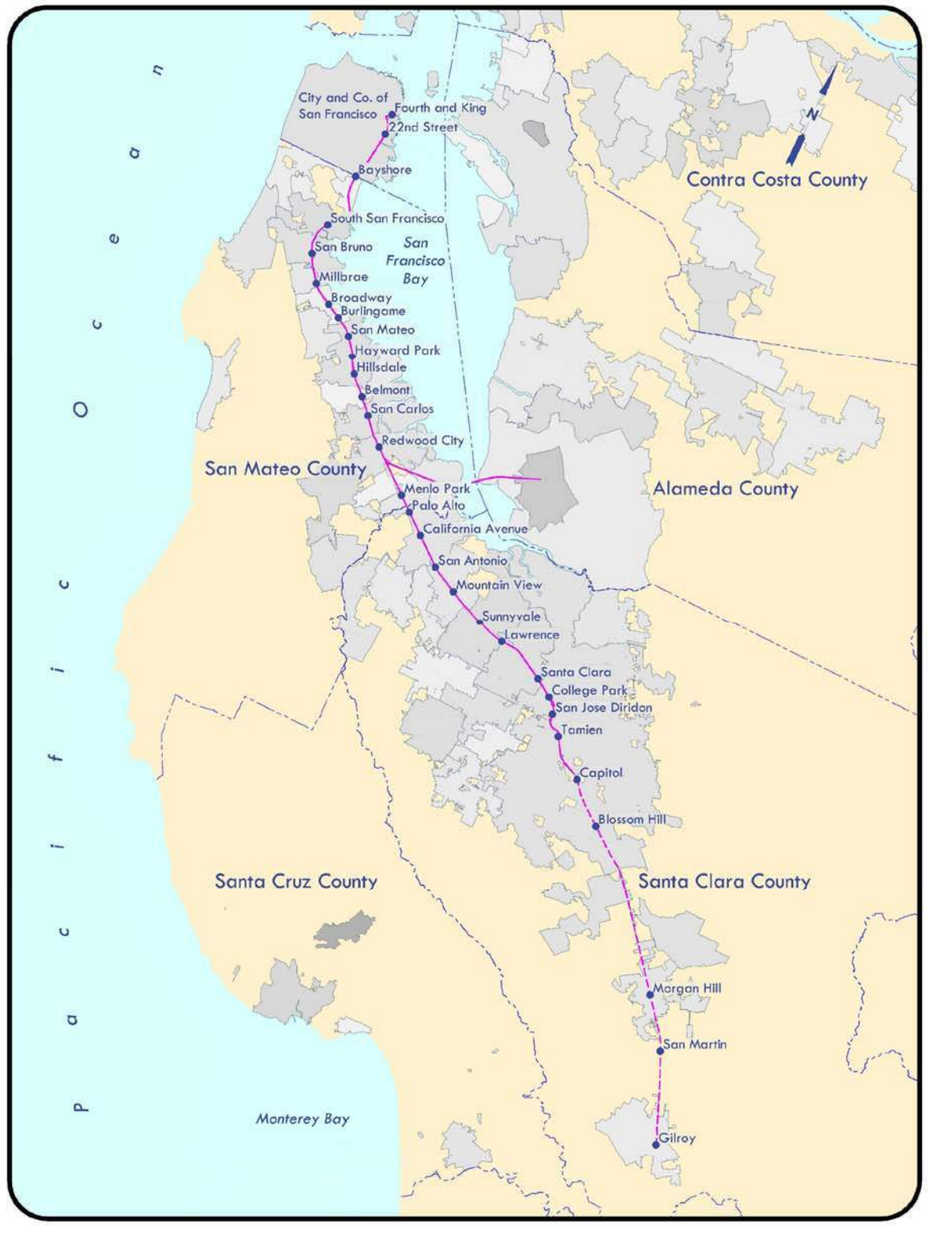
CALTRAIN CORRIDOR



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STANDARD DRAWINGS

PENINSULA CORRIDOR JOINT POWERS BOARD

FOURTH EDITION
JANUARY 1, 2024

INDEX OF DRAWINGS

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PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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CADD FILE NAME: SD-1001

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SPECIAL TRACKWORK (CONTINUED)

NO. 10 TURNOUT (CONTINUED)

DWG NO	DESCRIPTION	RVN	DATE
SD-2521	HOLLOW STEEL TIES FOR RH TURNOUT SWITCH MACHINE ON TURNOUT SIDE		01012024
SD-2522	HOLLOW STEEL TIES FOR LH TURNOUT SWITCH MACHINE ON TURNOUT SIDE		01012024
SD-2523	WSM FROG RH AND FROG PACK		01012024
SD-2524	WSM FROG LH AND FROG PACK		01012024
SD-2525	WSM FROG RH FROG BASE PLATES 10-34RC AND 10-37RC		01012024
SD-2526	WSM FROG LH FROG BASE PLATES 10-34LC AND 10-37LC		01012024
SD-2527	WSM FROG RH FROG BASE PLATE 10-39RC		01012024
SD-2528	WSM FROG LH FROG BASE PLATE 10-39LC		01012024
SD-2529	WSM FROG RH FROG BASE PLATE 10-43RC		01012024
SD-2530	WSM FROG LH FROG BASE PLATE 10-43LC		01012024
SD-2531	WSM FROG RH FROG BASE PLATES 10-47RC AND 10-48RC		01012024
SD-2532	WSM FROG LH FROG BASE PLATES 10-47LC AND 10-48LC		01012024
SD-2533	GUARD RAIL ASSEMBLY LH SKEWED WITH PLATES 15'-0" LONG		01012024
SD-2534	GUARD RAIL ASSEMBLY RH SKEWED WITH PLATES 15'-0" LONG		01012024
SD-2535	LH SWITCH STAND ADAPTER PLATES FOR 36E SWITCH STAND WITH ELECTRIC LOCK		01012024
SD-2536	RH SWITCH STAND ADAPTER PLATES FOR 36E SWITCH STAND WITH ELECTRIC LOCK		01012024
SD-2537	HOLLOW STEEL TIE ROD ASSEMBLY SWITCH MACHINE ON LH SIDE		01012024
SD-2538	HOLLOW STEEL TIE ROD ASSEMBLY SWITCH MACHINE ON RH SIDE		01012024
SD-2539	HOLLOW STEEL TIES SWITCH RODS 10-1, 10-2 AND 10-3		01012024
SD-2540	SWITCH PLATES FOR LH TURNOUT 10-12LLC/LRC THRU 10-14LLC/LRC		01012024
SD-2541	SWITCH PLATES FOR LH TURNOUT 10-15LLC/LRC THRU 10-17LLC/LRC		01012024
SD-2542	SWITCH PLATES FOR LH TURNOUT 10-18LLC/LRC THRU 10-19LLC/LRC		01012024
SD-2543	SWITCH PLATES FOR RH TURNOUT 10-12RLC/RRC THRU 10-14RLC/RRC		01012024
SD-2544	SWITCH PLATES FOR RH TURNOUT 10-15RLC/RRC THRU 10-17RLC/RRC		01012024
SD-2545	SWITCH PLATES FOR RH TURNOUT 10-18RLC/RRC THRU 10-19RLC/RRC		01012024

NO. 14 TURNOUT

DWG NO	DESCRIPTION	RVN	DATE
SD-2601	NO. 14 LH TURNOUT WITH WSM FROG AND HST SWITCH MACHINE ON MAINLINE SIDE		01012024
SD-2602	NO. 14 RH TURNOUT WITH WSM FROG AND HST SWITCH MACHINE ON MAINLINE SIDE		01012024
SD-2603	NO. 14 LH TURNOUT WITH WSM FROG AND HST SWITCH MACHINE ON TURNOUT SIDE		01012024
SD-2604	NO. 14 RH TURNOUT WITH WSM FROG AND HST SWITCH MACHINE ON TURNOUT SIDE		01012024
SD-2605	LH SWITCH PACK WITH HOLLOW STEEL TIES SWITCH MACHINE ON MAINLINE SIDE		01012024
SD-2606	RH SWITCH PACK WITH HOLLOW STEEL TIES SWITCH MACHINE ON MAINLINE SIDE		01012024
SD-2607	LH SWITCH PACK WITH HOLLOW STEEL TIES SWITCH MACHINE ON TURNOUT SIDE		01012024
SD-2608	RH SWITCH PACK WITH HOLLOW STEEL TIES SWITCH MACHINE ON TURNOUT SIDE		01012024
SD-2609	SWITCH POINT ASSEMBLY FOR LH TURNOUT LH STRAIGHT 29'-0" SAMSON		01012024
SD-2610	SWITCH POINT ASSEMBLY FOR LH TURNOUT RH CURVED 29'-0" SAMSON		01012024
SD-2611	SWITCH POINT ASSEMBLY FOR RH TURNOUT LH CURVED 29'-0" SAMSON		01012024
SD-2612	SWITCH POINT ASSEMBLY FOR RH TURNOUT RH STRAIGHT 29'-0" SAMSON		01012024
SD-2613	SAMSON STOCK RAIL FOR LH TURNOUT LH CURVED 51'-8" LONG		01012024
SD-2614	SAMSON STOCK RAIL FOR LH TURNOUT RH STRAIGHT 57'-8" LONG		01012024
SD-2615	SAMSON STOCK RAIL FOR RH TURNOUT LH STRAIGHT 57'-8" LONG		01012024
SD-2616	SAMSON STOCK RAIL FOR RH TURNOUT RH CURVED 51'-8" LONG		01012024
SD-2617	HOLLOW STEEL TIE AND CONCRETE TIE LAYOUT FOR RH TURNOUT		01012024
SD-2618	HOLLOW STEEL TIE AND CONCRETE TIE LAYOUT FOR LH TURNOUT		01012024
SD-2619	HOLLOW STEEL TIES FOR RH TURNOUT SWITCH MACHINE ON MAINLINE SIDE		01012024
SD-2620	HOLLOW STEEL TIES FOR LH TURNOUT SWITCH MACHINE ON MAINLINE SIDE		01012024
SD-2621	HOLLOW STEEL TIES FOR RH TURNOUT SWITCH MACHINE ON TURNOUT SIDE		01012024
SD-2622	HOLLOW STEEL TIES FOR LH TURNOUT SWITCH MACHINE ON TURNOUT SIDE		01012024
SD-2623	WSM FROG LH AND FROG PACK		01012024
SD-2624	WSM FROG RH AND FROG PACK		01012024
SD-2625	WSM FROG LH FROG BASE PLATES 14-50LC AND 14-51LC		01012024
SD-2626	WSM FROG RH FROG BASE PLATES 14-50RC AND 14-51RC		01012024
SD-2627	WSM FROG LH FROG BASE PLATE 14-52LC		01012024
SD-2628	WSM FROG RH FROG BASE PLATE 14-52RC		01012024
SD-2629	WSM FROG LH FROG BASE PLATE 14-55LC		01012024
SD-2630	WSM FROG RH FROG BASE PLATE 14-55RC		01012024
SD-2631	WSM FROG LH FROG BASE PLATES 14-62LC AND 14-64LC		01012024
SD-2632	WSM FROG RH FROG BASE PLATES 14-62RC AND 14-64RC		01012024
SD-2633	WSM FROG LH FROG BASE PLATES 14-65LC AND 14-66LC		01012024
SD-2634	WSM FROG RH FROG BASE PLATES 14-65RC AND 14-66RC		01012024
SD-2635	GUARD RAIL ASSEMBLY LH SKEWED WITH PLATES 26'-0" LONG		01012024
SD-2636	GUARD RAIL ASSEMBLY RH SKEWED WITH PLATES 26'-0" LONG		01012024
SD-2637	HOLLOW STEEL TIE ROD ASSEMBLY SWITCH MACHINE ON LH SIDE		01012024
SD-2638	HOLLOW STEEL TIE ROD ASSEMBLY SWITCH MACHINE ON RH SIDE		01012024
SD-2639	HOLLOW STEEL TIE SWITCH RODS 14-1, 14-2, 14-3 AND 14-4		01012024
SD-2640	SWITCH PLATES FOR LH TURNOUT 14-16LLC/LRC THRU 14-18LLC/LRC		01012024
SD-2641	SWITCH PLATES FOR LH TURNOUT 14-19LLC/LRC, 14-20LC THRU 14-23LC		01012024
SD-2642	SWITCH PLATES FOR LH TURNOUT 14-24LC THRU 14-26LC		01012024
SD-2643	SWITCH PLATES FOR RH TURNOUT 14-16RLC/RRC THRU 14-18RLC/RRC		01012024
SD-2644	SWITCH PLATES FOR RH TURNOUT 14-19RLC/RRC, 14-20RC THRU 14-23RC		01012024
SD-2645	SWITCH PLATES FOR RH TURNOUT 14-24RC THRU 14-26RC		01012024

NO. 20 TURNOUT

DWG NO	DESCRIPTION	RVN	DATE
SD-2701	NO. 20 LH TURNOUT WITH WSM FROG AND HST SWITCH MACHINE ON MAINLINE SIDE		01012024
SD-2702	NO. 20 RH TURNOUT WITH WSM FROG AND HST SWITCH MACHINE ON MAINLINE SIDE		01012024
SD-2703	NO. 20 LH TURNOUT WITH WSM FROG AND HST SWITCH MACHINE ON TURNOUT SIDE		01012024
SD-2704	NO. 20 RH TURNOUT WITH WSM FROG AND HST SWITCH MACHINE ON TURNOUT SIDE		01012024
SD-2705	LH SWITCH PACK WITH HST SWITCH MACHINE ON MAINLINE SIDE		01012024
SD-2706	RH SWITCH PACK WITH HST SWITCH MACHINE ON MAINLINE SIDE		01012024
SD-2707	LH SWITCH PACK WITH HST SWITCH MACHINE ON TURNOUT SIDE		01012024
SD-2708	RH SWITCH PACK WITH HST SWITCH MACHINE ON TURNOUT SIDE		01012024
SD-2709	LH SWITCH POINT ASSEMBLY 67'-0" LONG WITH UNIFORM RISER		01012024
SD-2710	RH SWITCH POINT ASSEMBLY 67'-0" LONG WITH UNIFORM RISER		01012024
SD-2711	SAMSON STOCK RAIL FOR LH TURNOUT LH 69'-8" LONG		01012024
SD-2712	SAMSON STOCK RAIL FOR LH TURNOUT RH 76'-0" LONG		01012024
SD-2713	SAMSON STOCK RAIL FOR RH TURNOUT LH 76'-0" LONG		01012024
SD-2714	SAMSON STOCK RAIL FOR RH TURNOUT RH 69'-0" LONG		01012024
SD-2715	HOLLOW STEEL TIE AND CONCRETE TIE LAYOUT FOR RH TURNOUT		01012024

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SIGNAL AND COMMUNICATIONS (CONTINUED)

SWITCH APPARATUS (CONTINUED)

DWG NO	DESCRIPTION	RVN	DATE
SD-5304	ALSTOM 5F SWITCH MACHINE SWITCH TIES AND GAUGE PLATE EXT.		01012024
SD-5305	M-23A SWITCH MACHINE SWITCH TIES AND GAUGE PLATE EXT.		01012024
SD-5306	M-23A SWITCH MACHINE LAYOUT NO. 20 TURNOUT, RIGHT MOUNTED		01012024
SD-5307	M-23A SWITCH MACHINE LAYOUT NO. 20 TURNOUT, LEFT MOUNTED		01012024
SD-5308	M-23A SWITCH MACHINE LAYOUT NO. 10 OR NO. 14 CONCRETE TIES		01012024
SD-5309	M-23A SWITCH MACHINE LAYOUT NO. 10 OR NO. 14 WOOD TIES		01012024
SD-5310	5F SWITCH MACHINE LAYOUT NO. 20 TURNOUT, RIGHT MOUNTED		01012024
SD-5311	5F SWITCH MACHINE LAYOUT NO. 20 TURNOUT, LEFT MOUNTED		01012024
SD-5312	5F SWITCH MACHINE LAYOUT NO. 10 OR NO. 14 CONCRETE TIES		01012024
SD-5313	5F SWITCH MACHINE LAYOUT NO. 10 OR NO. 14 WOOD TIES		01012024
SD-5314	ROTATING HELPER ROD ASSEMBLY LAYOUT, NO. 20 CONCRETE TIES		01012024
SD-5315	ROTATING HELPER ROD ASSEMBLY LAYOUT, NO. 20 WOOD TIES		01012024
SD-5316	TYPICAL "T" CRANK AND PIPE GUIDE AUXILIARY CONNECTION		01012024
SD-5317	ADJUSTER FOR INTERLOCKING SWITCHES		01012024
SD-5318	SCREW JAW, SOLID JAW AND ADJUSTABLE LINK		01012024
SD-5319	THROW ROD AND SWIVEL ROD FOR SWITCH MACHINE		01012024
SD-5320	RACOR TYPE "MJ" NO. 1 INSULATED SWITCH ROD SHEET 1 OF 2		01012024
SD-5321	RACOR TYPE "MJ" NO. 1 INSULATED SWITCH ROD SHEET 2 OF 2		01012024
SD-5322	9B ELECTRIC LOCK LOW SWITCH LAYOUT		01012024
SD-5323	9B ELECTRIC LOCK HICH SWITCH LAYOUT		01012024
SD-5324	MODEL 10A ELECTRIC SWITCH LOCK LAYOUT		01012024
SD-5325	A-5 E. P. SWITCH MACHINE TYPICAL SWITCH MACHINE LAYOUT		01012024

HIGHWAY GRADE CROSSING APPARATUS

DWG NO	DESCRIPTION	RVN	DATE
SD-5401	TYPICAL HIGHWAY CROSSING SIGNALS LIGHT UNIT ALIGNMENT		01012024
SD-5402	TYPICAL CROSSING LOCATIONS		01012024
SD-5403	FLASHING LIGHT SIGNALS WITH GATES HOUSE CONDUIT LAYOUT		01012024
SD-5404	FLASHING LIGHT SIGNALS WITH ENTRANCE AND EXIT GATES		01012024
SD-5405	CANTILEVER FLASHERS WITH ENTRANCE AND EXIT GATES		01012024
SD-5406	FLASHING LIGHT SIGNALS WITH ENTRANCE AND EXIT GATES AND MEDIAN		01012024
SD-5407	CANTILEVER FLASHERS WITH ENTRANCE AND EXIT GATES AND MEDIAN		01012024
SD-5408	NOT USED		01012024
SD-5409	CROSSING GATE WITH AND WITHOUT FLASHING LIGHT SIGNALS		01012024
SD-5410	PEDESTRIAN WARNING DEVICE STATION PED CROSSING GATE		01012024
SD-5411	PEDESTRIAN WARNING DEVICE AT VEHICLE CROSSINGS		01012024
SD-5412	PEDESTRIAN GATE ASSEMBLY AT VEHICLE CROSSINGS		01012024
SD-5413	PEDESTRIAN WARNING DEVICE FOR PEDESTRIAN AND BICYCLE ONLY CROSSINGS		01012024
SD-5414	PEDESTRIAN WARNING DEVICE LAYOUT AT VEHICLE CROSSINGS		01012024
SD-5415	MODEL "W" WALKOUT CANTILEVER SIGNAL		01012024
SD-5416	MODEL "WNR" WALKOUT CANTILEVER SIGNAL		01012024
SD-5417	TYPICAL GUARD RAILS FOR HIGHWAY CROSSINGS		01012024
SD-5418	WIND SUPPORT FOR TUBULAR GATE ARM		01012024
SD-5419	HIGHWAY GRADE CROSSING WARNING DEVICES		01012024
SD-5420	LOCATION OF AUTOMATIC WARNING DEVICES		01012024
SD-5421	NOT USED		01012024
SD-5422	HIGHWAY GRADE CROSSING TYPICAL 2-LANE WITH PEDESTRIAN GATE		01012024
SD-5423	NOT USED		01012024
SD-5424	HIGHWAY GRADE CROSSING W/ MEDIAN TYPICAL 4-LANE WITH PEDESTRIAN GATE		01012024
SD-5425	NOT USED		01012024
SD-5426	HIGHWAY GRADE CROSSING NO MEDIAN TYPICAL 3-LANE WITH PEDESTRIAN GATE		01012024
SD-5427	TRACKSIDE TERMINATION SHUNT ENCLOSURE		01012024

8' X 14' SIGNAL HOUSE

DWG NO	DESCRIPTION	RVN	DATE
SD-5501	AC DISTRIBUTION CIRCUITS SHEET 1 OF 2		01012024
SD-5502	AC DISTRIBUTION CIRCUITS SHEET 2 OF 2		01012024
SD-5503	RACK 1 DETAILS		01012024
SD-5504	RACK 2 DETAILS		01012024
SD-5505	RACK 3 DETAILS		01012024
SD-5506	TERMINAL BOARD 1		01012024
SD-5507	TERMINAL BOARD 2		01012024
SD-5508	SIDE A		01012024
SD-5509	SIDE C		01012024
SD-5510	HOUSE LAYOUT		01012024
SD-5511	HOUSE GROUNDING DETAIL		01012024
SD-5512	HOUSE GROUNDING LAYOUT		01012024

TRAIN CONTROL COMMUNICATIONS

VOICE RADIO – BASE STATIONS

DWG NO	DESCRIPTION	RVN	DATE
SD-6001	VOICE AND ATCS BASE STATIONS DED TRANSMITTERS: MP00.0 – MP14.0		01012024
SD-6002	VOICE AND ATCS BASE STATIONS DED TRANSMITTERS: MP17.0 – MP31.0		01012024
SD-6003	VOICE AND ATCS BASE STATIONS DED TRANSMITTERS: MP40.0 – CP LICK		01012024
SD-6004	EXISTING BASE STATIONS, DED AND CORRIDOR TERRAIN		01012024

VOICE RADIO – EXISTING SYSTEM

DWG NO	DESCRIPTION	RVN	DATE
SD-6050	EXISTING SYSTEM BLOCK DIAGRAM		01012024
SD-6051	EXISTING SYSTEM SAN JOSE BASE STATION		01012024
SD-6052	EXISTING SYSTEM SAN CARLOS BASE STATION		01012024
SD-6053	EXISTING SYSTEM SIGN HILL BASE STATION		01012024
SD-6054	EXISTING SYSTEM 4TH STREET BASE STATION		01012024

VOICE RADIO – CCF INTERFACE

DWG NO	DESCRIPTION	RVN	DATE
SD-6101	ROAD CHANNEL INTERFACE AT CCF RECEIVING PATH		01012024
SD-6102	ROAD CHANNEL INTERFACE AT CCF TRANSMITTING PATH		01012024
SD-6103	ROAD CHANNEL VOTING AND STEERING INTERFACE AT CCF SHEET 1 OF 3		01012024
SD-6104	ROAD CHANNEL VOTING AND STEERING INTERFACE AT CCF SHEET 2 OF 3		01012024
SD-6105	ROAD CHANNEL VOTING AND STEERING INTERFACE AT CCF SHEET 3 OF 3		01012024

VOICE RADIO – MAINTENANCE CHANNEL

DWG NO	DESCRIPTION	RVN	DATE
SD-6151	MAINTENANCE CHANNEL VOTING AND STEERING INTERFACE AT CCF		01012024
SD-6152	DTX, LAN AND IP ADDRESS AT CCF		01012024
SD-6153	MAINTENANCE CHANNEL BASE STATION TYPICAL OF MOUNTAIN TOPS		01012024

VOICE RADIO – MICROWAVE NETWORK

DWG NO	DESCRIPTION	RVN	DATE
SD-6201	MICROWAVE NETWORK ARCHITECTURE		01012024
SD-6202	MICROWAVE RADIO SITE DESIGN		01012024

VOICE RADIO – TUNNEL RADIO SITES

DWG NO	DESCRIPTION	RVN	DATE
SD-6301	TYPICAL TUNNEL		01012024
SD-6302	TUNNEL VOICE RADIO BASE STATIONS CONFIGURATION		01012024
SD-6303	TUNNEL RADIO CABINET SHEET 1 OF 3		01012024
SD-6304	TUNNEL RADIO CABINET SHEET 2 OF 3		01012024
SD-6305	TUNNEL RADIO CABINET SHEET 3 OF 3		01012024
SD-6306	TUNNEL 4 PLAN VIEW		01012024
SD-6307	TUNNEL 3 PLAN VIEW AND DETAILS		01012024
SD-6308	TUNNEL 2 PLAN VIEW AND DETAILS		01012024
SD-6309	TUNNEL 1 ELEVATION VIEW		01012024

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TRACK GEOMETRY – HORIZONTAL

CC	COMPOUND CURVATURE
CS	POINT OF CHANGE FROM CIRCULAR CURVE TO SPIRAL
k1	TANGENT DISTANCE OF SHIFTED PC REFERRED TO TS
k2	TANGENT DISTANCE OF SHIFTED PT REFERRED TO ST
Lc	TOTAL LENGTH OF CIRCULAR CURVE FROM PC TO PT OR SC TO CS
Lsc	LENGTH OF COMPOUND SPIRAL FROM CS TO SC
Ls1	LENGTH OF SPIRAL FROM TS TO SC
Ls2	LENGTH OF SPIRAL FROM CS TO ST
p1	OFFSET FROM INITIAL TANGENT TO PC OF SHIFTED CIRCLE OF SPIRALIZED CURVE
p2	OFFSET FROM INITIAL TANGENT TO PT OF SHIFTED CIRCLE OF SPIRALIZED CURVE
PC	POINT OF CURVATURE/POINT OF CHANGE FROM TANGENT TO CIRCULAR CURVE
PCC	POINT OF COMPOUND CURVE
PI	POINT OF INTERSECTION
POC	POINT ON CIRCULAR CURVE
POS	POINT ON SPIRAL
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PS	POINT OF SWITCH
PT	POINT OF TANGENCY/POINT OF CHANGE FROM CIRCULAR CURVE TO TANGENT
SC	POINT OF CHANGE FROM SPIRAL TO CIRCULAR CURVE
SS	POINT OF CHANGE FROM SPIRAL TO SPIRAL
ST	POINT OF CHANGE FROM SPIRAL TO TANGENT
SPO	POINT ON ORIGIN OF COMPOUND SPIRAL
Ts1	TANGENT DISTANCE FROM TS TO PI
Ts2	TANGENT DISTANCE FROM ST TO PI
TS	POINT OF CHANGE FROM TANGENT TO SPIRAL
Xs1	TANGENT OFFSET AT SC
Xs2	TANGENT OFFSET AT CS
Ys1	TANGENT DISTANCE AT SC
Ys2	TANGENT DISTANCE AT CS
Δ	TOTAL CENTRAL ANGLE OF SPIRALIZED CURVE
Δc	CENTRAL ANGLE OF CIRCULAR CURVE (Lc) FROM SC TO CS
Δc1	CENTRAL ANGLE OF FIRST CIRCULAR CURVE OF COMPOUND CURVATURE
Δc2	CENTRAL ANGLE OF SECOND CIRCULAR CURVE OF COMPOUND CURVATURE
Θs1	CENTRAL ANGLE OF SPIRAL LENGTH Ls1 OR SPIRAL ANGLE OF FIRST SPIRAL IN SPIRALIZED CURVE
Θs2	CENTRAL ANGLE OF SPIRAL LENGTH Ls2 OR SPIRAL ANGLE OF SECOND SPIRAL IN SPIRALIZED CURVE
Θsc	CENTRAL ANGLE OF COMPOUND SPIRAL OR COMPOUND SPIRAL ANGLE FROM CS TO SC

TRACK GEOMETRY – VERTICAL

BVC	BEGIN VERTICAL CURVE
E	TOTAL SUPERELEVATION IN INCHES
Ea	ACTUAL SUPERELEVATION IN INCHES
Eu	UNBALANCED SUPERELEVATION IN INCHES
EVC	END VERTICAL CURVE
PCVC	POINT OF COMPOUND VERTICAL CURVE
PIVC	POINT OF INTERSECTION OF TWO PROFILE TANGENTS
POVC	POINT ON VERTICAL CURVE
POVT	POINT ON VERTICAL TANGENT
VC	VERTICAL CURVE

GENERAL, CIVIL AND TRACK

AB	AGGREGATE BASE
ABN	ABANDON
ABUT	ABUTMENT
AC	ASPHALT CONCRETE
ADA	AMERICANS WITH DISABILITIES ACT
ADJ	ADJUSTABLE
AHD	AHEAD
ALIGN	ALIGNMENT
ALT	ALTERNATE
ALUM	ALUMINUM
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
AS	AGGREGATE SUBBASE
ASPH	ASPHALT
AVE	AVENUE
AVG	AVERAGE
BAA	BOARDING ASSISTANCE AREA
BBR	BEGINNING OF BRIDGE
BCR	BEGIN CURB RETURN
BEG	BEGIN
BK	BACK
BKF	BACKFILL
BLDG	BUILDING
BLVD	BOULEVARD
BM	BENCHMARK
BOC	BOTTOM OF CURB
BOP	BOTTOM OF PIPE
BOT	BOTTOM
BOW	BOTTOM OF WALL
BR	BRIDGE
BS	BOTTOM OF SLOPE
C	CURB
C&G	CURB AND GUTTER
CAB	CABINET
CALP	CORRUGATED ALUMINUM PIPE
CAP	CAPACITY
CB	CATCH BASIN
CEM	CEMENT
CF	CUBIC FEET
CG	CENTER OF GRAVITY
CI	CAST IRON
CIDH	CAST IN DRILLED HOLE
CIP	CAST IN PLACE
CIV	CIVIL
CJ	CONSTRUCTION JOINT
CL	CENTER LINE
CLK	CHAIN LINK
CLR	CLEAR
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CND	CONDUIT
CO	CLEANOUT
COC	CENTER ON CENTER
COL	COLUMN
COMB	COMBINE
COMM	COMMUNICATIONS
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS, CONTINUE
COORD	COORDINATE
CP	CONTROL POINT
CRV	CURVE
CSP	CORRUGATED STEEL PIPE
CTR	CENTER
CULV	CULVERT
CVR	COVER
CWR	CONTINUOUS WELDED RAIL
CY	CUBIC YARDS
DEL	DELINEATORS
DEP	DEPTH
DET	DETAIL
DFT	DRY FILM THICKNESS
DFX	DIRECT FIXATION
DI	DRAIN INLET
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIR	DIRECTION
DIST	DISTRIBUTION
DN	DOWN
DR	DRIVE
DTR	DETOUR
DWG	DRAWING
(E)	EXISTING
E	EAST
EA	EACH
EB	EASTBOUND
EBR	END OF BRIDGE
ECR	END CURB RETURN
EE	EACH END
EF	EACH FACE
EIC	EMPLOYEE IN CHARGE
EJ	EXPANSION JOINT
ELEC	ELECTRICAL
EL, ELEV	ELEVATION
EMB	EMBANKMENT
EMER	EMERGENCY
ENCL	ENCLOSURE
ENGR	ENGINEER, ENGINEERING
EP	EDGE OF PAVEMENT
EQ	EQUATION
EQUIP	EQUIPMENT
ES	EDGE OF SHOULDER
ESMT	EASEMENT
ETW	EDGE OF TRAVELED WAY
EW	END WALL
EXC	EXCAVATION
EXP	EXPANSION
EXT	EXTERIOR, EXTENSION
(F)	FUTURE
FC	FACE OF CURB
FD	FLOOR DRAIN
FDN	FOUNDATION
FF	FILTER FABRIC
FG	FINISHED GRADE
FH	FIRE HYDRANT
FIN	FINISH
FL	FLOW LINE
FLR	FLOOR
FOC	FIBER OPTIC CABLE/CARRIER
FPS	FEET PER SECOND
FR	FRAME
FS	FINISH SURFACE
FT	FEET
FTG	FOOTING
FWY	FREEWAY
GA	GAUGE OR GAGE
GAL	GALLON
GALV	GALVANIZED
GCL	GRADING CONTROL LINE
GND	GROUND
GOV	GOVERNMENT
GP	GRADING PLANE
GPM	GALLONS PER MINUTE
GR	GUARDRAIL
GSP	GALVANIZED STEEL PIPE
HAZ	HAZARDOUS
HB	HOSE BIBB
HD	HEAVY DUTY
HDPE	HIGH-DENSITY POLYETHYLENE
HEX	HEXAGONAL
HH	HANDHOLE
HI	HIGH
HMAC	HOT MIX ASPHALT CONCRETE
HOR	HORIZONTAL
HP	HIGH POINT
HR	HANDRAIL
HS	HIGH STRENGTH
HST	HOLLOW STEEL TIE
HT	HEIGHT
HW	HEADWALL
HWY	HIGHWAY
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IJ	INSULATED JOINT
IN	INCHES
INC	INCORPORATED
INCL	INCLUDE, INCLUDING
INSUL	INSULATION
INT	INTERIOR
INV	INVERT
IR	INSIDE RADIUS
IRR	IRRIGATION
JB	JUNCTION BOX
JT	JOINT
LB	POUNDS
LEG	LEGEND
LF	LINEAL FEET
LG	LONG
LGT	LIGHT
LGTH	LENGTH
LH	LEFT-HAND
LIM	LIMITS
LN	LANE
LOC	LOCATION
LONG	LONGITUDINAL
LP	LOW POINT
LT	LEFT
LTG	LIGHTING
LVL	LEVEL
MAS	MAXIMUM AUTHORIZED SPEED
MAX	MAXIMUM
MECH	MECHANICAL
MED	MEDIAN
MEM	MEMBRANE
MET	METAL
MH	MANHOLE, MAINTENANCE HOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MOD	MODIFIED
MON	MONUMENT
MOW	MAINTENANCE OF WAY
MP	MILEPOST
MPH	MILES PER HOUR
MSE	MECHANICALLY STABILIZED EARTH
MSL	MEAN SEA LEVEL
MTL	MATERIAL
(N)	NEW
N	NORTH
N/A	NOT APPLICABLE
NB	NORTHBOUND
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
OA	OVERALL
OB	OUTBOUND
OC	ON CENTERS
OCS	OVERHEAD CONTACT SYSTEM
OD	OUTSIDE DIAMETER
OG	ORIGINAL GRADE
OH	OVERHEAD
OP	OVERPASS
OPNG	OPENING
OPP	OPPOSITE
ORG	ORGANIZATIONPAX PASSENGER
PB	PULL BOX
PC	PORTLAND CEMENT, PRECAST CONCRETE
PCC	PORTLAND CEMENT CONCRETE
PE	PROFESSIONAL ENGINEER
PED	PEDESTRIAN
PERM	PERMEABLE
PERF	PERFORATED
PF	PLATFORM
PG	PAGE
PGL	PROFILE GRADE LINE
PH	POTHOLE
PL	PLATE
P/L	PROPERTY LINE
PNA	PERSON NEEDING ASSISTANCE
PNL	PANEL
PP	POWER POLE
PPP	PERFORATED PLASTIC PIPE
PR	PAIR
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
QTY	QUANTITY
(R)	RELOCATED
R	RADIUS
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RECT	RECTANGULAR
REF	REFERENCE
REINF	REINFORCED
REL	RELOCATE
REQD	REQUIRED
REV	REVISION
RH	RIGHT-HAND
RO	ROUGH OPENING
RR	RAILROAD
RT	RIGHT
RTE	ROUTE
RW	RETAINING WALL
ROW	RIGHT-OF-WAY
S	SOUTH
SALV	SALVAGE
SB	SOUTH BOUND
SCHD	SCHEDULE
SD	STORM DRAIN
SECT	SECTION
SERV	SERVICE
SF	SQUARE FEET
SG	SUBGRADE
SHT	SHEET
SIG	SIGNAL
SIM	SIMILAR
SL	SLOPE
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL, SANITARY SEWER
ST	STREET
STA	STATION
STD	STANDARD
STIFF	STIFFENER
STL	STEEL
STRL	STRUCTURAL
STRUCT	STRUCTURE
SWK	SIDEWALK
SY	SQUARE YARDS
SYMB	SYMBOL
SYMM	SYMMETRICAL
T&B	TOP AND BOTTOM
TAN	TANGENT
TBD	TO BE DETERMINED
TC	TOP OF CONCRETE
TD	TRENCH DRAIN
TEL	TELEPHONE
TEMP	TEMPERATURE
TF	TRACK FEET
TH	THICK
TO	TURNOUT
TOC	TOP OF CURB
TOG	TOP OF GRATE
TOL	TOLERANCE
TOP	TOP OF PAVEMENT, TOP OF PIPE
TOR	TOP OF RAIL
TOS	TOP OF SLOPE
TOT	TOP OF TIE
TOW	TOP OF WALL
TRANS	TRANSITION
TS	TUBULAR STEEL
TUB	TUBULAR
TVM	TICKET VENDING MACHINE
TYP	TYPICAL
UB	UTILITY BOX
UD	UNDERDRAIN
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
UP	UNDERPASS
UTIL	UTILITY
VAR	VARIES
VEH	VEHICULAR, VEHICLE
VEL	VELOCITY
VERT	VERTICAL
VMB	VISUAL MESSAGE BOARD
VMS	VARIABLE MESSAGE SIGN
VOL	VOLUME
W	WEST
W/	WITH
W/O	WITHOUT
WB	WESTBOUND
WP	WORK POINT
WPF	WATERPROOF
WRT	WITH RESPECT TO
WT	WEIGHT
WWM	WELDED WIRE MESH
XING	CROSSING
XOVER	CROSSOVER
YD	YARDS
YR	YEAR

REV	DATE	BY	CHK	APP	DESCRIPTION
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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STANDARD DRAWINGS

GENERAL ABBREVIATIONS

CIVIL AND TRACK

CADD FILE NAME: SD-1101

REV: | EDITION: FOURTH

GENERAL

STANDARD DRAWING NO.: SD-1101

STATION COMMUNICATIONS

ACS	ADVANCED COMMUNICATION SYSTEM
BCCF	BACKUP CENTRAL CONTROL FACILITY
BER	BIT-ERROR RATE
CC	COMMUNICATIONS CABINET
CCF	CENTRAL CONTROL FACILITY
CCTV	CLOSED CIRCUIT TELEVISION CAMERAS
CER	COMMUNICATIONS EQUIPMENT ROOM
CIC	COMMUNICATIONS INTERFACE CABINETS
CID	CARD INTERFACE DEVICE
CSMH	COMMUNICATIONS SYSTEM MANHOLE
CST	COMBINED SYSTEM TRUNK
DC	DISTRIBUTION CABINET
DDS	DEDICATED DIGITAL SERVICE
DS0	SINGLE DATA CHANNEL OF 56-65 Kbps
E&M	EAR AND MOUTH
E-LAN	ETHERNET LAN
ENS	EMERGENCY NOTIFICATION SIGN
EOS	ETHERNET OVER SONET
EPL	ETHERNET PRIVATE LINE
EVC	ETHERNET VIRTUAL CIRCUIT
EVPL	ETHERNET VIRTUAL PRIVATE LINE
EVPLAN	ETHERNET VIRTUAL PRIVATE LAN
FDP	FIBER DISTRIBUTION PANEL
FO	FIBER OPTIC
FOC	FIBER OPTIC CABLE
FOCN	FIBER OPTIC COMMUNICATIONS NETWORK
FOPP	FIBER OPTIC PATCH PANEL
FPS	FRAME PER SECOND
FSE	FIBER SLACK ENCLOSURE
GBIC	GIGABIT INTERFACE CONVERTER
GBPS	GIGABITS PER SECOND
GRP	GLASS REINFORCED PLASTIC ROD
GRS	GALVANIZED RIGID STEEL
GUI	GRAPHICAL USER INTERFACE
IP	INTERNET PROTOCOL
Kbps	KILO BITS PER SECOND
LAN	LOCAL AREA NETWORK
LCD	LIQUID CRYSTAL DISPLAY
LDF	LOCAL DISTRIBUTION FRAME
LID	LOCAL INJECTION AND DETECTION (FUSION SPLICING)
LPM	LOCAL PAGING MICROPHONE
Mbps	MEGA BITS PER SECOND
MDF	MAIN DISTRIBUTION FRAME
MDPE	MEDIUM DENSITY POLYETHYLENE (CABLE SHEATH)
MEF	METRO ETHERNET FORUM
MIC	MICROPHONE
MM	MULTI-MODE
MMFOC	MULTI-MODE FIBER OPTIC CABLE
MPOE	MAIN POINT OF ENTRY
MS	MILLISECOND
MSPP	MULTI-SERVICE PROVISIONING PLATFORM
NID	NETWORK INTERFACE DEVICE
NMS	NETWORK MANAGEMENT SYSTEM
NTP	NETWORK TIME PROTOCOL
NVR	NETWORK VIDEO RECORDER
OCC	OPERATION CONTROL CENTER
OSP	OUTSIDE PLANT
PA	PUBLIC ADDRESS
PAS	PUBLIC ADDRESS SYSTEM
PDA	PERSONAL DIGITAL ASSISTANT
PDU	POWER DISTRIBUTION UNIT
PID	PASSENGER INFORMATION DISPLAY
PIDS	PASSENGER INFORMATION DISPLAY SYSTEM
PIS	PASSENGER INFORMATION SYSTEM
PLC	PROGRAMMABLE LOGIC CONTROLLER
POE	POWER OVER ETHERNET
PSTN	PUBLIC SWITCHING TELEPHONE NETWORK
PTB	PROTECTED TERMINAL BLOCKS
PTT	PUSH TO TALK
PVC	PRIVATE VIRTUAL CIRCUIT
QOS	QUALITY OF SERVICE
RPR	RESILIENT PACKET RING
RTU	REMOTE TERMINAL UNIT (COMMUNICATIONS)
SCC	STATION COMMUNICATION CABINET
SFX	SMALL FORM (PLUGGABLE) CROSS-CONNECT
SLA	SERVICE LEVEL AGREEMENT
SM	SINGLE MODE
SMFOC	SINGLE-MODE FIBER OPTIC CABLE
SNMP	SIMPLE NETWORK MANAGEMENT PROTOCOL
SONET	SYNCHRONOUS OPTICAL NETWORK
SPDU	SWITCHED POWER DISTRIBUTION UNIT
T1C	SINGLE DATA CHANNEL OF 1.544 Mbps
T1MUX	A MULTIPLEXING DEVICE BY WHICH A SINGLE T1 CHANNEL IS UTILIZED TO PROVIDE DS0 CHANNELS
TDM	TIME DIVISION MULTIPLEXING
TTB	TELEPHONE TERMINAL BOARD
UPS	1000 MBPS SWITCH EXPANSION PORTS
UP-LINK	UNINTERRUPTIBLE POWER SUPPLY
UPSR	UNIDIRECTIONAL PATH SWITCH RING
UTP	UNSHIELDED TWISTED PAIR
VCAT	VIRTUAL CONCATENATION
VLAN	VIRTUAL LOCAL AREA NETWORK
VMS	VARIABLE MESSAGE SIGN
VPN	VIRTUAL PRIVATE NETWORK
WA	WORK AREA
WAN	WIDE AREA NETWORK
WAP	WIRELESS APPLICATION PROTOCOL
WCM	WAYSIDE COMMUNICATIONS MANAGER

SIGNALS

AK	APPROACH TRACK INDICATION
BS	BOLT CENTERS
DAX	DOWNSTREAM ADJACENT CROSSING
EMS	EMERGENCY ALARM CONTROL CIRCUITS
FLT	SIGNAL FLEETING
FR	FLASHER RELAY
GCR	GATE CONTROL RELAY
GD	GATE DOWN
GE	GREEN SIGNAL LAMP
GPR	GATE REPEATER RELAY (GATE IN UP POSITION)
LED	LIGHT EMITTING DIODE
LOS	LOSS OF SHUNT
NGHS	NORTHWARD SIGNAL REQUEST
NGK	NORTHWARD SIGNAL CLEAR INDICATION
NJSP	DUAL SELECTOR LEVER
NWK	NORMAL SWITCH INDICATION
NWP	NORMAL SWITCH POINT POSITION
NWR	NORMAL SWITCH CONTROL RELAY
NWS	NORMAL SWITCH REQUEST
RE	RED SIGNAL LAMP
RWK	REVERSE SWITCH INDICATION
RWP	REVERSE SWITCH POINT POSTION
RWR	REVERSE SWITCH CONTROL RELAY
RWS	REVERSE SWITCH REQUEST
SGHS	SOUTHWARD SIGNAL REQUEST
SGK	SOUTHWARD SIGNAL CLEAR INDICATION
TEK	SIGNAL IN TIME INDICATION
TJC	TUNED JOINT COUPLER
TK	OS TRACK INDICATION
TOB	TON PER OPERATIVE BRAKE
UAX	UPSTREAM ADJACENT CROSSING
WBC	SWITCH CONTROL RELAY BACK CHECK
XR	CROSSING CONTROL RELAY
YE	YELLOW SIGNAL LAMP

TRAIN CONTROL COMMUNICATION

AC	ALTERNATING CURRENT
AMP	AMPLIFIER
ATCS	ADVANCE TRAIN CONTROL SYSTEM
BER	BIT ERROR RATE
BPF	BAND PASS FILTER
BS	BASE STATION
C	CONDUIT
CCF	CENTRAL CONTROL FACILITY
CEMOF	CENTRALIZED EQUIPMENT MAINTENANCE AND OPERATIONS FACILITY
CP	CONTROL POINT
CRC	CYCLIC REDUNDANCY CHECKS
CSU	CHANNEL SERVICE UNIT
CTC	CENTRALIZED TRAIN CONTROL
CTCSS	CONTINUOUS-TONE-CODED SQUELCH SYSTEM
dB	DECIBEL
dBm	DECIBEL REFERENCED TO A MILLIWATT
dBW	DECIBEL REFERENCED TO A WATT
DBU	DIAL BACKUP
DC	DIRECT CURRENT
DED	DRAGGING EQUIPMENT DETECTOR
DSU	DATA SERVICE UNIT
DTX	DIGITAL TOUCH EXCHANGE
EIA	ELECTRONIC INDUSTRIES ALLIANCE
ELEV	ELEVATION
ERP	EFFECTIVE RADIATED POWER
FAA	FEDERAL AVIATION ADMINISTRATION
FAT	FACTORY ACCEPTANCE TEST
FCC	FEDERAL COMMUNICATIONS COMMISSION
FDP	FIBER DISTRIBUTION PANEL
FEC	FORWARD ERROR CONNECTION
FM	FREQUENCY MODULATION
FO	FIBER OPTIC
FPP	FIBER PATCH PANEL
FR	FRAME RELAY
GMSK	GAUSSIAN MINIMUM SHIFT KEYING
GPS	GLOBAL POSITIONING SYSTEM
ISDN	INTERGRATED SERVICES DIGITAL NETWORK
JB	JUNCTION BOX
KO	KEYBOARD OPERATOR
KVM	KEYBOARD VIDEO MOUSE
LAN	LOCAL AREA NETWORK
M.P.XX	RAILROAD MILE POST
MAS	MULTIPLE ADDRESSING SCHEME
MC	MEDIA CONVERTER
MDF	MAIN DISTRIBUTION FRAME
MOW	MAINTENANCE OF WAY
MSL	MEAN SEA LEVEL
MUX	MULTIPLEXER
NIC	NETWORK INTERFACE CARD
NMS	NETWORK MANAGEMENT SYSTEM
OCC	OPERATIONS CONTROL CENTER
PTT	PUSH TO TALK
RF	RADIO FREQUENCY
ROCS	RAIL OPERATIONS CONTROL SYSTEM
RX	RECEIVE
S	SPEAKER
SB	SAN BRUNO MOUNTAIN BASE STATION
SINAD	SIGNAL TO NOISE AND DISTORTION
SVR	SERVER
TC/C	TRAIN CONTROLS AND COMMUNICATION
TCT	TRAIN CONTROL TRENCH
TX	TRANSMITTER
UHF	ULTRA HIGH FREQUENCY
UL	UNDERWRITERS LABORATORY
UPRR, UP	UNION PACIFIC
VHF	VERY HIGH FREQUENCY
VHLC	VITAL HARMON LOGIC CONTROLLER (GE)
W	WATT
WRT	WITH RESPECT TO

CITIES AND COUNTIES

CATH	CITY OF ATHERTON
CBEL	CITY OF BELMONT
CBUR	CITY OF BURLINGAME
CGIL	CITY OF GILROY
CMIL	CITY OF MILLBRAE
CMPK	CITY OF MENLO PARK
CMV	CITY OF MOUNTAIN VIEW
CPA	CITY OF PALO ALTO
CRWC	CITY OF REDWOOD CITY
CSB	CITY OF SAN BRUNO
CSC	CITY OF SAN CARLOS
CSJ	CITY OF SAN JOSE
CSM	CITY OF SAN MATEO
CSCL	CITY OF SANTA CLARA
CSSF	CITY OF SOUTH SAN FRANCISCO
CSV	CITY OF SUNNYVALE
CCSF	CITY AND COUNTY OF SAN FRANCISCO
COSM	COUNTY OF SAN MATEO
COSCL	COUNTY OF SANTA CLARA

AGENCIES, ORGANIZATIONS AND CODES

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
AAR	ASSOCIATION OF AMERICAN RAILROADS
ACE	ALTAMONT CORRIDOR EXPRESS
ACI	AMERICAN CONCRETE INSTITUTE
ADA	AMERICANS WITH DISABILITIES ACT
AMTRAK	NATIONAL RAILROAD PASSENGER CORPORATION
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APWA	AMERICAN PUBLIC WORKS ASSOCIATION
AREA	AMERICAN RAILWAY ENGINEERING ASSOCIATION
AREMA	AMERICAN RAILWAY ENGINEERING AND MAINTENANCE-OF-WAY ASSOCIATION
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
ATT, AT&T	ATLANTIC TELEPHONE AND TELEGRAPH COMPANY
AWG	AMERICAN WIRE GAUGE
AWS	AMERICAN WELDING SOCIETY
BART	BAY AREA RAPID TRANSIT (DISTRICT)
BNSF	BURLINGTON NORTHERN SANTA FE RAILWAY
CA	CALIFORNIA
CALDAG	CALIFORNIA DISABLED ACCESSIBILITY GUIDEBOOK
CALTRANS	CALIFORNIA DEPARTMENT OF TRANSPORTATION
CCJPA	CAPITAL CORRIDOR JOINT POWERS AUTHORITY
CCR	CALIFORNIA CODE OF REGULATIONS
CEC	CALIFORNIA ELECTRICAL CODE
CHSR	CALIFORNIA HIGH SPEED RAIL
CHSRA	CALIFORNIA HIGH SPEED RAIL AUTHORITY
CPUC	CALIFORNIA PUBLIC UTILITIES COMMISSION
DOT	DEPARTMENT OF TRANSPORTATION
EIA	ELECTRONIC INDUSTRIES ALLIANCE
FCC	FEDERAL COMMUNICATIONS COMMISSION
FED	FEDERAL
FHWA	FEDERAL HIGHWAY ADMINISTRATION
FRA	FEDERAL RAILROAD ADMINISTRATION
FTA	FEDERAL TRANSIT ADMINISTRATION
HST	HIGH SPEED TRAIN
MTC	METROPOLITAN TRANSPORTATION COMMISSION
MUTCD	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
PCJPB, JPB	PENINSULA CORRIDOR JOINT POWERS BOARD
PCMCIA	PERSONAL COMPUTER MEMORY CARD INTERNATIONAL ASSOCIATION
PG&E	PACIFIC GAS AND ELECTRIC
SAMTRANS	SAN MATEO COUNTY TRANSIT DISTRICT
SCVTA, VTA	SANTA CLARA VALLEY TRANSPORTATION AUTHORITY
SFMTA	SAN FRANCISCO MUNICIPAL TRANSPORTATION AGENCY
SMCTA	SAN MATEO COUNTY TRANSPORTATION AUTHORITY
SPTC, SP	SOUTHERN PACIFIC TRANSPORTATION COMPANY (NOW UPRR)
TASI	TRANSIT AMERICA SERVICES, INC.
TIA	TELECOMMUNICATIONS INDUSTRY ASSOCIATION
TJPA	TRANSBAY JOINT POWERS AUTHORITY
UBC	UNIFORM BUILDING CODE
UL	UNDERWRITERS LABORATORIES
UPC	UNIFORM PLUMBING CODE
UPRR, UP	UNION PACIFIC RAILROAD

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PENINSULA CORRIDOR JOINT POWERS BOARD

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STANDARD DRAWINGS

GENERAL ABBREVIATIONS
SIGNAL, TRAIN CONTROL AND STATION COMMUNICATIONS

CADD FILE NAME: SD-1102

REV: | EDITION: FOURTH

GENERAL

STANDARD DRAWING NO.: SD-1102

ARCHITECTURAL

ACOUS	ACOUSTICAL
ALUM	ALUMINUM
AFF	ABOVE FINISHED FLOOR
BD	BOARD
BITUM	BITUMINOUS
BLKG	BLOCKING
BM	BEAM
CAB	CABINET
CER	CERAMIC
CI	CAST IRON
CIP	CAST IRON PIPE
CLG	CEILING
CLKG	CAULKING
CORR	CORRIDOR
CT	CERAMIC TILE
CTSK	COUNTERSUNK
DF	DRINKING FOUNTAIN
DISP	DISPENSER
DO	DOOR OPENING
DR	DOOR
DS	DOWNSPOUT
DSP	DRY STANDPIPE
ENCL	ENCLOSURE
ESCL	ESCALATOR
EXPD	EXPOSED
ESEW	EMERGENCY SHOWER/EYE WASH
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FCO	FLOOR CLEAN OUT
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FDP	FIRE DAMPER
FE	FIRE EXTINGUISHER
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FLR	FLOOR
FLUOR	FLUORESCENT
FOF	FACE OF FINISH
FOS	FACE OF STUDS
FPRF	FIREPROOF
FSK	FLOOR SINK
FUR	FURRING
GL	GLASS
GYP	GYPSUM
GYPBD	GYPSUM BOARD
HDWE	HARDWARE
HM	HOLLOW METAL
INCAND	INCANDESCENT
JAN	JANITOR
LAM	LAMINATE
LAV	LAVATORY
LKR	LOCKER
MO	MASONRY OPENING
MSK	MOP SINK
MTD	MOUNTED
MUL	MULLION
OFD	OVERFLOW DRAIN
PC	PRECAST CONCRETE
PCC	PORTLAND CEMENT CONCRETE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLYWD	PLYWOOD
PTD	PAPER TOWEL DISPENSER
RB	RESILIENT BASE
RD	ROOF DRAIN
RESIL	RESILIENT
RM	ROOM
RWL	RAIN WATER LEADER
SC	SOLID CORE
SCD	SEAT COVER DISPENSER
SD	SMOKE DETECTOR
SDT	STATIC DISSIPATIVE TILE FLOOR
SND	SANITARY NAPKIN DISPENSER
SNR	SANITARY NAPKIN RECEPTACLE
SPKR	SPEAKER
SSK	SERVICE SINK
STOR	STORAGE
SUSP	SUSPENDED
TPD	TOILET PAPER DISPENSER
UNF	UNFINISHED
UR	URINAL
VCT	VINYL COMPOSITION TILE
VEST	VESTIBULE
WC	WATER CLOSET
WD	WOOD
WSP	WET STAND PIPE

ELECTRICAL

AC	ALTERNATING CURRENT
AF	AMPERE FUSE
AFR	AMPERE FRAME
AGC	AUTOMATIC GAIN CONTROL
AMP	AMPERE
ANN	ANNUCIATOR
AS	AMPERE SENSOR
ASW	AMPERE SWITCH
AUX	AUXILIARY
ASSY	ASSEMBLY
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AVI	AUTOMATIC VEHICLE IDENTIFICATION
BC	BARE COPPER
BCW	BARE COPPER WIRE
BAT	BATTERY
BKR	BREAKER
CBKR	CIRCUIT BREAKER
CCD	CHARGE COUPLED DEVICE
CGB	CHASSIS GROUNDING BUS-BAR
CKT	CIRCUIT
CLF	CURRENT LIMITING FUSE
C/O	CONDUIT ONLY
COMM	COMMUNICATIONS
COND	CONDUCTOR
CNTL	CONTROL
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFER
C/R	CONTACT RAIL
CR	CONTROL RELAY
CRI	COLOR RENDERING INDEX
CRS	PVC COATED RIGID STEEL CONDUIT
CS	CONTROL STATION
CT	CURRENT TRANSFORMER
CTB	COMPUTER TERMINAL BOARD
CU	COPPER
DIM	DIMMER
DC	DIRECT CURRENT
DISC	DISCONNECT
DP	DISTRIBUTION PANEL
DSP	DIGITAL SIGNAL PROCESSING
ELEC	ELECTRICAL
EMI	ELECTROMAGNETIC INTERFACE
EMT	ELECTRICAL METALLIC TUBING
EPF	EXPLOSION PROOF
ETM	ELAPSED TIME METER
FC	FRAMING CHANNEL
FDR	FEEDER
FS	FLOW SWITCH
FVNR	FULL VOLTAGE NON-REVERSING
GFI	GROUND FAULT INTERRUPTER
GTS	GROUND TEST STATION
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTO SWITCH
HPS	HIGH PRESSURE SODIUM
HV	HIGH VOLTAGE
IC	INTERRUPTING CAPACITY
KVA	KILOVOLT-AMPERE
KW	KILOWATT
LED	LIGHT EMITTING DIODE
LFMC	LIQUID TIGHT FLEXIBLE METALLIC CONDUIT
LV	LOW VOLTAGE
LS	LIMIT SWITCH
MAG	MAGNETIC
MC	CONTACTOR COIL METALLIC CONDUIT
MDP	MAIN DISTRIBUTION PANEL
MGB	MAIN GROUNDING BUSS-BAR
MS	MOTOR STARTER
MT	EMPTY CONDUIT
MTS	MANUAL TRANSFER SWITCH
NF	NON FUSED
NMC	NONMETALLIC CONDUIT
NP	NAME PLATE
PC	POWER CABLE
PCU	POWER CONDITIONING UNIT
PE	PHOTOELECTRIC
PEC	PHOTOELECTRIC CELL
PH	PHASE
POS	POSITIVE
PT	POTENTIAL TRANSFORMER
RES	RESISTOR
RGS	RIGID GALVANIZED STEEL
RPC	REMOTE POWER CENTER
RSC	RIGID STEEL CONDUIT
STC	SUPERVISORY TERMINATION CABINET
SV	SOLENOID VALVE
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TCK	TIME CLOCK
TDR	TIME DELAY RELAY
TGB	TELECOMMUNICATIONS GROUNDING BUSS-BAR
TH	THERMOSTAT
TLK	TWISTLOCK
TMGB	TELCOMMUNICATIONS MAIN GROUNDING BUSS-BAR
TMS	THERMAL FIT MARKER SYSTEM
TS	TUBULAR SHEET
V	VOLT
VM	VOLT METER
VPF	VAPOR PROOF
VS	VOLTIMETER SWITCH
W	WATT
WHD	WATT-HOUR DEMAND METER
XFMR	TRANSFORMER

MECHANICAL

ASA	ACOUSTICAL SOUND ATTENUATOR
AC	AIR COMPRESSOR
ACD	ACCESS DOOR
ACU	AIR CONDITIONING UNIT
AF	AIR FILTER/AIR FOIL
AHU	AIR HANDLING UNIT
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
ASR	AUTOMATIC SPRINKLER RISER
BD	BALANCING DAMPER
BDD	BACK DRAFT DAMPER
BFP	BACKFLOW PREVENTER
BFV	BUTTERFLY VALVE
CA	COMPRESSED AIR
CC	COOLING COIL
CEG	CEILING EXHAUST GRILLE
CG	CEILING GRILLE
COND	CONDENSATE
CU	CONDENSING UNIT
CV	CHECK VALVE
CW	COLD WATER
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
DB	DRY BULB
DEG	DUCT EXHAUST GRILLE
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EAD	EXHAUST AIR DAMPER
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
EFF	EFFICIENCY
ESP	EXTERNAL STATIC PRESSURE
EUH	ELECTRIC UNIT HEATER
EXTR	EXTRACTER
FC	FORWARD CURVE
FCD	FLOW CONTROL DEVICE
FLA	FULL LOAD AMPERES
FLEX	FLEXIBLE
FM	FORCE MAIN
GPM	GALLONS PER MINUTE
GR	GRILLE
GV	GATE VALVE
HC	HEATING COIL
HD	HEAD
HDN	HOPPER DRAIN
HP	HORSEPOWER/HEAT PUMP
HSC	HOSE STORAGE CABINET
HVA	HOSE VALVE, ANGLE GLOBE TYPE
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HVS	HOSE VALVE, STRAIGHTWAY GATE TYPE
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
IPS	IRON PIPE SIZE
IW	INDUSTRIAL WASTE
LAT	LEAVING AIR TEMPERATURE
LCP	LOCAL CONTROL PANEL
LR	LONG RADIUS
MAV	MANUAL AIR VENT
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CONTROL PANEL
MD	MOTOR OPERATED DAMPER
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OA	OUTSIDE AIR
OAD	OUTSIDE AIR DAMPER
PD	PUMP DISCHARGE
PDN	PLANTER DRAIN
PH	PHASE
PIV	POST INDICATOR VALVE
PRV	PRESSURE REDUCING VALVE
PS	POSITION SWITCH
RA	RETURN AIR
RAD	RETURN AIR DAMPER
RF	RETURN FAN
RH	RADIANT HEATER
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
RV	ROOF VENTILATOR
SA	SUPPLY AIR
SANT	SANITARY
SAR	SOUND ATTENUATOR
SCAC	SELF CONTAINED AIR CONDITIONER
SCHP	SELF CONTAINED HEAT PUMP
SDP	SPLITTER DAMPER
SF	SUPPLY FAN
SPWG	STATIC PRESSURE WATER GAUGE
SP	SUMP PUMP
T&P	TEMPERATURE AND PRESSURE RELIEF VALVE
TEMP	TEMPERATURE
TG	TRANSFER GRILLE
THR	TOTAL HEAT REJECTION
TSP	TOTAL STATIC PRESSURE
TV	TURNING VANE
UC	UNDER CUT
UH	UNIT HEATER
VB	VACUUM BREAKER
VD	VOLUME DAMPER
VEL	VELOCITY
VTR	VENT THROUGH ROOF
WST	WASTE
WB	WET BULB
WCO	WALL CLEAN OUT
WEG	WALL EXHAUST GRILLE
WG	WATER GAUGE
WH	WATER HEATER
WHA	WATER HAMMER ARRESTOR
WL	WALL LOUVER
WSP	WET STANDPIPE

REV	DATE	BY	CHK	APP	DESCRIPTION
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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STANDARD DRAWINGS

GENERAL
ABBREVIATIONS
ARCHITECTURAL AND
ENGINEERING

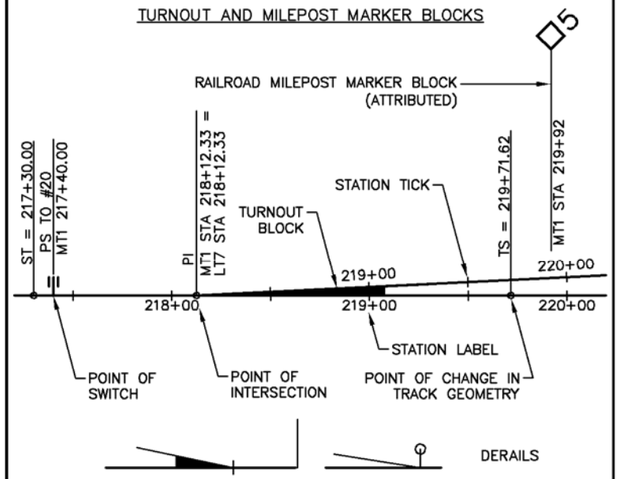
CADD FILE NAME: SD-1103

REV: | EDITION: FOURTH

GENERAL

STANDARD DRAWING NO.: SD-1103

TURNOUT AND MILEPOST MARKER BLOCKS



SYMBOLS

- MON # / ELEV — HORIZONTAL CONTROL POINT (ATTRIBUTED)
- PNT # / ELEV — HORIZONTAL AND VERTICAL CONTROL POINT (ATTRIBUTED)
- MON # / ELEV — VERTICAL CONTROL POINT (ATTRIBUTED)
- K / LENGTH — POINT OF VERTICAL INTERSECTION (PVI) VERTICAL CURVE (ATTRIBUTED)
- BENCHMARK
- EQN — STATIONING EQUATION MARKER
- CURVE_ID — CURVE MARKER (ATTRIBUTED)
- NORTH ARROW
- PLAN NORTH ARROW
- TREE(S), BRUSH, SHRUBS
- TREE(S), BRUSH, SHRUBS TO BE REMOVED

PATTERNS

- PEDESTRIAN CROSSING PANELS TO BE REMOVED
- GRADE CROSSING PANELS TO BE REMOVED
- ASPHALT CONCRETE TO BE REMOVED
- PORTLAND CEMENT CONCRETE TO BE REMOVED
- NEW ASPHALT CONCRETE
- COMPACTED SUBGRADE, EARTH
- BALLAST
- PORTLAND CEMENT CONCRETE
- AGGREGATE BASE
- GRADED/LANDSCAPED AREA
- STONE/BRICK PAVING
- TACTILE WARNING TILES

- SANITARY SEWER MANHOLE
- STORM DRAIN MANHOLE
- CCTV, SECURITY MANHOLE
- TELEVISION MANHOLE
- ELECTRIC MANHOLE
- WATER VALVE BOX
- RAILROAD SWITCHBOX
- TRAFFIC CONTROL BOX
- TRAFFIC SIGNAL
- TRAFFIC SIGNAL W/ ARM ONLY
- TRAFFIC SIGNAL W/ ARM AND POLE
- SIGN
- TELEPHONE POLE
- EXISTING POLE
- LUMINAIRE
- EXISTING LUMINAIRE
- POLE MOUNTED LUMINAIRE
- POLE MOUNTED LUMINAIRE, TWIN
- CROSSING GATE WITH LIGHTS
- SIGNAL HOUSE
- RAILROAD SIGNAL
- SIGNAL BASE
- TEMPORARY DRAINAGE INLET
- TC — TIME CLOCK
- PC — PHOTOELECTRIC CELL
- STAIRWAY OR RAMP FLOODLIGHT
- SERVICE METERING SWITCHBOARD
- M — UTILITY METER
- TRANSFORMER

- GROUNDING ROD
- GROUND
- CCTV CAMERA
- CID — CARD INTERFACE DEVICE
- D## — DISTRIBUTION CABINET (ATTRIBUTED)
- TVM — TICKET VENDING MACHINE
- VMS — VARIABLE MESSAGE SIGN
- TEL — PUBLIC TELEPHONE
- CER — COMMUNICATIONS EQUIPMENT ROOM
- CIC — COMMUNICATIONS INTERFACE CABINET
- FDP — FIBER DISTRIBUTION PANEL
- M — NOISE SENSING MICROPHONE (SURFACE MOUNTED)
- PB — PULL BOX
- ER — EQUIPMENT ROOM
- D — SUBSYSTEM DEVICE (TVM, VMS OR CCTV)
- DC — DISTRIBUTION CABINET (INTERMEDIATE CROSS-CONNECT)
- MICROPHONE
- SPEAKER
- DUAL SPEAKER
- H — HANDHOLE
- SINGLE MODE OR MULTIMODE FIBER OPTIC CABLE
- S — 8 OHM EXTERIOR HORN SPEAKER
- CP — CONTROL POINT
- C/S — SM FIBER TO COPPER MEDIA CONVERTER/SWITCH DUAL TX/RX

SPECIAL TRACKWORK SYMBOLS

- INSULATED JOINT
- WELDED JOINT

LINE TYPES

- TRENCH DRAIN
- UNDER DRAIN
- CABLE TV LINE
- COMMUNICATIONS LINE
- COPPER CABLE
- ELECTRICAL LINE
- FIBER OPTIC CABLE
- FIBER OPTIC CABLE, ATT
- FIBER OPTIC CABLE, SPRINT
- FUEL LINE
- GAS LINE
- SANITARY SEWER LINE
- SIGNALS LINE
- STORM DRAIN
- STORM DRAIN, OVER 18" DIA
- TELEPHONE LINE
- OVERHEAD UTILITY LINE
- WATER LINE
- HOT WATER LINE
- CENTERLINE
- MATCH LINE
- RIGHT-OF-WAY, EASEMENT, PROPERTY LINE
- FENCE
- PCJPB INTERTRACK FENCE WELDED WIRE MESH (WWM)

TRACK

- TRACK TO BE REMOVED
- TRACK TO BE SHIFTED
- EXISTING TRACK ALIGNMENT
- FUTURE TRACK ALIGNMENT
- NEW TRACK ALIGNMENT

TRACK RECONSTRUCTION

- RAIL ONLY
- TIES ONLY (TIMBER)
- TIES ONLY (CONCRETE)
- SPOT TIE ONLY
- FASTENERS ONLY
- RECONSTRUCT RAIL AND INSTALL NEW PLATES
- BALLAST ONLY
- RAIL/TIMBER TIE/BALLAST
- RAIL/CONCRETE TIE/BALLAST
- RAIL/CONCRETE TIE/ BALLAST/HMAC

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					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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STANDARD DRAWINGS

GENERAL SYMBOLS

GENERAL, CIVIL AND TRACK

CADD FILE NAME: SD-1201

REV: | EDITION: FOURTH

GENERAL

STANDARD DRAWING NO.: SD-1201

SIGNALS AND GATES

GATE ONLY

PEDESTRIAN GATE AND FLASHING LIGHT

FLASHING LIGHT SIGNAL W/GATE

FLASHING LIGHT SIGNAL W/GATE

CANTILEVER FLASHING LIGHT SIGNAL

GROUND SIGNAL

CANTILEVER SIGNAL

BRIDGE SIGNAL

CANTILEVER FLASHING LIGHT SIGNAL WITH GATE MOUNTED ON SAME MAST

TRACK CIRCUITS

B B | R R | R B/R

B R | B EC | R EC

EC EC

B/R – TRACK BATTERY WITH FLOATER RELAY LOCATION
EC – ELECTRONICALLY CODED
R – TRACK RELAY LOCATION
B – TRACK BATTERY LOCATION
Ⓛ – BATTERY CHOKE

DETECTORS

WHEEL IMPACT DETECTOR

TAG READER

DRAGGING EQUIPMENT DETECTOR

TRACK INSTRUMENT

(TRANSMITTER) (RECEIVER)

OVERLAY CIRCUIT

HXP CONSTANT WARNING DEVICE (BI–DIRECTIONAL)

HXP CONSTANT WARNING DEVICE (UNI–DIRECTIONAL)

GCP CONSTANT WARNING DEVICE (BI–DIRECTIONAL)

GCP CONSTANT WARNING DEVICE (UNI–DIRECTIONAL)

XP4 CONSTANT WARNING DEVICE (BI–DIRECTIONAL)

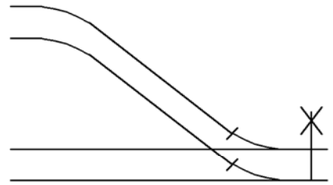
XP4 CONSTANT WARNING DEVICE (UNI–DIRECTIONAL)

DWBS
DOUBLE WIDE BAND SHUNT

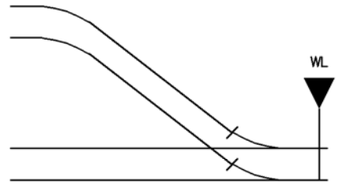
XXX HZ
NARROW BAND SHUNT

XXX HZ
TUNED JOINT COUPLER

HAND–OPERATED TURNOUTS



TURNOUT WITH CIRCUIT CONTROLLER



TURNOUT WITH CIRCUIT CONTROLLER AND ELECTRIC LOCK

RAIL BONDING

POLARITY JOINT PLATE

PROFILE (GRADE)

(FOR SOUTHBOUND MOVEMENT LEFT TO RIGHT)

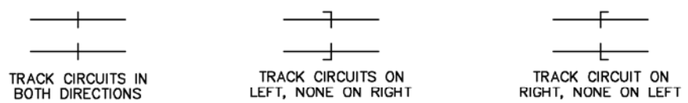
−0.22 | 0 | +0.2

(LEVEL)

45

MILE POST

INSULATED RAIL JOINTS

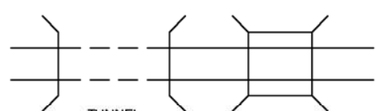


TRACK CIRCUITS IN BOTH DIRECTIONS

TRACK CIRCUITS ON LEFT, NONE ON RIGHT

TRACK CIRCUIT ON RIGHT, NONE ON LEFT

TUNNELS AND BRIDGES



TUNNEL

BRIDGE OR VIADUCT

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STANDARD DRAWINGS

GENERAL SYMBOLS

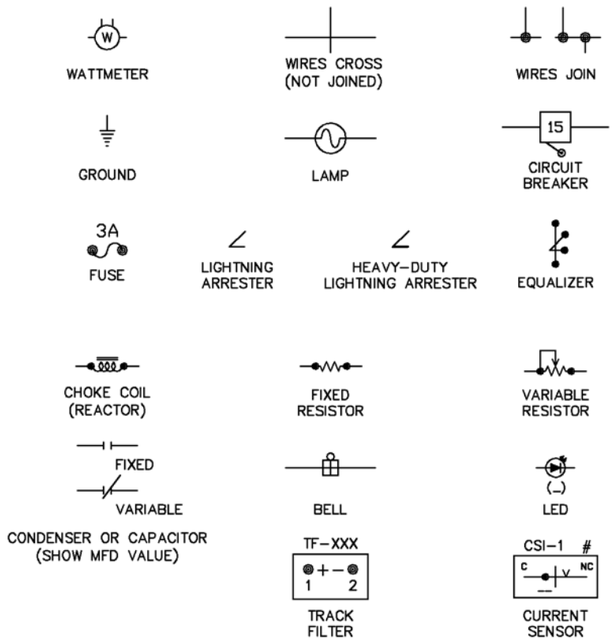
SIGNAL AND COMMUNICATIONS

CADD FILE NAME: SD–1202

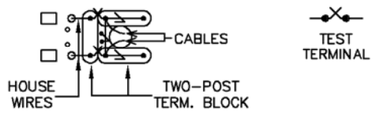
REV: | EDITION: FOURTH

GENERAL

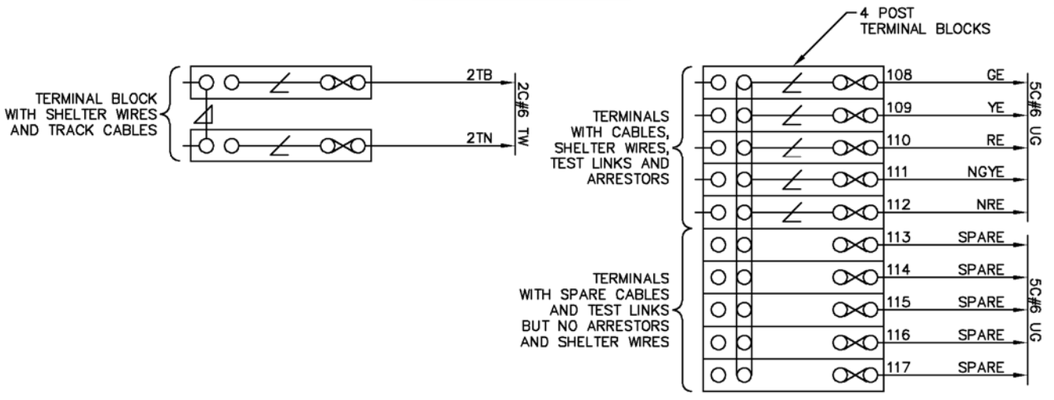
STANDARD DRAWING NO.: SD–1202



VARIOUS SYMBOLS

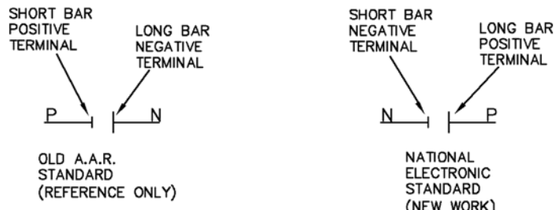


2 POST TERMINAL BLOCKS



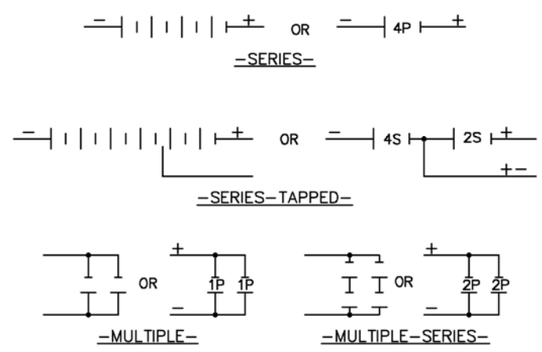
4 POST TERMINAL BLOCKS

DETAILS FOR TERMINAL BOARDS



BATTERIES

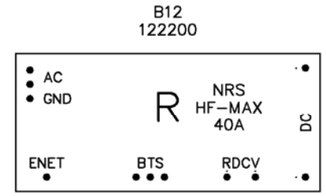
NOTE:
THE NATIONAL ELECTRONIC STANDARD IS SHOWN HERE TO ACQUAINT OUR PERSONNEL WITH THE SYMBOL USED BY OTHER INDUSTRIES AND IS NOT FOR USE ON SIGNAL CIRCUIT PLANS.



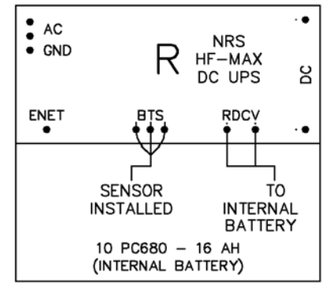
SPECIFY NUMBER OF CELLS USED AND, USING SYMBOLS BELOW, SHOW THE TYPE.

D-DRY CELLS
P-PRIMARY CELLS
S-LEAD STORAGE CELLS
N-NICKEL-IRON OR NICKEL-CADMIUM STORAGE CELLS

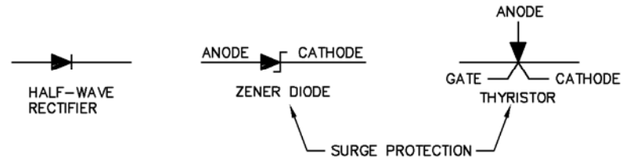
CIRCUIT ARRANGEMENTS



HF-MAX CHARGER



HF-MAX CHARGER 110 V DC



DEVICES USED WITH RECTIFIERS

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PENINSULA CORRIDOR JOINT POWERS BOARD

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STANDARD DRAWINGS

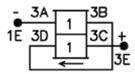
GENERAL SYMBOLS
SIGNAL COMPONENT AND CIRCUIT PLANS

CADD FILE NAME: SD-1203
REV: EDITION: FOURTH
GENERAL
STANDARD DRAWING NO.: SD-1203

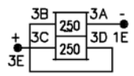
ACCEPTABLE PLUG-IN RELAYS FOR USE ON PCJPB PROJECTS

RELAY DESCRIPTION	BASE TYPE	BASE DWG #	CONTACT CONFIGURATION	ASO	OLD SPTC TAB	SIEMENS	OLD SPTC TAB
RELAY, 2 OHM BIASED NEUTRAL TRACK	B1	1	4FB-2F-1B	A62-120	RTM	400510	RTN
RELAY, 0.5 OHM BIASED NEUTRAL TRACK	B1	2	4FB-2F-1B	A62-120	RTM	400510	RTN
RELAY 500 OHM BIASED NEUTRAL REGULAR RELEASE	B1	3	6FB	A62-125	RBM	400500	RBN
RELAY, 60 OHM NEUTRAL FLASHER	B1	4	4FB	A62-195	REF	400700-X	RFH
RELAY, 100/100 OHM NEUTRAL POWER TRANSFER	B1	5	6FB HD	A62-579	RXR	400801-X	RXT
RELAY, 450/.069 OHM NEUTRAL LIGHT OUT	B1	7	4FB	A62-217	RXS	400302	RXU
RELAY, 500 OHM BIASED NEUTRAL SWITCH CONTROL	B1	9	2F-2B EHD	A62-429	RWN	400520	RWT
				A62-0744			
RELAY, MICROCHRON TIMING 1 SEC TO 19 MIN 59 SEC	B2	10	2FB-3F-2B	A62-627	RUK	NONE	
RELAY, .064/135 OHM NEUTRAL SWITCH OVERLOAD	B1	11	2CBO	A62-430	RWO	400601	RWU
RELAY, 24 OHM NEUTRAL SLOW RELEASE	B1	13	2FB	A62-365	RLY	400221	
RELAY, 500 OHM NEUTRAL REGULAR RELEASE	B1	14	6FB	A62-262	RLT	400000	RLT1
RELAY, 500 OHM NEUTRAL REGULAR RELEASE	B1	15	6FB HD	A62-580	RLV	400023	RLV1

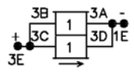
VITAL PLUG-IN RELAYS



D.C. BIASED NEUTRAL RELAY

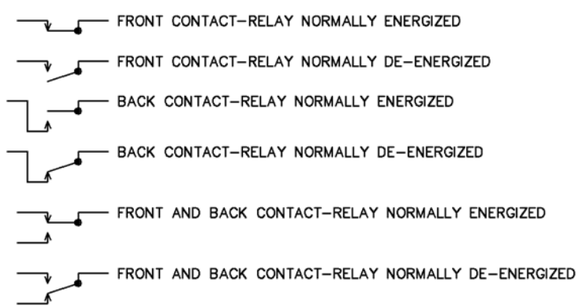


D.C. NEUTRAL RELAY

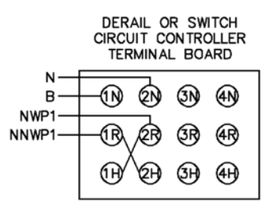


D.C. BIASED NEUTRAL RELAY-COILS IN PARALLEL

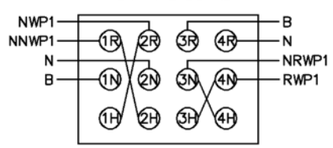
RELAY CONTACTS - TWO POSITION RELAYS



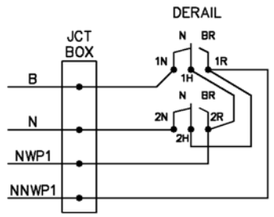
SWITCH CIRCUIT CONTROLLER WIRING

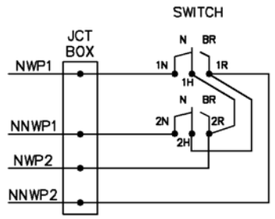


SECOND SWITCH IN SWITCH AND DERAIL COMBINATION OR CROSSOVER CIRCUIT CONTROLLER TERMINAL BOARD

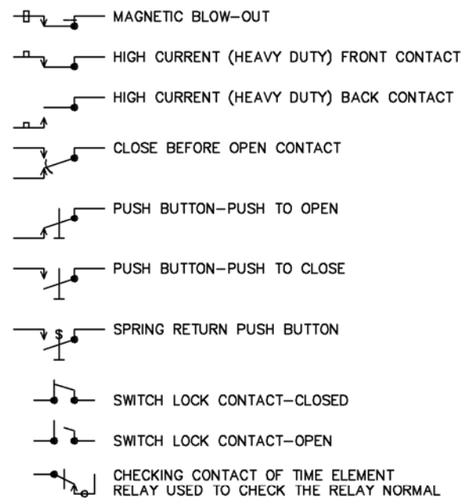


SWITCH CIRCUIT CONTROLLER CONTACT

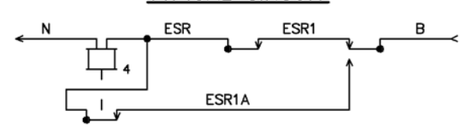




RELAY CONTACTS WITH SPECIAL CHARACTERISTICS



TYPICAL CIRCUIT



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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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STANDARD DRAWINGS

GENERAL
SYMBOLS
SIGNAL RELAYS, RELAY CONTACTS, SHELF AND VITAL RELAYS

CADD FILE NAME: SD-1204

REV: | EDITION: FOURTH

GENERAL

STANDARD DRAWING NO.: SD-1204

CENTRAL CONTROL FACILITY

MICROWAVE SITE

DATA RADIO BASE STATION
ANTENNA TOWER AND SITE

SPREAD SPECTRUM REPEATER SITE

CONTROL POINT

50 OHM TERMINATION

PENINSULA CORRIDOR

LEASED 4 WIRE E&M CIRCUITS

COAXIAL CABLE

AMPLIFIER OR PRE-AMPLIFIER
(XX DENOTES GAIN IN dB)

RF DEVICE
(XXXX DENOTES DEVVICE TYPE)

RELAY

RESISTOR

EARTH GROUND

CAVITY FILTER

CAVITY NOTCH FILTER

CRYSTAL FILTER

SAMPLE TAP / DIRECTIONAL COUPLER

FERRITE ISOLATOR

DUPLEXER

POWER COMBINER / SPLITTER

RAILROAD TRACKS

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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STANDARD DRAWINGS

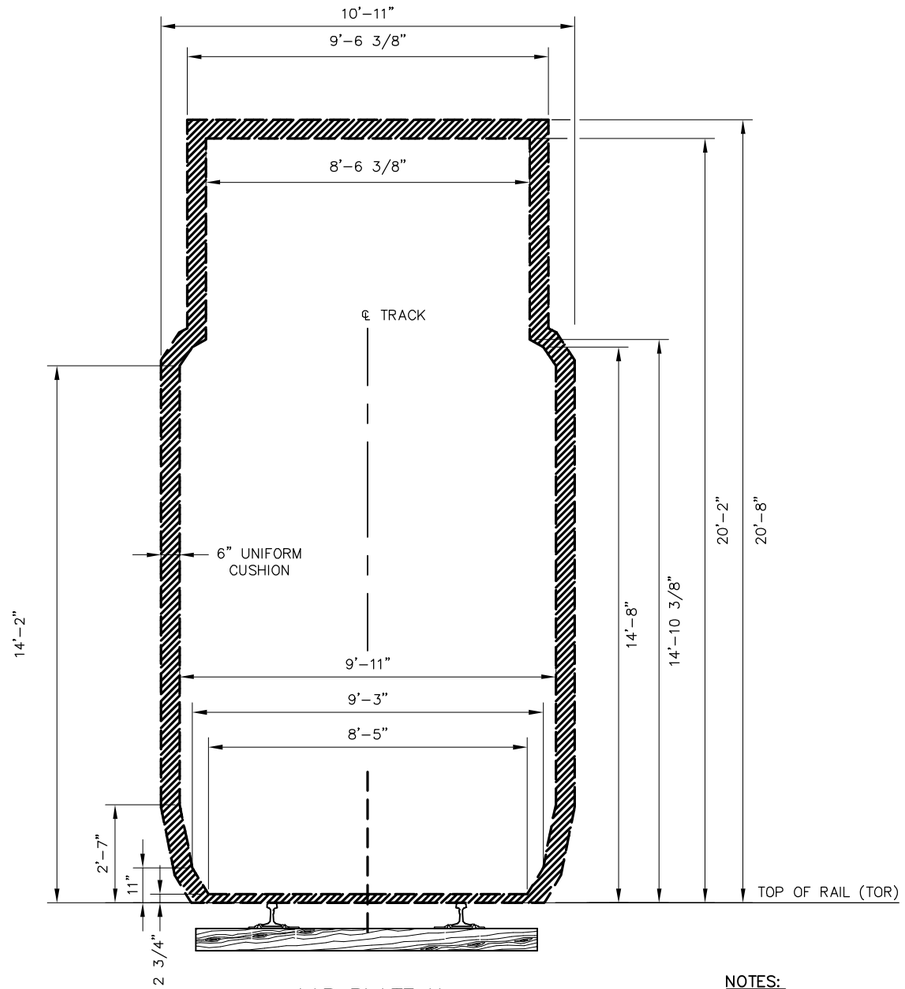
GENERAL SYMBOLS
VHF VOICE RADIO AND DATA RADIO NETWORK

CADD FILE NAME: SD-1205

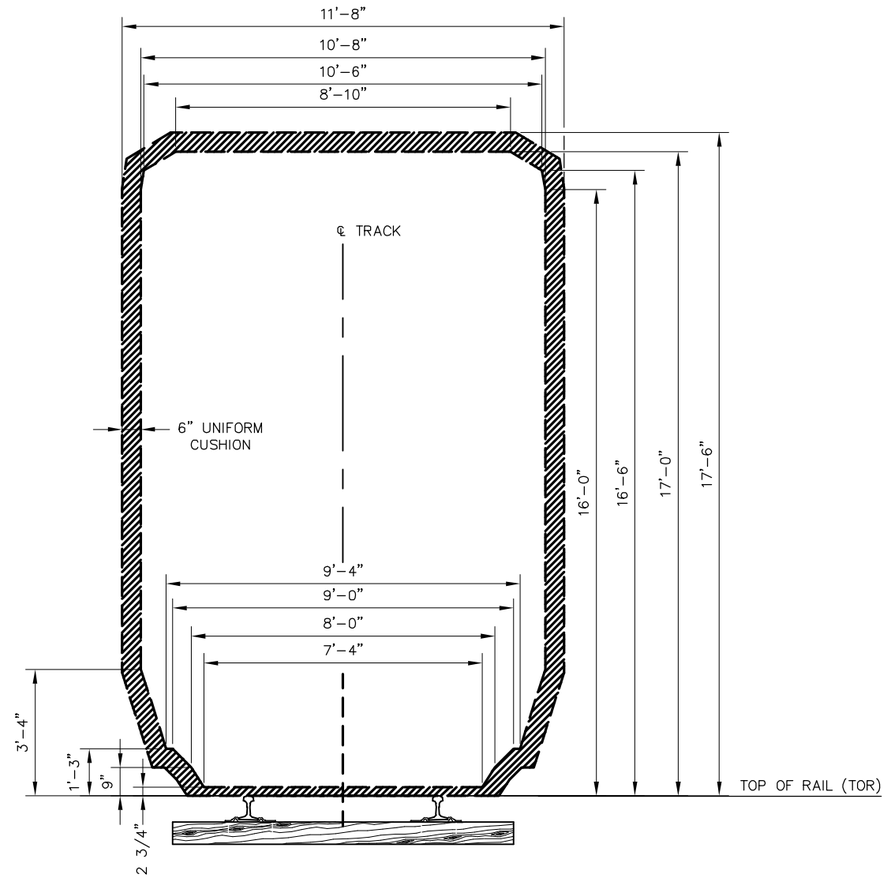
REV: | EDITION: FOURTH

GENERAL

STANDARD DRAWING NO.: SD-1205



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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STANDARD DRAWINGS

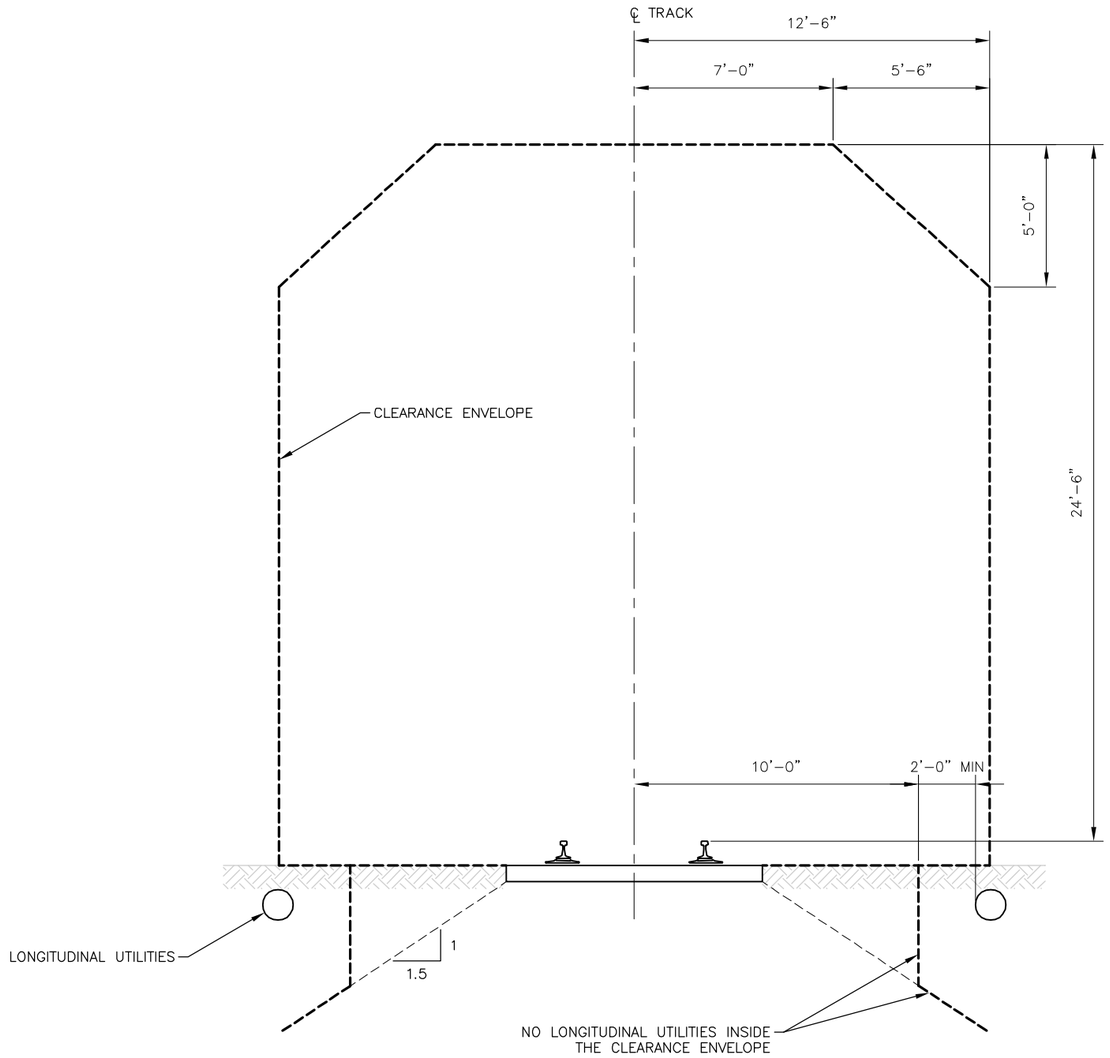
TRACK
CLEARANCE
AAR PLATE F AND H CAR
CLEARANCE ENVELOPES

CADD FILE NAME: SD–2001

REV: | EDITION: FOURTH

TRACK

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.

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STANDARD DRAWINGS

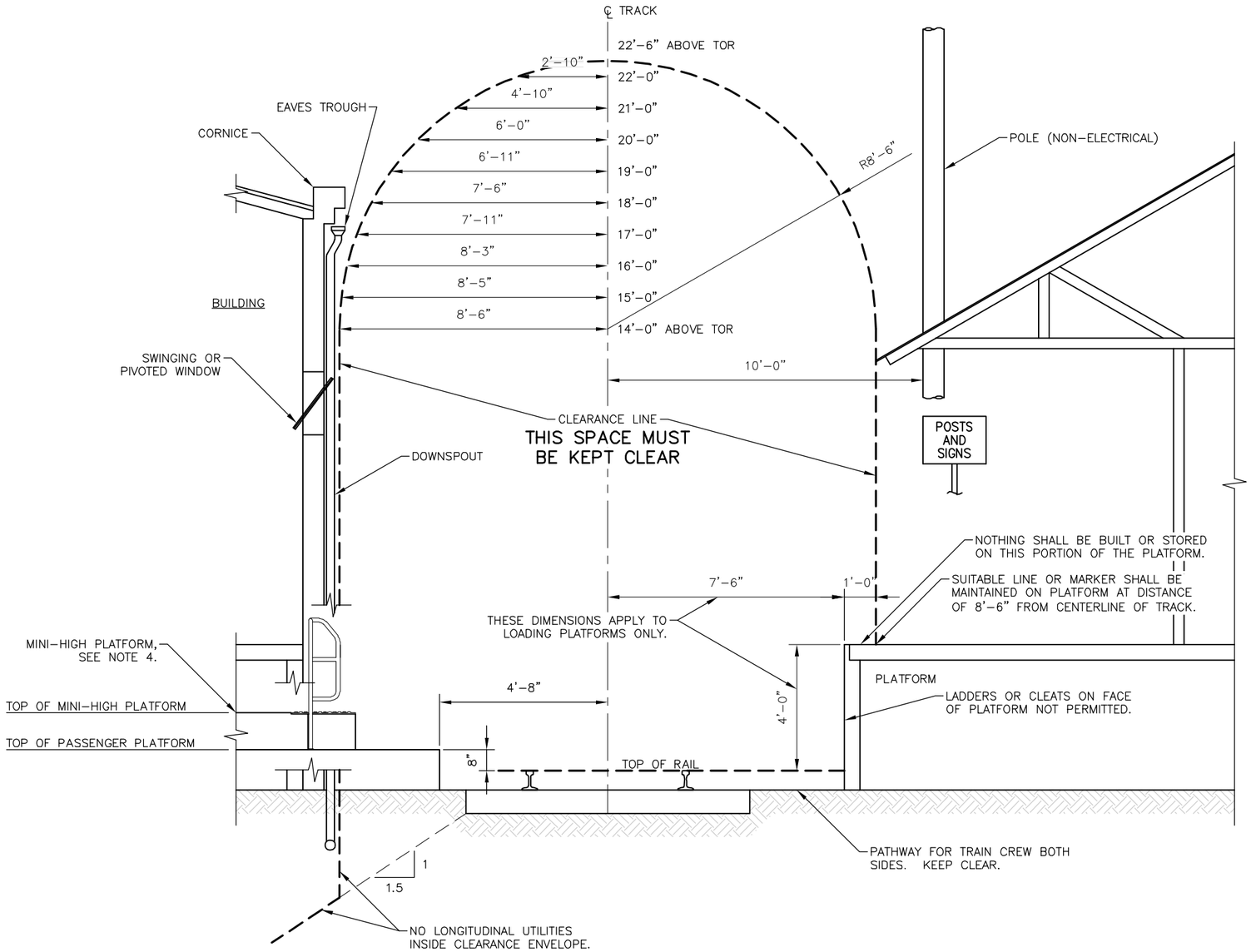
TRACK
CLEARANCE
STANDARD CLEARANCE
STRUCTURES AND STATIONS

CADD FILE NAME: SD–2002

REV: | EDITION: FOURTH

TRACK

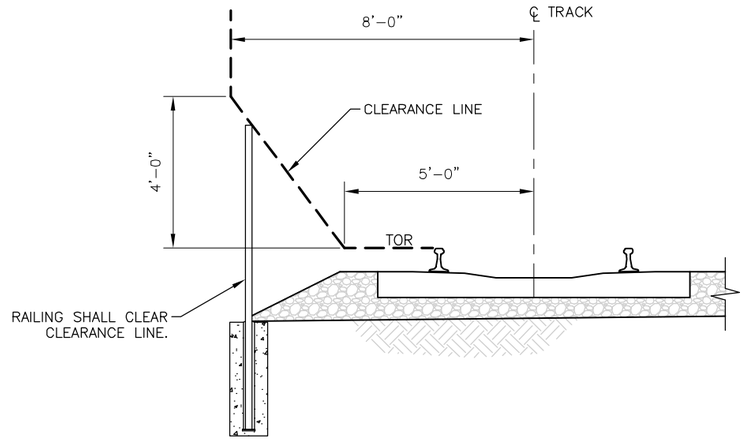
STANDARD DRAWING NO.: SD–2002



TYPICAL CLEARANCE OF STRUCTURES FROM RAILROAD TRACKS PER CPUC GENERAL ORDER NO. 26–D (DATED 1948)

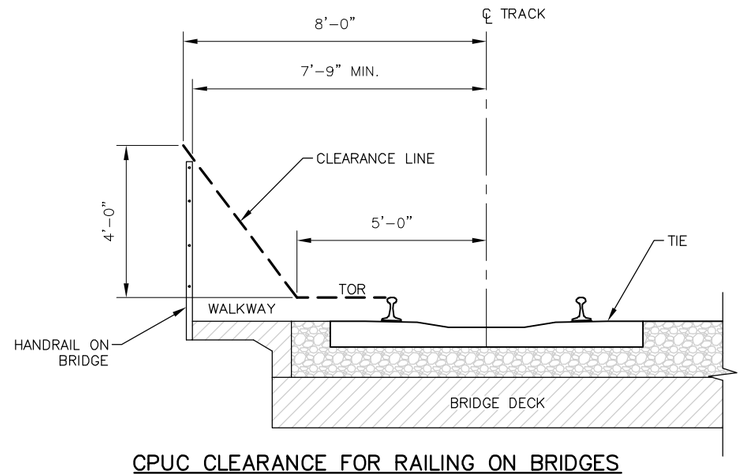
NOTES:

1. OVERHEAD WIRE CLEARANCES SHALL CONFORM TO CPUC GO95 AND RESOLUTION SED–2.
2. POSTS, POLES, SIGNS AND SIMILAR FACILITIES MAY HAVE A MINIMUM CLEARANCE OF 8'–6".
3. ALL SIDE CLEARANCE DIMENSIONS ARE FOR TANGENT TRACK. IN GENERAL SIDE CLEARANCE FOR CURVED TRACK SHALL BE 1'–0" GREATER THAN THAT FOR TANGENT TRACK.
4. SEE SD–3051 AND SD–3052 FOR STATION PLATFORM DETAILS. SEE SD–3101 TO SD–3103 FOR MINI–HIGH PLATFORM DETAILS.
5. CLEARANCES LISTED HERE ARE MINIMUM REQUIREMENTS PER CPUC. CALTRAIN HAS ADDITIONAL CLEARANCE REQUIREMENTS.
6. TEMPORARY FACILITIES MIGHT NOT MEET THE CLEARANCE REQUIREMENTS. DESIGNS OF TEMPORARY FACILITIES MUST BE APPROVED BY THE DEPUTY DIRECTOR OF ENGINEERING.



CPUC CLEARANCE FOR RAILING PER SECTION 3.11

HEIGHT ABOVE TOP OF RAIL	CLEARANCE FROM CENTER OF TRACK
0'	5'
0'–6"	5–4 1/2"
1'–0"	5'–9"
1'–6"	6'–1 1/2"
2'–0"	6'–6"
2'–6"	6'–10 1/2"
3'–0"	7'–3"
3'–6"	7'–7 3/4"
4'–0"	8'–0"
> 4'–0"	8'–6"



CPUC CLEARANCE FOR RAILING ON BRIDGES PER SECTION 3.11

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STANDARD DRAWINGS

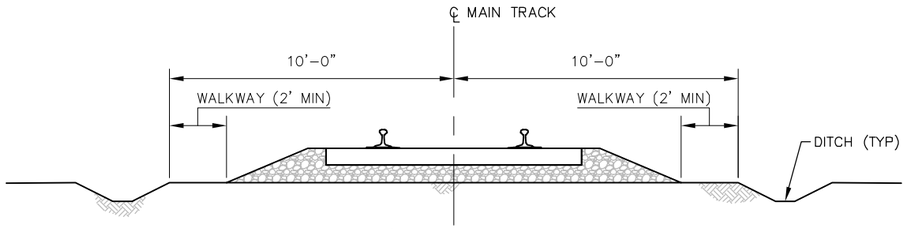
TRACK
CLEARANCE
MINIMUM CLEARANCE
PER CPUC GENERAL ORDER 26D

CADD FILE NAME: SD–2003

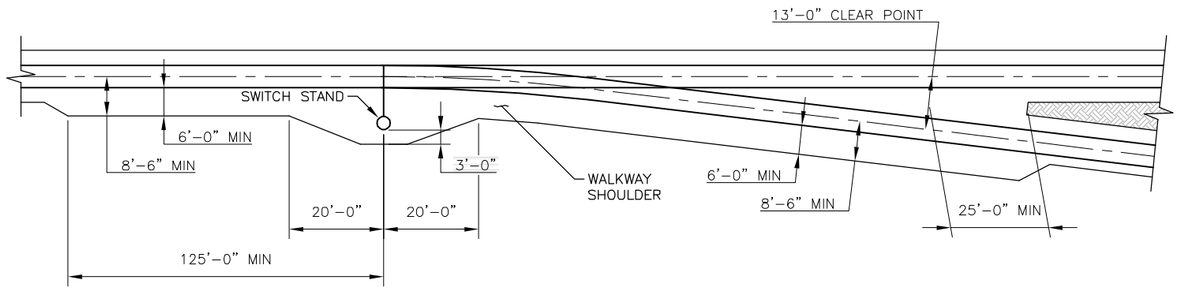
REV: | EDITION: FOURTH

TRACK

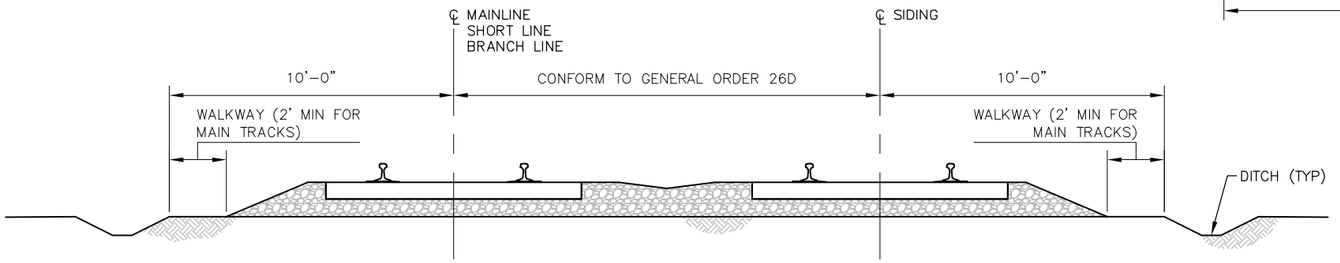
STANDARD DRAWING NO.: SD–2003



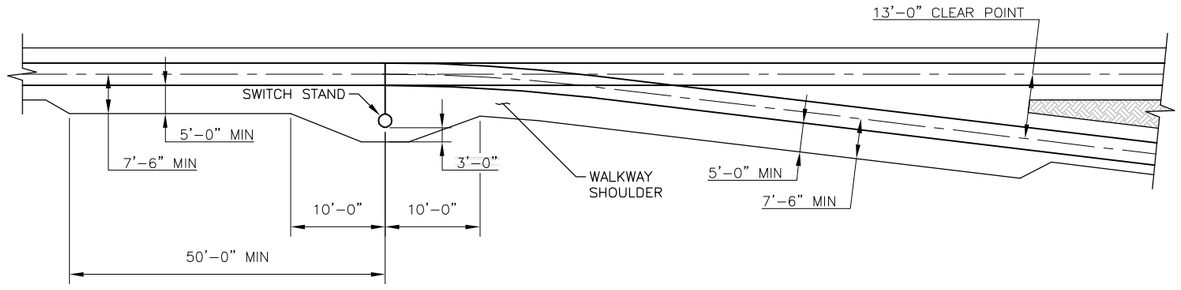
STANDARD 1
WALKWAY ALONG MAIN LINE TRACKS



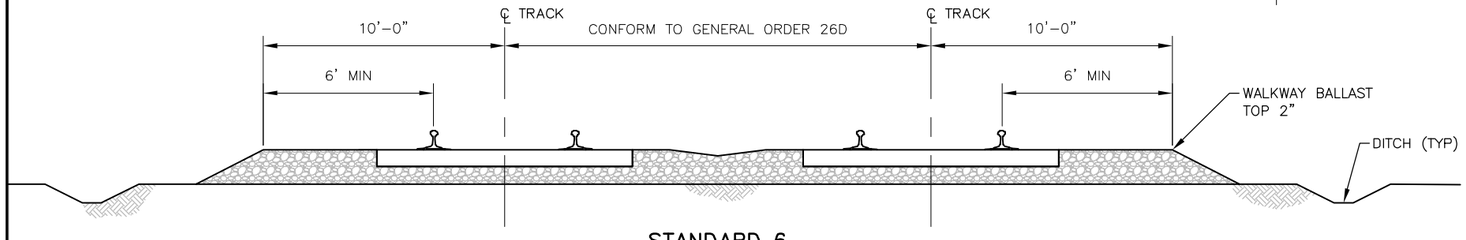
STANDARD NO. 3
WALKWAYS AT NON–POWERED MAIN LINE SWITCHES
ENTERING YARDS AND SERVING INDUSTRY TRACKS



STANDARD 2
WALKWAY ALONG MAIN LINE TRACKS



STANDARD NO. 5
WALKWAYS AT SHORT LINE AND BRANCH LINE SWITCHES
AND LOCATIONS WHERE SWITCHES ARE POWER OPERATED



STANDARD 6
WALKWAYS IN YARDS AND AT POINTS WHERE INDUSTRIAL SWITCHING
IS PERFORMED, BUT NOT LESS THAN 50 FT. IN ADVANCE OF SWITCH

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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STANDARD DRAWINGS

TRACK
CLEARANCE
MINIMUM WALKWAY REQUIREMENTS
PER CPUC GENERAL ORDER 118

CADD FILE NAME: SD–2004

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TRACK

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

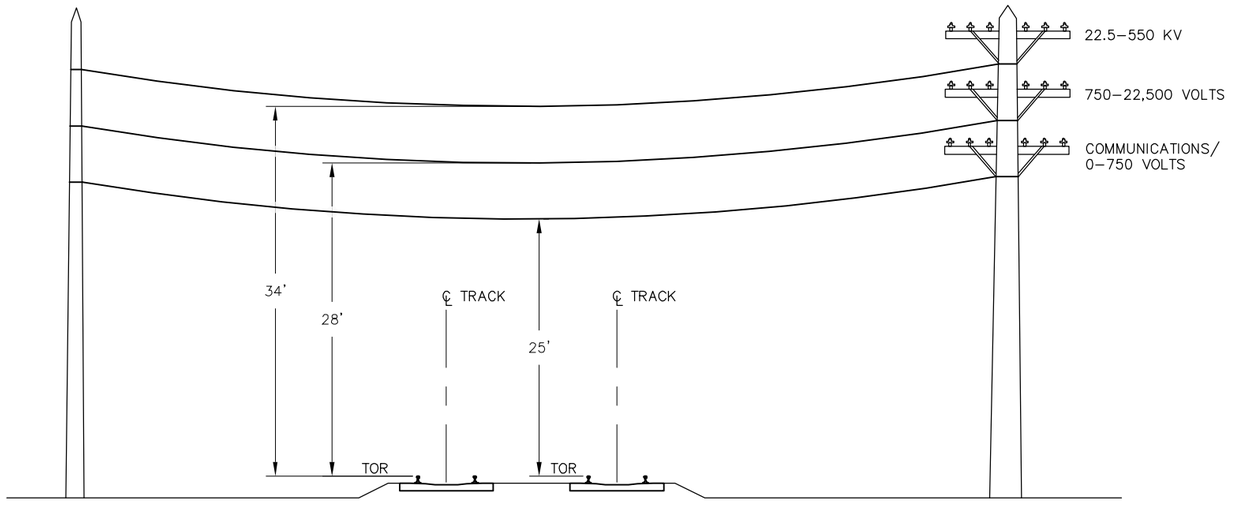
CASE NO.	NATURE OF CLEARANCE	A SPAN WIRES (OTHER THAN TROLLEY SPAN WIRES) OVERHEAD GUYS AND MESSENGERS	B COMMUNICATION CONDUCTORS (INCLUDING OPEN WIRE, CABLES AND SERVICE DROPS), SUPPLY SERVICE DROPS OF 0–750 VOLTS	C TROLLEY CONTACT, FEEDER AND SPAN WIRES, 0–5,000 VOLTS	D SUPPLY CONDUCTORS OF 0–750 VOLTS 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.

CLEARANCE OF POLES, TOWERS AND STRUCTURES FROM RAILROAD TRACKS

1. WHERE POLES, TOWERS OR OTHER LINE STRUCTURES ARE SET IN PROXIMITY TO RAILROAD TRACKS, THE MINIMUM SIDE CLEARANCE FROM THE FACE OF A POLE, TOWER, OR STRUCTURE TO THE CENTER LINE OF THE TANGENT RAILROAD TRACK SHALL BE 8 FEET 6 INCHES.
2. THIS SIDE CLEARANCE MAY BE DECREASED OR SHALL BE INCREASED IN ACCORDANCE WITH CPUC GENERAL ORDER 26–D, SECTIONS 3.7, 3.16, 3.20, 8.1, 9.2, 9.3 AND 9.4. FOR TRACKS USED EXCLUSIVELY FOR LIGHT–RAIL TRANSIT OPERATIONS, THE SIDE CLEARANCES MAY BE FURTHER DECREASED IN ACCORDANCE WITH CPUC GENERAL ORDER 143A, SECTION 9.06.



MINIMUM CLEARANCES OF WIRES ABOVE RAILROADS – CASE 1

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STANDARD DRAWINGS

TRACK
CLEARANCE
MINIMUM VERTICAL CLEARANCE
PER CPUC GENERAL ORDER 95

CADD FILE NAME: SD–2005

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TRACK

STANDARD DRAWING NO.: SD–2005

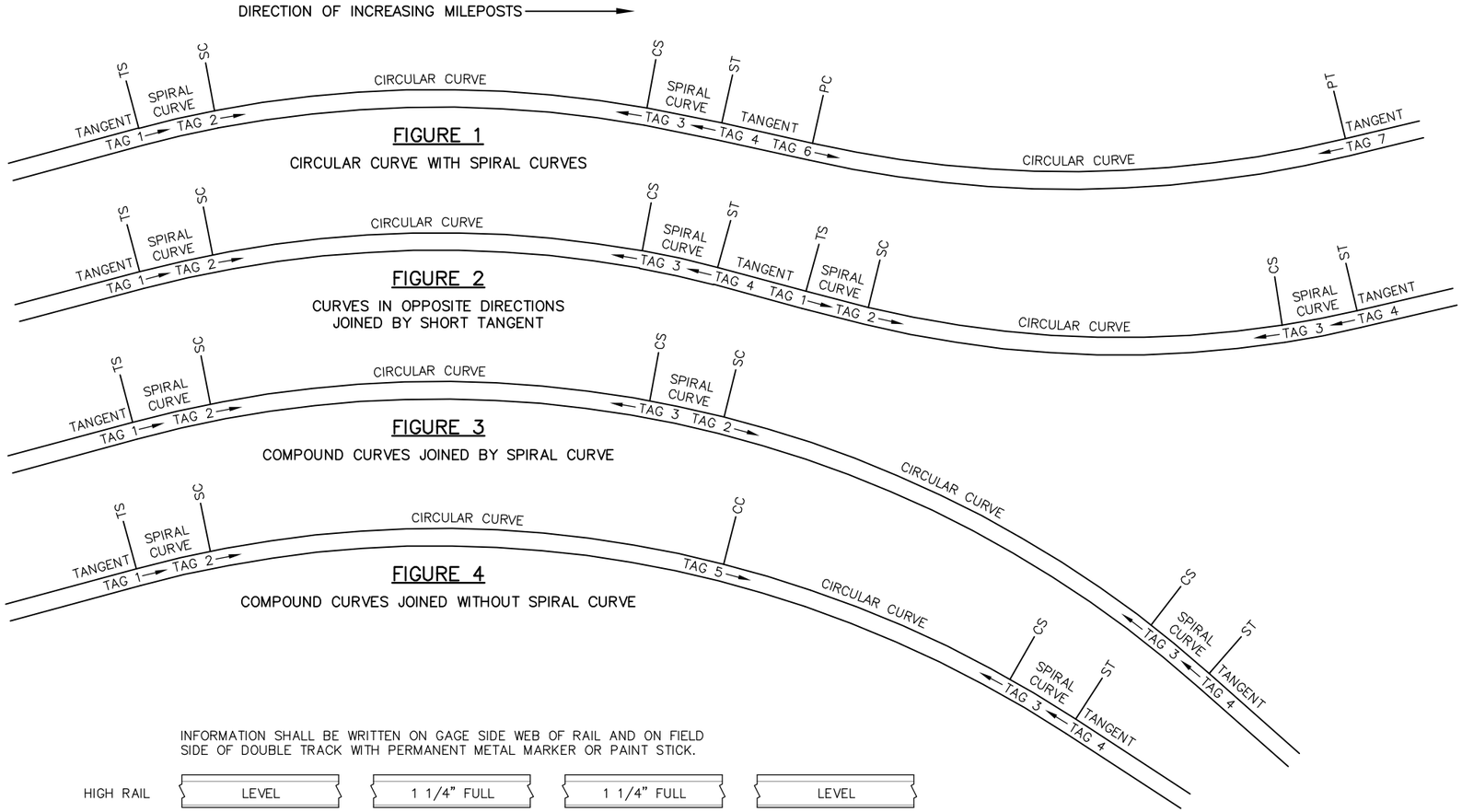


FIGURE 1

CIRCULAR CURVE WITH SPIRAL CURVES

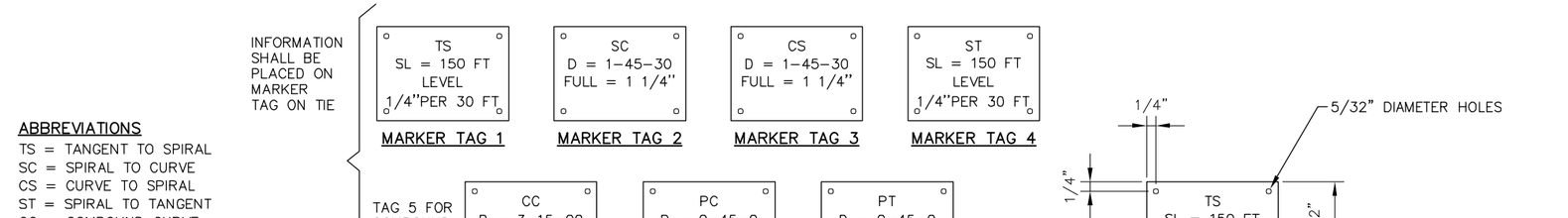


FIGURE 2

CURVES IN OPPOSITE DIRECTIONS
JOINED BY SHORT TANGENT

FIGURE 3

COMPOUND CURVES JOINED BY SPIRAL CURVE

FIGURE 4

COMPOUND CURVES JOINED WITHOUT SPIRAL CURVE

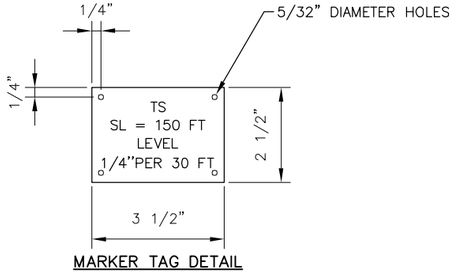
INFORMATION SHALL BE WRITTEN ON GAGE SIDE WEB OF RAIL AND ON FIELD SIDE OF DOUBLE TRACK WITH PERMANENT METAL MARKER OR PAINT STICK.

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

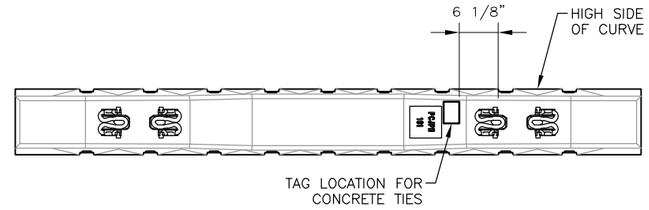


FIGURE 5

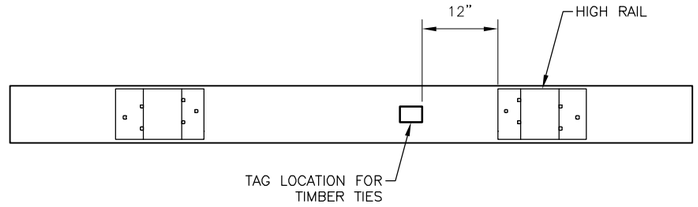
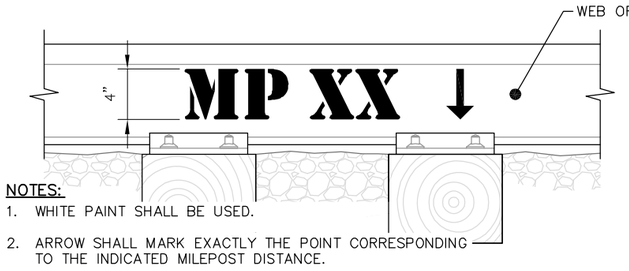


FIGURE 6



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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STANDARD DRAWINGS

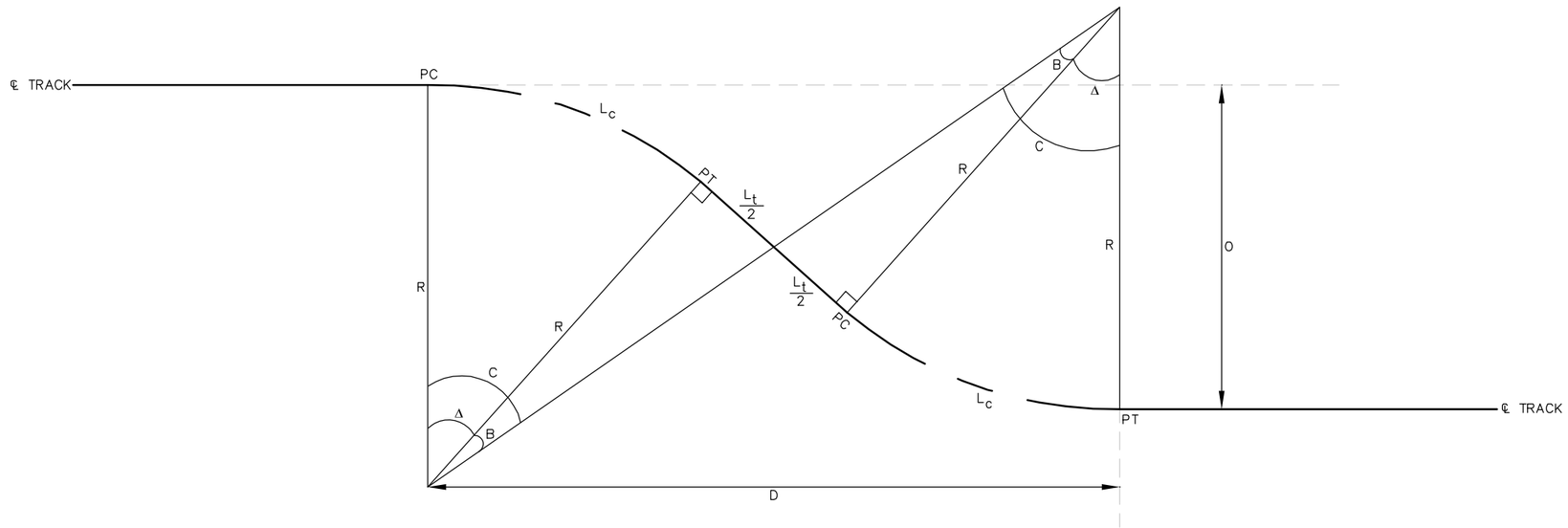
TRACK
GEOMETRY
CURVE AND MILEPOST
MARKING DETAILS

CADD FILE NAME: SD-2101

REV: | EDITION: FOURTH

TRACK

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	Lc	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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PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

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San Carlos, CA 94070

STANDARD DRAWINGS

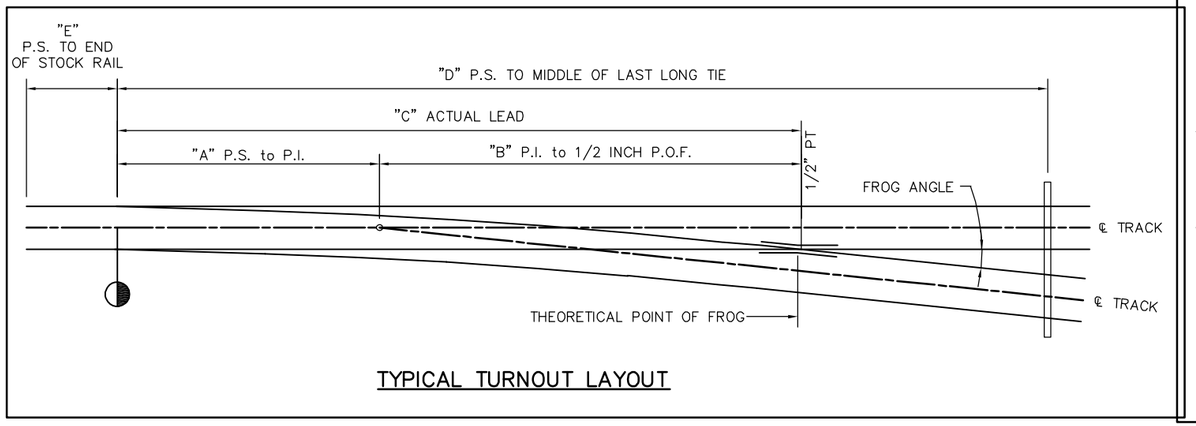
TRACK
GEOMETRY
REVERSING CURVES
LAYOUT AND CALCULATIONS

CADD FILE NAME: SD-2102

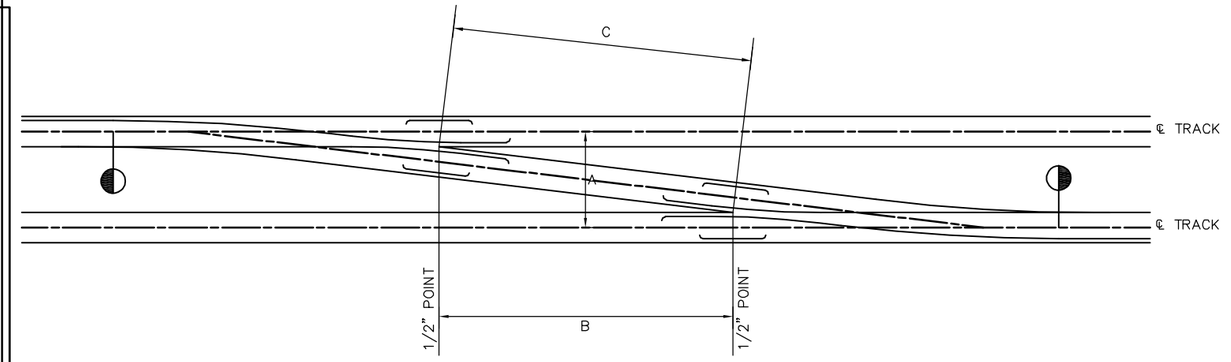
REV: | EDITION: FOURTH

TRACK

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
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"	10 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. 10 FROG**		**NO. 14 FROG**		**NO. 20 FROG**	
A	B	C	B	C	B	C	B	C
13'–0"	27'–7 1/8"	28'–4 7/8"	34'–8 1/8"	35'–3 7/8"	48'–9 1/4"	49'–2 3/4"	69'–10 1/16"	70'–1 15/16"
14'–0"	35'–6 3/4"	36'–5 1/4"	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"	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"	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"	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"	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"	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"	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"	9'–11 11/16"	10'–0 5/16"	13'–11 13/16"	14'–0 3/16"	19'–11 7/8"	20'–0 1/8"

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PENINSULA CORRIDOR JOINT POWERS BOARD

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San Carlos, CA 94070

STANDARD DRAWINGS

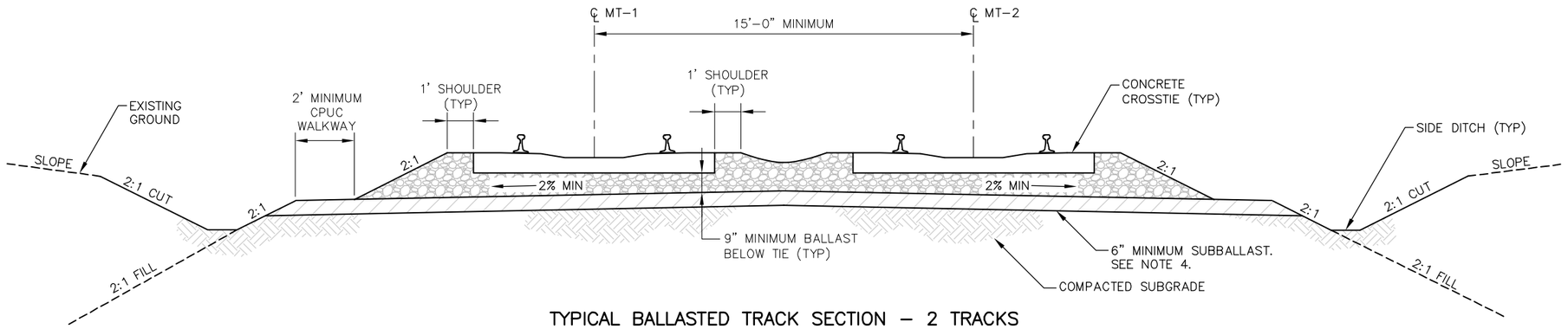
TRACK
TURNOUTS AND DERAILS
STANDARD TURNOUT AND CROSSOVER DATA

CADD FILE NAME: SD–2103

REV: | EDITION: FOURTH

TRACK

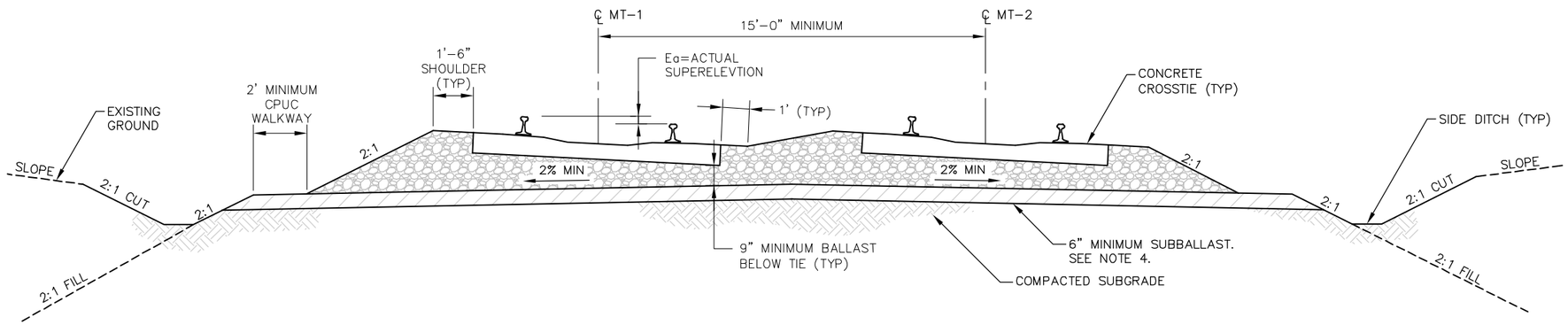
STANDARD DRAWING NO.: SD–2103



TYPICAL BALLASTED TRACK SECTION – 2 TRACKS

SECTION

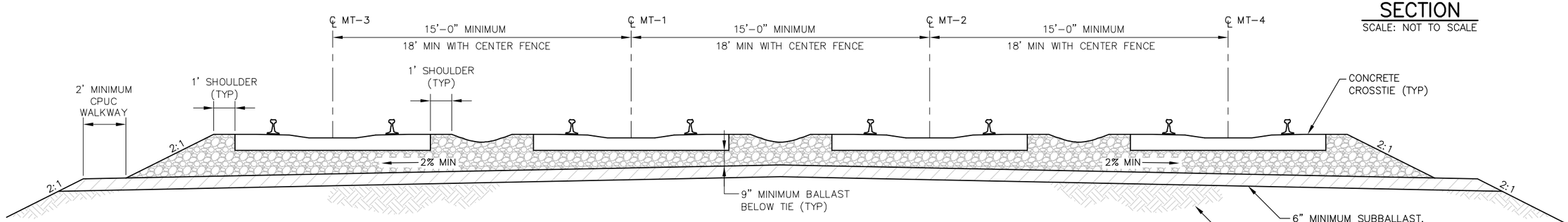
SCALE: NOT TO SCALE



TYPICAL SUPERELEVATED BALLASTED TRACK SECTION – 2 TRACKS

SECTION

SCALE: NOT TO SCALE



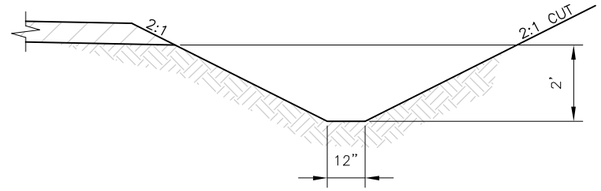
TYPICAL BALLASTED TRACK SECTION – 4 TRACKS

SECTION

SCALE: NOT TO SCALE

NOTES:

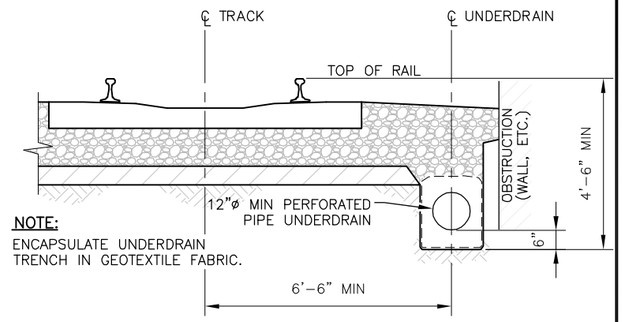
1. BALLAST DEPTH FOR SUPERELEVATED CURVED TRACK SHALL NOT EXCEED 18" AT ANY POINT BELOW BOTTOM OF TIE. FOR STANDARD TANGENT TRACK, MAXIMUM BALLAST DEPTH SHALL NOT EXCEED 12" BELOW BOTTOM OF TIE.
2. INCREASE SHOULDER WIDTH TO 18" FOR CURVED TRACKS SUPERELEVATED BY 1/2" AND GREATER.
3. SEE SD–2153 FOR 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)



SIDE DITCH FOR TRACK DRAINAGE

SECTION

SCALE: NOT TO SCALE



NOTE:
ENCAPSULATE UNDERDRAIN TRENCH IN GEOTEXTILE FABRIC.

WHEN SIDE DITCH IS NOT POSSIBLE

SECTION

SCALE: NOT TO SCALE

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PENINSULA CORRIDOR JOINT POWERS BOARD

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STANDARD DRAWINGS

TRACK
TRACK STRUCTURE

STANDARD TRACK SECTIONS

CADD FILE NAME: SD–2151

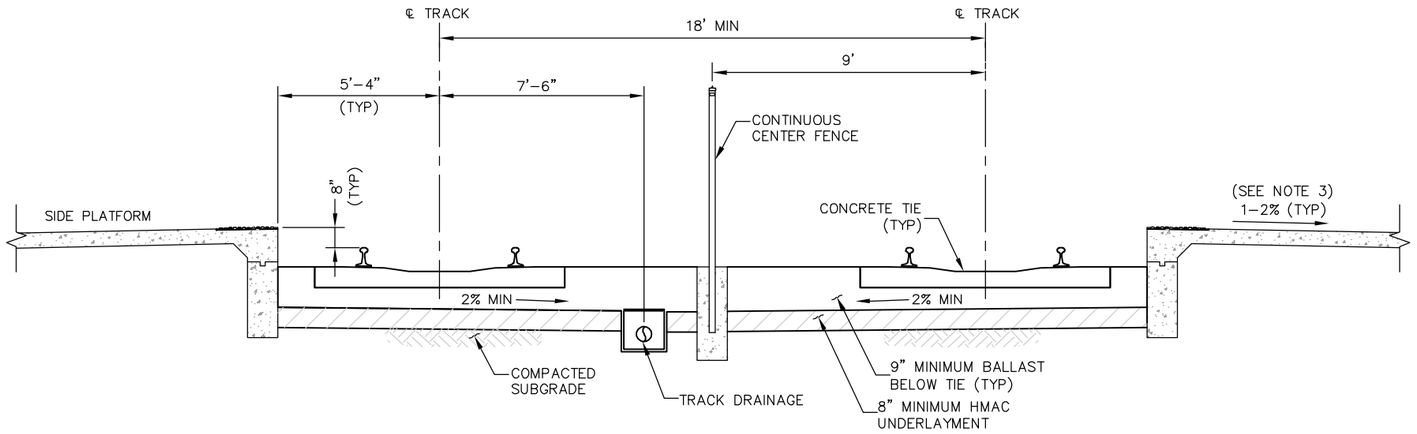
REV: | EDITION: FOURTH

TRACK

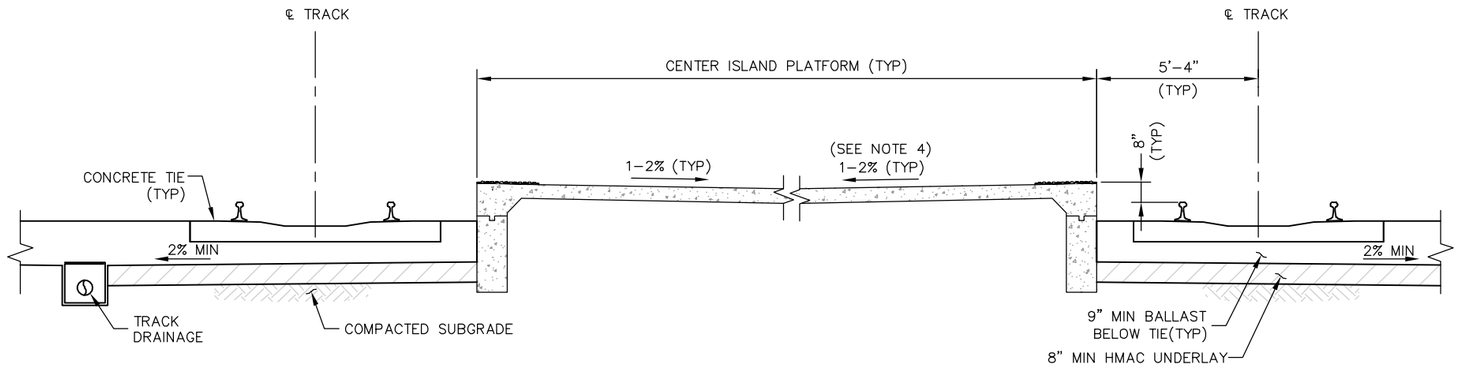
STANDARD DRAWING NO.: SD–2151

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.



OUTBOARD PLATFORMS



CENTER ISLAND PLATFORM

TYPICAL BALLASTED TRACK THROUGH STATIONS

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STANDARD DRAWINGS

TRACK
TRACK STRUCTURE

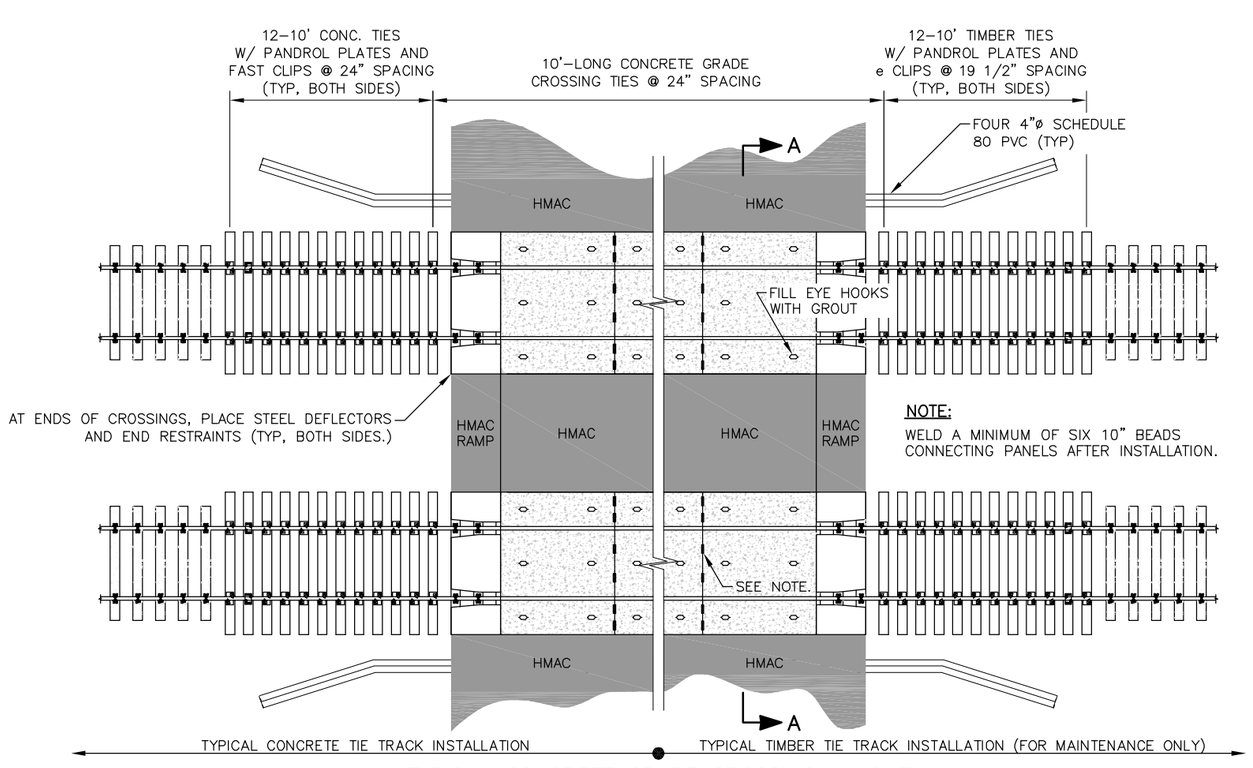
TYPICAL SECTIONS THROUGH STATIONS

CADD FILE NAME: SD-2152

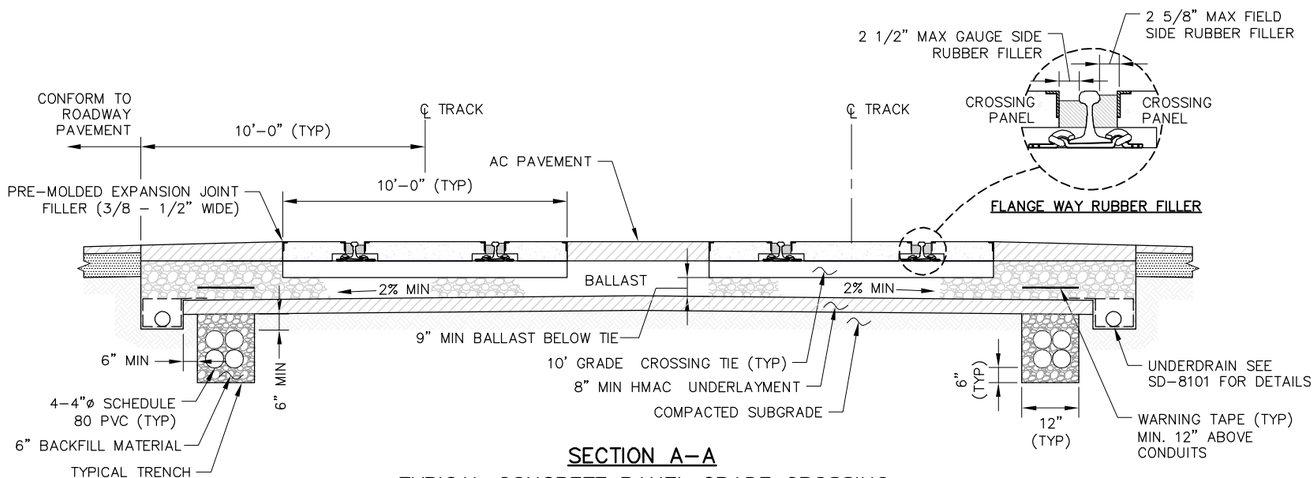
REV: | EDITION: FOURTH

TRACK

STANDARD DRAWING NO.: SD-2152



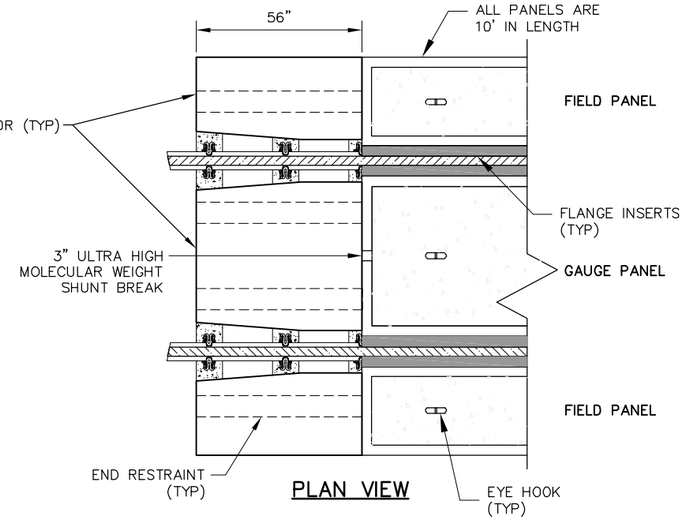
TYPICAL CONCRETE GRADE CROSSING LAYOUT



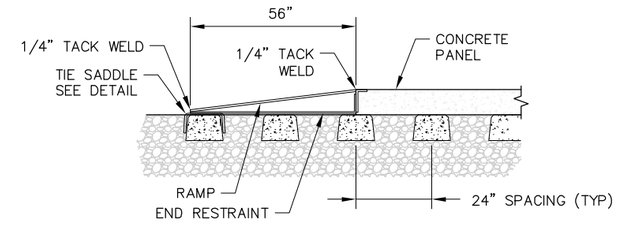
SECTION A–A
TYPICAL CONCRETE PANEL GRADE CROSSING WITH SIDE UNDERDRAINS

NOTE: DESIGNER TO FINALIZE UNDERDRAIN DESIGN

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

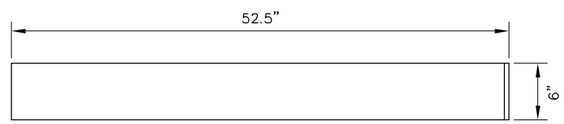


PLAN VIEW



ELEVATION

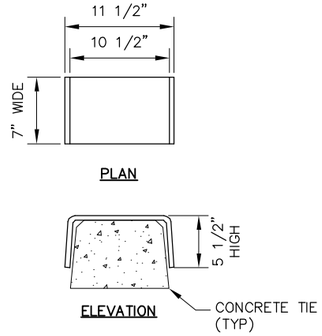
TYPICAL CONCRETE PANEL WITH STEEL DEFLECTOR AND END RESTRAINT



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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STANDARD DRAWINGS

TRACK
TRACK STRUCTURE

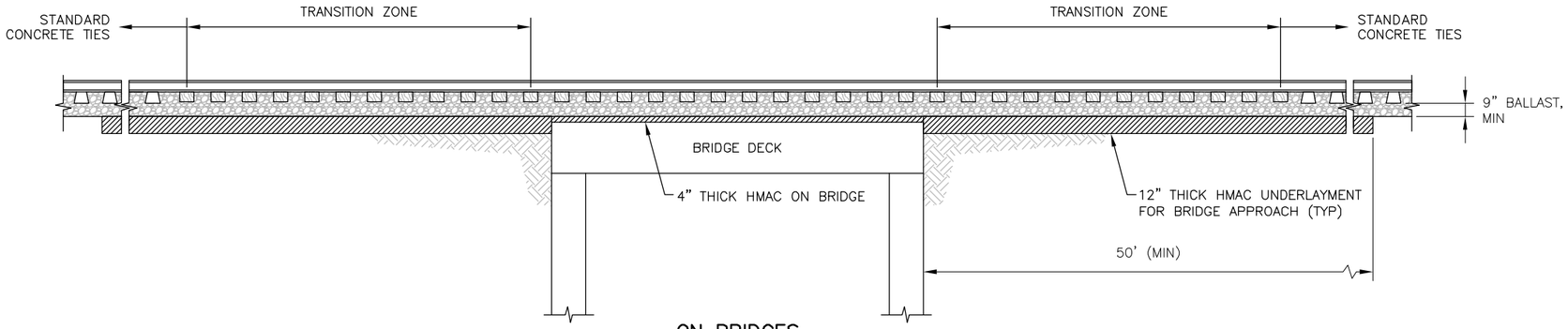
AT–GRADE CROSSINGS

CADD FILE NAME: SD–2153

REV: | EDITION: FOURTH

TRACK

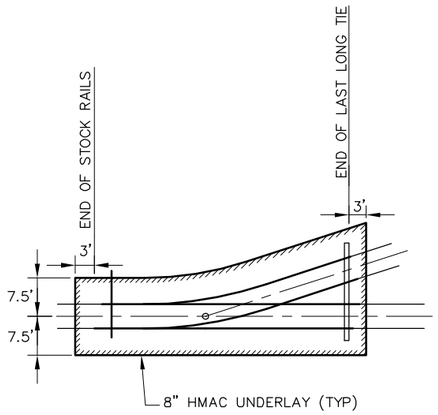
STANDARD DRAWING NO.: SD–2153



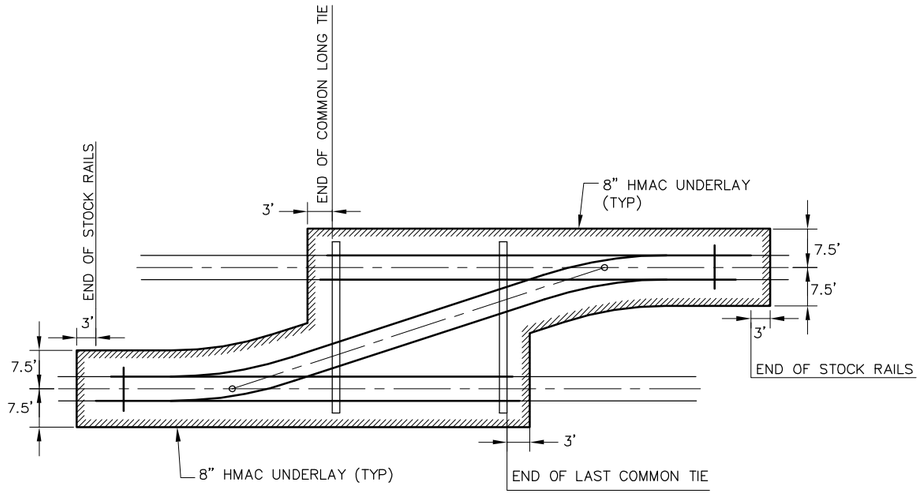
ON BRIDGES

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.



AT TURNOUTS



AT CROSSOVERS

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.

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STANDARD DRAWINGS

TRACK
ROADBED SECTIONS

HMAC UNDERLAYMENT

CADD FILE NAME: SD–2154

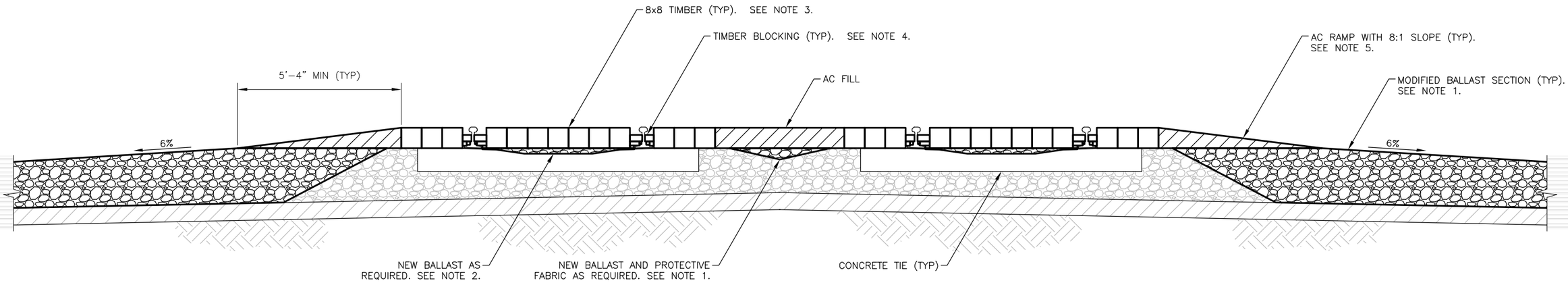
REV: | EDITION: FOURTH

TRACK

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

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STANDARD DRAWINGS

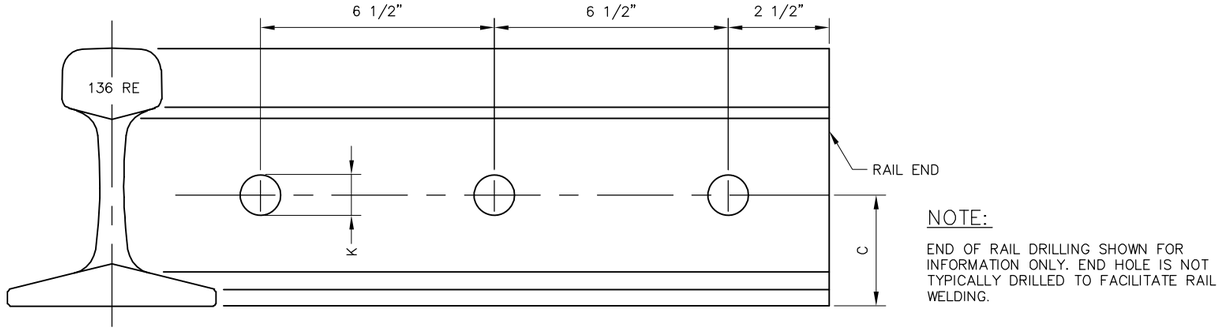
TRACK
TRACK STRUCTURE
TEMPORARY CONSTRUCTION CROSSINGS
STANDARD DETAIL

CADD FILE NAME: SD–2155

REV: | EDITION: FOURTH

TRACK

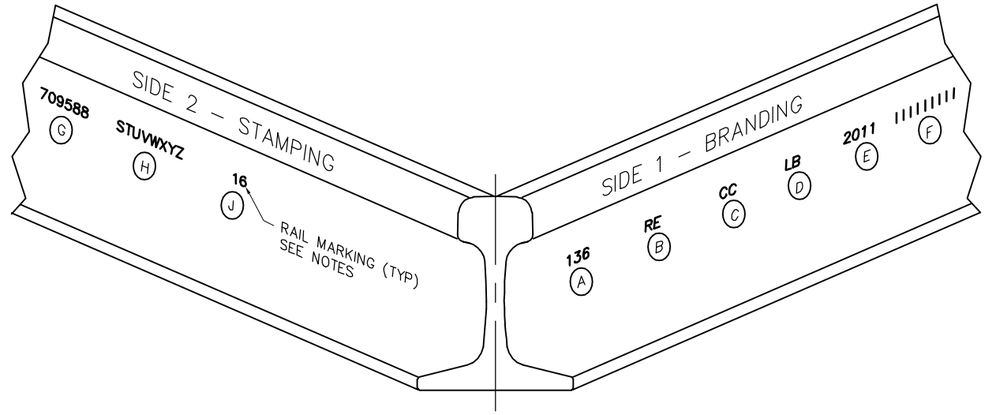
STANDARD DRAWING NO.: SD–2155



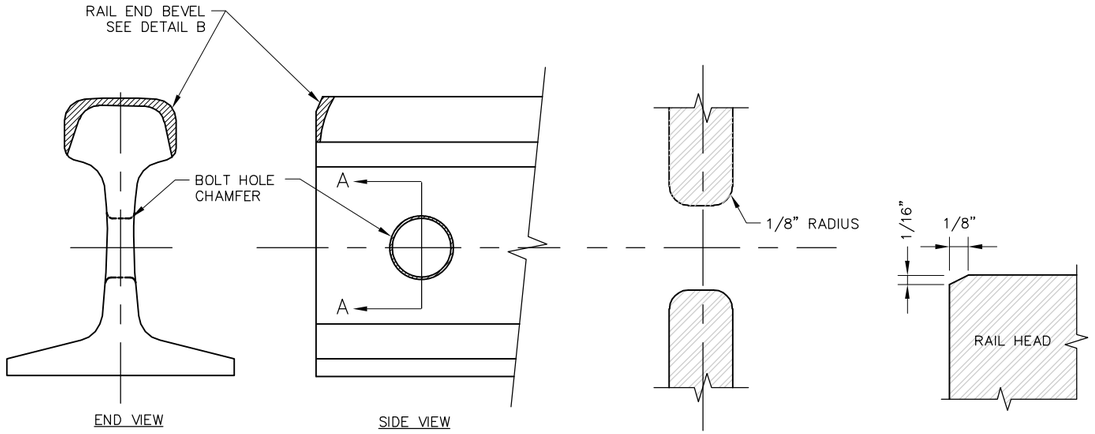
NOTE:

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)

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STANDARD DRAWINGS

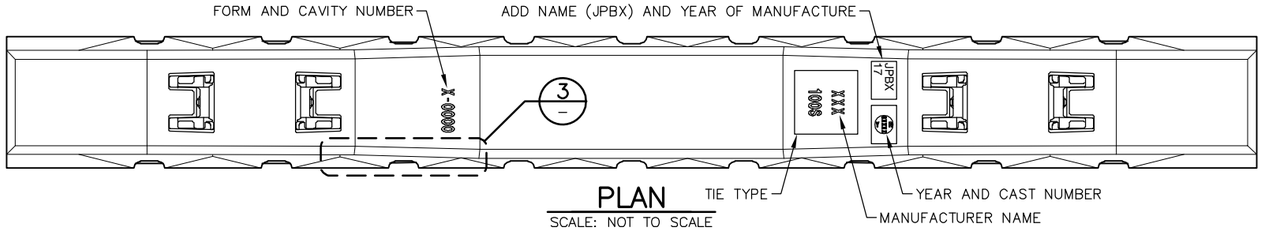
TRACK
RAILS, TIES AND FASTENERS
MARKING FOR
STANDARD RAIL SECTIONS

CADD FILE NAME: SD-2201

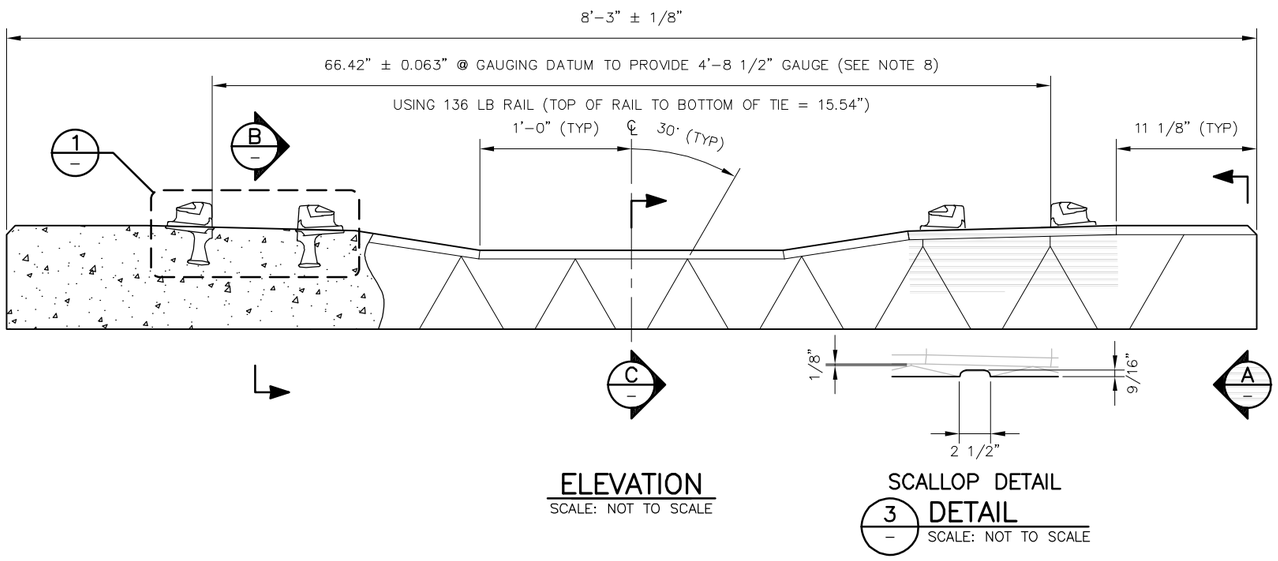
REV: | EDITION: FOURTH

TRACK

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.

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

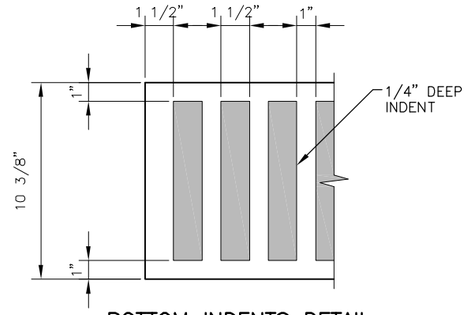
STEEL FORM FINISH, EXCEPT BOTTOM AND ENDS SHALL HAVE ROUGH FINISH.

RAIL FASTENINGS (PANDROL)

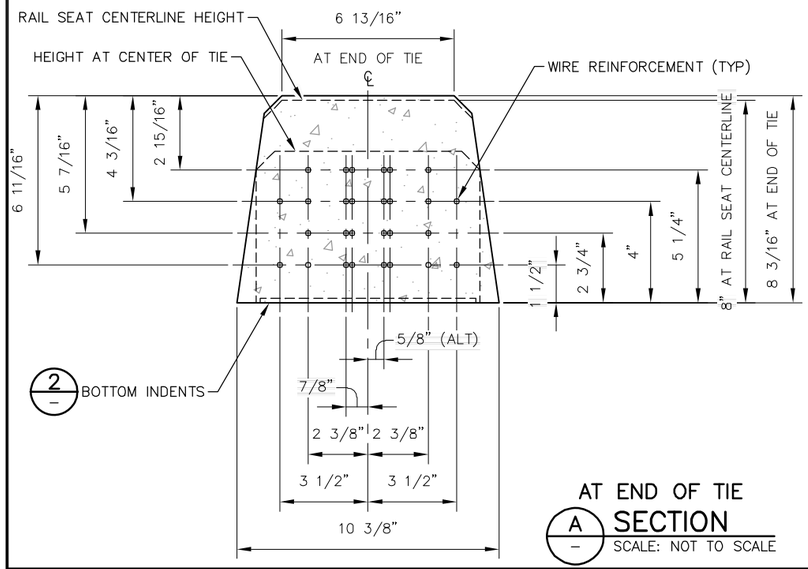
1. TIE PAD: 6.5 MM THICK 7083WB (POLY).
2. SHOULDERS: 9086.
3. TOE INSULATOR: 7695.
4. POST INSULATOR: 7692.
5. FAST CLIPS: GALVANIZED–1601 FOR 5 1/2" BASE RAIL, 1603 FOR 6" BASE RAIL.
6. NORMAL TOE LOAD 2,400 TO 3,000 LBS. NORMAL RAIL SEAT CLAMPING FORCE 4,800 TO 6,000 LBS.
7. SEE SD–2222 FOR FASTENING 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

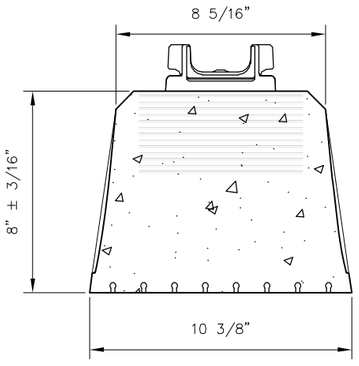
1. RAIL SEAT CANT: 1:40 ± 5.
2. RAIL SEAT FLATNESS: ± 1/32" ACROSS ANY PART OF THE RAIL SEAT.



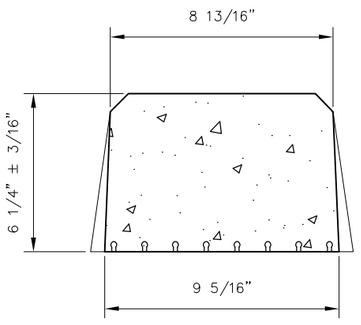
BOTTOM INDENTS DETAIL
2 DETAIL
SCALE: NOT TO SCALE



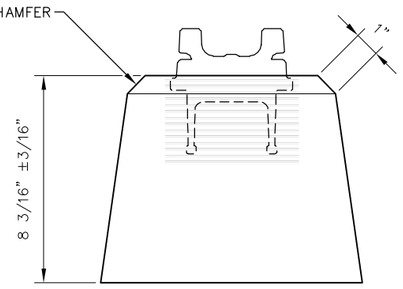
AT END OF TIE
A SECTION
SCALE: NOT TO SCALE



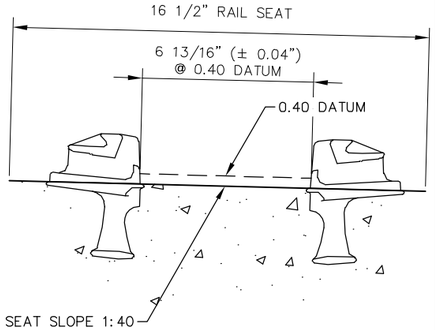
MIDWAY BETWEEN SHOULDERS
B SECTION
SCALE: NOT TO SCALE



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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APPROVED BY:
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DEPUTY DIRECTOR, ENGINEERING

Caltrain
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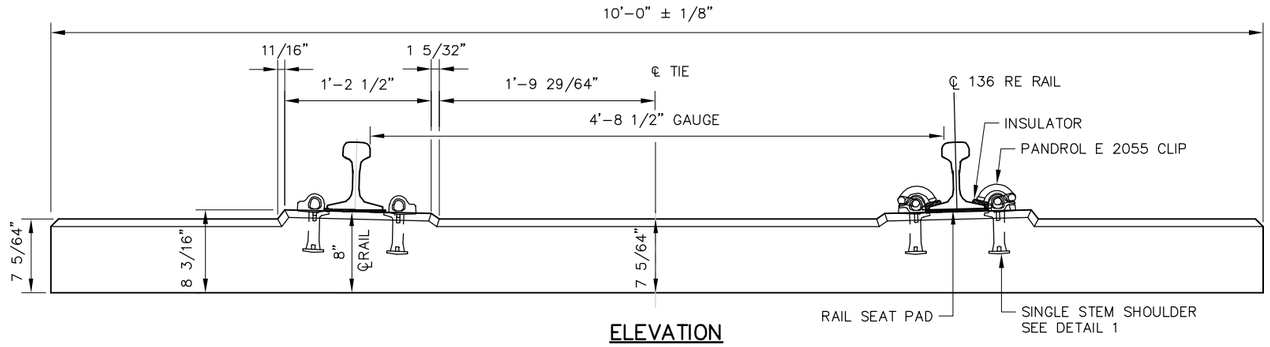
San Carlos, CA 94070

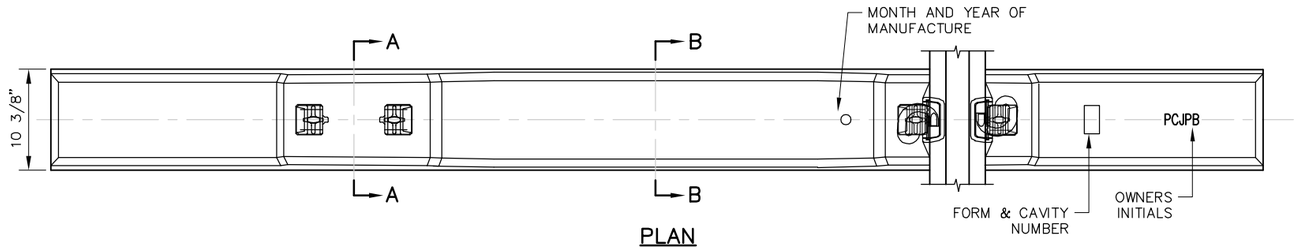
STANDARD DRAWINGS

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

CADD FILE NAME: SD–2211
REV: | EDITION: FOURTH
TRACK
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:

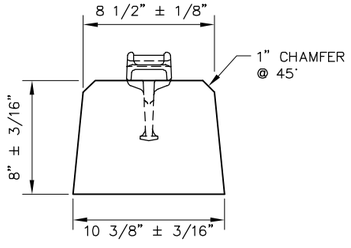
a) NORMAL TOE LOAD 2,400 TO 3,000 LBS, AND NORMAL RAIL SEAT CLAMPING FORCE 4,800 TO 6,000 LBS

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

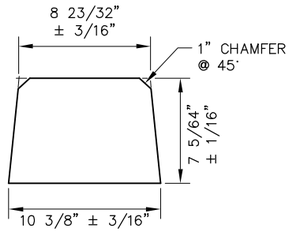
c) IN THE EVENT OF SUBSEQUENT PRODUCTION CHANGE, SUBMIT (IN WRITING) FOR ENGINEER'S APPROVAL PANDROL RECOMMENDED REPLACEMENT WHICH EQUALS OR EXCEEDS THE PART NUMBER SPECIFIED HEREIN

TOLERANCES

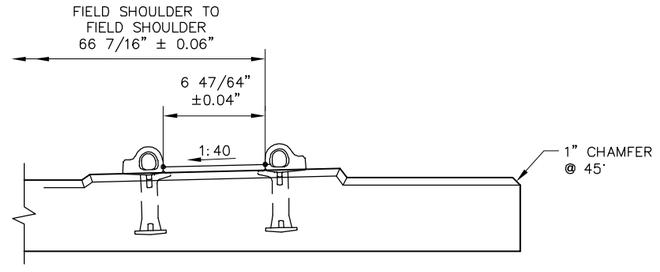
1. RAIL SEAT CANT: 1:40 ± 5
2. RAIL SEAT FLATNESS: ± 1/32" ACROSS ANY PART OF THE RAIL SEAT



SECTION A-A



SECTION B-B



DETAIL 1
SHOULDERS

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PENINSULA CORRIDOR JOINT POWERS BOARD

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Caltrain

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STANDARD DRAWINGS

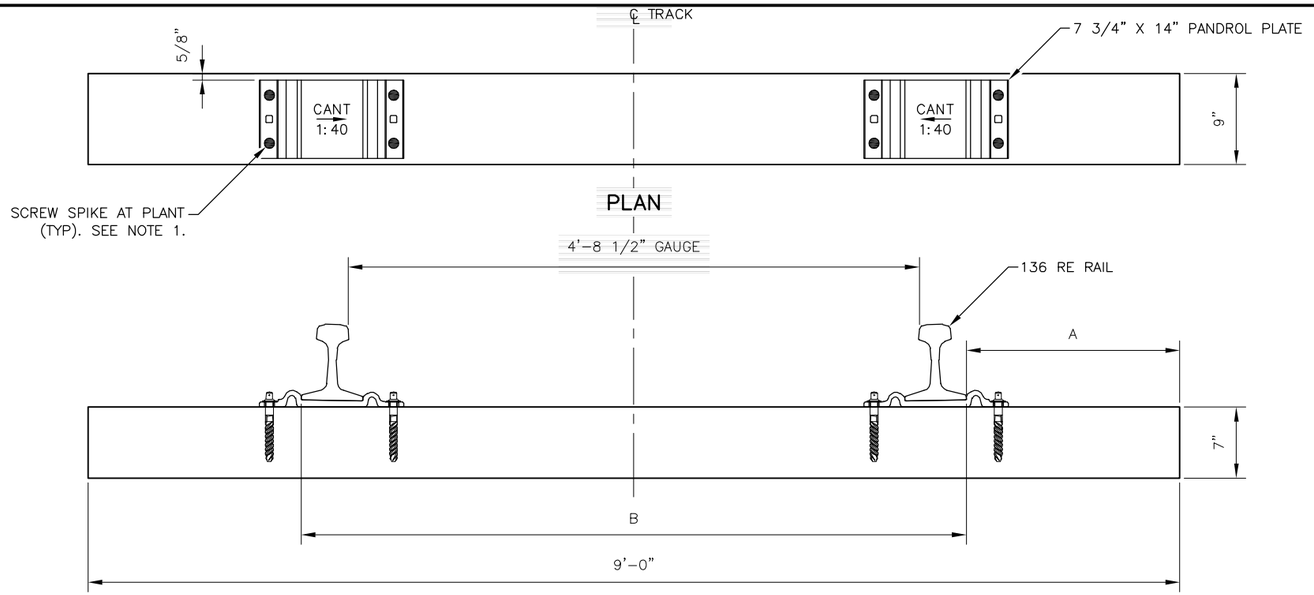
TRACK
RAILS, TIES AND FASTENERS
CONCRETE TIES FOR 136 RE RAIL
GRADE CROSSING
AND TRANSITION TIES

CADD FILE NAME: SD-2212

REV: | EDITION: FOURTH

TRACK

STANDARD DRAWING NO.: SD-2212



ELEVATION

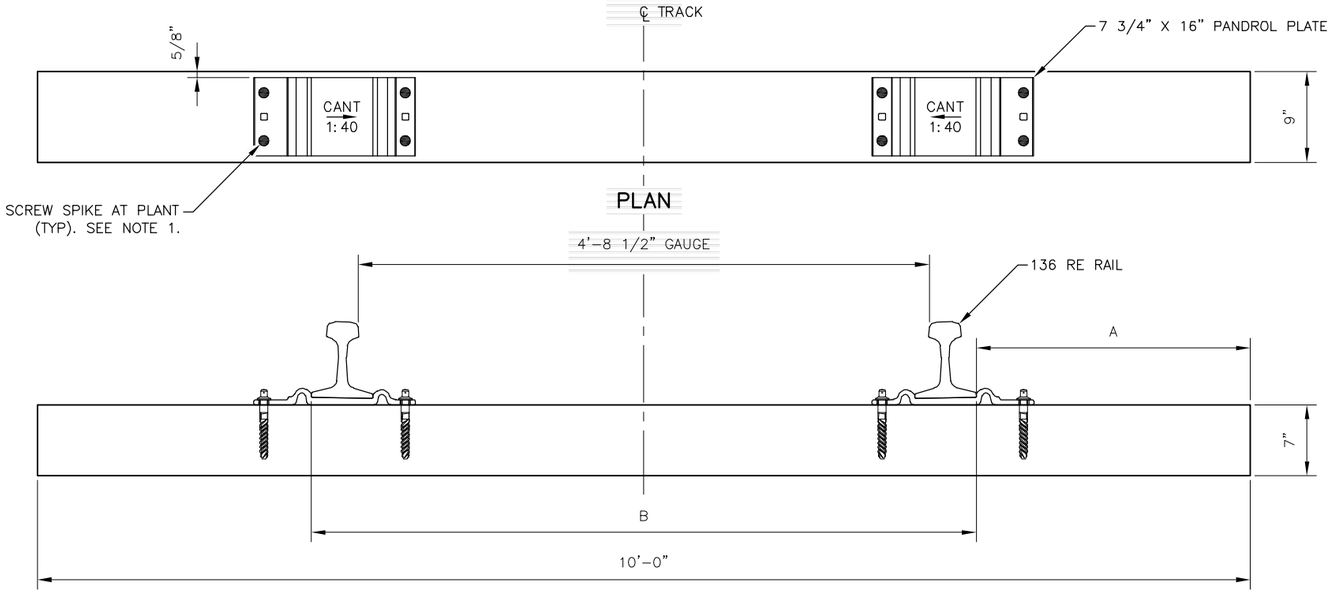
STANDARD TIMBER TIE WITH 14" PLATE (FOR SCREW SPIKES)

DETAIL

SCALE: NOT TO SCALE

NOTE:

FOR USE ON OTHER THAN MAIN TRACKS AND SIDINGS.



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 9' STANDARD TIMBER TIE	1'-9"	65 3/4"
7" X 9" X 10' TRANSITION TIE	2'-3"	65 3/4"

BILL OF MATERIALS – 9' TIES W/ 14" 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 9'	EACH	1	200.00 LBS.	200.00
TIE PLATES 8" X 14"	EACH	2	22.30 LBS.	44.60
			TOTAL	248.00

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 SUPPLIER SHALL ORIENT TIE WITH HEART SIDE FACING DOWN. INSTALL ALL FOUR SCREW SPIKES ON EACH OF THE PANDROL PLATES.
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. PANDROL PLATE INSTALLATION IS FOR TRANSITION ZONES ON MAIN TRACKS AND SIDINGS AND FOR OTHER THAN MAIN TRACK AND SIDING TRACK CONSTRUCTION.
5. ALL DIMENSIONS SHOWN ARE FOR USE WITH NEW 136# RE RAIL.

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STANDARD DRAWINGS

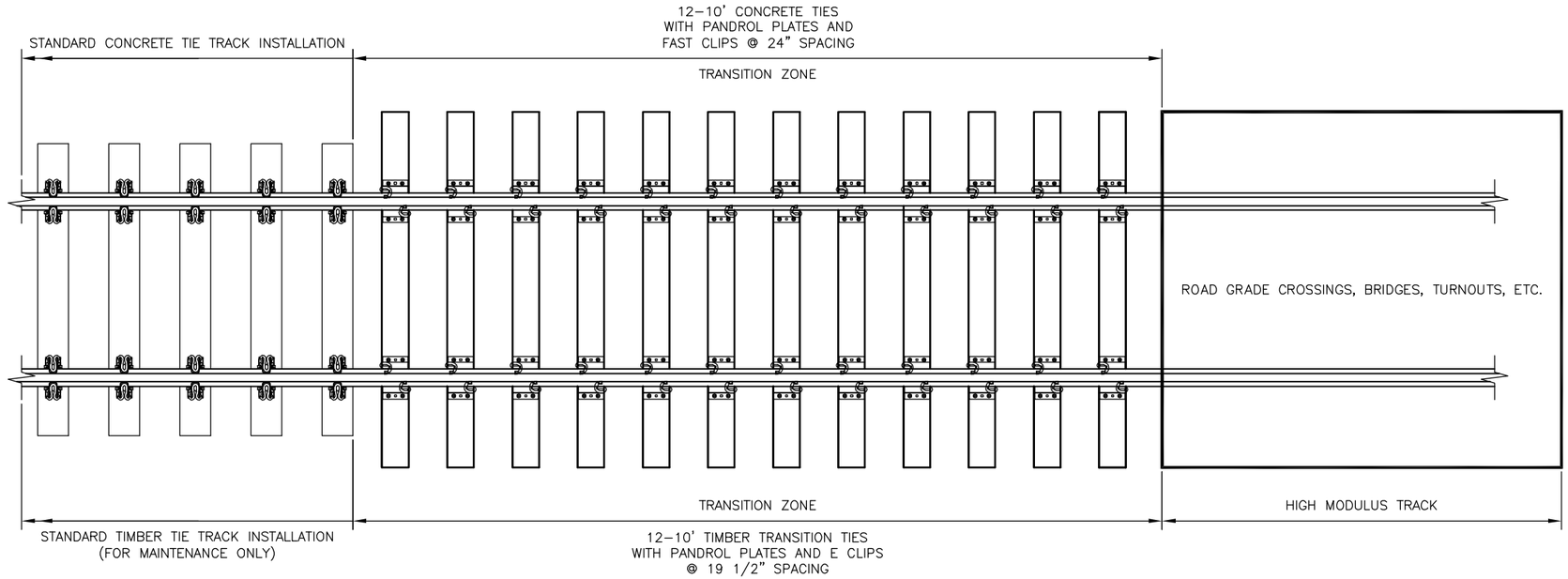
TRACK
RAIL, TIES AND FASTENERS
PRE-PLATED TIMBER
STANDARD AND
TRANSITION CROSS TIES

CADD FILE NAME: SD-2213

REV: | EDITION: FOURTH

TRACK

STANDARD DRAWING NO.: SD-2213



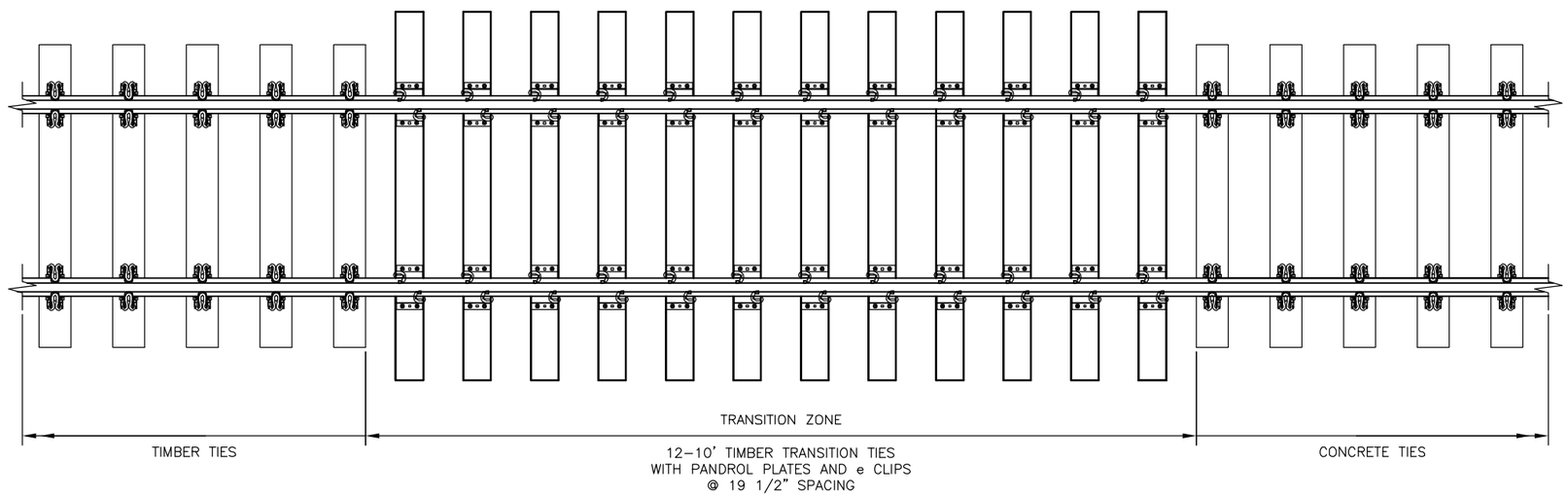
TRANSITION ZONE FOR HIGH MODULUS TRACK

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 BETWEEN TIMBER AND CONCRETE TIES

PLAN

SCALE: NOT TO SCALE

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REV	DATE	BY	CHK	APP

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STANDARD DRAWINGS

TRACK
RAIL, TIES AND FASTENERS

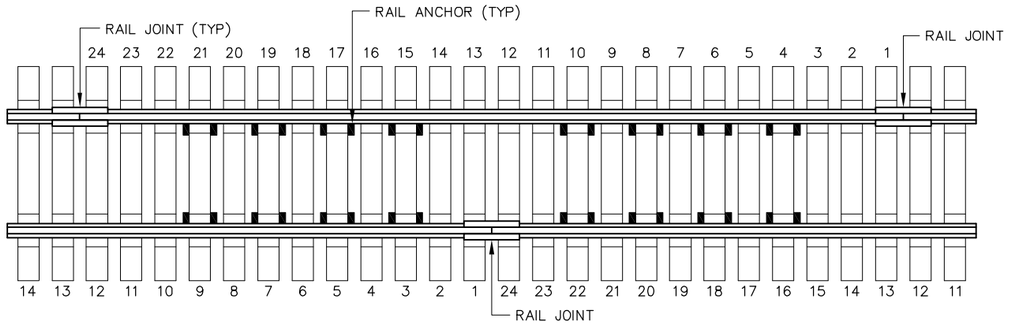
TRANSITION ZONE TIES

CADD FILE NAME: SD–2214

REV: | EDITION: FOURTH

TRACK

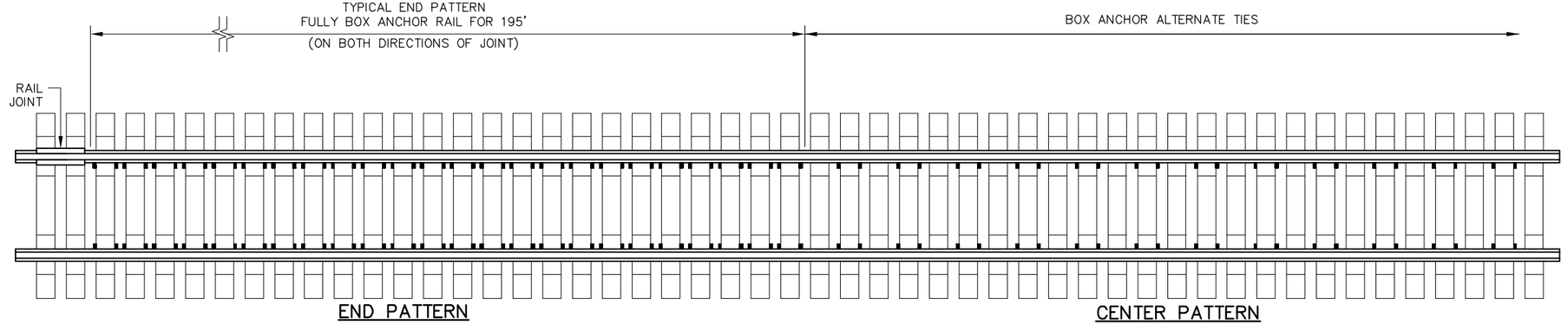
STANDARD DRAWING NO.: SD–2214



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.



APPLICATION 2: ANCHORS PER CONTINOUS WELDED RAIL

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

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DEPUTY DIRECTOR, ENGINEERING

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San Carlos, CA 94070

STANDARD DRAWINGS

TRACK
RAILS, TIES AND FASTENERS

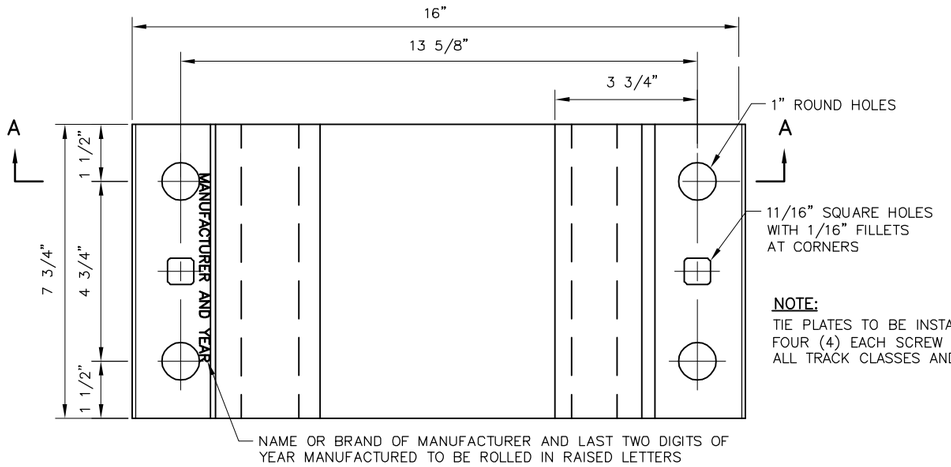
APPLICATIONS OF RAIL ANCHORS

CADD FILE NAME: SD–2215

REV: | EDITION: FOURTH

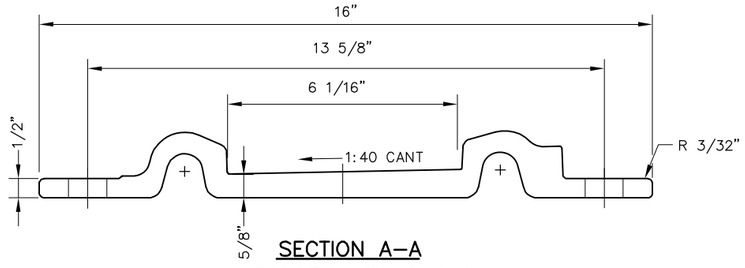
TRACK

STANDARD DRAWING NO.: SD–2215



TOP VIEW

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



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 GEVERGRIP 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. 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"

8. FOR USE IN PLATES WITH 1" ROUND HOLES.

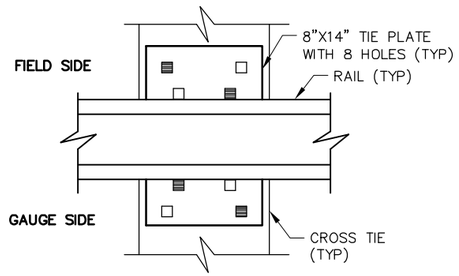


FIGURE 1

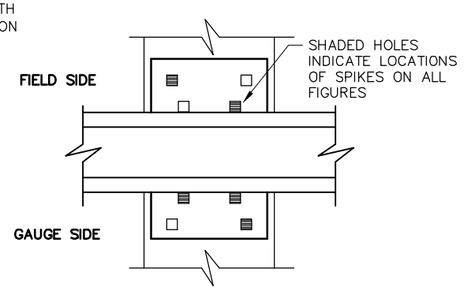


FIGURE 2

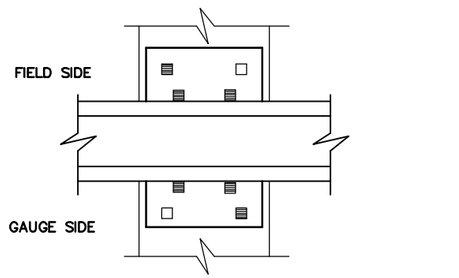


FIGURE 3

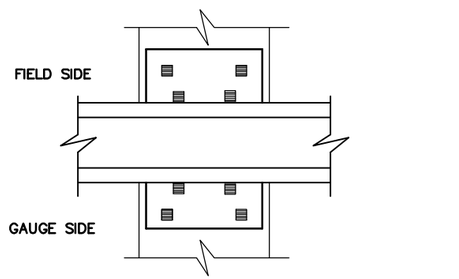
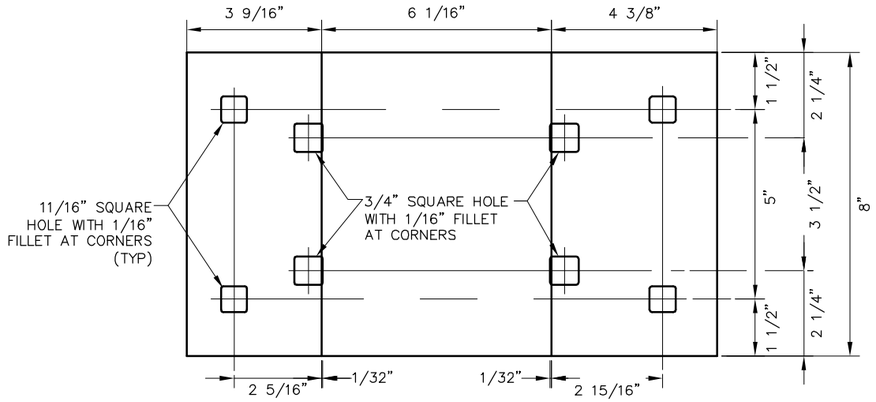


FIGURE 4

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



8" X 14" TIE PLATE WITH 8 HOLES

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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APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain®

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STANDARD DRAWINGS

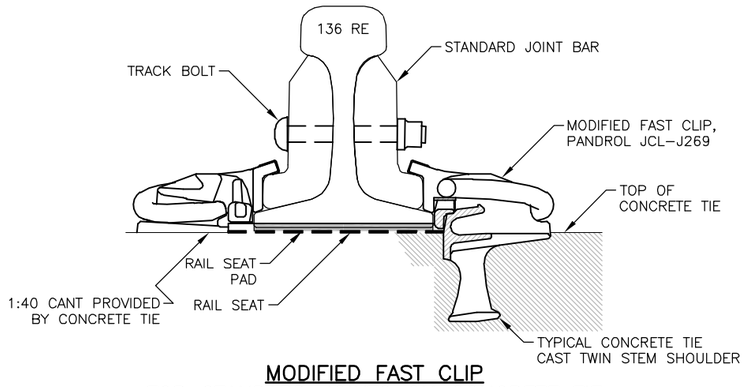
TRACK
RAILS, TIES AND FASTENERS
FASTENING ASSEMBLIES
PANDROL PLATES AND TIE PLATES

CADD FILE NAME: SD–2221

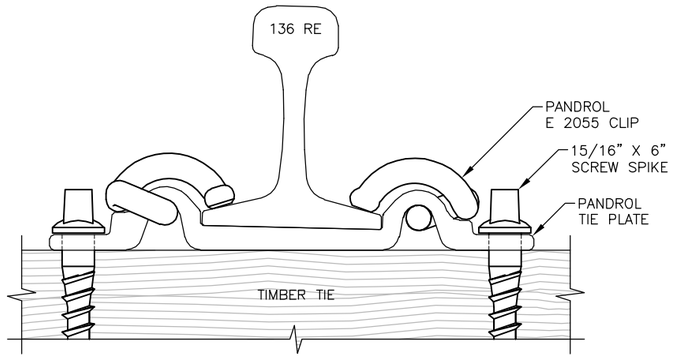
REV: | EDITION: FOURTH

TRACK

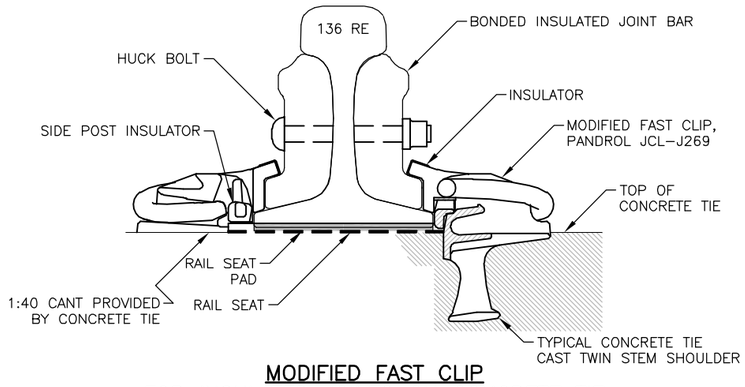
STANDARD DRAWING NO.: SD–2221



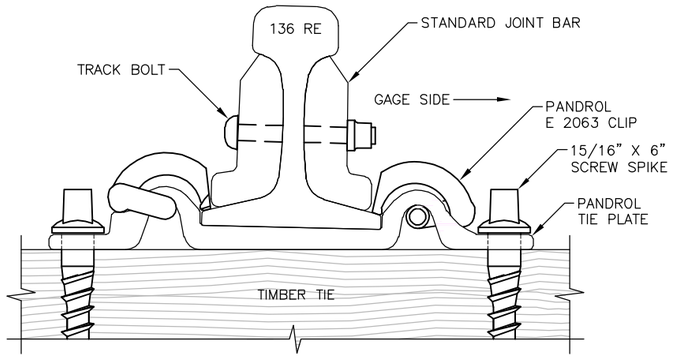
MODIFIED FAST CLIP
FOR STANDARD JOINTS ON CONCRETE TIE



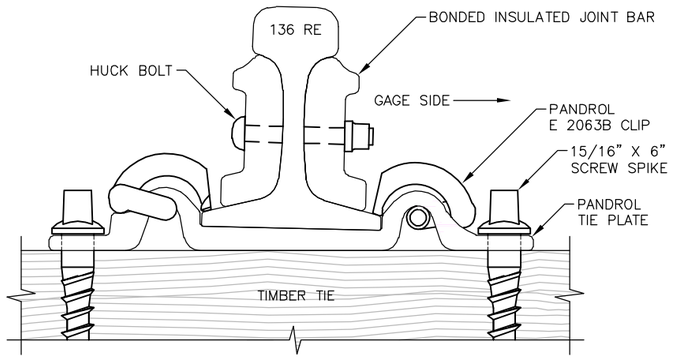
PANDROL E 2055
CLIP ON TIMBER TIE



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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					01012024 FOURTH EDITION

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PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

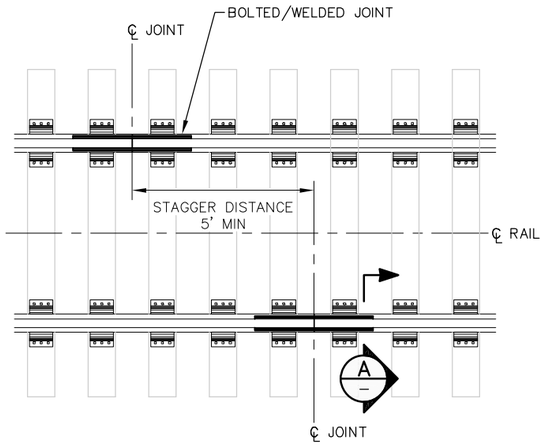
TRACK
RAILS, TIES AND FASTENERS
FASTENING ASSEMBLIES
FOR STANDARD AND
INSULATED JOINTS

CADD FILE NAME: SD–2222

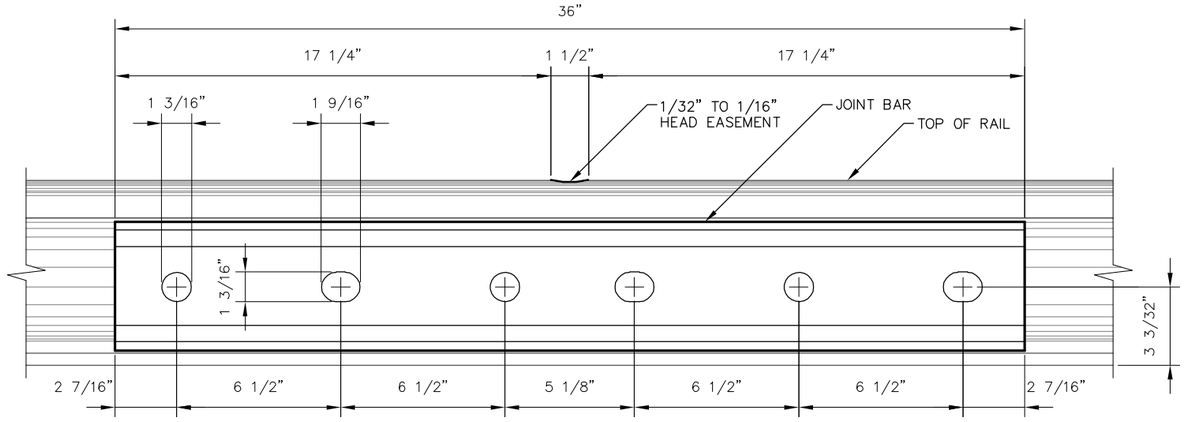
REV: | EDITION: FOURTH

TRACK

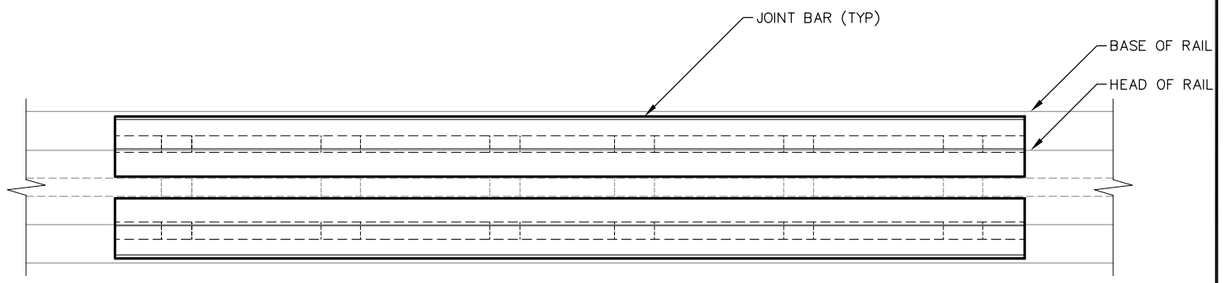
STANDARD DRAWING NO.: SD–2222



JOINT STAGGER
PLAN
SCALE: NOT TO SCALE



FRONT VIEW

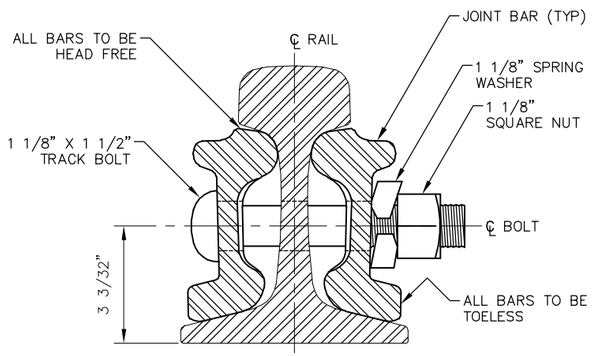


TOP VIEW

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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REV	DATE	BY	CHK	APP	DESCRIPTION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
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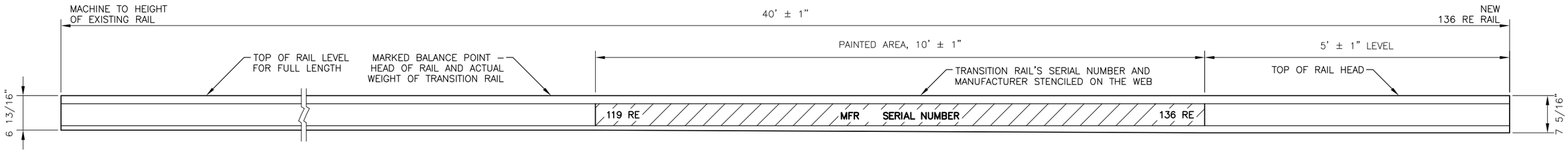
STANDARD DRAWINGS

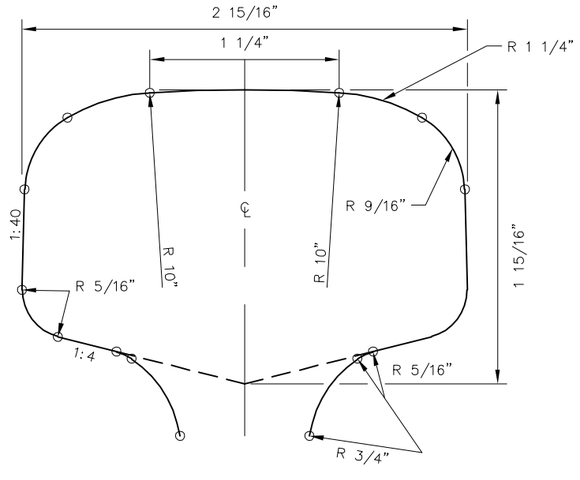
TRACK
RAILS, TIES AND FASTENERS

STANDARD BOLTED JOINT

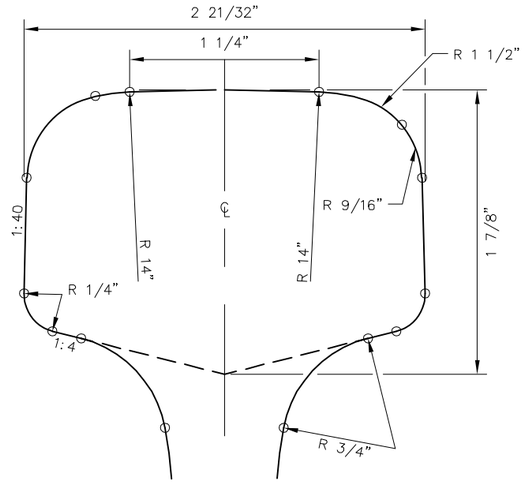
CADD FILE NAME: SD–2231
REV:
EDITION: FOURTH
TRACK
STANDARD DRAWING NO.: SD–2231



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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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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San Carlos, CA 94070

STANDARD DRAWINGS

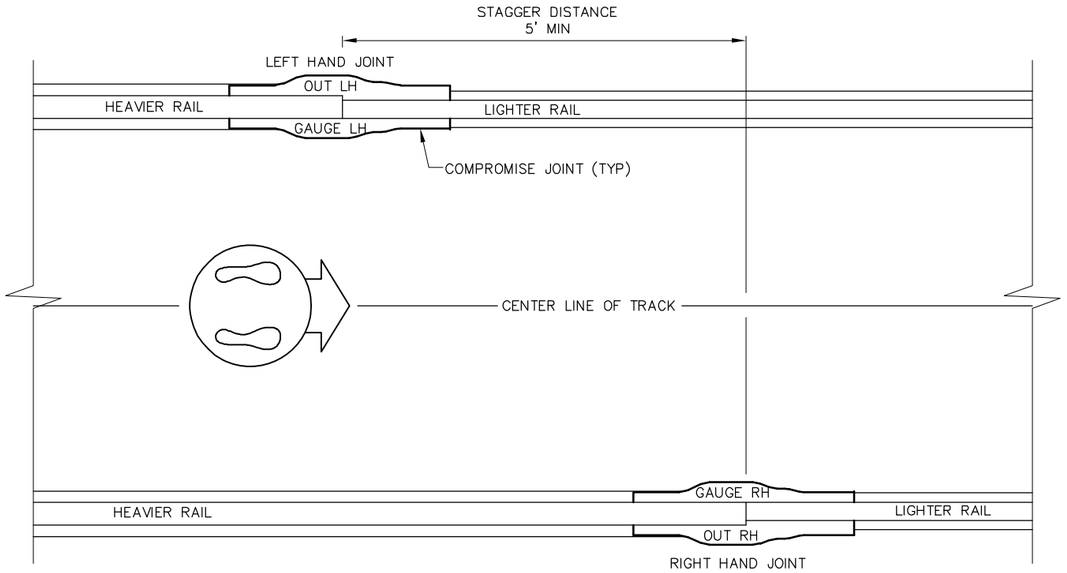
TRACK
RAILS, TIES AND FASTENERS
FORGED TRANSITION RAILS FOR
119 RE TO 136 RE

CADD FILE NAME: SD-2232

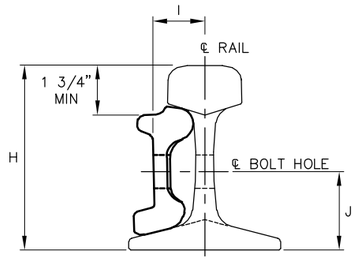
REV: | EDITION: FOURTH

TRACK

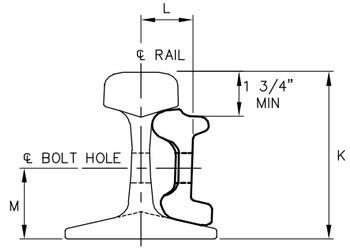
STANDARD DRAWING NO.: SD-2232



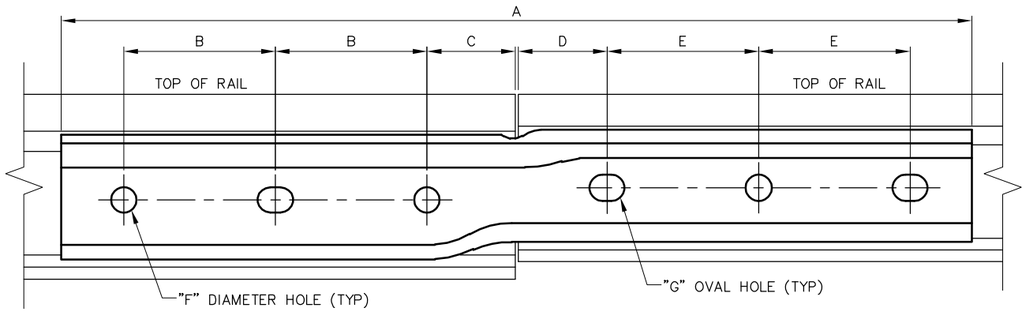
TYPICAL INSTALLATION LAYOUT



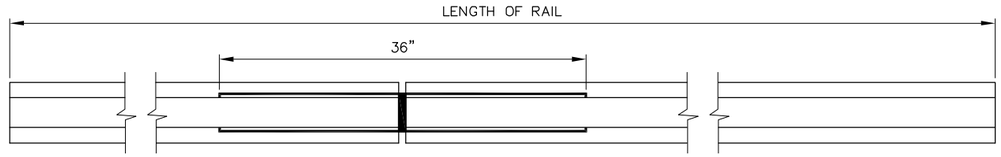
LARGER RAIL



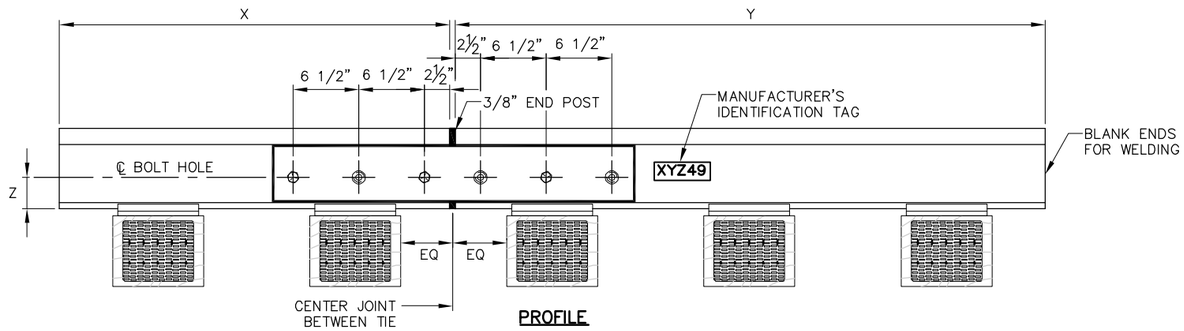
SMALLER RAIL



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:

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DEPUTY DIRECTOR, ENGINEERING

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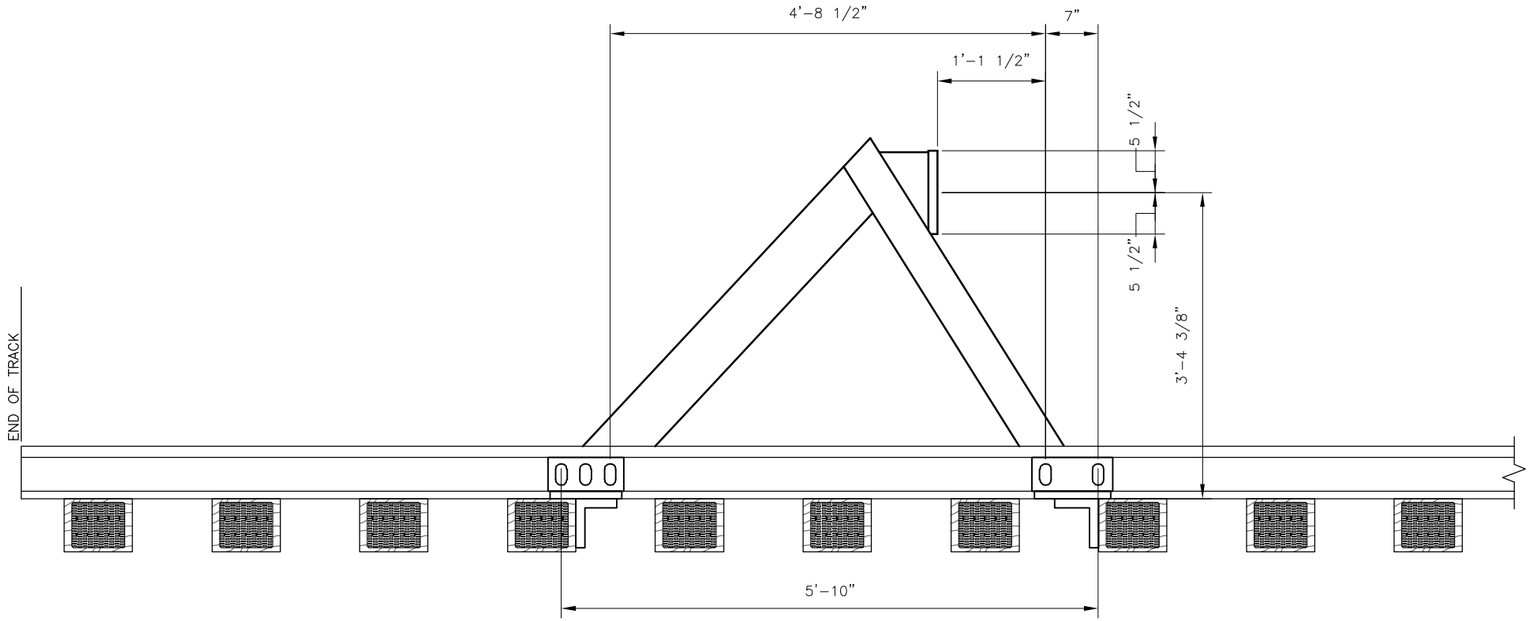
San Carlos, CA 94070

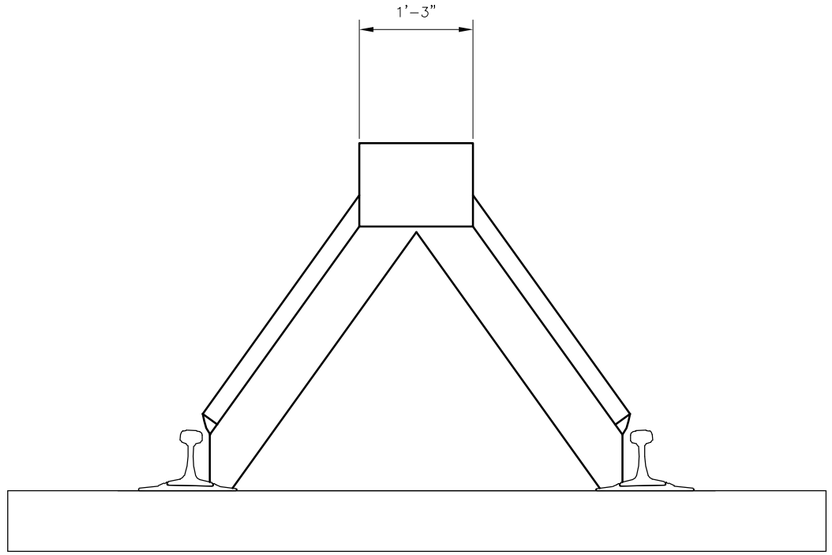
STANDARD DRAWINGS

TRACK
RAILS, TIES AND FASTENERS
COMPROMISE JOINT
AND INSULATED JOINT

CADD FILE NAME:	SD-2233
REV:	EDITION: FOURTH
TRACK	
STANDARD DRAWING NO.:	SD-2233



SIDE VIEW



FRONT VIEW

NOTES:

1. BUMPING POSTS SHALL BE INSTALLED IN TERMINALS TO PROTECT EQUIPMENT AND FACILITIES FROM ROLLING STOCK MOVEMENTS BEYOND RAIL'S END. THE POST MAY ALSO BE INSTALLED AT THE END OF STORAGE TRACKS OR AT STUB END TRACKS.
2. BUMPING POST SHOWN IS BASED ON A MODEL FROM WESTERN CULLEN HAYES, INC. ANY SPECIFIC MODEL PROPOSED WILL REQUIRE APPROVAL FROM DEPUTY DIRECTOR OF ENGINEERING.
3. BUMPING POSTS SHALL BE INSTALLED AT 3 TIES MINIMUM FROM END OF TRACK OR 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.

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1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

TRACK
OTHER MISCELLANEOUS ITEMS

BUMPING POST

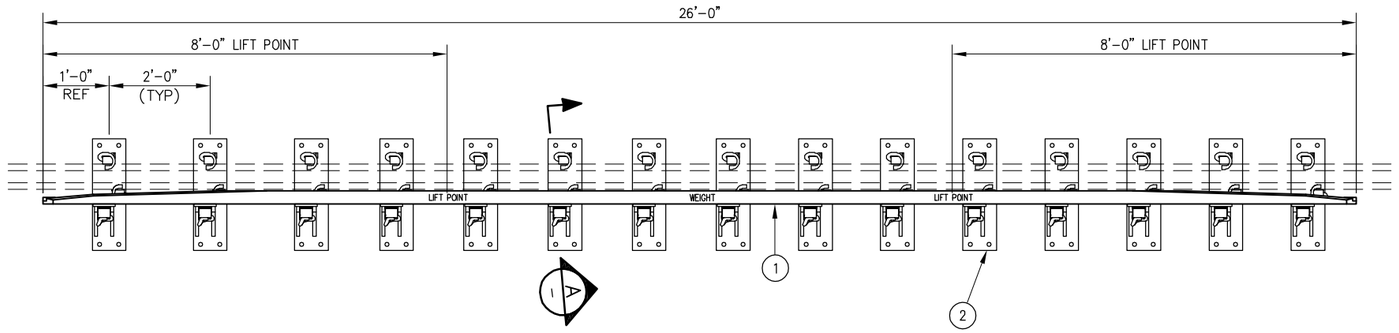
CADD FILE NAME: SD-2241

REV: | EDITION: FOURTH

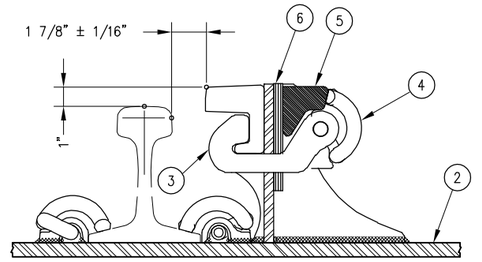
TRACK

STANDARD DRAWING NO.: SD-2241

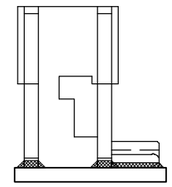
BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	GUARD BAR, UIC33 1200 SERIES x 26'-0" LONG	–
2	13	GUARD RAIL PLATE ASSEMBLY, RAISED 1", STRAIGHT	–
3	13	H-CLAMP	–
4	39	CLIP, PANDROL, E2055	–
5	13	LOCKING BLOCK	–
6	52	SHIM, 1/8" x 3" X 6"	–



26'-0" LONG GUARD RAIL

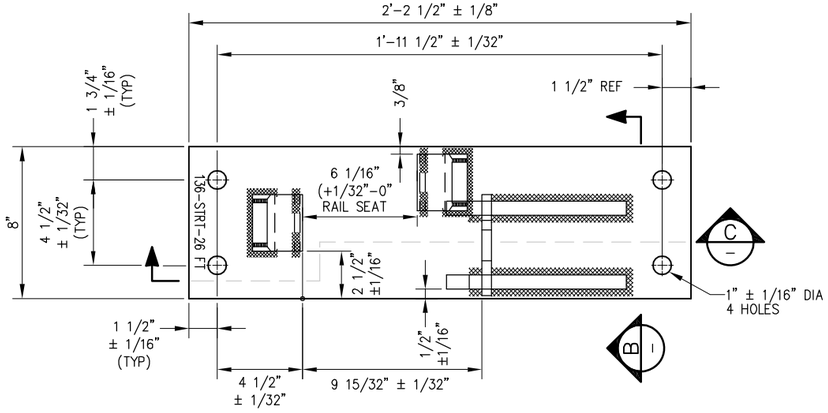


GUARD RAIL HARDWARE ASSEMBLY

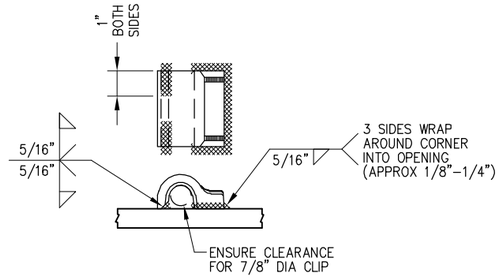


A – PARTIAL SECTION
SCALE: NTS

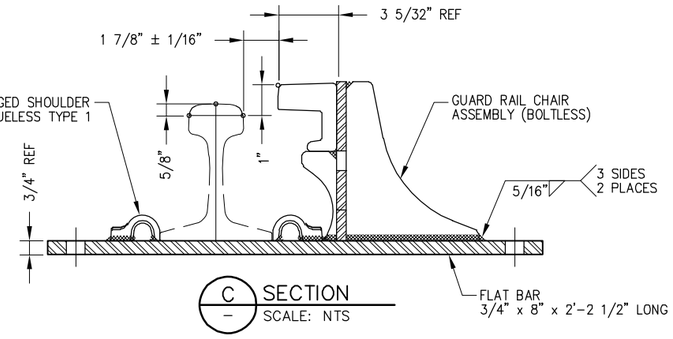
B – SECTION
SCALE: NTS



GUARD RAIL PLATE ASSEMBLY



FORGED SHOULDER WELDING DETAIL



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 SHALL CLEAR FOOT OF CHAIR ASSEMBLY

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PENINSULA CORRIDOR JOINT POWERS BOARD

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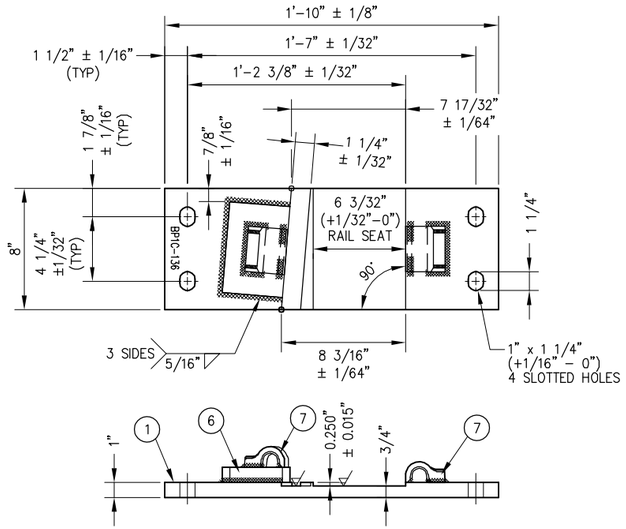
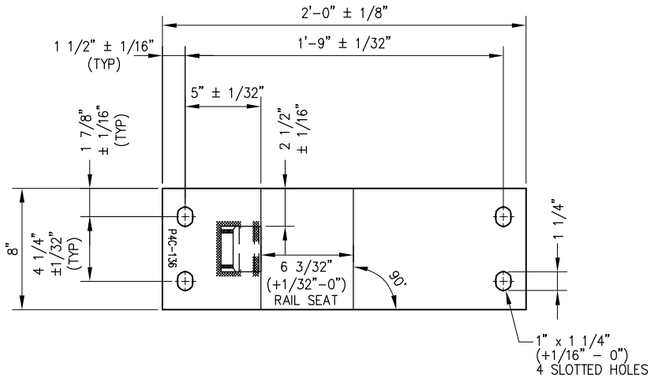
STANDARD DRAWINGS

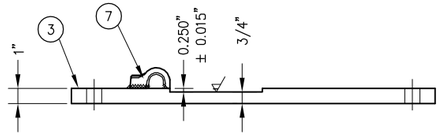
SPECIAL TRACKWORK
GENERAL ELEMENTS
GUARD RAIL ASSEMBLY
STRAIGHT WITH PLATES 26'-0" LONG

CADD FILE NAME: SD-2301
REV: | EDITION: FOURTH
SPECIAL TRACKWORK
STANDARD DRAWING NO.: SD-2301

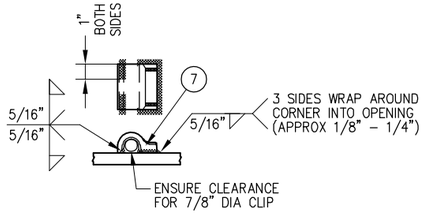


SWITCH PLATE BRACE BP1C-136

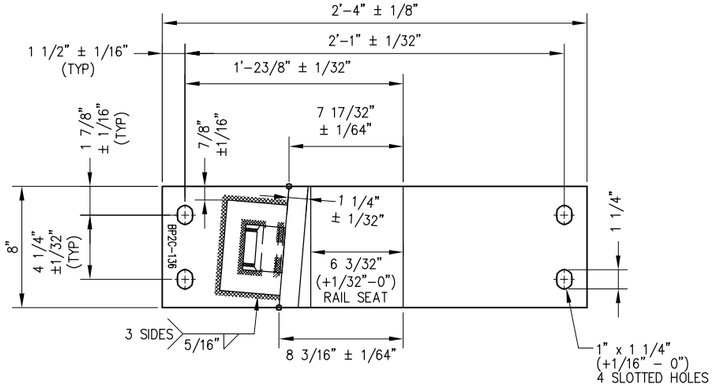


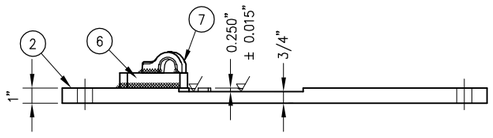


SWITCH PLATE P4C-136 1/64

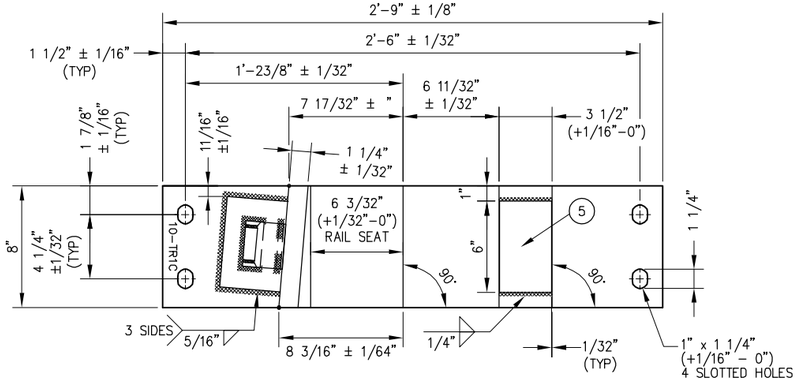


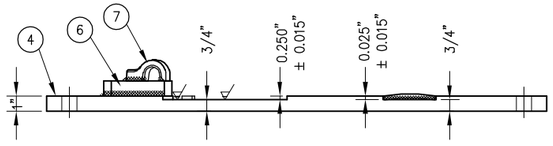
FORGED SHOULDER WELDING DETAIL





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

REV	DATE	BY	CHK	APP	DESCRIPTION
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

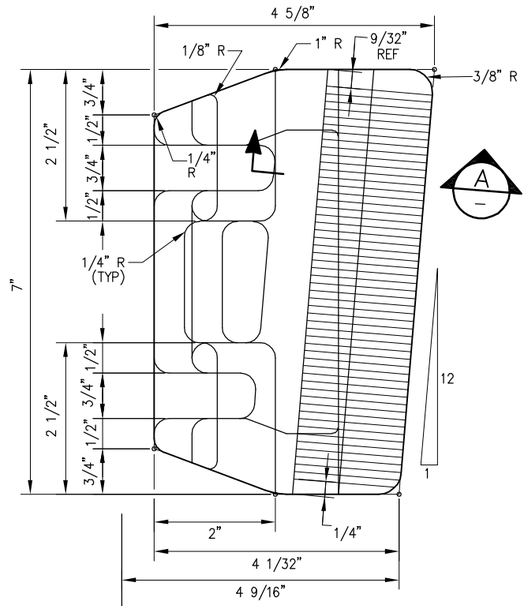
Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

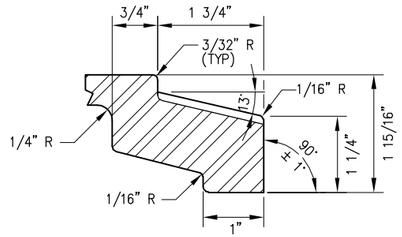
STANDARD DRAWINGS

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

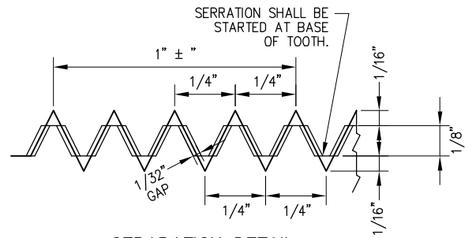
CADD FILE NAME:	SD-2302
REV:	EDITION: FOURTH
SPECIAL TRACKWORK	
STANDARD DRAWING NO.:	SD-2302



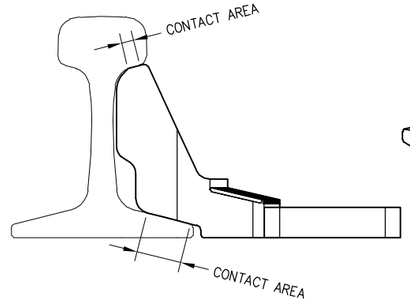
TOP VIEW



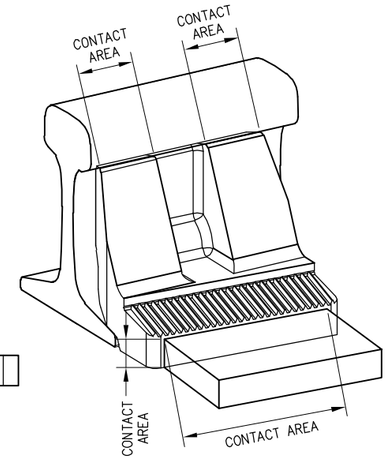
A — SECTION
SCALE: NTS



SEPARATION DETAIL
OF MATING PARTS

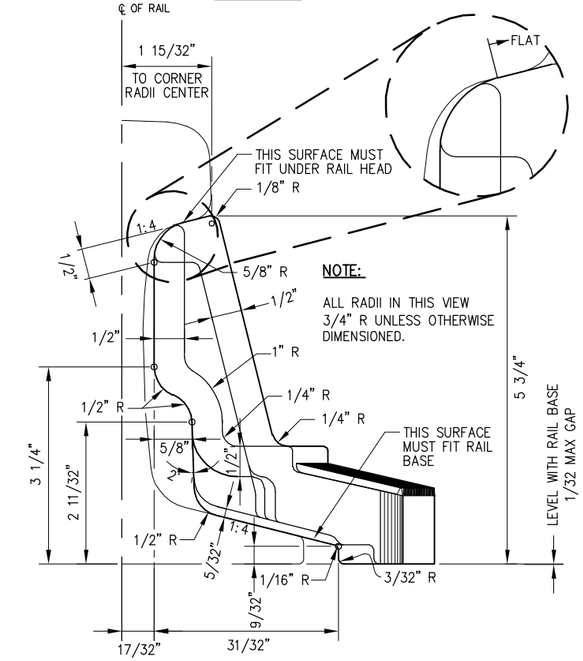


FRONG VIEW



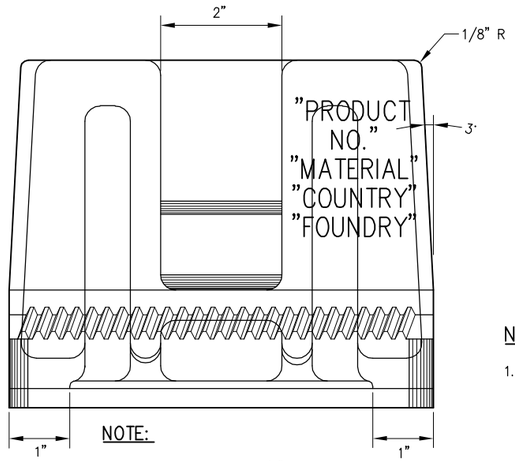
ISOMETRIC VIEW

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.

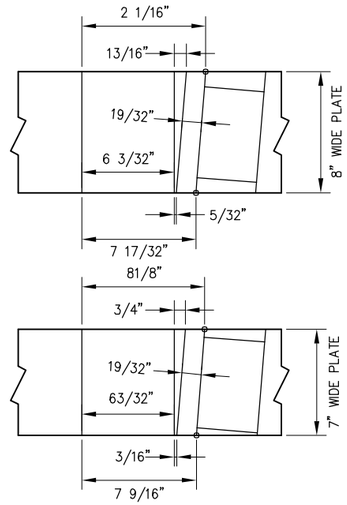


PLATE DESIGN REFERENCE DETAILS
VALUES ONLY GOOD FOR 90° PLATES

REV	DATE	BY	CHK	APP	DESCRIPTION
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain
1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

SPECIAL TRACKWORK
GENERAL ELEMENTS

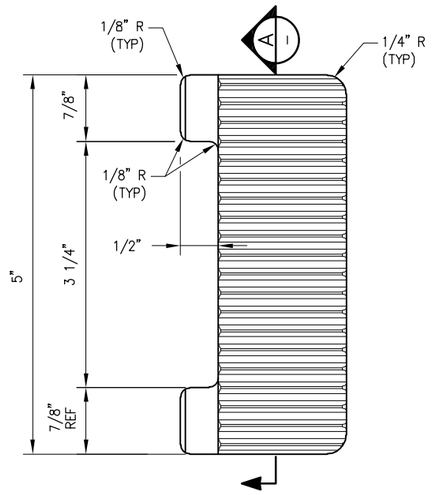
BOLTLESS BRACE (TYPE 2)

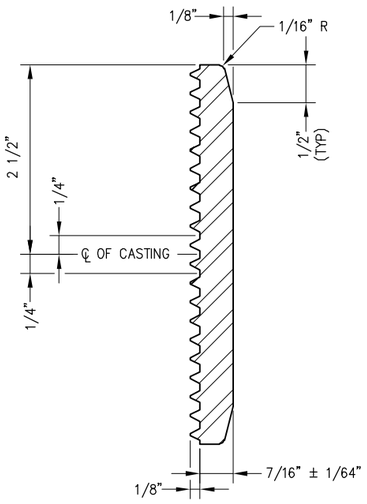
CADD FILE NAME: SD-2303

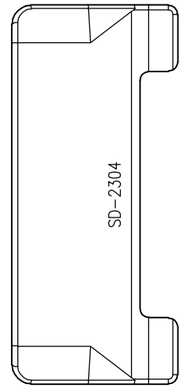
REV: | EDITION: FOURTH

SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD-2303

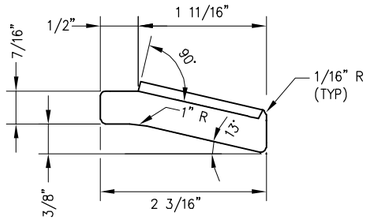


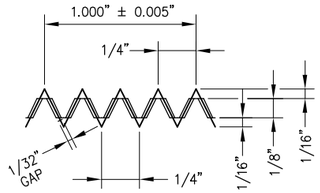




ELEVATION

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
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

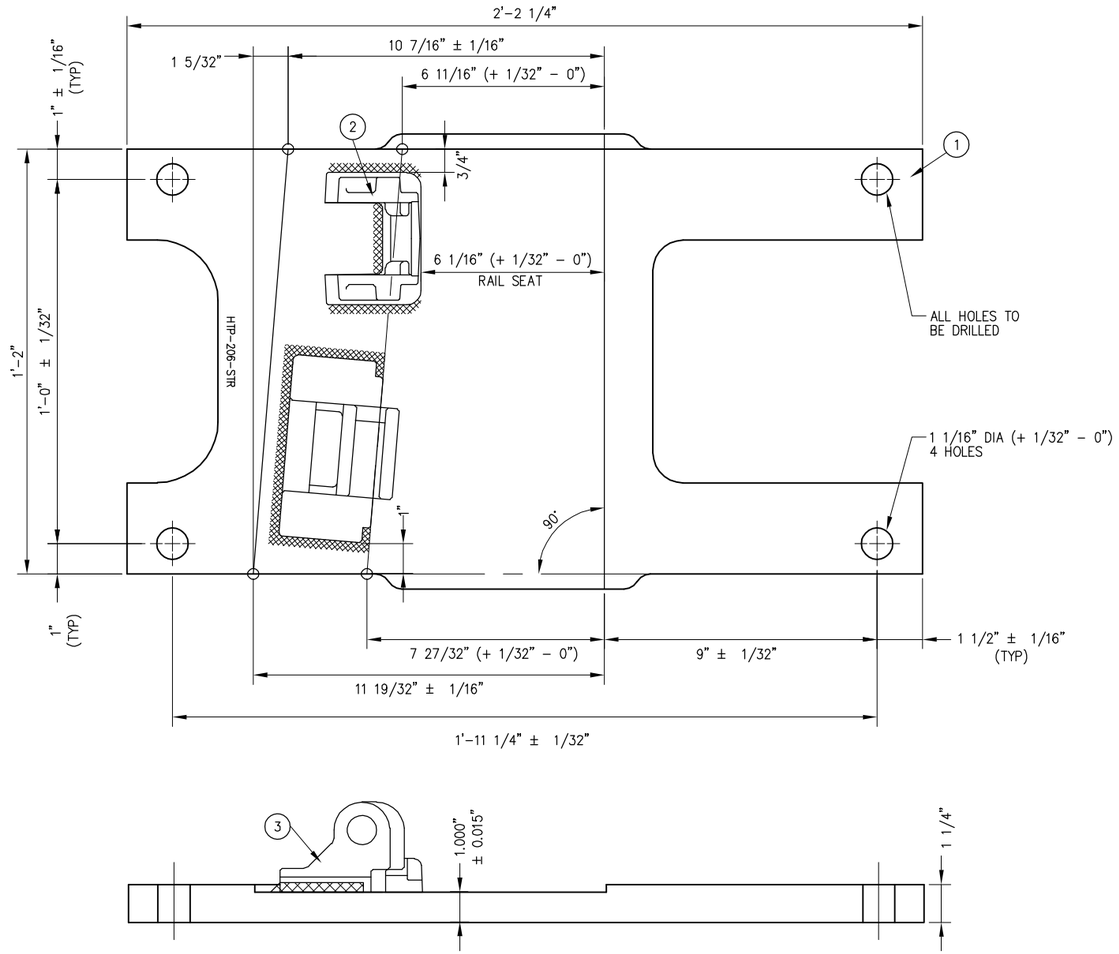
SPECIAL TRACKWORK
GENERAL ELEMENTS
SERRATED WASHER
FOR BOLTLESS BRACE

CADD FILE NAME: SD-2304

REV: | EDITION: FOURTH

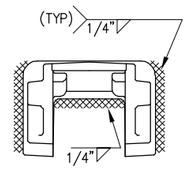
SPECIAL TRACKWORK

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
					01012024 FOURTH EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

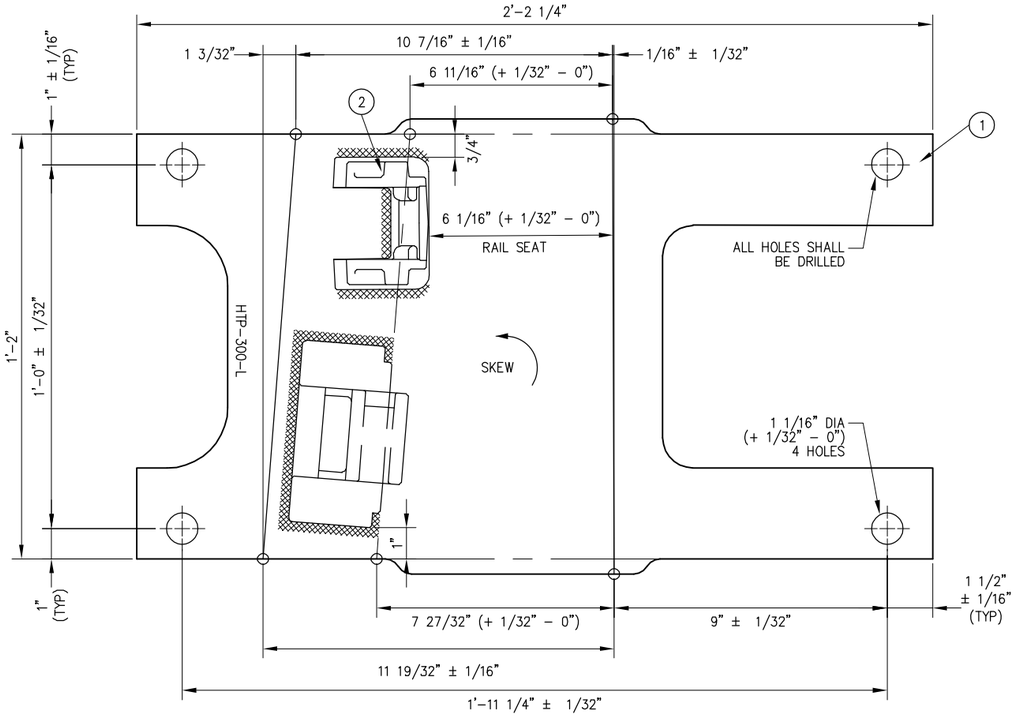
SPECIAL TRACKWORK
GENERAL ELEMENTS
SWITCH PLATES FOR HOLLOW STEEL TIES
PLATE HTP-206-STR NO SKEW LV BRACE

CADD FILE NAME: SD-2305

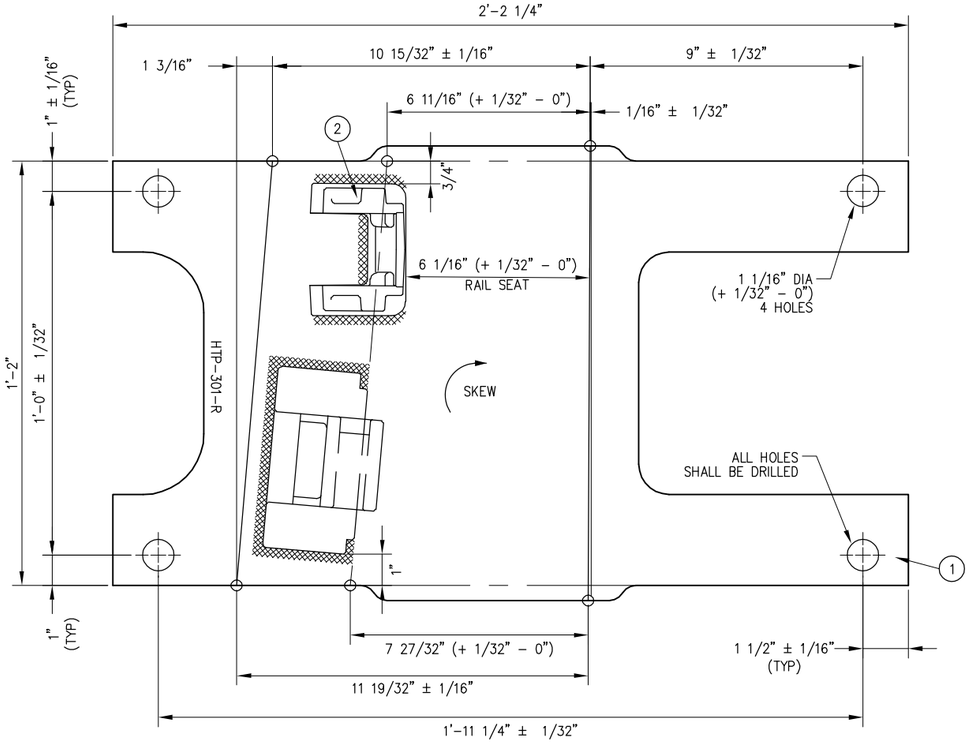
REV: | EDITION: FOURTH

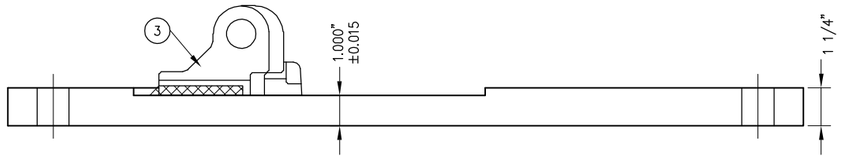
SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD-2305

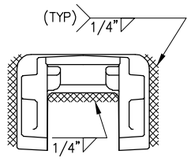


HTP-300-L





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
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

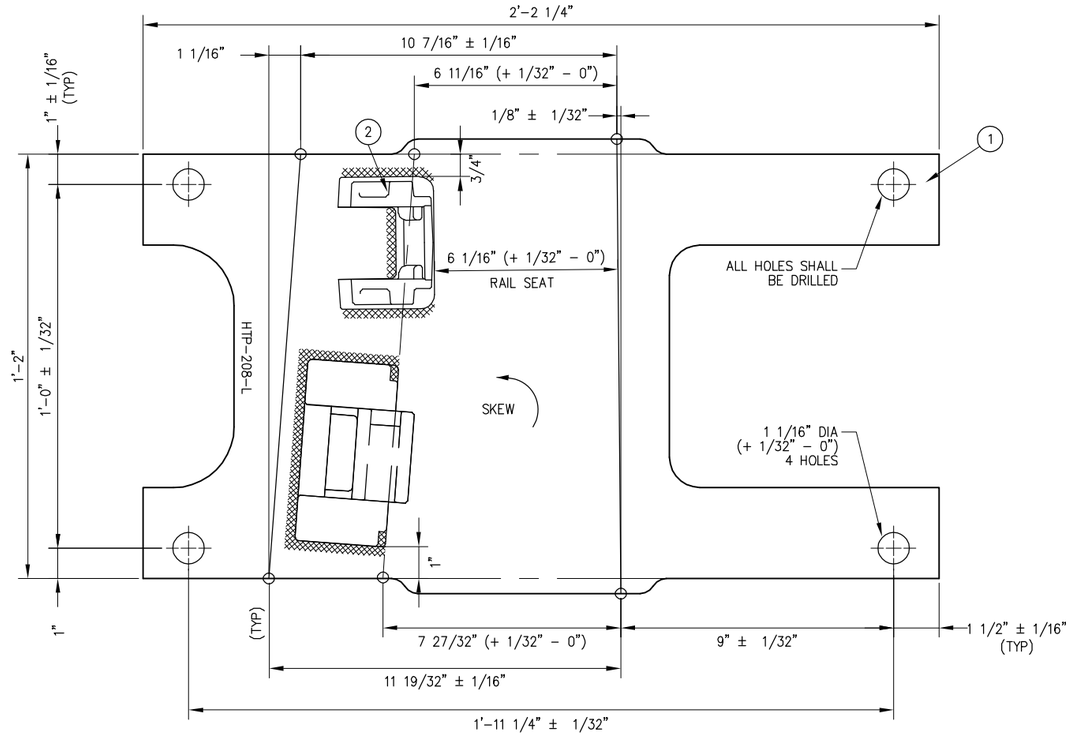
SPECIAL TRACKWORK
GENERAL ELEMENTS
SWITCH PLATES FOR HOLLOW STEEL TIES
PLATES HTP-300-L AND HTP-301-R

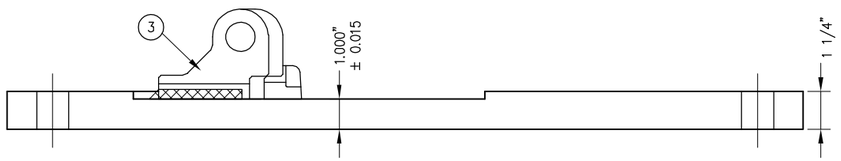
CADD FILE NAME: SD-2306

REV: | EDITION: FOURTH

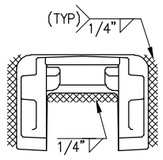
SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD-2306

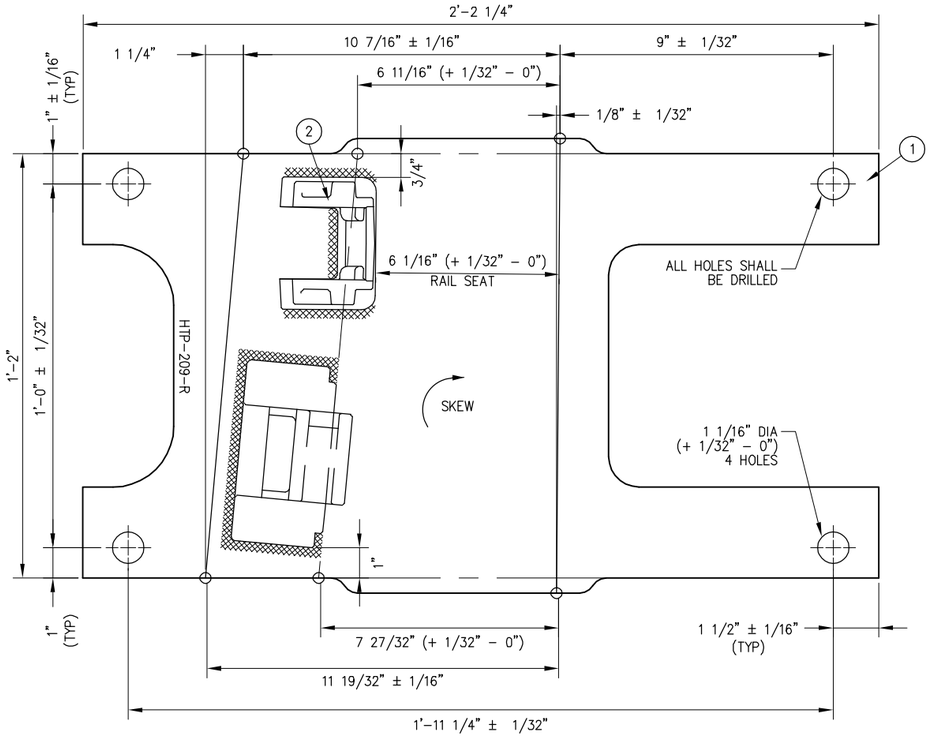


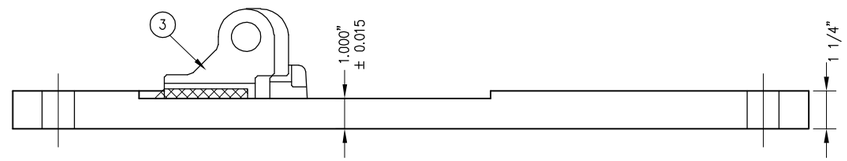


HTP-208-L



TYPICAL FASTCLIP WELD-ON CAST SHOULDER WELDING DETAILS





HTP-209-R

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
					01012024 FOURTH EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

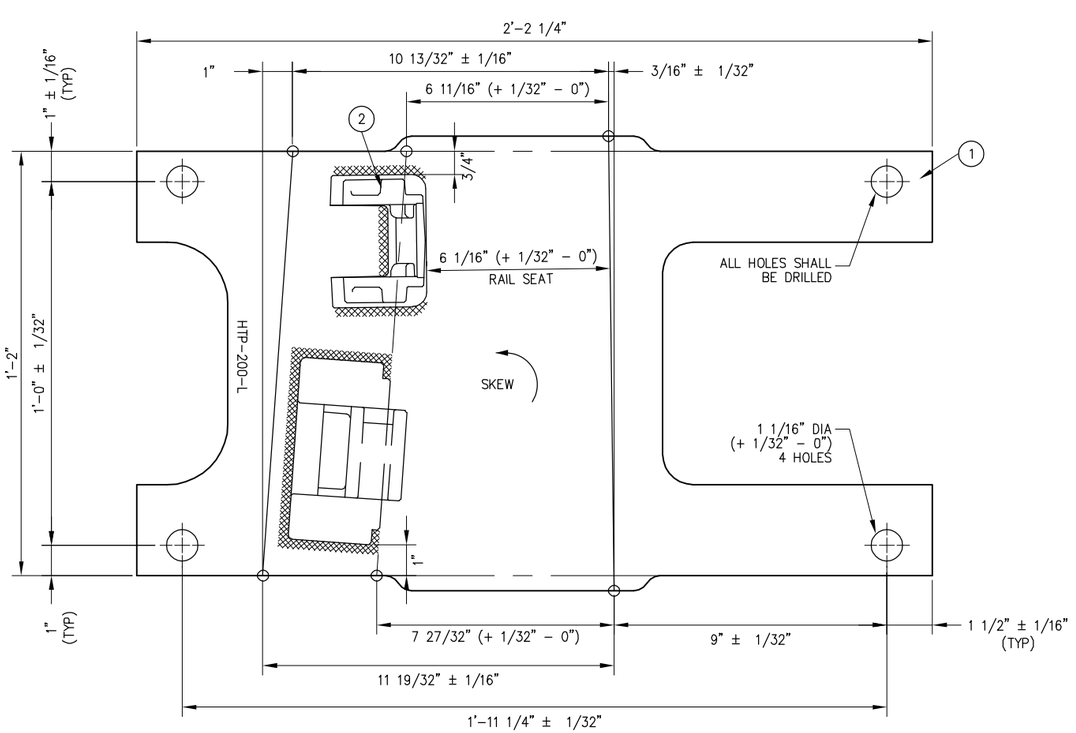
SPECIAL TRACKWORK
GENERAL ELEMENTS
SWITCH PLATES FOR HOLLOW STEEL TIES
PLATES HTP-208-L AND HTP-209-R

CADD FILE NAME: SD-2307

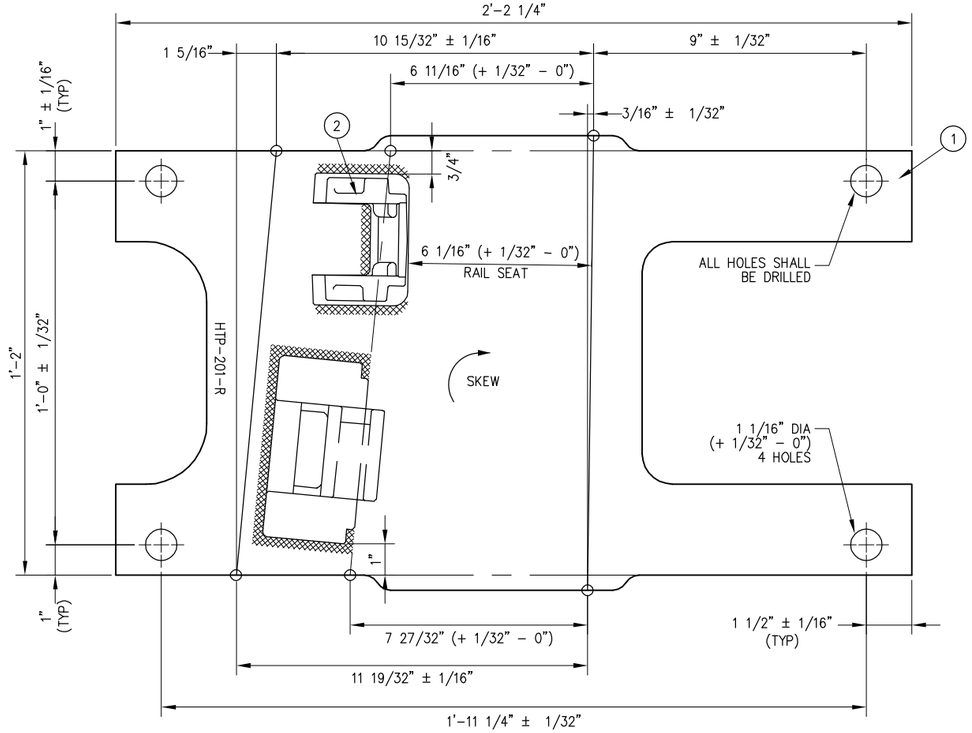
REV: | EDITION: FOURTH

SPECIAL TRACKWORK

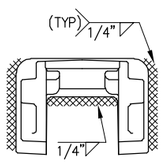
STANDARD DRAWING NO.: SD-2307



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
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

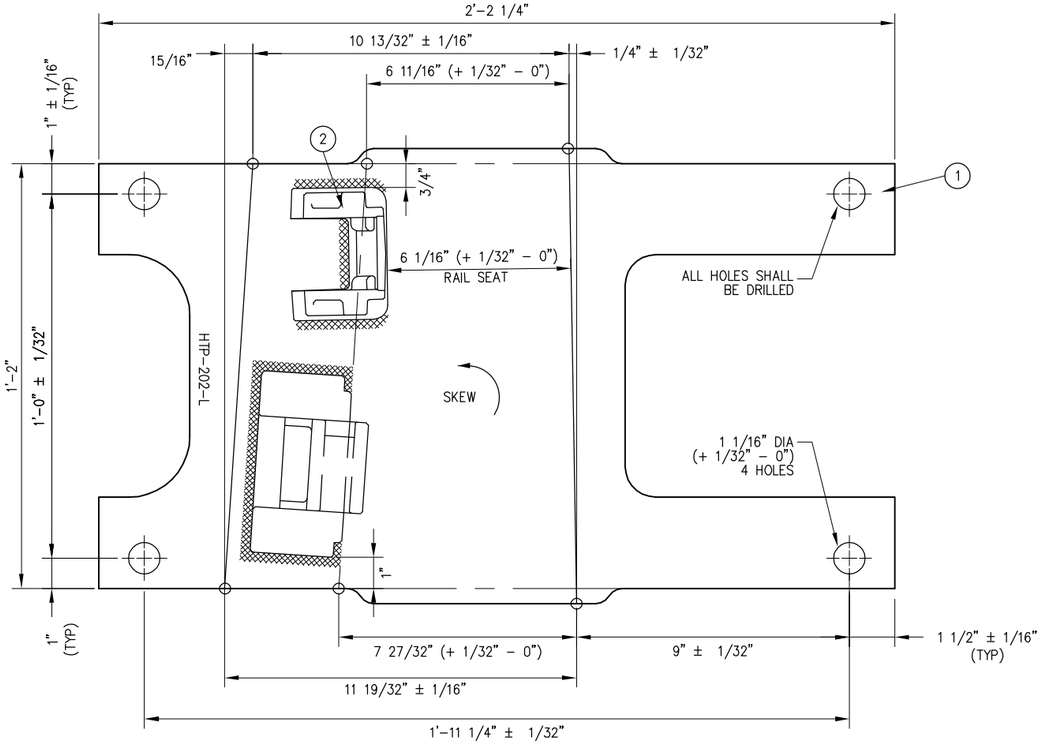
SPECIAL TRACKWORK
GENERAL ELEMENTS
SWITCH PLATES FOR HOLLOW STEEL TIES
PLATES HTP–200–L AND HTP–201–R

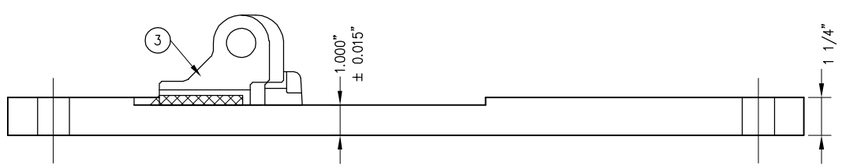
CADD FILE NAME: SD–2308

REV: | EDITION: FOURTH

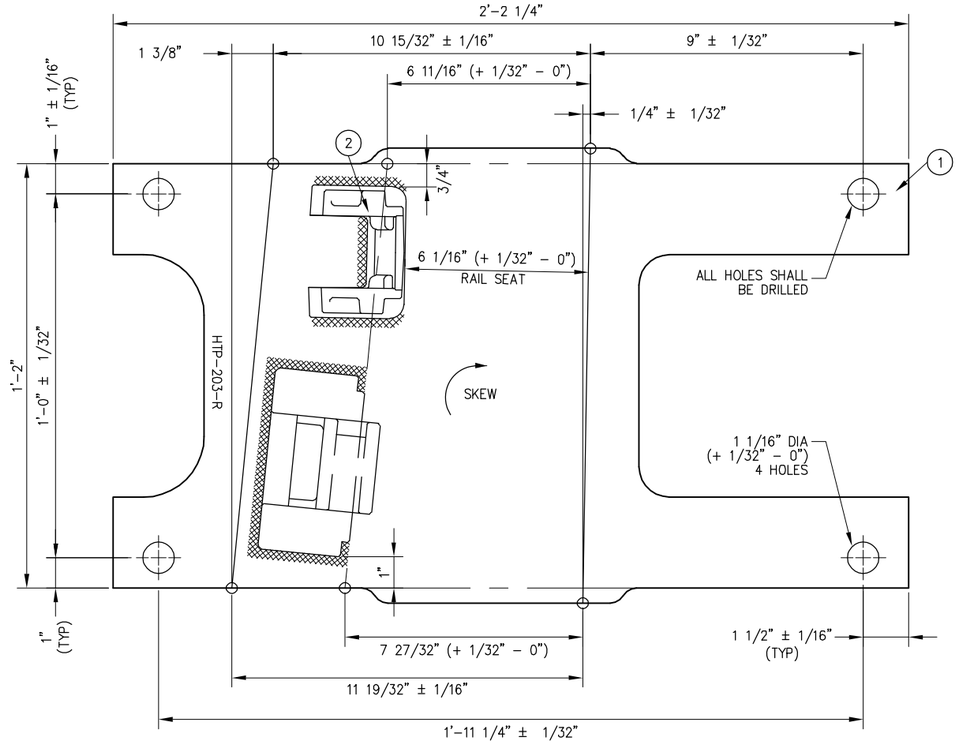
SPECIAL TRACKWORK

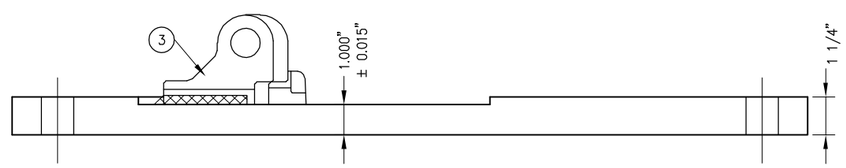
STANDARD DRAWING NO.: SD–2308



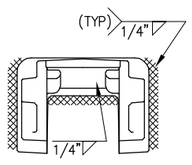


HTP-202-L





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
					01012024 FOURTH EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

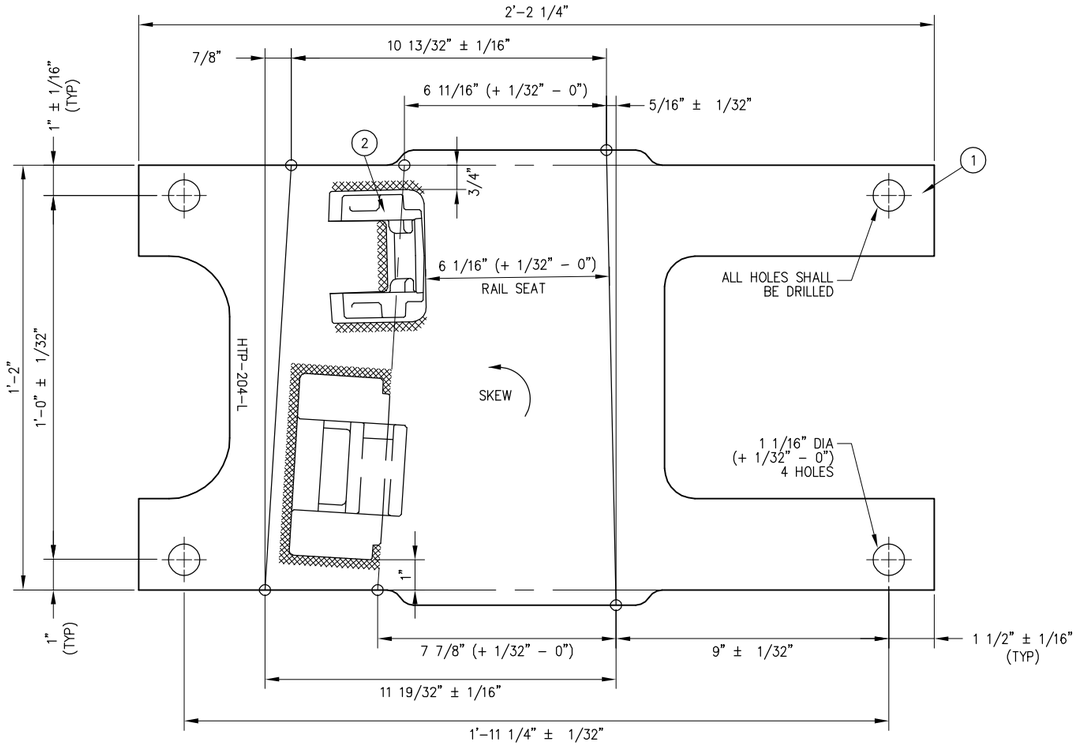
SPECIAL TRACKWORK
GENERAL ELEMENTS
SWITCH PLATES FOR HOLLOW STEEL TIES
PLATES HTP-202-L AND HTP-203-R

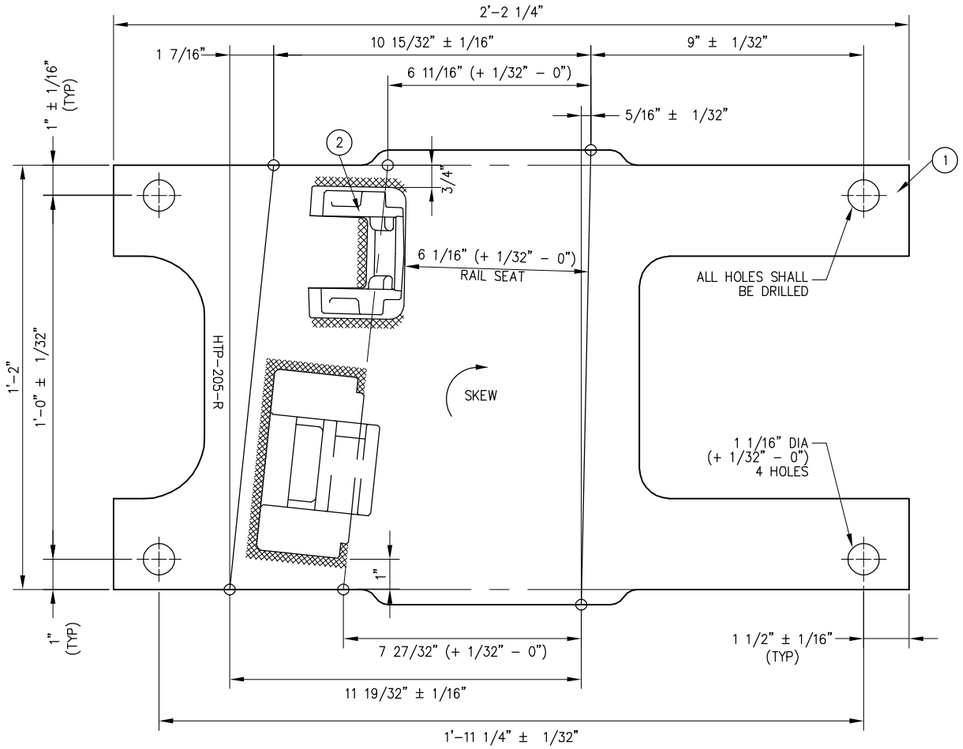
CADD FILE NAME: SD-2309

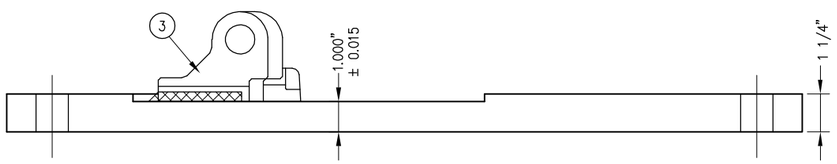
REV: | EDITION: FOURTH

SPECIAL TRACKWORK

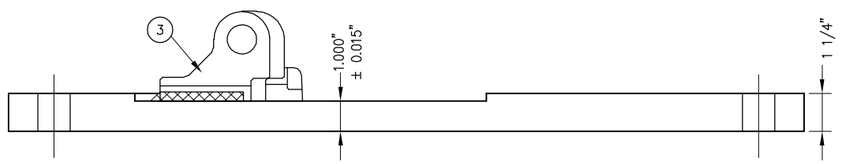
STANDARD DRAWING NO.: SD-2309



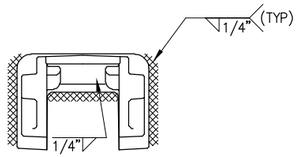




HTP-204-L



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
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

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San Carlos, CA 94070

STANDARD DRAWINGS

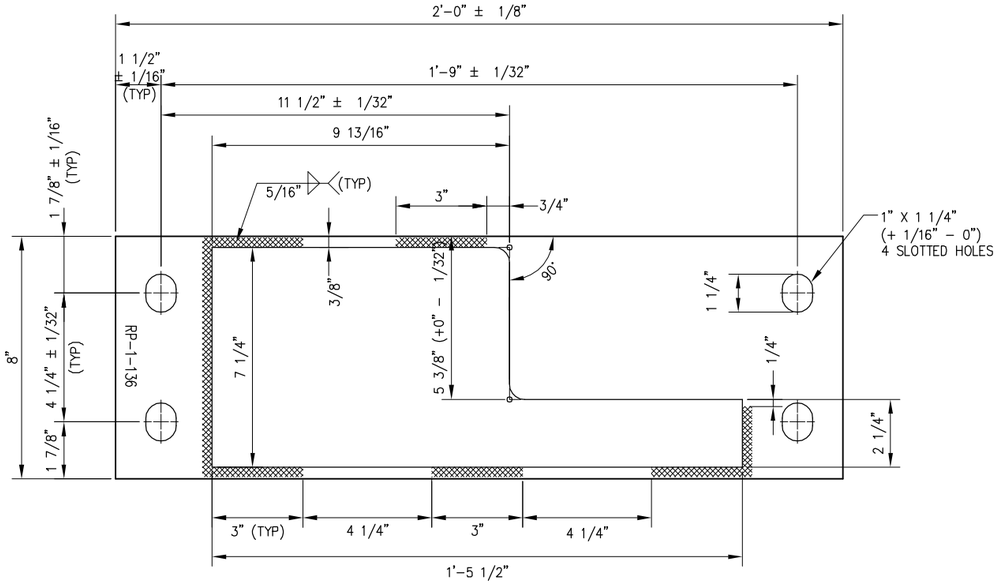
SPECIAL TRACKWORK
GENERAL ELEMENTS
SWITCH PLATES FOR HOLLOW STEEL TIES
PLATES HTP-204-L AND HTP-205-R

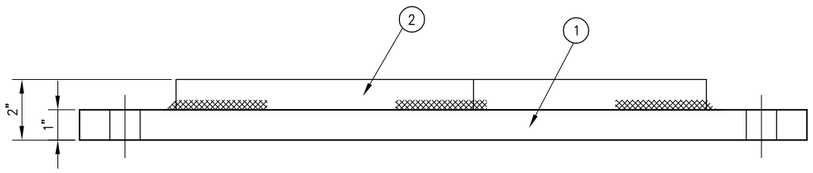
CADD FILE NAME: SD-2310

REV: | EDITION: FOURTH

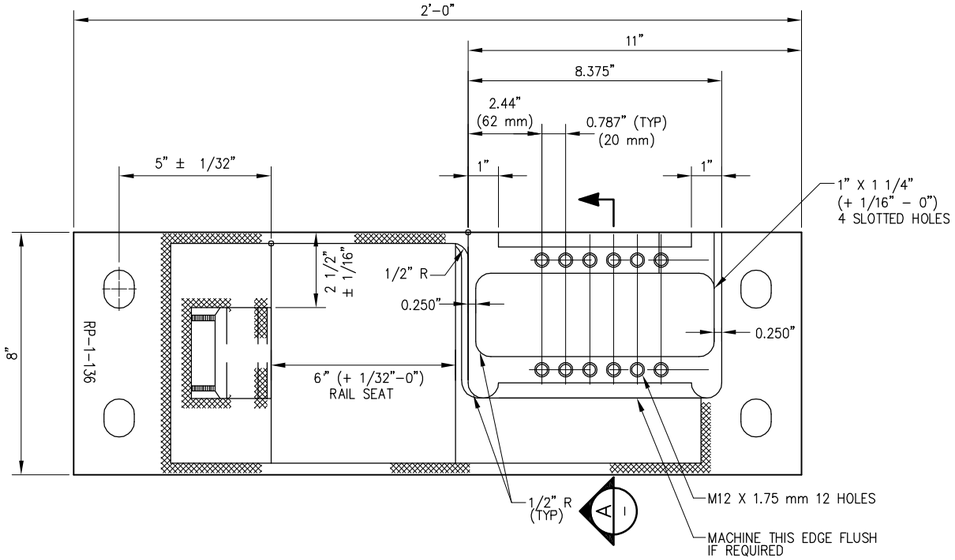
SPECIAL TRACKWORK

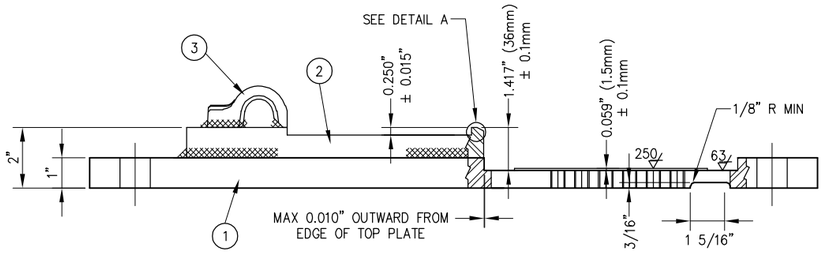
STANDARD DRAWING NO.: SD-2310



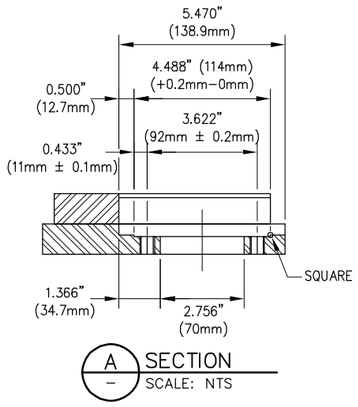


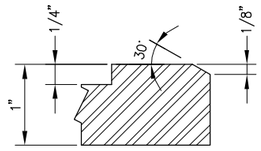
SWITCH ROLLER PLATE RP-1-136 W/O ROLLER WELDING & PUNCHING DETAILS





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





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

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Caltrain

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STANDARD DRAWINGS

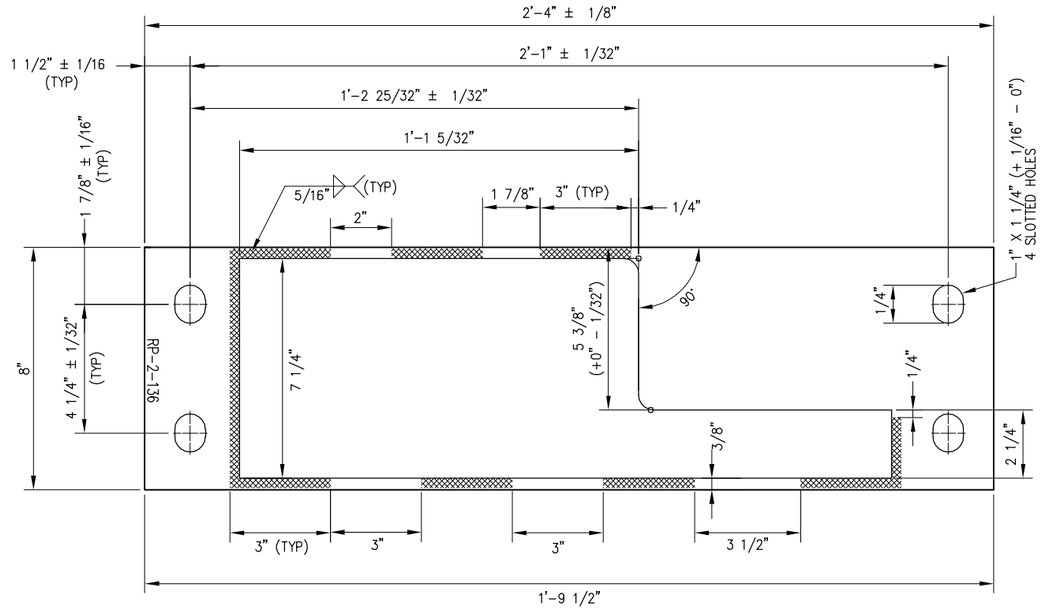
SPECIAL TRACKWORK
GENERAL ELEMENTS
SWITCH PLATES FOR HOLLOW STEEL TIES
SWITCH PLATE ROLLER SCHWIHAG RP-1-136

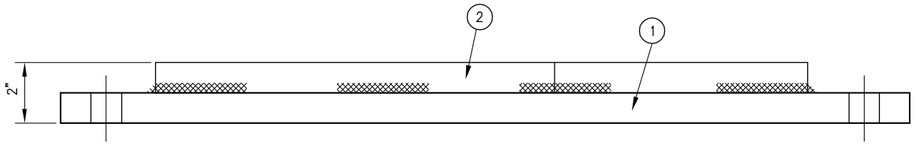
CADD FILE NAME: SD-2311

REV: | EDITION: FOURTH

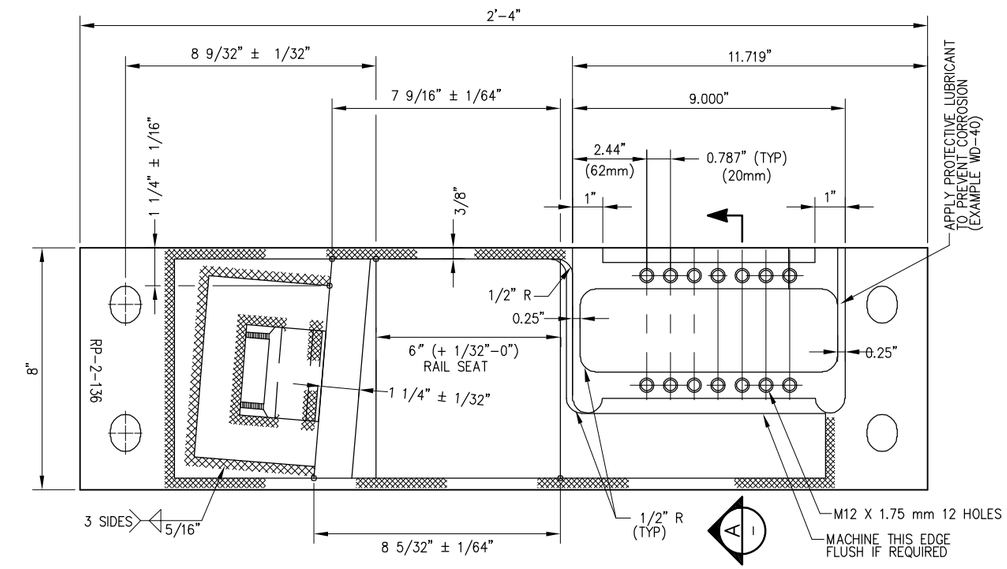
SPECIAL TRACKWORK

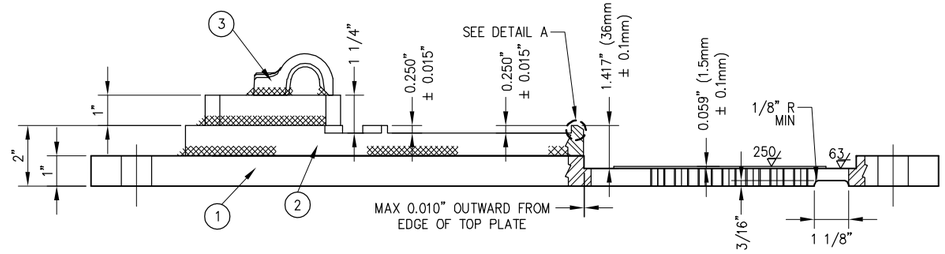
STANDARD DRAWING NO.: SD-2311



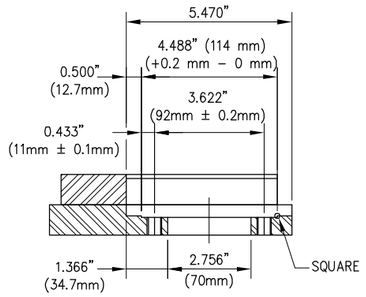


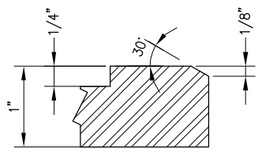
SWITCH ROLLER PLATE RP-2-136 W/O ROLLER WELDING & PUNCHING DETAILS





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





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:

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DEPUTY DIRECTOR, ENGINEERING

Caltrain

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San Carlos, CA 94070

STANDARD DRAWINGS

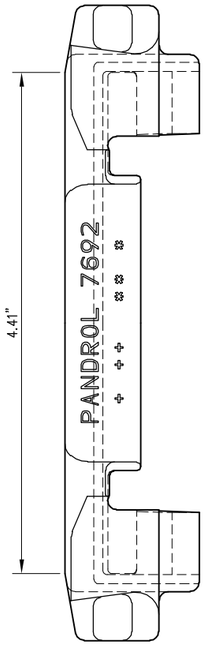
SPECIAL TRACKWORK
GENERAL ELEMENTS
SWITCH PLATES FOR HOLLOW STEEL TIES
SWITCH PLATE ROLLER SCHWIHAG RP-2-136

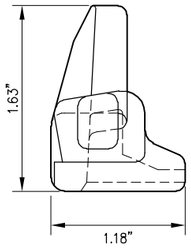
CADD FILE NAME: SD-2312

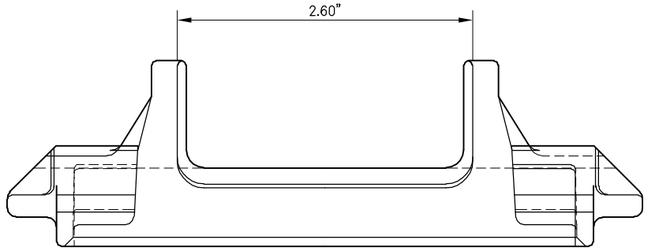
REV: | EDITION: FOURTH

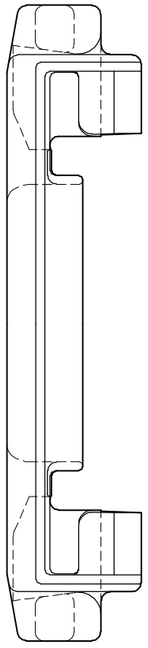
SPECIAL TRACKWORK

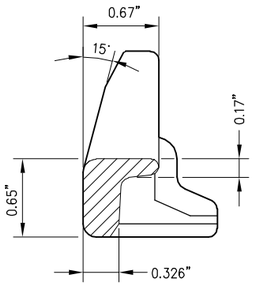
STANDARD DRAWING NO.: SD-2312

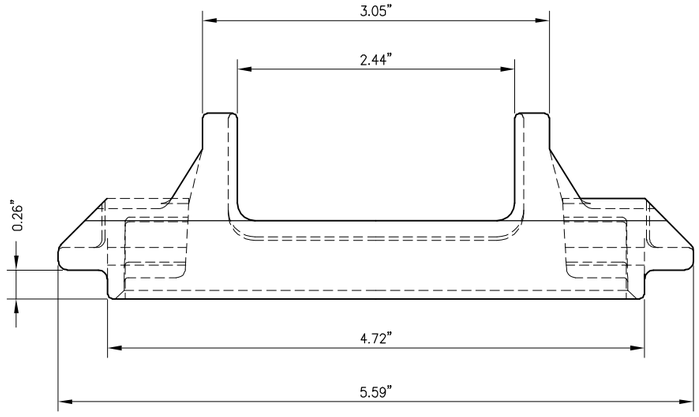












STANDARD SIDE POST INSULATOR (PANDROL PART #7692)

NOTE:

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

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					01012024 FOURTH EDITION

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PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DEPUTY DIRECTOR, ENGINEERING

Caltrain

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STANDARD DRAWINGS

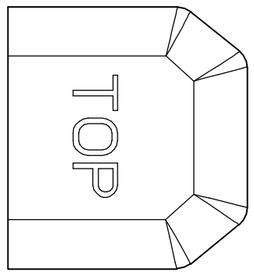
SPECIAL TRACKWORK
GENERAL ELEMENTS
SIDE POST INSULATOR
FOR FC1600 SERIES PANDROL FASTCLIP

CADD FILE NAME: SD-2313

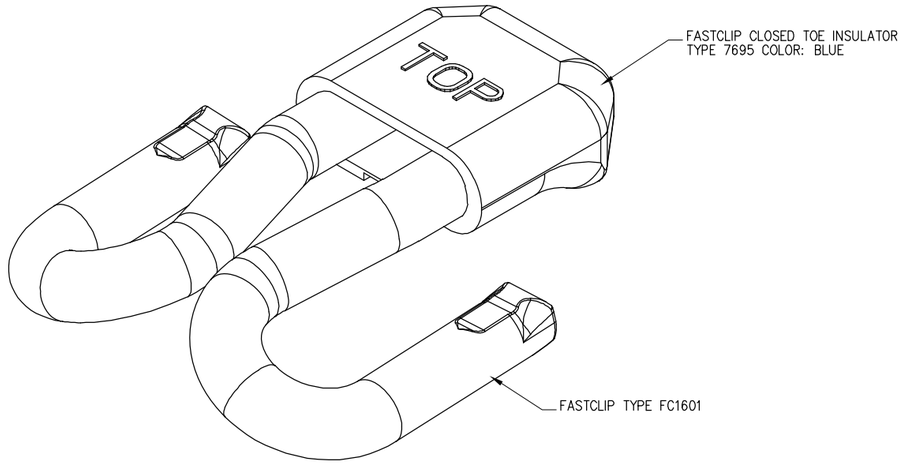
REV: | EDITION: FOURTH

SPECIAL TRACKWORK

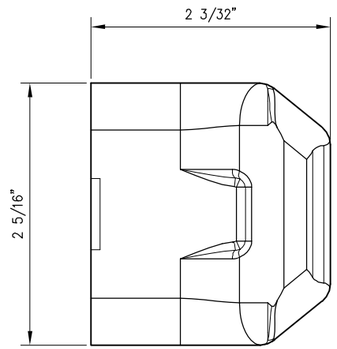
STANDARD DRAWING NO.: SD-2313



TOP VIEW

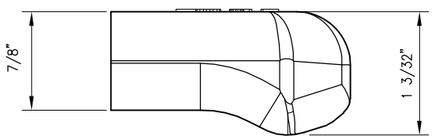


ISOMETRIC
(ASSEMBLED)

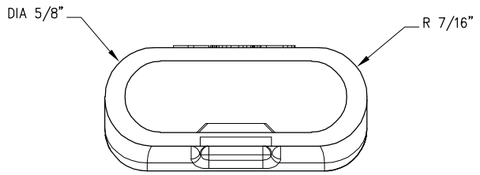


BOTTOM

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
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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Caltrain®

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STANDARD DRAWINGS

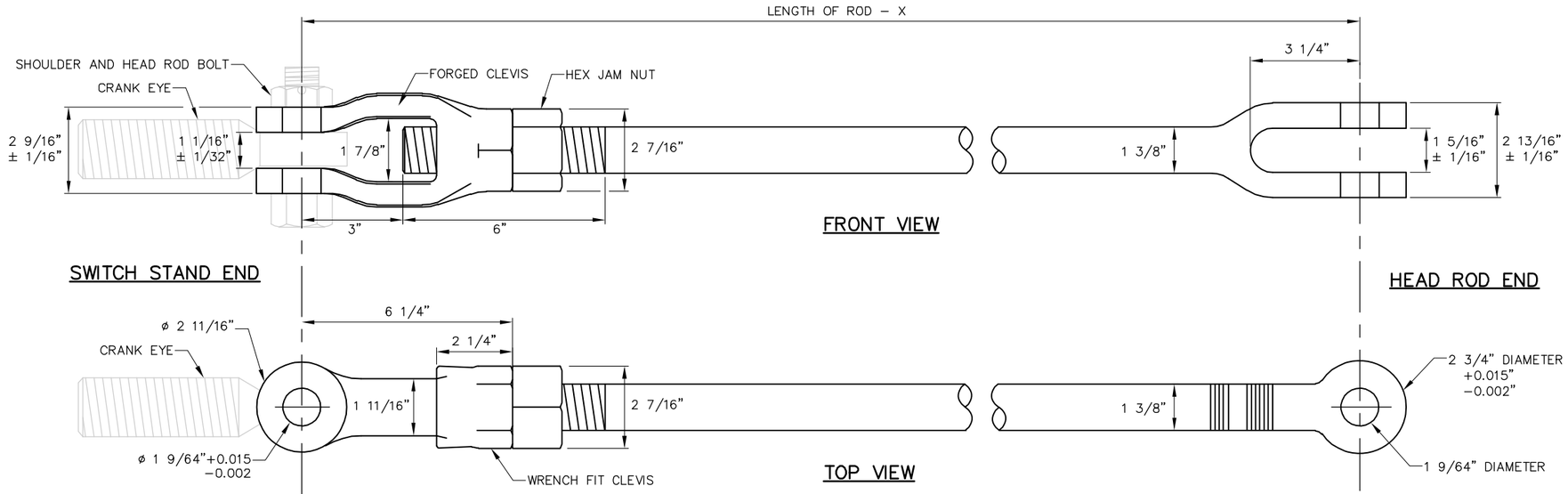
SPECIAL TRACKWORK
GENERAL ELEMENTS
TOE INSULATOR
FOR FC1600 SERIES PANDROL FASTCLIP

CADD FILE NAME: SD-2314

REV: | EDITION: FOURTH

SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD-2314



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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PENINSULA CORRIDOR JOINT POWERS BOARD

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STANDARD DRAWINGS

SPECIAL TRACKWORK
GENERAL ELEMENTS

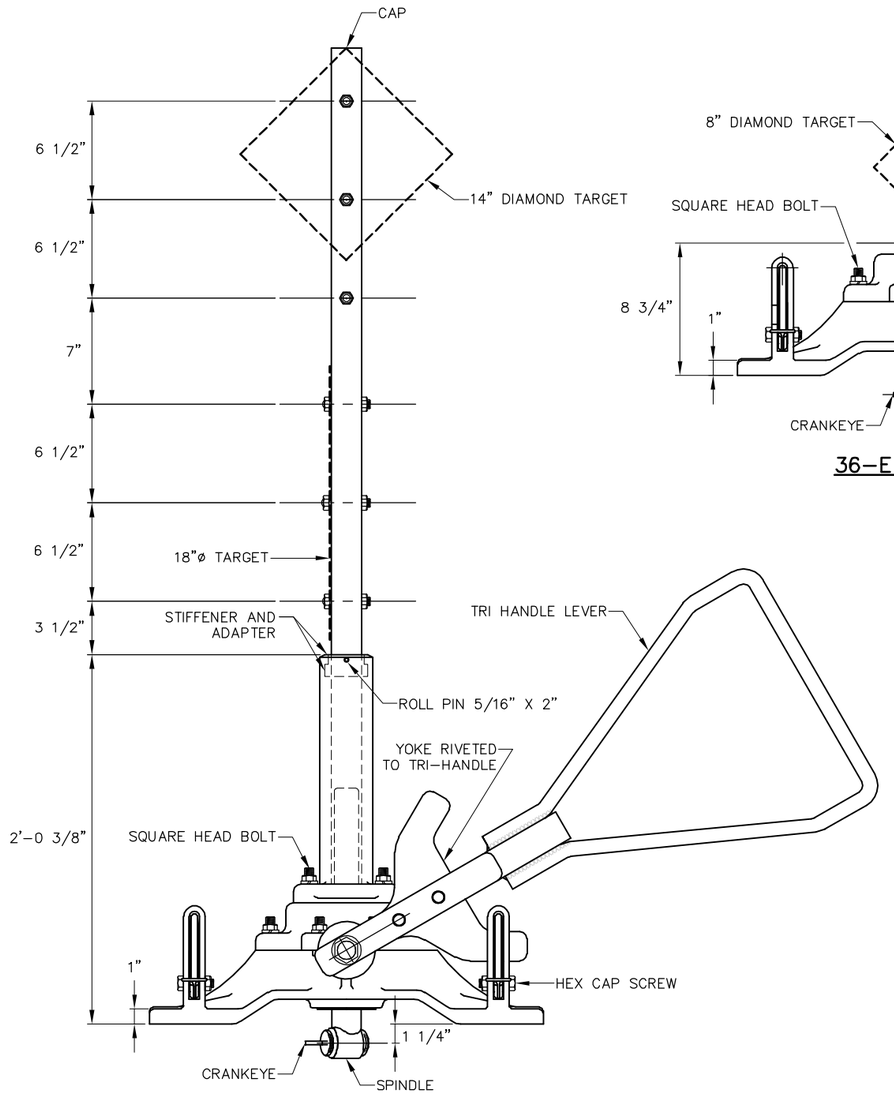
CONNECTING RODS

CADD FILE NAME: SD–2315

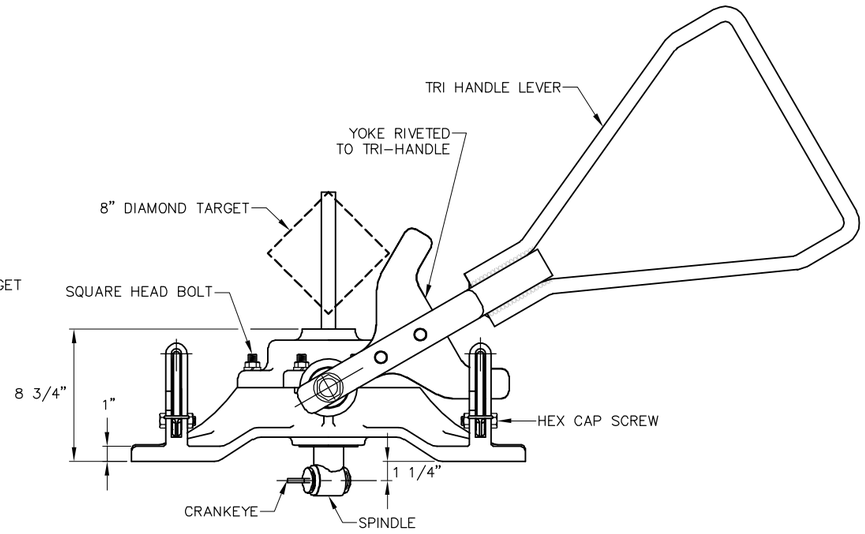
REV: | EDITION: FOURTH

SPECIAL TRACKWORK

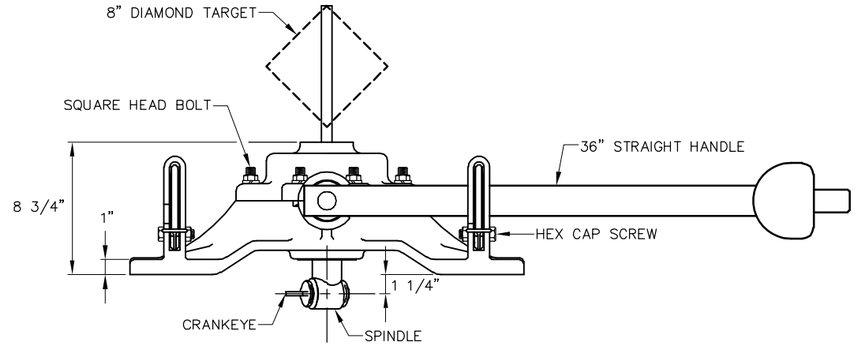
STANDARD DRAWING NO.: SD–2315



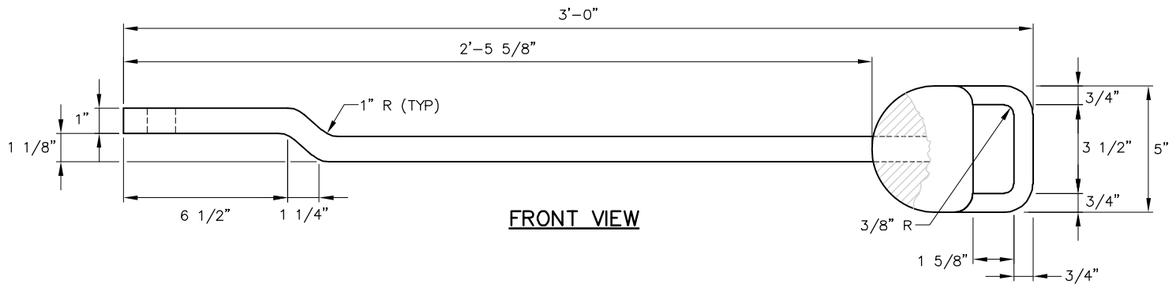
36-EH SWITCH STAND (STANDARD)



36-E SWITCH STAND



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



36" STRAIGHT HANDLE

NOTE:

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

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STANDARD DRAWINGS

SPECIAL TRACKWORK
GENERAL ELEMENTS

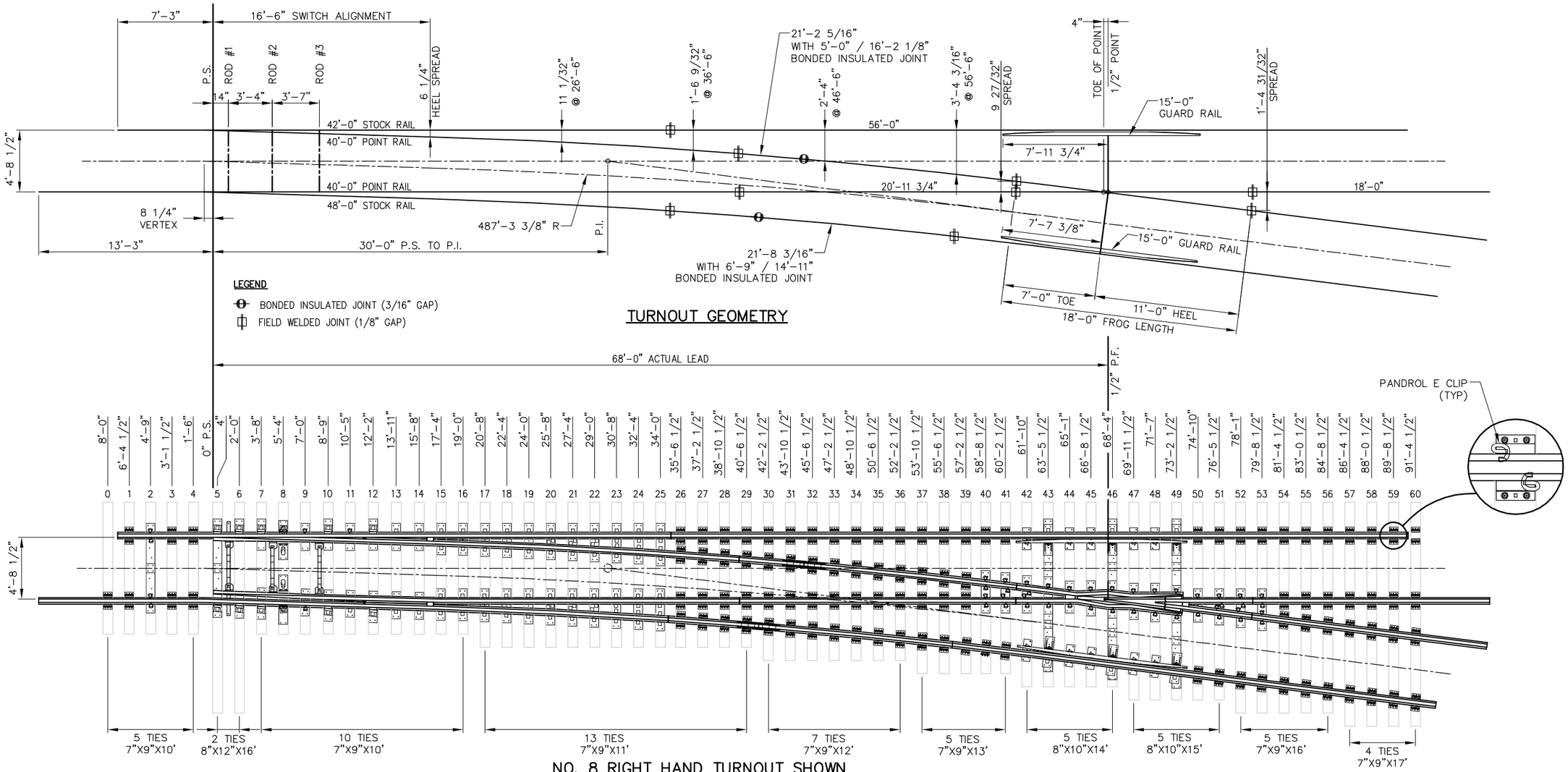
36E AND 36EH SWITCH STANDS

CADD FILE NAME: SD-2316

REV: | EDITION: FOURTH

SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD-2316



LEGEND

- BONDED INSULATED JOINT (3/16" GAP)
- FIELD WELDED JOINT (1/8" GAP)

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.

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STANDARD DRAWINGS

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

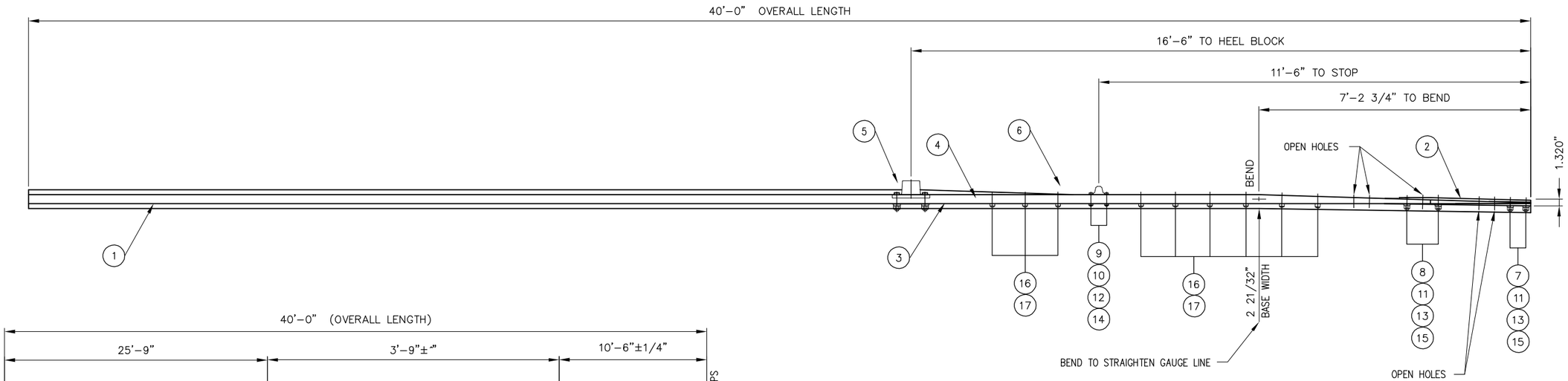
CADD FILE NAME: SD-2401

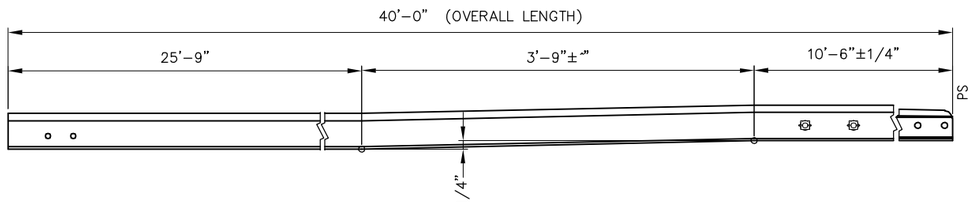
REV: | EDITION: FOURTH

SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD-2401

BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	SWITCH POINT RAIL, 136 LB RE, RH SAMSON GR, 40'–0"	ES2801–22	10	2	SPRING WASHER, 3/4" DIA	–
2	1	MANGANESE TIP RH FOR 136 LB RE 16'–6" SAMSON SWITCH POINT	–	11	4	SPRING WASHER, 1" DIA	–
3	1	REINFORCING BAR, GAUGE SIDE, 1/2" x 14'–6", RH POINT	–	12	2	NUT, 3/4" DIA HEAVY HEX, GR 5	–
4	1	REINFORCING BAR, STOCK SIDE, 1/2" x 10'–11 1/2", RH POINT	–	13	4	NUT, 1" DIA HEAVY HEX, GR 5	–
5	1	SWITCH HEEL ASSY FLOATING 132/136 LB RE C/W HARDWARE	–	14	2	COTTER PIN, 3/16" DIA x 1 3/4"	–
6	1	POINT STOP 3 1/4" HIGH	–	15	4	COTTER PIN, 1/4" DIA x 2"	–
7	2	BOLT, 1" DIA x 3 1/2", THIN SQUARE HEAD DRILLED @ 3 3/16" GR 5	–	16	9	HUCKBOLT, 3/4" DIA (C50LR–BR24–24)	–
8	2	BOLT, 1" DIA x 3 3/4", THIN SQUARE HEAD DRILLED @ 3 1/2" GR 5	–	17	9	HUCK COLLAR, 3/4" DIA (3LC–2R24G)	–
9	2	BOLT, 3/4" DIA x 4", SQUARE HEAD DRILLED @ 3 21/32" GR 5	–				





SIDE VIEW – VERTICAL BENDING DETAIL
NTS

NOTES:

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

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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

CADD FILE NAME: SD–2401

REV: | EDITION: FOURTH

SPECIAL TRACKWORK

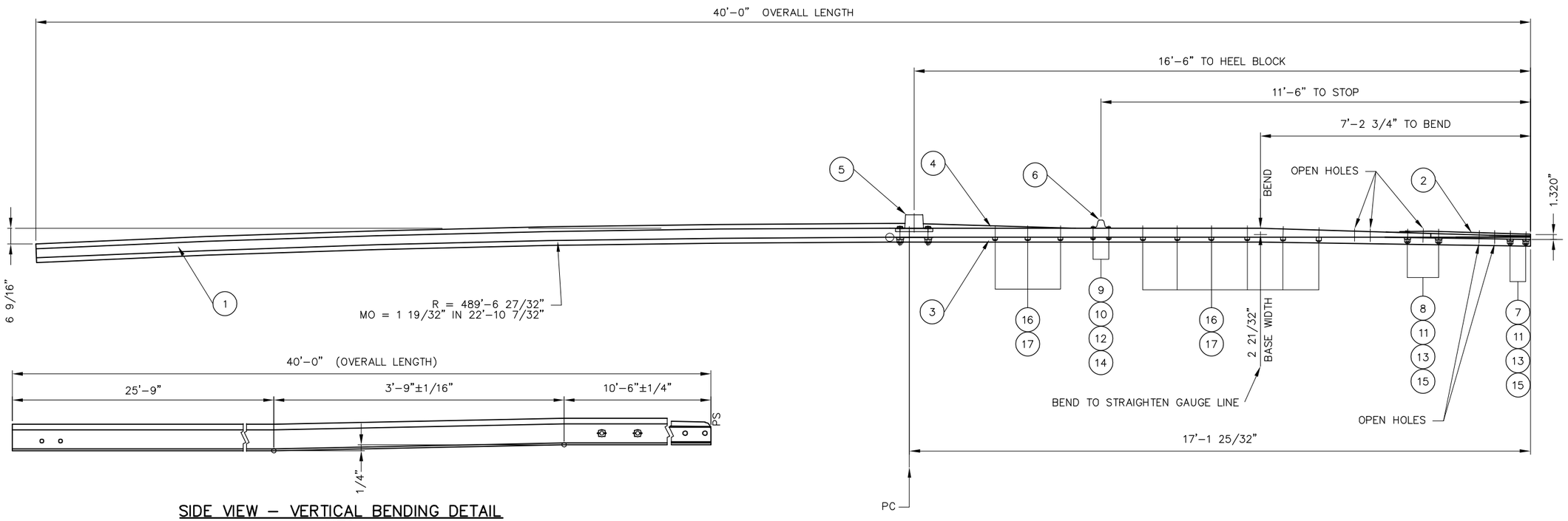
STANDARD DRAWING NO.: SD–2402

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

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REV	DATE	BY	CHK	APP	DESCRIPTION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
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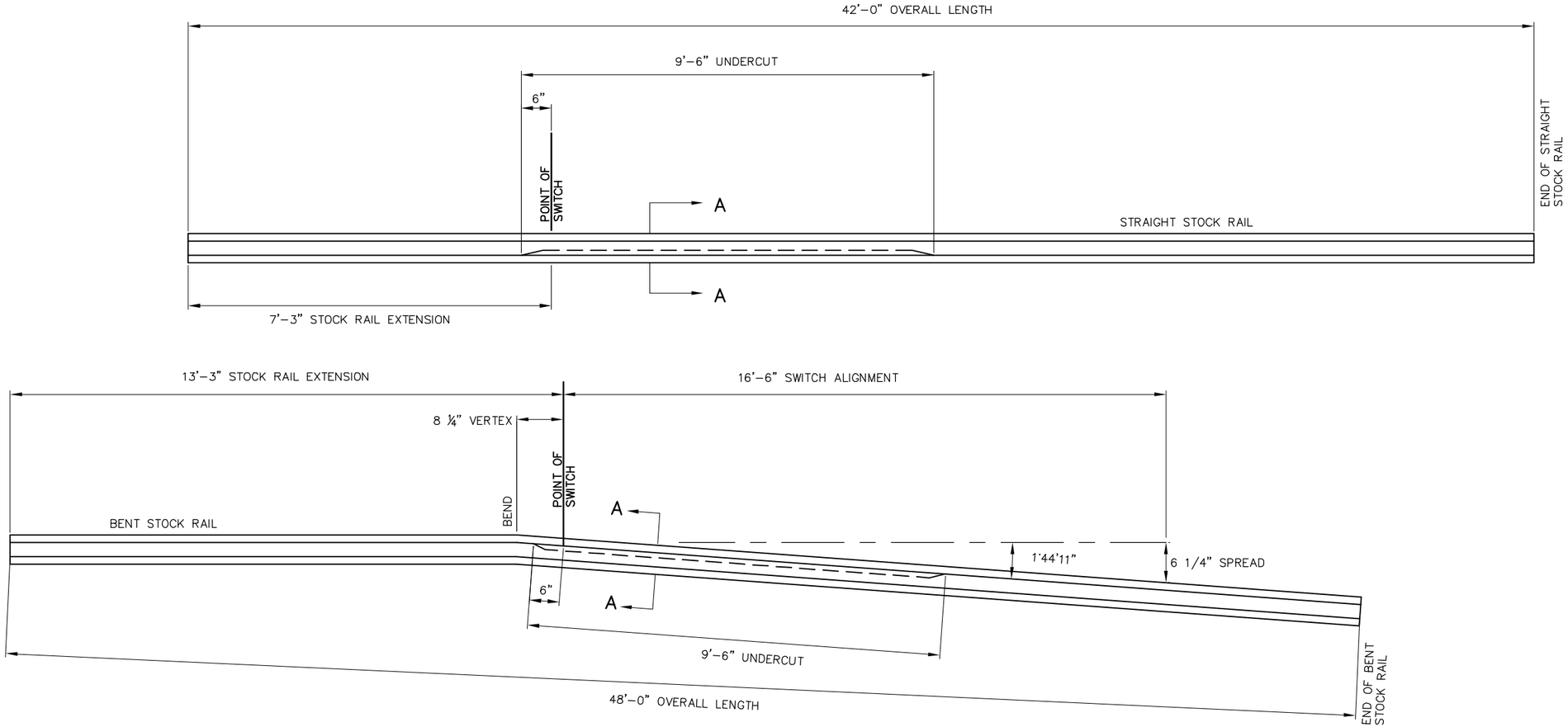
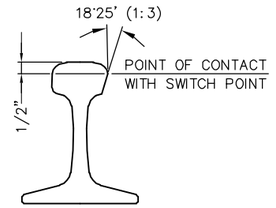
1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

CADD FILE NAME: SD–2403
REV: | EDITION: FOURTH
SPECIAL TRACKWORK
STANDARD DRAWING NO.: SD–2403





SECTION A–A

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

REV	DATE	BY	CHK	APP	DESCRIPTION
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PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

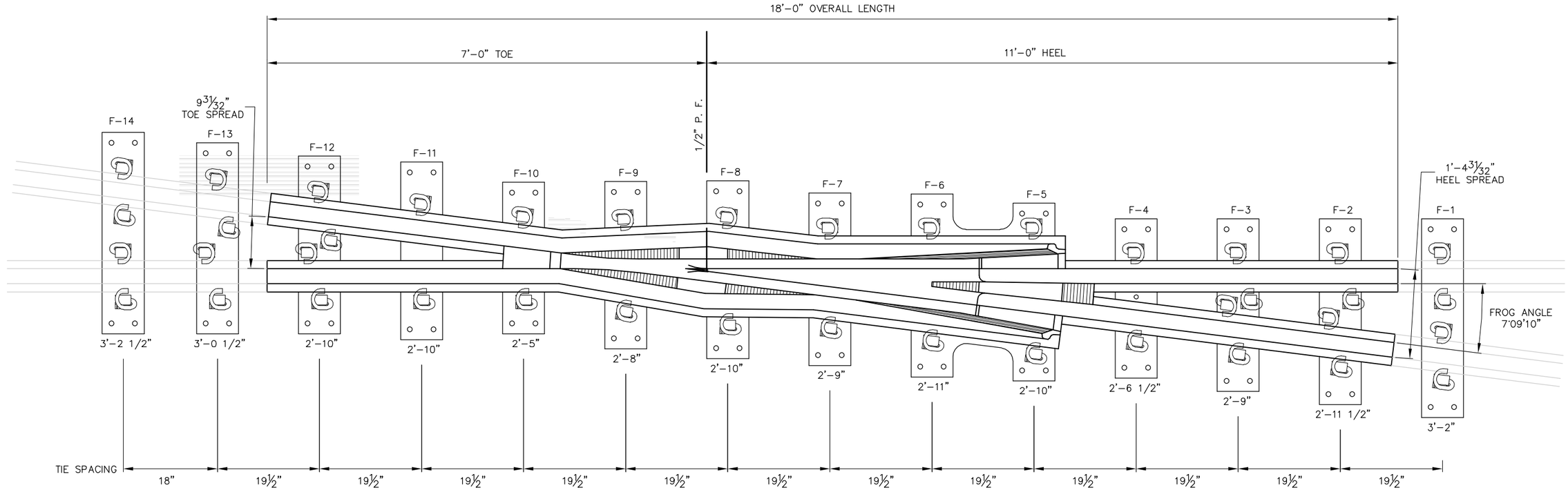
SPECIAL TRACKWORK
NO. 8 TURNOUT
STRAIGHT AND BENT
STOCK RAILS

CADD FILE NAME: SD–2404

REV: | EDITION: FOURTH

SPECIAL TRACKWORK

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.

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PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 8 TURNOUT

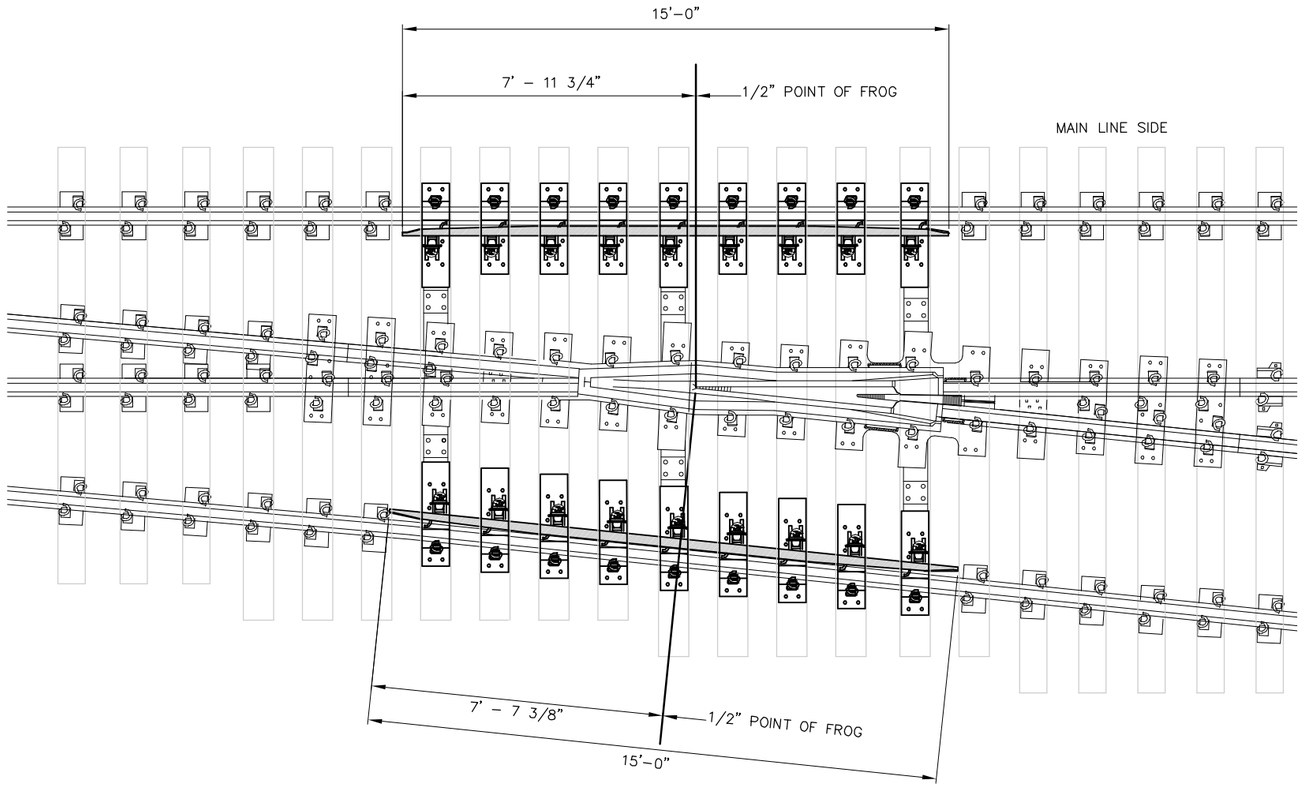
NO. 8 RAILBOUND MANGANESE FROG

CADD FILE NAME: SD–2405

REV: | EDITION: FOURTH

SPECIAL TRACKWORK

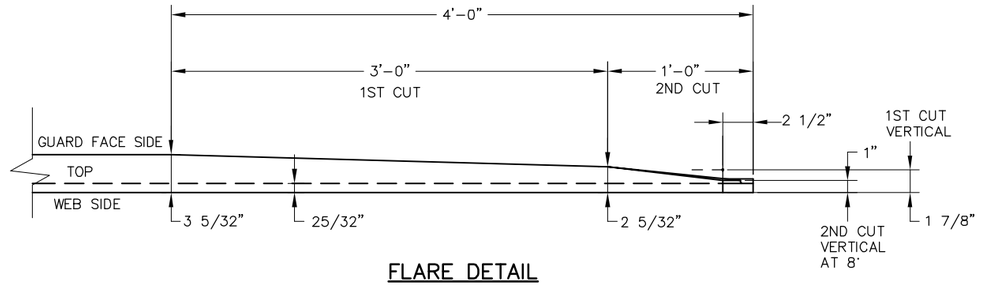
STANDARD DRAWING NO.: SD–2405



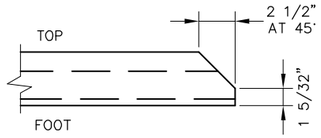
TYPICAL GUARD RAIL PLACEMENT

NOTES:

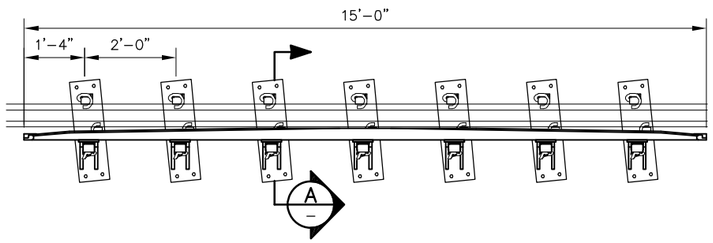
1. PLATE SPACING IS SET FOR SHIPPING ONLY. FINAL PLATE SPACING SHALL BE DETERMINED BY THE SPACING AT THE TIME OF INSTALLATION.
2. PANDROL SPRING CLIPS (E2055) SHALL BE INCLUDED IN ASSEMBLY.
3. LIFT POINTS AND WEIGHT OF ASSEMBLY SHALL BE MARKED ON HEAD OF WEAR BAR WITH WHITE PAINT.
4. FOR PLACEMENT OF GUARD RAIL, SEE SD-2401.
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.



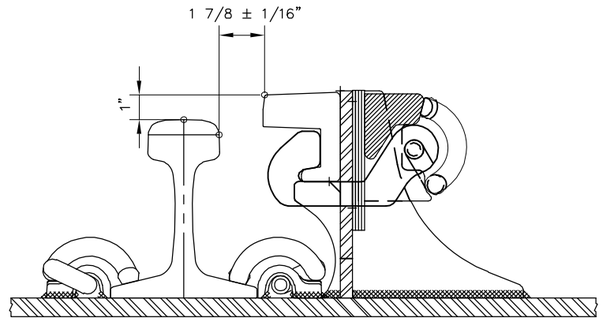
FLARE DETAIL



END BEVEL



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



A — SECTION
NOT TO SCALE

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PENINSULA CORRIDOR JOINT POWERS BOARD

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Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

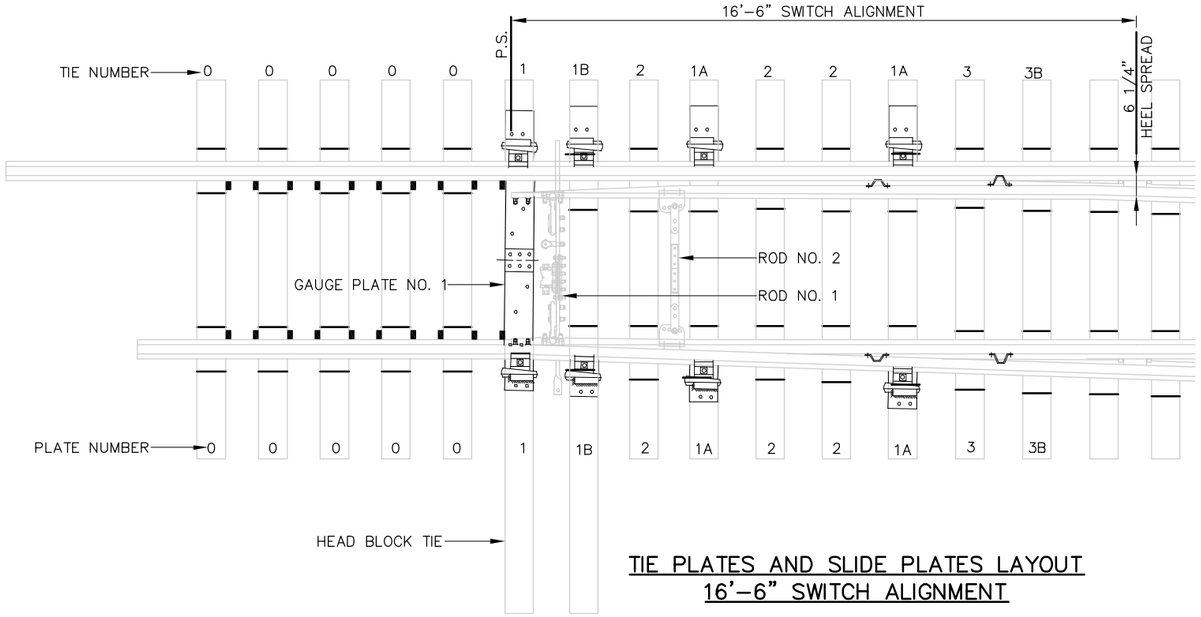
SPECIAL TRACKWORK
NO. 8 TURNOUT
BOLTLESS ADJUSTABLE
GUARD RAILS

CADD FILE NAME: SD-2406

REV: | EDITION: FOURTH

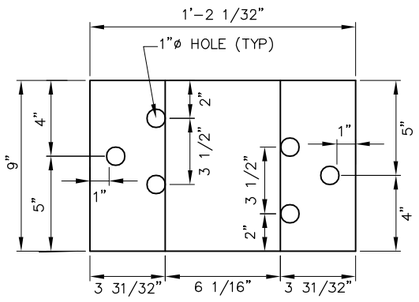
SPECIAL TRACKWORK

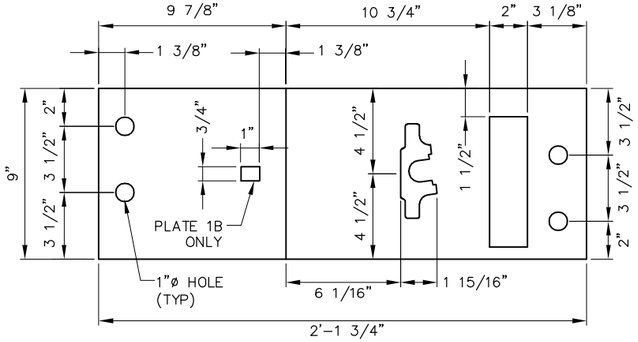
STANDARD DRAWING NO.: SD-2406

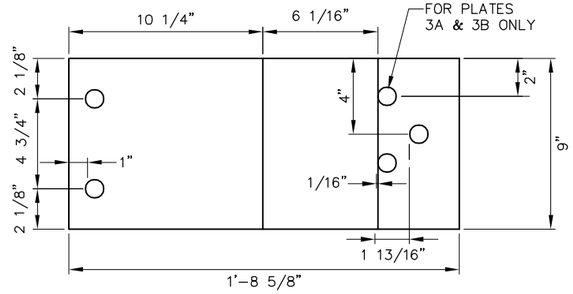


TIE PLATES AND SLIDE PLATES LAYOUT
16'-6" SWITCH ALIGNMENT

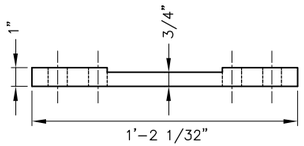
TABLE OF QUANTITIES							
SWITCH LENGTH	PLATE NUMBER						
	0	1A	1B	2	3	3A	3B
16'-6"	10	4	2	6	2	N/A	2



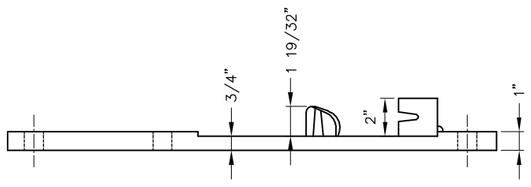




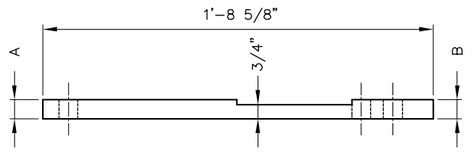
SLIDE PLATES		
PLATE NO.	A	B
PLATE 2	1"	1"
PLATE 3	15/16"	1"
PLATE 3A	7/8"	7/8"
PLATE 3B	13/16"	7/8"



TIE PLATE NO. 0



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

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 8 TURNOUT

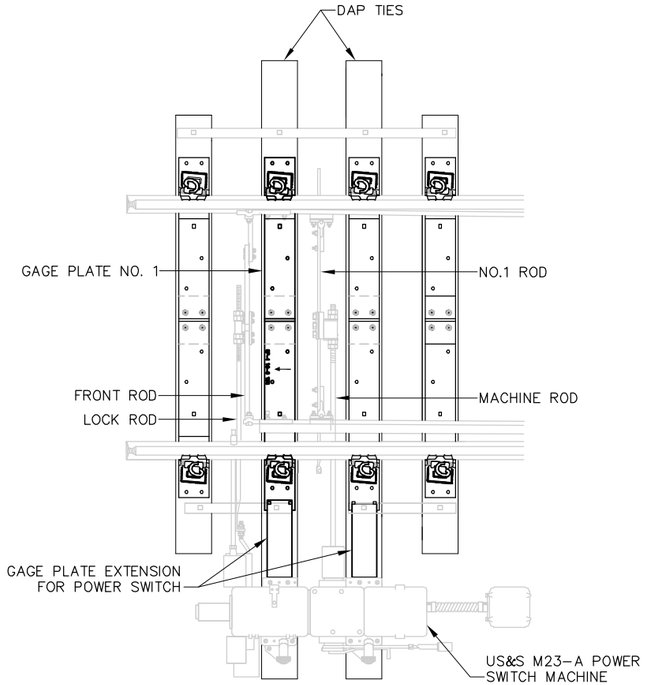
SWITCH PLATES

CADD FILE NAME: SD-2407

REV: | EDITION: FOURTH

SPECIAL TRACKWORK

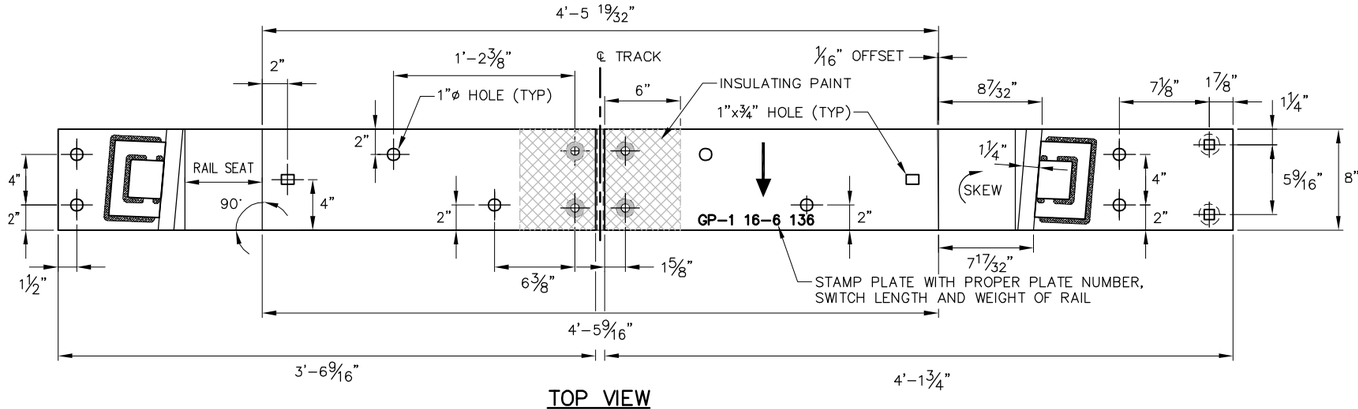
STANDARD DRAWING NO.: SD-2407



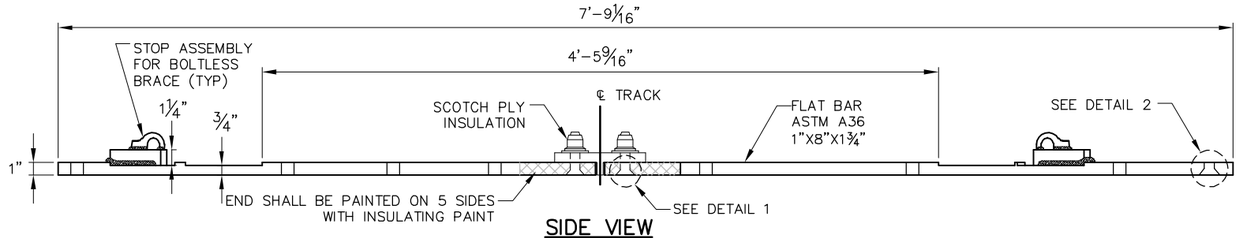
POWER OPERATION SWITCH PLAN

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.

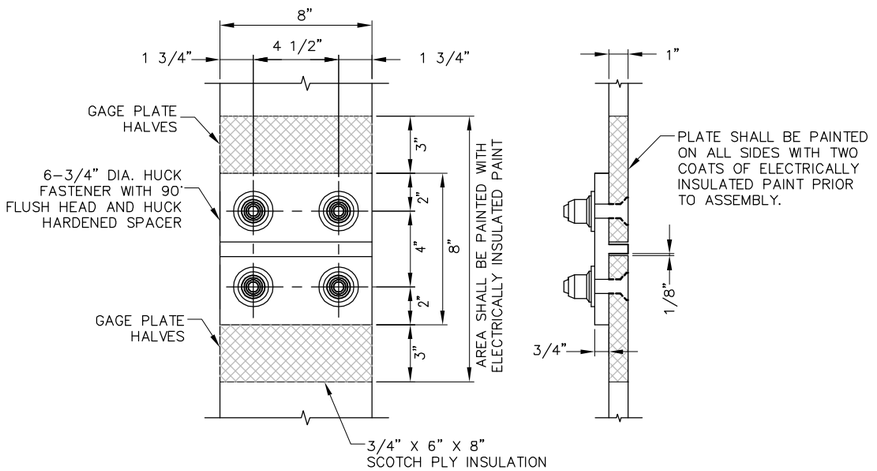


TOP VIEW

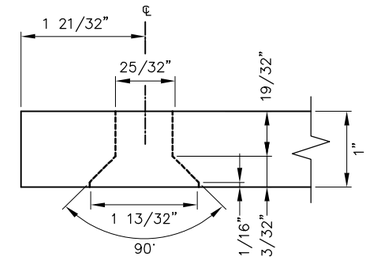


SIDE VIEW

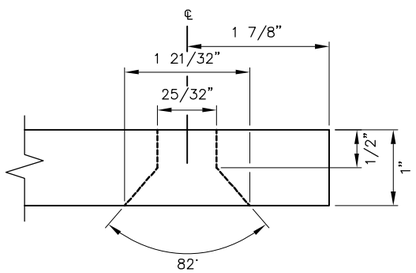
GAGE PLATE NO. 1



SCOTCH PLY INSULATION



DETAIL 1
COUNTERSINK DETAIL



DETAIL 2
COUNTERBORE DETAIL

REV	DATE	BY	CHK	APP	DESCRIPTION
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP	DESCRIPTION

PENINSULA CORRIDOR JOINT POWERS BOARD

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Caltrain

1250 San Carlos Avenue
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STANDARD DRAWINGS

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

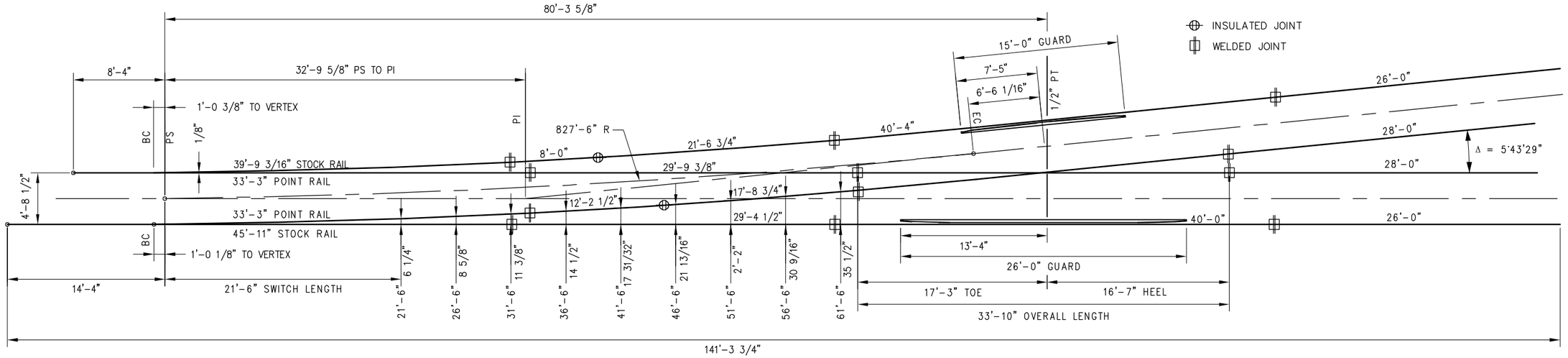
CADD FILE NAME: SD-2408

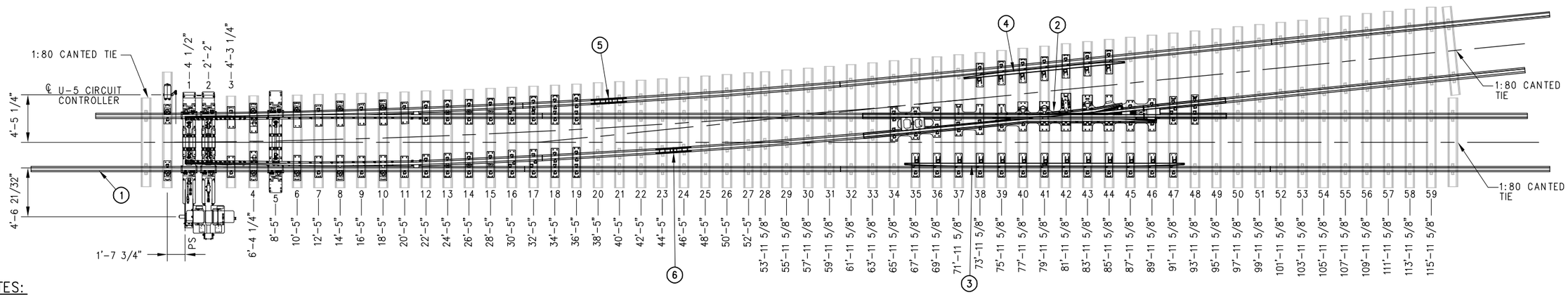
REV: | EDITION: FOURTH

SPECIAL TRACKWORK

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
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

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REV	DATE	BY	CHK	APP	DESCRIPTION

PENINSULA CORRIDOR JOINT POWERS BOARD

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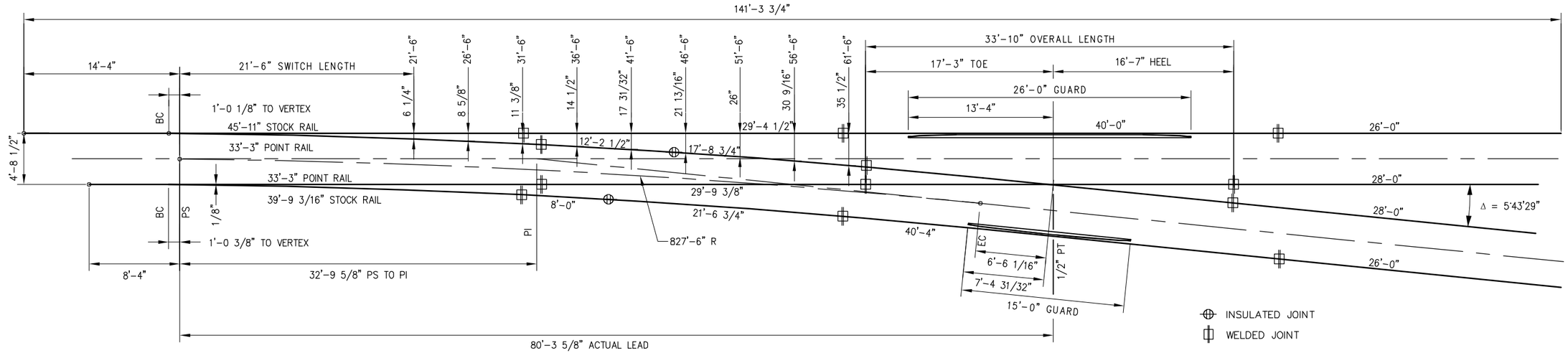
Caltrain
1250 San Carlos Avenue
San Carlos, CA 94070

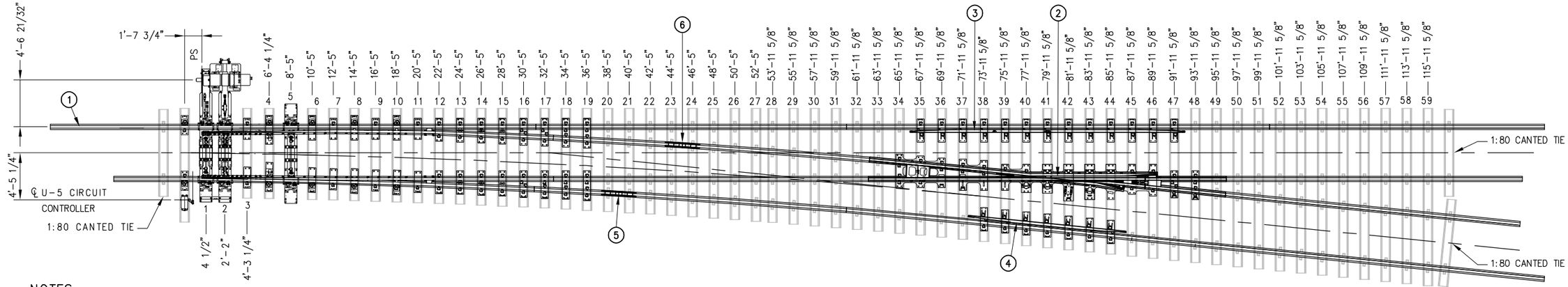
STANDARD DRAWINGS

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

CADD FILE NAME: SD–2501
REV: EDITION: FOURTH
SPECIAL TRACKWORK
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
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP	DESCRIPTION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

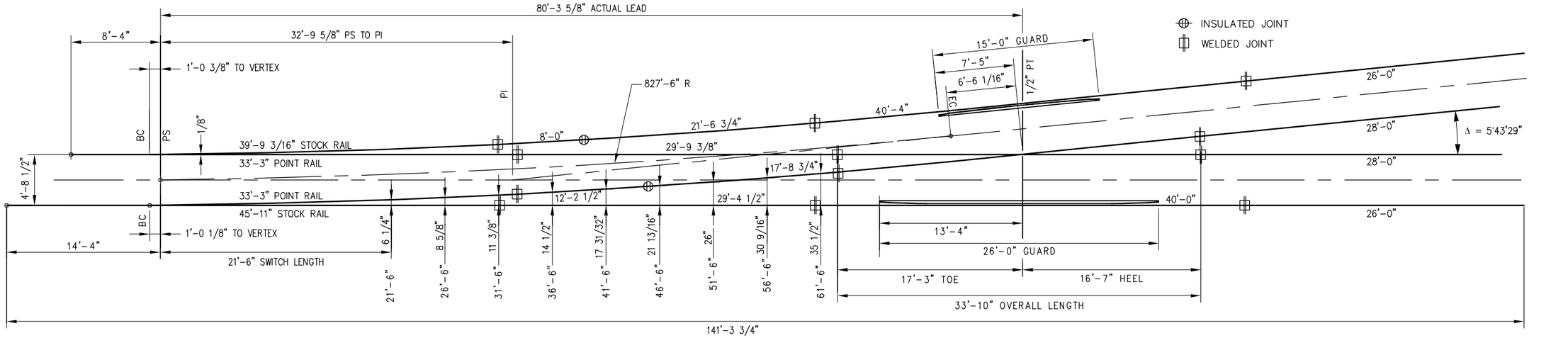
CADD FILE NAME: SD–2502

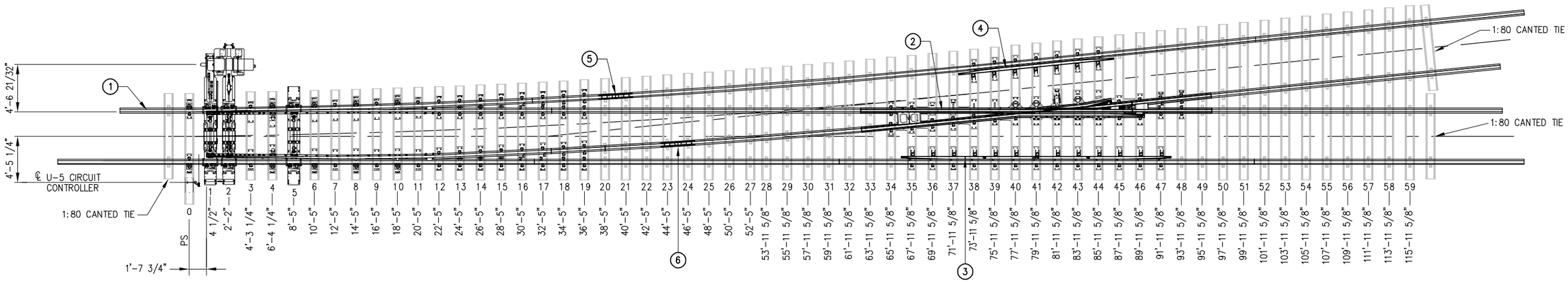
REV: | EDITION: FOURTH

SPECIAL TRACKWORK

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
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP	DESCRIPTION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

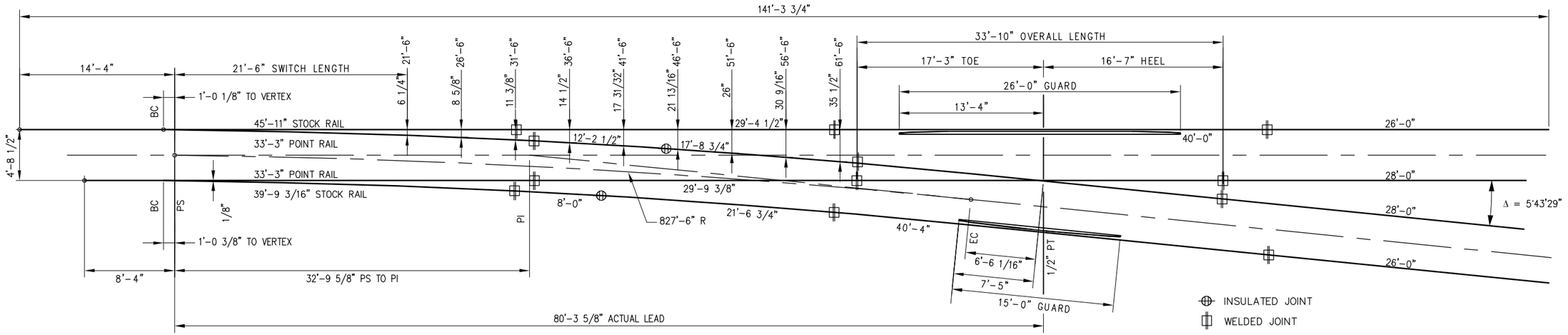
CADD FILE NAME: SD–2503

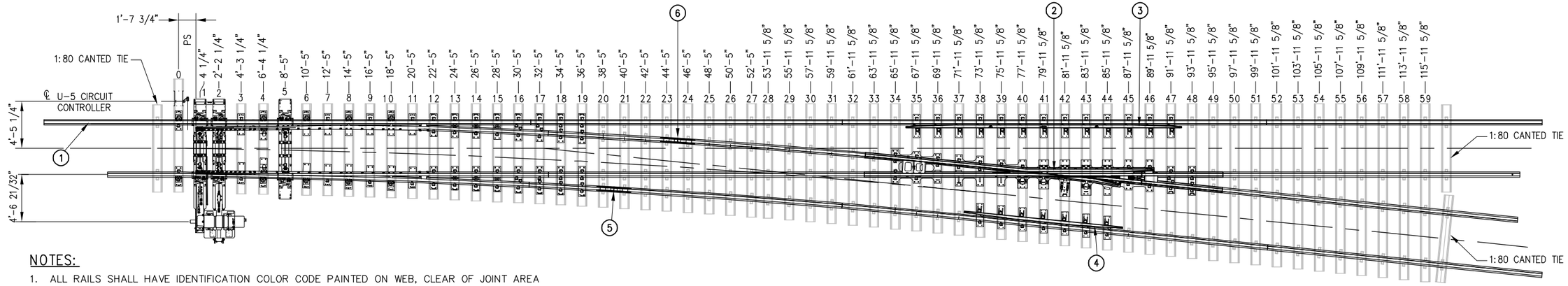
REV: | EDITION: FOURTH

SPECIAL TRACKWORK

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
					01012024 FOURTH EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

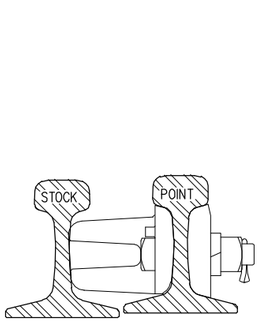
CADD FILE NAME: SD–2504

REV: | EDITION: FOURTH

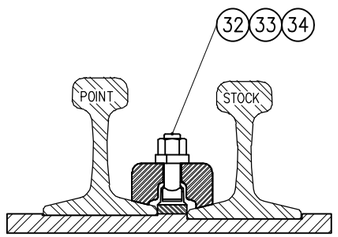
SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD–2504

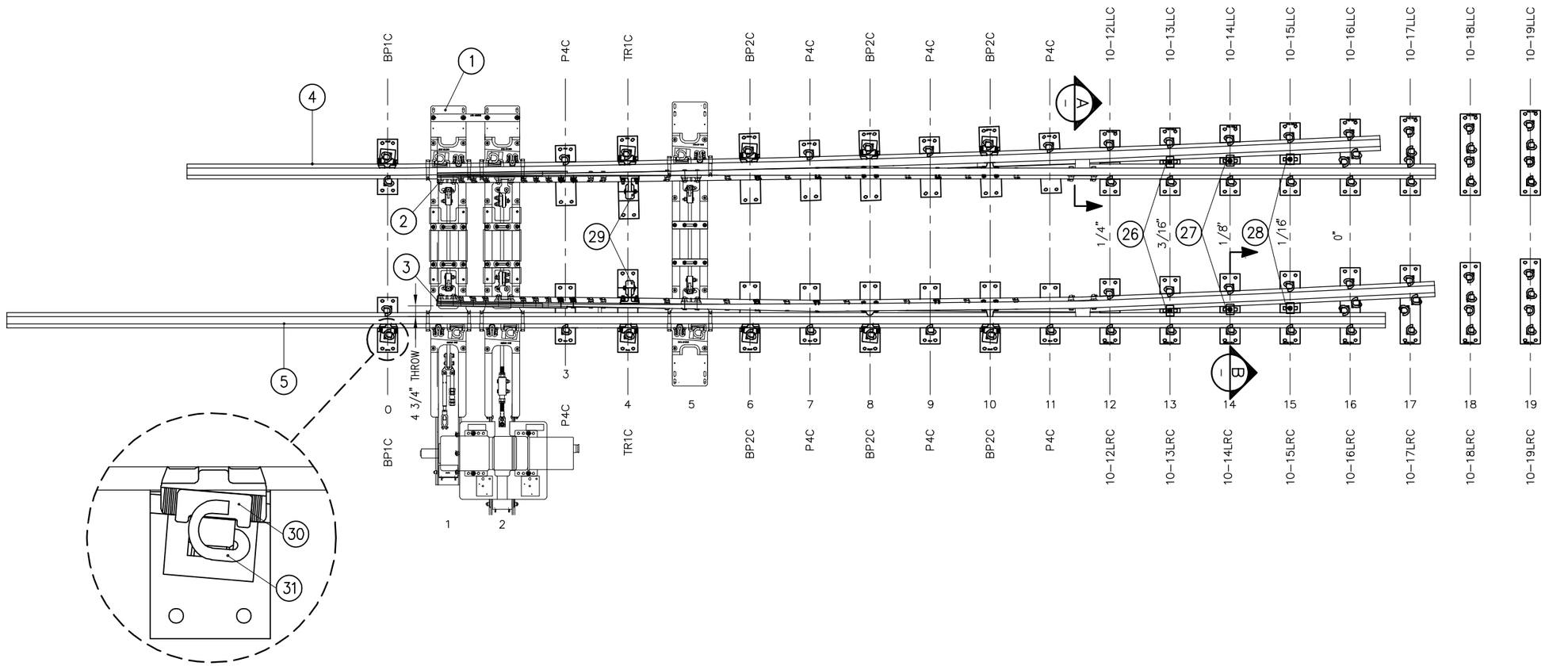
BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	HOLLOW SWITCH TIE & RODDING ASSEMBLY	SD–2538	18	1	SWITCH PLATE (10–16LLC)	SD–2541
2	1	SAMSON POINT, 33'–3" LONG, DOUBLE REINFORCED, UR MANG TIP, STR, LH	SD–2509	19	1	SWITCH PLATE (10–16LRC)	SD–2541
3	1	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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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

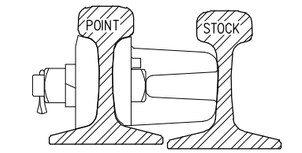
CADD FILE NAME: SD–2505

REV: | EDITION: FOURTH

SPECIAL TRACKWORK

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	–



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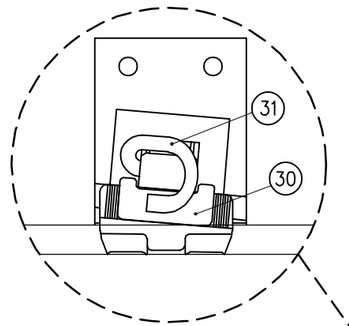
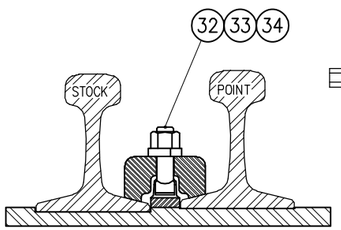
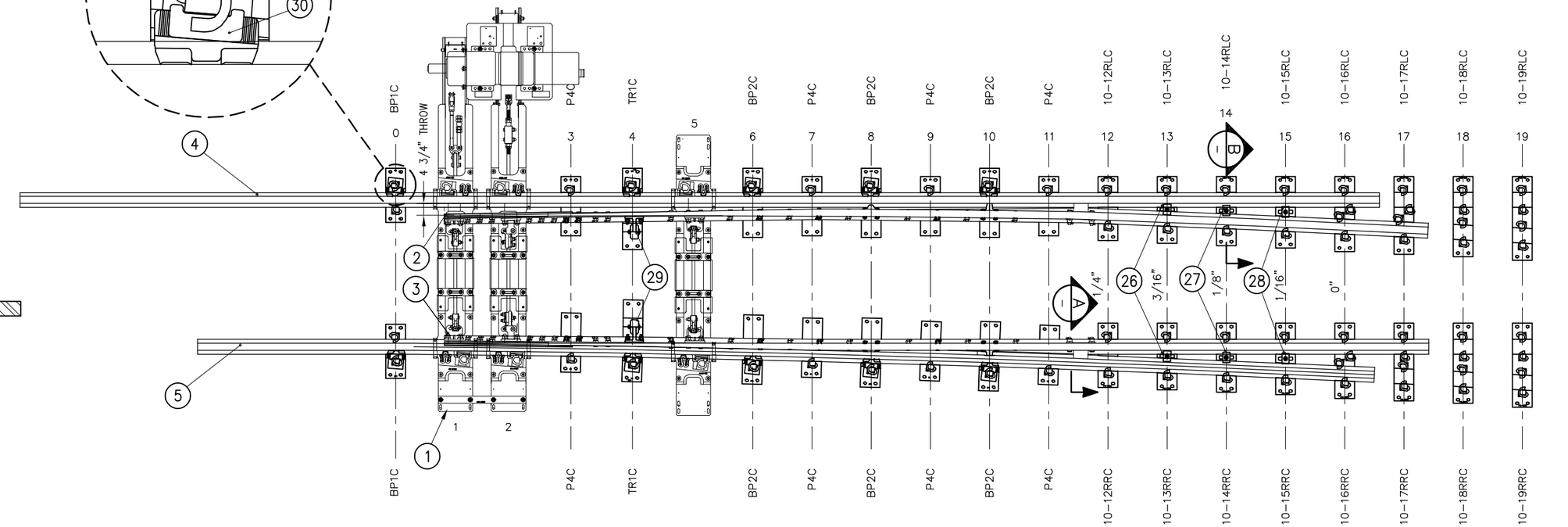




B SECTION
– NTS



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PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

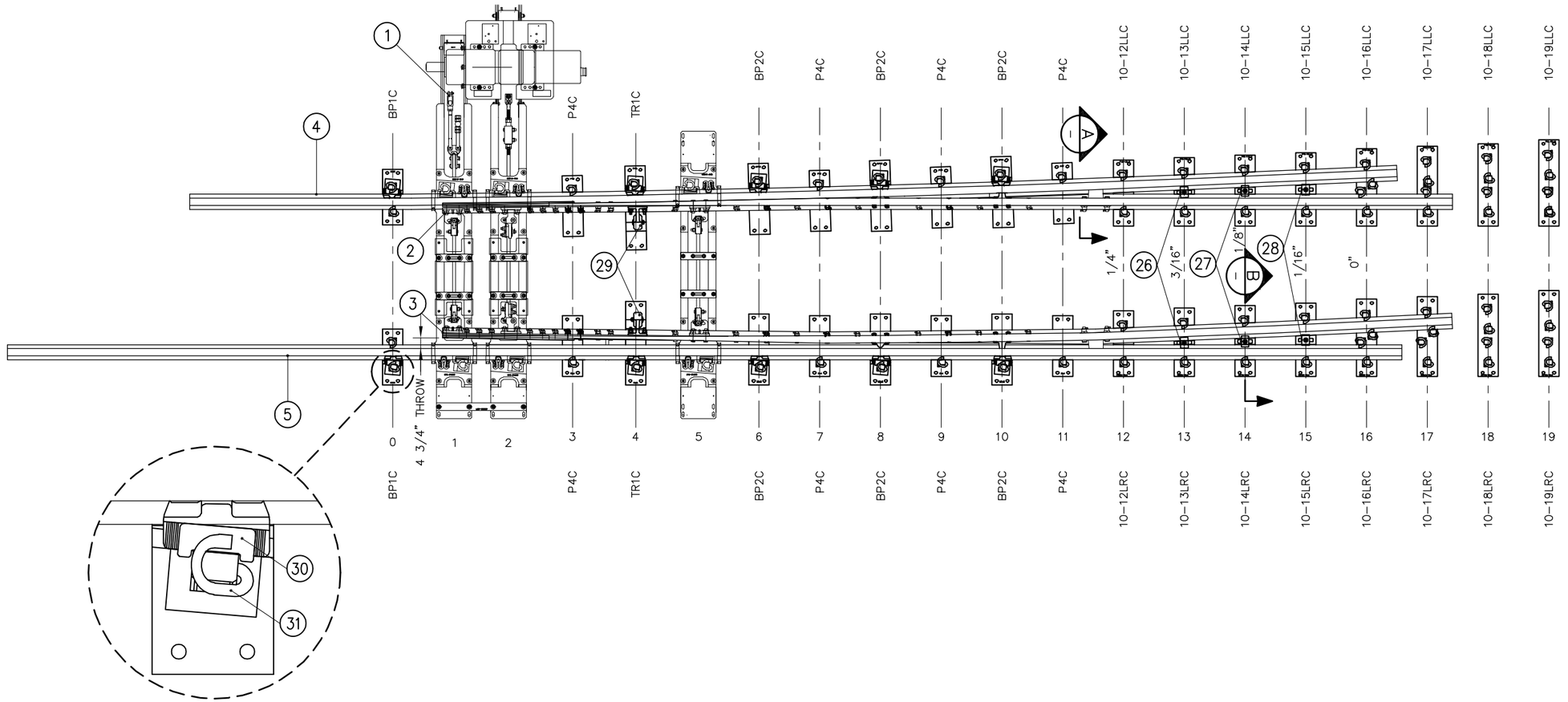
CADD FILE NAME: SD–2506

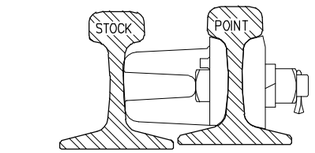
REV: | EDITION: FOURTH

SPECIAL TRACKWORK

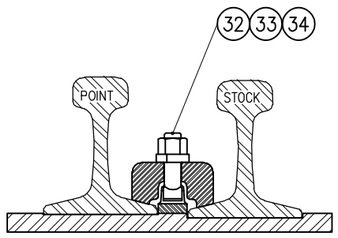
STANDARD DRAWING NO.: SD–2506

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
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

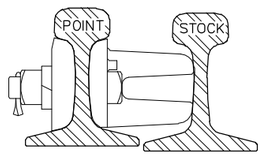
CADD FILE NAME: SD-2507

REV: | EDITION: FOURTH

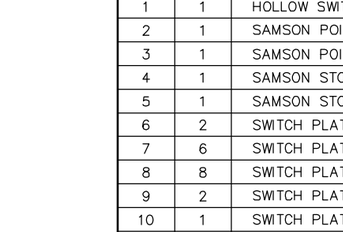
SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD-2507

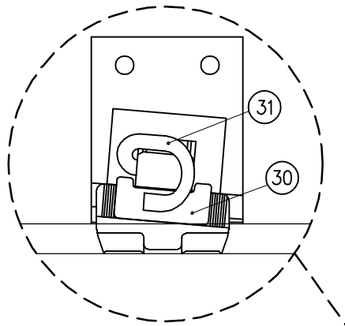
BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO	ITEM	QTY	DESCRIPTION	DWG NO
1	1	HOLLOW SWITCH TIE & RODDING ASSEMBLY	SD–2538	18	1	SWITCH PLATE (10–16RLC)	SD–2544
2	1	SAMSON POINT, 33'–3" LONG, DOUBLE REINFORCED, UR MANG TIP, CVD, LH	SD–2511	19	1	SWITCH PLATE (10–16RRC)	SD–2544
3	1	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	–

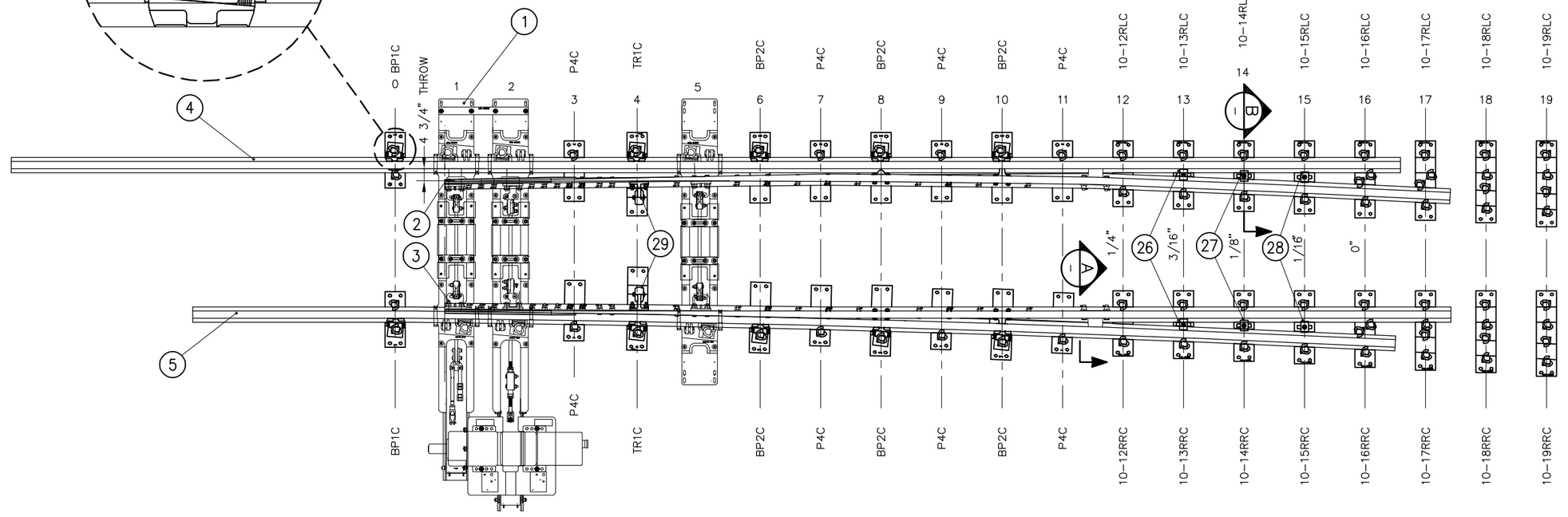


A SECTION
– NTS



B SECTION
– NTS





REV	DATE	BY	CHK	APP	DESCRIPTION
					01012024 FOURTH EDITION

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PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

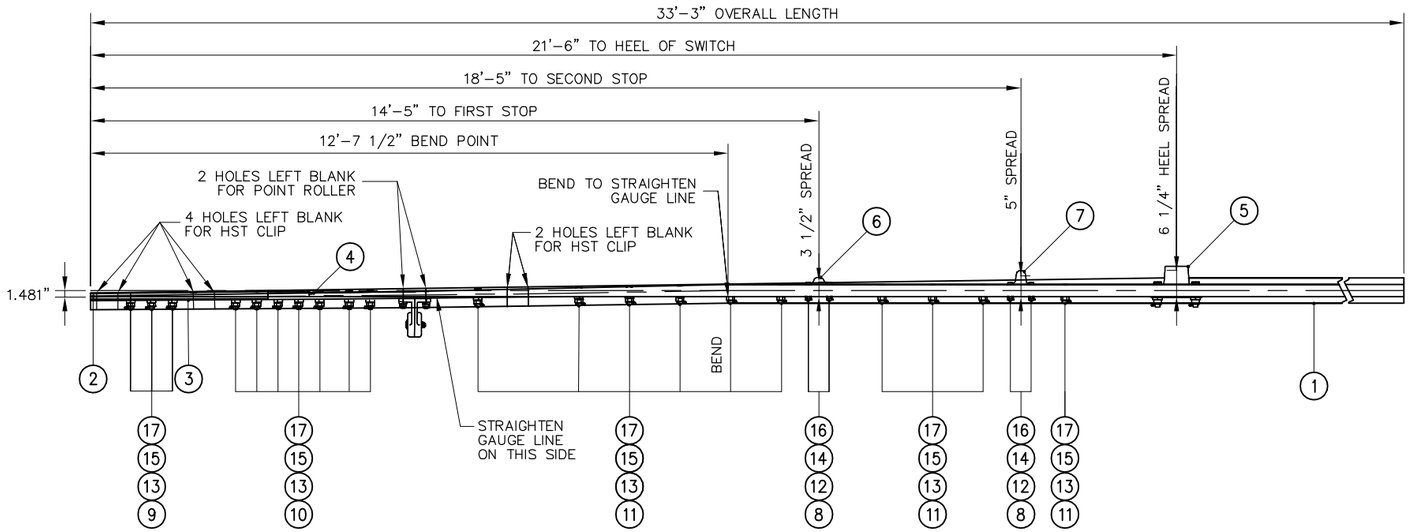
CADD FILE NAME: SD–2508

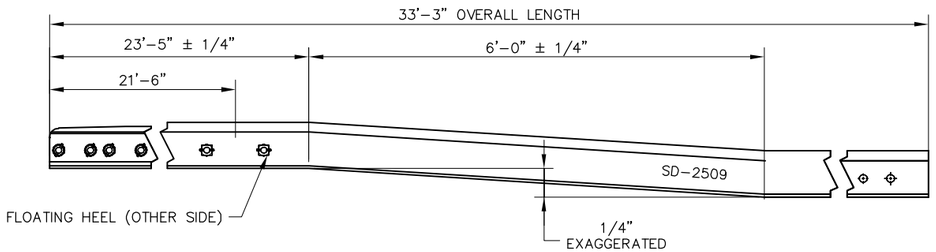
REV: | EDITION: FOURTH

SPECIAL TRACKWORK

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
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PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

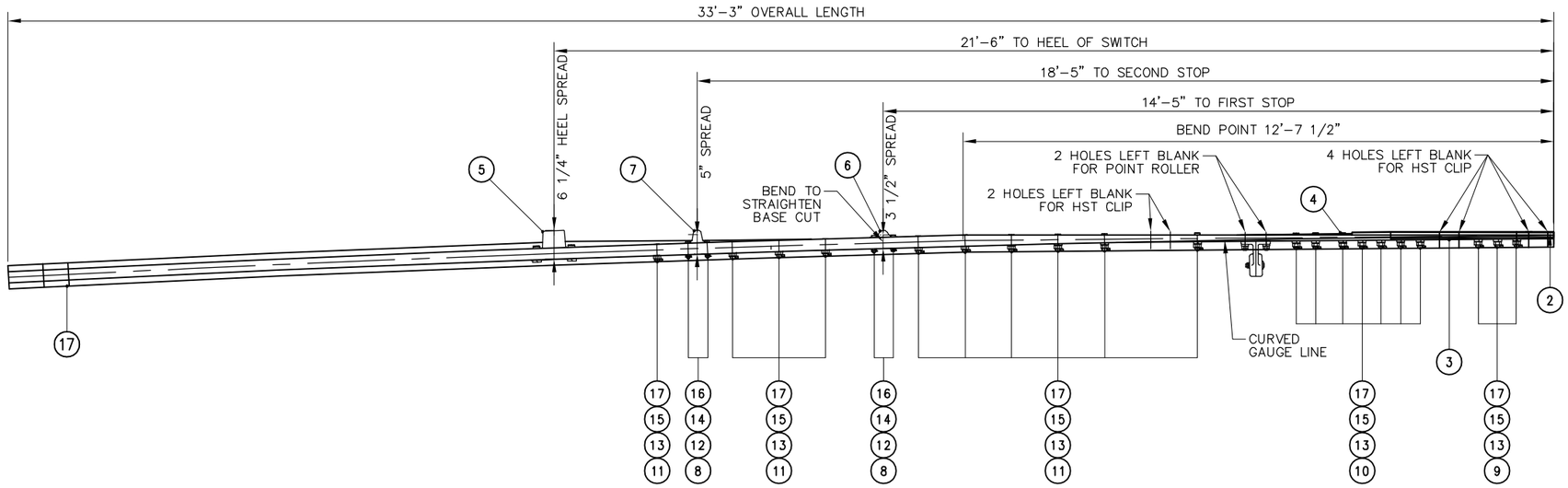
CADD FILE NAME: SD–2509

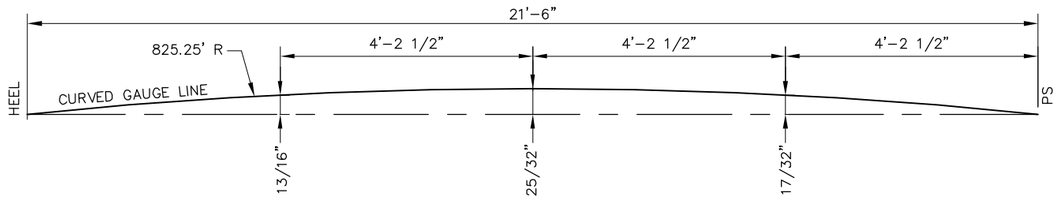
REV: | EDITION: FOURTH

SPECIAL TRACKWORK

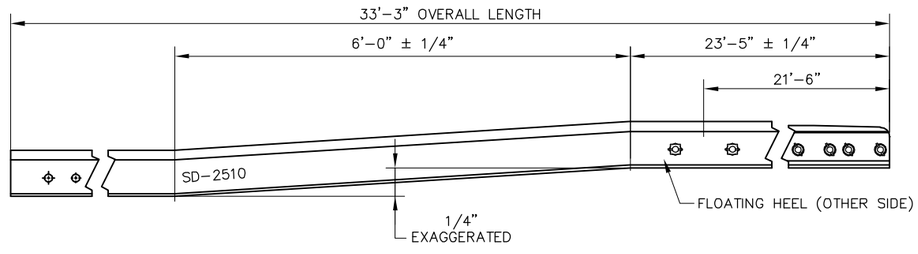
STANDARD DRAWING NO.: SD–2509

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
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REV	DATE	BY	CHK	APP	DESCRIPTION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

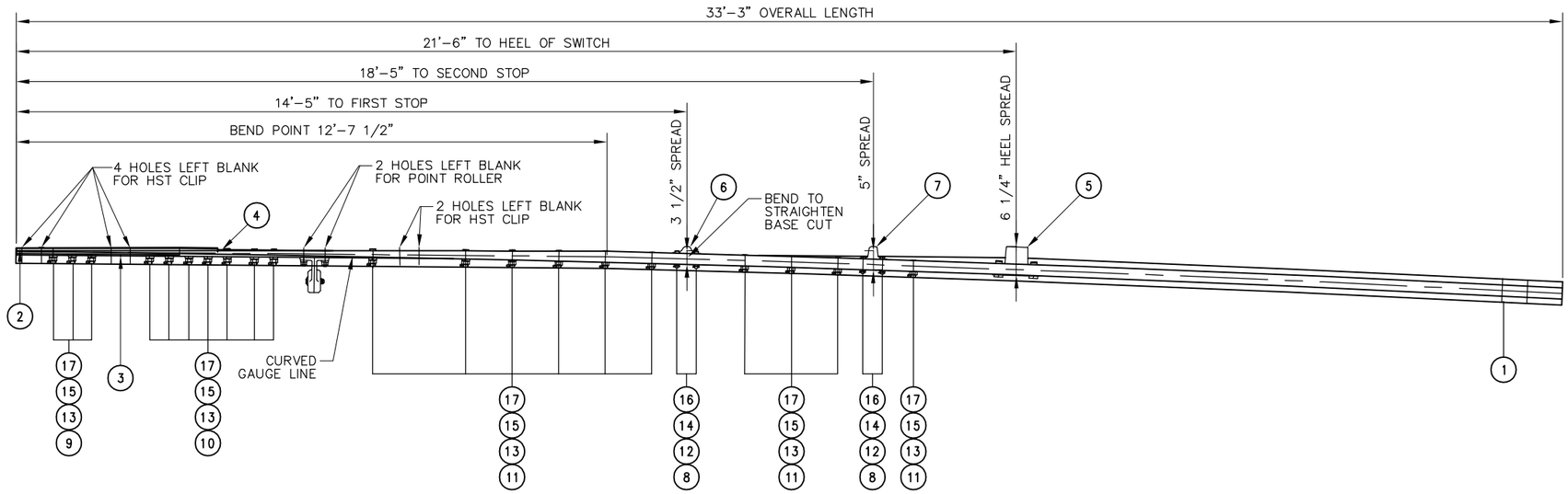
CADD FILE NAME: SD–2510

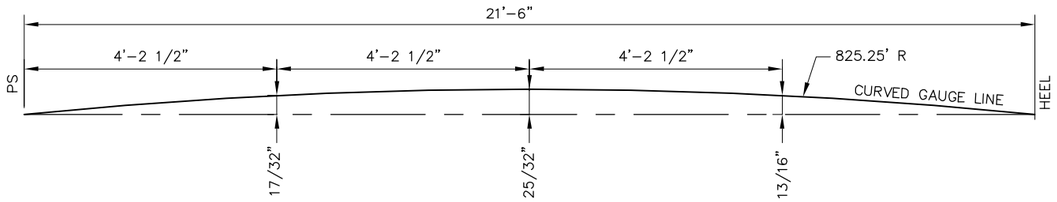
REV: | EDITION: FOURTH

SPECIAL TRACKWORK

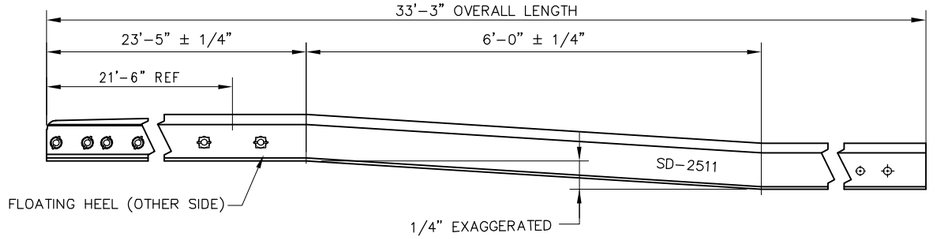
STANDARD DRAWING NO.: SD–2510

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

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PENINSULA CORRIDOR JOINT POWERS BOARD

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DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

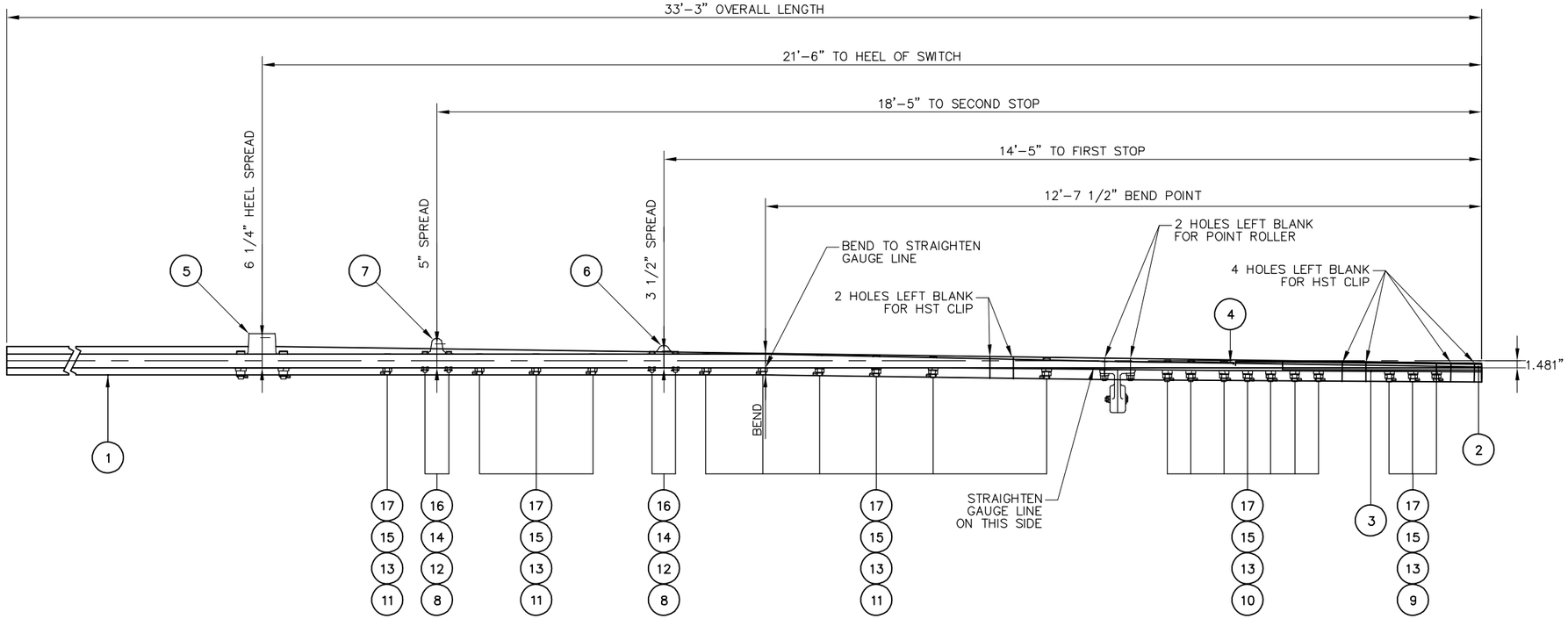
CADD FILE NAME: SD–2511

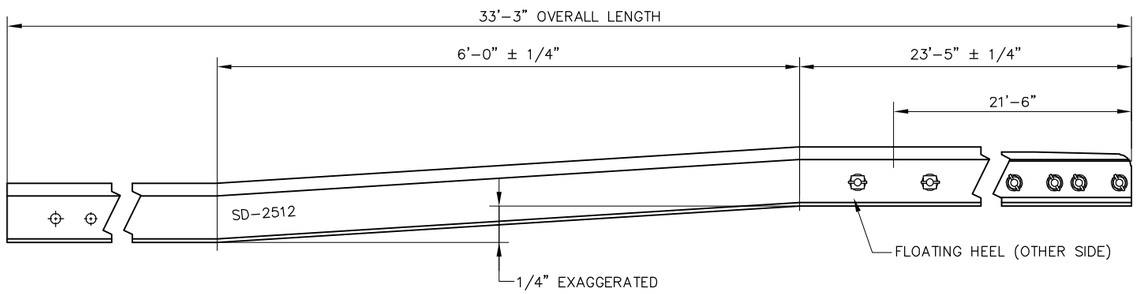
REV: | EDITION: FOURTH

SPECIAL TRACKWORK

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
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PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

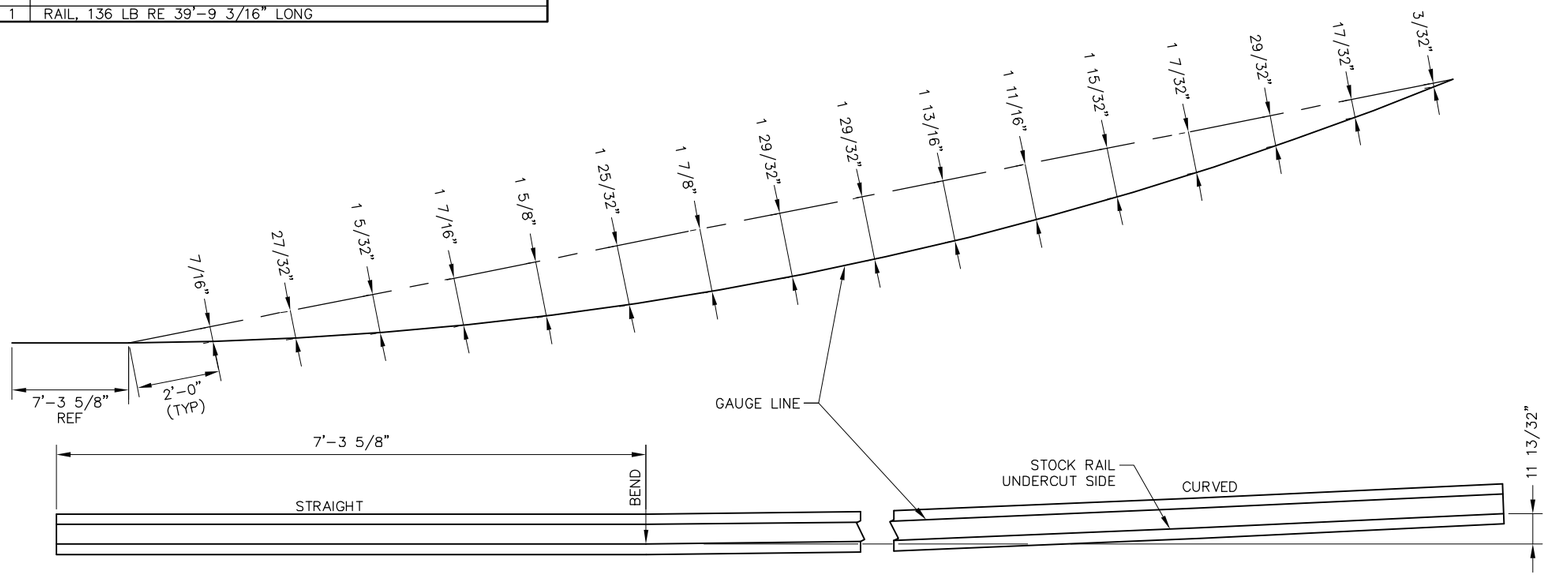
CADD FILE NAME: SD–2512

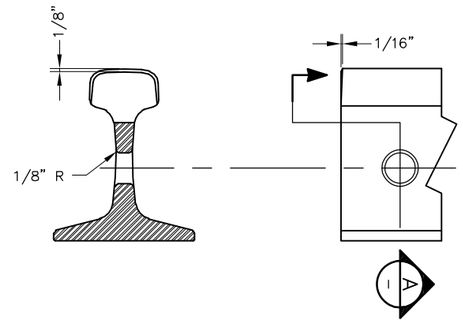
REV: | EDITION: FOURTH

SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD–2512

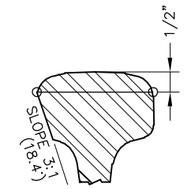
BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION
1	1	RAIL, 136 LB RE 39'–9 3/16" LONG



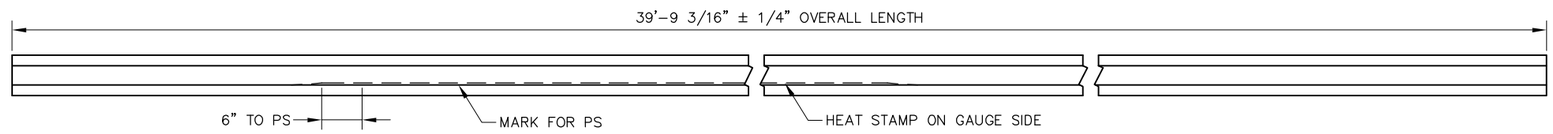


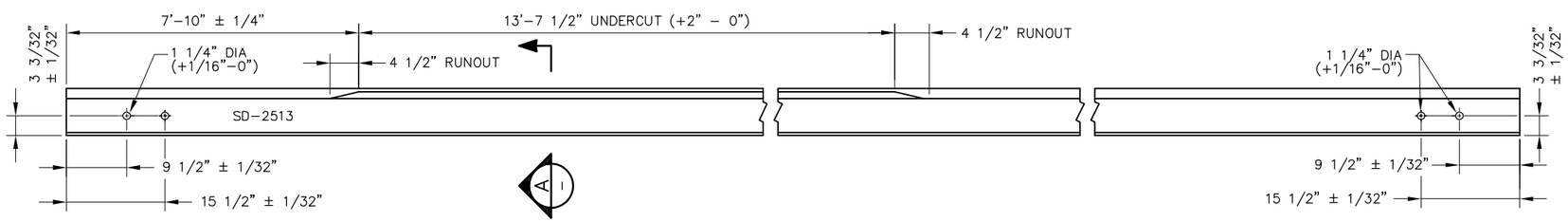
RAIL END / HOLE BEVELING DETAILS

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

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DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

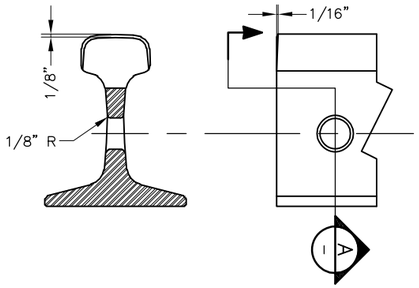
CADD FILE NAME: SD–2513

REV: | EDITION: FOURTH

SPECIAL TRACKWORK

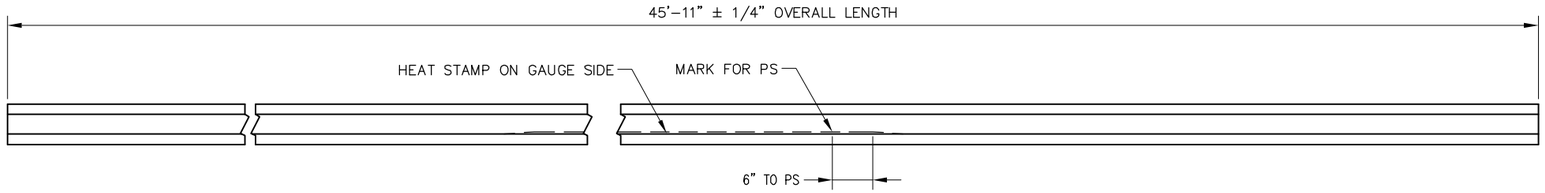
STANDARD DRAWING NO.: SD–2513

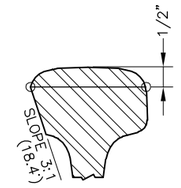
BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION
1	1	RAIL, 136 LB RE 45'–11" LONG



RAIL END / HOLE BEVELING DETAILS

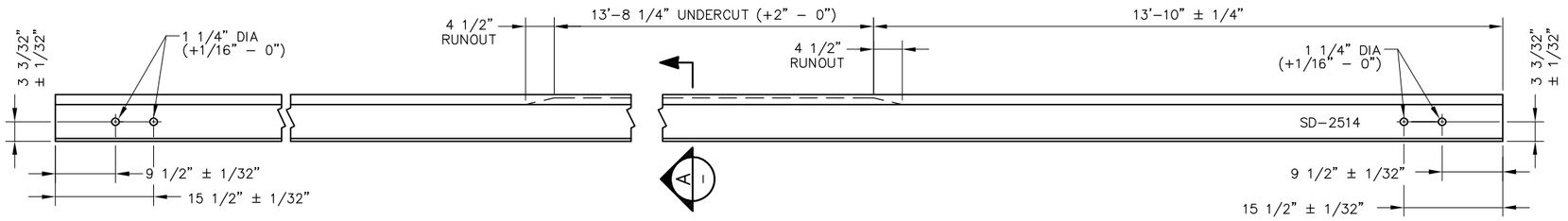
RAIL HEAD ONY – NOT BASE





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
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

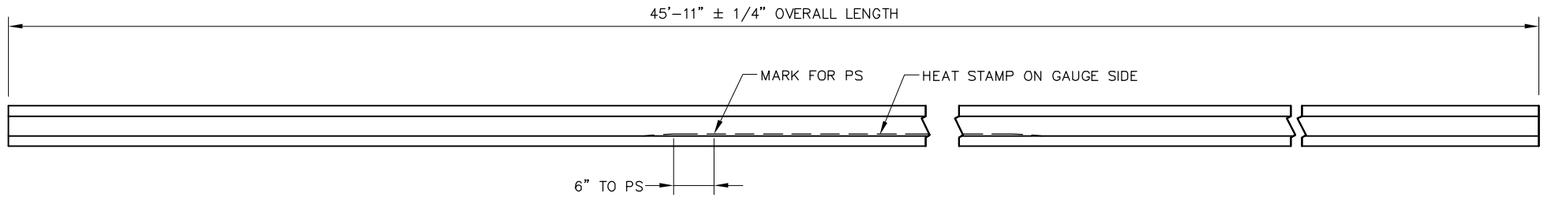
1250 San Carlos Avenue
San Carlos, CA 94070

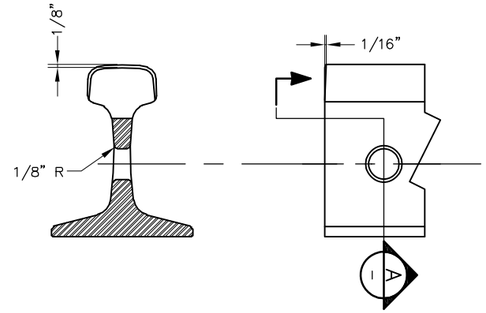
STANDARD DRAWINGS

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

CADD FILE NAME:	
SD–2514	
REV:	EDITION: FOURTH
SPECIAL TRACKWORK	
STANDARD DRAWING NO.:	
SD–2514	

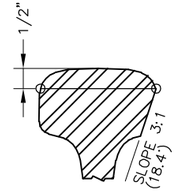
BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION
1	1	RAIL, 136 LB RE 45'–11" LONG





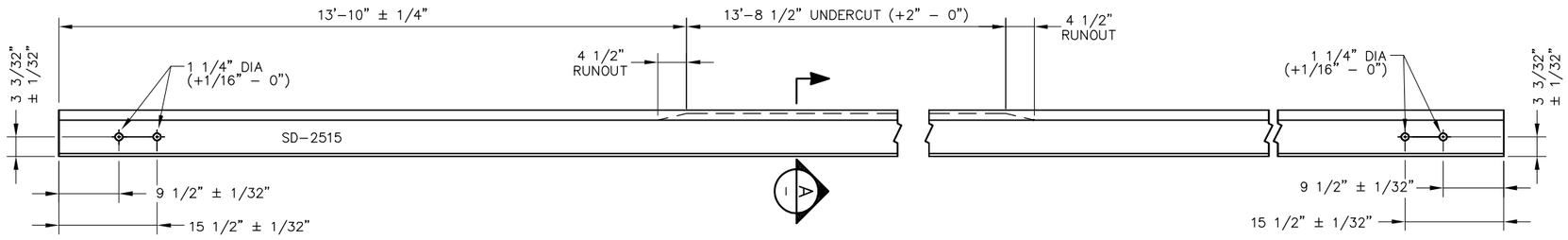
RAIL END / HOLE BEVELING DETAILS

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
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

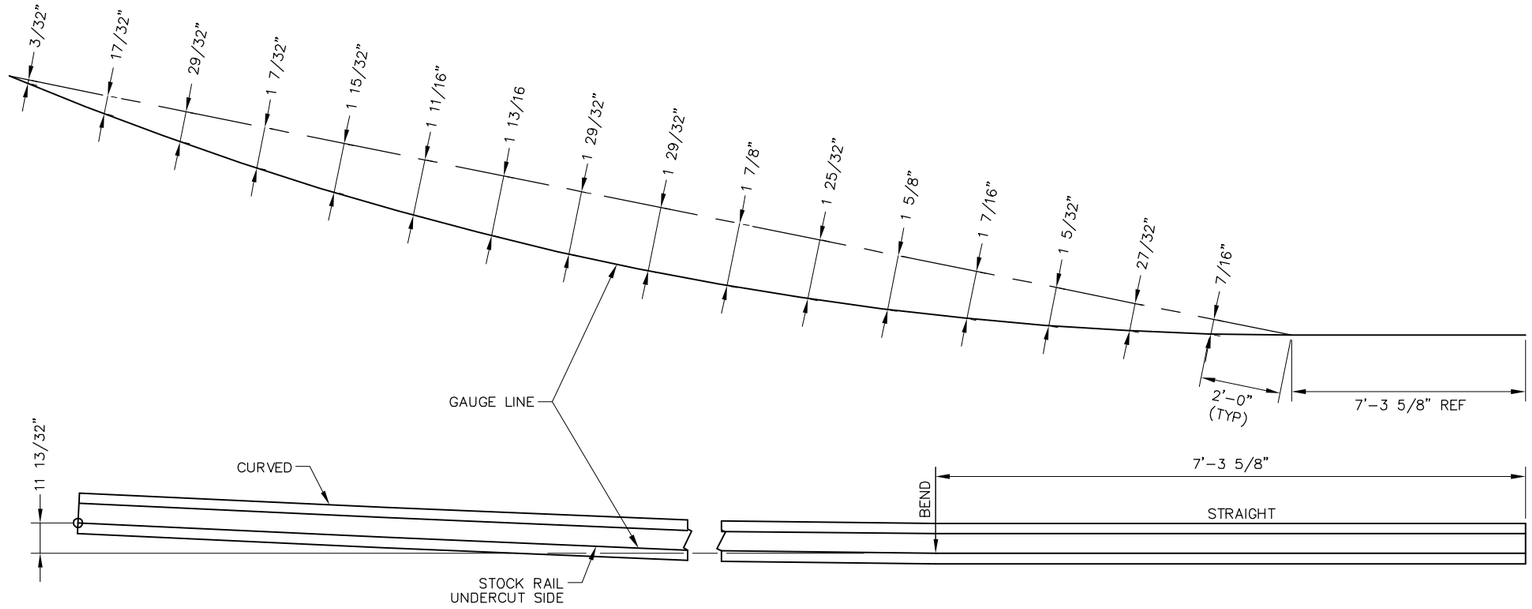
CADD FILE NAME: SD–2515

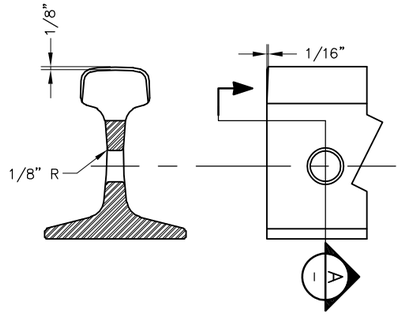
REV: | EDITION: FOURTH

SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD–2515

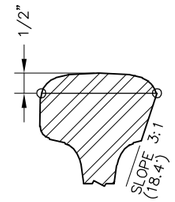
BILL OF MATERIAL		
ITEM	QTY	DESCRIPTION
1	1	RAIL, 136 LB RE 39'-9 3/16" LONG



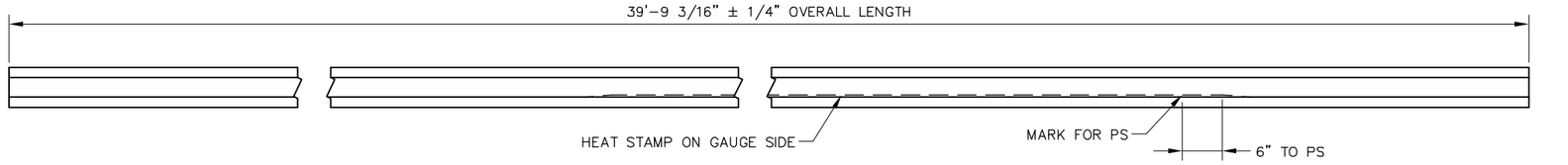


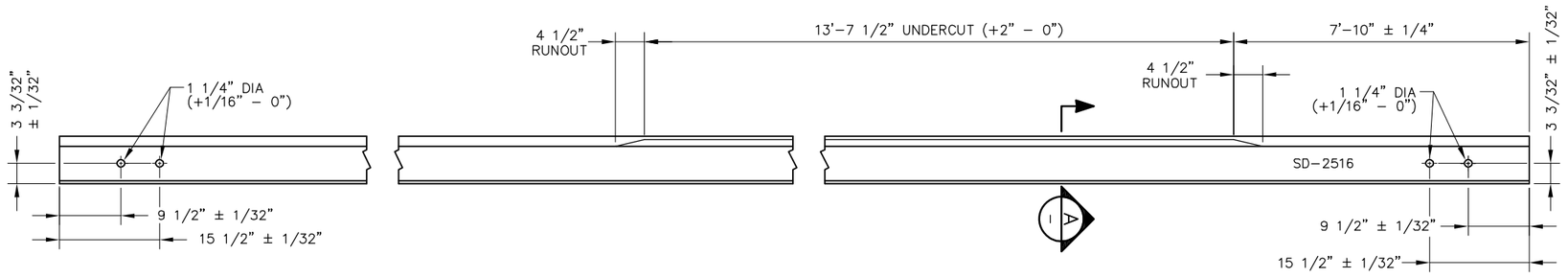
RAIL END / HOLE BEVELING DETAILS

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
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

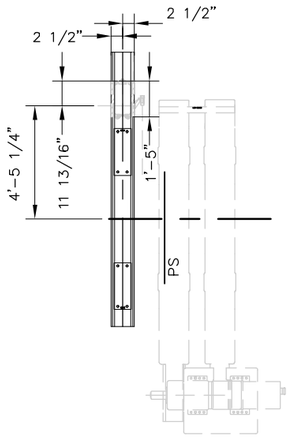
SPECIAL TRACKWORK
NO. 10 TURNOUT
SAMSON STOCK RAIL
FOR RH TURNOUT
RH CURVED 39'-9 3/16" LONG

CADD FILE NAME: SD-2516

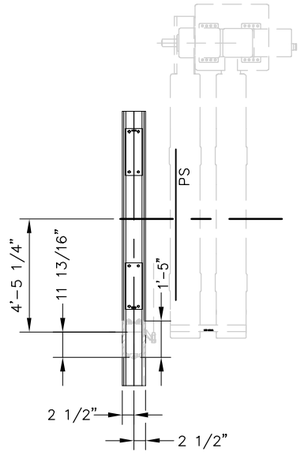
REV: | EDITION: FOURTH

SPECIAL TRACKWORK

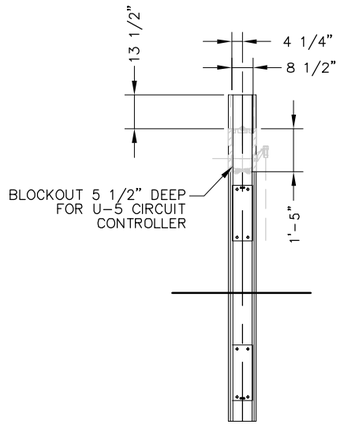
STANDARD DRAWING NO.: SD-2516



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

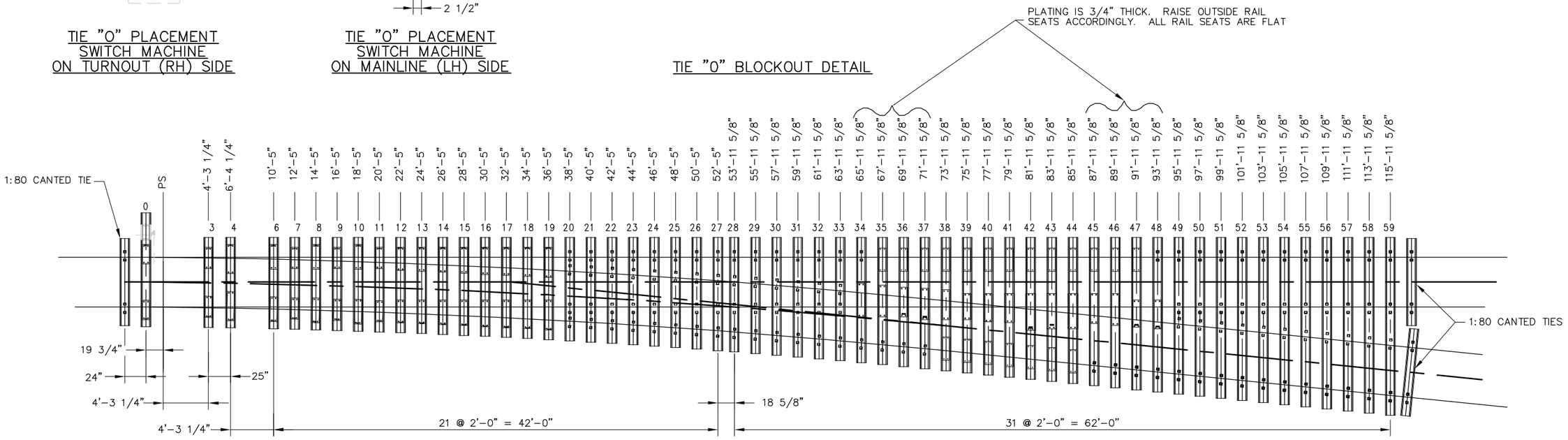


TIE "0" PLACEMENT
SWITCH MACHINE
ON MAINLINE (LH) SIDE



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
					01012024 FOURTH EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

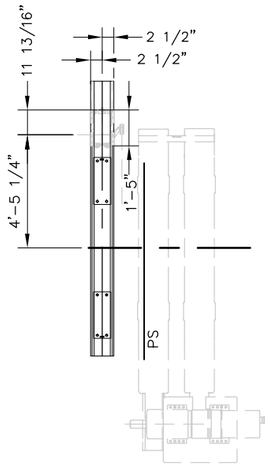
SPECIAL TRACKWORK
NO. 10 TURNOUT
HOLLOW STEEL TIE AND CONCRETE TIE
LAYOUT FOR A RH TURNOUT

CADD FILE NAME: SD-2517

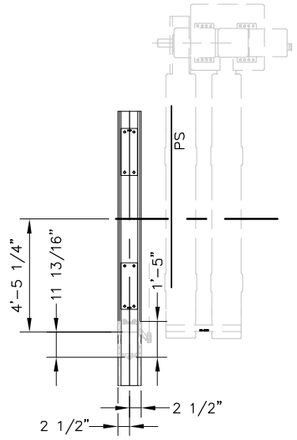
REV: | EDITION: FOURTH

SPECIAL TRACKWORK

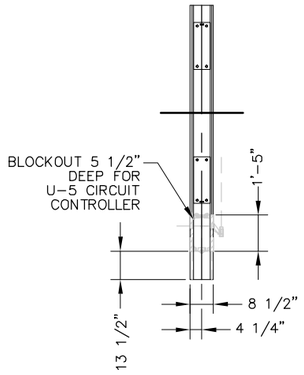
STANDARD DRAWING NO.: SD-2517



TIE "0" PLACEMENT
SWITCH MACHINE
ON MAINLINE SIDE

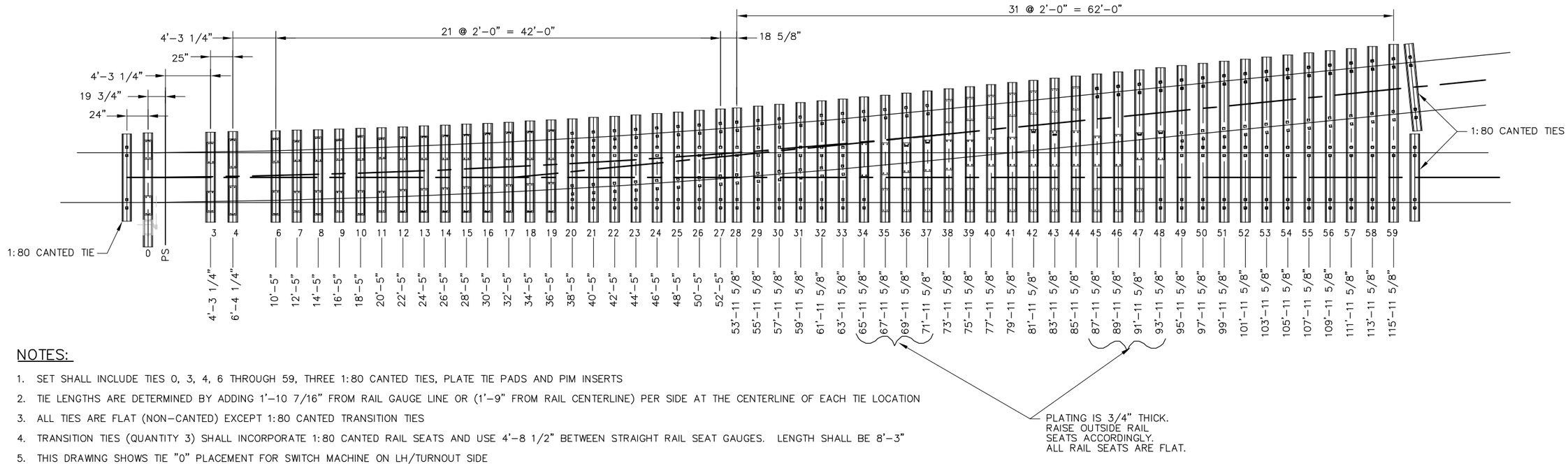


TIE "0" PLACEMENT
SWITCH MACHINE
ON TURNOUT (LH) SIDE



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



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
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REV	DATE	BY	CHK	APP	DESCRIPTION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

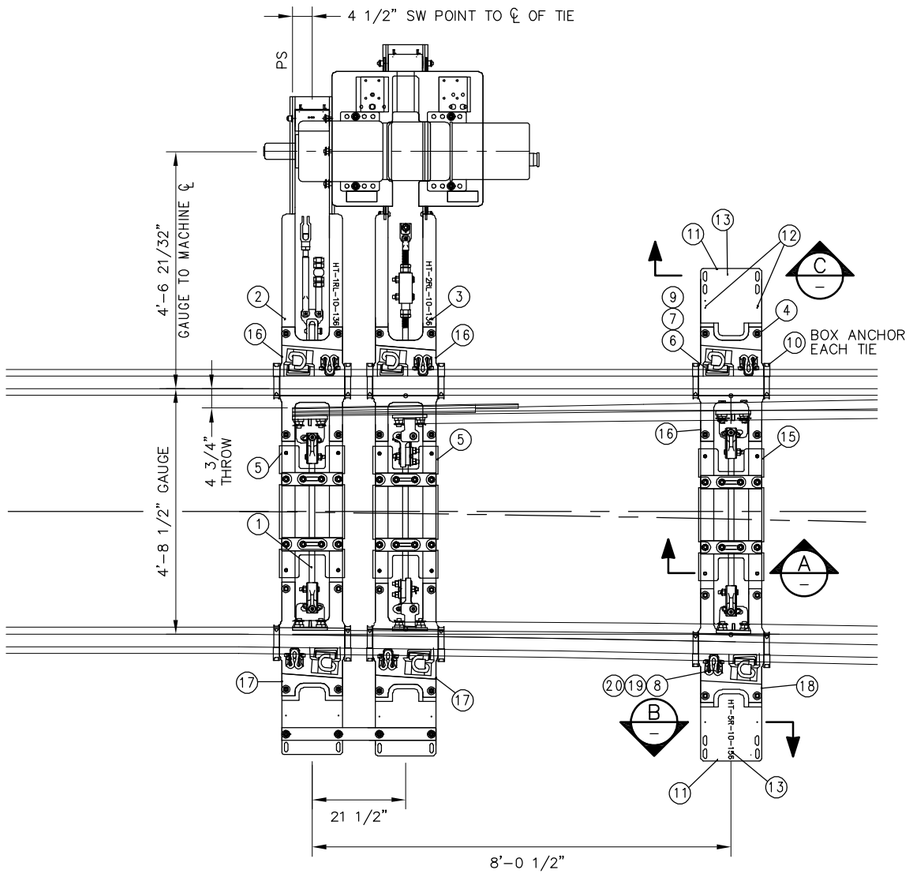
SPECIAL TRACKWORK
NO. 10 TURNOUT
HOLLOW STEEL TIE AND CONCRETE TIE
LAYOUT FOR LH TURNOUT

CADD FILE NAME: SD-2518

REV: | EDITION: FOURTH

SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD-2518

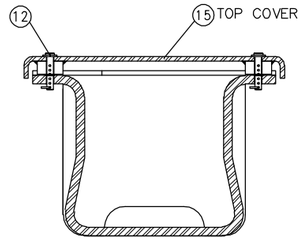


NOTE:

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

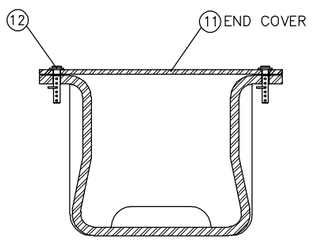
BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	RODDING ASSEMBLY FOR NO 10-136 LB RE, SWITCH MACHINE ON LEFT SIDE	SD-2537
2	1	HOLLOW TIE ASSEMBLY (HT-1RL-10-136)	–
3	1	HOLLOW TIE ASSEMBLY (HT-2RL-10-136)	–
4	1	HOLLOW TIE ASSEMBLY (HT-5R-10-136)	–
5*	2	COVER PLATE NO1, HOLLOW SWITCH TIE	–
6	6	LV BRACE 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



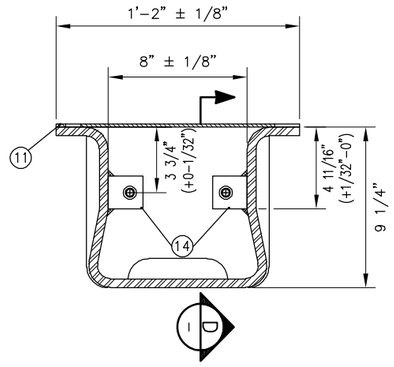
HOLLOW TIE TOP COVER DETAIL

A – SECTION
SCALE: NTS



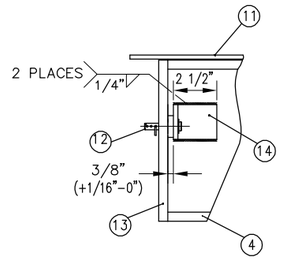
END COVER PLATE

B – SECTION
SCALE: NTS



HOLLOW TIE SIDE END COVER DETAIL

C – SECTION
SCALE: NTS



WELDING DETAIL

D – SECTION
SCALE: NTS

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PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

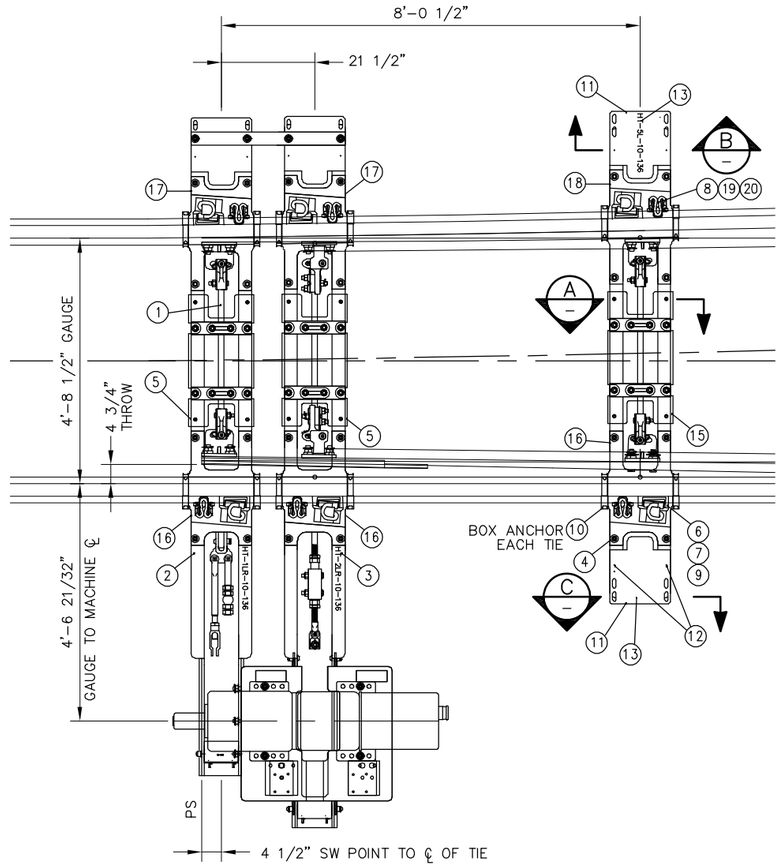
SPECIAL TRACKWORK
NO. 10 TURNOUT
HOLLOW STEEL TIES FOR RH TURNOUT
SWITCH MACHINE ON MAINLINE SIDE

CADD FILE NAME: SD-2519

REV: | EDITION: FOURTH

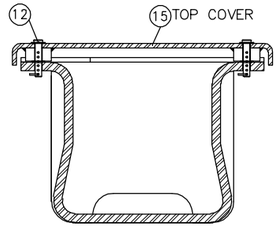
SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD-2519



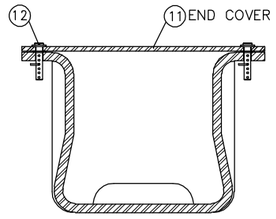
		BILL OF MATERIAL	
ITEM	QTY	DESCRIPTION	DWG NO
1	1	RODDING ASSEMBLY FOR NO 10-136 LB RE, SWITCH MACHINE ON RH SIDE	SD-2538
2	1	HOLLOW TIE ASSEMBLY (HT-1LR-10-136)	–
3	1	HOLLOW TIE ASSEMBLY (HT-2LR-10-136)	–
4	1	HOLLOW TIE ASSEMBLY (HT-5L-10-136)	–
5*	2	COVER PLATE NO1, HOLLOW SWITCH TIE	–
6	6	LV BRACE 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



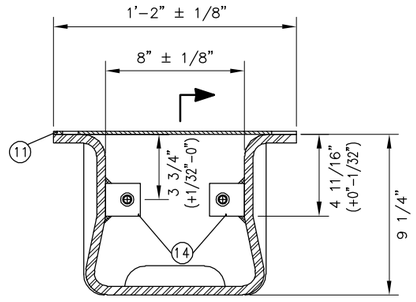
HOLLOW TIE TOP COVER DETAIL

A – SECTION
SCALE: NTS



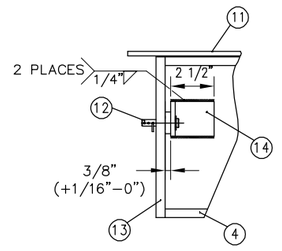
END COVER PLATE

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
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

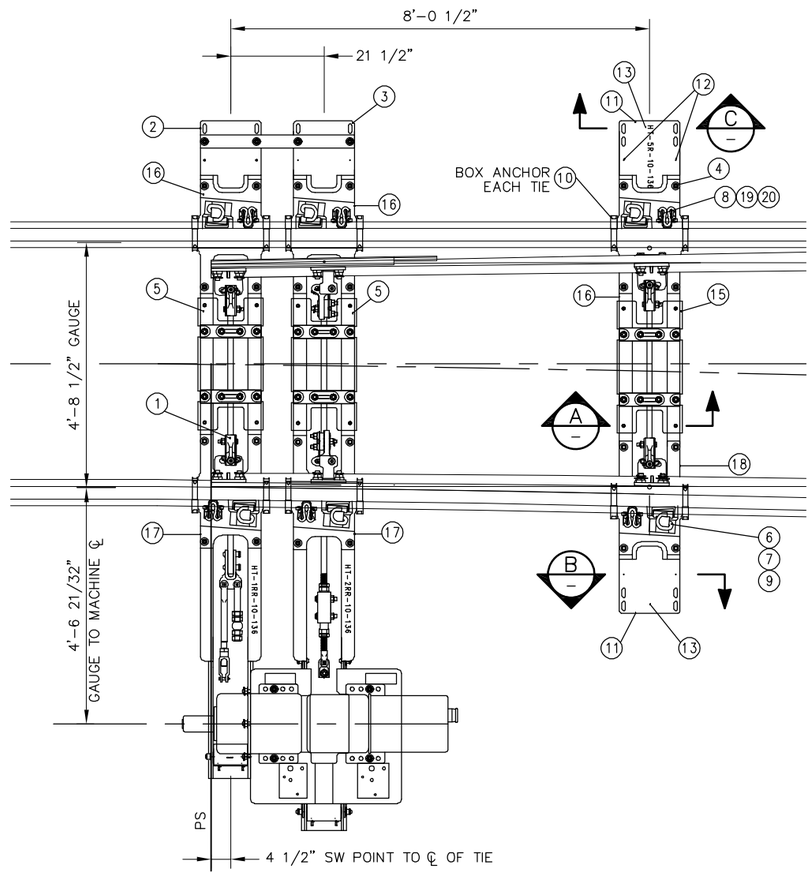
SPECIAL TRACKWORK
NO. 10 TURNOUT
HOLLOW STEEL TIES FOR LH TURNOUT
SWITCH MACHINE ON MAINLINE SIDE

CADD FILE NAME: SD-2520

REV: | EDITION: FOURTH

SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD-2520

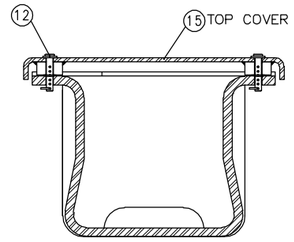


NOTE:

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

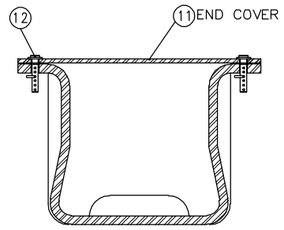
BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	RODDING ASSEMBLY FOR NO 10-136 LB RE, SWITCH MACHINE ON RIGHT SIDE	SD-2538
2	1	HOLLOW TIE ASSEMBLY (HT-1RR-10-136)	-
3	1	HOLLOW TIE ASSEMBLY (HT-2RR-10-136)	-
4	1	HOLLOW TIE ASSEMBLY (HT-5R-10-136)	-
5*	2	COVER PLATE NO1, HOLLOW SWITCH TIE	-
6	6	LV 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



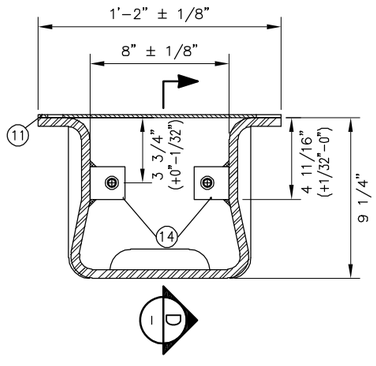
HOLLOW TIE TOP COVER DETAIL

A – SECTION
SCALE: NTS



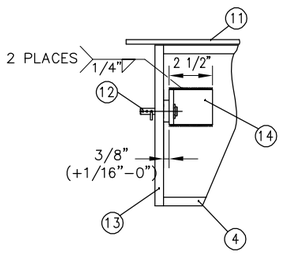
END COVER PLATE

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
					01012024 FOURTH EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

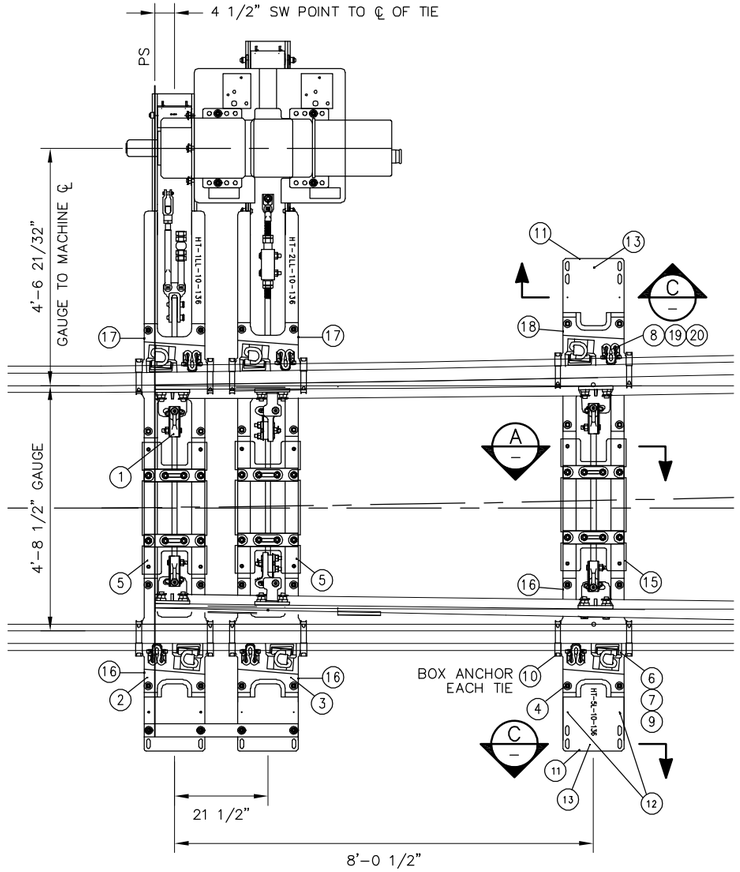
SPECIAL TRACKWORK
NO. 10 TURNOUT
HOLLOW STEEL TIES FOR RH TURNOUT
SWITCH MACHINE ON TURNOUT SIDE

CADD FILE NAME: SD-2521

REV: | EDITION: FOURTH

SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD-2521

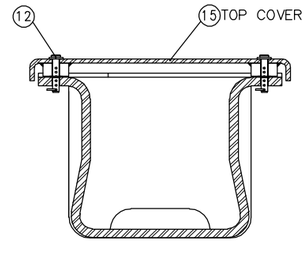


NOTE:

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

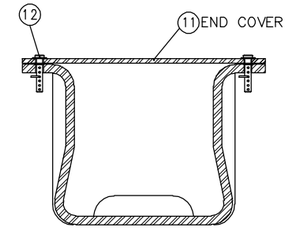
BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	RODDING ASSEMBLY FOR NO 10–136 LB RE, SWITCH MACHINE ON LH SIDE	SD–2537
2	1	HOLLOW TIE ASSEMBLY (HT–1LL–10–136)	–
3	1	HOLLOW TIE ASSEMBLY (HT–2LL–10–136)	–
4	1	HOLLOW TIE ASSEMBLY (HT–5L–10–136)	–
5*	2	COVER PLATE NO1, HOLLOW SWITCH TIE	–
6	6	LV BRACE 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



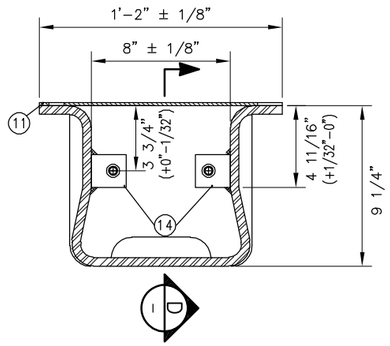
HOLLOW TIE TOP COVER DETAIL

A – SECTION
SCALE: NTS



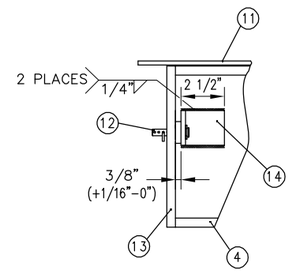
END COVER PLATE

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
					01012024 FOURTH EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain
1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

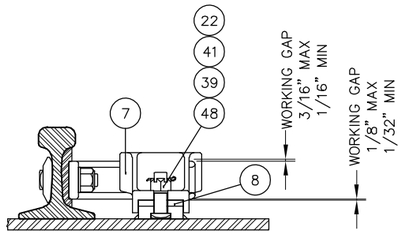
SPECIAL TRACKWORK
NO. 10 TURNOUT
HOLLOW STEEL TIES FOR LH TURNOUT
SWITCH MACHINE ON TURNOUT SIDE

CADD FILE NAME: SD–2522

REV: | EDITION: FOURTH

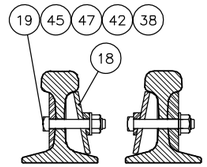
SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD–2522



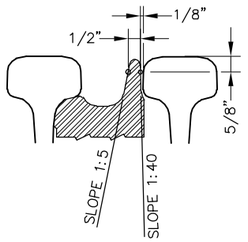
HORN KEEPER DETAIL

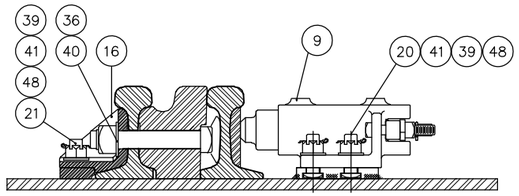
A — SECTION
SCALE: NTS



FOOT GUARD DETAIL

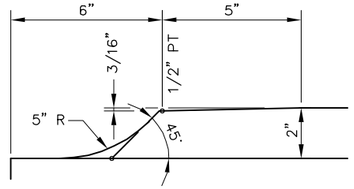
B — SECTION
SCALE: NTS





SPRING BOX DETAIL

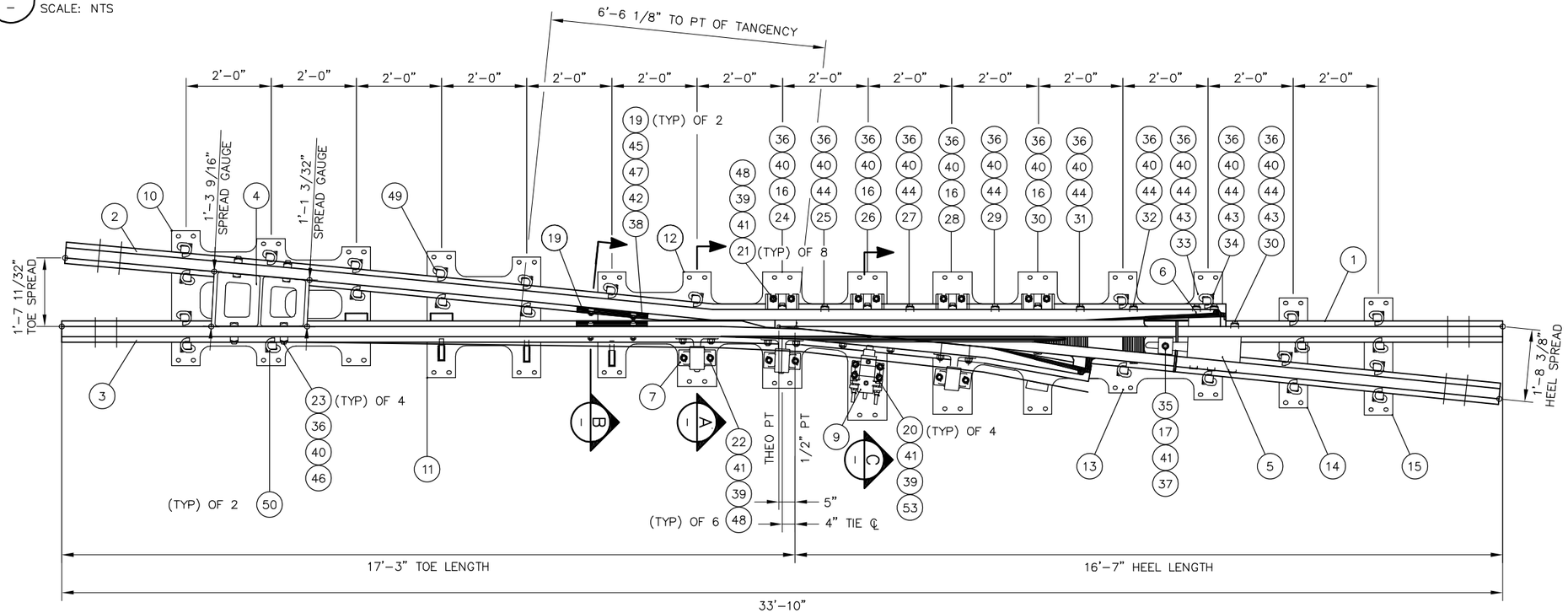
C — SECTION
SCALE: NTS



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
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP	DESCRIPTION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT

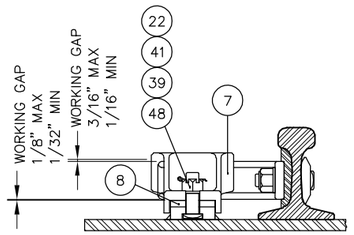
WSM FROG RH AND FROG PACK

CADD FILE NAME: SD–2523

REV: | EDITION: FOURTH

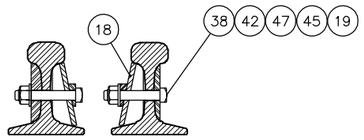
SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD–2523



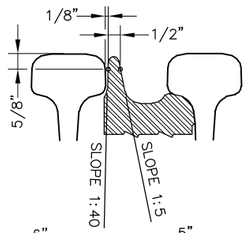
HORN KEEPER DETAIL

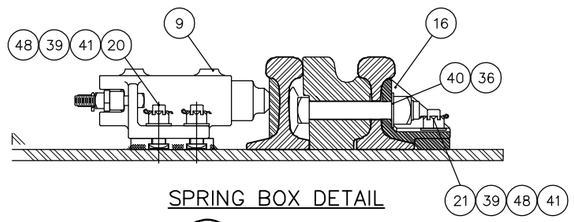
A — SECTION
SCALE: NTS



FOOT GUARD DETAIL

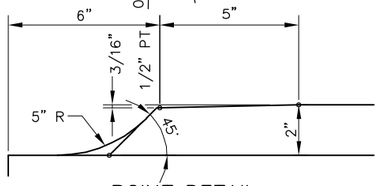
B — SECTION
SCALE: NTS





SPRING BOX DETAIL

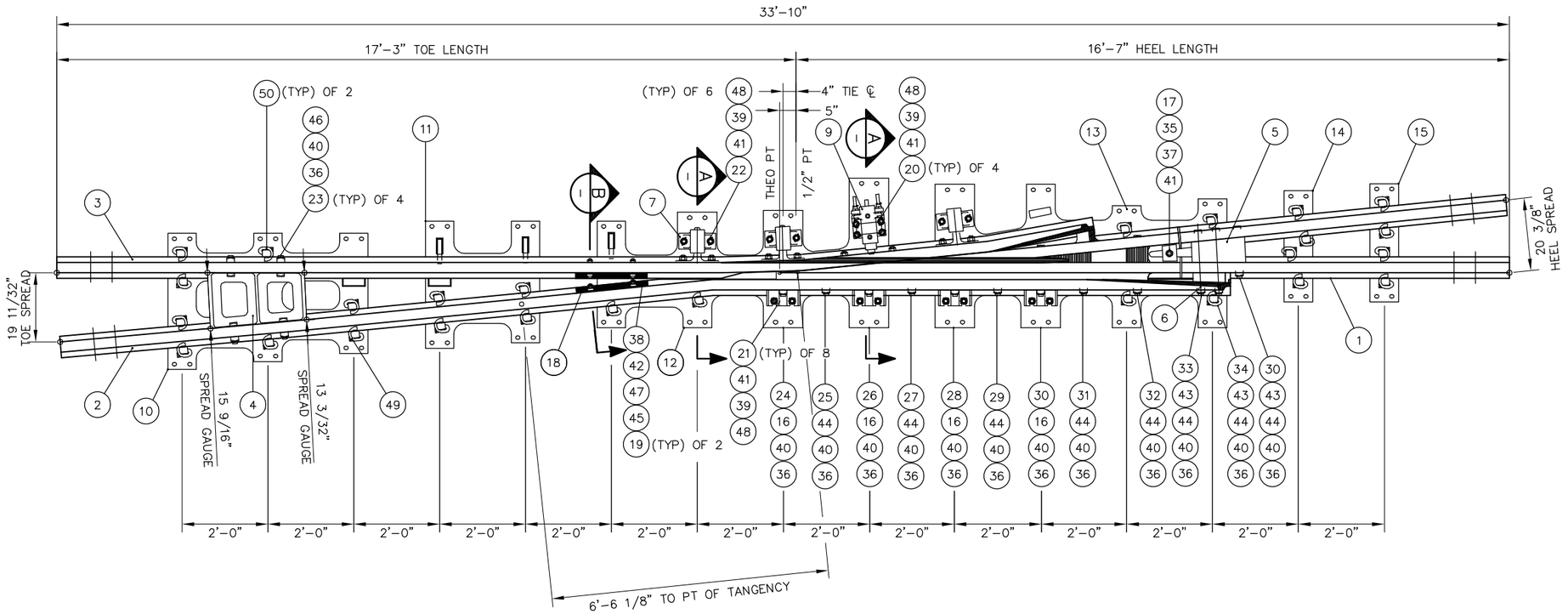
C — SECTION
SCALE: NTS



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
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
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San Carlos, CA 94070

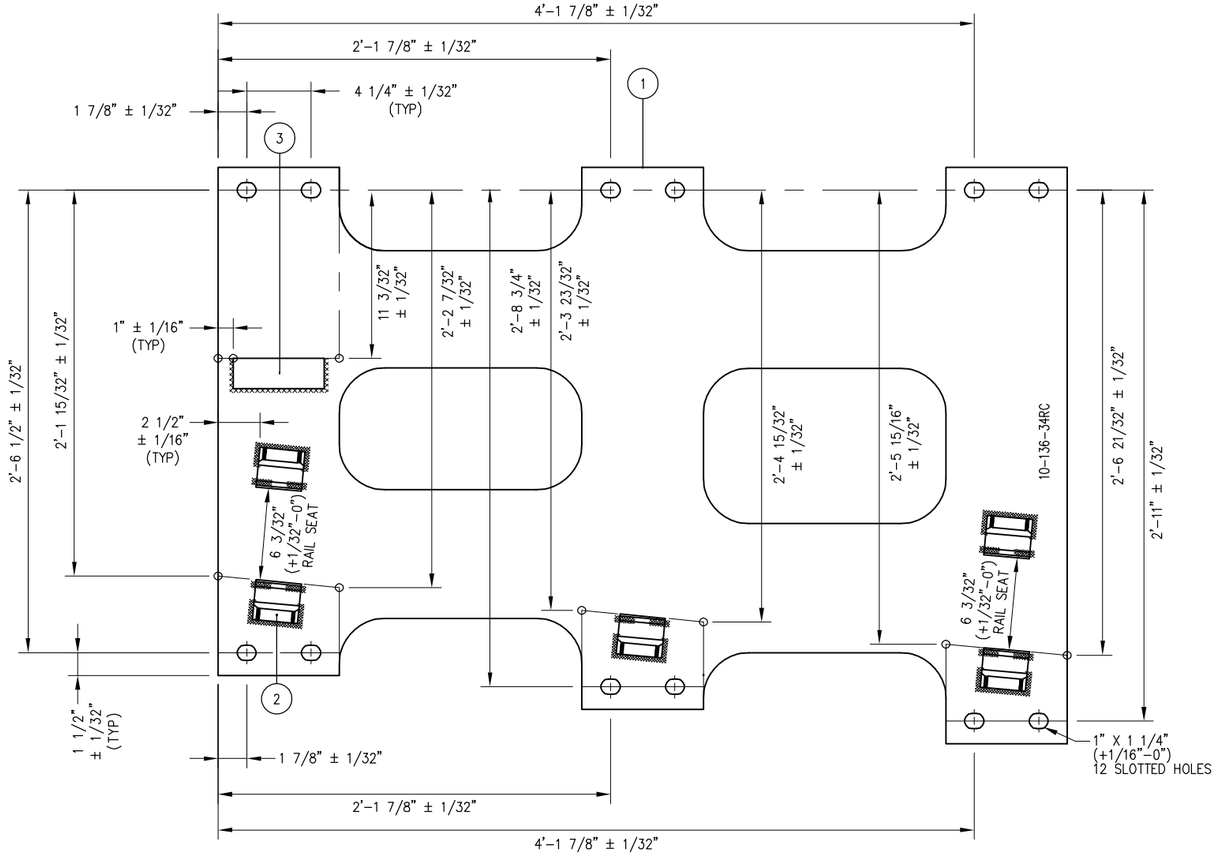
STANDARD DRAWINGS

SPECIAL TRACKWORK
NO. 10 TURNOUT

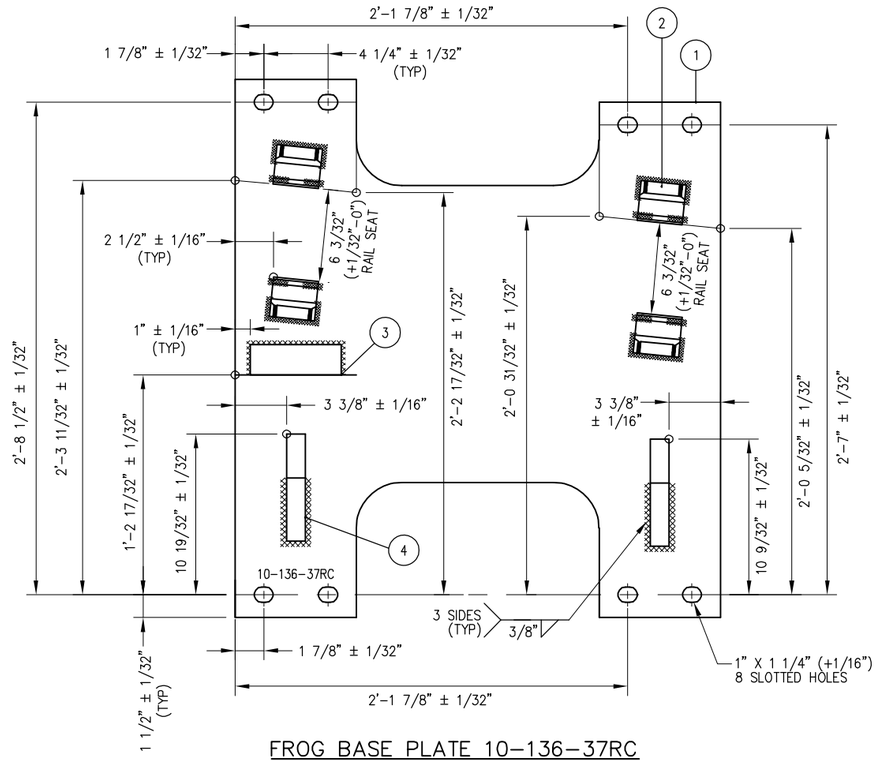
WSM FROG LH AND FROG PACK

CADD FILE NAME: SD–2524
REV: | EDITION: FOURTH
SPECIAL TRACKWORK
STANDARD DRAWING NO.: SD–2524

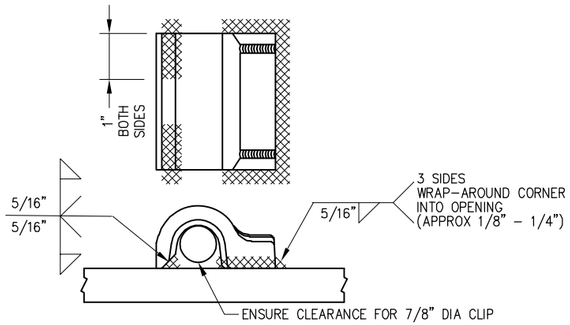
BILL OF MATERIAL				
ITEM	QTY FOR 10–34RC	QTY FOR 10–37RC	DESCRIPTION	DWG NO
1	1	1	BURNED PLATE, 3/4" THICK	–
2	5	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–
3	1	1	FLAT BAR, ASTM A36, 2" x 6" x 1/2" THICK	–
4	0	2	BURNED BRACE, 132/136 LB RE, HR A36 1 1/4" THICK	–



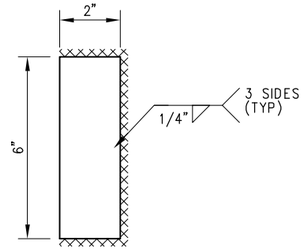
FROG BASE PLATE 10–136–34RC



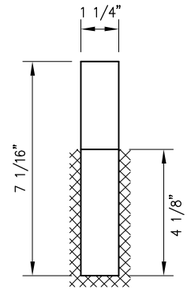
FROG BASE PLATE 10–136–37RC



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
					01012024 FOURTH EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

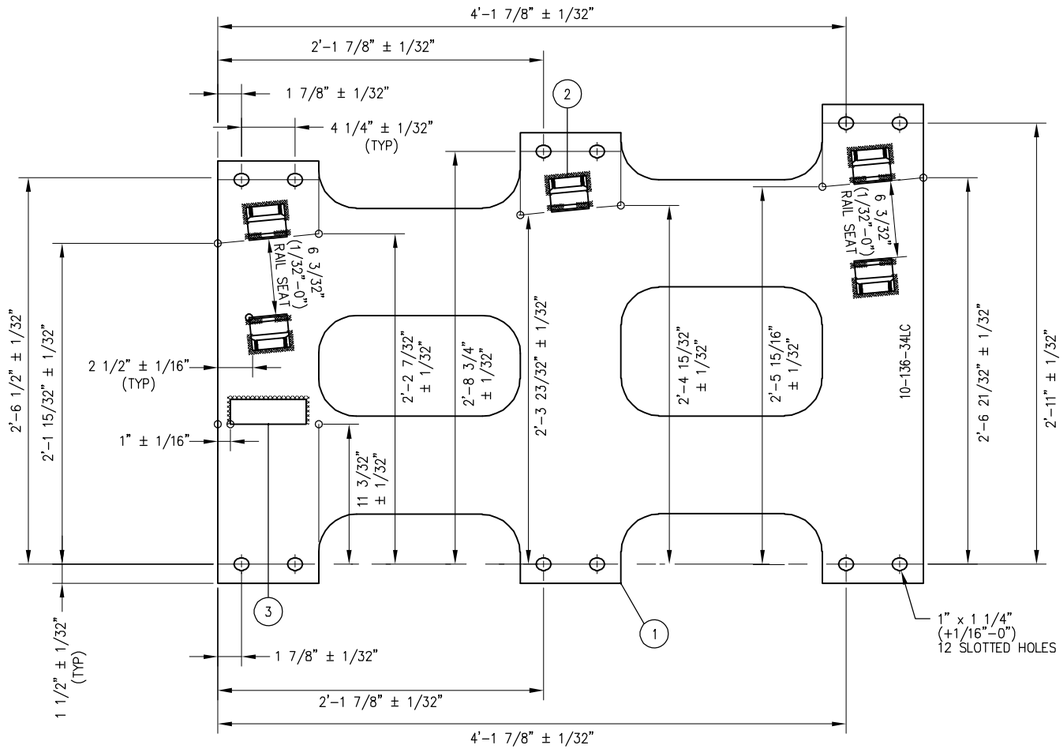
CADD FILE NAME: SD–2525

REV: | EDITION: FOURTH

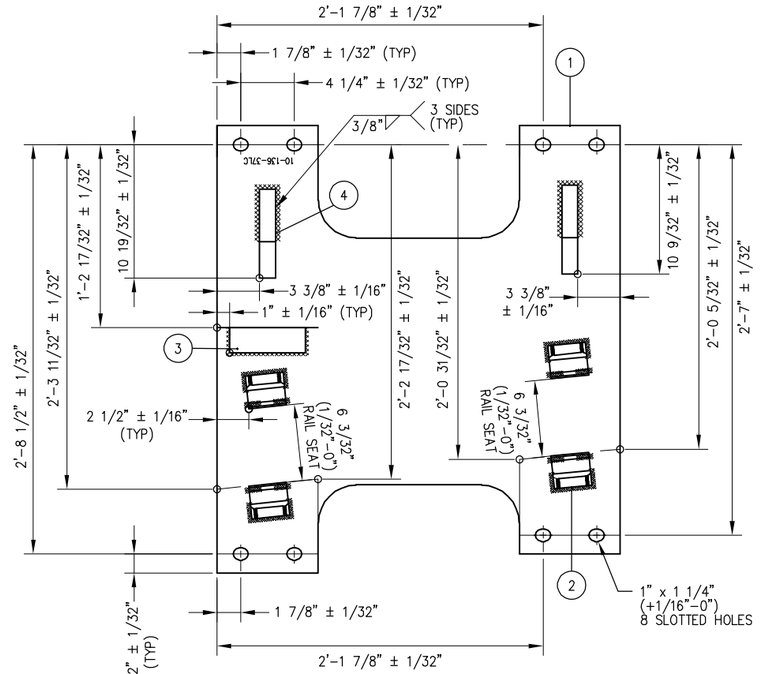
SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD–2525

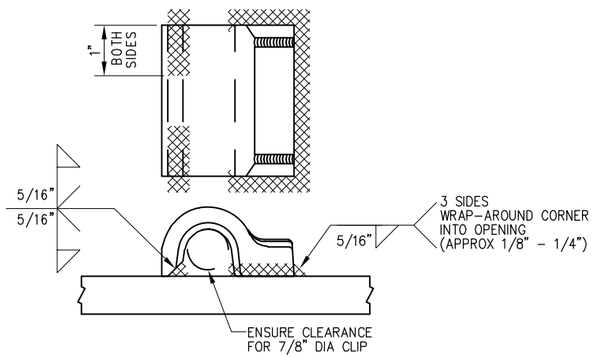
BILL OF MATERIAL				
ITEM	QTY FOR 10–34LC	QTY FOR 10–37LC	DESCRIPTION	DWG NO
1	1	1	BURNED PLATE, 3/4" THICK	–
2	5	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–
3	1	1	FLAT BAR, ASTM A36, 2" x 6" x 1/2" THICK	–
4	0	2	BURNED BRACE, 132/136 LB RE, HR A36 1 1/4" THICK	–



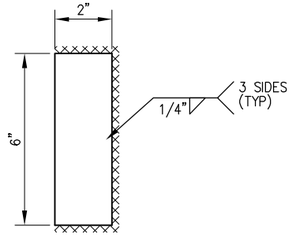
FROG BASE PLATE 10–136–34LC



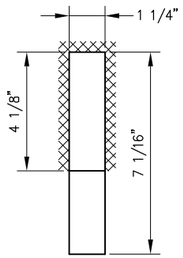
FROG BASE PLATE 10–136–37LC



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
					01012024 FOURTH EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

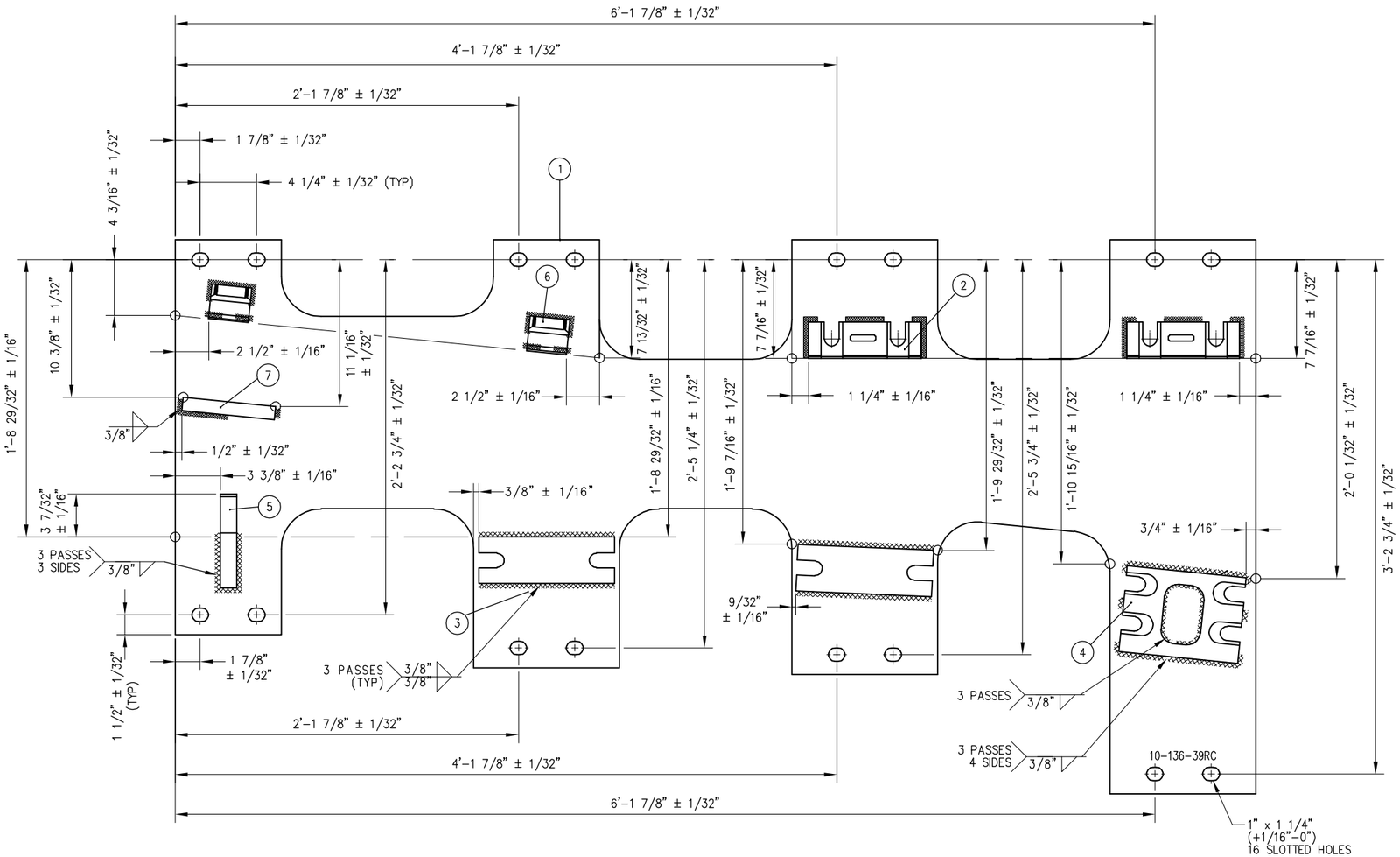
CADD FILE NAME: SD–2526

REV: | EDITION: FOURTH

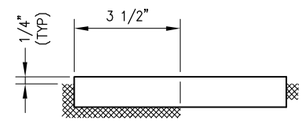
SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD–2526

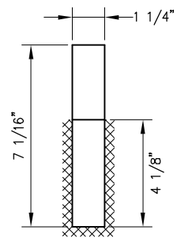
BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	BURNED PLATE, 3/4" THICK	–
2	2	CAPTURE BLOCK FOR PLATE CLIP	–
3	2	CAPTURE BLOCK FOR HORN KEEPER	–
4	1	CAPTURE BLOCK FOR SPRING BOX	–
5	1	WELD ON BRACE	–
6	2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–
7	1	FLAT BAR, ASTM A36, 1/2" x 7" x 1" LONG	–



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
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

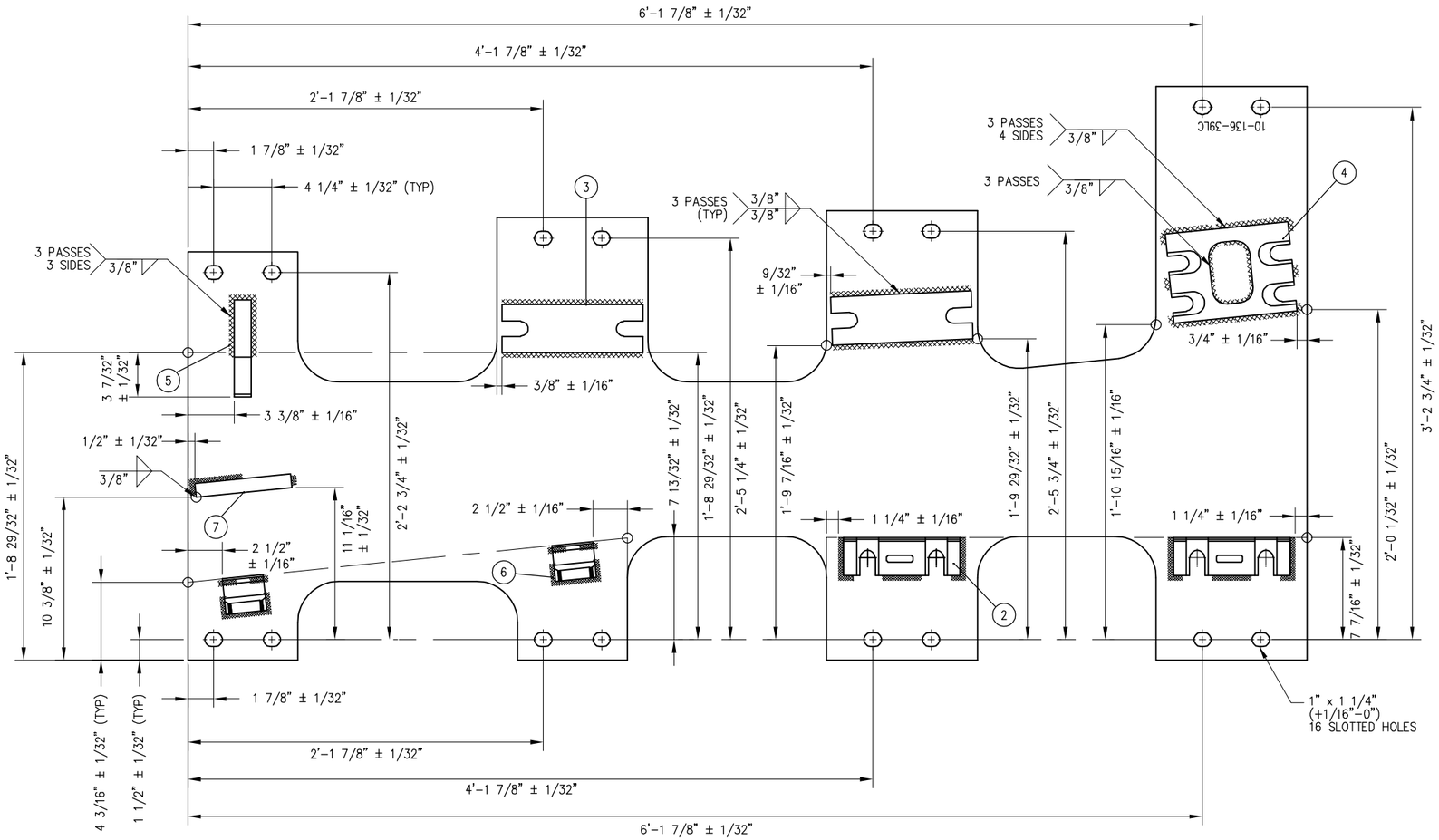
CADD FILE NAME: SD-2527

REV: | EDITION: FOURTH

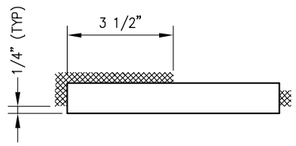
SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD-2527

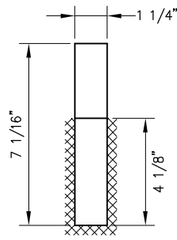
BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	BURNED PLATE, 3/4" THICK	–
2	2	CAPTURE BLOCK FOR PLATE CLIP	–
3	2	CAPTURE BLOCK FOR HORN KEEPER	–
4	1	CAPTURE BLOCK FOR SPRING BOX	–
5	1	WELD ON BRACE	–
6	2	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–
7	1	FLAT BAR, ASTM A36, 1/2" x 7" x 1" LONG	–



BASE PLATE 10–39LC



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
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

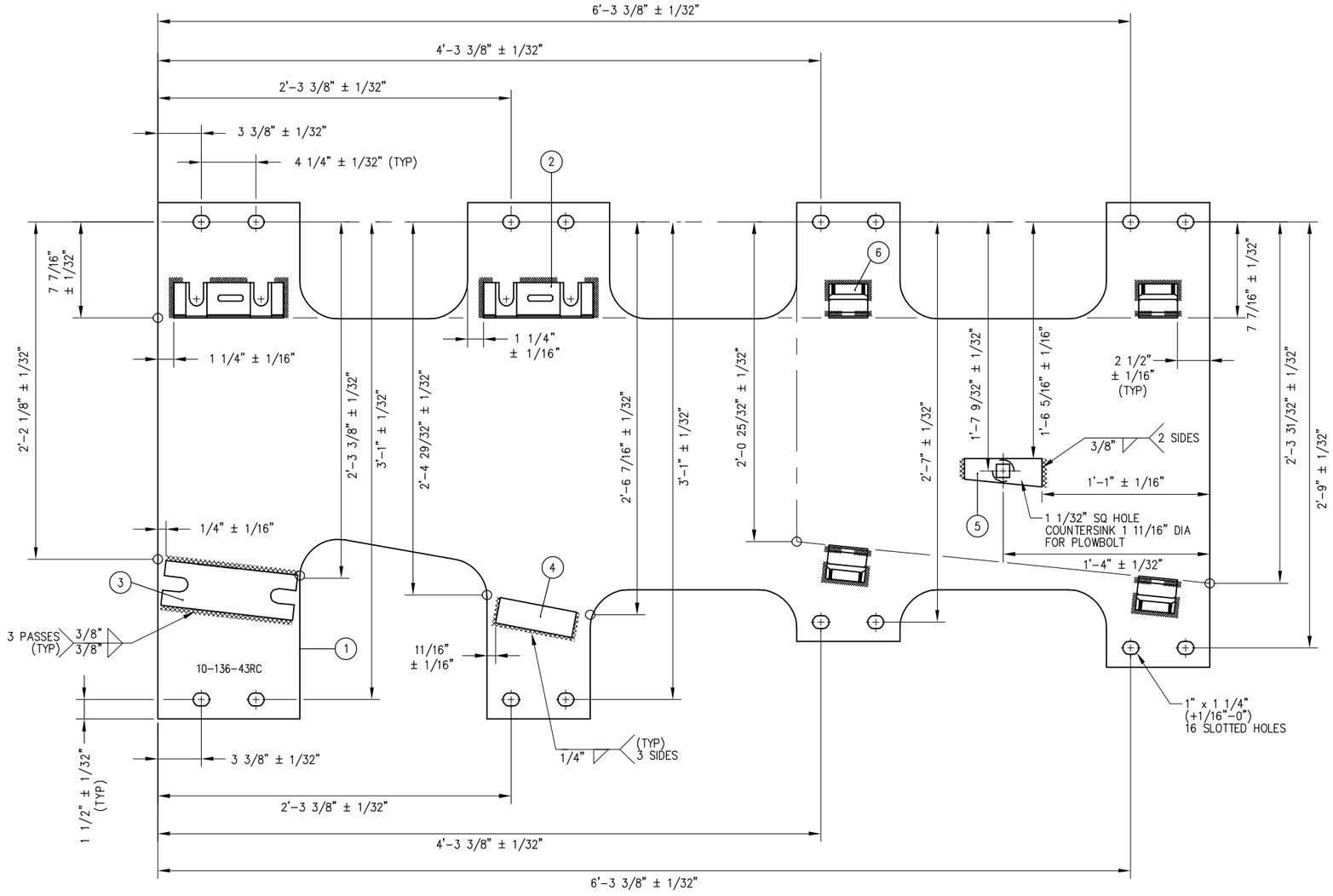
SPECIAL TRACKWORK
NO. 10 TURNOUT
WSM FROG LH
FROG BASE PLATE 10–39LC

CADD FILE NAME: SD–2528

REV: | EDITION: FOURTH

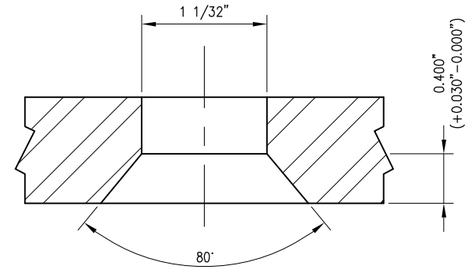
SPECIAL TRACKWORK

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
					01012024 FOURTH EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
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DEPUTY DIRECTOR, ENGINEERING

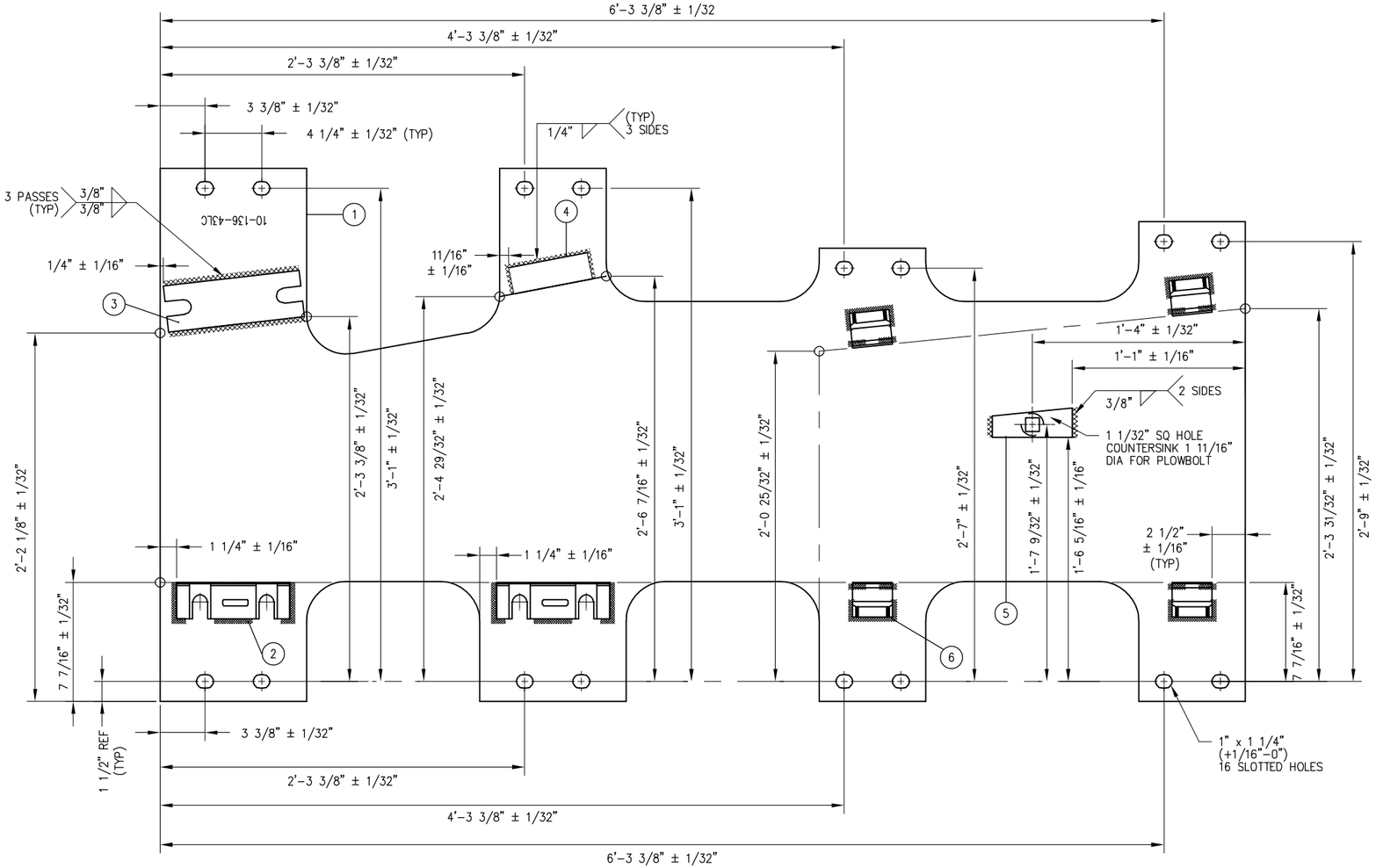
Caltrain
1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

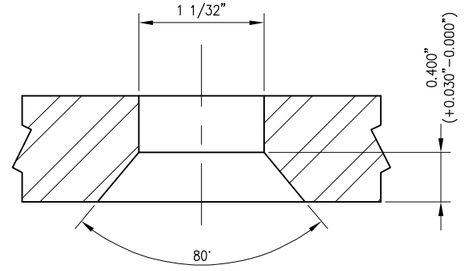
SPECIAL TRACKWORK
NO. 10 TURNOUT
WSM FROG RH
FROG BASE PLATE 10-43RC

CADD FILE NAME: SD-2529
REV:
EDITION: FOURTH
SPECIAL TRACKWORK
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
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

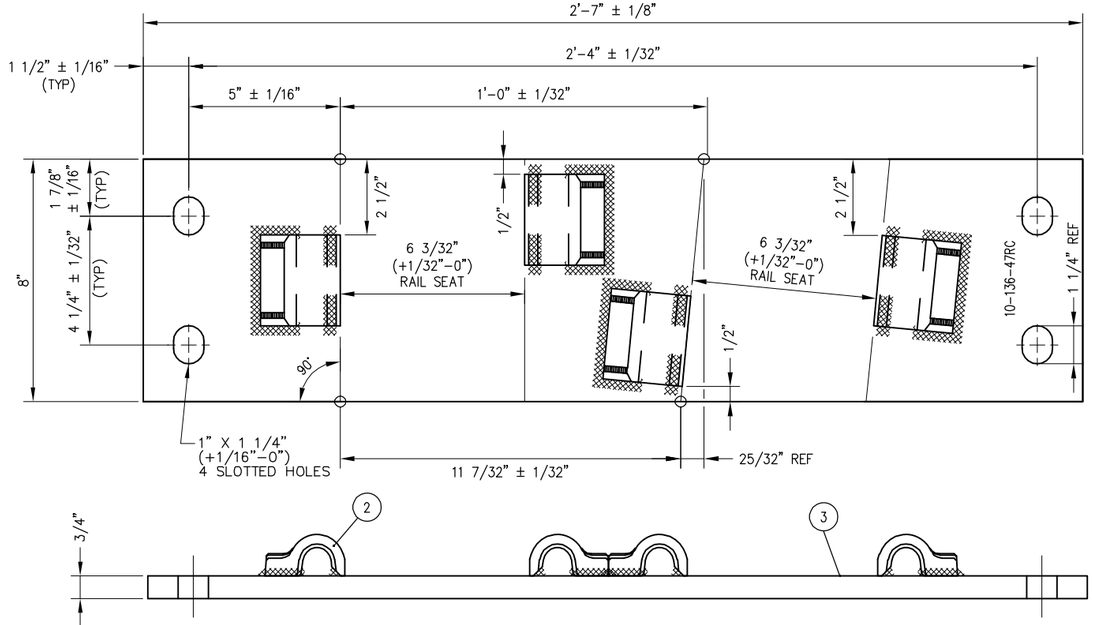
CADD FILE NAME: SD–2530

REV: | EDITION: FOURTH

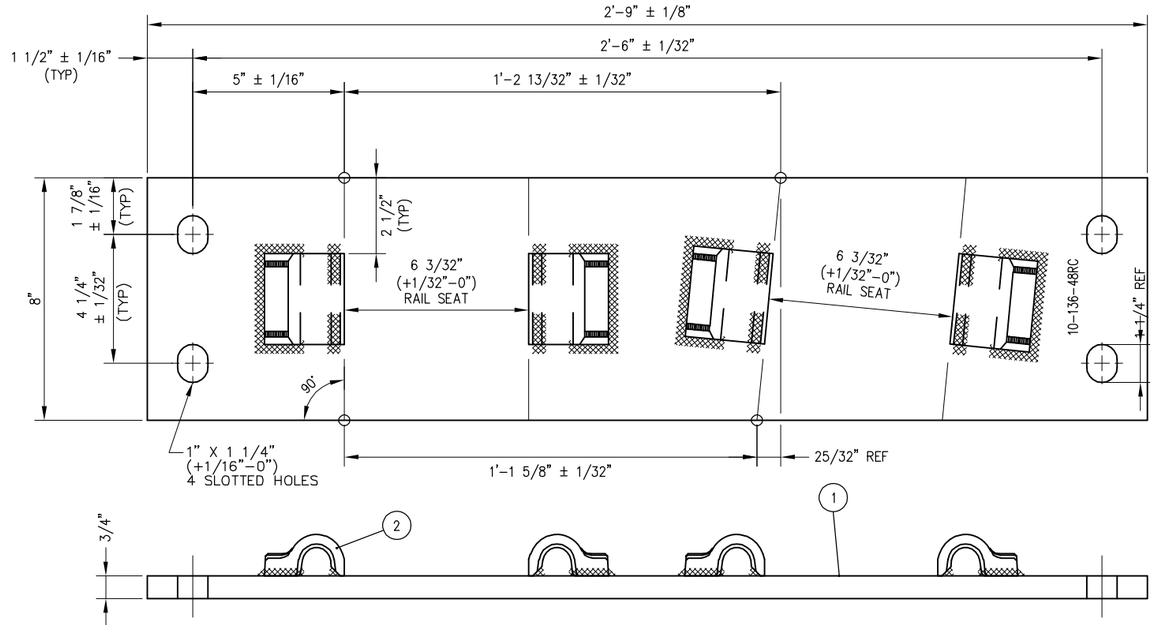
SPECIAL TRACKWORK

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
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP	DESCRIPTION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

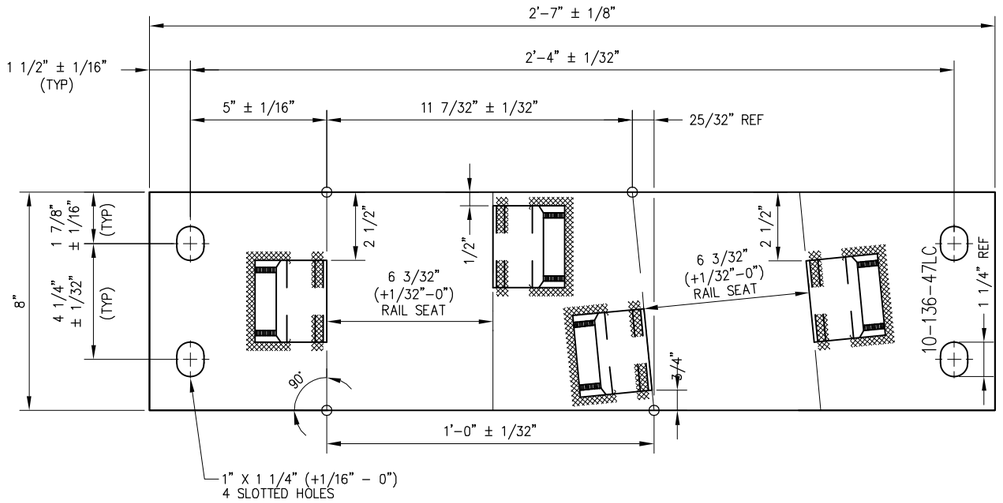
CADD FILE NAME: SD–2531

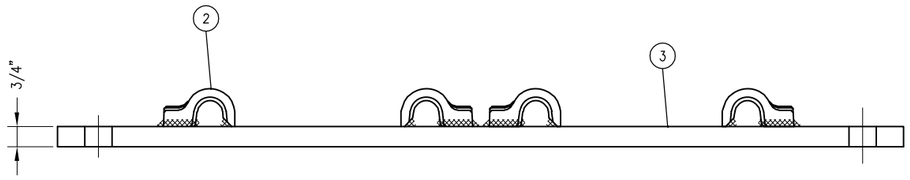
REV: | EDITION: FOURTH

SPECIAL TRACKWORK

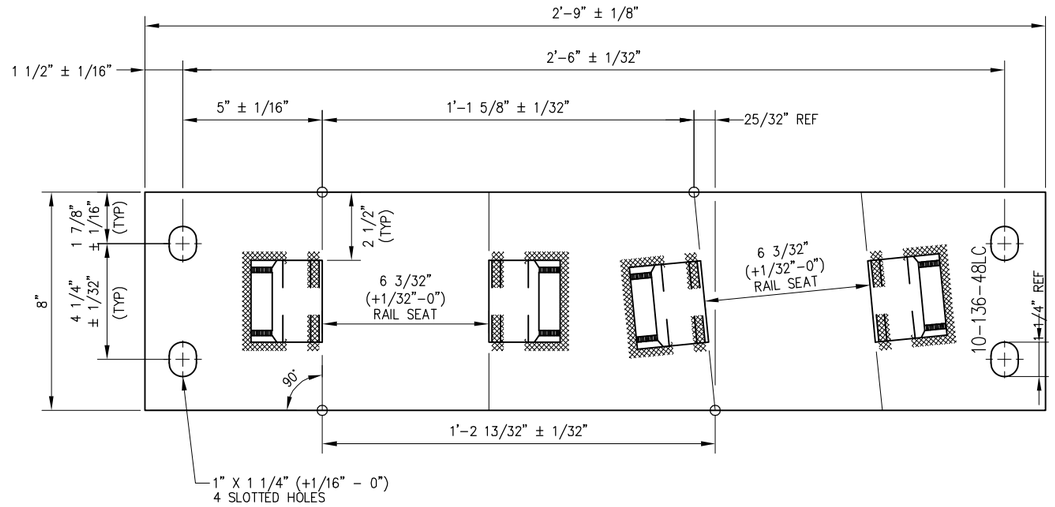
STANDARD DRAWING NO.: SD–2531

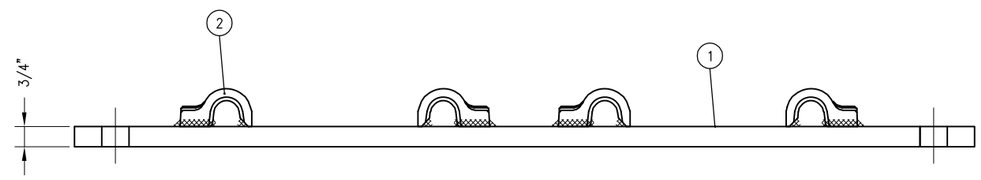
BILL OF MATERIAL				
ITEM	QTY FOR 10–47LC	QTY FOR 10–48LC	DESCRIPTION	DWG NO
1	0	1	FLAT BAR, ASTM A36, 3/4" X 8" X 2'–9" LONG	–
2	4	4	SHOULDER, PANDROL, FORGED TONGUELESS, TYPE 1	–
3	1	0	FLAT BAR, ASTM A36, 3/4" X 8" X 2'–7" LONG	–





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
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

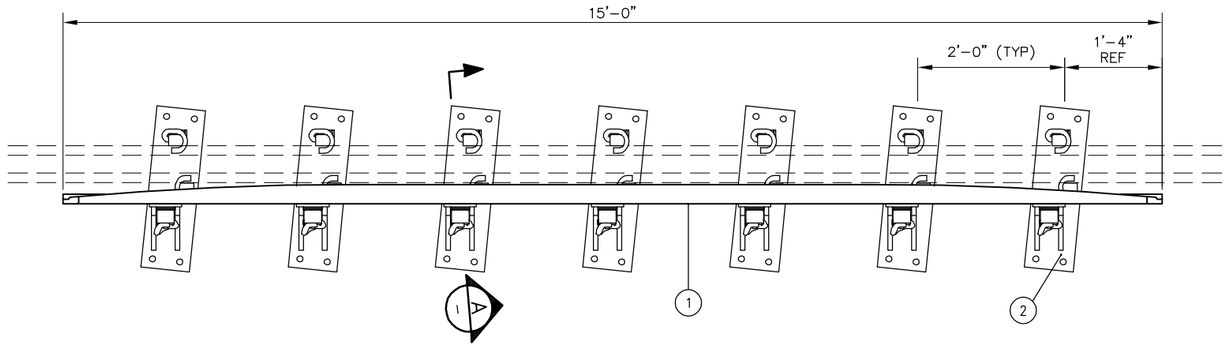
CADD FILE NAME: SD–2532

REV: | EDITION: FOURTH

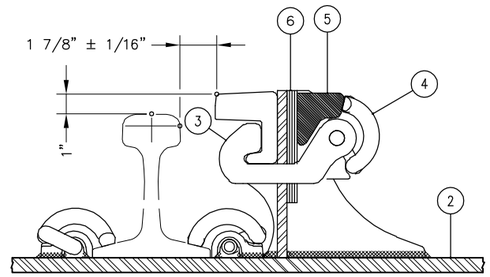
SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD–2532

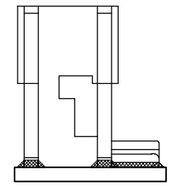
BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	GUARD BAR, UIC33 1200 SERIES x 15'–0" LONG	–
2	7	GUARD RAIL PLATE ASSEMBLY, RAISED 1", LH SKEWED	–
3	7	H–CLAMP	–
4	21	CLIP, PANDROL, E2055	–
5	7	LOCKING BLOCK	–
6	28	SHIM, 1/8" x 3" X 6"	–



15'–0" LONG GUARD RAIL

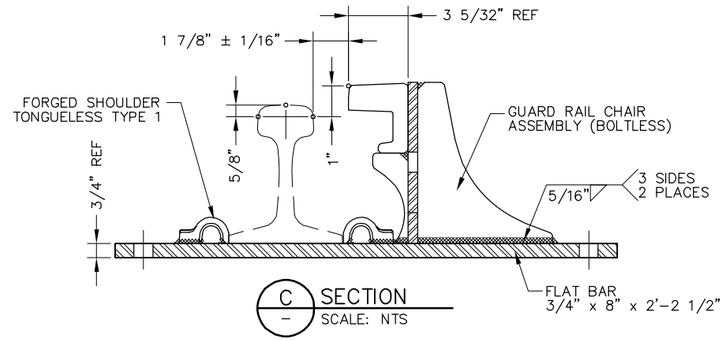


GUARD RAIL HARDWARE ASSEMBLY

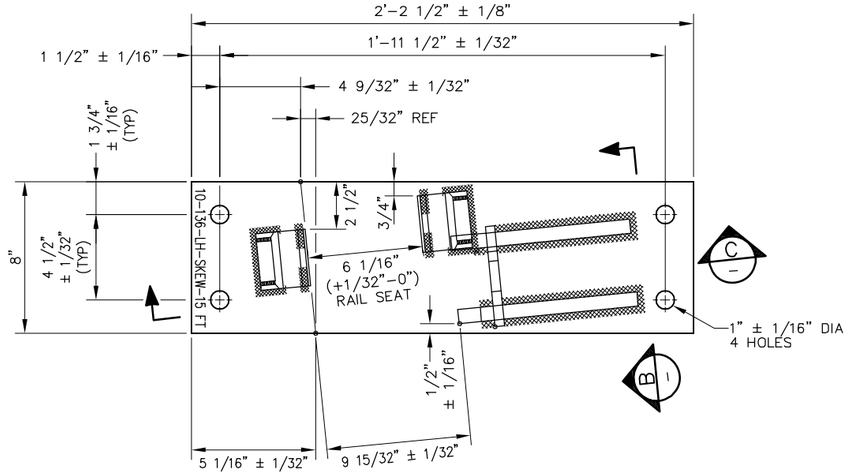


A – PARTIAL SECTION
SCALE: NTS

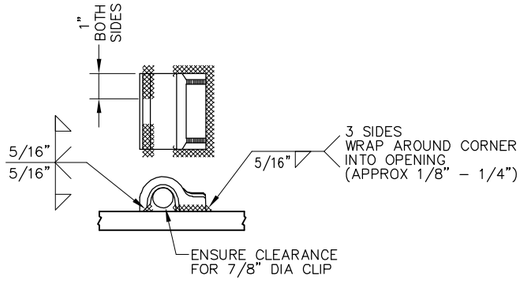
B – SECTION
SCALE: NTS



C – SECTION
SCALE: NTS



GUARD RAIL PLATE ASSEMBLY



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
					01012024 FOURTH EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

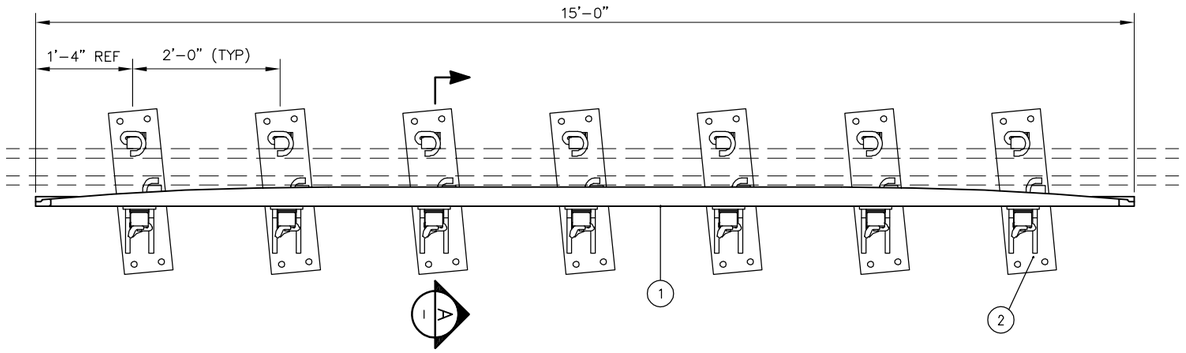
CADD FILE NAME: SD–2533

REV: | EDITION: FOURTH

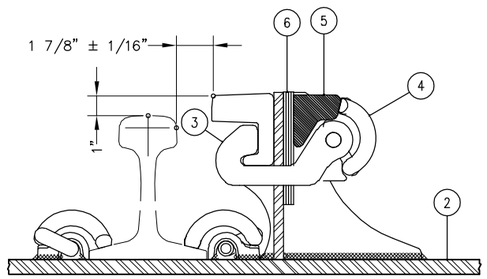
SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD–2533

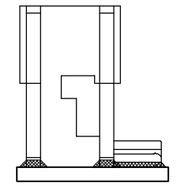
BILL OF MATERIAL			
ITEM	QTY	DESCRIPTION	DWG NO
1	1	GUARD BAR, UIC33 1200 SERIES x 15'–0" LONG	–
2	7	GUARD RAIL PLATE ASSEMBLY, RAISED 1", RH SKEWED	–
3	7	H–CLAMP	–
4	21	CLIP, PANDROL, E2055	–
5	7	LOCKING BLOCK	–
6	28	SHIM, 1/8" X 3" X 6"	–



15'–0" LONG GUARD RAIL

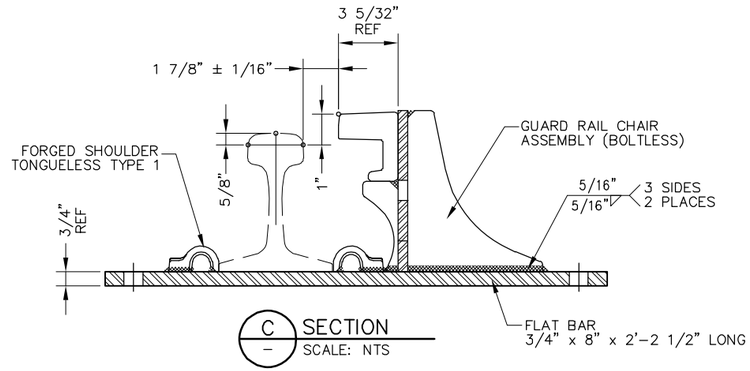


GUARD RAIL HARDWARE ASSEMBLY

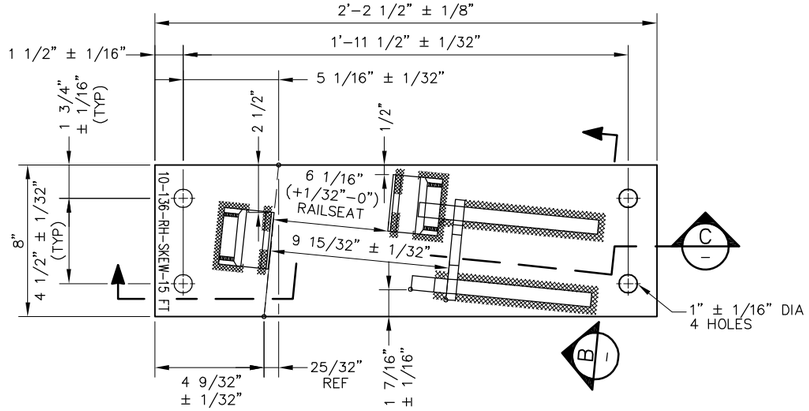


A – PARTIAL SECTION
SCALE: NTS

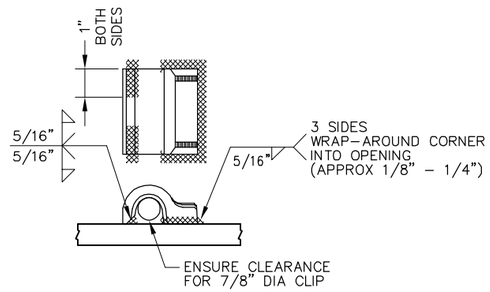
B – SECTION
SCALE: NTS



C – SECTION
SCALE: NTS



GUARD RAIL PLATE ASSEMBLY



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.

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PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

CADD FILE NAME: SD–2534

REV: | EDITION: FOURTH

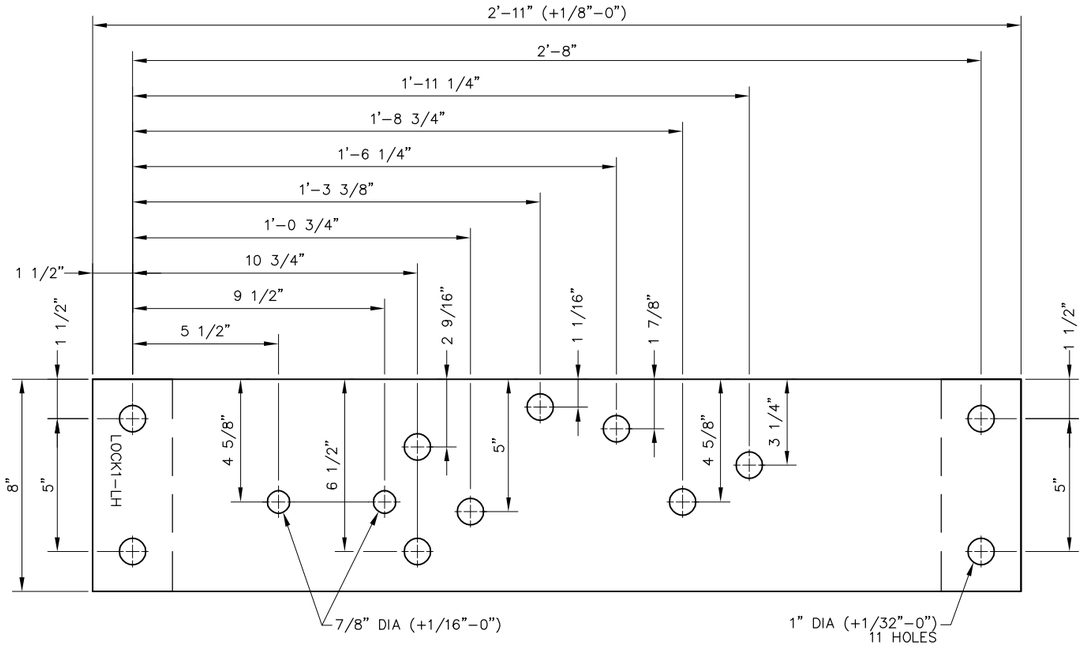
SPECIAL TRACKWORK

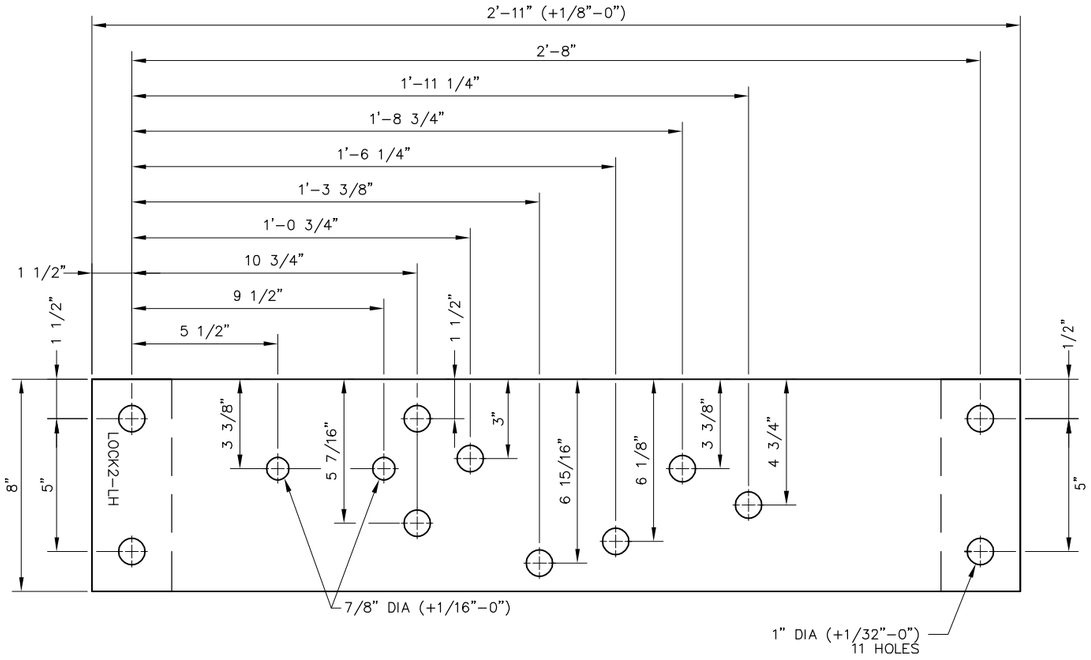
STANDARD DRAWING NO.: SD–2534

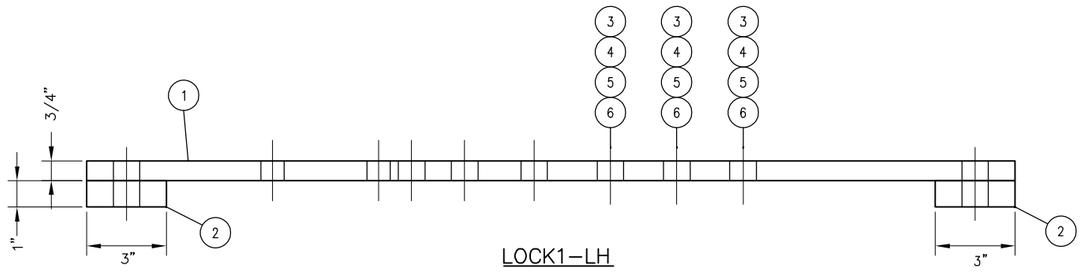
BILL OF MATERIAL				
ITEM	QTY FOR LOCK1–LH	QTY FOR LOCK2–LH	DESCRIPTION	DWG NO
1	1	1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–11" LONG	–
2	2	2	FILLER PLATE – 1" x 8" x 3"	–
3	3	3	BOLT HEX 7/8"–9UNC–2A x 3 1/2" LONG	–
4	3	3	NUT HEAVY HEX 7/8" UNC J995–GR8	–
5	3	3	WASHER FLAT 7/8" DIA BOLT	–
6	3	3	WASHER SPRING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

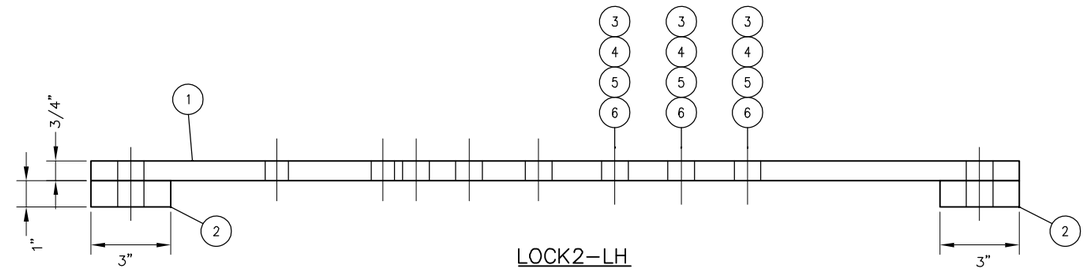
NOTES:

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









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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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DEPUTY DIRECTOR, ENGINEERING

Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

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: FOURTH

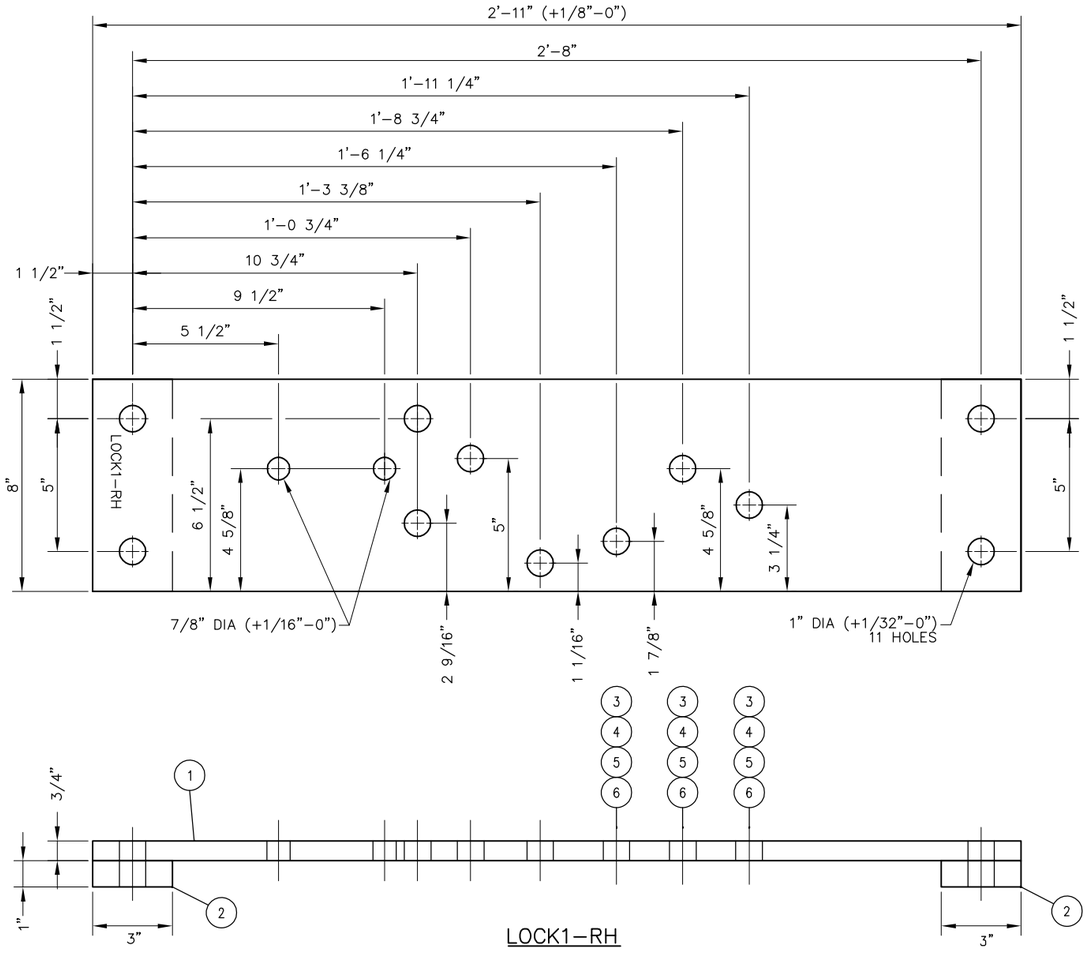
SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD–2535

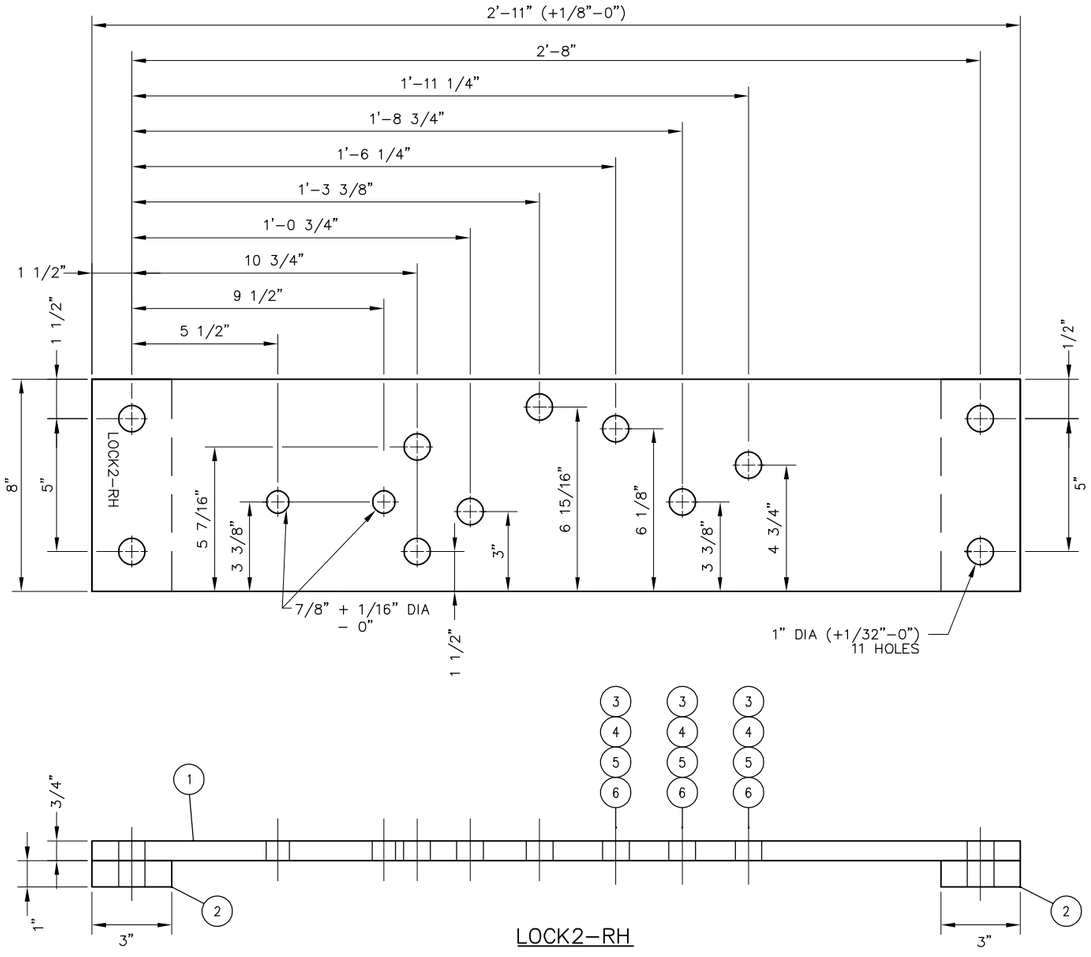
BILL OF MATERIAL				
ITEM	QTY FOR LOCK1–RH	QTY FOR LOCK2–RH	DESCRIPTION	DWG NO
1	1	1	FLAT BAR, ASTM A36, 3/4" x 8" x 2'–11" LONG	–
2	2	2	FILLER PLATE – 1" x 8" x 3"	–
3	3	3	BOLT HEX 7/8"–9UNC–2A x 3 1/2" LONG	–
4	3	3	NUT HEAVY HEX 7/8" UNC J995–GR8	–
5	3	3	WASHER FLAT 7/8" DIA BOLT	–
6	3	3	WASHER SPRING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



LOCK1–RH



LOCK2–RH

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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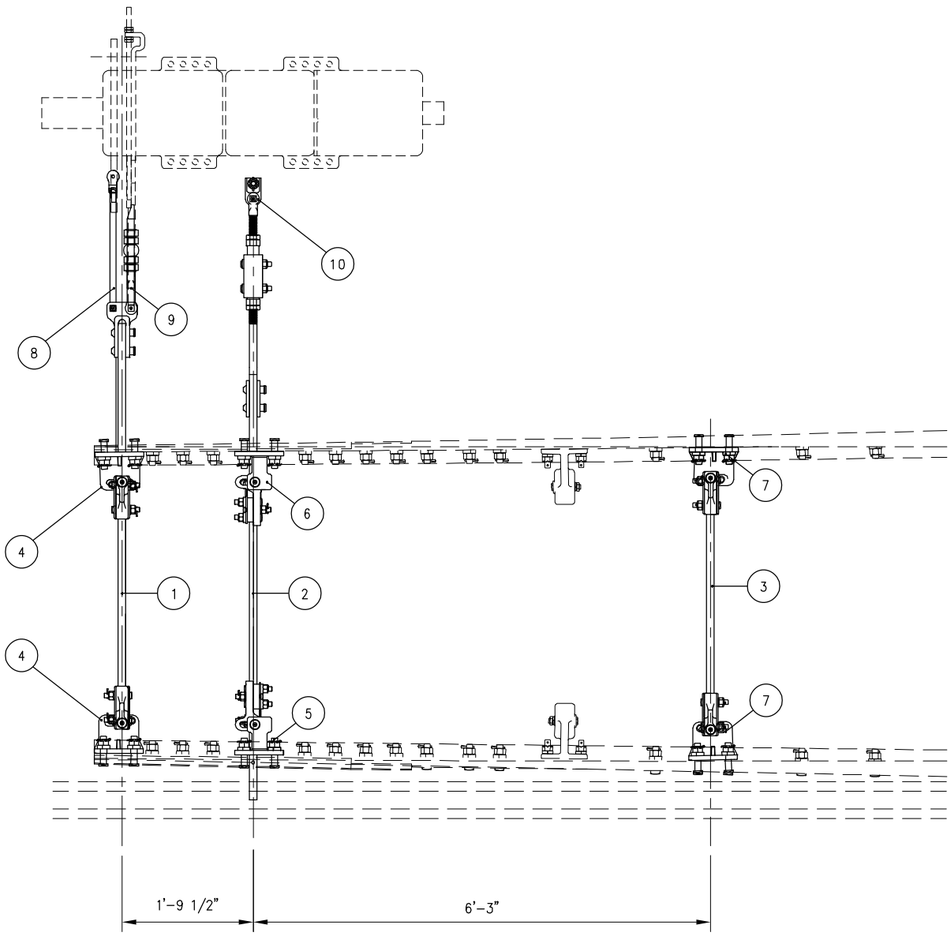
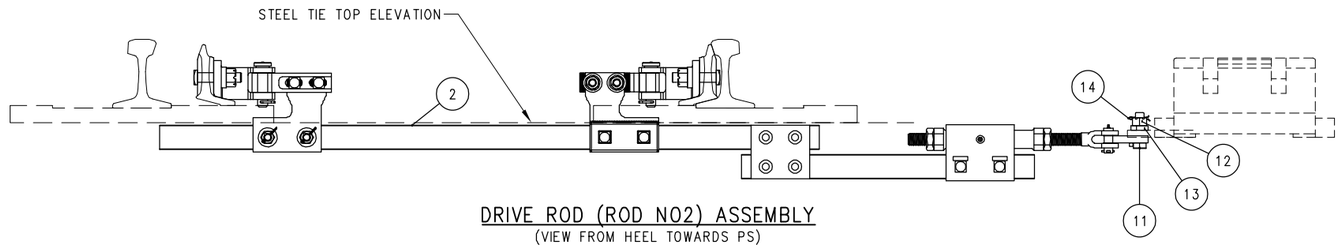
STANDARD DRAWINGS

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

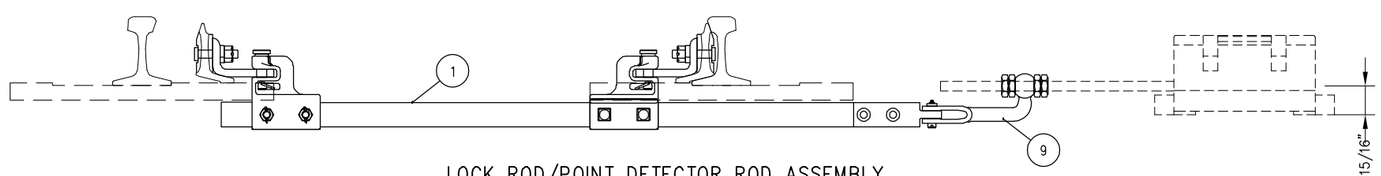
CADD FILE NAME:	SD–2536
REV:	EDITION: FOURTH
SPECIAL TRACKWORK	
STANDARD DRAWING NO.:	SD–2536

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	–

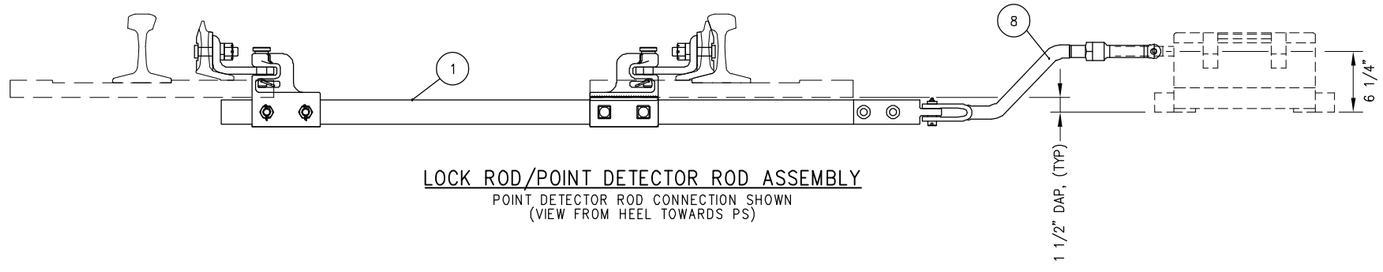




DRIVE ROD (ROD NO2) ASSEMBLY
(VIEW FROM HEEL TOWARDS PS)



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
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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Caltrain

1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

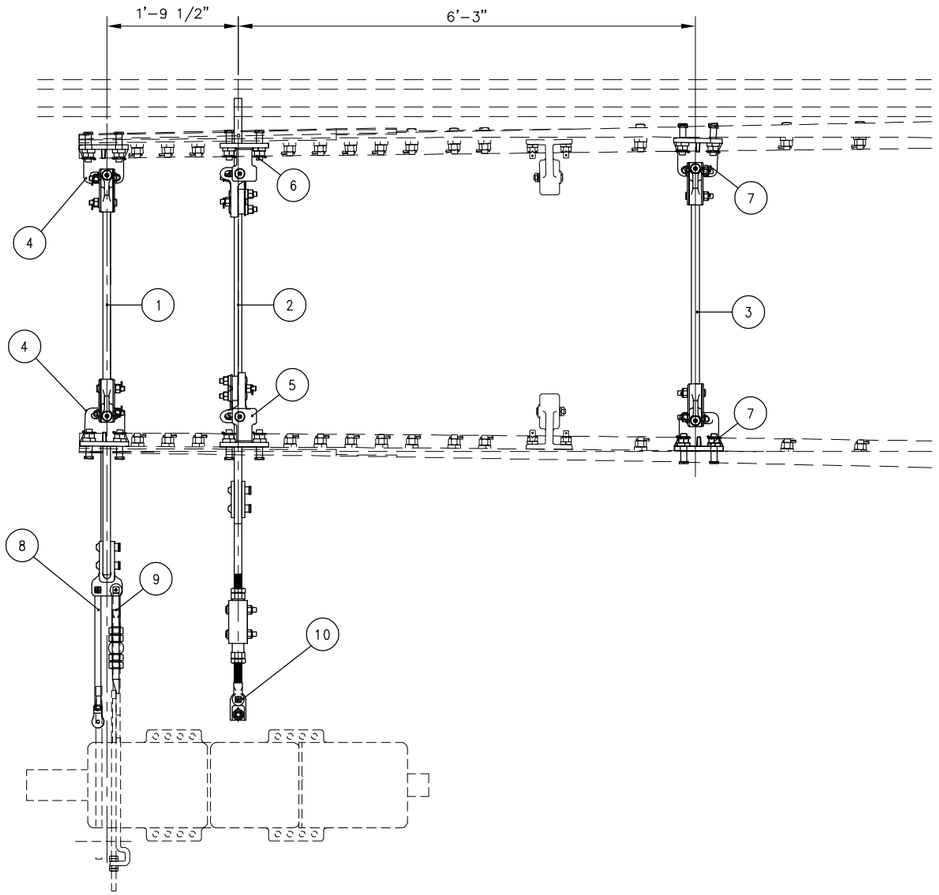
CADD FILE NAME: SD–2537

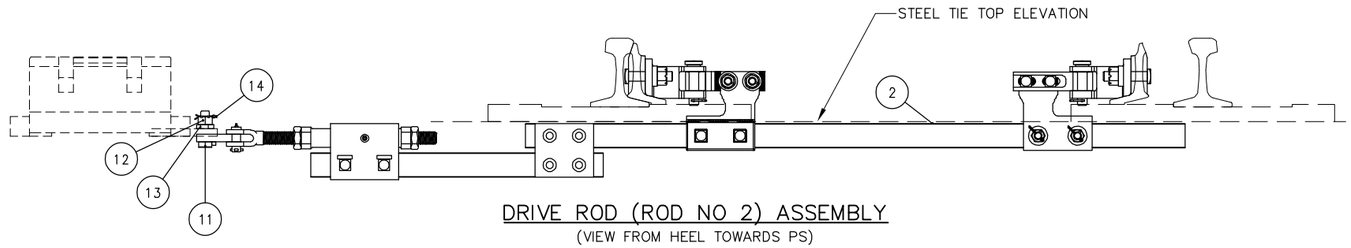
REV: | EDITION: FOURTH

SPECIAL TRACKWORK

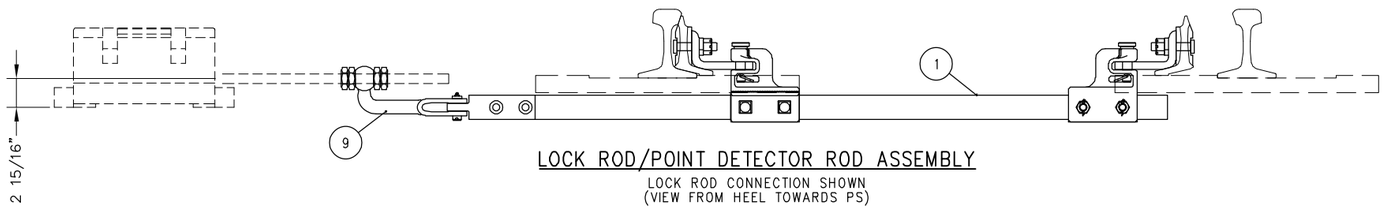
STANDARD DRAWING NO.: SD–2537

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	-

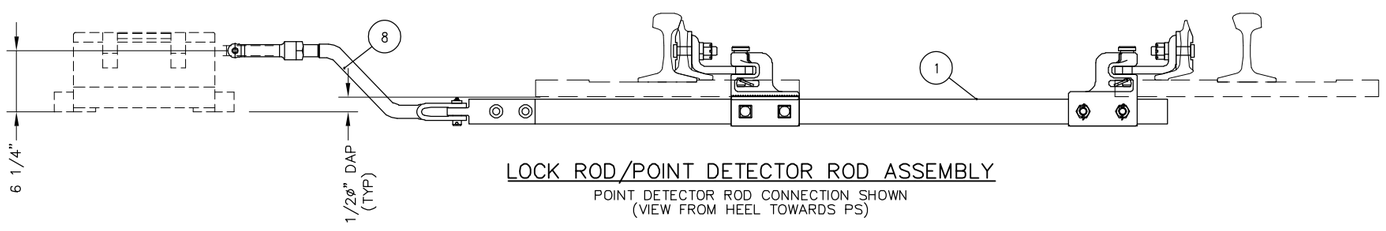




DRIVE ROD (ROD NO 2) ASSEMBLY
(VIEW FROM HEEL TOWARDS PS)



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)

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PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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1250 San Carlos Avenue
San Carlos, CA 94070

STANDARD DRAWINGS

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

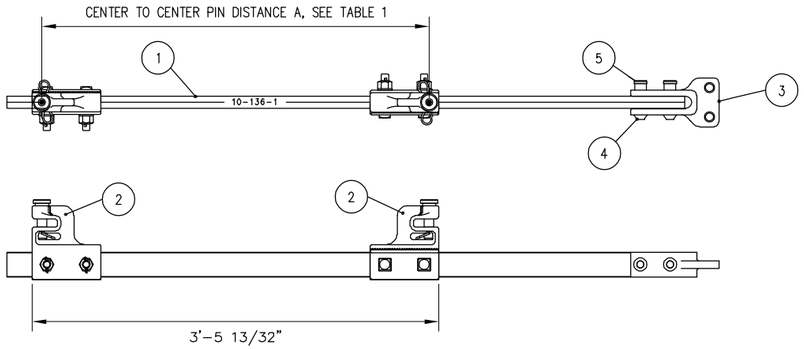
CADD FILE NAME: SD-2538

REV: | EDITION: FOURTH

SPECIAL TRACKWORK

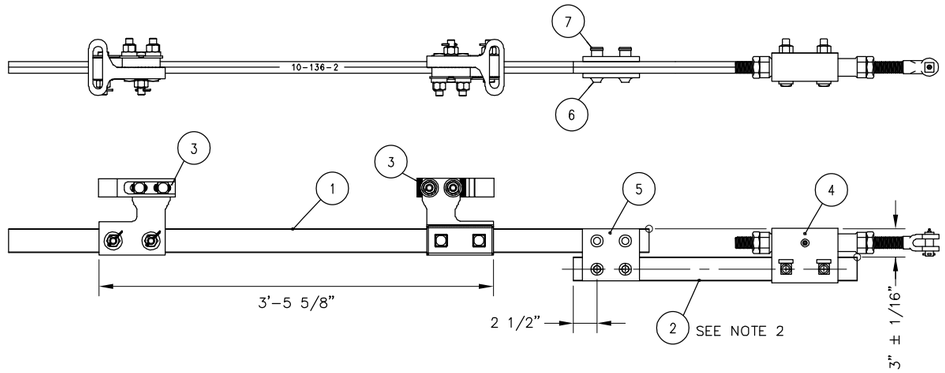
STANDARD DRAWING NO.: SD-2538

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)	–



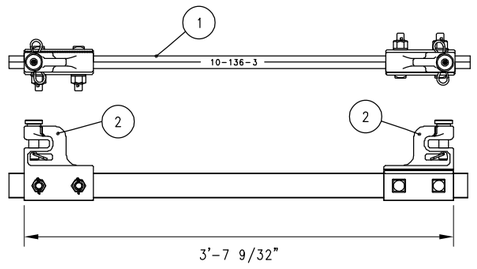
SWITCH ROD ASSEMBLY 10–136–1

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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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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Caltrain

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San Carlos, CA 94070

STANDARD DRAWINGS

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

CADD FILE NAME: SD–2539

REV: | EDITION: FOURTH

SPECIAL TRACKWORK

STANDARD DRAWING NO.: SD–2539