GENERAL:

1. THE SPECIFICATIONS ARE MINIMUM REQUIREMENTS. THE PIPELINES SHALL BE DESIGNED AND CONSTRUCTED SO THAT CALTRAIN OPERATIONS, MAINTENANCE, AND THE 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 DESIGN SHALL BE SIGNED AND SEALED BY A 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 IS 25 FEET FROM THE 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 THE 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 THE PIPELINES SHALL BE THE GREATER OF THE FOLLOWINGS MEASURED VERTICALLY TO THE TOP OF THE CASING (DEPTHS IN PARENTHESIS ARE FOR FLAMMABLE OR HAZARDOUS SUBSTANCES):

   A. 6 FT MINIMUM FROM THE TOP OF THE TIE (8 FT MINIMUM)
   B. 4 FT MINIMUM FROM THE BOTTOM OF THE 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 SURFACE
   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 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 LIQUID OR GASEOUS SUBSTANCES AS FOLLOWS:

   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 THE 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 E–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.

NOTES:

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.

REV	DATE	BY	CHK	APP	DESCRIPTION

REV	DATE	BY	CHK	APP	DESCRIPTION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

ENGINEERING MANAGER

DEPUTY DIRECTOR OF ENGINEERING

Caltrain®
1250 San Carlos Avenue
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STANDARD DRAWINGS

CIVIL ENGINEERING
CROSSING UTILITIES
PIPELINES
GENERAL REQUIREMENTS

CADD FILE NO.:	SD–8000
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CIVIL	
STANDARD NO.:	SD–8000