

### NOTES:

- 1. THE STANDARDS ARE FOR GUIDANCE AND TO INDICATE INTENT. SINCE THE ACTUAL DESIGN WILL TYPICALLY BE SITE SPECIFIC, COLLABORATE CLOSELY WITH CALTRAIN DURING DESIGN.
- 2. PAVEMENT MARKINGS SHALL CONFORM TO LATEST CALTRANS AND LOCAL JURISDICTION STANDARDS. FOLLOW THE CALIFORNIA MUTCD FOR STRIPPING, SIGNAGE AND OTHER TRAFFIC WARNING DEVICES. ADDITIONAL DEVICES MAY BE REQUIRED BY LOCAL AGENCIES.
- TO MINIMIZE CROSSING DISTANCE, THE PEDESTRIAN GATE SHALL BE PARALLEL TO TRACKS. ALIGN WITH EITHER SIDE OF THE VEHICULAR GATE COUNTER WEIGHT, AND PROVIDE MINIMUM 12 FEET DISTANCE BETWEEN TRACK CENTER AND CENTER OF PED SIGNAL MAST.

### 4. REFERENCED DRAWINGS:

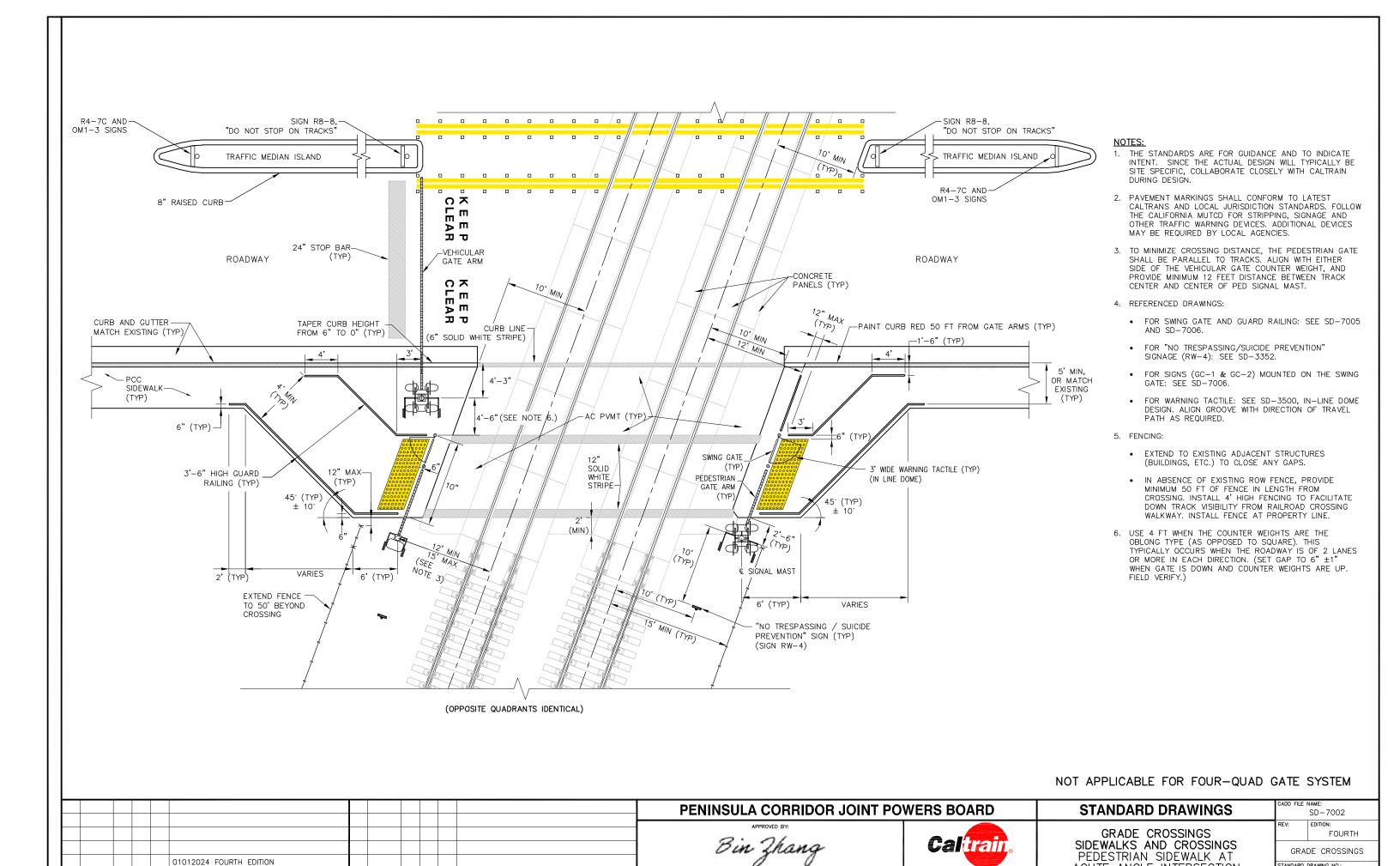
- FOR SWING GATE AND GUARD RAILING: SEE SD-7005 AND SD-7006.
- FOR "NO TRESPASSING/SUICIDE PREVENTION" SIGNAGE (RW-4): SEE SD-3352.
- FOR SIGNS (GC-1 & GC-2) MOUNTED ON THE SWING GATE: SEE SD-7006.
- FOR WARNING TACTILE: SEE SD-3500, IN-LINE DOME DESIGN. ALIGN GROOVE WITH DIRECTION OF TRAVEL PATH AS REQUIRED.

### 5. FENCING:

- EXTEND TO EXISTING ADJACENT STRUCTURES (BUILDINGS, ETC.) TO CLOSE ANY GAPS.
- IN ABSENCE OF EXISTING ROW FENCE, PROVIDE MINIMUM 50 FT OF FENCE IN LENGTH FROM CROSSING. INSTALL 4' HIGH FENCING TO FACILITATE DOWN TRACK VISIBILITY FROM RAILROAD CROSSING WALKWAY. INSTALL FENCE AT PROPERTY LINE.
- 6. USE 4 FT WHEN THE COUNTER WEIGHTS ARE THE OBLONG TYPE (AS OPPOSED TO SQUARE). THIS TYPICALLY OCCURS WHEN THE ROADWAY IS OF 2 LANES OR MORE IN EACH DIRECTION. (SET GAP TO 6"  $\pm$ 1" WHEN GATE IS DOWN AND COUNTER WEIGHTS ARE UP. FIELD VERIFY.)

NOT APPLICABLE FOR FOUR-QUAD GATE SYSTEM

PENINSULA CORRIDOR JOINT POWERS BOARD STANDARD DRAWINGS SD-7001 GRADE CROSSINGS FOURTH Calirain SIDEWALKS AND CROSSINGS GRADE CROSSINGS PEDESTRIAN SIDEWALK AT 01012024 FOURTH EDITION RIGHT ANGLE INTERSECTION STANDARD DRAWING NO. 1250 San Carlos Avenue San Carlos, CA 94070 DEPUTY DIRECTOR, ENGINEERING DATE BY CHK APP REV DATE BY CHK APP SD-7001



DEPUTY DIRECTOR, ENGINEERING

DATE BY CHK APP

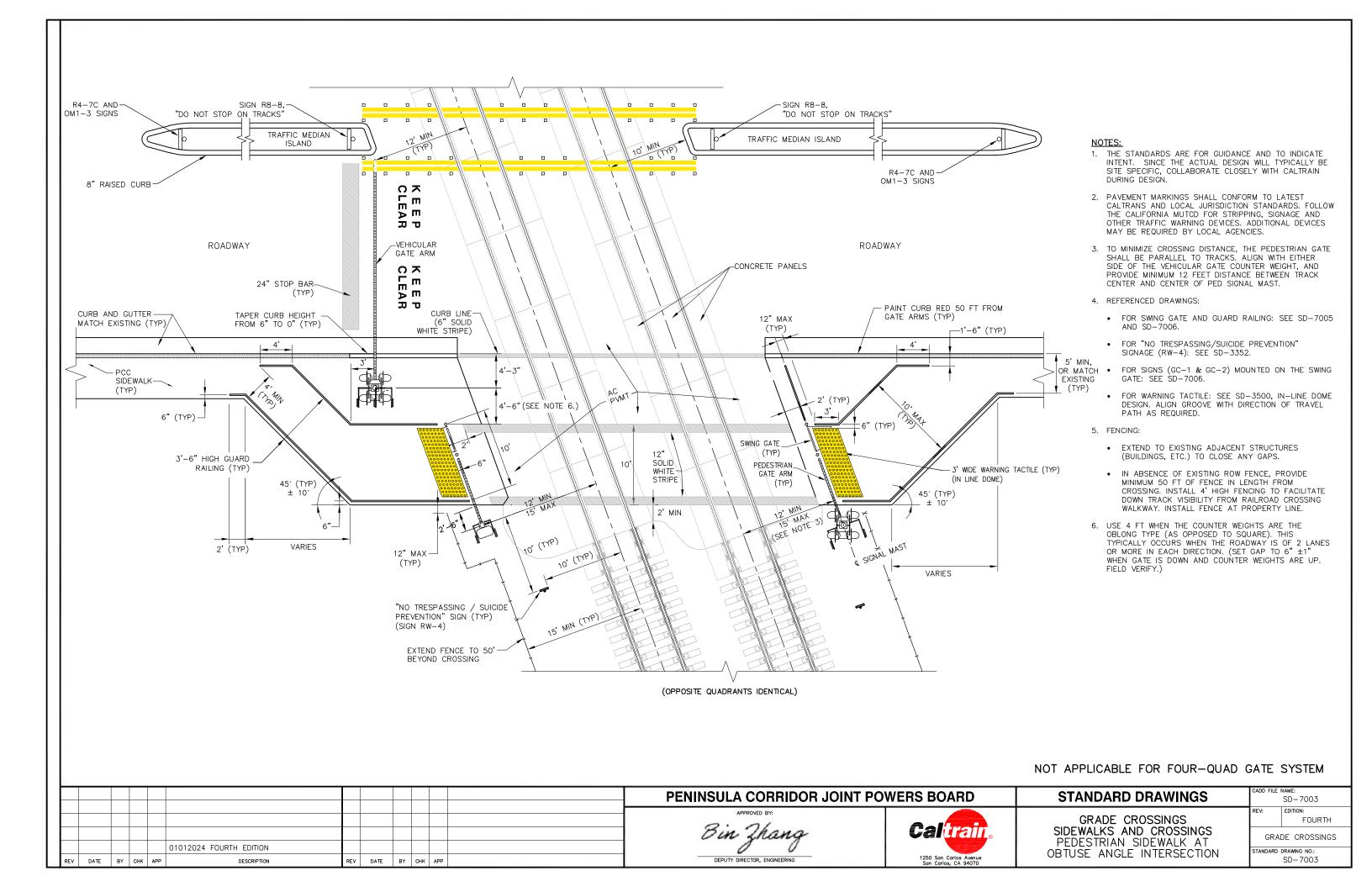
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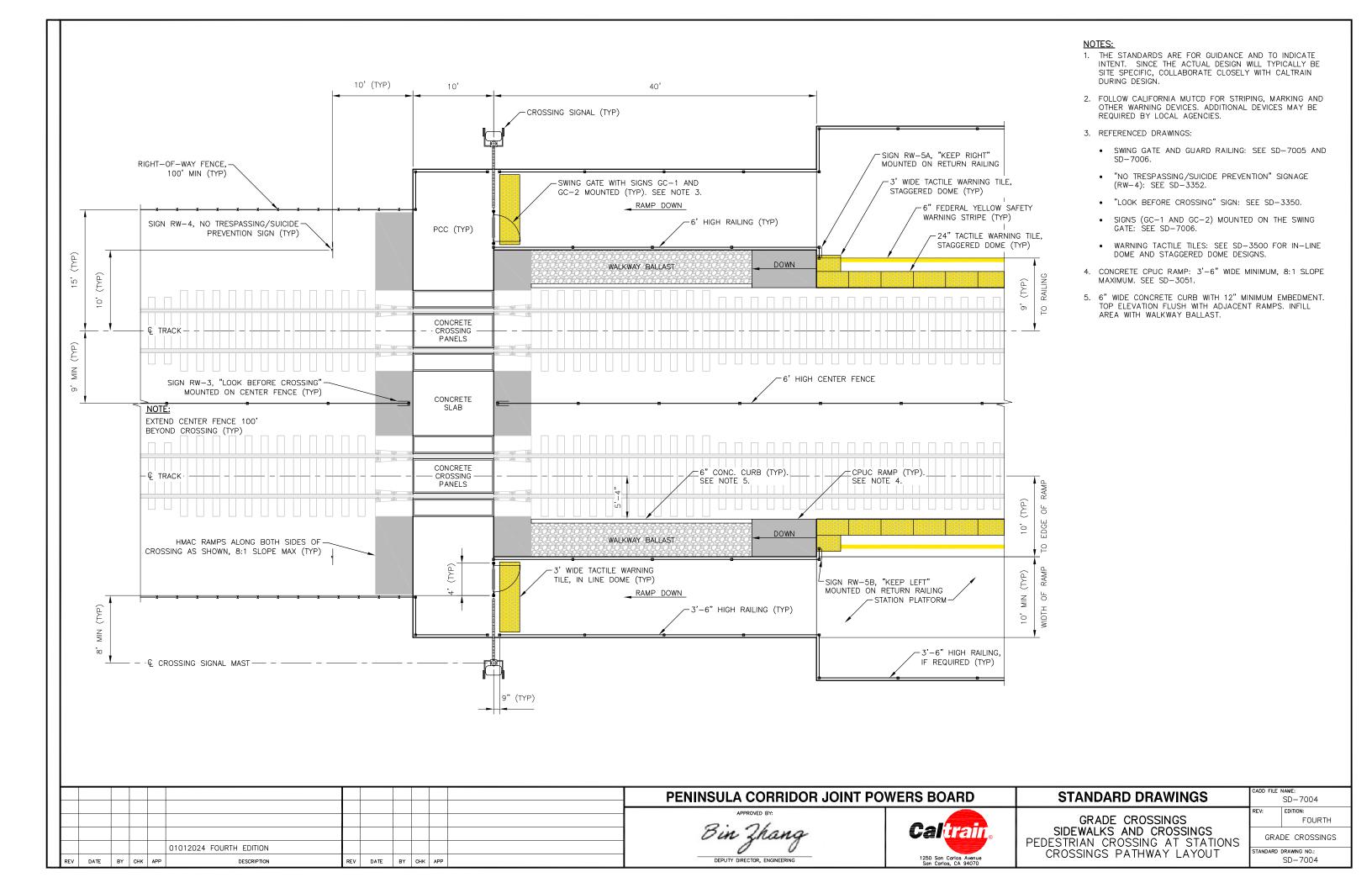
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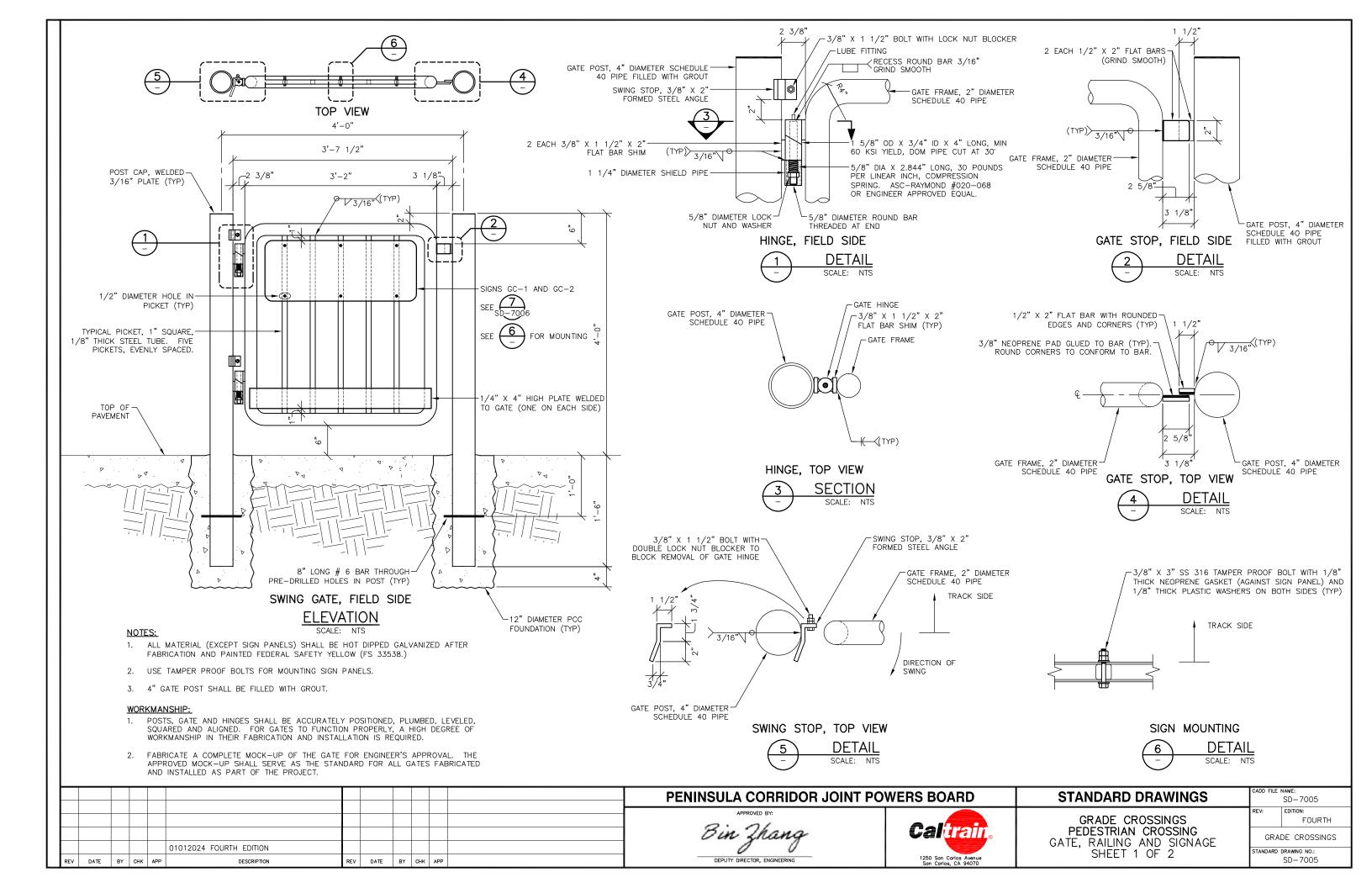
1250 San Carlos Avenue San Carlos, CA 94070

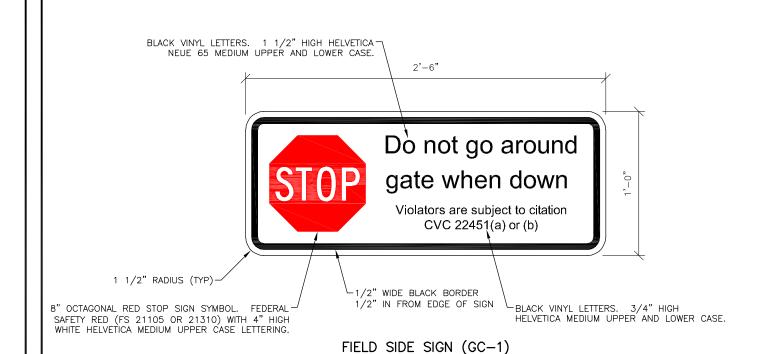
STANDARD DRAWING NO.:

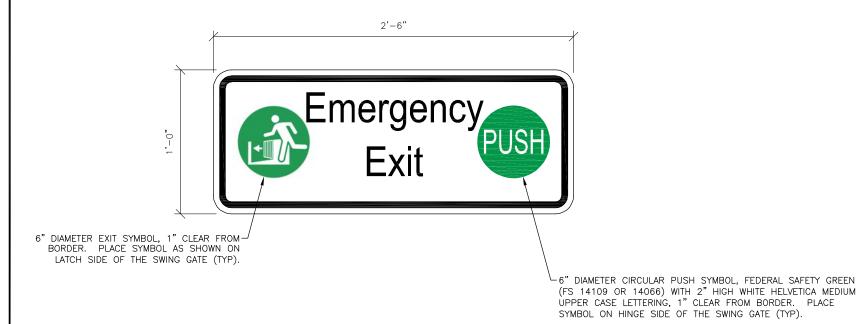
SD-7002







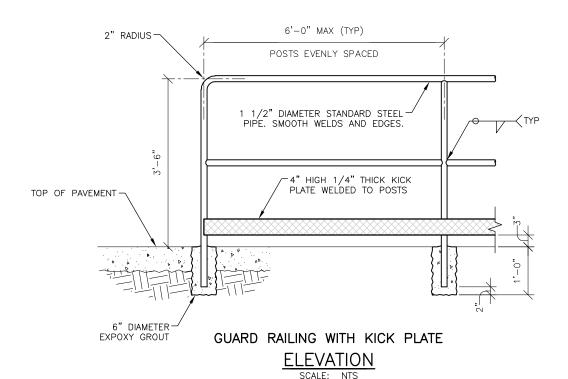


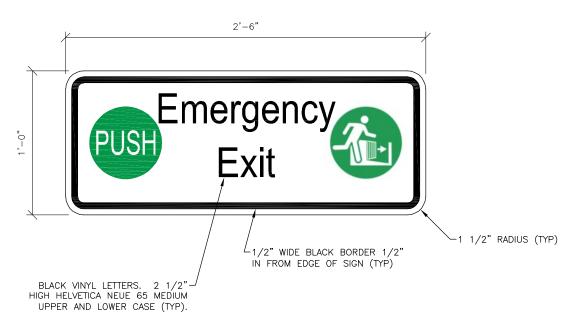


TRACK SIDE SIGN (GC-2)
FOR CLOCKWISE SWINGING GATES

SWING GATE SIGNAGE DETAILS

SD-7005 7 SD-7006 DETAIL SCALE: NTS





# TRACK SIDE SIGN (GC-2) FOR COUNTERCLOCKWISE SWINGING GATES

- 1. SEE SD-3300 FOR SIGN REQUIREMENTS AND SPECIFICATIONS.
- 2. SIGN PANELS: 0.120" THICK REFLECTORIZED WHITE ALUMINUM.
- 3. GUARD RAILING AND KICK PLATE SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.

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									PENINSULA CORRIDOR JOINT PO	WERS BOARD	STANDARD DRAWINGS	CADD FILE NAME: SD-7006
11									APPROVED BY:			REV: EDITION:
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									Oin Thang	Cal <u>tali</u> ,	PEDESTRIAN CROSSING	GRADE CROSSINGS
				01012024 FOURTH EDITION					0		GATE, RAILING AND SIGNAGE SHEET 2 OF 2	STANDARD DRAWING NO.:
	REV [	DATE	BY CHK	APP DESCRIPTION	REV	DATE	BY CH	APP	DEPUTY DIRECTOR, ENGINEERING	1250 San Carlos Avenue San Carlos, CA 94070	SHLLI Z OF Z	SD-7006

### GENERAL:

- 1. THESE SPECIFICATIONS ARE MINIMUM REQUIREMENTS. PIPELINES SHALL BE DESIGNED AND CONSTRUCTED SO THAT CALTRAIN OPERATIONS, MAINTENANCE AND FACILITIES ARE NOT INTERFERED WITH, INTERRUPTED OR SAFETY COMPROMISED.
- 2. ANY REPLACEMENT OR MODIFICATIONS TO THE EXISTING PIPE (CARRIER OR CASING) SHALL BE CONSIDERED AS A NEW INSTALLATION SUBJECT TO THESE SPECIFICATIONS.
- 3. ALL DESIGNS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL CIVIL ENGINEER LICENSED IN THE STATE OF CALIFORNIA.
- 4. PIPELINES SHALL CROSS TRACKS AT RIGHT ANGLES; IF NOT FEASIBLE, AT MAXIMUM 45 DEGREES. THE PIPELINES SHALL NOT BE PLACED INSIDE CULVERTS, NOR UNDER RAIL BRIDGES, NOR CLOSER THAN 100 FEET IN ANY PORTION OF ANY RAIL BRIDGE, CULVERT, BUILDING, OR OTHER IMPORTANT STRUCTURE.
- 5. CROSSING PIPELINES SHALL NOT BE LOCATED WITHIN THE LIMITS OF A TURNOUT. THE LIMIT OF A TURNOUT EXTENDS 25 FEET BEYOND EACH SWITCH POINT.
- 6. LONGITUDINAL PIPELINES SHALL BE LOCATED AS FAR AS PRACTICABLE FROM ANY TRACKS OR OTHER IMPORTANT STRUCTURES.
- 7. LONGITUDINAL PIPELINES SHALL NOT BE LOCATED WITHIN EARTH EMBANKMENT OR WITHIN DITCHES.
- 8. THE DEPTH OF PIPELINES (CARRIER AND CASING PIPES) SHALL BE SUCH TO WITHSTAND RIGOROUS RAILROAD OPERATING CONDITIONS AND SHALL ALLOW FOR FUTURE INSTALLATIONS (SUCH AS CONDUIT, PIPES, STRUCTURES, ETC.) BY CALTRAIN.
- 9. THE DEPTH OF PIPELINES SHALL BE THE GREATER OF THE FOLLOWING MEASURED VERTICALLY TO THE TOP OF THE CASING (DEPTHS IN PARENTHESIS ARE FOR FLAMMABLE OR HAZARDOUS SUBSTANCES):
  - A. 6 FT MINIMUM FROM TOP OF TIE (8 FT MINIMUM)
- B. 4 FT MINIMUM FROM THE BOTTOM OF TRACK SIDE DRAINAGE DITCH (5 FT MINIMUM).
- C. 4 FT MINIMUM FROM THE LOWEST GROUND LEVEL (5 FT MINIMUM).
- 10. BOTH CARRIER AND CASING PIPES SHALL BE INSTALLED WITH SUFFICIENT SLACK SO THAT THE PIPES ARE NOT IN TENSION.
- 11. SIGNS TO INDICATE LOCATION OF PIPELINE OR DUCT BANK SHALL BE INSTALLED AND MAINTAINED BY OWNER OF THE UTILITIES. THE SIGNS SHALL HAVE DURABLE WEATHERPROOF AND BE ON BOTH SIDES OF THE TRACKS OVER THE CENTERLINE OF THE UTILITIES WITH THE FOLLOWING INFORMATION:
  - A. NAME AND ADDRESS OF OWNER
  - B. CONTENTS AND PRESSURE IN PIPE
  - C. SOIL DEPTH BELOW THE FINISH GRADE
- D. EMERGENCY PHONE NUMBER IN THE EVENT OF DAMAGE (PIPE RUPTURE, ETC).
- 12. WARNING TAPE SHALL BE PLACED WITHIN 2 FEET FROM GROUND SURFACE FOR OPEN CUT INSTALLATION.

### CARRIER PIPES:

- 1. CARRIER PIPE MATERIAL UNDER AND ADJACENT TO TRACKS MUST BE CAPABLE OF SUPPORTING A MINIMUM OF 3,600 POUNDS PER SQUARE FOOT OF PRESSURE FOR COVER HEIGHTS OF 30 FEET OR LESS. FOR HEIGHTS GREATER THAN 30 FEET, SUPPORTING WEIGHT SHALL BE INCREASED PROPORTIONALLY.
- 2. CARRIER PIPELINE SHALL BE SLOPED ONE PERCENT (1%).
- 3. UNCASED CARRIER PIPES SHALL HAVE THE PIPE WALL THICKNESS IN ACCORDANCE WITH TABLE 1-5-3 (AREMA, PART 1).

### CASINGS:

- 1. CASING REQUIREMENTS APPLY TO PIPELINES THAT CARRY THE FOLLOWING LIQUID OR GASEOUS SUBSTANCES:
  - A. OIL, GAS, PETROLEUM PRODUCTS OR OTHER FLAMMABLE, HIGHLY VOLATILE OR HAZARDOUS SUBSTANCES UNDER PRESSURE.
    B. STEAM, WATER OR ANY NON-FLAMMABLE SUBSTANCE WHICH FROM ITS NATURE OR PRESSURE, MAY CAUSE DAMAGE IF ESCAPING ON OR IN THE VICINITY OF THE CALTRAIN CORRIDOR.
- 2. CASING PIPE SHALL BE INSTALLED TO PREVENT THE FORMATION OF STANDING WATER UNDER THE TRACKS, AND SHALL SLOPE TO ONE END SIMILAR TO THE CARRIER PIPES (EXCEPT FOR LONGITUDINAL PIPELINE).
- 3. CASING PIPE SHALL BE SIZED SUCH THAT THERE IS AT LEAST 2 INCHES CLEARANCE TO THE LARGEST OUTSIDE DIAMETER OF CARRIER PIPE, JOINTS OR COUPLINGS.
- 4. BOTH ENDS OF CASING SHALL BE SUITABLY SEALED AGAINST THE ENTRANCE OF FOREIGN MATERIAL, BUT ALLOWING LEAKAGE TO PASS THROUGH IN THE EVENT OF CARRIER BREAK.
- 5. CASING PIPE AND JOINTS SHALL BE OF LEAK PROOF CONSTRUCTION, CAPABLE OF WITHSTANDING RAILROAD LOADING (COOPER F-80).
- 6. CASING PIPE SHALL HAVE A MINIMUM YIELD STRENGTH OF 35,000 PSI. WHEN CASING IS WITHOUT PROTECTIVE COATING, AND NOT CATHODICALLY PROTECTED, THE WALL THICKNESS SHOWN IN TABLE 1-5-1 (AREMA, PART 1) SHALL BE INCREASED TO THE NEAREST STANDARD SIZE WHICH IS A MINIMUM OF 1/16" GREATER THAN THE THICKNESS SHOWN EXCEPT FOR DIAMETERS LESS THAN 12"
- 7. CASING SHALL COVER THE ENTIRE WIDTH OF THE CALTRAIN ROW.

### **VENTING:**

- 1. CASING PIPE SHALL BE PROPERLY VENTED. VENT PIPES SHALL BE MINIMUM 2 INCHES IN DIAMETER AND SHALL BE INSTALLED NEAR THE END OF CASING.
- 2. VENT PIPE SHALL BE VERTICAL AND SHALL EXTEND NOT LESS THAN 4 FEET ABOVE GROUND SURFACE. TOP OF VENT PIPE SHALL BE FITTED WITH DOWNTURNED ELBOW PROPERLY SCREENED, OR A RELIEF VALVE.
- 3. VENTS IN LOCATIONS SUBJECT TO HIGH WATER SHALL BE EXTENDED ABOVE MAXIMUM ELEVATION OF HIGH WATER AND SHALL BE SUPPORTED AND PROTECTED.

### MANHOLES:

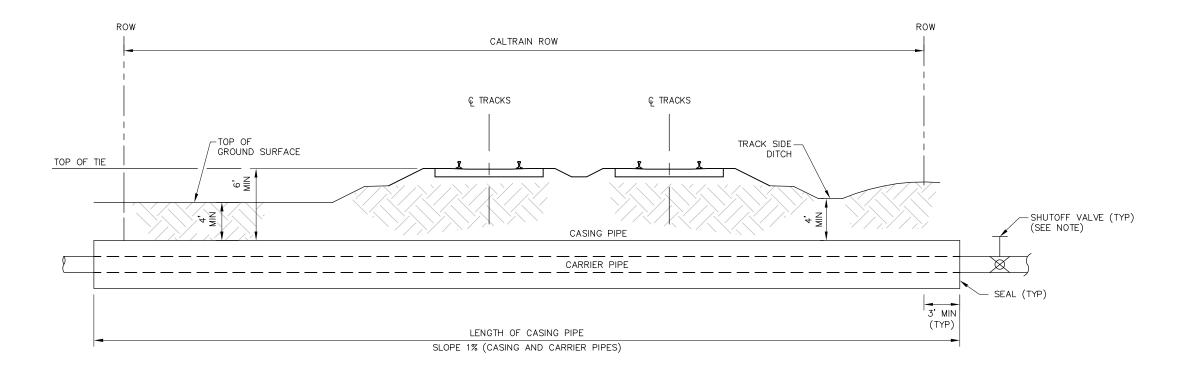
1. MANHOLES ARE NOT ALLOWED WITHIN CALTRAIN CORRIDOR, EXCEPT FOR LONGITUDINAL PIPELINES WHERE MANHOLES SHALL BE PRECAST CONCRETE, FLUSH WITH TOP OF GROUND.

### ABANDONED FACILITIES:

- 1. THE OWNER OF ALL CROSSING OR LONGITUDINAL PIPELINES PROPOSED FOR ABANDONMENT SHALL NOTIFY CALTRAIN, IN WRITING, OF THE INTENTION TO ABANDON.
- 2. AS DIRECTED BY CALTRAIN, ABANDONED PIPELINES SHALL BE EITHER REMOVED OR COMPLETELY FILLED WITH CEMENT GROUT, COMPACTED SAND, OR OTHER METHODS, AS APPROVED BY CALTRAIN.
- 3. ABANDONED MANHOLES SHALL BE REMOVED TO A MINIMUM DEPTH OF 6 FEET BELOW FINISHED GRADE AND COMPLETELY FILLED WITH CEMENT GROUT, COMPACTED SAND, OR OTHER METHODS AS APPROVED BY CALTRAIN.

- 1. AREMA: AMERICAN RAILWAY ENGINEERING AND MAINTENANCE-OF-WAY ASSOCIATION
- 2. FIBER OPTICS OR ELECTRICAL INSTALLATIONS MAY USE PVC OR HDPE PIPE SCHEDULE 80, AS A CONDUIT.

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									Oin Thang	<b>Calitain</b> 。	CROSSING UTILITIES		CIVIL
			01012024	FOURTH EDITION					0		PIPELINES GENERAL REQUIREMENTS	STANDARD	RD DRAWING NO.:
ll	REV DATE	BY	CHK APP	DESCRIPTION	REV	DATE B	Y CHK	APP	DEPUTY DIRECTOR, ENGINEERING	1250 San Carlos Avenue	GLINLINAL INLIGOTIVEINTS		SD-8000



### **CARRIER PIPES:**

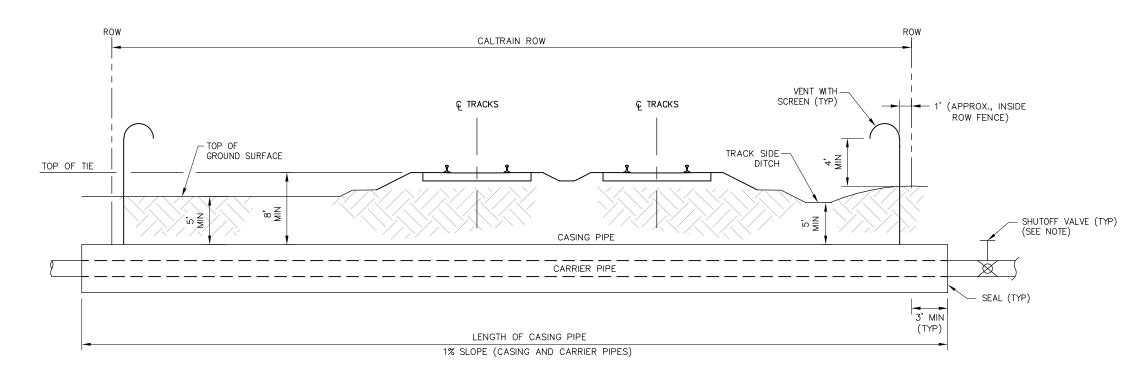
- CLASS IV RCP SHALL BE USED FOR STORM WATER OR OTHER LIQUIDS THAT COULD CAUSE CORROSION, WHERE THE OPERATING PRESSURE IS UNDER 40 PSI
- 2. DUCTILE IRON PIPE IN A CASING IS ACCEPTABLE AS FOLLOWS:
  - CLASS 52 FOR DIAMETERS OF 4" THRU 10"
  - CLASS 53 FOR DIAMETERS OF 12" THRU 14"
  - CLASS 54 FOR DIAMETERS OF 16" THRU 18"
  - CLASS 56 FOR DIAMETERS OF 20" THRU 24"
- 3. PLASTIC PIPE MAY BE USED IF OPERATING PRESSURE IS UNDER 60 PSI. PLASTIC PIPE SHALL BE PVC OR HDPE AND PROTECTED IN A CASING.

### CASING PIPE:

- CASING PIPE MAY BE OMITTED FOR NON-PRESSURE (GRAVITY) SEWER AND STORM DRAIN CROSSINGS UNDER TRACKS WHERE THE PIPE STRENGTH IS CAPABLE OF WITHSTANDING RAILROAD LOADING.
- 2. VOID BETWEEN CASING AND CARRIER PIPE SHALL BE FILLED WITH CLEAN SAND IN ALL PRESSURE ABOVE 20 PSI INSTALLATIONS. VOID MAY BE PARTIALLY FILLED IN AS DIRECTED.

- 1. PIPELINES CONVEYING NON-FLAMMABLE SUBSTANCES SHALL MEET AREMA CHAPTER 1, PART 5, SECTION 5.3 GUIDELINES UNLESS NOTED OTHERWISE ON THIS DRAWING.
- 2. ACCESSIBLE EMERGENCY SHUTOFF VALVES MAY BE REQUIRED BY FEDERAL, STATE OR LOCAL AUTHORITIES. IF INSTALLED, THE VALVES SHALL BE LOCATED OUTSIDE OF CALTRAIN'S RIGHT—OF—WAY.
- 3. SEE SD-8000 FOR GENERAL REQUIREMENTS.
- 4. SIGNS NOT SHOWN FOR CLARITY.

		PENINSULA CORRIDOR JOINT PO	WERS BOARD	STANDARD DRAWINGS		SD-8001						
								Bin Zhang	Caltrain.	CIVIL ENGINEERING CROSSING UTILITIES	REV:	FOURTH
REV	DATE	ву сн	01012024 FOURTH EDITION  APP DESCRIPTION	REV	/ DATE I	BY CHK APE		DEPUTY DIRECTOR, ENGINEERING	1250 San Carlos Avenue San Carlos, CA 94070	PIPELINES FOR NON-FLAMMABLE SUBSTANCES	STANDARD	D DRAWING NO.: SD-8001



### **CARRIER PIPES:**

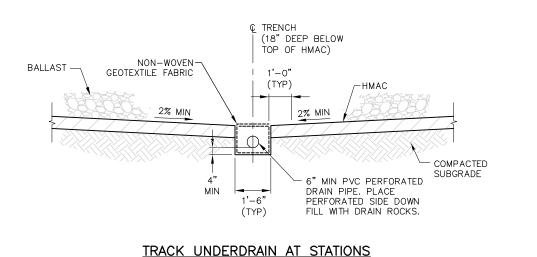
- 1. ALL JOINTS OR COUPLINGS SHALL BE WELDED
- 2. GAS LINE SHALL BE ALLOYED CARBON STEEL WITH A FACTORY—APPLIED CORROSION PROTECTION COATING

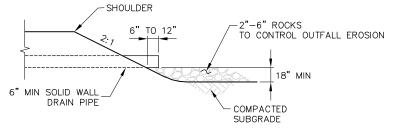
### **CASING PIPES:**

- 1. CASING PIPE AND JOINTS SHALL BE WELDED, CAPABLE OF WITHSTANDING RAILROAD LOADING (COOPER E-80)
- 2. CASING PIPE MAY BE OMITTED FOR GAS PIPELINES WHEN DEPTH OF BURIAL FROM BASE OF RAIL TO TOP OF PIPE IS MORE THAN 10'.

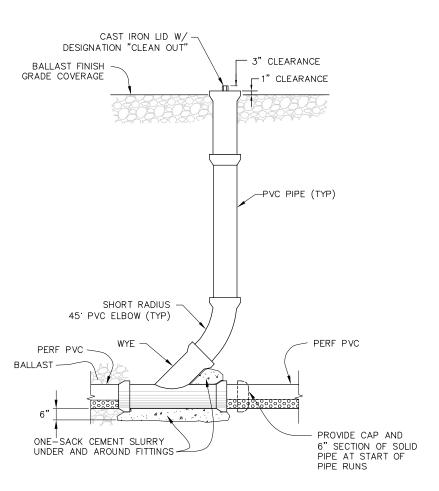
- 1. PIPELINES CONVEYING FLAMMABLE AND HAZARDOUS SUBSTANCES SHALL MEET AREMA CHAPTER 1, PART 5, SECTION 5.1 GUIDELINES UNLESS NOTED OTHERWISE ON THIS DRAWING.
- SHUTOFF VALVES MAY BE REQUIRED BY FEDERAL, STATE OR LOCAL AUTHORITIES. IF INSTALLED, THE VALVES SHALL BE LOCATED OUTSIDE OF CALTRAIN'S RIGHT—OF—WAY.
- 3. SEE SD-8000 FOR GENERAL REQUIREMENTS.

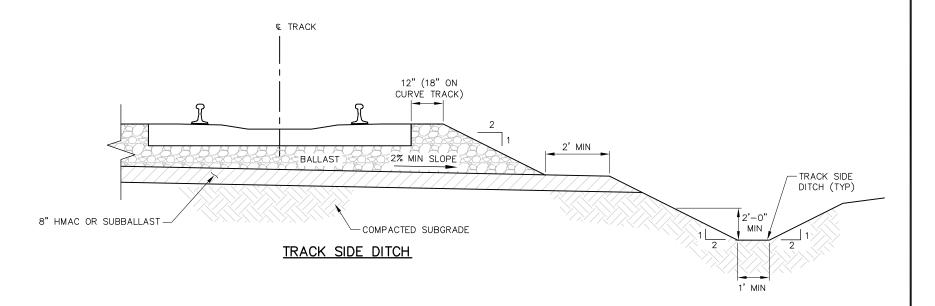
		PENINSULA CORRIDOR JOINT POWERS BOARD	
		Bin Zhang Caltrai	CIVIL ENGINEERING CROSSING UTILITIES PIPELINES FOR FLAMMABLE
R	EV         DATE         BY         CHK         APP         DESCRIPTION         REV         DATE         BY         CHK         APP	DEPUTY DIRECTOR, ENGINEERING 1250 San Carlos Avenue San Carlos, CA 94070	AND HAZARDOUS SUBSTANCES STANDARD DRAWING NO.:





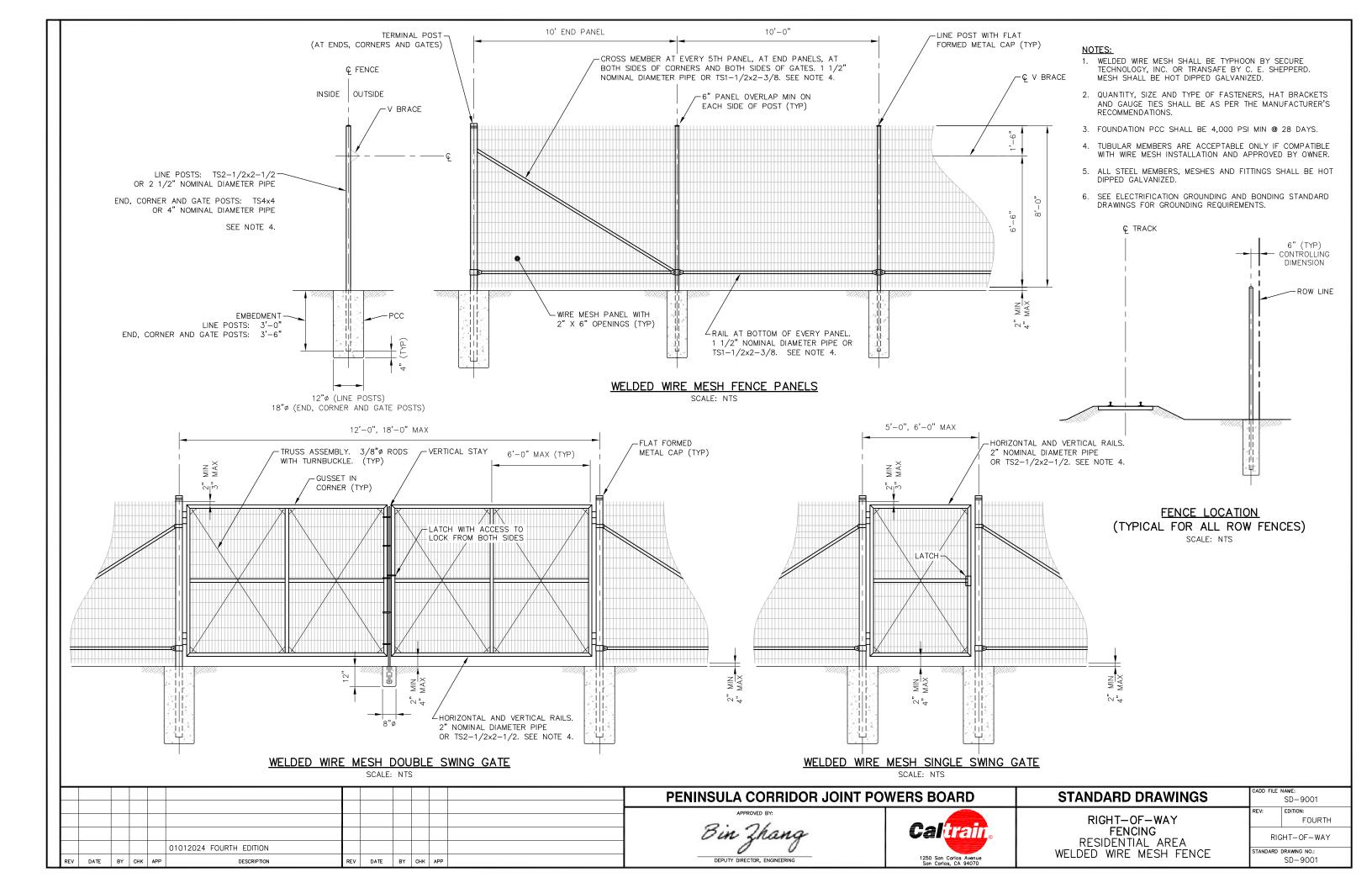
# UNDERDRAIN OUTFALL

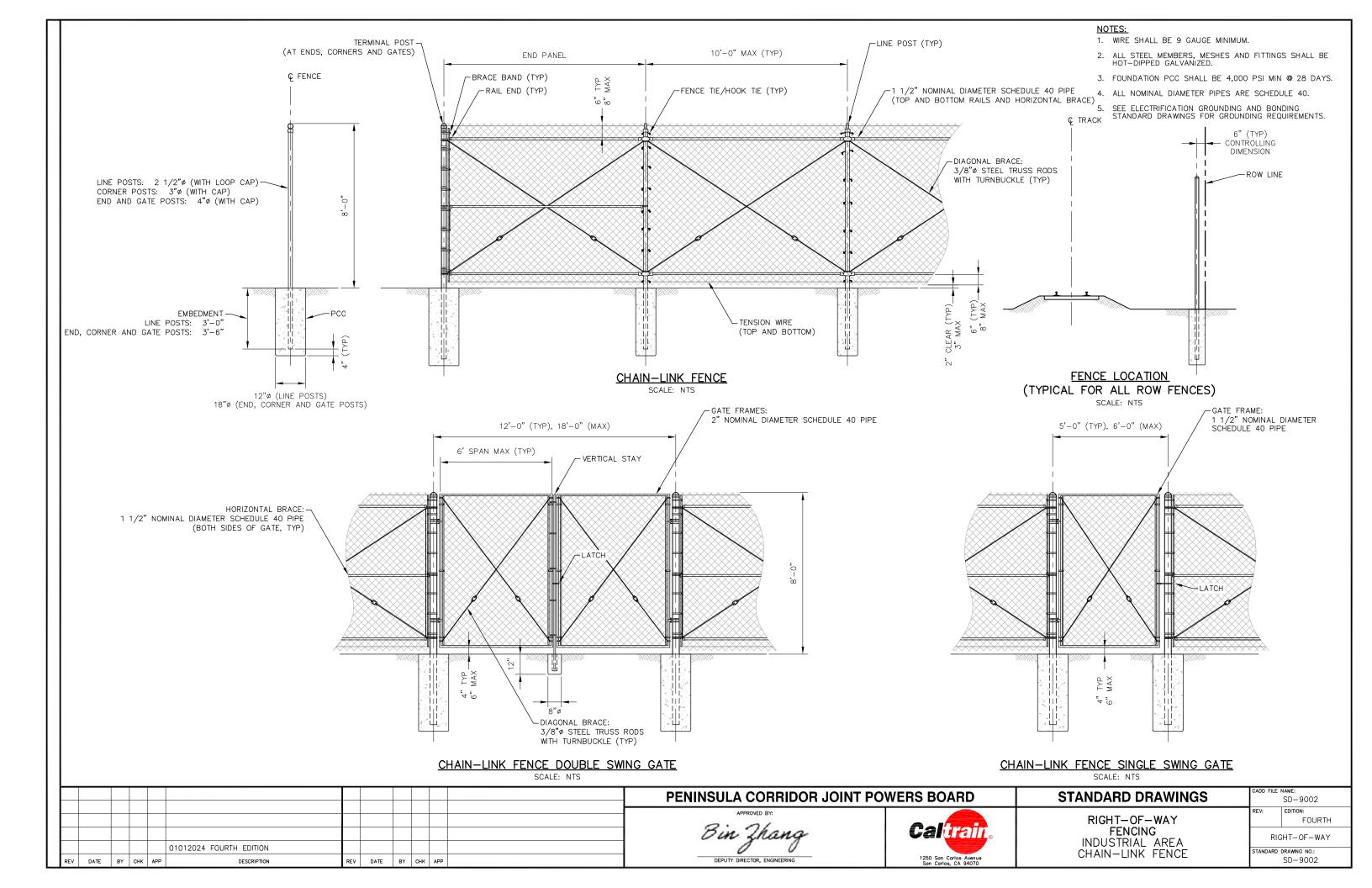


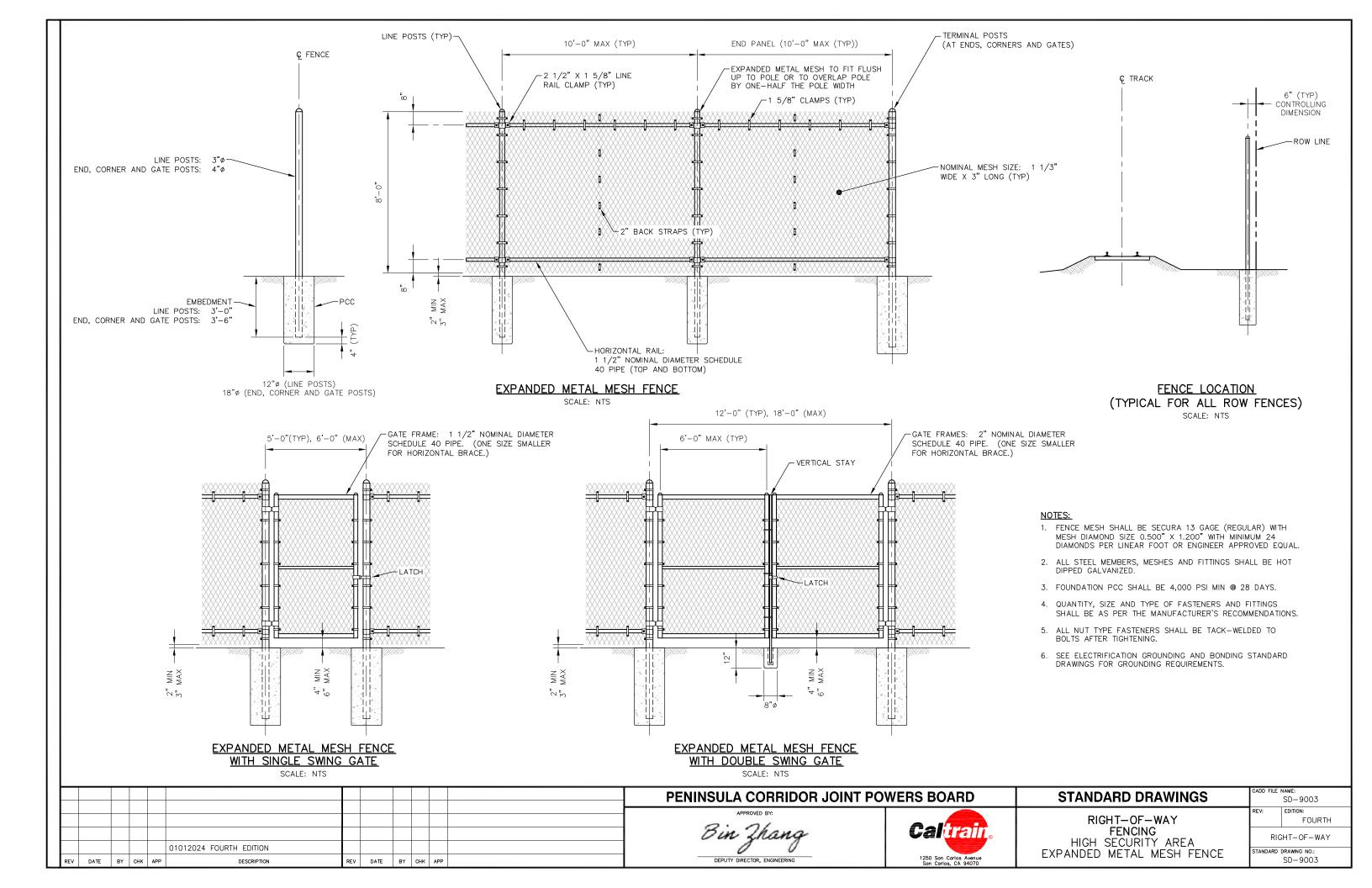


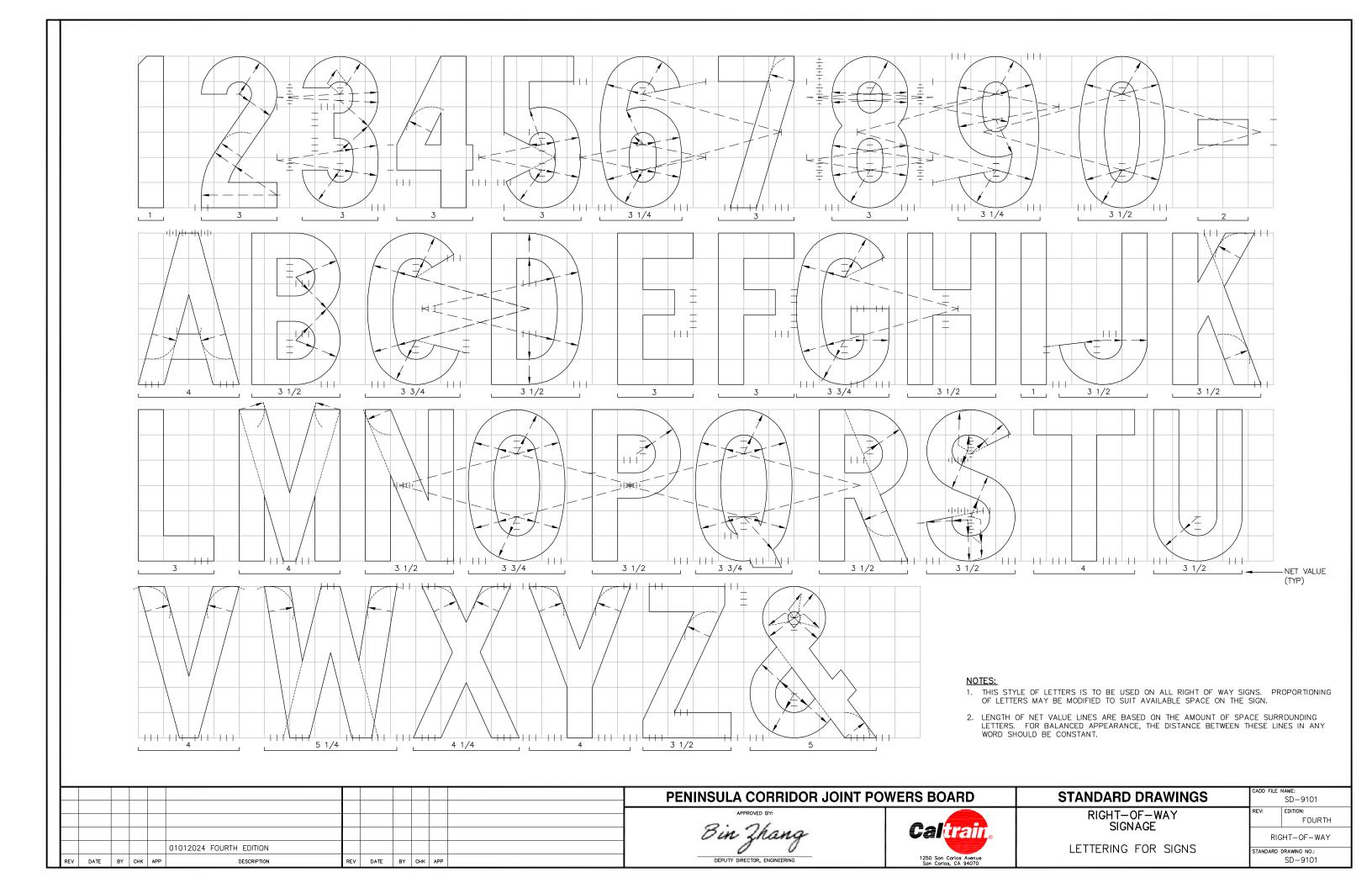
# TYPICAL PERFORATED DRAIN CLEANOUT

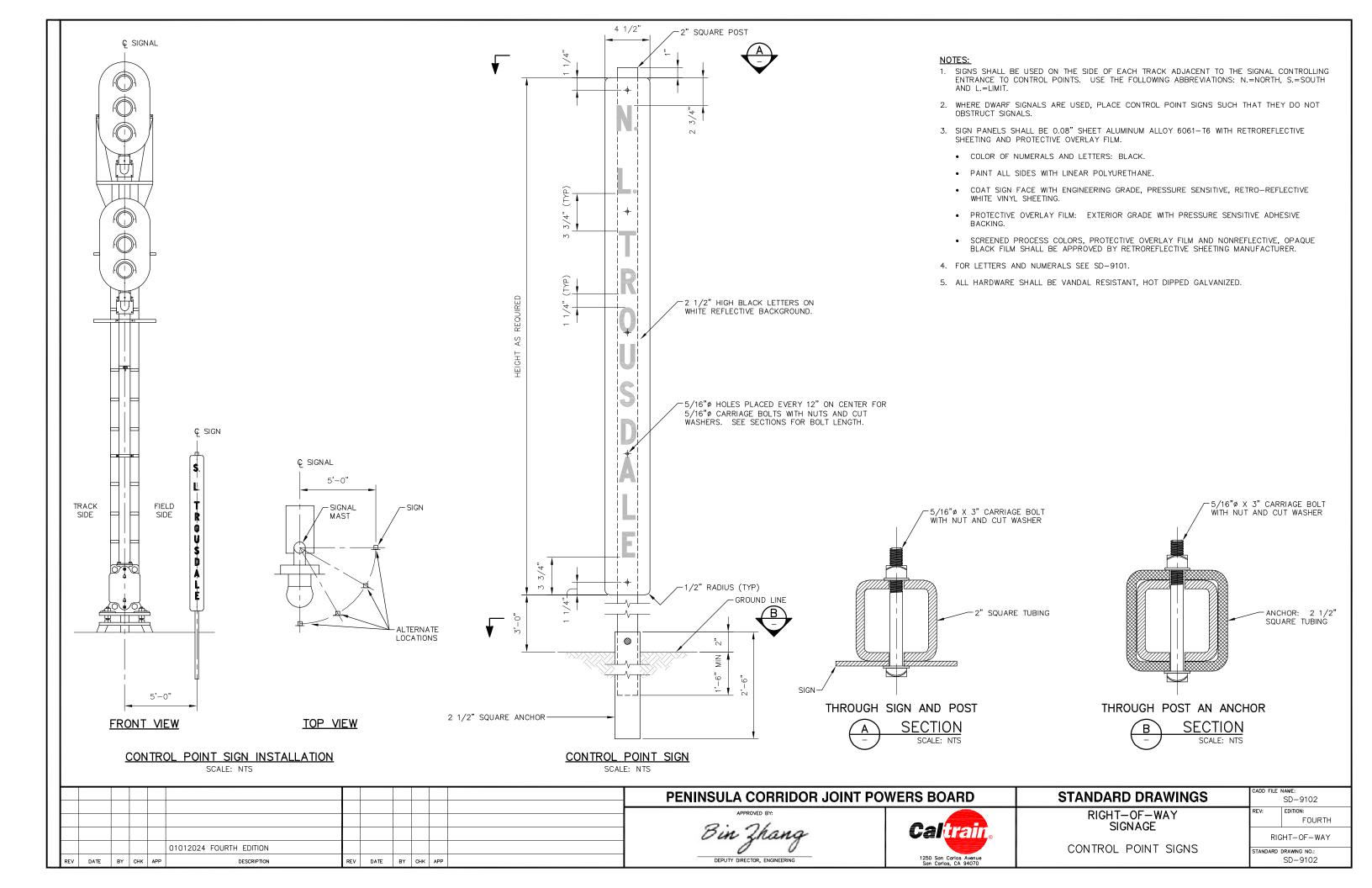
	PENINSULA CORRIDOR JOINT PO	STANDARD DRAWINGS	CADD FILE NAME: SD-8101	
REV DATE BY CHK APP DESCRIPTION REV DATE BY CHK APP	APPROVED BY:  Bin Zhang  DEPUTY DIRECTOR, ENGINEERING	Caltrain 1250 Son Carlos Avenue Son Carlos, CA 94070	CIVIL ENGINEERING DRAINAGE TRACK UNDERDRAIN AND TRACKSIDE DITCH DETAILS	REV: EDITION: FOURTH  CIVIL  STANDARD DRAWING NO.: SD—8101

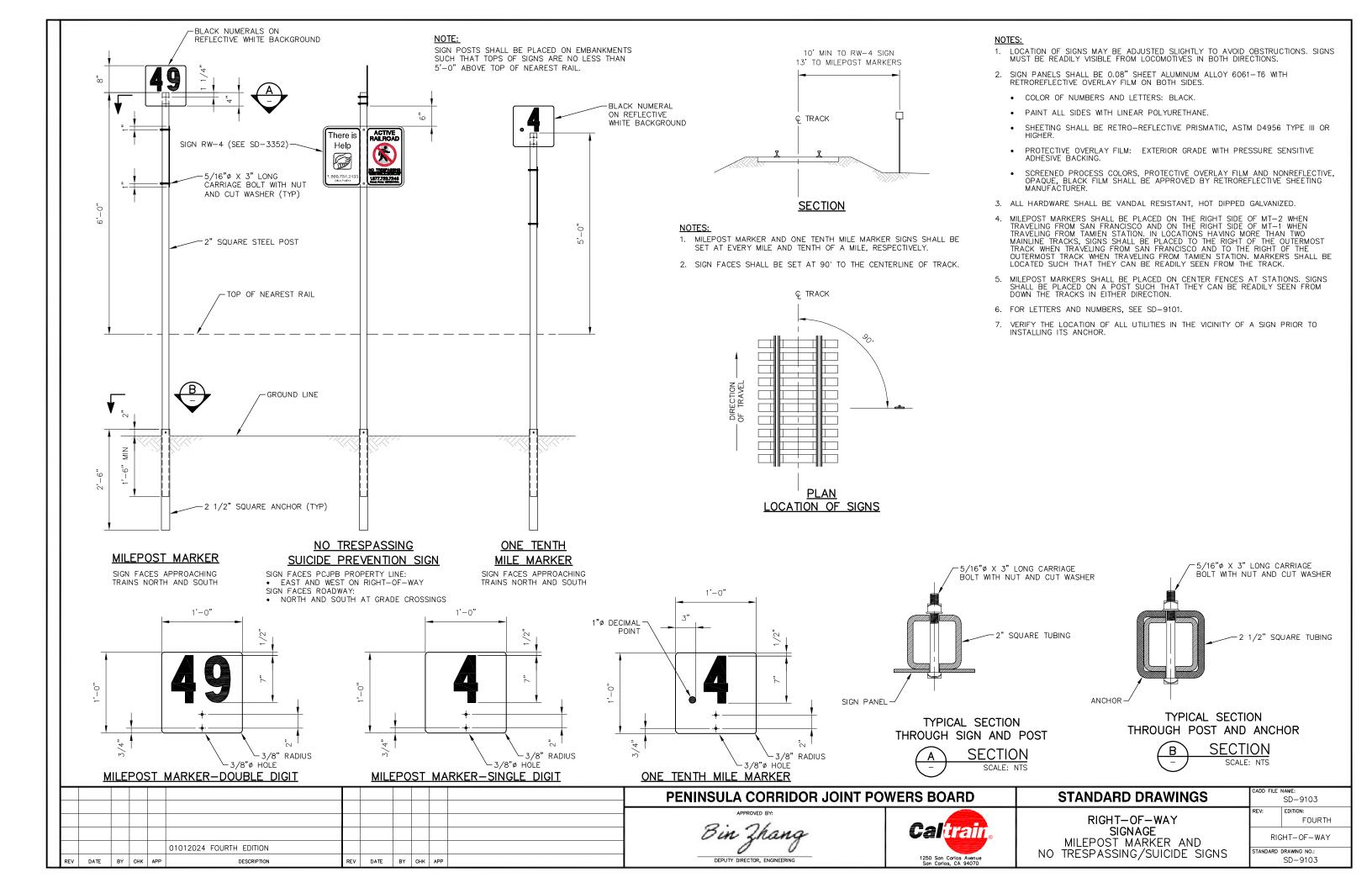


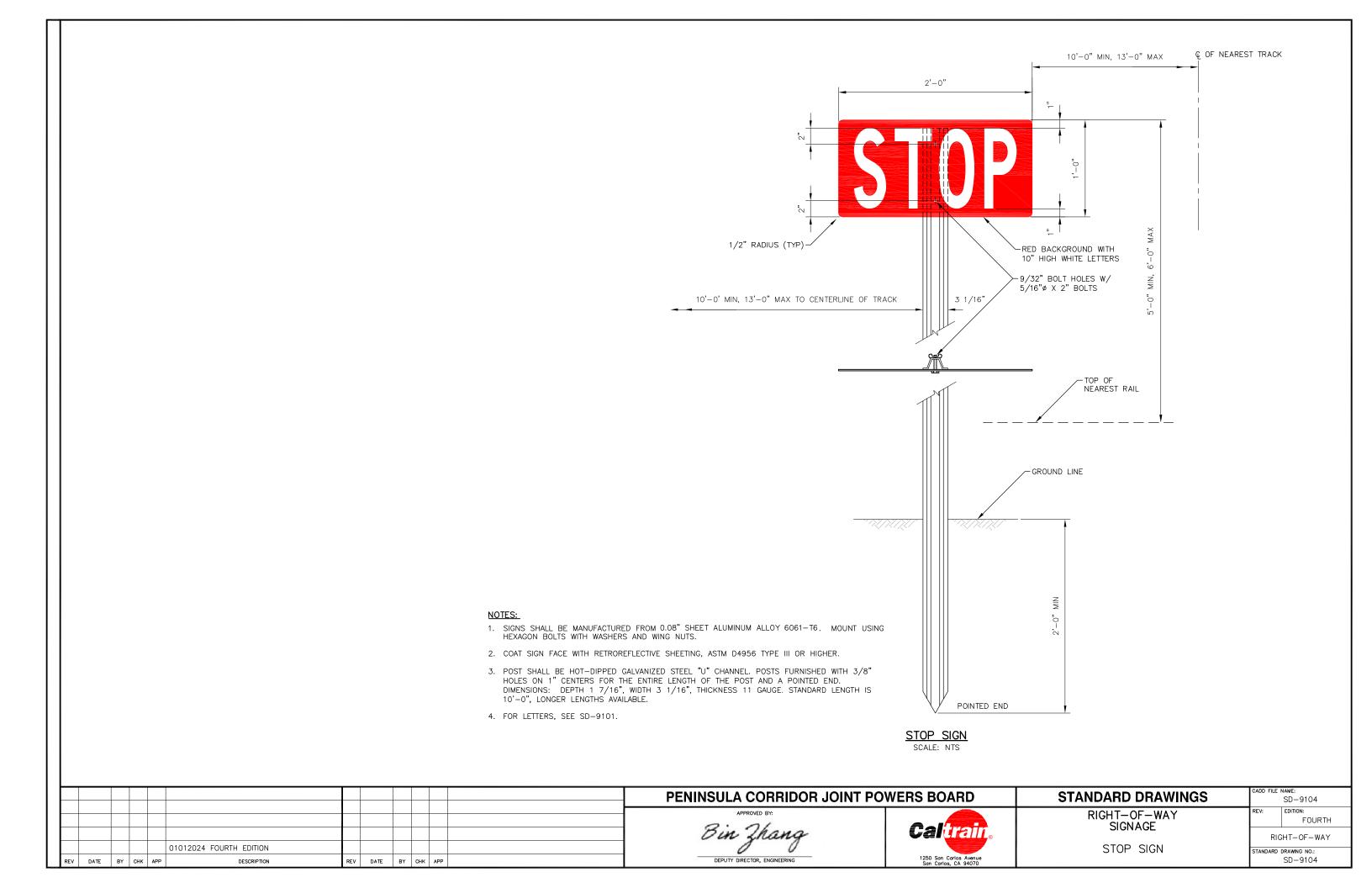


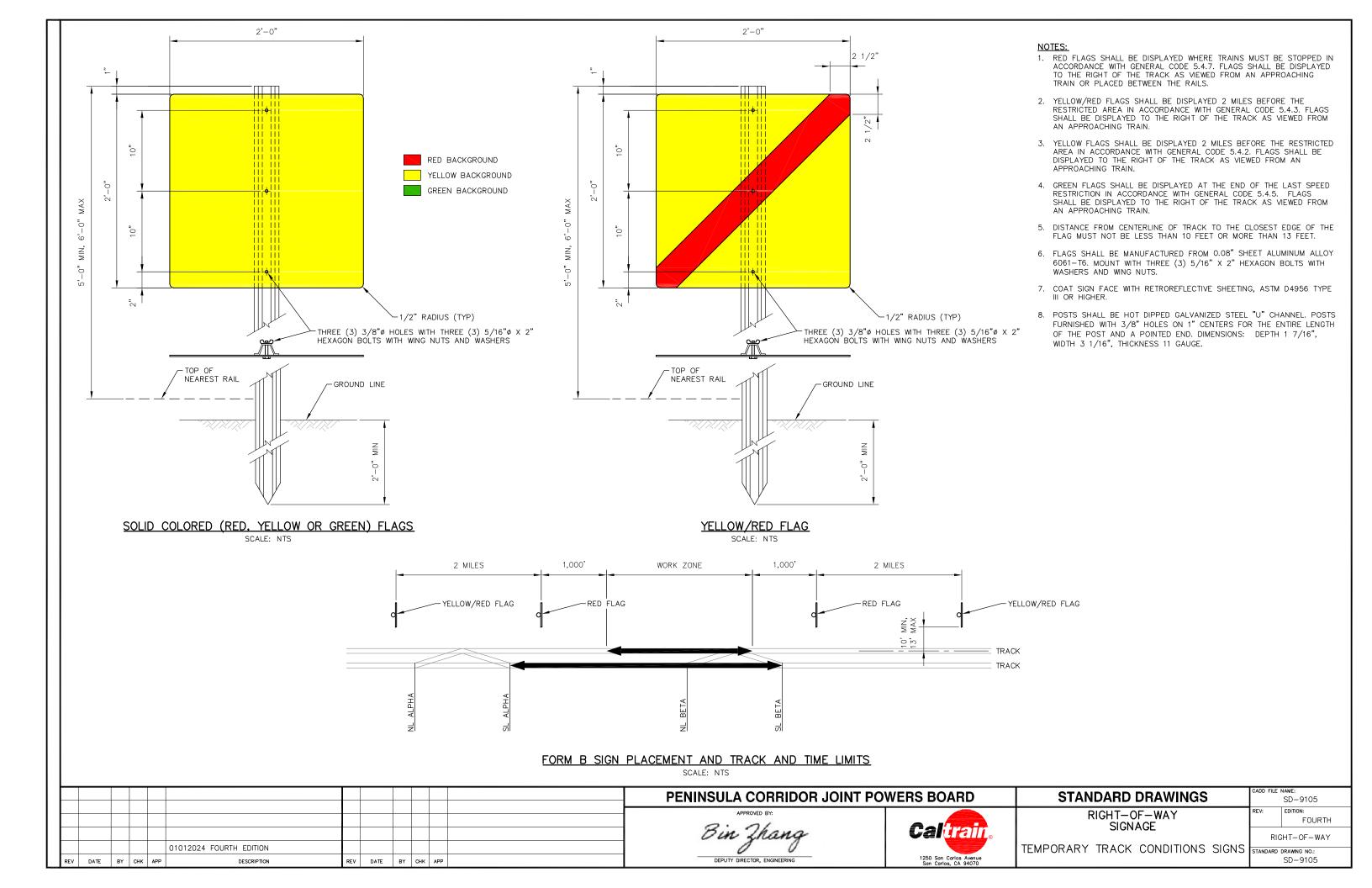


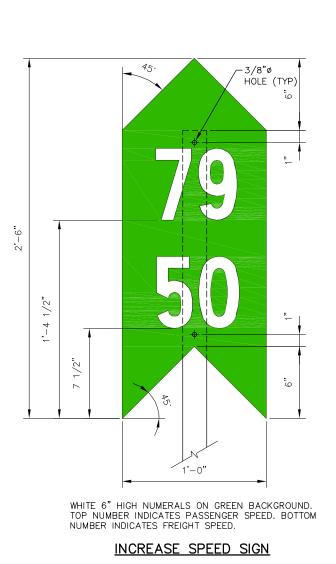




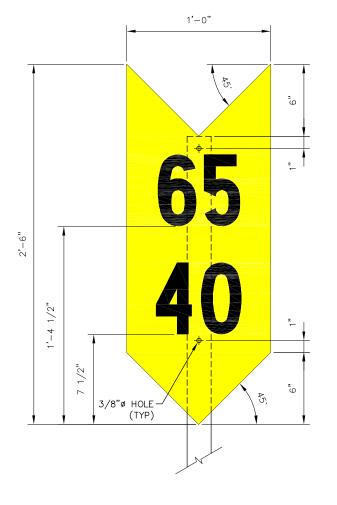






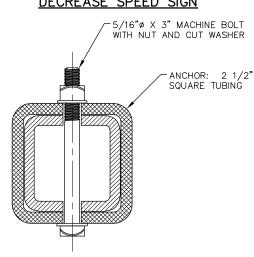


# 5/16" X 3" MACHINE BOLT WITH NUT AND CUT WASHER -2" SQUARE TUBING THROUGH SIGN AND POST



BLACK 6" HIGH NUMERALS ON YELLOW BACKGROUND. TOP NUMBER INDICATES PASSENGER SPEED. BOTTOM NUMBER INDICATES FREIGHT SPEED.

# DECREASE SPEED SIGN

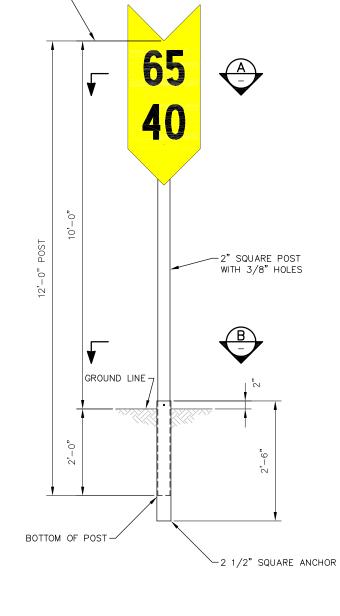


THROUGH POST AND ANCHOR





- 1. ALL SIGNS SHALL BE PLACED ON RIGHT SIDE OF TRACK IN THE DIRECTION OF APPROACH TO SPEED CHANGE WITH THE NEAREST POINT OF SIGN TO BE AT MINIMUM OF 10 FEET FROM THE GAGE SIDE OF THE NEAREST RAIL. SIGNS SHALL BE PLACED ON OUTSIDE OF EACH TRACK. SIGNS SHALL BE PLACED ON BOTH SIDES OF THE POST.
- 2. DECREASE SPEED SIGNS SHALL BE LOCATED 2,640 FEET (1/2 MILE) IN ADVANCE OF THE RESTRICTED TERRITORY AND SHALL INDICATE THE MAXIMUM SPEED PERMITTED AS SHOWN IN THE CURRENT TIME TABLE. PASSENGER SPEEDS SHALL BE SHOWN AT THE TOP OF THE SIGNS AND FREIGHT SPEEDS AT THE BOTTOM.
- 3. INCREASE SPEED SIGNS SHALL BE PLACED TO INDICATE WHERE SPEED OF TRAIN MAY BE INCREASED. THESE SIGNS SHALL NOT BE PLACED WHERE THERE IS LESS THAN 1/2 MILE BETWEEN THE END OF ONE SPEED RESTRICTION AND THE BEGINNING OF ANOTHER SPEED RESTRICTION.
- 4. ALL HARDWARE SHALL BE VANDAL RESISTANT AND HOT DIPPED GALVANIZED.
- 5. FOR LETTERS AND NUMERALS, SEE SD-9101.
- 6. SIGN PANELS SHALL BE 0.08" SHEET ALUMINUM ALLOY 6061-T6 WITH RETROREFLECTIVE SHEETING AND PROTECTIVE OVERLAY FILM.
  - · COLOR OF NUMERALS: BLACK OR WHITE.
  - PAINT ALL SIDES WITH LINEAR POLYURETHANE.
  - SHEETING: RETRO-REFLECTIVE PRISMATIC, ASTM D4956 TYPE III OR HIGHER.
  - PROTECTIVE OVERLAY FILM: EXTERIOR GRADE WITH PRESSURE SENSITIVE ADHESIVE BACKING.
  - SCREENED PROCESS COLORS, PROTECTIVE OVERLAY FILM AND NONREFLECTIVE, OPAQUE, BLACK FILM SHALL BE APPROVED BY THE RETROREFLECTIVE SHEETING MANUFACTURER.



STEEL MOUNTING POST AND INSTALLATION DETAIL

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$\prod$			PENINSULA CORRIDOR JOINT POWERS BOARD	STANDARD DRAWINGS	FILE NAME: SD-9106
			APPROVED BY:	RIGHT-OF-WAY SIGNAGE	EDITION: FOURTH
$\ \cdot\ $		01012024 FOURTH EDITION	Bin Zhang Calitratic.	DEDMANENT SPEED SIONS	RIGHT-OF-WAY
Ц	REV DATE BY CH	CHK APP DESCRIPTION REV DATE BY CHK APP	DEPUTY DIRECTOR, ENGINEERING 1250 San Carlos, CA 94070	JANUARI	SD-9106

TOP OF POST-

