



CITY OF PISMO BEACH

760 Mattie Road
Pismo Beach, CA 93449
(805) 773-4656/ Fax: (805) 773-4684

PUBLIC WORKS DEPARTMENT ENGINEERING STANDARDS

June 2005

TABLE OF CONTENTS

SECTION 100

STREET IMPROVEMENT

101	CUL-DE-SAC
102	KNUCKLE
103	CROSS GUTTER
104	6'x8' CURB WITH GUTTER
105	6'x8' CURB WITHOUT GUTTER
106	DRIVEWAY RAMP
106A	DRIVEWAY RAMP WITH DETACHED SIDEWALK
107	DRIVEWAY RAMP LOCATIONS
108	HANDICAP RAMP
109	CURB & SIDEWALK
110	SIDEWALK- CUTTING & REPLACING
111	SIDEWALK UNDERDRAIN
112	STREET LIGHT- WOOD
113	STREET LIGHT- METAL
114	STREET MONUMENT
115	TRENCH BACKFILL REQUIREMENTS
116-7	TYPICAL STREET SECTIONS
118	SPEED HUMP
118A	SPEED HUMP LOCATION, STRIPING, & SIGNS
119	CURB & GUTTER- ROLLED
120	DIKES- ASPHALT CONCRETE
121	CUTOFF WALL AT END OF PAVEMENT
122	CURB RAMP- NEW CONSTRUCTION
123-5	CURB RAMP- FOR EXISTING SIDEWALK
126	NOTES FOR CURB RAMP
127	GUARD POST AND BARRICADE

SECTION 200

SEWER & SANITATION

201	SEWER LATERAL
202	SEWER MANHOLE
203	SEWER DROP MANHOLE
204	SEWER CLEANOUT
205-8	WATER-SEWER SEPARATION
209	PRIVATE UTILITY JOINT TRENCH
210	JOINT TRENCH SECTION
211	CONCRETE SUPPORT FOR UNDERCUT SEWER PIPE
212	CONCRETE CRADLE
213	CONCRETE ENCASEMENT
214	CONCRETE ANCHOR

SECTION 300

STORM DRAINAGE

- 301 STORM DRAIN CATCH BASIN
- 302 CATCH BASIN- OPEN CURB
- 303 STORM GRATE
- 304 STORM DRAIN MANHOLE- 18" TO 36" PIPE
- 305 CATCH BASIN- SIDE OPENING
- 306 RIP RAP ENERGY DISSIPATOR
- 307 INLET APRON FOR CULVERTS UP TO 42" DIAMETER

SECTION 400

WATER SYSTEM

- 401 1" MINIMUM SINGLE SERVICE LINE
- 402 1½" WATER SERVICE
- 403 2" WATER SERVICE
- 403A 2" WATER SERVICE VALVE & WELL
- 403B MANIFOLD ASSEMBLY
- 404 AIR AND VACUUM RELEASE VALVE
- 405 AIR-VAC & AIR RELEASE VALVE COVER
- 406 WATERLINE TIE-IN
- 407 WATER VALVE & WELL
- 408 BLOWOFF ASSEMBLY
- 409 FIRE HYDRANT ASSEMBLY
- 410 GUARD POST
- 411 DOUBLE DETECTOR CHECK BACKFLOW PREVENTION ASSEMBLY
- 412 UTILITY COVERS WITH CONCRETE COLLARS
- 413 THRUST BLOCK
- 414 WATER DISTRIBUTION SYSTEM MATERIAL LIST
- 415 WATER DISTRIBUTION SYSTEM SPECIFICATIONS
- 416 WATER SAMPLING STATION

SECTION 500

TREE PLANTING

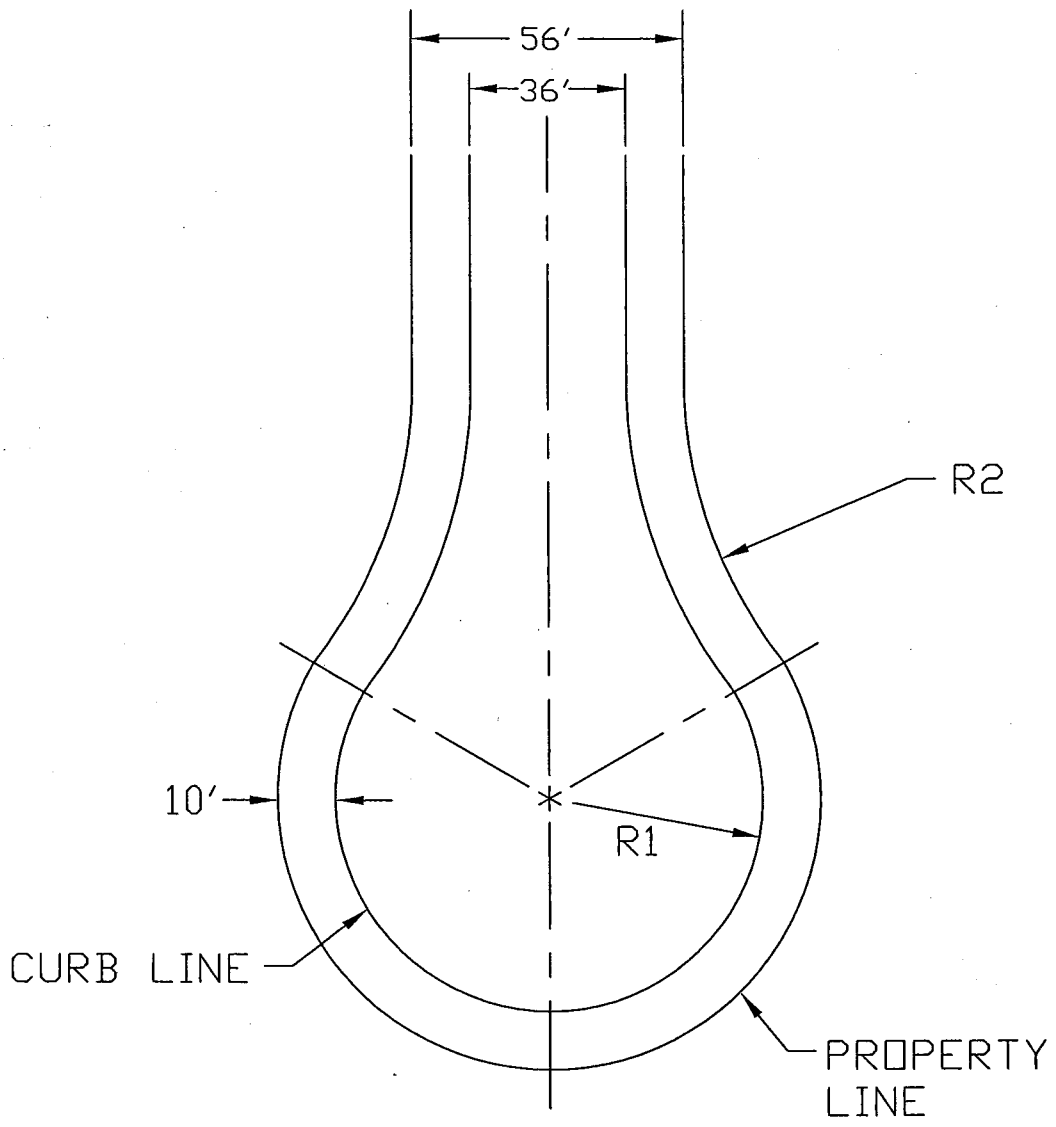
- 501 STREET TREE PLANTING REQUIREMENTS & INSTRUCTIONS
- 502 TREE PLANTING & STAKING
- 503 STREET TREE PLANTING WITH GRATE
- 504 STREET GRATE
- 505 STREET TREE PLANTING BY ZONE
- 506-7 MASTER STREET TREE LIST

SECTION 600

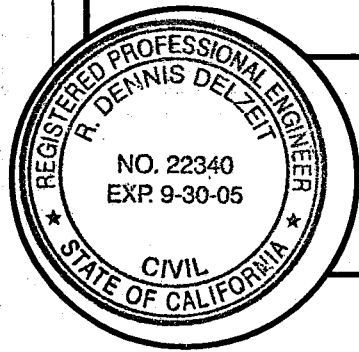
DRAFTING STANDARDS

- 601 GENERAL
- 602 LINES
- 603 SYMBOLS

REVISIONS
NO. DESCRIPTION BY DATE
REV



- 1. R1=40 FEET or 48 FEET WITH PARKING
- 2. R2=100 FEET or 116 FEET WITH PARKING
- 3. MAXIMUM LENGTH OF CUL-DE-SAC IS 500 FEET FROM CENTERLINE OF NEAREST STREET TO MID POINT OF CUL-DE-SAC

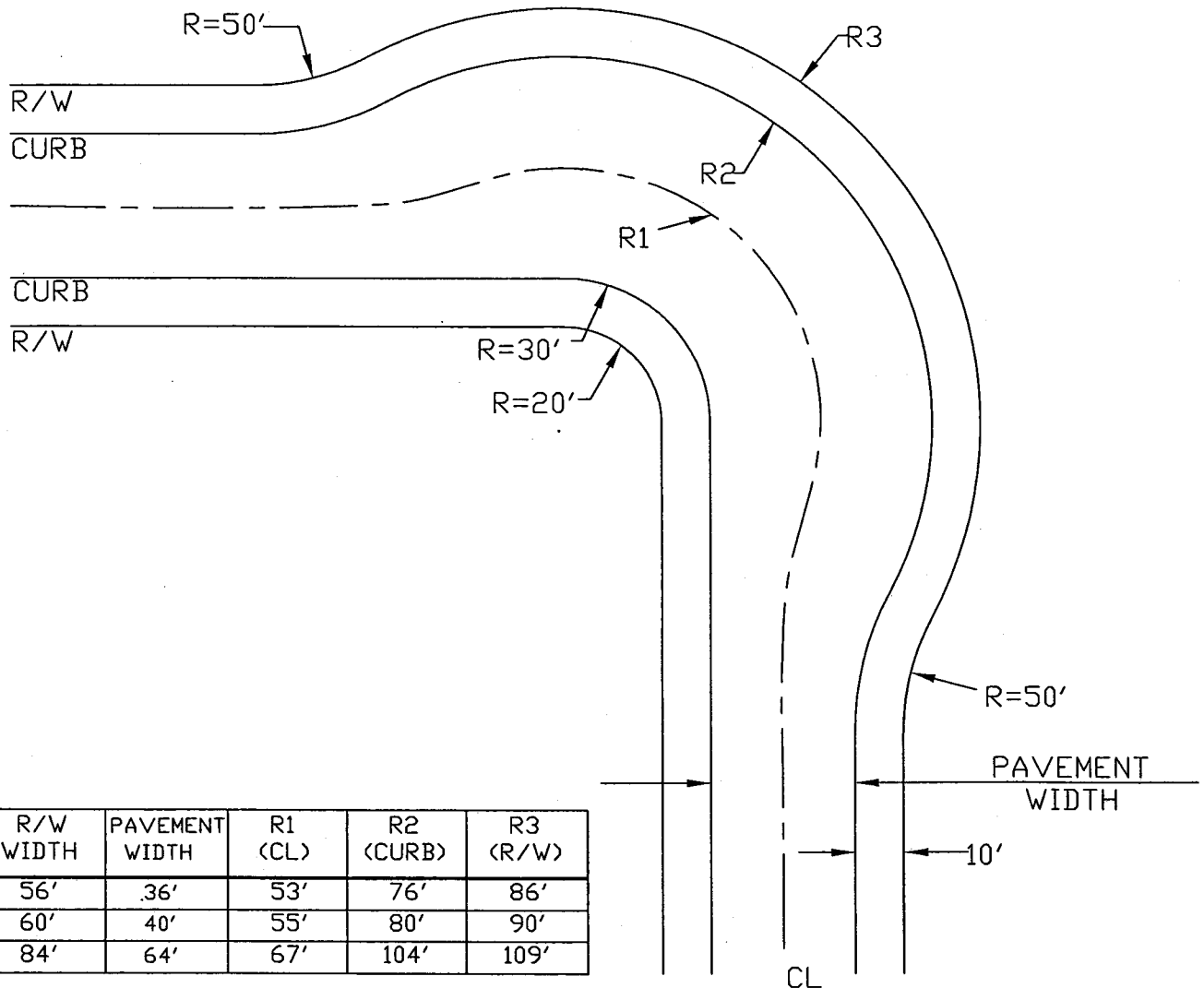


CITY OF
PISMO BEACH
R. Dennis Delzeit
CITY ENGINEER

CUL-DE-SAC
STANDARD DRAWING 101

DATE
5/31/05

REVISION DESCRIPTION DATE
 1
 2
 3
 4
 5
 6
 7
 8
 9
 10
 11
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21
 22
 23
 24
 25
 26
 27
 28
 29
 30
 31
 32
 33
 34
 35
 36
 37
 38
 39
 40
 41
 42
 43
 44
 45
 46
 47
 48
 49
 50
 51
 52
 53
 54
 55
 56
 57
 58
 59
 60
 61
 62
 63
 64
 65
 66
 67
 68
 69
 70
 71
 72
 73
 74
 75
 76
 77
 78
 79
 80
 81
 82
 83
 84
 85
 86
 87
 88
 89
 90
 91
 92
 93
 94
 95
 96
 97
 98
 99
 100



R/W WIDTH	PAVEMENT WIDTH	R1 (CL)	R2 (CURB)	R3 (R/W)
56'	36'	53'	76'	86'
60'	40'	55'	80'	90'
84'	64'	67'	104'	109'

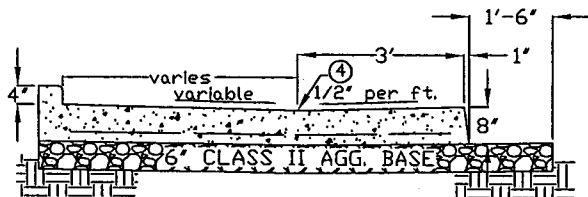
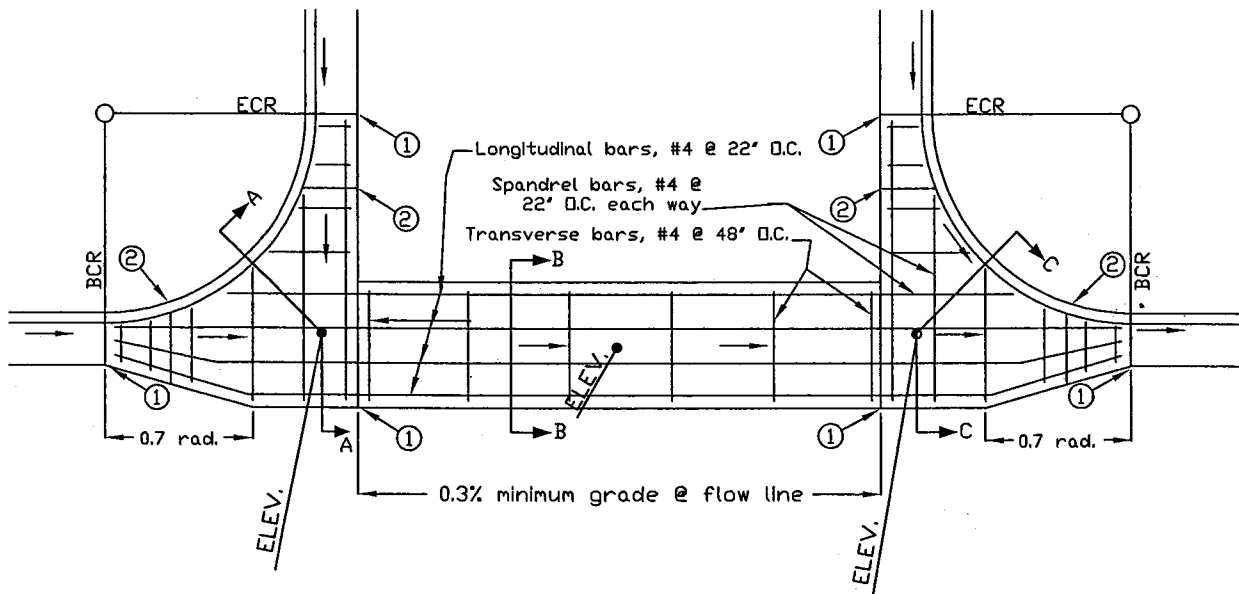


CITY OF PISMO BEACH

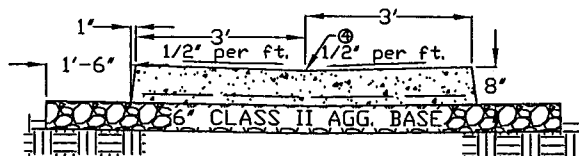
R. Dennis Delzeit 5/31/05
 CITY ENGINEER DATE

STREET KNUCKLE

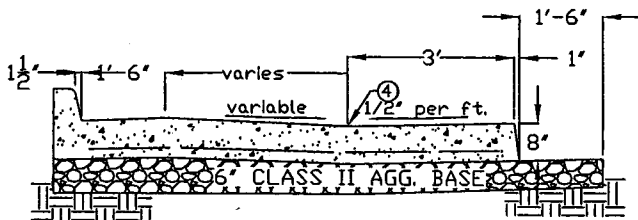
STANDARD DRAWING 102



SECTION A-A
(UPHILL SIDE)



SECTION B-B



SECTION C-C
(DOWNHILL SIDE)

- ① Standard expansion joint, see note ③
- ② If curb return radius is larger than 20' spandrels shall have extra expansion joints at locations to be determined by the city Engineer. Rebar shall be cut and dowels installed per note ③
- ③ All expansion joints shall have 18" smooth 1/2" dowels with 6" minimum embedment at 22" O.C., wrapped or greased at one end.
- ④ All flowlines shall have an 8" wide steel trowel finish
- ⑤ All P.C.C. shall be Class A, including curb
- ⑥ All gutter construction adjacent to existing A.C. paving shall include sawcutting, removal, and replacement of A.C. paving for a width of 18" minimum from gutter, 1" thicker than existing, 3" minimum.

ALL CLASS II AGGREGATE BASE TO BE COMPACTED TO A MINIMUM 95% RELATIVE COMPACTION UNLESS OTHERWISE SPECIFIED

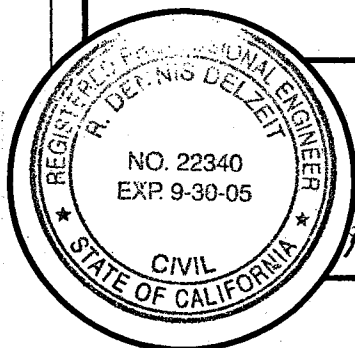
CITY OF
PISMO BEACH

CROSS GUTTER

NO. 22340
EXP. 9-30-05

R. Dennis Delzeit 5/31/05
CITY ENGINEER DATE

STANDARD DRAWING 103



REV. DESCRIPTION. DATE. DISCUSSION. DATE.

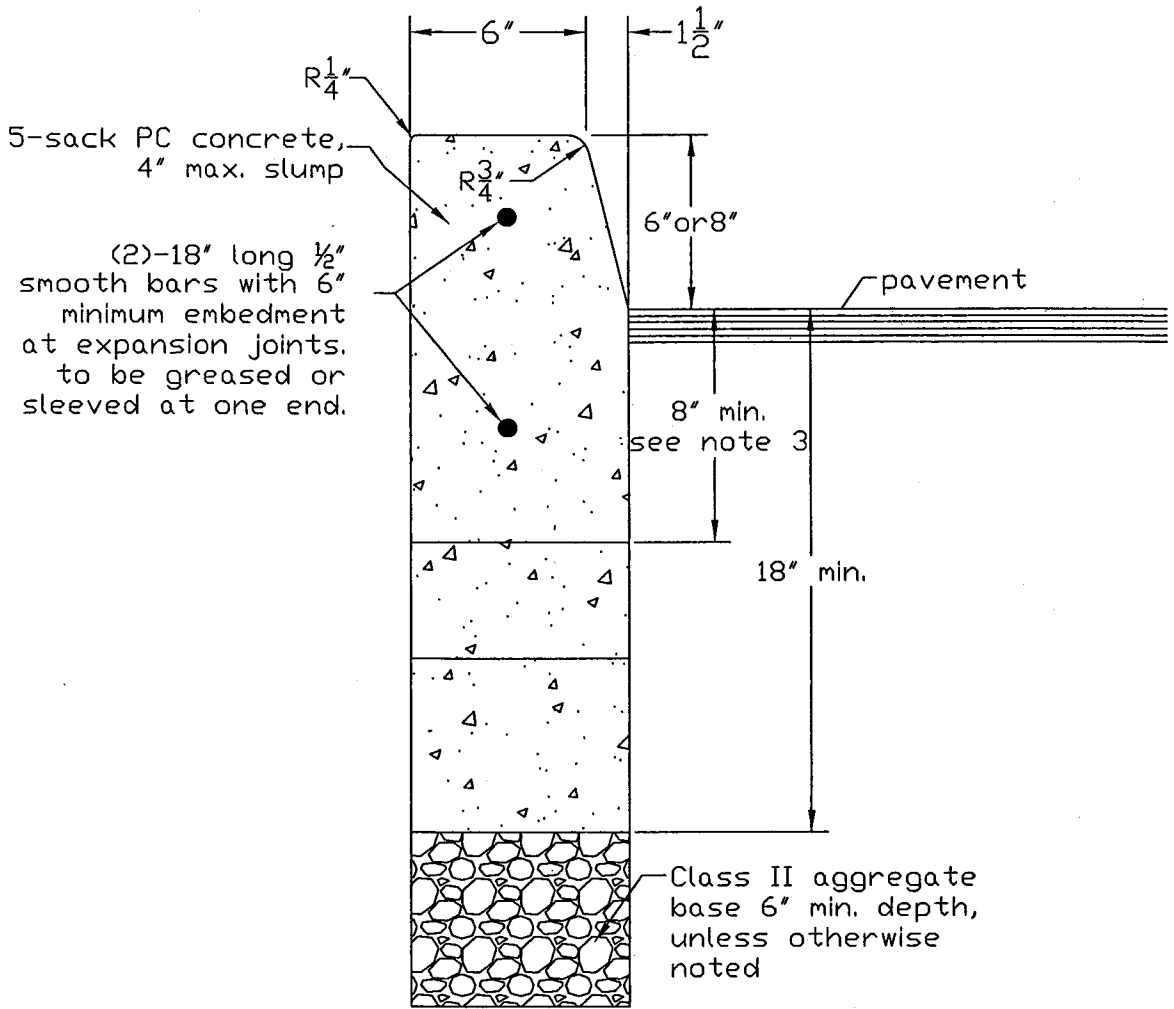
DATE

DESCRIPTION

DATE

REV

REV



1. This section to be used only for parking lots or as approved by the city engineer.
2. When curb is placed adjacent to existing or future irrigated landscape area, P.C.C. shall extend down as for moisture barrier. Any alternate moisture barrier shall be approved by the City.
3. When curb is not located as in note 2, depth may be reduced.
4. All Class II aggregate base shall be copcompacted to min 95% relative compaction unless otherwise specified. Compaction tests shall be performed at the option of the city inspector or of the city engineer.
5. Face of curb shall be marked with an "S" (sewer) or a "W" (water) directly over all laterals/services unless otherwise marked to the satisfaction of the City Engineer. The mark shall be STAMPED into the concrete, and shall not be smaller than 3"x2" nor less than 3/16" deep.
6. Expansion joints shall be constructed at 60' intervals with 1/4" expansion material and 1/2" smooth dowels, greased or sleeved at one end. Weakened plane joints shall be placed at 10' intervals and be 1 1/2" deep.



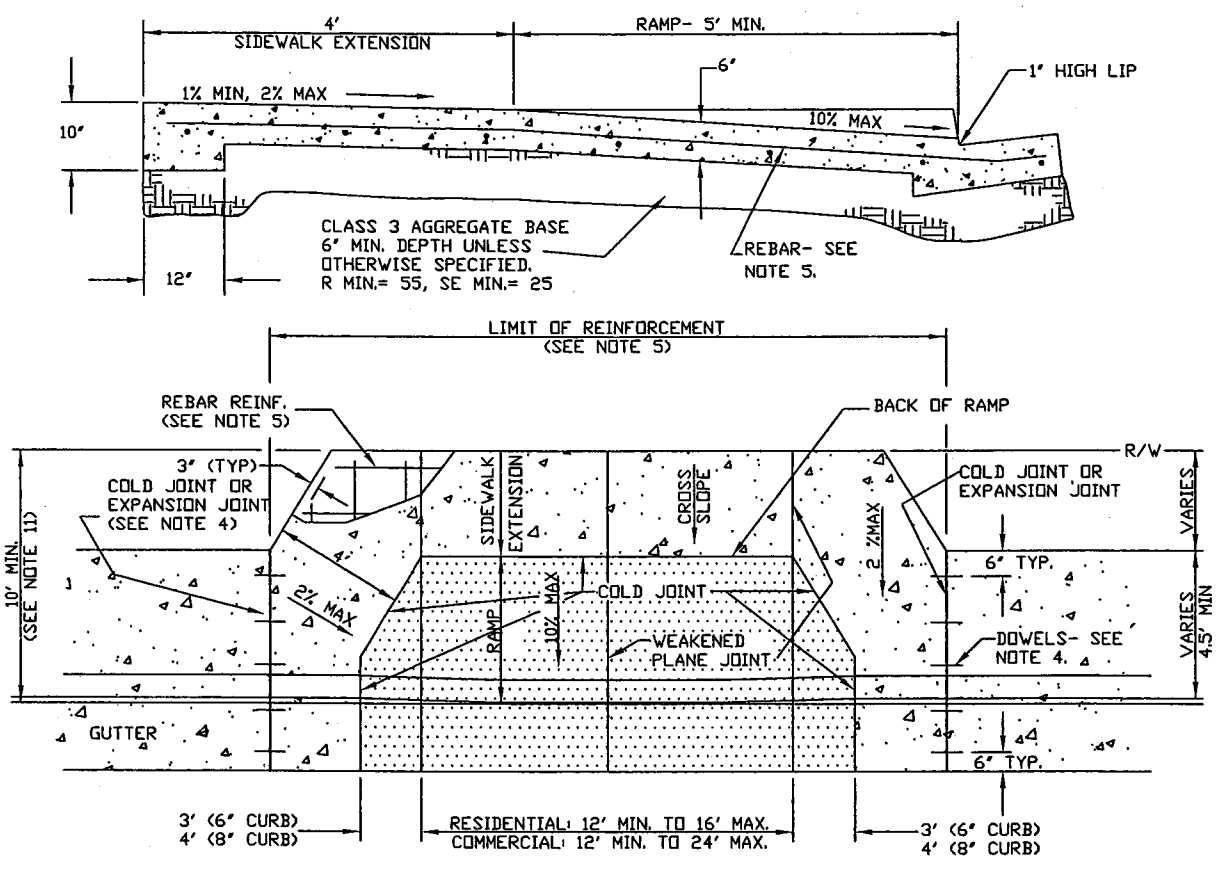
CITY OF
PISMO BEACH

6" AND 8" CURB

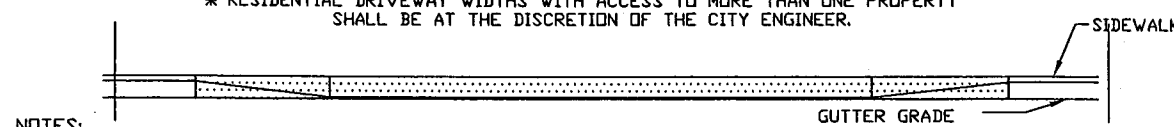
R. Dennis Delzeit 6/31/05
CITY ENGINEER DATE

STANDARD DRAWING 105

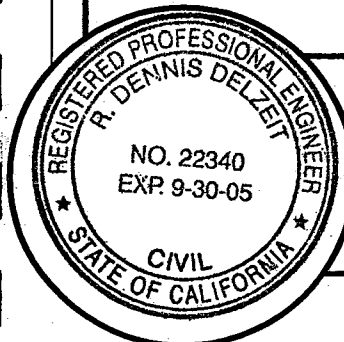
REV DESCRIPTION BY DATE
 REV DESCRIPTION BY DATE
 REV DESCRIPTION BY DATE



*MAY BE INCREASED TO 30' FOR LARGE COMMERCIAL SHOPPING CENTERS WITH APPROVAL OF THE CITY ENGINEER.
 * RESIDENTIAL DRIVEWAY WIDTHS WITH ACCESS TO MORE THAN ONE PROPERTY SHALL BE AT THE DISCRETION OF THE CITY ENGINEER.



- NOTES:
- (1.) A DEPRESSION IN A NEW CURB AND GUTTER FOR A DRIVEWAY WILL NOT BE PERMITTED UNLESS THE RAMP AND SIDEWALK ARE CONSTRUCTED ALSO.
 - (2.) SLOPE OR RAMP IS A STRAIGHT 10% MAX. GRADE FROM THE TOP OF THE BACK OF THE DRIVEWAY TO THE TOP OF THE 1' LIP AT THE GUTTER.
 - (3.) CONCRETE SHALL BE 5-SACK, SLUMP: 2" MIN., 4" MAX, STANDARD GRAY WITH BROOM FINISH.
 - (4.) DOWELS AT EXPANSION JOINTS WITH NEW CONSTRUCTION SHALL BE 1/2" SMOOTH BARS, 18" LONG AT 24" O.C. ONE END SHALL BE SLEEVED OR GREASED, ALL DRIVEWAYS SHALL BE DRILLED 6" MIN. INTO EXISTING CONCRETE AND REINFORCED WITH REBAR.
 - (5.) PROVIDE #4 REBAR @ 24" O.C., BOTH WAYS.
 - (6.) COMMERCIAL & INDUSTRIAL DRIVEWAYS AND DRIVEWAY RAMPS SERVING MORE THAN SIX (6) PARKING SPACES SHALL BE 10 FT. DEEP (LONG) UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
 - (7.) CURB CONSTRUCTION ADJACENT TO EXISTING A.C. PAVING SHALL INCLUDE SAWCUTTING, REMOVAL, AND REPLACEMENT OF A.C. PAVING 18" MIN. FROM EDGE OF CURB, 1" THICKER THAN EXISTING, 3" MIN.
 - (8.) METER BOX LOCATION MUST CONFORM TO STD. DWG. 107. NO METER BOXES WILL BE ALLOWED IN DRIVEWAYS UNLESS APPROVED BY THE CITY ENGINEER.
 - (9.) ALL DRIVEWAY WIDTHS ARE TO BE PER ZONING ORDINANCE.
 - (10.) ALL CLASS II AGGREGATE BASE SHALL BE COMPACTED TO 95% MINIMUM RELATIVE COMPACTION UNLESS OTHERWISE SPECIFIED. COMPACTION TESTS SHALL BE PERFORMED AT THE OPTION OF THE CITY INSPECTOR OR THE CITY ENGINEER.
 - (11.) IF DESIGN WILL NOT FIT WITHIN RIGHT-OF-WAY, ALTERNATE DESIGN MAY BE USED, WITH APPROVAL OF CITY ENGINEER.
 - (12.) IF RIGHT-OF-WAY IS MORE THE 10' FROM CURB FACE, BACK OF SIDEWALK EXTENSION SHALL NOT EXTEND BEYOND 10' FROM CURB FACE.

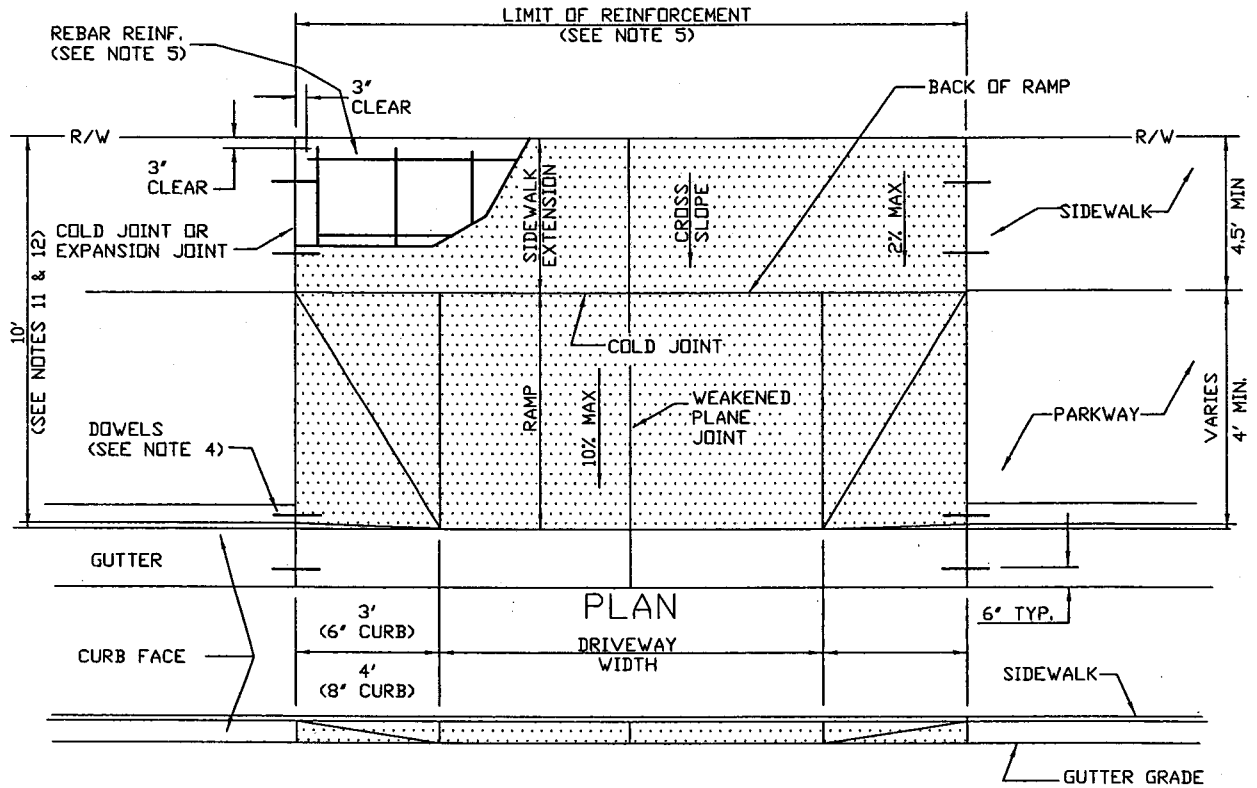
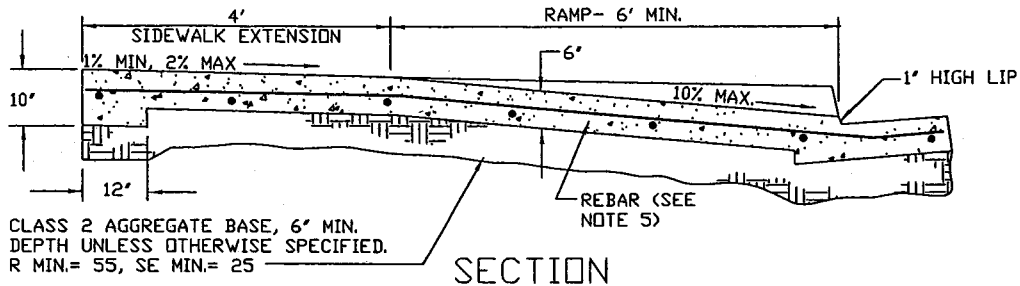


CITY OF PISMO BEACH

DRIVEWAY RAMP

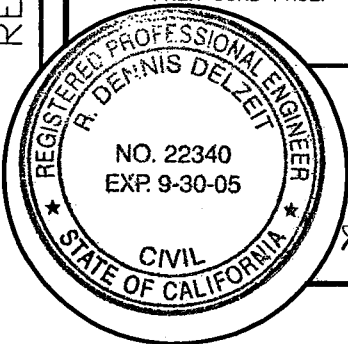
R. Dennis Delzeit 5/31/05
CITY ENGINEER DATE

STANDARD DRAWING 106



NOTES:

- (1.) A DEPRESSION IN A NEW CURB AND GUTTER FOR A DRIVEWAY WILL NOT BE PERMITTED UNLESS THE RAMP IS CONSTRUCTED ALSO.
- (2.) SLOPE OR RAMP IS A STRAIGHT 1/12 GRADE FROM THE TOP OF THE BACK OF THE DRIVEWAY TO THE TOP OF THE 1' LIP AT THE GUTTER.
- (3.) CONCRETE SHALL BE 5-SACK, SLUMP: 2" MIN., 4" MAX, STANDARD GRAY WITH BROOM FINISH.
- (4.) DOWELS AT EXPANSION JOINTS WITH NEW CONSTRUCTION SHALL BE 1/2" SMOOTH BARS, 18" LONG AT 24" O.C. ONE END SHALL BE SLEEVED OR GREASED.
- (5.) ALL DRIVEWAYS SHALL BE DRILLED 6" MIN. INTO EXISTING CONCRETE AND REINFORCED WITH REBAR, #4 @ 24" O.C., BOTH WAYS.
- (6.) COMMERCIAL & INDUSTRIAL DRIVEWAYS AND DRIVEWAY RAMPS SERVING MORE THAN SIX (6) PARKING SPACES SHALL BE 10 FT. DEEP (LONG) UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
- (7.) CURB CONSTRUCTION ADJACENT TO EXISTING A.C. PAVING SHALL INCLUDE SAWCUTTING, REMOVAL, AND REPLACEMENT OF A.C. PAVING 18" MIN. FROM EDGE OF CURB, 1" THICKER THAN EXISTING, 3" MIN.
- (8.) METER BOX LOCATION MUST CONFORM TO STD. DWG. 107. NO METER BOXES WILL BE ALLOWED IN DRIVEWAYS UNLESS APPROVED BY THE CITY ENGINEER.
- (9.) ALL DRIVEWAY WIDTHS ARE TO BE PER ZONING ORDINANCE.
- (10.) ALL CLASS II AGGREGATE BASE SHALL BE COMPACTED TO 95% MINIMUM RELATIVE COMPACTION UNLESS OTHERWISE SPECIFIED. COMPACTION TESTS SHALL BE PERFORMED AT THE OPTION OF THE CITY INSPECTOR OR THE CITY ENGINEER.
- (11.) IF DESIGN WILL NOT FIT WITHIN RIGHT-OF-WAY, ALTERNATE DESIGN MAY BE USED, WITH APPROVAL OF CITY ENGINEER.
- (12.) IF RIGHT-OF-WAY IS MORE THAN 10' FROM CURB FACE, BACK OF SIDEWALK EXTENSION SHALL NOT EXTEND BEYOND 10' FROM CURB FACE.



CITY OF
PISMO BEACH

R. Dennis Delzeit 5/31/05
CITY ENGINEER DATE

DRIVEWAY RAMP
DETACHED SIDEWALK
STANDARD DRAWING 106A

REV _____ BY DATE _____ DESCRIPTION _____ BY DATE _____

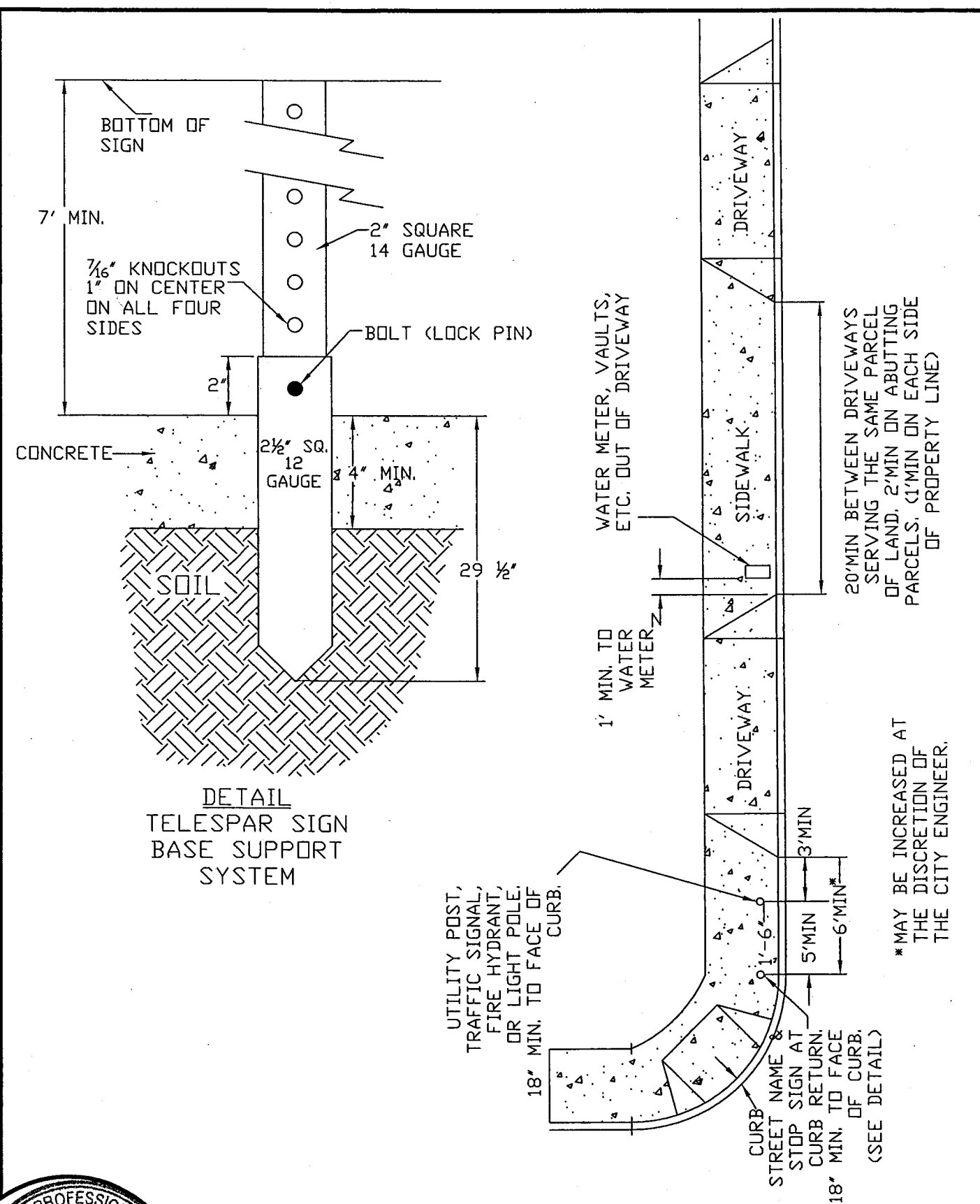
DATE

DESCRIPTION

REVISION

NO.

REV



BOTTOM OF SIGN

7' MIN.

2" SQUARE 14 GAUGE

7/16" KNOCKOUTS 1" ON CENTER ON ALL FOUR SIDES

BOLT (LOCK PIN)

2"

2 1/2" SQ. 12 GAUGE

4" MIN.

29 1/2"

CONCRETE

SOIL

UTILITY POST, TRAFFIC SIGNAL, FIRE HYDRANT, OR LIGHT POLE, 18" MIN. TO FACE OF CURB.

1' MIN. TO WATER METER

WATER METER, VAULTS, ETC. OUT OF DRIVEWAY

SIDEWALK

DRIVEWAY

DRIVEWAY

20' MIN BETWEEN DRIVEWAYS SERVING THE SAME PARCEL OF LAND. 2' MIN ON ABUTTING PARCELS. (1' MIN ON EACH SIDE OF PROPERTY LINE)

18" MIN. TO FACE OF CURB.

STOP SIGN AT CURB RETURN. 18" MIN. TO FACE OF CURB. (SEE DETAIL)

5' MIN

6' MIN*

3' MIN

* MAY BE INCREASED AT THE DISCRETION OF THE CITY ENGINEER.



CITY OF
PISMO BEACH

R. Dennis Delzeit 5/31/05
CITY ENGINEER DATE

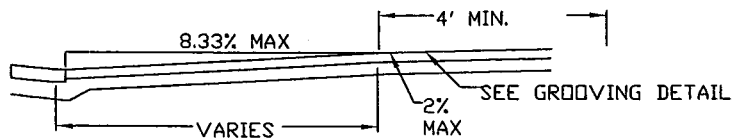
DRIVEWAY RAMP
LOCATION

STANDARD DRAWING 107

REV DESCRIPTION BY DATE

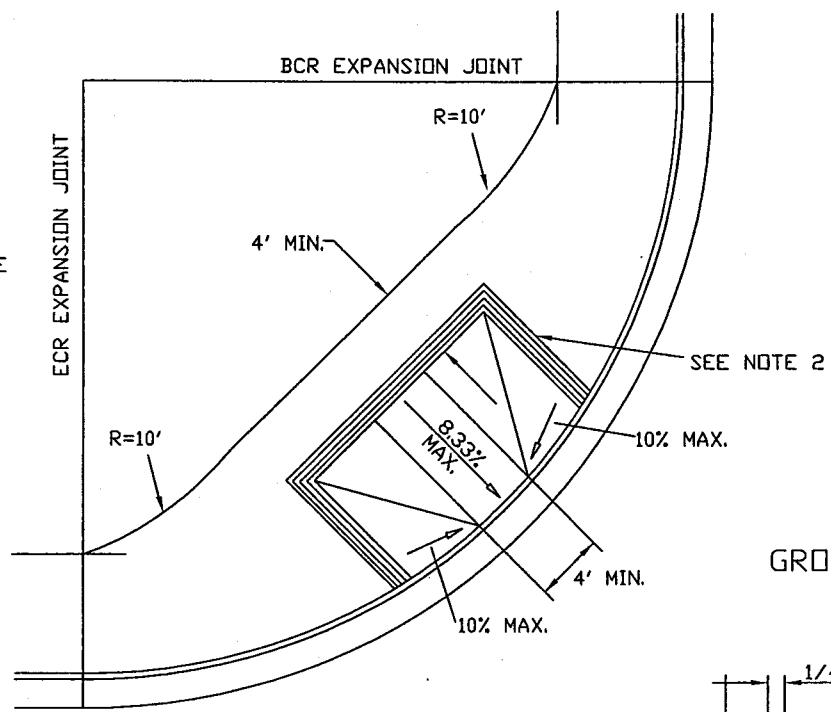
SECTION

NO SCALE



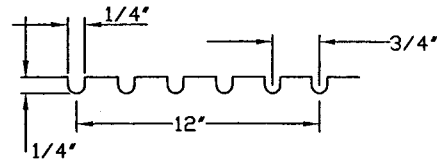
PLAN

NO SCALE



GROOVING DETAIL

NO SCALE



NOTES

1. THE RAMP SHALL HAVE A 1' WIDE BORDER WITH 1/4" GROOVES AT 3/4" O.C.. SEE GROOVING DETAIL.
2. RAMP WITH SLOPES LESS THAN 6.67% SHALL BE CONSTRUCTED IN ACCORDANCE WITH CAL-TRANS STANDARDS.
3. RAMP WITH SLOPES GREATER THAN 6.67% SHALL HAVE A TRANSVERSE BROOM FINISH TEXTURE ROUGHER THAN THE ADJACENT SIDEWALK.
4. RAMP SIDE SLOPES SHALL VARY UNIFORMLY FROM A MAXIMUM OF 10% TO CONFORM WITH THE LONGITUDINAL SIDEWALK SLOPE ADJACENT TO THE TOP OF THE RAMP.
5. TRANSITIONS FROM RAMP TO WALKS, GUTTERS, OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES.
6. CONCRETE SHALL BE CLASS 5 SACK, SLUMP: 2" MIN., 4" MAX.
7. DOWELS AT EXPANSION JOINTS SHALL BE 1/2" SMOOTH BARS, 18" LONG, 24" O.C. WITH A 6" MINIMUM EMBEDMENT.
8. THE ENTIRE RAMP FROM BCR TO ECR SHALL BE DRILLED 6" MIN. INTO EXISTING CONCRETE AND REINFORCED WITH REBAR, NO. 3 18" O.C., OR NO. 4 24" O.C. - BOTH WAYS.

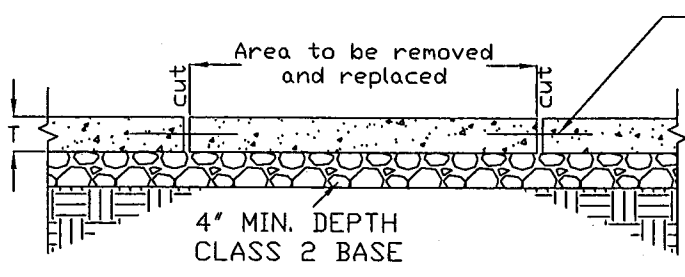


CITY OF
PISMO BEACH

HANDICAP RAMP

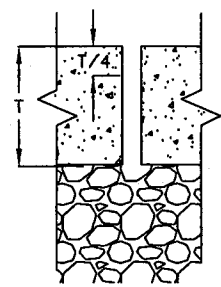
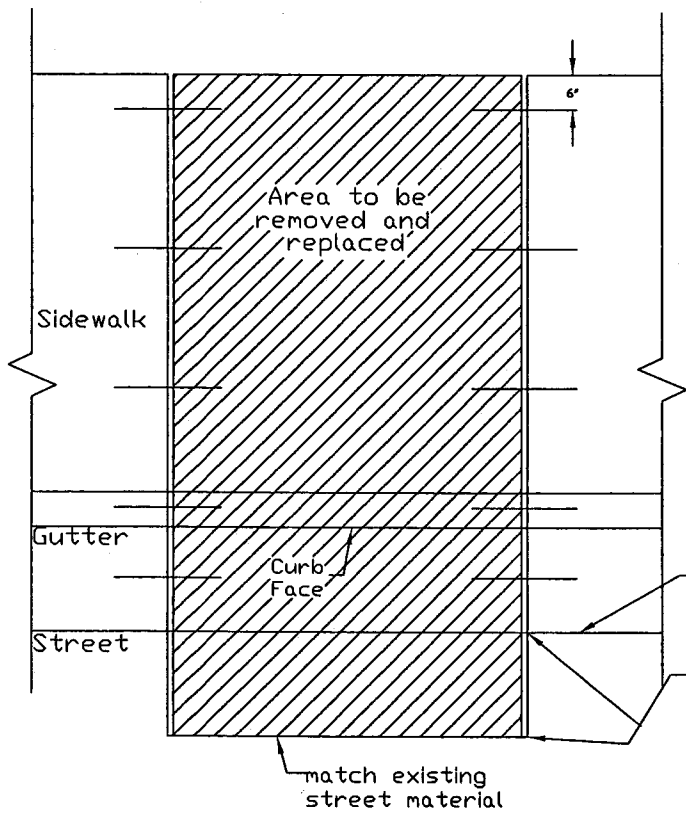
R. Dennis Delzeit 5/31/05
CITY ENGINEER DATE

STANDARD DRAWING 108



18" # 4 smooth bars @ 24" o.c. in sidewalk, drilled 6" min. into existing concrete, one in each curb and gutter, one end to be sleeved or greased.

SIDEWALK SECTION



All cuts to be made with an abrasive-type cutting wheel.

Remaining edge to smooth and true with no shatter.

Depth of cut = $T/4, 1\frac{1}{2}$ " min

CUT DETAIL

PLAN OF CURB, GUTTER & SIDEWALK

All Class II aggregate base to be compacted to minimum of 95% relative compaction unless otherwise specified.

If concrete is stamped, the section should be removed to maintain appearance.



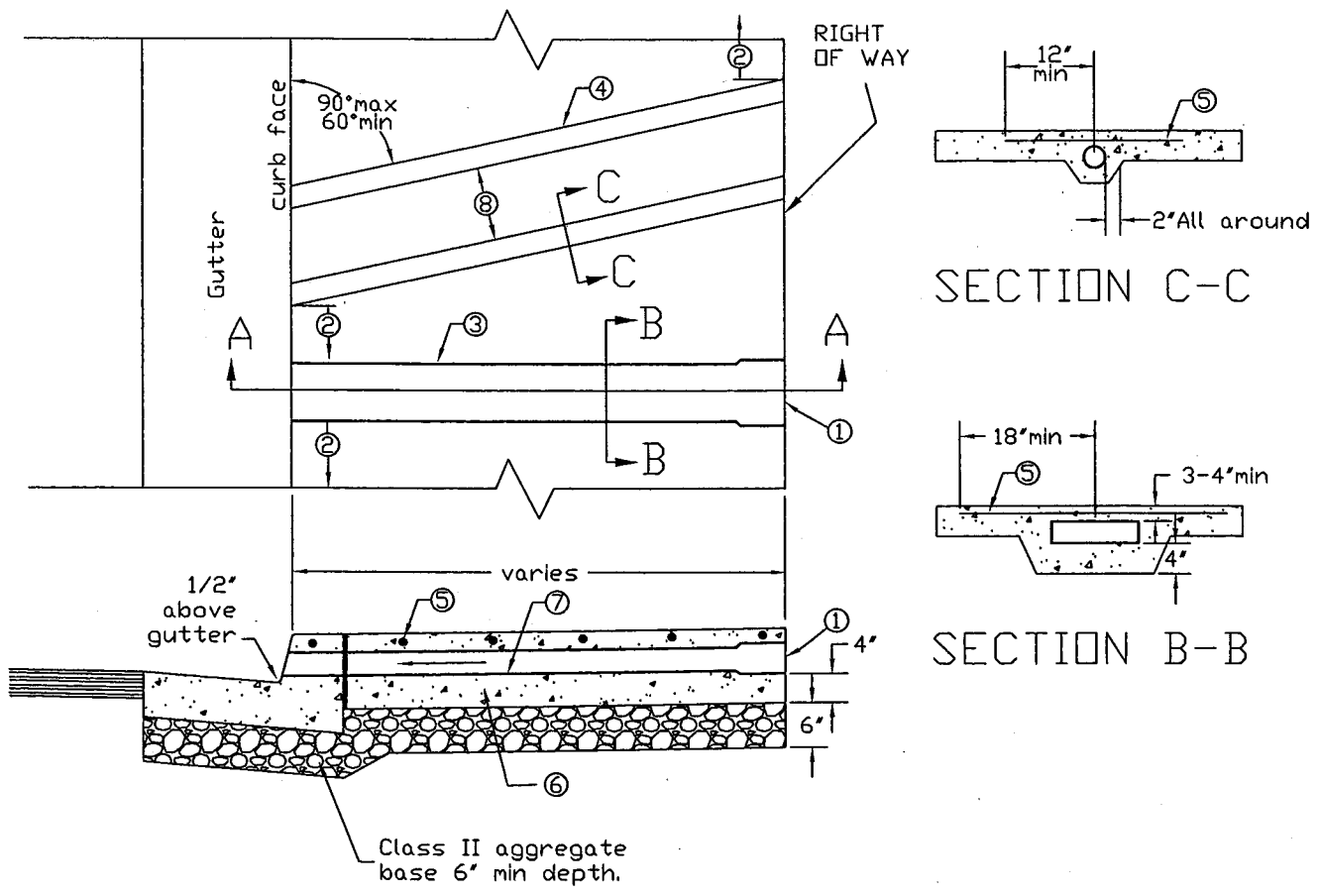
CITY OF PISMO BEACH

R. Dennis Delzeit 5/31/05
CITY ENGINEER DATE

CUTTING AND REPLACING SIDEWALK

STANDARD DRAWING 110

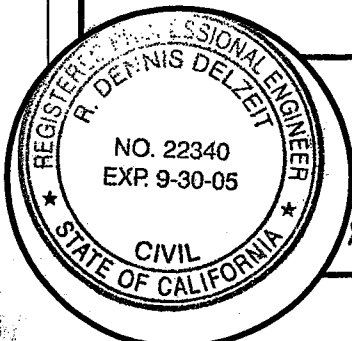
REV DESCRIPTION BY DATE



SECTION A-A

1. Inlet shall be paved swale, rectangular conduit, or pipe(s). Max Inlet height/diameter shall be curb height minus 2". Inlet conduits larger than 3" diameter/height shall be reduced with a manifold or junction box. A junction box shall have access/cleanout. Inlet type shall be approved by the city engineer.
2. Underdrain shall be no closer than 2' to a driveway or curb return.
3. Rectangular cast iron pipe- ALHAMBRA A-470, or approved equal.
4. Cast iron pipe- 3" diameter for 6" curbs, or 4" diameter for 8" curbs.
5. #4 rebar at 12" o.c.
6. Concrete shall be 5 sack PC concrete, slump: 2" min., 4" max.
7. Channel slope shall be 2% and no less than 1%. Slope shall be parallel with the sidewalk surface.
8. Multiple drains shall have 4" minimum clearance, outside to outside, with max of three drains per 10' of sidewalk. Drains shall be cut to match curb slope and grout filled between pipe and curb for a smooth transition.
9. Flexible and plastic pipes are not permitted as underdrains.
10. All class II base shall be compacted to 95%. Compaction tests may be required at the the option of the city inspector or the city engineer.

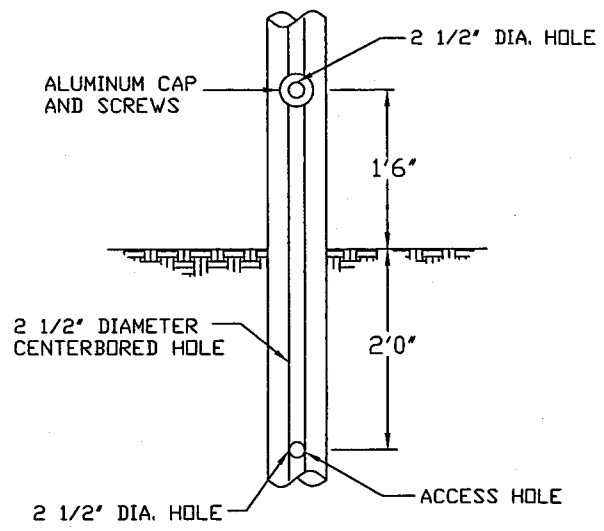
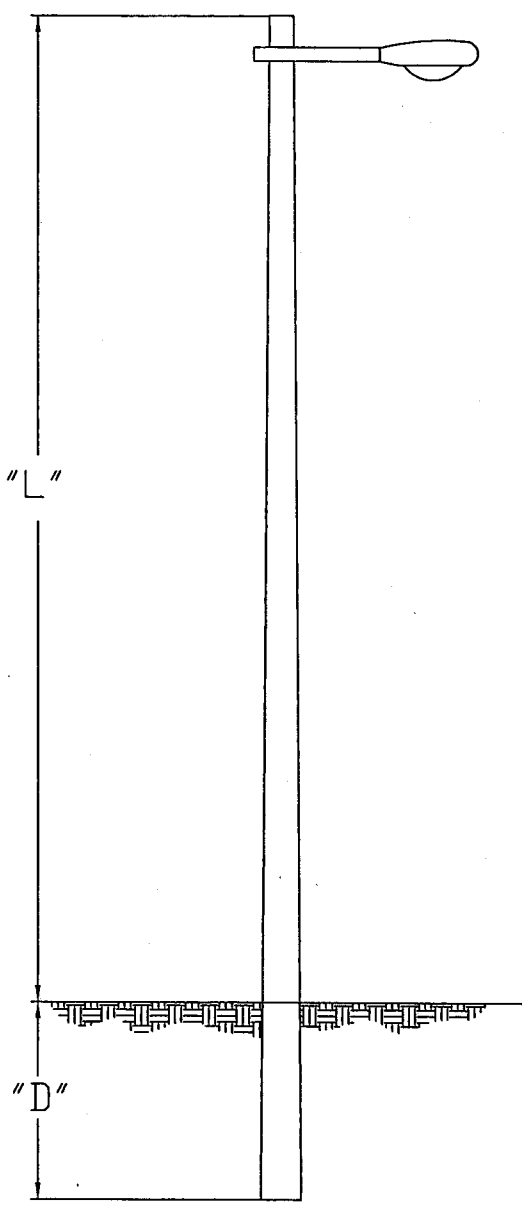
REV DESCRIPTION BY DATE



CITY OF
 PISMO BEACH
R. Dennis Delzeit
 CITY ENGINEER DATE

SIDEWALK
 UNDERDRAIN
 STANDARD DRAWING 111

NO. 22340 EXP. 9-30-05
 DESCRIPTION BY DATE
 REV

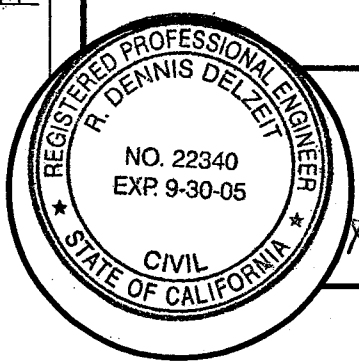


DETAIL "A"
HAND HOLE AND ACCESS HOLE

OVERALL LENGTH FT.	HEIGHT ABOVE GROUND "L" FT.	SETTING DEPTH "D" FT.	CENTER-BORED POLES CODE
25	20-1/2	4-1/2	35-7176
30	25	5	35-7177
35	30	5	35-7178
40	34-1/2	5-1/2	35-7179

CENTERBORED POLE

WOOD POSTS AND POLES ARE FULL-TREATED CELLON.
POSTS ARE FURNISHED WITH STEEL TENDON AND BOLT.



CITY OF
PISMO BEACH

R. Dennis Delzeit 5/31/05
CITY ENGINEER DATE

WOOD STREET LIGHT
STANDARD DRAWING 112

REV DESCRIPTION BY DATE

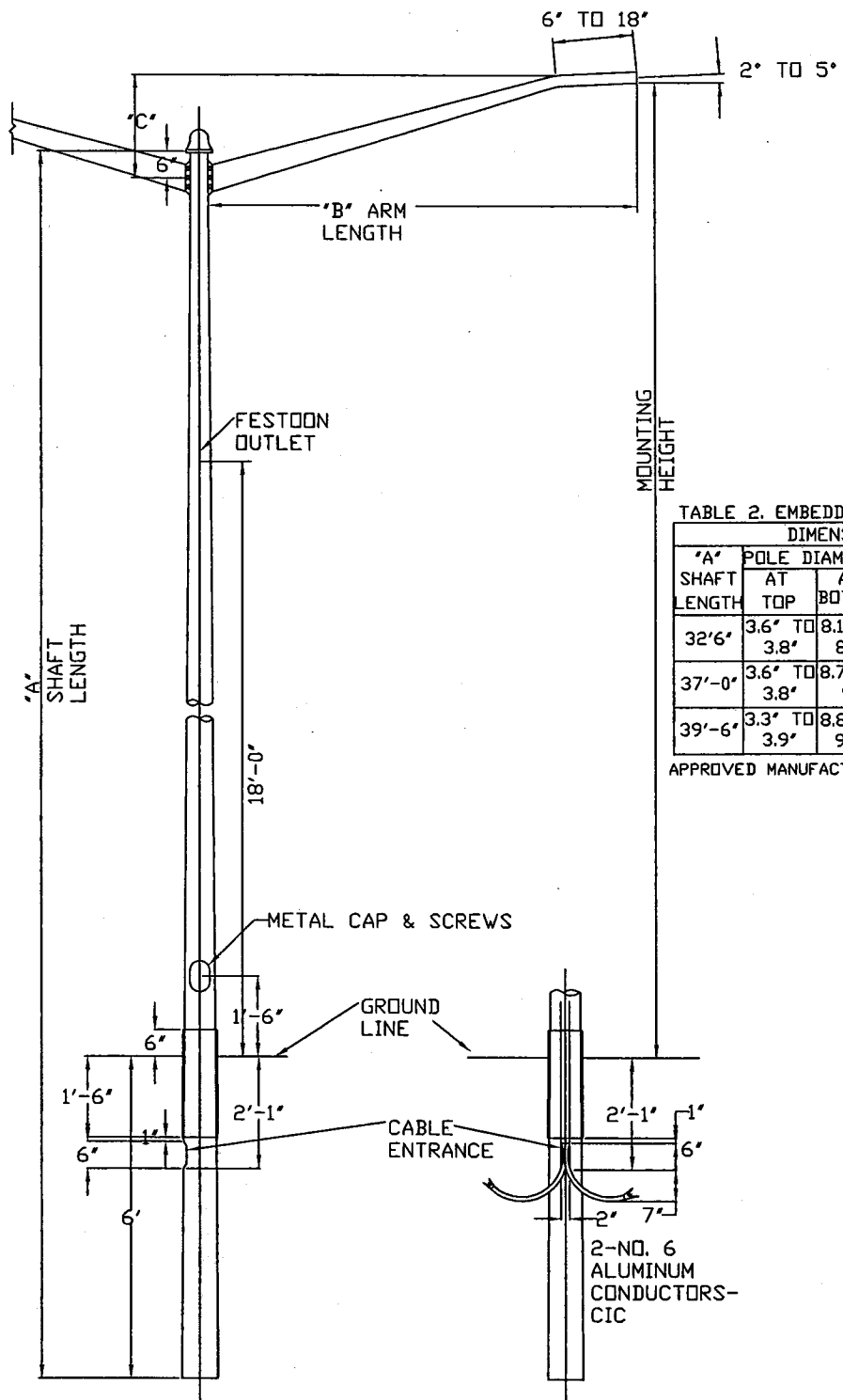


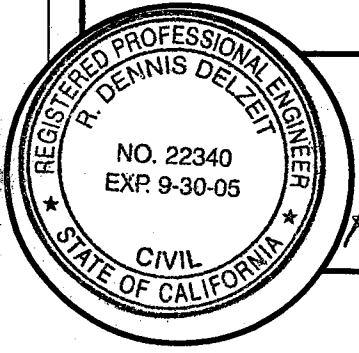
TABLE 2. EMBEDDED STEEL POLES

'A' SHAFT LENGTH	DIMENSIONS				CODE		MOUNTING HEIGHT
	POLE DIAMETER AT TOP	POLE DIAMETER AT BOTTOM	'B' ARM LENGTH	'C' RISE	SINGLE ARM	DOUBLE ARM	
32'-6"	3.6" TO 3.8"	8.1" TO 8.4"	4' TO 6'	1'-6" TO 2'	35-7231 TO 35-7232	35-7236	27'-6" TO 28'-6"
37'-0"	3.6" TO 3.8"	8.7" TO 9"	6' TO 8'	2' TO 2'	35-7233 TO 35-7234	35-7237 TO 35-7238	32'-6"
39'-6"	3.3" TO 3.9"	8.8" TO 9.5"	6' TO 8'	2' TO 2'	35-7235 TO —	35-7239 TO 35-7240	35'-6"

APPROVED MANUFACTURERS: AMERON, UNION METAL MFG. AND VALMONT

FIG. 1

FIG. 1A
CABLE ENTRANCE DETAIL

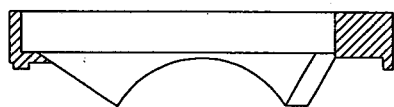
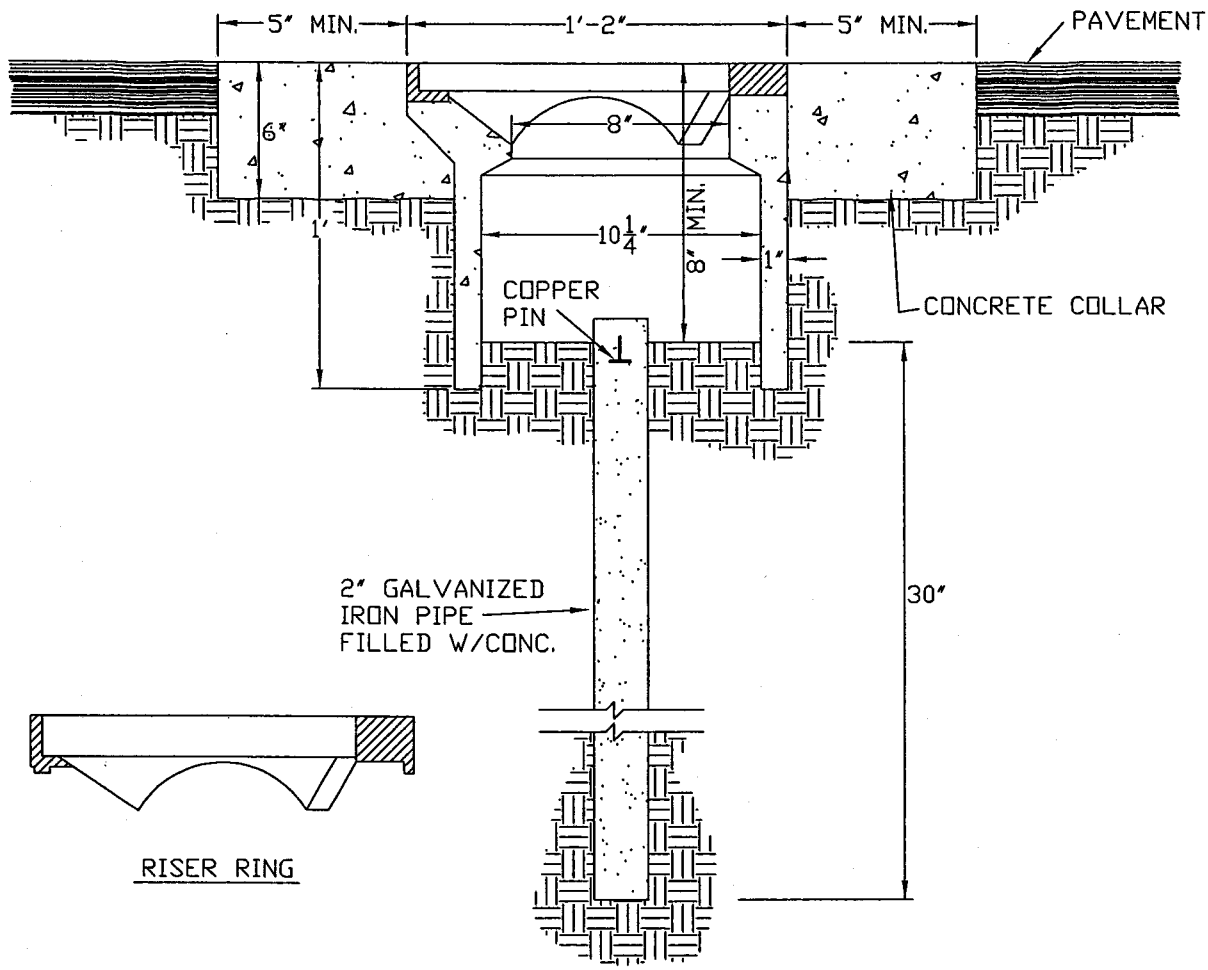


CITY OF PISMO BEACH

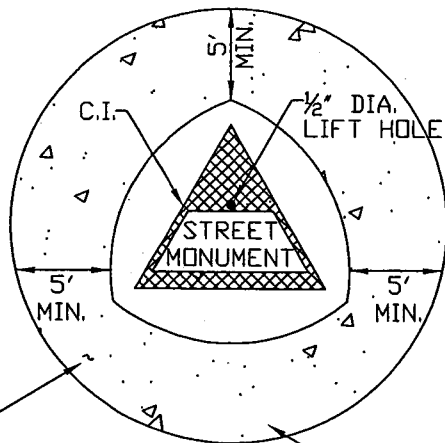
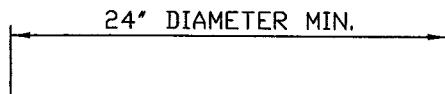
R. Dennis Delzeit 5/31/05
CITY ENGINEER DATE

METAL STREET LIGHT

STANDARD DRAWING 113



RISER RING



SLOPE SURFACE OF GROUT PAD TO DRAIN AWAY FROM COVER, AND TO MEET EXISTING GRADE.

NOTES

1. MONUMENT WELL TO BE BROOKS PRODUCTS NO. 4TT OR EQUAL.
2. MONUMENT WELL AND IRON PIPE TO BE SET BY CONTRACTOR. CONCRETE IN PIPE AND COPPER PIN TO BE SET BY ENGINEER OR SURVEYOR.
3. EXACT POINT TO BE SET WITH A COPPER PIN, OR EQUAL, AND A STANDARD SURVEYORS TAG.



CITY OF
PISMO BEACH

R. Dennis Delzeit 5/31/05
CITY ENGINEER DATE

STREET MONUMENT

STANDARD DRAWING 114

REV
 DESCRIPTION
 BY DATE
 DESCRIPTION
 BY DATE

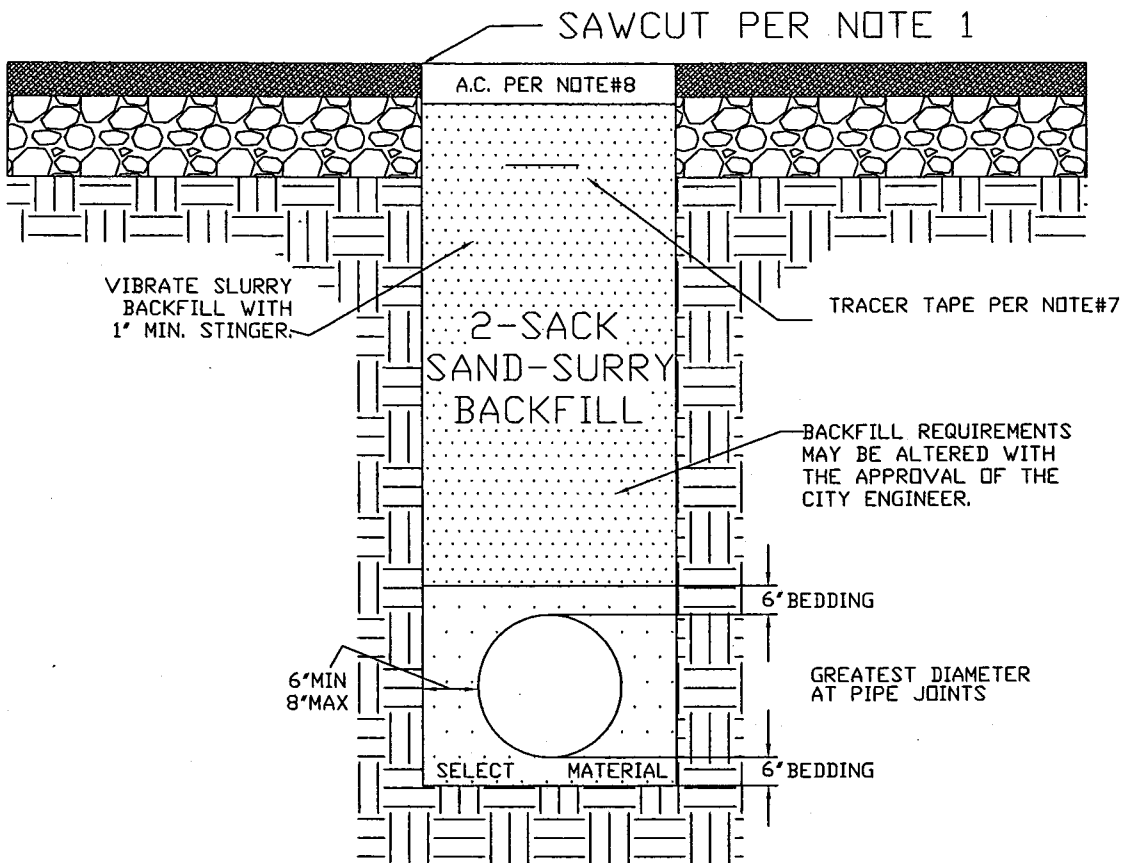
NO. 22340

DESCRIPTION

DATE

DESCRIPTION

REV



1. Cut existing roadway to provide vertical surfaces and square corners. Cut edges shall be straight and neat in appearance.
2. Select sand bedding material shall be placed and compacted prior to the placement of pipe in all trenches.
3. Initial backfill shall be select sand material, leveled, and compacted to 90% relative compaction to a depth of 6' above the pipe. Subsequent backfill shall be plant-mixed two-sack sand (cement) slurry, vibrated with a 1' minimum stinger.
4. When flexible pipe is used (PVC, HDPE, etc.), 4' and larger trench shall be backfilled to the spring line of the pipe, compacted to 90% prior to completing initial backfill.
5. Slurry shall have a water content sufficient to produce a fluid, workable mix that will flow and can be pumped without segregation while being placed. Slurry shall be placed in the trench within one hour of being mixed.
6. In the event that no structures are to be built over a non-roadway trench, select sand or select native materials may be used in place of slurry, and a minimum of 85% compaction may be acceptable, upon approval of city engineer or his representative.
7. If non-metallic pipe is used, magnetic tracer tape shall be placed within 12' of the surface of all trenches, with a minimum cover of 4' between tape and A.C.
8. Replacement section shall have a minimum A.C. depth equal to existing, plus 1' Minimum A.C. depth shall be 3' on local streets, 6' on collector or arterial streets.
9. Temporary cold mix patches may be placed in trench excavations for a maximum time period not to exceed the time allotted by the encroachment permit.
10. Prior to backfilling, all metal tees and valves are to be completely wrapped in plastic.
11. Backfill in CalTrans right-of-way.

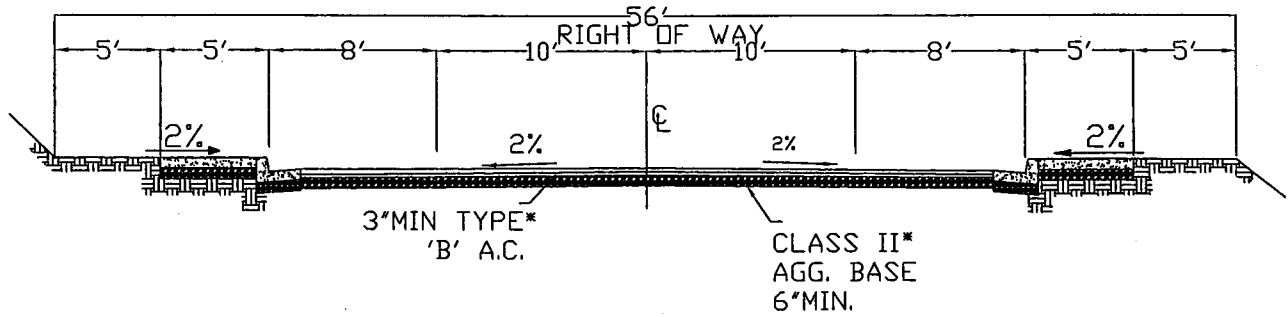


CITY OF
PISMO BEACH

R. Dennis Delzeit 5/31/05
CITY ENGINEER DATE

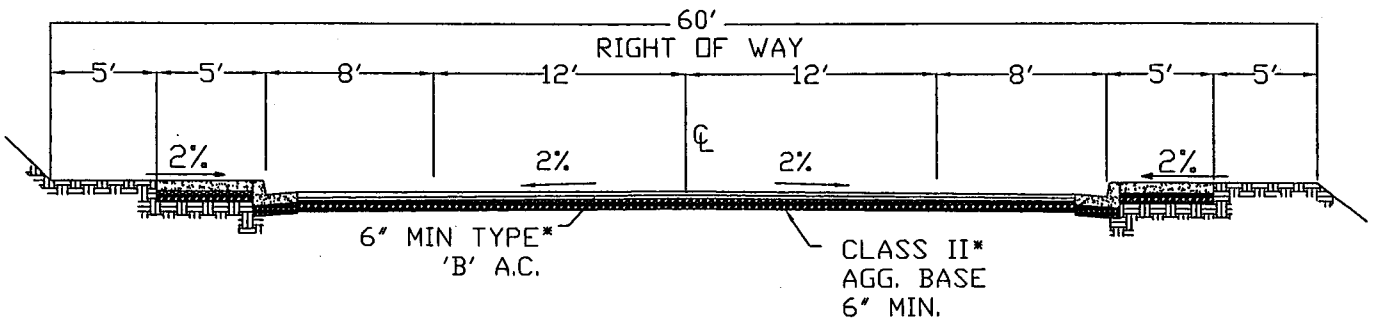
TRENCH BACKFILL
REQUIREMENTS

STANDARD DRAWING 115



RESIDENTIAL

T.I. = 5.5



COLLECTOR

T.I. = 7.0

*ROAD SECTION SHALL BE PER SOILS ENGINEER'S RECOMMENDATIONS.

REVISIONS
 NO. DATE BY DESCRIPTION
 REV



CITY OF
PISMO BEACH

R. Dennis Delzeit 5/31/05
CITY ENGINEER DATE

TYPICAL STREET
SECTIONS

STANDARD DRAWING 116

DATA

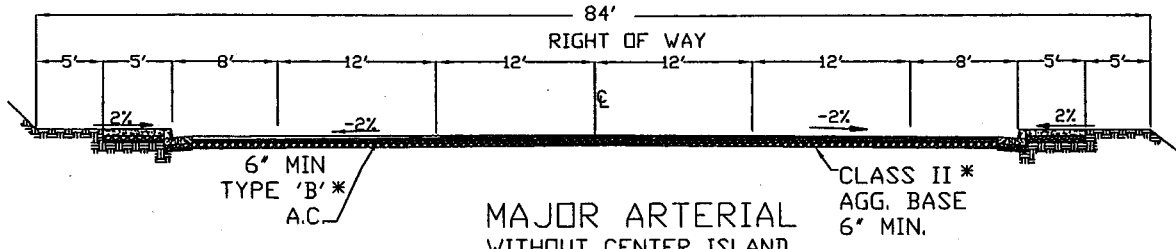
DESCRIPTION

DATE

REV

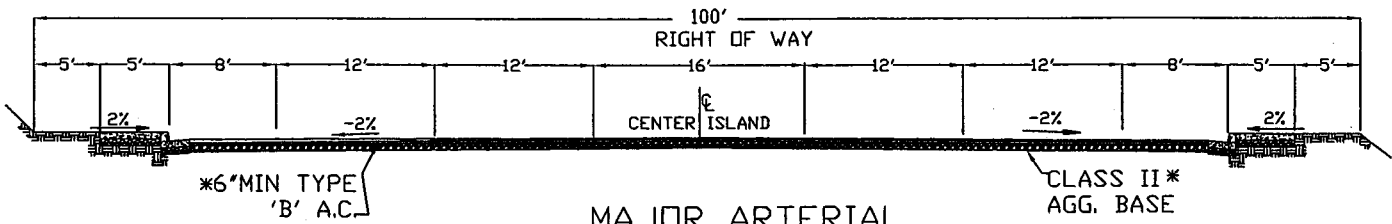
DESCRIPTION

DATE



MAJOR ARTERIAL
WITHOUT CENTER ISLAND

T.I.- 8.0
COMMERCIAL/INDUSTRIAL- 8.0
LOCAL HIGHWAY- 10.0



MAJOR ARTERIAL
WITH CENTER ISLAND

T.I.- 8.0
LOCAL HIGHWAY- 10.0

*ROAD SECTION SHALL BE
PER SOILS ENGINEER'S
RECOMMENDATIONS.



CITY OF
PISMO BEACH

R. Dennis Delzeit 5/31/05
CITY ENGINEER DATE

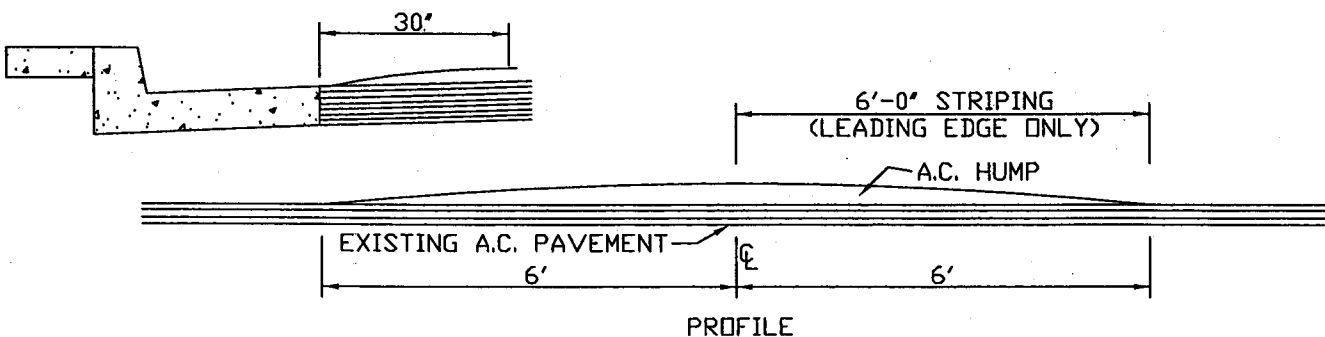
TYPICAL STREET
SECTIONS

STANDARD DRAWING 117

REV
 DESCRIPTION
 DATE
 DESCRIPTION
 DATE
 DESCRIPTION
 DATE

NOTES:

1. HUMPS SHALL BE PLACED ON GOOD, SOUND ASPHALT SURFACE. STRUCTURAL SECTION SHALL BE REPAIRED OR REPLACED, AS NEEDED, PRIOR TO REPLACING HUMP.
2. A TACK COAT SHALL BE APPLIED PRIOR TO PLACING THE HUMP PAVING.
3. HUMP SHALL BE CONSTRUCTED OF ASPHALT CONCRETE TYPE 'B', WITH $\frac{3}{8}$ " MAX AGG.
4. SPEED HUMPS MUST MEET THE REQUIREMENTS OF CITY OF P.B. RESOLUTION R-99-18



DEPTH OF A.C. HUMP							
DISTANCE FROM EDGE-IN FEET	0	2.0	4.0	5.0	4.0	2.0	0
DEPTH OF A.C. EDGE-IN FEET	0	.14	.22	.25	.22	.14	0



CITY OF
PISMO BEACH

R. Dennis Delzeit 6/1/05
CITY ENGINEER DATE

SPEED HUMP

STANDARD DRAWING 118

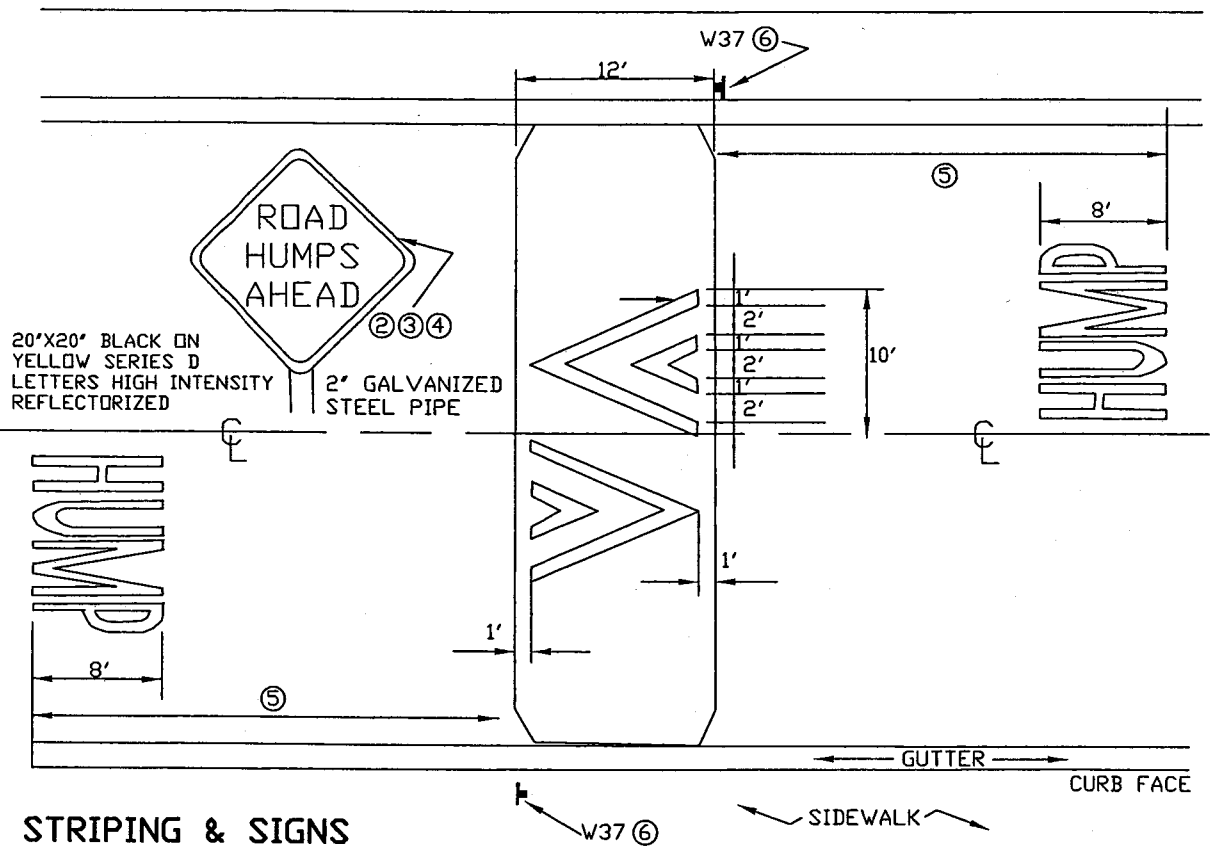
NO. DA

DESCRIPTION

REV. DATE

DESCRIPTION

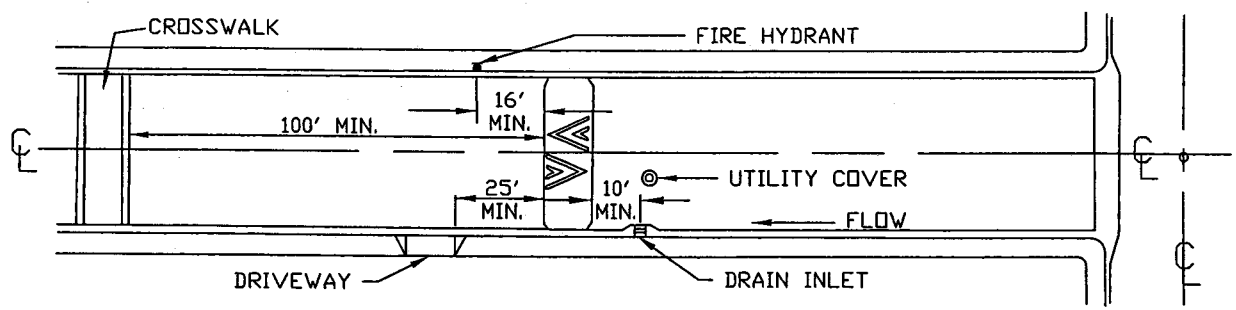
REV



STRIPING & SIGNS

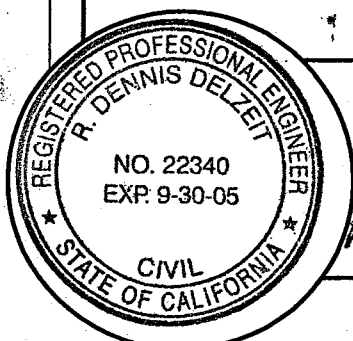
NOTES:

- ① 12 INCH WIDE REFLECTIVE WHITE THERMOPLASTIC PAVEMENT MARKINGS.
- ② 'ROAD HUMPS AHEAD' SIGNS SHALL BE LOCATED ONLY AS DIRECTED BY THE CITY ENGINEER.
- ③ SET SIGN POST 18" INTO 1' DIAMETER HOLE WITH 5-SACK CONCRETE.
- ④ SIGNS SHALL CONFORM TO STATE SPECIFICATIONS.
- ⑤ TO BE DETERMINED IN FIELD. ONE SIGN SHALL BE INSTALLED IN ADVANCE OF A SERIES OF BUMPS.
- ⑥ SIGN TO BE POSTED AT THE ROAD HUMP BUT MAY NOT BE POSTED UP TO 50 FEET IN ADVANCE AS DIRECTED BY THE CITY ENGINEER.



LOCATION

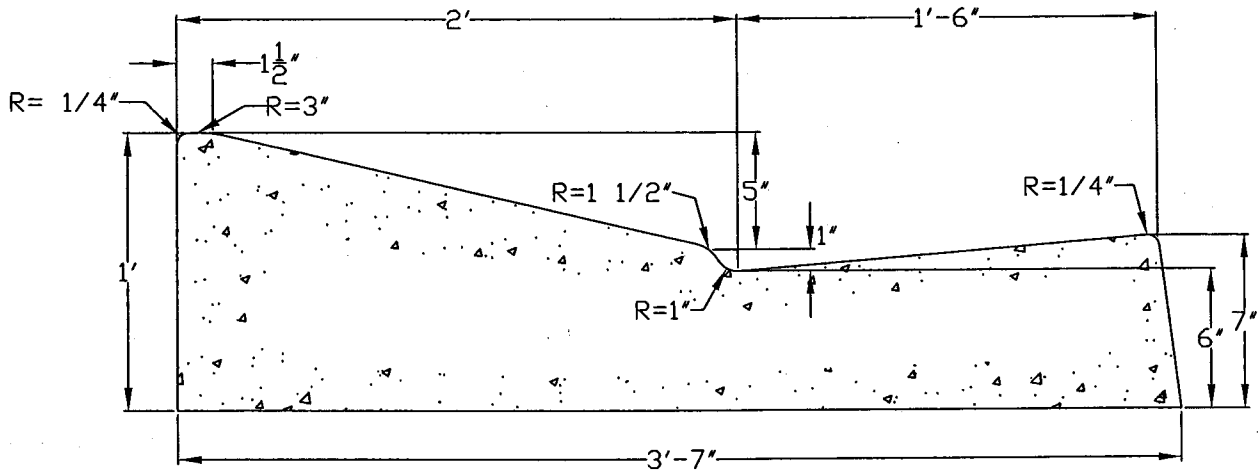
NOTE: SPEED HUMPS MUST MEET THE REQUIREMENTS OF CITY DD P.B. RESOLUTION R-99-18.



CITY OF
PISMO BEACH
R. Dennis Delzeit
CITY ENGINEER 5/31/05
DATE

SPEED HUMP
LOCATION, STRIPING, &
SIGNS
STANDARD DRAWING 118A

REV DESCRIPTION DATE



CURB AREA
(2.48 SQ. FT.)

NOTES:

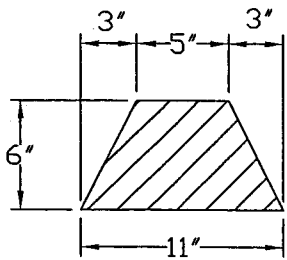
1. TRANSITION TO STANDARD CURB AT ALL CURB RETURNS, EXCEPT WHERE SIDEWALK RAMPS ARE PROVIDED, AND AT ALL CUL-DE-SACS WITH DRAINAGE STRUCTURES.
2. CONCRETE SHALL BE 5 SACK PC CONCRETE, 4" MAX. SLUMP.



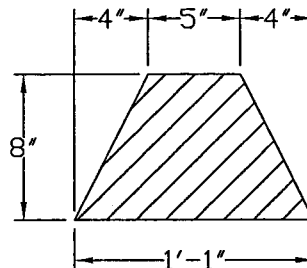
CITY OF
PISMO BEACH
R. Dennis Delzeit 5/31/05
CITY ENGINEER DATE

CURB AND GUTTER-ROLLED
STANDARD DRAWING 119

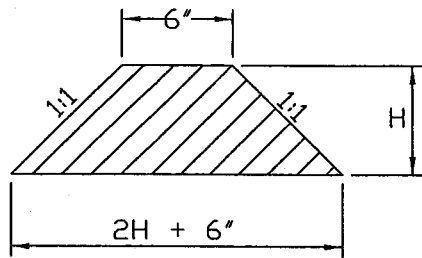
REV DESCRIPTION BY DATE



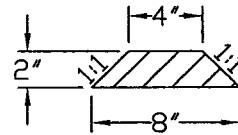
TYPE A



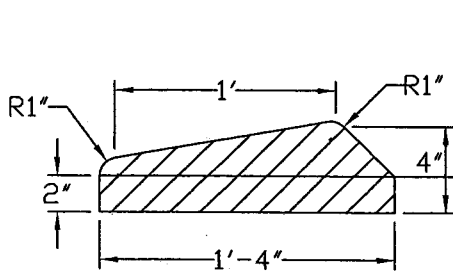
TYPE B



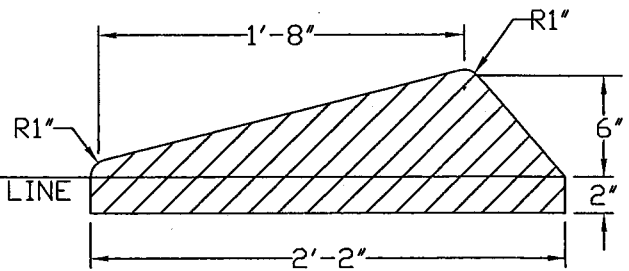
TYPE C



TYPE D

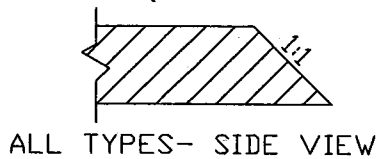


TYPE E



TYPE F

MOUNTABLE DIKES



ALL TYPES- SIDE VIEW

SLOPE END
 OF DIKE 1:1
 WHEN NOT
 JOINING
 OTHER
 IMPROVMENTS.

NOTES:

1. DIKE IS TO BE PLACED ON 3" OF A.C. ROAD SURFACING, EXTENDING THROUGHOUT THE WIDTH OF THE DIKE.
2. AR-8000 GRADE ASPHALT TO BE USED FOR ALL DIKES.
3. A.C. DIKES MAY BE SHAPED AND COMPACTED WITH AN EXTRUSION MACHINE OR OTHER EQUIPMENT CAPABLE OF SHAPING AND COMPACTING THE MATERIAL TO THE REQUIRED CROSS SECTION.



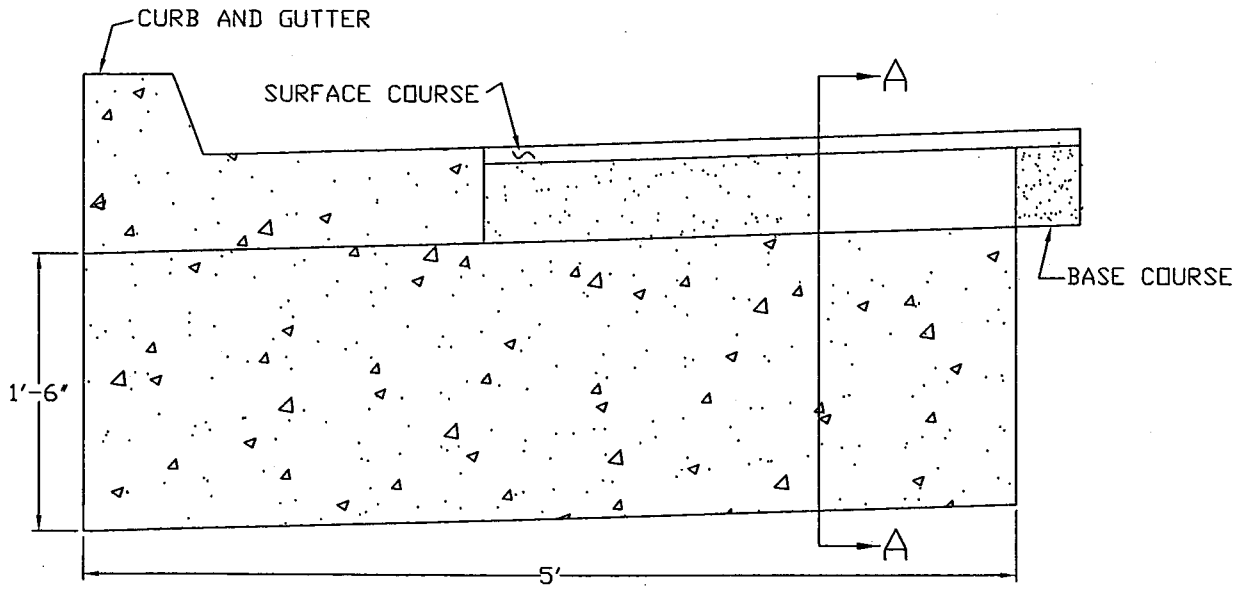
CITY OF
PISMO BEACH

R. Dennis Delzeit 5/31/05
CITY ENGINEER DATE

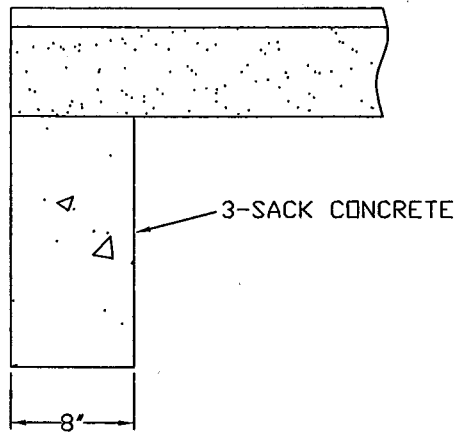
DIKES- ASPHALT
CONCRETE

STANDARD DRAWING 120

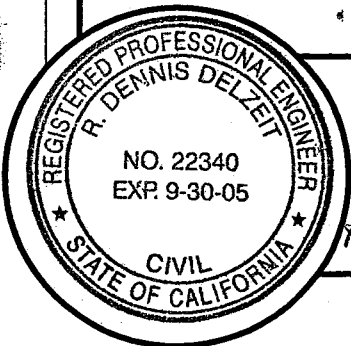
DATE
DESCRIPTION
REVISION
BY
DATE



ELEVATION



SECTION A-A



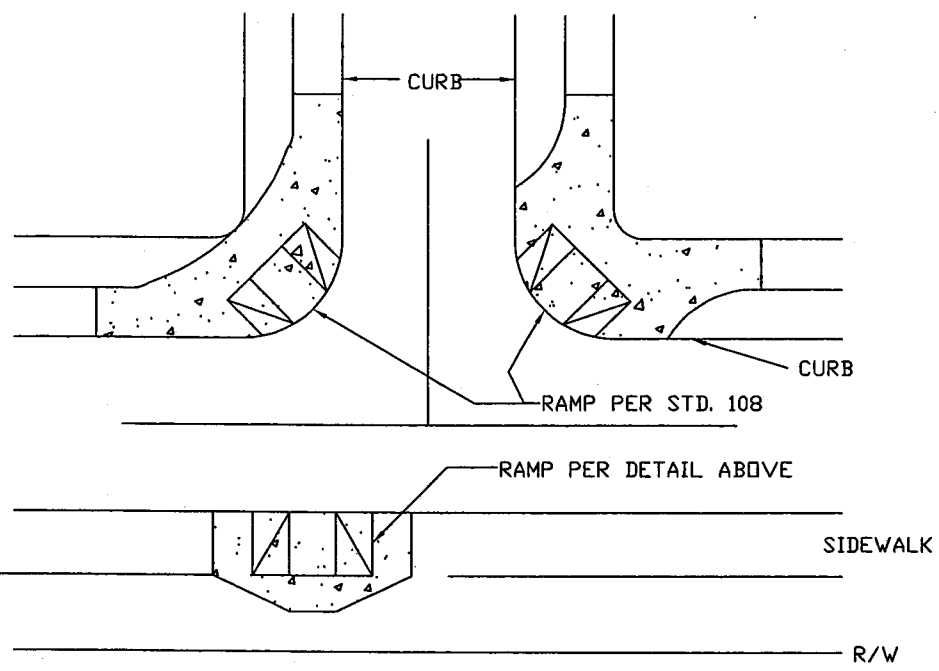
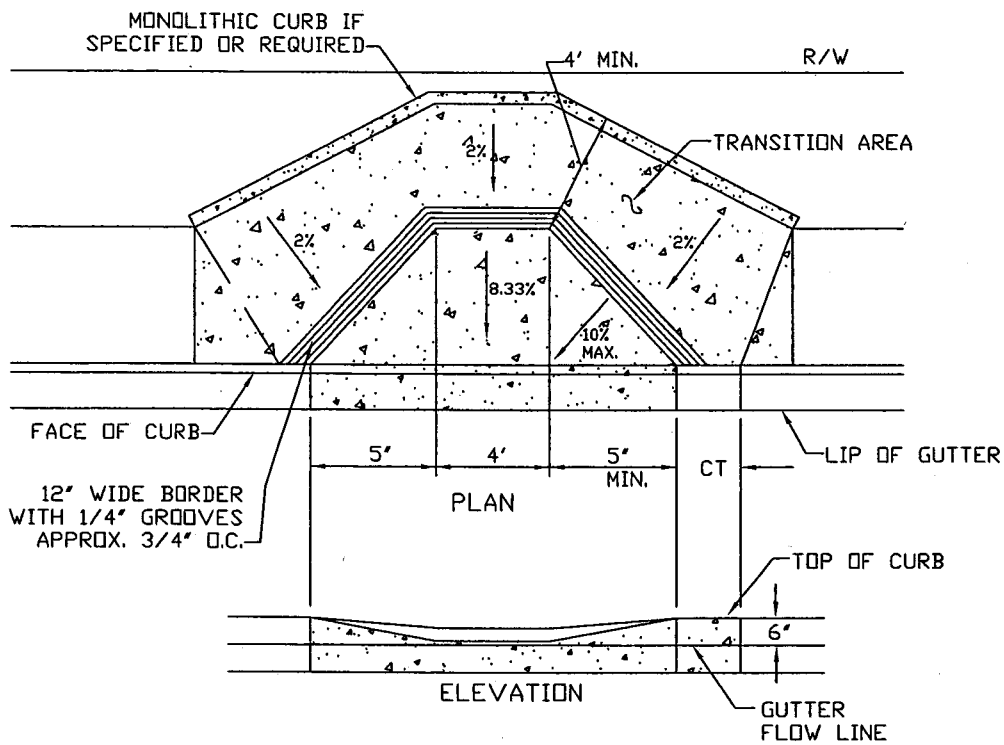
CITY OF
PISMO BEACH

R. Dennis Delzeit 5/31/05
CITY ENGINEER DATE

CUTOFF WALL AT
END OF PAVEMENT

STANDARD DRAWING 121

REV DESCRIPTION BY DATE



CITY OF
PISMO BEACH

R. Dennis Delzet 5/31/05
CITY ENGINEER DATE

CURB RAMP
(NEW CONSTRUCTION)

STANDARD DRAWING 122

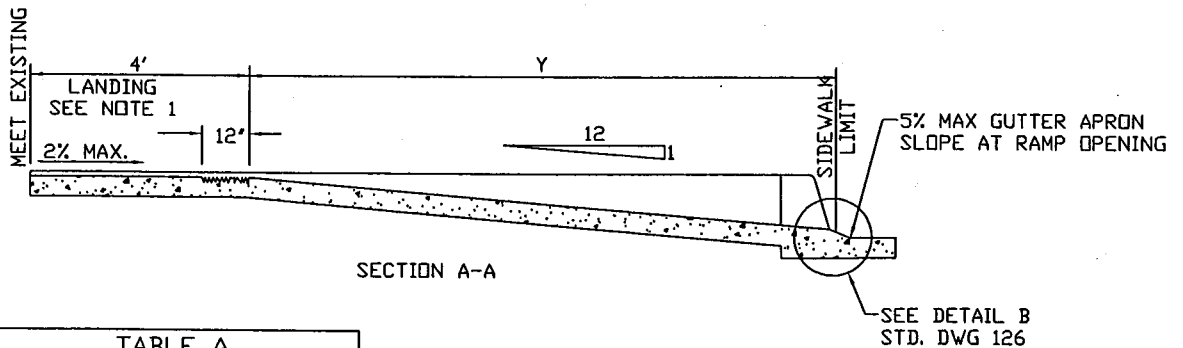
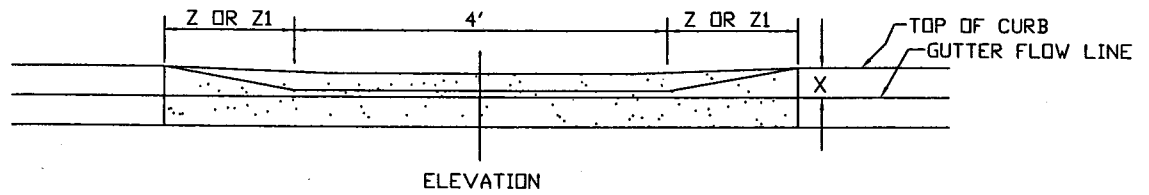
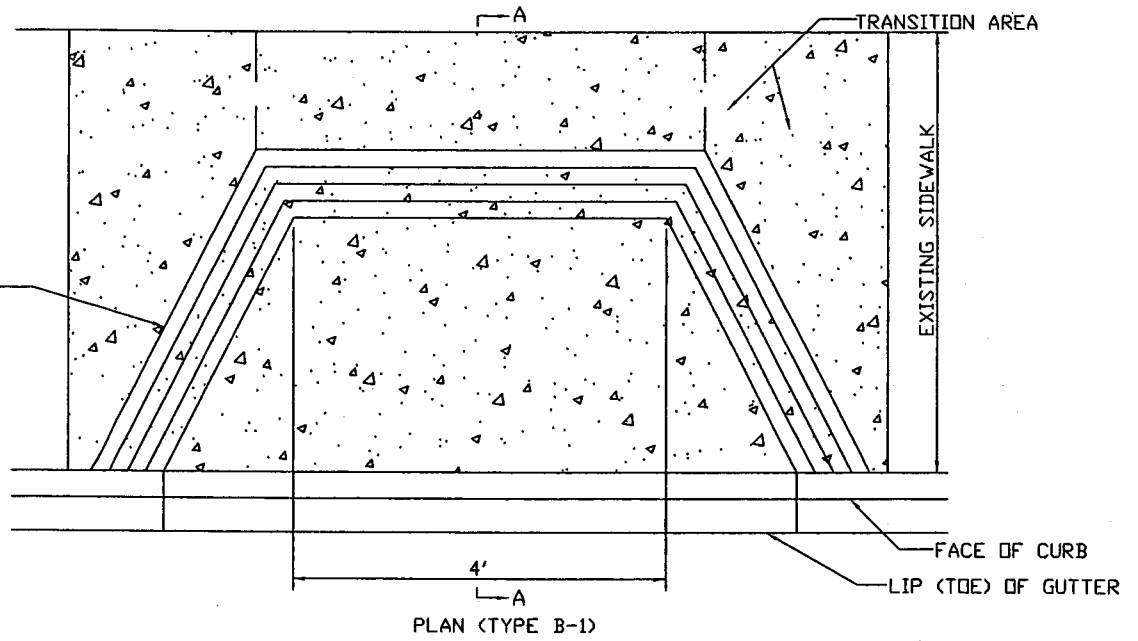
DATE

DESCRIPTION

BY DATE

REV

12" WIDE BORDER WITH 1/4" GROOVES



X	Y	Z	Z1
1"	0'-6"	1'-6"	1'-6"
2"	1'-6"	1'-6"	1'-6"
3"	2'-6"	2'-1"	2'-6"
4"	3'-6"	2'-11"	3'-6"
5"	4'-6"	3'-9"	4'-6"
6"	5'-6"	4'-7"	5'-6"
7"	6'-6"	5'-5"	6'-6"
8"	7'-6"	6'-3"	7'-6"

NOTES:

1. IF INADEQUATE R/W EXISTS TO PROVIDE A 4' LANDING, A LANDING WIDTH LESS THAN 4' BUT AT LEAST 3' IS ACCEPTABLE IF THE SIDE SLOPES ARE REVISED TO 12:1 PER SIDE SLOPE Z1 IN TABLE A.
2. SEE STANDARD DRAWING 126 FOR GENERAL NOTES.
3. TYPE B-1 IS A DESIGNATION FOR RAMP AT STRAIGHT CURB
- *4. DELETE 12" WIDE BORDER WHEN X=1'



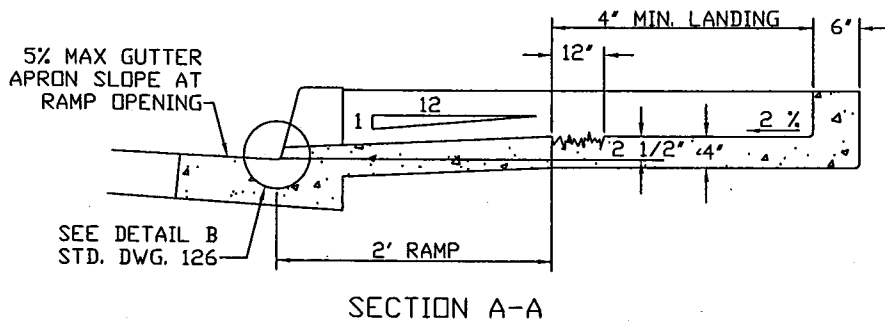
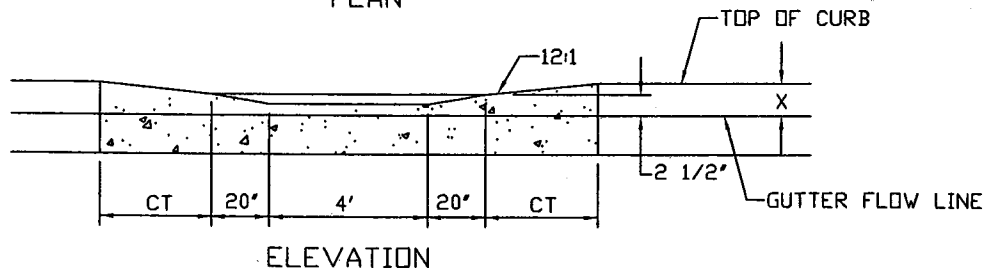
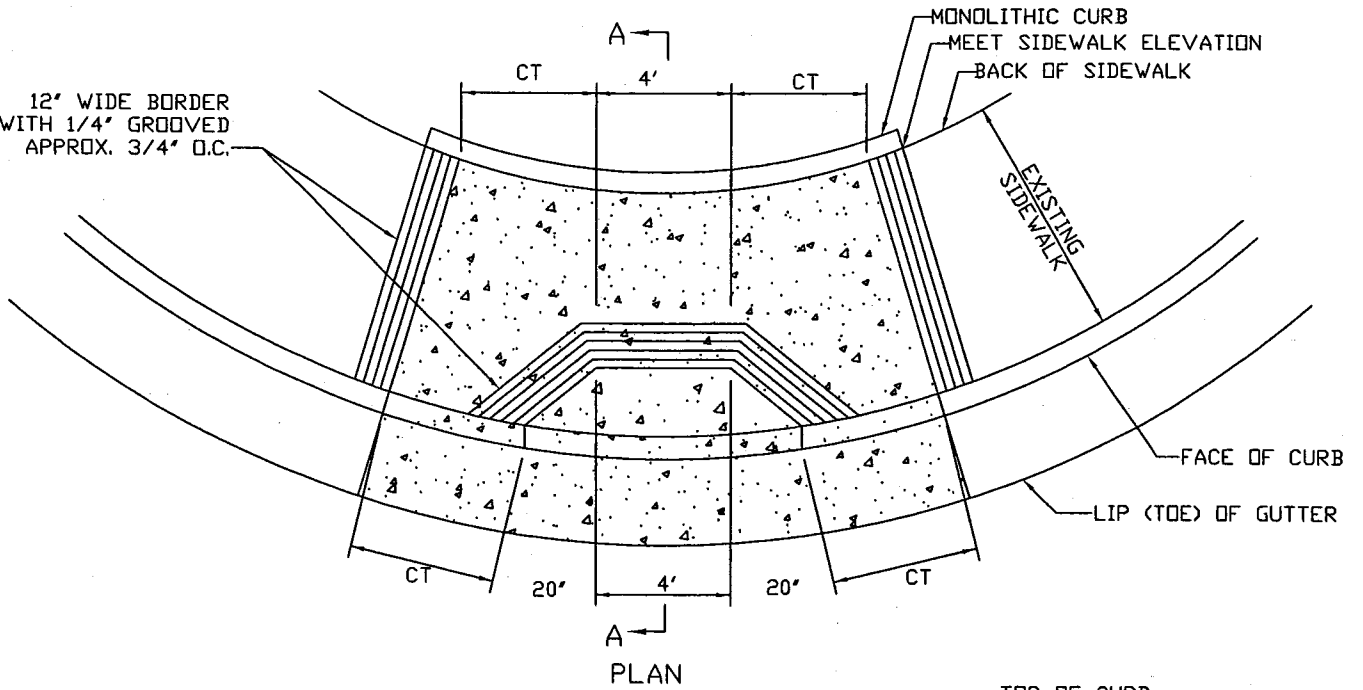
CITY OF PISMO BEACH

R. Dennis Delzeit 5/31/05
CITY ENGINEER DATE

CURB RAMP (FOR EXISTING SIDEWALK)

STANDARD DRAWING 123

12" WIDE BORDER
WITH 1/4" GROOVED
APPROX. 3/4" D.C.

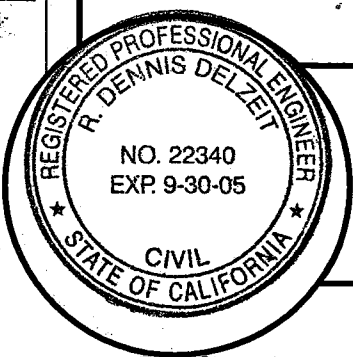


NOTES:

1. TYPE C RAMPS ARE ONLY TO BE USED TO MITIGATE EXISTING CONDITIONS WHERE INADEQUATE RIGHT OF WAY EXISTS TO USE STD. DWG. 108, AND ARE NOT TO BE USED IN NEW CONSTRUCTION.

2. SEE STANDARD DRAWING 126 FOR GENERAL NOTES.

X CURB HEIGHT	CT CURB TRANSITION
4'	1'-6"
5'	2'-6"
6'	3'-6"
7'	4'-6"
8'	5'-6"
9'	6'-6"
10'	7'-6"
11'	8'-6"
12'	9'-6"
13'	10'-6"



CITY OF
PISMO BEACH

R. Dennis Delzeit
CITY ENGINEER DATE

5/31/05

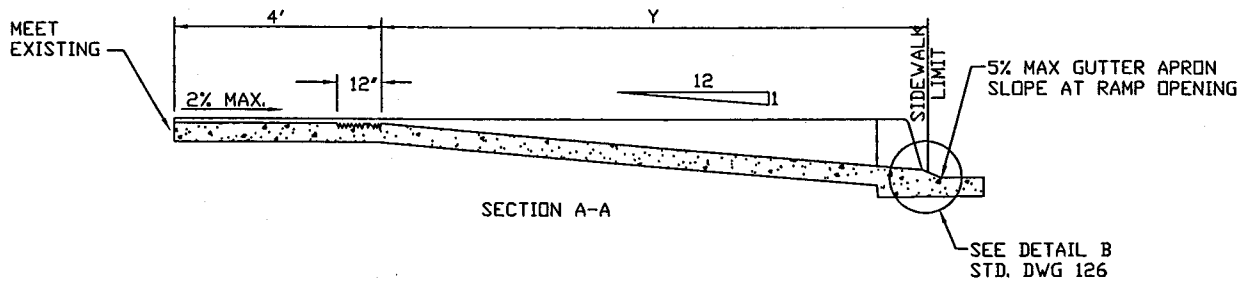
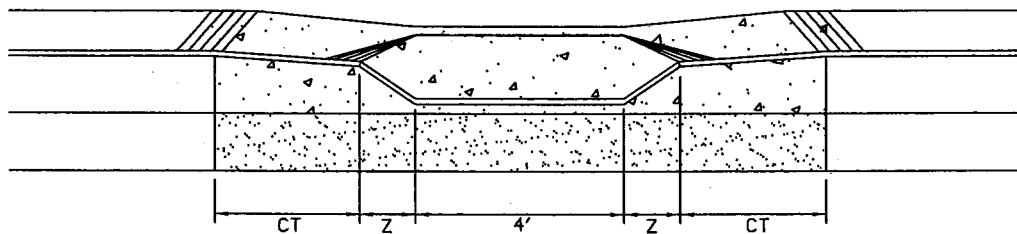
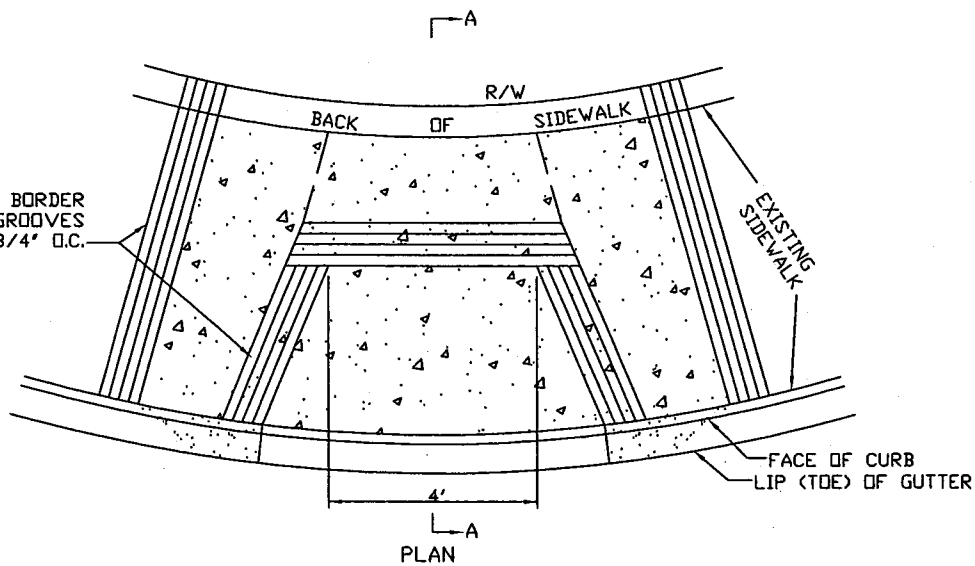
CURB RAMP- TYPE C
(FOR EXISTING SIDEWALK)

STANDARD DRAWING 124

DATE DESCRIPTION TIME REV

REV DESCRIPTION DATE

12" WIDE BORDER WITH 1/4" GROOVES APPROX. 3/4" O.C.



X	Y	Z	CT
DESIGN CURB HEIGHT	RAMP LENGTH (12:1)	SIDE SLOPE (10:1)	CURB TRANS.
1"	0'-6"	1'-6"	(SEE NOTE 3)
2"	1'-6"	1'-6"	
3"	2'-6"	2'-1"	
4"	3'-6"	2'-11"	
5"	4'-6"	3'-9"	
6"	5'-6"	4'-7"	
7"	6'-6"	5'-5"	
8"	7'-6"	6'-3"	

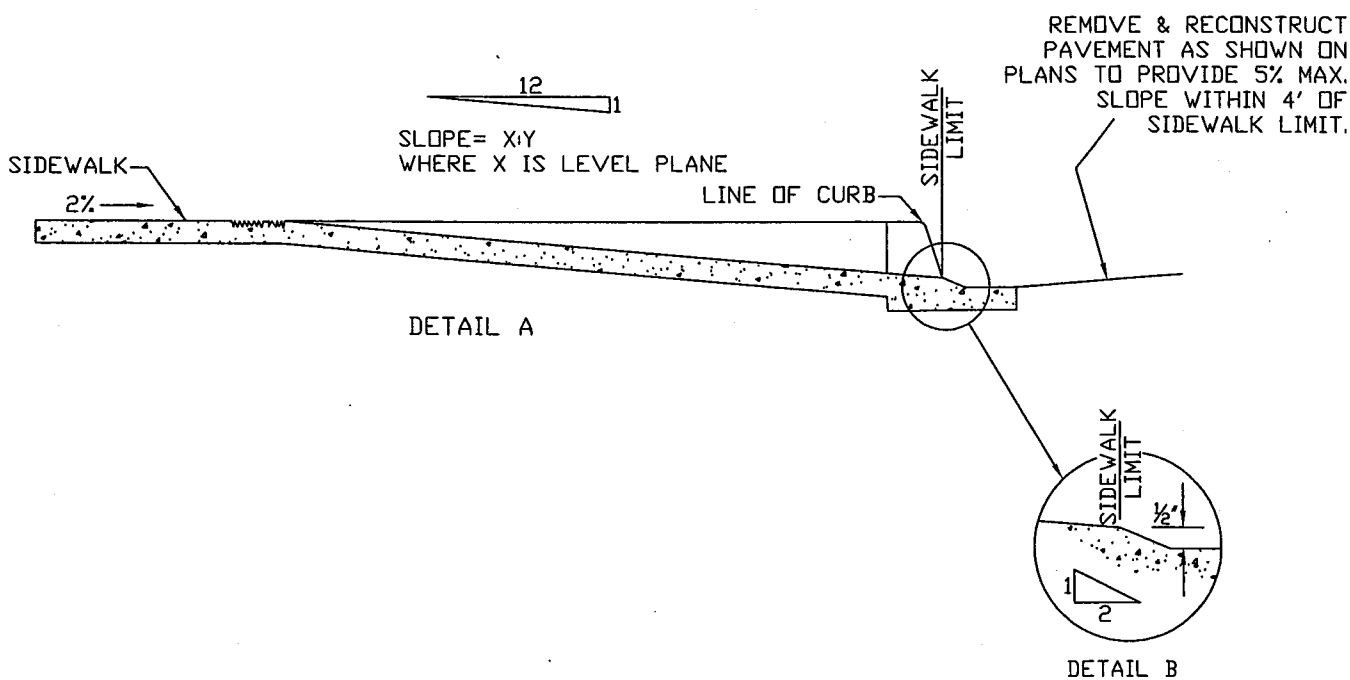
- NOTES:
- SEE STD. DWG. 126 FOR GENERAL NOTES.
 - X = DESIGN CURB HEIGHT AS SHOWN ON PLANS.
 - CURB TRANSITION (CT) SHALL BE 1' FOR EACH ONE INCH DIFFERENCE BETWEEN EXISTING CURB HEIGHT AND DESIGN CURB HEIGHT.
 - IF SPECIFIED, CONSTRUCT MONOLITHIC CURB AT BACK OF RAMP, AS IN STD. DWG. 124.
 - DELETE 12" INSIDE BORDER AT RAMP WHEN X=1'.



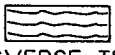
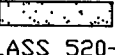
CITY OF PISMO BEACH
R. Dennis Delzett 5/31/05
 CITY ENGINEER DATE

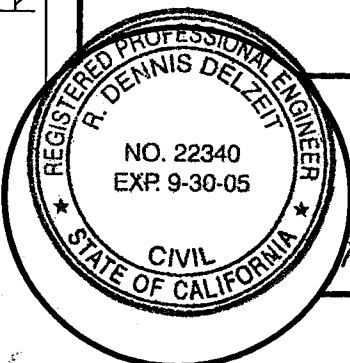
CURB RAMP- TYPE C-1
 (FOR EXISTING SIDEWALK)
 STANDARD DRAWING 125

REV DESCRIPTION BY DATE



NOTES:

1. THE REMOVAL OF EXISTING CONCRETE CURB, GUTTER, SIDEWALK AND PAVEMENT FOR PEDESTRIAN RAMP INSTALLATION SHALL COMPLY WITH STD. DWG. 110.
2. AREAS SHOWN THUS:  SHALL HAVE HEAVY BROOM "RIPPLE" TEXTURE FINISH, TRANSVERSE TO AXIS OF RAMP CONTRASTING VISUALLY WITH ADJOINING SURFACES.
3. AREAS SHOWN THUS:  ARE THE MINIMUM REQUIRED FOR A COMPLETE RAMP INSTALLATION AND SHALL BE CONCRETE CLASS 520-C-2500.
4. IF OBSTRUCTIONS SUCH AS INLETS, UTILITY POLES, FIRE HYDRANTS, ETC., ARE ENCOUNTERED, THE RAMP LOCATIONS MAY BE ADJUSTED UPON THE APPROVAL OF THE CITY ENGINEER.
5. RAMP SLOPE SHALL BE A MINIMUM GRADE OF 12:1.
6. THE RAMP SLOPES WILL BE MEASURED RELATIVE TO THE SIDEWALK SLOPE, SEE DETAIL A ABOVE. ADJOINING SLOPE BEYOND RAMP SHALL NOT EXCEED 2%.



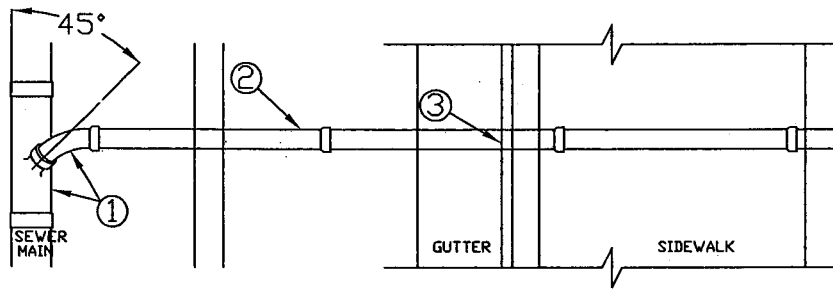
CITY OF
PISMO BEACH

R. Dennis Delzeit 5/31/05
CITY ENGINEER DATE

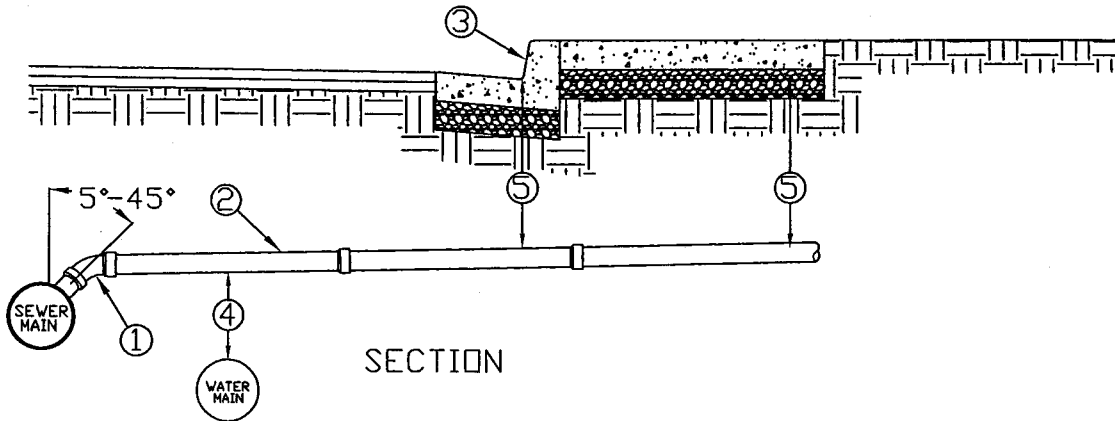
GENERAL NOTES
FOR CURB RAMPS

STANDARD DRAWING 126

REV DESCRIPTION DATE



PLAN VIEW



SECTION

1. For new construction, a factory fabricated wye of PVC schedule 40 or approved equal shall be used. Install $\frac{1}{8}$ " bend pointing downstream and entering main at a vertical angle of not less than 5%, nor more than 45%. For construction of a new lateral into an existing main, a flexible saddle wye manufactured by Mission Rubber, DFW, or approved equal shall be used.
2. Sewer lateral pipe and fittings shall be Sch. 40 ABS, SDR 35 PVC, with a minimum diameter of 4" and a minimum slope of $\frac{1}{4}$ " per foot. Grade shall be uniform from main to property line. Changes in grade shall be made using long-radius bends. Cement or hot-pour joints will not be allowed.
3. Face of curb shall be marked with an "S" directly over the lateral. The "S" shall be stamped into new concrete, or chiseled into existing concrete, and shall be no smaller than 3'x2', nor less than $\frac{3}{16}$ " deep.
4. A minimum separation of 18' shall be maintained when crossing over waterlines, and a minimum separation of 12' shall be maintained when crossing under waterlines.
5. Depth of lateral shall be no less than 36" from the top of the pipe unless constructed of cast iron waterline or encased in concrete with the approval of the City Engineering Division. Maximum depth at gutterline shall be 60" to flowline when terrain is flat.
6. A minimum separation of 5' between sewer lateral and domestic water service shall be maintained in all new subdivisions, and in all existing locations where conditions permit. A joint trench may be used upon written city approval under some circumstances, if a minimum of 12" horizontal and 12" vertical separation is maintained with the water service installed above the sewer lateral, on a solid 12" min. width shelf of undisturbed material.
7. New sewer laterals into existing mains will be made using an inserta tee lateral connection or approved equal.



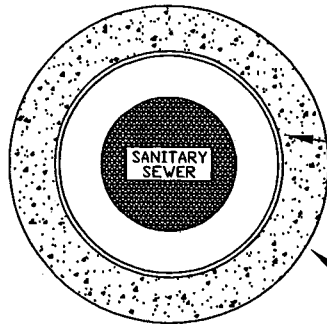
CITY OF
PISMO BEACH

R. Dennis Delzeit 5/31/05
CITY ENGINEER DATE

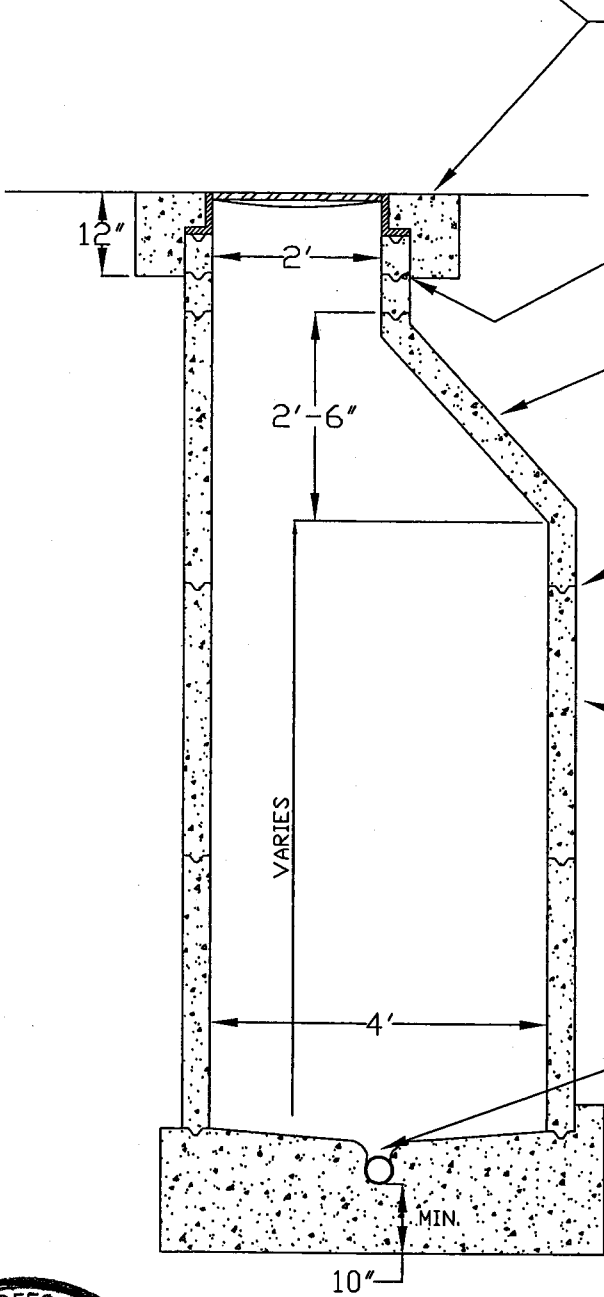
SEWER LATERAL

STANDARD DRAWING 201

REV DESCRIPTION BY DATE



COVER W/BLIND PICKHOLE
 MANHOLE COVER AND FRAME SHALL BE PHOENIX P-1090 WITH A 24" CLEAR OPENING, AND THE COVER SHALL BE LETTERED "SANITARY SEWER". INSIDE OF FRAME SHALL BE GROUTED. (APPROVED EQUAL IS SBF-1900)



CONCRETE COLLAR
 COLLAR SHALL BE CLASS "A" CONCRETE AND TROWELLED TO STREET GRADE, AND ALLOWED TO CURE 48 HOURS PRIOR TO ANY TRAFFIC USE. SEE STANDARD DRAWING NUMBER 412.

ADJUSTMENT RINGS
 RINGS SHALL BE 3" OR 6". TOP OF CONE TO TOP OF RING SHALL NOT EXCEED 18". INSIDE OF RINGS SHALL BE GROUTED.

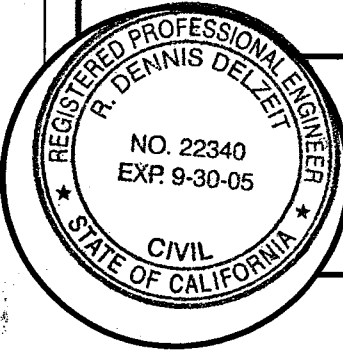
CONE
 CONE SHALL BE ECCENTRIC. STRAIGHT SIDE OF CONE SHALL BE POSITIONED OVER MANHOLE INLET, OR OVER MIDPOINT OF MULTIPLE INLETS. CONCENTRIC CONES MAY BE USED ONLY IN SPECIAL CASES WITH WRITTEN APPROVAL OF THE CITY ENGINEER.

JOINTS
 JOINTS SHALL BE SET WITH BUTYL RUBBER SEALANT (RUB'R NEK). INSIDE OF JOINTS SHALL BE GROUTED.

MANHOLE
 MANHOLE WALLS SHALL BE PRECAST CONCRETE CONFORMING TO THE STATE STANDARD FOR CLASS 2 REINFORCED CONCRETE PIPE.

PIPE
 PIPE OF THE SAME SIZE AND MATERIAL AS THE MAIN SHALL BE USED FOR THE TROUGHS AND CHANNELS IN MANHOLE BASE. EXCEPTIONS MAY BE GRANTED IN SPECIAL CASES WITH THE WRITTEN APPROVAL OF THE CITY ENGINEER. INSTALL RUBBER O-RING WATER STOP(S) WHEN PVC PIPE IS USED.

BASE
 BOTTOM CAST SECTION SHALL BE SET IN FORMED GROOVE USING RUBBER O-RING OR BUTYL RUBBER SEALANT (RUB'R NEK). MANHOLE BASE SHALL BE CLASS B CONCRETE AND STEEL-TOWEL FINISHED ON THE INSIDE.



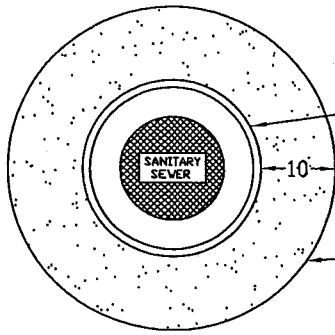
CITY OF PISMO BEACH

R. Dennis Delzeit 5/31/08
 CITY ENGINEER DATE

SEWER MANHOLE

STANDARD DRAWING 202

REV DESCRIPTION BY DATE DISCUSSION DATE



COVER W/BLIND PICKHOLE
 MANHOLE COVER AND FRAME SHALL BE PHOENIX P-1090 WITH A 24" CLEAR OPENING, AND THE COVER SHALL BE LETTERED "SANITARY SEWER". INSIDE OF FRAME SHALL BE GROUTED. (APPROVED EQUAL IS SBF-1900)

COLLAR
 COLLAR SHALL BE CLASS "A" CONCRETE AND TROWELLED TO STREET GRADE, AND ALLOWED TO CURE 48 HOURS PRIOR TO ANY TRAFFIC USE, SEE STANDARD DRAWING 412.

ADJUSTMENT RINGS
 RINGS SHALL BE 3" OR 6". TOP OF CONE TO TOP OF RING SHALL NOT EXCEED 18". INSIDE OF RINGS SHALL BE GROUTED.

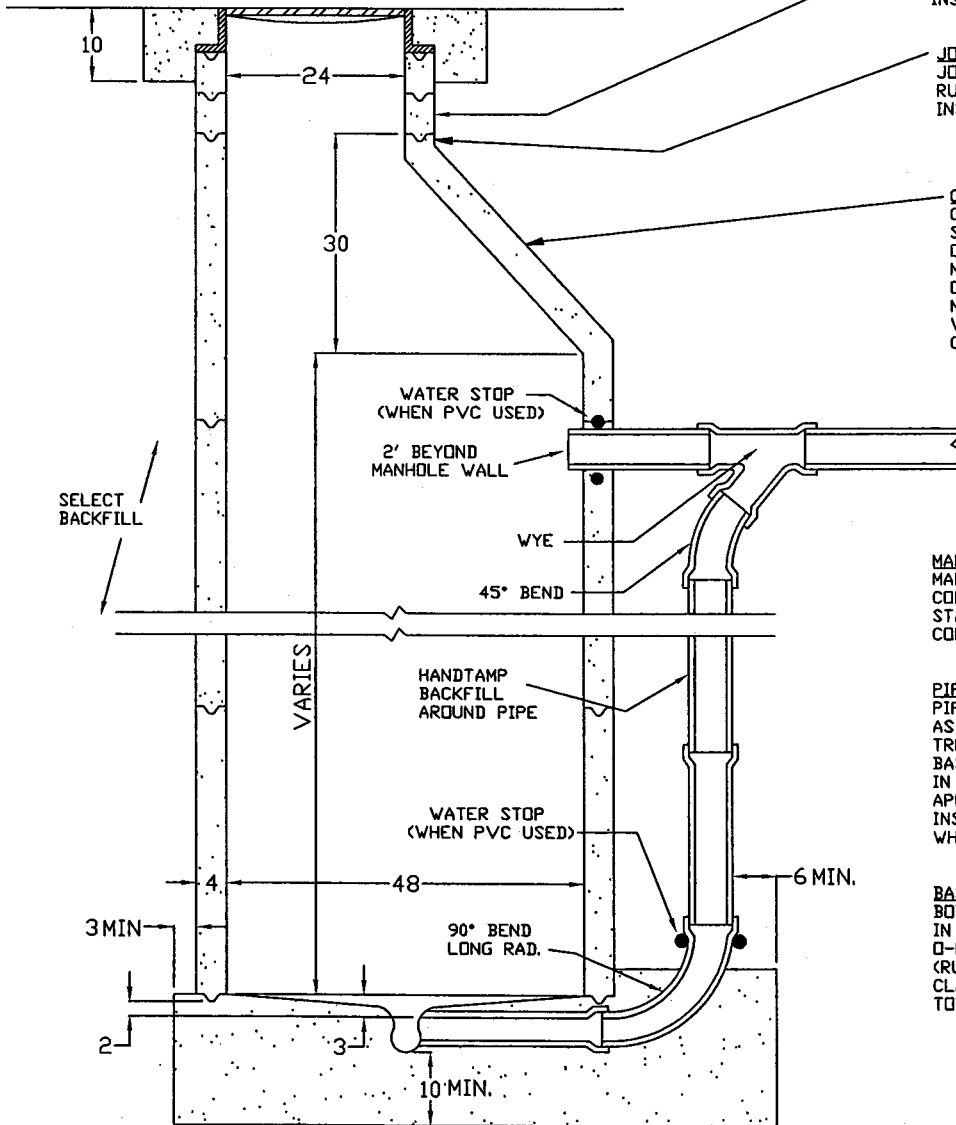
JOINTS
 JOINTS SHALL BE SET WITH BUTYL RUBBER SEALANT (RUB'R NEK). INSIDE OF JOINTS SHALL BE GROUTED.

CONE
 CONE SHALL BE ECCENTRIC. STRAIGHT SIDE OF CONE SHALL BE POSITIONED OVER MANHOLE INLET, OR OVER MIDPOINT OF MULTIPLE INLETS. CONCENTRIC CONES MAY BE USED ONLY IN SPECIAL CASES WITH WRITTEN APPROVAL OF THE CITY ENGINEER.

MANHOLE
 MANHOLE WALLS SHALL BE PRECAST CONCRETE CONFORMING TO THE STATE STANDARD FOR CLASS 2 REINFORCED CONCRETE PIPE.

PIPE
 PIPE OF THE SAME SIZE AND MATERIAL AS THE MAIN SHALL BE USED FOR THE TROUGHS AND CHANNELS IN MANHOLE BASE, EXCEPTIONS MAY BE GRANTED IN SPECIAL CASES WITH THE WRITTEN APPROVAL OF THE CITY ENGINEER. INSTALL RUBBER O-RING WATER STOP(S) WHEN PVC PIPE IS USED.

BASE
 BOTTOM CAST SECTION SHALL BE SET IN FORMED GROOVE USING RUBBER O-RING OR BUTYL RUBBER SEALANT-(RUB'R NEK). MANHOLE BASE SHALL BE CLASS B CONCRETE AND STEEL-TOWEL FINISHED ON THE INSIDE.



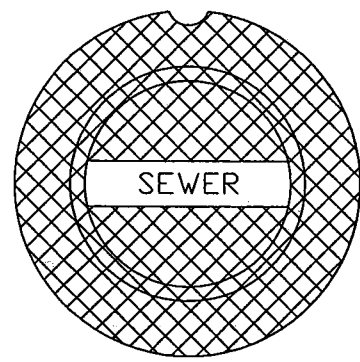
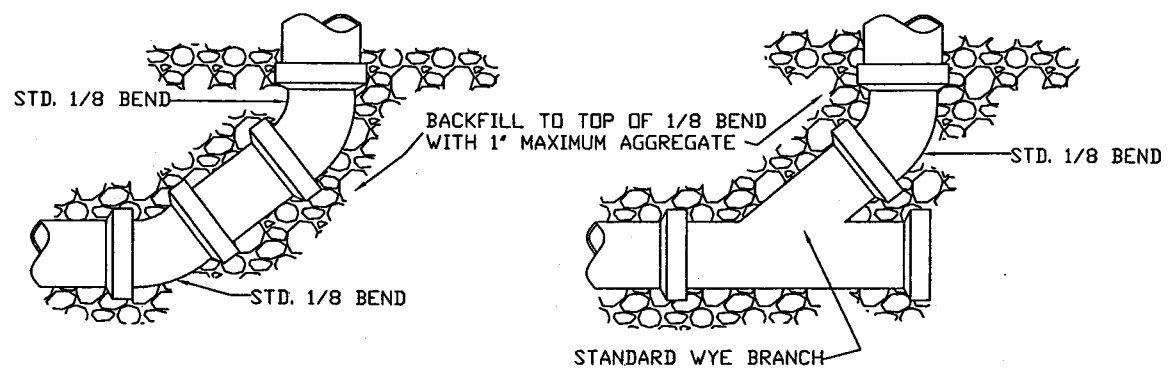
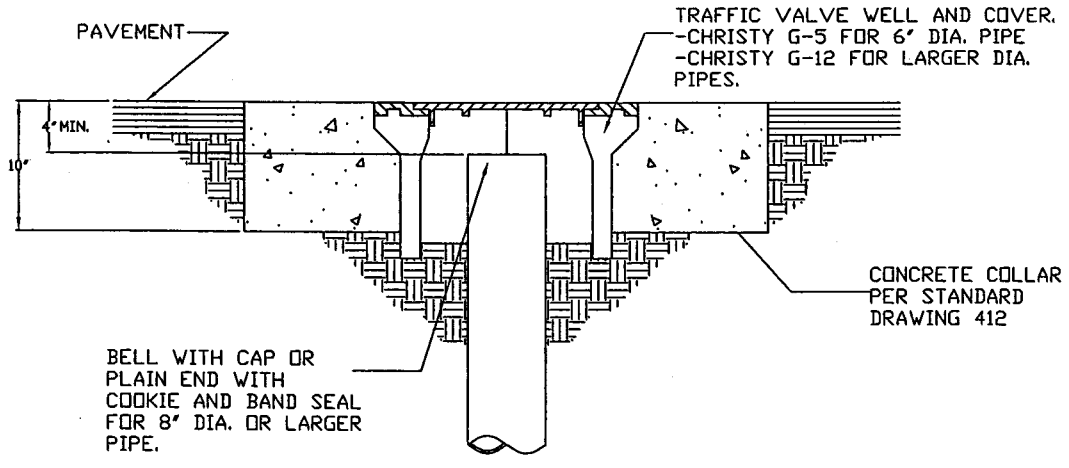
CITY OF
 PISMO BEACH

R. Dennis Delzeit 5/31/05
 CITY ENGINEER DATE

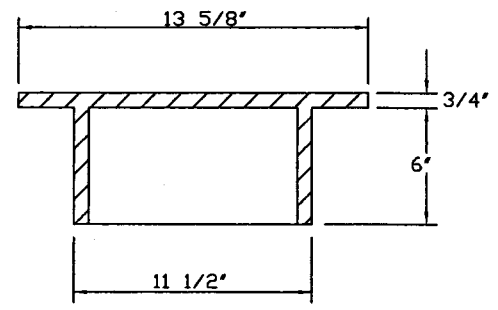
SEWER DROP
 MANHOLE

STANDARD DRAWING 203

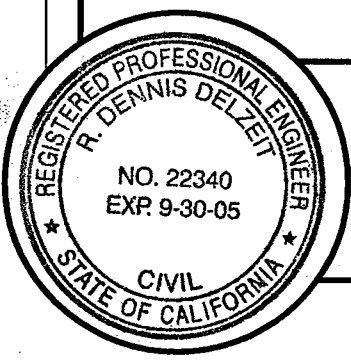
DESCRIPTION BY DATE REV



- NOTES:
1. GATE CAP SHALL BE LABELED "SEWER".
 2. CLEANOUTS MAY BE USED FOR EITHER V.C.P. OR PLASTIC (PVC) SEWER MAINS.
 3. RISER TO BE SAME DIAMETER AS SEWER MAINS.



GATE CAP
(HEAVY DUTY)



CITY OF
PISMO BEACH

R. Dennis Delzeit 5/31/05
CITY ENGINEER DATE

SEWER CLEANOUT

STANDARD DRAWING 204

CRITERIA FOR THE SEPARATION
OF WATER MAINS AND SANITARY SEWERS

A. PUBLIC HEALTH CONSIDERATIONS

WATERBORNE DISEASE OUTBREAKS ATTRIBUTED TO THE ENTRY OF SEWAGE-CONTAMINATED GROUNDWATER INTO THE DISTRIBUTION SYSTEMS OF PUBLIC WATER SUPPLIES CONTINUE TO BE A PROBLEM IN THE UNITED STATES. A COMMUNITY WITH ITS BURIED WATER MAINS IN CLOSE PROXIMITY TO SANITARY SEWERS IS VULNERABLE TO WATERBORNE DISEASE OUTBREAKS.

SANITARY SEWERS FREQUENTLY LEAK AND SATURATE THE SURROUNDING SOIL WITH SEWAGE. THIS IS CAUSED PRIMARILY BY STRUCTURAL FAILURE OF THE SEWER LINE, IMPROPERLY CONSTRUCTED JOINTS, AND SUBSIDENCE OR UPEAVAL OF THE SOIL ENCASING THE CONDUIT. A SERIOUS PUBLIC HEALTH HAZARD EXISTS WHEN THE WATER MAINS ARE DEPRESSURIZED AND NO PRESSURE OR NEGATIVE PRESSURES OCCUR. THE HAZARD IS FURTHER COMPOUNDED WHEN, IN THE COURSE OF INSTALLING OR REPAIRING A WATER MAIN, EXISTING SEWER LINES ARE BROKEN. SEWAGE SPILLS INTO THE EXCAVATION AND, HENCE, ENTERS INTO THE WATER MAIN ITSELF. ADDITIONALLY, IF A WATER MAIN FAILS IN CLOSE PROXIMITY TO A SEWER LINE THE RESULTANT FAILURE MAY DISTURB THE BEDDING OF THE SEWER LINE AND CAUSE IT TO FAIL. IN THE EVENT OF AN EARTHQUAKE OR MAN-MADE DISASTER, SIMULTANEOUS FAILURE OF BOTH CONDUITS OFTEN OCCURS.

THE WATER SUPPLIER IS RESPONSIBLE FOR THE QUALITY OF THE WATER DELIVERED TO CONSUMERS AND MUST TAKE ALL PRACTICAL STEPS TO MINIMIZE THE HAZARD OF SEWAGE CONTAMINATION TO THE PUBLIC WATER SUPPLY. PROTECTION OF THE QUALITY OF THE WATER IN THE PUBLIC WATER SYSTEM IS BEST ACHIEVED BY THE BARRIER PROVIDED BY THE PHYSICAL SEPERATION OF THE WATER MAINS AND SEWER LINES.

THIS DOCUMENT SETS FORTH THE CONSTRUCTION CRITERIA FOR THE INSTALLATION OF WATER MAINS AND SEWER LINES TO PREVENT CONTAMINATION OF THE PUBLIC WATER SUPPLIES FROM NEARBY SANITARY SEWERS.

B. BASIC SEPARATION STANDARDS

THE 'CALIFORNIA WATERWORKS STANDARDS' SETS FORTH THE MINIMUM SEPARATION REQUIREMENTS FOR WATER MAINS AND SEWER LINES. THESE STANDARDS, CONTAINED IN SECTION 64630, TITLE 22, CALIFORNIA ADMINISTRATIVE CODE, SPECIFY:

- (C) (1) PARALLEL CONSTRUCTION: THE HORIZONTAL DISTANCE BETWEEN PRESSURE WATER MAINS AND SEWER LINES SHALL BE AT LEAST 10 FEET.
- (2) PERPENDICULAR CONSTRUCTION (CROSSING): PRESSURE WATER MAINS SHALL BE AT LEAST ONE FOOT ABOVE SANITARY SEWER LINES WHERE THESE LINES MUST CROSS.
- (D) SEPERATION DISTANCES SPECIFIED IN (C) SHALL BE MEASURED FROM THE EDGE OF THE NEAREST FACILITY.
- (E) (2) COMMON TRENCH: WATER MAINS AND SEWER LINES MUST NOT BE INSTALLED IN THE SAME TRENCH.

WHEN WATER MAINS AND SANITARY SEWERS ARE NOT ADEQUATELY SEPARATED, THE POTENTIAL FOR CONTAMINATION OF THE WATER SUPPLY INCREASES. THEREFORE, WHEN ADEQUATE PHYSICAL SEPERATION CANNOT BE ATTAINED, AN INCREASE IN THE FACTOR OF SAFETY SHOULD BE PROVIDED BY INCREASING THE STRUCTURAL INTEGRITY OF BOTH THE PIPE MATERIALS AND JOINTS.

C. EXCEPTIONS TO BASIC SEPARATION STANDARDS

LOCAL CONDITIONS, SUCH AS AVAILABLE SPACE, LIMITED SLOPE, EXISTING STRUCTURES, ETC., MAY CREATE A SITUATION WHERE THERE IS NO ALTERNATIVE BUT TO INSTALL WATER MAINS OR SEWER LINES AT A DISTANCE LESS THAN THAT REQUIRED BY THE BASIC SEPARATION STANDARDS. IN SUCH CASES, ALTERNATIVE CONSTRUCTION CRITERIA AS SPECIFIED IN SECTION E SHOULD BE FOLLOWED, SUBJECT TO THE SPECIAL PROVISIONS IN SECTION D.

WATER MAINS AND SEWERS OF 24 INCHES DIAMETER OR GREATER MAY CREATE SPECIAL HAZARDS BECAUSE OF THE LARGE VOLUMES OF FLOW. THEREFORE, INSTALLATIONS OF WATER MAINS AND SEWER LINES 24 INCHES DIAMETER OR LARGER SHOULD BE REVIEWED AND APPROVED BY THE HEALTH AGENCY PRIOR TO CONSTRUCTION.

REV DESCRIPTION BY DATE



CITY OF
PISMO BEACH

R. Dennis Delzeit 5/31/05
CITY ENGINEER DATE

WATER-SEWER
SEPARATION

STANDARD DRAWING 205

D. SPECIAL PROVISIONS

1. THE BASIC SEPARATION STANDARDS ARE APPLICABLE UNDER NORMAL CONDITIONS FOR SEWAGE COLLECTION LINES AND WATER DISTRIBUTION MAINS. MORE STRINGENT REQUIREMENTS MAY BE NECESSARY IF CONDITIONS SUCH AS HIGH GROUNDWATER EXISTS.

2. SEWER LINES SHALL NOT BE INSTALLED WITHIN 25 FEET HORIZONTALLY OF A LOW HEAD (5 PSI OR LESS PRESSURE) WATER MAIN.

3. NEW WATER MAINS AND SEWERS SHALL BE PRESSURE TESTED WHERE THE CONDUITS ARE LOCATED TEN FEET APART OR LESS.

4. IN THE INSTALLATION OF WATER MAINS OR SEWER LINES, MEASURES SHOULD BE TAKEN TO PREVENT OR MINIMIZE DISTURBANCES OF THE EXISTING LINE. DISTURBANCE OF THE SUPPORTING BASE OF THIS LINE COULD EVENTUALLY RESULT IN FAILURE OF THIS EXISTING PIPELINE.

5. SPECIAL CONSIDERATION SHALL BE GIVEN TO THE SELECTION OF PIPE MATERIALS IF CORROSIVE CONDITIONS ARE LIKELY TO EXIST. THE CONDITIONS MAY BE DUE TO SOIL TYPE AND/OR THE NATURE OF FLUID CONVEYED IN THE CONDUIT, SUCH AS A SEPTIC SEWAGE WHICH PRODUCES CORROSIVE HYDROGEN SULFIDE.

6. SEWER FORCE MAINS

- A. SEWER FORCE MAINS SHALL NOT BE INSTALLED WITHIN 10 FEET (HORIZONTALLY) OF A WATER MAIN.
- B. WHEN A SEWER FORCE MAIN MUST CROSS A WATER LINE, THE CROSSING SHOULD BE AS CLOSE AS PRACTICAL TO THE PERPENDICULAR. THE SEWER FORCE MAIN SHOULD BE AT LEAST ONE FOOT BELOW THE WATER LINE.
- C. WHEN A NEW SEWER FORCE MAIN CROSSES UNDER AN EXISTING WATER MAIN, ALL PORTIONS OF THE SEWER FORCE MAIN WITHIN TEN FEET (HORIZONTALLY) OF THE WATER MAIN SHALL BE ENCLOSED IN A CONTINUOUS SLEEVE.
- D. WHEN A NEW WATER MAIN CROSSES OVER AN EXISTING SEWER FORCE MAIN, THE WATER MAIN SHALL BE CONSTRUCTED OF PIPE MATERIALS WITH A MINIMUM RATED WORKING PRESSURE OF 200 PSI OR EQUIVALENT PRESSURE RATING.

E. ALTERNATIVE CRITERIA FOR CONSTRUCTION

THE CONSTRUCTION CRITERIA FOR SEWER LINES OR WATER MAINS WHERE THE BASIC SEPARATION STANDARDS CANNOT BE ATTAINED ARE SHOWN IN FIGURES 1 AND 2. THERE ARE TWO SITUATIONS ENCOUNTERED:

CASE 1- NEW SEWER LINE- NEW OR EXISTING WATER MAIN

CASE 2- NEW WATER MAIN- EXISTING SEWER LINE

FOR CASE 1, THE ALTERNATE CONSTRUCTION CRITERIA APPLY TO THE SEWER LINE.

FOR CASE 2, THE ALTERNATE CONSTRUCTION MAY APPLY TO EITHER OR BOTH THE WATER MAIN AND SEWER LINE.

THE CONSTRUCTION CRITERIA SHOULD APPLY TO THE HOUSE LATERALS THAT CROSS ABOVE A PRESSURE WATER MAIN BUT NOT TO THOSE LATERALS THAT CROSS BELOW A PRESSURE WATER MAIN.

REV DESCRIPTION BY DATE



CITY OF
PISMO BEACH

R. Dennis Delzeit 6/3/05
CITY ENGINEER DATE

WATER-SEWER
SEPARATION

STANDARD DRAWING 206

CASE 1
NEW SEWER BEING INSTALLED
(SEE FIGURE 1)

ZONE	SPECIAL CONSTRUCTION REQUIRED FOR SEWER
A	SEWER LINES PARALLEL TO WATER MAINS SHALL NOT BE PERMITTED IN THIS ZONE WITHOUT APPROVAL FOR THE RESPONSIBLE HEALTH AGENCY AND WATER SUPPLIER.
B	A SEWER LINE PLACED PARALLEL TO A WATER LINE SHALL BE CONSTRUCTED OF: 1. EXTRA STRENGTH VITRIFIED CLAY PIPE WITH COMPRESSION JOINTS. 2. CLASS 4000, TYPE II, ASBESTOS-CEMENT PIPE WITH RUBBER GASKET JOINTS. 3. PLASTIC SEWER PIPE WITH RUBBER RING JOINTS (PER ASTM D3034) OR EQUIVALENT. 4. CAST OR DUCTILE IRON PIPE WITH COMPRESSION JOINTS. 5. REINFORCED CONCRETE PRESSURE PIPE WITH COMPRESSION JOINTS (PER AWWA C302-74).
C	A SEWER LINE CROSSING A WATER MAIN SHALL BE CONSTRUCTED OF: 1. DUCTILE IRON PIPE WITH HOT-DIP BITUMINOUS COATING AND MECHANICAL JOINTS. 2. A CONTINUOUS SECTION OF CLASS 200 (DR 14 PER AWWA C900) PLASTIC PIPE OR EQUIVALENT, CENTERED ON THE PIPE BEING CROSSED. 3. A CONTINUOUS SECTION OF REINFORCED CONCRETE PRESSURE PIPE (PER AWWA C302-74) CENTERED OVER THE PIPE BEING CROSSED. 4. ANY SEWER PIPE WITHIN A CONTINUOUS SLEEVE.
D	A SEWER LINE CROSSING A WATER MAIN SHALL BE CONSTRUCTED OF: 1. A CONTINUOUS SECTION OF DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING. 2. A CONTINUOUS SECTION OF CLASS 200 (DR 14 PER AWWA C900) PLASTIC PIPE OR EQUIVALENT, CENTERED ON THE PIPE BEING CROSSED. 3. A CONTINUOUS SECTION OF REINFORCED CONCRETE PRESSURE PIPE (PER AWWA C302-74) CENTERED OVER THE PIPE BEING CROSSED. 4. ANY SEWER PIPE WITHIN A CONTINUOUS SLEEVE. 5. ANY SEWER PIPE SEPERATED BY A TEN-FOOT BY TEN-FOOT, FOUR-INCH THICK REINFORCED CONCRETE SLAB.

CASE 2
NEW WATER MAIN BEING INSTALLED
(SEE FIGURE 2)

ZONE	SPECIAL CONSTRUCTION REQUIRED FOR WATER:
A	NO WATER MAINS PARALLEL TO SEWERS SHALL BE CONSTRUCTED WITHOUT APPROVAL FROM THE HEALTH AGENCY.
B	IF THE SEWER PARALLELING THE WATER MAIN DOES NOT MEET THE CASE 1, ZONE B REQUIREMENTS, THE WATER MAIN SHALL BE CONSTRUCTED OF: 1. DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING. 2. DIPPED AND WRAPPED ONE-FOURTH-INCH- THICK WELDED STEEL PIPE. 3. CLASS 200 PRESSURE RATED PLASTIC WATER PIPE (DR 14 PER AWWA C900) OR EQUIVALENT. 4. REINFORCED CONCRETE PRESSURE PIPE, STEEL CYLINDER TYPE, PER AWWA (C300-74 OR C301-79 OR C303-70). 5. CLASS 200, TYPE II, ASBESTOS-CEMENT PRESSURE PIPE.
C	IF THE SEWER CROSSING THE WATER MAIN DOES NOT MEET THE CASE 1, ZONE C REQUIREMENTS, THE WATER MAIN SHALL HAVE NO JOINTS IN ZONE C AND BE CONSTRUCTED OF: 1, 2, 3 AND 4 AS IN ZONE B, ABOVE.
D	IF THE SEWER CROSSING THE WATER MAIN DOES NOT MEET THE REQUIREMENTS FOR CASE 1, ZONE D, THE WATER MAIN SHALL HAVE NO JOINTS WITHIN FOUR FEET FROM EITHER SIDE OF THE SEWER AND SHALL BE CONSTRUCTED OF: 1, 2, 3 AND 4 AS IN ZONE B, ABOVE.



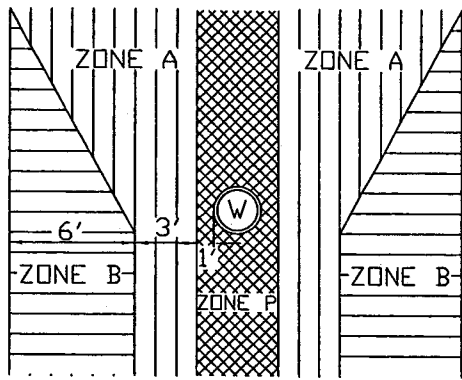
CITY OF
PISMO BEACH

R. Dennis Delzeit 5/31/05
CITY ENGINEER DATE

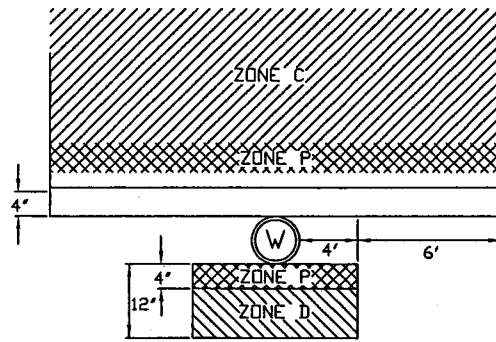
WATER-SEWER
SEPARATION

STANDARD DRAWING 207

REVISION DESCRIPTION



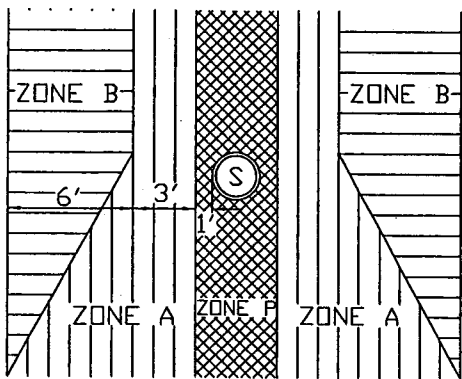
PARALLEL



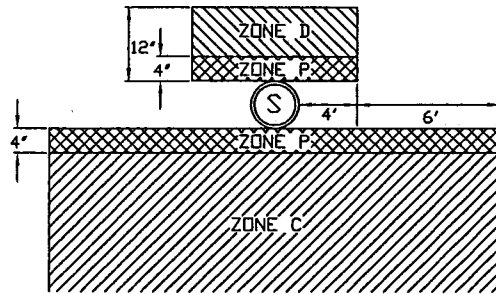
CROSSING

CASE 1
NEW SEWER MAIN
FIGURE 1

ZONE P IS A PROHIBITED ZONE,
SECTION 64630 (E) (2) CALIFORNIA
ADMINISTRATIVE CODE, TITLE 22



PARALLEL



CROSSING

CASE 2
NEW WATER MAIN
FIGURE 2

NOTES AND DEFINITIONS

1. COMPRESSION JOINT- A PUSH-ON JOINT THAT SEALS BY MEANS OF THE COMPRESSION OF A RUBBER RING OR GASKET BETWEEN THE PIPE AND A BELL OR COUPLING.
2. DIMENSIONS ARE FROM THE OUTSIDE OF WATER MAIN TO OUTSIDE OF SEWER LINE OR MANHOLE.
3. FUSED JOINT- THE JOINING OF SECTIONS OF PIPE USING THERMAL OR CHEMICAL BONDING PROCESSES.
4. GROUND WATER- SUBSURFACE WATER FOUND IN THE SATURATION ZONE.
5. HEALTH AGENCY- THE STATE DEPARTMENT OF HEALTH SERVICES. FOR THOSE WATER SYSTEMS SUPPLYING LESS THAN 200 SERVICE CONNECTIONS, THE LOCAL HEALTH OFFICER SHALL ACT FOR THE DEPARTMENT OF HEALTH SERVICES.
6. HOUSE LATERAL- A SEWER PIPE CONNECTING THE BUILDING DRAIN AND THE MAIN SEWER LINE.
7. LOW HEAD WATER MAIN- ANY WATER MAIN WHICH HAS A PRESSURE OF 5 PSI OR LESS AT ANY TIME AT ANY POINT IN THE MAIN.
8. MECHANICAL JOINT- BOLTED JOINT.
9. RATED WORKING WATER PRESSURE OR PRESSURE CLASS- A PIPE CLASSIFICATION SYSTEM BASED UPON INTERNAL WORKING PRESSURE OF THE FLUID IN THE PIPE, TYPE OF PIPE MATERIAL, AND THE THICKNESS OF THE PIPE WALL.
10. SLEEVE- A PROTECTIVE TUBE OF STEEL WITH A WALL THICKNESS IF NOT LESS THAN ONE-FOURTH INCH INTO WHICH A PIPE IS INSERTED
11. WATER SUPPLIER- ANY PERSON WHO OWNS OR OPERATES A PUBLIC WATER SYSTEM.



CITY OF
PISMO BEACH

R. Dennis Delzeit 5/3/05
CITY ENGINEER DATE

WATER-SEWER
SEPARATION

STANDARD DRAWING 208

REV. DESCRIPTION BY DATE
 ES. P.T. E.