TYPE A  TYPE C

HANDRAIL INSTALLATION ON STAIRWAYS

SLIP JOINT DETAIL  CAP DETAIL FOR RAIL END

NOTES:
1. USE TYPE C WHERE ADJACENT GRADE IS MORE THAN 2'-0" (760 mm) BELOW LANDING OR SIDEWALK FINISHED SURFACE.
2. RAILS, POSTS, AND PICKETS SHALL BE GALVANIZED STEEL PIPE.
3. PROVIDE SLIP JOINTS AT STAIRWAY EXPANSION JOINTS, 24' (7.3 m) MAXIMUM.
4. MAXIMUM SPACING OF POSTS SHALL BE 8'-0" (2.44 m) ON STRAIGHT ALIGNMENTS, AND 6'-0" (1.83 m) ON CURVED ALIGNMENTS WITH LESS THAN 30' (9.1 m) RADIUS. MAKE SPACING UNIFORM BETWEEN CHANGES IN ALIGNMENT.
5. WELDS SHALL BE SLOT OR FILLET WELDS EQUAL TO THICKNESS OF PIPE. WELD ALL JOINTS ALL AROUND.
TOP RAIL TYPE 1

SECTION D–D

TOP RAIL TYPE 2

SECTION E–E

WALL–MOUNTED HANDRAIL

SECTION F–F

BRACKETS EACH 8’–0” (2.44 m) OR AS SHOWN ON PLANS. MOUNT TOP BRACKET ABOVE TOP STAIR NOSE.
NOTES:

1. FOR ROADWAYS 16'-0" (4.8 m) WIDE OR LESS, USE A SINGLE GATE. PLACE THE ANGLE CATCH ON A PERMANENT END POST.

2. PIPE SHALL BE STANDARD WEIGHT, PER AISC STANDARDS.

3. CUT THE PIPE TO PROVIDE A CLOSE FIT-UP OF THE JOINTS.

4. USE 100% Penetration Welds FOR PIPE CONNECTIONS.

5. PAINT GATE WITH ONE COAT OF ALUMINUM PAINT AFTER FABRICATION.

6. GATE HINGES SHALL BE HEAVY DUTY, MALLEABLE IRON OR STEEL, INDUSTRIAL SERVICE TYPE, WITH 270° SWING.

7. TYPE K AND TYPE L MARKERS SHALL CONFORM TO STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION ("CALTRANS") STANDARDS. THE REFLECTORS SHALL BE FILM–TYPE.

8. SECURE NUTS AT U BOLT ENDS FROM REMOVAL BY WELDING OR PEENING AFTER INSTALLING MARKERS.

DETAIL D

PLUNGER CUP
ISOMETRIC

CENTER POST
2-1/2" (64 mm) Ø

STOPPER
3-1/2" (89 mm) Ø
(89 mm Ø)

SLEEVE
3-1/2" Ø
(89 mm Ø)

PCC

2" (50 mm)

6" (150 mm)

18" (450 mm)

24" (610 mm)

30" (760 mm)

12" (300 mm Ø)

#5 x 12" RE–BAR
(#15M x 300 mm)

1/8" (3 mm)

1/8" (3 mm)

STL PLATE

2"

4" (100 mm)

1/8" (3 mm)

1/8" (3 mm)
NOTES:

1. SECURE DRIVE-FIT GALVANIZED CAP TO POST WITH 1/4" (6 mm) ROUND-HEAD RIVET.

2. H DENOTES FABRIC WIDTH AND NOMINAL FENCE HEIGHT. H = 5’ (1.5 m) UNLESS OTHERWISE NOTED.

3. IF FENCE WITH TOP RAIL IS SPECIFIED, DELETE STEEL TENSION WIRE AT TOP, AND PIPE RAILS AT INTERMEDIATE, SLOPE, END AND CORNER POSTS. EXTEND TENSION ROD TO TOP RAIL.

4. BARBED WIRE SHALL BE USED ONLY WHEN SPECIFIED.

5. POST SPACING IS MAXIMUM 10’ (3.0 m).

6. FILL CLEAR OPENINGS GREATER THAN 3” (75 mm) WITH FABRIC. FOR OPENINGS LESS THAN 18” (450 mm), TIE FABRIC TO POSTS.

7. USE ONE POST FOR COMBINED SLOPE AND CORNER POST IF TOP OF CHANNEL WALL IS CONSTRUCTED AS SHOWN FOR “ALTERNATE”.

8. STEEL BANDS AT TENSION BARS SHALL BE 1/8" x 1” (3 x 25 mm), MINIMUM, SPACED AT MAXIMUM 16” (400 mm).

9. SECURE TENSION WIRES TO EACH LINE POST WITH TIE WIRES.
TYPICAL ELEVATION

END OR CORNER POST
2" (51 mm) STD BAR
MALLEABLE IRON BANDS AT 14" (350 mm) MAX
3/16"x3/4" (5 x 19 mm) TENSION BAR

GROUND LINE
2.4 m (8'-0") MAX
2.1 m (8'-3") MIN
3'-0" (900 mm)
3'-0" (900 mm)
5'-0" (1500 mm)
10'-0" (3.0 m) MAX SPACING TYPICAL & PANEL REINFORCED SECTION
10'-0" (3.0 m) MAX SPACING TYPICAL & PANEL REINFORCED SECTION

PL
TOP OF EMBANKMENT
PIPE RAIL
LINE POST
CHAIN LINK FABRIC

STEEL TENSION WIRE
FOOTING
TOP OF WALL

TYPICAL WALL SECTION

#4 (#13M) CONTINUOUS IN BOND BEAM
CONTINUOUS MORTAR CAP OR STANDARD PRECAST CAP
FILL ALL CELLS IN TOP COURSE TO BOND CAP
GROUT ALL CELLS WITH STEEL
8" (200 mm) STANDARD CONC BLOCK

#4 (#13M) CONTINUOUS CLEAR
2" (50 mm)
6" (150 mm)
12" (300 mm)
15" (380 mm) MIN

EXTRA #4 x 24" (#13M x 600 mm) CENTERED AT POST
#4 (#13M) ADJACENT TO POST AND AT CORNERS

DRAINAGE SWALE DETAIL
WELDED WIRE MESH
6x6-W4.0xW4.0
(152x152 MW25.8xMW25.8)

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION
REINFORCED CONCRETE BLOCK WALL AND CHAIN LINK FENCE COMBINATION
STANDARD PLAN
621-2
USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION
PROMULGATED BY THE
PUBLIC WORKS STANDARDS INC.
GREENBOOK COMMITTEE
1998
REV. 1998, 2009

SHEET 1 OF 2
NOTES:

1. THE BLOCK WALL SHALL BE CONSTRUCTED IN ACCORDANCE WITH SSPWC 303–4.1.
2. USE STANDARD 8" (200 mm) WIDE NORMAL WEIGHT CONCRETE BLOCK PER SSPWC 202–2.
3. USE CONCRETE BOND BEAM BLOCK WHERE HORIZONTAL STEEL IS CALLED FOR.
4. MORTAR, GROUT AND WATER SHALL BE IN ACCORDANCE WITH SSPWC 202–2.
5. REINFORCING STEEL SHALL BE GRADE 40 (GRADE 300) PER SSPWC 201–2.
6. ALL BLOCKS SHALL BE LAID UP IN MORTAR HEAD AND BED JOINTS FOR FULL THICKNESS OF FACE SHELLS. WEBS OF EACH COURSE SHALL CENTER ON WEBS OF COURSES BELOW. OMIT HEAD JOINT IN GRADE COURSE.
7. PLACE A MINIMUM 4" (100 mm) LAYER OF NO. 4 CONCRETE AGGREGATE BETWEEN THE SOIL BACKFILL AND THE OPEN HEAD JOINT.
8. ALL CELLS IN WHICH STEEL IS PLACED SHALL BE FILLED WITH GROUT.
10. POUR FOOTING AGAINST UNDISTURBED NATURAL SOIL OR SOIL THAT HAS BEEN COMPACTED TO 90% OPTIMUM DENSITY PER ASTM D1557–78.
12. PROVIDE OPEN HEAD JOINTS AT INTERVALS NO GREATER THAN 48" (1.2 m). WHERE WALL IS LOCATED ADJACENT TO A SIDEWALK, PROVIDE 2" ø (50 mm ø) WEEP HOLES UNDER SIDEWALK.
13. FOR PRIVATE PROPERTY, USE 1V:2H SLOPE. FOR PUBLIC PROPERTY, USE ENGINEER’S DESIGNATION.
14. WELDED WIRE MESH SHALL BE PER SSPWC 201–2.4.
# TABLE OF CONTENTS

## SECTION 1
Street Improvements

### GENERAL
- 100-1 TOPOGRAPHY SYMBOLS
- 101-2 ABOVE-GROUND UTILITIES LOCATION IN PARKWAY

### SIDEWALKS, DRIVEWAYS, AND RAMPS
- 110-2 DRIVEWAY APPROACHES
- 111-4 CURB RAMP
- 112-2 CURB AND SIDEWALK JOINTS
- 113-2 SIDEWALK AND DRIVEWAY REPLACEMENT

### CURB AND GUTTER
- 120-2 CURB AND GUTTER BARRIER
- 121-2 CURB AND GUTTER-MOUNTABLE
- 112-2 CROSS AND LOGITUNDINAL GUTTERS
- 123-2 CROSS GUTTER AT T INTERSECTIONS

### PAVEMENT
- 130-2 ALLEY INTERSECTION
- 131-2 CONCRETE BUS PAD
- 132-3 CONCRETE PAVEMENT REPLACEMENT
- 133-3 ASPHALT CONCRETE PAVEMENT REPLACEMENT
- 134-2 CONCRETE PAVEMENT JOINT DETAILS

### MEDIAN
- 140-3 MEDIAN TAPER
- 141-2 MEDIAN FLARE
- 150-3 CURB DRAIN
- 151-2 PARKWAY DRAIN
- 152-2 RECTANGULAR FRAME AND COVER

## SECTION 2
Sewers and Sanitation

### MANHOLES AND STRUCTURES
- 200-3 PRECAST CONCRETE SEWER MANHOLE
- 201-2 PRECAST CONCRETE SHALLOW MANHOLE
- 202-2 DROP SEWER MANHOLE
- 203-2 BRICK SEWER MANHOLE
- 204-2 TERMINAL CLEANOUT STRUCTURE
- 205-2 SEWER MANHOLE ADJUSTMENT
- 206-2 MANHOLE RAISING RINGS
- 207-2 PRECAST REINFORCED CONCRETE MANHOLE BASE
- 208-2 BREAKING INTO EXISTING MANHOLES
- 210-3 24" (610mm) MANHOLE FRAME AND COVER – LOCKING TYPE
- 211-2 MANHOLE FRAME AND COVER – PRESSURE TYPE
- 212-2 ANCHOR SYSTEM FOR PRESSURE COVER FOR OTHER MANHOLES, SEE SECTION 6 – GENERAL FACILITIES

### PIPE APPURTEYNANCES
- 220-3 CHIMNEYS
- 221-2 PIPE ANCHORS AND BACKFILL STABILIZERS
- 222-2 HOUSE CONNECTION SEWER
- 223-2 HOUSE CONNECTION REMODELING
- 224-2 SUPPORTS FOR CONDUITS ACROSS TRENCHES
- 225-2 BLANKET PROTECTION FOR PIPES

## SECTION 3
Flood Control And Storm Drain Facilities

### GENERAL
- 300-3 CURB OPENING CATCH BASIN
- 301-3 CURB OPENING CATCH BASIN WITH GRATING(S) AND DEBRIS SKimmer
- 302-3 CURB OPENING CATCH BASIN WITH GRATING(S)
- 303-3 CURBSIDE GRATING CATCH BASIN
- 304-3 GRATING CATCH BASIN – ALLEY (LONGITUDINAL)
- 305-3 GRATING CATCH BASIN – ALLEY (TRANSVERSE)
- 306-3 CURB OPENING CATCH BASIN AT DRIVEWAY
- 307-3 CURB OPENING CATCH BASIN WITH MANHOLE IN STREET
- 308-2 MONOLITHIC CATCH BASIN CONNECTION
- 309-2 CATCH BASIN REINFORCEMENT
- 310-3 CATCH BASIN FACE PLATE ASSEMBLY AND PROTECTION BAR
- 311-3 FRAME AND GRAETING FOR CATCH BASINS
- 312-3 CATCH BASIN MANHOLE FRAME AND COVER
- 313-3 LOCAL DEPRESSIONS AT CATCH BASINS
- 314-3 MODIFICATIONS FOR SIDE OPENING CATCH BASINS

### MANHOLES AND JUNCTION STRUCTURES
- 320-2 MANHOLE - PIPE TO PIPE [MAIN LINE ID = 36" (900 mm) OR LARGER]
- 321-2 MANHOLE - PIPE TO PIPE [ONE OR BOTH MAINLINE IDS 33" (825mm) OR SMALLER]
- 322-2 MANHOLE - PIPE TO PIPE (LARGE SIDE INLET)
- 323-2 MANHOLE - CONCRETE BOX STORM DRAIN
- 324-2 MANHOLE SHAFT - WITH ECCENTRIC REDUCER
- 326-2 MANHOLE FOR EXISTING RCB
- 328-2 PRESSURE MANHOLE SHAFT - WITH ECCENTRIC REDUCER
- 329-2 PRESSURE MANHOLE SHAFT AND PRESSURE PLATE DETAILS 36" (914 mm) WITHOUT REDUCER
- 330-2 MANHOLE SHAFT SAFETY LEDGE
- 331-3 JUNCTION STRUCTURE - PIPE TO PIPE [INLET ID ≥ 24" (600 mm) OR OD ≥ ½ MAIN LINE ID]
- 332-2 JUNCTION STRUCTURE - PIPE TO PIPE [ID ≤ 24" (600 mm)]
- 333-2 JUNCTION STRUCTURE - PIPE TO RCB
- 334-2 JUNCTION STRUCTURE - PIPE TO PIPE [INLET ID < 30" (750 mm)]
- 335-2 PIPE CONNECTIONS TO EXISTING STORM DRAINS

### TRANSITION STRUCTURES
- 340-2 TRANSITION STRUCTURE PIPE TO PIPE
- 341-2 TRANSITION STRUCTURE SINGLE RCP TO SINGLE RCB
- 342-2 TRANSITION STRUCTURE RCB TO PIPE
- 343-2 TRANSITION STRUCTURE SINGLE RCB TO DOUBLE RCB
- 344-2 TRANSITION STRUCTURE DOUBLE RCB TO DOUBLE RCB
- 345-2 TRANSITION STRUCTURE DOUBLE RCB TO TRIPLE RCB
- 346-2 TRANSITION STRUCTURE TRIPLE RCB TO TRIPLE RCB INLETS
- 350-2 YARD INLET
- 351-2 CSP FLARED INLET
- 360-2 SLOPED PROTECTION BARRIER
- 361-2 TRASH RACK (INCLINED)
- 365-4 CONCRETE COLLAR FOR RCP 12" (300 mm) THROUGH 72" (1800 mm)
- 381-2 ABANDONMENT SEALS FOR MANHOLES AND INLETS
- 382-2 WINDOW DETAILS FOR MULTIPLE RCB STRUCTURES
- 383-2 VELOCITY CONTROL RING PRECAST RCP SECTION
- 384-3 ENERGY DISSIPATOR - IMPACT BASIN WITH VERTICAL BAFFLE WALL
- 390-0 PRECAST REINFORCED CONCRETE BOX
# TABLE OF CONTENTS – (Continued)

## SECTION 4
Street Lighting and Traffic Signals

- **SERVICE**
  - 401-1 ELECTRICAL SERVICE
  - 403-1 SERVICE CABINET
  - 405-1 PULL BOXES
  - 408-1 WIRING SERVICE DETAILS

- **CONTROLLER CABINETS**
  - 429-1 STEEL LIGHTING STANDARD TYPE 10
  - 430-1 CONCRETE LIGHTING STANDARD TYPE C-1
  - 431-1 CONCRETE LIGHTING STANDARD TYPE C-2
  - 432-1 CONCRETE LIGHTING STANDARD TYPE C-4
  - 433-1 CONCRETE LIGHTING STANDARD TYPE C-6
  - 434-1 STREET LIGHTING DETAILS
  - 452-1 CONTROLLER CABINET TYPE 170
  - 453-1 SIGNAL STANDARDS
  - 454-1 SIGNAL HEADS AND FIXTURES
  - 455-1 PEDESTRIAN PUSH BUTTON STAND
  - 457-1 LOOP DETECTORS
  - 458-1 TEMPORARY SIGNALS

## SECTION 5
Landscaping and Irrigation Systems

- **500-2 LANDSCAPE IRRIGATION SYMBOLS**
- **501-3 ELECTRICAL SERVICE**
- **502-3 ANGLE VALVE**
- **503-3 GATE VALVE**
- **504-3 QUICK COUPLER VALVE**
- **505-3 HOSE BIBB VALVE**
- **506-3 REMOTE CONTROL VALVE**
- **507-3 REMOTE CONTROL VALVE WITH QUICK COUPLER**
- **508-3 THRUST BLOCKS FOR PLASTIC PIPE**
- **509-3 IRRIGATION SPRINKLER HEAD**
- **510-3 VACUUM BREAKER ASSEMBLY**
- **511-3 BACKFLOW PREVENTER ASSEMBLY DOUBLE CHECK TYPE**
- **512-3 BACKFLOW PREVENTER ASSEMBLY REDUCED PRESSURE TYPE**
- **513-3 ELECTRICAL PULL BOX**
- **514-3 IRRIGATION CONTROLLER ENCLOSURE**
- **515-3 PIPE PINNING**
- **517-3 SWING JOINT ASSEMBLY**
- **518-3 TREE STAKING**
- **519-3 TREE WELLS**
- **520-4 TREE PLANTING**
- **521-3 PRESSURE REGULATOR INSTALLATION**
- **523-2 ROOT PRUNING**
- **524-2 TEMPORARY TREE WELL COVER**

## SECTION 6
General Facilities

- **SERVICE**
  - 600-3 ELECTRICAL SERVICE
  - 603-3 SERVICE CABINET
  - 605-1 PULL BOXES
  - 608-1 WIRING SERVICE DETAILS

- **CONTROLLER CABINETS**
  - 629-1 STEEL LIGHTING STANDARD TYPE 10
  - 630-1 CONCRETE LIGHTING STANDARD TYPE C-1
  - 631-1 CONCRETE LIGHTING STANDARD TYPE C-2
  - 632-1 CONCRETE LIGHTING STANDARD TYPE C-4
  - 633-1 CONCRETE LIGHTING STANDARD TYPE C-6
  - 634-1 STREET LIGHTING DETAILS
  - 652-1 CONTROLLER CABINET TYPE 170
  - 653-1 SIGNAL STANDARDS
  - 654-1 SIGNAL HEADS AND FIXTURES
  - 655-1 PEDESTRIAN PUSH BUTTON STAND
  - 657-1 LOOP DETECTORS
  - 658-1 TEMPORARY SIGNALS

- **RETAINING STRUCTURES**
  - 650-1 CONTROLLED CABINET TYPE 170
  - 651-1 SIGNAL STANDARDS
  - 652-1 SIGNAL HEADS AND FIXTURES
  - 653-1 PEDESTRIAN PUSH BUTTON STAND
  - 655-1 LOOP DETECTORS
  - 658-1 TEMPORARY SIGNALS

- **PROTECTIVE FACILITIES**
  - 650-1 CONTROLLED CABINET TYPE 170
  - 651-1 SIGNAL STANDARDS
  - 652-1 SIGNAL HEADS AND FIXTURES
  - 653-1 PEDESTRIAN PUSH BUTTON STAND
  - 655-1 LOOP DETECTORS
  - 658-1 TEMPORARY SIGNALS

- **RETAILING STRUCTURES**
  - 650-1 CONTROLLED CABINET TYPE 170
  - 651-1 SIGNAL STANDARDS
  - 652-1 SIGNAL HEADS AND FIXTURES
  - 653-1 PEDESTRIAN PUSH BUTTON STAND
  - 655-1 LOOP DETECTORS
  - 658-1 TEMPORARY SIGNALS

- **SUBSURFACE ACCESS**
  - 629-1 STEEL LIGHTING STANDARD TYPE 10
  - 630-1 CONCRETE LIGHTING STANDARD TYPE C-1
  - 631-1 CONCRETE LIGHTING STANDARD TYPE C-2
  - 632-1 CONCRETE LIGHTING STANDARD TYPE C-4
  - 633-1 CONCRETE LIGHTING STANDARD TYPE C-6
  - 634-1 STREET LIGHTING DETAILS
  - 652-1 CONTROLLER CABINET TYPE 170
  - 653-1 SIGNAL STANDARDS
  - 654-1 SIGNAL HEADS AND FIXTURES
  - 655-1 PEDESTRIAN PUSH BUTTON STAND
  - 657-1 LOOP DETECTORS
  - 658-1 TEMPORARY SIGNALS