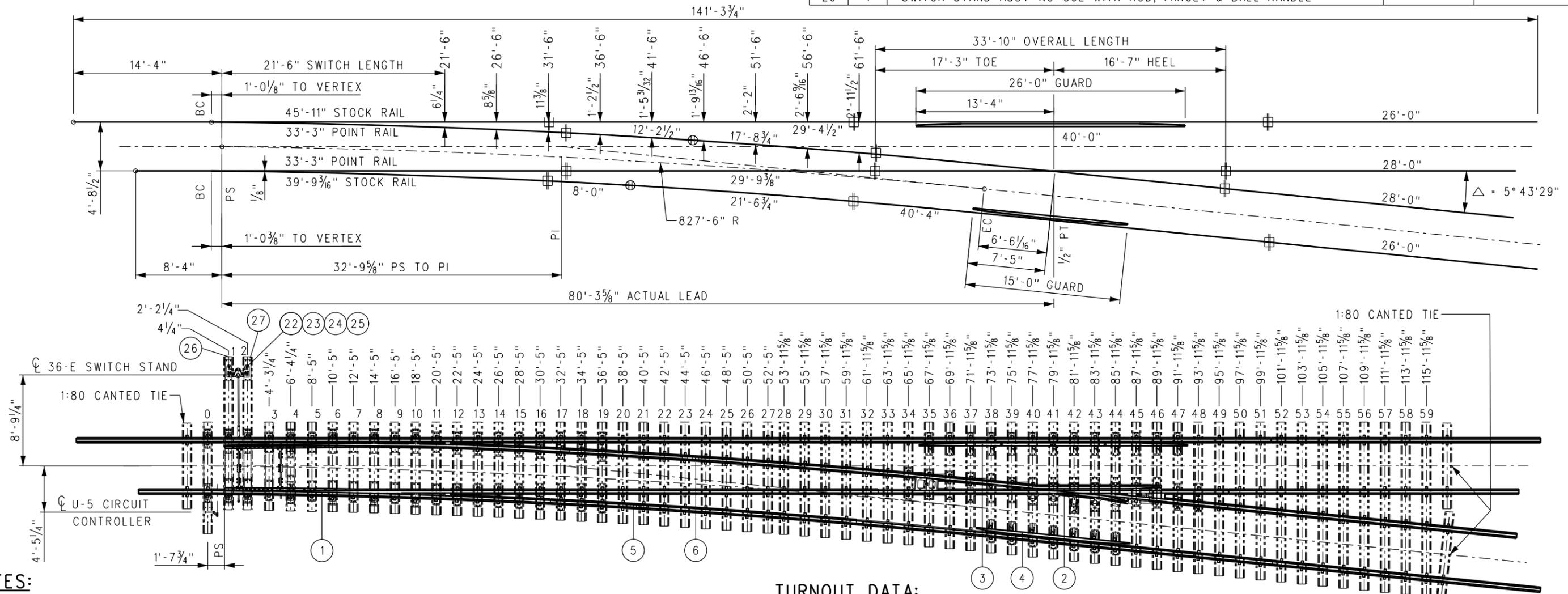
METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
TURNOUT LAYOUT
NO 10-136 LB RE LH WSM FROG TURNOUT
CONCRETE TIES, SWITCH STAND ON MAINLINE SIDE

STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-09

BILL OF MATERIAL				
ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	1	SWITCH PACK, NO 10-136 LB RE MODIFIED TANGENTIAL, RH	ES2803-18	
2	1	FROG PACK, NO 10-136 LB RE WSM, RH	ES2803-40	
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'-0" LG, 136 LB RE RAISED 1", STRAIGHT	ES2800-50	
4	1	GUARD RAIL ASSEMBLY BOLTLESS, 15'-0" LG, 136 LB RE RAISED 1", RH	ES2803-52	
5	1	INSULATED RAIL ASSEMBLY, 29'-6 ³ / ₄ " C/W BONDED INSULATED JOINT	-	
6	1	INSULATED RAIL ASSEMBLY, 29'-11 ¹ / ₄ " C/W BONDED INSULATED JOINT	-	
7	2	DRILLED RAIL, 136 LB RE, 26'-0" LONG	-	
8	2	DRILLED RAIL, 136 LB RE, 28'-0" LONG	-	
9	1	DRILLED RAIL, 136 LB RE, 29'-4 ¹ / ₂ " LONG	-	
10	1	DRILLED RAIL, 136 LB RE, 29'-9 ³ / ₈ " LONG	-	
11	1	DRILLED RAIL, 136 LB RE, 40'-0" LONG	-	
12	1	DRILLED RAIL, 136 LB RE, 40'-4" LONG	-	
13	300	TIE SCREW, CONCRETE ⁷ / ₈ " DIAMETER x 6" HEX HEAD	-	
14	300	WASHER FLAT ⁷ / ₈ " TYPE A NARROW ¹⁵ / ₁₆ " x 1 ³ / ₄ " x 0.134"	-	

BILL OF MATERIAL				
ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
15	300	SPRING WASHER, DOUBLE COIL (Fe6)	-	
16	1	CONCRETE TIE SET, 0-59 + (3) 1:80 TIES, PLATE PADS, RH	-	
17	224	CLIP PANDROL E2055	-	
18	224	INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD-10	-	
19	8	CLIP PANDROL E2063	-	
20	8	INSULATION, PANDROL NYLON 6790	-	
21	116	TIE PAD PANDROL 6993SR	-	
22	10	PLOW BOLT, ³ / ₄ " DIA x 3 ¹ / ₂ " LG, ROUND HEAD, SQ NECK, GR 8	-	
23	10	WASHER, ³ / ₄ " DIA, PLAIN, TYPE 'A' WIDE, ¹³ / ₁₆ " x 2" x 0.148" THICK	-	
24	10	SPRING WASHER, ³ / ₄ " DIA, ⁷ / ₁₆ " THICK	-	
25	10	NUT, ³ / ₄ " DIA, HEAVY HEX, GR 8	-	
26	1	SWITCH STAND MOUNTING PLATE, LOCK1-LH	-	
27	1	SWITCH STAND MOUNTING PLATE, LOCK2-LH	-	
28	150	SHIM, TO REDUCE PLATE FLEXURE	-	
29	1	SWITCH STAND ASSY NO 36E WITH ROD, TARGET & BALL HANDLE	-	



- NOTES:**
- ALL RAILS SHALL HAVE IDENTIFICATION COLOR CODE PAINTED ON WEB, CLEAR OF JOINT AREA.
 - RAIL LENGTHS ALLOW ¹/₈" GAP BETWEEN RAIL JOINTS FOR WELDING.
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 - TIGHTEN TIE SCREW WITH DOUBLE COIL SPRING WASHER IN PLACE.
 - ⊕ = INSULATED JOINT ⊞ = WELDED JOINT

TURNOUT DATA:

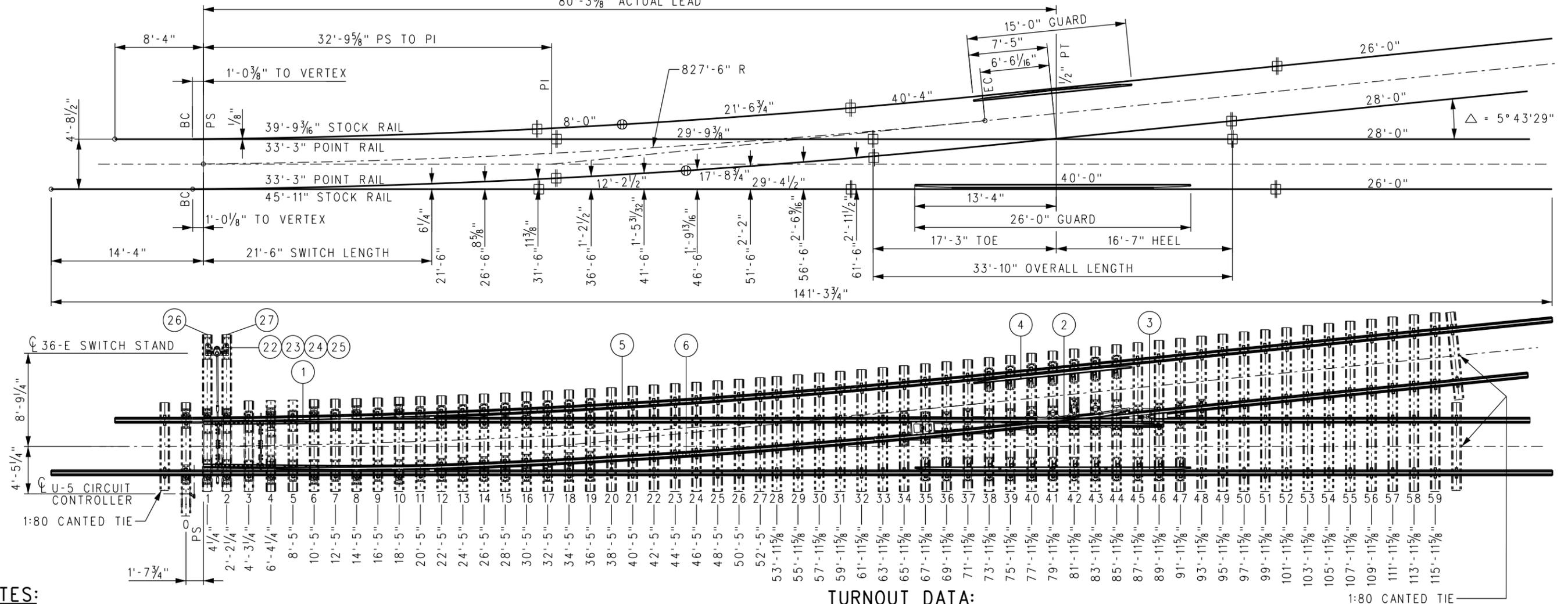
FROG NO 10	Δ = 5° 43' 29"	SWITCH LENGTH OF POINTS:	21'-6" / 33'-3"	ACTUAL LEAD:	80'-3 ⁵ / ₈ "
TOE LENGTH:	17'-3"	ENTRY ANGLE:	0° 37' 11"	CLOSURE AREA:	
HEEL LENGTH:	16'-7"	VERTEX DISTANCE:	VARIES PER SIDE	CENTERLINE RADIUS:	827'-6"
TOTAL LENGTH:	33'-10"	THICKNESS AT POINT:	¹ / ₈ "	DEGREE OF CURVE:	6° 55' 41"
		CENTERLINE RADIUS:	827'-6"	DESIGN SPEEDS:	25 MPH PASSENGER @ 3" UNBALANCE 15 MPH FREIGHT @ 2" UNBALANCE
		THROW AT ROD #1:	4 ³ / ₄ "		

DRAWN BY: <i>Nareh D. Papp</i> HDR DATE: 03/31/2011		<p>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>	<p>SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA. 90012</p>	<p>ENGINEERING STANDARDS</p> <p>TURNOUT LAYOUT</p> <p>NO 10-136 LB RE RH WSM FROG TURNOUT CONCRETE TIES, SWITCH STAND ON MAINLINE SIDE</p>	STANDARD: 2803
<p>REVISION: XX XX</p> <p>DATE: DESCRIPTION DES. ENG.</p>					SCALE: NTS
<p>REVISION: XX XX</p> <p>DATE: DESCRIPTION DES. ENG.</p>		<p>REVISION: 1 OF 1</p> <p>FILE: ES2803-10</p>			

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH PACK, NO 10-136 LB RE MODIFIED TANGENTIAL, LH	ES2803-19
2	1	FROG PACK, NO 10-136 LB RE WSM, LH	ES2803-41
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'-0" LG, 136 LB RE RAISED 1", STRAIGHT	ES2800-50
4	1	GUARD RAIL ASSEMBLY BOLTLESS, 15'-0" LG, 136 LB RE RAISED 1", LH	ES2803-51
5	1	INSULATED RAIL ASSEMBLY, 29'-6 ³ / ₄ " C/W BONDED INSULATED JOINT	-
6	1	INSULATED RAIL ASSEMBLY, 29'-11 ¹ / ₄ " C/W BONDED INSULATED JOINT	-
7	2	DRILLED RAIL, 136 LB RE, 26'-0" LONG	-
8	2	DRILLED RAIL, 136 LB RE, 28'-0" LONG	-
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10	1	DRILLED RAIL, 136 LB RE, 29'-9 ³ / ₈ " LONG	-
11	1	DRILLED RAIL, 136 LB RE, 40'-0" LONG	-
12	1	DRILLED RAIL, 136 LB RE, 40'-4" LONG	-
13	300	TIE SCREW, CONCRETE ⁷ / ₈ " DIAMETER x 6" HEX HEAD	-
14	300	WASHER FLAT ⁷ / ₈ " TYPE A NARROW ¹⁵ / ₁₆ " x 1 ³ / ₄ " x 0.134"	-

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
15	300	SPRING WASHER, DOUBLE COIL (Fe6)	-
16	1	CONCRETE TIE SET, 0-59 + (3) 1:80 TIES, PLATE PADS, LH	-
17	224	CLIP PANDROL E2055	-
18	224	INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD-10	-
19	8	CLIP PANDROL E2063	-
20	8	INSULATION, PANDROL NYLON 6790	-
21	116	TIE PAD PANDROL 6993SR	-
22	10	PLOW BOLT, ³ / ₄ " DIA x 3 ¹ / ₂ " LONG, ROUND HEAD, SQ NECK, GR 8	-
23	10	WASHER, ³ / ₄ " DIA, PLAIN, TYPE 'A' WIDE, ¹³ / ₁₆ " x 2" x 0.148" THICK	-
24	10	SPRING WASHER, ³ / ₄ " DIA, ⁷ / ₁₆ " THICK	-
25	10	NUT, ³ / ₄ " DIA, HEAVY HEX, GR 8	-
26	1	SWITCH STAND MOUNTING PLATE, LOCK1-LH	-
27	1	SWITCH STAND MOUNTING PLATE, LOCK2-LH	-
28	150	SHIM, TO REDUCE PLATE FLEXURE	-
29	1	SWITCH STAND ASSY NO 36E WITH ROD, TARGET AND BALL HANDLE	-

80'-3⁵/₈" ACTUAL LEAD



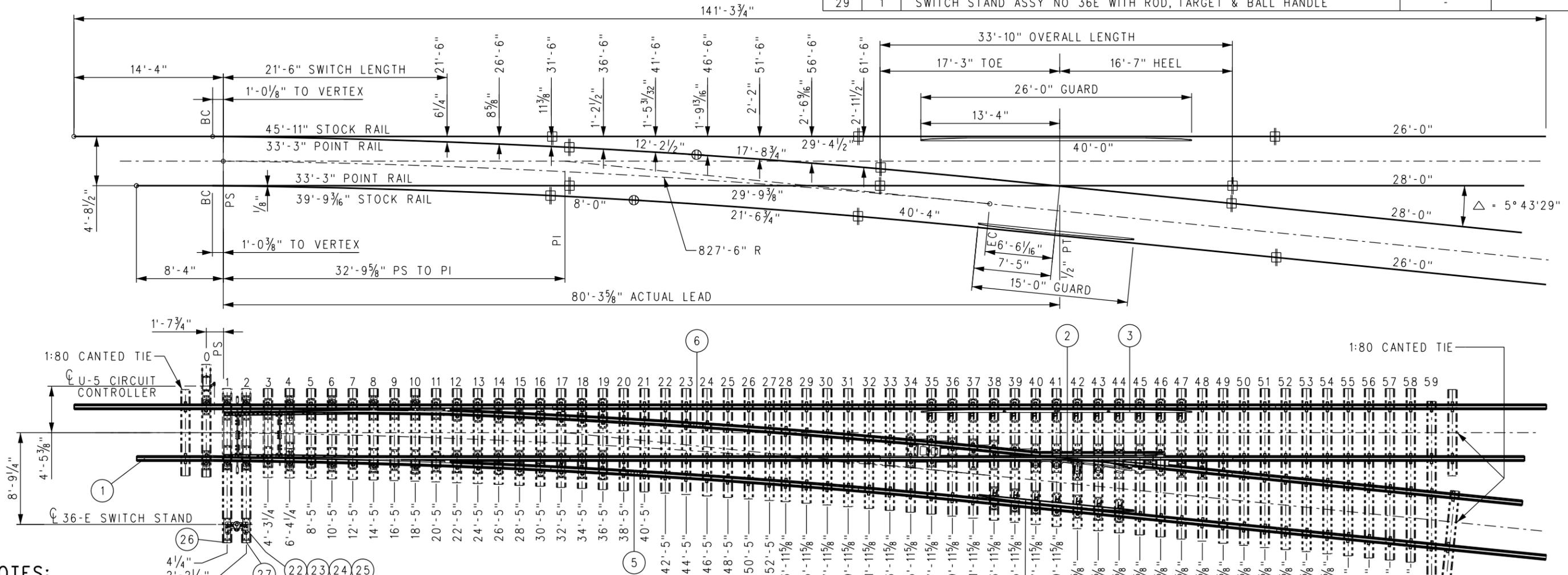
NOTES:

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DRAWN BY: <i>Nareh D. Papp</i> HDR DATE: 03/31/2011		<p>SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012</p>	<p>ENGINEERING STANDARDS</p> <p>TURNOUT LAYOUT</p> <p>NO 10-136 LB RE LH WSM FROG TURNOUT CONCRETE TIES, SWITCH STAND ON TURNOUT SIDE</p>	STANDARD: 2803 SCALE: NTS REVISION SHEET: 1 OF 1 CADD FILE: ES2803-11
ASSISTANT DIRECTOR: STANDARDS & DESIGN <i>William Davan</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.

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH PACK, NO 10-136 LB RE MODIFIED TANGENTIAL, RH	ES2803-20
2	1	FROG PACK, NO 10-136 LB RE WSM, RH	ES2803-40
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'-0" LG, 136 LB RE RAISED 1", STRAIGHT	ES2800-50
4	1	GUARD RAIL ASSEMBLY BOLTLESS, 15'-0" LG, 136 LB RE RAISED 1", RH	ES2803-52
5	1	INSULATED RAIL ASSEMBLY, 29'-6 ³ / ₄ " C/W BONDED INSULATED JOINT	-
6	1	INSULATED RAIL ASSEMBLY, 29'-11 ¹ / ₄ " C/W BONDED INSULATED JOINT	-
7	2	DRILLED RAIL, 136 LB RE, 26'-0" LONG	-
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13	300	TIE SCREW, CONCRETE ¹ / ₈ " DIAMETER x 6" HEX HEAD	-
14	300	WASHER FLAT ¹ / ₈ " TYPE A NARROW ¹⁵ / ₁₆ " x 1 ³ / ₄ " x 0.134"	-

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
15	300	SPRING WASHER, DOUBLE COIL (Fe6)	-
16	1	CONCRETE TIE SET, 0-59 + (3) 1:80 TIES, PLATE PADS, RH	-
17	224	CLIP PANDROL E2055	-
18	224	INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD-10	-
19	8	CLIP PANDROL E2063	-
20	8	INSULATION, PANDROL NYLON 6790	-
21	116	TIE PAD PANDROL 6993SR	-
22	10	PLOW BOLT, ³ / ₄ " DIA x 3 ¹ / ₂ " LG, ROUND HEAD, SQ NECK, GR 8	-
23	10	WASHER, ³ / ₄ " DIA, PLAIN, TYPE 'A' WIDE, ¹³ / ₁₆ " x 2" x 0.148" THICK	-
24	10	SPRING WASHER, ³ / ₄ " DIA, ¹ / ₁₆ " THICK	-
25	10	NUT, ³ / ₄ " DIA, HEAVY HEX, GR 8	-
26	1	SWITCH STAND MOUNTING PLATE, LOCK1-RH	-
27	1	SWITCH STAND MOUNTING PLATE, LOCK2-RH	-
28	150	SHIM, TO REDUCE PLATE FLEXURE	-
29	1	SWITCH STAND ASSY NO 36E WITH ROD, TARGET & BALL HANDLE	-



NOTES:

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- ⊕ = INSULATED JOINT, ⊕ = WELDED JOINT

TURNOUT DATA:

FROG NO 10 Δ = 5° 43' 29"
 TOE LENGTH: 17'-3"
 HEEL LENGTH: 16'-7"
 TOTAL LENGTH: 33'-10"

SWITCH LENGTH OF POINTS: 21'-6" / 33'-3"
 ENTRY ANGLE: 0° 37' 11"
 VERTEX DISTANCE: VARIES PER SIDE
 THICKNESS AT POINT: ¹/₈"
 CENTERLINE RADIUS: 827'-6"
 THROW AT ROD *1: 4³/₄"

ACTUAL LEAD: 80'-3⁵/₈"
 CLOSURE AREA
 CENTERLINE RADIUS: 827'-6"
 DEGREE OF CURVE: 6° 55' 41"
 DESIGN SPEEDS
 25 MPH PASSENGER @ 3" UNBALANCE
 15 MPH FREIGHT @ 2" UNBALANCE

DRAWN BY: HDR DATE: 03/31/2011		REVISION	
<i>Nareh D. Papp</i> ASSISTANT DIRECTOR: STANDARDS & DESIGN		XX	XX
<i>William Davan</i> DIRECTOR OF ENGINEERING AND CONSTRUCTION		DES.	ENG.

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

ENGINEERING STANDARDS
 TURNOUT LAYOUT
 NO 10-136 LB RE RH WSM FROG TURNOUT
 CONCRETE TIES, SWITCH STAND ON TURNOUT SIDE

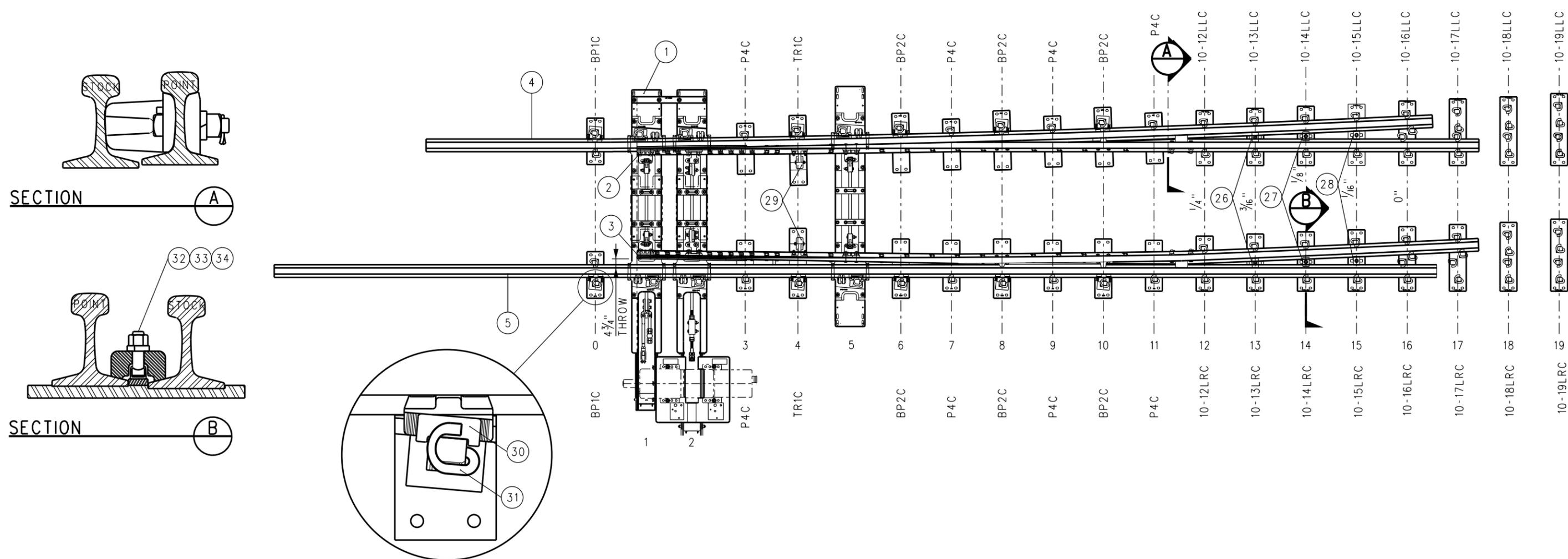
STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-12

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	1	HOLLOW SWITCH TIE & RODDING ASSEMBLY	ES2803-72	
2	1	SAMSON POINT, 33'-3" LONG, DOUBLE REINFORCED, UR MANG TIP, STR, LH	ES2803-21	
3	1	SAMSON POINT, 33'-3" LONG, DOUBLE REINFORCED, UR MANG TIP, CVD, RH	ES2803-22	
4	1	SAMSON STOCK RAIL, 39'-9 ³ / ₁₆ " LONG, CURVED, LH	ES2803-25	
5	1	SAMSON STOCK RAIL, 45'-11" LONG, STRAIGHT, RH	ES2803-26	
6	2	SWITCH PLATE, BRACE (BP1C-136)	ES2800-80	
7	6	SWITCH PLATE, BRACE (BP2C-136)	ES2800-80	
8	8	SWITCH PLATE (P4C-136)	ES2800-80	
9	2	SWITCH PLATE, ROLLER (10-TR1C)	ES2800-80	
10	1	SWITCH PLATE (10-12LLC)	ES2803-81	
11	1	SWITCH PLATE (10-12LRC)	ES2803-81	
12	1	SWITCH PLATE (10-13LLC)	ES2803-81	
13	1	SWITCH PLATE (10-13LRC)	ES2803-81	
14	1	SWITCH PLATE (10-14LLC)	ES2803-81	
15	1	SWITCH PLATE (10-14LRC)	ES2803-81	
16	1	SWITCH PLATE (10-15LLC)	ES2803-82	
17	1	SWITCH PLATE (10-15LRC)	ES2803-82	

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
18	1	SWITCH PLATE (10-16LLC)	ES2803-82	
19	1	SWITCH PLATE (10-16LRC)	ES2803-82	
20	1	SWITCH PLATE (10-17LLC)	ES2803-82	
21	1	SWITCH PLATE (10-17LRC)	ES2803-82	
22	1	SWITCH PLATE (10-18LLC)	ES2803-83	
23	1	SWITCH PLATE (10-18LRC)	ES2803-83	
24	1	SWITCH PLATE (10-19LLC)	ES2803-83	
25	1	SWITCH PLATE (10-19LRC)	ES2803-83	
26	2	HOLD DOWN CLIP (PC37A) "K" STYLE	-	
27	2	HOLD DOWN CLIP (PC38A) "K" STYLE	-	
28	2	HOLD DOWN CLIP (PC39A) "K" STYLE	-	
29	2	POINT ROLLER ASSEMBLY, FLAT BACK C/W DOUBLE REINFORCED HARDWARE	-	
30	10	BOLTLESS BRACE ASSEMBLY, SUREFIT, 136 LB RE C/W SERRATED WASHER	-	
31	68	CLIP, PANDROL, E2055	-	
32	6	T-BOLT, 7/8" DIAMETER 3 3/4" LONG, GR 8	-	
33	6	SPRING WASHER 7/8" DIAMETER	-	
34	6	NUT, 7/8" DIAMETER HEAVY HEX, GR 8	-	



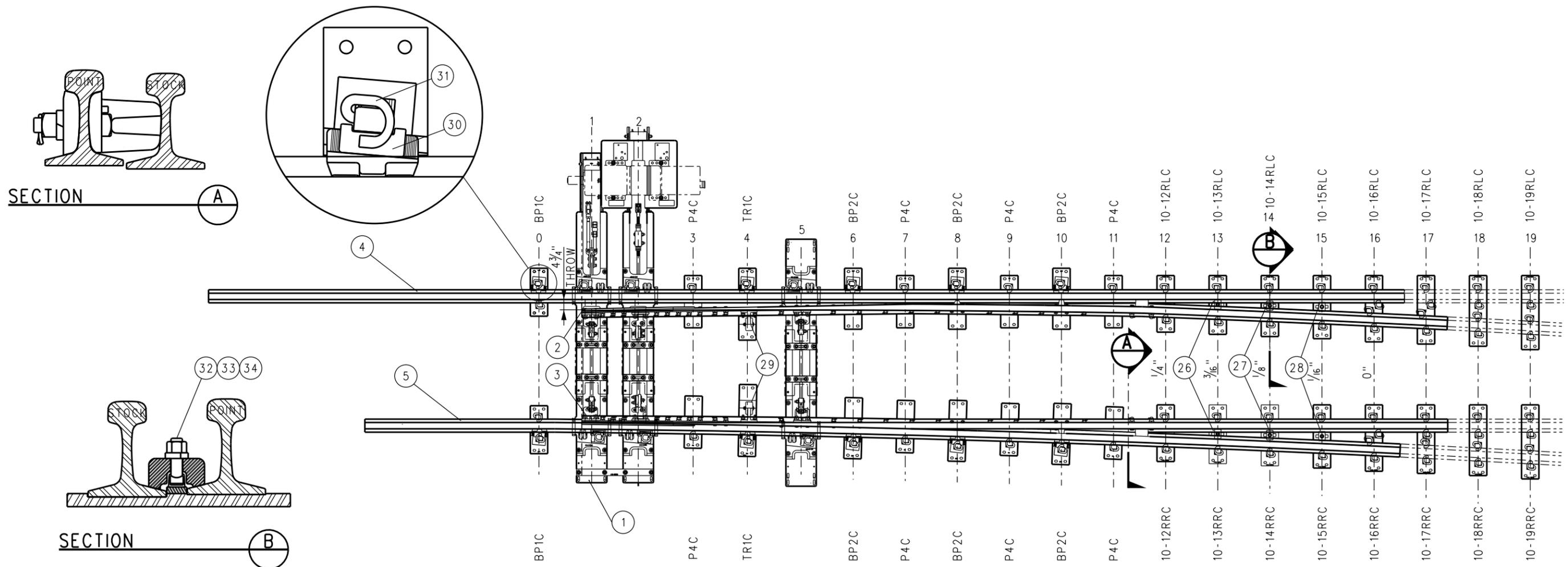
DRAWN BY: <i>Nareh D. Papp</i> HDR DATE: 03/31/2011 ASSISTANT DIRECTOR: STANDARDS & DESIGN		SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE 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.	SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	ENGINEERING STANDARDS NO 10-136 LB RE LH SWITCH PACK, HOLLOW STEEL TIES, SWITCH MACHINE ON MAINLINE SIDE		STANDARD 2803 SCALE: NTS REVISION SHEET 1 OF 1 CADD FILE: ES2803-13
DES. ENG. <i>William Davan</i> DIRECTOR OF ENGINEERING AND CONSTRUCTION						

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	1	HOLLOW SWITCH TIE & RODDING ASSEMBLY	ES2803-71	
2	1	SAMSON POINT, 33'-3" LONG, DOUBLE REINFORCED, UR MANG TIP, CVD, LH	ES2803-23	
3	1	SAMSON POINT, 33'-3" LONG, DOUBLE REINFORCED, UR MANG TIP, STR, RH	ES2803-24	
4	1	SAMSON STOCK RAIL, 45'-11" LONG, STRAIGHT, LH	ES2803-27	
5	1	SAMSON STOCK RAIL, 39'-9 ³ / ₁₆ " LONG, CURVED, RH	ES2803-28	
6	2	SWITCH PLATE, BRACE (BP1C-136)	ES2800-80	
7	6	SWITCH PLATE, BRACE (BP2C-136)	ES2800-80	
8	8	SWITCH PLATE (P4C-136)	ES2800-80	
9	2	SWITCH PLATE, ROLLER (10-TR1C)	ES2800-80	
10	1	SWITCH PLATE (10-12RLC)	ES2803-84	
11	1	SWITCH PLATE (10-12RRC)	ES2803-84	
12	1	SWITCH PLATE (10-13RLC)	ES2803-84	
13	1	SWITCH PLATE (10-13RRC)	ES2803-84	
14	1	SWITCH PLATE (10-14RLC)	ES2803-84	
15	1	SWITCH PLATE (10-14RRC)	ES2803-84	
16	1	SWITCH PLATE (10-15RLC)	ES2803-85	
17	1	SWITCH PLATE (10-15RRC)	ES2803-85	

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
18	1	SWITCH PLATE (10-16RLC)	ES2803-85	
19	1	SWITCH PLATE (10-16RRC)	ES2803-85	
20	1	SWITCH PLATE (10-17RLC)	ES2803-85	
21	1	SWITCH PLATE (10-17RRC)	ES2803-85	
22	1	SWITCH PLATE (10-18RLC)	ES2803-86	
23	1	SWITCH PLATE (10-18RRC)	ES2803-86	
24	1	SWITCH PLATE (10-19RLC)	ES2803-86	
25	1	SWITCH PLATE (10-19RRC)	ES2803-86	
26	2	HOLD DOWN CLIP (PC37A) "K" STYLE	-	
27	2	HOLD DOWN CLIP (PC38A) "K" STYLE	-	
28	2	HOLD DOWN CLIP (PC39A) "K" STYLE	-	
29	2	POINT ROLLER ASSEMBLY, FLAT BACK C/W DOUBLE REINFORCED HARDWARE	-	
30	10	BOLTLESS BRACE ASSEMBLY, SUREFIT, 136 LB RE C/W SERRATED WASHER	-	
31	68	CLIP, PANDROL, E2055	-	
32	6	T-BOLT 7/8" DIAMETER 3 3/4" LONG, GR 8	-	
33	6	SPRING WASHER 7/8" DIAMETER	-	
34	6	NUT, 7/8" DIAMETER HEAVY HEX GR 8	-	



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

DRAWN BY: *Narek D. Pape* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Davan
 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 RH SWITCH PACK,
 HOLLOW STEEL TIES,
 SWITCH MACHINE ON MAINLINE SIDE

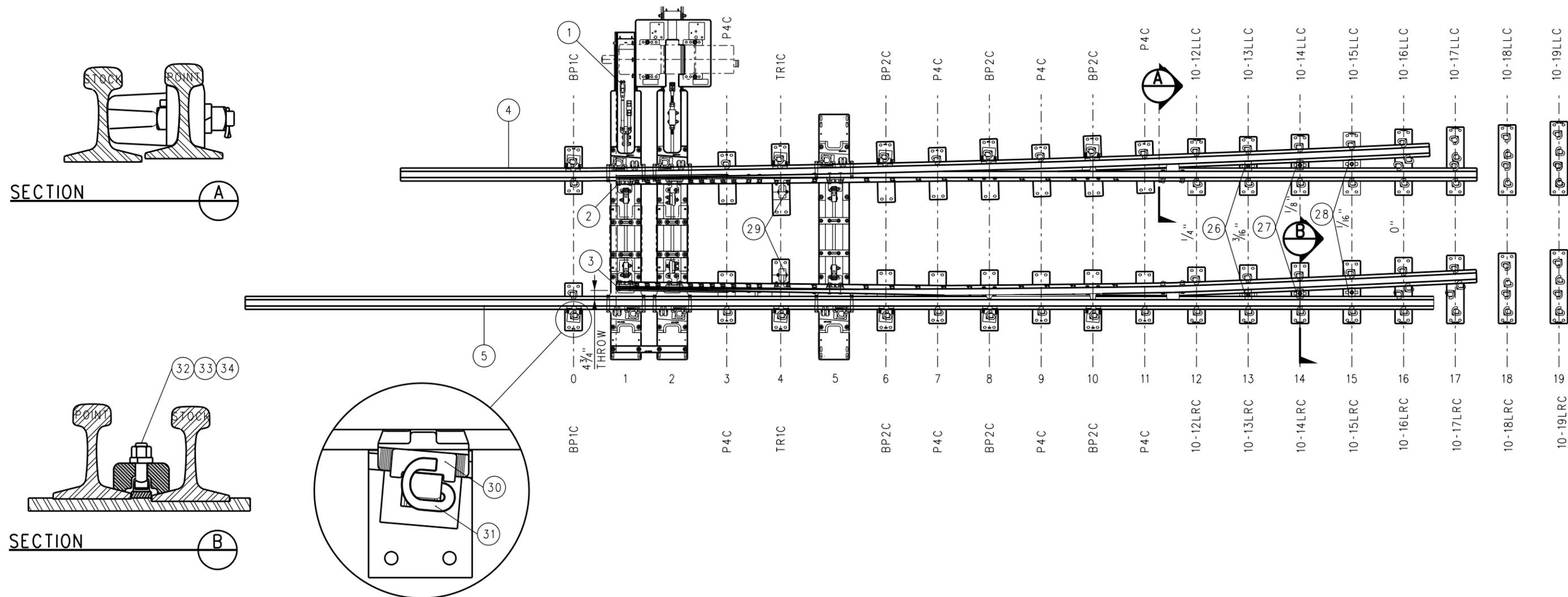
STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-14

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	1	HOLLOW SWITCH TIE & RODDING ASSEMBLY	ES2803-71	
2	1	SAMSON POINT, 33'-3" LONG, DOUBLE REINFORCED, UR MANG TIP, STR, LH	ES2803-21	
3	1	SAMSON POINT, 33'-3" LONG, DOUBLE REINFORCED, UR MANG TIP, CVD, RH	ES2803-22	
4	1	SAMSON STOCK RAIL, 39'-9 ³ / ₁₆ " LONG, CURVED, LH	ES2803-25	
5	1	SAMSON STOCK RAIL, 45'-11" LONG, STRAIGHT, RH	ES2803-26	
6	2	SWITCH PLATE, BRACE (BP1C-136)	ES2800-80	
7	6	SWITCH PLATE, BRACE (BP2C-136)	ES2800-80	
8	8	SWITCH PLATE (P4C-136)	ES2800-80	
9	2	SWITCH PLATE, ROLLER (10-TR1C)	ES2800-80	
10	1	SWITCH PLATE (10-12LLC)	ES2803-81	
11	1	SWITCH PLATE (10-12LRC)	ES2803-81	
12	1	SWITCH PLATE (10-13LLC)	ES2803-81	
13	1	SWITCH PLATE (10-13LRC)	ES2803-81	
14	1	SWITCH PLATE (10-14LLC)	ES2803-81	
15	1	SWITCH PLATE (10-14LRC)	ES2803-81	
16	1	SWITCH PLATE (10-15LLC)	ES2803-82	
17	1	SWITCH PLATE (10-15LRC)	ES2803-82	

BILL OF MATERIAL

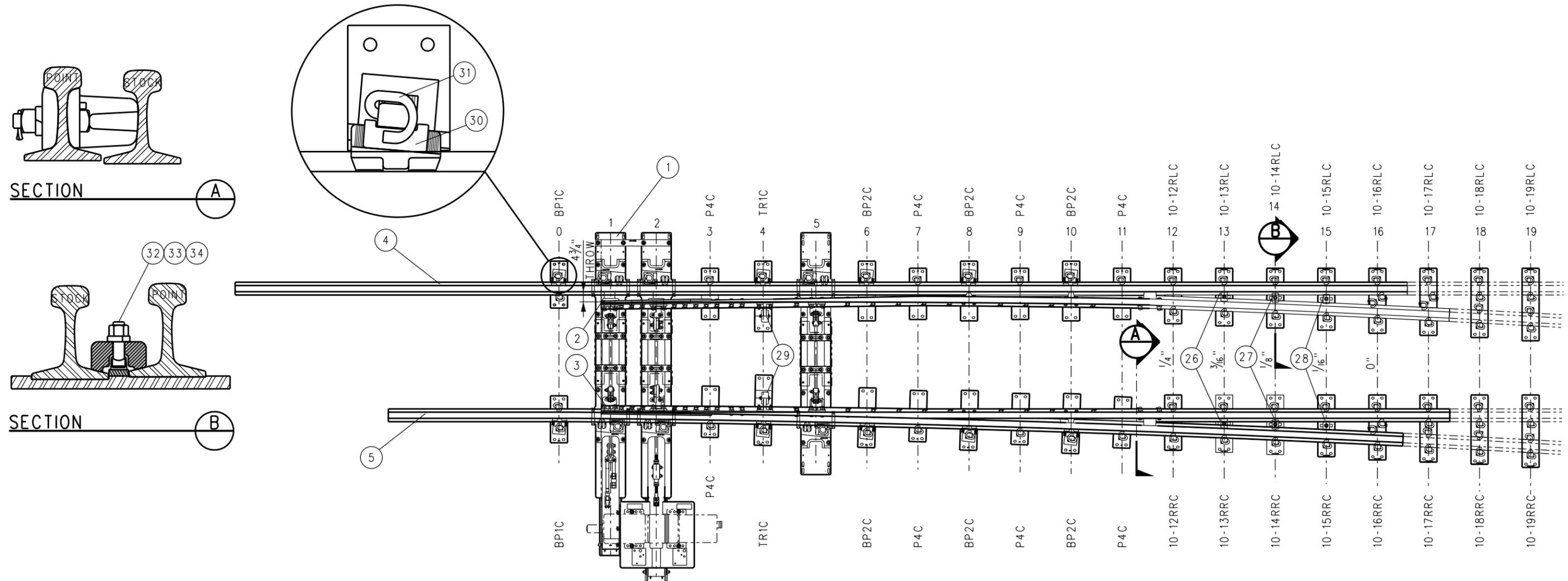
ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
18	1	SWITCH PLATE (10-16LLC)	ES2803-82	
19	1	SWITCH PLATE (10-16LRC)	ES2803-82	
20	1	SWITCH PLATE (10-17LLC)	ES2803-82	
21	1	SWITCH PLATE (10-17LRC)	ES2803-82	
22	1	SWITCH PLATE (10-18LLC)	ES2803-83	
23	1	SWITCH PLATE (10-18LRC)	ES2803-83	
24	1	SWITCH PLATE (10-19LLC)	ES2803-83	
25	1	SWITCH PLATE (10-19LRC)	ES2803-83	
26	2	HOLD DOWN CLIP (PC37A) "K" STYLE	-	
27	2	HOLD DOWN CLIP (PC38A) "K" STYLE	-	
28	2	HOLD DOWN CLIP (PC39A) "K" STYLE	-	
29	2	POINT ROLLER ASSEMBLY, FLAT BACK C/W DOUBLE REINFORCED HARDWARE	-	
30	10	BOLTLESS BRACE ASSEMBLY, SUREFIT, 136 LB RE C/W SERRATED WASHER	-	
31	68	CLIP, PANDROL, E2055	-	
32	6	T-BOLT, 7/8" DIAMETER 3 ³ / ₄ " LONG, GR 8	-	
33	6	SPRING WASHER 7/8" DIAMETER	-	
34	6	NUT, 7/8" DIAMETER HEAVY HEX, GR 8	-	



DRAWN BY: <i>Narek D. Pape</i>		HDR: <i>Narek D. Pape</i>	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.	SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	ENGINEERING STANDARDS NO 10-136 LB RE LH SWITCH PACK, HOLLOW STEEL TIES, SWITCH MACHINE ON TURNOUT SIDE	STANDARD: 2803
REVISION: <i>Wilson Davan</i> DES. ENG.							SCALE: NTS

BILL OF MATERIAL				
ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	1	HOLLOW SWITCH TIE & RODDING ASSEMBLY	ES2803-72	
2	1	SAMSON POINT, 33'-3" LONG, DOUBLE REINFORCED, UR MANG TIP, CVD, LH	ES2803-23	
3	1	SAMSON POINT, 33'-3" LONG, DOUBLE REINFORCED, UR MANG TIP, STR, RH	ES2803-24	
4	1	SAMSON STOCK RAIL, 45'-11" LONG, STRAIGHT, LH	ES2803-27	
5	1	SAMSON STOCK RAIL, 39'-9 ³ / ₁₆ " LONG, CURVED, RH	ES2803-28	
6	2	SWITCH PLATE, BRACE (BP1C-136)	ES2800-80	
7	6	SWITCH PLATE, BRACE (BP2C-136)	ES2800-80	
8	8	SWITCH PLATE (P4C-136)	ES2800-80	
9	2	SWITCH PLATE, ROLLER (10-TR1C)	ES2800-80	
10	1	SWITCH PLATE (10-12RLC)	ES2803-84	
11	1	SWITCH PLATE (10-12RRC)	ES2803-84	
12	1	SWITCH PLATE (10-13RLC)	ES2803-84	
13	1	SWITCH PLATE (10-13RRC)	ES2803-84	
14	1	SWITCH PLATE (10-14RLC)	ES2803-84	
15	1	SWITCH PLATE (10-14RRC)	ES2803-84	
16	1	SWITCH PLATE (10-15RLC)	ES2803-85	
17	1	SWITCH PLATE (10-15RRC)	ES2803-85	

BILL OF MATERIAL				
ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
18	1	SWITCH PLATE (10-16RLC)	ES2803-85	
19	1	SWITCH PLATE (10-16RRC)	ES2803-85	
20	1	SWITCH PLATE (10-17RLC)	ES2803-85	
21	1	SWITCH PLATE (10-17RRC)	ES2803-85	
22	1	SWITCH PLATE (10-18RLC)	ES2803-86	
23	1	SWITCH PLATE (10-18RRC)	ES2803-86	
24	1	SWITCH PLATE (10-19RLC)	ES2803-86	
25	1	SWITCH PLATE (10-19RRC)	ES2803-86	
26	2	HOLD DOWN CLIP (PC37A) "K" STYLE	-	
27	2	HOLD DOWN CLIP (PC38A) "K" STYLE	-	
28	2	HOLD DOWN CLIP (PC39A) "K" STYLE	-	
29	2	POINT ROLLER ASSEMBLY, FLAT BACK C/W DOUBLE REINFORCED HARDWARE	-	
30	10	BOLTLESS BRACE ASSEMBLY, SUREFIT, 136 LB RE C/W SERRATED WASHER	-	
31	68	CLIP, PANDROL, E2055	-	
32	6	T-BOLT ⁷ / ₈ " DIAMETER 3 ³ / ₄ " LONG, GR 8	-	
33	6	SPRING WASHER ⁷ / ₈ " DIAMETER	-	
34	6	NUT, ⁷ / ₈ " DIAMETER HEAVY HEX GR 8	-	



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 D. Davis
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

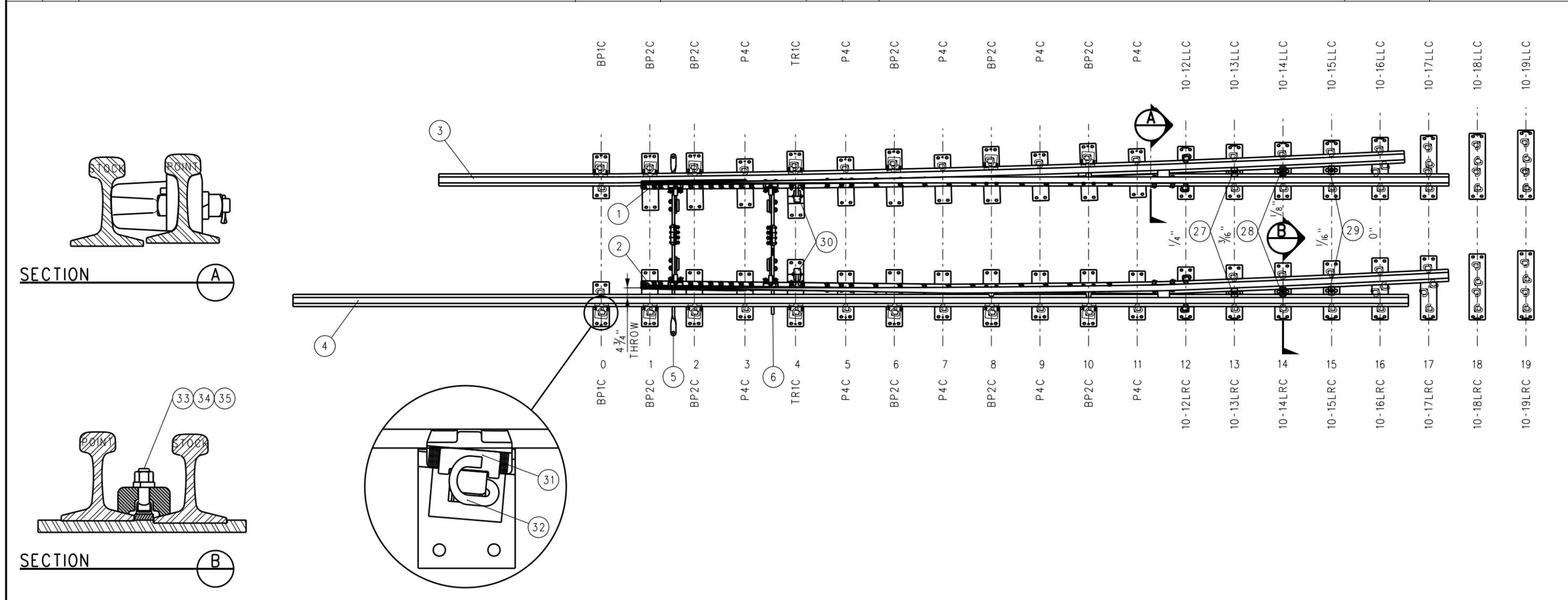
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METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 NO 10-136 LB RE RH SWITCH PACK,
 HOLLOW STEEL TIES,
 SWITCH MACHINE ON TURNOUT SIDE

STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-16

BILL OF MATERIAL				BILL OF MATERIAL					
ITEM	QTY	DESCRIPTION	DWG NO	SCRRA PART NO	ITEM	QTY	DESCRIPTION	DWG NO	SCRRA PART NO
1	1	SAMSON POINT, 33'-3" LONG, DOUBLE REINFORCED, UR MANG TIP, STR, LH	ES2803-21		19	1	SWITCH PLATE (10-16LLC)	ES2803-82	
2	1	SAMSON POINT, 33'-3" LONG, DOUBLE REINFORCED, UR MANG TIP, CVD, RH	ES2803-22		20	1	SWITCH PLATE (10-16LRC)	ES2803-82	
3	1	SAMSON STOCK RAIL, 39'-9 ³ / ₁₆ " LONG, CURVED, LH	ES2803-25		21	1	SWITCH PLATE (10-17LLC)	ES2803-82	
4	1	SAMSON STOCK RAIL, 45'-11" LONG, STRAIGHT, RH	ES2803-26		22	1	SWITCH PLATE (10-17LRC)	ES2803-82	
5	1	SWITCH ROD NO 1	-		23	1	SWITCH PLATE (10-18LLC)	ES2803-83	
6	1	SWITCH ROD NO 2	-		24	1	SWITCH PLATE (10-18LRC)	ES2803-83	
7	2	SWITCH PLATE, BRACE (BP1C-136)	ES2800-80		25	1	SWITCH PLATE (10-19LLC)	ES2803-83	
8	10	SWITCH PLATE, BRACE (BP2C-136)	ES2800-80		26	1	SWITCH PLATE (10-19LRC)	ES2803-83	
9	10	SWITCH PLATE (P4C-136)	ES2800-80		27	2	HOLD DOWN CLIP (PC37A) "K" STYLE	-	
10	2	SWITCH PLATE, ROLLER (10-TRIC)	ES2800-80		28	2	HOLD DOWN CLIP (PC38A) "K" STYLE	-	
11	1	SWITCH PLATE (10-12LLC)	ES2803-81		29	2	HOLD DOWN CLIP (PC39A) "K" STYLE	-	
12	1	SWITCH PLATE (10-12LRC)	ES2803-81		30	1	POINT ROLLER ASSEMBLY, FLAT BACK C/W DOUBLE REINFORCED HARDWARE	-	
13	1	SWITCH PLATE (10-13LLC)	ES2803-81		31	10	BOLTLESS BRACE ASSEMBLY, SUREFIT, 136 LB RE C/W SERRATED WASHER	-	
14	1	SWITCH PLATE (10-13LRC)	ES2803-81		32	68	CLIP, PANDROL, E2055	-	
15	1	SWITCH PLATE (10-14LLC)	ES2803-81		33	6	T-BOLT, 7/8" DIAMETER 3 3/4" LONG, GR 8	-	
16	1	SWITCH PLATE (10-14LRC)	ES2803-81		34	6	SPRING WASHER 7/8" DIAMETER	-	
17	1	SWITCH PLATE (10-15LLC)	ES2803-82		35	6	NUT, 7/8" DIAMETER HEAVY HEX GR 8	-	
18	1	SWITCH PLATE (10-15LRC)	ES2803-82						



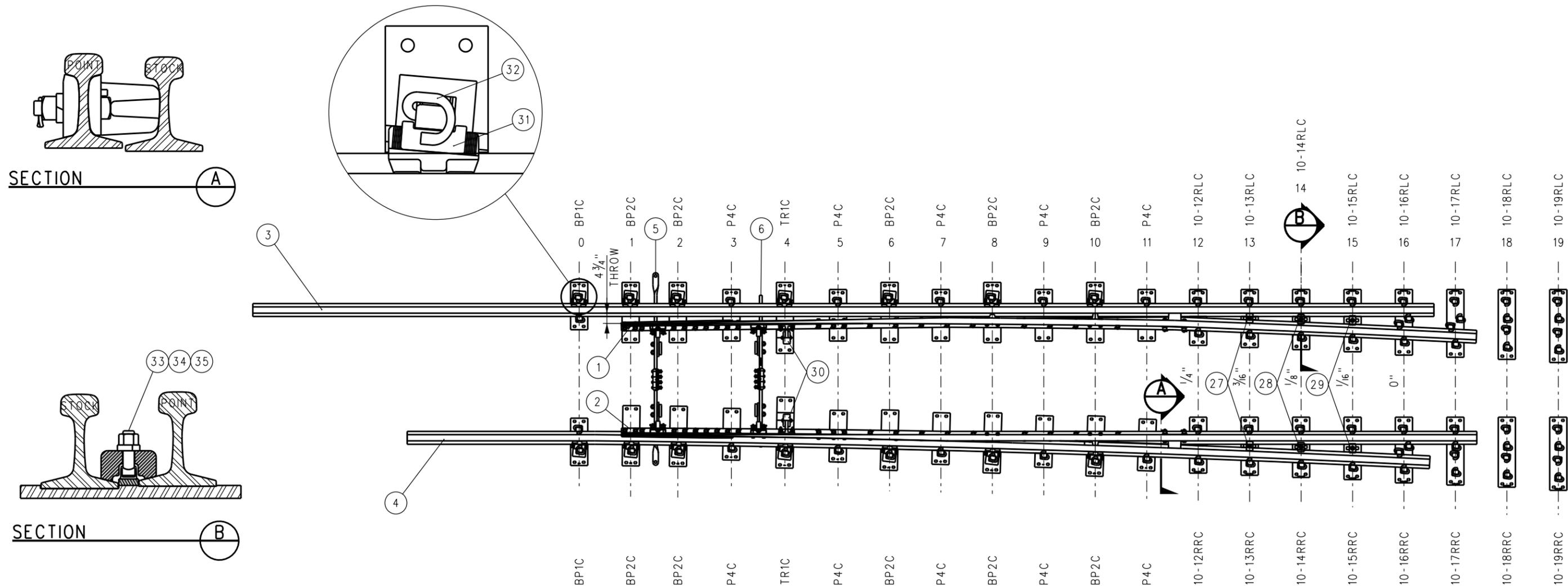
DRAWN BY: <i>Nareh D. Papp</i> HDR DATE: 03/31/2011 ASSISTANT DIRECTOR: STANDARDS & DESIGN		SCRRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRRA APPROVED USES ONLY. FOR NON-SCRRRA APPROVED USES, SCRRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. 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.	SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	ENGINEERING STANDARDS NO 10-136 LB RE LH SWITCH PACK, CONCRETE TIES, SWITCH CONTROL ON MAINLINE SIDE		STANDARD 2803 SCALE: NTS REVISION SHEET 1 OF 1 CADD FILE: ES2803-17
DES. ENG. <i>William Dacan</i> DIRECTOR OF ENGINEERING AND CONSTRUCTION						

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	1	SAMSON POINT, 33'-3" LONG, DOUBLE REINFORCED, UR MANG TIP, CVD, LH	ES2803-23	
2	1	SAMSON POINT, 33'-3" LONG, DOUBLE REINFORCED, UR MANG TIP, STR, RH	ES2803-24	
3	1	SAMSON STOCK RAIL, 45'-11" LONG, STRAIGHT, LH	ES2803-27	
4	1	SAMSON STOCK RAIL, 39'-9 ³ / ₁₆ " LONG, CURVED, RH	ES2803-28	
5	1	SWITCH ROD NO 1	-	
6	1	SWITCH ROD NO 2	-	
7	2	SWITCH PLATE, BRACE (BP1C-136)	ES2800-80	
8	10	SWITCH PLATE, BRACE (BP2C-136)	ES2800-80	
9	10	SWITCH PLATE (P4C-136)	ES2800-80	
10	2	SWITCH PLATE, ROLLER (10-TR1C)	ES2800-80	
11	1	SWITCH PLATE (10-12RLC)	ES2803-84	
12	1	SWITCH PLATE (10-12RRC)	ES2803-84	
13	1	SWITCH PLATE (10-13RLC)	ES2803-84	
14	1	SWITCH PLATE (10-13RRC)	ES2803-84	
15	1	SWITCH PLATE (10-14RLC)	ES2803-84	
16	1	SWITCH PLATE (10-14RRC)	ES2803-84	
17	1	SWITCH PLATE (10-15RLC)	ES2803-85	
18	1	SWITCH PLATE (10-15RRC)	ES2803-85	

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
19	1	SWITCH PLATE (10-16RLC)	ES2803-85	
20	1	SWITCH PLATE (10-16RRC)	ES2803-85	
21	1	SWITCH PLATE (10-17RLC)	ES2803-85	
22	1	SWITCH PLATE (10-17RRC)	ES2803-85	
23	1	SWITCH PLATE (10-18RLC)	ES2803-86	
24	1	SWITCH PLATE (10-18RRC)	ES2803-86	
25	1	SWITCH PLATE (10-19RLC)	ES2803-86	
26	1	SWITCH PLATE (10-19RRC)	ES2803-86	
27	2	HOLD DOWN CLIP (PC37A) "K" STYLE	-	
28	2	HOLD DOWN CLIP (PC38A) "K" STYLE	-	
29	2	HOLD DOWN CLIP (PC39A) "K" STYLE	-	
30	2	POINT ROLLER ASSEMBLY, FLAT BACK C/W DOUBLE REINFORCED HARDWARE	-	
31	10	BOLTLESS BRACE ASSEMBLY, SUREFIT, 136 LB RE C/W SERRATED WASHER	-	
32	68	CLIP, PANDROL, E2055	-	
33	6	T-BOLT, 7/8" DIAMETER 3 ³ / ₄ " LONG, GR 8	-	
34	6	SPRING WASHER 7/8" DIAMETER	-	
35	6	NUT, 7/8" DIAMETER HEAVY HEX GR 8	-	



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 RH SWITCH PACK,
 CONCRETE TIES,
 SWITCH CONTROL ON MAINLINE SIDE

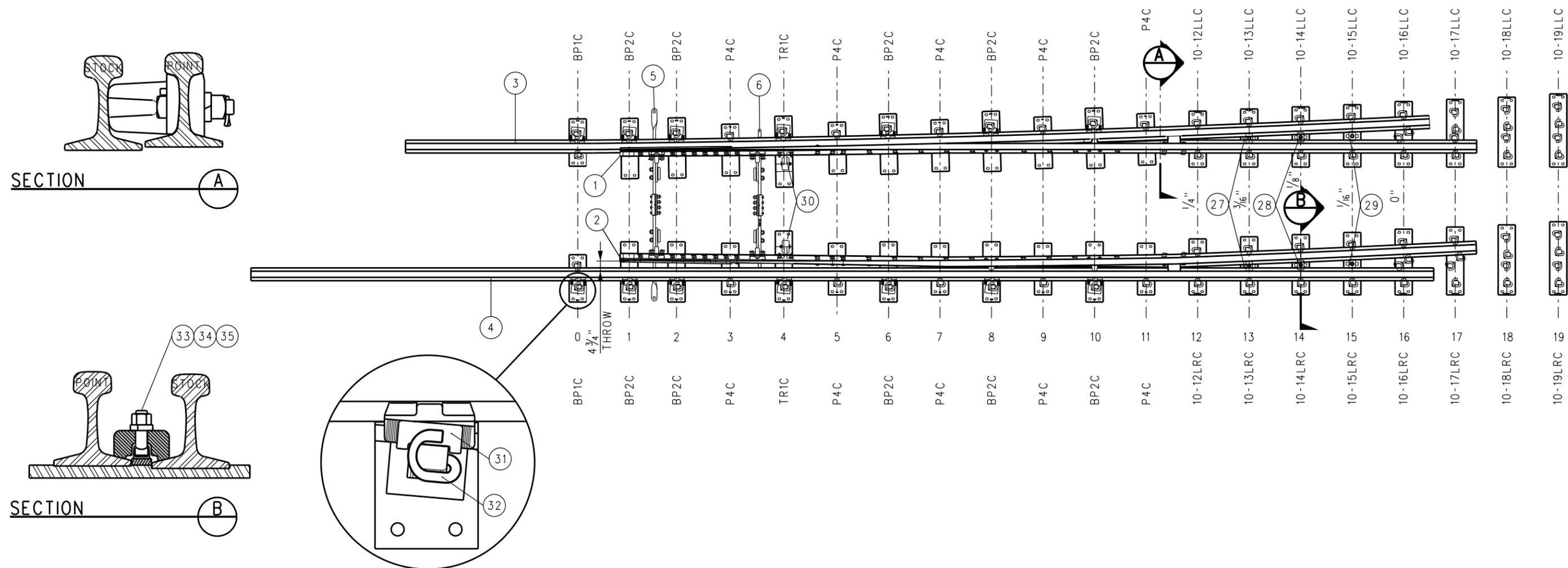
STANDARD	2803
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2803-18

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	1	SAMSON POINT, 33'-3" LONG, DOUBLE REINFORCED, UR MANG TIP, STR, LH	ES2803-21	
2	1	SAMSON POINT, 33'-3" LONG, DOUBLE REINFORCED, UR MANG TIP, CVD, RH	ES2803-22	
3	1	SAMSON STOCK RAIL, 39'-9 ³ / ₆ " LONG, CURVED, LH	ES2803-25	
4	1	SAMSON STOCK RAIL, 45'-11" LONG, STRAIGHT, RH	ES2803-26	
5	1	SWITCH ROD NO 1	-	
6	1	SWITCH ROD NO 2	-	
7	2	SWITCH PLATE, BRACE (BP1C-136)	ES2800-80	
8	10	SWITCH PLATE, BRACE (BP2C-136)	ES2800-80	
9	10	SWITCH PLATE (P4C-136)	ES2800-80	
10	2	SWITCH PLATE, ROLLER (10-TR1C)	ES2800-80	
11	1	SWITCH PLATE (10-12LLC)	ES2803-81	
12	1	SWITCH PLATE (10-12LRC)	ES2803-81	
13	1	SWITCH PLATE (10-13LLC)	ES2803-81	
14	1	SWITCH PLATE (10-13LRC)	ES2803-81	
15	1	SWITCH PLATE (10-14LLC)	ES2803-81	
16	1	SWITCH PLATE (10-14LRC)	ES2803-81	
17	1	SWITCH PLATE (10-15LLC)	ES2803-82	
18	1	SWITCH PLATE (10-15LRC)	ES2803-82	

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
19	1	SWITCH PLATE (10-16LLC)	ES2803-82	
20	1	SWITCH PLATE (10-16LRC)	ES2803-82	
21	1	SWITCH PLATE (10-17LLC)	ES2803-82	
22	1	SWITCH PLATE (10-17LRC)	ES2803-82	
23	1	SWITCH PLATE (10-18LLC)	ES2803-83	
24	1	SWITCH PLATE (10-18LRC)	ES2803-83	
25	1	SWITCH PLATE (10-19LLC)	ES2803-83	
26	1	SWITCH PLATE (10-19LRC)	ES2803-83	
27	2	HOLD DOWN CLIP (PC37A) "K" STYLE	-	
28	2	HOLD DOWN CLIP (PC38A) "K" STYLE	-	
29	2	HOLD DOWN CLIP (PC39A) "K" STYLE	-	
30	2	POINT ROLLER ASSEMBLY, FLAT BACK C/W DOUBLE REINFORCED HARDWARE	-	
31	10	BOLTLESS BRACE ASSEMBLY, SUREFIT, 136 LB RE C/W SERRATED WASHER	-	
32	68	CLIP, PANDROL, E2055	-	
33	6	T-BOLT, 7/8" DIAMETER 3 ³ / ₄ " LONG, GR 8	-	
34	6	SPRING WASHER 7/8" DIAMETER	-	
35	6	NUT, 7/8" DIAMETER HEAVY HEX GR 8	-	



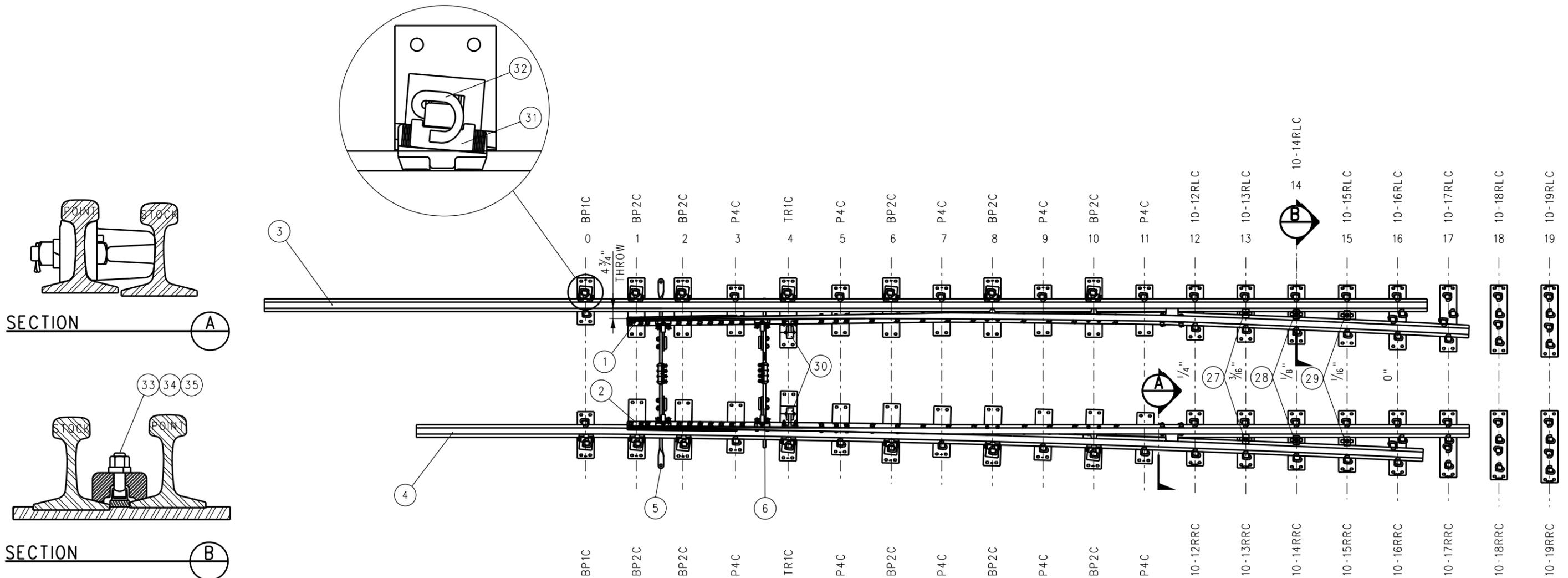
DRAWN BY: <i>Nareh D. Papp</i> HDR DATE: 03/31/2011 ASSISTANT DIRECTOR: STANDARDS & DESIGN		SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE 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.	SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	ENGINEERING STANDARDS NO 10-136 LB RE LH SWITCH PACK, CONCRETE TIES, SWITCH CONTROL ON TURNOUT SIDE	STANDARD 2803
REV. DATE DESCRIPTION DES. ENG.					SCALE: NTS REVISION SHEET 1 OF 1 CADD FILE: ES2803-19

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	1	SAMSON POINT, 33'-3" LONG, DOUBLE REINFORCED, UR MANG TIP, CVD, LH	ES2803-23	
2	1	SAMSON POINT, 33'-3" LONG, DOUBLE REINFORCED, UR MANG TIP, STR, RH	ES2803-24	
3	1	SAMSON STOCK RAIL, 45'-11" LONG, STRAIGHT, LH	ES2803-27	
4	1	SAMSON STOCK RAIL, 39'-9 ³ / ₁₆ " LONG, CURVED, RH	ES2803-28	
5	1	SWITCH ROD NO 1	-	
6	1	SWITCH ROD NO 2	-	
7	2	SWITCH PLATE, BRACE (BP1C-136)	ES2800-80	
8	10	SWITCH PLATE, BRACE (BP2C-136)	ES2800-80	
9	10	SWITCH PLATE (P4C-136)	ES2800-80	
10	2	SWITCH PLATE, ROLLER (10-TR1C)	ES2800-80	
11	1	SWITCH PLATE (10-12RLC)	ES2803-84	
12	1	SWITCH PLATE (10-12RRC)	ES2803-84	
13	1	SWITCH PLATE (10-13RLC)	ES2803-84	
14	1	SWITCH PLATE (10-13RRC)	ES2803-84	
15	1	SWITCH PLATE (10-14RLC)	ES2803-84	
16	1	SWITCH PLATE (10-14RRC)	ES2803-84	
17	1	SWITCH PLATE (10-15RLC)	ES2803-85	
18	1	SWITCH PLATE (10-15RRC)	ES2803-85	

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
19	1	SWITCH PLATE (10-16RLC)	ES2803-85	
20	1	SWITCH PLATE (10-16RRC)	ES2803-85	
21	1	SWITCH PLATE (10-17RLC)	ES2803-85	
22	1	SWITCH PLATE (10-17RRC)	ES2803-85	
23	1	SWITCH PLATE (10-18RLC)	ES2803-86	
24	1	SWITCH PLATE (10-18RRC)	ES2803-86	
25	1	SWITCH PLATE (10-19RLC)	ES2803-86	
26	1	SWITCH PLATE (10-19RRC)	ES2803-86	
27	2	HOLD DOWN CLIP (PC37A) "K" STYLE	-	
28	2	HOLD DOWN CLIP (PC38A) "K" STYLE	-	
29	2	HOLD DOWN CLIP (PC39A) "K" STYLE	-	
30	2	POINT ROLLER ASSEMBLY, FLAT BACK C/W DOUBLE REINFORCED HARDWARE	-	
31	10	BOLTLESS BRACE ASSEMBLY, SUREFIT, 136 LB RE C/W SERRATED WASHER	-	
32	68	CLIP, PANDROL, E2055	-	
33	6	T-BOLT, 7/8" DIAMETER 3 ³ / ₄ " LONG, GR 8	-	
34	6	SPRING WASHER 7/8" DIAMETER	-	
35	6	NUT, 7/8" DIAMETER HEAVY HEX GR 8	-	



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 Davan
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

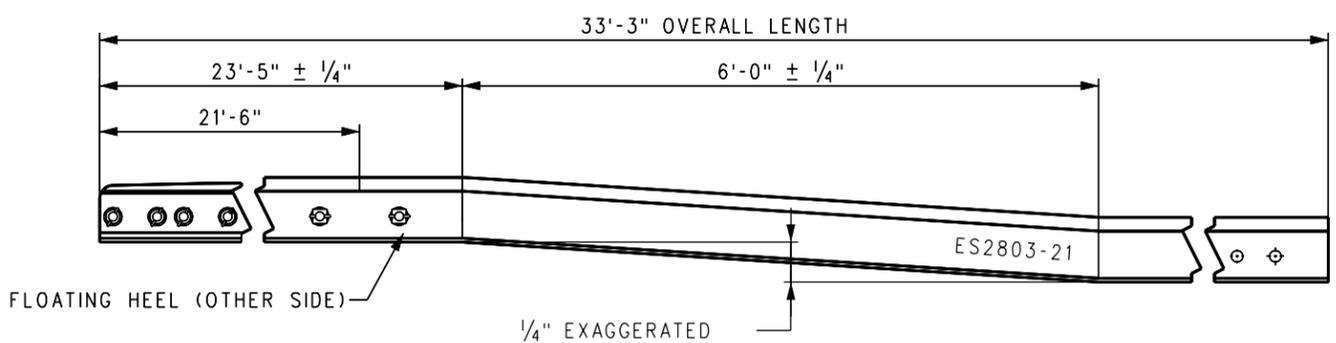
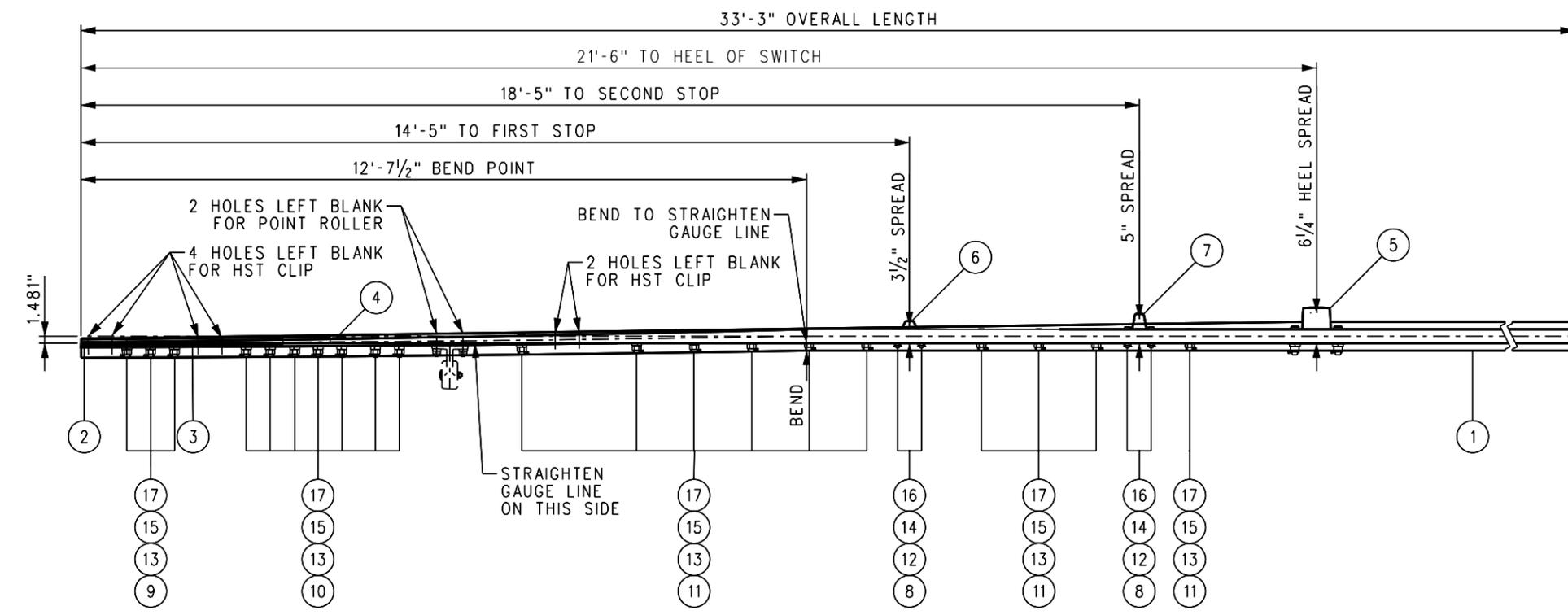
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METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 NO 10-136 LB RE RH SWITCH PACK,
 CONCRETE TIES,
 SWITCH CONTROL ON TURNOUT SIDE

STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-20

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	SCRR PART NO	ITEM	QTY	DESCRIPTION	SCRR PART NO
1	1	SWITCH POINT RAIL, 33'-3" LONG, UR MANG TIP, STRAIGHT, LH		10	7	BOLT, 1" DIA x 4" LONG, THIN SQUARE HEAD DRILLED @ 3/2" GR 5	
2	1	MANGANESE TIP, 21'-6" LONG, 136 LB RE SAMSON SWITCH POINT, LH		11	10	BOLT, 1" DIA x 4" LONG, SQUARE HEAD DRILLED @ 3/16" GR 5	
3	1	REINFORCING BAR, GAUGE SIDE, 1/2" x 19'-6" LONG, SAMSON, LH POINT		12	4	NUT, 3/4" DIA HEAVY HEX, GR 5	
4	1	REINFORCING BAR, STOCK SIDE, 1/2" x 15'-1/2" LONG, SAMSON, LH POINT		13	20	NUT, 1" DIA HEAVY HEX, GR 5	
5	1	HEEL BLOCK ASSEMBLY, FLOATING C/W HARDWARE		14	4	SPRING WASHER, 3/4" DIA	
6	1	POINT STOP 2 5/16" HIGH		15	20	SPRING WASHER, 1" DIA	
7	1	POINT STOP 3 13/16" HIGH		16	4	COTTER PIN, 3/16" DIA x 1 3/4" LONG	
8	4	BOLT, 3/4" DIA x 4" LONG, SQUARE HEAD DRILLED @ 3 9/16" GR 5		17	20	COTTER PIN, 1/4" DIA x 2" LONG	
9	3	BOLT, 1" DIA x 3 3/4" LONG, THIN SQUARE HEAD DRILLED @ 3 3/32" GR 5					

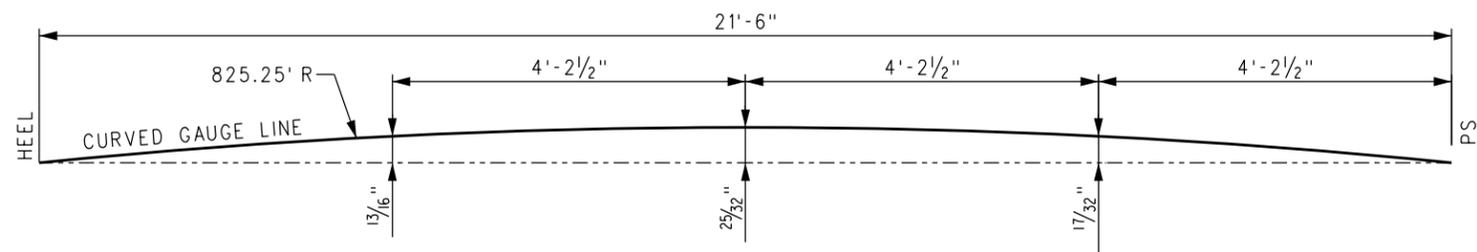
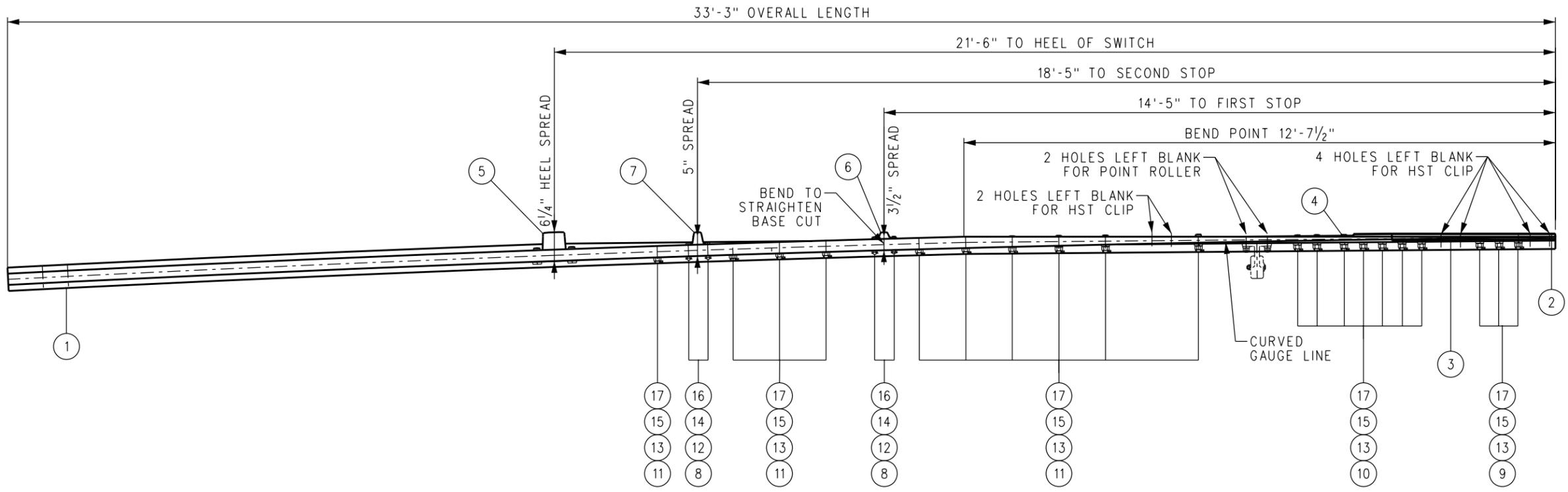


- NOTES:**
1. ROUND EDGES OF SWITCH STOPS AT CONTACT AREAS, 1/2" R.
 2. BEVEL ALL BOLT HOLES.
 3. WRITE SCRR ES NUMBER ON WEB OF RAIL WITH WATERPROOF MARKER OR PAINT.

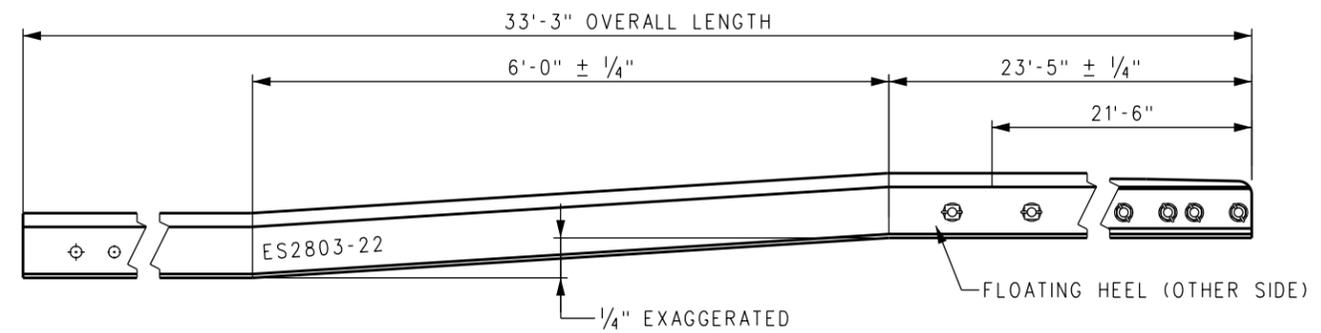
SIDE VIEW - VERTICAL BENDING DETAIL

DRAWN BY: <i>Nareh D. Papp</i>		HDR: <i>Willson Davan</i>	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 SWITCH POINT ASSEMBLY, 136 LB RE SAMSON, STRAIGHT, LH NO 10 LH TURNOUT 33'-3" OVERALL LENGTH MANGANESE TIP	STANDARD: 2803
REVISION: XX XX DATE: DES. ENG.	ASSISTANT DIRECTOR: STANDARDS & DESIGN DIRECTOR OF ENGINEERING AND CONSTRUCTION	SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	SCALE: NTS SHEET: 1 OF 1 CADD FILE: ES2803-21				

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	SCRR PART NO	ITEM	QTY	DESCRIPTION	SCRR PART NO
1	1	SWITCH POINT RAIL, 33'-3" LONG, UR MANG TIP, CURVED, RH		10	7	BOLT, 1" DIA x 4" LONG, THIN SQUARE HEAD DRILLED @ 3/2" GR 5	
2	1	MANGANESE TIP, 21'-6" LONG, 136 LB RE SAMSON SWITCH POINT, RH		11	10	BOLT, 1" DIA x 4" LONG, SQUARE HEAD DRILLED @ 3/16" GR 5	
3	1	REINFORCING BAR, GAUGE SIDE, 1/2" x 19'-6" LONG, SAMSON, RH POINT		12	4	NUT, 3/4" DIA HEAVY HEX, GR 5	
4	1	REINFORCING BAR, STOCK SIDE, 1/2" x 15'-1 7/8" LONG, SAMSON, RH POINT		13	20	NUT, 1" DIA HEAVY HEX, GR 5	
5	1	HEEL BLOCK ASSEMBLY, FLOATING C/W HARDWARE		14	4	SPRING WASHER, 3/4" DIA	
6	1	POINT STOP 2 5/16" HIGH		15	20	SPRING WASHER, 1" DIA	
7	1	POINT STOP 3 13/16" HIGH		16	4	COTTER PIN, 3/16" DIA x 1 3/4" LONG	
8	4	BOLT, 3/4" DIA x 4" LONG, SQUARE HEAD DRILLED @ 3/16" GR 5		17	20	COTTER PIN, 1/4" DIA x 2" LONG	
9	3	BOLT, 1" DIA x 3 3/4" LONG, THIN SQUARE HEAD DRILLED @ 3/32" GR 5					



LATERAL CURVING DETAIL

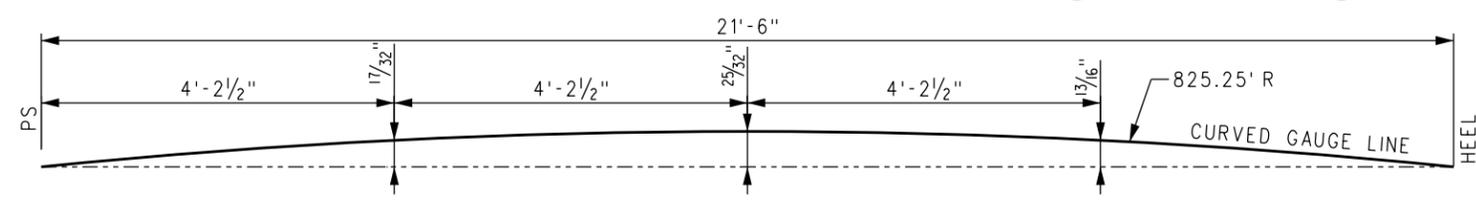
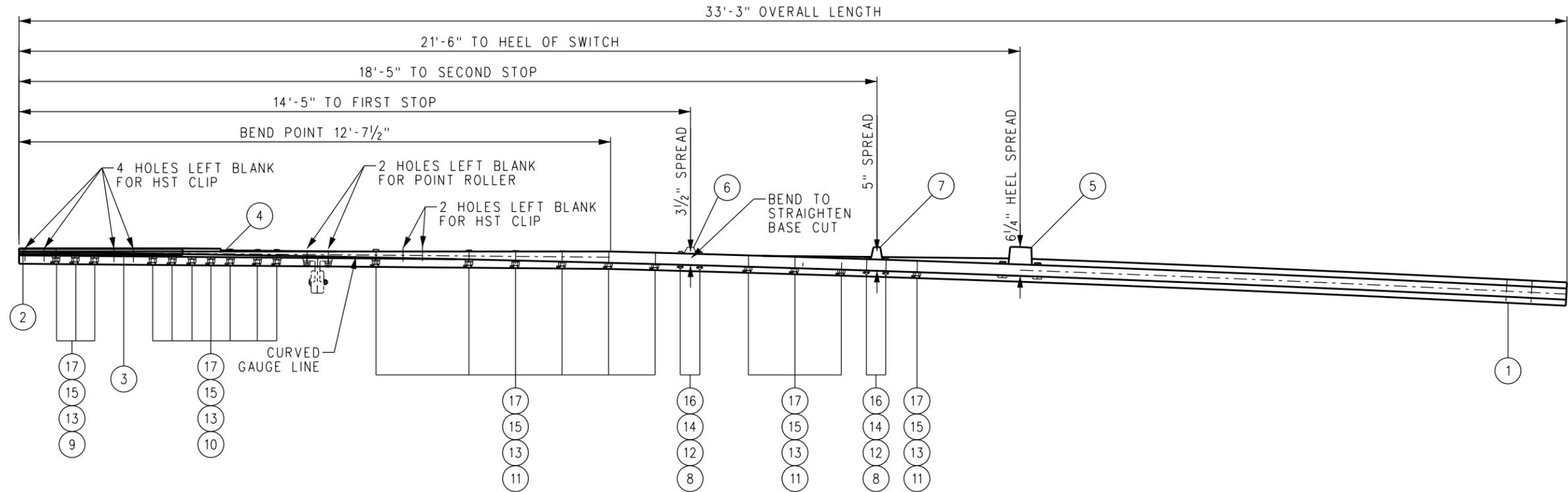


SIDE VIEW - VERTICAL BENDING DETAIL

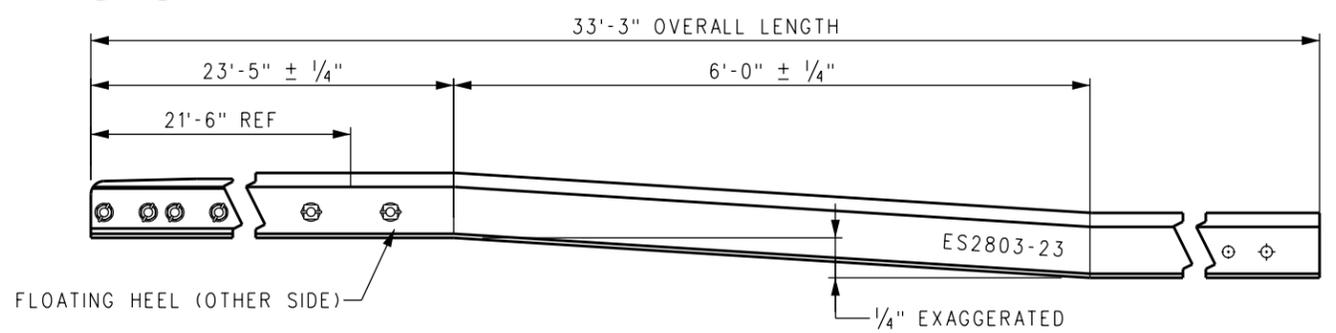
- NOTES:**
1. ROUND EDGES OF SWITCH STOPS AT CONTACT AREAS, 1/2" R.
 2. BEVEL ALL BOLT HOLES.
 3. WRITE SCRR ES NUMBER ON WEB OF RAIL WITH WATERPROOF MARKER OR PAINT.

DRAWN BY: <i>Nareh D. Papp</i>		HDR: <i>Willson Dava</i>	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.	 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	ENGINEERING STANDARDS		STANDARD: 2803
REVISION: XX XX DATE: DESCRIPTION DES. ENG.		SWITCH POINT ASSEMBLY, 136 LB RE SAMSON, CURVED, RH NO 10 LH TURNOUT 33'-3" OVERALL LENGTH MANGANESE TIP				SCALE: NTS	REVISION SHEET: 1 OF 1	CADD FILE: ES2803-22

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	SCRR PART NO	ITEM	QTY	DESCRIPTION	SCRR PART NO
1	1	SWITCH POINT RAIL, 33'-3" LONG, UR MANG TIP, CURVED, LH		10	7	BOLT, 1" DIA x 4" LONG, THIN SQ HEAD DRILLED @ 3/2" GRADE 5	
2	1	MANGANESE TIP, 21'-6" LONG, 136 LB RE SAMSON SWITCH POINT, LH		11	10	BOLT, 1" DIA x 4" LONG, SQ HEAD DRILLED @ 3/16" GRADE 5	
3	1	REINFORCING BAR, GAUGE SIDE, 1/2" x 19'-6" LONG, SAMSON, LH POINT		12	4	NUT, 3/4" DIA HEAVY HEX, GRADE 5	
4	1	REINFORCING BAR, STOCK SIDE, 1/2" x 15'-1 1/2" LONG, SAMSON, LH POINT		13	20	NUT, 1" DIA HEAVY HEX, GRADE 5	
5	1	HEEL BLOCK ASSEMBLY, FLOATING C/W HARDWARE		14	4	SPRING WASHER, 3/4" DIA	
6	1	POINT STOP 2 5/16" HIGH		15	20	SPRING WASHER, 1" DIA	
7	1	POINT STOP 3 13/16" HIGH		16	4	COTTER PIN, 3/16" DIA x 1 3/4" LONG	
8	4	BOLT, 3/4" DIA x 4" LONG, SQUARE HEAD DRILLED @ 3 3/16" GRADE 5		17	20	COTTER PIN, 1/4" DIA x 2" LONG	
9	3	BOLT, 1" DIA x 3 3/4" LONG, THIN SQUARE HEAD DRILLED @ 3 7/32" GRADE 5					



LATERAL CURVING DETAIL



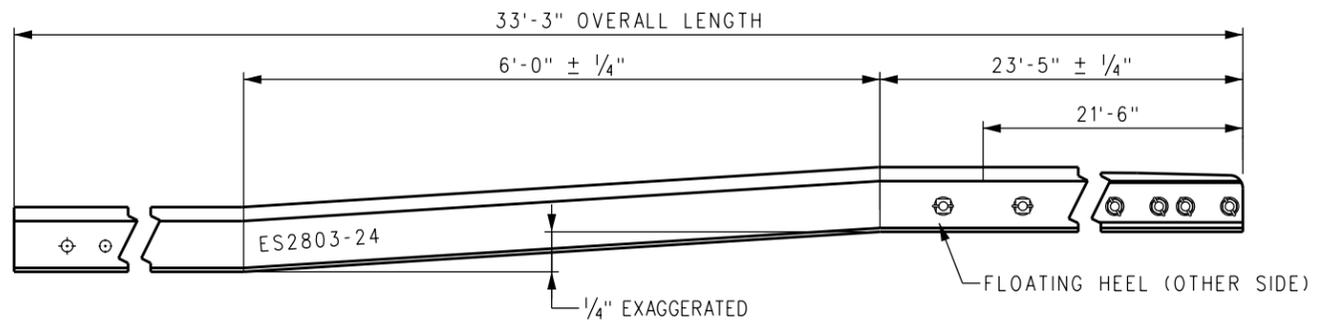
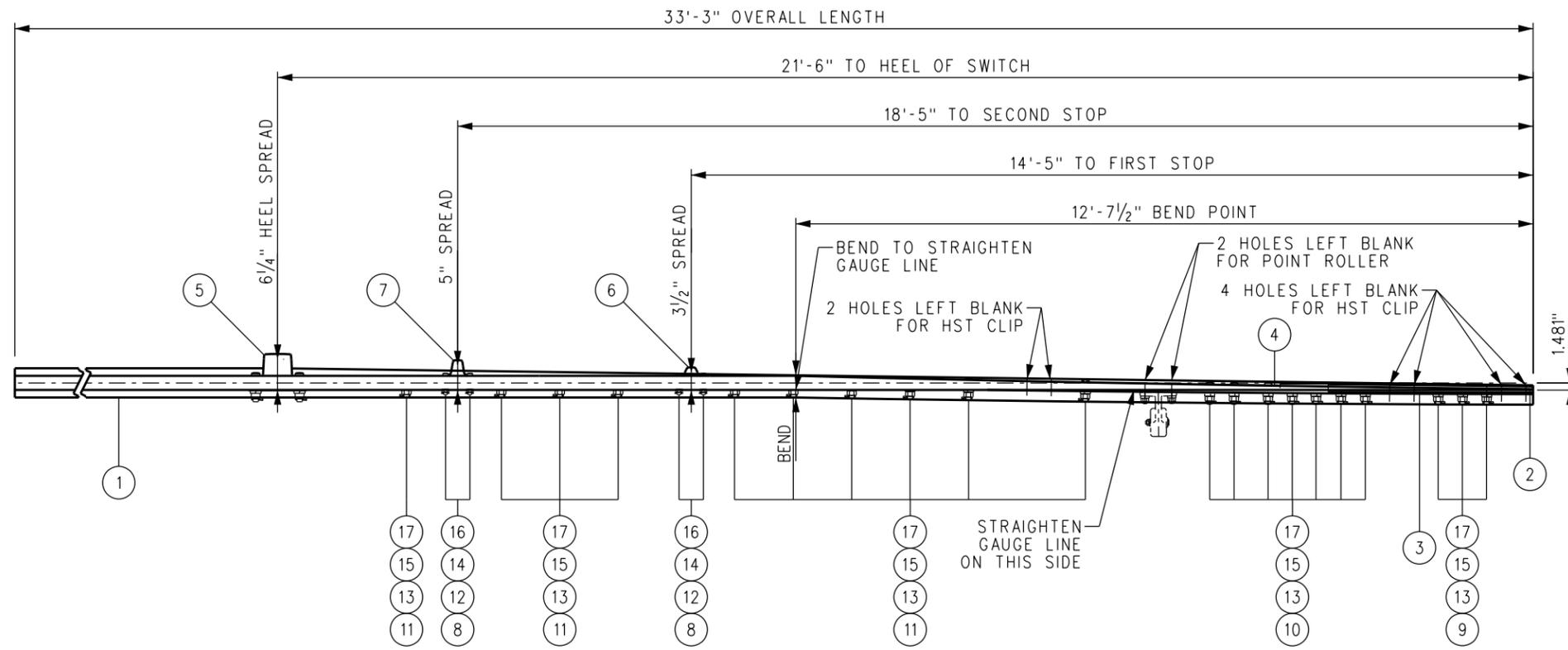
SIDE VIEW - VERTICAL BENDING DETAIL

NOTES:

1. ROUND EDGES OF SWITCH STOPS AT CONTACT AREAS, 1/2" R.
2. BEVEL ALL BOLT HOLES.
3. WRITE SCRR ES NUMBER ON WEB OF RAIL WITH WATERPROOF MARKER OR PAINT.

DRAWN BY: <i>Nareh D. Papp</i>		HDR: <i>Wilson Davan</i>	DATE: 03/31/2011	<small>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.</small>	<p>SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012</p>	ENGINEERING STANDARDS		STANDARD: 2803
<small>REVISION</small> <small>XX XX</small> <small>REV. DATE DESCRIPTION DES. ENG.</small>		<small>ASSISTANT DIRECTOR: STANDARDS & DESIGN</small> <small>DIRECTOR OF ENGINEERING AND CONSTRUCTION</small>				SWITCH POINT ASSEMBLY, 136 LB RE SAMSON, CURVED, LH NO 10 RH TURNOUT 33'-3" OVERALL LENGTH MANGANESE TIP		SCALE: NTS

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	SCRR PART NO	ITEM	QTY	DESCRIPTION	SCRR PART NO
1	1	SWITCH POINT RAIL, 33'-3" LONG, UR MANG TIP, STRAIGHT, RH		10	7	BOLT, 1" DIA x 4" LONG, THIN SQ HEAD DRILLED @ 3/2" GRADE 5	
2	1	MANGANESE TIP, 21'-6" LONG, 136 LB RE SAMSON SWITCH POINT, RH		11	10	BOLT, 1" DIA x 4" LONG, SQ HEAD DRILLED @ 3/16" GRADE 5	
3	1	REINFORCING BAR, GAUGE SIDE, 1/2" x 19'-6" LONG, SAMSON, RH POINT		12	4	NUT, 3/4" DIA HEAVY HEX, GRADE 5	
4	1	REINFORCING BAR, STOCK SIDE, 1/2" x 15'-1 7/8" LONG, SAMSON, RH POINT		13	20	NUT, 1" DIA HEAVY HEX, GRADE 5	
5	1	HEEL BLOCK ASSEMBLY, FLOATING C/W HARDWARE		14	4	SPRING WASHER, 3/4" DIA	
6	1	POINT STOP 2 5/16" HIGH		15	20	SPRING WASHER, 1" DIA	
7	1	POINT STOP 3 3/16" HIGH		16	4	COTTER PIN, 3/16" DIA x 1 3/4" LONG	
8	4	BOLT, 3/4" DIA x 4" LONG, SQUARE HEAD DRILLED @ 3/16" GRADE 5		17	20	COTTER PIN, 1/4" DIA x 2" LONG	
9	3	BOLT, 1" DIA x 3 3/4" LONG, THIN SQUARE HEAD DRILLED @ 3/32" GRADE 5					

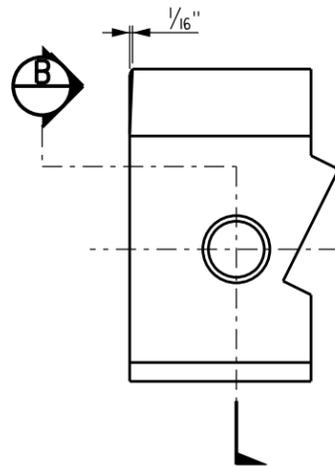


SIDE VIEW - VERTICAL BENDING DETAIL

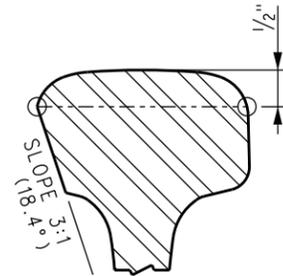
- NOTES:**
1. ROUND EDGES OF SWITCH STOPS AT CONTACT AREAS, 1/2" R.
 2. BEVEL ALL BOLT HOLES.
 3. WRITE SCRR ES NUMBER ON WEB OF RAIL WITH WATERPROOF MARKER OR PAINT.

DRAWN BY: <i>Nareh D. Papp</i>		HDR: <i>Willson Davan</i>	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 SWITCH POINT ASSEMBLY, 136 LB RE SAMSON, STRAIGHT, RH NO 10 RH TURNOUT 33'-3" OVERALL LENGTH MANGANESE TIP	STANDARD: 2803
REVISION: XX XX DATE: DESCRIPTION: DES. ENG.	ASSISTANT DIRECTOR: STANDARDS & DESIGN DIRECTOR OF ENGINEERING AND CONSTRUCTION	SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	SCALE: NTS SHEET: 1 OF 1 CADD FILE: ES2803-24				

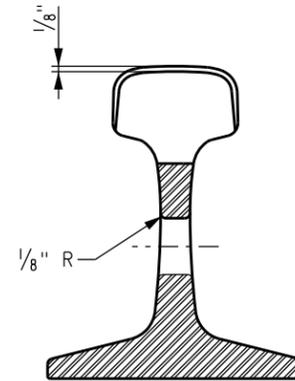
ITEM	QTY	DESCRIPTION	SCRR PART NO
1	1	RAIL, 136 LB RE 45'-11" LONG	



RAIL END/HOLE BEVELING DETAIL
RAIL HEAD ONLY - NOT BASE

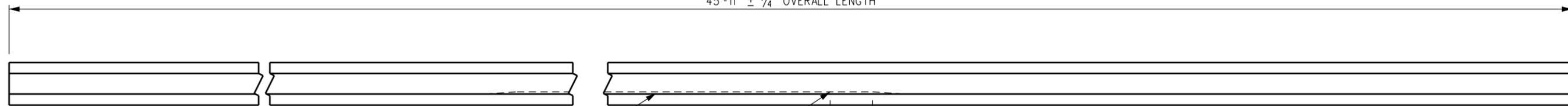


PARTIAL SECTION A



SECTION B

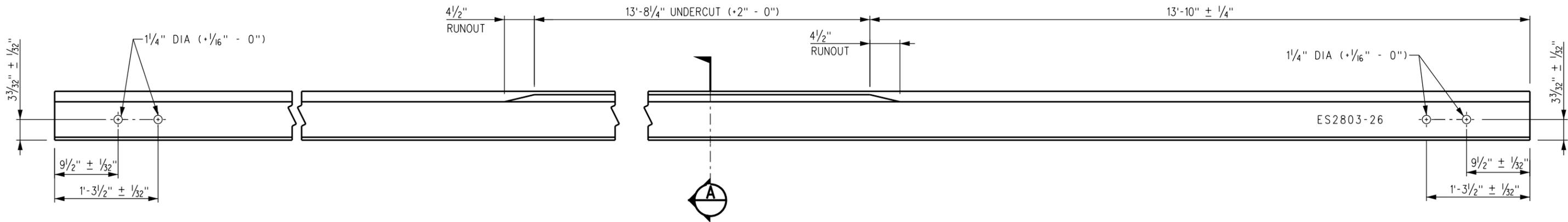
45'-11" ± 1/4" OVERALL LENGTH



HEAT STAMP ON GAUGE SIDE

MARK FOR PS

6" TO PS



NOTES:

1. ALL BURNING METHODS PROHIBITED.
2. ALL BOLT HOLES TO BE BEVELED PER DETAIL.
3. POINT OF SWITCH TO BE MARKED ON GAUGE SIDE OF WEB WITH A WHITE LINE USING WATERPROOF MARKER OR PAINT.
4. WRITE SCRR ES NUMBER ON WEB OF RAIL WITH WATERPROOF MARKER OR PAINT.

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

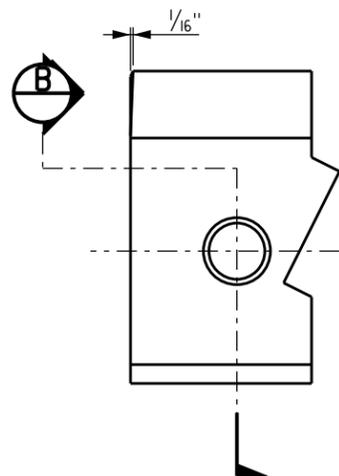
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METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

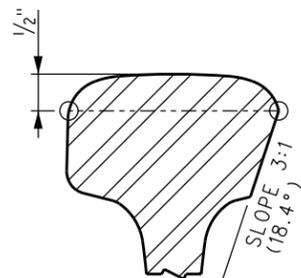
ENGINEERING STANDARDS	
SAMSON STOCK RAIL, STRAIGHT, RH 136 LB RE 45'-11" LONG FOR NO 10 136 LB RE LH SWITCH PACK	

STANDARD	2803
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2803-26

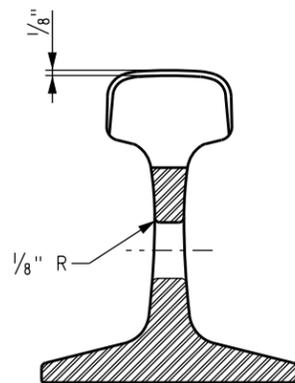
ITEM	QTY	DESCRIPTION	SCRRRA PART NO
1	1	RAIL, 136 LB RE 45'-11" LONG	



RAIL END/HOLE BEVELING DETAIL
RAIL HEAD ONLY - NOT BASE

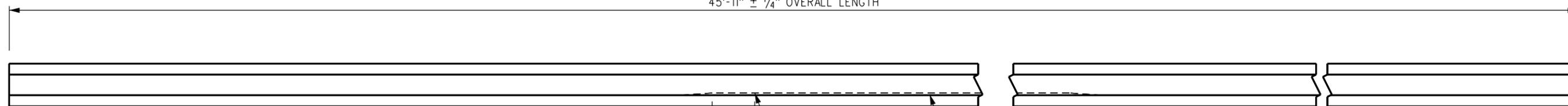


PARTIAL SECTION A



SECTION B

45'-11" ± 1/4" OVERALL LENGTH



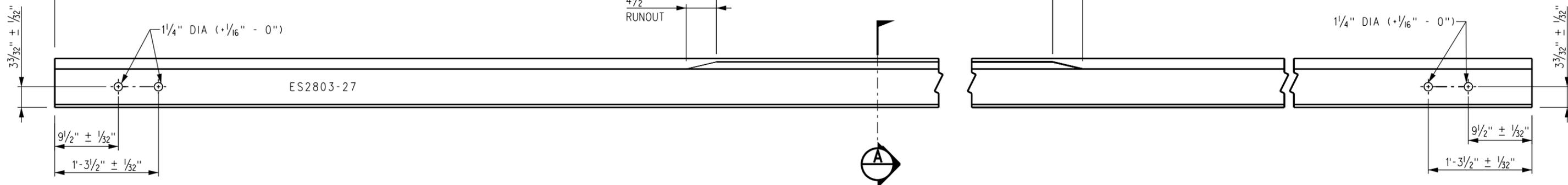
6" TO PS MARK FOR PS HEAT STAMP ON GAUGE SIDE

13'-10" ± 1/4"

13'-8 1/4" UNDERCUT (+2" - 0")

4 1/2" RUNOUT

4 1/2" RUNOUT



ES2803-27

NOTES:

1. ALL BURNING METHODS PROHIBITED.
2. ALL BOLT HOLES TO BE BEVELED PER DETAIL.
3. POINT OF SWITCH TO BE MARKED ON GAUGE SIDE OF WEB WITH A WHITE LINE USING WATERPROOF MARKER OR PAINT.
4. WRITE SCRRRA ES NUMBER ON WEB OF RAIL WITH WATERPROOF MARKER OR PAINT.

DRAWN BY: <i>Nareh D. Papp</i>		HDR: <i>Nareh D. Papp</i>		DATE: 03/31/2011	
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

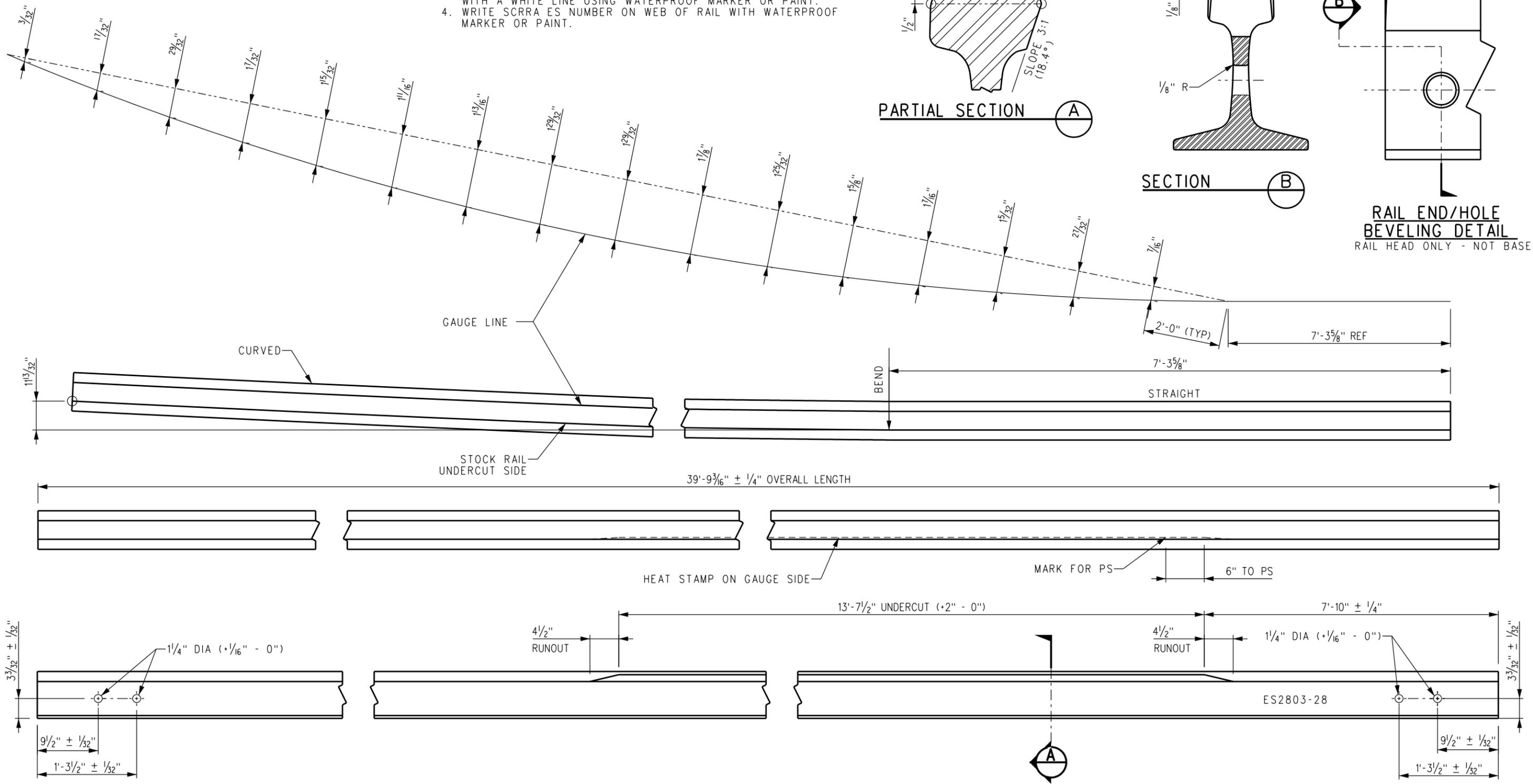
ENGINEERING STANDARDS
SAMSON STOCK RAIL, STRAIGHT, LH
136 LB RE 45'-11" LONG
FOR NO 10 136 LB RE RH SWITCH PACK

STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-27

ITEM	QTY	DESCRIPTION	SCRRRA PART NO
1	1	RAIL, 136 LB RE 39'-9 3/16" LONG	

NOTES:

1. ALL BURNING METHODS PROHIBITED.
2. ALL BOLT HOLES TO BE BEVELED PER DETAIL.
3. POINT OF SWITCH TO BE MARKED ON GAUGE SIDE OF WEB WITH A WHITE LINE USING WATERPROOF MARKER OR PAINT.
4. WRITE SCRRRA ES NUMBER ON WEB OF RAIL WITH WATERPROOF MARKER OR PAINT.



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

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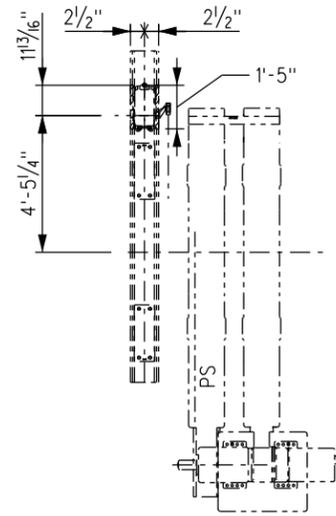
METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
SAMSON STOCK RAIL, CURVED, RH
136 LB RE 39'-9 3/16" LONG
FOR NO 10 136 LB RE RH SWITCH PACK

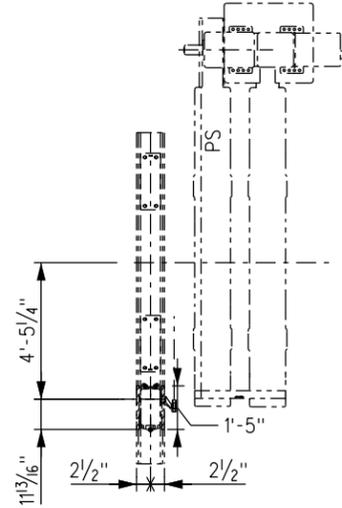
STANDARD	2803
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2803-28

BILL OF MATERIALS

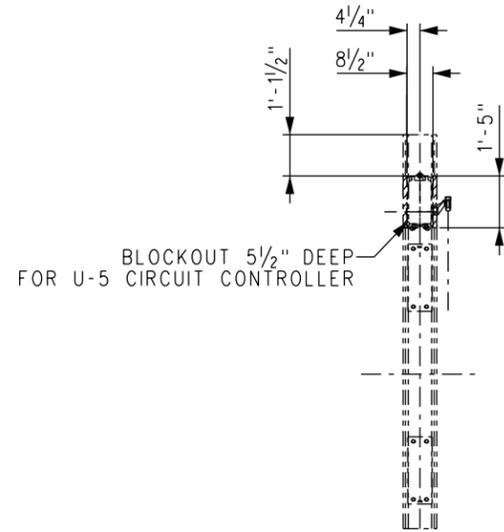
ITEM	QTY	DESCRIPTION	DWG NO
1	3	TIES 1, 2, AND 5, POWER SWITCH MACHINE ON MAINLINE SIDE FOR RH TURNOUT (HOLLOW STEEL)	ES2803-32
2	3	TIES 1, 2, AND 5, POWER SWITCH MACHINE ON TURNOUT SIDE FOR RH TURNOUT (HOLLOW STEEL)	ES2803-34
3	3	TIES 1, 2, AND 5, MANUAL OR POWER SWITCH MACHINE ON MAINLINE SIDE FOR RH TURNOUT (CONCRETE)	ES2803-36
4	3	TIES 1, 2, AND 5, MANUAL OR POWER SWITCH MACHINE ON TURNOUT SIDE FOR RH TURNOUT (CONCRETE)	ES2803-38



**TIE "0" PLACEMENT
SWITCH MACHINE
ON TURNOUT (RH) SIDE**



**TIE "0" PLACEMENT
SWITCH MACHINE
ON MAINLINE (LH) SIDE**

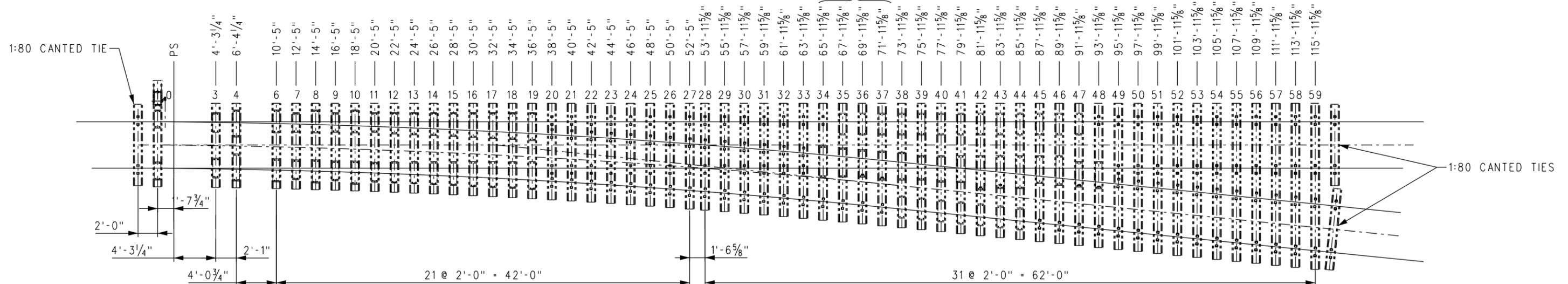


TIE "0" BLOCKOUT DETAIL

NOTES:

1. SET TO INCLUDE TIES 0, 3, 4, 6 THROUGH 59, THREE 1:80 CANTED TIES, PLATE TIE PADS AND PIM INSERTS.
2. TIE LENGTHS ARE DETERMINED BY ADDING 1'-10 7/16" FROM RAIL GAUGE LINE OR (1'-9" FROM RAIL CENTERLINE) PER SIDE AT THE CENTERLINE OF EACH TIE LOCATION.
3. ALL TIES ARE FLAT (NON-CANTED) EXCEPT 1:80 CANTED TIES.
4. TRANSITION TIES (QUANTITY 3) SHALL INCORPORATE 1:80 CANTED RAIL SEATS AND USE 4'-8 1/2" BETWEEN STRAIGHT RAIL SEAT GAUGES. LENGTH SHALL BE 8'-3".
5. THIS DRAWING SHOWS TIE "0" PLACEMENT FOR SWITCH MACHINE ON RH/TURNOUT SIDE. USE OPPOSITE HAND FOR SWITCH MACHINE ON THE LH/MAINLINE SIDE.
6. SEE BILL OF MATERIALS ABOVE FOR TIES 1, 2, AND 5.

PLATING IS 3/4" THICK. RAISE OUTSIDE RAIL SEATS ACCORDINGLY. ALL RAIL SEATS ARE FLAT.



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 Davan
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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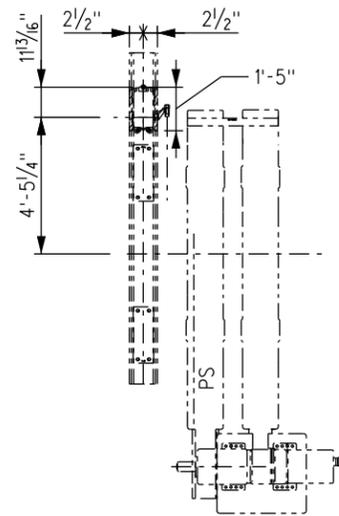
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 CONCRETE TIE LAYOUT
 NO 10-136 LB RE SPRING FROG TURNOUT, RH

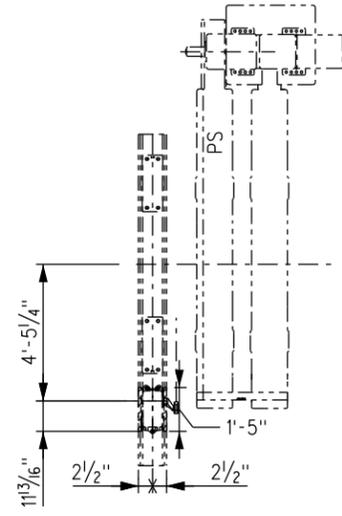
STANDARD	2803
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2803-30

BILL OF MATERIALS

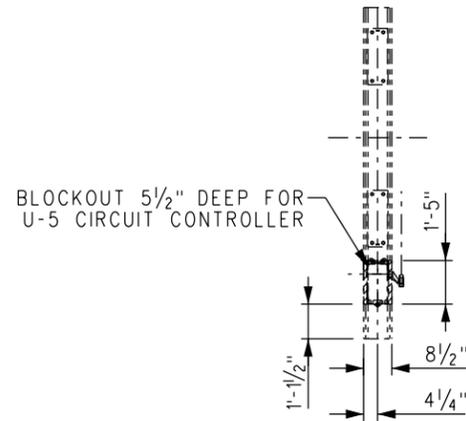
ITEM	QTY	DESCRIPTION	DWG NO
1	3	TIES 1, 2, AND 5, POWER SWITCH MACHINE ON MAINLINE SIDE FOR LH TURNOUT (HOLLOW STEEL)	ES2803-33
2	3	TIES 1, 2, AND 5, POWER SWITCH MACHINE ON TURNOUT SIDE FOR LH TURNOUT (HOLLOW STEEL)	ES2803-35
3	3	TIES 1, 2, AND 5, MANUAL OR POWER SWITCH MACHINE ON MAINLINE SIDE FOR LH TURNOUT (CONCRETE)	ES2803-37
4	3	TIES 1, 2, AND 5, MANUAL OR POWER SWITCH MACHINE ON TURNOUT SIDE FOR LH TURNOUT (CONCRETE)	ES2803-39



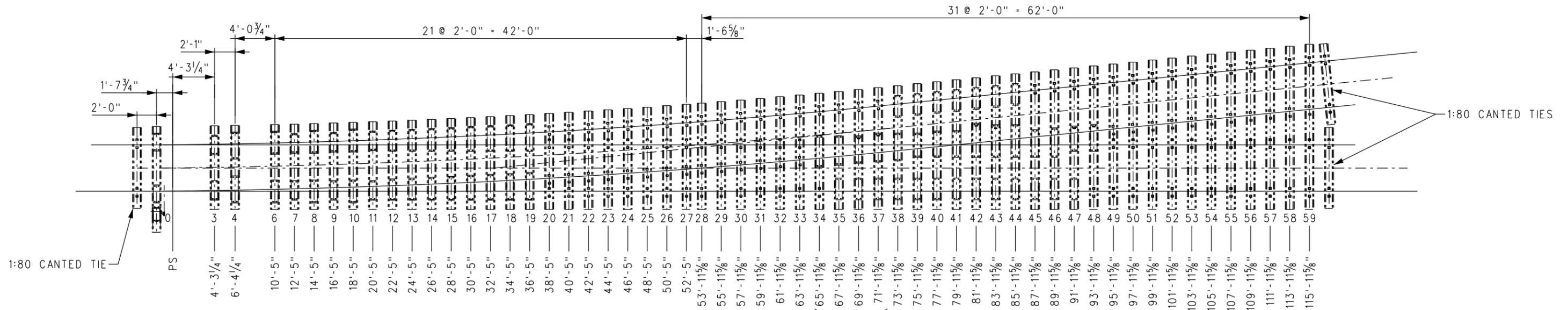
TIE "O" PLACEMENT SWITCH MACHINE ON MAINLINE (RH) SIDE



TIE "O" PLACEMENT SWITCH MACHINE ON TURNOUT (LH) SIDE



TIE "O" BLOCKOUT DETAIL



NOTES:

1. SET TO INCLUDE TIES 0, 3, 4, 6 THROUGH 59, THREE 1:80 CANTED TIES, PLATE TIE PADS AND PIM INSERTS.
2. TIE LENGTHS ARE DETERMINED BY ADDING 1'-10 1/16" FROM RAIL GAUGE LINE OR (1'-9" FROM RAIL CENTERLINE) PER SIDE AT THE CENTERLINE OF EACH TIE LOCATION.
3. ALL TIES ARE FLAT (NON-CANTED) EXCEPT 1:80 CANTED TIES.
4. TRANSITION TIES (QUANTITY 3) SHALL INCORPORATE 1:80 CANTED RAIL SEATS AND USE 4'-8 1/2" BETWEEN STRAIGHT RAIL SEAT GAUGES. LENGTH SHALL BE 8'-3".
5. THIS DRAWING SHOWS TIE "O" PLACEMENT FOR SWITCH MACHINE ON LH/TURNOUT SIDE. USE OPPOSITE HAND FOR SWITCH MACHINE ON THE RH/MAINLINE SIDE.
6. SEE BILL OF MATERIALS ABOVE FOR TIES 1, 2, AND 5.

PLATING IS 3/4" THICK. RAISE OUTSIDE RAIL SEATS ACCORDINGLY. ALL RAIL SEATS ARE FLAT.

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

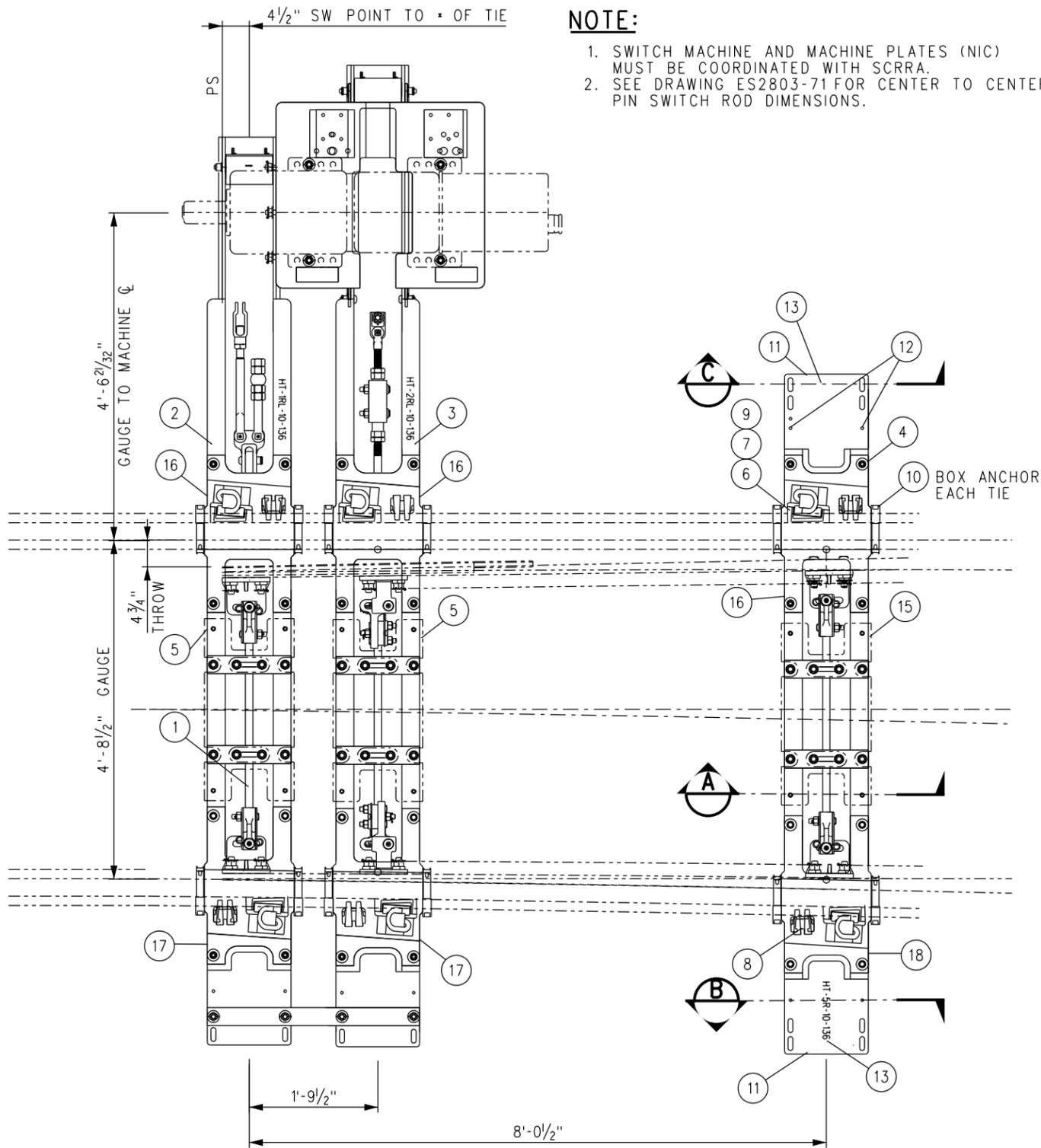
DRAWN BY: *Nareh D. Papp* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Davan
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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

ENGINEERING STANDARDS
 CONCRETE TIE LAYOUT
 NO 10-136 LB RE SPRING FROG TURNOUT, LH

STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-31

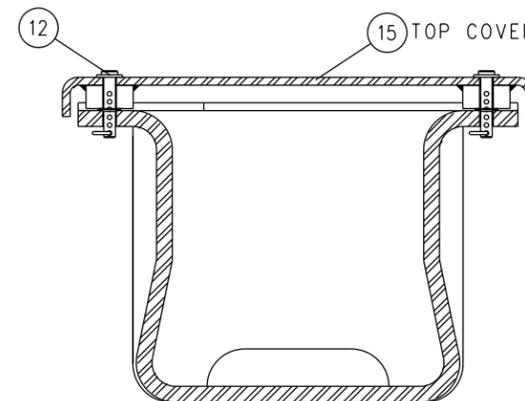


NOTE:

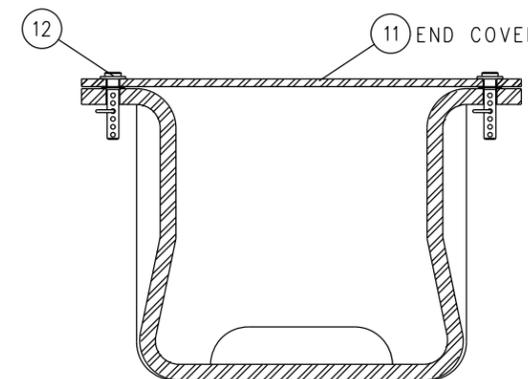
1. SWITCH MACHINE AND MACHINE PLATES (NIC) MUST BE COORDINATED WITH SCRRRA.
2. SEE DRAWING ES2803-71 FOR CENTER TO CENTER PIN SWITCH ROD DIMENSIONS.

BILL OF MATERIAL				
ITEM	QTY	DESCRIPTION	DWG NO	SCRRRA PART NO
1	1	RODDING ASSEMBLY FOR NO 10-136 LB RE, SWITCH MACHINE ON LEFT SIDE	ES2803-71	
2	1	HOLLOW TIE ASSEMBLY (HT-1RL-10-136)	-	
3	1	HOLLOW TIE ASSEMBLY (HT-2RL-10-136)	-	
4	1	HOLLOW TIE ASSEMBLY (HT-5R-10-136)	-	
5*	2	COVER PLATE NO 1, HOLLOW SWITCH TIE	-	
6	6	LV BRACE FOR 136 LB RE	-	
7	6	SERRATED WASHER FOR LV BRACE	-	
8	6	CLIP, SAFELOK AB 2000	-	
9	6	CLIP, PANDROL, E2055	-	
10	12	RAIL ANCHOR UNIT DRIVE-ON TYPE 5	-	
11	2	STEEL COVER PLATE FOR HST TIE, TOP END	-	
12	20	PUSH PIN ASSEMBLY FOR HST COVERS	-	
13	2	STEEL SIDE END COVER PLATE ASSEMBLY FOR HST TIE	-	
14	4	COVER SUPPORT BRACKET	-	
15*	1	COVER PLATE NO 2, HOLLOW SWITCH TIE	-	
16	3	HST SWITCH PLATE HTP-206-STR	ES2800-90	
17	2	HST SWITCH PLATE HTP-201-R	ES2800-93	
18	1	HST SWITCH PLATE HTP-205-R	ES2800-95	

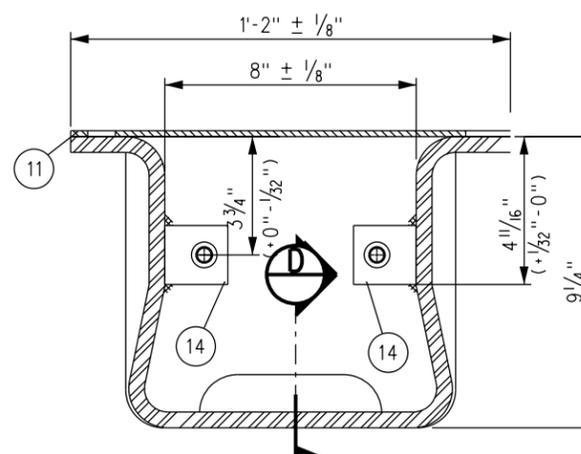
* NOT SHOWN ON ASSEMBLY FOR CLARITY



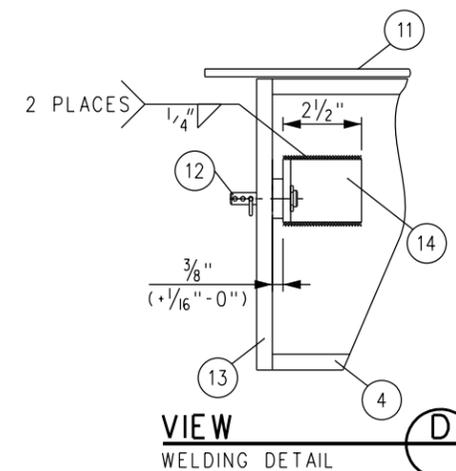
SECTION A
HOLLOW TIE TOP COVER DETAIL



SECTION B
END COVER PLATE



SECTION C
HOLLOW TIE SIDE END COVER DETAIL



VIEW D
WELDING DETAIL

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

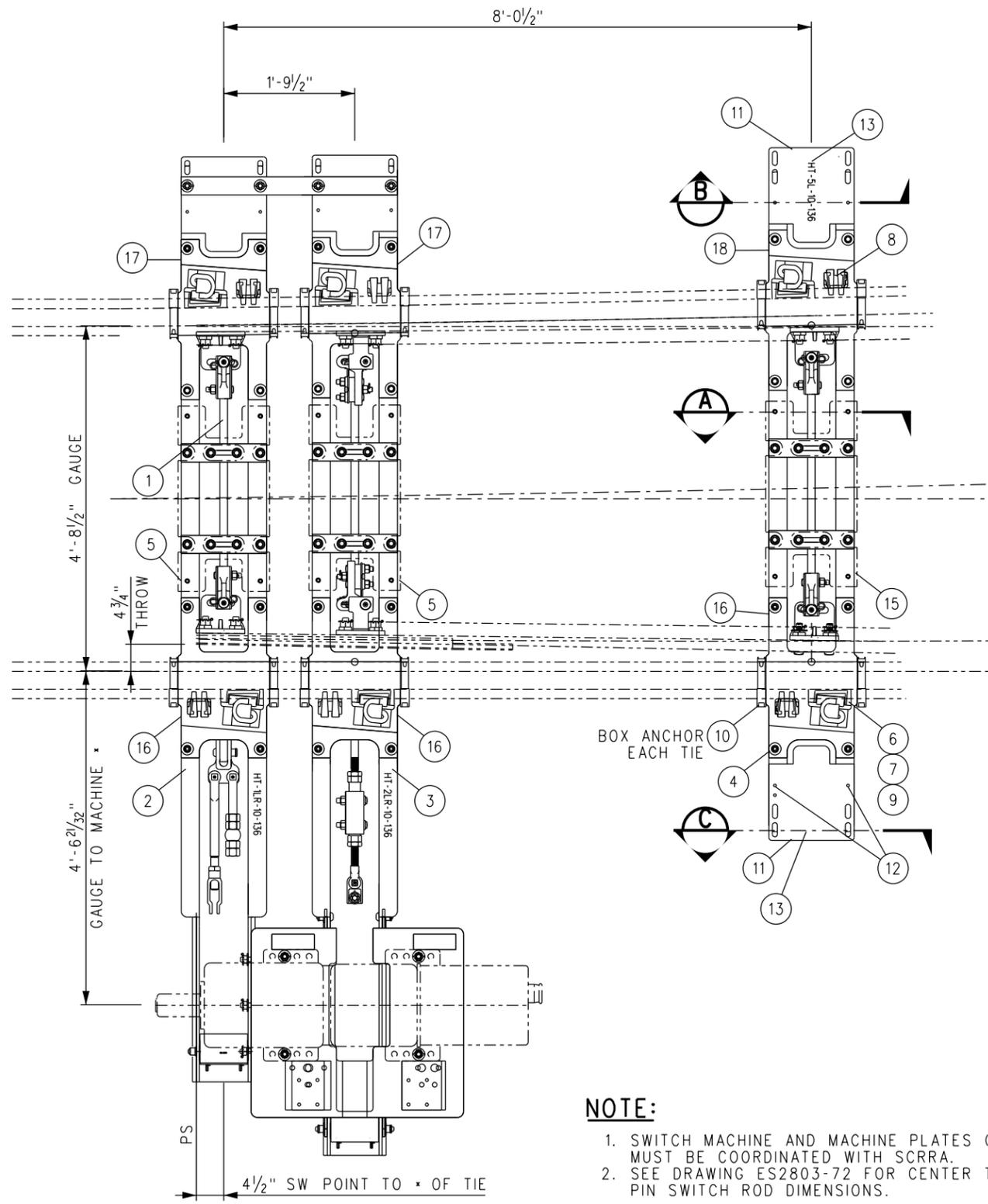
DRAWN BY: *Naresh D. Papp* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Davan
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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

ENGINEERING STANDARDS
 HOLLOW STEEL TIE LAYOUT
 SWITCH MACHINE ON MAINLINE SIDE
 NO 10-136 LB RE RH

STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-32

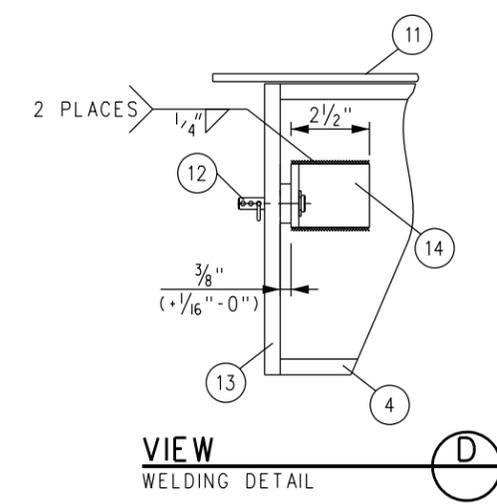
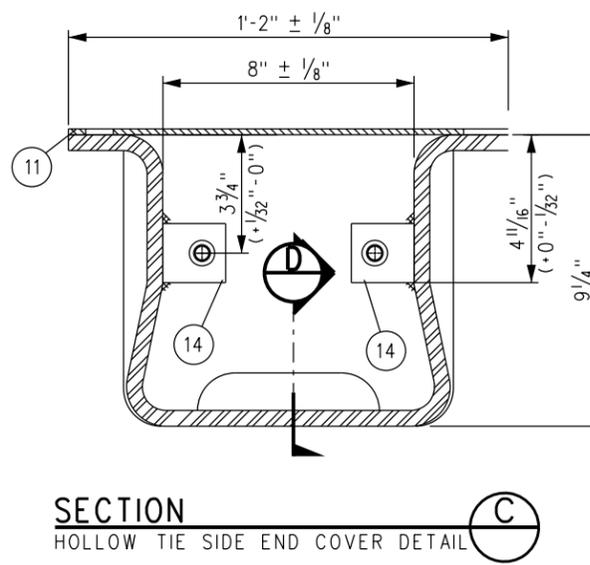
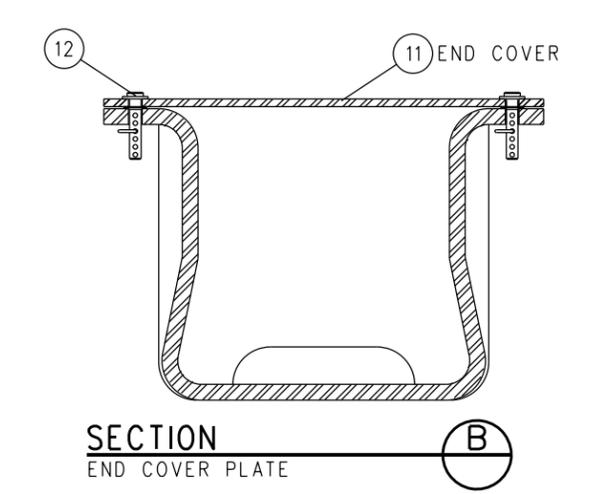
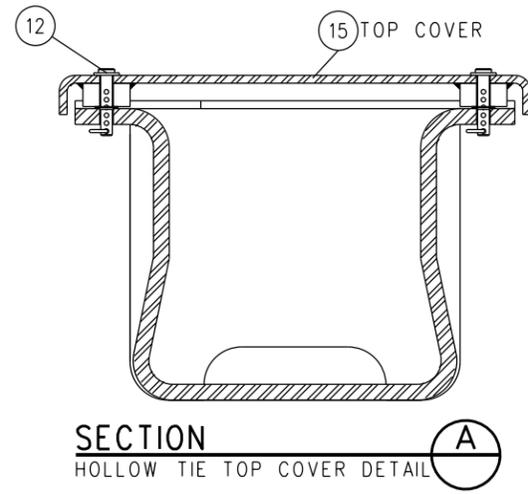


NOTE:

1. SWITCH MACHINE AND MACHINE PLATES (NIC) MUST BE COORDINATED WITH SCRR.
2. SEE DRAWING ES2803-72 FOR CENTER TO CENTER PIN SWITCH ROD DIMENSIONS.

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	SCRR PART NO
1	1	RODDING ASSEMBLY FOR NO 10-136 LB RE, SWITCH MACHINE ON RH SIDE	ES2803-72
2	1	HOLLOW TIE ASSEMBLY (HT-1LR-10-136)	-
3	1	HOLLOW TIE ASSEMBLY (HT-2LR-10-136)	-
4	1	HOLLOW TIE ASSEMBLY (HT-5L-10-136)	-
5*	2	COVER PLATE NO 1, HOLLOW SWITCH TIE	-
6	6	LV BRACE FOR 136 LB RE	-
7	6	SERRATED WASHER FOR LV BRACE	-
8	6	CLIP, SAFELOK AB 2000	-
9	6	CLIP, PANDROL, E2055	-
10	12	RAIL ANCHOR, UNIT DRIVE-ON TYPE 5	-
11	2	STEEL COVER PLATE FOR HST TIE, TOP END	-
12	20	PUSH PIN ASSEMBLY FOR HST COVERS	-
13	2	STEEL SIDE END COVER PLATE ASSEMBLY FOR HST TIE	-
14	4	COVER SUPPORT BRACKET	-
15*	1	COVER PLATE NO 2, HOLLOW SWITCH TIE	-
16	3	HST SWITCH PLATE HTP-206-STR	ES2800-90
17	2	HST SWITCH PLATE HTP-200-L	ES2800-93
18	1	HST SWITCH PLATE HTP-204-L	ES2800-95

* NOT SHOWN ON ASSEMBLY FOR CLARITY



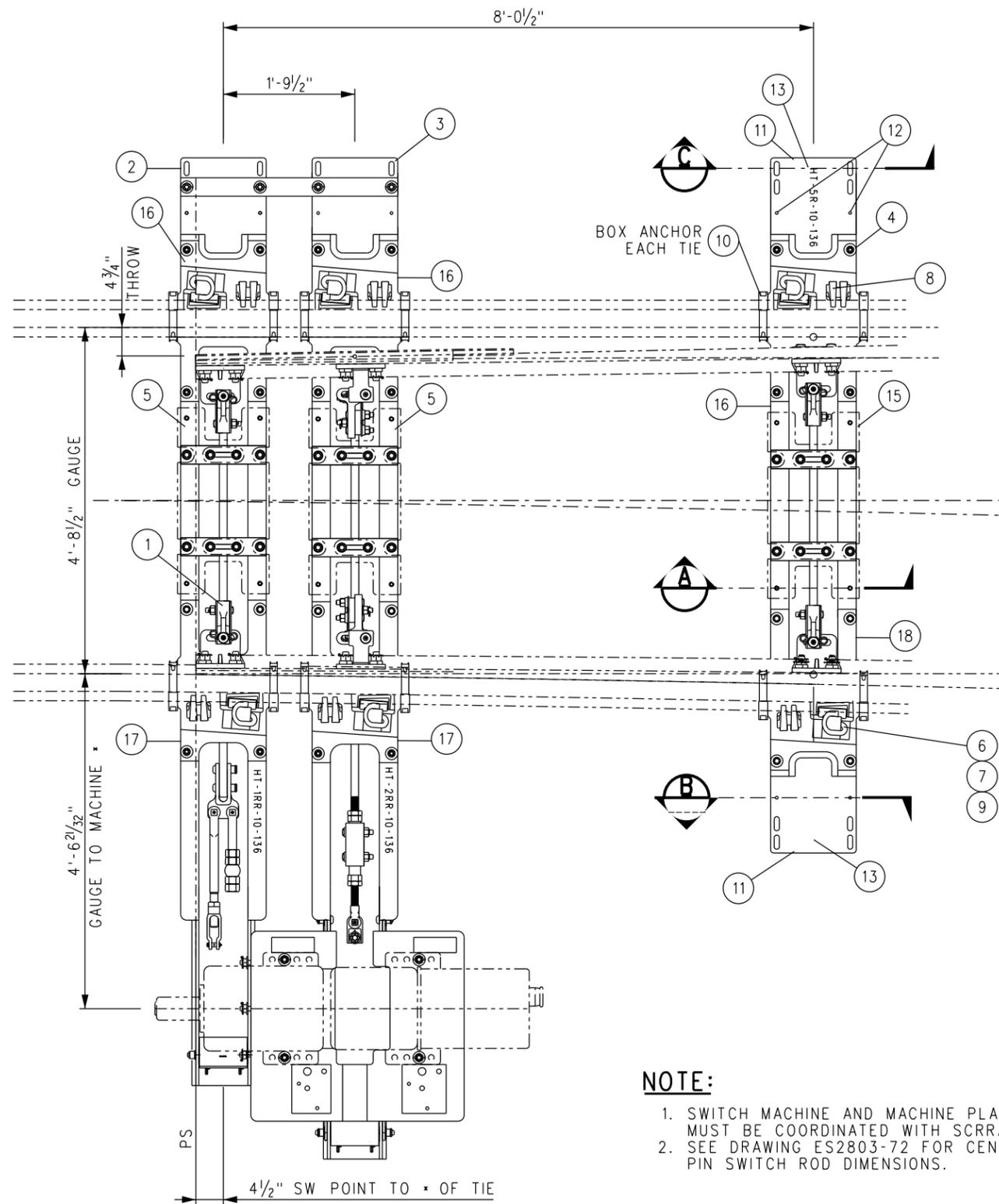
REV.	DATE	DESCRIPTION	DES.	ENG.
X	XX-XX-XX		XX	XX

DRAWN BY: *Narek D. Pape*
 HDR: *Willson Davan*
 DATE: 03/31/2011
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 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	2803
HOLLOW STEEL TIE LAYOUT SWITCH MACHINE ON MAINLINE SIDE NO 10-136 LB RE LH		SCALE:	NTS
REVISION	SHEET	1 OF 1	
CADD FILE:	ES2803-33		



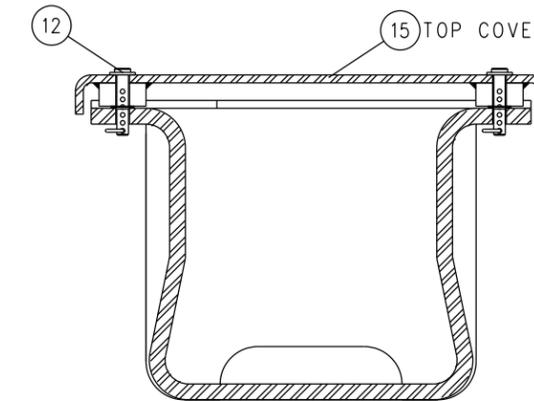
NOTE:

1. SWITCH MACHINE AND MACHINE PLATES (NIC) MUST BE COORDINATED WITH SCRRRA.
2. SEE DRAWING ES2803-72 FOR CENTER TO CENTER PIN SWITCH ROD DIMENSIONS.

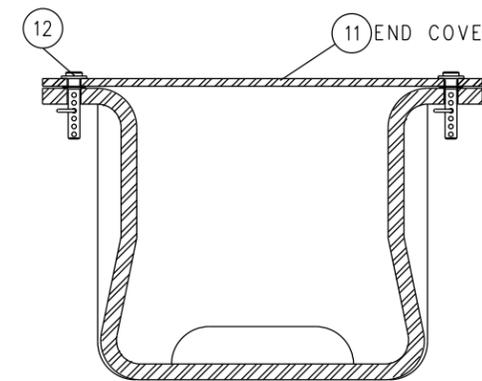
BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO	SCRRRA PART NO
1	1	RODDING ASSEMBLY FOR NO 10-136 LB RE, SWITCH MACHINE ON RIGHT SIDE	ES2803-72	
2	1	HOLLOW TIE ASSEMBLY (HT-1RR-10-136)	-	
3	1	HOLLOW TIE ASSEMBLY (HT-2RR-10-136)	-	
4	1	HOLLOW TIE ASSEMBLY (HT-5R-10-136)	-	
5*	2	COVER PLATE NO 1, HOLLOW SWITCH TIE	-	
6	6	LV BRACE FOR 136 LB RE	-	
7	6	SERRATED WASHER FOR LV BRACE	-	
8	6	CLIP, SAFELOK AB 2000	-	
9	6	CLIP, PANDROL, E2055	-	
10	12	RAIL ANCHOR, UNIT DRIVE-ON TYPE 5	-	
11	2	STEEL COVER PLATE FOR HST TIE, TOP END	-	
12	20	PUSH PIN ASSEMBLY FOR HST COVERS	-	
13	2	STEEL SIDE END COVER PLATE ASSEMBLY FOR HST TIE	-	
14	4	COVER SUPPORT BRACKET	-	
15*	1	COVER PLATE NO 2, HOLLOW SWITCH TIE	-	
16	3	HST SWITCH PLATE HTP-206-STR	ES2800-90	
17	2	HST SWITCH PLATE HTP-201-R	ES2800-93	
18	1	HST SWITCH PLATE HTP-205-R	ES2800-95	

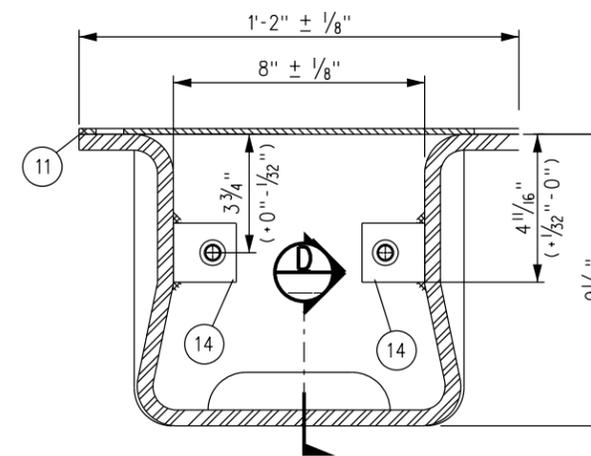
* NOT SHOWN ON ASSEMBLY FOR CLARITY



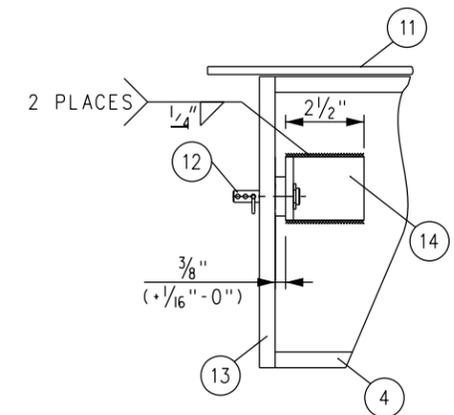
SECTION A
HOLLOW TIE TOP COVER DETAIL



SECTION B
END COVER PLATE



SECTION C
HOLLOW TIE SIDE END COVER DETAIL



VIEW D
WELDING DETAIL

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

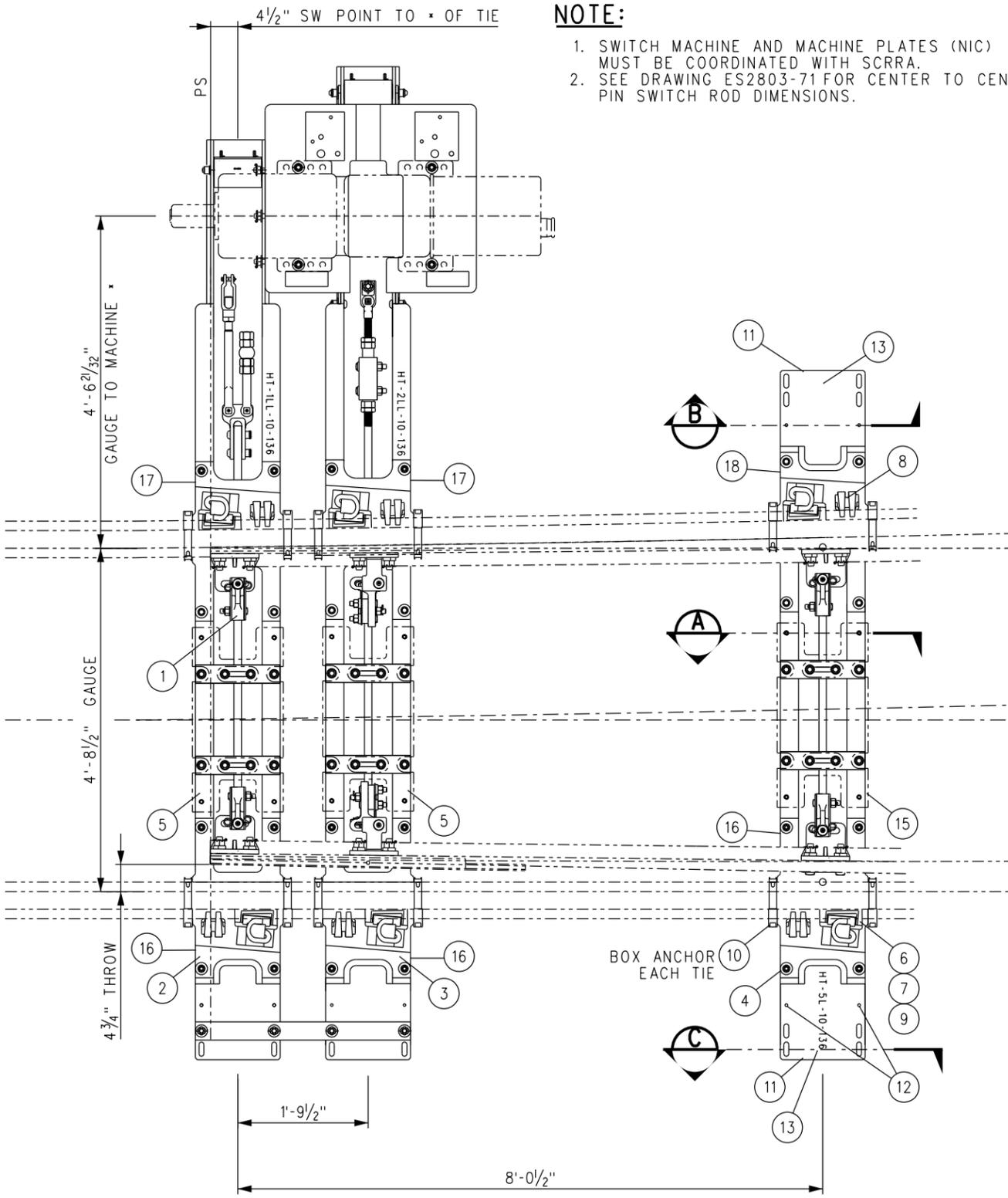
DRAWN BY: *Narek D. Pape* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Dava
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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

ENGINEERING STANDARDS
 HOLLOW STEEL TIE LAYOUT
 SWITCH MACHINE ON TURNOUT SIDE
 NO 10-136 LB RE RH

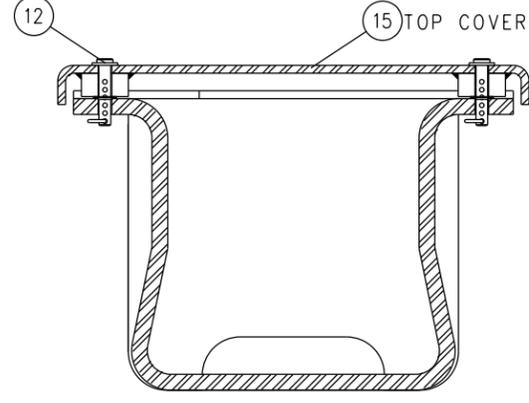
STANDARD	2803
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2803-34



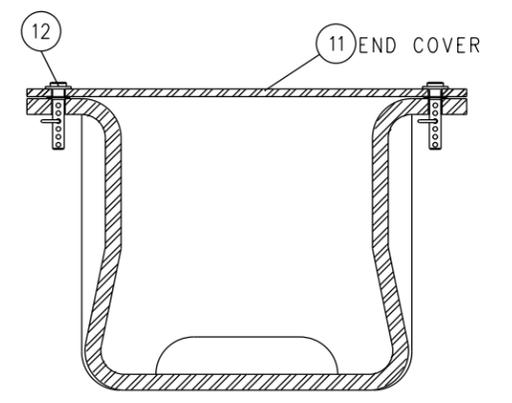
NOTE:
 1. SWITCH MACHINE AND MACHINE PLATES (NIC) MUST BE COORDINATED WITH SCRR.
 2. SEE DRAWING ES2803-71 FOR CENTER TO CENTER PIN SWITCH ROD DIMENSIONS.

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	SCRR PART NO
1	1	RODDING ASSEMBLY FOR NO 10-136 LB RE, SWITCH MACHINE ON LH SIDE	ES2803-71
2	1	HOLLOW TIE ASSEMBLY (HT-1LL-10-136)	-
3	1	HOLLOW TIE ASSEMBLY (HT-2LL-10-136)	-
4	1	HOLLOW TIE ASSEMBLY (HT-5L-10-136)	-
5*	2	COVER PLATE NO 1, HOLLOW SWITCH TIE	-
6	6	LV BRACE FOR 136 LB RE	-
7	6	SERRATED WASHER FOR LV BRACE	-
8	6	CLIP, SAFELOK AB 2000	-
9	6	CLIP, PANDROL, E2055	-
10	12	RAIL ANCHOR, UNIT DRIVE-ON TYPE 5	-
11	2	STEEL COVER PLATE FOR HST TIE, TOP END	-
12	20	PUSH PIN ASSEMBLY FOR HST COVERS	-
13	2	STEEL SIDE END COVER PLATE ASSEMBLY FOR HST TIE	-
14	4	COVER SUPPORT BRACKET	-
15*	1	COVER PLATE NO 2, HOLLOW SWITCH TIE	-
16	3	HST SWITCH PLATE HTP-206-STR	ES2800-90
17	2	HST SWITCH PLATE HTP-200-L	ES2800-93
18	1	HST SWITCH PLATE HTP-204-L	ES2800-95

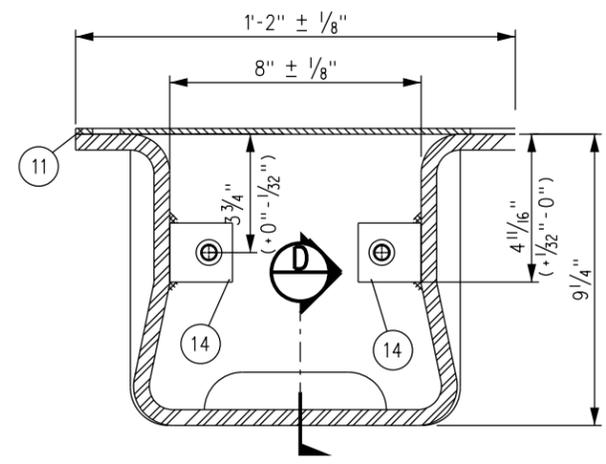
* NOT SHOWN ON ASSEMBLY FOR CLARITY



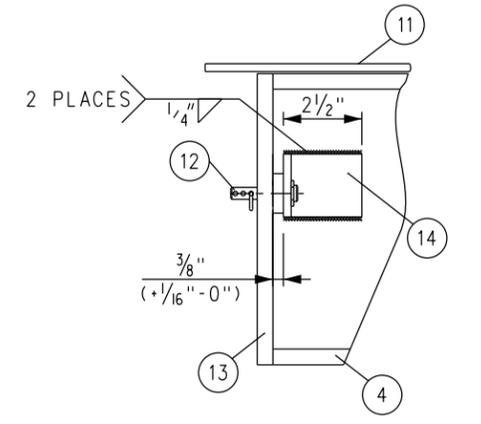
SECTION A
HOLLOW TIE TOP COVER DETAIL



SECTION B
END COVER PLATE



SECTION C
HOLLOW TIE SIDE END COVER DETAIL



VIEW D
WELDING DETAIL

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

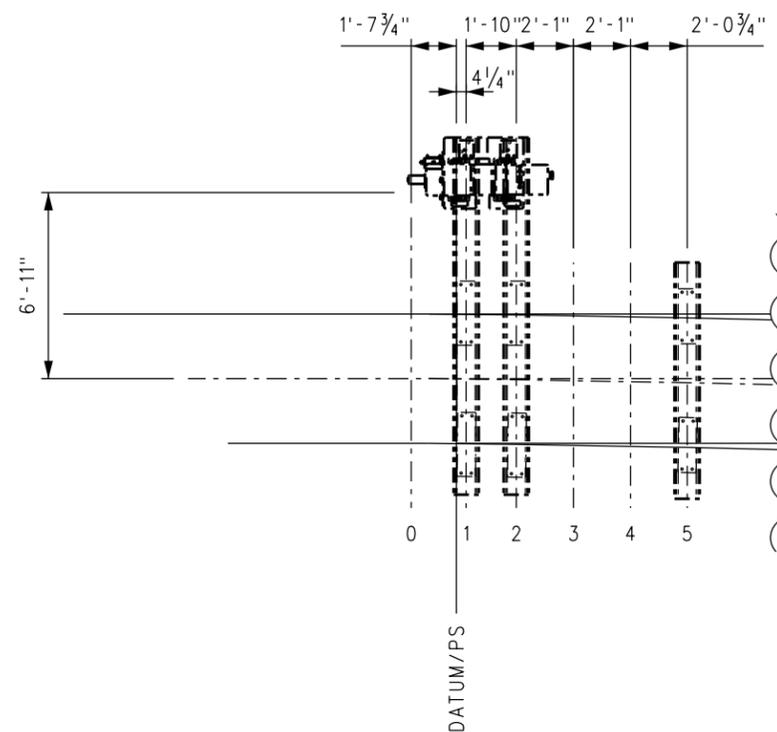
DRAWN BY: *Narek D. Pape*
 HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Davan
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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

ENGINEERING STANDARDS
 HOLLOW STEEL TIE LAYOUT
 SWITCH MACHINE ON TURNOUT SIDE
 NO 10-136 LB RE LH

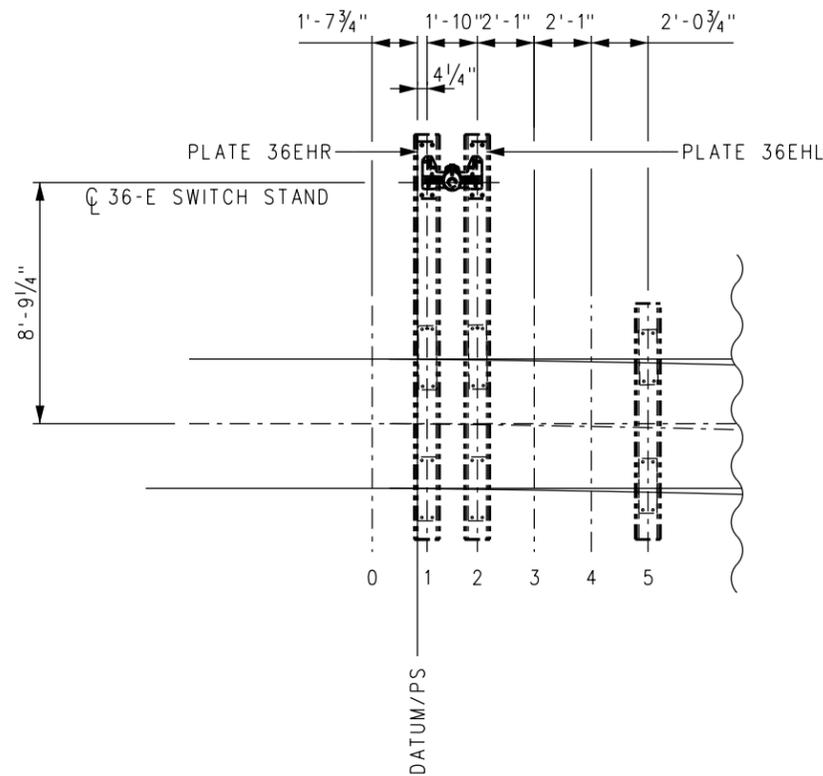
STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-35



POWER-OPERATED

NOTES:

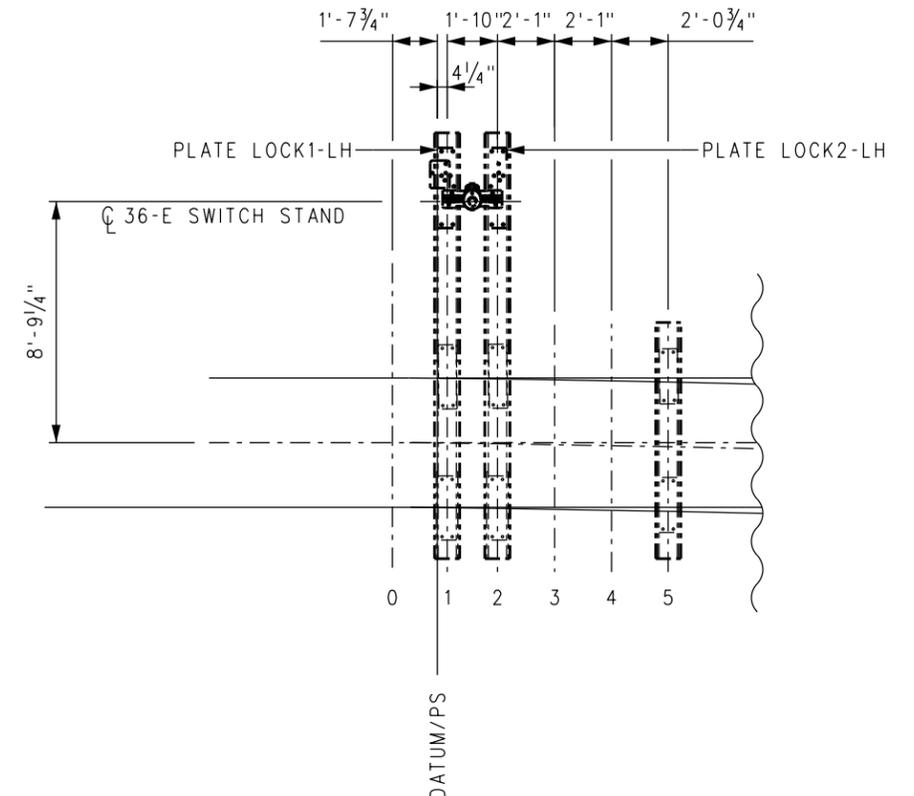
1. SWITCH MACHINE AND MACHINE PLATES (NIC) MUST BE COORDINATED WITH SCRRRA.
2. LENGTH OF TIES 1 AND 2 ARE 13'-0".
3. LENGTH OF TIE 5 IS 8'-7".



MANUAL THROW-WITHOUT ELECTRIC LOCK

NOTES:

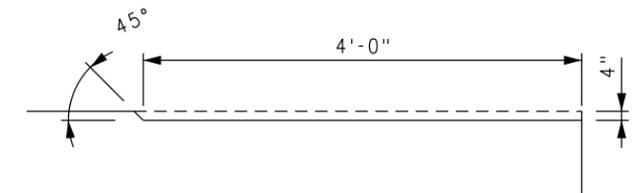
1. LENGTH OF TIES 1 AND 2 ARE 14'-9".
2. LENGTH OF TIE 5 IS 8'-7".



MANUAL THROW-WITH ELECTRIC LOCK

NOTES:

1. SEE ES2803-56 FOR DETAILS OF PLATES LOCK1-LH AND LOCK2-LH.
2. LENGTH OF TIES 1 AND 2 ARE 15'-6".
3. LENGTH OF TIE 5 IS 8'-7".
4. TIES 1 AND 2 ARE DAPPED DOWN 1" @ 45° PER DETAIL BELOW.



DAP FOR SWITCH STAND TIES 1 AND 2

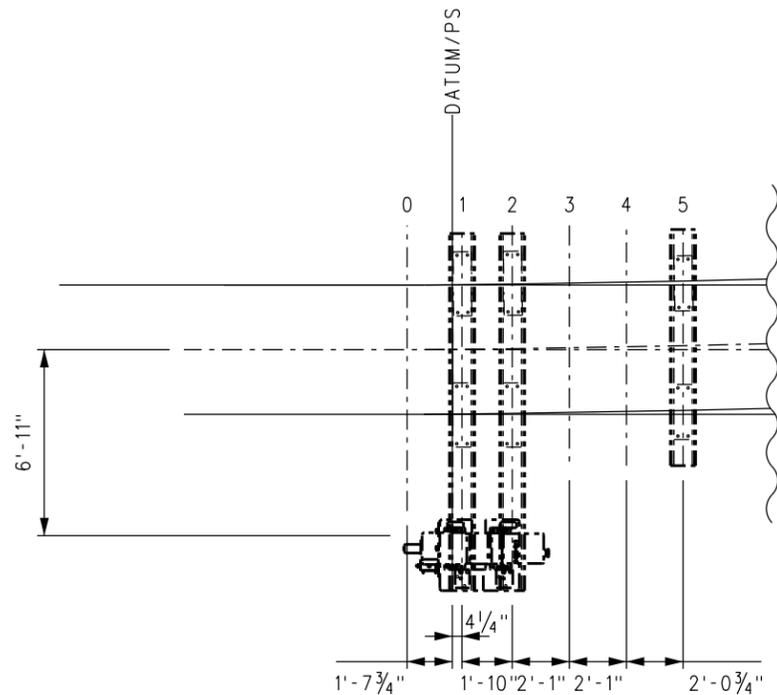
DRAWN BY: <i>Narek D. Pape</i>		HDR: <i>Willson Davan</i>		DATE: 03/31/2011
ASSISTANT DIRECTOR: STANDARDS & DESIGN		DIRECTOR OF ENGINEERING AND CONSTRUCTION		
X	XX-XX-XX	REVISION	XX	XX
REV.	DATE	DESCRIPTION	DES.	ENG.

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

ENGINEERING STANDARDS
CONCRETE HEADBLOCK TIE LAYOUT
SWITCH STAND/SWITCH MACHINE ON MAINLINE SIDE
NO 10-136 LB RE RH

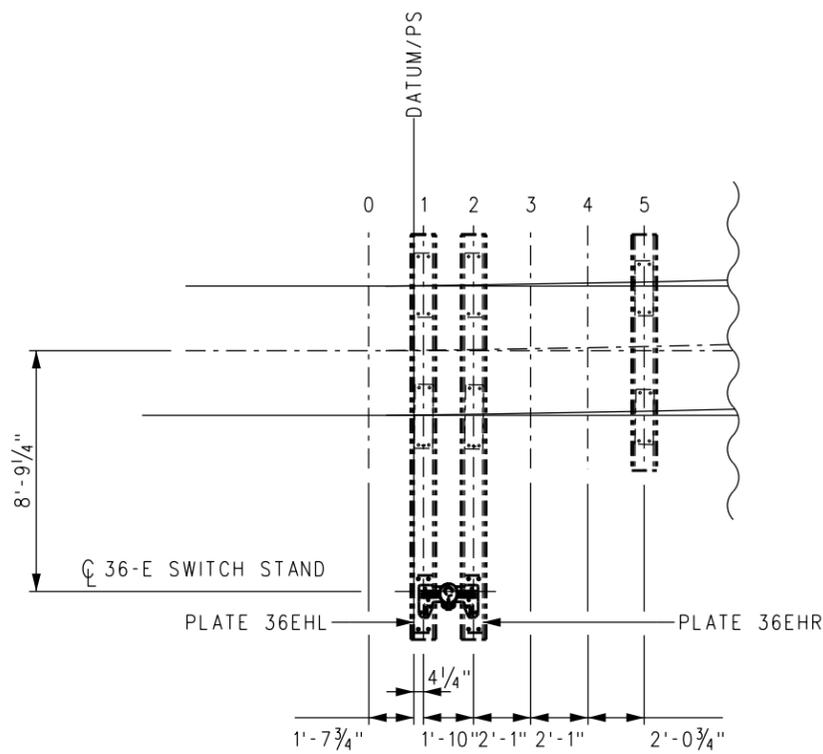
STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-36



POWER-OPERATED

NOTES:

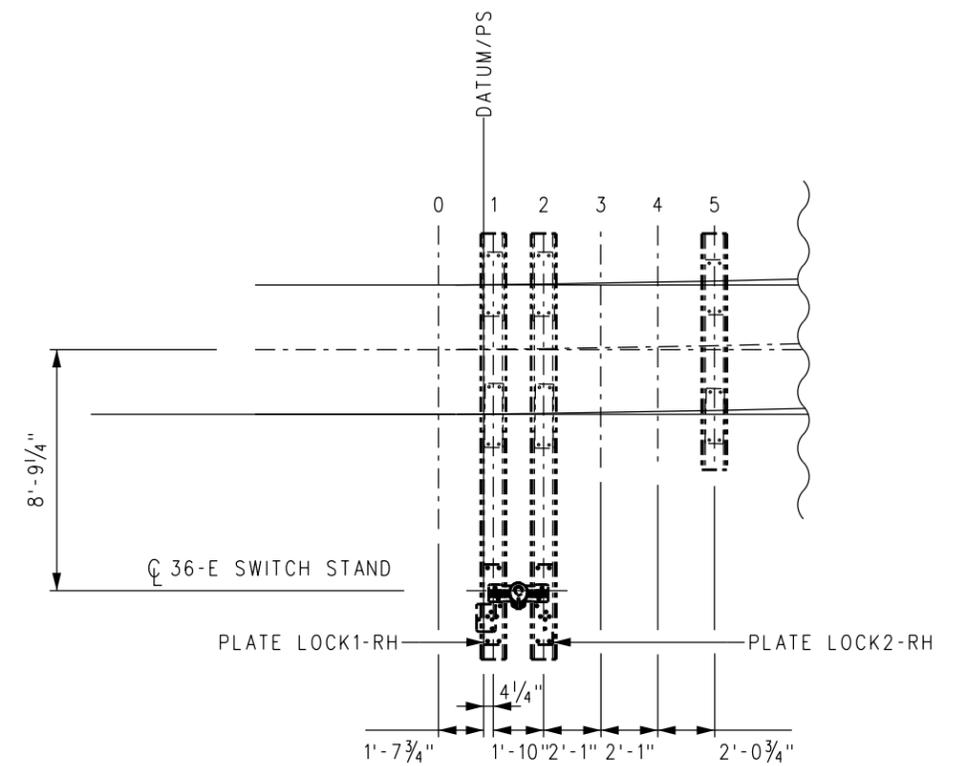
1. SWITCH MACHINE AND MACHINE PLATES (NIC) MUST BE COORDINATED WITH SCRRRA.
2. LENGTH OF TIES 1 AND 2 ARE 13'-0".
3. LENGTH OF TIE 5 IS 8'-7".



MANUAL THROW-WITHOUT ELECTRIC LOCK

NOTES:

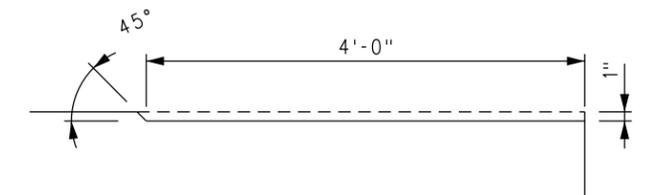
1. LENGTH OF TIES 1 AND 2 ARE 14'-9".
2. LENGTH OF TIE 5 IS 8'-7".



MANUAL THROW-WITH ELECTRIC LOCK

NOTES:

1. SEE ES2803-57 FOR DETAILS OF PLATES LOCK1-RH AND LOCK2-RH.
2. LENGTH OF TIES 1 AND 2 ARE 15'-6".
3. LENGTH OF TIE 5 IS 8'-7".
4. TIES 1 AND 2 ARE DAPPED DOWN 1" @ 45° PER DETAIL BELOW.



DAP FOR SWITCH STAND TIES 1 AND 2

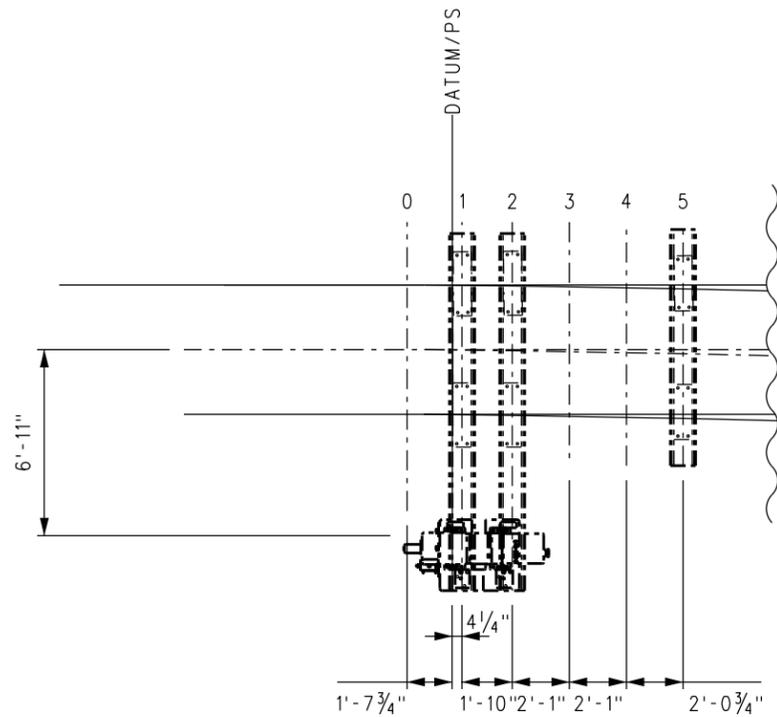
DRAWN BY: <i>Nareh D. Papp</i>		HDR: <i>Nareh D. Papp</i>		DATE: 03/31/2011	
REVISION		DES.		ENG.	
X	XX-XX-XX	XX	XX		
REV.	DATE	DESCRIPTION	DES.	ENG.	

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

ENGINEERING STANDARDS
CONCRETE HEADBLOCK TIE LAYOUT
SWITCH STAND/SWITCH MACHINE ON MAINLINE SIDE
NO 10-136 LB RE LH

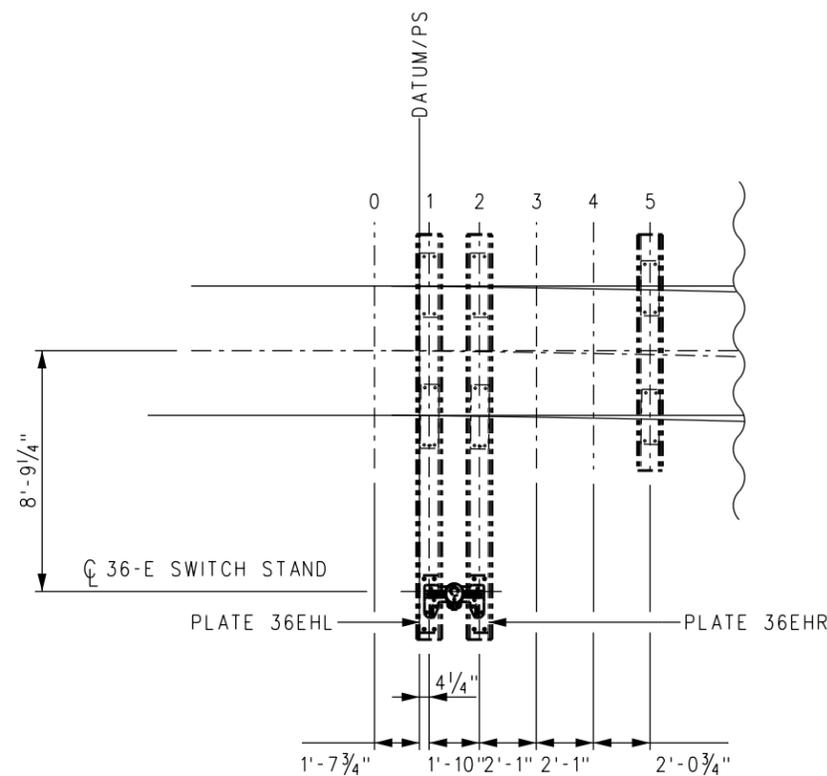
STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-37



POWER-OPERATED

NOTES:

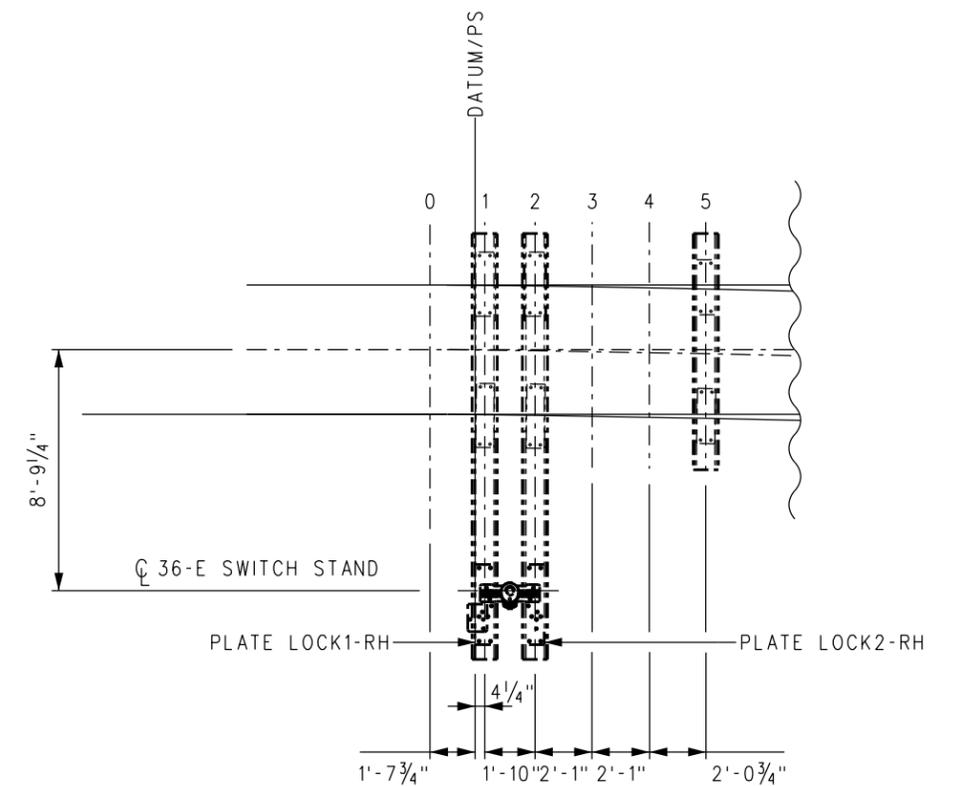
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2. LENGTH OF TIES 1 AND 2 ARE 13'-0".
3. LENGTH OF TIE 5 IS 8'-7".



MANUAL THROW-WITHOUT ELECTRIC LOCK

NOTES:

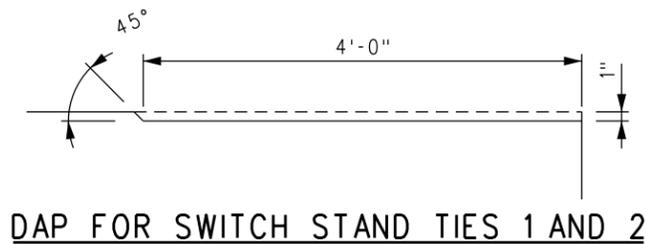
1. LENGTH OF TIES 1 AND 2 ARE 14'-9".
2. LENGTH OF TIE 5 IS 8'-7".



MANUAL THROW-WITH ELECTRIC LOCK

NOTES:

1. SEE ES2803-57 FOR DETAILS OF PLATES LOCK1-RH AND LOCK2-RH.
2. LENGTH OF TIES 1 AND 2 ARE 15'-6".
3. LENGTH OF TIE 5 IS 8'-7".
4. TIES 1 AND 2 ARE DAPPED DOWN 1" @ 45° PER DETAIL BELOW.



DAP FOR SWITCH STAND TIES 1 AND 2

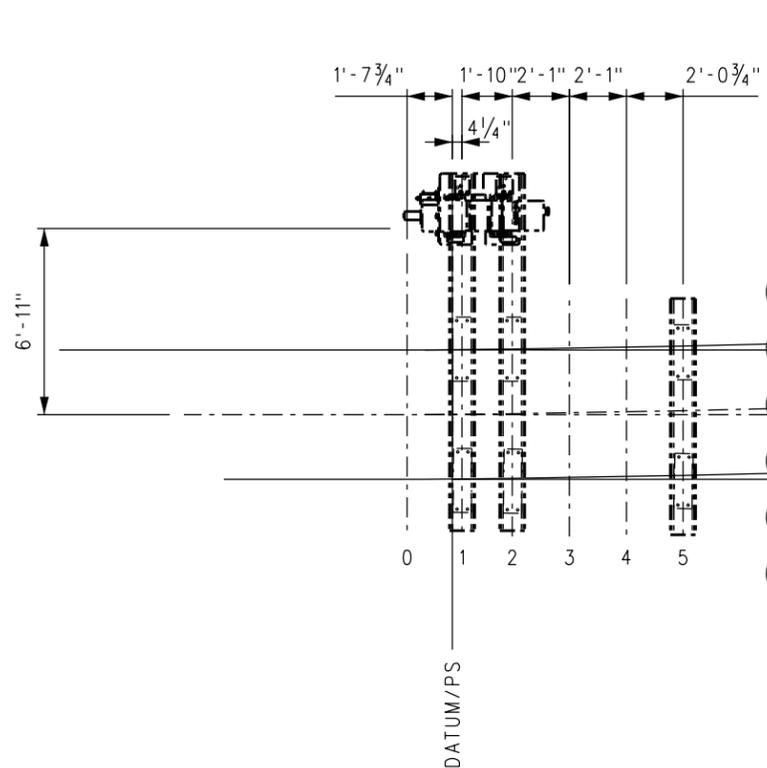
DRAWN BY: <i>Naresh D. Palle</i>		HDR: <i>Naresh D. Palle</i>		DATE: 03/31/2011	
REVISION		DES.		ENG.	
X	XX-XX-XX	XX	XX		
REV.	DATE	DESCRIPTION	DES.	ENG.	

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

ENGINEERING STANDARDS
 CONCRETE HEADBLOCK TIE LAYOUT
 SWITCH STAND/SWITCH MACHINE ON TURNOUT SIDE
 NO 10-136 LB RE RH

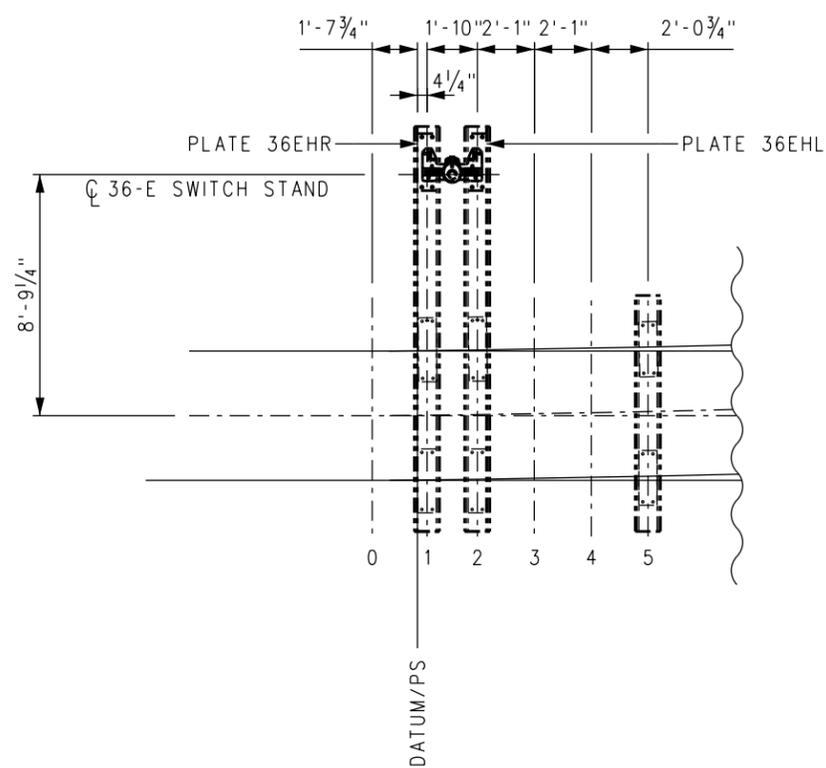
STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-38



POWER-OPERATED

NOTES:

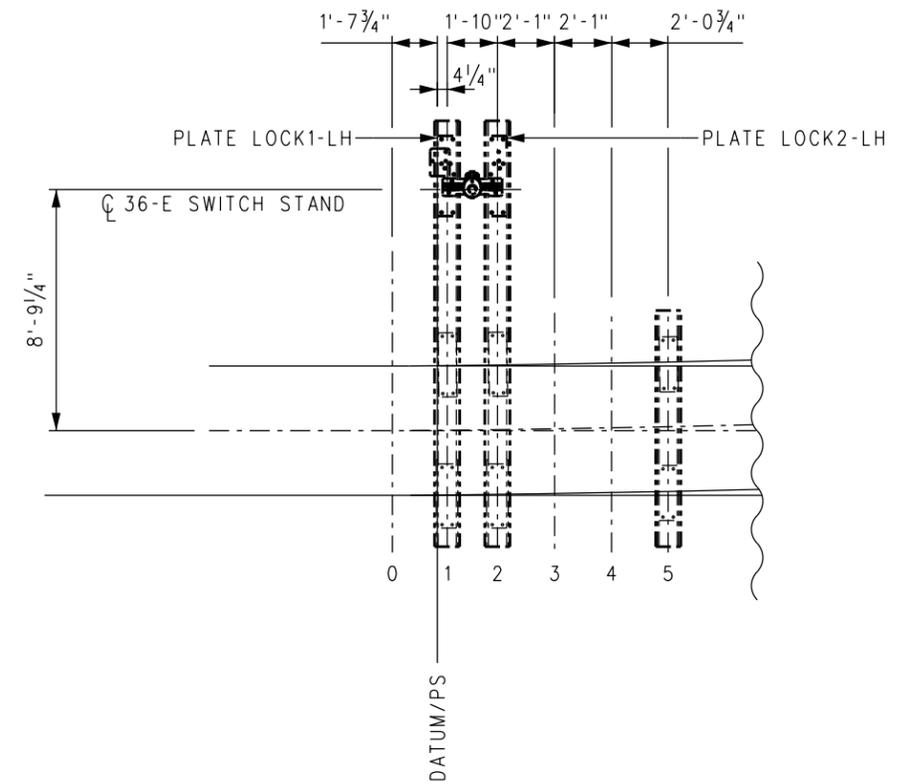
1. SWITCH MACHINE AND MACHINE PLATES (NIC) MUST BE COORDINATED WITH SCRRRA.
2. LENGTH OF TIES 1 AND 2 ARE 13'-0".
3. LENGTH OF TIE 5 IS 8'-7".



MANUAL THROW-WITHOUT ELECTRIC LOCK

NOTES:

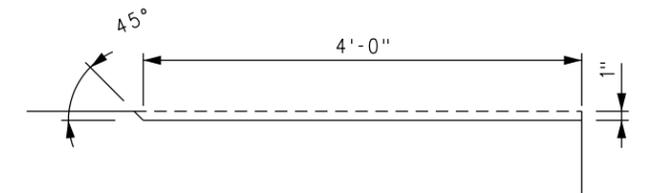
1. LENGTH OF TIES 1 AND 2 ARE 14'-9".
2. LENGTH OF TIE 5 IS 8'-7".



MANUAL THROW-WITH ELECTRIC LOCK

NOTES:

1. SEE ES2803-56 FOR DETAILS OF PLATES LOCK1-LH AND LOCK2-LH.
2. LENGTH OF TIES 1 AND 2 ARE 15'-6".
3. LENGTH OF TIE 5 IS 8'-7".
4. TIES 1 AND 2 ARE DAPPED DOWN 1" @ 45° PER DETAIL BELOW.



DAP FOR SWITCH STAND TIES 1 AND 2

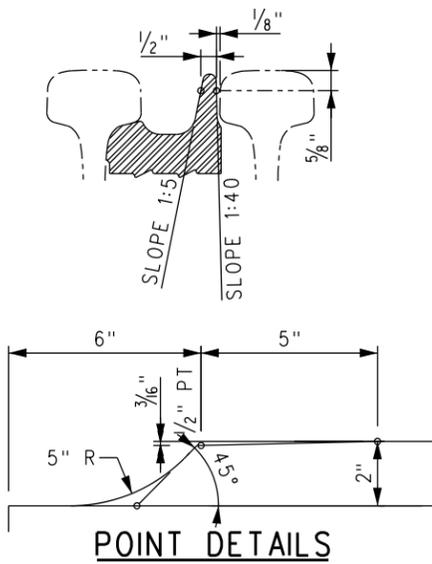
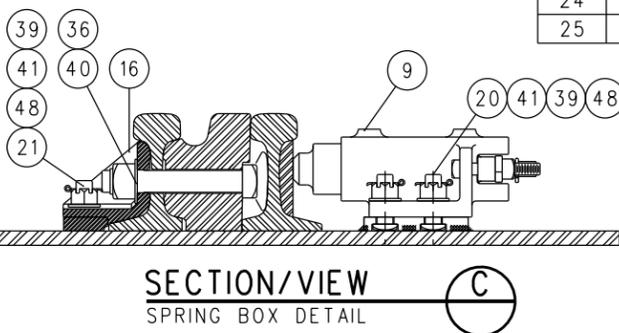
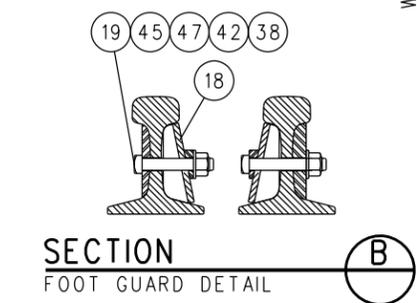
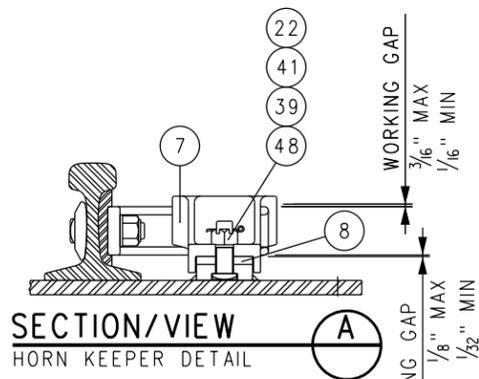
DRAWN BY: <i>Nareh D. Papp</i>		HDR: <i>Willson Davan</i>		DATE: 03/31/2011
ASSISTANT DIRECTOR: STANDARDS & DESIGN		DIRECTOR OF ENGINEERING AND CONSTRUCTION		
REV.	DATE	DESCRIPTION	DES.	ENG.
X	XX-XX-XX	REVISION	XX	XX

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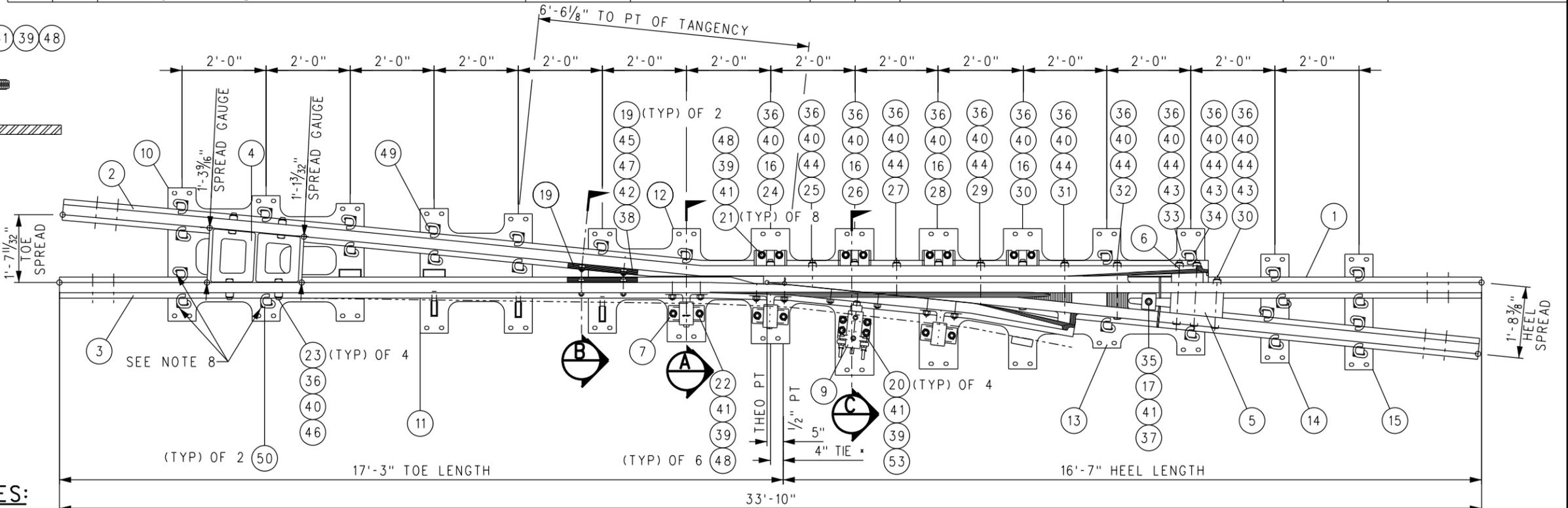
METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
CONCRETE HEADBLOCK TIE LAYOUT
SWITCH STAND/SWITCH MACHINE ON TURNOUT SIDE
NO 10-136 LB RE LH

STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-39



BILL OF MATERIAL					BILL OF MATERIAL				
ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO	ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	1	NO 10-136 LB RE SPRING FROG, RH POINT ASSEMBLY	-		26	1	BOLT, 1 3/8" DIA x 9" SQ HEAD, GR 8	-	
2	1	SPRING WING RAIL, NO 10-136 LB RE, RIGID, RH	-		27	1	BOLT, 1 3/8" DIA x 9 1/2" SQ HEAD, GR 8	-	
3	1	SPRING WING RAIL, NO 10-136 LB RE, RH, C/W HARDWARE	-		28	1	BOLT, 1 3/8" DIA x 11" SQ HEAD, GR 8	-	
4	1	TOE BLOCK (SFTB136RE-10A)	-		29	1	BOLT, 1 3/8" DIA x 1'-0" SQ HEAD, GR 8	-	
5	1	HEEL BLOCK (SFHB136RE-10A)	-		30	2	BOLT, 1 3/8" DIA x 1'-1 1/2" SQ HEAD, GR 8	-	
6	1	FLARE FILLER BLOCK (FB136WHM-LCR)	-		31	1	BOLT, 1 3/8" DIA x 1'-2 1/2" SQ HEAD, GR 8	-	
7	3	HORN KEEPER, REVERSIBLE	-		32	1	BOLT, 1 3/8" DIA x 1'-4" SQ HEAD, GR 8	-	
8	3	HORN KEEPER WEAR PLATE, REVERSIBLE	-		33	1	BOLT, 1 3/8" DIA x 1'-5 1/2" SQ HEAD, GR 8	-	
9	1	SPRING BOX ASSEMBLY	-		34	1	BOLT, 1 3/8" DIA x 1'-6" SQ HEAD, GR 8	-	
10	1	FROG BASE PLATE (10-136-34RC)	ES2803-42		35	1	PLOW BOLT, 1" DIA x 4" ROUND HD, SQ NECK, GR 8	-	
11	1	FROG BASE PLATE (10-136-37RC)	ES2803-42		36	16	NUT, SECURITY LOCK, 1 3/8" DIA HEAVY HEX	-	
12	1	FROG BASE PLATE (10-136-39RC)	ES2803-44		37	1	NUT, SECURITY LOCK, 1" DIA HEAVY HEX	-	
13	1	FROG BASE PLATE (10-136-43RC)	ES2803-46		38	2	NUT, SECURITY LOCK, 3/4" DIA HEAVY HEX	-	
14	1	FROG PLATE (10-136-47RC)	ES2803-48		39	18	NUT, SLOTTED, 1" DIA HEAVY HEX	-	
15	1	FROG PLATE (10-136-48RC)	ES2803-48		40	16	WASHER, HARDENED, 1 3/8" DIA x 5/32" THICK	-	
16	4	PLATE CLIP, 136 LB RE	-		41	11	WASHER, HARDENED, 1" DIA x 5/32" THICK	-	
17	1	HOLD-DOWN CLIP (10A1)	-		42	2	WASHER, HARDENED, 3/4" DIA x 3/16" THICK	-	
18	1	FOOT GUARD, 136 LB RE x 1'-8" LONG	-		43	3	WASHER, HEADLOCK	-	
19	2	BOLT, 3/4" DIA x 4 1/2" SQ HEAD, GR 8	-		44	8	WASHER, TAIL	-	
20	4	BOLT, 1" DIA x 3", THIN SQ HEAD, DRILLED 2 1/2", GR 5	-		45	2	WASHER, TAIL, 1/2" x 3" FOR 3/4" BOLT	-	
21	8	BOLT, 1" DIA x 3", THIN SQ HEAD, DRILLED 2 3/32", GR 5	-		46	4	WASHER, TAIL	-	
22	6	BOLT, 1" DIA x 3 1/2", THIN SQ HEAD, DRILLED 2 1/16", GR 5	-		47	2	WASHER, BEVELED, FOR 3/4" BOLT	-	
23	4	BOLT, 1 3/8" DIA x 5" SQ HEAD, GR 8	-		48	18	COTTER PIN, 1/4" DIA x 2" LONG	-	
24	1	BOLT, 1 3/8" DIA x 6 1/2" SQ HEAD, GR 8	-		49	26	CLIP, PANDROL E2055	-	
25	1	BOLT, 1 3/8" DIA x 7 1/2" SQ HEAD, GR 8	-		50	3	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	-	



NOTES:

- RETARDER CLOSING TIME RANGES FROM 1 TO 3 MINUTES.
- SPRING BOX LOAD IS 300 LBS/IN.
- SPRING WING SHALL BE THROWN TO A 1/8" FLANGWAY AT THE 3/4" POINT TO DETERMINE THE SPRING WING THROWN POSITION.
- RAIL END DRILLING SHALL BE @ 9" AND 1'-3 1/2", 3 3/32" ABOVE RAIL BASE, 1 5/16" DIA AT ALL 4 RAIL ENDS. ALL RAIL HOLE EDGES SHALL BE ROUNDED WITH A 1/8" R.
- RETARDER BRACKET SHALL BE WELDED ADJACENT TO SPRING BOX ASSEMBLY.
- FROG SHALL BE CONSTRUCTED TO TOLERANCES GIVEN ON LATEST AREMA PLAN 1010, PERMISSIBLE VARIATIONS IN COMPLETED FROGS.
- INSERT TO BE EXPLOSIVE DEPTH HARDENED TO 352 BRINELL PER AREMA.
- NAME TAG TO BE AFFIXED TO RIGID WING RAIL NEAR 1/2" PT WITH INFORMATION SHOWN.
- SCRR WILL CONSIDER A TAPERED HEEL SPRING OF SAME ALIGNMENT AND DIMENSIONS TO REPLACE WSM.

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

DRAWN BY: HDR DATE: 03/31/2011

Nareh D. Papp
ASSISTANT DIRECTOR: STANDARDS & DESIGN

William Davan
DIRECTOR OF ENGINEERING AND CONSTRUCTION

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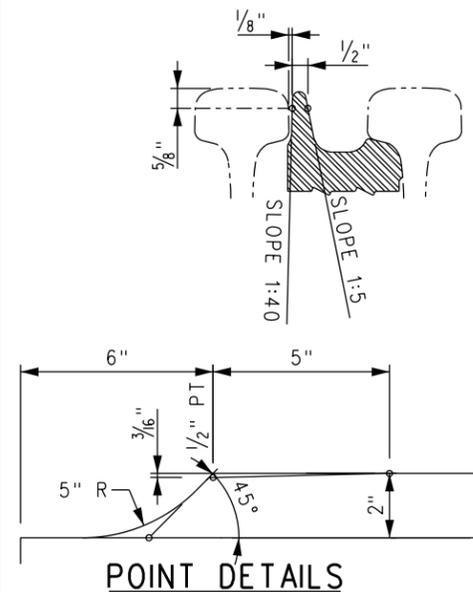
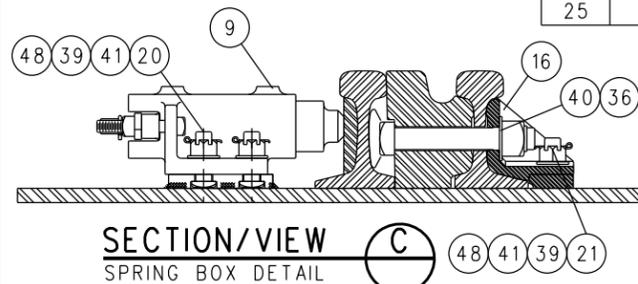
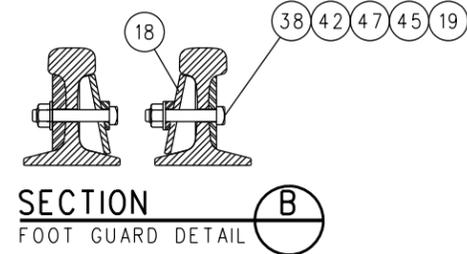
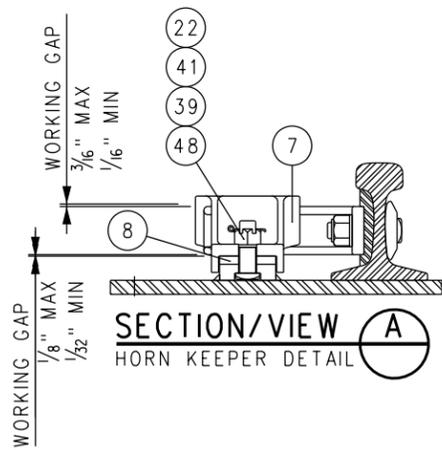
METROLINK

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

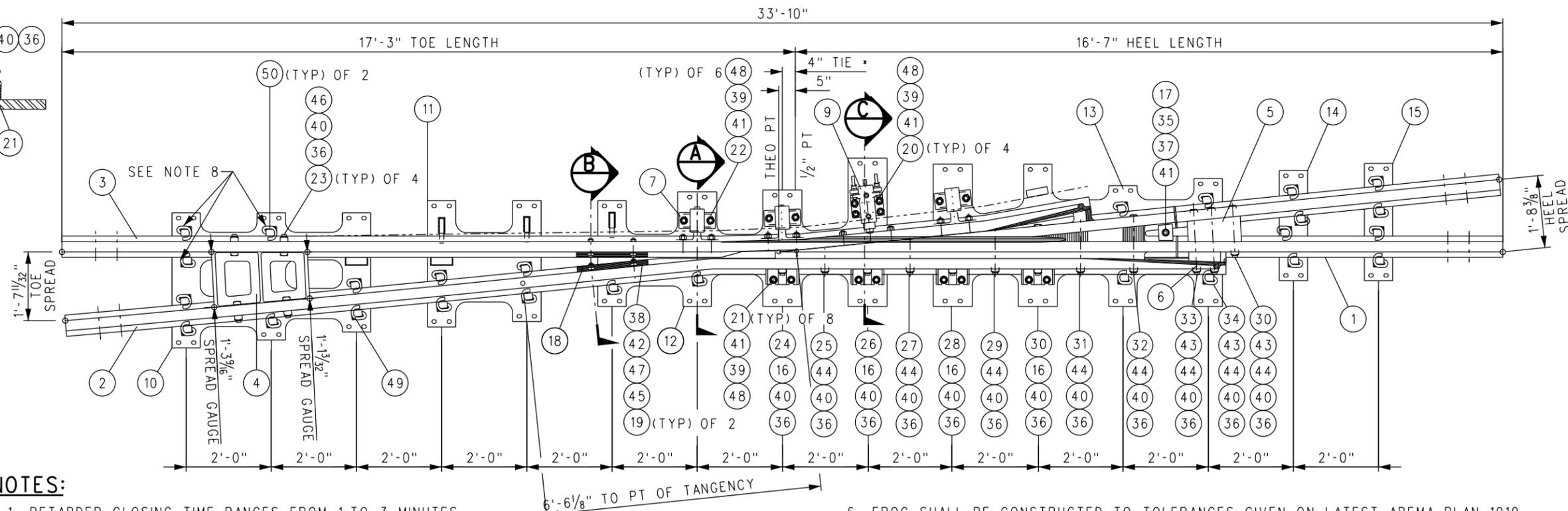
ENGINEERING STANDARDS

NO 10 WSM FROG RH
FROG ASSEMBLY PLAN VIEW AND FROG PACK
CONCRETE TIES-136 LB RE RAIL

STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-40



BILL OF MATERIAL					BILL OF MATERIAL				
ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO	ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	1	NO 10-136 LB RE SPRING FROG, LH POINT ASSEMBLY	-		26	1	BOLT, 1 3/8" DIA x 9" SQ HEAD, GR 8	-	
2	1	SPRING WING RAIL, NO 10-136 LB RE, RIGID, LH	-		27	1	BOLT, 1 3/8" DIA x 9 1/2" SQ HEAD, GR 8	-	
3	1	SPRING WING RAIL, NO 10-136 LB RE, LH, C/W HARDWARE	-		28	1	BOLT, 1 3/8" DIA x 11" SQ HEAD, GR 8	-	
4	1	TOE BLOCK (SFTB136RE-10A)	-		29	1	BOLT, 1 3/8" DIA x 1'-0" SQ HEAD, GR 8	-	
5	1	HEEL BLOCK (SFHB136RE-10A)	-		30	2	BOLT, 1 3/8" DIA x 1'-1/2" SQ HEAD, GR 8	-	
6	1	FLARE FILLER BLOCK (FB136WHM-RCR)	-		31	1	BOLT, 1 3/8" DIA x 1'-2 1/2" SQ HEAD, GR 8	-	
7	3	HORN KEEPER, REVERSIBLE	-		32	1	BOLT, 1 3/8" DIA x 1'-4" SQ HEAD, GR 8	-	
8	3	HORN KEEPER WEAR PLATE, REVERSIBLE	-		33	1	BOLT, 1 3/8" DIA x 1'-5 1/2" SQ HEAD, GR 8	-	
9	1	SPRING BOX ASSEMBLY	-		34	1	BOLT, 1 3/8" DIA x 1'-6" SQ HEAD, GR 8	-	
10	1	FROG BASE PLATE (10-136-34LC)	ES2803-43		35	1	PLOW BOLT, 1" DIA x 4" ROUND HD, SQ NECK, GR 8	-	
11	1	FROG BASE PLATE (10-136-37LC)	ES2803-43		36	16	NUT, SECURITY LOCK, 1 3/8" DIA HEAVY HEX	-	
12	1	FROG BASE PLATE (10-136-39LC)	ES2803-45		37	1	NUT, SECURITY LOCK, 1" DIA HEAVY HEX	-	
13	1	FROG BASE PLATE (10-136-43LC)	ES2803-47		38	2	NUT, SECURITY LOCK, 3/4" DIA HEAVY HEX	-	
14	1	FROG PLATE (10-136-47LC)	ES2803-49		39	18	NUT, SLOTTED, 1" DIA HEAVY HEX	-	
15	1	FROG PLATE (10-136-48LC)	ES2803-49		40	16	WASHER, HARDENED, 1 3/8" DIA x 5/32" THICK	-	
16	4	PLATE CLIP, 136 LB RE	-		41	11	WASHER, HARDENED, 1" DIA x 5/32" THICK	-	
17	1	HOLD-DOWN CLIP (10A1)	-		42	2	WASHER, HARDENED, 3/4" DIA x 3/16" THICK	-	
18	1	FOOT GUARD, 136 LB RE x 1'-8" LONG	-		43	3	WASHER, HEADLOCK	-	
19	2	BOLT, 3/4" DIA x 4 1/2" SQ HEAD, GR 8	-		44	8	WASHER, TAIL	-	
20	4	BOLT, 1" DIA x 3", THIN SQ HEAD, DRILLED 2 1/2", GR 5	-		45	2	WASHER, TAIL, 1/2" x 3" FOR 3/4" BOLT	-	
21	8	BOLT, 1" DIA x 3", THIN SQ HEAD, DRILLED 2 3/32", GR 5	-		46	4	WASHER, TAIL	-	
22	6	BOLT, 1" DIA x 3 1/2", THIN SQ HEAD, DRILLED 2 11/16", GR 5	-		47	2	WASHER, BEVELED, FOR 3/4" BOLT	-	
23	4	BOLT, 1 3/8" DIA x 5" SQ HEAD, GR 8	-		48	18	COTTER PIN, 1/4" DIA x 2" LONG	-	
24	1	BOLT, 1 3/8" DIA x 6 1/2" SQ HEAD, GR 8	-		49	26	CLIP, PANDROL E2055	-	
25	1	BOLT, 1 3/8" DIA x 7 1/2" SQ HEAD, GR 8	-		50	3	SHOULDER, FORGED TYPE 1	-	



NOTES:

- RETARDER CLOSING TIME RANGES FROM 1 TO 3 MINUTES.
- SPRING BOX LOAD IS 300 LBS/IN.
- SPRING WING SHALL BE THROWN TO A 1 1/8" FLANGWAY AT THE 3/4" POINT TO DETERMINE THE SPRING WING THROWN POSITION.
- RAIL END DRILLING SHALL BE @ 9" AND 1'-3 1/2", 3 3/32" ABOVE RAIL BASE, 1 1/16" DIA AT ALL 4 RAIL ENDS. ALL RAIL HOLE EDGES SHALL BE ROUNDED WITH A 1/8" R.
- RETARDER BRACKET SHALL BE WELDED ADJACENT TO SPRING BOX ASSEMBLY.
- FROG SHALL BE CONSTRUCTED TO TOLERANCES GIVEN ON LATEST AREMA PLAN 1010, PERMISSIBLE VARIATIONS IN COMPLETED FROGS.
- INSERT TO BE EXPLOSIVE DEPTH HARDENED TO 352 BRINELL PER AREMA.
- NAME TAG TO BE AFFIXED TO RIGID WING RAIL NEAR 1/2" PT WITH INFORMATION SHOWN.
- SCRR WILL CONSIDER A TAPERED HEEL SPRING OF SAME ALIGNMENT AND DIMENSIONS TO REPLACE WSM.

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

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

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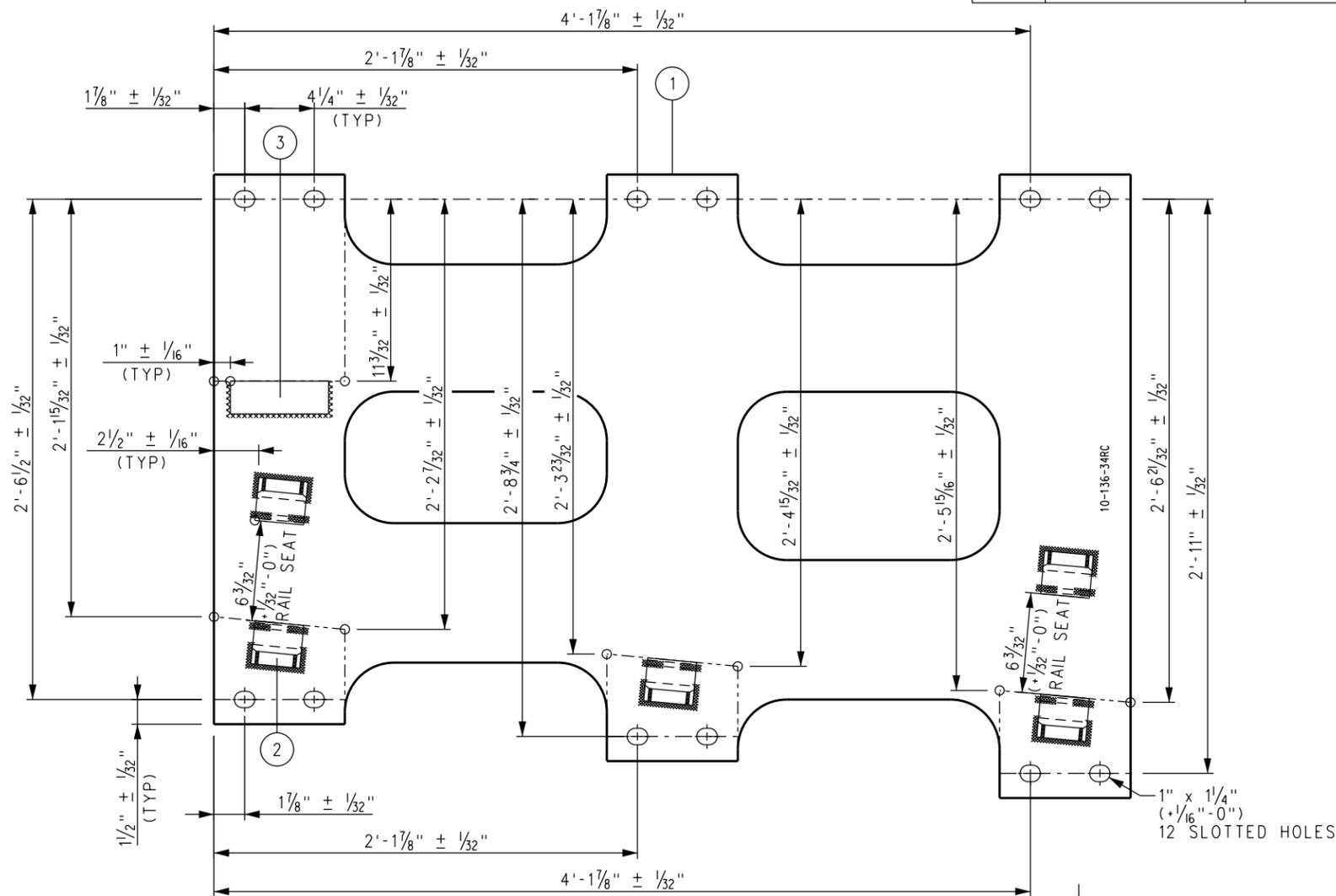
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 NO 10 WSM FROG LH
 FROG ASSEMBLY PLAN VIEW AND FROG PACK
 CONCRETE TIES-136 LB RE RAIL

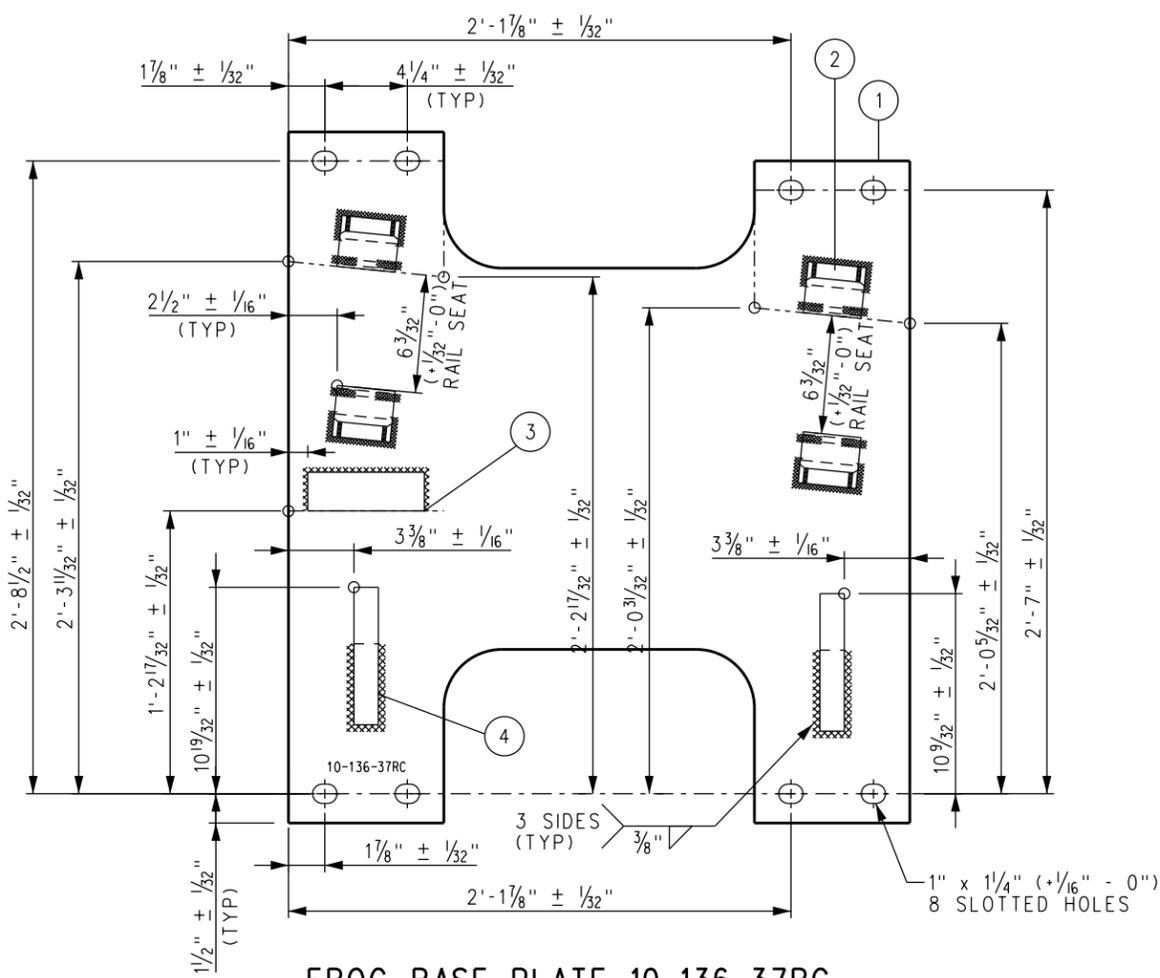
STANDARD	2803
SCALE:	NTS
REVISION	SHEET
-	1 OF 1
CADD FILE:	ES2803-41

BILL OF MATERIAL

ITEM	QTY FOR 10-34RC	QTY FOR 10-37RC	DESCRIPTION	DWG NO	SCRR PART NO
1	1	1	BURNED PLATE, 3/4" THICK	-	
2	5	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	-	
3	1	1	FLAT BAR, ASTM A36, 2" x 6" x 1/2" THICK	-	
4	0	2	BURNED BRACE, 132/136 LB RE, ASTM A36, 7/16" x 1/4" x 1/2" THICK	-	



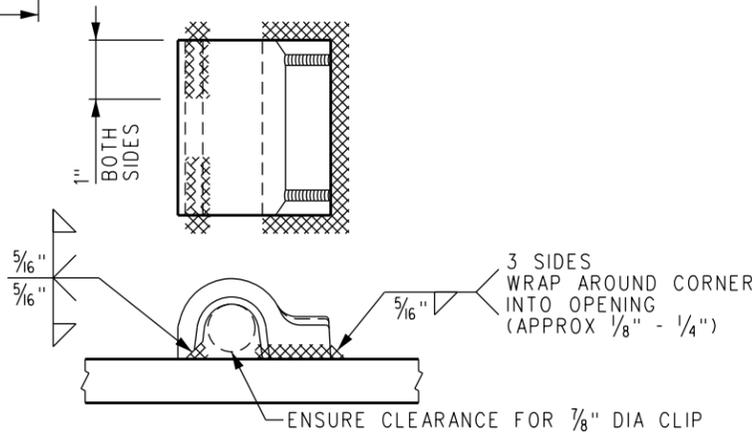
FROG BASE PLATE 10-136-34RC



FROG BASE PLATE 10-136-37RC

NOTES:

- I.D. CHARACTERS TO BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
- WELDS TO BE DRESSED FLUSH WITH SHOULDERS AND STOPS AND NOT TO PROTRUDE INTO RAIL SEAT.
- SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.



FORGED SHOULDER WELDING DETAIL

2" x 6" x 1/2" STOP WELDING DETAIL

7/16" x 1/4" x 1/2" 132/136 LB RE BURNED BRACE

DRAWN BY: <i>Nareh D. Papp</i>		HDR DATE: 03/31/2011	
ASSISTANT DIRECTOR: STANDARDS & DESIGN			
<i>William Davan</i>		DIRECTOR OF ENGINEERING AND CONSTRUCTION	
XX	XX-XX-XX	XX	XX
REV.	DATE	DES.	ENG.

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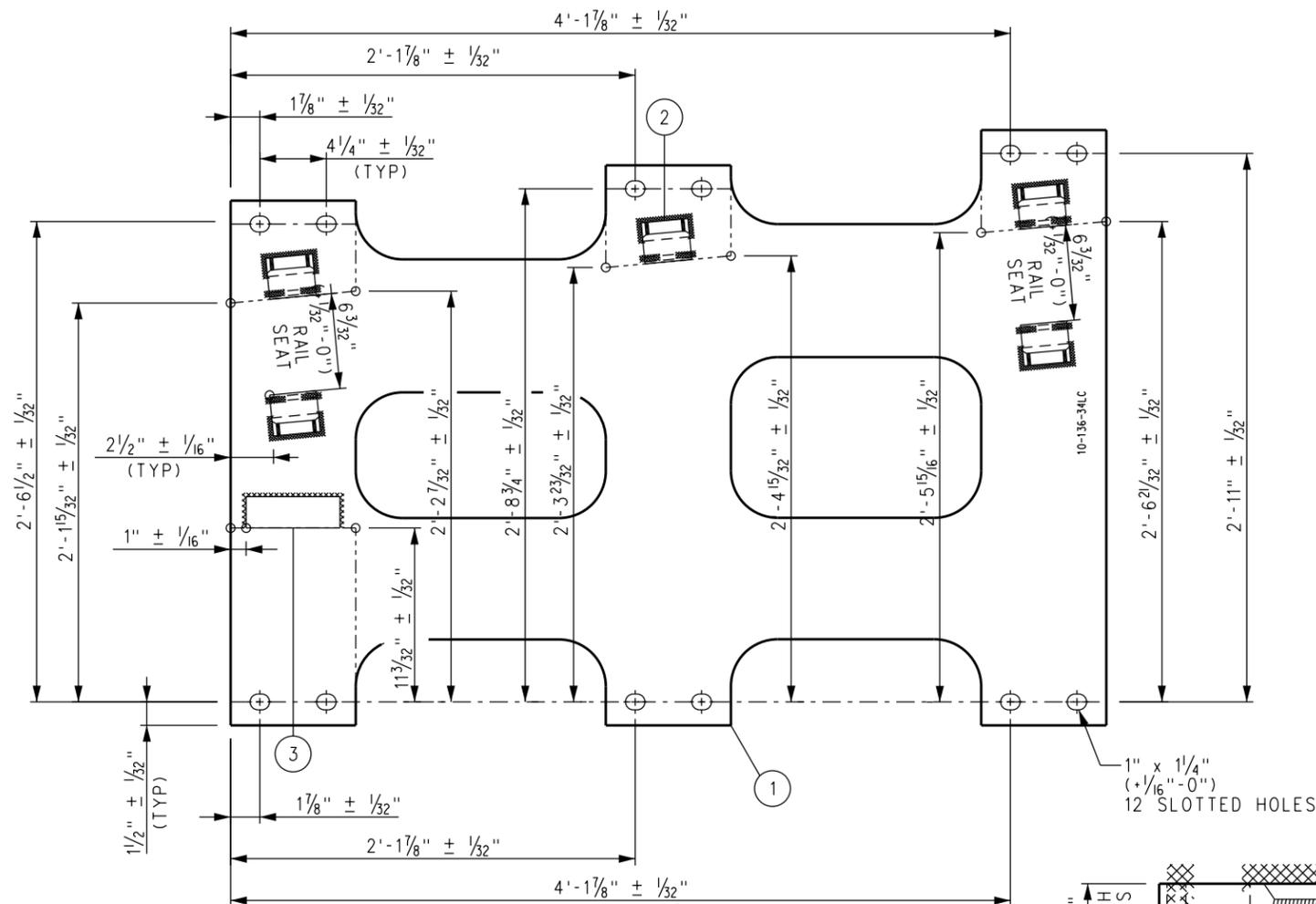
METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
NO 10 WSM FROG RH
FROG BASE PLATES 10-34RC AND 10-37RC
CONCRETE TIES-136 LB RE RAIL

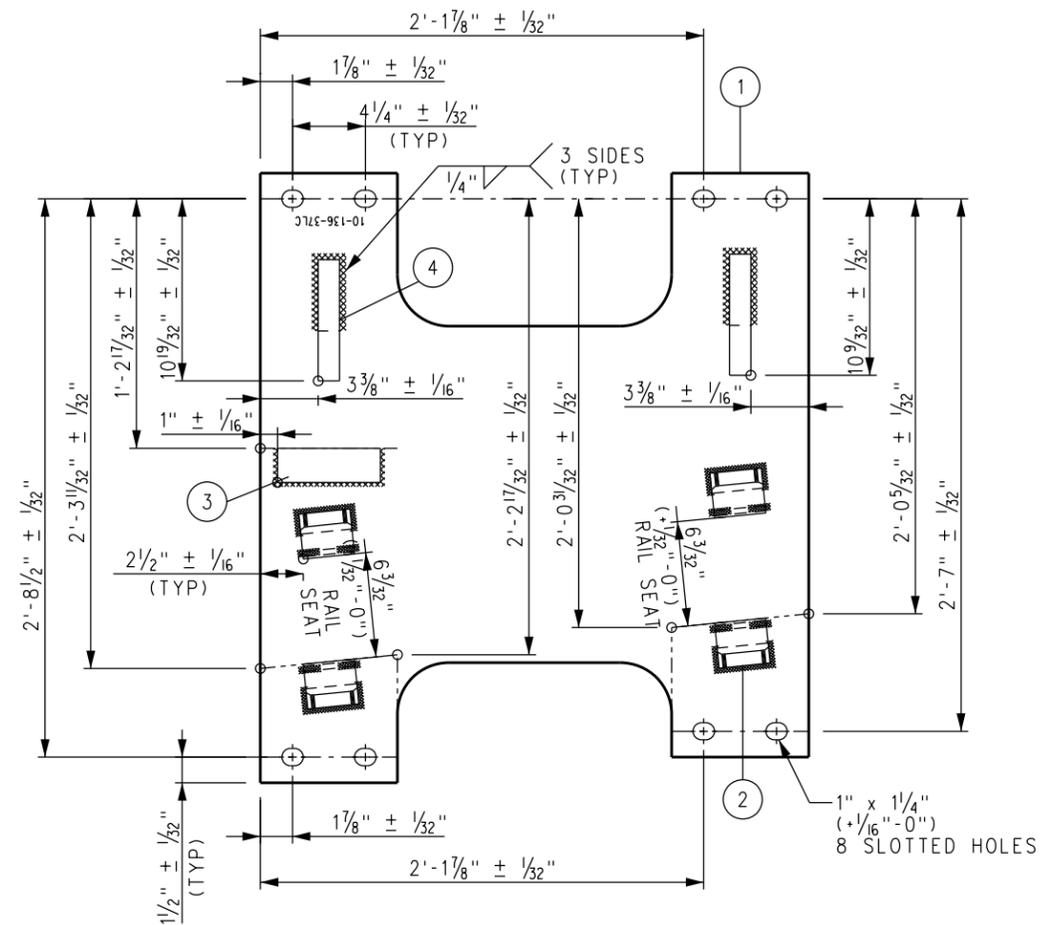
STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-42

BILL OF MATERIAL

ITEM	QTY FOR 10-34LC	QTY FOR 10-37LC	DESCRIPTION	DWG NO	SCRR PART NO
1	1	1	BURNED PLATE, 3/4" THICK	-	
2	5	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	-	
3	1	1	FLAT BAR, ASTM A36, 2" x 6" x 1/2" THICK	-	
4	0	2	BURNED BRACE, 132/136 LB RE, ASTM A36, 7/16" x 1/4" x 1/2" THICK	-	



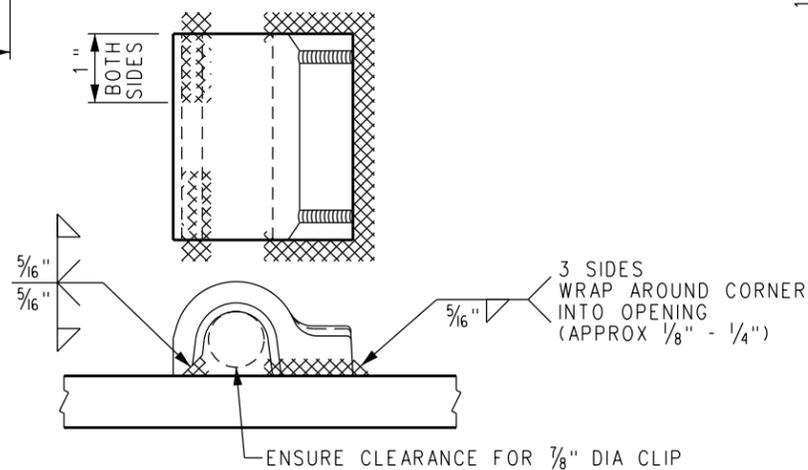
FROG BASE PLATE 10-136-34LC



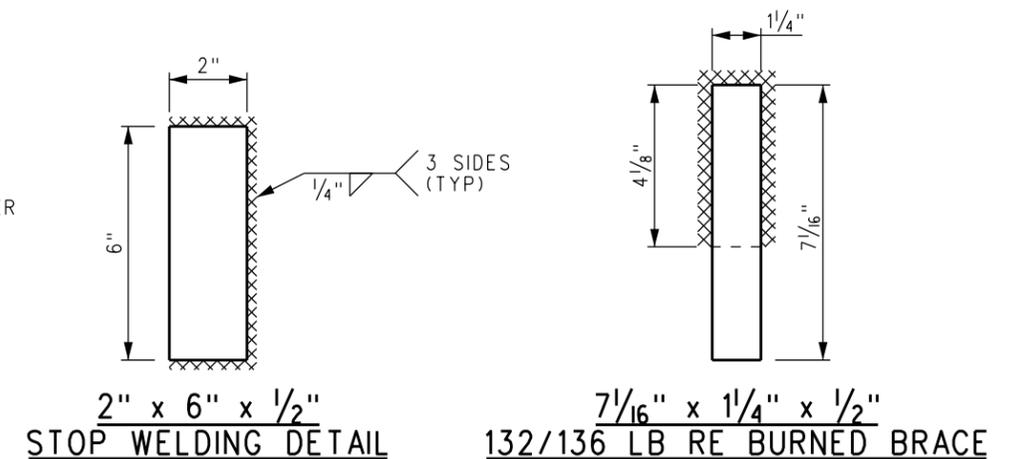
FROG BASE PLATE 10-136-37LC

NOTES:

1. I.D. CHARACTERS TO BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DRESSED FLUSH WITH SHOULDERS AND STOPS AND NOT TO PROTRUDE INTO RAIL SEAT.
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.
4. SHOULDERS TO BE WELDED ON AFTER FITTING TOE BLOCK.



FORGED SHOULDER WELDING DETAIL



2" x 6" x 1/2" STOP WELDING DETAIL

7/16" x 1/4" x 1/2" 132/136 LB RE BURNED BRACE

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

DRAWN BY: *Nareh D. Pape* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Davan
 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 WSM FROG LH
 FROG BASE PLATES 10-34LC AND 10-37LC
 CONCRETE TIES-136 LB RE RAIL

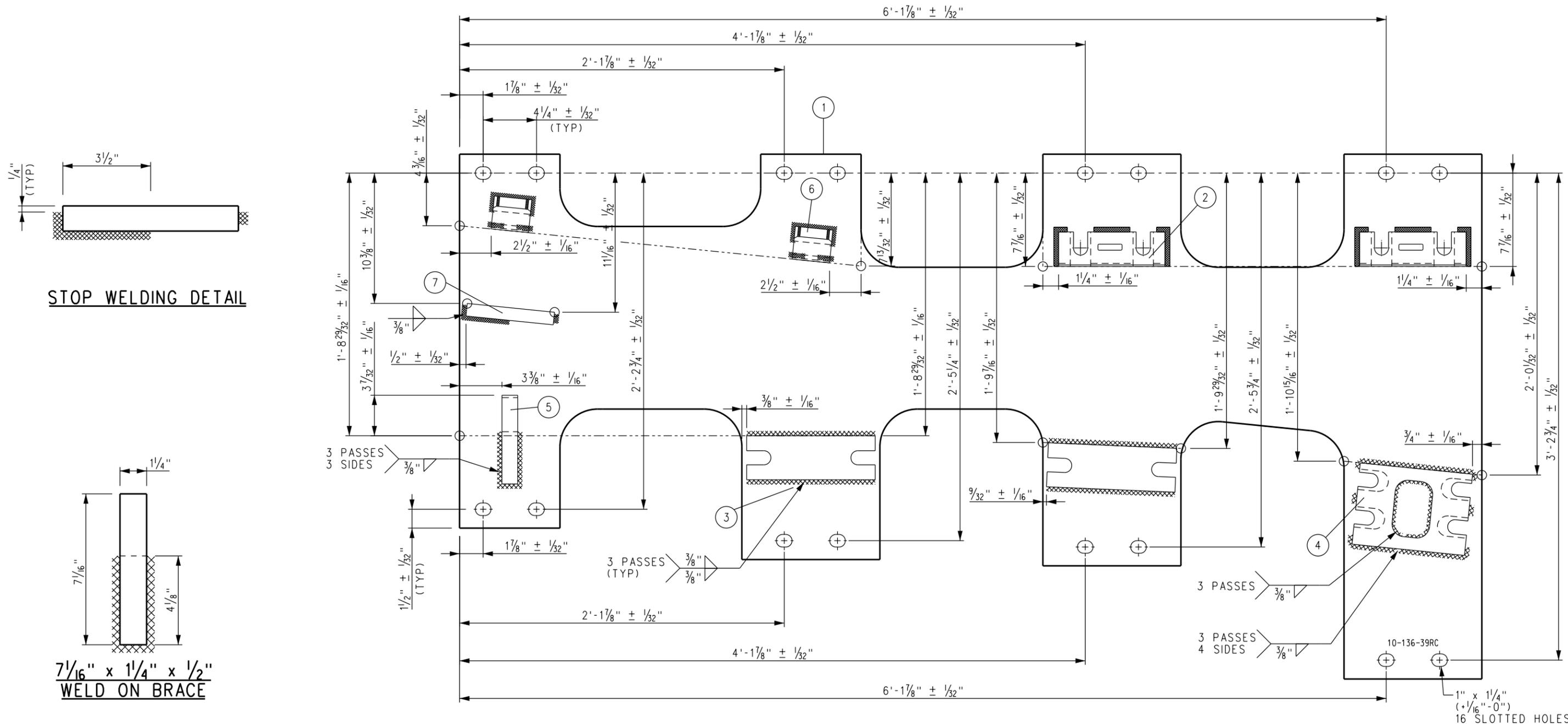
STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-43

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	1	BURNED PLATE, 3/4" THICK	-	
2	2	CAPTURE BLOCK FOR PLATE CLIP	-	
3	2	CAPTURE BLOCK FOR HORN KEEPER	-	
4	1	CAPTURE BLOCK FOR SPRING BOX	-	
5	1	WELD ON BRACE, 7/16" x 1/4" x 1/2" THICK	-	
6	2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	-	
7	1	FLAT BAR, ASTM A36, 1/2" x 7" x 1"	-	

NOTES:

1. I.D. CHARACTERS TO BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DRESSED FLUSH WITH SHOULDERS AND STOPS AND NOT TO PROTRUDE INTO RAIL SEAT.
3. OPENINGS IN BOLT CAPTURE BLOCKS SHALL BE FREE OF WELD AND SPATTER.
4. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.
5. SEE ES2803-42 FOR SHOULDER WELDING DETAIL.



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

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

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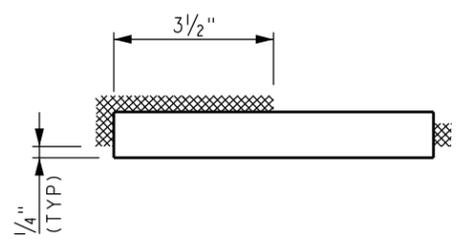
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 NO 10 WSM FROG RH
 FROG BASE PLATE 10-39RC
 CONCRETE TIES-136 LB RE RAIL

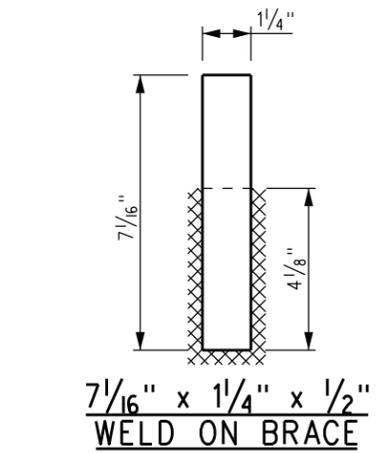
STANDARD	2803
SCALE:	NTS
REVISION	SHEET
-	1 OF 1
CADD FILE:	ES2803-44

BILL OF MATERIAL

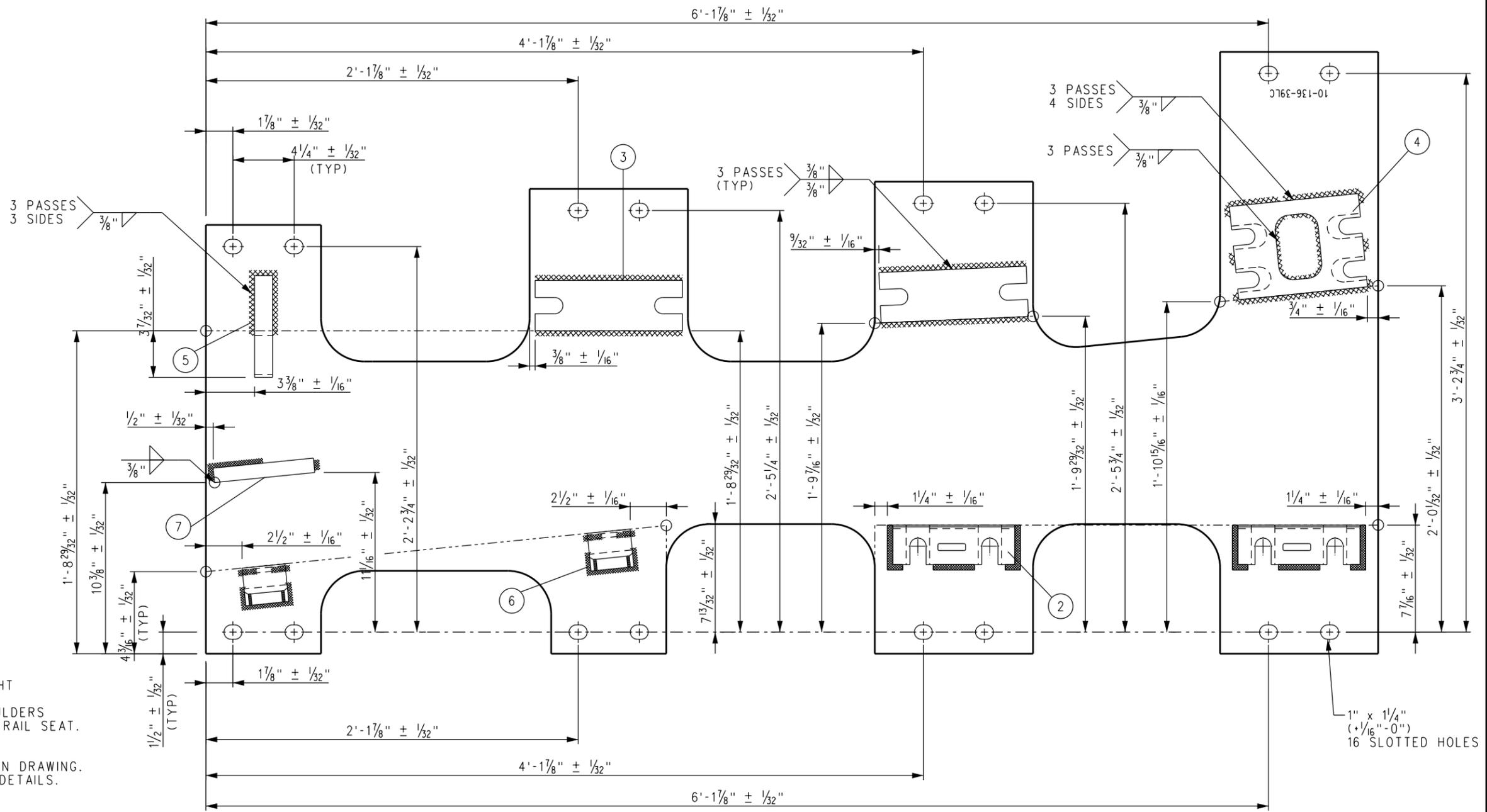
ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	1	BURNED PLATE, 3/4" THICK	-	
2	2	CAPTURE BLOCK FOR PLATE CLIP	-	
3	2	CAPTURE BLOCK FOR HORN KEEPER	-	
4	1	CAPTURE BLOCK FOR SPRING BOX	-	
5	1	WELD ON BRACE 7/16" x 1/4" x 1/2" THICK	-	
6	2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	-	
7	1	FLAT BAR, ASTM A36, 1/2" x 7" x 1"	-	



STOP WELDING DETAIL



7/16" x 1/4" x 1/2"
WELD ON BRACE



NOTES:

1. I.D. CHARACTERS TO BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DRESSED FLUSH WITH SHOULDERS AND STOPS AND NOT TO PROTRUDE INTO RAIL SEAT.
3. OPENINGS IN BOLT CAPTURE BLOCKS SHALL BE FREE OF WELD AND SPATTER.
4. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.
5. SEE ES2803-42 FOR SHOULDER WELDING DETAILS.

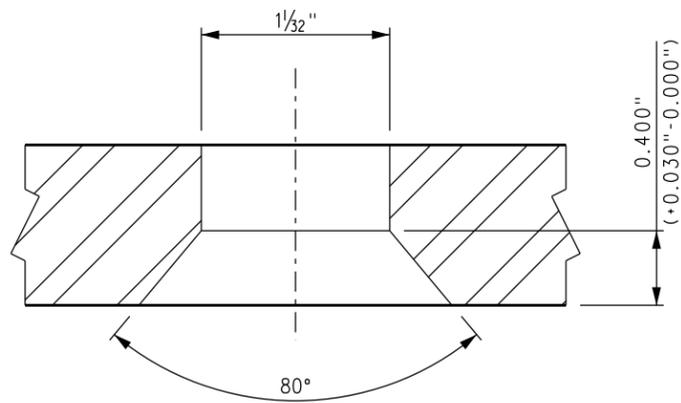
REV.	DATE	DESCRIPTION	DES.	ENG.
X	XX-XX-XX		XX	XX

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

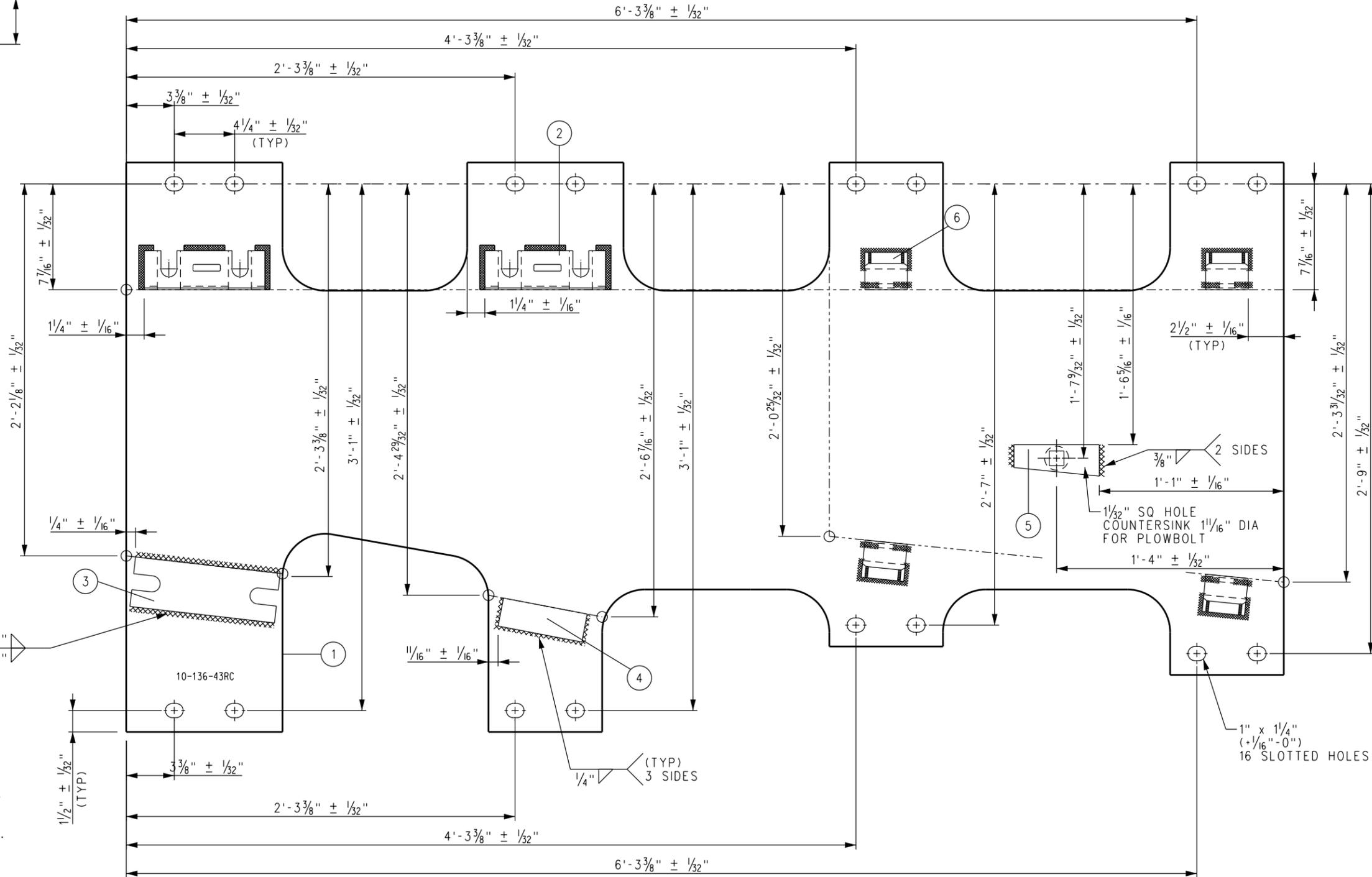
ENGINEERING STANDARDS
NO 10 WSM FROG LH
FROG BASE PLATE 10-39LC
CONCRETE TIES-136 LB RE RAIL

STANDARD	2803
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2803-45



COUNTERSINK DETAIL
(PLOW BOLT)

BILL OF MATERIAL						DWG NO	SCRRRA PART NO
ITEM	QTY	DESCRIPTION					
1	1	BURNED PLATE, 3/4" THICK				-	
2	2	CAPTURE BLOCK FOR PLATE CLIP				-	
3	1	CAPTURE BLOCK FOR HORN KEEPER				-	
4	1	FLAT BAR, ASTM A36, 1/2" THICK x 2" x 6" LONG				-	
5	1	STOP 6" x 1 9/32" x 2 7/32" x 7/16" THICK				-	
6	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1				-	



NOTES:

1. I.D. CHARACTERS TO BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DRESSED FLUSH WITH SHOULDERS AND STOPS AND NOT TO PROTRUDE INTO RAIL SEAT.
3. OPENINGS IN BOLT CAPTURE BLOCKS SHALL BE FREE OF WELD AND SPATTER.
4. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.
5. SEE ES2803-42 FOR SHOULDER WELDING DETAIL.

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

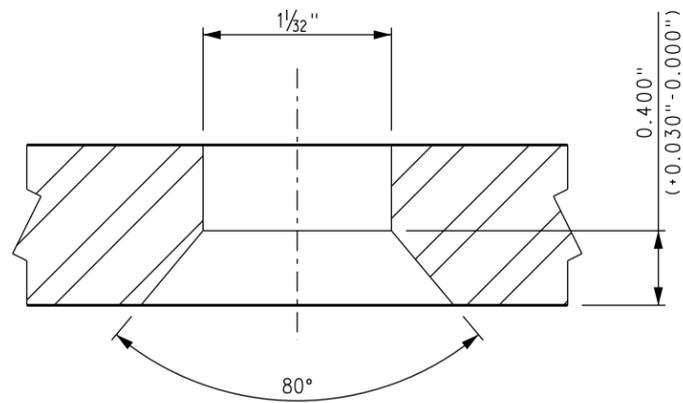
DRAWN BY: *Nareh D. Papp* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Dava
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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

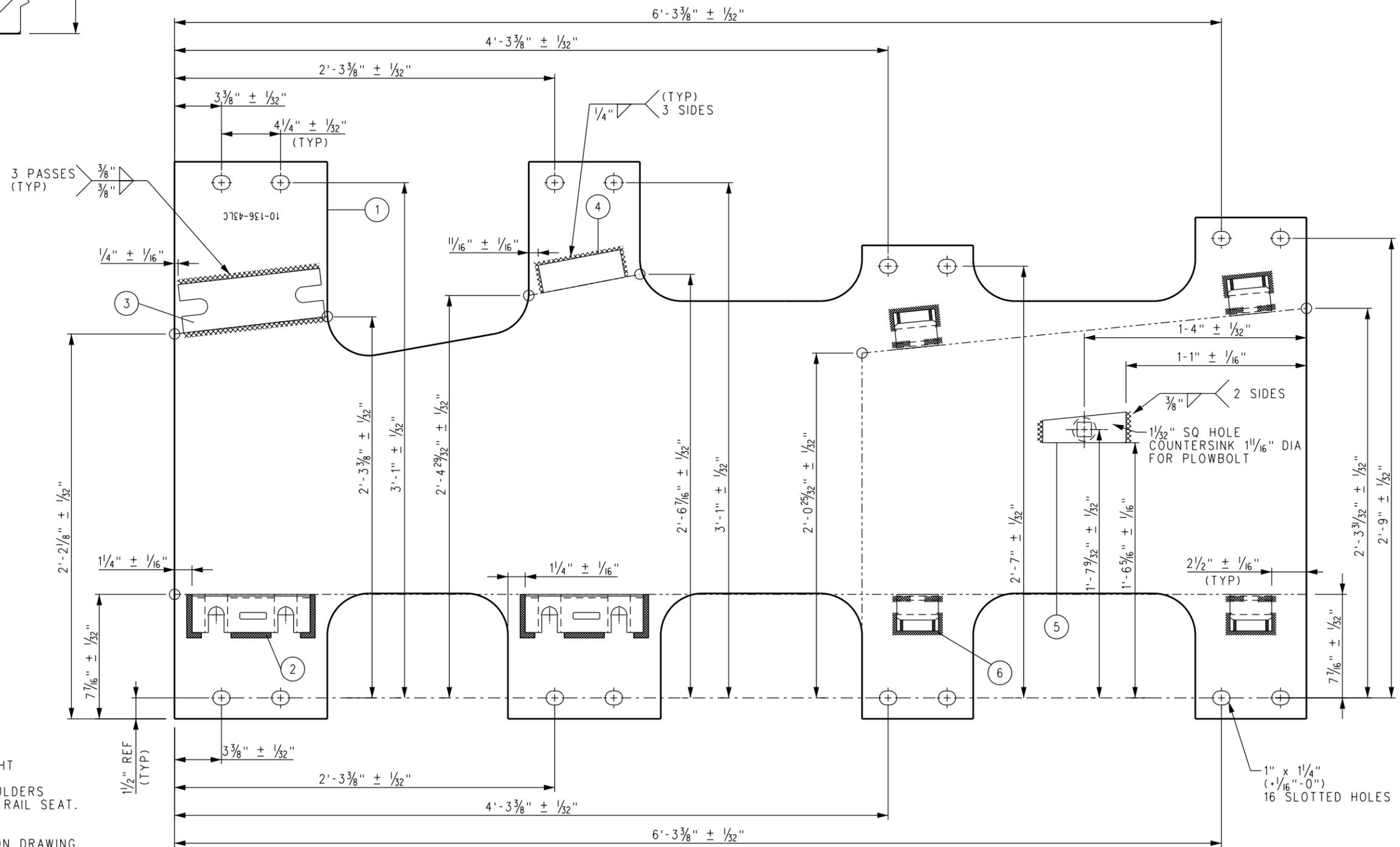
ENGINEERING STANDARDS
 NO 10 WSM FROG RH
 FROG BASE PLATE 10-43RC
 CONCRETE TIES-136 LB RE RAIL

STANDARD	2803
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2803-46



COUNTERSINK DETAIL
(PLOW BOLT)

BILL OF MATERIAL				DWG NO	SCRR PART NO
ITEM	QTY	DESCRIPTION			
1	1	BURNED PLATE, 3/4" THICK		-	
2	2	CAPTURE BLOCK FOR PLATE CLIP		-	
3	1	CAPTURE BLOCK FOR HORN KEEPER		-	
4	1	FLAT BAR, ASTM A36, 1/2" THICK x 2" x 6" LONG		-	
5	1	STOP 6" x 1 9/32" x 2 7/32" x 3/16" THICK		-	
6	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1		-	



NOTES:

1. I.D. CHARACTERS TO BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DRESSED FLUSH WITH SHOULDERS AND STOPS AND NOT TO PROTRUDE INTO RAIL SEAT.
3. OPENINGS IN BOLT CAPTURE BLOCKS SHALL BE FREE OF WELD AND SPATTER.
4. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.
5. SEE ES2803-42 FOR SHOULDER WELDING DETAIL.

REV.	DATE	DESCRIPTION	DES.	ENG.
X	XX-XX-XX		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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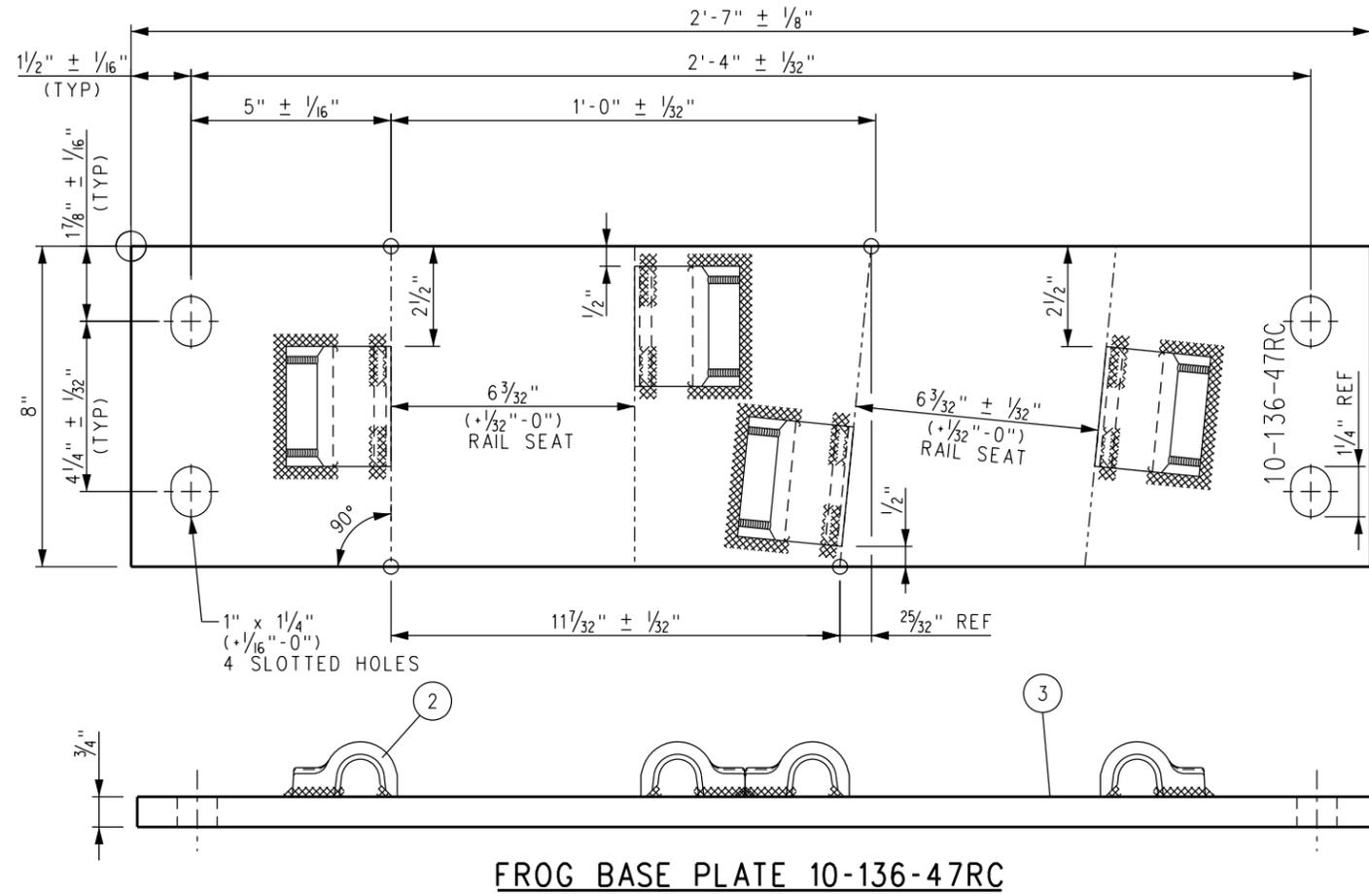
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 NO 10 WSM FROG LH
 FROG BASE PLATE 10-43LC
 CONCRETE TIES-136 LB RE RAIL

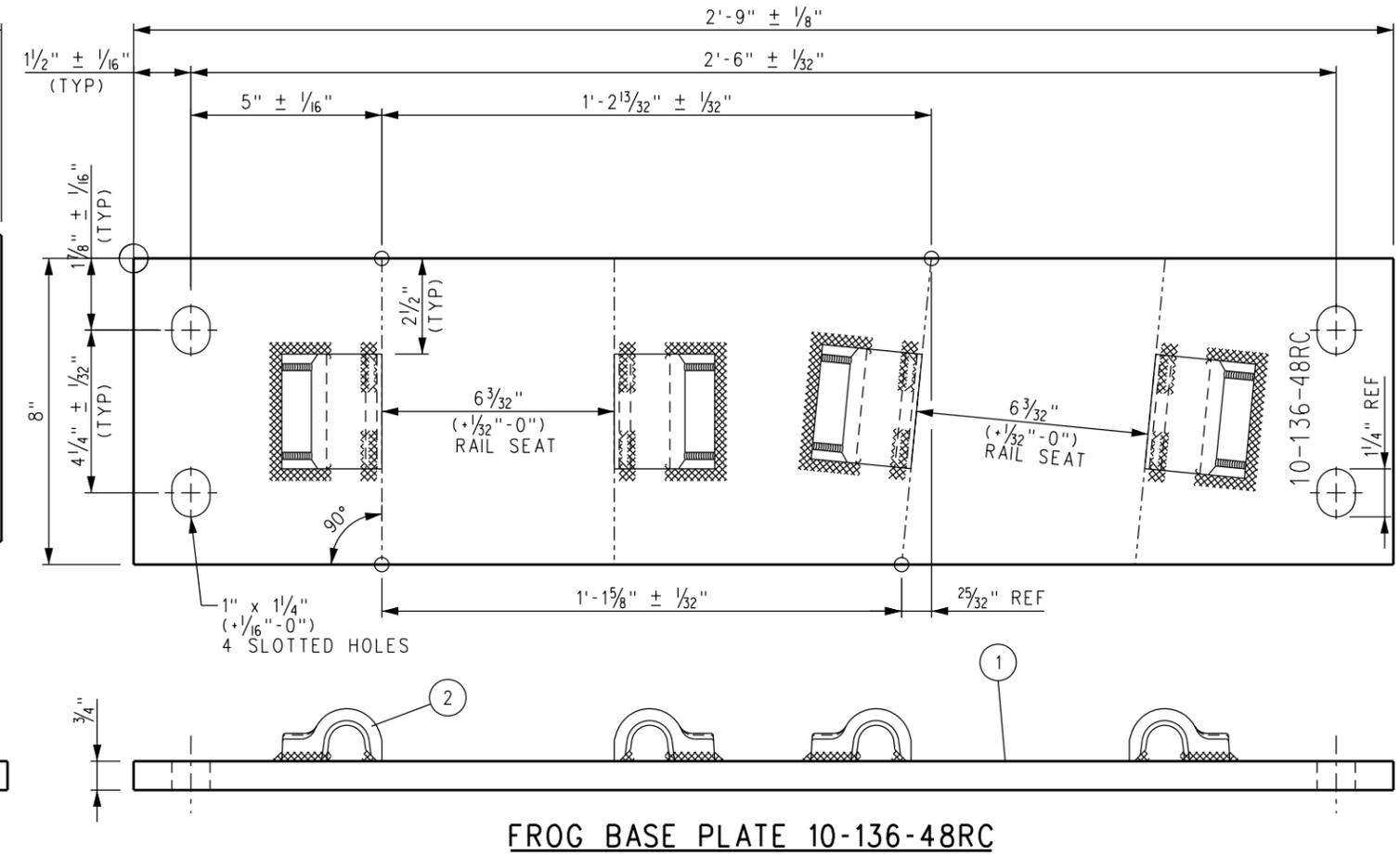
STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-47

BILL OF MATERIAL

ITEM	QTY FOR 10-47RC	QTY FOR 10-48RC	DESCRIPTION	DWG NO	SCRR PART NO
1	0	1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-9" LONG	-	
2	4	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	-	
3	1	0	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-7" LONG	-	



FROG BASE PLATE 10-136-47RC



FROG BASE PLATE 10-136-48RC

NOTES:

1. I.D. CHARACTERS TO BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DRESSED FLUSH WITH SHOULDER & NOT TO PROTRUDE INTO RAIL SEAT.
3. SEE ES2803-42 FOR SHOULDER WELDING DETAILS.

REV.	DATE	DESCRIPTION	DES.	ENG.
X	XX-XX-XX		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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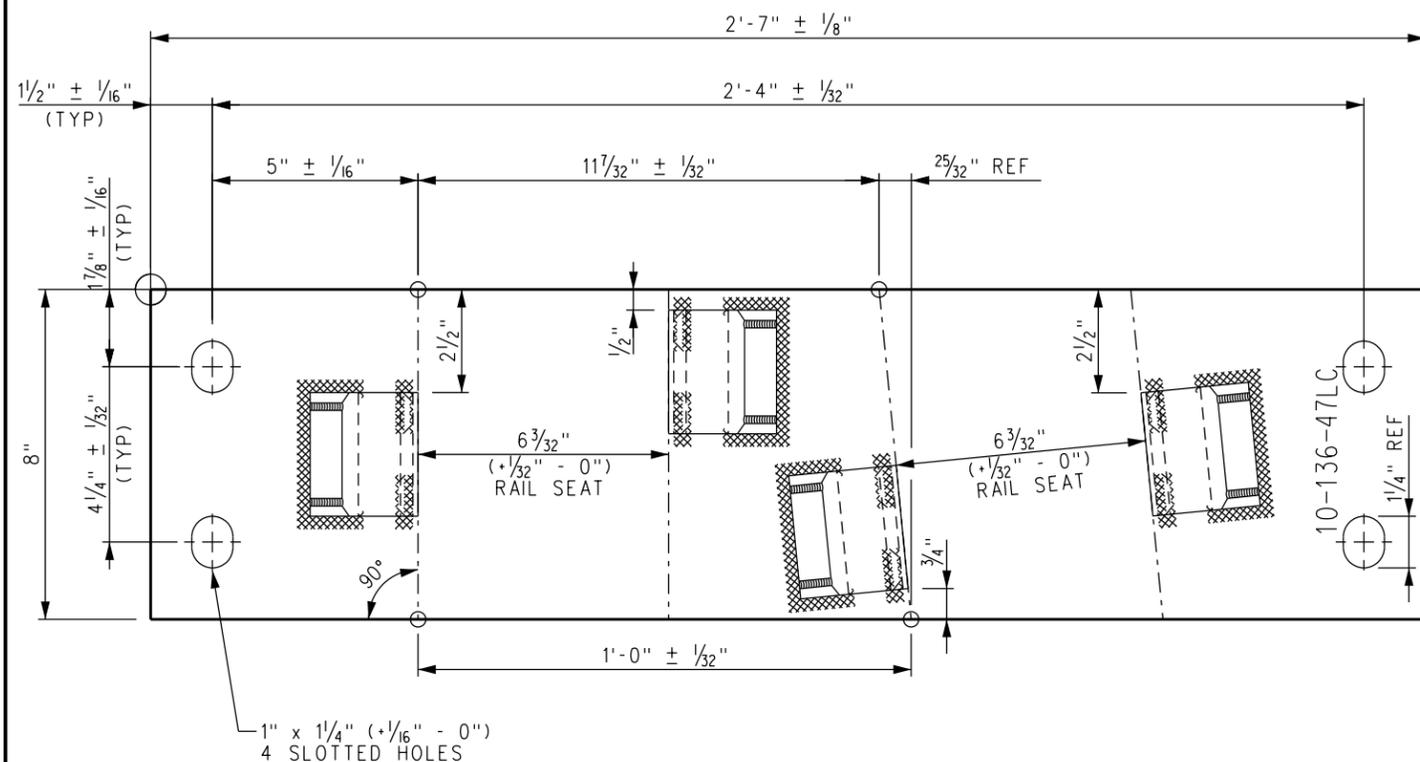
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 NO 10 WSM FROG RH
 FROG BASE PLATES 10-47RC AND 10-48RC
 CONCRETE TIES-136 LB RE RAIL

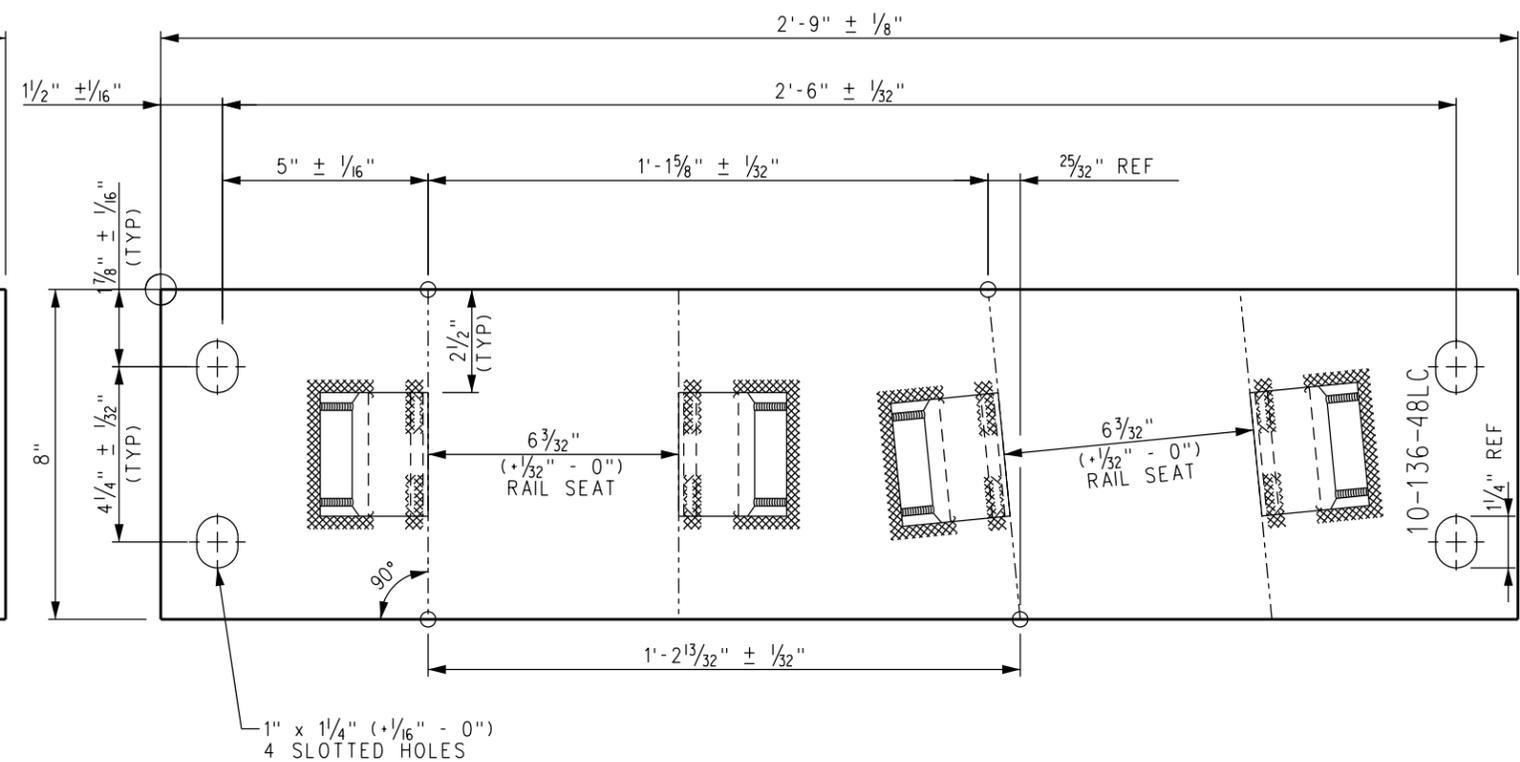
STANDARD	2803
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2803-48

BILL OF MATERIAL

ITEM	QTY FOR 10-47LC	QTY FOR 10-48LC	DESCRIPTION	DWG NO	SCRRRA PART NO
1	0	1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-9" LONG	-	
2	4	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	-	
3	1	0	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-7" LONG	-	



FROG BASE PLATE 10-136-47LC



FROG BASE PLATE 10-136-48LC

NOTES:

1. I.D. CHARACTERS TO BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DRESSED FLUSH WITH SHOULDER & NOT TO PROTRUDE INTO RAIL SEAT.
3. SEE ES2803-42 FOR SHOULDER WELDING DETAILS.

DRAWN BY: <i>Narek D. Pape</i>		HDR: <i>Narek D. Pape</i>		DATE: 03/31/2011	
ASSISTANT DIRECTOR: STANDARDS & DESIGN					
<i>William Davan</i>		DIRECTOR OF ENGINEERING AND CONSTRUCTION			
REV.	DATE	DESCRIPTION	DES.	ENG.	
X	XX-XX-XX	REVISION	XX	XX	

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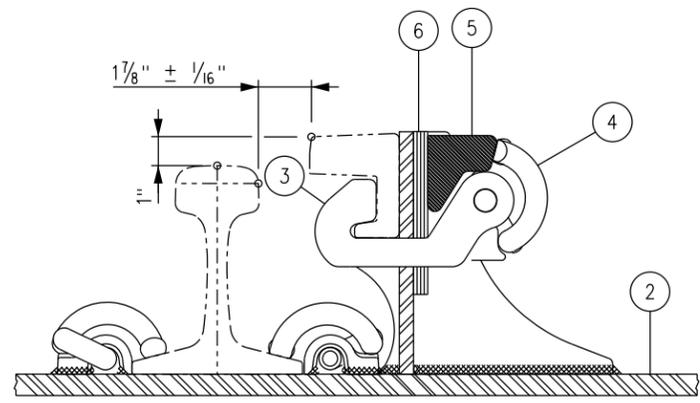
METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
NO 10 WSM FROG LH
FROG BASE PLATES 10-47LC AND 10-48LC
CONCRETE TIES-136 LB RE RAIL

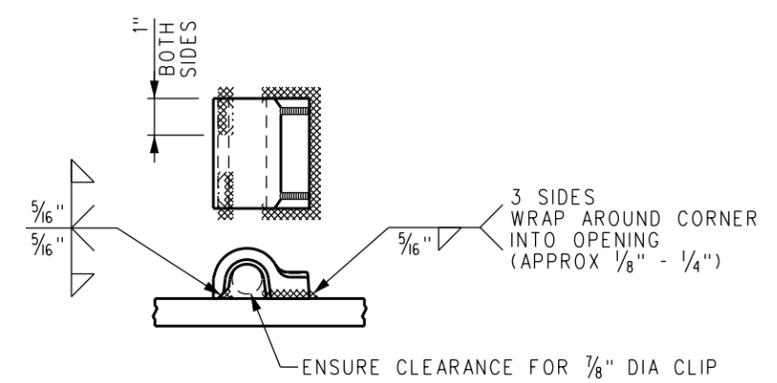
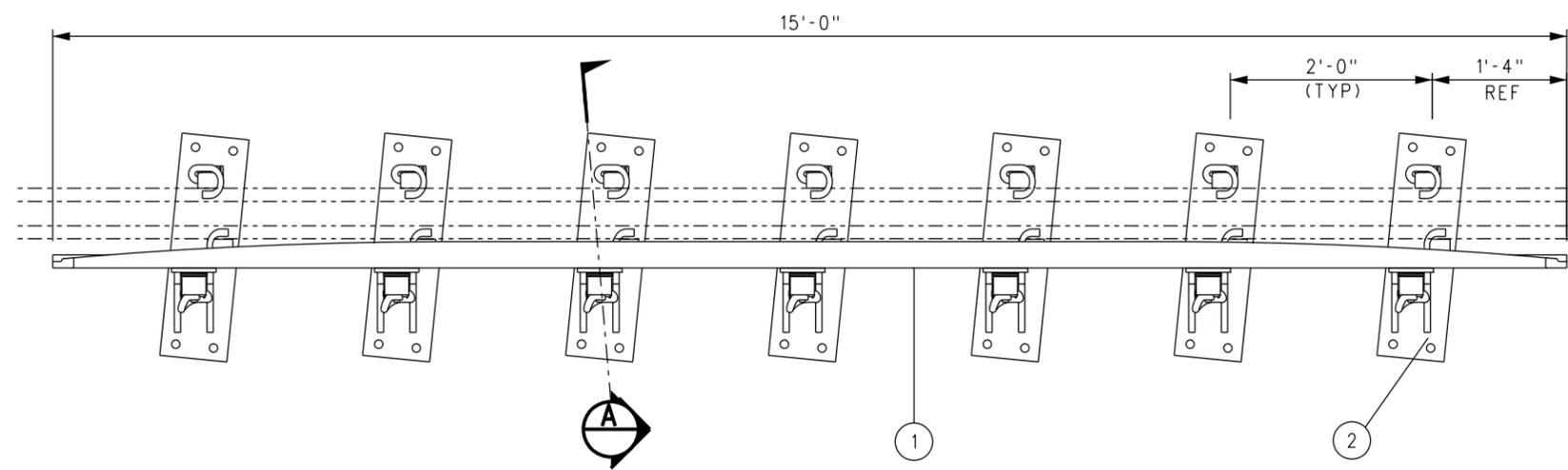
STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-49

BILL OF MATERIAL

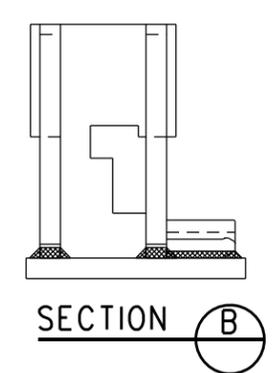
ITEM	QTY	DESCRIPTION	DWG NO	SCRRRA PART NO
1	1	GUARD BAR, UIC33 1200 SERIES x 15'-0" LONG	-	
2	7	GUARD RAIL PLATE ASSEMBLY, RAISED 1", LH SKEWED	-	
3	7	H-CLAMP	-	
4	21	CLIP, PANDROL, E2055	-	
5	7	LOCKING BLOCK	-	
6	28	SHIM, 1/8" x 3" x 6"	-	



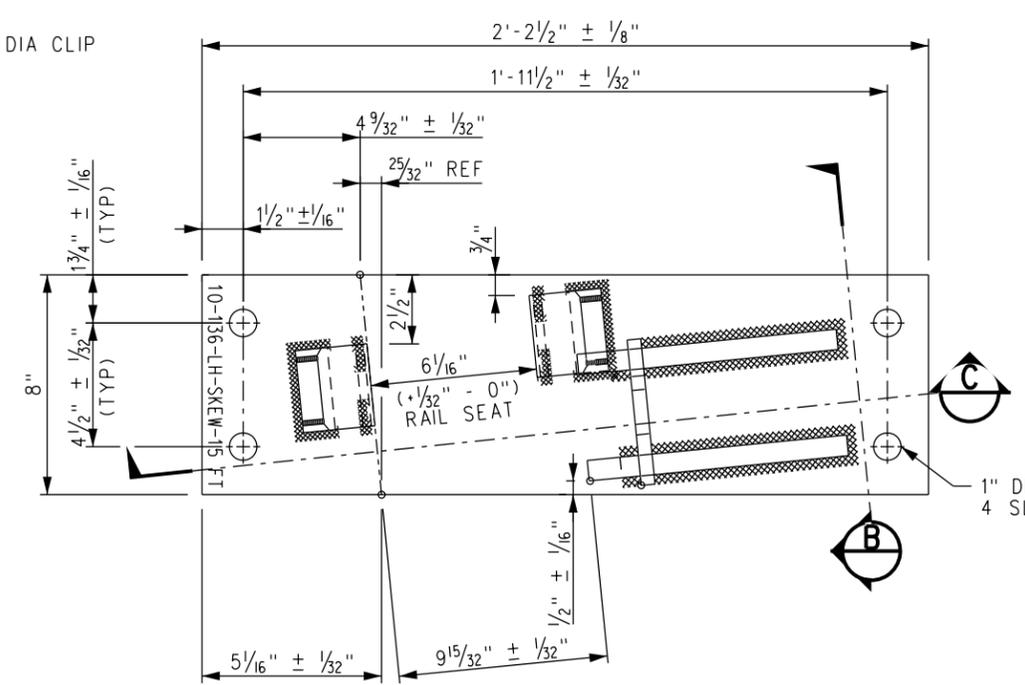
PARTIAL SECTION A
GUARD RAIL HARDWARE ASSEMBLY



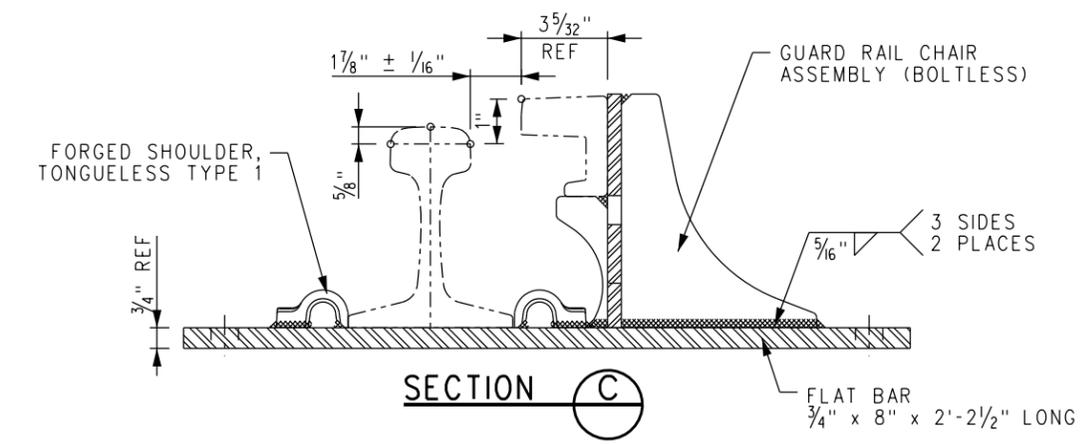
FORGED SHOULDER WELDING DETAIL



SECTION B



GUARD RAIL PLATE ASSEMBLY



SECTION C

NOTES:

1. PLATE SPACING IS SET FOR SHIPPING ONLY. FINAL PLATE SPACING IS TO BE DETERMINED BY TIE SPACING AT TIME OF INSTALLATION.
2. PANDROL SPRING CLIPS (E2055) TO BE INCLUDED IN ASSEMBLY.
3. LIFT POINTS AND WEIGHT OF ASSEMBLY TO BE MARKED ON HEAD OF WEAR BAR WITH WHITE PAINT.
4. PLATE IS TO BE STAMPED WITH PLATE I.D. WITH 1/2" HIGH CHARACTERS AS SHOWN.
5. GRIND AWAY CORNER OF PANDROL SHOULDER TO CLEAR FOOT OF CHAIR ASSEMBLY.
6. SEE ES2800-50 FOR STRAIGHT SIDE GUARD RAIL.

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 Davan
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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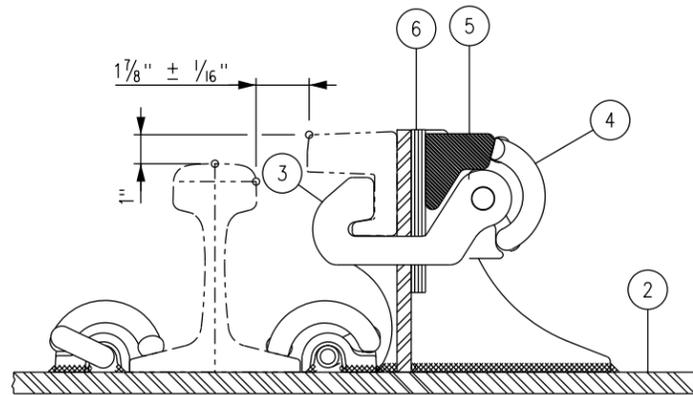
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 NO 10 GUARD RAIL ASSEMBLY,
 LH SKEWED WITH PLATES
 15'-0" LONG, BOLTLESS, RAISED 1"
 CONCRETE TIES - 136 LB RE RAIL, 1-7/8" FLANGEWAY

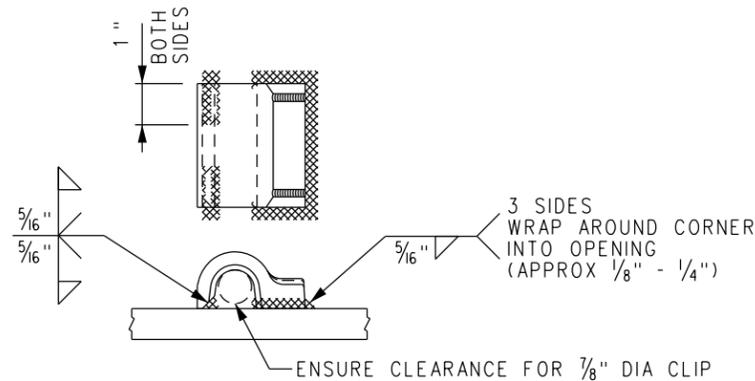
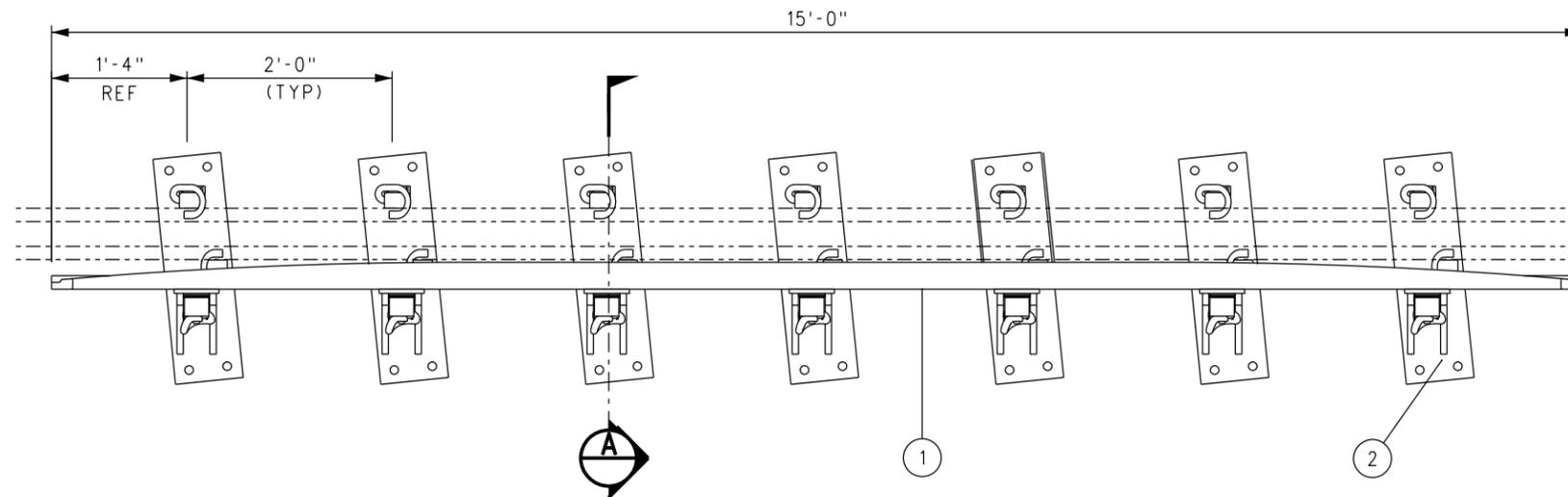
STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-51

BILL OF MATERIAL

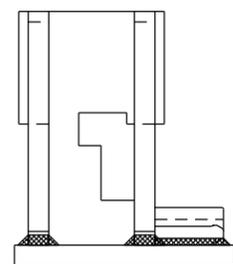
ITEM	QTY	DESCRIPTION	DWG NO	SCRRRA PART NO
1	1	GUARD BAR, UIC33 1200 SERIES x 15'-0" LONG	-	
2	7	GUARD RAIL PLATE ASSEMBLY, RAISED 1", RH SKEWED	-	
3	7	H-CLAMP	-	
4	21	CLIP, PANDROL, E2055	-	
5	7	LOCKING BLOCK	-	
6	28	SHIM, 1/8" x 3" x 6"	-	



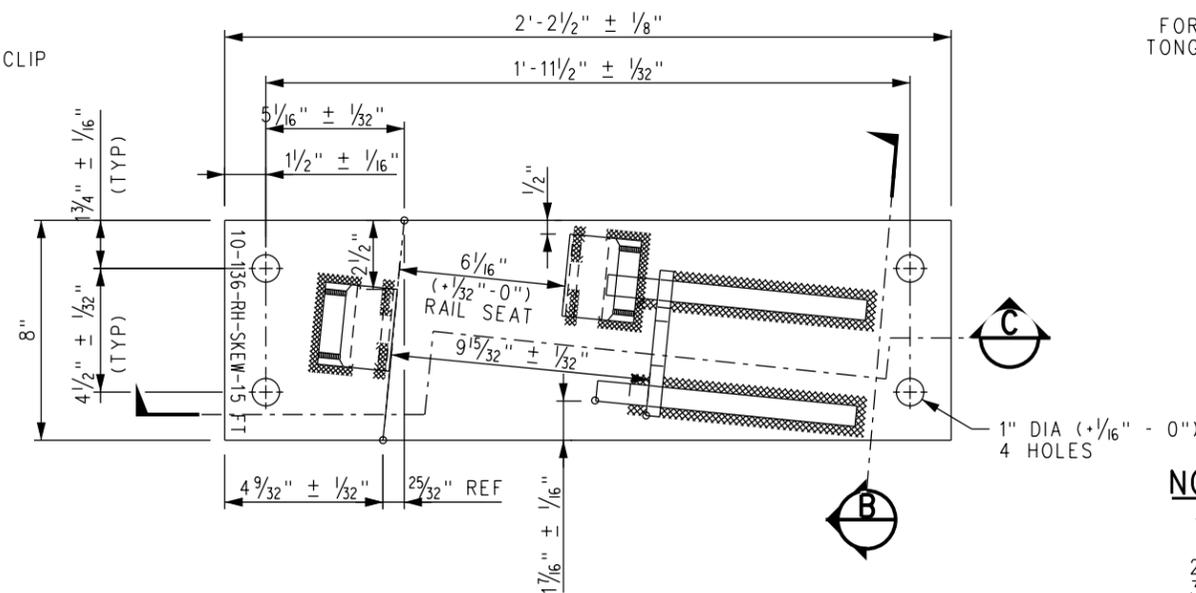
PARTIAL SECTION A
GUARD RAIL HARDWARE ASSEMBLY



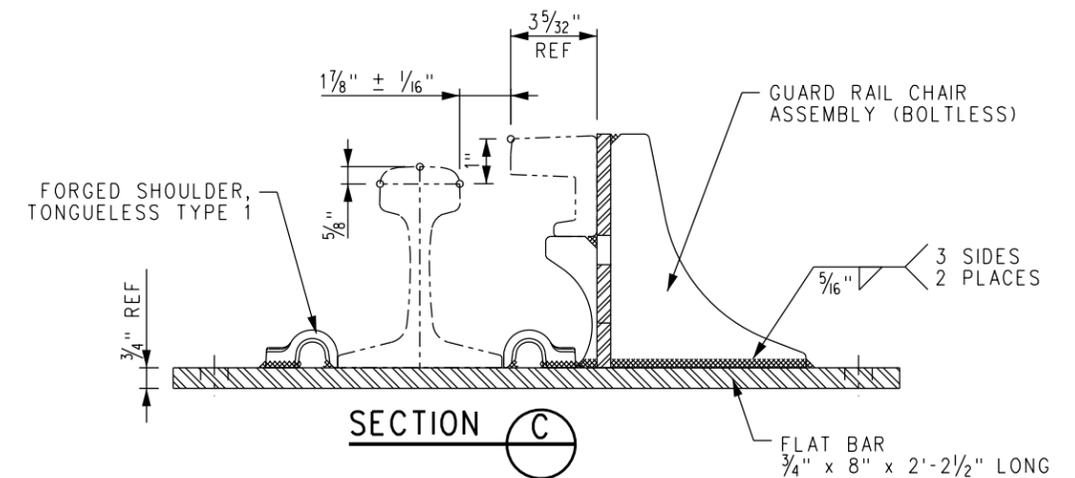
FORGED SHOULDER WELDING DETAIL



SECTION B



GUARD RAIL PLATE ASSEMBLY



SECTION C

NOTES:

1. PLATE SPACING IS SET FOR SHIPPING ONLY. FINAL PLATE SPACING IS TO BE DETERMINED BY TIE SPACING AT TIME OF INSTALLATION.
2. PANDROL SPRING CLIPS (E2055) TO BE INCLUDED IN ASSEMBLY.
3. LIFT POINTS AND WEIGHT OF ASSEMBLY TO BE MARKED ON HEAD OF WEAR BAR WITH WHITE PAINT.
4. PLATE IS TO BE STAMPED WITH PLATE I.D. WITH 1/2" HIGH CHARACTERS AS SHOWN.
5. GRIND AWAY CORNER OF PANDROL SHOULDER TO CLEAR FOOT OF CHAIR ASSEMBLY.
6. SEE ES2800-50 FOR STRAIGHT SIDE GUARD RAIL.

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
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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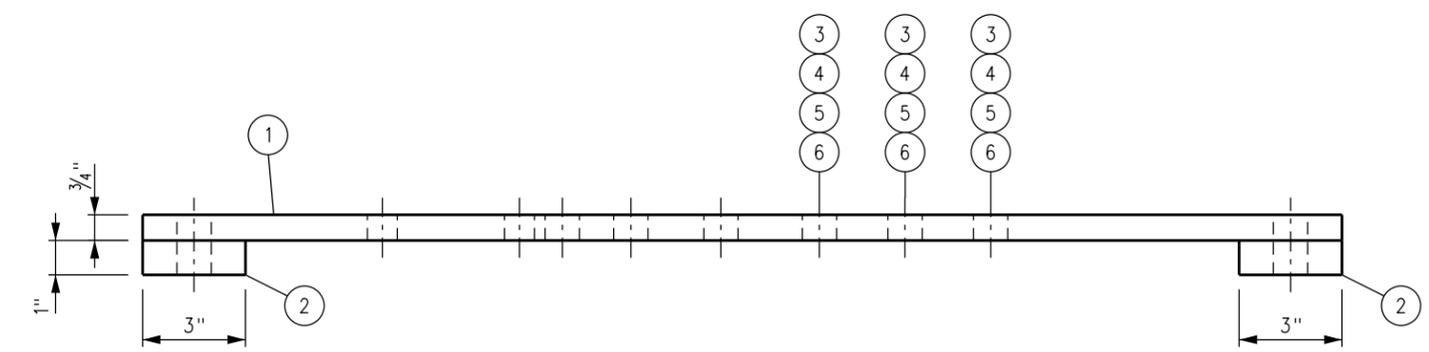
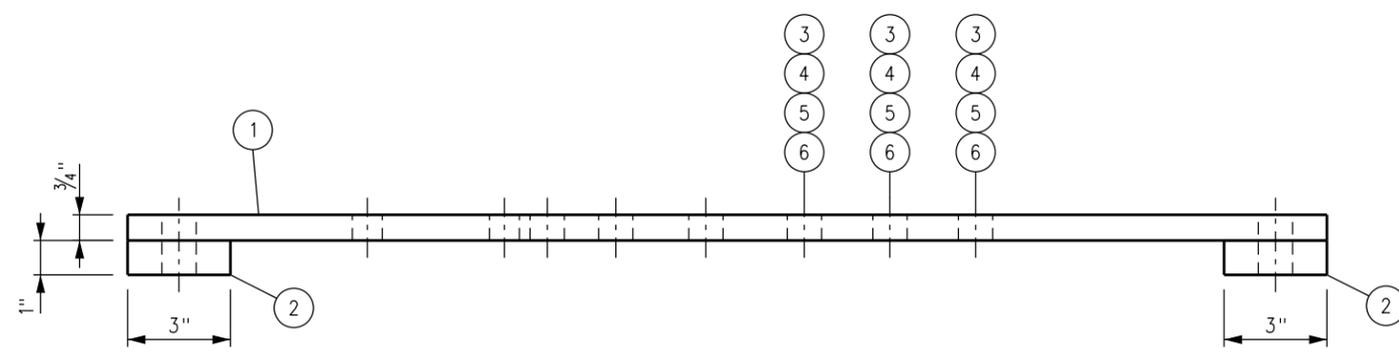
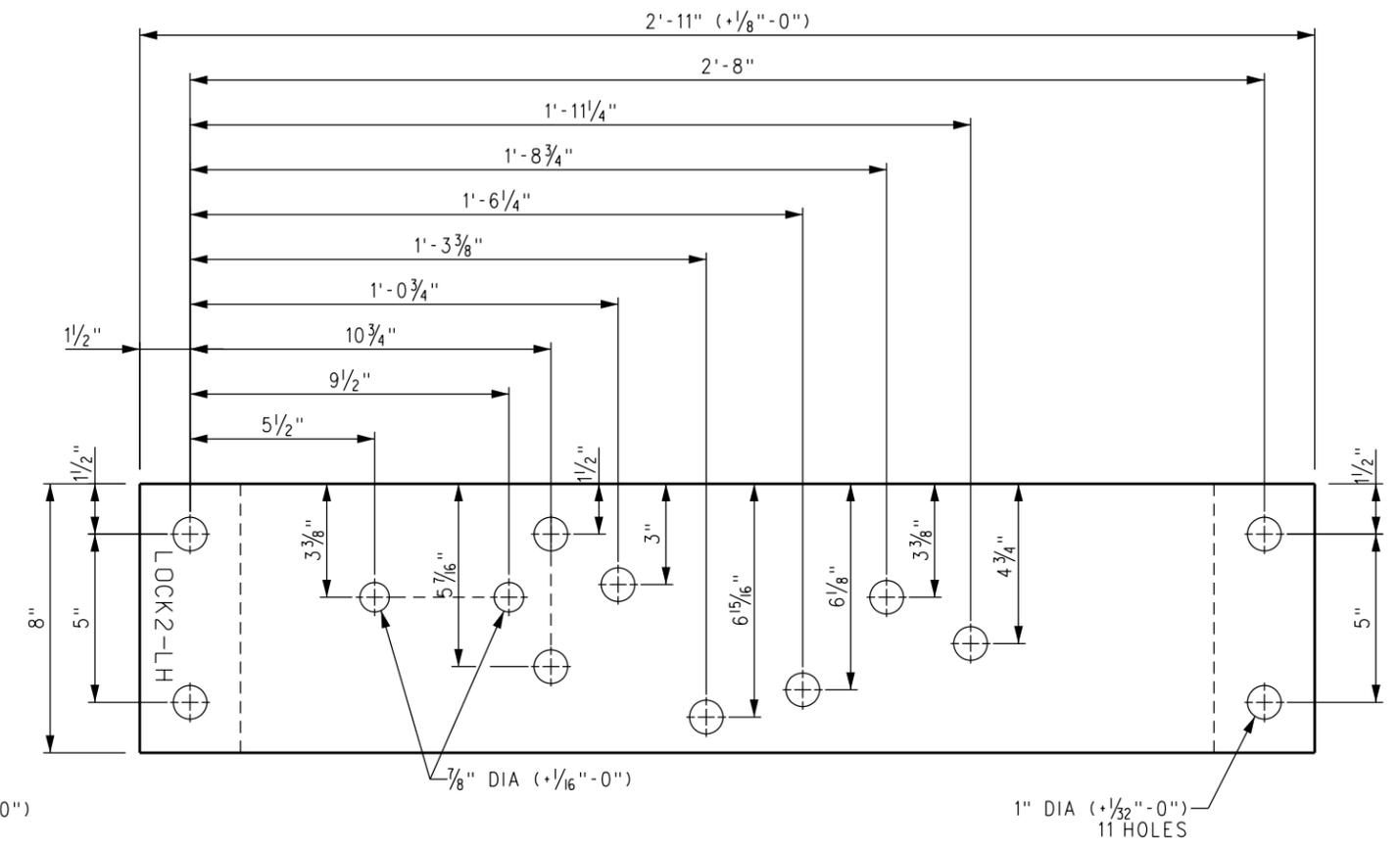
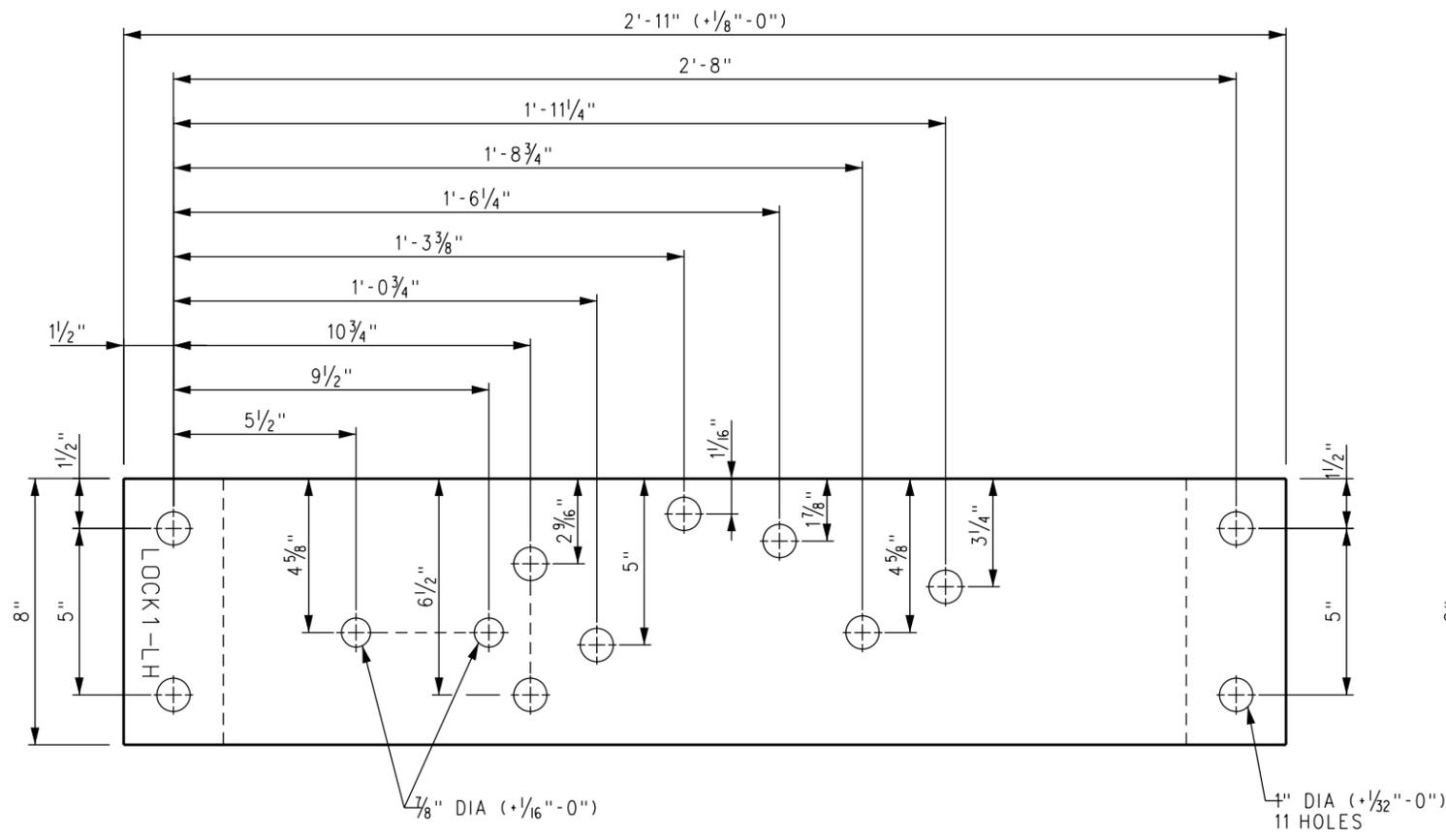
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 NO 10 GUARD RAIL ASSEMBLY,
 RH SKEWED WITH PLATES
 15'-0" LONG, BOLTLESS, RAISED 1"
 CONCRETE TIES - 136 LB RE RAIL, 1-7/8" FLANGEWAY

STANDARD	2803
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2803-52

BILL OF MATERIAL

ITEM	QTY FOR LOCK1-LH	QTY FOR LOCK2-LH	DESCRIPTION	DWG NO	SCRR PART NO
1	1	1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-11" LONG	-	
2	2	2	FILLER PLATE - 1" x 8" x 3"	-	
3	3	3	BOLT HEX 7/8"-9UNC-2A x 3 1/2" LONG	-	
4	3	3	NUT HEAVY HEX 7/8" UNC J995-GR8	-	
5	3	3	WASHER FLAT 7/8" DIA BOLT	-	
6	3	3	WASHER SPRING 7/8" SQ EDGE	-	



LOCK1-LH

LOCK2-LH

NOTES:

1. ALL TOLERANCES $\pm 1/32$ " UNLESS OTHERWISE SPECIFIED.
2. STAMP PLATE I.D. CLEARLY AS SHOWN.
3. HARDWARE TO COME FULL ATTACHED TO PLATE.

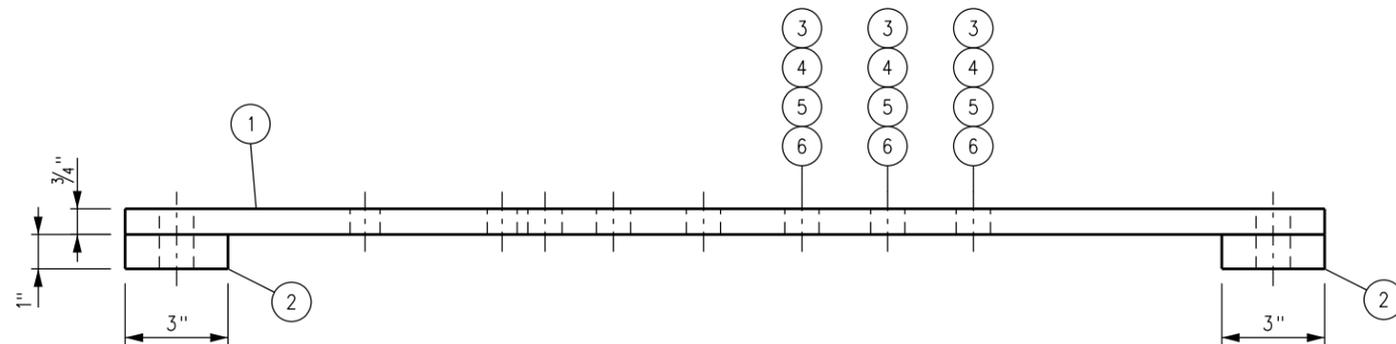
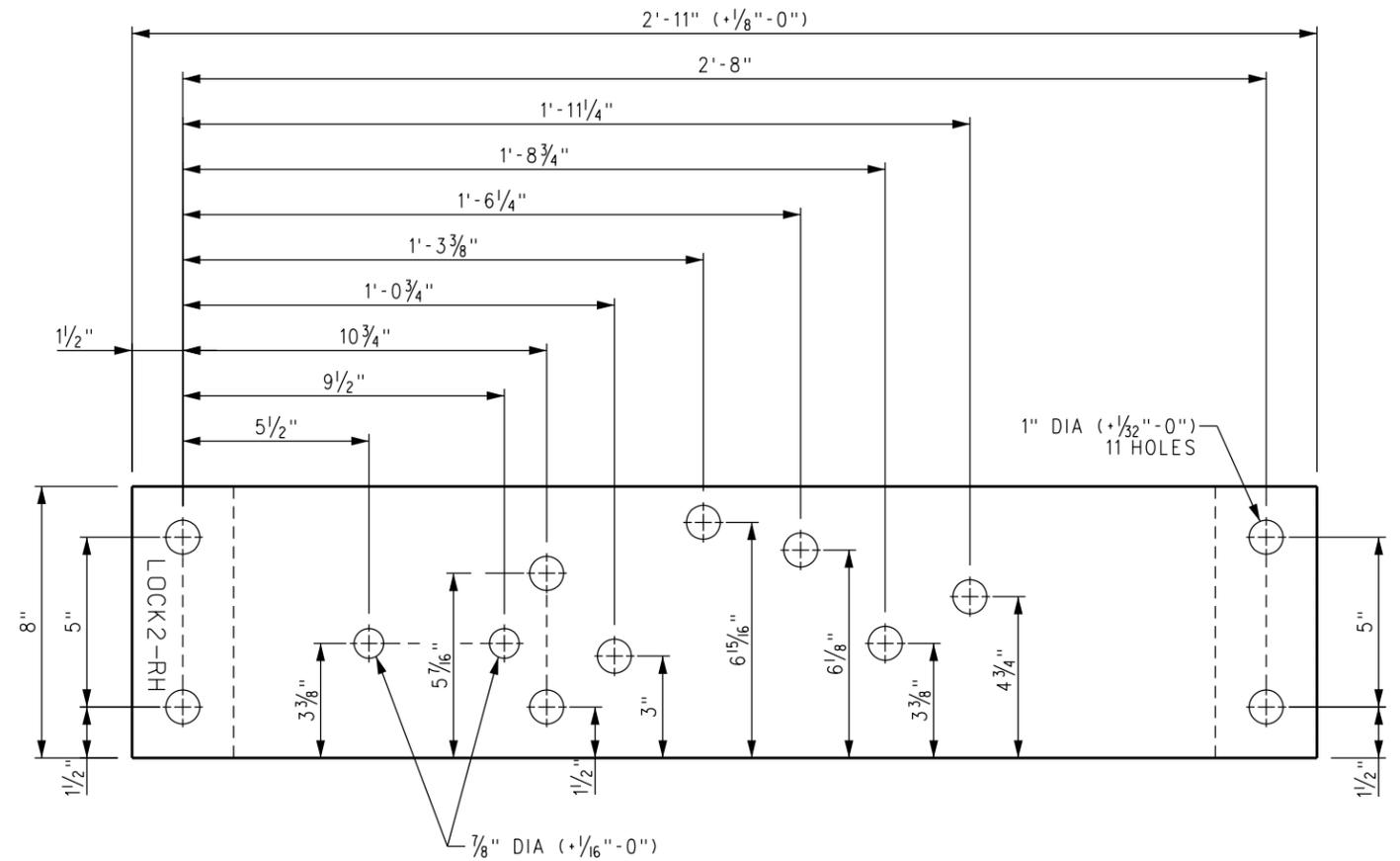
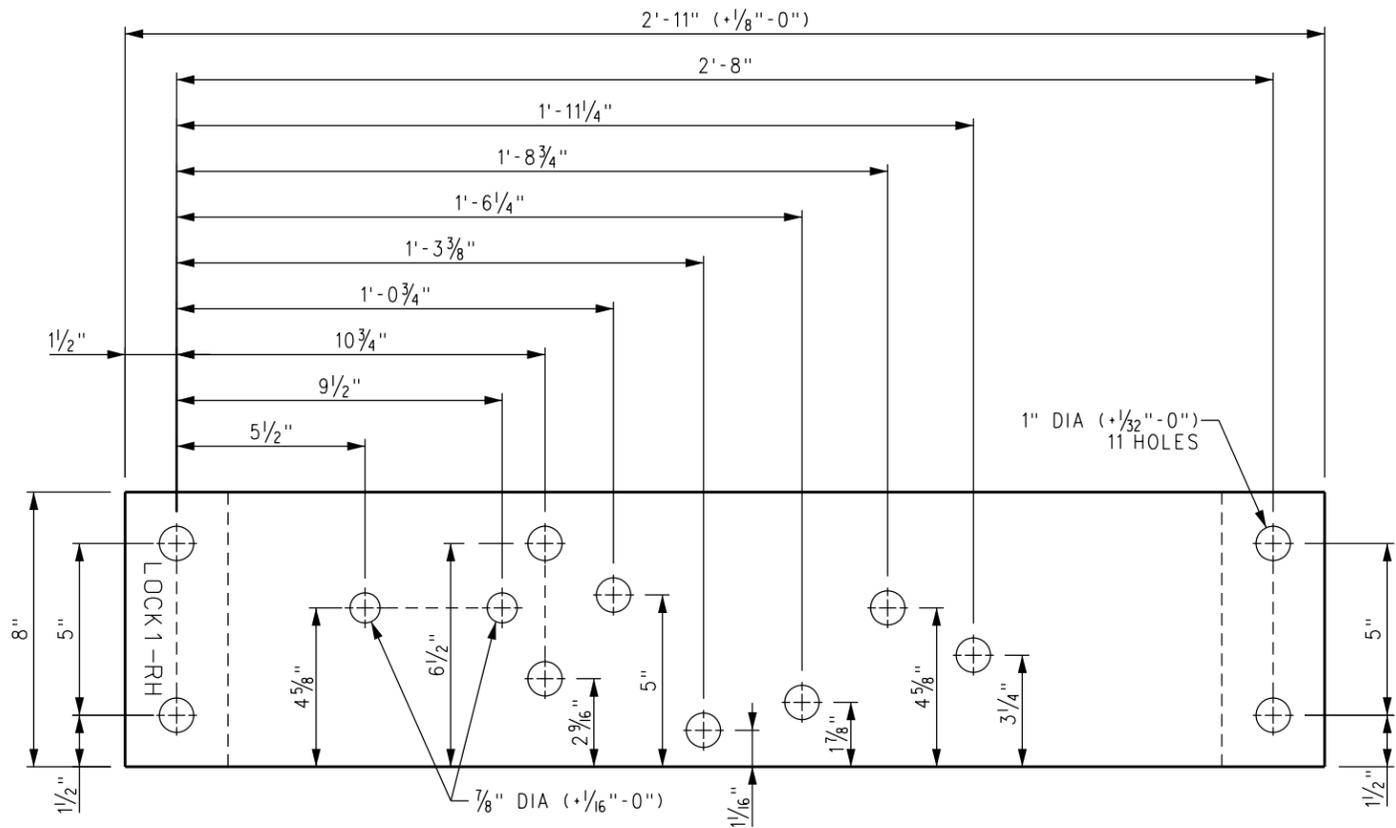
DRAWN BY: <i>Narek D. Pape</i> HDR DATE: 03/31/2011 ASSISTANT DIRECTOR: STANDARDS & DESIGN <i>William Davan</i> DIRECTOR OF ENGINEERING AND CONSTRUCTION		SCRR ENGINEERING STANDARDS ARE INTENDED FOR SCRR APPROVED USES ONLY. FOR NON-SCRR APPROVED USES, SCRR SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR 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.	SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012	ENGINEERING STANDARDS LH SWITCH STAND ADAPTER PLATES FOR 36E SWITCH STAND NO 10-136 LB RE SPRING FROG FOR TURNOUT WITH ELECTRIC LOCK	STANDARD 2803 SCALE: NTS REVISION SHEET 1 OF 1 CADD FILE: ES2803-56
X XX-XX-XX REV. DATE DESCRIPTION DES. ENG.	REVISION XX XX DESCRIPTION DES. ENG.	User Name: carlosa Date Plotted: 10/5/2011 3:26:15 PM Plot Driver: S:\Plot Drivers\pdf.plt			File Name: s:\V8EngStds\2000\Turnouts\No 10 Turnout\ES2803-56.dgn

BILL OF MATERIAL

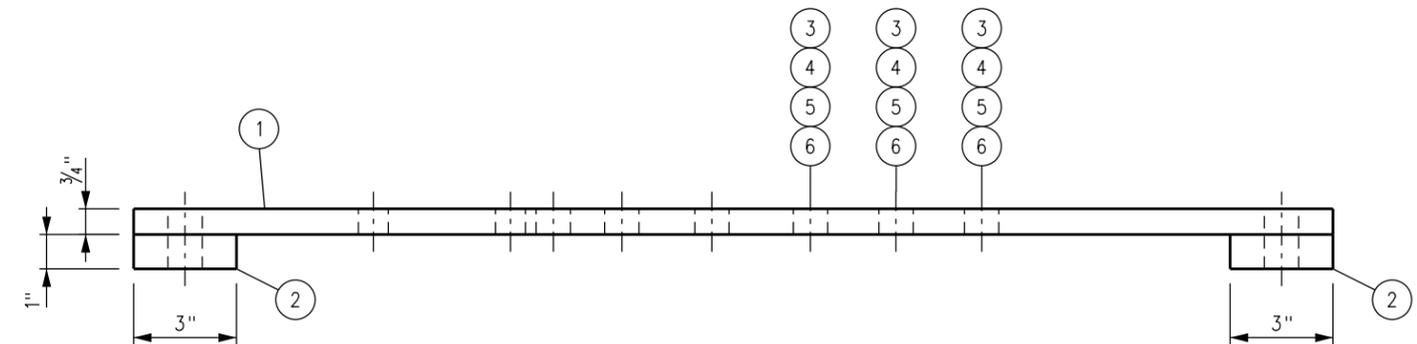
ITEM	QTY FOR LOCK1-RH	QTY FOR LOCK2-RH	DESCRIPTION	DWG NO	SCRR PART NO
1	1	1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-11" LONG	-	
2	2	2	FILLER PLATE - 1" x 8" x 3"	-	
3	3	3	BOLT HEX 7/8"-9UNC-2A x 3 1/2" LONG	-	
4	3	3	NUT HEAVY HEX 7/8" UNC J995-GR8	-	
5	3	3	WASHER FLAT 7/8" DIA BOLT	-	
6	3	3	WASHER SPRING 7/8" SQ EDGE	-	

NOTES:

1. ALL TOLERANCES $\pm 1/32$ " UNLESS OTHERWISE SPECIFIED.
2. STAMP PLATE I.D. CLEARLY AS SHOWN.
3. HARDWARE TO COME FULL ATTACHED TO PLATE.



LOCK1-RH



LOCK2-RH

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 Davan
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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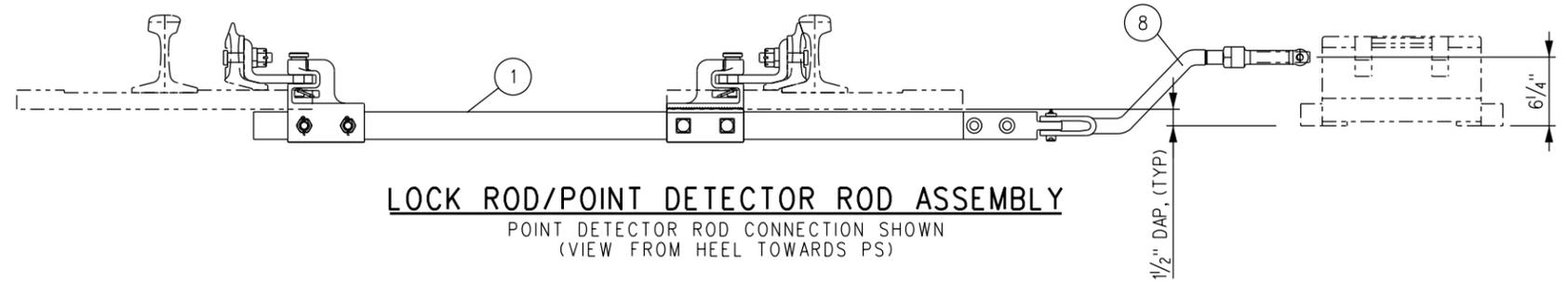
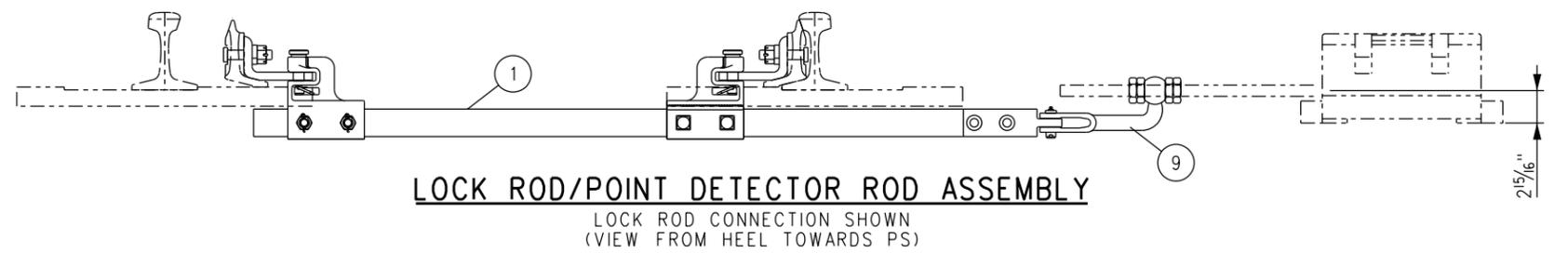
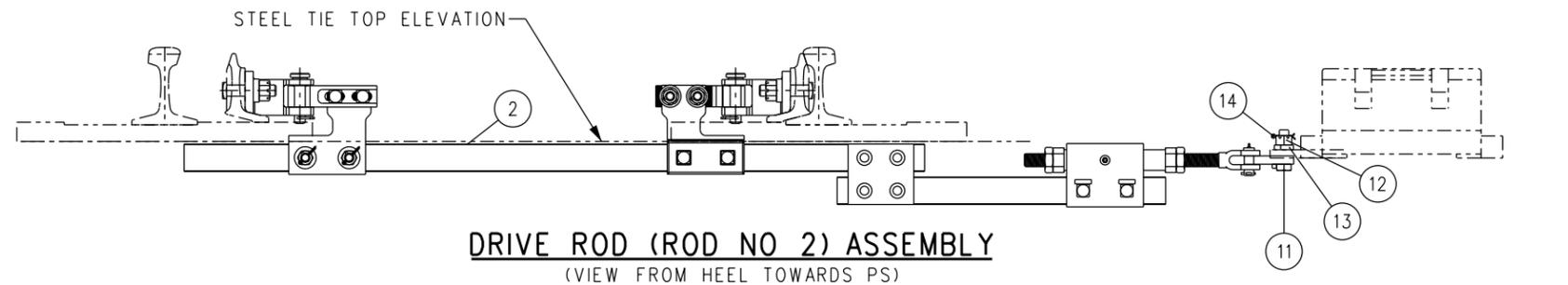
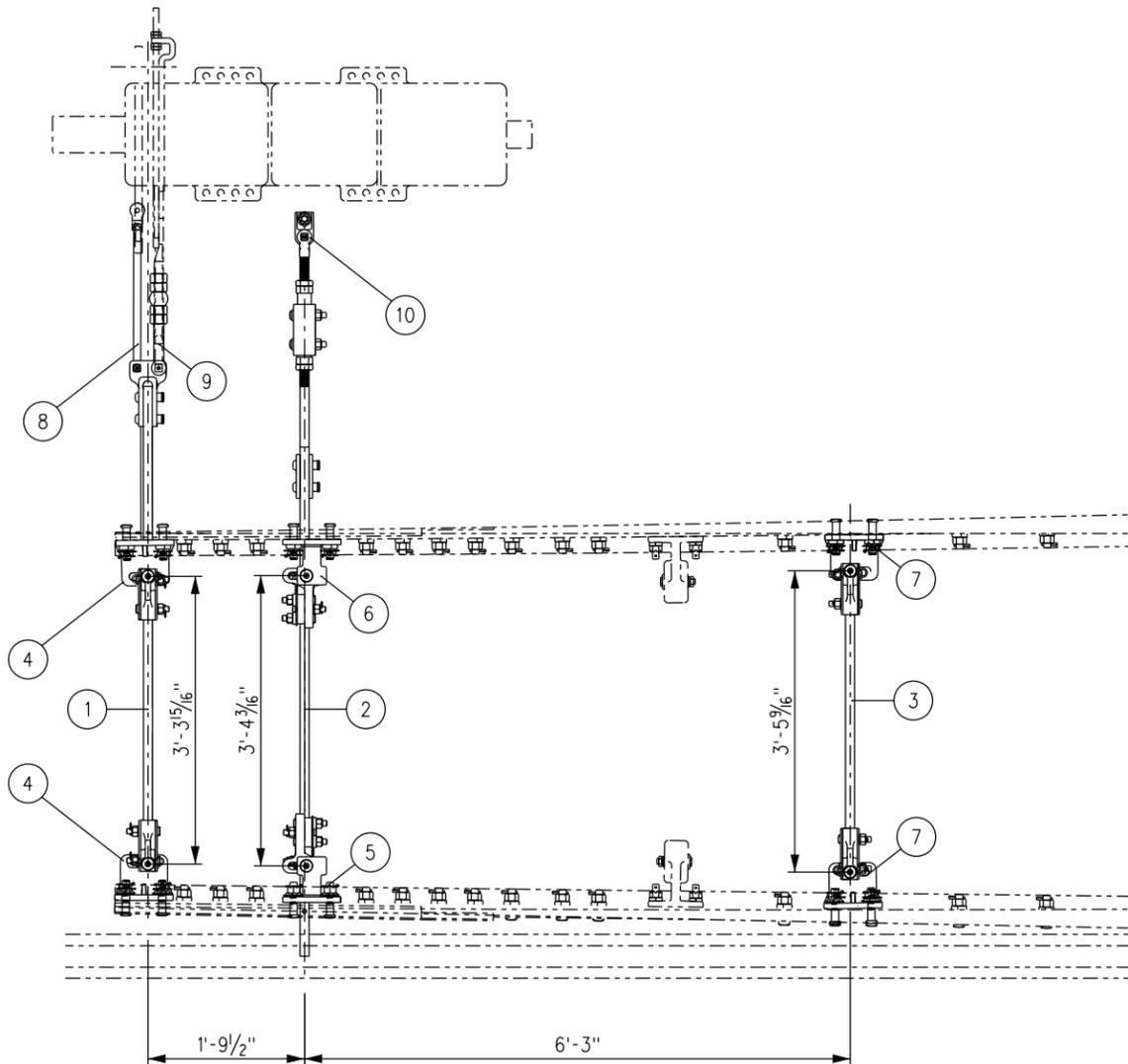
ENGINEERING STANDARDS
 RH SWITCH STAND ADAPTER PLATES
 FOR 36E SWITCH STAND
 NO 10-136 LB RE SPRING FROG
 FOR TURNOUT WITH ELECTRIC LOCK

STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-57

NOTE: CENTER TO CENTER PIN DIMENSION REQUIRED FOR 4 3/4" THROW

ROD #	C-C PIN DIMENSION
1	3'-3 15/16"
2	3'-4 3/16"
3	3'-5 9/16"

BILL OF MATERIAL				
ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	1	FRONT ROD FOR POINT DETECTOR/LOCK RODS NO 10-136-1	ES2803-73	
2	1	SWITCH ROD NO 10-136-2	ES2803-73	
3	1	SWITCH ROD NO 10-136-3	ES2803-73	
4	2	ROD POINT BRACKET ASSEMBLY, 136 LB RE HOLES @ 2 7/8" ABOVE RAIL BASE	-	
5	1	ROD POINT BRACKET FOR HST, ANTI-ROLL, HOLES @ 2 7/8" ABOVE RAIL BASE, LH	-	
6	1	ROD POINT BRACKET FOR HST, ANTI-ROLL, HOLES @ 2 7/8" ABOVE RAIL BASE, RH	-	
7	2	ROD POINT BRACKET ASSY	-	
8	1	POINT DETECTOR	-	
9	1	LOCK ROD, CONNECTOR, FOR US&S M23 SWITCH MACHINE	-	
10	1	DROP LUG FOR US&S M23 SWITCH MACHINE DRIVE BAR	-	
11	1	BOLT, 7/8" DIA x 3" LONG, DRILLED 2 9/16" BELOW HEAD, HEAVY HEX, GR 5	-	
12	1	NUT, 7/8" DIA SLOTTED HEAVY HEX, GR 8	-	
13	1	SPRING WASHER, 7/8" DIA	-	
14	1	COTTER PIN, 3/16" DIA x 1 3/4" LONG	-	



DRAWN BY: <i>Nareh D. Papp</i>		HDR: <i>Willson Davan</i>	DATE: 03/31/2011
ASSISTANT DIRECTOR: STANDARDS & DESIGN		DIRECTOR OF ENGINEERING AND CONSTRUCTION	
XX	XX-XX-XX	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
HOLLOW STEEL TIE RODDING ASSEMBLY
SWITCH MACHINE ON LEFT HAND SIDE
NO 10-136 LB RE SPRING FROG TURNOUT

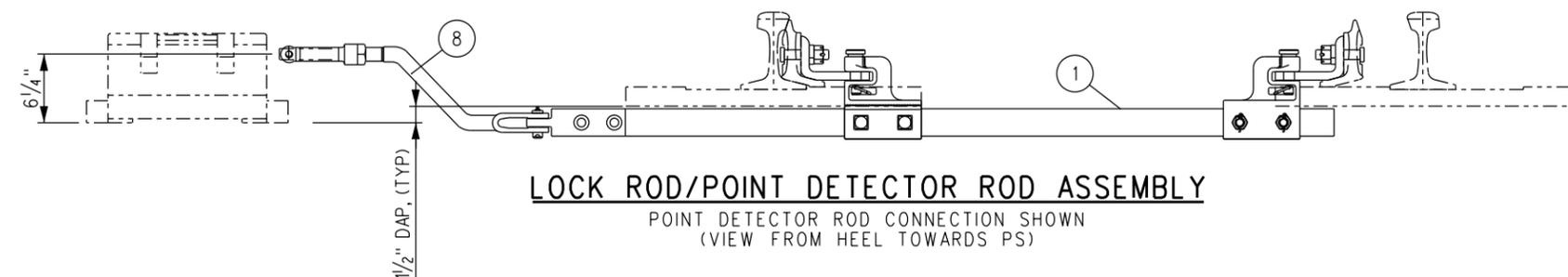
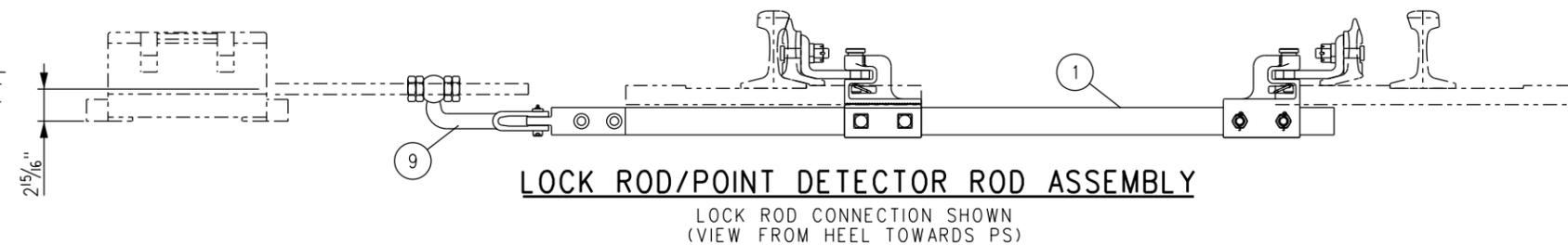
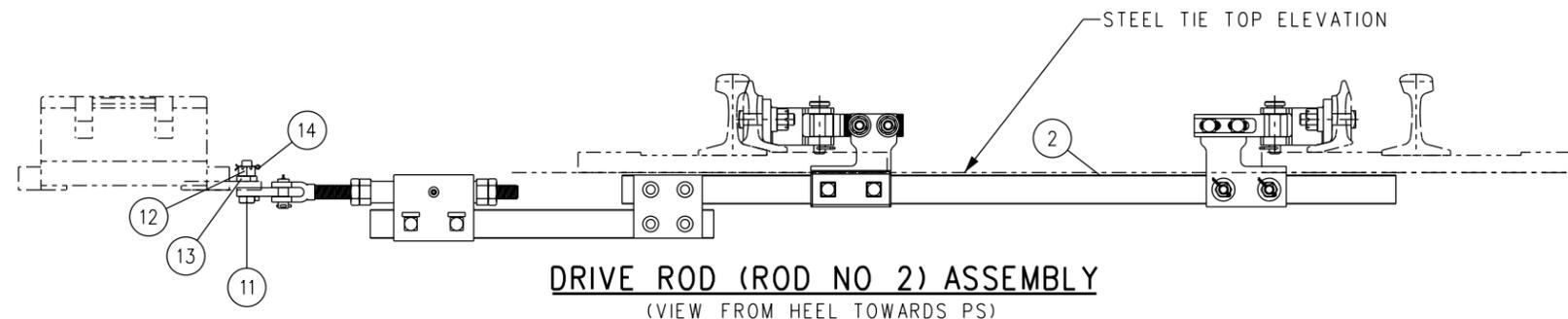
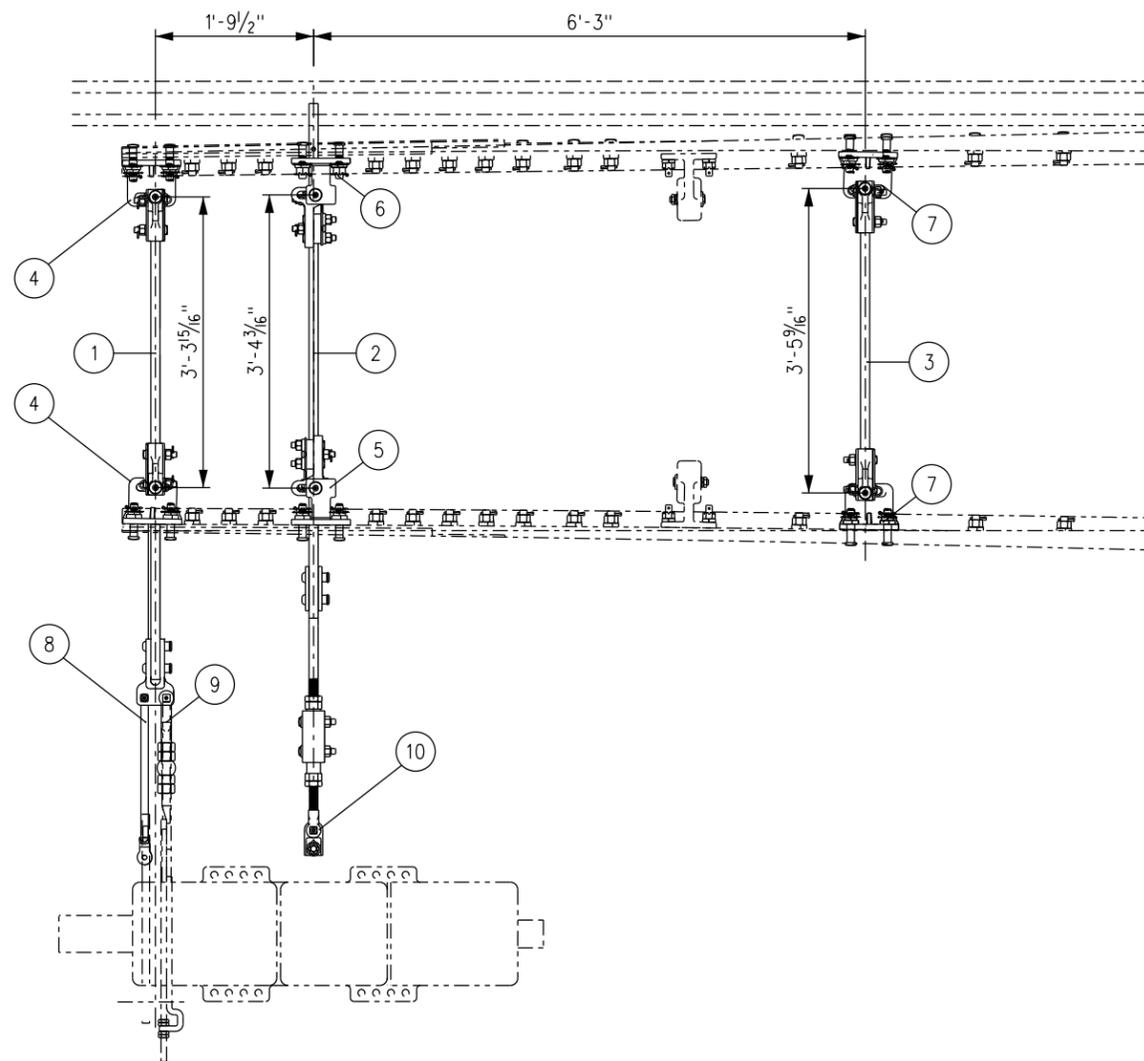
STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-71

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO	SCRR PART NO
1	1	FRONT ROD FOR POINT DETECTOR/LOCK RODS NO 10-136-1	ES2803-73	
2	1	SWITCH ROD NO 10-136-2	ES2803-73	
3	1	SWITCH ROD NO 10-136-3	ES2803-73	
4	2	ROD POINT BRACKET ASSEMBLY, 136 LB RE HOLES @ 2 7/8" ABOVE RAIL BASE	-	
5	1	ROD POINT BRACKET FOR HST, ANTI-ROLL, HOLES @ 2 7/8" ABOVE RAIL BASE, LH	-	
6	1	ROD POINT BRACKET FOR HST, ANTI-ROLL, HOLES @ 2 7/8" ABOVE RAIL BASE, RH	-	
7	2	ROD POINT BRACKET ASSY	-	
8	1	POINT DETECTOR	-	
9	1	LOCK ROD, CONNECTOR, FOR US&S M23 SWITCH MACHINE	-	
10	1	DROP LUG FOR US&S M23 SWITCH MACHINE DRIVE BAR	-	
11	1	BOLT, 7/8" DIA x 3" LONG, DRILLED 2 9/16" BELOW HEAD, HEAVY HEX, GR 5	-	
12	1	NUT, 7/8" DIA SLOTTED HEAVY HEX, GR 8	-	
13	1	SPRING WASHER, 7/8" DIA	-	
14	1	COTTER PIN, 3/16" DIA x 1 3/4" LONG	-	

NOTE: CENTER TO CENTER PIN DIMENSION REQUIRED FOR 4 3/4" THROW

ROD #	C-C PIN DIMENSION
1	3'-3 15/16"
2	3'-4 3/16"
3	3'-5 9/16"



DRAWN BY: <i>Narek D. Pape</i>		HDR: <i>Willson Davan</i>		DATE: 03/31/2011	
ASSISTANT DIRECTOR: STANDARDS & DESIGN		DIRECTOR OF ENGINEERING AND CONSTRUCTION			
XX	XX-XX-XX	REVISION	XX	XX	
REV.	DATE	DESCRIPTION	DES.	ENG.	

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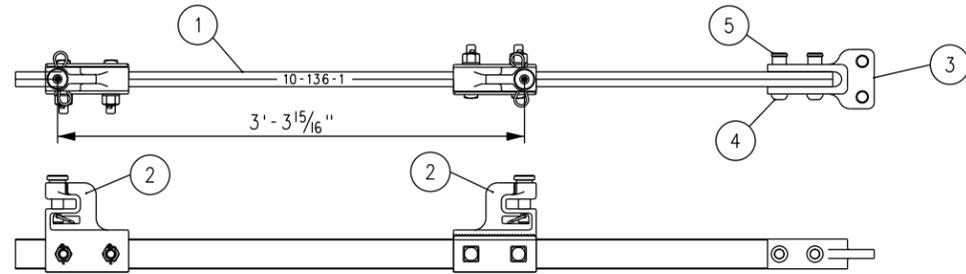
METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
HOLLOW STEEL TIE RODDING ASSEMBLY
SWITCH MACHINE ON RIGHT HAND SIDE
NO 10-136 LB RE SPRING FROG TURNOUT

STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-72

BILL OF MATERIAL FOR SWITCH ROD 10-136-1

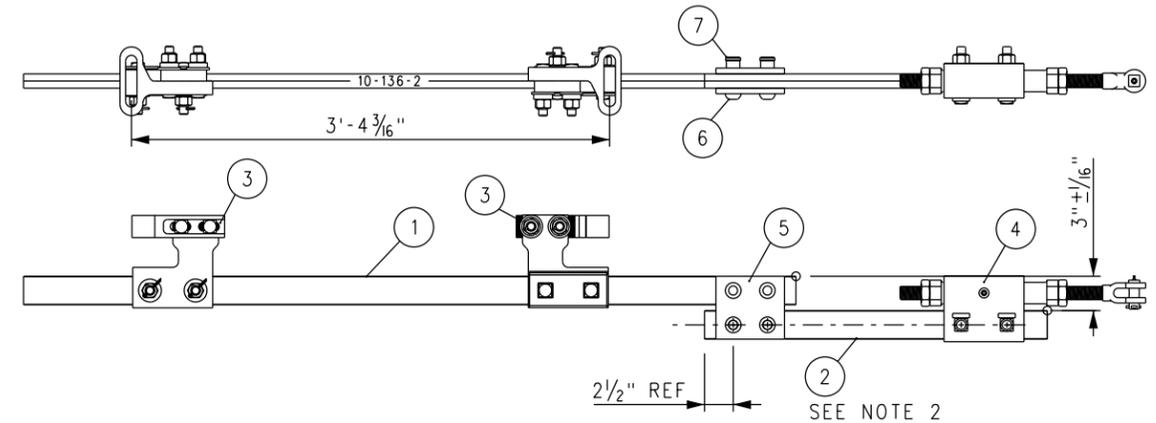
ITEM	QTY	DESCRIPTION	DWG NO	SCRRRA PART NO
1	1	SWITCH ROD 10-136-1	-	
2	2	SWITCH CLIP ASSEMBLY, ADJUSTABLE, FOR HOLLOW TIE COMPOSITE RODS	-	
3	1	CONNECTOR LUG FOR POINT DETECTOR/LOCK RODS	-	
4	2	HUCK BOLT, 3/4" DIA (C50LR-BR24-36)	-	
5	2	HUCK COLLAR, 3/4" DIA (LC-2R24B)	-	



SWITCH ROD ASSEMBLY 10-136-1

BILL OF MATERIAL FOR SWITCH ROD 10-136-2

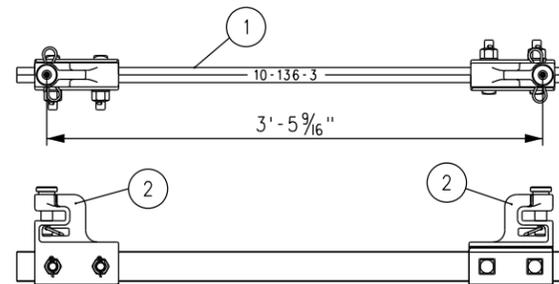
ITEM	QTY	DESCRIPTION	DWG NO	SCRRRA PART NO
1	1	SWITCH ROD HALF 10-136-2A	-	
2	1	SWITCH ROD HALF 2-B	-	
3	2	CLIP/LUG ASSEMBLY, HST SWITCH, ANTI-ROLLOVER DESIGN	-	
4	1	ROD THROW FRONT AND BASKET ASSY, FOR HOLLOW TIE	-	
5	2	SPLICE PLATE	-	
6	4	HUCK BOLT, 3/4" DIA (C50LR-BR24-36)	-	
7	4	HUCK COLLAR, 3/4" DIA (LC-2R24B)	-	



SWITCH ROD ASSEMBLY 10-136-2

BILL OF MATERIAL FOR SWITCH ROD 10-136-3

ITEM	QTY	DESCRIPTION	DWG NO	SCRRRA PART NO
1	1	SWITCH ROD 10-136-3	-	
2	2	SWITCH CLIP ASSEMBLY, ADJUSTABLE, FOR HOLLOW TIE	-	



SWITCH ROD ASSEMBLY 10-136-3

NOTES:

1. ROD IDENTIFICATION TO BE ENGRAVED ON ROD CLEARLY AS SHOWN, 3/8" MIN HEIGHT.
2. SWITCH RODS MUST BE PARALLEL WITHIN 1/16" OVER LENGTH OF 2-B ROD.

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

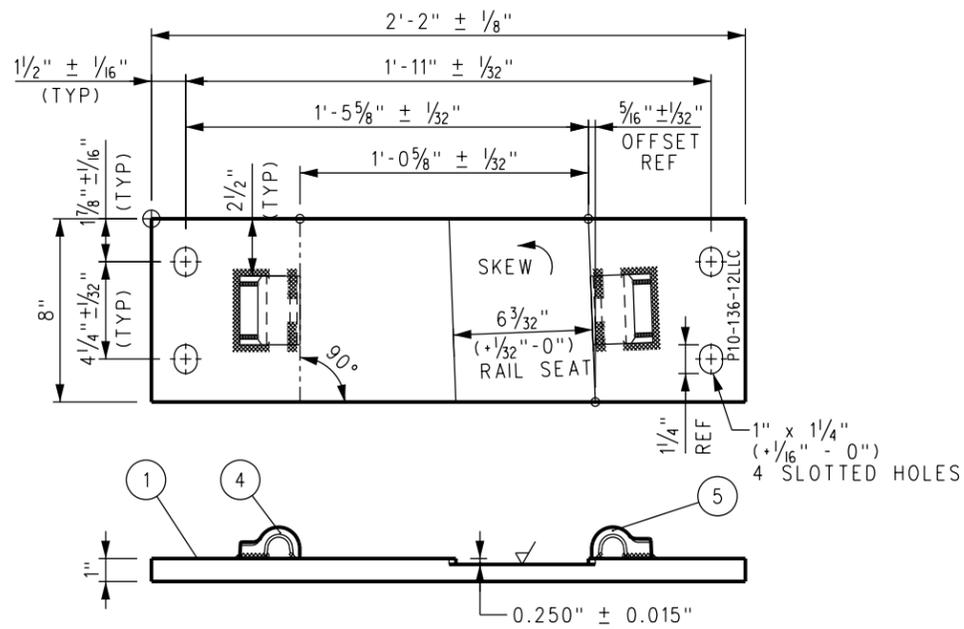
DRAWN BY: *Narek D. Pape* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Davan
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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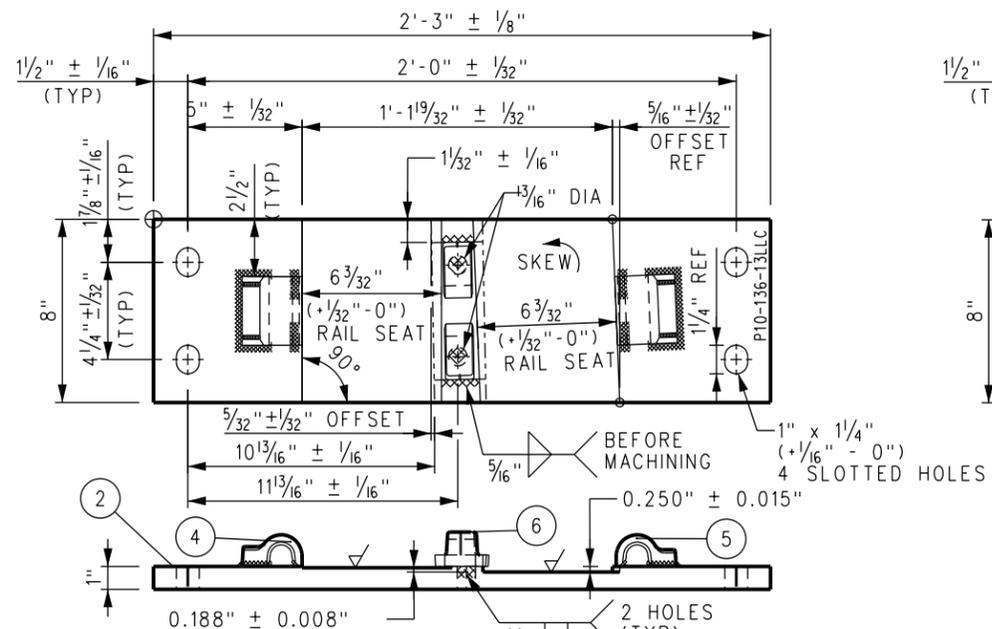


ENGINEERING STANDARDS
 HOLLOW STEEL TIE SWITCH RODS
 10-1, 10-2 AND 10-3
 NO 10-136 LB RE

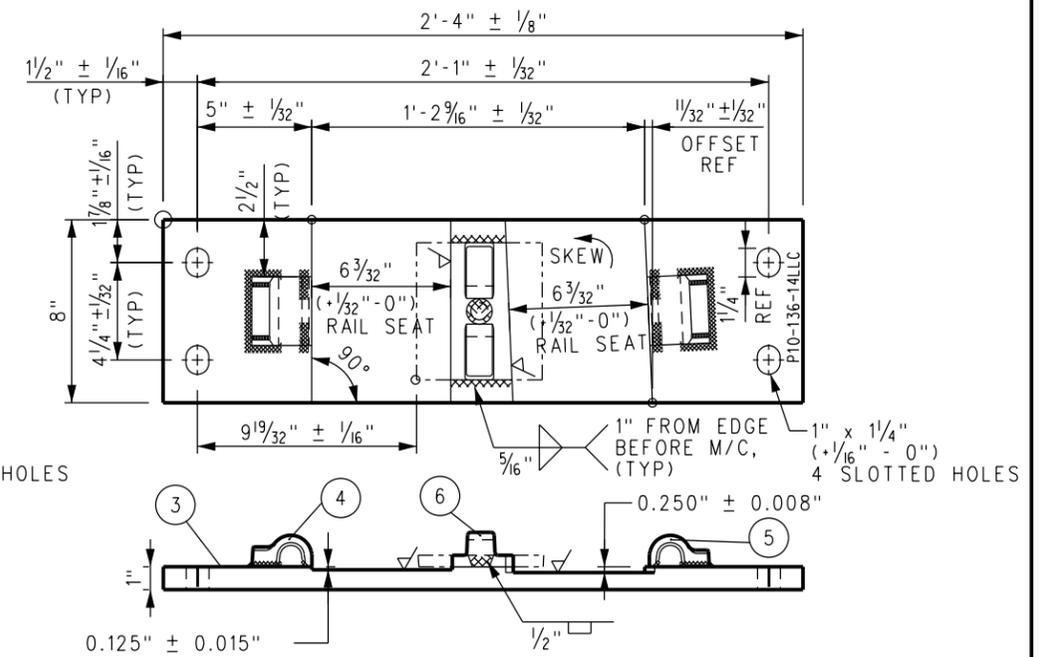
STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-73



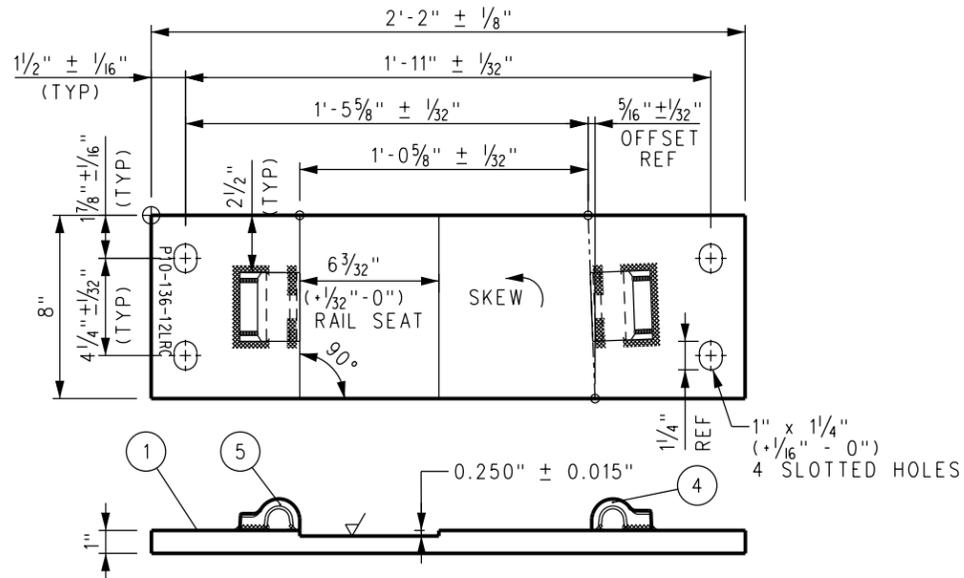
SWITCH PLATE P10-136-12LLC



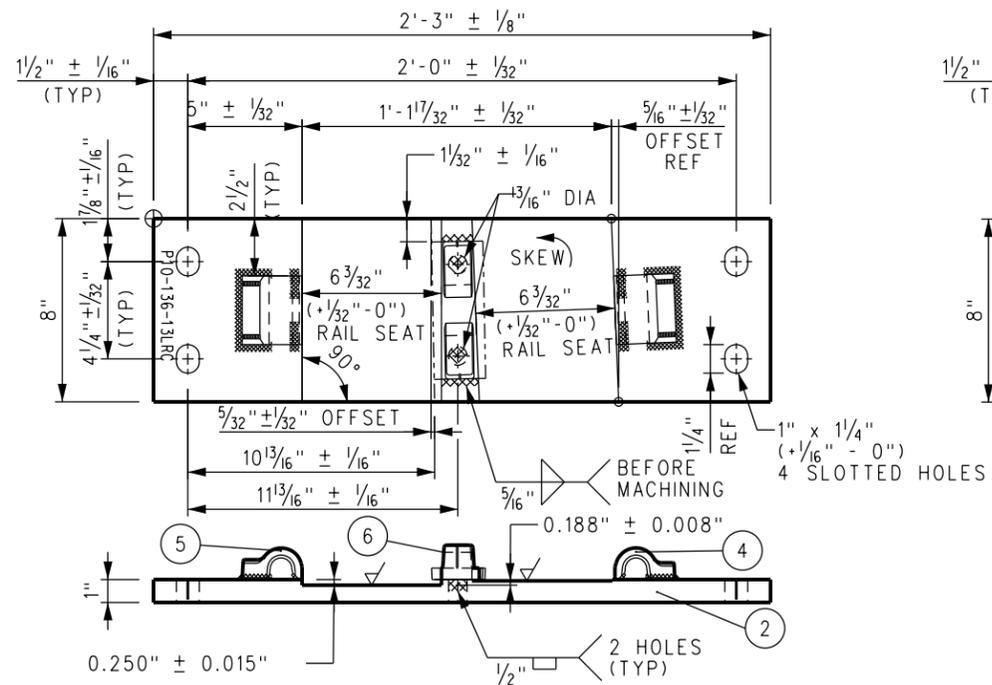
SWITCH PLATE P10-136-13LLC



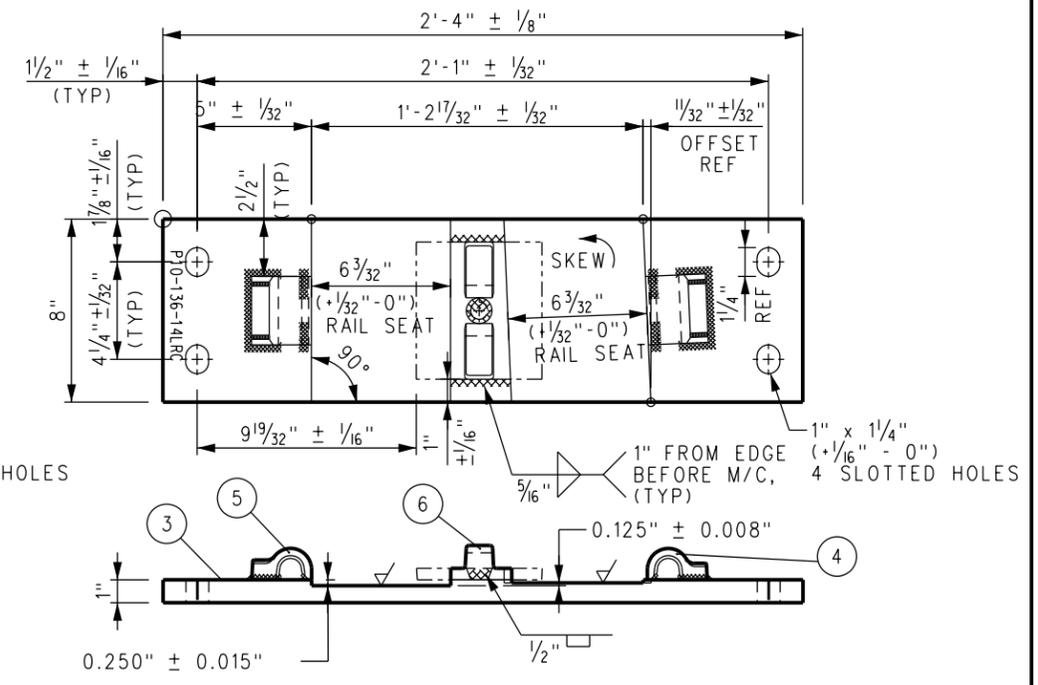
SWITCH PLATE P10-136-14LLC



SWITCH PLATE P10-136-12LRC



SWITCH PLATE P10-136-13LRC



SWITCH PLATE P10-136-14LRC

BILL OF MATERIALS	
ITEM	DESCRIPTION
1	FLAT BAR, ASTM A36, 1" x 8" x 2'-2" LONG
2	FLAT BAR, ASTM A36, 1" x 8" x 2'-3" LONG
3	FLAT BAR, ASTM A36, 1" x 8" x 2'-4" LONG
4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1
5	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 5
6	STOP WITH INTEGRAL T-BOLT HOLD DOWN

NOTES:

- I.D. CHARACTERS TO BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
- WELDS TO BE DRESSED FLUSH WITH SHOULDER & NOT TO PROTRUDE INTO RAIL SEAT.
- SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.

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

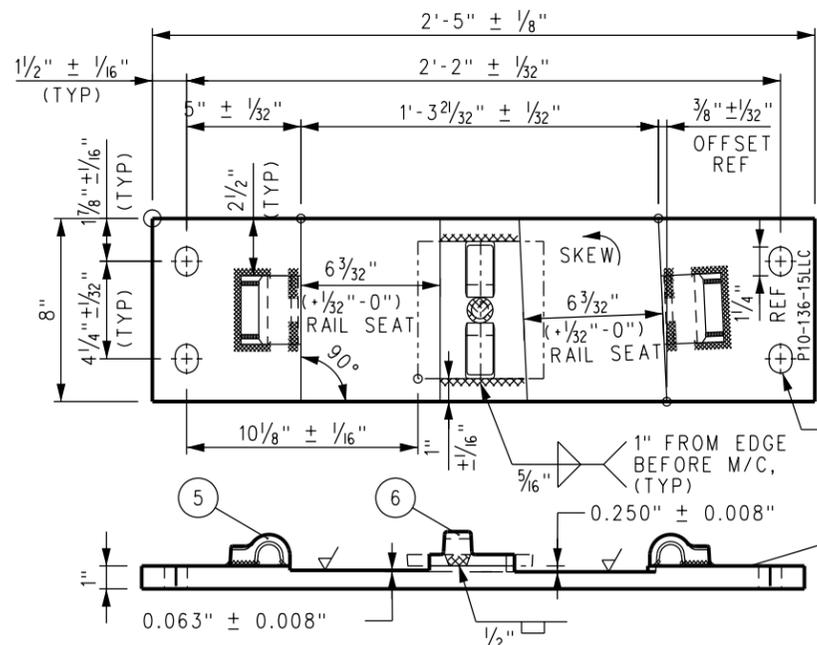
DRAWN BY: *Nareh D. Papp* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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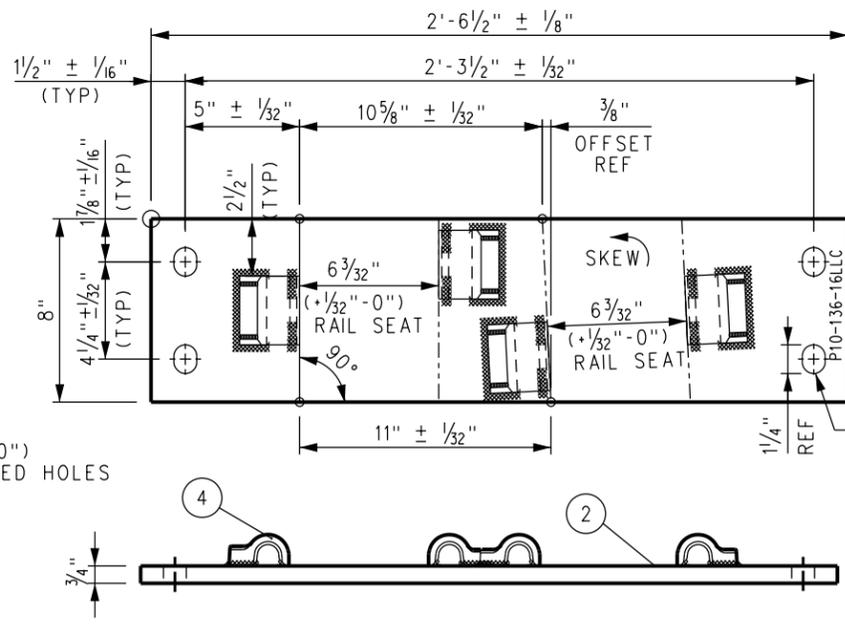
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA. 90012

ENGINEERING STANDARDS
 SWITCH PLATES
 (10-12LLC / LRC THROUGH 10-14LLC / LRC)
 FOR NO 10 136 LB RE LH CONCRETE TIE TURNOUT

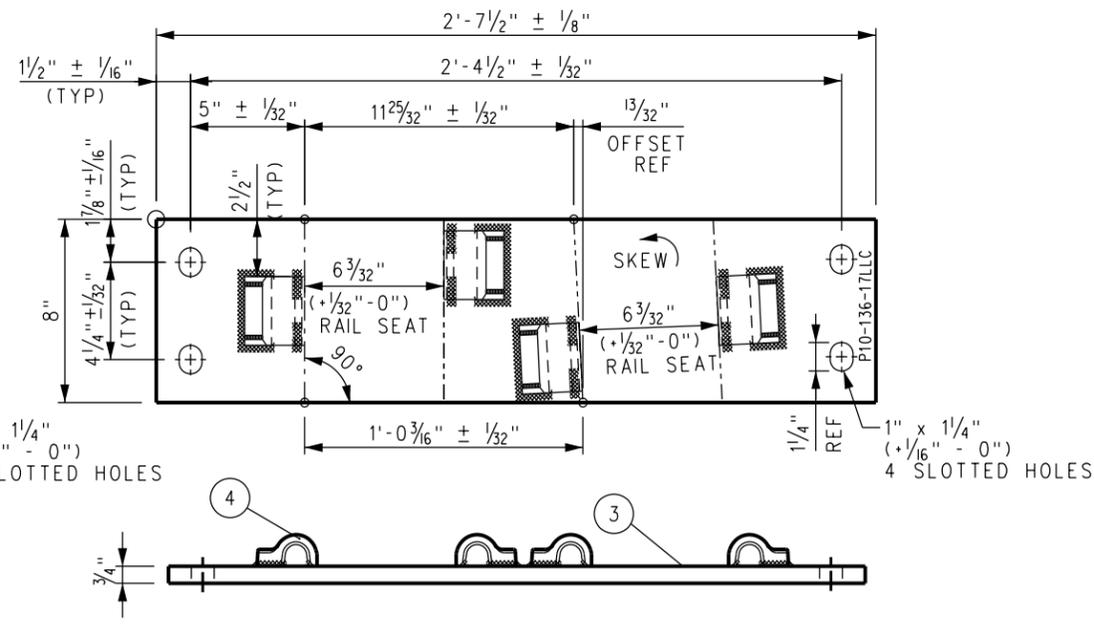
STANDARD	2803
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2803-81



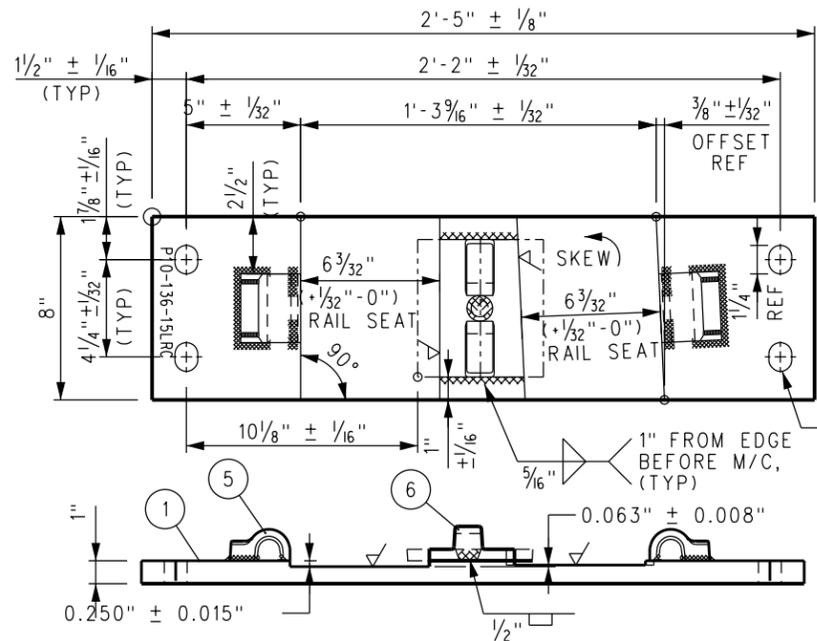
SWITCH PLATE P10-136-15LLC



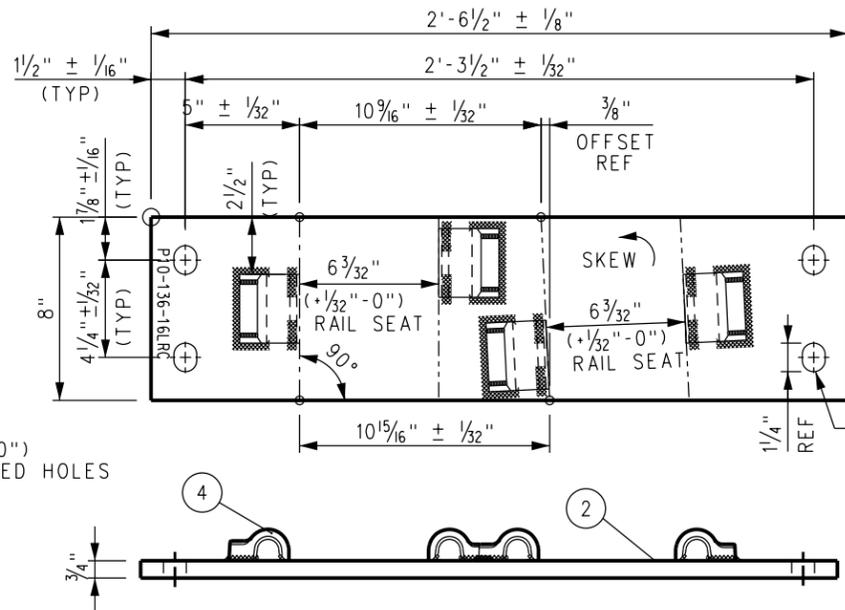
SWITCH PLATE P10-136-16LLC



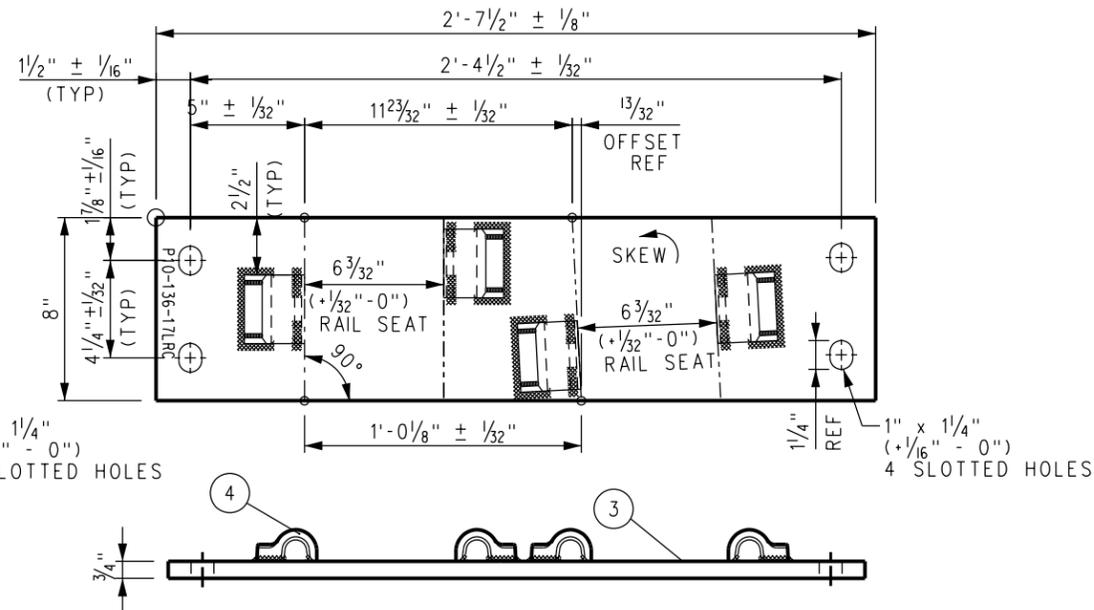
SWITCH PLATE P10-136-17LLC



SWITCH PLATE P10-136-15LRC



SWITCH PLATE P10-136-16LRC



SWITCH PLATE P10-136-17LRC

BILL OF MATERIALS	
ITEM	DESCRIPTION
1	FLAT BAR, ASTM A36, 1" x 8" x 2'-5" LONG
2	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-6 1/2" LONG
3	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-7 1/2" LONG
4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1
5	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 5
6	STOP WITH INTEGRAL T-BOLT HOLD DOWN

NOTES:

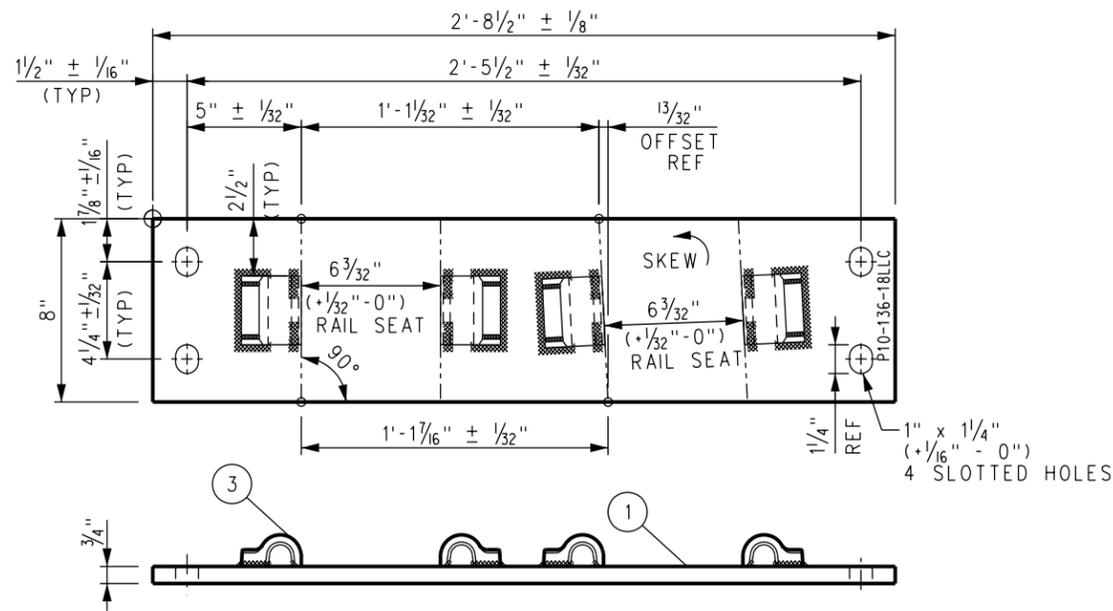
1. I.D. CHARACTERS TO BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DRESSED FLUSH WITH SHOULDER & NOT TO PROTRUDE INTO RAIL SEAT.
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.

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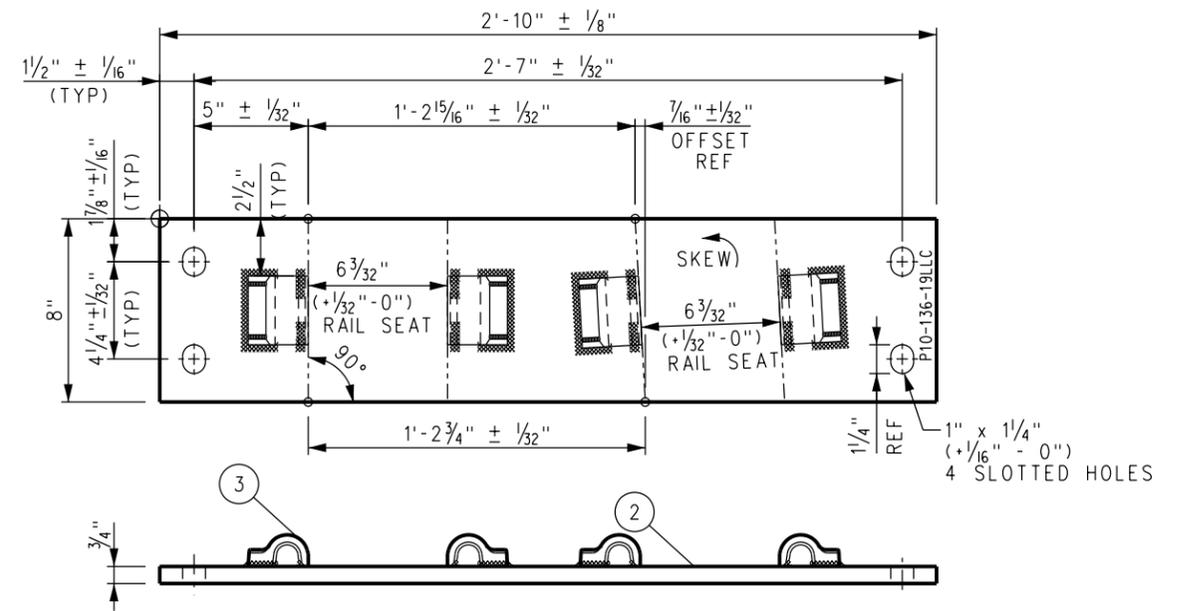
METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA. 90012

ENGINEERING STANDARDS
SWITCH PLATES
(10-15LLC /LRC THROUGH 10-17LLC /LRC)
FOR NO 10 136 LB RE LH CONCRETE TIE TURNOUT

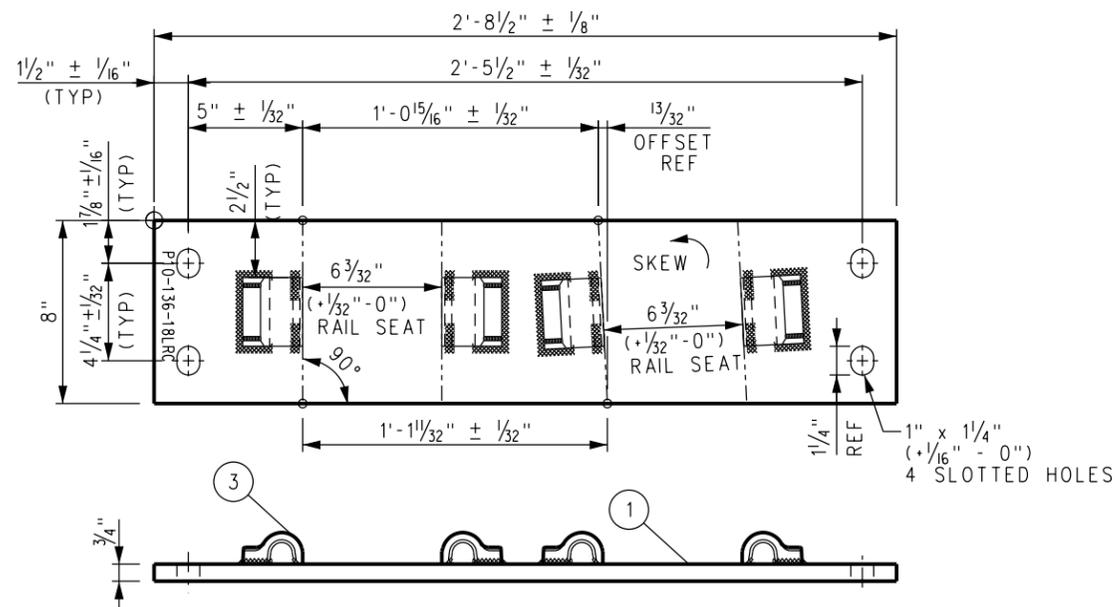
STANDARD 2803
SCALE: NTS
REVISION SHEET 1 OF 1
CADD FILE: ES2803-82



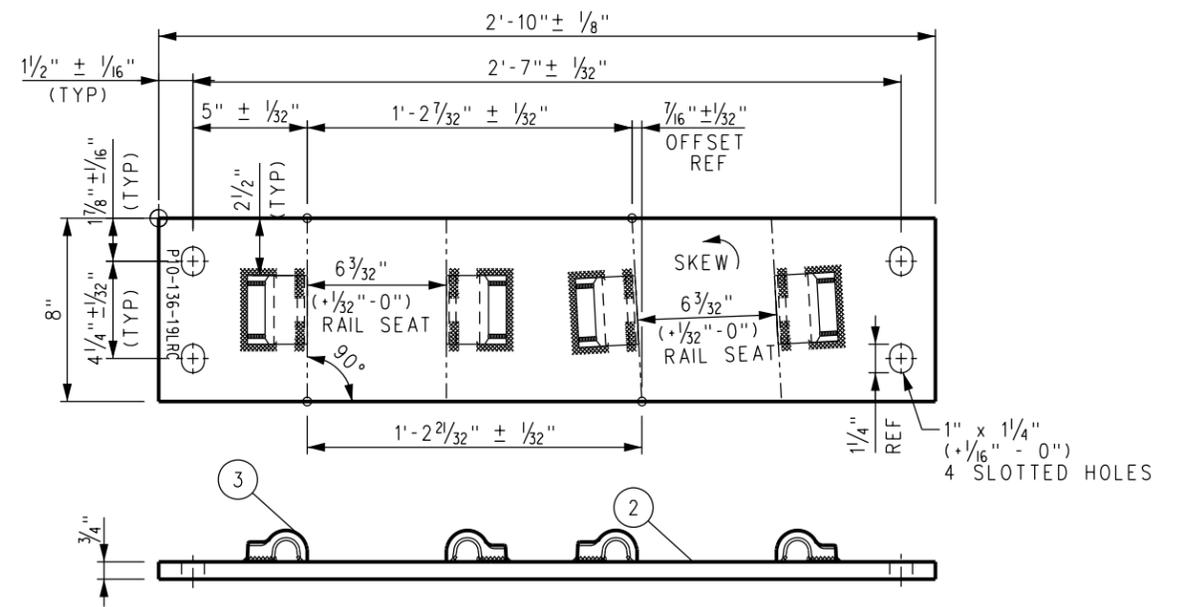
SWITCH PLATE P10-136-18LLC



SWITCH PLATE P10-136-19LLC



SWITCH PLATE P10-136-18LRC



SWITCH PLATE P10-136-19LRC

BILL OF MATERIALS	
ITEM	DESCRIPTION
1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-8 1/2" LONG
2	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-10" LONG
3	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1

NOTES:

1. I.D. CHARACTERS TO BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DRESSED FLUSH WITH SHOULDER & NOT TO PROTRUDE INTO RAIL SEAT.
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.

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

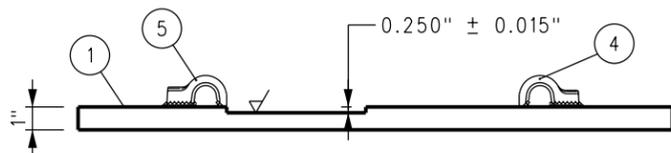
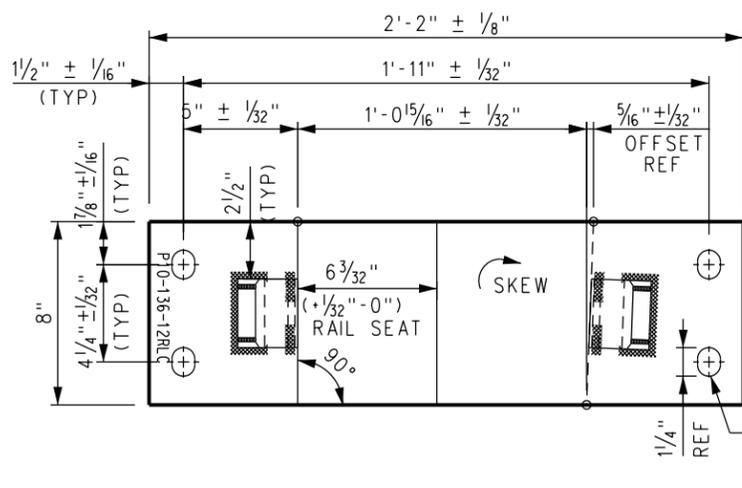
DRAWN BY: *Nareh D. Bae* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Dava
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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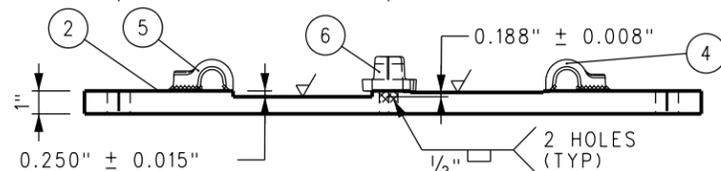
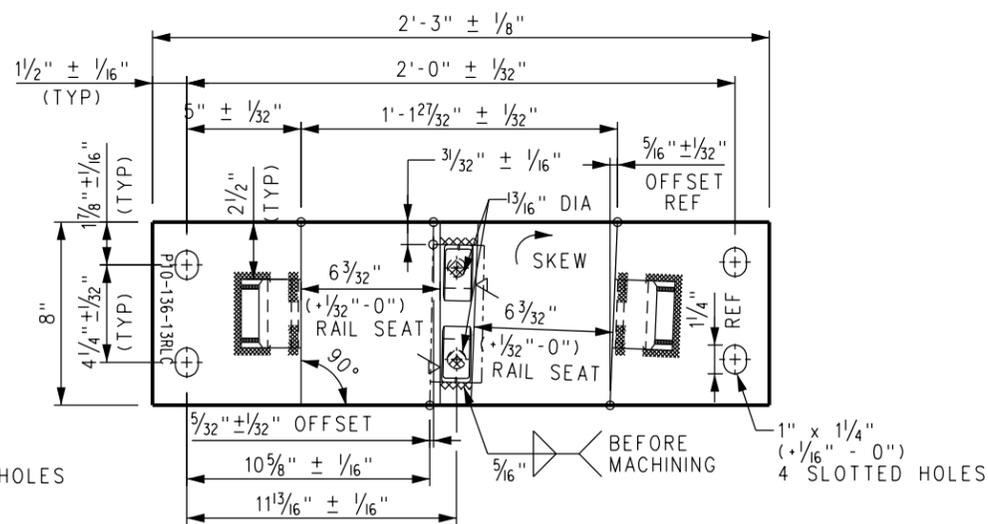
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L.A., CA. 90012

ENGINEERING STANDARDS
 SWITCH PLATES
 (10-18LLC /LRC THROUGH 10-19LLC /LRC)
 FOR NO 10 136 LB RE LH CONCRETE TIE TURNOUT

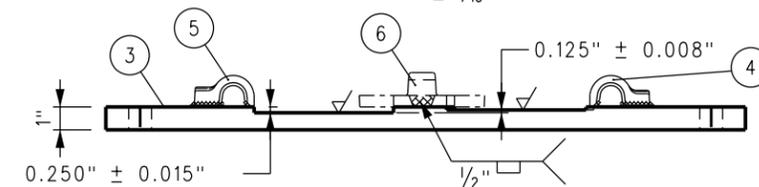
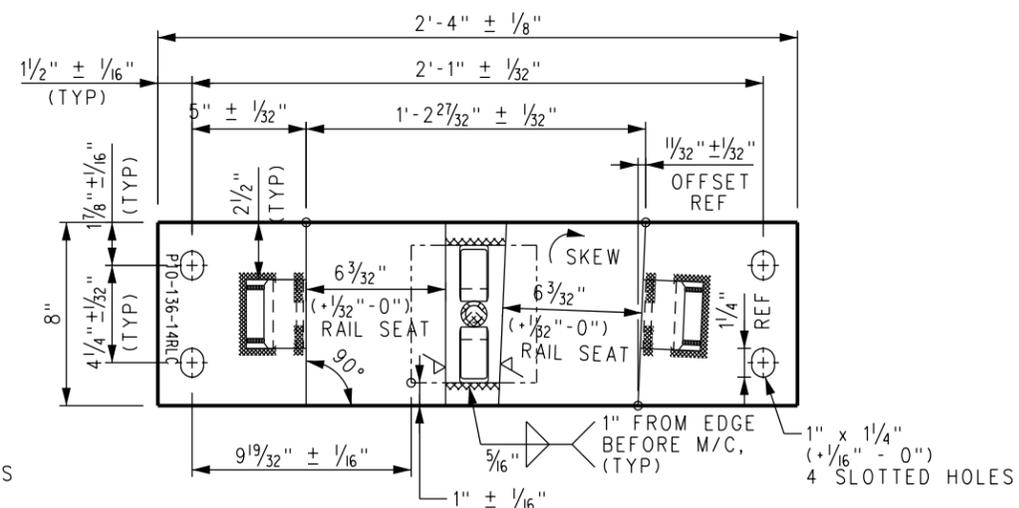
STANDARD	2803
SCALE:	NTS
REVISION SHEET	1 OF 1
CADD FILE:	ES2803-83



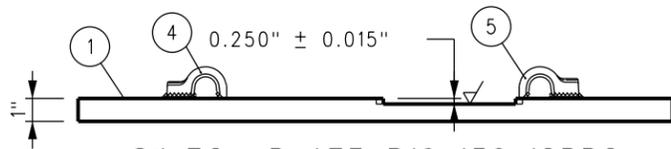
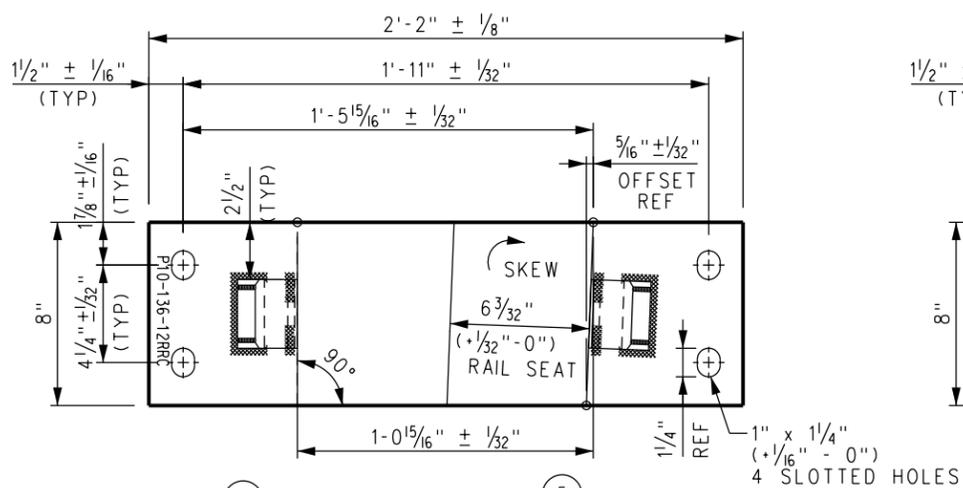
SWITCH PLATE P10-136-12RLC



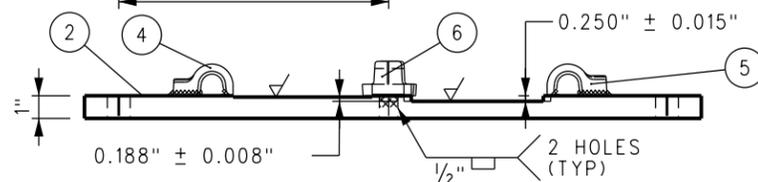
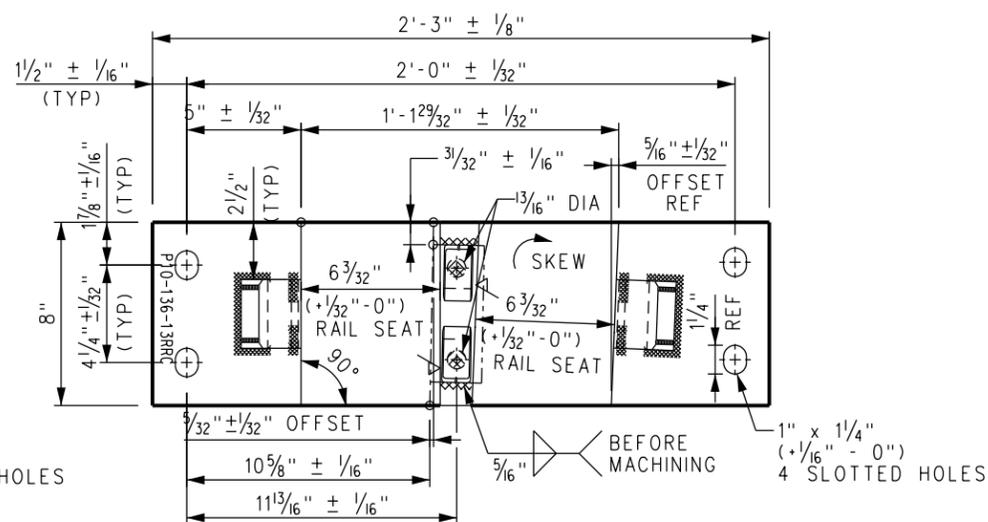
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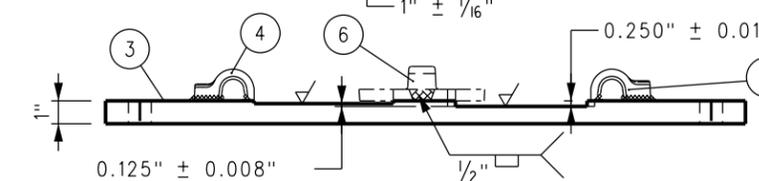
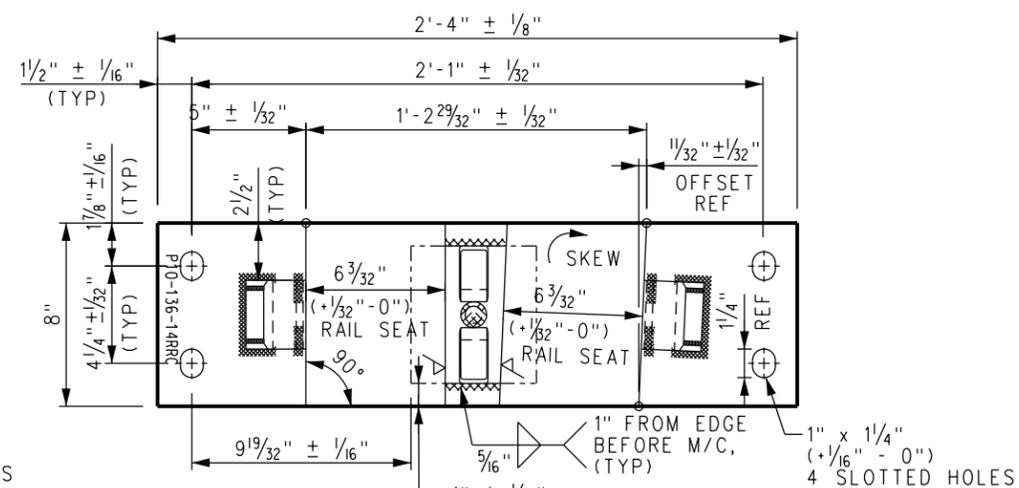
SWITCH PLATE P10-136-14RLC



SWITCH PLATE P10-136-12RRC



SWITCH PLATE P10-136-13RRC



SWITCH PLATE P10-136-14RRC

BILL OF MATERIALS	
ITEM	DESCRIPTION
1	FLAT BAR, ASTM A36, 1" x 8" x 2'-2" LONG
2	FLAT BAR, ASTM A36, 1" x 8" x 2'-3" LONG
3	FLAT BAR, ASTM A36, 1" x 8" x 2'-4" LONG
4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1
5	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 5
6	STOP WITH INTEGRAL T-BOLT HOLD DOWN

NOTES:

- I.D. CHARACTERS TO BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
- WELDS TO BE DRESSED FLUSH WITH SHOULDER & NOT TO PROTRUDE INTO RAIL SEAT.
- SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.

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

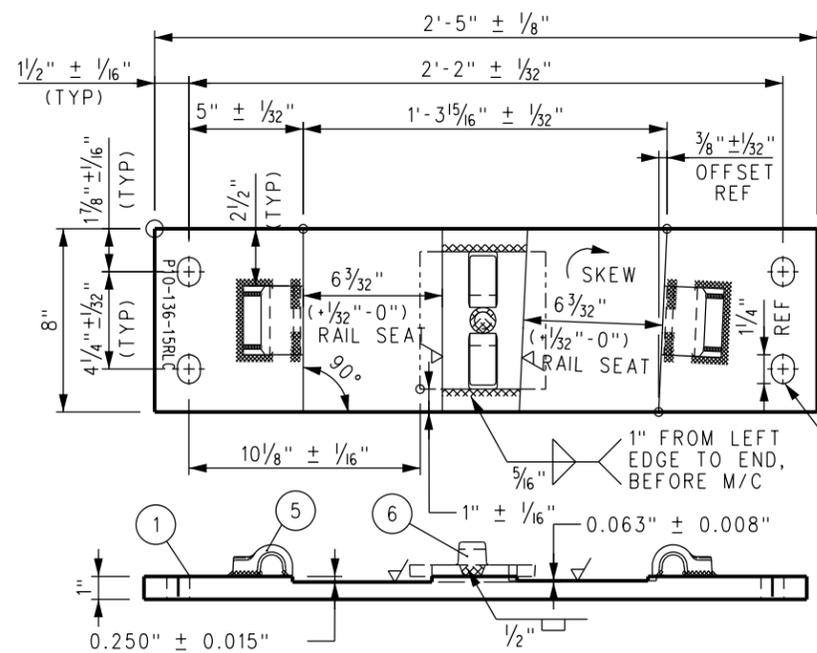
DRAWN BY: *Narex D. Pae* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Davan
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

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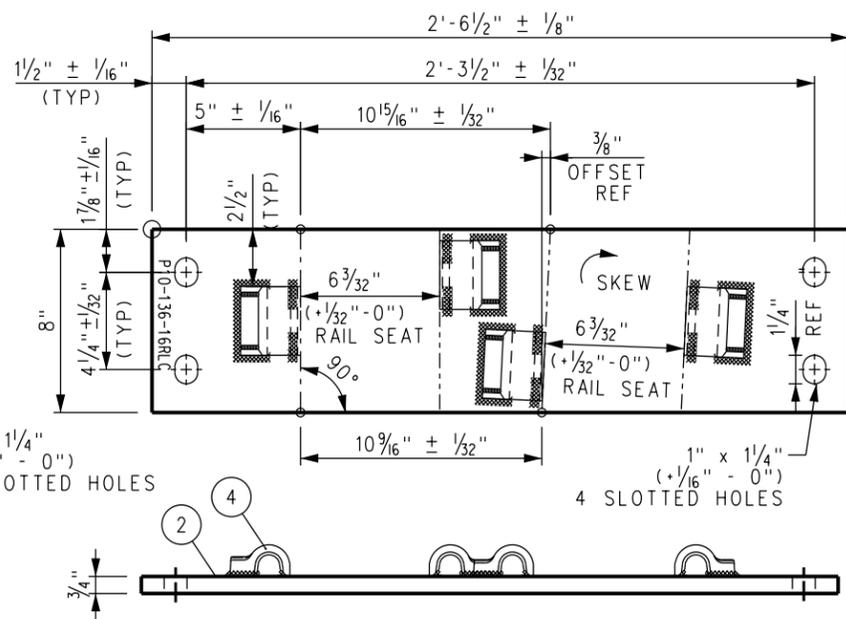
METROLINK
 SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
 ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012

ENGINEERING STANDARDS
 SWITCH PLATES
 (10-12RLC / RRC THROUGH 10-14RLC / RRC)
 FOR NO 10 136 LB RE RH CONCRETE TIE TURNOUT

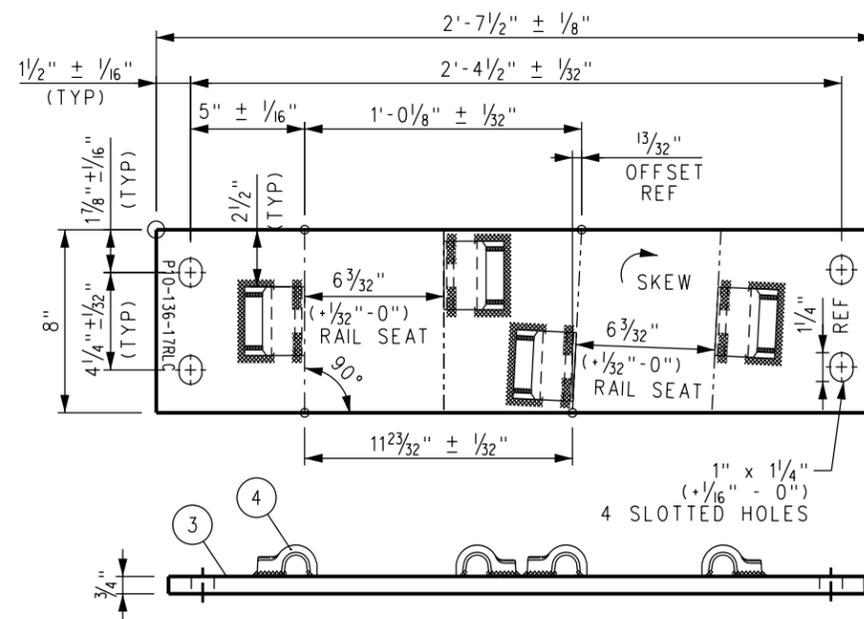
STANDARD	2803
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2803-84



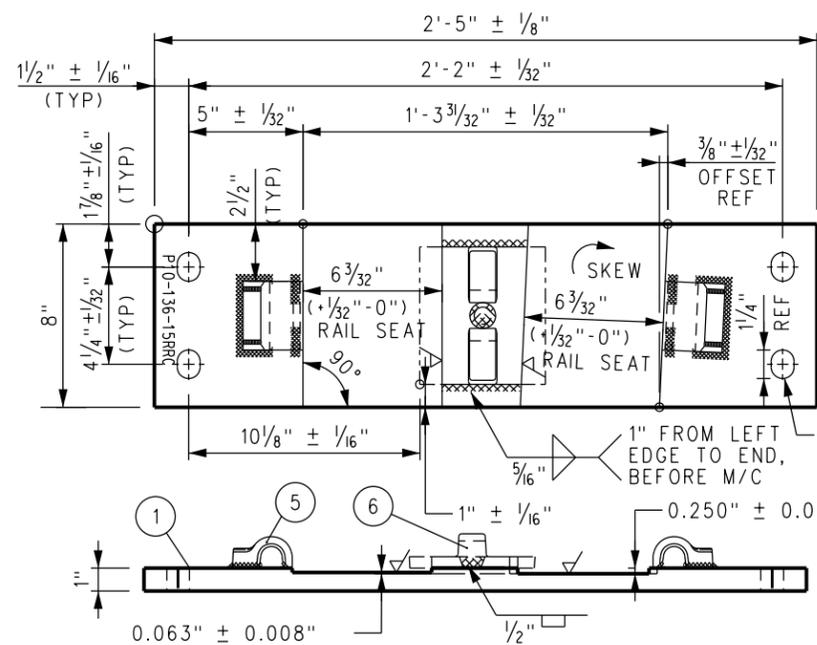
SWITCH PLATE P10-136-15RLC



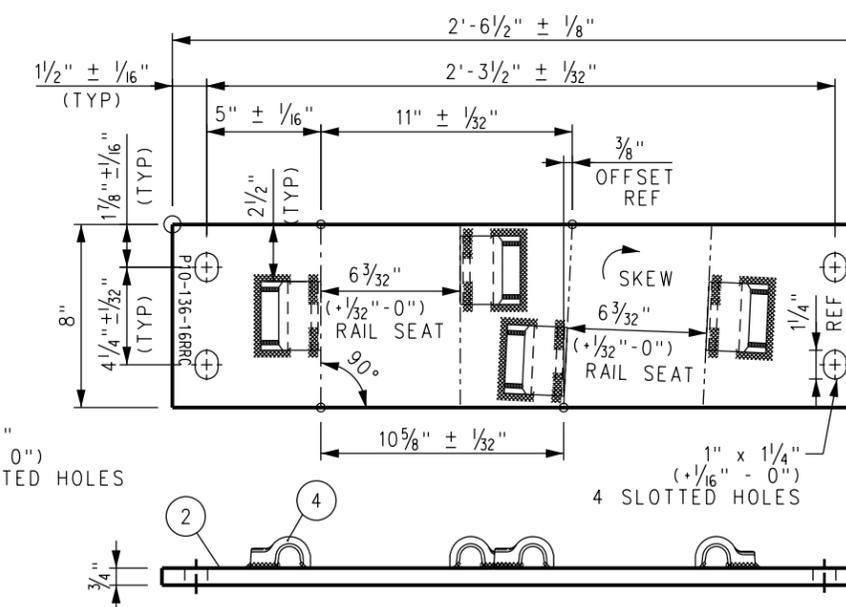
SWITCH PLATE P10-136-16RLC



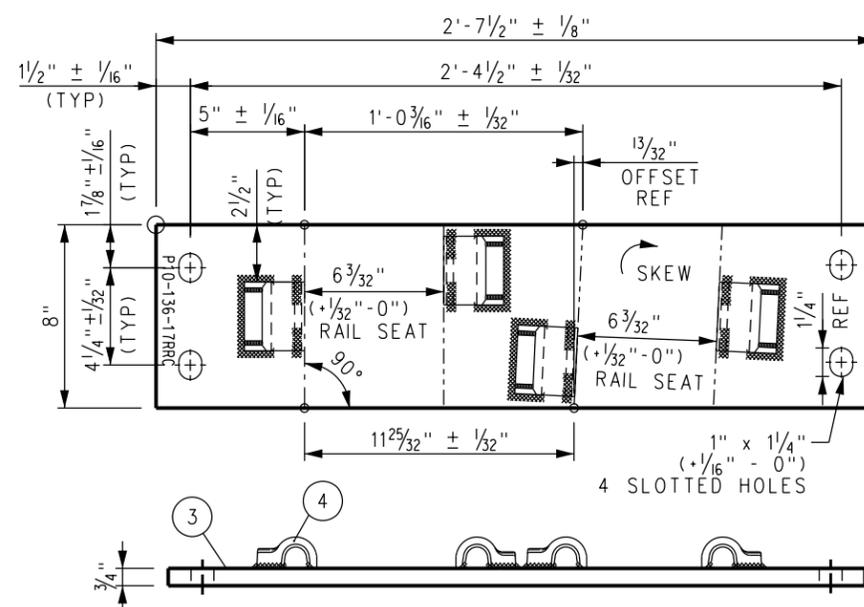
SWITCH PLATE P10-136-17RLC



SWITCH PLATE P10-136-15RRC



SWITCH PLATE P10-136-16RRC



SWITCH PLATE P10-136-17RRC

NOTES:

1. I.D. CHARACTERS TO BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS TO BE DRESSED FLUSH WITH SHOULDER & NOT TO PROTRUDE INTO RAIL SEAT.
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.

BILL OF MATERIALS	
ITEM	DESCRIPTION
1	FLAT BAR, ASTM A36, 1" x 8" x 2'-5" LONG
2	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-6 1/2" LONG
3	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-7 1/2" LONG
4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1
5	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 5
6	STOP WITH INTEGRAL T-BOLT HOLD DOWN

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

DRAWN BY: *Nareh D. Papp* HDR DATE: 03/31/2011
 ASSISTANT DIRECTOR: STANDARDS & DESIGN
William Davan
 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
 SWITCH PLATES
 (10-15RLC / RRC THROUGH 10-17RLC / RRC)
 FOR NO 10 136 LB RE RH CONCRETE TIE TURNOUT

STANDARD	2803
SCALE	NTS
REVISION SHEET	1 OF 1
CADD FILE	ES2803-85

