NOTES:
1. THIS DRAWING SHALL BE USED ONLY AS A GUIDE. EACH CROSSING SHALL BE EVALUATED AND LED LAMPS ADJUSTED TO PROVIDE OPTIMUM DURABILITY.
2. DEFLECTION FOR BACK LIGHTS AND SIDE LIGHTS 70°
3. DEFLECTION FOR LIGHTS FACING TRAFFIC: 30°/15°
4. DEFLECTION FOR LIGHTS FACING TRAFFIC IN BOTH DIRECTIONS: 20°/15°
5. FIRST NUMBER IS HORIZONTAL DEFLECTION
6. SECOND NUMBER IS DOWNWARD DEFLECTION
7. ANGLES OF DEFLECTION DO NOT APPLY TO LED SIGNALS
8. FOCUS LED LIGHTS TO FOOTPOINT ON DRAWING
9. MAINTAIN 30 INCH SEPARATION BETWEEN FLASHERS

FIGURE 1
SINGLE LANE GROUND FLASHERS WITH BACK LIGHTS

FIGURE 2
TWO LANE APPROACH GROUNDFLASHERS WITH BACK LIGHTS

FIGURE 3
TWO LANE APPROACH GROUNDFLASHERS ON R.M. SIDE AND ONE MEDIAN - NO BACK LIGHTS

PENINSULA CORRIDOR JOINT POWERS BOARD
STANDARD DRAWINGS

CALTRAIN
HIGHWAY GRADE CROSSING APPARATUS
TYPICAL HIGHWAY CROSSING SIGNALS
LIGHT UNIT ALIGNMENT
FLAShING LIGHT SIGNALS W/ GATE

- Number Inspected Devices
  - Quantity of 4 inch SCH 80 PVC
  - Number Inspected Devices
  - Quantity of 2 inch SCH 80 PVC
  - 2x2 Pull Box
  - 3x3 Pull Box
  - Track Wire Bootless (see SD-812)

NOTES:
1. Crossing House, Cables, and Meter Service Location is Typical may be located in any quadrant.
2. Crossing House and Gate located 25' from centerline of track. Variation only by approval of the Engineer.
3. Track Leads Located Minimum 50' from Curve Face
4. 120V Minimum Field Circuit Length
5. 10' Minimum and 15' Minimum Shall be Maintained. 10' from Ends of Rail Assembly to introduce into High Clearance Envelope 10'-0" Inches from Center Line on Tangent Track
6. Backlights and Bell Location on Cantilever and Gates to be determined by Owner and Approved by Engineer
7. Cover Out of Service Flashers with Shut-Off and Reset Device

CANTILEVER FLASHERS W/ GATES

PENINSULA CORRIDOR JOINT POWERS BOARD
STANDARD DRAWINGS

SIGNAL AND COMMUNICATION
HIGHWAY GRADE CROSSING APPARATUS
TYPICAL CROSSING LOCATION

DRAWN: [Signatures]

APPROVED:

[Signatures]

DATE: 08/30/11

SD-812
FLASING LIGHT SIGNALS WITH ENTRANCE AND EXIT GATES

NOTE:
1. CROSSING SIGNAL HOUSE LOCATION IS TYPICAL WAY BE LOCATED IN ANY NEUTRAL QUADRANT
2. ALL CONDUITS SHALL BE 4" SCHEDULE 80 PVC UNLESS OTHERWISE SPECIFIED
3. A MINIMUM OF 4 CONDUITS SHALL BE MAINTAINED UNDERNEATH THE WOODEN ON BOTH SIDES OF TRUCK AFTER INITIAL INSTALLATION
4. SPARE CONDUITS SHALL BE INSTALLED COMPLETELY FROM ONE 4" X 4" X 4" PULL BOX TO THE OTHER 4" X 4" X 4" PULL BOX
5. ALL EXACT CONDUITS (8 SHOWN) SHALL BE DETERMINED BY CALTRAIN DURING DESIGN
6. ALL CONDUITS SHALL BE PLUMB A MINIMUM OF 36" BELOW TOP OF GRADE CLEARANCE
7. INSTALL CABLE AND TRACK WIRE AS SPECIFIED BY SIGNAL DESIGN DRAWINGS
8. THE 4" X 4" X 4" PULL BOXES SHALL BE PLACED 24" IN FRONT OF THE SIGNAL MAST AT A MINIMUM DISTANCE OF 3'-0"
9. DEVIATION FROM THIS STANDARD SHALL BE APPROVED BY CALTRAIN
FLASING LIGHT SIGNALS WITH ENTRANCE AND EXIT GATES

A. RIGHT ANGLE CROSSING, GATES PARALLEL TO TRACK
B. ANGLED CROSSING, GATES PERPENDICULAR TO ROADWAY

NOTES:
1. FINIAL LOCATION PLAN MAY VARY AS FIELD CONDITIONS REQUIRE.
2. ROADWAY GATE ARM LENGTH SHALL NOT EXCEED 36" MEASURED FROM CENTER OF WHEEL TO TOP OF GATE ARM.
3. SEE STANDARD DRAWINGS SD-7000 SERIES FOR ADDITIONAL INFORMATION.
4. REFER TO ARES MANUAL PART 3.1.36 FOR DIFFERENT CONFIGURATION.

* USE OF MINIMUM DIMENSIONS SHALL BE AUTHORIZED BY CALTRAIN.
CANTILEVER FLASHERS WITH ENTRANCE AND EXIT GATES:

ONE OR MORE TRACKS, TWO-WAY VEHICULAR TRAFFIC, TWO LANES EACH WAY
USE OF MINIMUM DIMENSIONS SHALL BE AUTHORIZED BY CALTRAI

RIGHT ANGLE CROSSING

ACUTE ANGLE CROSSING

NOTES:
1. TYPICAL LOCATION PLAN MAY VARY AS CONDITIONS REQUIRE
2. ROADWAY GATE ARM LENGTH SHALL NOT EXCEED 23' MEASURED FROM CENTER OF KNUCKLE TO TOP OF GATE ARM
3. SEE STANDARD DRAWINGS 50-7002 SERIES FOR ADDITIONAL INSTRUCTIONS
FLAShING LIGHT SIGNALS WITH ENTREnCE AND EXIT GATES AND MEDIAN

1. TYPICAL LOCATION PLAN MAY VARY AS CONDITIONS REQUiRE.
2. ADDITIONAL MEDIAN WIDE MAY BE REQUIRED TO PROVIDE CLEARANCE FOR 24" BACKGROUND WINDOwS ON GATE COUNTERMEASURERS.
3. BACkLIGHTS MAY BE ADDED AS CONDITIONS REQUIRE.
4. ROADWAY GATE ARM LENGTH SHALL NOT EXCEED 32" MEASURED FROM THE CENTER OF WINDING TO THE TOP OF GATE ARM.
5. WHERE BOTH ENTRANCE GATES AND EXIT GATES ARE MOUNTED ON A MEDIAN, FRONT LIGHTS SHALL BE INSTALLED ON THE ASSEMBLY CLOSEST TO TRAFFIC APPROACHING IN THE CARRiER DIRECTION.
6. MAINTAIN 30° SEPARATION FOR FLASHERS.
7. SEE STANDARD DRAWINGS 50-7/200 SERIES FOR ADDITIONAL INFORMATION.
8. REFERENCE ARENA CBS MANUAL PART 3.1.56 FOR DIFFERENT COFIGURATIONS.
TYPICAL LOOP LAYOUT DIMENSIONS

1. LOOPS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS
2. "A" - TYPICALLY 15" WIDE MAXIMUM DIMENSION. "A" AND "E" MAY BE REDUCED IF ENTRANCE GATES CANNOT BE RELOCATED
3. "B" - TYPICALLY 15" WIDE MAY BE REDUCED IF EXIT GATES CANNOT BE RELOCATED. SEE ENTRANCE GATE DIMENSIONS
4. "C" - TYPICALLY 16" - 18", MAY VARY FROM 8" TO 12" DEPENDING ON PAVEMENT QUALITY
5. "D" - TYPICALLY 2" FROM EDGE OF TRAVELEDeway OR LANE LINE
6. "E" - 3-3.125" RECOMMENDED TO AVOID LOOP ACTIVATION WHEN A VEHICLE CRASHES UNDER AN ENTRANCE GATE. DIMENSION MAY BE REDUCED IF GATES CANNOT BE RELOCATED OR IN ORDER TO MAINTAIN THE 5" MINIMUM RECOMMENDED IN DIMENSION "B"
7. "F" - TYPICALLY 2" FROM LOOP TO EDGE OF TRAVELEDeway. SAME AS DIMENSION "E". MAY BE INCREASED UP TO 5" TO REMOVE TRASH CAN STANDING ON OTHER ITEMS OR PROPERTY AS DETERMINED BY PROJECT DESIGNER
8. "G" - MAXIMUM LOOP WIDTH SHALL BE 8" MAXIMUM. LOOP WIDTH OF EXIT AND ENTRANCE GATES SHALL BE 5" MINIMUM. LOOPS BETWEEN TRACKS SHALL BE 4" IN WIDTH MINIMUM
9. "H" - MAXIMUM LOOP LENGTH 28'-6"
10. "T" - MAXIMUM 15" BETWEEN LOOPS IN THE SAME LANE

NOTES:

1. TOTAL AREA OF LOOP SHALL BE 144 SQ FT MAXIMUM
   (EXAMPLE 1: 36" X 4' = 144 SQ FT)
   (EXAMPLE 2: 36" X 2' = 108 SQ FT)
2. WHILE LOOPS MAY COVER MULTIPLE LANES THEY SHALL NOT COVER PARTIAL LANES
3. PREVENT VEHICLE DETECTION LOOPS, WELL WATER REPELLENT, WITH AN INTERNAL CHECK LOOP SUCH AS THAT MANUFACTURED BY PEDO ARE
4. SHALLOWING PAVEMENT FOR LOOP INSTALLATION SHALL BE AVOIDED
NOTES FOR GATE ARM:

1. GATE ARM LENGTH IS MEASURED FROM GATE MECHANISM GAN SHAFT TO END OF GATE ARM.

2. END OF GATE ARM SHALL BE LOCATED WITHIN 12" OF THE CENTERLINE OF HIGHWAY OR FACE OF MEDIAN CURB WHERE THE ROADWAY EXTENDS TO TERMINATION OF MEDIAN OR FACE OF MEDIAN CURB.

3. THE FOLLOWING DIMENSIONS SHALL BE USED FOR GATE ARM AND LIGHT FixTURES. HEIGHTS GIVEN SHALL BE ELEVATIONS AND LAMPS PLACED FOR OPTIMUM VIEWING BY MOTORIST.

LAMP A:
- TO END OF GATE ARM.

LAMP B:
- GATE LAMP SHALL BE CENTERED BETWEEN LAMP A AND LAMP C.

LAMP C:
- GATE LAMP SHALL BE 8' FROM CENTER OF WAST.

STUB GATE
(NOT FOR NEW WORK)

GATE USED W/GIC
(FIC NO. 92)
SEE NOTE 10

FLS W/GATE
(FIC NO. 9)

NOTES:

1. TOP OF FOUNDATION SHALL BE LEVEL WITH CROWN OF ROAD AT MINIMUM 4" ABOVE TOP OF GROUND LEVEL.

2. WHEN USED, MECHANICAL ASSEMBLY SHALL BE PLACED SO AS NOT TO INTERFERENCE WITH GATE ARM OR REDUCE CLEARANCE 12" SEPARATION OF LIGHT LAMPS SHALL BE MAINTAINED.

3. ALL PARTS SHALL BE FINISHED IN COLOR EXCEPT VERSOS AND BACKGROUNDS WILL BE FLAT BLACK.

4. TRACK SIGN SHALL BE USED WHEN TWO OR MORE TRACKS CROSS DIETEY.

5. GATE LAMPS SHALL BE 6" DIAMETER.

6. FLASHING LIGHT SIGNAL UNIT BACKGROUNDS-24" AND VERSOS SHALL BE STEEL.

7. LENS HORIZONTAL DEFLECTION PER AAR/ARENA.

8. WHEN ALUMINUM PEDESTRIAN GATE ARM IS USED, FLASHING LIGHT BRACKETS SHALL BE OFFSET.

9. GATE MAY BE ELECTRIC OR ELECTRO MECHANICAL.

10. GATE MECHANISM SHALL BE ADJUSTED SO THAT WHEN GATE IS IN FULL HORIZONTAL POSITION, THE GATE ARM RESTS BETWEEN 6" TO 4-1/2" ABOVE CROWN OF HIGHWAY.

11. PEDESTRIAN GATE ARM SHALL HAVE TOP LAMP UNTO TO 10' GATE ARMS LARGER THAN 10' TO HAVE THREE LIGHTS.

12. PEDESTRIAN GATE ARM SHALL NOT BLOCK ENTIRE PEDESTRIAN PASSAGE. AREA PANS MUST BE PROVIDED FOR PEDESTRIAN PASSAGE IN TRANSIT WHEN GATES ARE ACTUATING.

13. BACKHAUS & ROLL LOCATIONS TO CANTILEVER & GATES SHALL BE DETERMINED DURING DESIGN.
NOTES:
1. PER CPUC GENERAL ORDER 750, SIGNAL AT ALL NEW LOCATIONS SHALL HAVE LED FLASHER ATTACHMENTS.
2. FLASHING LIGHT-EMITTING DIODE (LED) TYPE DESIGNED TO OPERATE WHEN A CROSSING SIGNAL CONTROLLED AND SHOWN CONFORM TO ACPA\n   MANUAL REQUIREMENTS.
3. LAMPS ON ALL THREE LED FLASHER ASSEMBLIES SHALL BE IN JUNCTION BOX CROSS ARM ASSEMBLY ALONG WITH MOUNTING HARDWARE PER ACPA\n   MANUAL PART 3.3.01-12" LED LAMPS LENS, 24" STEEL ARM, SHADE MOUNTING, STEEL HOODS AND ALL ASSOCIATED HARDWARE.
4. LIGHT ASSEMBLIES SHALL BE PLACED SO AS THEY DO NOT INTERFERENCE WITH GATE ARM MOVEMENT.
5. INSTALL FLASHERS PER SITE SPECIFIC SIGNAL DRAWINGS.
6. WHEN COUNTER WEIGHTS ARE ADDED, ENSURE THAT SMALL PLATES ARE USED TO AVOID EXCESSIVE DEVIATIONS FROM THE PEDESTRIAN TRAFFIC OCCUPY
7. SEE SD-5409 SERIES FOR OTHER DETAILS OF CIRCUIT DRAWINGS.
8. SMOOTHEN GATE TOP FROM BURRS AND SHARP EDGES.
9. GALEX MESH ZONE BE PROTECTED FROM TRUCKS AND SANDERS.
10. TOP OF FOUNDATION SHALL BE LEVELLED WITH SIDEWALK.
11. FOR FLASHER INSTALL SEE SD-5409 (PLC NO. 9).
12. ORIENTATION OF GATE ARM AND MECHANISM WILL VARY DEPENDING ON SITE SPECIFIC REQUIREMENTS ORIENTATION AS SHOWN FOR ILLUSTRATION PURPOSES ONLY.
13. INSTALL SIGNS EQUAL DISTANCE BETWEEN FLASHERS AND ELECTRONIC BELL.
14. ON PEDESTRIAN GATES FULL ARM CAN BE USED ON OPPOSITE SIDE OF ARM WITH COUNTER WEIGHT.
15. ON PEDESTRIAN GATES EXCESS BRACKETS SHALL BE REMOVED FROM SUPPORT BOLTS AFTER INSTALLATION OF COUNTER WEIGHTS.
NOTES:
1. PER CPUC GENERAL ORDER 700, SIGNAL AT ALL NEW LOCATIONS SHALL HAVE LED FLASHER ASSEMBLIES.
2. FLASHING LIGHT SIGNAL UNITS SHALL BE 12" LED TYPE DESIGNED TO OPERATE WITH A SOLID STATE CROSSING CONTROLLED AND SHALL CONFORM TO APPEA C5000 MANUAL RECOMMENDATIONS.
3. 1-WAY OR 2-WAY LED FLASHER ASSEMBLIES SHALL INCLUDE JUNCTION BOX, CROSS ARM ASSEMBLIES AND LAMP MOUNTING BRACKETS PER APPEA GAS MANUAL PART A2.2, 12" LED LAMP UNITS, 24" STEEL BACKGROUND, STEEL ACCESS AND ALL ASSOCIATED HARDWARE.
4. LIGHT ASSEMBLIES SHALL BE PLACED SO AS THEY DO NOT INTERFERE WITH GATE ARM MOVEMENT.
5. INSTALL FLASHERS PER SITE SPECIFIC SIGNAL DRAWINGS.
6. WHEN COUNTER WEIGHTS ARE ADDED, ENDURA THAT SMALL PLATES ARE USED TO AVOID EXCESSIVE OVERHANGS IN AREA THE EFFECTATION MAY OCCUPY.
7. SEE SD-7000 SERIES FOR OTHER DETAILS OF CROSS DRAWINGS.
8. SMOOTH GATE TF FROM BURRS AND SHARP EDGES.
9. CABLE ENTRY SHALL BE PROTECTED FROM HORIZONTAL AND VERTICAL.
10. TOP OF FOUNDATION SHALL BE LEVELLED WITH GRADE.
11. FOR FLASHER HEIGHT SEE SD 5409 (PUC NO. 9).
12. ORIENTATION OF GATE ARM AND MOUNTING WILL VARY DEPENDING ON THE SPECIFIC REQUIREMENTS. ORIENTATION AS SHOWN FOR ILLUSTRATION PURPOSES IS NEUTRAL.
13. INSTALL SIGNS EQUIAL DISTANCE BETWEEN FLASHERS AND ELECTRONIC BELL.
14. ON PEDESTRIAN GATES MADE ARM CAN BE USED ON OPPOSITE SIDE OF ARM WITH COUNTER WEIGHT.
15. ON PEDESTRIAN GATES EXCESS BOLT THREAD SHALL BE REMOVED FROM SUPPORT BOLTS AFTER INSTALLATION OF COUNTER WEIGHTS.
EXAMPLE OF PEDESTRIAN TREATMENT AT GRADE CROSSING WITH ENTRANCE GATE ONLY

NOTE:
To minimize crossing distance, the pedestrian gate shall be parallel to tracks, aligned with either side of the vehicle gate counterweight. This provides a 15 ft. wide and 15 ft. max. track center to pedestrian gate sight.
NOTES:
1. TOP OF FOUNDATION SHALL BE LEVEL WITH CHAIN OF ROAD, MAXIMUM 4" ABOVE TOP OF GROUND LEVEL.
2. FOUNDATION BOLTS SHALL EXTEND A MINIMUM OF 6" ABOVE TOP OF CONCRETE FOUNDATION.
3. LANE LIGHTS AND ADDITIONAL MAIN WAVE LIGHTS SHALL BE INSTALLED AS SHOWN ON LAYOUT DRAWING.
4. FOUNDATION SHALL MEET OR EXCEED CANTILEVER MANUFACTURER'S RECOMMENDATIONS.
5. CANTILEVER SHALL BE EQUIPPED WITH LADDER GUARD AND LOOKING BRACKET.
6. LADDER, CAGE, AND PLATFORM SHALL BE OSHA COMPLIANT.
NOTES:
1. TOP OF FOUNDATION SHALL BE LEVEL WITH CROWN OF ROAD, MAXIMUM 4" ABOVE TOP OF GROUND LEVEL.
2. FOUNDATION BOLTS SHALL EXTEND A MINIMUM OF 8" ABOVE TOP OF CONCRETE FOUNDATION.
3. LANE LIGHTS AND ADDITIONAL MAIN MAST LIGHTS SHALL BE INSTALLED WHEN HITCHED ON LIFTS.
4. FOUNDATION SHALL MEET OR EXCEED CANTILEVER MANUFACTURER'S RECOMMENDATIONS.
5. CANTILEVER SHALL BE EQUIPPED WITH LADDER GUARDS AND LOCKING BRACKET.
6. LADDER CAGE AND PLATFORM SHALL BE OSHA COMPLIANT.
LOCATION OF AUTOMATIC WARNING DEVICE FROM CURB

LOCATION OF AUTOMATIC WARNING DEVICE FROM ROADWAY WITH NO CURB

LOCATION OF AUTOMATIC WARNING DEVICE FROM PULLOVER OR DECLARATION LANE

LOCATION OF AUTOMATIC WARNING DEVICE FROM E OF TRACK

NOTE:
GUARD RAILS ARE ONLY USED WHEN APPROVED BY CALTRANS.
NOTES:
1. AUXILIARY PED GATE ARM CONFIGURATION IS NOT FOR NEW CONSTRUCTION.
2. MAXIMUM GATE LENGTH IS 32' IF MORE THAN TWO LANES IN ONE DIRECTION USE CANTILEVER.
NOTES:
1. Auxiliary red gate arm configuration is not for new construction.
2. Maximum vehicular gate length is 32' if more than two lanes in one direction use cantilever.

PENINSULA CORRIDOR JOINT POWERS BOARD
STANDARD DRAWINGS
SIGNAL AND COMMUNICATION
HIGHWAY GRADE CROSSING APPARATUS
HIGHWAY GRADE CROSSING
TYPICAL 2-LANE WITH PEDESTRIAN GATE

DRAWN BY:
CHECKED BY:
APPROVED BY:

DRAWN:
CHECKED:
APPROVED:

DATE:
09/2011

CALENDAR:
000-0422
NOTES:
1. AUXILIARY GATE ARM CONFIGURATION IS NOT FOR NEW CONSTRUCTION.
2. IF MORE THAN TWO LANES PER DIRECTION, CONTROLLERS ARE REQUIRED WITH THE SET OF PLACING DEVICES PER LANE. MEDIAN IS PREFERRED. MAXIMUM GATE LENGTH IS 30'.
NOTES:
1. ALTERNATE GATE ARM CONFIGURATION IS NOT FOR NEW CONSTRUCTION
2. IF MORE THAN TWO LANE PER DIRECTION, CANTILEVERS ARE REQUIRED WITH ONE SET OF FLASHING LIGHTS PER LANE
   MEDIAN GATE IS PREFERRED, MEDIAN GATE LENGTH 10 ft 5"
NOTE:
1. Auxiliary Ped Gate Arm configuration is not for new construction.
2. Center median is preferred where distance of gate arm to pedestrian is greater than 32 ft.
   A 6-ft median with flashing and gate shall be installed.
   In cases of two lanes per direction, centerlines and gates are required. Max. gate length 32 ft.
1. Center median is preferred with the distance of gate to centerline of street is greater than 32'-0".
   A 2' median with flanged and gate shall be installed if the centerline of street, centerline of gate and gates are required. Minimum gate length 32'.