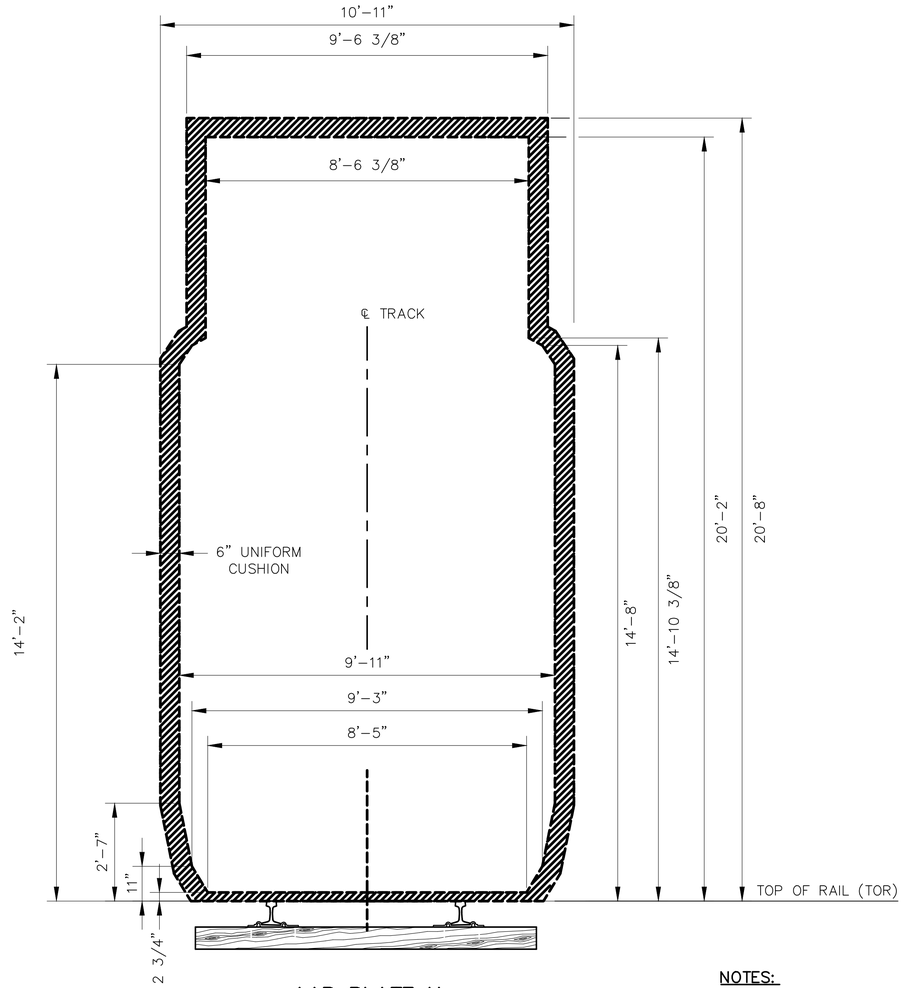
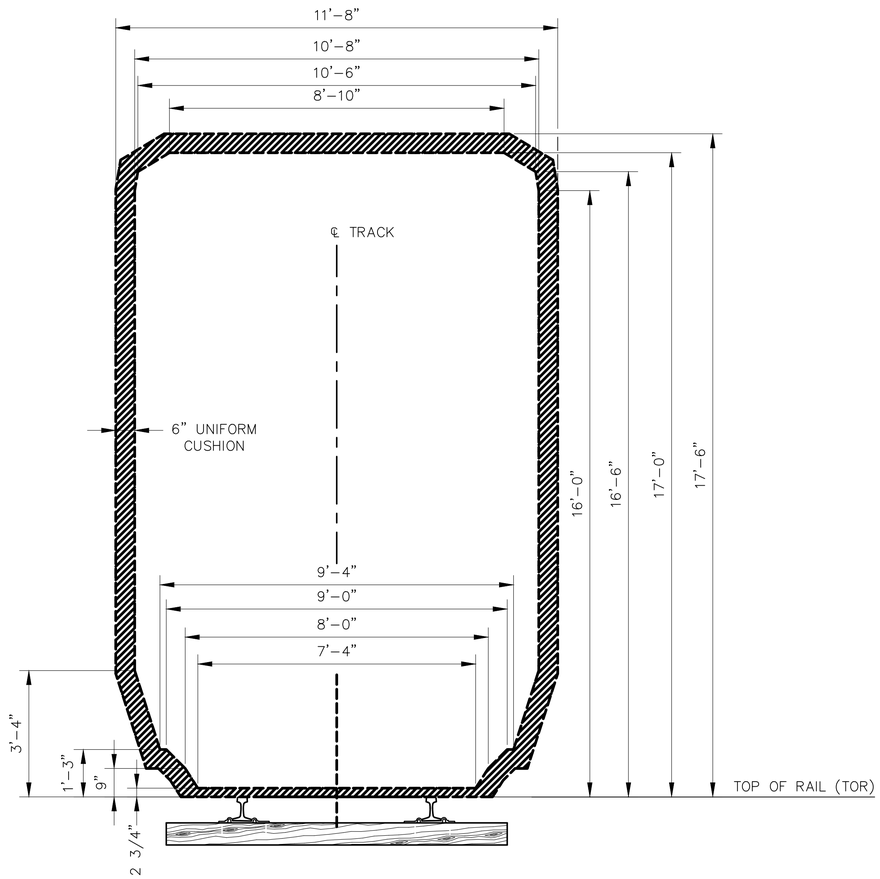


AAR PLATE H
WITH 6" CUSHION



AAR PLATE F
WITH 6" CUSHION

NOTES:

1. HORIZONTAL CLEARANCE DISTANCES SHALL BE INCREASED ON CURVES AT RATE OF 1.5" ON INSIDE OF CURVES AND 1.0" ON OUTSIDE OF CURVES PER DEGREE OF CURVE.

2. WHEN TRACK SUPERELEVATION IS SET APPROPRIATELY FOR THE AUTHORIZED TRAIN SPEED, ALL CLEARANCE MEASUREMENTS SHALL BE MADE PARALLEL TO THE PLANE OF THE TOP OF RAIL AND PERPENDICULAR TO THE CENTERLINE OF TRACK.

3. DIMENSIONS SHOWN ARE FOR INFORMATION ONLY AND NOT TO BE USED TO ESTABLISH LEGAL CLEARANCE REQUIREMENTS OR FOR HIGH–WIDE LOAD CLEARANCES.

4. CALTRAIN CLEARANCE REQUIREMENTS ARE IN SD–2002. THE 2–3/4" ABOVE TOP OF RAIL IS ABSOLUTE MINIMUM UNDER ANY AND ALL CONDITIONS OF LADING, OPERATIONS, AND MAINTENANCE.

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PENINSULA CORRIDOR JOINT POWERS BOARD

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DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

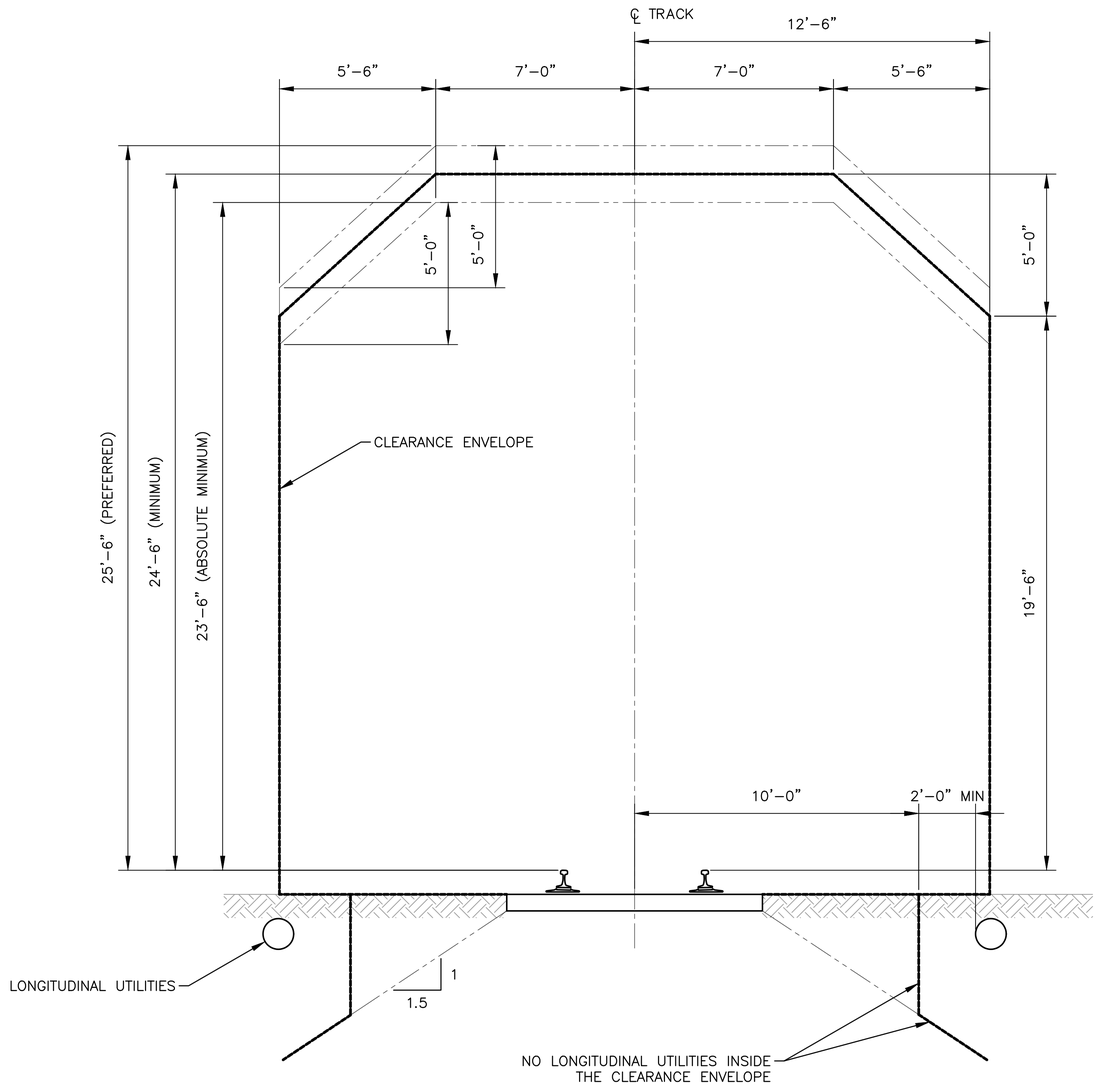
TRACK
CLEARANCE
AAR PLATE F AND H CAR
CLEARANCE ENVELOPES

CADD FILE NAME: SD–2001

REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD–2001



CLEARANCE REQUIREMENTS FOR NEW STRUCTURES

NOTES:

1. CLEARANCES SHOWN SHALL BE USED FOR NEW STRUCTURES, UNLESS NOTED OTHERWISE ELSEWHERE FOR STATION AND WAYSIDE FACILITIES.
2. SEE SD–3101 FOR MINI–HIGH PLATFORM.
3. SEE SD–3051, SD–3052 AND SD–3101 FOR CLEARANCE REQUIREMENTS AT STATIONS.
4. OCS STRUCTURES SHALL NOT BE PLACED WITHIN CLEARANCE ENVELOPE IN OPEN LINES. FOR STATIONS, REFER TO CHAPTER–3 OF CALTRAIN STANDARD DESIGN CRITERIA.

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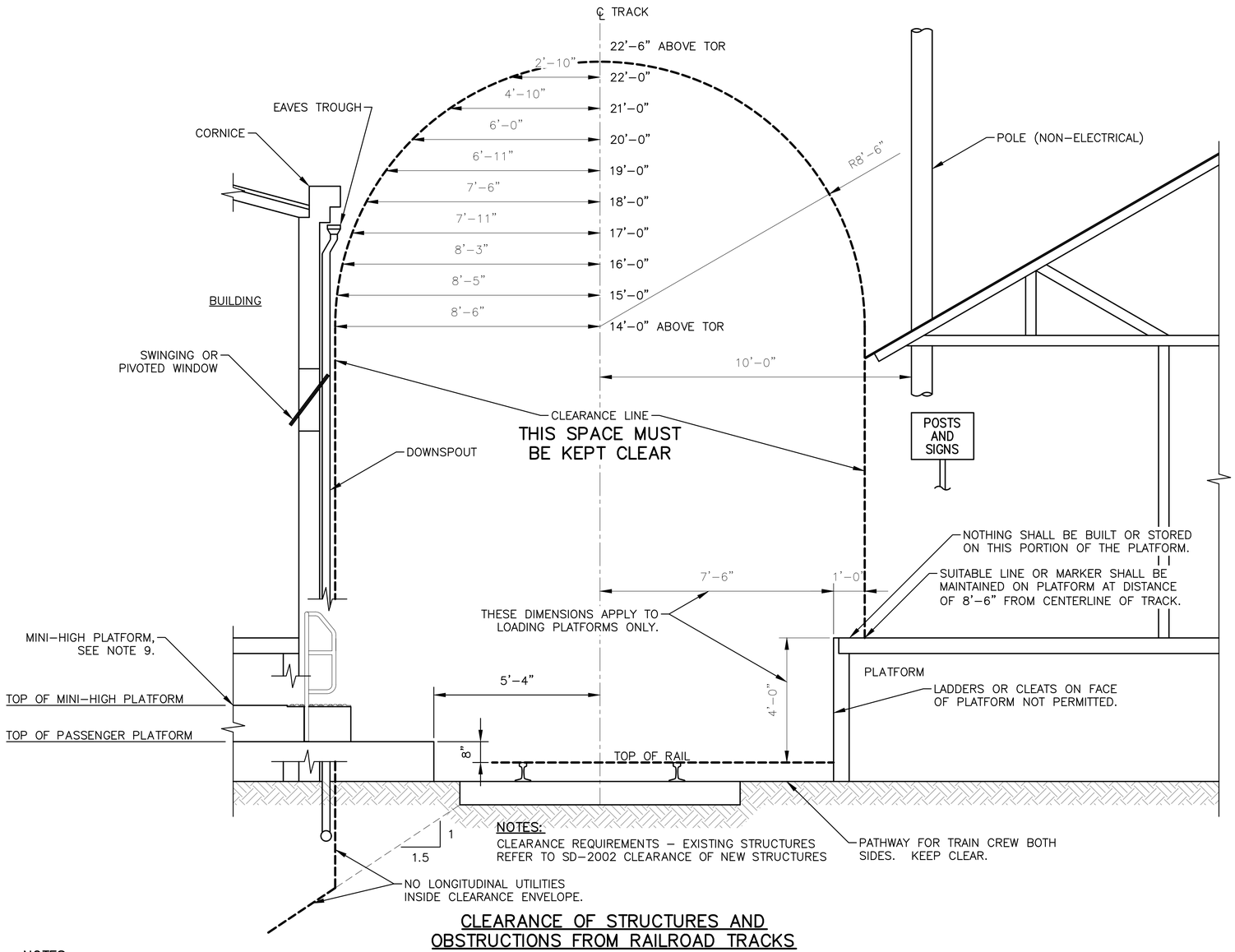
TRACK
CLEARANCE
STANDARD CLEARANCE
REQUIREMENTS

CADD FILE NAME: SD–2002

REV: | EDITION: FIFTH

SCALE: NTS

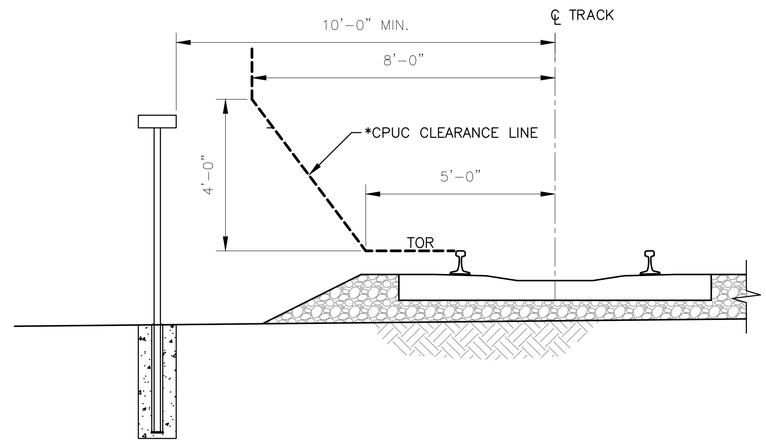
STANDARD DRAWING NO.: SD–2002



CLEARANCE OF STRUCTURES AND OBSTRUCTIONS FROM RAILROAD TRACKS

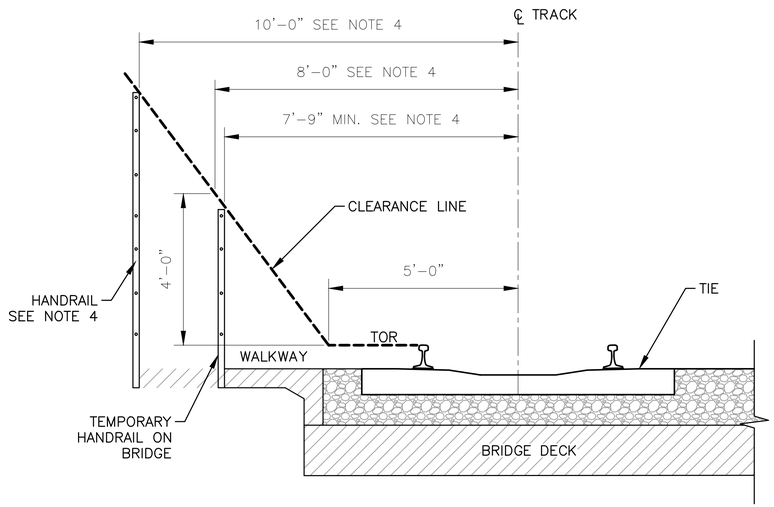
NOTES:

1. REFER TO CALTRAIN ELECTRIFICATION STANDARDS FOR OVERHEAD WIRE CLEARANCES AND SD–2005
2. ALL STRUCTURES AND OBSTRUCTIONS SHALL HAVE A MINIMUM CLEARANCE OF 10'
3. FOR SIGNALS, SIGNAL MECHANISMS, APPARATUS, REFER TO SIGNAL DRAWINGS, FOR OTHER WHERE 10' CANNOT BE MAINTAINED, OR NEEDS TO BE VISIBLE OR CREATES AN OBSTRUCTION, REFER TO CUPC GENERAL ORDER 26–D FOR MINIMUM DISTANCES
4. CLEARANCE FOR RAILING ON BRIDGES SHALL BE 10' MINIMUM, WHERE 10' CANNOT BE OBTAINED, CLEARANCE DISTANCE MAY BE REDUCED IN SUPPORT OF CONSTRUCTION PROJECTS WITH APPROVAL FROM THE DIRECTOR OF ENGINEERING TRACK AND STRUCTURES, REDUCE DISTANCE SHALL MEET CPUC GENERAL ORDER 26–D, SECTION 3.11 AT MINIMUM
5. REFER TO CPUC GENERAL ORDER 26–D SECTION 3.11. FOR CLEARANCE WHERE SWITCHING OPERATIONS ARE PERFORMED
6. FOR ADDITIONAL CLEARANCE REQUIREMENTS REFER TO CALTRAIN ELECTRIFICATION STANDARDS CLEARANCES ON OTHER THAN MAIN TRACKS AND SIDING SHALL CONFORM TO CONTRACT DRAWINGS AND STANDARD SPECIFICATIONS AND AT MINIMUM CPUC GENERAL ORDER 26–D
7. ALL SIDE CLEARANCE DIMENSION ARE FOR TANGENT TRACK, SIDE CLEARANCE FOR CURVED TRACK SHALL BE 1'–0" GREATER THAN THAT FOR TANGENT TRACK
8. SEE STATION AND FACILITIES STANDARD DRAWINGS FOR OTHER CLEARANCE REQUIREMENTS WITHIN STATIONS



CLEARANCE FOR ALL STRUCTURES AND OBSTRUCTIONS

*CPUC CLEARANCE LINE SHOWN FOR INFORMATION, REFER TO CPUC G.O. 26–D FOR FURTHER INFORMATION



CLEARANCE FOR RAILING ON BRIDGES

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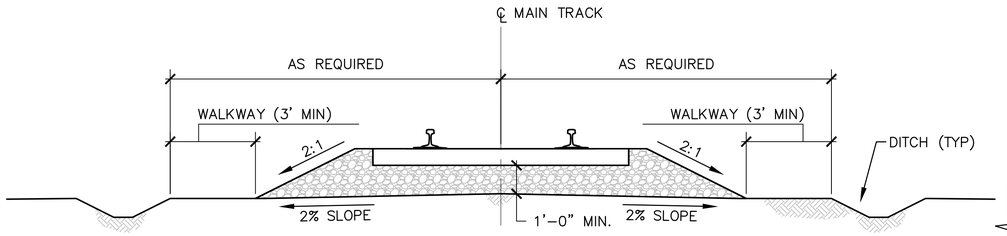
TRACK
CLEARANCE
MINIMUM CLEARANCE

CADD FILE NAME: SD–2003

REV: | EDITION: FIFTH

SCALE: NTS

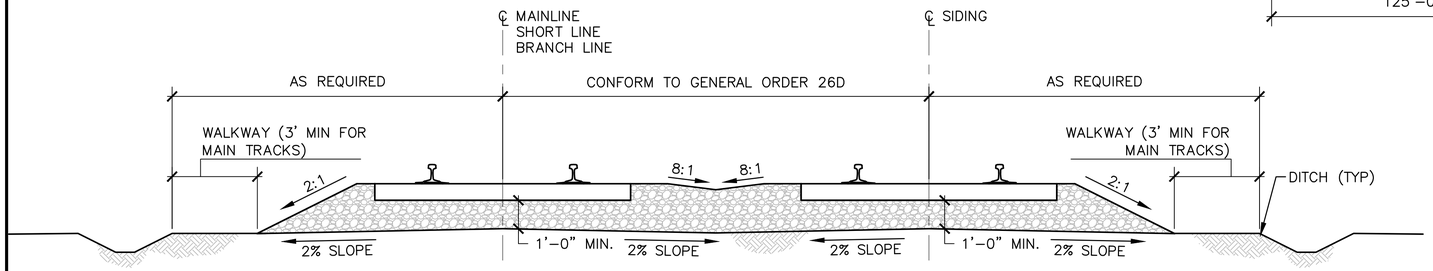
STANDARD DRAWING NO.: SD–2003



WALKWAY ALONG MAIN LINE TACKS

STANDARD 1

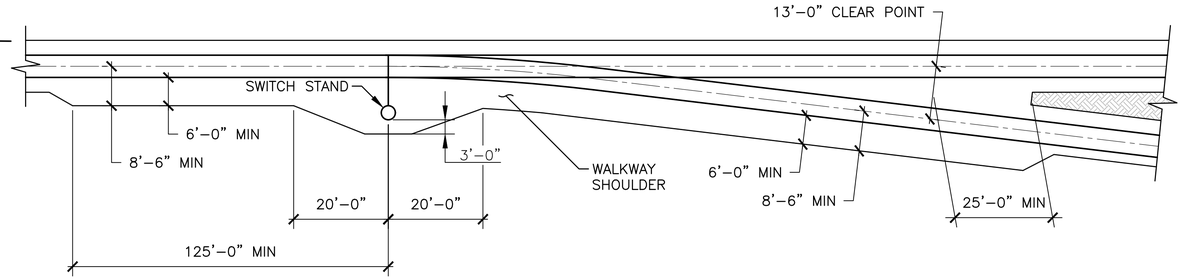
SCALE: 3/8"=1'–0"



WALKWAY ALONG MAIN LINE TACKS

STANDARD 2

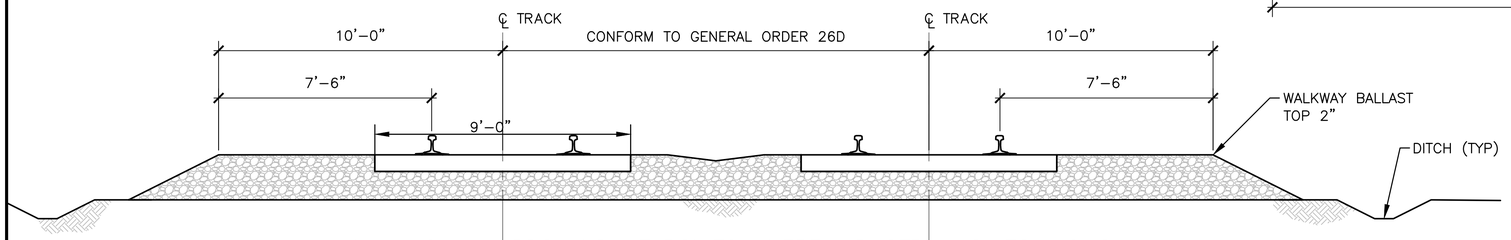
SCALE: 3/8"=1'–0"



WALKWAYS AT NON–POWERED MAIN LINE SWITCHES ENTERING YARDS AND SERVING INDUSTRY TRACKS

STANDARD NO. 3

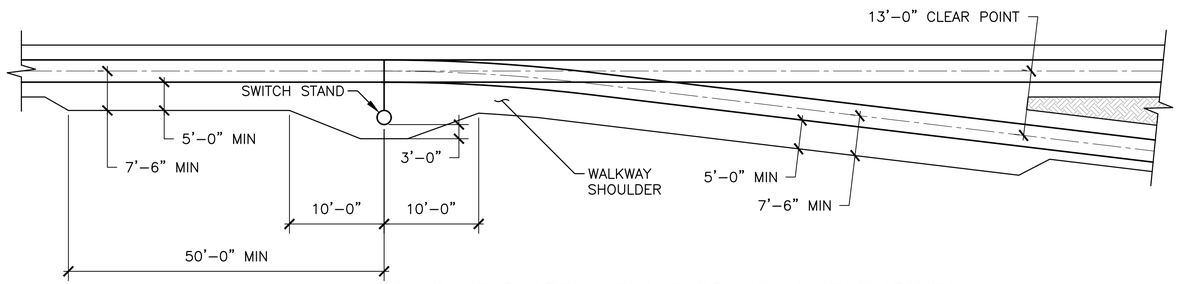
SCALE: NTS



WALKWAYS IN YARDS AND AT POINTS WHERE INDUSTRIAL SWITCHING IS PERFORMED, BUT NOT LESS THAN 50 FT. IN ADVANCE OF SWITCH

STANDARD 6

SCALE: 3/8"=1'–0"



WALKWAYS AT SHORT LINE AND BRANCH LINE SWITCHES AND LOCATIONS WHERE SWITCHES ARE POWER OPERATED

STANDARD NO. 5

SCALE: NTS

NOTES:

1. WALKWAYS SHALL BE CLEAR OF VEGETATION.
2. WALKWAYS SHALL PROVIDE A REASONABLY REGULAR SURFACE WITH A GRADUAL SLOPE NOT TO EXCEED APPROXIMATELY ONE INCH TO 8 INCHES.
3. WHERE CRUSHED MATERIAL IS USED FOR WALKWAY SURFACES ADJACENT TO TRACKS IN RAILWAY SWITCHING YARDS, 100% OF THE MATERIAL MUST BE CAPABLE OF PASSING THROUGH A 1 1/2 INCH SQUARE SIEVE OPENING AND 90–100% OF THE MATERIAL MUST BE CAPABLE OF PASSING THROUGH A 1–INCH SQUARE SIEVE OPENING.

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TRACK
CLEARANCE
MINIMUM WALKWAY REQUIREMENTS

CADD FILE NAME: SD–2004

REV: | EDITION: FIFTH

SCALE: AS SHOWN

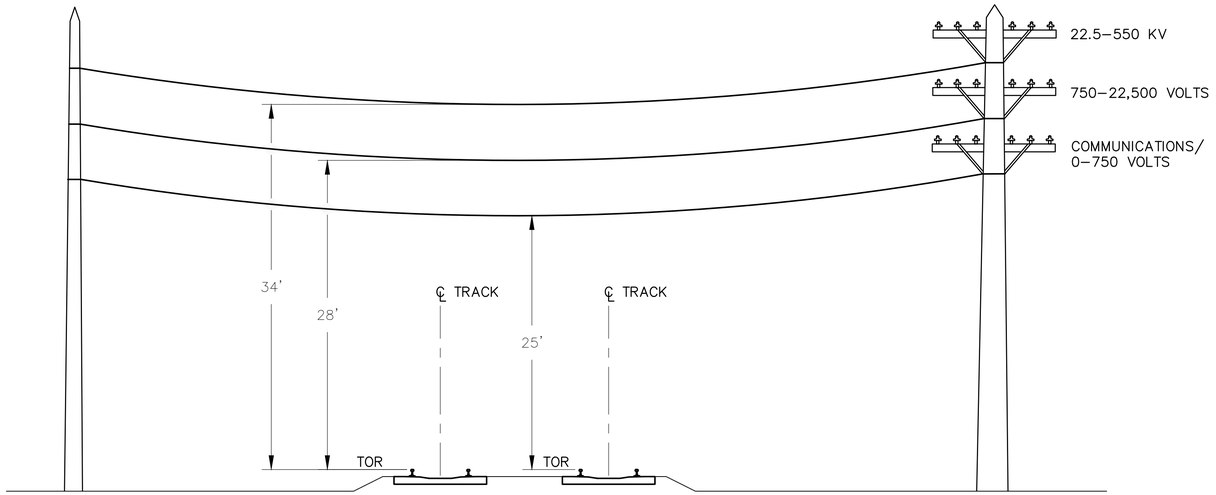
STANDARD DRAWING NO.: SD–2004

TABLE 1: CPUC GENERAL ORDER 95 BASIC MINIMUM ALLOWABLE VERTICAL CLEARANCE OF WIRES ABOVE RAILROADS, THOROUGHFARES, POLES, BUILDINGS, STRUCTURES OR OTHER OBJECTS

CASE NO.	NATURE OF CLEARANCE	A SPAN WIRES (OTHER THAN TROLLEY SPAN WIRES) OVERHEAD GUYS AND MESSENGERS	B COMMUNICATION CONDUCTORS (INCLUDING OPEN WIRE, CABLES AND SERVICE DROPS), SUPPLY SERVICE DROPS OF 0–750 VOLTS	C TROLLEY CONTACT, FEEDER AND SPAN WIRES, 0–5,000 VOLTS	D SUPPLY CONDUCTORS OF 0–750 VOLTS AND SUPPLY CABLES	E SUPPLY CONDUCTORS AND SUPPLY CABLES, 750–22,500 VOLTS	F SUPPLY CONDUCTORS AND SUPPLY CABLES, 22.5–300 KV	G SUPPLY CONDUCTORS AND SUPPLY CABLES, 300–550 KV (mm)
1	CROSSING ABOVE TRACKS OF RAILROADS WHICH TRANSPORT OR PROPOSE TO TRANSPORT FREIGHT CARS (MAXIMUM HEIGHT 15 FEET 6 INCHES) WHERE NOT OPERATED BY OVERHEAD CONTACT WIRES.	25–FT	25–FT	22.5–FT	25–FT	28–FT	34–FT	34–FT
2	CROSSING OR PARALLELING ABOVE TRACKS OF RAILROAD OPERATED BY OVERHEAD TROLLEYS.	26–FT	26–FT	19–FT	27–FT	30–FT	34–FT	34–FT
3	CROSSING OR ALONG THOROUGHFARES IN URBAN DISTRICTS OR CROSSING THOROUGHFARES IN RURAL DISTRICTS.	18–FT	18–FT	19–FT	20–FT	25–FT	30–FT	30–FT
4	ABOVE GROUND ALONG THOROUGHFARES IN RURAL DISTRICTS OR ACROSS OTHER AREAS CAPABLE OF BEING TRAVERSED BY VEHICLES OR AGRICULTURAL EQUIPMENT.	18–FT	18–FT	19–FT	20–FT	25–FT	30–FT	30–FT
5	ABOVE GROUND IN AREAS ACCESSIBLE TO PEDESTRIANS ONLY.	8–FT	10–FT	19–FT	12–FT	17–FT	25–FT	25–FT
6	VERTICAL CLEARANCE ABOVE WALKABLE SURFACES ON BUILDINGS (EXCEPT GENERATING PLANTS OR SUBSTATIONS), BRIDGES OR OTHER STRUCTURES WHICH DO NOT ORDINARILY SUPPORT CONDUCTORS, WHETHER ATTACHED OR UNATTACHED.	8–FT	8–FT	8–FT	8–FT	12–FT	12–FT	20–FT
6A	VERTICAL CLEARANCE ABOVE NON–WALKABLE SURFACES ON BUILDINGS (EXCEPT GENERATING PLANTS OR SUBSTATIONS), BRIDGES OR OTHER STRUCTURES, WHICH DO NOT ORDINARILY SUPPORT CONDUCTORS, WHETHER ATTACHED OR UNATTACHED.	2–FT	8–FT	8–FT	8–FT	8–FT	8–FT	20–FT
7	HORIZONTAL CLEARANCE OF CONDUCTOR AT REST FROM BUILDINGS (EXCEPT GENERATING PLANTS AND SUBSTATIONS), BRIDGES OR OTHER STRUCTURES (UPON WHICH PEOPLE MAY WORK) WHERE SUCH CONDUCTOR IS NOT ATTACHED THERETO.	–	3–FT	3–FT	3–FT	6–FT	6–FT	15–FT
8	DISTANCE OF CONDUCTOR FROM CENTER LINE OF POLE, WHETHER ATTACHED OR UNATTACHED.	–	15–INCHES	15–INCHES	15–INCHES	15 OR 18–INCHES	18–INCHES	NOT APPLICABLE
9	DISTANCE OF CONDUCTOR FROM SURFACE OF POLE CROSS ARM OR OTHER OVERHEAD LINE STRUCTURE UPON WHICH IT IS SUPPORTED, PROVIDING IT COMPLIES WITH CASE 8 ABOVE.	–	3–INCHES	3–INCHES	3–INCHES	3–INCHES	1/4	NOT APPLICABLE

MINIMUM CLEARANCES OF WIRES ABOVE RAILROADS, THOROUGHFARES, ETC.

1. CLEARANCES BETWEEN OVERHEAD CONDUCTORS, GUYS, MESSENGERS OR TROLLEY SPAN WIRES AND TOPS OF RAILS, SURFACES OF THOROUGHFARES OR OTHER GENERALLY ACCESSIBLE AREAS ACROSS, ALONG OR ABOVE WHICH ANY OF THE FORMER PASS; ALSO THE CLEARANCES BETWEEN CONDUCTORS, GUYS, MESSENGERS OR TROLLEY SPAN WIRES AND BUILDINGS, POLES, STRUCTURES, OR OTHER OBJECTS, SHALL NOT BE LESS THAN THOSE SET FORTH IN TABLE 1, AT A TEMPERATURE OF 60°F AND NO WIND.
2. THE CLEARANCES SPECIFIED IN TABLE 1, CASE 1, COLUMNS A, B, D, E AND F, SHALL IN NO CASE BE REDUCED MORE THAN 5% BELOW THE TABULAR VALUES BECAUSE OF TEMPERATURE AND LOADING AS SPECIFIED IN CPUC GO 95 RULE 43. THE CLEARANCES SPECIFIED IN TABLE 1, CASES 2 TO 6 INCLUSIVE, SHALL IN NO CASE BE REDUCED MORE THAN 10% BELOW THE TABULAR VALUES BECAUSE OF TEMPERATURE AND LOADING AS SPECIFIED IN CPUC GO 95 RULE 43.
3. THE CLEARANCE SPECIFIED IN TABLE 1, CASE 1, COLUMN C (22.5 FEET), SHALL IN NO CASE BE REDUCED BELOW THE TABULAR VALUE BECAUSE OF TEMPERATURE AND LOADING AS SPECIFIED IN RULE 43.
4. WHERE SUPPLY CONDUCTORS ARE SUPPORTED BY SUSPENSION INSULATORS AT CROSSINGS OVER RAILROADS WHICH TRANSPORT FREIGHT CARS, THE INITIAL CLEARANCES SHALL BE SUFFICIENT TO PREVENT REDUCTION TO CLEARANCES LESS THAN 95% OF THE CLEARANCES SPECIFIED IN TABLE 1, CASE 1, THROUGH THE BREAKING OF A CONDUCTOR IN EITHER OF THE ADJOINING SPANS.
5. ADDITIONAL CLEARANCE IS REQUIRED TO MEET CPUC RESOLUTION SED–2, REQUIREMENTS FOR ELECTRIFIED RAILROAD TRACKS.
6. FOR CLEARANCE OF POLES, TOWERS, AND STRUCTURES REFER TO SD–2003 AND CPUC GENERAL ORDER 26–D.
7. REFER TO CPUC G.O. 95 RULE 35, APPENDIX E FOR VEGETATION MANAGEMENT CLEARANCES.



MINIMUM CLEARANCES OF WIRES ABOVE RAILROADS – CASE 1

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ENGINEERING STANDARD DRAWINGS

TRACK
CLEARANCE
MINIMUM VERTICAL CLEARANCE FOR WIRES

CADD FILE NAME: SD–2005

REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD–2005

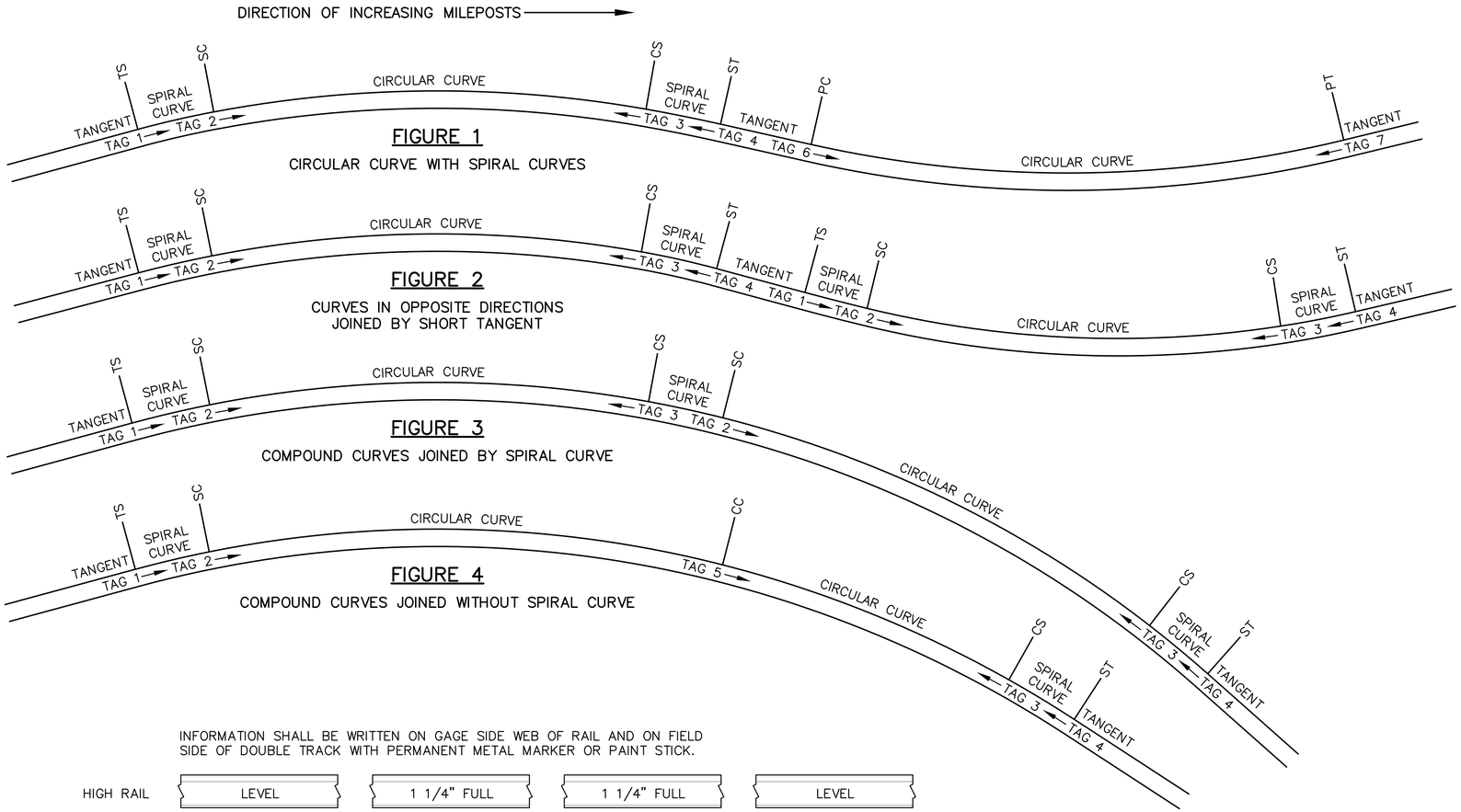


FIGURE 1

CIRCULAR CURVE WITH SPIRAL CURVES

FIGURE 2

CURVES IN OPPOSITE DIRECTIONS JOINED BY SHORT TANGENT

FIGURE 3

COMPOUND CURVES JOINED BY SPIRAL CURVE

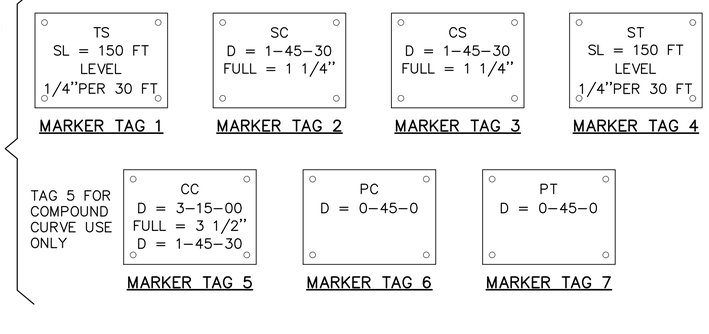
FIGURE 4

COMPOUND CURVES JOINED WITHOUT SPIRAL CURVE

INFORMATION SHALL BE WRITTEN ON GAGE SIDE WEB OF RAIL AND ON FIELD SIDE OF DOUBLE TRACK WITH PERMANENT METAL MARKER OR PAINT STICK.

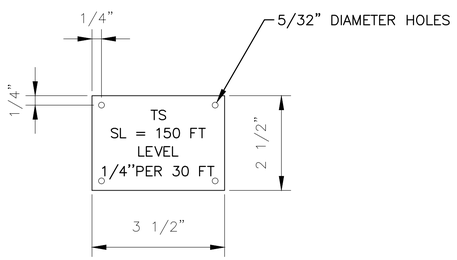
HIGH RAIL	LEVEL	1 1/4" FULL	1 1/4" FULL	LEVEL
LOW RAIL	ST SL=150'	CS D=1-45-30	D=1-45-30 SC	SL=150' TS

INFORMATION SHALL BE PLACED ON MARKER TAG ON TIE



ABBREVIATIONS

TS = TANGENT TO SPIRAL
SC = SPIRAL TO CURVE
CS = CURVE TO SPIRAL
ST = SPIRAL TO TANGENT
CC = COMPOUND CURVE
SL = SPIRAL LENGTH
PC = POINT OF CURVATURE
PT = POINT OF TANGENCY



MARKER TAG DETAIL

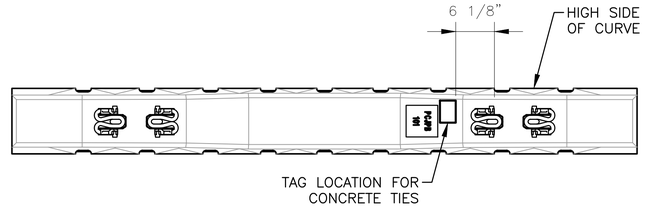


FIGURE 5

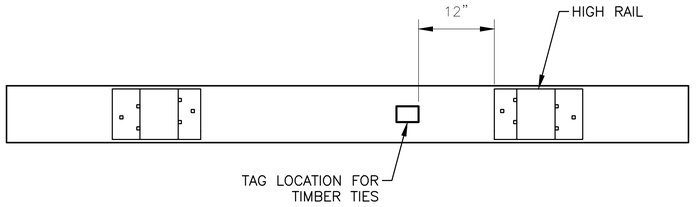
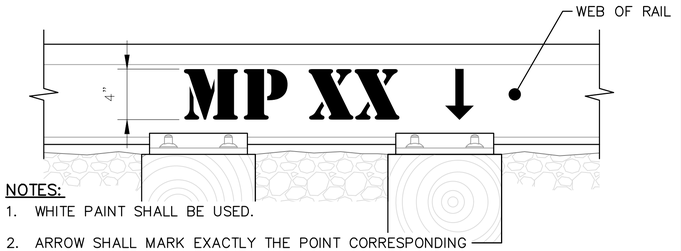


FIGURE 6



NOTES:

1. WHITE PAINT SHALL BE USED.
2. ARROW SHALL MARK EXACTLY THE POINT CORRESPONDING TO THE INDICATED MILEPOST DISTANCE.

FIGURE 7

NOTES:

1. EXISTING MARKER TAGS WILL BE REMOVED AND ATTACHED TO REPLACEMENT TIE BY CONTRACTOR. MARKER TAGS SHALL BE 16 GAGE ALUMINUM. TAGS SHALL BE STAMPED IN 1/4" INCREMENTS FROM ZERO TO MAXIMUM SUPERELEVATION.
2. ON COMPOUND CURVES THE PROPER ELEVATION MUST BE GIVEN TO THE CURVE OF GREATER DEGREE THROUGHOUT ITS LENGTH, UNIFORMLY REDUCING THIS ELEVATION AT THE PRESCRIBED RATE OF CHANGE UNTIL THE PROPER ELEVATION IS ATTAINED FOR THE CURVE OF LESSER DEGREE.
3. TO SECURE CURVE TAGS ON:
   A. CONCRETE TIES (FIGURE 5), USE ADHESIVE APPROVED BY THE ENGINEER.
   B. TIMBER TIES (FIGURE 6), USE GALVANIZED 10 PENNY NAILS OR ENGINEER APPROVED EQUAL.
4. CONTRACTOR SHALL STENCIL RAILS WITH THE INFORMATION SHOWN IN FIGURE 7 AT ALL WHOLE MILEPOST MARKER SIGNS. STENCIL SHALL BE APPLIED TO THE WEB OF RAIL ON BOTH SIDES OF EACH RAIL.

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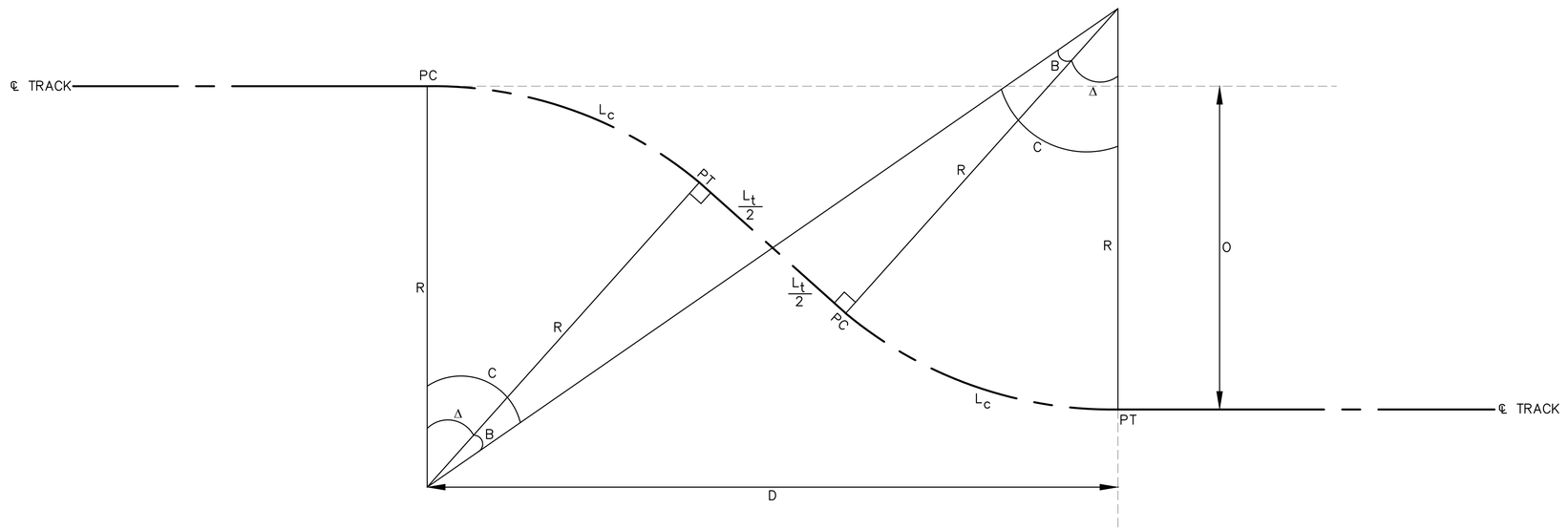
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ENGINEERING STANDARD DRAWINGS

TRACK
GEOMETRY
CURVE AND MILEPOST
MARKING DETAILS

CADD FILE NAME:	SD-2101
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD-2101



EQUATIONS:

$D = \sqrt{L_t^2 + 4RO - O^2}$

$\Delta = C - B$

$B = TAN^{-1}\frac{L_t}{2R}$

$C = TAN^{-1}\frac{D}{2R-O}$

$L_c = 100\Delta/D_c$

$L_t = 3V$

V = DESIGN SPEED IN MPH

L_c = LENGTH OF CURVE IN FEET

L_t = LENGTH OF TANGENT IN FEET

O = OFFSET DISTANCE IN FEET

PC = POINT OF CURVE

PT = POINT OF TANGENT

Δ = INTERIOR ANGLE OF CURVES IN DEGREES

B = ANGLE IN DEGREES

C = ANGLE IN DEGREES

D_c = DEGREE OF CURVATURE (IN DEGREE)

D = LIMITS OF TRACK REALIGNMENT IN FEET

R = RADIUS OF CURVE IN FEET

EXAMPLES OF CALCULATIONS:

O	D_c	R	D	L_t	Δ	L_c	V
0.5	0°20'	17188.76	303.28	240.00	0°04'20"	31.67	79
2.0	0°30'	11459.19	386.35	240.00	0°21'57"	73.17	79
3.0	0°40'	8594.42	400.90	240.00	0°32'11"	80.46	79
4.0	1°00'	5729.65	331.49	135.00	0°58'57"	98.26	45
5.0	1°15'	4583.73	331.47	135.00	1°13'42"	98.26	45
6.0	1°30'	3819.83	331.46	135.00	1°28'26"	98.26	45
8.0	1°45'	3274.17	350.62	135.00	1°53'15"	107.86	45
10.0	2°00'	2864.93	364.31	135.00	2°17'41"	114.74	45

NOTE:

THIS DRAWING IS USED AS A QUICK REFERENCE FOR DETERMINING THE DESIGN LIMITS OF A TEMPORARY ALIGNMENT WITH NO SUPERELEVATION.

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ENGINEERING STANDARD DRAWINGS

TRACK
GEOMETRY
REVERSING CURVES
LAYOUT AND CALCULATIONS

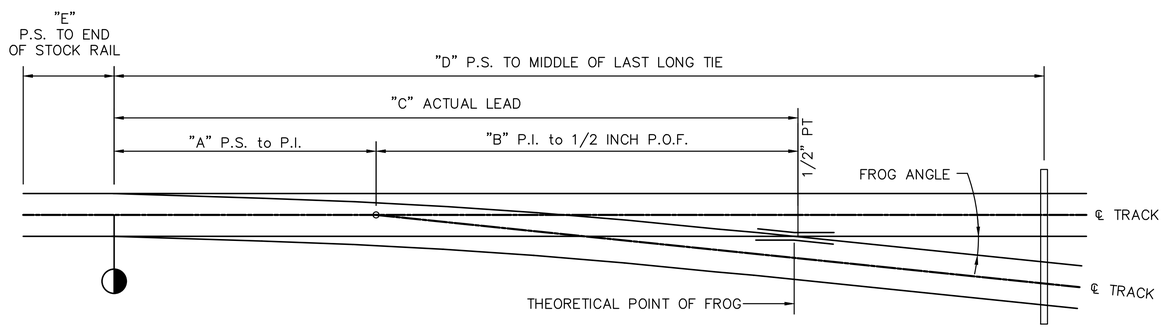
CADD FILE NAME: SD-2102

REV:

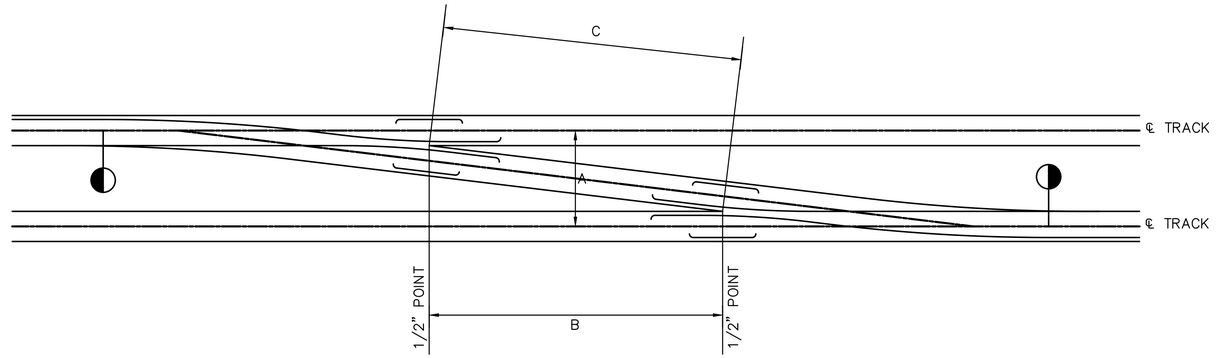
EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD-2102



TYPICAL TURNOUT LAYOUT



TYPICAL CROSSOVER LAYOUT

TABLE 1: TURNOUT DATA

TURNOUT NO.	FROG ANGLE	FROG TYPE	A	B	C	D	E		TRACK STANDARD DRAWING NUMBER
							STRAIGHT SIDE	TURNOUT SIDE	
8	7°09'10"	RBM	30'–0"	38'–0"	68'–0"	91'–4 1/2"	7'–3"	13'–3"	SD–2401
9	6°21'35"	RBM	10'–3 3/4"	43'–0 7/16"	74'–0 3/4"	102'–4 1/2"	9'–10"	14'–10"	SD–2
10	5°43'29"	SPRING	32'–9 5/8"	47'–6"	80'–3 5/8"	115'–11 5/8"	14'–4"	8'–4"	SD–2501 TO SD–2504
14	4°05'27"	SPRING	44'–6 3/8"	66'–6"	111'–0 3/8"	162'–11 1/4"	14'–6 3/8"	8'–6 3/8"	SD–2601 TO SD–2604
20	2°51'51"	SPRING	72'–4"	95'–0"	167'–4"	239'–8 1/4"	14'–8"	8'–4"	SD–2701 TO SD–2704

TABLE 2: PASSENGER SPEED THROUGH TURNOUT

TURNOUT NO.	SWITCHPOINTS LENGTHS	OPERATING SPEED
8	16' – 6"	15 MPH
9	16' – 6"	20 MPH
10	21' – 6"	25 MPH
14	29' – 0"	35 MPH
20	47' – 0"	50 MPH

TABLE 3: CROSSOVER DATA

DISTANCE BETWEEN CENTERLINE OF TRACKS	DISTANCE BETWEEN 1/2 INCH FROG POINTS									
	NO. 8 FROG		**NO. 9 FROG**		**NO. 10 FROG**		**NO. 14 FROG**		**NO. 20 FROG**	
A	B	C	B	C	B	C	B	C	B	C
14'–0"	35'–6 3/4"	36'–5 1/4"	40'–1 3/8"	40'–10 5/8"	44'–7 13/16"	45'–4 3/16"	62'–9"	63'–3"	89'–9 15/16"	90'–2 1/8"
15'–0"	43'–6 3/8"	44'–5 5/8"	49'–1"	49'–11"	54'–7 9/16"	55'–4 1/2"	76'–8 13/16"	77'–3 3/16"	109'–9 3/4"	110'–2 1/4"
16'–0"	51'–6"	52'–6"	58'–0 11/16"	58'–11 5/16"	64'–7 1/4"	65'–4 13/16"	90'–8 9/16"	91'–3 7/16"	129'–9 5/8"	130'–2 3/8"
17'–0"	59'–5 5/8"	60'–6 3/8"	67'–0 3/8"	67'–11 5/8"	74'–6 15/16"	75'–5 1/16"	104'–8 3/8"	105'–3 5/8"	149'–9 1/2"	150'–2 9/16"
18'–0"	67'–5 1/4"	68'–6 3/4"	76'–0"	77'–0"	84'–6 5/8"	85'–5 3/8"	118'–8 3/16"	119'–3 13/16"	169'–9 5/16"	170'–2 11/16"
19'–0"	75'–4 7/8"	76'–7 1/8"	84'–11 11/16"	86'–0 5/16"	94'–6 5/16"	95'–5 11/16"	132'–7 15/16"	133'–4 1/16"	189'–9 3/16"	190'–2 7/8"
20'–0"	83'–4 1/2"	84'–7 1/2"	93'–11 3/8"	95'–0 5/8"	104'–6 1/16"	105'–6"	146'–7 3/4"	147'–4 1/4"	209'–9 1/16"	210'–3"
DIFFERENCE PER FOOT CHANGE	7'–11 5/8"	8'–0 3/8"	8'–11 5/8"	9'–0 5/16"	9'–11 11/16"	10'–0 5/16"	13'–11 13/16"	14'–0 3/16"	19'–11 7/8"	20'–0 1/8"

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

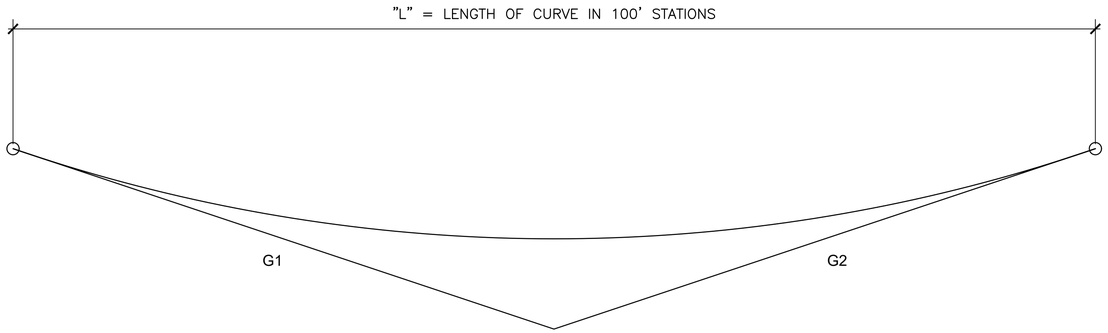
TRACK
GEOMETRY
STANDARD TURNOUT AND
CROSSOVER DATA

CADD FILE NAME: SD–2103

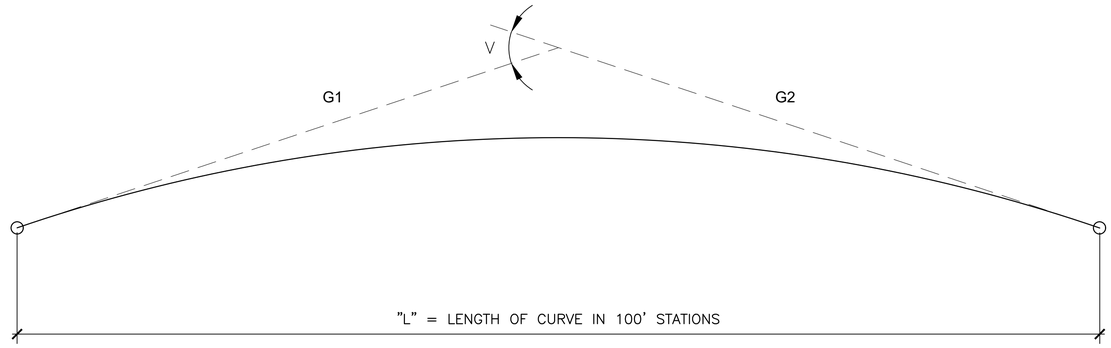
REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD–2103



SAG CURVE



SUMMIT CURVE

$$V/L = \frac{|(G2-G1)|}{L}$$

G1 AND G2 DESIGNATE GRADES IN PERCENT.
L = LENGTH OF CURVE IN 100' STATIONS.
V = ALGEBRAIC DIFFERENCE IN GRADES IN PERCENT (G2−G1)
V/L = AVERAGE CHANGE IN GRADIENT PER 100' STATION.
TO DETERMINE LENGTH (L), DIVIDE V BY THE DESIRED V/L
ROUND UP THE RESULT TO THE NEAREST 100' STATION.

EXAMPLES:
GIVEN G1=1.05 AND G2=−0.71 V=(−0.71)−(1.05)=1.76%
GIVEN V/L=0.10 L=−1.76/0.10=17.6' STATION
VERTICAL CURVE LENGTH=1800' (ROUNDED UP).

TRACK CLASS	MAX SPEED	MAX V/L
1	10	2
2	25	0.7
3	40	0.3
4	60	0.13
5	70	0.1

NOTES:

1. VERTICAL CURVES SHALL NOT FALL WITHIN THE LIMITS OF HORIZONTAL CURVES OR TURNOUTS UNLESS AUTHORIZED BY THE DIRECTOR OF ENGINEERING.

VERTICAL CURVE DESIGN

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

TRACK GEOMETRY

VERTICAL CURVE DESIGN

CADD FILE NAME: SD−2104

REV: | EDITION: FIFTH

SCALE: NONE

STANDARD DRAWING NO.: SD−2104

DECIMAL DEGREE OF CURVE	DEGREE OF CURVE IN DEGREE/ MINS/SECS	SPEED IN MILES PER HOUR																
		10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
0.5°	0°–30'								3/4"	1"	1"	1 1/4"	1 1/2"	1 3/4"	2"	2 1/4"	2 1/2"	2 3/4"
1.0°	1°–00'						3/4"	1"	1 1/2"	1 3/4"	2"	2 1/2"	3"	3 1/2"	4"	4 1/2"	5"	
1.5°	1°–30'				3/4"	1"	1 1/4"	1 3/4"	2 1/4"	2 3/4"	3 1/4"	3 3/4"	4 1/2"					
2.0°	2°–00'			3/4"	1"	1 1/4"	1 3/4"	2 1/4"	2 3/4"	3 1/2"	4 1/4"	5"						
2.5°	2°–30'			3/4"	1"	1 1/2"	2 1/4"	2 3/4"	3 1/2"	4 1/4"								
3.0°	3°–00'			3/4"	1 1/4"	2"	2 1/2"	3 1/4"	4 1/4"									
3.5°	3°–30'		3/4"	1"	1 1/2"	2 1/4"	3"	4"	5"									
4.0°	4°–00'		3/4"	1"	1 3/4"	2 1/2"	3 1/2"	4 1/2"										
4.5°	4°–30'		3/4"	1 1/4"	2"	2 3/4"	3 3/4"	5"										
5.0°	5°–00'		3/4"	1 1/2"	2 1/4"	3 1/4"	4 1/4"											
5.5°	5°–30'		3/4"	1 1/2"	2 1/2"	3 1/2"	4 3/4"											
6.0°	6°–00'	3/4"	1"	1 3/4"	2 3/4"	3 3/4"												
6.5°	6°–30'	3/4"	1"	1 3/4"	2 3/4"	4"												
7.0°	7°–00'	3/4"	1"	2"	3"	4 1/2"												
7.5°	7°–30'	3/4"	1 1/4"	2"	3 1/4"	4 3/4"												
8.0°	8°–00'	3/4"	1 1/4"	2 1/4"	3 1/2"	5"												
9.0°	9°–00'	3/4"	1 1/2"	2 1/2"	4"													
10.0°	10°–00'	3/4"	1 1/2"	2 3/4"	4 1/2"													
11.0°	11°–00'	3/4"	1 3/4"	3"	4 3/4"													
12.0°	12°–00'	3/4"	2"	3 1/4"														

E = ELEVATION OF THE OUTSIDE RAIL IN INCHES
D = DEGREE OF CURVE IN DECIMAL DEGREE FORMAT
S = SPEED IN MILES PER HOUR

CONVERSIONS ARE AS FOLLOWS:

$E = S(0.0007SD)$

R = RADIUS OF CURVE IN FEET

$D = \frac{5729.578}{R}$

$S(max.) = \sqrt{\frac{E}{(0.0007)D}}$

NOTES:

1. THESE REQUIREMENTS DO NOT REPRESENT MAINTENANCE STANDARDS. THEREFORE, DO NOT USE THEM TO DETERMINE APPROVED ELEVATION WHEN SURFACING AND LINING EXISTING CURVES. FOR EXISTING CURVES, USE CURVE DATA INFORMATION IN THE CURVE DATA HANDBOOK OR IN THE ON–LINE INTRANET ENGINEERING PLANNING AND BUDGETING SITE.
2. DESIGNATED SUPERELEVATION MAY NOT BE LESS THAN 1/2 INCH OR GREATER THAN 5 INCHES IN ANY MAINLINE, SIDING OR INDUSTRIAL CURVE.

SUPERELEVATION OF CURVES EQUILIBRIUM

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

TRACK
GEOMETRY
SUPERELEVATION
OF CURVES EQUILIBRIUM

CADD FILE NAME: SD–2105

REV: | EDITION: FIFTH

SCALE: NONE

STANDARD DRAWING NO.: SD–2105

DECIMAL DEGREE OF CURVE	DEGREE OF CURVE IN DEGREE/ MINS/SECS	SPEED IN MILES PER HOUR																
		10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
0.5°	0°–30'													3/4"	1"	1 1/4"	1 1/2"	1 3/4"
1.0°	1°–00'									3/4"	1"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	
1.5°	1°–30'							3/4"	1 1/4"	1 3/4"	2 1/4"	2 3/4"	3 1/2"	4 1/4"	5"			
2.0°	2°–00'						3/4"	1 1/4"	1 3/4"	2 1/2"	3 1/4"	4"	5"					
2.5°	2°–30'					3/4"	1 1/4"	1 3/4"	2 1/2"	3 1/4"	4 1/4"							
3.0°	3°–00'				3/4"	1"	1 1/2"	2 1/4"	3 1/4"	4 1/4"								
3.5°	3°–30'				3/4"	1 1/4"	2"	3"	4"									
4.0°	4°–00'				3/4"	1 1/2"	2 1/2"	3 1/2"	4 3/4"									
4.5°	4°–30'			3/4"	1"	1 3/4"	2 3/4"	4"										
5.0°	5°–00'			3/4"	1 1/4"	2 1/4"	3 1/4"	4 1/2"										
5.5°	5°–30'			3/4"	1 1/2"	2 1/2"	3 3/4"											
6.0°	6°–00'			3/4"	1 3/4"	2 3/4"	4 1/4"											
6.5°	6°–30'			3/4"	1 3/4"	3"	4 1/2"											
7.0°	7°–00'		3/4"	1"	2"	3 1/2"	5"											
7.5°	7°–30'		3/4"	1"	2 1/4"	3 3/4"												
8.0°	8°–00'		3/4"	1 1/4"	2 1/2"	4"												
9.0°	9°–00'		3/4"	1 1/2"	3"	4 1/4"												
10.0°	10°–00'		3/4"	1 3/4"	3 1/2"													
11.0°	11°–00'		3/4"	2"	3 3/4"													
12.0°	12°–00'	3/4"	1"	2 1/4"	4 1/4"													

E = ELEVATION OF THE OUTSIDE RAIL IN INCHES
D = DEGREE OF CURVE IN DECIMAL DEGREE FORMAT
S = SPEED IN MILES PER HOUR

CONVERSIONS ARE AS FOLLOWS:

$E = S(0.0007SD) - 1"$

R = RADIUS OF CURVE IN FEET

$D = \frac{5729.578}{R}$

$S(max.) = \sqrt{\frac{E+1}{(0.0007)D}}$

NOTES:

1. THESE REQUIREMENTS DO NOT REPRESENT MAINTENANCE STANDARDS. THEREFORE, DO NOT USE THEM TO DETERMINE APPROVED ELEVATION WHEN SURFACING AND LINING EXISTING CURVES. FOR EXISTING CURVES, USE CURVE DATA INFORMATION IN THE CURVE DATA HANDBOOK OR IN THE ON–LINE INTRANET ENGINEERING PLANNING AND BUDGETING SITE.
2. DESIGNATED SUPERELEVATION MAY NOT BE LESS THAN 1/2 INCH OR GREATER THAN 5 INCHES IN ANY MAINLINE, SIDING OR INDUSTRIAL CURVE.

SUPERELEVATION OF CURVES 1" UNBALANCE

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

TRACK
GEOMETRY
SUPERELEVATION
OF CURVES 1" UNBALANCE

CADD FILE NAME: SD–2106

REV:

EDITION: FIFTH

SCALE: NONE

STANDARD DRAWING NO.: SD–2106

DECIMAL DEGREE OF CURVE	DEGREE OF CURVE IN DEGREE/ MINS/SECS	SPEED IN MILES PER HOUR																
		10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
0.5°	0°–30'																	3/4"
1.0°	1°–00'											3/4"	1"	1 1/2"	2"	2 1/2"	3"	3 3/4"
1.5°	1°–30'									3/4"	1 1/4"	1 3/4"	2 1/2"	3 1/4"	4"	4 3/4"		
2.0°	2°–00'								3/4"	1 1/2"	2 1/4"	3"	4"	4 3/4"				
2.5°	2°–30'							3/4"	1 1/2"	2 1/4"	3 1/4"	4 1/4"						
3.0°	3°–00'						3/4"	1 1/4"	2 1/4"	3 1/4"	4 1/4"							
3.5°	3°–30'					3/4"	1"	2"	3"	4 1/4"								
4.0°	4°–00'					3/4"	1 1/2"	2 1/2"	3 3/4"	5"								
4.5°	4°–30'					3/4"	1 3/4"	3"	4 1/2"									
5.0°	5°–00'				3/4"	1 1/4"	2 1/4"	3 1/2"	5"									
5.5°	5°–30'				3/4"	1 1/2"	2 3/4"	4 1/4"										
6.0°	6°–00'				3/4"	1 3/4"	3 1/4"	4 3/4"										
6.5°	6°–30'				3/4"	2"	3 1/2"											
7.0°	7°–00'			3/4"	1"	2 1/2"	4"											
7.5°	7°–30'			3/4"	1 1/4"	2 3/4"	4 1/2"											
8.0°	8°–00'			3/4"	1 1/2"	3"	4 3/4"											
9.0°	9°–00'			3/4"	2"	3 1/2"												
10.0°	10°–00'			3/4"	2 1/2"	4 1/4"												
11.0°	11°–00'		3/4"	1"	2 3/4"	5"												
12.0°	12°–00'		3/4"	1 1/4"	3 1/4"													

E = ELEVATION OF THE OUTSIDE RAIL IN INCHES
D = DEGREE OF CURVE IN DECIMAL DEGREE FORMAT
S = SPEED IN MILES PER HOUR

CONVERSIONS ARE AS FOLLOWS:

$E = S(0.0007SD) - 2"$

R = RADIUS OF CURVE IN FEET

$D = \frac{5729.578}{R}$

$S(max.) = \sqrt{\frac{E+2}{(0.0007)D}}$

NOTES:

1. THESE REQUIREMENTS DO NOT REPRESENT MAINTENANCE STANDARDS. THEREFORE, DO NOT USE THEM TO DETERMINE APPROVED ELEVATION WHEN SURFACING AND LINING EXISTING CURVES. FOR EXISTING CURVES, USE CURVE DATA INFORMATION IN THE CURVE DATA HANDBOOK OR IN THE ON–LINE INTRANET ENGINEERING PLANNING AND BUDGETING SITE.
2. DESIGNATED SUPERELEVATION MAY NOT BE LESS THAN 1/2 INCH OR GREATER THAN 5 INCHES IN ANY MAINLINE, SIDING OR INDUSTRIAL CURVE.

SUPERELEVATION OF CURVES 2" UNBALANCE

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

TRACK
GEOMETRY
SUPERELEVATION
OF CURVES 2" UNBALANCE

CADD FILE NAME: SD–2107

REV: | EDITION: FIFTH

SCALE: NONE

STANDARD DRAWING NO.: SD–2107

DECIMAL DEGREE OF CURVE	DEGREE OF CURVE IN DEGREE/ MINS/SECS	SPEED IN MILES PER HOUR																
		10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
0.5°	0°–30'																	3/4"
1.0°	1°–00'													3/4"	1"	1 1/2"	2 1/4"	2 3/4"
1.5°	1°–30'										3/4"	1"	1 1/2"	2 1/4"	3"	3 3/4"	4 3/4"	
2.0°	2°–00'									3/4"	1 1/4"	2 1/4"	3"	4"	5"			
2.5°	2°–30'								3/4"	1 1/2"	2 1/2"	3 1/2"	4 1/2"					
3.0°	3°–00'							3/4"	1 1/4"	2 1/4"	3 1/2"	4 3/4"						
3.5°	3°–30'						3/4"	1"	2"	3 1/4"	4 1/2"							
4.0°	4°–00'						3/4"	1 1/2"	2 3/4"	4"								
4.5°	4°–30'					3/4"	1"	2 1/4"	3 1/2"	5"								
5.0°	5°–00'					3/4"	1 1/2"	2 3/4"	4 1/4"									
5.5°	5°–30'					3/4"	1 3/4"	3 1/4"	5"									
6.0°	6°–00'				3/4"	1"	2 1/4"	3 3/4"										
6.5°	6°–30'				3/4"	1 1/4"	2 3/4"	4 1/2"										
7.0°	7°–00'				3/4"	1 1/2"	3 1/4"	5"										
7.5°	7°–30'				3/4"	1 3/4"	3 1/2"											
8.0°	8°–00'				3/4"	2 1/4"	4"											
9.0°	9°–00'			3/4"	1"	2 3/4"	4 3/4"											
10.0°	10°–00'			3/4"	1 1/2"	3 1/2"												
11.0°	11°–00'			3/4"	2"	4"												
12.0°	12°–00'			3/4"	2 1/4"	4 3/4"												

E = ELEVATION OF THE OUTSIDE RAIL IN INCHES
D = DEGREE OF CURVE IN DECIMAL DEGREE FORMAT
S = SPEED IN MILES PER HOUR

CONVERSIONS ARE AS FOLLOWS:

$E = S(0.0007SD) - 3"$

R = RADIUS OF CURVE IN FEET

$D = \frac{5729.578}{R}$

$S(max.) = \sqrt{\frac{E+3}{(0.0007)D}}$

NOTES:

1. THESE REQUIREMENTS DO NOT REPRESENT MAINTENANCE STANDARDS. THEREFORE, DO NOT USE THEM TO DETERMINE APPROVED ELEVATION WHEN SURFACING AND LINING EXISTING CURVES. FOR EXISTING CURVES, USE CURVE DATA INFORMATION IN THE CURVE DATA HANDBOOK OR IN THE ON–LINE INTRANET ENGINEERING PLANNING AND BUDGETING SITE.
2. DESIGNATED SUPERELEVATION MAY NOT BE LESS THAN 1/2 INCH OR GREATER THAN 5 INCHES IN ANY MAINLINE, SIDING OR INDUSTRIAL CURVE.

SUPERELEVATION OF CURVES – CALTRAIN 3" UNBALANCE MAX ALLOWABLE

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

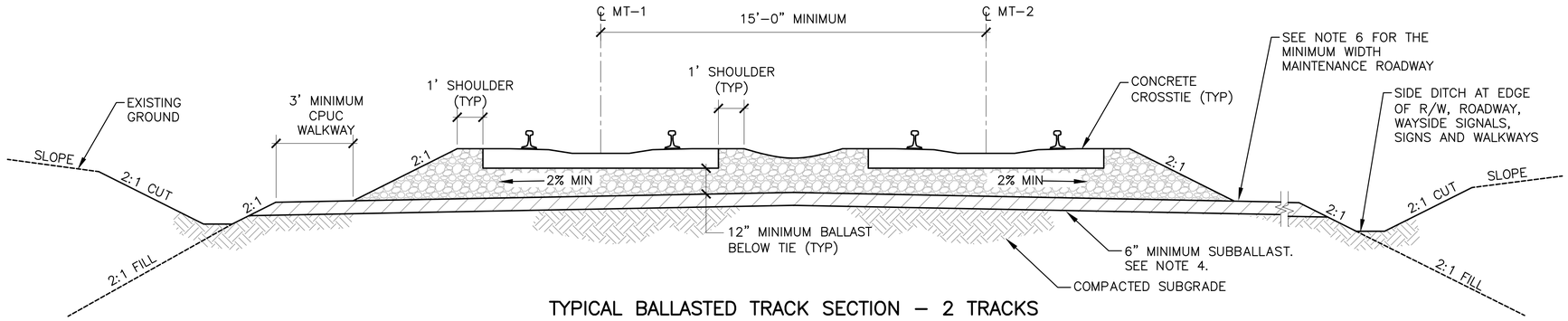
TRACK
GEOMETRY
SUPERELEVATION
OF CURVES 3" UNBALANCE
FRA MAX ALLOWABLE

CADD FILE NAME: SD–2108

REV: | EDITION: FIFTH

SCALE: NONE

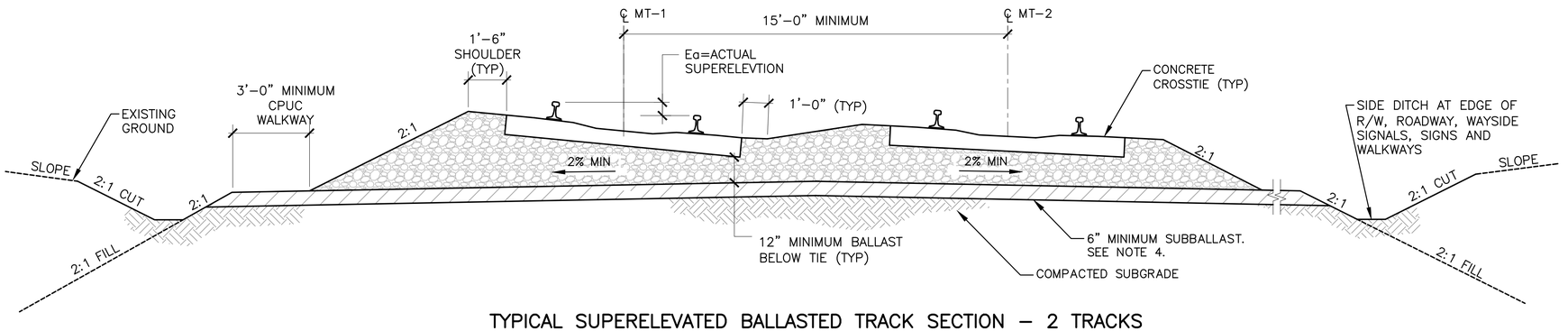
STANDARD DRAWING NO.: SD–2108



TYPICAL BALLASTED TRACK SECTION – 2 TRACKS

SECTION

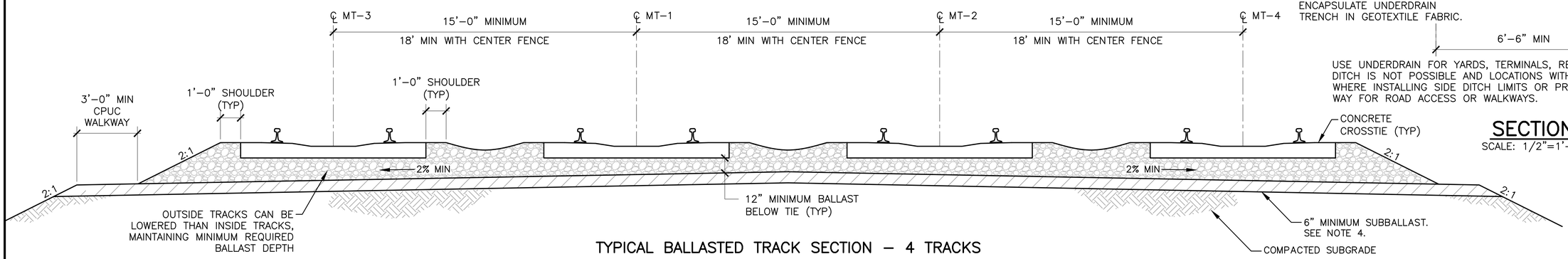
SCALE: 3/8"=1'–0"



TYPICAL SUPERELEVATED BALLASTED TRACK SECTION – 2 TRACKS

SECTION

SCALE: 3/8"=1'–0"



TYPICAL BALLASTED TRACK SECTION – 4 TRACKS

SECTION

SCALE: 3/8"=1'–0"

NOTES:

1. BALLAST DEPTH FOR SUPERELEVATED CURVED TRACK SHALL NOT EXCEED 18" AT ANY POINT BELOW BOTTOM OF TIE. FOR STANDARD TANGENT TRACK, MAXIMUM BALLAST DEPTH SHALL NOT EXCEED 12" BELOW BOTTOM OF TIE:

   1a. YARD AND SETOUT TRACKS MINIMUM BALLAST DEPTH MAY BE REDUCED TO 8" FOR CONCRETE TIES, AND 6" FOR WOOD TIE CONSTRUCTION.

2. INCREASE SHOULDER WIDTH TO 18" FOR CURVED TRACKS SUPERELEVATED BY 1/2" AND GREATER.

3. SEE SD–2153 FOR TRACK STRUCTURE THROUGH AT–GRADE CROSSINGS.

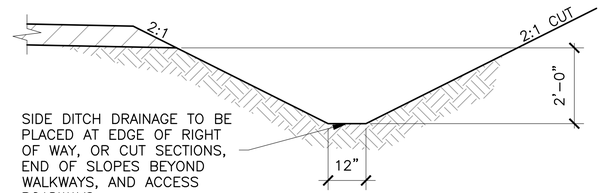
4. HMAC UNDERLAYMENT IS REQUIRED FOR LOCATIONS LISTED BELOW. SEE ADDITIONAL DETAILS ON OTHER STANDARD DRAWINGS.

   - BRIDGE APPROACHES
   - AT–GRADE CROSSINGS
   - SPECIAL TRACK WORK
   - STATIONS
   - AREAS WITH POOR SUBGRADE (8" THICK HMAC)

5. REFER TO SD–8101 FOR ADDITIONAL REQUIREMENTS.

6. 12' WIDTH MINIMUM MAINTENANCE ROADWAY, WHERE ROW PERMITS ON ANY AVAILABLE SIDES.

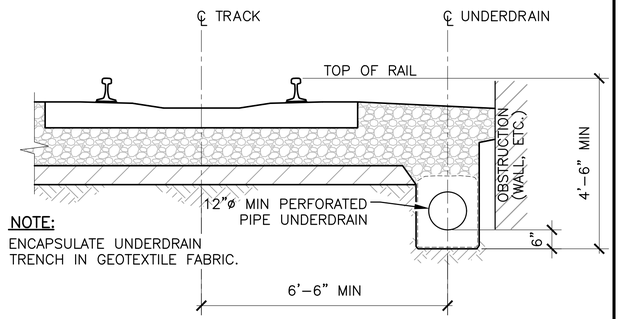
7. REFERENCING THE SD–W5170 FOR ADDITIONAL REQUIREMENTS AT THE OCS LOCATIONS.



SIDE DITCH FOR TRACK DRAINAGE

SECTION

SCALE: 1/2"=1'–0"



NOTE:

ENCAPSULATE UNDERDRAIN TRENCH IN GEOTEXTILE FABRIC.

USE UNDERDRAIN FOR YARDS, TERMINALS, RETAINING WALLS WHERE SIDE DITCH IS NOT POSSIBLE AND LOCATIONS WITH LIMITED RIGHT OF WAY WHERE INSTALLING SIDE DITCH LIMITS OR PREVENTS USE OF RIGHT OF WAY FOR ROAD ACCESS OR WALKWAYS.

SECTION

SCALE: 1/2"=1'–0"

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PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

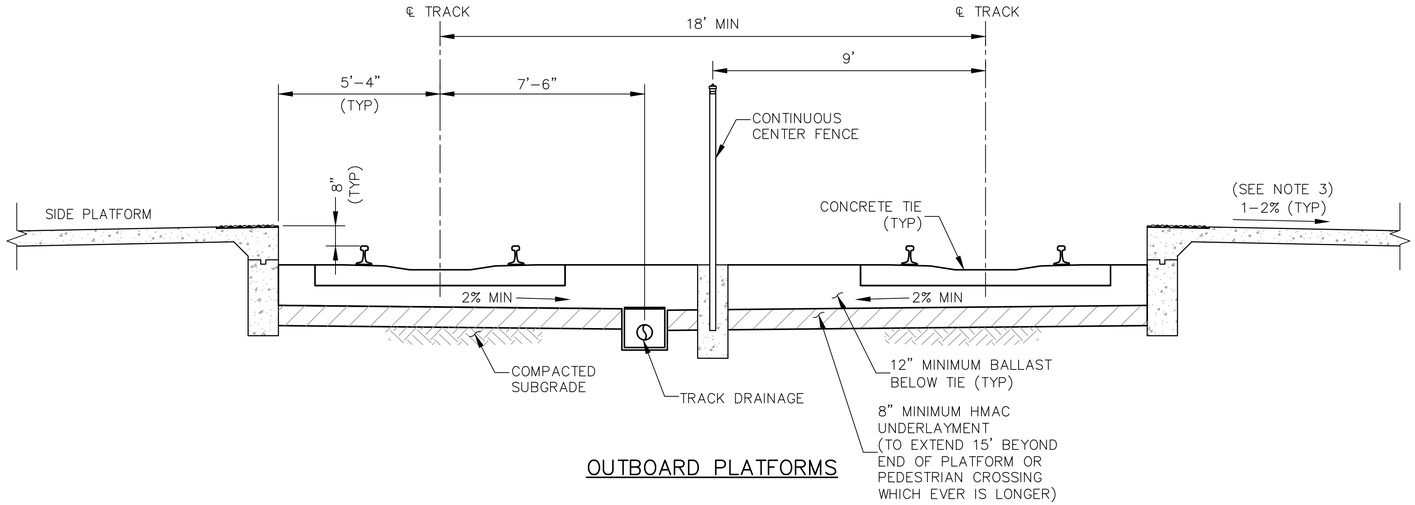
Caltrain

ENGINEERING STANDARD DRAWINGS

TRACK
TRACK STRUCTURE

STANDARD TRACK SECTIONS FOR CONCRETE TIE TRACK

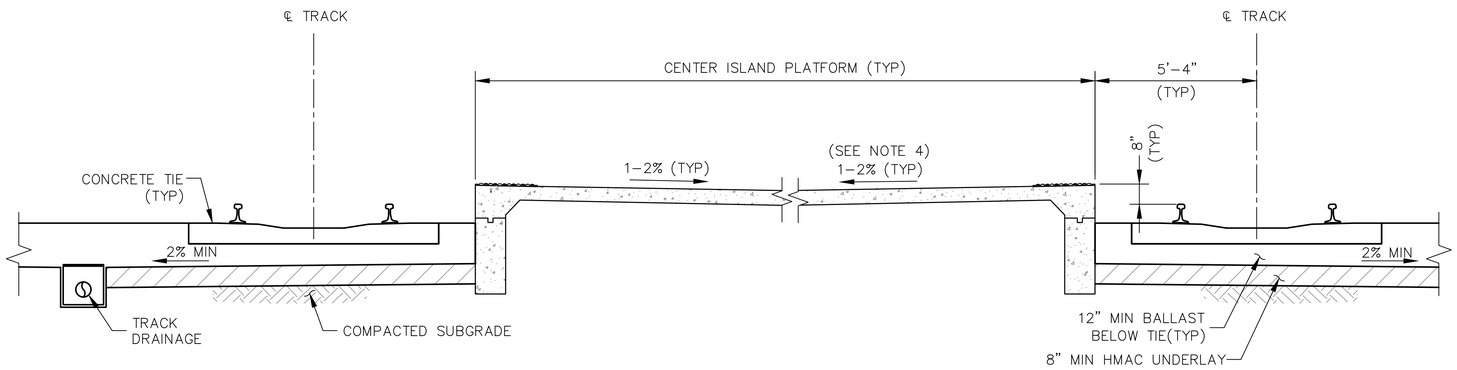
CADD FILE NAME:	SD–2151
REV:	EDITION: FIFTH
SCALE:	AS SHOWN
STANDARD DRAWING NO.:	SD–2151



OUTBOARD PLATFORMS

NOTES:

1. MAXIMUM DEPTH OF BALLAST BELOW TIE SHALL BE 12 INCHES ABOVE SUBGRADE ON TANGENT TRACK.
2. SEE SD–2153 FOR TRACK STRUCTURE THROUGH AT–GRADE CROSSINGS.
3. SAFETY CONCERNS DICTATE THAT PLATFORM SHALL SLOPE AWAY FROM TRACKS TO ELIMINATE POSITIVE ROLL TOWARDS TRACKS.
4. FOR TRACK UNDERDRAIN DETAILS, SEE SD–8101.
5. SEE STATION STANDARDS SD–3051, SD–3052 SD–3601 AND SD–8101 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
6. REFER TO ELECTRIFICATION STANDARDS FOR OTHER DETAILS, INFORMATION AND REQUIREMENTS.



CENTER ISLAND PLATFORM

TYPICAL BALLASTED TRACK THROUGH STATIONS

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REV	DATE	BY	CHK	APP

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Caltrain

ENGINEERING STANDARD DRAWINGS

TRACK
TRACK STRUCTURE

TYPICAL SECTIONS THROUGH STATIONS

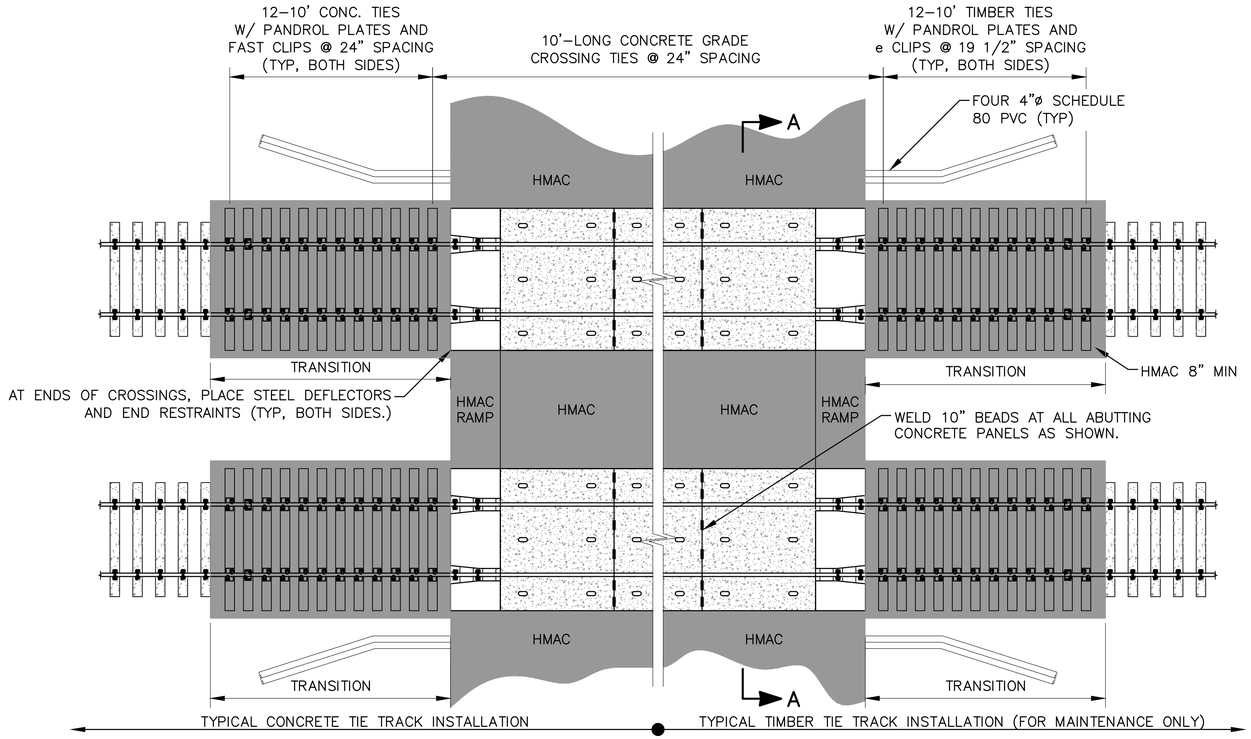
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REV:

EDITION: FIFTH

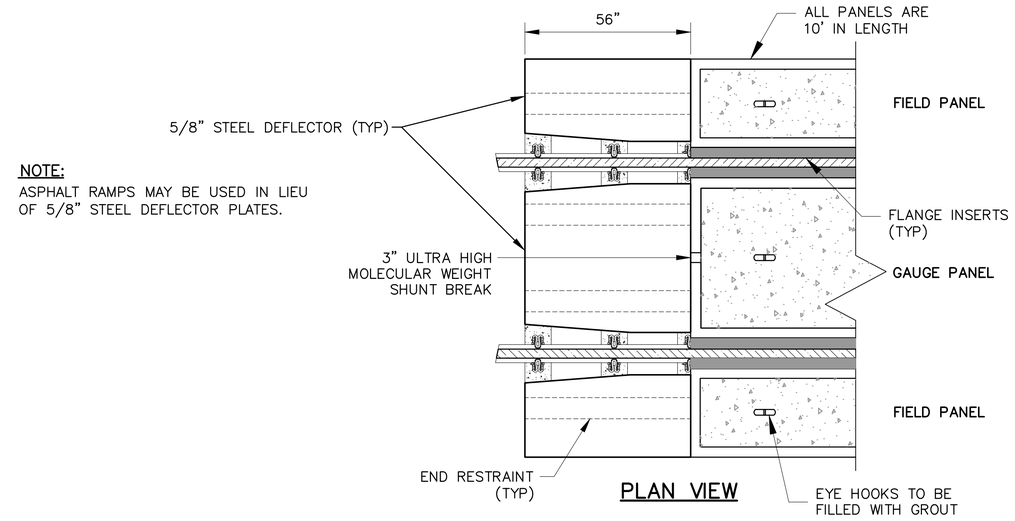
SCALE: NTS

STANDARD DRAWING NO.: SD–2152



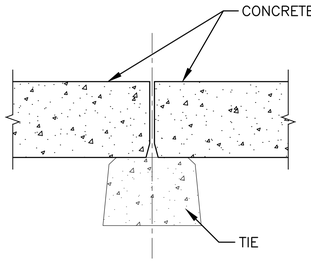
TYPICAL CONCRETE GRADE CROSSING LAYOUT

HMAC SHALL EXTEND THROUGH GRADE CROSSING AND INCLUDE TRANSITION TIES LIMITS AND BE TAPPERED AS SHOWN IN SD–2154

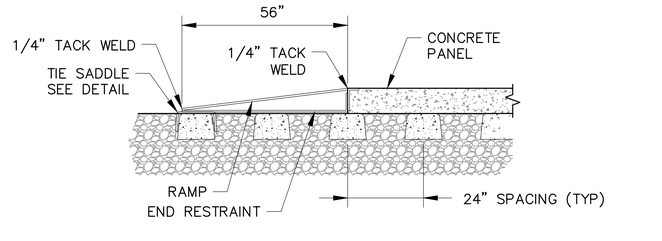


NOTE:
ASPHALT RAMPS MAY BE USED IN LIEU OF 5/8" STEEL DEFLECTOR PLATES.

PLAN VIEW

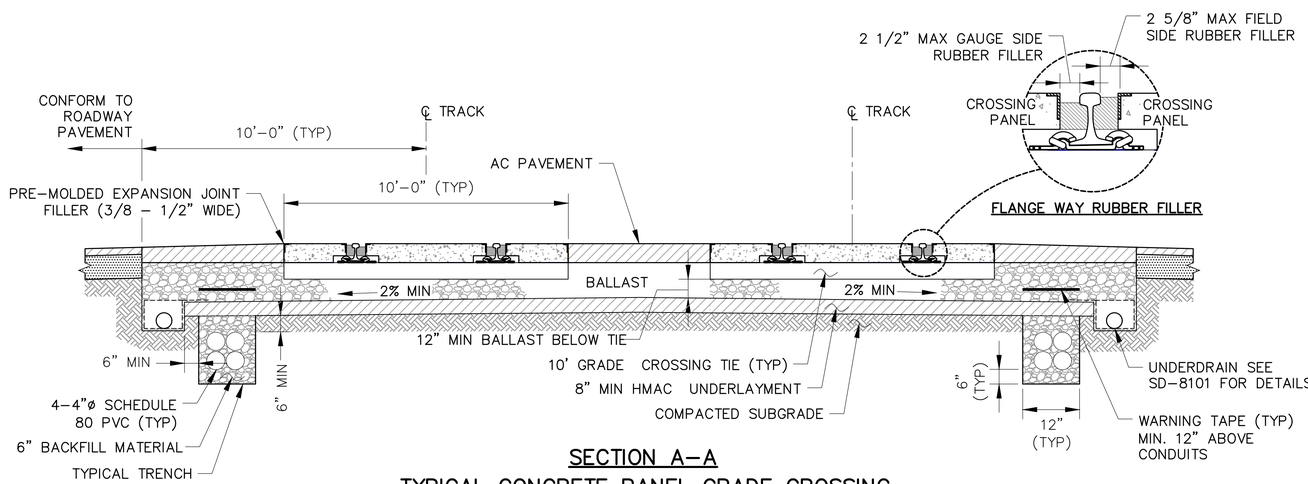


DETAIL



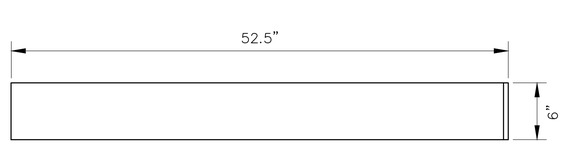
ELEVATION

TYPICAL CONCRETE PANEL WITH STEEL DEFLECTOR AND END RESTRAINT



SECTION A–A
TYPICAL CONCRETE PANEL GRADE CROSSING WITH SIDE UNDERDRAINS

NOTE: DESIGNER TO FINALIZE UNDERDRAIN DESIGN

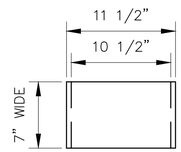


PLAN

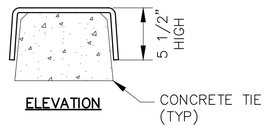


ELEVATION

END RESTRAINT



PLAN



ELEVATION

CONCRETE TIE SADDLE

1/2" X 7" X 1'–10" STEEL PLATE FORMED AS SHOWN (HOT DIP GALVANIZED)

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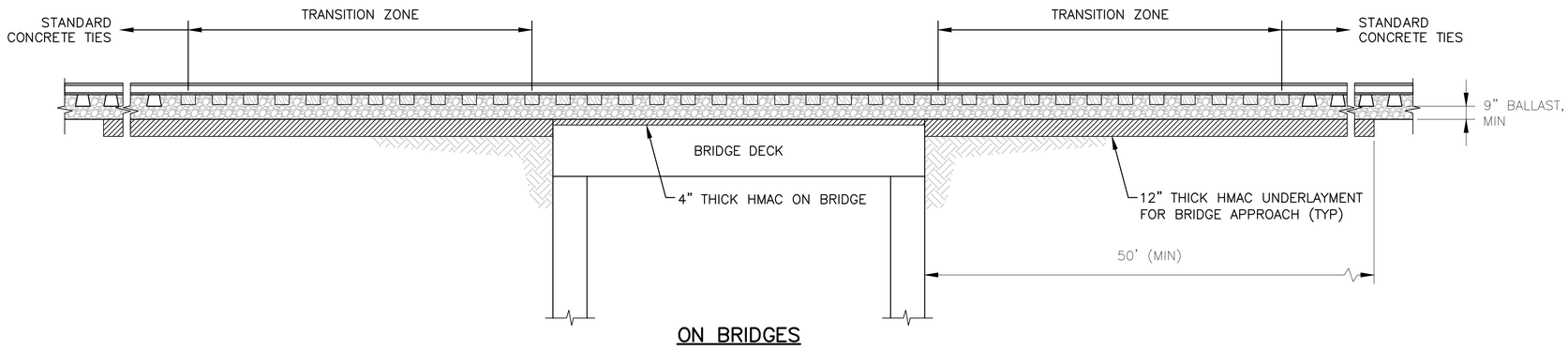
Caltrain

ENGINEERING STANDARD DRAWINGS

TRACK
TRACK STRUCTURE

AT–GRADE CROSSINGS

CADD FILE NAME: SD–2153
REV: | EDITION: FIFTH
SCALE: NTS
STANDARD DRAWING NO.: SD–2153



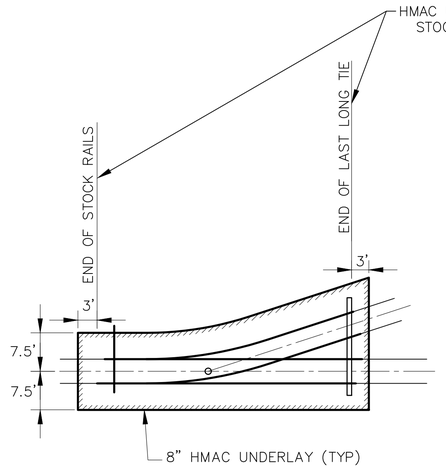
ON BRIDGES

NOTES ON BRIDGES:

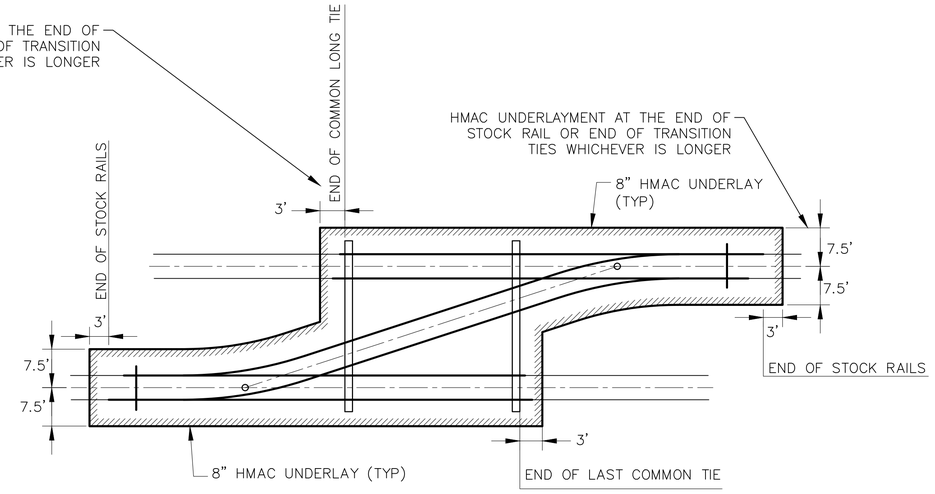
1. TRANSITION TIES (10'–LONG TIES) ARE USED TO BRIDGE HIGH MODULUS TRACK (THROUGH BRIDGE DECKS, FOR EXAMPLE) AND MAIN LINE TRACK ON SUBGRADE. SEE SD–2213 AND SD–2214 FOR TIES IN TRANSITION ZONES.
2. TRANSITION TIES SHALL BE USED AT:
   - BRIDGE APPROACHES
   - AT–GRADE CROSSINGS
   - TUNNEL PORTALS
   - PEDESTRIAN UNDERPASSES
   - ANY LOCATION WITH A MODULUS CHANGE
3. HMAC UNDERLAYMENT AT APPROACHES IS TO MINIMIZE LOCAL SETTLEMENT DUE TO DIFFERENCE IN TRACK MODULUS.
4. TO FURTHER MINIMIZE LOCAL SETTLEMENT AT APPROACHES, BALLAST DEPTH AT APPROACHES SHALL NOT BE MORE THAN 12".
5. CALTRAIN WILL DETERMINE TYPE OF TIES TO USE ON BRIDGE DURING DESIGN.
6. TIE PAD, WATERPROOFING AND DECK DRAINAGE NOT SHOWN FOR CLARITY.
7. HMAC SHALL BE REQUIRED AT LOCATIONS WHERE THE DISTANCE BETWEEN HMAC UNDERLAYMENTS UNDER TRACKS IS LESS THAN 200 FT AS MEASURED LONGITUDINALLY ALONG THE TRACK.
8. HMAC UNDERLAYMENT SHALL HAVE A 2% CROSS SLOPE OR OTHER MEANS OF DRAINAGE PROVIDED

NOTES:

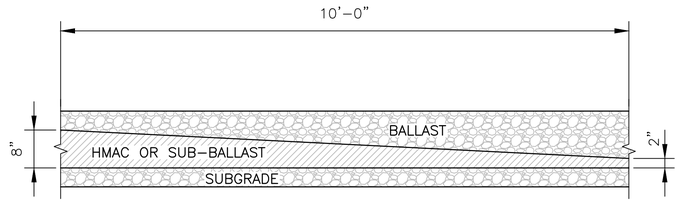
1. HMAC UNDERLAYMENT IS REQUIRED FOR LOCATIONS LISTED BELOW. SEE ADDITIONAL DETAILS ON OTHER STANDARD DRAWINGS.
   - BRIDGE APPROACHES
   - AT–GRADE CROSSINGS
   - SPECIAL TRACK WORK
   - STATIONS
2. SEE SD–2153 FOR DETAILS ON HMAC UNDERLAYMENT FOR AT–GRADE CROSSINGS.
3. SEE SD–2152 FOR DETAILS ON HMAC UNDERLAYMENT THROUGH STATIONS.



AT TURNOUTS



AT CROSSOVERS



SLOPE HMAC TO A THICKNESS OF 2"
AT BOTH ENDS OF TRANSITION ZONES

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PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

TRACK
ROADBED SECTIONS

HMAC UNDERLAYMENT

CADD FILE NAME: SD–2154

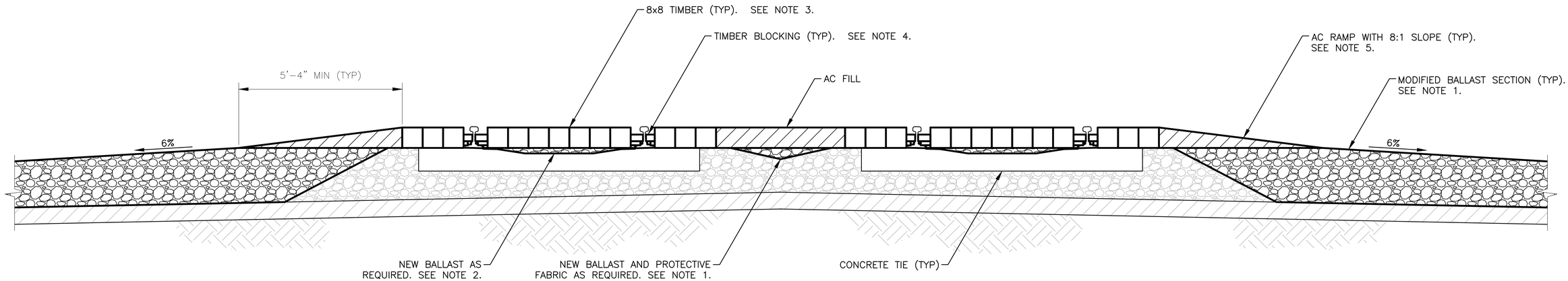
REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD–2154

NOTES:

1. MODIFY BALLAST SECTION WITH NEW BALLAST AS REQUIRED TO PROVIDE A STABLE BASE FOR TEMPORARY CROSSING TIMBERS AND RAMPS. PLACE PROTECTIVE FABRIC OR PLASTIC AND LEVEL WITH BASE MATERIAL TO CREATE A FLAT FINISHED SURFACE BEFORE PLACING TIMBER MATS.
2. FOR CONCRETE TIES, ADD NEW BALLAST BETWEEN THE RAILS TO CREATE A FLAT FINISHED SURFACE BEFORE PLACING TIMBER MATS.
3. 8 X 8 TIMBERS SHALL BE DRILLED AND BOLTED TOGETHER TO PREVENT THEM FROM MOVING UNDER TRAFFIC CONDITIONS.
4. INSTALL TIMBER BLOCKING TO PROVIDE A FLANGE WAY GAP 2–1/2" WIDE BY 1–1/2" DEEP, MINIMUM. TIMBER BLOCKING SHALL FIT TIGHTLY AND NOT MOVE OR SLIDE UNDER TRAFFIC CONDITIONS. BLOCKING SHALL BE INSTALLED ALONG THE FULL LENGTH OF THE TEMPORARY CROSSING TIMBERS.
5. PROVIDE AC RAMPS ON ALL FOUR SIDES OF TIMBER MATS FOR END RESTRAINT. AC RAMPS AT TEMPORARY CROSSINGS SHALL HAVE A SLOPE OF 8:1.
6. MINIMUM CROSSING WIDTH SHALL BE 2' WIDER THAN THE WIDEST EQUIPMENT SERVED BUT NO LESS THAN 10'.
7. BALLAST SECTION, RAMPS AND TIMBER MATS SHALL BE MAINTAINED AS REQUIRED DURING THE CONSTRUCTION PROJECT.
8 FORM B PROTECTION IS REQUIRED WHEN CROSSING IS IN USE. UNAUTHORIZED ACCESS TO TEMPORARY CROSSINGS SHALL BE PREVENTED WHEN NOT IN USE. GATES SHALL SECURED WITH PADLOCK AND CABLE OR CHAIN.
9. AXLE LOAD CROSSING TRACK SHALL BE LESS THAN 32,000 LBS.
10. DESIGN DRAWINGS FOR TEMPORARY GRADE CROSSINGS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO THEIR INSTALLATION. DRAWINGS SHALL SHOW DETAILS OF THE LOCATION, TRACKS, CONSTRUCTION, MATERIALS AND METHOD OF PROTECTION.



TEMPORARY CONSTRUCTION CROSSING

SECTION

SCALE: NOT TO SCALE

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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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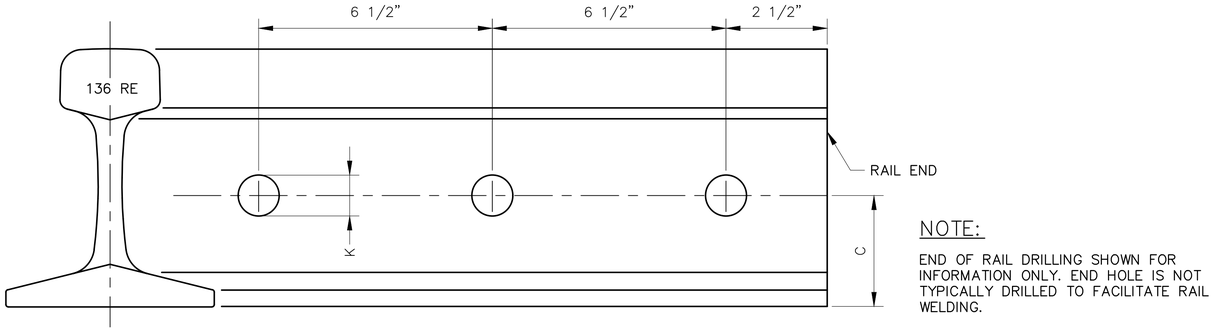
Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

TRACK
TRACK STRUCTURE
TEMPORARY CONSTRUCTION CROSSINGS
STANDARD DETAIL

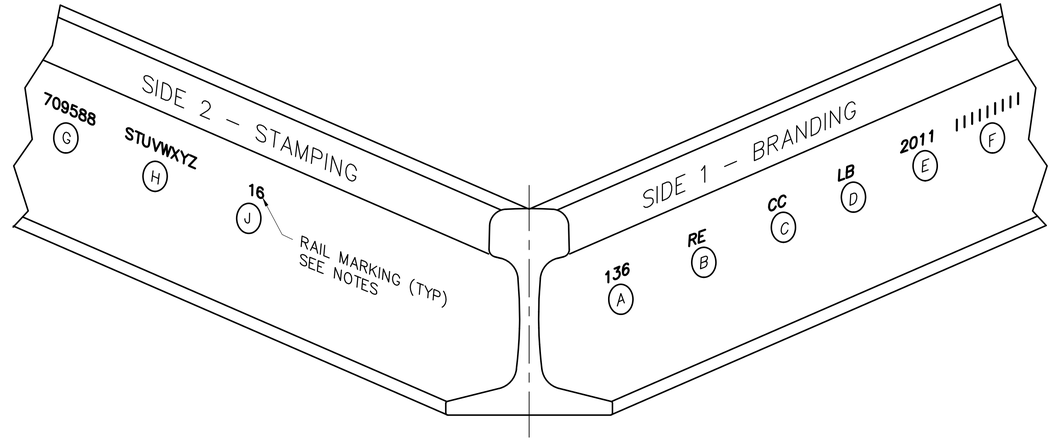
CADD FILE NAME:	SD–2155
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2155



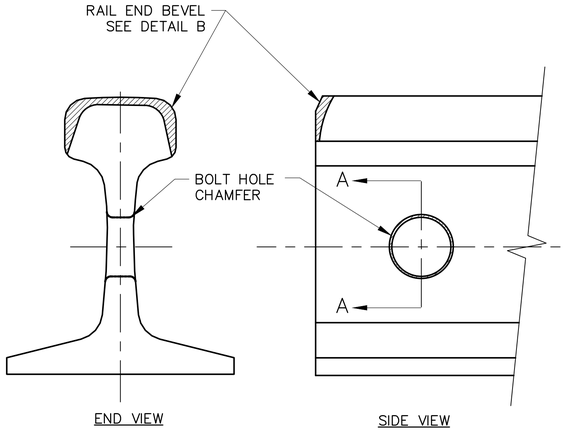
NOTE:

END OF RAIL DRILLING SHOWN FOR INFORMATION ONLY. END HOLE IS NOT TYPICALLY DRILLED TO FACILITATE RAIL WELDING.

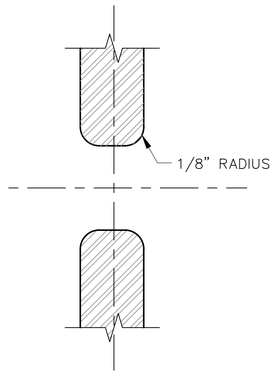
RAIL DRILLING FOR JOINTS



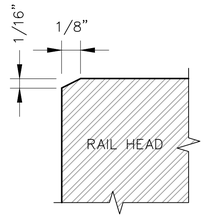
RAIL MARKINGS



RAIL CHAMFERING AND BEVELING



BOLT HOLE CHAMFER
SECTION A–A



RAIL END BEVEL
DETAIL B

RAIL MARKING NOTES

SIDE 1: BRANDING SHALL BE ROLLED IN RAISED CHARACTERS ON THE SIDE OF THE WEB OF EACH RAIL IN ACCORDANCE TO AREMA.

A = WEIGHT OF RAIL
B = SECTION
C = HYDROGEN REDUCTION METHOD (CC = CONTROL COOLED, VT = VACUUM TREATED)
D = MANUFACTURER (EG, LB = LB FOSTER)
E = YEAR ROLLED
F = MONTH ROLLED

SIDE 2: THE WEB OF OPPOSITE SIDE OF THE RAIL SHALL BE HOT STAMPED IN ACCORDANCE TO AREMA.

G = HEAT NUMBER
H = RAIL LETTER
J = INGOT NUMBER OR STRAND AND BLOOM NUMBER (IF APPLICABLE)

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

TRACK
RAILS, TIES AND FASTENERS
MARKING FOR
STANDARD RAIL SECTIONS

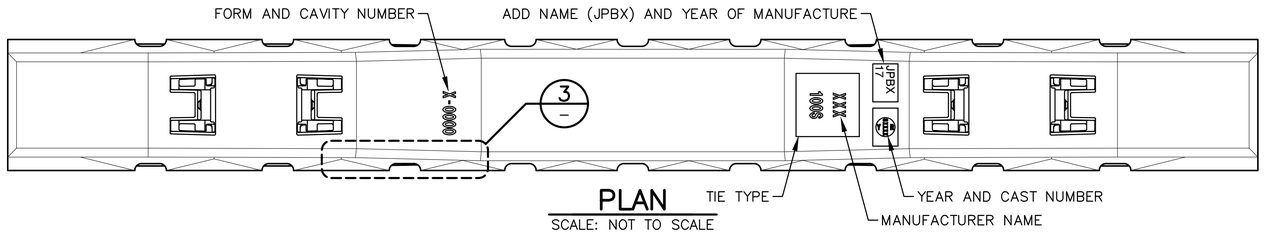
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REV:

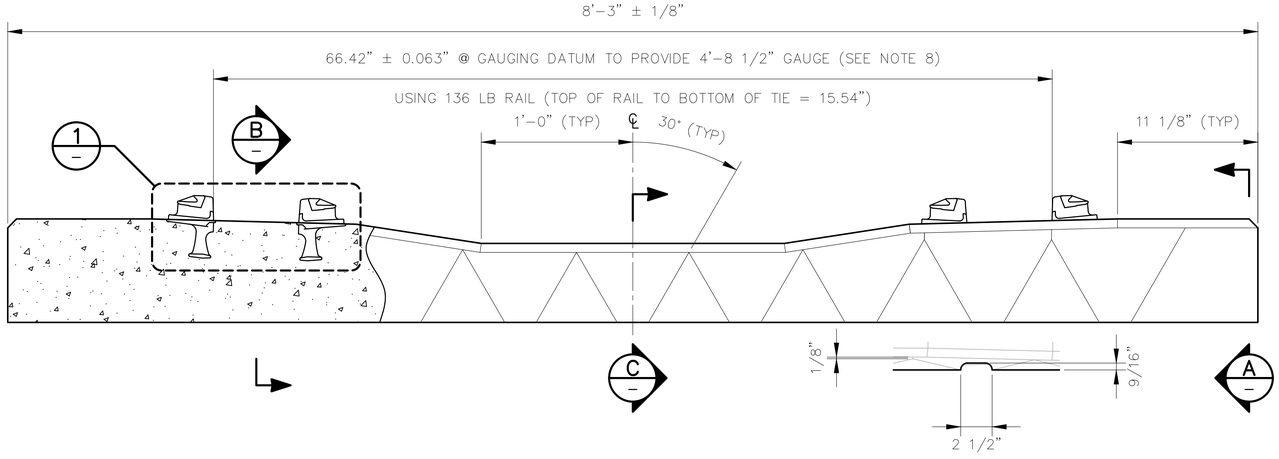
EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD-2201



PLAN
SCALE: NOT TO SCALE



ELEVATION
SCALE: NOT TO SCALE

SCALLOP DETAIL
3 DETAIL
SCALE: NOT TO SCALE

NOTES:

GENERAL

1. TIES SHALL CONFORM TO CURRENT AREMA CHAPTER 30, CONCRETE TIES, AND CALTRAIN STANDARD SPECIFICATION, SECTION 20140.
2. SUBMIT SHOP DRAWINGS FOR APPROVAL.
3. THE LENGTH OF TIES SHALL BE 8'–3" MINIMUM, 8'–6" MAXIMUM.
4. TIES SHALL BE OF UNIFORM WIDTH.
5. SPECIFIED PANDROL FASTENINGS MAY CHANGE BECAUSE OF CHANGES BY THE MANUFACTURER.
6. TIE WEIGHT: APPROX. 610 LBS (± 20 LBS) FOR AN 8'–3" TIE AND APPROX. 710 LBS FOR AN 8'–6" TIE, INCLUDING FASTENING SHOULDERS.
7. MAIN, SIDING, YARD AND TERMINAL TRACKS SHALL BE CONSTRUCTED WITH CONCRETE TIES.

CONCRETE

1. 7,000 PSI MINIMUM AT 28 DAYS.
2. 4,500 PSI MINIMUM AT TRANSFER.
3. CONCRETE SHALL BE AIR ENTRAINED: MINIMUM 3.5% AIR IN HARDENED CONCRETE.

PRESTRESSING

1. WIRE: 5.32 MM NOMINAL DIAMETER (ASTM A881M), GRADE 260, STRESS RELIEVED. TENSION EACH WIRE TO 7,000 PSI.
2. WIRE PATTERN: 20 MINIMUM, 4 ROWS.
3. WIRES SHALL BE CUT TO TERMINATE 1/8" FROM SURFACE OF SURROUNDING CONCRETE AT TIE ENDS.

SURFACE FINISH

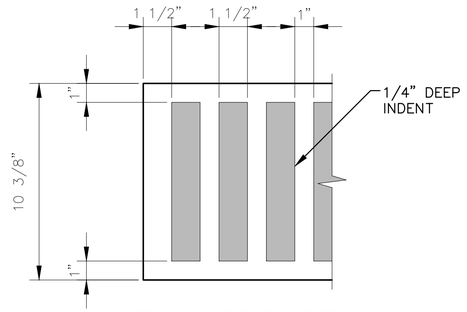
STEEL FORM FINISH, EXCEPT BOTTOM AND ENDS SHALL HAVE ROUGH FINISH.

RAIL FASTENINGS (PANDROL)

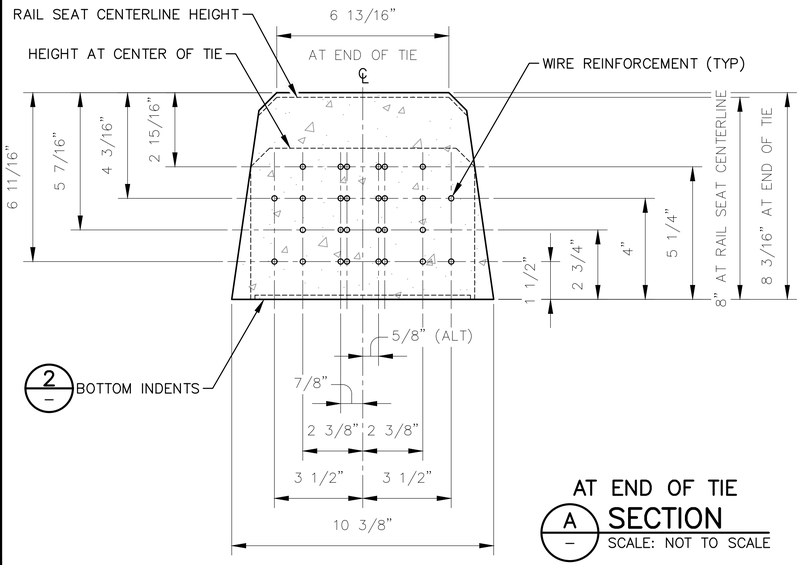
1. TIE PAD: 6.5 MM THICK 7083WB (POLY).
2. SHOULDERS: 9086.
3. TOE INSULATOR: 7695.
4. POST INSULATOR: 7692.
5. FAST CLIPS: GALVANIZED–1601 FOR 5 1/2" BASE RAIL, 1603 FOR 6" BASE RAIL.
6. NORMAL TOE LOAD 2,400 TO 3,000 LBS. NORMAL RAIL SEAT CLAMPING FORCE 4,800 TO 6,000 LBS.
7. SEE SD–2222 FOR FASTENING ASSEMBLIES FOR STANDARD JOINTS AND INSULATED JOINTS.
8. IN THE EVENT OF SUBSEQUENT PRODUCTION CHANGE, SUBMIT (IN WRITING) FOR ENGINEER'S APPROVAL PANDROL RECOMMENDED REPLACEMENT WHICH EQUALS OR EXCEEDS THE PART NUMBER SPECIFIED HEREIN.

TOLERANCES

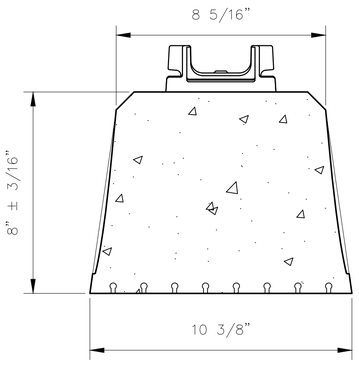
1. RAIL SEAT CANT: 1:40 ± 5.
2. RAIL SEAT FLATNESS: ± 1/32" ACROSS ANY PART OF THE RAIL SEAT.



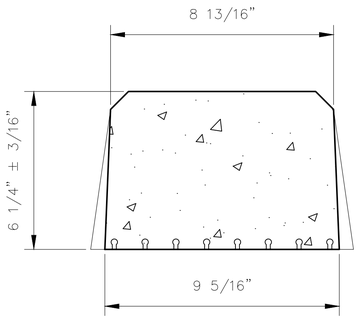
BOTTOM INDENTS DETAIL
2 DETAIL
SCALE: NOT TO SCALE



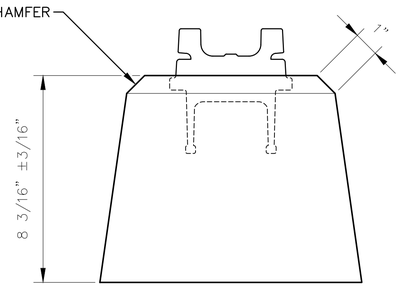
AT END OF TIE
A SECTION
SCALE: NOT TO SCALE



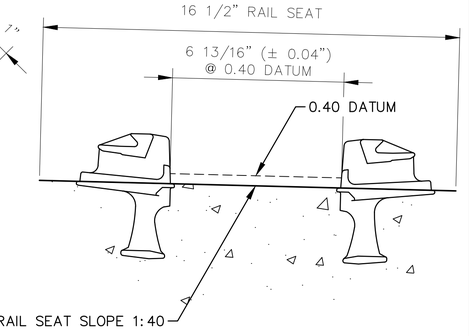
MIDWAY BETWEEN SHOULDERS
B SECTION
SCALE: NOT TO SCALE



CENTER OF TIE
C SECTION
SCALE: NOT TO SCALE



END VIEW
D ELEVATION
SCALE: NOT TO SCALE



SHOULDER LOCATION
1 DETAIL
SCALE: NOT TO SCALE

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PENINSULA CORRIDOR JOINT POWERS BOARD

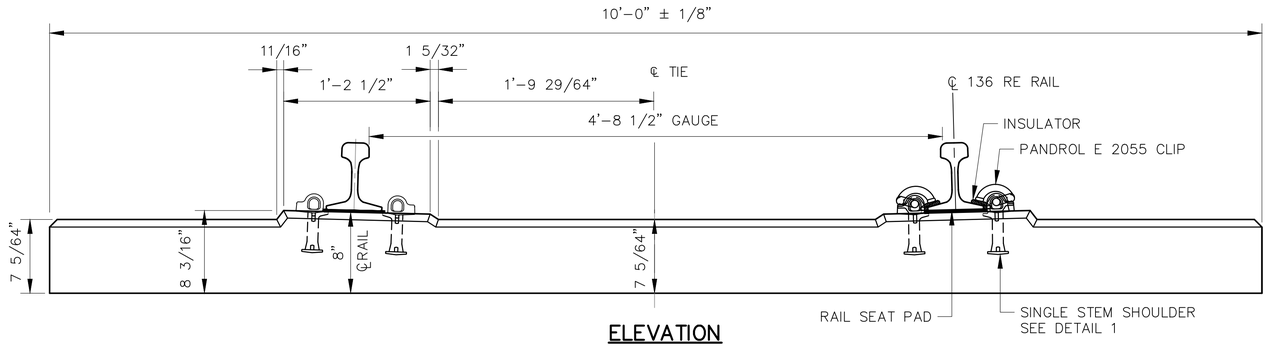
APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

Caltrain

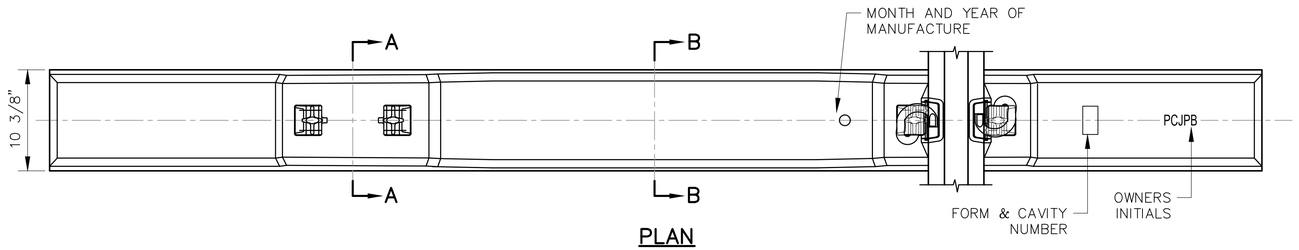
ENGINEERING STANDARD DRAWINGS

TRACK
RAILS, TIES AND FASTENERS
CONCRETE TIES FOR 136 RE RAIL
STANDARD CROSS TIES

CADD FILE NAME:	SD–2211
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2211



ELEVATION



PLAN

CONCRETE GRADE CROSSING TIE

GENERAL NOTES:

GENERAL

1. CONFORM WITH AREMA CURRENT CHAPTER 30, CONCRETE TIES AND CALTRAIN STANDARD SPECIFICATION SECTIONS 20044 AND 20140
2. SUBMIT SHOP DRAWINGS FOR APPROVAL
3. THE TIE SHALL BE OF UNIFORM IN WIDTH
4. SPECIFIED PANDROL FASTENINGS MAY CHANGE DUE TO CHANGES BY THE MANUFACTURER
5. WEIGHT: 750 LBS MAX (± 20 LBS) INCLUDING FASTENING SHOULDERS

CONCRETE

1. 7,000 PSI MINIMUM AT 28 DAY
2. 4.500 PSI MINIMUM AT TRANSFER
3. AIR ENTRAINED: MINIMUM 3.5% AIR IN HARDENED CONCRETE

PRESTRESSING

1. 5.32 MM NOMINAL DIAMETER (ASTM A881M), GRADE 260, STRESS RELIEVED. TENSION EACH WIRE TO 7000 PSI
2. WIRE PATTERN: 20 MINIMUM, 4 ROWS
3. CUT WIRE TO WITHIN 1/8" FROM SURROUNDING CONCRETE AT THE ENDS

SURFACE FINISH

STEEL FORM FINISH, EXCEPT BOTTOM AND ENDS SHALL HAVE ROUGH FINISH

RAIL FASTENINGS (PANDROL)

1. TIE PAD: 6.5 MM THICK 7083WB (POLY)
2. CLIPS: E 2055, GALVANIZED

NOTES:

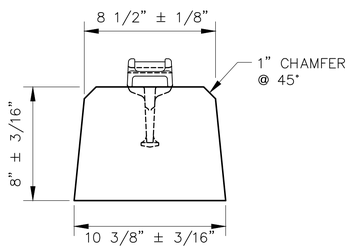
a) NORMAL TOE LOAD 2,400 TO 3,000 LBS, AND NORMAL RAIL SEAT CLAMPING FORCE 4,800 TO 6,000 LBS

b) SEE SD-2222 FOR FASTENING ASSEMBLIES FOR STANDARD JOINTS AND INSULATED JOINTS

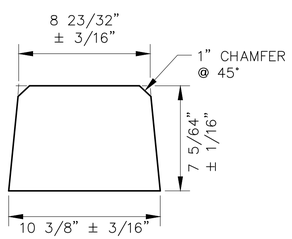
c) IN THE EVENT OF SUBSEQUENT PRODUCTION CHANGE, SUBMIT (IN WRITING) FOR ENGINEER'S APPROVAL PANDROL RECOMMENDED REPLACEMENT WHICH EQUALS OR EXCEEDS THE PART NUMBER SPECIFIED HEREIN

TOLERANCES

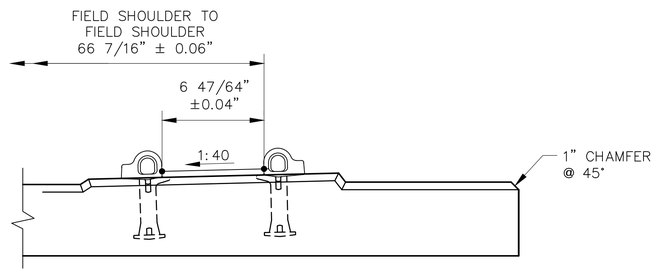
1. RAIL SEAT CANT: 1:40 ± 5
2. RAIL SEAT FLATNESS: ± 1/32" ACROSS ANY PART OF THE RAIL SEAT



SECTION A-A



SECTION B-B



DETAIL 1
SHOULDERS

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PENINSULA CORRIDOR JOINT POWERS BOARD

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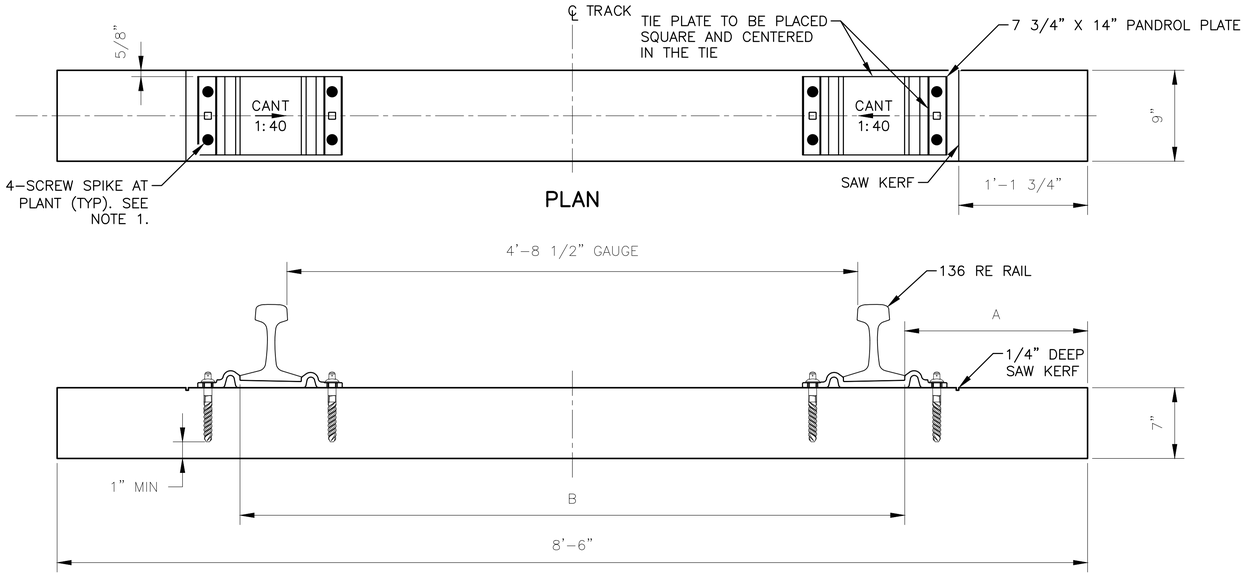
Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

TRACK
RAILS, TIES AND FASTENERS
CONCRETE TIES FOR 136 RE RAIL
GRADE CROSSING
AND TRANSITION TIES

CADD FILE NAME:	SD-2212
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD-2212

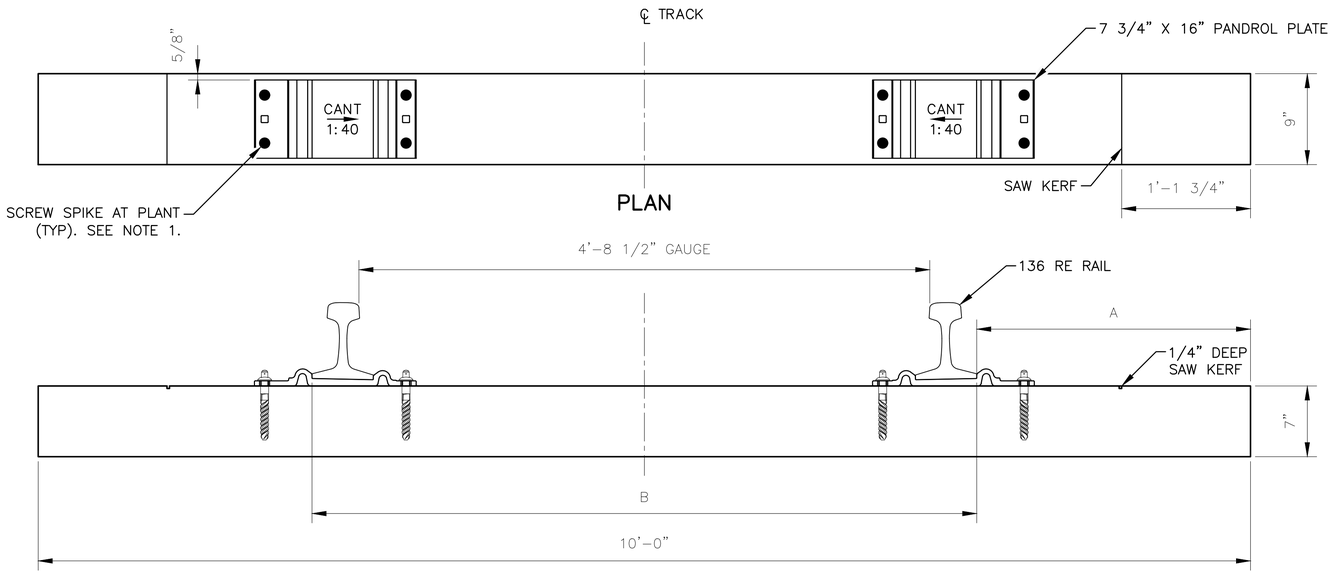


ELEVATION

STANDARD TIMBER TIE WITH 16" PLATE (FOR SCREW SPIKES)

DETAIL

SCALE: NOT TO SCALE



ELEVATION

10' LONG TIMBER TIE WITH 16" PLATE (FOR SCREW SPIKES)

DETAIL

SCALE: NOT TO SCALE

NOTE:
FOR USE IN TRANSITION ZONES.

TYPE OF TIE	A	B
7" X 9" X 8'–6" STANDARD TIMBER TIE	1'–6"	65 3/4"
7" X 9" X 10' TRANSITION TIE	2'–3"	65 3/4"

BILL OF MATERIALS – 8'–6" TIES W/ 16" PANDROL PLATES				
MATERIAL	UNIT	QUANTITY	WEIGHT	SUBTOTAL
SCREW SPIKES, 15/16" X 6"	EACH	4	0.85 LBS.	3.40
TIES, 7" X 9" X 8'–6"	EACH	1	200.00 LBS.	200.00
TIE PLATES 8" X 16"	EACH	2	25.30 LBS.	50.60
			TOTAL	254.00

BILL OF MATERIALS – 10' TIES W/ 16" PANDROL PLATES				
MATERIAL	UNIT	QUANTITY	WEIGHT	SUBTOTAL
SCREW SPIKES, 15/16" X 6"	EACH	4	1.1 LBS.	4.40
TIES, 7" X 9" X 10'	EACH	1	222.00 LBS.	222.00
TIE PLATES 7 3/4" X 16"	EACH	2	25.30 LBS.	50.60
			TOTAL	277.00

NOTES:

1. BEFORE PLACING TIE PLATE ON TIE, TIE SHALL BE ORIENTED HEART SIDE FACING DOWN, TIES SHALL HAVE A SAW KERF LOCATED ON TOP SIDE (SAP SIDE) OF TIES, SAW KERF SHALL BE A MAXIMUM OF 1/4" WIDE X 1/4" DEEP. ALL FOUR SCREW SPIKES ON EACH PLATE SHALL BE INSTALLED WHEN SUPPLYING PRE–PLATED TIES.
2. NAIL CONFIGURATION FOR END PLATES SHALL BE DEEP GROVED ANTI–SPLIT TOOTH.
3. END PLATES SHALL BE 6" X 7" WITH MINIMUM OF 180 TEETH PER PLATE.
4. FOR TIE PLATES, PANDROL PLATES, AND FASTENING DETAILS, SEE SD–2221 AND SD–2222
5. 8'–6" WOOD TIES AND 16" PANDROL TIE PLATES ARE TO BE INSTALLED ON TEMPORARY MAIN AND SIDING TRACKS
6. 10'–0" WOOD TIES AND 16" PANDROL TIE PLATES SHALL BE USED ON TRANSITION ZONES WHERE REQUIRED
7. ALL DIMENSIONS SHOWN ARE FOR USE WITH NEW 136# RE RAIL
8. PREBORE TIMBER TIES PRIOR TO TREATMENT TO PROVIDE PRESERVATIVE PENETRATION AROUND THE SPIKE HOLES. USE DIAMETER "A" BIT TO A DEPTH OF "B" FROM TOP OF TIE. DO NOT PUNCTURE BOTTOM OF TIE.

	A	B
6" SCREW	11/16"	5"
6 1/2" SCREW	11/16"	5 1/2"

9. FOR USE IN PLATES WITH 1" ROUND HOLES
10. WOOD TIES TO BE USED FOR TEMPORARY TRACK CONSTRUCTION, SPOT TIE REPLACEMENT, AND MAINTENANCE
11. FOR SETOOUT AND INDUSTRY TRACKS USE 8'–0" TIES
12. PANDROL TIE PLATES SHALL BE USED FOR ALL NEW WOOD TIE CONSTRUCTION, MAINTENANCE AND SPOT TIE REPLACEMENT SHALL USED THE SAME TYPE OF PLATE THAT IS ON THE TIES TO BE REPLACED

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ENGINEERING STANDARD DRAWINGS

TRACK
RAIL, TIES AND FASTENERS

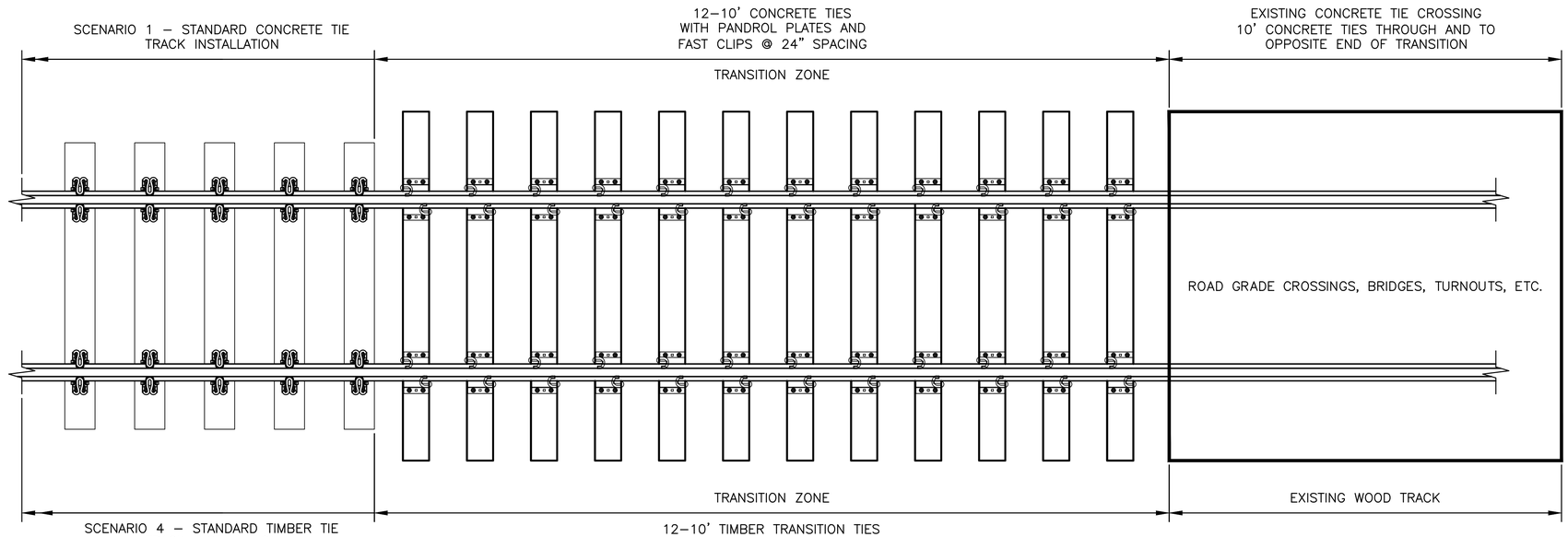
TIMBER STANDARD AND TRANSITION CROSS TIES

CADD FILE NAME: SD–2213

REV: | EDITION: FIFTH

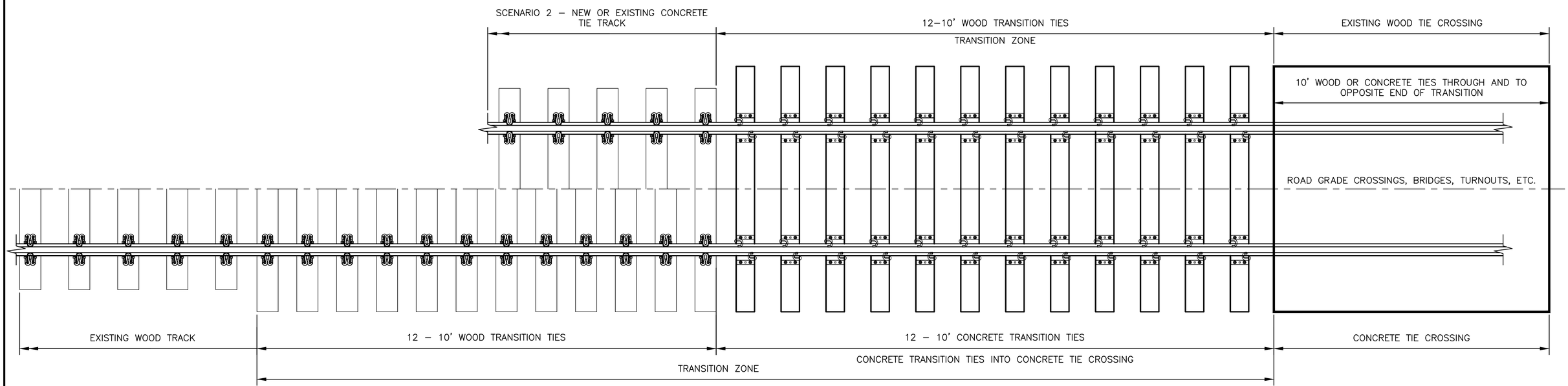
SCALE: NTS

STANDARD DRAWING NO.: SD–2213



TRANSITION ZONE FOR HIGH MODULUS TRACK
PLAN
SCALE: NOT TO SCALE

NOTE:
TRANSITION ZONE FROM TIMBER TO CONCRETE TIES SHALL NOT BE INSTALLED WHERE CURVATURE OR OBSTRUCTIONS EXIST. INSTALL CONCRETE TIES UNTIL CURVATURE OR OBSTRUCTIONS ARE NO LONGER PRESENT. THEN BEGIN INSTALLING TRANSITION TIES.



TRANSITION ZONE FOR HIGH MODULUS TRACK
PLAN
SCALE: NOT TO SCALE

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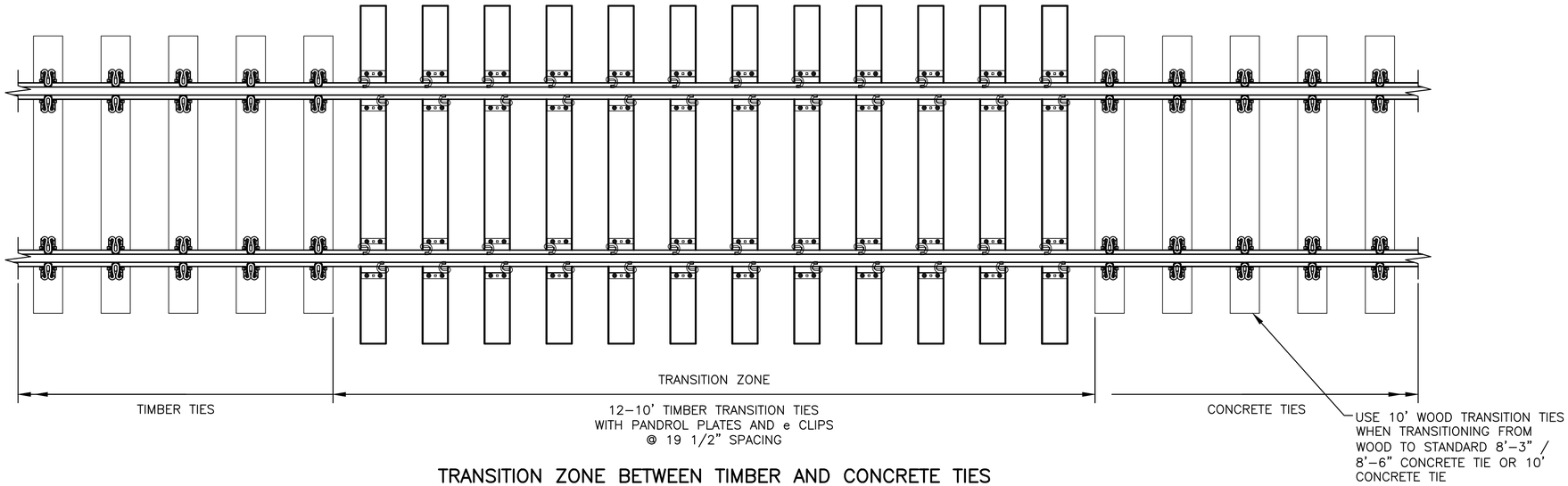
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

TRACK
RAIL, TIES AND FASTENERS

TRANSITION ZONES
AT GRADE CROSSINGS

CADD FILE NAME: SD–2214A
REV: | EDITION: FIFTH
SCALE: NTS
STANDARD DRAWING NO.: SD–2214A



TRANSITION ZONE BETWEEN TIMBER AND CONCRETE TIES

PLAN

SCALE: NOT TO SCALE

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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

TRACK
RAIL, TIES AND FASTENERS

STANDARD TRACK –
TRANSITION ZONES

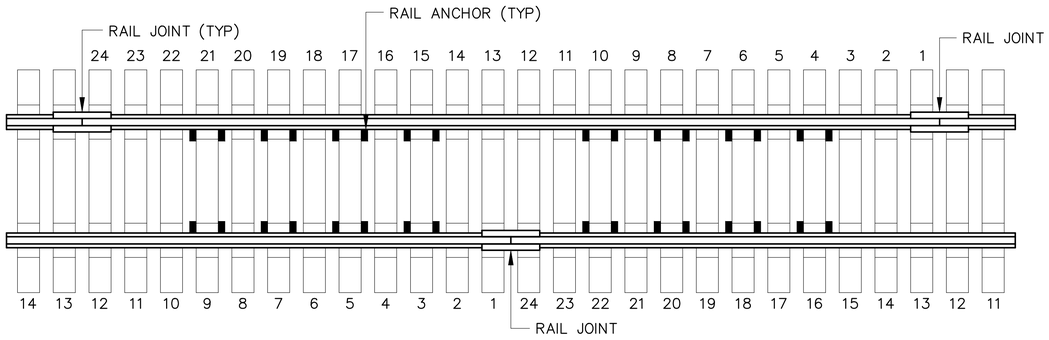
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REV:

EDITION: FIFTH

SCALE: NTS

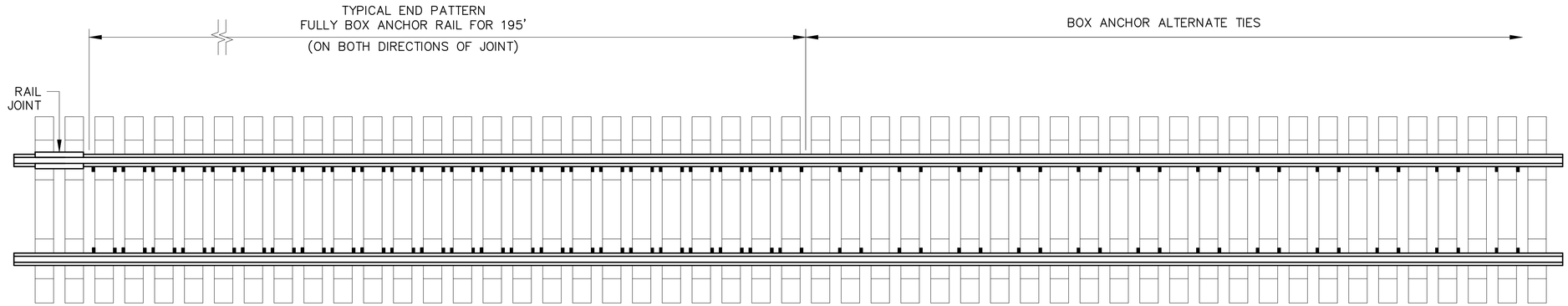
STANDARD DRAWING NO.: SD–2214B



APPLICATION 1: 16 ANCHORS PER 39'–0" JOINTED RAIL

NOTES:

1. WHILE THE NUMBER OF ANCHORS REQUIRED MAY VARY WITH EXISTING CONDITIONS, STANDARD IS 16 ANCHORS PER RAIL LENGTH OF 24 TIES
2. RAIL ANCHORS SHALL BE DRIVEN ON BASE OF RAIL UNTIL LOCKING NOTCH ENGAGES EDGE OF OPPOSITE FLANGE. ANCHORS MUST NOT BE DRIVEN ALONG THE RAIL. ANCHORS SHALL BE POSITIONED TIGHTLY AGAINST THE TIES
3. FOR RAIL LENGTHS LESS THAN 400', I.E. NOT CWR, CONNECTING TO CONTINUOUS WELDED RAIL (CWR), FULLY BOX ANCHOR RAIL FOR 195' EACH WAY.
4. TIES SHALL BE SYMMETRICALLY ANCHORED. WHERE ANCHORING PATTERN TRANSITION OCCURS FOR OPPOSITE RAIL, ANCHORS SHALL BE DUPLICATED TO AVOID ANY SKEWING OF TIES.
5. FULLY BOX ANCHOR ALL TURNOUTS FOR 195' AHEAD OF AND BEHIND ON MAIN AND SIDING TRACKS AND TO CLEAR POINT OF ALL OTHER TRACKS.
6. FULLY BOX ANCHOR CWR INTO DRAGGING EQUIPMENT DETECTOR, BRIDGES, INSULATED JOINTS, GRADE CROSSING, SWITCHES, OR ANY OTHER FIXED OBJECT FOR 195' IN BOTH DIRECTIONS.



END PATTERN

CENTER PATTERN

APPLICATION 2: ANCHORS PER CONTINOUS WELDED RAIL

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

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PENINSULA CORRIDOR JOINT POWERS BOARD

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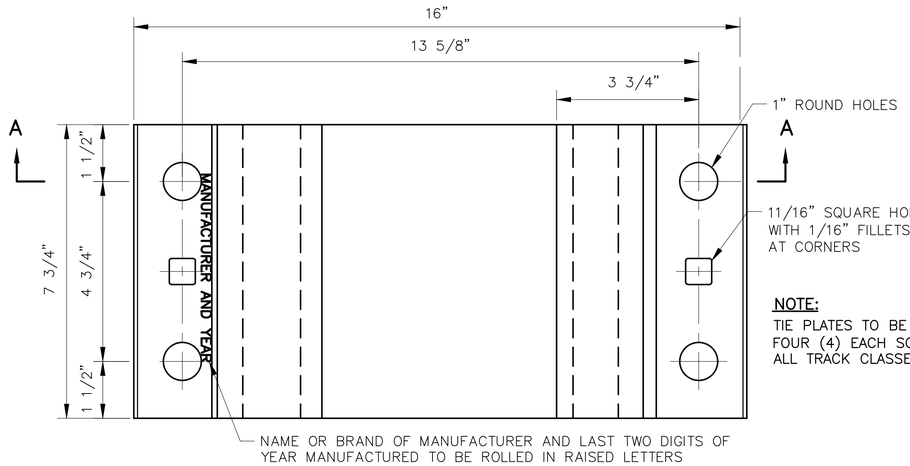
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

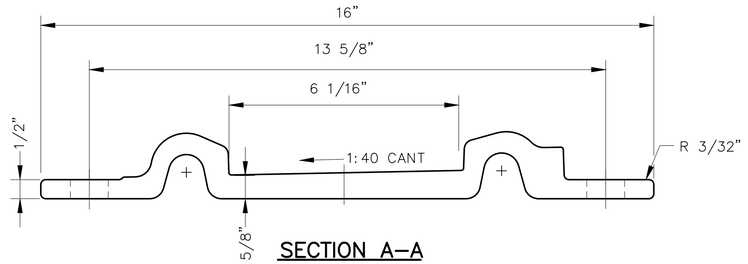
TRACK
RAILS, TIES AND FASTENERS

APPLICATIONS OF RAIL ANCHORS

CADD FILE NAME:	SD–2215
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2215



TOP VIEW



SECTION A–A
PANDROL TIE PLATE

NOTES FOR PANDROL PLATES:

1. TOLERANCES FOR SHEARING AND PUNCHING WILL BE IN ACCORDANCE WITH AREMA STANDARDS FOR STANDARD TIE PLATE SECTIONS.
2. SQUARE HOLES SHALL BE USED FOR INITIAL ATTACHMENT OF PLATES USING CUT SPIKES. CUT SPIKES WILL NOT BE REMOVED ONCE INSTALLED.
3. 6" LONG SCREW SPIKES WITH SQUARE HEADS SHALL BE USED FOR STANDARD TRACK SECTIONS, AND 6 1/2" LONG EVERGRIP GALVANIZED SCREW SPIKES SHALL BE USED FOR AT–GRADE CROSSING TRACKS.
4. SCREW SPIKE MATERIAL SHALL BE AMERICAN IRON AND STEEL INSTITUTE (AISI) 1045 STEEL, MEETING OR EXCEEDING THE FOLLOWING MINIMUM MECHANICAL REQUIREMENTS:

   MINIMUM YIELD STRENGTH: 37,000 PSI
   PSI ELONGATION: 18% IN 2"
   MINIMUM TENSILE STRENGTH: 74,000 PSI
5. THE FOLLOWING INFORMATION TO BE FORGED INTO HEAD OF THE SCREW SPIKES:
   A. MANUFACTURER'S NAME OR INITIALS
   B. YEAR OF MANUFACTURE
   C. SIZE OF SCREW: MUST BE HOT FORGED AND CENTERED RELATIVE TO SHANK
6. SCREW SPIKE SHALL BE COATED TO RESIST CORROSION.
7. 16" PLATES ARE TO BE USED FOR TEMPORARY MAIN TRACK CONSTRUCTION OF WOOD TIE TRACK, AND WHERE REQUIRED IN TRANSITIONS ZONES.

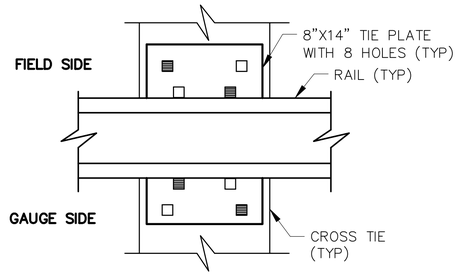


FIGURE 1

NOTE:
TIE PLATES TO BE INSTALLED WITH FOUR (4) EACH SCREW SPIKES ON ALL TRACK CLASSES AND TYPES.

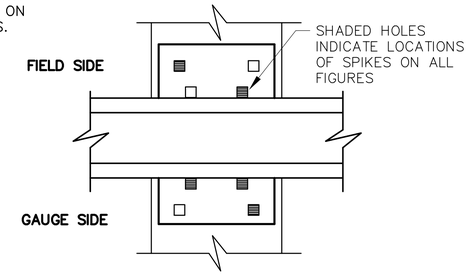


FIGURE 2

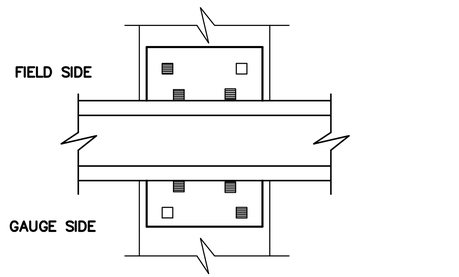


FIGURE 3

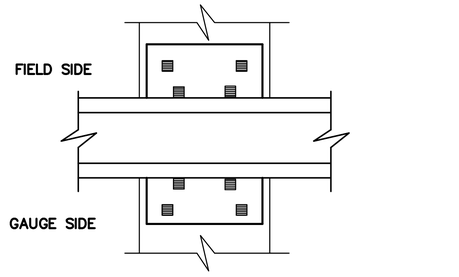
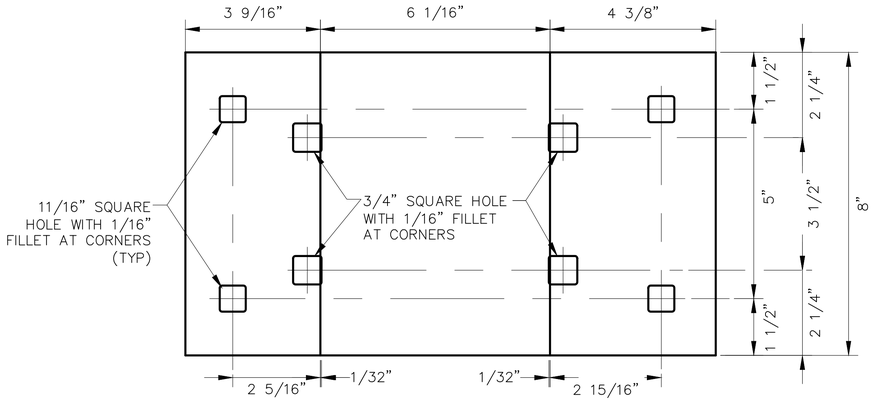


FIGURE 4

8–HOLE PUNCH TIE PLATE
WITH HOLD–DOWN
SPIKE HOLES



8" X 14" TIE PLATE WITH 8 HOLES

TO BE USED FOR MAINTENANCE AND SPOT TIE REPLACEMENT WHERE 14" PLATES ARE PRESENT

NOTES FOR TIE PLATES:

1. TIE PLATE SPIKING FOR PLATES WITH HOLD-DOWN SPIKE HOLES:
   - FIGURES 1: - TANGENT AND CURVES TO 2°00'
     - 4 SPIKES REQUIRED (2 LINE AND 2 HOLD-DOWN)
   - FIGURES 2: - CURVES 2°01' TO 4°00' INCLUSIVE
     - 5 SPIKES REQUIRED (3 LINE AND 2 HOLD-DOWN)
   - FIGURES 3: - CURVES OVER 4°00'
     - 6 SPIKES REQUIRED (4 LINE AND 2 HOLD-DOWN)
2. ANY VARIATIONS IN THE SPIKING PATTERNS ILLUSTRATED IN FIGURES 1 THROUGH 3 SHALL BE APPROVED BY THE CALTRAIN DEPUTY DIRECTOR OF ENGINEERING.
3. CUT SPIKES MAY BE USED IN "PANDROL" PLATE SQUARE HOLES FOR TEMPORARY ASSEMBLY OF TRACK. THE CUT SPIKES WILL NOT BE REMOVED AFTER INSTALLATION OF SCREW SPIKES.
4. SPIKES SHALL CONFORM TO CURRENT AREMA STANDARDS FOR SOFT STEEL TRACK SPIKES.

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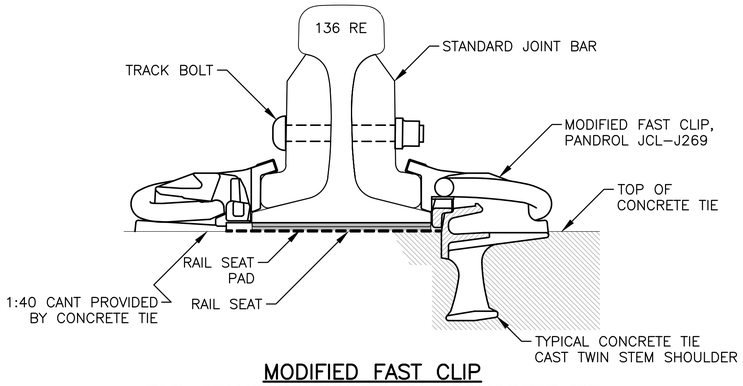
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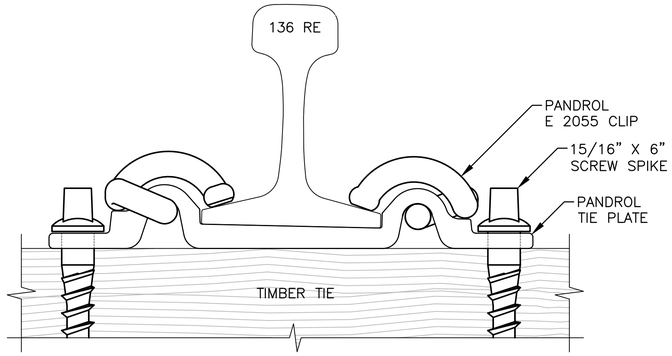
ENGINEERING STANDARD DRAWINGS

TRACK
RAILS, TIES AND FASTENERS
FASTENING ASSEMBLIES
PANDROL PLATES AND TIE PLATES

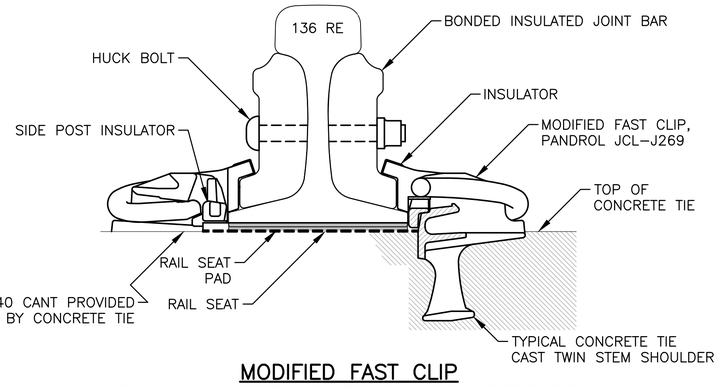
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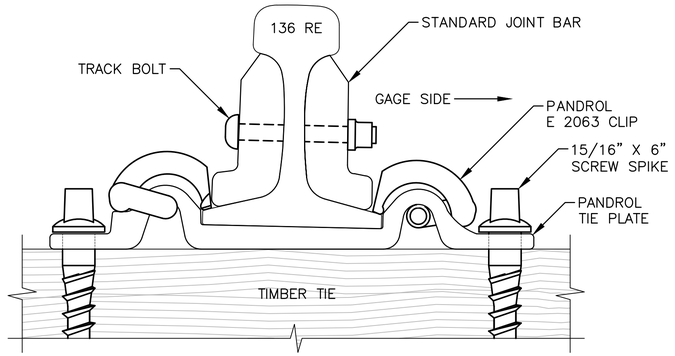
MODIFIED FAST CLIP
FOR STANDARD JOINTS ON CONCRETE TIE



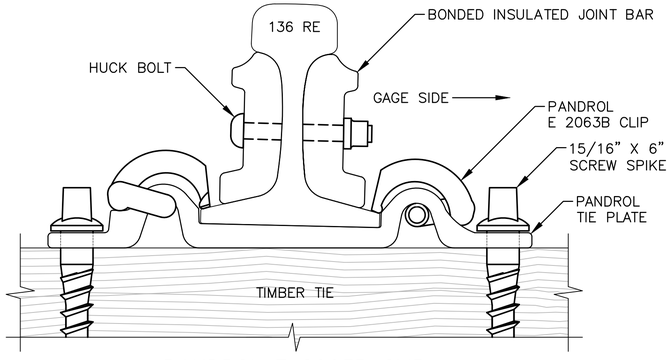
PANDROL E 2055
CLIP ON TIMBER TIE



MODIFIED FAST CLIP
FOR INSULATED JOINTS ON CONCRETE TIE



PANDROL E 2063 CLIP
FOR STANDARD JOINT ON TIMBER TIE



PANDROL E 2063B CLIP
FOR INSULATED JOINTS ON TIMBER TIE

GENERAL NOTES:

1. IN THE EVENT OF SUBSEQUENT PRODUCTION CHANGE, SUBMIT (IN WRITING) FOR ENGINEER'S APPROVAL PANDROL RECOMMENDED REPLACEMENT WHICH EQUALS OR EXCEEDS THE PART NUMBER SPECIFIED HEREIN.
2. WHEN LAYING RAIL, JOINTS MUST NOT BE LOCATED IN ROAD CROSSINGS, BRIDGE DECKS OR ON ENDS OF BRIDGES.

FOR CONCRETE TIE FASTENERS:

1. FOR ALL LOCATIONS OTHER THAN JOINTS AND TRANSITION ZONES. SEE SD–2211. NOMINAL TOE LOAD 2,400 TO 3,000 LBS, AND NORMAL RAIL SEAT CLAMPING FORCE 4,800 TO 6,000 LBS.
2. USE MODIFIED FAST CLIPS JCL–J269 AT JOINT LOCATIONS (STANDARD JOINTS AND INSULATED JOINTS).
3. FAST CLIPS FOR INSULATED JOINTS ARE PAINTED YELLOW FOR QUICK VISUAL IDENTIFICATION.

FOR TIMBER TIE FASTENERS:

1. USE PANDROL E CLIPS WITH PANDROL 7 3/4" X 16" PLATE AND SCREW SPIKES.
2. USE E 2055 CLIPS AT ALL LOCATIONS OTHER THAN JOINT BAR OR INSULATED JOINT LOCATIONS. NOMINAL TOE LOAD 2,750 LBS., AND NOMINAL RAIL SEAT CLAMPING FORCE 5,500 LBS.
3. BEARING AREA OF TOE FOR E 2055 CLIP IS 0.7 SQ. IN.
4. ALL CLIPS SHALL BE GALVANIZED.
5. USE E–2063 CLIP ON ALL STANDARD JOINT BARS.
6. USE E–2063B CLIP AND OVERDRIVE PROTECTORS ON TIMBER TIES FOR INSULATED JOINT LOCATIONS.
7. PAINT E 2063B CLIP FOR INSULATED JOINTS YELLOW FOR QUICK VISUAL IDENTIFICATION.

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PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

TRACK
RAILS, TIES AND FASTENERS
FASTENING ASSEMBLIES
FOR STANDARD AND
INSULATED JOINTS

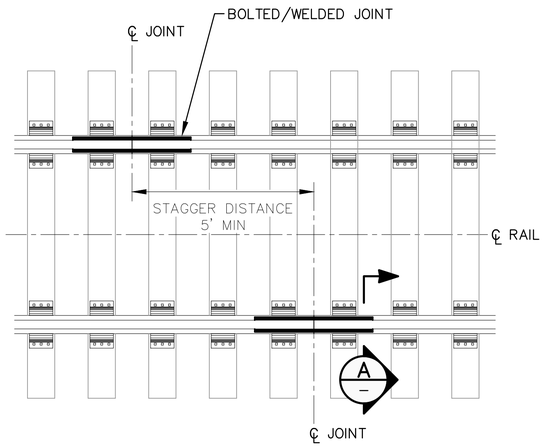
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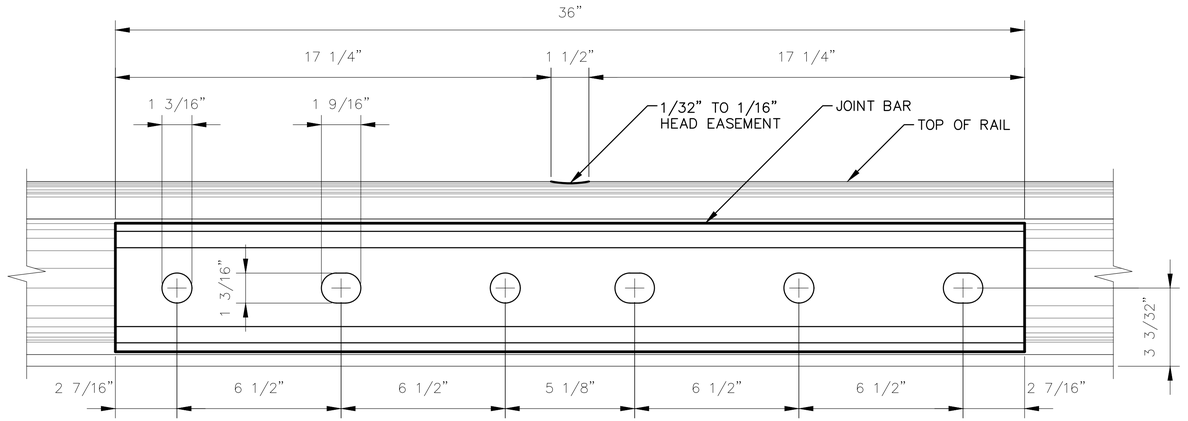
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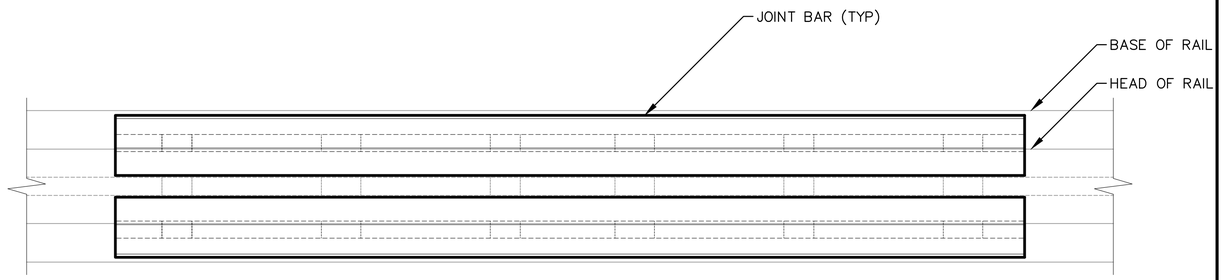
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JOINT STAGGER
PLAN
SCALE: NOT TO SCALE



FRONT VIEW

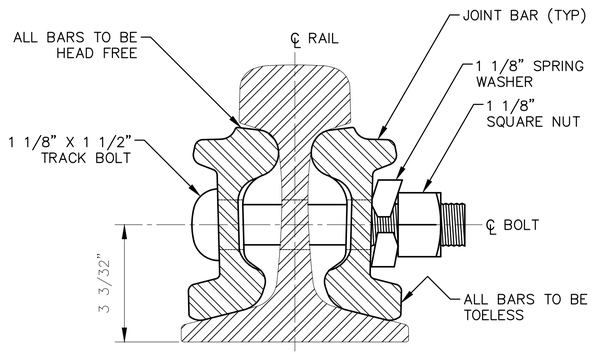


TOP VIEW

36" JOINT BAR
VIEWS
SCALE: NOT TO SCALE

NOTES:

1. ALL JOINT BARS SHALL BE TOELESS AND HEAD FREE.
2. BARS SHALL MEET REQUIREMENTS OF AREMA FOR QUENCHED CARBON–STEEL JOINT BARS. MICRO ALLOY BARS ARE NOT ACCEPTABLE.
3. ALL BOLTS, NUTS AND WASHERS SHALL CONFORM TO AREMA SPECIFICATIONS.
4. ALL BOLT HOLES SHALL BE CHAMFERED. SEE SD–2201 FOR DETAILS.
5. ALL PERMANENT 6–HOLE ANCHOR BARS SHALL BE FULLY BOLTED.
6. TEMPORARY JOINTS SHALL HAVE THE FOUR OUTER HOLES DRILLED AND BOLTED. TEMPORARY JOINTS SHALL BE WELDED WITHIN 60 DAYS OF INSTALLATION OR DRILLED AND FULLY BOLTED, IF NOT WELDED WITHIN 60 DAYS.
7. JOINTS ON TRACK CONSTRUCTED WITH JOINTED RAIL SHALL BE STAGGERED A DISTANCE OF 19'–6". PROVIDE EXPANSION GAPS IN JOINTS AS REQUIRED BY AREMA SPECIFICATIONS.
8. SQUARE JOINTS ARE NOT ALLOWED WITHOUT PRIOR APPROVAL.



RAIL AND JOINT BARS
A – SECTION
SCALE: NOT TO SCALE

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

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PENINSULA CORRIDOR JOINT POWERS BOARD

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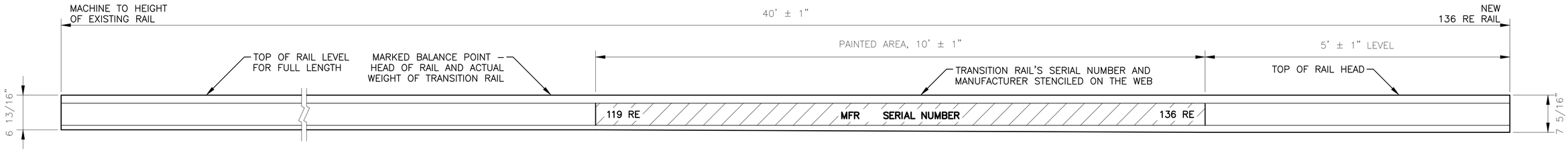
Caltrain

ENGINEERING STANDARD DRAWINGS

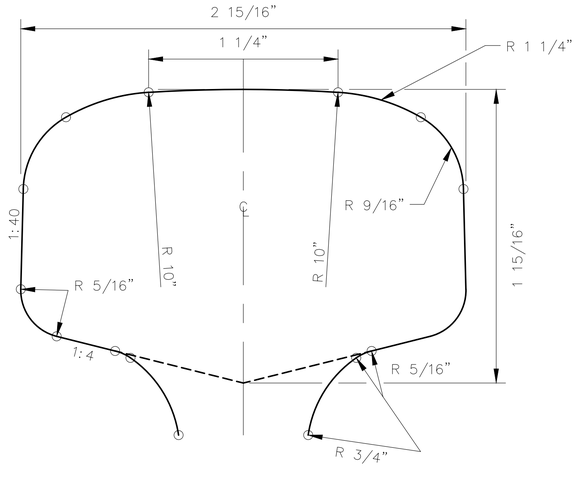
TRACK
RAILS, TIES AND FASTENERS

STANDARD BOLTED JOINT

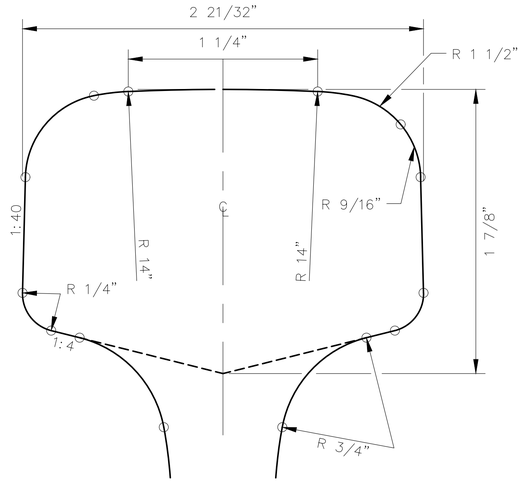
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40' LONG TRANSITION RAIL – 119 RE TO 136 RE



TOP RADII DETAIL
136 RE



TOP RADII DETAIL
119 RE

NOTES:

1. RAIL SHALL BE PURCHASED AND MANUFACTURED TO CURRENT CALTRAIN SPECIFICATIONS AND STANDARD DRAWINGS.
2. TRANSITION RAIL SHALL BE MANUFACTURED FROM HEAD HARDENED RAIL.
3. MACHINED SURFACES SHALL BE FREE OF SEAMS AND RIDGES.
4. TEMPLATES SHALL BE USED TO CHECK FINISHED GAUGE CORNER AND TOP RADII.
5. MANUFACTURER SHALL MARK LIFT/BALANCE POINT FOR EACH LENGTH OF RAIL, AND THE ACTUAL WEIGHT OF LENGTH OF RAIL SHALL BE STENCILED ON HEAD OF RAIL.
6. MANUFACTURER SHALL PAINT WEB OF RAIL SOLID WHITE, AS ILLUSTRATED, ON BOTH SIDES. USING 2 1/2" BLOCK STENCIL AND BLACK PAINT, RAIL TRANSITIONS, THAT IS, 136 RE AND 119 RE SHALL BE MARKED AT EACH END OF THE PAINTED AREAS. THE MANUFACTURER'S NAME AND TRANSITION RAIL'S SERIAL NUMBER SHALL BE STENCILED IN BLACK BETWEEN RAIL TRANSITION MARKINGS USING 2" BLOCK STENCIL.
7. TRANSITION RAIL IS UNIVERSAL AND CAN BE USED AS RIGHT HAND OR LET HAND RAIL.
8. TRANSITION RAILS SHALL BE USED ONLY ON TANGENT TRACKS.
9. TRANSITION RAIL SHALL BE INSTALLED SO THAT NO TIE SHALL BE WITHIN THE TRANSITION TAPER OF THE RAIL. TIE PLATE OR TIE PAD SHALL HAVE A FULL BEARING SUPPORT ON THE BASE OF THE RAIL. IF RAIL ANCHORS ARE TO BE APPLIED, RAIL ANCHOR SHALL BE AT LEAST 2" FROM TAPER WELD.

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PENINSULA CORRIDOR JOINT POWERS BOARD

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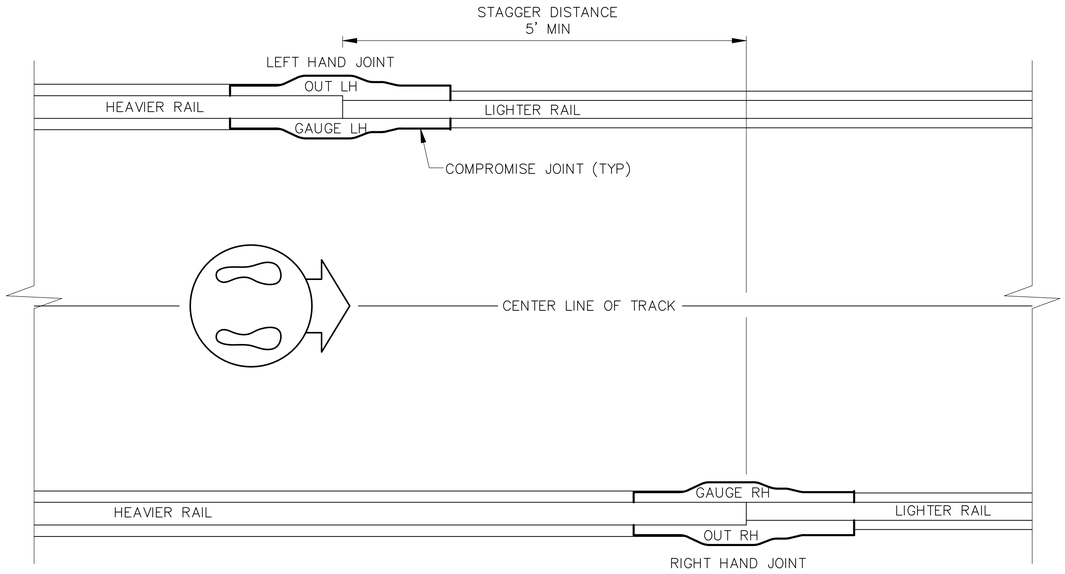
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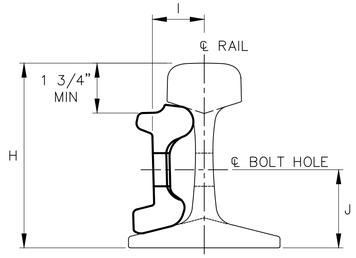
ENGINEERING STANDARD DRAWINGS

TRACK
RAILS, TIES AND FASTENERS
FORGED TRANSITION RAILS FOR
119 RE TO 136 RE

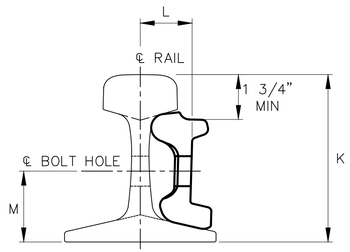
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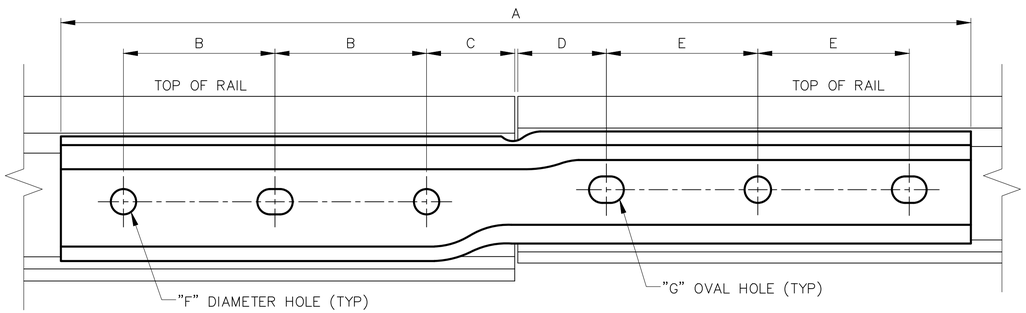
TYPICAL INSTALLATION LAYOUT



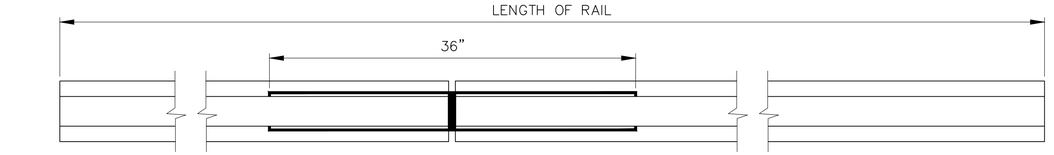
LARGER RAIL



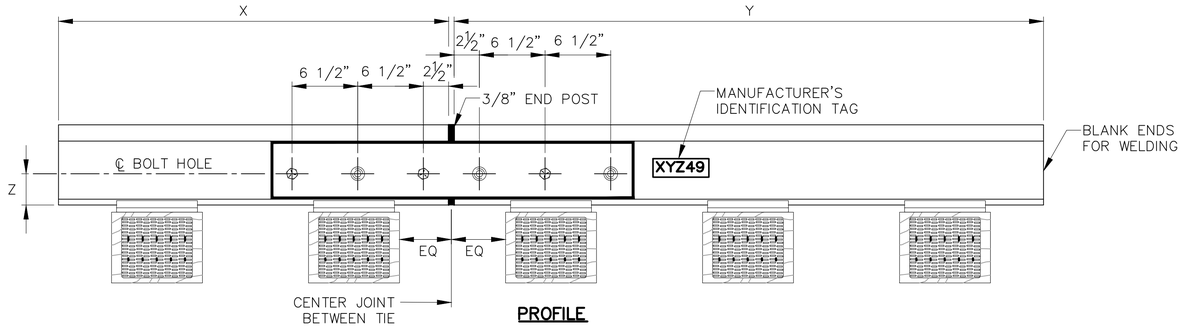
SMALLER RAIL



6–HOLE OUT BAR DETAIL



PLAN



PROFILE

PREFABRICATED BONDED INSULATED JOINT

DATA FOR INSULATED JOINT RAIL

LENGTH OF RAIL	X	Y	Z
19'–6"	8'–0 1/2	11'–5 1/8"	3 3/32"
39'–0"	16'–1"	22'–10 5/8"	3 3/32"

DATA FOR COMPROMISE JOINTS

RAIL SIZES	A	B	C	D	E	F	G	H	I	J	K	L	M
136 RE & 112 RE	36"	6 1/2"	2 1/2"	2 1/2"	6 1/2"	1 7/32"	1 3/16" x 1 3/16"	7 5/16"	2 1/32"	3 3/32"	6 5/8"	2 3/16"	2 7/8"
136 RE & 119 RE	36"	6 1/2"	2 1/2"	2 1/2"	6 1/2"	1 7/32"	1 3/16" x 1 3/16"	7 5/16"	2 1/32"	3 3/32"	6 13/16"	2 3/16"	2 7/8"
132 HF & 112 RE	36"	6 1/2"	2 1/2"	2 1/2"	6 1/2"	1 7/32"	1 3/16" x 1 3/16"	7 5/16"	2 3/16"	3 3/32"	6 5/8"	2 3/16"	2 7/8"
132 HF & 113 HF	36"	6 1/2"	2 1/2"	2 1/2"	6 1/2"	1 7/32"	1 3/16" x 1 3/16"	7 5/16"	2 3/16"	3 3/32"	6 13/16"	2 3/16"	2 7/8"
132 HF & 115 RE	36"	6 1/2"	2 1/2"	2 1/2"	6 1/2"	1 7/32"	1 3/16" x 1 3/16"	7 5/16"	2 3/16"	3 3/32"	6 5/8"	2 3/16"	2 7/8"

NOTES:

1. TO DETERMINE A RIGHT HAND OR A LEFT HAND JOINT, STAND AT AND SIGHT ALONG THE CENTERLINE OF THE TRACK IN THE DIRECTION OF THE LIGHT RAIL. RIGHT HAND AND LEFT HAND JOINTS ARE LOCATED ON THE RIGHT AND LEFT RESPECTIVELY.
2. EACH BAR SHALL BE MARKED WITH THE RAIL SECTION NEAR EACH END, MANUFACTURER'S IDENTIFICATION, MONTH AND YEAR OF MANUFACTURE NEAR ONE END. HAND ORIENTATION (**LH** OR **RH**) MARKED ON THE TOP SURFACE AT THE CENTER OF THE JOINT AND (**GAUGE** OR **OUT**).
3. ALL BOLT HOLES SHALL BE CHAMFERED. SEE SD–2201 FOR DETAILS.
4. USE 1" 490 HUCK BOLTS FOR INSULATED JOINTS. USE 1 1/8" GRADE 8 BOLTS WITH SECURITY LOCKNUTS LUBRICATED AND TORQUED TO 850 FOOT LBS FOR BOLTED COMP JOINTS. COMPROMISE JOINTS SHALL BE SUPPORTED WITH TWO TIES THAT ARE WITHIN THE JOINT BARS. NO TIE SHALL BE PLACED WITHIN THE MIDDLE OF THE JOINT.
5. ALL BOLTS, NUTS AND WASHERS SHALL CONFORM TO AREMA.
6. FOR USE ON TRACKS OTHER THAN MAIN TRACKS, SIDINGS AND CWR CONSTRUCTED TRACKS.
7. MAY BE USED FOR TEMPORARY MAIN TRACK OR SIDING CONSTRUCTION NOT EXCEEDING 60 DAYS WITH ENGINEER'S APPROVAL.

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PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

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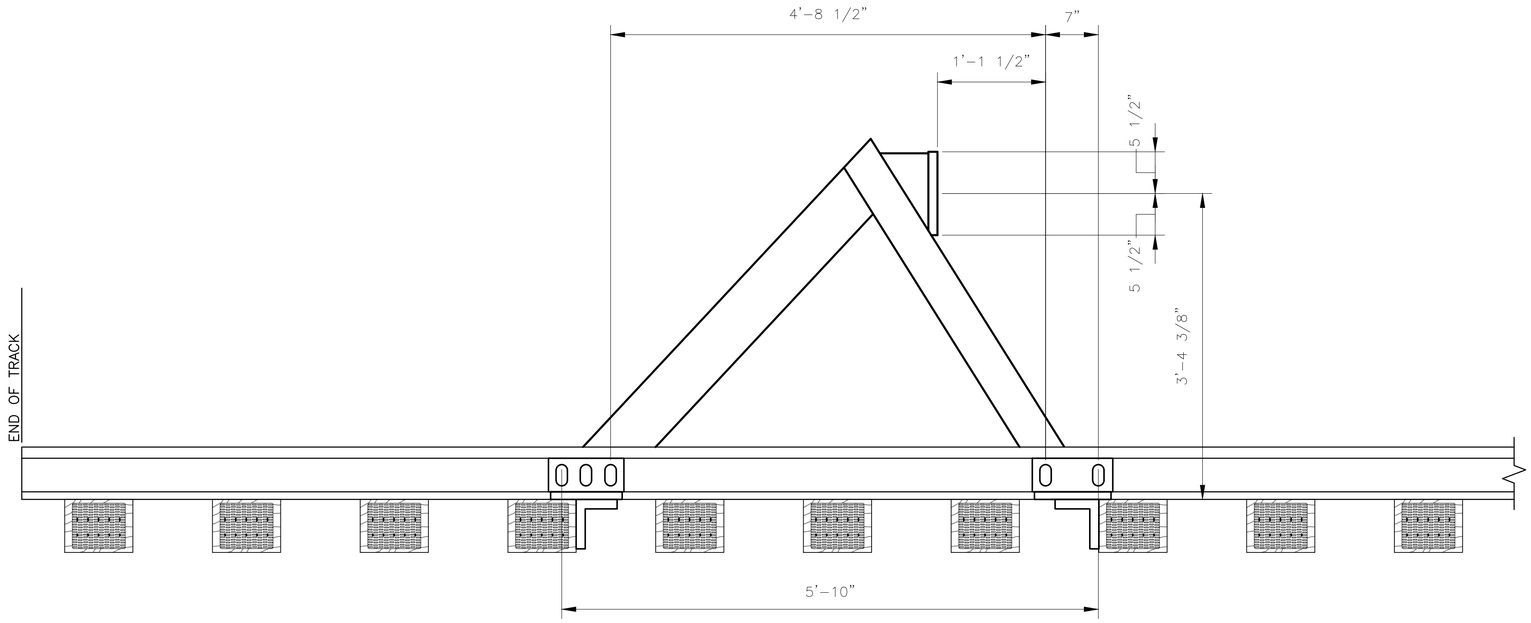
TRACK
RAILS, TIES AND FASTENERS
COMPROMISE JOINT
AND INSULATED JOINT

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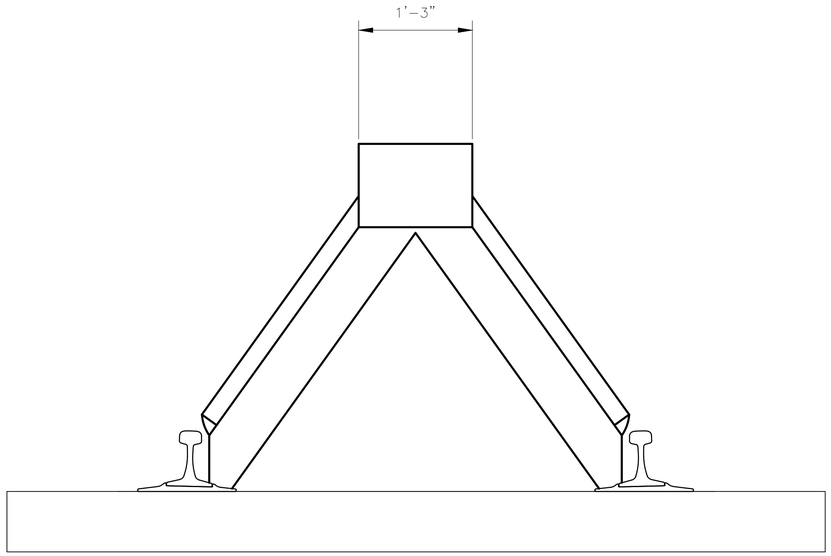
REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD–2233



SIDE VIEW



FRONT VIEW

NOTES:

1. BUMPING POSTS SHALL BE INSTALLED IN MOW AND INDUSTRY TRACKS TO PROTECT EQUIPMENT AND FACILITIES FROM ROLLING STOCK AND EQUIPMENT BEYOND RAIL'S END.
2. BUMPING POST SHOWN IS ON A MODEL FROM WESTERN CULLEN HAYES, INC.
3. BUMPING POSTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATION.
4. BUMPING POSTS SHALL BE INSTALLED ON TANGENT TRACKS. TRACK SHALL BE TANGENT FROM ITS END TO AT LEAST 100' IN FRONT OF THE BUMPING POST.
5. REFER TO CURRENT DESIGN CRITERIA BUMPING POST REQUIREMENTS FOR PASSENGER EMU ROLLING STOCK, CHAPTER 2 TRACK, SECTION B TRACK STRUCTURE, PART 9.0 BUMPING POST.

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TRACK
OTHER MISCELLANEOUS ITEMS

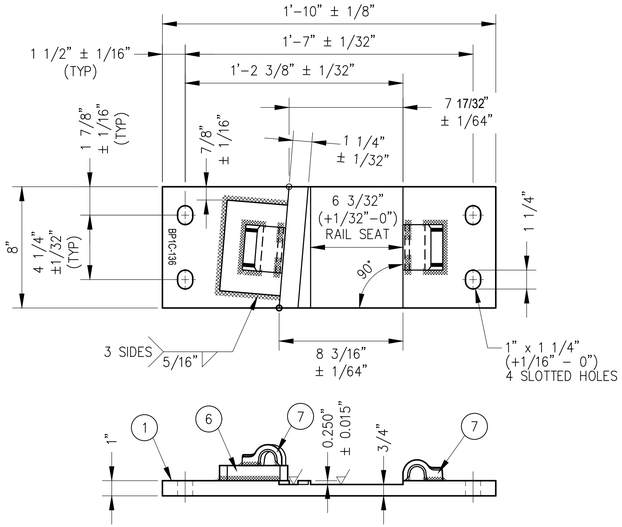
MOW AND INDUSTRIAL
TRACK BUMPING POST

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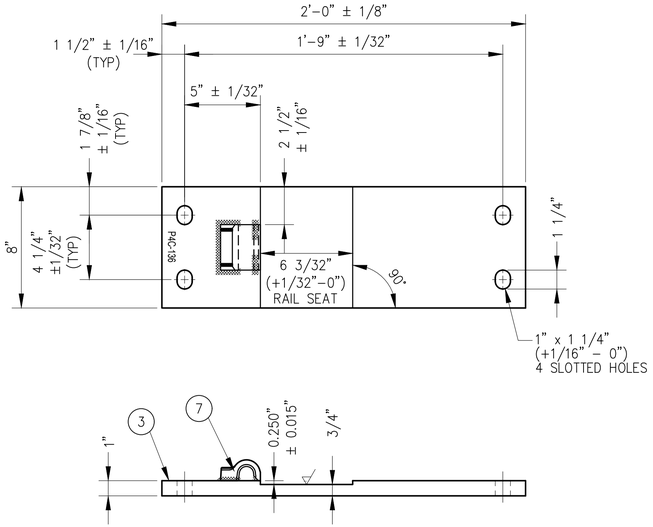
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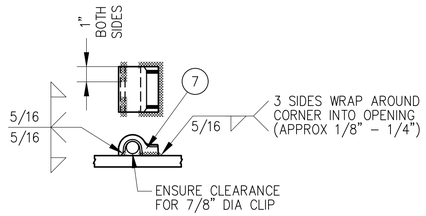
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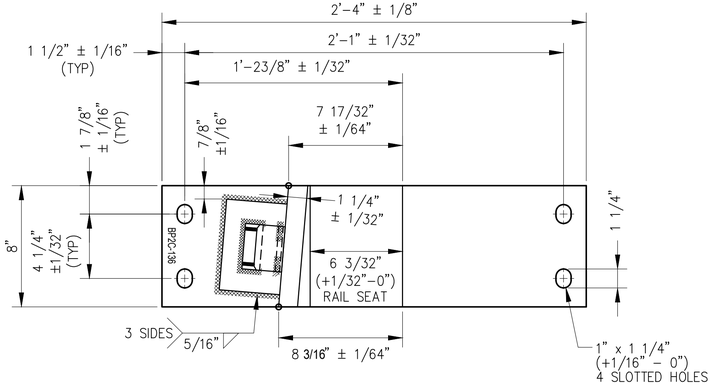
SWITCH PLATE BRACE BP1C–136

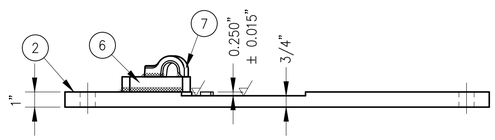


SWITCH PLATE P4C–136 1/64

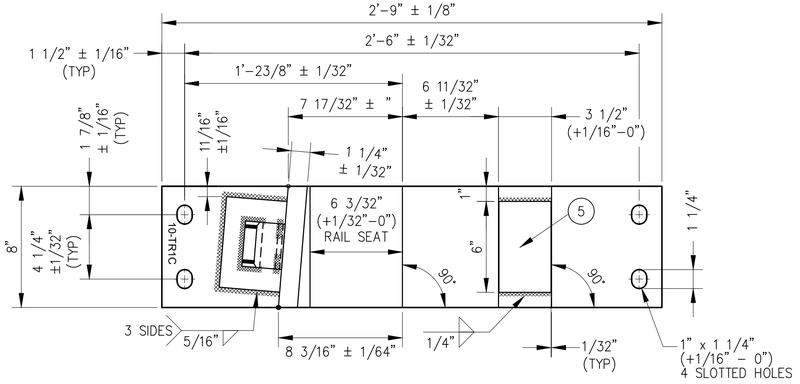


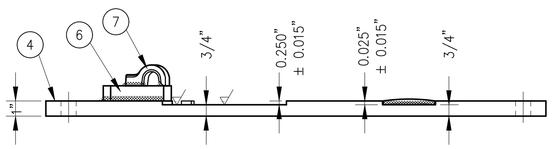
FORGED SHOULDER WELDING DETAIL





SWITCH PLATE BRACE BP2C–136 1/64





SWITCH ROLLER PLATE 10–TRIC 1/64

BILL OF MATERIALS	
ITEM	DESCRIPTION
1	FLAT BAR, ASTM A36, 1" x 8" x 1'-10"
2	FLAT BAR, ASTM A36, 1" x 8" x 2'-4"
3	FLAT BAR, ASTM A36, 1" x 8" x 2'-0"
4	FLAT BAR, ASTM A36, 1" x 8" x 2'-9"
5	RISER FOR ROLLER PLATE, 1/4" THICK x 3 7/16" x 6"
6	STOP ASSEMBLY FOR BOLTLESS BRACE, 1" THICK, CONTINUOUSLY WELDED SHOULDER
7	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 5

NOTES:

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

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PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

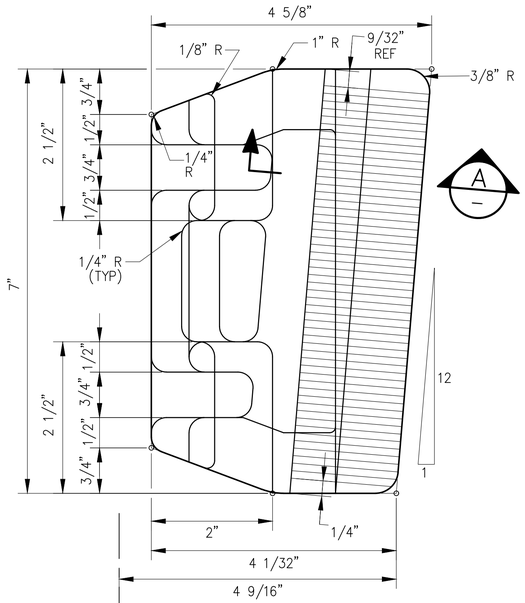
SPECIAL TRACKWORK
GENERAL ELEMENTS
SWITCH PLATE BRACES BP1C AND BP2C
PLATE P4C–136 AND ROLLER PLATE 10–TRLC

CADD FILE NAME: SD–2302

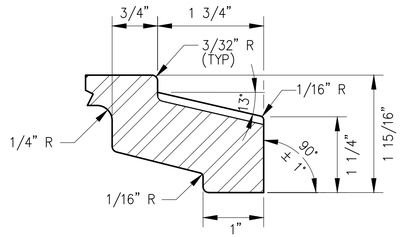
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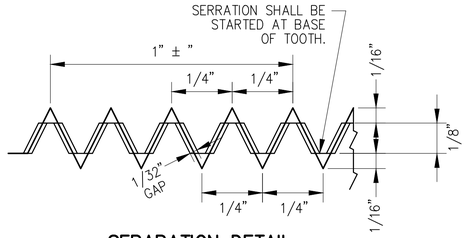
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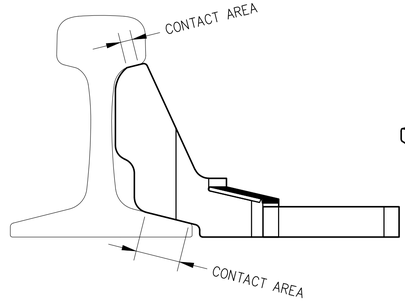
TOP VIEW



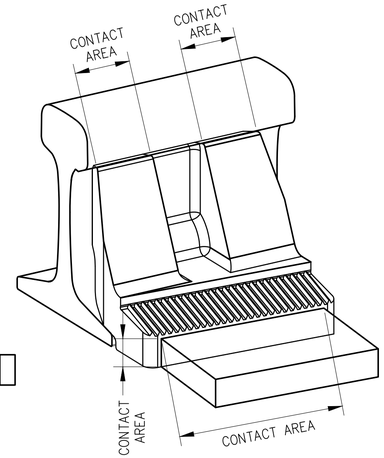
A SECTION
SCALE: NTS



SEPARATION DETAIL
OF MATING PARTS

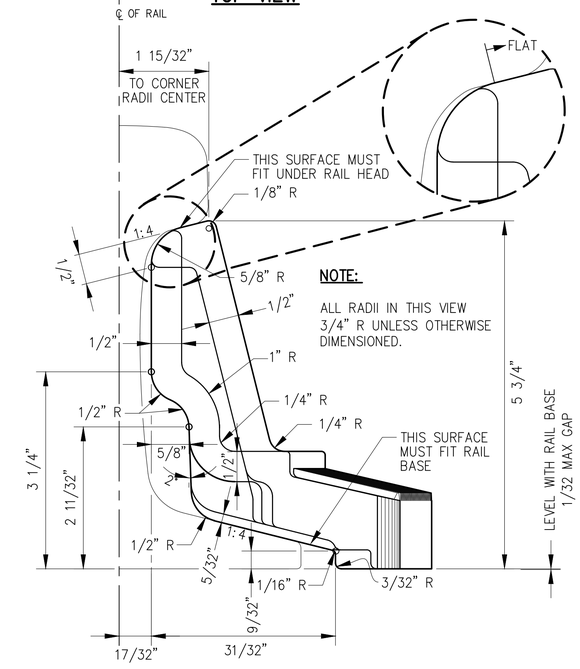


FRONG VIEW



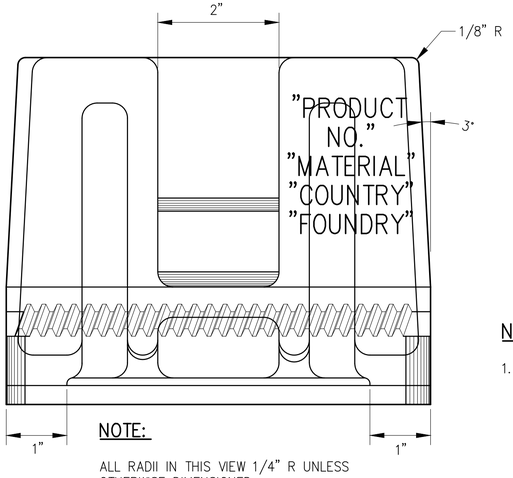
ISOMETRIC VIEW

CONTACT AREAS



FRONT VIEW

BOLTLESS BRACE (TYPE 2)



NOTE:

ALL RADII IN THIS VIEW 1/4" R UNLESS OTHERWISE DIMENSIONED.

SIDE VIEW

NOTES:

1. "PART ID" CHARACTERS SHALL BE CAST RAISED WITH TEXT AS FOLLOWS:

"PRODUCT NO."	SD-2303
"MATERIAL"	D.I.
"COUNTRY"	SEE "COUNTRY OF ORIGIN"
"FOUNDRY"	LOGO OR ID NOT TO BE GREATER THAN 3/4" X 3/4"

2. "COUNTRY OF ORIGIN": CANADA = "CA"; CHINA = "CH"; UNITED STATES = "US".
3. TEXT AND LOGOS ARE RAISED 0.030" TO 0.040". THE TEXT FONT IS BLOCK LETTERING AND TEXT SIZE OF 3/8".
4. FOR USE WITH 132 LB AND 136 LB RE RAIL ONLY. MATERIAL: DUCTILE IRON, ASTM A536 GR 65-45-12.
5. SEE SD-2304 FOR SERRATED WASHER DRAWING.

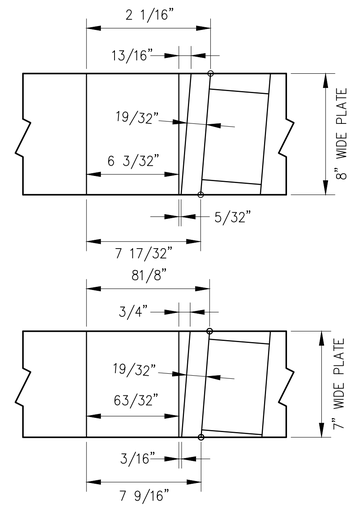


PLATE DESIGN REFERENCE DETAILS
VALUES ONLY GOOD FOR 90° PLATES

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

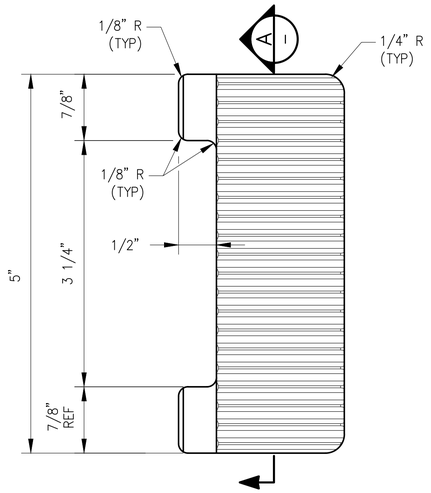
DIRECTOR, ENGINEERING

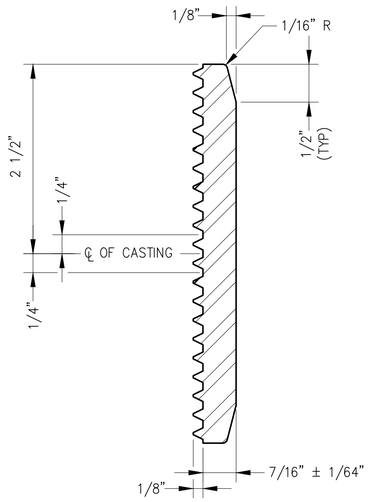
ENGINEERING STANDARD DRAWINGS

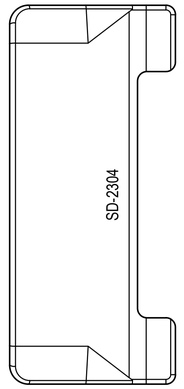
SPECIAL TRACKWORK
GENERAL ELEMENTS

BOLTLESS BRACE (TYPE 2)

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REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD-2303

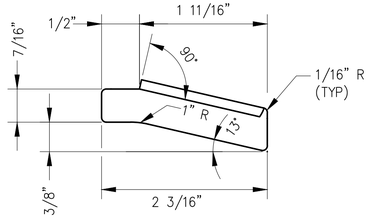


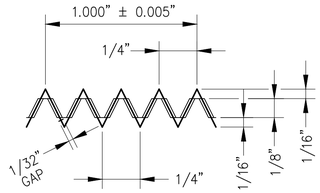




ELEVATION

A
–
SECTION
SCALE: NTS





SEPARATION DETAIL
OF MATING PARTS

NOTES:

1. MATERIAL – DUCTILE IRON ASTM Gr 536–G 65–45–12 OR ACCEPTABLE ALTERNATE AISI/SAE 1020
2. PARTS SHALL BE CAST INDENTED WITH TEXT SD–2304.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
GENERAL ELEMENTS
SERRATED WASHER
FOR BOLTLESS BRACE

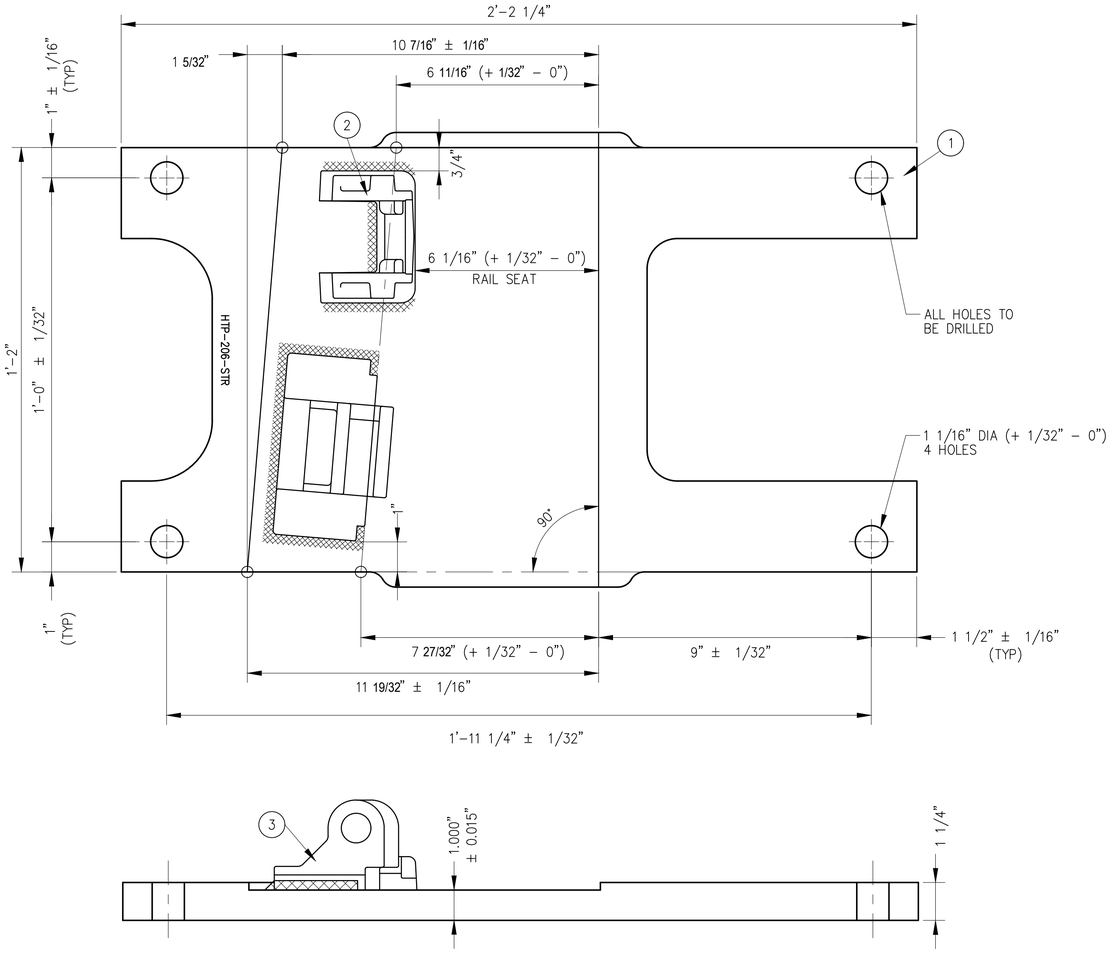
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REV:

EDITION: FIFTH

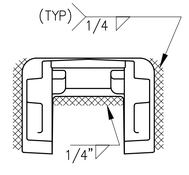
SCALE: NTS

STANDARD DRAWING NO.: SD–2304



HTP-206-STR

BILL OF MATERIAL			
ITEM	QTY FOR HTP-206-STR	DESCRIPTION	DWG NO
1	1	BURNED SWITCH PLATE, 1 1/4" THICK	–
2	1	WELD-ON FASTCLIP SHOULDER	–
3	1	LV BRACE RETENTION BLOCK	–



TYPICAL FASTCLIP WELD-ON CAST SHOULDER WELDING DETAILS

NOTES:

1. I.D. CHARACTERS SHALL BE 5/8" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

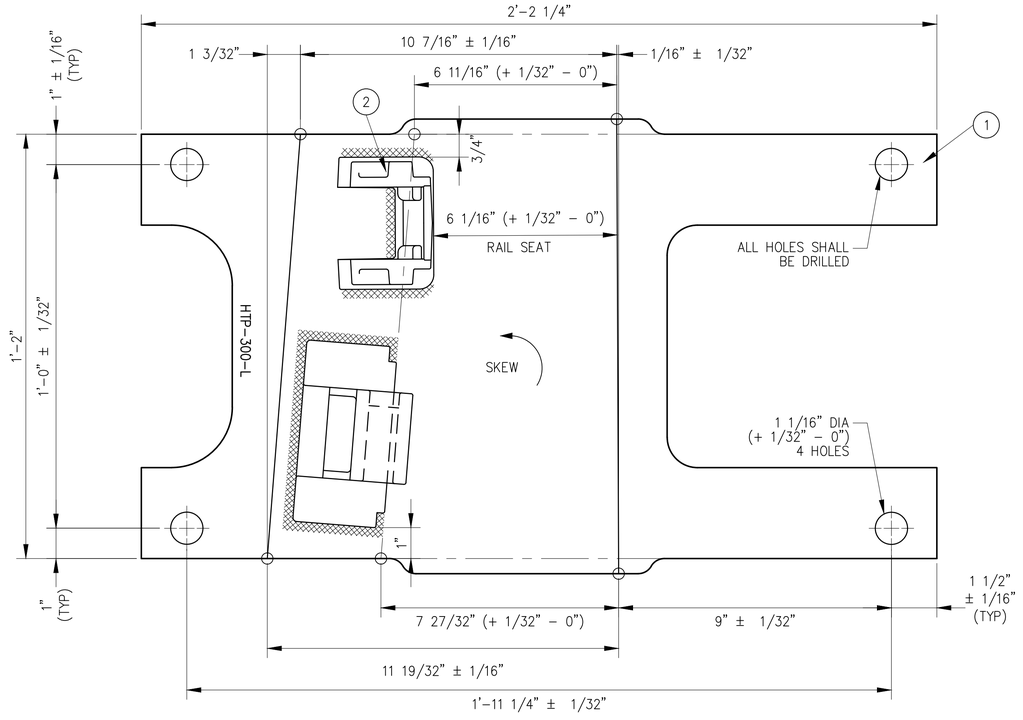
Bin Zhang

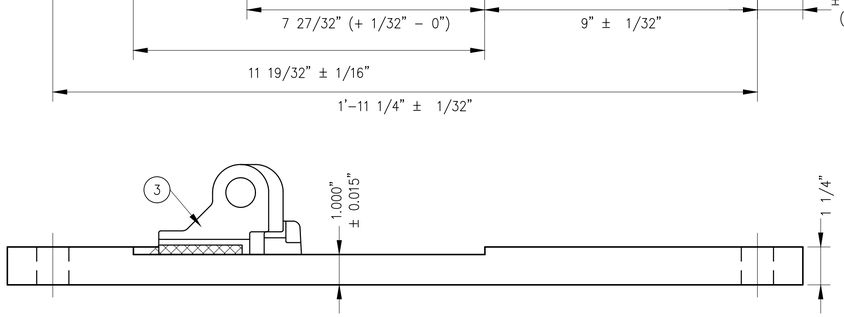
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

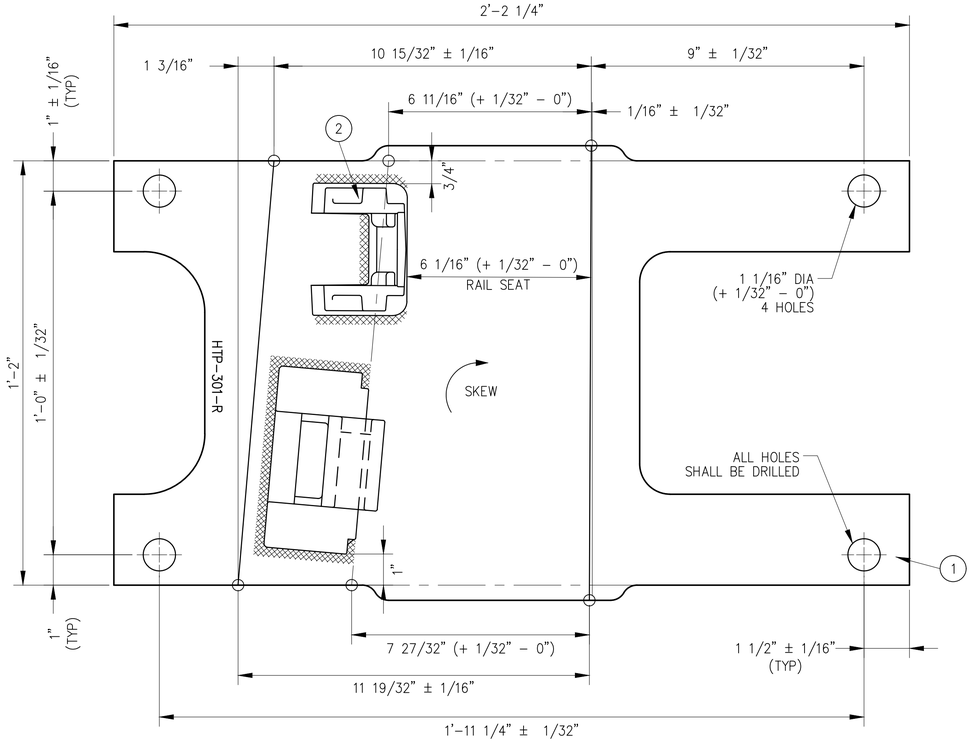
SPECIAL TRACKWORK
GENERAL ELEMENTS
SWITCH PLATES FOR HOLLOW STEEL TIES
PLATE HTP-206-STR NO SKEW LV BRACE

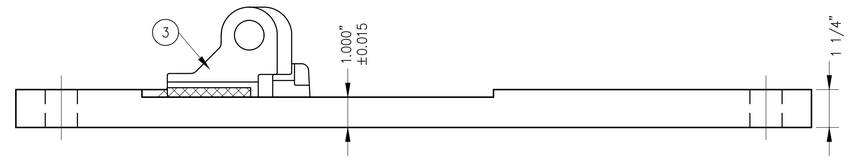
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SCALE:	NTS
STANDARD DRAWING NO.:	SD-2305



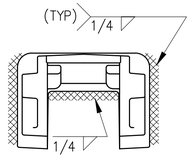


HTP–300–L





HTP–301–R



TYPICAL FASTCLIP WELD–ON AST SHOULDER WELDING DETAILS

BILL OF MATERIAL				
ITEM	QTY FOR HTP–300–L	QTY FOR HTP–301–R	DESCRIPTION	DWG NO
1	1	1	BURNED SWITCH PLATE, 1 1/4" THICK	–
2	1	1	WELD–ON FASTCLIP SHOULDER	–
3	1	1	LV BRACE RETENTION BLOCK	–

NOTES:

1. I.D. CHARACTERS SHALL BE 5/8" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN
2. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

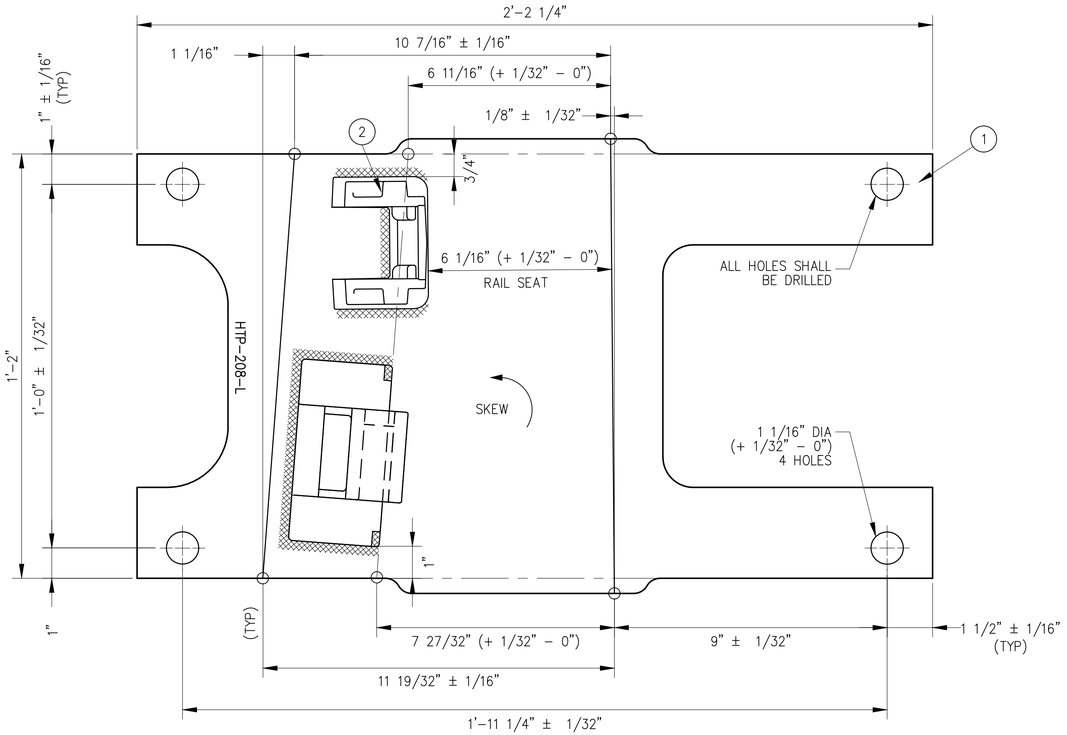
SPECIAL TRACKWORK
GENERAL ELEMENTS
SWITCH PLATES FOR HOLLOW STEEL TIES
PLATES HTP–300–L AND HTP–301–R

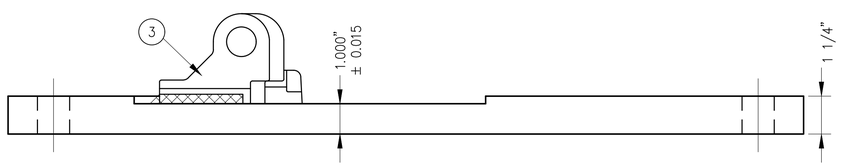
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REV: | EDITION: FIFTH

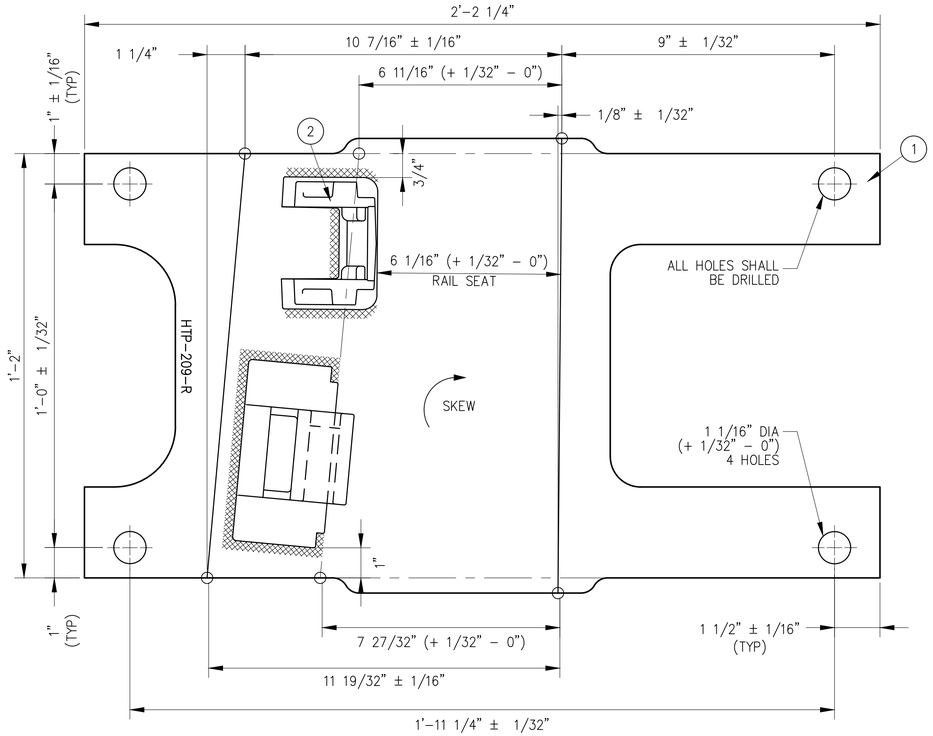
SCALE: NTS

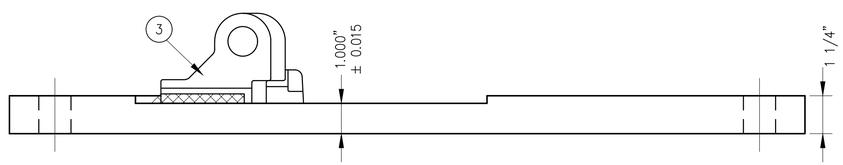
STANDARD DRAWING NO.: SD–2306



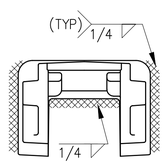


HTP-208-L





HTP-209-R



TYPICAL FASTCLIP WELD-ON CAST SHOULDER WELDING DETAILS

BILL OF MATERIAL				
ITEM	QTY FOR HTP-208-L	QTY FOR HTP-209-R	DESCRIPTION	DWG NO
1	1	1	BURNED SWITCH PLATE, 1 1/4" THICK	–
2	1	1	WELD-ON FASTCLIP SHOULDER	–
3	1	1	LV BRACE RETENTION BLOCK	–

NOTES:

1. I.D. CHARACTERS SHALL BE 5/8" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN
2. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

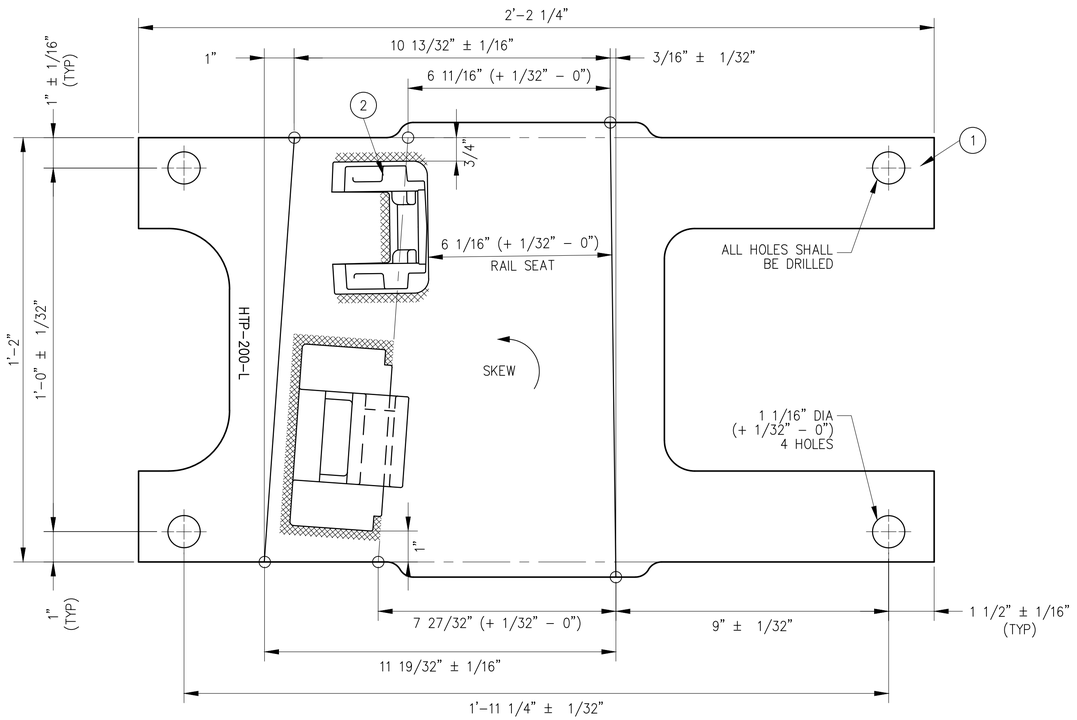
SPECIAL TRACKWORK
GENERAL ELEMENTS
SWITCH PLATES FOR HOLLOW STEEL TIES
PLATES HTP-208-L AND HTP-209-R

CADD FILE NAME: SD-2307

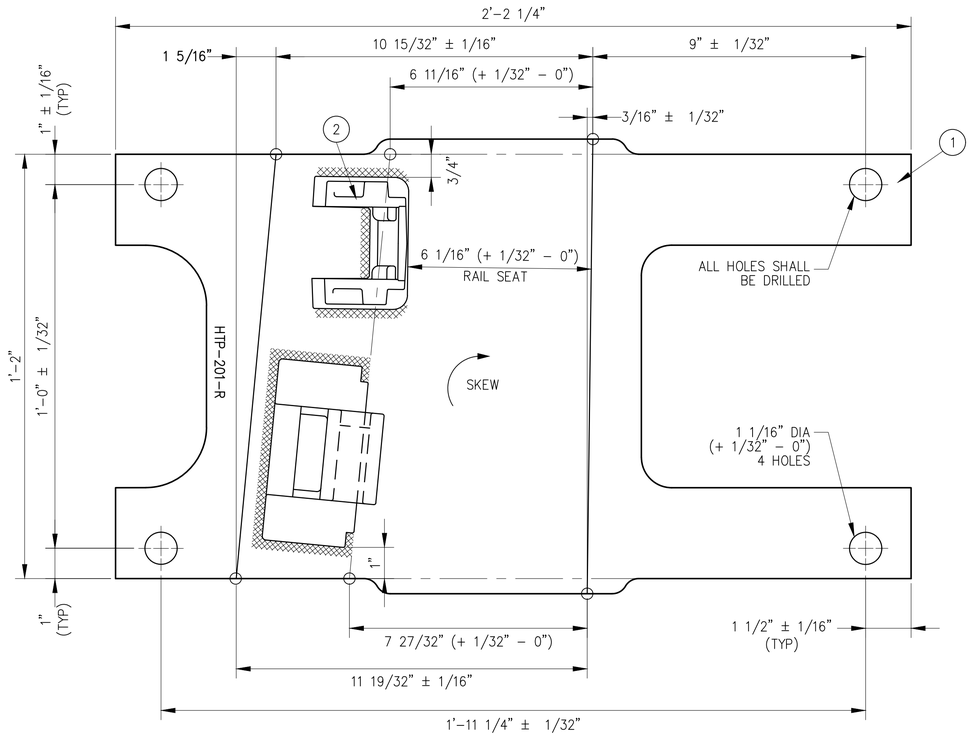
REV: | EDITION: FIFTH

SCALE: NTS

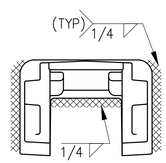
STANDARD DRAWING NO.: SD-2307



HTP–200–L



HTP–201–R



TYPICAL FASTCLIP WELD–ON
CAST SHOULDER WELDING DETAILS

BILL OF MATERIAL				
ITEM	QTY FOR HTP–200–L	QTY FOR HTP–201–R	DESCRIPTION	DWG NO
1	1	1	BURNED SWITCH PLATE, 1 1/4" THICK	–
2	1	1	WELD–ON FASTCLIP SHOULDER	–
3	1	1	LV BRACE RETENTION BLOCK	–

NOTES:

1. I.D. CHARACTERS SHALL BE 5/8" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN
2. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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ENGINEERING STANDARD DRAWINGS

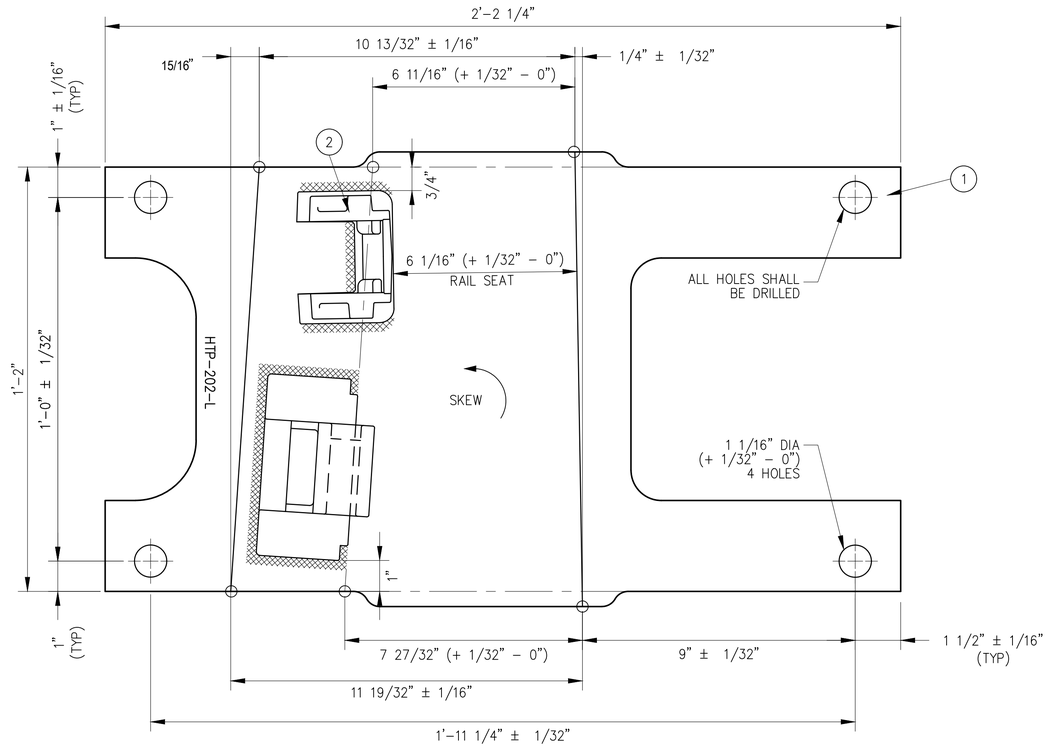
SPECIAL TRACKWORK
GENERAL ELEMENTS
SWITCH PLATES FOR HOLLOW STEEL TIES
PLATES HTP–200–L AND HTP–201–R

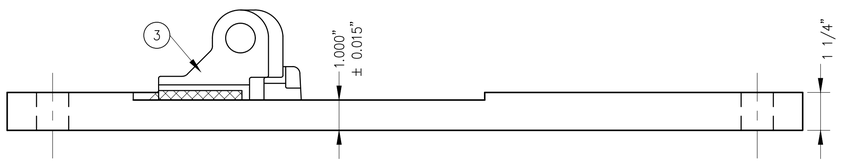
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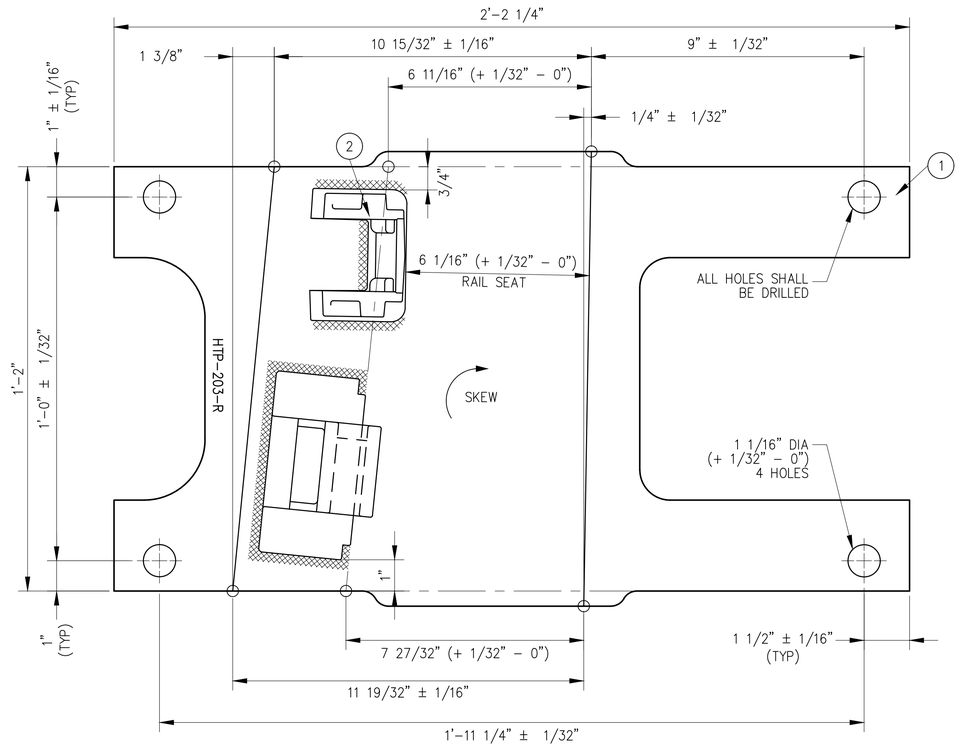
SCALE: NTS

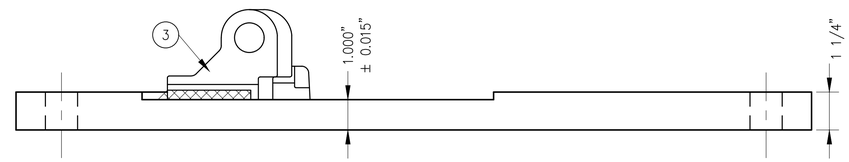
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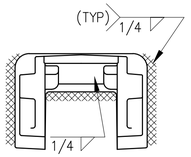


HTP-202-L





HTP-203-R



TYPICAL FASTCLIP WELD-ON CAST SHOULDER WELDING DETAILS

BILL OF MATERIAL				
ITEM	QTY FOR HTP-202-L	QTY FOR HTP-203-R	DESCRIPTION	DWG NO
1	1	1	BURNED SWITCH PLATE, 1 1/4" THICK	–
2	1	1	WELD-ON FASTCLIP SHOULDER	–
3	1	1	LV BRACE RETENTION BLOCK	–

NOTES:

1. I.D. CHARACTERS SHALL BE 5/8" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN
2. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

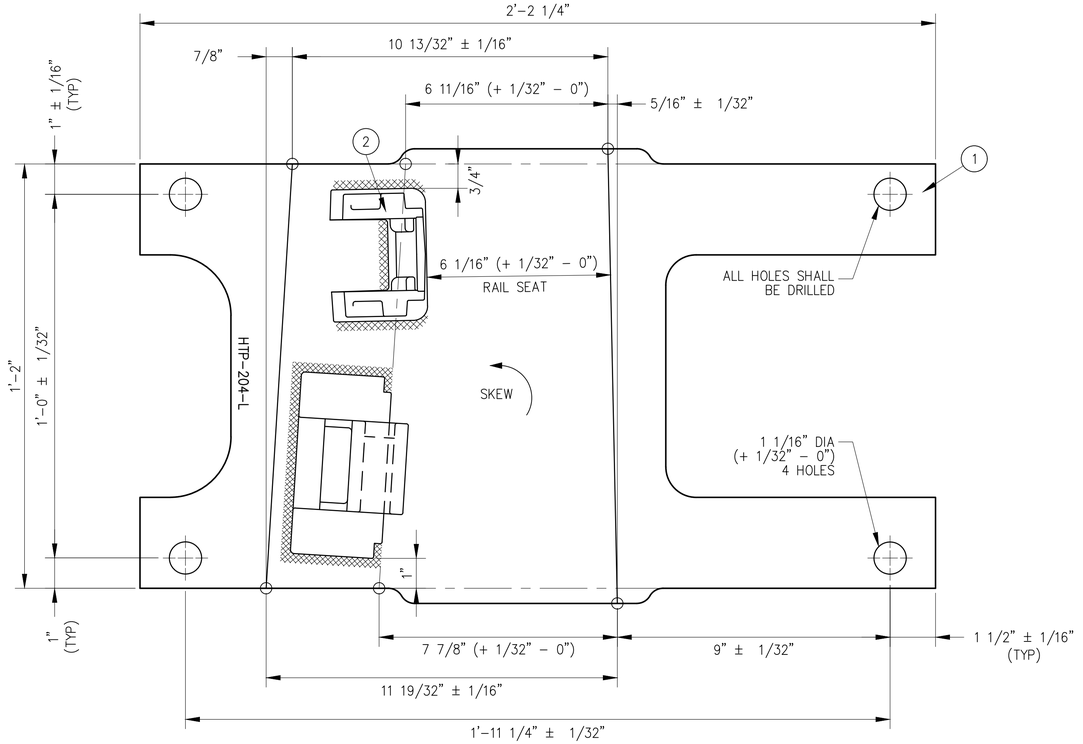
Bin Zhang

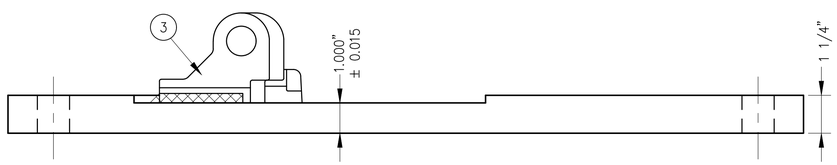
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

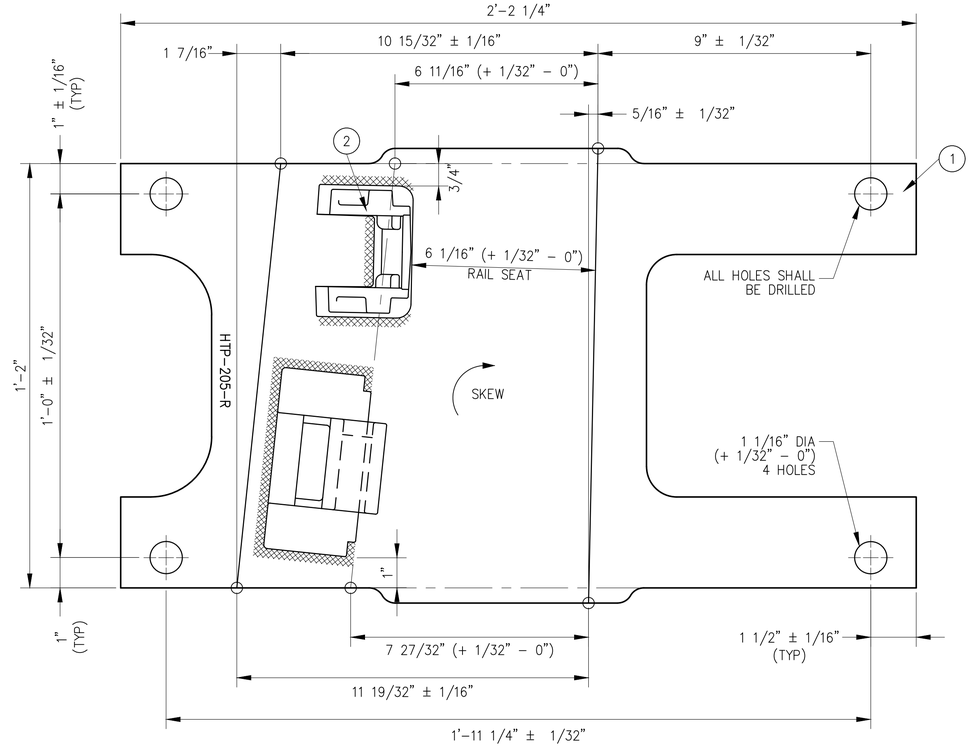
SPECIAL TRACKWORK
GENERAL ELEMENTS
SWITCH PLATES FOR HOLLOW STEEL TIES
PLATES HTP-202-L AND HTP-203-R

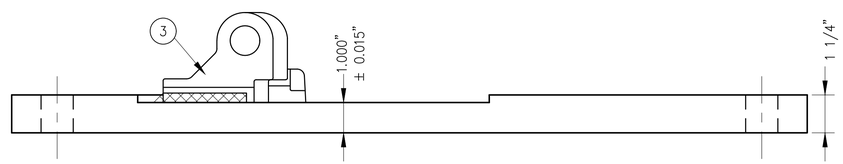
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STANDARD DRAWING NO.:	SD-2309



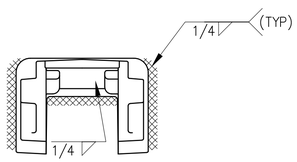


HTP-204-L





HTP-205-R



TYPICAL FASTCLIP WELD-ON CAST SHOULDER WELDING DETAILS

BILL OF MATERIAL				
ITEM	QTY FOR HTP-204-L	QTY FOR HTP-205-R	DESCRIPTION	DWG NO
1	1	1	BURNED SWITCH PLATE, 1 1/4" THICK	–
2	1	1	WELD-ON FASTCLIP SHOULDER	–
3	1	1	LV BRACE RETENTION BLOCK	–

NOTES:

1. I.D. CHARACTERS SHALL BE 5/8" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN
2. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

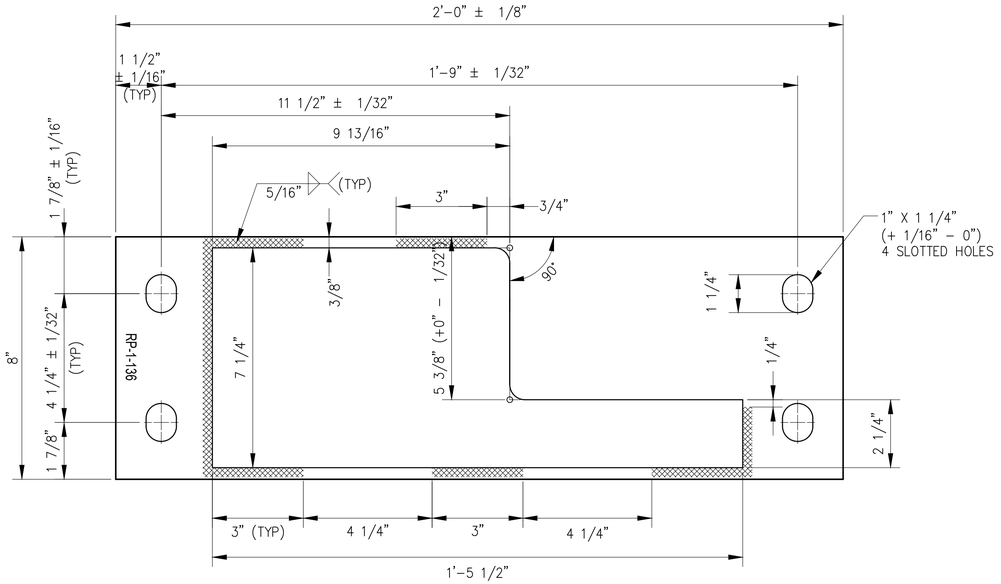
SPECIAL TRACKWORK
GENERAL ELEMENTS
SWITCH PLATES FOR HOLLOW STEEL TIES
PLATES HTP-204-L AND HTP-205-R

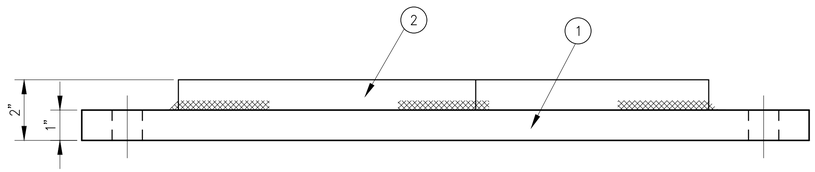
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REV: | EDITION: FIFTH

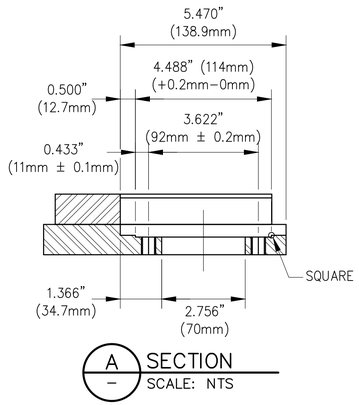
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STANDARD DRAWING NO.: SD-2310

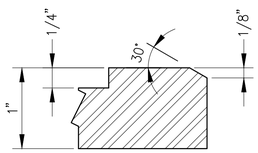




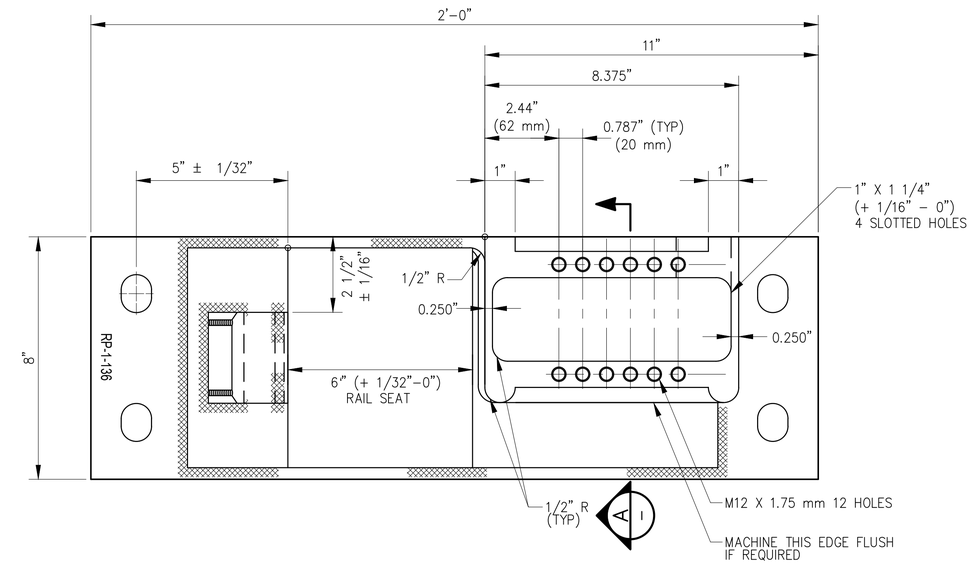
SWITCH ROLLER PLATE RP-1-136 W/O ROLLER WELDING & PUNCHING DETAILS

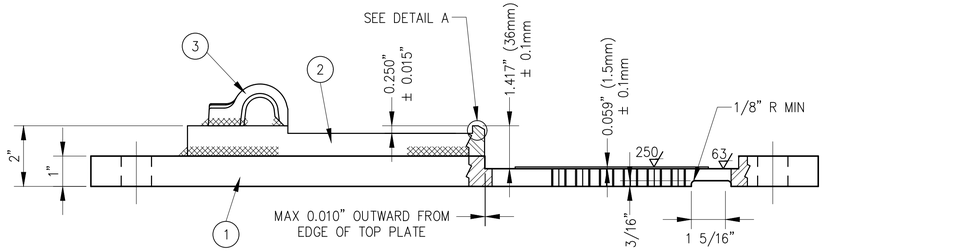


A SECTION
SCALE: NTS



DETAIL 'A'





SWITCH ROLLER PLATE RP-1-136 W/O ROLLER MACHINING DETAILS

BILL OF MATERIALS	
ITEM	DESCRIPTION
1	FLAT BAR, ASTM A36, 1" X 8" X 2'-0" LONG
2	BURNED SWITCH POINT RISER PLATE FOR RP-1-136
3	SHOULDER, FORGED, TYPE 5, ANTI-OVERDRIVE

NOTES:

1. I.D. CHARACTERS SHALL BE 1/2" MINIMUM HEIGHT, STAMPED CLEARLY AS SHOWN
2. USE IMPERIAL DIMENSIONS WITH THE EXCEPTION OF TOLERANCED METRIC DIMENSIONS AND THREADED HOLES
3. SURFACE ROUGHNESS 250 AND 63 MICROINCH ARE EQUIVALENT TO N9 AND N7 AND SHOULD TRAVERSE THE ENTIRE MACHINED SURFACE
4. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING
5. DEBUR ALL THREADED HOLES

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

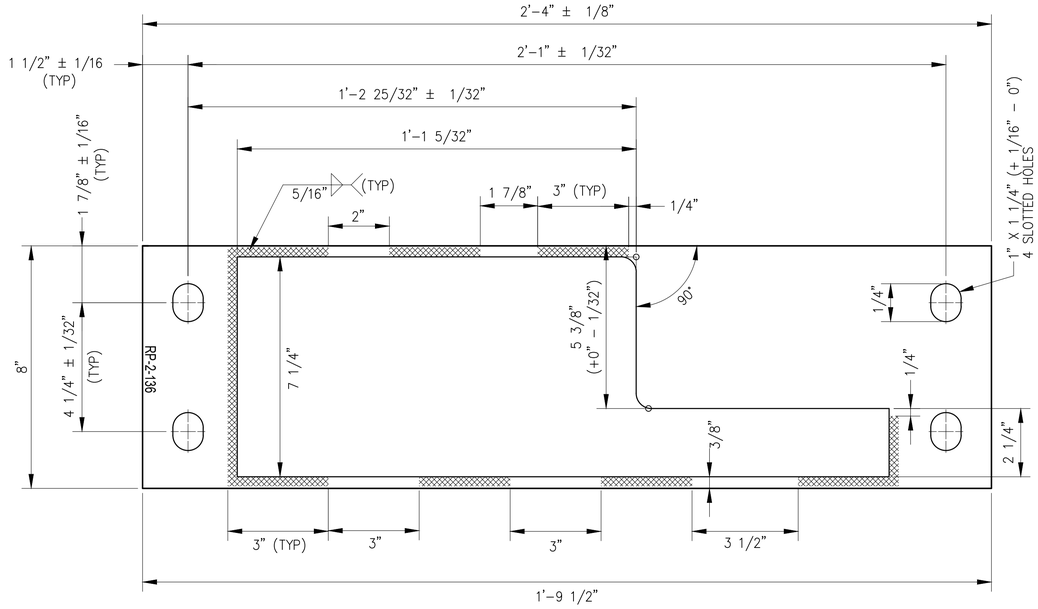
Bin Zhang

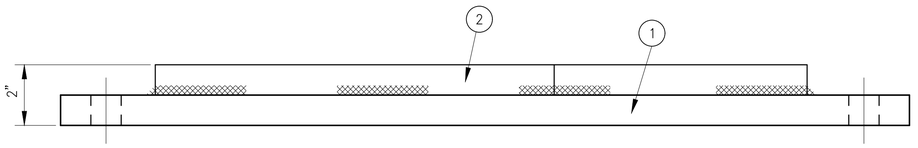
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

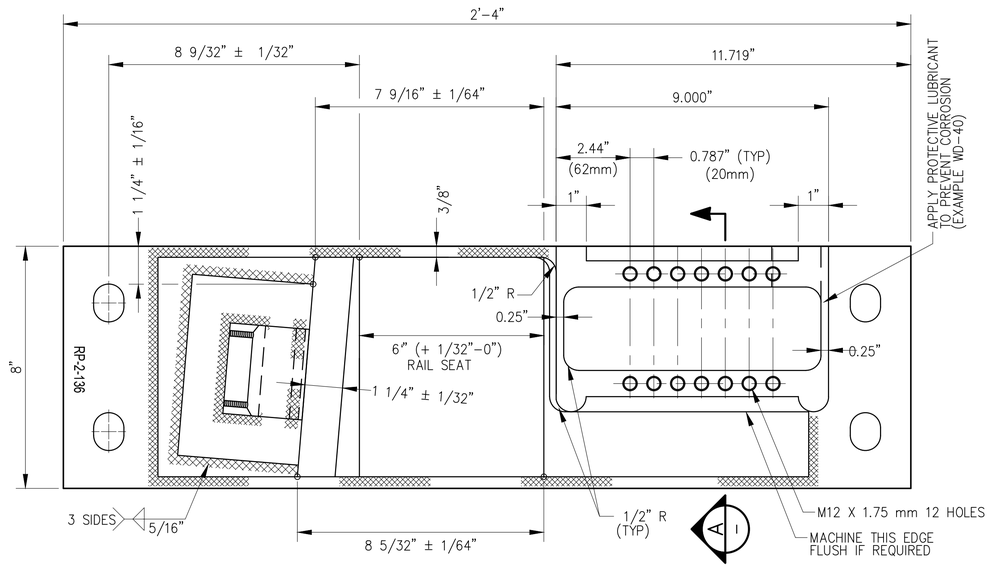
SPECIAL TRACKWORK
GENERAL ELEMENTS
SWITCH PLATES FOR HOLLOW STEEL TIES
SWITCH PLATE ROLLER SCHWIHAG RP-1-136

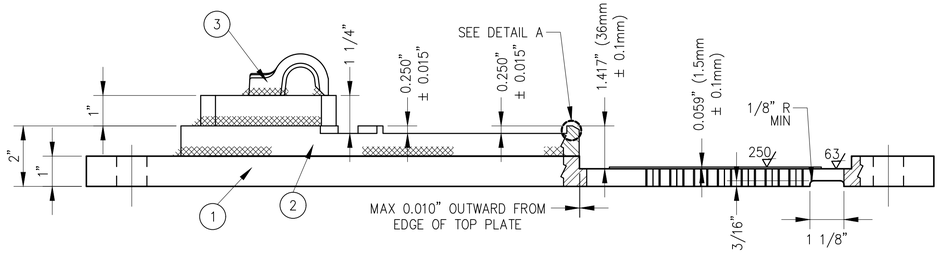
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REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD-2311



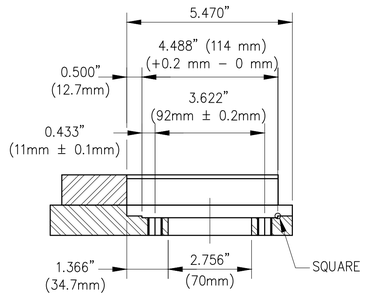


SWITCH ROLLER PLATE RP-2-136 W/O ROLLER WELDING & PUNCHING DETAILS

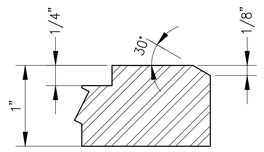




SWITCH ROLLER PLATE RP-2-136 W/O ROLLER MACHINING DETAILS



A SECTION
– SCALE: NTS



DETAIL 'A'

BILL OF MATERIALS	
ITEM	DESCRIPTION
1	FLAT BAR, ASTM A36, 1" X 8" X 2'-0" LONG
2	BURNED SWITCH POINT RISER PLATE FOR RP-1-136
3	SHOULDER, FORGED, TYPE 5, ANTI-OVERDRIVE

NOTES:

1. I.D. CHARACTERS SHALL BE 1/2" MINIMUM HEIGHT, STAMPED CLEARLY AS SHOWN
2. USE IMPERIAL DIMENSIONS WITH THE EXCEPTION OF TOLERANCED METRIC DIMENSIONS AND THREADED HOLES
3. SURFACE ROUGHNESS 250 AND 63 MICROINCH ARE EQUIVALENT TO N9 AND N7 AND SHOULD TRAVERSE THE ENTIRE MACHINED SURFACE
4. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING
5. DEBUR ALL THREADED HOLES

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
GENERAL ELEMENTS
SWITCH PLATES FOR HOLLOW STEEL TIES
SWITCH PLATE ROLLER SCHWIHAG RP-2-136

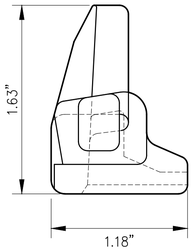
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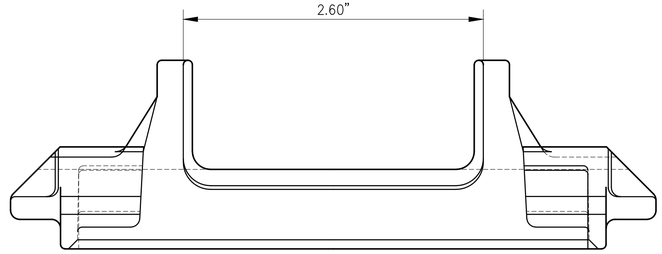
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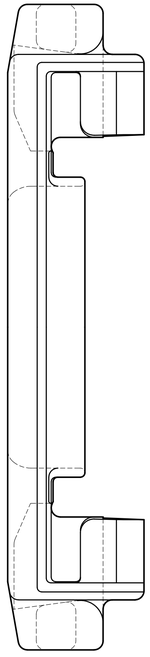
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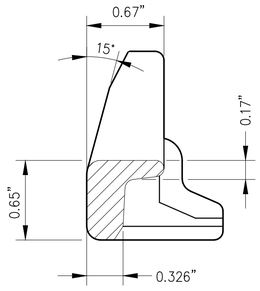
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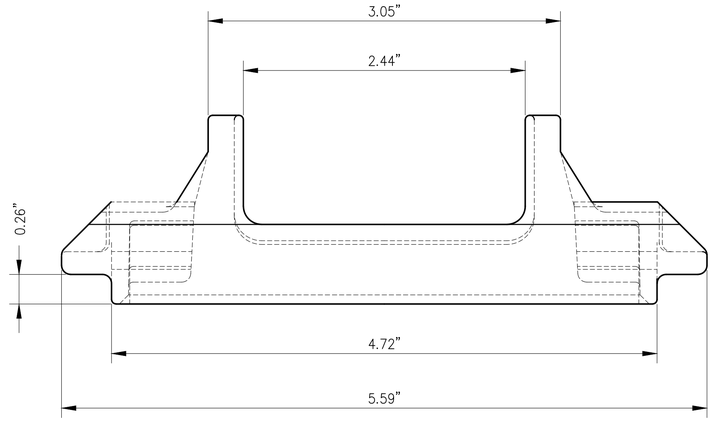












STANDARD SIDE POST INSULATOR (PANDROL PART #7692)

NOTE:

COLOR: NATURAL (OFF-WHITE) OR AS SPECIFIED ON PURCHASE ORDER

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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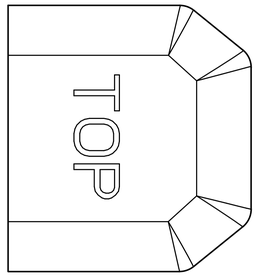
Bin Zhang

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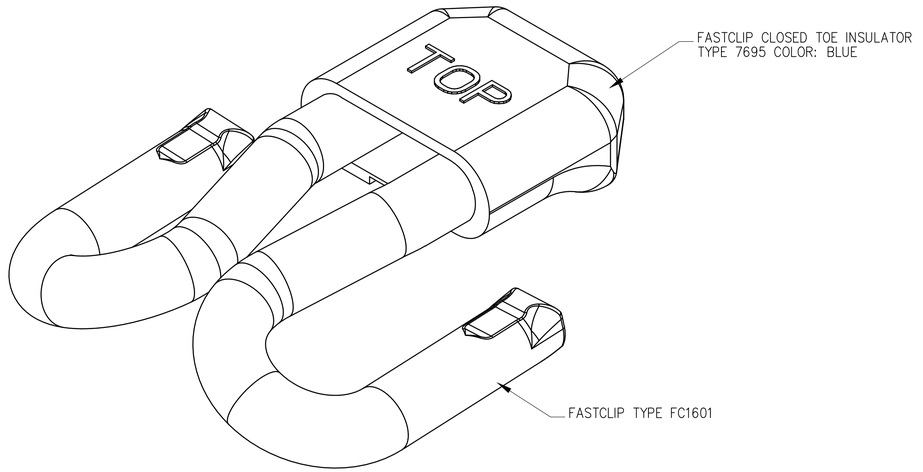
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
GENERAL ELEMENTS
SIDE POST INSULATOR
FOR FC1600 SERIES PANDROL FASTCLIP

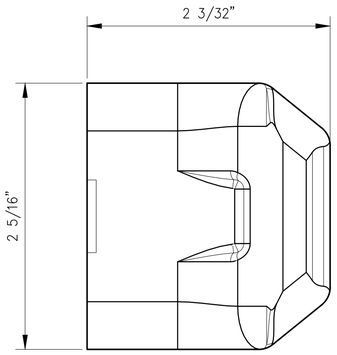
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REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD-2313



TOP VIEW



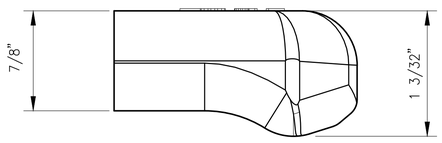
ISOMETRIC
(ASSEMBLED)



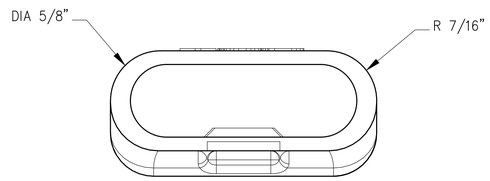
BOTTOM



ISOMETRIC



SIDE VIEW



END VIEW

NOTES:

1. TOE INSULATOR SHALL BE PANDROL TYPE 7695. INSULATOR COLOR: BLUE
2. FOR USE WITH PANDROL FASTCLIP TYPE FC1601
3. TYPE 7695 TOE INSULATOR IS A HEAVY DUTY PART NUMBER

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

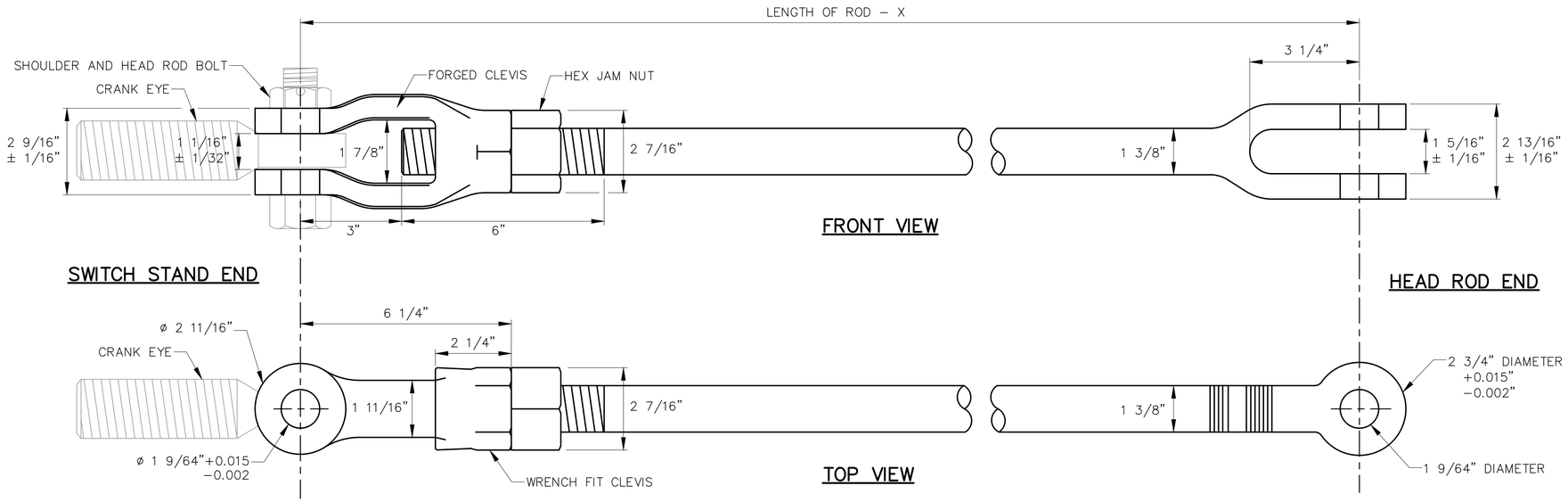
Bin Zhang

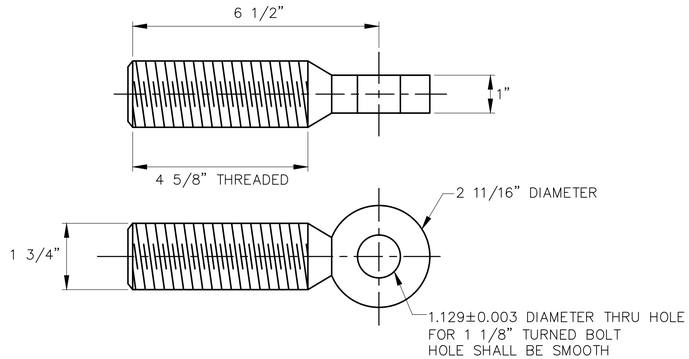
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

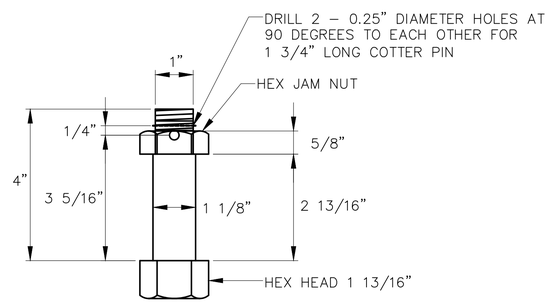
SPECIAL TRACKWORK
GENERAL ELEMENTS
TOE INSULATOR
FOR FC1600 SERIES PANDROL FASTCLIP

CADD FILE NAME:	SD-2314
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD-2314





CRANK EYE



SWITCH STAND SHOULDER AND HEAD ROD BOLT
(MINIMUM SAE 4140 STEEL)

UNIVERSAL CONNECTING RODS		
X = LENGTH OF ROD	JAW OPENING	HEAD ROD BOLT DIAMETER
3'–6"	1 5/16"	1 1/8"
5'–0"	1 5/16"	1 1/8"
5–9"	1 5/16"	1 1/8"
6'–0"	1 5/16"	1 1/8"
6'–10 1/2"	1 5/16"	1 1/8"

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	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
GENERAL ELEMENTS

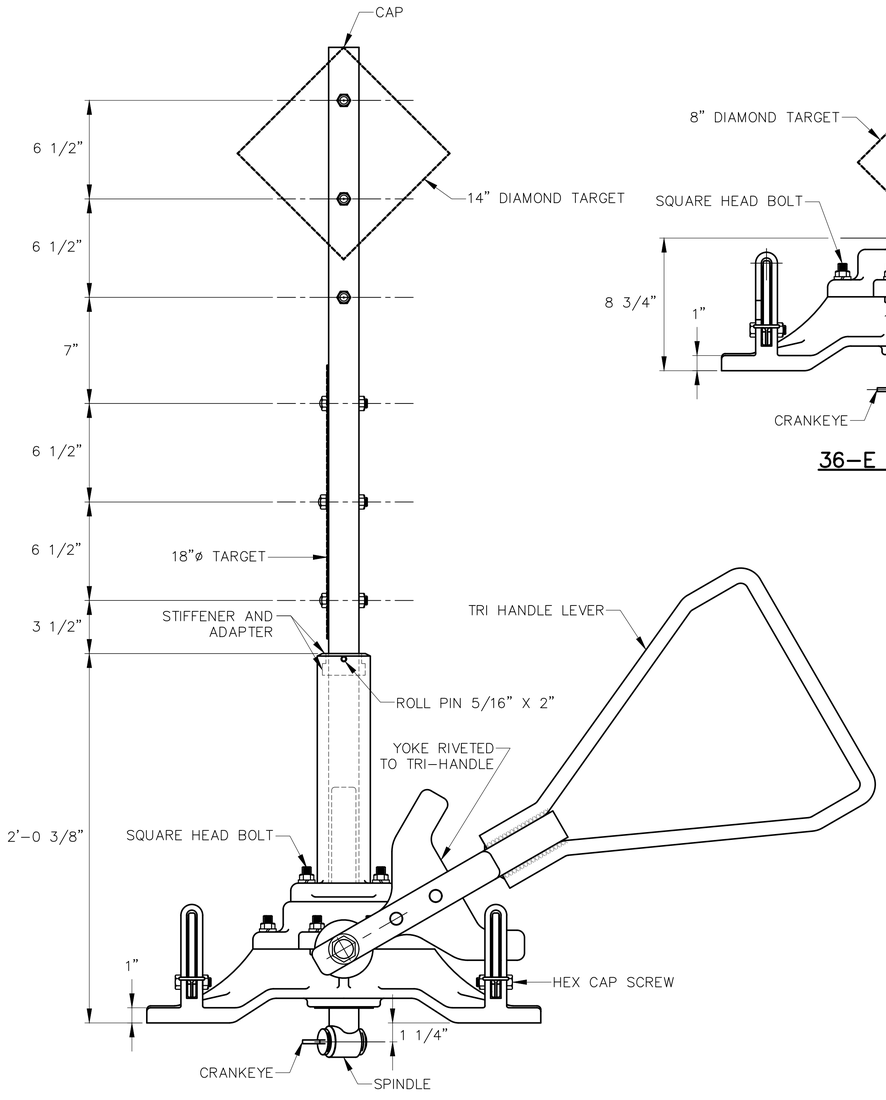
CONNECTING RODS

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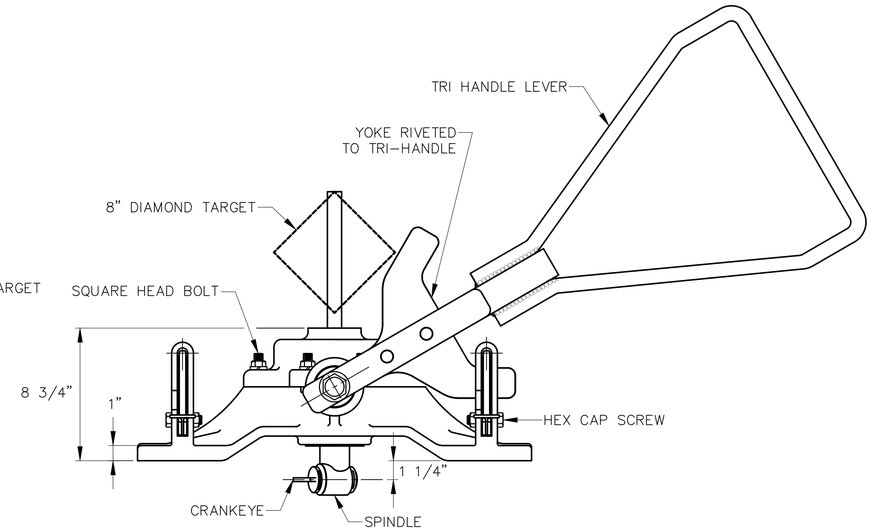
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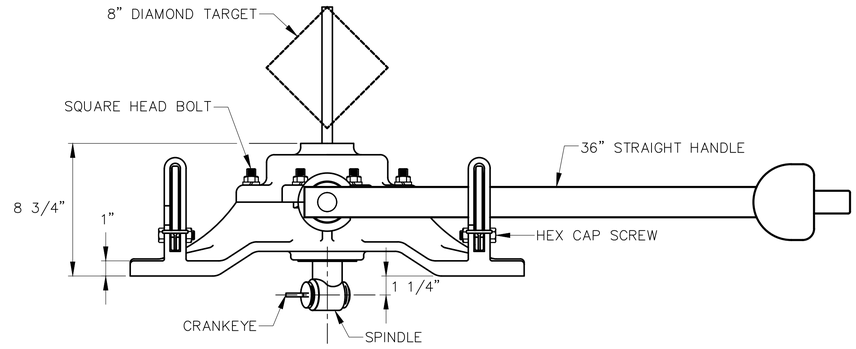
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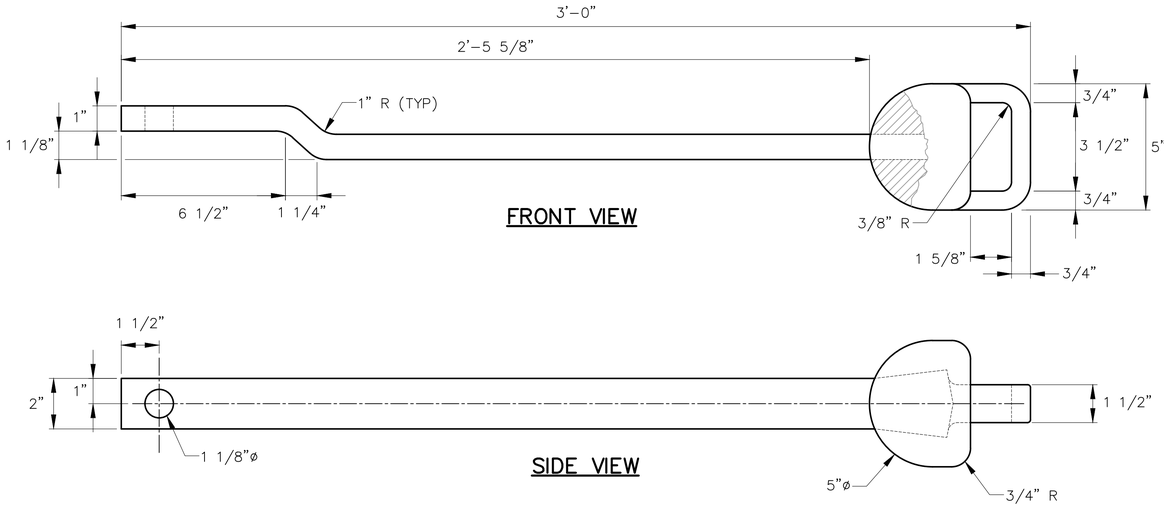
36-EH SWITCH STAND (STANDARD)



36-E SWITCH STAND



36-E WITH STRAIGHT HANDLE
(FOR TIGHT CLEARANCE ONLY)



FRONT VIEW

SIDE VIEW

36" STRAIGHT HANDLE

NOTE:

1. ALL SWITCH STANDS SHOWN ARE FOR USE ON HANDTHROW SWITCHES ONLY.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
GENERAL ELEMENTS

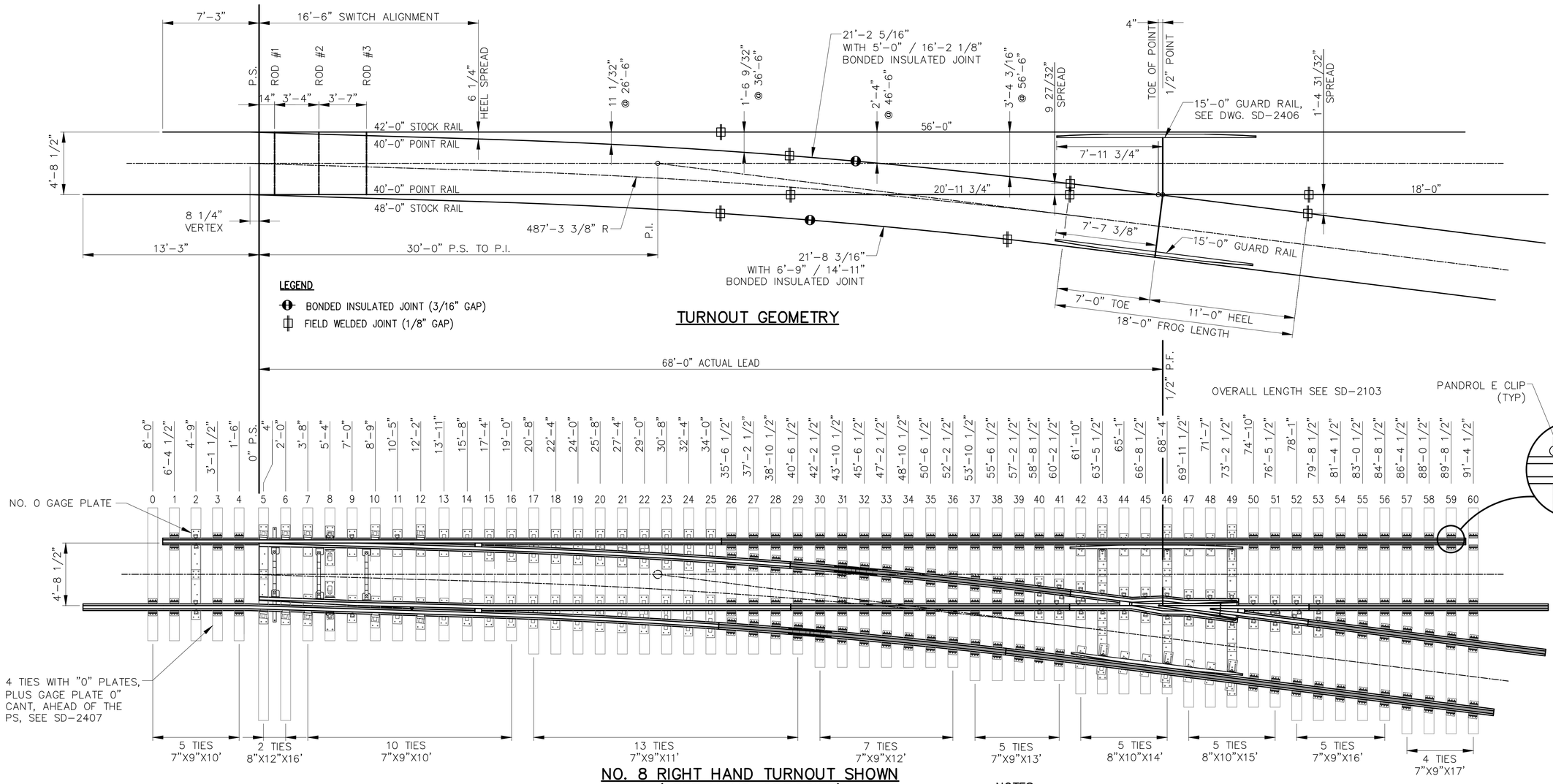
36E AND 36EH SWITCH STANDS

CADD FILE NAME: SD-2316

REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD-2316



TURNOUT GEOMETRY

NO. 8 RIGHT HAND TURNOUT SHOWN (LEFT HAND OPPOSITE)

BILL OF MATERIAL*

ITEM	QTY	DESCRIPTION
1	1	16'-6"/40'-0" SWITCH (42'-0" STRAIGHT STOCK RAIL & 48'-0" CURVED STOCK RAIL)
2	1	#8 - RBM 18-0" FROG
3	1	BOLTLESS 1"-RAISED GUARDRAIL, STRAIGHT, 15'-0"
4	1	BOLTLESS 1"-RAISED GUARDRAIL, RH, 15'-0"
5	1	BONDED INSULATED RAIL, LH, 21'-2 5/16" (5'-0"/16'-2 1/8")
6	1	BONDED INSULATED RAIL, RH, 21'-8 3/16" (6'-9"/14'-11")
7	2	DRILLED RAIL, 136RE, 18'-0" LONG
8	1	DRILLED RAIL, 136RE, 20'-11 3/4" LONG
9	1	DRILLED RAIL, 136RE, 37'-0" LONG
10	1	DRILLED RAIL, 136RE, 56'-0" LONG

* BILL OF MATERIAL SHOWN DOES NOT INCLUDE TIES, PLATES, RODS, AND OTM.

NO. 8 TURNOUT SPECIFICATIONS

FROG NUMBER	8
FROG ANGLE	7°-09'-10"
FROG LENGTH	18'-0"
LENGTH OF SWITCH POINT	16'-6"
THROW OF SWITCH AT # 1 ROD	4 3/4"
ENTRY ANGLE	1°-44'-11"
VERTEX DISTANCE	8 1/4" @ CENTERLINE
ACTUAL LEAD	68'-0"
CENTERLINE RADIUS	487'-3 3/8"
DEGREE OF CURVE	11°-46'-44"
P.S. TO CENTER OF LAST LONG TIE	91'-4 1/2"

NOTES:

1. POINTS AND STOCK RAILS ARE UNDERCUT. SEE DRAWING SD-2402 TO SD-2404 FOR UNDERCUT DETAILS.
2. INSULATED JOINTS SHALL BE PLACED AS SHOWN. INSULATED JOINTS MAY BE RELOCATED UP TO 12 INCHES TO PROVIDE A SUSPENDED JOINT. STAGGER OF INSULATED JOINTS SHALL BE NO MORE THAN 4'-6".
3. FULLY BOX ANCHOR FOR 195 FEET IN FRONT OF AND BEHIND THE TURNOUT.
4. RAIL LENGTHS ALLOW 1/8" GAP BETWEEN RAIL JOINTS FOR FIELD ASSEMBLY. ALL JOINTS SHALL BE WELDED. NO BOLTED JOINTS ARE ALLOWED WITHIN TURNOUT LIMITS.
5. GUARD RAILS FORM A 1 7/8" FLANGEWAY, AND ARE RAISED 1".
6. TURNOUT SHOWN IS FOR TIMBER TIES, FASTENED WITH PANDROL E CLIPS.
7. THIS DRAWING IS A REFERENCE FOR DESIGN AND LAYOUT. SHOP DRAWINGS FOR ALL COMPONENTS SHALL BE SUBMITTED FOR APPROVAL BY CALTRAIN ENGINEERING PRIOR TO TURNOUT FABRICATION.
8. SEE SD-2407 FOR SWITCH PLATE REQUIREMENTS.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 8 TURNOUT
NO. 8 TURNOUT WITH RBM FROG
TIMBER TIES

CADD FILE NAME: SD-2401

REV: | EDITION: FIFTH

SCALE: NTS

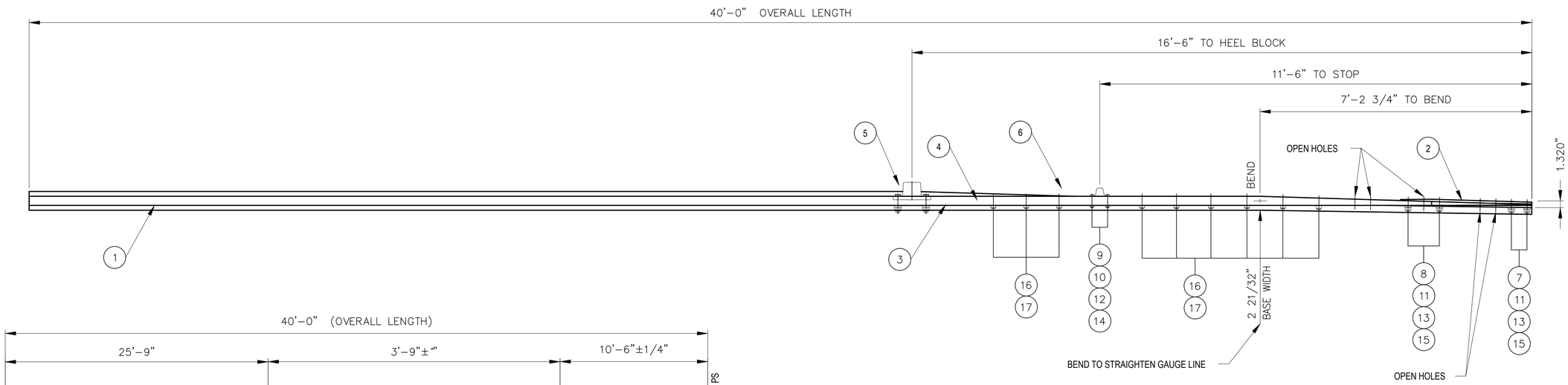
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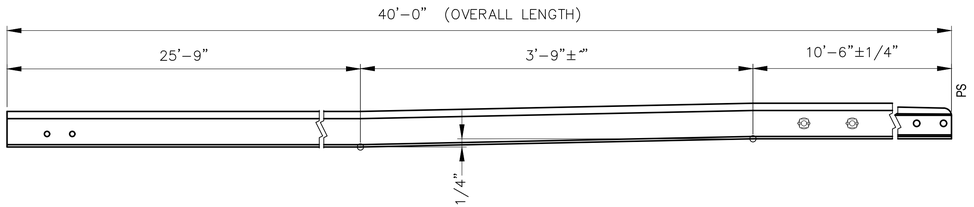
BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH POINT RAIL, 136 LB RE, RH SAMSON GR, 40'–0"	ES2801–22
2	1	MANGANESE TIP RH FOR 136 LB RE 16'–6" SAMSON SWITCH POINT	–
3	1	REINFORCING BAR, GAUGE SIDE, 1/2" x 14'–6", RH POINT	–
4	1	REINFORCING BAR, STOCK SIDE, 1/2" x 10'–11 1/2", RH POINT	–
5	1	SWITCH HEEL ASSY FLOATING 132/136 LB RE C/W HARDWARE	–
6	1	POINT STOP 3 1/4" HIGH	–
7	2	BOLT, 1" DIA x 3 1/2", THIN SQUARE HEAD DRILLED @ 3 3/16" GR 5	–
8	2	BOLT, 1" DIA x 3 3/4", THIN SQUARE HEAD DRILLED @ 3 1/2" GR 5	–
9	2	BOLT, 3/4" DIA x 4", SQUARE HEAD DRILLED @ 3 21/32" GR 5	–

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO
10	2	SPRING WASHER, 3/4" DIA	–
11	4	SPRING WASHER, 1" DIA	–
12	2	NUT, 3/4" DIA HEAVY HEX, GR 5	–
13	4	NUT, 1" DIA HEAVY HEX, GR 5	–
14	2	COTTER PIN, 3/16" DIA x 1 3/4"	–
15	4	COTTER PIN, 1/4" DIA x 2"	–
16	9	HUCKBOLT, 3/4" DIA (C50LR–BR24–24)	–
17	9	HUCK COLLAR, 3/4" DIA (3LC–2R24G)	–





SIDE VIEW – VERTICAL BENDING DETAIL
NTS

NOTES:

1. ROUND EDGES OF SWITCH STOPS AT CONTACT AREAS. R = 1/2"
2. BEVEL ALL BOLT HOLES

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 8 TURNOUT
SWITCH POINT ASSEMBLY
16'–6" STRAIGHT SWITCH POINT

CADD FILE NAME: SD–2401

REV:

EDITION: FIFTH

SCALE: NTS

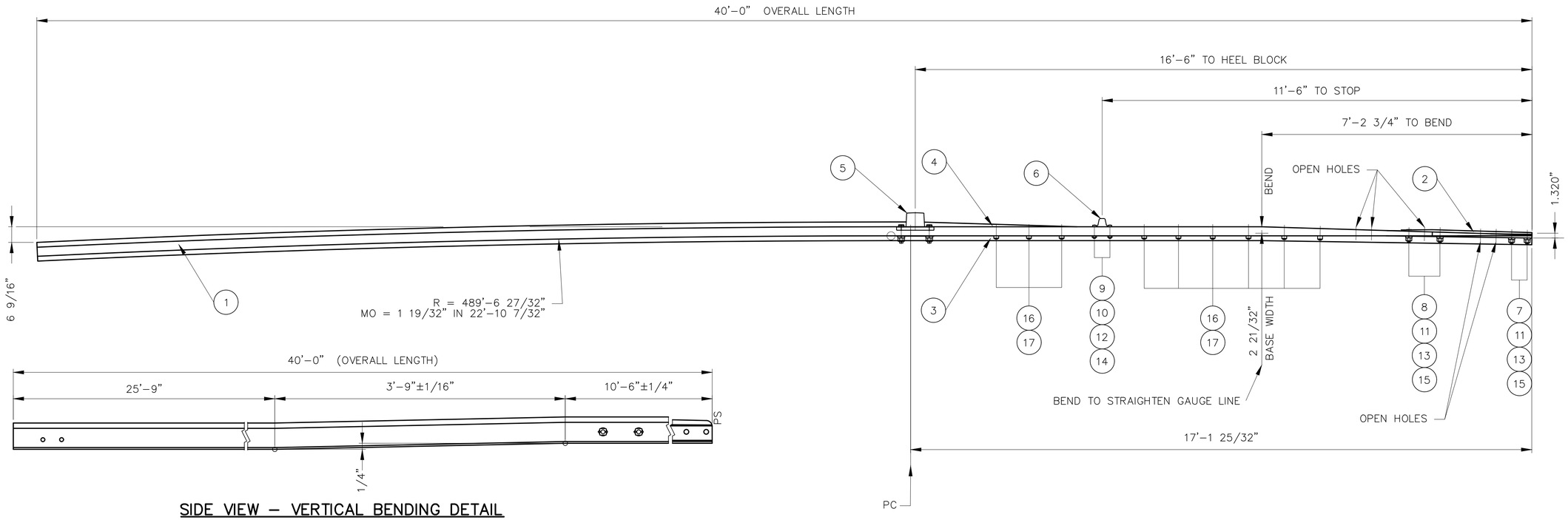
STANDARD DRAWING NO.: SD–2402

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH POINT RAIL, 136 LB RE, RH SAMSON GR, 40'–0"	ES2801–24
2	1	MANGANESE TIP RH FOR 136 LB RE 16'–6" SAMSON SWITCH POINT	–
3	1	REINFORCING BAR, GAUGE SIDE, 1/2" x 14'–6", RH POINT	–
4	1	REINFORCING BAR, STOCK SIDE, 1/2" x 10'–11 1/2", RH POINT	–
5	1	SWITCH HEEL ASSY FLOATING 132/136 LB RE C/W HARDWARE	–
6	1	POINT STOP 3 1/4" HIGH	–
7	2	BOLT, 1" DIA x 3 1/2", THIN SQUARE HEAD DRILLED @ 3 3/16" GR 5	–
8	2	BOLT, 1" DIA x 3 3/4", THIN SQUARE HEAD DRILLED @ 3 1/2" GR 5	–
9	2	BOLT, 3/4" DIA x 4", SQUARE HEAD DRILLED @ 3 21/32" GR 5	–

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DWG NO
10	2	SPRING WASHER, 3/4" DIA	–
11	4	SPRING WASHER, 1" DIA	–
12	2	NUT, 3/4" DIA HEAVY HEX, GR 5	–
13	4	NUT, 1" DIA HEAVY HEX, GR 5	–
14	2	COTTER PIN, 3/16" DIA x 1 3/4"	–
15	4	COTTER PIN, 1/4" DIA x 2"	–
16	9	HUCKBOLT, 3/4" DIA (C50LR–BR24–24)	–
17	9	HUCK COLLAR, 3/4" DIA (3LC–2R24G)	–



SIDE VIEW – VERTICAL BENDING DETAIL
NTS

NOTES:

1. ROUND EDGES OF SWITCH STOPS AT CONTACT AREAS. R = 1/2"
2. BEVEL ALL BOLT HOLES

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

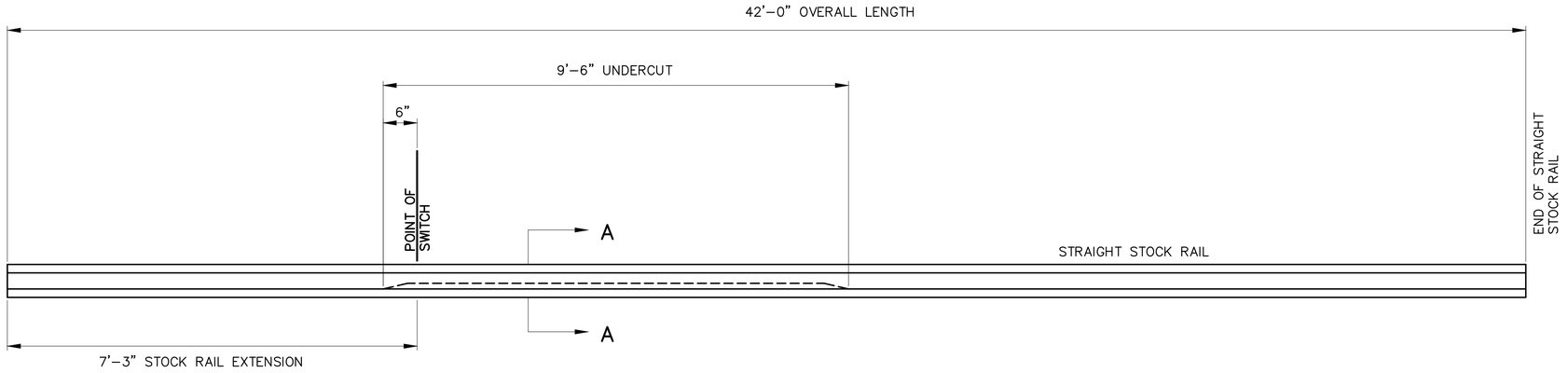
SPECIAL TRACKWORK
NO. 8 TURNOUT
SWITCH POINT ASSEMBLY
16'–6" CURVED SWITCH POINT

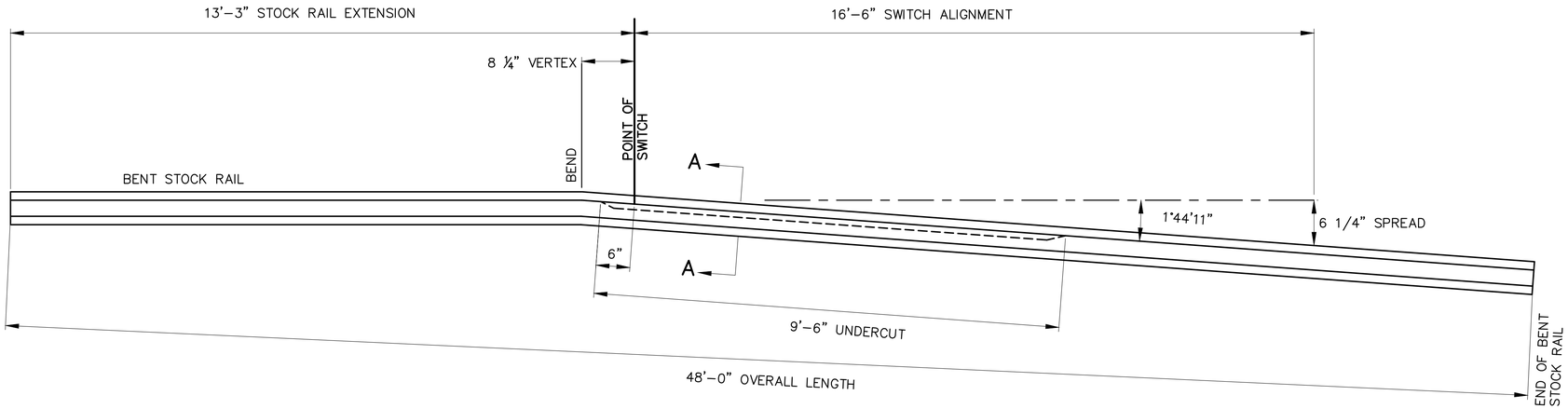
CADD FILE NAME: SD–2403

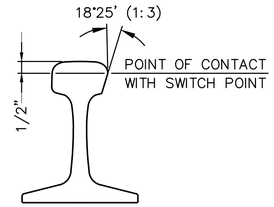
REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD–2403







SECTION A–A

STRAIGHT AND BENT STOCK RAILS
(RH SHOWN, LH OPPOSITE)

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

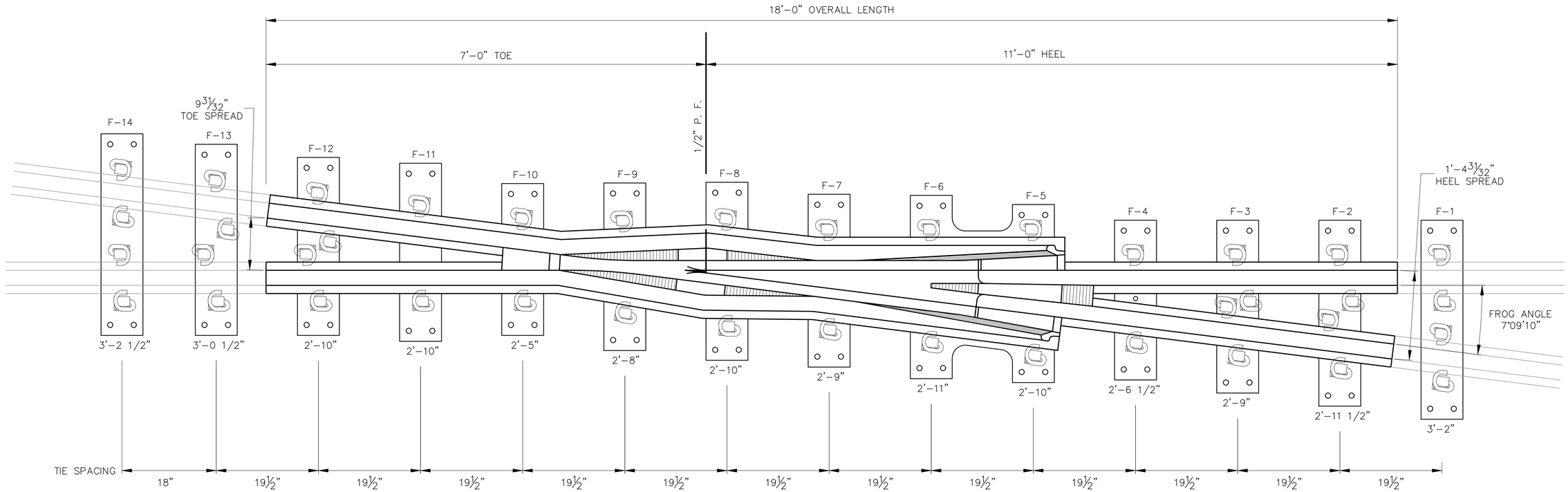
SPECIAL TRACKWORK
NO. 8 TURNOUT
STRAIGHT AND BENT
STOCK RAILS

CADD FILE NAME: SD–2404

REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD–2404



No. 8 RAILBOUND MANGANESE FROG
(RH SHOWN, LH PLATE LAYOUT OPPOSITE)

(NOT TO SCALE)

NOTES:

1. MANGANESE CASTINGS SHALL BE 3-SHOT EXPLOSION IN ACCORDANCE WITH CURRENT AREMA SPECIFICATIONS. HEEL RAILS SHALL INCORPORATE A 30° BEVELED CUT.
2. ALL FROG BOLTS SHALL BE 1 3/8" GRADE 8, SQUARE HEAD WITH 1/4" HARDENED FLAT WASHERS AND HEXAGON SECURITY LOCKNUTS. FROG BOLTS SHALL BE LUBRICATED AND TORQUED TO 2500 FOOT POUNDS.
3. ALL RAIL FURNISHED SHALL BE HEAD HARDENED.
4. EXCEPT WHERE SHOWN, ALL FROG PLATES FURNISHED WITH 1" ROUND HOLES.
5. SEE SIGNAL STANDARD DRAWINGS FOR FROG BOND DETAILS.
6. THIS DRAWING IS FOR REFERENCE ONLY. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL BY CALTRAIN ENGINEERING PRIOR TO FABRICATION.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 8 TURNOUT

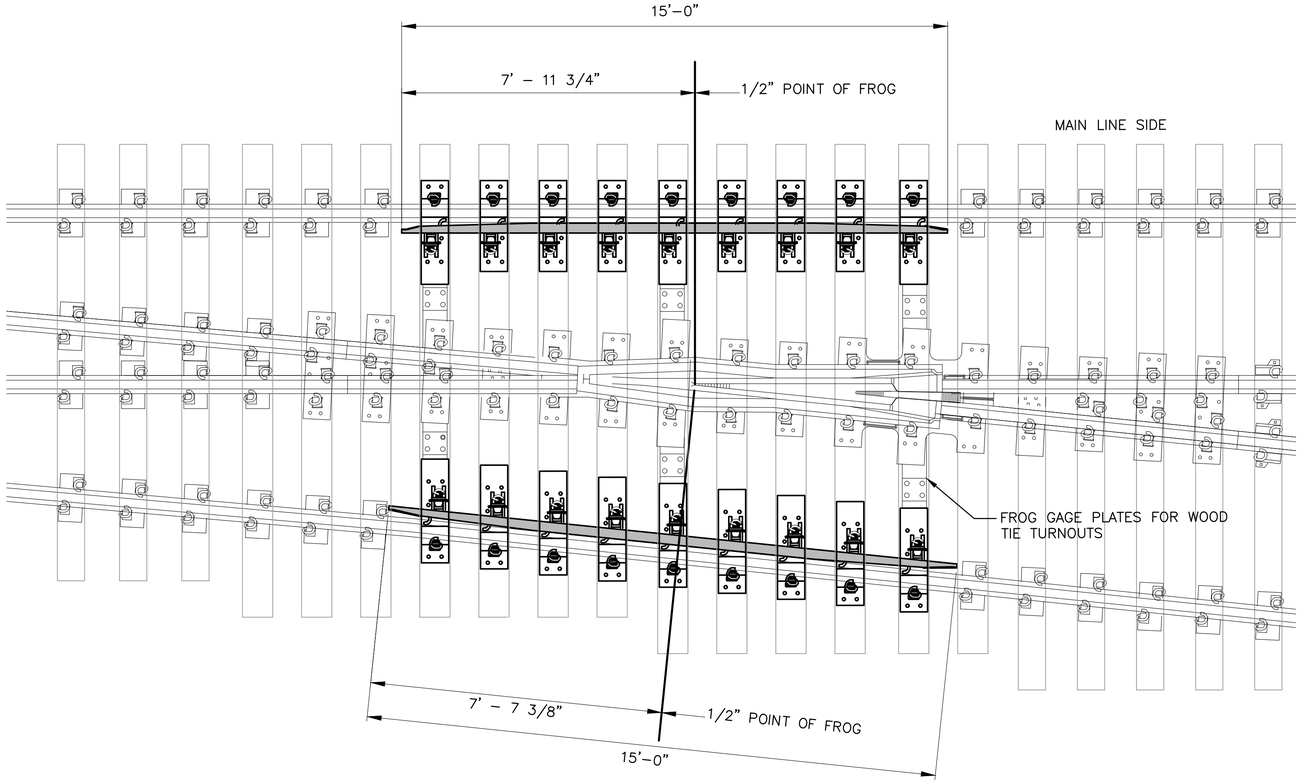
NO. 8 RAILBOUND MANGANESE FROG

CADD FILE NAME: SD-2405

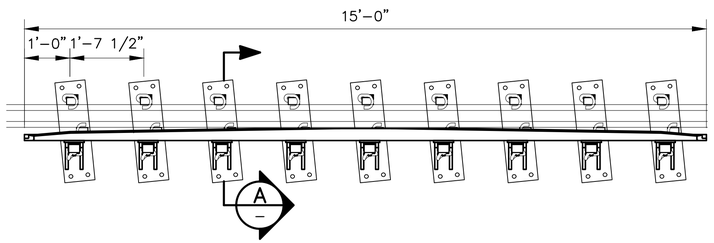
REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD-2405



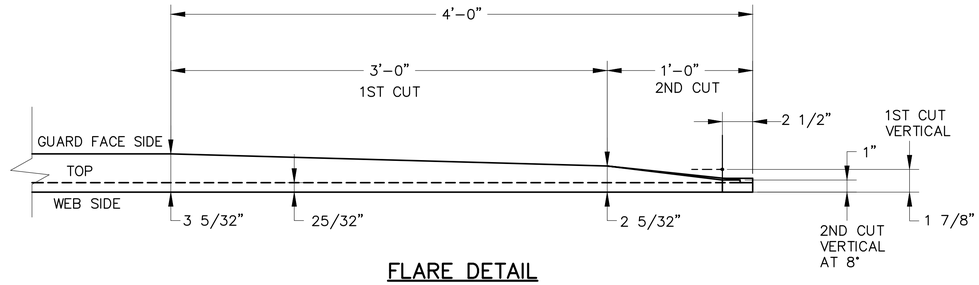
TYPICAL GUARD RAIL PLACEMENT



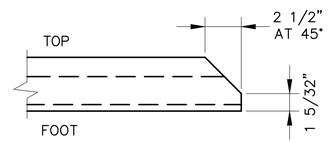
15'–0" BOLTLESS ADJUSTABLE GUARD RAIL (RH)

NOTES:

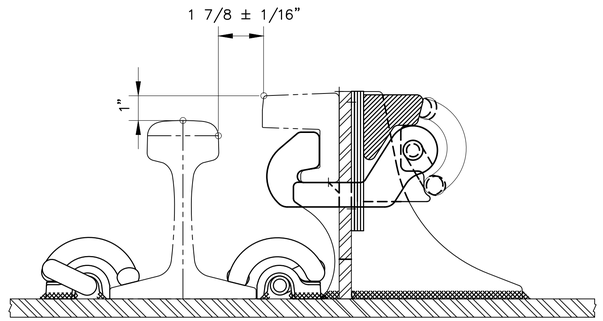
1. FOR GUARD RAIL PLATE SPACING REFER TO THE SPECIFIC TURNOUT NUMBER AND TYPE.
2. PANDROL SPRING CLIPS (E2055) SHALL BE INCLUDED IN ASSEMBLY.
3. LIFT POINTS AND WEIGHT OF ASSEMBLY SHALL BE MARKED ON HEAD OF WEAR BAR WITH WHITE PAINT.
4. FOR PLACEMENT OF GUARD RAIL REFER TO THE SPECIFIC TURNOUT NUMBER AND TYPE OF FROG.
5. PLATE SPACING AND ORIENTATION ON THIS DRAWING ILLUSTRATES SEVERAL POSSIBLE CONFIGURATIONS. EACH GUARD RAIL SHALL BE CONFIGURED WITH PLATE/BRACE ASSEMBLIES ORIENTED PARALLEL TO SWITCH TIES AND SPACED FOR WOOD OR CONCRETE TIES AS INDICATED FOR EACH TURNOUT.
6. ALL GUARD RAIL SHALL BE BOLTLESS ADJUSTABLE WITH 1" RAISE.



FLARE DETAIL



END BEVEL



A – SECTION
NOT TO SCALE

REV	DATE	BY	CHK	APP	DESCRIPTION
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PENINSULA CORRIDOR JOINT POWERS BOARD

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Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

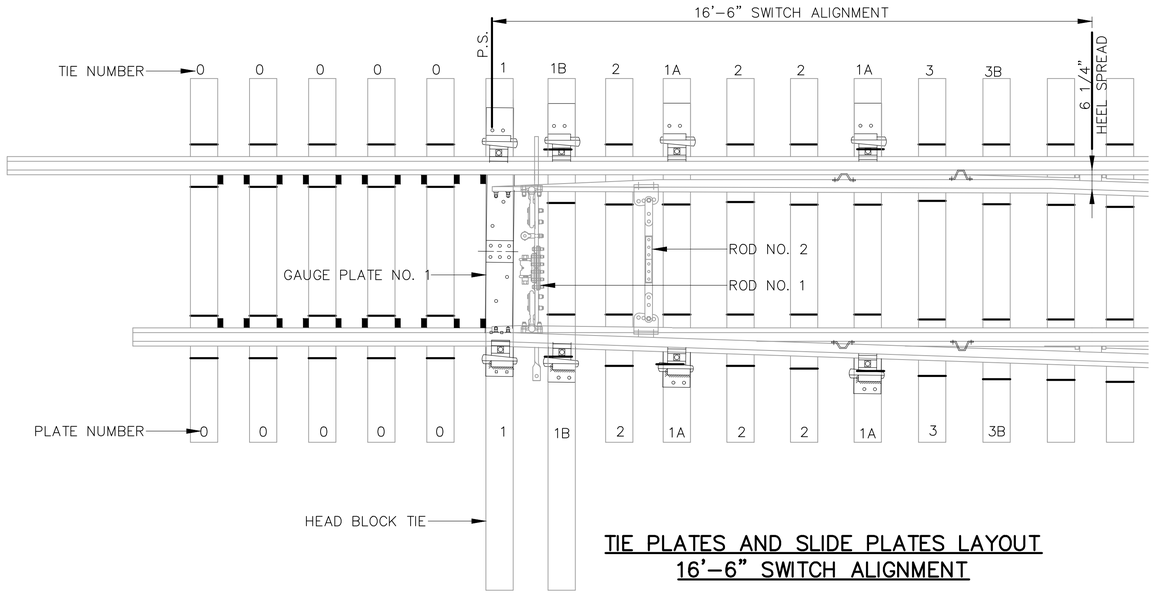
SPECIAL TRACKWORK
NO. 8 TURNOUT
BOLTLESS ADJUSTABLE
GUARD RAILS

CADD FILE NAME: SD–2406

REV: | EDITION: FIFTH

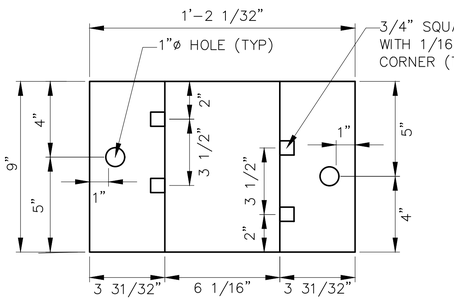
SCALE: NTS

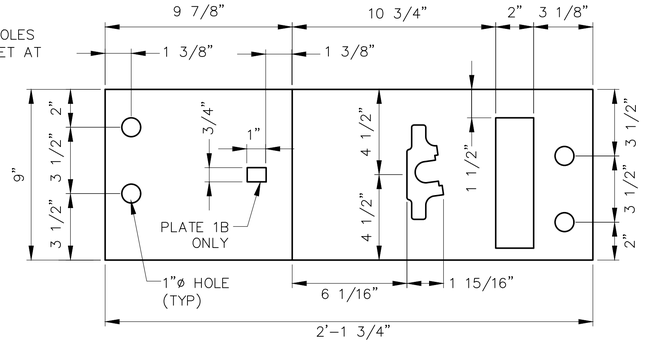
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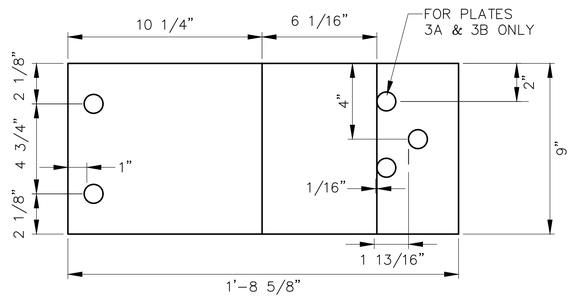


TIE PLATES AND SLIDE PLATES LAYOUT
16'–6" SWITCH ALIGNMENT

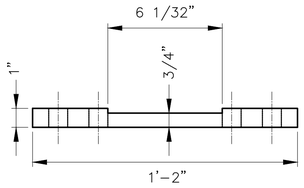
TABLE OF QUANTITIES							
SWITCH LENGTH	PLATE NUMBER						
	0	1A	1B	2	3	3A	3B
16'–6"	10	4	2	6	2	N/A	2



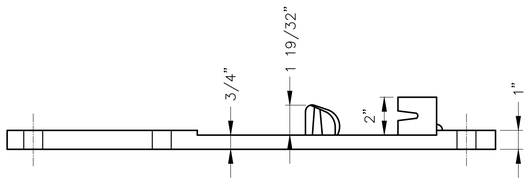




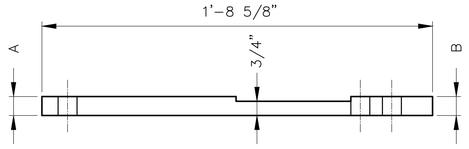
SLIDE PLATES		
PLATE NO.	A	B
PLATE 2	1"	1"
PLATE 3	15/16"	1"
PLATE 3A	7/8"	7/8"
PLATE 3B	13/16"	7/8"



TIE PLATE NO. 0
NO. 0 PLATES TO BE INSTALLED AHEAD OF THE PS



SLIDE PLATE NO. 1A & 1B



SLIDE PLATE NO. 2, 3, 3A & 3B

NOTES:

1. SWITCH PLATES SHOWN ARE FOR TIMBER TIE SWITCHES ONLY

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PENINSULA CORRIDOR JOINT POWERS BOARD

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DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 8 TURNOUT

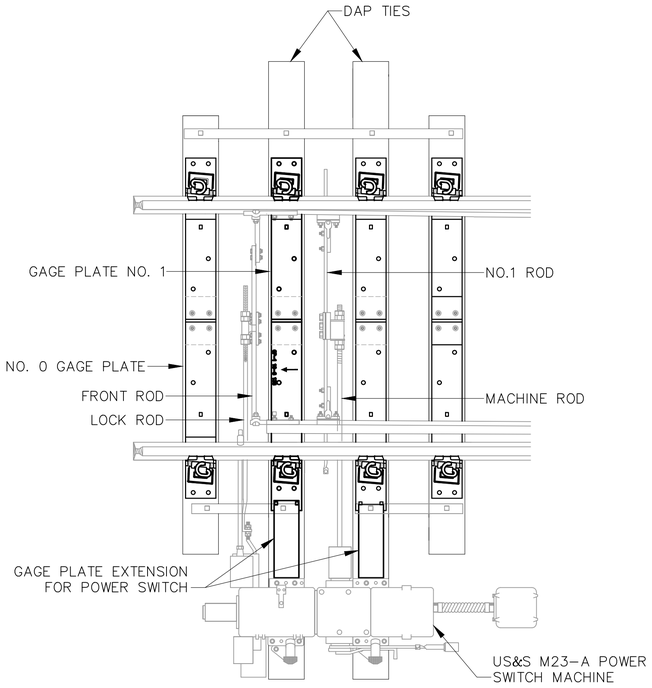
SWITCH PLATES

CADD FILE NAME: SD–2407

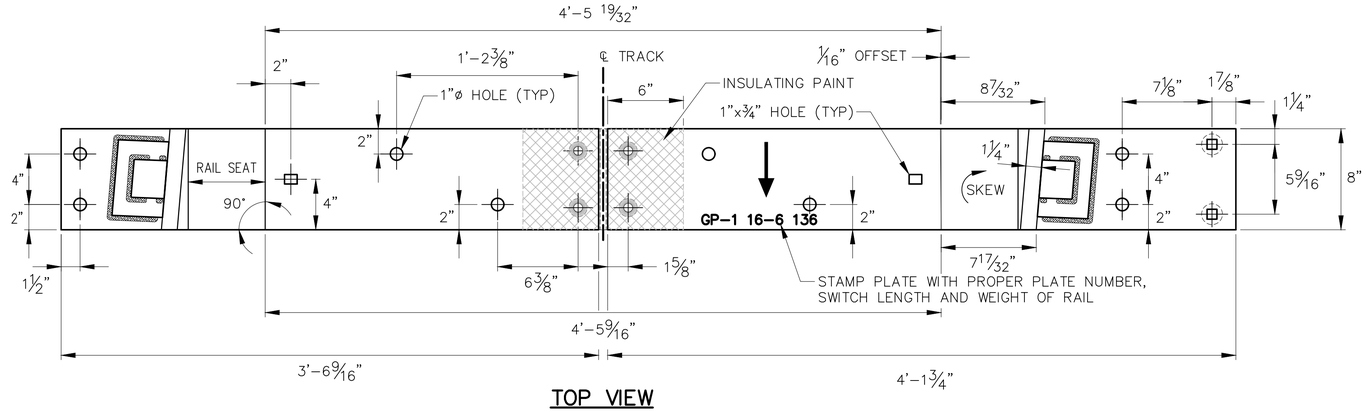
REV: | EDITION: FIFTH

SCALE: NTS

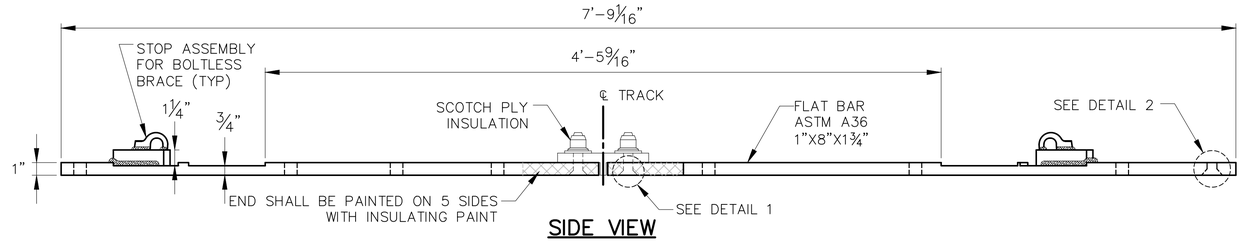
STANDARD DRAWING NO.: SD–2407



POWER OPERATION SWITCH PLAN



TOP VIEW

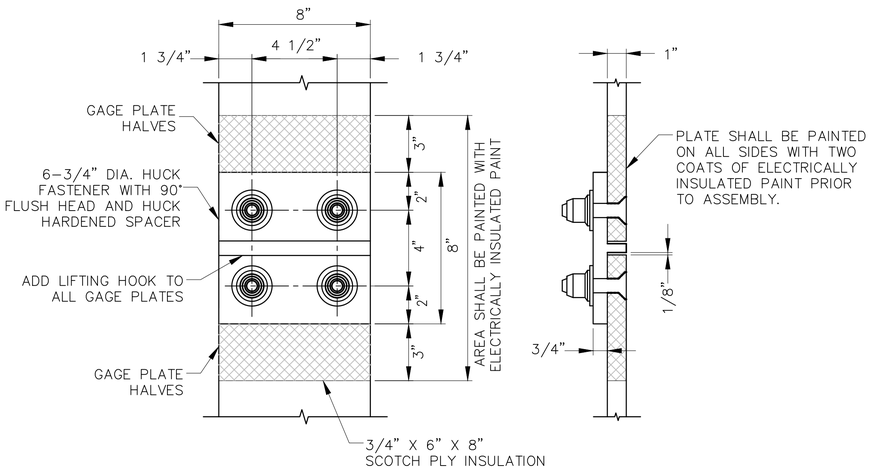


SIDE VIEW

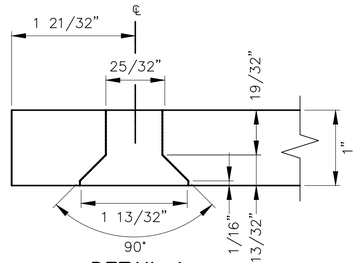
GAGE PLATE NO. 1

NOTES:

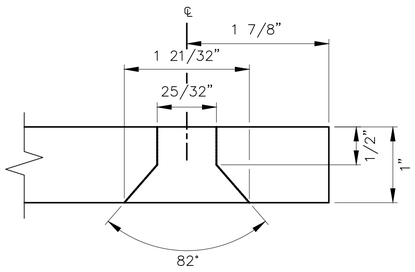
1. GAGE PLATE SHOWN IS FOR TIMBER TIE SWITCHES ONLY.
2. GAGE PLATE SHALL BE MARKED AS SHOWN WITH 3/4" CHARACTERS ENGRAVED TO A DEPTH OF 0.050" AT LOCATION INDICATED.
3. SEE SIGNAL DRAWING FOR DETAILS ON GAGE PLATE EXTENSION AND DAP TIES.
4. MARK ARROW WITH WHITE PAINT TOWARD POINT OF SWITCH.



SCOTCH PLY INSULATION



DETAIL 1
COUNTERSINK DETAIL



DETAIL 2
COUNTERBORE DETAIL

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 8 TURNOUT
GAGE PLATE NO. 1 WITH
SCOTCH PLY INSULATION

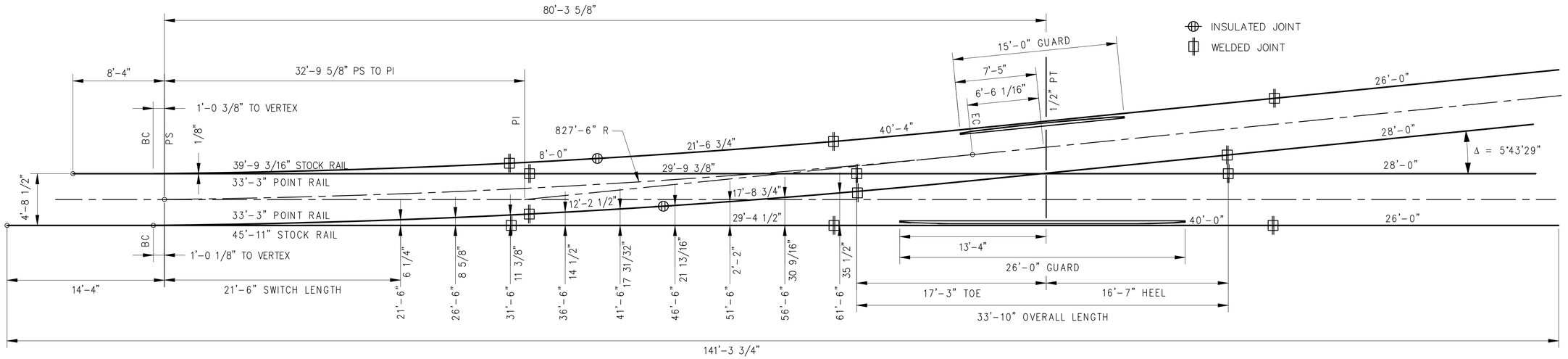
CADD FILE NAME: SD-2408

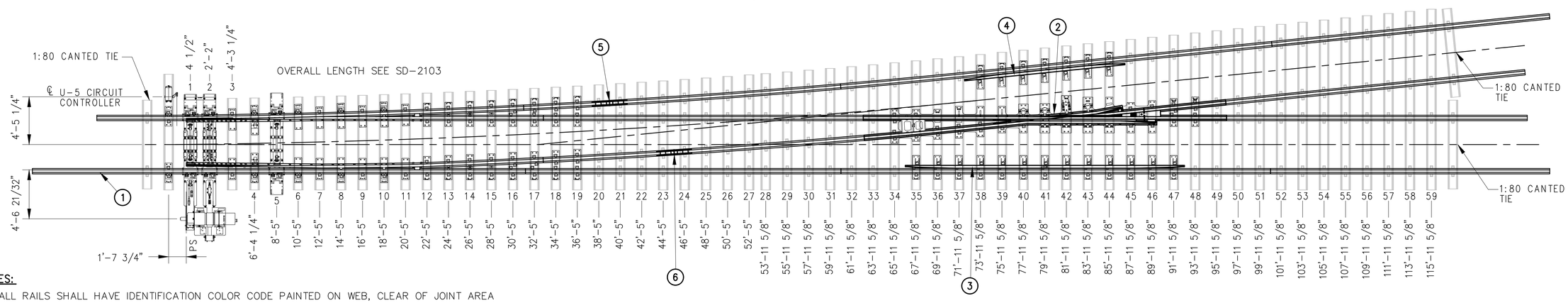
REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD-2408

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH PACK, NO 10–136 LB RE MODIFIED TANGENTIAL, LH, HST	SD–2505	12	1	DRILLED RAIL, 136 LB RE, 40'–4" LONG	–
2	1	FROG PACK, NO 10–136 LB RE WSM, LH	SD–2524	13	276	TIE SCREW, CONCRETE 7/8" DIAMETER x 6" HEX HEAD	–
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'–0" LG, 136 LB RE RAISED 1", STRAIGHT	SD–2301	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" LG, 136 LB RE RAISED 1", LH	SD–2533	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:

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 7/8" FLANGEWAY
4. COORDINATE SWITCH MACHINE AND MACHINE PLATE (NIC) WITH CALTRAIN
5. ALL TIE LENGTHS SHALL INCLUDE 1'–9" FROM TIE ENDS TO RAIL CENTERLINE, EXCEPT AS NOTED AND 1:80 CANTED TIES, SEE SD–2517
6. TIGHTEN TIE SCREW WITH DOUBLE COIL SPRING WASHER IN PLACE

TURNOUT DATA:

FROG

#10 FROG ANGLE:	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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

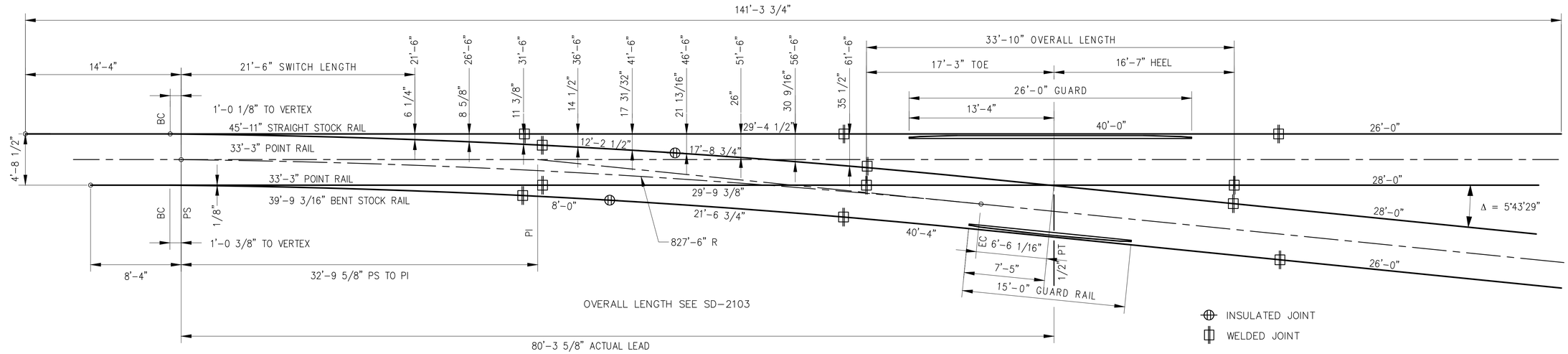
DIRECTOR, ENGINEERING

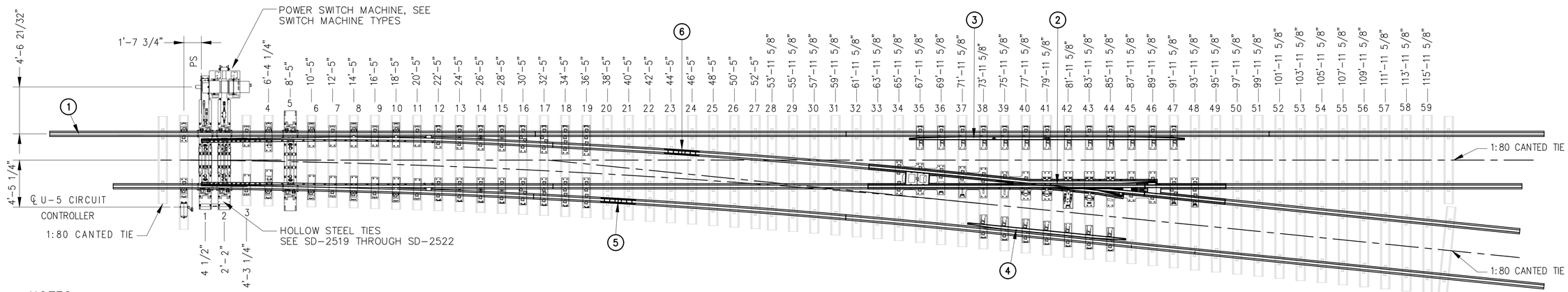
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT CONCRETE TIE
NO. 10 LH TURNOUT WITH
WSM FROG AND HST SWITCH MACHINE
ON MAINLINE SIDE

CADD FILE NAME: SD–2501
REV:
EDITION: FIFTH
SCALE: NTS
STANDARD DRAWING NO.: SD–2501

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH PACK, NO 10–136 LB RE MODIFIED TANGENTIAL, RH, HST	SD–2506	12	1	DRILLED RAIL, 136 LB RE, 40'–4" LONG	–
2	1	FROG PACK, NO 10–136 LB RE WSM, RH	SD–2523	13	276	TIE SCREW, CONCRETE 7/8" DIAMETER x 6" HEX HEAD	–
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'–0" LG, 136 LB RE RAISED 1", STRAIGHT	SD–2301	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" LG, 136 LB RE RAISED 1", RH	SD–2534	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 7/8" FLANGEWAY
4. COORDINATE SWITCH MACHINE AND MACHINE PLATE (NIC) WITH CALTRAIN
5. ALL TIE 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

TURNOUT DATA:

FROG

#10 FROG ANGLE:	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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

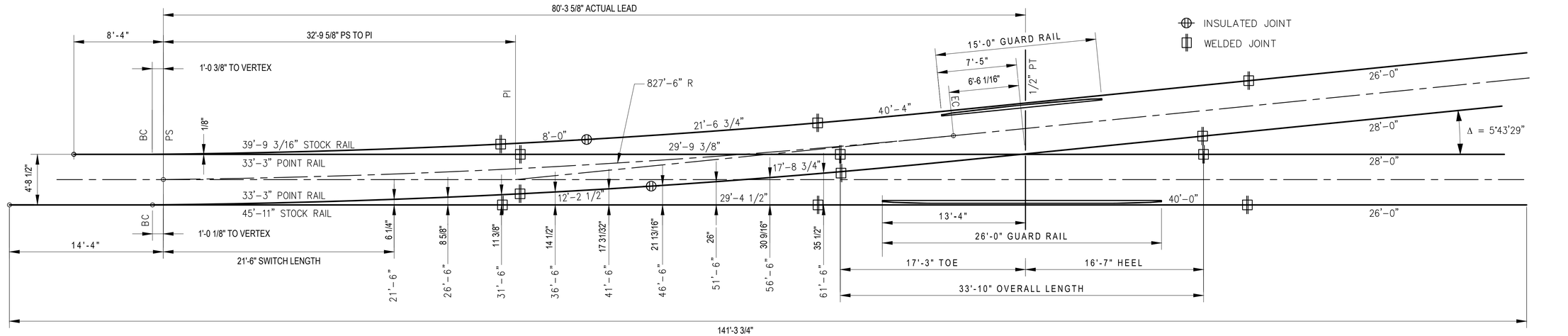
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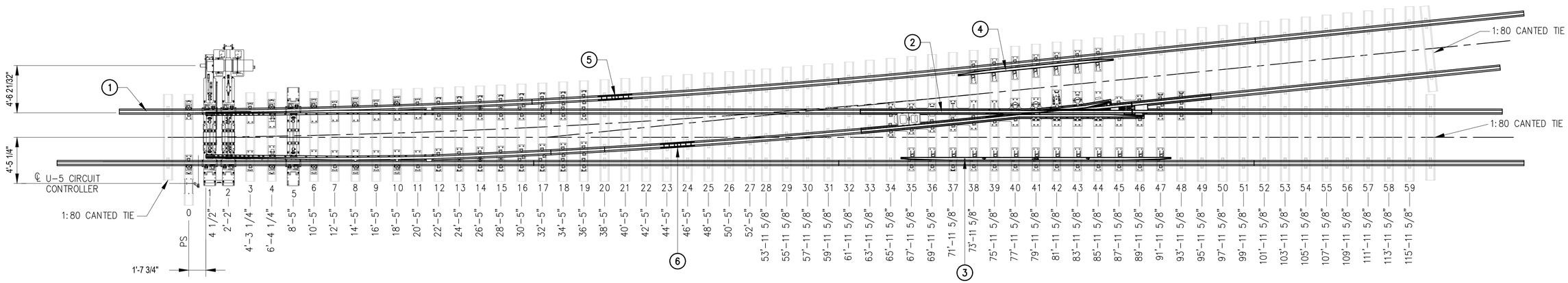
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
NO. 10 RH TURNOUT WITH
WSM FROG AND HST SWITCH MACHINE
ON MAINLINE SIDE

CADD FILE NAME:	SD–2502
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2502

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH PACK, NO 10–136 LB RE MODIFIED TANGENTIAL, LH, HST	SD–2507	12	1	DRILLED RAIL, 136 LB RE, 40'–4" LONG	–
2	1	FROG PACK, NO 10–136 LB RE WSM, LH	SD–2524	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	SD–2301	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	SD–2533	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 1/2" 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 7/8" FLANGEWAY
4. COORDINATE SWITCH MACHINE AND MACHINE PLATE (NIC) MUST WITH CALTRAIN
5. ALL TIE 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

TURNOUT DATA:

FROG

#10 FROG ANGLE:	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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

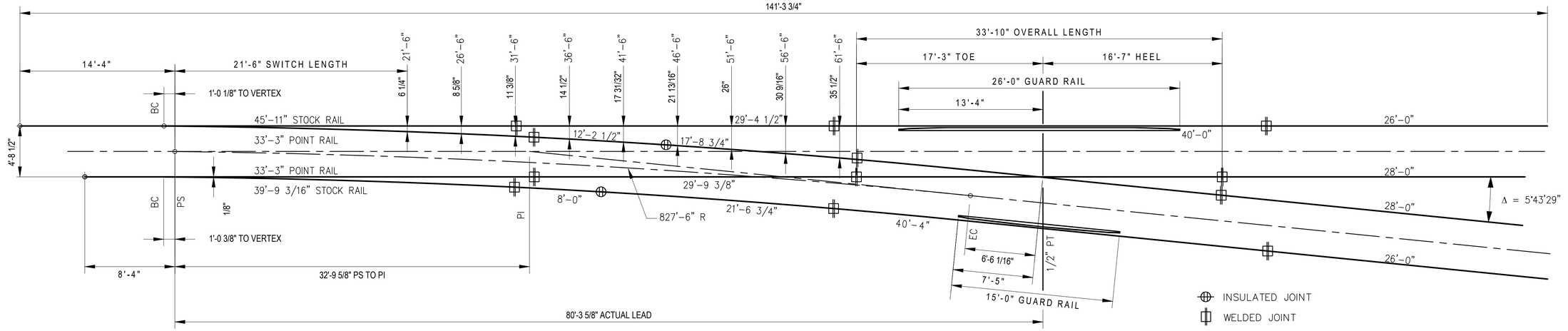
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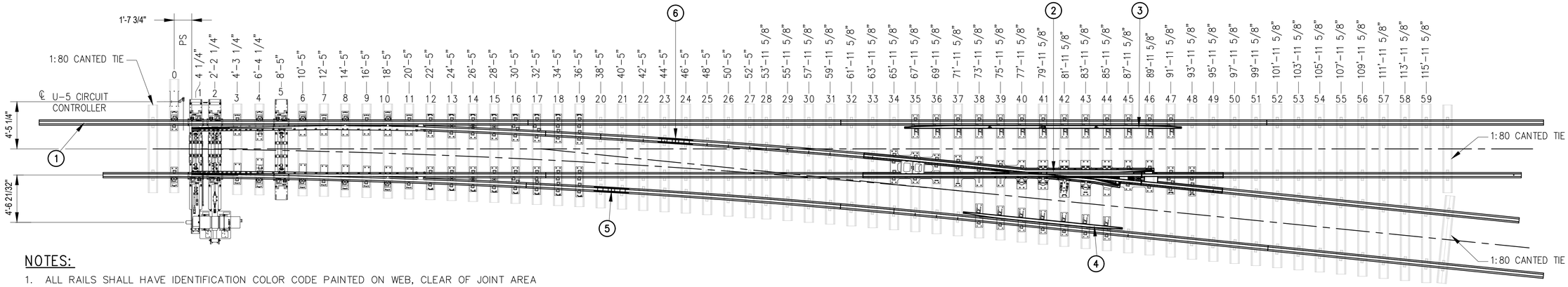
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
NO. 10 LH TURNOUT WITH
WSM FROG AND HST SWITCH MACHINE
ON TURNOUT SIDE

CADD FILE NAME:	SD–2503
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2503

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH PACK, NO 10–136 LB RE MODIFIED TANGENTIAL, RH, HST	SD–2508	12	1	DRILLED RAIL, 136 LB RE, 40'–4" LONG	–
2	1	FROG PACK, NO 10–136 LB RE WSM, RH	SD–2523	13	276	TIE SCREW, CONCRETE 7/8" DIAMETER x 6" HEX HEAD	–
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'–0" LG, 136 LB RE RAISED 1", STRAIGHT	SD–2301	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" LG, 136 LB RE RAISED 1", RH	SD–2534	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 7/8" FLANGEWAY
4. COORDINATE SWITCH MACHINE AND MACHINE PLATE (NIC) WITH CALTRAIN
5. ALL TIE 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

TURNOUT DATA:

FROG

#10 FROG ANGLE:	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

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK NO. 10 TURNOUT

NO. 10 RH TURNOUT WITH WSM FROG AND HST SWITCH MACHINE ON TURNOUT SIDE

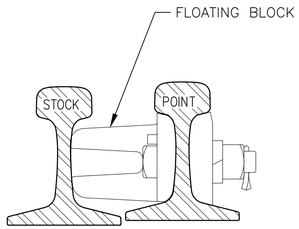
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REV: | EDITION: FIFTH

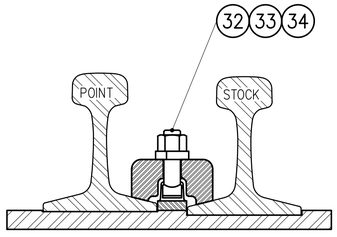
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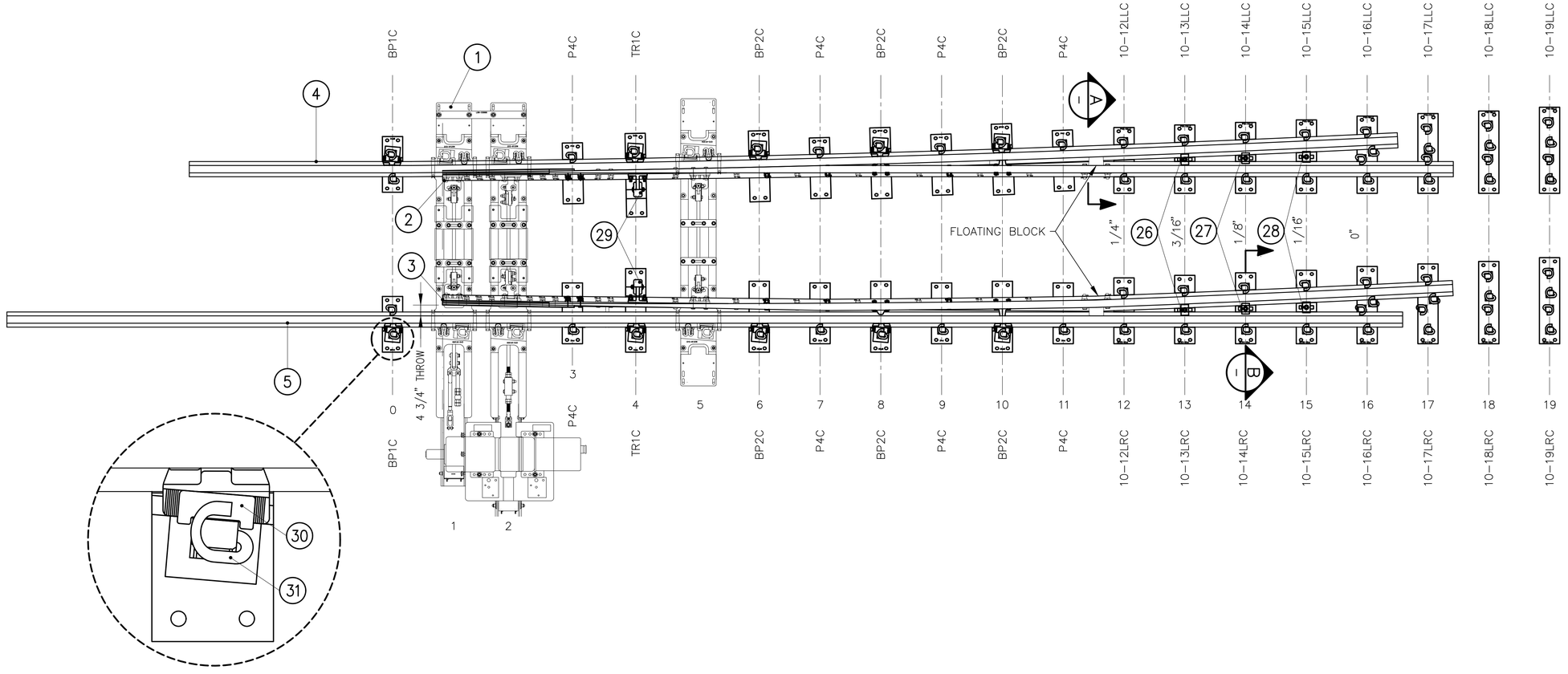
BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	HOLLOW SWITCH TIE & RODDING ASSEMBLY	SD-2538	18	1	SWITCH PLATE (10-16LLC)	SD-2541
2	1	SAMSON POINT, 33'-3" LONG, DOUBLE REINFORCED, UR MANG TIP, STR, LH	SD-2509	19	1	SWITCH PLATE (10-16LRC)	SD-2541
3	1	SAMSON POINT, 33'-3" LONG, DOUBLE REINFORCED, UR MANG TIP, CVD, RH	SD-2510	20	1	SWITCH PLATE (10-17LLC)	SD-2541
4	1	SAMSON STOCK RAIL, 39'-9 3/16" LONG, CURVED, LH	SD-2513	21	1	SWITCH PLATE (10-17LRC)	SD-2541
5	1	SAMSON STOCK RAIL, 45'-11" LONG, STRAIGHT, RH	SD-2514	22	1	SWITCH PLATE (10-18LLC)	SD-2542
6	2	SWITCH PLATE, BRACE (BP1C-136)	SD-2302	23	1	SWITCH PLATE (10-18LRC)	SD-2542
7	6	SWITCH PLATE, BRACE (BP2C-136)	SD-2302	24	1	SWITCH PLATE (10-19LLC)	SD-2542
8	8	SWITCH PLATE (P4C-136)	SD-2302	25	1	SWITCH PLATE (10-19LRC)	SD-2542
9	2	SWITCH PLATE, ROLLER (10-TR1C)	SD-2302	26	2	HOLD DOWN CLIP (PC37A) "K" STYLE	-
10	1	SWITCH PLATE (10-12LLC)	SD-2540	27	2	HOLD DOWN CLIP (PC38A) "K" STYLE	-
11	1	SWITCH PLATE (10-12LRC)	SD-2540	28	2	HOLD DOWN CLIP (PC39A) "K" STYLE	-
12	1	SWITCH PLATE (10-13LLC)	SD-2540	29	2	POINT ROLLER ASSEMBLY, FLAT BACK C/W DOUBLE REINFORCED HARDWARE	-
13	1	SWITCH PLATE (10-13LRC)	SD-2540	30	10	BOLTLESS BRACE ASSEMBLY, SUREFIT, 136 LB RE C/W SERRATED WASHER	-
14	1	SWITCH PLATE (10-14LLC)	SD-2540	31	68	CLIP, PANDROL, E2055	-
15	1	SWITCH PLATE (10-14LRC)	SD-2540	32	6	T-BOLT, 7/8" DIAMETER 3 3/4" LONG, GR 8	-
16	1	SWITCH PLATE (10-15LLC)	SD-2541	33	6	SPRING WASHER 7/8" DIAMETER	-
17	1	SWITCH PLATE (10-15LRC)	SD-2541	34	6	NUT, 7/8" DIAMETER HEAVY HEX, GR 8	-



A SECTION
– NTS



B SECTION
– NTS



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PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK NO. 10 TURNOUT LH SWITCH PACK WITH HOLLOW STEEL TIES SWITCH MACHINE ON MAINLINE SIDE

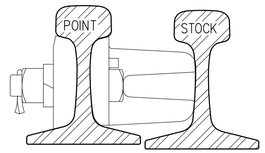
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REV: | EDITION: FIFTH

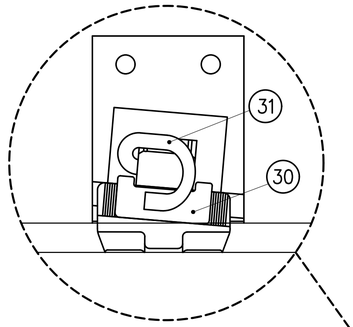
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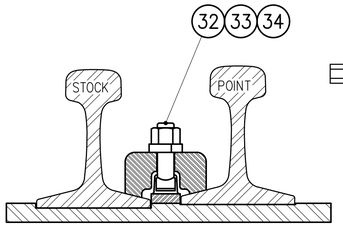
STANDARD DRAWING NO.: SD-2505

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	HOLLOW SWITCH TIE & RODDING ASSEMBLY	SD–2537	18	1	SWITCH PLATE (10–16RLC)	SD–2544
2	1	SAMSON POINT, 33'–3" LONG, DOUBLE REINFORCED, UR MANG TIP, CVD, LH	SD–2511	19	1	SWITCH PLATE (10–16RRC)	SD–2544
3	1	SAMSON POINT, 33'–3" LONG, DOUBLE REINFORCED, UR MANG TIP, STR, RH	SD–2512	20	1	SWITCH PLATE (10–17RLC)	SD–2544
4	1	SAMSON STOCK RAIL, 45'–11" LONG, STRAIGHT, LH	SD–2515	21	1	SWITCH PLATE (10–17RRC)	SD–2544
5	1	SAMSON STOCK RAIL, 39'–9 3/16" LONG, CURVED, RH	SD–2516	22	1	SWITCH PLATE (10–18RLC)	SD–2545
6	2	SWITCH PLATE, BRACE (BP1C–136)	SD–2302	23	1	SWITCH PLATE (10–18RRC)	SD–2545
7	6	SWITCH PLATE, BRACE (BP2C–136)	SD–2302	24	1	SWITCH PLATE (10–19RLC)	SD–2545
8	8	SWITCH PLATE (P4C–136)	SD–2302	25	1	SWITCH PLATE (10–19RRC)	SD–2545
9	2	SWITCH PLATE, ROLLER (10–TR1C)	SD–2302	26	2	HOLD DOWN CLIP (PC37A) "K" STYLE	–
10	1	SWITCH PLATE (10–12RLC)	SD–2543	27	2	HOLD DOWN CLIP (PC38A) "K" STYLE	–
11	1	SWITCH PLATE (10–12RRC)	SD–2543	28	2	HOLD DOWN CLIP (PC39A) "K" STYLE	–
12	1	SWITCH PLATE (10–13RLC)	SD–2543	29	2	POINT ROLLER ASSEMBLY, FLAT BACK C/W DOUBLE REINFORCED HARDWARE	–
13	1	SWITCH PLATE (10–13RRC)	SD–2543	30	10	BOLTLESS BRACE ASSEMBLY, SUREFIT, 136 LB RE C/W SERRATED WASHER	–
14	1	SWITCH PLATE (10–14RLC)	SD–2543	31	68	CLIP, PANDROL, E2055	–
15	1	SWITCH PLATE (10–14RRC)	SD–2543	32	6	T–BOLT 7/8" DIAMETER 3 3/4" LONG, GR 8	–
16	1	SWITCH PLATE (10–15RLC)	SD–2544	33	6	SPRING WASHER 7/8" DIAMETER	–
17	1	SWITCH PLATE (10–15RRC)	SD–2544	34	6	NUT, 7/8" DIAMETER HEAVY HEX GR 8	–

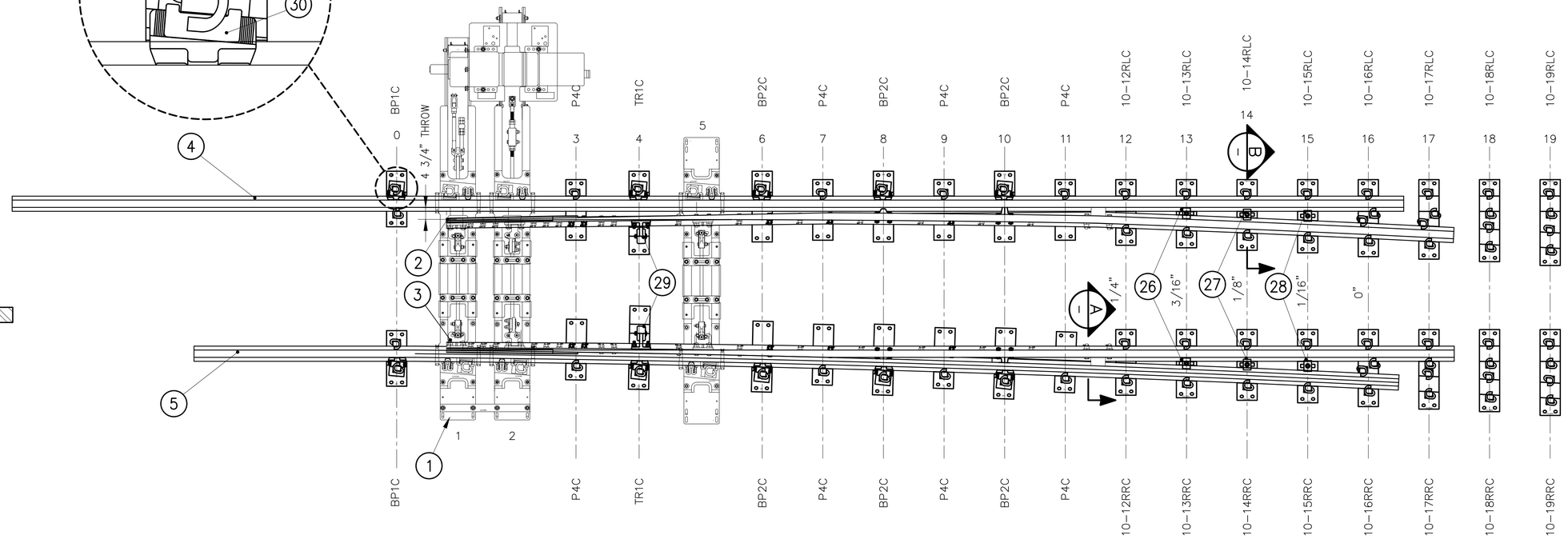


A SECTION
– NTS





B SECTION
– NTS



REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
RH SWITCH PACK WITH
HOLLOW STEEL TIES
SWITCH MACHINE ON MAINLINE SIDE

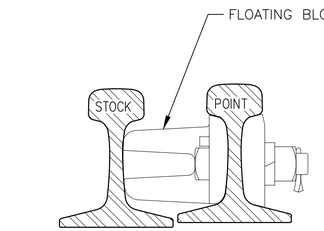
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REV: | EDITION: FIFTH

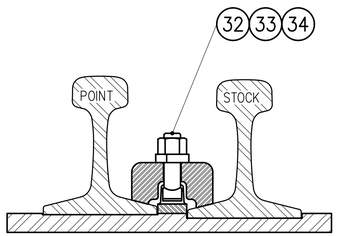
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STANDARD DRAWING NO.: SD–2506

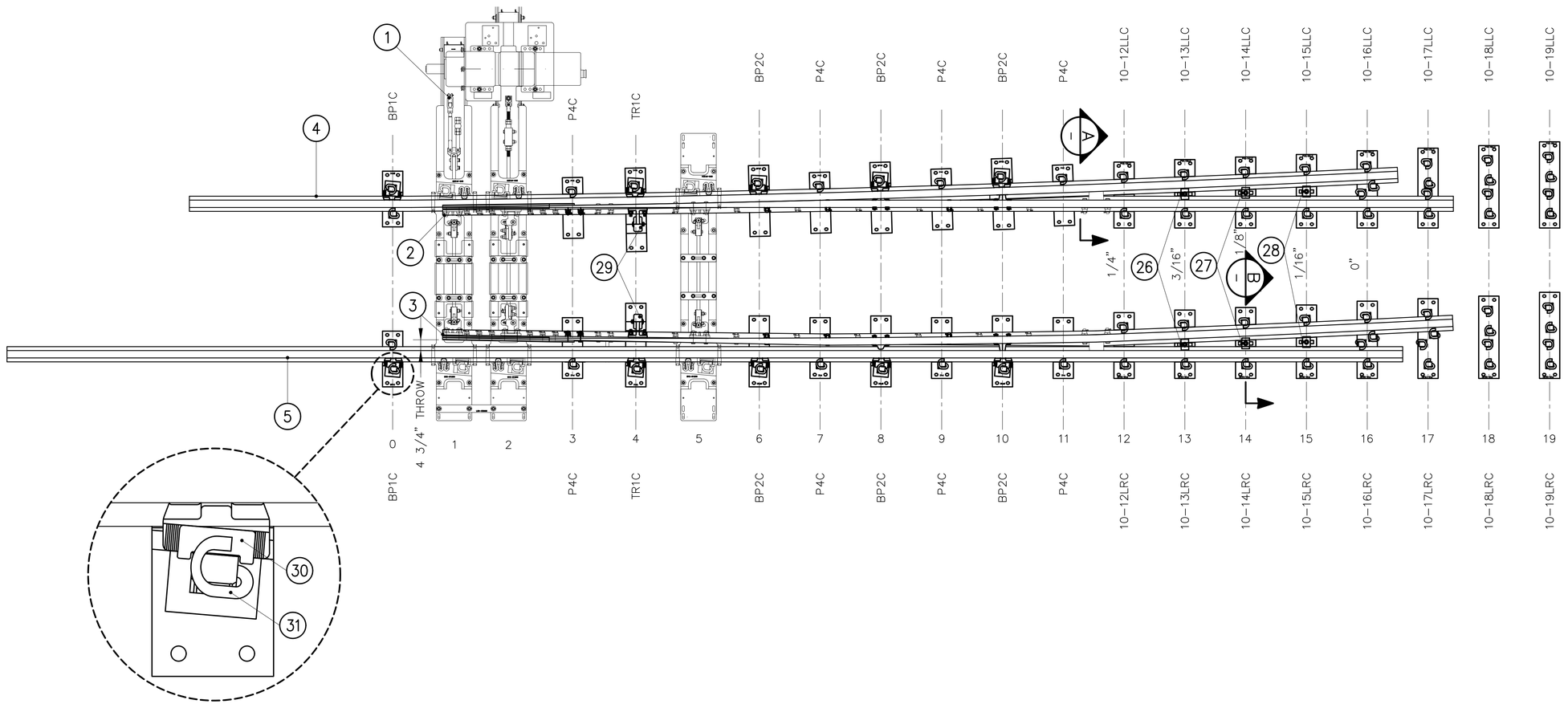
BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	HOLLOW SWITCH TIE & RODDING ASSEMBLY	SD-2537	18	1	SWITCH PLATE (10-16LLC)	SD-2541
2	1	SAMSON POINT, 33'-3" LONG, DOUBLE REINFORCED, UR MANG TIP, STR, LH	SD-2509	19	1	SWITCH PLATE (10-16LRC)	SD-2541
3	1	SAMSON POINT, 33'-3" LONG, DOUBLE REINFORCED, UR MANG TIP, CVD, RH	SD-2510	20	1	SWITCH PLATE (10-17LLC)	SD-2541
4	1	SAMSON STOCK RAIL, 39'-9 3/16" LONG, CURVED, LH	SD-2513	21	1	SWITCH PLATE (10-17LRC)	SD-2541
5	1	SAMSON STOCK RAIL, 45'-11" LONG, STRAIGHT, RH	SD-2514	22	1	SWITCH PLATE (10-18LLC)	SD-2542
6	2	SWITCH PLATE, BRACE (BP1C-136)	SD-2302	23	1	SWITCH PLATE (10-18LRC)	SD-2542
7	6	SWITCH PLATE, BRACE (BP2C-136)	SD-2302	24	1	SWITCH PLATE (10-19LLC)	SD-2542
8	8	SWITCH PLATE (P4C-136)	SD-2302	25	1	SWITCH PLATE (10-19LRC)	SD-2542
9	2	SWITCH PLATE, ROLLER (10-TR1C)	SD-2302	26	2	HOLD DOWN CLIP (PC37A) "K" STYLE	-
10	1	SWITCH PLATE (10-12LLC)	SD-2540	27	2	HOLD DOWN CLIP (PC38A) "K" STYLE	-
11	1	SWITCH PLATE (10-12LRC)	SD-2540	28	2	HOLD DOWN CLIP (PC39A) "K" STYLE	-
12	1	SWITCH PLATE (10-13LLC)	SD-2540	29	2	POINT ROLLER ASSEMBLY, FLAT BACK C/W DOUBLE REINFORCED HARDWARE	-
13	1	SWITCH PLATE (10-13LRC)	SD-2540	30	10	BOLTLESS BRACE ASSEMBLY, SUREFIT, 136 LB RE C/W SERRATED WASHER	-
14	1	SWITCH PLATE (10-14LLC)	SD-2540	31	68	CLIP, PANDROL, E2055	-
15	1	SWITCH PLATE (10-14LRC)	SD-2540	32	6	T-BOLT, 7/8" DIAMETER 3 3/4" LONG, GR 8	-
16	1	SWITCH PLATE (10-15LLC)	SD-2541	33	6	SPRING WASHER 7/8" DIAMETER	-
17	1	SWITCH PLATE (10-15LRC)	SD-2541	34	6	NUT, 7/8" DIAMETER HEAVY HEX, GR 8	-



A SECTION
NTS



B SECTION
NTS



REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
LH SWITCH PACK WITH
HOLLOW STEEL TIES
SWITCH MACHINE ON TURNOUT SIDE

CADD FILE NAME: SD-2507

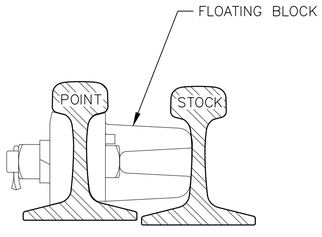
REV:

EDITION: FIFTH

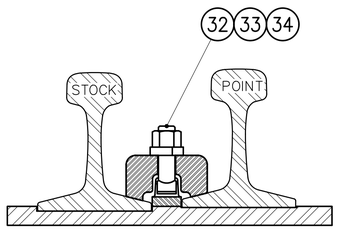
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STANDARD DRAWING NO.: SD-2507

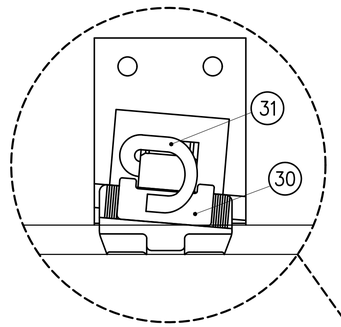
BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	HOLLOW SWITCH TIE & RODDING ASSEMBLY	SD–2538	18	1	SWITCH PLATE (10–16RLC)	SD–2544
2	1	SAMSON POINT, 33'–3" LONG, DOUBLE REINFORCED, UR MANG TIP, CVD, LH	SD–2511	19	1	SWITCH PLATE (10–16RRC)	SD–2544
3	1	SAMSON POINT, 33'–3" LONG, DOUBLE REINFORCED, UR MANG TIP, STR, RH	SD–2512	20	1	SWITCH PLATE (10–17RLC)	SD–2544
4	1	SAMSON STOCK RAIL, 45'–11" LONG, STRAIGHT, LH	SD–2515	21	1	SWITCH PLATE (10–17RRC)	SD–2544
5	1	SAMSON STOCK RAIL, 39'–9 3/16" LONG, CURVED, RH	SD–2516	22	1	SWITCH PLATE (10–18RLC)	SD–2545
6	2	SWITCH PLATE, BRACE (BP1C–136)	SD–2302	23	1	SWITCH PLATE (10–18RRC)	SD–2545
7	6	SWITCH PLATE, BRACE (BP2C–136)	SD–2302	24	1	SWITCH PLATE (10–19RLC)	SD–2545
8	8	SWITCH PLATE (P4C–136)	SD–2302	25	1	SWITCH PLATE (10–19RRC)	SD–2545
9	2	SWITCH PLATE, ROLLER (10–TR1C)	SD–2302	26	2	HOLD DOWN CLIP (PC37A) "K" STYLE	–
10	1	SWITCH PLATE (10–12RLC)	SD–2543	27	2	HOLD DOWN CLIP (PC38A) "K" STYLE	–
11	1	SWITCH PLATE (10–12RRC)	SD–2543	28	2	HOLD DOWN CLIP (PC39A) "K" STYLE	–
12	1	SWITCH PLATE (10–13RLC)	SD–2543	29	2	POINT ROLLER ASSEMBLY, FLAT BACK C/W DOUBLE REINFORCED HARDWARE	–
13	1	SWITCH PLATE (10–13RRC)	SD–2543	30	10	BOLTLESS BRACE ASSEMBLY, SUREFIT, 136 LB RE C/W SERRATED WASHER	–
14	1	SWITCH PLATE (10–14RLC)	SD–2543	31	68	CLIP, PANDROL, E2055	–
15	1	SWITCH PLATE (10–14RRC)	SD–2543	32	6	T–BOLT 7/8" DIAMETER 3 3/4" LONG, GR 8	–
16	1	SWITCH PLATE (10–15RLC)	SD–2544	33	6	SPRING WASHER 7/8" DIAMETER	–
17	1	SWITCH PLATE (10–15RRC)	SD–2544	34	6	NUT, 7/8" DIAMETER HEAVY HEX GR 8	–

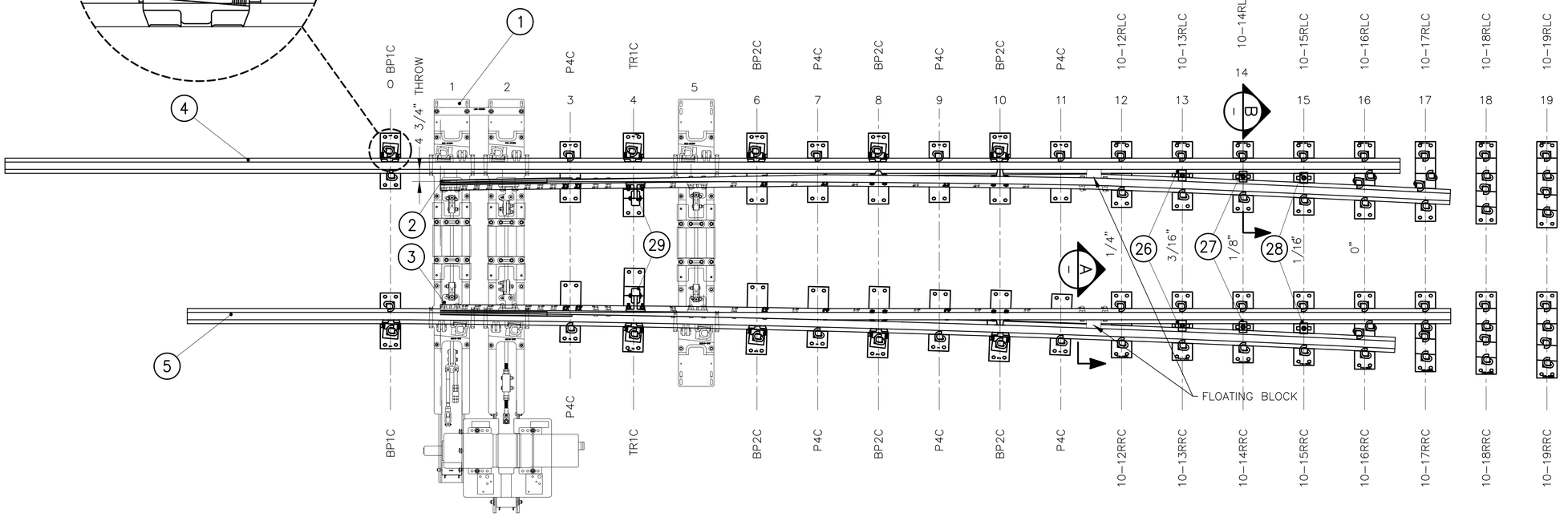


A SECTION
– NTS



B SECTION
– NTS





REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
RH SWITCH PACK WITH
HOLLOW STEEL TIES
SWITCH MACHINE ON TURNOUT SIDE

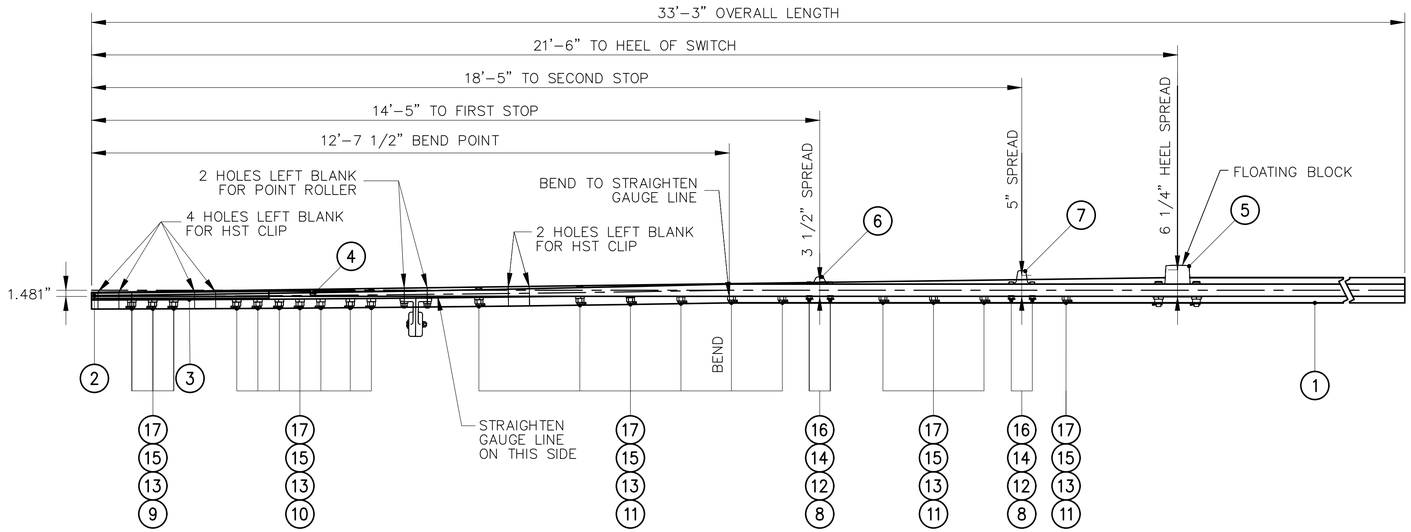
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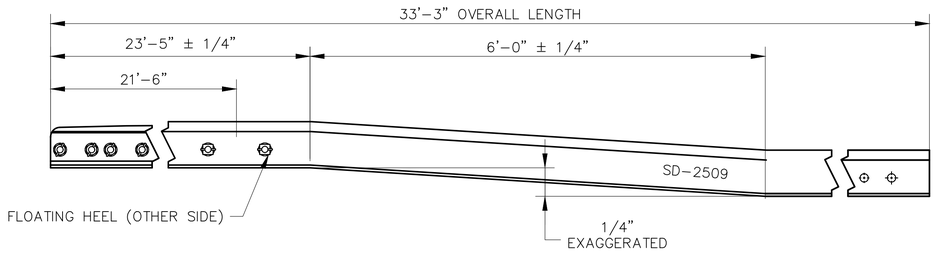
REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD–2508

BILL OF MATERIAL			BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
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 1/2" 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 7/16" 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 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 7/32" GR 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 CALTRAIN SD NUMBER ON WEB OF RAIL WITH WATERPROOF MARKER OR PAINT

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
SWITCH POINT ASSEMBLY
FOR LH TURNOUT
LH STRAIGHT 21'–6" SAMSON

CADD FILE NAME: SD–2509

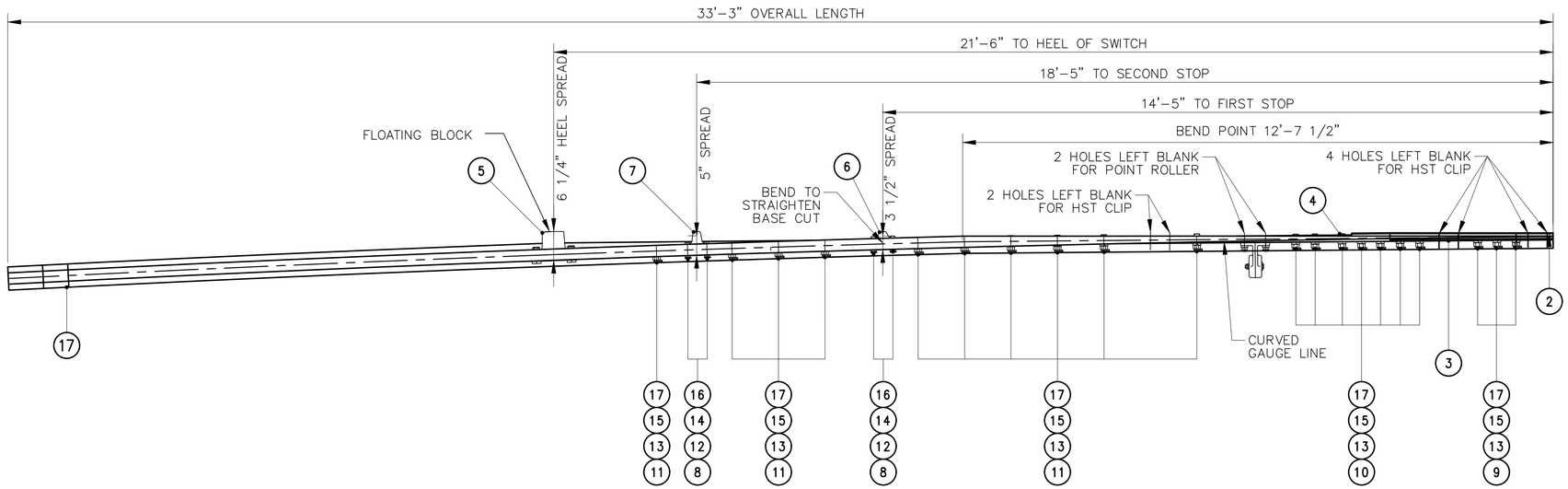
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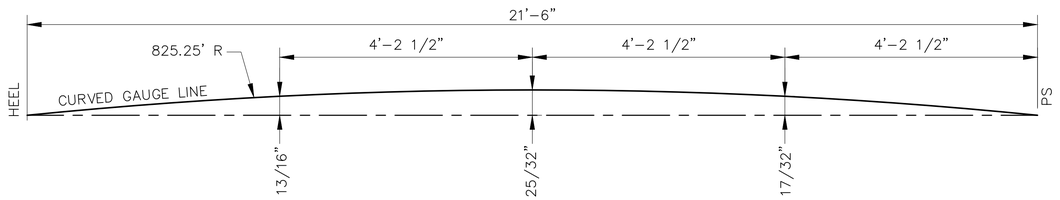
EDITION: FIFTH

SCALE: NTS

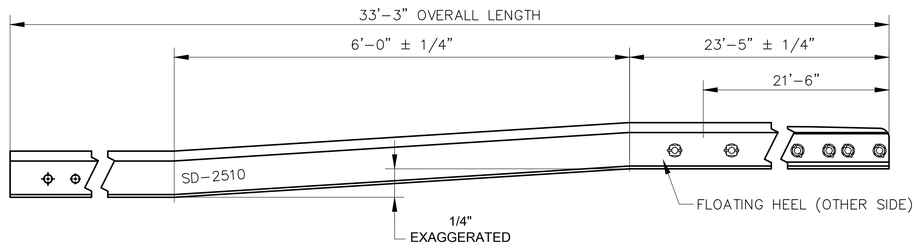
STANDARD DRAWING NO.: SD–2509

BILL OF MATERIAL			BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
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 1/2" 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 7/16" 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 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 7/32" 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 CALTRAIN SD NUMBER ON WEB OF RAIL WITH WATERPROOF MARKER OR PAINT

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
SWITCH POINT ASSEMBLY
FOR LH TURNOUT
RH CURVED 21'–6" SAMSON

CADD FILE NAME: SD–2510

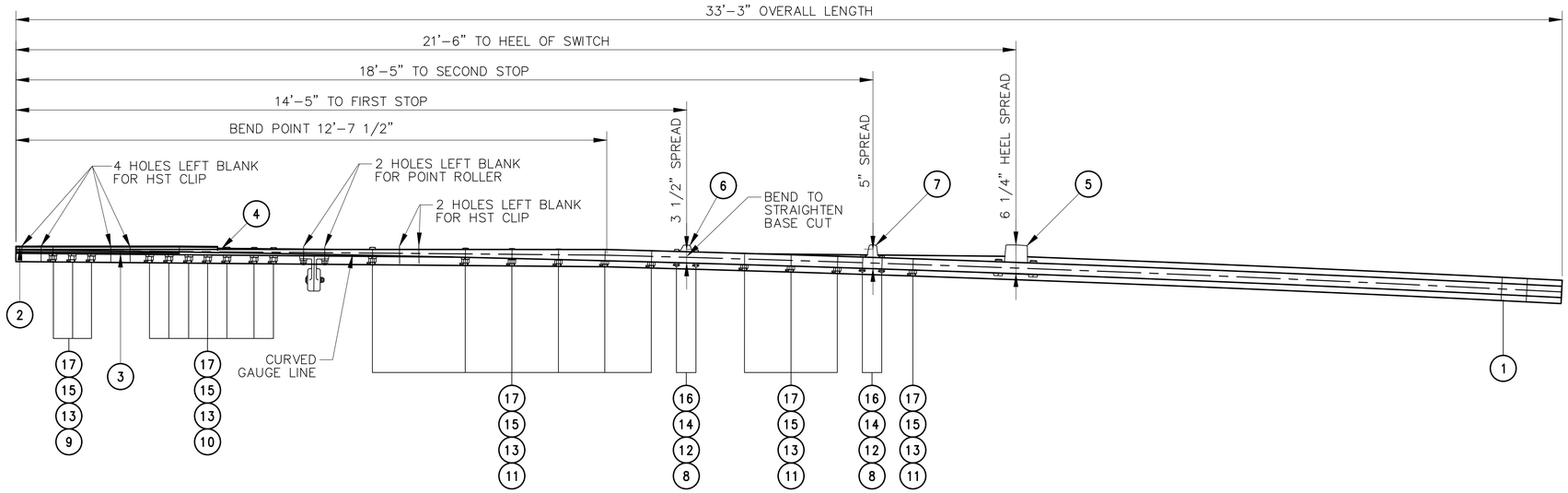
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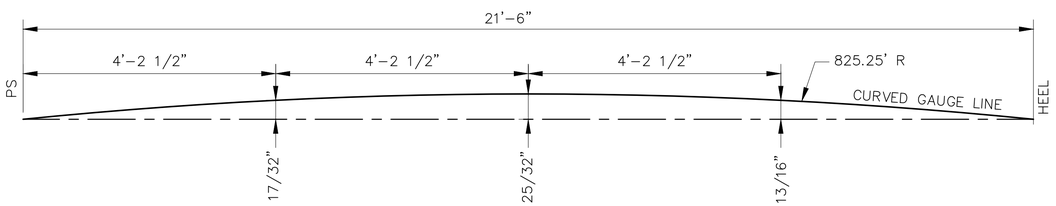
EDITION: FIFTH

SCALE: NTS

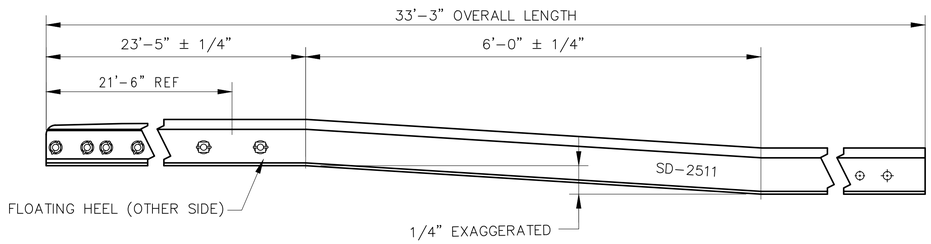
STANDARD DRAWING NO.: SD–2510

BILL OF MATERIAL			BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
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 1/2" 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 7/16" 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 9/16" 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 CALTRAIN SD NUMBER ON WEB OF RAIL WITH WATERPROOF MARKER OR PAINT

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
SWITCH POINT ASSEMBLY
FOR RH TURNOUT
LH CURVED 21'–6" SAMSON

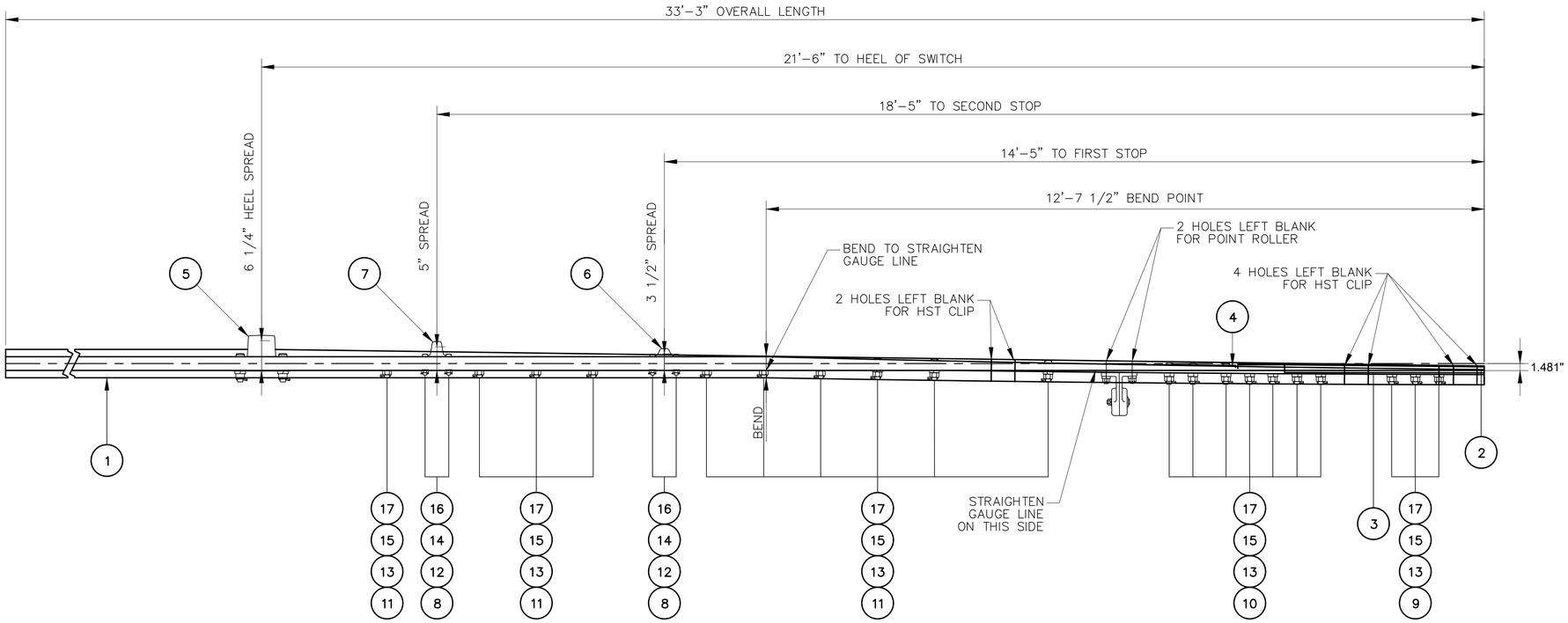
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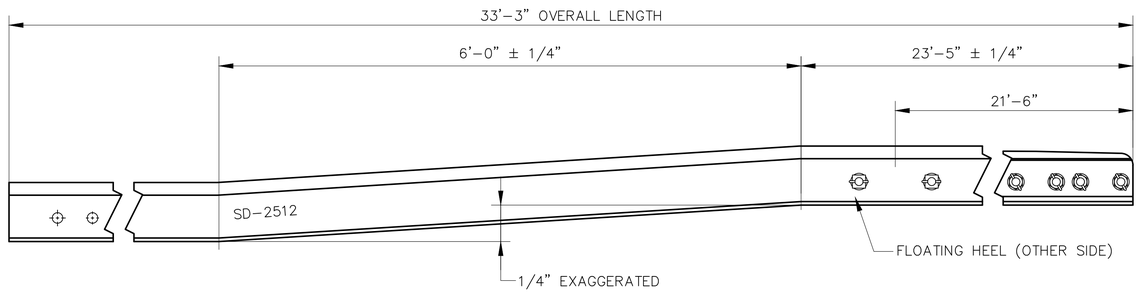
REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD–2511

BILL OF MATERIAL			BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
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 1/2" 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 7/16" 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 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" 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			





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 CALTRAIN SD NUMBER ON WEB OF RAIL WITH WATERPROOF MARKER OR PAINT

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
SWITCH POINT ASSEMBLY
FOR RH TURNOUT
RH STRAIGHT 21'–6" SAMSON

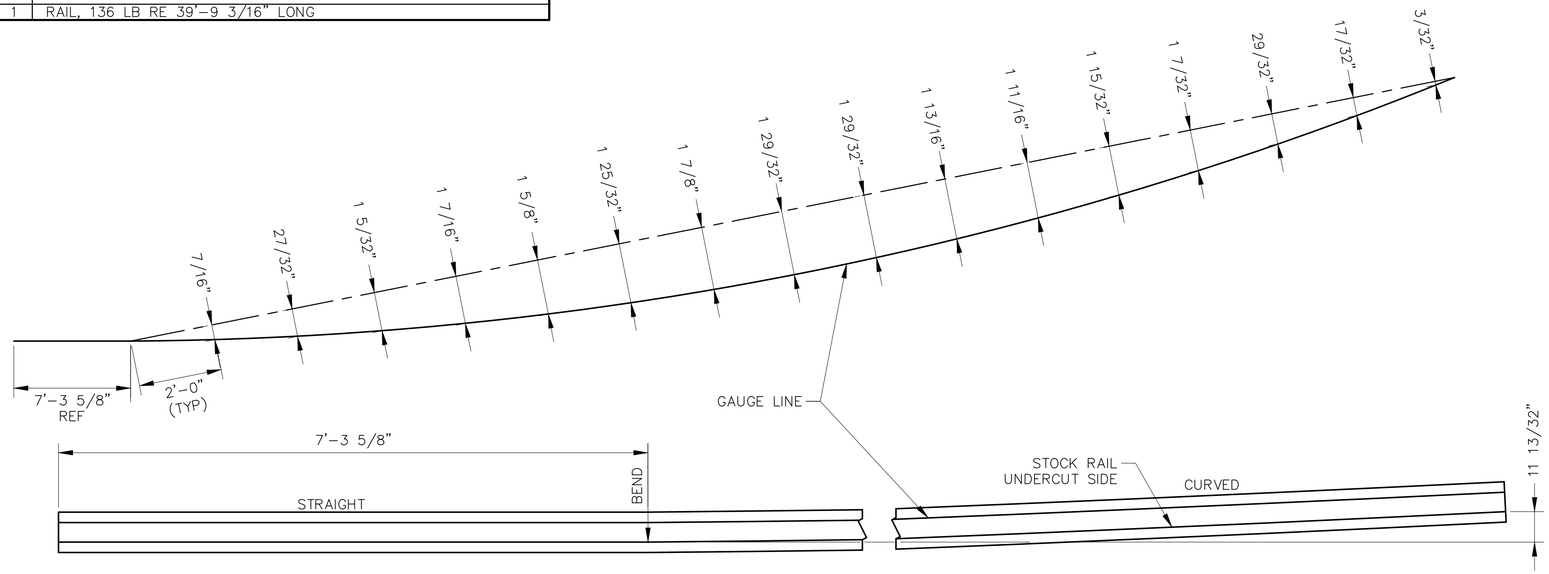
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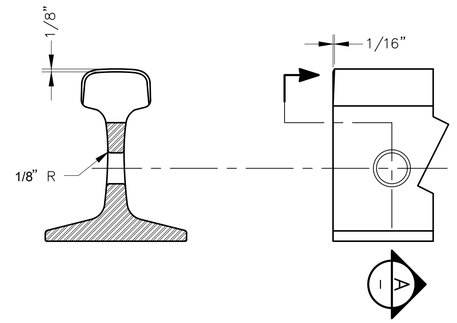
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SCALE: NTS

STANDARD DRAWING NO.: SD–2512

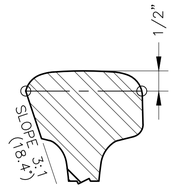
BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION
1	1	RAIL, 136 LB RE 39'-9 3/16" LONG



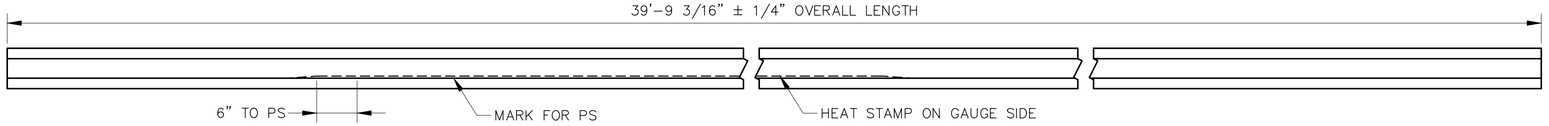


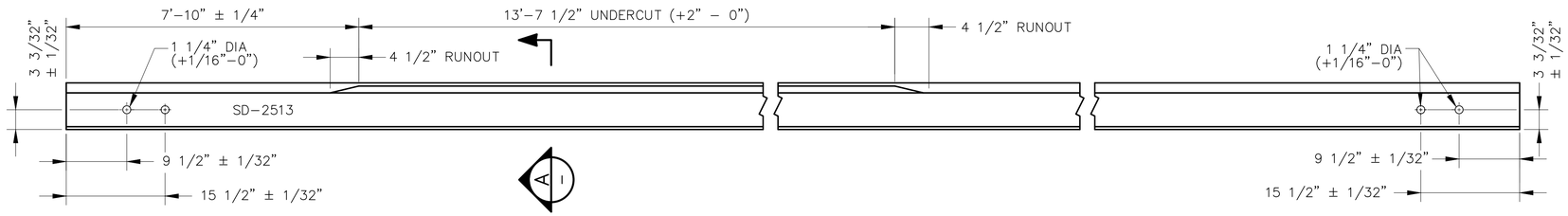
RAIL END / HOLE BEVELING DETAILS

RAIL HEAD ONY – NOT BASE



A PARTIAL SECTION
SCALE: NTS





NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

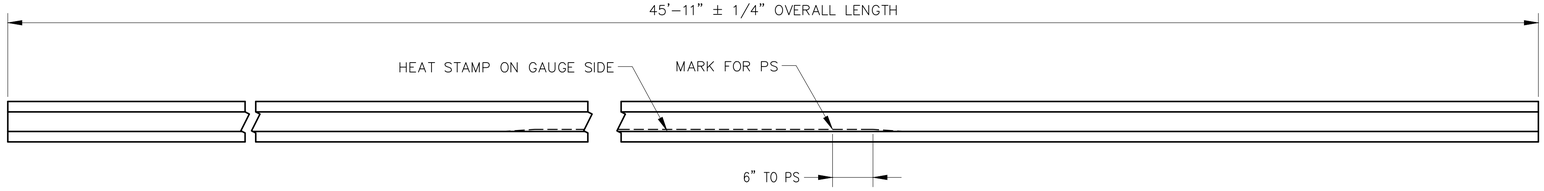
Caltrain

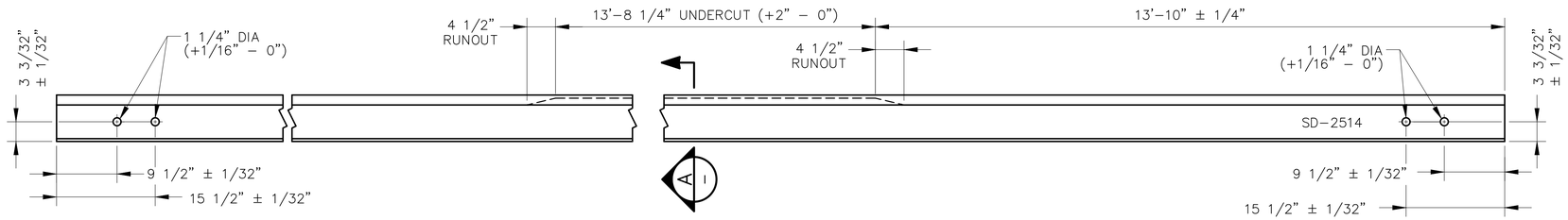
ENGINEERING STANDARD DRAWINGS

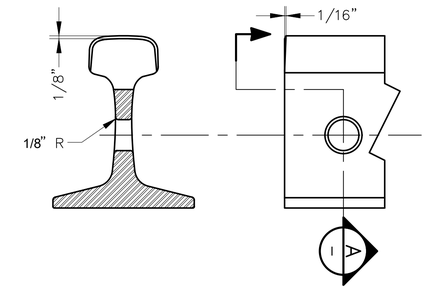
SPECIAL TRACKWORK
NO. 10 TURNOUT
SAMSON STOCK RAIL
FOR LH TURNOUT
LH CURVED 39'-9 3/16" LONG

CADD FILE NAME:	SD-2513
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD-2513

BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION
1	1	RAIL, 136 LB RE 45'–11" LONG

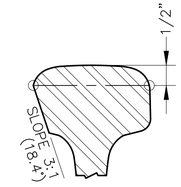






RAIL END / HOLE BEVELING DETAILS

RAIL HEAD ONY – NOT BASE



A – PARTIAL SECTION

NTS

NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

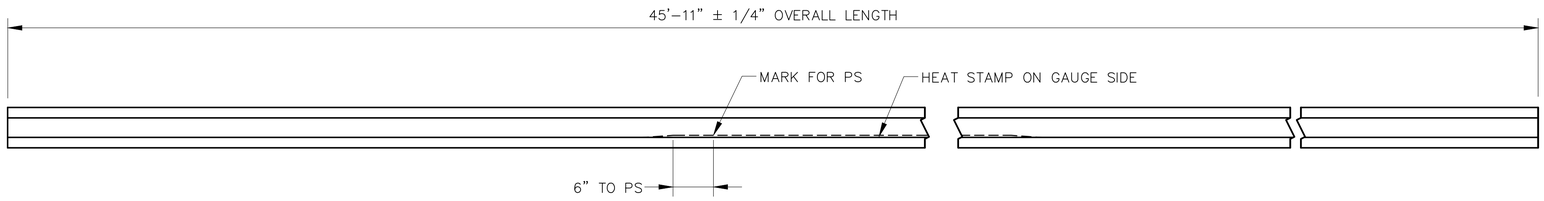
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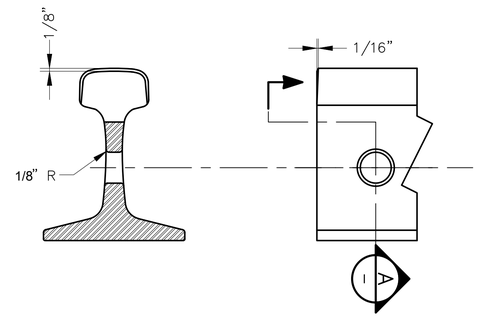
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
SAMSON STOCK RAIL
FOR LH TURNOUT
RH STRAIGHT 45'–11" LONG

CADD FILE NAME:	SD–2514
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2514

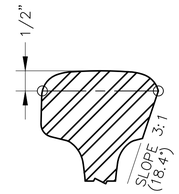
BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION
1	1	RAIL, 136 LB RE 45'–11" LONG



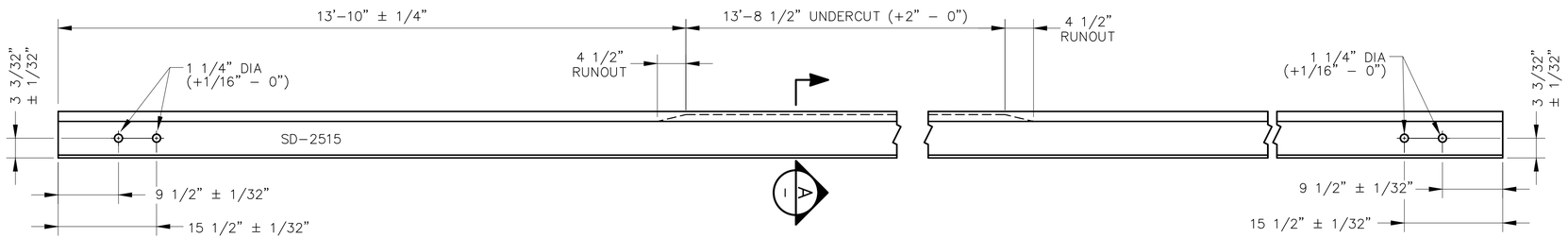


RAIL END / HOLE BEVELING DETAILS

RAIL HEAD ONY – NOT BASE



A – PARTIAL SECTION
SCALE: NTS



NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

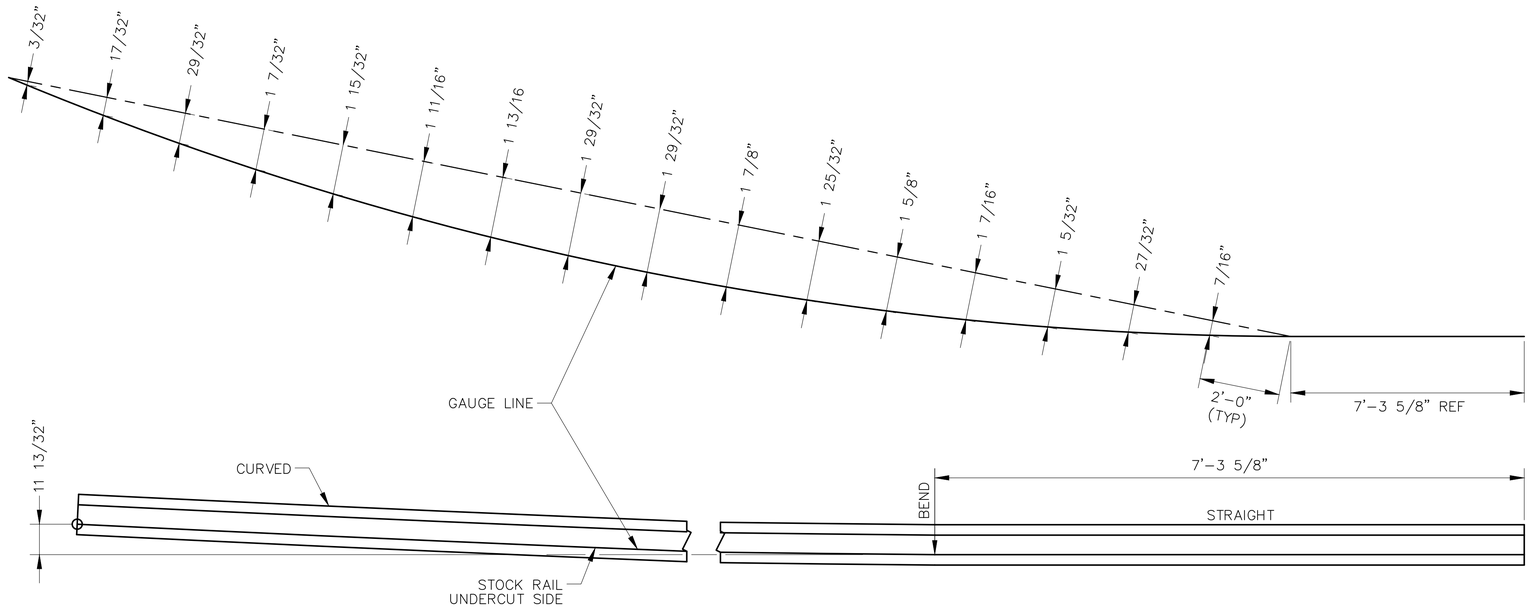
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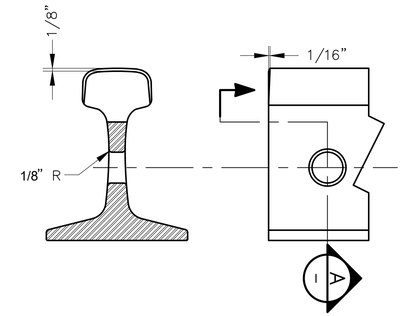
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
SAMSON STOCK RAIL
FOR RH TURNOUT
LH STRAIGHT 45'–11" LONG

CADD FILE NAME: SD–2515
REV:
EDITION: FIFTH
SCALE: NTS
STANDARD DRAWING NO.: SD–2515

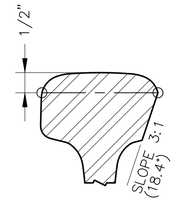
BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION
1	1	RAIL, 136 LB RE 39'–9 3/16" LONG



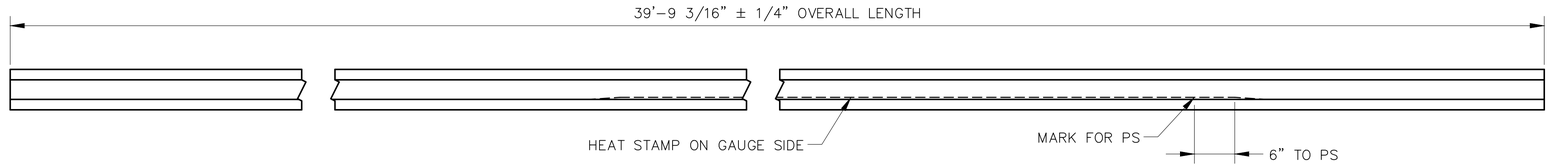


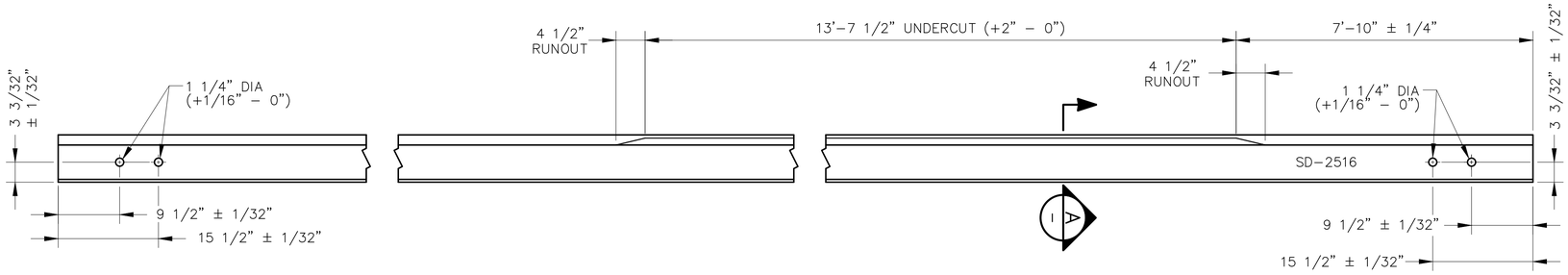
RAIL END / HOLE BEVELING DETAILS

RAIL HEAD ONY – NOT BASE



A – PARTIAL SECTION
SCALE: NTS





NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

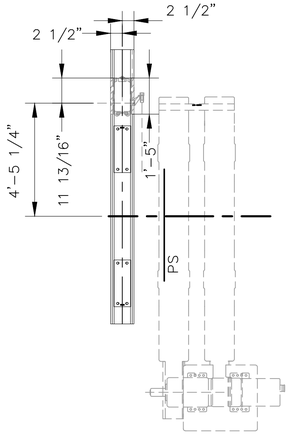
DIRECTOR, ENGINEERING

Caltrain

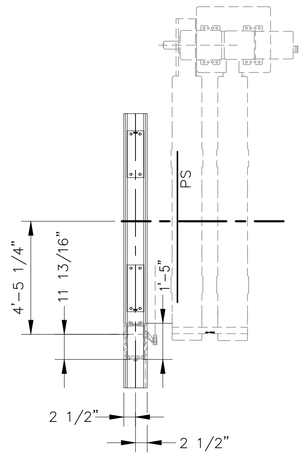
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
SAMSON STOCK RAIL
FOR RH TURNOUT
RH CURVED 39'–9 3/16" LONG

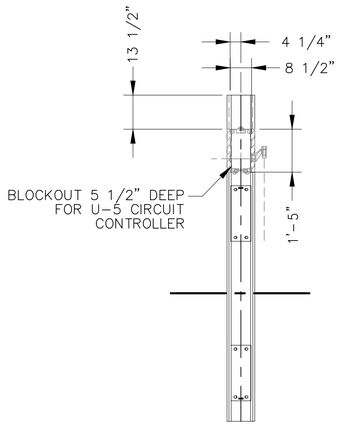
CADD FILE NAME:	SD–2516
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2516



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

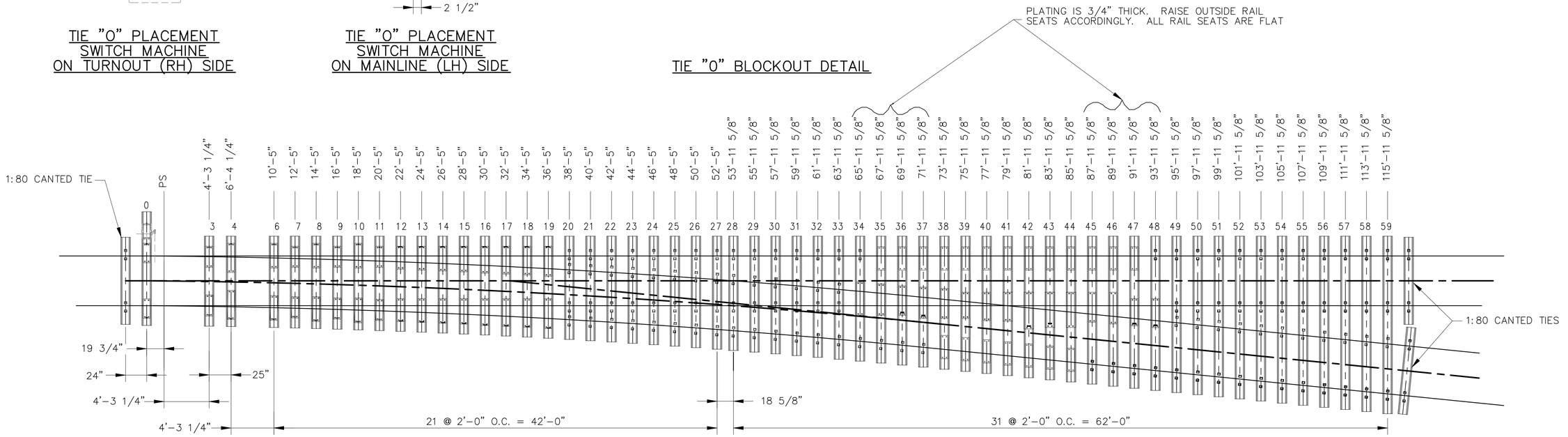


TIE "0" PLACEMENT
SWITCH MACHINE
ON MAINLINE (LH) SIDE



BILL OF MATERIALS (TIES 1, 2, & 5)			
ITEM	QTY	DESCRIPTION	DWG NO
1	3	TIES 1, 2, AND 5 (HOLLOW STEEL TIES) FOR RH TURNOUT WITH POWER SWITCH MACHINE ON MAINLINE SIDE	SD-2519
2	3	TIES 1, 2, AND 5 (HOLLOW STEEL TIES) FOR RH TURNOUT WITH POWER SWITCH MACHINE ON TURNOUT SIDE	SD-2521

TIE "0" BLOCKOUT DETAIL



NOTES:

1. SET SHALL 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 TRANSITION 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
6. USE OPPOSITE HAND FOR SWITCH MACHINE ON THE LH/MAINLINE SIDE
7. SEE BILL OF MATERIALS TABLE FOR TIES 1, 2, AND 5

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP	DESCRIPTION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

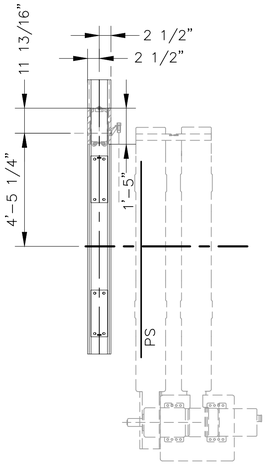
SPECIAL TRACKWORK
NO. 10 TURNOUT
HOLLOW STEEL TIE AND CONCRETE TIE
LAYOUT FOR A RH TURNOUT

CADD FILE NAME: SD-2517

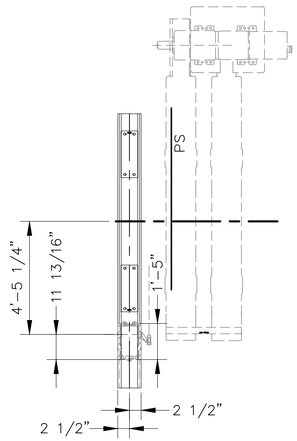
REV: | EDITION: FIFTH

SCALE: NTS

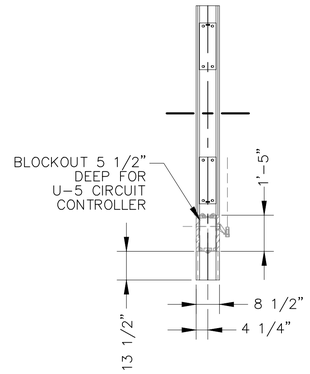
STANDARD DRAWING NO.: SD-2517



TIE "0" PLACEMENT
SWITCH MACHINE
ON MAINLINE SIDE



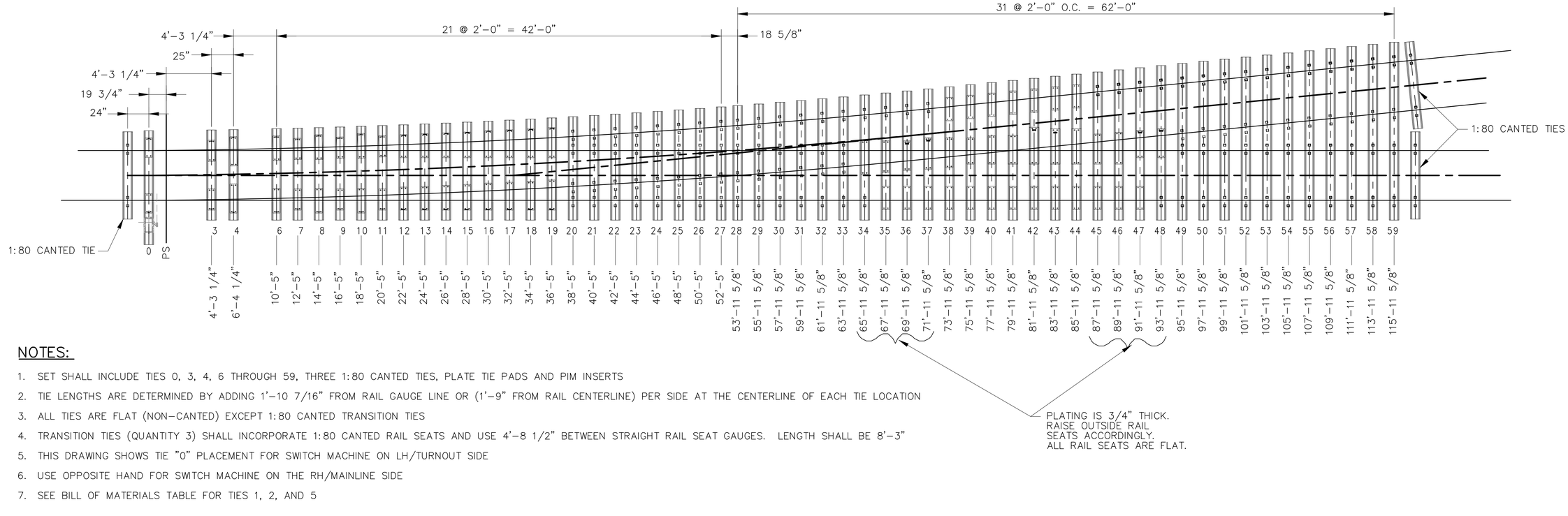
TIE "0" PLACEMENT
SWITCH MACHINE
ON TURNOUT (LH) SIDE



TIE "0" BLOCKOUT DETAIL

BILL OF MATERIALS (TIES 1, 2, & 5)			
ITEM	QTY	DESCRIPTION	DWG NO
1	3	TIES 1, 2, AND 5 (HOLLOW STEEL TIES) FOR LH TURNOUT WITH POWER SWITCH MACHINE ON MAINLINE SIDE	SD-2520
2	3	TIES 1, 2, AND 5 (HOLLOW STEEL TIES) FOR LH TURNOUT WITH POWER SWITCH MACHINE ON TURNOUT SIDE	SD-2522

OVERALL LENGTH SEE SD-2103



NOTES:

1. SET SHALL 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 TRANSITION 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 LH/TURNOUT SIDE
6. USE OPPOSITE HAND FOR SWITCH MACHINE ON THE RH/MAINLINE SIDE
7. SEE BILL OF MATERIALS TABLE FOR TIES 1, 2, AND 5

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

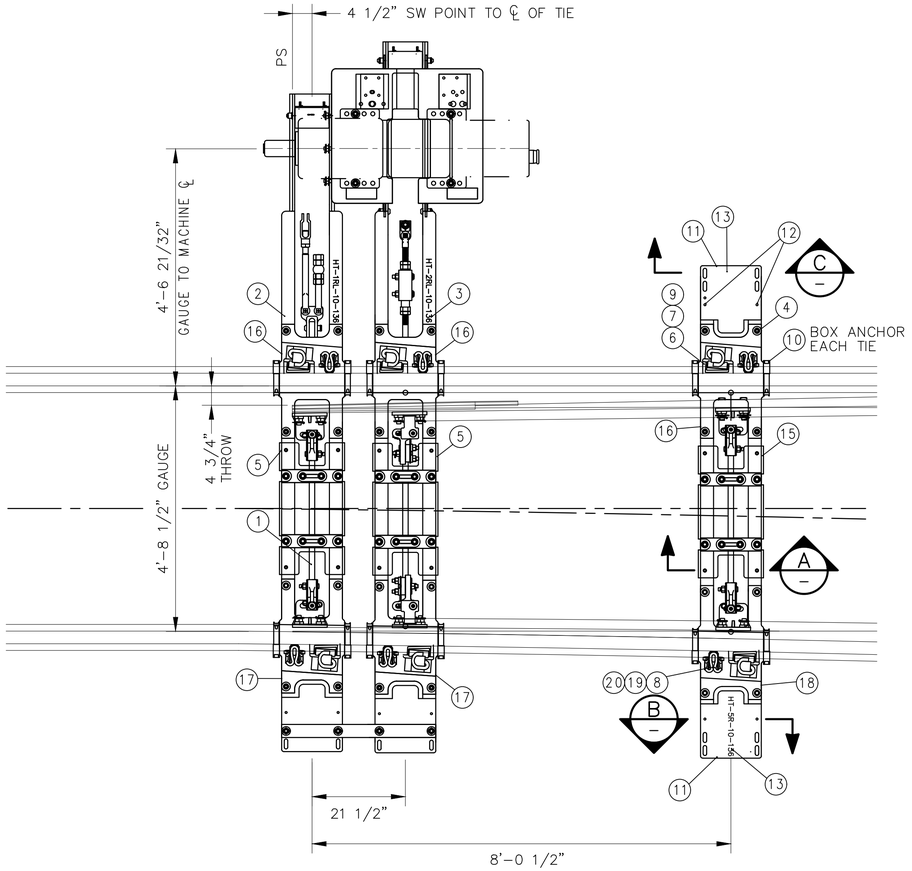
SPECIAL TRACKWORK
NO. 10 TURNOUT
HOLLOW STEEL TIE AND CONCRETE TIE
LAYOUT FOR LH TURNOUT

CADD FILE NAME: SD-2518

REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD-2518

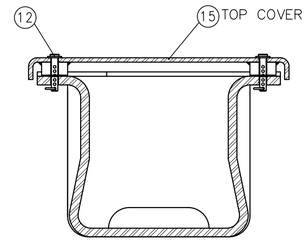


NOTE:

1. COORDINATE SWITCH MACHINE AND MACHINE PLATES (NIC) WITH CALTRAIN

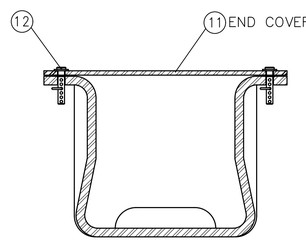
BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	RODDING ASSEMBLY FOR NO 10-136 LB RE, SWITCH MACHINE ON LEFT SIDE	SD-2537
2	1	HOLLOW TIE ASSEMBLY (HT-1RL-10-136)	–
3	1	HOLLOW TIE ASSEMBLY (HT-2RL-10-136)	–
4	1	HOLLOW TIE ASSEMBLY (HT-5R-10-136)	–
5*	2	COVER PLATE NO1, HOLLOW SWITCH TIE	–
6	6	LV BRACE FOR 136 LB RE	–
7	6	SERRATED WASHER FOR LV BRACE	–
8	6	CLIP, PANDROL, FC1601	–
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 NO2, HOLLOW SWITCH TIE	–
16	3	HST SWITCH PLATE HTP-206-STR	SD-2305
17	2	HST SWITCH PLATE HTP-201-R	SD-2308
18	1	HST SWITCH PLATE HTP-205-R	SD-2310
19	6	SIDE POST INSULATOR FOR FC1600 SERIES PANDROL FAST CLIP	SD-2313
20	6	TOE INSULATOR FOR FC1600 SERIES PANDROL FAST CLIP	SD-2314

* NOT SHOWN ON ASSEMBLY FOR CLARITY



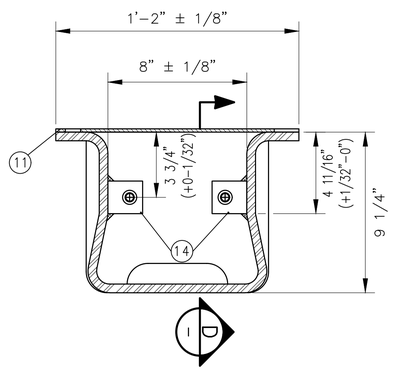
HOLLOW TIE TOP COVER DETAIL

A – SECTION
SCALE: NTS



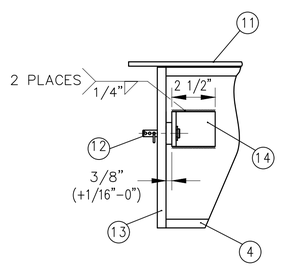
END COVER PLATE

B – SECTION
SCALE: NTS



HOLLOW TIE SIDE END COVER DETAIL

C – SECTION
SCALE: NTS



WELDING DETAIL

D – SECTION
SCALE: NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

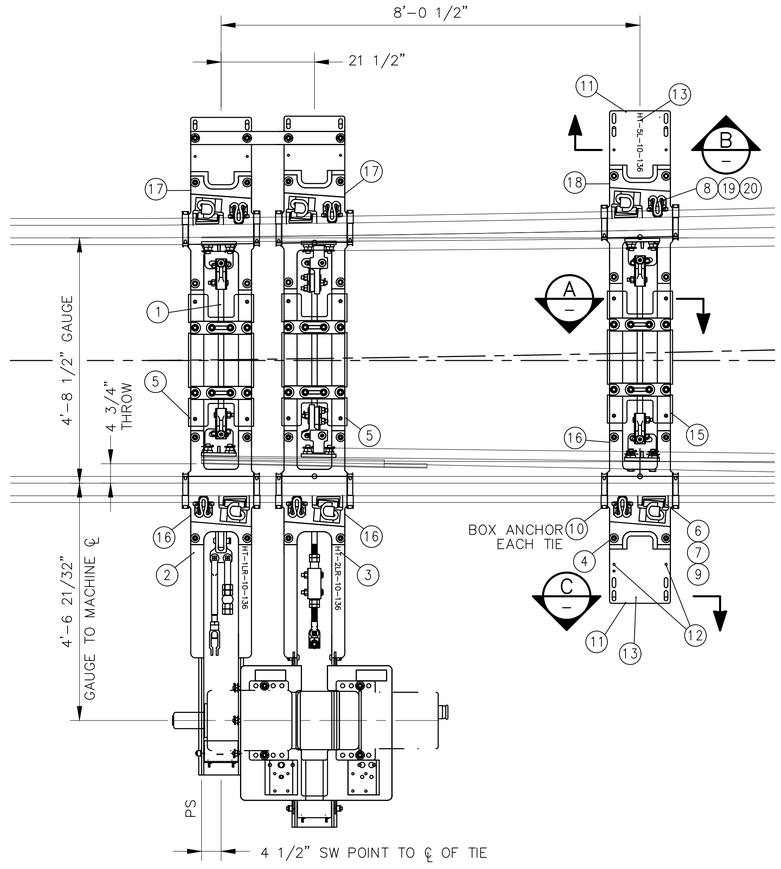
SPECIAL TRACKWORK
NO. 10 TURNOUT
HOLLOW STEEL TIES FOR RH TURNOUT
SWITCH MACHINE ON MAINLINE SIDE

CADD FILE NAME: SD-2519

REV: | EDITION: FIFTH

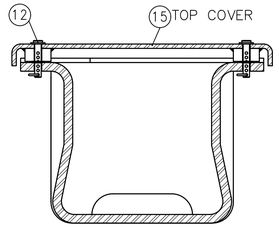
SCALE: NTS

STANDARD DRAWING NO.: SD-2519



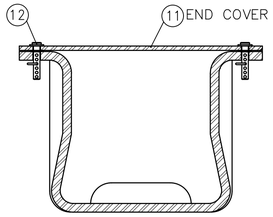
		BILL OF MATERIAL	
ITEM	QTY	DESCRIPTION	DWG NO
1	1	RODDING ASSEMBLY FOR NO 10-136 LB RE, SWITCH MACHINE ON RH SIDE	SD-2538
2	1	HOLLOW TIE ASSEMBLY (HT-1LR-10-136)	–
3	1	HOLLOW TIE ASSEMBLY (HT-2LR-10-136)	–
4	1	HOLLOW TIE ASSEMBLY (HT-5L-10-136)	–
5*	2	COVER PLATE NO1, HOLLOW SWITCH TIE	–
6	6	LV BRACE FOR 136 LB RE	–
7	6	SERRATED WASHER FOR LV BRACE	–
8	6	CLIP, PANDROL, FC1601	–
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 NO2, HOLLOW SWITCH TIE	–
16	3	HST SWITCH PLATE HTP-206-STR	SD-2305
17	2	HST SWITCH PLATE HTP-200-L	SD-2308
18	1	HST SWITCH PLATE HTP-204-L	SD-2310
19	6	SIDE POST INSULATOR FOR FC1600 SERIES PANDROL FAST CLIP	SD-2313
20	6	TOE INSULATOR FOR FC1600 SERIES PANDROL FAST CLIP	SD-2314

* NOT SHOWN ON ASSEMBLY FOR CLARITY



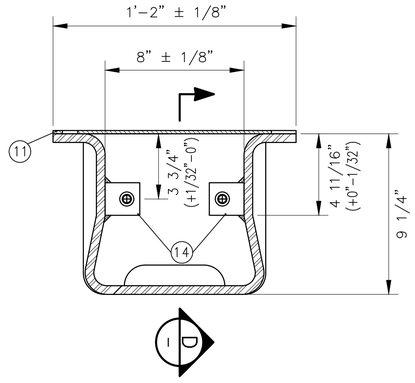
HOLLOW TIE TOP COVER DETAIL

A – SECTION
SCALE: NTS



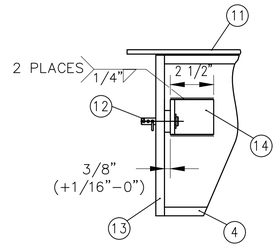
END COVER PLATE

B – SECTION
SCALE: NTS



HOLLOW TIE SIDE END COVER DETAIL

C – SECTION
SCALE: NTS



WELDING DETAIL

D – SECTION
SCALE: NTS

NOTE:

1. COORDINATE SWITCH MACHINE AND MACHINE PLATES (NIC) WITH CALTRAIN

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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ENGINEERING STANDARD DRAWINGS

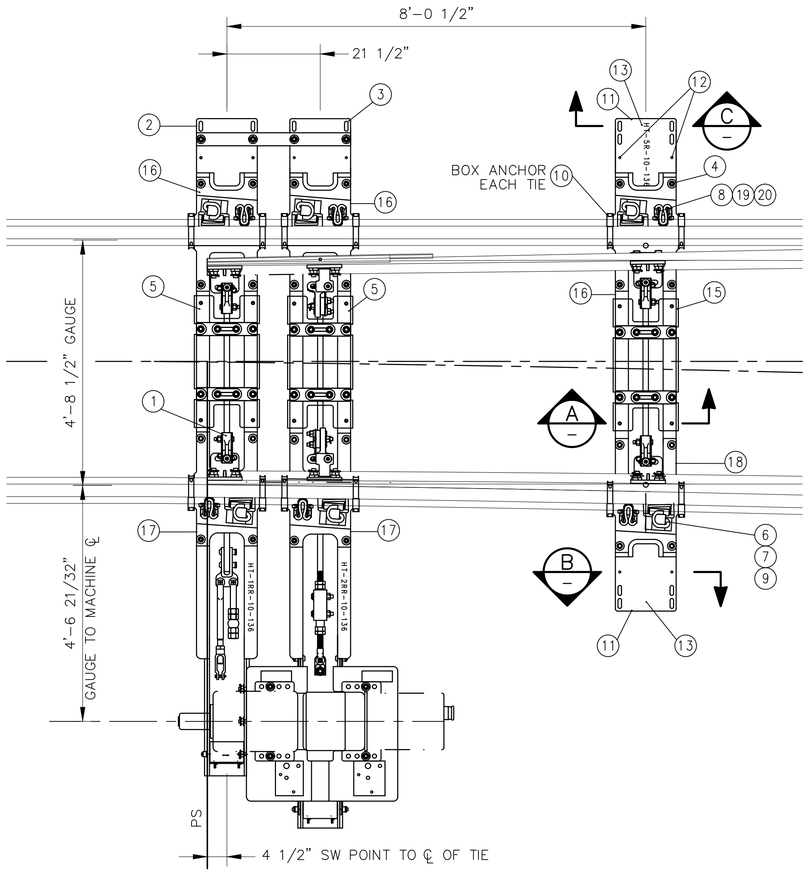
SPECIAL TRACKWORK
NO. 10 TURNOUT
HOLLOW STEEL TIES FOR LH TURNOUT
SWITCH MACHINE ON MAINLINE SIDE

CADD FILE NAME: SD-2520

REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD-2520



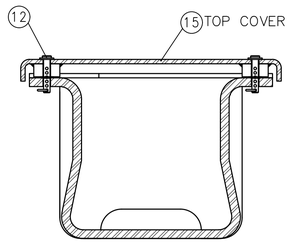
NOTE:

1. COORDINATE SWITCH MACHINE AND MACHINE PLATES (NIC) WITH CALTRAIN

BILL OF MATERIAL

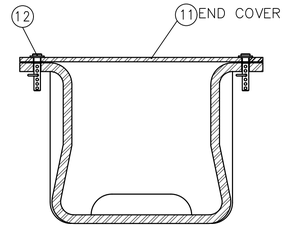
ITEM	QTY	DESCRIPTION	DWG NO
1	1	RODDING ASSEMBLY FOR NO 10-136 LB RE, SWITCH MACHINE ON RIGHT SIDE	SD-2538
2	1	HOLLOW TIE ASSEMBLY (HT-1RR-10-136)	-
3	1	HOLLOW TIE ASSEMBLY (HT-2RR-10-136)	-
4	1	HOLLOW TIE ASSEMBLY (HT-5R-10-136)	-
5*	2	COVER PLATE NO1, HOLLOW SWITCH TIE	-
6	6	LV BRACE FOR 136 LB RE	-
7	6	SERRATED WASHER FOR LV BRACE	-
8	6	CLIP, PANDROL, FC1601	-
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 NO2, HOLLOW SWITCH TIE	-
16	3	HST SWITCH PLATE HTP-206-STR	SD-2305
17	2	HST SWITCH PLATE HTP-201-R	SD-2308
18	1	HST SWITCH PLATE HTP-205-R	SD-2310
19	6	SIDE POST INSULATOR FOR FC1600 SERIES PANDROL FAST CLIP	SD-2313
20	6	TOE INSULATOR FOR FC1600 SERIES PANDROL FAST CLIP	SD-2314

* NOT SHOWN ON ASSEMBLY FOR CLARITY



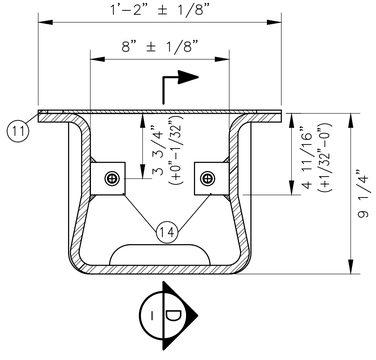
HOLLOW TIE TOP COVER DETAIL

A – SECTION
SCALE: NTS



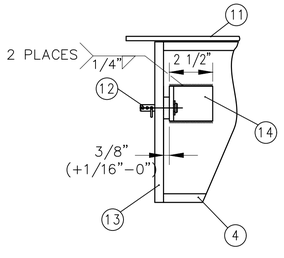
END COVER PLATE

B – SECTION
SCALE: NTS



HOLLOW TIE SIDE END COVER DETAIL

C – SECTION
SCALE: NTS



WELDING DETAIL

D – SECTION
SCALE: NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

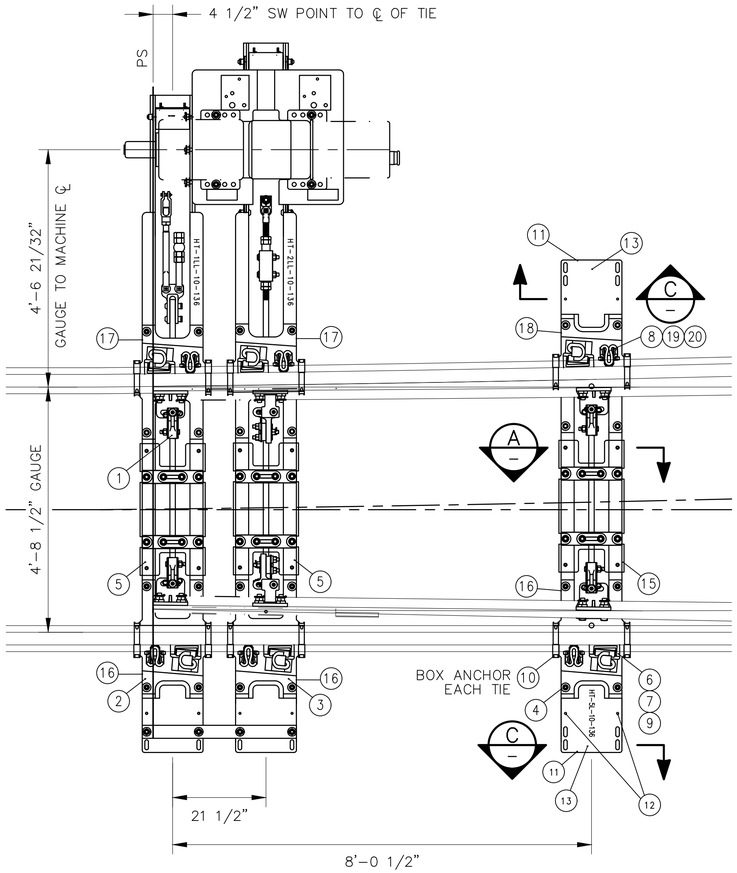
Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
HOLLOW STEEL TIES FOR RH TURNOUT
SWITCH MACHINE ON TURNOUT SIDE

CADD FILE NAME: SD-2521
REV: EDITION: FIFTH
SCALE: NTS
STANDARD DRAWING NO.: SD-2521

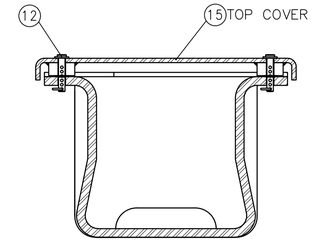


NOTE:

1. COORDINATE SWITCH MACHINE AND MACHINE PLATES (NIC) WITH CALTRAIN

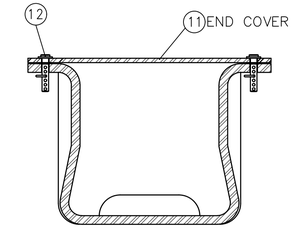
BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	RODDING ASSEMBLY FOR NO 10–136 LB RE, SWITCH MACHINE ON LH SIDE	SD–2537
2	1	HOLLOW TIE ASSEMBLY (HT–1LL–10–136)	–
3	1	HOLLOW TIE ASSEMBLY (HT–2LL–10–136)	–
4	1	HOLLOW TIE ASSEMBLY (HT–5L–10–136)	–
5*	2	COVER PLATE NO1, HOLLOW SWITCH TIE	–
6	6	LV BRACE FOR 136 LB RE	–
7	6	SERRATED WASHER FOR LV BRACE	–
8	6	CLIP, PANDROL, FC1601	–
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 NO2, HOLLOW SWITCH TIE	–
16	3	HST SWITCH PLATE HTP–206–STR	SD–2305
17	2	HST SWITCH PLATE HTP–200–L	SD–2308
18	1	HST SWITCH PLATE HTP–204–L	SD–2310
17	6	SIDE POST INSULATOR FOR FC1600 SERIES PANDROL FAST CLIP	SD–2313
18	6	TOE INSULATOR FOR FC1600 SERIES PANDROL FAST CLIP	SD–2314

* NOT SHOWN ON ASSEMBLY FOR CLARITY



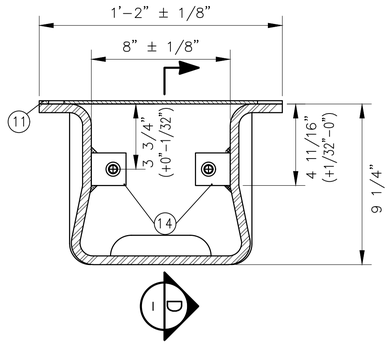
HOLLOW TIE TOP COVER DETAIL

A – SECTION
SCALE: NTS



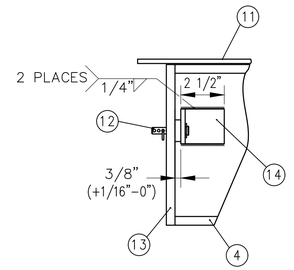
END COVER PLATE

B – SECTION
SCALE: NTS



HOLLOW TIE SIDE END COVER DETAIL

C – SECTION
SCALE: NTS



WELDING DETAIL

D – SECTION
SCALE: NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

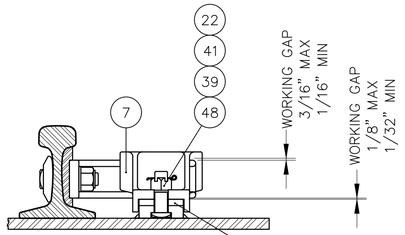
PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

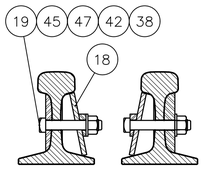
SPECIAL TRACKWORK
NO. 10 TURNOUT
HOLLOW STEEL TIES FOR LH TURNOUT
SWITCH MACHINE ON TURNOUT SIDE

CADD FILE NAME: SD–2522
REV: | EDITION: FIFTH
SCALE: NTS
STANDARD DRAWING NO.: SD–2522



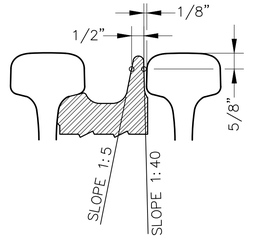
HORN KEEPER DETAIL

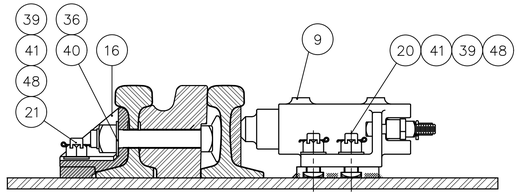
A – SECTION
SCALE: NTS



FOOT GUARD DETAIL

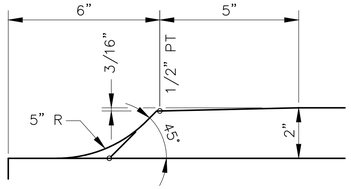
B – SECTION
SCALE: NTS





SPRING BOX DETAIL

C – SECTION
SCALE: NTS



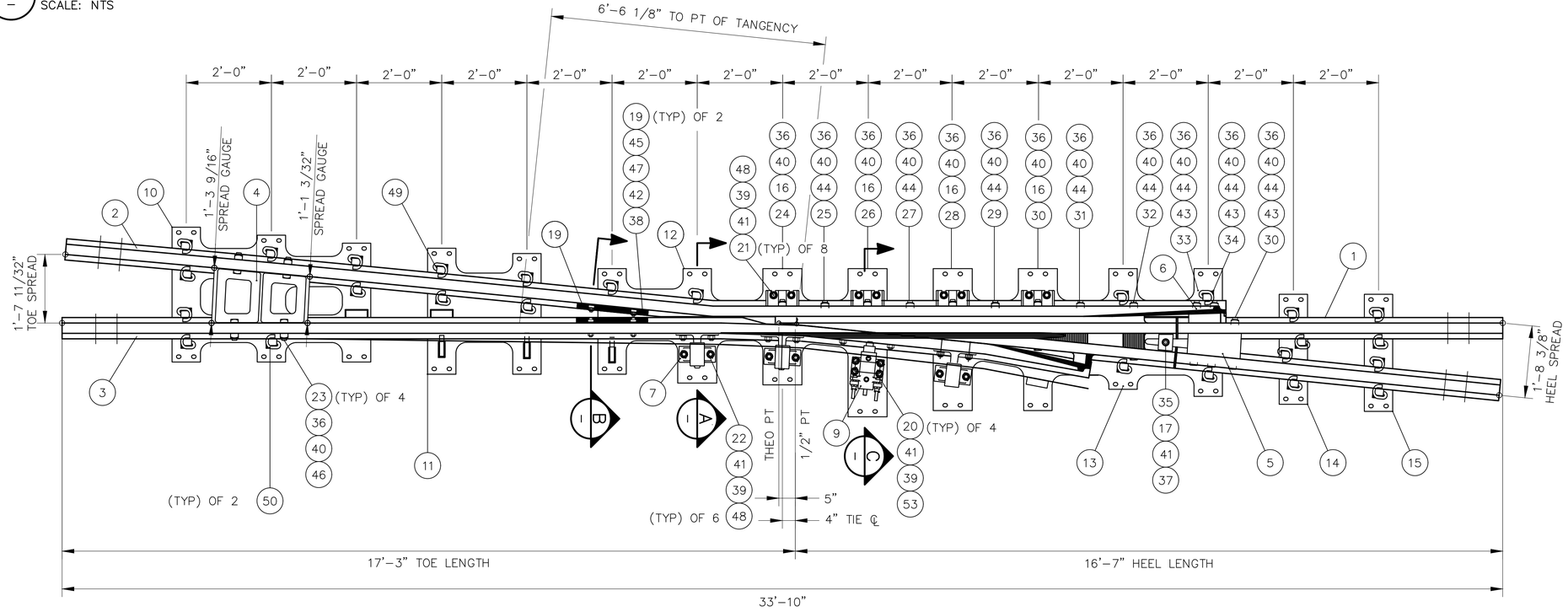
POINT DETAIL

1 – DETAIL
SCALE: NTS

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG 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 12" SQ HEAD, GR 8	–
5	1	HEEL BLOCK (SFHB136RE–10A)	–	30	2	BOLT, 1 3/8" DIA x 13 1/2" SQ HEAD, GR 8	–
6	1	FLARE FILLER BLOCK (FB136WHM–LCR)	–	31	1	BOLT, 1 3/8" DIA x 14 1/2" SQ HEAD, GR 8	–
7	3	HORN KEEPER, REVERSIBLE	–	32	1	BOLT, 1 3/8" DIA x 16" SQ HEAD, GR 8	–
8	3	HORN KEEPER WEAR PLATE, REVERSIBLE	–	33	1	BOLT, 1 3/8" DIA x 17 1/2" SQ HEAD, GR 8	–
9	1	SPRING BOX ASSEMBLY	–	34	1	BOLT, 1 3/8" DIA x 18" SQ HEAD, GR 8	–
10	1	FROG BASE PLATE (10–136–34RC)	SD–2525	35	1	PLOW BOLT, 1" DIA x 4" ROUND HD, SQ NECK, GR 8	–
11	1	FROG BASE PLATE (10–136–37RC)	SD–2525	36	16	NUT, SECURITY LOCK, 1 3/8" DIA HEAVY HEX	–
12	1	FROG BASE PLATE (10–136–39RC)	SD–2527	37	1	NUT, SECURITY LOCK, 1" DIA HEAVY HEX	–
13	1	FROG BASE PLATE (10–136–43RC)	SD–2529	38	2	NUT, SECURITY LOCK, 3/4" DIA HEAVY HEX	–
14	1	FROG PLATE (10–136–47RC)	SD–2531	39	18	NUT, SLOTTED, 1" DIA HEAVY HEX	–
15	1	FROG PLATE (10–136–48RC)	SD–2531	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, PANDROL, FORGED TONGUELESS, TYPE 1	–

NOTES:

1. RETARDER CLOSING TIME RANGES FROM 1 TO 3 MINUTES
2. SPRING BOX LOAD IS 300 LBS/IN
3. SPRING WING SHALL BE THROWN TO A 1 7/8" FLANGEWAY AT THE 3/4" POINT TO DETERMINE THE SPRING WING THROWN POSITION
4. RAIL END DRILLING SHALL BE @ 9" AND 15 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
5. RETARDER BRACKET SHALL BE WELDED ADJACENT TO SPRING BOX ASSEMBLY
6. FROG SHALL BE CONSTRUCTED TO TOLERANCES GIVEN ON LATEST AREMA PLAN 1010, PERMISSIBLE VARIATIONS IN COMPLETED FROGS
7. INSERT SHALL BE EXPLOSIVE DEPTH HARDENED TO 352 BRINELL PER AREMA
8. NAME TAG SHALL BE AFFIXED TO RIGID WING RAIL NEAR 1/2" PT WITH INFORMATION SHOWN
9. CALTRAIN WILL CONSIDER A TAPERED HEEL SPRING OF SAME ALIGNMENT AND DIMENSIONS TO REPLACE WSM



REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT

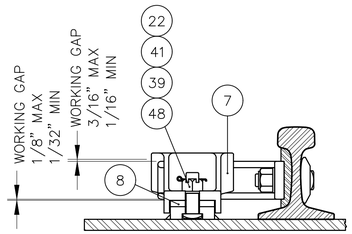
WSM FROG RH AND FROG PACK

CADD FILE NAME: SD–2523

REV: | EDITION: FIFTH

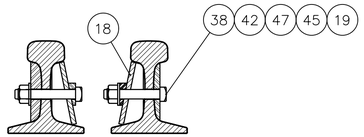
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STANDARD DRAWING NO.: SD–2523



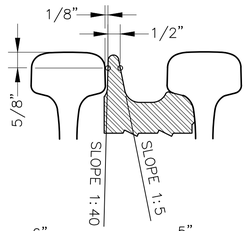
HORN KEEPER DETAIL

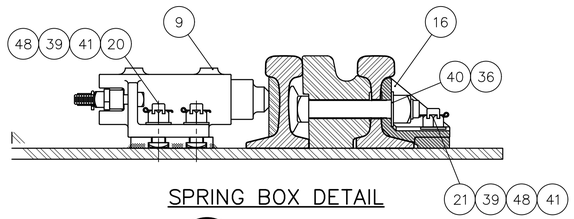
A – SECTION
SCALE: NTS



FOOT GUARD DETAIL

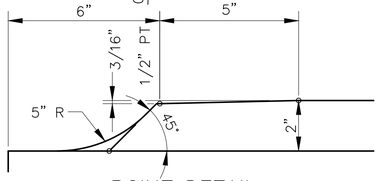
B – SECTION
SCALE: NTS





SPRING BOX DETAIL

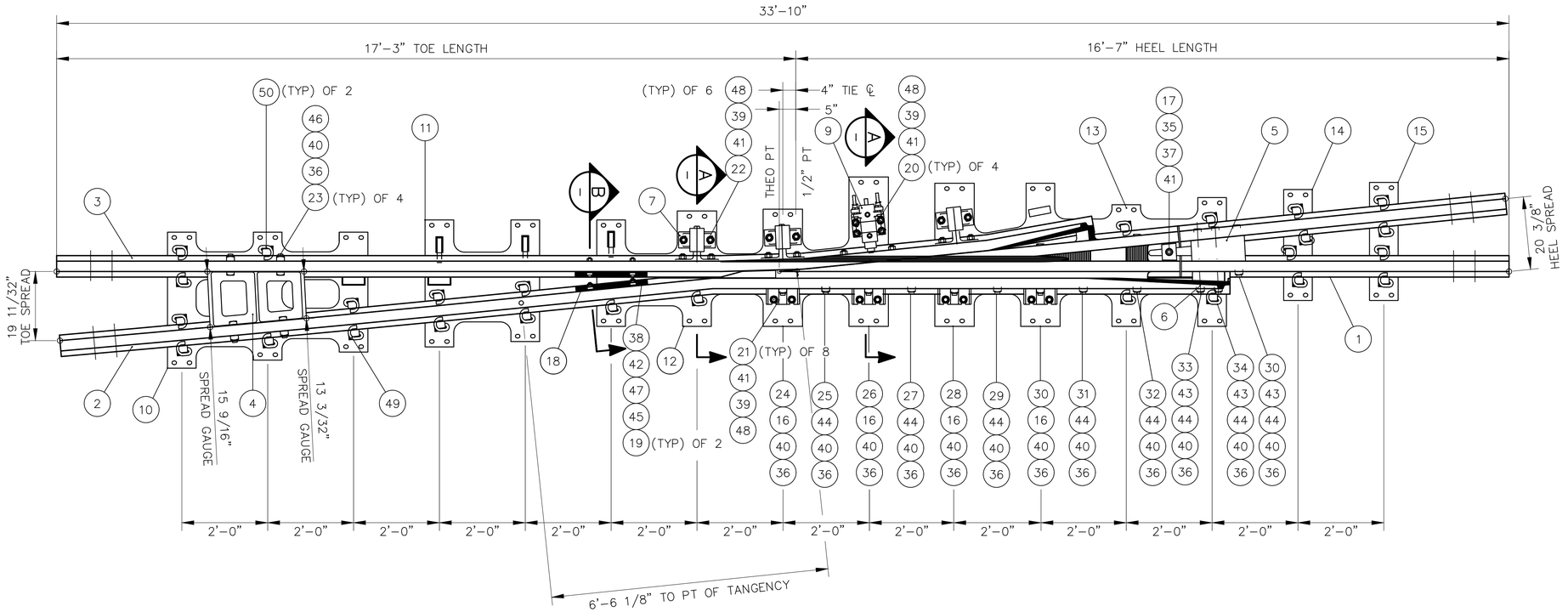
C – SECTION
SCALE: NTS



POINT DETAIL

1 – DETAIL
SCALE: NTS

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG 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 12" SQ HEAD, GR 8	–
5	1	HEEL BLOCK (SFHB136RE–10A)	–	30	2	BOLT, 1 3/8" DIA x 13 1/2" SQ HEAD, GR 8	–
6	1	FLARE FILLER BLOCK (FB136WHM–RCR)	–	31	1	BOLT, 1 3/8" DIA x 14 1/2" SQ HEAD, GR 8	–
7	3	HORN KEEPER, REVERSIBLE	–	32	1	BOLT, 1 3/8" DIA x 16" SQ HEAD, GR 8	–
8	3	HORN KEEPER WEAR PLATE, REVERSIBLE	–	33	1	BOLT, 1 3/8" DIA x 17 1/2" SQ HEAD, GR 8	–
9	1	SPRING BOX ASSEMBLY	–	34	1	BOLT, 1 3/8" DIA x 18" SQ HEAD, GR 8	–
10	1	FROG BASE PLATE (10–136–34LC)	SD–2526	35	1	PLOW BOLT, 1" DIA x 4" ROUND HD, SQ NECK, GR 8	–
11	1	FROG BASE PLATE (10–136–37LC)	SD–2526	36	16	NUT, SECURITY LOCK, 1 3/8" DIA HEAVY HEX	–
12	1	FROG BASE PLATE (10–136–39LC)	SD–2528	37	1	NUT, SECURITY LOCK, 1" DIA HEAVY HEX	–
13	1	FROG BASE PLATE (10–136–43LC)	SD–2530	38	2	NUT, SECURITY LOCK, 3/4" DIA HEAVY HEX	–
14	1	FROG PLATE (10–136–47LC)	SD–2532	39	18	NUT, SLOTTED, 1" DIA HEAVY HEX	–
15	1	FROG PLATE (10–136–48LC)	SD–2532	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:

1. RETARDER CLOSING TIME RANGES FROM 1 TO 3 MINUTES
2. SPRING BOX LOAD IS 300 LBS/IN
3. SPRING WING SHALL BE THROWN TO A 1 7/8" FLANGEWAY AT THE 3/4" POINT TO DETERMINE THE SPRING WING THROWN POSITION
4. RAIL END DRILLING SHALL BE @ 9" AND 15 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
5. RETARDER BRACKET SHALL BE WELDED ADJACENT TO SPRING BOX ASSEMBLY
6. FROG SHALL BE CONSTRUCTED TO TOLERANCES GIVEN ON LATEST AREMA PLAN 1010, PERMISSIBLE VARIATIONS IN COMPLETED FROGS
7. INSERT SHALL BE EXPLOSIVE DEPTH HARDENED TO 352 BRINELL PER AREMA
8. NAME TAG SHALL BE AFFIXED TO RIGID WING RAIL NEAR 1/2" PT WITH INFORMATION SHOWN
9. CALTRAIN WILL CONSIDER A TAPERED HEEL SPRING OF SAME ALIGNMENT AND DIMENSIONS TO REPLACE WSM

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT

WSM FROG LH AND FROG PACK

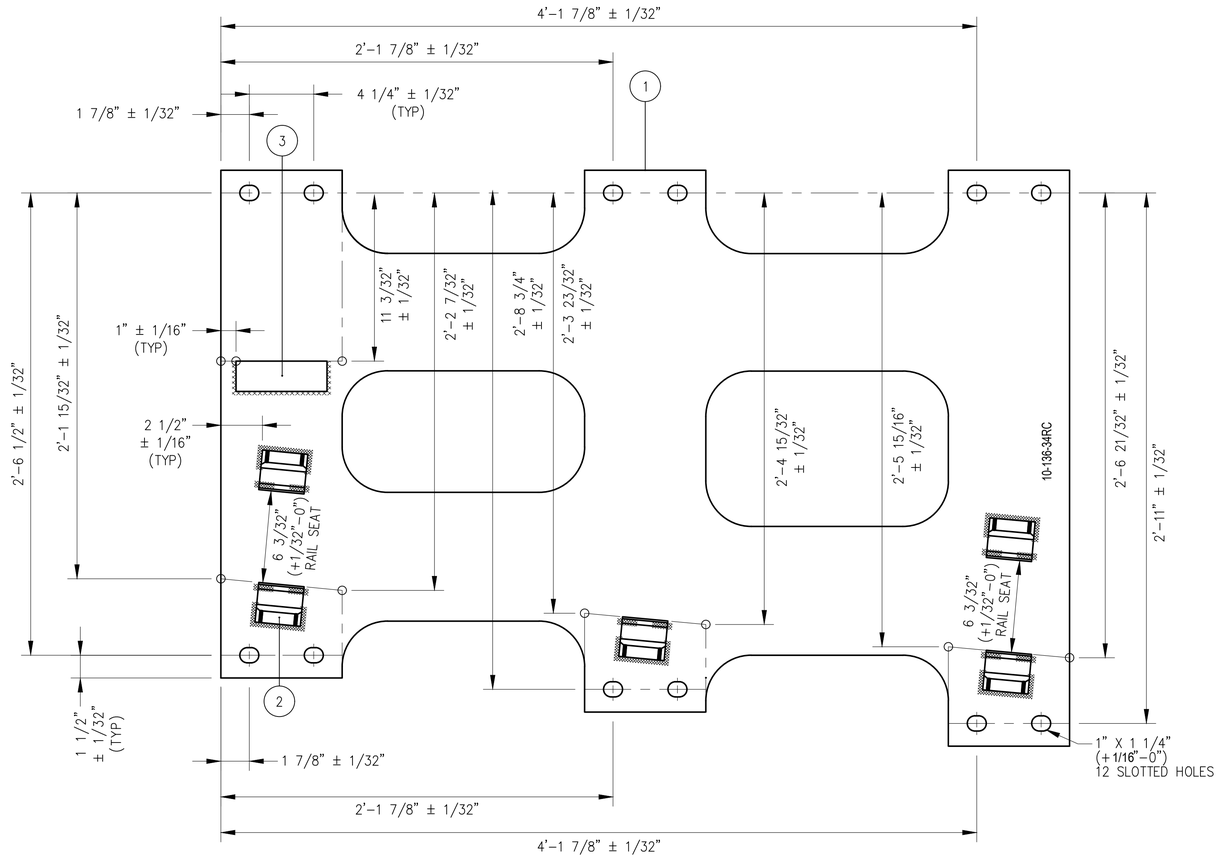
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REV: | EDITION: FIFTH

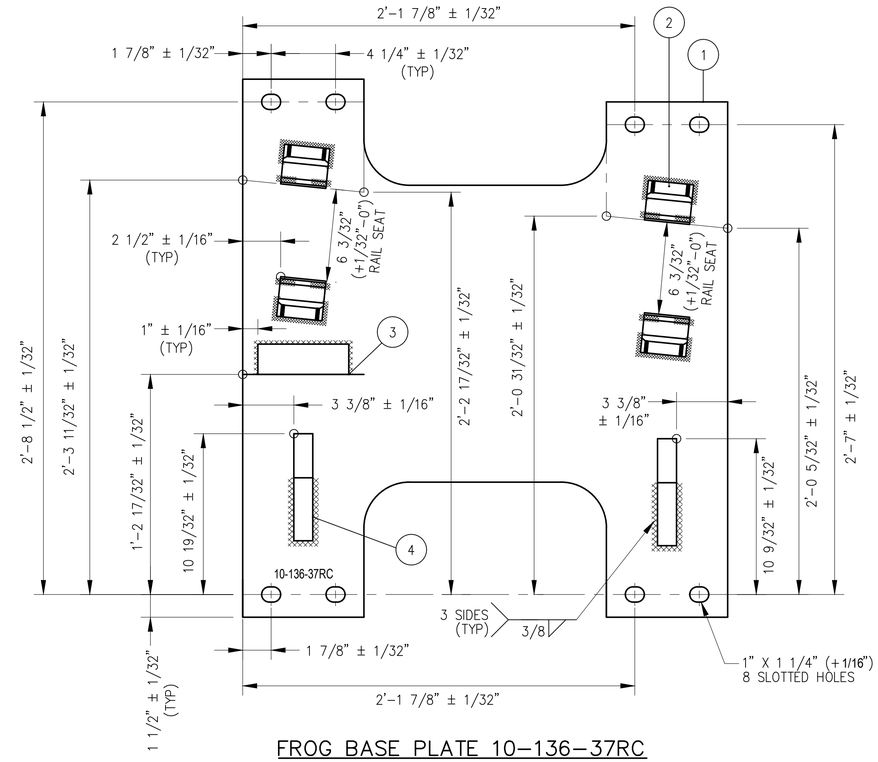
SCALE: NTS

STANDARD DRAWING NO.: SD–2524

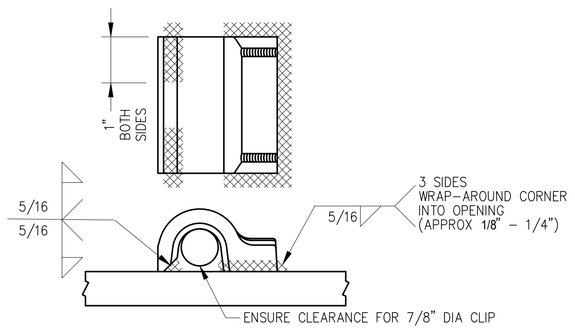
BILL OF MATERIAL				
ITEM	QTY FOR 10–34RC	QTY FOR 10–37RC	DESCRIPTION	DWG NO
1	1	1	BURNED PLATE, 3/4" THICK	–
2	5	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–
3	1	1	FLAT BAR, ASTM A36, 2" x 6" x 1/2" THICK	–
4	0	2	BURNED BRACE, 132/136 LB RE, HR A36 1 1/4" THICK	–



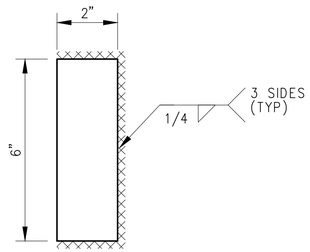
FROG BASE PLATE 10–136–34RC



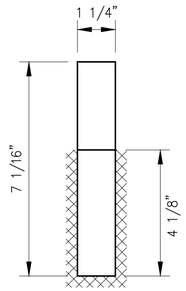
FROG BASE PLATE 10–136–37RC



FORGED SHOULDER WELDING DETAIL



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



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

NOTES

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
WSM FROG RH
FROG BASE PLATES
10–34RC AND 10–37RC

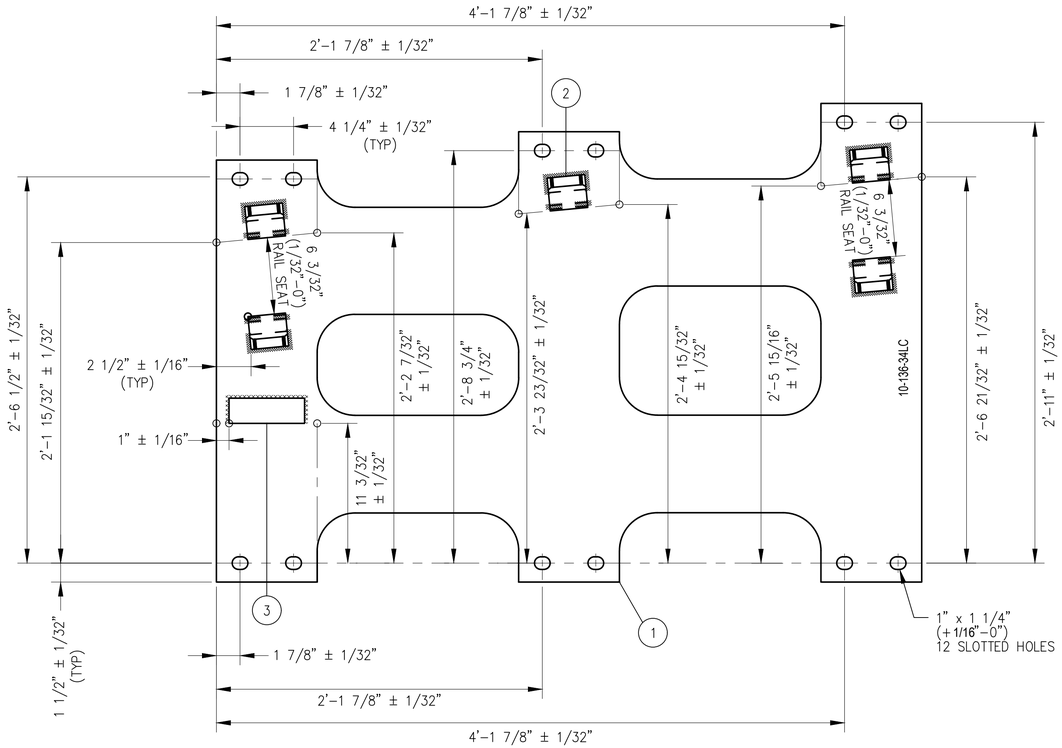
CADD FILE NAME: SD–2525

REV: | EDITION: FIFTH

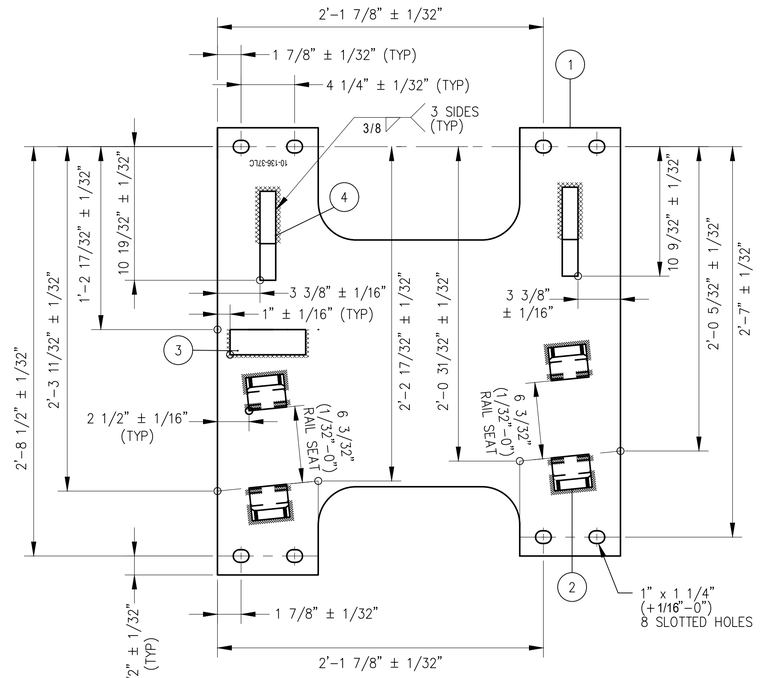
SCALE: NTS

STANDARD DRAWING NO.: SD–2525

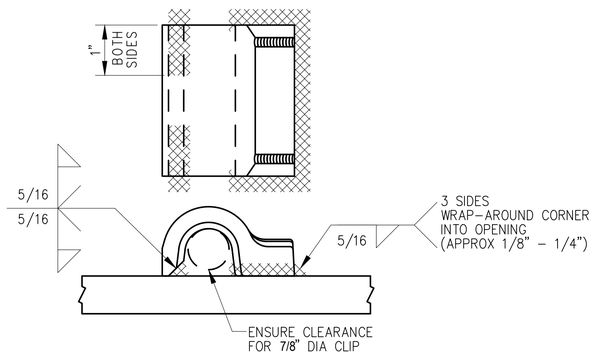
BILL OF MATERIAL				
ITEM	QTY FOR 10–34LC	QTY FOR 10–37LC	DESCRIPTION	DWG NO
1	1	1	BURNED PLATE, 3/4" THICK	–
2	5	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–
3	1	1	FLAT BAR, ASTM A36, 2" x 6" x 1/2" THICK	–
4	0	2	BURNED BRACE, 132/136 LB RE, HR A36 1 1/4" THICK	–



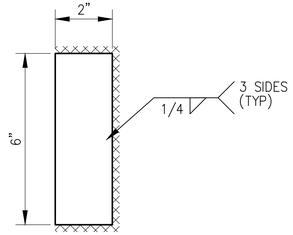
FROG BASE PLATE 10–136–34LC



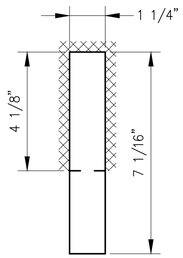
FROG BASE PLATE 10–136–37LC



FORGED SHOULDER WELDING DETAIL



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



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

NOTES

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
WSM FROG LH
FROG BASE PLATES
10–34LC AND 10–37LC

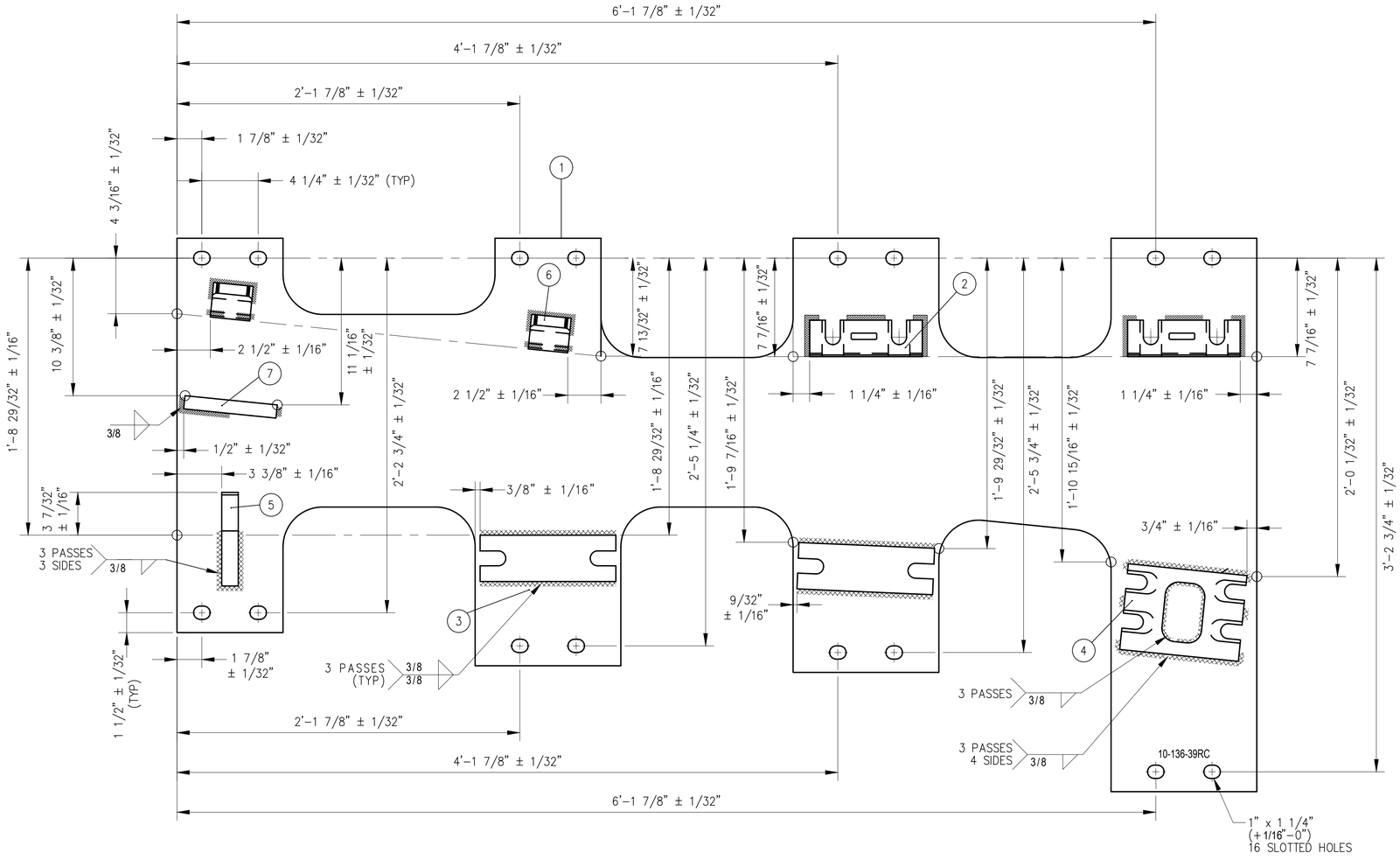
CADD FILE NAME: SD–2526

REV: | EDITION: FIFTH

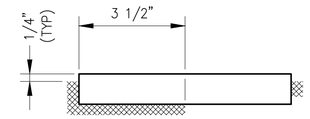
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STANDARD DRAWING NO.: SD–2526

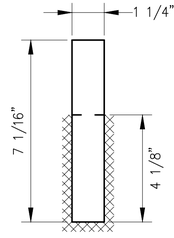
BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	BURNED PLATE, 3/4" THICK	–
2	2	CAPTURE BLOCK FOR PLATE CLIP	–
3	2	CAPTURE BLOCK FOR HORN KEEPER	–
4	1	CAPTURE BLOCK FOR SPRING BOX	–
5	1	WELD ON BRACE	–
6	2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–
7	1	FLAT BAR, ASTM A36, 1/2" x 7" x 1" LONG	–



FROG BASE PLATE 110–39RC



STOP WELDING DETAIL



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

NOTES

1. I.D. CHARACTERS SHALL BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN
2. WELDS SHALL 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 SD–2525 FOR SHOULDER WELDING DETAIL

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

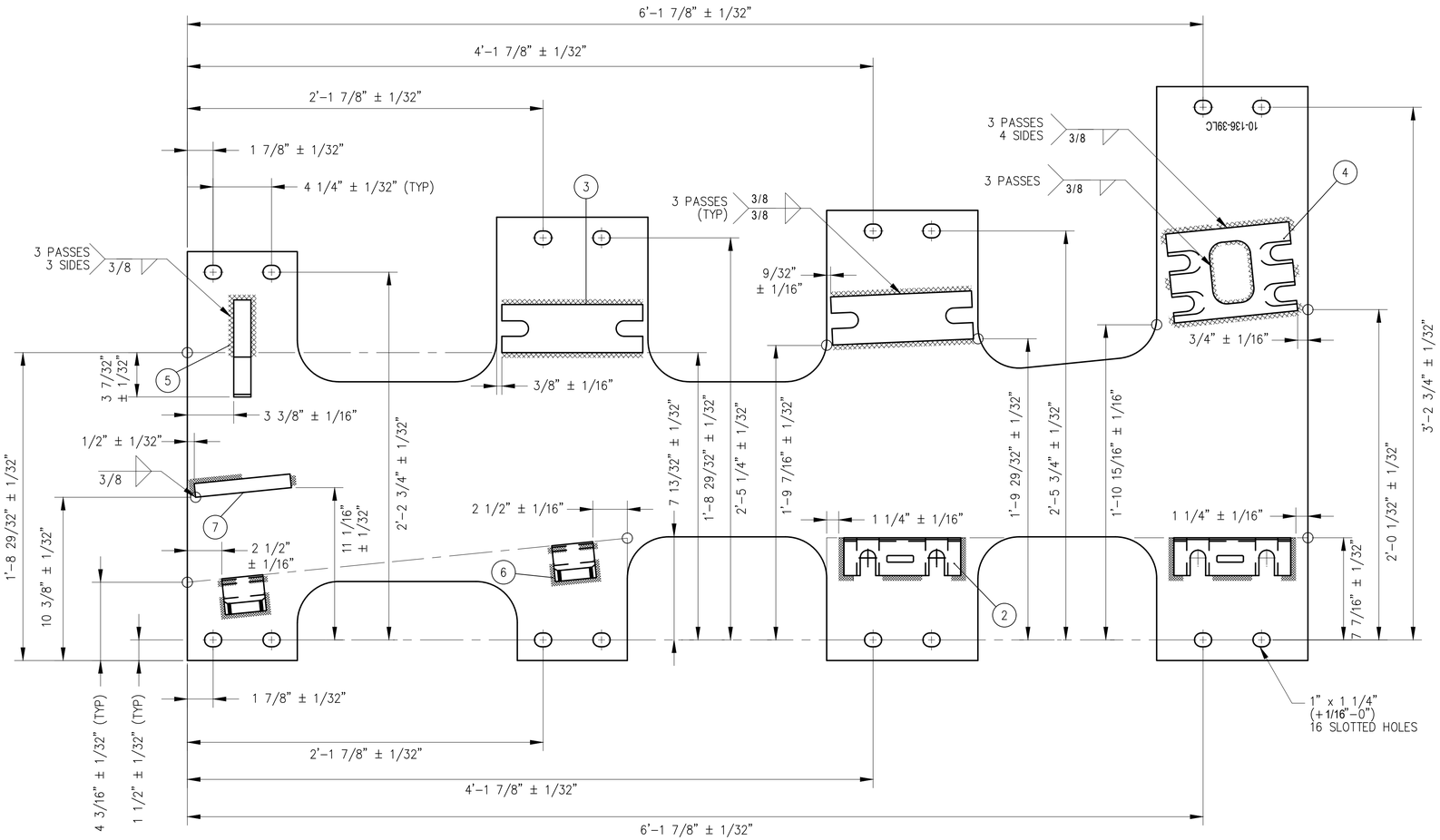
SPECIAL TRACKWORK
NO. 10 TURNOUT
WSM FROG RH
FROG BASE PLATE 10–39RC

CADD FILE NAME: SD–2527

REV: | EDITION: FIFTH

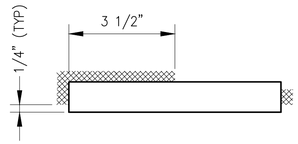
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STANDARD DRAWING NO.: SD–2527

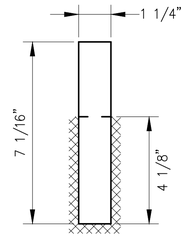


BASE PLATE 10-39LC

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG 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	–
6	2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–
7	1	FLAT BAR, ASTM A36, 1/2" x 7" x 1" LONG	–



STOP WELDING DETAIL



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

NOTES

1. I.D. CHARACTERS SHALL BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN
2. WELDS SHALL 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 SD-2525 FOR SHOULDER WELDING DETAILS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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ENGINEERING STANDARD DRAWINGS

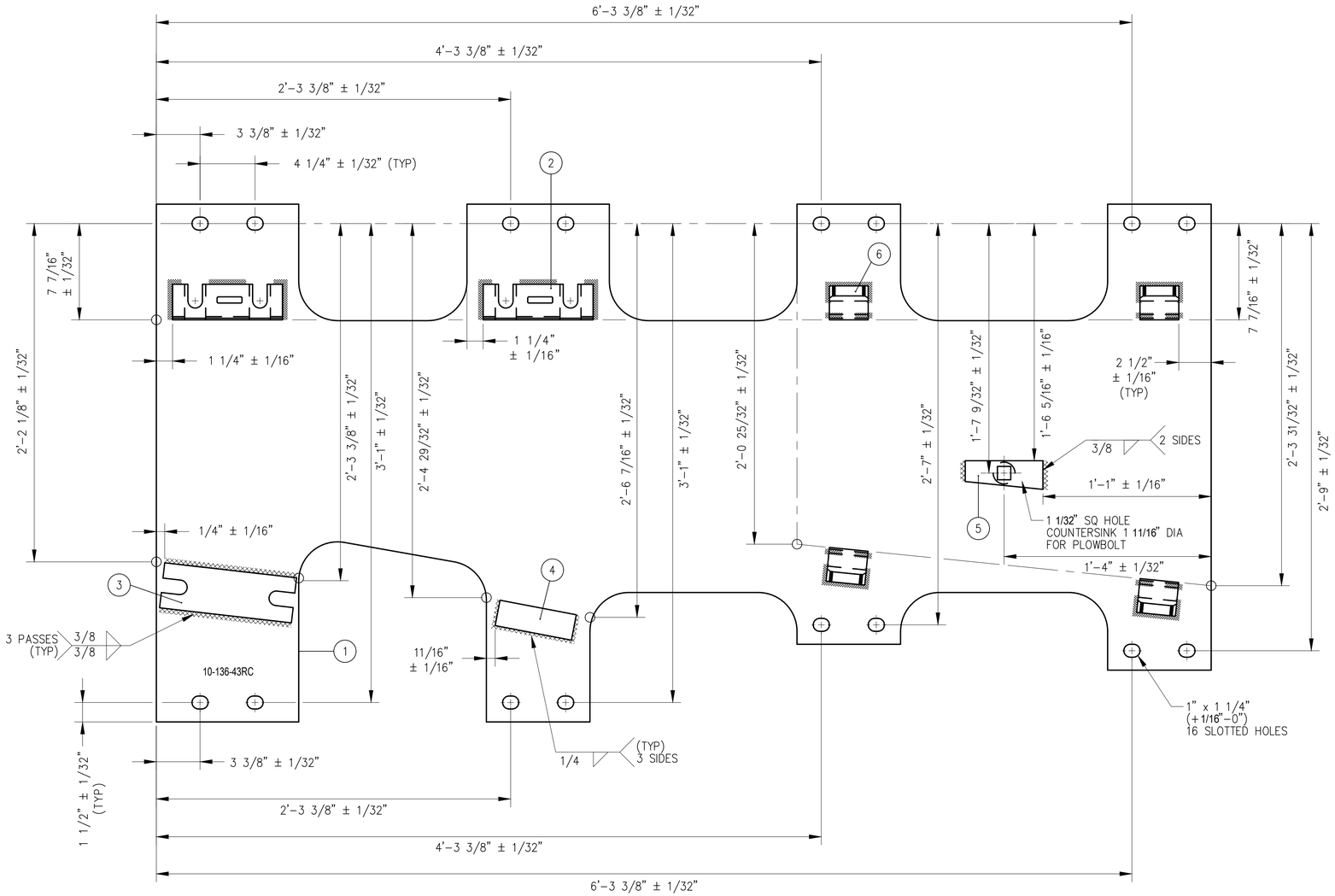
SPECIAL TRACKWORK
NO. 10 TURNOUT
WSM FROG LH
FROG BASE PLATE 10-39LC

CADD FILE NAME: SD-2528

REV: | EDITION: FIFTH

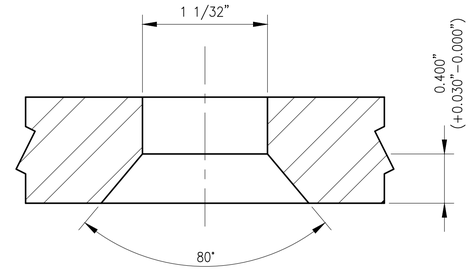
SCALE: NTS

STANDARD DRAWING NO.: SD-2528



BASE PLATE 10–43RC

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
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 19/32" x 2 7/32" x 7/16 THICK	–
6	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–



COUNTERSINK DETAIL
(PLOW BOLT)

NOTES

1. I.D. CHARACTERS SHALL BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN
2. WELDS SHALL 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 SD-2525 FOR SHOULDER WELDING DETAIL

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

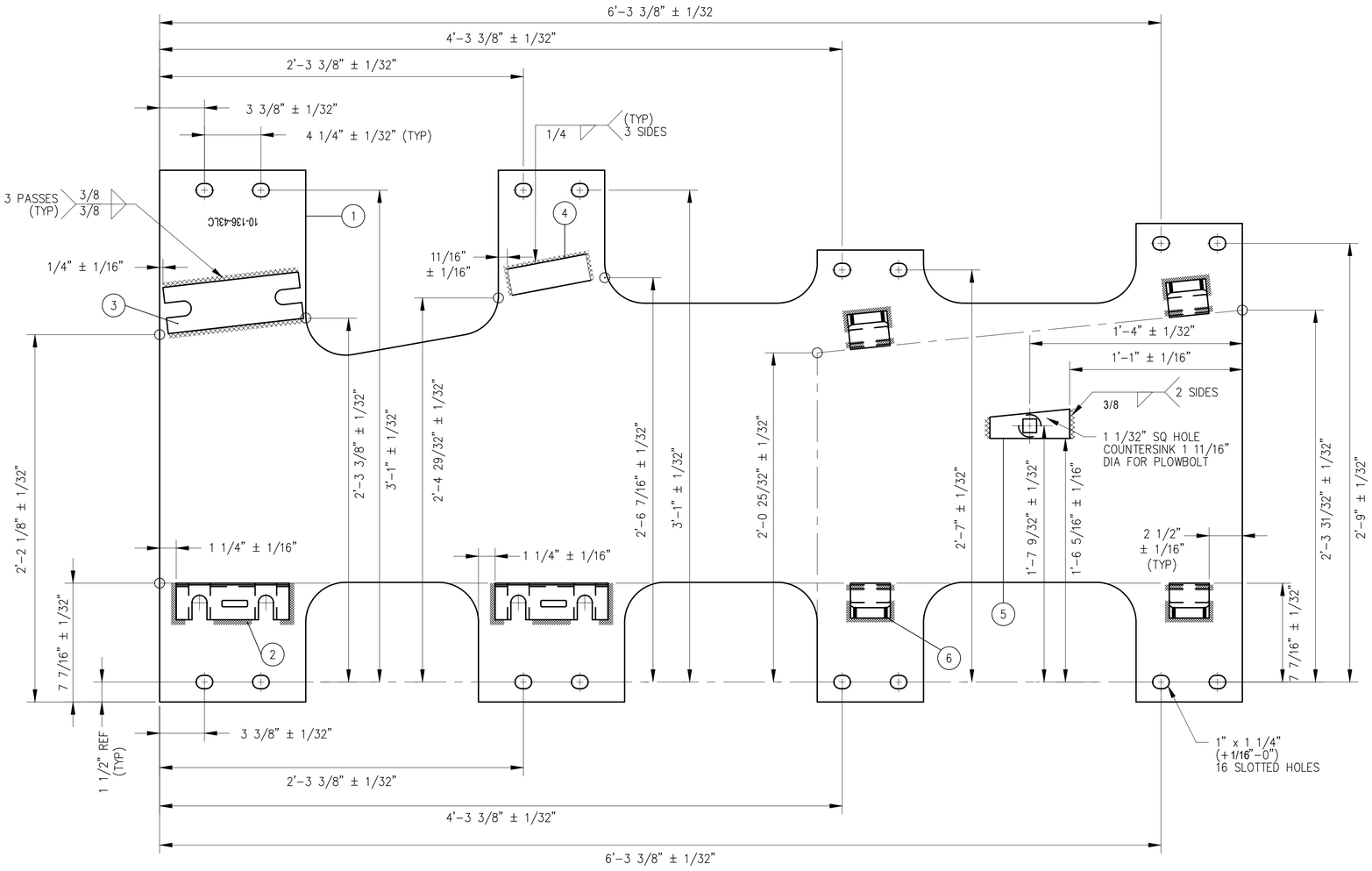
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ENGINEERING STANDARD DRAWINGS

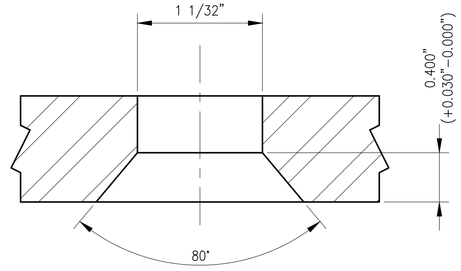
SPECIAL TRACKWORK
NO. 10 TURNOUT
WSM FROG RH
FROG BASE PLATE 10–43RC

CADD FILE NAME:	SD-2529
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD-2529

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
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 19/32" x 2 7/32" x 7/16" THICK	–
6	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–



BASE PLATE 10–43LC



COUNTERSINK DETAIL
(PLOW BOLT)

NOTES

1. I.D. CHARACTERS SHALL BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN
2. WELDS SHALL 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 SD–2525 FOR SHOULDER WELDING DETAIL

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
WSM FROG LH
FROG BASE PLATE 10–43LC

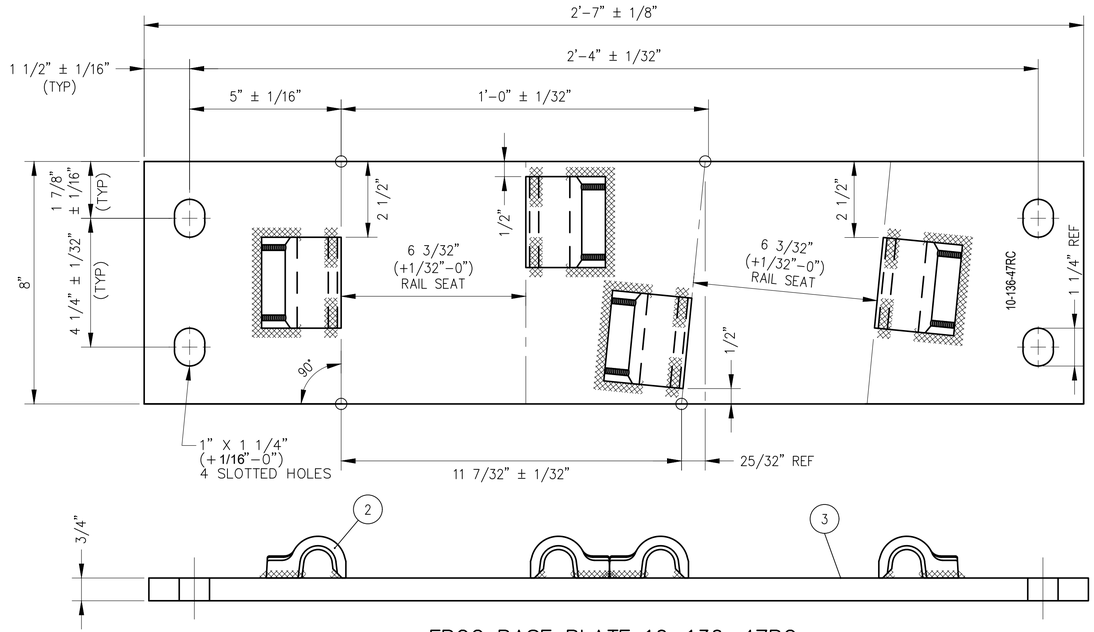
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REV: | EDITION: FIFTH

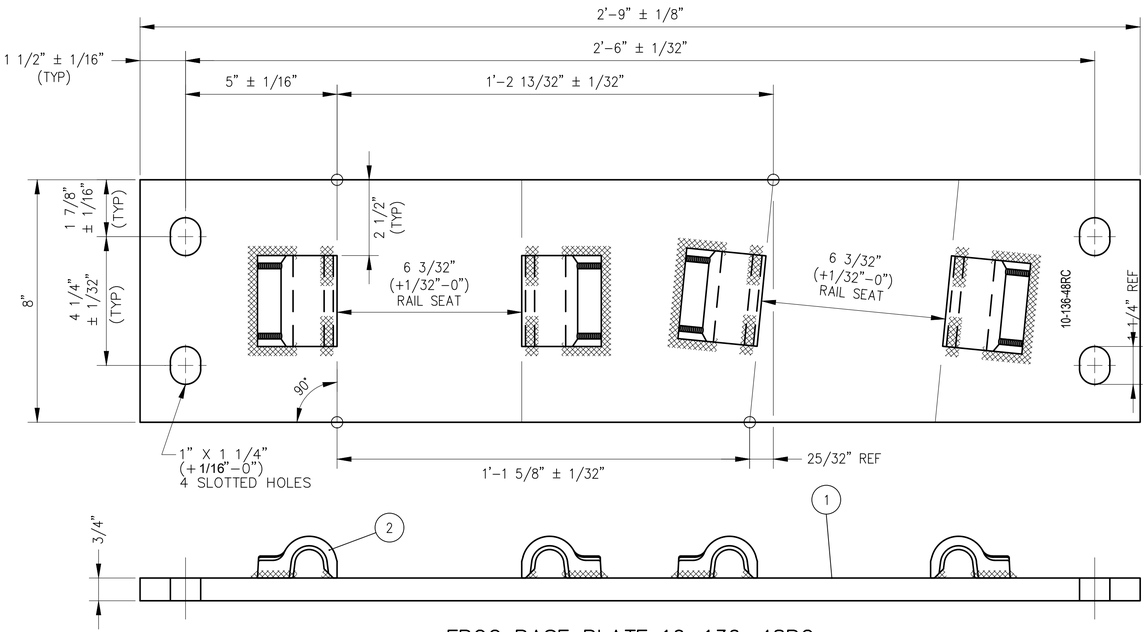
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STANDARD DRAWING NO.: SD–2530

BILL OF MATERIAL				
ITEM	QTY FOR 10–47RC	QTY FOR 10–48RC	DESCRIPTION	DWG 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 SHALL BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN
2. WELDS SHALL BE DRESSED FLUSH WITH SHOULDER & NOT TO PROTRUDE INTO RAIL SEAT
3. SEE SD–2525 FOR SHOULDER WELDING DETAILS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
WSM FROG RH
FROG BASE PLATES
10–47RC AND 10–48RC

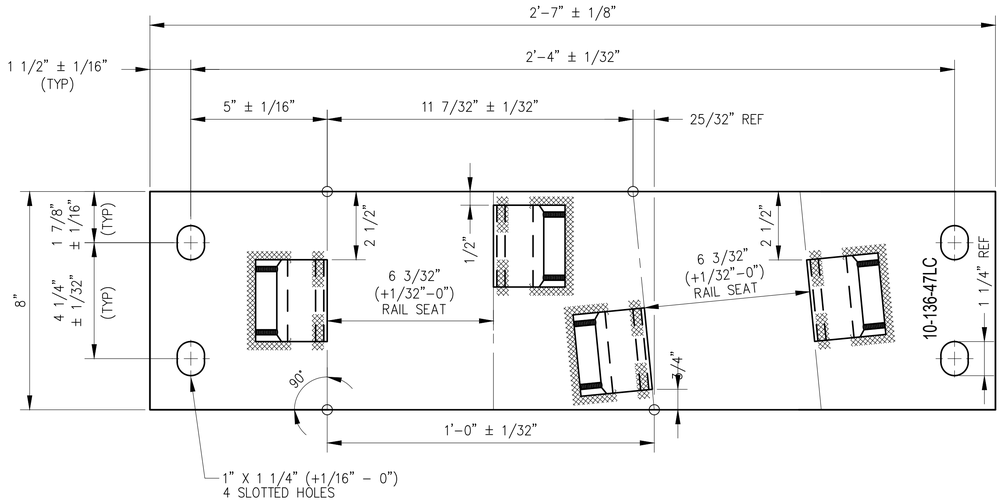
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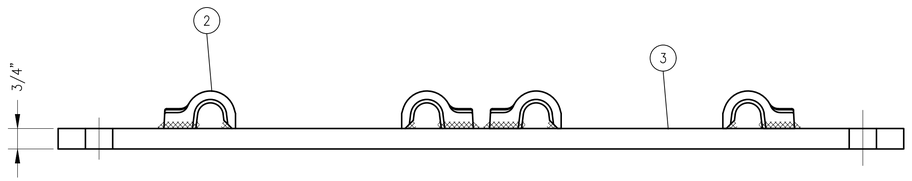
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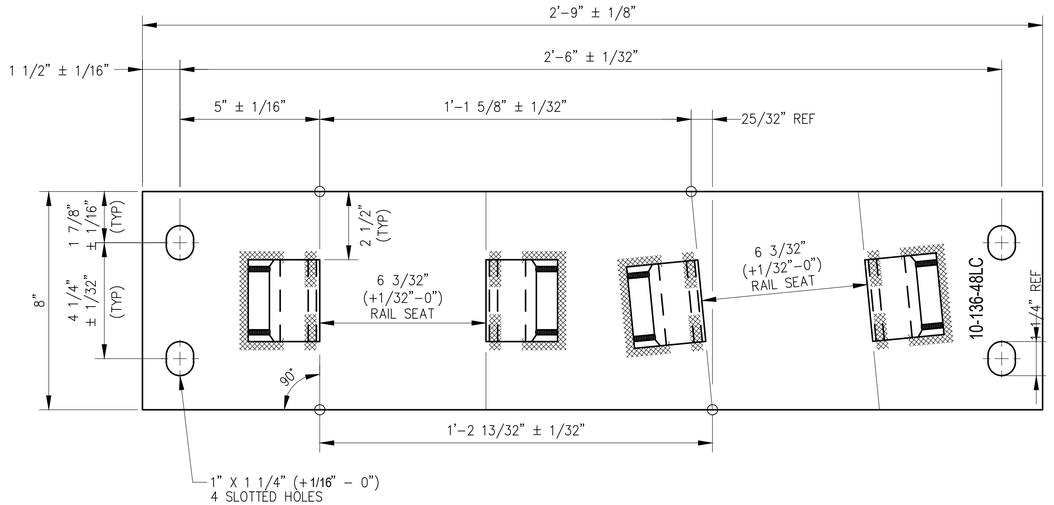
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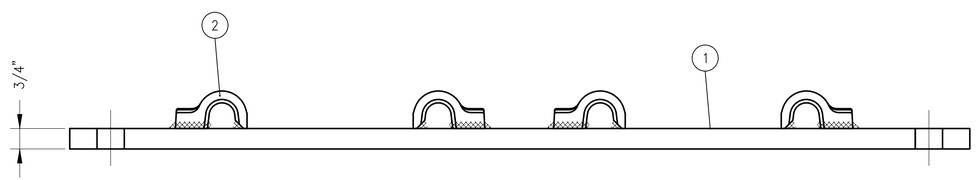
BILL OF MATERIAL				
ITEM	QTY FOR 10–47LC	QTY FOR 10–48LC	DESCRIPTION	DWG NO
1	0	1	FLAT BAR, ASTM A36, 3/4" X 8" X 2'–9" LONG	–
2	4	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–
3	1	0	FLAT BAR, ASTM A36, 3/4" X 8" X 2'–7" LONG	–





FROG BASE PLATE 10–136–47LC





FROG BASE PLATE 10–136–48LC

NOTES

1. I.D. CHARACTERS SHALL BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN.
2. WELDS SHALL BE DRESSED FLUSH WITH SHOULDER & NOT TO PROTRUDE INTO RAIL SEAT.
3. SEE SD–2525 FOR SHOULDER WELDING DETAILS.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
WSM FROG LH
FROG BASE PLATES
10–47LC AND 10–48LC

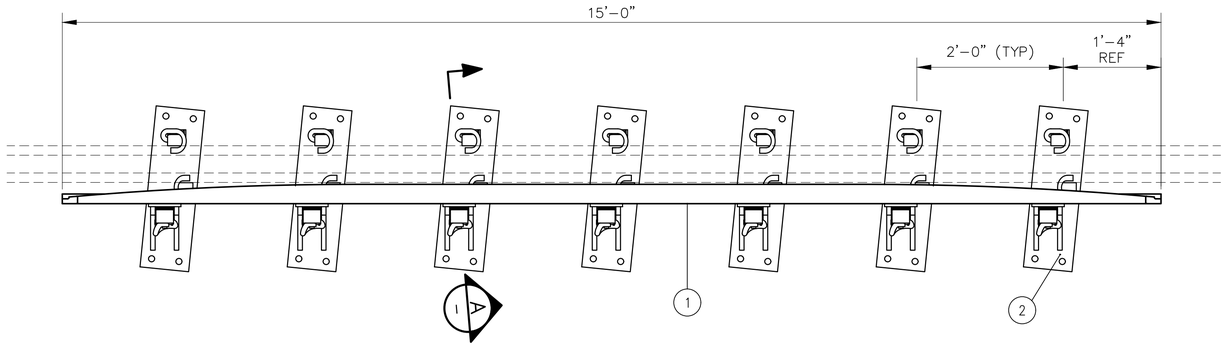
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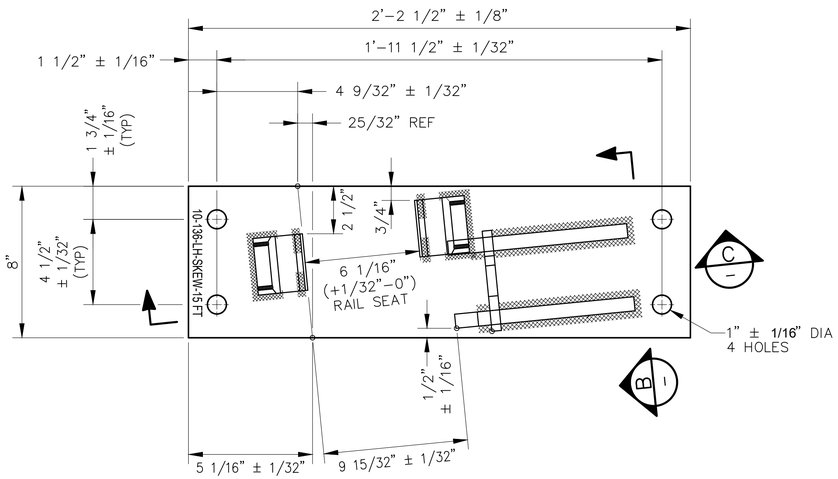
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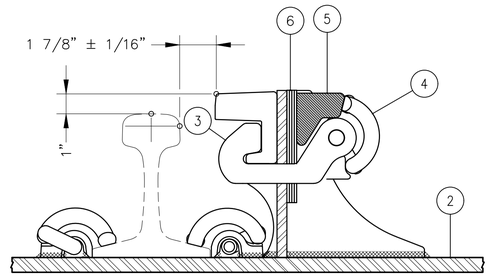
BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	GUARD BAR, UIC33 1200 SERIES x 15'–0" LONG	–
2	7	GUARD RAIL PLATE ASSEMBLY, RAISED 1", LH SKEWED	–
3	7	H–CLAMP	–
4	21	CLIP, PANDROL, E2055	–
5	7	LOCKING BLOCK	–
6	28	SHIM, 1/8" x 3" X 6"	–



15'–0" LONG GUARD RAIL

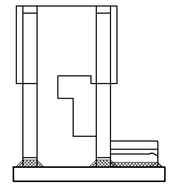


GUARD RAIL PLATE ASSEMBLY

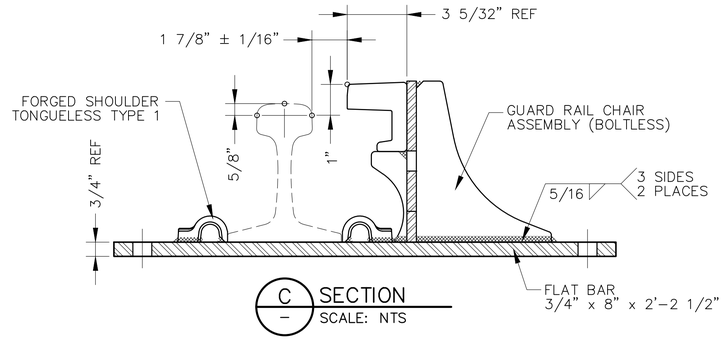


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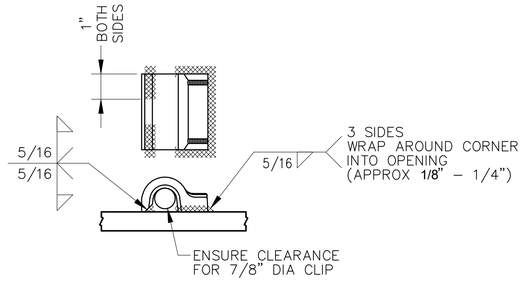
A – PARTIAL SECTION
SCALE: NTS



B – SECTION
SCALE: NTS



C – SECTION
SCALE: NTS



FORGED SHOULDER WELDING DETAIL

NOTES

1. PLATE SPACING IS SET FOR SHIPPING ONLY. FINAL PLATE SPACING SHALL BE DETERMINED BY TIE SPACING AT TIME OF INSTALLATION
2. PANDROL SPRING CLIPS (E2055) SHALL BE INCLUDED IN ASSEMBLY
3. LIFT POINTS AND WEIGHT OF ASSEMBLY SHALL BE MARKED ON HEAD OF WEAR BAR WITH WHITE PAINT
4. PLATE SHALL 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 SD–2301 FOR STRAIGHT SIDE GUARD RAIL

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
GUARD RAIL ASSEMBLY
LH SKEWED WITH
PLATES 15'–0" LONG

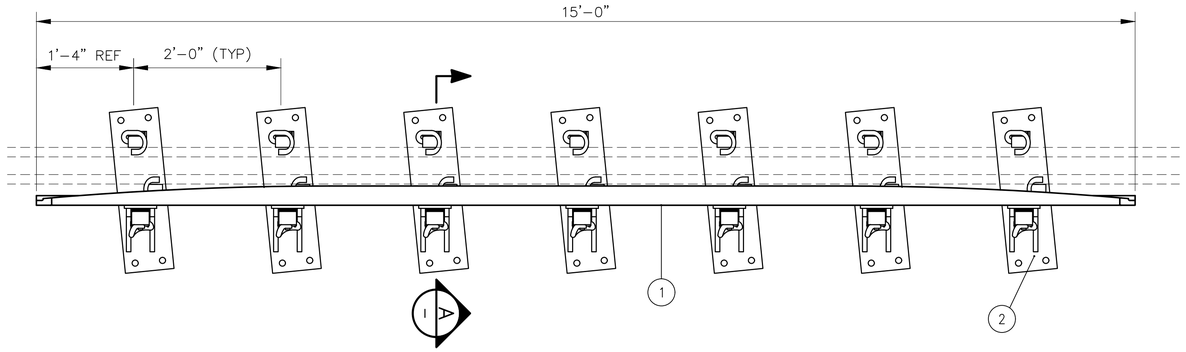
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REV: | EDITION: FIFTH

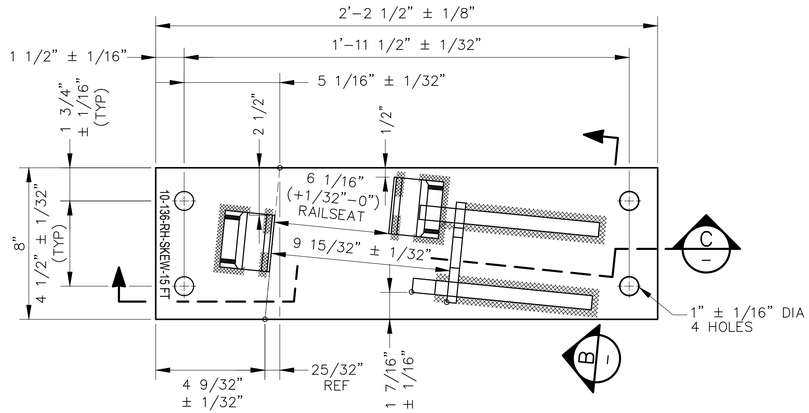
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STANDARD DRAWING NO.: SD–2533

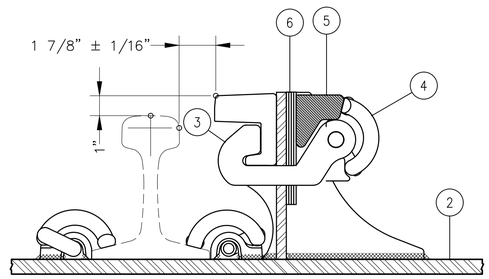
BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	GUARD BAR, UIC33 1200 SERIES x 15'–0" LONG	–
2	7	GUARD RAIL PLATE ASSEMBLY, RAISED 1", RH SKEWED	–
3	7	H–CLAMP	–
4	21	CLIP, PANDROL, E2055	–
5	7	LOCKING BLOCK	–
6	28	SHIM, 1/8" X 3" X 6"	–



15'–0" LONG GUARD RAIL

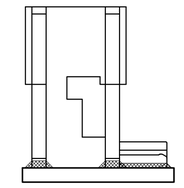


GUARD RAIL PLATE ASSEMBLY

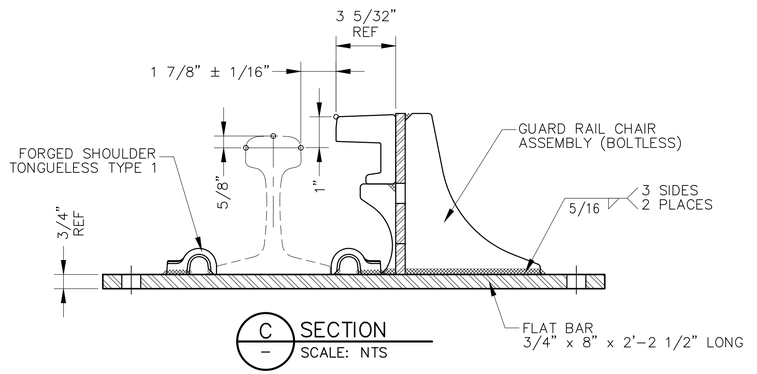


GUARD RAIL HARDWARE ASSEMBLY

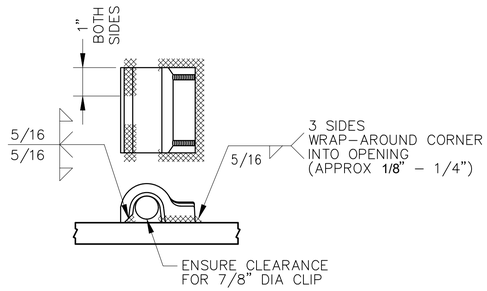
A – PARTIAL SECTION
SCALE: NTS



B – SECTION
SCALE: NTS



C – SECTION
SCALE: NTS



FORGED SHOULDER WELDING DETAIL

NOTES

1. PLATE SPACING IS SET FOR SHIPPING ONLY. FINAL PLATE SPACING SHALL BE DETERMINED BY TIE SPACING AT TIME OF INSTALLATION.
2. PANDROL SPRING CLIPS (E2055) SHALL BE INCLUDED IN ASSEMBLY.
3. LIFT POINTS AND WEIGHT OF ASSEMBLY SHALL BE MARKED ON HEAD OF WEAR BAR WITH WHITE PAINT.
4. PLATE SHALL 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 SD–2301 FOR STRAIGHT SIDE GUARD RAIL.

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
GUARD RAIL ASSEMBLY
RH SKEWED WITH
PLATES 15'–0" LONG

CADD FILE NAME: SD–2534

REV: | EDITION: FIFTH

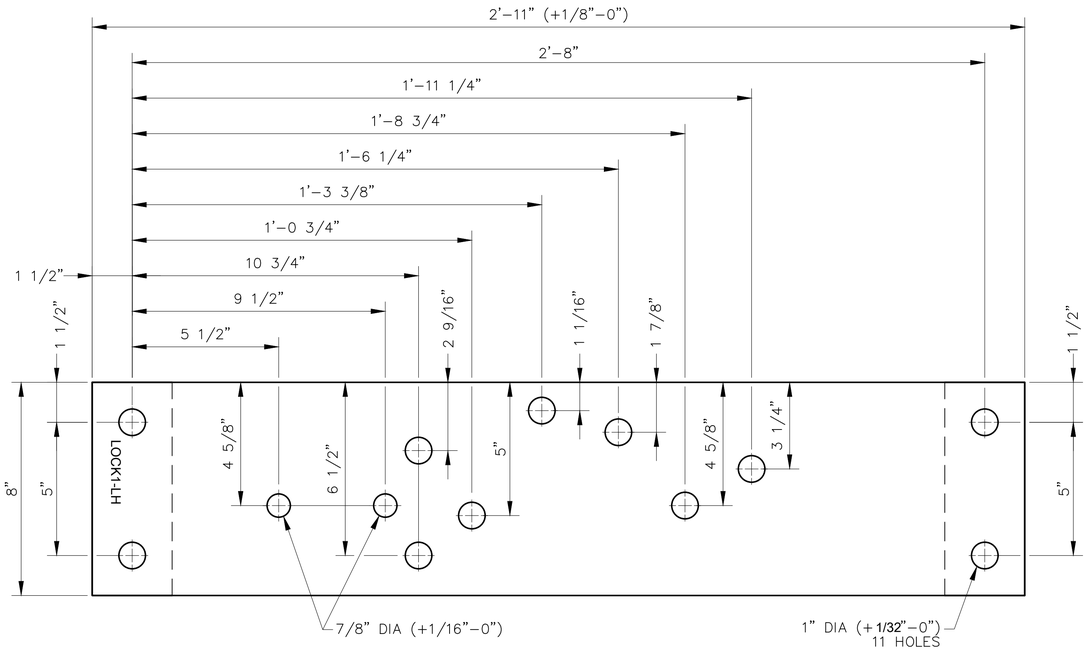
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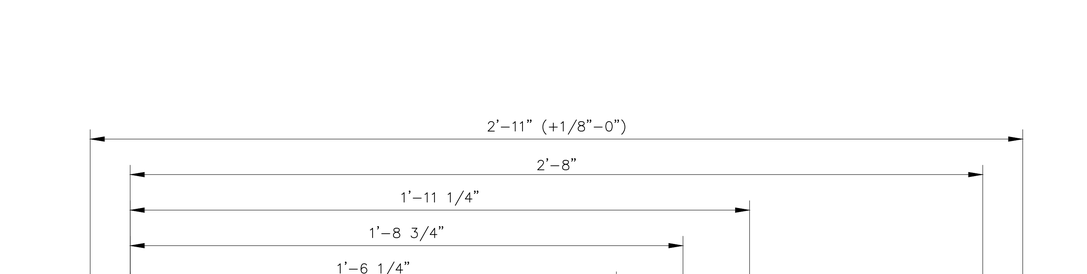
STANDARD DRAWING NO.: SD–2534

BILL OF MATERIAL				
ITEM	QTY FOR LOCK1–LH	QTY FOR LOCK2–LH	DESCRIPTION	DWG 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	–

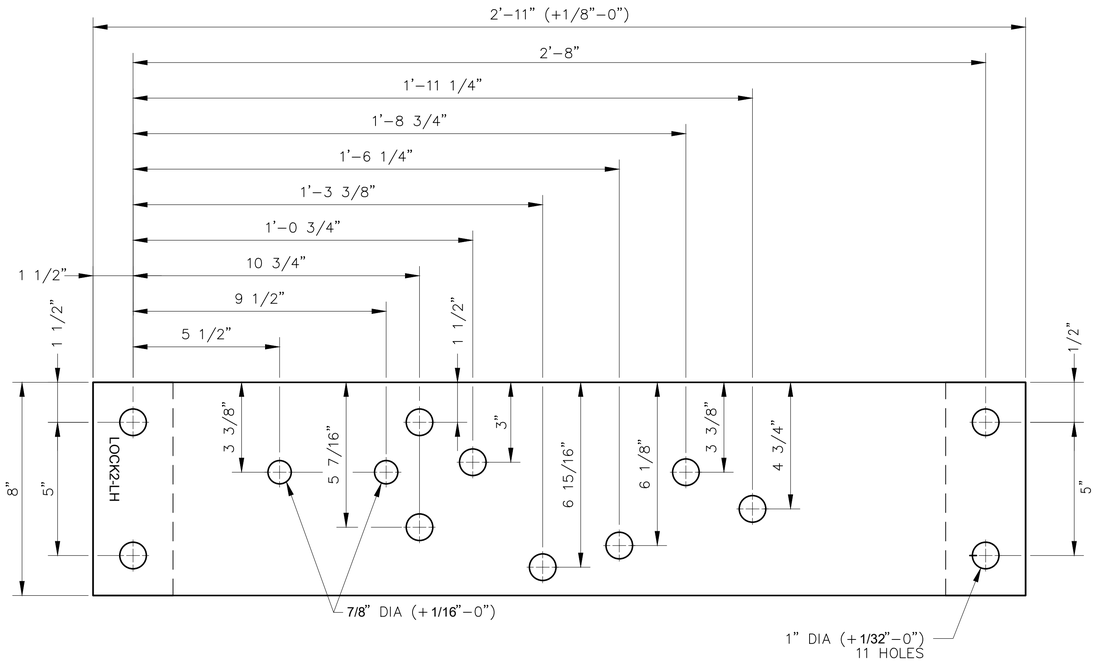
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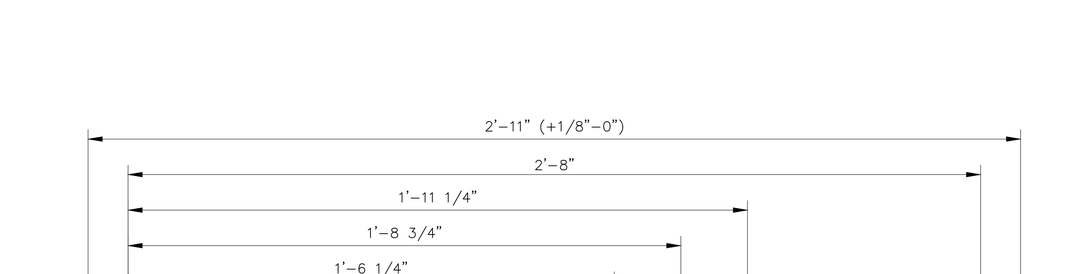
1. ALL TOLERANCES ± 1/32" UNLESS OTHERWISE SPECIFIED.
2. STAMP PLATE I.D. CLEARLY AS SHOWN.
3. HARDWARE SHALL COME FULL ATTACHED TO PLATE.





LOCK1–LH





LOCK2–LH

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
LH SWITCH STAND
ADAPTER PLATES FOR
36E SWITCH STAND WITH ELECTRIC LOCK

CADD FILE NAME: SD–2535

REV:

EDITION: FIFTH

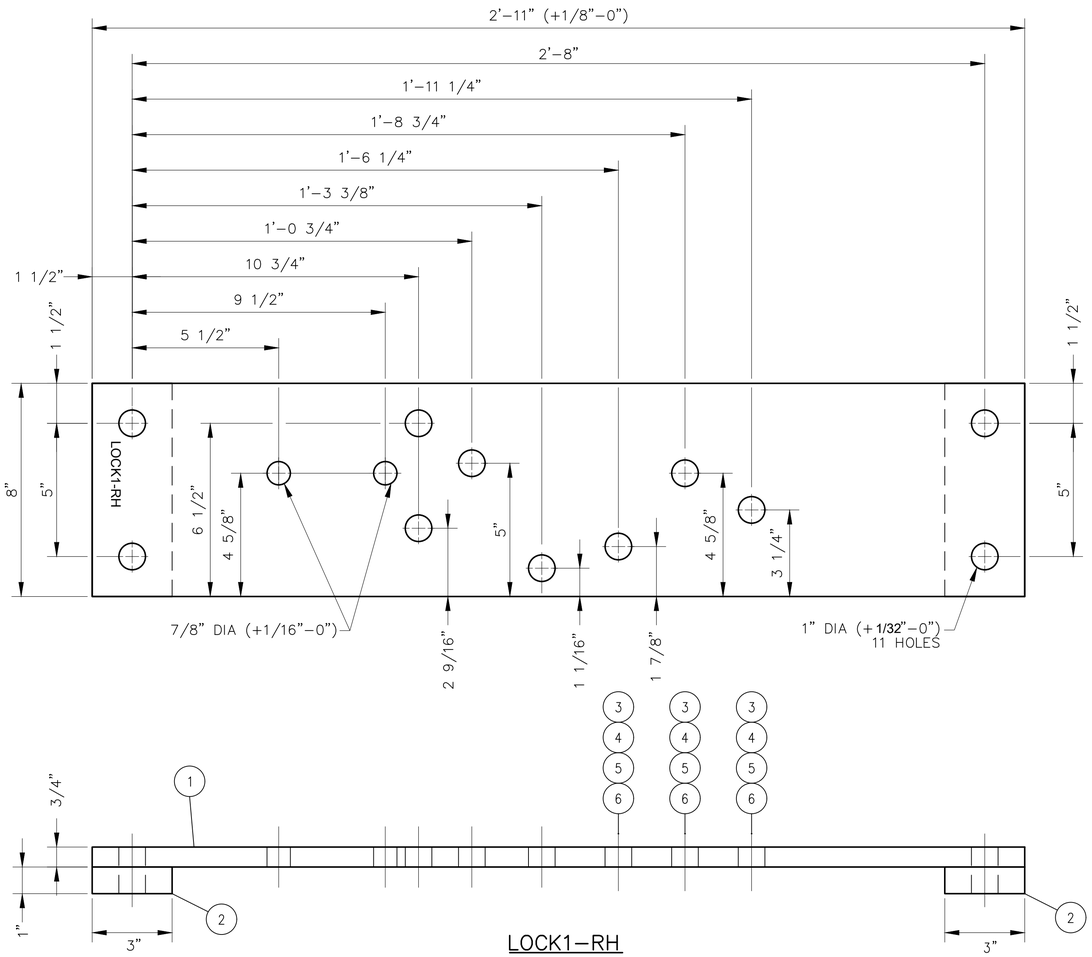
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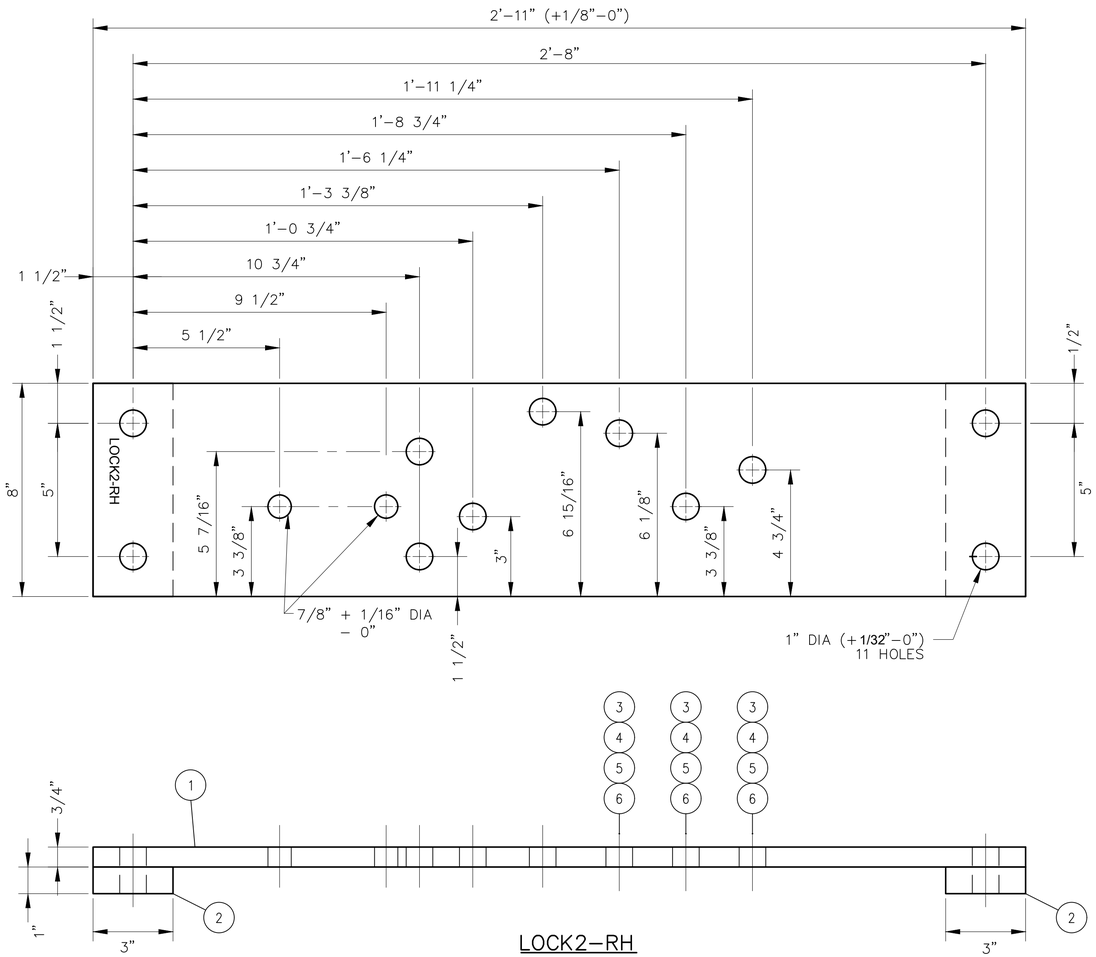
STANDARD DRAWING NO.: SD–2535

BILL OF MATERIAL				
ITEM	QTY FOR LOCK1–RH	QTY FOR LOCK2–RH	DESCRIPTION	DWG 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 ± 1/32" UNLESS OTHERWISE SPECIFIED.
2. STAMP PLATE I.D. CLEARLY AS SHOWN.
3. HARDWARE SHALL COME FULL ATTACHED TO PLATE.





REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
RH SWITCH STAND
ADAPTER PLATES FOR
36E SWITCH STAND WITH ELECTRIC LOCK

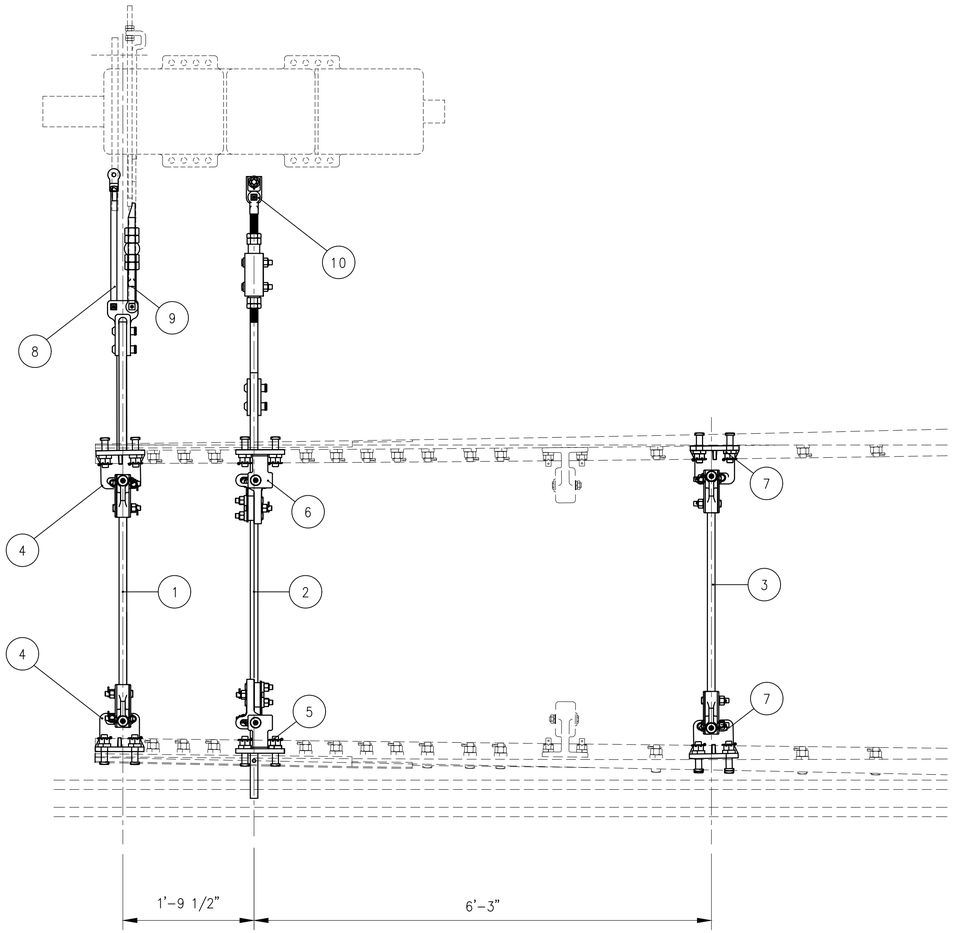
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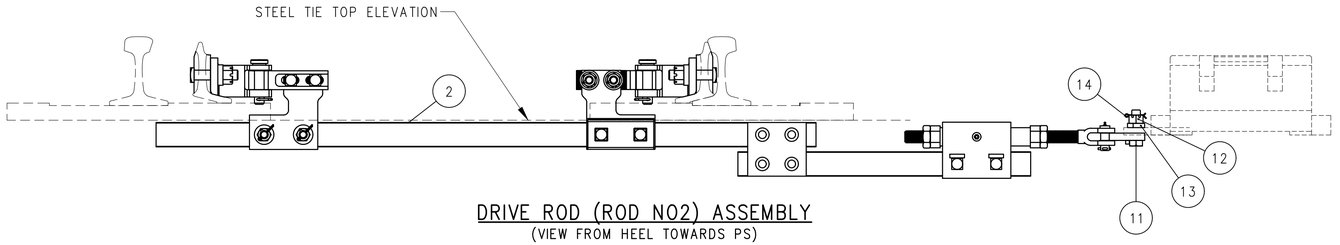
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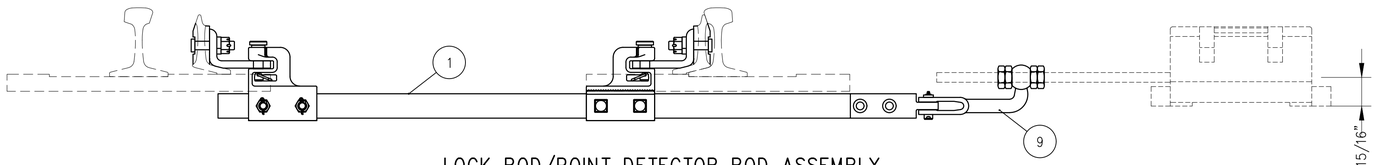
STANDARD DRAWING NO.: SD–2536

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	FRONT ROD FOR POINT DETECTOR/LOCK RODS NO 10–136–1	SD–2539
2	1	SWITCH ROD NO 10–136–2	SD–2539
3	1	SWITCH ROD NO 10–136–3	SD–2539
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	–

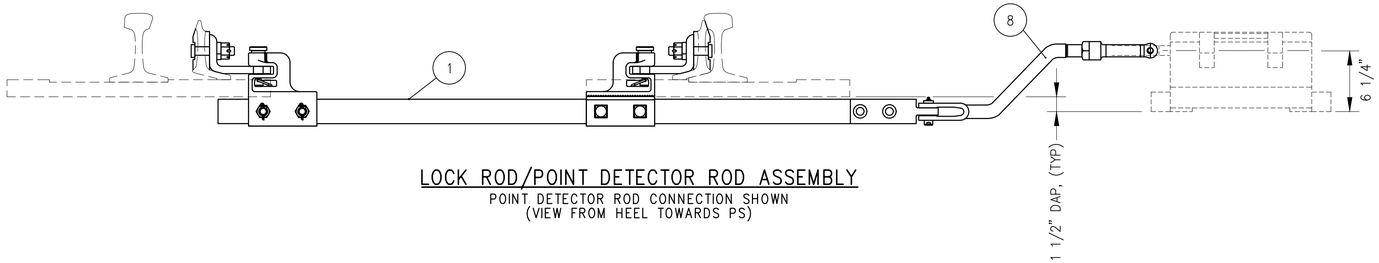




DRIVE ROD (ROD NO2) ASSEMBLY
(VIEW FROM HEEL TOWARDS PS)



LOCK ROD/POINT DETECTOR ROD ASSEMBLY
LOCK ROD CONNECTION SHOWN
(VIEW FROM HEEL TOWARDS PS)



LOCK ROD/POINT DETECTOR ROD ASSEMBLY
POINT DETECTOR ROD CONNECTION SHOWN
(VIEW FROM HEEL TOWARDS PS)

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
HOLLOW STEEL TIE ROD ASSEMBLY
SWITCH MACHINE ON LH SIDE

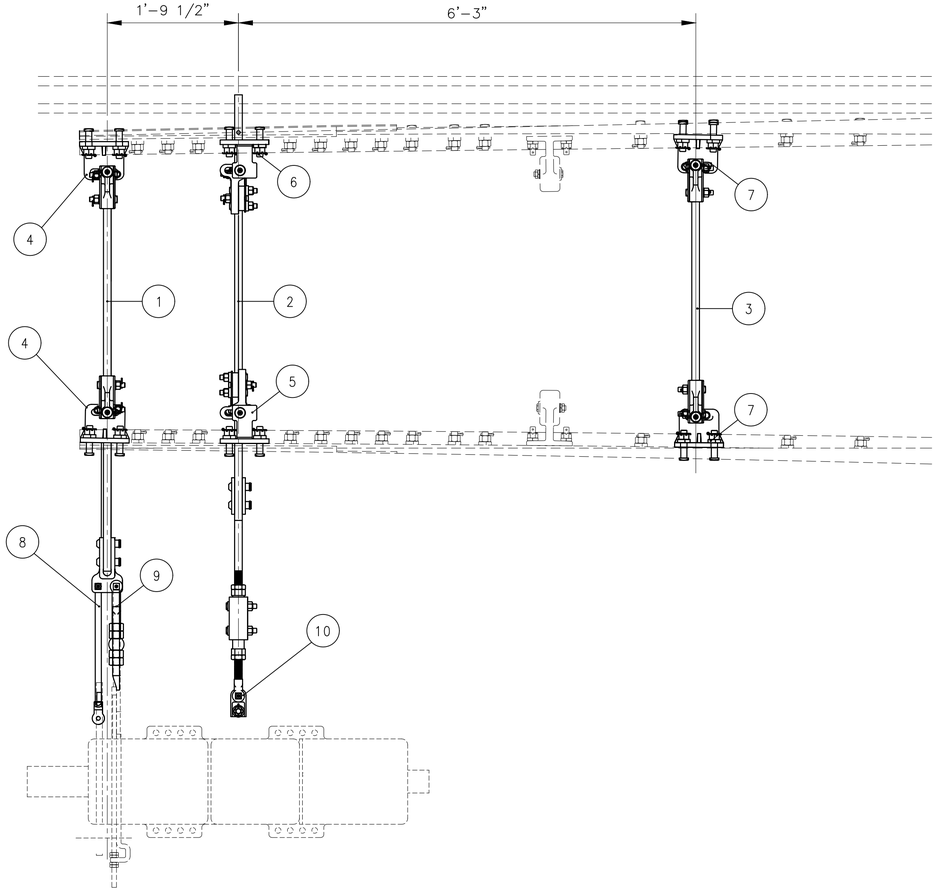
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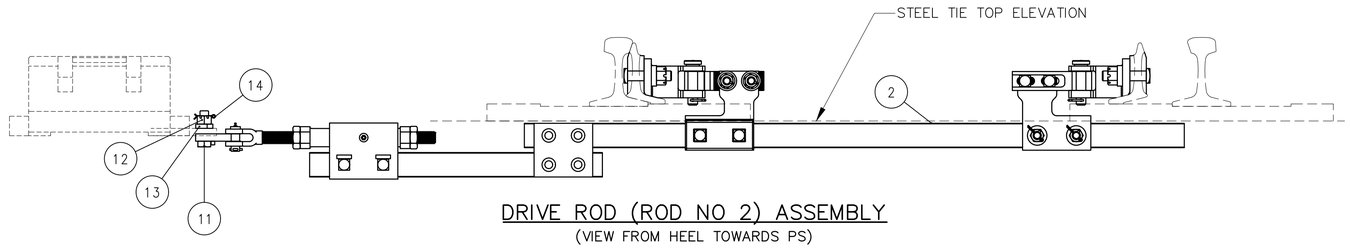
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SCALE: NTS

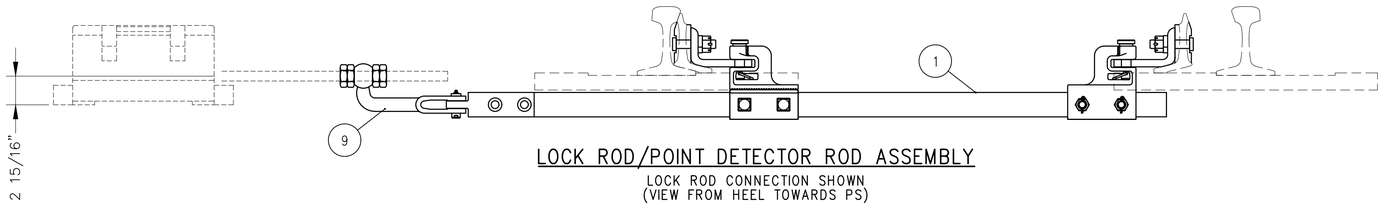
STANDARD DRAWING NO.: SD–2537

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	FRONT ROD FOR POINT DETECTOR/LOCK RODS NO 10–136–1	SD–2539
2	1	SWITCH ROD NO 10–136–2	SD–2539
3	1	SWITCH ROD NO 10–136–3	SD–2539
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	–

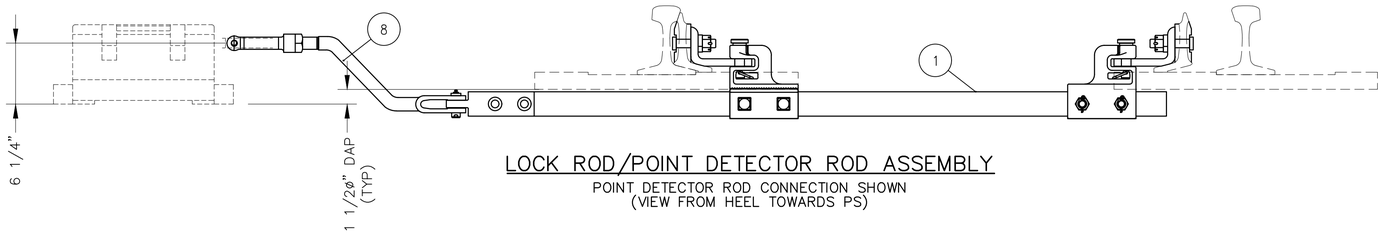




DRIVE ROD (ROD NO 2) ASSEMBLY
(VIEW FROM HEEL TOWARDS PS)



LOCK ROD/POINT DETECTOR ROD ASSEMBLY
LOCK ROD CONNECTION SHOWN
(VIEW FROM HEEL TOWARDS PS)



LOCK ROD/POINT DETECTOR ROD ASSEMBLY
POINT DETECTOR ROD CONNECTION SHOWN
(VIEW FROM HEEL TOWARDS PS)

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
HOLLOW STEEL TIE ROD ASSEMBLY
SWITCH MACHINE ON RH SIDE

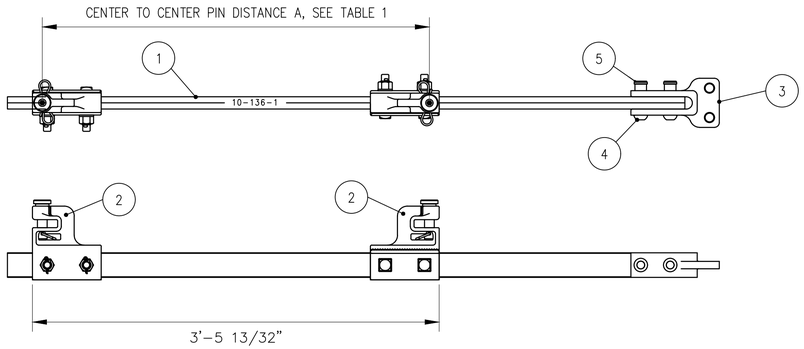
CADD FILE NAME: SD–2538

REV: | EDITION: FIFTH

SCALE: NTS

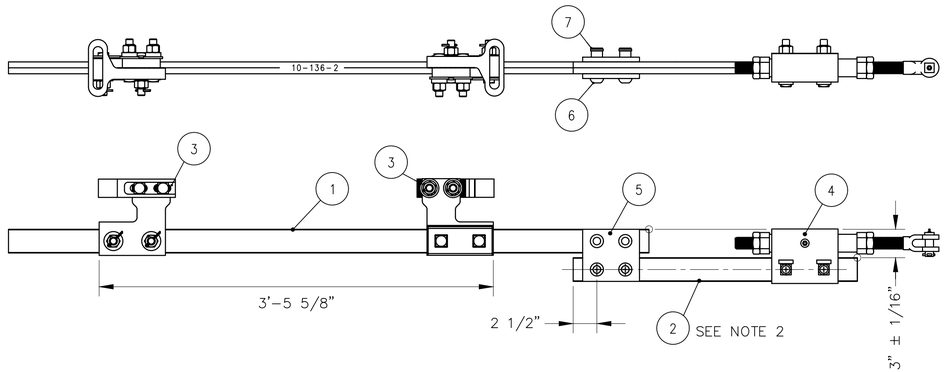
STANDARD DRAWING NO.: SD–2538

BILL OF MATERIAL FOR SWITCH ROD 10–136–1			
ITEM	QTY	DESCRIPTION	DWG 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)	–



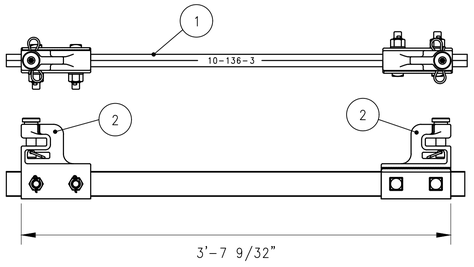
SWITCH ROD ASSEMBLY 10–136–1

BILL OF MATERIAL FOR SWITCH ROD 10–136–2			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH ROD HALF 10–136–2A	–
2	1	SWITCH ROD HALF 1–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
1	1	SWITCH ROD 10–136–3	–
2	2	SWITCH CLIP ASSEMBLY, ADJUSTABLE, FOR HOLLOW TIE	–



SWITCH ROD ASSEMBLY 10–136–3

TABLE 1

ROD #	A
SWITCH ROD ASSEMBLY 10–136–1	3'– 3 15/16"
SWITCH ROD ASSEMBLY 10–136–2	3'– 4 3/16"
SWITCH ROD ASSEMBLY 10–136–3	3'– 5 9/16"

NOTES:

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

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PENINSULA CORRIDOR JOINT POWERS BOARD

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DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

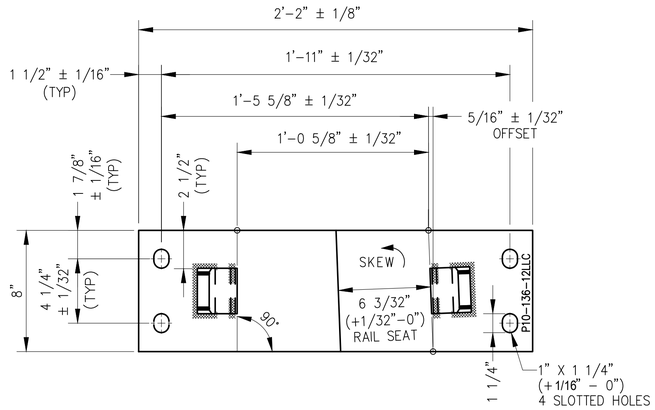
SPECIAL TRACKWORK
NO. 10 TURNOUT
HOLLOW STEEL TIES
SWITCH RODS 10–1, 10–2 AND 10–3

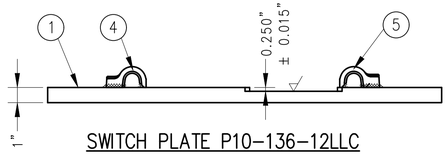
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REV: | EDITION: FIFTH

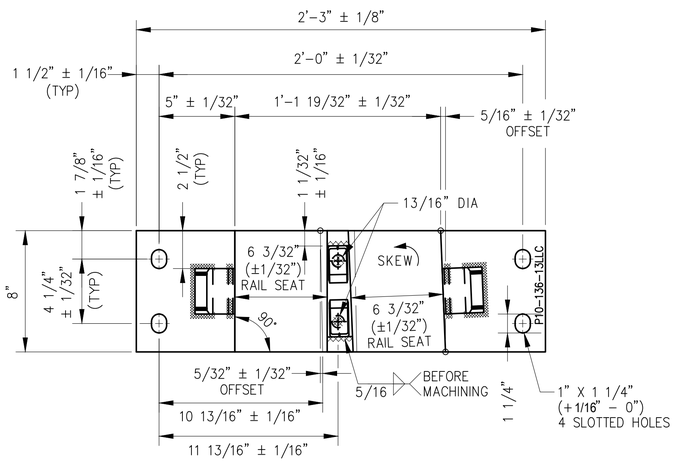
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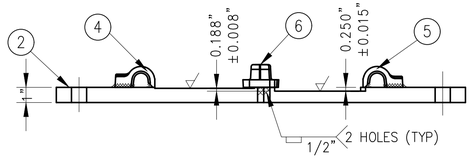
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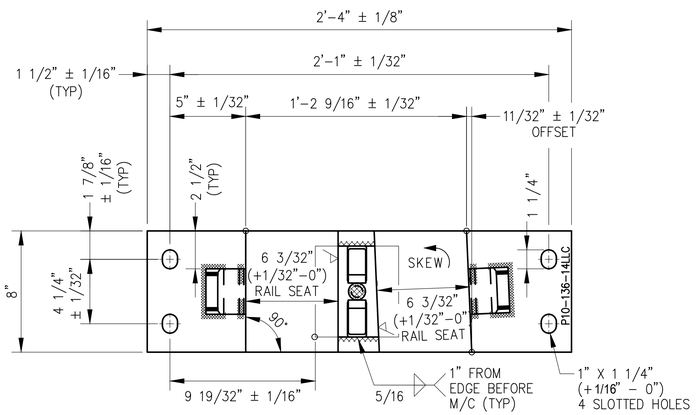


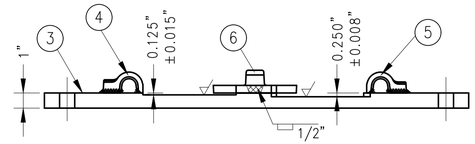
SWITCH PLATE P10-136-12LLC



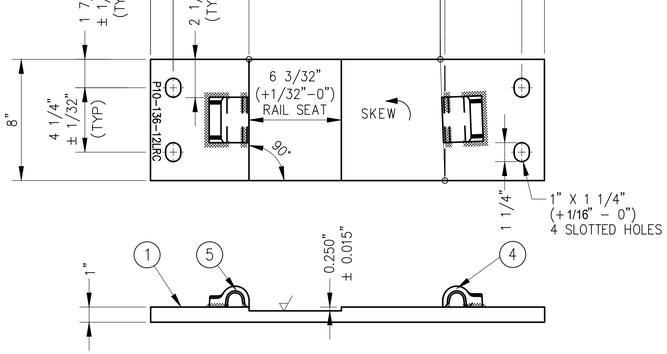


SWITCH PLATE P10-136-13LLC



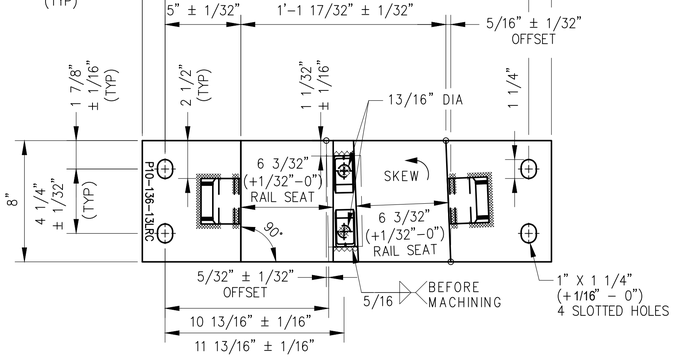


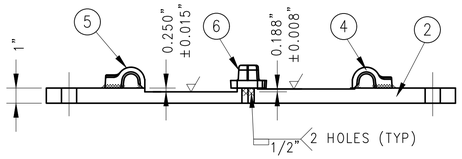
SWITCH PLATE P10-136-14LLC



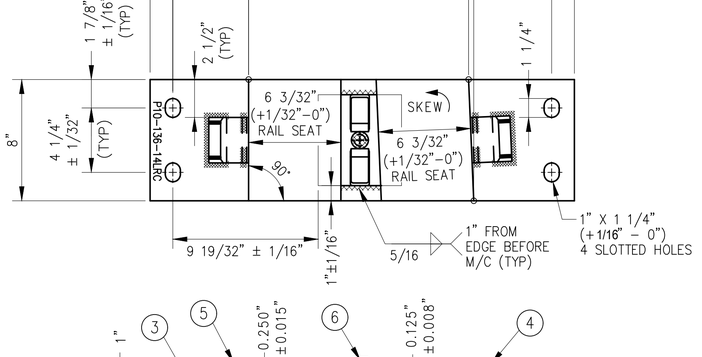
SWITCH PLATE P10-136-12LRC

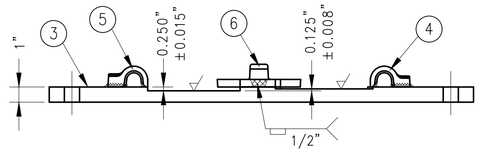
BILL OF MATERIALS	
ITEM	DESCRIPTION
1	FLAT BAR, ASTM A36, 1" x 8" x 2'-2" LONG
2	FLAT BAR, ASTM A36, 1" x 8" x 2'-3" LONG
3	FLAT BAR, ASTM A36, 1" x 8" x 2'-4" LONG
4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1
5	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 5
6	STOP WITH INTEGRAL T-BOLT HOLD DOWN





SWITCH PLATE P10-136-13LRC





SWITCH PLATE P10-136-14LRC

NOTES

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

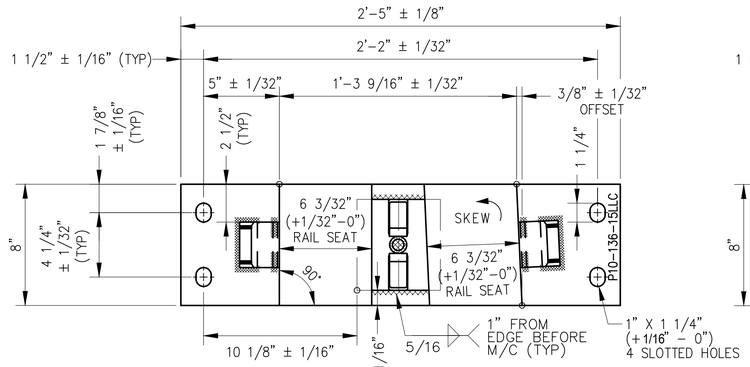
SPECIAL TRACKWORK
NO. 10 TURNOUT
SWITCH PLATES FOR
LH TURNOUT
10-12LLC/LRC THRU 10-14LLC/LRC

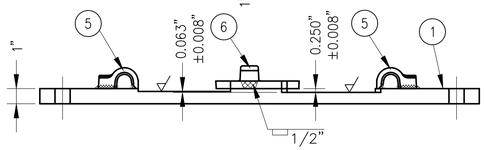
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REV: | EDITION: FIFTH

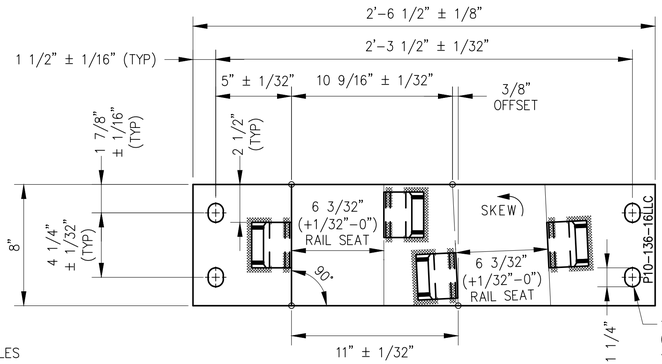
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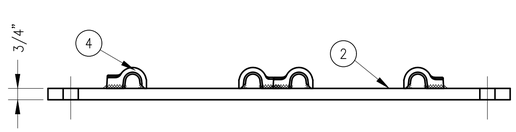
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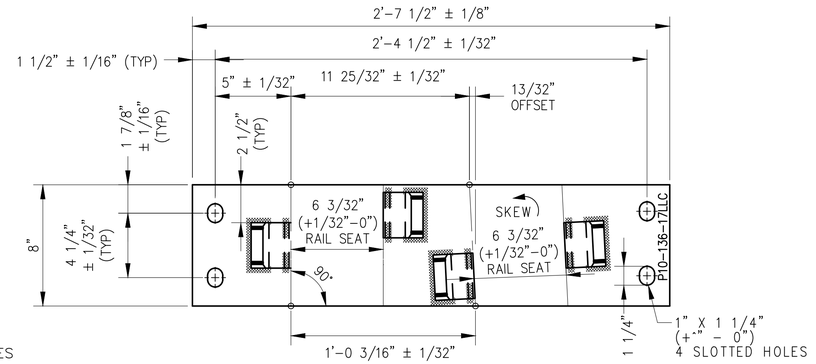


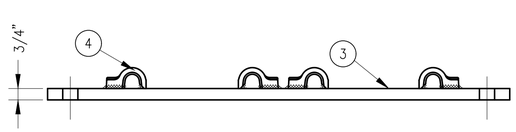
SWITCH PLATE P10-136-15LLC



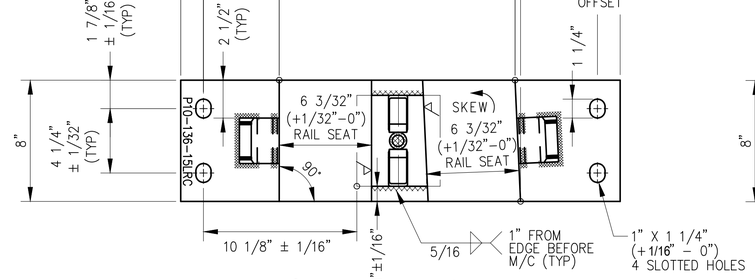


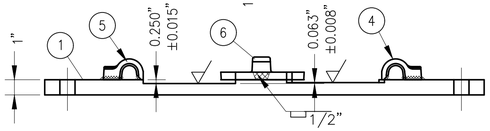
SWITCH PLATE P10-136-16LLC



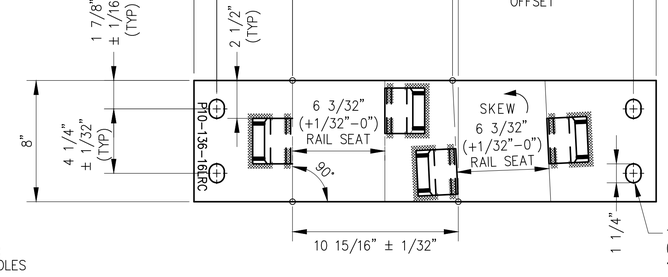


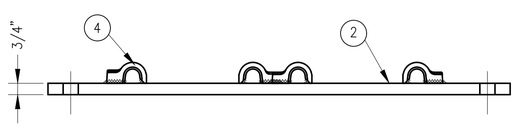
SWITCH PLATE P10-136-17LLC



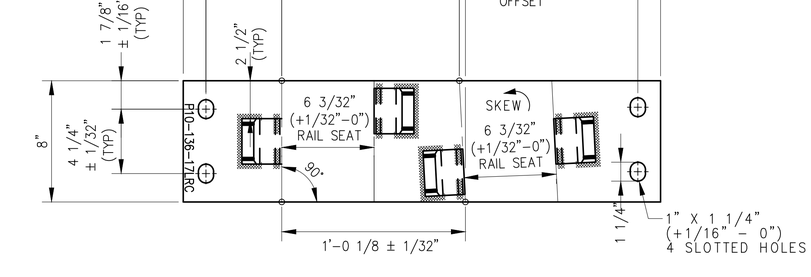


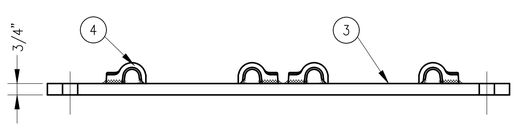
SWITCH PLATE P10-136-15LRC





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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

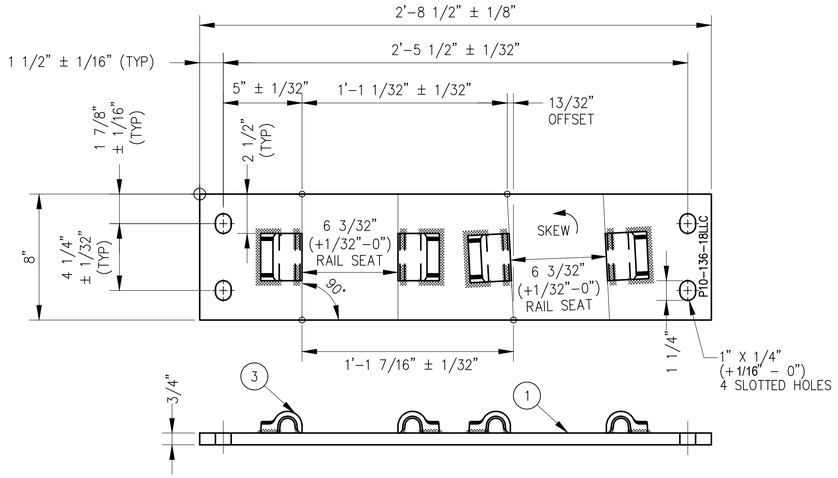
SPECIAL TRACKWORK
NO. 10 TURNOUT
SWITCH PLATES FOR
LH TURNOUT
10-15LLC/LRC THRU 10-17LLC/LRC

CADD FILE NAME: SD-2541

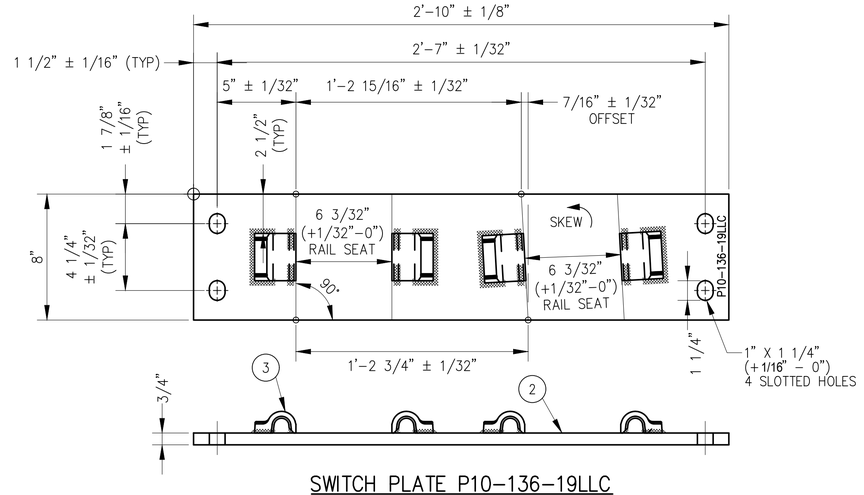
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SCALE: NTS

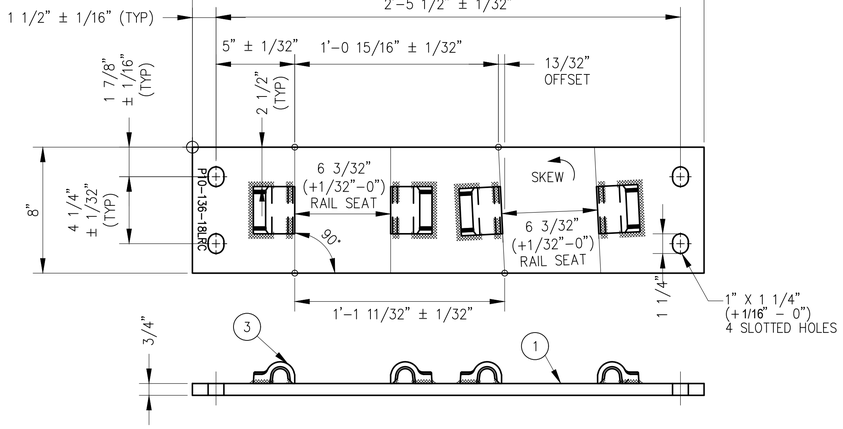
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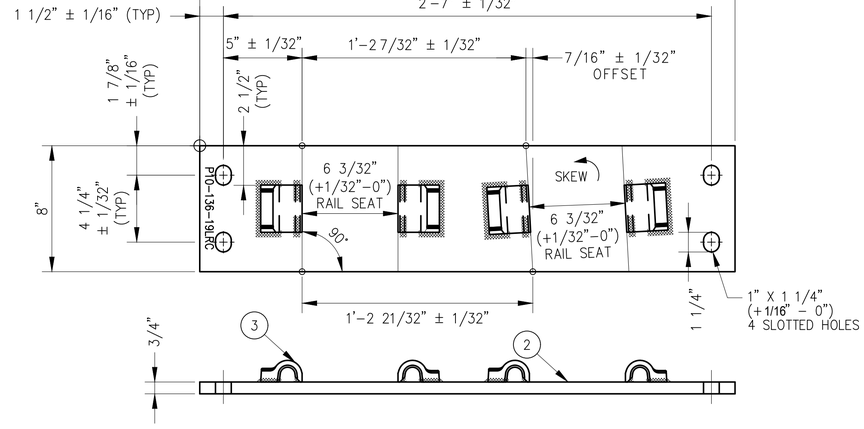
SWITCH PLATE P10-136-18LLC



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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

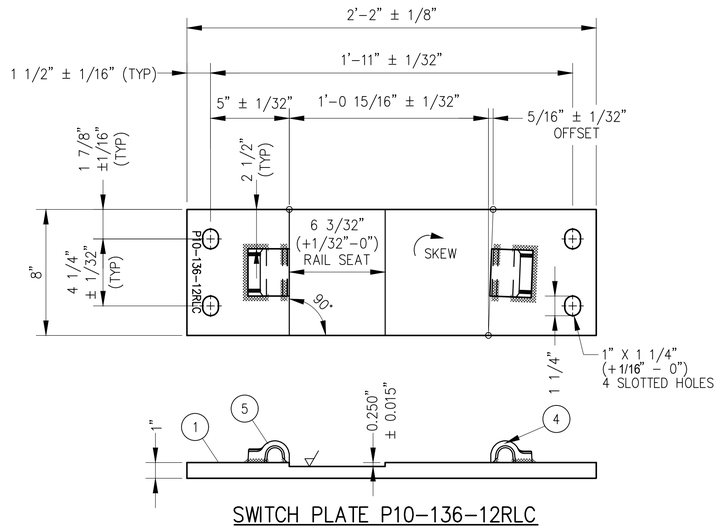
Bin Zhang

DIRECTOR, ENGINEERING

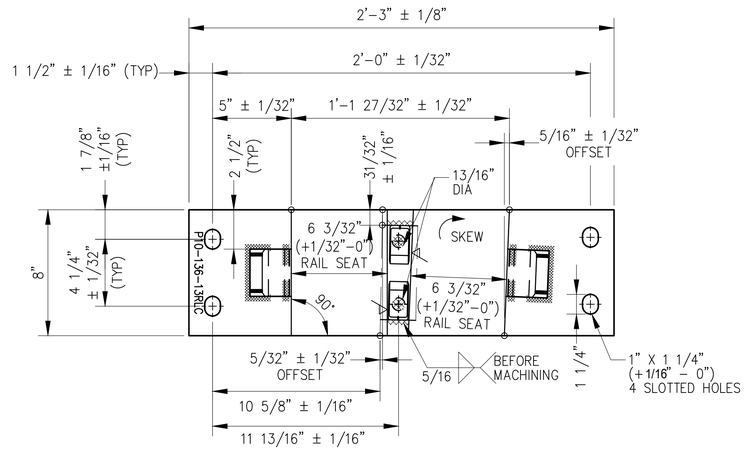
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
SWITCH PLATES FOR
LH TURNOUT
10-18LLC/LRC THRU 10-19LLC/LRC

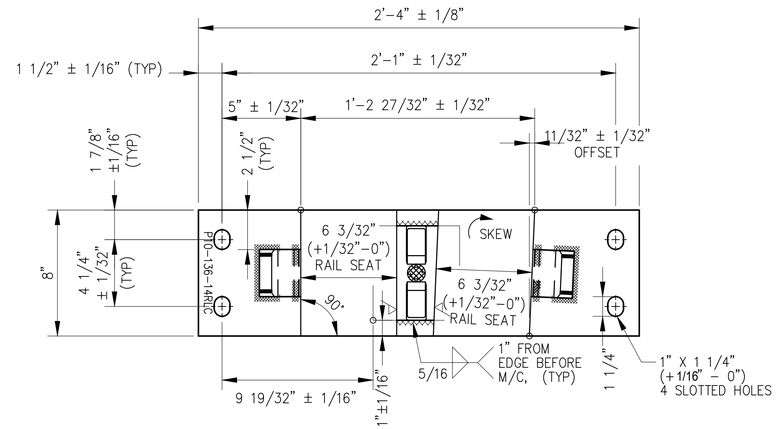
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SCALE:	NTS
STANDARD DRAWING NO.:	SD-2542



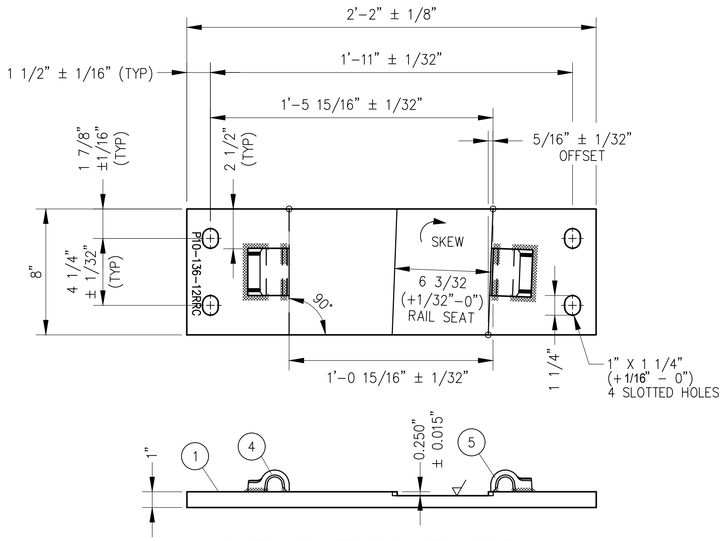
SWITCH PLATE P10-136-12RLC



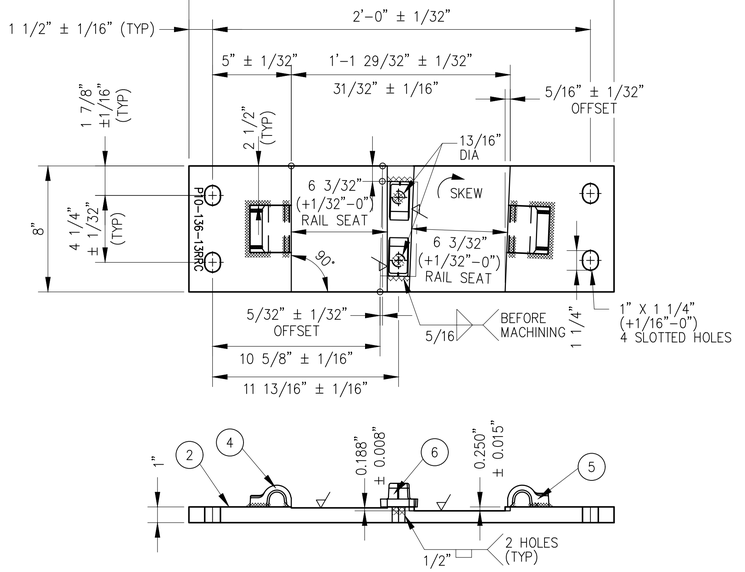
SWITCH PLATE P10-136-13RLC



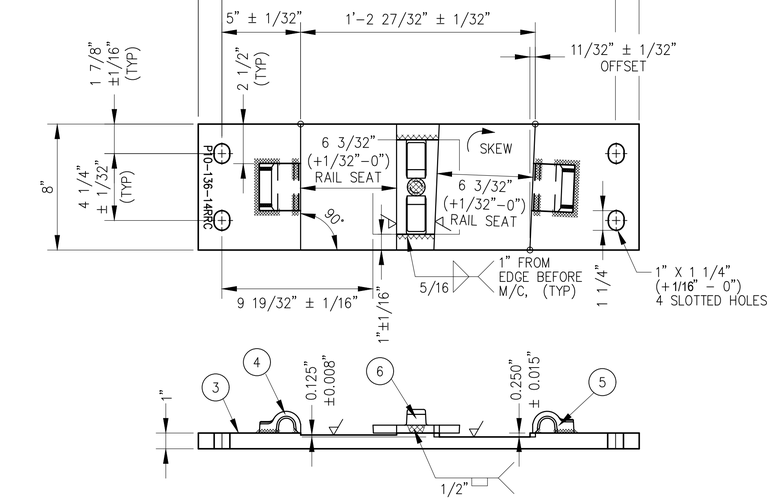
SWITCH PLATE P10-136-14RLC



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

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

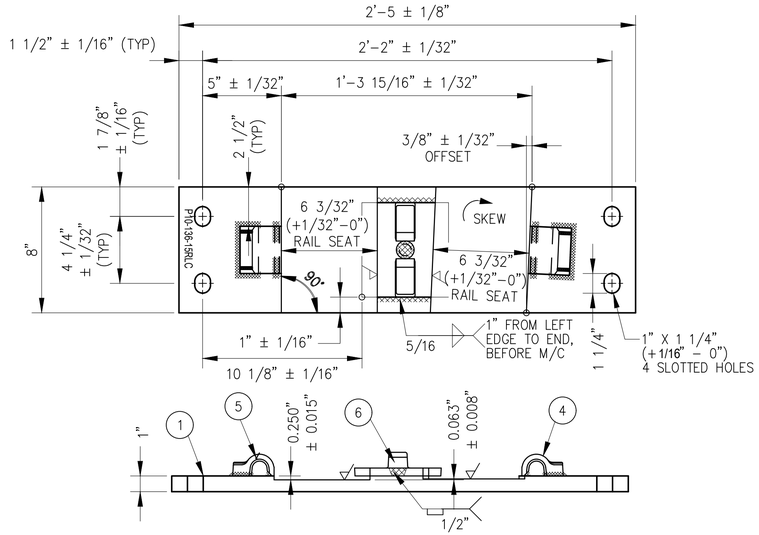
DIRECTOR, ENGINEERING

Caltrain

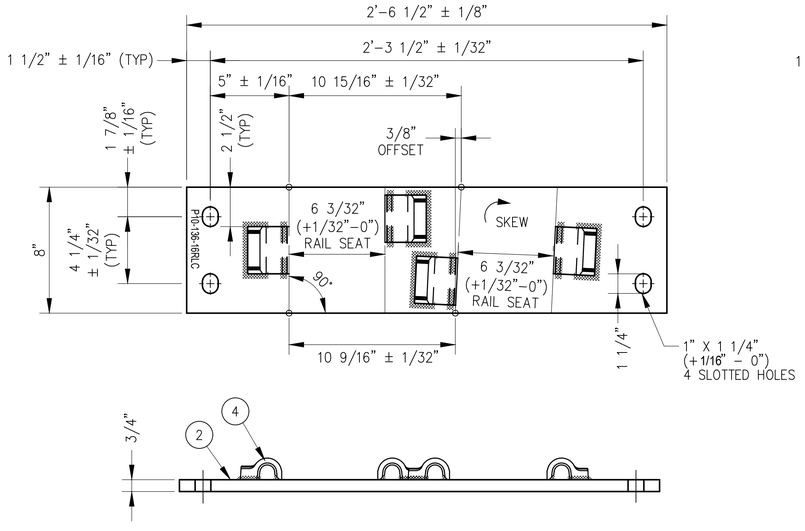
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
SWITCH PLATES FOR
RH TURNOUT
10-12RLC/RRC THRU 10-14RLC/RRC

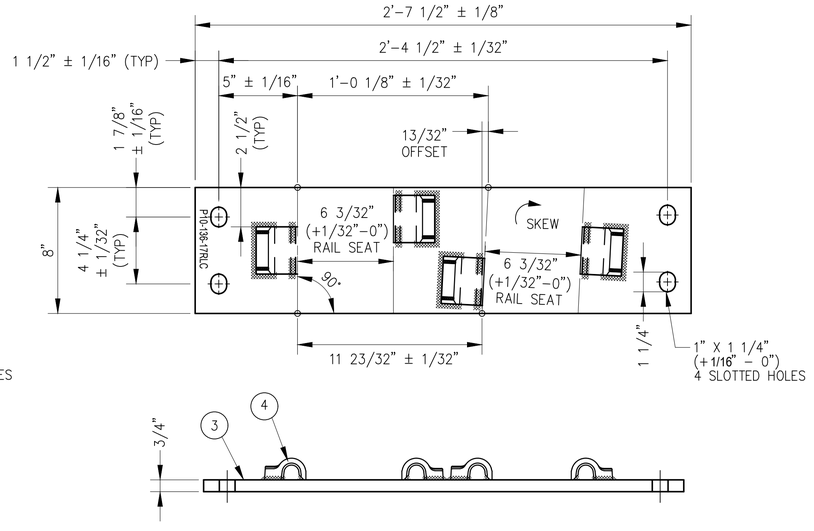
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REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD-2543



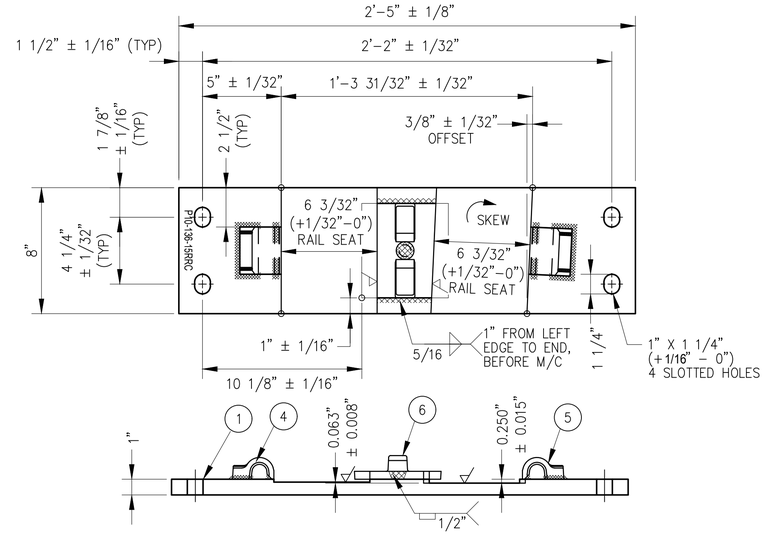
SWITCH PLATE P10-136-15RLC



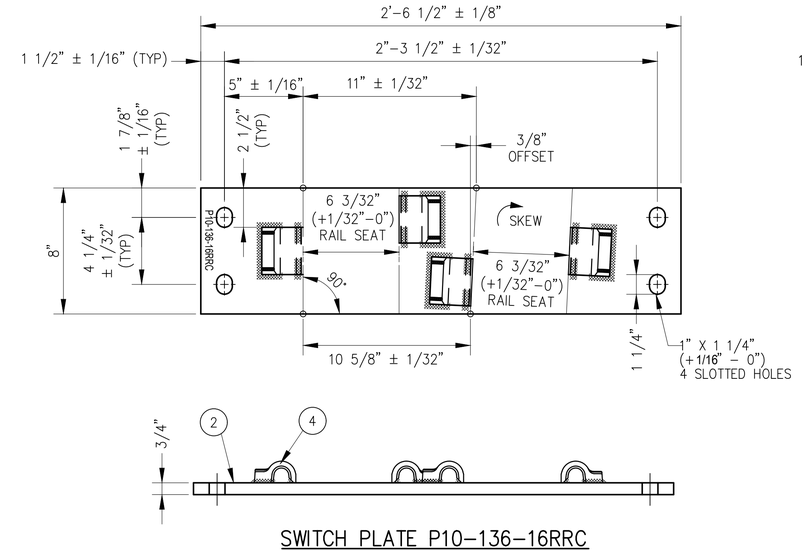
SWITCH PLATE P10-136-16RLC



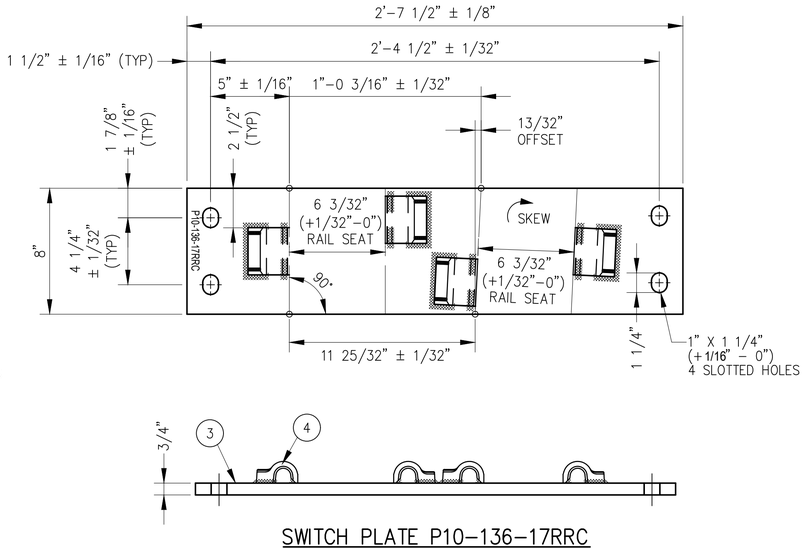
SWITCH PLATE P10-136-17RLC



SWITCH PLATE P10-136-15RRC



SWITCH PLATE P10-136-16RRC



SWITCH PLATE P10-136-17RRC

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

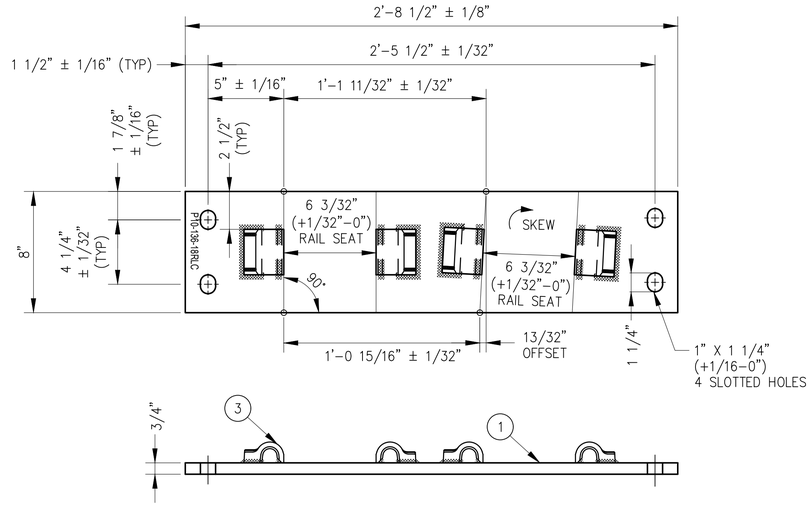
DIRECTOR, ENGINEERING

Caltrain

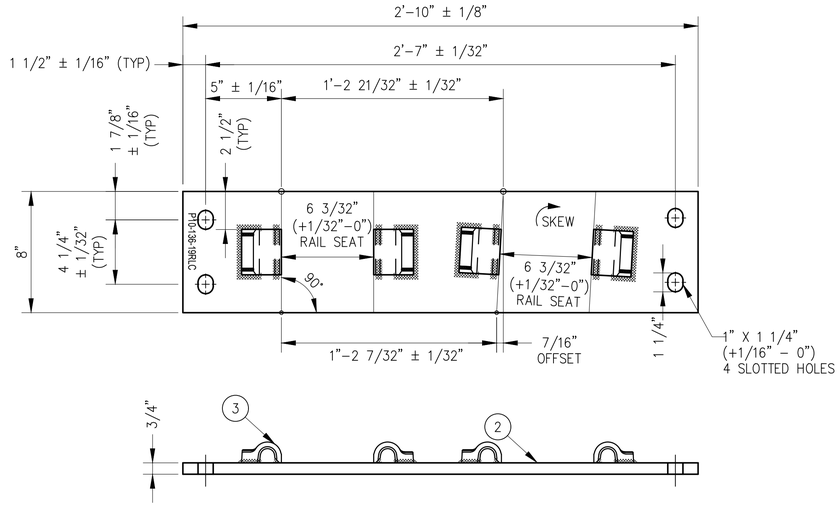
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
SWITCH PLATES FOR
RH TURNOUT
10-15RLC/RRC THRU 10-17RLC/RRC

CADD FILE NAME:	SD-2544
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD-2544



SWITCH PLATE P10-136-18RLC



SWITCH PLATE P10-136-19RLC

SWITCH PLATE P10-136-18RRC

SWITCH PLATE P10-136-19RRC

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT
SWITCH PLATES FOR
RH TURNOUT
10-18RLC/RRC THRU 10-19RLC/RRC

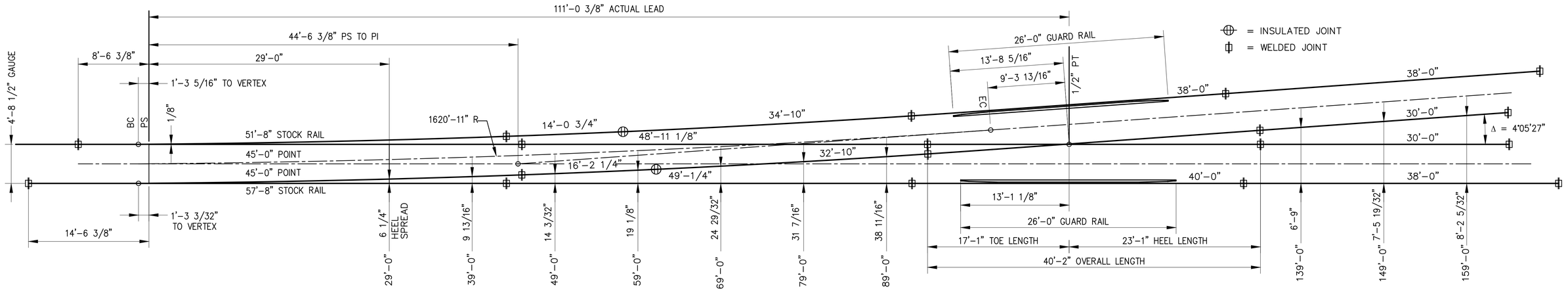
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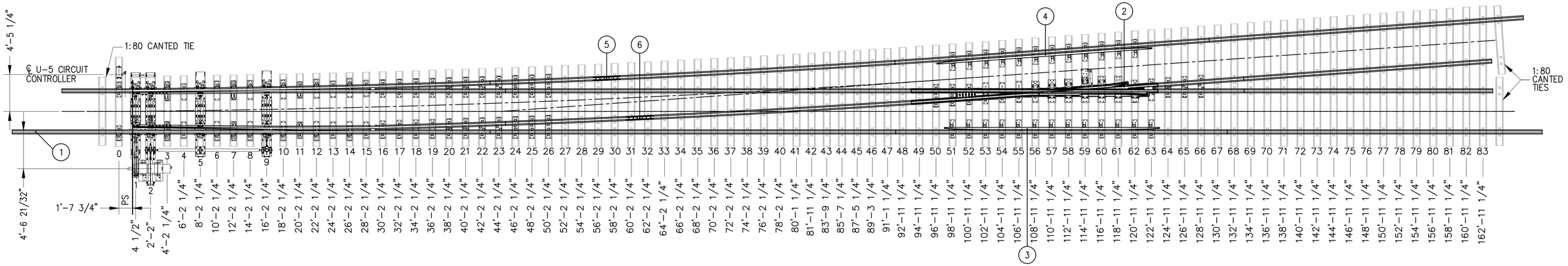
REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD-2545

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH PACK, NO 14–136 LB RE MODIFIED TANGENTIAL, LH, HST	SD–2605	11	352	TIE SCREW, CONCRETE 7/8" DIA X 6" HEX HEAD	–
2	1	FROG PACK, NO 14–136 LB RE WSM, LH	SD–2623	12	352	WASHER FLAT 7/8" TYPE A NARROW 15/16" X 1 3/4" X 0.134"	–
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'–0" LONG, 136 LB RE RAISED 1", STRAIGHT	SD–2301	13	352	SPRING WASHER, DOUBLE COIL (Fe6)	–
4	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'–0" LONG, 136 LB RE RAISED 1", LH	SD–2635	14	1	CONCRETE TIE SET, 0–83 + (3) 1:80 TIES, PLATE PADS, PIM INSERTS, LH	SD–2618
5	1	INSULATED RAIL ASSEMBLY, 48'–10 3/4" C/W BONDED INSULATED JOINT	–	15	342	CLIP PANDROL E2055	–
6	1	INSULATED RAIL ASSEMBLY, 49'–0 1/4" C/W BONDED INSULATED JOINT	–	16	342	INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD–10	–
7	2	DRILLED RAIL, 136 LB RE, 30'–0" LONG	–	17	8	CLIP PANDROL E2063	–
8	3	DRILLED RAIL, 136 LB RE, 38'–0" LONG	–	18	8	INSULATION, PANDROL NYLON 6790	–
9	1	DRILLED RAIL, 136 LB RE, 40'–0" LONG	–	19	175	TIE PAD PANDROL 6993SR	–
10	2	DRILLED RAIL, 136 LB RE, 48'–11 1/8" LONG	–	20	176	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 7/8" FLANGEWAY
4. COORDINATE SWITCH MACHINE AND MACHINE PLATE (NIC) WITH CALTRAIN
5. ALL TIE 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. SCHWIHAG ROLLERS SHALL BE INSTALLED AND ADJUSTED IN THE FIELD

TURNOUT DATA

FROG

ANGLE	4°05'27"	ACTUAL LEAD:	111'–3/8"
TOE LENGTH:	17'–1"	CLOSURE AREA	
HEEL LENGTH:	23'–1"	CENTERLINE RADIUS:	1620'–11"
TOTAL LENGTH:	40'–2"	DEGREE OF CURVE:	3°32'07"

SWITCH

LENGTH OF POINTS:	45'–0"
VERTEX DISTANCE:	1'–3 7/32"
ENTRY ANGLE:	0°29'50"
THICKNESS AT POINT:	1/8"
THROW AT ROD #1:	4 3/4"

DESIGN SPEEDS
35 MPH PASSENGER @ 3" UNBALANCE
25 MPH FREIGHT @ 2" UNBALANCE

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

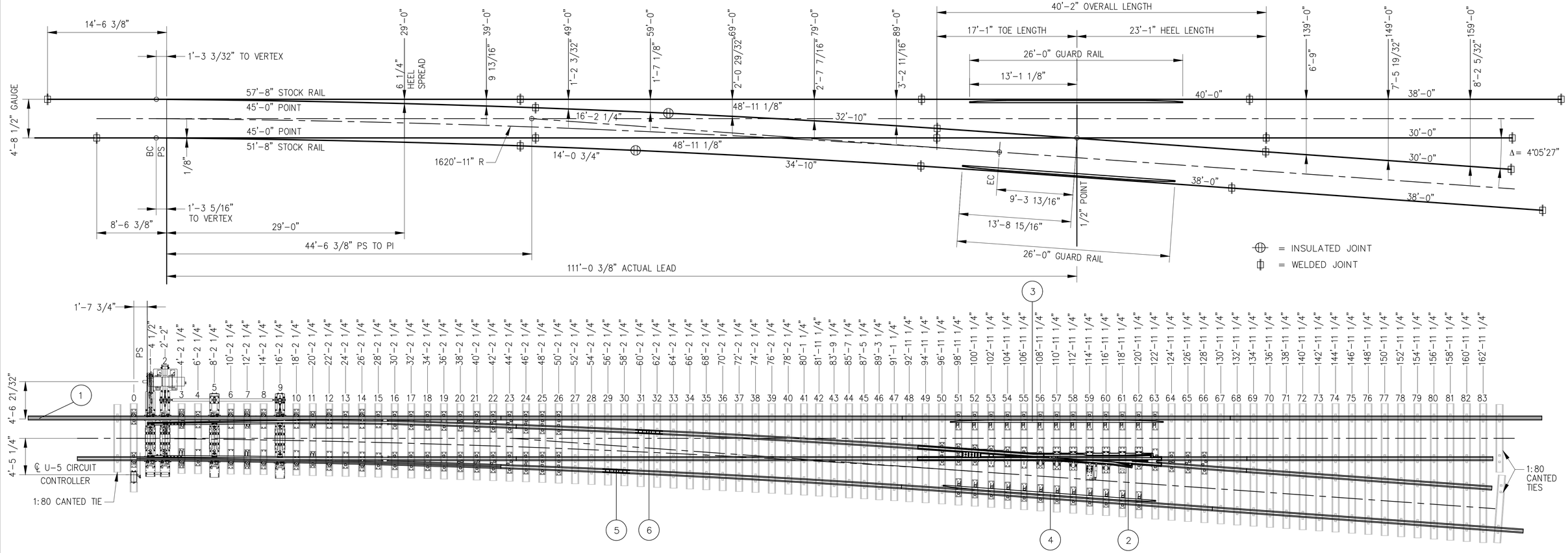
Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
NO. 14 LH TURNOUT WITH
WSM FROG AND HST SWITCH MACHINE
ON MAINLINE SIDE

CADD FILE NAME: SD–2601
REV: | EDITION: FIFTH
SCALE: NTS
STANDARD DRAWING NO.: SD–2601

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH PACK, NO 14–136 LB RE MODIFIED TANGENTIAL, RH, HST	SD–2606	11	352	TIE SCREW, CONCRETE 7/8" DIA x 6" HEX HEAD	–
2	1	FROG PACK, NO 14–136 LB RE WSM, RH	SD–2624	12	352	WASHER FLAT 7/8" TYPE A NARROW 15/16" x 1 3/4" x 0.134"	–
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'–0" LONG, 136 LB RE RAISED 1", STRAIGHT	SD–2301	13	352	SPRING WASHER, DOUBLE COIL (Fe6)	–
4	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'–0" LONG, 136 LB RE RAISED 1", RH	SD–2636	14	1	CONCRETE TIE SET, 0–83 + (3) 1:80 TIES, PLATE PADS, PIM INSERTS, RH	SD–2617
5	1	INSULATED RAIL ASSEMBLY, 48'–10 3/4" C/W BONDED INSULATED JOINT	–	15	342	CLIP PANDROL E2055	–
6	1	INSULATED RAIL ASSEMBLY, 49'– 0 1/4" C/W BONDED INSULATED JOINT	–	16	342	INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD–10	–
7	2	DRILLED RAIL, 136 LB RE, 30'–0" LONG	–	17	8	CLIP PANDROL E2063	–
8	3	DRILLED RAIL, 136 LB RE, 38'–0" LONG	–	18	8	INSULATION, PANDROL NYLON 6790	–
9	1	DRILLED RAIL, 136 LB RE, 40'–0" LONG	–	19	175	TIE PAD PANDROL 6993SR	–
10	2	DRILLED RAIL, 136 LB RE, 48'–11 1/8" LONG	–	20	176	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 7/8" FLANGEWAY
4. COORDINATE SWITCH MACHINE AND MACHINE PLATE (NIC) WITH CALTRAIN
5. ALL TIE 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. SCHWIHAG ROLLERS SHALL BE INSTALLED AND ADJUSTED IN THE FIELD

TURNOUT DATA

FROG

ANGLE	4°05'27"
TOE LENGTH:	17'–1"
HEEL LENGTH:	23'–1"
TOTAL LENGTH:	40'–2"

SWITCH

LENGTH OF POINTS:	45'–0"
VERTEX DISTANCE:	1'–3 7/32"
ENTRY ANGLE:	0°29'50"
THICKNESS AT POINT:	1/8"
THROW AT ROD #1:	4 3/4"

ACTUAL LEAD:	111'–3/8"
CLOSURE AREA	
CENTERLINE RADIUS:	1620'–11"
DEGREE OF CURVE:	3°32'07"

DESIGN SPEEDS
35 MPH PASSENGER @ 3" UNBALANCE
25 MPH FREIGHT @ 2" UNBALANCE

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

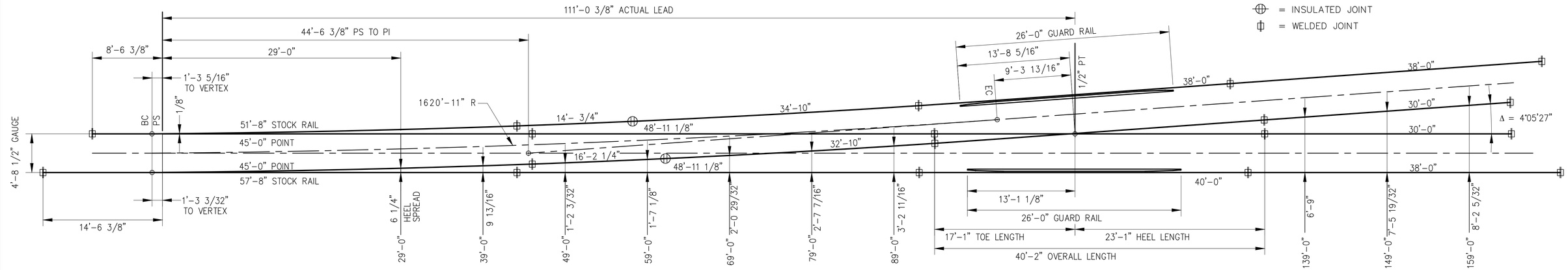
ENGINEERING STANDARD DRAWINGS

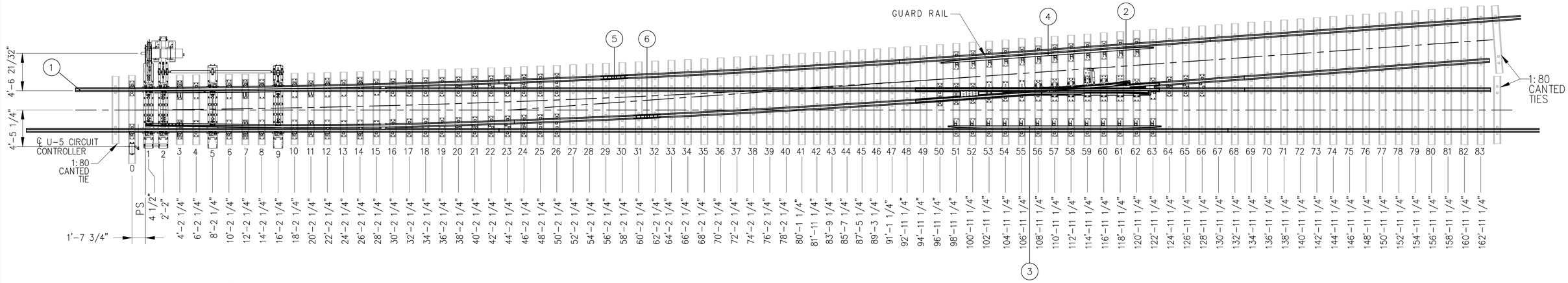
SPECIAL TRACKWORK
NO. 14 TURNOUT
NO. 14 RH TURNOUT WITH
WSM FROG AND HST SWITCH MACHINE
ON MAINLINE SIDE

CADD FILE NAME:	SD–2602
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2602

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH PACK, NO 14–136 LB RE MODIFIED TANGENTIAL, LH, HST	SD–2607
2	1	FROG PACK, NO 14–136 LB RE WSM, LH	SD–2623
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'–0" LONG, 136 LB RE RAISED 1", STRAIGHT	SD–2301
4	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'–0" LONG, 136 LB RE RAISED 1", LH	SD–2635
5	1	INSULATED RAIL ASSEMBLY, 48'–10 3/4" C/W BONDED INSULATED JOINT	–
6	1	INSULATED RAIL ASSEMBLY, 49'–0 1/4" C/W BONDED INSULATED JOINT	–
7	2	DRILLED RAIL, 136 LB RE, 30'–0" LONG	–
8	3	DRILLED RAIL, 136 LB RE, 38'–0" LONG	–
9	1	DRILLED RAIL, 136 LB RE, 40'–0" LONG	–
10	2	DRILLED RAIL, 136 LB RE, 48'–11 1/8" LONG	–

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
11	352	TIE SCREW, CONCRETE 7/8" DIA X 6" HEX HEAD	–
12	352	WASHER FLAT 7/8" TYPE A NARROW 15/16" X 1 3/4" X 0.134"	–
13	352	SPRING WASHER, DOUBLE COIL (Fe6)	–
14	1	CONCRETE TIE SET, 0–83 + (3) 1:80 TIES, PLATE PADS, PIM INSERTS, LH	SD–2618
15	342	CLIP PANDROL E2055	–
16	342	INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD–10	–
17	8	CLIP PANDROL E2063	–
18	8	INSULATION, PANDROL NYLON 6790	–
19	175	TIE PAD PANDROL 6993SR	–
20	176	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 7/8" FLANGEWAY
4. COORDINATE SWITCH MACHINE AND MACHINE PLATE (NIC) WITH CALTRAIN
5. ALL TIE 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. SCHWIHAG ROLLERS SHALL BE INSTALLED AND ADJUSTED IN THE FIELD

TURNOUT DATA

FROG

ANGLE	4°05'27"
TOE LENGTH:	17'–1"
HEEL LENGTH:	23'–1"
TOTAL LENGTH:	40'–2"

SWITCH

LENGTH OF POINTS:	45'–0"
VERTEX DISTANCE:	1'–3 7/32"
ENTRY ANGLE:	0°29'50"
THICKNESS AT POINT:	1/8"
THROW AT ROD #1:	4 3/4"

ACTUAL LEAD:	111'–3/8"
CLOSURE AREA	
CENTERLINE RADIUS:	1620'–11"
DEGREE OF CURVE:	3°32'07"

DESIGN SPEEDS

35 MPH PASSENGER @ 3" UNBALANCE
25 MPH FREIGHT @ 2" UNBALANCE

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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
NO. 14 LH TURNOUT WITH
WSM FROG AND HST SWITCH MACHINE
ON TURNOUT SIDE

CADD FILE NAME: SD–2603

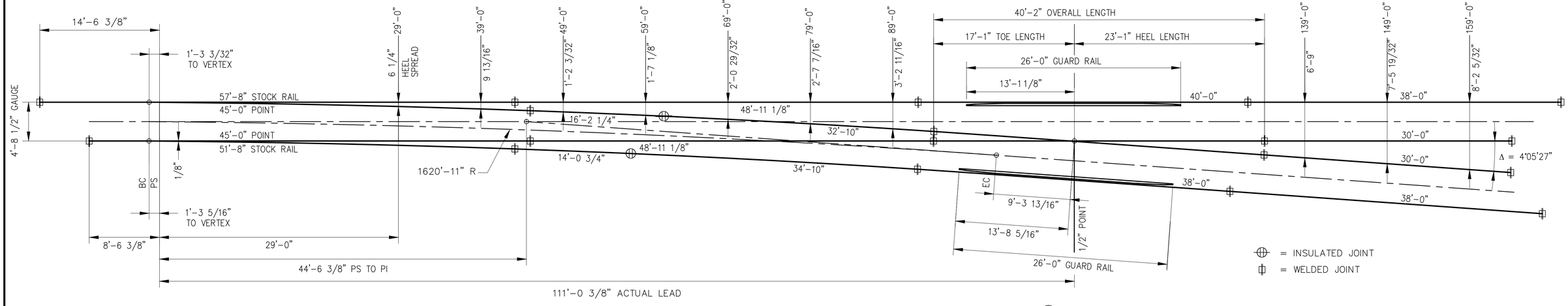
REV: | EDITION: FIFTH

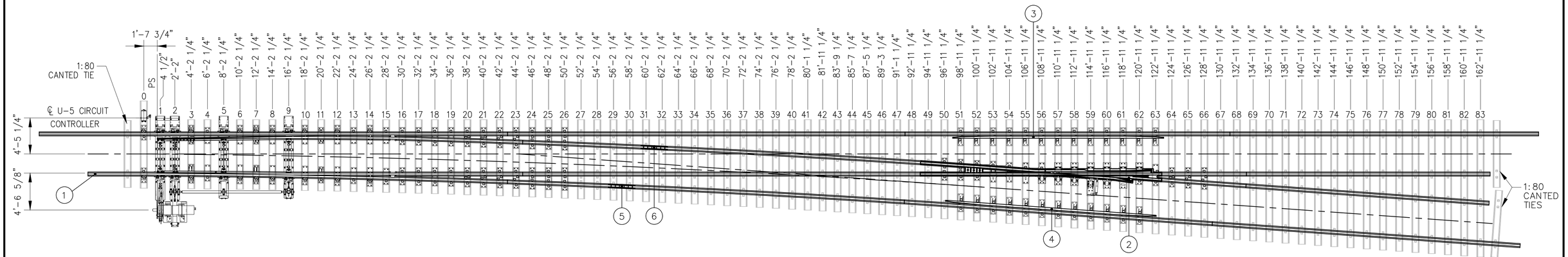
SCALE: NTS

STANDARD DRAWING NO.: SD–2603

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH PACK, NO 14–136 LB RE MODIFIED TANGENTIAL, RH, HST	SD–2608
2	1	FROG PACK, NO 14–136 LB RE WSM, RH	SD–2624
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'–0" LONG, 136 LB RE RAISED 1", STRAIGHT	SD–2301
4	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'–0" LONG, 136 LB RE RAISED 1", RH	SD–2636
5	1	INSULATED RAIL ASSEMBLY, 48'–10 3/4" C/W BONDED INSULATED JOINT	–
6	1	INSULATED RAIL ASSEMBLY, 49'–1/4" C/W BONDED INSULATED JOINT	–
7	2	DRILLED RAIL, 136 LB RE, 30'–0" LONG	–
8	3	DRILLED RAIL, 136 LB RE, 38'–0" LONG	–
9	1	DRILLED RAIL, 136 LB RE, 40'–0" LONG	–
10	2	DRILLED RAIL, 136 LB RE, 48'–11 1/8" LONG	–

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
11	352	TIE SCREW, CONCRETE 7/8" DIA x 6" HEX HEAD	–
12	352	WASHER FLAT 7/8" TYPE A NARROW 15/16" x 1 3/4" x 0.134"	–
13	352	SPRING WASHER, DOUBLE COIL (Fe6)	–
14	1	CONCRETE TIE SET, 0–83 + (3) 1:80 TIES, PLATE PADS, PIM INSERTS, RH	SD–2617
15	342	CLIP PANDROL E2055	–
16	342	INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD–10	–
17	8	CLIP PANDROL E2063	–
18	8	INSULATION, PANDROL NYLON 6790	–
19	175	TIE PAD PANDROL 6993SR	–
20	176	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 7/8" FLANGEWAY
4. COORDINATE SWITCH MACHINE AND MACHINE PLATE (NIC) WITH CALTRAIN
5. ALL TIE 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. SCHWIHAG ROLLERS TO BE INSTALLED AND ADJUSTED IN THE FIELD

TURNOUT DATA

FROG

ANGLE	4°05'27"
TOE LENGTH:	17'–1"
HEEL LENGTH:	23'–1"
TOTAL LENGTH:	40'–2"

SWITCH

LENGTH OF POINTS:	45'–0"
VERTEX DISTANCE:	1'–3 7/32"
ENTRY ANGLE:	0°29'50"
THICKNESS AT POINT:	1/8"
THROW AT ROD #1:	4 3/4"

ACTUAL LEAD:	111'–3/8"
CLOSURE AREA	
CENTERLINE RADIUS:	1620'–11"
DEGREE OF CURVE:	3°32'07"

DESIGN SPEEDS

35 MPH PASSENGER @ 3" UNBALANCE
25 MPH FREIGHT @ 2" UNBALANCE

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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DIRECTOR, ENGINEERING

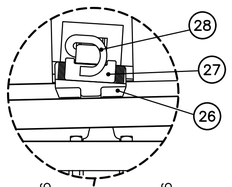
ENGINEERING STANDARD DRAWINGS

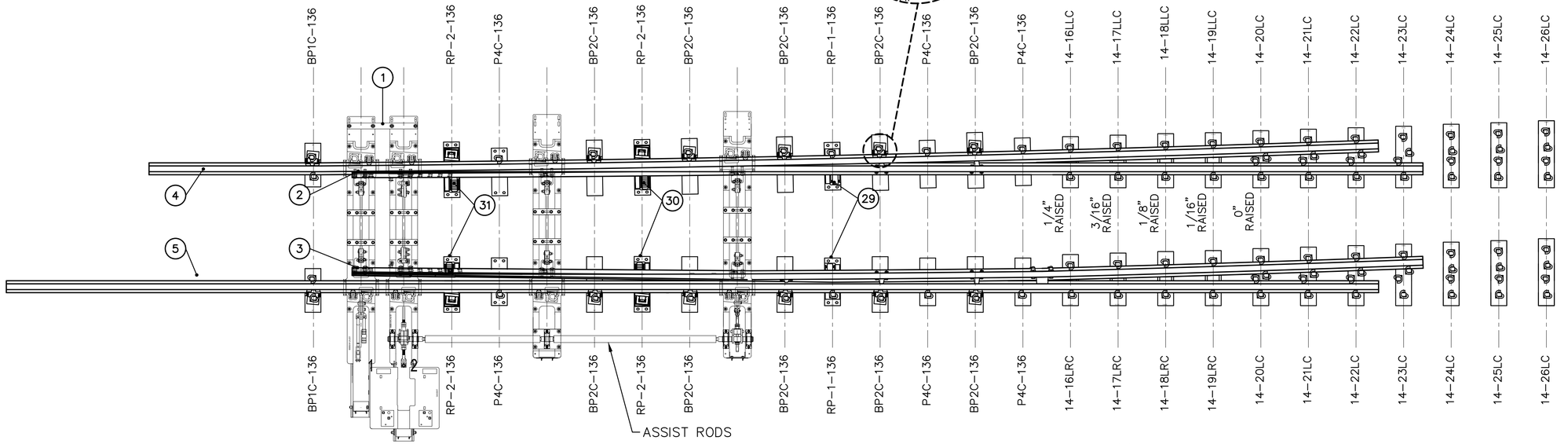
SPECIAL TRACKWORK
NO. 14 TURNOUT
NO. 14 RH TURNOUT WITH WSM FROG AND HST SWITCH MACHINE ON TURNOUT SIDE

CADD FILE NAME:	SD–2604
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2604

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	HOLLOW SWITCH TIE & RODDING ASSEMBLY	SD–2620	16	1	PLATE, SWITCH (14–18LRC)	SD–2640
2	1	SAMSON POINT, 45'–0" LONG, UR MANG TIP, STRAIGHT, LH	SD–2609	17	1	PLATE, SWITCH (14–19LLC)	SD–2641
3	1	SAMSON POINT, 45'–0" LONG, UR MANG TIP, CURVED, RH	SD–2610	18	1	PLATE, SWITCH (14–19LRC)	SD–2641
4	1	SAMSON STOCK RAIL, 51'–8" LONG, CURVED, LH	SD–2613	19	2	PLATE, SWITCH (14–20LC)	SD–2641
5	1	SAMSON STOCK RAIL, 57'–8" LONG, STRAIGHT, RH	SD–2614	20	2	PLATE, SWITCH (14–21LC)	SD–2641
6	2	PLATE, SWITCH (BP1C–136)	SD–2302	21	2	PLATE, SWITCH (14–22LC)	SD–2641
7	10	PLATE, SWITCH (BP2C–136)	SD–2302	22	2	PLATE, SWITCH (14–23LC)	SD–2641
8	6	PLATE, SWITCH (P4C–136)	SD–2302	23	2	PLATE, SWITCH (14–24LC)	SD–2642
9	2	PLATE, SWITCH ROLLER SCHWIHAG RP–1–136	SD–2311	24	2	PLATE, SWITCH (14–25LC)	SD–2642
10	4	PLATE, SWITCH ROLLER SCHWIHAG RP–2–136	SD–2312	25	2	PLATE, SWITCH (14–26LC)	SD–2642
11	1	PLATE, SWITCH (14–16LLC)	SD–2640	26	16	BRACE, BOLTLESS, 136 LB RE 'SUREFIT'	–
12	1	PLATE, SWITCH (14–16LRC)	SD–2640	27	16	WASHER, SERRATED FOR BOLTLESS BRACE	–
13	1	PLATE, SWITCH (14–17LLC)	SD–2640	28	98	CLIP, PANDROL, E2055	–
14	1	PLATE, SWITCH (14–17LRC)	SD–2640	29	2	ROLLER SCHWIHAG, SINGLE	–
15	1	PLATE, SWITCH (14–18LLC)	SD–2640	30	2	ROLLER SCHWIHAG, DOUBLE	–
				31	2	ROLLER SCHWIHAG, TRIPLE	–

TYPICAL BOLTLESS BRACE ASSEMBLY





NOTES:

1. SEE DRAWING SD–2618 FOR TIE LOCATION DIMENSIONS
2. SWITCH RODS SHALL BE PREADJUSTED TO DIMENSIONS SHOWN IN DETAIL FOR EACH ROD LOCATION. MODIFY SPREADS AS NECESSARY WHEN INSTALLING INTO LAYOUT

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
LH SWITCH PACK WITH
HOLLOW STEEL TIES
SWITCH MACHINE ON MAINLINE SIDE

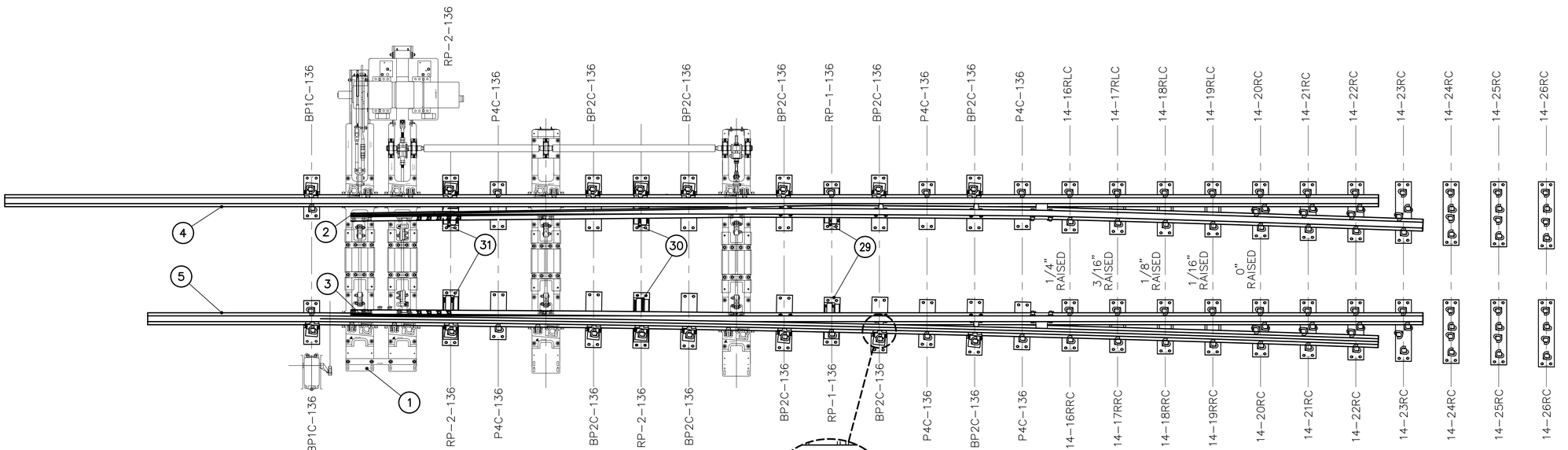
CADD FILE NAME: SD–2605

REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD–2605

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	HOLLOW SWITCH TIE & RODDING ASSEMBLY	SD-2619	16	1	PLATE, SWITCH (14-18RRC)	SD-2643
2	1	SAMSON POINT, 45'-0" LONG, UR MANG TIP, CURVED, LH	SD-2611	17	1	PLATE, SWITCH (14-19RLC)	SD-2644
3	1	SAMSON POINT, 45'-0" LONG, UR MANG TIP, STRAIGHT, RH	SD-2612	18	1	PLATE, SWITCH (14-19RRC)	SD-2644
4	1	SAMSON STOCK RAIL, 57'-8" LONG, STRAIGHT, LH	SD-2615	19	2	PLATE, SWITCH (14-20RC)	SD-2644
5	1	SAMSON STOCK RAIL, 51'-0" LONG, CURVED, RH	SD-2616	20	2	PLATE, SWITCH (14-21RC)	SD-2644
6	2	PLATE, SWITCH (BP1C-136)	SD-2302	21	2	PLATE, SWITCH (14-22RC)	SD-2644
7	10	PLATE, SWITCH (BP2C-136)	SD-2302	22	2	PLATE, SWITCH (14-23RC)	SD-2644
8	6	PLATE, SWITCH (P4C-136)	SD-2302	23	2	PLATE, SWITCH (14-24RC)	SD-2645
9	2	PLATE, SWITCH ROLLER SCHWIHAG RP-1-136	SD-2311	24	2	PLATE, SWITCH (14-25RC)	SD-2645
10	4	PLATE, SWITCH ROLLER SCHWIHAG RP-2-136	SD-2312	25	2	PLATE, SWITCH (14-26RC)	SD-2645
11	1	PLATE, SWITCH (14-16RLC)	SD-2643	26	16	BRACE, BOLTLESS, 136 LB RE 'SUREFIT'	–
12	1	PLATE, SWITCH (14-16RRC)	SD-2643	27	16	WASHER, SERRATED FOR BOLTLESS BRACE	–
13	1	PLATE, SWITCH (14-17RLC)	SD-2643	28	98	CLIP, PANDROL, E2055	–
14	1	PLATE, SWITCH (14-17RRC)	SD-2643	29	2	ROLLER SCHWIHAG, SINGLE	–
15	1	PLATE, SWITCH (14-18RLC)	SD-2643	30	2	ROLLER SCHWIHAG, DOUBLE	–
				31	2	ROLLER SCHWIHAG, TRIPLE	–



TYPICAL BOLTLESS BRACE ASSEMBLY

NOTES:

1. SEE DRAWING SD-2617 FOR TIE LOCATION DIMENSIONS
2. SWITCH RODS SHALL BE PREADJUSTED TO DIMENSIONS SHOWN IN DETAIL FOR EACH ROD LOCATION. MODIFY SPREADS AS NECESSARY WHEN INSTALLING INTO LAYOUT

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
RH SWITCH PACK WITH
HOLLOW STEEL TIES
SWITCH MACHINE ON MAINLINE SIDE

CADD FILE NAME: SD-2606

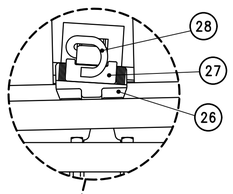
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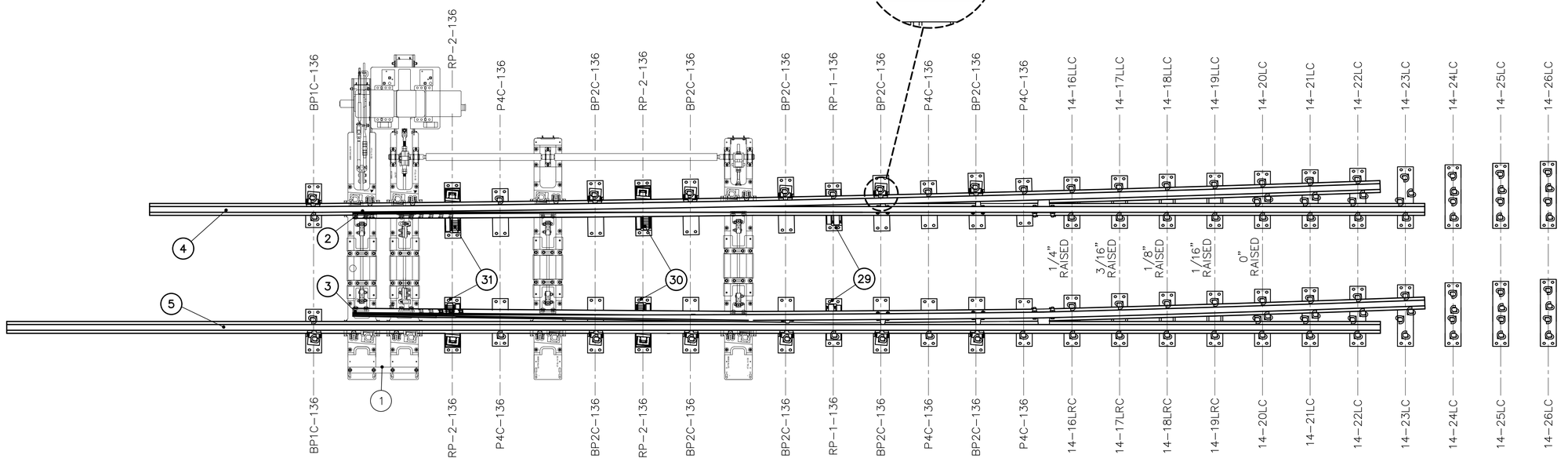
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STANDARD DRAWING NO.: SD-2606

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	HOLLOW SWITCH TIE & RODDING ASSEMBLY	SD-2622	16	1	PLATE, SWITCH (14-18LRC)	SD-2640
2	1	SAMSON POINT, 45'-0" LONG, UR MANG TIP, STRAIGHT, LH	SD-2609	17	1	PLATE, SWITCH (14-19LLC)	SD-2641
3	1	SAMSON POINT, 45'-0" LONG, UR MANG TIP, CURVED, RH	SD-2610	18	1	PLATE, SWITCH (14-19LRC)	SD-2641
4	1	SAMSON STOCK RAIL, 51'-8" LONG, CURVED, LH	SD-2613	19	2	PLATE, SWITCH (14-20LC)	SD-2641
5	1	SAMSON STOCK RAIL, 57'-8" LONG, STRAIGHT, RH	SD-2614	20	2	PLATE, SWITCH (14-21LC)	SD-2641
6	2	PLATE, SWITCH (BP1C-136)	SD-2302	21	2	PLATE, SWITCH (14-22LC)	SD-2641
7	10	PLATE, SWITCH (BP2C-136)	SD-2302	22	2	PLATE, SWITCH (14-23LC)	SD-2641
8	6	PLATE, SWITCH (P4C-136)	SD-2302	23	2	PLATE, SWITCH (14-24LC)	SD-2642
9	2	PLATE, SWITCH ROLLER SCHWIHAG RP-1-136	SD-2311	24	2	PLATE, SWITCH (14-25LC)	SD-2642
10	4	PLATE, SWITCH ROLLER SCHWIHAG RP-2-136	SD-2312	25	2	PLATE, SWITCH (14-26LC)	SD-2642
11	1	PLATE, SWITCH (14-16LLC)	SD-2640	26	16	BRACE, BOLTLESS, 136 LB RE 'SUREFIT'	–
12	1	PLATE, SWITCH (14-16LRC)	SD-2640	27	16	WASHER, SERRATED FOR BOLTLESS BRACE	–
13	1	PLATE, SWITCH (14-17LLC)	SD-2640	28	98	CLIP, PANDROL, E2055	–
14	1	PLATE, SWITCH (14-17LRC)	SD-2640	29	2	ROLLER SCHWIHAG, SINGLE	–
15	1	PLATE, SWITCH (14-18LLC)	SD-2640	30	2	ROLLER SCHWIHAG, DOUBLE	–
				31	2	ROLLER SCHWIHAG, TRIPLE	–

TYPICAL BOLTLESS BRACE ASSEMBLY





NOTES:

1. SEE DRAWING SD-2618 FOR TIE LOCATION DIMENSIONS
2. SWITCH RODS SHALL BE PREADJUSTED TO DIMENSIONS SHOWN IN DETAIL FOR EACH ROD LOCATION. MODIFY SPREADS AS NECESSARY WHEN INSTALLING INTO LAYOUT

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
LH SWITCH PACK WITH
HOLLOW STEEL TIES
SWITCH MACHINE ON TURNOUT SIDE

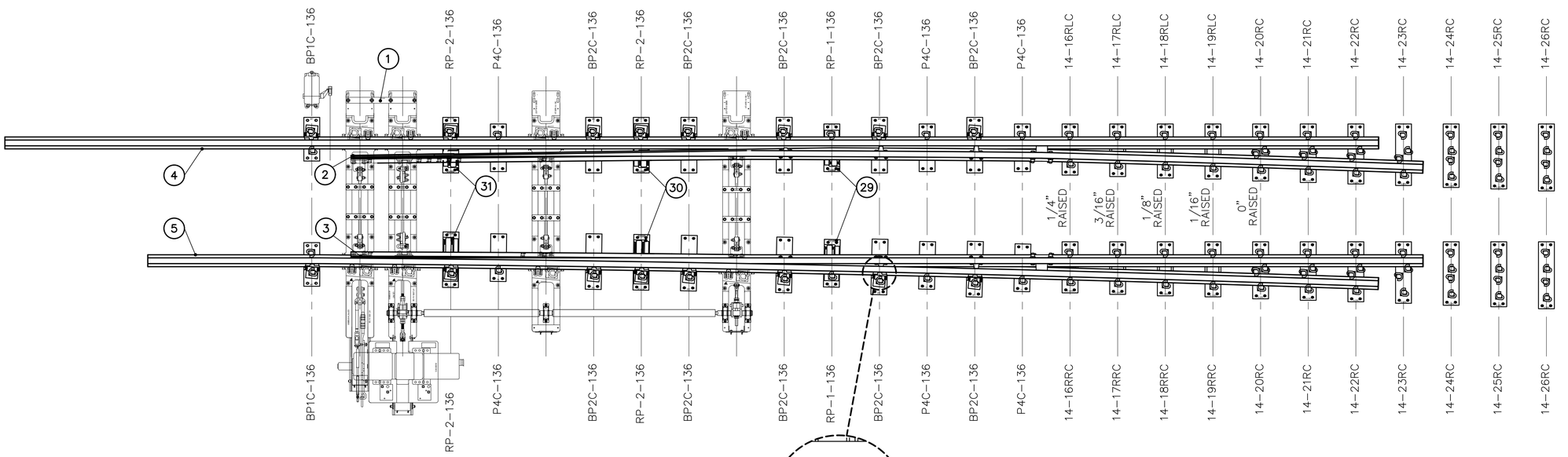
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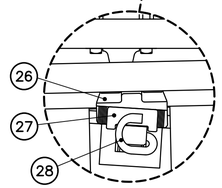
REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD-2607

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	HOLLOW SWITCH TIE & RODDING ASSEMBLY	SD-2621	16	1	PLATE, SWITCH (14-18RRC)	SD-2643
2	1	SAMSON POINT, 45'-0" LONG, UR MANG TIP, CURVED, LH	SD-2611	17	1	PLATE, SWITCH (14-19RLC)	SD-2644
3	1	SAMSON POINT, 45'-0" LONG, UR MANG TIP, STRAIGHT, RH	SD-2612	18	1	PLATE, SWITCH (14-19RRC)	SD-2644
4	1	SAMSON STOCK RAIL, 57'-8" LONG, STRAIGHT, LH	SD-2615	19	2	PLATE, SWITCH (14-20RC)	SD-2644
5	1	SAMSON STOCK RAIL, 51'-8" LONG, CURVED, RH	SD-2616	20	2	PLATE, SWITCH (14-21RC)	SD-2644
6	2	PLATE, SWITCH (BP1C-136)	SD-2302	21	2	PLATE, SWITCH (14-22RC)	SD-2644
7	10	PLATE, SWITCH (BP2C-136)	SD-2302	22	2	PLATE, SWITCH (14-23RC)	SD-2644
8	6	PLATE, SWITCH (P4C-136)	SD-2302	23	2	PLATE, SWITCH (14-24RC)	SD-2645
9	2	PLATE, SWITCH ROLLER SCHWIHAG RP-1-136	SD-2311	24	2	PLATE, SWITCH (14-25RC)	SD-2645
10	4	PLATE, SWITCH ROLLER SCHWIHAG RP-2-136	SD-2312	25	2	PLATE, SWITCH (14-26RC)	SD-2645
11	1	PLATE, SWITCH (14-16RLC)	SD-2643	26	16	BRACE, BOLTLESS, 136 LB RE 'SUREFIT'	–
12	1	PLATE, SWITCH (14-16RRC)	SD-2643	27	16	WASHER, SERRATED FOR BOLTLESS BRACE	–
13	1	PLATE, SWITCH (14-17RLC)	SD-2643	28	98	CLIP, PANDROL, E2055	–
14	1	PLATE, SWITCH (14-17RRC)	SD-2643	29	2	ROLLER SCHWIHAG, SINGLE	–
15	1	PLATE, SWITCH (14-18RLC)	SD-2643	30	2	ROLLER SCHWIHAG, DOUBLE	–
				31	2	ROLLER SCHWIHAG, TRIPLE	–





TYPICAL BOLTLESS BRACE ASSEMBLY

NOTES:

1. SEE DRAWING SD-2618 FOR TIE LOCATION DIMENSIONS
2. SWITCH RODS SHALL BE PREADJUSTED TO DIMENSIONS SHOWN IN DETAIL FOR EACH ROD LOCATION. MODIFY SPREADS AS NECESSARY WHEN INSTALLING INTO LAYOUT

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
RH SWITCH PACK WITH
HOLLOW STEEL TIES
SWITCH MACHINE ON TURNOUT SIDE

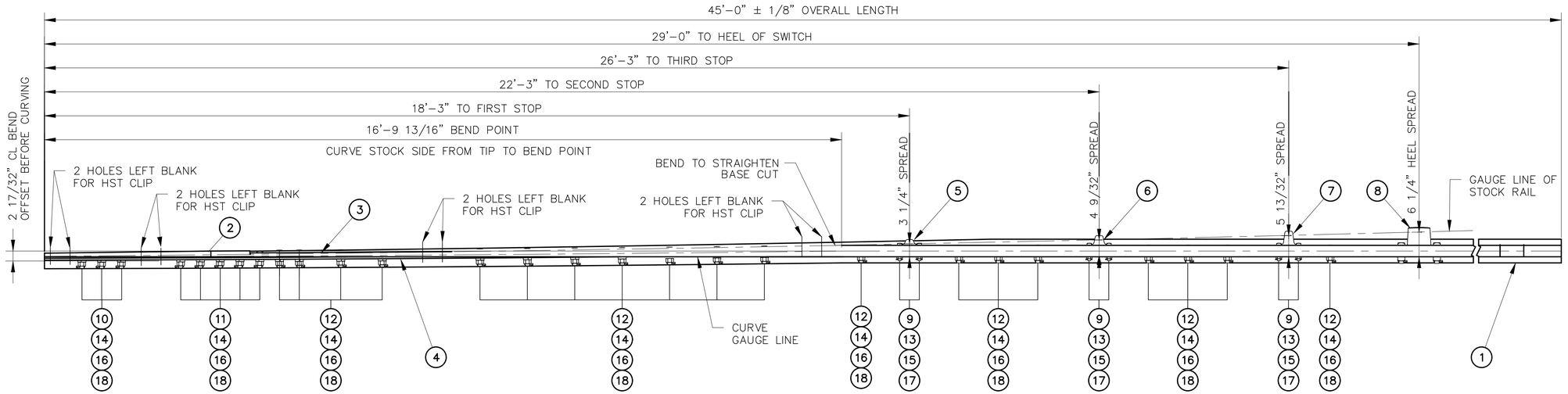
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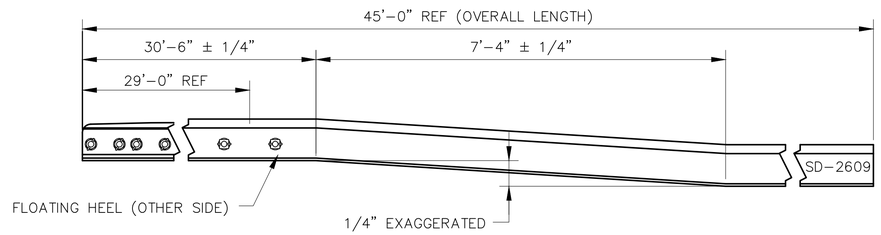
REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD-2608

BILL OF MATERIAL			BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
1	1	SAMSON POINT RAIL, 45'–0" LONG, UR MANG TIP, STRAIGHT, LH	10	3	BOLT, 1" DIA X 3 3/4" LONG, THIN SQ HEAD DRILLED @ 3 1/4", GR 5
2	1	MANGANESE TIP, LH, FOR 29'–0", 136 LB RE SAMSON SWITCH POINT	11	5	BOLT, 1" DIA X 4" LONG, THIN SQ HEAD DRILLED @ 3 1/2", GR 5
3	1	REINFORCING BAR, STOCK SIDE, 1/2" X 22'–11 7/8" LONG, SAMSON, LH POINT	12	19	BOLT, 1" DIA X 3 3/4" LONG, SQ HEAD DRILLED @ 3 3/8", GR 5
4	1	REINFORCING BAR, GAUGE SIDE, 1/2" X 27'–4" LONG, SAMSON, LH POINT	13	6	NUT, 3/4" DIA HEAVY HEX, GR 5
5	1	POINT STOP 2 1/16" HIGH	14	27	NUT, 1" DIA HEAVY HEX, GR 5
6	1	POINT STOP 3 1/16" HIGH	15	6	SPRING WASHER, 3/4" DIA
7	1	POINT STOP 4 3/16" HIGH	16	27	SPRING WASHER, 1" DIA
8	1	HEEL BLOCK ASSEMBLY, FLOATING C/W HARDWARE	17	6	COTTER PIN, 3/16" DIA X 1 3/4" LONG
9	6	BOLT, 3/4" DIA X 4" LONG, SQ HEAD DRILLED @ 3 21/32", GR 5	18	27	COTTER PIN, 1/4" DIA X 2" LONG





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 CALTRAIN SD NUMBER ON WEB OF RAIL WITH WATERPROOF MARKER OR PAINT

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
SWITCH POINT ASSEMBLY
FOR LH TURNOUT
LH STRAIGHT 29'–0" SAMSON

CADD FILE NAME: SD–2609

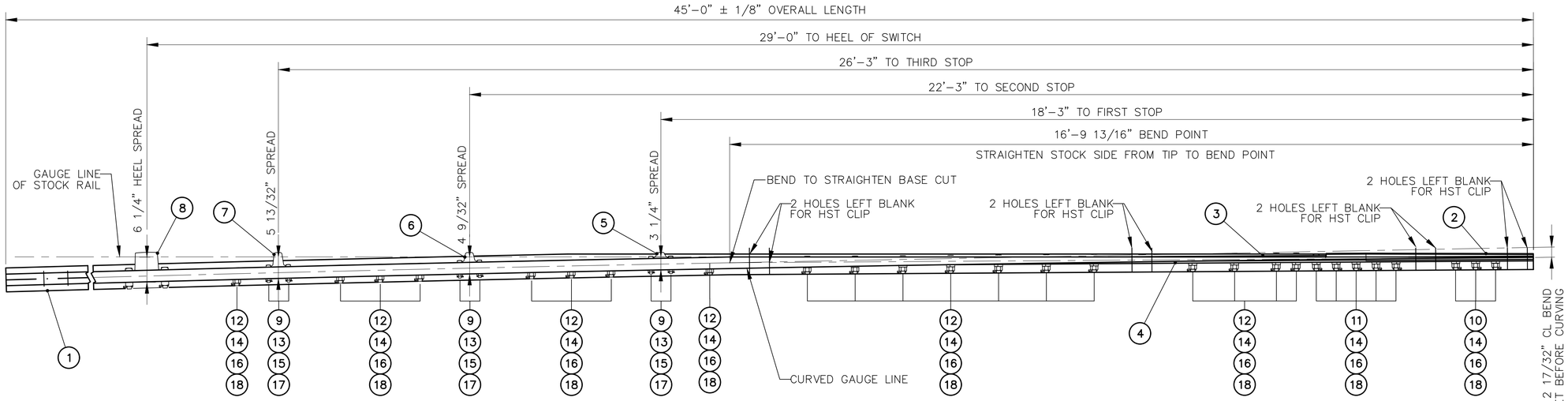
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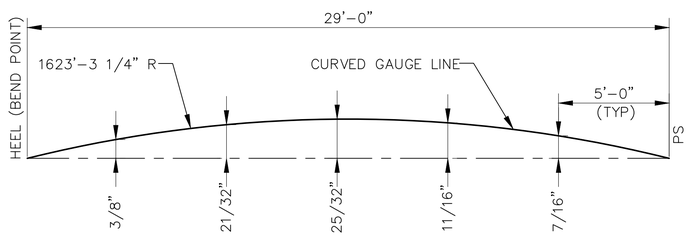
EDITION: FIFTH

SCALE: NTS

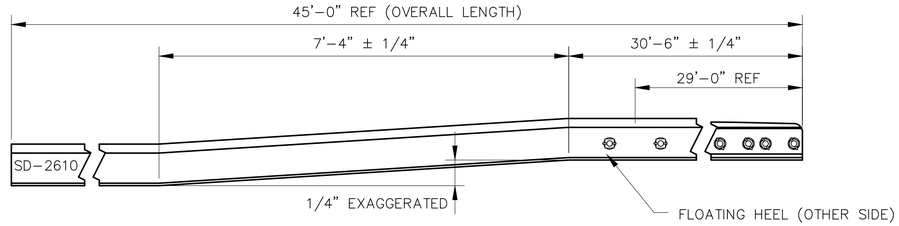
STANDARD DRAWING NO.: SD–2609

BILL OF MATERIAL			BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
1	1	SAMSON POINT RAIL, 45'–0" LONG, UR MANG TIP, CURVED, RH	10	3	BOLT, 1" DIA X 3 3/4" LONG, THIN SQ HEAD DRILLED @ 3 1/4", GR 5
2	1	MANGANESE TIP, RH, FOR 29'–0", 136 LB RE SAMSON SWITCH POINT	11	5	BOLT, 1" DIA X 4" LONG, THIN SQ HEAD DRILLED @ 3 1/2", GR 5
3	1	REINFORCING BAR, STOCK SIDE, 1/2" X 22'–11 7/8" LONG, SAMSON, RH POINT	12	19	BOLT, 1" DIA X 3 3/4" LONG, SQ HEAD DRILLED @ 3 3/8", GR 5
4	1	REINFORCING BAR, GAUGE SIDE, 1/2" X 27'–4" LONG, SAMSON, RH POINT	13	6	NUT, 3/4" DIA HEAVY HEX, GR 5
5	1	POINT STOP 2 1/16" HIGH	14	27	NUT, 1" DIA HEAVY HEX, GR 5
6	1	POINT STOP 3 1/16" HIGH	15	6	SPRING WASHER, 3/4" DIA
7	1	POINT STOP 4 3/16" HIGH	16	27	SPRING WASHER, 1" DIA
8	1	HEEL BLOCK ASSEMBLY, FLOATING C/W HARDWARE	17	6	COTTER PIN, 3/16" DIA X 1 3/4" LONG
9	6	BOLT, 3/4" DIA X 4" LONG, SQ HEAD DRILLED @ 3 21/32", GR 5	18	27	COTTER PIN, 1/4" DIA X 2" LONG





LATERAL CURVING DETAIL
GAUGE SIDE



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 CALTRAIN SD NUMBER ON WEB OF RAIL WITH WATERPROOF MARKER OR PAINT

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
SWITCH POINT ASSEMBLY
FOR LH TURNOUT
RH CURVED 29'–0" SAMSON

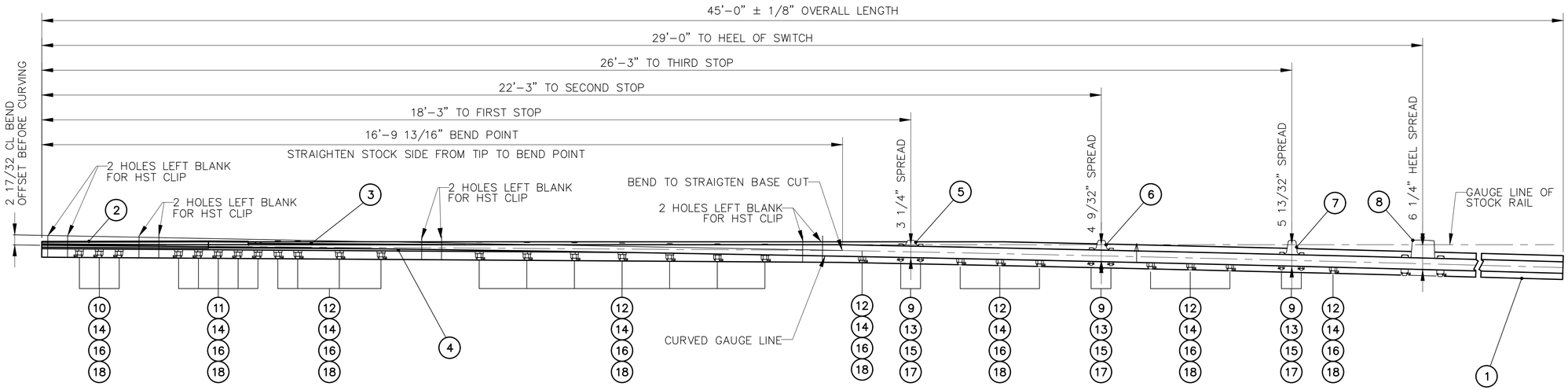
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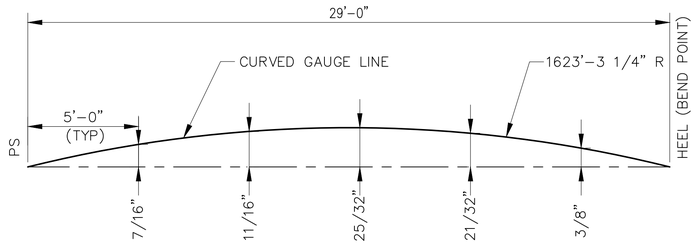
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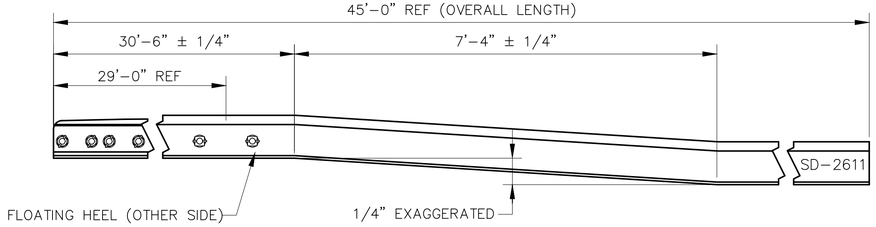
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BILL OF MATERIAL			BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
1	1	SAMSON POINT RAIL, 45'–0" LONG, UR MANG TIP, CURVED, LH	10	3	BOLT, 1" DIA X 3 3/4" LONG, THIN SQ HEAD DRILLED @ 3 1/4", GR 5
2	1	MANGANESE TIP, LH, FOR 29'–0", 136 LB RE SAMSON SWITCH POINT	11	5	BOLT, 1" DIA X 4" LONG, THIN SQ HEAD DRILLED @ 3 1/2", GR 5
3	1	REINFORCING BAR, STOCK SIDE, 1/2" X 22'–11 7/8" LONG, SAMSON, LH POINT	12	19	BOLT, 1" DIA X 3 3/4" LONG, SQ HEAD DRILLED @ 3 3/8", GR 5
4	1	REINFORCING BAR, GAUGE SIDE, 1/2" X 27'–4" LONG, SAMSON, LH POINT	13	6	NUT, 3/4" DIA HEAVY HEX, GR 5
5	1	POINT STOP 2 1/16" HIGH	14	27	NUT, 1" DIA HEAVY HEX, GR 5
6	1	POINT STOP 3 1/16" HIGH	15	6	SPRING WASHER, 3/4" DIA
7	1	POINT STOP 4 3/16" HIGH	16	27	SPRING WASHER, 1" DIA
8	1	HEEL BLOCK ASSEMBLY, FLOATING C/W HARDWARE	17	6	COTTER PIN, 3/16" DIA X 1 3/4" LONG
9	6	BOLT, 3/4" DIA X 4" LONG, SQ HEAD DRILLED @ 3 21/32", GR 5	18	27	COTTER PIN, 1/4" DIA X 2" LONG





LATERAL CURVING DETAIL
GAUGE SIDE



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 CALTRAIN SD NUMBER ON WEB OF RAIL WITH WATERPROOF MARKER OR PAINT

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
SWITCH POINT ASSEMBLY
FOR RH TURNOUT
LH CURVED 29'–0" SAMSON

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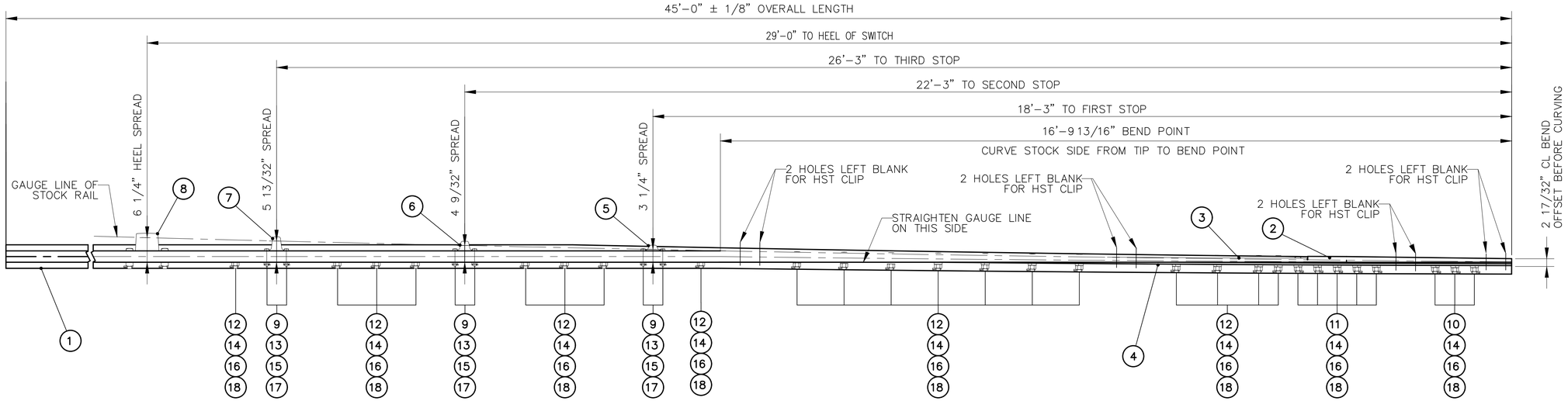
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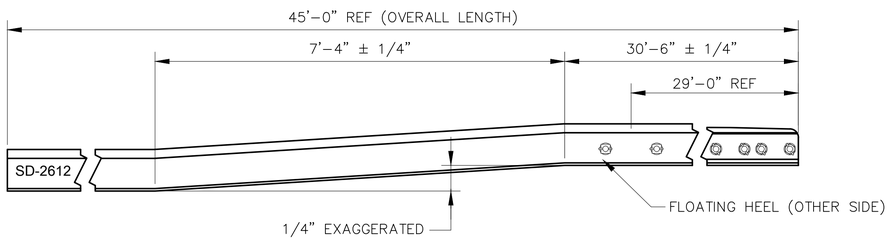
EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD–2611

BILL OF MATERIAL			BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
1	1	SAMSON POINT RAIL, 45'–0" LONG, UR MANG TIP, STRAIGHT, RH	10	3	BOLT, 1" DIA X 3 3/4" LONG, THIN SQ HEAD DRILLED @ 3 1/4", GR 5
2	1	MANGANESE TIP, RH, FOR 29'–0", 136 LB RE SAMSON SWITCH POINT	11	5	BOLT, 1" DIA X 4" LONG, THIN SQ HEAD DRILLED @ 3 1/2", GR 5
3	1	REINFORCING BAR, STOCK SIDE, 1/2" X 22'–11 7/8" LONG, SAMSON, RH POINT	12	19	BOLT, 1" DIA X 3 3/4" LONG, SQ HEAD DRILLED @ 3 3/8", GR 5
4	1	REINFORCING BAR, GAUGE SIDE, 1/2" X 27'–4" LONG, SAMSON, RH POINT	13	6	NUT, 3/4" DIA HEAVY HEX, GR 5
5	1	POINT STOP 2 1/16" HIGH	14	27	NUT, 1" DIA HEAVY HEX, GR 5
6	1	POINT STOP 3 1/16" HIGH	15	6	SPRING WASHER, 3/4" DIA
7	1	POINT STOP 4 3/16" HIGH	16	27	SPRING WASHER, 1" DIA
8	1	HEEL BLOCK ASSEMBLY, FLOATING C/W HARDWARE	17	6	COTTER PIN, 3/16" DIA X 1 3/4" LONG
9	6	BOLT, 3/4" DIA X 4" LONG, SQ HEAD DRILLED @ 3 21/32, GR 5	18	27	COTTER PIN, 1/4" DIA X 2" LONG





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 CALTRAIN SD NUMBER ON WEB OF RAIL WITH WATERPROOF MARKER OR PAINT

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

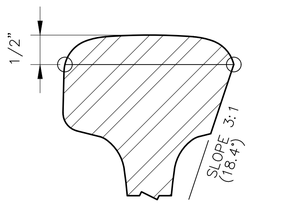
SPECIAL TRACKWORK
NO. 14 TURNOUT
SWITCH POINT ASSEMBLY
FOR RH TURNOUT
RH STRAIGHT 29'–0" SAMSON

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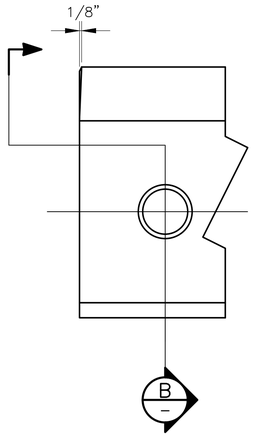
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SCALE: NTS

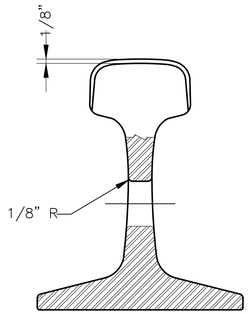
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SCALE: NTS

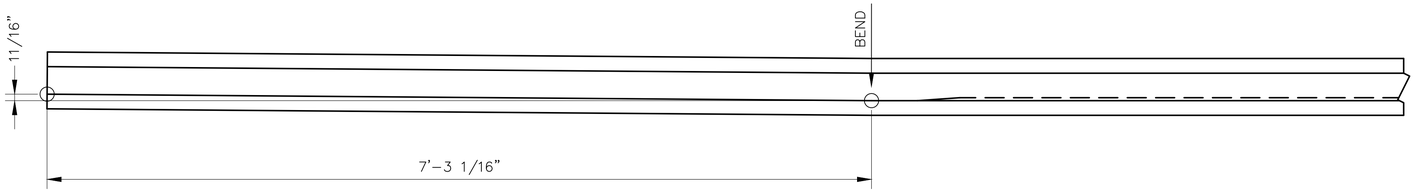


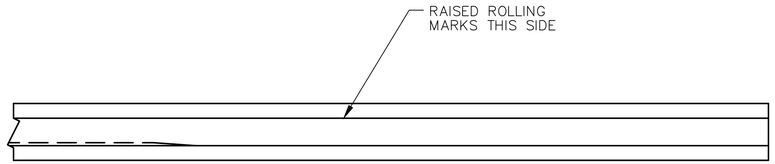
RAIL END/HOLE BEVELING DETAIL
RAIL HEAD ONLY – NOT BASE



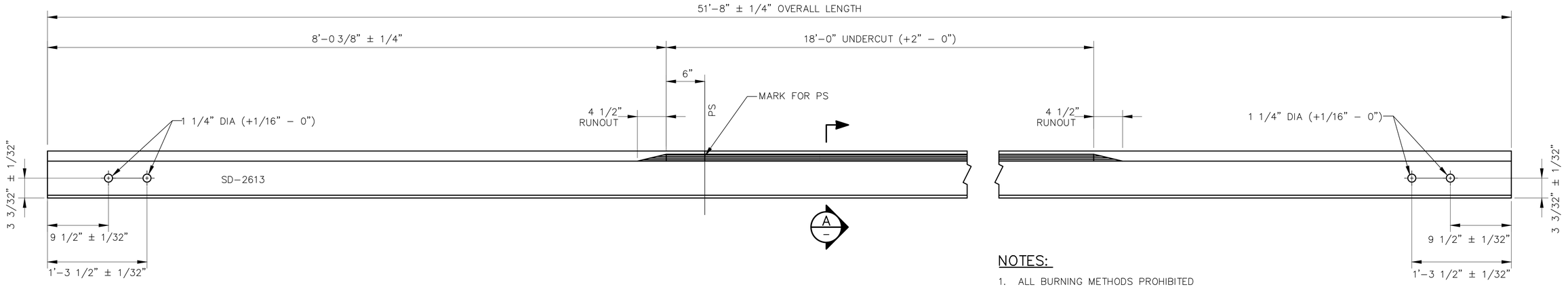
B
–
SECTION
SCALE: NTS

BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION
1	1	RAIL, 136 LB RE 51'–8" LONG





BENDING DETAILS



MACHINING DETAILS

NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

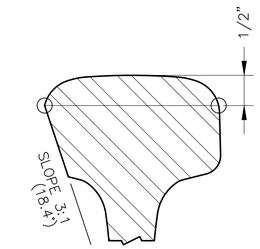
SPECIAL TRACKWORK
NO. 14 TURNOUT
SAMSON STOCK RAIL
FOR LH TURNOUT
LH CURVED 51'–8" LONG

CADD FILE NAME: SD–2613

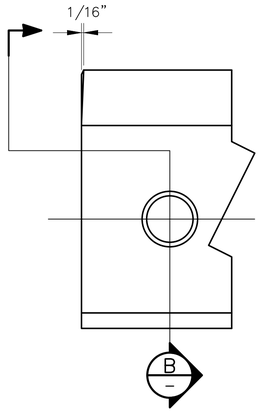
REV: | EDITION: FIFTH

SCALE: NTS

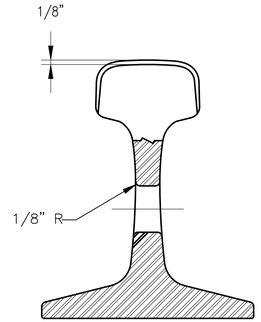
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A — PARTIAL SECTION
SCALE: NTS



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

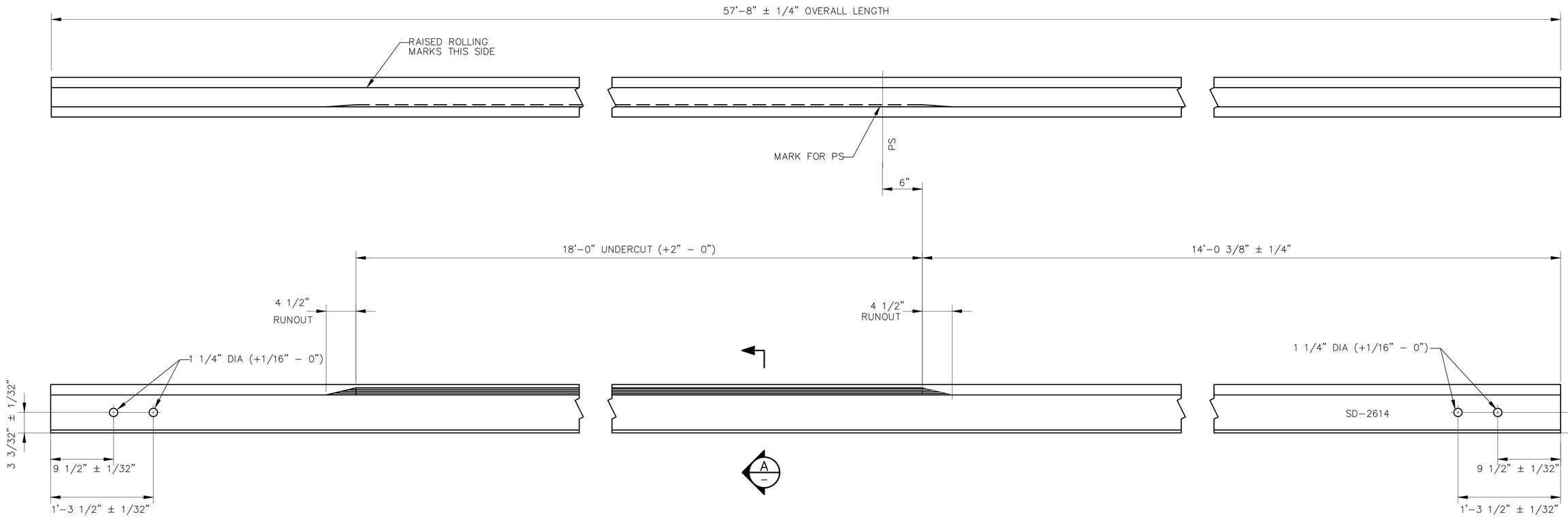


B — SECTION
SCALE: NTS

BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION
1	1	RAIL, 136 LB RE 57'–8" LONG

NOTES:

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



MACHINING DETAILS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

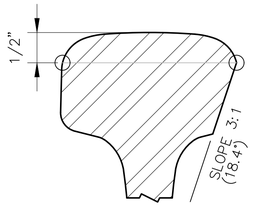
Bin Zhang

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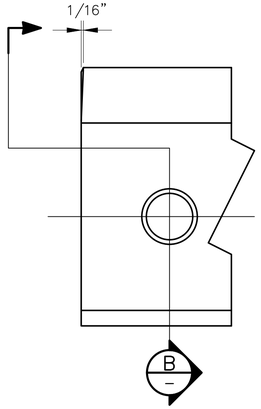
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
SAMSON STOCK RAIL
FOR LH TURNOUT
RH STRAIGHT 57'–8" LONG

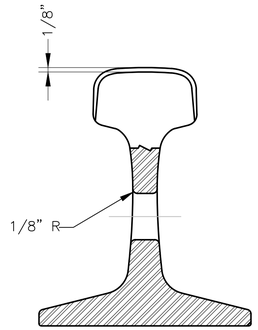
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SCALE:	NTS
STANDARD DRAWING NO.:	SD–2614



A
–
PARTIAL SECTION
SCALE: NTS



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

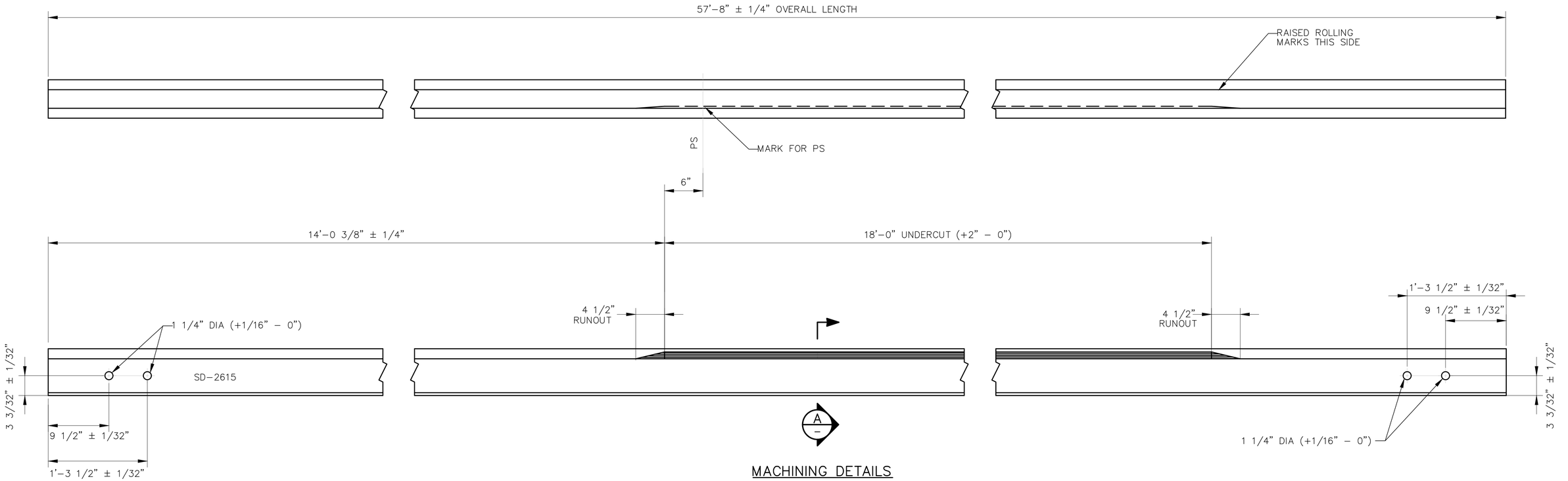


B
–
SECTION
SCALE: NTS

BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION
1	1	RAIL, 136 LB RE 57'–8" LONG

NOTES:

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



MACHINING DETAILS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

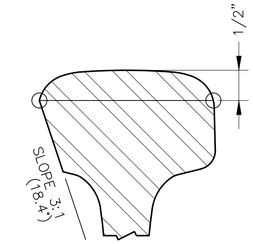
Bin Zhang

DIRECTOR, ENGINEERING

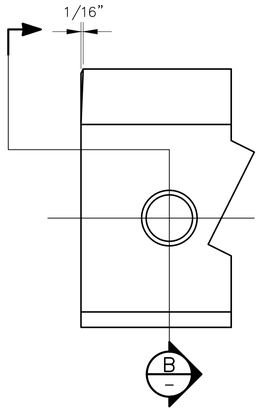
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
SAMSON STOCK RAIL
FOR RH TURNOUT
LH STRAIGHT 57'–8" LONG

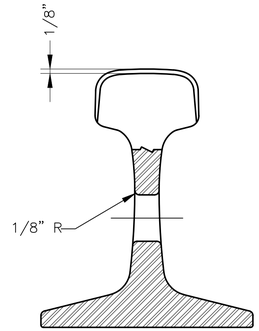
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REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2615



A — PARTIAL SECTION
SCALE: NTS



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

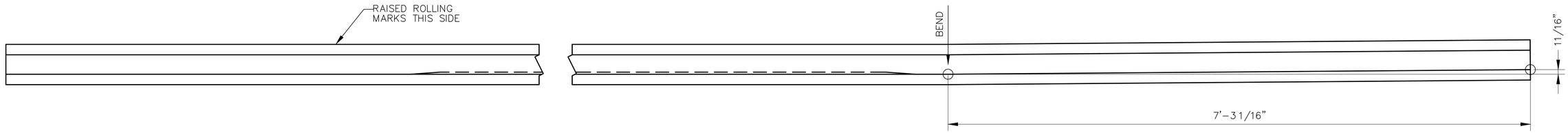


B — SECTION
SCALE: NTS

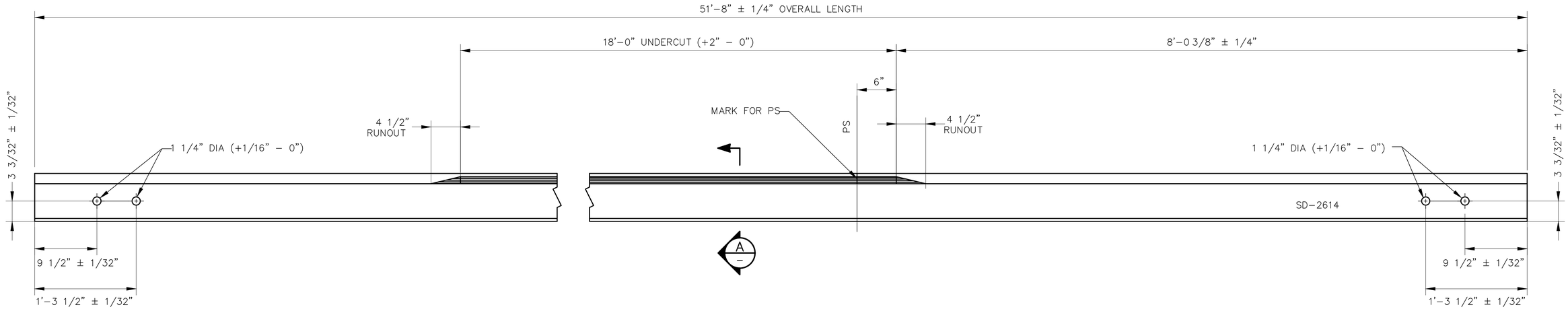
BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION
1	1	RAIL, 136 LB RE 51'–8" LONG

NOTES:

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



BENDING DETAILS



MACHINING DETAILS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

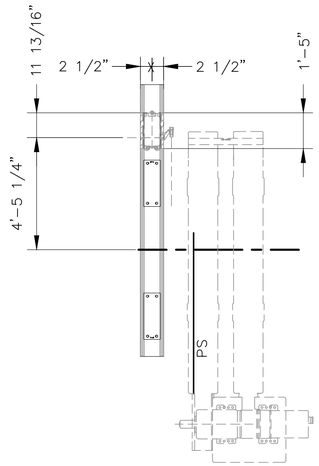
SPECIAL TRACKWORK
NO. 14 TURNOUT
SAMSON STOCK RAIL
FOR RH TURNOUT
RH CURVED 51'–8" LONG

CADD FILE NAME: SD–2616

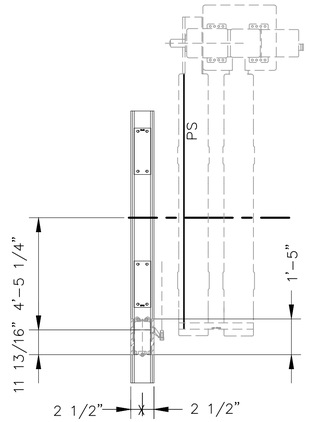
REV: | EDITION: FIFTH

SCALE: NTS

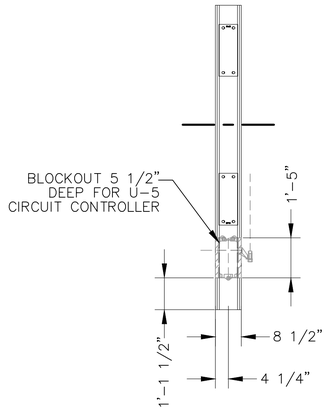
STANDARD DRAWING NO.: SD–2616



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

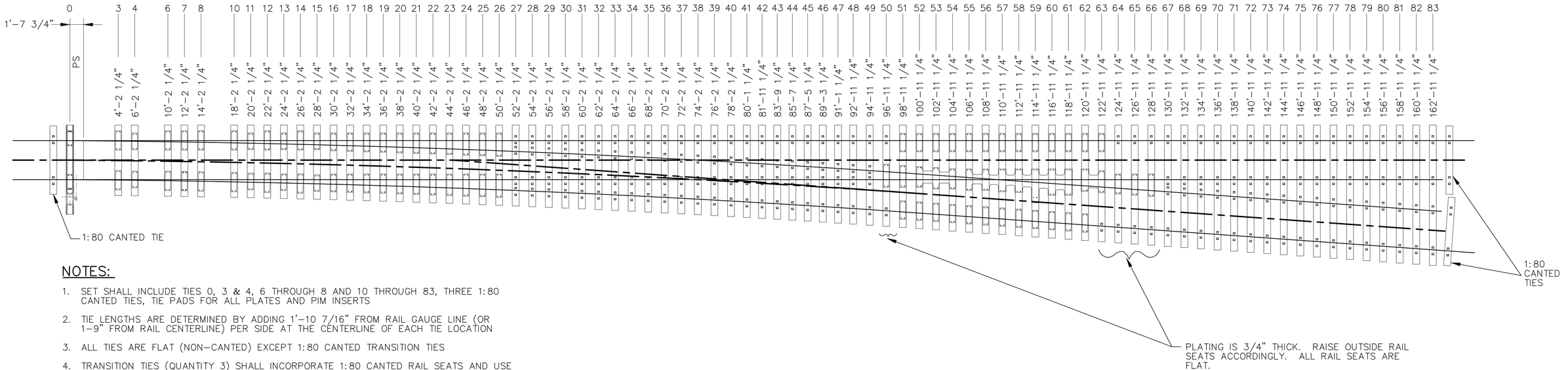


TIE "0" PLACEMENT
SWITCH MACHINE
ON MAINLINE (LH) SIDE



TIE "0" BLOCKOUT DETAIL

BILL OF MATERIALS			
ITEM	QTY	DESCRIPTION	DWG NO
1	4	TIES 1,2,5 AND 9, POWER SWITCH MACHINE ON MAINLINE SIDE FOR LH TURNOUT (HOLLOW STEEL)	SD-2619
2	4	TIES 1,2,5 AND 9, POWER SWITCH MACHINE ON TURNOUT SIDE FOR LH TURNOUT (HOLLOW STEEL)	SD-2621



NOTES:

1. SET SHALL INCLUDE TIES 0, 3 & 4, 6 THROUGH 8 AND 10 THROUGH 83, THREE 1:80 CANTED TIES, TIE PADS FOR ALL PLATES 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 TRANSITION 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 LH/MAINLINE SIDE. USE OPPOSITE HAND FOR SWITCH MACHINE ON RH/TURNOUT SIDE
6. SEE BILL OF MATERIALS ABOVE FOR TIES 1, 2, 5 AND 9

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

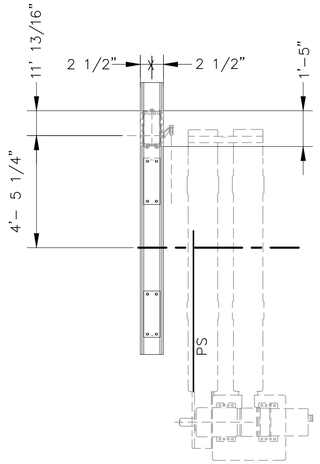
SPECIAL TRACKWORK
NO. 14 TURNOUT
HOLLOW STEEL TIE AND CONCRETE TIE
LAYOUT FOR RH TURNOUT

CADD FILE NAME: SD-2617

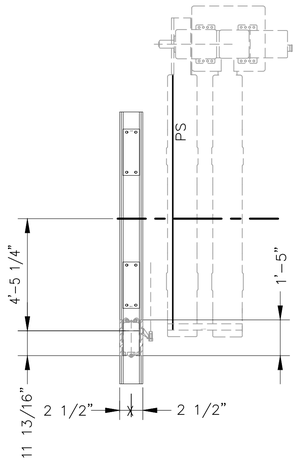
REV: | EDITION: FIFTH

SCALE: NTS

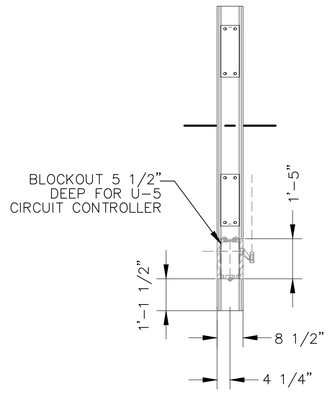
STANDARD DRAWING NO.: SD-2617



TIE "0" PLACEMENT
SWITCH MACHINE
ON MAINLINE (RH) SIDE

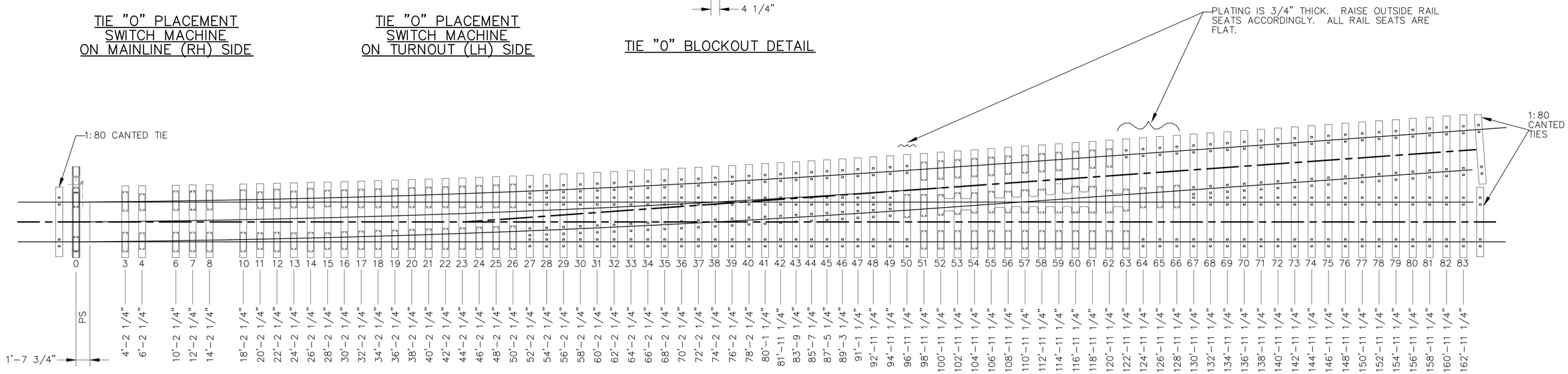


TIE "0" PLACEMENT
SWITCH MACHINE
ON TURNOUT (LH) SIDE



TIE "0" BLOCKOUT DETAIL

BILL OF MATERIALS			
ITEM	QTY	DESCRIPTION	DWG NO
1	4	TIES 1,2,5 AND 9, POWER SWITCH MACHINE ON MAINLINE SIDE FOR LH TURNOUT (HOLLOW STEEL)	SD-2620
2	4	TIES 1,2,5 AND 9, POWER SWITCH MACHINE ON TURNOUT SIDE FOR LH TURNOUT (HOLLOW STEEL)	SD-2622



NOTES:

1. SET SHALL INCLUDE TIES 0, 3 & 4, 6 THROUGH 8 AND 10 THROUGH 83, THREE 1:80 CANTED TIES, TIE PADS FOR ALL PLATES 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 TRANSITION 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/MAINLINE SIDE. USE OPPOSITE HAND FOR SWITCH MACHINE ON LH/TURNOUT SIDE
6. SEE BILL OF MATERIALS ABOVE FOR TIES 1, 2, 5 AND 9

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

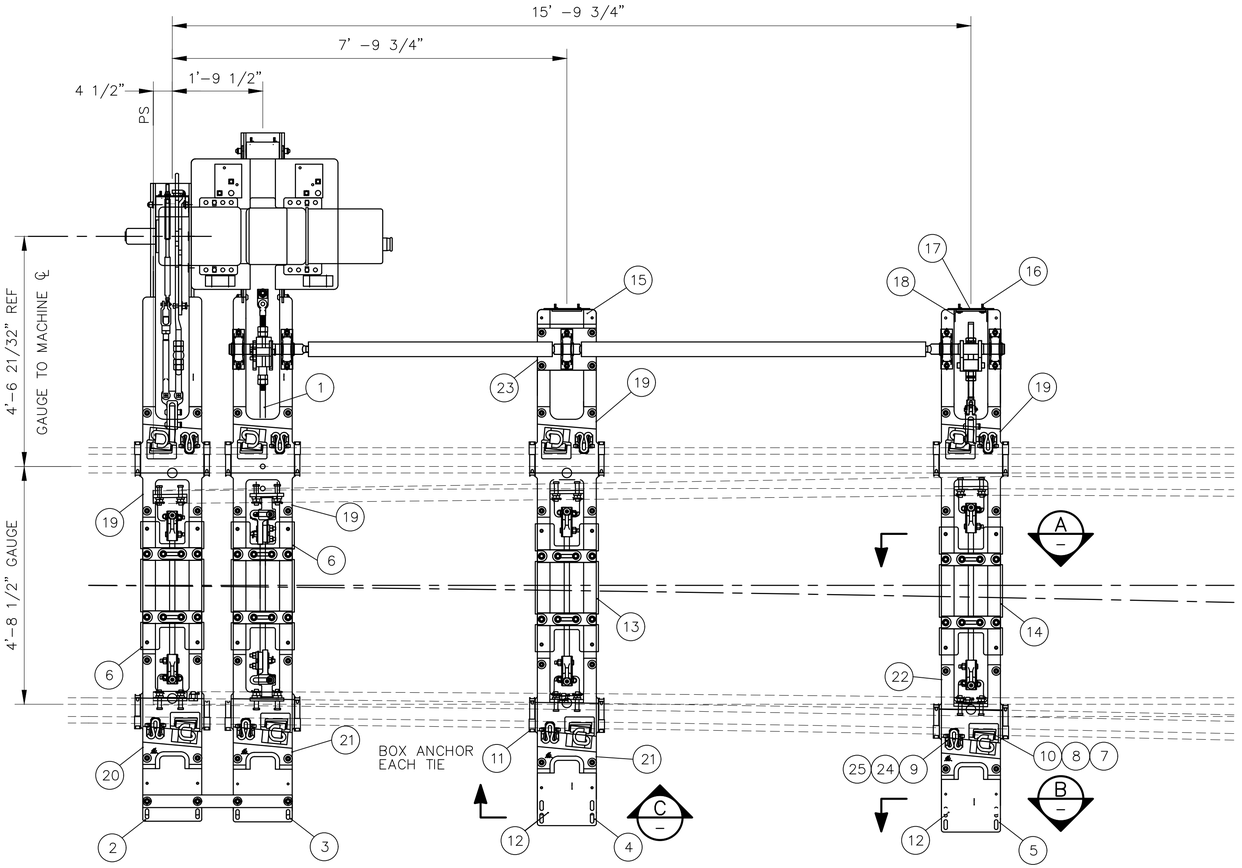
SPECIAL TRACKWORK
NO. 14 TURNOUT
HOLLOW STEEL TIE AND CONCRETE TIE
LAYOUT FOR LH TURNOUT

CADD FILE NAME: SD-2618

REV: | EDITION: FIFTH

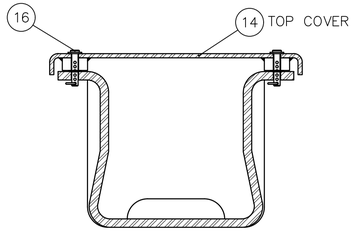
SCALE: NTS

STANDARD DRAWING NO.: SD-2618



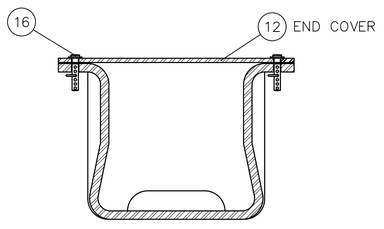
BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	RODDING ASSEMBLY FOR NO 14–136 LB RE, SWITCH MACHINE ON LEFT SIDE	SD–2637
2	1	HOLLOW TIE ASSEMBLY (HT–1RL–14–136)	–
3	1	HOLLOW TIE ASSEMBLY (HT–2RL–14–136)	–
4	1	HOLLOW TIE ASSEMBLY (HT–5RL–14–136)	–
5	1	HOLLOW TIE ASSEMBLY (HT–9RL–14–136)	–
6*	2	COVER PLATE NO 1, HOLLOW SWITCH TIE	–
7	8	LV BRACE FOR 136 LB RE	–
8	8	SERRATED WASHER FOR LV BRACE	–
9	8	CLIP, PANDROL, FC1601	
10	8	CLIP, PANDROL, E2055	–
11	16	RAIL ANCHOR UNIT DRIVE–ON TYPE 5	–
12	2	STEEL COVER PLATE FOR HST TIE, TOP END	–
13*	1	COVER PLATE NO 2, HOLLOW SWITCH TIE	–
14*	1	COVER PLATE NO 3, HOLLOW SWITCH TIE	–
15	1	END COVER PLATE FOR HST TIE, SHORT TOP VERSION	–
16	30	PUSH PIN ASSEMBLY FOR HST COVERS	–
17	4	STEEL SIDE END COVER PLATE ASSEMBLY FOR HST TIE	–
18	8	COVER SUPPORT BRACKET	–
19	4	HST SWITCH PLATE HTP–206–STR	SD–2305
20	1	HST SWITCH PLATE HTP–209–R	SD–2307
21	2	HST SWITCH PLATE HTP–201–R	SD–2308
22	1	HST SWITCH PLATE HTP–203–R	SD–2309
23	1	PILLOW BLOCK MOUNTING PLATE	–
24	8	SIDE POST INSULATOR FOR FC1600 SERIES PANDROL FASTCLIP	SD–2313
25	8	TOE INSULATOR FOR FC1600 SERIES PANDROL FASTCLIP	SD–2314

* NOT SHOWN ON ASSEMBLY FOR CLARITY



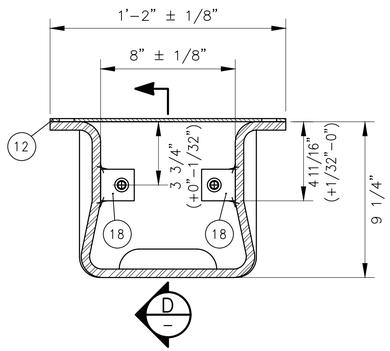
HOLLOW TIE TOP COVER DETAIL

A – SECTION
SCALE: NTS



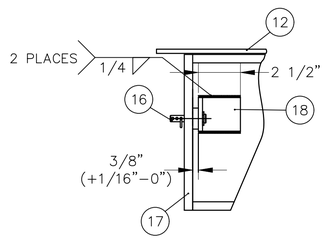
END COVER PLATE

B – SECTION
SCALE: NTS



HOLLOW TIE SIDE END COVER DETAIL

C – SECTION
SCALE: NTS



WELDING DETAIL

D – SECTION
SCALE: NTS

NOTE:

1. COORDINATE SWITCH MACHINE AND MACHINE PLATES (NIC) WITH CALTRAIN

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

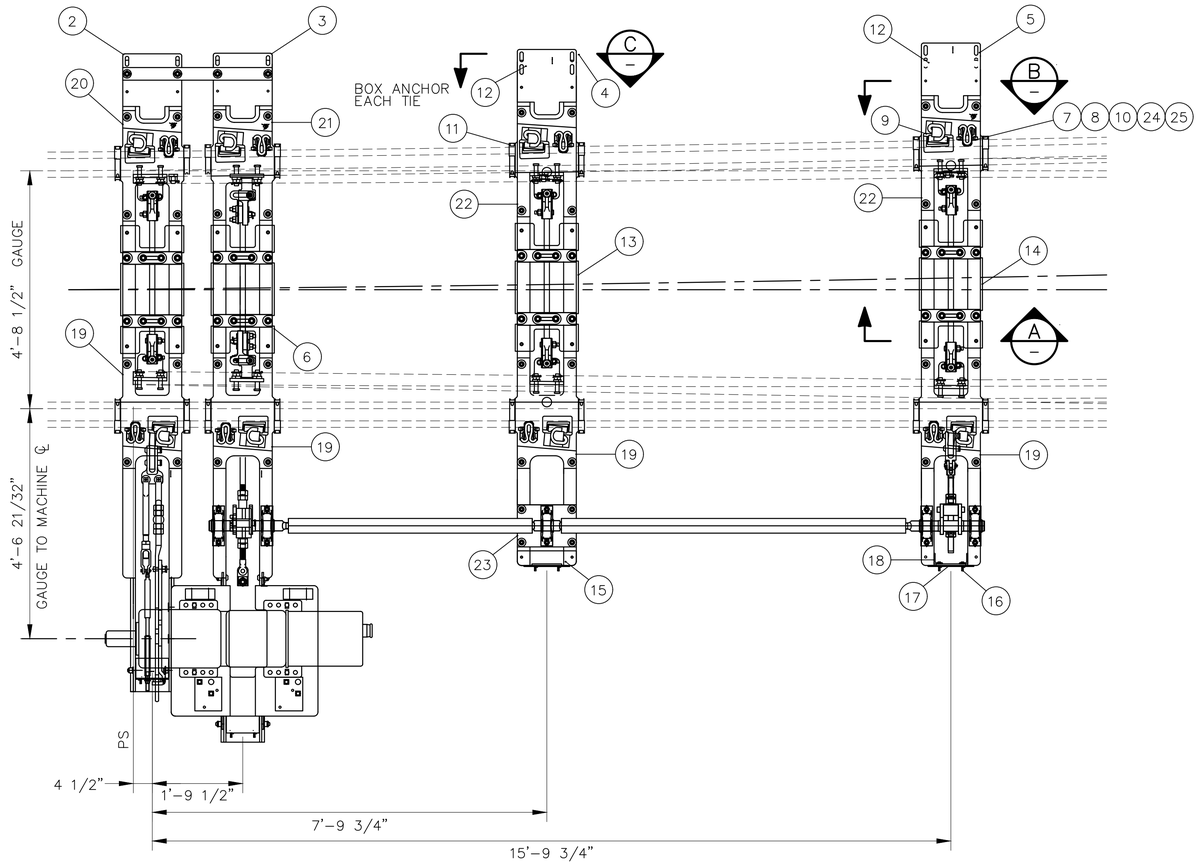
SPECIAL TRACKWORK
NO. 14 TURNOUT
HOLLOW STEEL TIES FOR RH TURNOUT
SWITCH MACHINE ON MAINLINE SIDE

CADD FILE NAME: SD–2619

REV: | EDITION: FIFTH

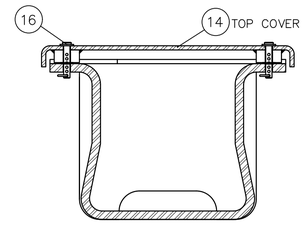
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STANDARD DRAWING NO.: SD–2619



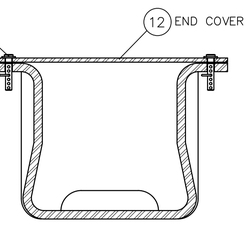
BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	RODDING ASSEMBLY FOR NO 14–136 LB RE, SWITCH MACHINE ON RIGHT SIDE	SD–2638
2	1	HOLLOW TIE ASSEMBLY (HT–1LR–14–136)	–
3	1	HOLLOW TIE ASSEMBLY (HT–2LR–14–136)	–
4	1	HOLLOW TIE ASSEMBLY (HT–5LR–14–136)	–
5	1	HOLLOW TIE ASSEMBLY (HT–9LR–14–136)	–
6*	2	COVER PLATE NO 1, HOLLOW SWITCH TIE	–
7	8	LV BRACE FOR 136 LB RE	–
8	8	SERRATED WASHER FOR LV BRACE	–
9	8	CLIP, PANDROL, FC1601	–
10	8	CLIP, PANDROL, E2055	–
11	16	RAIL ANCHOR UNIT DRIVE–ON TYPE 5	–
12	2	STEEL COVER PLATE FOR HST TIE, TOP END	–
13*	1	COVER PLATE NO 2, HOLLOW SWITCH TIE	–
14*	1	COVER PLATE NO 3, HOLLOW SWITCH TIE	–
15	1	END COVER PLATE FOR HST TIE, SHORT TOP VERSION	–
16	30	PUSH PIN ASSEMBLY FOR HST COVERS	–
17	4	STEEL SIDE END COVER PLATE ASSEMBLY FOR HST TIE	–
18	8	COVER SUPPORT BRACKET	–
19	4	HST SWITCH PLATE HTP–206–STR	SD–2305
20	1	HST SWITCH PLATE HTP–208–L	SD–2307
21	1	HST SWITCH PLATE HTP–200–L	SD–2308
22	2	HST SWITCH PLATE HTP–202–L	SD–2309
23	1	PILLOW BLOCK MOUNTING PLATE	–
24	8	SIDE POST INSULATOR FOR FC1600 SERIES PANDROL FASTCLIP	SD–2313
25	8	TOE INSULATOR FOR FC1600 SERIES PANDROL FASTCLIP	SD–2314

* NOT SHOWN ON ASSEMBLY FOR CLARITY



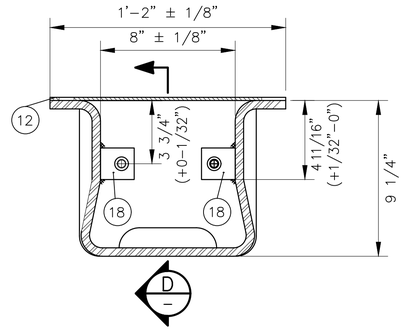
HOLLOW TIE TOP COVER DETAIL

A – SECTION
SCALE: NTS



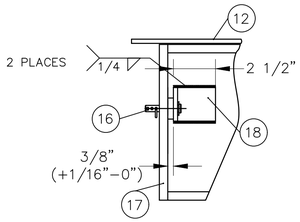
END COVER PLATE

B – SECTION
SCALE: NTS



HOLLOW TIE SIDE END COVER DETAIL

C – SECTION
SCALE: NTS



WELDING DETAIL

D – SECTION
SCALE: NTS

NOTES:

1. COORDINATE SWITCH MACHINE AND MACHINE PLATES (NIC) WITH CALTRAIN

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

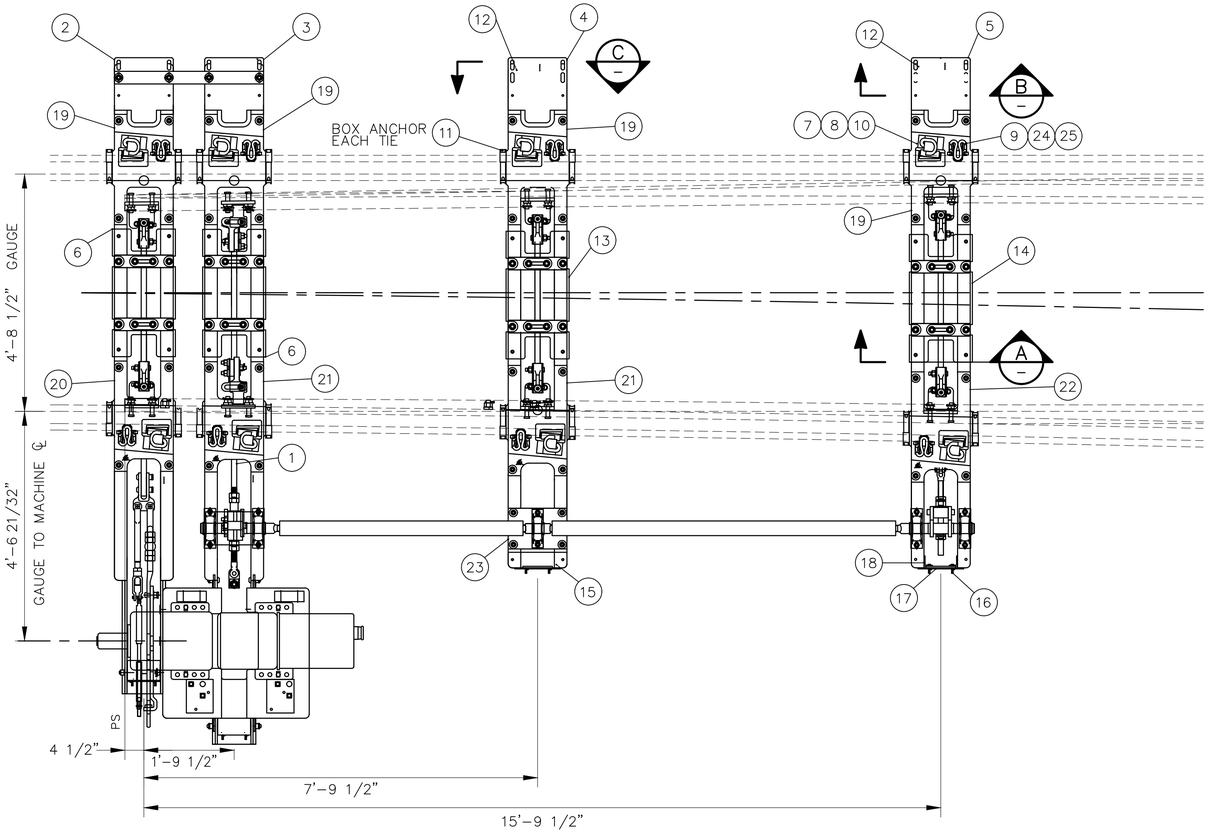
SPECIAL TRACKWORK
NO. 14 TURNOUT
HOLLOW STEEL TIES FOR LH TURNOUT
SWITCH MACHINE ON MAINLINE SIDE

CADD FILE NAME: SD–2620

REV: | EDITION: FIFTH

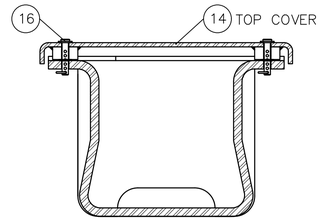
SCALE: NTS

STANDARD DRAWING NO.: SD–2620



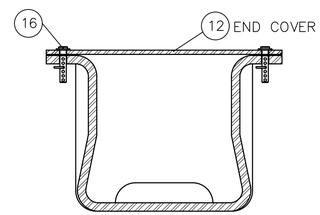
BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	RODDING ASSEMBLY, FOR NO 14–136 LB RE, SWITCH MACHINE ON RIGHT SIDE	SD–2638
2	1	HOLLOW TIE ASSEMBLY (HT–1RR–14–136)	–
3	1	HOLLOW TIE ASSEMBLY (HT–2RR–14–136)	–
4	1	HOLLOW TIE ASSEMBLY (HT–5RR–14–136)	–
5	1	HOLLOW TIE ASSEMBLY (HT–9RR–14–136)	–
6*	2	COVER PLATE NO 1, HOLLOW SWITCH TIE	–
7	8	LV BRACE FOR 136 LB RE	–
8	8	SERRATED WASHER FOR LV BRACE	–
9	8	CLIP, PANDROL, FC1601	–
10	8	CLIP, PANDROL, E2055	–
11	16	RAIL ANCHOR UNIT DRIVE–ON TYPE 5	
12	2	STEEL COVER PLATE FOR HST TIE, TOP END	–
13*	1	COVER PLATE NO 2, HOLLOW SWITCH TIE	–
14*	1	COVER PLATE NO 3, HOLLOW SWITCH TIE	–
15	1	END COVER PLATE FOR HST TIE, SHORT TOP VERSION	–
16	30	PUSH PIN ASSEMBLY FOR HST COVERS	–
17	4	STEEL SIDE END COVER PLATE ASSEMBLY FOR HST TIE	–
18	8	COVER SUPPORT BRACKET	–
19	4	HST SWITCH PLATE HTP–206–STR	SD–2305
20	1	HST SWITCH PLATE HTP–209–R	SD–2307
21	2	HST SWITCH PLATE HTP–201–R	SD–2308
22	1	HST SWITCH PLATE HTP–203–R	SD–2309
23	1	PILLOW BLOCK MOUNTING PLATE	–
24	8	SIDE POST INSULATOR FOR FC1600 SERIES PANDROL FASCLIP	SD–2313
25	8	TOE INSULATOR FOR FC1600 SERIES PANDROL FASTCLIP	SD–2314

* NOT SHOWN ON ASSEMBLY FOR CLARITY



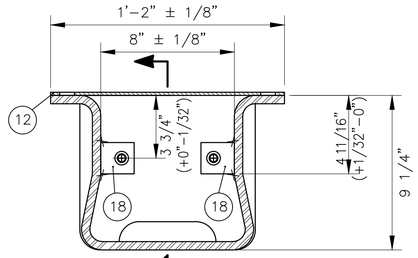
HOLLOW TIE TOP COVER DETAIL

A – SECTION
SCALE: NTS



END COVER PLATE

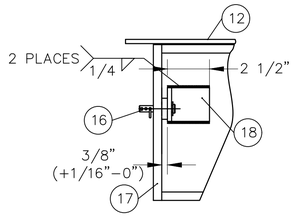
B – SECTION
SCALE: NTS



D

HOLLOW TIE SIDE END COVER DETAIL

C – SECTION
SCALE: NTS



WELDING DETAIL

D – SECTION
SCALE: NTS

NOTE:

1. COORDINATE SWITCH MACHINE AND MACHINE PLATES (NIC) WITH CALTRAIN

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

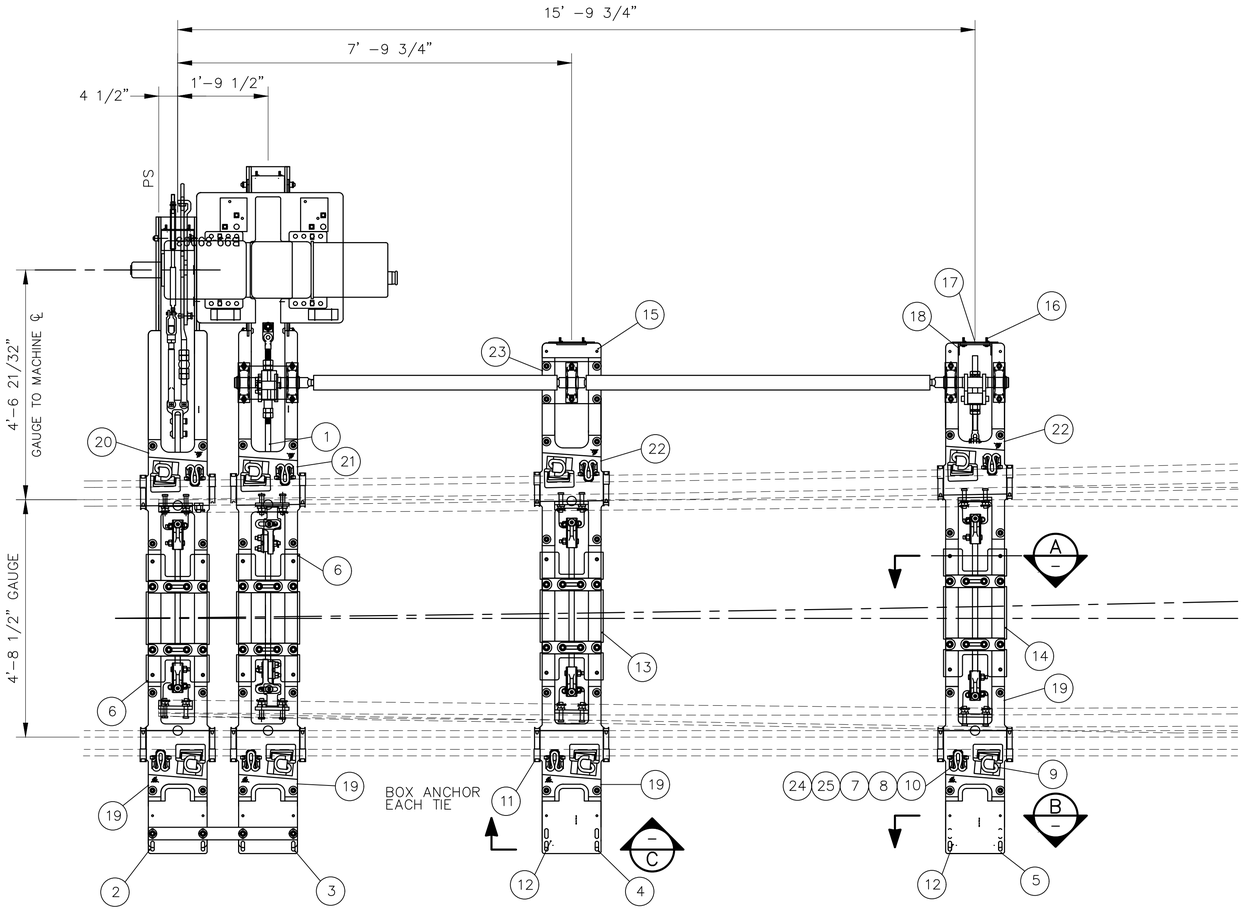
SPECIAL TRACKWORK
NO. 14 TURNOUT
HOLLOW STEEL TIES FOR RH TURNOUT
SWITCH MACHINE ON TURNOUT SIDE

CADD FILE NAME: SD–2621

REV: | EDITION: FIFTH

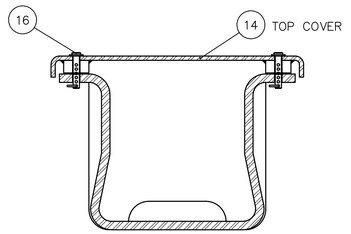
SCALE: NTS

STANDARD DRAWING NO.: SD–2621



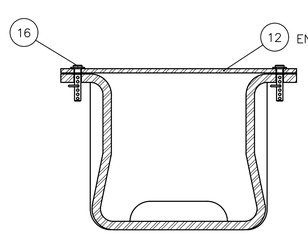
BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	RODDING ASSEMBLY FOR NO 14-136 LB RE, SWITCH MACHINE ON LEFT SIDE	SD-2637
2	1	HOLLOW TIE ASSEMBLY (HT-1LL-14-136)	–
3	1	HOLLOW TIE ASSEMBLY (HT-2LL-14-136)	–
4	1	HOLLOW TIE ASSEMBLY (HT-5LL-14-136)	–
5	1	HOLLOW TIE ASSEMBLY (HT-9LL-14-136)	–
6*	2	COVER PLATE NO 1, HOLLOW SWITCH TIE	–
7	8	LV BRACE FOR 136 LB RE	–
8	8	SERRATED WASHER FOR LV BRACE	–
9	8	CLIP, PANDROL, FC1601	–
10	8	CLIP, PANDROL, E2055	–
11	16	RAIL ANCHOR UNIT DRIVE-ON TYPE 5	–
12	2	STEEL COVER PLATE FOR HST TIE, TOP END	–
13*	1	COVER PLATE NO 2, HOLLOW SWITCH TIE	–
14*	1	COVER PLATE NO 3, HOLLOW SWITCH TIE	–
15	1	END COVER PLATE FOR HST TIE, SHORT TOP VERSION	–
16	30	PUSH PIN ASSEMBLY FOR HST COVERS	–
17	4	STEEL SIDE END COVER PLATE ASSEMBLY FOR HST TIE	–
18	8	COVER SUPPORT BRACKET	–
19	4	HST SWITCH PLATE HTP-206-STR	SD-2305
20	1	HST SWITCH PLATE HTP-208-L	SD-2307
21	1	HST SWITCH PLATE HTP-200-L	SD-2308
22	2	HST SWITCH PLATE HTP-202-L	SD-2309
23	1	PILLOW BLOCK MOUNTING PLATE	–
24	8	SIDE POST INSULATOR FOR FC1600 SERIES PANDROL FASTCLIP	SD-2313
25	8	TOE INSULATOR FOR FC1600 SERIES PANDROL FAST CLIP	SD-2314

* NOT SHOWN ON ASSEMBLY FOR CLARITY



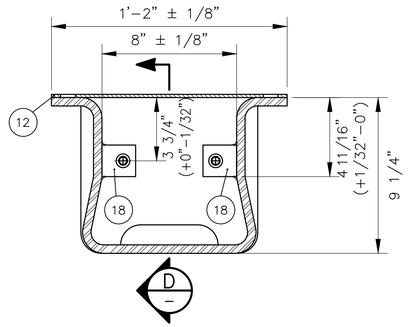
HOLLOW TIE TOP COVER DETAIL

A – SECTION – SCALE: NTS



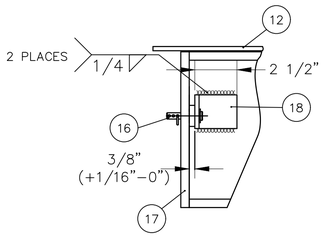
END COVER PLATE

B – SECTION – SCALE: NTS



HOLLOW TIE SIDE END COVER DETAIL

C – SECTION – SCALE: NTS



WELDING DETAIL

D – SECTION – SCALE: NTS

NOTE:

1. COORDINATE SWITCH MACHINE AND MACHINE PLATES (NIC) WITH CALTRAIN

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
HOLLOW STEEL TIES FOR LH TURNOUT
SWITCH MACHINE ON TURNOUT SIDE

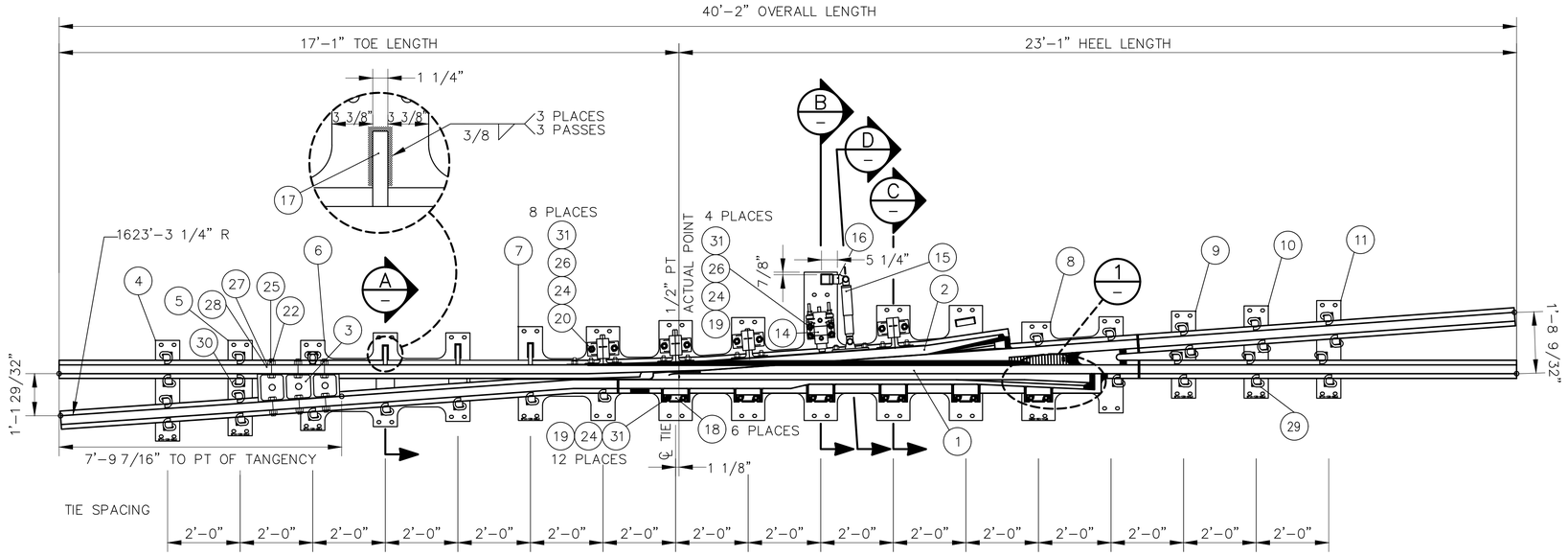
CADD FILE NAME: SD-2622

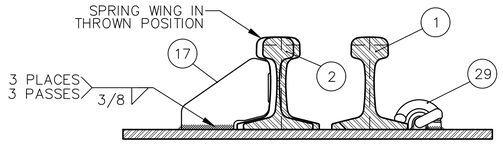
REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD-2622

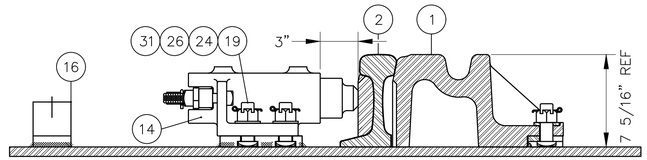
BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	NO 14–136 LB RE SPRING FROG, LH POINT ASSEMBLY	–	16	1	RETARDER PLATE BRACKET FOR FROG C/W HYDRAULIC RETARDER	–
2	1	SPRING WING RAIL, NO 14–136LB RE, LH C/W HARDWARE	–	17	3	FLAT RAIL BRACE FOR NON D–BAR APPLICATIONS	–
3	1	TOE BLOCK, NO 14–136 LB RE WSM	–	18	6	WASHER, BOLT CAPTURE STYLE, 1/4" THICK	–
4	1	FROG PLATE (14–136–50LC)	SD–2625	19	16	BOLT, 1" DIA X 3", THIN SQ HEAD, DRILLED @ 2 1/2", GR 5	–
5	1	FROG PLATE (14–136–51LC)	SD–2625	20	8	BOLT, 1" DIA X 3 1/2", THIN SQ HEAD, DRILLED @ 2 11/16", GR 5	–
6	1	FROG PLATE (14–136–52LC)	SD–2627	21	2	BOLT, 1" DIA X 4 1/8", HEAVY HEX HEAD, GR 8	–
7	1	FROG PLATE (14–136–55LC)	SD–2629	22	6	BOLT, 1 3/8" DIA X 5 1/2", SQUARE HEAD, GR 8	–
8	1	FROG PLATE (14–136–62LC)	SD–2631	23	2	SECURITY LOCK NUT, 1" DIA, HEX (SH521), GR 5	–
9	1	FROG PLATE (14–136–64LC)	SD–2631	24	24	NUT, 1" DIA HEAVY HEX, SLOTTED, GR 5	–
10	1	FROG PLATE (14–136–65LC)	SD–2633	25	6	SECURITY LOCK NUT, 1 3/8" DIA HEX (SH530), GR 8	–
11	1	FROG PLATE (14–136–66LC)	SD–2633	26	16	FLAT WASHER, FOR 1" DIA x 5/32" THICK, HARDENED	–
12	4	HORN KEEPER, REVERSIBLE	–	27	6	FLAT WASHER, FOR 1 3/8" DIA x 1/4" THICK, HARDENED	–
13	4	WEAR PLATE FOR REVERSIBLE HORN KEEPER	–	28	6	TAIL WASHER, FLAT (837K)	–
14	1	SPRING BOX ASSEMBLY, WITH 3" MAXIMUM PLUNGER TRAVEL	–	29	28	PANDROL SPRING CLIP E2055	–
15	1	RETARDER, ENIDINE P/N: SP22917, CLEVIS ENDS WITH HARDWARE	–	30	1	PANDROL SPRING CLIP E2056	–
				31	24	COTTER PIN, 1/4" DIA x 2" LONG	–





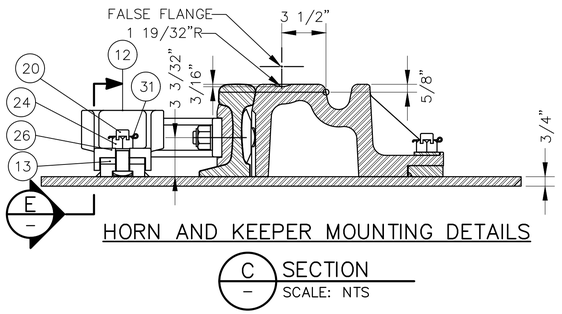
FLAT RAIL BRACE MOUNTING DETAILS, TYPICAL 3 PLACES

A – SECTION
SCALE: NTS



SPRING BOX DETAIL RETARDER REMOVED FOR CLARITY

B – SECTION
SCALE: NTS

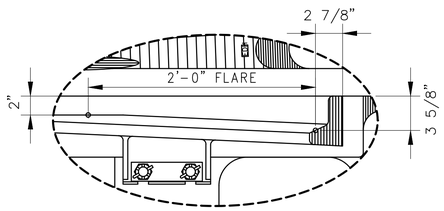


HORN AND KEEPER MOUNTING DETAILS

C – SECTION
SCALE: NTS

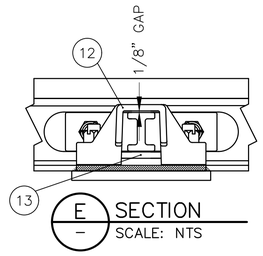
NOTES:

1. RETARDER CLOSING TIME RANGES FROM 1 TO 3 MINUTES
2. SPRING BOX LOAD IS 300 LBS/IN
3. SPRING WING SHALL BE THROWN TO A 1 7/8" FLANGEWAY AT THE 3/4" POINT TO DETERMINE THE SPRING WING THROWN POSITION
4. FLAT RAIL BRACES (ITEM NO 17) SHALL BE WELDED WHERE SHOWN, UP AGAINST SPRING WING WHEN FULLY THROWN
5. RAIL END DRILLING SHALL BE @ 9" AND 15 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
6. RETARDER BRACKET (ITEM NO 16) SHALL BE WELDED AS SHOWN
7. FROG SHALL BE CONSTRUCTED TO TOLERANCES GIVEN ON LATEST AREMA PLAN 1010, PERMISSIBLE VARIATIONS IN COMPLETED FROGS
8. INSERT SHALL BE EXPLOSIVE DEPTH HARDENED TO 352 BRINELL PER AREMA
9. NAME TAG SHALL BE AFFIXED TO RIGID WING RAIL NEAR 1/2" PT WITH INFORMATION SHOWN
10. CALTRAIN WILL CONSIDER A TAPERED HEEL SPRING OF SAME ALIGNMENT AND DIMENSIONS TO REPLACE WSM

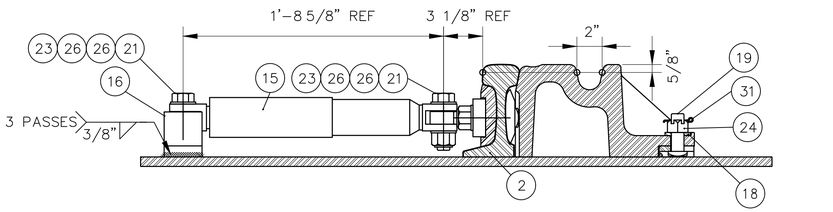


DIMENSIONS AT GAUGE ELEVATION

1 – DETAIL
SCALE: NTS



E – SECTION
SCALE: NTS



RETARDER MOUNTING DETAIL SPRING BOX REMOVED FOR CLARITY

D – SECTION
SCALE: NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

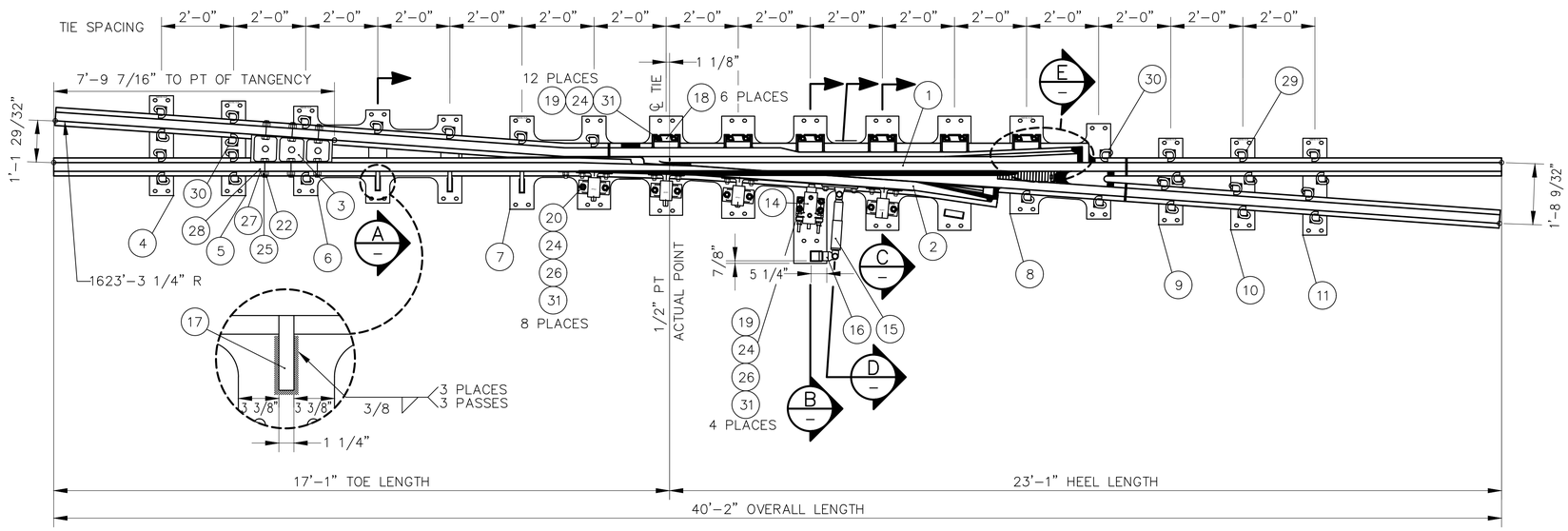
SPECIAL TRACKWORK
NO. 14 TURNOUT

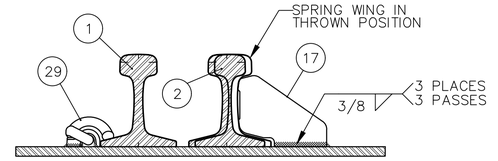
WSM FROG LH AND FROG PACK

CADD FILE NAME:	SD–2623
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2623

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	NO 14–136 LB RE SPRING FROG, RH POINT ASSEMBLY	–
2	1	SPRING WING RAIL, NO 14–136 LB RE, RH, C/W HARDWARE	–
3	1	TOE BLOCK, NO 14–136 LB RE WSM	–
4	1	FROG PLATE (14–136–50RC)	SD–2626
5	1	FROG PLATE (14–136–51RC)	SD–2626
6	1	FROG PLATE (14–136–52RC)	SD–2628
7	1	FROG PLATE (14–136–55RC)	SD–2630
8	1	FROG PLATE (14–136–62RC)	SD–2632
9	1	FROG PLATE (14–136–64RC)	SD–2632
10	1	FROG PLATE (14–136–65RC)	SD–2634
11	1	FROG PLATE (14–136–66RC)	SD–2634
12	4	HORN KEEPER, REVERSIBLE	–
13	4	WEAR PLATE FOR REVERSIBLE HORN KEEPER	–
14	1	SPRING BOX ASSEMBLY, WITH 3" MAXIMUM PLUNGER TRAVEL	–
15	1	RETARDER, ENIDINE P/N: SP22917, CLEVIS ENDS WITH HARDWARE	–

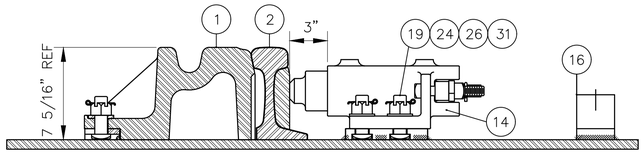
BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
16	1	RETARDER PLATE BRACKET FOR FROG C/W HYDRAULIC RETARDER	–
17	3	FLAT RAIL BRACE FOR NON D–BAR APPLICATIONS	–
18	6	WASHER, BOLT CAPTURE STYLE, 1/4" THICK	–
19	16	BOLT, 1" DIA x 3", THIN SQ HEAD, DRILLED @ 2 1/2", GR 5	–
20	8	BOLT, 1" DIA x 3 1/2", THIN SQ HEAD, DRILLED @ 2 11/16", GR 5	–
21	2	BOLT, 1" DIA x 4 1/8" HEAVY HEX HEAD, GR 8	–
22	6	BOLT, 1 3/8" DIA x 5 1/2", SQUARE HEAD, GR 8	–
23	2	SECURITY LOCK NUT, 1" DIA, HEX (SH521), GR 5	–
24	24	NUT, 1" DIA HEAVY HEX, SLOTTED, GR 5	–
25	6	SECURITY LOCK NUT, 1 3/8" DIA HEX (SH530), GR 8	–
26	16	FLAT WASHER, FOR 1" DIA x 5/32" THICK, HARDENED	–
27	6	FLAT WASHER, FOR 1 3/8" DIA x 1/4" THICK, HARDENED	–
28	6	TAIL WASHER, FLAT (837K)	–
29	27	PANDROL SPRING CLIP E2055	–
30	2	PANDROL SPRING CLIP E2056	–
31	24	COTTER PIN, 1/4" DIA x 2" LONG	–





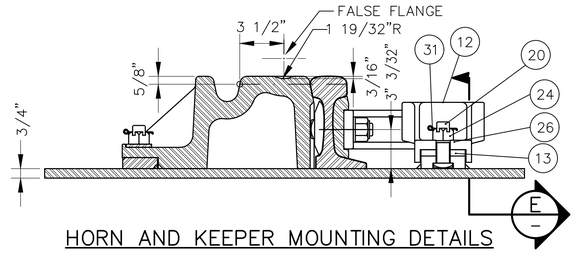
FLAT RAIL BRACE MOUNTING DETAILS, TYPICAL 3 PLACES

A – SECTION
SCALE: NTS



SPRING BOX DETAIL RETARDER REMOVED FOR CLARITY

B – SECTION
SCALE: NTS

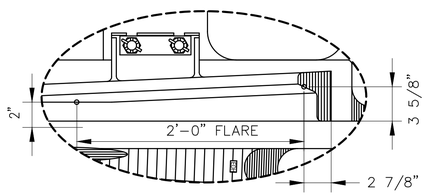


HORN AND KEEPER MOUNTING DETAILS

C – SECTION
SCALE: NTS

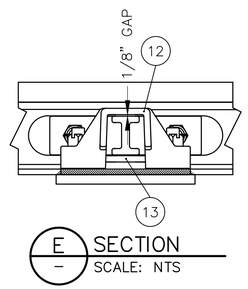
NOTES:

1. RETARDER CLOSING TIME RANGES FROM 1 TO 3 MINUTES
2. SPRING BOX LOAD IS 300 LBS/IN
3. SPRING WING SHALL BE THROWN TO A 1 7/8" FLANGEWAY AT THE 3/4"POINT TO DETERMINE THE SPRING WING THROWN POSITION
4. FLAT RAIL BRACES (ITEM NO 17) SHALL BE WELDED WHERE SHOWN, UP AGAINST SPRING WING WHEN FULLY THROWN
5. RAIL END DRILLING SHALL BE @ 9" AND 15 1/2", 33/32" ABOVE RAIL BASE, 15/16" DIA AT ALL 4 RAIL ENDS. ALL RAIL HOLE EDGES SHALL BE ROUNDED WITH A 1/8" R
6. RETARDER BRACKET (ITEM NO 16) SHALL BE WELDED AS SHOWN
7. FROG SHALL BE CONSTRUCTED TO TOLERANCES GIVEN ON LATEST AREMA PLAN 1010, PERMISSIBLE VARIATIONS IN COMPLETED FROGS
8. INSERT SHALL BE EXPLOSIVE DEPTH HARDENED TO 352 BRINELL PER AREMA
9. NAME TAG SHALL BE AFFIXED TO RIGID WING RAIL NEAR 1/2" PT WITH INFORMATION SHOWN
10. CALTRAIN WILL CONSIDER A TAPERED HEEL SPRING OF SAME ALIGNMENT AND DIMENSIONS TO REPLACE WSM

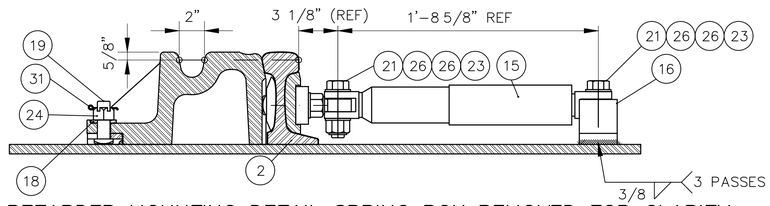


DIMENSIONS AT GAUGE ELEVATION

1 – DETAIL
SCALE: NTS



E – SECTION
SCALE: NTS



RETARDER MOUNTING DETAIL SPRING BOX REMOVED FOR CLARITY

D – SECTION
SCALE: NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

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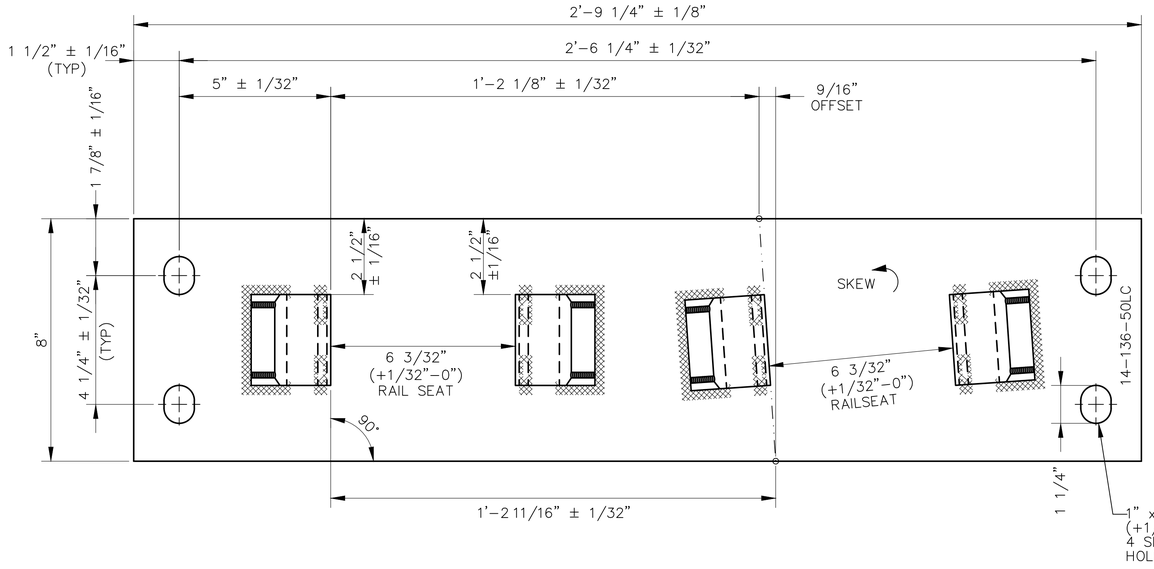
ENGINEERING STANDARD DRAWINGS

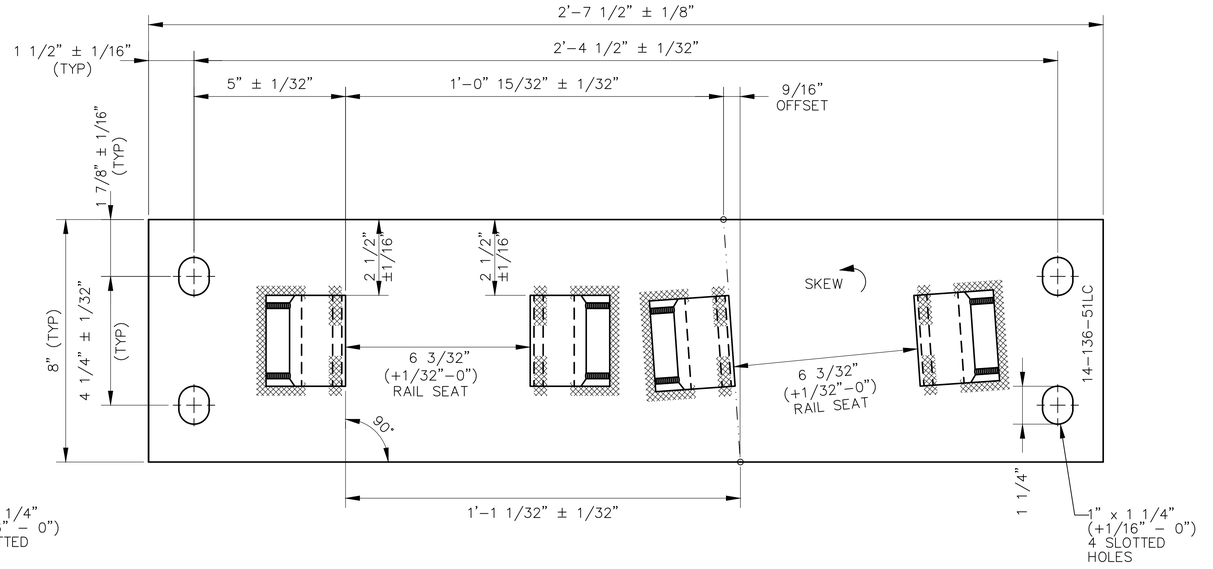
SPECIAL TRACKWORK
NO. 14 TURNOUT

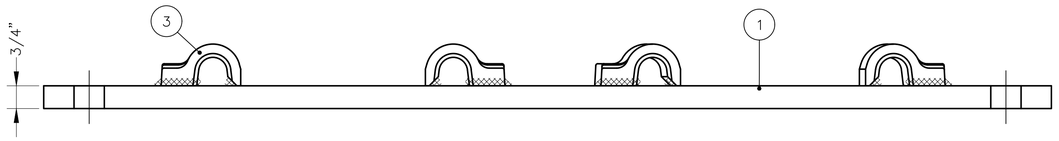
WSM FROG RH AND FROG PACK

CADD FILE NAME:	SD–2624
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2624

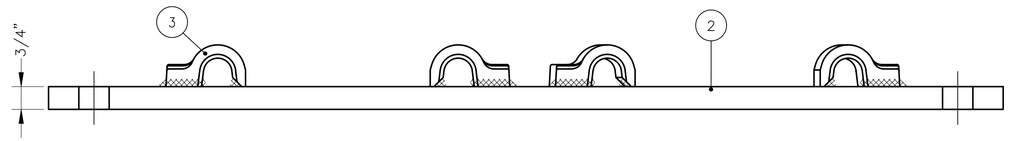
BILL OF MATERIAL				
ITEM	QTY FOR 14–136–50LC	QTY FOR 14–136–51LC	DESCRIPTION	DWG NO
1	1	0	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–9 1/4" LONG	–
2	0	1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–7 1/2" LONG	–
3	4	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–



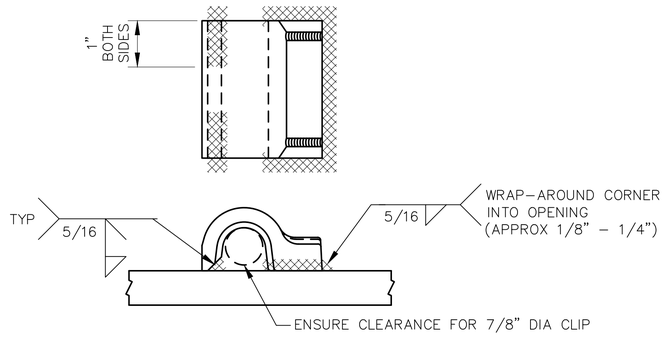




FROG BASE PLATE 14–136–50LC



FROG BASE PLATE 14–136–51LC



FORGED SHOULDER WELDING DETAIL

NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

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ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TRACKWORK
WSM FROG LH
FROG BASE PLATES
14–50LC AND 14–51LC

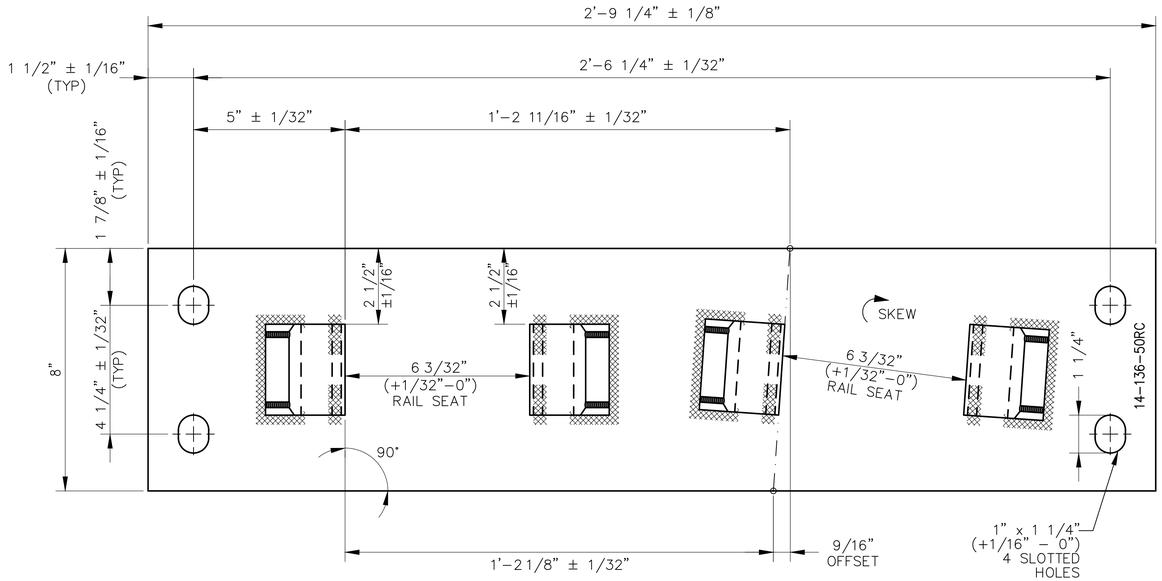
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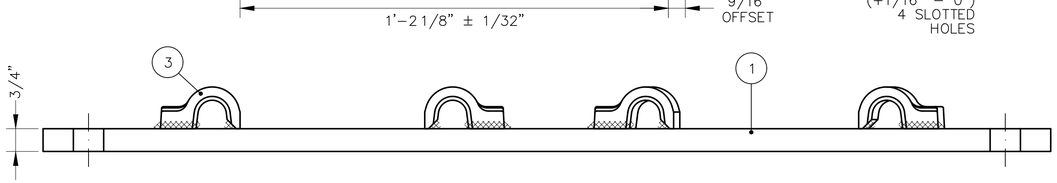
REV: | EDITION: FIFTH

SCALE: NTS

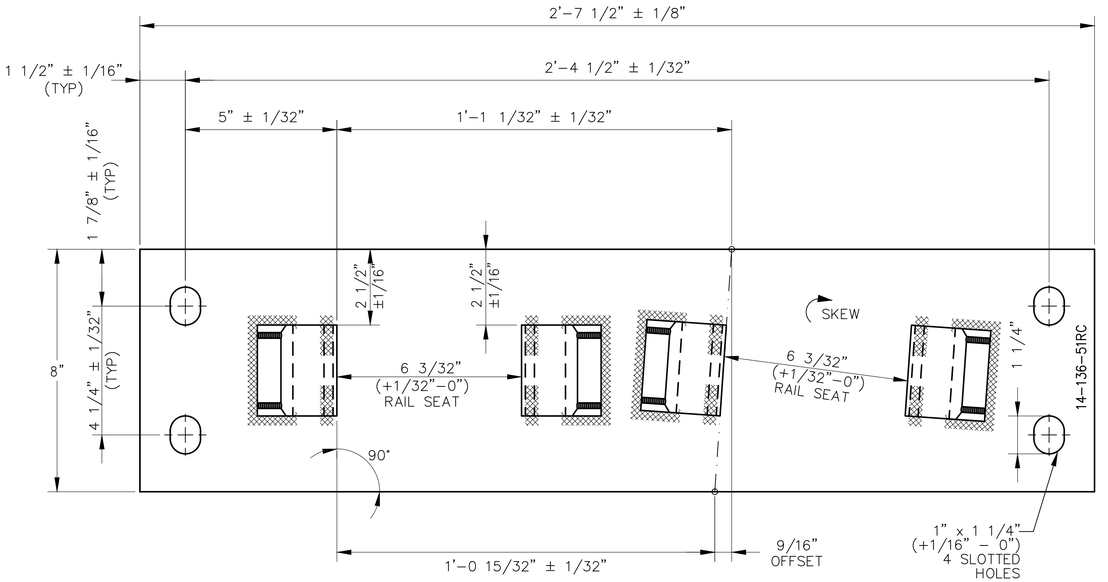
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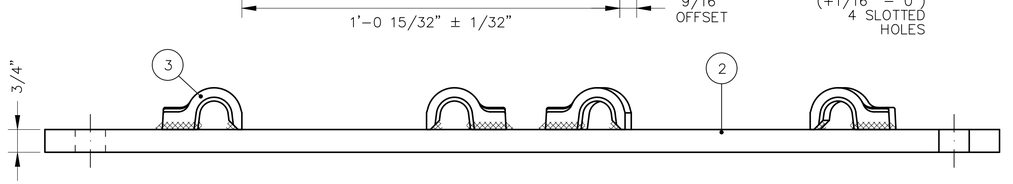
BILL OF MATERIAL				
ITEM	QTY FOR 24–136–50RC	QTY FOR 24–136–51RC	DESCRIPTION	DWG NO
1	1	0	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–9 1/4" LONG	–
2	0	1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–7 1/2" LONG	–
3	4	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–



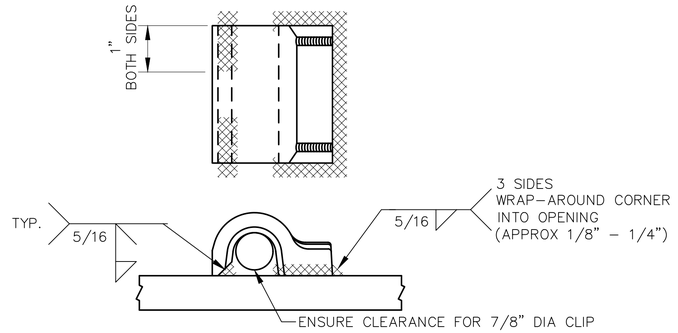


FROG BASE PLATE 14–136–50RC





FROG BASE PLATE 14–136–51RC



FORGED SHOULDER WELDING DETAIL

NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
WSM FROG RH
FROG BASE PLATES
14–50RC AND 14–51RC

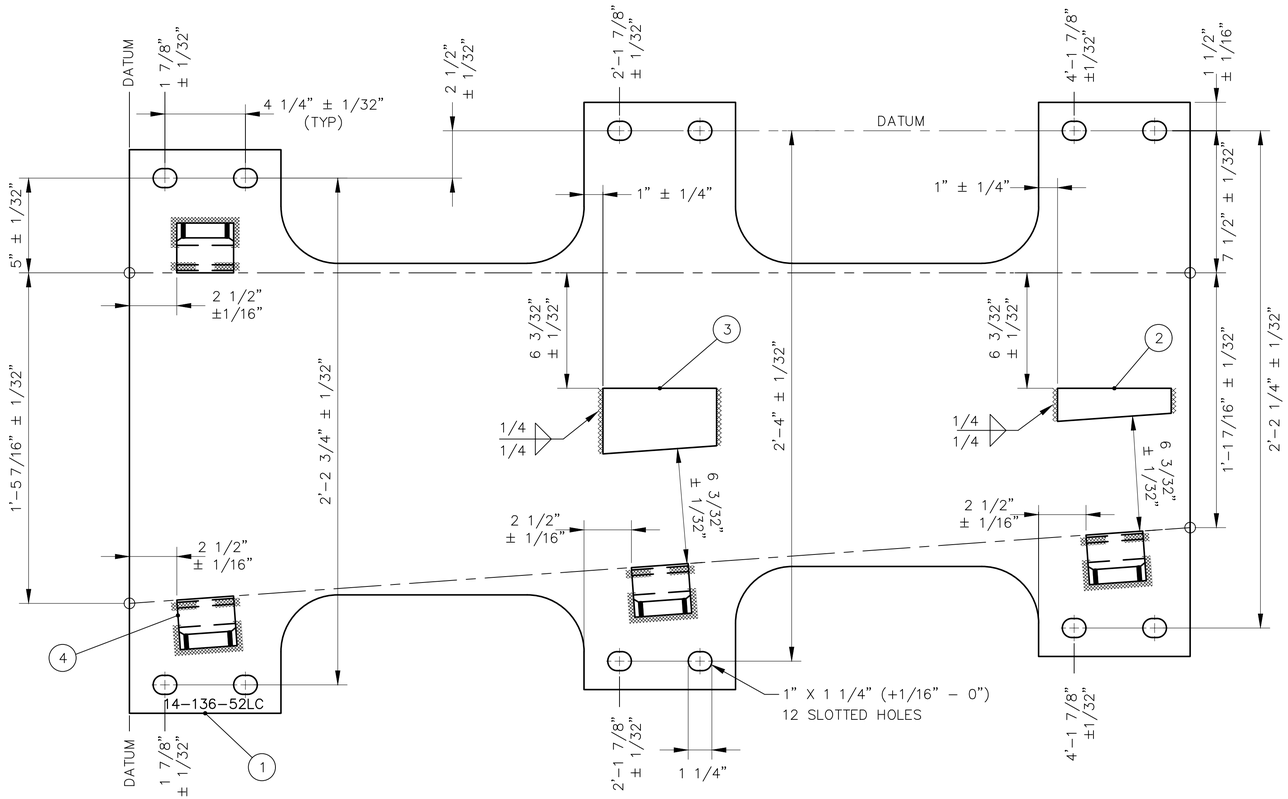
CADD FILE NAME: SD–2626

REV: | EDITION: FIFTH

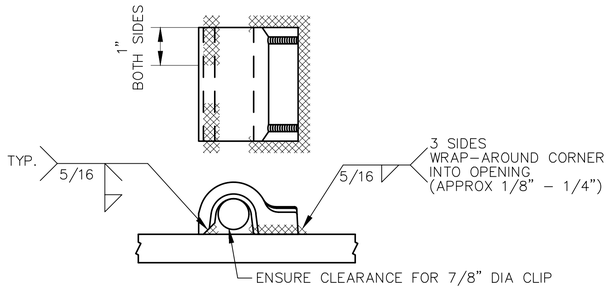
SCALE: NTS

STANDARD DRAWING NO.: SD–2626

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	BURNED PLATE, 3/4" THICK	–
2	1	BURNED STOP, 1/2" THICK, TAPERED 1 5/16" TO 1 3/4", 6" LONG	–
3	1	BURNED STOP, 1/2" THICK, TAPERED 3 1/32", TO 3 15/32", 6" LONG	–
4	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–



FROG BASE PLATE 14–136–52LC



FORGED SHOULDER WELDING DETAIL

NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
WSM FROG LH
FROG BASE PLATE 14–52LC

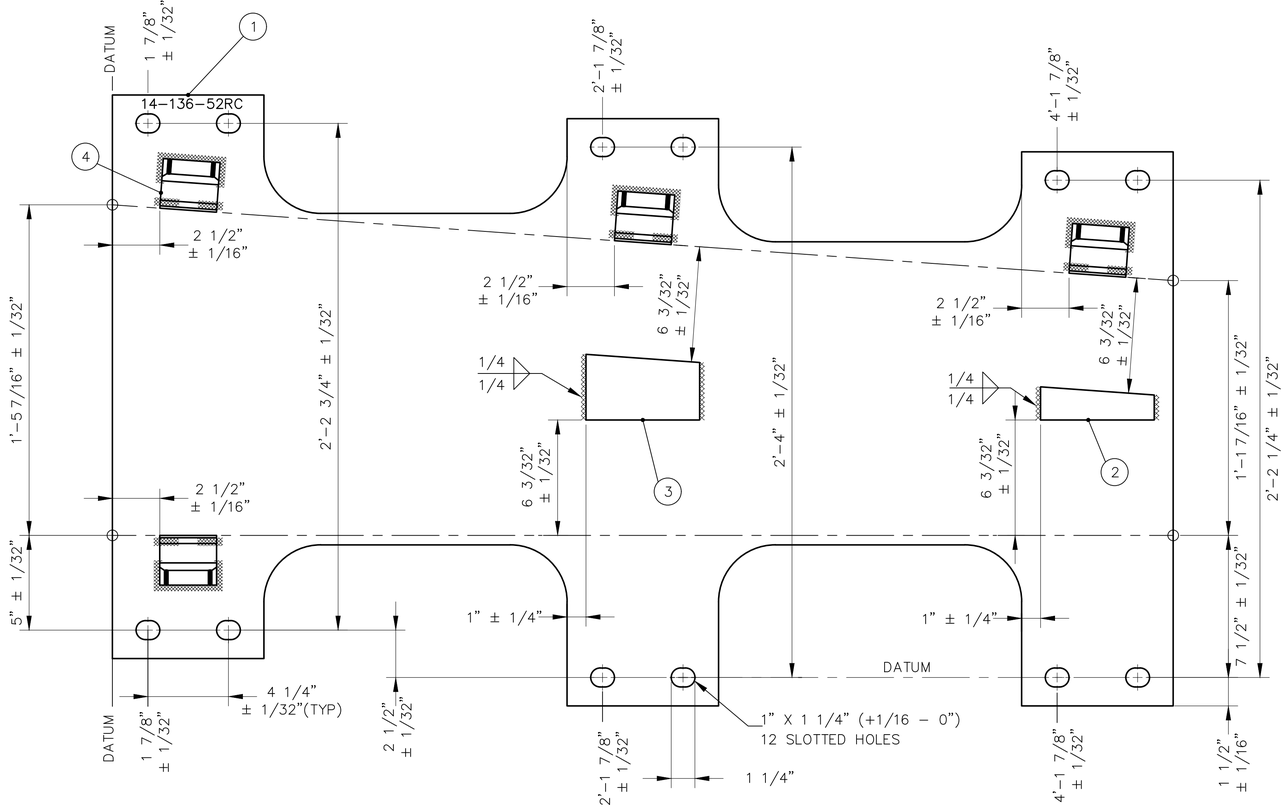
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REV: | EDITION: FIFTH

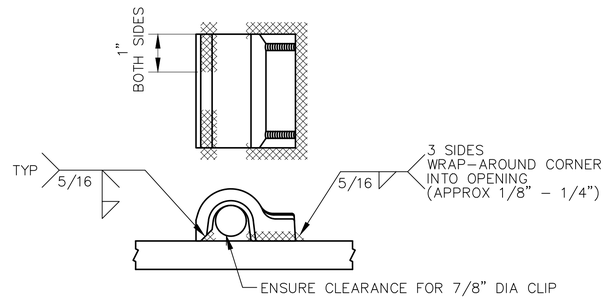
SCALE: NTS

STANDARD DRAWING NO.: SD–2627

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	BURNED PLATE, 3/4" THICK	–
2	1	BURNED STOP, 1/2" THICK, TAPERED 1 5/16" TO 1 3/4", 6" LONG	–
3	1	BURNED STOP, 1/2" THICK, TAPERED 3 1/32" TO 3 15/32", 6' LONG	–
4	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–



FROG BASE PLATE 14–136–52RC



FORGED SHOULDER WELDING DETAIL

NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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SPECIAL TRACKWORK
NO. 14 TURNOUT
WSM FROG RH
FROG BASE PLATE 14–52RC

CADD FILE NAME: SD–2628

REV: | EDITION: FIFTH

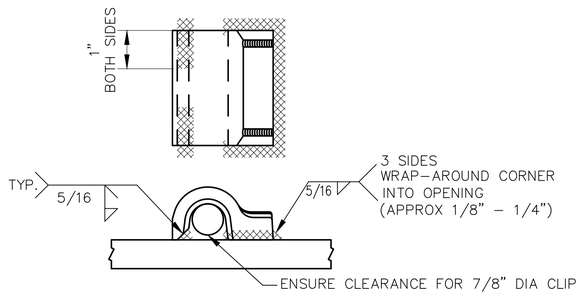
SCALE: NTS

STANDARD DRAWING NO.: SD–2628

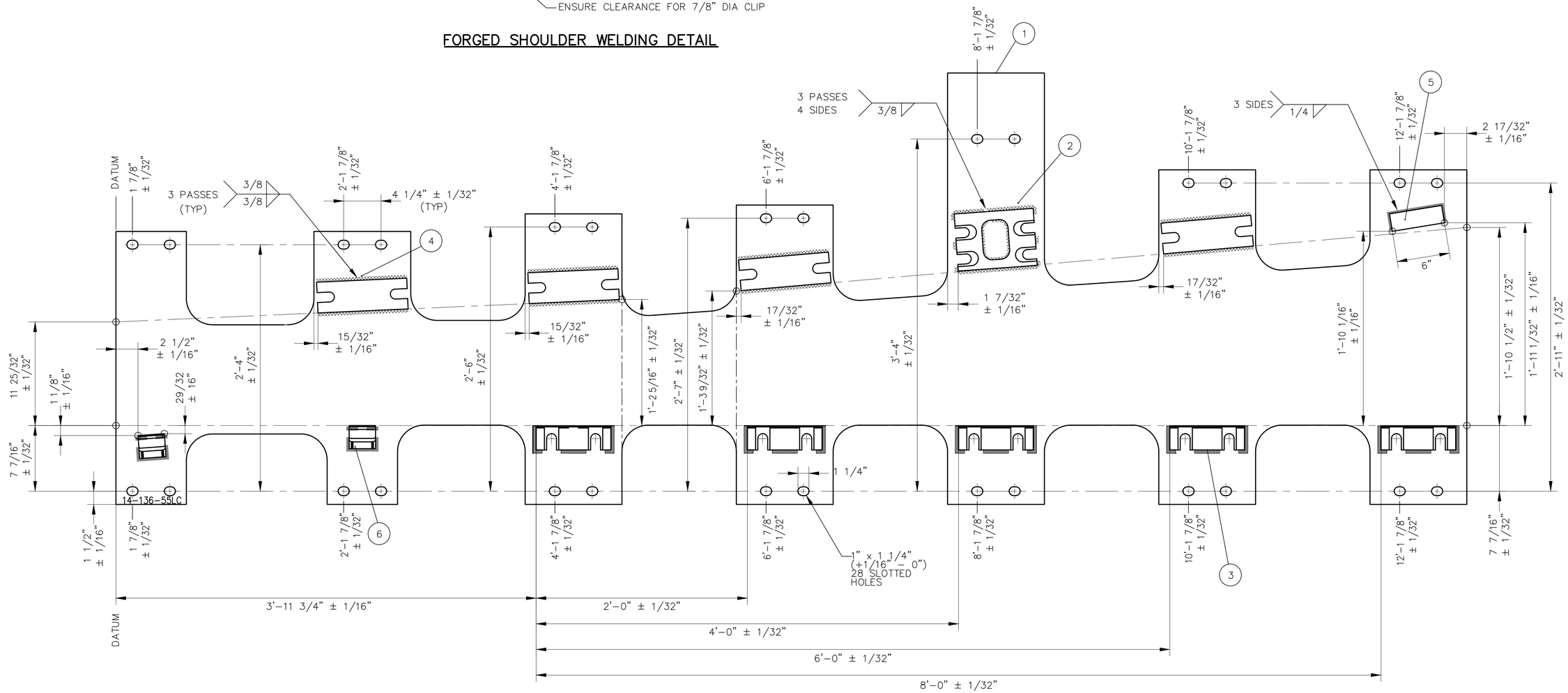
NOTES:

1. I.D. CHARACTERS SHALL BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN
2. WELDS SHALL 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

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	BURNED PLATE, 3/4" THICK	–
2	1	CAPTURE BLOCK FOR SPRING BOX	–
3	5	CAPTURE BLOCK FOR PLATE CLIP	–
4	4	CAPTURE BLOCK FOR HORN KEEPER	–
5	1	FLAT BAR, ASTM A36, 1/2" THICK x 2" x 6" LONG	–
6	2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–



FORGED SHOULDER WELDING DETAIL



FROG BASE PLATE 14–136–55LC

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
WSM FROG LH
FROG BASE PLATE 14–55LC

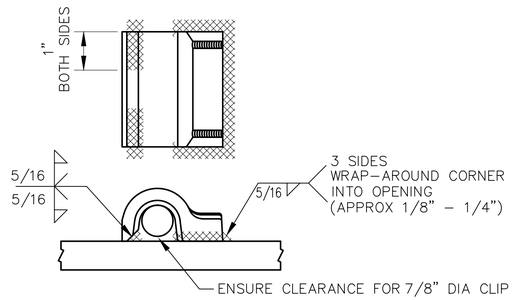
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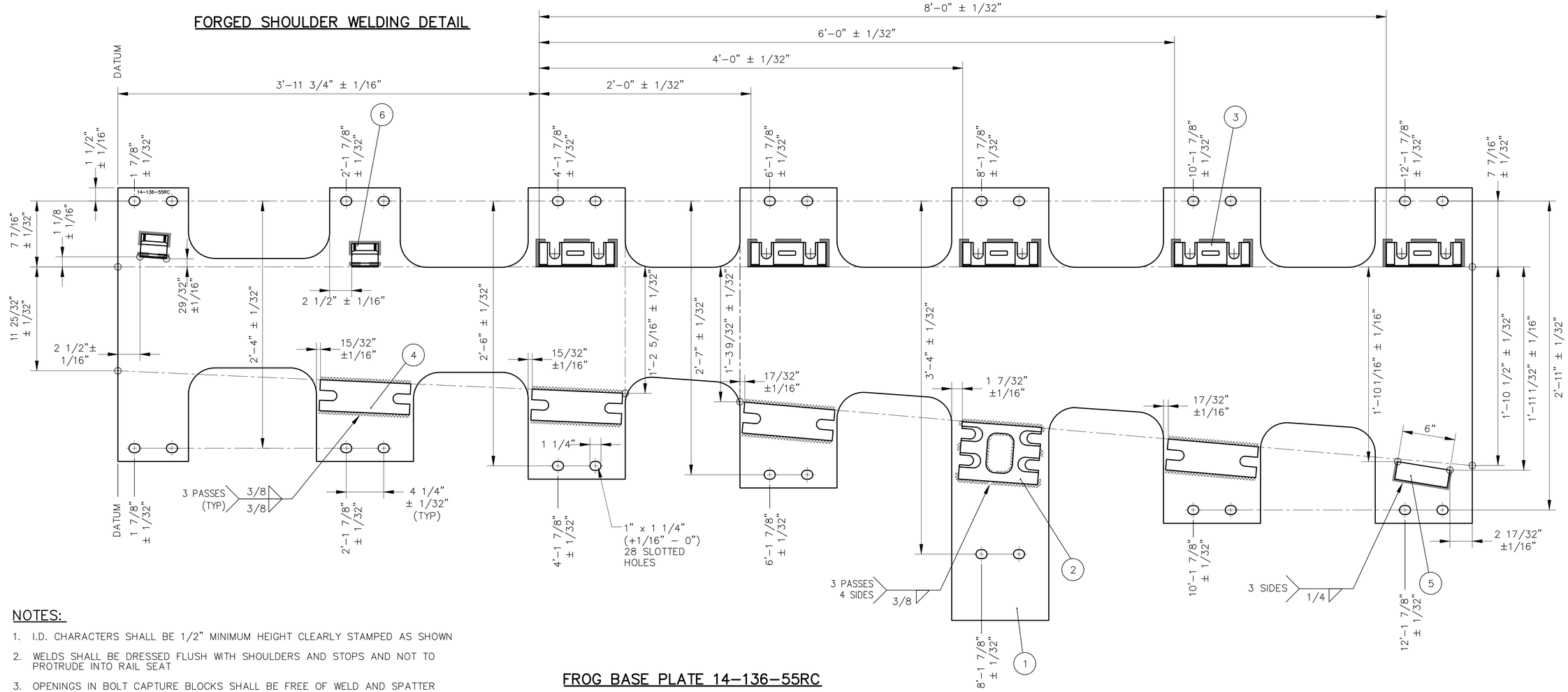
SCALE: NTS

STANDARD DRAWING NO.: SD–2629

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	BURNED PLATE, 3/4" THICK	–
2	1	CAPTURE BLOCK FOR SPRING BOX	–
3	5	CAPTURE BLOCK FOR PLATE CLIP	–
4	4	CAPTURE BLOCK FOR HORN KEEPER	–
5	1	FLAT BAR, ASTM A36, 1/2" THICK x 2" x 6" LONG	–
6	2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–



FORGED SHOULDER WELDING DETAIL



NOTES:

1. I.D. CHARACTERS SHALL BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN
2. WELDS SHALL 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

FROG BASE PLATE 14–136–55RC

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

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DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
WSM FROG RH
FROG BASE PLATE 14–55RC

CADD FILE NAME:	SD–2630
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2630

NOTES:

1. I.D. CHARACTERS SHALL BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN
2. WELDS SHALL BE DRESSED FLUSH WITH SHOULDERS AND STOPS AND NOT 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

BILL OF MATERIAL				
ITEM	QTY FOR 14–136–62LC	QTY FOR 14–136–64LC	DESCRIPTION	DWG NO
1	1	0	BURNED PLATE, 3/4" THICK	–
2	1	0	CAPTURE BLOCK FOR HORN KEEPER	–
3	3	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–
4	0	1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–4 3/4" LONG	–

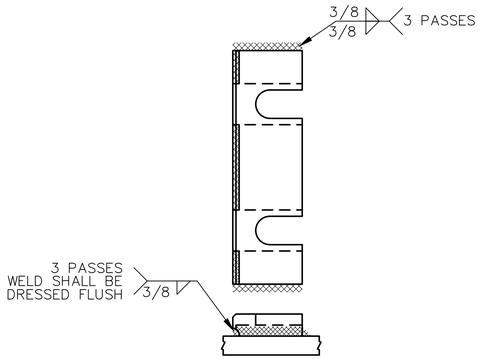
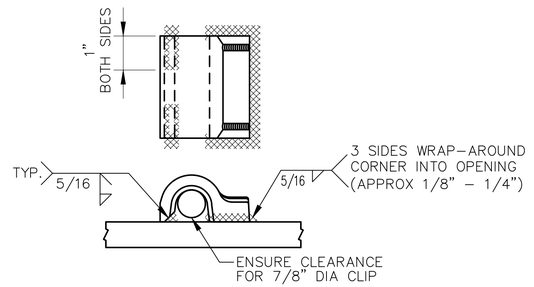
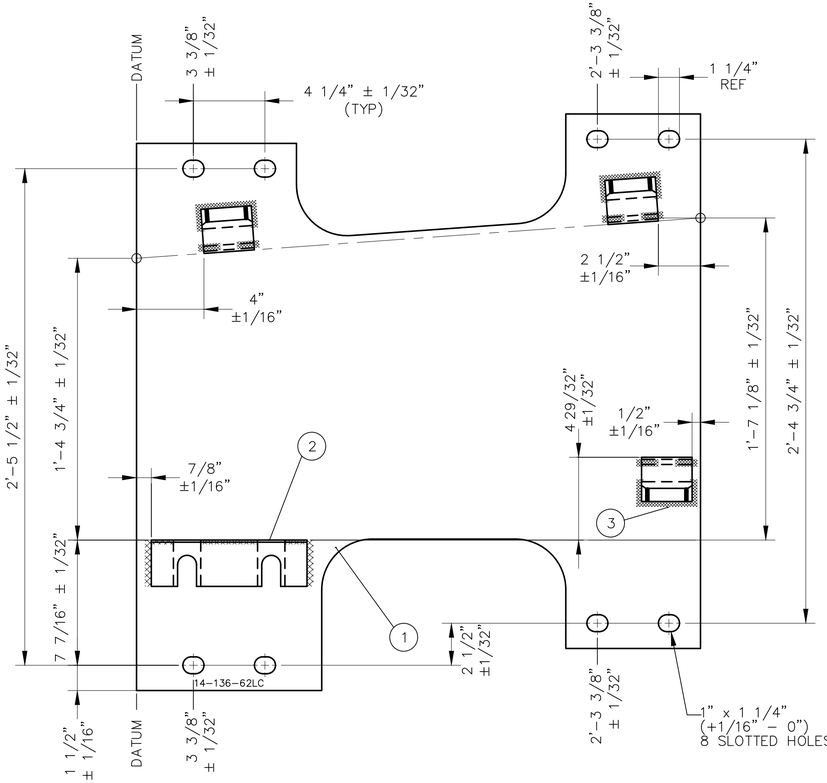


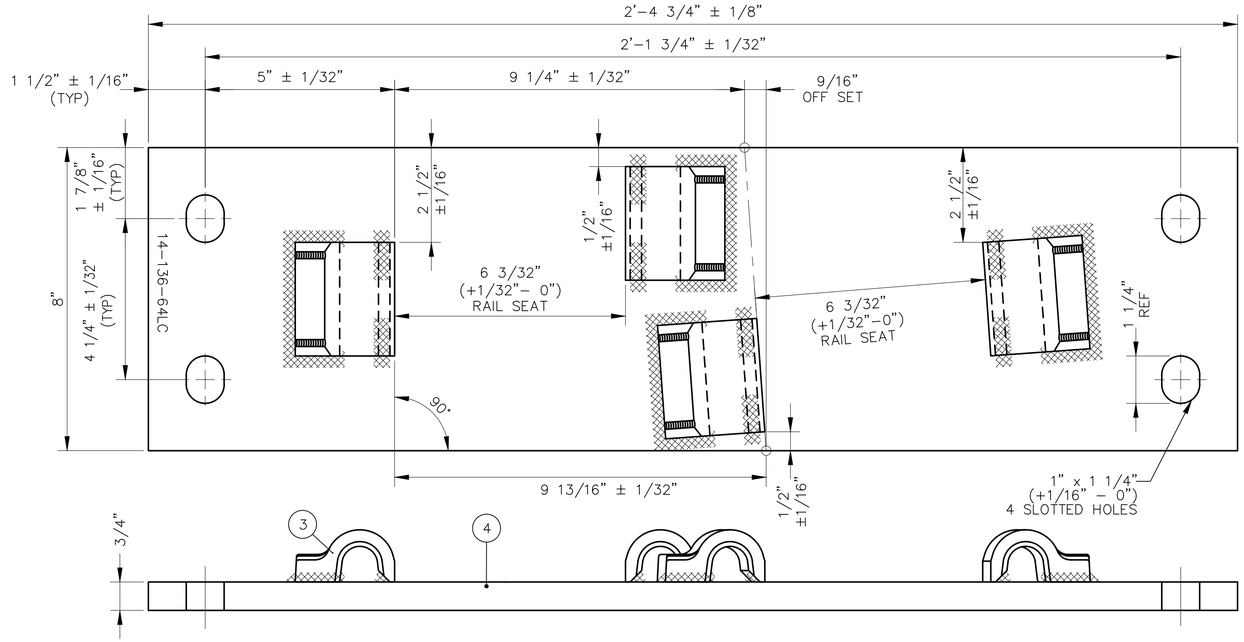
PLATE BRACE CAPTURE BLOCK WELDING DETAILS



FORGED SHOULDER WELDING DETAIL



FROG BASE PLATE 14–136–62LC



FROG BASE PLATE 14–136–64LC

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
WSM FROG LH
FROG BASE PLATES
14–62LC AND 14–64LC

CADD FILE NAME:	SD–2631
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2631

BILL OF MATERIAL				
ITEM	QTY FOR 14–136–62RC	QTY FOR 14–136–64RC	DESCRIPTION	DWG NO
1	1	0	BURNED PLATE, 3/4" THICK	–
2	1	0	CAPTURE BLOCK FOR HORN KEEPER	–
3	3	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–
4	0	1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–4 3/4" LONG	–

NOTES:

1. I.D. CHARACTERS SHALL BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN
2. WELDS SHALL BE DRESSED FLUSH WITH SHOULDERS AND STOPS AND NOT 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

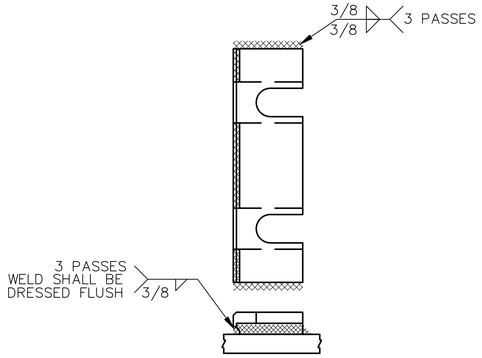
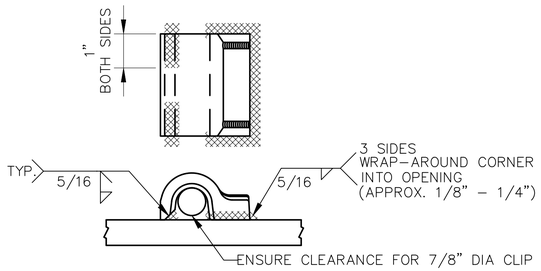
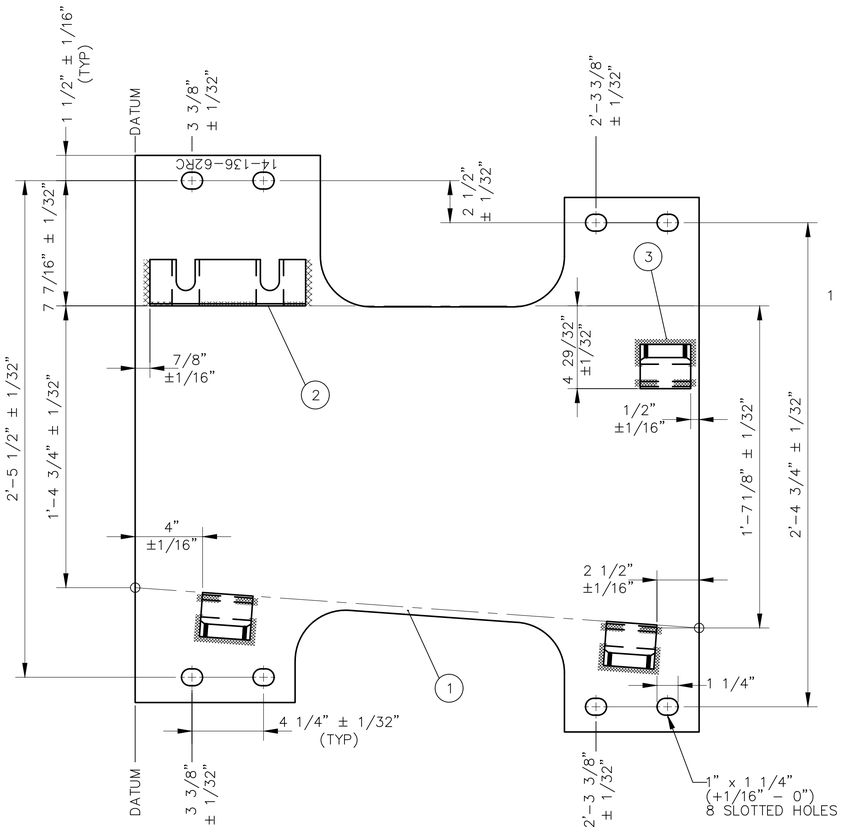


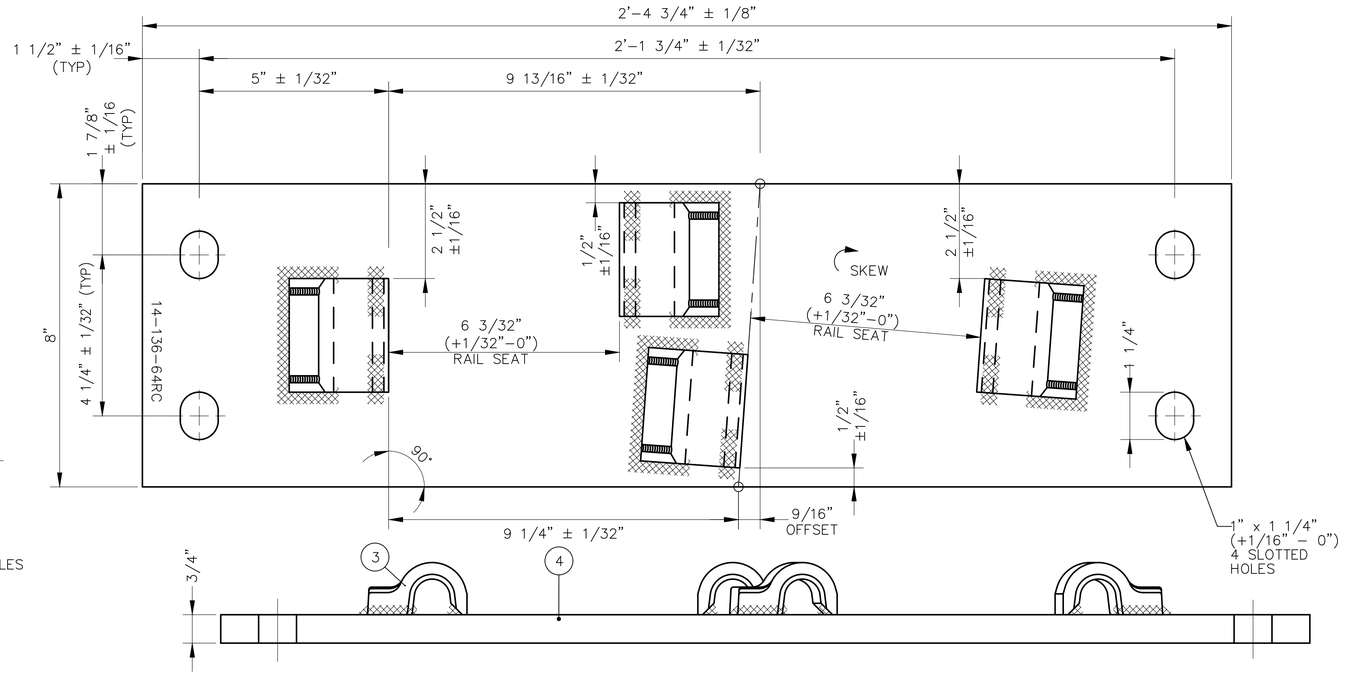
PLATE BRACE CAPTURE BLOCK WELDING DETAILS



FORGED SHOULDER WELDING DETAIL



FROG BASE PLATE 14–136–62RC



FROG BASE PLATE 14–136–64RC

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
WSM FROG RH
FROG BASE PLATES
14–62RC AND 14–64RC

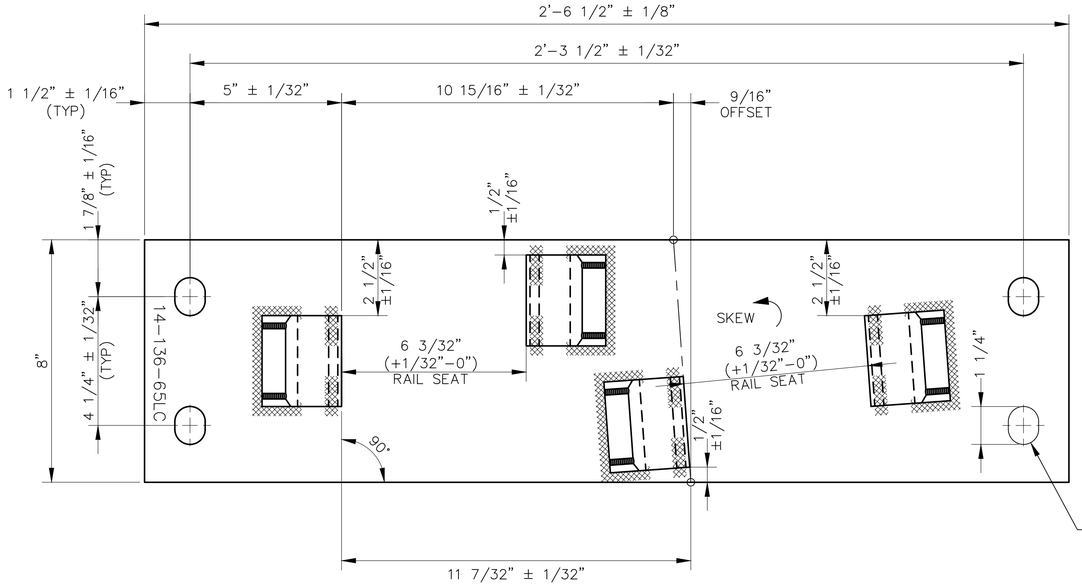
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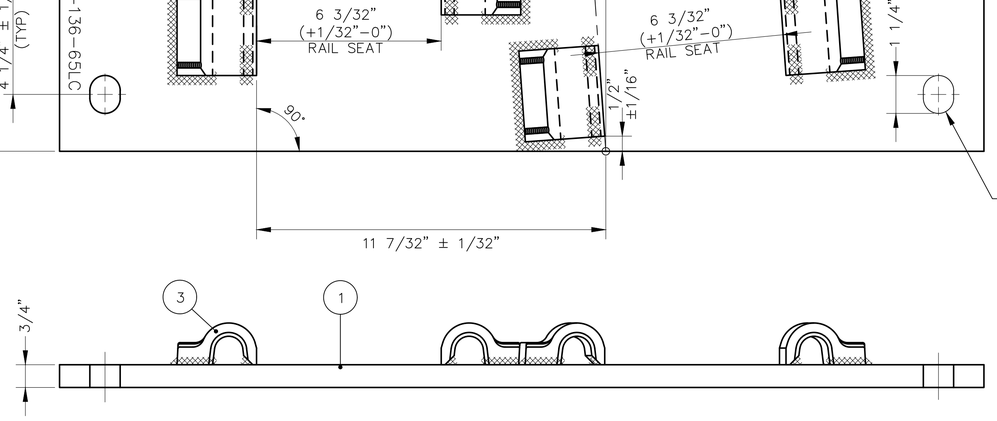
REV: | EDITION: FIFTH

SCALE: NTS

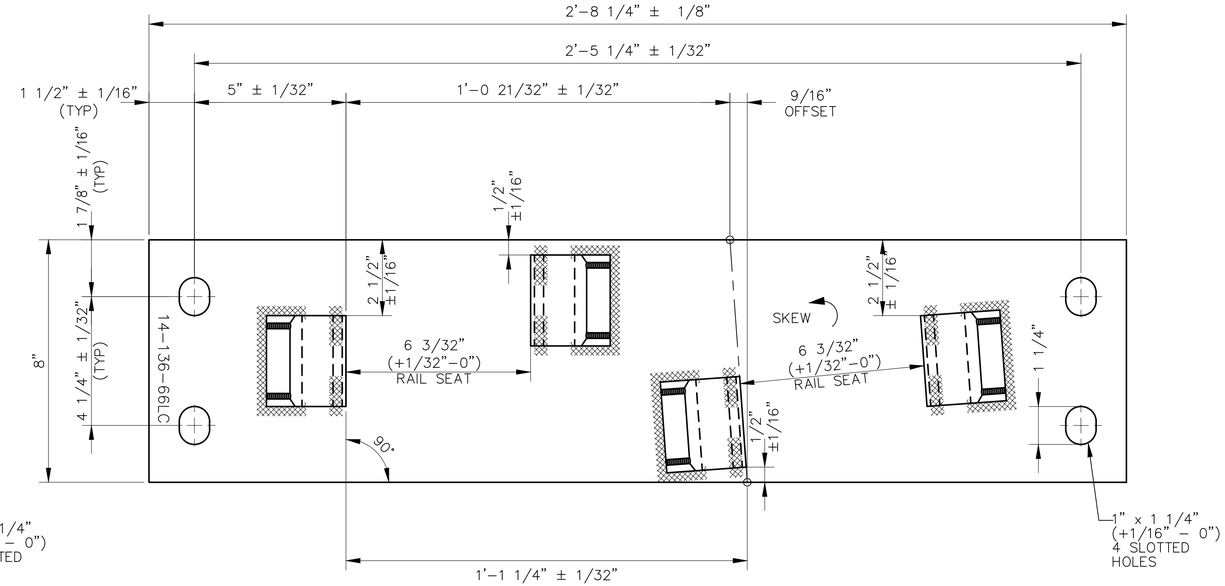
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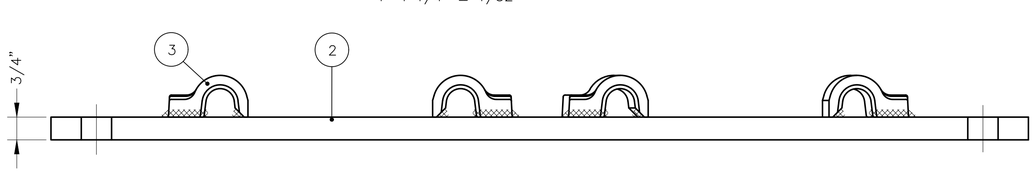
BILL OF MATERIAL				
ITEM	QTY FOR 14–136–65LC	QTY FOR 14–136–66LC	DESCRIPTION	DWG NO
1	1	0	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–6 1/2" LONG	–
2	0	1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–8 1/4" LONG	–
3	4	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–



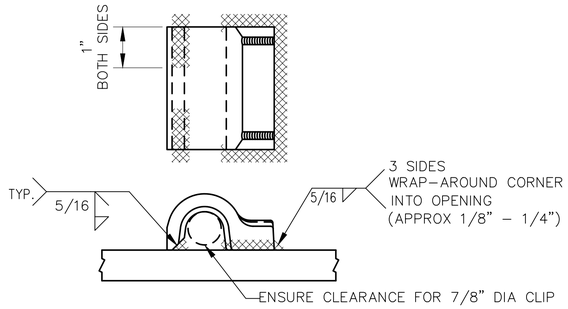


FROG BASE PLATE 14–136–65LC





FROG BASE PLATE 14–136–66LC



FORGED SHOULDER WELDING DETAIL

NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
WSM FROG LH
FROG BASE PLATES
14–65LC AND 14–66LC

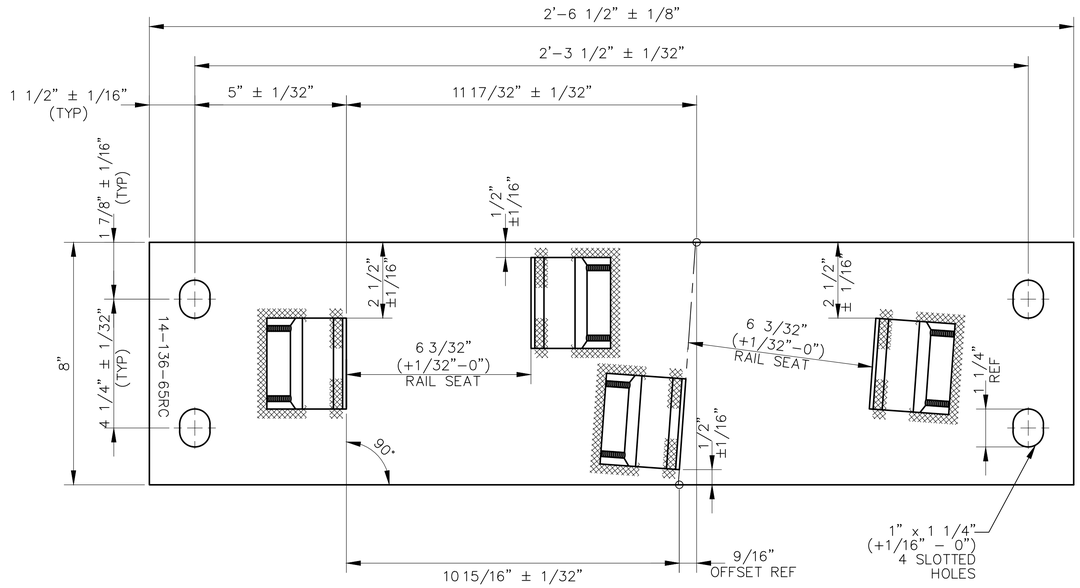
CADD FILE NAME: SD–2633

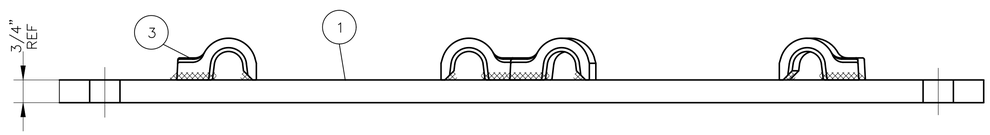
REV: | EDITION: FIFTH

SCALE: NTS

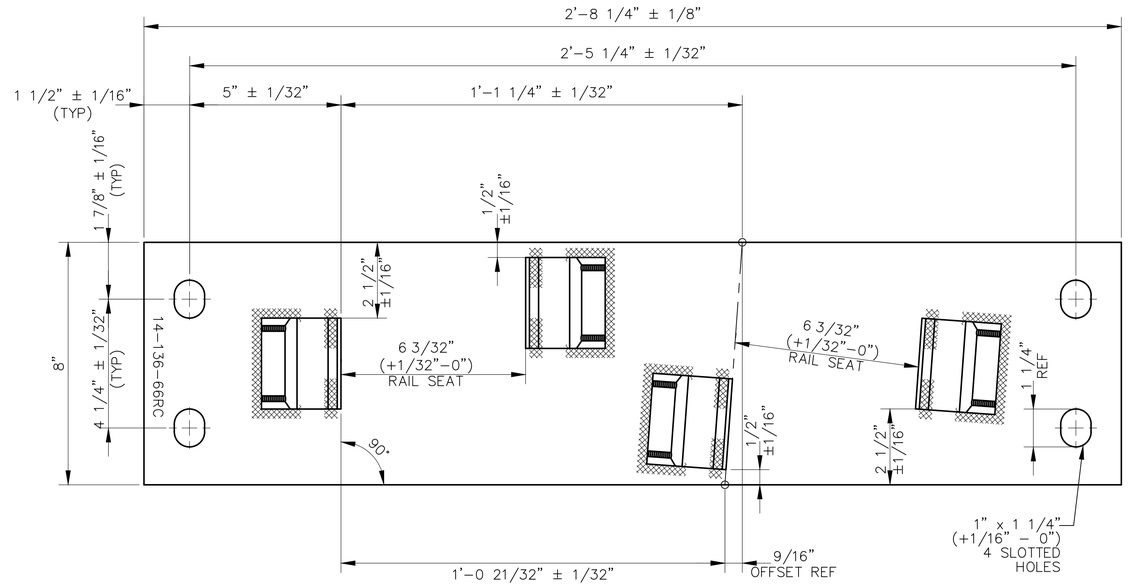
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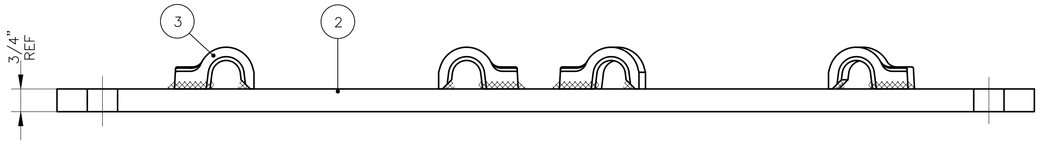
BILL OF MATERIAL				
ITEM	QTY FOR 14–136–65RC	QTY FOR 14–136–66RC	DESCRIPTION	DWG NO
1	1	0	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–6 1/2" LONG	–
2	0	1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–8 1/4" LONG	–
3	4	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–



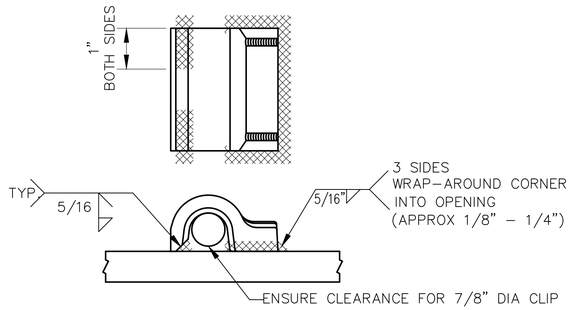


FROG BASE PLATE 14–136–65RC





FROG BASE PLATE 14–136–66RC



FORGED SHOULDER WELDING DETAIL

NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

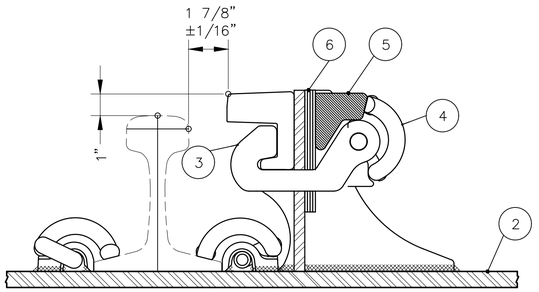
SPECIAL TRACKWORK
NO. 14 TURNOUT
WSM FROG RH
FROG BASE PLATES
14–65RC AND 14–66RC

CADD FILE NAME: SD–2634

REV: | EDITION: FIFTH

SCALE: NTS

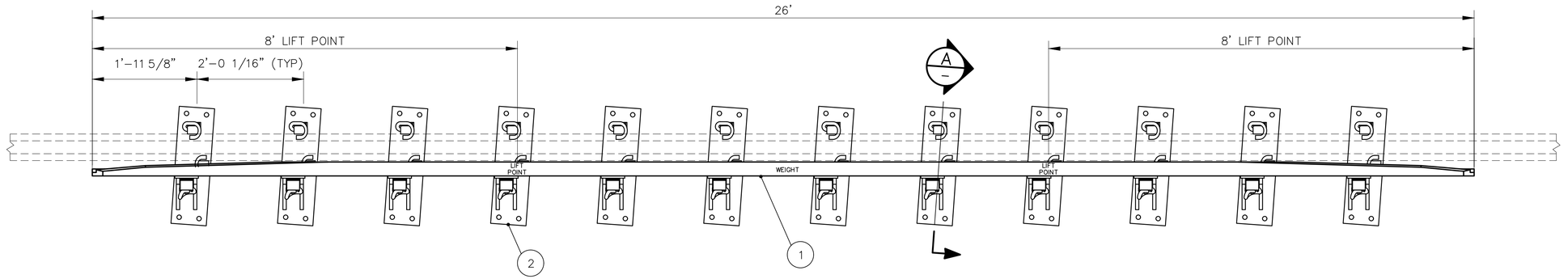
STANDARD DRAWING NO.: SD–2634

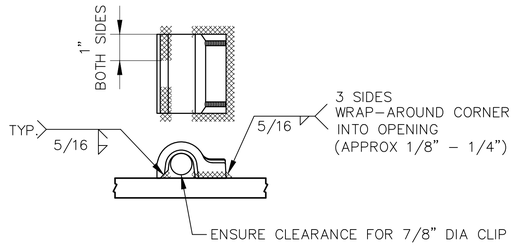


GUARD RAIL HARDWARE ASSEMBLY

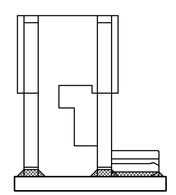
A — PARTIAL SECTION
SCALE: NTS

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	GUARD BAR, UIC33 1200 SERIES X 26'–0" LONG	–
2	12	GUARD RAIL PLATE ASSEMBLY, RAISED 1", LH SKEWED	–
3	12	H–CLAMP	–
4	36	CLIP, PANDROL, E2055	–
5	12	LOCKING BLOCK	–
6	48	SHIM, 1/8" THICK X 3" X 6" LONG	–

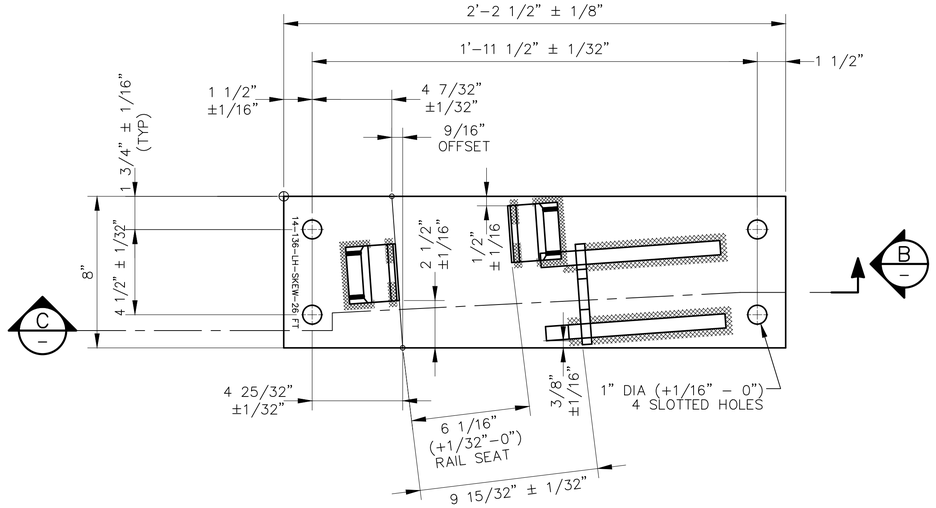




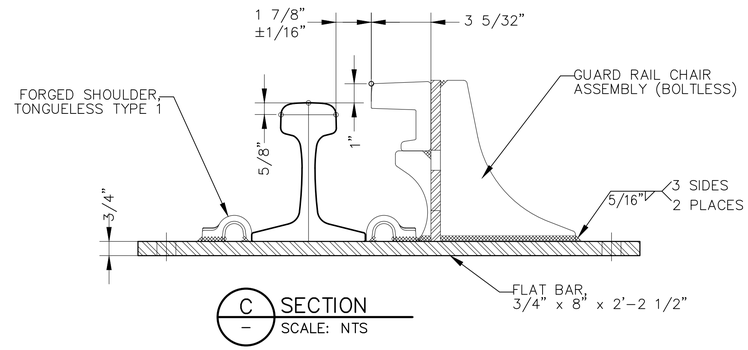
FORGED SHOULDER WELDING DETAIL



B — VIEW
SCALE: NTS



GUARD RAIL PLATE ASSEMBLY



C — SECTION
SCALE: NTS

NOTES:

1. PLATE SPACING IS SET FOR SHIPPING ONLY. FINAL PLATE SPACING SHALL BE DETERMINED BY TIE SPACING AT TIME OF INSTALLATION
2. PANDROL SPRING CLIPS (E2055) SHALL BE INCLUDED IN ASSEMBLY
3. LIFT POINTS AND WEIGHT OF ASSEMBLY SHALL BE MARKED ON HEAD OF WEAR BAR WITH WHITE PAINT
4. PLATE SHALL 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 SD–2301 FOR STRAIGHT SIDE GUARD RAIL

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

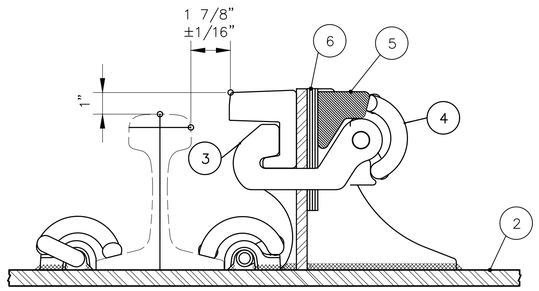
Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
GUARD RAIL ASSEMBLY
LH SKEWED WITH PLATES 26'–0" LONG

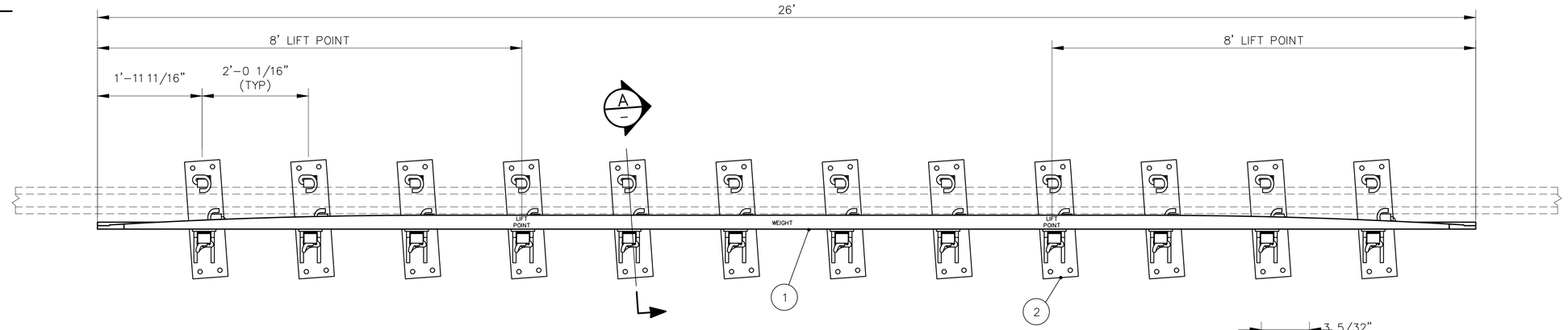
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REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2635

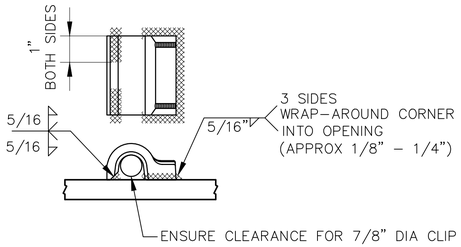


GUARD RAIL HARDWARE ASSEMBLY

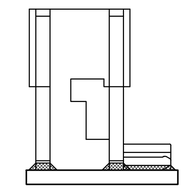
A – PARTIAL SECTION
SCALE: NTS

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	GUARD BAR, UIC33 1200 SERIES X 26'–0" LONG	–
2	12	GUARD RAIL PLATE ASSEMBLY, RAISED 1", RH SKEWED	–
3	12	H–CLAMP	–
4	36	CLIP, PANDROL, E2055	–
5	12	LOCKING BLOCK	–
6	48	SHIM, 1/8" THICK X 3" X 6" LONG	–

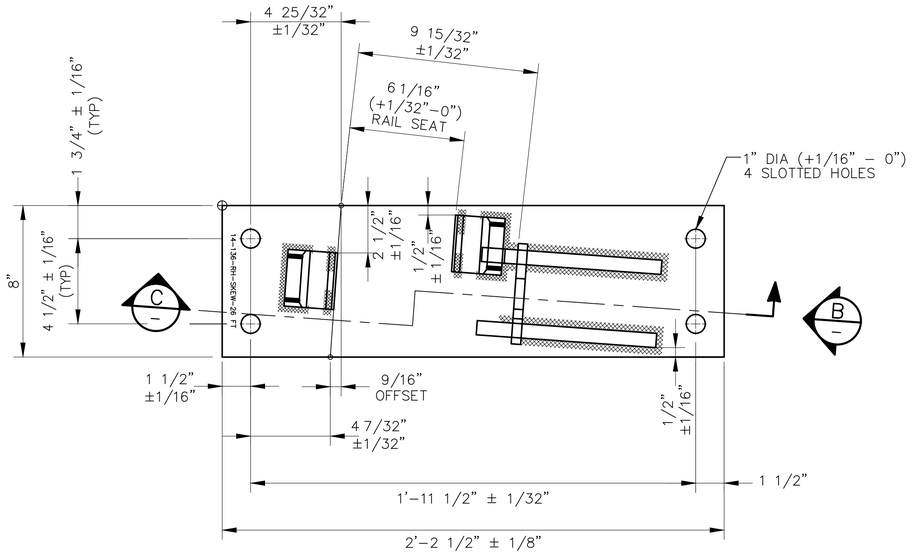




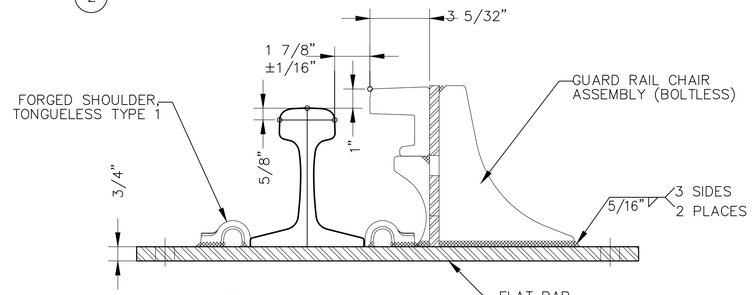
FORGED SHOULDER WELDING DETAIL



B – VIEW
SCALE: NTS



GUARD RAIL PLATE ASSEMBLY



C – SECTION
SCALE: NTS

NOTES:

1. PLATE SPACING IS SET FOR SHIPPING ONLY. FINAL PLATE SPACING SHALL BE DETERMINED BY TIE SPACING AT TIME OF INSTALLATION
2. PANDROL SPRING CLIPS (E2055) SHALL BE INCLUDED IN ASSEMBLY
3. LIFT POINTS AND WEIGHT OF ASSEMBLY SHALL BE MARKED ON HEAD OF WEAR BAR WITH WHITE PAINT
4. PLATE SHALL 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 SD–2301 FOR STRAIGHT SIDE GUARD RAIL

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

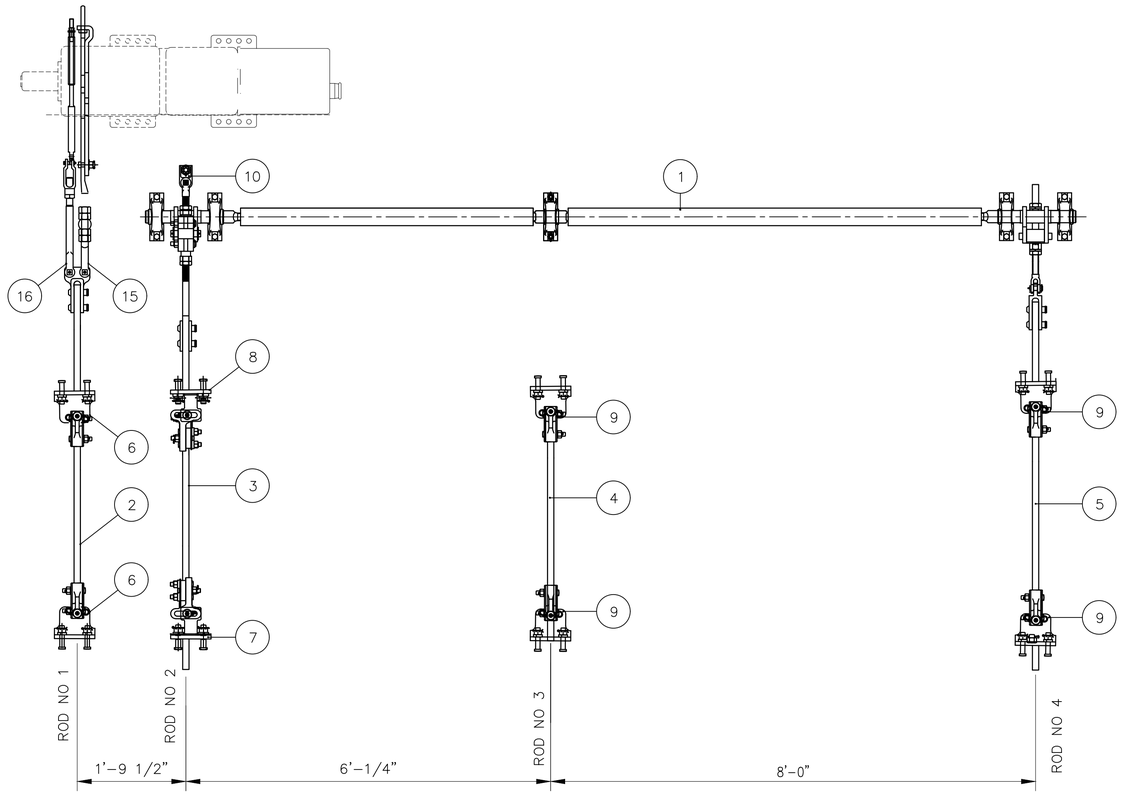
APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

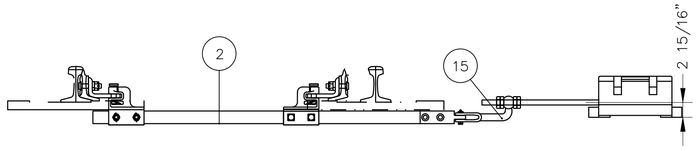
SPECIAL TRACKWORK
NO. 14 TURNOUT
GUARD RAIL ASSEMBLY
RH SKEWED WITH PLATES 26'–0" LONG

CADD FILE NAME:	SD–2636
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2636



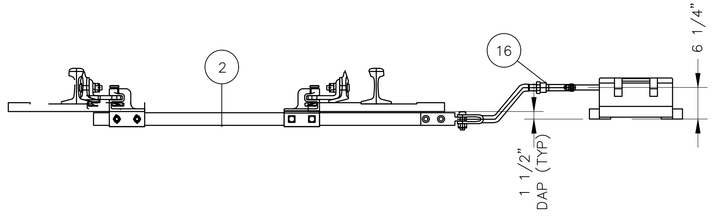
BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	ROTARY ASSIST ASSEMBLY FOR NO 14–136 LB RE TURNOUT	–
2	1	SWITCH ROD NO 1, FOR POINT DETECTOR/LOCK ROD, (14–136–1)	SD–2639
3	1	SWITCH ROD NO 2, DRIVE, C/W BASKET (14–136–2)	SD–2639
4	1	SWITCH ROD NO 3, THROW, (14–136–3)	SD–2639
5	1	SWITCH ROD NO 4, THROW, (14–136–4)	SD–2639
6	2	ROD POINT BRACKET, DETECTOR/LOCK ROD, HOLES AT 2 7/8" ARB*	–
7	1	ROD POINT BRACKET, THROW ROD, ANTI–ROLL, HOLES AT 2 7/8" ARB*, LH	–
8	1	ROD POINT BRACKET, THROW ROD, ANTI–ROLL, HOLES AT 2 7/8" ARB*, RH	–
9	4	ROD POINT BRACKET, HOLES AT 2 3/8" ARB*, C/W SQ BOLTS	–
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	–
15	1	LOCK ROD, FOR M23 SWITCH MACHINE, HST	–
16	1	DETECTOR ROD, FOR M23 SWITCH MACHINE, HST	–

ARB*–ABOVE RAIL BASE



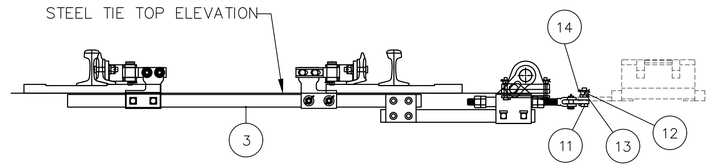
SWITCH ROD (ROD NO 1)ASSEMBLY

LOCK ROD CONNECTION SHOWN
(VIEW FROM HEEL TOWARDS PS)



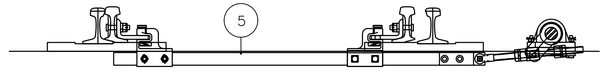
SWITCH ROD (ROD NO 1) ASSEMBLY

POINT DETECTOR ROD CONNECTION SHOWN
(VIEW FROM HEEL TOWARDS PS)



DRIVE ROD (ROD NO 2) ASSEMBLY

FRONT HELPER ROD CRANK ATTACHES TO BASKET
(VIEW FROM HEEL TOWARDS PS)



REAR HELPER (ROD NO 4) DRIVE ROD ASSEMBLY

REAR HELPER ROD CRANK ATTACHES TO ROD PIN

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

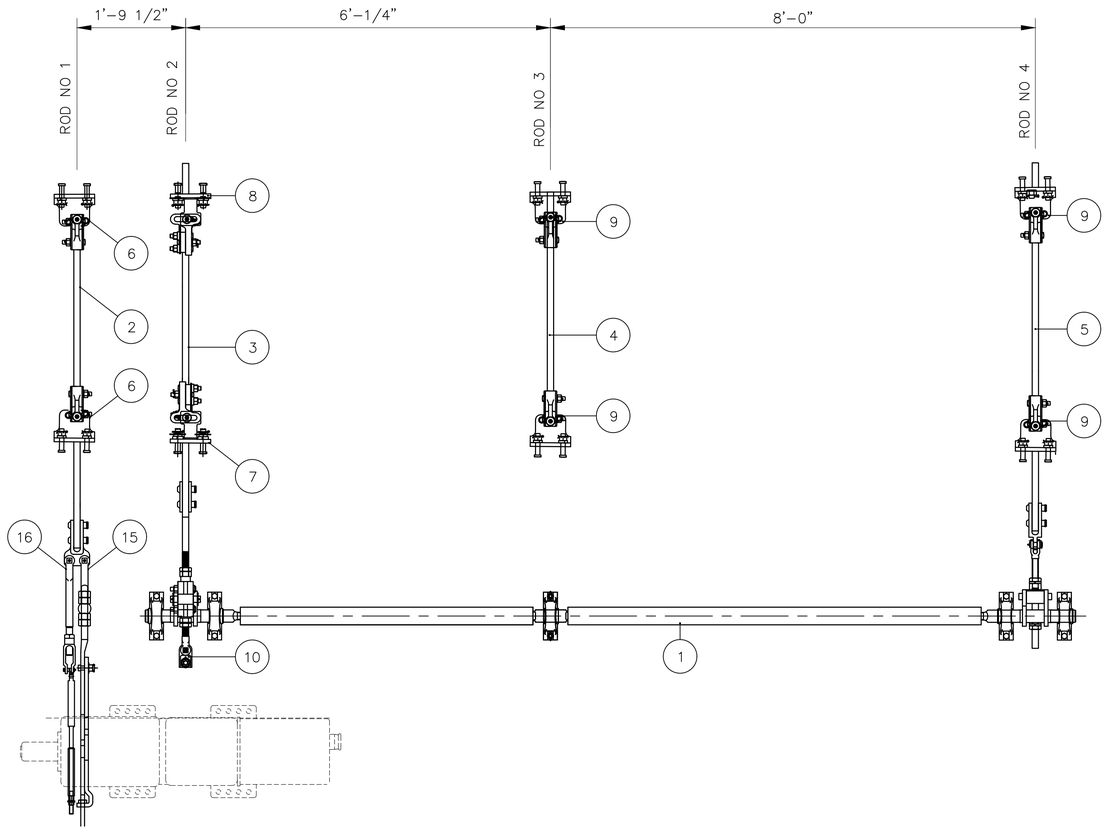
SPECIAL TRACKWORK
NO. 14 TURNOUT
HOLLOW STEEL TIE ROD ASSEMBLY
SWITCH MACHINE ON LH SIDE

CADD FILE NAME: SD–2637

REV: | EDITION: FIFTH

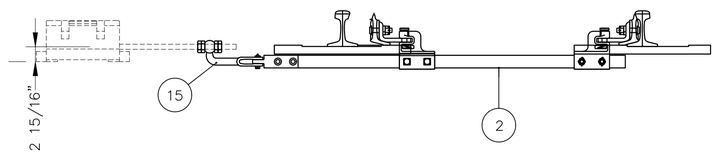
SCALE: NTS

STANDARD DRAWING NO.: SD–2637

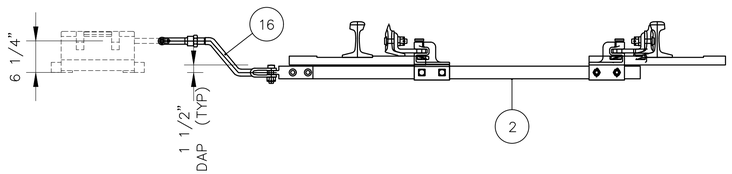


BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	ROTARY ASSIST ASSEMBLY FOR NO 14–136 LB RE TURNOUT	–
2	1	SWITCH ROD NO 1, FOR POINT DETECTOR/LOCK ROD, (14–136–1)	SD–2639
3	1	SWITCH ROD NO 2, DRIVE, C/W BASKET (14–136–2)	SD–2639
4	1	SWITCH ROD NO 3, THROW, (14–136–3)	SD–2639
5	1	SWITCH ROD NO 4, THROW, (14–136–4)	SD–2639
6	2	ROD POINT BRACKET, DETECTOR/LOCK ROD, HOLES AT 2 7/8" ARB*	–
7	1	ROD POINT BRACKET, THROW ROD, ANTI–ROLL, HOLES AT 2 7/8" ARB*, LH	–
8	1	ROD POINT BRACKET, THROW ROD, ANTI–ROLL, HOLES AT 2 7/8" ARB*, RH	–
9	4	ROD POINT BRACKET, HOLES AT 2 3/8" ARB*, C/W SQ BOLTS	–
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	–
15	1	LOCK ROD, FOR M23 SWITCH MACHINE, HST	–
16	1	DETECTOR ROD, FOR M23 SWITCH MACHINE, HST	–

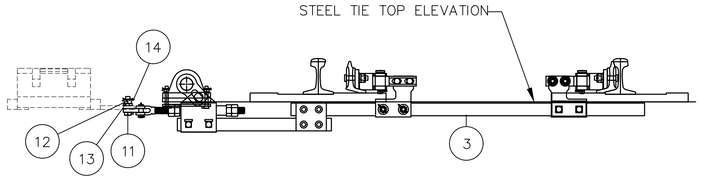
ARB*–ABOVE RAIL BASE



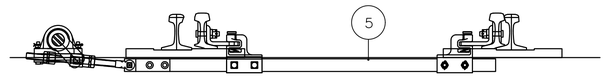
SWITCH ROD (ROD NO 1) ASSEMBLY
LOCK ROD CONNECTION SHOWN
(VIEW FROM HEEL TOWARDS PS)



SWITCH ROD (ROD NO 1) ASSEMBLY
POINT DETECTOR ROD CONNECTION SHOWN
(VIEW FROM HEEL TOWARDS PS)



DRIVE ROD (ROD NO 2) ASSEMBLY
FRONT HELPER ROD CRANK ATTACHES TO BASKET
(VIEW FROM HEEL TOWARDS PS)



REAR HELPER (ROD NO 4) DRIVE ROD ASSEMBLY
REAR HELPER ROD CRANK ATTACHES TO ROD PIN

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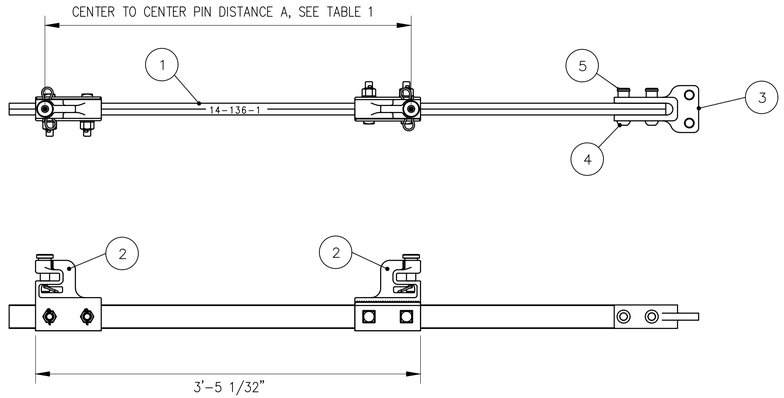
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ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
HOLLOW STEEL TIE ROD ASSEMBLY
SWITCH MACHINE ON RH SIDE

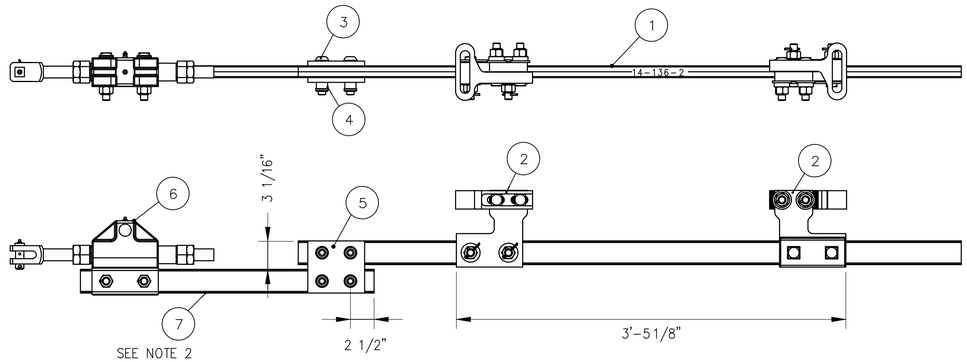
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REV:
EDITION: FIFTH
SCALE: NTS
STANDARD DRAWING NO.: SD–2638

BILL OF MATERIAL FOR SWITCH ROD 14–136–1			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH ROD 14–136–1	–
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)	–



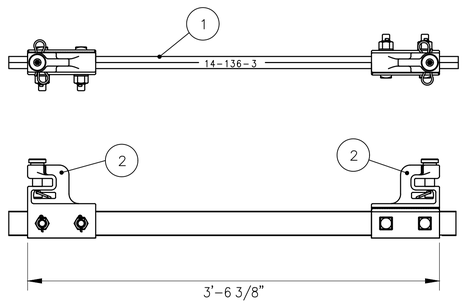
SWITCH ROD ASSEMBLY 14–136–1

BILL OF MATERIAL FOR SWITCH ROD 14–136–2			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	BLUE ROD, PULTRUDED COMPOSITE, 1 1/4" x 2 1/2" x 5'–10" LONG, 14–136–2A	–
2	2	CLIP/LUG ASSEMBLY, HST SWITCH, ANTI–ROLLOVER DESIGN, LH	–
3	4	HUCK BOLT, 3/4" DIA (C50LR–BR24–36)	–
4	4	HUCK COLLAR, 3/4" DIA (LC–2R24B)	–
5	2	SPLICE PLATE, FOR BLUE ROD BASKET ASSEMBLY RODS	–
6	1	BASKET/ROD ASSEMBLY FOR HST WITH ROTARY ASSIST	–
7	1	BLUE ROD, PULTRUDED COMPOSITE, 1 1/4" x 2 1/2" x 2'–7" LONG, 2–B ROD	–



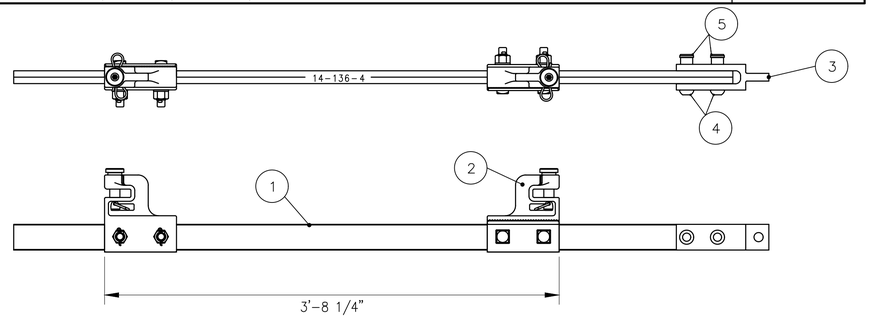
SWITCH ROD ASSEMBLY 14–136–2

BILL OF MATERIAL FOR SWITCH ROD 14–136–3			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH ROD 14–136–3	–
2	2	SWITCH CLIP ASSEMBLY, ADJUSTABLE, FOR HOLLOW TIE	–



SWITCH ROD ASSEMBLY 14–136–3

BILL OF MATERIAL FOR SWITCH ROD 14–136–4			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH ROD 14–136–4	–
2	2	SWITCH CLIP ASSEMBLY, ADJUSTABLE	–
3	1	CONNECTOR LUG FOR REAR DRIVE ROD	–
4	2	HUCK BOLT, 3/4" DIA (C50LR–BR24–36)	–
5	2	HUCK COLLAR, 3/4" DIA (LC–2R24B)	–



SWITCH ROD ASSEMBLY 14–136–4

TABLE 1

ROD #	A
SWITCH ROD ASSEMBLY 14–136–1	3'– 3 15/16"
SWITCH ROD ASSEMBLY 14–136–2	3'– 4 1/8"
SWITCH ROD ASSEMBLY 14–136–3	3'– 5"
SWITCH ROD ASSEMBLY 14–136–4	3'– 6 5/8"

NOTES:

1. ROD IDENTIFICATION SHALL 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

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ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
HOLLOW STEEL TIE SWITCH
RODS 14–1, 14–2, 14–3 AND 14–4

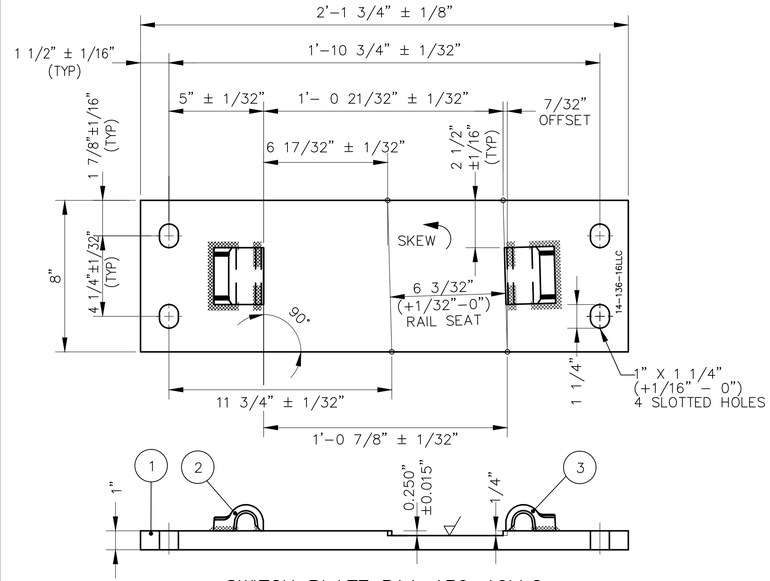
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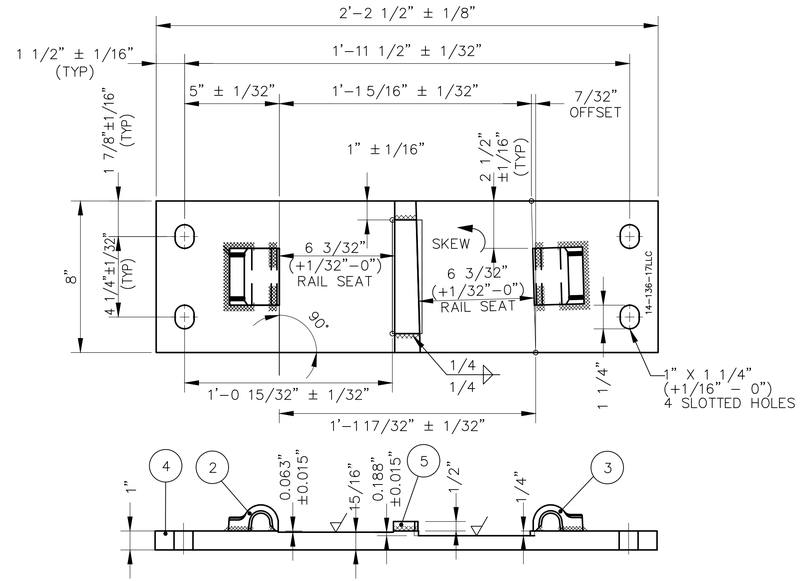
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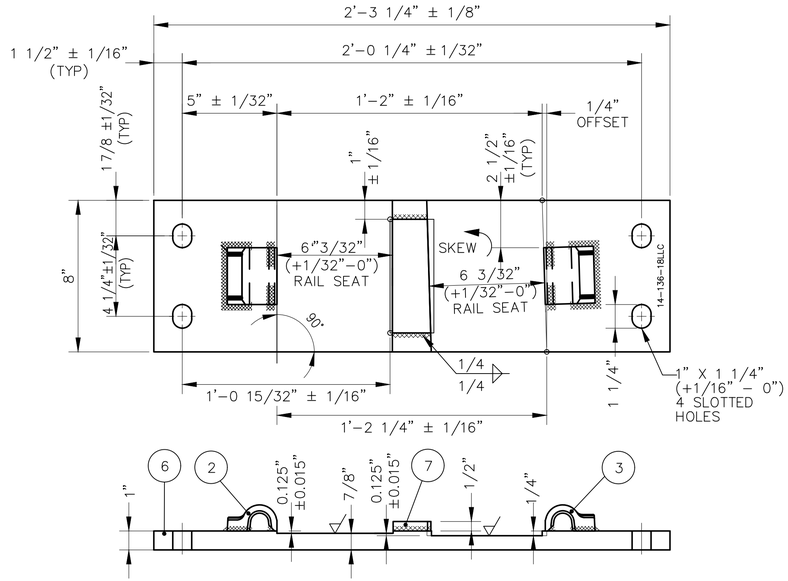
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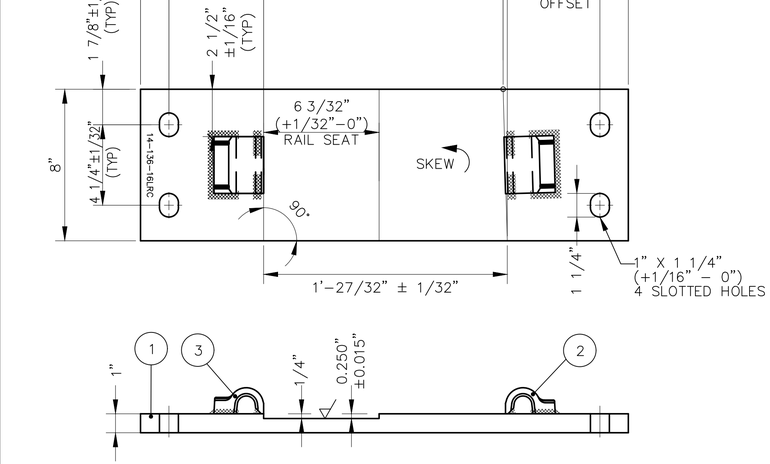
SWITCH PLATE P14-136-16LLC



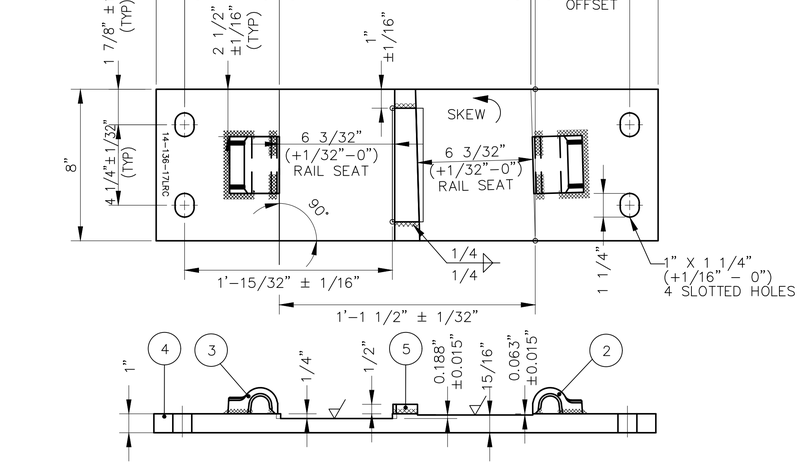
SWITCH PLATE P14-136-17LLC



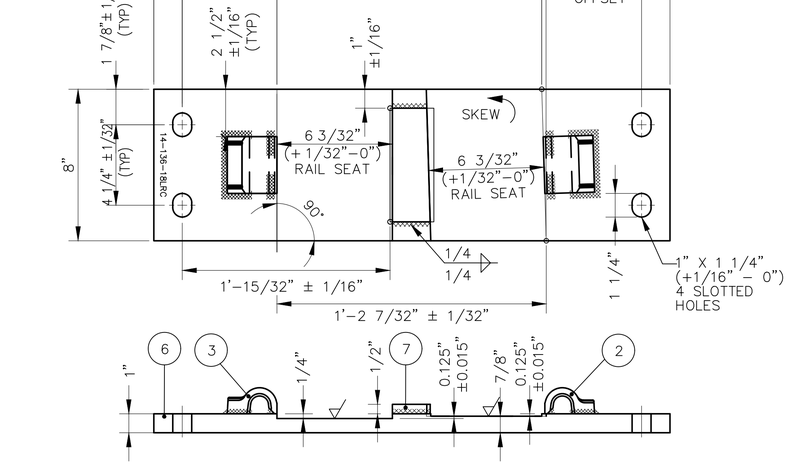
SWITCH PLATE P14-136-18LLC



SWITCH PLATE P14-136-16LRC



SWITCH PLATE P14-136-17LRC



SWITCH PLATE P14-136-18LRC

BILL OF MATERIALS	
ITEM	DESCRIPTION
1	FLAT BAR, ASTM A36, 1" x 8" x 2'-1 3/4"
2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1
3	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 5
4	FLAT BAR, ASTM A36, 1" X 8" X 2'-2 1/2"

BILL OF MATERIALS	
ITEM	DESCRIPTION
5	FLAT BAR, ASTM A36, 1/2" X 6" X 1 5/8"
6	FLAT BAR, ASTM A36, 1" X 8" X 2'-3 1/4"
7	FLAT BAR, ASTM A36, 1/2" X 6" X 2 5/16"

NOTES:

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

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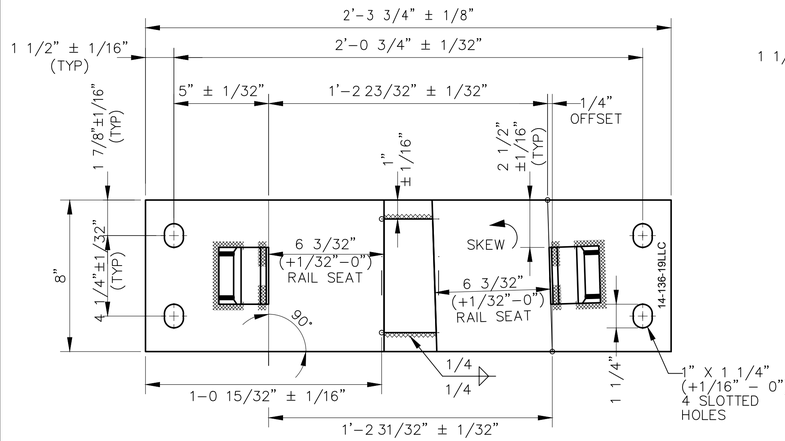
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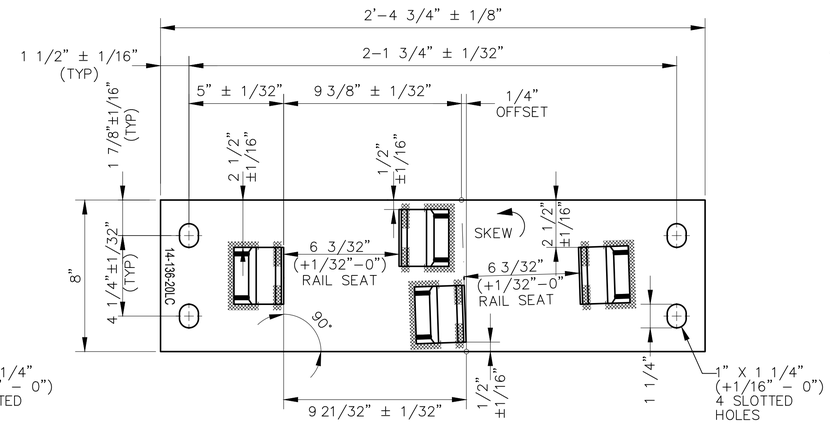
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
SWITCH PLATES
FOR LH TURNOUT
14-16LLC/LRC THRU 14-18LLC/LRC

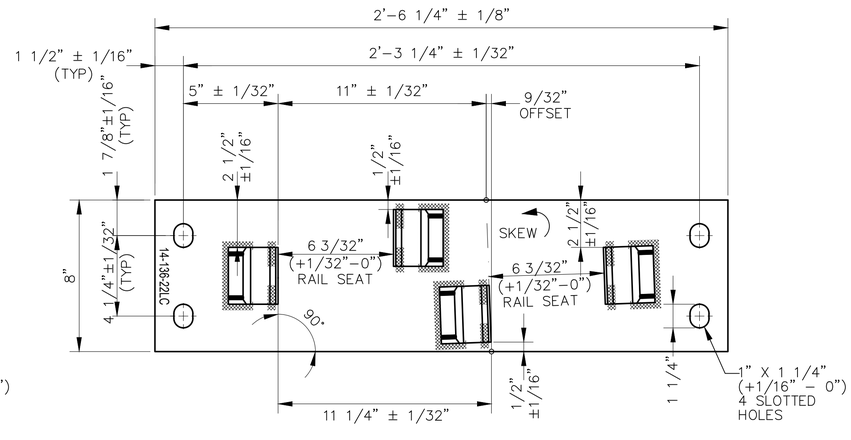
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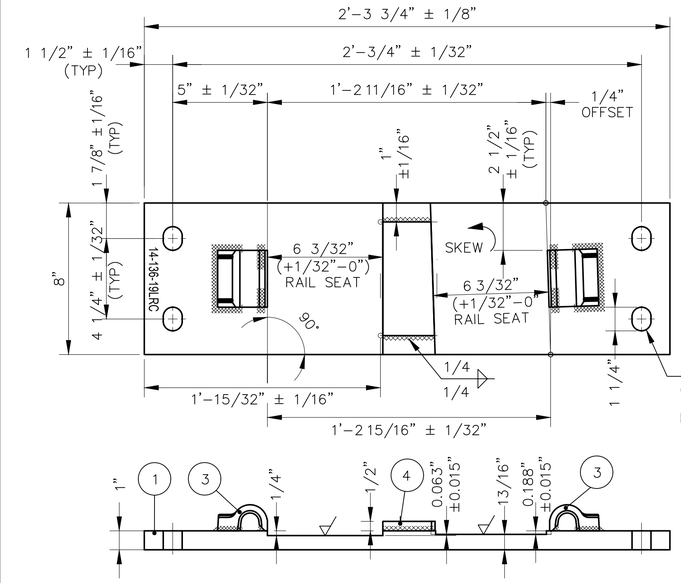
SWITCH PLATE P14-136-19LLC



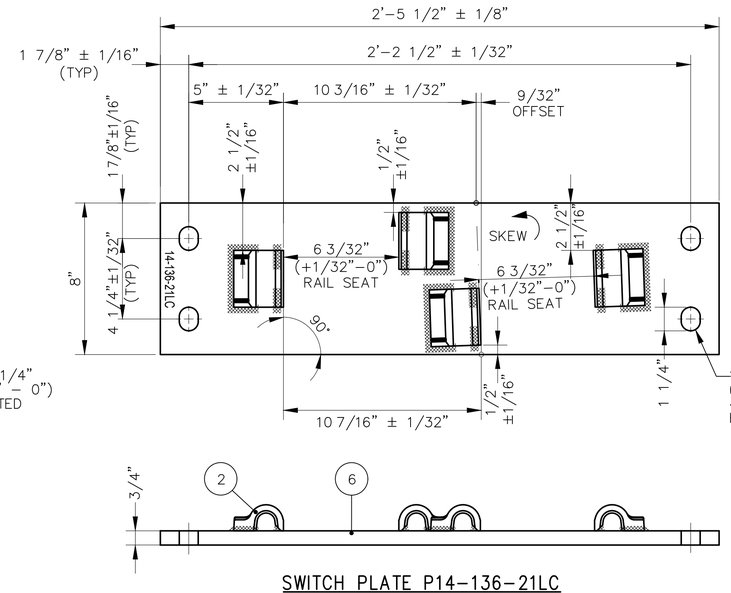
SWITCH PLATE P14-136-20LC



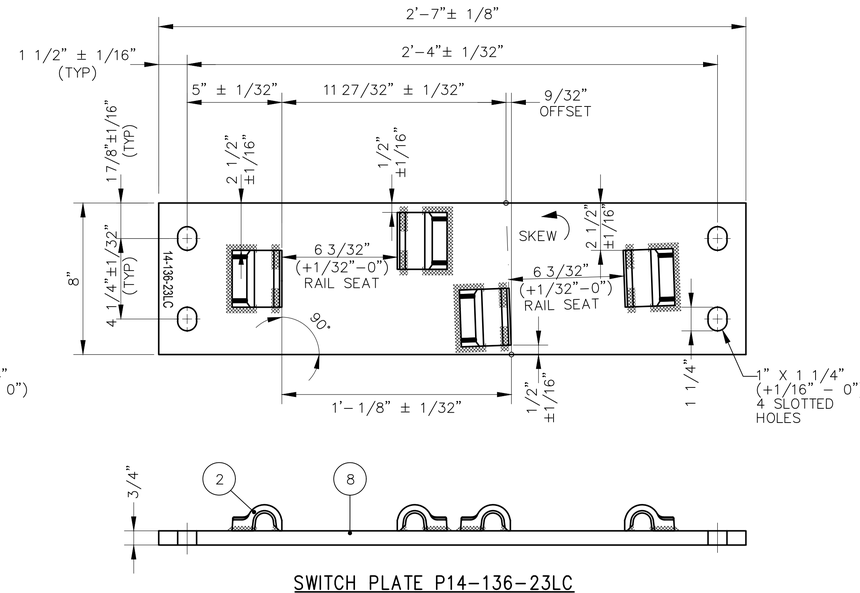
SWITCH PLATE P14-136-22LC



SWITCH PLATE P14-136-19LRC



SWITCH PLATE P14-136-21LC



SWITCH PLATE P14-136-23LC

BILL OF MATERIALS		BILL OF MATERIALS	
ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	FLAT BAR, ASTM A36, 1" x 8" x 2'-3 3/4"	5	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-4 3/4"
2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	6	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-5 1/2"
3	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 5	7	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-6 1/4"
4	FLAT BAR, ASTM A36, 1/2" x 6" x 3"	8	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-7"

NOTES:

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

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PENINSULA CORRIDOR JOINT POWERS BOARD

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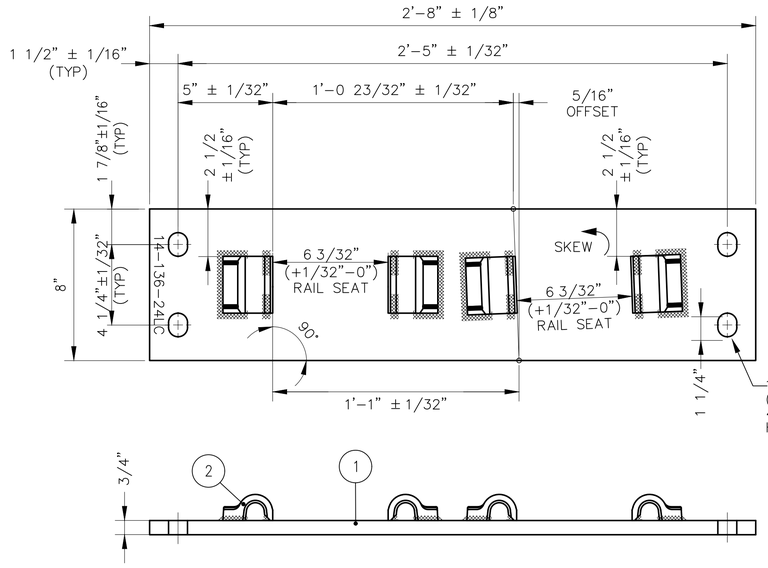
SPECIAL TRACKWORK
NO. 14 TURNOUT
SWITCH PLATES
FOR LH TURNOUT
14-19LLC/LRC, 14-20LC THRU 14-23LC

CADD FILE NAME: SD-2641

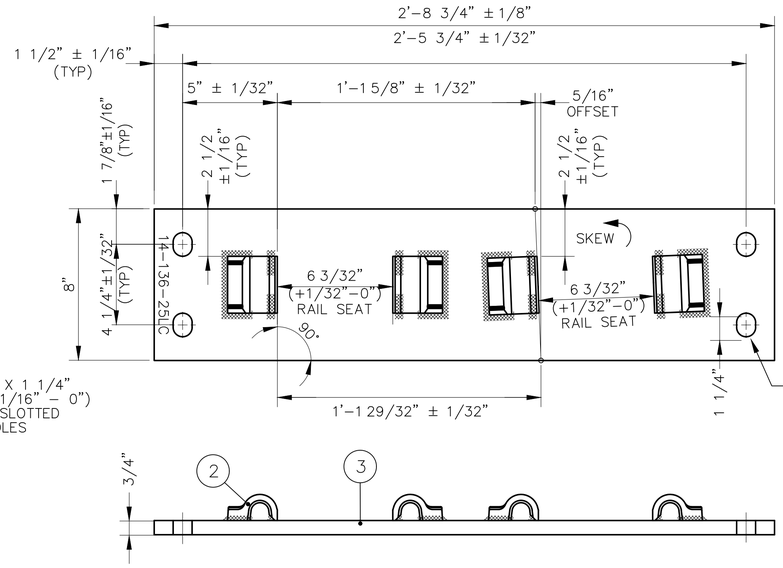
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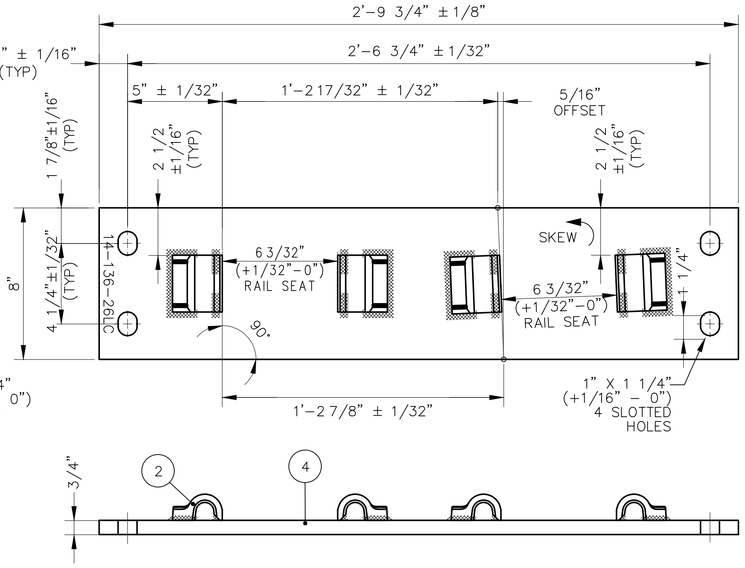
STANDARD DRAWING NO.: SD-2641



SWITCH PLATE P14-136-24LC



SWITCH PLATE P14-136-25LC



SWITCH PLATE P14-136-26LC

BILL OF MATERIALS	
ITEM	DESCRIPTION
1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-8" LONG
2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1
3	FLAT BAR, ASTM A36, 3/4" X 8" X 2'-8 3/4"
4	FLAT BAR, ASTM A36, 3/4" X 8" X 2'-9 3/4"

NOTES:

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

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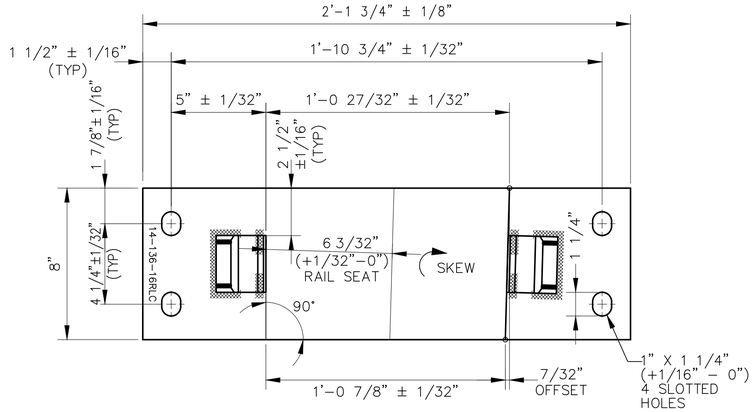
SPECIAL TRACKWORK
NO. 14 TURNOUT
SWITCH PLATES FOR LH TURNOUT
14-24LC THRU 14-26LC

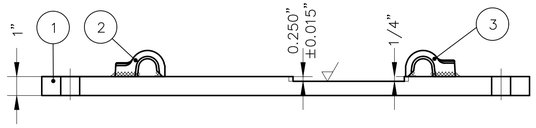
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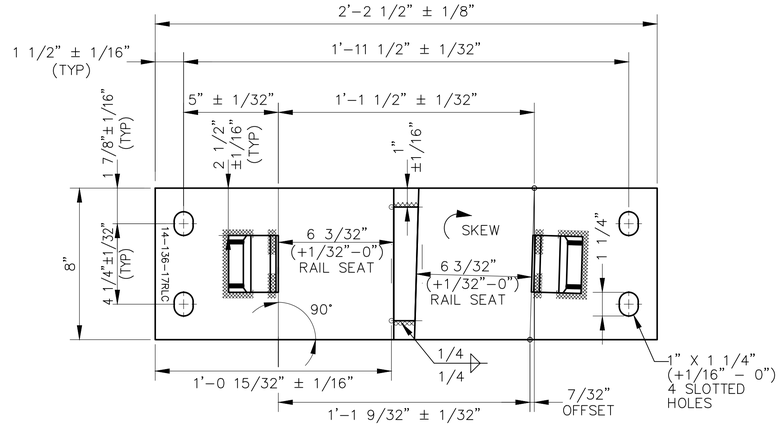
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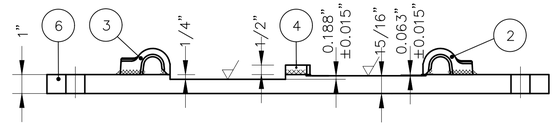
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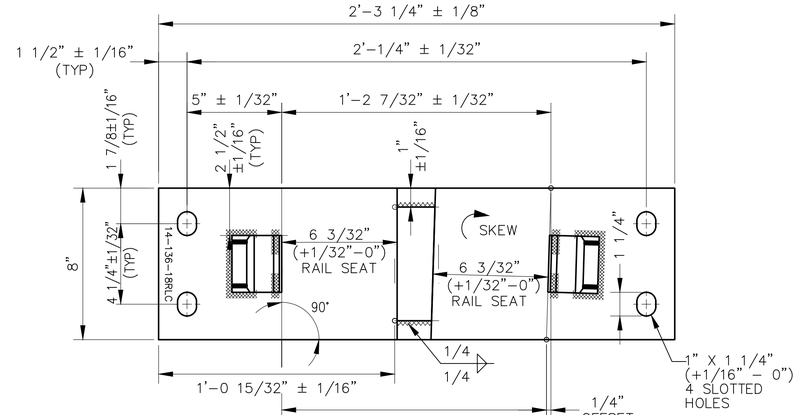


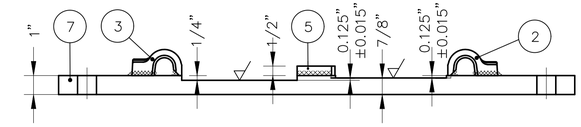
SWITCH PLATE P14-136-16RLC



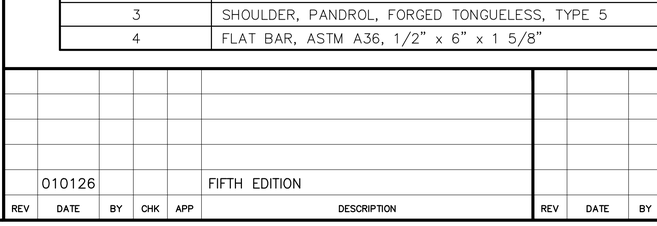


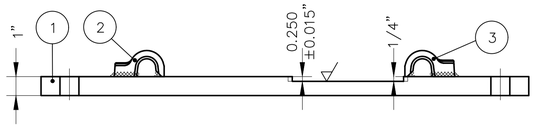
SWITCH PLATE P14-136-17RLC



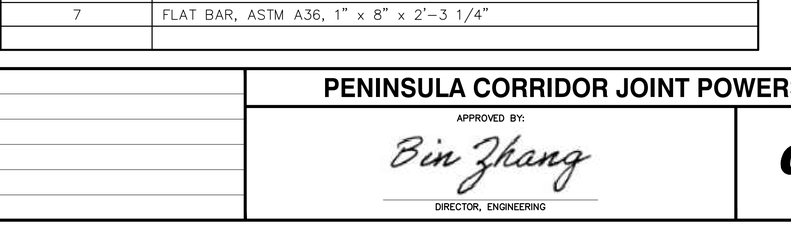


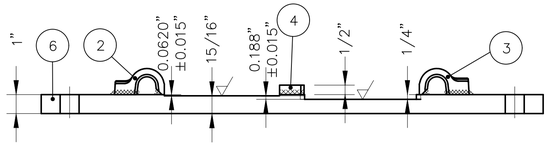
SWITCH PLATE P14-136-18RLC



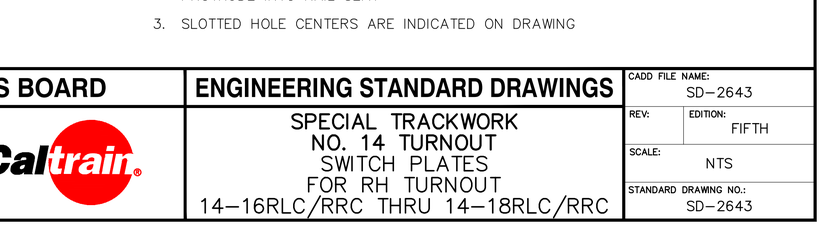


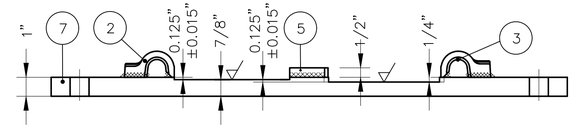
SWITCH PLATE P14-136-16RRC





SWITCH PLATE P14-136-17RRC





SWITCH PLATE P14-136-18RRC

BILL OF MATERIALS	
ITEM	DESCRIPTION
1	FLAT BAR, ASTM A36, 1" x 8" x 2'-1 3/4"
2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1
3	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 5
4	FLAT BAR, ASTM A36, 1/2" x 6" x 1 5/8"

BILL OF MATERIALS	
ITEM	DESCRIPTION
5	FLAT BAR, ASTM A36, 1/2" x 6" x 2 5/16"
6	FLAT BAR, ASTM A36, 1" x 8" x 2'-2 1/2"
7	FLAT BAR, ASTM A36, 1" x 8" x 2'-3 1/4"

NOTES:

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

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ENGINEERING STANDARD DRAWINGS

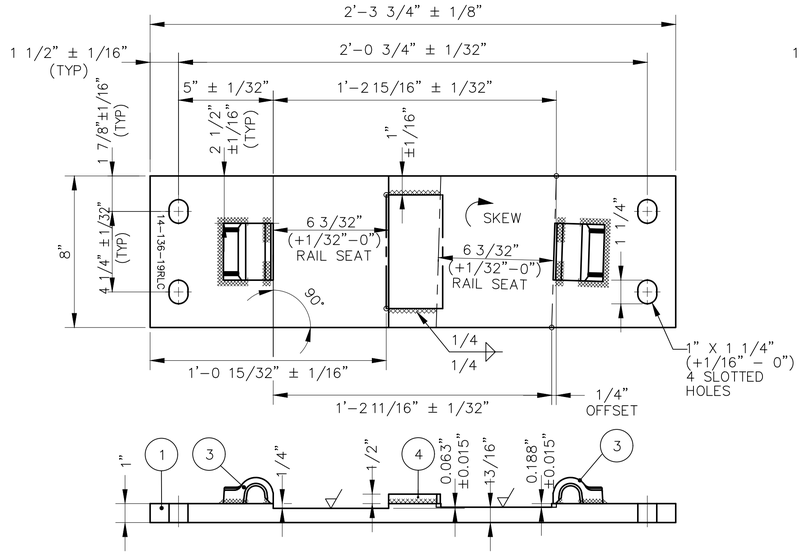
SPECIAL TRACKWORK
NO. 14 TURNOUT
SWITCH PLATES
FOR RH TURNOUT
14-16RLC/RRC THRU 14-18RLC/RRC

CADD FILE NAME: SD-2643

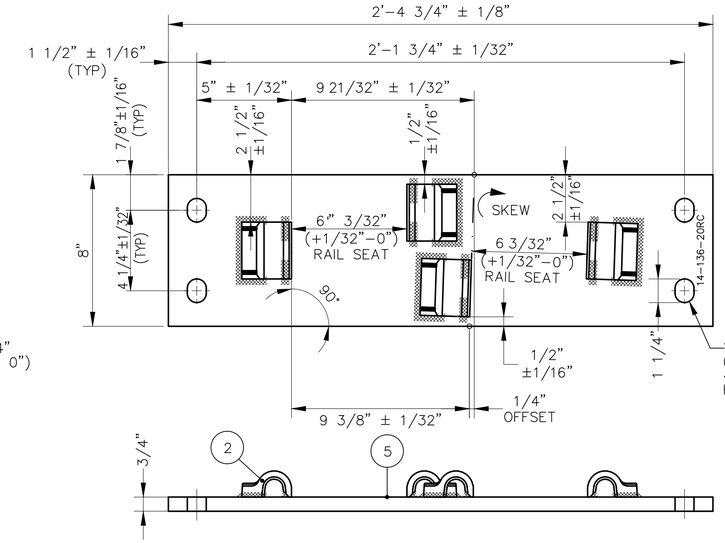
REV: | EDITION: FIFTH

SCALE: NTS

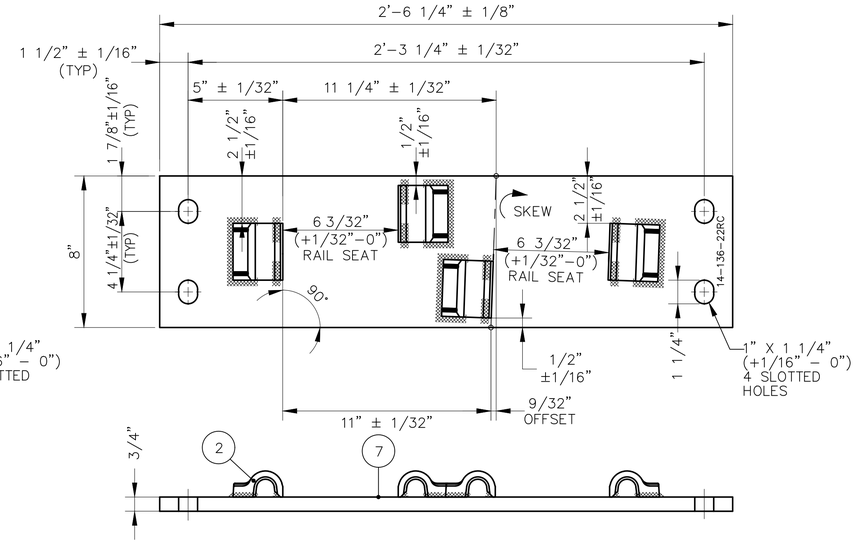
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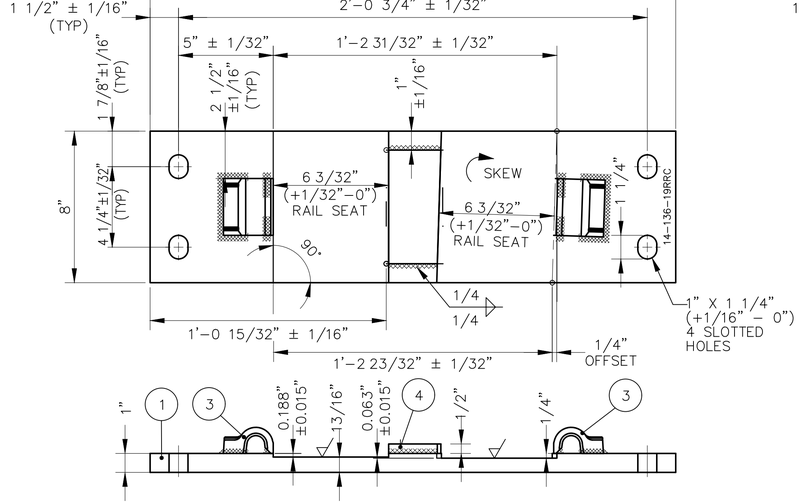
SWITCH PLATE P14-136-19RLC



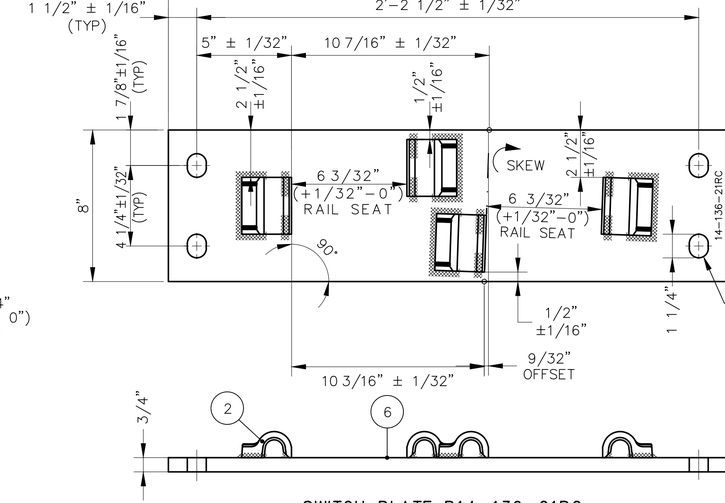
SWITCH PLATE P14-136-20RC



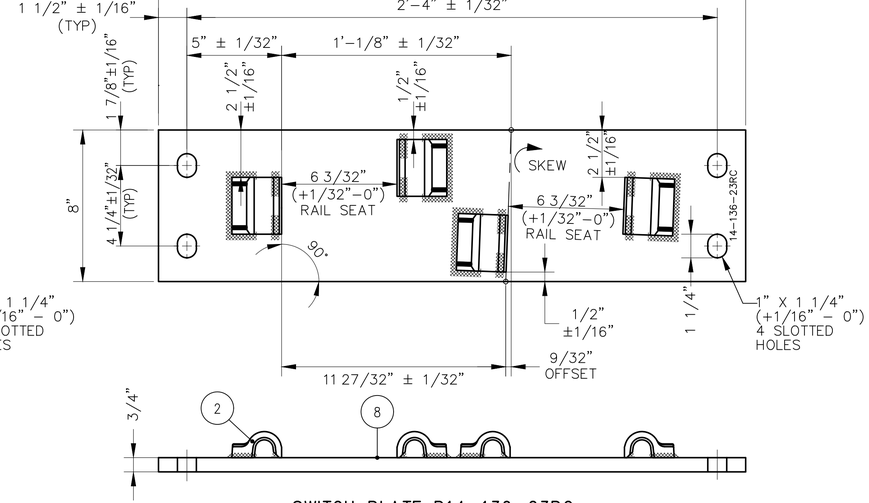
SWITCH PLATE P14-136-22RC



SWITCH PLATE P14-136-19RRC



SWITCH PLATE P14-136-21RC



SWITCH PLATE P14-136-23RC

BILL OF MATERIALS		BILL OF MATERIALS	
ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	FLAT BAR, ASTM A36, 1" x 8" x 2'-3 3/4"	5	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-4 3/4"
2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	6	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-5 1/2"
3	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 5	7	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-6 1/4"
4	FLAT BAR, ASTM A36, 1/2" x 6" x 3"	8	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-7"

NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

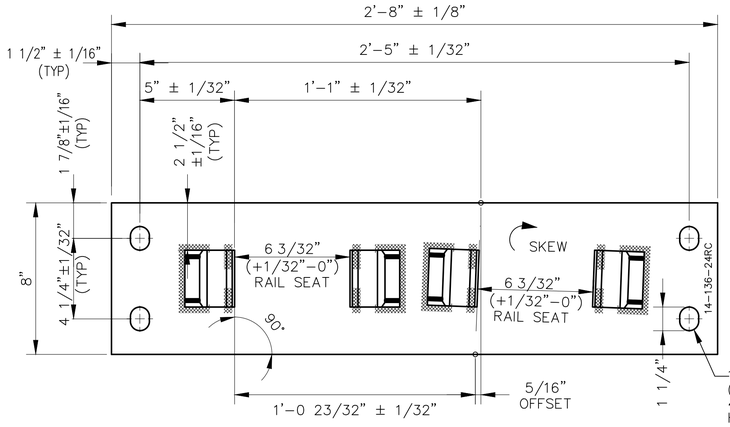
SPECIAL TRACKWORK
NO. 14 TURNOUT
SWITCH PLATES
FOR RH TURNOUT
14-19RLC/RRC, 14-20RC THRU 14-23RC

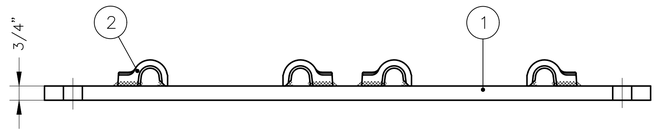
CADD FILE NAME: SD-2644

REV: | EDITION: FIFTH

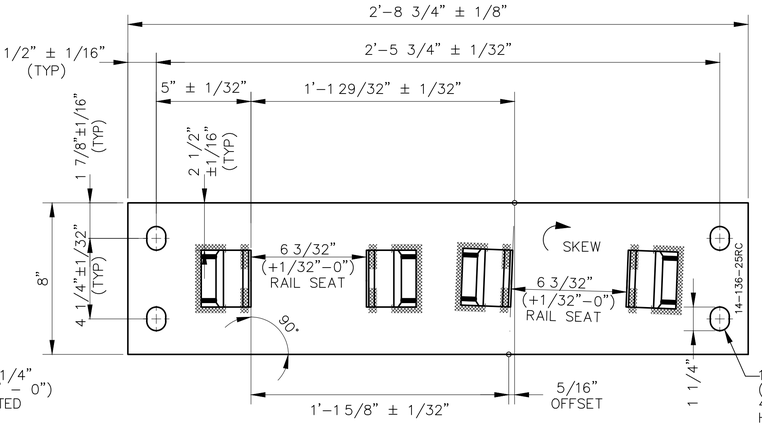
SCALE: NTS

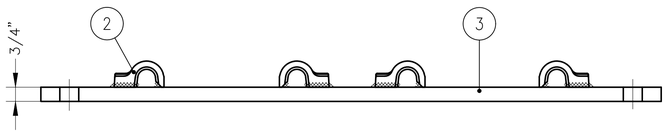
STANDARD DRAWING NO.: SD-2644



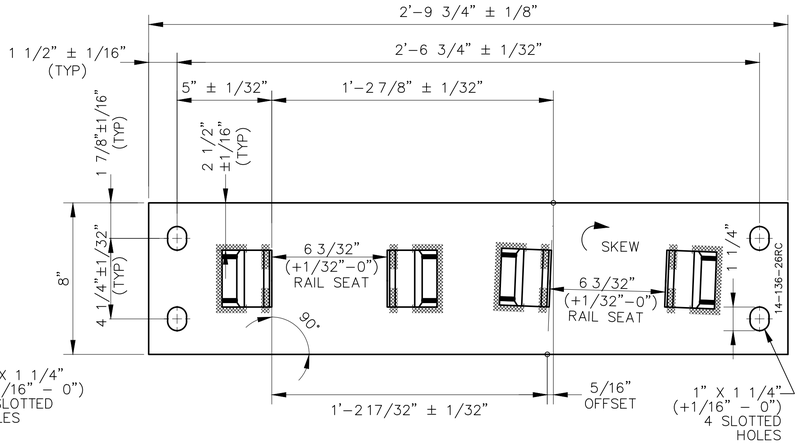


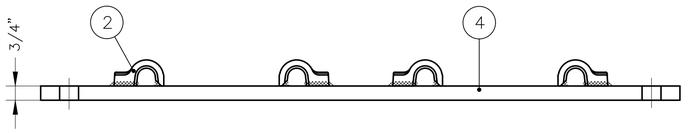
SWITCH PLATE P14-136-24RC





SWITCH PLATE P14-136-25RC





SWITCH PLATE P14-136-26RC

BILL OF MATERIALS	
ITEM	DESCRIPTION
1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-8"
2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1
3	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-8 3/4"
4	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-9 3/4"

NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 14 TURNOUT
SWITCH PLATES FOR RH TURNOUT
14-24RC THRU 14-26RC

CADD FILE NAME: SD-2645

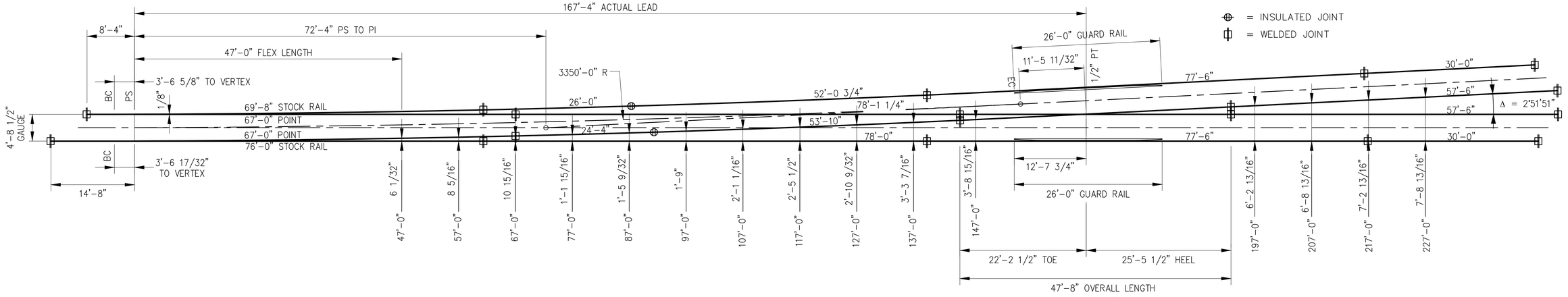
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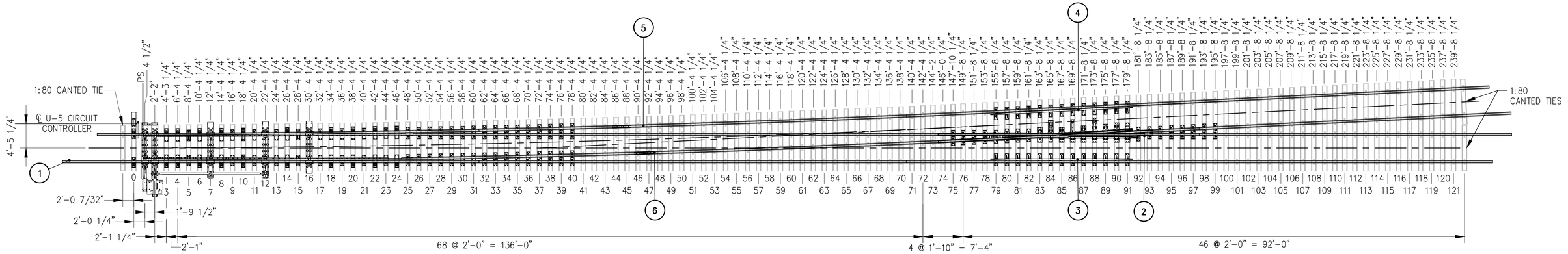
SCALE: NTS

STANDARD DRAWING NO.: SD-2645

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH PACK, NO 20–136 LB RE MODIFIED TANGENTIAL, LH, HST	SD–2705
2	1	FROG PACK, NO 20–136 LB RE WSM, LH	SD–2721
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'–0" LG, 136 LB RE RAISED 1", STRAIGHT	SD–2738
4	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'–0" LG, 136 LB RE RAISED 1", LH	SD–2737
5	1	INSULATED RAIL ASSEMBLY, 78'–0 3/4" C/W BONDED INSULATED JOINT	–
6	1	INSULATED RAIL ASSEMBLY, 78'–2" C/W BONDED INSULATED JOINT	–
7	2	DRILLED RAIL, 136 LB RE, 30'–0" LONG	–
8	2	DRILLED RAIL, 136 LB RE, 57'–6" LONG	–
9	2	DRILLED RAIL, 136 LB RE, 77'–6 " LONG	–
10	1	DRILLED RAIL, 136 LB RE, 78'–0" LONG	–
11	1	DRILLED RAIL, 136 LB RE, 78'–1 1/4" LONG	–

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
12	492	TIE SCREW, CONCRETE 7/8" DIA X 6" HEX HEAD	–
13	492	WASHER FLAT 7/8" TYPE A NARROW 15/16" X 1 3/4" X 0.134"	–
14	492	SPRING WASHER, DOUBLE COIL (FE6)	–
15	1	CONCRETE TIE SET, 0–121 + (3) 1:80 TIES, PLATE PADS, PIM INSERTS, LH	–
16	500	CLIP PANDROL E2055	–
17	500	INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD–10	–
18	8	CLIP PANDROL E2063	–
19	8	INSULATION, PANDROL NYLON 6790	–
20	254	TIE PAD PANDROL 6993SR	–
21	246	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 7/8" FLANGEWAY
4. COORDINATE SWITCH MACHINE AND MACHINE PLATE (NIC) WITH CALTRAIN
5. ALL TIE 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. SCHWIHAG ROLLERS SHALL BE INSTALLED AND ADJUSTED IN THE FIELD

TURNOUT DATA:

FROG
NO 20 Δ = 2°51'51"
TOE LENGTH: 22'–2 1/2"
HEEL LENGTH: 25'–5 1/2"
TOTAL LENGTH: 47'–8"

SWITCH
LENGTH OF POINT: 47'–0" / 67'–0"
VERTEX DISTANCE: VARIES PER SIDE
ENTRY ANGLE: 0°11'55"
THICKNESS AT POINT: 1/8"
THROW AT ROD # 1 : 4 3/4"

ACTUAL LEAD: 167'–4"
CLOSURE AREA
CENTERLINE RADIUS: 3350'–0"
DEGREE OF CURVE: 1°42'37"
DESIGN SPEEDS
50 MPH PASSENGER @ 3" UNBALANCE
40 MPH FREIGHT @ 2" UNBALANCE

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

Caltrain

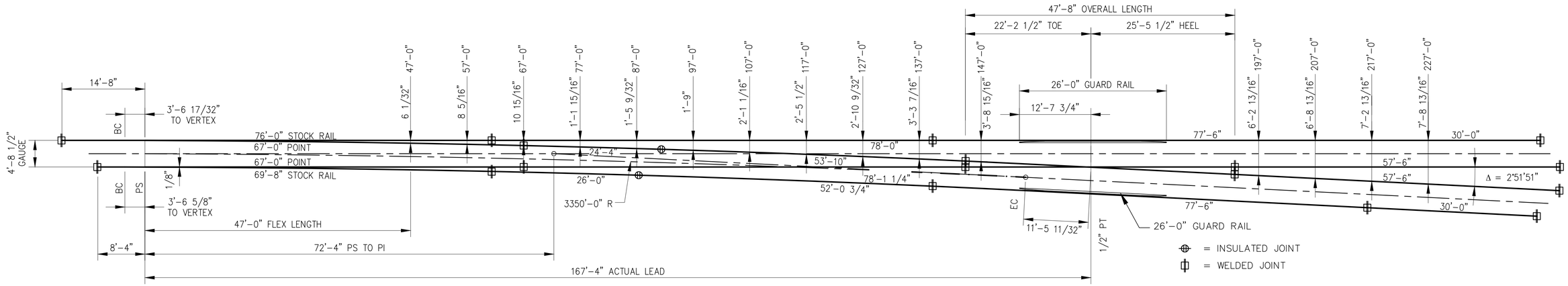
ENGINEERING STANDARD DRAWINGS

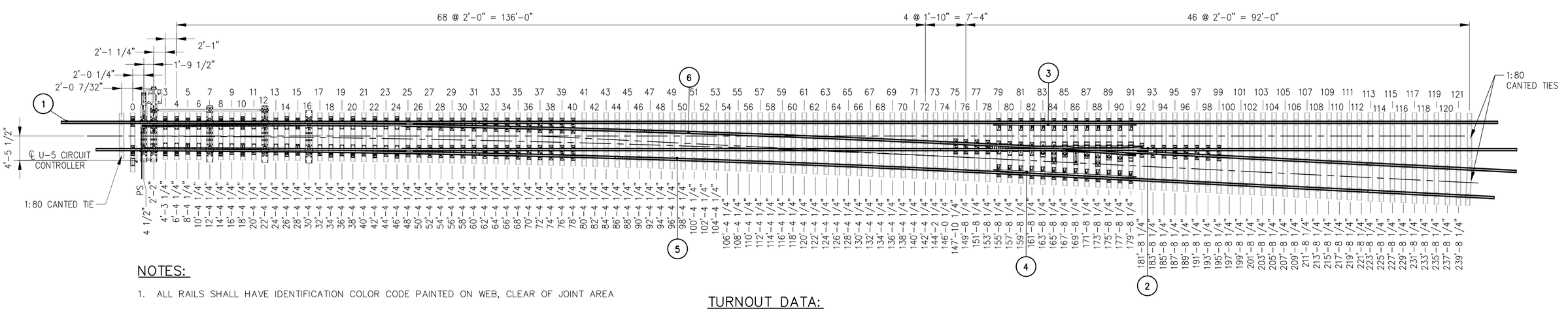
SPECIAL TRACKWORK
NO. 20 TURNOUT
NO. 20 LH TURNOUT WITH WSM FROG AND HST SWITCH MACHINE ON MAINLINE SIDE

CADD FILE NAME: SD–2701
REV: | EDITION: FIFTH
SCALE: NTS
STANDARD DRAWING NO.: SD–2701

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH PACK, NO 20–136 LB RE MODIFIED TANGENTIAL, RH, HST	SD–2706
2	1	FROG PACK, NO 20–136 LB RE WSM, RH	SD–2722
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'–0" LG, 136 LB RE RAISED 1", STRAIGHT	SD–2737
4	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'–0" LG, 136 LB RE RAISED 1", RH	SD–2738
5	1	INSULATED RAIL ASSEMBLY, 78'–0 3/4" C/W BONDED INSULATED JOINT	–
6	1	INSULATED RAIL ASSEMBLY, 78'–2" C/W BONDED INSULATED JOINT	–
7	2	DRILLED RAIL, 136 LB RE, 30'–0" LONG	–
8	2	DRILLED RAIL, 136 LB RE, 57'–6" LONG	–
9	2	DRILLED RAIL, 136 LB RE, 77'–6" LONG	–
10	1	DRILLED RAIL, 136 LB RE, 78'–0" LONG	–
11	1	DRILLED RAIL, 136 LB RE, 78'–1 1/4" LONG	–

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
12	492	TIE SCREW, CONCRETE 7/8" DIA X 6" HEX HEAD	–
13	492	WASHER FLAT 7/8" TYPE A NARROW 15/16" X 1 3/4" X 0.134"	–
14	492	SPRING WASHER, DOUBLE COIL (FE6)	–
15	1	CONCRETE TIE SET, 0–121 + (3) 1:80 TIES, PLATE PADS, PIM INSERTS, RH	–
16	500	CLIP PANDROL E2055	–
17	500	INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD–10	–
18	8	CLIP PANDROL E2063	–
19	8	INSULATION, PANDROL NYLON 6790	–
20	254	TIE PAD PANDROL 6993SR	–
21	246	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 7/8" FLANGEWAY
4. COORDINATE SWITCH MACHINE AND MACHINE PLATE (NIC) WITH CALTRAIN
5. ALL TIE 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. SCHWIHAG ROLLERS SHALL BE INSTALLED AND ADJUSTED IN THE FIELD

TURNOUT DATA:

FROG

NO 20:	Δ = 2°51'51"
TOE LENGTH:	22'–2 1/2"
HEEL LENGTH:	25'–5 1/2"
TOTAL: LENGTH:	47'–8"

SWITCH

LENGTH OF POINT:	47'–0" / 67'–0"
VERTEX DISTANCE:	VARIES PER SIDE
ENTRY ANGLE:	0°11'55"
THICKNESS AT POINT:	1/8"
THROW AT ROD # 1:	4 3/4"

ACTUAL LEAD: 167'–4"
CLOSURE AREA
CENTERLINE RADIUS: 3350'–0"
DEGREE OF CURVE: 1°42'37"
DESIGN SPEEDS
50 MPH PASSENGER @ 3" UNBALANCE
40 MPH FREIGHT @ 2" UNBALANCE

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DIRECTOR, ENGINEERING

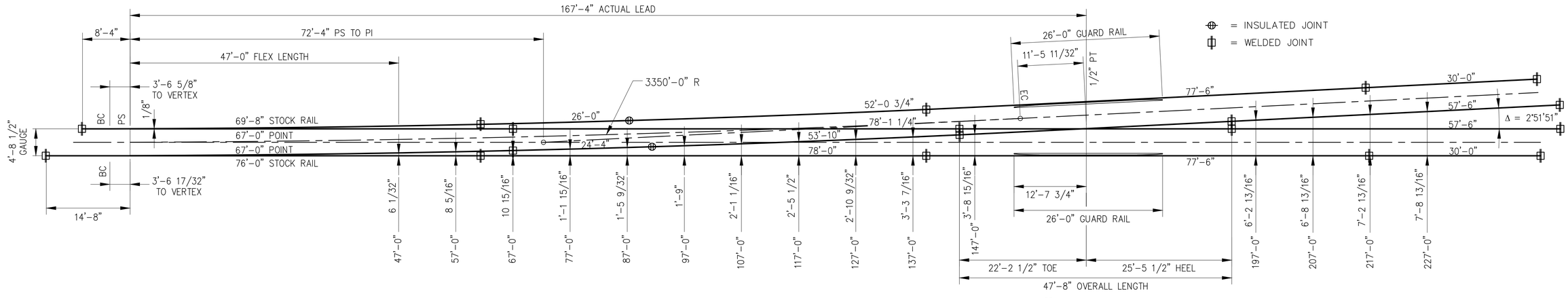
ENGINEERING STANDARD DRAWINGS

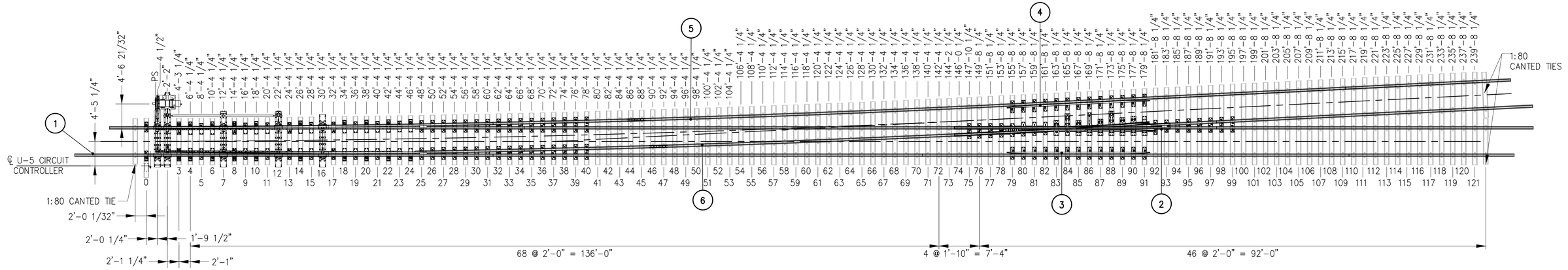
SPECIAL TRACKWORK NO. 20 TURNOUT NO. 20 RH TURNOUT WITH WSM FROG AND HST SWITCH MACHINE ON MAINLINE SIDE

CADD FILE NAME: SD–2702
REV: EDITION: FIFTH
SCALE: NTS
STANDARD DRAWING NO.: SD–2702

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH PACK, NO 20–136 LB RE MODIFIED TANGENTIAL, LH, HST	SD–2707
2	1	FROG PACK, NO 20–136 LB RE WSM, LH	SD–2721
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'–0" LG, 136 LB RE RAISED 1", STRAIGHT	SD–2738
4	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'–0" LG, 136 LB RE RAISED 1", LH	SD–2737
5	1	INSULATED RAIL ASSEMBLY, 78'–0 3/4" C/W BONDED INSULATED JOINT	–
6	1	INSULATED RAIL ASSEMBLY, 78'–2" C/W BONDED INSULATED JOINT	–
7	2	DRILLED RAIL, 136 LB RE, 30'–0" LONG	–
8	2	DRILLED RAIL, 136 LB RE, 57'–6" LONG	–
9	2	DRILLED RAIL, 136 LB RE, 77'–6" LONG	–
10	1	DRILLED RAIL, 136 LB RE, 78'–0" LONG	–
11	1	DRILLED RAIL, 136 LB RE, 78'–1 1/4" LONG	–

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
12	492	TIE SCREW, CONCRETE ?" DIA X 6" HEX HEAD	–
13	492	WASHER FLAT ? TYPE A NARROW 15/16" X 1 3/4" X 0.134"	–
14	492	SPRING WASHER, DOUBLE COIL (FE6)	–
15	1	CONCRETE TIE SET, 0–121 + (3) 1:80 TIES, PLATE PADS, LH	–
16	500	CLIP PANDROL E2055	–
17	500	INSULATOR PANDROL FEATRUES BASE HOLDOWN NYLON HD–10	–
18	8	CLIP PANDROL E2063	–
19	8	INSULATION, PANDROL NYLON 6790	–
20	254	TIE PAD PANDROL 6993SR	–
21	246	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 7/8" FLANGEWAY
4. COORDINATE SWITCH MACHINE AND MACHINE PLATE (NIC) WITH CALTRAIN
5. ALL TIE 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. SCHWIHAG ROLLERS SHALL BE INSTALLED AND ADJUSTED IN THE FIELD

TURNOUT DATA:

FROG
NO 20 Δ = 2°51'51"
TOE LENGTH: 22'–2 1/2"
HEEL LENGTH: 25'–5 1/2"
TOTAL LENGTH: 47'–8"

SWITCH
LENGTH OF POINT: 47'–0" / 67'–0"
VERTEX DISTANCE: VARIES PER SIDE
ENTRY ANGLE: 0°11'55"
THICKNESS AT POINT: 1/8"
THROW AT ROD # 1 : 4 3/4"

ACTUAL LEAD: 167'–4"
CLOSURE AREA
CENTERLINE RADIUS: 3350'–0"
DEGREE OF CURVE: 1°42'37"
DESIGN SPEEDS
50 MPH PASSENGER @ 3" UNBALANCE
40 MPH FREIGHT @ 2" UNBALANCE

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

Caltrain

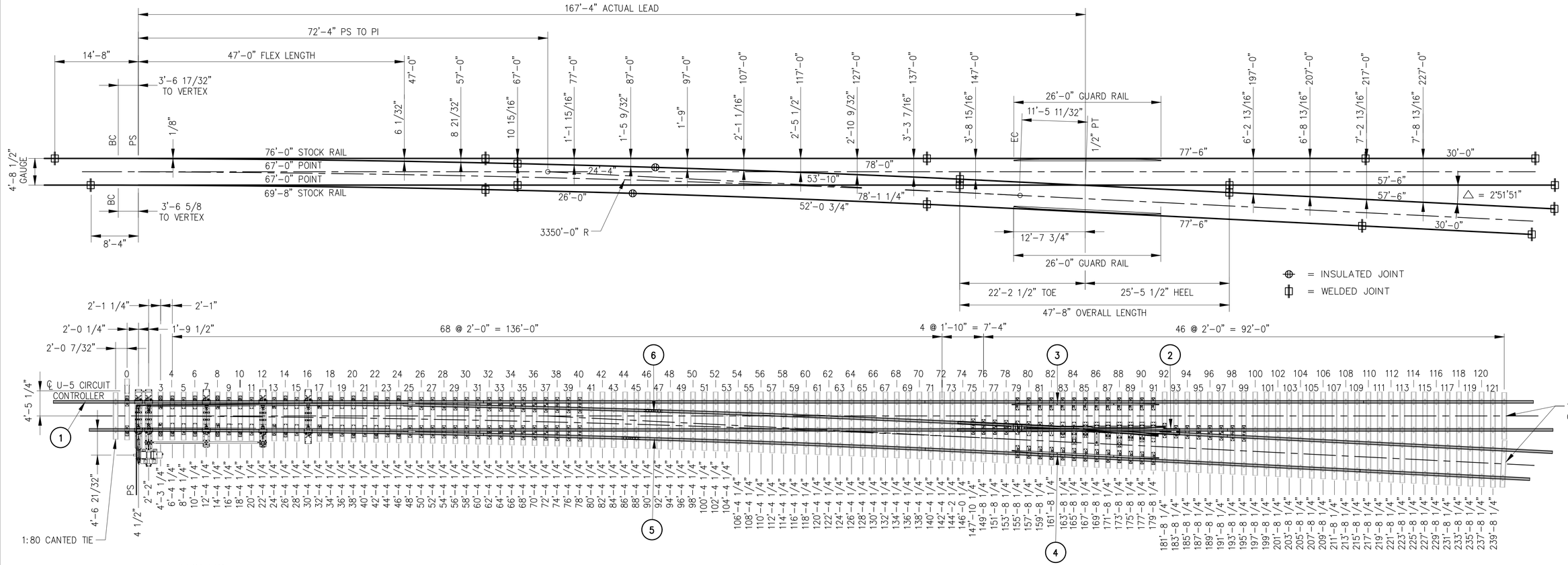
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
NO. 20 LH TURNOUT WITH WSM FROG AND HST SWITCH MACHINE ON TURNOUT SIDE

CADD FILE NAME: SD–2703
REV: EDITION: FIFTH
SCALE: NTS
STANDARD DRAWING NO.: SD–2703

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH PACK, NO 20–136 LB RE MODIFIED TANGENTIAL, RH, HST	SD–2708
2	1	FROG PACK, NO 20–136 LB RE WSM, RH	SD–2722
3	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'–0" LG, 136 LB RE RAISED 1", STRAIGHT	SD–2737
4	1	GUARD RAIL ASSEMBLY BOLTLESS, 26'–0" LG, 136 LB RE RAISED 1", RH	SD–2738
5	1	INSULATED RAIL ASSEMBLY, 78'–0 3/4" C/W BONDED INSULATED JOINT	–
6	1	INSULATED RAIL ASSEMBLY, 78'–2" C/W BONDED INSULATED JOINT	–
7	2	DRILLED RAIL, 136 LB RE, 30'–0" LONG	–
8	2	DRILLED RAIL, 136 LB RE, 57'–6" LONG	–
9	2	DRILLED RAIL, 136 LB RE, 77'–6" LONG	–
10	1	DRILLED RAIL, 136 LB RE, 78'–0" LONG	–
11	1	DRILLED RAIL, 136 LB RE, 78'–1 1/4" LONG	–

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
12	492	TIE SCREW, CONCRETE 7/8" DIA X 6" HEX HEAD	–
13	492	WASHER FLAT 7/8" TYPE A NARROW 15/16" X 1 3/4" X 0.134"	–
14	492	SPRING WASHER, DOUBLE COIL (FE6)	–
15	1	CONCRETE TIE SET, 0–121 + (3) 1:80 TIES, PLATE PADS, RH	–
16	500	CLIP PANDROL E2055	–
17	500	INSULATOR PANDROL FEATURES BASE HOLDOWN NYLON HD–10	–
18	8	CLIP PANDROL E2063	–
19	8	INSULATION, PANDROL NYLON 6790	–
20	254	TIE PAD PANDROL 6993SR	–
21	246	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 7/8" FLANGEWAY
4. COORDINATE SWITCH MACHINE AND MACHINE PLATE (NIC) WITH CALTRAIN
5. ALL TIE 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. SCHWIHAG ROLLERS SHALL BE INSTALLED AND ADJUSTED IN THE FIELD

TURNOUT DATA:

FROG

NO 20	Δ = 2°51'51"
TOE LENGTH:	22'–2 1/2"
HEEL LENGTH:	25'–5 1/2"
TOTAL LENGTH:	47'–8"

SWITCH

LENGTH OF POINT:	47'–0" / 67'–0"
VERTEX DISTANCE:	VARIES PER SIDE
ENTRY ANGLE:	0°11'55"
THICKNESS AT POINT:	1/8"
THROW AT ROD # 1 :	4 3/4"

ACTUAL LEAD:	167'–4"
CLOSURE AREA	
CENTERLINE RADIUS:	3350'–0"
DEGREE OF CURVE:	1°42'37"
DESIGN SPEEDS	
50 MPH PASSENGER @ 3" UNBALANCE	
40 MPH FREIGHT @ 2" UNBALANCE	

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
NO. 20 RH TURNOUT WITH WSM FROG AND HST SWITCH MACHINE ON TURNOUT SIDE

CADD FILE NAME: SD–2704

REV: | EDITION: FIFTH

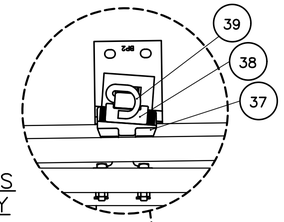
SCALE: NTS

STANDARD DRAWING NO.: SD–2704

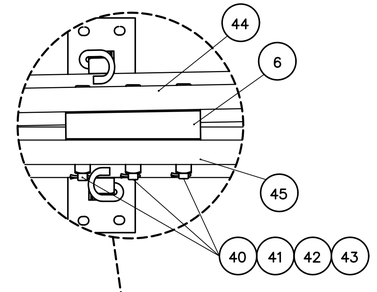
BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	HOLLOW SWITCH TIE & RODDING ASSEMBLY	SD–2718	23	2	SWITCH PLATE (20–30LC)	SD–2744
2	1	SAMSON POINT, 67'–0" LONG, DOUBLE REINFORCED, UR MANG TIP, LH	SD–2709	24	2	SWITCH PLATE (20–31LC)	SD–2744
3	1	SAMSON POINT, 67'–0" LONG, DOUBLE REINFORCED, UR MANG TIP, RH	SD–2710	25	2	SWITCH PLATE (20–32LC)	SD–2745
4	1	SAMSON STOCK RAIL, 69'–8" LONG, CURVED, LH	SD–2711	26	2	SWITCH PLATE (20–33LC)	SD–2745
5	1	SAMSON STOCK RAIL, 76'–0" LONG, STRAIGHT, RH	SD–2712	27	2	SWITCH PLATE (20–34LC)	SD–2745
6	1	SWITCH HEEL BLOCK, 136 LB RE, UNIFORM RISER, LH	–	28	2	SWITCH PLATE (20–35LC)	SD–2745
7	1	SWITCH HEEL BLOCK, 136 LB RE, UNIFORM RISER, RH	–	29	2	SWITCH PLATE (20–36LC)	SD–2745
8	2	SWITCH PLATE (BP1C–136)	SD–2302	30	2	SWITCH PLATE (20–37LC)	SD–2745
9	16	SWITCH PLATE (BP2C–136)	SD–2302	31	2	SWITCH PLATE (20–38LC)	SD–2746
10	14	SWITCH PLATE (P4C–136)	SD–2302	32	2	SWITCH PLATE (20–39LC)	SD–2746
11	4	SWITCH ROLLER PLATE (RP–1–136) SCHWIHAG	SD–2311	33	2	SWITCH PLATE (20–40LC)	SD–2746
12	4	SWITCH ROLLER PLATE (RP–2–136) SCHWIHAG	SD–2312	34	2	ROLLER SCHWIHAG, SINGLE	–
13	1	SWITCH PLATE (20–25LLC)	SD–2743	35	4	ROLLER SCHWIHAG, DOUBLE	–
14	1	SWITCH PLATE (20–25LRC)	SD–2743	36	2	ROLLER SCHWIHAG, TRIPLE	–
15	1	SWITCH PLATE (20–26LLC)	SD–2743	37	22	BRACE, BOLTLESS, 136 LB RE 'SUREFIT'	–
16	1	SWITCH PLATE (20–26LRC)	SD–2743	38	22	SERRATED WASHER FOR BOLTLESS BRACE	–
17	1	SWITCH PLATE (20–27LLC)	SD–2743	39	142	CLIP, PANDROL, E2055	–
18	1	SWITCH PLATE (20–27LRC)	SD–2743	40	6	BOLT, 1 1/8" DIA X 10 1/2" LONG, SQUARE HEAD, DRILLED @ 10 1/16", GR 5	–
19	1	SWITCH PLATE (20–28LLC)	SD–2744	41	6	SPRING WASHER FOR 1 1/8" DIA BOLT	–
20	1	SWITCH PLATE (20–28LRC)	SD–2744	42	6	NUT, 1 1/8" DIA HEAVY SQUARE, GR 5	–
21	1	SWITCH PLATE (20–29LLC)	SD–2744	43	6	COTTER PIN, 1/4" DIA X 2 1/4" LONG	–
22	1	SWITCH PLATE (20–29LRC)	SD–2744	44	2	FISH PLATE, 3–HOLE, 1/2" D–BAR X 16" LONG, HEADLOCKED	–
				45	2	FISH PLATE, 3–HOLE, 1/2" D–BAR X 16" LONG	–

NOTES:

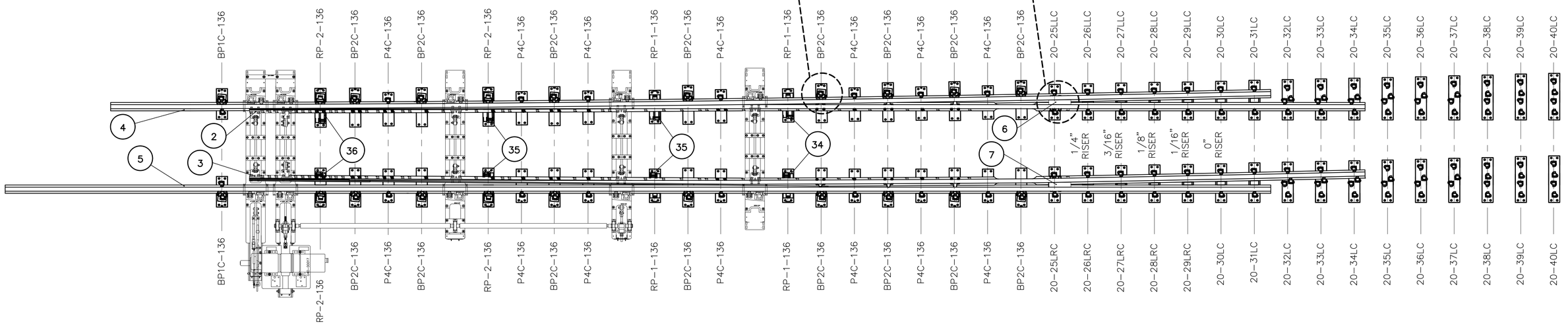
1. SEE DRAWING SD–2716 FOR TIE LOCATION DIMENSIONS
2. SWITCH RODS SHALL BE PREADJUSTED TO DIMENSIONS SHOWN IN DETAIL FOR EACH ROD LOCATION. MODIFY SPREADS AS NECESSARY WHEN INSTALLING INTO LAYOUT



TYPICAL BOLTLESS BRACE ASSEMBLY



TYPICAL SWITCH HEEL ASSEMBLY



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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
LH SWITCH PACK WITH HST
SWITCH MACHINE ON MAINLINE SIDE

CADD FILE NAME: SD–2705

REV:

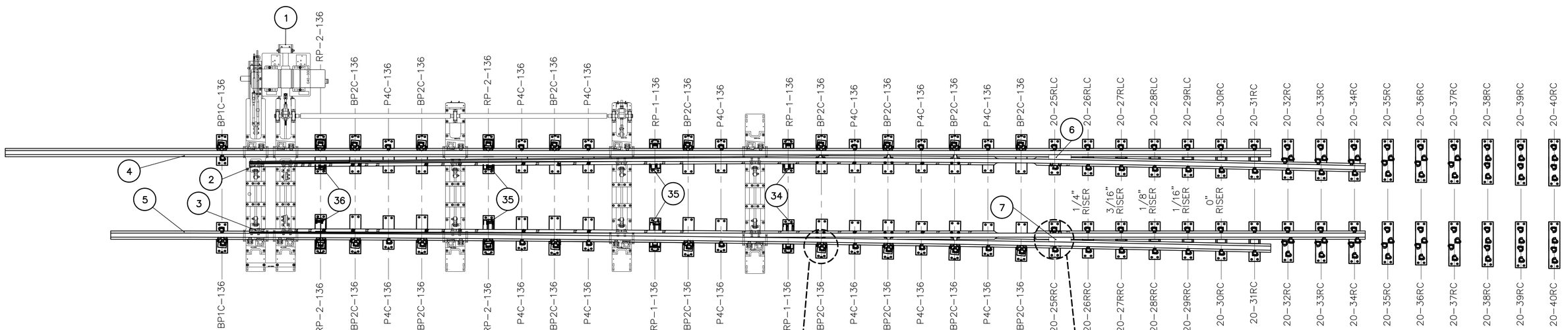
EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD–2705

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	HOLLOW SWITCH TIE & RODDING ASSEMBLY	SD–2717
2	1	SAMSON POINT, 67'–0" LONG, DOUBLE REINFORCED, UR MANG TIP, LH	SD–2709
3	1	SAMSON POINT, 67'–0" LONG, DOUBLE REINFORCED, UR MANG TIP, RH	SD–2710
4	1	SAMSON STOCK RAIL, 76'–0" LONG, STRAIGHT, LH	SD–2713
5	1	SAMSON STOCK RAIL, 69'–8" LONG, CURVED, RH	SD–2714
6	1	SWITCH HEEL BLOCK, 136 LB RE, UNIFORM RISER, LH	–
7	1	SWITCH HEEL BLOCK, 136 LB RE, UNIFORM RISER, RH	–
8	2	SWITCH PLATE (BP1C–136)	SD–2301
9	16	SWITCH PLATE (BP2C–136)	SD–2301
10	14	SWITCH PLATE (P4C–136)	SD–2301
11	4	SWITCH ROLLER PLATE (RP–1–136) SCHWIHAG	SD–2311
12	4	SWITCH ROLLER PLATE (RP–2–136) SCHWIHAG	SD–2312
13	1	SWITCH PLATE (20–25RLC)	SD–2747
14	1	SWITCH PLATE (20–25RRC)	SD–2747
15	1	SWITCH PLATE (20–26RLC)	SD–2747
16	1	SWITCH PLATE (20–26RRC)	SD–2747
17	1	SWITCH PLATE (20–27RLC)	SD–2747
18	1	SWITCH PLATE (20–27RRC)	SD–2747
19	1	SWITCH PLATE (20–28RLC)	SD–2748
20	1	SWITCH PLATE (20–28RRC)	SD–2748
21	1	SWITCH PLATE (20–29RLC)	SD–2748
22	1	SWITCH PLATE (20–29RRC)	SD–2748

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
23	2	SWITCH PLATE (20–30RC)	SD–2748
24	2	SWITCH PLATE (20–31RC)	SD–2748
25	2	SWITCH PLATE (20–32RC)	SD–2749
26	2	SWITCH PLATE (20–33RC)	SD–2749
27	2	SWITCH PLATE (20–34RC)	SD–2749
28	2	SWITCH PLATE (20–35RC)	SD–2749
29	2	SWITCH PLATE (20–36RC)	SD–2749
30	2	SWITCH PLATE (20–37RC)	SD–2749
31	2	SWITCH PLATE (20–38RC)	SD–2750
32	2	SWITCH PLATE (20–39RC)	SD–2750
33	2	SWITCH PLATE (20–40RC)	SD–2750
34	2	ROLLER SCHWIHAG, SINGLE	–
35	4	ROLLER SCHWIHAG, DOUBLE	–
36	2	ROLLER SCHWIHAG, TRIPLE	–
37	22	BRACE, BOLTLESS, 136 LB RE 'SUREFIT'	–
38	22	SERRATED WASHER FOR BOLTLESS BRACE	–
39	142	CLIP, PANDROL, E2055	–
40	6	BOLT, 1 1/8" DIA X 10 1/2" LONG, SQUARE HEAD, DRILLED @ 10 1/16", GR 5	–
41	6	SPRING WASHER FOR 1 1/8" DIA BOLT	–
42	6	NUT, 1 1/8" DIA HEAVY SQUARE, GR 5	–
43	6	COTTER PIN, 1/4" DIA X 2 1/4" LONG	–
44	2	FISH PLATE, 3–HOLE, 1/2" D–BAR X 16" LONG, HEADLOCKED	–
45	2	FISH PLATE, 3–HOLE, 1/2" D–BAR X 16" LONG	–



TYPICAL BOLTLESS BRACE ASSEMBLY

TYPICAL SWITCH HEEL ASSEMBLY

NOTES:

1. SEE DRAWING SD–2715 FOR TIE LOCATION DIMENSIONS
2. SWITCH RODS SHALL BE PREADJUSTED TO DIMENSIONS SHOWN IN DETAIL FOR EACH ROD LOCATION. MODIFY SPREADS AS NECESSARY WHEN INSTALLING INTO LAYOUT

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
RH SWITCH PACK WITH HST
SWITCH MACHINE ON MAINLINE SIDE

CADD FILE NAME: SD–2706

REV: | EDITION: FIFTH

SCALE: NTS

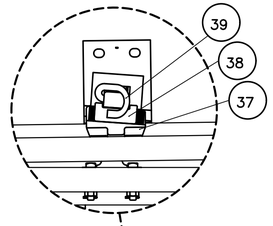
STANDARD DRAWING NO.: SD–2706

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	HOLLOW SWITCH TIE & RODDING ASSEMBLY	SD–2720	23	2	SWITCH PLATE (20–30LC)	SD–2744
2	1	SAMSON POINT, 67'–0" LONG, DOUBLE REINFORCED, UR MANG TIP, LH	SD–2709	24	2	SWITCH PLATE (20–31LC)	SD–2744
3	1	SAMSON POINT, 67'–0" LONG, DOUBLE REINFORCED, UR MANG TIP, RH	SD–2710	25	2	SWITCH PLATE (20–32LC)	SD–2745
4	1	SAMSON STOCK RAIL, 69'–8" LONG, CURVED, LH	SD–2711	26	2	SWITCH PLATE (20–33LC)	SD–2745
5	1	SAMSON STOCK RAIL, 76'–0" LONG, STRAIGHT, RH	SD–2712	27	2	SWITCH PLATE (20–34LC)	SD–2745
6	1	SWITCH HEEL BLOCK, 136 LB RE, UNIFORM RISER, LH	–	28	2	SWITCH PLATE (20–35LC)	SD–2745
7	1	SWITCH HEEL BLOCK, 136 LB RE, UNIFORM RISER, RH	–	29	2	SWITCH PLATE (20–36LC)	SD–2745
8	2	SWITCH PLATE (BP1C–136)	SD–2301	30	2	SWITCH PLATE (20–37LC)	SD–2745
9	16	SWITCH PLATE (BP2C–136)	SD–2301	31	2	SWITCH PLATE (20–38LC)	SD–2746
10	14	SWITCH PLATE (P4C–136)	SD–2301	32	2	SWITCH PLATE (20–39LC)	SD–2746
11	4	SWITCH ROLLER PLATE (RP–1–136) SCHWIHAG	SD–2311	33	2	SWITCH PLATE (20–40LC)	SD–2746
12	4	SWITCH ROLLER PLATE (RP–2–136) SCHWIHAG	SD–2312	34	2	ROLLER SCHWIHAG, SINGLE	–
13	1	SWITCH PLATE (20–25LLC)	SD–2743	35	4	ROLLER SCHWIHAG, DOUBLE	–
14	1	SWITCH PLATE (20–25LRC)	SD–2743	36	2	ROLLER SCHWIHAG, TRIPLE	–
15	1	SWITCH PLATE (20–26LLC)	SD–2743	37	22	BRACE, BOLTLESS, 136 LB RE 'SUREFIT'	–
16	1	SWITCH PLATE (20–26LRC)	SD–2743	38	22	SERRATED WASHER FOR BOLTLESS BRACE	–
17	1	SWITCH PLATE (20–27LLC)	SD–2743	39	142	CLIP, PANDROL, E2055	–
18	1	SWITCH PLATE (20–27LRC)	SD–2743	40	6	BOLT, 1 1/8" DIA X 10 1/2" LONG, SQUARE HEAD, DRILLED @ 10 1/16", GR 5	–
19	1	SWITCH PLATE (20–28LLC)	SD–2744	41	6	SPRING WASHER FOR 1 1/8" DIA BOLT	–
20	1	SWITCH PLATE (20–28LRC)	SD–2744	42	6	NUT, 1 1/8" DIA HEAVY SQUARE, GR 5	–
21	1	SWITCH PLATE (20–29LLC)	SD–2744	43	6	COTTER PIN, 1/4" DIA X 2 1/4" LONG	–
22	1	SWITCH PLATE (20–29LRC)	SD–2744	44	2	FISH PLATE, 3–HOLE, 1/2" D–BAR X 16" LONG, HEADLOCKED	–
				45	2	FISH PLATE, 3–HOLE, 1/2" D–BAR X 16" LONG	–

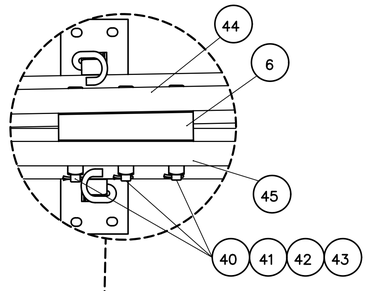
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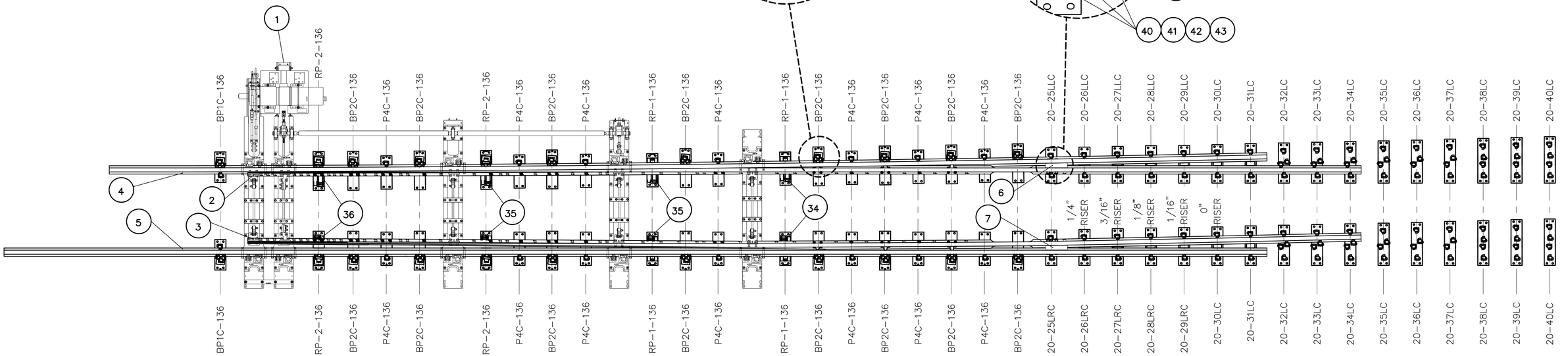
1. SEE DRAWING SD–2716 FOR TIE LOCATION DIMENSIONS
2. SWITCH RODS SHALL BE PREADJUSTED TO DIMENSIONS SHOWN IN DETAIL FOR EACH ROD LOCATION. MODIFY SPREADS AS NECESSARY WHEN INSTALLING INTO LAYOUT

TYPICAL BOLTLESS BRACE ASSEMBLY



TYPICAL SWITCH HEEL ASSEMBLY





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PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK NO. 20 TURNOUT LH SWITCH PACK WITH HST SWITCH MACHINE ON TURNOUT SIDE

CADD FILE NAME: SD–2707

REV: | EDITION: FIFTH

SCALE: NTS

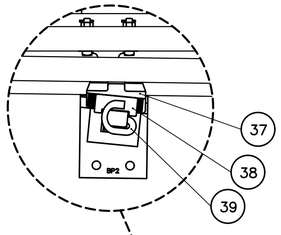
STANDARD DRAWING NO.: SD–2707

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	HOLLOW SWITCH TIE & RODDING ASSEMBLY	SD–2719	23	2	SWITCH PLATE (20–30RC)	SD–2748
2	1	SAMSON POINT, 67'–0" LONG, DOUBLE REINFORCED, UR MANG TIP, LH	SD–2709	24	2	SWITCH PLATE (20–31RC)	SD–2748
3	1	SAMSON POINT, 67'–0" LONG DOUBLE REINFORCED, UR MANG TIP, RH	SD–2710	25	2	SWITCH PLATE (20–32RC)	SD–2749
4	1	SAMSON STOCK RAIL, 76'–0" LONG, STRAIGHT, LH	SD–2713	26	2	SWITCH PLATE (20–33RC)	SD–2749
5	1	SAMSON STOCK RAIL, 69'–8" LONG, CURVED, RH	SD–2714	27	2	SWITCH PLATE (20–34RC)	SD–2749
6	1	SWITCH HEEL BLOCK, 136 LB RE, UNIFORM RISER, LH	–	28	2	SWITCH PLATE (20–35RC)	SD–2749
7	1	SWITCH HEEL BLOCK, 136 LB RE, UNIFORM RISER, RH	–	29	2	SWITCH PLATE (20–36RC)	SD–2749
8	2	SWITCH PLATE (BP1C–136)	SD–2301	30	2	SWITCH PLATE (20–37RC)	SD–2749
9	16	SWITCH PLATE (BP2C–136)	SD–2301	31	2	SWITCH PLATE (20–38RC)	SD–2750
10	14	SWITCH PLATE (P4C–136)	SD–2301	32	2	SWITCH PLATE (20–39RC)	SD–2750
11	4	SWITCH ROLLER PLATE (RP–1–136) SCHWIHAG	SD–2311	33	2	SWITCH PLATE (20–40RC)	SD–2750
12	4	SWITCH ROLLER PLATE (RP–2–136) SCHWIHAG	SD–2312	34	2	ROLLER SCHWIHAG, SINGLE	–
13	1	SWITCH PLATE (20–25RLC)	SD–2747	35	4	ROLLER SCHWIHAG, DOUBLE	–
14	1	SWITCH PLATE (20–25RRC)	SD–2747	36	2	ROLLER SCHWIHAG, TRIPLE	–
15	1	SWITCH PLATE (20–26RLC)	SD–2747	37	22	BRACE, BOLTLESS, 136 LB RE 'SUREFIT'	–
16	1	SWITCH PLATE (20–26RRC)	SD–2747	38	22	SERRATED WASHER FOR BOLTLESS BRACE	–
17	1	SWITCH PLATE (20–27RLC)	SD–2747	39	142	CLIP, PANDROL, E2055	–
18	1	SWITCH PLATE (20–27RRC)	SD–2747	40	6	BOLT, 1 1/8" DIA X 10 1/2" LONG, SQUARE HEAD, DRILLED @ 10 1/16", GR 5	–
19	1	SWITCH PLATE (20–28RLC)	SD–2748	41	6	SPRING WASHER FOR 1 1/8" DIA BOLT	–
20	1	SWITCH PLATE (20–28RRC)	SD–2748	42	6	NUT, 1 1/8" DIA HEAVY SQUARE, GR 5	–
21	1	SWITCH PLATE (20–29RLC)	SD–2748	43	6	COTTER PIN, 1/4" DIA X 2 1/4" LONG	–
22	1	SWITCH PLATE (20–29RRC)	SD–2748	44	2	FISH PLATE, 3–HOLE, 1/2" D–BAR X 16" LONG, HEADLOCKED	–
				45	2	FISH PLATE, 3–HOLE, 1/2" D–BAR X 16" LONG	–

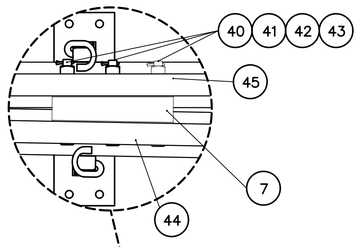
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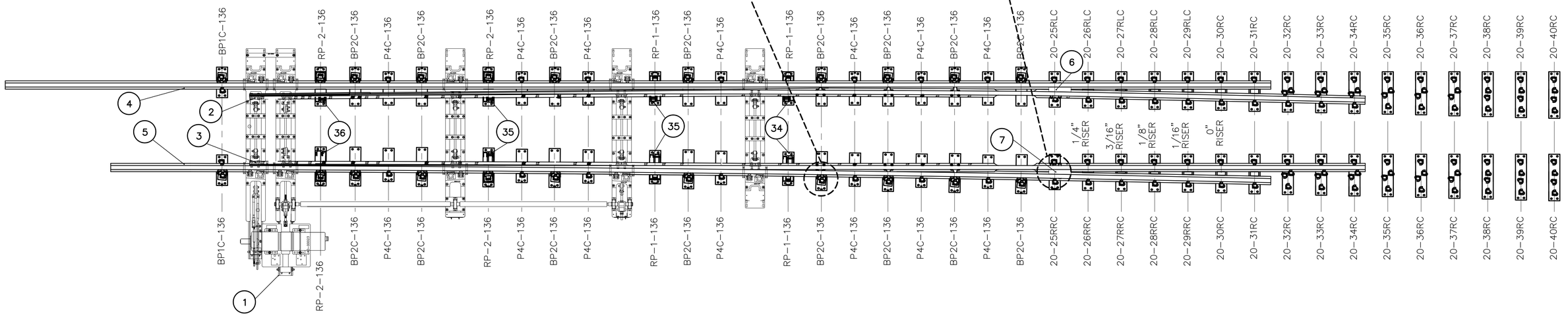
1. SEE DRAWING SD–2715 FOR TIE LOCATION DIMENSIONS
2. SWITCH RODS SHALL BE PREADJUSTED TO DIMENSIONS SHOWN IN DETAIL FOR EACH ROD LOCATION. MODIFY SPREADS AS NECESSARY WHEN INSTALLING INTO LAYOUT

TYPICAL BOLTLESS BRACE ASSEMBLY



TYPICAL SWITCH HEEL ASSEMBLY





REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
RH SWITCH PACK WITH HST
SWITCH MACHINE ON TURNOUT SIDE

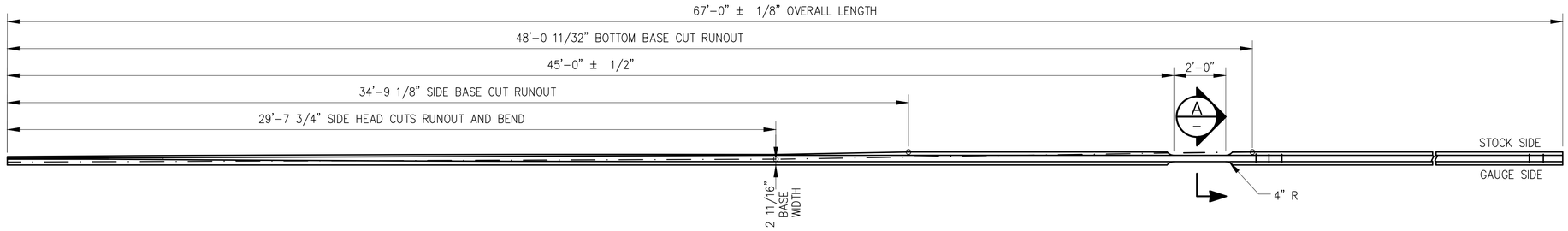
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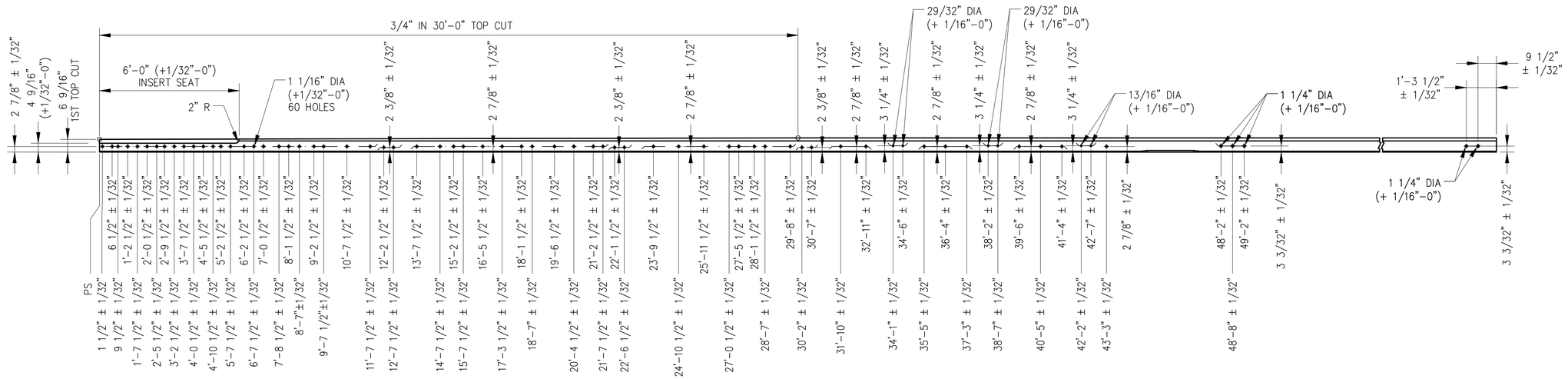
REV: | EDITION: FIFTH

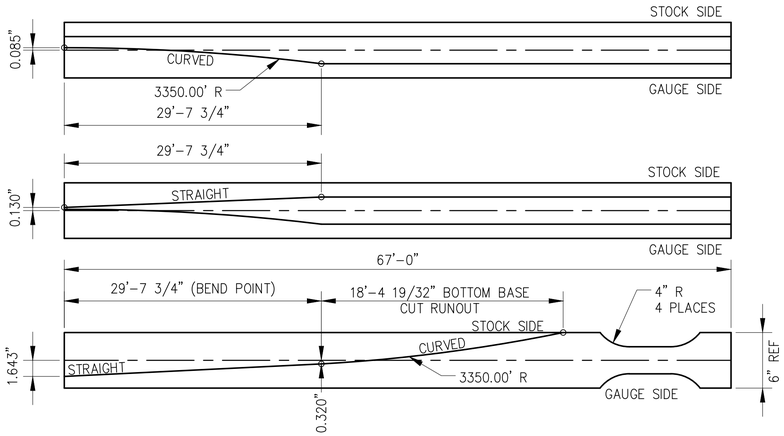
SCALE: NTS

STANDARD DRAWING NO.: SD–2708

BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION
1	1	RAIL, 136 LB RE x 67'–0" LONG



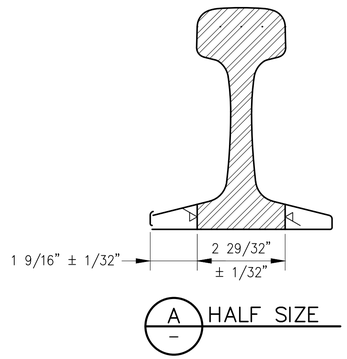




GAUGE SIDE HEAD CUT:
DIMENSIONS @ 6 11/16" AT RAIL
BEND STRAIGHT WEB, TOP VIEW

STOCK SIDE HEAD CUT:
DIMENSIONS @ 6 11/16" AT RAIL BEND
STRAIGHT WEB, TOP VIEW

UNDERSIDE BASE CUT:
DIMENSIONS @ BASE.
STRAIGHT WEB, TOP VIEW



NOTES:

1. MACHINE SIDE HEAD CUTS BEFORE REMOVING HEAD AND WEB AREA SHOWN FOR MANGANESE TIP
2. POINT SHALL BE MACHINED STRAIGHT
3. ALL HOLES SHALL BE CHAMFERED WITH 1/8" R EDGES

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

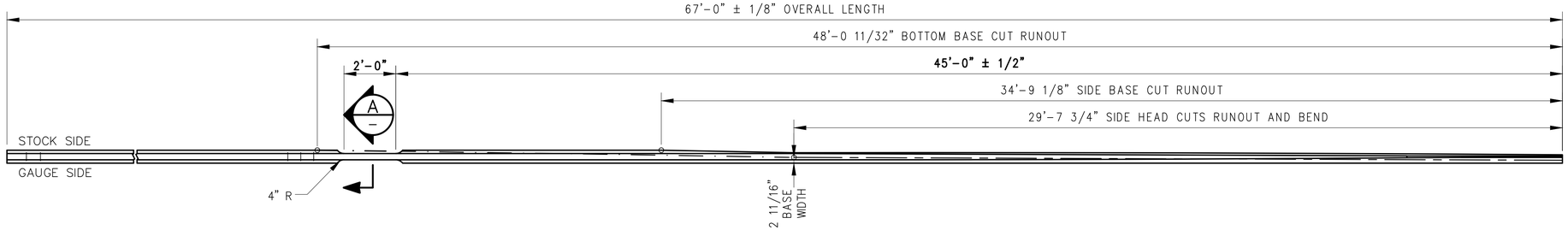
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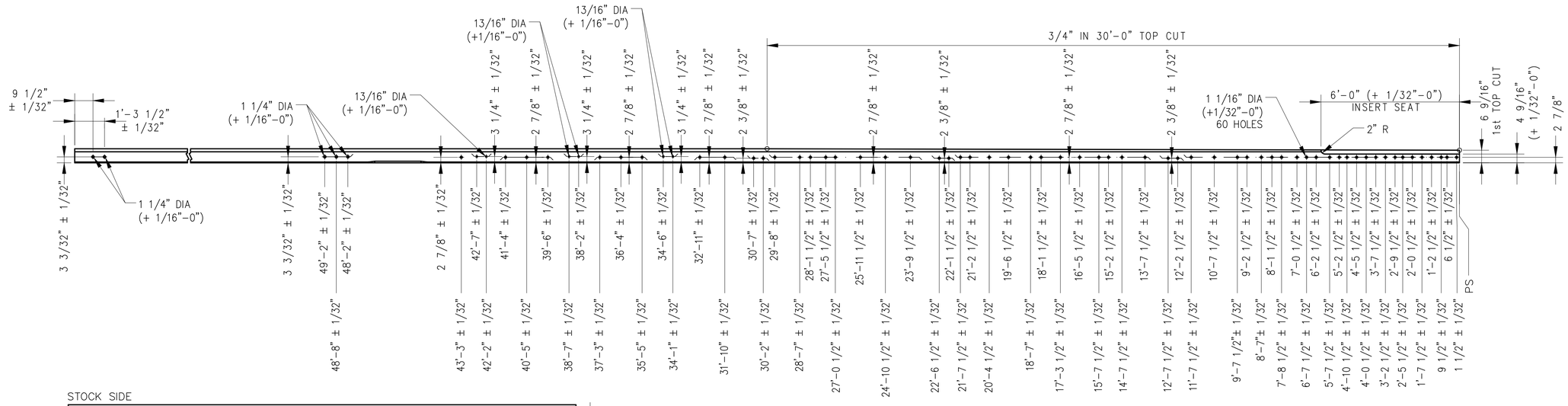
ENGINEERING STANDARD DRAWINGS

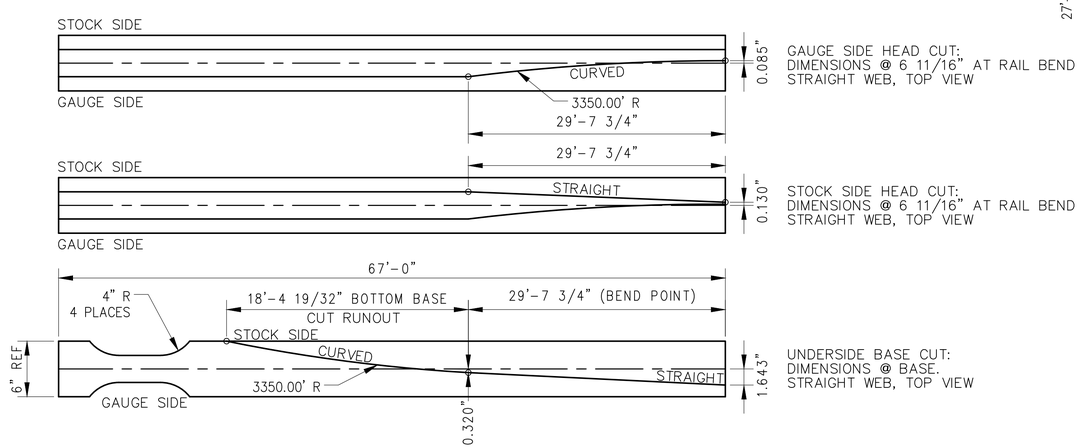
SPECIAL TRACKWORK
NO. 20 TURNOUT
LH SWITCH POINT ASSEMBLY
67'–0" LONG WITH UNIFORM RISER

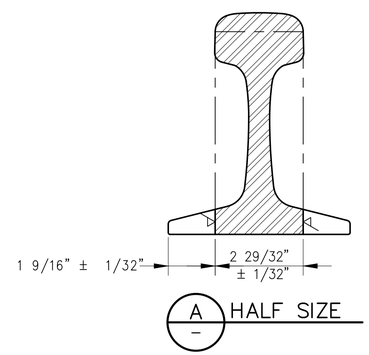
CADD FILE NAME:	SD–2709
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2709

BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION
1	1	RAIL, 136 LB RE x 67'-0" LONG









NOTES:

1. MACHINE SIDE HEAD CUTS BEFORE REMOVING HEAD AND WEB AREA SHOWN FOR MANGANESE TIP
2. POINT SHALL BE MACHINED STRAIGHT
3. ALL HOLES SHALL BE CHAMFERED WITH 1/8" R EDGES

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

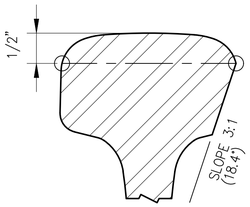
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ENGINEERING STANDARD DRAWINGS

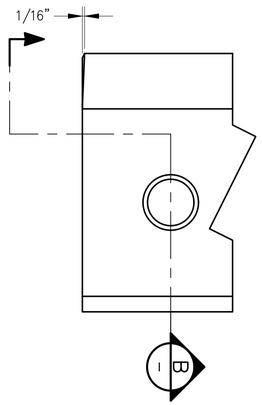
SPECIAL TRACKWORK NO. 20 TURNOUT RH SWITCH POINT ASSEMBLY 67'-0" LONG WITH UNIFORM RISER

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REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD-2710

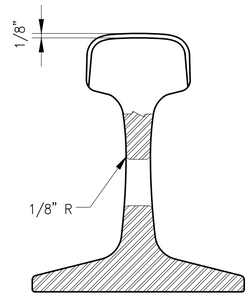
BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION
1	1	RAIL, 136 LB RE 69'–8" LONG



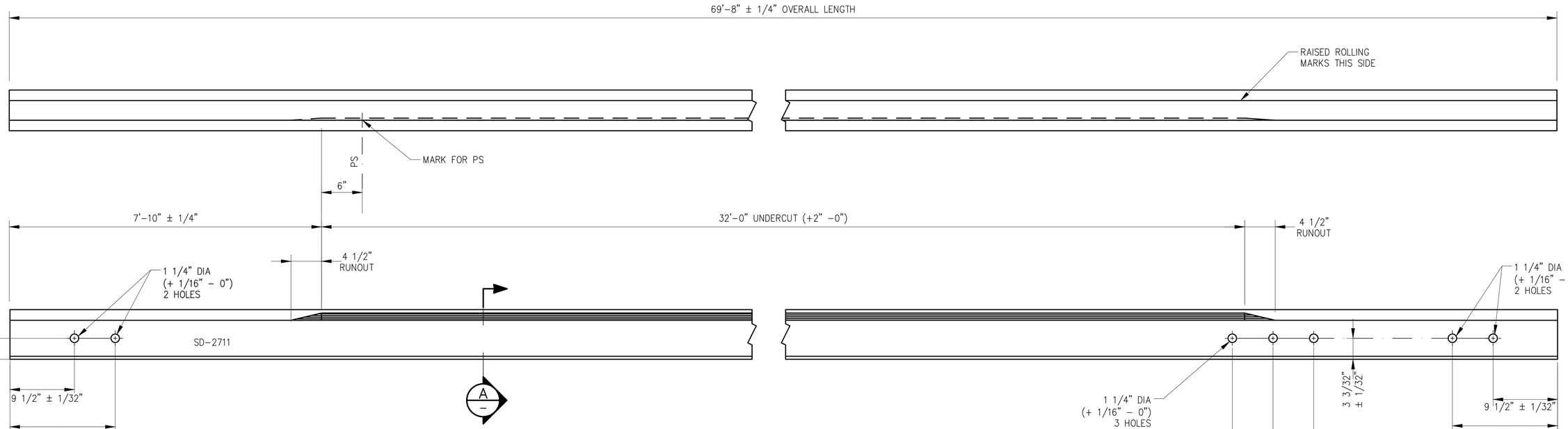
A — PARTIAL SECTION
SCALE: NTS



RAIL END / HOLE BEVELING DETAILS
RAIL HEAD ONY – NOT BASE



B — SECTION
SCALE: NTS



NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

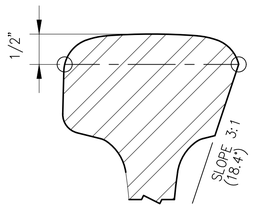
APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

Caltrain

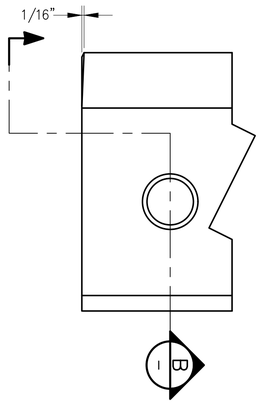
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
SAMSON STOCK RAIL FOR LH TURNOUT
LH 69'–8" LONG

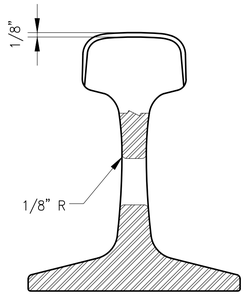
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REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2711



A PARTIAL SECTION
SCALE: NTS

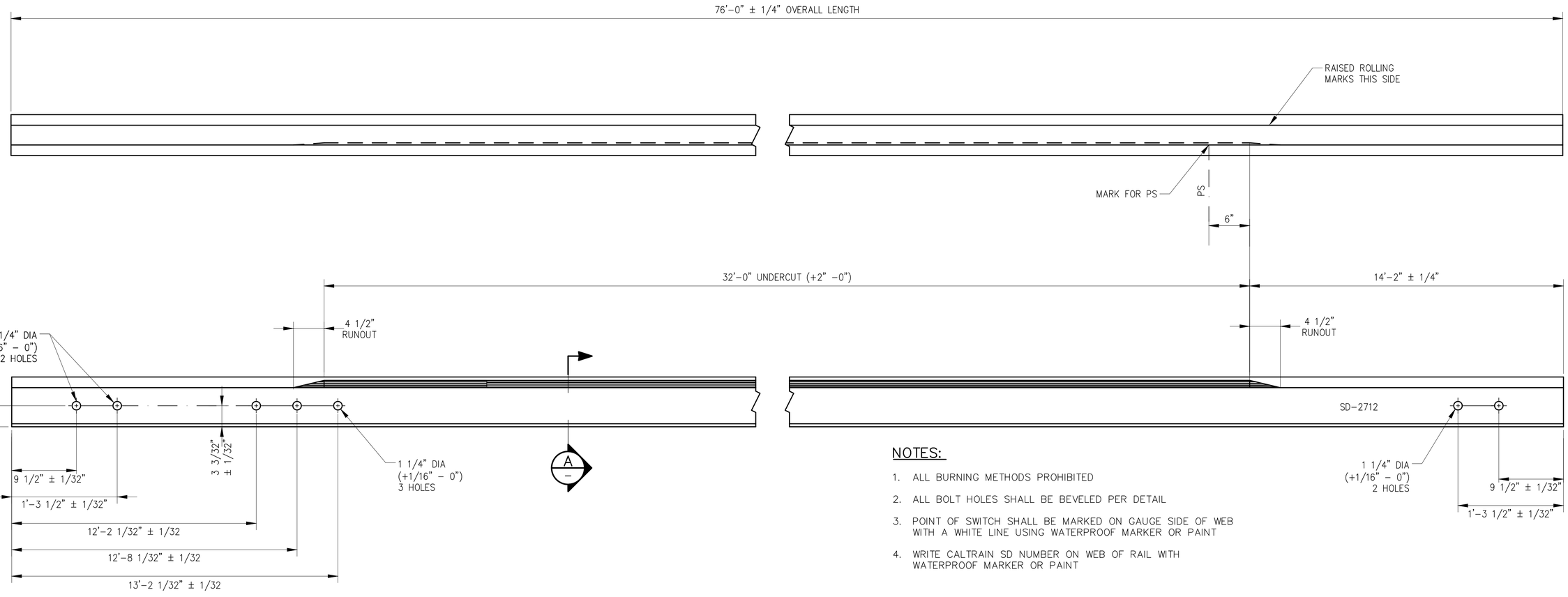


RAIL END / HOLE BEVELING DETAILS
RAIL HEAD ONY – NOT BASE



B SECTION
SCALE: NTS

BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION
1	1	RAIL, 136 LB RE 76'–0" LONG



NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

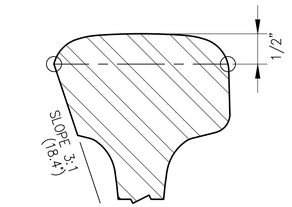
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

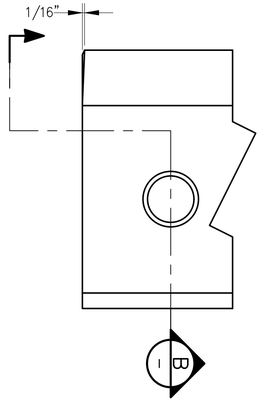
SPECIAL TRACKWORK
NO. 20 TURNOUT
SAMSON STOCK RAIL FOR LH TURNOUT
RH 76'–0" LONG

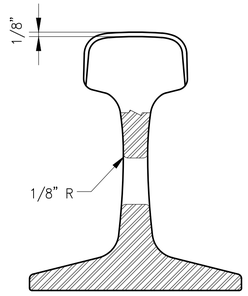
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REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2712

BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION
1	1	RAIL, 136 LB RE 76'–0" LONG



A PARTIAL SECTION
– SCALE: NTS

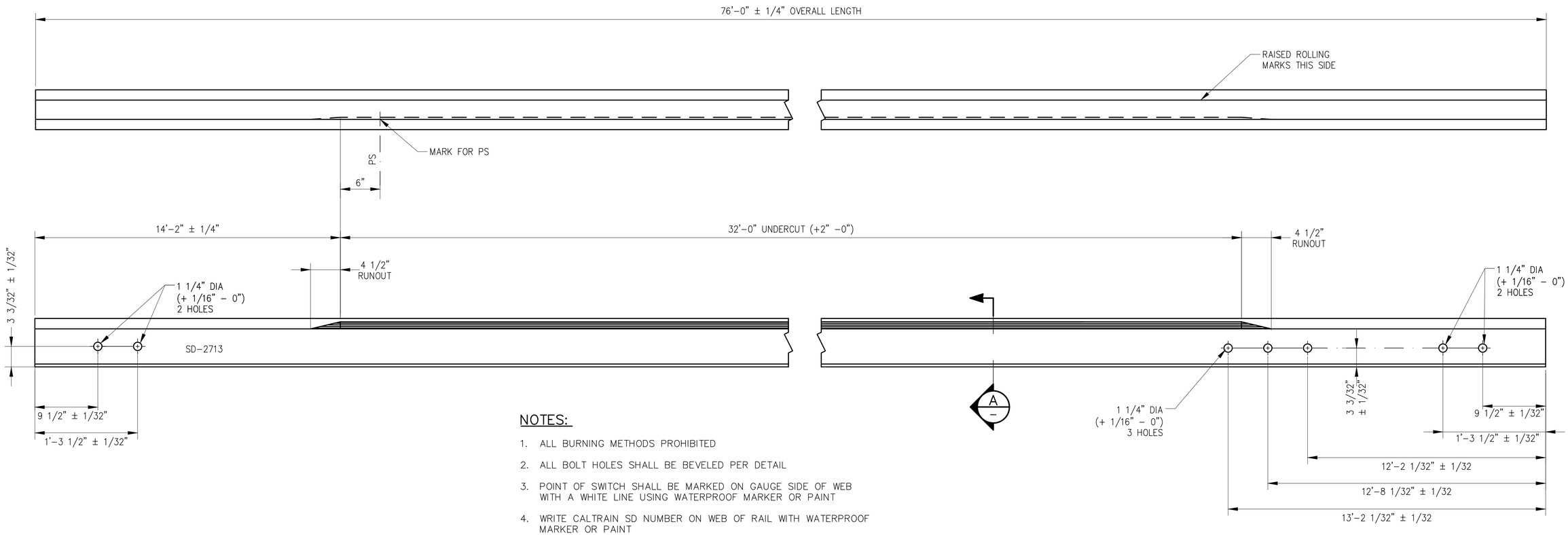




B SECTION
– SCALE: NTS

RAIL END / HOLE BEVELING DETAILS

RAIL HEAD ONY – NOT BASE



NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

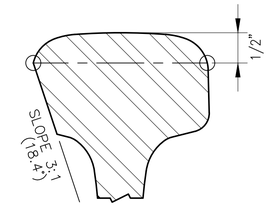
Bin Zhang

DIRECTOR, ENGINEERING

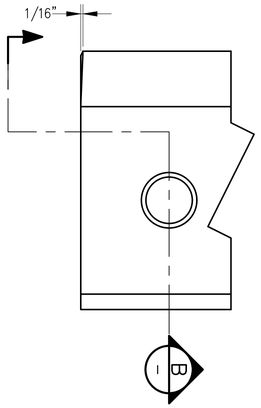
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
SAMSON STOCK RAIL FOR RH TURNOUT
LH 76'–0" LONG

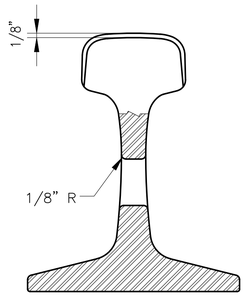
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REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2713



A PARTIAL SECTION
SCALE: NTS

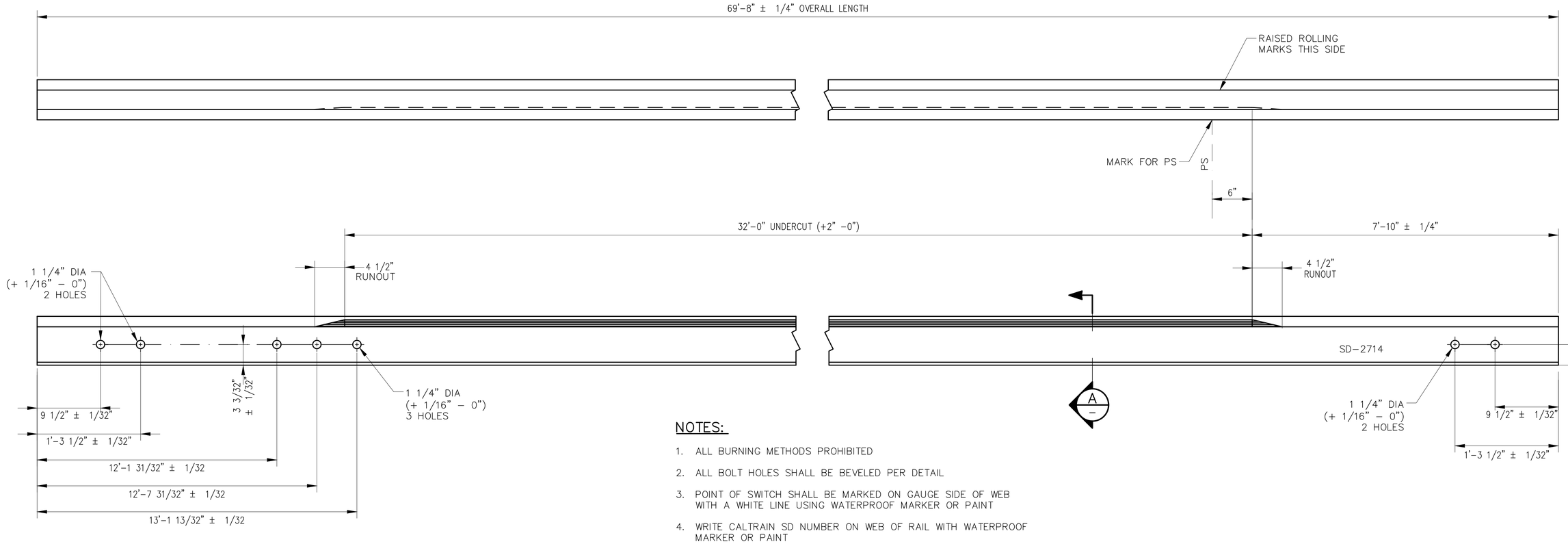


RAIL END / HOLE BEVELING DETAILS
RAIL HEAD ONY – NOT BASE



B SECTION
SCALE: NTS

BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION
1	1	RAIL, 136 LB RE 69'–8" LONG



NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

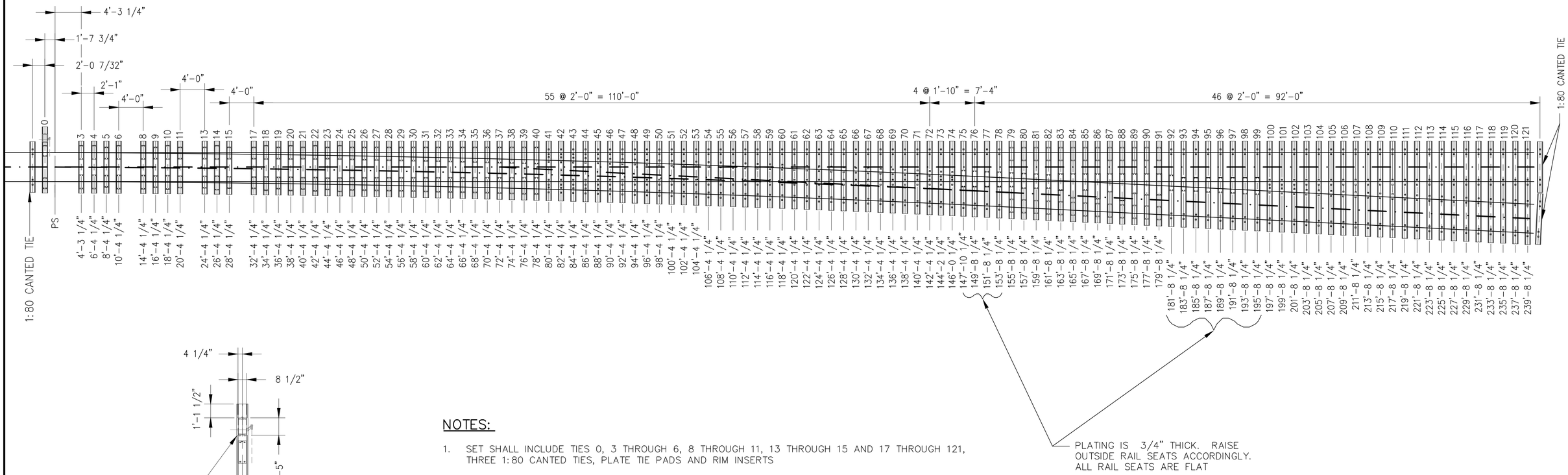
APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

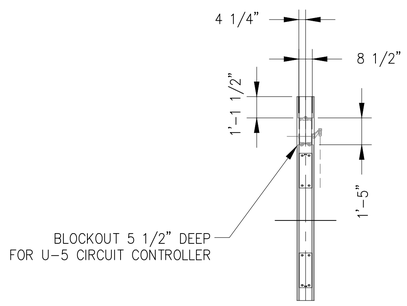
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
SAMSON STOCK RAIL FOR RH TURNOUT
RH 69'–0" LONG

CADD FILE NAME: SD–2714
REV:
EDITION: FIFTH
SCALE: NTS
STANDARD DRAWING NO.: SD–2714

BILL OF MATERIALS			
ITEM	QTY	DESCRIPTION	DWG NO
1	5	TIES 1,2,7,12 AND 16, POWER SWITCH MACHINE ON MAINLINE SIDE FOR RH TURNOUT (HOLLOW STEEL)	SD-2717
2	5	TIES 1,2,7,12 AND 16, POWER SWITCH MACHINE ON TURNOUT SIDE FOR RH TURNOUT (HOLLOW STEEL)	SD-2719





TIE #0 BLOCKOUT DETAIL

NOTES:

1. SET SHALL INCLUDE TIES 0, 3 THROUGH 6, 8 THROUGH 11, 13 THROUGH 15 AND 17 THROUGH 121, THREE 1:80 CANTED TIES, PLATE TIE PADS AND RIM 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 LH/MAINLINE SIDE
6. SEE BILL OF MATERIALS ABOVE FOR TIES 1, 2, 7, 12 AND 16

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
HOLLOW STEEL TIE AND CONCRETE TIE
LAYOUT FOR RH TURNOUT

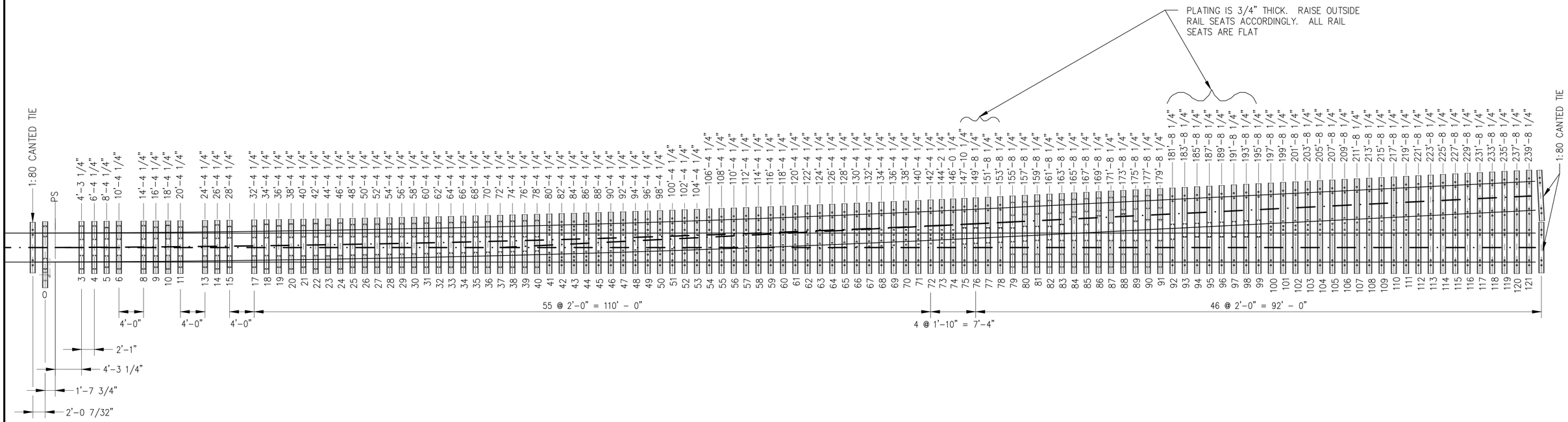
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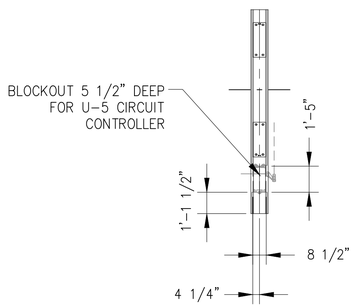
REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD-2715

BILL OF MATERIALS			
ITEM	QTY	DESCRIPTION	DWG NO
1	5	TIES 1,2,7,12 AND 16, POWER SWITCH MACHINE ON MAINLINE SIDE FOR LH TURNOUT (HOLLOW STEEL)	SD-2718
2	5	TIES 1,2,7,12 AND 16, POWER SWITCH MACHINE ON TURNOUT SIDE FOR LH TURNOUT (HOLLOW STEEL)	SD-2720





TIE #0 BLOCKOUT DETAIL

NOTES:

1. SET SHALL INCLUDE TIES 0, 3 THROUGH 6, 8 THROUGH 11, 13 THROUGH 15 AND 17 THROUGH 121, THREE 1:80 CANTED TIES, PLATE TIE PADS AND RIM 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 LH/TURNOUT SIDE. USE OPPOSITE HAND FOR SWITCH MACHINE ON RH/MAINLINE SIDE
6. SEE BILL OF MATERIALS ABOVE FOR TIES 1, 2, 7, 12 AND 16

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
HOLLOW STEEL TIE AND CONCRETE TIE
LAYOUT FOR LH TURNOUT

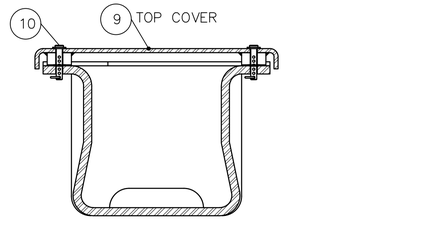
CADD FILE NAME:	SD-2716
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD-2716

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	ASSEMBLY FOR NO 20–136 LB RE, SWITCH MACHINE ON LH SIDE	SD–2739	13	10	LV BRACE FOR 136 LB RE	–
2	1	HOLLOW TIE ASSEMBLY (HT–1RL–20–136)	–	14	10	SERRATED WASHER FOR LV BRACE	–
3	1	HOLLOW TIE ASSEMBLY (HT–2RL–20–136)	–	15	10	CLIP, PANDROL, E2055	–
4	1	HOLLOW TIE ASSEMBLY (HT–7RL–20–136)	–	16	10	CLIP, PANDROL, FC1601	–
5	1	HOLLOW TIE ASSEMBLY (HT–12RL–20–136)	–	17	20	RAIL ANCHOR, UNIT DRIVE–ON TYPE 5	–
6	1	HOLLOW TIE ASSEMBLY (HT–16L–20–136)	–	18	1	STEEL COVER PLATE FOR HST TIE, SHORT TOP VERSION	–
7*	2	COVER PLATE NO 1, HOLLOW SWITCH TIE	–	19	4	STEEL COVER PLATE FOR HST TIE, TOP END	–
8*	1	COVER PLATE NO 2, HOLLOW SWITCH TIE	–	20	5	HST SWITCH PLATE HTP–206–STR	SD–2305
9*	2	COVER PLATE NO 3, HOLLOW SWITCH TIE	–	21	1	HST SWITCH PLATE HTP–209–R	SD–2307
10	42	PUSH PIN ASSEMBLY FOR HST COVERS	–	22	2	HST SWITCH PLATE HTP–201–R	SD–2308
11	6	STEEL SIDE END COVER PLATE ASSEMBLY FOR HST TIE	–	23	2	HST SWITCH PLATE HTP–301–R	SD–2306
12	12	COVER SUPPORT BRACKET	–	24	1	PILLOW BLOCK MOUNTING PLATE	–

* COVER PLATES SHOWN TRANSPARENT FOR CLARITY

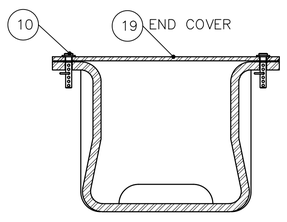
NOTES:

1. COORDINATE SWITCH MACHINE AND MACHINE PLATES (NIC) WITH CALTRAIN



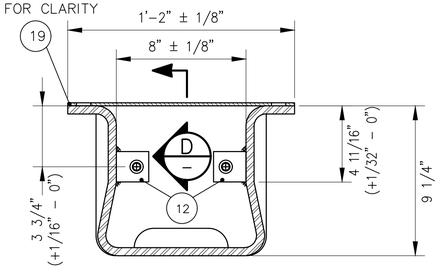
HOLLOW TIE TOP COVER DETAIL

A – SECTION
SCALE: NTS



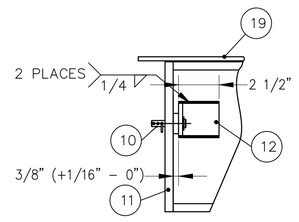
END COVER PLATE

B – SECTION
SCALE: NTS



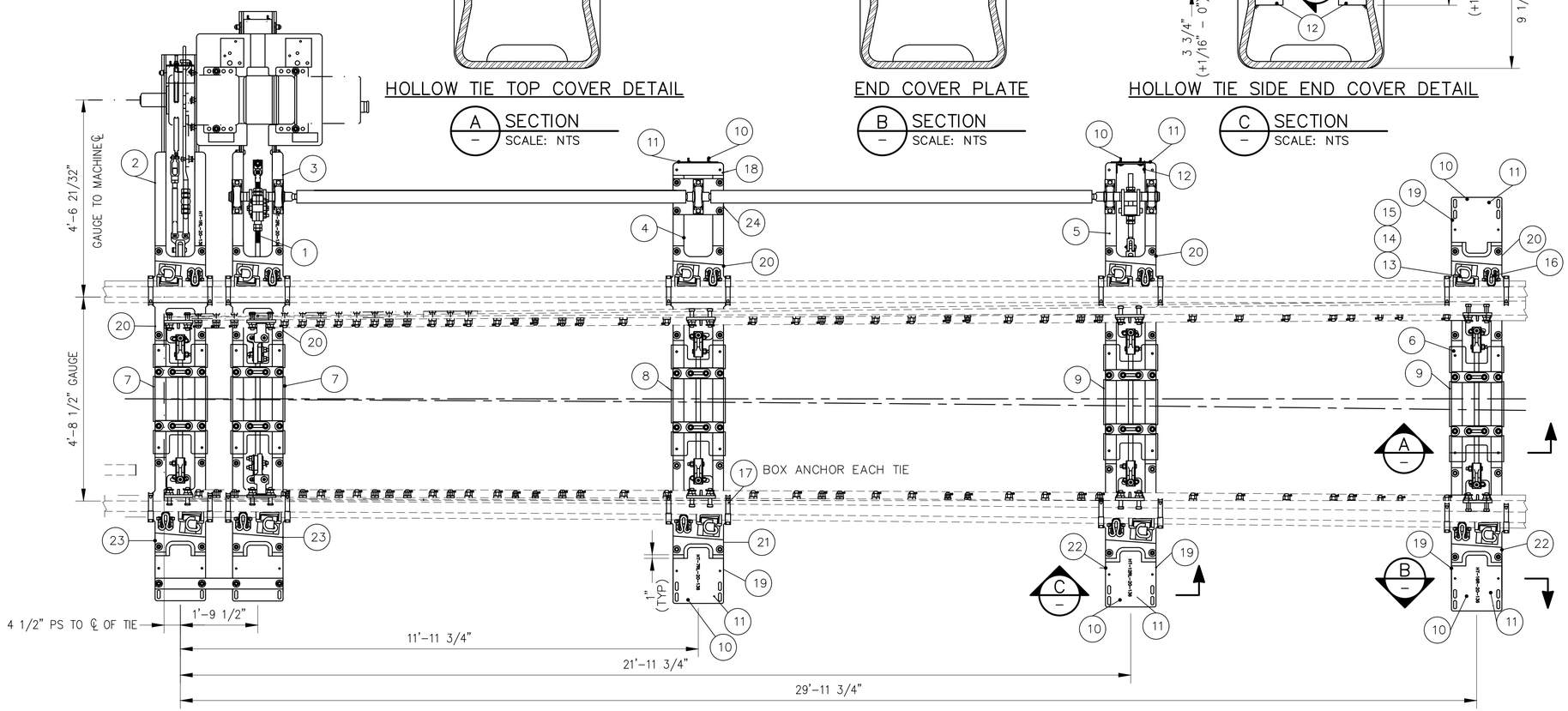
HOLLOW TIE SIDE END COVER DETAIL

C – SECTION
SCALE: NTS



WELDING DETAIL

D – VIEW
SCALE: NTS



REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
HOLLOW STEEL TIES
FOR RH TURNOUT WITH
SWITCH MACHINE ON MAINLINE SIDE

CADD FILE NAME: SD–2717

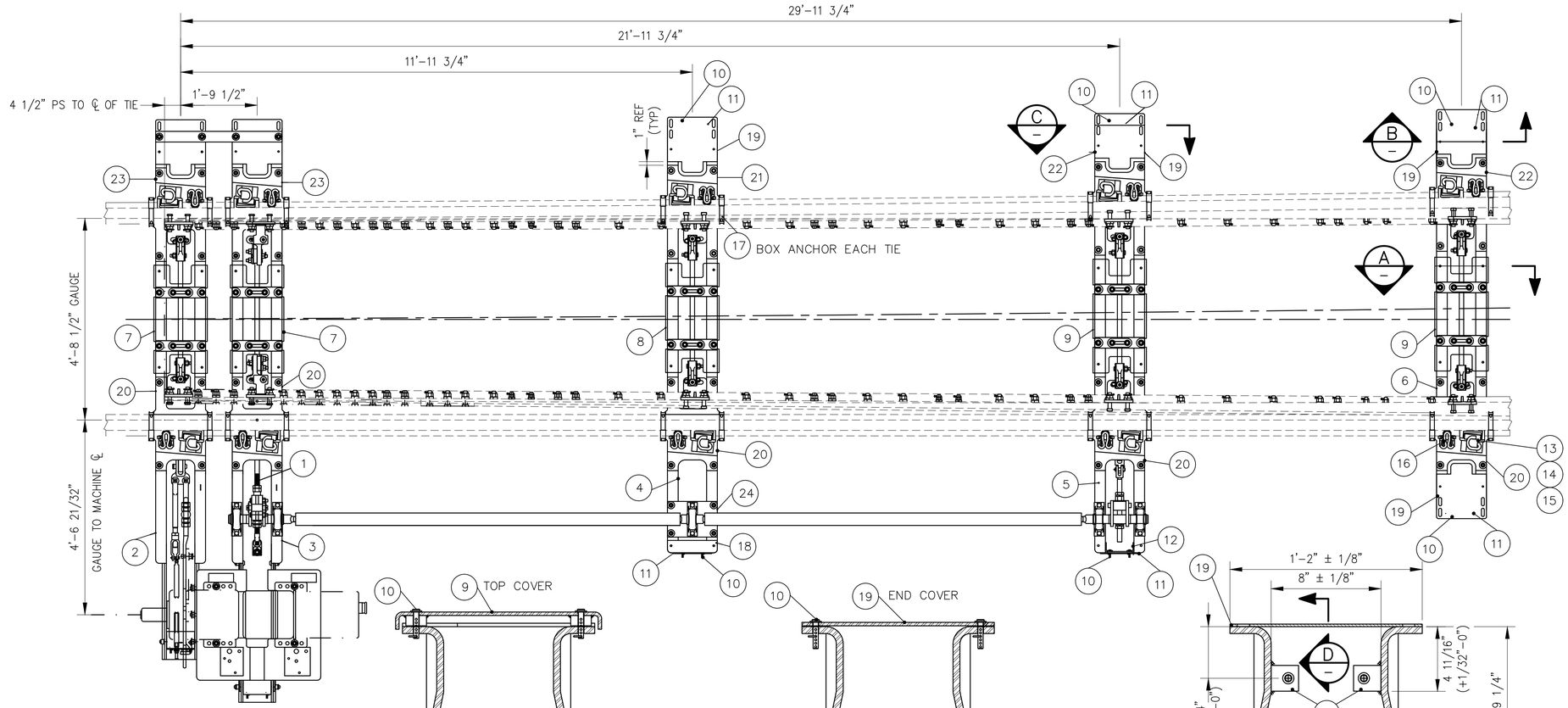
REV: | EDITION: FIFTH

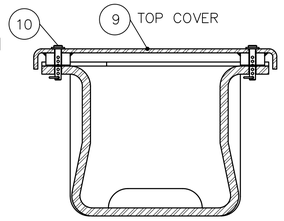
SCALE: NTS

STANDARD DRAWING NO.: SD–2717

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	RODDING ASSEMBLY FOR NO 20–136 LB RE, SWITCH MACHINE ON RH SIDE	SD–2740	13	10	LV BRACE FOR 136 LB RE	–
2	1	HOLLOW TIE ASSEMBLY (HT–1LR–20–136)	–	14	10	SERRATED WASHER FOR LV BRACE	–
3	1	HOLLOW TIE ASSEMBLY (HT–2LR–20–136)	–	15	10	CLIP, PANDROL, E2055	–
4	1	HOLLOW TIE ASSEMBLY (HT–7LR–20–136)	–	16	10	CLIP, PANDROL, FC1601	–
5	1	HOLLOW TIE ASSEMBLY (HT–12LR–20–136)	–	17	20	RAIL ANCHOR, UNIT DRIVE–ON TYPE 5	–
6	1	HOLLOW TIE ASSEMBLY (HT–16L–20–136)	–	18	1	STEEL COVER PLATE FOR HST TIE, SHORT TOP VERSION	–
7*	2	COVER PLATE NO 1, HOLLOW SWITCH TIE	–	19	4	STEEL COVER PLATE FOR HST TIE, TOP END	–
8*	1	COVER PLATE NO 2, HOLLOW SWITCH TIE	–	20	5	HST SWITCH PLATE HTP–206–STR	SD–2305
9*	2	COVER PLATE NO 3, HOLLOW SWITCH TIE	–	21	1	HST SWITCH PLATE HTP–208–L	SD–2307
10	42	PUSH PIN ASSEMBLY FOR HST COVERS	–	22	2	HST SWITCH PLATE HTP–200–L	SD–2308
11	6	STEEL SIDE END COVER PLATE ASSEMBLY FOR HST TIE	–	23	2	HST SWITCH PLATE HTP–300–L	SD–2306
12	12	COVER SUPPORT BRACKET	–	24	1	PILLOW BLOCK MOUNTING PLATE	–

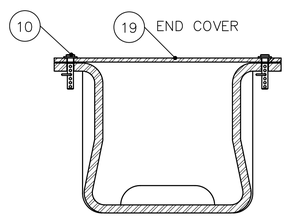
* COVER PLATES SHOWN TRANSPARENT FOR CLARITY





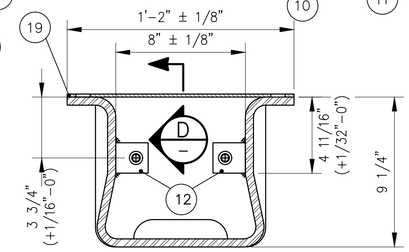
HOLLOW TIE TOP COVER DETAIL

A – SECTION
SCALE: NTS



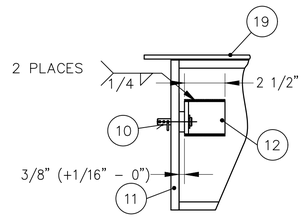
END COVER PLATE

B – SECTION
SCALE: NTS



HOLLOW TIE SIDE END COVER DETAIL

C – SECTION
SCALE: NTS



WELDING DETAIL

D – VIEW
SCALE: NTS

NOTES:

1. COORDINATE SWITCH MACHINE AND MACHINE PLATES (NIC) WITH CALTRAIN

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
HOLLOW STEEL TIES
FOR LH TURNOUT WITH
SWITCH MACHINE ON MAINLINE SIDE

CADD FILE NAME: SD–2718

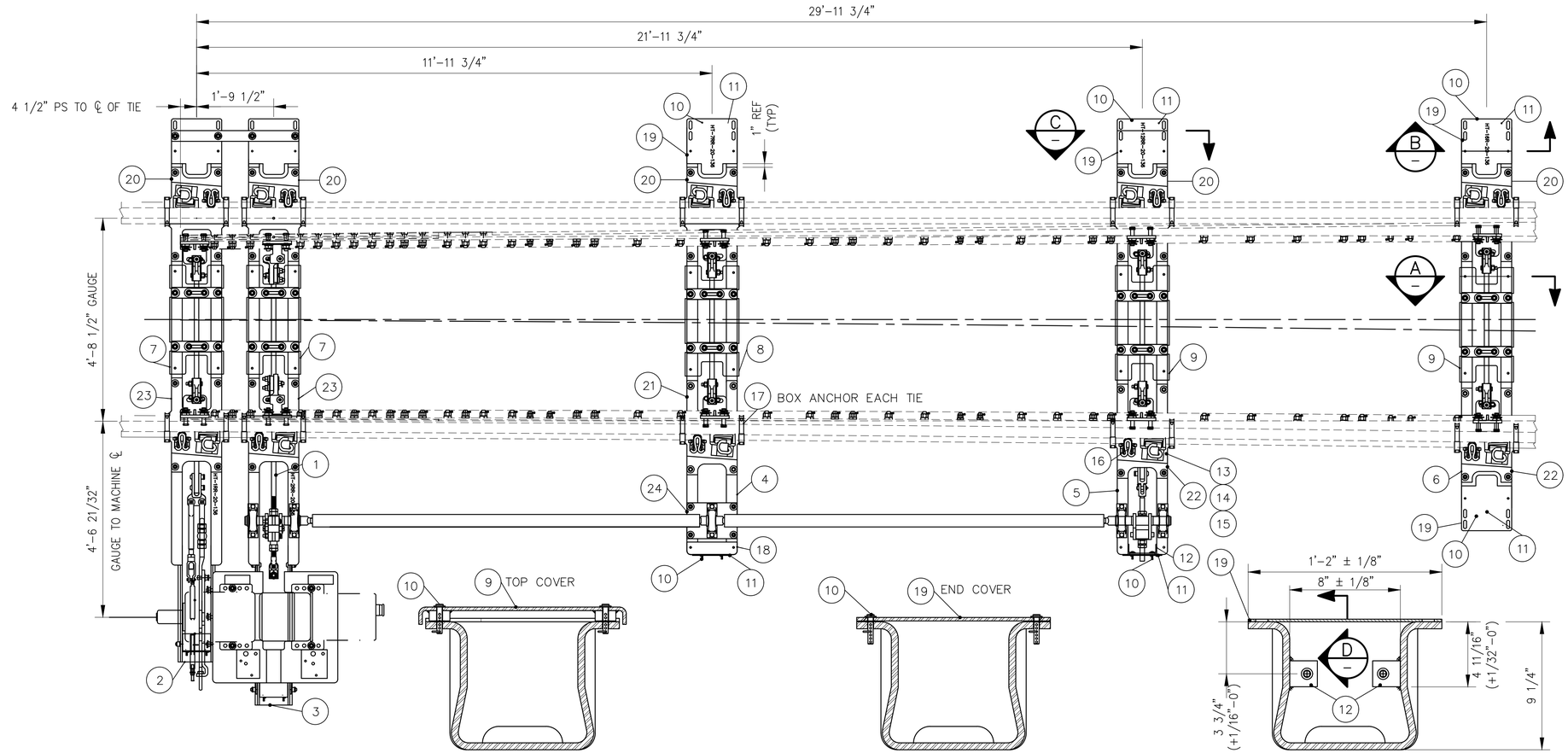
REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD–2718

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	RODDING ASSEMBLY FOR NO 20–136 LB RE, SWITCH MACHINE ON RH SIDE	SD–2740	13	10	LV BRACE FOR 136 LB RE	–
2	1	HOLLOW TIE ASSEMBLY (HT–1RR–20–136)	–	14	10	SERRATED WASHER FOR LV BRACE	–
3	1	HOLLOW TIE ASSEMBLY (HT–2RR–20–136)	–	15	10	CLIP, PANDROL, E2055	–
4	1	HOLLOW TIE ASSEMBLY (HT–7RR–20–136)	–	16	10	CLIP, PANDROL, FC1601	–
5	1	HOLLOW TIE ASSEMBLY (HT–12RR–20–136)	–	17	20	RAIL ANCHOR, UNIT DRIVE–ON TYPE 5	–
6	1	HOLLOW TIE ASSEMBLY (HT–16R–20–136)	–	18	1	STEEL COVER PLATE FOR HST TIE, SHORT TOP VERSION	–
7*	2	COVER PLATE NO 1, HOLLOW SWITCH TIE	–	19	4	STEEL COVER PLATE FOR HST TIE, TOP END	–
8*	1	COVER PLATE NO 2, HOLLOW SWITCH TIE	–	20	5	HST SWITCH PLATE HTP–206–STR	SD–2305
9*	2	COVER PLATE NO 3, HOLLOW SWITCH TIE	–	21	1	HST SWITCH PLATE HTP–209–R	SD–2307
10	42	PUSH PIN ASSEMBLY FOR HST COVERS	–	22	2	HST SWITCH PLATE HTP–201–R	SD–2308
11	6	STEEL SIDE END COVER PLATE ASSEMBLY FOR HST TIE	–	23	2	HST SWITCH PLATE HTP–301–R	SD–2306
12	12	COVER SUPPORT BRACKET	–	24	1	PILLOW BLOCK MOUNTING PLATE	–

* COVER PLATES SHOWN TRANSPARENT FOR CLARITY



NOTES:

1. COORDINATE SWITCH MACHINE AND MACHINE PLATES (NIC) WITH CALTRAIN

HOLLOW TIE TOP COVER DETAIL

A – SECTION
SCALE: NTS

END COVER PLATE

B – SECTION
SCALE: NTS

HOLLOW TIE SIDE END COVER DETAIL

C – SECTION
SCALE: NTS

WELDING DETAIL

D – VIEW
SCALE: NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
HOLLOW STEEL TIES
FOR RH TURNOUT WITH
SWITCH MACHINE ON TURNOUT SIDE

CADD FILE NAME: SD–2719

REV: | EDITION: FIFTH

SCALE: NTS

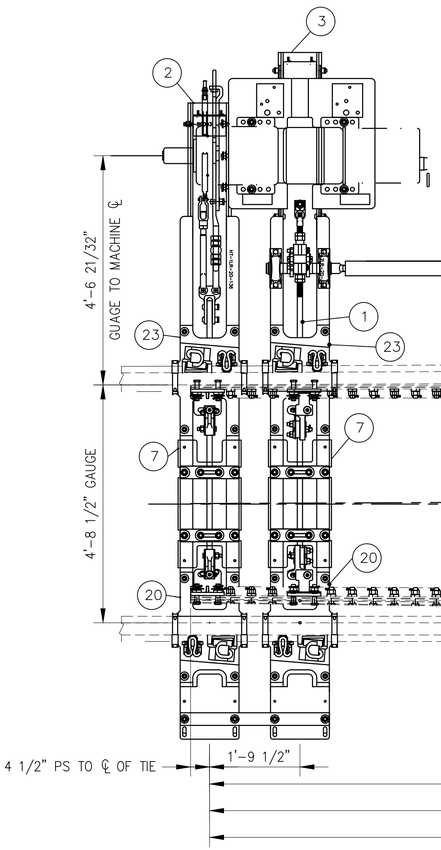
STANDARD DRAWING NO.: SD–2719

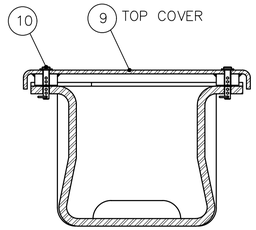
BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	RODDING ASSEMBLY FOR NO 20–136 LB RE, SWITCH MACHINE ON LH SIDE	SD–2739	13	10	LV BRACE FOR 136 LB RE	–
2	1	HOLLOW TIE ASSEMBLY (HT–1LL–20–136)	–	14	10	SERRATED WASHER FOR LV BRACE	–
3	1	HOLLOW TIE ASSEMBLY (HT–2LL–20–136)	–	15	10	CLIP, PANDROL, E2055	–
4	1	HOLLOW TIE ASSEMBLY (HT–7LL–20–136)	–	16	10	CLIP, PANDROL, FC1601	–
5	1	HOLLOW TIE ASSEMBLY (HT–12LL–20–136)	–	17	20	RAIL ANCHOR, UNIT DRIVE–ON TYPE 5	–
6	1	HOLLOW TIE ASSEMBLY (HT–16L–20–136)	–	18	1	STEEL COVER PLATE FOR HST TIE, SHORT TOP VERSION	–
7*	2	COVER PLATE NO 1, HOLLOW SWITCH TIE	–	19	4	STEEL COVER PLATE FOR HST TIE, TOP END	–
8*	1	COVER PLATE NO 2, HOLLOW SWITCH TIE	–	20	5	HST SWITCH PLATE HTP–206–STR	SD–2305
9*	2	COVER PLATE NO 3, HOLLOW SWITCH TIE	–	21	1	HST SWITCH PLATE HTP–208–L	SD–2307
10	42	PUSH PIN ASSEMBLY FOR HST COVERS	–	22	2	HST SWITCH PLATE HTP–200–L	SD–2308
11	6	STEEL SIDE END COVER PLATE ASSEMBLY FOR HST TIE	–	23	2	HST SWITCH PLATE HTP–300–L	SD–2306
12	12	COVER SUPPORT BRACKET	–	24	1	PILLOW BLOCK MOUNTING PLATE	–

* COVER PLATES SHOWN TRANSPARENT FOR CLARITY

NOTES:

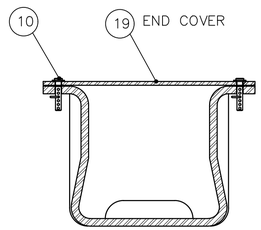
1. COORDINATE SWITCH MACHINE AND MACHINE PLATES (NIC) WITH CALTRAIN





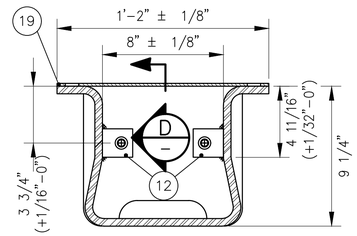
HOLLOW TIE TOP COVER DETAIL

A – SECTION SCALE: NTS



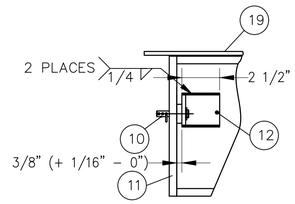
END COVER PLATE

B – SECTION SCALE: NTS



HOLLOW TIE SIDE END COVER DETAIL

C – SECTION SCALE: NTS



WELDING DETAIL

D – VIEW SCALE: NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
HOLLOW STEEL TIES
FOR LH TURNOUT WITH
SWITCH MACHINE ON TURNOUT SIDE

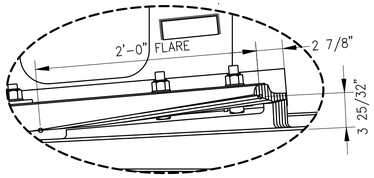
CADD FILE NAME: SD–2720

REV: | EDITION: FIFTH

SCALE: NTS

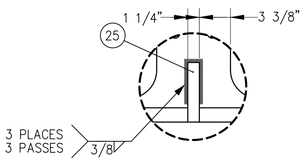
STANDARD DRAWING NO.: SD–2720

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	NO 20–136 LB RE SPRING FROG, LH POINT ASSEMBLY	–	21	1	SPRING BOX ASSEMBLY, WITH 5 1/2" MAXIMUM PLUNGER TRAVEL	–
2	1	SPRING WING RAIL, NO 20–136 LB RE, LH, C/W D–BAR	–	22	1	RETARDER TIMING DEVICE (ENIDINE P/N SP22917)	–
3	1	TOE BLOCK, NO 20–136 LB RE WSM	–	23	1	RETARDER BRACKET FOR SPRING FROGS	–
4	1	FROG PLATE (SF20–136–75LC)	SD–2723	24	1	RETARDER PLATE BRACKET FOR FROG	–
5	1	FROG PLATE (SF20–136–76LC)	SD–2723	25	3	FLAT RAIL BRACE FOR NON D–BAR APPLICATIONS	–
6	1	FROG PLATE (SF20–136–77LC)	SD–2723	26	7	WASHER, BOLT CAPTURE STYLE, 1/4" THICK	–
7	1	FROG PLATE (SF20–136–78LC)	SD–2725	27	18	BOLT, 1" DIA x 3" LONG, THIN SQUARE HEAD, DRILLED @ 2 1/2", GR 5	–
8	1	FROG PLATE (SF20–136–83LC)	SD–2727	28	10	BOLT, 1" DIA x 3 1/2" LONG, THIN SQUARE HEAD, DRILLED @ 2 11/16", GR 5	–
9	1	FROG PLATE (SF20–136–88LC)	SD–2729	29	2	BOLT, 1" DIA x 4 1/8" LONG, HEAVY HEX HEAD, GR 8	–
10	1	FROG PLATE (SF20–136–93LC)	SD–2731	30	14	BOLT, 1" DIA x 4 1/2" LONG, SQUARE HEAD, GR 5	–
11	1	FROG PLATE (SF20–136–94LC)	SD–2731	31	6	BOLT, 1 3/8" DIA x 5 1/2" LONG, SQUARE HEAD, GR 8	–
12	1	FROG PLATE (SF20–136–95LC)	SD–2731	32	16	SECURITY LOCK NUT, 1" DIA, HEX (SH521), GR 5	–
13	1	FROG PLATE (SF20–136–96LC)	SD–2733	33	28	NUT, 1" DIA HEAVY HEX, SLOTTED, GR 5	–
14	1	FROG PLATE (SF20–136–97LC)	SD–2733	34	6	SECURITY LOCK NUT, 1 3/8" DIA HEX (SH530), GR 8	–
15	1	FROG PLATE (SF20–136–98LC)	SD–2735	35	32	FLAT WASHER, FOR 1" DIA x 5/32" THICK, HARDENED	–
16	1	FROG PLATE (SF20–136–99LC)	SD–2735	36	6	FLAT WASHER, FOR 1 3/8" DIA x 1/4" THICK, HARDENED	–
17	5	HORN KEEPER, REVERSIBLE	–	37	6	TAIL WASHER, FLAT (837K)	–
18	5	HOLD–DOWN HORN	–	38	14	HEADLOCK WASHER, FLAT (837P)	–
19	5	WEAR PLATE FOR REVERSIBLE HORN KEEPER	–	39	48	CLIP, PANDROL, E2055	–
20	1	SPRING BOX ASSEMBLY, WITH 3" MAXIMUM PLUNGER TRAVEL	–	40	28	COTTER PIN, 1/4" DIA x 2" LONG	–

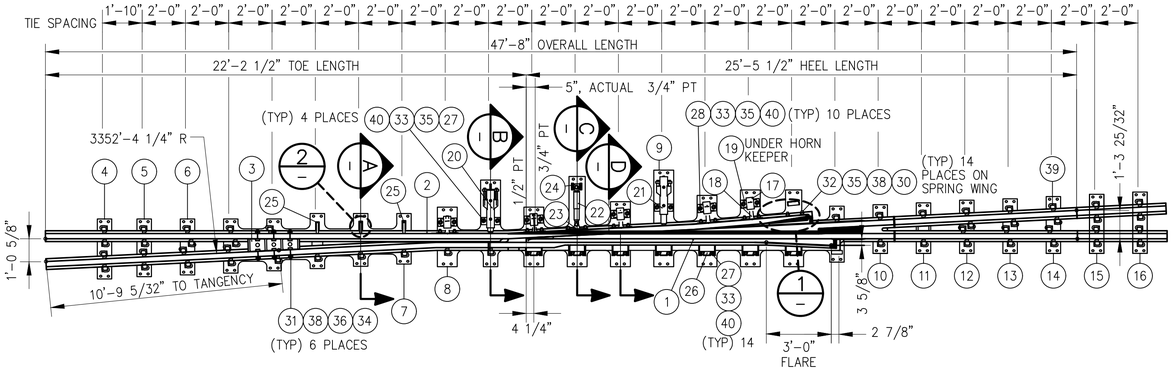


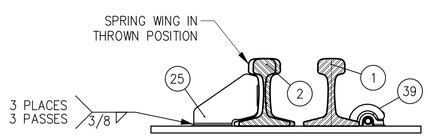
DIMENSIONS AT GAUGE ELEVATION

1 – DETAIL
SCALE: NTS



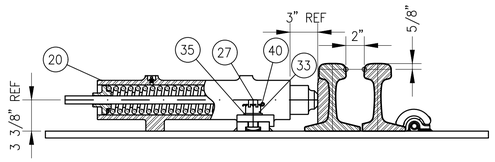
2 – DETAIL
SCALE: NTS





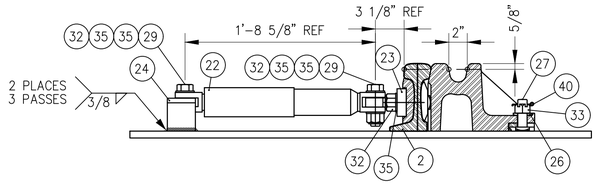
FLAT RAIL BRACE MOUNTING DERAILS
TYPICAL 3 PLACES

A – SECTION
SCALE: NTS



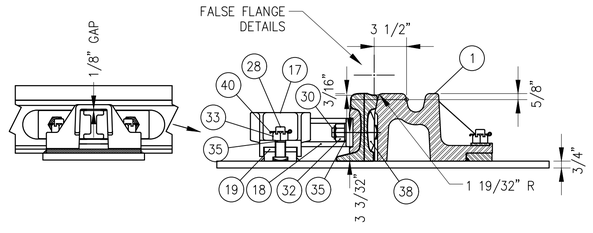
SPRING BOX MOUNTING DETAILS

B – SECTION
SCALE: NTS



RETARDER MOUNTING DETAILS
(RETARDER NOT SHOWN SECTIONAL)

C – SECTION
SCALE: NTS



HORN AND KEEPER MOUNTING DETAILS

D – SECTION
SCALE: NTS

NOTES:

1. RETARDER CLOSING TIME RANGES FROM 1 TO 3 MINUTES
2. SPRING BOX LOAD IS 300 LB/IN
3. SPRING WING SHALL BE THROWN TO A 1 7/8" FLANGEWAY AT THE 3/4" POINT TO DETERMINE THE SPRING WING THROWN POSITION
4. FLAT RAIL BRACES (ITEM NO 25) SHALL BE WELDED WHERE SHOWN, UP AGAINST SPRING WING WHEN FULLY THROWN
5. RAIL END DRILLING SHALL BE @ 9" AND 15 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
6. RETARDER BRACKET (ITEM NO 23) SHALL BE WELDED AS SHOWN
7. FROG SHALL BE CONSTRUCTED TO TOLERANCES GIVEN ON LATEST AREMA PLAN 1010, PERMISSIBLE VARIATIONS IN COMPLETED FROGS
8. INSERT SHALL BE EXPLOSIVE DEPTH HARDENED TO 352 BRINELL PER AREMA
9. NAME TAG SHALL BE AFFIXED TO RIGID WING RAIL NEAR 1/2" PT WITH INFORMATION SHOWN
10. CALTRAIN WILL CONSIDER A TAPERED HEEL SPRING OF SAME ALIGNMENT AND DIMENSIONS TO REPLACE WSM

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

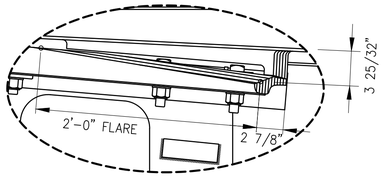
Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
WSM FROG LH
AND FROG PACK

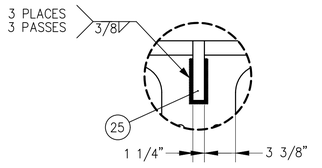
CADD FILE NAME:	SD–2721
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2721

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	NO 20–136 LB RE SPRING FROG, RH POINT ASSEMBLY	–	21	1	SPRING BOX ASSEMBLY, WITH 5 1/2" MAXIMUM PLUNGER TRAVEL	–
2	1	SPRING WING RAIL, NO 20–136 LB RE, RH, C/W D–BAR	–	22	1	RETARDER TIMING DEVICE (ENIDINE P/N SP22917)	–
3	1	TOE BLOCK, NO 20–136 LB RE WSM	–	23	1	RETARDER BRACKET FOR SPRING FROGS	–
4	1	FROG PLATE (SF20–136–75RC)	SD–2724	24	1	RETARDER PLATE BRACKET FOR FROG	–
5	1	FROG PLATE (SF20–136–76RC)	SD–2724	25	3	FLAT RAIL BRACE FOR NON D–BAR APPLICATIONS	–
6	1	FROG PLATE (SF20–136–77RC)	SD–2724	26	7	WASHER, BOLT CAPTURE STYLE, 1/4" THICK	–
7	1	FROG PLATE (SF20–136–78RC)	SD–2726	27	18	BOLT, 1" DIA x 3" LONG, THIN SQUARE HEAD, DRILLED @ 2 1/2", GR 5	–
8	1	FROG PLATE (SF20–136–83RC)	SD–2728	28	10	BOLT, 1" DIA x 3 1/2" LONG, THIN SQUARE HEAD, DRILLED @ 2 11/16", GR 5	–
9	1	FROG PLATE (SF20–136–88RC)	SD–2730	29	2	BOLT, 1" DIA x 4 1/8" LONG, HEAVY HEX HEAD, GR 8	–
10	1	FROG PLATE (SF20–136–93RC)	SD–2732	30	14	BOLT, 1" DIA x 4 1/2" LONG, SQUARE HEAD, GR 5	–
11	1	FROG PLATE (SF20–136–94RC)	SD–2732	31	6	BOLT, 1 3/8" DIA x 5 1/2" LONG, SQUARE HEAD, GR 8	–
12	1	FROG PLATE (SF20–136–95RC)	SD–2732	32	16	SECURITY LOCK NUT, 1" DIA, HEX (SH521), GR 5	–
13	1	FROG PLATE (SF20–136–96RC)	SD–2734	33	28	NUT, 1" DIA HEAVY HEX, SLOTTED, GR 5	–
14	1	FROG PLATE (SF20–136–97RC)	SD–2734	34	6	SECURITY LOCK NUT, 1 3/8" DIA HEX (SH530), GR 8	–
15	1	FROG PLATE (SF20–136–98RC)	SD–2736	35	32	FLAT WASHER, FOR 1" DIA x 5/32" THICK, HARDENED	–
16	1	FROG PLATE (SF20–136–99RC)	SD–2736	36	6	FLAT WASHER, FOR 1 3/8" DIA x 1/4" THICK, HARDENED	–
17	5	HORN KEEPER, REVERSIBLE	–	37	6	TAIL WASHER, FLAT (837K)	–
18	5	HOLD–DOWN HORN	–	38	14	HEADLOCK WASHER, FLAT (837P)	–
19	5	WEAR PLATE FOR REVERSIBLE HORN KEEPER	–	39	48	CLIP, PANDROL, E2055	–
20	1	SPRING BOX ASSEMBLY, WITH 3" MAXIMUM PLUNGER TRAVEL	–	40	28	COTTER PIN, 1/4" DIA x 2" LONG	–

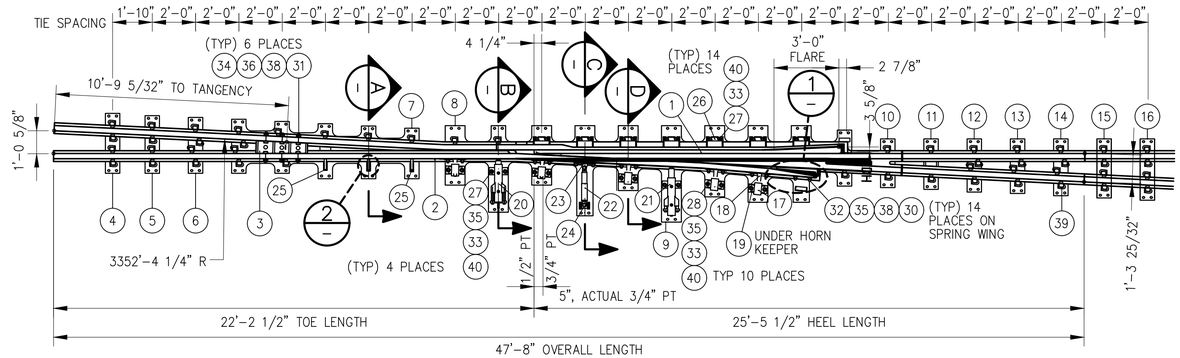


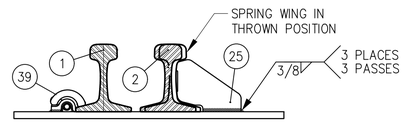
DIMENSIONS AT GAUGE ELEVATION

1 – DETAIL
SCALE: NTS



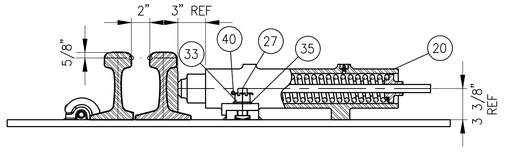
2 – DETAIL
SCALE: NTS





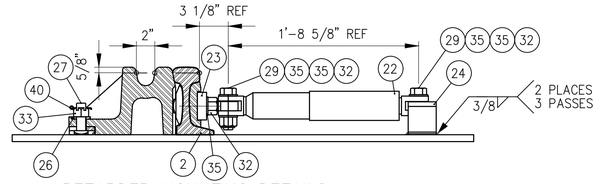
FLAT RAIL BRACE MOUNTING DETAILS
TYPICAL 3 PLACES

A – SECTION
SCALE: NTS



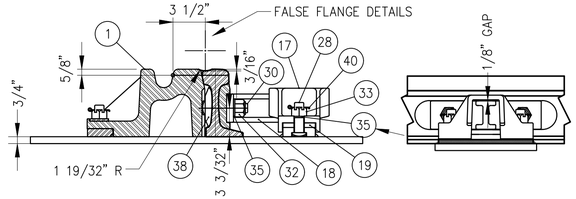
SPRING BOX MOUNTING DETAILS

B – SECTION
SCALE: NTS



RETARDER MOUNTING DETAILS
(RETARDER NOT SHOWN SECTIONAL)

C – SECTION
SCALE: NTS



HORN AND KEEPER MOUNTING DETAILS

D – SECTION
SCALE: NTS

NOTES:

1. RETARDER CLOSING TIME RANGES FROM 1 TO 3 MINUTES
2. SPRING BOX LOAD IS 300 LB/IN
3. SPRING WING SHALL BE THROWN TO A 1 7/8" FLANGEWAY AT THE 3/4" POINT TO DETERMINE THE SPRING WING THROWN POSITION
4. FLAT RAIL BRACES (ITEM NO 25) SHALL BE WELDED WHERE SHOWN, UP AGAINST SPRING WING WHEN FULLY THROWN
5. RAIL END DRILLING SHALL BE @ 9" AND 15 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
6. RETARDER BRACKET (ITEM NO 23) SHALL BE WELDED AS SHOWN
7. FROG SHALL BE CONSTRUCTED TO TOLERANCES GIVEN ON LATEST AREMA PLAN 1010, PERMISSIBLE VARIATIONS IN COMPLETED FROGS
8. INSERT SHALL BE EXPLOSIVE DEPTH HARDENED TO 352 BRINELL PER AREMA
9. NAME TAG SHALL BE AFFIXED TO RIGID WING RAIL NEAR 1/2" PT WITH INFORMATION SHOWN
10. CALTRAIN WILL CONSIDER A TAPERED HEEL SPRING OF SAME ALIGNMENT AND DIMENSIONS TO REPLACE WSM

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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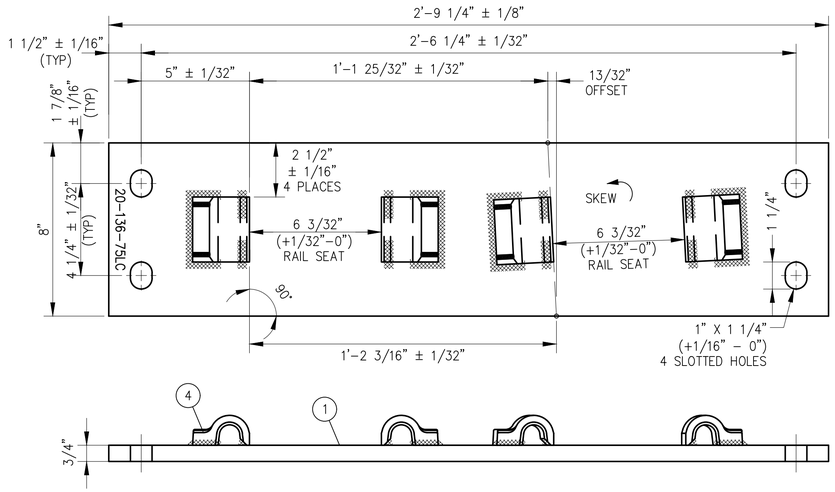
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

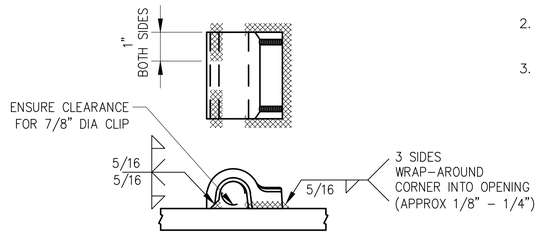
SPECIAL TRACKWORK
NO. 20 TURNOUT
WSM FROG RH
AND FROG PACK

CADD FILE NAME:	SD–2722
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2722

BILL OF MATERIAL					
ITEM	QTY FOR 20–75LC	QTY FOR 20–76LC	QTY FOR 20–77LC	DESCRIPTION	DWG NO
1	1	0	0	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–9 1/4" LONG	–
2	0	1	0	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–8" LONG	–
3	0	0	1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–7" LONG	–
4	4	4	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–



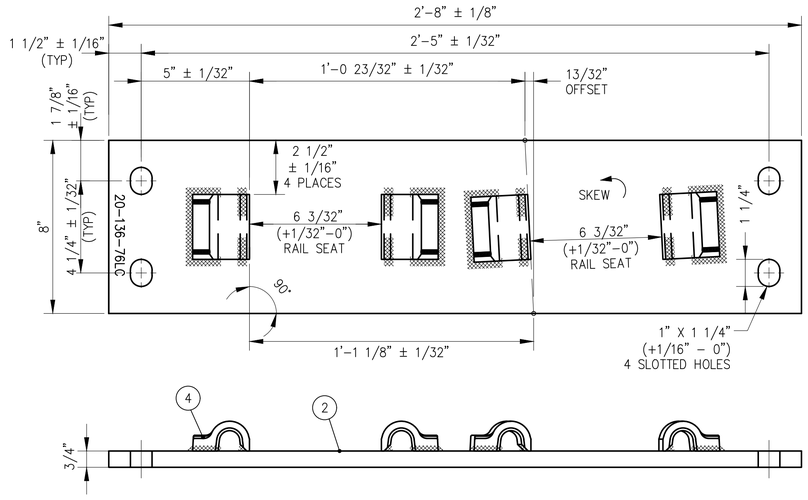
FROG BASE PLATE 20–136–75LC



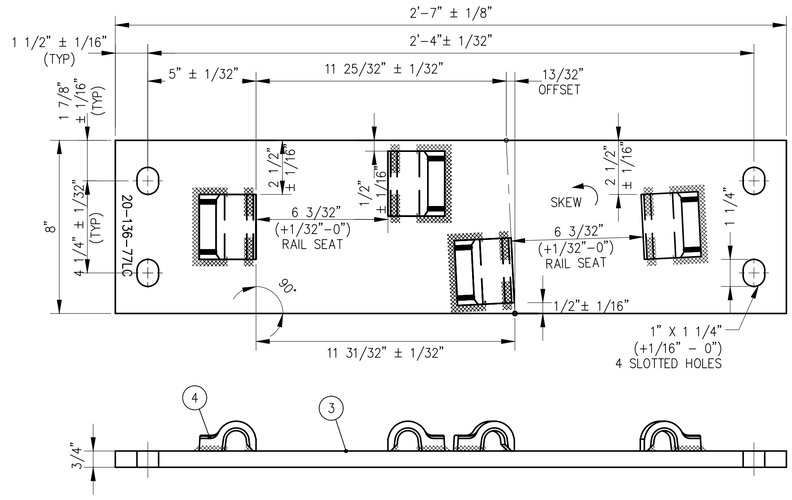
FORGED SHOULDER WELDING DETAIL

NOTES:

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



FROG BASE PLATE 20–136–76LC



FROG BASE PLATE 20–136–77LC

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
WSM FROG LH
FROG BASE PLATES
20–75LC, 20–76LC AND 20–77LC

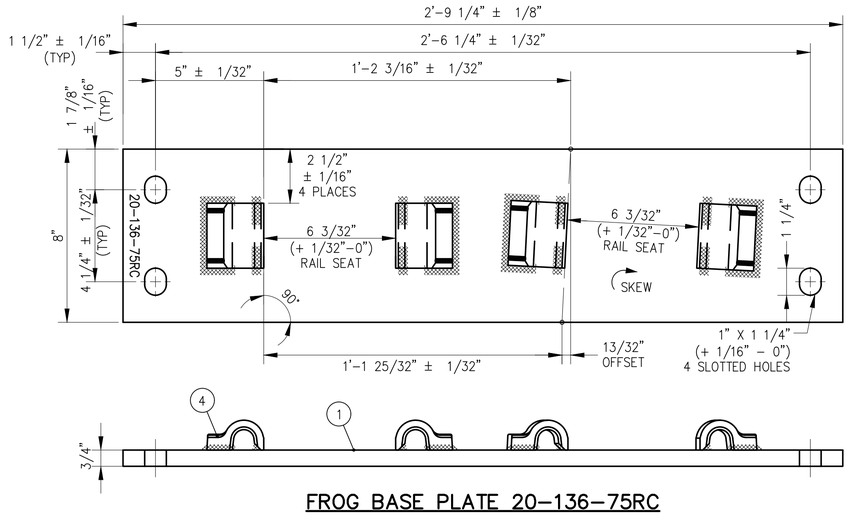
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REV: | EDITION: FIFTH

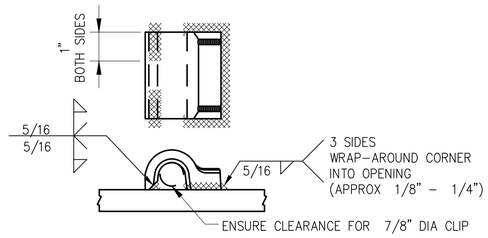
SCALE: NTS

STANDARD DRAWING NO.: SD–2723

BILL OF MATERIAL					
ITEM	QTY FOR 20–75RC	QTY FOR 20–76RC	QTY FOR 20–77RC	DESCRIPTION	DWG NO
1	1	0	0	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–9 1/4" LONG	–
2	0	1	0	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–8" LONG	–
3	0	0	1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–7" LONG	–
4	4	4	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–



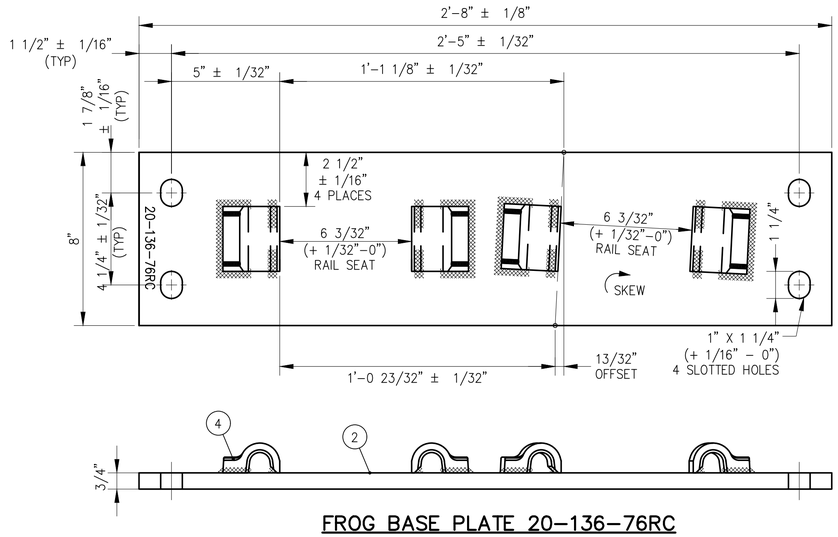
FROG BASE PLATE 20–136–75RC



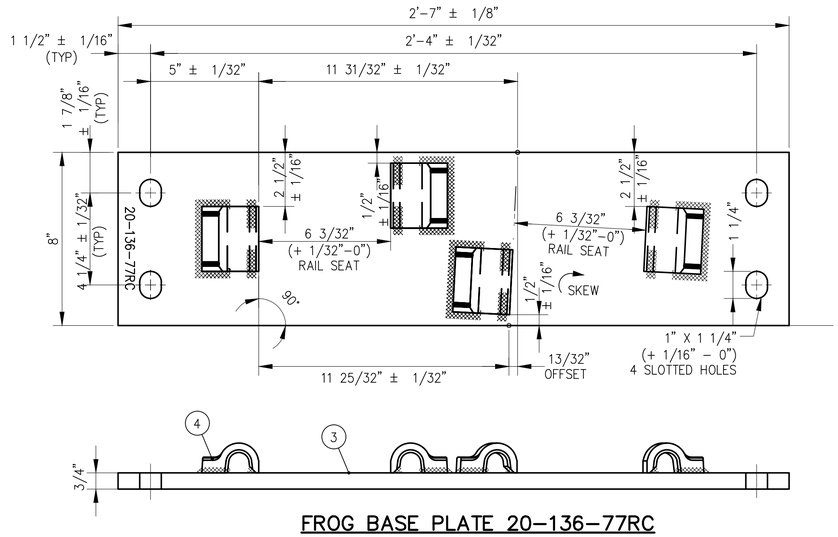
FORGED SHOULDER WELDING DETAIL

NOTES:

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



FROG BASE PLATE 20–136–76RC



FROG BASE PLATE 20–136–77RC

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

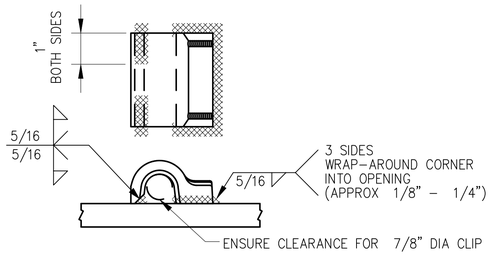
DIRECTOR, ENGINEERING

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ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
WSM FROG RH
FROG BASE PLATES
20–75RC, 20–76RC AND 20–77RC

CADD FILE NAME:	SD–2724
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2724

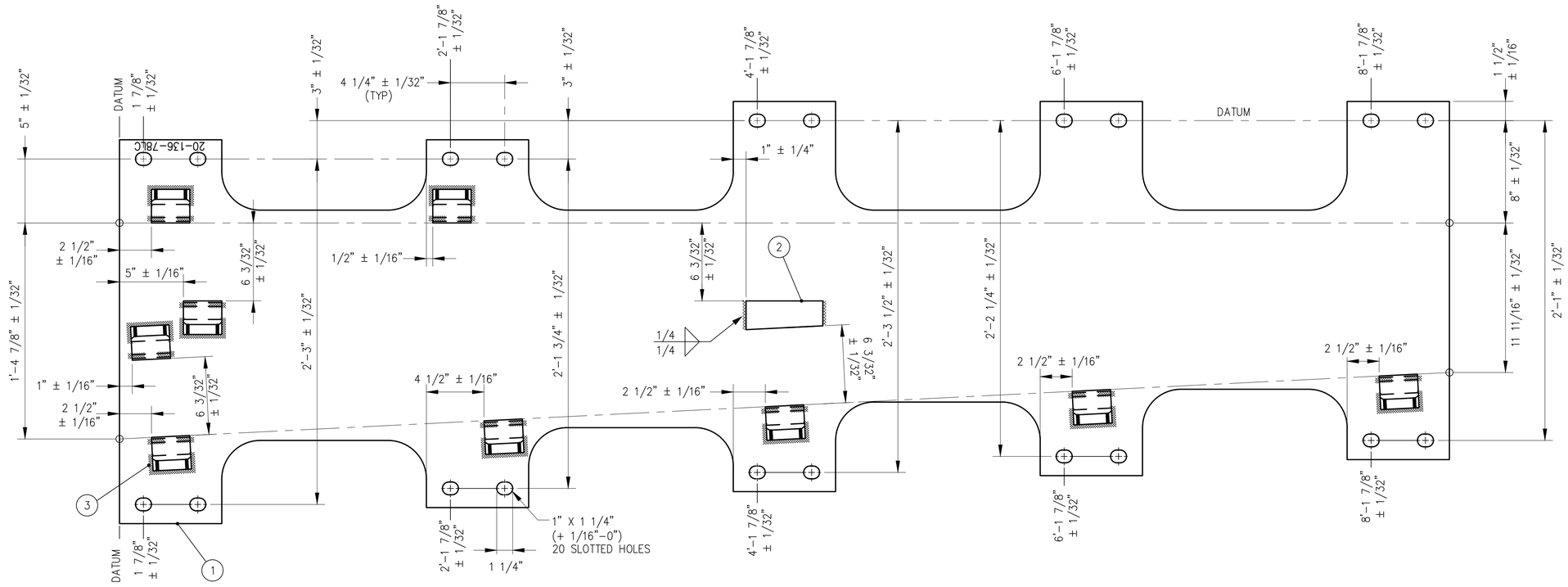


FORGED SHOULDER WELDING DETAIL

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	BURNED PLATE, ASTM A36, 3/4" THICK	–
2	1	BURNED STOP, 1/2" THICK, TAPERED 1 15/16" TO 2 1/4", 6" LONG	–
3	9	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–

NOTES:

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



FROG BASE PLATE 20–136–78LC

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
WSM FROG LH
FROG BASE PLATE 20–78LC

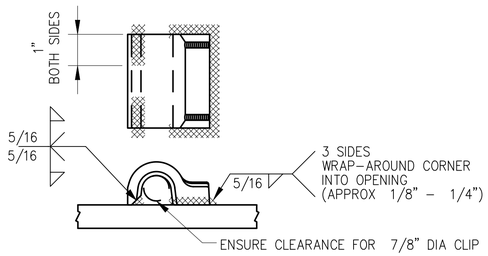
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REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD–2725

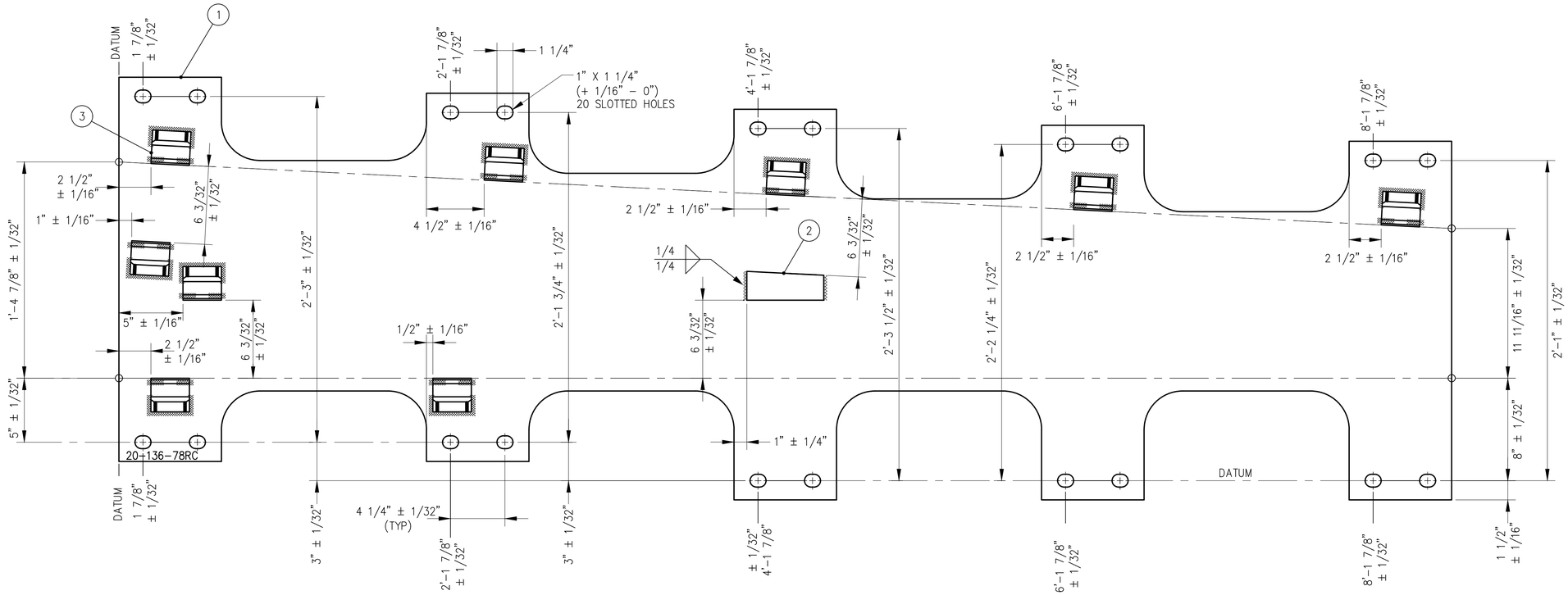
BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	BURNED PLATE, ASTM A36, 3/4" THICK	–
2	1	BURNED STOP, 1/2" THICK, TAPERED 1 15/16" TO 2 1/4", 6" LONG	–
3	9	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–



FORGED SHOULDER WELDING DETAIL

NOTES:

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



FROG BASE PLATE 20–136–78RC

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
WSM FROG RH
FROG BASE PLATE 20–78RC

CADD FILE NAME: SD–2726

REV: | EDITION: FIFTH

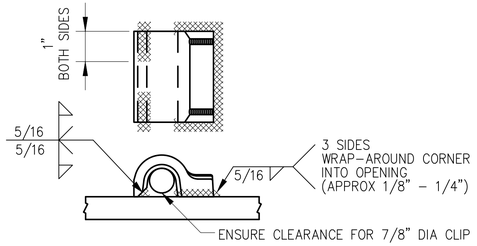
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STANDARD DRAWING NO.: SD–2726

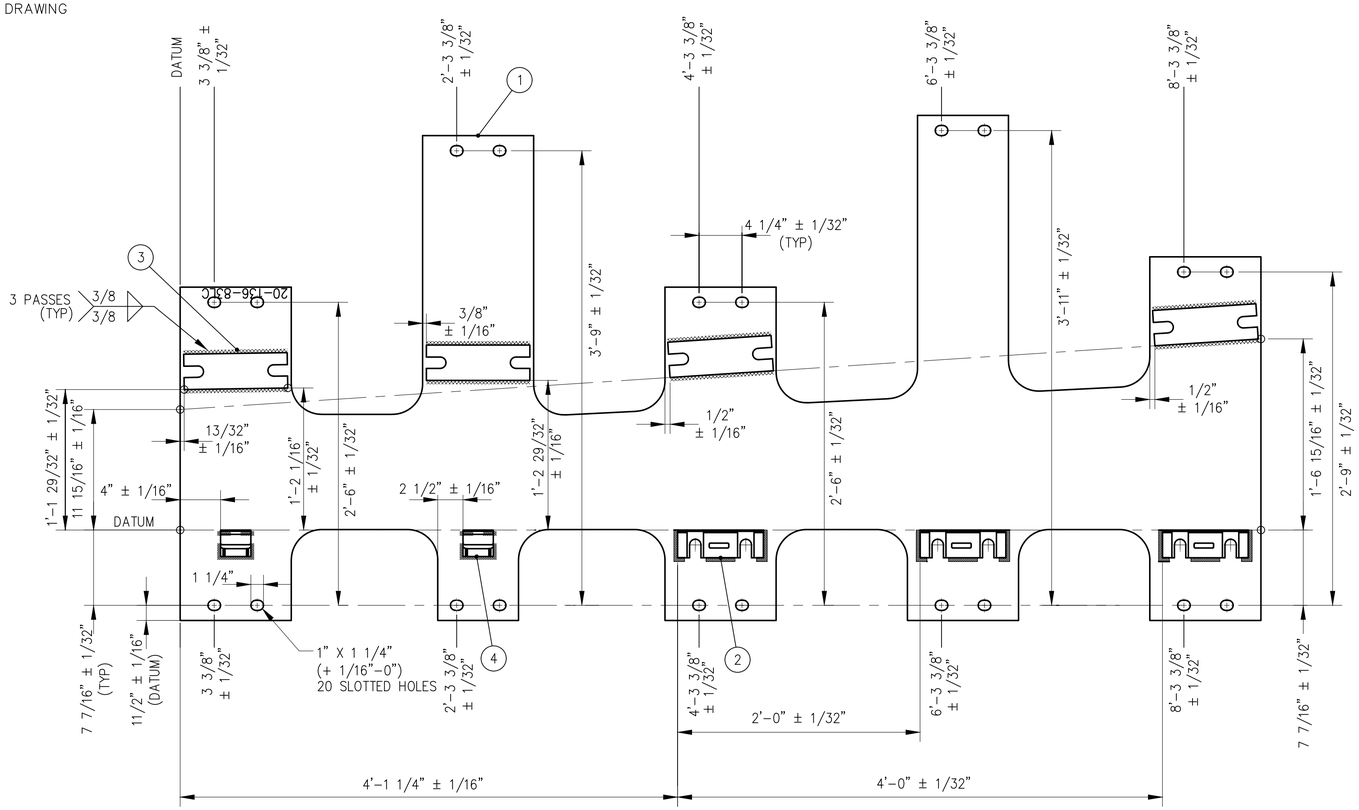
NOTES:

1. I.D. CHARACTERS SHALL BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN
2. WELDS SHALL BE DRESSED FLUSH WITH SHOULDER & 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

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	BURNED PLATE, ASTM A36, 3/4" THICK	–
2	3	CAPTURE BLOCK FOR PLATE CLIP	–
3	4	CAPTURE BLOCK FOR HORN KEEPER	–
4	2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–



FORGED SHOULDER WELDING DETAIL



FROG BASE PLATE 20-136-83LC

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
WSM FROG LH
FROG BASE PLATE 20-83LC

CADD FILE NAME: SD-2727

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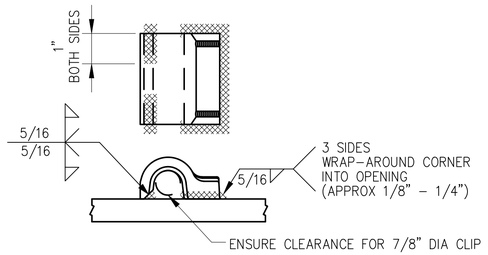
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STANDARD DRAWING NO.: SD-2727

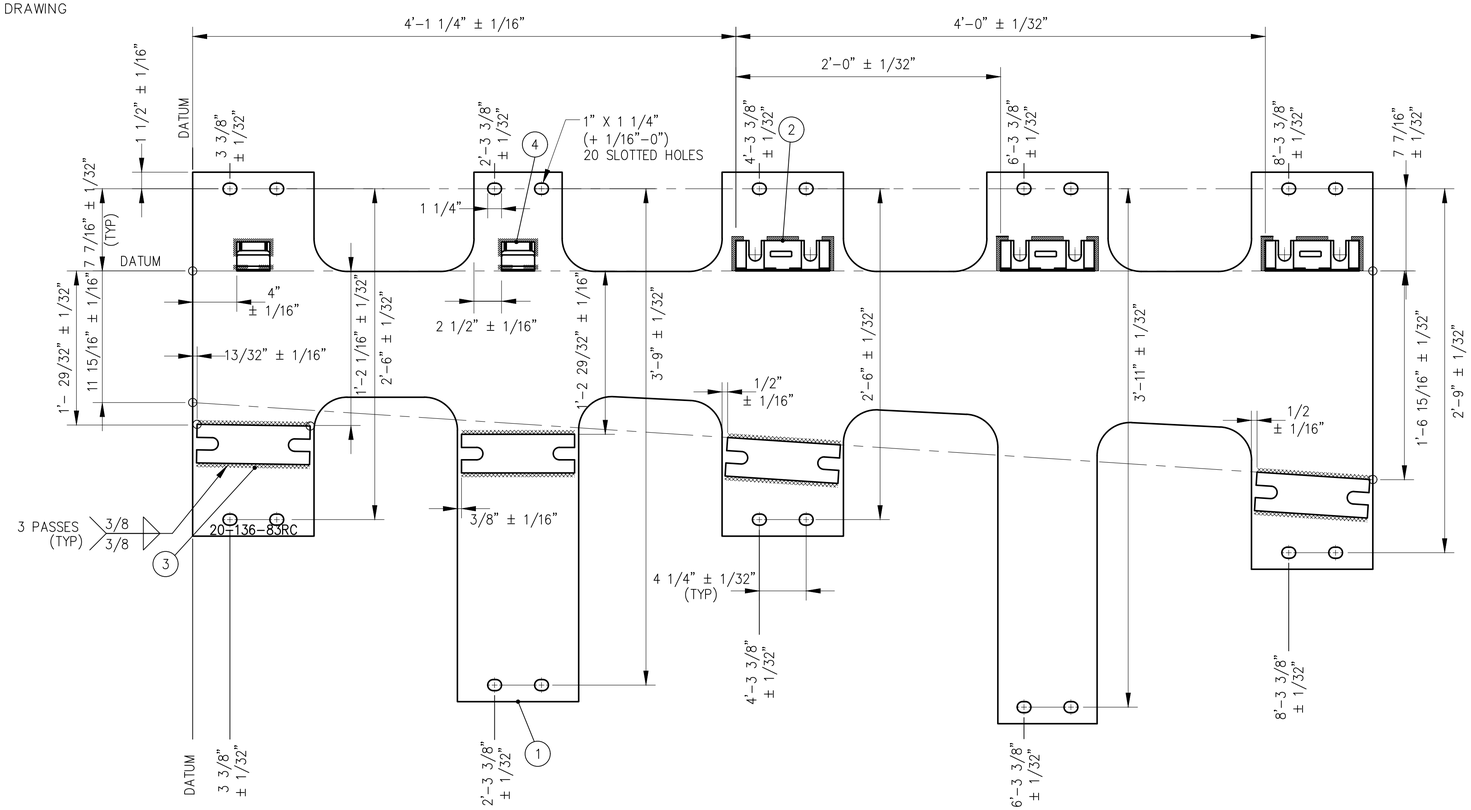
NOTES:

1. I.D. CHARACTERS SHALL BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN
2. WELDS SHALL BE DRESSED FLUSH WITH SHOULDER & 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

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	BURNED PLATE, ASTM A36, 3/4" THICK	–
2	3	CAPTURE BLOCK FOR PLATE CLIP	–
3	4	CAPTURE BLOCK FOR HORN KEEPER	–
4	2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–



FORGED SHOULDER WELDING DETAIL



FROG BASE PLATE 20–136–83RC

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
WSM FROG RH
FROG BASE PLATE 20–83RC

CADD FILE NAME: SD–2728

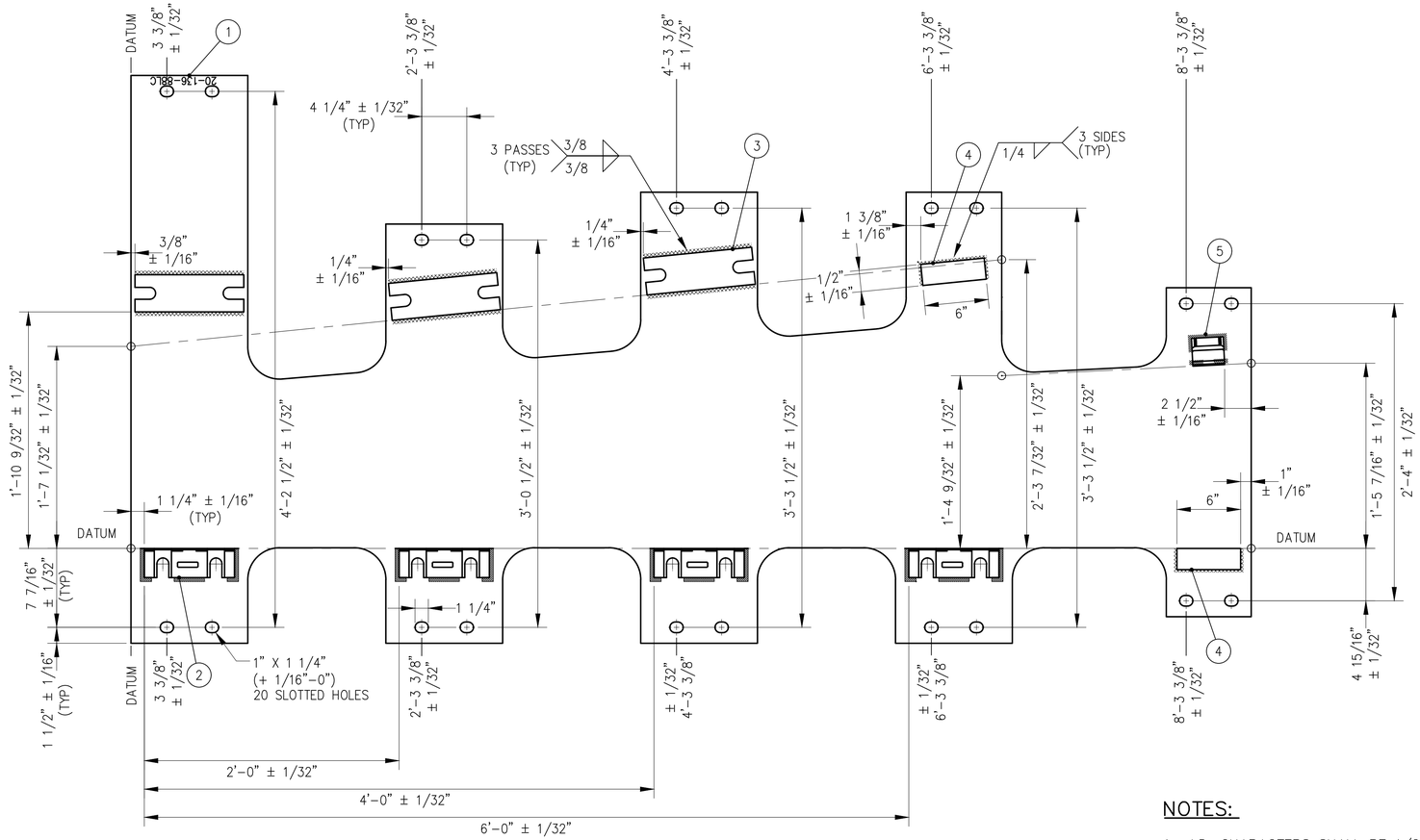
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EDITION: FIFTH

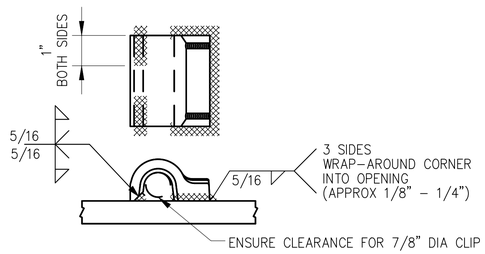
SCALE: NTS

STANDARD DRAWING NO.: SD–2728

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	BURNED PLATE, ASTM A36, 3/4" THICK	–
2	4	CAPTURE BLOCK FOR PLATE CLIP	–
3	3	CAPTURE BLOCK FOR HORN KEEPER	–
4	2	FLAT BAR, ASTM A36, 1/2" THICK X 2" X 6" LONG	–
5	1	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–



FROG BASE PLATE 20-136-88LC



FORGED SHOULDER WELDING DETAIL

NOTES:

1. I.D. CHARACTERS SHALL BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN
2. WELDS SHALL BE DRESSED FLUSH WITH SHOULDER 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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
WSM FROG LH
FROG BASE PLATE 20-88LC

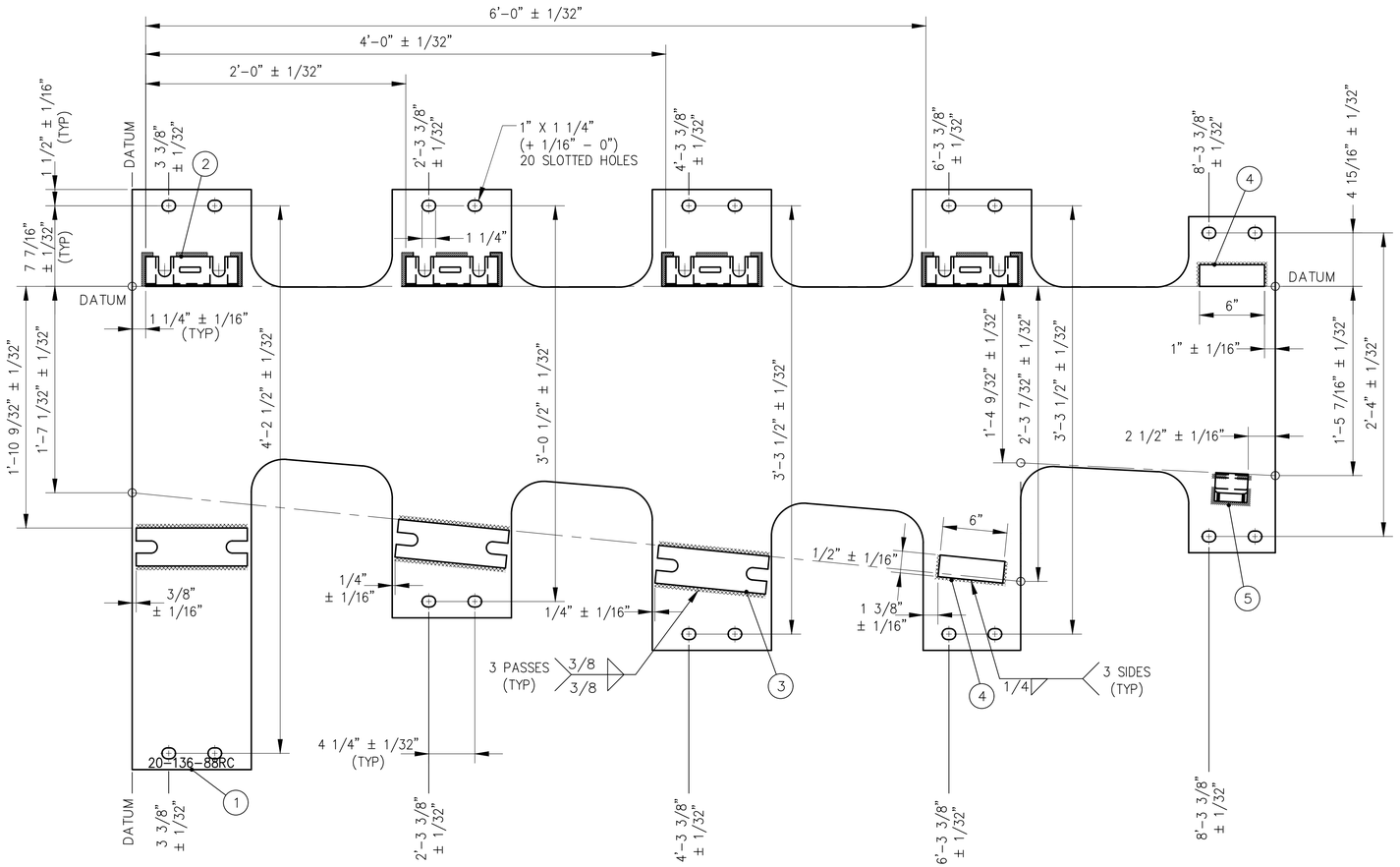
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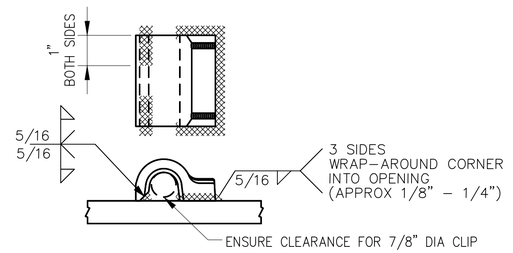
SCALE: NTS

STANDARD DRAWING NO.: SD-2729

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	BURNED PLATE, 3/4" THICK	–
2	4	CAPTURE BLOCK FOR PLATE CLIP	–
3	3	CAPTURE BLOCK FOR HORN KEEPER	–
4	2	FLAT BAR, ASTM A36, 1/2" THICK X 2" X 6" LONG	–
5	1	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–



FROG BASE PLATE 20–136–88RC



FORGED SHOULDER WELDING DETAIL

NOTES:

1. I.D. CHARACTERS SHALL BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN
2. WELDS SHALL BE DRESSED FLUSH WITH SHOULDER 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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
WSM FROG RH
FROG BASE PLATE 20–88RC

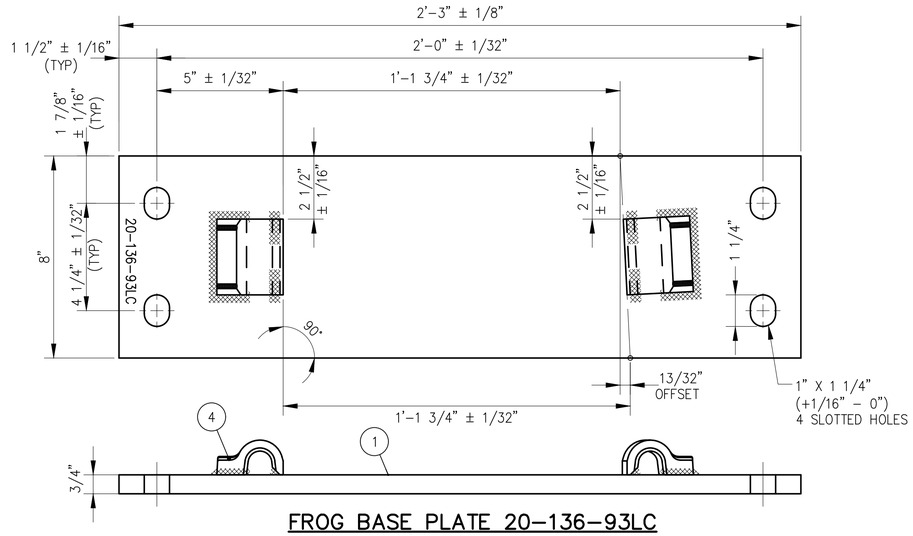
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REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD–2730

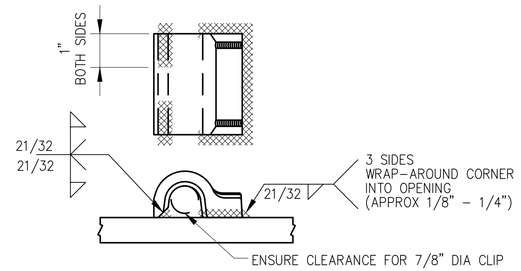
BILL OF MATERIAL					
ITEM	QTY FOR 20–93LC	QTY FOR 20–94LC	QTY FOR 20–95LC	DESCRIPTION	DWG NO
1	1	0	0	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–3" LONG	–
2	0	1	0	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–4" LONG	–
3	0	0	1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–5 1/2" LONG	–
4	2	2	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–
5	0	1	0	BURNED STOP, 1/2" THICK, TAPERED 2 3/8" TO 2 21/32", 6" LONG	–



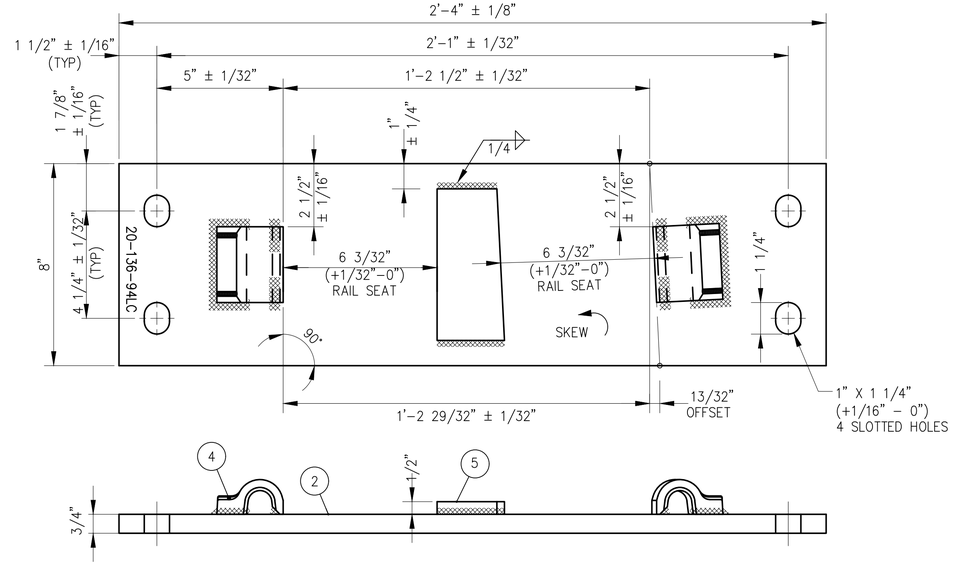
FROG BASE PLATE 20–136–93LC

NOTES:

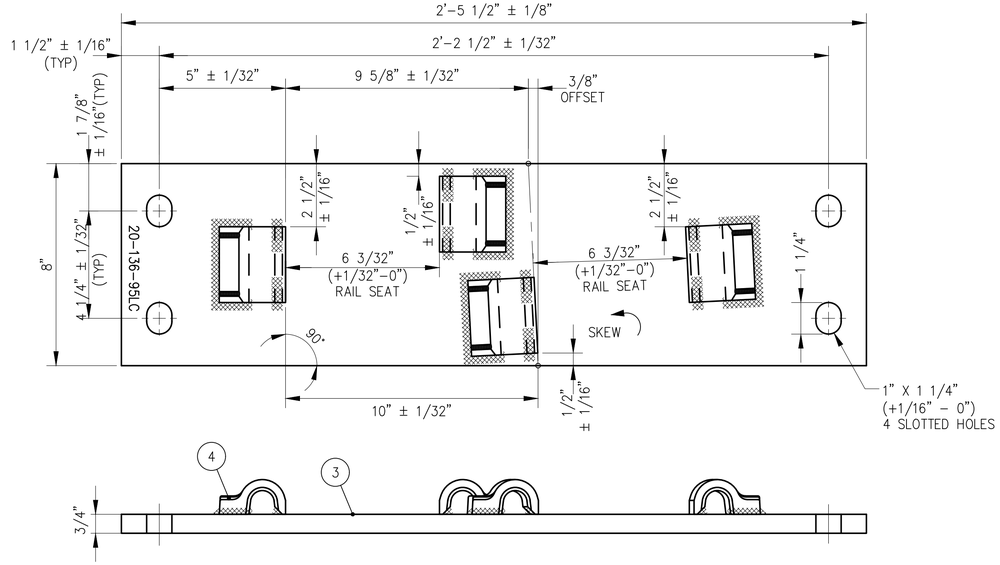
1. I.D. CHARACTERS SHALL BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN
2. WELDS SHALL BE DRESSED FLUSH WITH SHOULDER & NOT TO PROTRUDE INTO RAIL SEAT
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING



FORGED SHOULDER WELDING DETAIL



FROG BASE PLATE 20–136–94LC



FROG BASE PLATE 20–136–95LC

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
WSM FROG LH
FROG BASE PLATES
20–93LC, 20–94LC AND 20–95LC

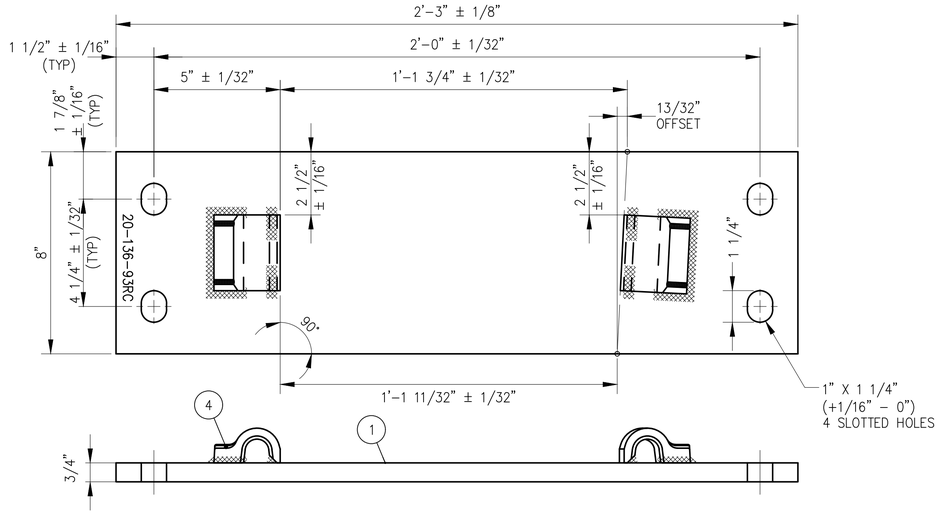
CADD FILE NAME: SD–2731

REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD–2731

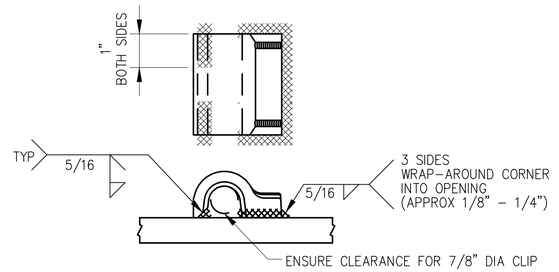
BILL OF MATERIAL					
ITEM	QTY FOR 20–93RC	QTY FOR 20–94RC	QTY FOR 20–95RC	DESCRIPTION	DWG NO
1	1	0	0	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–3" LONG	–
2	0	1	0	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–4" LONG	–
3	0	0	1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–5 1/2" LONG	–
4	2	2	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–
5	0	1	0	BURNED STOP, 1/2" THICK, TAPERED 2 3/8" TO 2 5/16", 6" LONG	–



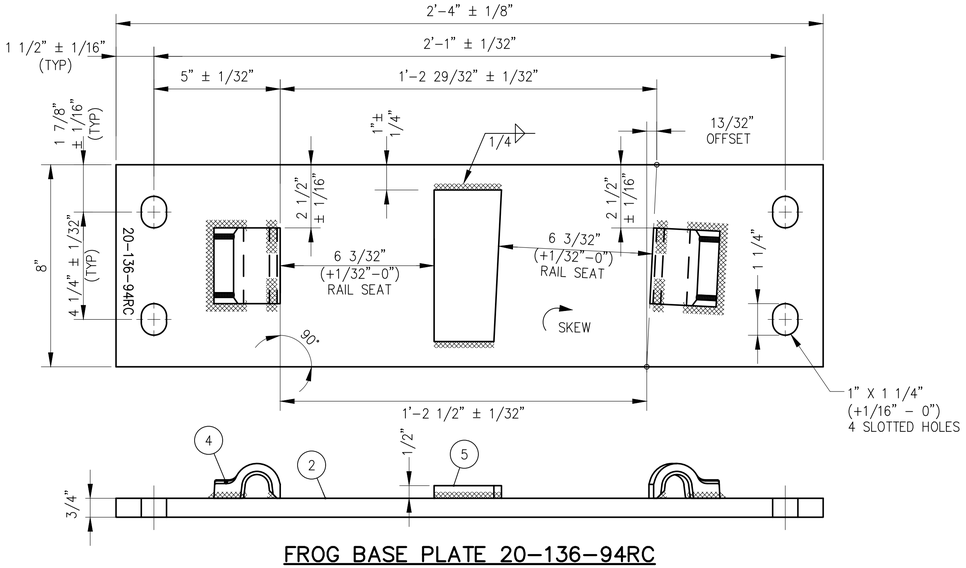
FROG BASE PLATE 20–136–93RC

NOTES:

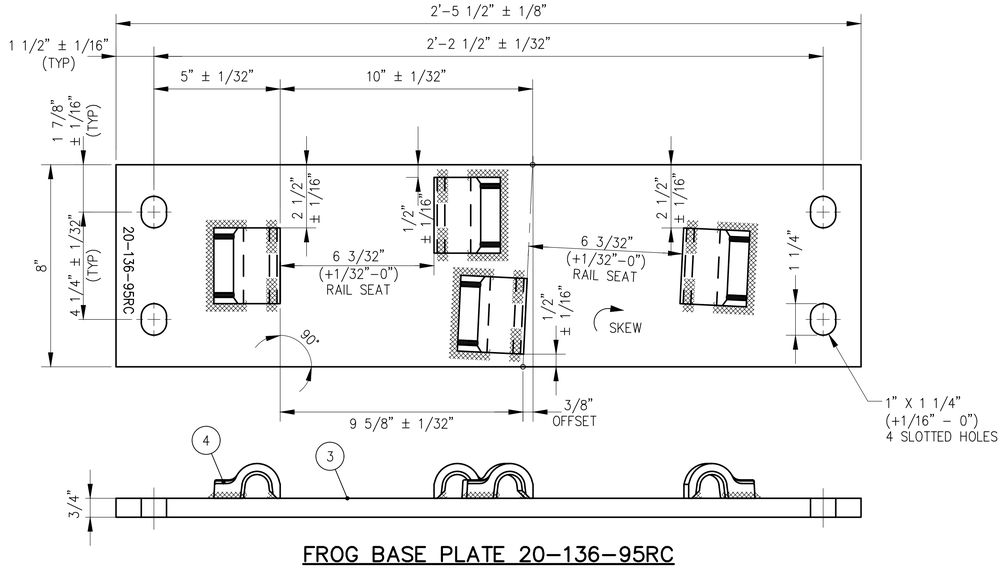
1. I.D. CHARACTERS SHALL BE 1/2" MINIMUM HEIGHT CLEARLY STAMPED AS SHOWN
2. WELDS SHALL BE DRESSED FLUSH WITH SHOULDER & NOT TO PROTRUDE INTO RAIL SEAT
3. SLOTTED HOLE CENTERS ARE INDICATED ON DRAWING



FORGED SHOULDER WELDING DETAIL



FROG BASE PLATE 20–136–94RC



FROG BASE PLATE 20–136–95RC

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

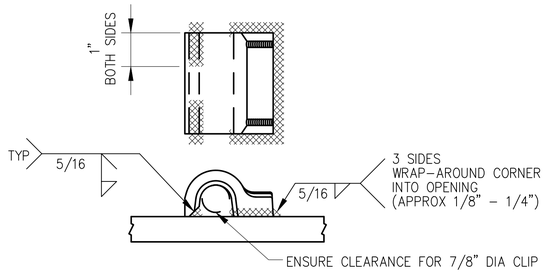
Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
WSM FROG RH
FROG BASE PLATES
20–93RC, 20–94RC AND 20–95RC

CADD FILE NAME:	SD–2732
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2732

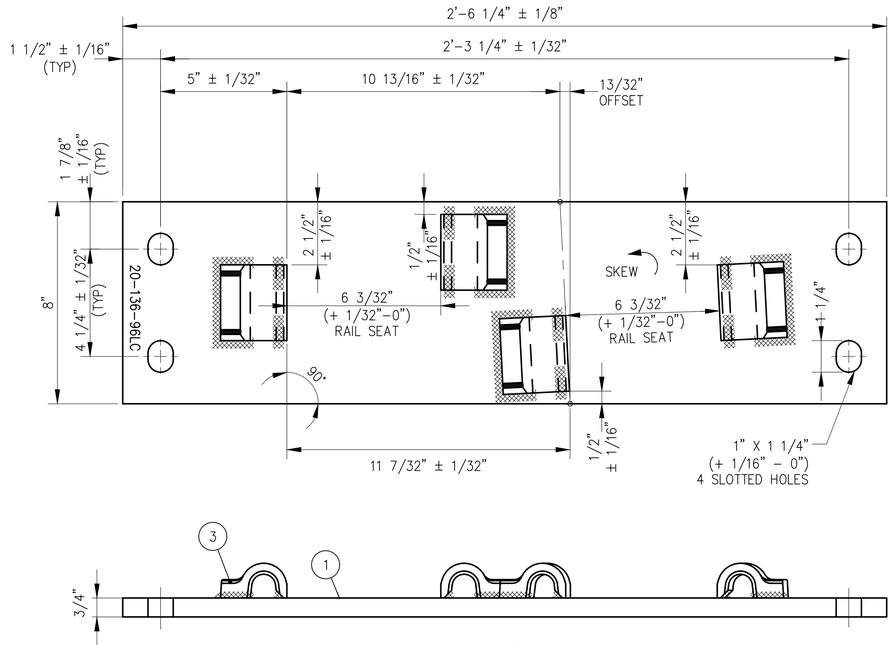
BILL OF MATERIAL				
ITEM	QTY FOR 20–96LC	QTY FOR 20–97LC	DESCRIPTION	DWG NO
1	1	0	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–6 1/4" LONG	–
2	0	1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–7 1/2" LONG	–
3	4	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–



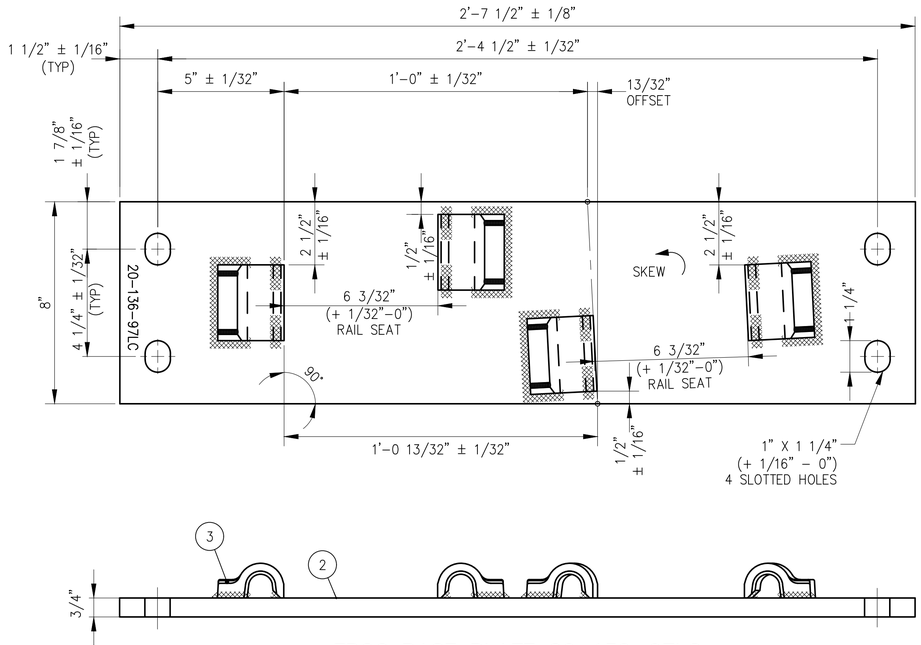
FORGED SHOULDER WELDING DETAIL

NOTES:

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



FROG BASE PLATE 20–136–96LC



FROG BASE PLATE 20–136–97LC

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

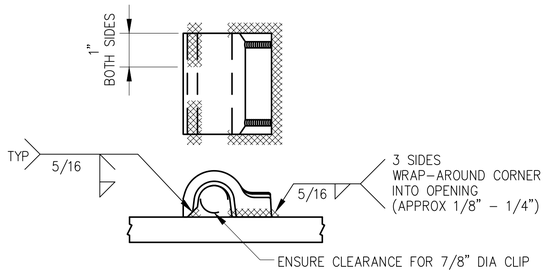
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
WSM FROG LH
FROG BASE PLATES
20–96LC AND 20–97LC

CADD FILE NAME:	SD–2733
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD–2733

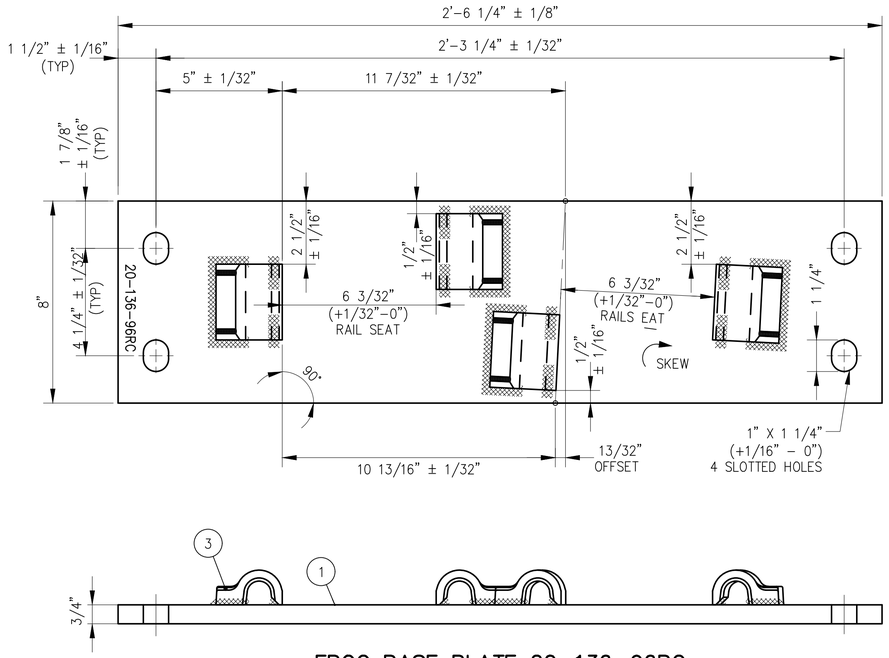
BILL OF MATERIAL				
ITEM	QTY FOR 20–96RC	QTY FOR 20–97RC	DESCRIPTION	DWG NO
1	1	0	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–6 1/4" LONG	–
2	0	1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–7 1/2" LONG	–
3	4	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–



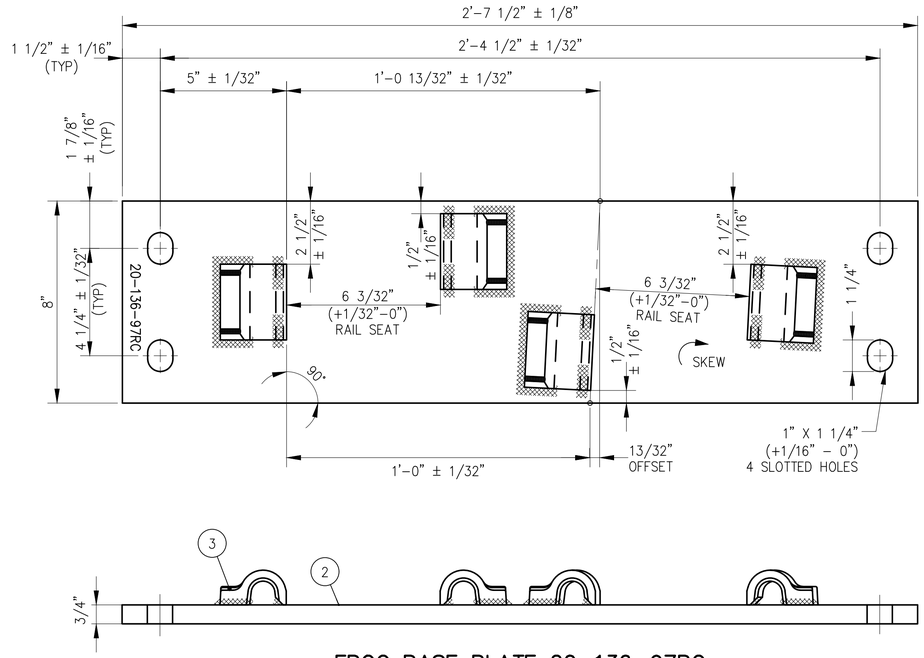
NOTES:

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

FORGED SHOULDER WELDING DETAIL



FROG BASE PLATE 20–136–96RC



FROG BASE PLATE 20–136–97RC

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
WSM FROG RH
FROG BASE PLATES
20–96RC AND 20–97RC

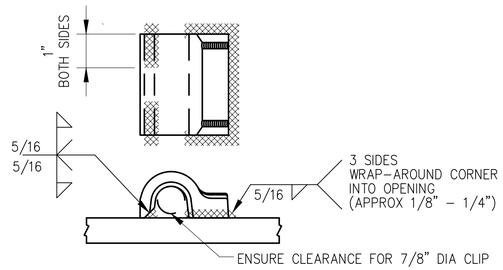
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REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD–2734

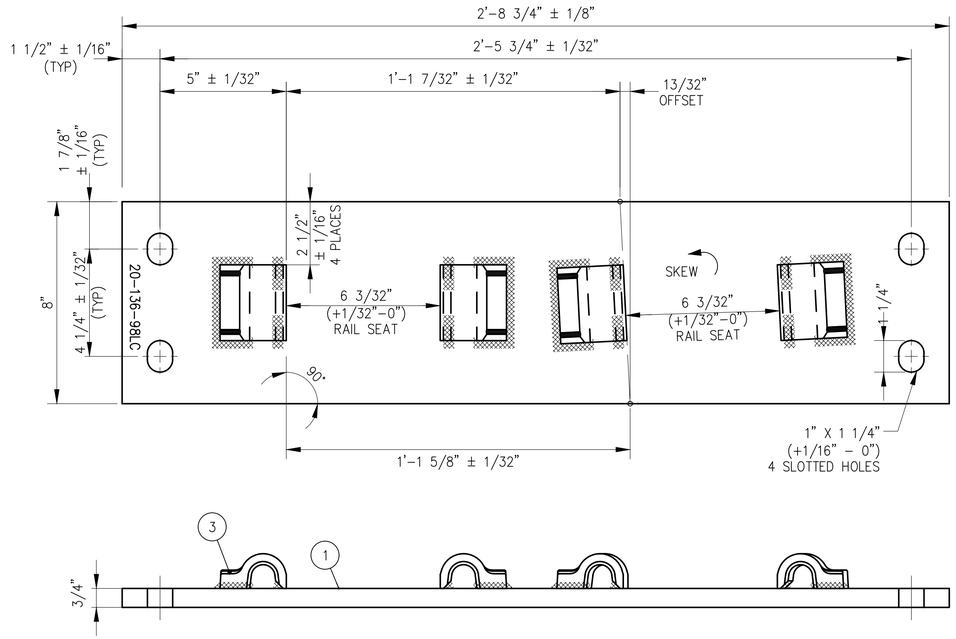
BILL OF MATERIAL				
ITEM	QTY FOR 20-98LC	QTY FOR 20-99LC	DESCRIPTION	DWG NO
1	1	0	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-8 3/4" LONG	–
2	0	1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-10" LONG	–
3	4	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–



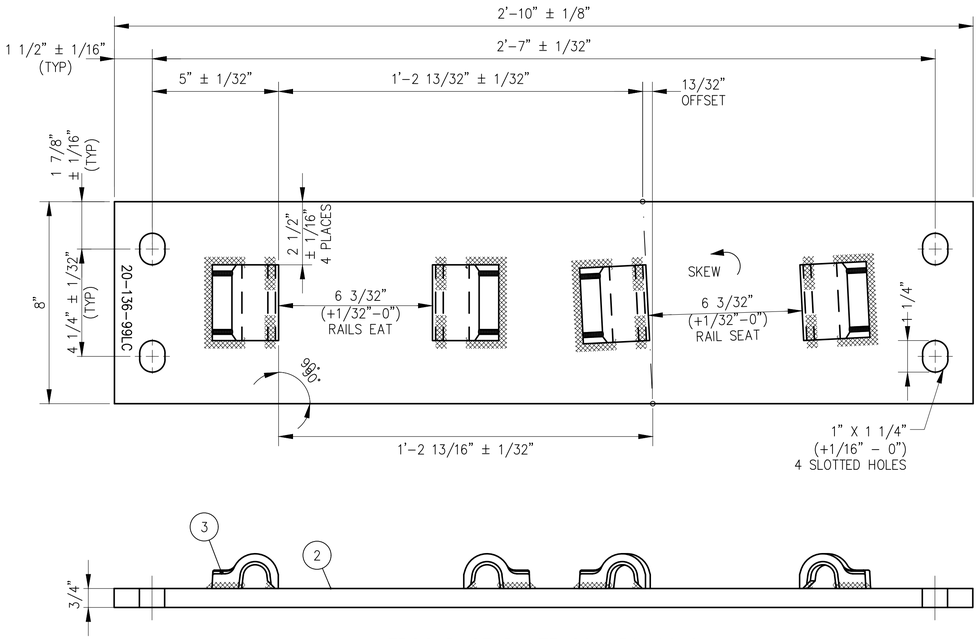
FORGED SHOULDER WELDING DETAIL

NOTES:

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



FROG BASE PLATE 20-136-98LC



FROG BASE PLATE 20-136-99LC

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
WSM FROG LH
FROG BASE PLATES
20-98LC AND 20-99LC

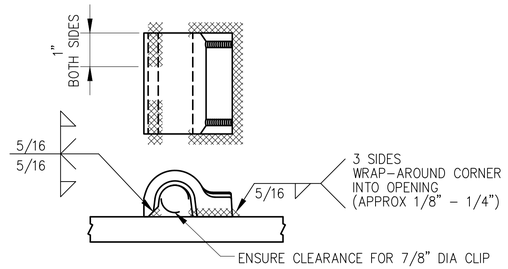
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REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD-2735

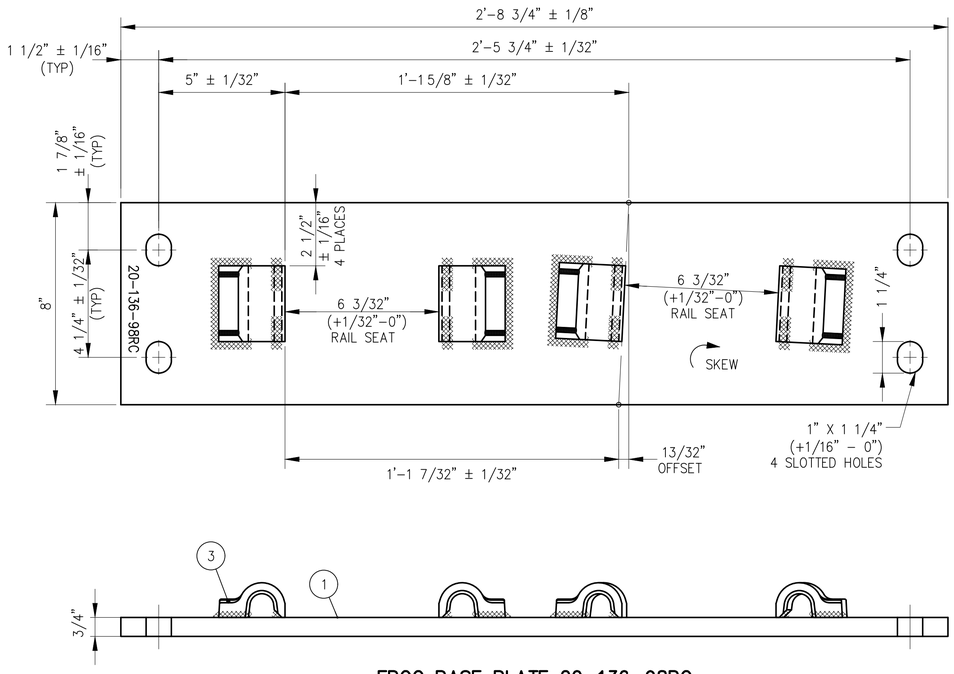
BILL OF MATERIAL				
ITEM	QTY FOR 20–98RC	QTY FOR 20–99RC	DESCRIPTION	DWG NO
1	1	0	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–8 3/4" LONG	–
2	0	1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–10" LONG	–
3	4	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–



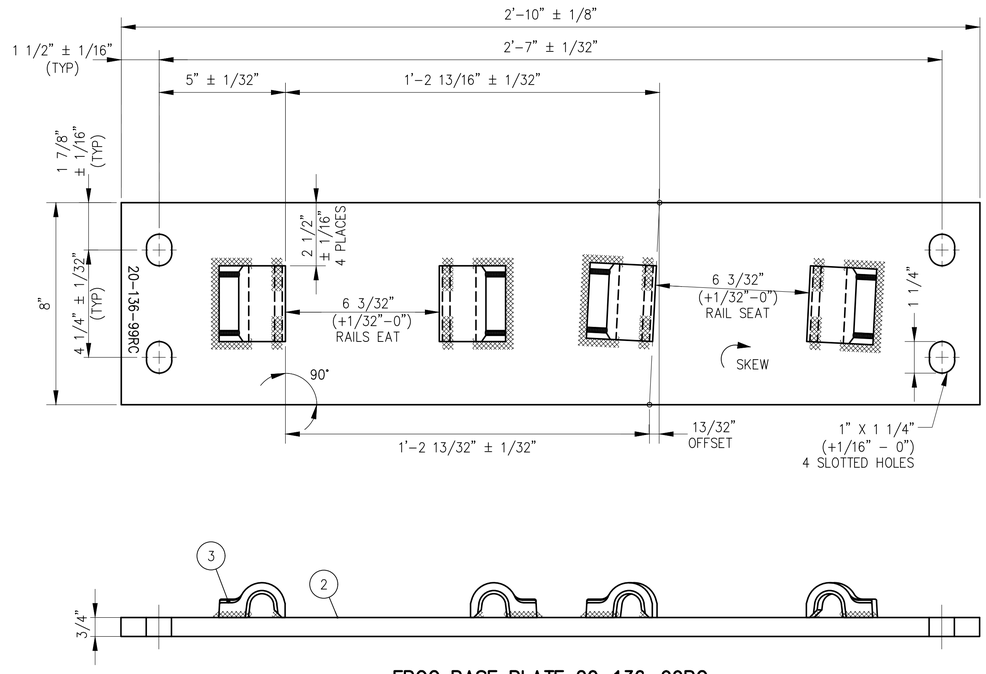
FORGED SHOULDER WELDING DETAIL

NOTES:

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



FROG BASE PLATE 20–136–98RC



FROG BASE PLATE 20–136–99RC

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
WSM FROG RH
FROG BASE PLATES
20–98RC AND 20–99RC

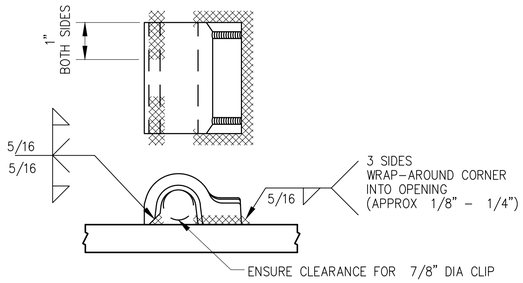
CADD FILE NAME: SD–2736

REV: | EDITION: FIFTH

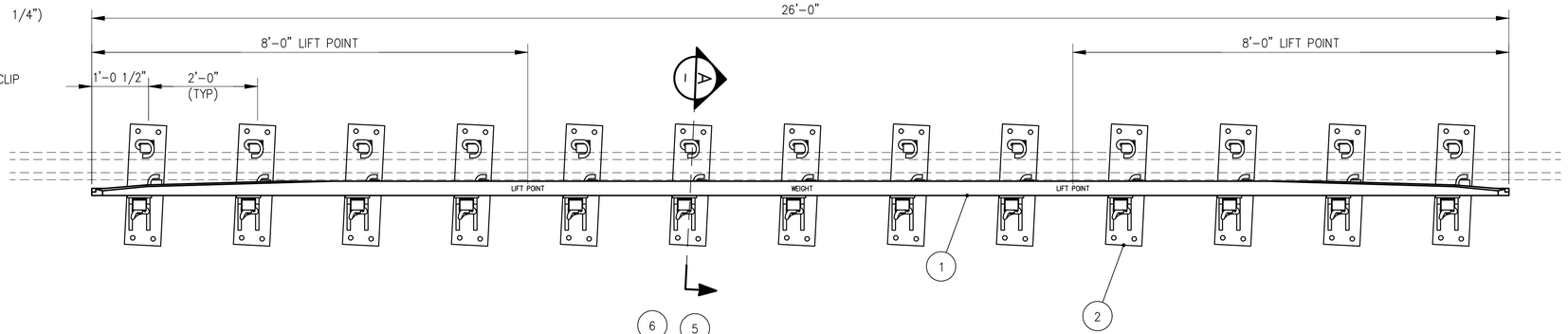
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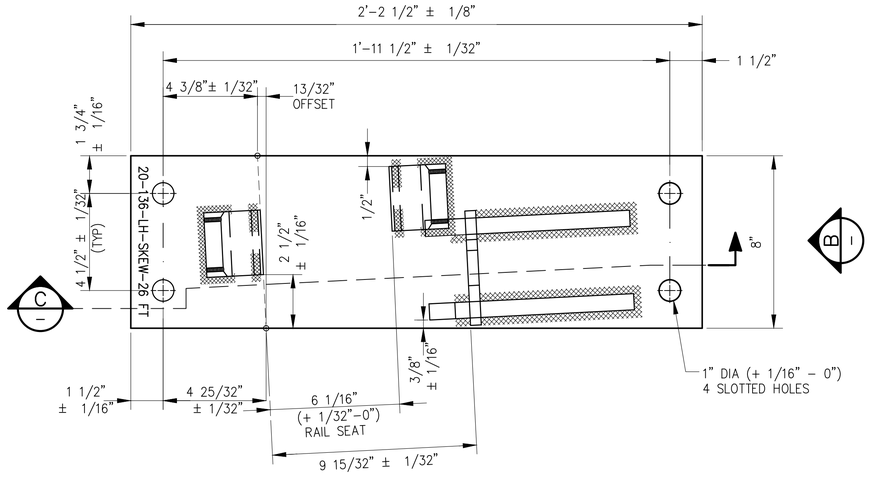
STANDARD DRAWING NO.: SD–2736

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	GUARD BAR, UIC33 1200 SERIES x 26'–0" LONG	–
2	13	GUARD RAIL PLATE ASSEMBLY, RAISED 1", LH SKEWED	–
3	13	H–CLAMP	–
4	39	CLIP, PANDROL, E2055	–
5	13	LOCKING BLOCK	–
6	52	SHIM, 1/8" x 3" X 6"	–

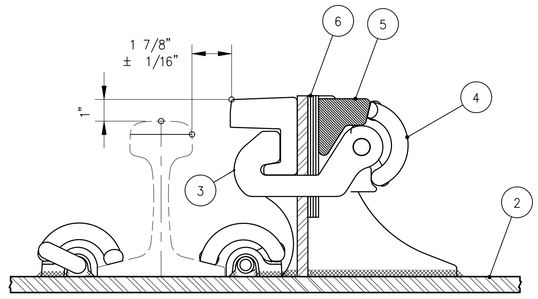


FORGED SHOULDER WELDING DETAIL



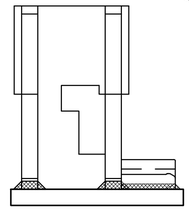


GUARD RAIL PLATE ASSEMBLY

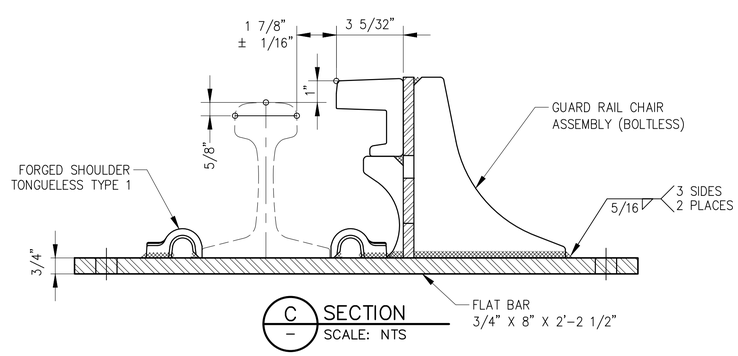


GUARD RAIL HARDWARE ASSEMBLY

A – PARTIAL SECTION
SCALE: NTS



B – VIEW
SCALE: NTS



C – SECTION
SCALE: NTS

NOTES:

1. PLATE SPACING SHALL BE SET FOR SHIPPING ONLY. FINAL PLATE SPACING SHALL BE DETERMINED BY TIE SPACING AT TIME OF INSTALLATION
2. PANDROL SPRING CLIPS (E2055) SHALL BE INCLUDED IN ASSEMBLY
3. LIFT POINTS AND WEIGHT OF ASSEMBLY SHALL BE MARKED ON HEAD OF WEAR BAR WITH WHITE PAINT
4. PLATE SHALL 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 SD–2301 FOR STRAIGHT SIDE GUARD RAIL

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

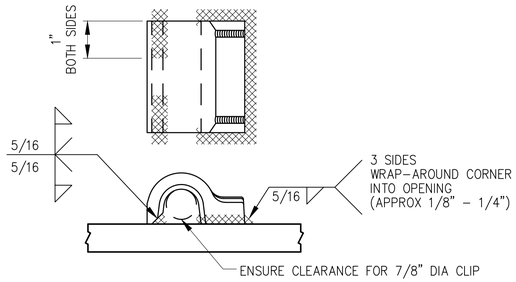
SPECIAL TRACKWORK
NO. 20 TURNOUT
GUARD RAIL ASSEMBLY
LH SKEWED WITH
PLATES 26'–0" LONG

CADD FILE NAME: SD–2737

REV: | EDITION: FIFTH

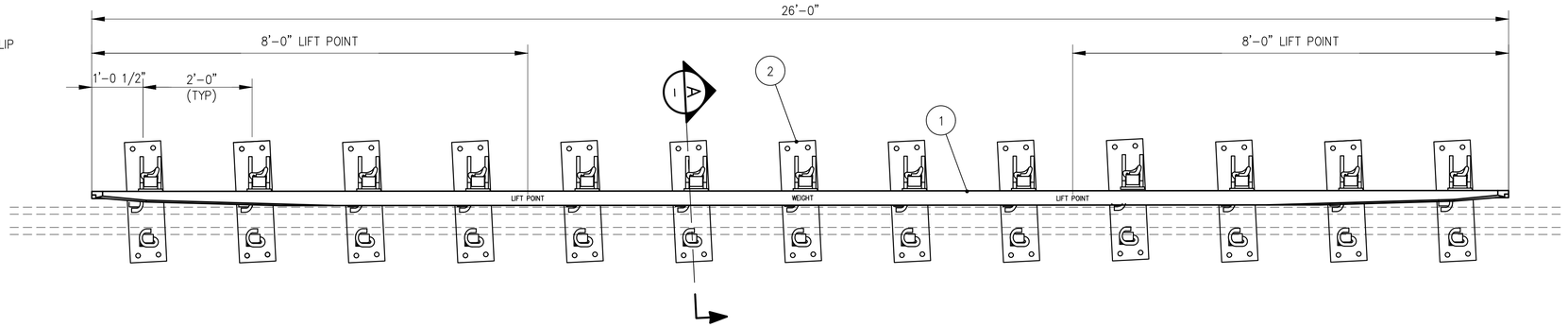
SCALE: NTS

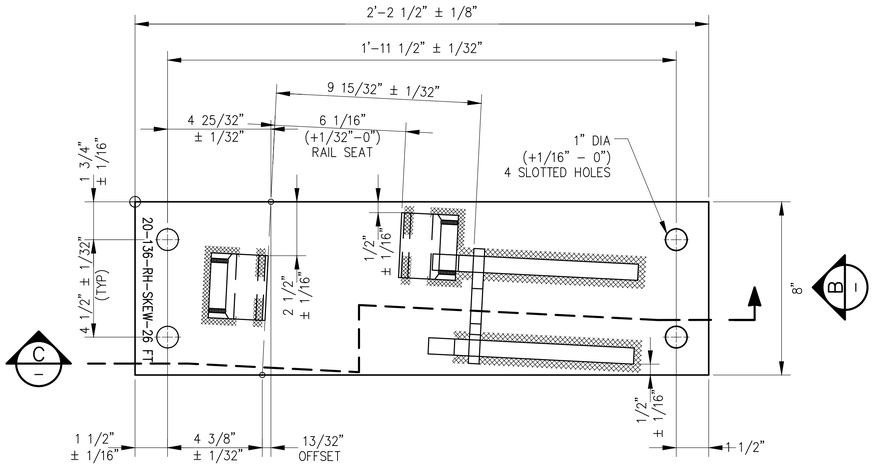
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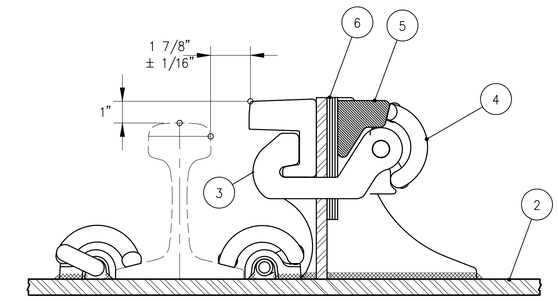
FORGED SHOULDER WELDING DETAIL

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	GUARD BAR, UIC33 1200 SERIES x 26'-0" LONG	–
2	13	GUARD RAIL PLATE ASSEMBLY, RAISED 1", RH SKEWED	–
3	13	H-CLAMP	–
4	39	CLIP, PANDROL, E2055	–
5	13	LOCKING BLOCK	–
6	52	SHIM, 1/8" x 3" X 6"	–



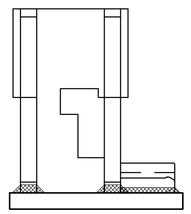


GUARD RAIL PLATE ASSEMBLY

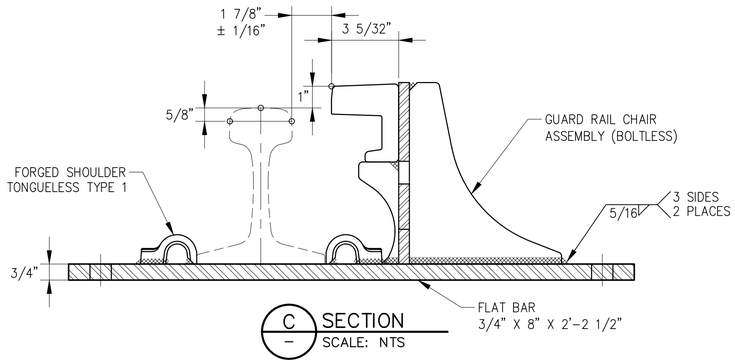


GUARD RAIL HARDWARE ASSEMBLY

A – PARTIAL SECTION
SCALE: NTS



B – VIEW
SCALE: NTS



C – SECTION
SCALE: NTS

NOTES:

1. PLATE SPACING IS SET FOR SHIPPING ONLY. FINAL PLATE SPACING SHALL BE DETERMINED BY TIE SPACING AT TIME OF INSTALLATION
2. PANDROL SPRING CLIPS (E2055) SHALL BE INCLUDED IN ASSEMBLY
3. LIFT POINTS AND WEIGHT OF ASSEMBLY SHALL BE MARKED ON HEAD OF WEAR BAR WITH WHITE PAINT
4. PLATE SHALL 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 SD-2301 FOR STRAIGHT SIDE GUARD RAIL

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

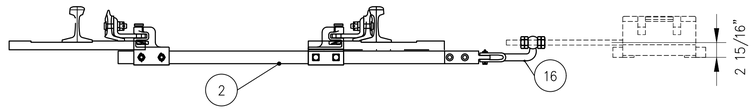
PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

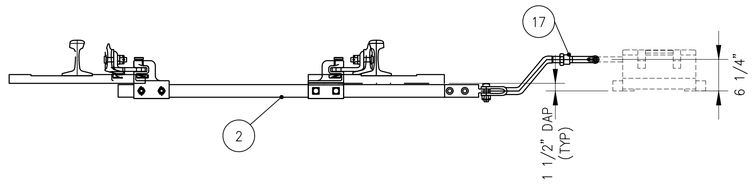
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
GUARD RAIL ASSEMBLY
RH SKEWED WITH
PLATES 26'-0" LONG

CADD FILE NAME: SD-2738
REV: | EDITION: FIFTH
SCALE: NTS
STANDARD DRAWING NO.: SD-2738



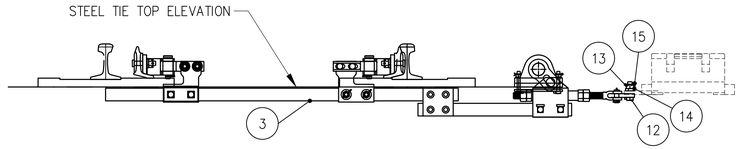
SWITCH ROD ASSEMBLY NO 1
LOCK ROD CONNECTION SHOWN
(VIEW FROM HEEL TOWARDS PS)



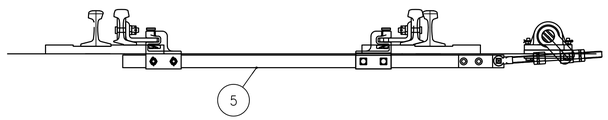
SWITCH ROD ASSEMBLY NO 1
POINT DETECTOR ROD CONNECTION SHOWN
(VIEW FROM HEEL TOWARDS PS)

BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	ROTARY ASSIST ASSEMBLY FOR NO 20–136 LB RE TURNOUT	–
2	1	SWITCH ROD NO 1, FOR POINT DETECTOR/LOCK ROD, (20–136–1)	SD–2741
3	1	SWITCH ROD NO 2, DRIVE, C/W BASKET (20–136–2)	SD–2741
4	1	SWITCH ROD NO 3, THROW, (20–136–3)	SD–2741
5	1	SWITCH ROD NO 4, THROW, (20–136–4)	SD–2742
6	1	SWITCH ROD NO 5, THROW, (20–136–5)	SD–2742
7	2	ROD POINT BRACKET, DETECTOR/LOCK ROD, HOLES AT 2 7/8" ARB*	–
8	1	ROD POINT BRACKET, THROW ROD, ANTI–ROLL, HOLES AT 2 7/8" ARB*, LH	–
9	1	ROD POINT BRACKET, THROW ROD, ANTI–ROLL, HOLES AT 2 7/8" ARB*, RH	–
10	6	ROD POINT BRACKET, HOLES AT 2 3/8" ARB* C/W SQUARE BOLTS	–
11	1	DROP LUG FOR US&S M23 SWITCH MACHINE DRIVE BAR	–
12	1	BOLT, 7/8" DIA X 3" LONG, DRILLED 2 9/16" BELOW HEAD, HEAVY HEX, GR 5	–
13	1	NUT, 7/8" DIA SLOTTED HEAVY HEX, GR 8	–
14	1	SPRING WASHER, 7/8" DIA	–
15	1	COTTER PIN, 3/16" DIA X 1 3/4" LONG	–
16	1	LOCK ROD, FOR M23 SWITCH MACHINE, HST	–
17	1	DETECTOR ROD, FOR M23 SWITCH MACHINE, HST	–

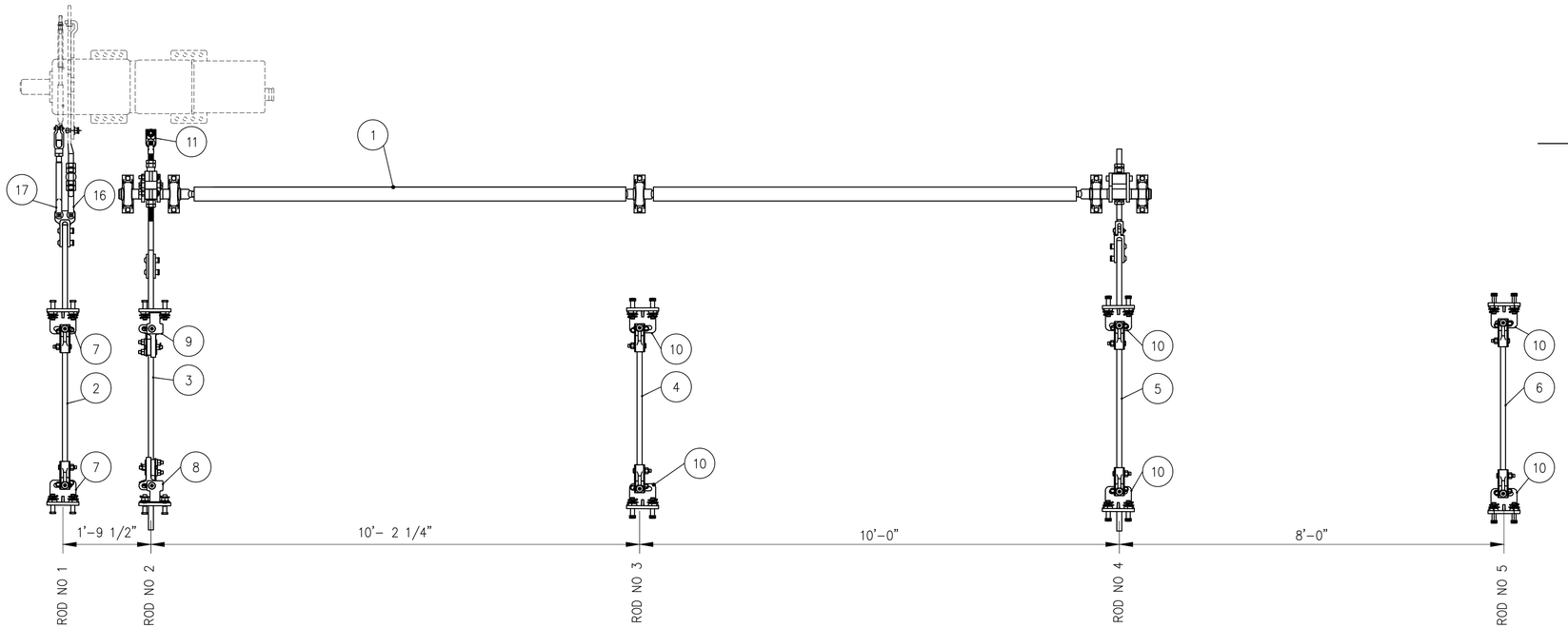
ARB*– ABOVE RAIL BASE



DRIVE ROD (ROD NO 2) ASSEMBLY
FRONT HELPER ROD CRANK ATTACHES TO BASKET
(VIEW FROM HEEL TOWARDS PS)



REAR HELPER (ROD NO 4) DRIVE ROD
ASSEMBLY REAR HELPER ROD CRANK
ATTACHES TO ROD PIN



REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

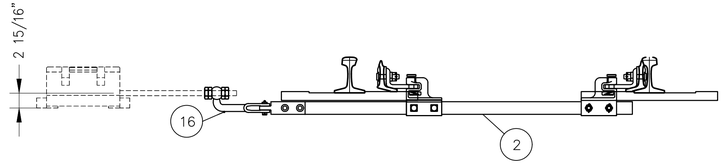
APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

Caltrain

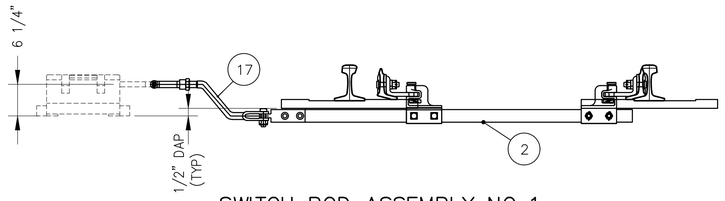
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
HOLLOW STEEL TIE ROD ASSEMBLY
SWITCH MACHINE ON LH SIDE

CADD FILE NAME: SD–2739
REV:
EDITION: FIFTH
SCALE: NTS
STANDARD DRAWING NO.: SD–2739



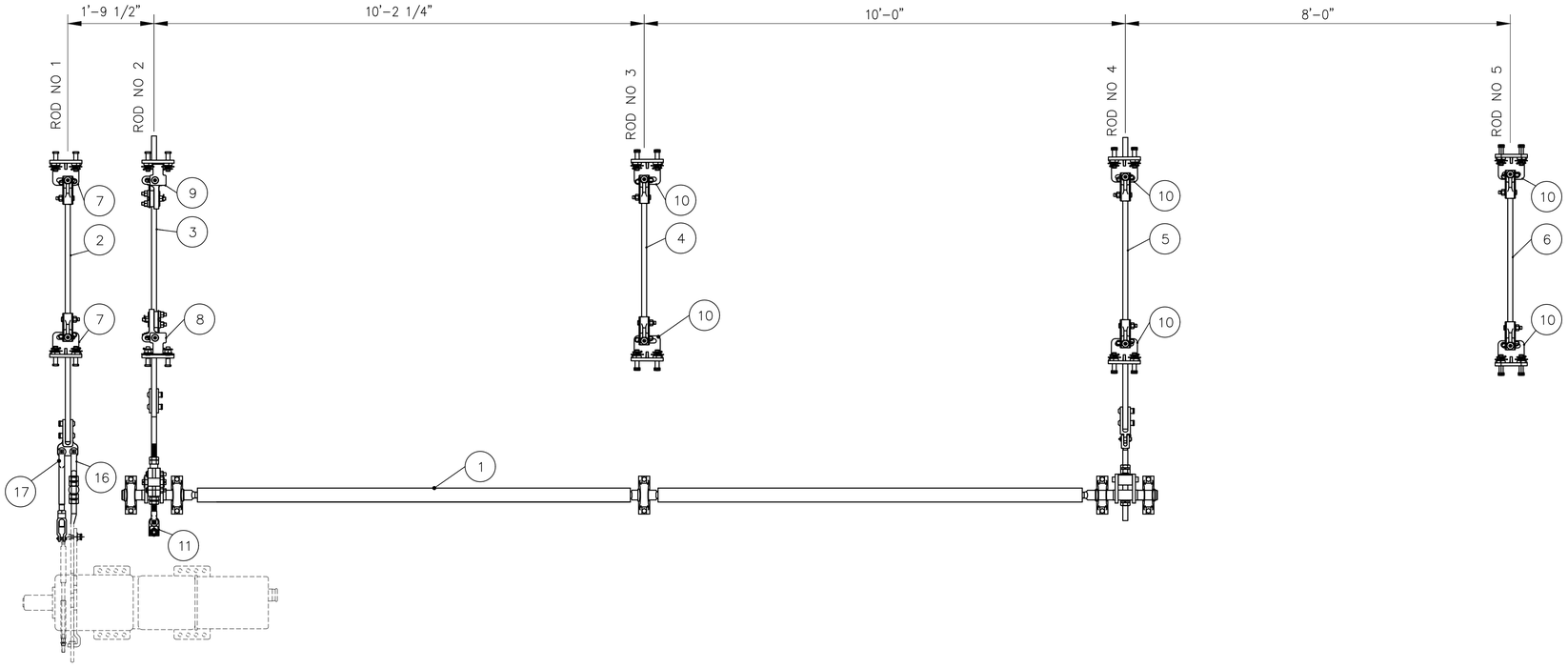
SWITCH ROD ASSEMBLY NO 1
LOCK ROD CONNECTION SHOWN
(VIEW FROM HEEL TOWARDS PS)

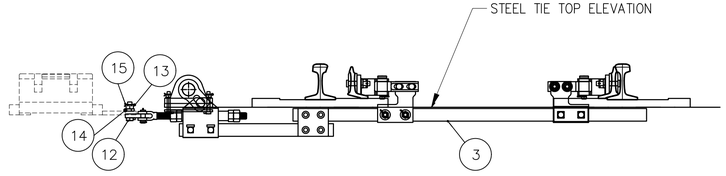


SWITCH ROD ASSEMBLY NO 1
POINT DETECTOR ROD CONNECTION SHOWN
(VIEW FROM HEEL TOWARDS PS)

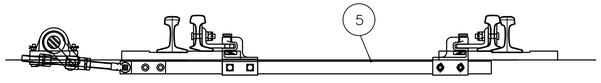
BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	ROTARY ASSIST ASSEMBLY FOR NO 20–136 LB RE TURNOUT	–
2	1	SWITCH ROD NO 1, FOR POINT DETECTOR/LOCK ROD, (20–136–1)	SD–2741
3	1	SWITCH ROD NO 2, DRIVE, C/W BASKET (20–136–2)	SD–2741
4	1	SWITCH ROD NO 3, THROW, (20–136–3)	SD–2741
5	1	SWITCH ROD NO 4, THROW, (20–136–4)	SD–2742
6	1	SWITCH ROD NO 5, THROW, (20–136–5)	SD–2742
7	2	ROD POINT BRACKET, DETECTOR/LOCK ROD, HOLES AT 2 7/8" ARB*	–
8	1	ROD POINT BRACKET, THROW ROD, ANTI–ROLL, HOLES AT 2 7/8" ARB*, LH	–
9	1	ROD POINT BRACKET, THROW ROD, ANTI–ROLL, HOLES AT 2 7/8" ARB*, RH	–
10	6	ROD POINT BRACKET, HOLES AT 2 3/8" ARB*C/W SQUARE BOLTS	–
11	1	DROP LUG FOR US&S M23 SWITCH MACHINE DRIVE BAR	–
12	1	BOLT, 7/8" DIA X 3" LONG, DRILLED 2 9/16" BELOW HEAD, HEAVY HEX, GR 5	–
13	1	NUT, 7/8" DIA SLOTTED HEAVY HEX, GR 8	–
14	1	SPRING WASHER, 7/8" DIA	–
15	1	COTTER PIN, 3/16" DIA X 1 3/4" LONG	–
16	1	LOCK ROD, FOR M23 SWITCH MACHINE, HST	–
17	1	DETECTOR ROD, FOR M23 SWITCH MACHINE, HST	–

ARB*– ABOVE RAIL BASE





DRIVE ROD (ROD NO 2) ASSEMBLY
FRONT HELPER ROD CRANK ATTACHES TO BASKET
(VIEW FROM HEEL TOWARDS PS)



REAR HELPER (ROD NO 4) DRIVE ROD ASSEMBLY
REAR HELPER ROD CRANK ATTACHES TO ROD PIN

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

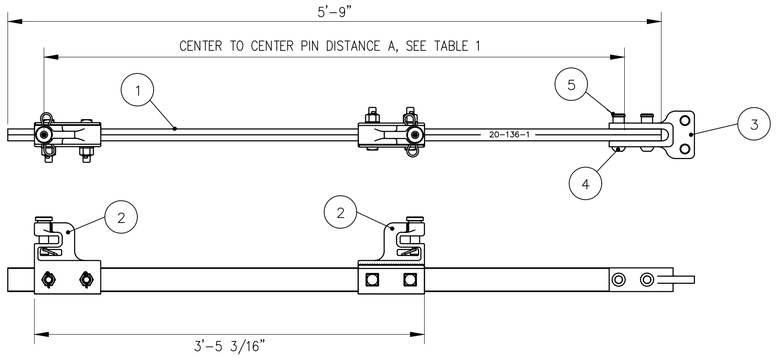
APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
HOLLOW STEEL TIE ROD ASSEMBLY
SWITCH MACHINE ON RH SIDE

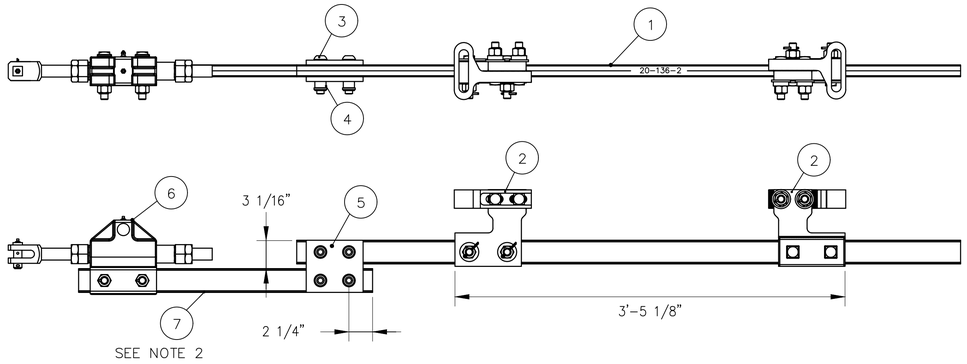
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EDITION: FIFTH
SCALE: NTS
STANDARD DRAWING NO.: SD–2740

BILL OF MATERIALS FOR SWITCH ROD 20–136–1			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH ROD 20–136–1	–
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)	–



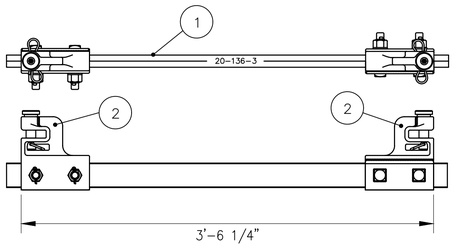
SWITCH ROD ASSEMBLY 20–136–1

BILL OF MATERIALS FOR SWITCH ROD 20–136–2			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	BLUE ROD, PULTRUDED COMPOSITE, 1 1/4" x 2 1/4" x 5'–10" LONG, 20–136–2	–
2	2	CLIP/LUG ASSEMBLY, HST SWITCH, ANTI–ROLLOVER DESIGN, LH	–
3	4	HUCK BOLT, 3/4" DIA (C50LR–BR24–36)	–
4	4	HUCK COLLAR, 3/4" DIA (LC–2R24B)	–
5	2	SPLICE PLATE, FOR BLUE ROD BASKET ASSEMBLY RODS	–
6	1	BASKET/ROD ASSEMBLY FOR HST WITH ROTARY ASSIST	–
7	1	BLUE ROD, PULTRUDED COMPOSITE, 1 1/4" x 2 1/4" x 2'–7" LONG, 1–B	–



SWITCH ROD ASSEMBLY 20–136–2

BILL OF MATERIALS FOR SWITCH ROD 20–136–3			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH ROD 20–136–3	–
2	2	SWITCH CLIP ASSEMBLY, ADJUSTABLE, FOR HOLLOW TIE	–



SWITCH ROD ASSEMBLY 20–136–3

TABLE 1

ROD #	A
SWITCH ROD ASSEMBLY 20–136–1	3'– 3 15/16"
SWITCH ROD ASSEMBLY 20–136–2	3'– 4 1/8"
SWITCH ROD ASSEMBLY 20–136–3	3'– 4 13/16"
SWITCH ROD ASSEMBLY 20–136–4	3'– 5 7/8"
SWITCH ROD ASSEMBLY 20–136–5	3'– 7"

NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
HOLLOW STEEL TIE SWITCH RODS
20–1, 20–2 AND 20–3

CADD FILE NAME: SD–2741

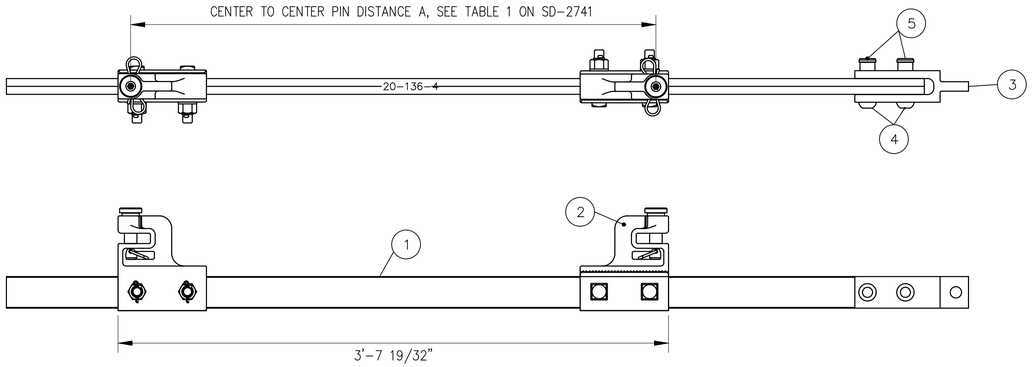
REV: | EDITION: FIFTH

SCALE: NTS

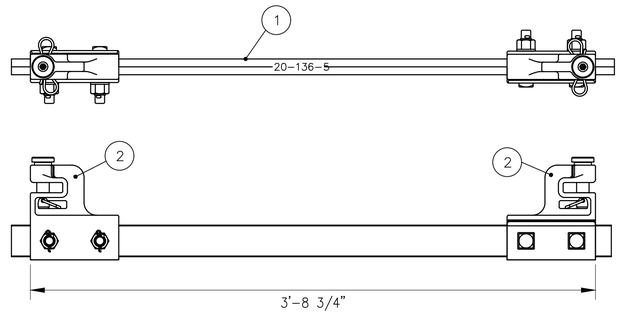
STANDARD DRAWING NO.: SD–2741

BILL OF MATERIALS FOR SWITCH ROD 20–136–4			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH ROD 20–136–4	–
2	2	SWITCH CLIP ASSEMBLY, ADJUSTABLE, FOR HOLLOW TIES	–
3	1	CONNECTOR LUG FOR REAR DRIVE ROD	–
4	2	HUCK BOLT, 3/4" DIA (C50LR–BR24–36)	–
5	2	HUCK COLLAR, 3/4" DIA (LC–2R24B)	–

BILL OF MATERIALS FOR SWITCH ROD 20–136–5			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH ROD 20–136–5	–
2	2	SWITCH CLIP ASSEMBLY, ADJUSTABLE, FOR HOLLOW TIES	–



SWITCH ROD ASSEMBLY 20–136–4



SWITCH ROD ASSEMBLY 20–136–5

NOTES:

1. ROD IDENTIFICATION SHALL BE ENGRAVED ON ROD CLEARLY AS SHOWN, 3/8" MIN HEIGHT

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

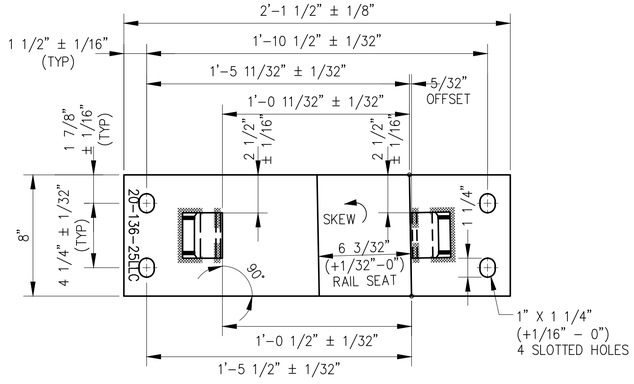
SPECIAL TRACKWORK
NO. 20 TURNOUT
HOLLOW STEEL TIE SWITCH RODS
20–4 AND 20–5

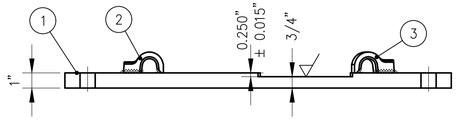
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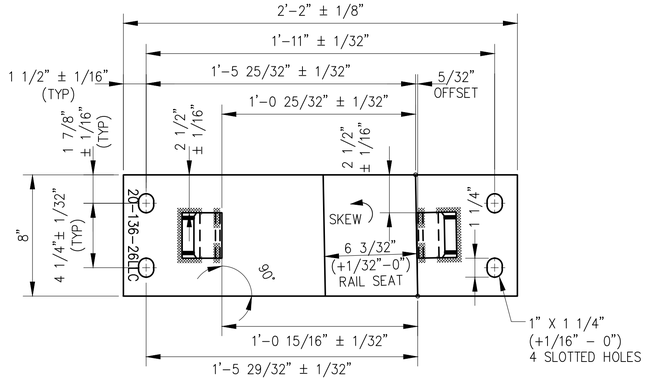
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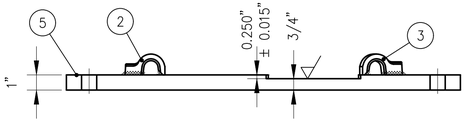
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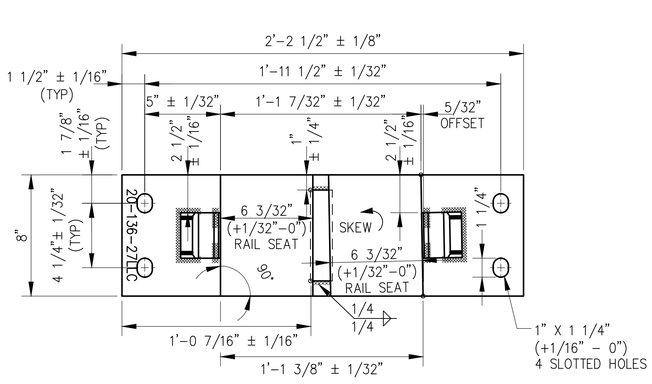


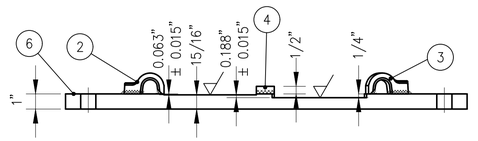
SWITCH PLATE P20-136-25LLC



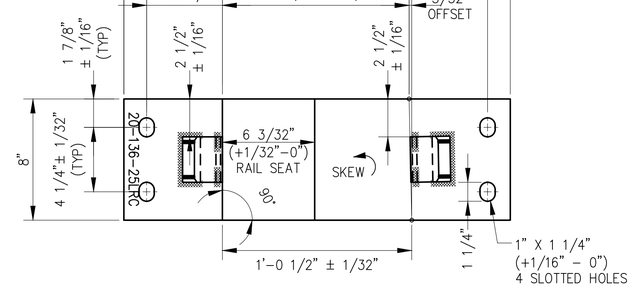


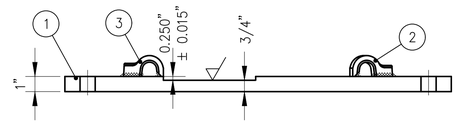
SWITCH PLATE P20-136-26LLC



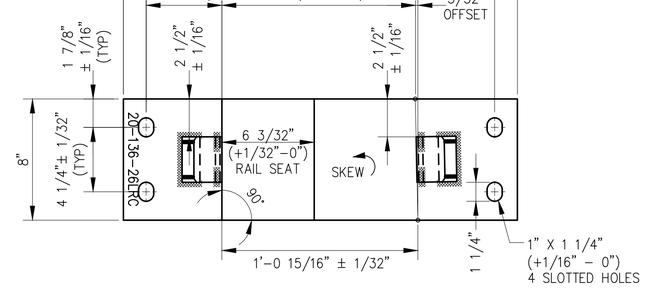


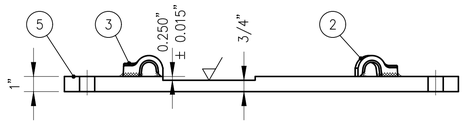
SWITCH PLATE P20-136-27LLC



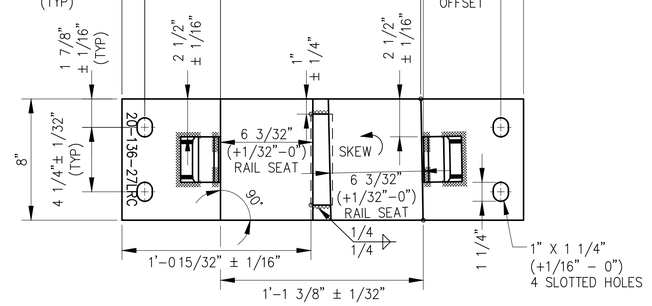


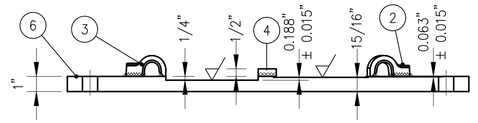
SWITCH PLATE P20-136-25LRC





SWITCH PLATE P20-136-26LRC





SWITCH PLATE P20-136-27LRC

BILL OF MATERIALS	
ITEM	DESCRIPTION
1	FLAT BAR, ASTM A36, 1" x 8" x 2'-1 1/2
2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1
3	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 5

BILL OF MATERIALS	
ITEM	DESCRIPTION
4	FLAT BAR, ASTM A36, 1/2" x 6" x 1 7/16"
5	FLAT BAR, ASTM A36, 1" X 8" X 2'-2"
6	FLAT BAR, ASTM A36, 1" X 8" X 2'-2 1/2"

NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

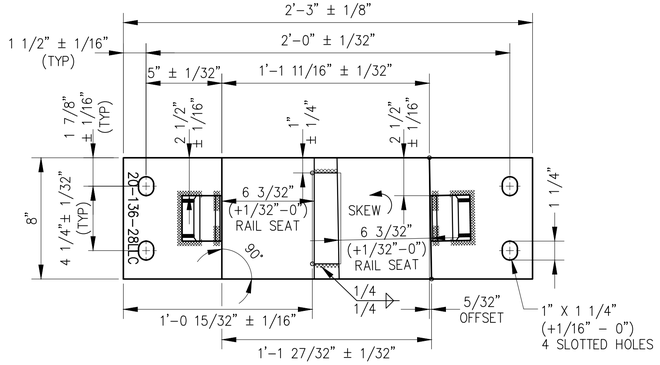
Bin Zhang

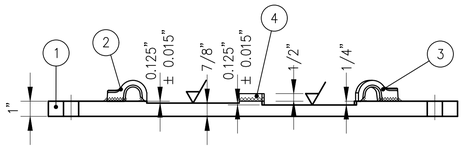
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

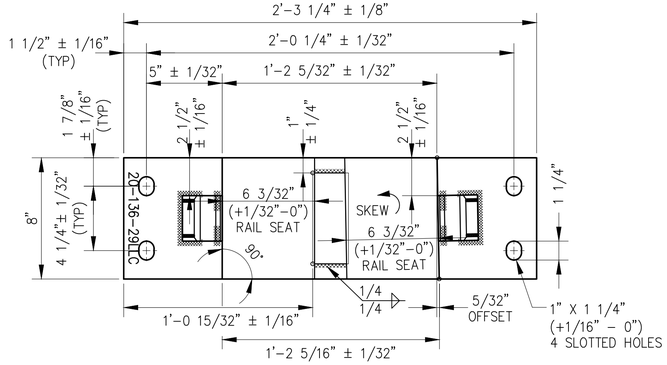
SPECIAL TRACKWORK
NO. 20 TURNOUT
SWITCH PLATES FOR LH TURNOUT
20-25LLC/LRC THRU 20-27LLC/LRC

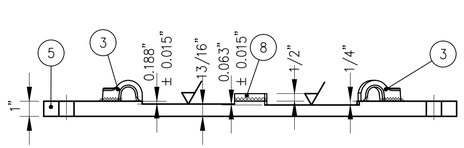
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REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD-2743



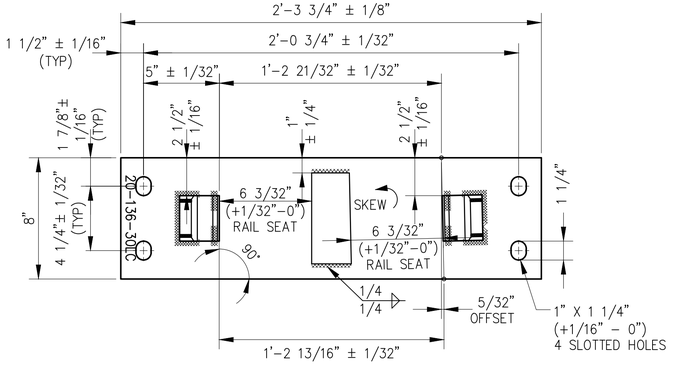


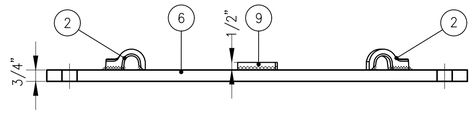
SWITCH PLATE P20-136-28LLC



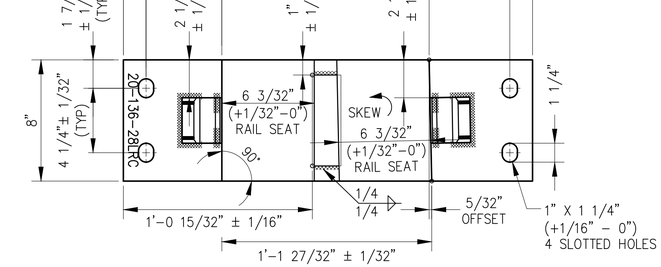


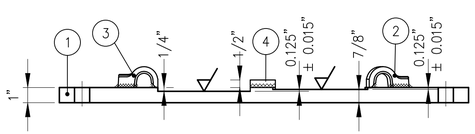
SWITCH PLATE P20-136-29LLC



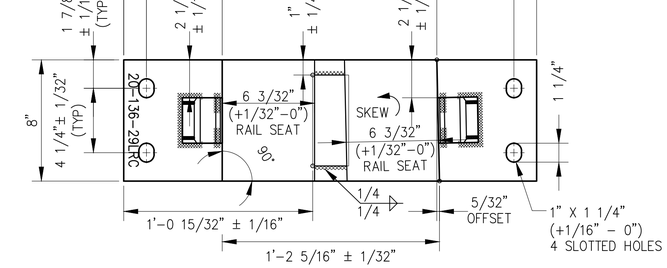


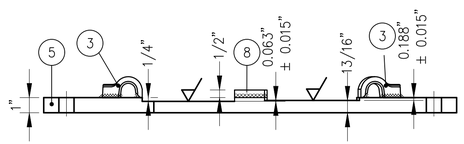
SWITCH PLATE P20-136-30LC



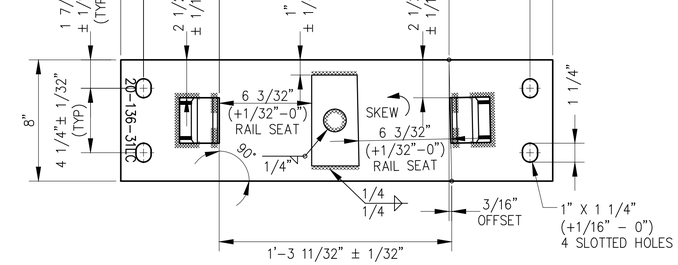


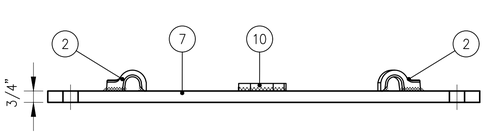
SWITCH PLATE P20-136-28LRC





SWITCH PLATE P20-136-29LRC





SWITCH PLATE P20-136-31LC

BILL OF MATERIALS		BILL OF MATERIALS	
ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	FLAT BAR, ASTM A36, 1" x 8" x 2'-3"	6	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-3 3/4"
2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	7	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-4 1/2"
3	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 5	8	FLAT BAR, ASTM A36, 1/2" x 6" x 2 3/8"
4	FLAT BAR, ASTM A36, 1/2" x 6" x 1 7/8"	9	BURNED STOP, 1/2" THICK, TAPERED 2 5/8" TO 2 1/2", OVER 6"
5	FLAT BAR, ASTM A36, 1" x 8" x 2'-3 1/4"	10	BURNED STOP, 1/2" THICK, TAPERED 3" TO 3 1/8", OVER 6"

NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

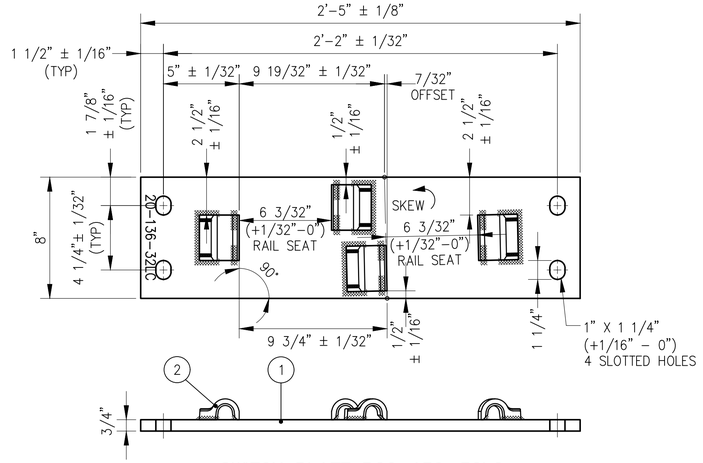
SPECIAL TRACKWORK
NO. 20 TURNOUT
SWITCH PLATES FOR LH TURNOUT
20-28LLC/LRC THRU 20-29LLC/LRC
20-30LC THRU 20-31LC

CADD FILE NAME: SD-2744

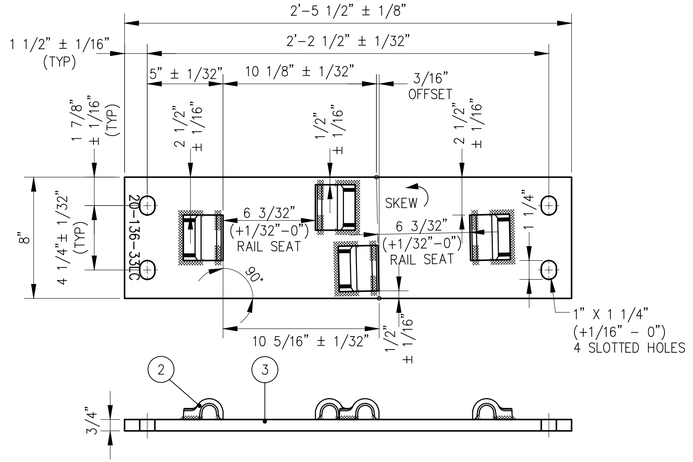
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SCALE: NTS

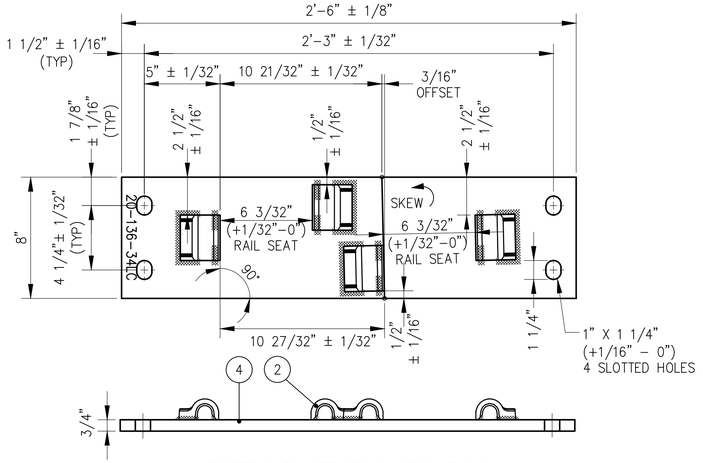
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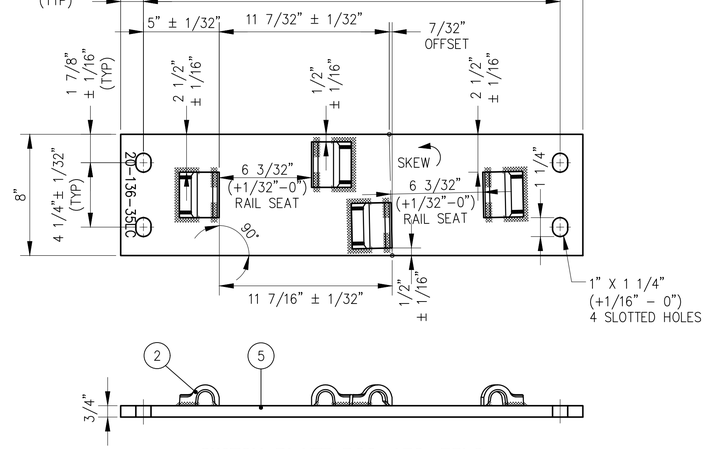
SWITCH PLATE P20-136-32LC



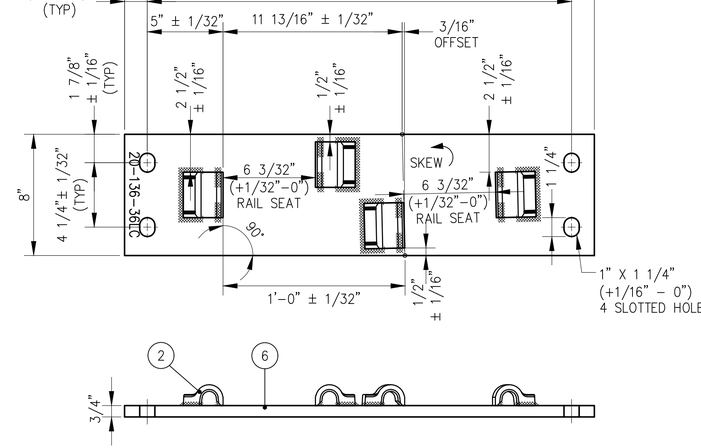
SWITCH PLATE P20-136-33LC



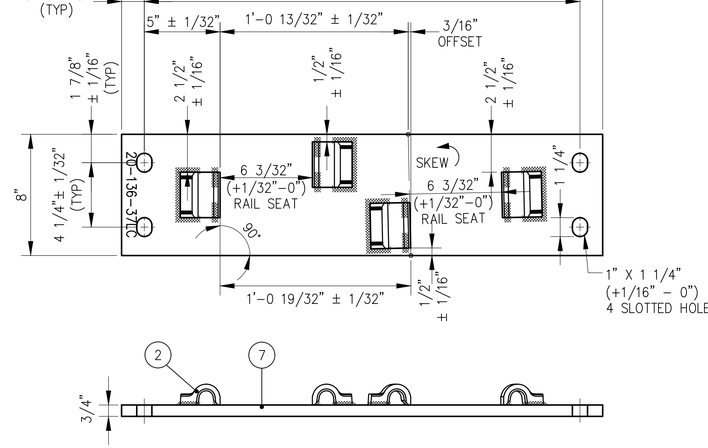
SWITCH PLATE P20-136-34LC



SWITCH PLATE P20-136-35LC



SWITCH PLATE P20-136-36LC



SWITCH PLATE P20-136-37LC

BILL OF MATERIALS		BILL OF MATERIALS	
ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-5"	5	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-6 1/2"
2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	6	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-7"
3	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-5 1/2"	7	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-7 1/4"
4	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-6"		

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	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

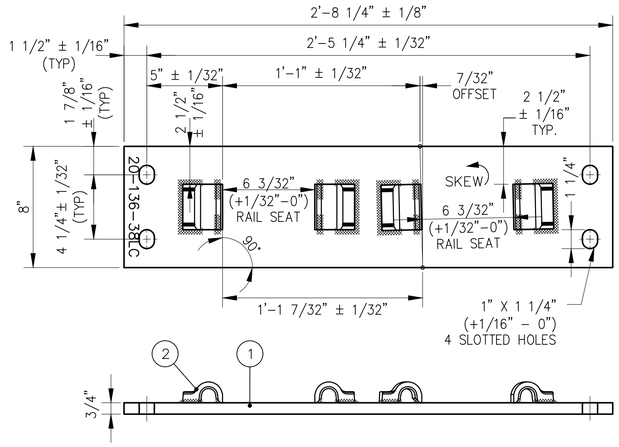
Bin Zhang

DIRECTOR, ENGINEERING

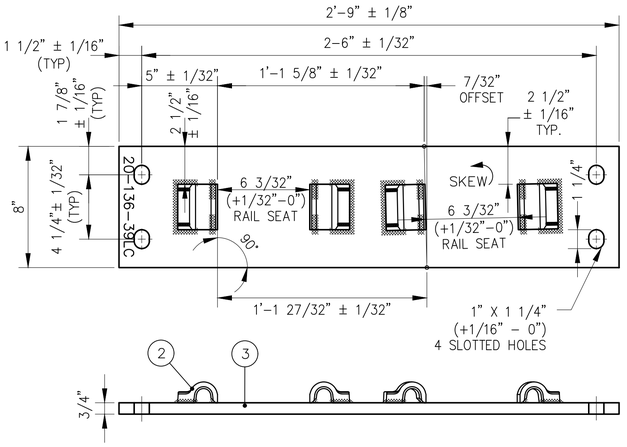
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
SWITCH PLATES FOR LH TURNOUT
20-32LC THRU 20-37LC

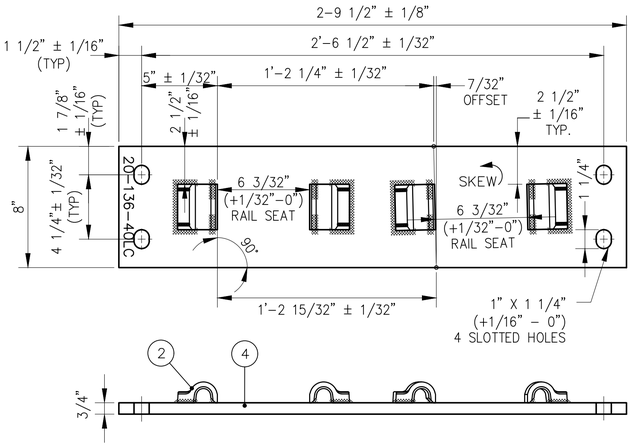
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SCALE:	NTS
STANDARD DRAWING NO.:	SD-2745



SWITCH PLATE P20-136-38LC



SWITCH PLATE P20-136-39LC



SWITCH PLATE P20-136-40LC

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

BILL OF MATERIALS	
ITEM	DESCRIPTION
3	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-9"
4	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-9 1/2"

NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
SWITCH PLATES FOR LH TURNOUT
20-38LC THRU 20-40LC

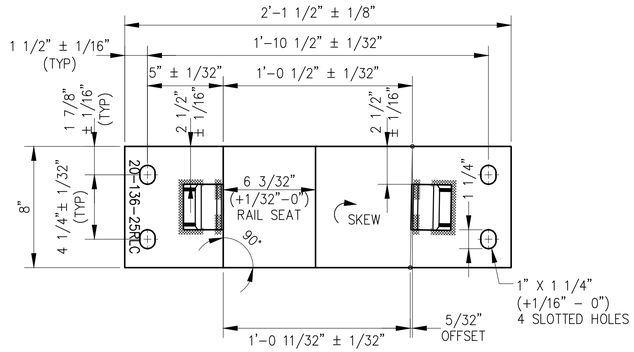
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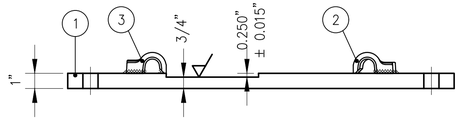
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EDITION: FIFTH

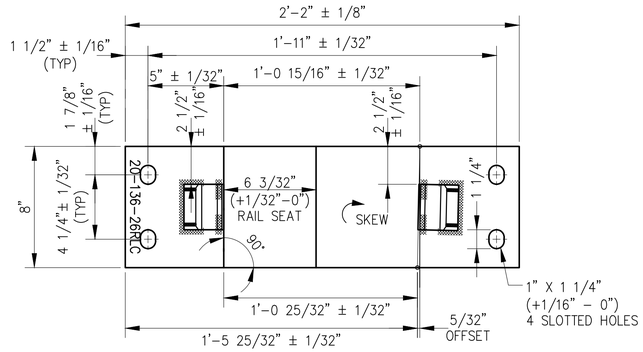
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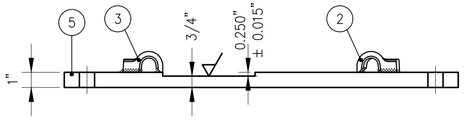
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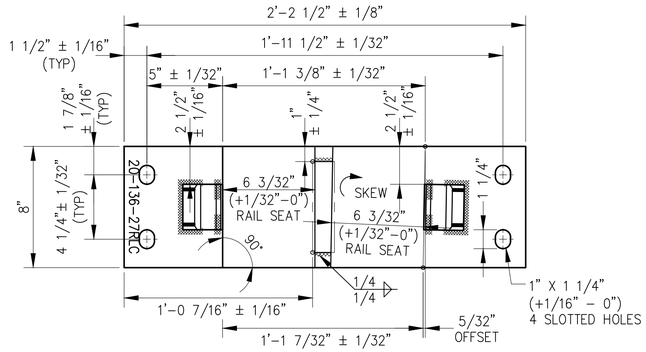


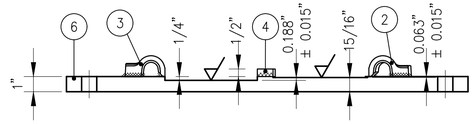
SWITCH PLATE P20-136-25RLC



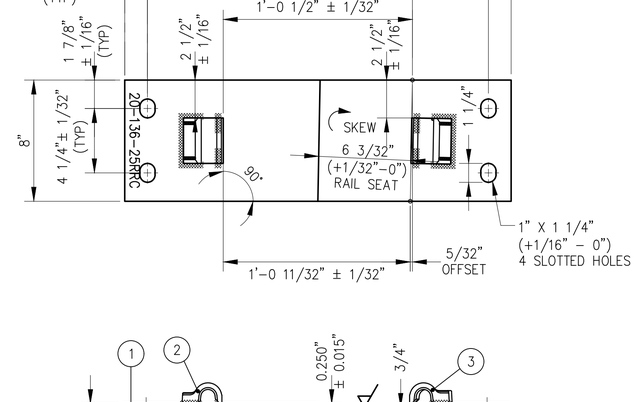


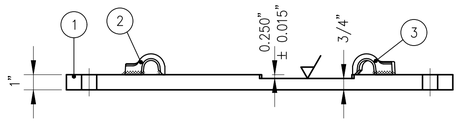
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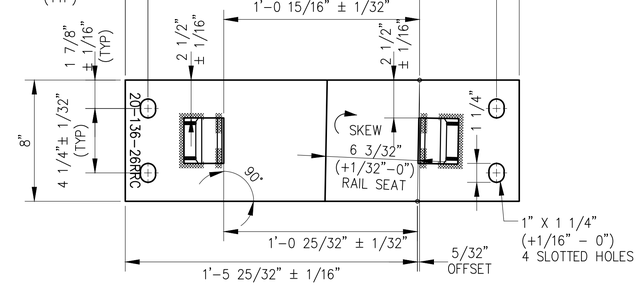


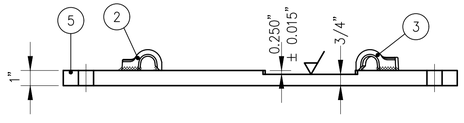
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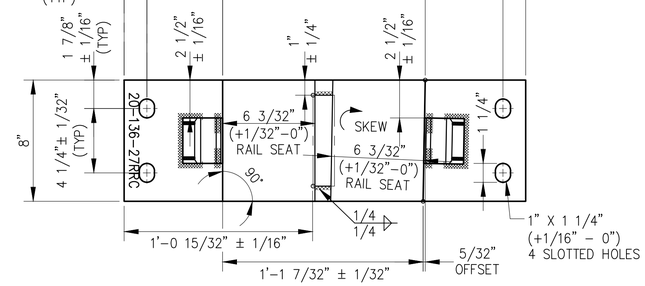


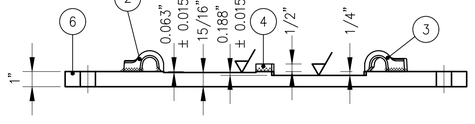
SWITCH PLATE P20-136-25RRC





SWITCH PLATE P20-136-26RRC





SWITCH PLATE P20-136-27RRC

BILL OF MATERIALS		BILL OF MATERIALS	
ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	FLAT BAR, ASTM A36, 1" x 8" x 2'-1 1/2	4	FLAT BAR, ASTM A36, 1/2" x 6" x 1 7/16"
2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	5	FLAT BAR, ASTM A36, 1" X 8" X 2'-2"
3	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 5	6	FLAT BAR, ASTM A36, 1" x 8" x 2'-2 1/2"

NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

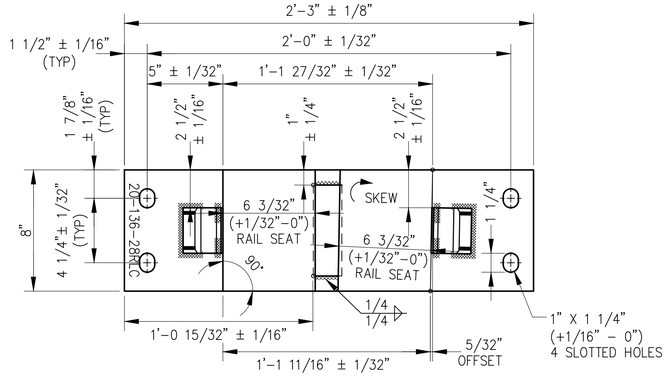
DIRECTOR, ENGINEERING

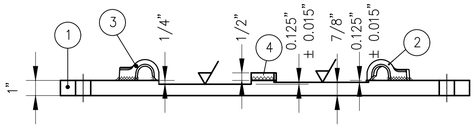
Caltrain

ENGINEERING STANDARD DRAWINGS

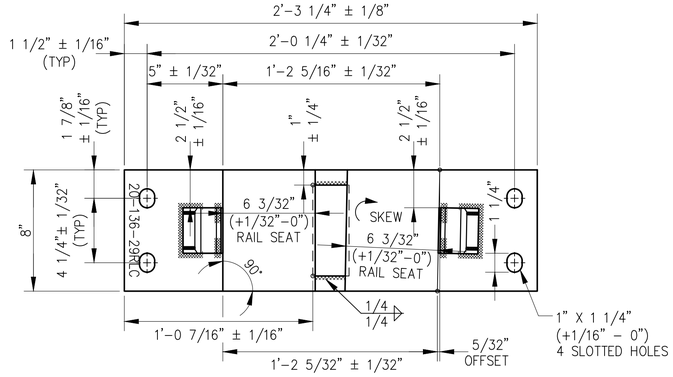
SPECIAL TRACKWORK
NO. 20 TURNOUT
SWITCH PLATES FOR RH TURNOUT
20-25RLC/RRC THRU 20-27RLC/RRC

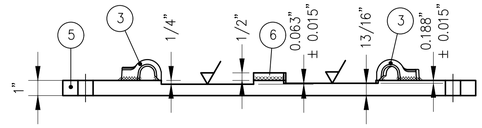
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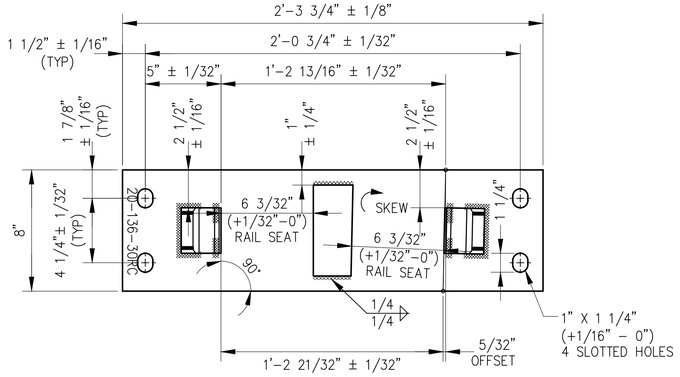


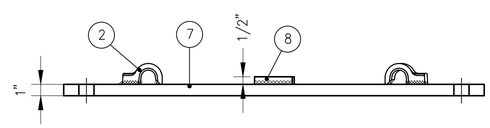
SWITCH PLATE P20-136-28RLC



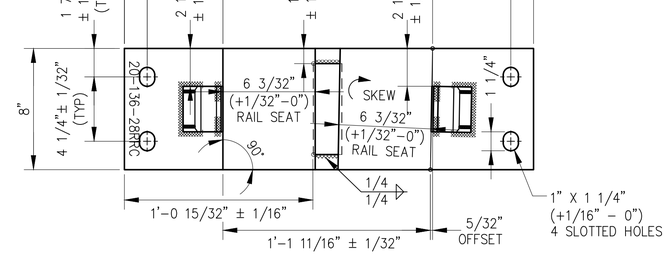


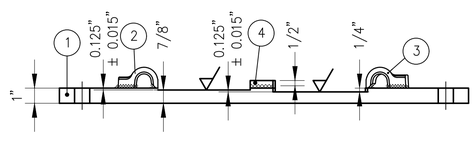
SWITCH PLATE P20-136-29RLC



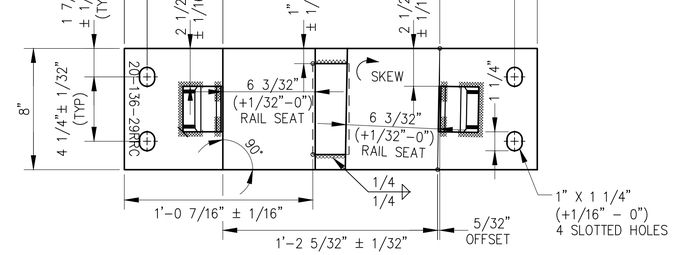


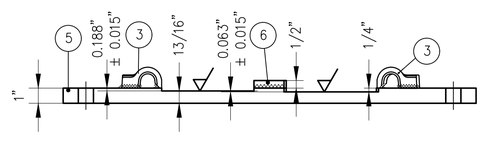
SWITCH PLATE P20-136-30RC



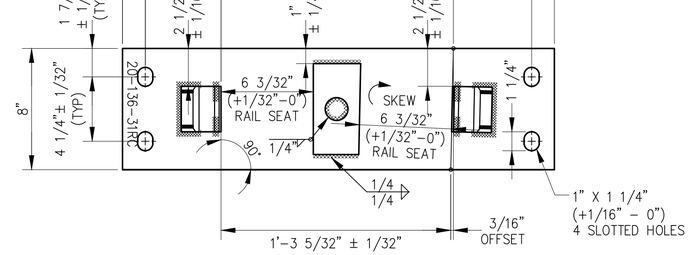


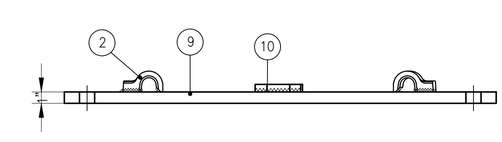
SWITCH PLATE P20-136-28RRC





SWITCH PLATE P20-136-29RRC





SWITCH PLATE P20-136-31RC

BILL OF MATERIALS	
ITEM	DESCRIPTION
1	FLAT BAR, ASTM A36, 1" x 8" x 2'-3"
2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1
3	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 5
4	FLAT BAR, ASTM A36, 1/2" x 6" x 1 7/8"
5	FLAT BAR, ASTM A36, 1" x 8" x 2'-3 1/4"

BILL OF MATERIALS	
ITEM	DESCRIPTION
6	FLAT BAR, ASTM A36, 1/2" x 6" x 2 3/8"
7	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-3 3/4"
8	BURNED STOP, 1/2" THICK, TAPERED 2 5/8" TO 2 1/2", OVER 6"
9	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-4 1/2"
10	BURNED STOP, 1/2" THICK, TAPERED 3" TO 3 1/8", OVER 6"

NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

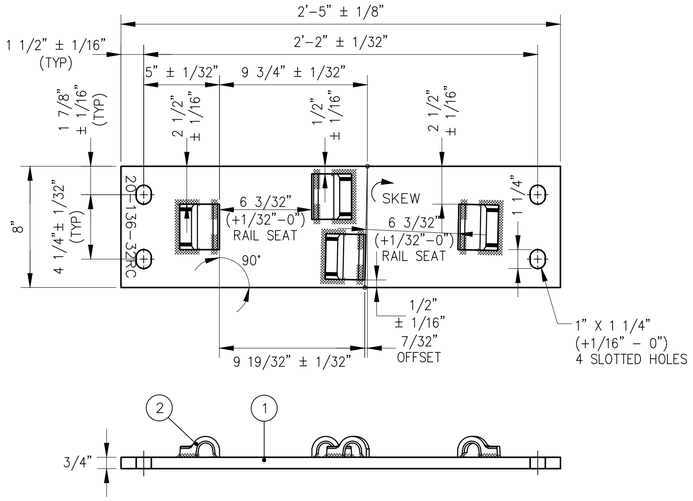
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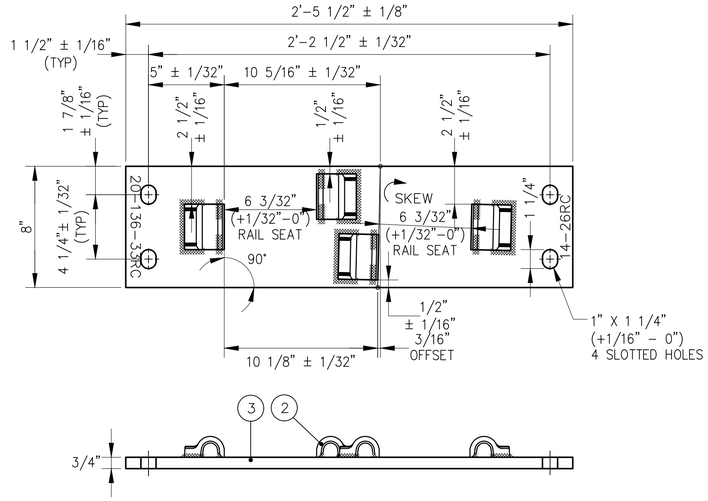
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
SWITCH PLATES FOR RH TURNOUT
20-28RLC/RRC THRU 20-29RLC/RRC
20-30RC THRU 20-31RC

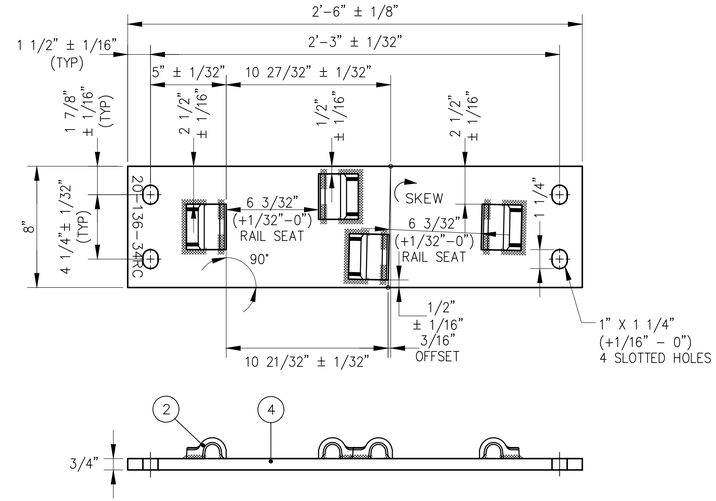
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REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD-2748



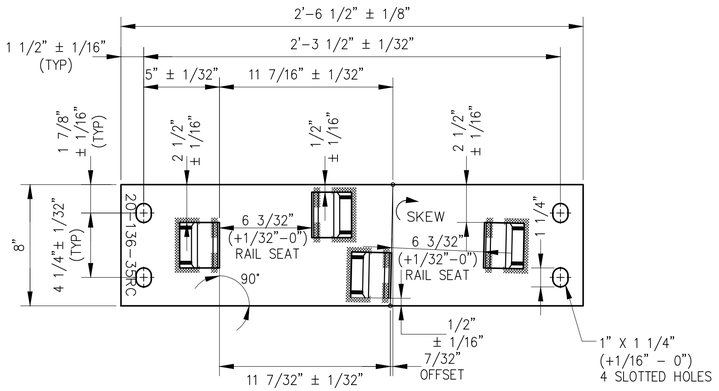
SWITCH PLATE P20-136-32RC



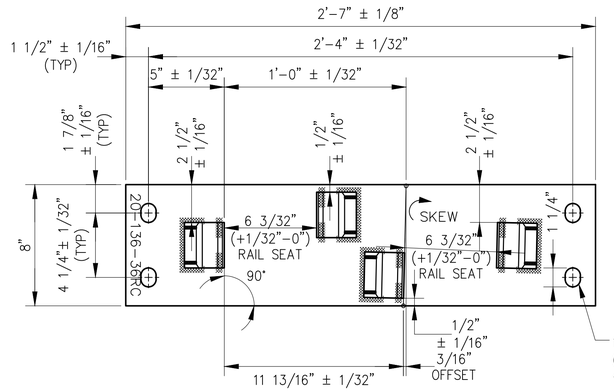
SWITCH PLATE P20-136-33RC



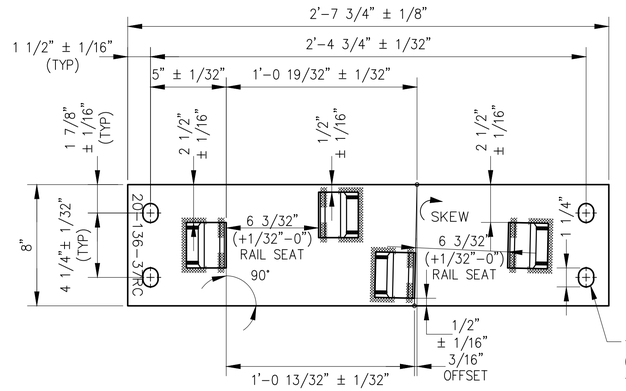
SWITCH PLATE P20-136-34RC



SWITCH PLATE P20-136-35RC



SWITCH PLATE P20-136-36RC



SWITCH PLATE P20-136-37RC

BILL OF MATERIALS		BILL OF MATERIALS	
ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-5"	5	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-6 1/2"
2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	6	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-7"
3	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-5 1/2"	7	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-7 3/4"
4	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-6"		

NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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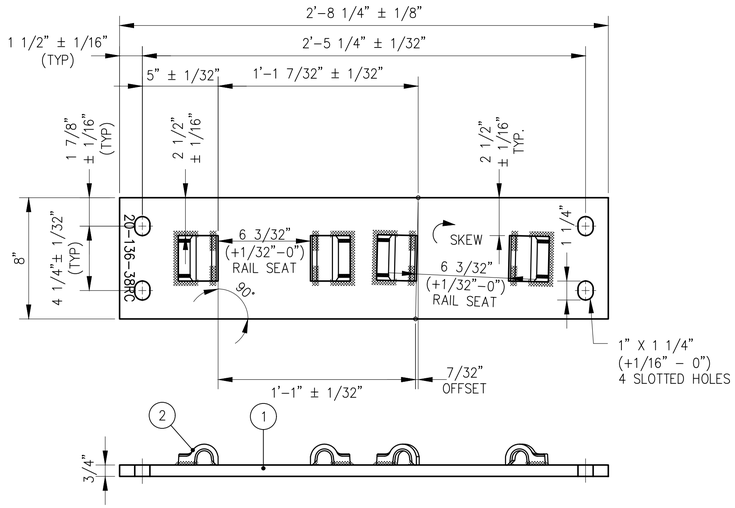
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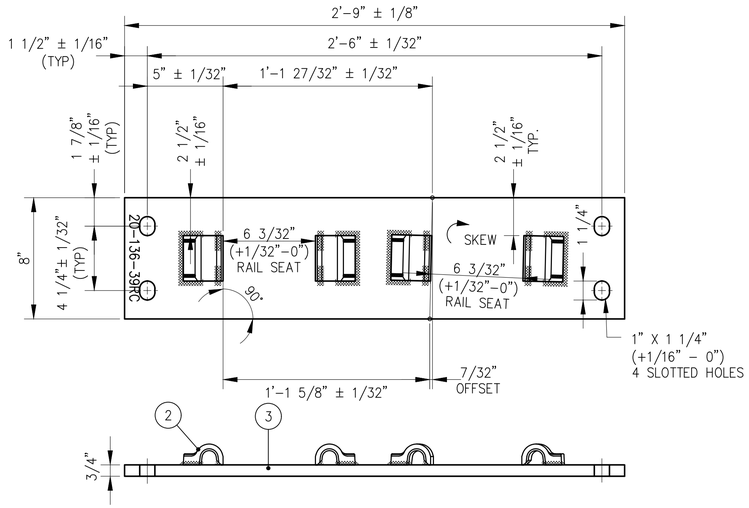
ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
SWITCH PLATES FOR RH TURNOUT
20-32RC THRU 20-37RC

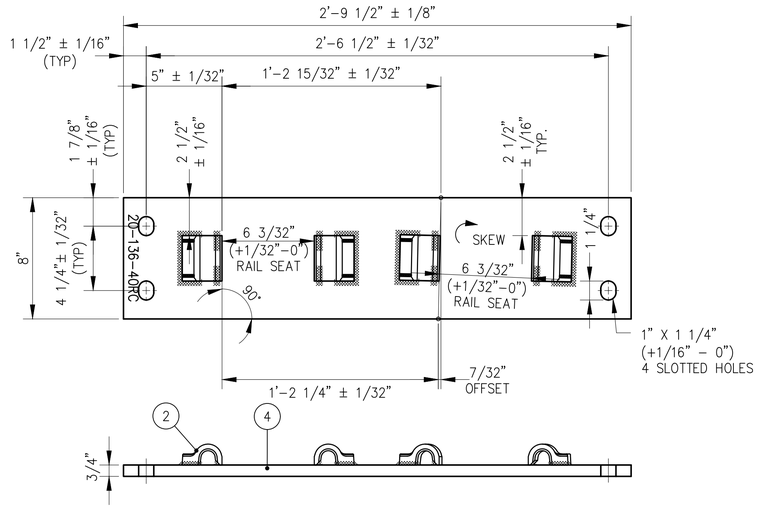
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SCALE:	NTS
STANDARD DRAWING NO.:	SD-2749



SWITCH PLATE P20-136-38RC



SWITCH PLATE P20-136-39RC



SWITCH PLATE P20-136-40RC

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

BILL OF MATERIALS	
ITEM	DESCRIPTION
3	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-9"
4	FLAT BAR, ASTM A36, 3/4" x 8" x 2'-9 1/2"

NOTES:

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

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 20 TURNOUT
SWITCH PLATES FOR RH TURNOUT
20-38RC THRU 20-40RC

CADD FILE NAME: SD-2750

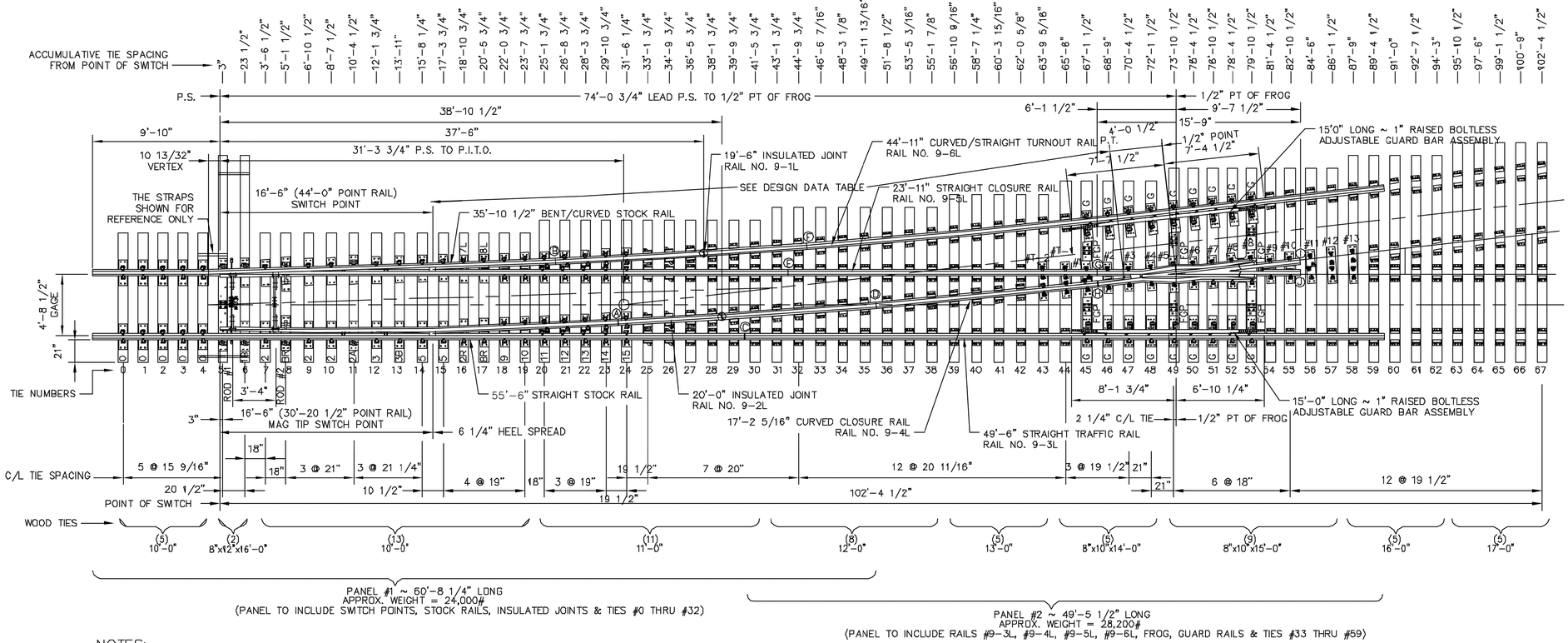
REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD-2750

THEORETICAL TURNOUT DESIGN DATA

		DECRIPTION	PROPERTIES / INFO.
FROG		NUMBER	9
		ANGLE	6°-21'-35"
		TOE LENGTH	6'-1 1/2"
		HEEL LENGTH	9'-7 1/2"
		TOTAL LENGTH	15'-9"
		TOE SPREAD B.C. / A.C.	7 21/32" / 7 5/8"
		HEEL SPREAD	13 11/32"
16'-6" SWITCH		LENGTH OF STRAIGHT SWITCH POINT	44'-0"
		LENGTH OF CURVED SWITCH POINT	30'-10 1/2"
		HEEL SPREAD	6 1/4"
		STRAIGHT STOCK RAIL	50'-6"
		BENT & CURVED STOCK RAIL	35'-10"
		SWITCH ANGLE	1°-43'-06"
		THROW @ #1 ROD	4 3/4"
	TURNOUT POINT	THICKNESS AT POINT	5/16"
		ANGLE AT POINT	1°-43'-06"
		RADIUS C/L(CLOSURE CURVE)	N/A
		VERTEX DISTANCE	10 13/32"
	MAINLINE POINT	THICKNESS AT POINT	5/16"
		ANGLE AT POINT	1°-43'-06"
		RADIUS G/L	N/A
		VERTEX DISTANCE	10 13/32"
		ACTUAL LEAD	74'-0 3/4"
TURNOUT CURVE		RADIUS OF CENTER LINE	660.249'
		CENTRAL ANGLE - CLOSURE CURVE	4°-38'-29"
		DEGREE OF CURVE	8°-41'-10"



SPECIFICATIONS

RAIL SECTION : 136RE DHH
FLANGEWAYS : 1 7/8" WIDE THRU-OUT
GAGE : 4'-8 1/2" BOTH RUNS THRU-OUT
JOINT DRILLING : 9" X 6 1/2" @ 3 3/32" ABR

GENERAL NOTES

ALL MEASUREMENTS GIVEN AT 5/8" BELOW TOP OF RAIL.
ALL RAIL TO BE 136RE DHH
ALL SWITCH RODS & GAGE PLATES TO BE INSULATED.
SWITCH POINTS ARE EXTENDED AND TURNOUT PLATES ARE DESIGNED TO ALLOW A LONGER FLEX LENGTH TO REDUCE THROW FORCES.
TURNOUT POINT TO HAVE MANGANESE TIP.
OPEN SWITCH POINTS TO BE BLOCKED WITH WOOD BLOCKS AND BANDED TO STOCK RAIL AT THE BLOCKED LOCATIONS. CLOSED SWITCH POINTS TO BE BANDED TO THE STOCK RAIL OPPOSITE THE OPEN SIDE BANDING.
FROGS TO BE 3 SHOT EXPLOSIVE HARDENED WITH GRADE 8 BOLTS, HARDENED FLAT WASHERS AND HEX SECURITY LOCKNUTS WITH A BOLT TORQUE OF 2,500 FT./LB8.
ALL BOLT HOLES TO BE CHAMFERED IN ACCORDANCE WITH TS-5005.
FROG GAGE PLATES TO BE WELDED AFTER ASSEMBLY, PRIOR TO SHIPPING.
GUARD RAILS TO BE 1" RAISED WITH 1:40 CANTED PLATES
ALL TIES TO BE PRE-BORED 11/16" DIA. X 6" DEEP FOR 15/16" SCREW SPIKES.
NO SCREW SPIKE SHOULD BE WITHIN 14" FROM END OF TIE.
TIE NUMBERS #60 TO #67 WILL BE PREPLATED AND BUNDLED FOR SHIPMENT.
PANELS TO BE BROKEN AS SHOWN.
PROGRESS RAIL SERVICES TO FURNISH ALL COMPONENTS SHOWN .

NOTES:

1. DRAWING FURNISHED FOR REFERENCE ONLY.
2. SUPPLIERS OF MATERIAL SHOWN ON STANDARD TRACK PLANS DRAWINGS SHALL FORMALLY SUBMIT THEIR SHOP DRAWINGS TO CALTRAIN FOR APPROVAL MATERIAL WITHOUT WRITTEN APPROVAL FROM CALTRAIN WILL NOT BE ACCEPTED.

#9 TURNOUT WITH "RBM" FROG AND INSULATED BONDED JOINTS

L.H. "PRS" PART NO. 9201936P01 (SHOWN)
R.H. "PRS" PART NO. 9201936P02 (OPPOSITE)

#9 TURNOUT BILL OF MATERIAL

QTY	DESCRIPTION	DRAWING NO.
1	#9 RAILBOUND MANGANESE FROG WITH PLATES (COMPLETE WITH CLIPS)	P-201779
1	L.H. STR. SAMSON SWITCH POINT 16'-6" ALIGN. (44'-0" RL.)	P-202062
1	R.H. CVD. MAG TIP SAMSON SWITCH POINT 16'-6" ALIGN. (30'-10 1/2" RL.)	P-202064
1	#1 INSUL. VERTICAL "SMJ" HEAD ROD W/ ADJ. BRACKET	P-202045
1	#2 INSUL. VERTICAL "SMJ" BACK ROD	P-202045
1	50'-6" R.H. STRAIGHT SAMSON UNDERCUT STOCK RAIL	P-202046
1	35'-10" L.H. BENT AND CURVED SAMSON UNDERCUT STOCK RAIL	P-202046
2	15'-0" 1" RAISED BOLTLESS ADJUSTABLE U-69 GUARD BAR W/PLATES	P-202040
1	19'-6" (45° CUT) INSULATED BONDED JOINT PLUG RAIL #9-1L (TURNOUT SIDE)	P-202067
1	20'-0" (45° CUT) INSULATED BONDED JOINT PLUG RAIL #9-2L (CLOSURE SIDE)	P-202067
1	MISC. RAIL SET ~ #9-3L 49'-6" STRT TRAFFIC RAIL	P-202047
	~ #9-4L 17'-2 5/16" CVD CLOSURE RAIL	P-202047
	~ #9-5L 23'-11" STRT CLOSURE RAIL	P-202047
	~ #9-6L 44'-11" CVD/STRT TURNOUT RAIL	P-202047

#9 TURNOUT BILL OF MATERIAL

QTY	DESCRIPTION	DRAWING NO.
10 EA.	SWITCH PLATES ~ "0 " COMPLETE WITH CLIPS	P-202043
2 EA.	~ BRACE PLATE " 1B " COMPLETE WITH CLIPS	P-202043
6 EA.	~ PLATE " 2 " COMPLETE WITH CLIPS	P-202043
2 EA.	~ BRACE PLATE " 1A " COMPLETE WITH CLIPS	P-202043
2 EA.	~ ROLLER BRACE PLATE " BR " COMPLETE WITH CLIPS	P-202043
2 EA.	~ PLATE " 3 " COMPLETE WITH CLIPS	P-202043
8 EA.	~ PLATE " 3B " COMPLETE WITH CLIPS	P-202043
4 EA.	~ PLATE " 5 " COMPLETE WITH CLIPS	P-202043
1 EA.	GAGE PLATES ~ INSULATED GAGE PLATE " 1 " COMPLETE WITH CLIPS	P-202044
2 EA.	TURNOUT PLATES ~ " 7 - 15" COMPLETE WITH CLIPS	P-202052
6 EA.	INSULATED FROG GAGE PLATES "FGP-2"	P-200867

#9 TURNOUT BILL OF MATERIAL

QTY	DESCRIPTION	DRAWING NO.
838	SCREW SPIKES	
236	PANDROL CLIP E-2055	
8	E-CLIP F/ JOINT BAR ~ (E-2063)	
8	JOINT CLIP ASSEMBLY	
8	BRACE ASSEMBLY	
114	STANDARD PANDROL ROLLED STEEL TIE PLATE	
8	MODIFIED PANDROL ROLLED STEEL TIE PLATE	

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

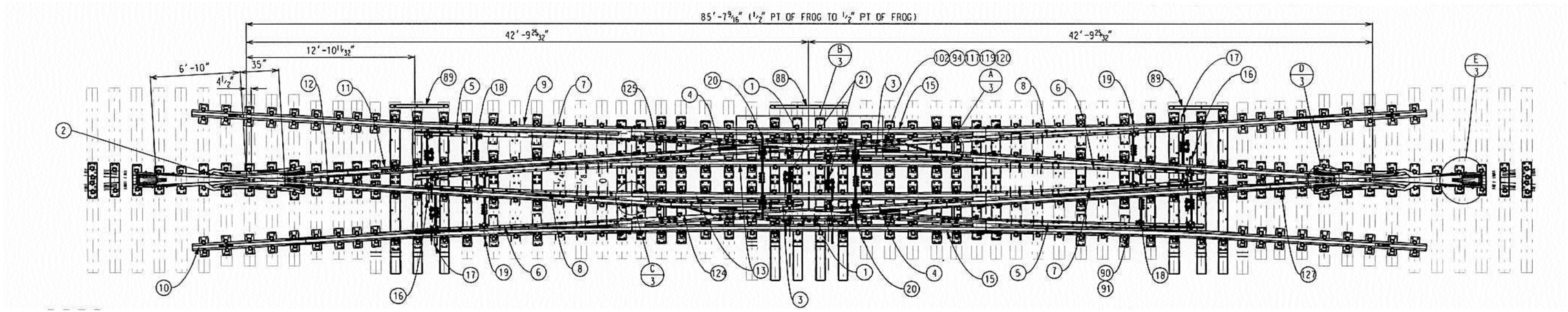
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ENGINEERING STANDARD DRAWINGS

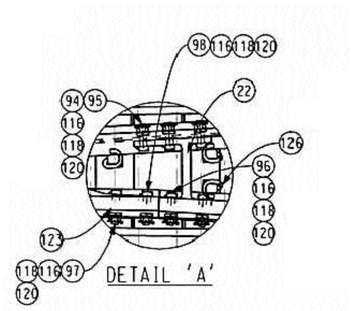
SPECIAL TRACKWORK
NO. 9 TURNOUT

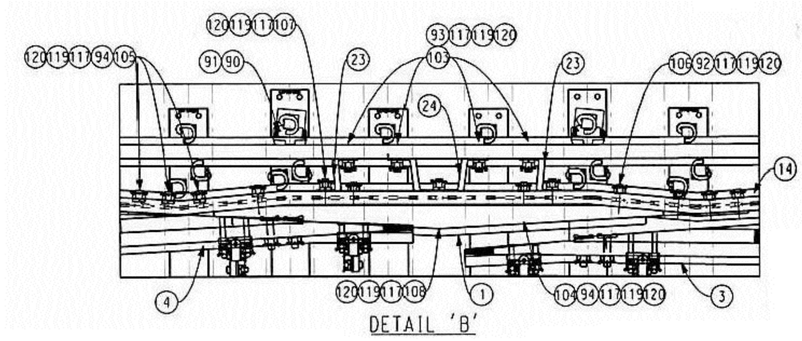
LH 136 RE WITH
RBM FROG ON WOOD TIES

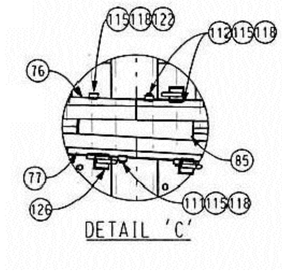
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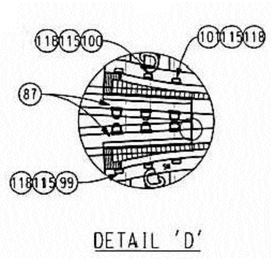


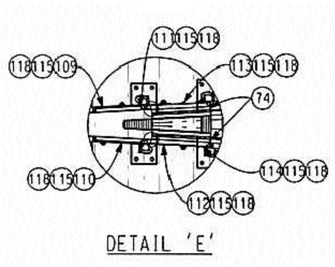
NO 9 DOUBLE SLIP SWITCH LAYOUT











NOTES:

1. ALL MEASUREMENTS GIVEN AT 5/8" BELOW TOP OF RAIL
2. SEE SD-2802 FOR BILL OF MATERIAL

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				FIFTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 9 DOUBLE SLIP
NO. 9 DOUBLE SLIP SWITCH
ON TIMBER TIES

CADD FILE NAME: SD-2801

REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD-2801

BILL OF MATERIAL

ITEM	PRODUCT No.	QTY	DESCRIPTION
1	C40-09900	2	FROG, CENTER KNUCKLE CASTING (K136RE-9) M/C'D, EDH'D
2	C40-09851	2	FROG, No.9-136RE SOLID MANGANESE, EDH (U99-09821)
3	D03-21280	2	CENTER POINT ASSEMBLY, LH 136RE
4	D03-21281	2	CENTER POINT ASSEMBLY, RH 136RE
5	D08-40250	2	SWITCH POINT ASSEMBLY, LH, STR, OUTSIDE END, 16'-6" SW
6	D08-40251	2	SWITCH POINT ASSEMBLY, RH, STR, OUTSIDE END, 16'-6" SW
7	D28-40250	2	SWITCH POINT ASSEMBLY, LH, CVD, INSIDE END, 16'-6" SW
8	D28-40251	2	SWITCH POINT ASSEMBLY, RH, CVD, INSIDE END, 16'-6" SW
9	L35-09000	2	STOCK RAIL, CVD, LH, OUTSIDE 136RE, SAMSON
10	B99-09001	2	INSULATED JOINT KIT ASSEMBLY, 136RE, 33'-6" LONG
11	B99-09002	2	INSULATED JOINT KIT ASSEMBLY, 136RE, 29'-5 13/16" LONG
12	L35-09003	2	STOCK RAIL, STR, RH, INSIDE 136RE, SAMSON
13	L41-09100	2	RAIL, SLIP, INSIDE x 26'-10 3/4" LONG
14	L41-09101	2	RAIL, EASER, OUTSIDE x 26'-11 1/2" LONG
15	L41-09102	2	SLIP RAIL, OUTSIDE, 136RE x 26'-10 11/16" LONG
16	B28-00620	2	ROD, SWITCH, VERTICAL, INSULATED No.1 c/w BASKET
17	B28-00621	2	ROD, SWITCH, VERTICAL, INSULATED No.2 c/w BASKET
18	B28-00622	2	ROD, SWITCH, VERTICAL, INSULATED No.3
19	B28-00623	2	ROD, SWITCH, VERTICAL, INSULATED No.4
20	B28-00624	2	ROD, SWITCH, VERTICAL, INSULATED No.5
21	B28-00625	2	ROD, SWITCH, VERTICAL, INSULATED No.6 c/w BASKET
22	B15-40410	4	STRAP, ANTI-CREEP
23	B15-40600	4	STRUT, SINGLE
24	B15-40601	2	STRUT, DOUBLE
25	G10-09534	8	BRACE SLIDE PLATE (BP2-136)
26	G10-09535	8	SWITCH PLATE (P4)
27	G10-94000	8	SWITCH PLATE (P4-136)
28	G10-94001	8	SWITCH PLATE (P5-136)
29	G35-94000	1	PLATE (DSS9-1L-136)
30	G35-94001	1	PLATE (DSS9-1R-136)
31	G35-94016	1	PLATE (DSS9-1LL-136)
32	G35-94017	1	PLATE (DSS9-1RR-136)
33	G35-94002	1	PLATE (DSS9-2L-136)
34	G35-94003	1	PLATE (DSS9-2R-136)
35	G35-94018	1	PLATE (DSS9-2LL-136)
36	G35-94019	1	PLATE (DSS9-2RR-136)
37	G35-94004	2	PLATE (DSS9-3L-136)
38	G35-94005	2	PLATE (DSS9-3R-136)
39	G35-94006	2	PLATE (DSS9-4L-136)
40	G35-94007	2	PLATE (DSS9-4R-136)
41	G35-94008	2	PLATE (DSS9-5L-136)
42	G35-94009	2	PLATE (DSS9-5R-136)

BILL OF MATERIAL

ITEM	PRODUCT No.	QTY	DESCRIPTION
43	G35-94010	2	PLATE (DSS9-6L-136)
44	G35-94011	2	PLATE (DSS9-6R-136)
45	G35-94012	2	PLATE (DSS9-7L-136)
46	G35-94013	2	PLATE (DSS9-7R-136
47	G35-94014	2	PLATE (DSS9-8L-136)
48	G35-94015	2	PLATE (DSS9-8R-136
49	G06-94000	1	GAUGE PLATE ASSEMBLY (DSS9-136-GP0L)
50	G06-94007	1	GAUGE PLATE ASSEMBLY (DSS9-136-GP0R)
51	G06-94001	2	GAUGE PLATE ASSEMBLY (DSS9-136-GP1)
52	G06-94002	2	GAUGE PLATE ASSEMBLY (DSS9-136-GP2)
53	G06-94003	2	GAUGE PLATE ASSEMBLY (DSS9-136-GP3)
54	G06-94004	2	GAUGE PLATE ASSEMBLY (DSS9-136-GP4)
55	G06-94005	1	GAUGE PLATE ASSEMBLY (DSS9-136-GP5L)
56	G06-94008	1	GAUGE PLATE ASSEMBLY (DSS9-136-GP5R)
57	G06-94006	1	GAUGE PLATE ASSEMBLY (DSS9-136-GP6L)
58	G06-94009	1	GAUGE PLATE ASSEMBLY (DSS9-136-GP6R)
59	G01-02901	36	PLATE, (SRP-136)
60	G20-09550	2	PLATE, FROG, 9-19F-136
61	G20-09564	4	PLATE, FROG, 9-20/21L-136
62	G20-09565	4	PLATE, FROG, 9-20/21R-136
63	G20-09553	2	PLATE, FROG, 9-22F-136
64	G20-09554	2	PLATE, FROG, 9-23F-136
65	G20-09555	2	PLATE, FROG, 9-24F-136
66	G20-09556	2	PLATE, FROG, 9-25F-136
67	G20-09557	2	PLATE, FROG, 9-26F-136
68	G20-09558	2	PLATE, FROG, 9-27F-136
69	G20-09559	2	PLATE, FROG, 9-28F-136
70	G20-09560	2	PLATE, FROG, 9-29F-136
71	G20-09561	2	PLATE, FROG, 9-30F-136
72	G20-09562	2	PLATE, FROG, 9-31F-136
73	G20-09563	2	PLATE, FROG, 9-32F-136
74	H10-90614	4	JOINT BAR RD/OV 6-HOLE 1 1/8" BOLT 132RE
75	H30-90226	6	JOINT BAR, LH, BENT AND M/C, 4-HOLE, 28" LONG, 1 1/8" DIA. BOLTS
76	H30-90225	6	JOINT BAR, RH, BENT AND M/C, 4-HOLE, 28" LONG, 1 1/8" DIA. BOLTS
77	H30-90228	4	JOINT BAR, LH, STRAIGHT, 4-HOLE, 28" LONG, 1 1/8" DIA. BOLTS
78	H30-90227	4	JOINT BAR, RH, STRAIGHT, 4-HOLE, 28" LONG, 1 1/8" DIA. BOLTS
79	J15-10352	33	TIE, TREATED HARDWOOD, 7" X 9" X 12'-0" LONG
80	J15-10353	8	TIE, TREATED HARDWOOD, 7" X 9" X 13'-0" LONG
81	J15-10354	12	TIE, TREATED HARDWOOD, 7" X 9" X 14'-0" LONG
82	J15-10380	8	TIE, WOOD, 8" X 10" X 13'-0", DAPPED
83	J15-10381	5	TIE, WOOD, 8" X 10" X 13'-6", DAPPED
84	J50-00010	1	TIE TAG SET

BILL OF MATERIAL

ITEM	PRODUCT No.	QTY	DESCRIPTION
85	L70-01300	2	BLOCK, RH, SWITCH HEEL, 136RE, 4-HOLE x 24" LONG
86	L70-01301	2	BLOCK, LH, SWITCH HEEL, 136RE, 4-HOLE x 24" LONG
87	L99-00070	4	PLATE, FISH 7/8" THICK, 136RE, 3-HOLE
88	L99-00675	1	STRAP, TIE SPACING, No 1, 3/4" x 2 1/2" X 5'-10 1/2" LONG
89	L99-00676	2	STRAP, TIE SPACING, No 2, 3/4" x 2 1/2" X 4'-4 1/2" LONG
90	U10-00460	80	BOLTLESS BRACE, 136RE 'SUREFIT'
91	U24-01010	80	SERRATED WASHER FOR BOLTLESS BRACE
92	U24-00087	4	WASHER, BEVELLED, WEB FOR 1 3/8" BOLTS
93	U24-00900	8	WASHER, (UHW132)
94	U24-00920	40	WASHER, (UTW132)
95	V10-73016	12	BOLT, 1 1/8" DIA. x 4 1/2" LONG, SQ. HD. Gr 5, DRILLED 1/4" DIA. @ 3 29/32"
96	V10-73029	8	BOLT, 1 1/8" DIA. x 6" LONG, SQ. HD. Gr 5, DRILLED 1/4" DIA. @ 5 1/4"
97	V10-73022	4	BOLT, 1 1/8" DIA. x 6" LONG, SQ. HD. Gr 5, DRILLED 1/4" DIA. @ 5 23/32"
98	V10-73028	4	BOLT, 1 1/8" DIA. x 6" LONG, SQ. HD. Gr 5, DRILLED 1/4" DIA. @ 5 13/32"
99	V10-71035	4	BOLT, 1 1/8" DIA. x 9 1/2" LONG, SQ. HD. Gr 5
100	V10-71030	4	BOLT, 1 1/8" DIA. x 9" LONG, SQ. HD. Gr 5
101	V10-71020	4	BOLT, 1 1/8" DIA. x 8" LONG, SQ. HD. Gr 5
102	V10-93022	12	BOLT, 1 3/8" DIA., SQ. Gr8 x 5" LONG, DRILLED 1/4" DIA. @ 4 3/16"
103	V10-93029	8	BOLT, 1 3/8" DIA. SQ HD Gr8 x 4 1/2" LONG, DRILLED 1/4" DIA. @ 4 3/16"
104	V10-93030	4	BOLT, 1 3/8" DIA. SQ HD Gr8 x 7" LONG, DRILLED 1/4" DIA. @ 6 1/2"
105	V10-93031	12	BOLT, 1 3/8" DIA. SQ HD Gr8 x 5" LONG, DRILLED 1/4" DIA. @ 4 1/4"
106	V10-93032	4	BOLT, 1 3/8" DIA. SQ HD Gr8 x 5 1/2" LONG, DRILLED 1/4" DIA. @ 5"
107	V10-93047	4	BOLT, 1 3/8" DIA. SQ HD Gr8 x 7 1/2" LONG, DRILLED 1/4" DIA. @ 7"
108	V10-93049	2	BOLT, 1 3/8" DIA. SQ HD Gr8 x 9 1/2" LONG, DRILLED 1/4" DIA. @ 9 1/16"
109	V20-75130	2	TRACKBOLT, 1 1/8" DIA. OVAL x 11" LONG, A183-Gr2
110	V20-75145	2	TRACKBOLT, 1 1/8" DIA. OVAL x 12" LONG, A183-Gr2
111	V20-75150	10	TRACKBOLT, 1 1/8" DIA. OVAL x 12 1/2" LONG, A183-Gr2
112	V20-75160	18	TRACKBOLT, 1 1/8" DIA. OVAL x 13" LONG, A183-Gr2
113	V20-75170	2	TRACKBOLT, 1 1/8" DIA. OVAL x 14" LONG, A183-Gr2
114	V20-75175	2	TRACKBOLT, 1 1/8" DIA. OVAL x 14 1/2" LONG, A183-Gr2
115	V30-70111	36	NUT, HVY SQ. 1 1/8" DIA.
116	V30-70038	56	NUT, HVY HEX, SLOTTED, 1 1/8" DIA. Gr.8
117	V30-90038	46	NUT, HVY HEX, SLOTTED, 1 3/8" DIA. Gr.8
118	V35-70218	92	WASHER, SPRING, 1 1/8" DIA.
119	V35-90222	46	WASHER, SPRING, 1 3/8" DIA.
120	V45-00030	102	PIN, COTTER, 1/4" X 2 1/2" LONG
121	V50-60013	652	SCREW SPIKE, 15/16" DIA. X 6 1/2" LONG
122	V99-70127	8	SHOULDER BOLT, 1 1/8" DIA. X 14 3/8"
123	X05-00035	4	THIMBLE, SEAMLESS (HT) 1 1/4" ID X 1 5/8" OD X 2 5/16" LONG
124	X25-00010	302	CLIP, PANDROL (E2055), RIGHT HAND
125	X25-00011	8	CLIP, PANDROL (E2056), LEFT HAND
126	X25-00021	24	C-CLIP c/w TYPE 'C' C-PLATE

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PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 9 DOUBLE SLIP

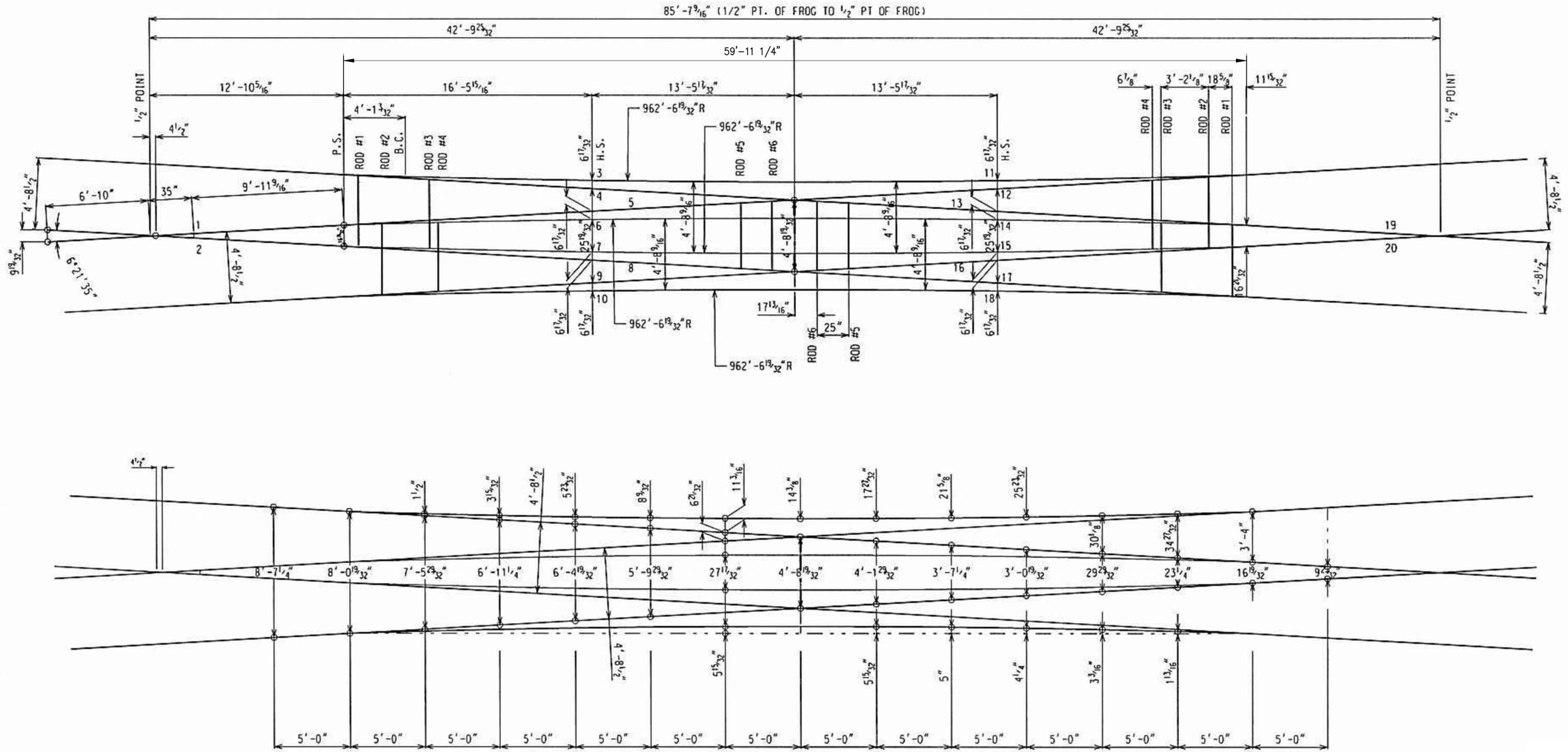
BILL OF MATERIAL

CADD FILE NAME: SD-2802

REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD-2802



SPREADS AND OFFSETS

NOTES:

1. DOUBLE SLIP SWITCH: SINGLE RAIL STYLE CROSSING WITH SLIP RAILS ON BOTH SIDES
2. CROSSING ANGLE: 6°20'25" (#9 FROG)
3. RAIL TYPE: 136 RE HEAD HARDENED
4. GAUGE: 4'-8 1/2" WIDE ON TANGENT RUNS, 4'-8 9/16" ON CURVES
5. FROG PLATING: FULLY PANDROLIZED
6. ALL RAISED ROLLING MARKS OR RAIL BRANDING IN THE AREA OF THE JOINT HOLES SHALL BE CONE-GROUND TO ELIMINATE ALL BURRS AND STRESS RISERS
7. BEVEL JOINT ARM ENDS PER AREMA PLAN 1005
8. EACH CROSSING FROG SHALL BE TAGGED WITH A METAL TAG STAMPED WITH THE MANUFACTURER'S INFORMATION
9. MATCH MARKING DETAIL:
   a. ALL RAIL AND INSERTS ARE TO BE MATCH MARKED ON TOP OF RAIL FOR RE-ASSEMBLY
   b. MATCH MARKING CHARACTERS ARE TO BE PAINTED IN WHITE ON A BLACK BACKGROUND
   c. DO NOT STAMP RAIS OR INSERTS
   d. DO NOT PAINT MARKS UNTIL AFTER INSPECTION
10. SEE SD-2801 TO 2802 FOR DETAILED LAYOUT
11. ALL DIMENSIONS SHOWN ARE AT GAUGE ELEVATION, 5/8" BELOW TOP OF HEAD

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SPECIAL TRACKWORK
NO. 9 DOUBLE SLIP

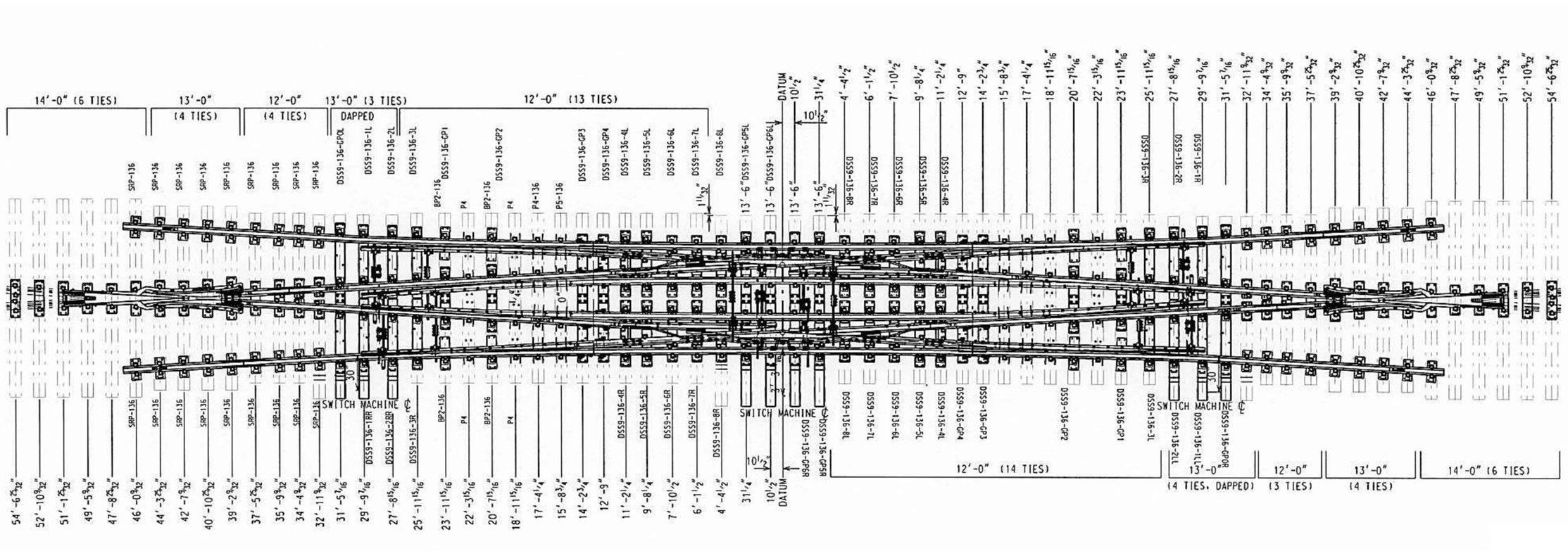
SPREADS AND OFFSETS

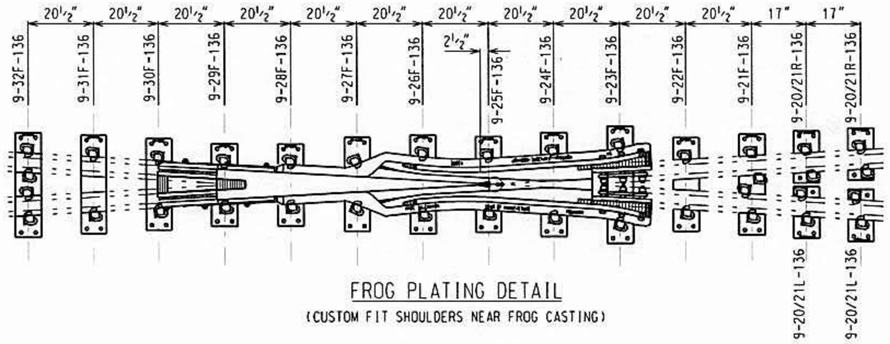
CADD FILE NAME: SD-2803

REV: | EDITION: FIFTH

SCALE: NTS

STANDARD DRAWING NO.: SD-2803





FROG PLATING DETAIL
(CUSTOM FIT SHOULDERS NEAR FROG CASTING)

NOTE:

ANY RAISED ROLLING MARKS O THE RAIL WEBS WITHIN JOINT BAR AREAS SHALL BE GROUND FLUSH WITH WEB FOR A DISTANCE OF 19" FROM END OF RAIL

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SPECIAL TRACKWORK
NO. 9 DOUBLE SLIP

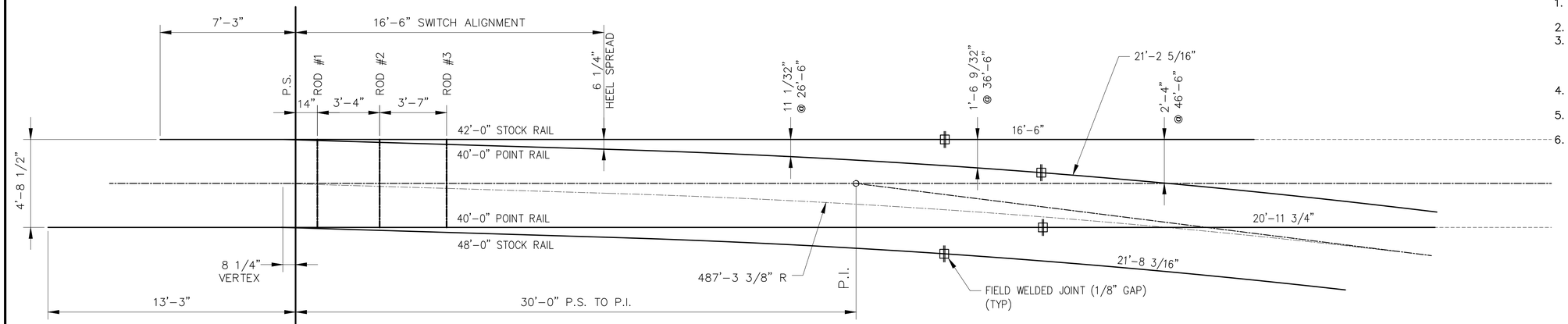
TIES AND PLATES

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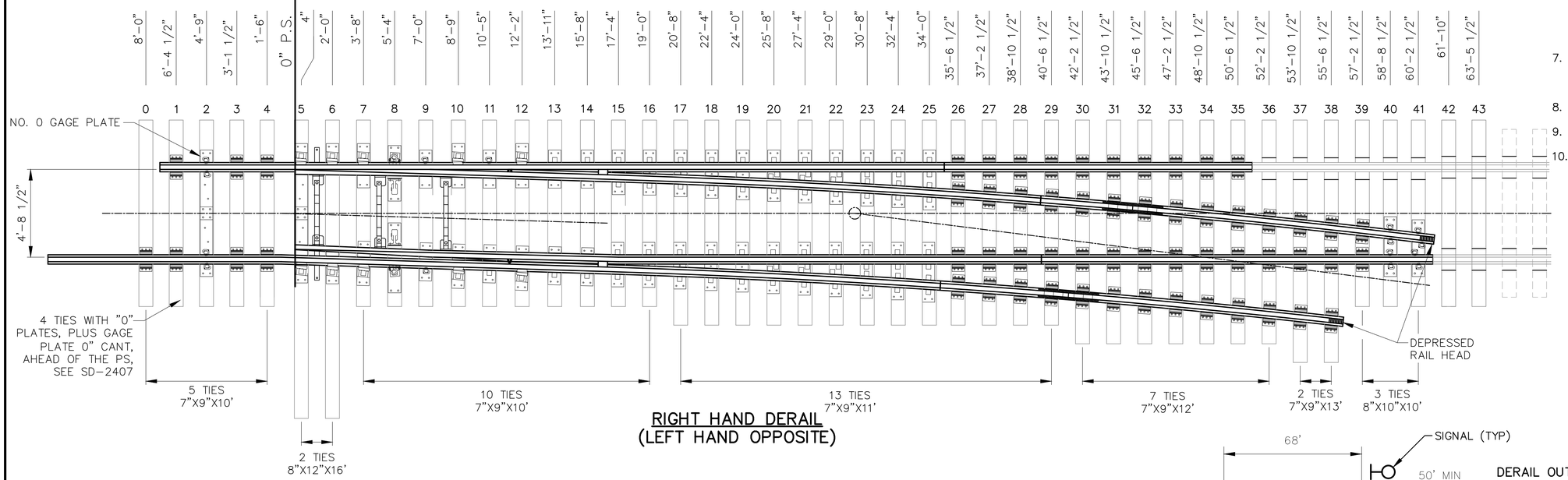
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SCALE: NTS

STANDARD DRAWING NO.: SD-2804

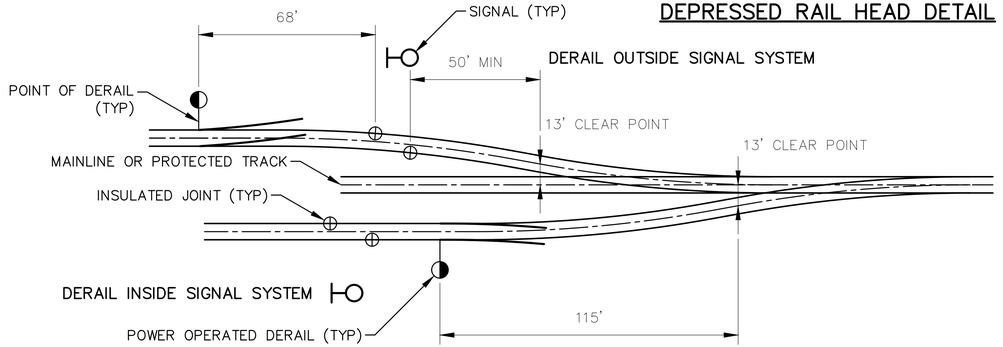


DERAIL GEOMETRY



RIGHT HAND DERAIL
(LEFT HAND OPPOSITE)

DEPRESSED RAIL HEAD DETAIL



PERMANENT DERAIL INSTALLATION LOCATIONS

DERAIL SPECIFICATIONS	
ANGLE	7°-09'-10"
THROW OF SWITCH AT # 1 ROD	4 3/4"
LENGTH OF SWITCH POINT	16'-6"
ENTRY ANGLE	1°-44'-11"
VERTEX DISTANCE	8 1/4" @ CENTERLINE
CENTERLINE RADIUS	487'-3 3/8"
DEGREE OF CURVE	5°-53'-22"
P.S. TO CENTER OF LAST LONG TIE	63'-5 1/2"

BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION
1	1	16'-6"/40'-0" SWITCH (42'-0" STRAIGHT STOCK RAIL & 48'-0" CURVED STOCK RAIL)
2	1	DRILLED RAIL, 136RE, 16'-6" LONG
3	1	DRILLED RAIL, 136RE, 20'-11 3/4" LONG
4	1	DRILLED RAIL, 136RE, 21'-2 5/16" LONG WITH DEPRESSED RAIL HEAD
5	1	DRILLED RAIL, 136RE, 21'-8 3/16" LONG WITH DEPRESSED RAIL HEAD

* BILL OF MATERIAL SHOWN DOES NOT INCLUDE TIES, PLATES, RODS, AND OTM. SEE NO. 8 T.O. FOR OTM SD-2401

NOTES:

1. POINTS AND STOCK RAILS ARE UNDERCUT. SEE DRAWING SD-2404 FOR UNDERCUT DETAILS.
2. LAYOUT BASED ON A NO. 8 TURNOUT.
3. RAIL LENGTHS ALLOW 1/8" GAP BETWEEN RAIL JOINTS FOR FIELD ASSEMBLY. ALL JOINTS SHALL BE WELDED. NO BOLTED JOINTS ARE ALLOWED WITHIN THE DERAIL LIMITS.
4. DERAIL SHOWN IS FOR TIMBER TIES, FASTENED WITH PANDROL E CLIPS.
5. FOR CONNECTING ROD AND SWITCH STAND DETAILS SEE SD-2315 AND SD-2316.
6. EXCEPT AT INTERLOCKINGS, DOUBLE POINT SPLIT SWITCH DERAILS ARE TO BE USED:
   a. ON ALL TRACKS LEADING TO A CONTROLLED TRACK, (MAIN, SIDING OR SIGNAL CONTROLLED TRACK, REGARDLESS OF GRADE).
   b. AT ALL LOCATIONS WHERE LOCOMOTIVES OR EMU'S ARE STORED
   c. ON INSIDE OF CURVES OVER 5 DEGREES
   d. WHERE UNCONTROLLED MOVEMENTS CAN REACH A SPEED IN EXCESS OF FOUR (4) MPH
   e. LOCATIONS WHERE TRACKS ARE HOLDING 15 OR MORE CARS
   f. AT OTHER LOCATIONS WHERE SPECIAL CONDITIONS REQUIRE DERAIL PROTECTION
   g. HAYES MODEL (SLIDING OR HINGED DERAILS) MAY BE USED AT LOCATIONS NOT LISTED ABOVE, SUCH AS FOR NON-MAINLINE, YARD AND INDUSTRY TRACK AND FOR PROTECTION AT LOCOMOTIVE AND REPAIR FACILITIES WHEN ALSO PROTECTED BY BLUE FLAG RULES AND PROCEDURES, AND AT OTHER LOCATIONS WITH THE APPROVAL OF THE DIRECTOR OF ENGINEERING
7. THIS DRAWING IS A REFERENCE FOR DESIGN AND LAYOUT. SHOP DRAWINGS FOR ALL COMPONENTS SHALL BE SUBMITTED FOR APPROVAL BY CALTRAIN ENGINEERING PRIOR TO FABRICATION.
8. DOUBLE POINT DERAIL SHALL BE PLACED ENTIRELY ON TANGENT TRACK.
9. SEE DRAWINGS SD-9108 AND SD-9109 FOR LOCATIONS OF SIGNS
10. ADD DERAIL SHALL BE INSTALLED PARALLEL TO MAIN TRACK, ALL DERAILS INSTALLED ON TRACKS LEADING TO A MAIN TRACK OR CONTROLLED SIDING SHALL BE POWER OPERATED .

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ENGINEERING STANDARD DRAWINGS

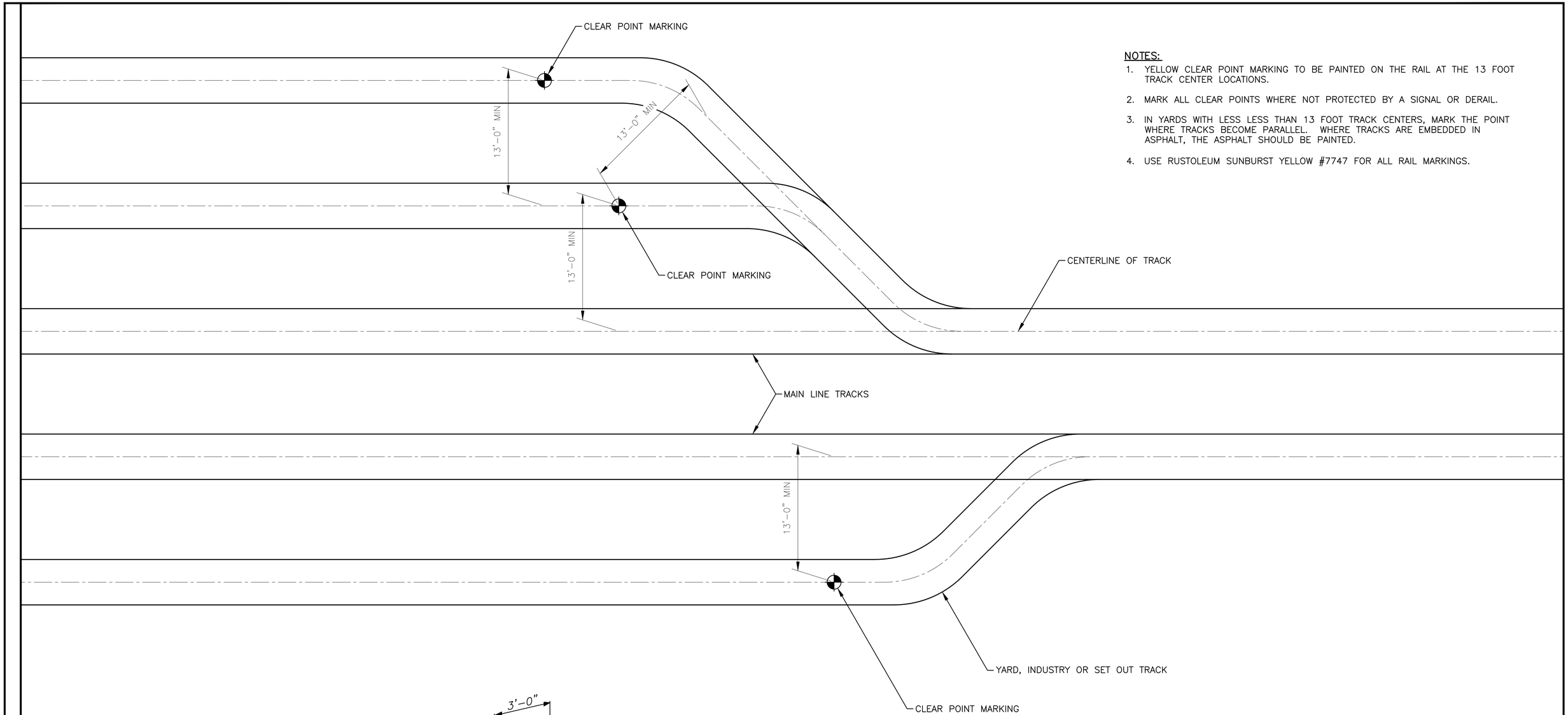
SPECIAL TRACKWORK
TURNOUTS AND DERAILS
16'-6" 136 RE DOUBLE POINT
SPLIT SWITCH DERAIL

CADD FILE NAME: SD-2901

REV: | EDITION: FIFTH

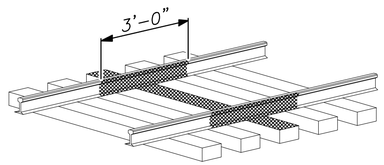
SCALE: NTS

STANDARD DRAWING NO.: SD-2901



NOTES:

1. YELLOW CLEAR POINT MARKING TO BE PAINTED ON THE RAIL AT THE 13 FOOT TRACK CENTER LOCATIONS.
2. MARK ALL CLEAR POINTS WHERE NOT PROTECTED BY A SIGNAL OR DERAIL.
3. IN YARDS WITH LESS LESS THAN 13 FOOT TRACK CENTERS, MARK THE POINT WHERE TRACKS BECOME PARALLEL. WHERE TRACKS ARE EMBEDDED IN ASPHALT, THE ASPHALT SHOULD BE PAINTED.
4. USE RUSTOLEUM SUNBURST YELLOW #7747 FOR ALL RAIL MARKINGS.



NOTE:

AT EACH CLEAR POINT, PAINT A 3 FOOT LONG SECTION OF BOTH SIDES OF THE WEB, HEAD AND BASE OF BOTH RAILS YELLOW. ALSO, PAINT THE TOP OF THE CENTER TIE YELLOW AS SHOWN.

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ENGINEERING STANDARD DRAWINGS

SPECIAL TRACKWORK
TURNOUTS AND DERAILS

CLEAR POINT MARKING

CADD FILE NAME:	SD-2911
REV:	EDITION: FIFTH
SCALE:	NTS
STANDARD DRAWING NO.:	SD-2911