

VAULT COPY



STANDARD DRAWINGS FOR AGENCIES IN THE SAN DIEGO REGION

Recommended by the Regional Standards Committee

Maintained and Published by the San Diego County

Department of Public Works

MAY, 1992

COUNTY OF SAN DIEGO
DEPARTMENT OF PUBLIC WORKS

INDEX OF DESIGN STANDARDS

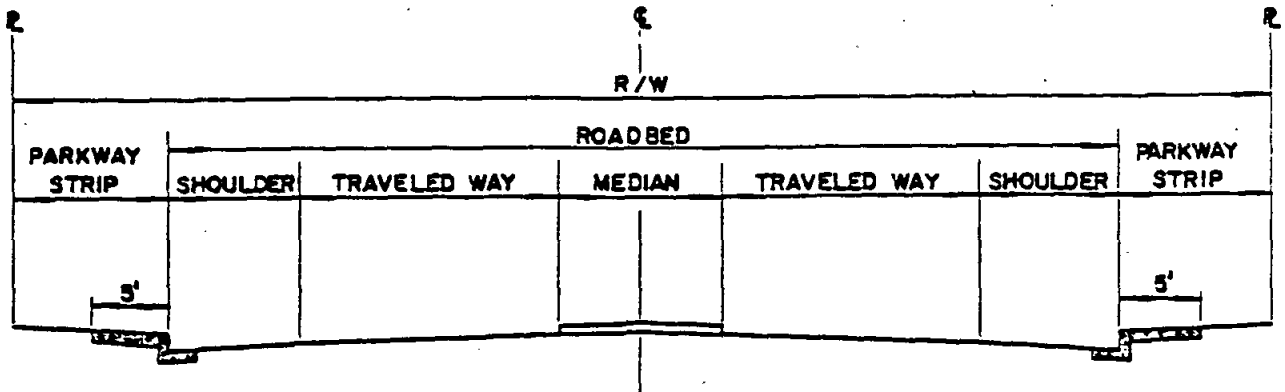
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STANDARD DRAWINGS FOR AGENCY USE

Recorded by the Regional Standard Committee
Maintained and published by the San Diego County
Department of Public Works

MAY, 1962

TYPICAL ROADWAY SECTION **SYMMETRICAL ABOUT CENTERLINE**



TYPE OF ROAD OR STREET	R/W	ROADBED	TRAVELED WAY	SHOULDER	MEDIAN	PARKWAY STRIP
PRIME ARTERIAL TRAFFIC VOLUME OF 16,000 V.P.D. OR MORE	126'	106'	36'	8'	18'	10'
MAJOR ROAD TRAFFIC VOLUME 10,000 TO 16,000 V.P.D.	102'	82'	24'	8'	18'	10'
COLLECTOR ROAD TRAFFIC VOLUME 3,000 TO 10,000 V.P.D.	84'	64'	24'	8'	0'	10'
RESIDENTIAL COLLECTOR STREET TRAFFIC VOLUME FROM 150 TO 700 DWELLING UNITS	60'	40'	12'	8'	0'	10'
RESIDENTIAL STREET TRAFFIC VOLUME FROM 150 DWELLING UNITS OR LESS	56'	36'	12'	6'	0'	10'
RESIDENTIAL CUL-DE-SAC STREET TRAFFIC VOLUME FROM 20 UNITS OR LESS, 600' MAX. LENGTH	52'	32'	12'	4'	0'	10'
RESIDENTIAL LOOP STREET TRAFFIC VOLUME FROM 20 UNITS OR LESS, 600' MAX. LENGTH	52'	32'	12'	4'	0'	10'
* COMM. & IND. COLLECTOR STREET TRAFFIC VOLUME FROM COMMERCIAL OR INDUSTRIAL ST'S	88'	68'	24'	10'	0'	10'
* COMM. & IND. STREET TRAFFIC VOLUME FROM ADJUTING COMMERCIAL LOTS	72'	52'	16'	10'	0'	10'
* COMM. & IND. CUL-DE-SAC STREET TRAFFIC VOLUME FROM ADJUTING COMMERCIAL LOTS	72'	52'	16'	10'	0'	10'
FRONTAGE ROAD ADJACENT TO FREEWAY RIGHT OF WAY		SEE	NOTE	NA 4		

* COMM. & IND. = COMMERCIAL & INDUSTRIAL

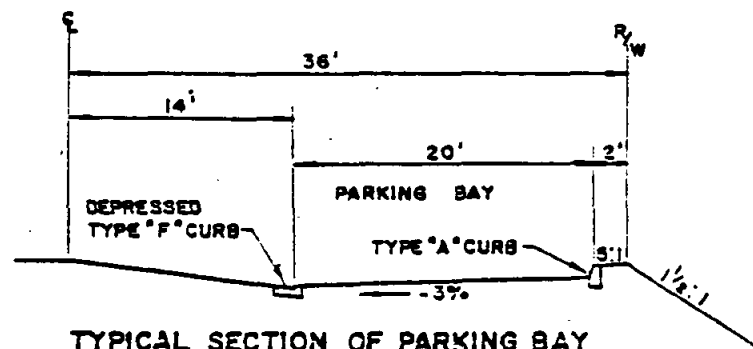
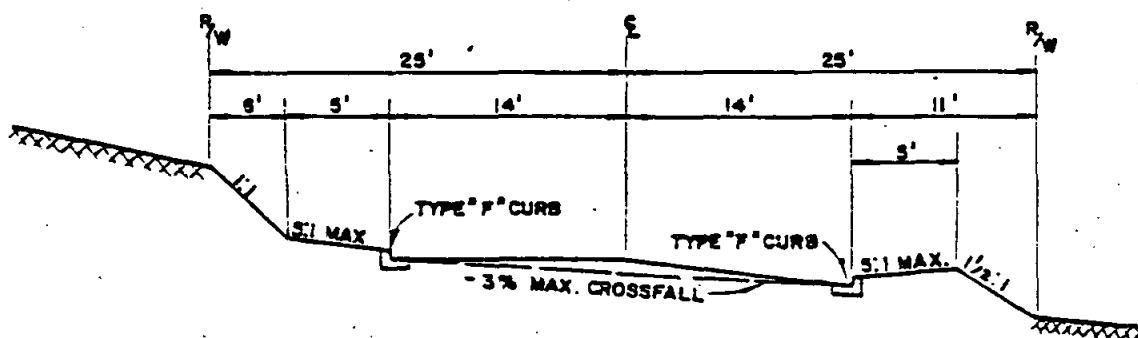
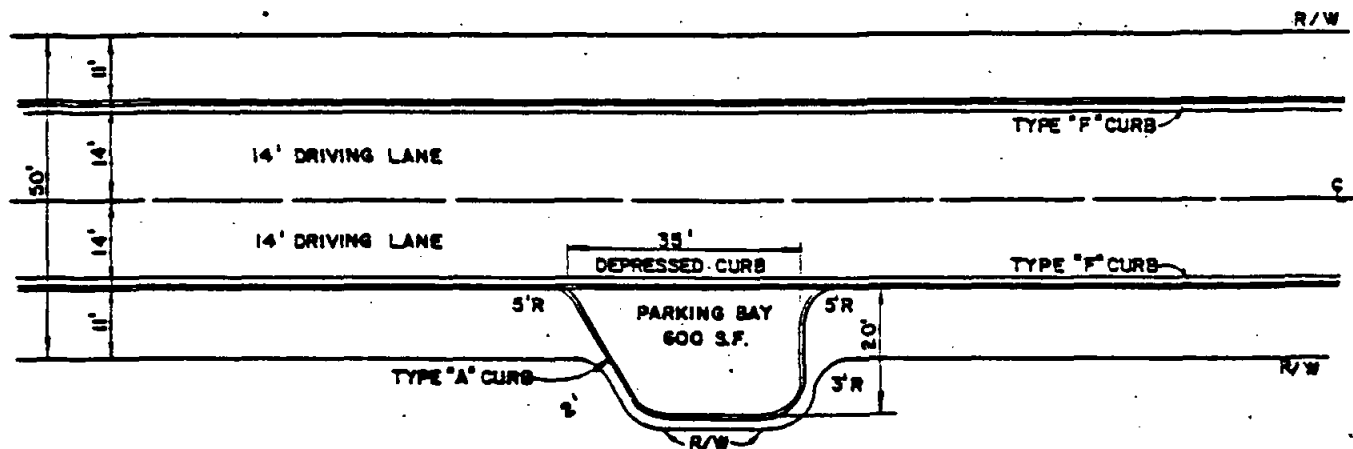
NOTE: 1. STREET CLASSIFICATIONS (EXCEPT PRIME ARTERIAL) AND TYPICAL ROADWAY SECTIONS FROM SAN DIEGO COUNTY TECHNICAL ROAD POLICY (JAN. 6, 1964).

2. PRIME ARTERIAL SECTION BASED UPON MINIMUM STANDARDS "NATIONAL COMMITTEE ON URBAN TRANSPORTATION".

3. SEE SAN DIEGO COUNTY STANDARD DRAWINGS AND SAN DIEGO COUNTY TECHNICAL ROAD POLICY FOR SIDEWALK, CURB, AND ROADWAY REQUIREMENTS.

4. FRONTAGE ROAD ADJACENT TO FREEWAY R/W, TRAVELED WAY AND MEDIAN STANDARD FOR ROAD CLASSIFICATION AND/OR TRAFFIC VOLUME. SHOULDER ADJACENT TO FREEWAY 2". PARKWAY STRIP ADJACENT TO FREEWAY VARIES FROM 4" TO 10" SHOULDER AND PARKWAY STRIP AWAY FROM FREEWAY STANDARD FOR TRAFFIC VOLUME AND/OR ROAD CLASSIFICATION.

DRAWN BY _____	CHECKED BY _____	SAN DIEGO COUNTY DESIGN STANDARD	TITLE <u>San Diego County Design Standard</u>			
RECOMMENDED BY <u>WBB</u>			REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER		TYPICAL ROADWAY SECTIONS	FORMERLY STANDARD DRAWING 310-3			
<u>H2. A. 12</u> R.C.E. 10338			NUMBER	DS-1		
DATE <u>2-12-64</u>						



NOTES:

1. SEE SAN DIEGO COUNTY STANDARD DRAWINGS AND SAN DIEGO COUNTY TECHNICAL ROAD POLICY FOR CURB, SIDEWALK & ROADWAY REQUIREMENTS.
2. NATURAL SLOPE EXCEEDS 20% AS DEFINED IN SAN DIEGO COUNTY TECHNICAL ROAD POLICY SECT 4.22
3. REQUIRED: ONE 600 SQUARE FOOT PERPENDICULAR PARKING BAY PER LOT. THE SURVEYOR-ROAD COMMISSIONER MAY ALSO ESTABLISH ALTERNATE STANDARD TYPICAL SECTIONS WHICH WILL PROVIDE A MINIMUM OF TWO

PARKING STALLS PER LOT.

4. USE OF THIS STREET SECTION LIMITED TO AREAS IN WHICH AT LEAST 80% OF THE LOTS HAVE A NET AREA NOT LESS THAN 20,000 SQUARE FEET.

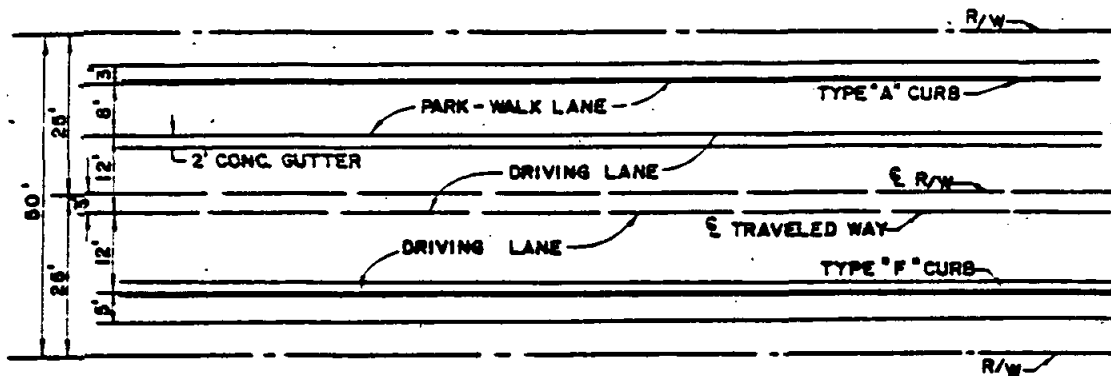
DRAWN BY _____	CHECKED BY _____
RECOMMENDED BY <u>H.M.B.</u>	
APPROVED BY COUNTY ENGINEER <u>H.M.B.</u>	R.C.E. 10358
DATE <u>2/27/76</u>	

SAN DIEGO COUNTY DESIGN STANDARD

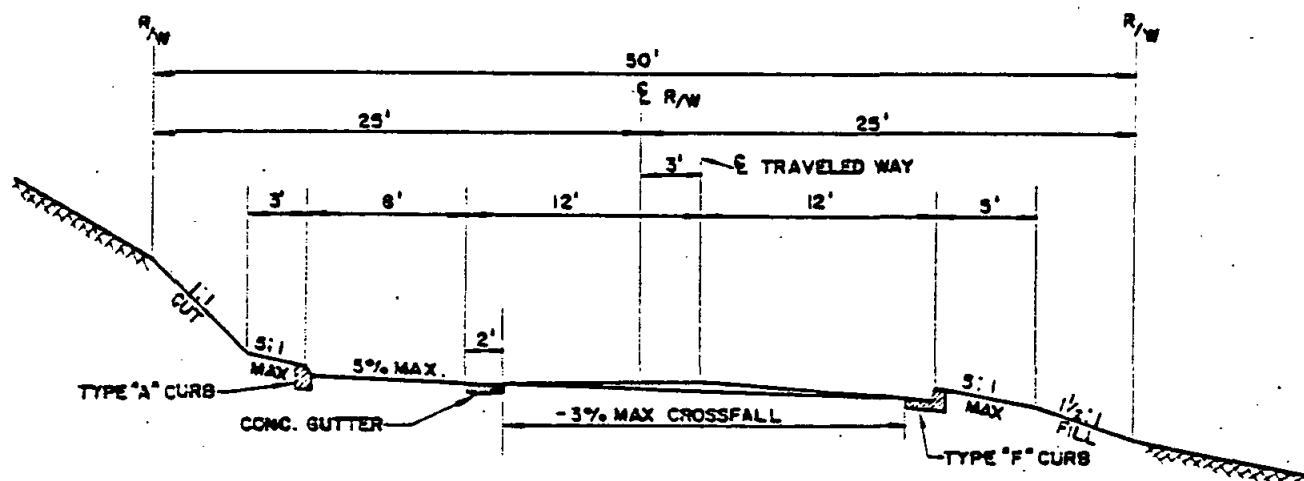
HILLSIDE RESIDENTIAL STREET

ALTERNATE No. 1

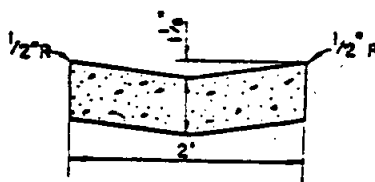
REVISION	BY	APPROVED	DATE
FORMERLY STANDARD DRAWING 311-1			
NUMBER		DS-2	



PLAN



TYPICAL ROADWAY SECTION



CONCRETE GUTTER
DETAIL

NOTES:

1. SEE SAN DIEGO COUNTY STANDARD DRAWINGS AND SAN DIEGO COUNTY TECHNICAL ROAD POLICY FOR CURB, SIDEWALK & ROADWAY REQUIREMENTS.
2. NATURAL SLOPE EXCEEDS 20% AS DEFINED IN SAN DIEGO COUNTY TECHNICAL ROAD POLICY SECT. 4.22
3. USE OF THIS STREET SECTION LIMITED TO AREAS IN WHICH AT LEAST 90% OF THE LOTS HAVE A NET AREA

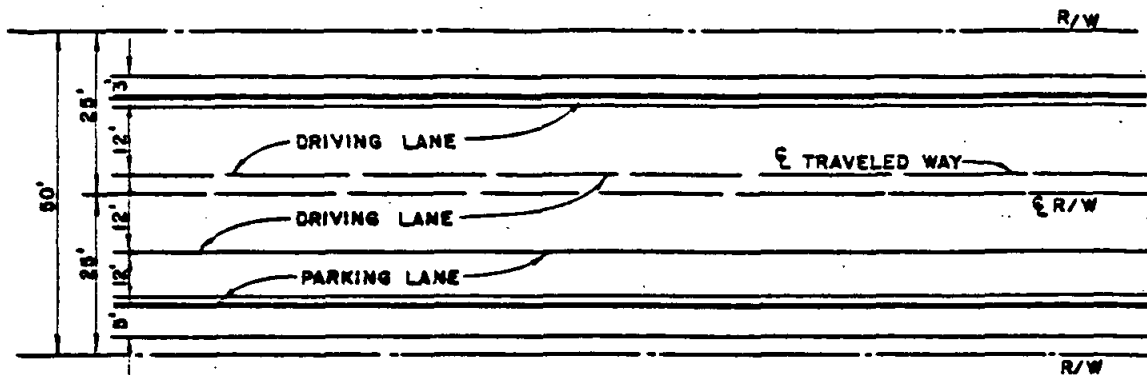
OF NOT LESS THAN 20,000 SQUARE FEET.

4. USE OF HILLSIDE RESIDENTIAL STREET STANDARDS ARE APPLICABLE ONLY TO STREETS CLASSIFIED AS, RESIDENTIAL, RESIDENTIAL CUL-DE-SAC, OR RESIDENTIAL LOOP STREETS AND ARE NOT APPLICABLE TO STREETS IN AREAS ZONED FOR COMMERCIAL, INDUSTRIAL OR MULTIPLE RESIDENTIAL USE.

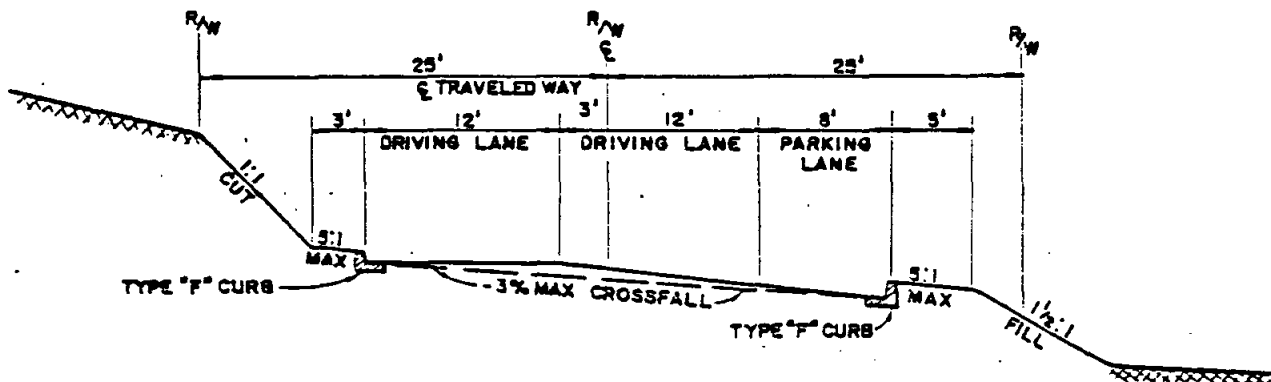
DRAWN BY	CHECKED BY
RECOMMENDED BY	APPROVED BY COUNTY ENGINEER
DATE	R.C.E. 10359

SAN DIEGO COUNTY DESIGN STANDARD
HILLSIDE RESIDENTIAL STREET
ALTERNATE No. 2

REVISION	BY	APPROVED	DATE
FORMERLY STANDARD DRAWING 312-1			
NUMBER		DS-3	



PLAN



TYPICAL ROADWAY SECTION

NOTES:

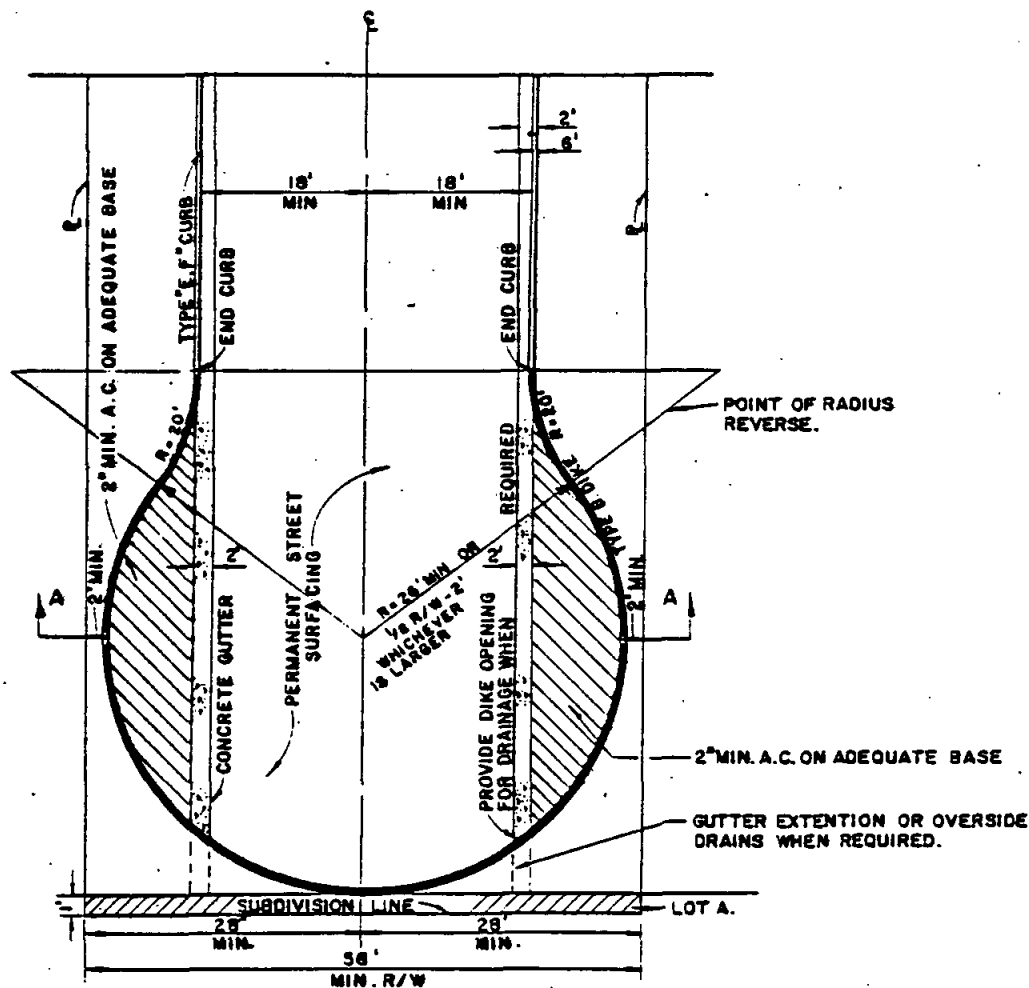
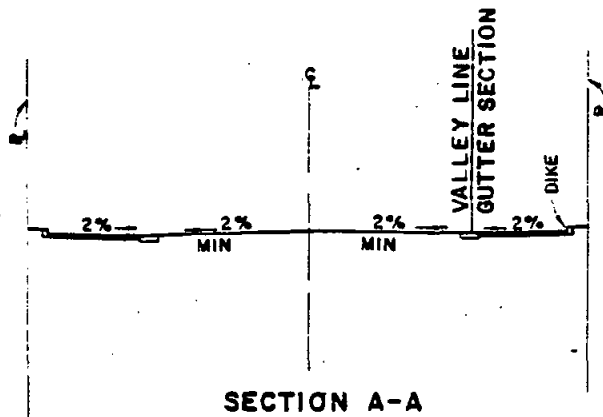
1. SEE SAN DIEGO COUNTY STANDARD DRAWINGS AND SAN DIEGO COUNTY TECHNICAL ROAD POLICY FOR CURB, SIDEWALK & ROAD REQUIREMENTS.
2. NATURAL SLOPE EXCEEDS 20% AS DEFINED IN SAN DIEGO COUNTY TECHNICAL ROAD POLICY SECT. 4.22.
3. USE OF THIS STREET SECTION LIMITED TO AREAS IN WHICH AT LEAST 80% OF THE LOTS HAVE A NET AREA OF NOT LESS THAN 20,000 SQUARE FEET.
4. USE OF HILLSIDE RESIDENTIAL STREET STANDARDS ARE APPLICABLE ONLY TO STREETS CLASSIFIED AS RESIDENTIAL, RESIDENTIAL CUL-DE-SAC, OR RESIDENTIAL LOOP STREETS AND ARE NOT APPLICABLE TO STREETS IN AREAS ZONED FOR COMMERCIAL, INDUSTRIAL OR MULTIPLE RESIDENTIAL USE.

DRAWN BY	CHECKED BY
RECOMMENDED BY	<i>[Signature]</i>
APPROVED BY, COUNTY ENGINEER	
<i>[Signature]</i> P.R.C.E. 10358	
DATE	2/12/76

SAN DIEGO COUNTY DESIGN STANDARD

HILLSIDE RESIDENTIAL STREET
ALTERNATE No. 3

REVISION	BY	APPROVED	DATE
FORMERLY STANDARD DRAWING 313-1			
NUMBER		DS-4	



NOTE:

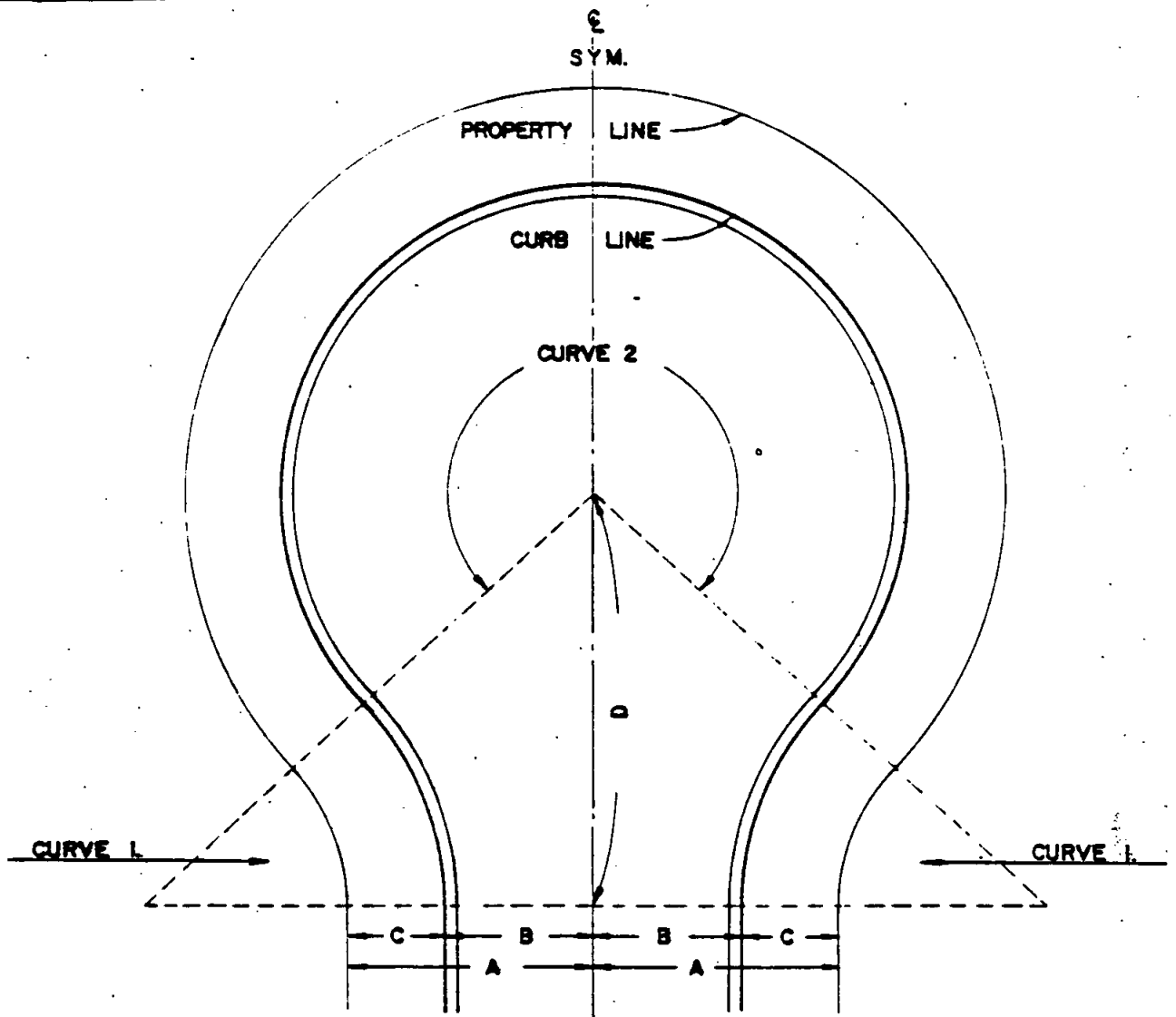
1. FOR USE ON EITHER 36' OR 40' WIDTH STREETS.

DRAWN BY	CHECKED BY
RECOMMENDED BY	
APPROVED BY COUNTY ENGINEER	
DATE	

SAN DIEGO COUNTY DESIGN STANDARD

TEMPORARY TURN-AROUND AT
DEAD-END STREET

REVISION	BY	APPROVED	DATE
FORMERLY STANDARD DRAWING 316-1			
NUMBER	DS-5		



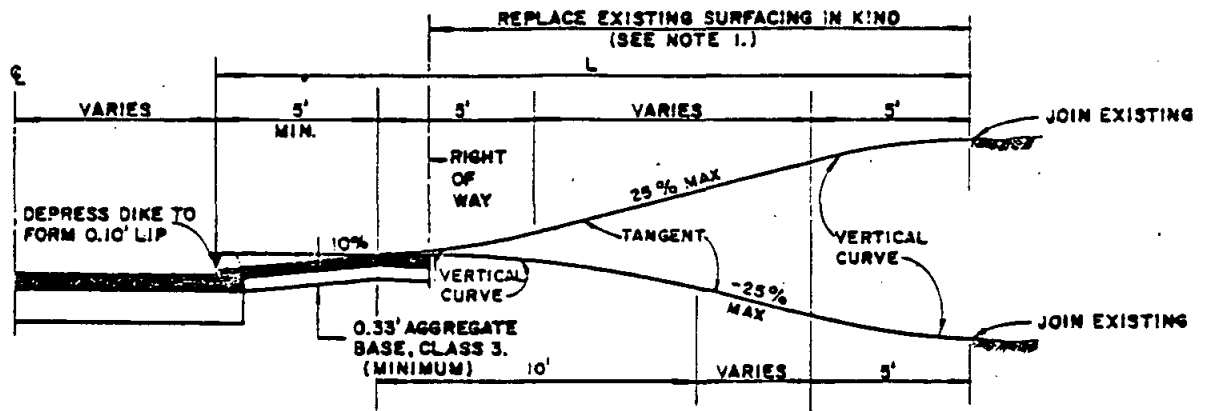
DIMENSIONS					CURVE 1						CURVE 2					
R_w	A	B	C	D	Δ	CURB			PROP.			Δ	CURB			PROP.
						R	L	T	R	L	T		R	L	R	L
52'	26'	16'	10'	50.95'	46°42'30"	32'	26.09'	13.82'	22'	17.93'	9.50'	273°25'00"	38'	181.34'	48'	229.06'
56'	28'	18'	10'	50.99'	42°50'00"	37'	27.66'	14.52'	27'	20.18'	10.59'	265°40'00"	38'	176.20'	48'	222.56'
60'	30'	20'	10'	68.15'	29°35'31"	100'	51.65'	26.41'	90'	46.48'	23.77'	239°11'02"	38'	158.63'	48'	200.38'
72'	36'	26'	10'	81.39'	32°31'36"	100'	57.35'	29.49'	90'	51.62'	26.54'	245°43'12"	50'	214.43'	60'	257.32'

DRAWN BY _____	CHECKED BY _____
RECOMMENDED BY <u>WCB</u>	
APPROVED BY COUNTY ENGINEER <u>[Signature]</u>	
DATE <u>2/22/76</u>	

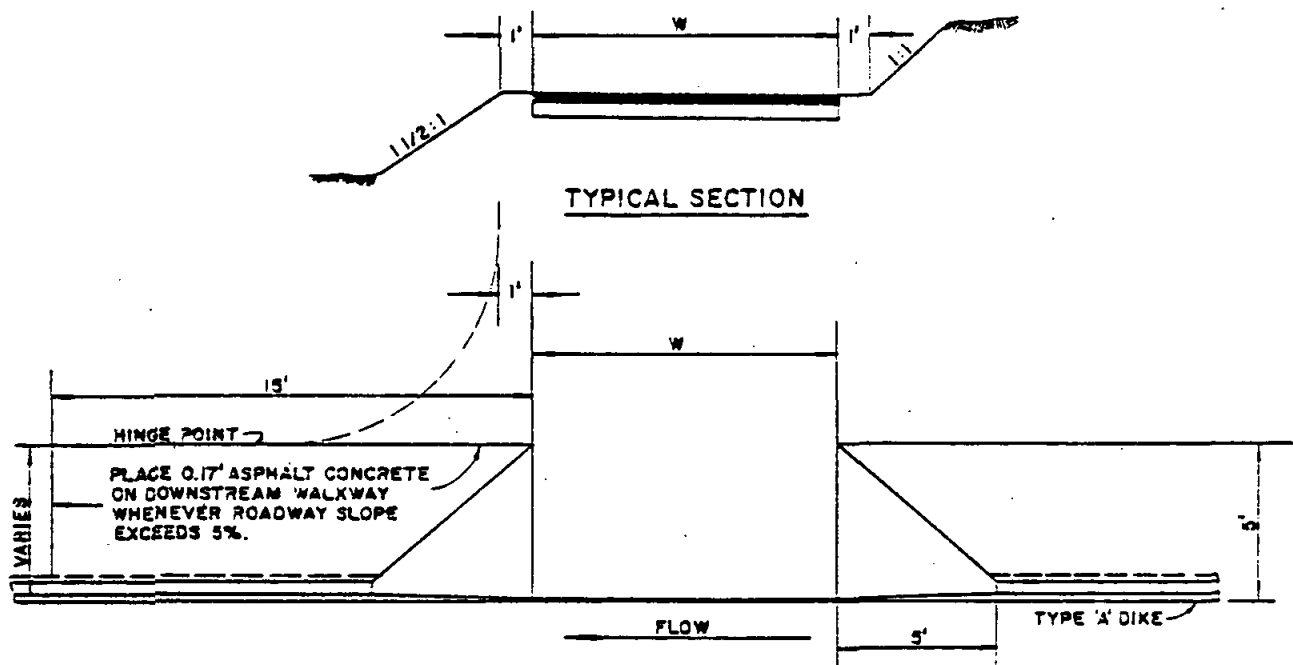
SAN DIEGO COUNTY DESIGN STANDARD

TURNAROUND AND CALCULATIONS

REVISION	BY	APPROVED	DATE
FORMERLY STANDARD DRAWING 304-3			
NUMBER		DS - 6	



PROFILE



PLAN

NOTES:

1. DRIVEWAYS WITH GRADES GREATER THAN 15% SHALL BE SURFACED WITH ASPHALT CONCRETE OR PORTLAND CEMENT CONCRETE.
2. MAXIMUM GRADE BREAK 14%.
3. SEE STANDARD DRAWING 3-14 FOR CONCRETE DRIVEWAYS.
4. SEE STANDARD DRAWING 6-15 & 6-16 FOR LOCATION & WIDTH REQUIREMENTS.

**DRIVEWAY
PAVING SCHEDULE**

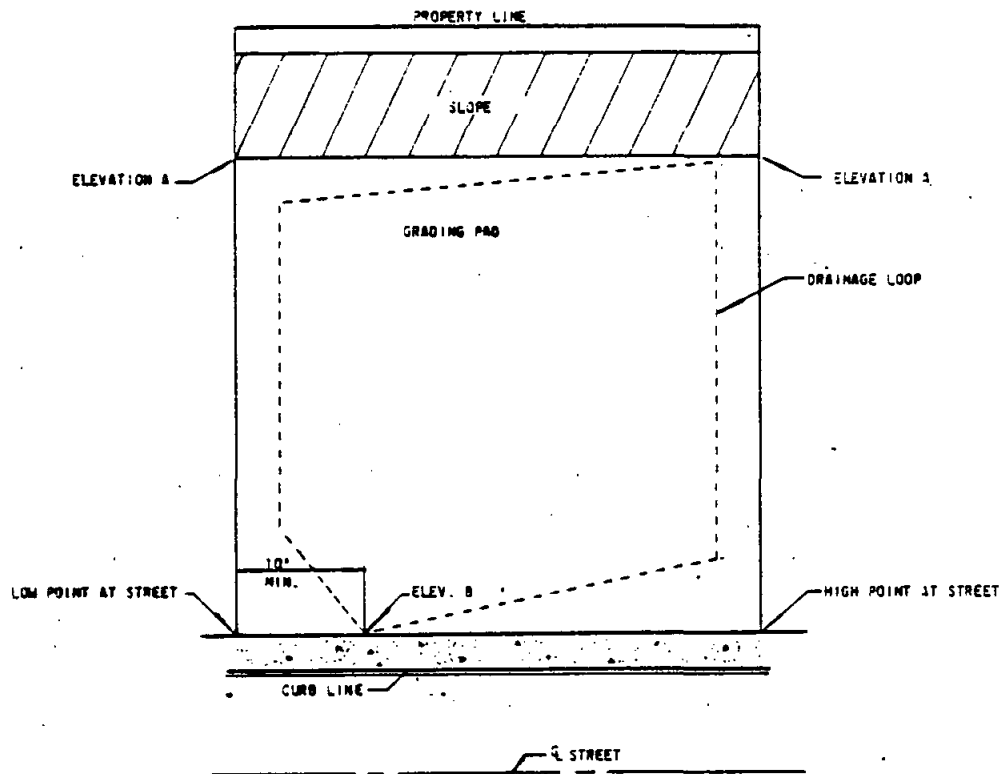
DEPTH OF AC	GRADE
0.17'	0-15%
0.25'	15-20%
0.33'	20-25%

DRAWN BY	CHECKED BY
RECOMMENDED BY	
APPROVED BY COUNTY ENGINEER	
DATE	

SAN DIEGO COUNTY DESIGN STANDARD

ASPHALT CONCRETE DRIVEWAY

TITLE	REVISION	BY	APPROVED	DATE
FORMERLY STANDARD DRAWING 227				
NUMBER	DS-7			

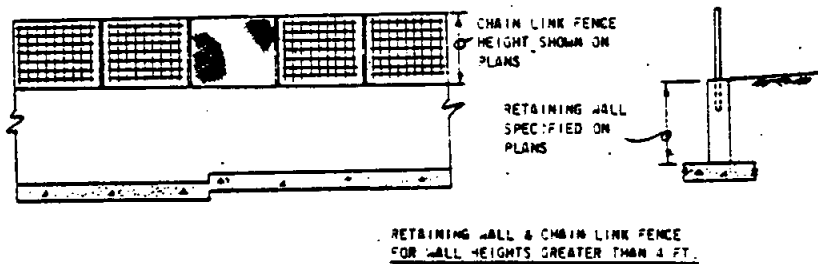
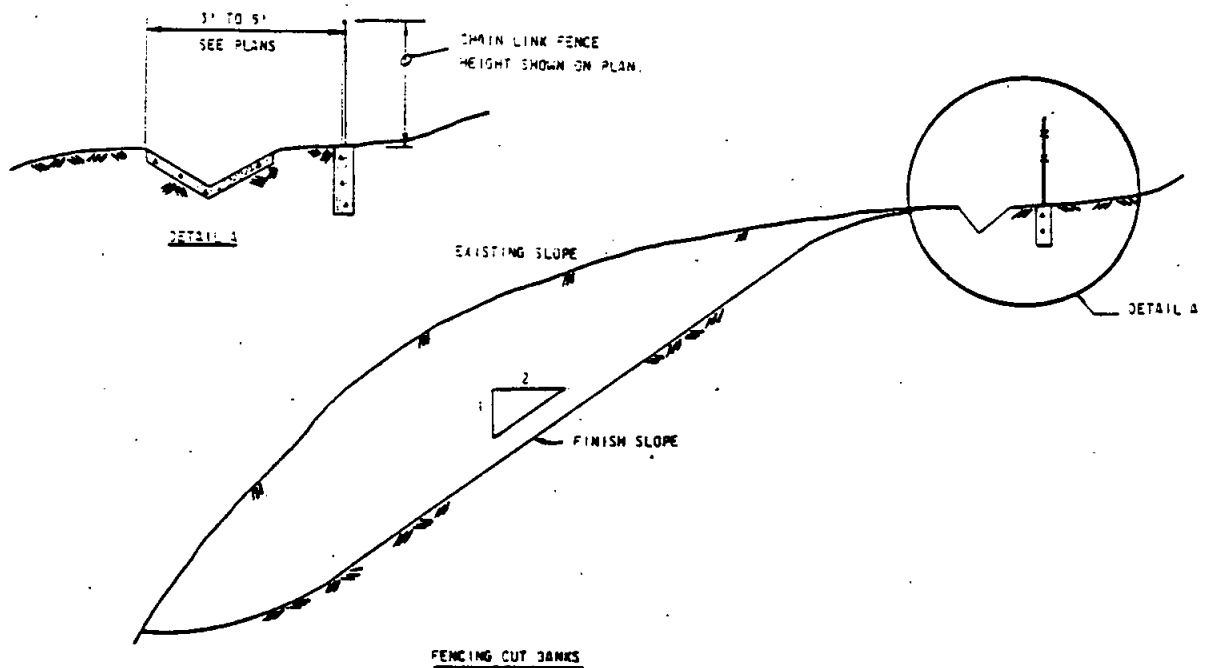


TYPICAL FINISHED GRADING

NOTES:

1. ELEV. A IS TO BE DETERMINED FOR THE MOST REMOTE CORNER OF THE LOT FROM THE DRAIN POINT. $ELEV. A = ELEV. B \text{ PLUS } 1\% \text{ TIMES ONE-HALF THE PERIMETER OF THE LOT.}$
2. MIN. 1% SHALE TO STREET OR OTHER DISCHARGE POINT.
3. ALL SLOPE SURFACES TO BE PROTECTED BY APPROVED EROSION CONTROL.

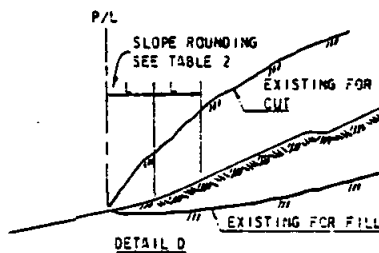
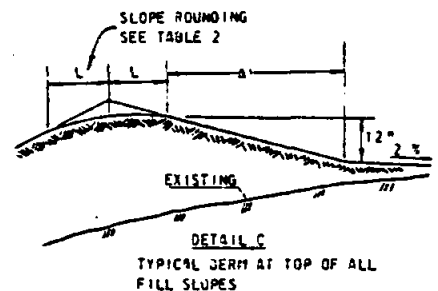
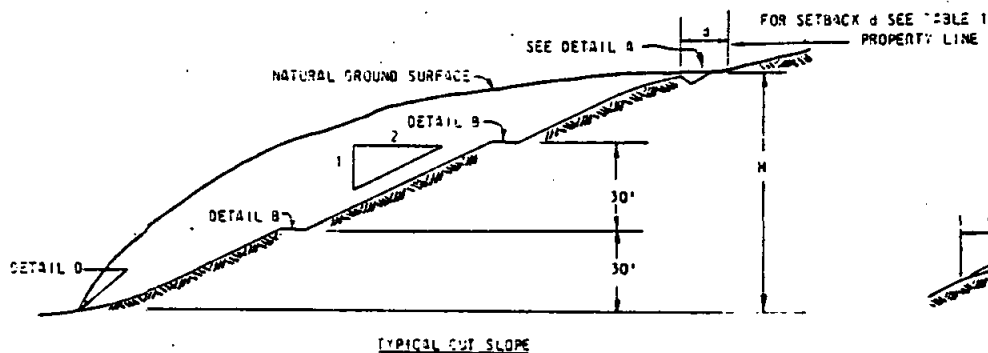
DRAWN BY _____	CHECKED BY _____	SAN DIEGO COUNTY DESIGN STANDARD	<i>U. Kuchan</i> 2/24/16			
RECOMMENDED BY <i>WFB</i>			REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER		LOT GRADING	FORMERLY STANDARD DRAWING Z31/T			
<i>H. J. ...</i> S.C.E. 10358			NUMBER DS-8			
DATE <i>11/24/16</i>						



NOTES:

1. CHAIN LINK FENCE OR ALTERNATE ACCEPTABLE TO THE COUNTY ENGINEER SHALL BE INSTALLED ALONG THE TOP OF SLOPES EXCEEDING 15 FEET VERTICAL HEIGHT AND 3 TO 1 SLOPE RATIO, AND ALONG THE TOP OF WALLS EXCEEDING 4' VERTICAL HEIGHT.
2. RETAINING WALLS AND CHAIN LINK FENCE OR ALTERNATE SHALL BE CONSTRUCTED IN ACCORDANCE WITH COUNTY OF SAN DIEGO STANDARD SPECIFICATIONS.

DRAWN BY _____	CHECKED BY _____	SAN DIEGO COUNTY DESIGN STANDARD	TITLE _____			
RECOMMENDED BY <u>WFB</u>			REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER		FENCING CUT BANKS	FORMERLY STANDARD DRAWING 232T			
DATE <u>2/28/76</u>			NUMBER	DS - 9		



ALL FILL MUST BE COMPACTED TO A MINIMUM OF 90% OF THE MAXIMUM DENSITY WITH THE EXCEPTION OF THE OUTER 8" OF THE SLOPE SURFACE WHICH MAY BE GRID ROLLED TO 95% DENSITY

TABLE 1
REQUIRED SETBACK

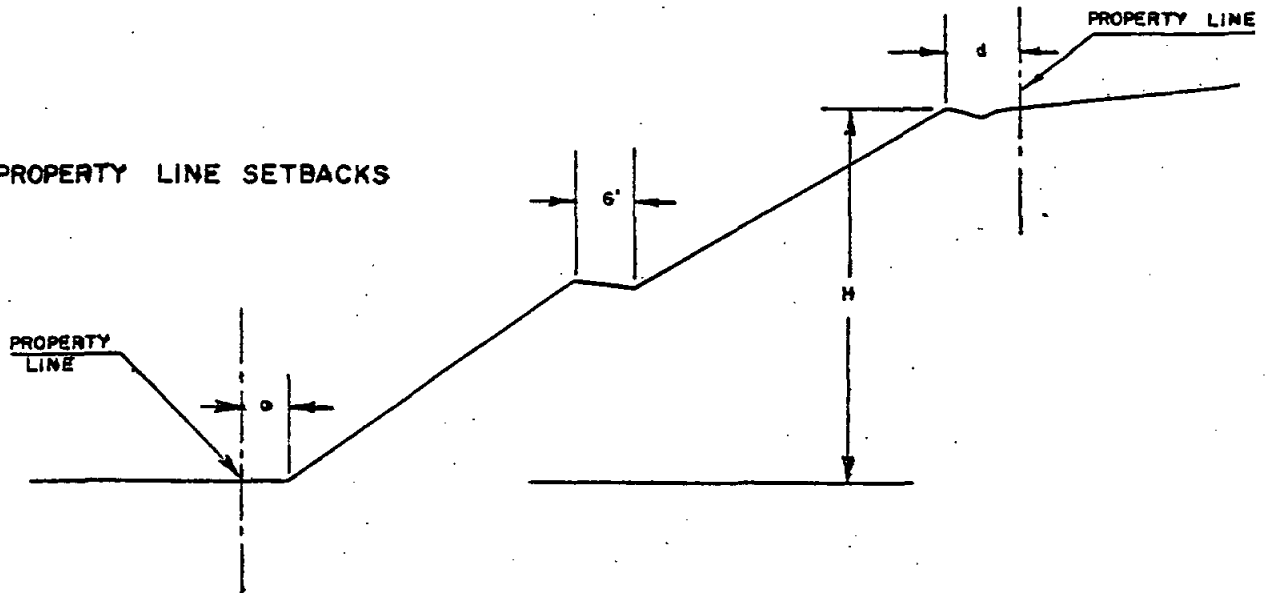
H FEET	d
0 - 15'	3'
OVER 15'	5'

TABLE 2
SLOPE ROUNDING

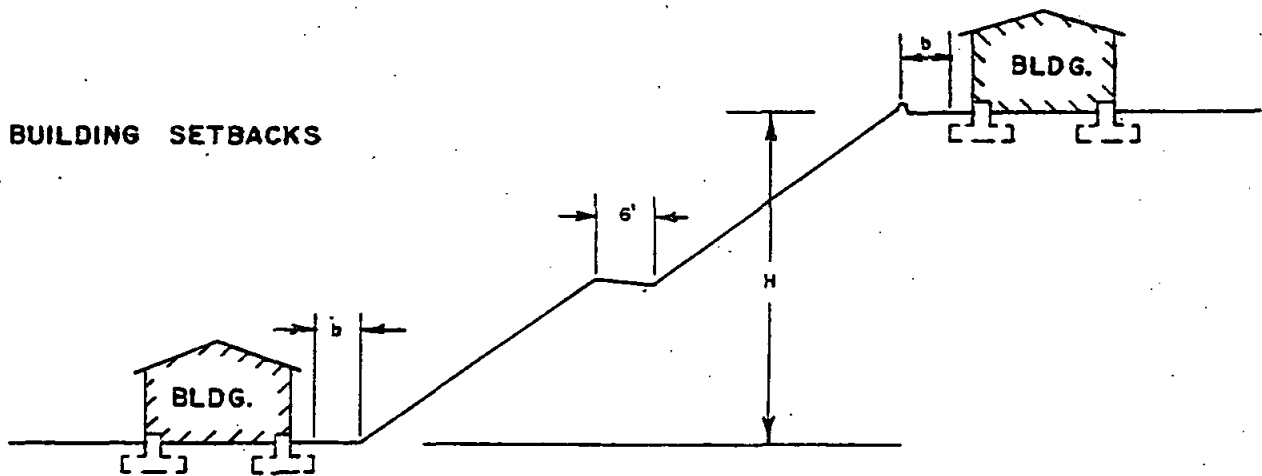
H FEET	L FEET
0' - 5'	-
5' - 20'	2.5'
20' - 40'	5'
OVER 40'	10'

DRAWN BY _____	CHECKED BY _____	SAN DIEGO COUNTY DESIGN STANDARD	T. F. L. 30 4.12.14/76			
RECOMMENDED BY <i>DEB</i>			REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER <i>H. K. L. 10358</i>		GRADING OF SLOPES	FORMERLY STANDARD DRAWING 208-17			
DATE <i>7/22/76</i>			NUMBER	DS - 10		

PROPERTY LINE SETBACKS



BUILDING SETBACKS



REQUIRED SETBACKS

H FEET	a	b	d
0 - 15	1' - 6"	5'	3'
15 - 30	3'	5'	5'
OVER 30	5'	5'	5'

- a. DISTANCE FROM TOE OF SLOPE TO PROPERTY LINE
- b. DISTANCE FROM EDGE OF FOUNDATION TO TOE OR TOP OF SLOPE.
- d. DISTANCE FROM TOP OF SLOPE TO PROPERTY LINE.
- H. TOTAL SLOPE HEIGHT MEASURED VERTICALLY.

DRAWN BY _____	CHECKED BY _____
RECOMMENDED BY <u>WFB</u>	
APPROVED BY COUNTY ENGINEER <u>WFB</u>	
DATE <u>7/12/76</u>	

SAN DIEGO COUNTY DESIGN STANDARD

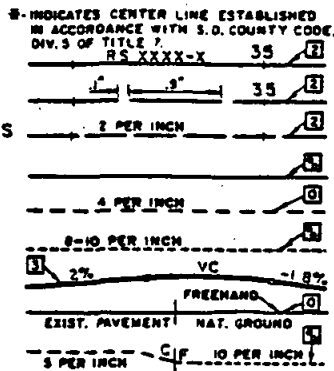
REQUIRED SETBACKS

REVISION	BY	APPROVED	DATE
FORMERLY STANDARD DRAWING 209			
NUMBER		DS - 11	

PROPOSED CONSTRUCTION

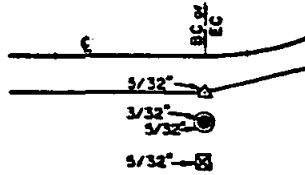
LINES

ULTIMATE CENTERLINE (C)²
 STAGE CONSTRUCTION LINE
 INTERSECTING ROADS & STREETS
 RIGHT OF WAY LINE
 EQUATION OR RADIUS LINE
 OFFSET TIE
 GRADE LINES ON PROFILES
 GROUND LINES ON PROFILES
 SLOPE LIMIT LINES



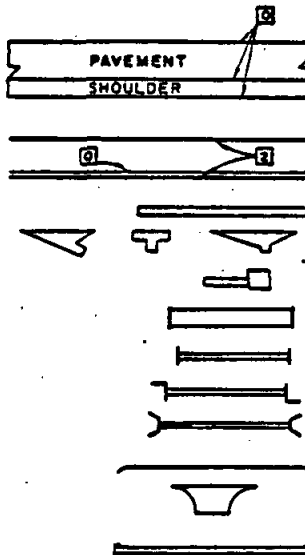
POINTS

BC & EC
 PI OR ANGLE PT.
 E MONUMENT
 BENCH MARK

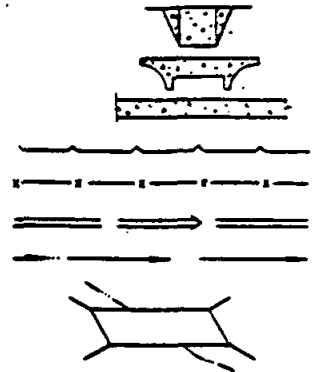


CONSTRUCTION

PAVEMENT EDGE & SHOULDERS
 A C DIKE (LABEL TYPE)
 CURB & GUTTER (LABEL TYPE)
 CULVERT
 DOWNDRAIN, A C SPILLWAY
 DROP INLET
 BOX CULVERT
 HEADWALL, STANDARD
 HEADWALL "L" TYPE
 HEADWALL & WINGWALL
 GUARD RAIL
 DRIVEWAY APRONS A C
 UTILITY DUCT (LABEL)

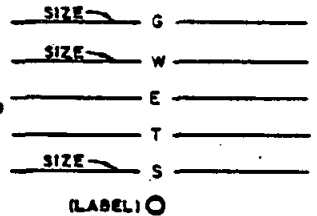


DRIVEWAY APRONS P C C
 CONCRETE CROSS GUTTER
 SIDEWALK
 RETAINING WALL
 FENCE (LABEL TYPE)
 DITCH, LINED
 DITCH, UNLINED
 BRIDGE



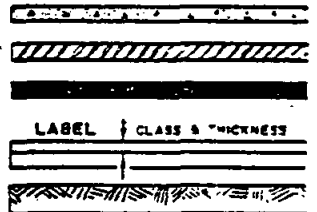
UTILITIES

GAS LINE
 WATER LINE
 ELECTRIC CABLE
 TELEPHONE CABLE
 SEWER LINE
 UTILITY MANHOLE



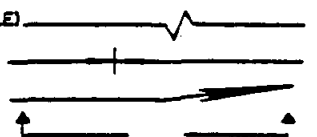
STRUCTURAL SYMBOLS

PORTLAND CEMENT CONCRETE
 ASPHALT CONCRETE (EXISTING)
 ROAD OIL MIX OR ASPHALT
 CONCRETE SURFACING
 BASE MATERIAL
 ORIGINAL GROUND



MISCELLANEOUS SYMBOLS

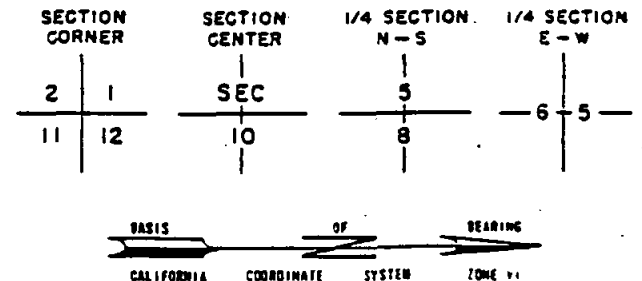
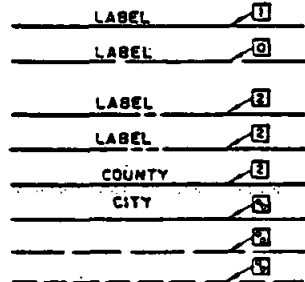
CONTRACTED LINE (NOT TO SCALE)
 LIMIT ARROWS
 PROJECT, WORK LIMIT
 CUTTING PLANE



CADASTRAL SYMBOLS

LAND LINES

TOWNSHIP LINES
 SECTION LINES
 GRANT LINE (RMO BOUNDARY OR INDIAN RESERVATION)
 SUBDIVISION BOUNDARY LINE
 CITY / COUNTY BOUNDARY LINE
 PROPERTY LINE
 LOT LINE
 EASEMENT LINE



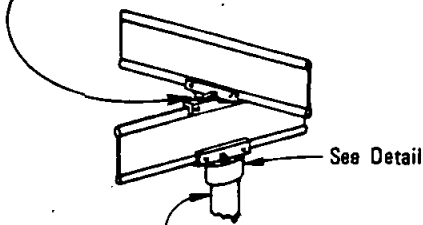
DRAWN BY	CHECKED BY
RECOMMENDED BY	WCB
APPROVED BY COUNTY ENGINEER	
DATE	11/22/76

SAN DIEGO COUNTY DESIGN STANDARD

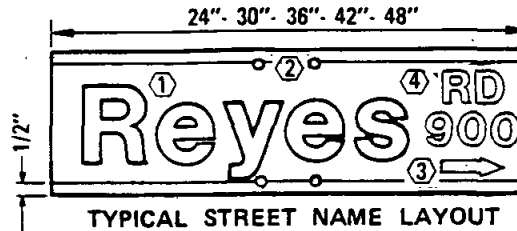
CONSTRUCTION PLAN SYMBOLS

REVISION	BY	APPROVED	DATE
FORMERLY STANDARD DRAWING			
NUMBER		DS-12	

Sign to Sign Bracket, Dimension to be compatible with post cap.



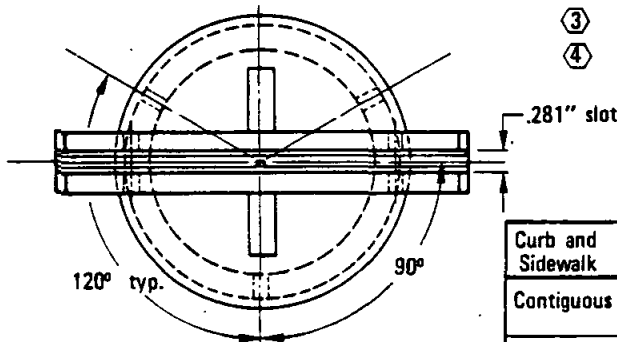
10" x 2 7/8" O.D. aluminum alloy 6063-T6, clear anodized pole.



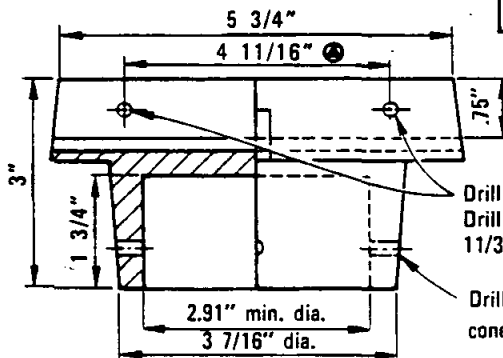
TYPICAL STREET NAME LAYOUT

Typical layout of legend and border on variable length sign blade of extruded aluminum with reverse screened reflective sheeting engineering grade. White letters and border on green background.

- ① 5"-U.C., 3 3/4"-L.C.
- ② 4 11/16" spacing of two 11/32" holes centered on both top and bottom edge of blade to match holes in sign bracket assemblies.
- ③ 2" x 2 3/4"-Arrow
- ④ 2"-U.C.



POST CAP DETAIL

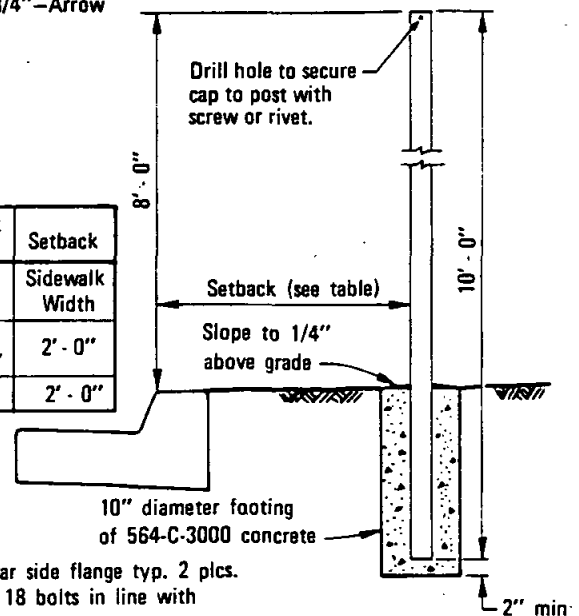


HALF-SECTION DETAIL

Curb and Sidewalk	Sidewalk Width	Setback
Contiguous	6' or less	Sidewalk Width
Contiguous	more than 6'	2' - 0"
Separate	—	2' - 0"

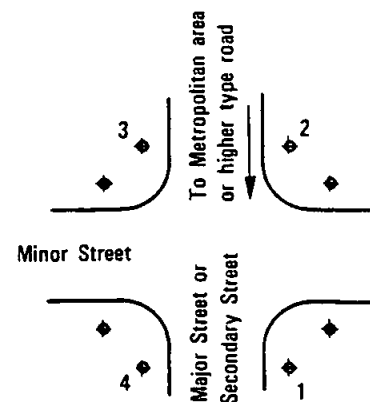
Drill 11/32" hole thru near side flange typ. 2 pls.
Drill and tap for 5/16" - 18 bolts in line with 11/32" diameter holes.

Drill and Tap for 5/16" - 18 cone pointed screw (3 pls.)



NOTES

- 1. ④ denotes 4 11/16" spacing shall match the holes in the extruded blades.
- 2. Bracket to be die cast aluminum.
- 3. All attaching screws shall be vandal proof type.



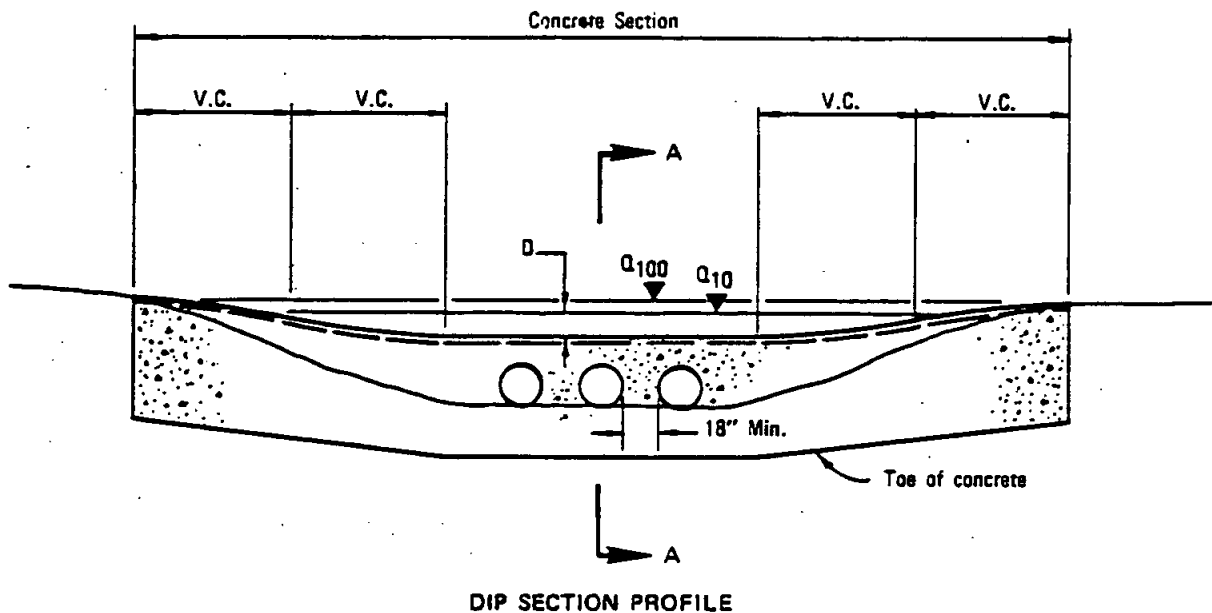
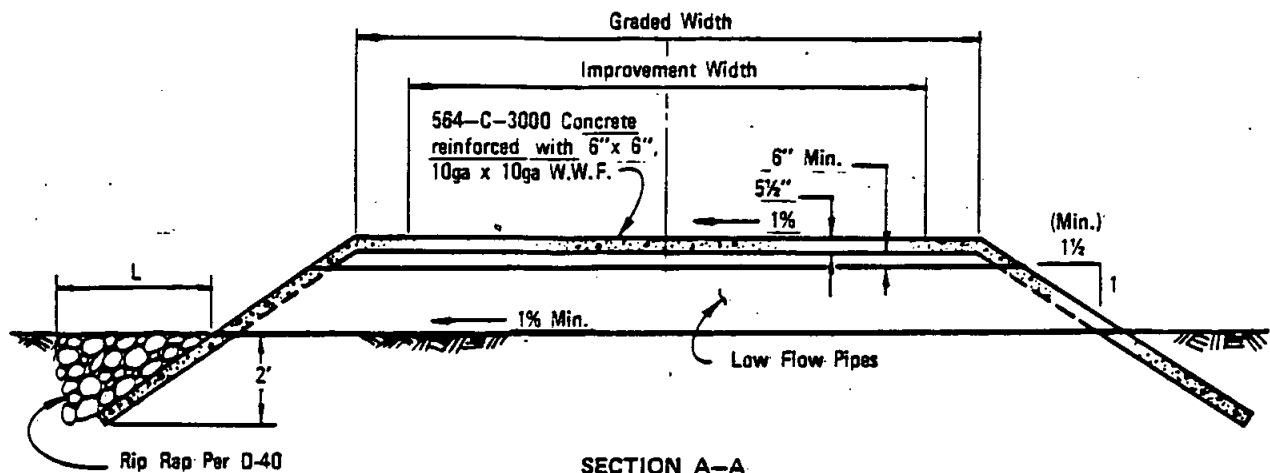
STREET NAME SIGN LOCATION
(numbers indicate priority of location selection)

DRAWN BY <i>gk</i>	CHECKED BY <i>RFW</i>
RECOMMENDED BY <i>RFW</i>	
APPROVED BY COUNTY ENGINEER	
<i>RFW</i> R.C.E. 10358	
DATE <i>10/4/76</i>	

SAN DIEGO COUNTY DESIGN STANDARD

STANDARD STREET SIGN

REVISION	BY	APPROVED	DATE
FORMERLY STANDARD DRAWING 3012			
NUMBER	DS-13		



NOTES:

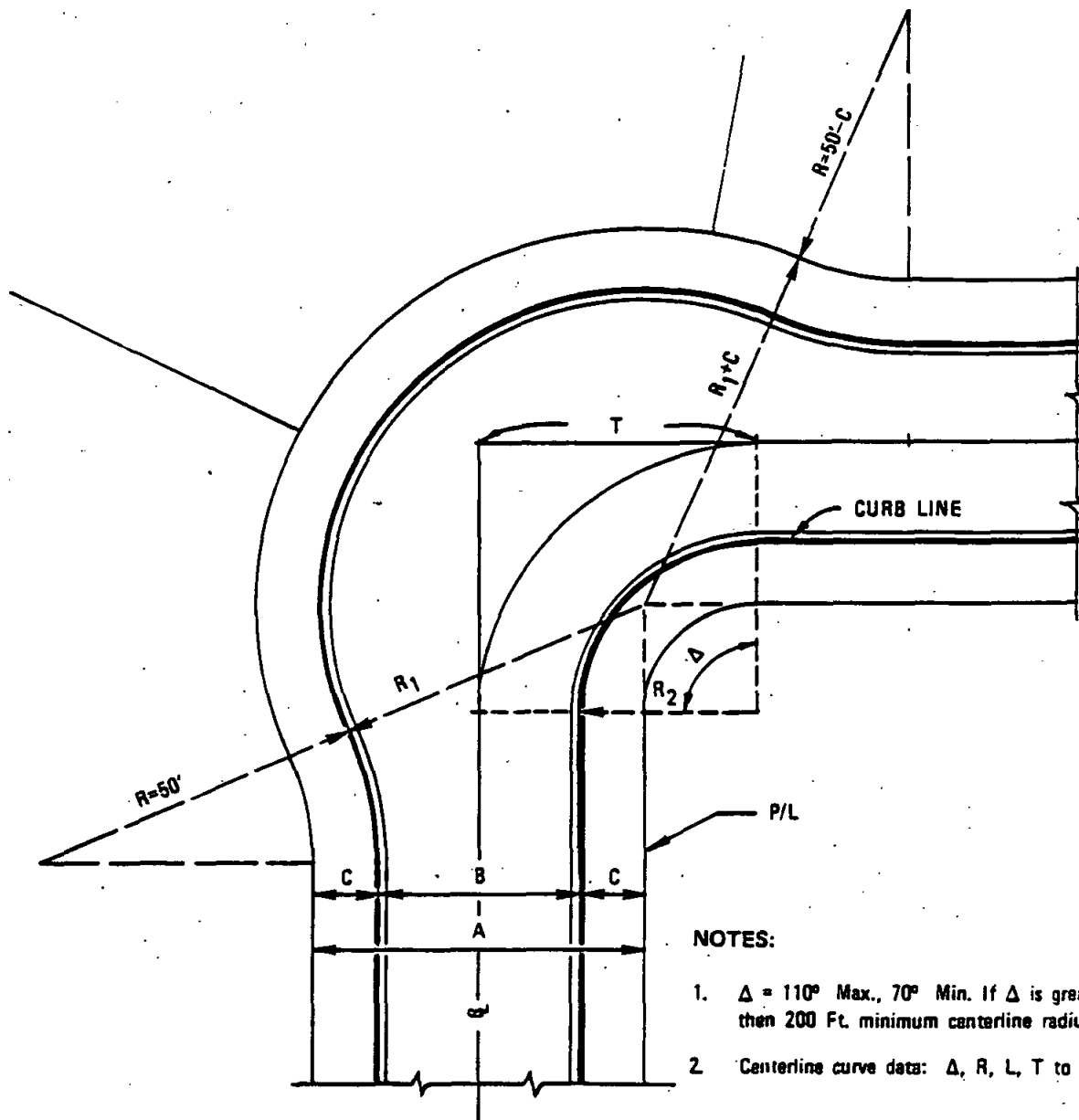
1. Dip sections shall conform to Section 5.7-10(d) of the San Diego County Standards.
2. The maximum water depth, based on a 10 year frequency storm, shall be 10". The depth (D) in feet multiplied by the velocity (V) in feet per second shall be equal to six or less. ($D \times V = 6$)
3. Vertical curves shall be designed based on road design speed and the percent change in longitudinal road grade.
4. Low Flow pipes may be omitted if the conditions of Note 2 can be met without their use.

DRAWN BY SG CHECKED BY MC
 RECOMMENDED BY W. B. Baker
 APPROVED BY COUNTY ENGINEER
R. F. Walsh C.E. 10358
 DATE 4-29-82

SAN DIEGO COUNTY DESIGN STANDARD

DIP SECTION (FOR PRIVATE STREETS)

REVISION	BY	APPROVED	DATE	
NUMBER DS-14				



NOTES:

1. $\Delta = 110^\circ$ Max., 70° Min. If Δ is greater than 110° , then 200 Ft. minimum centerline radius required.
2. Centerline curve data: Δ , R, L, T to be shown on plans.

PLAN

A	B	R_1°	R_2°	C*
72'	52'	80'	40'	10'
60'	40'	68'	30'	10'
56'	36'	64'	30'	10'
52'	32'	60'	30'	10'
48'	28'	56'	30'	10'

* DIMENSIONS SHOWN ARE MINIMUMS

DRAWN BY RLH CHECKED BY MS

RECOMMENDED BY [Signature]

APPROVED BY COUNTY ENGINEER

RF Weber R.C.E. 10358

DATE 11-6-84

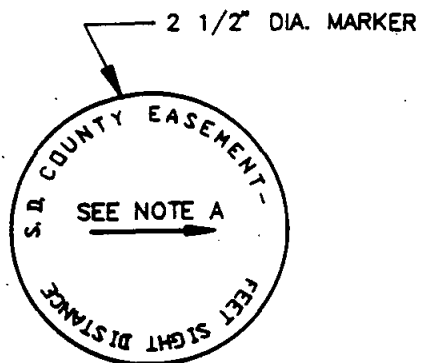
SAN DIEGO COUNTY DESIGN STANDARD

STREET KNUCKLE

R+C [Signature] 5/1/85

REVISION BY APPROVED DATE

NUMBER DS-15



BRONZE MARKER

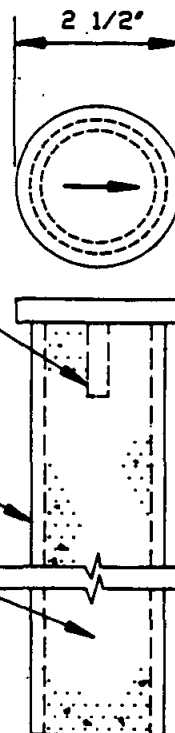
NOTE A:

Rotate arrow to indicate location of target point

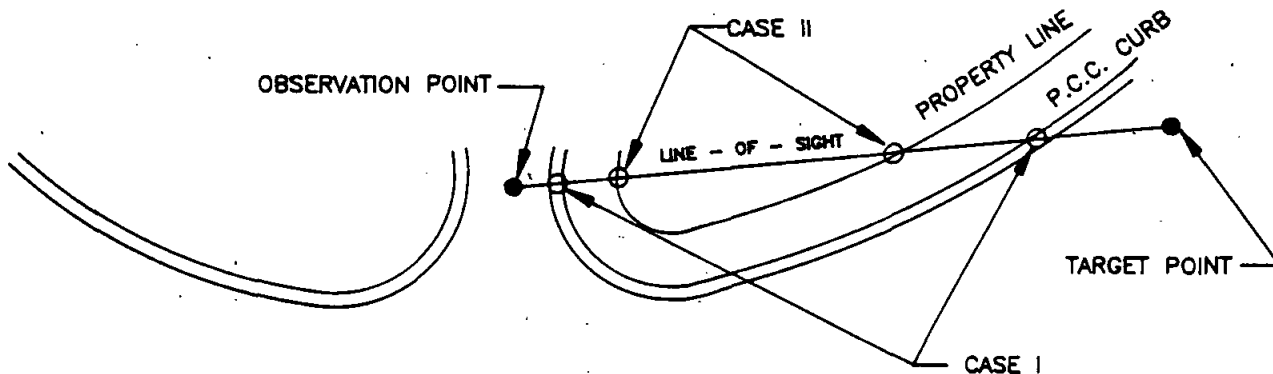
SHANK $3/4" \phi \times 2 1/2"$

GALVANIZED STEEL PIPE
2" I.D. X 24" LONG

QUICK SET
CONCRETE



CASE II MARKER



CASE I: BRONZE MARKER TO BE SET IN P.C.C. CURB AT LINE OF SIGHT - CURB INTERSECTION

CASE II: IF NO CURB, SET BRONZE MARKER IN CONCRETE IN 2" X 24" LONG STEEL PIPE AT INTERSECTION OF LINE OF SIGHT AND PROPERTY LINE

CLEAR SPACE EASEMENTS FOR SIGHT DISTANCE, WHERE SPECIFIED IN PLANS, SHALL BE DESIGNATED BY A BRONZE MARKER ACCORDING TO CASE I OR CASE II. ABOVE.

DRAWN BY <u>CAJ</u> CHECKED BY <u>CH</u>
RECOMMENDED BY <u>CMH</u>
APPROVED BY: <u>H. X. Salie</u> for
DIRECTOR OF PUBLIC WORKS, R.C.E. 13681
DATE <u>6-23-89</u>

SAN DIEGO COUNTY DESIGN STANDARD

CLEAR SPACE MARKERS

REVISION	BY	APPROVED	DATE
Title	<u>HE</u>	<u>CMHunt</u>	<u>9/89</u>
NUMBER		DS-16	

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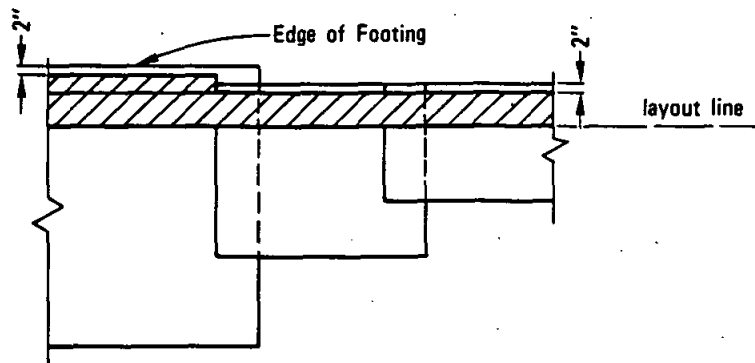
APPENDIX A

Traffic Control Plans

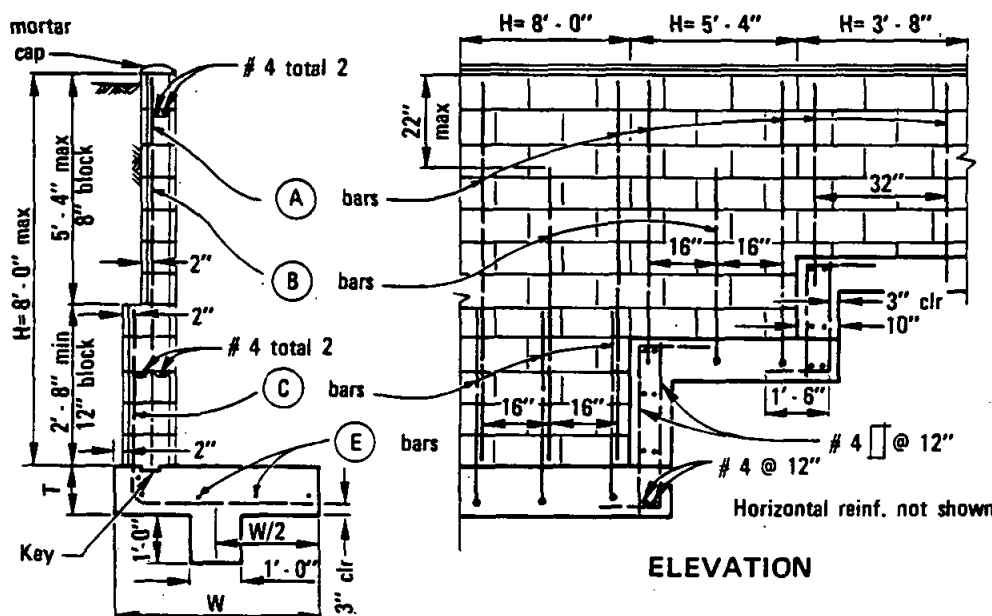
CONCRETE STRUCTURES

CONCRETE STRUCTURES

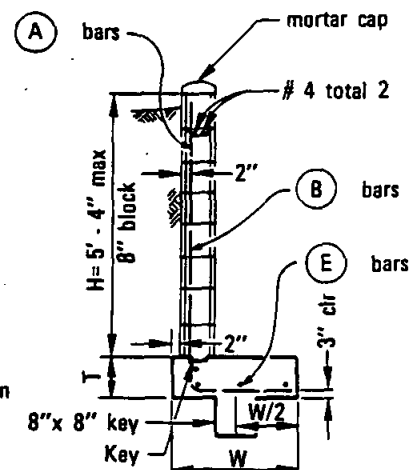
C



PLAN



ELEVATION



TYPICAL SECTION
5' - 4" max

TYPICAL SECTION
over 5' - 4"

NOTES

1. See Standard Drawings C-7 and C-8 for additional notes and details.
2. Fill all block cells with grout.

DIMENSIONS AND REINFORCING STEEL			
H (max)	3' - 8"	5' - 4"	8' - 0"
T (min)	0' - 8"	0' - 10"	1' - 0"
W (min)	2' - 4"	3' - 6"	5' - 4"
(A) bars	# 4 @ 32"	# 4 @ 32"	# 4 @ 32"
(B) bars	—	# 4 @ 32"	# 4 @ 32"
(C) bars	—	—	# 6 @ 16"
(E) bars	# 4 total 4	# 4 total 5	# 4 total 6
max soil press. (psf)	500	600	800

Revision	By	Approved	Date
Title	RC	M.B.	5-86
TITLE	RC	J.L.	7-88

SAN DIEGO REGIONAL STANDARD DRAWING

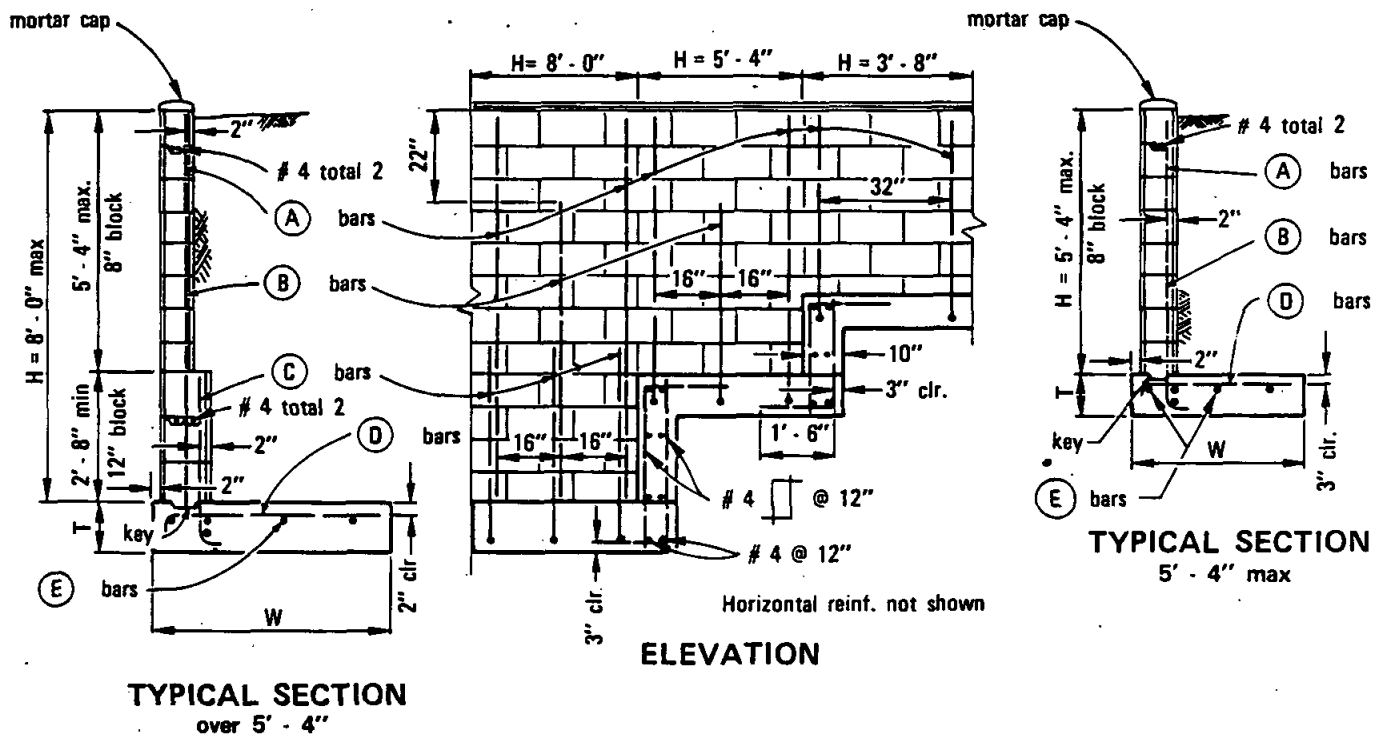
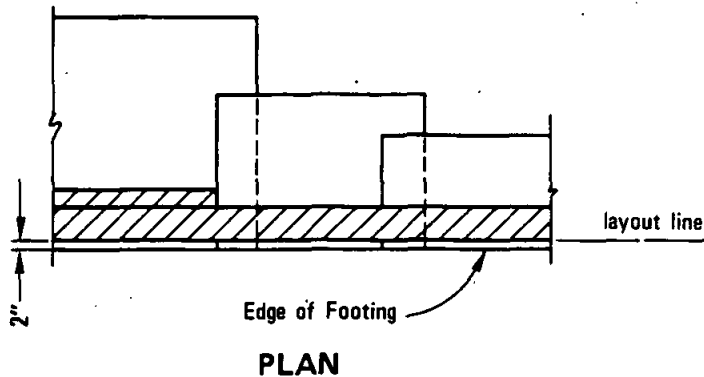
MASONRY RETAINING WALL TYPE 1
(LEVEL BACKFILL)

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Oliver O. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **C-1**

Revision	By	Approved	Date
REIN ST.	AC	A.H.	8-88



NOTES

1. See Standard Drawings C-7 and C-8 for additional notes and details.
2. Fill all blockcells with grout.

DIMENSIONS AND REINFORCING STEEL			
H (max)	3' - 8"	5' - 4"	8' - 0"
T (min)	0' - 8"	0' - 10"	1' - 0"
W (min)	2' - 4"	3' - 2"	4' - 9"
(A) bars	# 4 @ 32"	# 4 @ 32"	# 4 @ 32"
(B) bars	—	# 4 @ 32"	# 4 @ 32"
(C) bars	—	—	# 6 @ 16"
(D) bars	# 4 @ 32"	# 4 @ 16"	# 6 @ 16"
(E) bars	# 4 total 4	# 4 total 5	# 4 total 6
max. soil press. (psf)	1100	1600	2200

Revision	By	Approved	Date
REINST.	32	9. H.	8-88

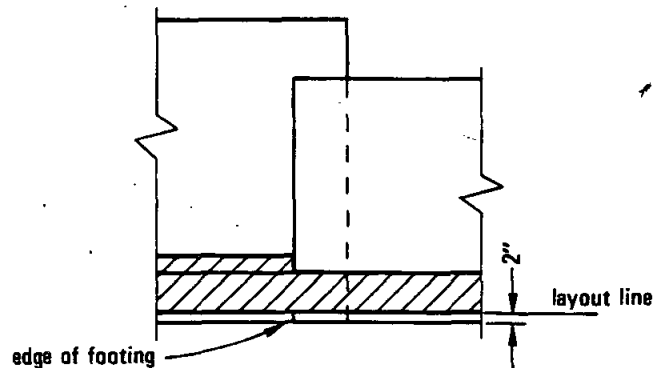
SAN DIEGO REGIONAL STANDARD DRAWING

MASONRY RETAINING WALL TYPE 3 (LEVEL BACKFILL)

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

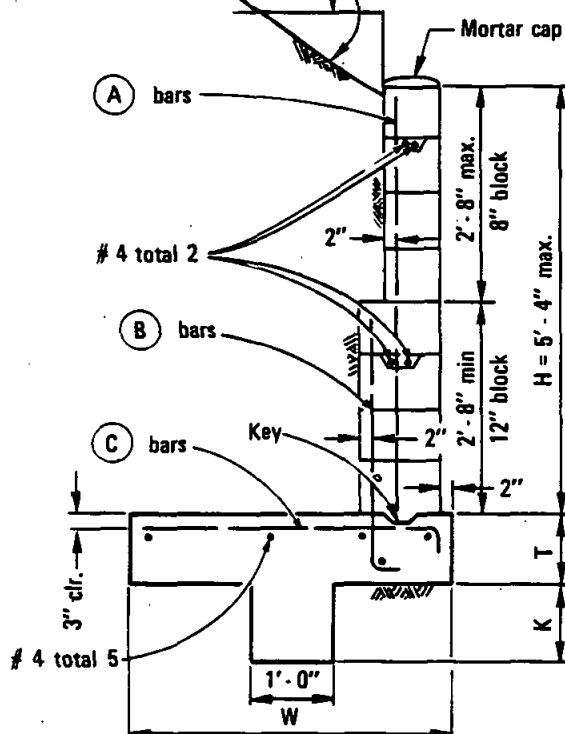
Allen A. Kuehnel *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **C-3**

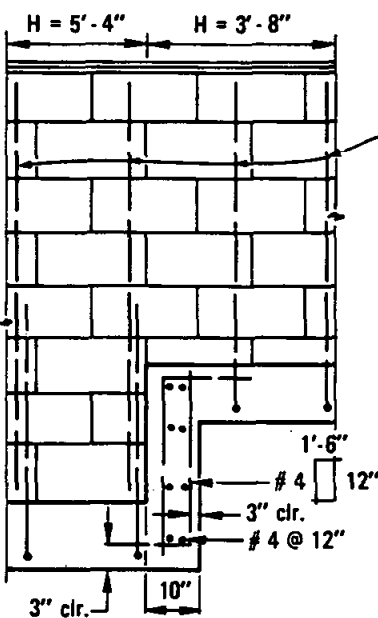


PLAN

1 1/2:1 sloping backfill or
250 psf. live load surcharge



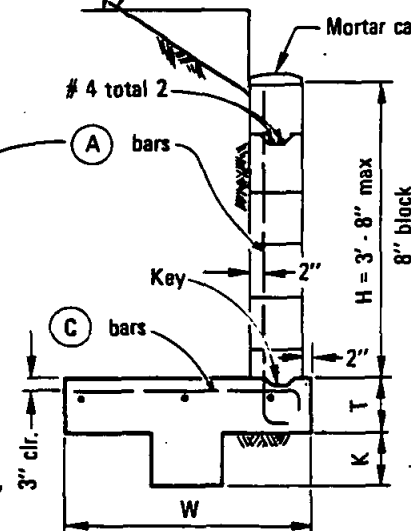
TYPICAL SECTION
over 3' - 8"



Horizontal reinf. not shown

ELEVATION

1 1/2:1 sloping backfill or
250 psf. live load surcharge



TYPICAL SECTION
3' - 8" max.

NOTES

1. See Standard Drawings C-7 and C-8 for additional notes and details.
2. Fill all block cells with grout.

DIMENSIONS AND REINFORCING STEEL

H (max)	5' - 4"		3' - 8"	
T (min)	0' - 10"		0' - 8"	
W (min)	4' - 0"		3' - 0"	
(A) bars	# 4 @ 16"		# 4 @ 16"	
(B) bars	# 6 @ 16"		—————	
Surcharge	sloping	live load	sloping	live load
(C) bars	# 6 @ 8"	# 6 @ 16"	# 6 @ 16"	# 6 @ 16"
K (min)	1' - 0"	0' - 8"	1' - 0"	0' - 8"
Toe press.	2700 psf.	1900 psf.	1700 psf	1430 psf

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

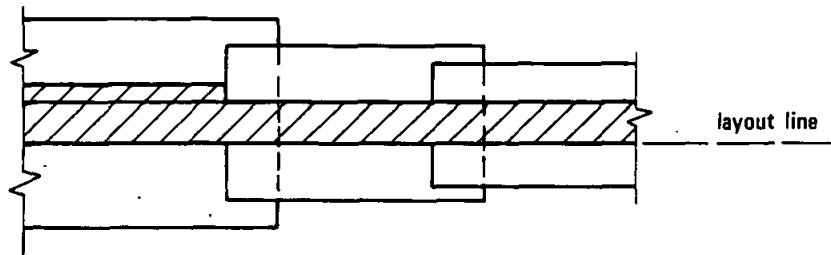
Allen G. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

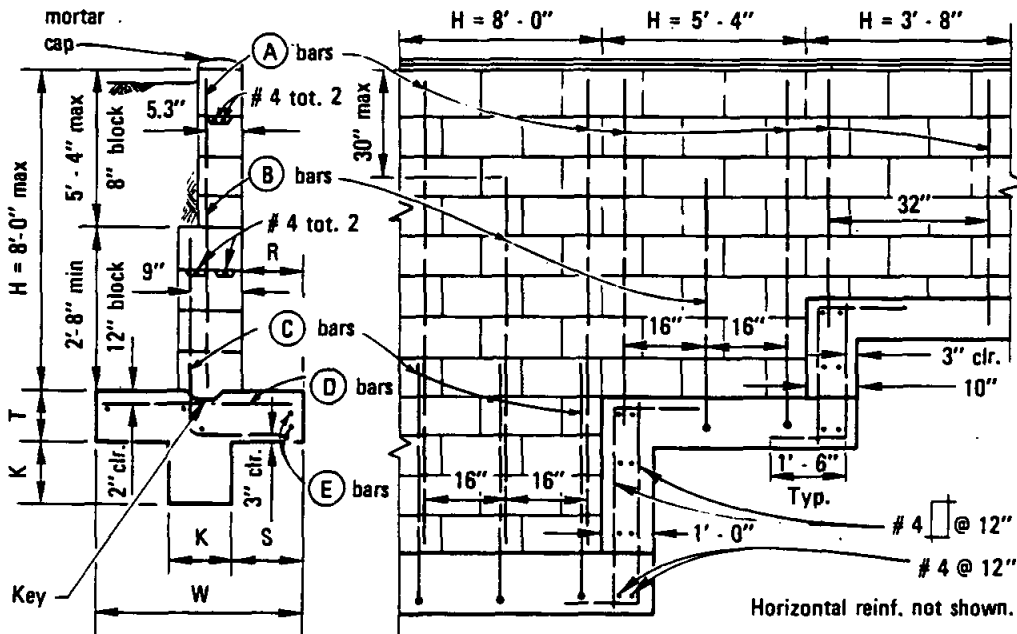
MASONRY RETAINING WALL TYPE 4
(LIVE LOAD SURCHARGE OR SLOPING BACKFILL)

DRAWING
NUMBER **C-4**

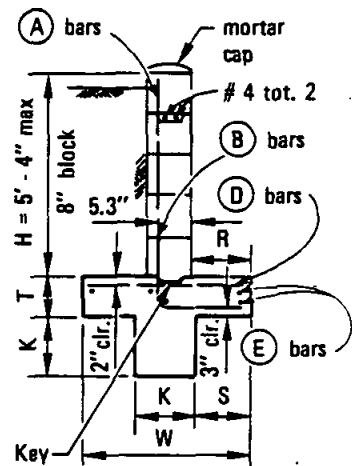
Revision	By	Approved	Date
Title	<i>MCB</i>	<i>MCB</i>	5/86
TITLE	<i>MC</i>	<i>A.H.</i>	7/88



PLAN



ELEVATION



TYPICAL SECTION
5' - 4" max

TYPICAL SECTION
over 5' - 4"

NOTES

1. See Standard Drawing C-7 and C-8 for additional notes and details.
2. Fill all block cells with grout.

DIMENSIONS AND REINFORCING STEEL

	3' - 8"	5' - 4"	8' - 0"
H (max)	3' - 8"	5' - 4"	8' - 0"
T (min)	0' - 8"	0' - 10"	1' - 0"
W (min)	2' - 1"	3' - 1"	4' - 3"
R	0' - 9"	1' - 2"	1' - 5"
S	0' - 8 1/2"	1' - 1/2"	1' - 7 1/2"
K	0' - 8"	0' - 8"	0' - 12"
(A) bars	# 4 @ 32"	# 4 @ 32"	# 4 @ 32"
(B) bars	—	# 4 @ 32"	# 4 @ 32"
(C) bars	—	—	# 7 @ 16"
(D) bars	# 4 @ 32"	# 4 @ 16"	# 4 @ 16"
(E) bars	# 4 total 5	# 4 total 5	# 4 total 6
max soil press. (psf)	774	1030	1660

Revision	By	Approved	Date
1	M.B.		5-86
2	A.H.		7-88

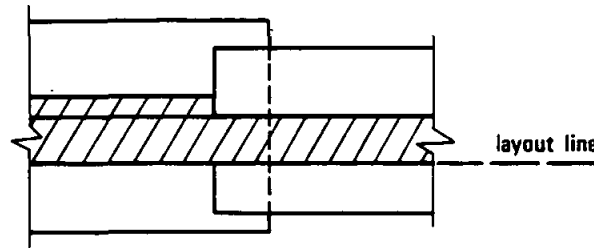
SAN DIEGO REGIONAL STANDARD DRAWING

MASONRY RETAINING WALL TYPE 5
(LEVEL BACKFILL)

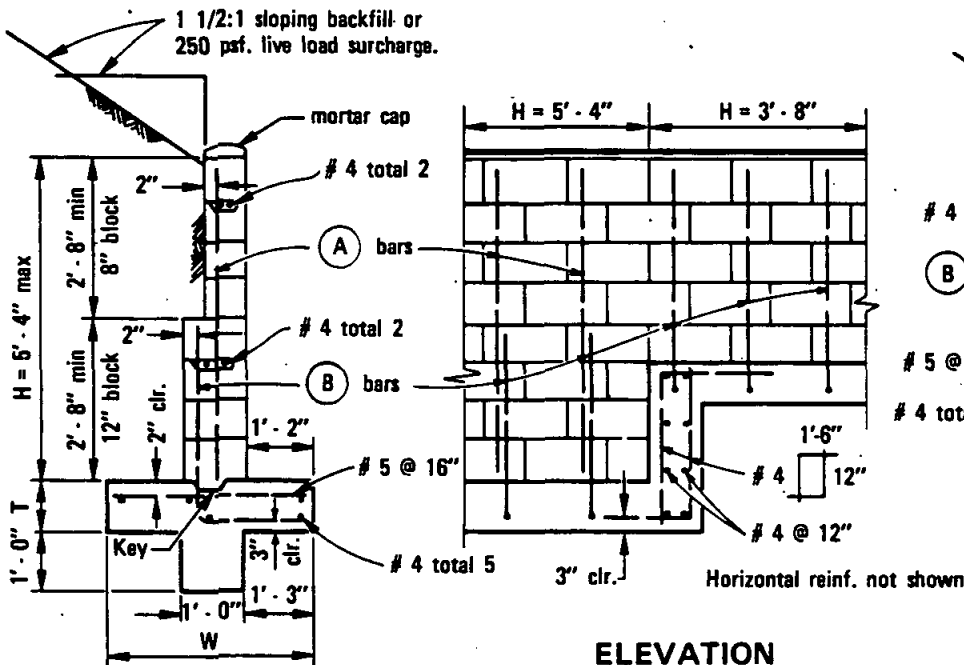
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alfred A. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

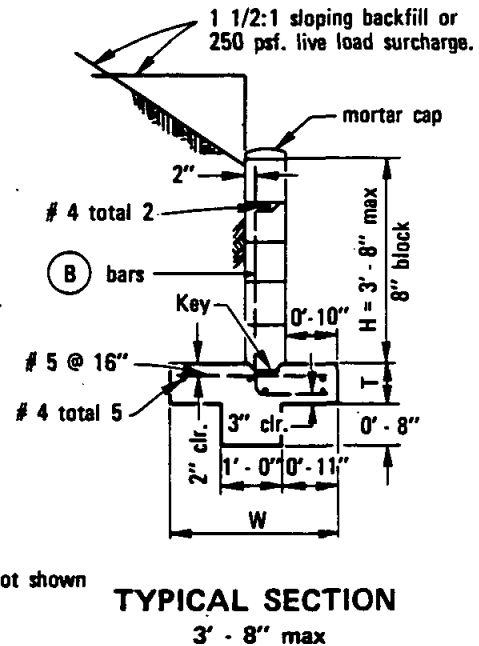
DRAWING
NUMBER C-5



PLAN



ELEVATION



TYPICAL SECTION
3' - 8" max

TYPICAL SECTION
over 3' - 8"

NOTES

1. See Standard Drawings C-7 and C-8 for additional notes and details.
2. Fill all block cells with grout.

DIMENSIONS AND REINFORCING STEEL		
H (max)	5' - 4"	3' - 8"
T (min)	0' - 10"	0' - 8"
W (min)	3' - 10"	2' - 9"
(A) bars	# 4 @ 16"	—
(B) bars	# 6 @ 16"	# 4 @ 16"
Max. Toe Press. P.S.F.	2000	1400

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan J. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **C-6**

SAN DIEGO REGIONAL STANDARD DRAWING

MASONRY RETAINING WALL TYPE 6
(LIVE LOAD SURCHARGE OR SLOPING BACKFILL)

Revision	By	Approved	Date

DESIGN CONDITIONS:

Walls are to be used for the loading conditions shown for each type wall. Design H shall not be exceeded. Footing key is required except as shown otherwise or when found unnecessary by the Engineer. Special footing design is required where foundation material is incapable of supporting toe pressure listed in table.

DESIGN DATA:

Reinforced Concrete:

$F_c = 1200 \text{ psi}$ $F'_c = 3000 \text{ psi}$
 $F_s = 20,000 \text{ psi}$ $n = 10$

Reinforced Masonry:

$F'_m = 600 \text{ psi}$ $F_m = 200 \text{ psi}$
 $F_s = 20,000 \text{ psi}$ $n = 50$
Earth = 120 pcf and Equivalent Fluid Pressure = 36 psf per foot of height. Walls shown for 1½:1 unlimited sloping surcharge are designed in accordance with Rankline's formula for unlimited sloping surcharge with a $\phi = 33^\circ 42'$.

REINFORCEMENT:

Intermediate grade, hard grade, or rail steel deformation shall conform to ASTM A615, A616, A617. Bars shall lap 40 diameters, where spliced, unless otherwise shown on the plans. Bends shall conform to the Manual of Standard Practice, A.C.I. Backing for hooks is four diameters. All bar embedments are clear distances to outside of bar. Spacing for parallel bars is center to center of bars.

MASONRY:

All reinforced masonry retaining walls shall be constructed of regular or light weight standard units conforming to the "Standard Specifications for Public Works Construction."

JOINTS:

Vertical control joints shall be placed at 32 foot intervals maximum. Joints shall be designed to resist shear and other lateral forces while permitting longitudinal movement. Vertical expansion joints shall be placed at 96 foot intervals maximum.

CONCRETE:

Footing concrete shall be 560-C-3250, using B aggregate when placing conditions permit.

BACKFILL:

No backfill material shall be placed against masonry retaining walls until grout has reached design strength or until grout has cured for a minimum of 28 days. Compaction of backfill material by jetting or ponding with water will not be permitted. Each layer of backfill shall be moistened as directed by the Engineer and thoroughly tamped, rolled or otherwise compacted until the relative compaction is not less than 90%.

FENCING:

Safety fencing shall be installed at the top of the wall as required by the agency.

INSPECTIONS:

Call for inspections as follows:

- A. When the footing has been formed, with the steel tied securely in final position, and is ready for the concrete to be placed.
- B. Where cleanout holes are not provided:
 - (1) After the blocks have been laid up to a height of 4', or full height for walls up to 5', with steel in place but before the grout is poured, and
 - (2) After the first lift is properly grouted, the blocks have been laid up to the top of the wall with the steel tied securely in place but before the upper lift is grouted.

Where cleanout holes are provided:

After the blocks have been laid up to the top of the wall, with the steel tied securely in place, but before grouting.

- C. After grouting is complete and after rock or rubble wall drains are in place but before earth backfill is placed.
- D. Final inspection when all work has been completed.

CONCRETE GROUT AND MORTAR MIXES:

Concrete grout shall attain a minimum compressive strength of 2,000 psi in 28 days and mortar shall attain 1,800 psi in 28 days. All cells shall be filled with grout. Rod or vibrate grout within 10 minutes of pouring to insure consolidation. Bring grout to a point 2" from the top of masonry units when grouting of second lift is to be continued at another time.

MORTAR KEY:

To insure proper bonding between the footing and the first course of block, a mortar key shall be formed by embedding a flat 2 X 4 flush with and at the top of the freshly poured footing. The 2 X 4 should be removed after the concrete has started to harden (approximately 1 hour). A mortar key may be omitted if the first course of block is set into the fresh concrete when the footing is poured, and a good bond is obtained.

WALL DRAINS:

Wall drains shall be provided in accordance with Standard Drawing C-8.

SOIL:

All footings shall extend at least 12 inches into undisturbed natural soil or approved compacted fill. Soil should be dampened prior to placing concrete in footings.

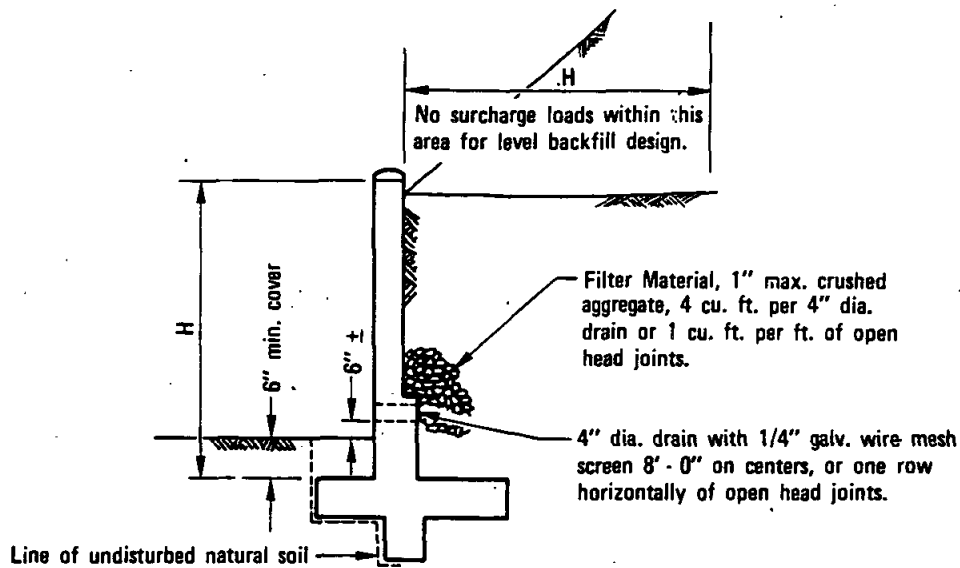
Revision	By	Approved	Date
New Des.	RP	M.B.	10-52
Notes		M.B.	5-86
Notes	RC	A.H.	7-88

SAN DIEGO REGIONAL STANDARD DRAWING

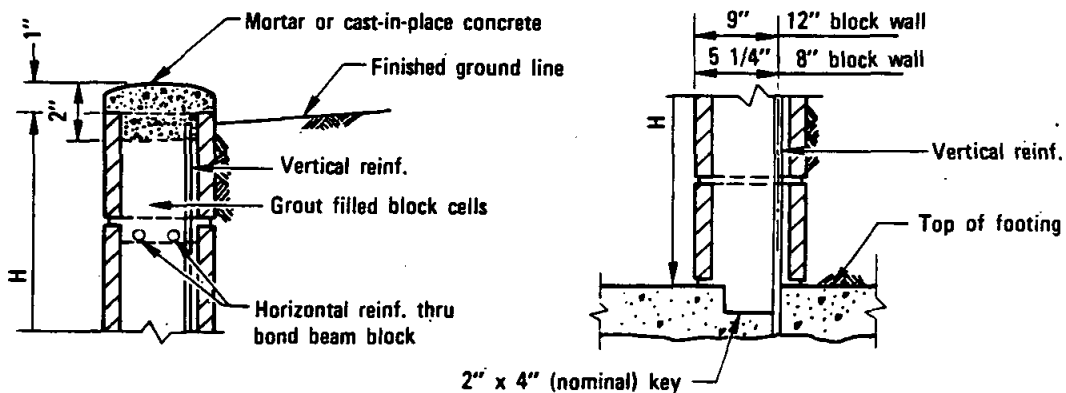
GENERAL NOTES FOR MASONRY RETAINING WALLS

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Allen A. Kinsland Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER C-7



TYPICAL SECTION



CAP DETAIL

KEY DETAIL

NOTES:

1. All masonry retaining walls shall be constructed with cap, key and drainage details as shown hereon.
2. 4" diameter drain may be formed by placing a block on it's side.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

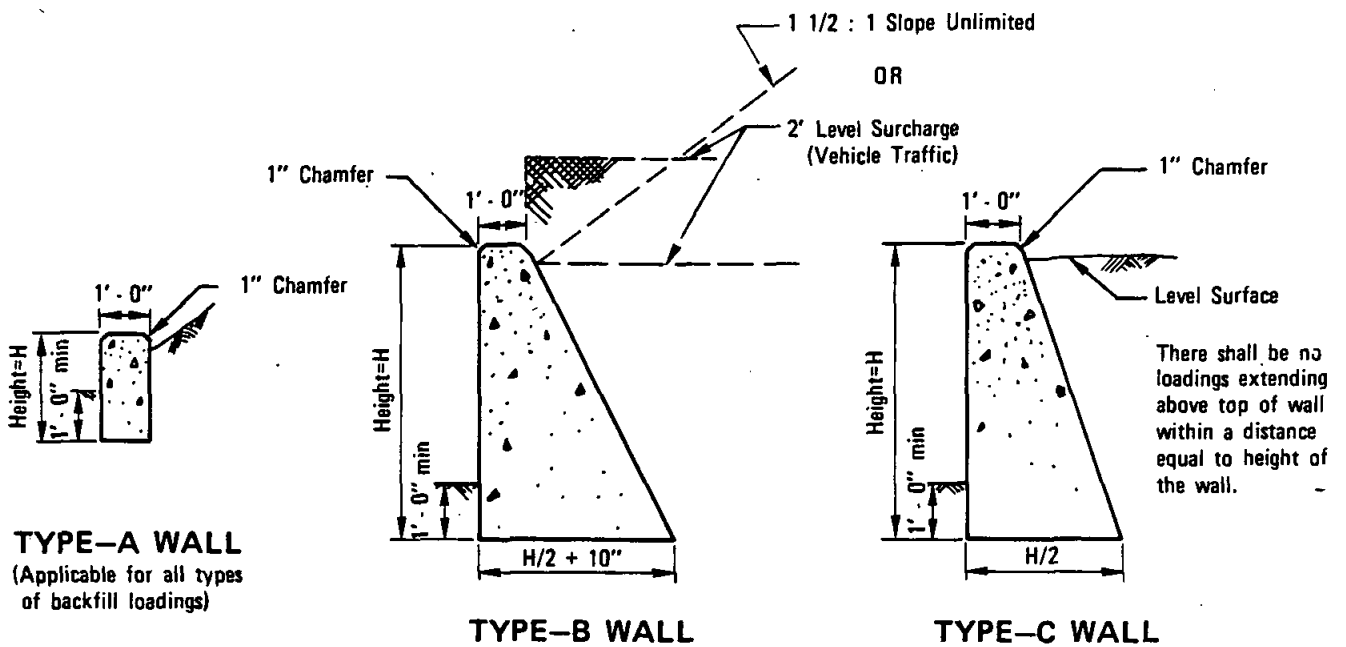
Clifford A. Kunkel *Dec. 1975*
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

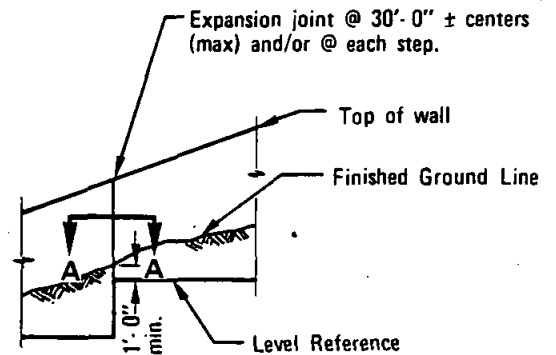
DETAILS FOR MASONRY RETAINING WALL

DRAWING
NUMBER C-8

Revision	By	Approved	Date
Note 2	SC	A.H.	7/88



WALL TYPE	HEIGHT	BASE	CONC CF/FT
A	1' - 6"	1' - 0"	1.50
	2' - 0"	1' - 0"	2.00
B	3' - 0"	2' - 4"	4.99
	4' - 0"	2' - 10"	7.66
	5' - 0"	3' - 4"	10.82
	6' - 0"	3' - 10"	14.49
C	3' - 0"	1' - 6"	3.75
	4' - 0"	2' - 0"	6.00
	5' - 0"	2' - 6"	8.75
	6' - 0"	3' - 0"	12.00



TYPICAL ELEVATION

NOTE

See Standard Drawing C-10 for Section A-A, notes and details.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
				GRAVITY RETAINING WALLS		<i>Allen A. Kershner</i> <i>Dec. 1975</i>
						Coordinator R.C.E. 19807 Date
						DRAWING NUMBER C-9

CONCRETE

Concrete shall be 560-C-3250.

DESIGN CONDITIONS

Walls are to be used for the loading conditions shown for each type wall. Design H may be exceeded by six inches before going to next size.

DESIGN DATA

$F_c = 1200 \text{ psi}$ $F'_c = 3000 \text{ psi}$
Earth = 120 pcf and equivalent fluid pressure = 36 psf per foot of height

Walls shown for 1 1/2:1 unlimited sloping surcharge are designed in accordance with Rankine's Formula for unlimited sloping surcharge with $\phi = 33^\circ 42'$.

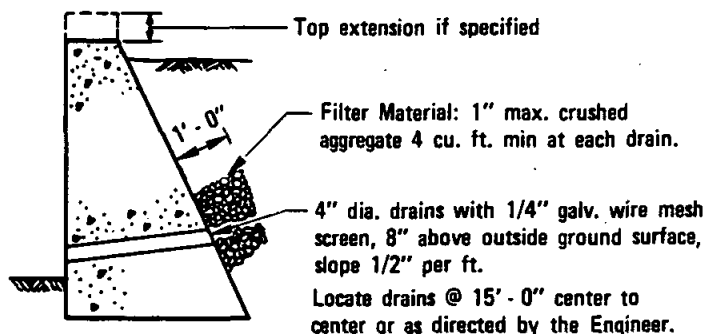
Note: Maximum toe pressure under wall footing = 1 1/2 tons. Special design required where footing material is incapable of supporting this pressure.

EXCAVATION AND BACKFILL

Compaction of backfill material by jetting or ponding with water will not be permitted.

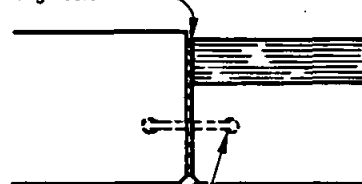
Each layer of backfill shall be moistened as directed by the Engineer and thoroughly tamped, rolled or otherwise compacted until the relative compaction is not less than 90 percent.

No backfill material shall be deposited against concrete retaining walls until the concrete has developed a strength of 2,500 pounds per square inch in compression as determined by test cylinders, or until 28 days after wall has been placed.



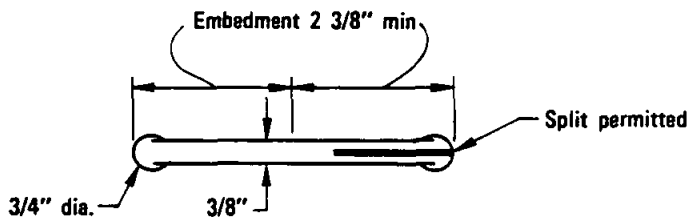
TYPICAL DRAINAGE WHEN H IS GREATER THAN 4' - 0"

1/2" Expansion joint, fill with premolded expansion joint filler. Locate joints at 30' - 0" $\pm$ centers or as directed by the Engineer.



1/2" chamfer Water stop, use only when watertight joint is required, see water stop detail.

SECTION A-A



RUBBER WATERSTOP

Use only when watertight joint is required.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

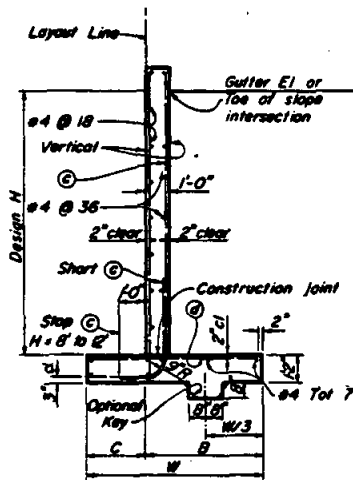
Alan O. Kishner Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **C-10**

SAN DIEGO REGIONAL STANDARD DRAWING

GENERAL NOTES AND DETAILS FOR GRAVITY RETAINING WALLS

Revision	By	Approved	Date
Conc.	R	M.B.	5-76



SPREAD FOOTING SECTION

Place concrete in toe against undisturbed material, except as permitted by the Engineer.

Note:
Quantities apply to Design H portion and exclude the added portion above "Gutter Elevation."

TABLE OF REINFORCING STEEL DIMENSIONS AND DATA						
Design H	4'	6'	8'	10'	12'	
W	3'-2"	4'-2"	5'-2"	6'-2"	7'-2"	
C	1'-0"	1'-4"	1'-8"	2'-0"	2'-4"	
B	2'-2"	2'-10"	3'-6"	4'-2"	4'-10"	
① bars	5 @ 24	5 @ 22	5 @ 11	6 @ 9	6 @ 7½	
② bars	5 @ 24	5 @ 22	5 @ 22	6 @ 18	6 @ 15	
Total ① bars	5 - 56	5 - 56	5 - 56	10 - 57	10 - 57	
Total ② bars				4 - 57	4 - 57	
CASE I - Toe Press. psf	1590	1930	2240	2550	2840	
CASE II - Toe Press. psf	1060	1460	1860	2280	2700	
Spread Steel lbs/ft	15	21	27	46	70	
Footing Conc CF/ft	8.6	11.8	14.9	18.1	21.3	
Pile Ftg Steel lbs/ft	25	32	38	75	101	
Pile Ftg Conc CF/ft	9.9	11.9	15.3	18.8	22.2	

Note:
Reinforcement detailed is to be placed in addition to that shown for spread footing. All piles not shown, see Pile Layout on plans.
① For pile footing Design H=4' use same footing dimensions as Design H=6'

NOTES

Design Conditions

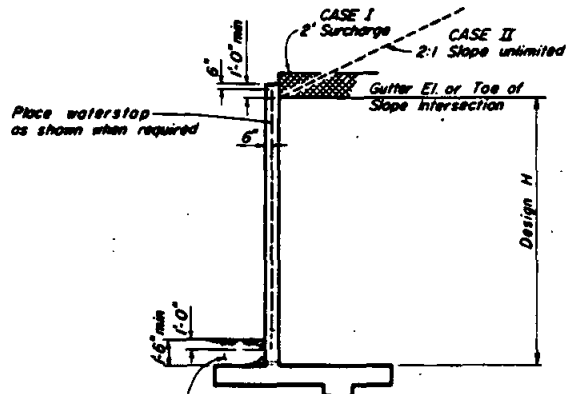
Design H may be exceeded by 6" before going to the next size. Footing key is required except when found unnecessary by the Engineer. Special footing design is required where foundation material is incapable of supporting toe pressure loads listed in table.

Design Data

$f_c = 1300$ psi $f'_c = 3250$ psi $f_s = 24,000$ psi
 $n = 10$ earth = 120 pcf

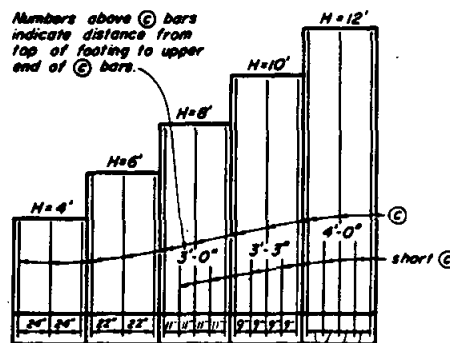
Case I Equivalent fluid pressure = 36 psf max for determination of toe pressure. 27 psf min for determination of heel pressure.

Case II - Earth pressure determined from Rankine's formula with $\phi = 33^\circ - 42^\circ$.

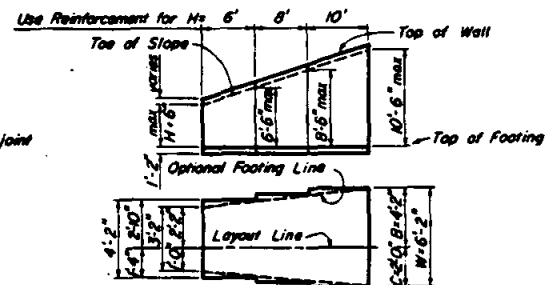


DESIGN

For drainage notes and other details, see "Retaining Wall Details No. 1, drawing C-13."



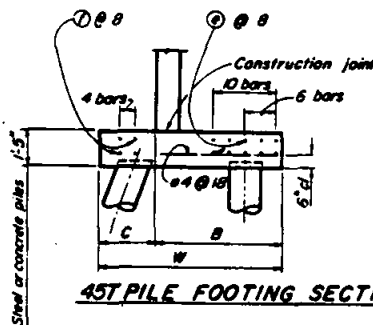
ELEVATION



Note:
Bar cut-offs may be varied in increments of 6"

TYPICAL LAYOUT EXAMPLE

For joints required, see Details 3-3 and 3-4, drawing C-13.



45° PILE FOOTING SECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

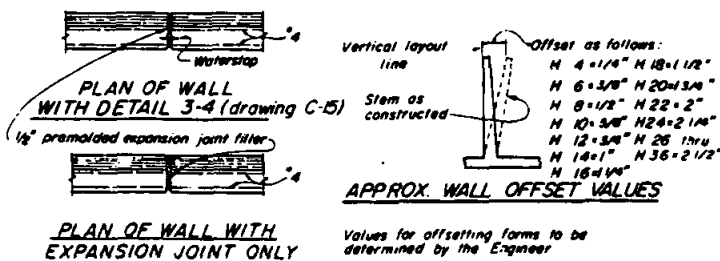
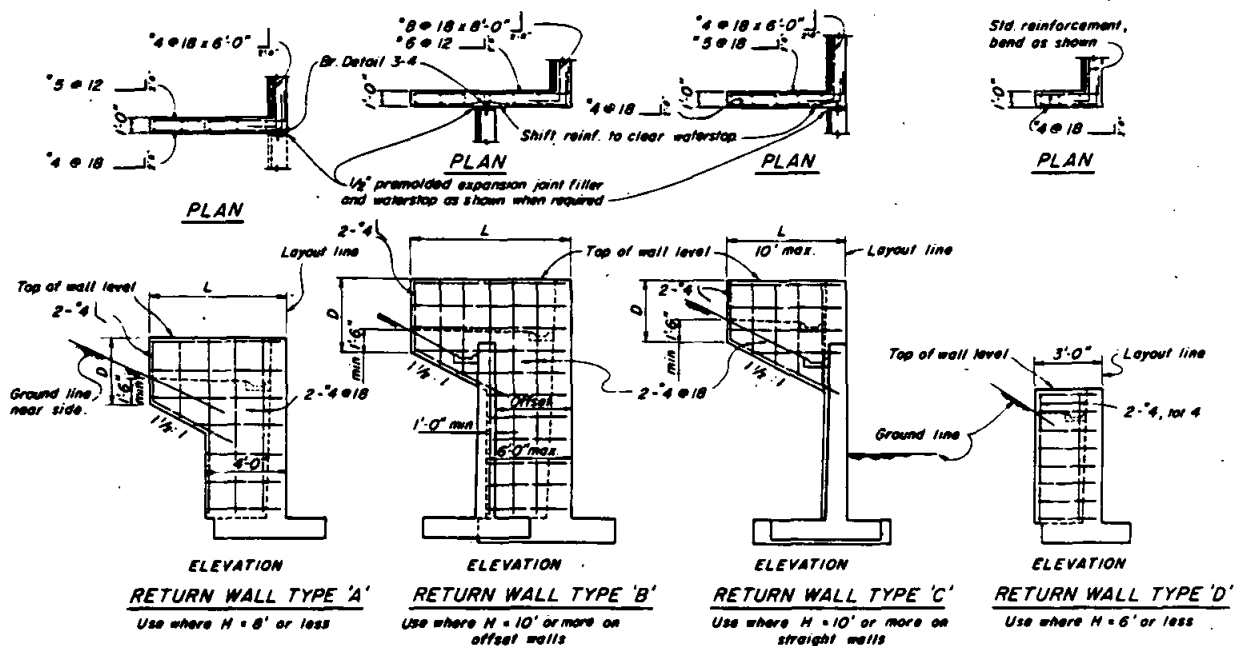
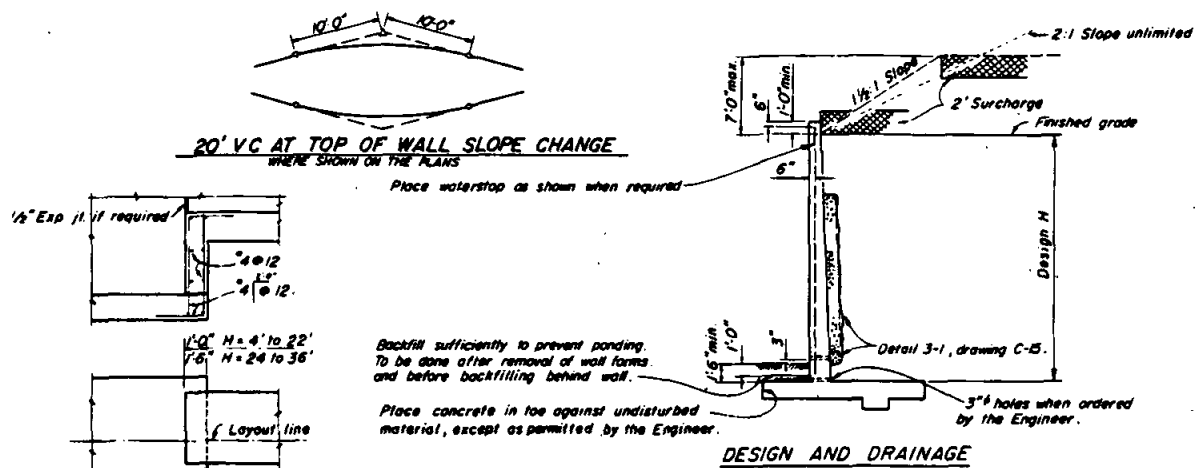
Alfred O. Kuehnert Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING NUMBER **C-12**

SAN DIEGO REGIONAL STANDARD DRAWING

REINFORCED CONCRETE RETAINING WALL TYPE 1A

Revision	By	Approved	Date



NOTES:

Design Conditions

Design H may be exceeded by 6" before going to the next size.
Footing key is required except when found unnecessary by the Engineer.
Special footing design is required where foundation material is incapable of supporting toe pressure loads listed in table.
Return wall not required unless shown elsewhere.

Design Data

$f_c = 1300$ psi $f_t = 3250$ psi $f_s = 24,000$ psi $n = 10$ earth = 120 pcf
2' Surcharge = 36 pcf max. for determination of toe pressure.
Equivalent fluid pressure = 27 pcf min. for determination of heel pressure.

Earth pressures for 2:1 unlimited slope, 1 1/2:1 slope, and 1 1/2:1 unlimited slope, determined from Rankine's formula with $\phi = 33^\circ - 42^\circ$.

Revision	By	Approved	Date
	EC	MLB	5-86

SAN DIEGO REGIONAL STANDARD DRAWING

REINFORCED CONCRETE RETAINING WALL DETAILS NO. 1

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen A. Kuehnert Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER C-13

RETAINING WALL
FACE OF WALL OUTLET

**RETAINING WALL
GUTTER OUTLET**

OUTLET DETAIL-SECTION B-B

PLAN	PLAN
OFFSET WALL	CONTINUOUS WALL
DRAIN THROUGH	RETURN WALL

SECTION A-A

WALL DRAIN DETAIL

TYPICAL GUTTER DETAIL

WALL DRAINAGE
WHERE GUTTER NOT REQUIRED



GRATE DETAIL

Sizes to fit Standard Hubs

RETAINING WALL-UTILITY OPENING

RETAINING WALL-UTILITY OPENING
To be used in conjunction with the "Retaining Wall Type 1" sheet.
Max. size of Opening (A)=48"

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Albert A. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

**DRAWING
NUMBER**

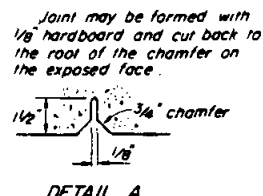
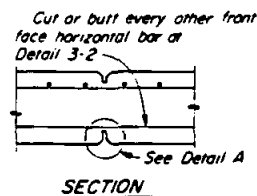
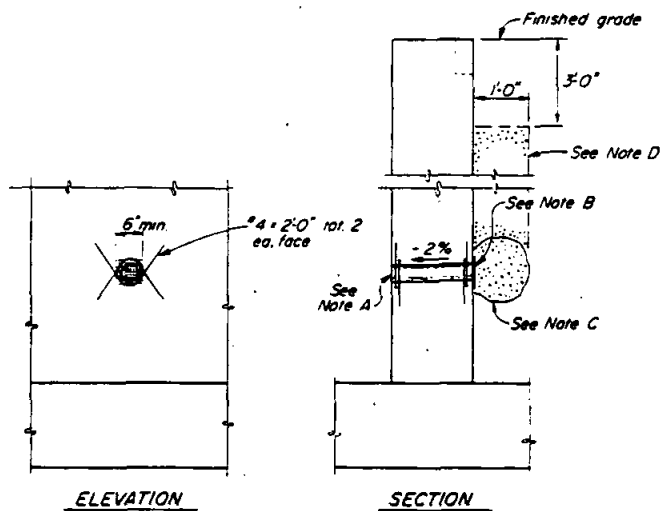
C-14

SAN DIEGO REGIONAL STANDARD DRAWING

REINFORCED CONCRETE RETAINING WALL DETAILS NO. 2

Revision	By	Approved	Date
Title	<i>EC</i>	<i>W.A.</i>	5-86

FILE	NO.	DATE



WEAKENED PLANES

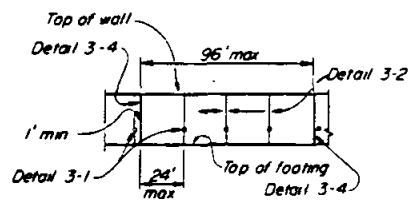
DETAIL 3-2

WEEP HOLE AND PERVIOUS BACKFILL

DETAIL 3-1

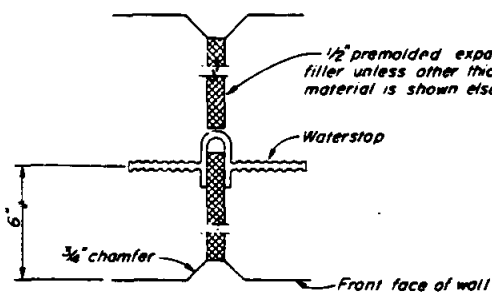
Notes:

- 4" drains @ 25' max. center to center (9' c-c for Type 3 and 9'-3" c-c for Type 4 Retaining Walls). For walls adjacent to sidewalks or curbs, provide 4" cast iron or asbestos cement pipe under the sidewalk to discharge thru curb face. Exposed wall drains shall be located 3" above finished grade.
- 6" square aluminum or galvanized steel wire 4 mesh hardware cloth (Min wire diameter 0.03"). Anchor firmly to backface.
- One cubic foot pervious backfill material in a burlap sack, securely tied.
- Pervious backfill material continuous behind retaining wall.



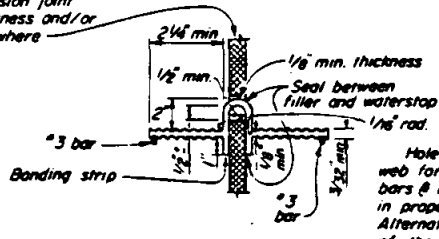
WALL EXPANSION JOINTS AND WEAKENED PLANES

DETAIL 3-3



WALL EXPANSION JOINT

DETAIL 3-4



WATERSTOP

DETAIL 3-6

Waterstop to have 5 or more pairs of raised ribs to provide 0.1 sq. in. min. rib cross-section area on each half of the waterstop. Height of ribs to be 3/32" min.

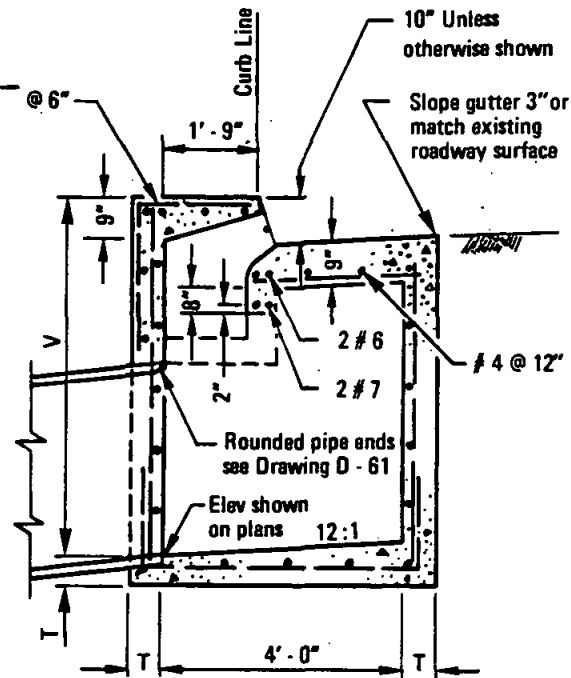
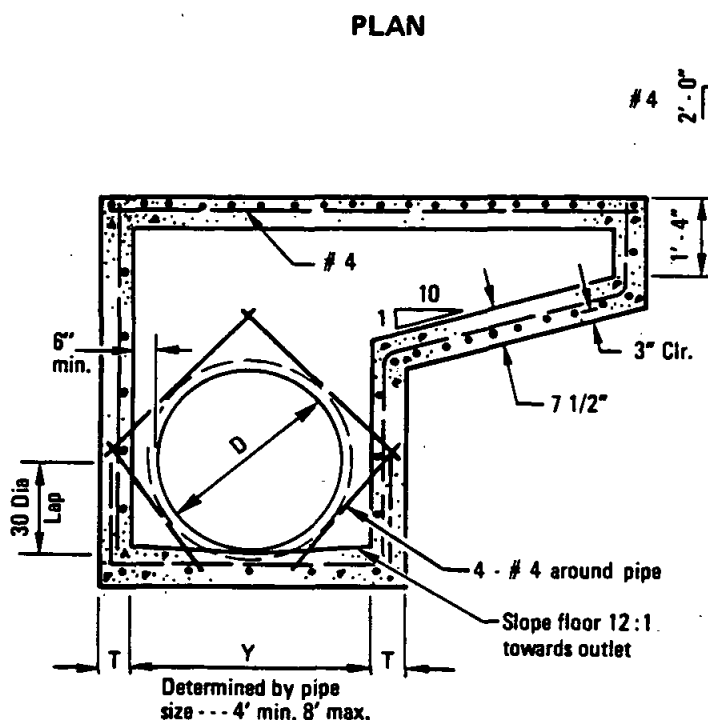
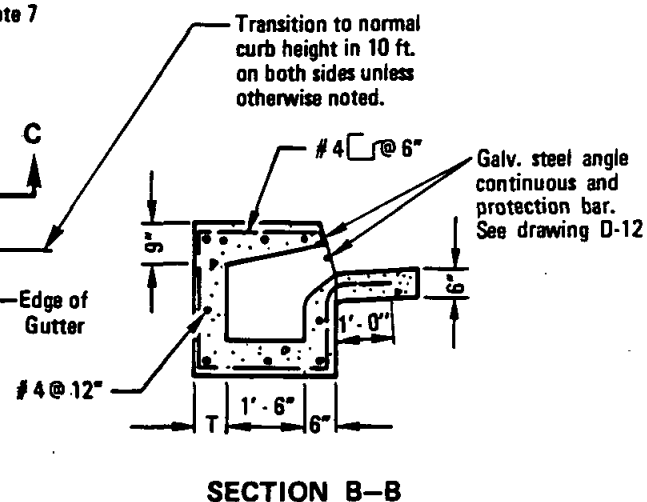
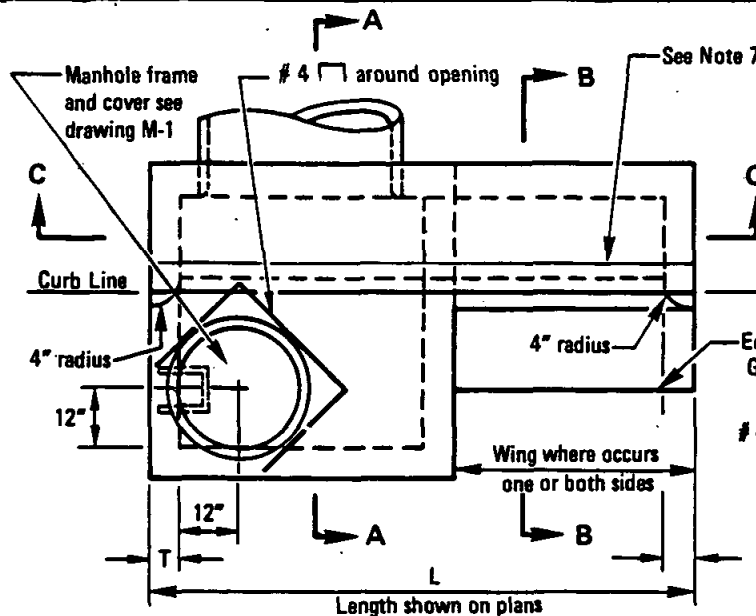
Holes will be permitted in the outer 1/2" of the web for wire, rings, etc. Tie web to "3" reinforcing bars @ 12" max. intervals to support the waterstop in proper position during concrete placement. Alternative detail may be submitted for approval of the Engineer.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Title	MLB	5-86				Allan A. Kuehnert, Dec. 1975	
				REINFORCED CONCRETE RETAINING WALL DETAILS NO. 3		Coordinator R.C.E. 19807 Date	
						DRAWING NUMBER C-15	

DRAINAGE SYSTEMS

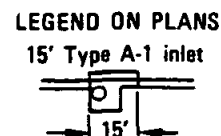
DRAINAGE SYSTEMS

D



NOTES:

1. See Standard Drawings D-11 & D-12 for additional notes and details.
2. Types are designated as follows: (no wing) A, (one wing) A-1, (two wings) A-2.
3. Exposed edges of concrete shall be rounded with a radius of 1/2".
4. When V exceeds 4' steps shall be installed. See Standard Drawing D-11 for details.
5. Concrete gutter to match adjacent gutters.
6. An expansion joint shall be placed at the ends of the inlet where the curb is to adjoin.
7. Provide 1/4" tooled groove in top slab in line with back of adjacent curb.
8. Surface of top slab shall be sidewalk finished to drain toward street at a slope of 1/4" per foot.
9. Maintain 1 1/2" clear spacing between reinforcing and surface unless otherwise noted.



Revision	By	Approved	Date
Reference	TRP	M.B.	10-82
Rebar	MC	M.B.	3-86

SAN DIEGO REGIONAL STANDARD DRAWING

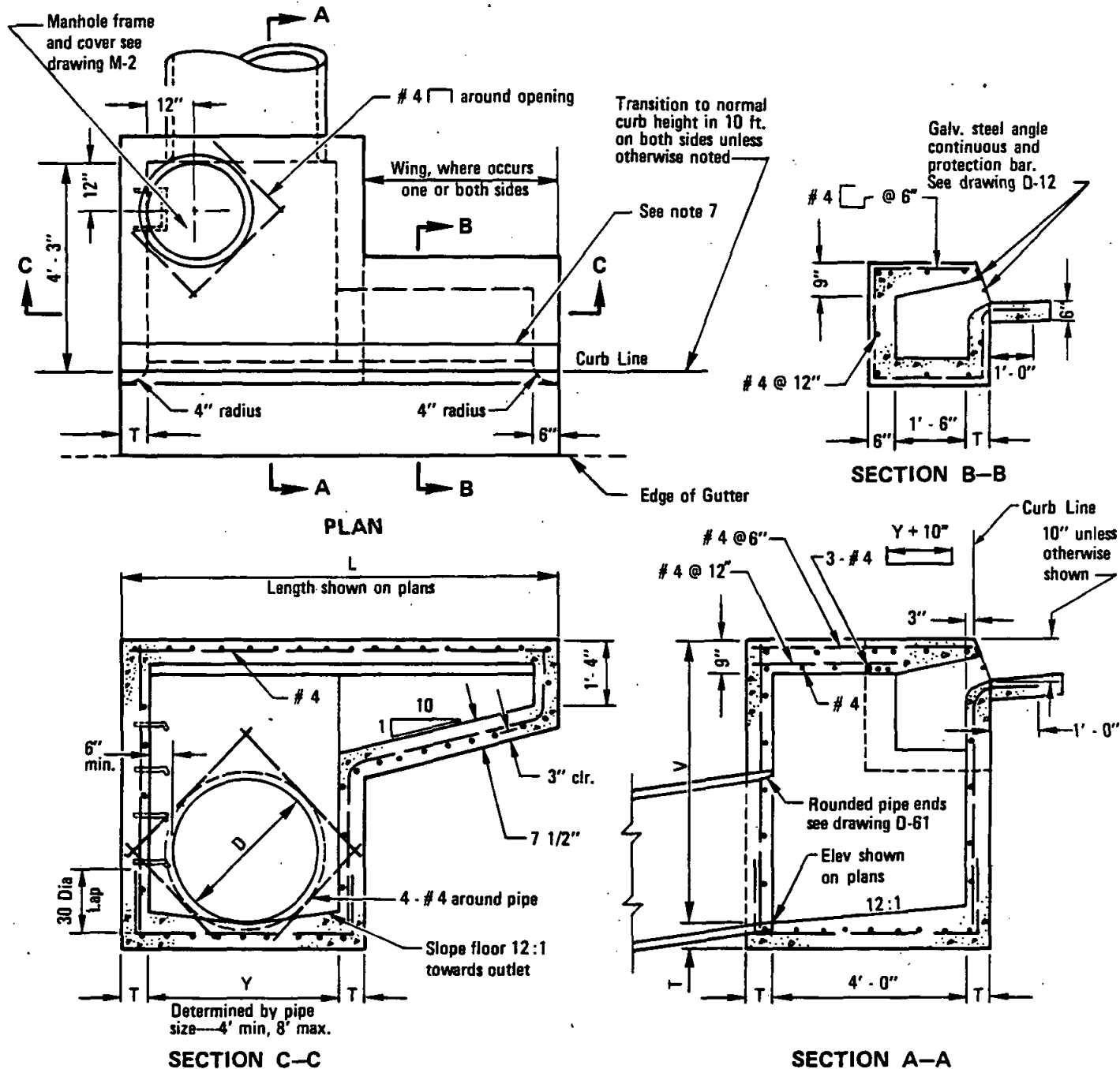
CURB INLET - TYPE A

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Allen G. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING NUMBER

D-1

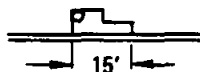


NOTES:

1. See Standard Drawings D-11 & D-12 for additional notes and details.
2. Types are designated as follows: (no wing) B, (one wing) B-1, (two wings) B-2.
3. Exposed edges of concrete shall be rounded with a radius of 1/2".
4. When V exceeds 4' steps shall be installed. See Standard Drawing D-11 for details.
5. Concrete gutter to match adjacent gutters.
6. An expansion joint shall be placed at the ends of the inlet where the curb is to adjoin.
7. Provide 1/4" tooled groove in top slab in line with back of adjacent curb.
8. Surface of top slab shall be sidewalk finished to drain toward street at a slope of 1/4" per foot.
9. Maintain 1 1/2" clear spacing between reinforcing and surface unless otherwise noted.

LEGEND ON PLANS

15' Type B-1 inlet



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

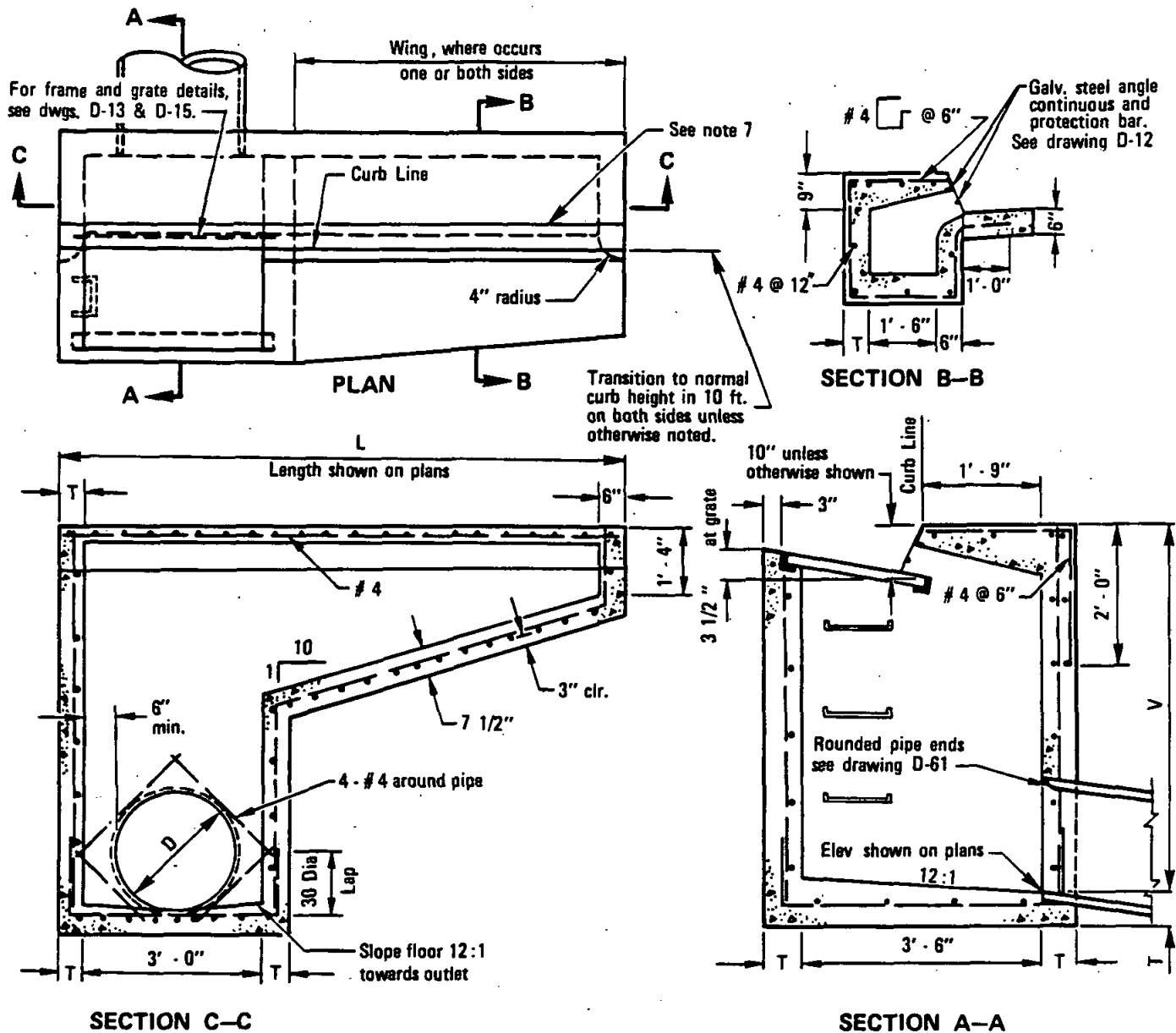
Allan D. Kershner Dec. 1975
Coordinator R.C.E. 13807 Date

DRAWING
NUMBER **D-2**

SAN DIEGO REGIONAL STANDARD DRAWING

CURB INLET - TYPE B

Revision	By	Approved	Date
Notes	S	D.S.	7-79
Reference	TRP	M.B.	10-82
Rebar	EC	M.B.	5-86
Dash line	EC	A.H.	7-88

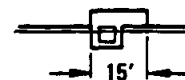


NOTES:

1. See Standard Drawings D-11 through D-15 for additional notes and details.
2. Types are designated as follows: (no wing) C, (one wing) C-1, (two wings) C-2.
3. Exposed edges of concrete shall be rounded with a radius of 1/2".
4. When V exceeds 4 ft. steps shall be installed. See Standard Drawing D-11 for details.
5. Concrete gutter to match adjacent gutters.
6. An expansion joint shall be placed at the ends of the inlet where the curb is to adjoin.
7. Provide 1/4" tooled groove in top slab in line with back of adjacent curb.
8. Surface of top slab shall be sidewalk finished to drain toward street at a slope of 1/4" per foot.
9. Maintain 1 1/2" clear spacing between reinforcing and surface unless otherwise noted.
10. Where inlet is to be constructed on grade and Standard Drawing D-20 concrete apron is required, lift down-grade end of grate as shown on D-20.

LEGEND ON PLANS

15' Type C-1 Inlet



Revision	By	Approved	Date
Notes	CS	D.S.	7-79
Reference	TRP	M.B.	10-82
Note 11	CS	M.B.	5-86

SAN DIEGO REGIONAL STANDARD DRAWING

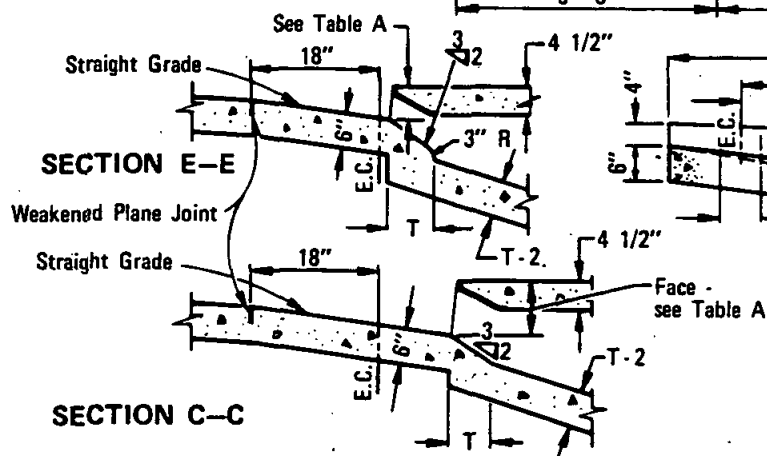
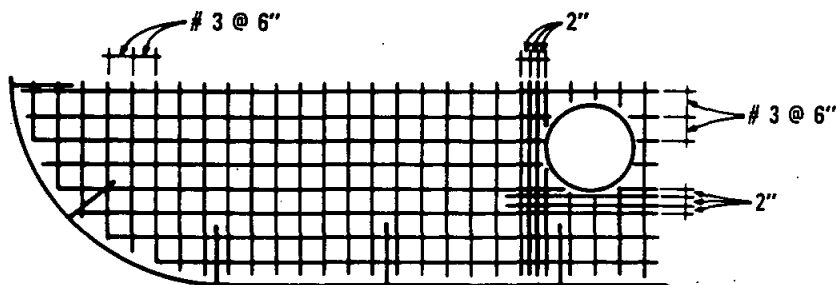
CURB INLET - TYPE C

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Allen G. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING NUMBER **D-3**

T = 8' if V is less than 8'.
T = 10' if V is 8' or more.
V = 5' unless otherwise specified.
V = D + 32" minimum.
W = 7' unless otherwise specified.
Y = 5' unless otherwise specified.
Width of driveway, W, shall be 10' unless otherwise specified.
Elevation of point N shall be 13" below point H unless otherwise specified.

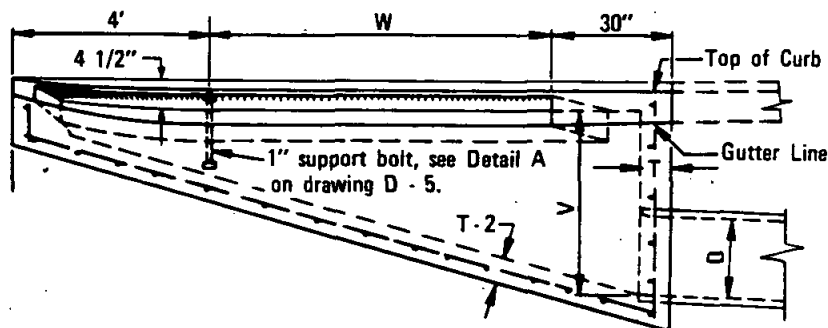


SECTION D-D

PT	A	B	C	D	E	F	G	H	K	M
F.C.	4½"	5¼"	6"	7½"	9"	9"	9"	9"	9"	8"

TABLE A

1. Steel Plate should be of one continuous piece with curve portion a circular arc. Length = Width + 18" + circular arc.
2. # 4 rebar 30" long, 1' O.C. shall be installed in top of walls for ties to top and gutters.
3. The reinforcing steel in the top slab shall be # 3 bars 6" O.C. unless otherwise specified. Clearance shall be 1 1/2" from the bottom of the slab.
4. Concrete for the inlet top to be placed at the same time as the s/w curb and gutter.
5. Concrete shall be 560-C-3250
6. Exposed edges of concrete shall be rounded with a radius of 1/2".
7. Surface of top slab shall be sidewalk finished to drain toward street at a slope of 1/4" per foot.



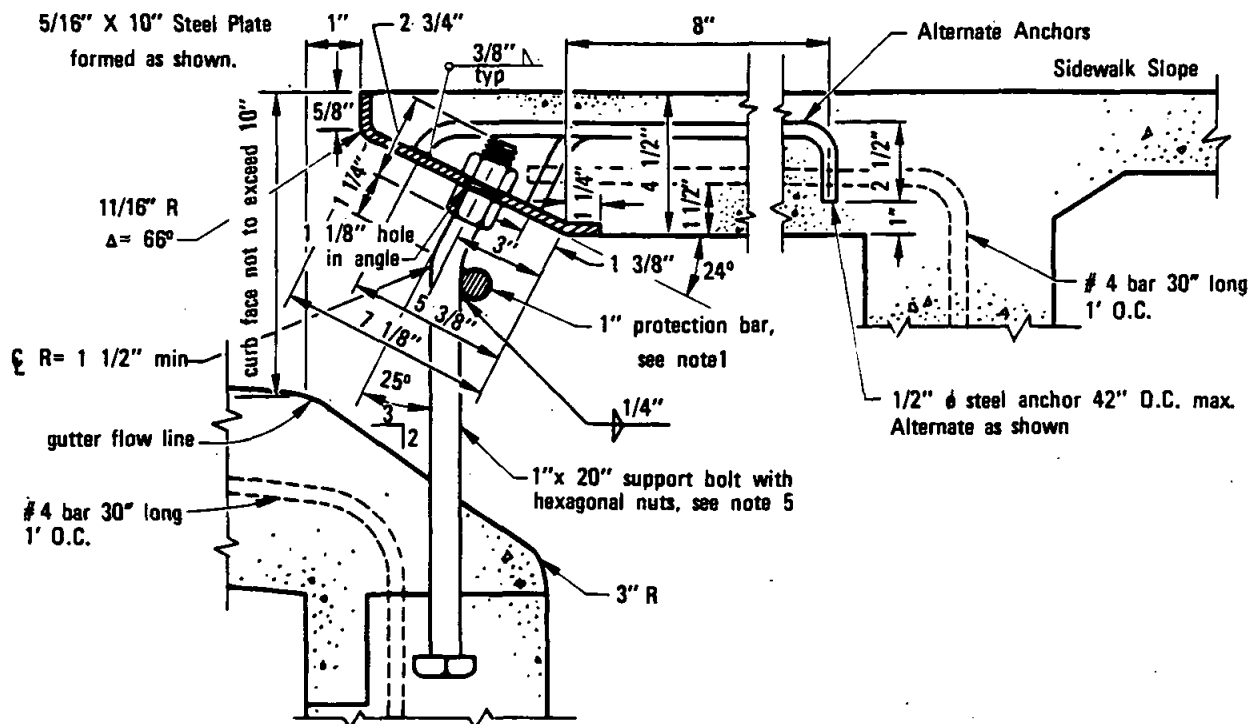
SECTION A-A

Allan A. Kerschbaum Dec. 1975
Coordinator R.C.E. 1980? Date

SAN DIEGO REGIONAL STANDARD DRAWING

CURB INLET - TYPE D

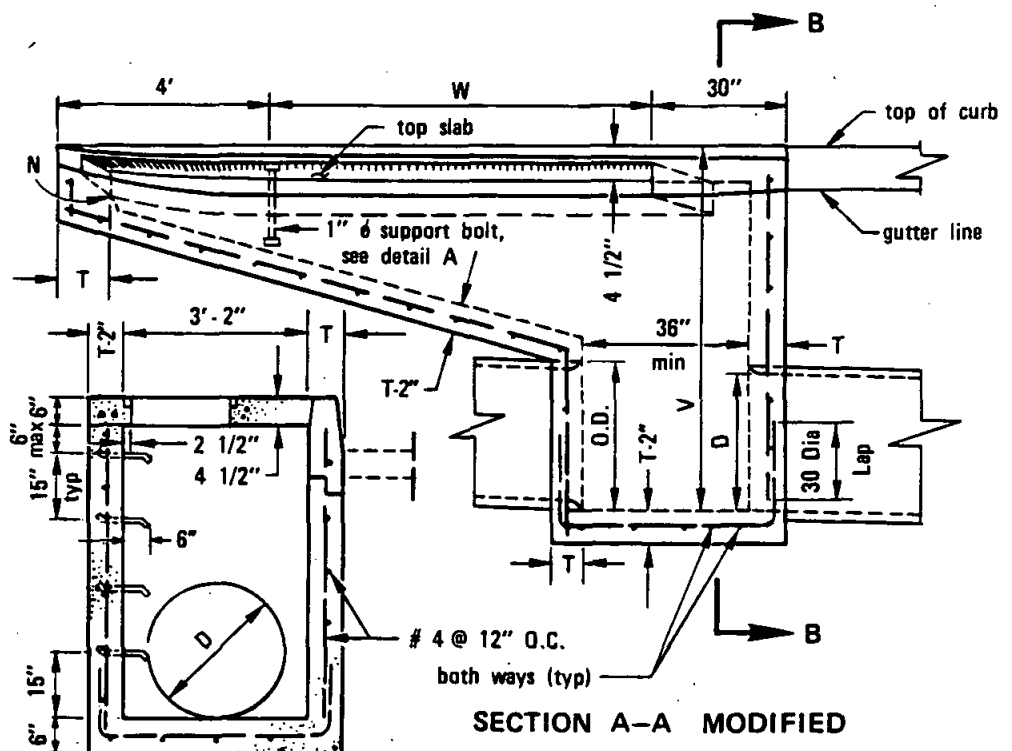
Revision	By	Approved	Date
Conc.	<i>LC</i>	<i>MLB</i>	5-86



DETAIL-A

NOTES

1. A plain, round steel protection bar 1" in dia. shall be installed. Bar shall be embedded 5" at each end.
2. Leave 8" hole blocked out in bottom placing of concrete for bolts placed at same time as gutter.
3. All exposed metal parts shall be galvanized.
4. All galvanizing damaged by welding shall receive two coats of aluminum paint.
5. Support bolts shall be spaced at not more than 5' - 0" O.C.
6. Adjusting nuts to be tightened and secured in place when steel plate is in proper position.



SECTION A-A MODIFIED

SECTION B-B

Revision	By	Approved	Date
Rebar	TRF	M.B.	10-82
Lap	SP	M.B.	5-86

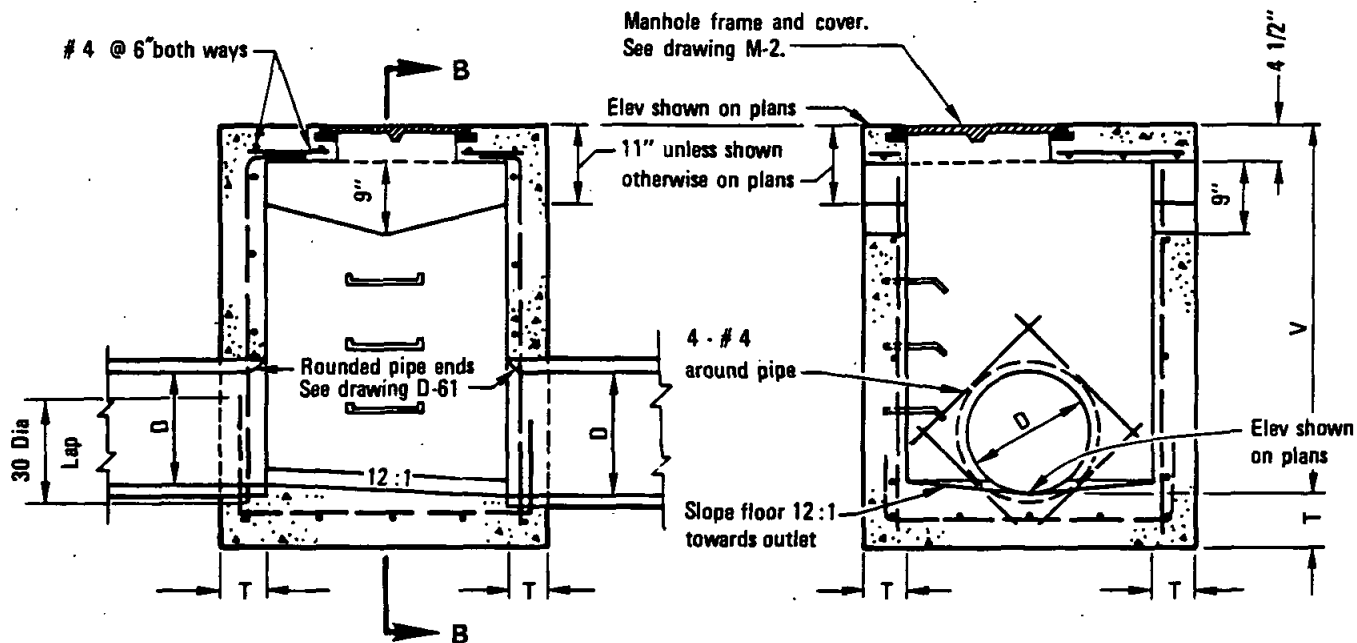
SAN DIEGO REGIONAL STANDARD DRAWING

CURB INLET - TYPE D (DETAILS)

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

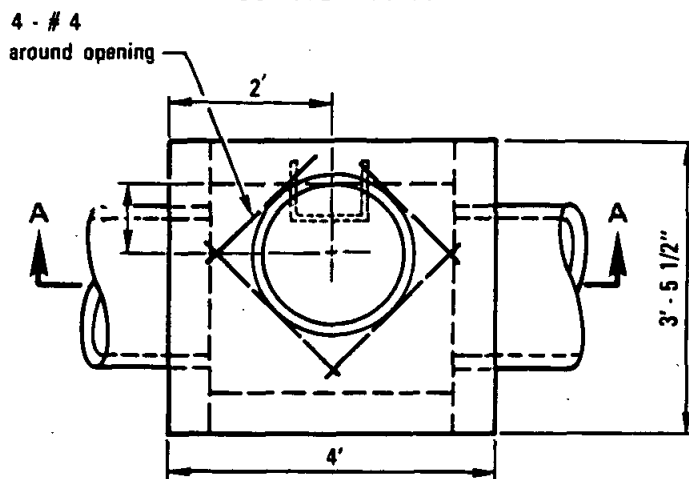
Allan A. Kuehnel *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **D-5**



SECTION A-A

SECTION B-B

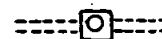


PLAN

NOTES

1. See Standard Drawing D-11 for additional notes and details.
2. When V exceeds 4' steps shall be installed. See Standard Drawing D-11 for details.
3. Exposed edges of concrete shall be rounded with a radius of 1/2".
4. Openings on both sides unless otherwise shown on plans.
5. Maintain 1 1/2" clear spacing between reinforcing and surface.

LEGEND ON PLANS



Revision	By	Approved	Date
Rebar	TRF	M.B.	10-82
Lap	TRF	M.B.	5-86

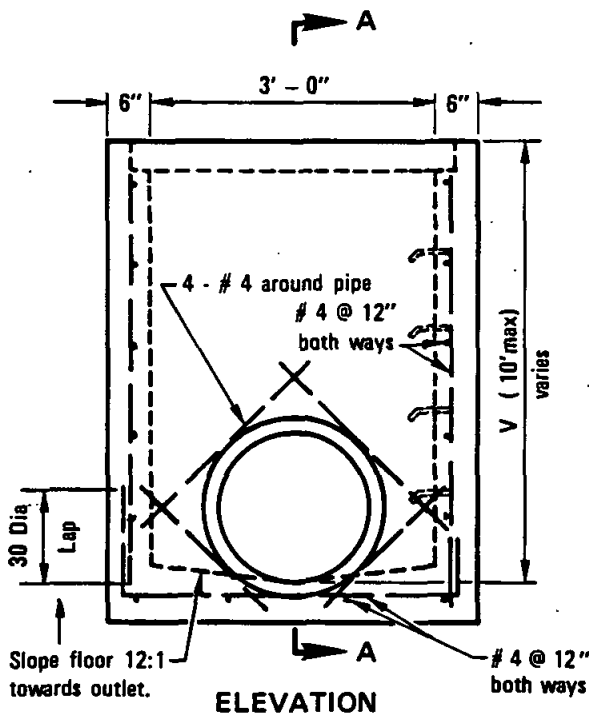
SAN DIEGO REGIONAL STANDARD DRAWING

CATCH BASIN - TYPE F

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

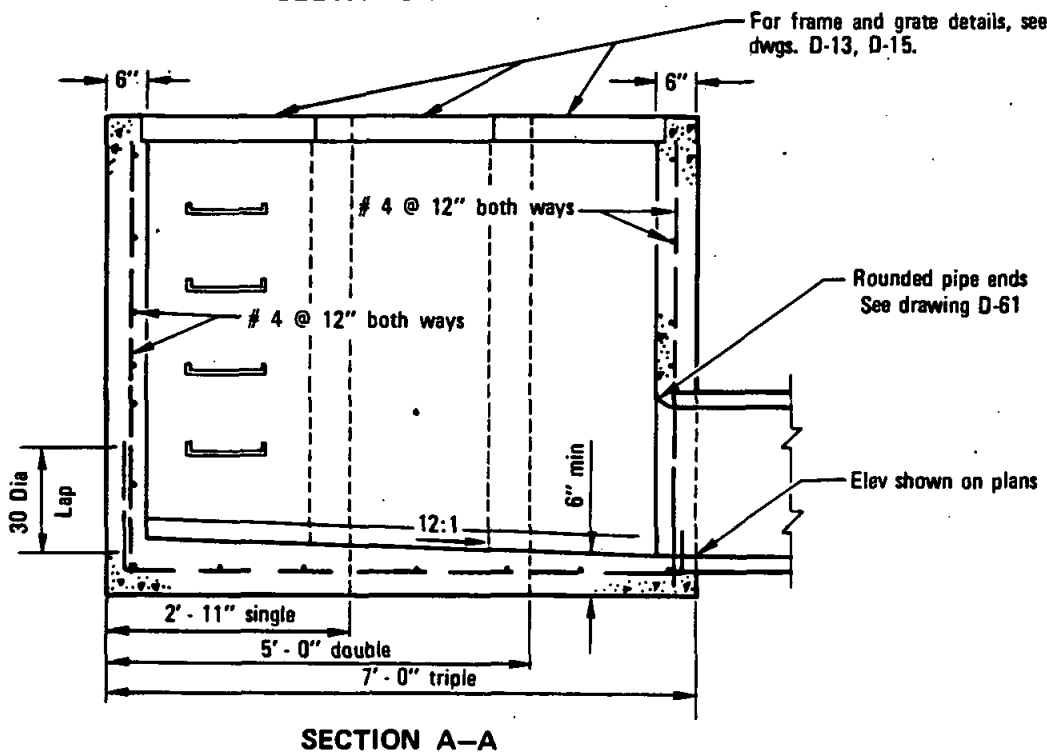
Allen A. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING NUMBER **D-7**



NOTES

1. See Standard Drawing D-11 for additional notes and details.
2. When V exceeds 4', steps shall be installed. See Standard Drawing D-11 for details.
3. Maintain 1 1/2" clear spacing between reinforcing and surface.
4. Increase in allowable depth subject to approval by Agency.
5. Section A-A shows 3 sizes and shall not imply that an interior wall is to be built for the structures with double or triple frame and grate.
6. Exposed edges of concrete shall be rounded with a radius of 1/2".
7. Designate types as follows: Single G-1, Double G-2 and Triple G-3.
8. Only end bearing grates shall be used. See Std. Drawing D-15.



LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

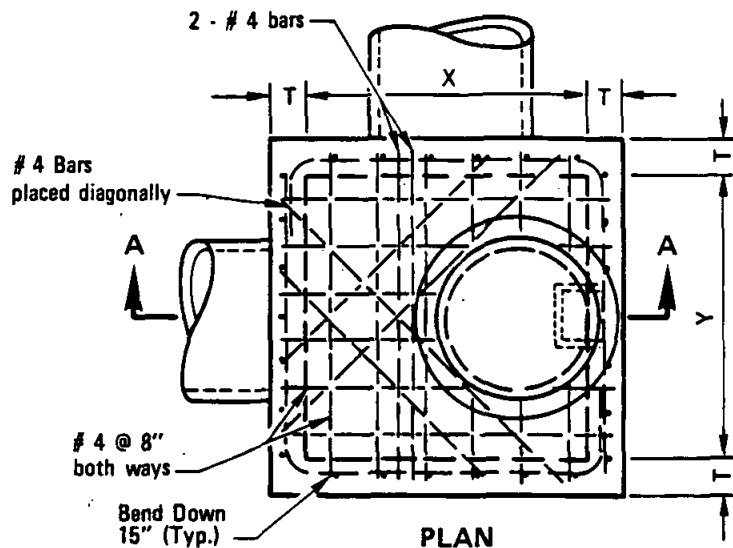
Allan A. Kershner Dec. 1975
Contributor R.C.E. 19807 Date

**DRAWING
NUMBER D-8**

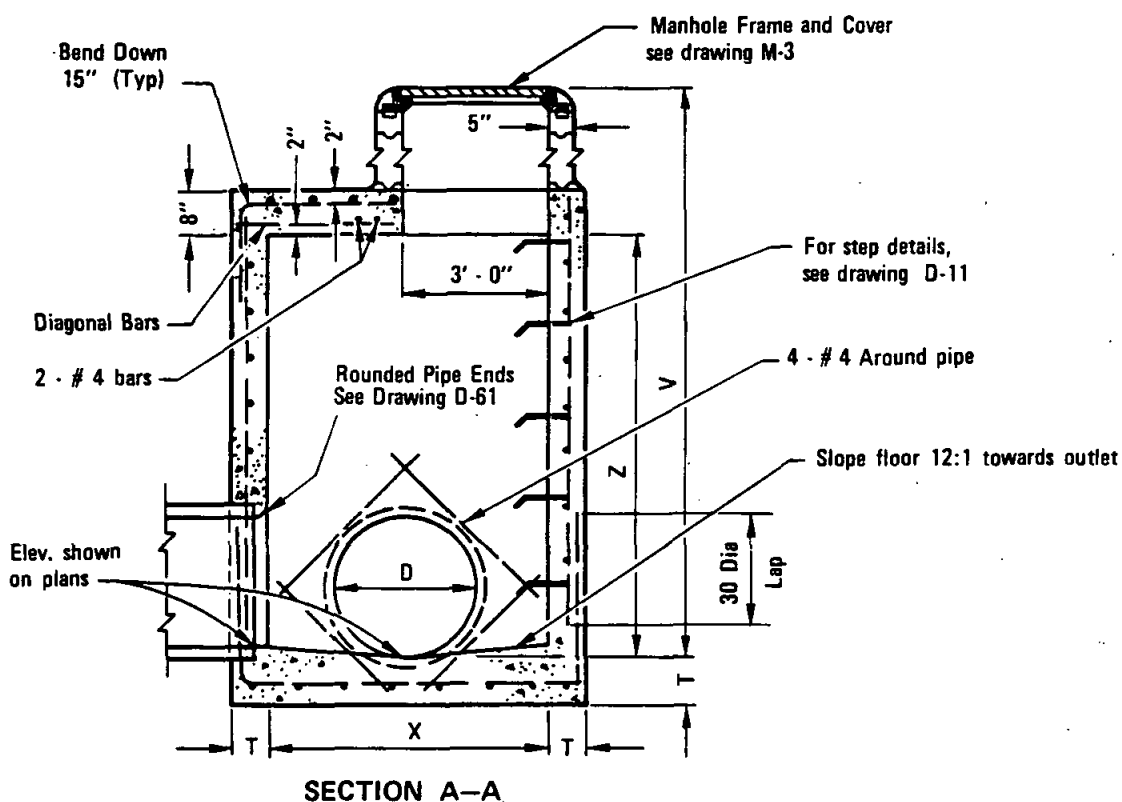
SAN DIEGO REGIONAL STANDARD DRAWING

CATCH BASIN - TYPE G

Revision	By	Approved	Date
Reference	TKP	M.B.	10-82
Lap	R	M.B.	5-86



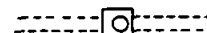
TYPE	PIPE DIA	X	Y	Z
A 4	up to 39"	4'	4'	6'
A 5	42" to 48"	5'	4'	6'
A 6	51" to 60"	6'	4'	6'
A 7	63" to 72"	7'	4'	7'
A 8	75" to 84"	8'	4'	8'



NOTES

1. See Standard Drawing D-11 for additional notes and details.
2. Concrete base shall be 560-C-3250
3. All precast components shall be reinforced with 1/4" diameter steel, wound spirally on 4" centers.
4. All joints shall be set in Class C mortar.
5. Maintain 1 1/2" clear spacing between reinforcing and surface unless otherwise noted.
6. Exposed edges of concrete shall be rounded with a radius of 1/2".

LEGEND ON PLANS



Revision	By	Approved	Date
Lap	SC	M.B.	5-86

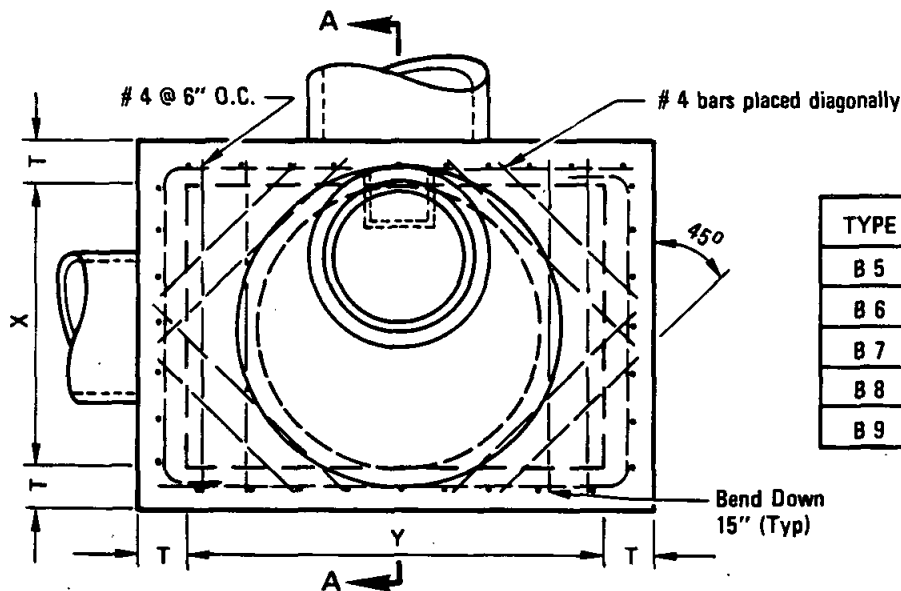
SAN DIEGO REGIONAL STANDARD DRAWING

STORM DRAIN CLEANOUT - TYPE A

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Allen D. Kinsland Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING NUMBER **D-9**



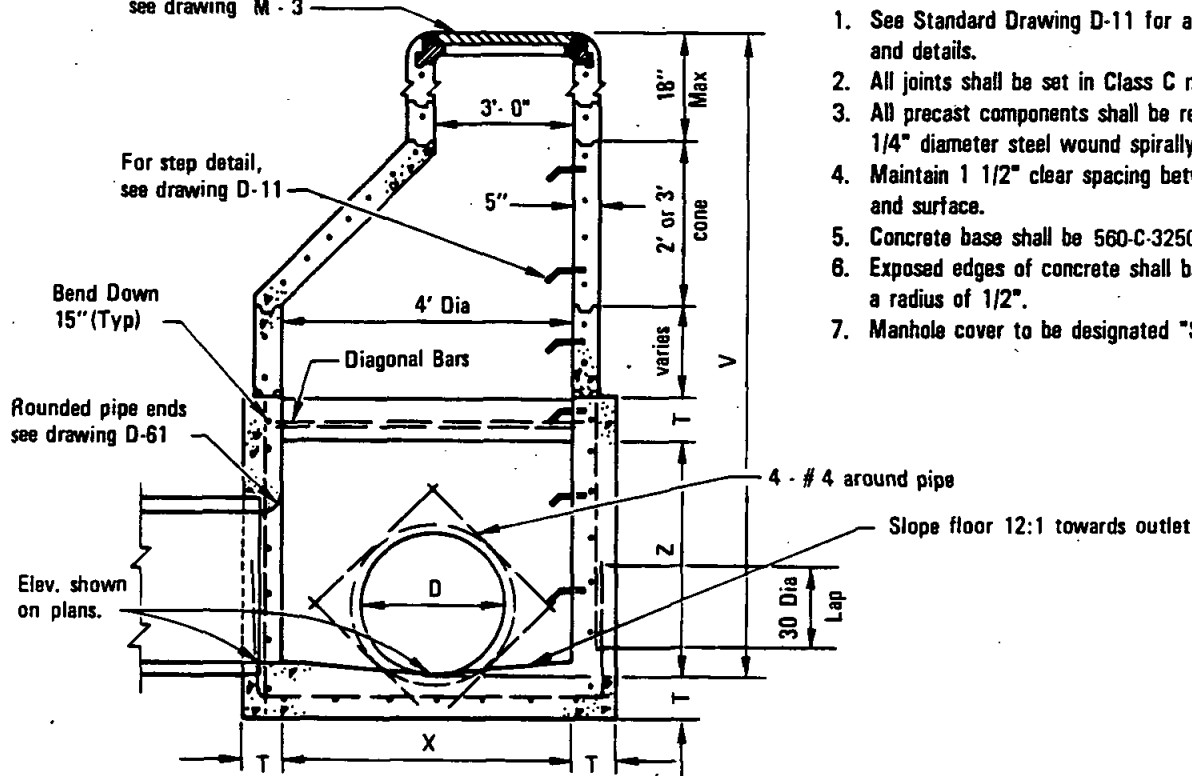
TYPE	PIPE DIA	X	Y	Z
B 5	up to 51"	4'	5'	5'
B 6	54" to 60"	4'	6'	6'
B 7	63" to 69"	4'	7'	7'
B 8	72" to 81"	4'	8'	8'
B 9	84" to 90"	4'	9'	9'

Manhole frame and cover
see drawing M-3

PLAN

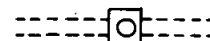
NOTES

1. See Standard Drawing D-11 for additional notes and details.
2. All joints shall be set in Class C mortar.
3. All precast components shall be reinforced with 1/4" diameter steel wound spirally on 4" centers.
4. Maintain 1 1/2" clear spacing between reinforcing and surface.
5. Concrete base shall be 560-C-3250.
6. Exposed edges of concrete shall be rounded with a radius of 1/2".
7. Manhole cover to be designated "Storm Drain".



SECTION A-A

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

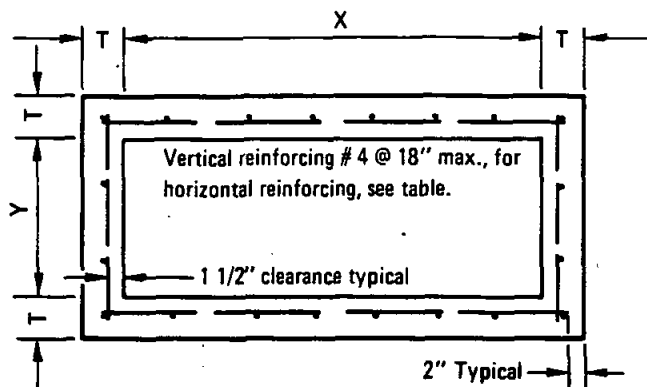
Allan A. Kuehnel Dec. 1975
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

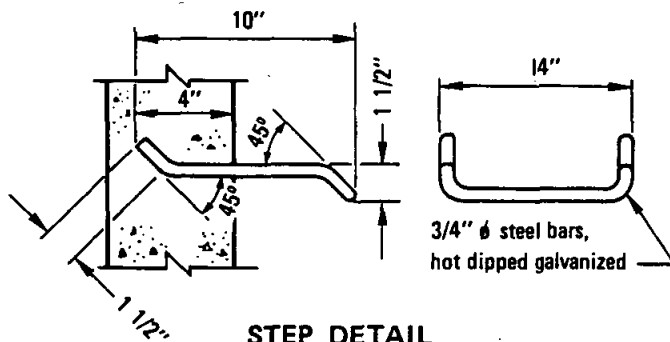
STORM DRAIN CLEANOUT - TYPE B

DRAWING
NUMBER **D-10**

Revision	By	Approved	Date
Lap	<i>JP</i>	<i>MLB</i>	5-86
Note 7	<i>JP</i>	<i>MLB</i>	5-92



TYPICAL BOX SECTION



STEP DETAIL

BOX SECTION REINFORCEMENT			
MAXIMUM SPAN X or Y	DEPTH V	THICK- NESS T	HOR. & FLR. REINF.
3' - 0" to 4' - 0"	4' - 0"	6"	# 4 @ 18"
4' - 1" to 7' - 0"		6"	# 4 @ 12"
7' - 1" to 8' - 0"		6"	# 4 @ 8"
3' - 0" to 4' - 0"	4' - 1" to 8' - 0"	6"	# 4 @ 18"
4' - 1" to 5' - 0"		6"	# 4 @ 12"
5' - 1" to 6' - 0"		6"	# 4 @ 8"
6' - 1" to 8' - 0"	8' - 1" to 12' - 0"	6"	# 4 @ 6"
3' - 0" to 4' - 0"		6"	# 4 @ 15"
4' - 1" to 5' - 0"		8"	# 4 @ 12"
5' - 1" to 6' - 0"	12' - 1" to 16' - 0"	8"	# 4 @ 8"
6' - 1" to 7' - 0"		8"	# 4 @ 6"
7' - 1" to 8' - 0"		8"	# 4 @ 6"
3' - 0" to 4' - 0"	16' - 1" to 20' - 0"	8"	# 4 @ 12"
4' - 1" to 5' - 0"		10"	# 4 @ 12"
5' - 1" to 6' - 0"		10"	# 4 @ 8"
6' - 1" to 7' - 0"	20' - 1" to 24' - 0"	10"	# 4 @ 6"
7' - 1" to 8' - 0"		10"	# 5 @ 8"
3' - 0" to 4' - 0"		8"	# 4 @ 12"
4' - 1" to 5' - 0"	24' - 1" to 28' - 0"	10"	# 4 @ 12"
5' - 1" to 6' - 0"		10"	# 4 @ 8"
6' - 1" to 7' - 0"		10"	# 4 @ 6"
7' - 1" to 8' - 0"		12"	# 5 @ 8"

NOTES

- Concrete shall be 560-C-3250 unless otherwise noted.
- Reinforcing steel shall comply with this drawing unless otherwise specified.
- Reinforcing steel shall be intermediate grade deformed bars conforming to latest ASTM specifications.
- Bends shall be in accordance with latest ACI code.
- Minimum splice length for reinforcing shall be 30 diameters.
- Floor shall have a wood trowel finish and, except where used as junction boxes, shall have a minimum slope of 1" per foot toward the outlet.
- Depth V is measured from the top of the structure to the flowline of the box.
- Wall thickness and reinforcing steel required may be decreased in accordance with table above.
- Wall thickness shall be stepped on the outside of the box.
- When the structure depth V exceeds 4', steps shall be cast into the wall at 15 inch intervals from 15" above floor to within 12 inches of top of structure. Where possible place steps in wall without pipe opening, otherwise over opening of smallest diameter.
- Alternate step may be an approved steel reinforced polypropylene step.

Revision	By	Approved	Date
Notes	J. D. S.		7-79
Conc.	J. M. B.		5-80

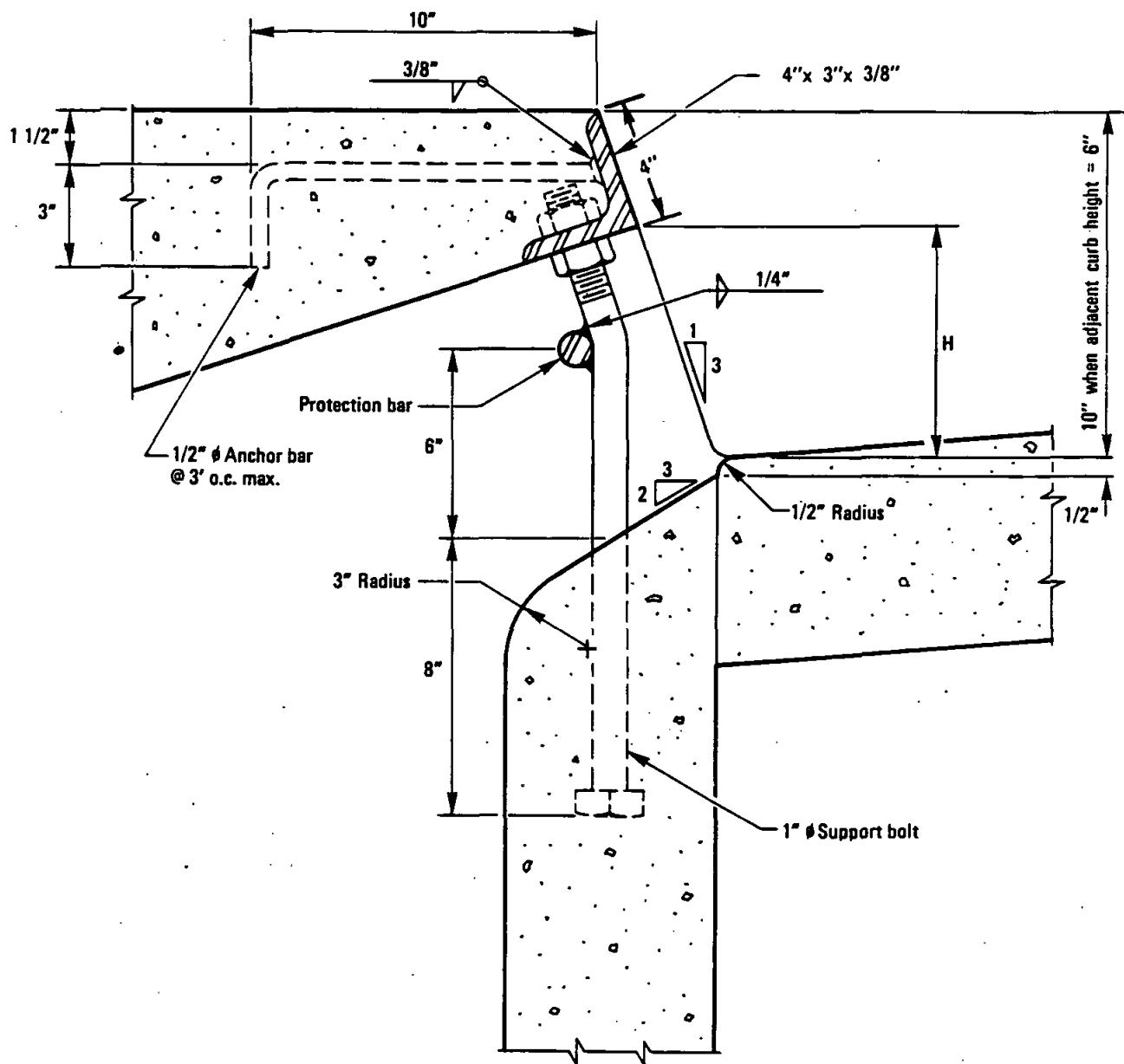
SAN DIEGO REGIONAL STANDARD DRAWING

INLETS AND CLEANOUTS NOTES AND DETAILS

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan O. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **D-11**



NOTES:

1. Face angle shall be cast into structure continuous for the full length "L".
2. All exposed metal parts to be hot-dipped galvanized after fabrication.
3. When curb inlet opening height (H) exceeds 6" install 1" # steel protection bar.
4. Install additional bars at 3 1/2" clear spacing above first bar when opening exceeds 13".
5. When curb inlet opening length exceeds 8' install 1" # steel support bolts, spaced at not more than 5' o.c.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

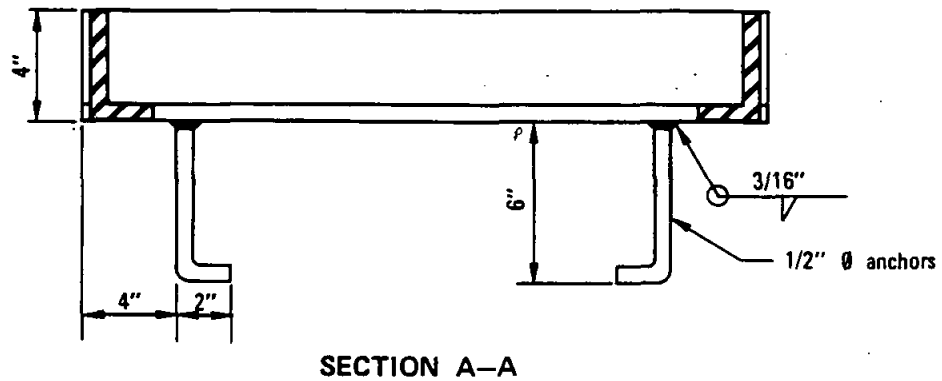
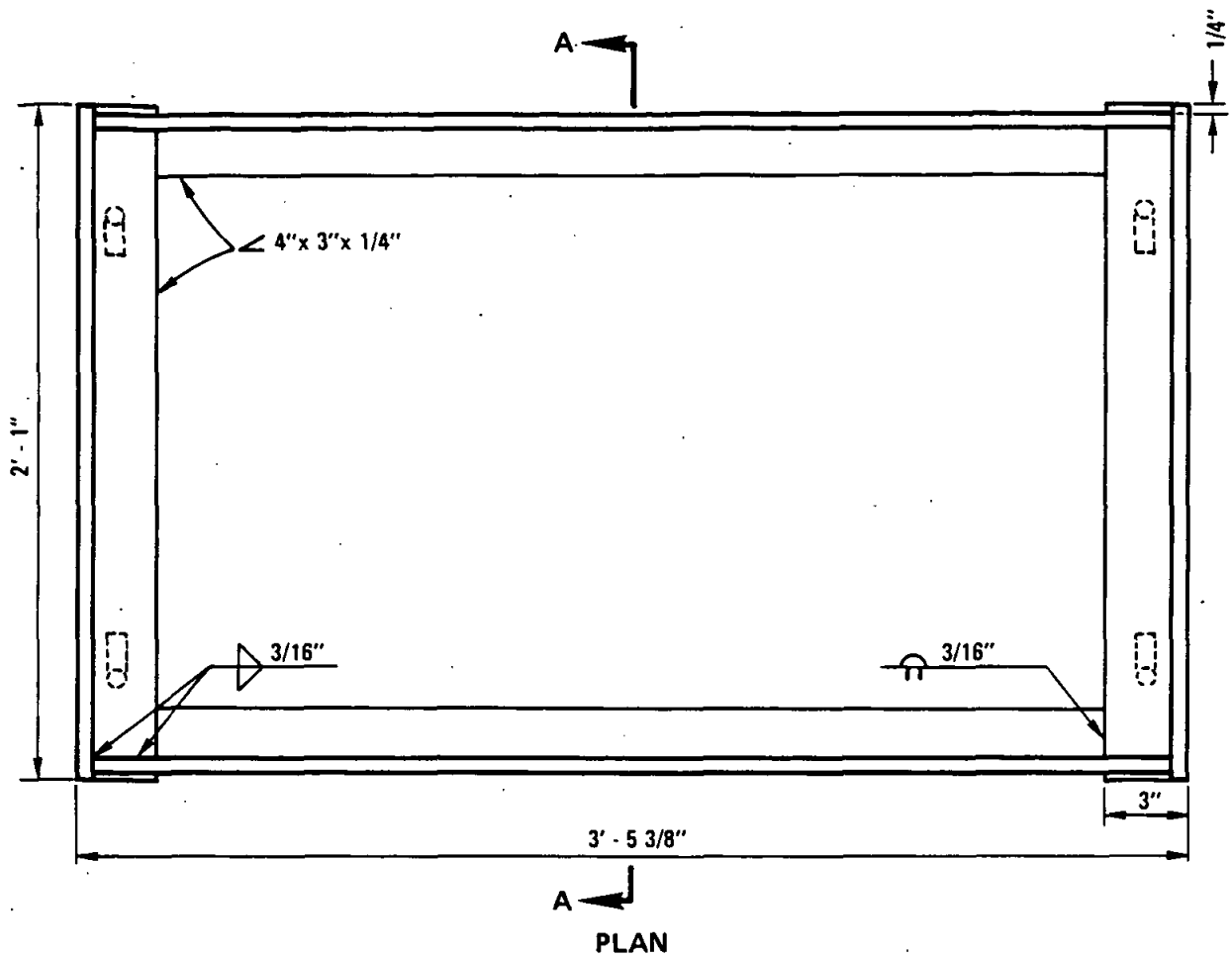
Allen O. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

CURB INLET OPENING

DRAWING
NUMBER **D-12**

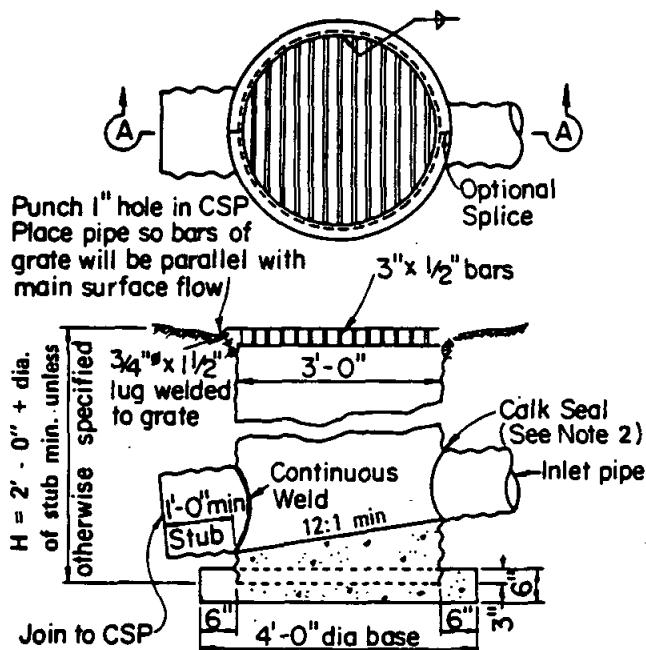
Revision	By	Approved	Date
Angle	SC	D.S.	7-79
Note 3	TRP	M.B.	10-82
Angle	TRP	M.B.	10-82



NOTES

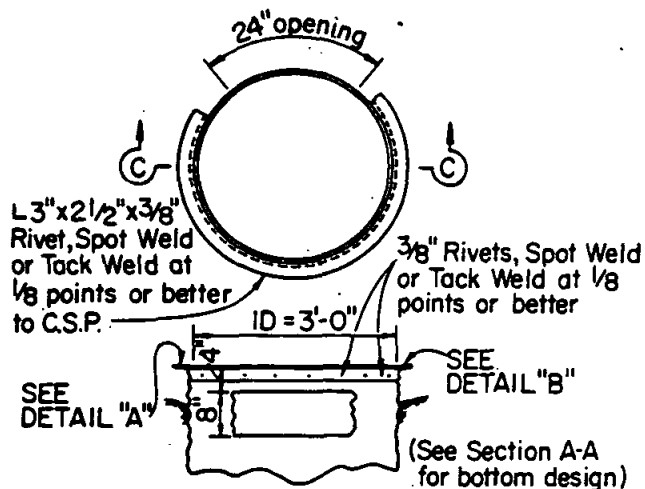
1. Hot dip galvanize all parts after fabrication.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Note 1	2	M.B.	5-86	WELDED STEEL GRATE FRAME		Allen D. Kuehnert	Dec. 1975
						Coordinator	R.C.E. 19807
						Date	
				DRAWING NUMBER		D-13	



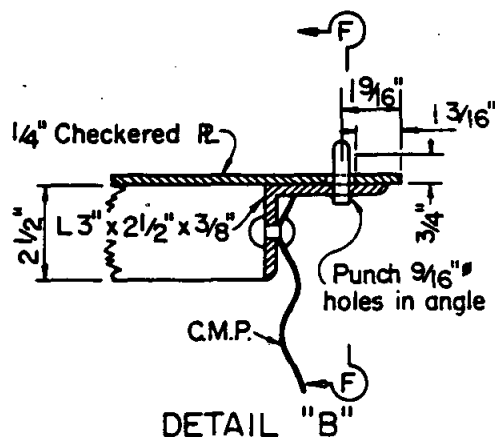
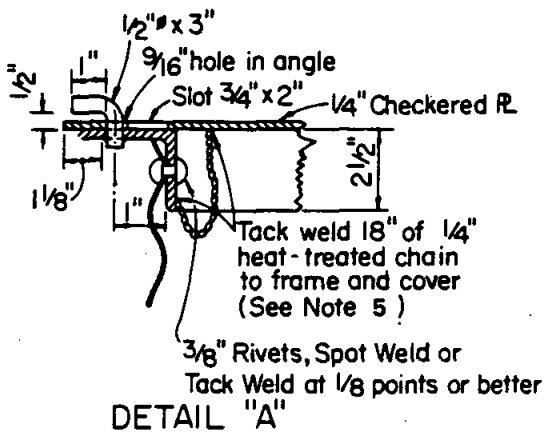
SECTION A-A

TYPE A



SECTION C-C

TYPE B



NOTES

1. All components shall be galvanized.
2. Inlet and outlet pipes shall be set at factory and positioned as shown on plans.
3. Ladders and Steps: None required where "H" is 3'-6" or less. Where "H" is between 3'-6" and 4'-11" place one step +16" above the floor. If "H" is 5'-0" or more install a ladder placing the lowest rung 16" above the floor and the highest rung not more than 14" below top of inlet. Place single step or ladder in wall without wall opening.
4. See Standard Drawing D-17 for additional details.
5. Grate to be provided when specified.
6. Grate detail shall be as shown on drawing D-17 unless otherwise approved by Agency.

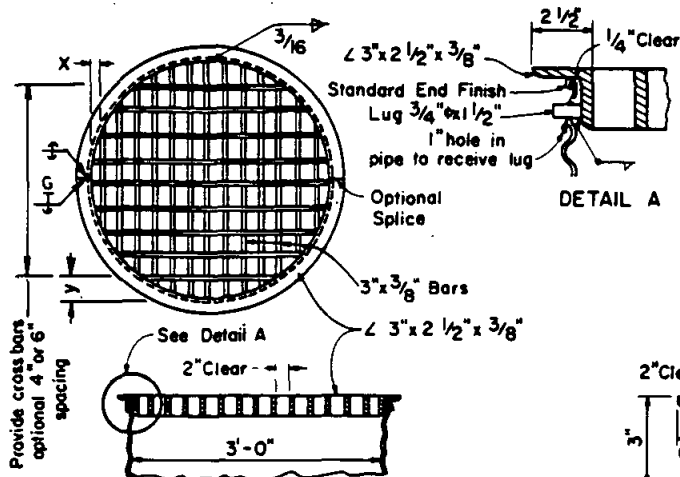
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Allen O. Kerschbaum Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **D-16**

SAN DIEGO REGIONAL STANDARD DRAWING

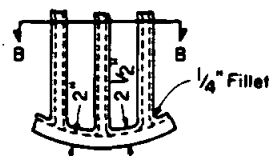
CORRUGATED STEEL PIPE INLETS TYPES A AND B

Revision	By	Approved	Date
Notes	<i>sc</i>	<i>D.S.</i>	<i>7-79</i>



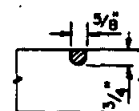
GRATE DETAILS

DETAIL A



3/8" Cross bars may be fillet welded, resistance welded or electroforged to bearing bars.

CROSS BAR DETAIL
GRATE (WELDED STEEL)

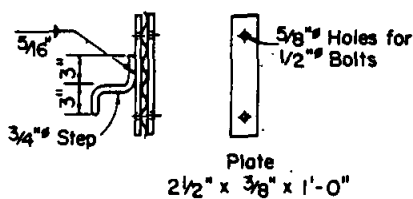


CROSS BAR DETAIL
ALTERNATIVE CAST
NODULAR IRON GRATE
OR CAST STEEL GRATE

GRATE BAR SPACING TABLE

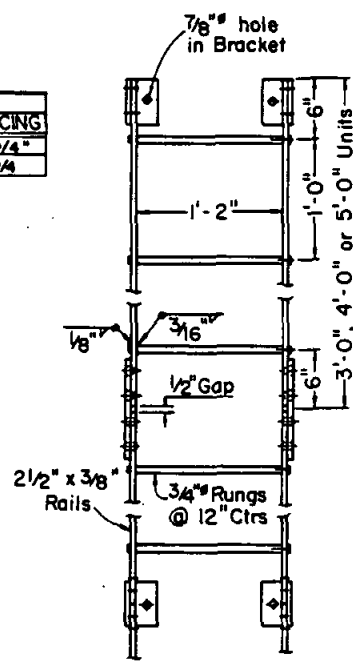
TYPE	NO. BARS	CLEAR BAR SPACING	X	4" SPACING	6" SPACING
welded	15	2	9/16	3 3/4"	5 3/4"
Cast	13	2	2 1/8	3 3/4"	5 3/4"

ALTERNATIVE CAST NODULAR
IRON GRATE OR CAST STEEL



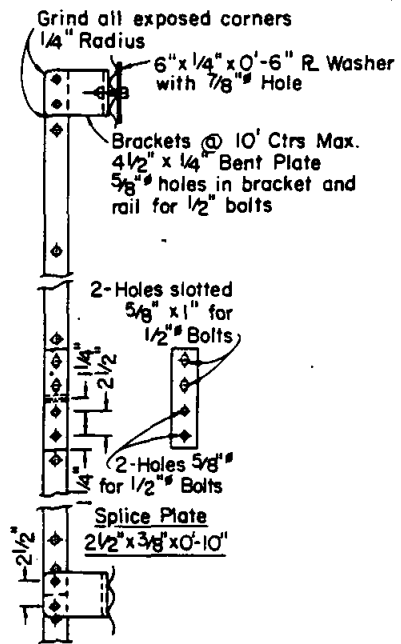
STEP DETAIL

H = 3' - 6" to 4' - 11"

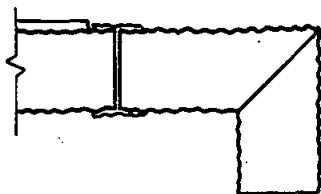


LADDER DETAIL

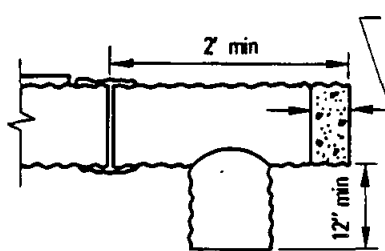
H = 5' - 0" or GREATER



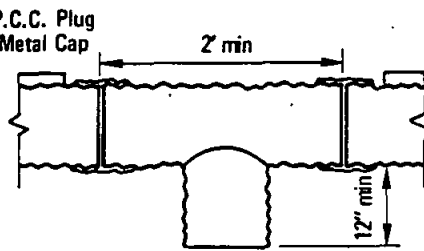
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING CORRUGATED STEEL PIPE INLETS DETAILS	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>Alfred A. Kuehnel</i> Sec. 1975 Coordinator R.C.E. 19807 Date
DRAWING NUMBER				D-17	



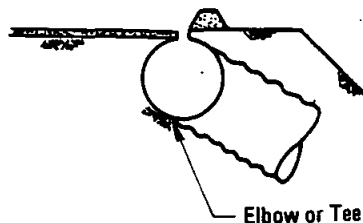
ELBOW



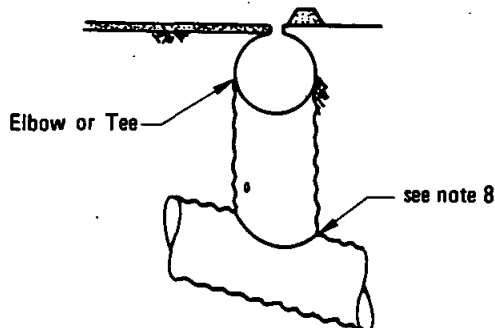
TEE



TEE-SAG CONDITION

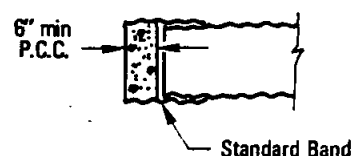


Elbow or Tee



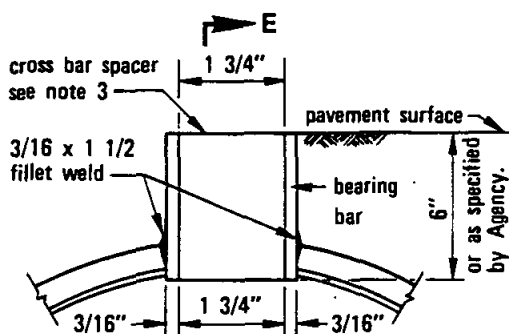
Elbow or Tee

see note 8

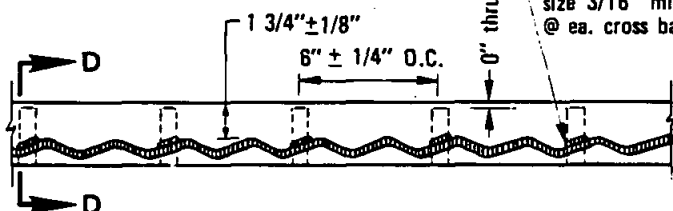


BAND PLUG

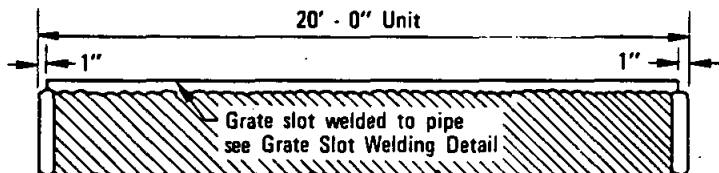
OVERSIDE DRAIN



SECTION D-D
GRATE SLOT DETAIL

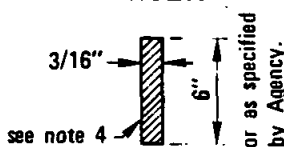


GRATE SLOT WELDING DETAIL

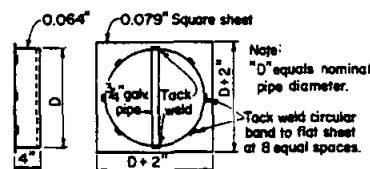


GRATE SLOT DRAIN

RISER



SECTION E-E



METAL CAP DETAIL

NOTES

1. Drain seams may be riveted or resistance spotwelded at equal centers, continuous helical lock seam or helical welded seam.
2. Each drain section shall be assembled with standard coupling bands.
3. Cross bar spacer of grate shall be pressure fusion or plug welded to bearing bars in such a manner as to develop the strength of the cross bar spacer.
4. Cross bar spacer (Section E-E) may differ from that shown provided section area is equal or greater.
5. Grate material shall be a weldable grade of steel complying to the requirements of ASTM A 36.
6. The maximum variance from a straight line from the extreme top corners of the bearing bar shall be 1/2" in 20 feet.
7. Installation lengths shall be 10 feet or multiples thereof.
8. Either field joint sealed with a pliable mixture of sand, portland cement and emulsified asphalt (Mixture of 1 part portland cement, 3 - 5 parts sand and 1 1/2 parts SSI emulsified asphalt), or continuous weld.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

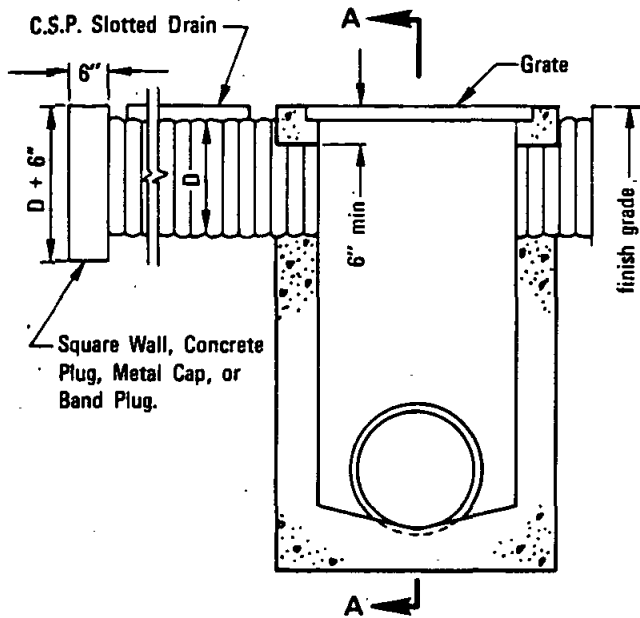
William D. Keisler Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER D-18

SAN DIEGO REGIONAL STANDARD DRAWING

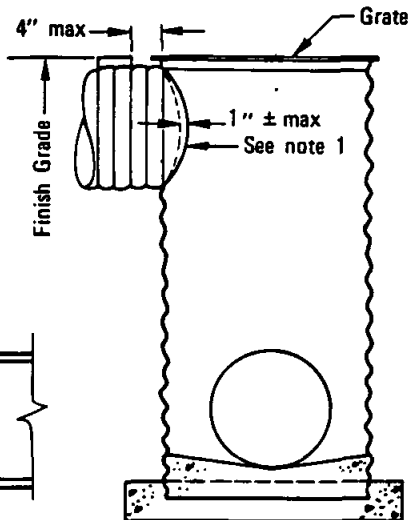
SLOTTED CORRUGATED STEEL PIPE DRAIN 12" THROUGH 24"

Revision	By	Approved	Date
Sect. D-D	TRP	M.B.	10-82

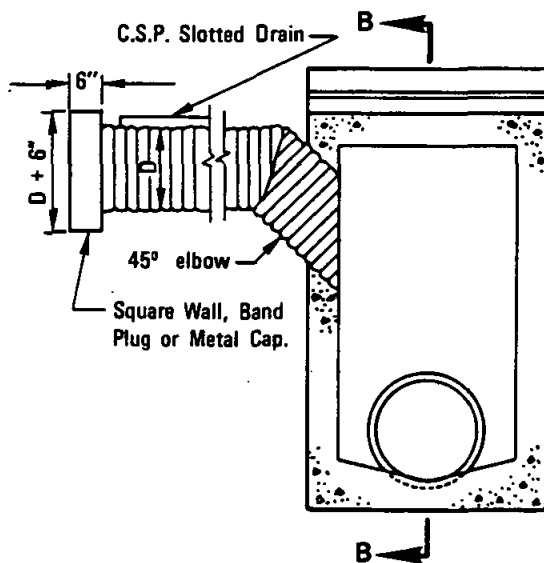


SECTION A-A

CATCH BASIN

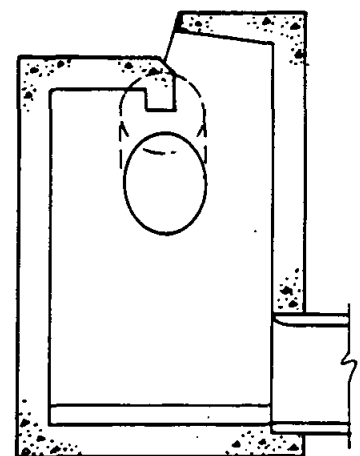


C.S.P. INLET



SECTION B-B

INLETS

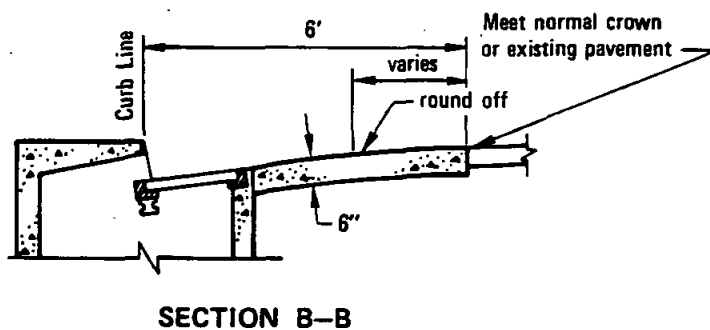
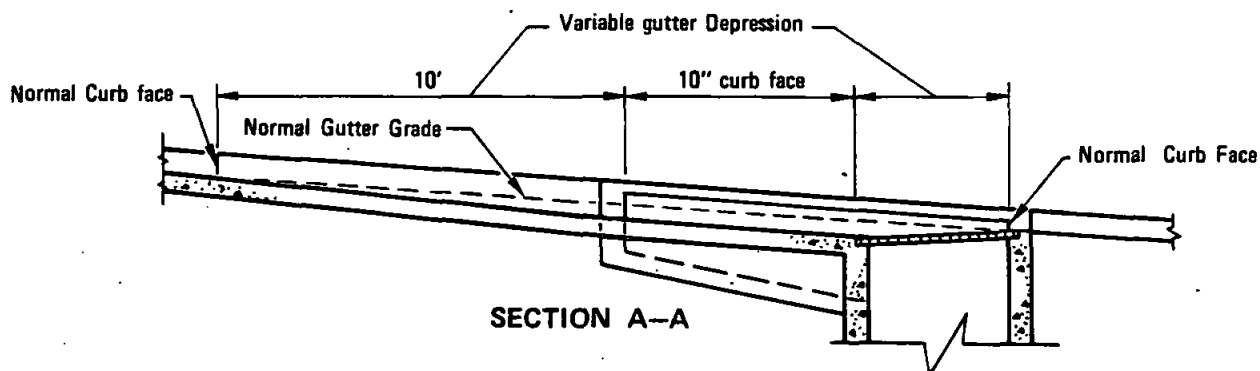
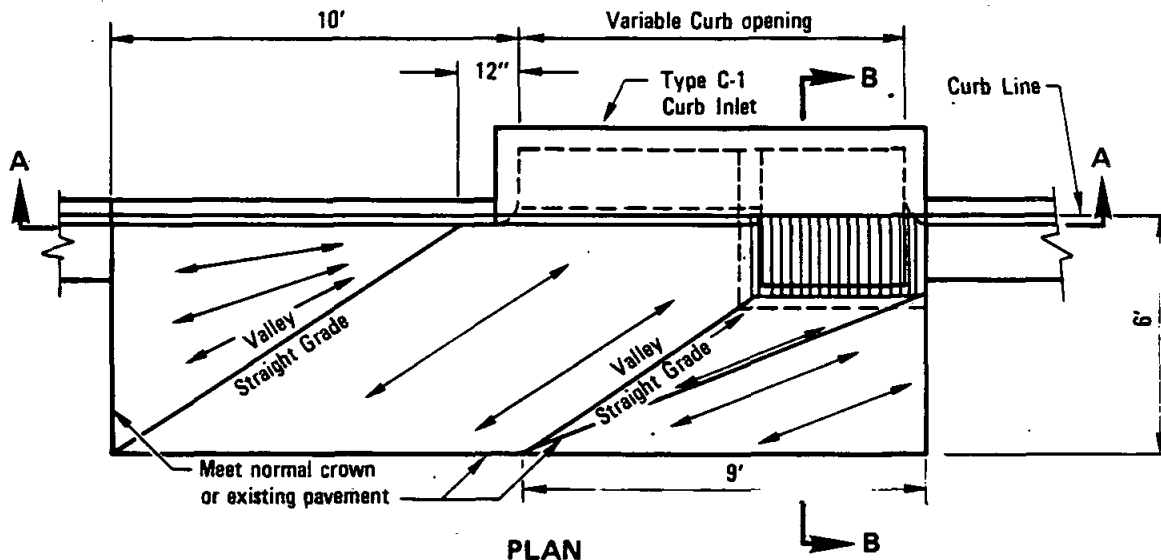


ALTERNATE SECTION B-B

NOTES

1. Either field joint with a pliable mixture of sand, portland cement and emulsified asphalt (mixture of 1 part portland cement, 3 - 5 parts sand, and 1 1/2 parts SSI emulsified asphalt), or continuous weld.
2. See Standard Drawing D - 18 for additional notes and details.

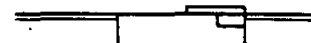
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
				SLOTTED DRAIN CONNECTIONS TO STANDARD INLETS		<i>Allen D. Kuehnel</i> <i>Dec. 1975</i>	
						Coordinator R.C.E. 19807 Date	
						DRAWING NUMBER D-19	



NOTES:

1. Curb and apron to be placed monolithically.
2. Use of false header at valleys and slope break line is optional.
3. Extend vertical steel from inlet structure into concrete apron as required.
4. Screed Direction →
5. Concrete shall be 520-C-2500

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Clifford A. Kershner *Dec. 1975*
Coordinator H.C.E. 13R07 Date

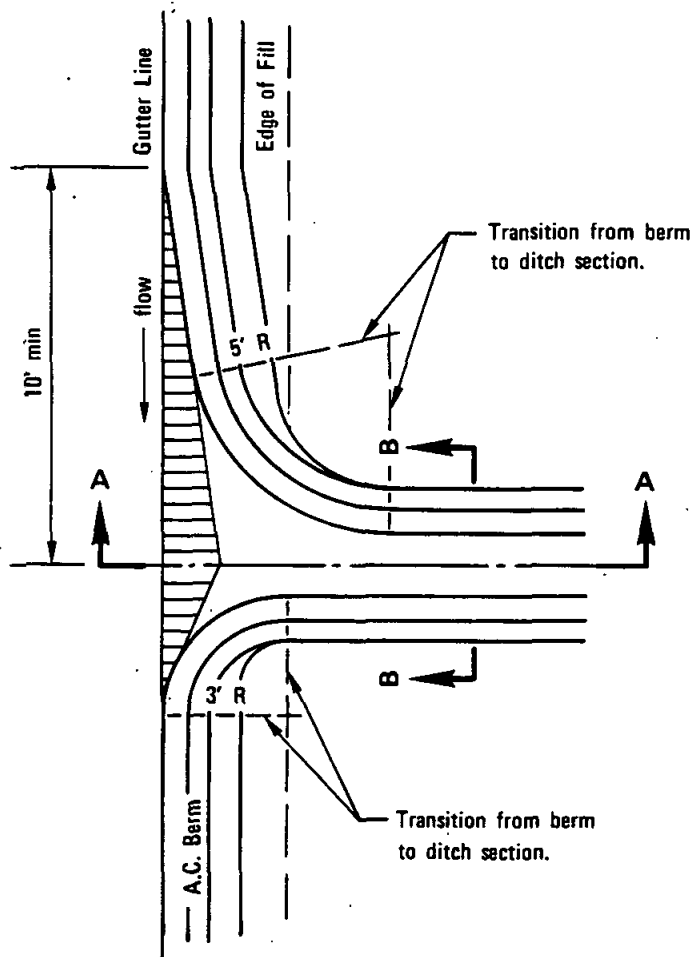
DRAWING
NUMBER **D-20**

SAN DIEGO REGIONAL STANDARD DRAWING

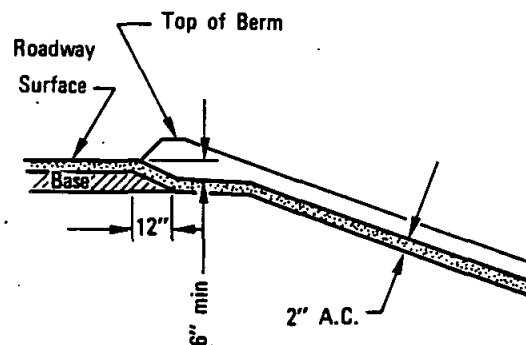
CONCRETE APRON FOR CURB INLET

Revision	By	Approved	Date
Conc.	<i>MB</i>	<i>MB</i>	<i>5-86</i>

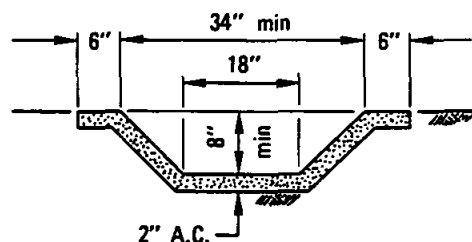
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PLAN



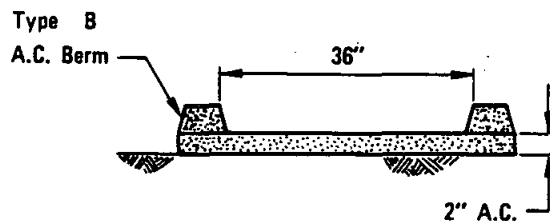
SECTION A-A



NOTE

Cross - sectional area of ditch may be rounded, or trapezoidal.

SECTION B-B



ALTERNATE SECTION B-B

NOTES

1. A.C. spillway may be used when fill is 10' or less, and where fill slope is 1 1/2:1 or flatter.
2. Use 10' min. length of gutter transition on each side of downdrain in sag condition.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Allan B. Kuehnel Dec. 1975
Coordinator R.C.E. 13807 Date

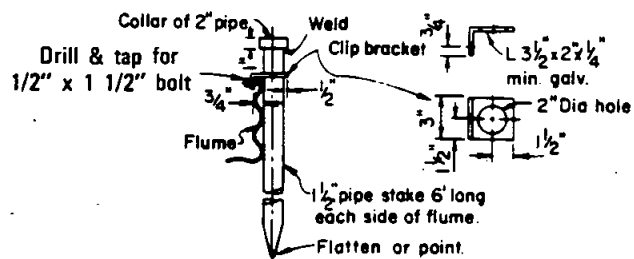
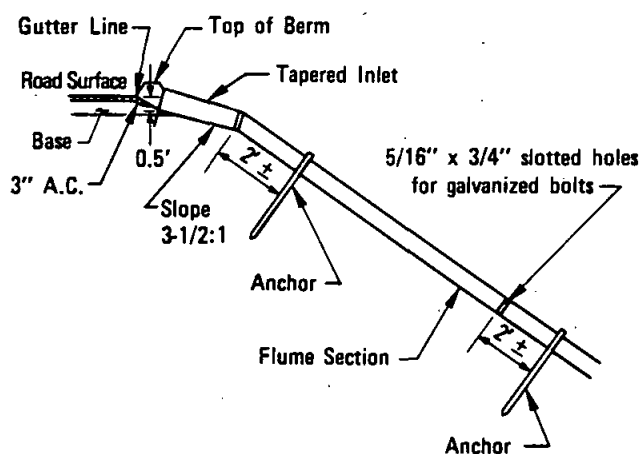
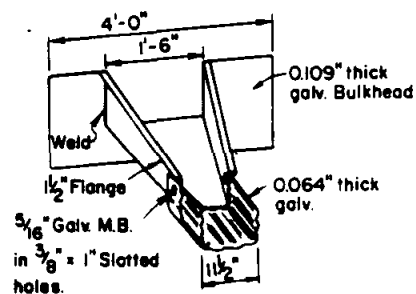
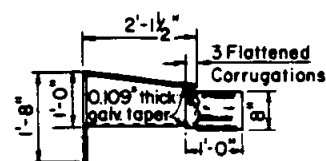
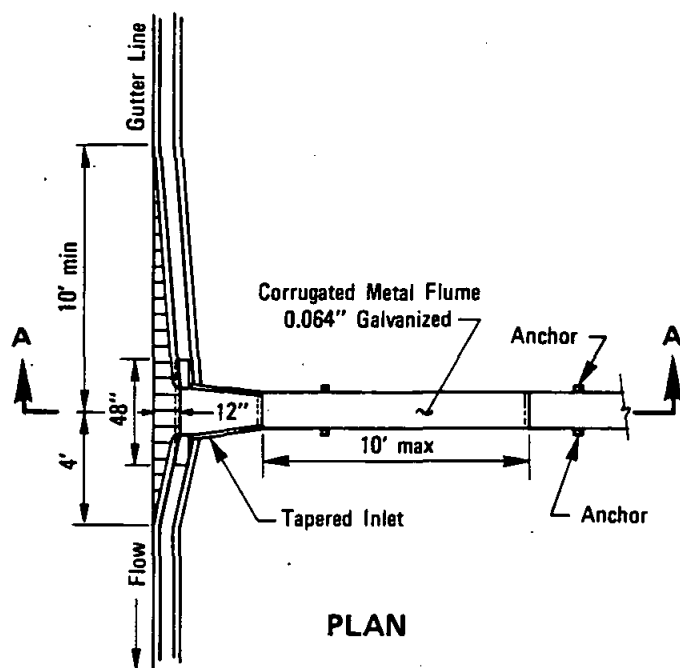
DRAWING NUMBER

D-22

SAN DIEGO REGIONAL STANDARD DRAWING

ASPHALT CONCRETE SPILLWAY

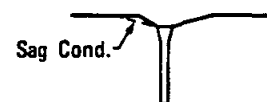
Revision	By	Approved	Date
Plan	<i>D. S.</i>	<i>D. S.</i>	7-79



NOTES

1. Downdrain flume may be used where fill slope is 1 1/2 : 1 or flatter.
2. Use 10' min length of gutter transition on each side of downdrain in sag location.
3. All metal parts to be galvanized after fabrication.

LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	TAPERED INLET AND DOWNDRAIN FLUME	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
						<i>Allan O. Kuehnel</i> <i>Dec. 1975</i>
						Coordinator R.C.E. 19807 Date
						DRAWING NUMBER D-23

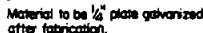
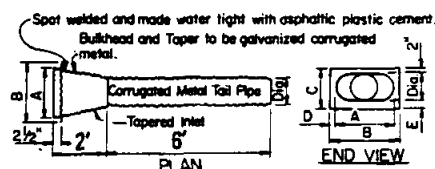


PLATE DETAIL

Dimensions to be as tabulated below for Assembly.

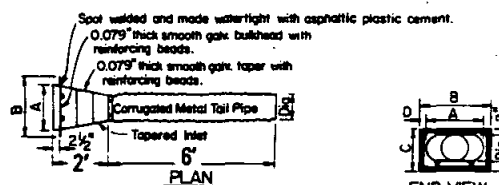
NOTES

1. All metal parts for anchor assemblies shall be galvanized after fabrication.
2. One anchor assembly required per length of pipe. When final length exceeds 10 ft. two anchors shall be required.



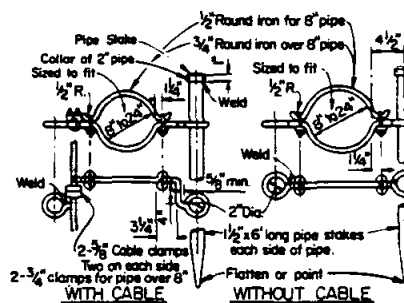
Bulkhead and Taper of same thickness as Tail Pipe with 0.079" Max
Tail Pipe of same thickness as Downdrain Pipe.

ENTRANCE TAPER- TYPE 1 ALTERNATIVE A

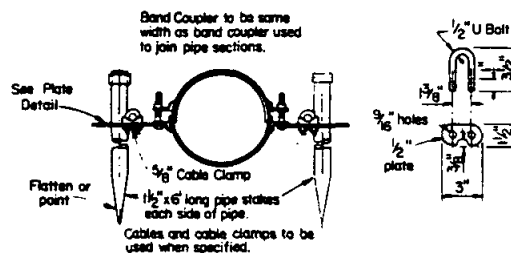


Tail Pipe of same thickness as Downdrain Pipe

ENTRANCE TAPER—TYPE 1 ALTERNATIVE B



ANCHOR ASSEMBLY ALTERNATIVE-A



ANCHOR ASSEMBLY ALTERNATIVE-B

LEGEND ON PLANS



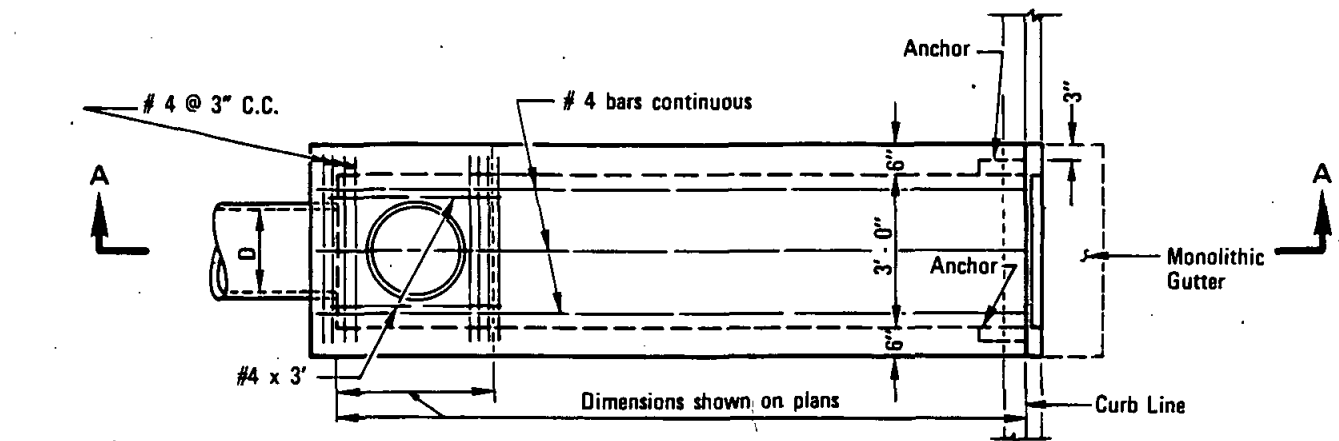
Allard & Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

D-24

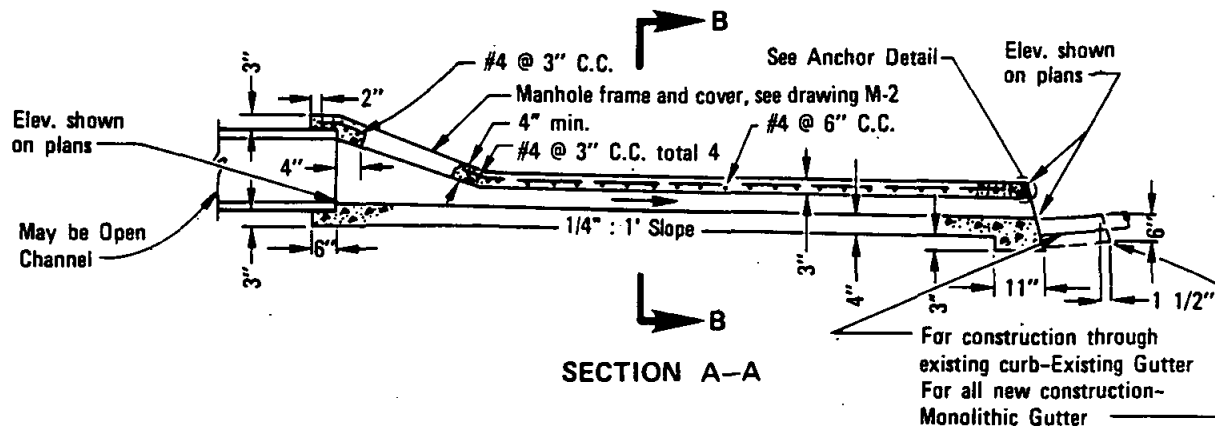
SAN DIEGO REGIONAL STANDARD DRAWING

ENTRANCE TAPER AND DOWNDRAIN PIPE

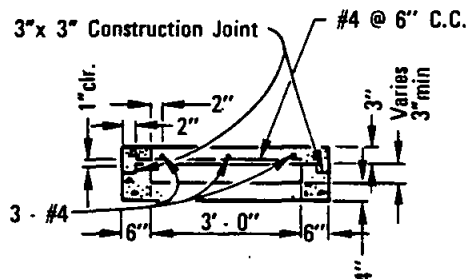
Revision	By	Approved	Date
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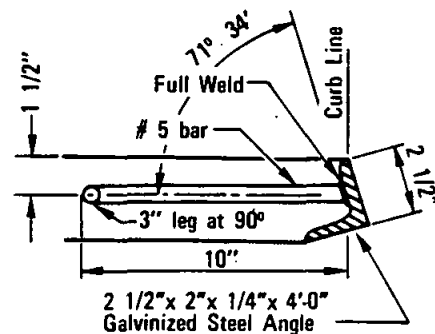
PLAN



SECTION A-A



SECTION B-B

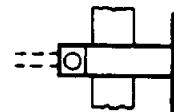


ANCHOR DETAIL

NOTES

- Concrete shall be 580-C-3250
- D=inside diameter of pipe or depth of channel.
- Section to be sloped laterally with top conforming to the grades of the existing sidewalk and curb.
- Manhole frame and cover may be deleted with open channel.
- Trowel finish top surface and reproduce markings of existing sidewalk and curb.
- Trowel finish floor of outlet.

LEGEND ON PLANS



Revision	By	Approved	Date
Bar Size	SC	D.S.	7-79
Conc.	SC	M.B.	5-86
Slope	JP	E.A.	5-82

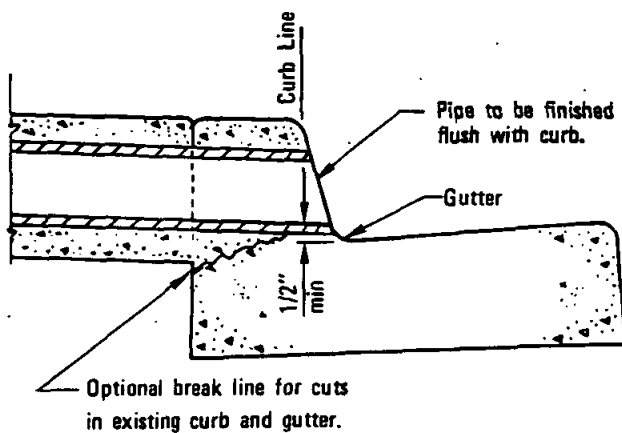
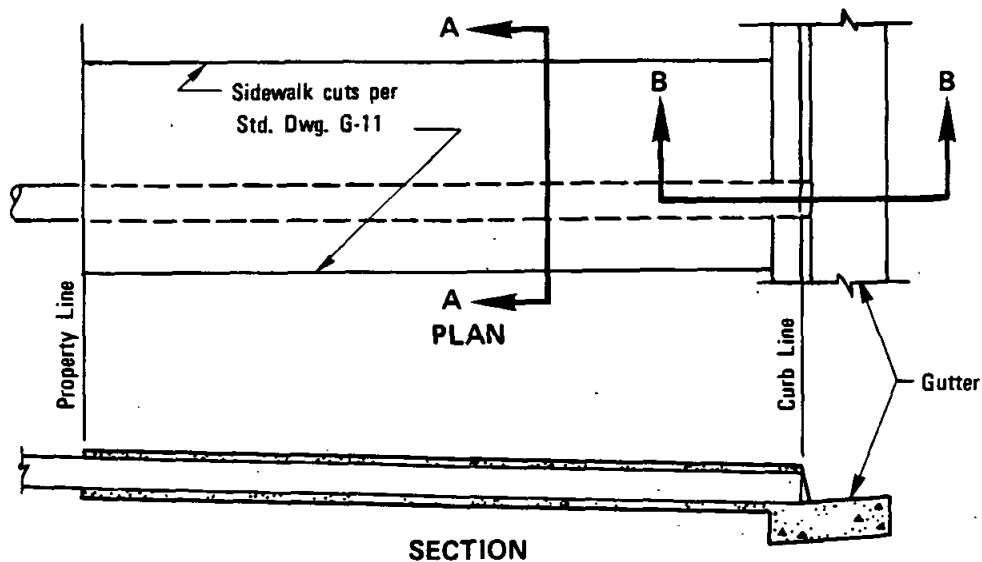
SAN DIEGO REGIONAL STANDARD DRAWING

CURB OUTLET - TYPE A

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

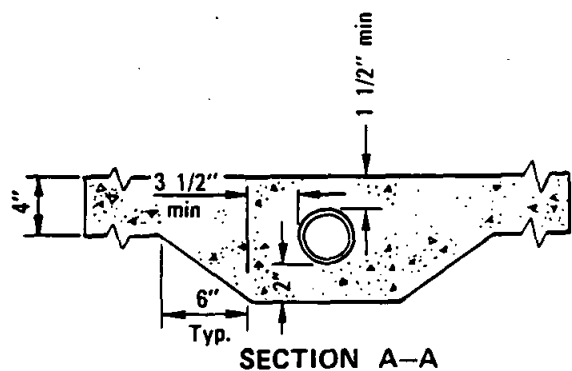
Atwood A. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING NUMBER D-25

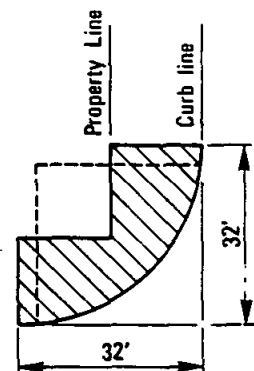


SECTION B-B

APPROVED DRAIN PIPE SIZES	
3"	6" to 8" CURB FACE
4"	8" CURB FACE
6"	10" CURB FACE



SECTION A-A



Drain shall not occupy the hatched area

BLOCK CORNER

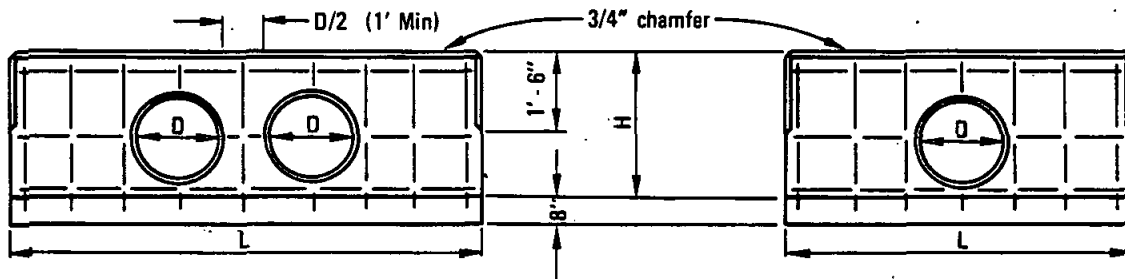
NOTES

1. Pipe shall be one continuous length from property line to curb line.
2. Multiple pipes to be set a minimum distance of $D/2$ apart.
3. Concrete shall be 520-C-2500
4. Pipe shall be circular asbestos cement, cast iron or rigid plastic.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Modif.		M.B.	5-86			 Dec. 1975
				SIDEWALK UNDERDRAIN PIPE	Coordinator R.C.E. 19807	Date
					DRAWING NUMBER D-27	

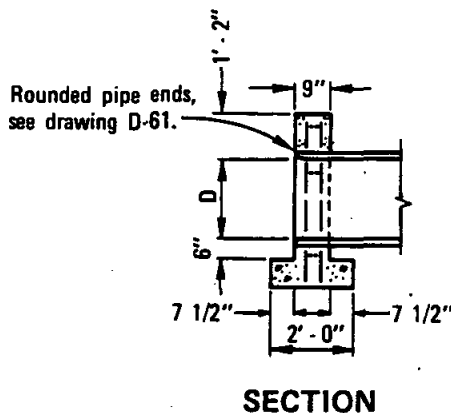


Revision		Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>Don S. D. Salazar July 1979</i> Coordinator R.C.E. 25291 Date
Reference	TRP	M.B.	10-82		
Modif.	5	M.B.	5-86	CATCH BASIN-TYPE I	DRAWING NUMBER D-29



ELEVATION DOUBLE HEADWALL

ELEVATION SINGLE HEADWALL



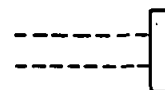
SECTION

D	H	SINGLE			DOUBLE		
		L	Steel Lbs.	Conc. C. Y.	L	Steel Lbs.	Conc. C. Y.
12"	2' - 8"	5' - 0"	35	0.60	8' - 0"	50	0.94
15"	2' - 11"	6' - 0"	40	0.75	9' - 6"	60	1.17
18"	3' - 2"	7' - 0"	50	0.91	10' - 6"	75	1.35
21"	3' - 5"	7' - 6"	60	1.02	11' - 6"	90	1.52
24"	3' - 8"	8' - 6"	75	1.20	12' - 6"	100	1.72
27"	3' - 11"	9' - 6"	85	1.39	14' - 0"	115	2.00
30"	4' - 2"	10' - 0"	85	1.52	15' - 0"	126	2.21
33"	4' - 5"	11' - 0"	100	1.73	16' - 0"	130	2.42
36"	4' - 8"	12' - 0"	105	1.95	17' - 0"	145	2.65
39"	4' - 11"	12' - 6"	130	2.09	18' - 0"	170	2.88
42"	5' - 2"	13' - 6"	140	2.34	19' - 0"	185	3.13
45"	5' - 5"	14' - 6"	150	2.60	20' - 0"	195	3.38
48"	5' - 8"	15' - 0"	160	2.75	21' - 0"	200	3.64
51"	5' - 11"	16' - 0"	180	3.03	22' - 6"	225	4.02
54"	6' - 2"	17' - 0"	190	3.31	23' - 6"	240	4.30

NOTES

- Concrete shall be 560-C-3250
- All reinforcing steel # 4 bars. All vertical and horizontal tie bars 18" maximum spacing.

LEGEND ON PLANS



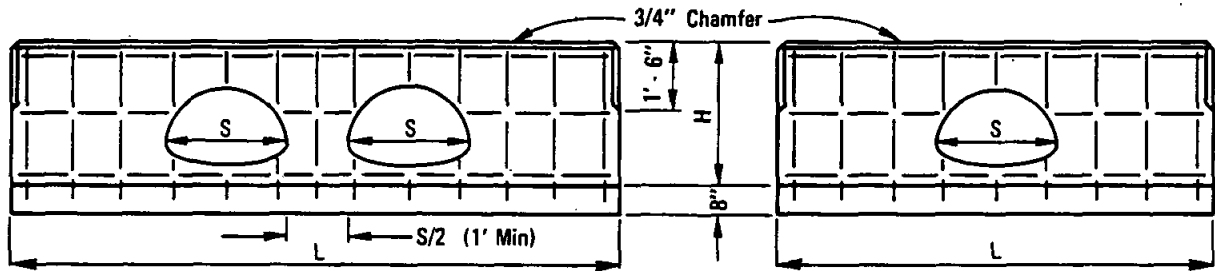
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Allard O. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

STRAIGHT HEADWALL - TYPE A (CIRCULAR PIPE)

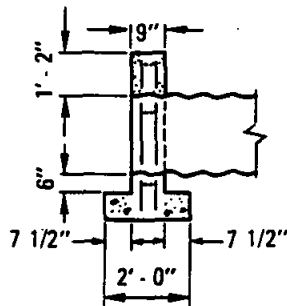
DRAWING
NUMBER **D-30**

Revision	By	Approved	Date
Conc.	<i>MB</i>	<i>MB</i>	5-86
Dim. lines	<i>AL</i>	<i>AL</i>	7-88



ELEVATION DOUBLE HEADWALL

ELEVATION SINGLE HEADWALL



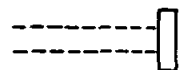
SECTION

C.S.P ARCH SIZE	H	SINGLE			DOUBLE		
		L	Steel Lbs	Conc Cu. Yds.	L	Steel Lbs	Conc Cu. Yds.
18" x 11"	2' - 7"	5' - 6"	37	0.64	8' - 0"	52	.91
21" x 15"	2' - 11"	6' - 6"	45	0.80	10' - 0"	60	1.22
24" x 18"	3' - 2"	7' - 6"	50	0.96	11' - 6"	70	1.45
28" x 20"	3' - 4"	8' - 6"	60	1.12	13' - 6"	90	1.76
35" x 24"	3' - 8"	10' - 6"	85	1.47	15' - 6"	120	2.16
42" x 29"	4' - 1"	12' - 6"	110	1.76	18' - 0"	145	2.57
49" x 33"	4' - 5"	14' - 6"	130	2.26	21' - 0"	170	3.13
57" x 38"	4' - 10"	17' - 0"	155	2.81	24' - 6"	210	3.86
64" x 43"	5' - 3"	19' - 0"	175	3.31	27' - 0"	230	4.42
71" x 47"	5' - 7"	21' - 0"	195	3.81	30' - 0"	255	5.09

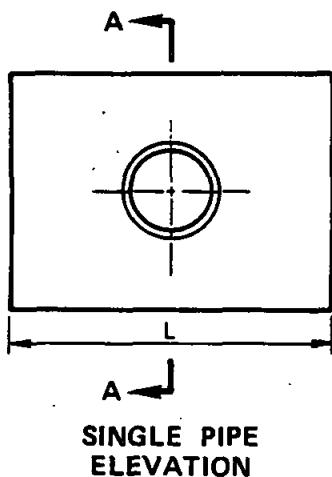
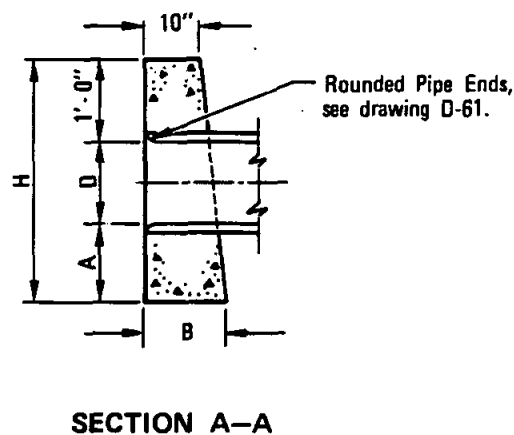
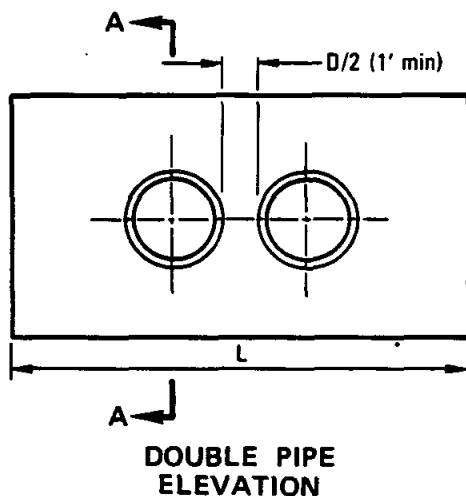
NOTES

1. Concrete shall be 560-C-3250
2. All reinforcing steel # 4 bars. All vertical and horizontal tie bars 18" maximum spacing.

LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Conc.	5	M.B.	5-86			Allen G. Kershner	Dec. 1975
				STRAIGHT HEADWALL - TYPE A (C.S.P.-ARCH)		Coordinator R.C.E. 19807	Date
						DRAWING NUMBER	D-31

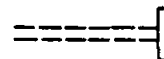


D	A	B	H	SINGLE		DOUBLE	
				L	Conc C.Y.	L	Conc C.Y.
12"	2'-0"	1'-0"	4'-0"	4'-0"	.45	5'-8"	.62
15"	2'-0"	1'-1"	4'-3"	5'-0"	.63	7'-1"	.85
18"	2'-0"	1'-2"	4'-6"	6'-0"	.83	8'-6"	1.12
24"	2'-6"	1'-5"	5'-6"	8'-0"	1.54	11'-4"	2.09
30"	2'-6"	1'-9"	6'-0"	10'-0"	2.41	14'-2"	3.26
36"	3'-0"	2'-0"	7'-0"	12'-0"	3.74	17'-0"	5.05

NOTES

1. Concrete shall be 560-C-3250
2. Exposed corners to be chamfered 3/4".

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

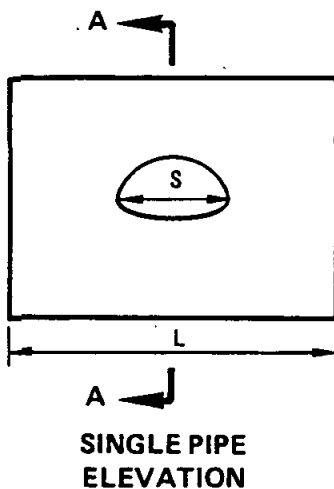
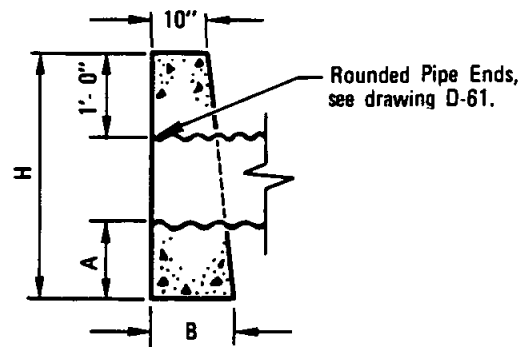
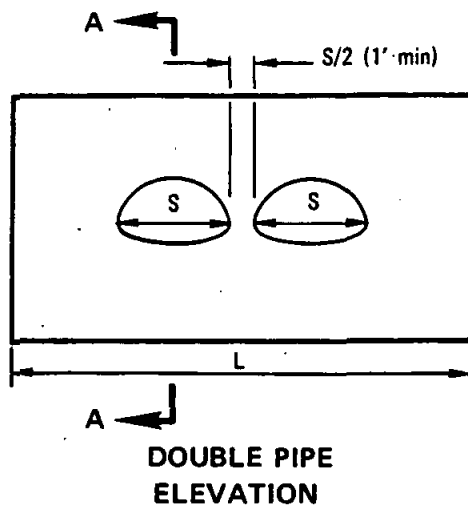
William A. Kerschbaum Dec. 1975
Coordinator H.C.C. Date

DRAWING
NUMBER **D-32**

SAN DIEGO REGIONAL STANDARD DRAWING

STRAIGHT HEADWALL - TYPE B (CIRCULAR PIPE)

Revision	By	Approved	Date
Conc.	20	M.B.	5-86

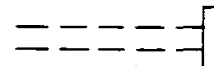


C.S.P. ARCH SIZE	A	B	H	SINGLE		DOUBLE	
				L	Conc C.Y.	L	Conc C.Y.
18"x 11"	2' - 0"	1' - 2"	3' - 11"	6'	0.83	7' - 3"	0.97
21"x 15"	2' - 0"	1' - 4"	4' - 1"	7'	1.08	9' - 8"	1.46
24"x 18"	2' - 0"	1' - 6"	4' - 4"	8'	1.41	11' - 6"	1.98
28"x 20"	2' - 6"	1' - 8"	5' - 0"	9'	1.97	12' - 6"	2.66
35"x 24"	2' - 6"	2' - 0"	5' - 4"	10'	2.56	14' - 5"	3.60

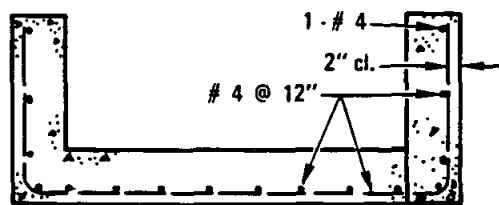
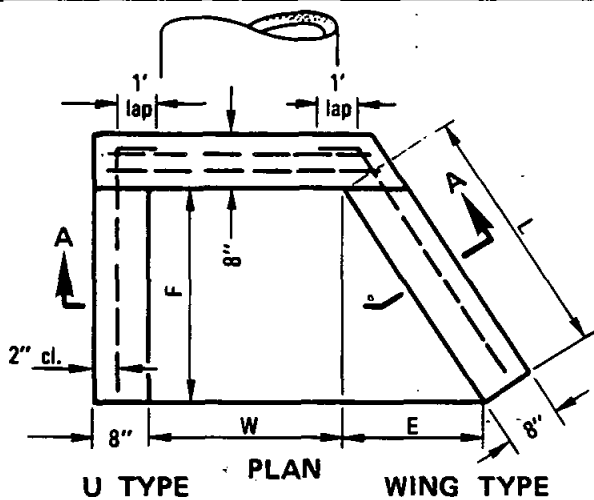
NOTES

1. Concrete shall be 560-C-3250
2. Exposed corners to be chamfered 3/4".

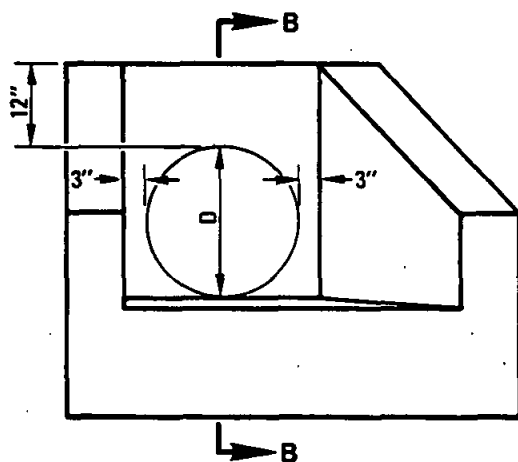
LEGEND ON PLANS



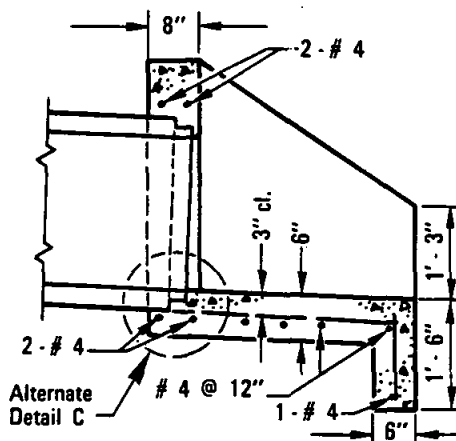
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING STRAIGHT HEADWALL - TYPE B (C.S.P. ARCH)	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>Allard A. Kershner</i> <i>Dec. 1975</i> Coordinator R.C.E. 19807 Date
Conc.	<i>2</i>	<i>M.B.</i>	<i>5-86</i>		
DRAWING NUMBER				D-33	



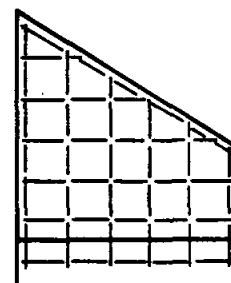
SECTION A-A



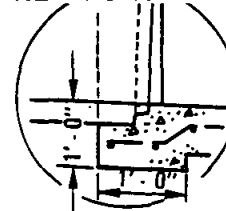
ELEVATION



SECTION B-B



WING WALL REINFORCING



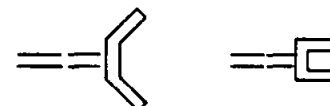
ALT. DETAIL C

DIA OF PIPE	DIMENSIONS			SINGLE PIPE								DOUBLE PIPE			
				W	U TYPE		WING TYPE		W	U TYPE		WING TYPE			
	CONC	STEEL	CONC		STEEL	CONC	STEEL	CONC		STEEL					
	L	E	F		C. Y.	LBS.	C. Y.	LBS.		C. Y.	LBS.	C. Y.	LBS.	C. Y.	LBS.
18"	2'-3 1/8"	1'-3"	1'-10 1/2"	2'-0"	0.55	35	0.63	43	As shown on plans	0.82	53	0.90	61		
24"	3'-1 7/8"	1'-9"	2'-7 1/2"	2'-6"	0.79	47	0.93	60		1.22	73	1.36	86		
30"	4'-0 5/8"	2'-3"	3'-4 1/2"	3'-0"	1.05	71	1.29	85		1.66	109	1.92	123		
36"	4'-11 1/2"	2'-9"	4'-1 1/2"	3'-6"	1.33	88	1.69	114		2.19	136	2.55	162		

NOTES:

- Concrete shall be 560-C-3250
- Exposed corners to be chamfered 3/4".
- Multiple pipes to be set a distance of D/2, with a 1' minimum between outside diameters of pipes.
- Top of headwall shall be placed approximately parallel to profile grade when the grade is 3% or more.
- Skewed pipes: Dimension W to be increased in width or length due to skew or multiple pipes.
- For pipe wall thickness greater than 3" use alternate Detail-C.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

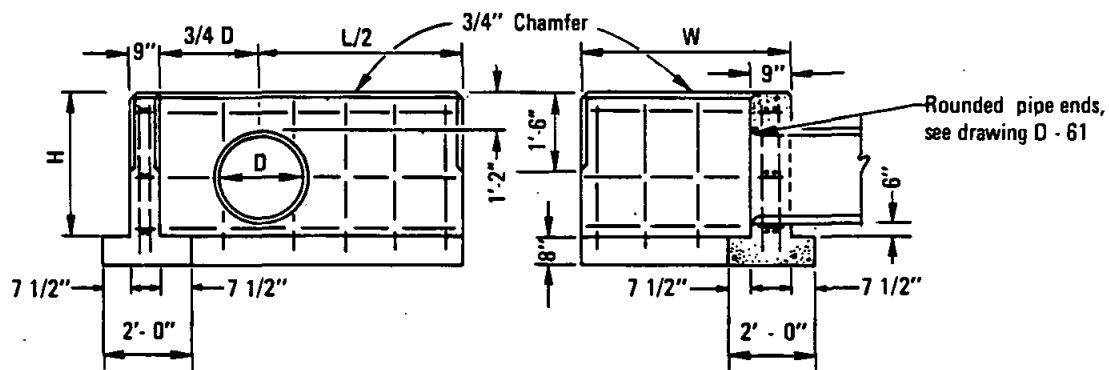
William A. Kuehnel Dec. 1975
Coordinator H.C.E. 19807 Date

DRAWING NUMBER **D-34**

SAN DIEGO REGIONAL STANDARD DRAWING

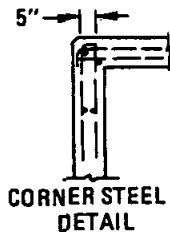
**WING AND U TYPE HEADWALLS
FOR 12" TO 36" PIPES**

Revision	By	Approved	Date
Conc.	20	M.B.	5-86



ELEVATION

SECTION

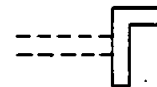


D	H	L/2	LENGTH OF W									
			3' - 4"		4' - 10"		6' - 4"		7' - 10"		9' - 4"	
			Steel lbs.	Conc C. Y.	Steel lbs.	Conc C. Y.	Steel lbs.	Conc C. Y.	Steel lbs.	Conc C. Y.	Steel lbs.	Conc C. Y.
12"	2' - 8"	2' - 6"	50	.79	60	.98						
15"	2' - 11"	3' - 0"	55	.91	65	1.11						
18"	3' - 2"	3' - 6"	65	1.04	75	1.25						
21"	3' - 5"	3' - 9"	75	1.15	90	1.36						
24"	3' - 8"	4' - 3"	85	1.29	100	1.51	110	1.74				
27"	3' - 11"	4' - 9"	90	1.44	105	1.67	115	1.91				
30"	4' - 2"	5' - 0"	95	1.55	110	1.80	120	2.05	135	2.29		
33"	4' - 5"	5' - 6"	105	1.71	120	1.97	135	2.23	150	2.48		
36"	4' - 8"	6' - 0"	110	1.88	125	2.15	140	2.41	155	2.68	170	2.95
39"	4' - 11"	6' - 3"			150	2.28	170	2.56	185	2.84	200	3.12
42"	5' - 2"	6' - 9"			155	2.42	175	2.76	190	3.05	210	3.34
45"	5' - 5"	7' - 3"					180	2.97	200	3.27	215	3.57
48"	5' - 8"	7' - 6"					190	3.13	216	3.44	230	3.75
51"	5' - 11"	8' - 0"							220	3.67	235	3.99
54"	6' - 2"	8' - 6"							235	3.91	250	4.24

NOTES

1. Concrete shall be 560-C-3250
2. All reinforcing steel # 4 bars. All vertical and horizontal tie bars 18" maximum spacing.
3. When multiple pipes are used, the distance between pipes shall be D/2 (1' min.). Dimension L/2 is from the center of the pipe nearest to the end of the headwall as shown.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Oliver A. Kuehnel Dec. 1975
Chairman R.C.E. Date

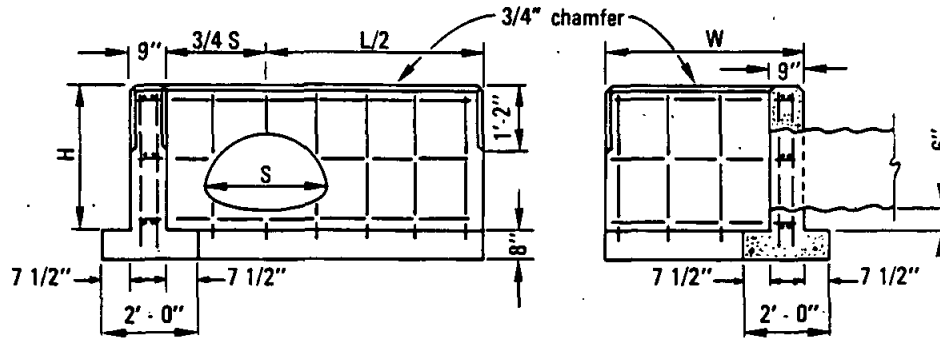
DRAWING
NUMBER

D-36

SAN DIEGO REGIONAL STANDARD DRAWING

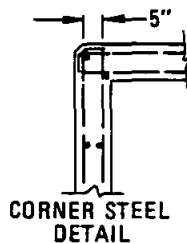
L TYPE HEADWALLS CIRCULAR PIPES

Revision	By	Approved	Date
Conc.	SC	M.B.	5-86



ELEVATION

SECTION



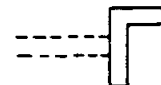
CORNER STEEL
DETAIL

C.S.P. ARCH SIZE	H	L/2	LENGTH OF W									
			3'-4"		4'-10"		6'-4"		7'-10"		9'-4"	
			Steel lbs.	Conc. C. Y.	Steel lbs.	Conc. C. Y.	Steel lbs.	Conc. C. Y.	Steel lbs.	Conc. C. Y.	Steel lbs.	Conc. C. Y.
18"x 11"	2'-7"	2'-9"	50	0.84	60	1.03	70	1.21	80	1.39	90	1.57
21"x 15"	2'-11"	3'-3"	60	1.00	65	1.18	75	1.38	90	1.58	100	1.77
24"x 18"	3'-2"	3'-9"	60	1.07	70	1.32	80	1.53	95	1.74	110	1.94
28"x 20"	3'-4"	4'-3"	70	1.26	80	1.47	90	1.68	100	1.90	115	2.11
35"x 24"	3'-8"	5'-3"	100	1.51	110	1.74	120	1.97	140	2.20	155	2.42
42"x 29"	4'-1"	6'-3"	115	1.82	130	2.06	140	2.31	155	2.55	170	2.83
49"x 33"	4'-5"	7'-3"	130	2.12	145	2.37	155	2.64	170	2.90	185	3.15
57"x 38"	4'-10"	8'-6"	145	2.52	160	2.79	175	3.07	190	3.35	205	3.61
64"x 43"	5'-3"	9'-6"	185	2.89	200	3.11	215	3.48	235	3.77	250	4.06
71"x 47"	5'-7"	10'-6"	200	3.25	215	3.56	235	3.86	250	4.17	270	4.48

NOTES

- Concrete shall be 560-C-3250
- All reinforcing steel # 4 bars. All vertical and horizontal tie bars 18" maximum spacing.
- When multiple pipes are used, the distance between pipes shall be S/2 (1' min.). The dimension L/2 is from the center of the pipe nearest to the end of the headwall as shown.

LEGEND ON PLANS



Revision	By	Approved	Date
Elev.	EC	D.S.	7-79
Conc.	EC	M.B.	5-86

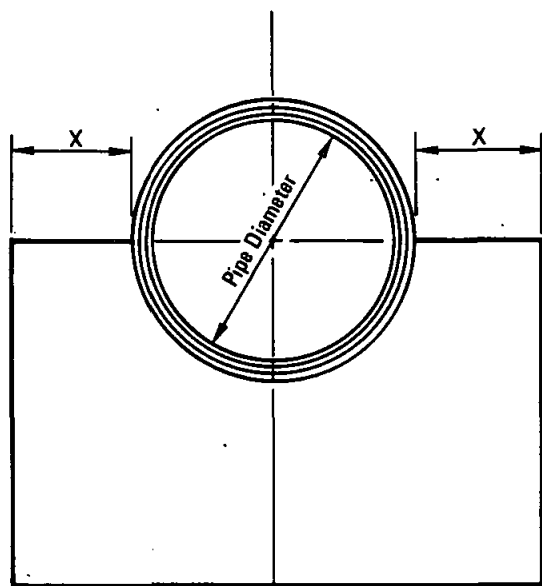
SAN DIEGO REGIONAL STANDARD DRAWING

L TYPE HEADWALLS (C.S.P. ARCH)

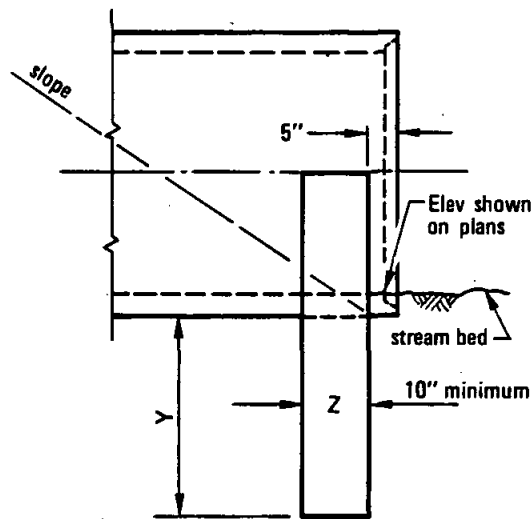
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen D. Kuehn *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **D-37**



FACE ELEVATION



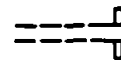
SIDE ELEVATION

PIPE DIAMETER	X	Y	Z
12" to 24"	1' - 0"	2' - 0"	10"
21" to 36"	1' - 6"	2' - 6"	12"
39" to 48"	2' - 0"	3' - 0"	12"
51" to 60"	2' - 6"	3' - 0"	14"
63" & Larger	3' - 0"	3' - 0"	14"

NOTES:

1. A curtain wall shall be used in place of a headwall at culvert ends where extension of the culvert is considered imminent or no fill is retained.
2. Concrete shall be 560-C-3250
3. Keep the pipe-end clear of obstructions to permit easy placing of culvert extension.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

William A. Kuehnel Dec. 1975
Coordinator R.C.E. 19807. Date

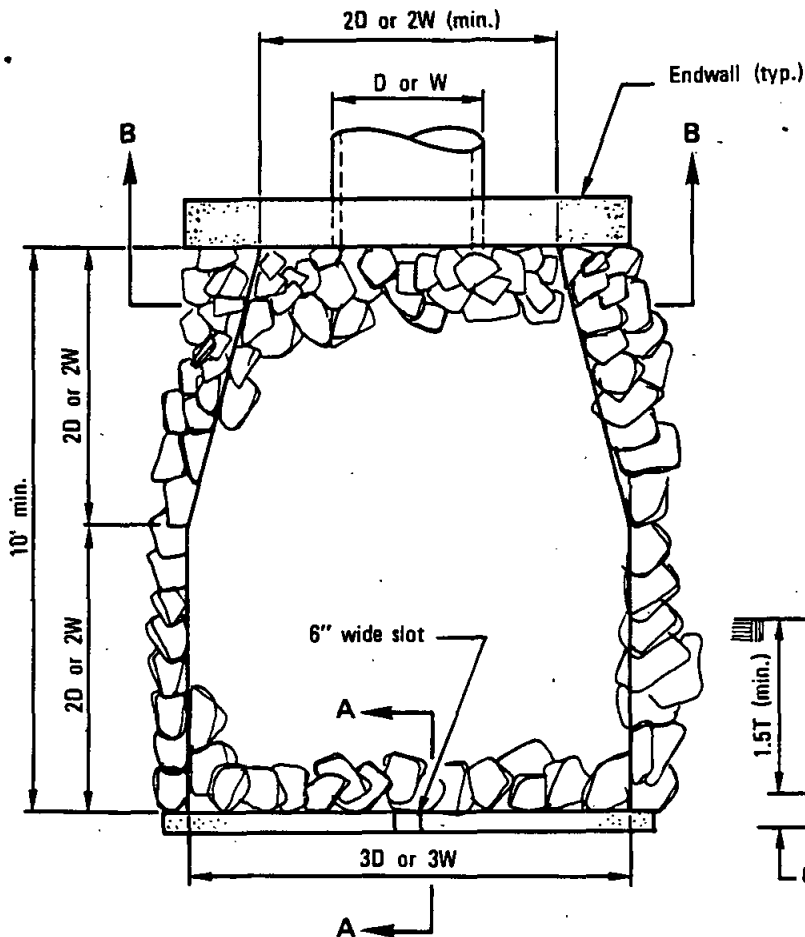
DRAWING
NUMBER **D-38**

SAN DIEGO REGIONAL STANDARD DRAWING

CURTAIN WALL

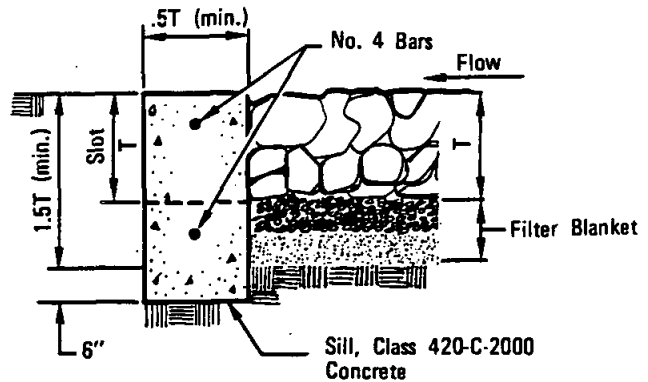
Revision	By	Approved	Date
Conc.	<i>2</i>	<i>M. B.</i>	<i>5-86</i>

DRAWING NUMBER **D-39**

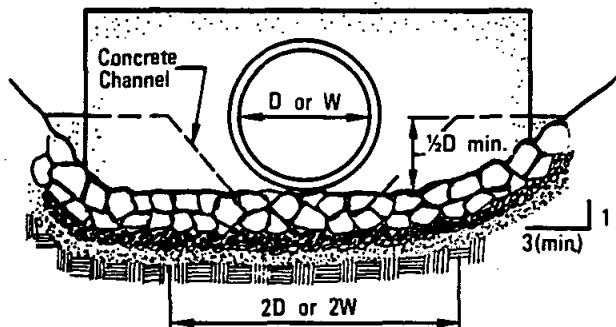


PLAN

D = Pipe Diameter
W = Bottom Width of Channel



SECTION A-A



SECTION B-B

NOTES:

- Plans shall specify:
 - Rock class and thickness (T).
 - Filter material, number of layers and thickness.
- Rip rap shall be either quarry stone or broken concrete (if shown on the plans.) Cobbles are not acceptable.
- Rip rap shall be placed over a filter blanket which may be either granular material or plastic filter cloth.
- See standard special provisions for selection of rip rap and filter blanket.
- Rip rap energy dissipators shall be designated as either Type 1 or Type 2. Type 1 shall be with concrete sill; Type 2 shall be without sill.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

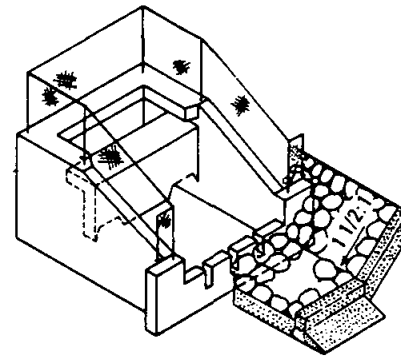
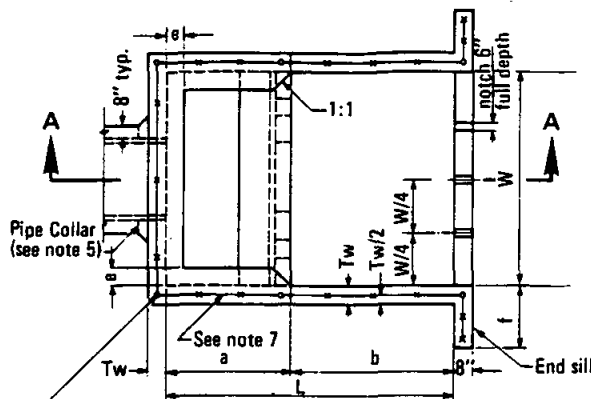
Richard A. Kuehner Dec. 1975
Coordinator H.C.C. 19807 Date

DRAWING
NUMBER D-40

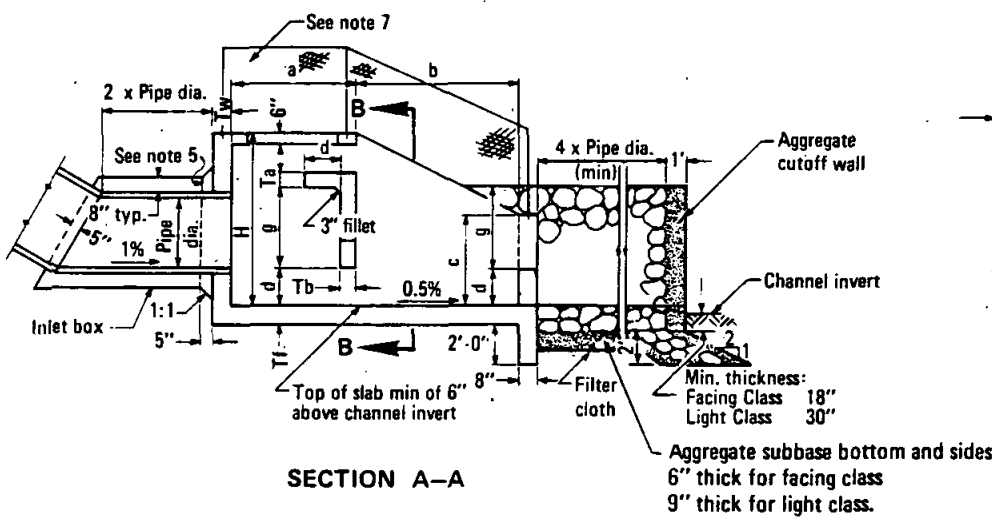
SAN DIEGO REGIONAL STANDARD DRAWING

RIP RAP
ENERGY DISSIPATOR

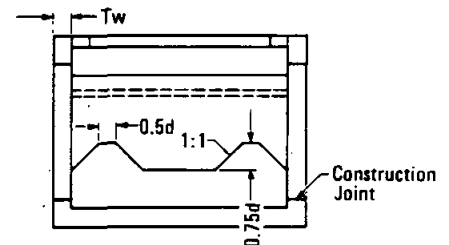
Revision	By	Approved	Date
Sill, filter	KP	M.B.	10-82



PICTORIAL VIEW



SECTION A-A



SECTION B-B

NOTES

- Design:
Equivalent Fluid Pressure = 60 p.c.f.
Maximum Outlet Velocity = 35 f.p.s.
- Concrete shall be 560-C-3250
- Reinforcing shall conform to ASTM designation A615 and may be grade 40 or 60. Reinforcing shall be placed with 2" clear concrete cover unless noted otherwise. Splices shall not be permitted except as indicated on the plans.
- For pipe grades not exceeding 20%, inlet box may be omitted.
- If inlet box is omitted, construct pipe collar as shown.
- Unless noted otherwise, all reinforcing bar bends shall be fabricated with standard hooks.
- Five foot high chain link fencing, embed post 18" deep in walls and encase with Class B mortar.
- In Sandy and Silty soil:
 - Riprap and aggregate base cutoff wall required at the end of rock apron.
 - Filter cloth (Polyfilter X or equivalent) shall be installed on native soil and base, minimum of 1 ft. overlaps at joints.
- Rip rap and subbase classification shall be as shown on plans.

Pipe Dia (in)	18	24	30	36	42	48	54	60	72
Area (sq.ft.)	1.77	3.14	4.91	7.07	9.62	12.57	15.90	19.63	28.27
Max. Q (cfs)	21	38	59	85	115	151	191	236	339
W	5' - 6"	6' - 9"	8' - 0"	9' - 3"	10' - 6"	11' - 9"	13' - 0"	14' - 3"	16' - 6"
H	4' - 3"	5' - 3"	6' - 3"	7' - 3"	8' - 0"	9' - 0"	9' - 9"	10' - 9"	12' - 3"
L	7' - 4"	9' - 0"	10' - 8"	12' - 4"	14' - 0"	15' - 8"	17' - 4"	19' - 0"	22' - 0"
a	3' - 3"	3' - 11"	4' - 7"	5' - 3"	6' - 0"	6' - 9"	7' - 4"	8' - 0"	9' - 3"
b	4' - 1"	5' - 1"	6' - 1"	7' - 1"	8' - 0"	8' - 11"	10' - 0"	11' - 0"	12' - 9"
c	2' - 4"	2' - 10"	3' - 4"	3' - 10"	4' - 5"	4' - 11"	5' - 5"	5' - 11"	6' - 11"
d	0' - 11"	1' - 2"	1' - 4"	1' - 7"	1' - 9"	2' - 0"	2' - 2"	2' - 5"	2' - 9"
e	0' - 6"	0' - 6"	0' - 8"	0' - 8"	0' - 10"	0' - 10"	1' - 0"	1' - 0"	1' - 3"
f	1' - 6"	2' - 0"	2' - 6"	3' - 0"	3' - 0"	3' - 0"	3' - 0"	3' - 0"	3' - 0"
g	2' - 1"	2' - 6"	3' - 0"	3' - 6"	3' - 11"	4' - 5"	4' - 11"	5' - 4"	6' - 2"
Tf	8"		10"		12"				
Tb	7"		9 1/2"		10 1/2"				
Tw	7"		9 1/2"		10 1/2"				
Ta	7"				8"				

Revision	By	Approved	Date
Note 9	SC	D.S.	7-79
Conc.	SC	M.B.	5-86

SAN DIEGO REGIONAL STANDARD DRAWING

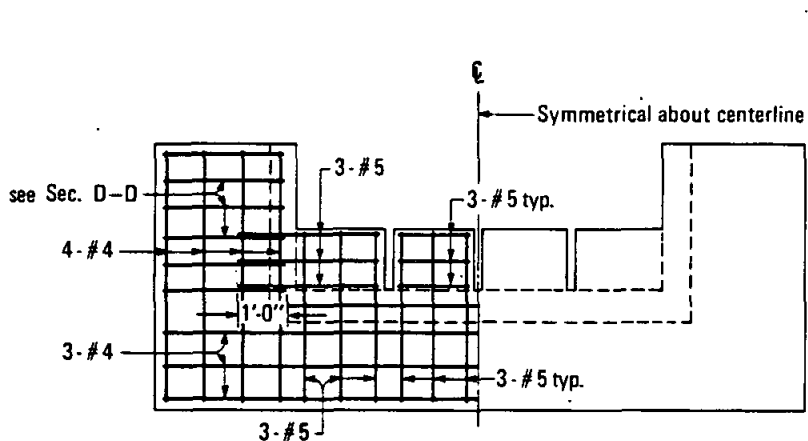
CONCRETE ENERGY DISSIPATOR

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

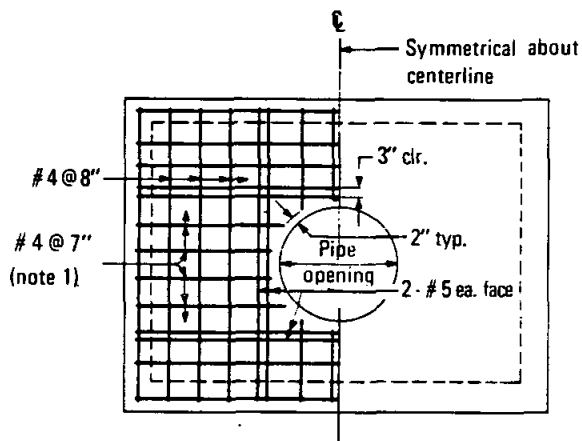
Alfred A. Kerschbaum Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER

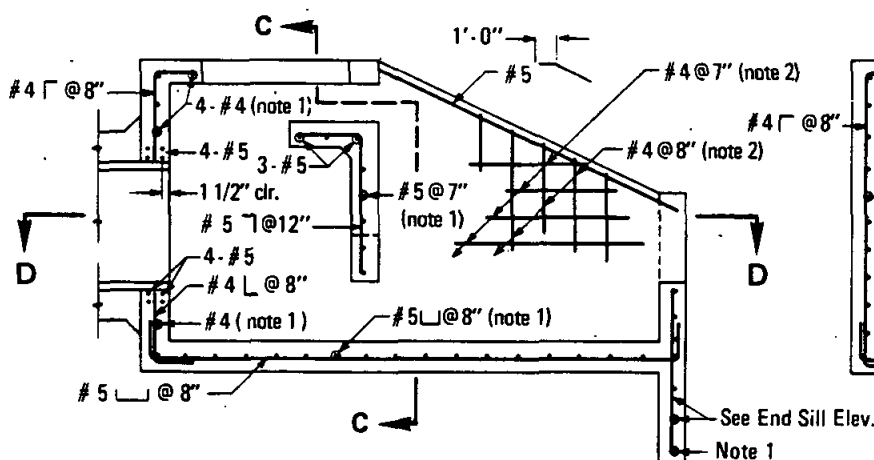
D-41



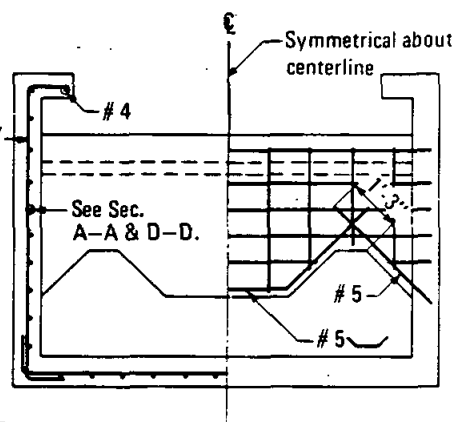
END SILL ELEVATION



HEADWALL ELEVATION



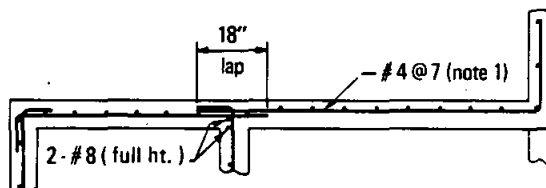
SECTION A-A



SECTION C-C

NOTES

1. Place reinforcing, as noted, at center wall (or slab).
2. Match location of reinforcing with that in headwall, end sill and foundation slab.
3. All reinforcing shall be placed with 2" concrete cover, unless noted otherwise.



SECTION D-D

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

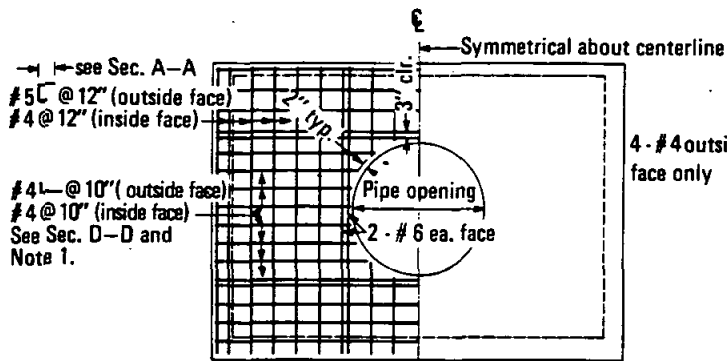
Allen A. Kuehnel Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **D-42**

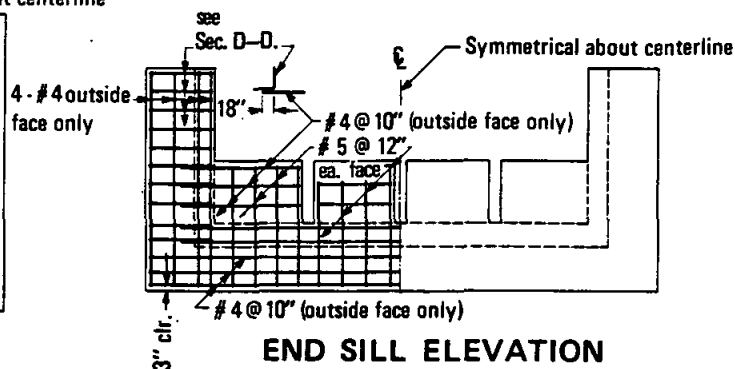
SAN DIEGO REGIONAL STANDARD DRAWING

**CONCRETE ENERGY DISSIPATOR
(REINFORCEMENT)
18" TO 30" DIAMETER PIPE**

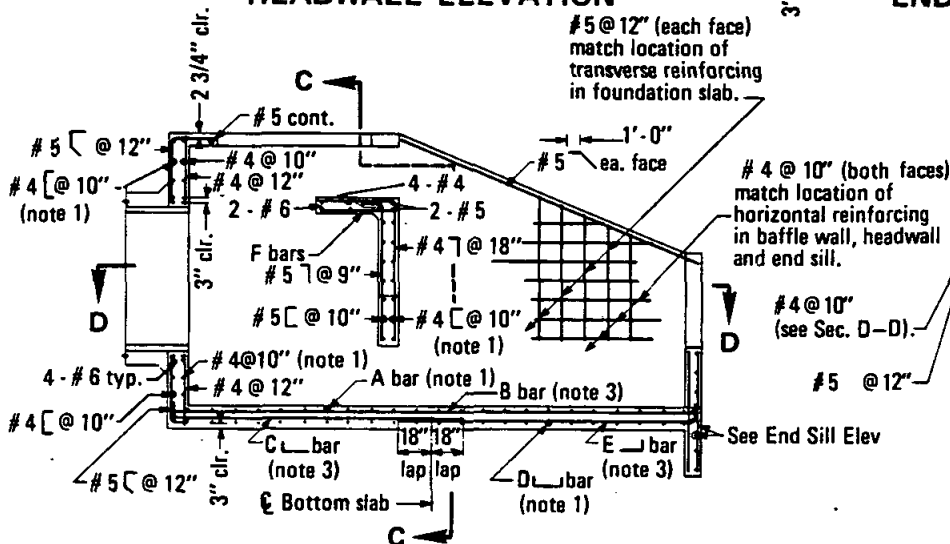
Revision	By	Approved	Date



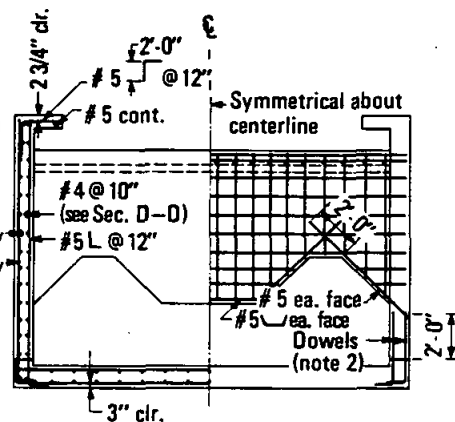
HEADWALL ELEVATION



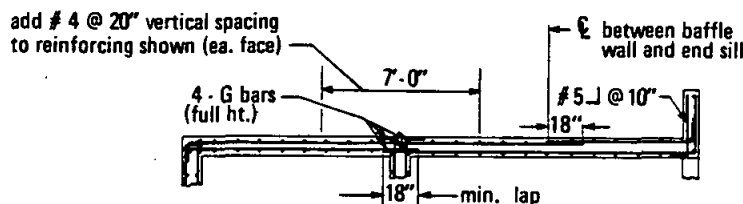
END SILL ELEVATION



SECTION A-A



SECTION C-C



SECTION D-D

NOTES

1. Match location of sidewall reinforcing.
2. Dowels having same size and spacing as wall reinforcing may be used in lieu of continuous bars at contractors option.
3. Match location of headwall or end sill reinforcing.

Pipe dia. (in.)	36	42	48	54	60	72
A bar	# 5 @ 12"	# 6 @ 12"	# 7 @ 12"			
B bar	# 5 @ 12"	# 6 @ 12"				
C bar	# 4 @ 12"	# 5 @ 12"				
D bar	# 4 @ 12"	# 5 @ 12"	# 6 @ 12"			
E bar	# 4 @ 12"	# 5 @ 12"				
F bar	# 4 @ 9"	# 5 @ 9"	# 6 @ 9"			
G bar		# 7			# 11	

Revision	By	Approved	Date

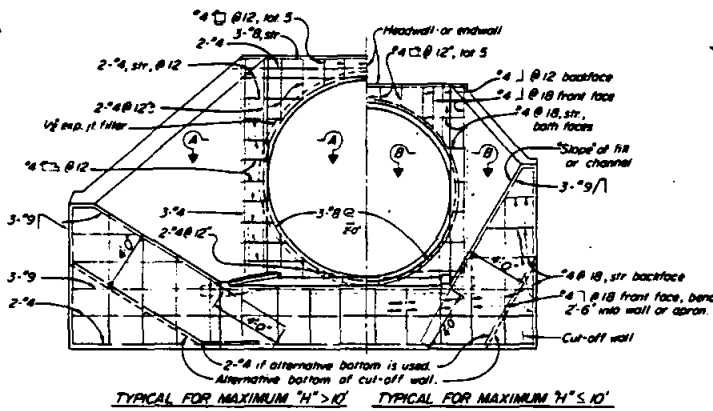
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE ENERGY DISSIPATOR
 (REINFORCEMENT)
 36" TO 72" DIAMETER PIPE

RECOMMENDED BY THE SAN DIEGO
 REGIONAL STANDARDS COMMITTEE

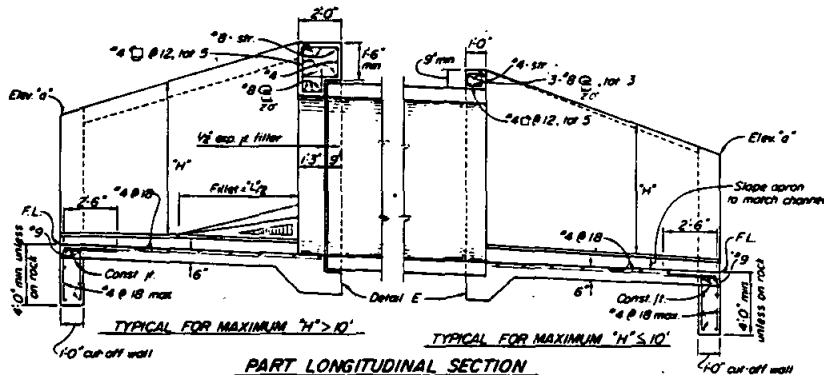
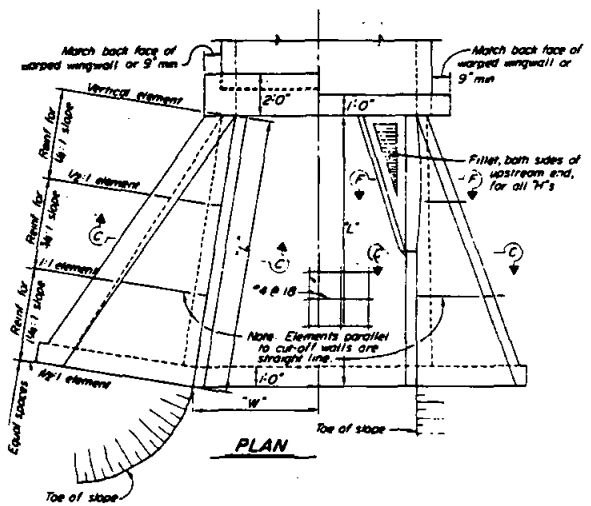
Allan A. Kuehnel Dec. 1975
 Coordinator R.C.E. 19807 Date

DRAWING
 NUMBER D-43

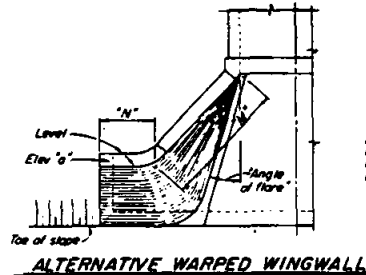
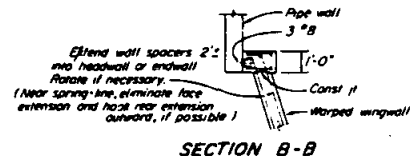
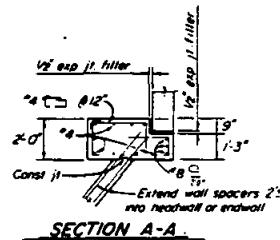


END ELEVATION

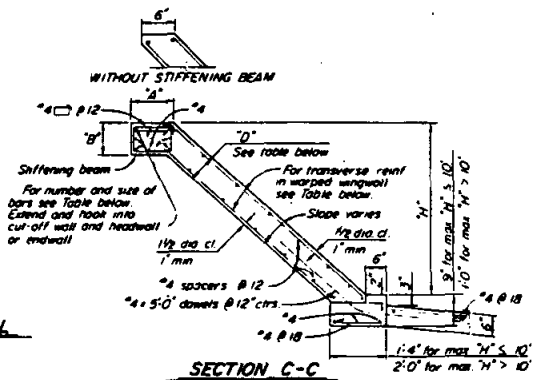
If at upstream end, fillet is not shown



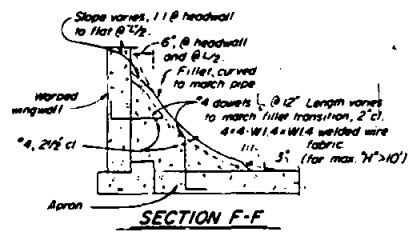
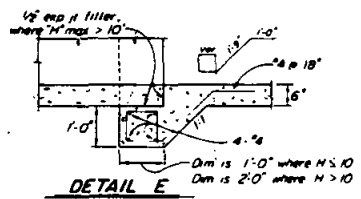
Note: R.C.P. shown. Metal pipe similar except eliminate the expansion joint and use hook bolts @ 15' spacing. Size and length provided by manufacturer.



Use where additional protection to toe of embankment is required. If at upstream end, fillet is not shown.



Where abrasion is anticipated, increase apron thickness to 7" min to provide 2" min reinforcement coverage



		WALL DIMENSIONS AND REINFORCING										STIFFENING BEAM DIMENSIONS AND REINFORCING									
Element	Slope	"H"	8' or less	10'	12'	14'	16'	18'	20'	24'	30'	36'	42'	48'	54'	60'	66'	72'	78'	84'	90'
16:1	Front face reinf.	"4 @ 12"	"4 @ 12"	"5 @ 7"	"5 @ 5"	"6 @ 6"	"7 @ 7"	"7 @ 6"	"8 @ 8"	"8 @ 12"	"8 @ 12"	"8 @ 12"	"8 @ 12"	"8 @ 12"	"8 @ 12"	"8 @ 12"	"8 @ 12"	"8 @ 12"	"8 @ 12"	"8 @ 12"	"8 @ 12"
	Rear face reinf.	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"
36:1	Front face reinf.	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"
	Rear face reinf.	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"
14:1	Front face reinf.	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"
	Rear face reinf.	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"	"4 @ 12"
10' at Cut-off Wall		"4 @ 8"	"4 @ 8"	"4 @ 8"	"4 @ 8"	"4 @ 8"	"4 @ 8"	"4 @ 8"	"4 @ 8"	"4 @ 8"	"4 @ 8"	"4 @ 8"	"4 @ 8"	"4 @ 8"	"4 @ 8"	"4 @ 8"	"4 @ 8"	"4 @ 8"	"4 @ 8"	"4 @ 8"	"4 @ 8"
10' at Headwall/Endwall		"6"	"6"	"6"	"6"	"6"	"6"	"6"	"6"	"6"	"6"	"6"	"6"	"6"	"6"	"6"	"6"	"6"	"6"	"6"	"6"

Notes: Walls designed for 2' surcharge; earth load = 120'cu ft; equivalent fluid pressure = 35'cu ft. Vary "D" at warped wall uniformly from that at cut-off wall to that at headwall or endwall, for max "H" > 12'. Dimensions "L", "W", "H", "N", "Elev. a", Angle of flare, and end "Slope" (as apply) are shown on the plans.

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Allen A. Kuehnel Dec. 1975
Coordinator R.C.E. 19807 Date

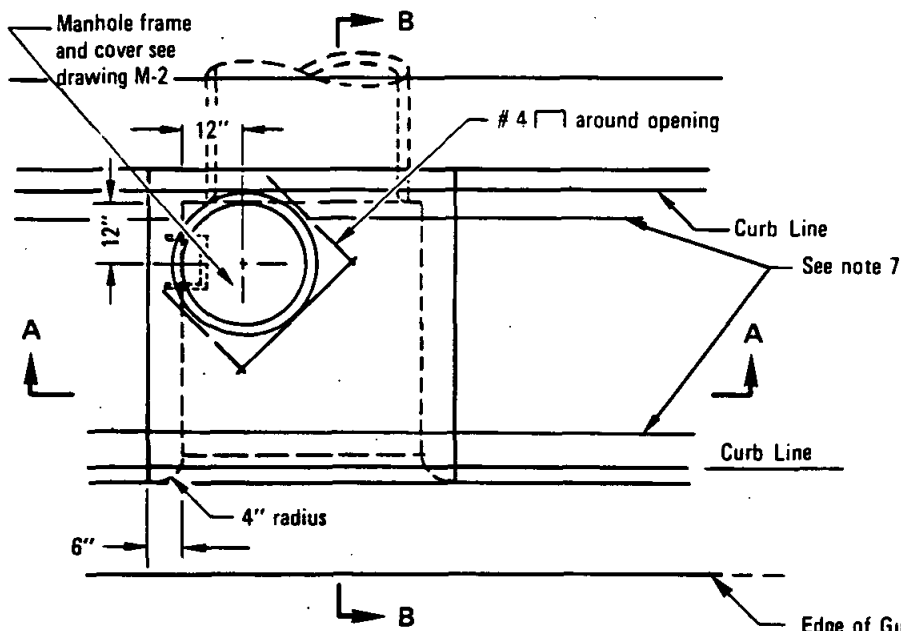
DRAWING NUMBER D-44

SAN DIEGO REGIONAL STANDARD DRAWING

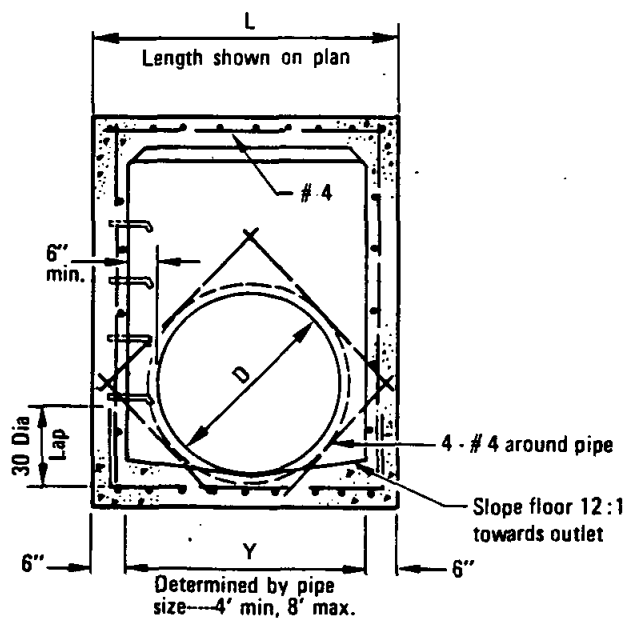
PIPE CULVERT-HEADWALLS, ENDWALLS & WARPED WINGWALLS

Revision By Approved Date

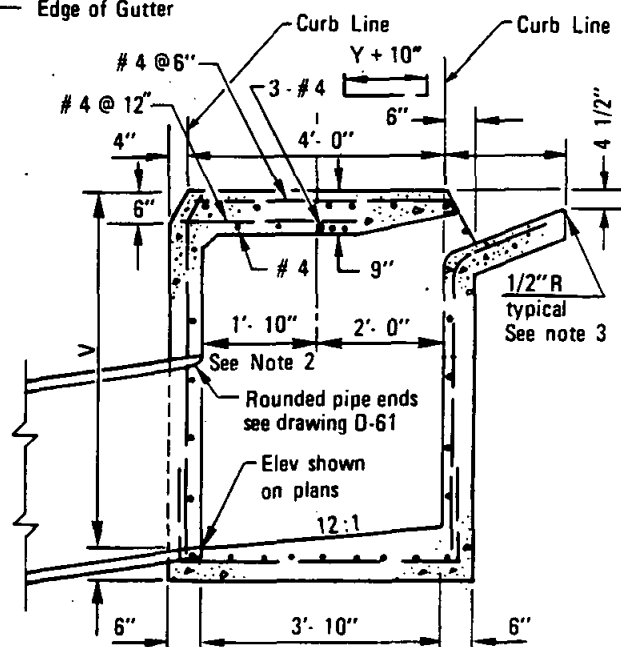
Revision	By	Approved	Date



PLAN



SECTION A-A



SECTION B-B

NOTES:

1. See Standard Drawings D-11 & D-12 for additional notes and details.
2. Dimension shown becomes 2'-0" when opening on both sides. Adjust manhole as required.
3. Exposed edges of concrete shall be rounded with a radius of 1/2".
4. When V exceeds 4' steps shall be installed. See Standard Drawing D-11 for details.
5. Concrete gutter to match adjacent gutters.
6. An expansion joint shall be placed at the ends of the inlet where the curb is to adjoin.
7. Provide 1/4" tooled groove in top slab in line with back of adjacent curb.
8. Maintain 1 1/2" clear spacing between reinforcing and surface unless otherwise noted.

LEGEND ON PLANS

4' Type J Inlet



Revision	Approved	Date
Rebar	MC	5-86

SAN DIEGO REGIONAL STANDARD DRAWING

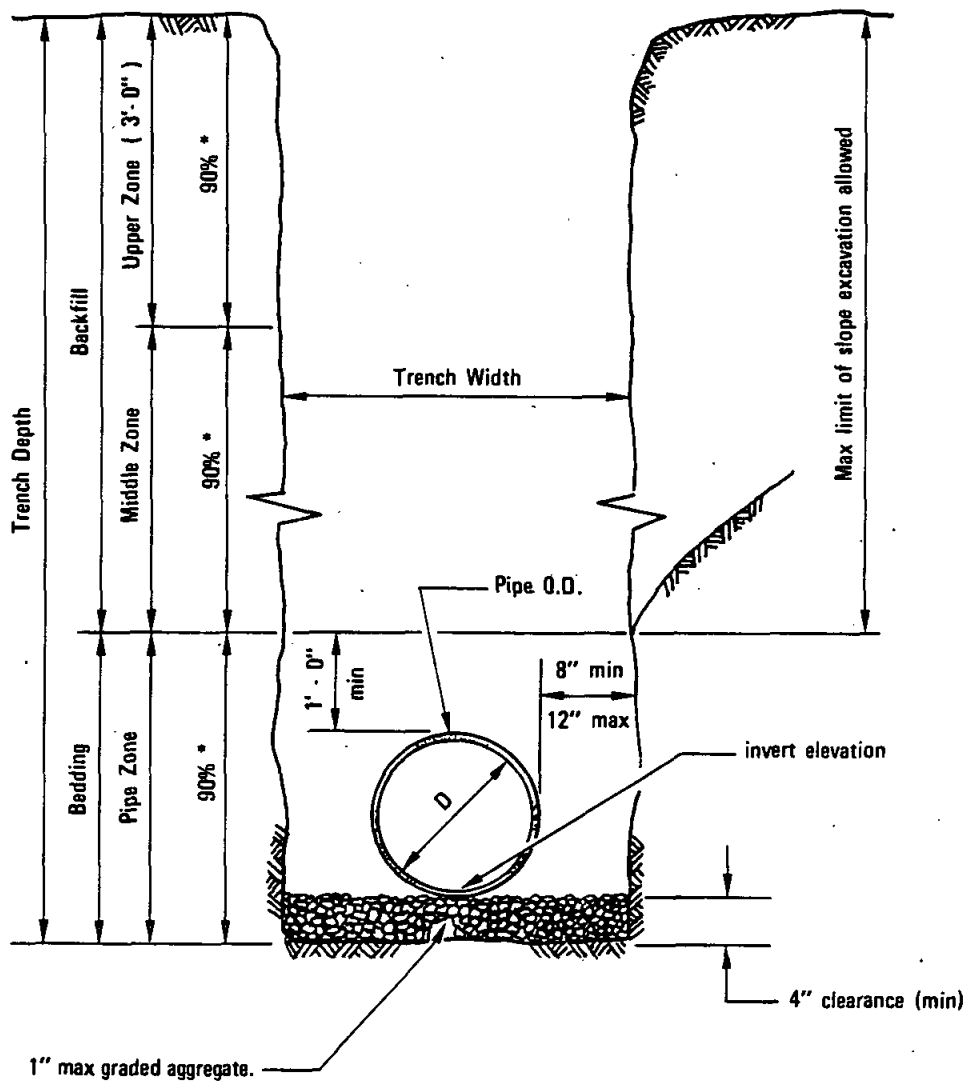
CURB INLET-TYPE J MEDIAN

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Harry R. Holt Oct 1992
Chairman R.C.E. C13768 Date

DRAWING NUMBER

D-45



SECTION

NOTES

1. For trenching on improved streets see Standard Drawing G-24 or G-25 for resurfacing details.
2. (*) indicates minimum relative compaction.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

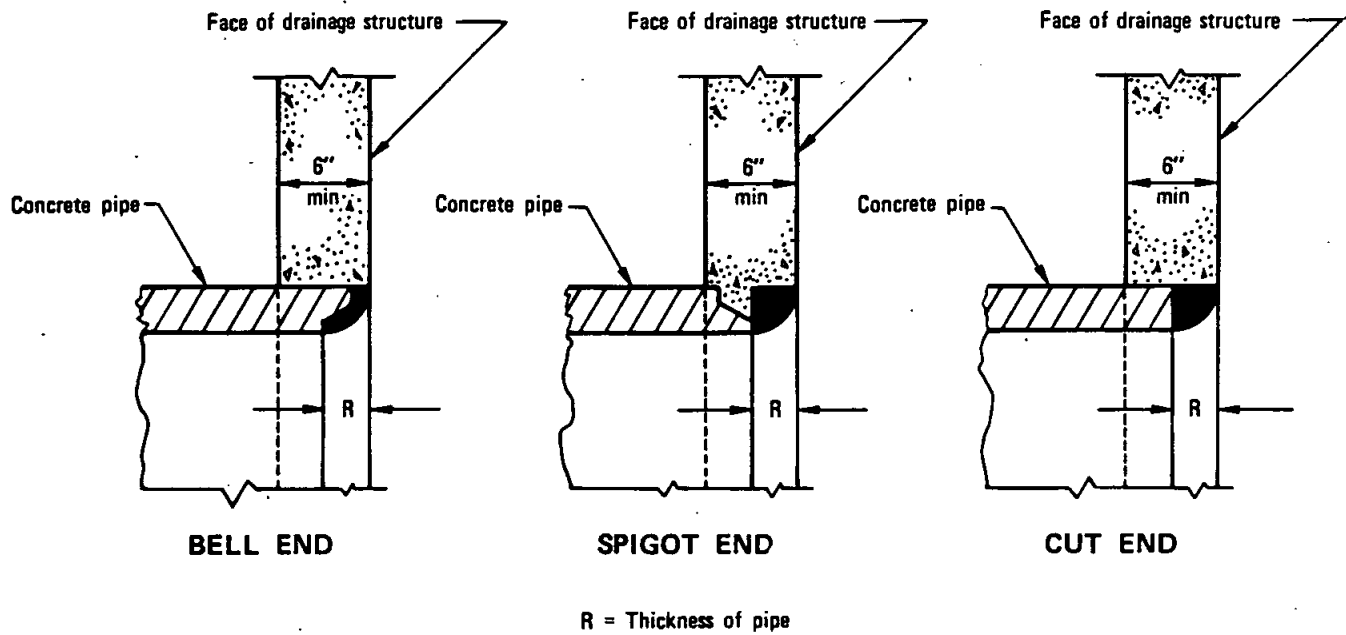
Clifford A. Kuehn Dec. 1975
Coordinator H.C.E. 19807 Date

DRAWING
NUMBER **D-60**

SAN DIEGO REGIONAL STANDARD DRAWING

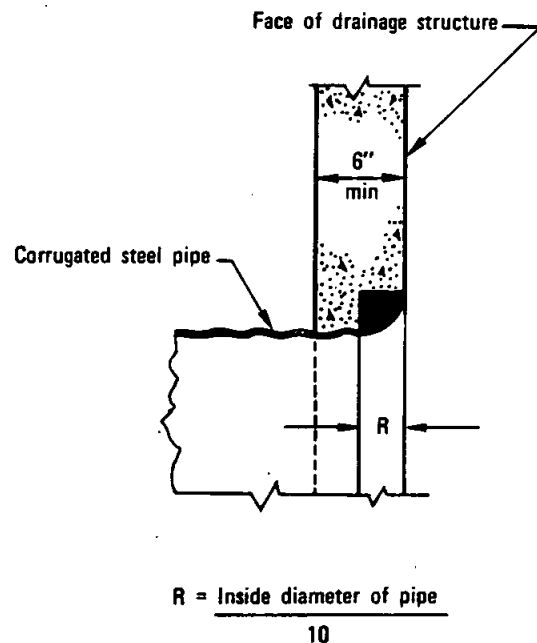
PIPE BEDDING AND TRENCH BACKFILL FOR STORM DRAINS

Revision	By	Approved	Date
Reference	TRP	M.B.	10-82
Compac.	SC	M.B.	5-86

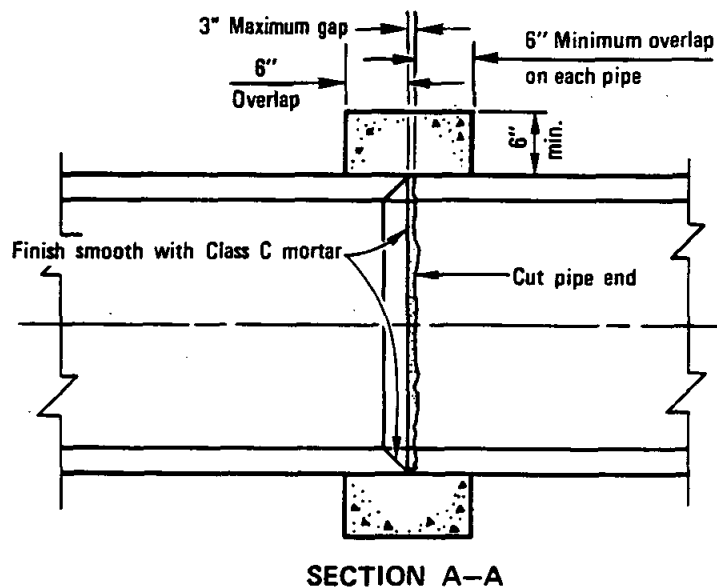
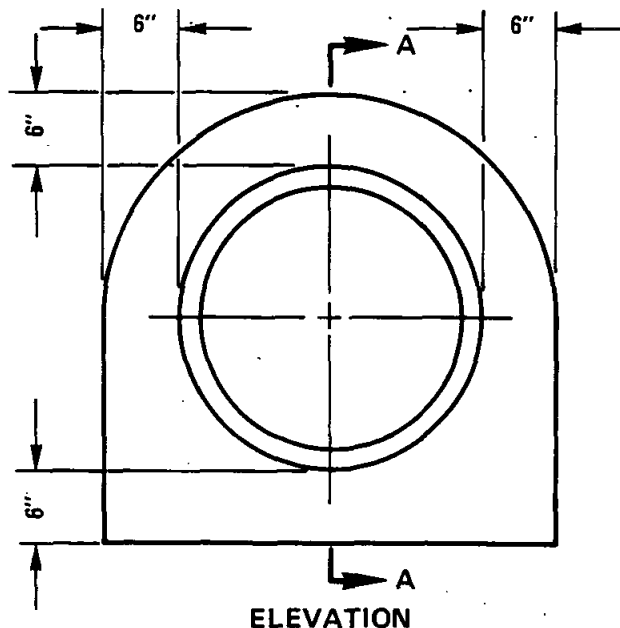


NOTE

The rounded areas may be built up of cement mortar or poured in place with the drainage structure.



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Note	3c	D.S.	7-79			<i>Allan O. Kershner</i>	Dec. 1975
				ROUNDED PIPE ENDS IN DRAINAGE STRUCTURES		Coordinator R.C.E. 19807	Date
						DRAWING NUMBER	D-61



NOTES:

1. Pipe collar does not have to be finished if covered.
2. Concrete shall be 560-C-3250.
3. Where gap exceeds 3" but is not more than 6" an internal form shall be used.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

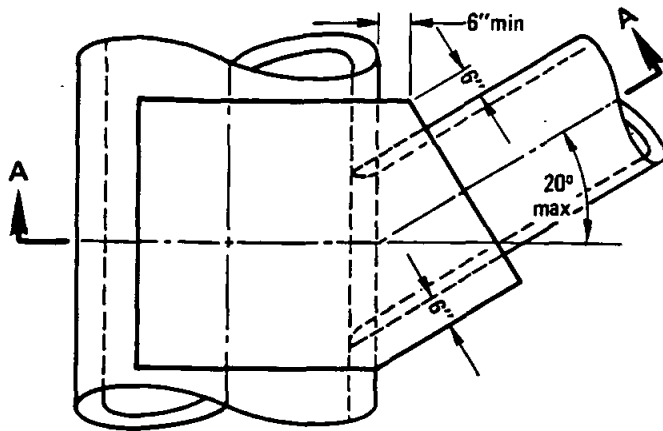
Allan O. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

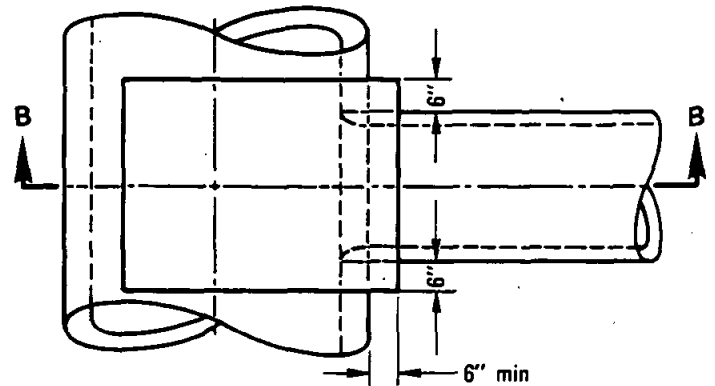
**DRAWING
NUMBER D-62**

PIPE COLLAR

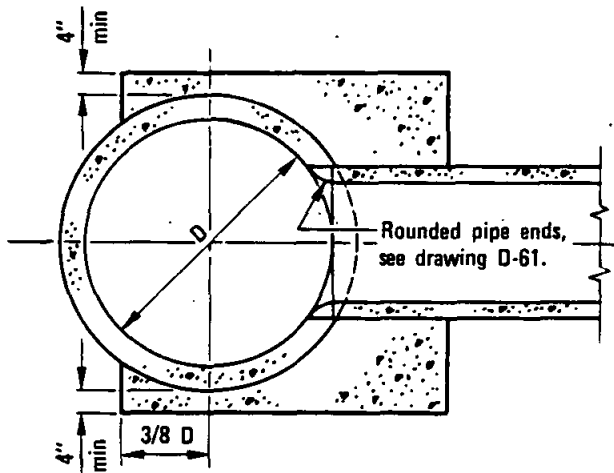
Revision	By	Approved	Date
Conc.	<i>SC</i>	<i>M.B.</i>	<i>5-86</i>
Overlap	<i>SC</i>	<i>A.H.</i>	<i>7-88</i>
Note 3	<i>JP</i>	<i>J.R.</i>	<i>5-92</i>



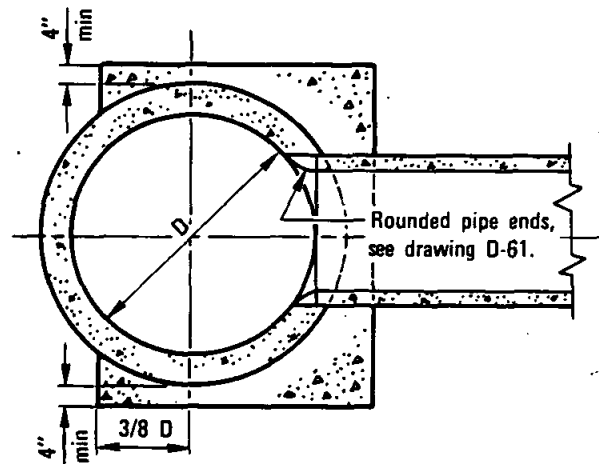
PLAN
SKEWED CONNECTION



PLAN



SECTION A-A



SECTION B-B

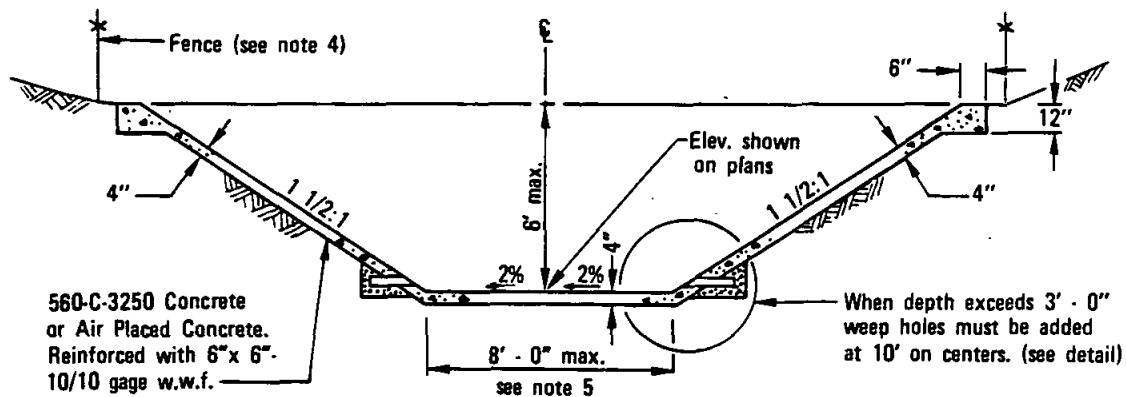
NOTES

1. The end of connecting pipe shall not project into the waterway of the larger pipe.
2. The larger pipe shall not be less than 24" I.D.
3. The smaller pipe shall not be more than 2/3 the size of the larger pipe.
4. Concrete shall be 470 - C - 2000.

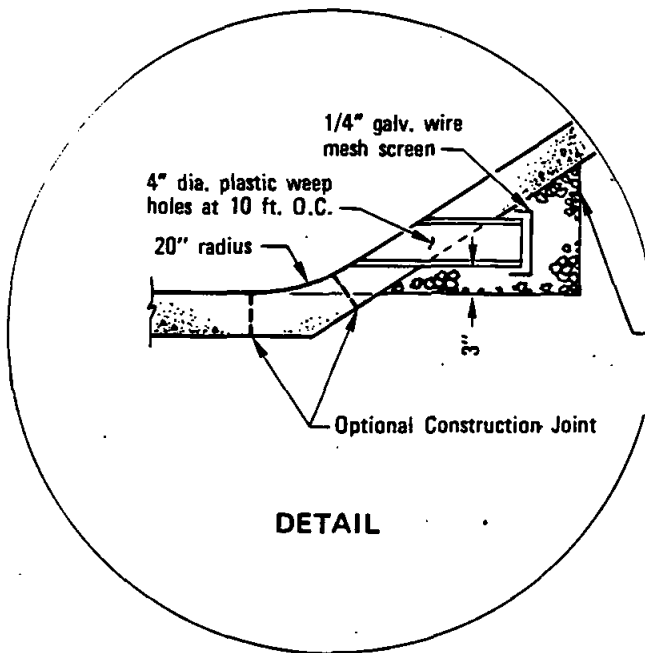
LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
				CONCRETE LUG		<i>Alfred A. Kuehn</i>	<i>Dec. 1975</i>
						Coordinator	R.C.E. 19807
							Date
						DRAWING NUMBER	D-63

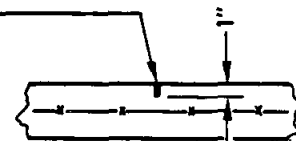


TYPICAL SECTION

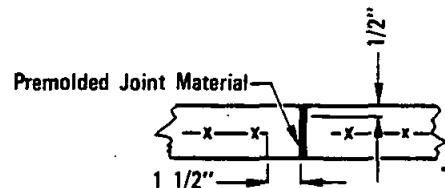


DETAIL

3/16" premolded joint material or
1/8" sawed joint.



WEAKENED PLANE JOINT



EXPANSION JOINT

NOTES

1. A.C. or clay pipe may be substituted for plastic pipe at weep holes.
2. Weakened plane joints shall be placed every 12' to 15'. Expansion joints shall be placed at all changes of section and at ends of curves.
3. Cutoff walls shall be constructed at each end of the channel along the full width of section. See Standard Drawing D-72.
4. Chainlink fence shall be as required by Agency.
5. For bottom widths greater than 8 feet see Standard Drawing D-71.
6. Reinforcement shown is minimum.

LEGEND ON PLANS

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Edward A. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **D-70**

SAN DIEGO REGIONAL STANDARD DRAWING

MINOR DRAINAGE CHANNEL

Revision	By	Approved	Date
Conc.	<i>M.B.</i>	<i>M.B.</i>	5-86



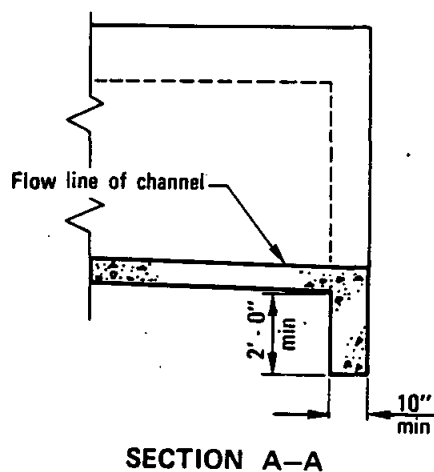
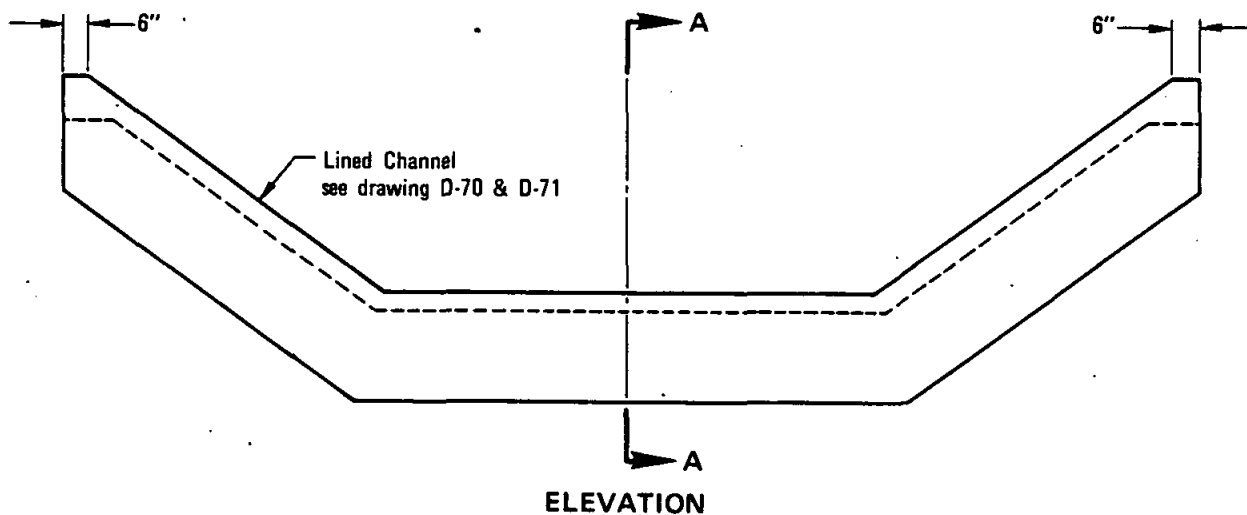
1. A.C. or clay pipe may be substituted for plastic pipe at weep holes.
2. Weakened plane joints shall be placed every 12' to 15'. Expansion joints shall be placed at all changes of section and at ends of curves.
3. Cutoff walls shall be constructed at each end of the channel along the full width of section. See Standard Drawing D-72.
4. Chainlink fence shall be as required by Agency.
5. Reinforcement shown is minimum.

~~_____~~
~~_____~~
~~_____~~

Revision	By	Approved	Date
Conc.	<i>PC</i>	<i>M.B.</i>	<i>5-96</i>

MAJOR DRAINAGE CHANNEL

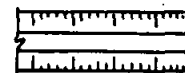
**DRAWING
NUMBER** **D-71**



NOTES

1. Thickness and wall depth shall be as shown on plan.
2. Reinforcing in cutoff wall shall be the same as that required in channel.
3. Concrete shall be 560-C-3250

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

William O. Kuehnel Dec. 1975
Coordinator R.C.E. 19807 Date

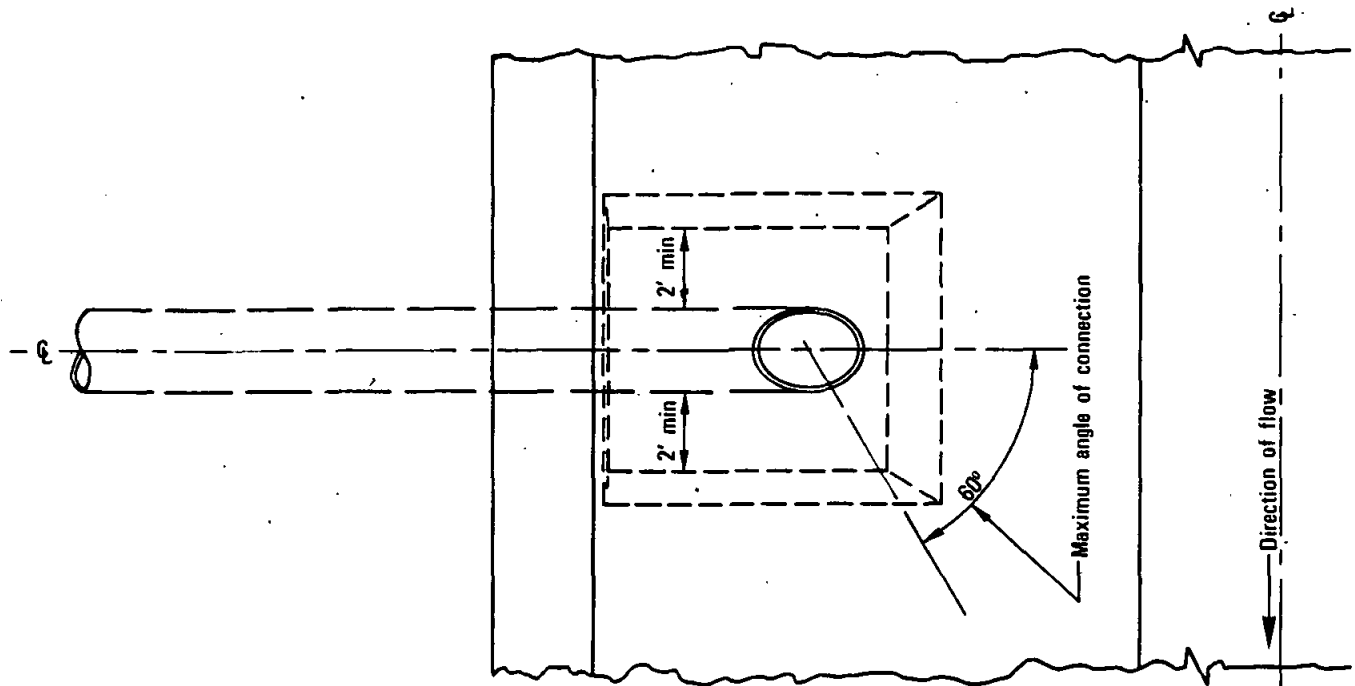
SAN DIEGO REGIONAL STANDARD DRAWING

CUTOFF WALL FOR DRAINAGE CHANNEL

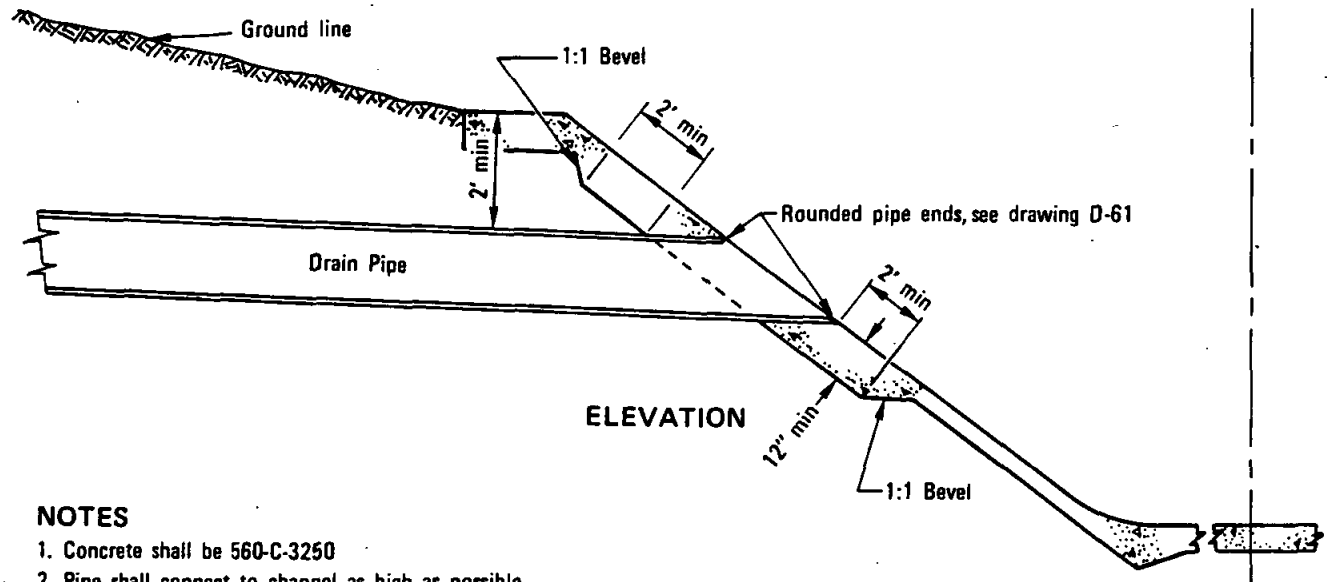
DRAWING
NUMBER

D-72

Revision	By	Approved	Date
Conc.	RC	M.B.	5-86



PLAN



ELEVATION

NOTES

1. Concrete shall be 560-C-3250
2. Pipe shall connect to channel as high as possible.
3. The maximum angle of connection is 60° downstream.
In no case shall a pipe angle upstream.

LEGEND ON PLANS



Revision	By	Approved	Date
Conc.	SC	M.B.	5-26

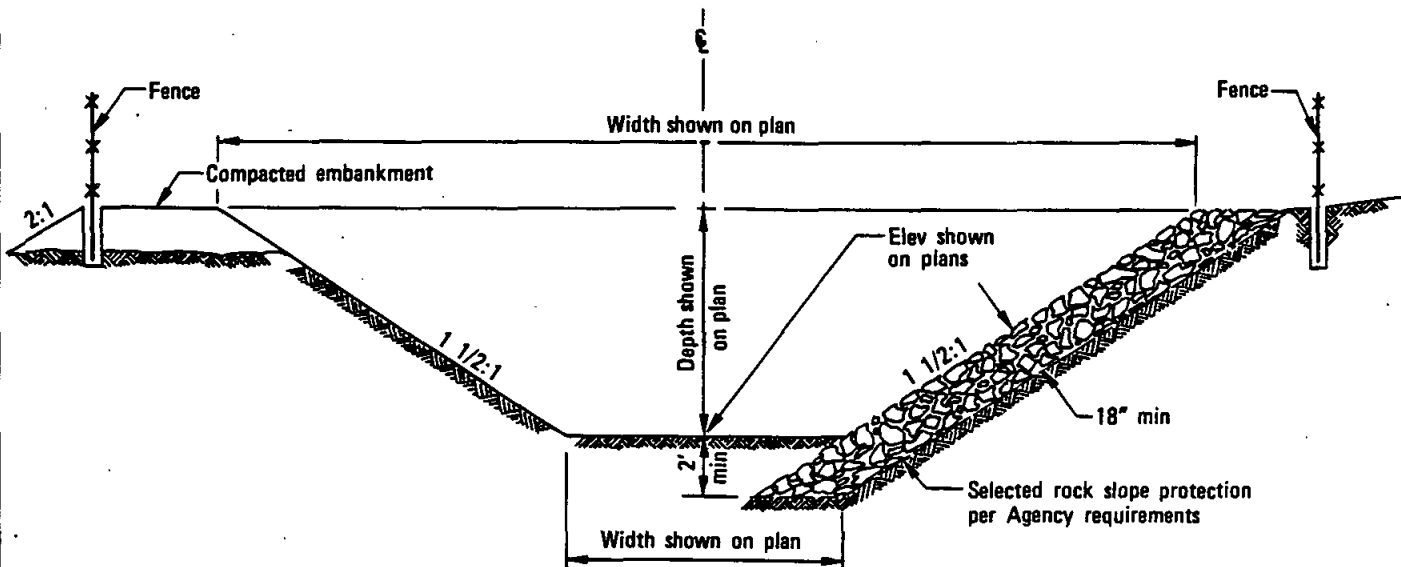
SAN DIEGO REGIONAL STANDARD DRAWING

PIPE TO CHANNEL CONNECTION

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen A. Kuehn *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **D-73**



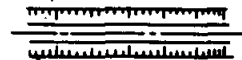
TYPICAL SECTION

NOTE

The following shall be as required by Agency:

- a) Low flow channel
- b) Filter blanket
- c) Cutoff wall
- d) Fence

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen O. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

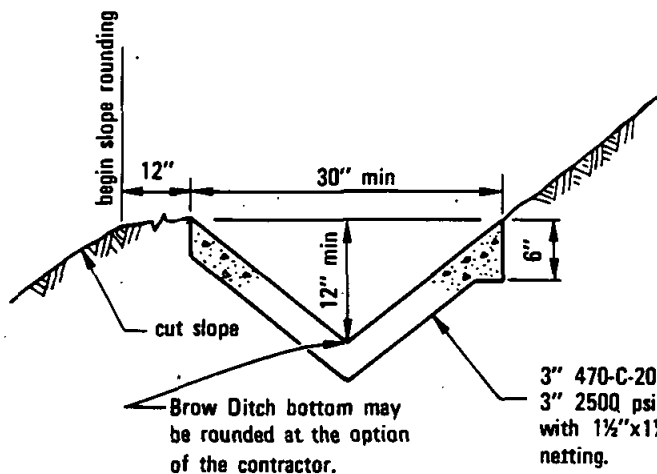
SAN DIEGO REGIONAL STANDARD DRAWING

GRADED EARTH CHANNEL

DRAWING
NUMBER

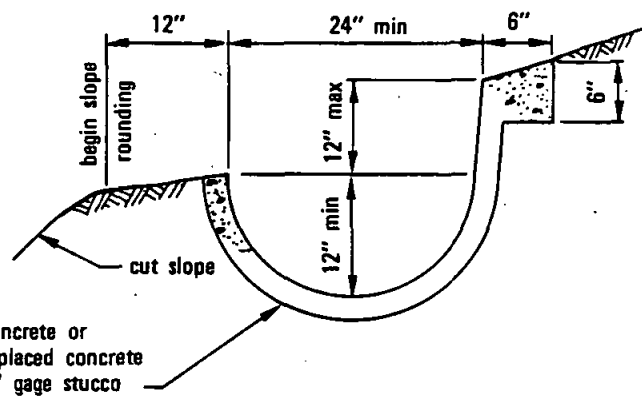
D-74

Revision	By	Approved	Date

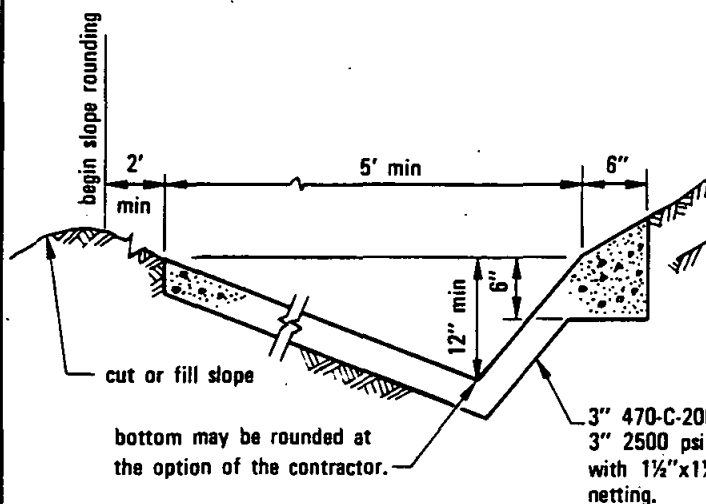


TYPE A

BROW DITCH

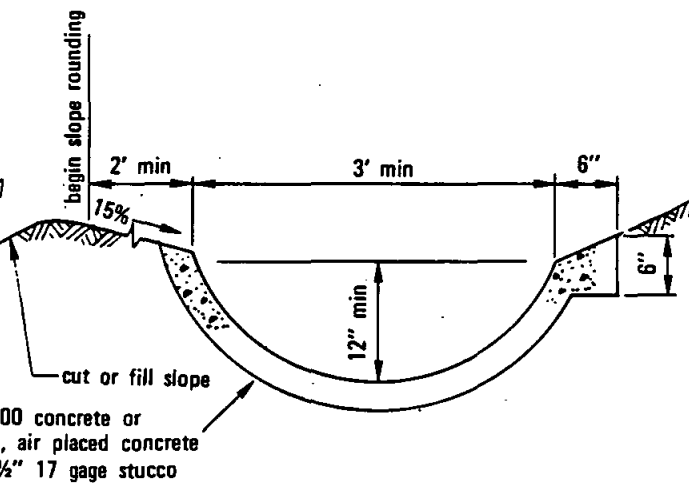


TYPE B



TYPE C

TERRACE DITCH



TYPE D

NOTES

1. Longitudinal slope of lined ditch shall be 2% minimum.
2. Over slope down ditches shall employ 6" thickened edge section at both sides of ditch.

LEGEND ON PLANS



Revision	By	Approved	Date
Ditch type	SC	D.S.	7-77
A.P.C.	TR	M.B.	10-82
B height	SC	A.H.	7-80

SAN DIEGO REGIONAL STANDARD DRAWING

DRAINAGE DITCHES

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan A. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **D-75**

**SINGLE BOX CULVERT
DETAILS NO. 1**

SAN DIEGO REGIONAL STANDARD DRAWING

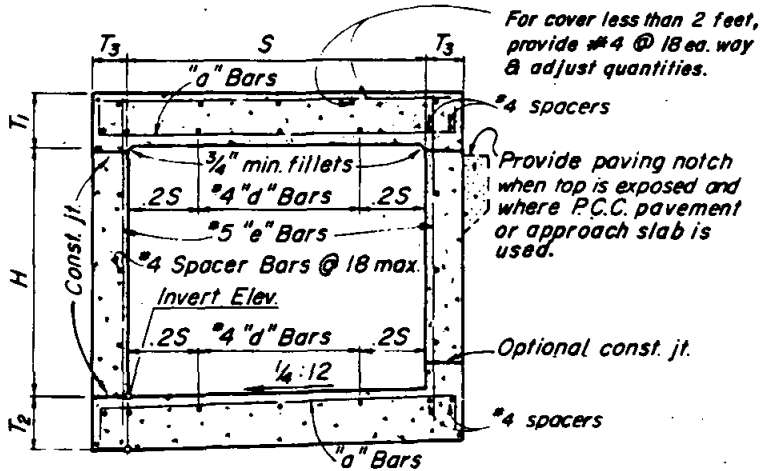
Revision	By	Approved	Date
Enlarged	22	DA	8-88

	SPAN		2'		3'		4'				5'								6'																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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MAX FILL OVER TOP		66	38	38	66	20	20	37	20	37	50	12	27	12	27	11	25	35	46	11	25	35	46	10	18	10	18	10	18	25	9	18	25	36	9	17	25	36	45	9	17	25	36	45																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Can Reinforcing Steel Conc.	Top Slab	T ₁	6	6	6 1/4	6 1/4	8	7	7	8	9	7 1/2	8	7 1/2	8	7 1/2	8	9 1/4	10 1/4	7 1/2	8	9 1/4	10 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1

[illegible]

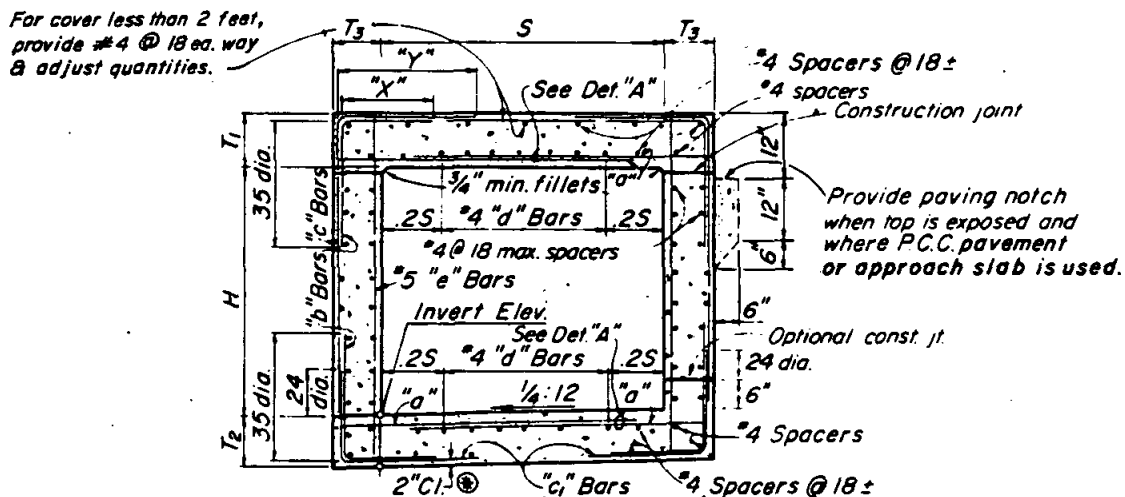
		SPAN				12'												
		HEIGHT				6'		7'		8'		9'		10'		12'		
STRENGTH CLASSIFICATION		A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	
MAX. FILL OVER TOP		3	16	5	16	5	16	5	16	24	5	16	24	5	16	24	5	
Cont.	Top Slab	T ₁	8 1/4	11 1/4	8 1/4	11 1/4	8 1/4	11 1/4	9	11 1/4	13 1/4	9	11 1/4	13 1/4	9	11 1/4	13 1/4	
	Bottom Slab	T ₂	8 1/4	12 1/4	8 1/4	12 1/4	8 1/4	12 1/4	9	12 1/4	14 1/4	9	12 1/4	14 1/4	9	12 1/4	14 1/4	
	Side walls	T ₃	7 1/2	10 1/2	7 1/2	10 1/2	7 1/2	10 1/2	8	10 1/2	12 1/2	8	10 1/2	12 1/2	8	10 1/2	12 1/2	
Reinforcing Steel	"a"	Size: Bar	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7
		Spacing	11	10	11	10	11	10	11	10	8	11	10	8	11	10	8	11
		Length	11-3	11-6	11-3	11-6	11-3	11-6	11-3	11-6	11-8	11-3	11-6	11-8	11-3	11-6	11-8	11-3
	"b"	Size: Bar	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7
		Spacing	11	10	11	10	11	10	11	10	8	11	10	8	11	10	8	11
		Dimension "x"	2-8	3-0	2-8	3-0	2-8	3-0	2-8	3-0	2-8	3-0	2-8	3-0	2-8	3-0	2-8	3-0
	"c"	Length	4-10	5-7	4-10	5-7	4-10	5-7	4-10	5-7	4-10	5-7	4-10	5-7	4-10	5-7	4-10	5-7
		Size: Bar	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7
		Spacing	11	10	11	10	11	10	11	10	8	11	10	8	11	10	8	11
	"c ₁ "	Dimension "y"	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9
		Length	10-2	10-4	11-2	11-4	12-2	12-4	13-2	13-4	13-6	14-2	14-4	14-6	16-2	16-4	16-6	16-8
		Size: Bar	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7
"d"	Spacing	11	10	11	10	11	10	11	10	8	11	10	8	11	10	8	11	
	Dimension "y"	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	3-9	
	Length	5-11	6-3	5-11	6-3	5-11	6-3	5-11	6-3	5-11	6-3	5-11	6-3	5-11	6-3	5-11	6-3	
Bars	Top Slab - No of	10	6	10	6	10	6	10	6	6	10	6	10	6	10	6	10	
	Bottom Slab - No of	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
	Spacing	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	
Quant.	Spacers/Total Number	36	44	44	44	44	44	44	44	44	44	48	48	48	48	52	52	
	Concrete - CY per lin. ft.	99	139	103	144	108	152	116	158	150	190	130	165	158	141	178	213	
	Reinft. - lbs. per lin. ft.	205	293	213	304	218	311	223	317	387	521	326	597	243	341	413	413	

For boxes of height less than that shown in table, use next greater table height slabs, wall dimensions and reinforcing steel, and make necessary changes in bar lengths, number of spacers and quantities.

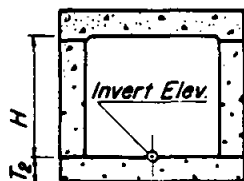


© For reinforcement clearance, except at bottom, see "Miscellaneous Details."

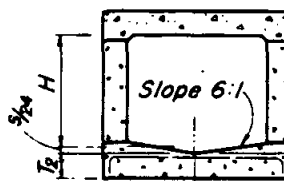
TYPICAL SECTIONS 2' THRU 6' SPANS



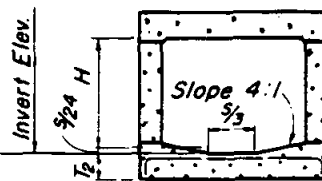
TYPICAL SECTION 7' THRU 12' SPANS



FLAT INVERT



V INVERT



TRAPEZOIDAL INVERT

ALTERNATIVE INVERTS

(When shown)

Revision	By	Approved	Date
Enlarged	32 AH		8-88

SAN DIEGO REGIONAL STANDARD DRAWING

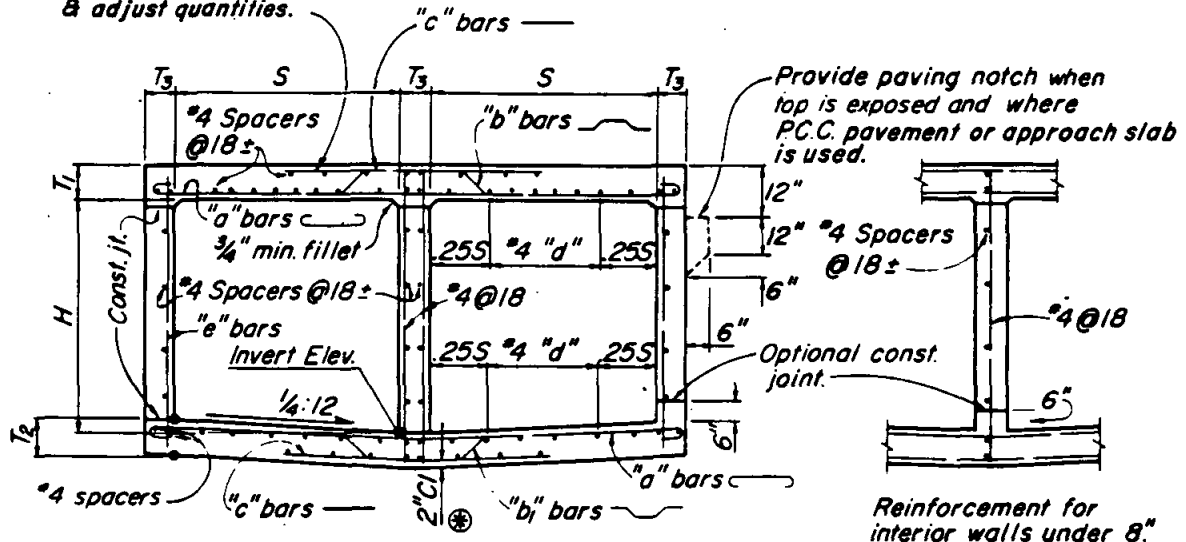
**SINGLE BOX CULVERT
DETAILS NO. 2**

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen A. Kuehner Dec. 1975
Coordinator R.C.E. 19807 Date

**DRAWING
NUMBER D-76B**

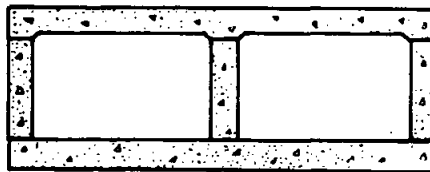
For cover less than 2 feet,
provide #4 @ 18 ea. way.
& adjust quantities.



TYPICAL SECTION

(Showing reinforcement for interior walls 8" and over.)

⊕ For reinforcement clearance, except
at bottom, see "Miscellaneous Details."



"FLAT INVERT" ALTERNATIVE

(When shown)

Revision	By	Approved	Date
Enlarge	sc	Q.H.	9/88

SAN DIEGO REGIONAL STANDARD DRAWING

DOUBLE BOX CULVERT DETAILS NO. 2

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen D. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

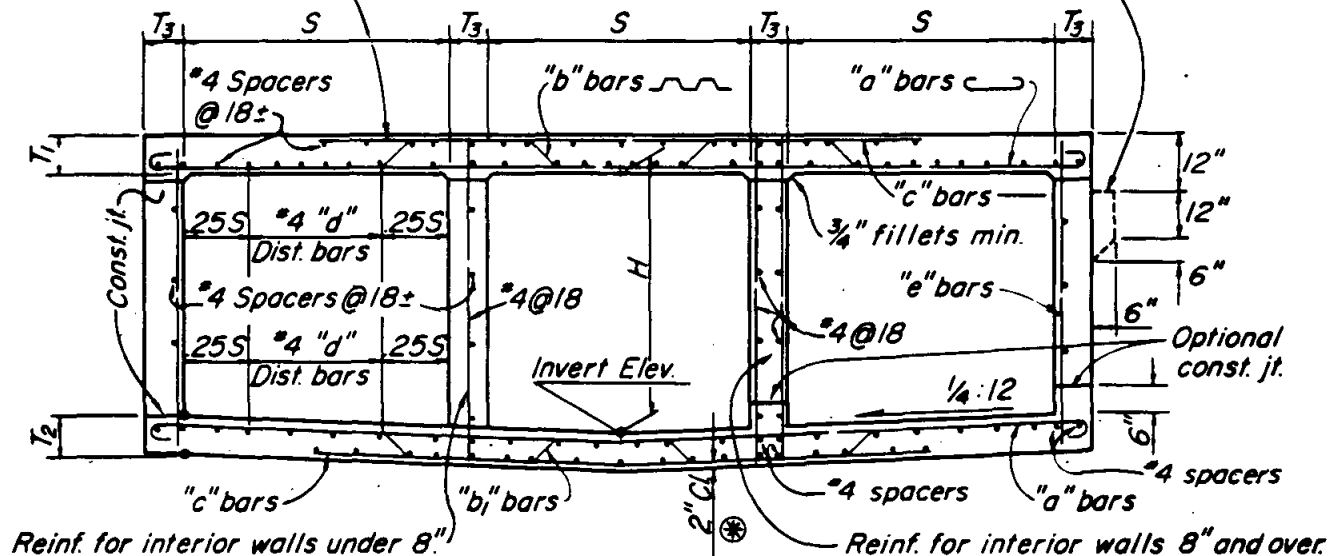
DRAWING
NUMBER **D-77B**

[illegible]

Enlarge		Q.H.	9-88

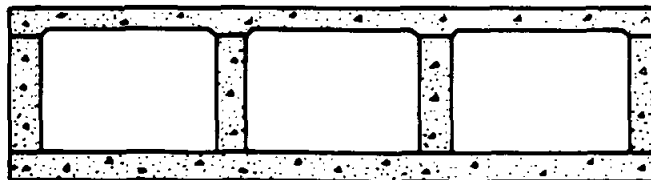
For cover less than 2 feet, extend "c" bars full length, top slab only. Provide additional #4 spacers @ 18"± and adjust quantities.

Provide paving notch when top is exposed and where P.C.C. pavement or approach slab is used.



TYPICAL SECTION

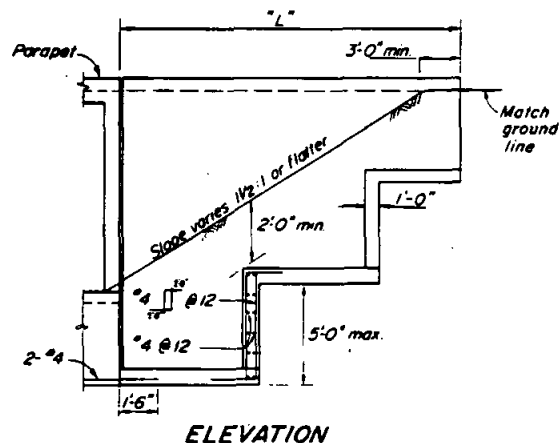
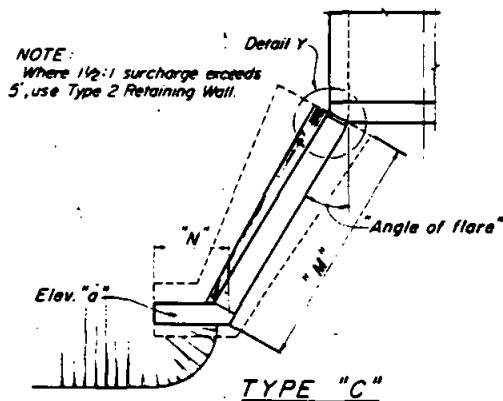
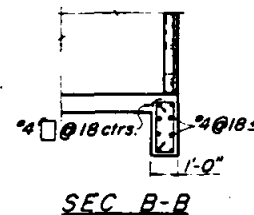
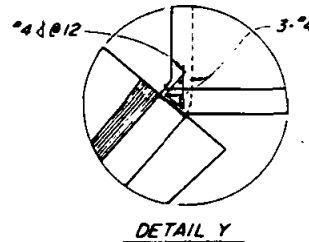
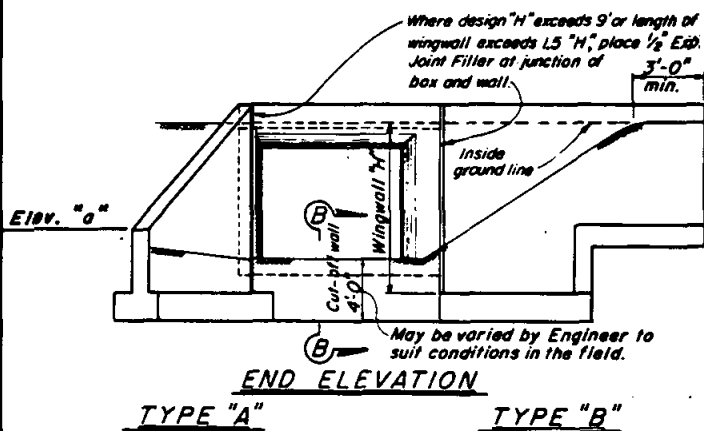
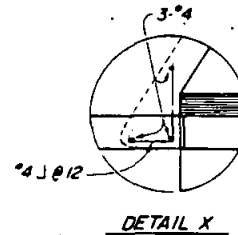
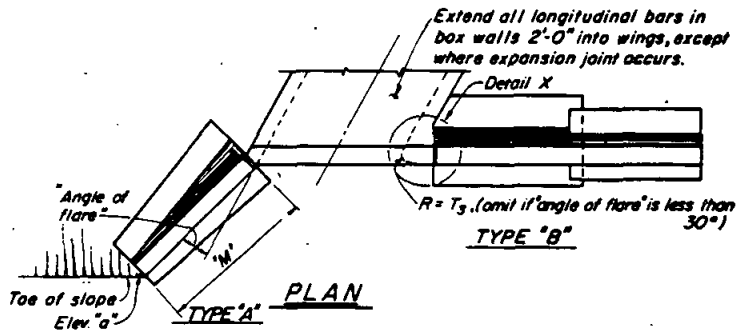
⊗ For reinforcement clearance, except at bottom, see "Miscellaneous Details."



"FLAT INVERT" ALTERNATIVE

(When shown)

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Enlarge	JC	U.H.	7-88			<i>Allen A. Kuehn</i>	<i>Dec. 1975</i>
				TRIPLE BOX CULVERT DETAILS NO. 2		Coordinator R.C.E. (1980)	Date
						DRAWING NUMBER	D-78B



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

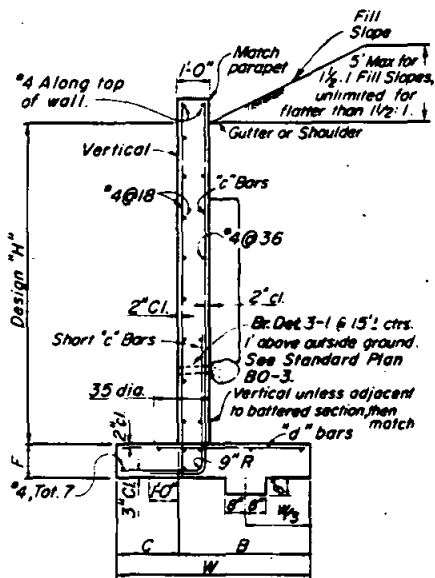
Allan O. Kneeland Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **D-79A**

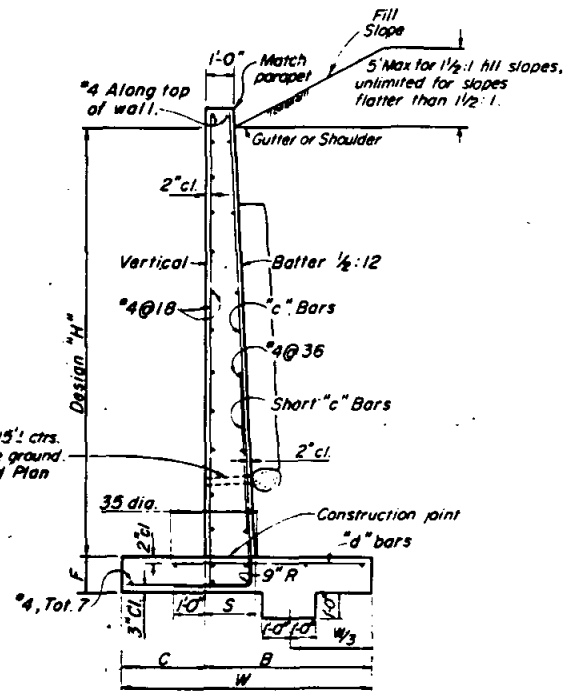
SAN DIEGO REGIONAL STANDARD DRAWING

**BOX CULVERT WINGWALL
TYPES A, B & C
DETAILS NO. 1**

Revision	By	Approved	Date
Enlarge	<i>P</i>	<i>A.H.</i>	<i>7-88</i>



TYPICAL SECTION
H=4' THRU 12'



TYPICAL SECTION
H=13' THRU 16'

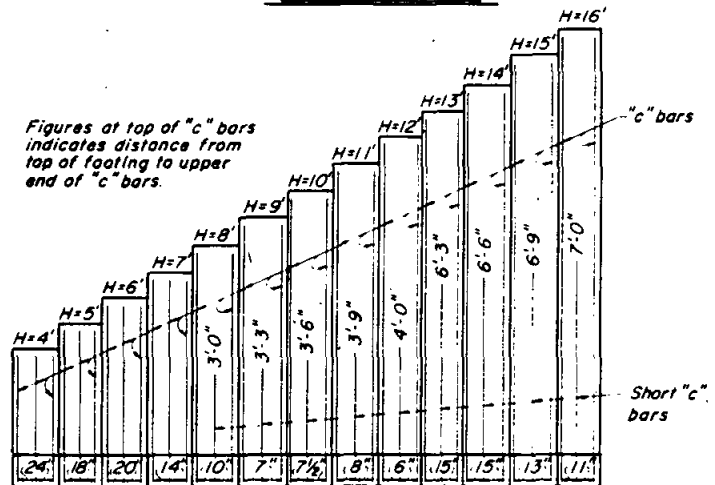
Design Notes:

Unit Stresses: $f_s = 20,000$ p.s.i., $f_c = 1200$ p.s.i., $n = 10$

Maximum Toe Pressure = $1\frac{1}{2}$ Tons/sq. ft.

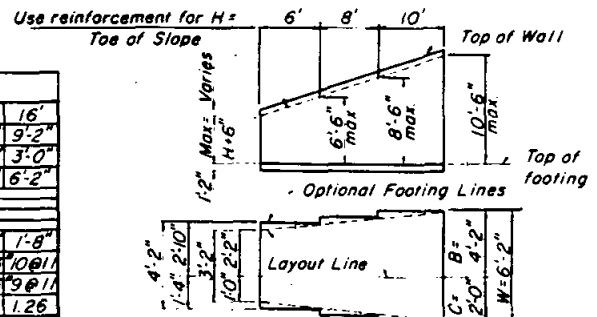
Elevations, length and angle of flare of wings may be varied by the Engineer to suit conditions encountered in the field. Walls designed for 2' live load surcharge, 1 1/2:1 sloping surcharge not to exceed 5' in elevation plus 2' live load surcharge, or unlimited 2:1 surcharge. Dimensions "H", "L", "M", "N", Elev. "a" and "Angle of flare" (as apply) are shown on the plans.

Figures at top of "c" bars indicates distance from top of footing to upper end of "c" bars.



REINFORCED CONCRETE WINGWALLS																
"H"	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'			
W	3'-2"	3'-8"	4'-2"	4'-8"	5'-2"	5'-8"	6'-2"	6'-8"	7'-2"	7'-8"	8'-2"	8'-8"	9'-2"			
C	1'-0"	1'-2"	1'-4"	1'-6"	1'-8"	1'-10"	2'-0"	2'-2"	2'-4"	2'-6"	2'-8"	2'-10"	3'-0"			
B	2'-2"	2'-6"	2'-10"	3'-2"	3'-6"	3'-10"	4'-2"	4'-6"	4'-10"	5'-2"	5'-6"	5'-10"	6'-2"			
F							1'-2"									
Batter	None															
S	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-6"	1'-7"	1'-7 1/2"	1'-8"			
"c" Bars	4@24	4@18	5@20	5@14	5@10	5@7	6@7 1/2	7@8	7@6	9@15	10@15	10@13	10@11			
"d" Bars	4@24	4@18	5@20	5@14	5@10	5@7	6@7 1/2	7@8	7@6	9@15	10@15	10@13	10@11			
Conc. %	0.32	0.38	0.44	0.49	0.55	0.61	0.67	0.73	0.79	1.02	1.10	1.18	1.26			
Reinf. "H"	13	16	19	25	30	37	49	62	76	73	90	104	125			

Quantities do not include that portion above the design "H" limit.



TYPICAL LAYOUT EXAMPLE

Revision	By	Approved	Date
Enlarge	CH	A.H.	9-88

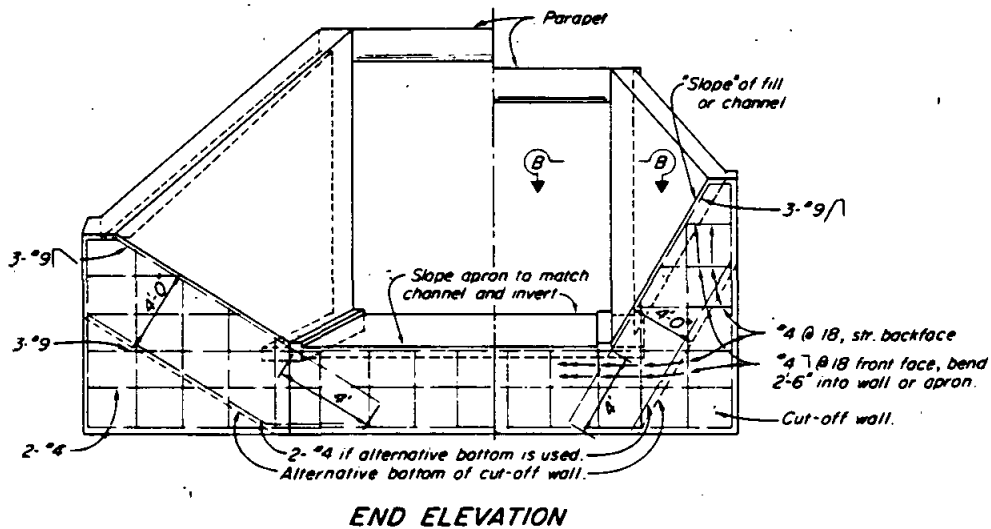
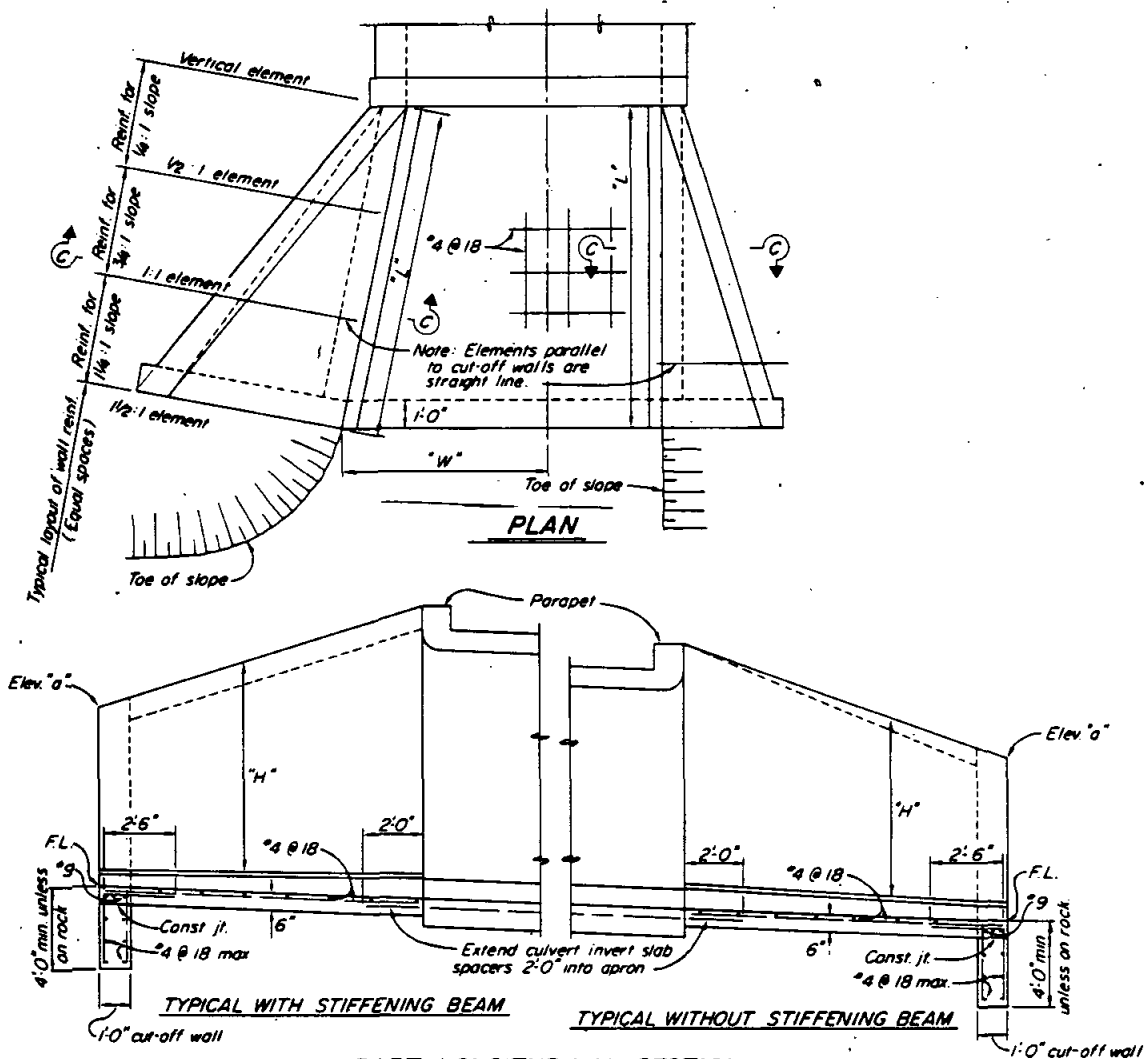
SAN DIEGO REGIONAL STANDARD DRAWING

BOX CULVERT WINGWALL
 TYPES A, B & C
 DETAILS NO. 2

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Officer A. Kaufman Dec. 1975
 Coordinator R.C.E. 19807 Date

DRAWING NUMBER D-79B



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

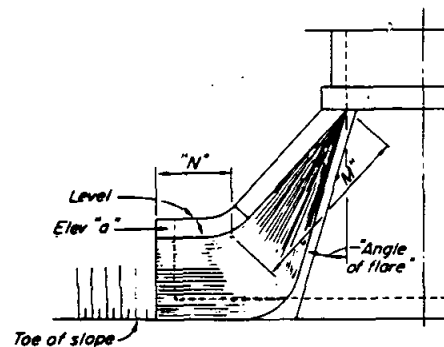
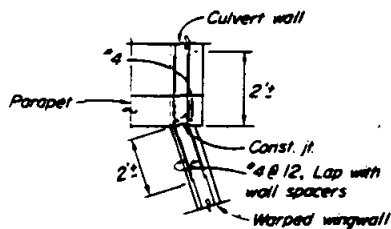
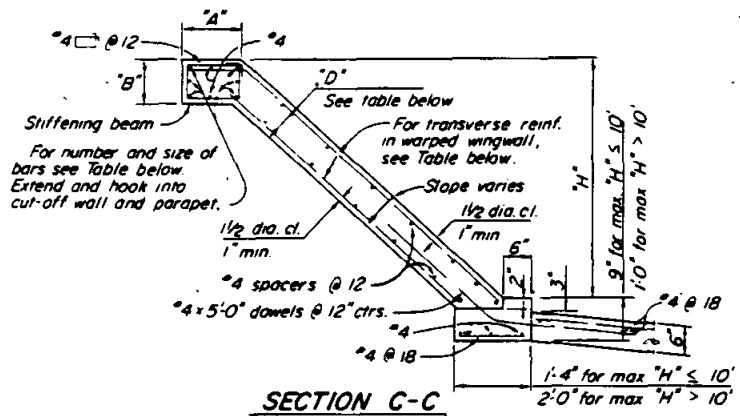
Allen O. Kunkel Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **D-80A**

SAN DIEGO REGIONAL STANDARD DRAWING

**BOX CULVERT WARPED WINGWALL
DETAILS NO. 1**

Revision	By	Approved	Date
Enlarge	32	A.H.	9-88



WARPED WINGWALLS																			
WALL DIMENSIONS AND REINFORCING										STIFFENING BEAM DIMENSIONS AND REINFORCING									
Element	"H"	"B" or less	10'	12'	14'	16'	18'	20'	"H" max	12'	14'	16'	18'	20'	25'	30'	35'	40' or more	
1/4:1	Front face reinf.	#4 @ 12"	#4 @ 7"	#5 @ 7"	#5 @ 5"	#6 @ 6"	#7 @ 7"	#7 @ 6"	6"	No beam Place 2" x 6" in each									
	Rear face reinf.	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	8"	face along top of									
3/8:1	Front face reinf.	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 10"	#4 @ 8"	#4 @ 6"	10"	"A" = 1'-0"									
	Rear face reinf.	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 10"	#4 @ 7"	#4 @ 6"	#5 @ 8"	12"	"B" = 9"									
1/2:1	Front face reinf.	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	14"	Tot. 6'-6"									
	Rear face reinf.	#4 @ 8"	#4 @ 8"	#4 @ 5"	#5 @ 6"	#6 @ 7"	#6 @ 6"	#7 @ 6"	16"	Tot. 6'-7"									
"D" at Cut-off Wall		6"	6"	6"	7 1/2"	8"	9 1/2"	11"	18"	Tot. 6'-8"									
"D" at Culvert		6"	6"	6"	8"	9 1/2"	11"	1'-1"	20"	Tot. 8'-9"									

Notes: Walls designed for 2' surcharge; earth load = 120#/cu. ft.; equivalent fluid pressure = 36#/cu. ft.
 Vary "D" of warped wall uniformly from that at cut-off wall to that at culvert, for max "H" > 12'.
 Where abrasion is anticipated increase apron thickness to 7" min. to provide 2" min. reinforcement coverage.
 Dimensions "L", "W", "H", "M", "N", Elev. "a", Angle of flare, and end "Slope" (as apply) are shown on the plans.
 Concrete shall be class 560-B-3250.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Enlarge	2	A.H.	9-88			Allan A. Kuehnert Dec. 1975 Coordinator R.C.E. 19807 Date	
				BOX CULVERT WARPED WINGWALL DETAILS NO. 2		DRAWING NUMBER D-80B	

GENERAL NOTES

QUANTITIES: QUANTITIES ARE FOR THE SLOPED INVERT SLAB AND DO NOT INCLUDE SPLICES IN LONGITUDINAL BARS, NOR TEMPERATURE REINFORCEMENT FOR EXPOSED TOP CULVERT, NOR CONCRETE OR REINFORCEMENT FOR PARAPETS OR CUTOFF WALLS.

SPECIAL COVERAGE: BOX STANDARD PLANS ARE NOT TO BE USED FOR CULVERTS IN A CORROSIVE ENVIRONMENT OR WHERE THERE IS A SEVERE ABRASIVE FLOW CONDITION.

DESIGNATION: SHOW ON PLANS AS SPAN X HEIGHT - STRENGTH CLASSIFICATION X LENGTH. THUS 4 x 4 : A x 60', FOLLOWED BY ALTERNATIVES

ALTERNATIVES: INVERT WILL BE SLOPED UNLESS "TRAPEZOIDAL INVERT", "FLAT INVERT" OR "V INVERT" IS INCLUDED IN DESIGNATION. ENDS OF CULVERT WILL BE ROUNDED UNLESS "SQUARE ENDS" ARE DESIGNATED. PARAPETS WILL BE AS SHOWN UNLESS "— FT. PARAPET" IS DESIGNATED IN PLANS. SUCH DESIGNATIONS MAY BE DIFFERENT FOR INLET AND OUTLET ENDS.

REINF. PLACEMENT: MAIN REINFORCEMENT IS POSITIONED TRANSVERSE OR, FOR CURVED CULVERTS, RADIAL. WHEN RADIAL, REINFORCING SPACING IS MEASURED ALONG THE ϕ .

CONSTRUCTION NOTES

CONCRETE:

BOTTOM SLAB & WALLS SHALL BE CLASS 560-B-3250
TOP SLAB SHALL BE CLASS 560-C-3250

EXPANSION JOINTS:

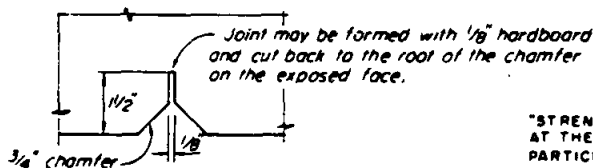
BOTTOM SLAB - NO EXPANSION JOINTS SHALL BE PLACED
TOP SLAB AND WALLS - WHEN COVER IS LESS THAN SPAN LENGTH, PLACE $\frac{1}{2}$ " EXPANSION JOINT FILLER AT 30'± CENTERS OUTSIDE THE PAVED ROADWAY LANES AND PLACE BRIDGE DETAIL 3-2 AT 30'± CENTERS UNDER PAVED ROADWAY LANES.
WHEN COVER IS MORE THAN SPAN LENGTH, PLACE $\frac{1}{2}$ " EXPANSION JOINT FILLER AT 30'± CENTERS AND ADDITIONAL $\frac{1}{2}$ " EXPANSION JOINTS AT LOCATIONS OF CHANGE IN FOUNDATION CHARACTER, AS DIRECTED BY THE ENGINEER.

CONSTRUCTION LOADS:

NOT PERMITTED UNTIL CONCRETE HAS REACHED A STRENGTH OF 3,000 PSI OR AGE OF 28 DAYS, WHICHEVER OCCURS FIRST, AND FALSEWORK PLANS HAVE BEEN SUBMITTED BY THE CONTRACTOR, TO THE ENGINEER, AND APPROVED.

CONSTRUCTION JOINTS:

TEMPORARY JOINTS MAY BE PERMITTED IF NORMAL (OR RADIAL) TO ϕ OF RCB. OTHERWISE, THE CONTRACTOR IS TO SUBMIT A PROPOSAL FOR CONSIDERATION.



BRIDGE DETAIL 3-2
(Portion)

See Standard Drawing C-13

DESIGN NOTES

SPECIFICATIONS:

DESIGN: AASHTO DATED 1973 WITH REVISIONS AND AS SUPPLEMENTED BY STATE OF CALIFORNIA BRIDGE PLANNING AND DESIGN MANUAL.

SECTIONS DESIGNED FOR CULVERT IN A TRENCH ON HARD FOUNDATION, OR CULVERT UNTRENCHED ON YIELDING FOUNDATION. FOR CULVERTS ON PILES OR ROCK FOUNDATIONS, SPECIAL DESIGN WILL BE REQUIRED.

LOADING

LIVE LOAD: FOR LEGAL HIGHWAY LOADS, USE HS20-44 OR ALTERNATIVE, WITH 30% IMPACT FOR ALL COVER DEPTHS NO IMPACT ON INVERT COVER LESS THAN 2' -

WHEEL LOAD DISTRIBUTION ON THE TOP SLAB IS $E = 0.175S + 3.2'$ LONGITUDINALLY AND CONCENTRATED ALONG THE SPAN. WHEEL LOAD DISTRIBUTION ON THE INVERT SLAB IS 7.5' LONGITUDINALLY AND UNIFORMLY OVER THE BREADTH OF THE CULVERT.

COVER 2' OR MORE - WHEEL LOADS DISTRIBUTED UNIFORMLY OVER A SQUARE, THE SIDES OF WHICH ARE 1.75 TIMES THE DEPTH OF COVER, BUT NOT LESS LONGITUDINALLY THAN E ON THE TOP SLAB, OR 7.5' ON THE INVERT SLAB. WHEN SUCH AREAS FROM SEVERAL WHEEL CONCENTRATIONS OVERLAP, THE TOTAL LOAD SHALL BE CONSIDERED AS UNIFORMLY DISTRIBUTED OVER THE AREA DEFINED BY THE OUTSIDE LIMITS OF THE INDIVIDUAL AREAS, BUT THE OVERALL LONGITUDINAL DIMENSION SHALL NOT EXCEED THE TOTAL LENGTH OF THE SUPPORTING SLAB. NEGLECT LIVE LOAD, ON SINGLE SPANS WHEN COVER IS MORE THAN 8' AND EXCEEDS SPAN, AND ON MULTIPLE SPANS WHEN COVER EXCEEDS DISTANCE BETWEEN EXTERIOR WALLS.

DEAD LOAD: EARTH LOAD OF 120 PCF AND AN EQUIVALENT FLUID PRESSURE OF 36 PCF, REDUCED TO 84 PCF AND 25 PCF RESPECTIVELY FOR CLEAR SPANS OF 20' OR LESS.

UNIT STRESSES: $F_s = 20,000 \text{ PSI}$, $N = 10$
 $F_c = 1,200 \text{ PSI}$

REINFORCEMENT EMBEDMENT IS $\frac{1}{2}$ " DIA. CLEAR, MIN. 1" AND $\frac{1}{4}$ " INCREMENTS, EXCEPT AS NOTED.

DISTRIBUTION "G" BARS EXPRESSED AS A % OF MAIN POSITIVE REINFORCEMENT

CLASSIFICATION "A" TOP SLAB = $\frac{100}{\text{SPAN}}$, MAX 50% (UNLESS TRAFFIC LONGITUDINAL)

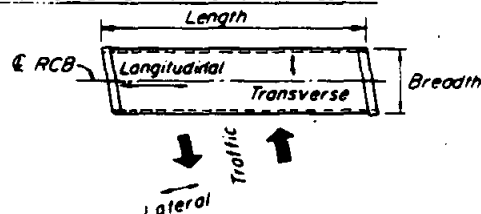
BOTTOM SLAB = "4 @ 18" MAX

CLASSIFICATION "B" TO "E": TOP AND BOTTOM SLABS "4 @ 18" MAX.

USE OF STANDARD DRAWING

"STRENGTH CLASSIFICATION", SYMBOLIZED BY THE LETTERS "A", "B", "C" ETC., AT THE TOP OF THE DATA TABLE IS MERELY A CONVENIENT DESIGNATION FOR A PARTICULAR STRUCTURAL SECTION FOR A CULVERT OF ANY GIVEN OPENING. IT IS DICTATED BY THE COVER OR DEPTH OF FILL OVER THE TOP SLAB.

LIVE LOAD & RCB DIRECTIONAL TERMINOLOGY



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

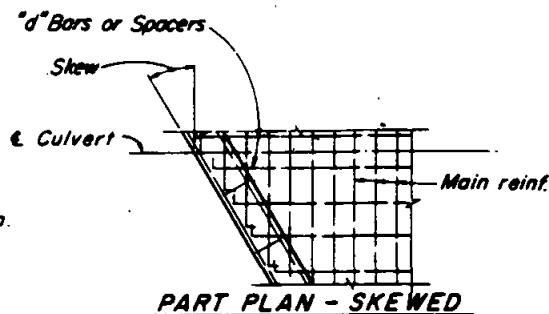
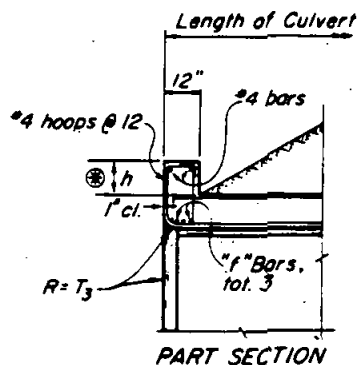
Allen D. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING NUMBER **D-81A**

SAN DIEGO REGIONAL STANDARD DRAWING

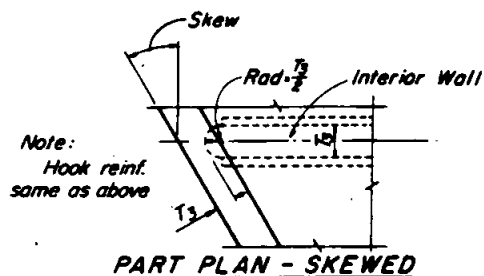
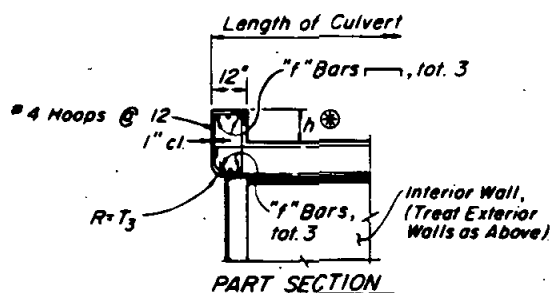
BOX CULVERT
MISCELLANEOUS DETAILS NO. 1

Revision	By	Approved	Date
Enlarge	<i>g.h.</i>	<i>g.h.</i>	10/88

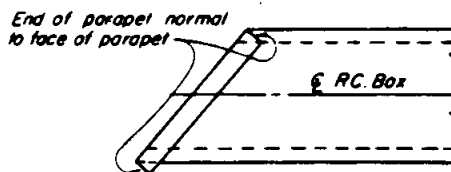


PARAPET DETAILS FOR SINGLE SPAN CULVERTS

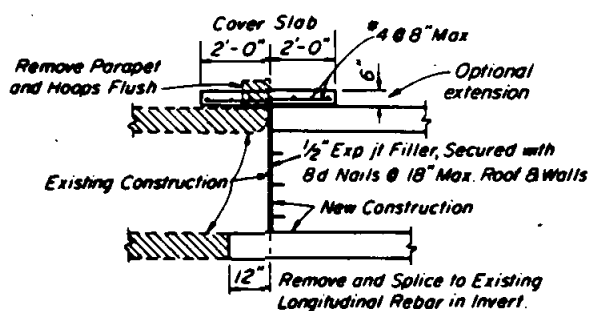
PARAPET "1" BAR NOS.				
SPAN	SKEW ANGLE	0° TO 15°	16° TO 30°	31° TO 45°
4'		*4	*4	*4
6'		*4	*4	*5
8'		*4	*5	*6
10'		*5	*6	*7
12'		*6	*7	*8
14'		*7	*8	*9



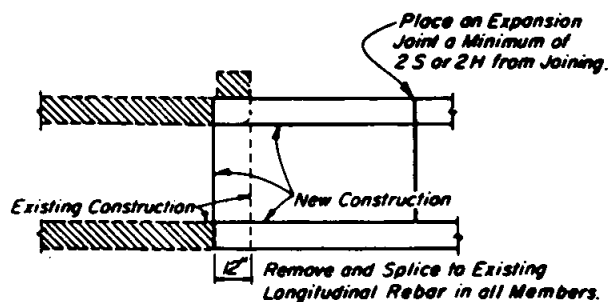
PARAPET DETAILS FOR MULTIPLE SPAN CULVERTS



PARAPET DETAIL FOR SKEWED CULVERTS W/O WINGWALLS



COVER: 1' AND GREATER



COVER: EXPOSED TOP AND GREATER

CULVERT EXTENSION

20° SKEW MAXIMUM

Revision	By	Approved	Date
Enlarge	W	O.H.	10/88

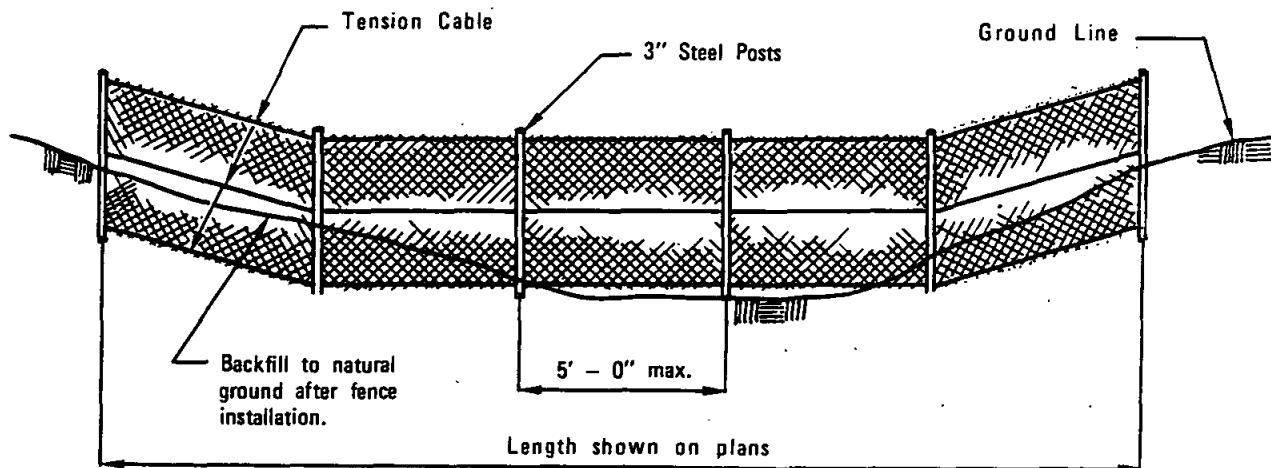
SAN DIEGO REGIONAL STANDARD DRAWING

**BOX CULVERT
MISCELLANEOUS DETAILS NO. 2**

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen D. Kneeland Dec. 1975
Coordinator R.C.E. 18807 Date

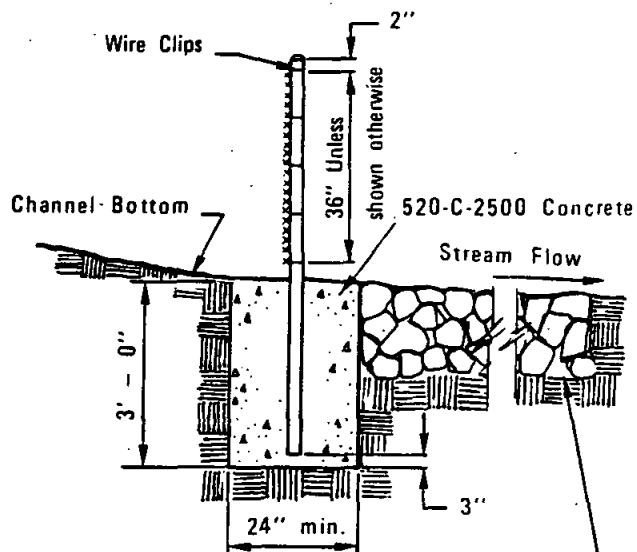
**DRAWING
NUMBER D-81B**



ELEVATION

NOTES:

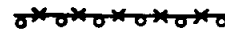
1. Fence fabric shall be 2" mesh, 9 gage galvanized wire, chainlink placed on the upstream side of the posts and tension cables.
2. Tension cable shall be 5/16" diameter steel at 18" c/c secured at ends with cable clamps. Secure fence to cable with No. 12 galv. steel wire looped at 6" c/c.
3. Posts shall be 3" diameter steel pipe, 5.79 lb./ft. Fill with mortar after placing.
4. Fence fabric shall be secured to posts with 9 gage wire clips at 9" c/c.



Rip Rap size and length to be shown on plans. See Std. Dwg. D-40

SECTION

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Harry R. Holt Oct 1982
Chairman A.C.E. C13768 Date

DRAWING
NUMBER

D-82

SAN DIEGO REGIONAL STANDARD DRAWING

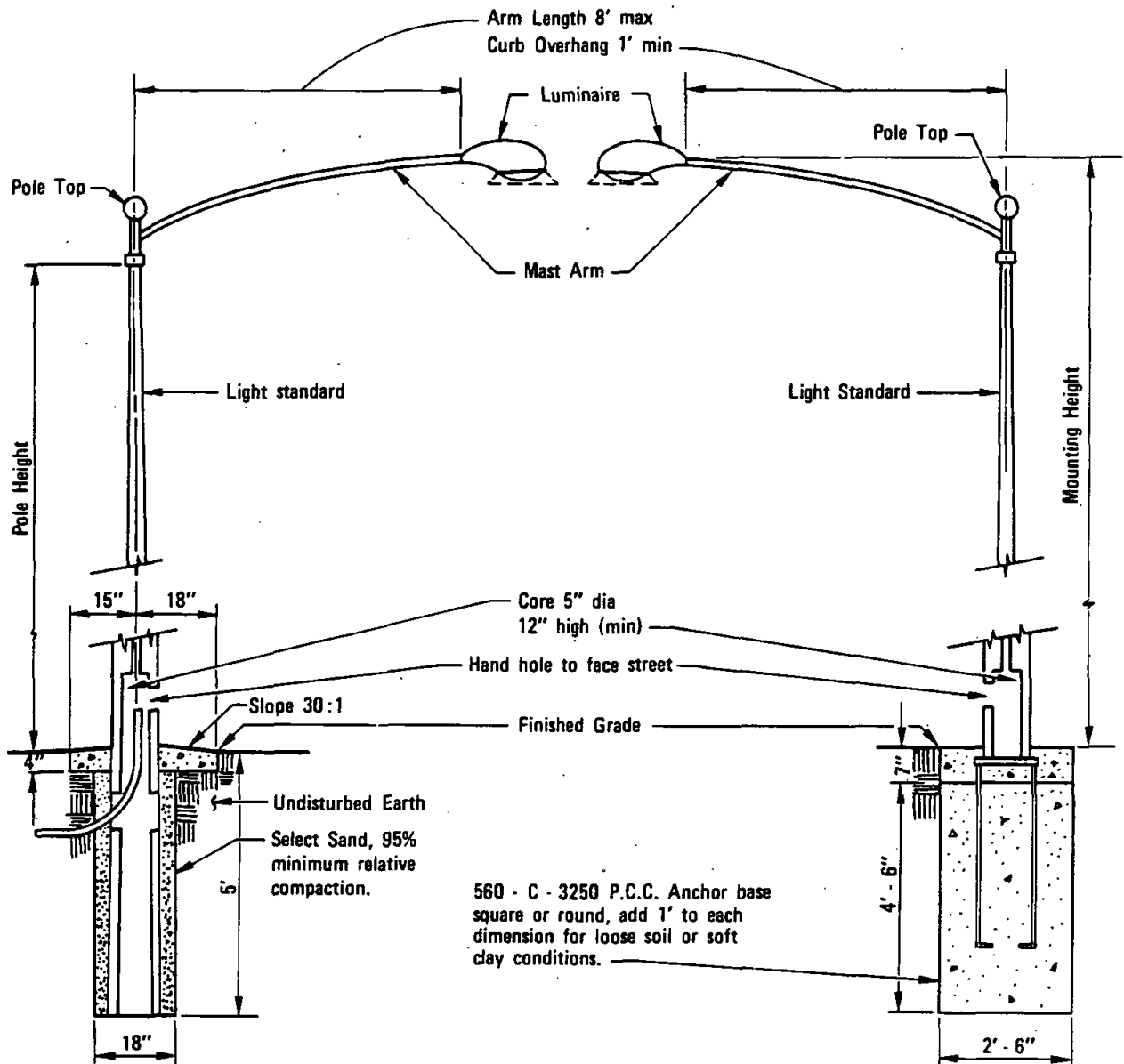
DEBRIS FENCE

Revision	By	Approved	Date

ELECTRICAL SYSTEMS

ELECTRICAL SYSTEMS

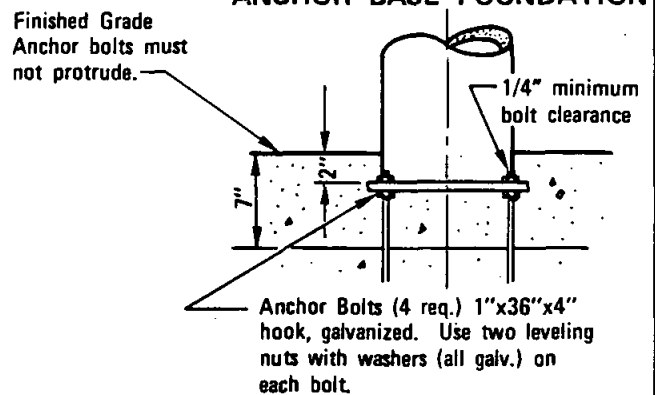
E



**DIRECT BURIAL
FOUNDATION**

POLE HEIGHT	MOUNTING HEIGHT	LAMP SIZE (WATTS)
25' ± 2'	27' ± 1'	170 M.V. 100 H.P.S. 90 L.P.S.
28' ± 2'	30' ± 1'	400 M.V. 250 H.P.S. 180 L.P.S.
23' - 0"	26' - 9"	70 H.P.S.
26' - 6"	30' - 0"	150 H.P.S.

ANCHOR BASE FOUNDATION



Revision	By	Approved	Date
Table	8	M.B.	5-86

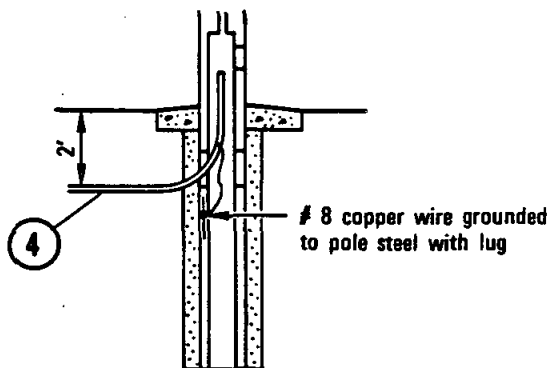
SAN DIEGO REGIONAL STANDARD DRAWING

STREET LIGHTING STANDARD

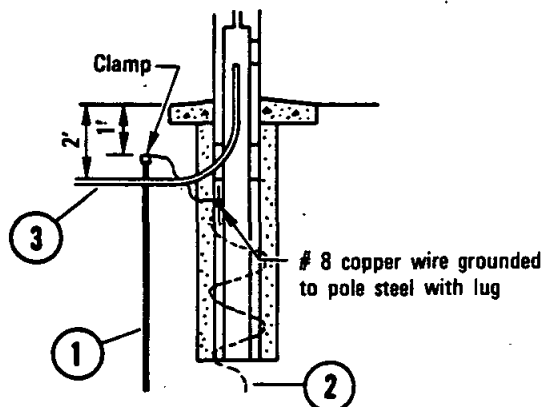
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen G. Kershner *Dec. 1975*
Coordinator R.C.E. 1980/ Date

**DRAWING
NUMBER E-1**

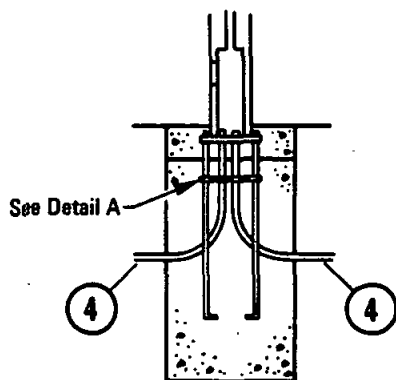


STEEL CONDUIT

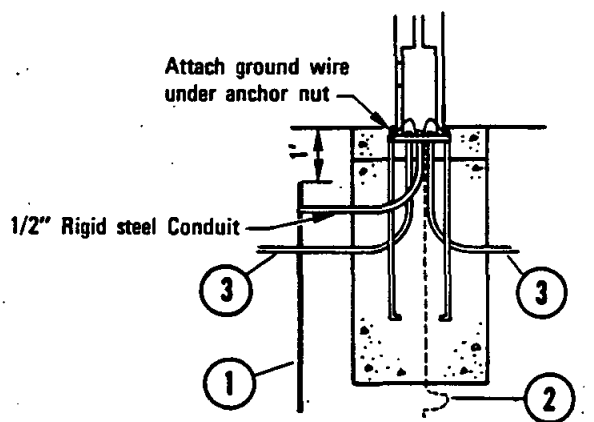


NON-METALLIC CONDUIT

DIRECT BURIAL FOUNDATION



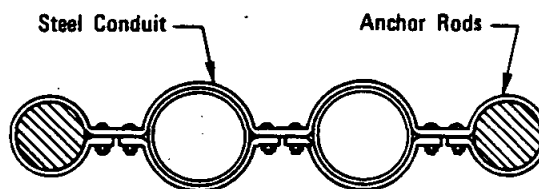
STEEL CONDUIT



NON-METALLIC CONDUIT

ANCHOR BASE FOUNDATION

- ① 3/4" x 8' copper covered steel ground rod.
- ② Alternate Ground: 15' no. 4 bare stranded copper wire, coiled.
- ③ Approved non-metallic conduit.
- ④ Steel conduit.



DETAIL A

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan A. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

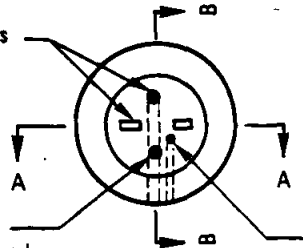
DRAWING
NUMBER E-2

SAN DIEGO REGIONAL STANDARD DRAWING

GROUNDING
OF CONCRETE LIGHTING STANDARDS

Revision	By	Approved	Date

1½" min. cover for bars and conduits.



Galvanized steel conduits.
Size and number as required.

PLAN

NOTE:

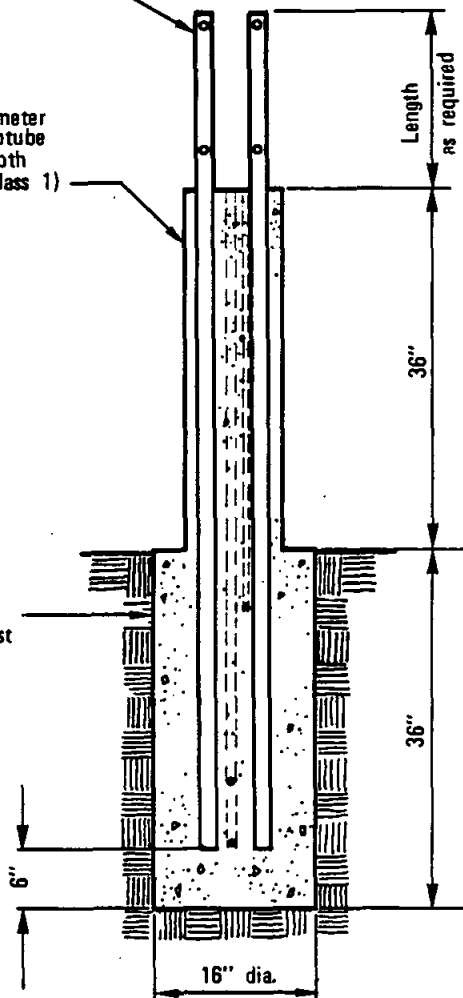
Concrete shall be class 560-C-3250

1" galvanized steel conduit for service ground (where required).

1/4" X 2" galvanized steel bars.

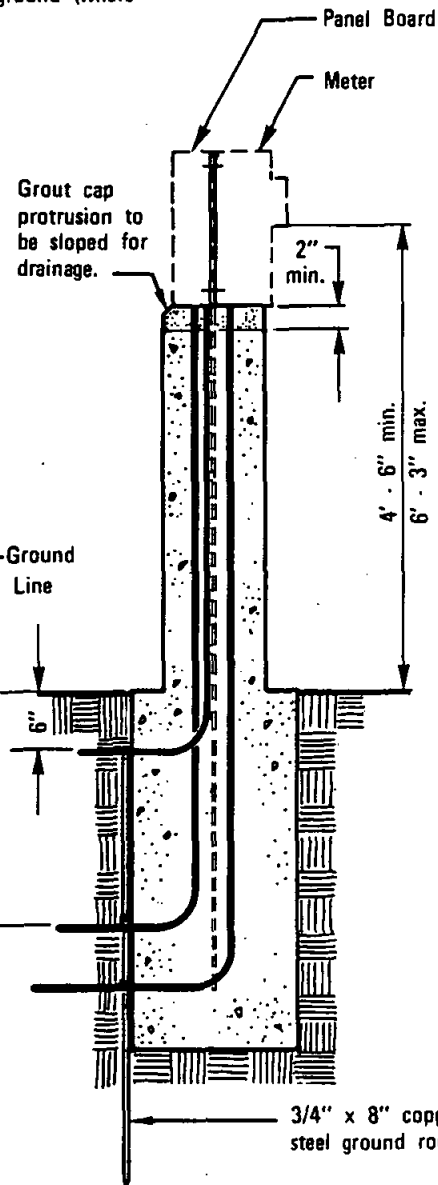
10" Diameter use Sonotube for smooth finish. (Class 1)

Permissible to auger hole and pour against soil.



SECTION A-A

STEEL & CONCRETE
DIMENSIONS



SECTION B-B

CONDUIT & EQUIPMENT

Revision	By	Approved	Date
Conc.	MB	MB	5-86

SAN DIEGO REGIONAL STANDARD DRAWING

PEDESTAL FOR
ELECTRICAL EQUIPMENT

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alfred A. Kuehn *Dec. 1975*
Coordinator R.C.E. 19807 Date

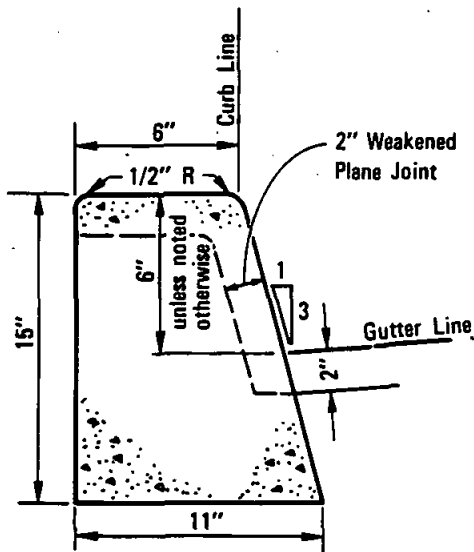
DRAWING
NUMBER

E-33

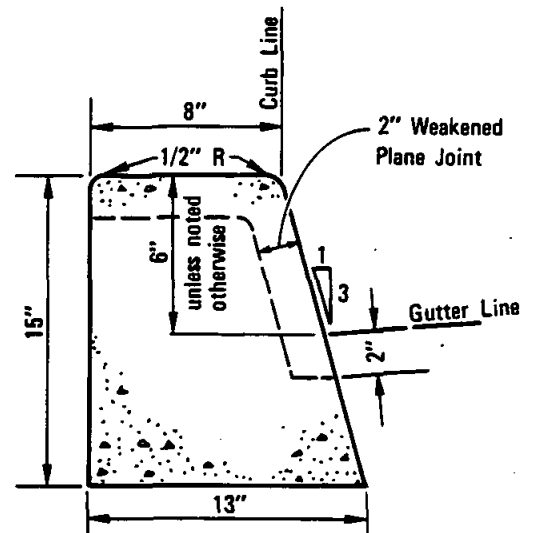
GENERAL SURFACE IMPROVEMENTS

G

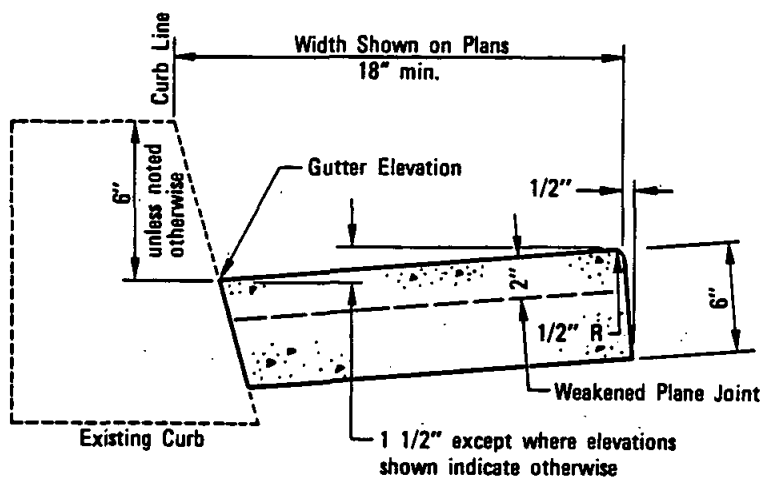
GENERAL SURFACE IMPROVEMENTS



6" CURB
Area = 0.89 SQ. FT.



8" CURB
Area = 1.09 SQ. FT.



GUTTER

NOTES:

1. Concrete shall be 520-C-2500.
2. See Standard Drawing G-10 for joint details.
3. Slope top of curb 1/4" per foot toward street.

LEGEND ON PLANS



6" curb

Revision	By	Approved	Date
Conc.	<i>MC</i>	<i>M.E.</i>	5-86
Note 3	<i>MC</i>	<i>A.H.</i>	7-88

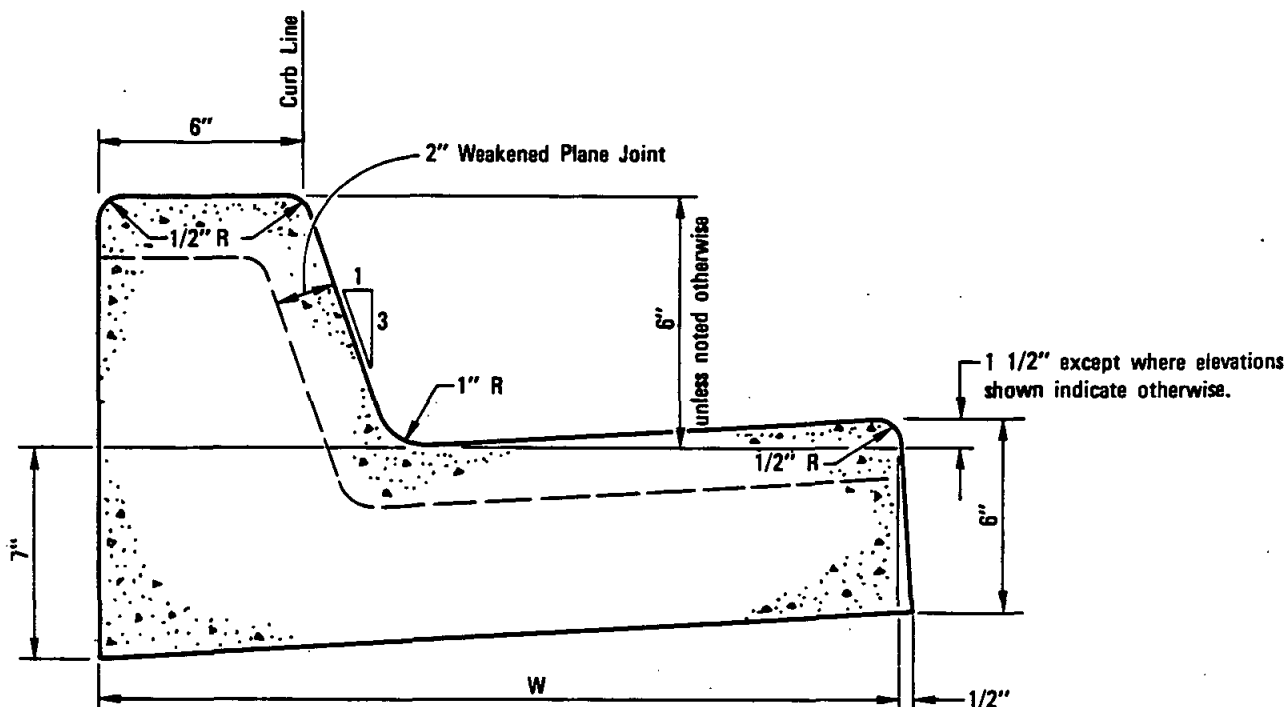
SAN DIEGO REGIONAL STANDARD DRAWING

CURBS AND GUTTER - SEPARATE

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen A. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **G-1**



TYPE G & H CURB

TYPE	W	* AREA SQ. FT.
G	24"	1.34
H	30"	1.61

* with 6" Curb Face

NOTES:

1. Concrete shall be 520-C-2500.
2. See Standard Drawing G-10 for joint details.
3. Slope top of curb 1/4" per foot toward street.

LEGEND ON PLANS

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allard G. Kneeland Dec. 1975
Coordinator R.C.E. 19607 Date

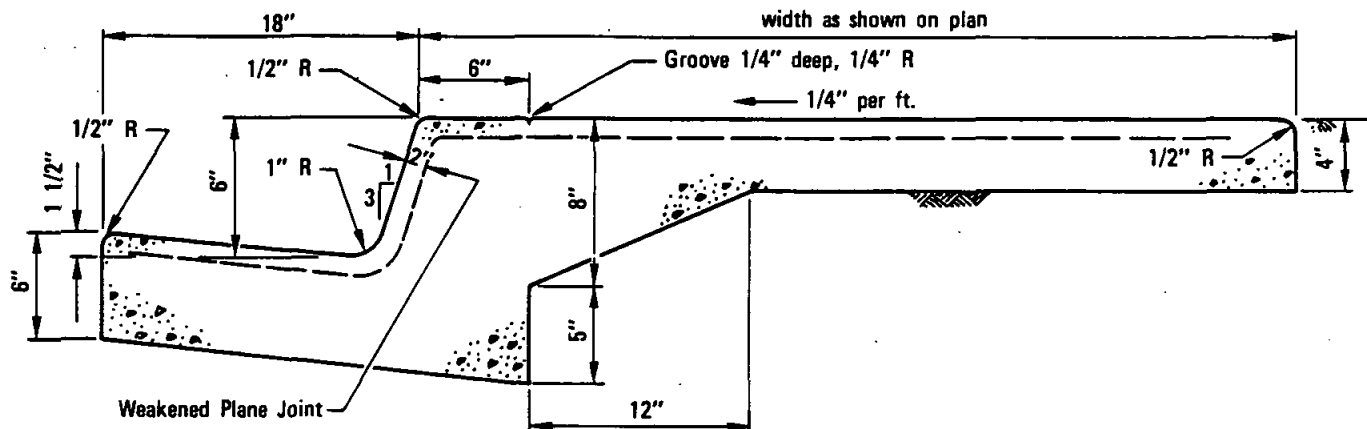
SAN DIEGO REGIONAL STANDARD DRAWING

CURB AND GUTTER - COMBINED

DRAWING
NUMBER

G-2

Revision	By	Approved	Date
Conc.	<i>MC</i>	<i>M.B.</i>	5-86
Note 3	<i>MC</i>	<i>A.H.</i>	7-88



NOTES

1. Concrete shall be 520-C-2500.
2. See Standard Drawing G-10 for joint details.
3. Monolithic curb, gutter and sidewalk is to be used with Agency approval only.

LEGEND ON PLANS

Revision	By	Approved	Date
Thickness	SC	D.S.	7-79
Thickness	SC	M.B.	6-82
Conc.	SC	M.B.	5-86

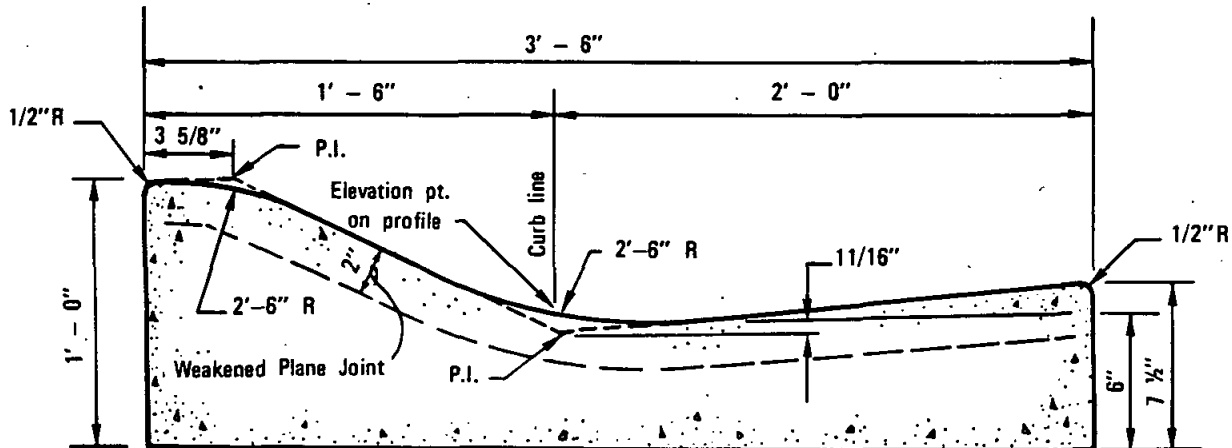
SAN DIEGO REGIONAL STANDARD DRAWING

MONOLITHIC CURB, GUTTER AND SIDEWALK

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alfred A. Kershner *Dec. 1975*
Coordinator R.C.E. 1980? Date

DRAWING
NUMBER **G-3**



CURB AREA (2.23 sq. ft.)

NOTES:

1. Transition to type G curb at all curb returns, except where sidewalk ramps are provided, and at all cul-de-sacs with drainage structures.
2. See Standard Drawing D-6.1 for Rolled Curb Inlet.
3. Concrete shall be 520-C-2500.
4. See Standard Drawing G-10 for joint details.

LEGEND ON PLANS

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

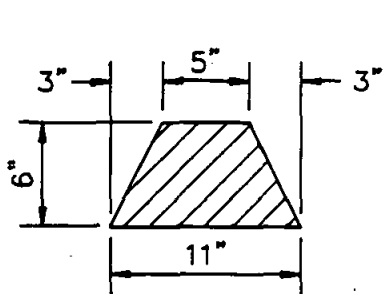
W. J. Kishner Dec. 1975
Coordinator R.C.C. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

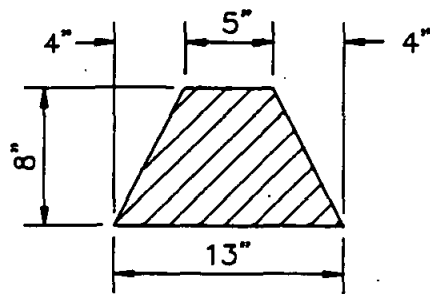
CURB AND GUTTER-ROLLED

**DRAWING
NUMBER** **G-4**

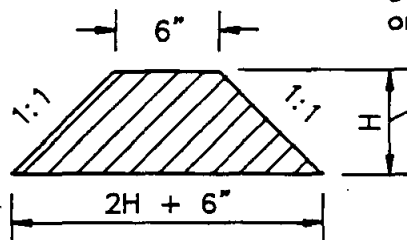
Revision	By	Approved	Date
X-Sect.	TRP	M. B.	10-82
Conc.	TRP	M.B.	5-86



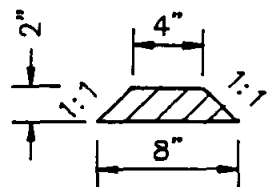
TYPE A-SECTION



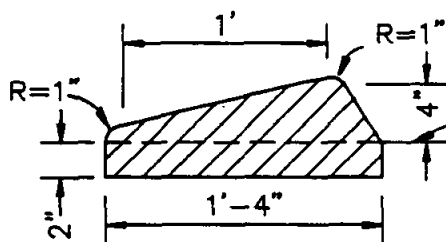
TYPE B-SECTION



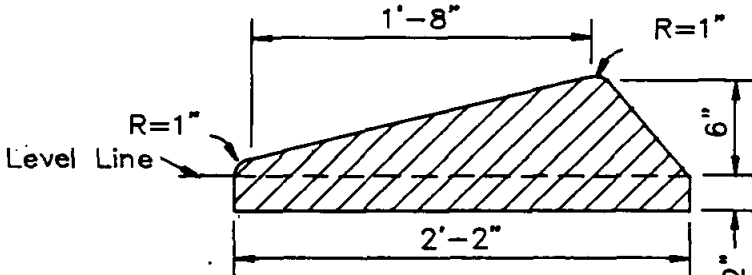
TYPE C-SECTION



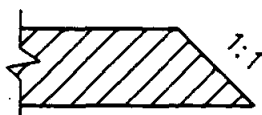
TYPE D-SECTION



TYPE E-SECTION



TYPE F-SECTION



Slope end of dike 1:1
when not joining
other improvements

ALL TYPES - SIDE VIEW

NOTES:

1. Dike is to be placed on a minimum 2" 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.

APPROX. DIKE QUANTITIES	
TYPE	TONS/LIN. FT.
A	0.0250
B	0.0375
C-6"	0.0375
C-8"	0.0583
C-9"	0.0702
D	0.0062
E	0.0407
F	0.0623

LEGEND ON PLANS

Type A Dike

Revision	By	Approved	Date
Type E	SC	QH	10/88
Type F	SC	QH	10/88

SAN DIEGO REGIONAL STANDARD DRAWING

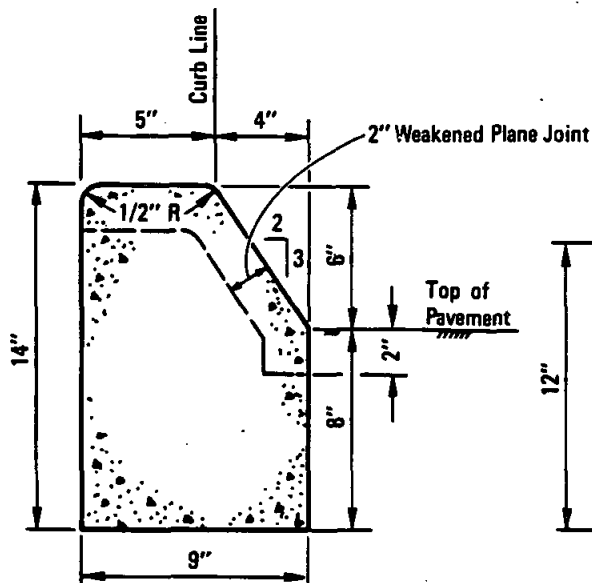
DIKES - ASPHALT CONCRETE

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

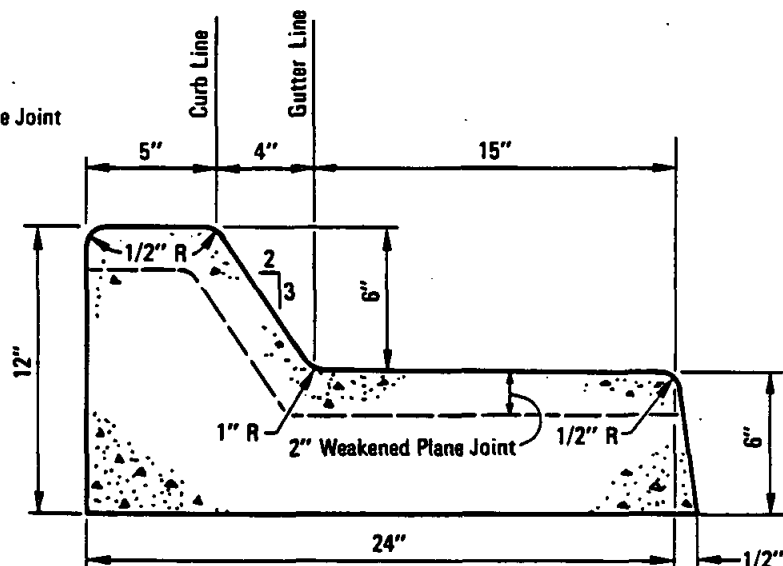
Allen J. Kerschbaum *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER

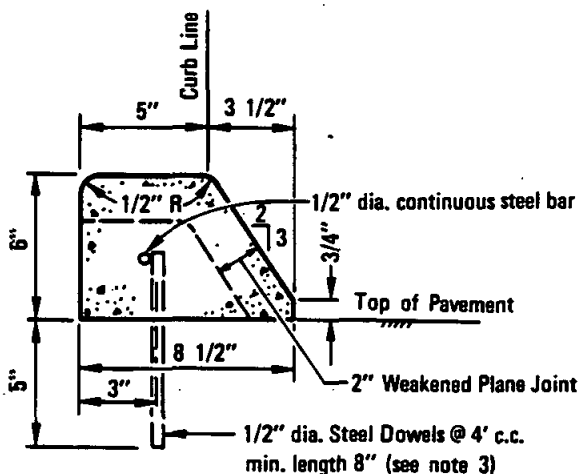
G-5



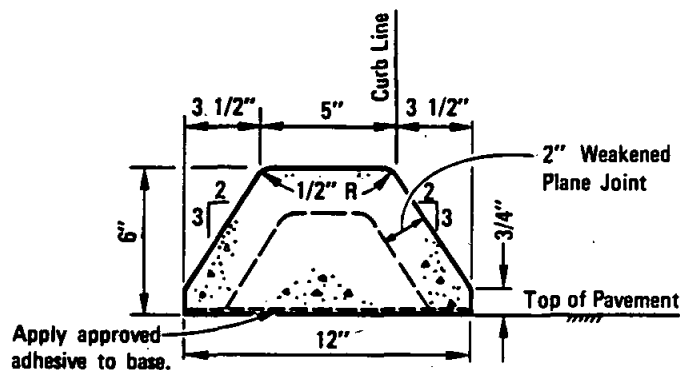
B-1
AREA = 0.79 SQ.FT.



B-2
AREA = 1.29 SQ.FT.



B-3
AREA = 0.29 SQ.FT.



B-4
AREA = 0.35 SQ.FT.

NOTES

- Concrete shall be 520-C-2500.
- See Standard Drawing G-10 for joint details.
- Extruded type B-3 curb shall be anchored to existing pavement by placing steel dowels and reinforcing steel as shown or by using an approved adhesive.

LEGEND ON PLANS

Type B-2 Curb and Gutter

Type B-1, B-3, B-4 Curb

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

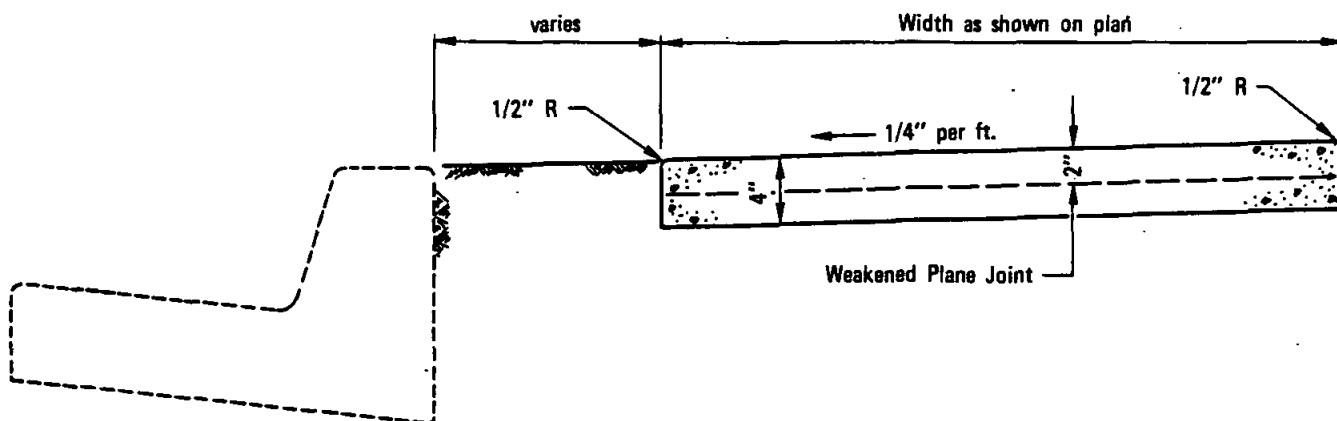
Alfred G. Kuehnel *Dec. 1973*
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

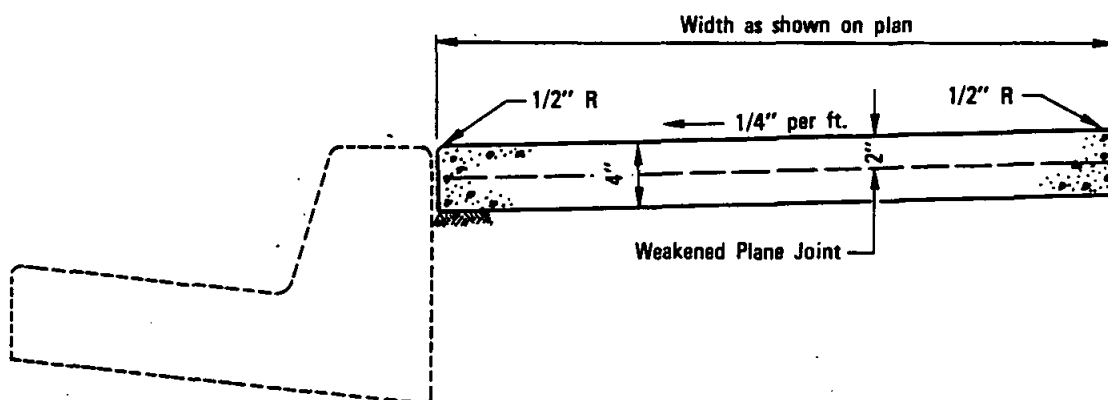
CURBS AND GUTTER - MEDIANS

DRAWING
NUMBER **G-6**

Revision	By	Approved	Date
Note 1	<i>CS</i>	<i>P.S.</i>	7-79
Conc.	<i>CS</i>	<i>M.B.</i>	5-86



NON-CONTIGUOUS

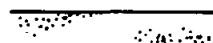


CONTIGUOUS

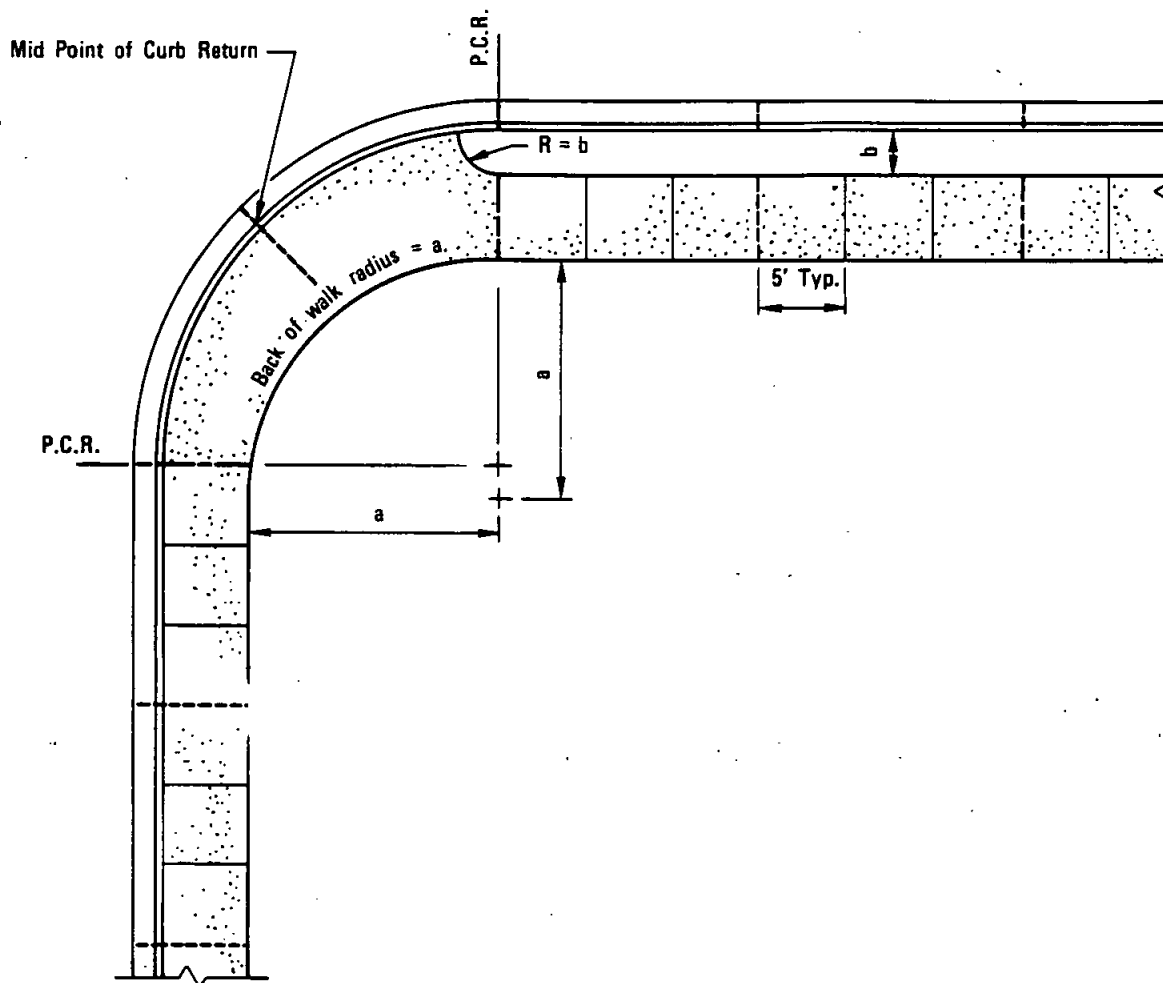
NOTES

- Concrete shall be 520-C-2500.
- See Standard Drawing G-9 and G-10 for joint details.

LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Thickness	8"	D.S.	7-79	SIDEWALK - TYPICAL SECTIONS		<i>Allen O. Kershner</i> <i>Dec. 1975</i> Coordinator R.C.E. 19807 Date	DRAWING NUMBER G-7
Thickness	8"	M.B.	6-82				
Conc.	8"	M.B.	5-86				
Note 2	8"	A.H.	7-88				



NOTES

1. Expansion Joints ——— at curb returns, adjacent to structures and at 45' intervals.
(See Standard Drawing G-10).
2. Weakened Plane Joints - - - - - at mid point of curb return, when required,
and at 15' intervals from P.C.R.'s (See Standard Drawing G-10).
3. 1/4" grooves ——— with 1/4" radius edges at 5' intervals.

Revision	By	Approved	Date
Note 4	PC	M.B.	5-86

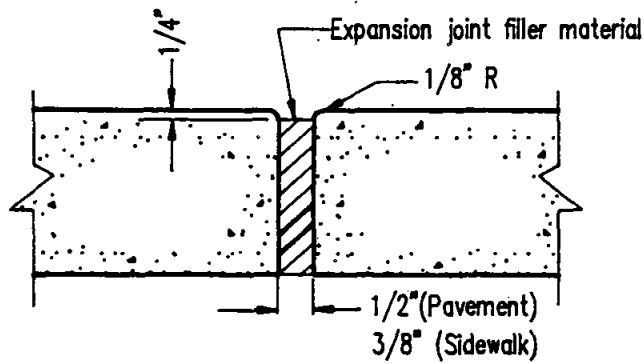
SAN DIEGO REGIONAL STANDARD DRAWING

SIDEWALK JOINT LOCATIONS

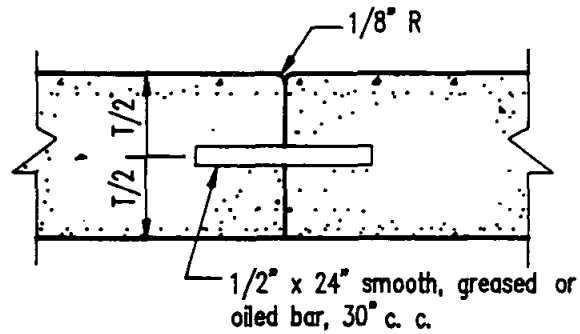
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Walter S. ... Dec. 1975
Coordinator R.C.E. 19807 Date

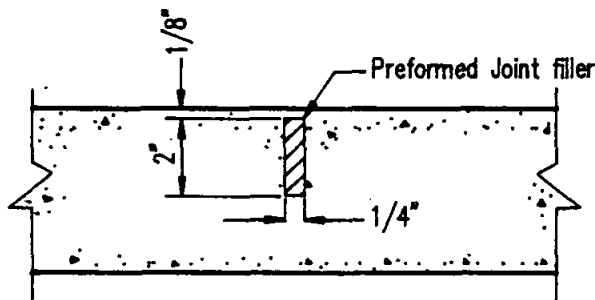
DRAWING
NUMBER **G-9**



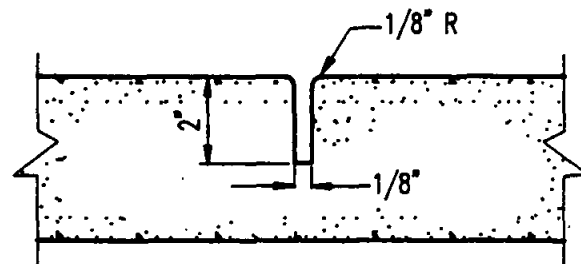
EXPANSION JOINT



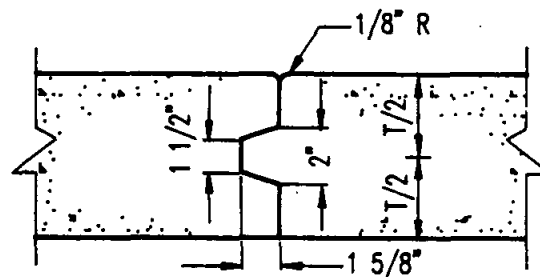
CONTACT JOINT



**WEAKENED PLAN JOINT
GUTTER AND PAVEMENT**



**WEAKENED PLAN JOINT
CURB AND SIDEWALK**



KEYED JOINT

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Joseph A. ... 5-11-92
Chairman Date

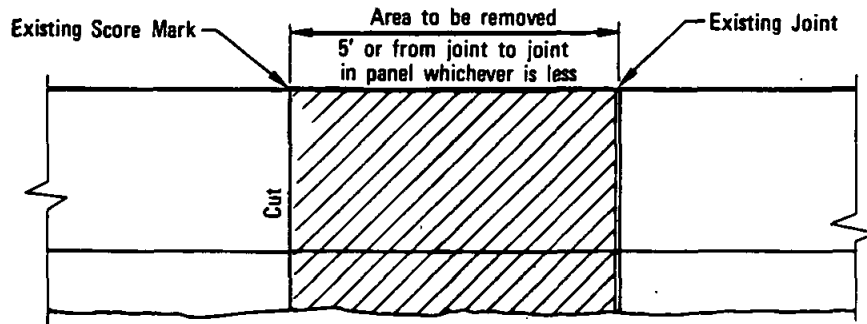
RCE 25102

DRAWING
NUMBER **G-10**

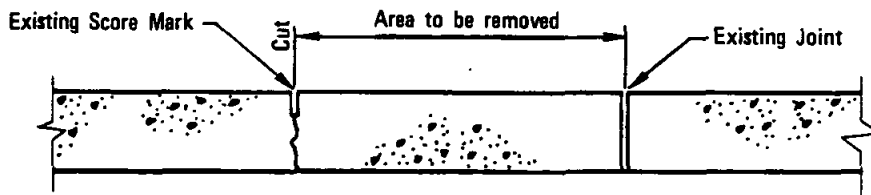
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE JOINT DETAILS

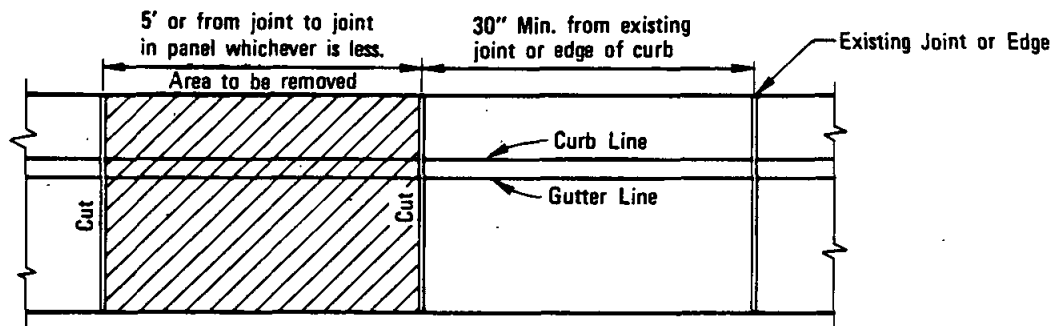
Revision	By	Approved	Date
Bar note	JP	G.O.	5-92



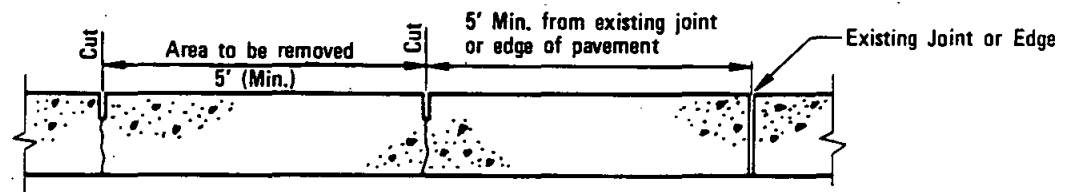
SIDEWALK PLAN



SIDEWALK SECTION



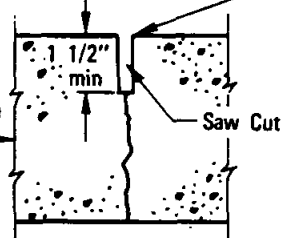
CURB PLAN



PAVEMENT SECTION

Remaining edge to be smooth and true with no shatter.

Portland cement concrete to be removed



**SECTION
Showing Cut**

NOTE

When distance from, "Area to be removed", to existing joint, edge or score mark is less than minimum shown, "Area to be removed" shall be extended to that joint, edge or score mark.

Revision	By	Approved	Date
Pvmt. min.	W.D.	5-86	
Notes	G.H.	9/88	

SAN DIEGO REGIONAL STANDARD DRAWING

**PORTLAND CEMENT CONCRETE CURB,
GUTTER, SIDEWALK AND PAVEMENT
REMOVAL AND REPLACEMENT**

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen Q. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

**DRAWING
NUMBER G-11**



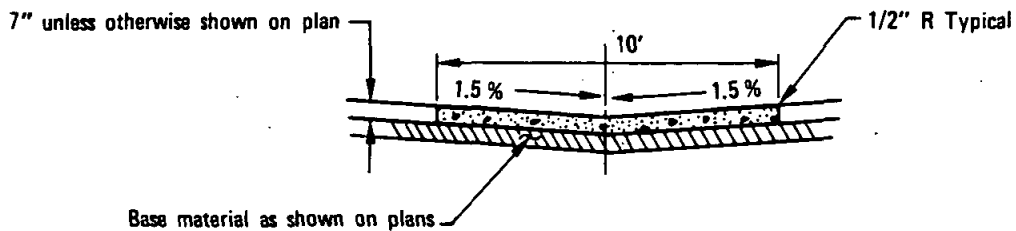
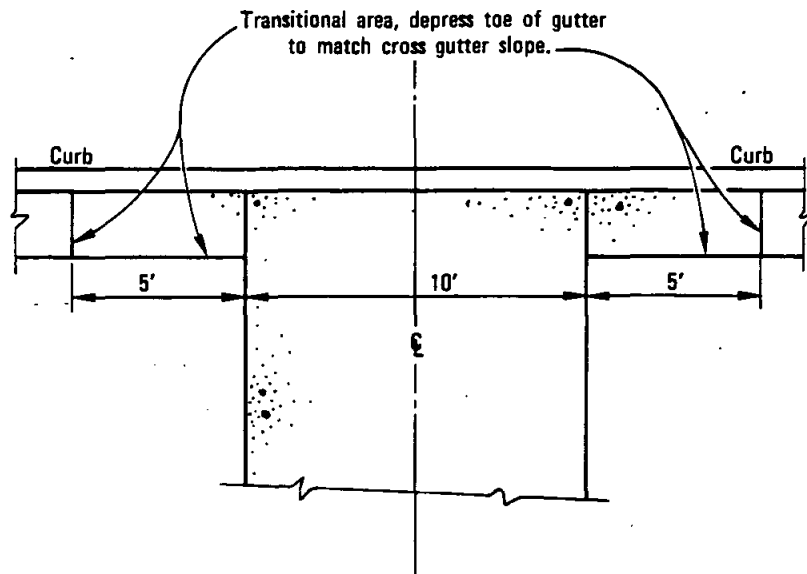
1. Concrete shall be 560-C-3250.
2. ----- = Weakened plane joints.
3. = Typical flowlines.
4. O = Elevations to be shown on plans.
5. Return segments to be 7" Thick.
6. Curb between P.C.R.s shall be considered as part of cross gutter.
7. In all cases subgrade shall be compacted to 95% min relative compaction to a depth of 12".

DRAWING **G-12**
NUMBER

SAN DIEGO REGIONAL STANDARD DRAWING

CROSS GUTTER

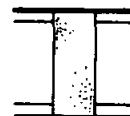
Revision	By	Approved	Date
Thickness	SC	0.5	7-79
Note 1	TRP	M.B.	10-82
Note 6	SC	M.B.	5-86
Note 7	JP	GA	5-92



NOTES:

1. Cross gutter to be constructed where the drainage is carried across street.
2. Minimum allowable cross slope is 0.5 %.
3. Concrete shall be 560-C-3250.
4. In all cases subgrade shall be compacted to 95% minimum relative compaction to a depth of 12".

LEGEND ON PLANS



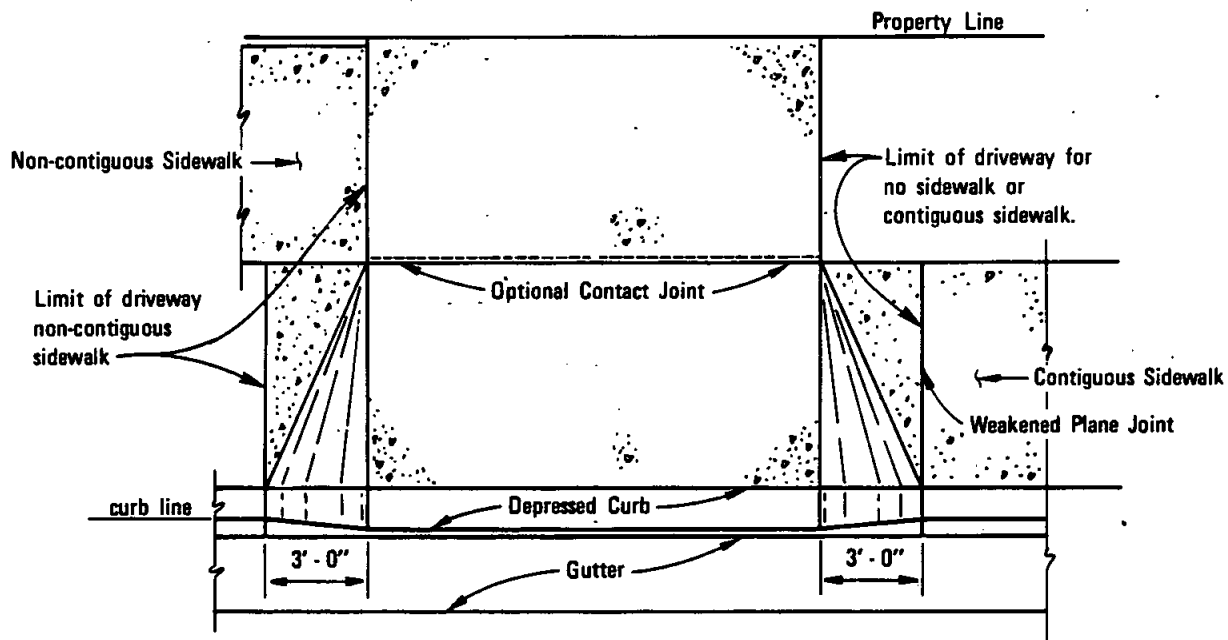
Revision	By	Approved	Date
Thickness	OS	7-79	
Conc.	TRP	M. B.	10-82
Thickness	JY	G. A.	5-92

SAN DIEGO REGIONAL STANDARD DRAWING

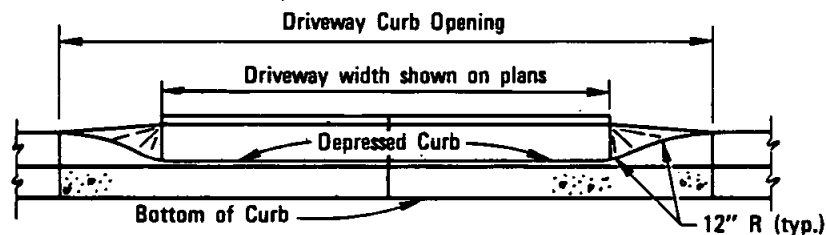
MID-BLOCK CROSS GUTTER

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Allen A. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

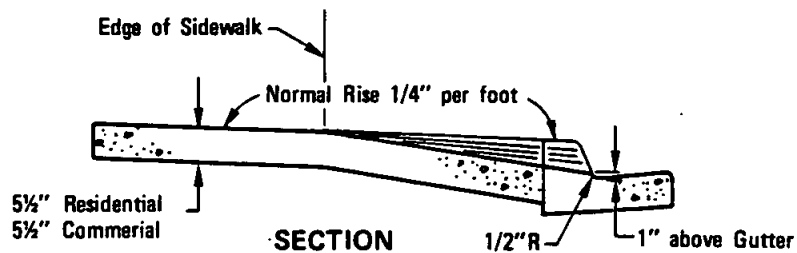
DRAWING
NUMBER **G-13**



PLAN



ELEVATION

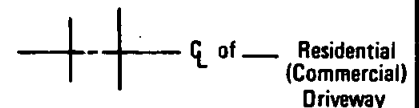


SECTION

NOTES

1. No concrete shall be placed until forms and subgrade are inspected by the Agency.
2. Concrete shall be 520-C-2500.
3. See standard drawings G-15 and G-16 for width and location requirements.
4. Driveway ramp to extend to 10 feet from curb face or to property line whichever is less. (For commercial driveways only)
5. See Standard Drawings G-2 and G-10 for curb and joint details.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Alfred G. Kuehn *Dec. 1975*
Coordinator R.C.E. 19807 Date

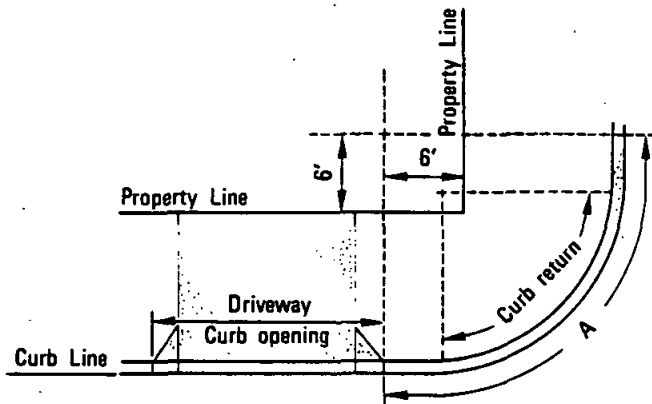
DRAWING NUMBER

G-14

SAN DIEGO REGIONAL STANDARD DRAWING

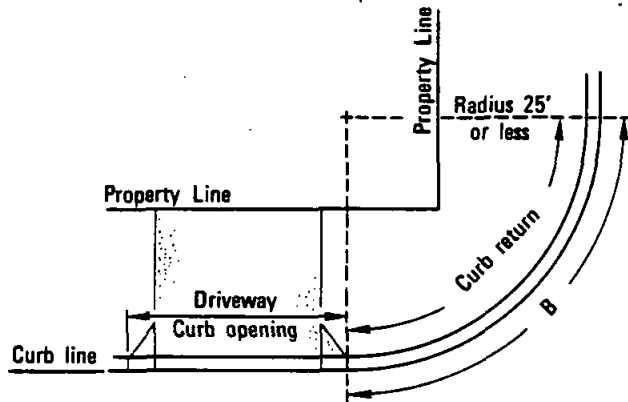
CONCRETE DRIVEWAYS

Revision	By	Approved	Date
Thickness	<i>D.S.</i>		7-79
Thickness	<i>M.B.</i>		6-82
Conc.	<i>TRA</i>	<i>M.B.</i>	10-82
Limits	<i>RA</i>	<i>M.B.</i>	5-86
Notations	<i>D.H.</i>		7-88



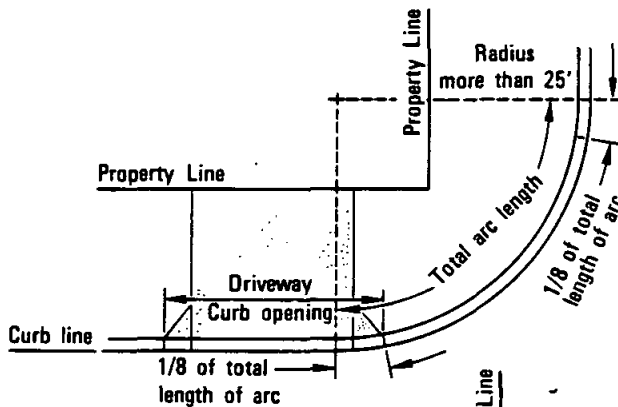
REQUIREMENT 1

No portion of any curb opening shall be permitted within 6' of the intersection of the prolonged property lines and the curb as shown by arc A.



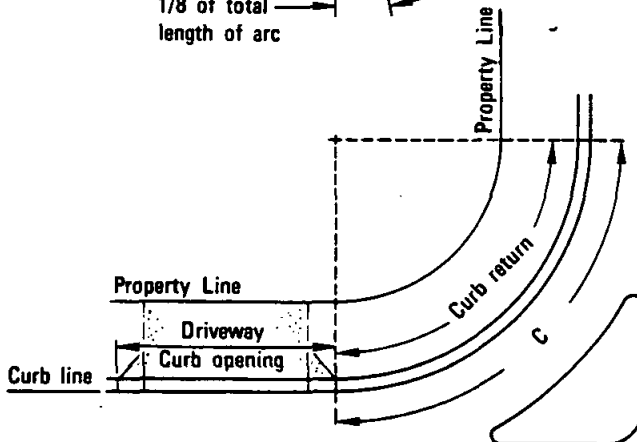
REQUIREMENT 2

No portion of any curb opening shall be permitted in the curb return where the radius of curb is 25' or less, as shown by arc B.



REQUIREMENT 3

On all curb returns where the radius is more than 25', curb openings may encroach upon each end of the return a distance equal to 12 1/2% or 1/8 of the total length of the arc on the curb return, thus leaving at least 75% of the length of arc on the return face free from driveway encroachment, provided Requirement 1 is met.



REQUIREMENT 4

No portion of any curb opening shall be permitted in the curb return where a separate turning movement is provided, as shown by arc C.

Revision	By	Approved	Date
Reqmt. 3	AC	M.B.	5-86

SAN DIEGO REGIONAL STANDARD DRAWING

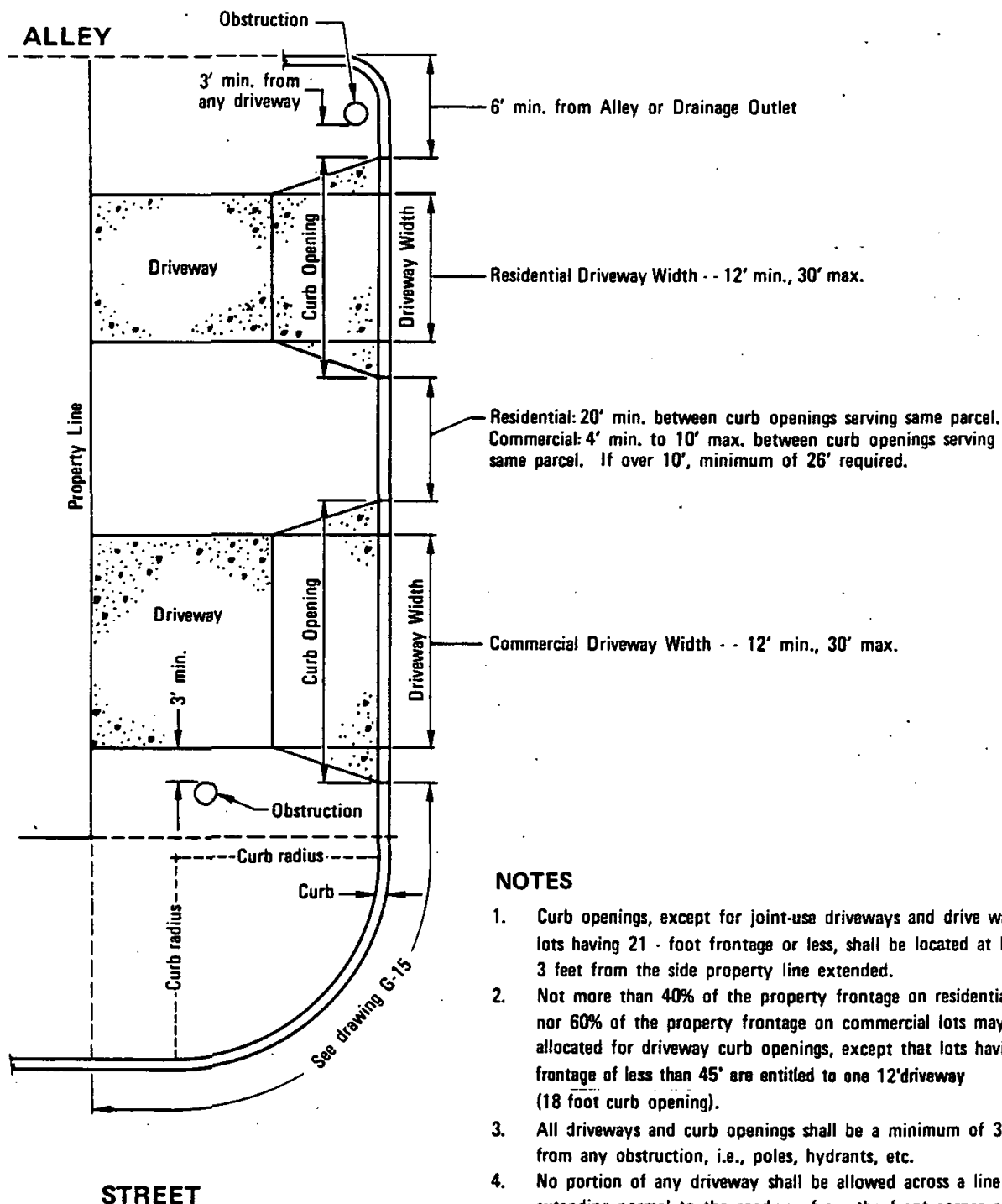
**DRIVEWAY LOCATION - ADJACENT TO
CURB RETURNS AND STREET LINES**

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen P. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER

G-15



NOTES

1. Curb openings, except for joint-use driveways and drive ways on lots having 21 - foot frontage or less, shall be located at least 3 feet from the side property line extended.
2. Not more than 40% of the property frontage on residential lots, nor 60% of the property frontage on commercial lots may be allocated for driveway curb openings, except that lots having frontage of less than 45' are entitled to one 12' driveway (18 foot curb opening).
3. All driveways and curb openings shall be a minimum of 3 feet from any obstruction, i.e., poles, hydrants, etc.
4. No portion of any driveway shall be allowed across a line extending normal to the roadway from the front corner of the property, except that joint-use driveways may be permitted in special instances where written approval of both property owners is filed with the Agency.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Oliver A. Kuehnel Dec. 1975
Coordinator R.C.E. 19807 Date

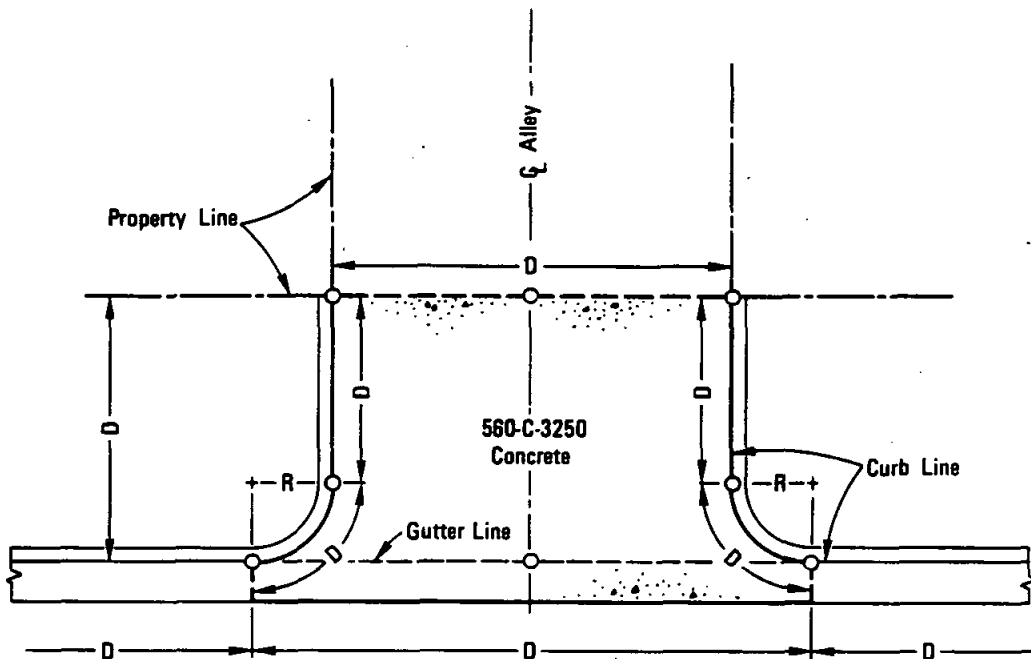
DRAWING
NUMBER

G-16

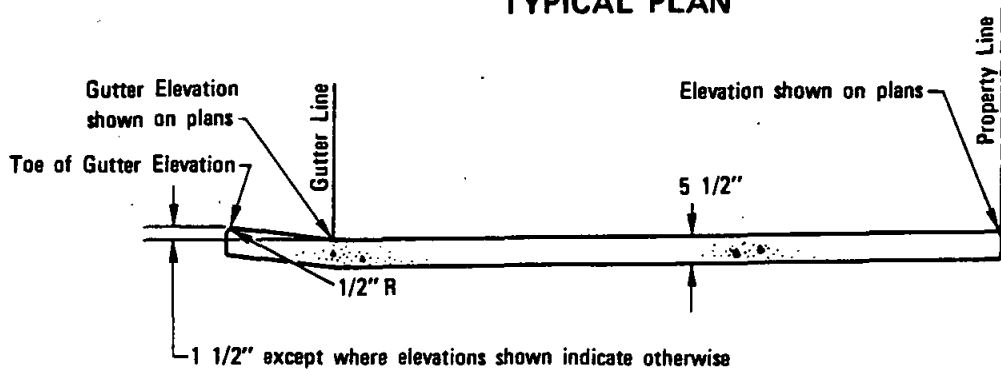
SAN DIEGO REGIONAL STANDARD DRAWING

DRIVEWAY LOCATION AND WIDTH REQUIREMENTS

Revision	By	Approved	Date
Note 2	JP	<i>[Signature]</i>	5-92



TYPICAL PLAN



C SECTION

NOTES

1. Sidewalk ramps shall be installed as required by Agency.
2. D = distance shown on plans.
3. R = radius shown on plans (3 ft. minimum).
4. O = elevations shown on plans (top of curb, and gutter elev).
5. --- = 1/2" expansion joints.

LEGEND ON PLANS



Revision	By	Approved	Date
Thickness	IC	D.S.	7-79
Conc.	8	M.B.	5-86
Note 5	SC	G.H.	7-88

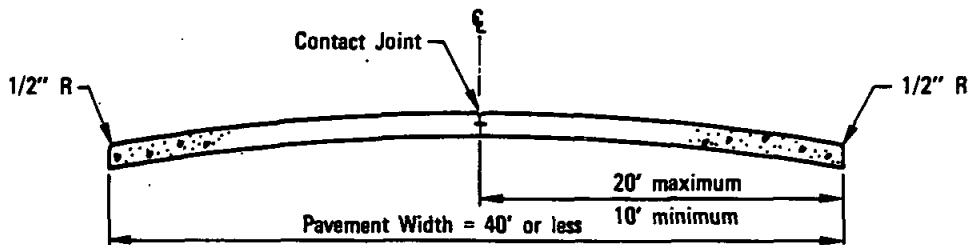
SAN DIEGO REGIONAL STANDARD DRAWING

ALLEY APRON

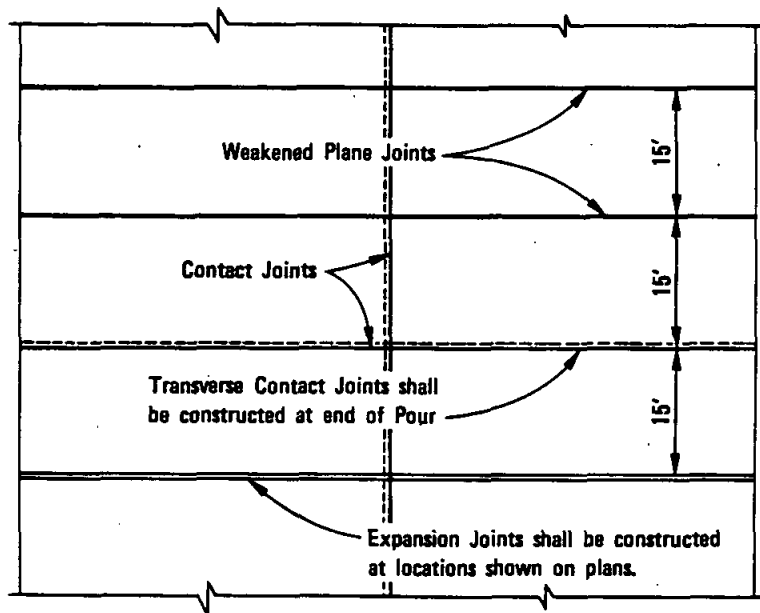
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Allan A. Kuehnel Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING NUMBER G-17



TYPICAL SECTION



TYPICAL PLAN

NOTES

1. Concrete shall be 560-C-3250.
2. See Standard Drawing G-10 for joint details.
3. Adjust 15' interval between Transverse Joints to match adjacent existing improvements.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

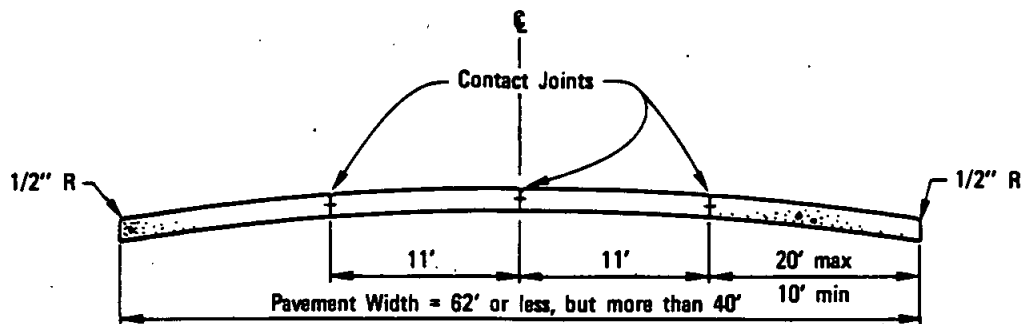
Allan A. Kuehnel Dec. 1975
Coordinator R.C.E. 19807 Date

**DRAWING
NUMBER G-18**

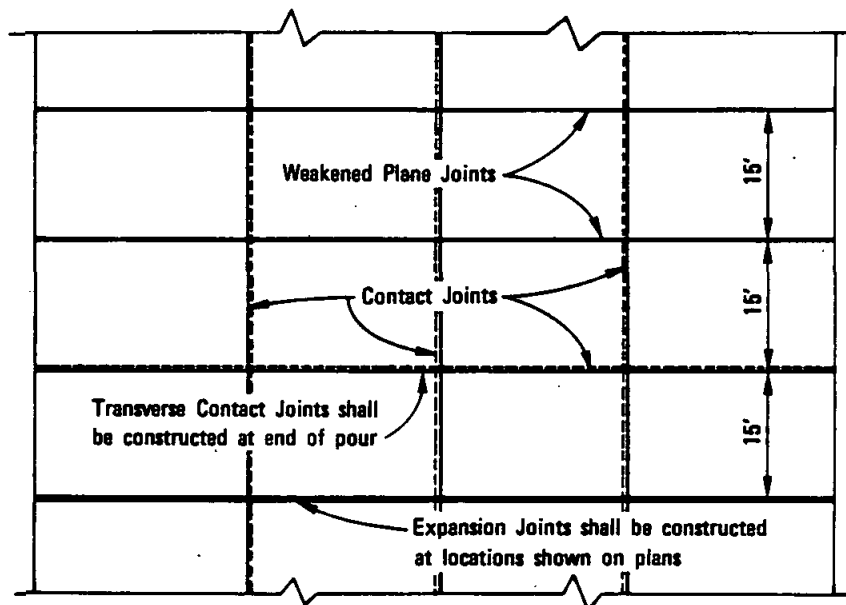
SAN DIEGO REGIONAL STANDARD DRAWING

**CONCRETE PAVEMENT,
WIDTH 40' OR LESS**

Revision	By	Approved	Date
Conc.	EC	M.B.	5-86



TYPICAL SECTION

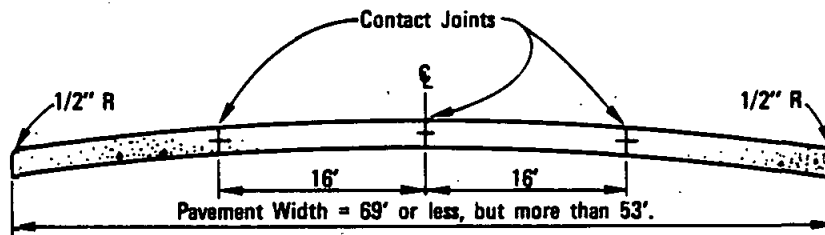


TYPICAL PLAN

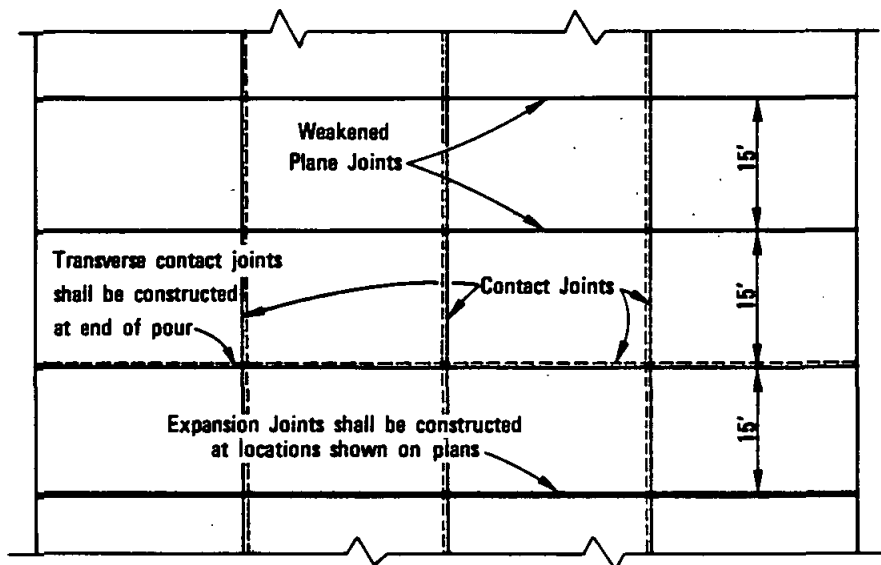
NOTES

1. Concrete shall be 560-C-3250.
2. See Standard Drawing G-10 for joint details.
3. Adjust 15' interval between Transverse Joints to match adjacent existing improvements.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Conc.	R	MA	5-24				
				CONCRETE PAVEMENT WIDTH 40' TO 62'		Coordinator	R.C.E. 19807
						Date	Dec. 1975
						DRAWING NUMBER	
						G-19	



TYPICAL SECTION



TYPICAL PLAN

NOTES

1. Concrete shall be 560-C-3250.
2. See Standard Drawing G-10 for Joint Details.
3. Adjust 15' interval between Transverse Joints to match adjacent existing improvements.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan A. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

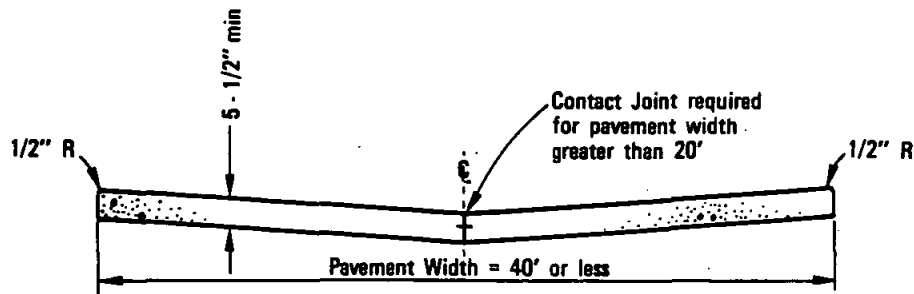
**DRAWING
NUMBER**

G-20

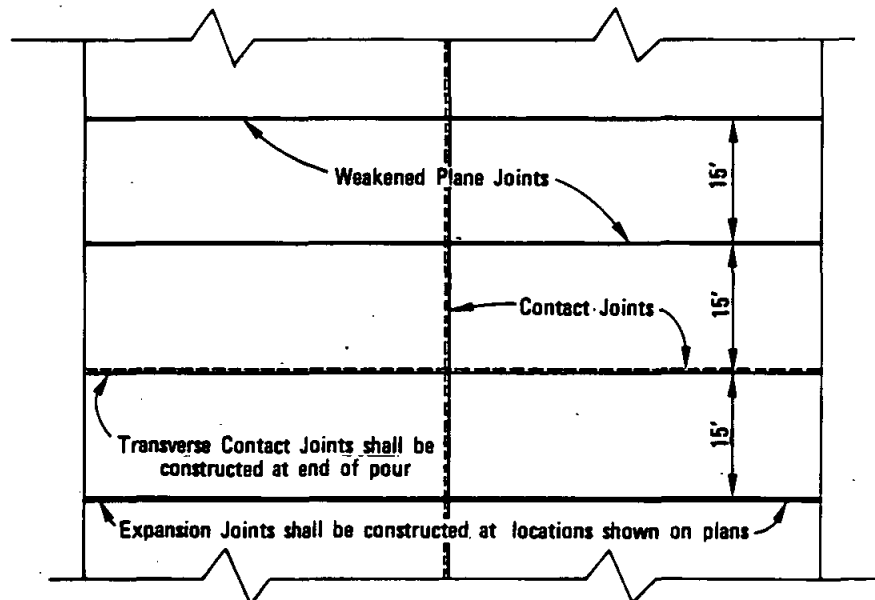
SAN DIEGO REGIONAL STANDARD DRAWING

**CONCRETE PAVEMENT
WIDTH 53' TO 69'**

Revision	By	Approved	Date
Conc.	<i>SS</i>	<i>M.A.</i>	<i>5/86</i>



TYPICAL SECTION



TYPICAL PLAN

NOTES

1. Concrete shall be 560-C-3250
2. See Standard Drawing G-10 for joint details.
3. Adjust 15' interval between Transverse Joints to match adjacent existing improvements.

Revision	By	Approved	Date
Conc.	<i>E. M. A.</i>		5-86

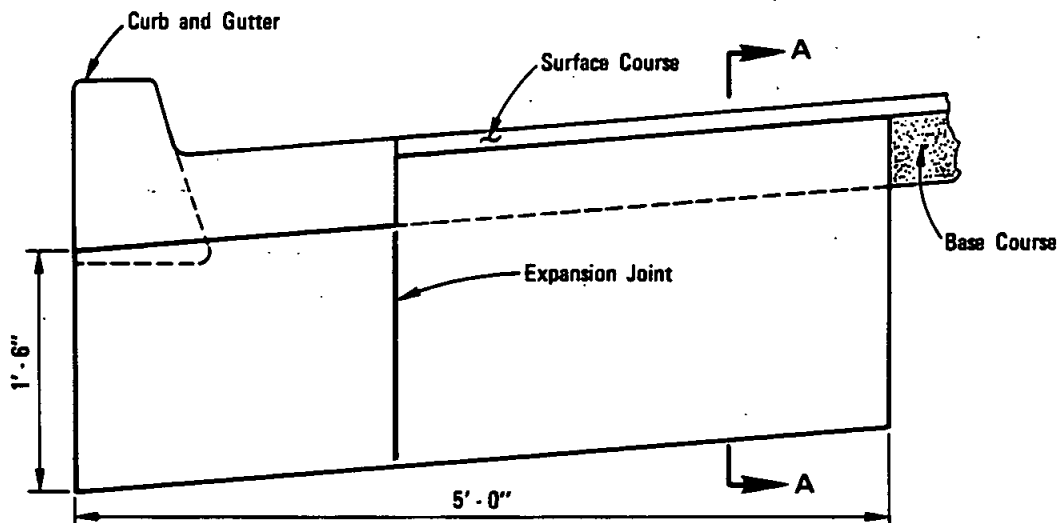
SAN DIEGO REGIONAL STANDARD DRAWING

**CONCRETE PAVEMENT,
ALLEY SECTION, WIDTH 40' OR LESS**

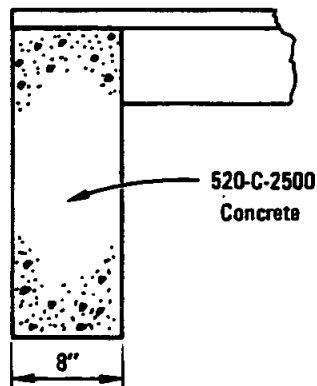
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alfred A. Kuehn *Dec. 1975*
Coordinator R.C.E. 19807 Date

**DRAWING
NUMBER G-21**

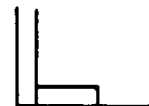


ELEVATION



SECTION A-A

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

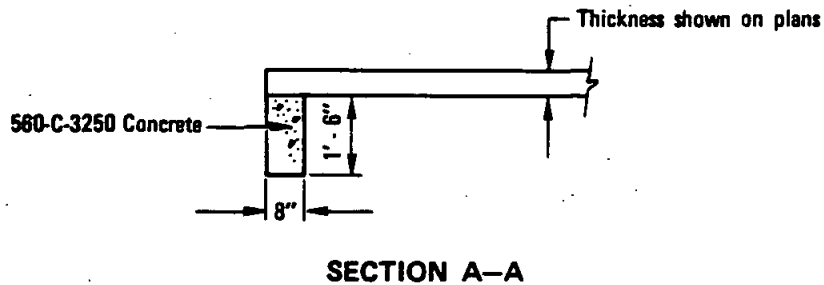
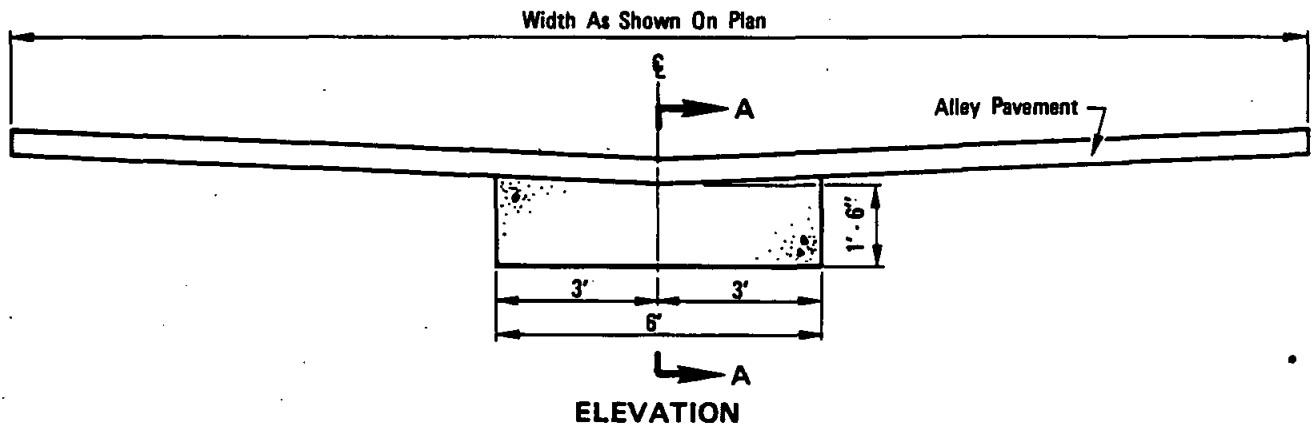
Allan A. Kuehnel Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **G-22**

SAN DIEGO REGIONAL STANDARD DRAWING

**CUTOFF WALL AT END
OF PAVEMENT**

Revision	By	Approved	Date
Conc.	R	M.B.	5-86



LEGEND ON PLANS



Revision	By	Approved	Date
Conc.	<i>M.B.</i>	<i>S.B.</i>	

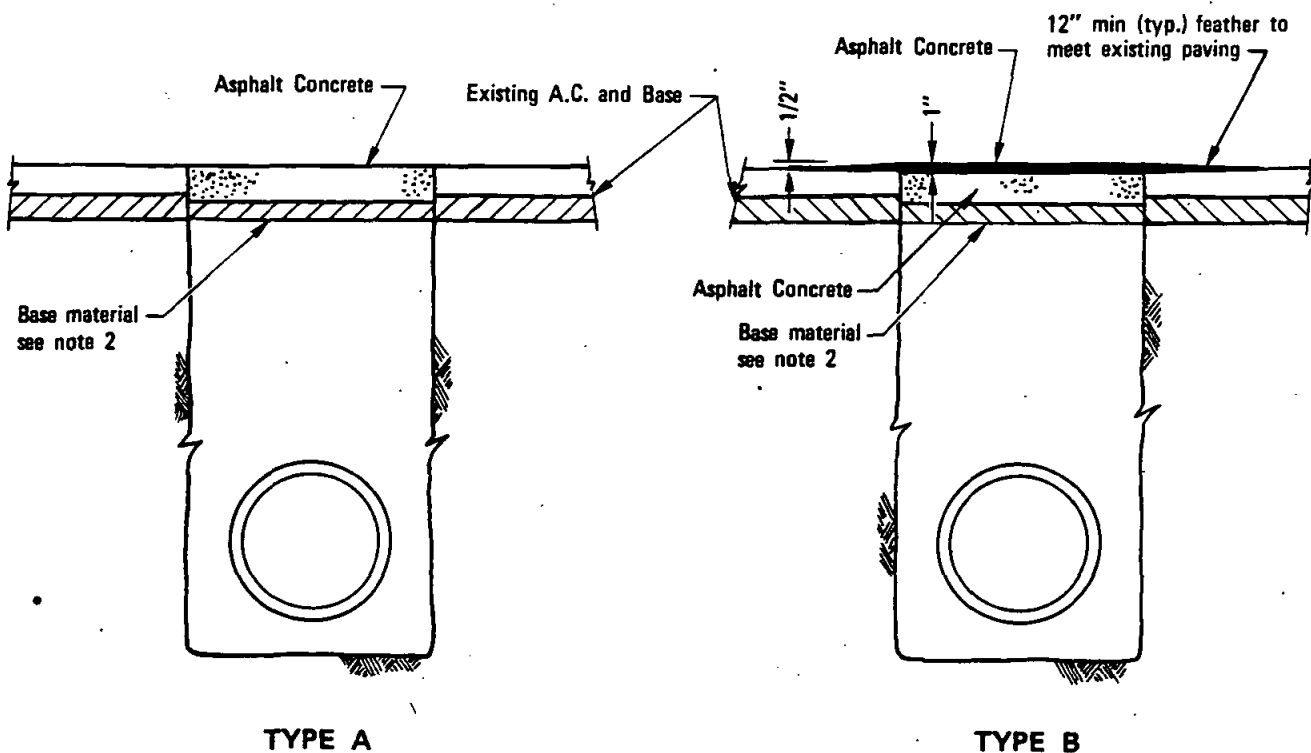
SAN DIEGO REGIONAL STANDARD DRAWING

**CUTOFF WALL AT END
OF ALLEY PAVEMENT**

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen G. Kuehn *Dec. 1975*
Coordinator R.C.E. 19807 Date

**DRAWING
NUMBER G-23**



NOTES

1. Existing A.C. shall be cut and removed in such a manner so as not to tear, bulge or displace adjacent pavement. Edges shall be clean and vertical. All cuts shall be parallel or perpendicular to street centerline, when practical.
2. Base material to be replaced to depth of existing base. A.C. may be substituted for base material.
3. A tack coat of asphaltic emulsion or paving asphalt shall be applied to existing A.C. at all contact surfaces, prior to resurfacing.
4. Asphaltic Concrete Resurfacing:
 - a) Minimum total thickness shall be one inch greater than existing A.C.
 - b) A.C. shall be hot plant mix.
 - c) Finish course for Type B resurfacing shall be laid down using a spreader box.
5. All A.C. resurfacing shall be seal coated with an emulsified asphalt and covered with sand. Chip sealing shall be applied as required by Agency.
6. Type B not to be used on lateral crossings.
7. Sloughing of trench under pavement shall be cause for requiring additional pavement and base.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

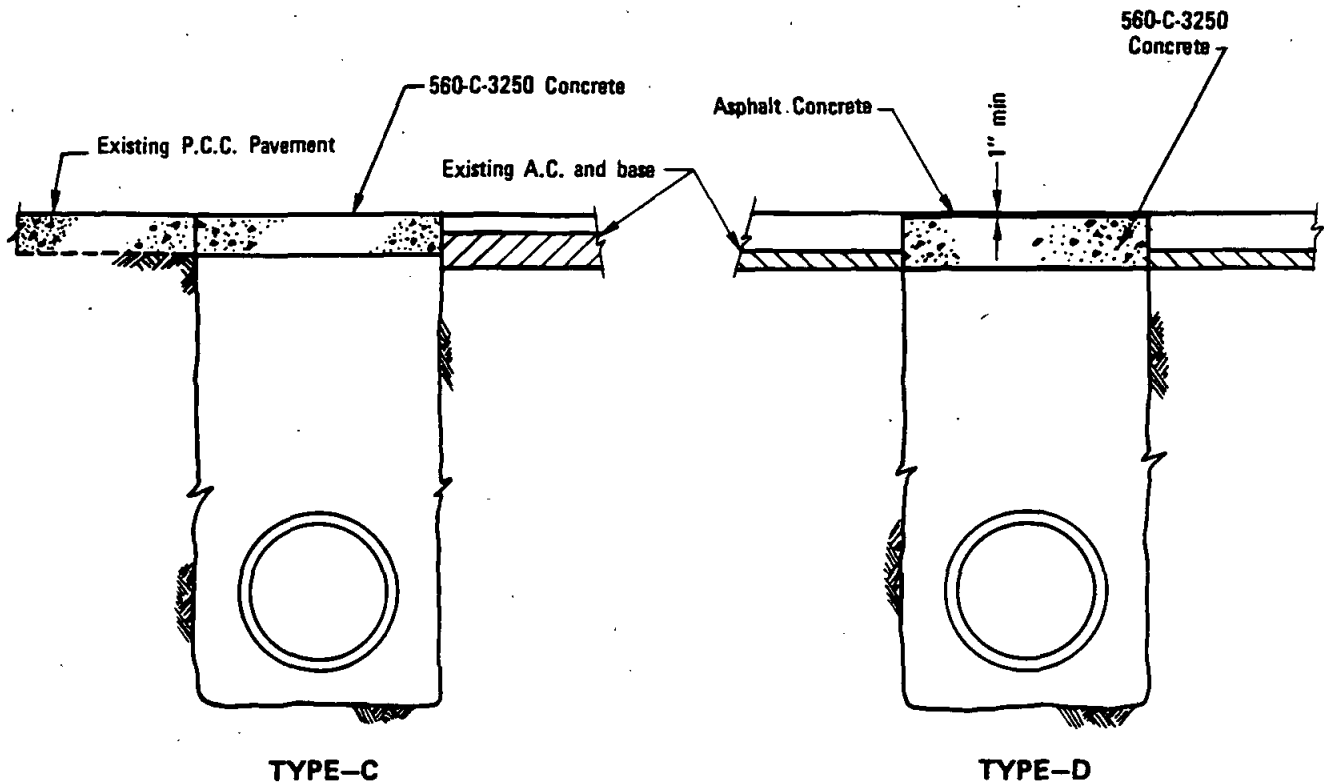
Allen O. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

TRENCH RESURFACING TYPES A & B

DRAWING
NUMBER **G-24**

Revision	By	Approved	Date
Overcut	JRP	M.B.	10-82



GENERAL NOTES

- Existing A.C. shall be cut and removed in such a manner so as not to tear, bulge or displace adjacent pavement. Edges shall be clean and vertical. All cuts shall be parallel or perpendicular to street centerline, when practical.
- Sloughing of trench under pavement shall be cause for requiring additional pavement and base.

NOTES TYPE-C

- Concrete shall be colored black where required to match existing pavement. Method to be specified by Agency.
- Minimum concrete thickness:
 Alleys and local residential street ————— 5 inches
 Major streets and highway ————— 7 inches
 Trench resurfacing in P.C.C. pavement shall have the above minimum thickness or match the existing concrete thickness plus one inch whichever is greater.

NOTES TYPE-D

- A.C. shall be hot plant mix.
- A tack coat of asphaltic emulsion or paving asphalt shall be applied to the existing A.C. at all contact surfaces and to the portland concrete prior to placing the new A.C.
- A.C. resurfacing shall be seal coated with an emulsified asphalt and covered with sand. Chip sealing shall be applied as required by Agency.

Revision	By	Approved	Date
Overcut	TKP	M.B.	10-82
Conc.	SP	M.B.	5-86

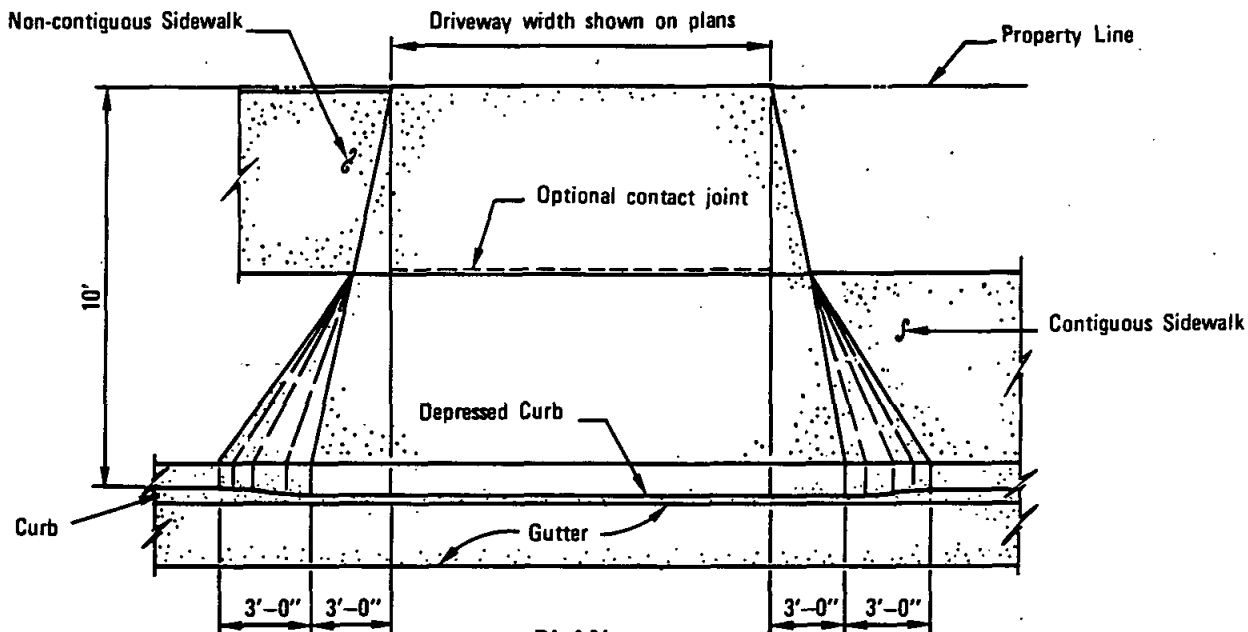
SAN DIEGO REGIONAL STANDARD DRAWING

TRENCH RESURFACING TYPES C & D

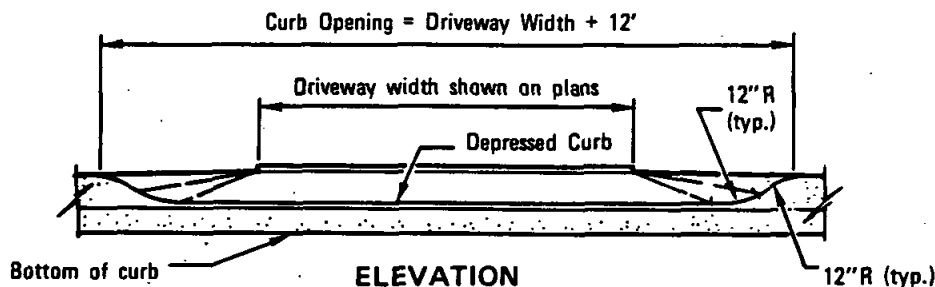
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen O. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

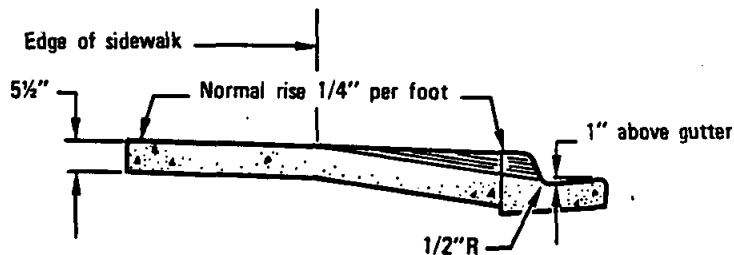
DRAWING
NUMBER **G-25**



PLAN



ELEVATION



SECTION

NOTES

1. No concrete shall be placed until forms and subgrade are inspected by the Agency.
2. Concrete shall be 520-C-2500.
3. See Standard Drawing G-15 and G-16 for width and location requirements.
4. See Standard Drawings G-2 and G-10 for curb and joint details.

LEGEND ON PLANS



Alt. Commercial
Driveway

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Harry R. Holt Oct 1982
Chairman C.E. C13768 Date

SAN DIEGO REGIONAL STANDARD DRAWING

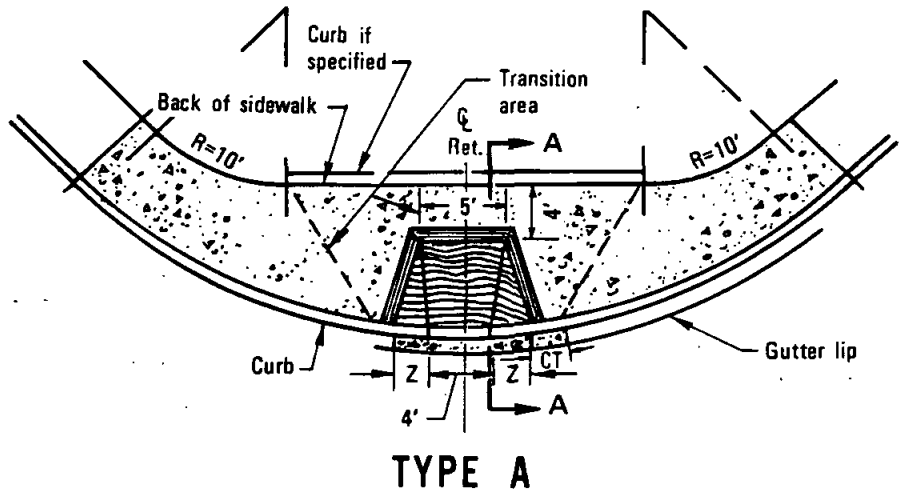
CONCRETE DRIVEWAY COMMERCIAL ALTERNATE

DRAWING
NUMBER

G-26

Revision	By	Approved	Date
Conc.	SC	M.B.	5-86
Note 4	SC	A.H.	7-88

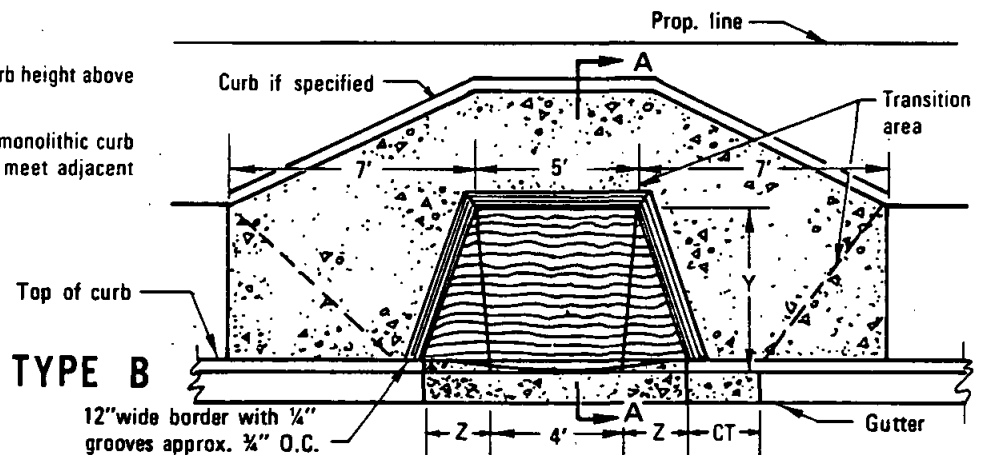
X	Y	Z	CT
Curb Height	Ramp Length	Side Slope	Curb Transition
1"	0' - 6"	1' - 6"	0' - 0"
2"	1' - 6"	1' - 6"	0' - 0"
3"	2' - 6"	1' - 8"	0' - 0"
4"	3' - 6"	2' - 4"	0' - 0"
5"	4' - 6"	3' - 0"	0' - 0"
6"	5' - 6"	3' - 0"	0' - 0"
7"	5' - 6"	3' - 0"	1' - 0"
8"	5' - 6"	3' - 0"	2' - 0"



TYPE A

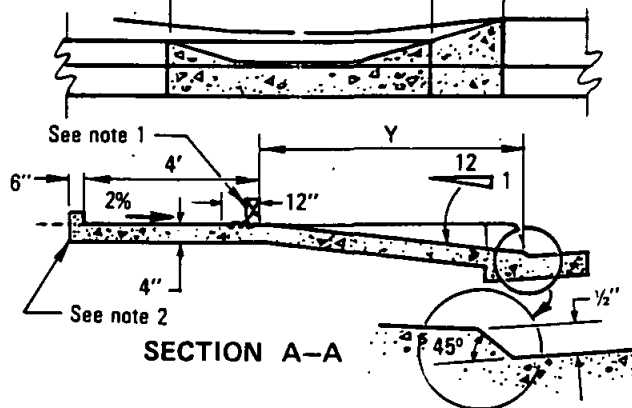
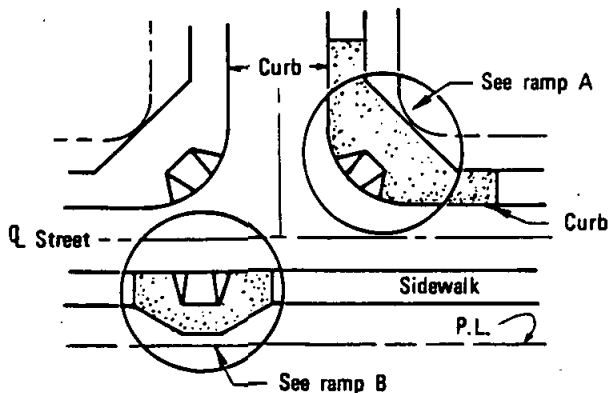
CONSTRUCTION NOTES

1. Set false header for back of ramp at curb height above gutter grade to maximum 6".
2. Where shown on the plans, construct monolithic curb for retention of street drainage or to meet adjacent improvements.



TYPE B

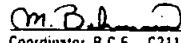
12" wide border with 1/4" grooves approx. 3/4" O.C.



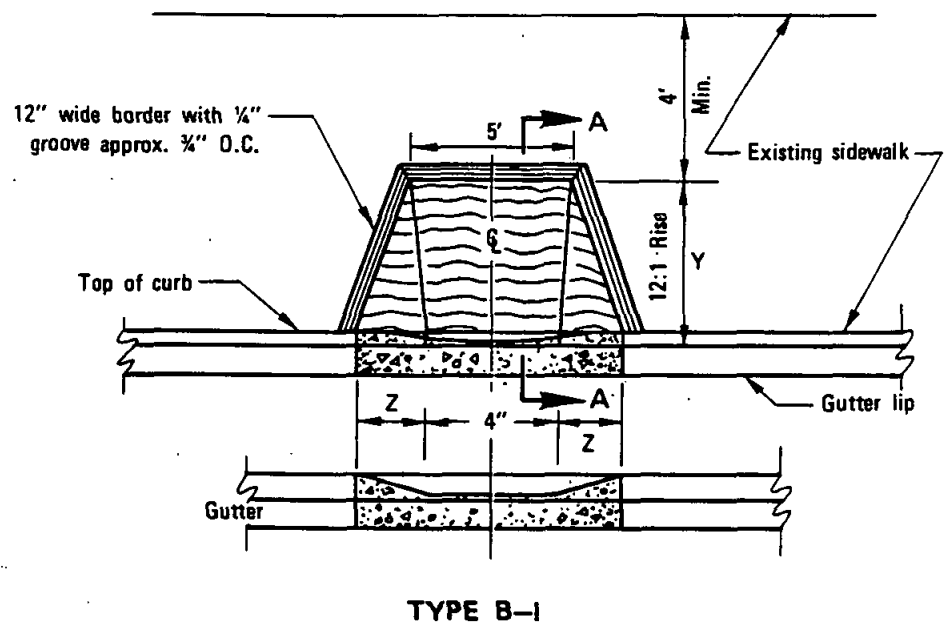
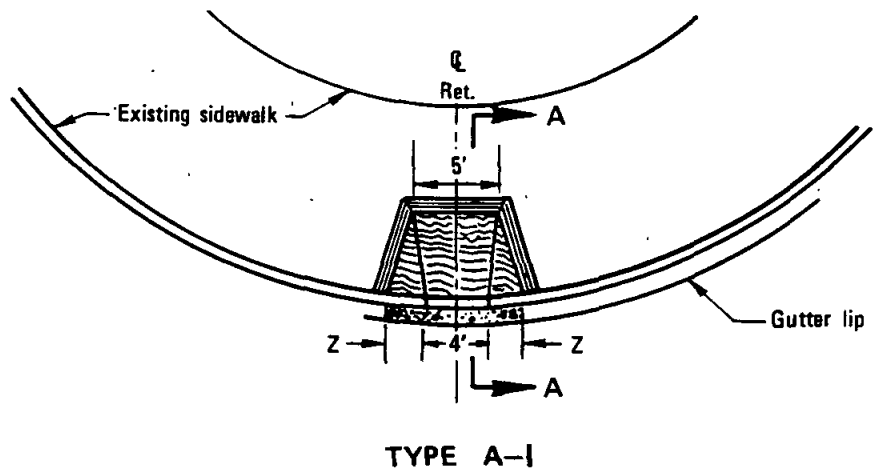
SECTION A-A

NOTE

See Standard Drawing G-32 for general notes.

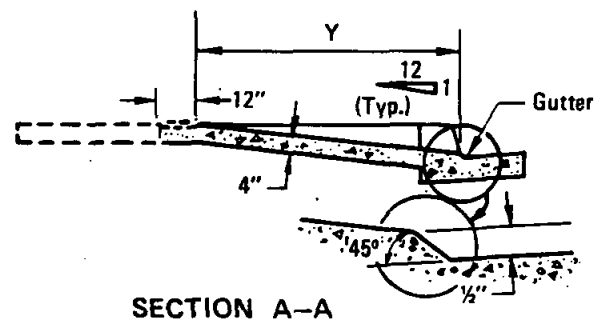
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Notes	✓	a.H.	9/88			 4-25-86 Coordinator R.C.E. C21133 Date	
				PEDESTRIAN RAMP TYPES A AND B (NEW CONSTRUCTION)		DRAWING NUMBER G-27	

X	Y	Z
Curb Height	Ramp Length	Side Slope
1"	0' - 8"	1' - 6"
2"	2' - 0"	1' - 6"
3"	3' - 4"	1' - 8"
4"	4' - 8"	2' - 4"
5"	6' - 0"	3' - 0"
6"	7' - 4"	3' - 0"
7"	8' - 7"	3' - 0"
8"	9' - 11"	3' - 0"



NOTES

1. See Standard Drawing G-32 for general notes.
2. If inadequate space exists in existing sidewalk to provide 4' minimum behind ramp, use Standard Drawing G-30.



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

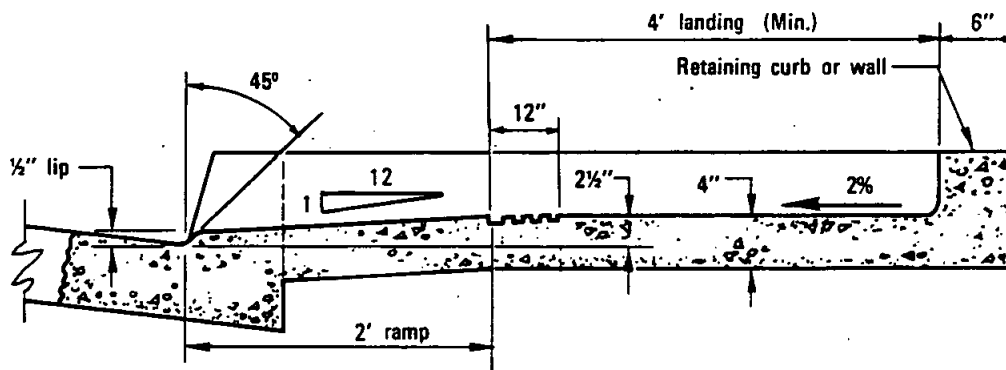
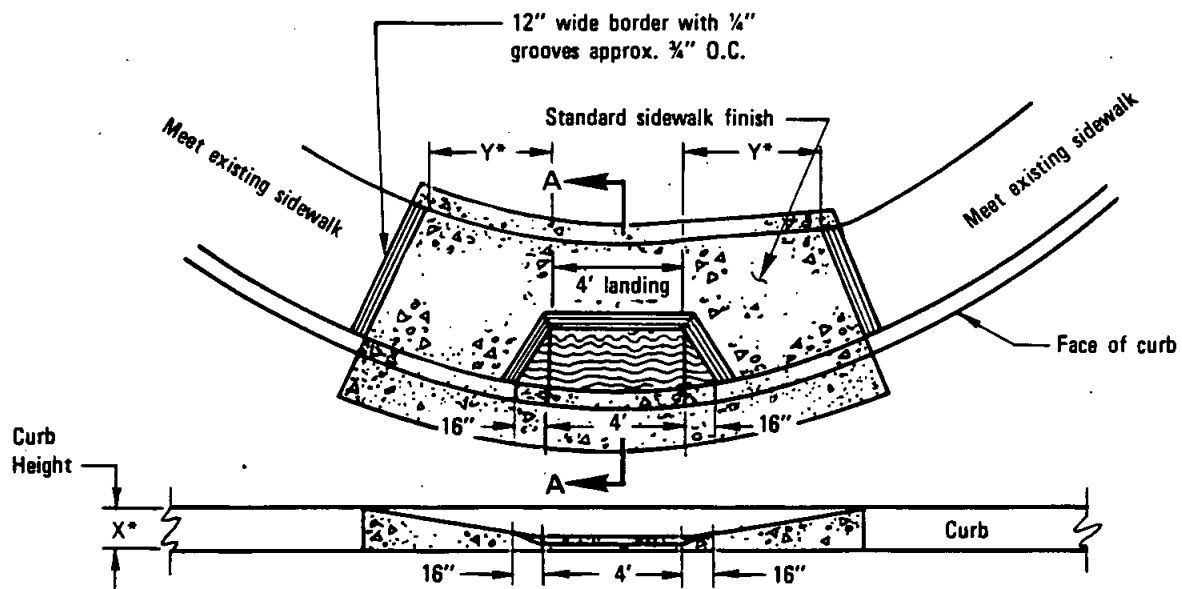
M. Bahman 4-25-86
Coordinator R.C.E. C21133 Date

DRAWING
NUMBER **G-28**

SAN DIEGO REGIONAL STANDARD DRAWING

PEDESTRIAN RAMP TYPES A-1 AND B-1 (IN EXISTING SIDEWALK)

Revision	By	Approved	Date
NOTES	3c	q/h	3-88
TITLE	JP	q/h	5-92



SECTION A-A

NOTES

1. Type C ramps are only to be used to mitigate existing conditions where inadequate right of way exists to use standard drawing G-27, G-28 or G-30 and are not to be used in new construction.
2. See Standard Drawing G-32 for general notes.

X* Curb Height	Y* Ramp Length
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"

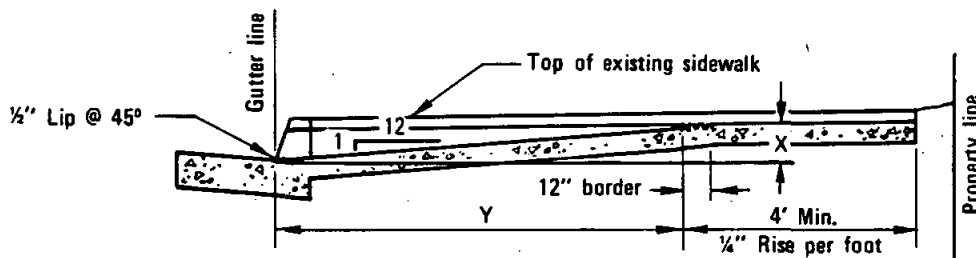
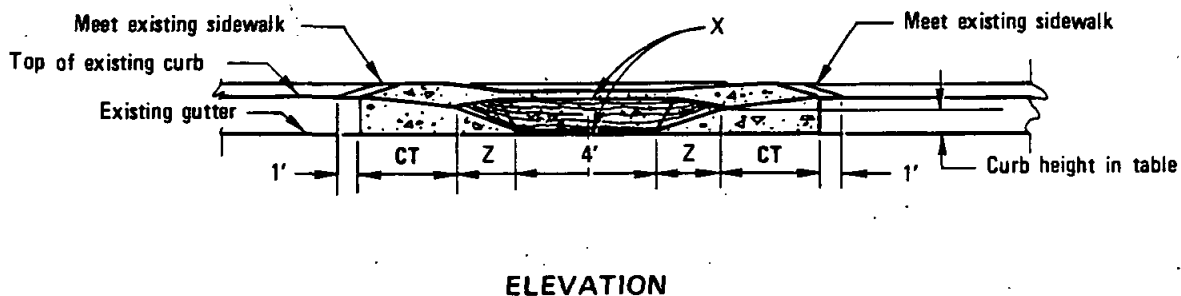
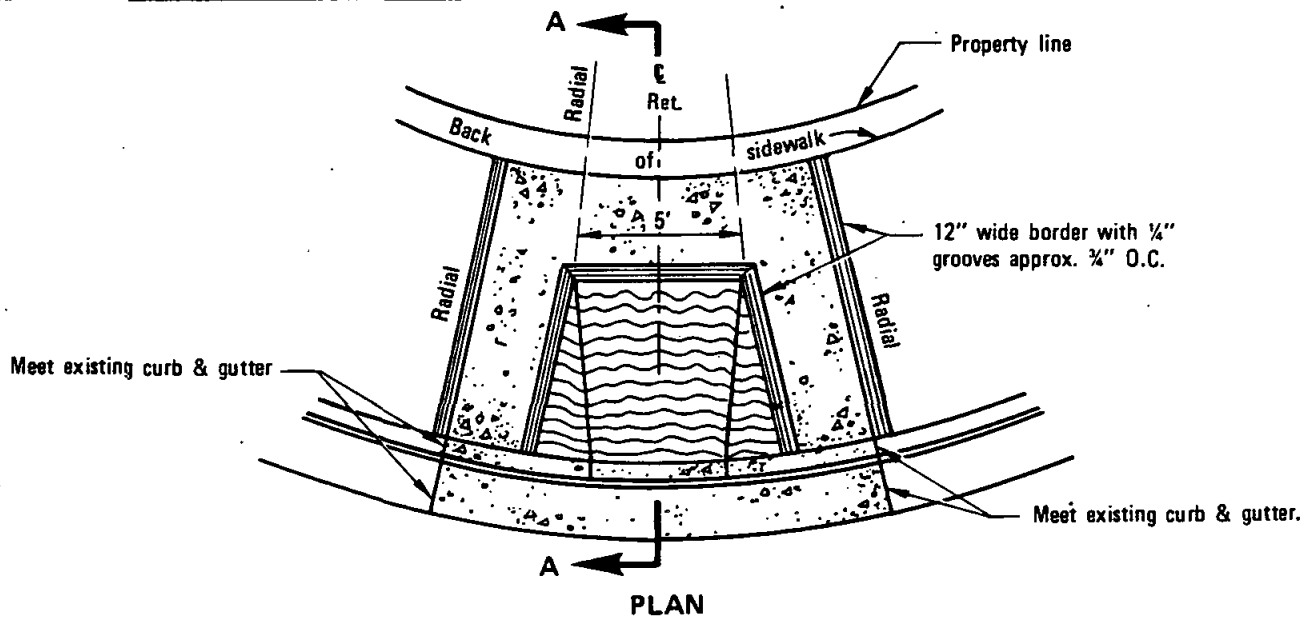
Revision	By	Approved	Date
NOTES	SC	CH	8-88
Y*dim.	JP	CH	5-90

SAN DIEGO REGIONAL STANDARD DRAWING

PEDESTRIAN RAMP TYPE C

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
M. B. [Signature] 4-25-86
Coordinator R.C.E. C21133 Date

DRAWING
NUMBER **G-29**



NOTES

1. See Standard Drawing G-32 for general notes.
2. See Standard Drawing G-27 for dimensions X, Y, Z, CT.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

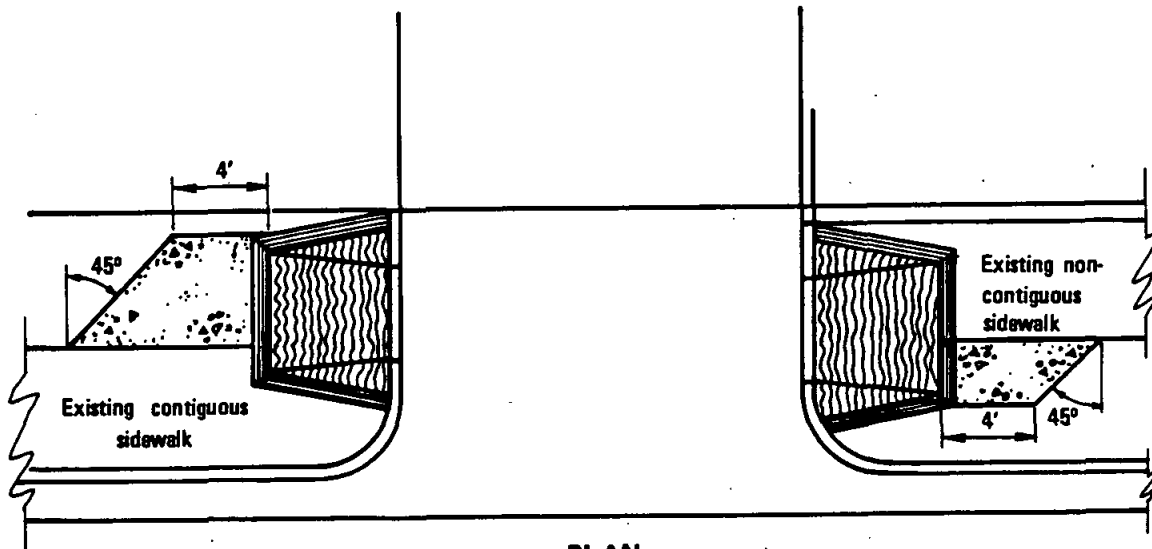
M. Behm 4-25-86
Coordinator R.C.E. C21133 Date

DRAWING
NUMBER **G-30**

SAN DIEGO REGIONAL STANDARD DRAWING

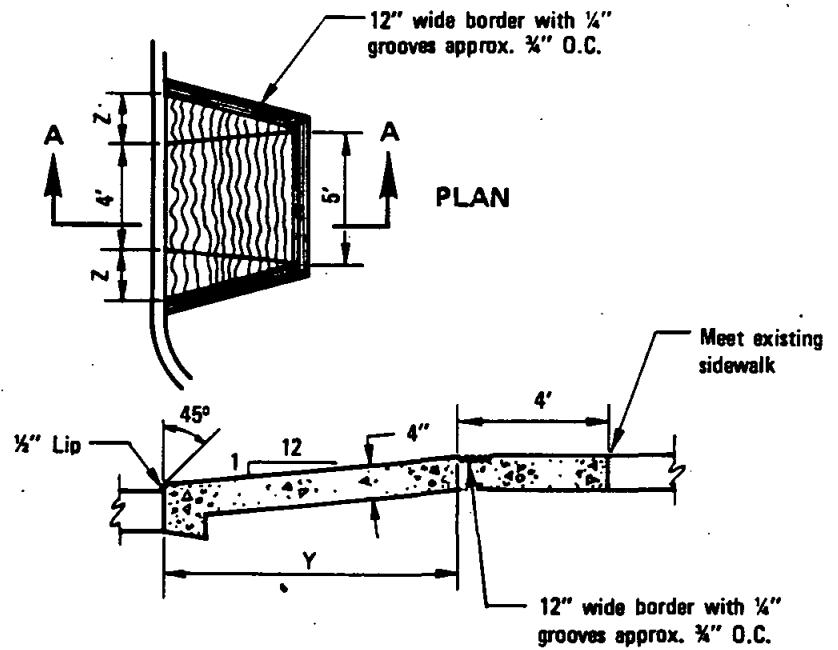
PEDESTRIAN RAMP TYPE C-1 (IN EXISTING SIDEWALK)

Revision	By	Approved	Date
NOTES	SC	CH	8-88



PLAN

X Curb Height	Y Ramp Length	Z Side Slope
2.0"	1' - 6"	1' - 0"
2.5"	2' - 0"	1' - 4"
3.0"	2' - 6"	1' - 8"
3.5"	3' - 0"	2' - 0"
4.0"	3' - 6"	2' - 4"
4.5"	4' - 0"	2' - 8"
5.0"	4' - 6"	3' - 0"
5.5"	5' - 0"	3' - 0"
6.0"	5' - 6"	3' - 0"
6.5"	6' - 0"	3' - 0"
7.0"	6' - 6"	3' - 0"
7.5"	7' - 0"	3' - 0"
8.0"	7' - 6"	3' - 0"



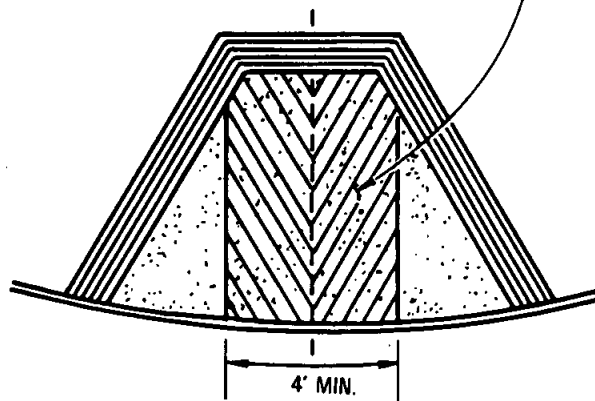
SECTION A-A

NOTE

See Standard Drawing G-32 for general notes.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>M. B. [Signature]</i> 4-25-86 Coordinator R.C.E. C21133 Date
PEDESTRIAN RAMP TYPE D				DRAWING NUMBER G-31	

1. Pedestrian ramps shown on Standard Drawings G-27 through G-30 do not conform to the requirements of the State Building Code (Part 2, Title 24, C.A.C.) and are not recommended for use on projects with Federal or State funding.
2. Areas shown thus:  Shall have a heavy broom "ripple" texture finish, transverse to axis of ramp.
3. Areas shown thus:  Are the minimum required for a complete ramp installation and shall be concrete class 520-C-2500.
4. When pedestrian ramps are installed in or adjacent to existing colored concrete, the new ramp shall be tinted to match existing concrete color.
5. The removal of existing concrete curb, gutter, sidewalk and pavement for pedestrian ramp installation shall comply with San Diego Regional Standard Drawing G-11.
6. If obstructions such as inlets, utility poles, fire hydrants, etc., are encountered, the ramp locations may be adjusted upon the approval of the Engineer.
7. Where shown on plans, construct herringbone grooves 1/4" deep x 1/4" wide, 1-1/2" apart. Grooves shall be aligned parallel to crosswalk stripes to direct blind pedestrians into appropriate crosswalk.



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

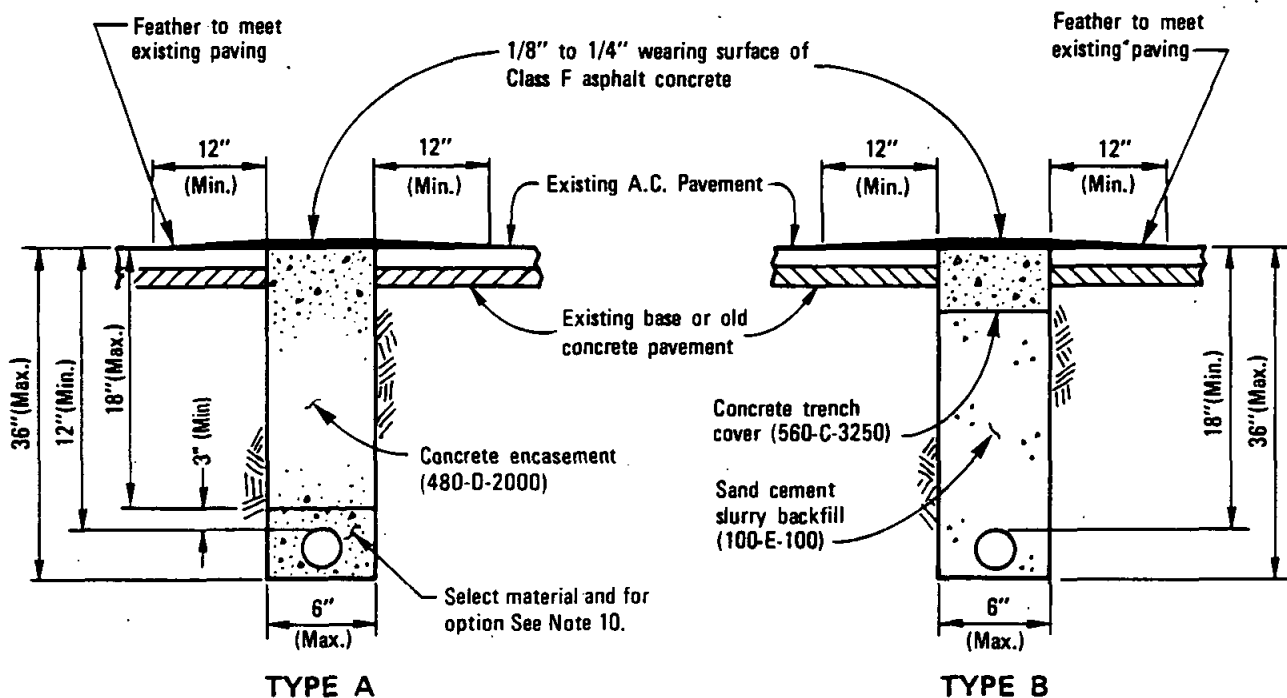
M. Behrman 4-25-86
Coordinator R.C.E. C21133 Date

DRAWING
NUMBER **G-32**

SAN DIEGO REGIONAL STANDARD DRAWING

GENERAL NOTES FOR PEDESTRIAN RAMP

Revision	By	Approved	Date
Note 7	<i>SE</i>	<i>94.</i>	<i>9/88</i>



NOTES

- Concrete encasement or sand cement slurry backfill shall have a maximum slump of 4 inches.
- Concrete encasement and sand cement slurry backfill shall be thoroughly consolidated to encase conduits. Tampers or vibrators shall be used.
- Concrete shall be screeded off to match existing pavement grade and floated to assure proper edge match.
- A tack coat shall be applied to the concrete and existing asphalt pavement prior to placing the new asphalt pavement wearing surface.
- Existing A.C. pavement will not require sawcutting when using rockwheel for excavation.
- Concrete trench cover shall be a minimum 5 1/2 inches thick in alleys or local residential streets and 7 inches thick in all other streets.
- Allow concrete backfill or concrete trench cover seven calendar days minimum but no longer than thirty calendar days to cure and dry before applying the asphalt concrete wearing surface.
- In major or prime arterial streets, an approved set accelerating admixture, such as Calcium Chloride, may be used only with prior approval of the agency's Engineer.
- Only type A shall be permitted for supply cables of 750 volts or less. See California Public Utility Commission General Order No. 128, Rule 33.4 D. (1) (b).
- Select material with a minimum sand equivalent of 50 shall be backfilled to 3" min. above the conduit. Sand cement slurry backfill (100-E-100) may be substituted for select material.

Revision	By	Approved	Date
Notes	JP	Q.A.	9/00
Notes 8, 10	JP	S.D.	5-90

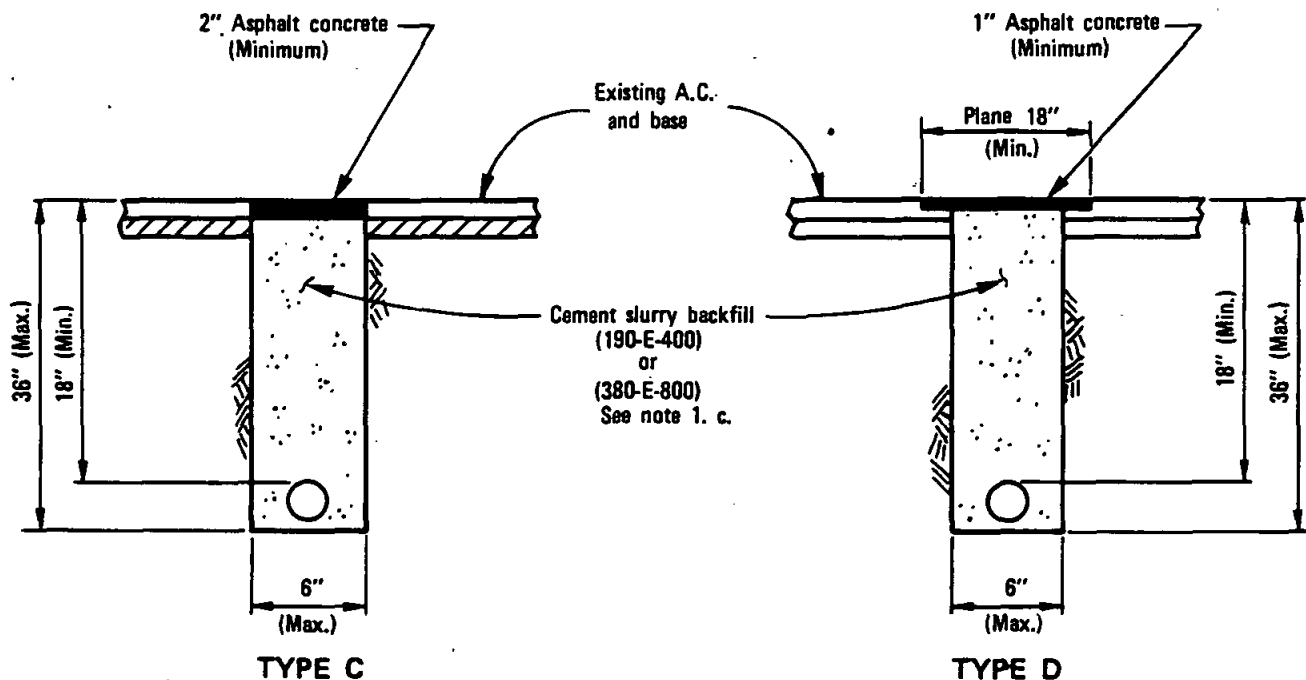
SAN DIEGO REGIONAL STANDARD DRAWING

NARROW TRENCHING TYPES A & B BACKFILL & RESURFACING

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

M. B. ... 4-25-96
Coordinator R.C.E. C21133 Date

DRAWING
NUMBER **G-33**



NOTES

1. Cement Slurry Backfill:
 - a. Cement slurry backfill shall have a maximum slump of 4 inches.
 - b. Cement slurry backfill shall be thoroughly consolidated to encase conduits. Tampers or vibrators shall be used.
 - c. Cement slurry backfill shall be as follows:

Alleys and local residential streets	Class (190-E-400)
All other streets	Class (380-E-800)
2. A tack coat shall be applied to the cement slurry backfill and existing asphalt pavement prior to placing the new asphalt surface.
3. Asphaltic Concrete Resurfacing:
 - Type C
 - a. Allow cement-slurry backfill 24 hours minimum to cure before resurfacing.
 - b. Thickness shall match the existing A.C. with a minimum of 2 inches.
 - c. A.C. shall be hot mix.
 - Type D
 - a. Allow cement slurry backfill seven days minimum to cure before planing.
 - b. Plane existing asphalt pavement and slurry backfill 1 inch minimum or one half thickness of existing A.C. not to exceed 2 inches.
 - c. A.C. shall be hot mix.
4. A.C. resurfacing shall be sealed or chip sealed when required by the agencies Engineer.
5. Existing A.C. pavement will not require sawcutting when using rockwheel for excavation.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

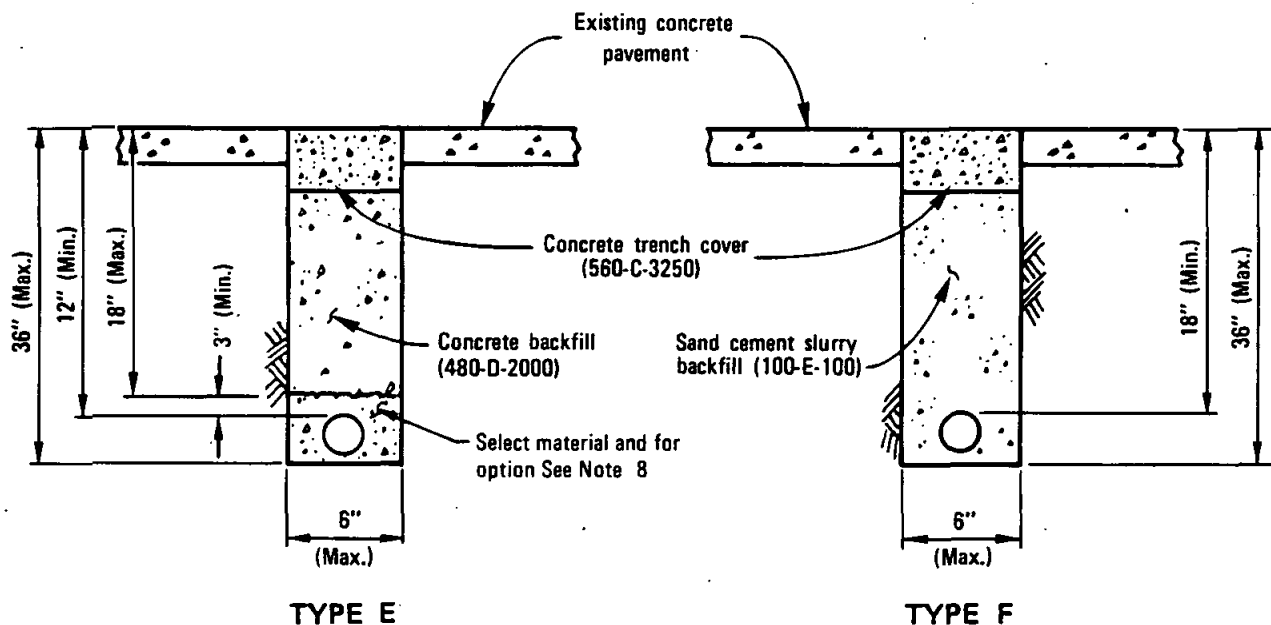
M. Belmont 4-25-86
Coordinator R.C.E. C21133 Date

DRAWING
NUMBER **G-34**

SAN DIEGO REGIONAL STANDARD DRAWING

**NARROW TRENCHING TYPES C & D
BACKFILL & RESURFACING**

Revision	By	Approved	Date
NOTES	SC	A.H.	8-88



NOTES

1. Concrete backfill or sand cement slurry backfill shall have a maximum slump of 4 inches.
2. Concrete backfill and sand cement slurry backfill shall be thoroughly consolidated to encase conduits. Tampers or vibrators shall be used.
3. Concrete shall be screeded off to match existing pavement grade and floated to assure proper edge match.
4. Concrete trench cover shall be a minimum of 5½ inches thick in alleys or local residential streets and 7 inches thick in all other streets.
5. Existing concrete pavement will not require sawcutting when using rockwheel for excavation.
6. In major or prime arterial streets, an approved set accelerating admixture, such as Calcium Chloride, may be used only with prior approval of the agency's Engineer.
7. Only Type E shall be permitted for supply cables of 750 volts or less. See California Public Utility Commission General Order No. 128, Rule 33.4 D. (1) (b).
8. Select material with a minimum sand equivalent of 50 shall be backfilled to 3" min. above the conduit. Sand cement slurry backfill (100-E-100) may be substituted for select material.

Revision	By	Approved	Date
Notes 7, 8	JD	G.H.	7/88
Notes 8, 9	JP	4/2	5-98

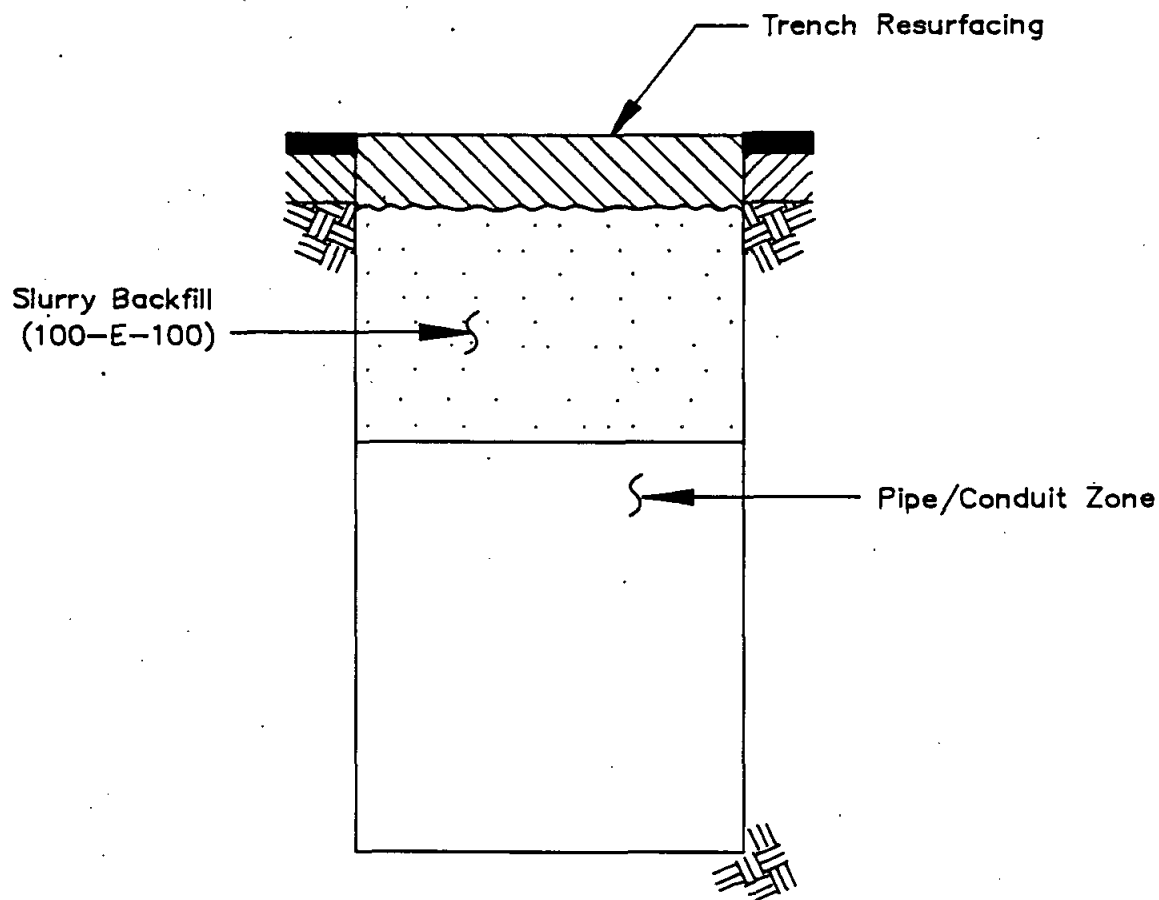
SAN DIEGO REGIONAL STANDARD DRAWING

NARROW TRENCHING TYPES E & F BACKFILL & RESURFACING

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

M.B. 4-25-96
Coordinator R.C.E. C21133 Date

DRAWING
NUMBER G-35



NOTES:

1. Trench resurfacing shall be done according to governmental (permitting) Agency's requirements.
2. The sand used for the slurry backfill shall meet the requirements for fine aggregate Subsection 400-1.3 listed in the Standard Specifications for Public Works Construction. Slurry must be firm prior to trench resurfacing.
3. Slurry backfill may be used in permeable soils and shall not be used where it will impede subsurface drainage.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Gregg Palmer SEPT. 1988
Chairman Date

SAN DIEGO REGIONAL STANDARD DRAWING

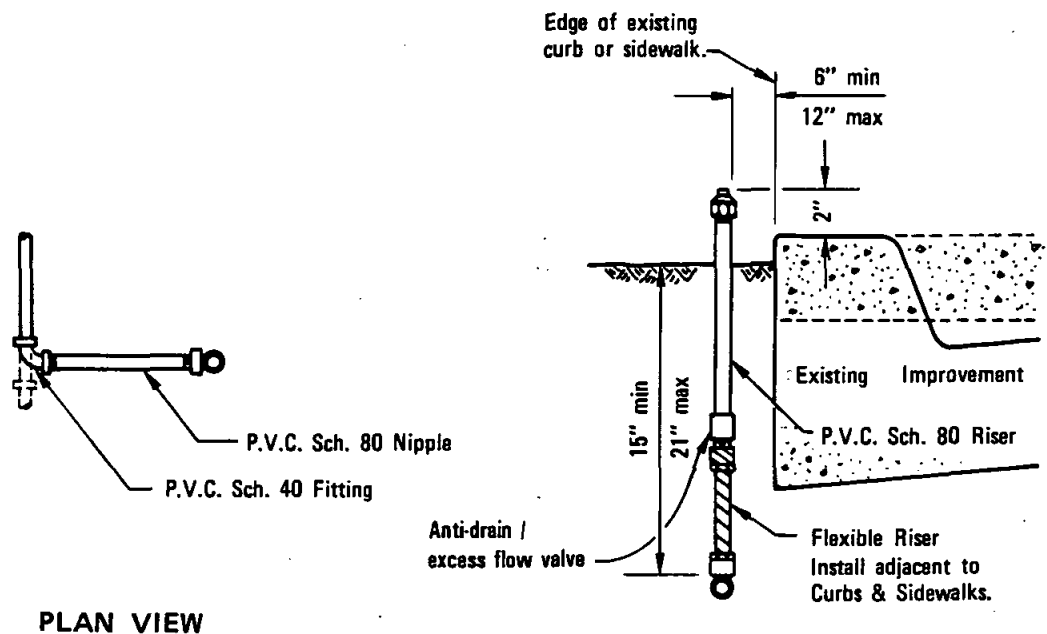
SLURRY BACKFILL

**DRAWING
NUMBER G-36**

Revision	By	Approved	Date

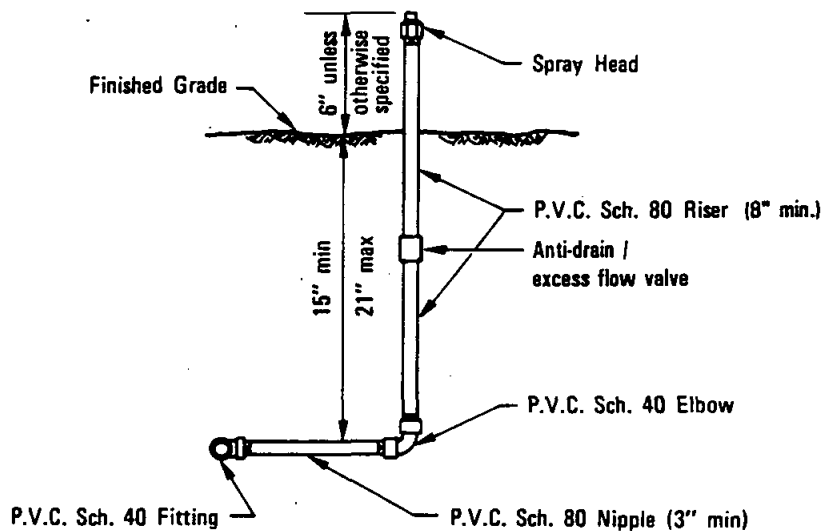
SPRINKLER IRRIGATION SYSTEMS

SPRINKLER IRRIGATION SYSTEMS



PLAN VIEW

LOCATION OF SPRINKLER HEADS ADJACENT TO EXISTING IMPROVEMENTS



ELEVATION

NOTES

1. Teflon tape, 3/4" wide, shall be used on all threaded connections.
2. Close nipples shall not be used.

LEGEND ON PLANS

Show a number to indicate type head.

Revision	By	Approved	Date
Anti-Drain	JP	G. J.	5-92

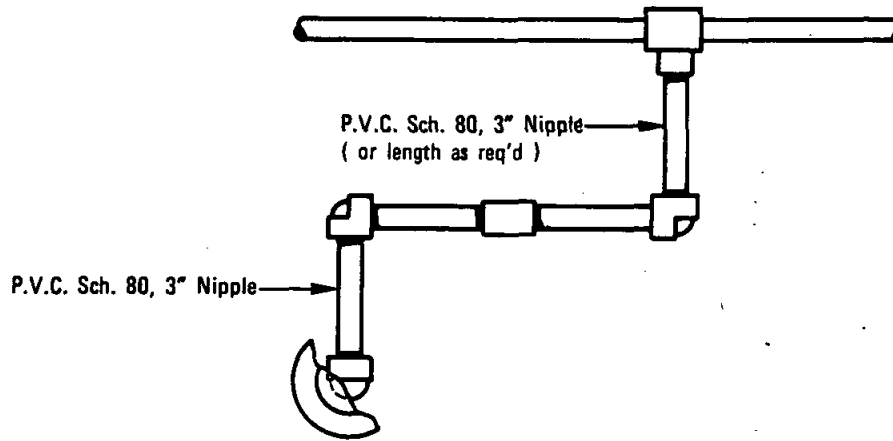
SAN DIEGO REGIONAL STANDARD DRAWING

SHRUBBERY SPRINKLER HEAD
FIXED SPRAY TYPE

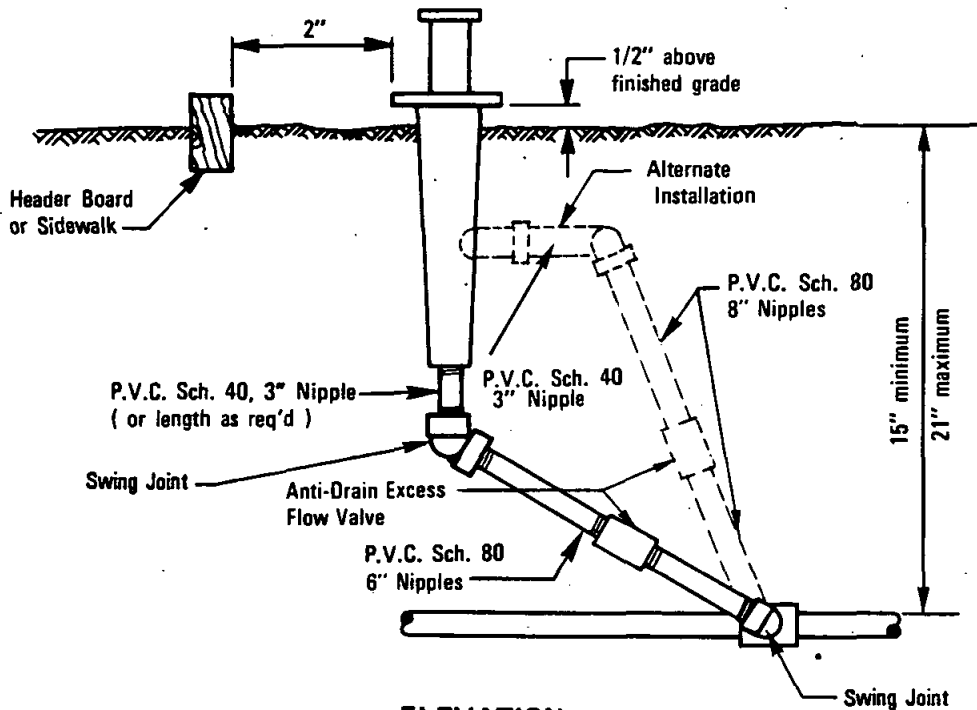
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Allen A. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING NUMBER 1-1



PLAN



ELEVATION

NOTES

1. All fittings shall be P.V.C. Sch. 40.
2. Teflon tape, 3/4" wide, shall be used on all threaded connections.
3. Short nipples shall not be used.
4. Anti-drain/Excess Flow Valve shall be installed under all heads unless heads have a "Built-in" Anti-drain or check valve.

LEGEND ON PLANS

Show a number to indicate type head 

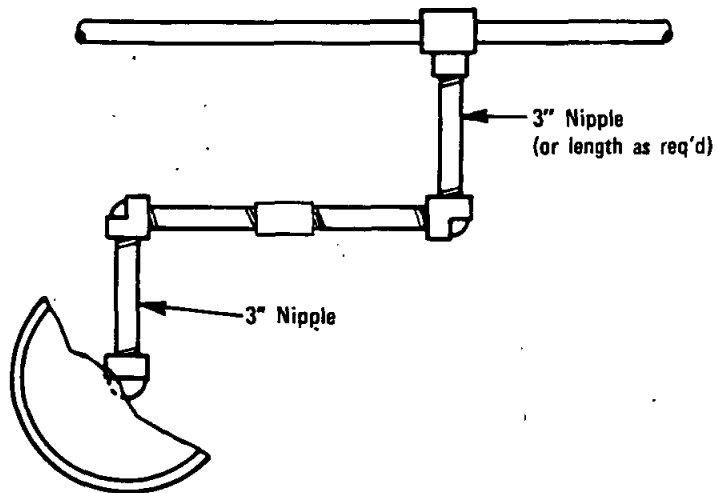
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Oliver A. Kuehnel *Dec. 1975*
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

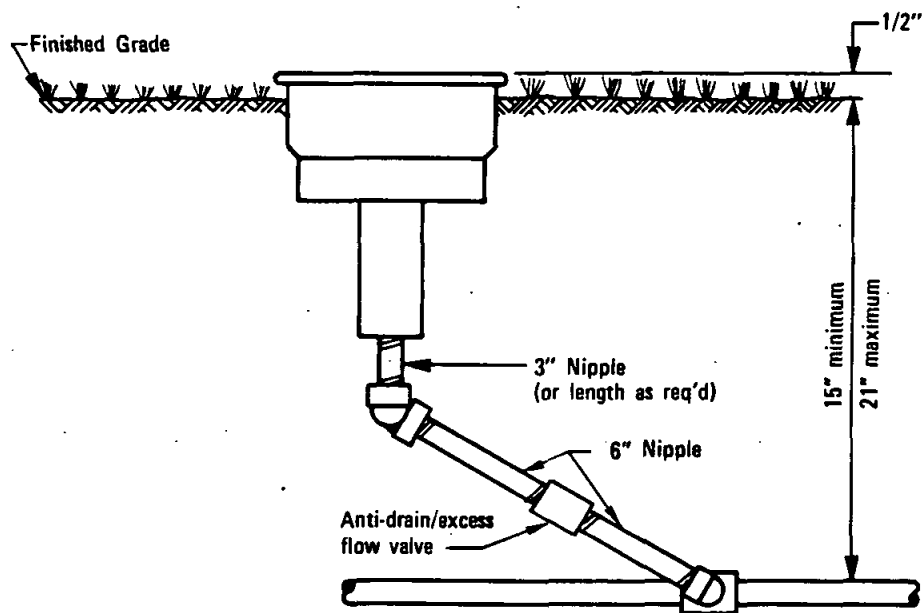
**SPRINKLER HEAD
POP UP SPRAY TYPE**

**DRAWING
NUMBER 1-2**

Revision	By	Approved	Date
Alt. Instl.	TRP	M.B.	10-72
VALVE	22	Q.H.	3-88
Swing joint	JP	Q.H.	5-92



PLAN



ELEVATION

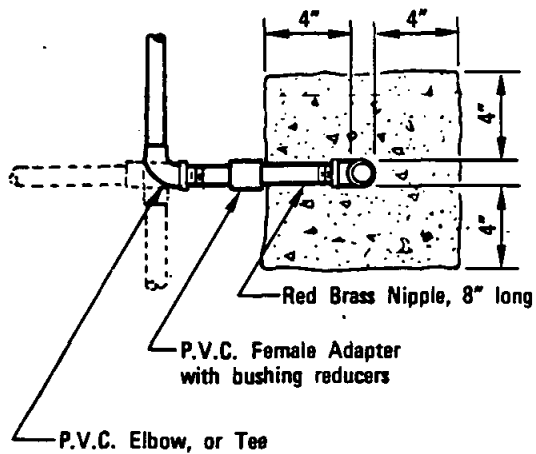
NOTES

1. All fittings shall be P.V.C. Sch. 40.
2. All nipples shall be P.V.C. Sch. 80.
3. Teflon tape, 3/4" wide, shall be used on all threaded connections.
4. Short nipples shall not be used.
5. Anti-drain/Excess Flow Valve shall be installed under all heads unless heads have a "Built-in" Anti-drain or check valve.

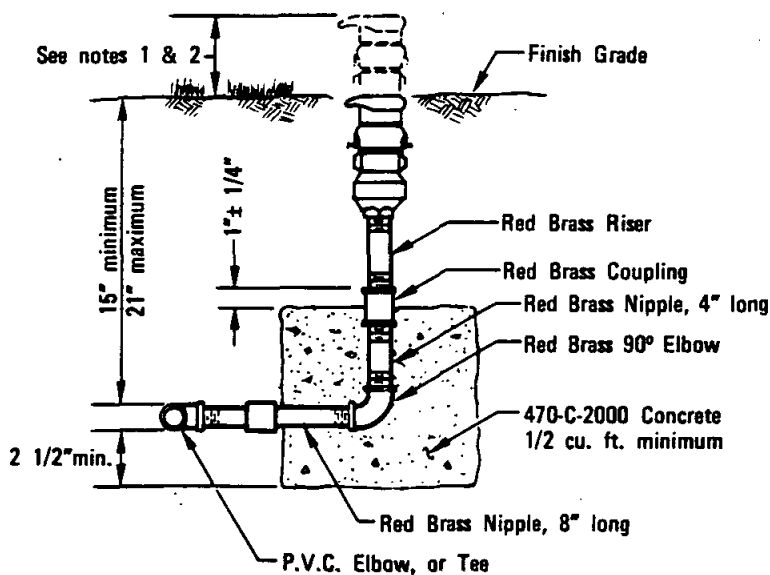
LEGEND ON PLANS

Show a number to indicate type head 

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Valve	RC	214	9/88		
				LAWN SPRINKLER HEAD POP UP ROTARY (WITH SWING JOINT)	 Dec. 1975 Coordinator R.C.E. 19807 Date
				DRAWING NUMBER	I-3



PLAN

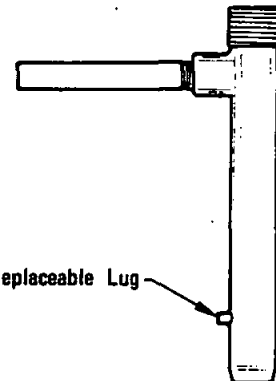


ELEVATION

NOTES

1. Quick coupling valves in lawn areas shall be set to grade.
2. Quick coupling valves in shrub areas shall be set 2 inches above grade.
3. Dimensions of concrete anchors are minimum.
4. Close nipples shall not be used.

COUPLER KEY-SINGLE LUG



Replaceable Lug



KEY FOR LOCK TOP

LEGEND ON PLANS

Q.C.V.

Revision	By	Approved	Date
Note 2	TKP	M.B.	10-82

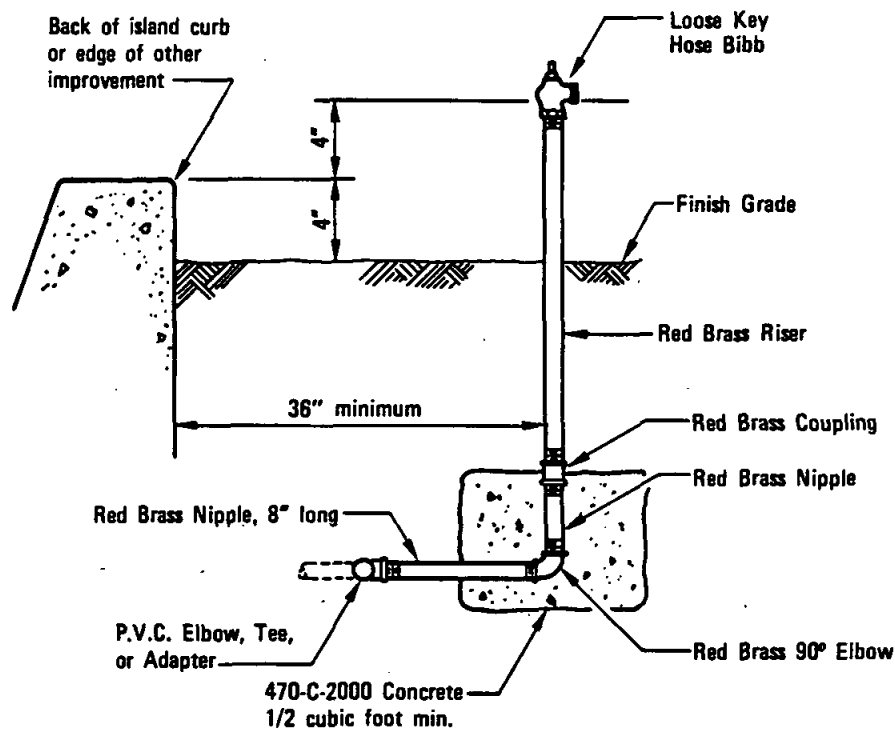
SAN DIEGO REGIONAL STANDARD DRAWING

QUICK COUPLING VALVE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Allan O. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING NUMBER 1-5



NOTES

- Hose bibb shall be loose key operated, all brass or bronze construction, angle pattern with removable bonnet and stem assembly, replaceable seat washers and stem packing glands.
- Unless otherwise specified, the hose connection thread shall be 3/4" male hose thread (pacific coast), and the riser opening thread shall be 3/4" female I.P.S. Discharge opening shall be 90° to riser opening.

LEGEND ON PLANS

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

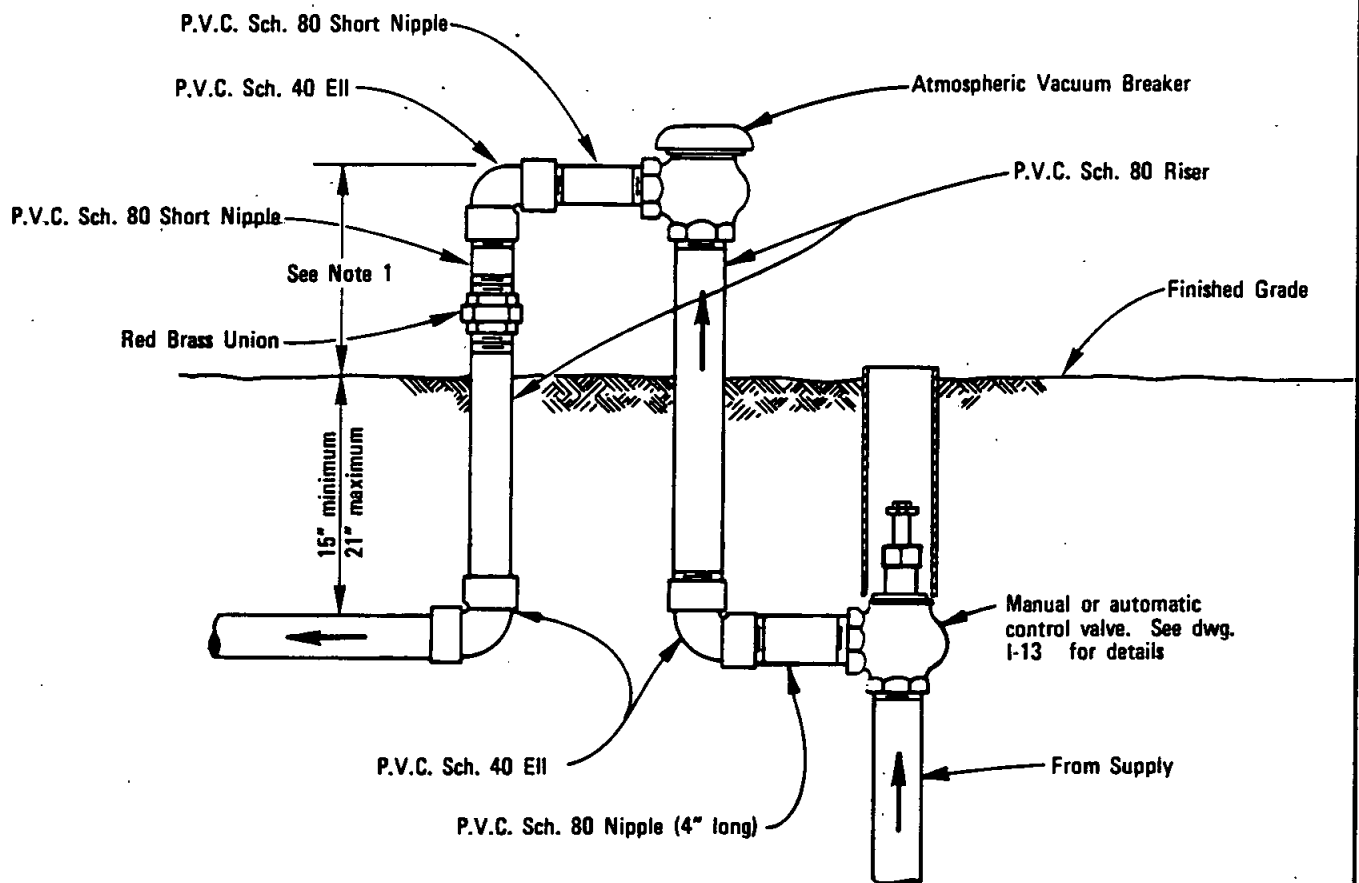
Allan A. Kuehnel *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER 1-6

SAN DIEGO REGIONAL STANDARD DRAWING

HOSE BIBB
(GARDEN VALVE)

Revision	By	Approved	Date
Set Back	JK	M.B.	10-82



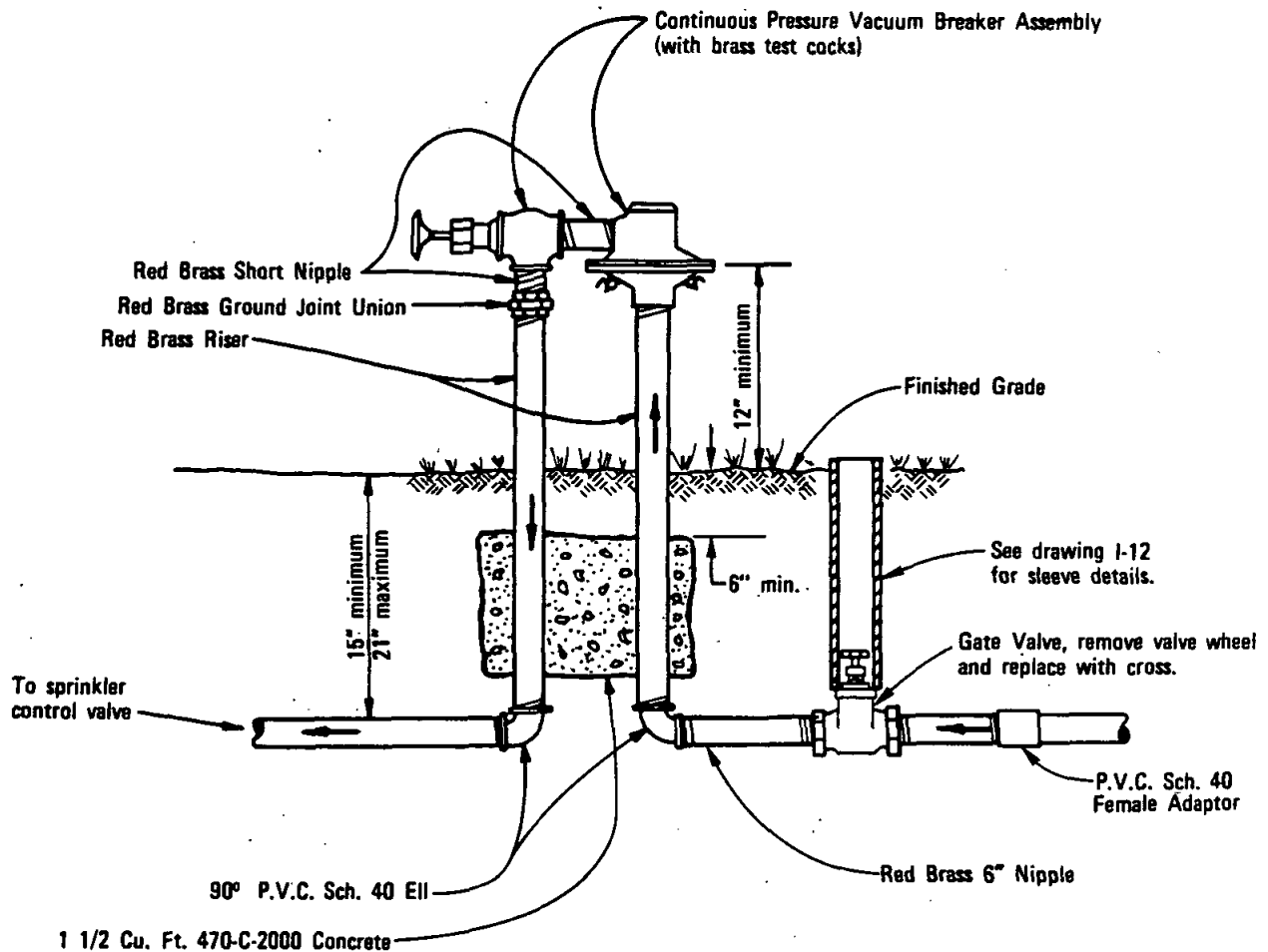
NOTES

1. Atmospheric vacuum breakers shall be installed approximately 6" above the finished grade and above a sufficient number of sprinkler heads closest to the vacuum breaker so that at no time will it be subjected to back pressure or drainage.
2. Close nipples shall not be used.
3. All fittings, including the atmospheric vacuum breaker, shall not be of smaller size than the valve.
4. Teflon tape, 3/4" wide, shall be used on all threaded connections.
5. For use on lines 2 inches and smaller.

LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Union	TRP	M.B.	10-82			<i>Alfred J. Kuehn</i>	<i>Dec. 1975</i>
				BACKFLOW PREVENTER ATMOSPHERIC VACUUM BREAKER (2" & SMALLER)		Coordinator R.C.E. 19807	Date
						DRAWING NUMBER 1-7	



NOTES

1. Continuous pressure vacuum breakers shall be installed approximately 12 inches above finished grade and at the highest point in the line.
2. Continuous pressure vacuum breakers shall not be subjected to back pressure or drainage.
3. Teflon tape 3/4" wide shall be used on all threaded connections.
4. Close nipples shall not be used.

LEGEND ON PLANS



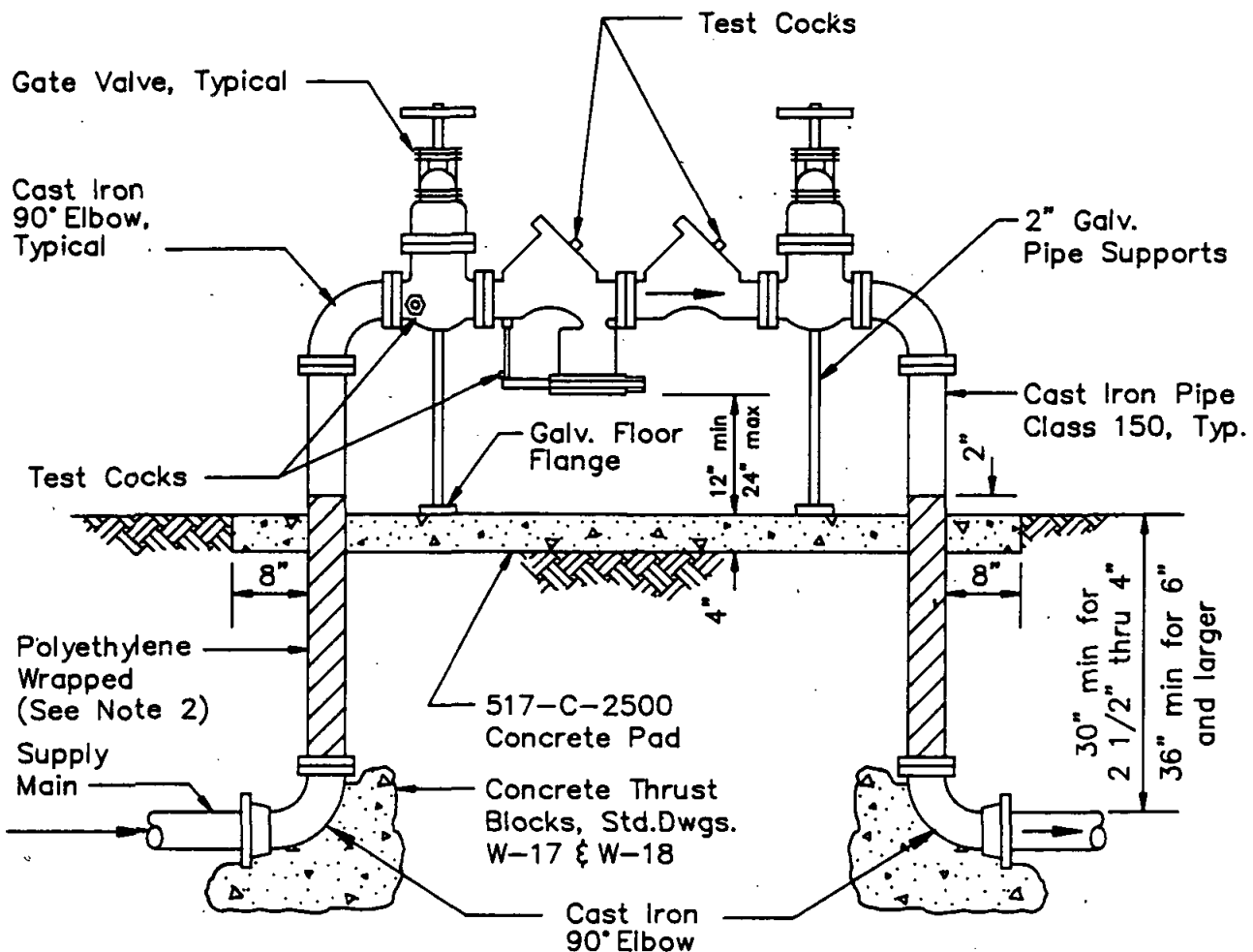
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Allen/O. Kershner *D.L.C. 1975*
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

BACKFLOW PREVENTER - CONTINUOUS PRESS. VAC. BREAKER ASSY. (2" & SMALLER)

Revision	By	Approved	Date
Note 1	<i>RP</i>	<i>D.S.</i>	7-79
Reference	<i>RP</i>	<i>M.B.</i>	10-82

DRAWING
NUMBER 1-8



NOTES:

1. All fittings on assembly shall be flanged.
2. Buried cast iron pipe and fittings shall be polyethylene wrapped with 2 inch wide plastic backed adhesive tape (8 mil thickness). Use 1/2 inch overlap.
3. Cast iron pipe and fittings shall be cement mortar lined.
4. All exposed cast iron shall be painted with one coat of primer and two coats of exterior enamel.
5. Concrete pad shall be 24 inches wide.
6. Backflow preventer assembly shall be tested upon installation by a certified backflow device tester. Contractor shall provide Engineer with written test results completed by certified backflow tester prior to the backflow preventer assembly's acceptance by Engineer.
7. Adapt inlet and outlet fittings to main as required.

LEGEND ON PLANS



Revision	By	Approved	Date
New Dwg.	SC	A.H.	10/88

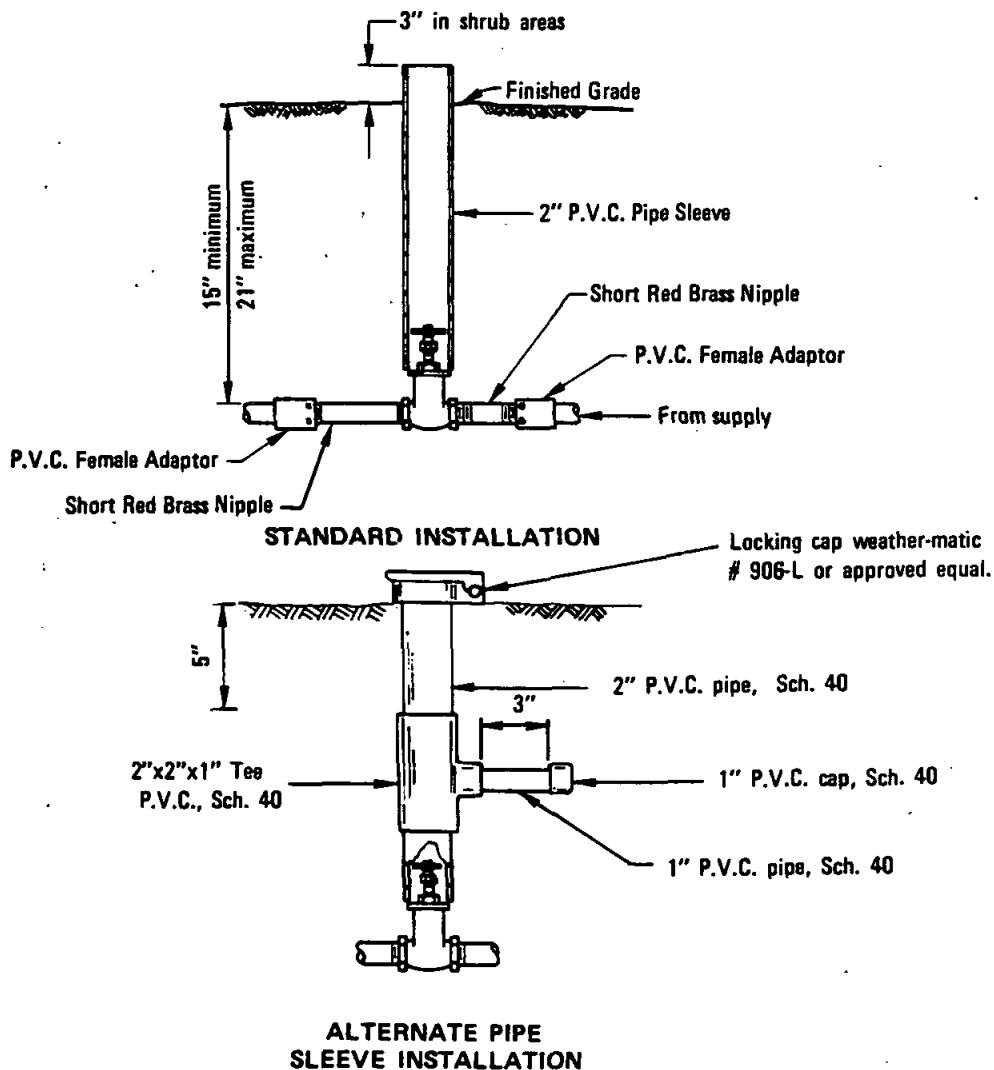
SAN DIEGO REGIONAL STANDARD DRAWING

**BACKFLOW PREVENTER
REDUCED PRESSURE PRINCIPLE
ASSEMBLY-LARGER THAN 2"**

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Henry Robinson **SEPT. 1988**
Chairman Date

**DRAWING
NUMBER I-9**



NOTES

1. All valves shall be furnished with a standard manual control valve bronze cross handle.
2. All valves shall be installed within 12" of the water main, unless otherwise shown on the plans.
3. Close nipples shall not be used.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen S. Kuehn *Dec. 1975*
Coordinator R.C.E. 19807 Date

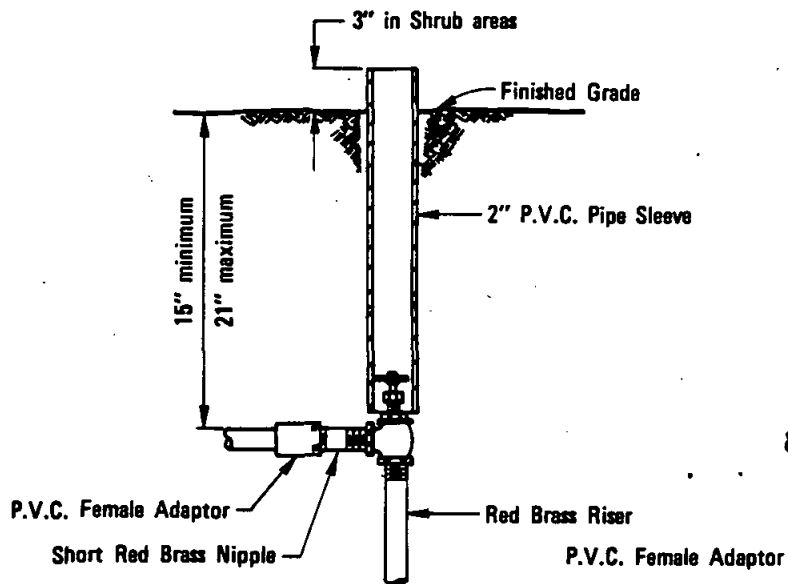
DRAWING
NUMBER

I-12

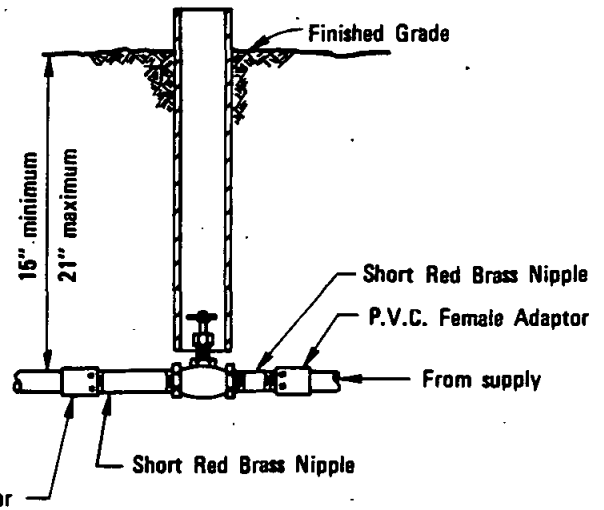
SAN DIEGO REGIONAL STANDARD DRAWING

GATE VALVE (2" AND SMALLER)

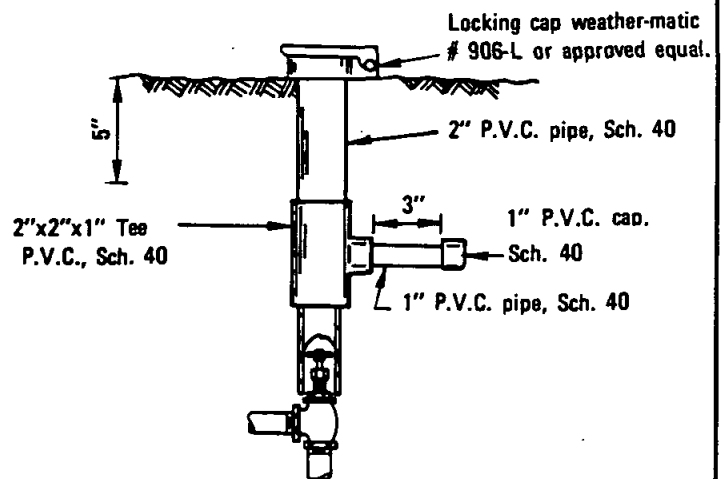
Revision	By	Approved	Date
Union	TRP	TM.B.	10-82



ANGLE VALVE



GLOBE VALVE
(special cases only)



ALTERNATE PIPE
SLEEVE INSTALLATION

NOTES

1. All Manual Valves shall be furnished with a standard manual control valve bronze cross handle.
2. All valves shall be installed with 12" of the water main, unless otherwise shown on the plans.
3. All Manual Valves shall be furnished with a removable bonnet and packing gland nut.
4. Close Nipples shall not be used.
5. Locking cap shall be mounted flush with finish grade in turf areas & 1 inch above finish grade in shrub areas.

LEGEND ON PLANS



M.C.V.

Revision	By	Approved	Date
Union	TR	M.B.	10-82
Note 5	R	M.B.	5-86

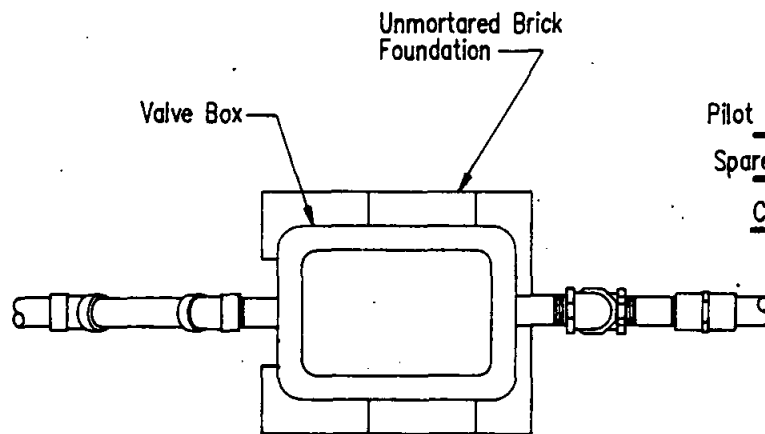
SAN DIEGO REGIONAL STANDARD DRAWING

MANUAL VALVES

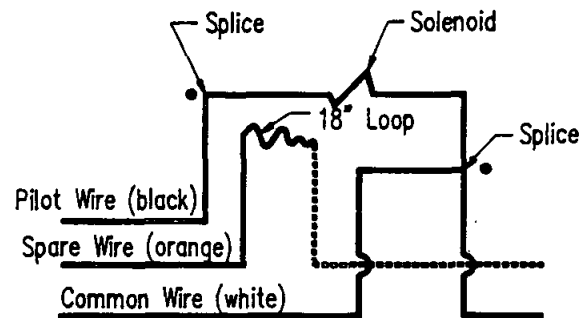
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen G. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

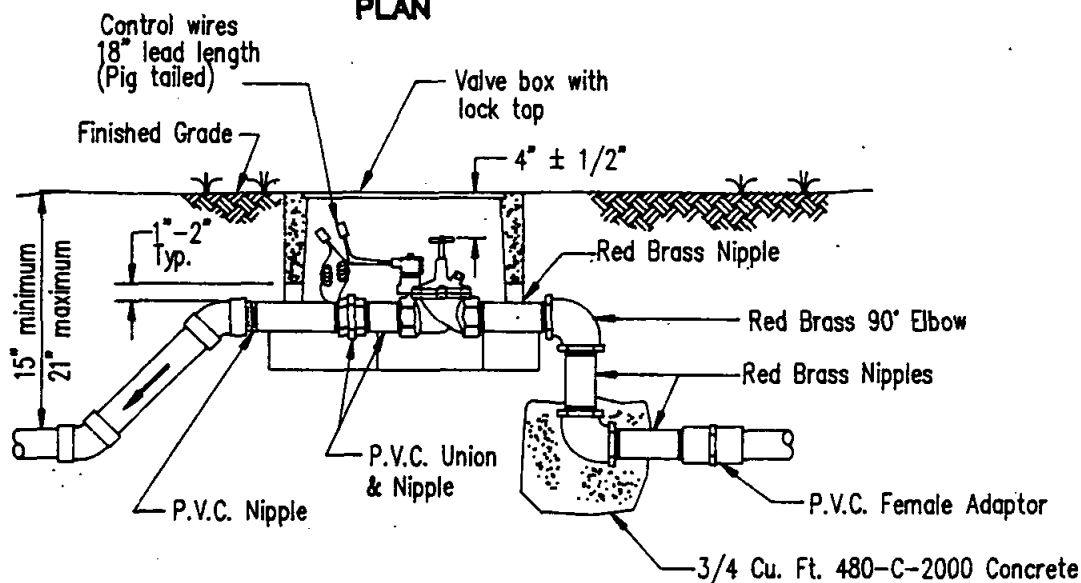
DRAWING
NUMBER I-13



PLAN



TYPICAL ELEMENTARY
DIAGRAM FOR WIRING
ELECTRICAL REMOTE
CONTROL VALVE



ELEVATION

NOTES:

1. Splicing shall be made in valve boxes and pull boxes only. See Standard Drawing I-15 for splice details.
2. Close nipples shall not be used.
3. Spare wires terminating in valve boxes shall have their ends insulated, the same as for a splice.
4. When two or more valves are installed in the same location, they shall be in manifold using red brass fittings, with a globe valve installed at the start of the manifold.
5. All valves shall be installed with a union on the downstream side of the valve. The union shall be P.V.C.
6. Valve/controller identification shall be painted on the valve boxes. Use only aluminum asphaltic base water proof paint.
7. Clearance between piping and valve box shall be 1" to 2" typical.

LEGEND ON PLANS

▼ R.C.V

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

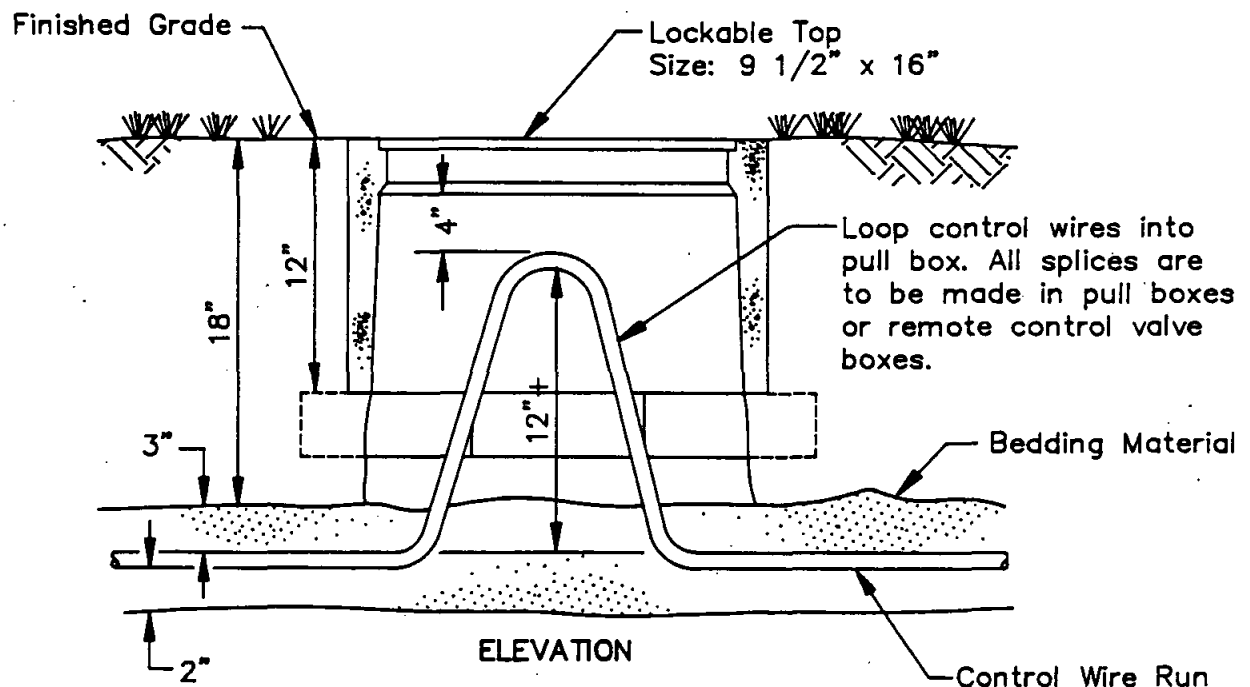
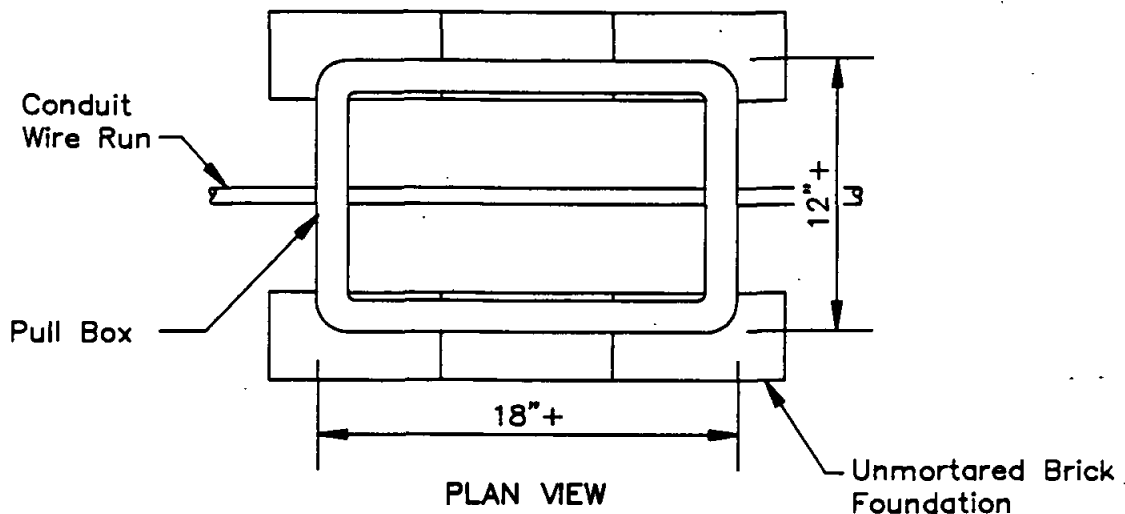
Chairman 5-11-22
RCE 25902 Date

DRAWING
NUMBER I-14

SAN DIEGO REGIONAL STANDARD DRAWING

REMOTE CONTROL VALVE

Revision	By	Approved	Date



NOTES

1. Install pull boxes as shown on plans.
2. At junctions where runs combine, splice common ground in pull box.
3. Pull box cover shall be permanently marked "ELECTRIC".
4. Conductors for each controller clock shall be harnessed separately and at sufficient intervals to maintain a definite bundle.
5. All splices shall be made with a properly set mechanical splice connector entirely enclosed in self-curing resin and shall be completely water-proof.
6. All spare wire ends shall be insulated in the same manner as wire splices.
7. If specified, all splices shall be soldered with metallic alloy solder prior to installing connectors.
8. Wire bundles inside pull boxes shall be at least 4 inches from the under side of the box cover. Minimum size pull box shall be as shown above. Larger boxes may be necessary to meet 4 inch clearance requirement.

LEGEND



Revision	By	Approved	Date
Notes	RC	A.H.	10/68

SAN DIEGO REGIONAL STANDARD DRAWING

ELECTRICAL PULL BOX FOR DIRECT BURIAL CONTROL WIRES AND SPLICE DETAILS

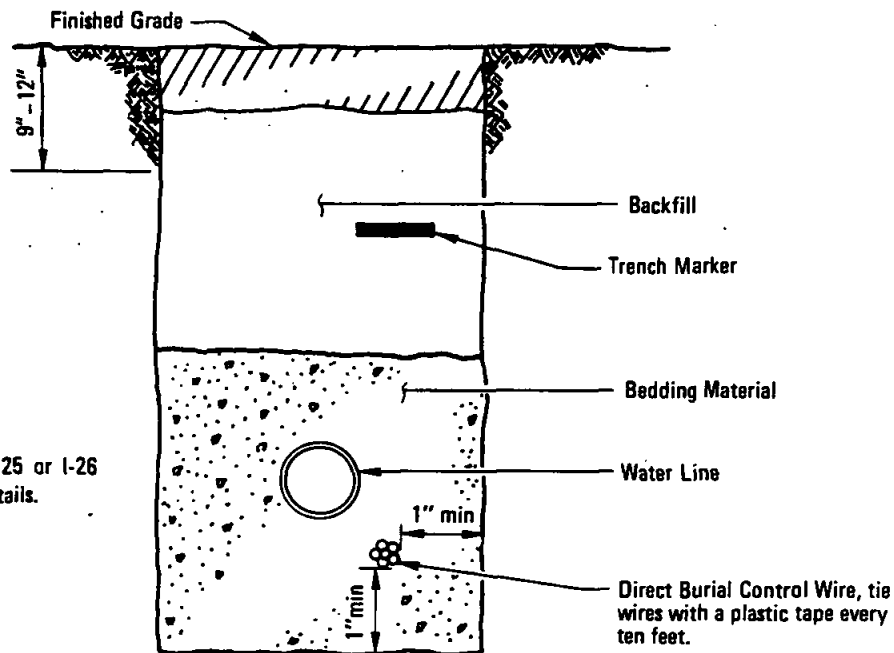
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen D. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

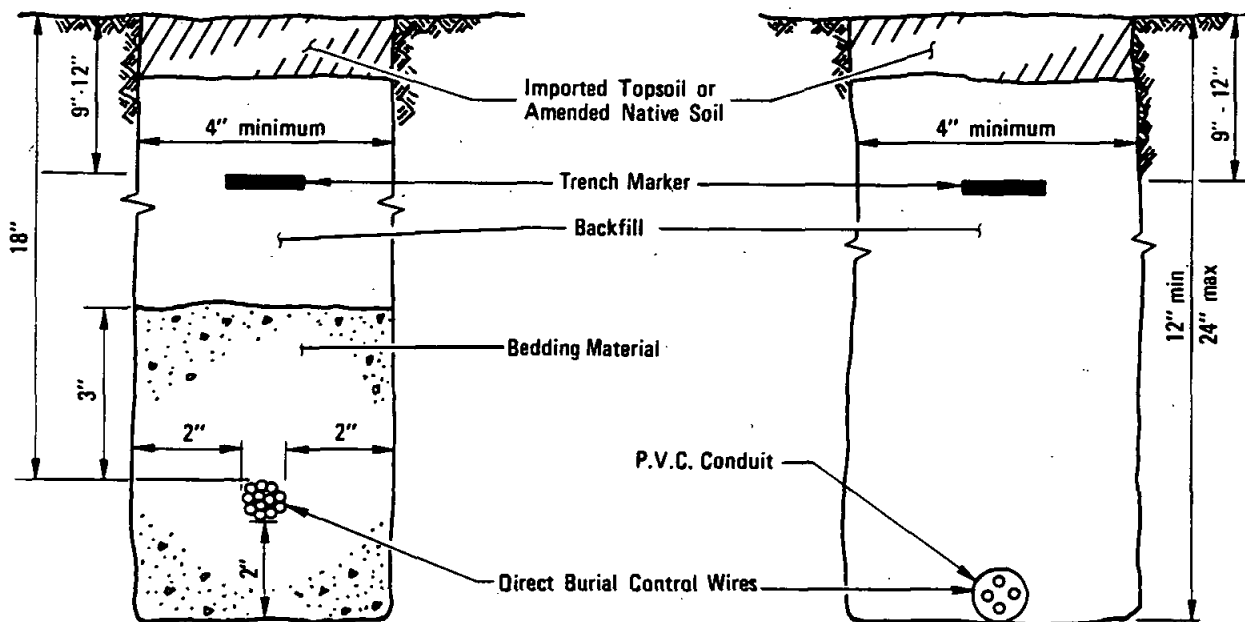
DRAWING
NUMBER **I-15**

NOTE

See Standard Drawing I-25 or I-26 for water line trench details.



NORMAL LOCATIONS OF CONTROL WIRES



ALTERNATE LOCATION OF CONTROL WIRES

NOTES:

1. Bedding material shall have a sand equivalent of 50, minimum
2. Place a 3" wide red continuous plastic tape trench marker, 9" to 12" below finish grade, directly above the direct burial control wires.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen A. Kuehnel Dec. 1975
Coordinator R.C.E. 19807 Date

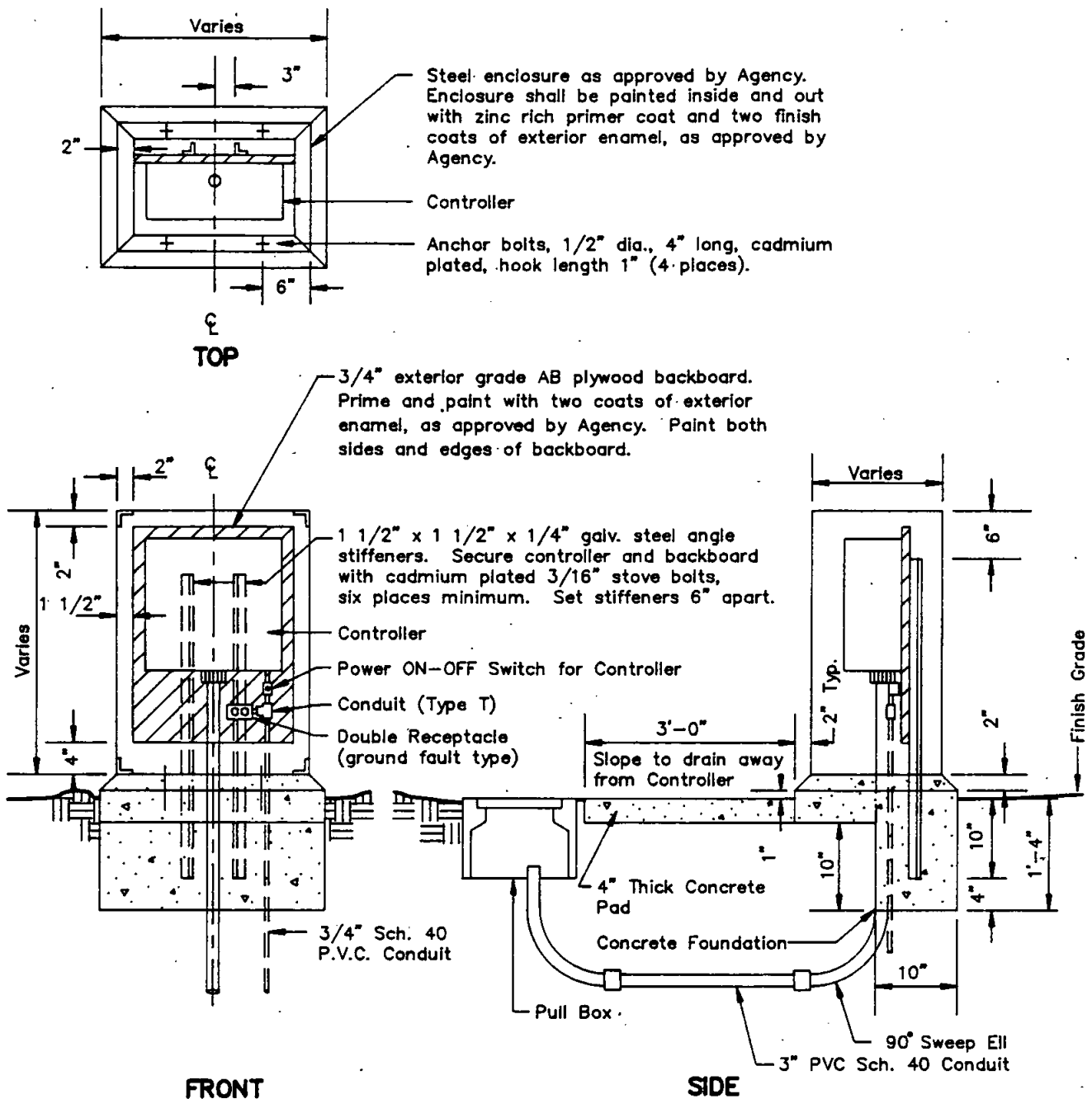
SAN DIEGO REGIONAL STANDARD DRAWING

DIRECT BURIAL CONTROL WIRE

DRAWING
NUMBER

I-16

Revision	By	Approved	Date
Reference	TRP	M.B.	10-82
MARKER	SC	O.H.	3-88

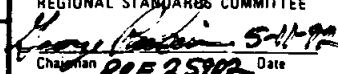


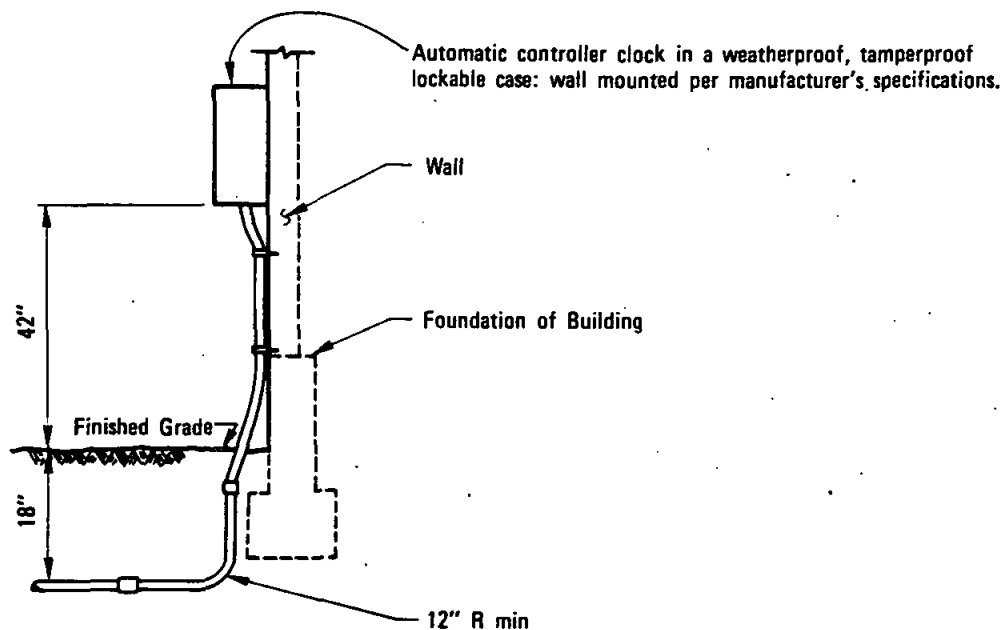
NOTES:

1. Install in each enclosure, one 25 watt incandescent lamp in a two-prong plug in light socket. Install in receptacle.
2. A 15 amp (minimum) circuit is required at each double receptacle (120 V).
3. Each controller shall have a power ON-OFF switch, with lock-out, tag-out facility.

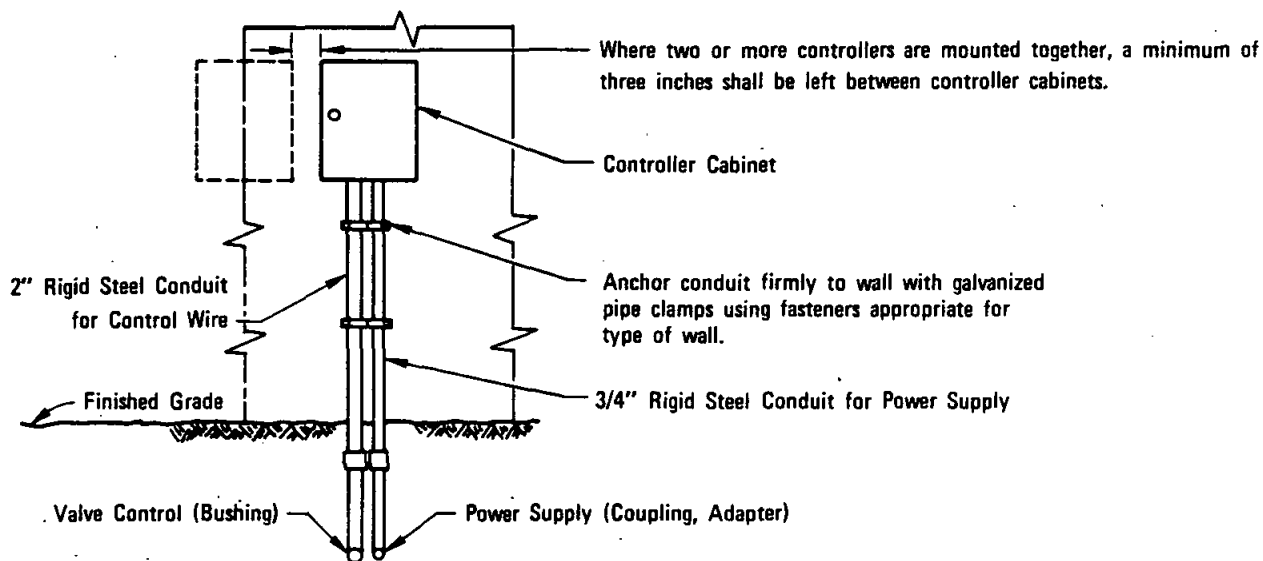
LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
				IRRIGATION SYSTEMS ELECTRIC CONTROLLER CLOCK PEDESTAL MOUNTING		 5-11-90 Chairman RCE 25902 Date
						DRAWING NUMBER I-17



SIDE VIEW



ELEVATION

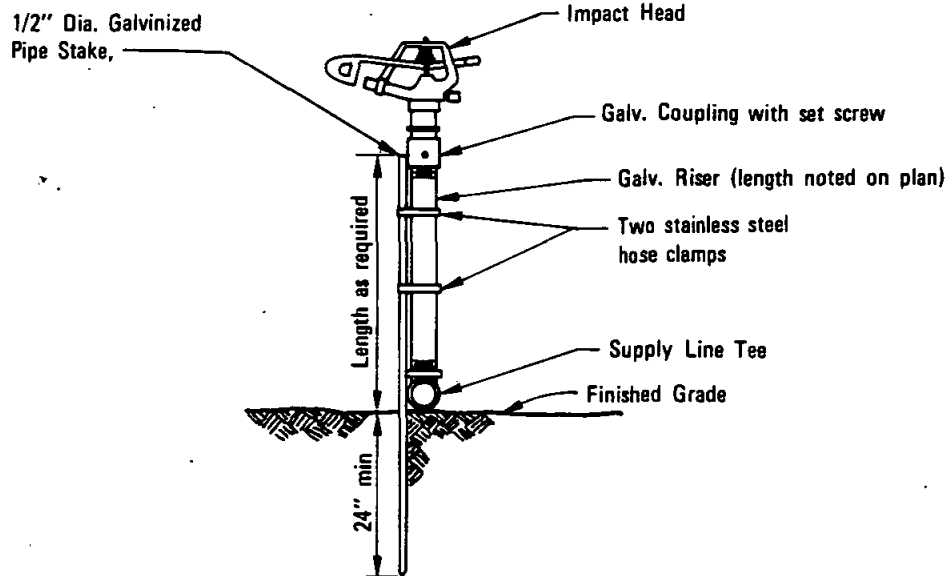
NOTES

1. For location of supply conduit and conductor, refer to the plans.
2. Controller shall be grounded at power supply by ground wire.
3. Make all electrical connections inside controller cabinet.
4. Each controller shall have a power on/off switch, with lock-out, tag-out facility.

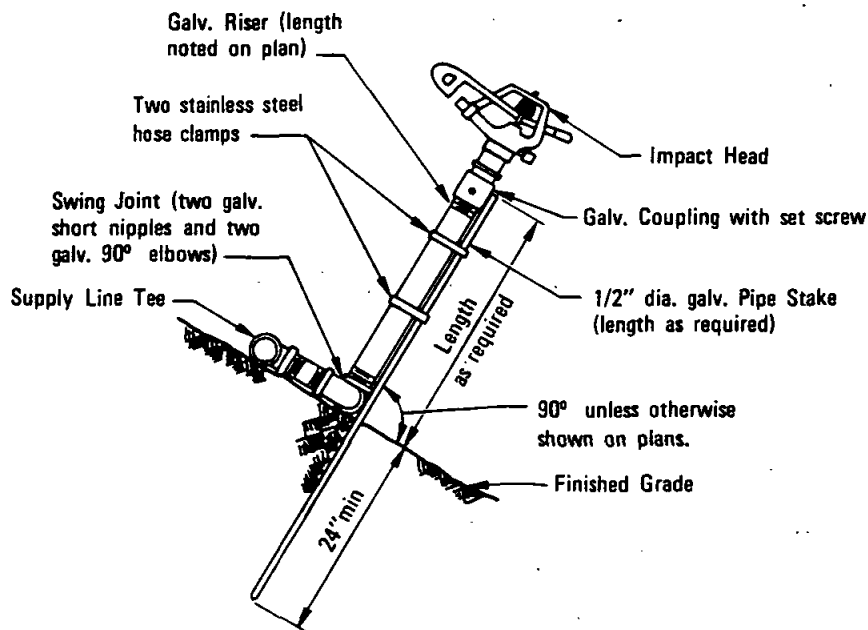
LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>Allen A. Kuehn</i> <i>Dec. 1975</i> Coordinator R.C.E. 19807 Date	SAN DIEGO REGIONAL STANDARD DRAWING	Revision	By	Approved	Date
		Note 4	JF	S.D.	5-92
DRAWING NUMBER I-18	IRRIGATION SYSTEMS ELECTRIC CONTROLLER CLOCK WALL MOUNTING				



LEVEL INSTALLATION



SLOPE INSTALLATION

LEGEND ON PLANS

Show a number to indicate type head

Revision	By	Approved	Date
Stake	TRP	M.B.	10-82
Clamps	JP	S. A.	5-92

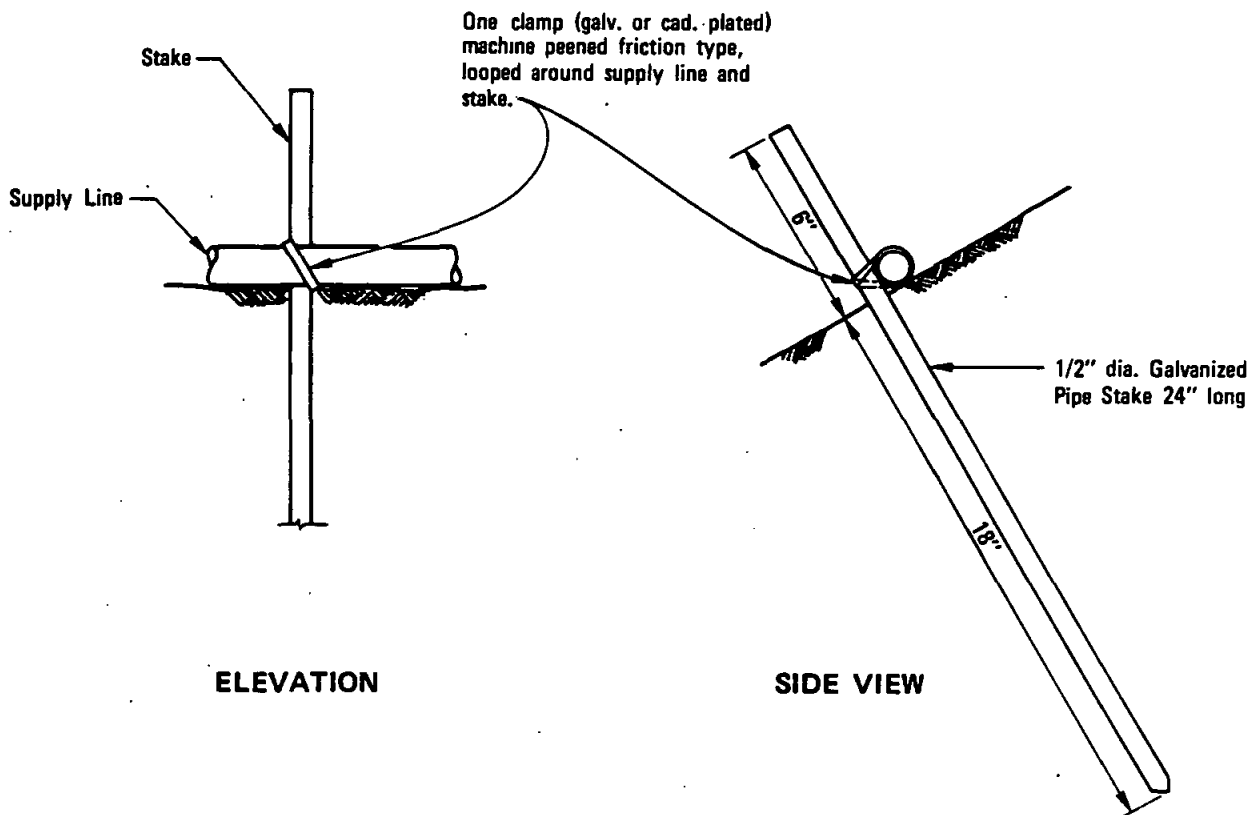
SAN DIEGO REGIONAL STANDARD DRAWING

**IMPACT HEAD
ABOVE GROUND PIPE INSTALLATIONS**

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan P. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

**DRAWING
NUMBER 1-19**



NOTE

Stake shall be placed no greater than 15' apart and at each riser.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alfred B. Knechtel *Dec. 1975*
Coordinator R.C.E. 19087 Don

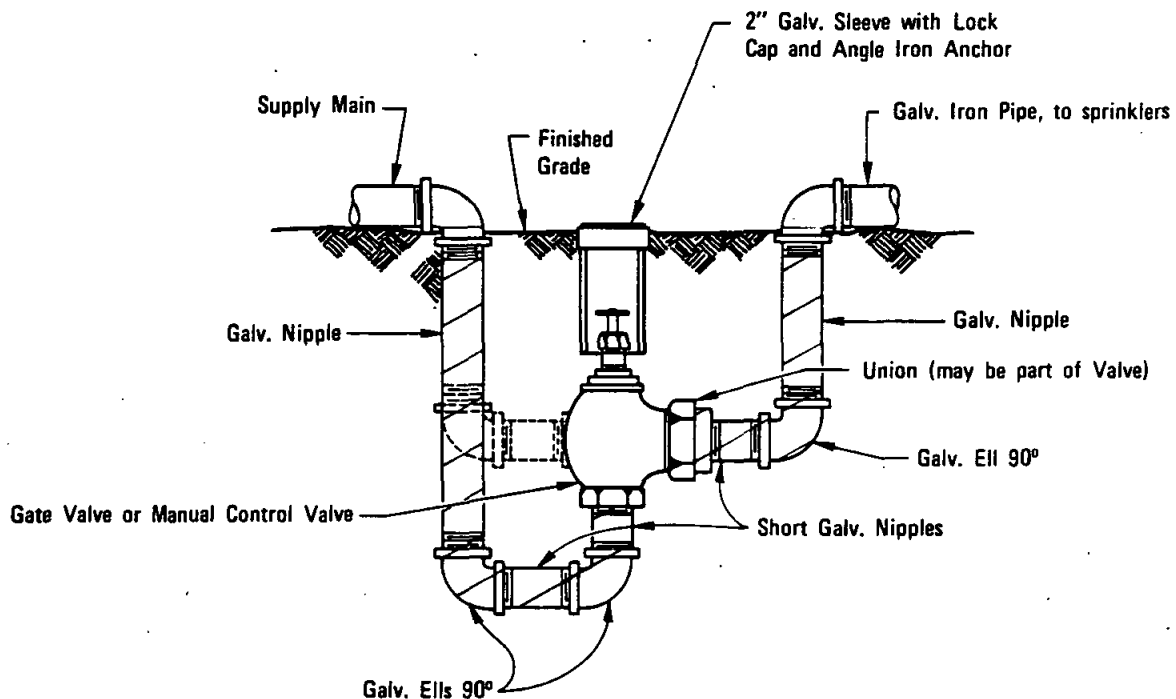
SAN DIEGO REGIONAL STANDARD DRAWING

**PINNING OF PIPE
ABOVE GROUND PIPE INSTALLATIONS**

**DRAWING
NUMBER**

1-20

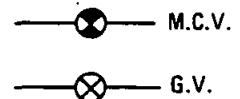
Revision	By	Approved	Date



NOTE

All Galvanized Pipe, Nipples and Fittings installed underground shall be wrapped with 2" wide plastic backed adhesive tape, use 1/2" overlap.

LEGEND ON PLANS



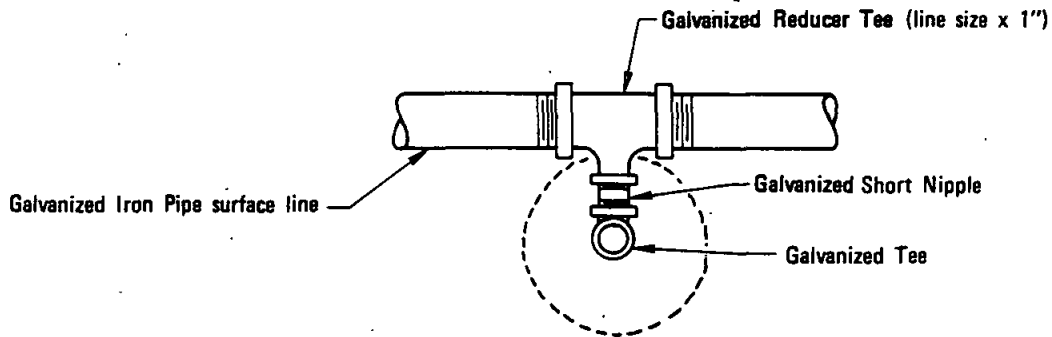
Revision	By	Approved	Date
Note	30	D.S.	7-78

SAN DIEGO REGIONAL STANDARD DRAWING

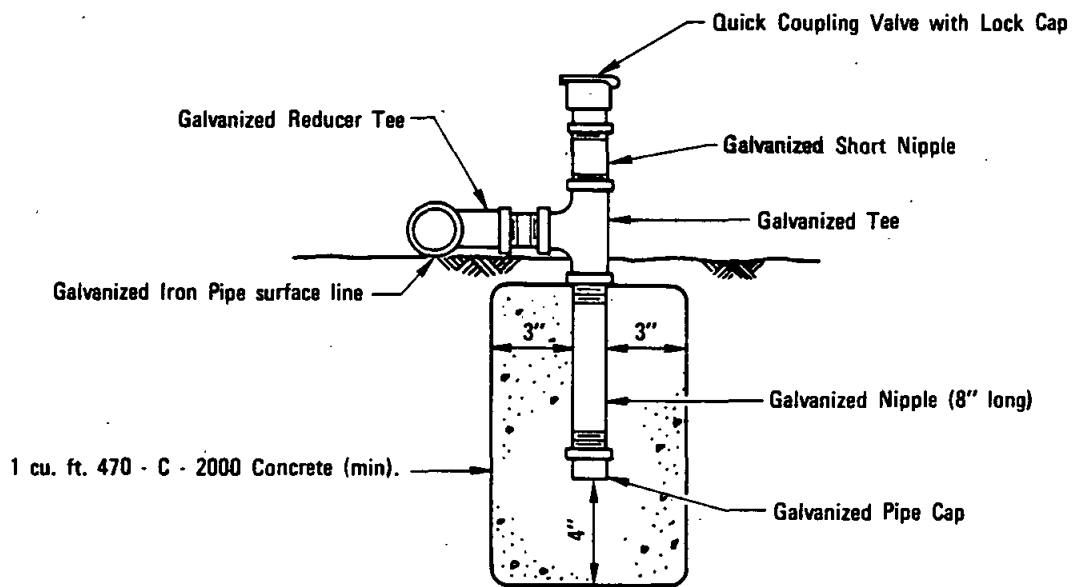
**MANUAL CONTROL VALVE
AND GATE VALVE INSTALLATION FOR
ABOVE GROUND PIPE INSTALLATIONS**

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Alfred A. Kunkel Dec. 1975
Coordinator R.C.E. 19807 Date

**DRAWING
NUMBER 1-21**



PLAN



ELEVATION

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Oliver A. Kuehnel *Dec. 1975*
Coordinator R.C.E. 19807 Date

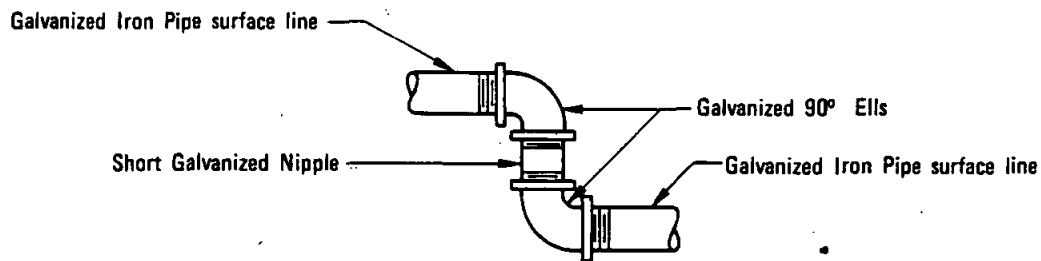
DRAWING
NUMBER

1-22

SAN DIEGO REGIONAL STANDARD DRAWING

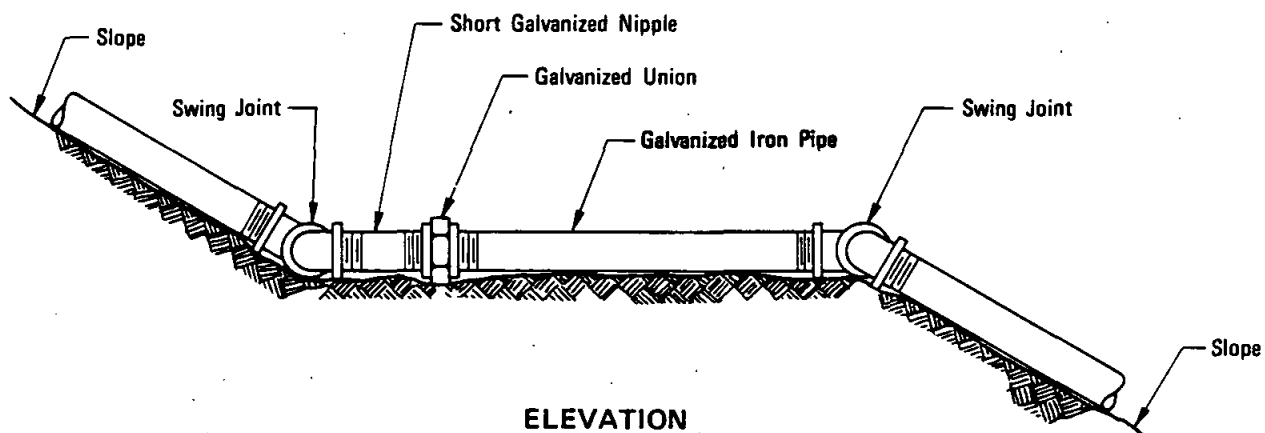
QUICK COUPLER ASSEMBLY
ABOVE GROUND PIPE INSTALLATIONS

Revision	By	Approved	Date



SWING JOINT DETAIL

PLAN

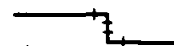


ELEVATION

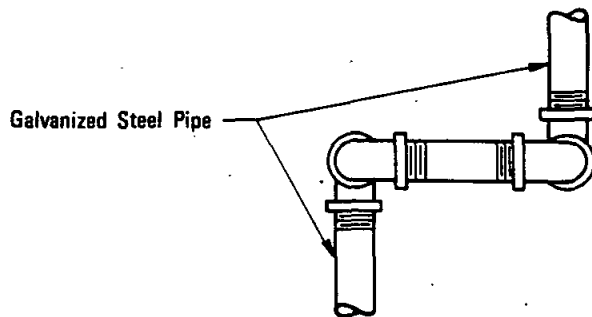
NOTE

Swing Joints shall be used at each change of grade.

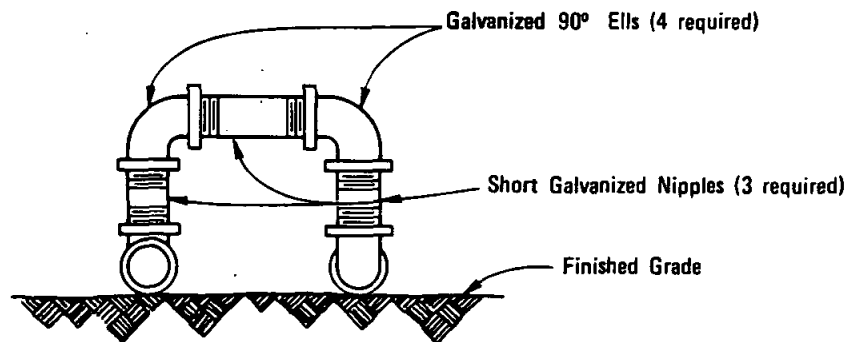
LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING SWING JOINT AND PIPE INSTALLATION ON SLOPES ABOVE GROUND PIPE INSTALLATIONS	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>Allan A. Kuehn</i> <i>Dec. 1975</i> Coordinator R.C.E. 19807 Date	DRAWING NUMBER I-23



PLAN



ELEVATION

NOTES

1. Double swing joint shall be used where changes of grade and alignment occur simultaneously.
2. Double swing joint shall be used for expansion joint on long runs of galvanized pipe.
(300' maximum runs)

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan G. Kuehn *Dec. 1975*
Coordinator R.C.E. 19807 Date

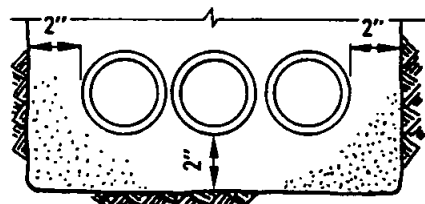
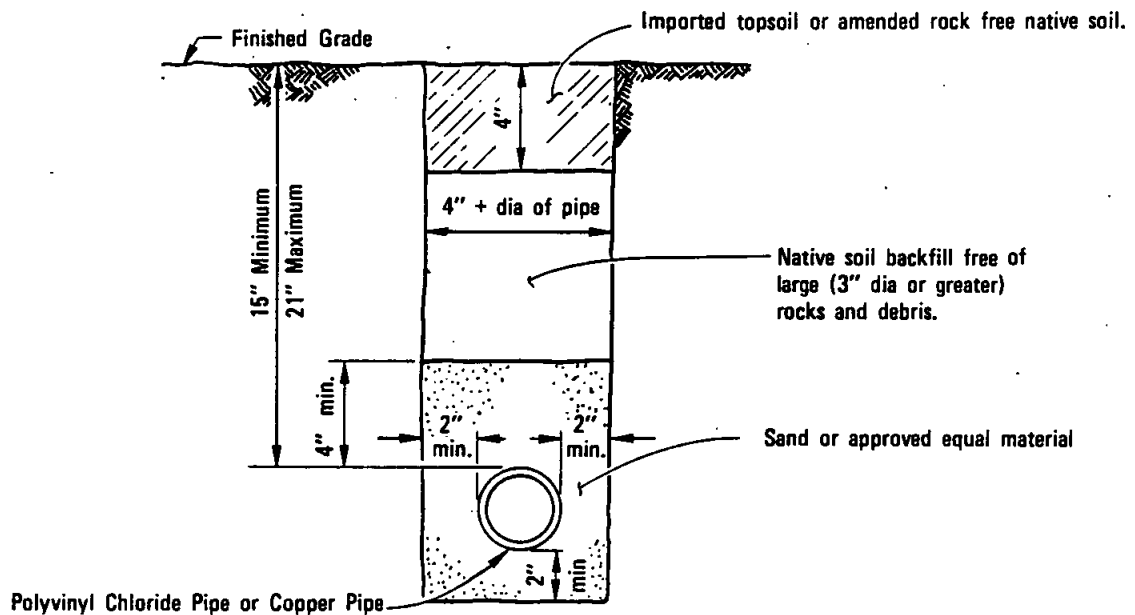
SAN DIEGO REGIONAL STANDARD DRAWING

**DOUBLE SWING JOINT
ABOVE GROUND PIPE INSTALLATIONS**

DRAWING
NUMBER

1-24

Revision	By	Approved	Date

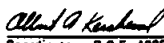


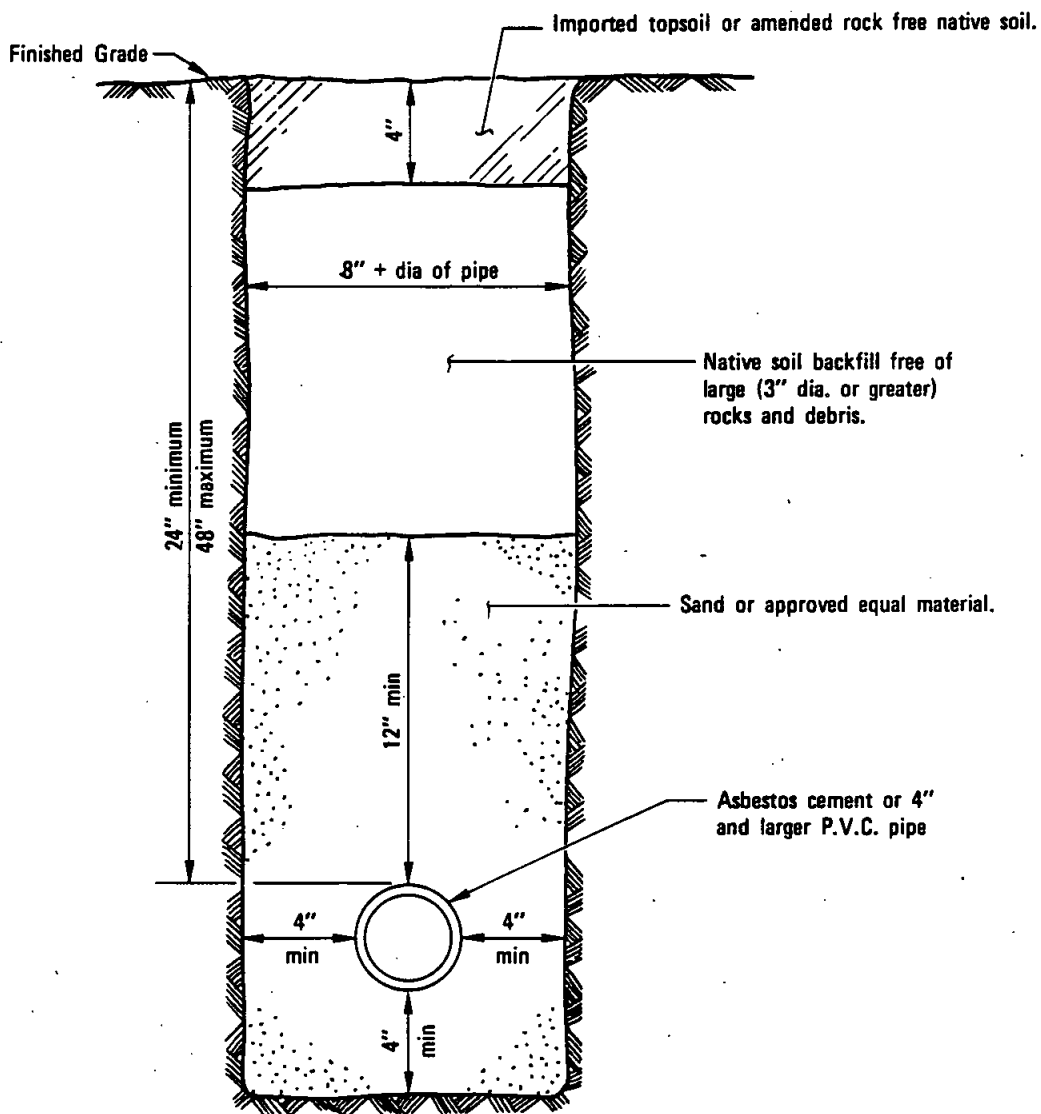
Multiple Pipe Installation Detail
(non-pressure pipe only, see Note 6
for pressure pipe)

Details not shown
are same as above.

NOTES

1. Backfill material shall be compacted to a relative compaction of 90% or more.
2. All P.V.C. pipe shall lay free in the trench with no induced strain and with sufficient allowance for expansion and contraction as recommended by the manufacturer.
3. Teflon tape, $\frac{3}{4}$ " wide, shall be used on all threaded connections.
4. The letter W shall be stamped or chiseled on the improvement (curb-sidewalk) directly above the pressure pipeline.
5. All plastic pressure pipe under pavement shall be installed in a P.V.C. sleeve.
6. Minimum clearance between pressure pipes shall be 2 inches.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Title	TRP	M.B.	10-82			 	
Note 6	SC	M.B.	5-86	TRENCH DETAIL P.V.C. AND/OR COPPER PIPE (3" AND SMALLER)		Coordinator R.C.E. 19807 Date	
Title, 6	SC	A.R.	7-88			DRAWING NUMBER 1-25	



NOTES

1. Backfill material shall be compacted to a relative compaction of 90% or more.
2. All pipeline fittings shall be cast iron, short body, Class 250, cement mortar lined and polyethylene wrapped. All fittings shall have thrust blocks or anchors.
3. The letter W shall be stamped or chiseled on the improvement (curb-sidewalk) directly above the pressure pipeline.
4. No P.V.C. pressure pipeline shall be installed within 3' of any line, unless otherwise specified.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

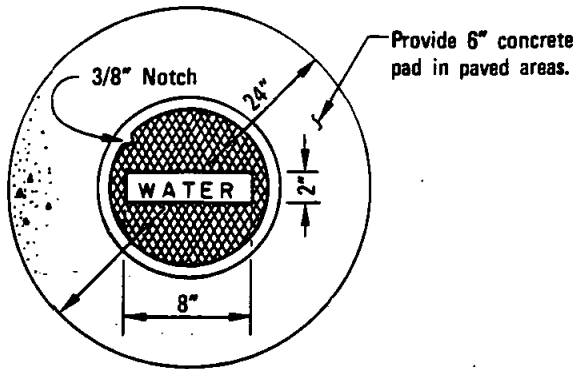
Allan A. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER 1-26

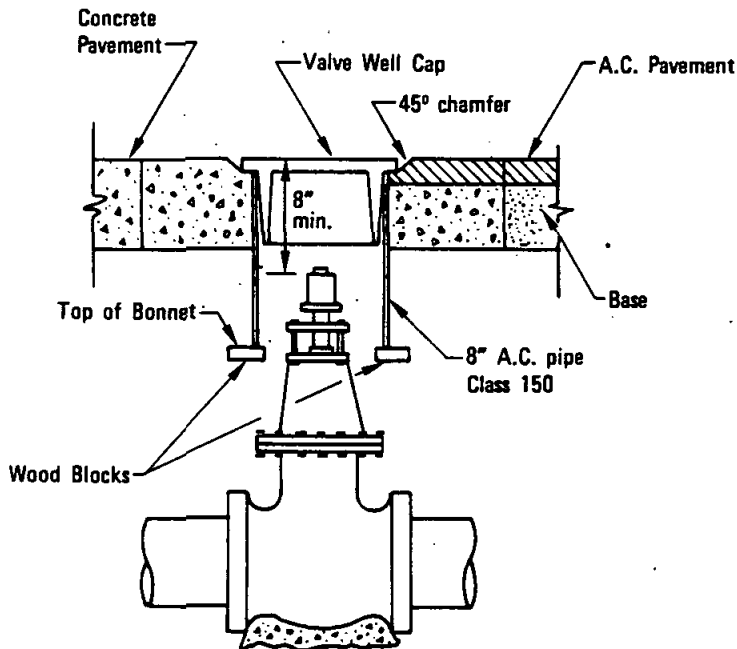
SAN DIEGO REGIONAL STANDARD DRAWING

TRENCH DETAIL — ASBESTOS CEMENT PIPE AND 4" AND LARGER P.V.C.

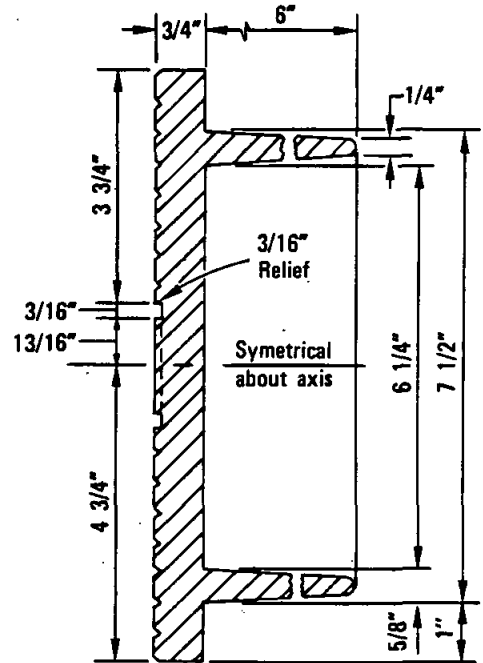
Revision	By	Approved	Date
Title	RP	M.B.	10-82
Title	SP	L.H.	7-88



PLAN



ELEVATION



CAST IRON
VALVE WELL CAP

LEGEND ON PLANS



Revision	By	Approved	Date
Dimension	<i>A.H.</i>		7-88

SAN DIEGO REGIONAL STANDARD DRAWING

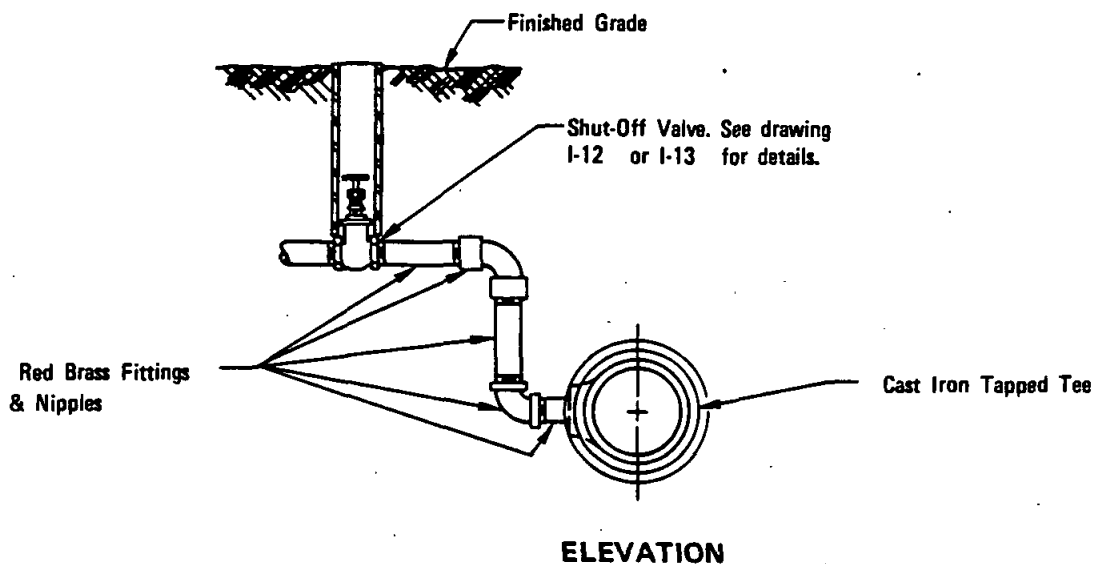
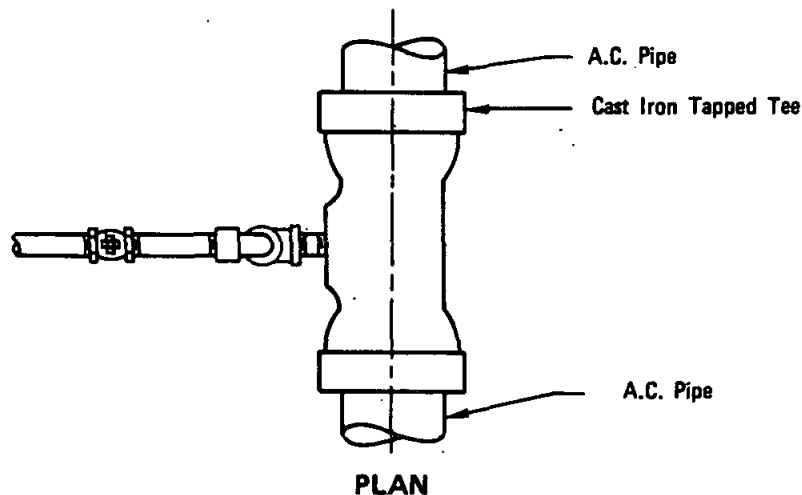
VALVE WELL AND COVER

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen A. Kuehn *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER

I-27



NOTES

1. Close nipples shall not be used.
2. Cast iron tapped tee shall be short body, class 250, cement mortar lined and polyethylene wrapped.
3. All tapped tees shall have a type - A support block. See Standard Drawing W-19.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen O. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

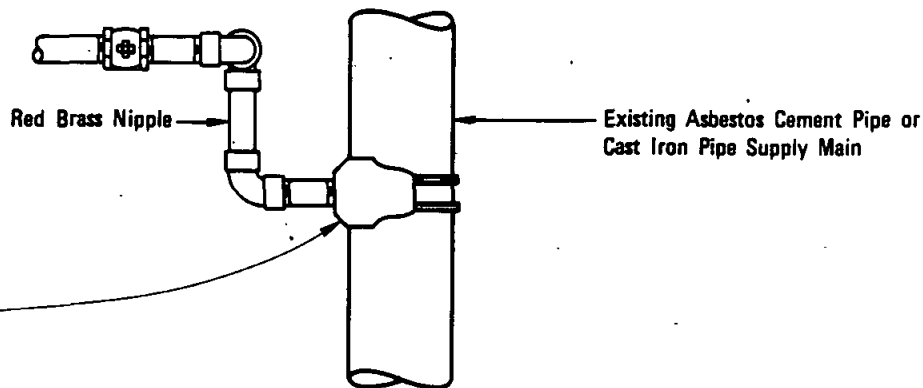
DRAWING
NUMBER

I-28

SAN DIEGO REGIONAL STANDARD DRAWING

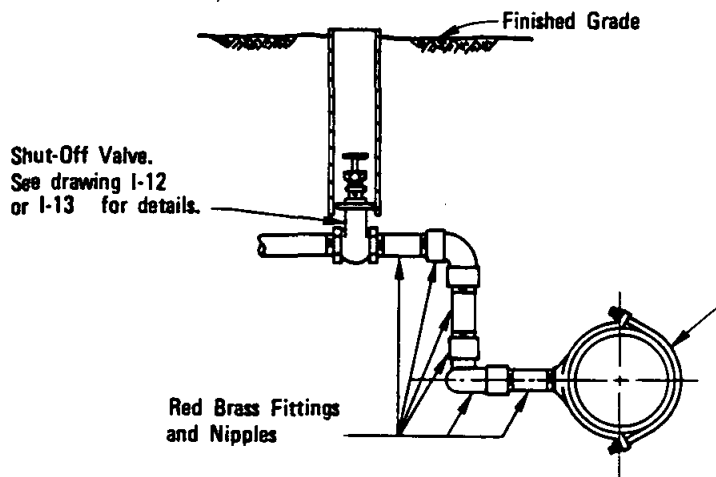
CONNECTION DETAIL FOR NEW ASBESTOS CEMENT SUPPLY MAINS

Revision	By	Approved	Date
Reference	RP	M.B.	10-82



PLAN

May Be: Bronze, double strap service clamp; cast iron tapped clamp coupling with stainless steel bolts; cast iron boltless tapping sleeve; or cast iron (cement mortar lined) cutting in tapped tee.



ELEVATION

NOTE

Close nipples shall not be used.

LEGEND ON PLANS



Revision	By	Approved	Date
Reference	TRP	M. B.	10-82

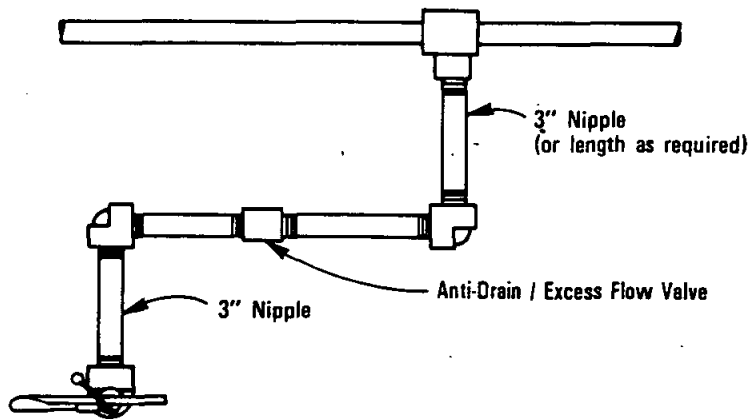
SAN DIEGO REGIONAL STANDARD DRAWING

**CONNECTION DETAIL
FOR EXISTING SUPPLY MAINS**

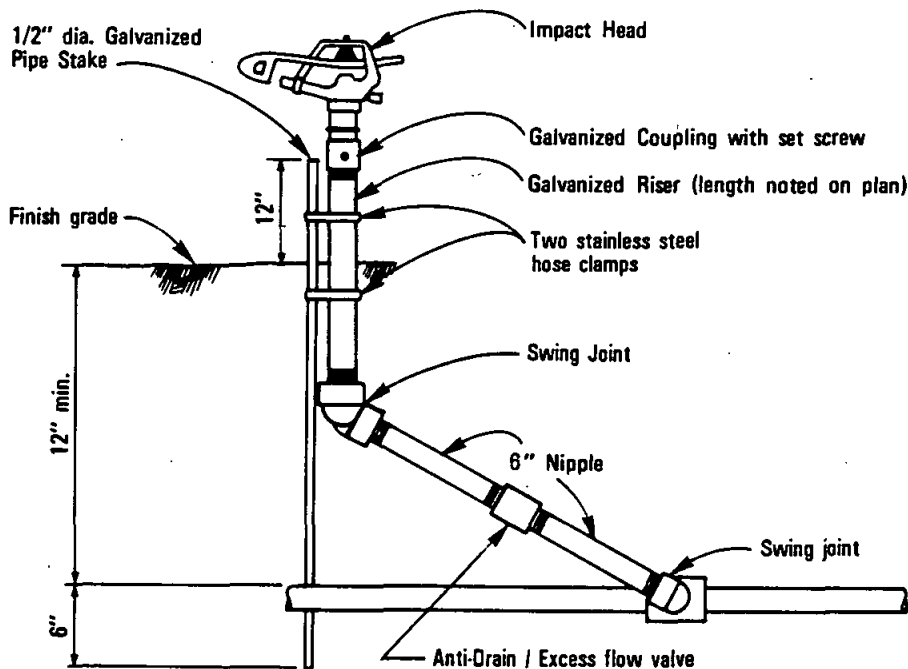
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan G. Kuehn *Dec. 1975*
Coordinator R.C.E. 19607 Date

**DRAWING
NUMBER 1-29**



PLAN



ELEVATION

NOTES

1. All fittings shall be P.V.C. Sch. 40 (except as noted).
2. All nipples shall be P.V.C. Sch. 80 (except as noted).
3. Teflon tape, 3/4" wide, shall be used on all threaded connections.
4. Short nipples shall not be used.

LEGEND ON PLANS

Show a number to indicate type head

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

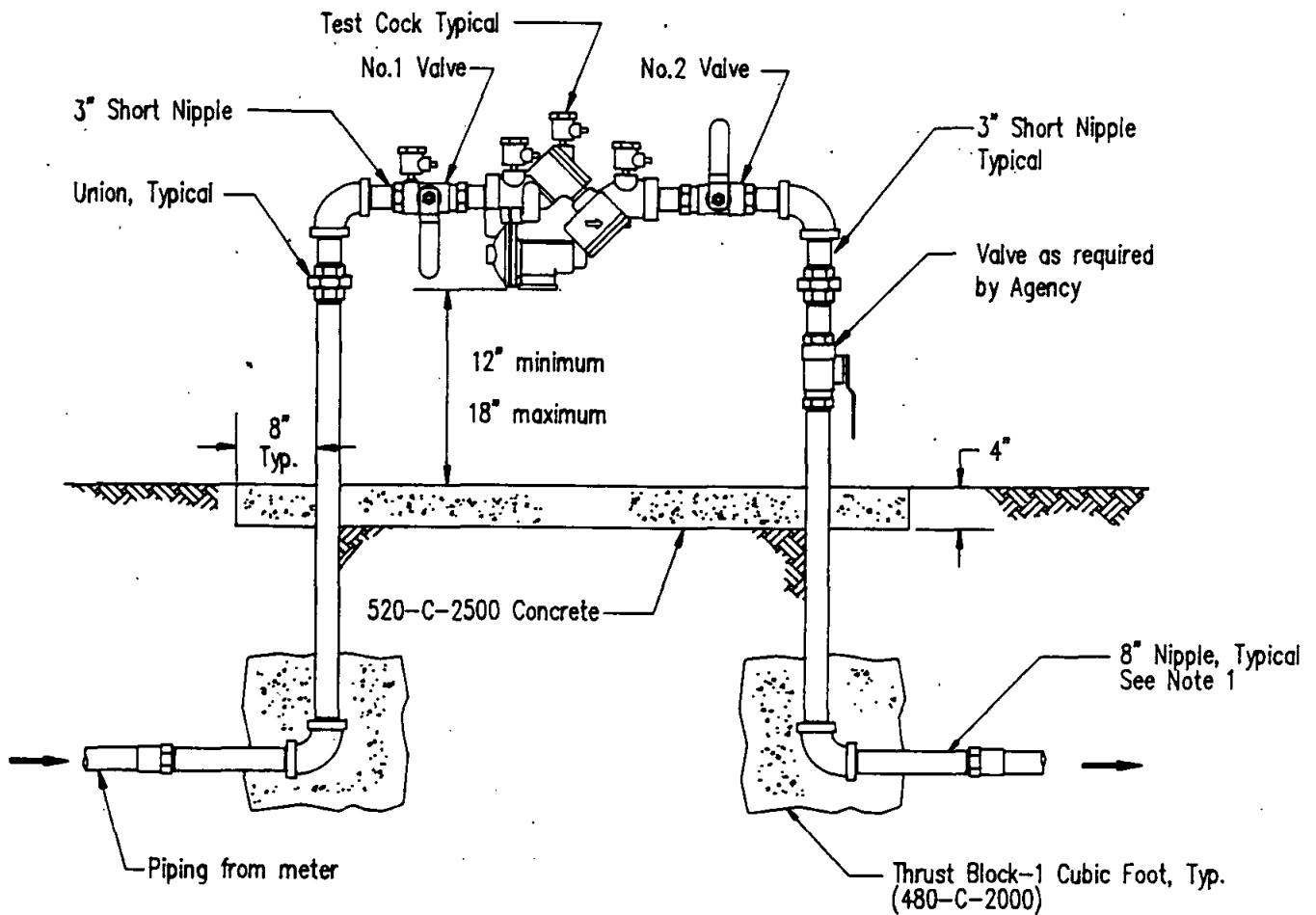
David J. Salas July 1979
Coordinator R.C.E. 25291 Date

SAN DIEGO REGIONAL STANDARD DRAWING

DRAWING
NUMBER 1-30

IMPACT HEAD
(WITH SWING JOINT)

Revision	By	Approved	Date
Notes	JP	SA	5-92



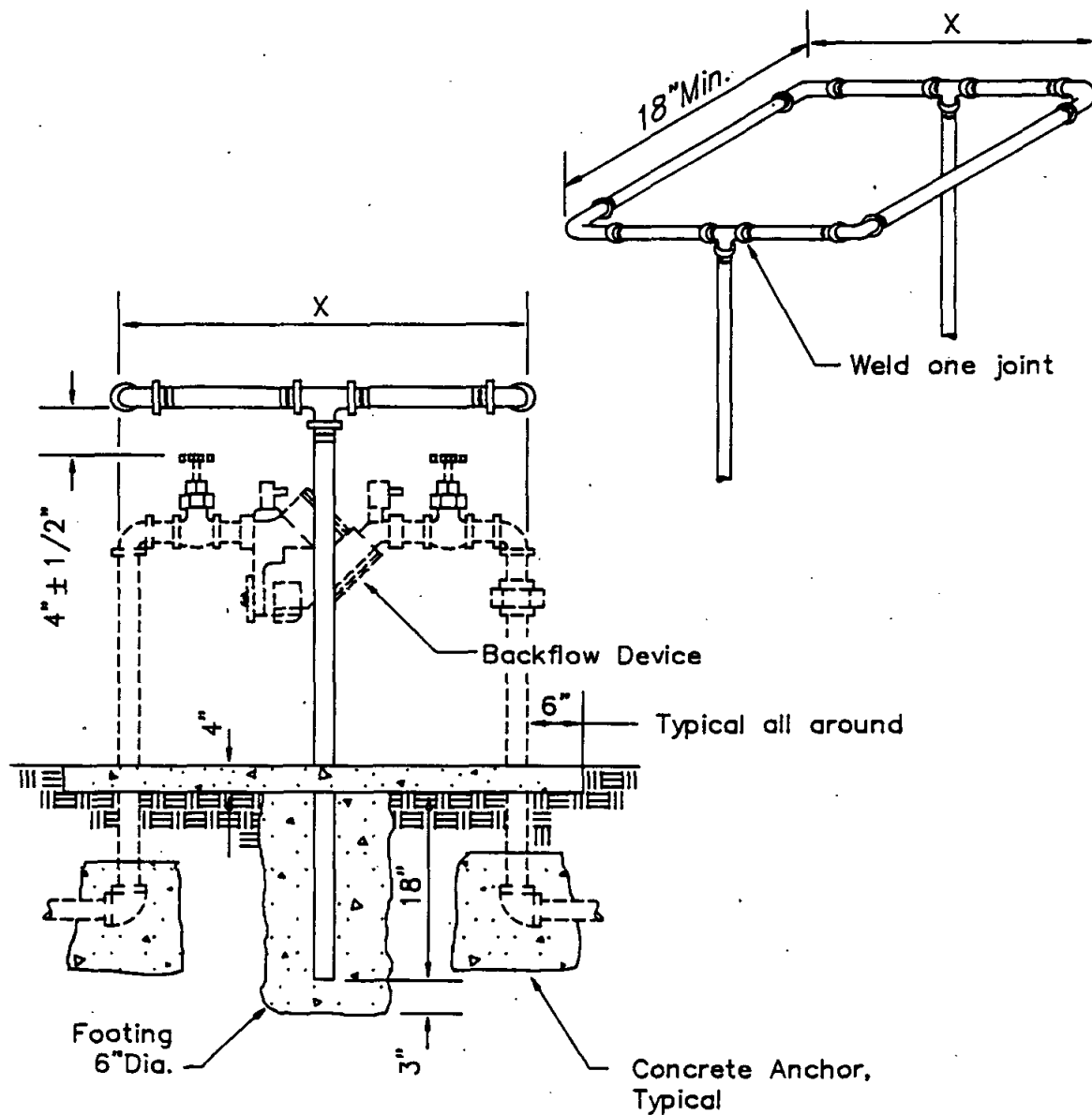
NOTES:

1. All risers, unions, elbows and nipples shall be red brass.
2. Close nipples shall not be used.
3. Teflon tape 3/4" wide shall be used on all threaded connections.
4. Concrete pad shall be 18" wide.
5. Backflow preventer assembly shall be tested upon installation by a certified backflow device tester. Contractor shall provide the Engineer with written test results completed by certified backflow tester prior to the backflow preventor assembly's acceptance by the Engineer.

LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
				BACKFLOW PREVENTER REDUCED PRESSURE PRINCIPLE ASSEMBLY - 2" AND SMALLER			
						CHAIRMAN <i>Ray P. ...</i> 5-11-92	DATE
						RCE 25702	
						DRAWING NUMBER	I-31



NOTES:

1. All pipes shall be 1 1/2-inch diameter galvanized schedule 40 steel.
2. X dimension shall be sized to accomodate type of backflow device being protected.
3. Paint entire fence with one coat metal primer and two coats of exterior yellow colored enamel.
4. Guard fence shall be centered on backflow device.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

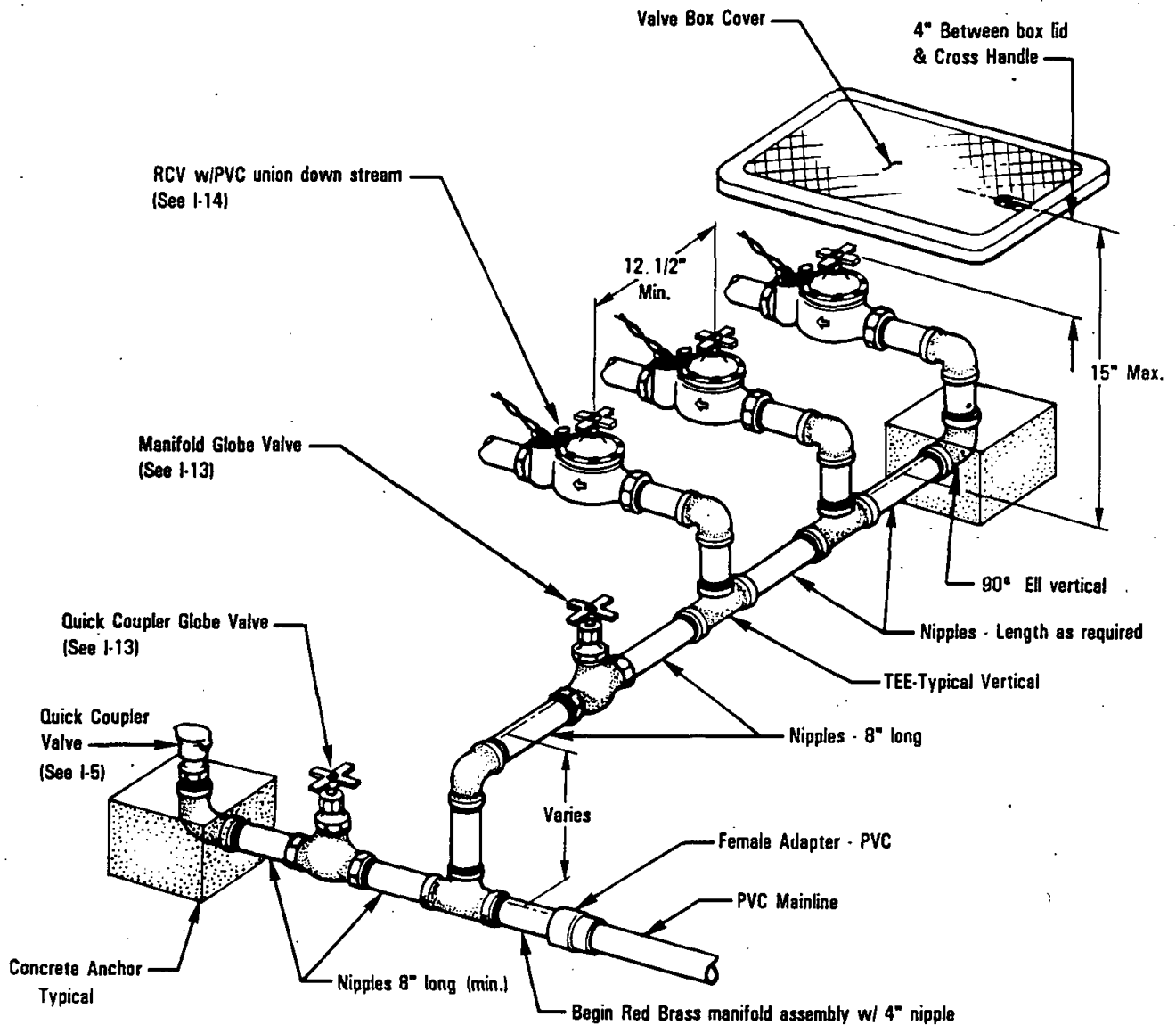
Henry Babin SEPT. 1968
Chairman Date

DRAWING
NUMBER I-32

SAN DIEGO REGIONAL STANDARD DRAWING

PROTECTIVE GUARD FENCE
FOR BACKFLOW DEVICE

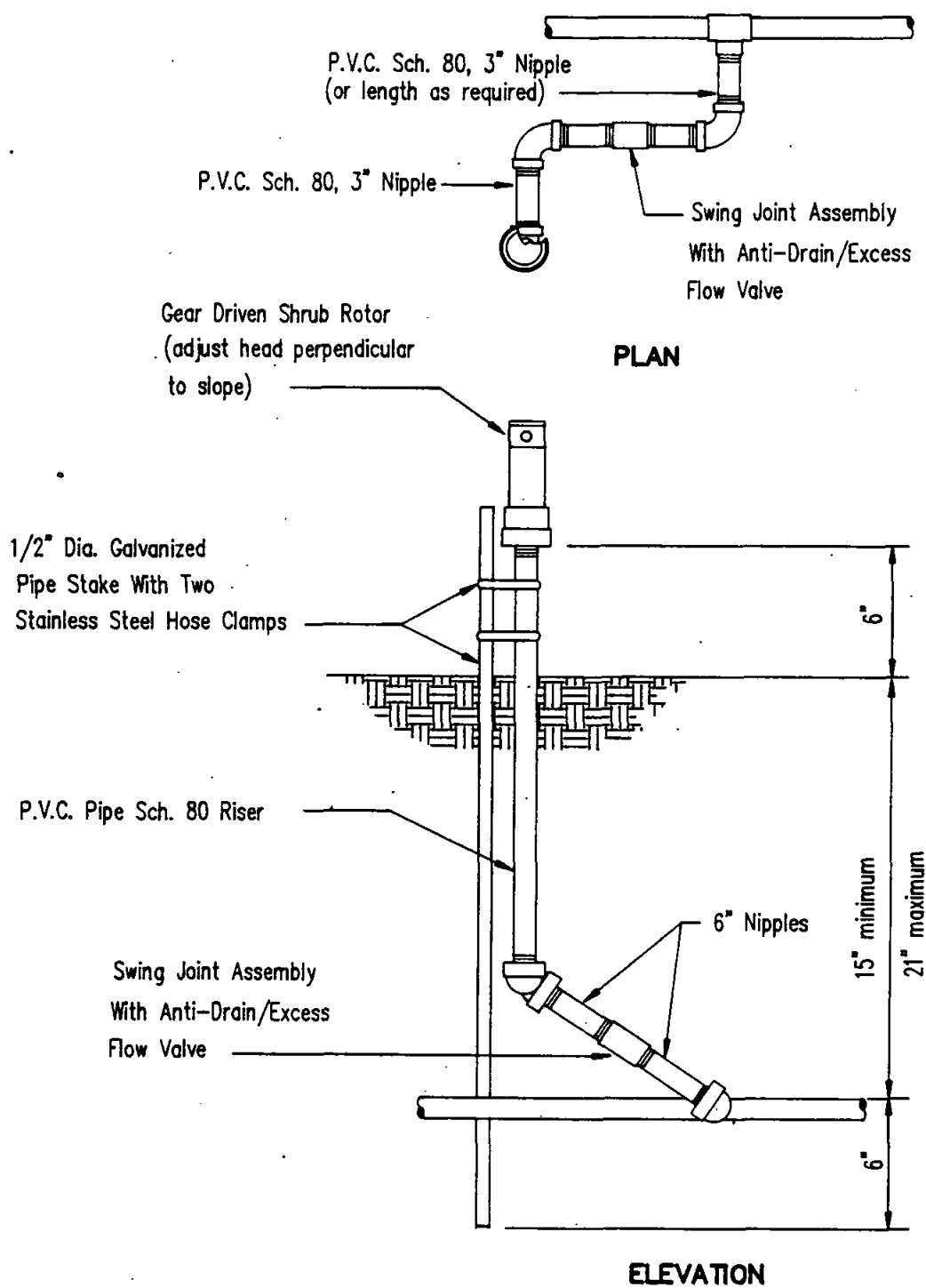
Revision	By	Approved	Date



NOTES

1. Typical remote control valve assembly : All nipples, risers, tees and elbows are to be red brass.
2. Install largest remote control valve adjacent to gate valve and maintain uniform decrease.
3. Close nipples are not allowed.
4. Install individual valve boxes for each remote control valve.
5. Locations of Quick Coupler valves shall be as shown on plans.
6. Tee vertically from Mainline intersection to reach the 15" maximum depth.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
				REMOTE CONTROL VALVE MANIFOLD ASSEMBLY		<i>Ray. V. ...</i> 5-11-92	
						Chairman Date	
						RCE 25902	
						DRAWING NUMBER 1-33	



NOTES:

1. All fittings shall be P.V.C. Sch. 40 (except as noted).
2. All nipples shall be P.V.C. Sch. 80 (except as noted).
3. Teflon tape, 3/4" wide, shall be used on all threaded connections.
4. Short nipples shall not be used.

LEGEND ON PLANS

Show a number to
indicate head type



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Chairman *RCE 25902* Date *5-11-92*

DRAWING
NUMBER **1-34**

SAN DIEGO REGIONAL STANDARD DRAWING

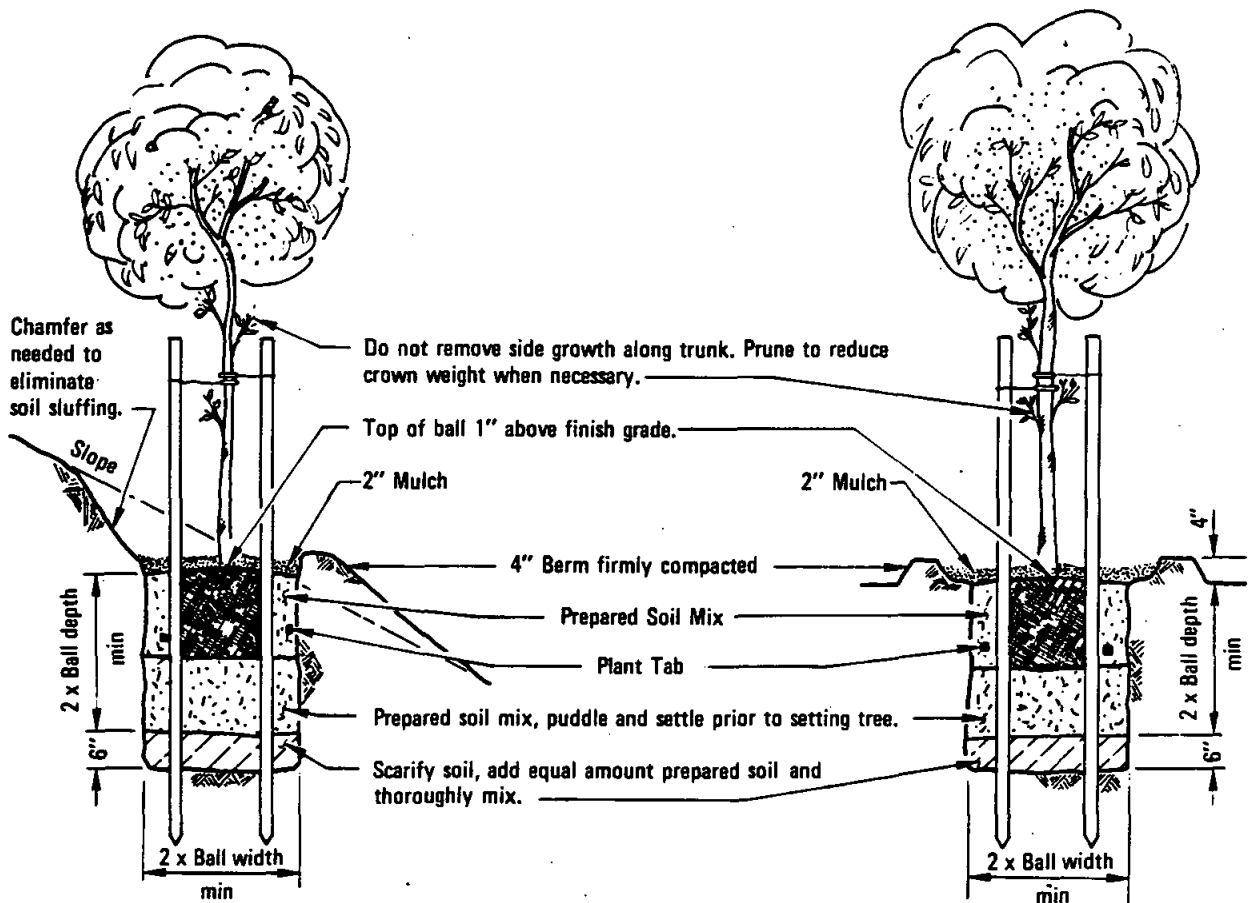
SHRUB SPRINKLER HEAD ROTARY TYPE

Revision	By	Approved	Date

LANDSCAPING

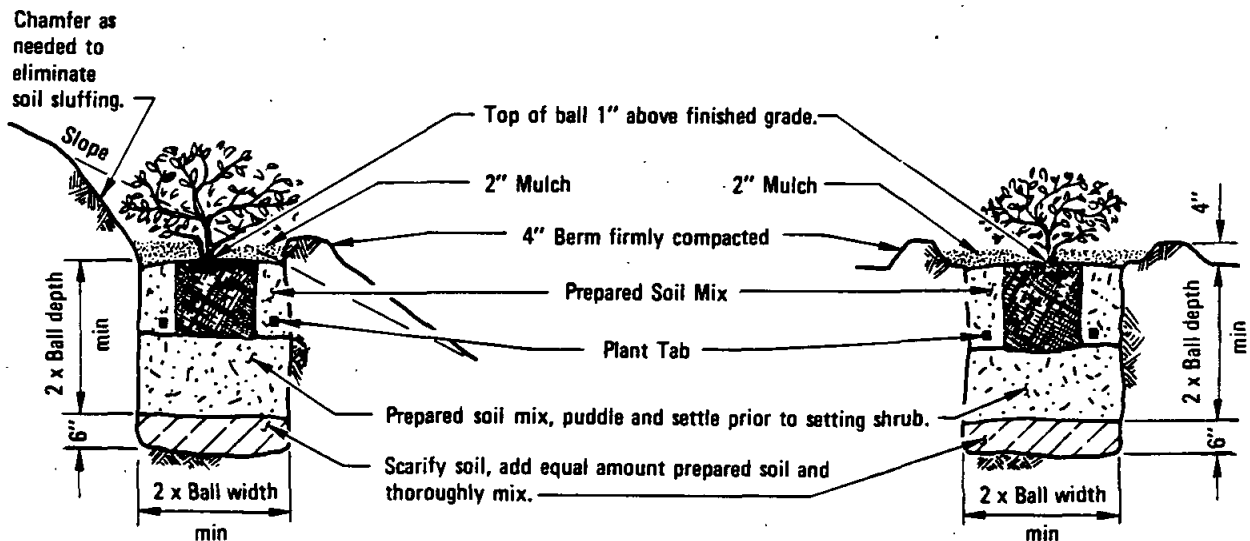
LANDSCAPING

L



TREE PLANTING - SLOPES

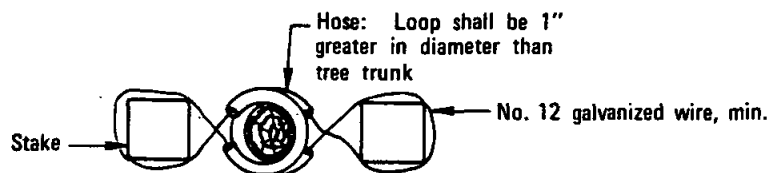
TREE PLANTING - LEVEL GROUND



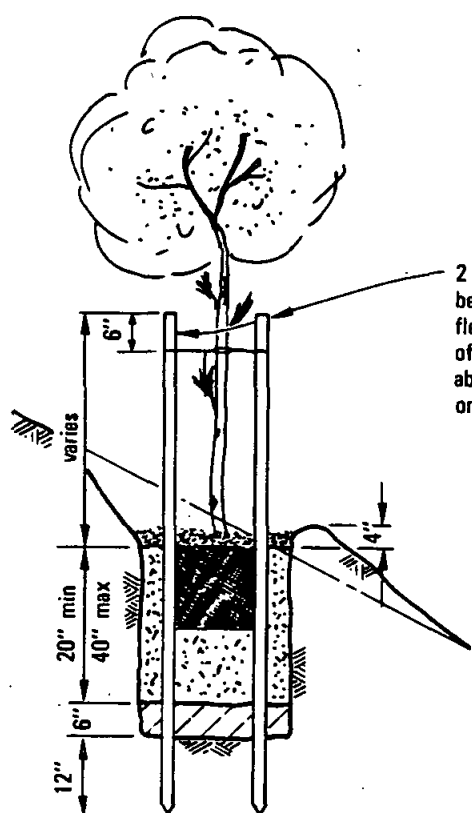
SHRUB PLANTING - SLOPES

SHRUB PLANTING - LEVEL GROUND

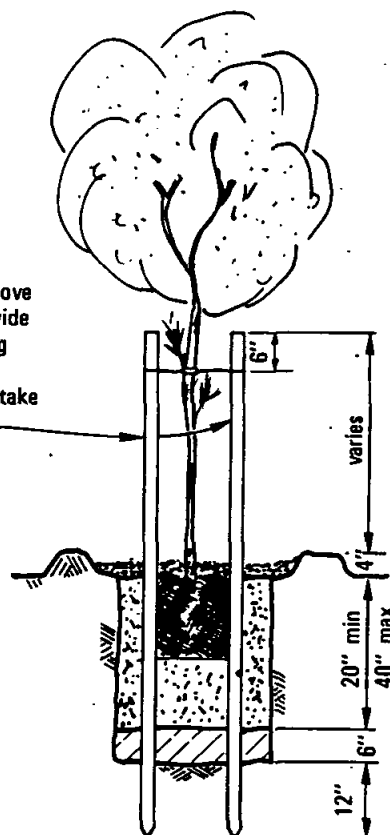
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
				TREE AND SHRUB PLANTING		<i>Alfred A. Kuehn</i>	<i>Dec. 1975</i>
						Coordinator	R.C.E. 19307
							Date
						DRAWING NUMBER	L-1



PLAN



TREE STAKING - SLOPES



TREE STAKING - LEVEL GROUND

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

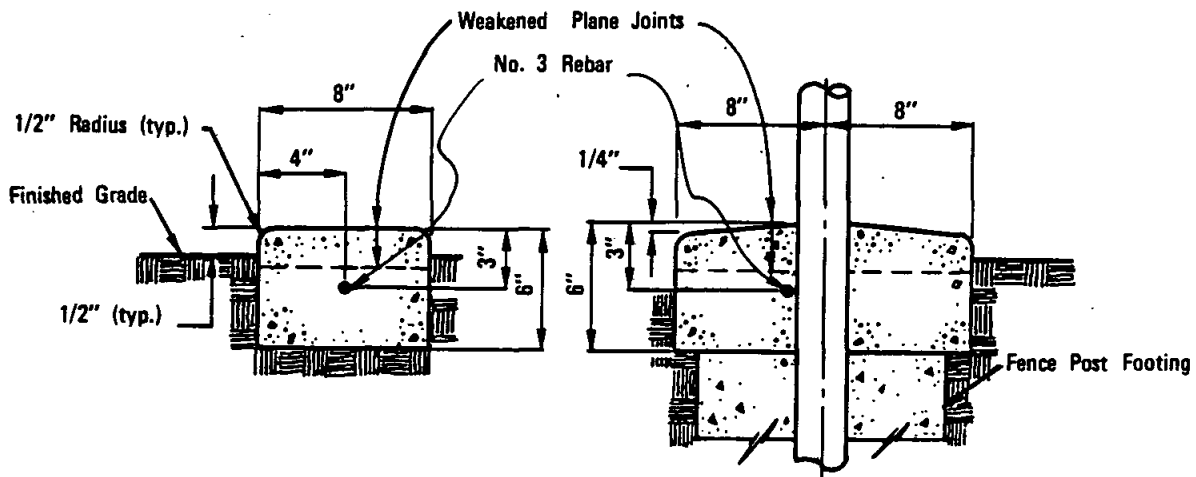
Allen A. Kuehnel *Dec. 1975*
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

TREE STAKING

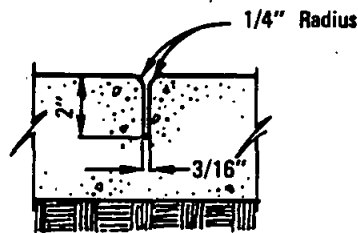
DRAWING
NUMBER L-2

Revision	By	Approved	Date
Plan	SC	D.S.	7.77

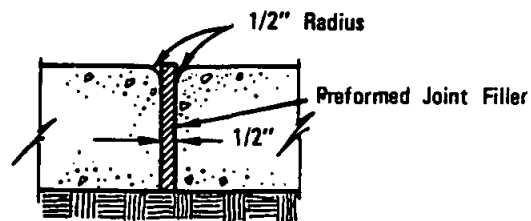


TYPE A
SHRUB AREAS

TYPE B
UNDER FENCES



WEAKENED PLANE JOINT
MAX. 20 FT. O. C.

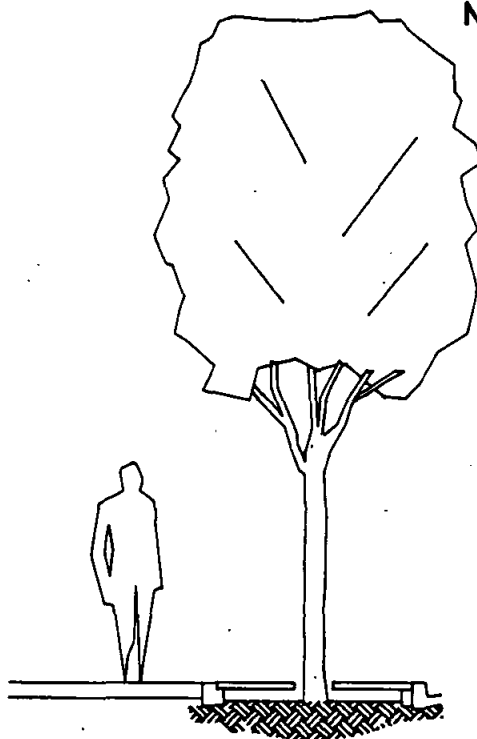


EXPANSION JOINT
MAX. 120 FT. O. C.

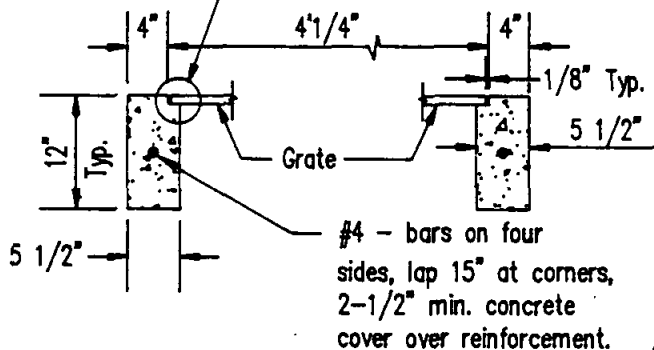
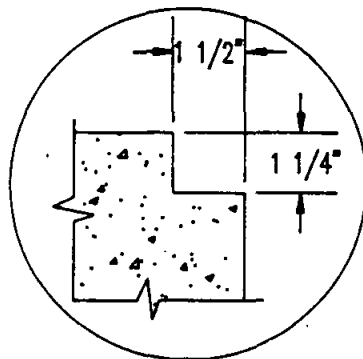
NOTES:

1. Rebar shall be continuous with 12 inch overlap at splices.
2. Concrete shall be class 520-C-2500 and same color as any adjacent concrete.
3. Install weakened plane joints at each fence post.
4. Install expansion joints where the mowing strip abuts any concrete improvement.

Revision	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>Harry R. Holt Oct 1982</i> Chairman A.C.E. C13768 Date
Conc.	<i>M.B.</i>	<i>5-86</i>			
			CONCRETE MOWING STRIP		DRAWING NUMBER L-3

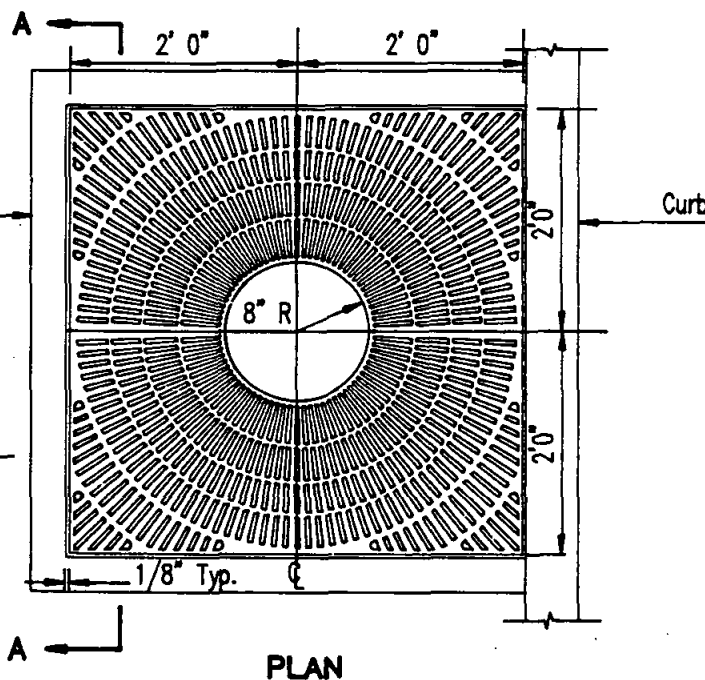
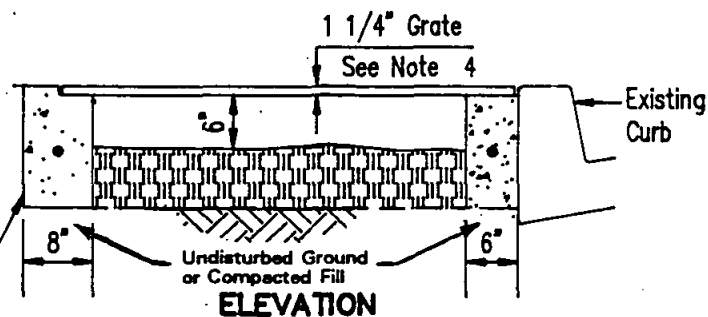


TREE SIZE



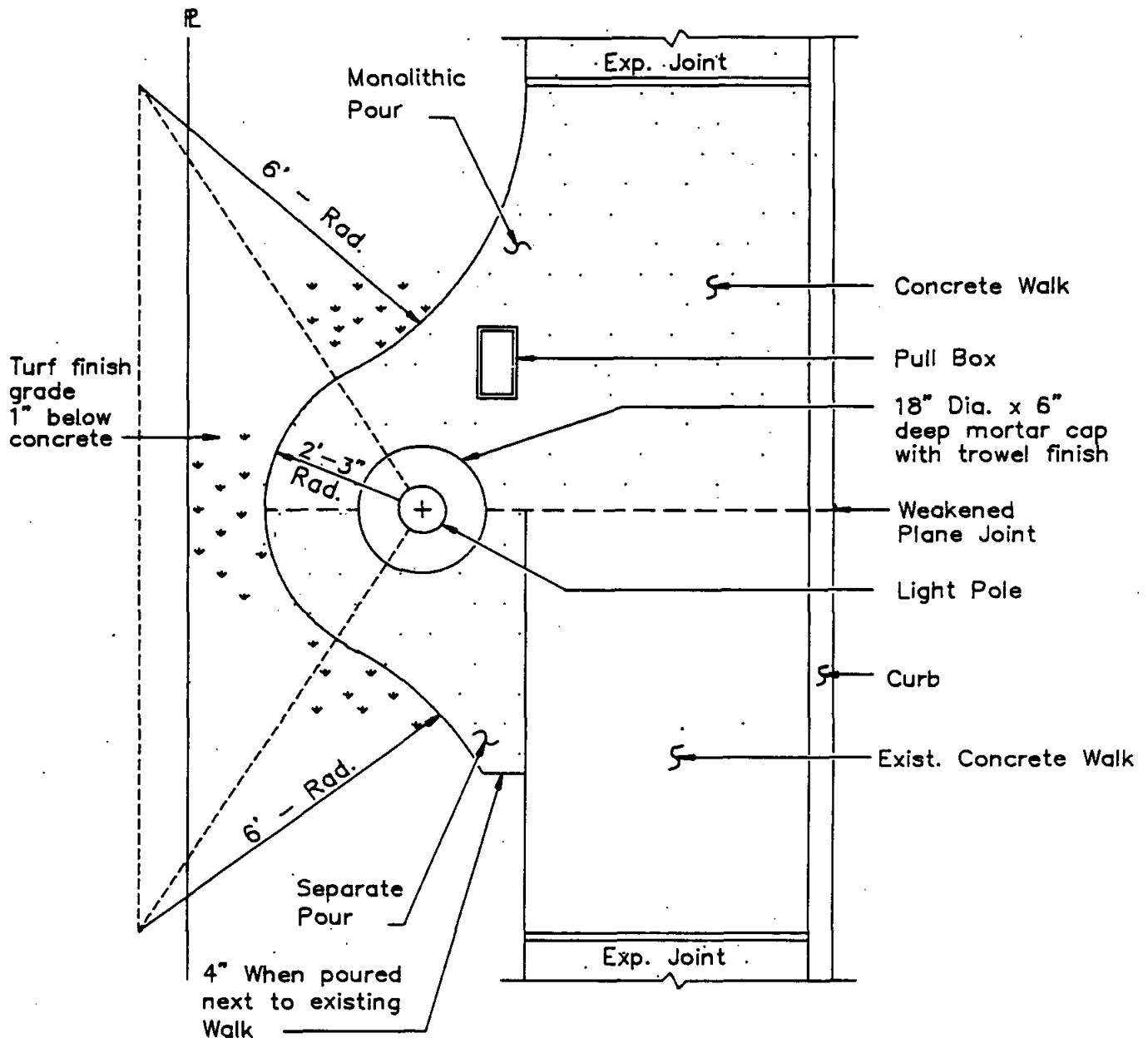
SECTION A-A

- NOTES:**
1. The location and species of each tree shall have prior approval of the Agency.
 2. Sidewalk to be removed for each tree planting shall be saw cut full depth.
 3. Fill below grate with $3/4"$ x No.4 clean crushed rock. If the grate is used for security, all bolts, nuts and washers shall be hot dipped galvanized. All steel items shall be hot dipped galvanized after fabrication.
 4. Grate shall be two separate pieces, $2' \times 4'$ in size, unless otherwise specified on the plans. Slot openings in grate design shall have $3/8"$ maximum width. Grates are to be designed in accordance with the latest edition of the Uniform Building Code, with a minimum uniform live load of 250 pounds per square foot in sidewalks, and have a method of symmetrical interior expandable rings/openings (detailed on the plans) as selected and approved by the agency.
 5. Immediate notification shall be given to the Engineer of any below grade improvements encountered.



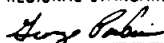
PLAN

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>Larry J. Finkbeiner</i> 5-11-92 Chairman <i>REES/PLR</i> Date DRAWING NUMBER L-4	SAN DIEGO REGIONAL STANDARD DRAWING STEEL GRATE TREE WELL COVER	Revision	By	Approved	Date



NOTES:

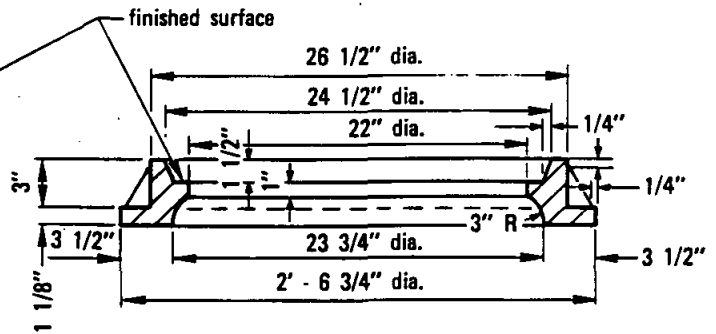
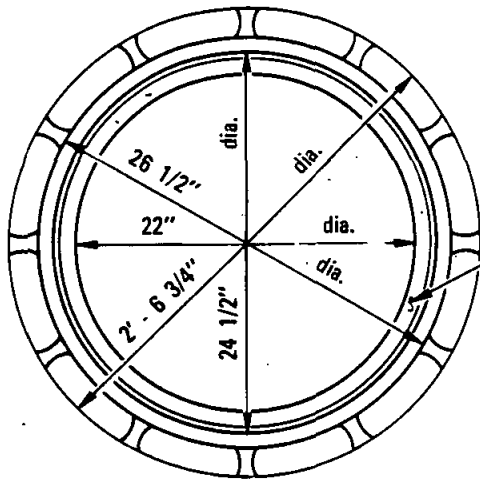
1. See Electric Plans for fixture/pole/footing details.
2. Use monolithic pour for new construction.
3. Poles shall be 6'-0" from face of curb, where applicable.
4. Pole pads shall drain at 2% minimum in same direction as sidewalk.
5. Concrete for pad shall be the same as specified for sidewalk.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
				LIGHT POLE PAD IN TURF AREAS		 SEPT. 1988	
						Chairman	Date
						DRAWING NUMBER L-5	

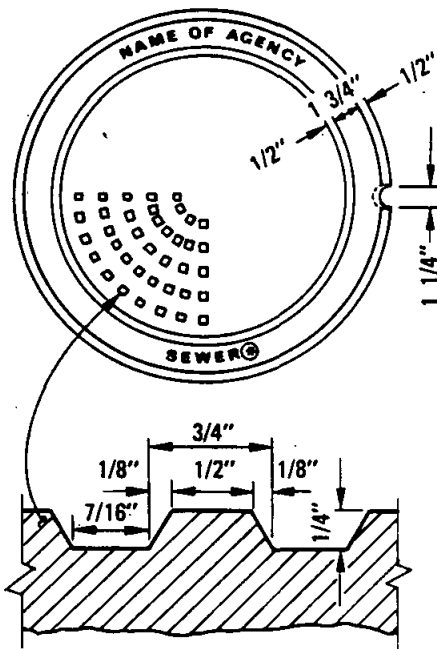
MISCELLANEOUS

M

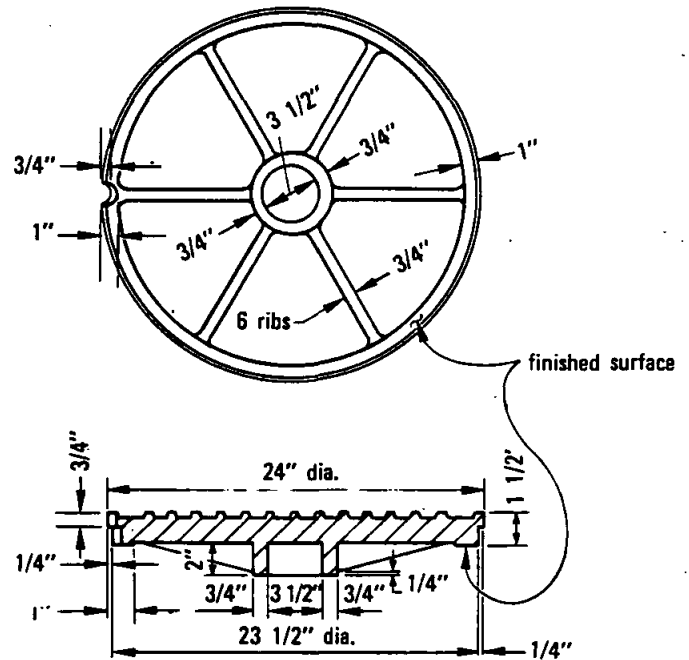
NEOUS



**MANHOLE COVER FRAME
CAST IRON WT. 175 LB.**



DETAIL



**MANHOLE COVER
CAST IRON WT. 155 LB.**

NOTES

1. Frame and cover shall be cast iron.
2. Weights: Frame 175 lbs.
Cover 155 lbs.
3. Imported covers and frames shall have the country of origin marking in compliance with federal regulations.

FOR	MARK
Sewer Projects	Sewer
Storm Drain Projects	Storm Drain
Water Projects	Water

Revision	By	Approved	Date
Note 3	SE	A.H.	7-88

SAN DIEGO REGIONAL STANDARD DRAWING

**24" MANHOLE FRAME AND COVER
HEAVY DUTY**

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Allan G. Kneeland Dec. 1975
Coordinator R.C.E. 19807 Date

**DRAWING
NUMBER M-1**



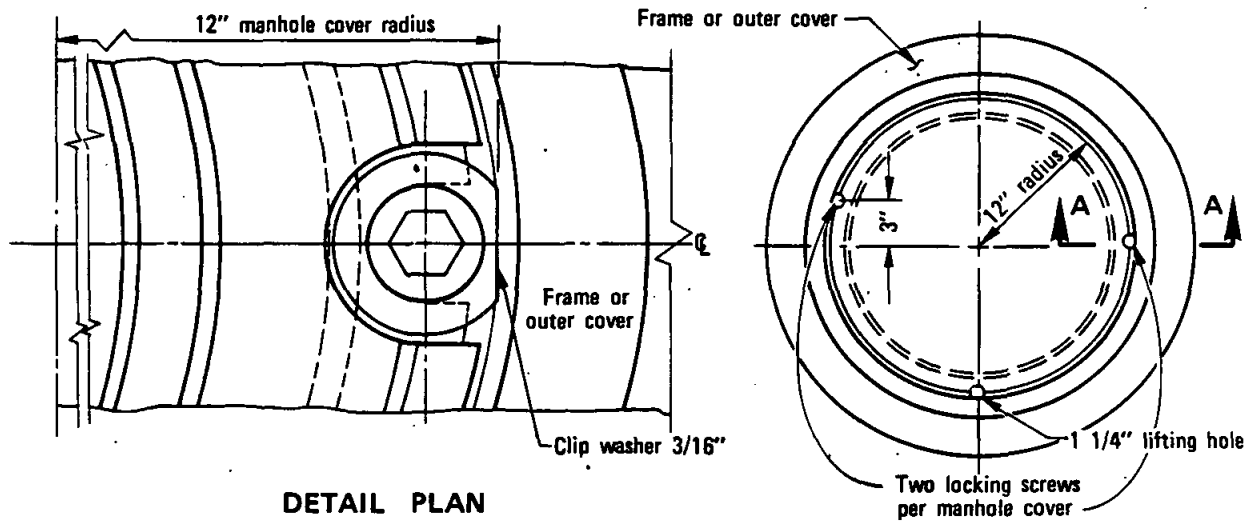
1. Frame and cover shall be cast iron.
2. Frame and cover for use in non-traffic area only.
3. Weights: Frame 30 lbs
 Cover 100 lbs
4. Imported covers and frames shall have the country of origin marking in compliance with federal regulations.

FOR	MARK
Sewer Projects	Sewer
Storm Drain Projects	Storm Drain
Water Projects	Water

M-2

24" MANHOLE FRAME AND COVER LIGHT DUTY

Revision	By	Approved	Date
Note 4	AL	A.H.	7/88

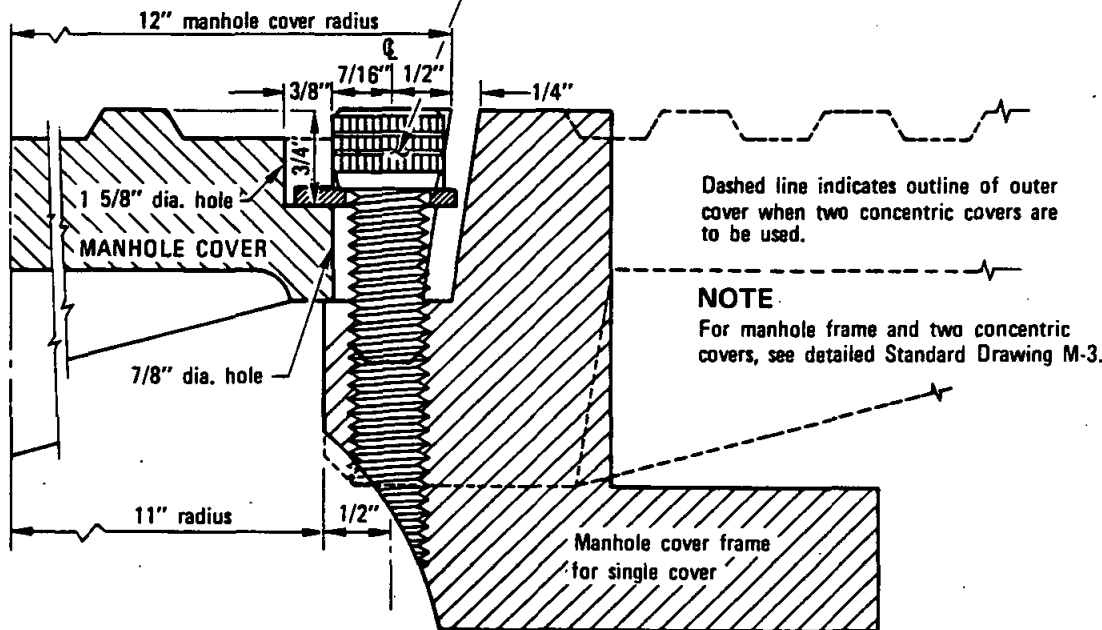


DETAIL PLAN

NOTE

For manhole frame and cover details, see Standard Drawing M-1 (single cover).

Drill and tap hole, install 5/8"x 1 1/2" stainless steel, hexagonal socket head cap screw (2 required), Unified National Coarse Thread - 11 per inch - with 1 1/2" O.D. x 11/16" I.D. x .078" thick stainless steel washer.
Use 18-8 stainless steel, A.S.T.M. Standard Specification A-276, Type 300 series.



Dashed line indicates outline of outer cover when two concentric covers are to be used.

NOTE

For manhole frame and two concentric covers, see detailed Standard Drawing M-3.

SECTION A-A

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan D. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

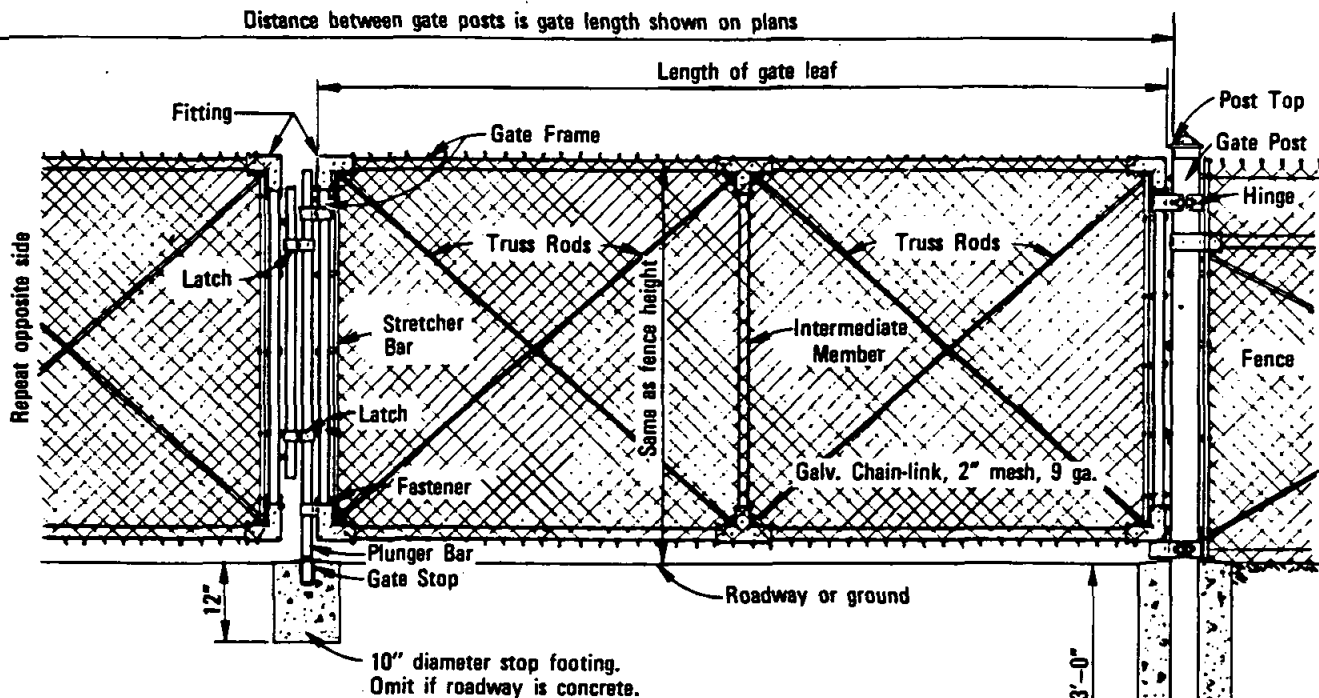
DRAWING
NUMBER

M-4

SAN DIEGO REGIONAL STANDARD DRAWING

MANHOLE COVER LOCKING DEVICE

Revision	By	Approved	Date

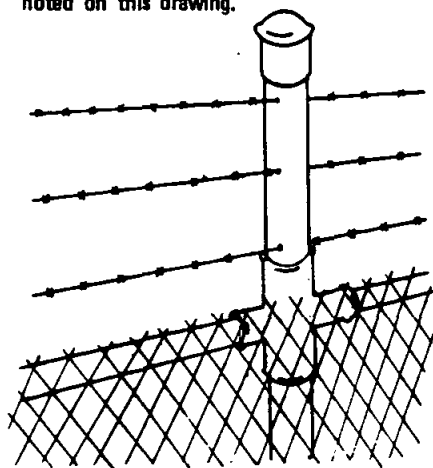


HALF ELEVATION DOUBLE SWING GATE

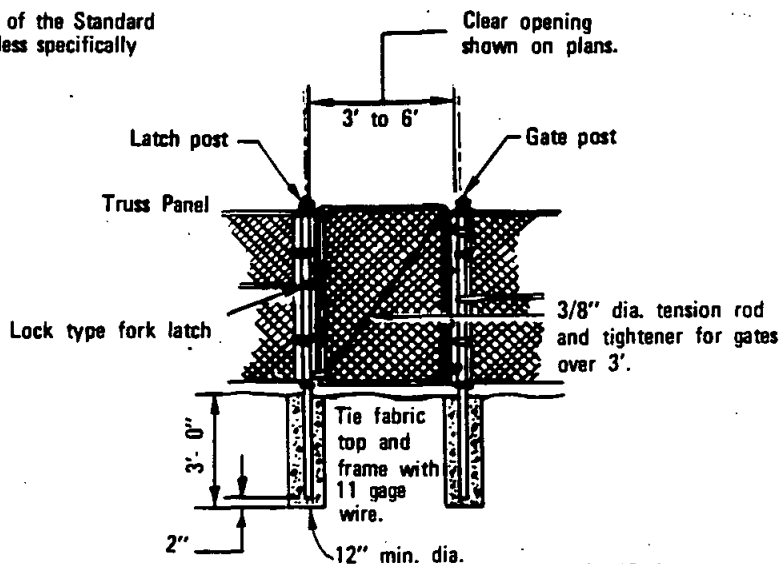
NOTES

1. All footings shall be 520-C-2500 concrete.
2. The following items shall be furnished and installed only when shown on the plans and/or called for in the special provisions:
 - a. Barbed wire
 - b. Extension post
3. Chain link fence shall conform to Section 206-6 of the Standard Specifications for Public Works Construction unless specifically noted on this drawing.

Diameter of footing = 4 times outside diameter of post.



EXTENSION POST AND BARBED WIRE



WALK GATE

LEGEND ON PLANS



Revision	By	Approved	Date
Walk gate	TRA	M.B.	10-82
Cont.	S	TRA	5-86

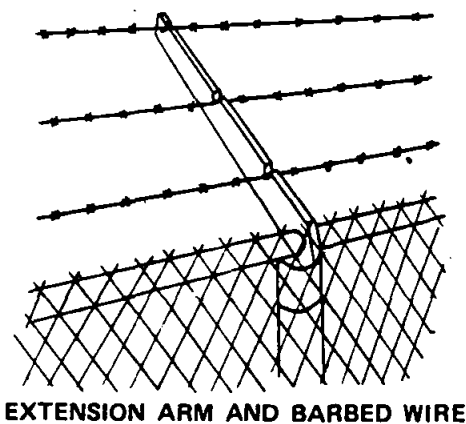
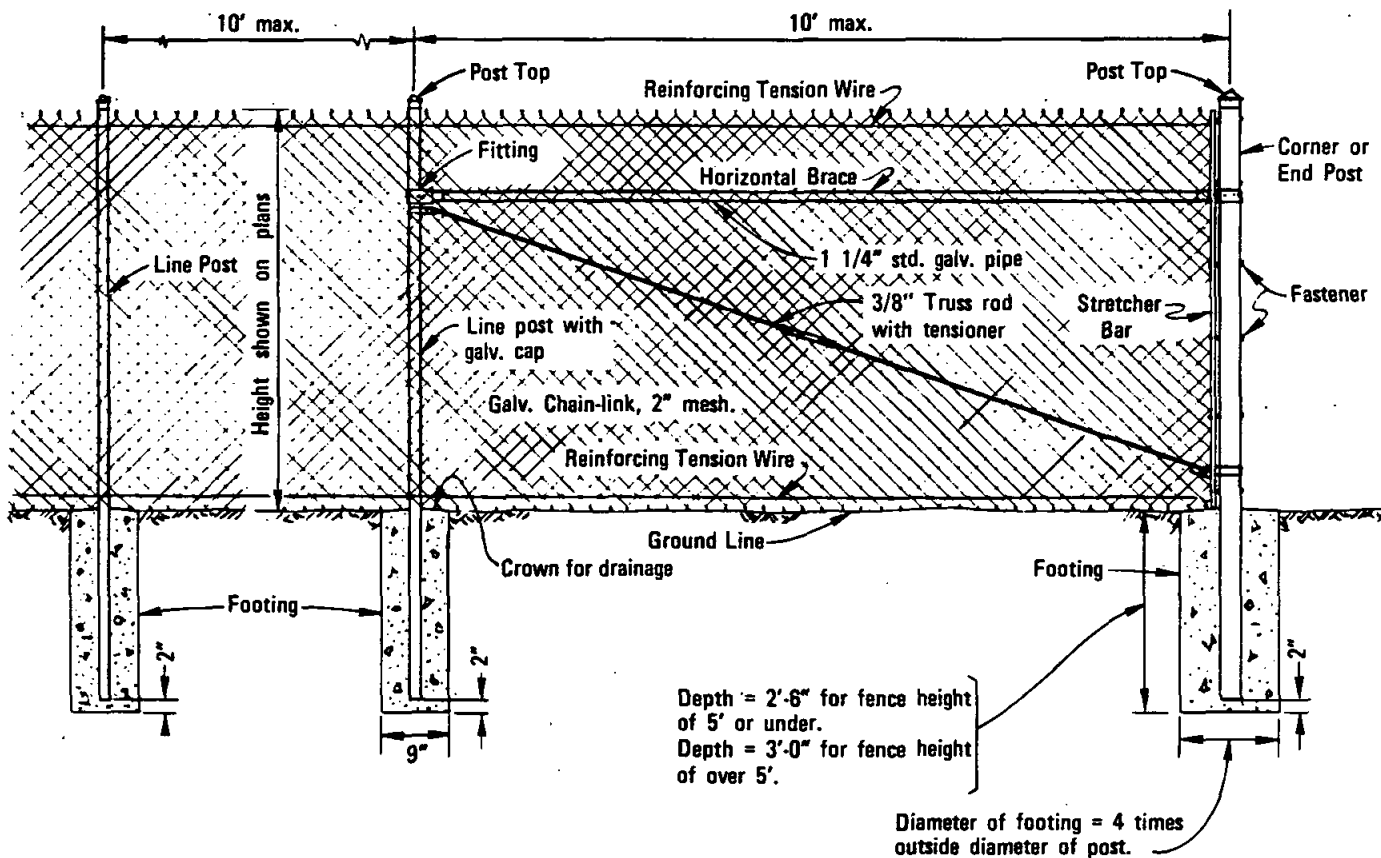
SAN DIEGO REGIONAL STANDARD DRAWING

CHAIN LINK GATE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Alfred A. Kerschbaum Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING NUMBER M-5



NOTES

1. All footings shall be 520-C-2500 concrete.
2. The following items shall be furnished and installed only when shown on the plans and/or called for in the special provisions:
 - a. Barbed Wire
 - b. Extension Arm
 - c. Top Horizontal Rail
3. Chain link fence shall conform to Section 206-6 of the Standard Specifications for Public Works Construction unless specifically noted on this drawing.
4. See Standard Drawing M-20 for additional details.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Olland A. Kuehnel *Dec. 1975*
Coordinator R.C.E. 19807 Date

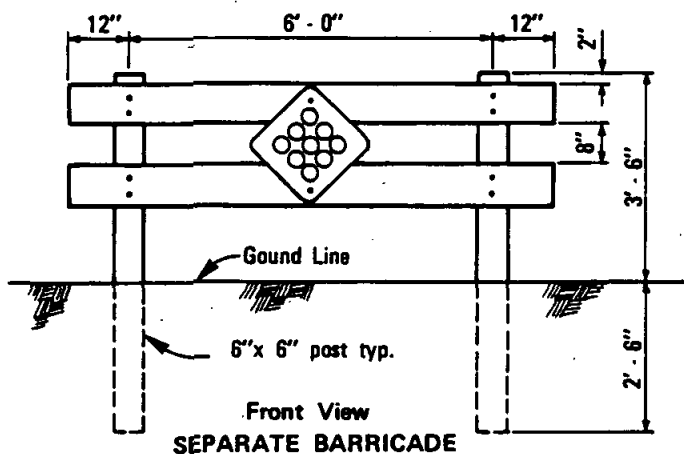
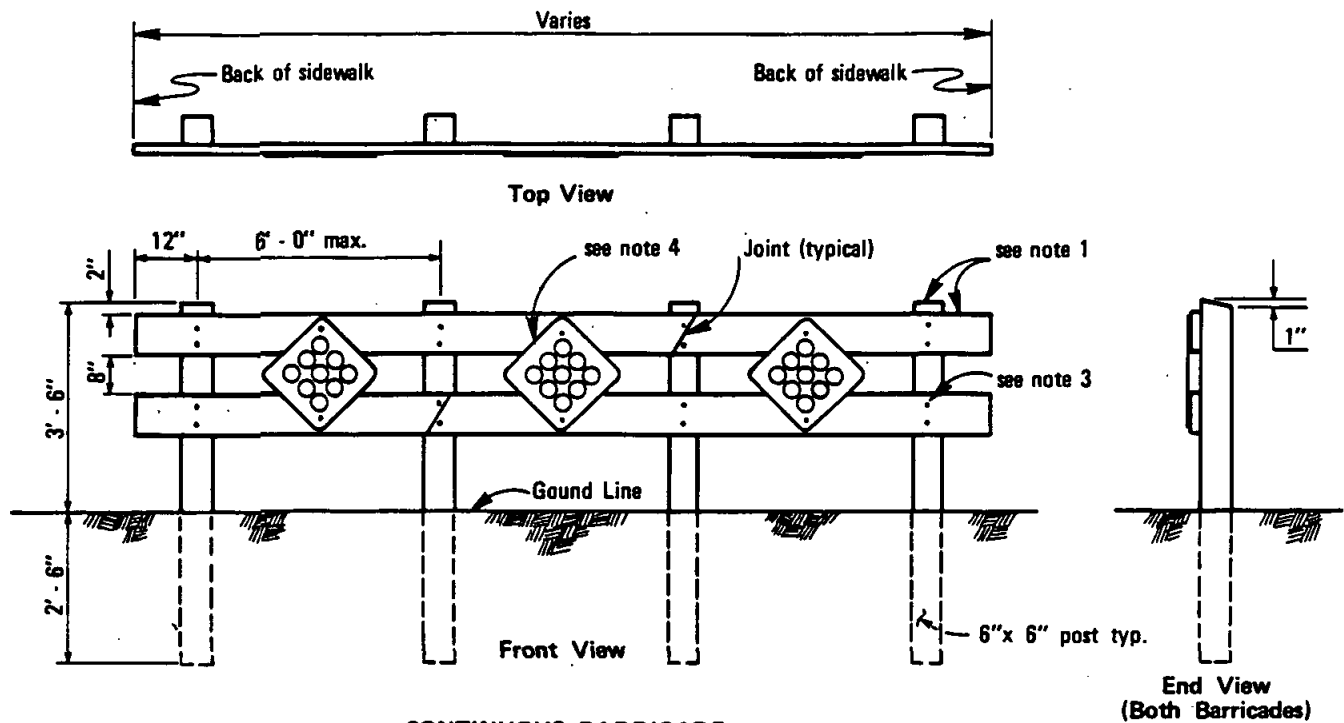
SAN DIEGO REGIONAL STANDARD DRAWING

CHAIN LINK FENCE

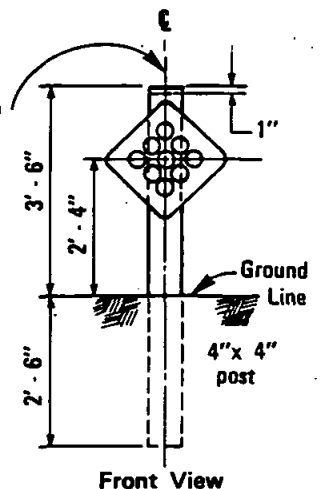
DRAWING
NUMBER

M-6

Revision	By	Approved	Date
Note 3	TRP	M.B.	10-82
Notes	SC	M.B.	5-86
Notes	SC	A.H.	7-88



Location dimension shown on plans



NOTES

1. Posts to be structural grade redwood or pressure treated (with wood preservative) Douglas Fir, surfaced four sides; cross pieces to be 2"x 8" select grade Douglas Fir, surfaced four sides.
2. All exposed portions of barricades shall be painted with two coats of white exterior enamel over prime coat.
3. Connections shall be made with 3/8"x 6" galvanized lag screws with one (1) washer each. Reflector sign fasteners to be 3/8"x 1 1/2" galvanized lag screws.
4. Reflector signs - California Type N. Size 18"x 18" - Yellow with nine (9) - 3/4" reflectors (center mount).
 - a. Reflectors shall be red for use on dead end streets, in all other cases they shall be yellow. Reflector material shall be plastic or other approved reflectorized material.
 - b. Sign material shall be aluminum alloy 6061-T6 or 5052-H38, aluminum thickness 0.063 inches.
5. Six foot long hat section metal post per Caltrans Std. Plan A74-A optional for guard post.

LEGEND ON PLANS



Revision	By	Approved	Date
Cont. Barric.	JP	D.S.	7-79
Post	TRD	M.B.	10-82

SAN DIEGO REGIONAL STANDARD DRAWING

GUARD POST AND BARRICADE

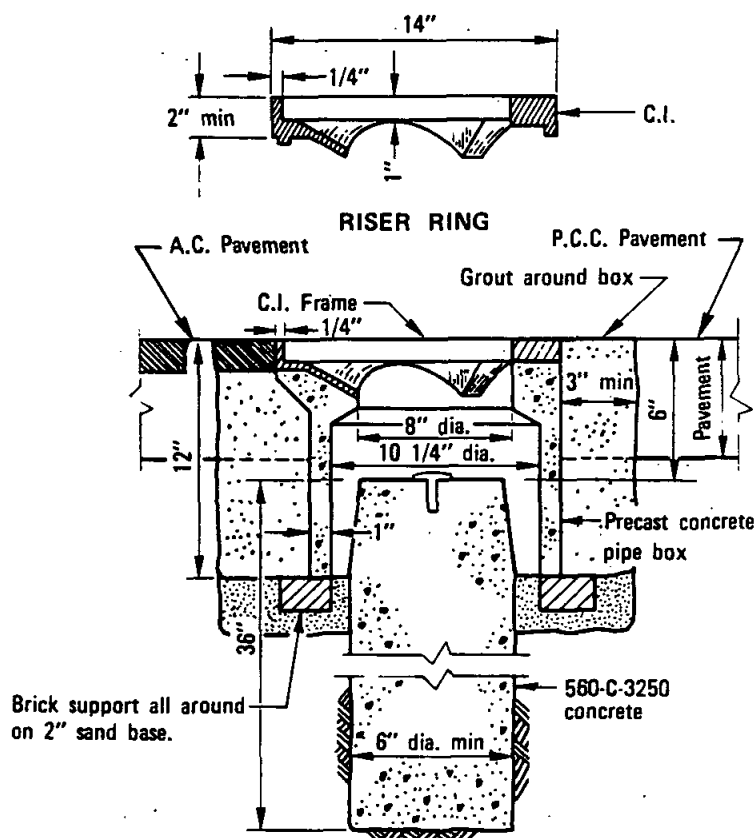
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Allan G. Kerschbaum Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING NUMBER **M-9**

-Slope surface of grout pad to drain away from cover, and to meet existing grade.

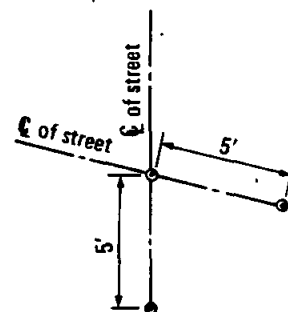
PLAN-IN UNPAVED AREA



TYPICAL MONUMENT SECTION IN PAVED AREA

NOTES

1. Cover and frame to be cast integrally with pipe box.
2. Monument base may be cast in place or precast.
3. Form and taper exposed upper 6" of cast in place base to a top diameter of 5". (Precast base shall be sand backfilled).
4. Monument marker shall be a domed brass, 3" in diameter.
5. Monument Location:
 - a) Set on all centerline intersections unless actual location is modified by the Agency and shown in modified location on map. When centerline intersection is impractical, offset 5 feet on centerline of major street, (see detail at right). If neither centerline can be occupied, two monuments will be set in line around the front on the perimeter of a 10-foot diameter circle, whose center is the point.
 - b) Set on centerline at intervals not exceeding 1000 feet on straight runs.
 - c) Set on centerline at points of curvature.
 - d) Set on center at center points of cul-de-sacs.
 - e) Set on centerline when center point of cul-de-sac is offset from centerline.
 - f) These standards may be modified at the discretion of the Agency in cases where strict compliance therewith results in more monuments than it considers necessary. The following technique for reducing the number of monuments will be routine.
 - g) Substitution of one monument on the "Point of Intersection" for monuments at the "Beginning of Curve" and the "Ending of Curve" when the "Point of Intersection" falls within the pavement area.
 - h) Deletion of any monument otherwise required by these standards when its position can be determined by turning one angle from a point on a straight line between two other monuments, providing such point is not more than 300 feet from the point on which the deleted monument would have been placed.



**Alternate location of monument.
Tie distances shown on final sub-
division map if alternate location
is used.**

**LOCATION OF STREET
SURVEY MONUMENT**

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allard A. Kershner *Dec. 1973*
Coordinator R.C.E. 19807 Date

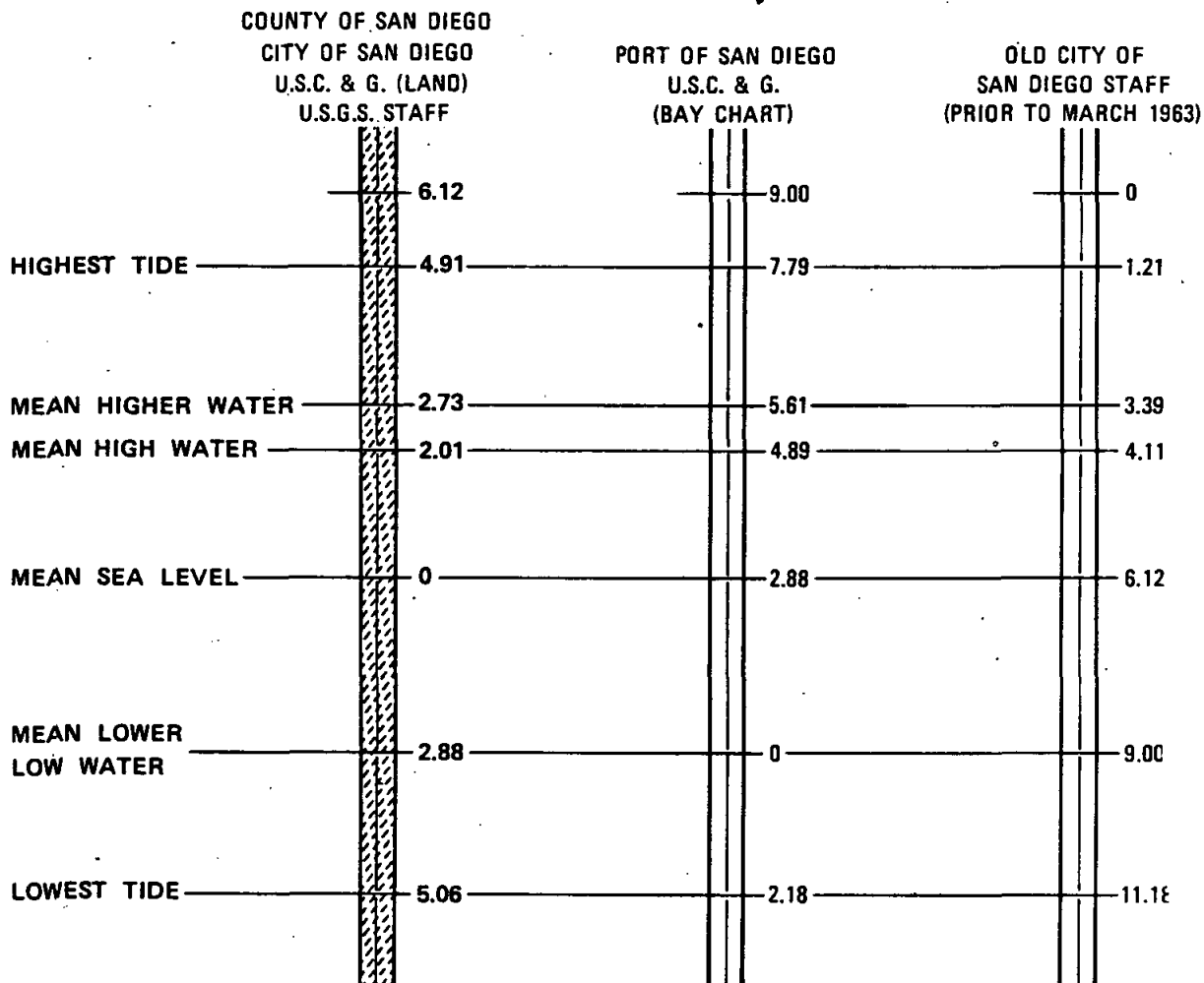
**DRAWING
NUMBER**

M-10

SAN DIEGO REGIONAL STANDARD DRAWING

STREET SURVEY MONUMENT

Revision	By	Approved	Date
Notes	SC	D.S.	7-79
Section	SC	M.A.	5-86
Taper	JY	S.L.	5-92



LEGEND

U.S.C. & G.

U.S.G.S.

MEAN HIGH WATER

MEAN HIGHER WATER

= United States Coast and Geodetic Survey.

= United States Geological Survey.

= Mean of all high water in San Diego Bay.

= Mean of all higher water in San Diego Bay.
Bay charts and topography up to the mean
high tide based on zero at the mean lower
low water.

SOURCE

Data based on U.S.C. & G. "Sea Level Datum of 1929".

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan O. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

DATUMS

DRAWING
NUMBER

M-12

Revision	By	Approved	Date

FOUND MONUMENTS

Found monuments must denote the character of the monument, how it is identified and the record, or no record as applicable.

SET MONUMENTS - Criteria for Locating and Character

On subdivision boundaries, permanent monuments are required; and must be shown on the map at intervals as specified by the local agency. The location of such points that are unacceptable or will be destroyed by construction may be established by ties to permanent reference monuments shown on the final map.

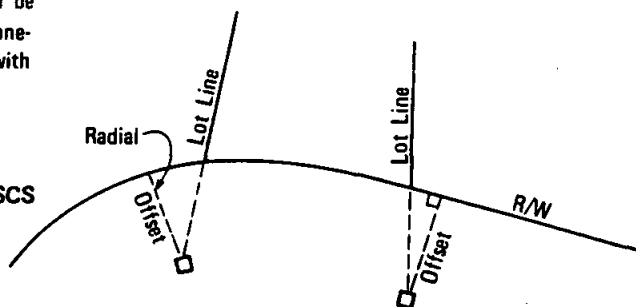
A permanent monument shall be no less substantial than the following:

a. An iron pipe of minimum two inch diameter not less than two feet in length placed upright in the ground so that the top of said pipe is flush with the surface. Said pipe shall be filled with a metal or cement plug at least three inches in depth and centered with a metal tack and disc; or

b. A metal plug with tack and disc set flush with the surface in portland cement concrete sidewalk, curb or pavement; or other monument satisfactory to the City Engineer or County Surveyor. The metal plug shall be anchored 1" deep in sidewalk.

Lot corners and points of curves along street and alley right of way lines where portland cement concrete sidewalks, curbs or pavement exist, or will be constructed as part of the subdivision requirements, shall be identified with tack and disc set flush with the surface along an extension of the lot line at an approved offset, to be measured radially or at right angles to the right of way line in said sidewalk, curb or pavement. In case the sideline of the lot is not radial or at right angles to the right of way line a disc shall be set along an extension of the sideline at an offset to be measured radially or at right angles to the right of way line. Where no such concrete work exists, and none will be required to be constructed, all lot corners, angle points and points of curve shall be marked with a monument no less substantial than a one-half inch steel rod or pipe, 18 inches long, set flush with the surface.

EXAMPLE OF OFFSET DISCS



LEGEND

● Fd 2" Iron Pipe Marked RCE XXXX or per Map XXX unless otherwise noted

▲ Fd Street Survey Monument Stamped RCE XXXX or LS XXXX

◎ Set 2" x 24" Iron Pipe Marked RCE XXXX or LS XXXX

□ Set Lead and Disc Stamped RCE XXXX or LS XXXX

○ Set ½" x 18" Iron Pipe Marked RCE XXXX or LS XXXX

△ Set Street Survey Monument Stamped RCE XXXX or LS XXXX per Standard Drawing M-10

The addition of other symbols is permissible where such will result in a clearer map.

The following notes should be used in the legend where applicable.

Unless otherwise shown on this map:

1. All lot corners except as described below will be monumented by a ½ inch by 18 inch iron pin stamped (RCE or LS number).

2. Lot corners along the sideline of dedicated street right of way will be monumented by a disc stamped (RCE or LS number), set along an extension of the lot line at an offset of ___ in the (curb, sidewalk). The offset shall be measured radially, or at right angles, to the right of way line. (See example below.)

3. All points of curve of the sidelines of dedicated streets will be monumented by a disc stamped (RCE or LS number), set at an offset of ___ in the (curb, sidewalk). The offset shall be measured radially.

Revision	By	Approved	Date
Notes	RC	Q.S.	7-79
Notes	JY	Q.S.	5-92

SAN DIEGO REGIONAL STANDARD DRAWING

SURVEY MONUMENTS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Allen A. Kuehnel Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING NUMBER **M-13**

1 Gram = 15.4324 grains
 1 Gram = 0.0353 oz.
 1 Kg. = 2.2046 lb.
 1 Kg. = 0.0011 ton
 1 Ton (met) = 1.1023 ton

WEIGHT

1 Grain = 0.0648 g.
 1 Ounce = 28.3495 g.
 1 Pound = 0.4536 kg.
 1 Ton = 907.1848 kg.
 1 Ton = 0.9072 ton (met)

1 Sq. cm. = 0.1550 sq. in.
 1 Sq. m. = 10.7639 sq. ft.
 1 Sq. m. = 1.1960 sq. yd.
 1 Hectare = 2.4710 acres
 1 Sq. km. = 0.3861 sq. mile
 1 Sq. km. = 247.10 acres

AREA

1 Sq. in. = 6.4516 sq. cm.
 1 Sq. ft. = 0.0929 sq. m.
 1 Sq. yd. = 0.8361 sq. m.
 1 Acre = 0.4047 hectare
 1 Sq. mile = 2.5900 sq. km.
 1 Acre = 0.0040 sq. km.

1 Cu. cm. = 0.0610 cu. in.
 1 Cu. m. = 35.3134 cu. ft.
 1 Cu. m. = 1.3079 cu. yd.

VOLUME

1 Cu. in. = 16.3872 cu. cm.
 1 Cu. ft. = 0.0283 cu. m.
 1 Cu. yd. = 0.7646 cu. m.

1 Liter = 61.0250 cu. in.
 1 Liter = 0.0353 cu. ft.
 1 Liter = 0.2642 gal. (U.S.)
 1 Liter = 0.0284 bu. (U.S.)

CAPACITY

1 Cu. in. = 0.0164 liter
 1 Cu. ft. = 28.3162 liters
 1 Gal. = 3.7853 liters
 1 Bu. = 35.2383 liters

1 MM. = 0.0394 in.
 1 CM. = 0.3937 in.
 1 Meter = 3.2808 ft.
 1 Meter = 1.0936 yd.
 1 Km. = 0.6214 mile

LENGTH

1 In. = 25.4000 mm.
 1 In. = 2.5400 cm.
 1 Ft. = 0.3048 m.
 1 Yd. = 0.9144 m.
 1 Mile = 1.6093 km.

MULTIPLE	PREFIX
1000000	mega
1000	kilo
100	hecto
10	deka

METRIC PREFIX

MULTIPLE	PREFIX
1/10	deci
1/100	centi
1/1000	milli
1/1000000	micro

TEMPERATURE

Degrees Fahrenheit = $9/5$ (Degrees Celcius) + 32

Degrees Centigrade = $5/9$ (Degrees Fahrenheit - 32)

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen O. Kishner Dec. 1975
Coordinator R.C.E. 19807 Date

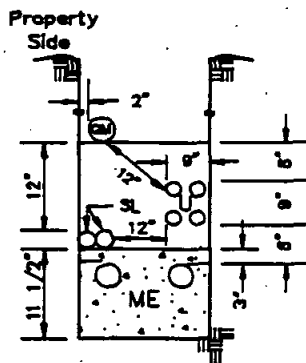
SAN DIEGO REGIONAL STANDARD DRAWING

DRAWING
NUMBER

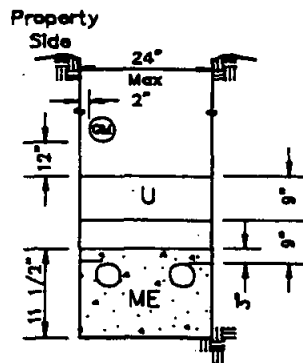
M-14

METRIC EQUIVALENTS

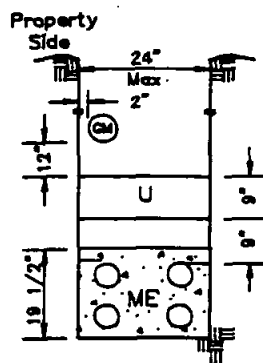
Revision	By	Approved	Date
Equation	36	D.S.	7-79



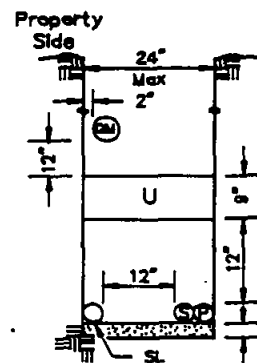
TYPE A



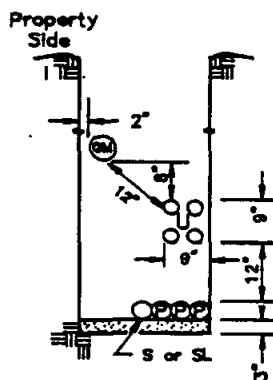
TYPE B



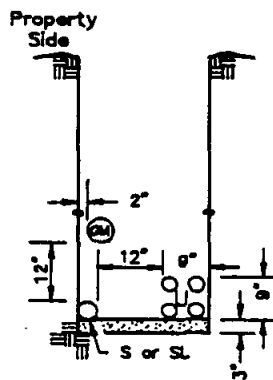
TYPE C



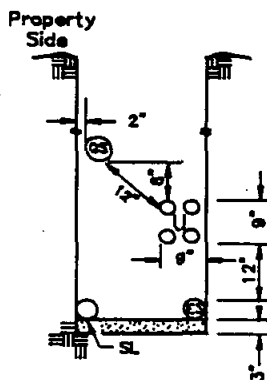
TYPE D



TYPE E



TYPE F



TYPE G

SERVICE TRENCH
ON
PUBLIC PROPERTY

LEGEND		MIN. COVER
GM	Gas Main	30"
GS	Gas Service	30"
P	Primary Electric	42"
S	Secondary Electric	30"
ES	Electric Service	30"
ME	Multiple Electric (P, S or ES in Spacers) Concrete Encased	24"
SL	Street Light (not series)	30"
U	CATV	24"
	TELCO	24"

NOTES:

1. All dimensions are typical unless otherwise noted.
2. Generally utilities are to be installed under the applicable specifications for the particular utility and the specifications of the owner Agency.
3. The location of utilities as shown by the Standard Drawing shall in no way violate existing codes or regulations applicable to individual utilities.
4. Installation of sewer and/or water utilities are not permitted in the joint trench shown above.
5. Minimum depth of gas pipe may, subject to gas company inspectors approval, be reduced to 24" where necessary to clear structure crossings.
6. Depth and width of trench varies.
7. CATV main or trunk line conduit required along all streets, except cul-de-sac streets less than 1000' in length which may be served by feeder lines only.
8. CATV 1 1/2" feeder conduit shall run across streets with each power service line and capped at edge of sidewalk.
9. All CATV terminals and conduits shall be terminated at generally accepted locations and marked. A map shall be filed with the appropriate agency showing the locations of the CATV system.
10. In no case shall CATV conduits be placed within 12" of gas lines. Also conduits are not to be placed directly over gas lines.
11. CATV conduit may be placed with the TELCO conduit provided the TELCO minimum depth is held.

Revision	By	Approved	Date
New Dwg	3c	A.H.	10/88

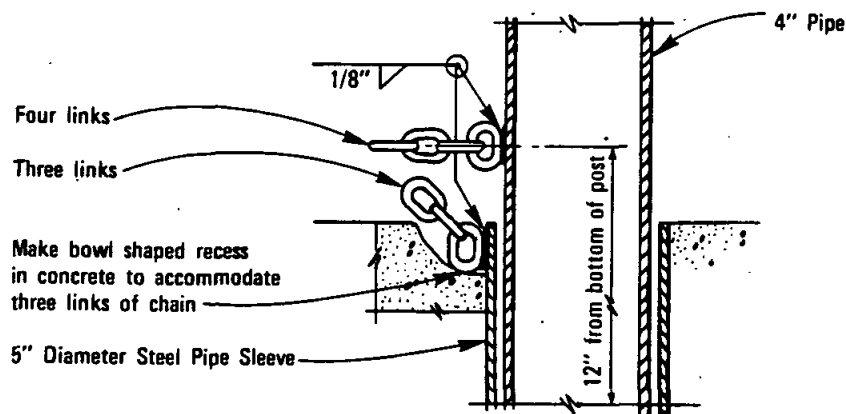
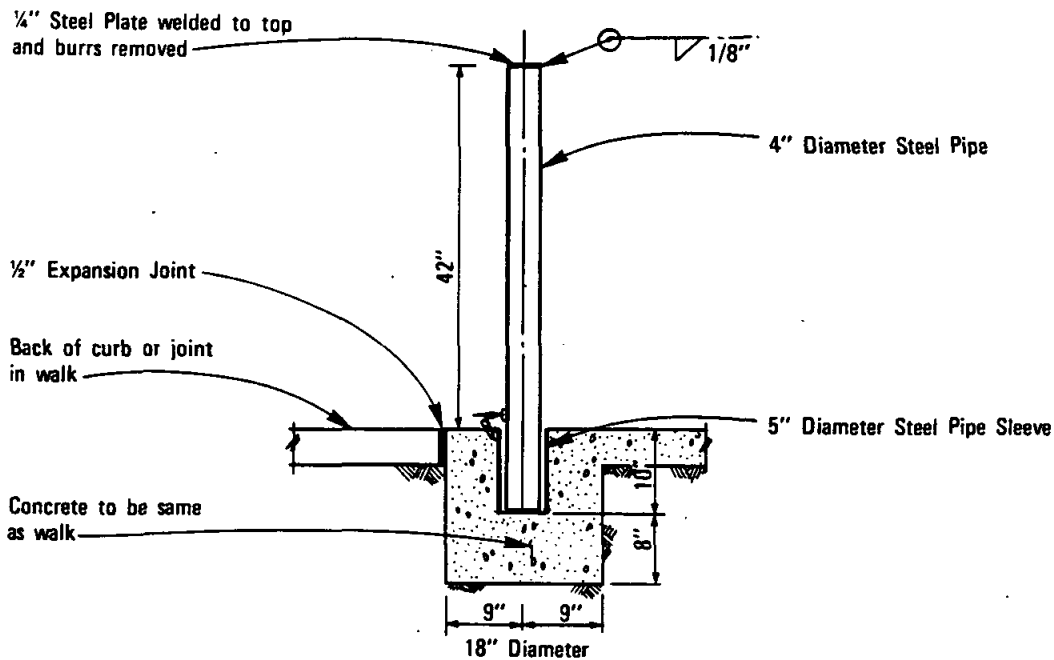
SAN DIEGO REGIONAL STANDARD DRAWING

JOINT TRENCH UTILITIES LOCATION

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

George Robinson 5/9/88
Chairman Date

DRAWING
NUMBER **M-15**



HASP DETAIL
(Showing Welds)

NOTES

1. Chain to be 1/4" proof coil chain galvanized steel. Weld four links to post and three links to pipe sleeve.
2. All metal to be hot-dip galvanized after fabrication.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

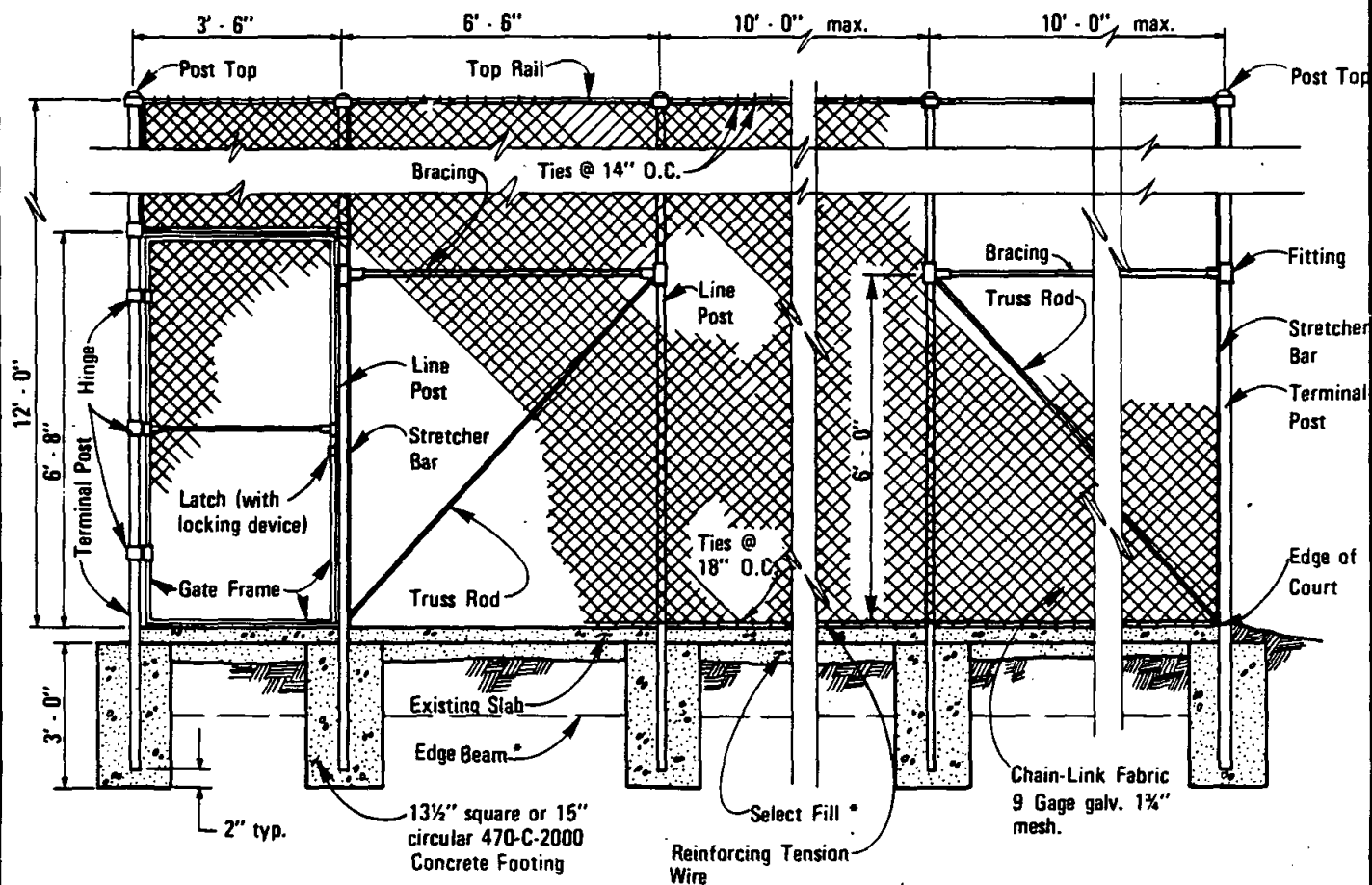
David J. Schlemmer July 1979
Coordinator R.C.E. 25291 Date

SAN DIEGO REGIONAL STANDARD DRAWING

DRAWING
NUMBER M-16

DEMOUNTABLE POST

Revision	By	Approved	Date



*For Edge Beam, Slab, and Select Fill details, see plans.

ELEVATION

NOTE:
Chain link fabric shall be erected on the interior side of the courts.

CAUTION:
This Standard Drawing is not to be used if any wind screen is to be applied to the fence.

DESCRIPTION	MIN. SIZE IN INCHES	MIN. WEIGHT PER LIN FT IN LBS
Line Post	2.375 O.D.	3.65
Terminal Post	2.875 O.D.	5.79
Top Rail	1.660 O.D.	2.27
Bracing	1.660 O.D.	2.27
Gate Frame	1.660 O.D.	2.27

Revision	Approved	Date
Fabric	M.B.	5-16
Caution	A.H.	7-88

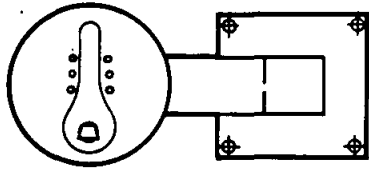
SAN DIEGO REGIONAL STANDARD DRAWING

TENNIS COURT FENCE CHAIN-LINK

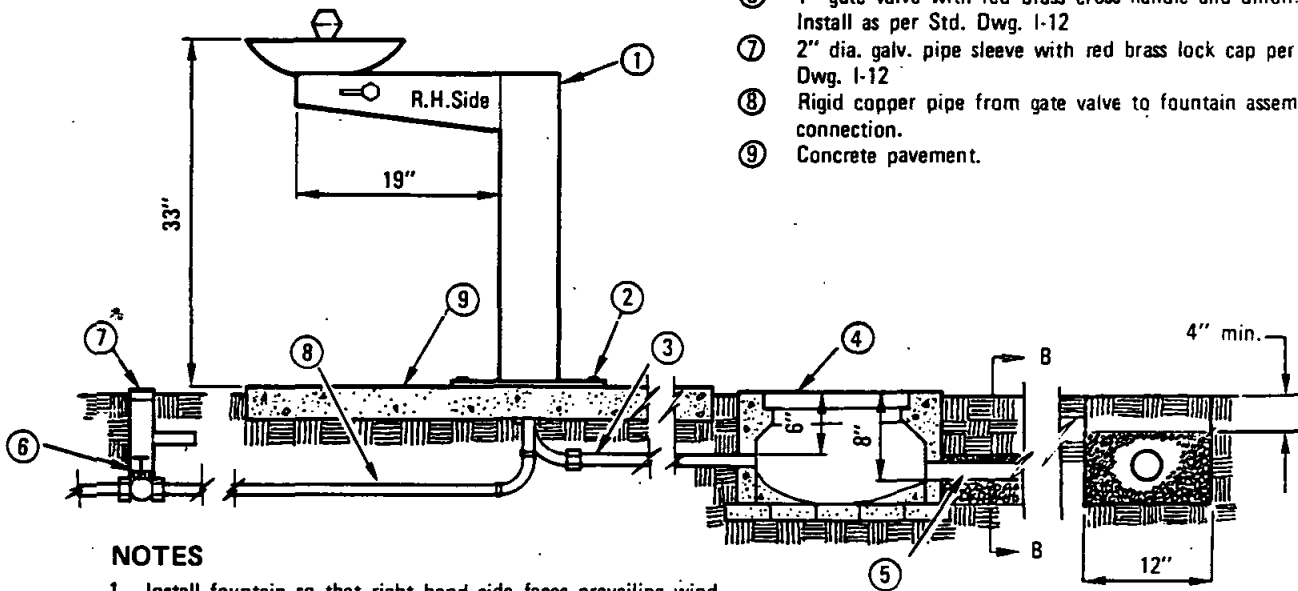
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

David J. Solomon July 1988
Coordinator R.C.E. 25291 Date

DRAWING
NUMBER M-17



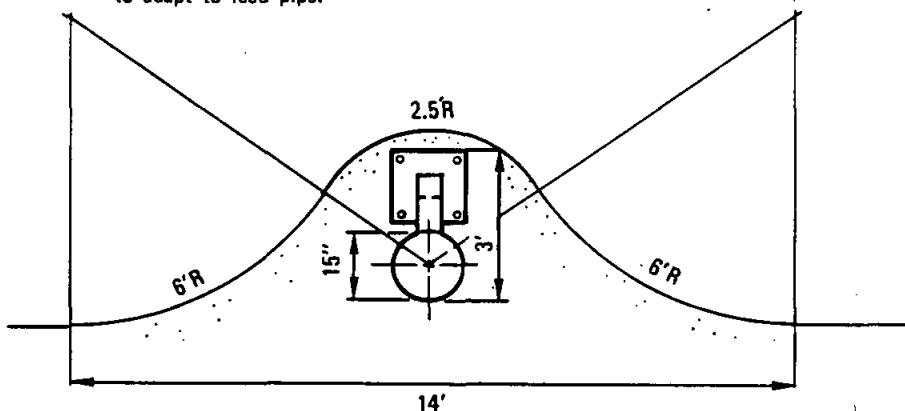
- ① Drinking Fountain - Haws model 3376 or approved equal.
- ② 3/8" dia. expansion anchors with flat (recessed heads) screws 4 places.
- ③ 1 1/4" P.V.C. pipe with sweep 90° ell connection to fountain drain.
- ④ 9 1/2" x 16" concrete yard box with hinged locking top (Brooks No. 3HL or equal) set on red brick foundation.
- ⑤ 4" x 40 lin. ft. perforated underdrain pipe, encased in crushed rock (3/4" size). Pipe to be A.D.S. or equal.
- ⑥ 1" gate valve with red brass cross handle and union. Install as per Std. Dwg. I-12
- ⑦ 2" dia. galv. pipe sleeve with red brass lock cap per Std. Dwg. I-12
- ⑧ Rigid copper pipe from gate valve to fountain assembly connection.
- ⑨ Concrete pavement.



SECT B-B

NOTES

1. Install fountain so that right hand side faces prevailing wind.
2. Hand form a concrete bowl at bottom of yard box to facilitate sand clean out.
3. Perforated drain pipe and trench are to drain away from fountain at 1% min. slope. Keep drain in lawn areas.
4. Item no. 6 is a one inch gate valve. Use red brass bushing reducers to adapt to feed pipe.



TYPICAL PLAN

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Harry R. Holt Oct 1982
Chairman R.C.E. C13768 Date

SAN DIEGO REGIONAL STANDARD DRAWING

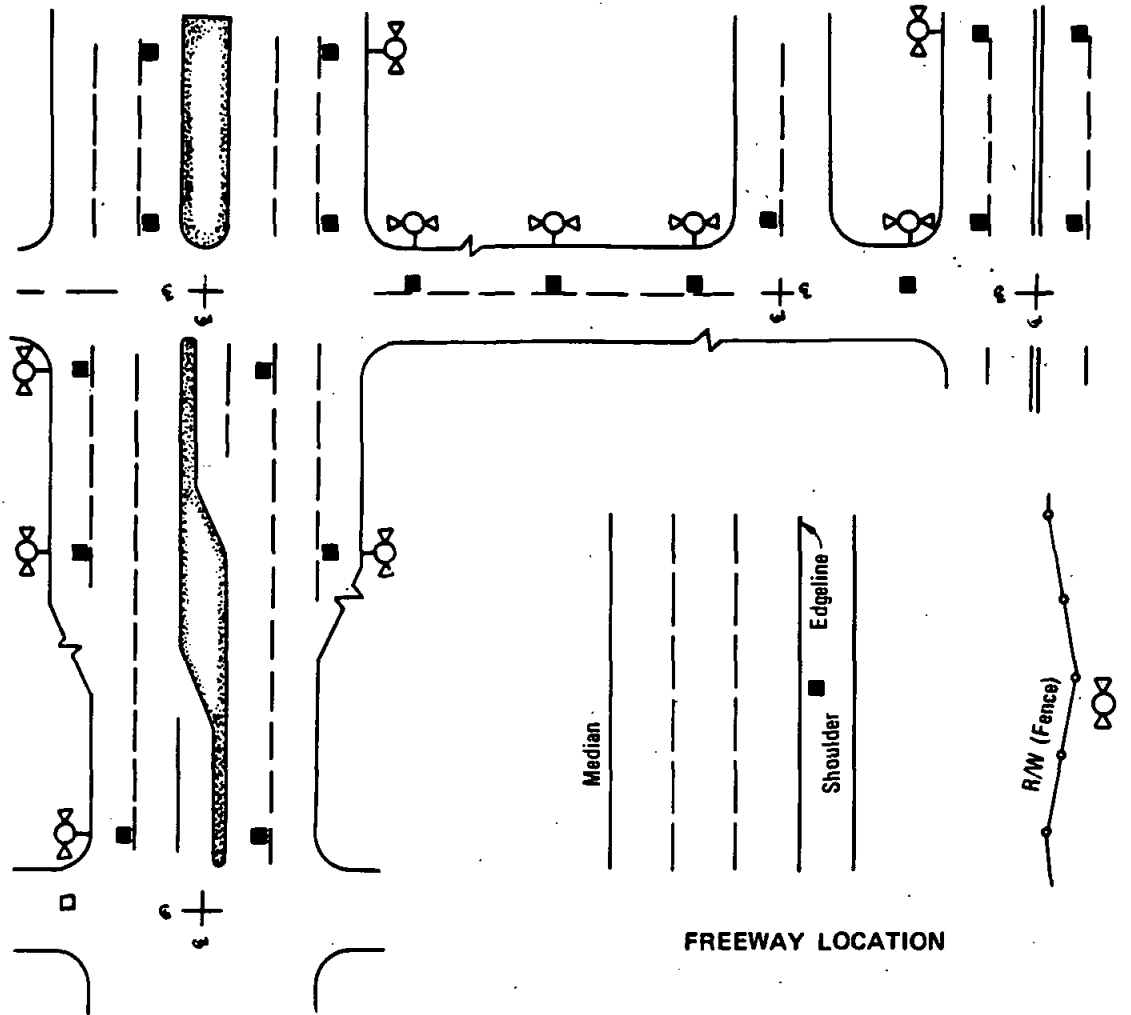
DRINKING FOUNTAIN

DRAWING
NUMBER

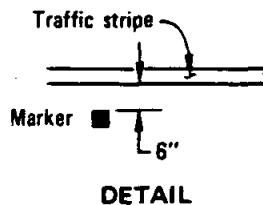
M-18

Revision	By	Approved	Date

STREET LOCATIONS



FREEWAY LOCATION



MARKERS - Shall be blue 2-way stimsonite lifelite 88AB or equal.

ADHESIVE - An ample amount of two part (A&B) epoxy or equal.

SURFACES - Clean and dry prior to installation per manufacturer's recommendations. Install markers with reflective surfaces facing oncoming vehicles and offset 2" from lane lines toward fire hydrant.

NOTES:

1. Fire Department will provide location(s) for all markers in PRD's, Commercial Lots and other areas outside of Public Right of Way.
2. Markers must be installed at all new and relocated hydrants and within all resurfacing projects.
3. For streets without lane lines or streets with raised pavement markers and no painted lane lines, install markers 6" from centerline or existing markers.

LEGEND ON PLANS

Marker 
Fire Hydrant 

Revision	Approved	Date
Frwy loc. 3	M.B.	5-86

SAN DIEGO REGIONAL STANDARD DRAWING

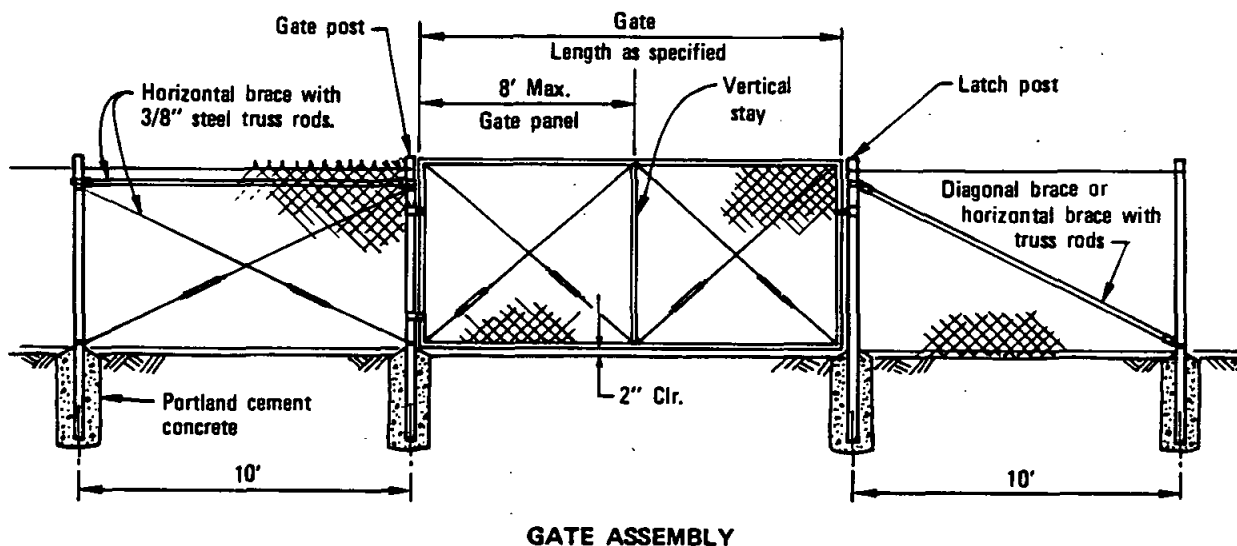
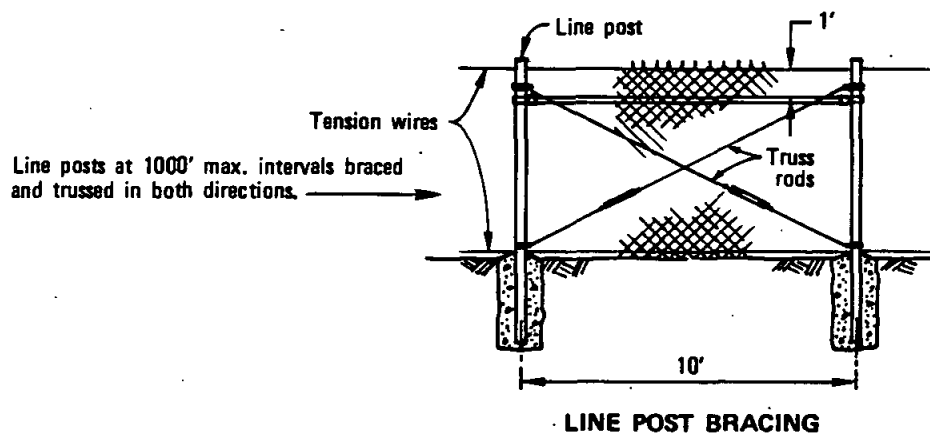
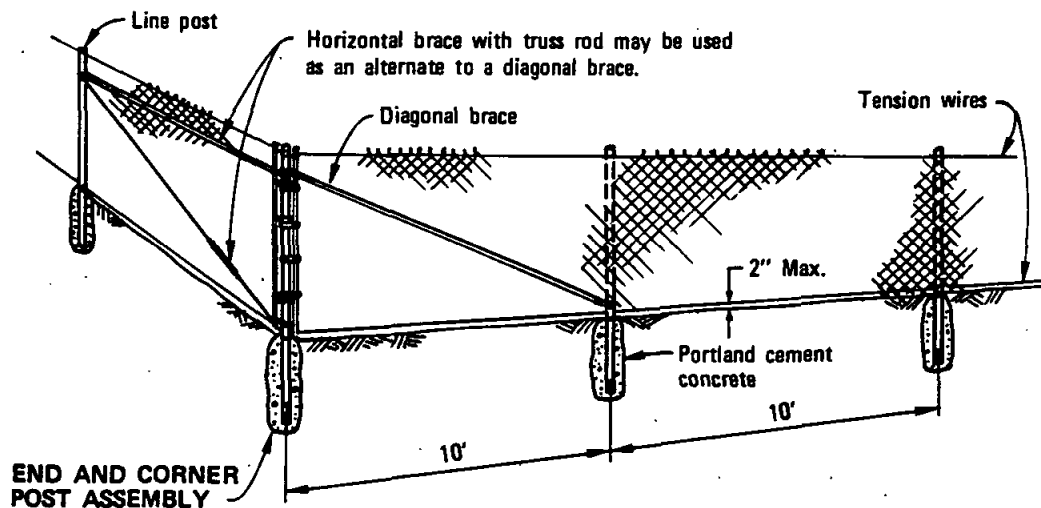
FIRE HYDRANT MARKERS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Henry R. Holt Oct 1982
Chairman P.E. CT3768 Date

DRAWING
NUMBER

M-19



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

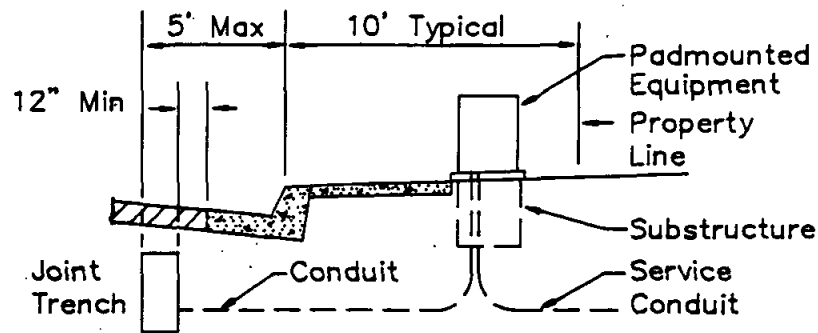
M. B. Berman 4-25-86
Coordinator R.C.E. C21133 Date

DRAWING
NUMBER **M-20**

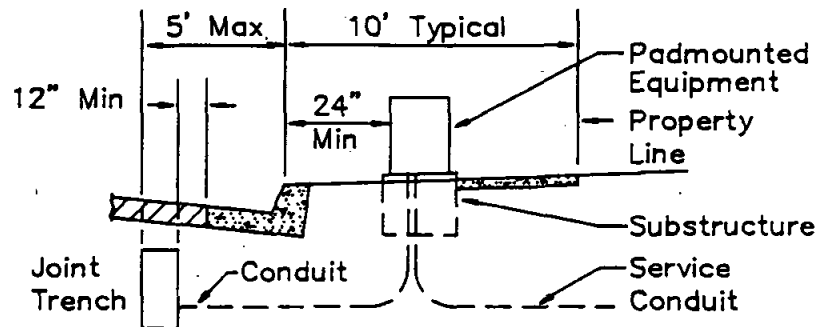
SAN DIEGO REGIONAL STANDARD DRAWING

**CHAIN LINK FENCE
DETAILS**

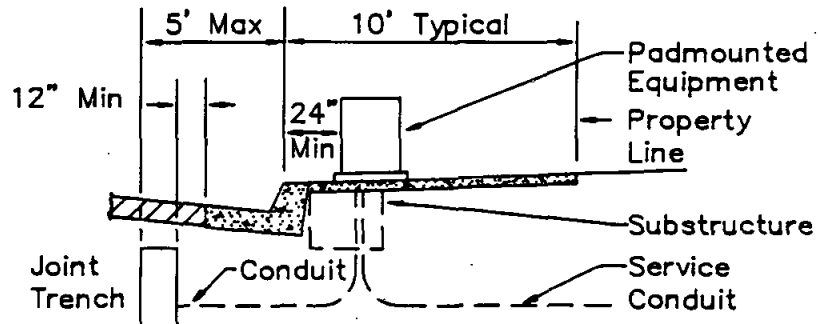
Revision	By	Approved	Date



SIDEWALK NEXT TO CURB



SIDEWALK NEXT TO PROPERTY LINE

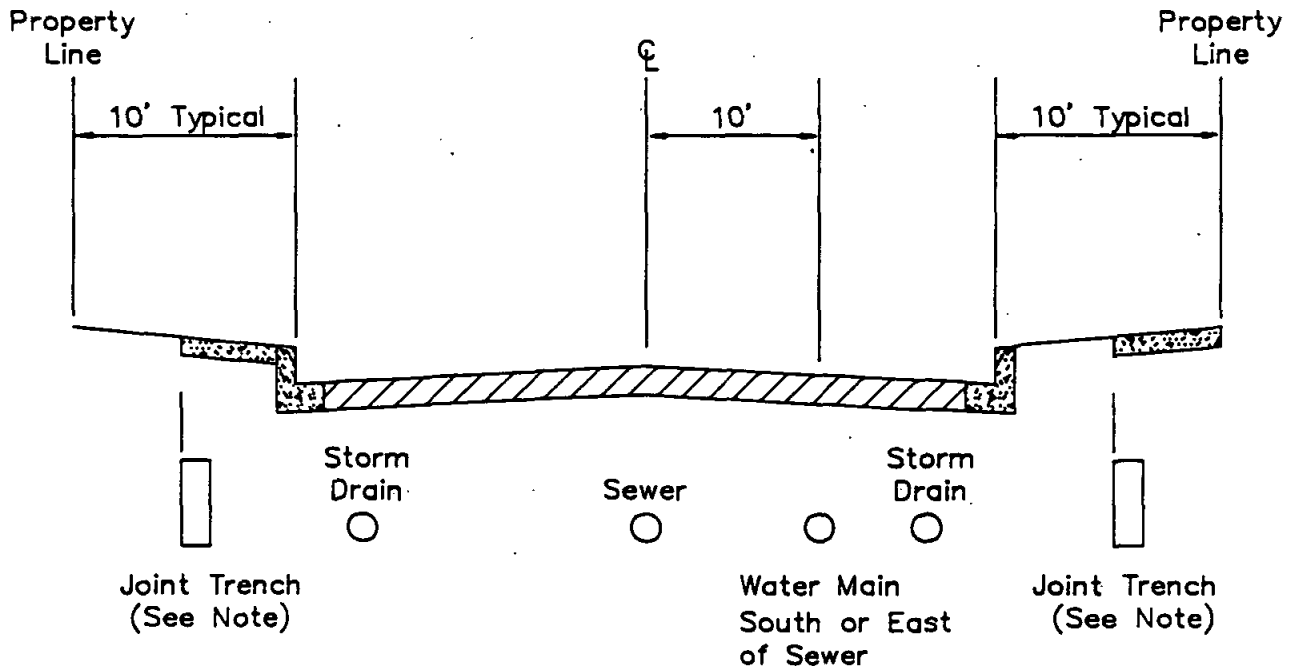


SIDEWALK NEXT TO CURB AND PROPERTY LINE

NOTES:

1. Sidewalk shall have a minimum of four (4) foot clear area (path, not including curb) passing pedestals, pullboxes and other structures.
2. See Standard Drawing M-15 for joint trench.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
				UNDERGROUND TYPICAL LOCATION CONVERSION/REPLACEMENT/UPGRADE		<i>Gary Palmer</i> 5 SEP. 1998 Chairman Date	DRAWING NUMBER M-21



**TYPICAL STREET
NEW CONSTRUCTION**

NOTE:

At catch basin locations, joint trench shall be 4 feet minimum from back of curb to inside wall of trench.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

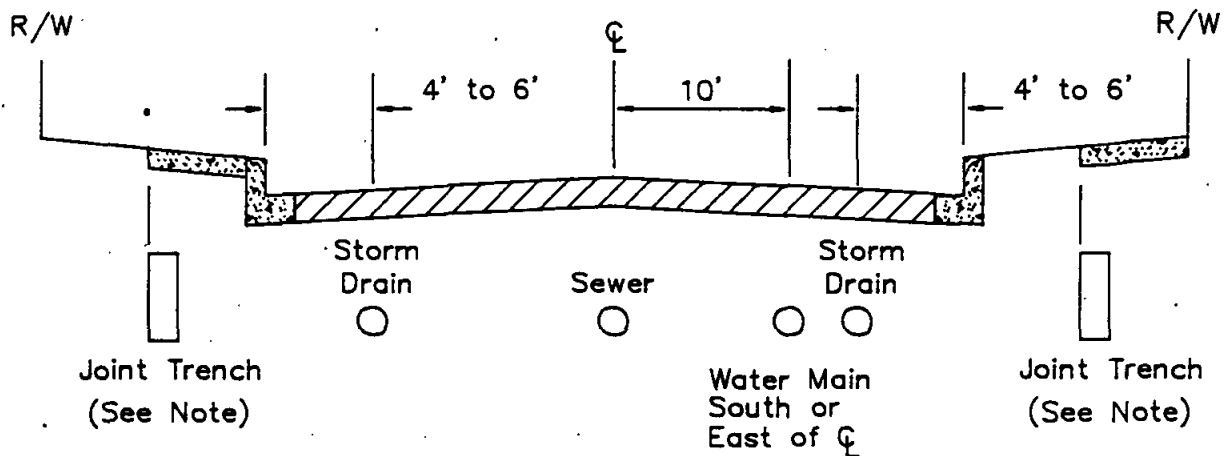
Gregg Rubin **SEPT. 1988**
Chairman Date

**DRAWING
NUMBER M-22**

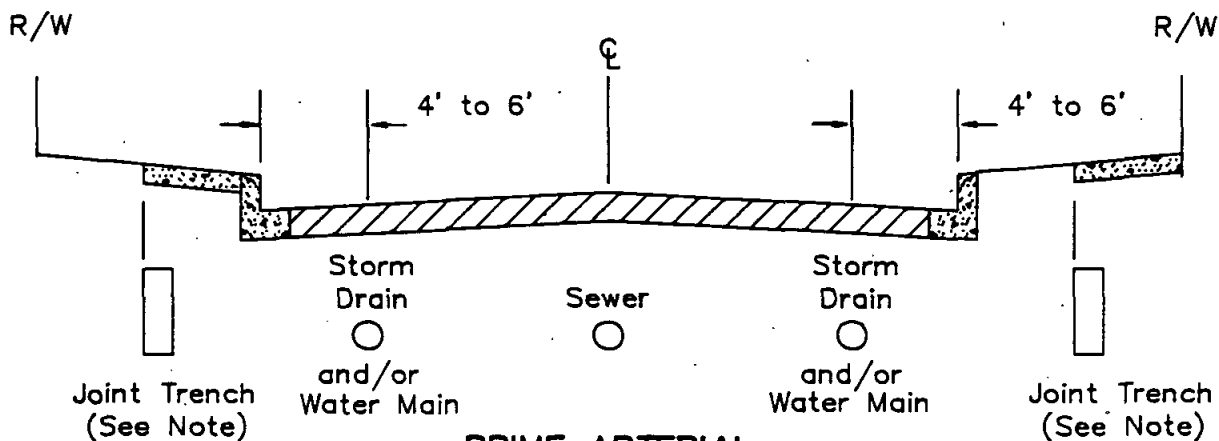
SAN DIEGO REGIONAL STANDARD DRAWING

**UTILITY LOCATIONS IN LOCAL
AND COLLECTOR STREETS**

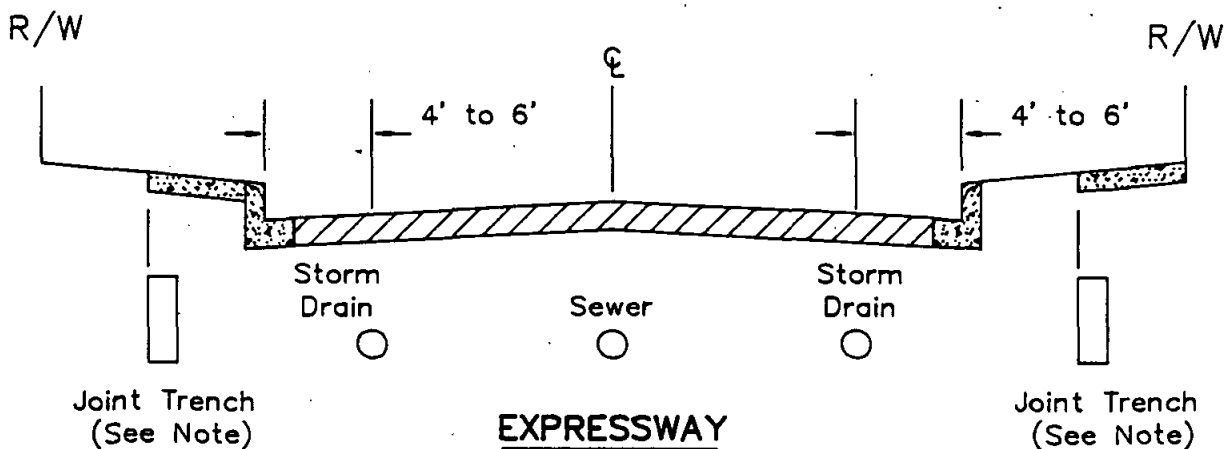
Revision	By	Approved	Date



MAJOR STREET



PRIME ARTERIAL



EXPRESSWAY

NOTE:

At catch basin locations, joint trench shall be 4 feet minimum from back of curb to inside wall of trench.

Revision	By	Approved	Date

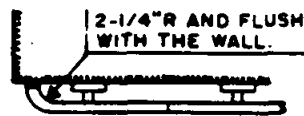
SAN DIEGO REGIONAL STANDARD DRAWING

UTILITY LOCATIONS IN MAJOR STREETS,
PRIME ARTERIALS AND EXPRESSWAYS

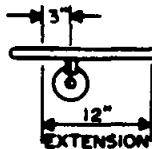
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

George P. ... 5 OCT. 1968
Chairman Date

DRAWING
NUMBER **M-23**



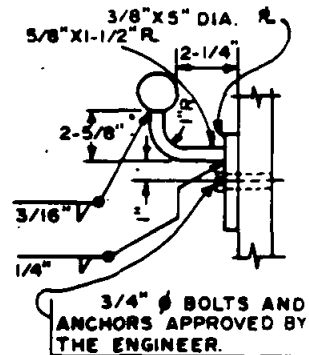
PLAN AT END OF HANDRAIL



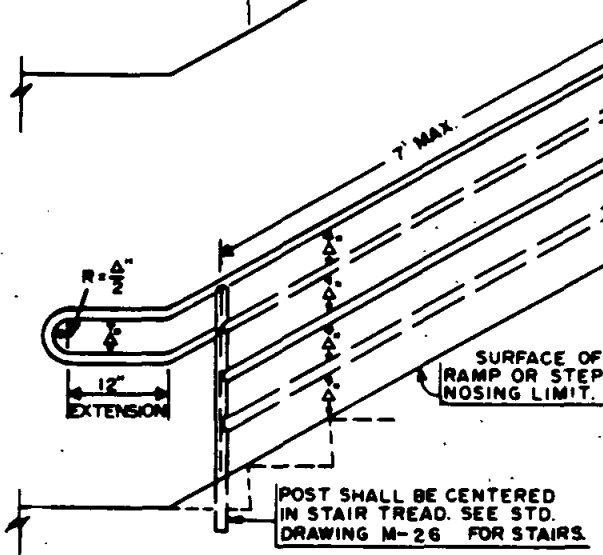
1-1/2" STD. PIPE
7' MAX.

SURFACE OF RAMP OR STEP NOSING LIMIT.

PIPE HANDRAIL WALL TYPE

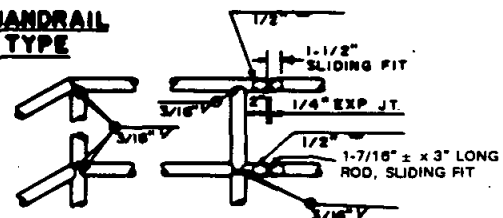
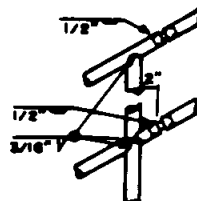


HANDRAIL BRACKET

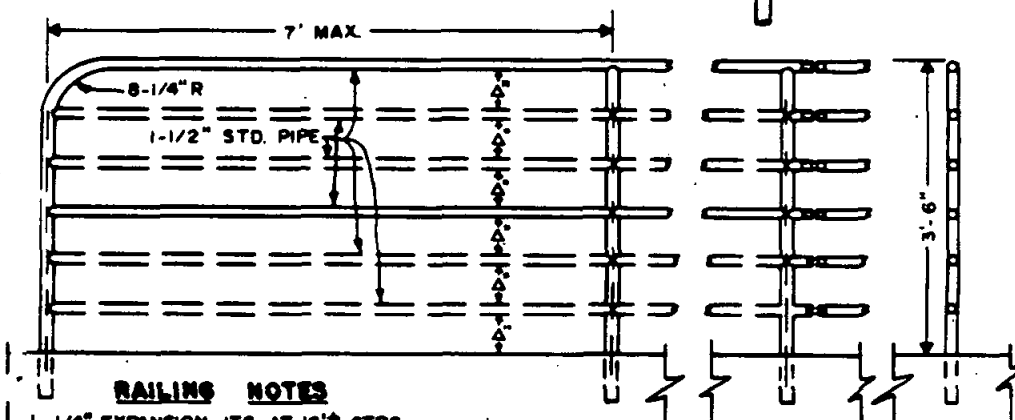


POST SHALL BE CENTERED IN STAIR TREAD. SEE STD. DRAWING M-26 FOR STAIRS.

PIPE HANDRAIL POST TYPE



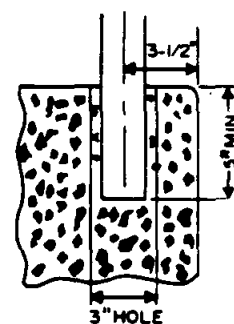
WELDING DETAILS



RAILING NOTES

1. 1/4" EXPANSION JTS. AT 16" CTRS.
2. WELD AND GRIND SMOOTH ALL CONNECTIONS.
3. ALL RAILING TO BE HOT DIPPED GALVANIZED AFTER FABRICATION.
4. PIPE TO BE SEAMLESS STEEL ASTM A53 GRADE B.
5. MAXIMUM Δ = 8 INCHES.

PIPE GUARDRAIL POST TYPE



MOUNTING DETAIL

POST SHALL BE GROUTED IN PLACE USING "POR ROK" GROUT, OR EQUAL.

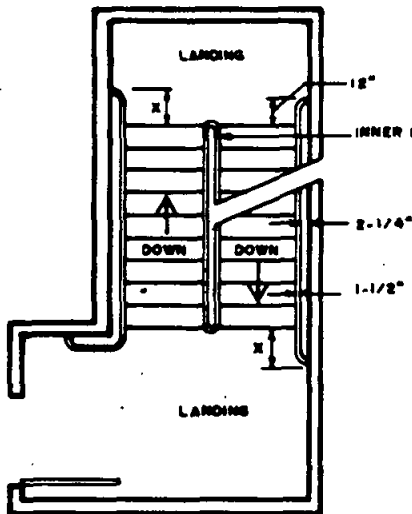
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

SAN DIEGO REGIONAL STANDARD DRAWING

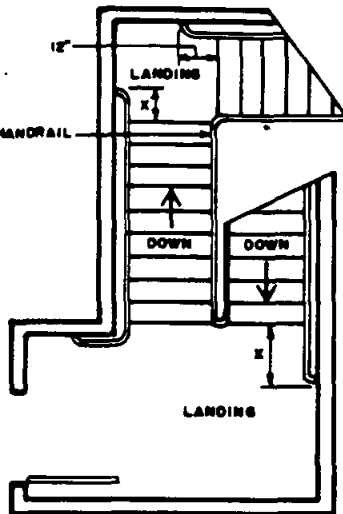
**PEDESTRIAN
PROTECTIVE RAILINGS
DETAIL NO. 1**

DRAWING NUMBER **M-24**

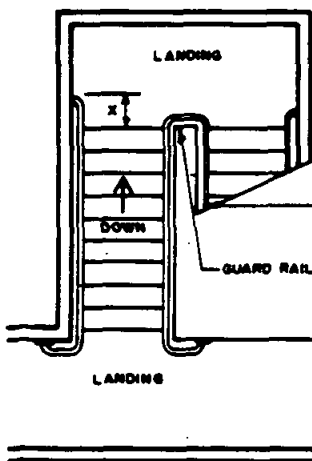
Revision	By	Approved	Date
Reil Mt.	JF	G.A.	5-92



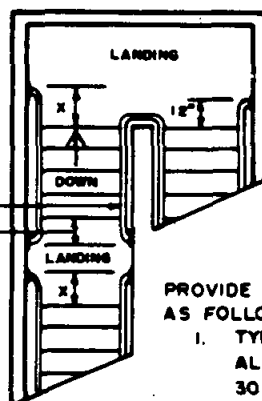
X: EXTENSION OF HANDRAIL SHALL BE EQUAL TO THE TREAD WIDTH PLUS 12 INCHES.



NOTE: INNER HANDRAIL AT LANDINGS OF STAIRS THAT DOUBLE BACK OR IMMEDIATELY TURN SHALL BE CONTINUOUS AND SHALL NOT EXTEND INTO LANDING OR PATH OF TRAVEL.

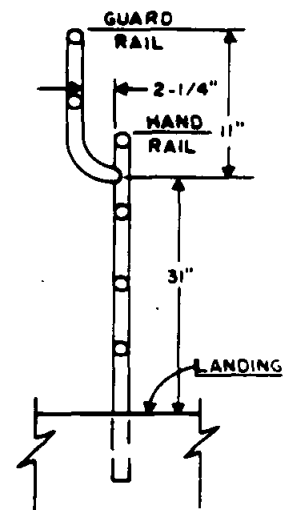


STAIR HANDRAILS

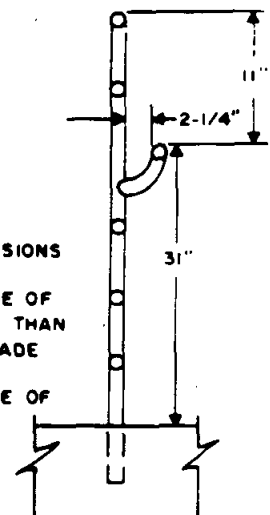


PROVIDE GUARDRAIL EXTENSIONS AS FOLLOWS:

1. TYPE A ON OPEN SIDE OF ALL LANDINGS MORE THAN 30 INCHES ABOVE GRADE OR FLOOR BELOW.
2. TYPE B ON OPEN SIDE OF STAIRS (INCLUDING LANDINGS) WHEN SPECIFIED.



TYPE A GUARDRAIL EXTENSION



TYPE B GUARDRAIL EXTENSION

GENERAL NOTES:

1. POST TYPE GUARDRAILS, AND HANDRAILS FOR STAIRS OR LANDINGS 30 INCHES OR LESS ABOVE GRADE OR FLOOR BELOW SHALL HAVE ONLY ONE INTERMEDIATE RAIL CENTERED BETWEEN THE STEP NOSING LIMIT (OR IF SPECIFIED THE TOP OF CURB) AND TOP OF RAILING.
2. POST TYPE GUARDRAILS, AND HANDRAILS FOR STAIRS OR LANDINGS MORE THAN 30 INCHES ABOVE GRADE OR FLOOR BELOW SHALL HAVE INTERMEDIATE RAILS EQUALLY SPACED SUCH THAT A SPHERE 6 INCHES IN DIAMETER CANNOT PASS THROUGH.
3. WHERE HANDRAIL EXTENSIONS INTERFERE WITH TRANSVERSE WALKWAYS THE HORIZONTAL PORTIONS SHALL NOT ENCROACH BUT BE TURNED AWAY FROM STAIRS AND PARALLEL TO WALKWAY.

Revision	By	Approved	Date

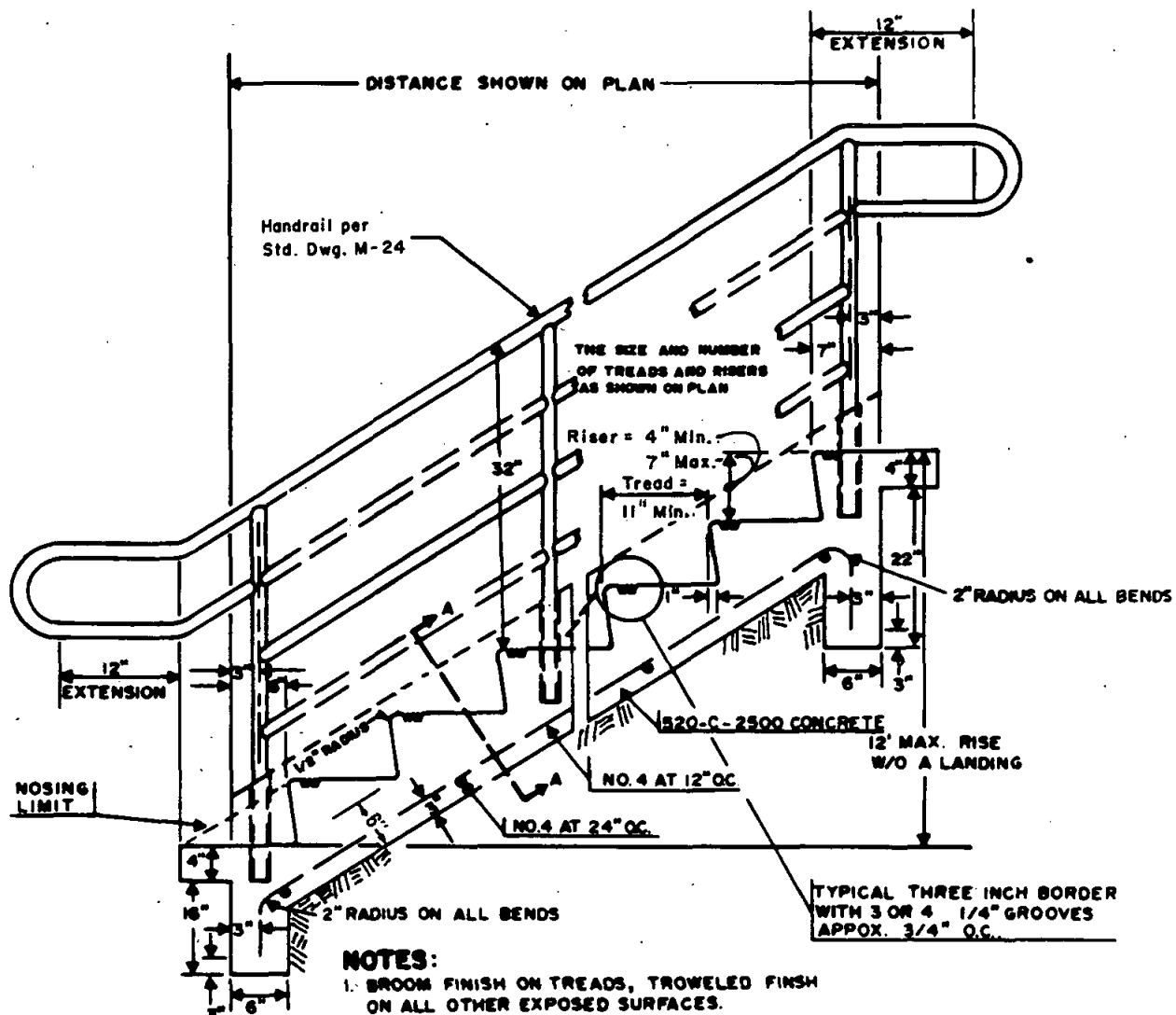
SAN DIEGO REGIONAL STANDARD DRAWING

PEDESTRIAN PROTECTIVE RAILINGS DETAIL NO. 2

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

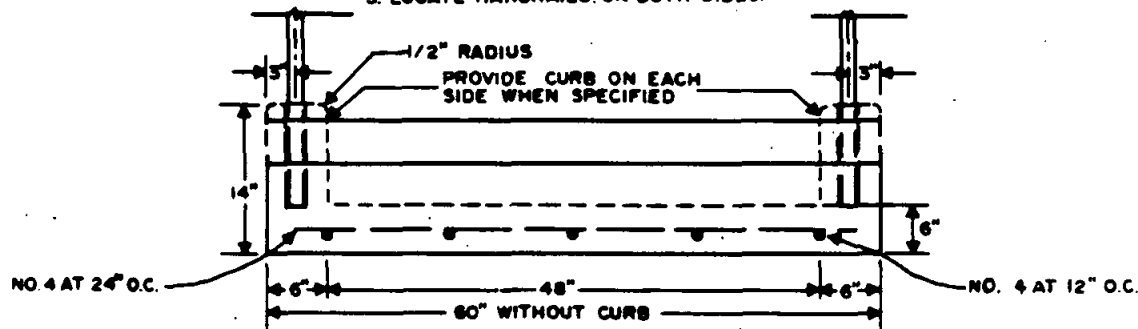
Henry Pabian SET. 17.88
Chairman Date

DRAWING
NUMBER M-25



NOTES:

1. BROOM FINISH ON TREADS, TROWELED FINISH ON ALL OTHER EXPOSED SURFACES.
2. 1/4" SLOPE ON TREADS FOR DRAINAGE.
3. LOCATE HANDRAILS ON BOTH SIDES.



SECTION A-A

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Ray Palmer SEPT. 1988
Chairman Date

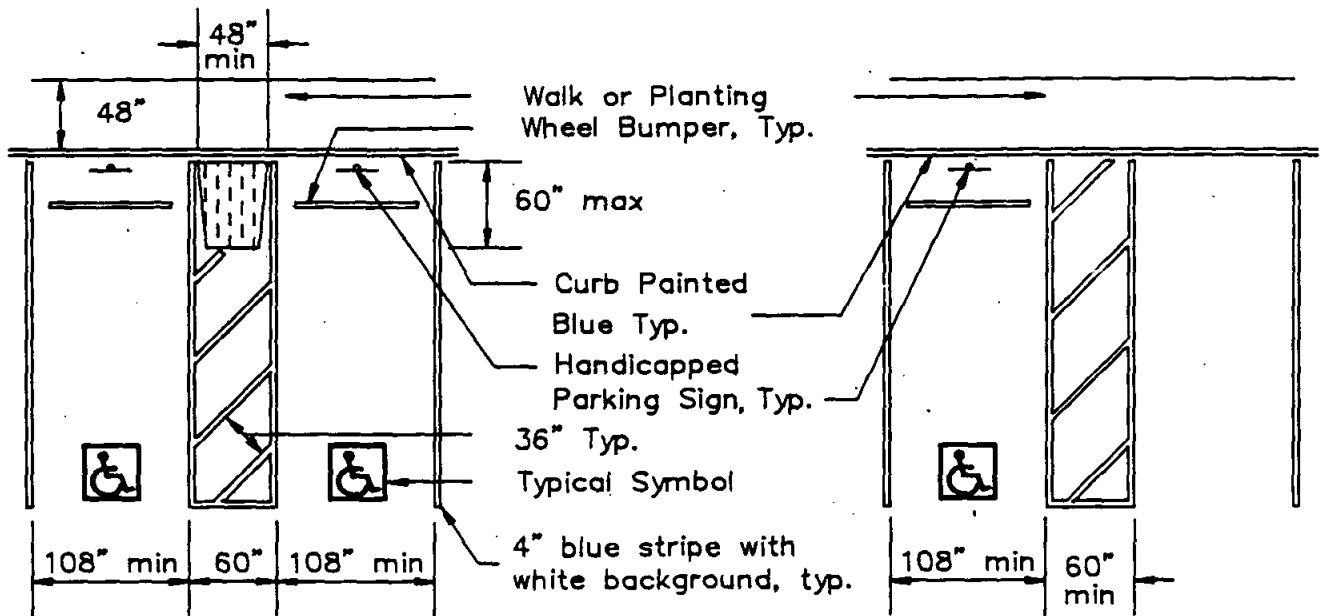
DRAWING NUMBER

M-26

SAN DIEGO REGIONAL STANDARD DRAWING

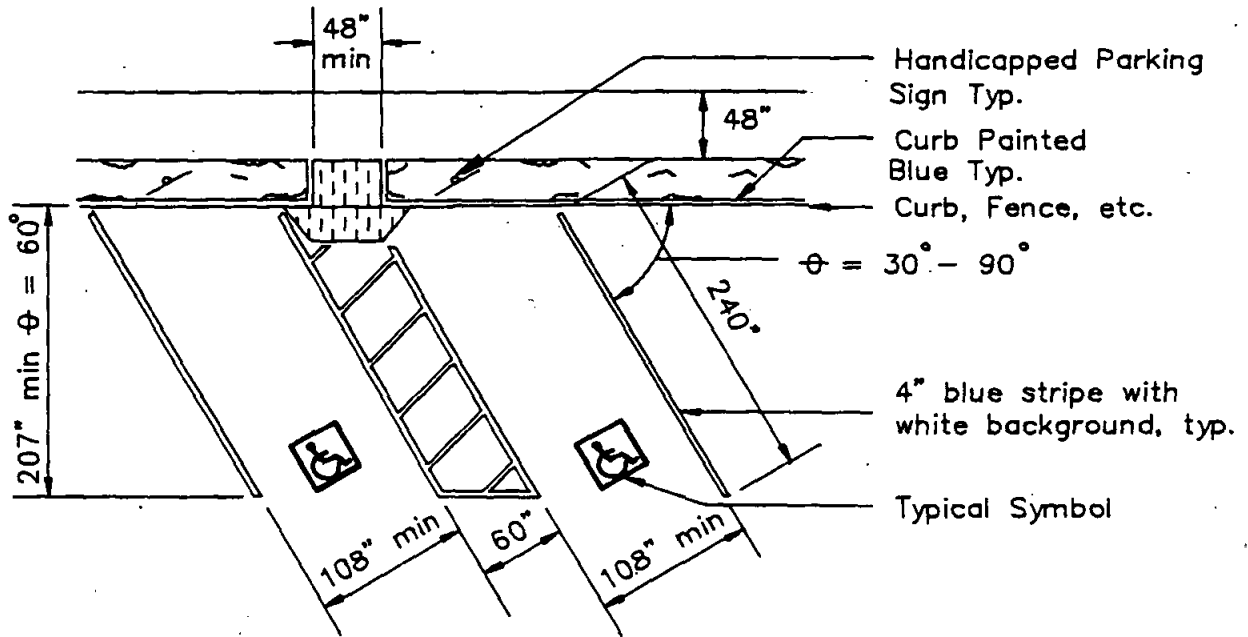
CONCRETE STEPS

Revision	By	Approved	Date



DOUBLE TYPE

SINGLE TYPE



DOUBLE DIAGONAL TYPE

Revision	By	Approved	Date

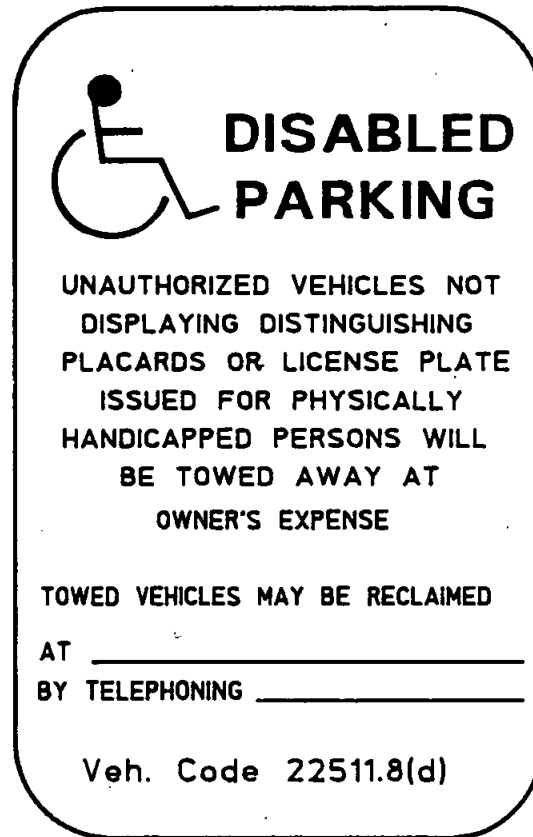
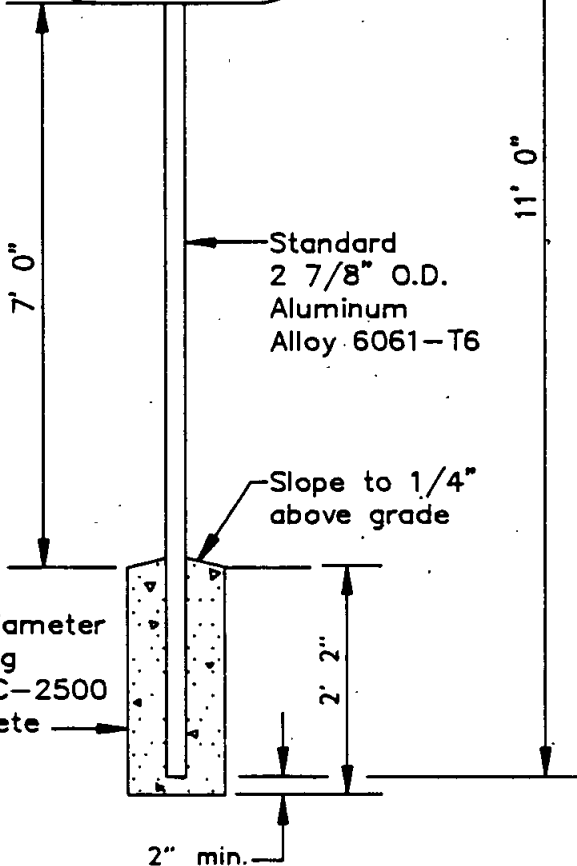
SAN DIEGO REGIONAL STANDARD DRAWING

HANDICAPPED
PARKING SPACES

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Don Robinson SEPT. 1988
Chairman Date

DRAWING
NUMBER **M-27**



Sign Detail

NOTES

1. Sign shall be 18"x 24" and constructed of 0.8" aluminum.
2. Lettering, symbol and border shall be reflectorized white, on a blue background.
3. Lettering shall be 1 inch and 2 inches high.
4. Attach sign with two piece SC-7 diecast aluminum sign clamps.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

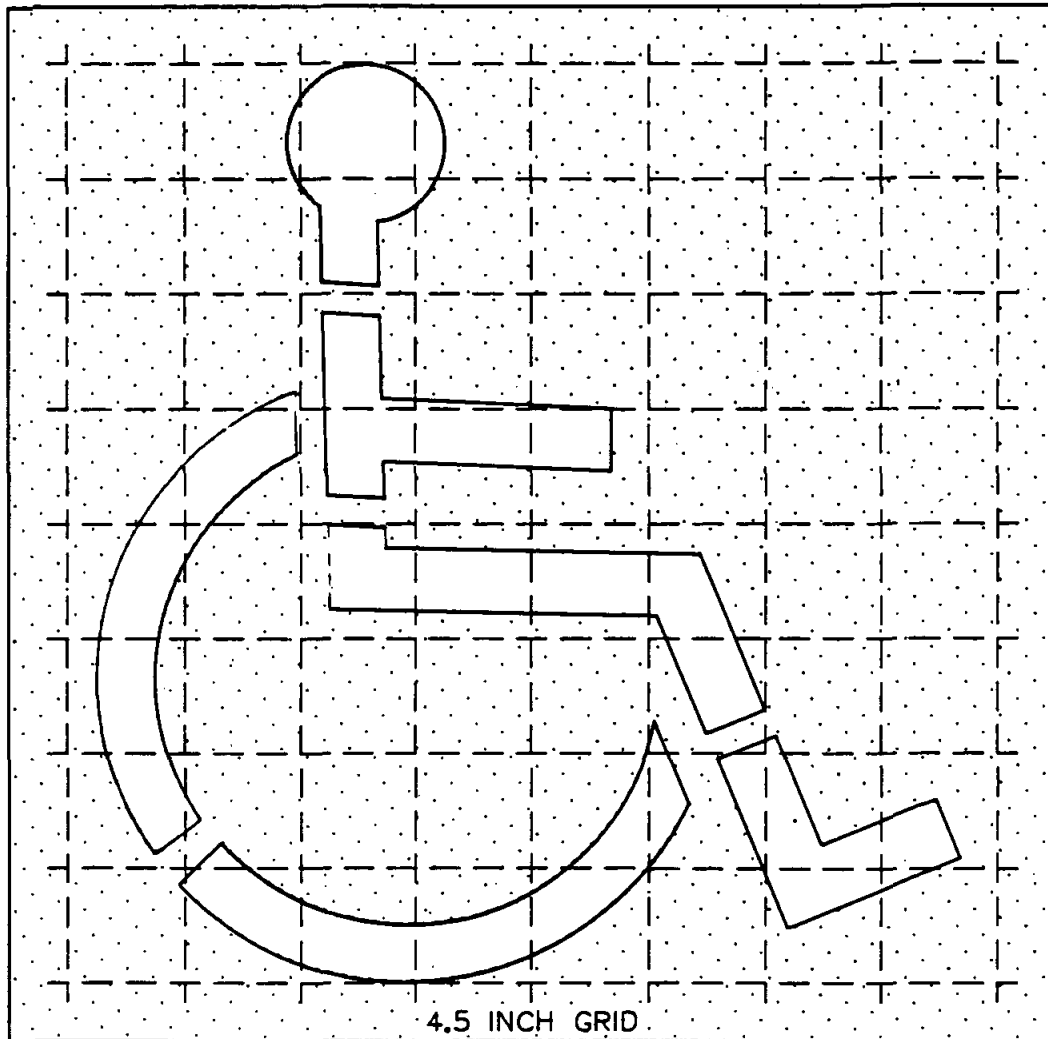
Henry Babin SEPT. 1988
Chairman Date

SAN DIEGO REGIONAL STANDARD DRAWING

DISABLED PARKING SIGN

DRAWING
NUMBER **M-28**

Revision	By	Approved	Date



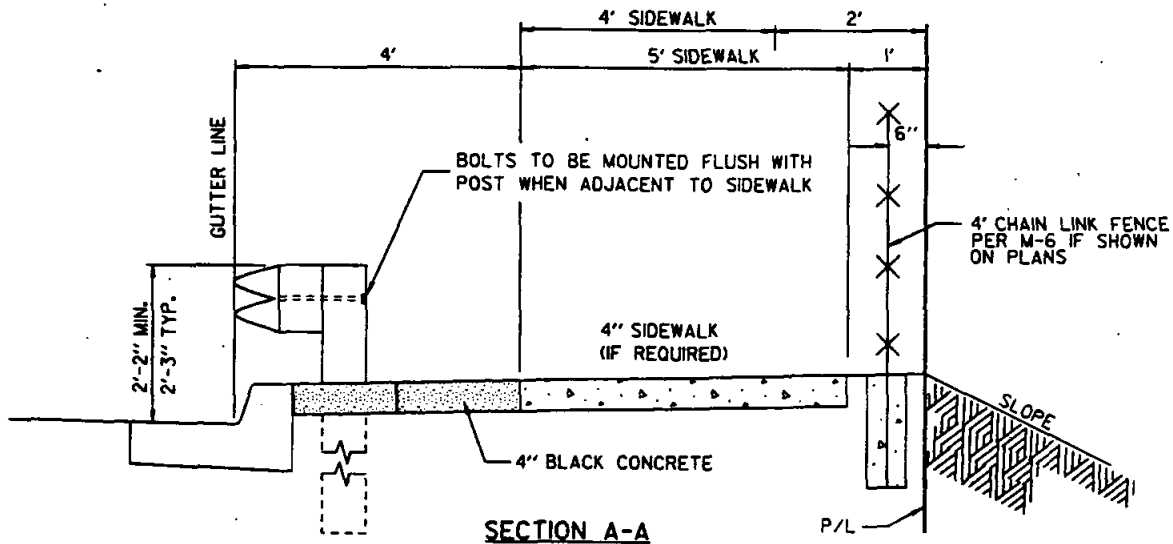
42"

42"

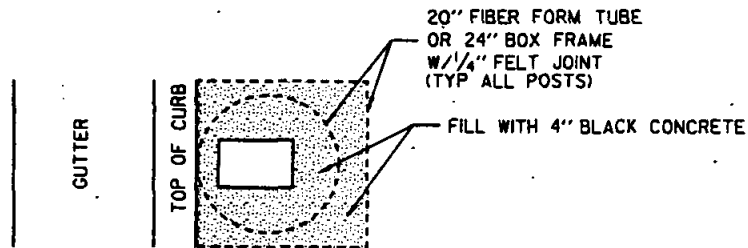
NOTE:

Pavement symbol shall be painted white on a blue background.

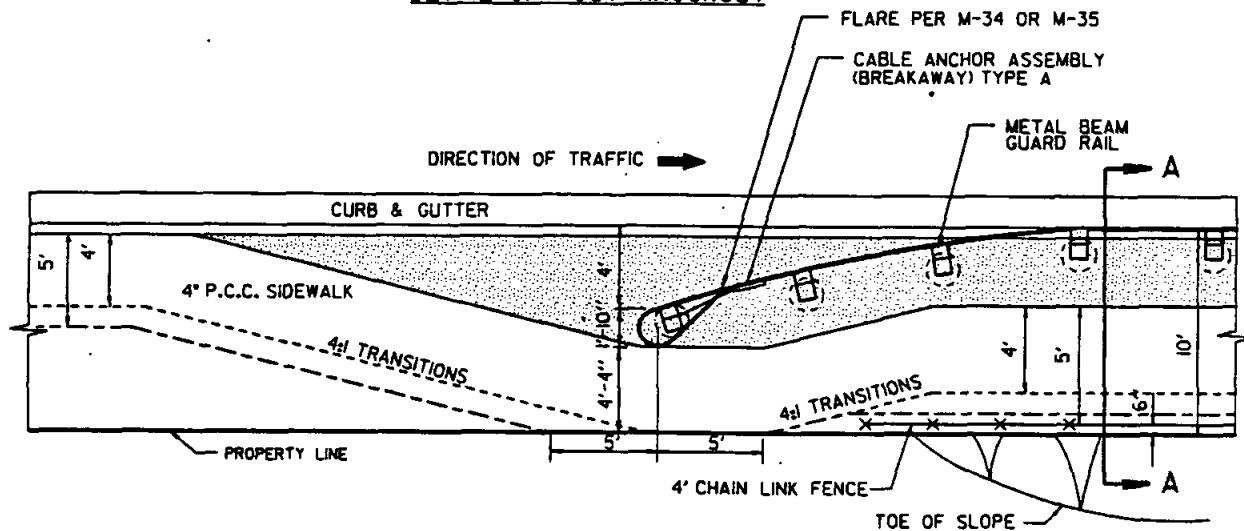
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
				PAVEMENT SYMBOL DISABLED PARKING		<i>George Pabian</i> SEPT. 1988 Chairman Date
				DRAWING NUMBER M-29		



TYPICAL FOR
ABOVE GROUND
OBSTRUCTIONS-4#
SIDEWALK TRANSITIONS
TYPICAL FOR USE
WITH G-7



DETAIL OF POST KNOCKOUT



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Raymond J. ... 6-11-92
Chairman Date
REF 25902

DRAWING NUMBER M-30

SAN DIEGO REGIONAL STANDARD DRAWING

GUARD RAIL STANDARDS

Revision	By	Approved	Date

M-31

DRAWING NUMBER

REVISION	BY	APPROVAL	DATE

DRAWING NUMBER

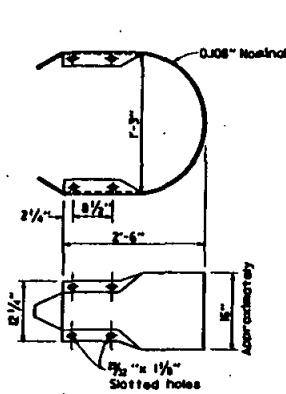
M-32

SAN DIEGO REGIONAL STANDARD DRAWING

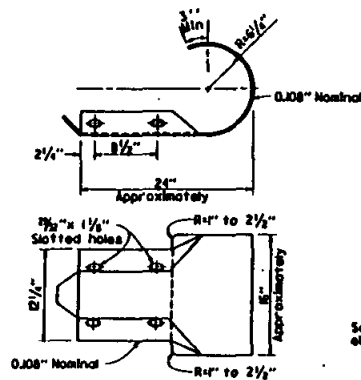
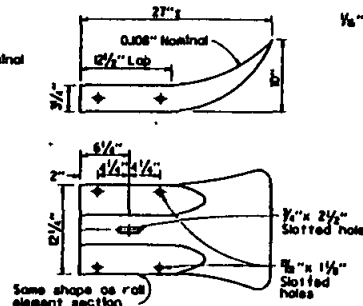
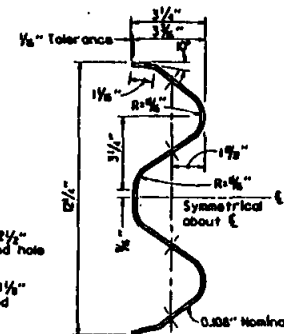
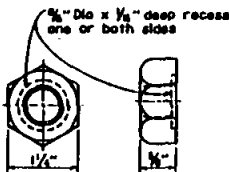
METAL BEAM GUARD RAILING STANDARD
HARDWARERECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARDS COMMITTEE

COORDINATOR R.C.E. 25902 DATE

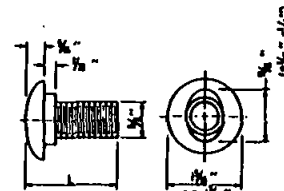
4-20-94



RETURN SECTION

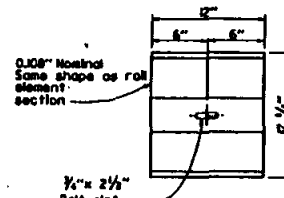
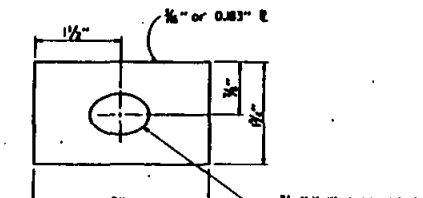
TERMINAL SECTION
TYPE ATERMINAL SECTION
TYPE BSECTION THRU
RAIL ELEMENT

3/8" Ø RECESS NUT



5/8" Ø BUTTON HEAD BOLT

L	THREAD LENGTH
1 1/4"	full thread length
2"	1 1/2" Min thread length
3 1/2"	1 3/4" Min thread length
4"	2 1/2" Min thread length

BACK-UP PLATE
See Note 2

FLAT PLATE WASHER

NOTES

1. Terminal sections will not be installed on the trailing end of guard railing placed adjacent to one-way roadways.
2. Back-up plate to be used between guard rail element and steel block on steel post where there is no rail element splice. See Standard Dwg. M-31.
3. For end section details, see Standard Dwg. M-40.
4. For terminal section Type C, see Standard Dwg. M-38.

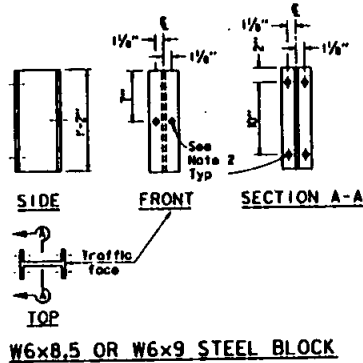
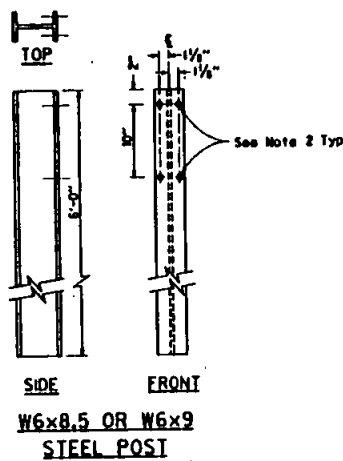
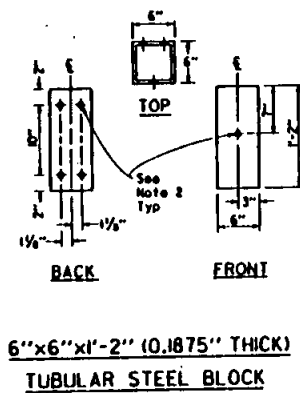
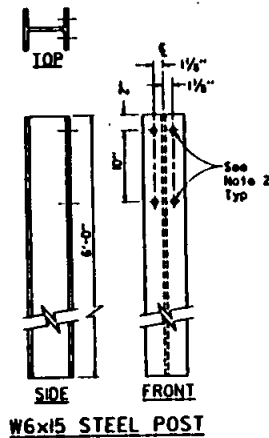
REVISION	BY	APPROVAL	DATE

RECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARDS COMMITTEE
COORDINATOR R.C.E. 25902 DATE 7-20-92

SAN DIEGO REGIONAL STANDARD DRAWING
METAL BEAM GUARD RAILING POSTS AND
BLOCKS

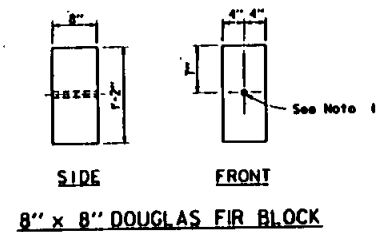
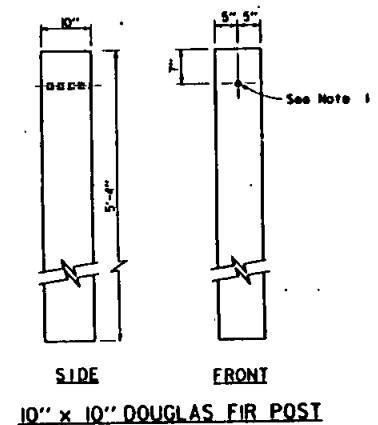
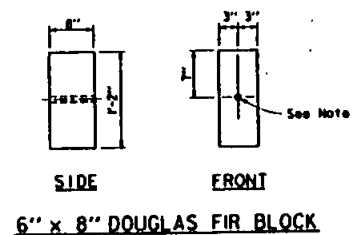
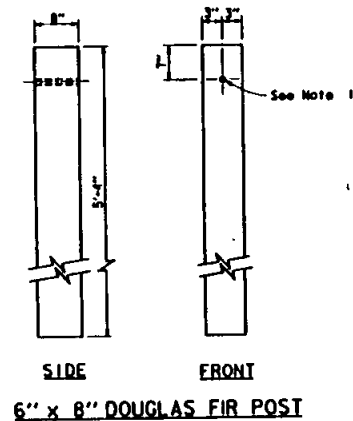
M-33

DRAWING NUMBER



NOTES

1. All holes in wood posts and blocks shall be $3/4" \pm 1/16"$.
2. All holes in steel posts and blocks shall be $13/16" \pm 1/16"$ maximum.
3. Contractor may submit alternative steel post details for Engineer's approval.
4. Dimensions shown for wood post are nominal.



REVISION	BY	APPROVAL	DATE

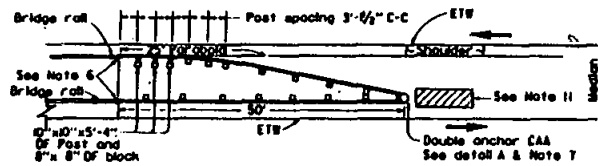
M-34

DRAWING NUMBER

GUARD RAIL FLARES

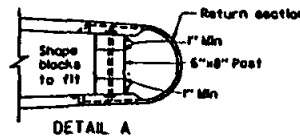
SAN DIEGO REGIONAL STANDARD DRAWING

RECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARDS COMMITTEE
COORDINATOR R.C.E. 25802 DATE 4-20-92

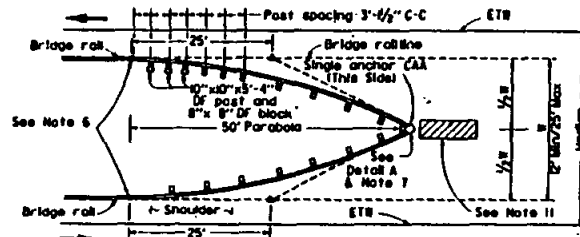


TYPE 4 FLARE

See Note 3

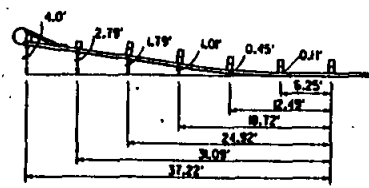


DETAIL A

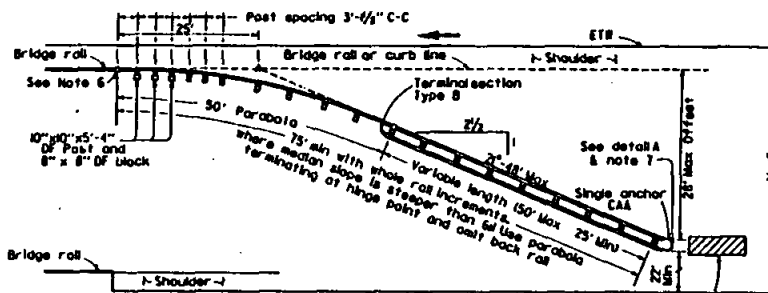


TYPE 3 FLARE

See Note 3



37'-6" PARABOLIC OFFSETS



TYPE 2 FLARE

(See Note 3)

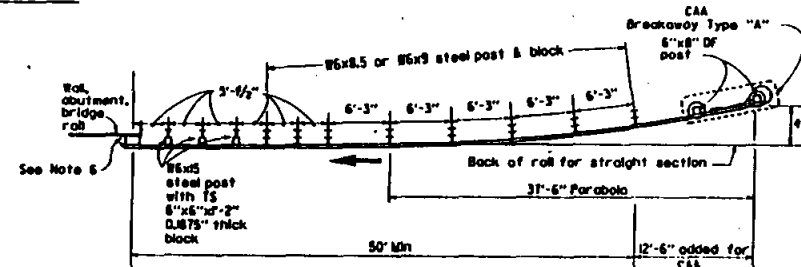


TYPICAL PARABOLIC LAYOUT

CAA = Cable Anchors Assembly
ETW = Edge of Traveled Way

NOTES

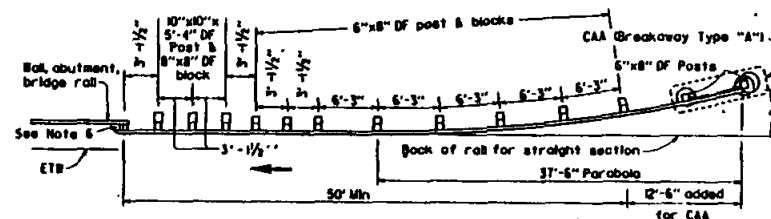
1. Post, blocks and hardware to be used are shown on Standard Dwg. M-32 and M-33.
2. Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, posts shown are 6" X 8" DF, W6 X 8.5 or W6 X 9 steel posts and blocks may be specified for 8" X 8" DF posts and blocks where applicable. Where 10" X 10" DF posts and 8" X 8" DF blocks are shown, W6 X 15 steel posts and Tubular Steel 6" X 8" X 1'-2" (0.1875" thick) blocks may be specified where applicable.
4. Top of rail to be 27" above ground line or shoulder surfacing under the rail element.
5. Direction of traffic indicated by →
6. For connection details see Standard Dwg. M-40 or M-41.
7. For end anchor details see Standard Dwg. M-37 and M-39.
8. Terminal Sections will not be installed on trailing end of guard rail placed adjacent to one-way roadways.
9. Parabola portion of Type I Flare used at approach end of guard railing for embankment installations.
10. For embankment widening details to accommodate approach flares, see Standard Dwg. M-36.
11. Sand filled crash cushion, as approved by the Engineer is required for Type 2, 3, and 4 flares, when the end of the guard rail is within 30 feet of the edge of traveled way (ETW) of approaching traffic.



TYPE I FLARE

(STEEL POST INSTALLATION)

See Note 3



TYPE I FLARE

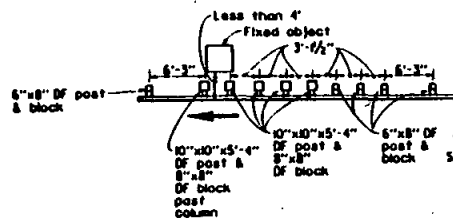
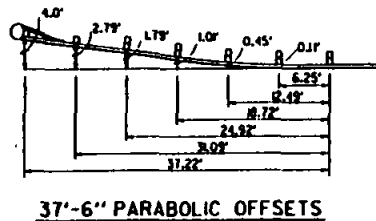
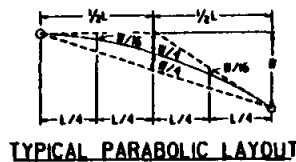
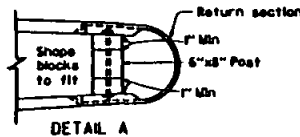
(WOOD POST INSTALLATION)

See Note 3

REVISION	BY	APPROVAL	DATE

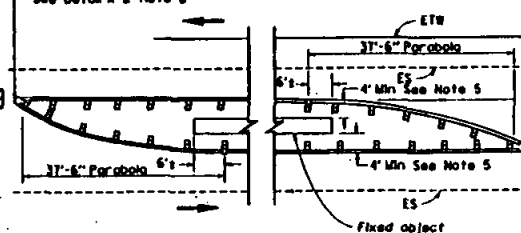
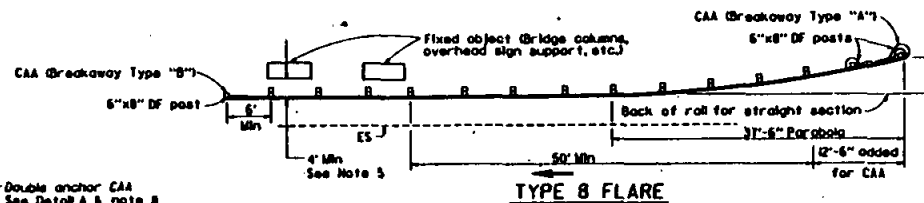
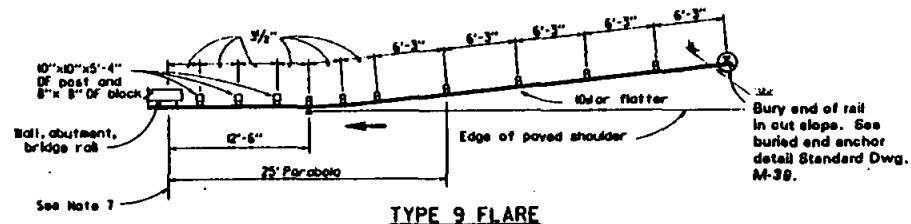
NOTES

1. Post, blocks and hardware to be used are shown on Standard Dwg. M-31 and M-32.
2. Guard rail post spacing to be 6'-3" center to center, except as noted.
3. Except as noted, posts shown are 6" X 8" DF, W8 X 8.5 or W8 X 9 steel posts and blocks may be specified for 6" X 8" DF posts and blocks where applicable. Where 10" X 10" DF posts and 8" X 8" DF blocks are shown, W8 X 15 steel posts and Tubular Steel 8" X 6" X 1'-2" (0.1875" thick) blocks may be specified where applicable.
4. Top of rail to be 27" above ground line or shoulder surfacing under the rail element.
5. A 4' minimum clearance is required between face of rail and a fixed object located directly behind a guard rail post. A fixed object located behind the rail but not behind a guard rail post requires a 3' minimum clearance. Where minimum clearance cannot be obtained use approach railing transition details for fixed objects.
6. Direction of traffic indicated by →
7. For connection details see Standard Dwg. M-40.
8. For end anchor details see Standard Dwg. M-37 and M-39.
9. Terminal Sections will not be installed on trailing end of guard rail placed adjacent to one-way roadways.
10. Type 7 flare has been deleted.
11. Sand filled crash cushion, as approved by the Engineer is required for Type 5 and 6 flares, when the end of the guard rail is within 30 feet of the edge of traveled way (ETW) of approaching traffic.

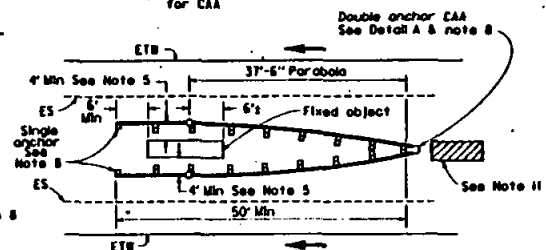


Use with Type 5, 6, and 8 flares when guard rail is less than 4' from fixed object. See Note 5. For a series of columns, additional 10"x10"x5'-4" DF post at 3'-1 1/2" center to center spacing to be used between columns. Where 10"x10" DF posts and 8"x8" DF blocks are shown, W8x5 steel posts and Tubular Steel 8"x6"x1'-2" (0.1875" thick) blocks may be specified where applicable. Where 6"x8" DF posts and blocks are shown, W6x5 or W6x7 steel posts and blocks may be specified where applicable.

APPROACH RAILING TRANSITION DETAIL
FOR FIXED OBJECT



TYPE 5 FLARE



TYPE 6 FLARE

CAA = Cable Anchors Assembly
ETW = Edge of Traveled Way

REVISION	BY	APPROVAL	DATE

RECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARDS COMMITTEE
COORDINATOR R.C.E. 25802 DATE 4-30-92

SAN DIEGO REGIONAL STANDARD DRAWING

DRAWING NUMBER

GUARD RAIL FLARES

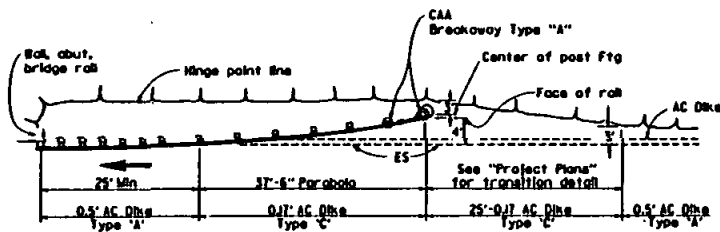
M-35

M-36

DRAWING NUMBER

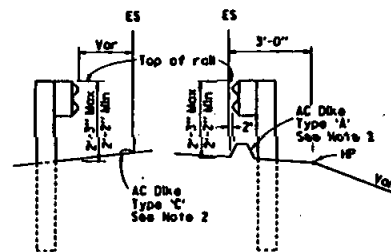
METAL BEAM GUARD RAILING MISCELLANEOUS
DETAILS

SAN DIEGO REGIONAL STANDARD DRAWING

RECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARD COMMITTEE
COORDINATOR R.C.E. 25902 DATE 4-30-92

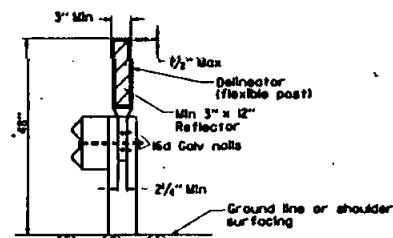
EMBANKMENT WIDENING AND DIKE PLACEMENT DIAGRAM

See Note 1 and 2



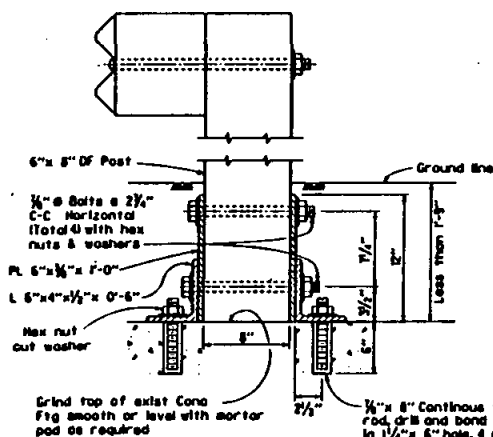
DIKE POSITIONING

(See Note 2)

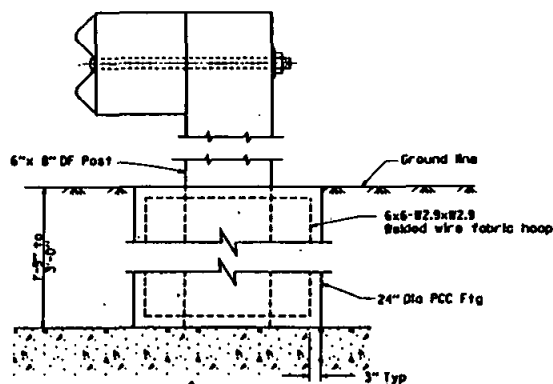


GUARD RAILING DELINEATION

See Note 4



DETAIL A



DETAIL B

Form socket in concrete to receive 6"x8" post or place concrete around 6"x8" post wrapped with one layer of 1/4" thick expanded polystyrene foam sheeting. Do not roll polystyrene to post. Post to be centered in concrete footing.

POST FOOTINGS

(See note 3)

Use where standard embedment of railing post is restricted by underground concrete facilities such as footing of walls, columns, etc. Use Detail A where embedment of post is less than 1'-3". Use Detail B where embedment of post is between 1'-3" and 3'-0".

NOTES

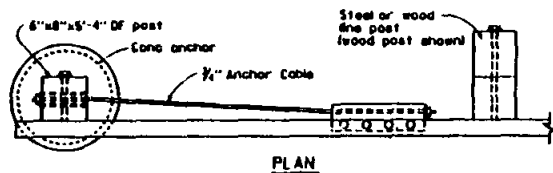
1. For guard rail flare details, see Standard Dwg. M-34 and M-35.
2. When necessary to place dike in front of guard rail, only Type "C" dike may be used. For dike details see Standard Dwg. G-5.
3. For standard railing post embedment see Standard Dwg. M-31.
4. Guard railing delineation to be used when required by special provisions.
5. Direction of traffic Indicated by →

REVISION	BY	APPROVAL	DATE

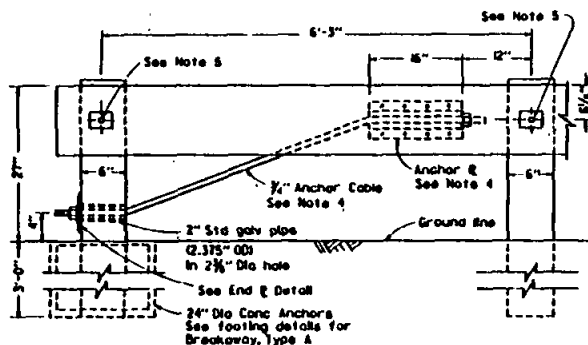
RECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARDS COMMITTEE
COORDINATOR R.C.E. 25902 DATE 4-20-87

SAN DIEGO REGIONAL STANDARD DRAWING
GUARD RAIL END ANCHORS (BREAKAWAY)

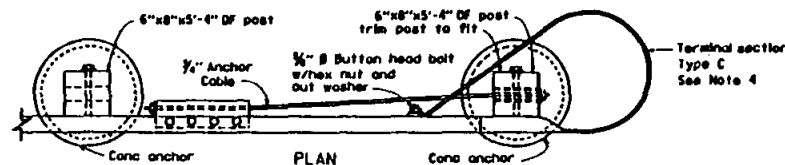
DRAWING NUMBER
M-37



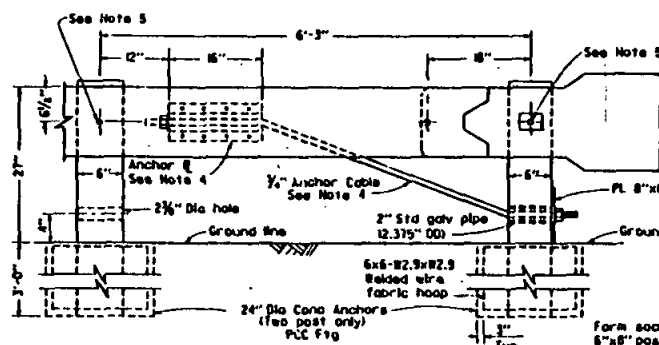
PLAN



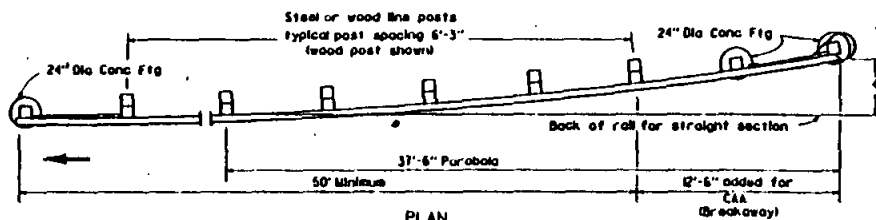
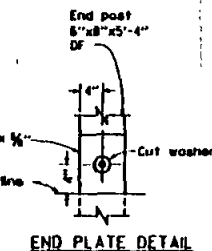
ELEVATION
CABLE ANCHOR ASSEMBLY
(BREAKAWAY, TYPE B)



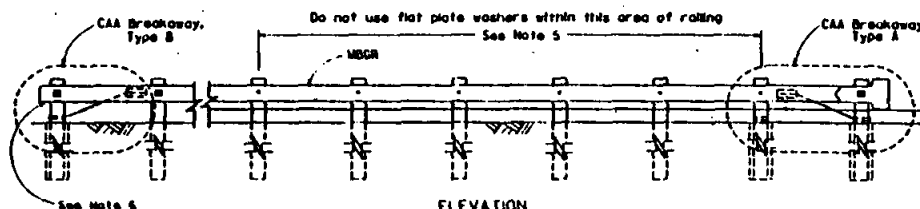
PLAN



ELEVATION
CABLE ANCHOR ASSEMBLY
(BREAKAWAY, TYPE A)



PLAN

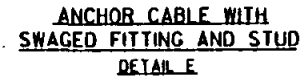
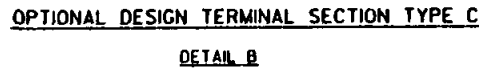


ELEVATION
BREAKAWAY END ANCHORS

NOTES

1. For typical use of cable anchor assembly (Breakaway, Type A), see Standard Dwg. M-34 and M-35.
2. Cable anchor assembly (Breakaway, Type B) is typically used on the trailing end of guard railing for embankment installations except two-way road beds less than 60 feet in width.
3. Direction of traffic indicated by →
4. For details of Terminal Section Type C, anchor plate and 3/4" cable, see Standard Dwg. M-38.
5. Do not use flat plate washers under head of rail mounting bolt at the second anchor post of Type A anchors and next five line posts. Use flat plate washers on other line posts and at the first anchor post of Type A anchor and at the Type B anchor post.
6. For trailing end of guard rail adjacent to one-way roadway omit terminal section.

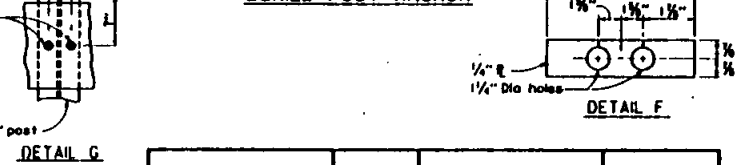
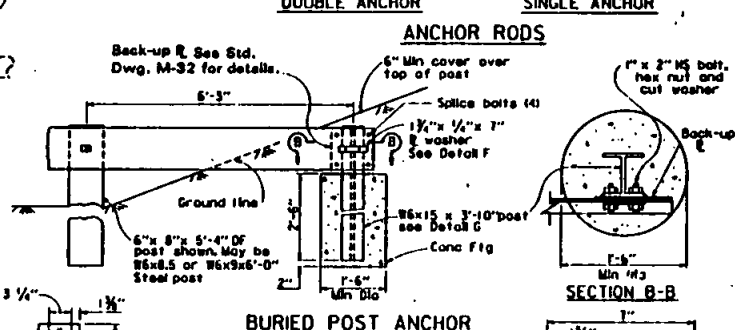
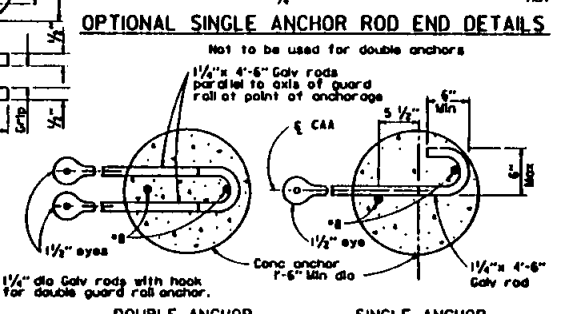
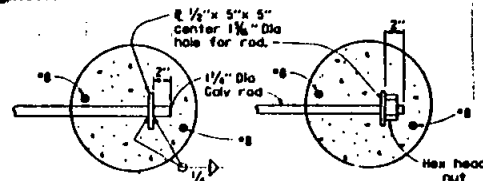
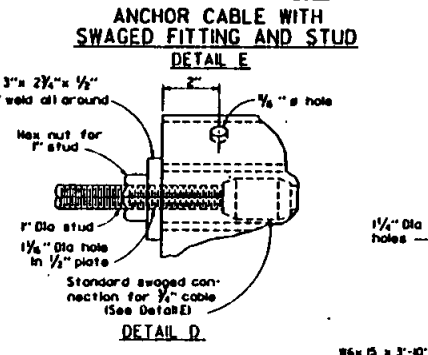
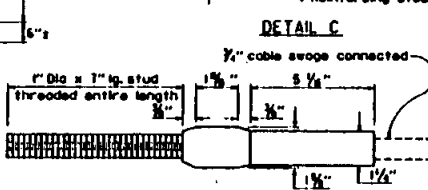
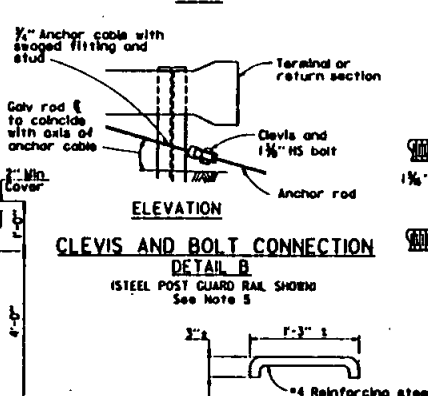
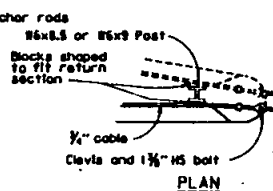
REVISION	BY	APPROVAL	DATE



REVISION	BY	APPROVAL	DATE

Henry Kissinger 4-20-72

1. For typical use of end anchors shown on this plan, See Standard Drawings M-34 and M-35.
2. Anchor cable to be parallel to guard rail for straight runs of rail. Anchor cable may have angle point at anchor plate if guard rail is curved.
3. 5'-8" with terminal section. May be less than with return sections if separate rods connect to concrete anchor.
4. Anchor rod hooks to be in contact with anchor reinforcement when concrete is placed. Wire ties may be used to position anchor rods.
5. Cable clip connection (Detail A) or clevis and bolt connection (Detail B) to be used with wood post guard railing installation. For steel post guard railing installations, clevis and bolt connection (Detail B) is to be used. Other alternative for attaching cable to anchor rod must be approved by the Engineer.



REVISION	BY	APPROVAL	DATE

M-40

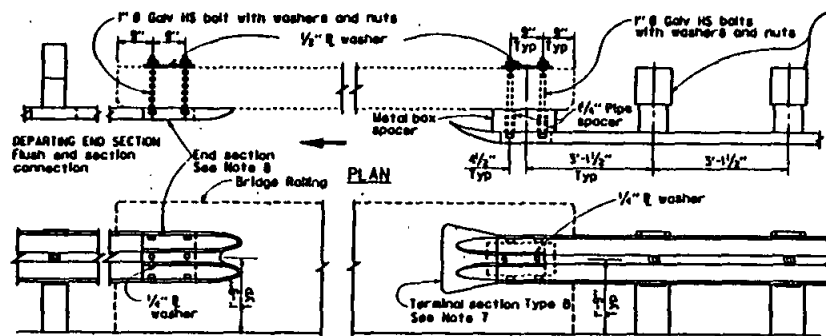
DRAWING NUMBER

GUARD RAIL CONNECTIONS TO BRIDGE RAILS,
RETAINING WALLS AND ABUTMENTS

SAN DIEGO REGIONAL STANDARD DRAWING

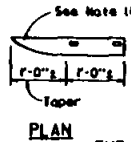
RECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARDS COMMITTEE

COORDINATOR R.C.E. 25902 DATE 4-20-94

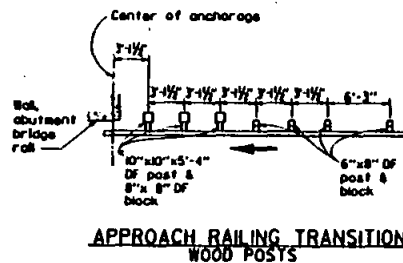
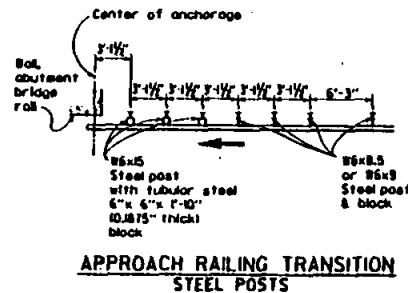
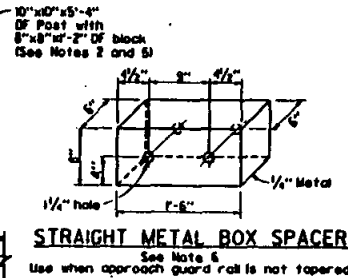


ELEVATION

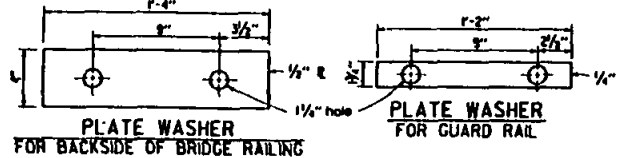
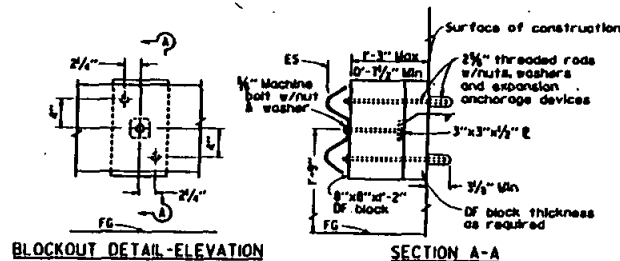
GUARD RAIL CONNECTION TO BRIDGE RAILING



END SECTION DETAILS

APPROACH RAILING TRANSITION
WOOD POSTSAPPROACH RAILING TRANSITION
STEEL POSTS

STRAIGHT METAL BOX SPACER

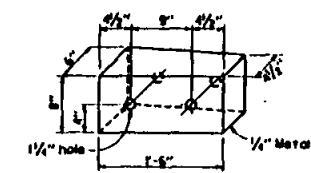
See Note 6
Use when approach guard rail is not taperedPLATE WASHER
FOR BACKSIDE OF BRIDGE RAILINGPLATE WASHER
FOR GUARD RAIL

BLOCKOUT DETAIL-ELEVATION

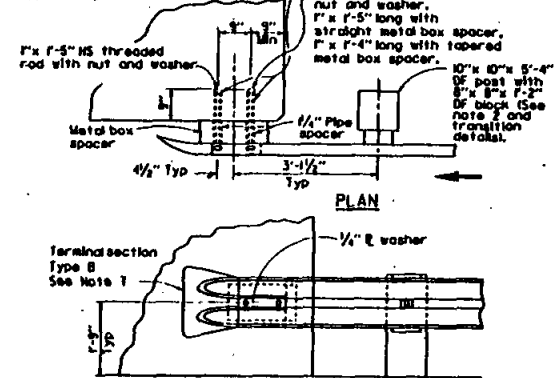
SECTION A-A

See Notes 9 and 10

GUARD RAIL ANCHORAGE TO WALL OR ABUTMENT



TAPERED METAL BOX SPACER

See Note 6
Use when approach guard rail is tapered

ELEVATION

GUARD RAIL CONNECTION TO WALL OR ABUTMENT FACE

NOTES

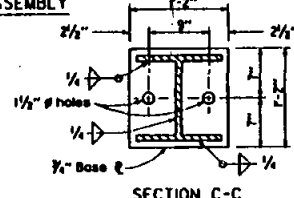
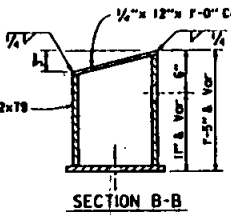
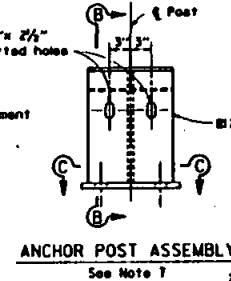
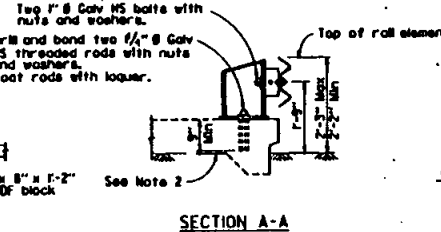
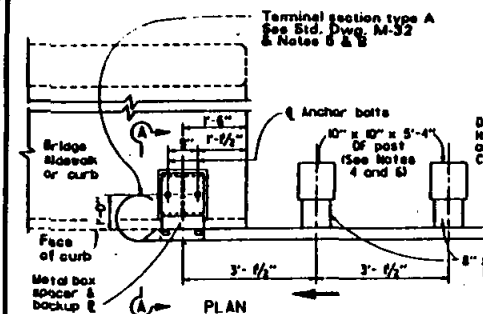
- These connection details apply to bridge rails, abutments and retaining walls. For additional connection details for bridge railing, see the project plans.
- Where 10" X 10" DF post and 8" X 8" DF blocks are shown, W8 X 15 steel posts and tubular steel 6" X 8" X 1'-2" (0.1875" thick) blocks may be specified where applicable.
- Additional details of post, blocks and hardware are shown on Standard Dwg. M-32 and M-33.
- Direction of traffic indicated by →
- For approach railing details, see Type I Flare on Standard Dwg. M-34 and transition details on this plan.
- When metal box spacer is installed, place 1-1/4" X 5" and 1-1/4" X 4" pipe spacers on 1" bolts passing through interior of tapered box spacer and 1-1/4" X 5-1/4" pipe spacers on 1" bolts passing through interior of straight box spacer.
- Terminal Sections will not be installed on trailing end of guard rail placed adjacent to one-way roadways. When terminal section is not installed, use backup plate between rail element and metal box spacer. See Standard Dwg. M-32 for backup plate details.
- This type of connection may be used for both the approach and departing ends of structures on roadways 28 feet or less in width.
- Use timer shims without posts where rail to wall or abutment clearance is less than 15 inches.
- Do Not attach rail to bridge columns. Use separate posts as shown on Standard Dwg. M-35.
- End sections may be cut from Type B terminal section or fabricated.

REVISION	BY	APPROVAL	DATE

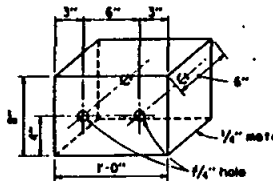
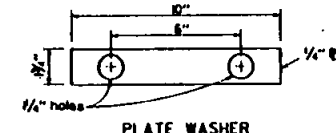
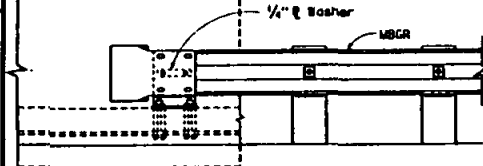
RECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARDS COMMITTEE
COORDINATOR R.C.E. 25902 DATE 4-26-92

SAN DIEGO REGIONAL STANDARD DRAWING
GUARD RAIL CONNECTION TO BRIDGE
SIDEWALK AND CURBS

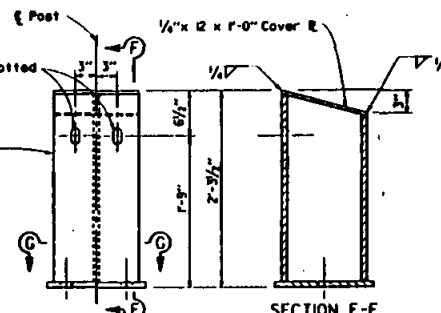
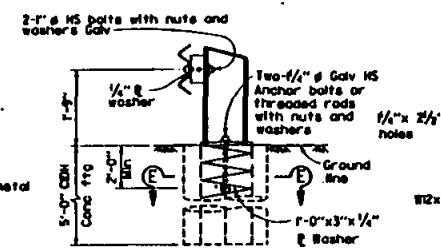
DRAWING NUMBER
M-41



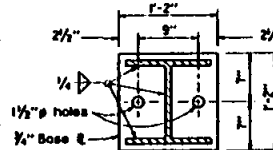
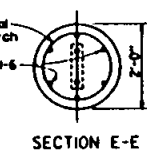
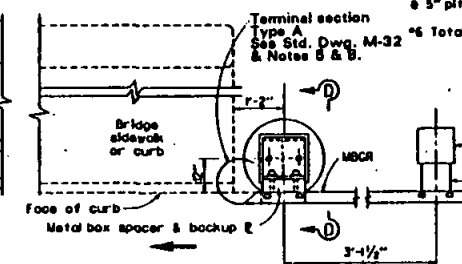
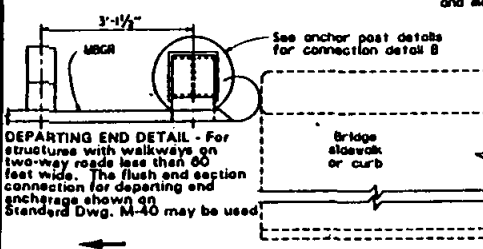
ANCHOR POST DETAILS
(FOR CONNECTION DETAIL A)



Place 1/4" x 5/16" pipe spacers on 1" bolts passing through box interior



ANCHOR POST DETAILS
(FOR CONNECTION DETAIL B)



CONNECTION DETAIL C
PLAN

REVISION	BY	APPROVAL	DATE

RECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARDS COMMITTEE
[Signature] 4-20-99
COORDINATOR R.C.E. 25902 DATE

(For barriers not located in median)
See Note 11

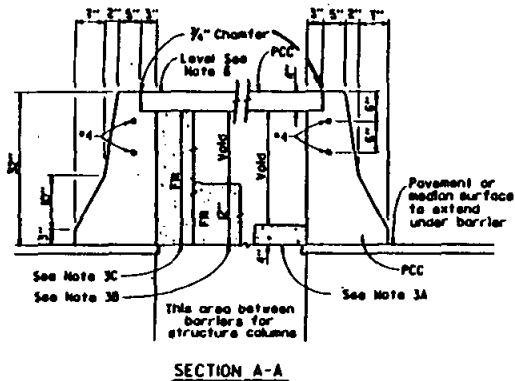
1. See Standard Dwg. M-32 for concrete barrier transitions at bridge column and sign pedestals.
2. Opening into existing drainage inlets shall not extend above the 3-inch vertical face at bottom of the barrier.
3. Where the barrier is added to the face of an existing concrete structure, matching existing weep holes.
4. Contractor may submit alternative details for Engineer's approval.
6. Footing monolithic or doweled with 2-#BX0'-8" @ 24". Required at barrier ends and at interruptions in barrier.
8. See Standard Dwg. M-33 for glare screen details.
7. Expansion joints in concrete barrier shall be located at all deck, pavement and principal wall joints. Expansion joint filler material shall be the same size as joint or 1/2" minimum.
8. 10" Barrier footing extends 10' back from structure.
9. For transition to TBB see Standard Dwg. M-34.
10. Where roadway offset is greater than 1-1/2", see Concrete Barrier Type 50C.
11. Barrier delineation to be used when required by the special provisions.
12. Spacing of barrier markers to match spacing of raised pavement markers on the adjacent median edge line pavement delineation.

REVISION	BY	APPROVAL	DATE

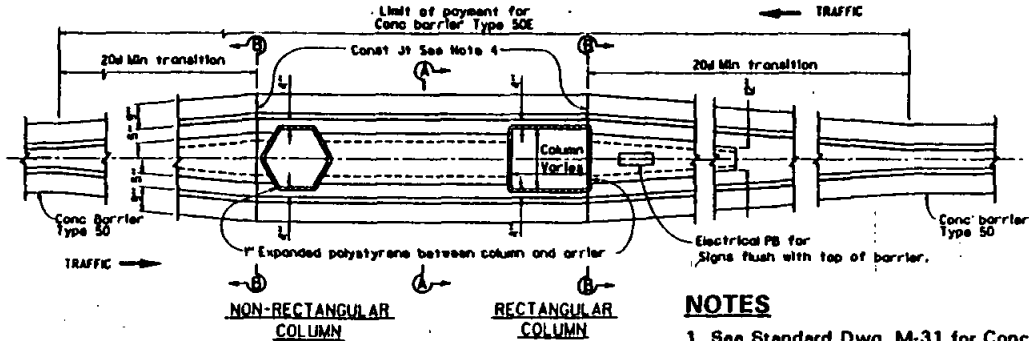
RECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARDS COMMITTEE
COORDINATOR R.C.E. 25902 DATE 4-20-92

SAN DIEGO REGIONAL STANDARD DRAWING
CONCRETE BARRIER TYPE 50E

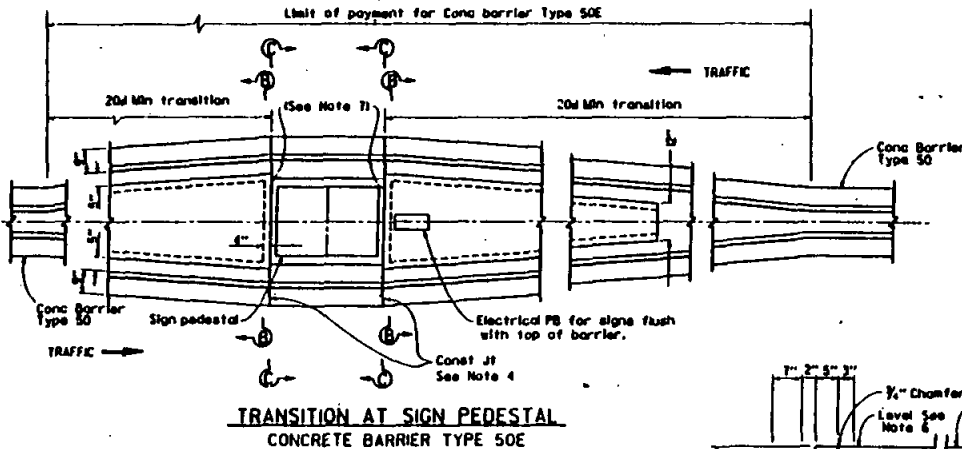
DRAWING NUMBER
M-43



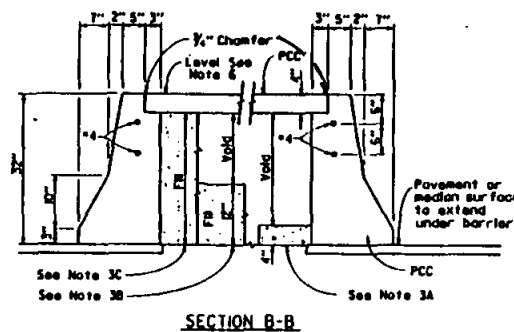
SECTION A-A



TRANSITION AT BRIDGE COLUMN
CONCRETE BARRIER TYPE 50E



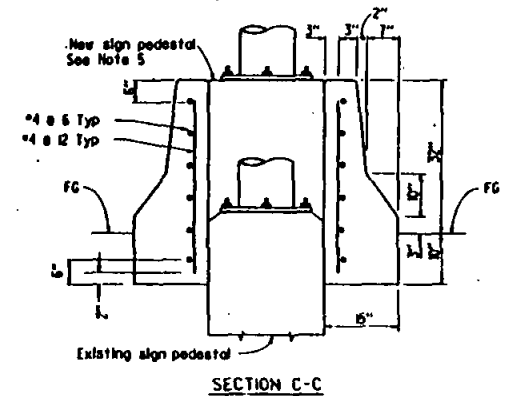
TRANSITION AT SIGN PEDESTAL
CONCRETE BARRIER TYPE 50E



SECTION B-B

NOTES

1. See Standard Dwg. M-31 for Concrete barrier Type 50.
2. See Standard Dwg. M-33 for Headlight glare Screen Details.
3. Contractor options for fill between barrier walls:
A: Place 4" PCC at base between barrier walls.
B: Place 12" of granular material at base between walls.
C: Place granular material from base to bottom of 4" cap.
Forming material for 4" cap may remain in place.
4. Reinforcing steel shall extend continuous through construction joints.
5. See "Overhead Sign" plans for sign pedestal elevations on new construction.
6. Adjust height of barrier on low side of offset or superelevated roadways to provide level grade across top of Type 50E Barrier.
7. 4" PCC vertical walls at existing sign pedestals.



SECTION C-C

REVISION	BY	APPROVAL	DATE

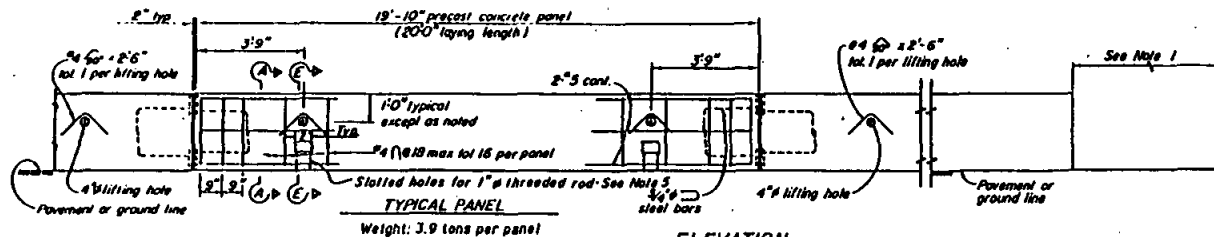
M-44

DRAWING NUMBER

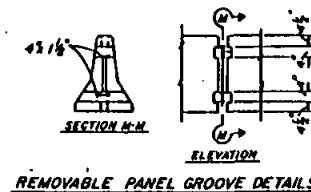
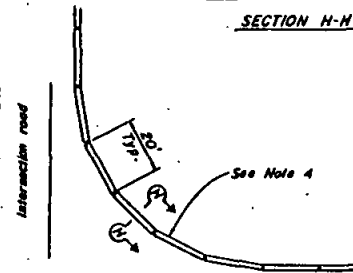
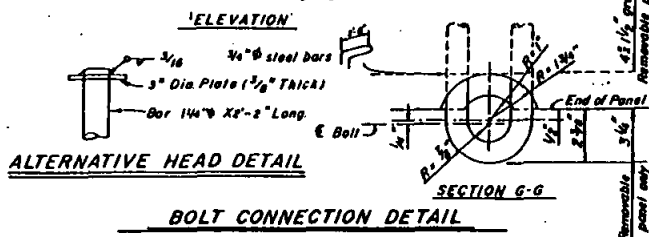
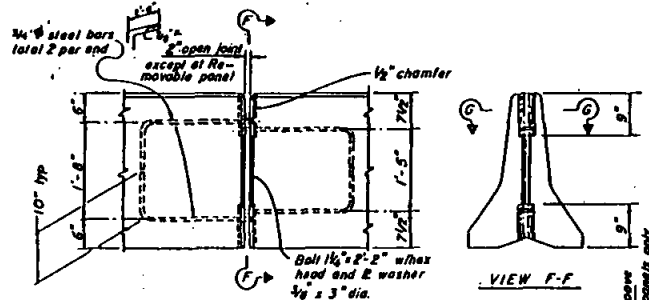
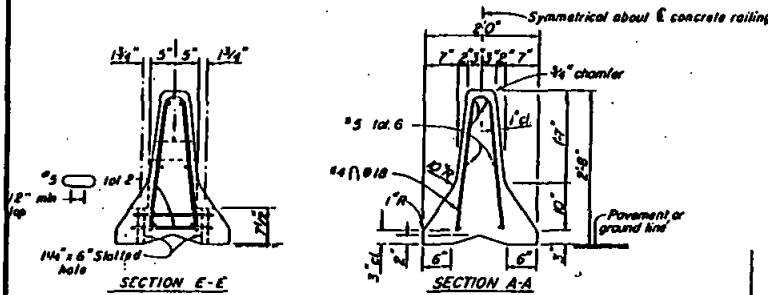
TEMPORARY RAILING (TYPE K)

SAN DIEGO REGIONAL STANDARD DRAWING

COORDINATOR R.C.E. 25902 DATE

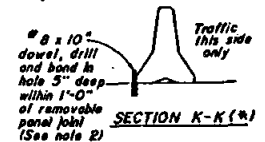
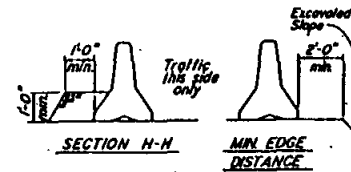
RECOMMENDED BY THE SAN DIEGO REGIONAL
STANDARDS COMMITTEE

ELEVATION

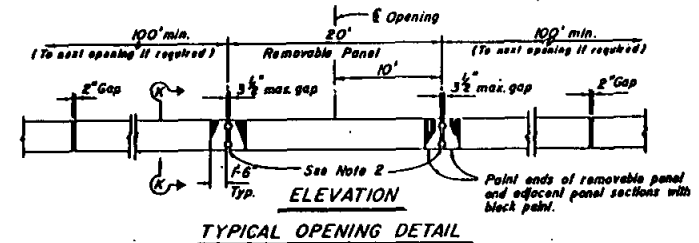


NOTES

- For end treatment, layout and crash cushions, where needed, see Project Plans or Special Provisions.
- All 3-1/2" gaps at removable panels are to be backed at the base with # 8X10" dowel or 1" pin each side of joint. See Section K-K.
- Alternative details for lifting the precast concrete panels of the Temporary Railing may be submitted by the Contractor for the Engineer's approval.
- Where Temporary Railing (Type K) is placed on curves and radii that are too severe to connect panels with balled joints, the railing is to be backed continuously with earth fill. See Section H-H.
- Attach units to deck slabs when required by Plans.



* Section K-K is for P.C.C. pavement. Alternative detail, 1" pins 2'-0" long driven in A.C. or firm soil permitted, minimum 1'-6" deep.

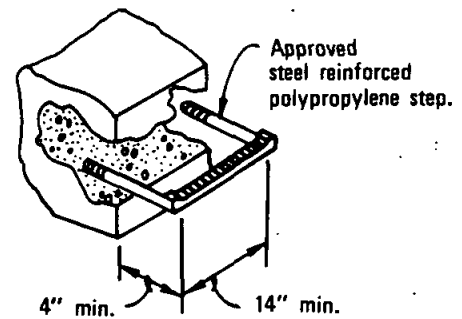


REVISION	BY	APPROVAL	DATE

SEWERAGE SYSTEMS

SEWERAGE SYSTEMS

S



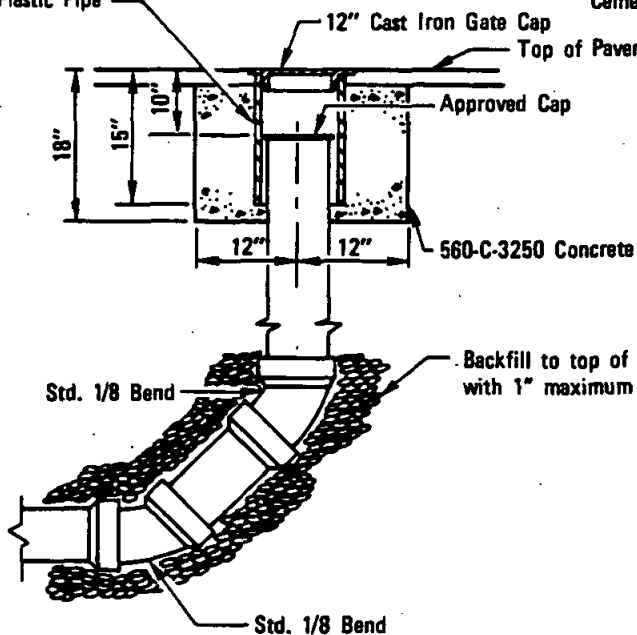
A cross-sectional diagram of a vertical channel. The channel has a vertical wall on the left and a sloped wall on the right. The slope is labeled "Slope-1" per foot". At the bottom of the channel, there is a shelf. The shelf is labeled "Shelf". The width of the channel at the top is labeled "8\"". The channel is shown to be vertical above a spring line, indicated by a horizontal line and the text "Channel shall be vertical above spring line.". The bottom of the channel is labeled "3/4 Inside dia. of pipe".

1. Manhole frame and all joints shall be set in Class "C" mortar.
2. All precast components shall be manufactured in accordance with ASTM C-478.
3. Vertical wall of cone shall be on the upstream side of the manhole.
4. Concrete base shall be 560-C-3250.
5. Approved water stop required for plastic pipe connectors.
6. Precast sections shall be used within dimension "A" as required, in order of preference listed:
 - A. Cone (notched for pipe if dimension "A" is less than 3').
 - B. 6" to 18" of 3' diameter grade rings and/or risers.
 - C. 5' diameter shaft variable height.
 - D. Top step to be 15" Max. from top of frame and cover.
7. Flexible pipe joints shall be required within 12" of inside face of manhole except for plastic pipe.
8. All patching within manhole base shall be epoxy mortar.
9. Prior approval of precast base is required by the Agency.

M.H. No. 2

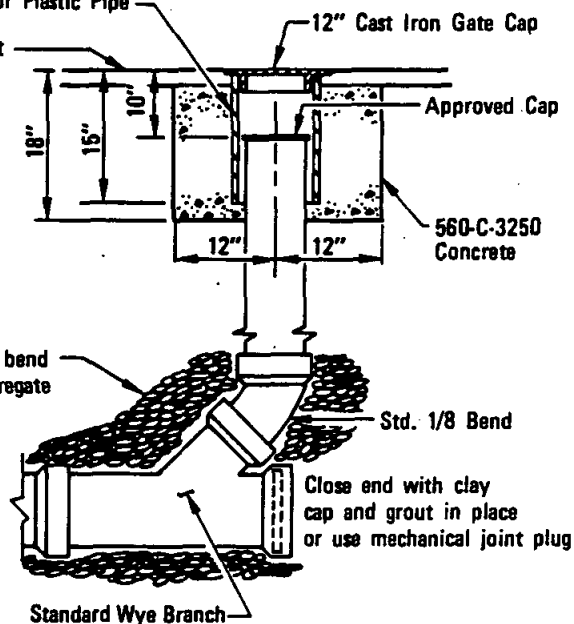
Revision	By	Approved	Date
Note 7	TRP	M.B.	10-82
Conc.	JL	M.B.	5-86
Notes	JP	JL	9-88
Conc base	JP	JL	5-92

Section of 12" Metallic, Asbestos
Cement or Plastic Pipe



TYPE A

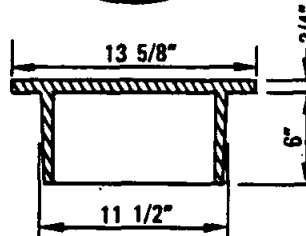
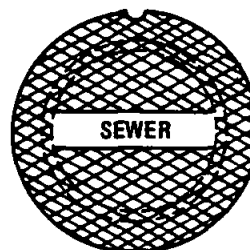
Section of 12" Metallic, Asbestos
Cement or Plastic Pipe



TYPE B

NOTES

1. Gate cap shall be labeled "Sewer".
2. Cleanouts may be used for either V.C.P. or plastic sewer mains.
3. Riser to be same diameter as sewer main.



GATE CAP
(Heavy Duty)

LEGEND ON PLANS



Revision	By	Approved	Date
Conc.	ME	ME	5-86

SAN DIEGO REGIONAL STANDARD DRAWING

SEWER MAIN CLEANOUT

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alfred A. Kneeland Dec. 1975
Coordinator R.C.E. 19807 Date

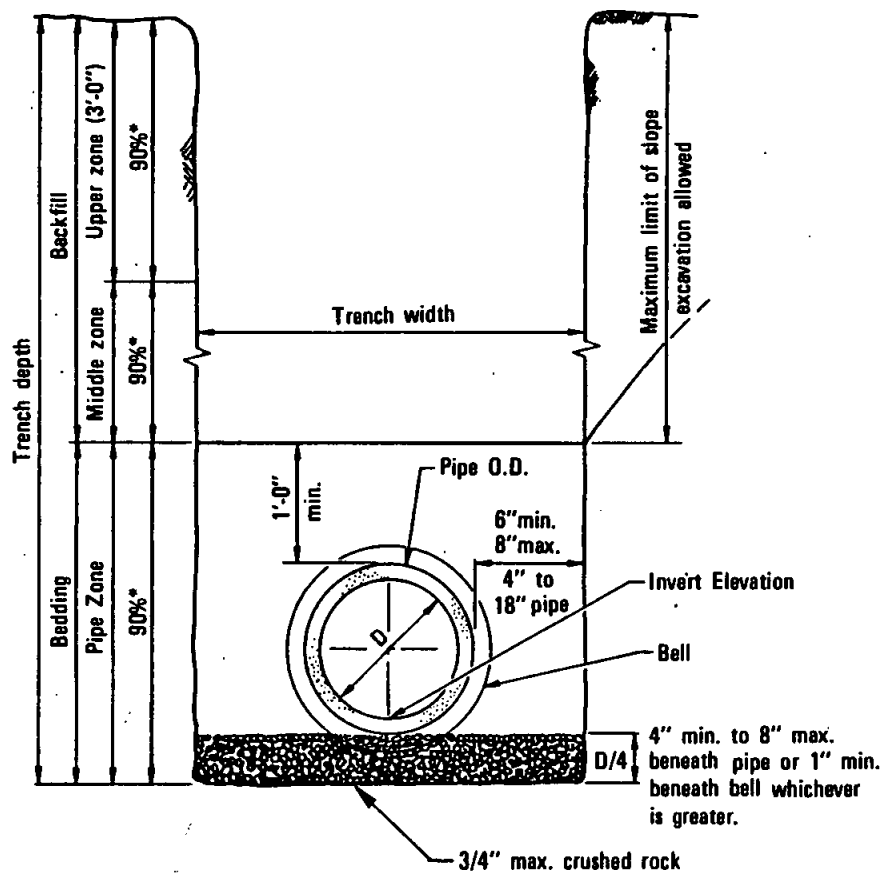
DRAWING
NUMBER

S-3

DRAWING
NUMBER S-4

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
ALL 10 Rechecked Dec. 1975
Coordinator R.C.E. 19807 Date

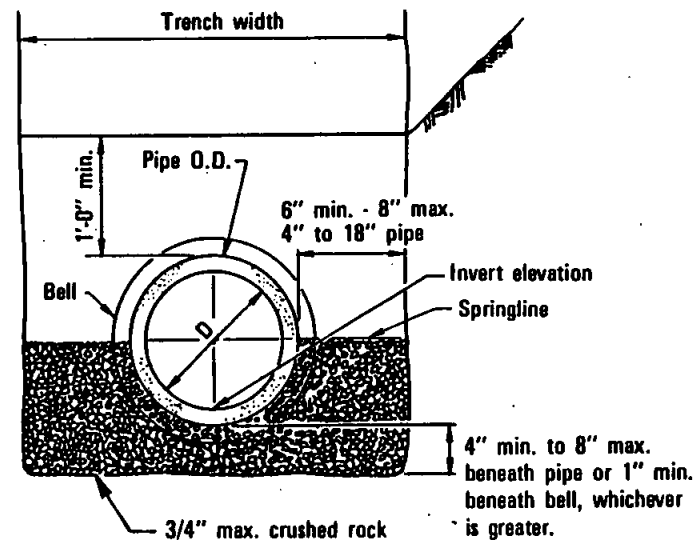
SAN DIEGO REGIONAL STANDARD DRAWING
PIPE BEDDING AND TRENCH BACKFILL
FOR SEWERS



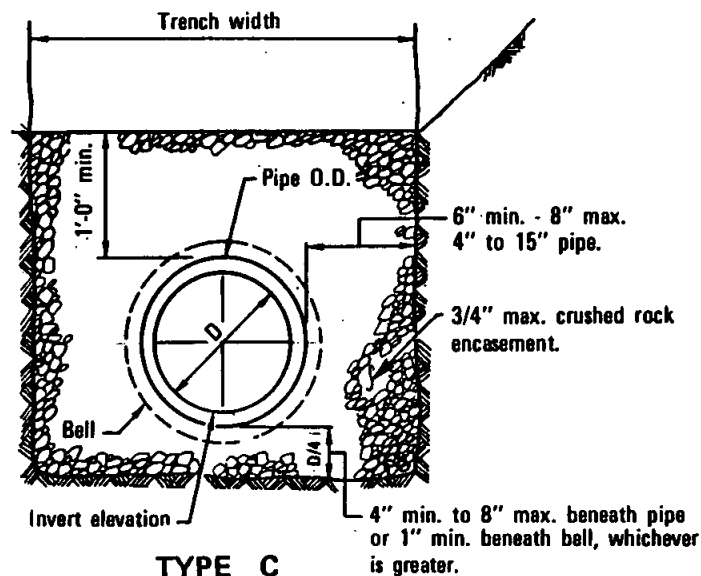
TYPE A
STANDARD INSTALLATION

NOTES

1. For trenching in improved streets, see Standard Drawings G-24 or G-25 for trench resurfacing.
2. (*) indicates minimum relative compaction.
3. Minimum depth of cover from the top of pipe to finish grade for all sanitary sewer installations shall be 3 feet. For cover less than 3 feet, see Standard Drawing S-7 for concrete encasement.
4. See Type A installation for details not shown for Types B and C.

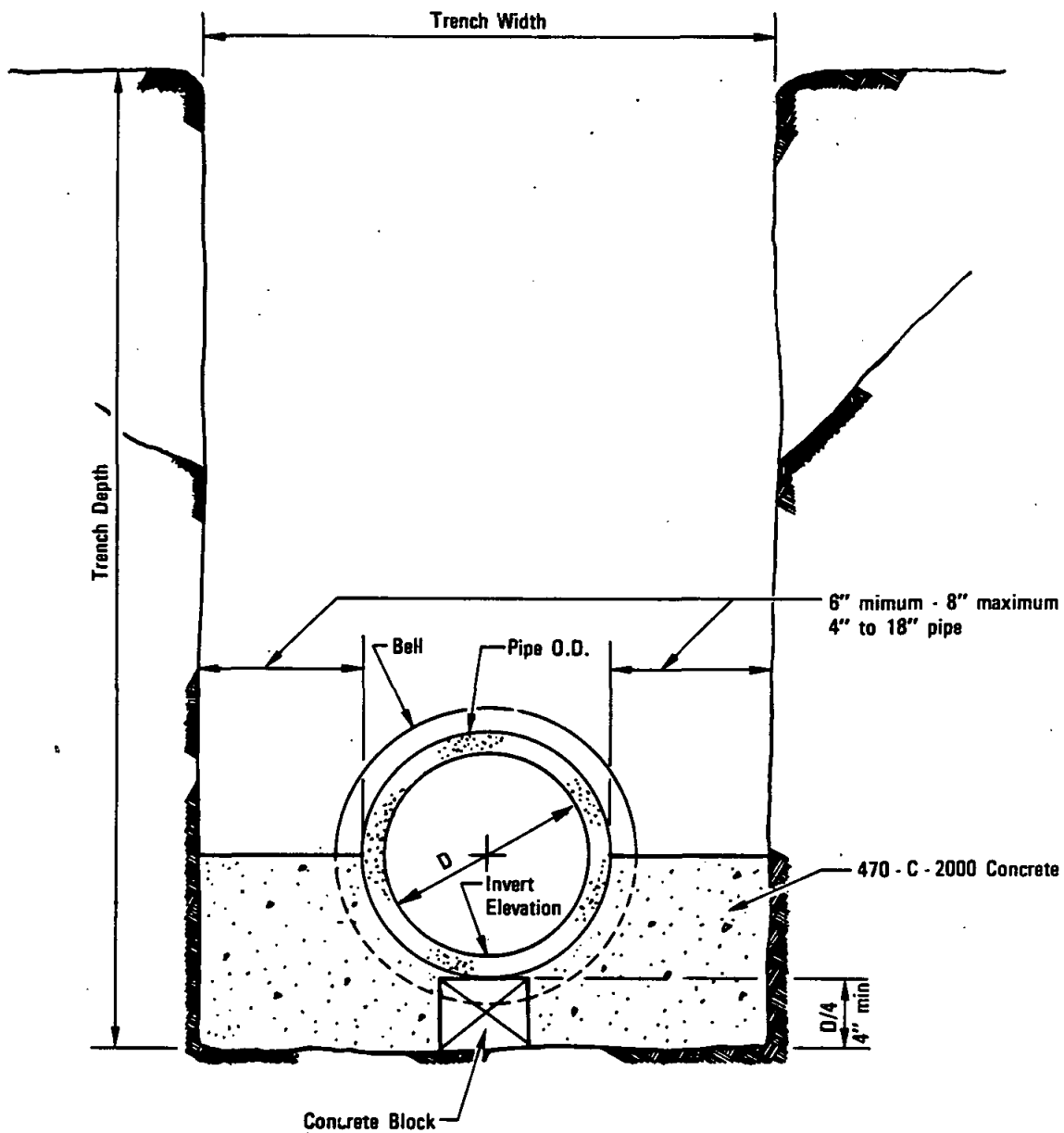


TYPE B
ROCK TO SPRINGLINE



TYPE C
ROCK ENVELOPE

Revision	By	Approved	Date
A, B, & C	RC	M.B.	5-86



SECTION

LEGEND ON PLANS

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen A. Kuehnel *Dec. 1975*
Coordinator R.C.E. 19807 Date

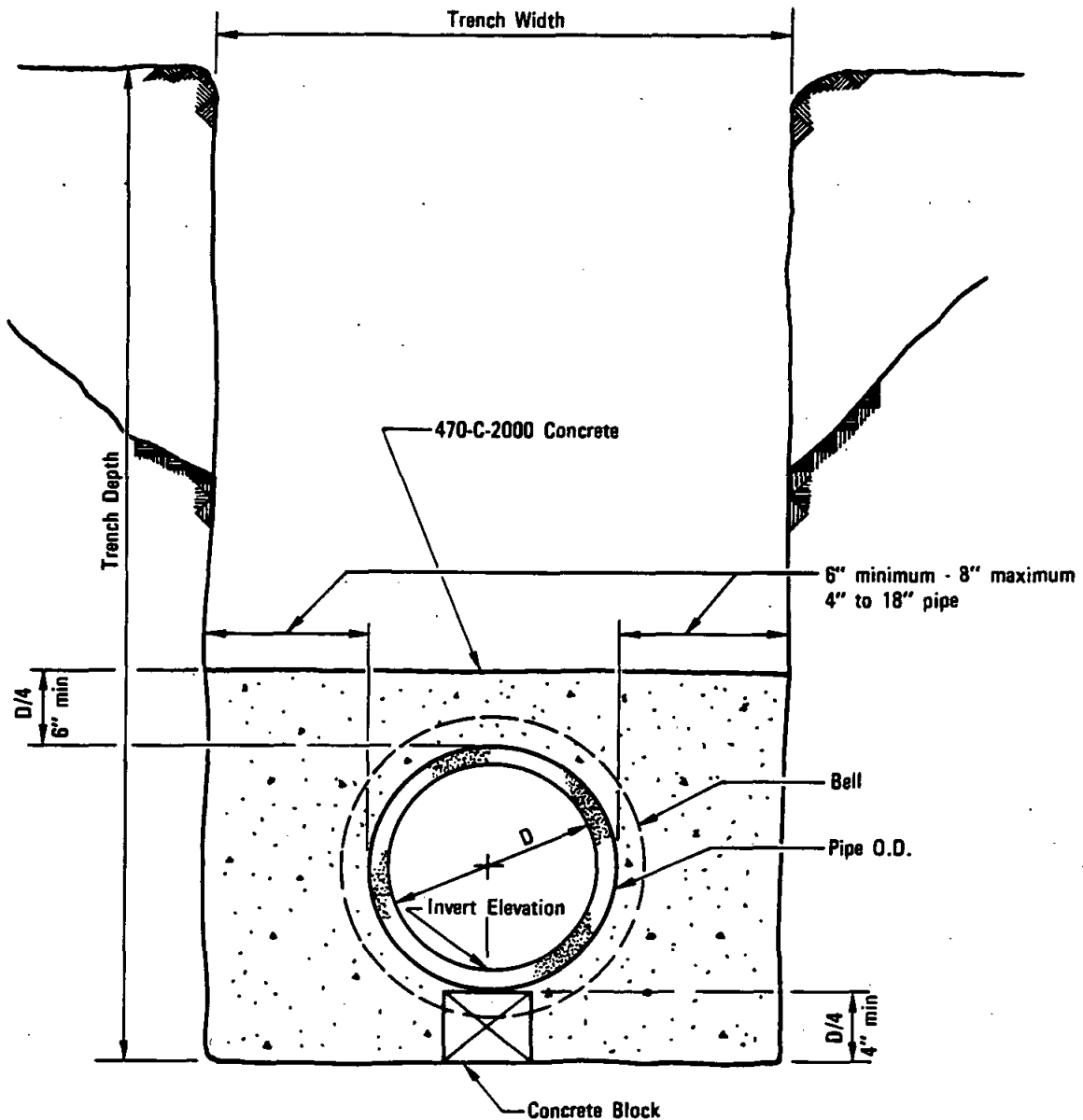
DRAWING
NUMBER

S-6

SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE CRADLE

Revision	By	Approved	Date



SECTION

NOTE:

Encase pipe to the nearest flexible joint.

LEGEND ON PLANS

Revision	By	Approved	Date
Note	TRP	M.B.	10-82

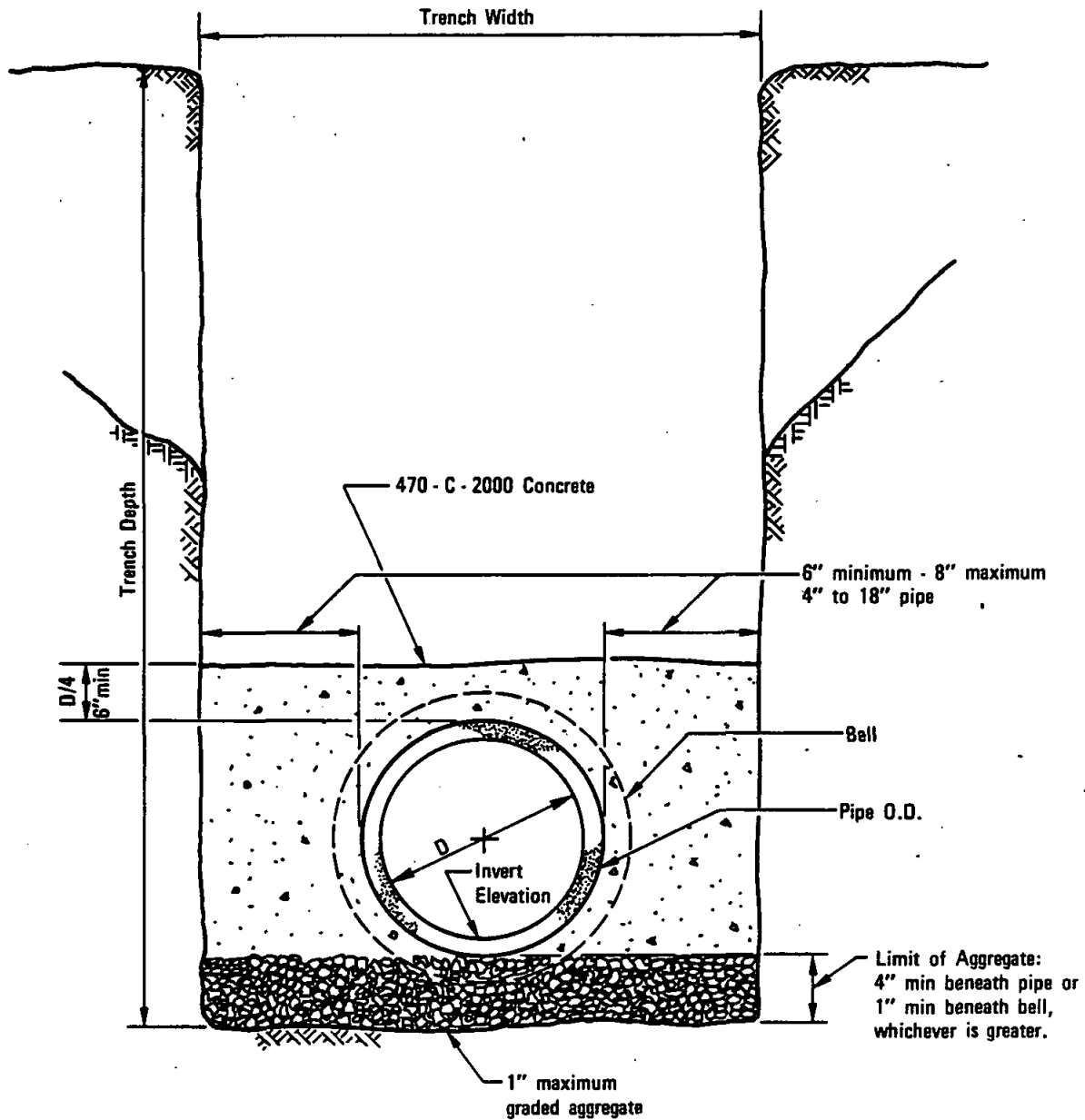
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE ENCASEMENT

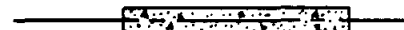
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alfred A. Kuehnel Dec. 1975
Coordinator R.C.E. 19807 Data

DRAWING
NUMBER S-7



LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alfred O. Kuehn *Dec. 1975*
Coordinator R.C.E. 19807 Date

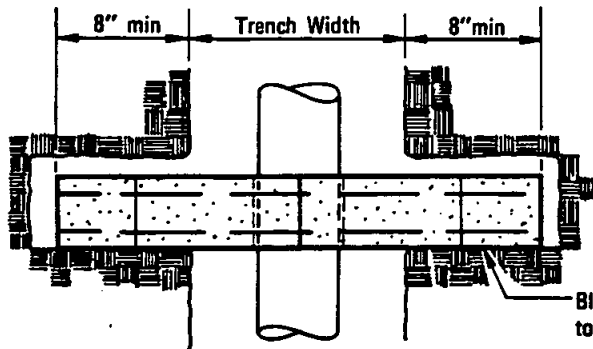
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE BACKFILL

DRAWING
NUMBER

S-8

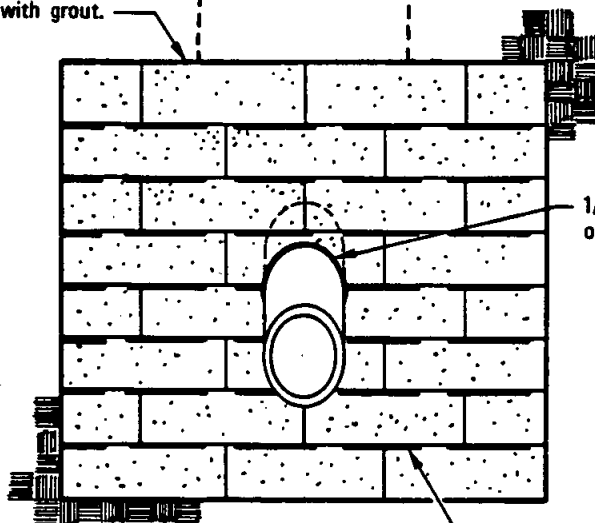
Revision	By	Approved	Date



Blocks to be laid as tightly as possible to downstream side of notch.

PLAN

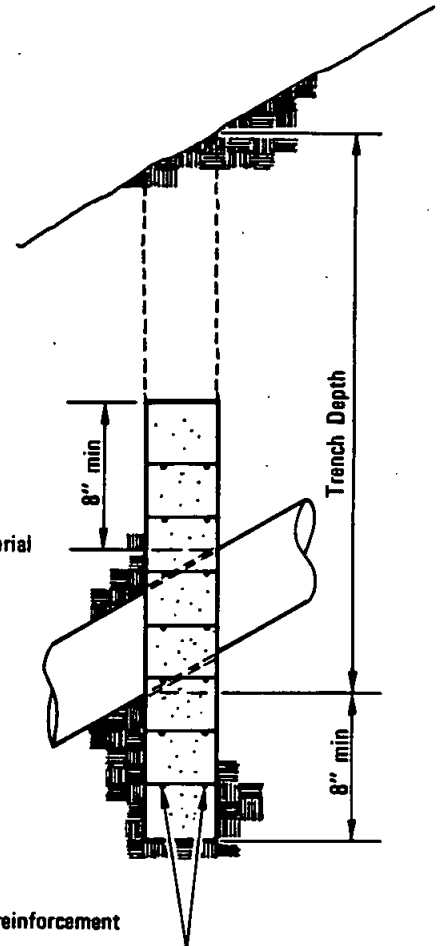
8"x 8"x 16" concrete block
Fill cores with grout.



1/2" expansion joint material
or jute around pipe.

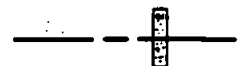
No. 9 wire ladder type reinforcement
in all horizontal joints.

FRONT ELEVATION



SIDE ELEVATION

LEGEND ON PLANS



Revision	By	Approved	Date
Expan. jt.	TOP	M.B.	10-82

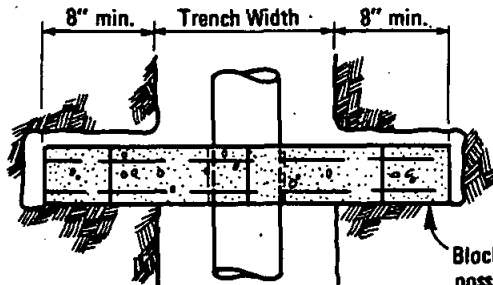
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE ANCHOR

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen G. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER S-9

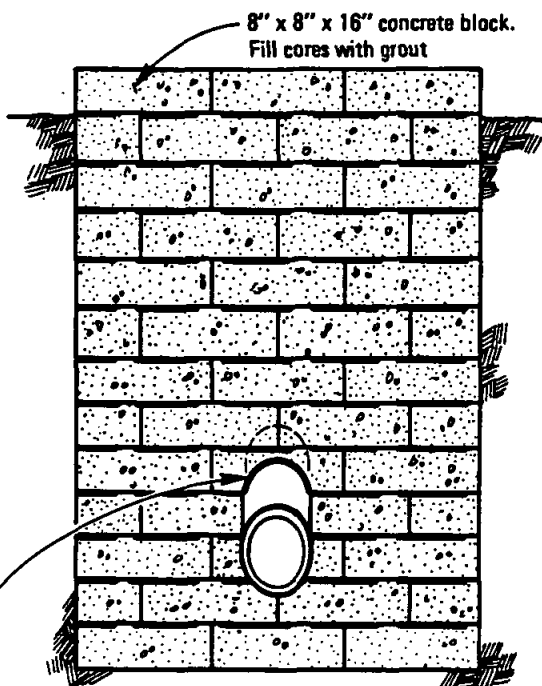


PLAN

NOTES

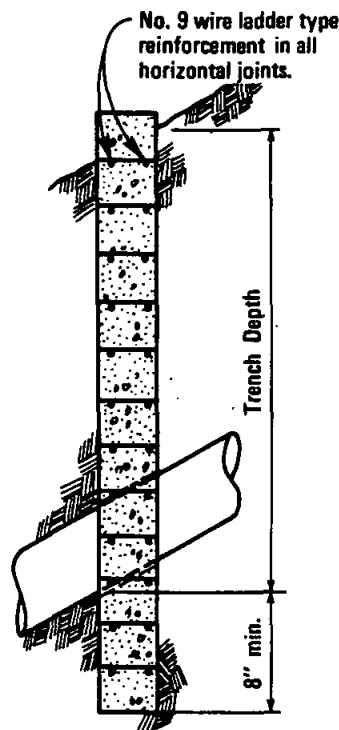
Type B:

1. No vertical joints permitted.
2. Horizontal joints must overlay by 2 corrugations.
3. Corrugations to run horizontally.
4. Front Elevation and Plan views similar to Type A.



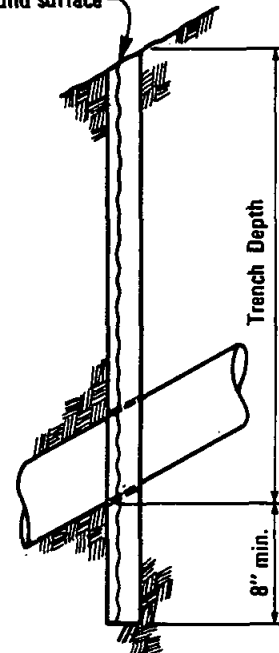
1/2" expansion joint material
or jute around pipe.

FRONT ELEVATION



SIDE ELEVATION

Galvanized Corrugated Sheet Metal
18 Gage or heavier to be laid as tightly
as possible to downstream side of notch.
Make flush with
ground surface

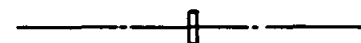


ELEVATION

TYPE A

TYPE B

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

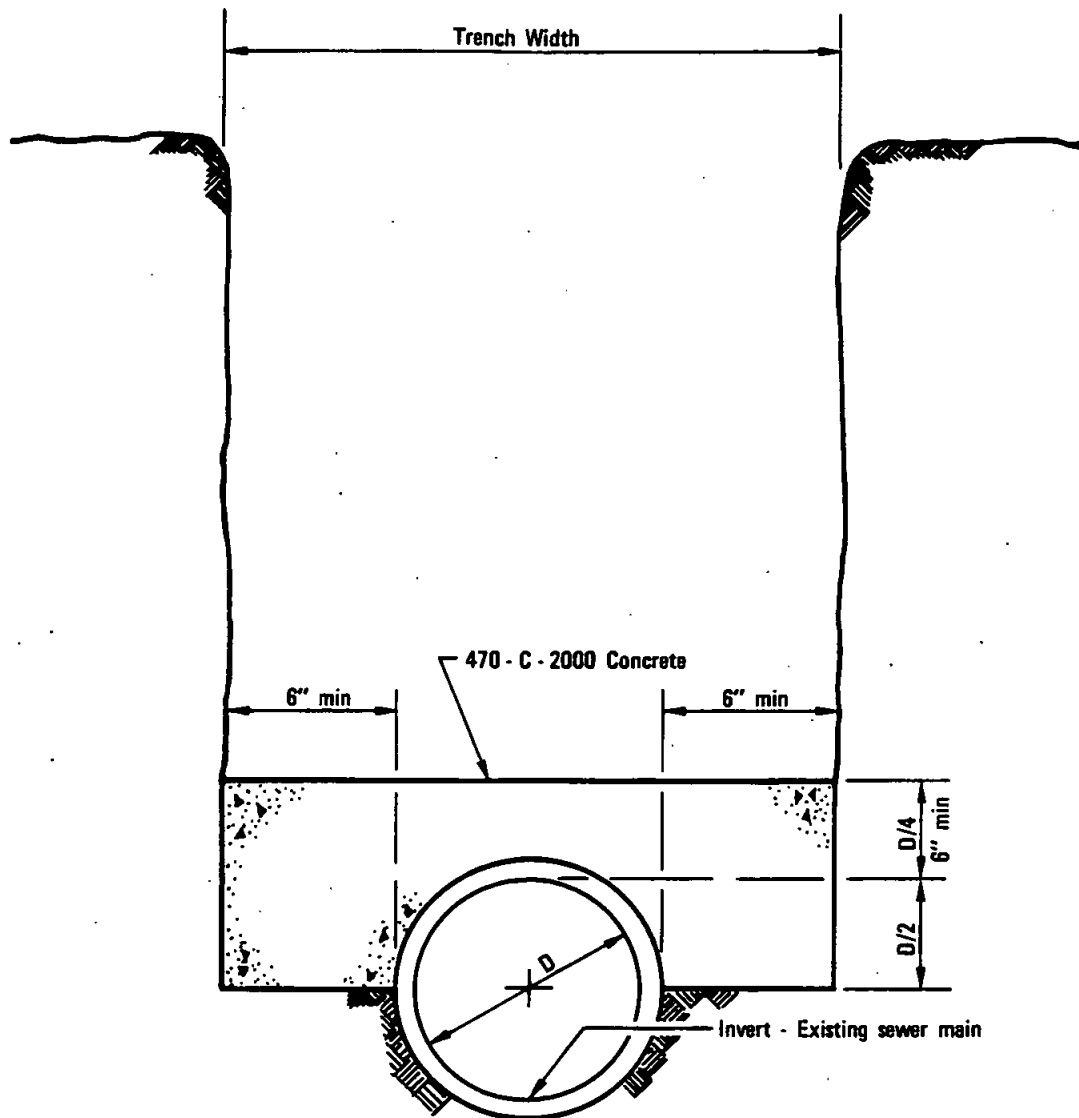
Allen A. Kuehnel Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER S-10

SAN DIEGO REGIONAL STANDARD DRAWING

CUTOFF WALL

Revision	By	Approved	Date
Type A	<i>Q</i>	<i>D.S.</i>	7-79
Chg. notes	<i>TRP</i>	<i>M.B.</i>	10-82

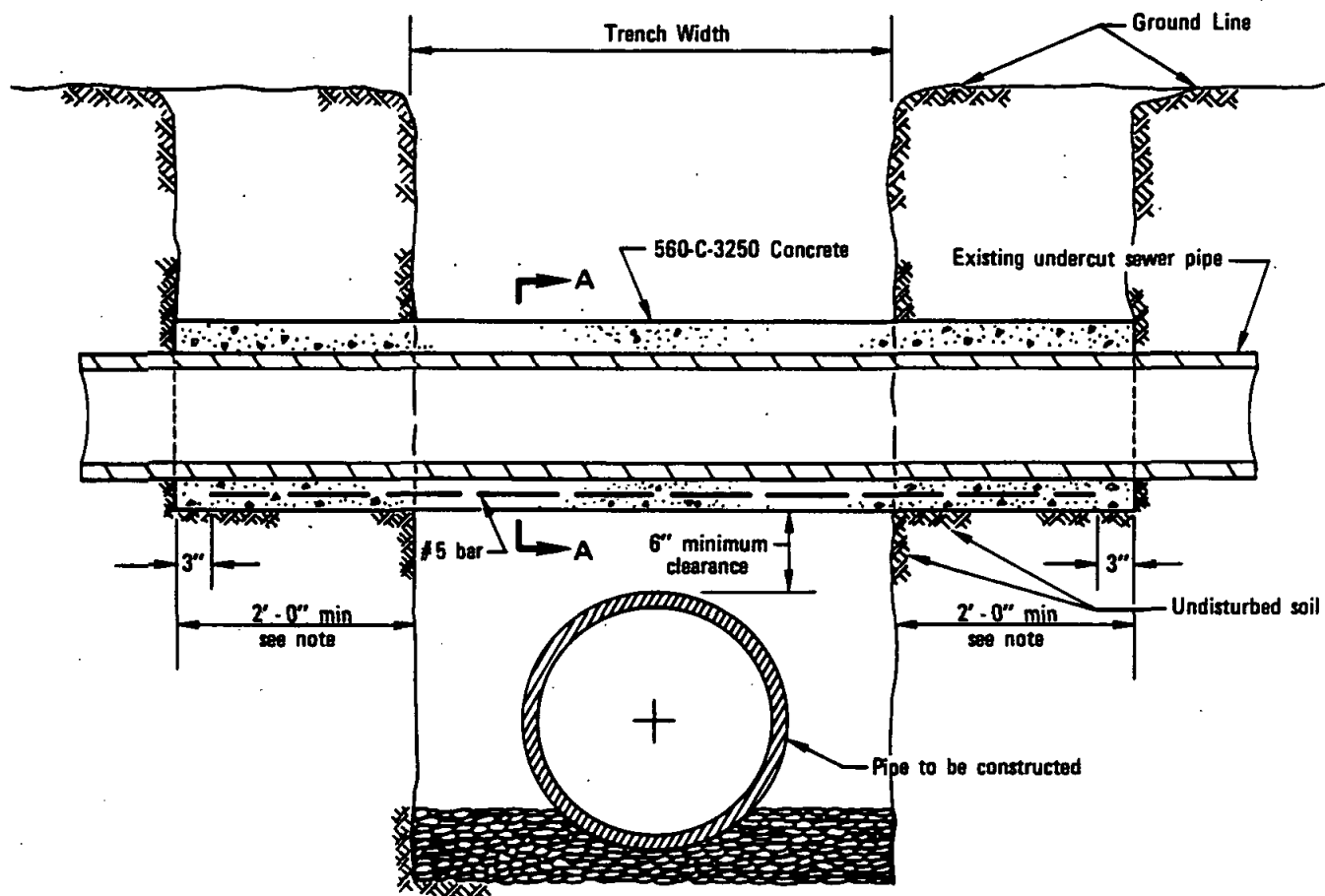


SECTION

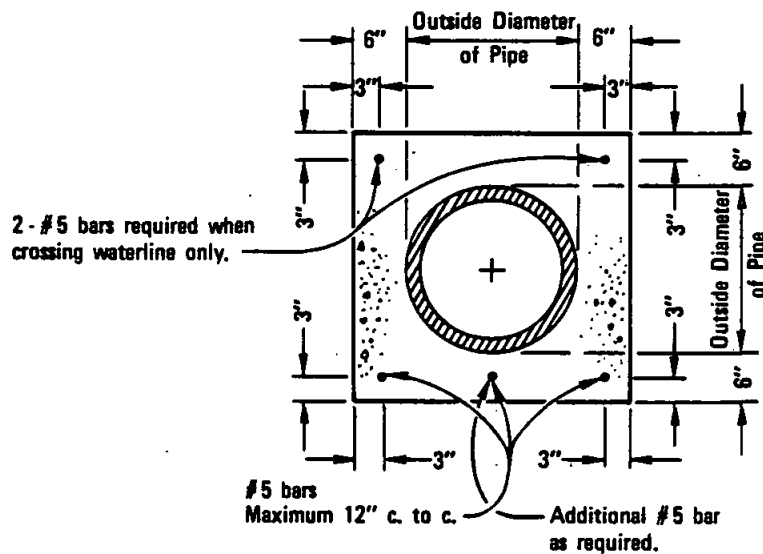
LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
						<i>Allen A. Kuehnel</i>	<i>Dec. 1975</i>
				CONCRETE PROTECTION FOR EXISTING SEWER PIPE		Coordinator R.C.E. 19807	Date
						DRAWING NUMBER	S-11



TYPICAL SECTION

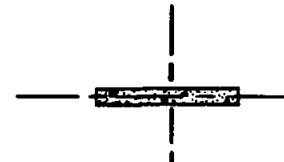


NOTE

For water line construction encasement shall extend to first joint beyond 2 feet at both sides of trench or to a distance of 4 feet, whichever is less.

SECTION A-A

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Alfred A. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

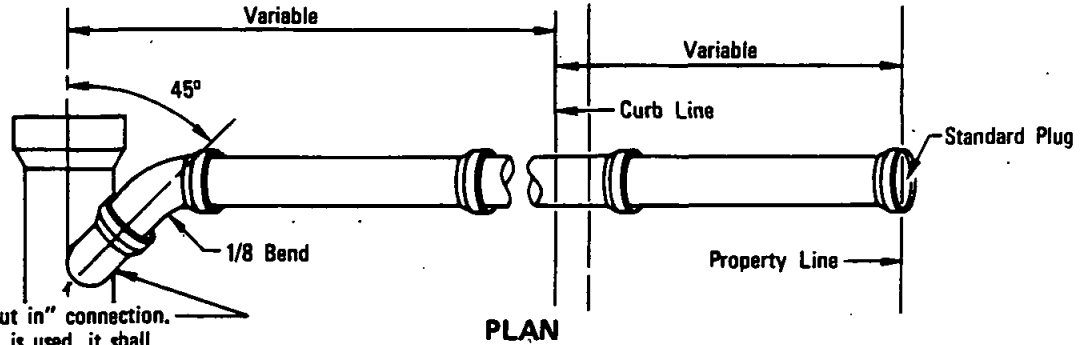
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE SUPPORT
FOR UNDERCUT SEWER PIPE

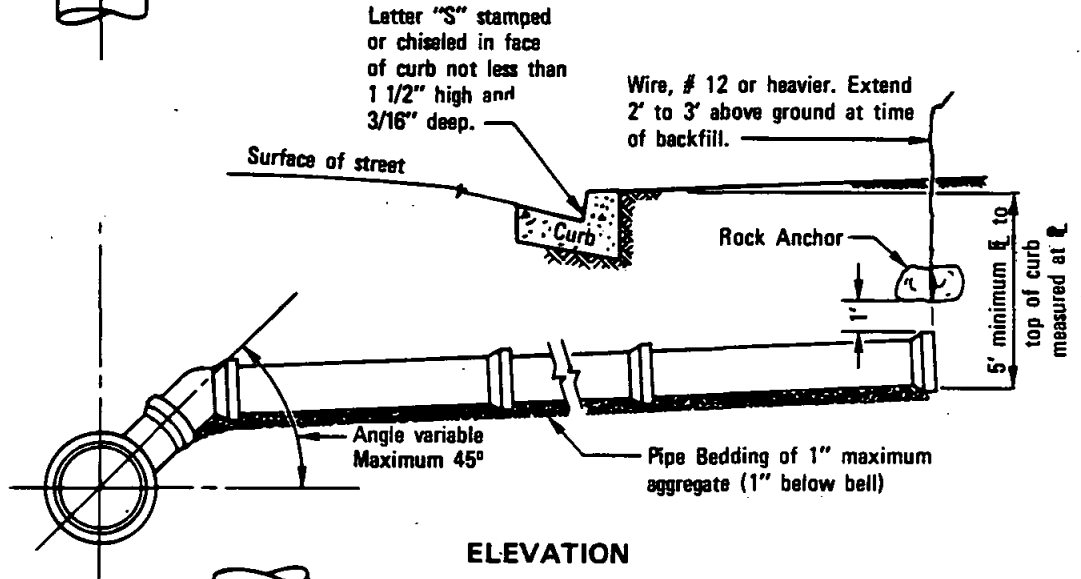
DRAWING
NUMBER S-12

Revision	By	Approved	Date
Conc.	SC	M.B.	5-86

Standard Wye, or Tee, or "Cut in" connection. Where a "Cut in" connection is used, it shall be surrounded with 4" of Class 470 - C - 2000 Concrete.

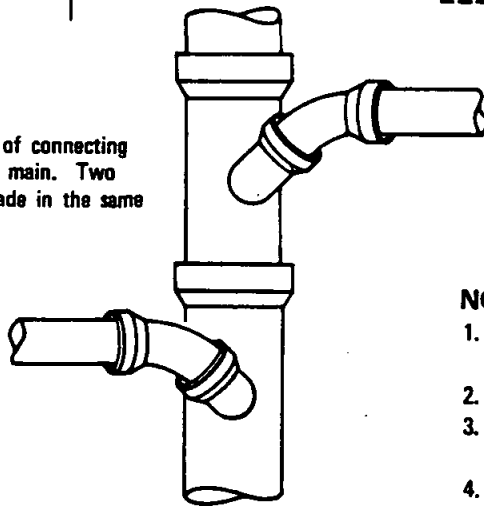


PLAN



ELEVATION

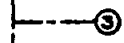
Detail showing the manner of connecting opposite laterals to a sewer main. Two connections shall not be made in the same length of pipe.



NOTES

1. In no case shall a lateral connect to the sewer main directly on top of the pipe.
2. Sewer laterals shall have a minimum slope of 2%.
3. All joints on sewer lateral pipe shall be compression type or approved solvent weld.
4. Lateral shall extend to property line unless otherwise shown on plans.

LEGEND ON PLANS



Revision	By	Approved	Date

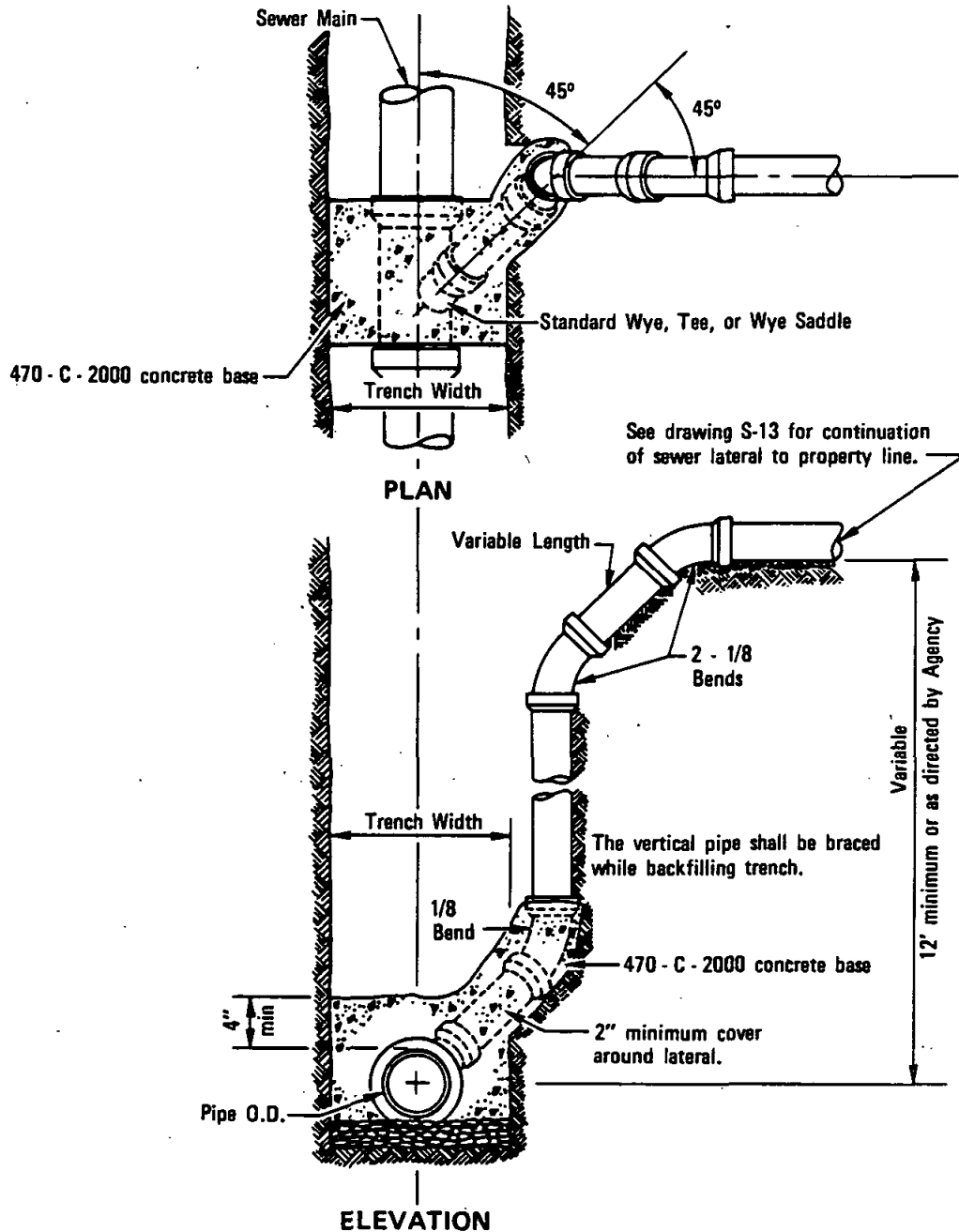
SAN DIEGO REGIONAL STANDARD DRAWING

HOUSE CONNECTION
(SEWER LATERAL)

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan A. Kuehnel *Dec. 1975*
Coordinator R.C.E. 15807 Date

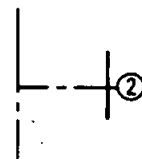
DRAWING
NUMBER S-13



NOTE

All joints on sewer lateral pipe shall be compression type or approved solvent weld.

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

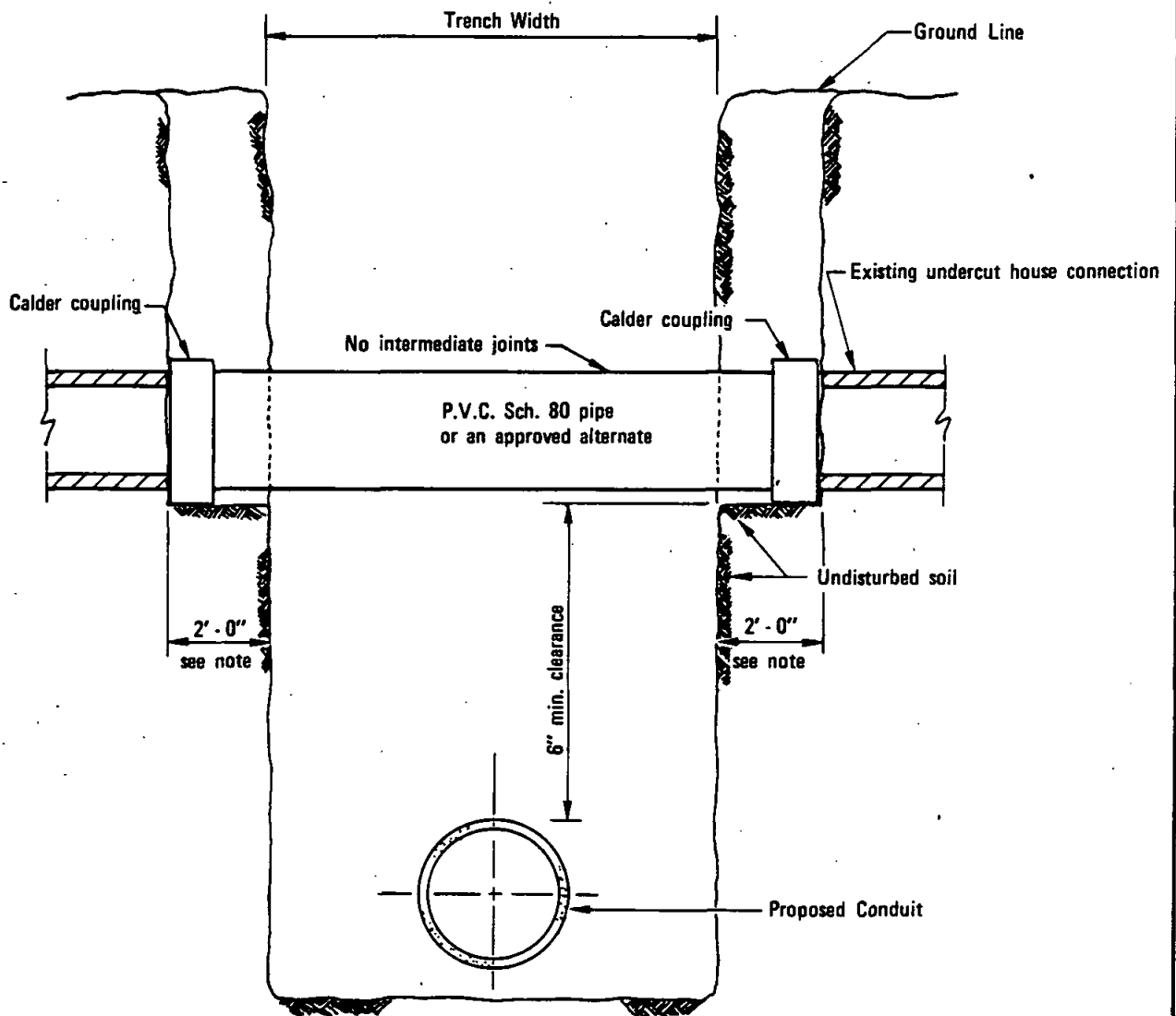
Alfred A. Kneib *Dec. 1975*
Coordinator R.C.E. 15887 Date

DRAWING
NUMBER **S-14**

SAN DIEGO REGIONAL STANDARD DRAWING

**DEEP CUT HOUSE CONNECTION
(SEWER LATERAL)**

Revision	By	Approved	Date

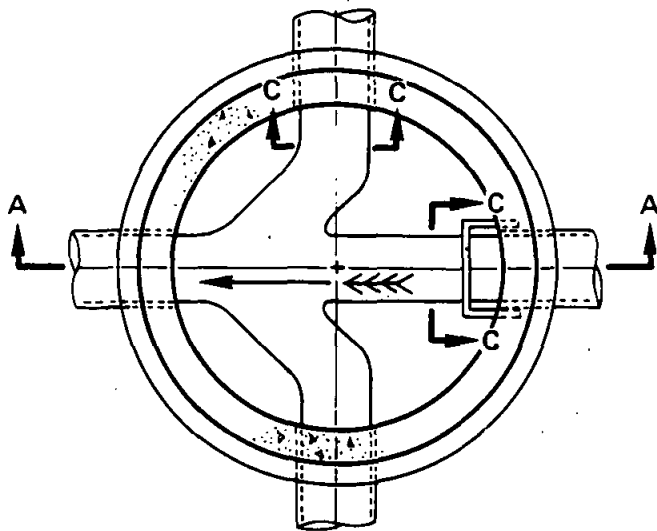


TYPICAL SECTION

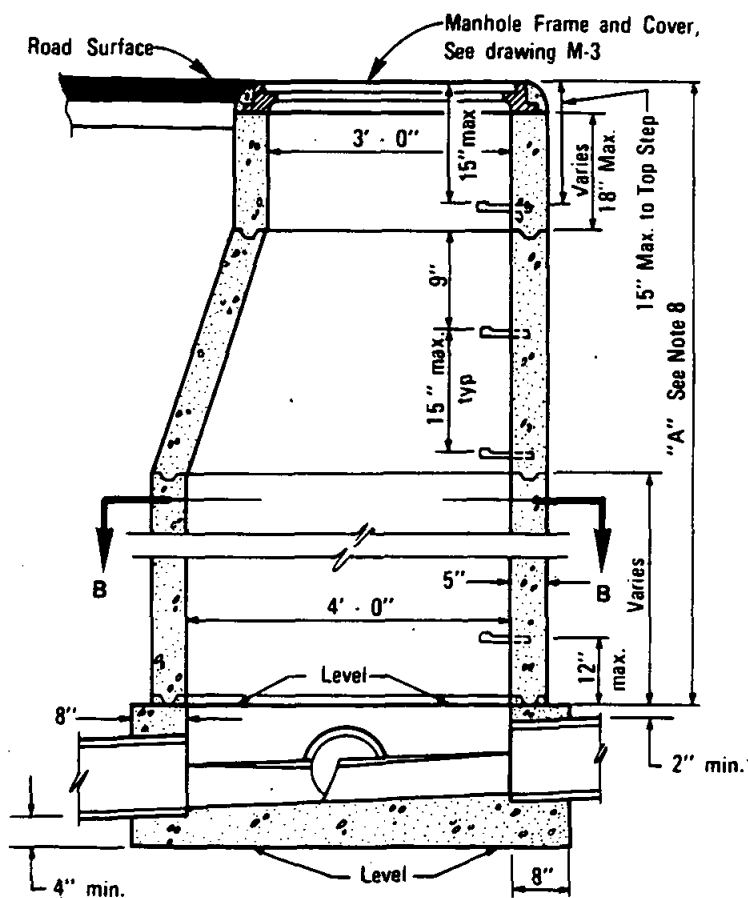
NOTE

For water line construction repair pipe shall extend to first joint beyond 2 ft. at both sides of trench or to a distance of 4 ft., whichever is less.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
						<i>Alfred A. Kershner</i>	<i>Dec. 1975</i>
				HOUSE CONNECTION SEWER REPAIR		Coordinator R.C.E. 19807	Date
						DRAWING NUMBER	S-15



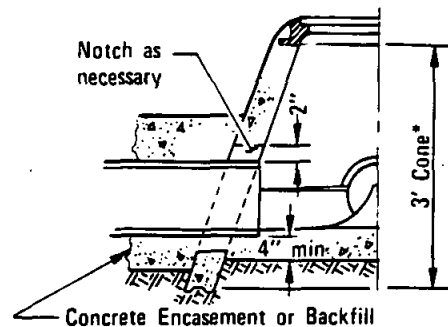
SECTION B-B



SECTION A-A

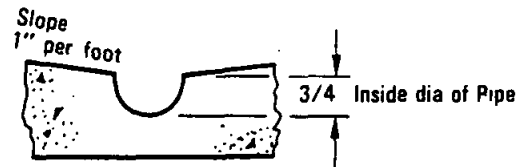
LEGEND ON PLANS

M.H. No. 2

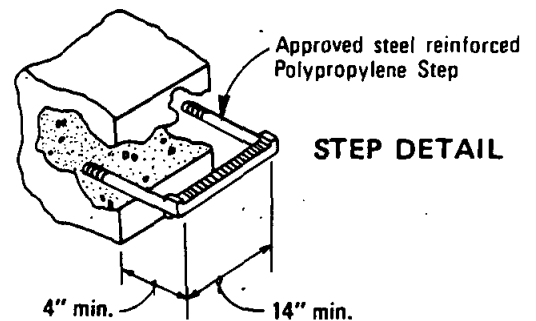


HALF SECTION SHALLOW MANHOLE

* Either Concentric or Eccentric Cone may be used.



SECTION C-C



STEP DETAIL

NOTES

1. Manhole frame and all joints shall be set in Class "C" mortar.
2. All precast components shall be manufactured in accordance with ASTM C-478 except step spacing.
3. Vertical wall of cone shall be on the upstream side of the manhole.
4. Concrete base shall be 560-C-3250.
5. Approved water stop required for plastic pipe connections.
6. Flexible pipe joints shall be required within 12" of inside face of manhole. (except for plastic pipe)
7. Precast base permitted as approved by Agency.
8. Precast sections shall be used within dimension "A" as required, in order of preference listed:
 - A. Cone (notched for pipe if dimension "A" is less than 3').
 - B. 3' to 18" of 3' diameter grade rings/and/or risers.
 - C. 4' diameter shaft variable height.
 - D. Top step to be 15" Max; from top of frame and cover.
9. All patching within manhole base shall be epoxy mortar.
10. Prior approval of precast base is required by the Agency.

Revision	Approved	Date
Notes	TRP V.R.B.	10/82
Conc., Step	M.B.	5-86
NOTES	G.H.	8-88

SAN DIEGO REGIONAL STANDARD DRAWING

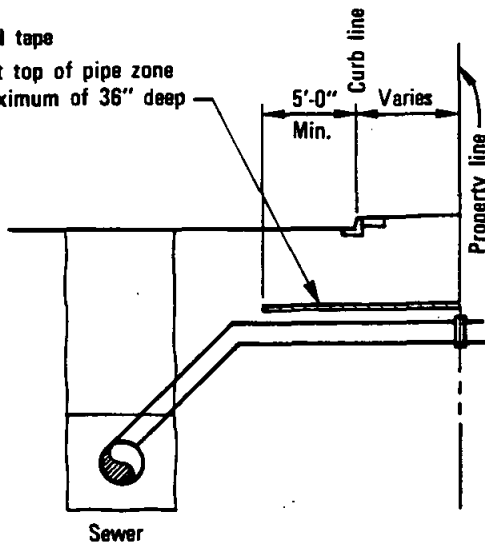
MANHOLE - 4' x 3' DIAMETER
(FOR 15" MAX. DIA. PIPE)

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

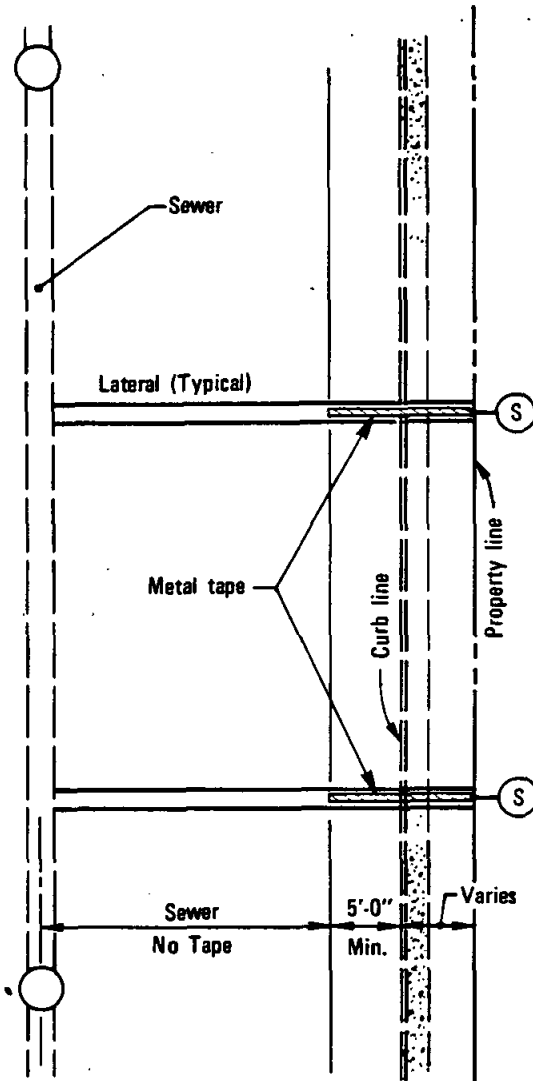
David J. Solomon July 1999
Coordinator R.C.E. 25291 Date

DRAWING
NUMBER S-17

6" Metal tape
Install at top of pipe zone
or a maximum of 36" deep



SECTION



PLAN

Revision	By	Approved	Date

SAN DIEGO REGIONAL STANDARD DRAWING

METALLIC TAPE LOCATOR
FOR NON-METALLIC SEWER PIPE

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

M. B. ... 4-25-86
Coordinator R.C.E. C21133 Date

DRAWING
NUMBER S-19

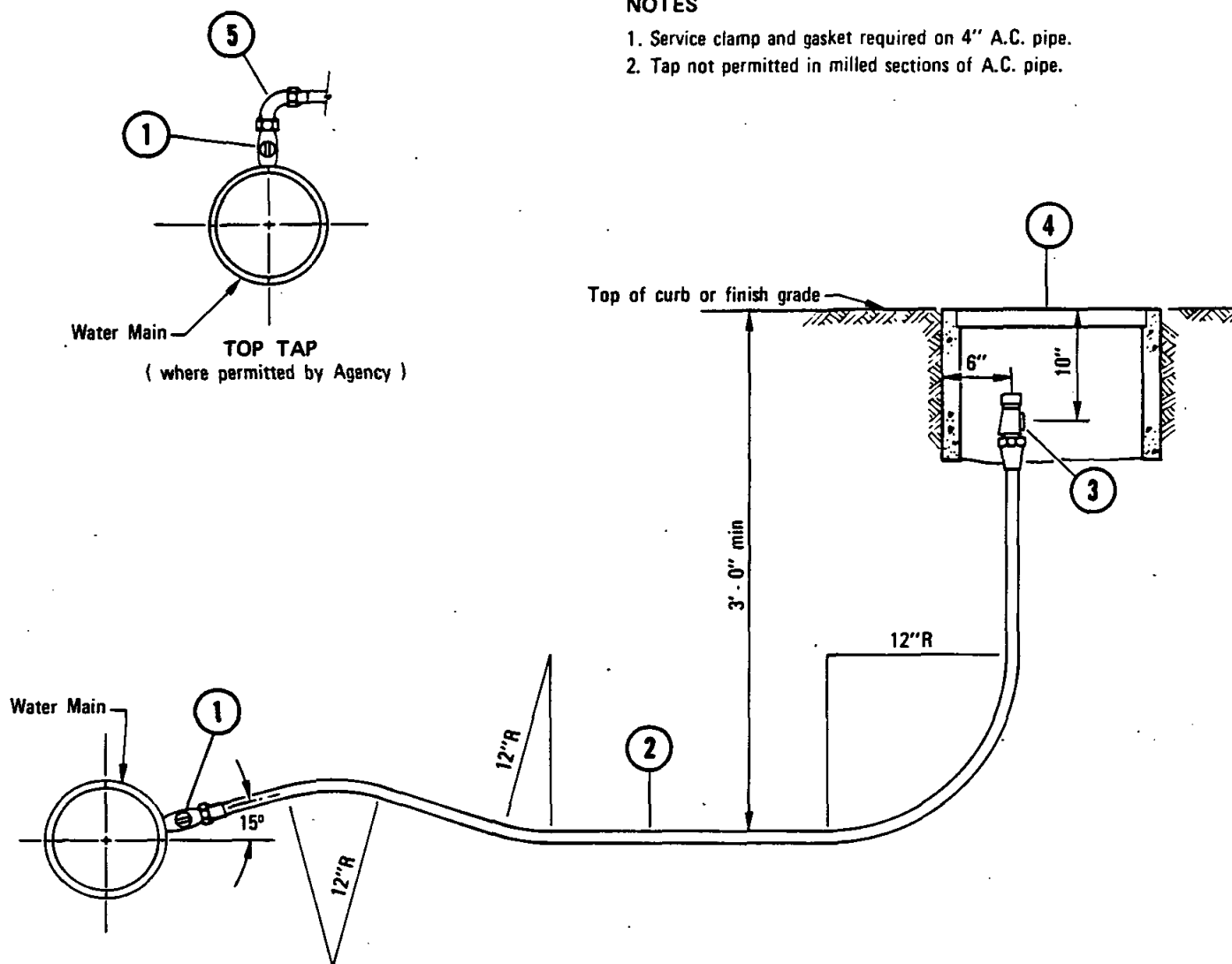
WATER SYSTEMS

WATER SYSTEMS

W

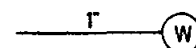
NOTES

1. Service clamp and gasket required on 4" A.C. pipe.
2. Tap not permitted in milled sections of A.C. pipe.



1. Bronze Corporation Stop (installed with key on side and open tap) and Adaptor as required by Agency.
Note: On steel mains use clamp or weld on coupling as required by Agency.
Install insulating bushing as required by Agency.
2. Copper Tubing or Plastic Pipe (no intermediate joints permitted without approval of the Agency).
3. Bronze Angle Service Stop with Locking Device and Meter Coupling attached.
4. Meter Box (see Standard Drawing W-15 for location).
5. 90° Ell

LEGEND ON PLANS



Revision	By	Approved	Date
Notes	SC	D.S.	7-79

SAN DIEGO REGIONAL STANDARD DRAWING

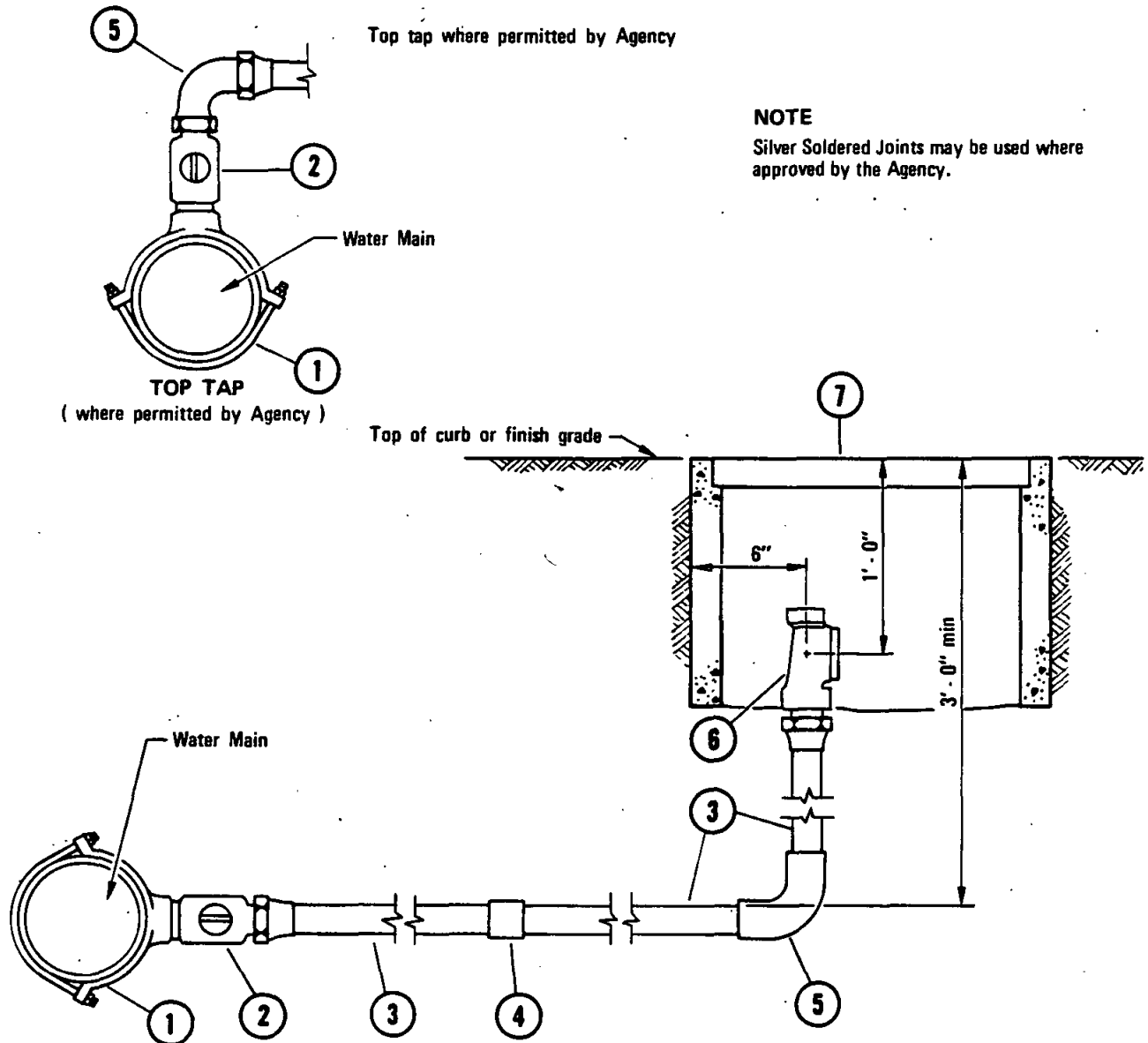
1" WATER SERVICE

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen Q. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER

W-1



NOTE

Silver Soldered Joints may be used where approved by the Agency.

- 1 Bronze Service Clamp (double strap). On steel mains use clamp or weld on coupling as required by Agency. Install insulating bushing as required by Agency.
- 2 Bronze Corporation Stop (installed with key on side and open tap).
- 3 Copper Tubing or Plastic Pipe except where otherwise specified by the Agency.
- 4 Coupling as required by Agency when service is 20' or longer, except on Polyethylene Pipe.
- 5 90° Ell
- 6 Bronze Angle Service Stop with Locking Device and adaptable to 1 1/2" and 2" Meter Flange.
- 7 Meter Box (see Standard Drawing W-15 for location).

LEGEND ON PLANS

2" (W)

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen O. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

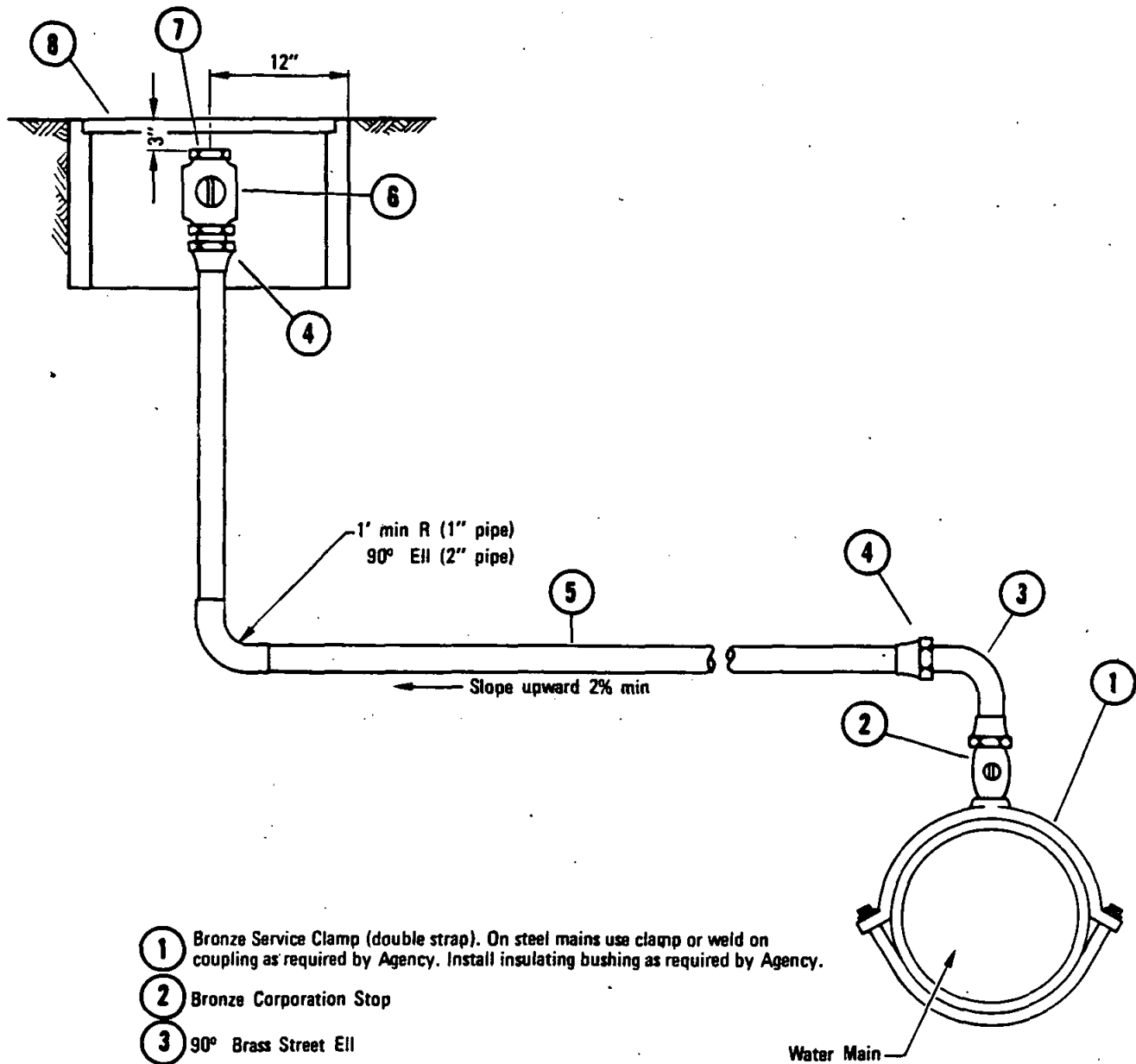
SAN DIEGO REGIONAL STANDARD DRAWING

1 1/2" AND 2" WATER SERVICES

DRAWING
NUMBER

W-2

Revision	By	Approved	Date
Notes	<i>SC</i>	<i>D.S.</i>	7-79



- 1 Bronze Service Clamp (double strap). On steel mains use clamp or weld on coupling as required by Agency. Install insulating bushing as required by Agency.
- 2 Bronze Corporation Stop
- 3 90° Brass Street Ell
- 4 Pipe to Tubing Adaptor
- 5 Copper Tubing
- 6 Ball Valve
- 7 Brass Plug
- 8 Meter Box (see Standard Drawing W-15 for location).

LEGEND ON PLANS



Revision	By	Approved	Date
Notes	SC	D.S.	7-77

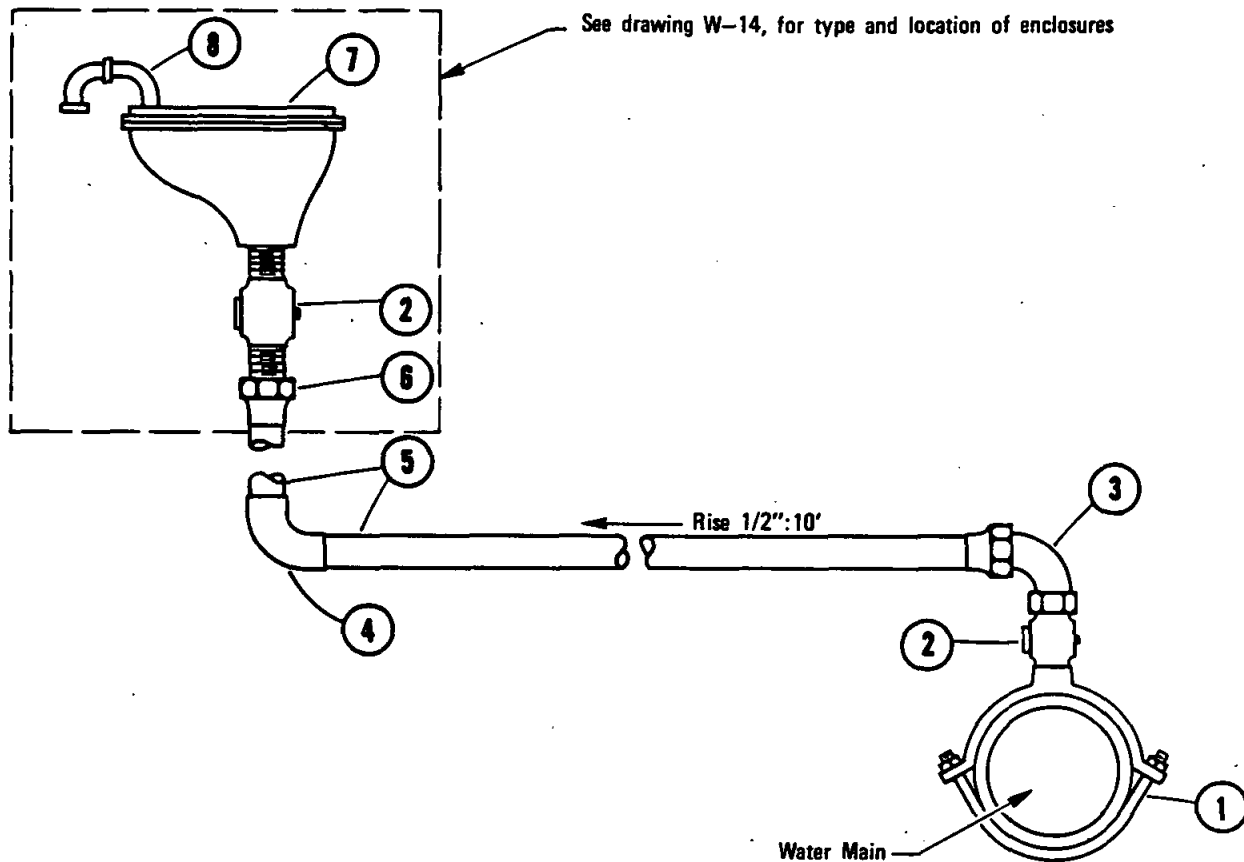
SAN DIEGO REGIONAL STANDARD DRAWING

1" AND 2" MANUAL AIR RELEASES

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alfred O. Kuehn *Dec. 1975*
Coordinator R.C.E. 19887 Date

DRAWING
NUMBER **W-3**



- ① Double Strap Bronze Service Clamp. On steel mains use clamp or weld on coupling as required by Agency. Install insulating bushing as required by Agency.
- ② Corporation Stop
- ③ Pipe x Tubing 90° Ell
- ④ 90° Sweat Ell
- ⑤ Copper Tubing
- ⑥ Female Adaptor
- ⑦ Air and Vacuum Valve
- ⑧ 2-90° Ells (not required in above metal ground enclosures).

LEGEND ON PLANS

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan A. Kuehnel Dec. 1975
Coordinator R.C.E. 19807 Date

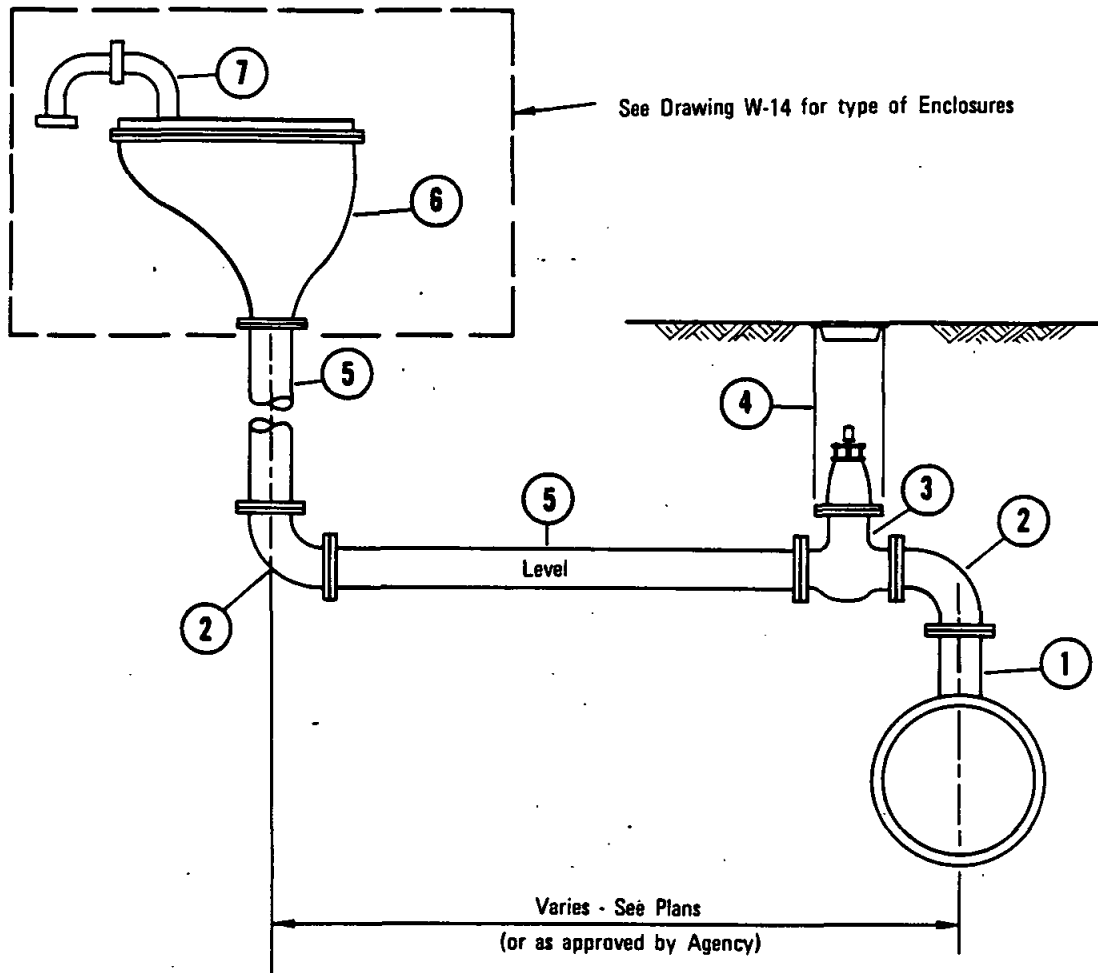
DRAWING
NUMBER

W-4

SAN DIEGO REGIONAL STANDARD DRAWING

1" AND 2" AIR AND VACUUM VALVES

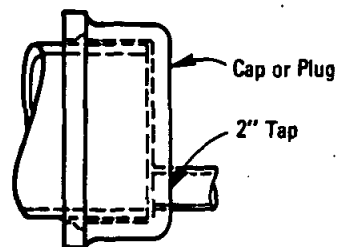
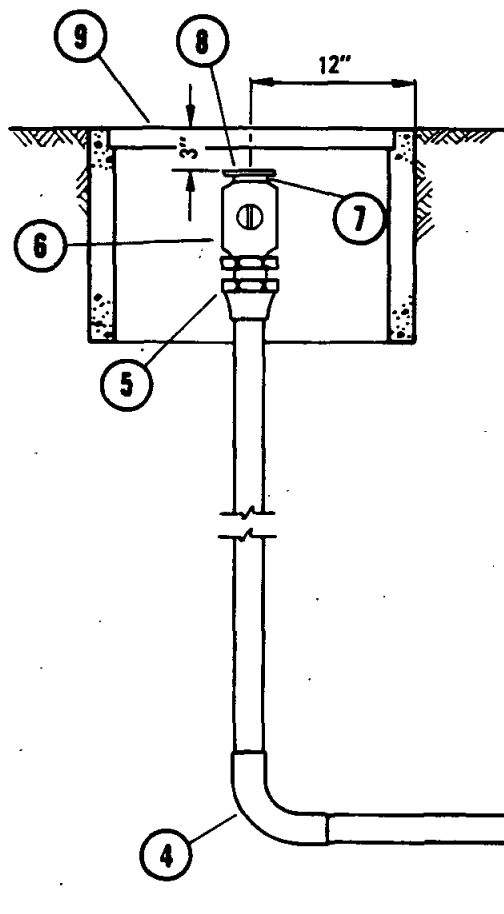
Revision	By	Approved	Date
Notes	3	O.S.	279



- ① Flanged Outlet, Cement Lined and Coated Steel
- ② Flanged, 90° Ell, Cement Lined and Coated Steel
- ③ Valve
- ④ Valve Well and Cap (see Standard Drawing W-12)
- ⑤ Steel Pipe, Cement Lined and Coated
- ⑥ Air and Vacuum Valve
- ⑦ 2 90° Ells (not required with above ground metal enclosures)

LEGEND ON PLANS

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
						<i>Allen A. Kuehn</i>	<i>Dec. 1975</i>
				4" AND 6" AIR AND VACUUM VALVES		Coordinator R.C.E. 19807	Date
				DRAWING NUMBER		W-5	



END OF MAIN DETAIL

- ① Bronze Service Clamp (double strap). On steel mains use clamp or weld on coupling as required by Agency. Install insulating bushing as required by Agency.
- ② Bronze Corporation Stop (installed with key on side and open tap) and adaptor as required by Agency.
- ③ Copper Tubing
- ④ 90° Ell
- ⑤ Pipe to Tubing Adaptor
- ⑥ Ball Valve
- ⑦ Brass 2" Iron Pipe Thread x 2 1/2" Hose Pipe Thread Adaptor.
- ⑧ 2 1/2" Hose Cap with chain, Brass.
- ⑨ Meter Box (see Standard Drawing W-15 for location).

LEGEND ON PLANS

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan S. Kuehn *Dec. 1975*
Coordinator R.C.E. 19807 Date

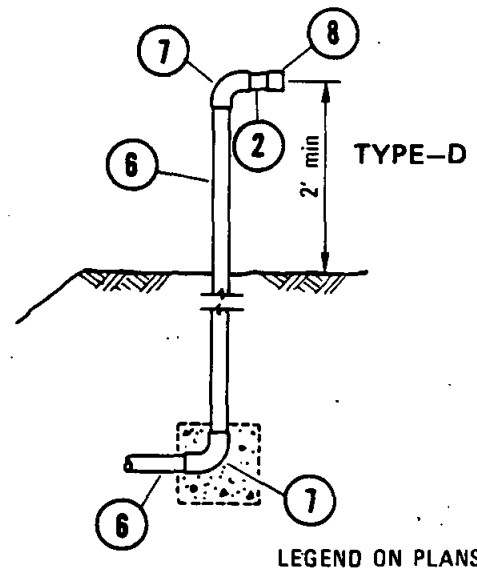
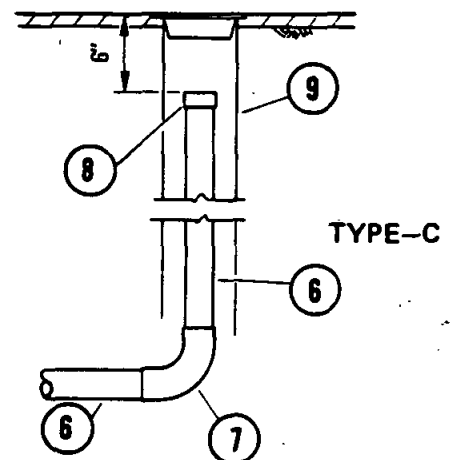
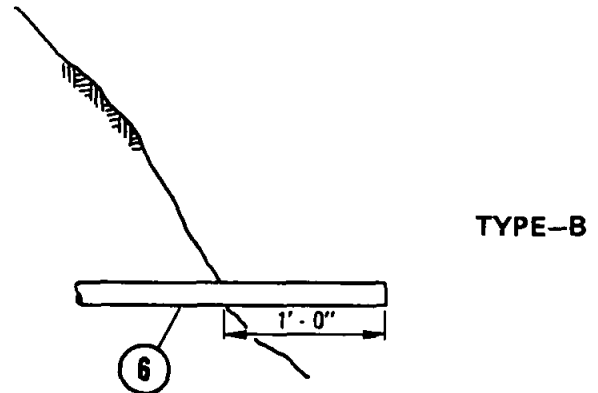
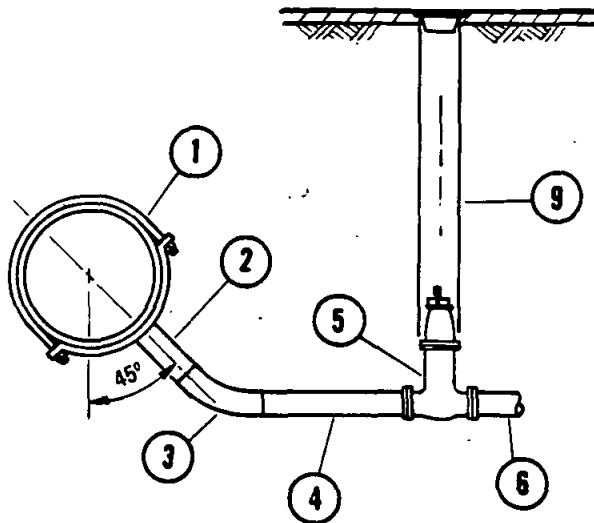
DRAWING
NUMBER

W-6

SAN DIEGO REGIONAL STANDARD DRAWING

2" BLOW-OFF ASSEMBLY - TYPE A

Revision	By	Approved	Date
Detail	<i>JS</i>	<i>D.S.</i>	7-79



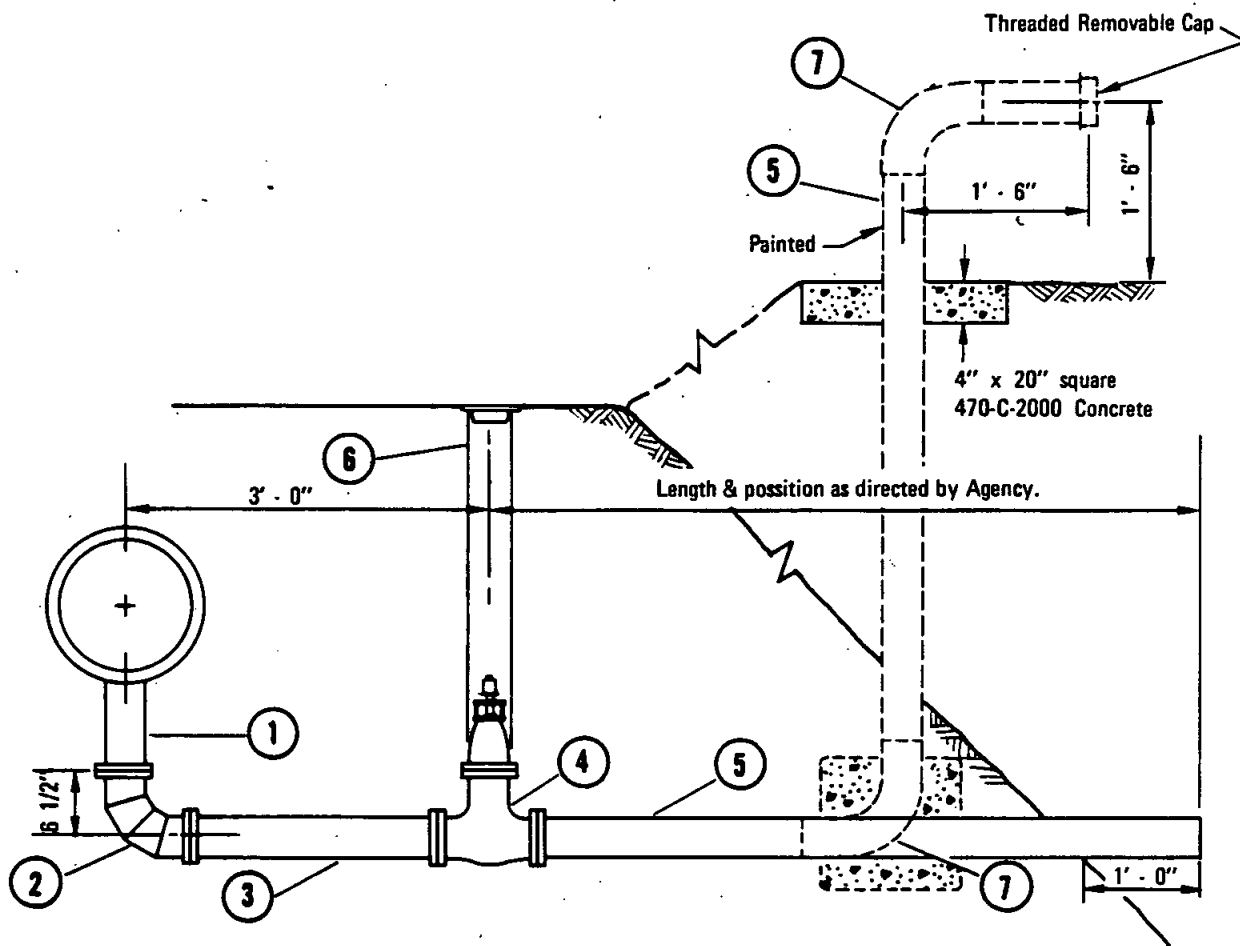
- 1 Bronze Service Clamp (double strap) or Pretapped Coupling. On steel mains use clamp or weld on coupling as required by Agency. Install insulating bushing as required by Agency.
- 2 2" Nipple (2" x 3")
- 3 45° Ell
- 4 2" Nipple (2" x 6")
- 5 2" Valve
- 6 2" Pipe
- 7 90° Ell
- 8 2" Threaded Cap
- 9 Valve Well Installation, See Standard Drawing W-12

NOTES

1. Type of installation and materials to be specified by Agency.
2. See Standard Drawing W-6 for end of main detail.

LEGEND ON PLANS

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Notes	8	RS	7-79			<i>Allen G. Kuehn</i> Dec. 1975 Coordinator R.C.E. 19807 Date	
				2" BLOW-OFF ASSEMBLIES TYPES B, C AND D		DRAWING NUMBER W-7	



- ① Flanged Tee or Welded Saddle.
- ② Short Radius 90° Flanged Bend, Cement Lined and Coated.
- ③ Steel Pipe, Cement Lined and Coated.
- ④ Flanged Valve.
- ⑤ Steel Pipe (or P. V. C. Schedule 80 Pipe Where Permitted by Agency).
- ⑥ Valve Well (See Standard Drawing W-12).
- ⑦ 90° Bend (Same Material as Item 5).

LEGEND ON PLANS



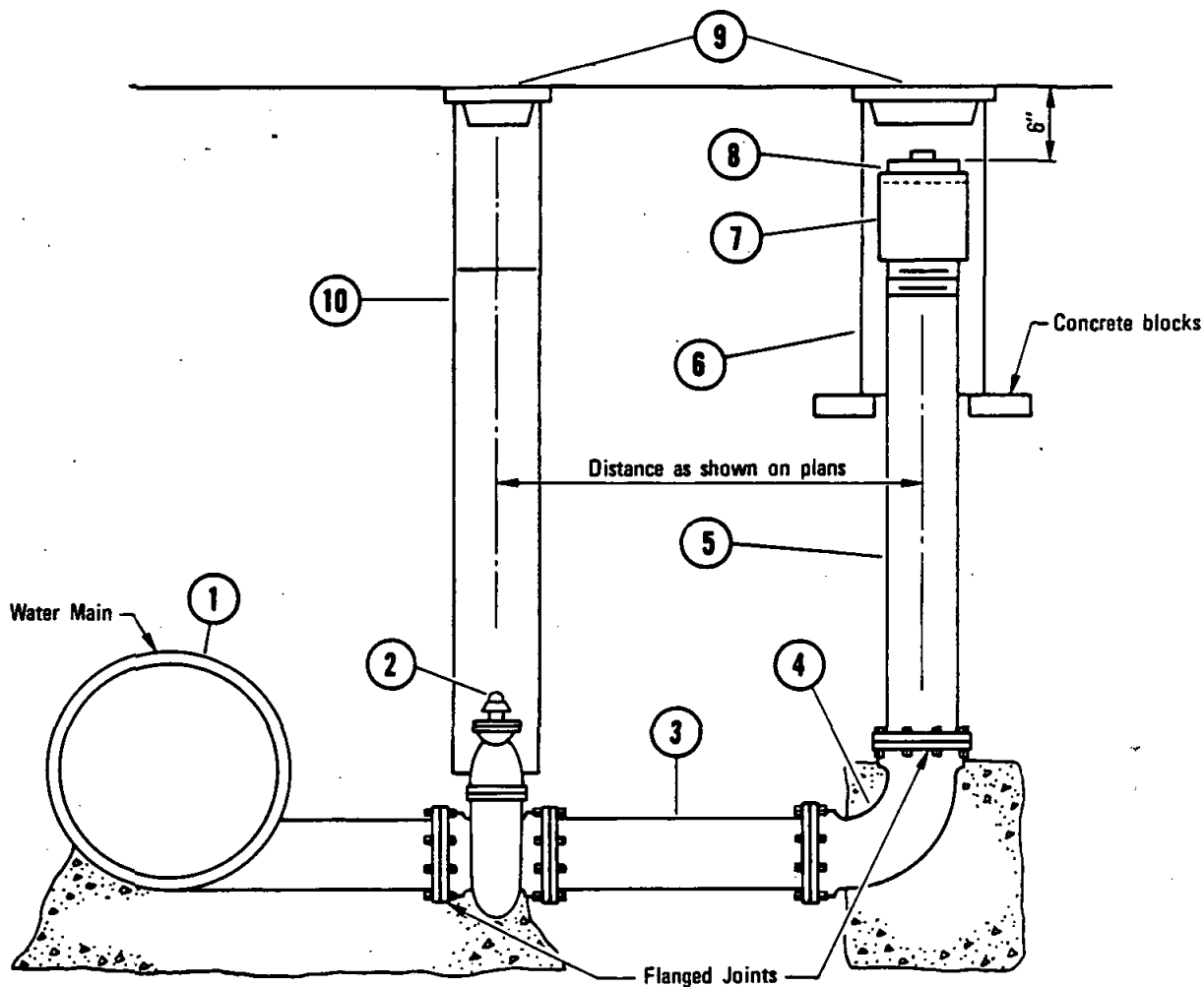
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Allard O. Kershner Dec. 1975
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

4" AND 6" BLOW-OFF ASSEMBLIES TYPE A

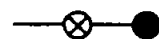
DRAWING
NUMBER **W-8**

Revision	By	Approved	Date



- ① Main Size x Flanged Outlet, cement lined and coated.
- ② Flanged Gate Valve (F x RT for A.C. Pipe).
- ③ Cast Iron Pipe or A.C. Pipe (6 1/2' min for A.C. Pipe).
- ④ F x F 90° Bend (F x RT for A.C. Pipe).
- ⑤ Galvanized Iron Pipe, threaded and flanged.
- ⑥ 10" Class 200 A.C. Pipe Gate Well.
- ⑦ Galvanized Iron Coupling, threaded.
- ⑧ Galvanized Iron Plug.
- ⑨ Gate Well Cap with 4" skirt.
- ⑩ Valve Well (see Standard Drawing W-12).

LEGEND ON PLANS



Revision	By	Approved	Date

SAN DIEGO REGIONAL STANDARD DRAWING

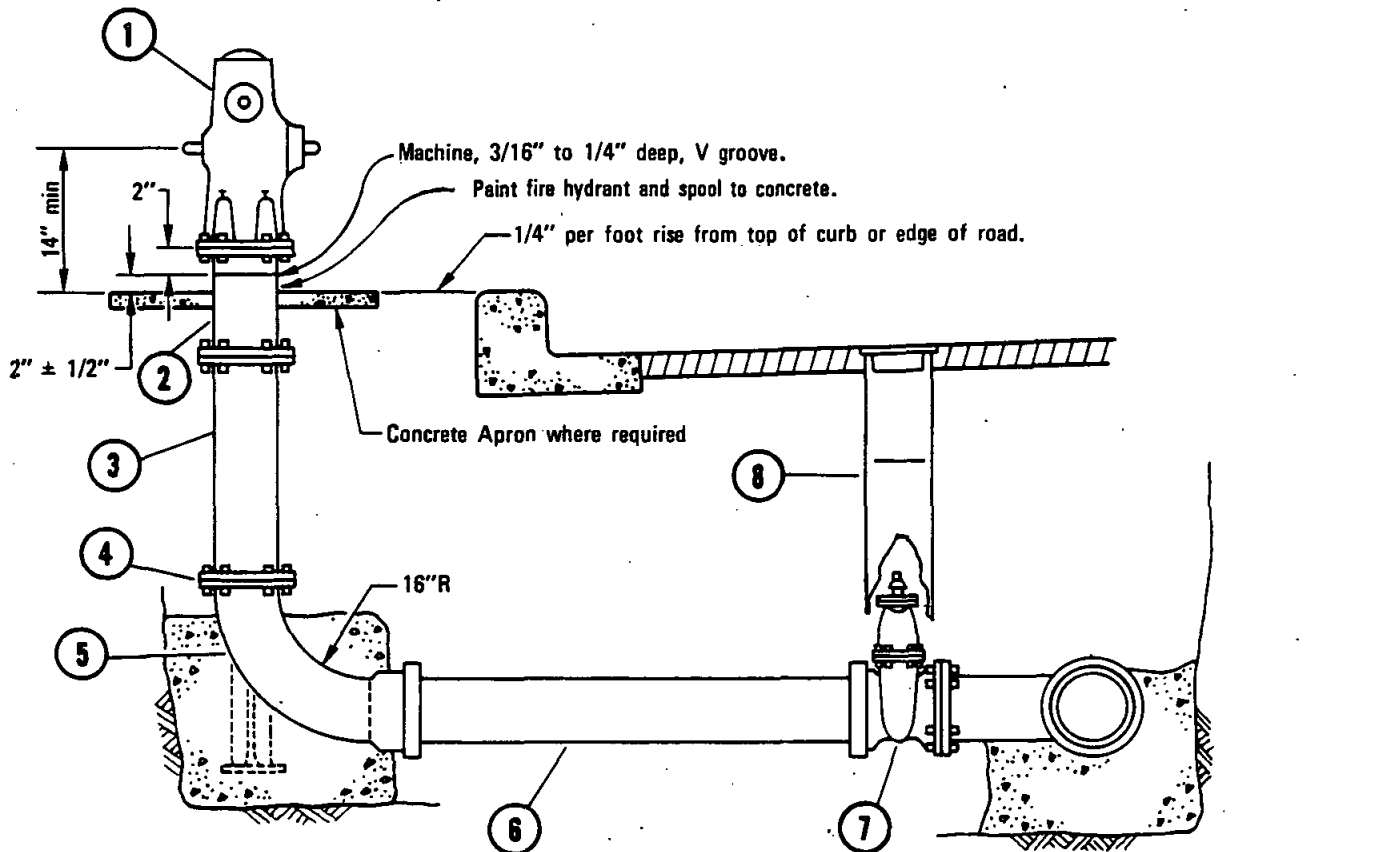
**4" AND 6" BLOW-OFF ASSEMBLIES
TYPE B**

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan A. Kuehn *Dec. 1975*
Coordinator R.C.E. 19807 Date

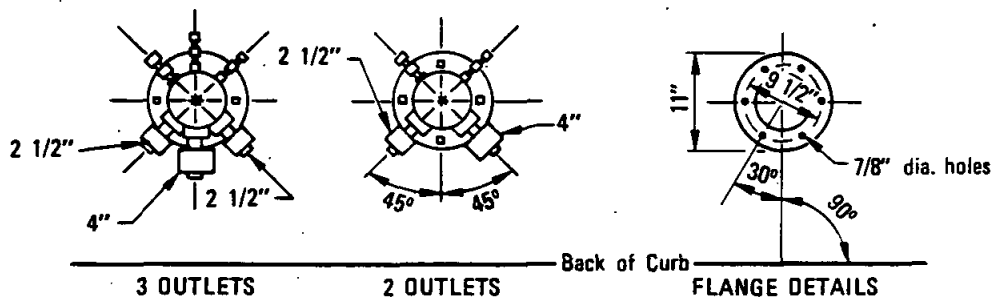
DRAWING
NUMBER

W-9



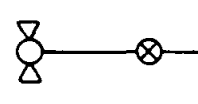
NOTE

Items 2, 3 & 6 may be cement lined and coated flanged steel pipe where permitted by Agency.



- ① Fire Hydrant
- ② 12" long Extension Spool
- ③ Extension Spool
- ④ 3/4"x 3" Hex. Head Machine Bolts and Nuts, Typical.
- ⑤ Hydrant Ell
- ⑥ Asbestos Cement Pipe
- ⑦ Valve
- ⑧ Valve Well Installation (see Standard Drawing W-12)

LEGEND ON PLANS



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

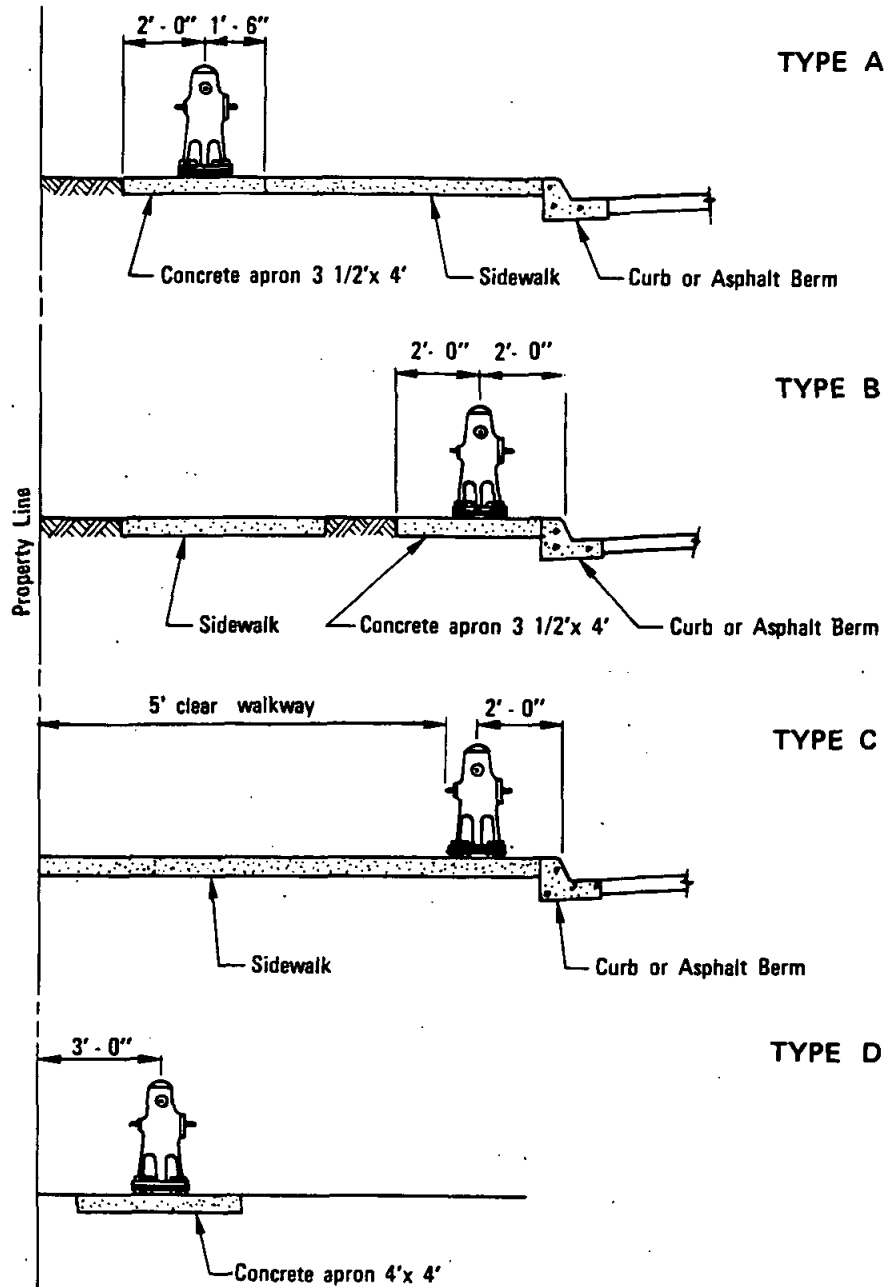
Allard A. Kuehnel Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **W-10**

SAN DIEGO REGIONAL STANDARD DRAWING

6" FIRE HYDRANT

Revision	By	Approved	Date
Notes	SP	LD	5/92



NOTES:

1. Apron, where required by Agency, shall be 4" thick (520-C-2500) concrete.
2. When distance from hydrant to the top or toe of slope is less than 2'-0", special hydrant installation will be required by Agency.
3. Where hydrant is not protected by a vertical face of curb protective posts are required. See Standard Drawing W-16 for details.
4. The centerline of the hydrant shall be located 5' minimum from curb return and minimum 3'-6" from driveway, pedestrian ramp or any fixed obstruction.

Revision	By	Approved	Date
Notes	MP	M.B.	10-82
Note 4	MP	G.H.	9-88

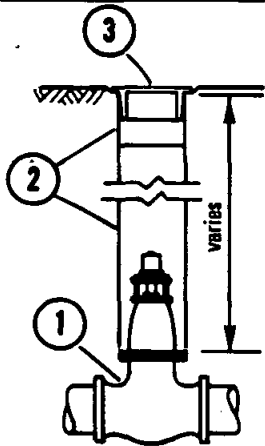
SAN DIEGO REGIONAL STANDARD DRAWING

FIRE HYDRANT LOCATIONS

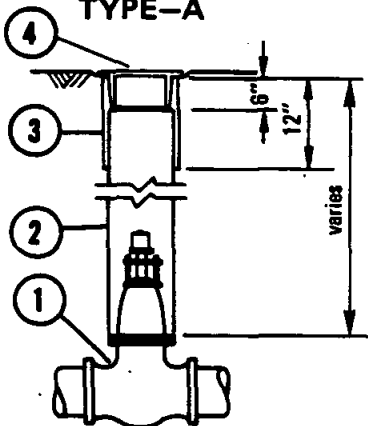
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen A. Kunkel Dec. 1975
Coordinator R.C.E. 19807 Date

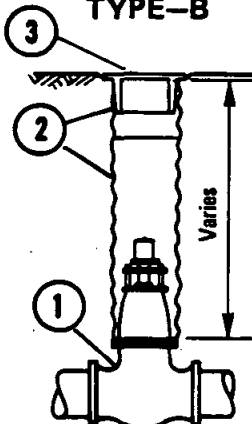
DRAWING
NUMBER **W-11**



TYPE-A



TYPE-B



TYPE-C

- ① Valve
- ② 8" Asbestos Cement Pipe, Class 150
- ③ Valve Well Cap per Detail

NOTES

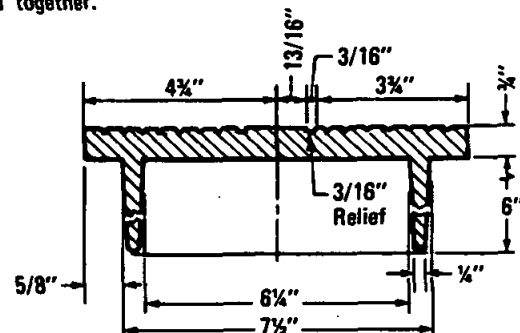
1. Provide clamp or felt to hold pipe sections (item 2) together during backfill.
2. Pipe shall be saw or machine cut on each end, no beveled sections will be permitted.
3. The final adjustment to finish grade may be made with an asbestos cement ring of 1" minimum height.

- ① Valve
- ② 8" O.D. Steel Pipe, or 10 Ga. Asphalt Coated and Lined.
- ③ 8 5/8" O.D. Steel Pipe or 10 Ga. Asphalt Coated and Lined.
- ④ Valve Well Cap per Detail

- ① Valve
- ② 8" Corrugated Steel Pipe, 16 Gage
- ③ Valve Well Cap per Detail

NOTE

Pipe sections shall be tack welded together.



CAST IRON
VALVE WELL CAP
DETAIL

NOTES

1. Clearance around cover shall permit lifting by hand without damage to pipe. Maximum clearance shall be 3/16".
2. See Standard Drawing W-13 for valve stem extension, when required by Agency.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen D. Kishland Dec. 1975
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

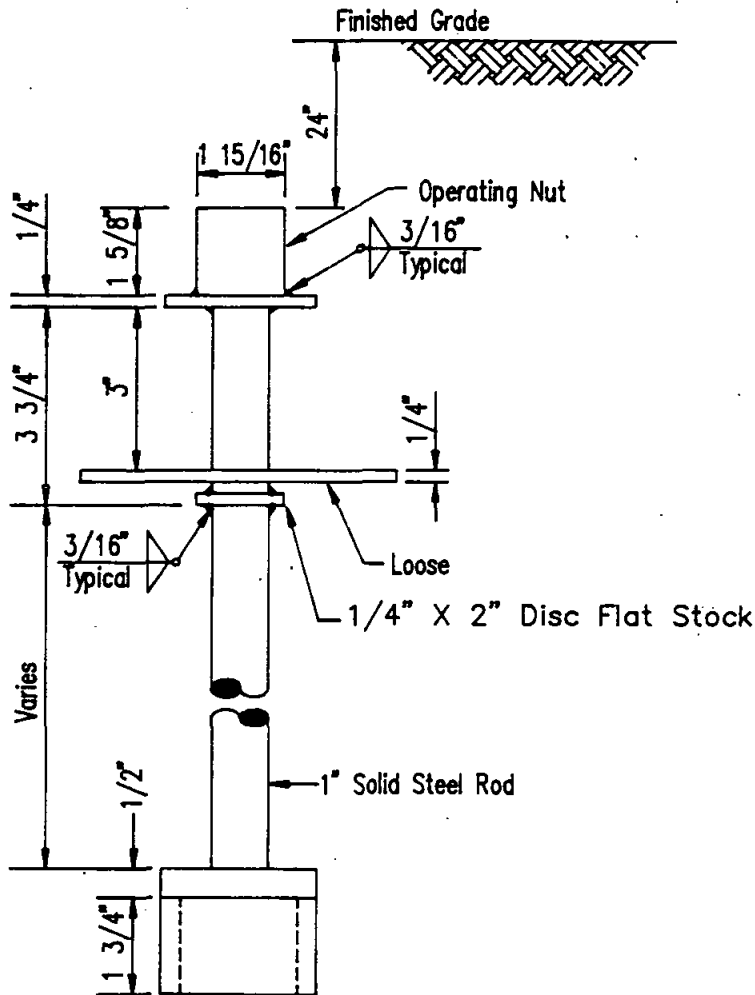
VALVE WELL INSTALLATION

DRAWING
NUMBER

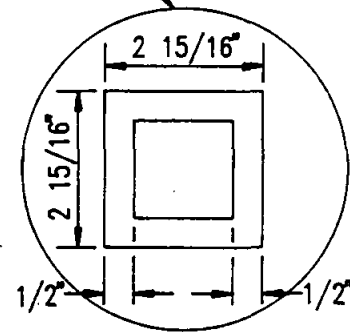
W-12

Revision	By	Approved	Date
Cap Det.	E	M. B.	5-86

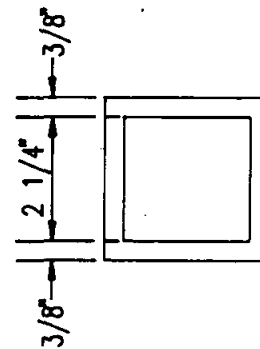
Diameter varies. Make 1/4" less than I.D. of can.



ELEVATION



TOP VIEW

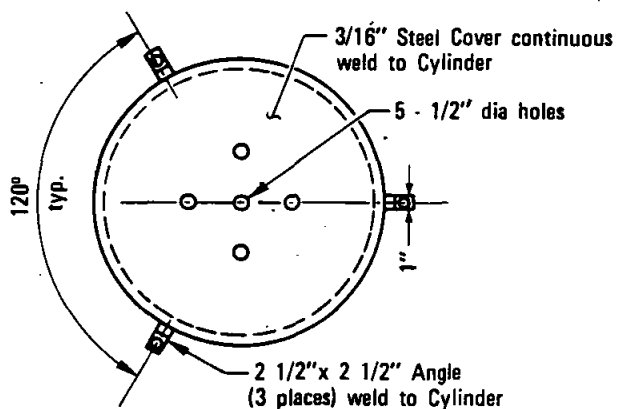


BOTTOM VIEW

NOTES:

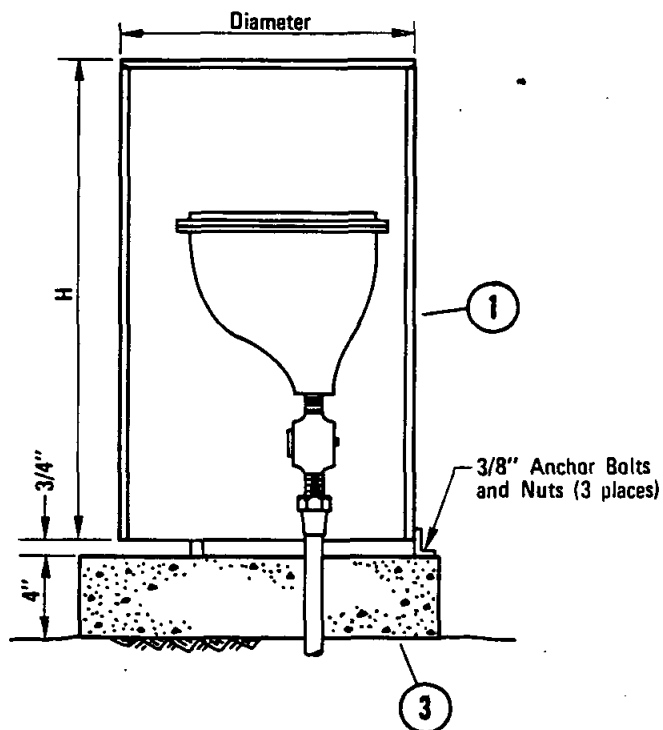
1. Extension to be used when top of operating nut is 5 feet or more below finish grade.
2. Paint all finished surfaces with asphalt varnish.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
				VALVE STEM EXTENSION		<i>Henry B. Sin</i> 5-11-00 Chairman RCE 25902 Date
						DRAWING NUMBER W-13

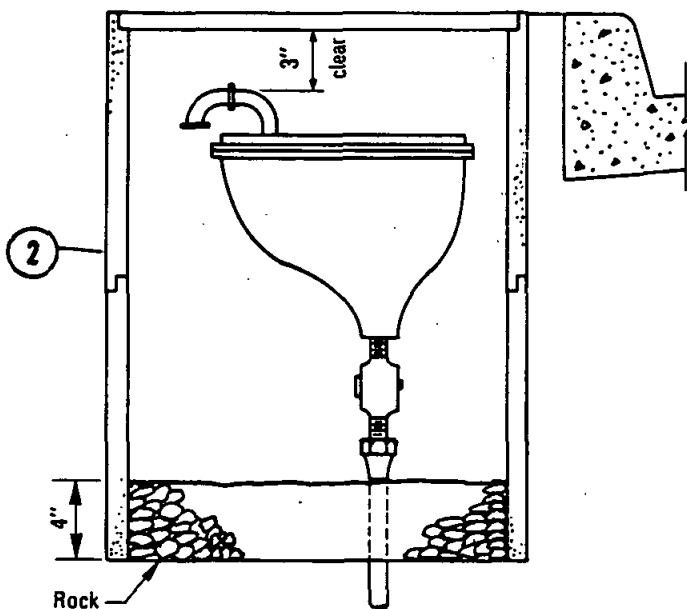


PLAN

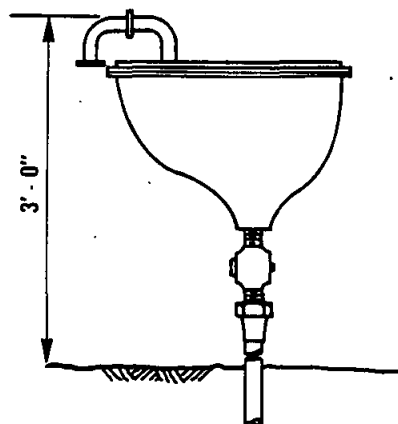
Valve Size	Dia	H
1" & 2"	14"	24"
4"	14"	30"
6"	16"	36"



TYPE A



TYPE B



TYPE C

- 1 Steel enclosure, paint as specified by Agency.
- 2 Meter box, see Standard Drawing W-15 for location.
- 3 2' x 2' pad, 470 - C - 2000 Concrete

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

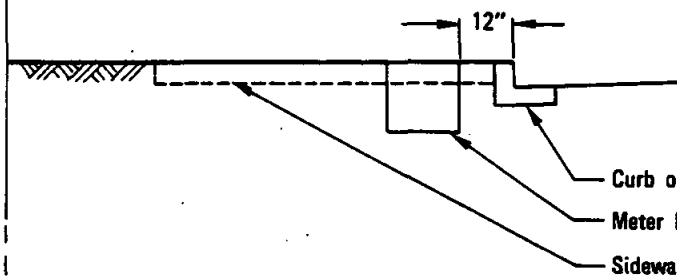
Allen O. Kerschbaum Dec. 1975
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

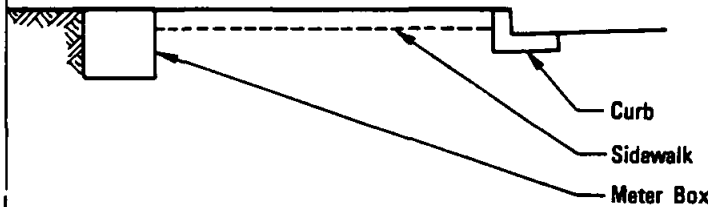
AIR AND VACUUM VALVE ENCLOSURES

DRAWING
NUMBER W-14

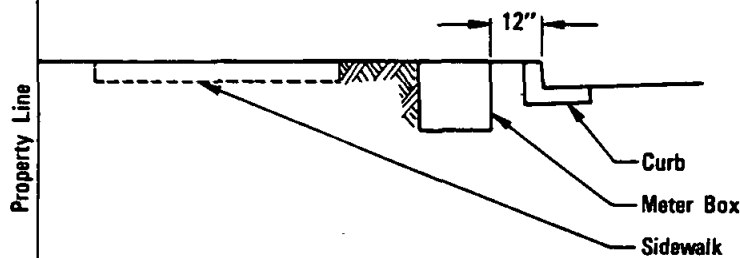
Revision	By	Approved	Date



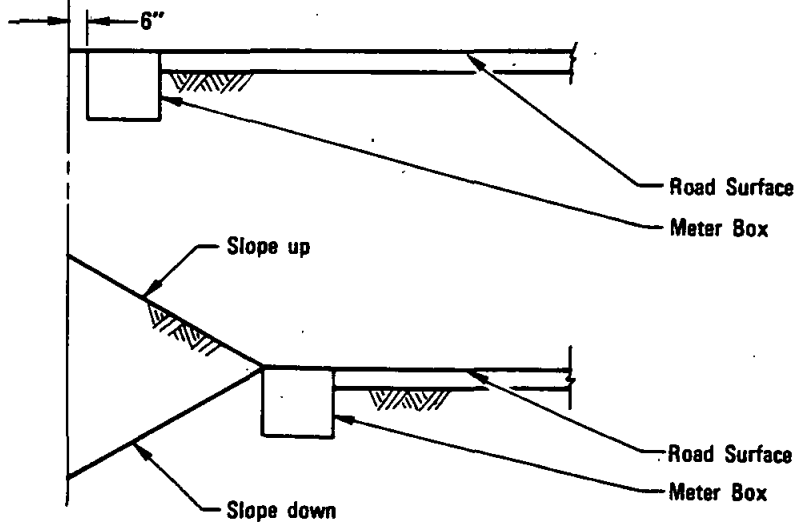
TYPE *A1
WITH OR WITHOUT COMMERCIAL
OR RESIDENTIAL SIDEWALK



TYPE *A2
CONTIGUOUS SIDEWALK



TYPE B
NON-CONTIGUOUS SIDEWALK



TYPE C
NO CURB

TYPE D
NO CURB

* Agency to determine alternate

NOTE:

Meter boxes shall not be located within driveways.

Revision	By	Approved	Date
Note	SC	A.H.	7-88

SAN DIEGO REGIONAL STANDARD DRAWING

METER BOX LOCATIONS

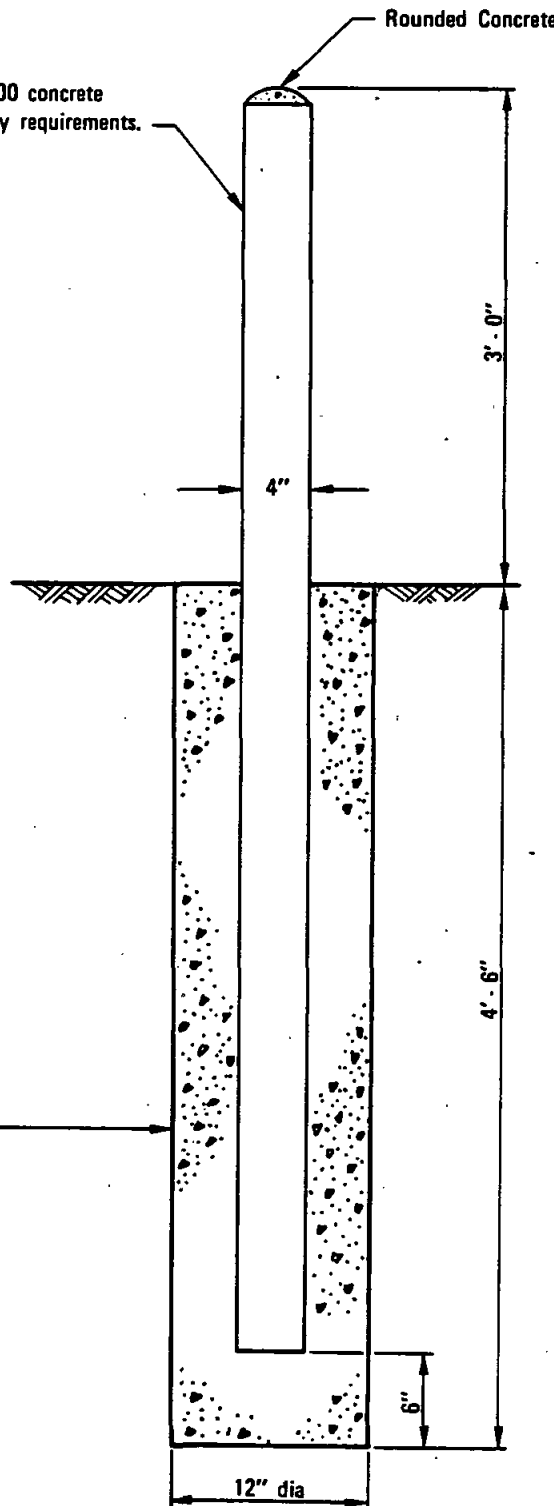
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Allan A. Kerschbaum *Dec. 1975*
Coordinator R.C.E. 19807 Date

**DRAWING
NUMBER W-15**

4" steel pipe filled with 470 - C - 2000 concrete
and painted in accordance with Agency requirements.

Rounded Concrete

470 - C - 2000 concrete



RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

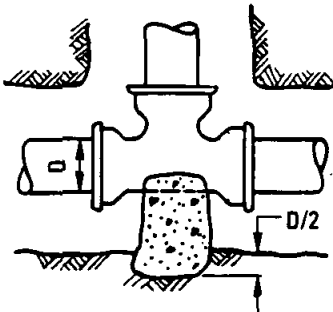
Alfred A. Kershner *DEC. 1975*
Coordinator R.C.E. 19807 Date

SAN DIEGO REGIONAL STANDARD DRAWING

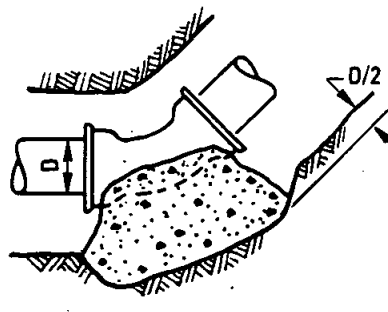
PROTECTION POST

DRAWING
NUMBER **W-16**

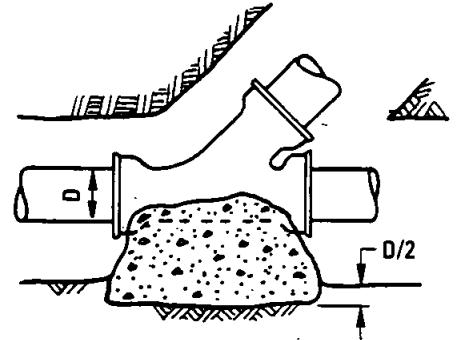
Revision	By	Approved	Date



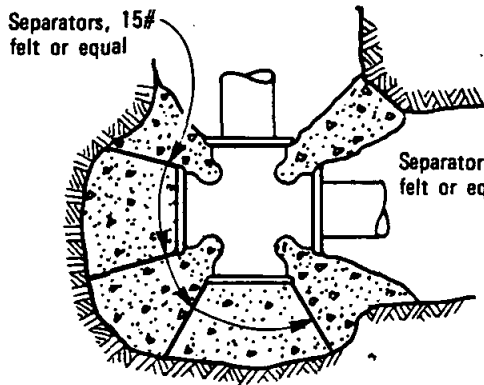
TEE



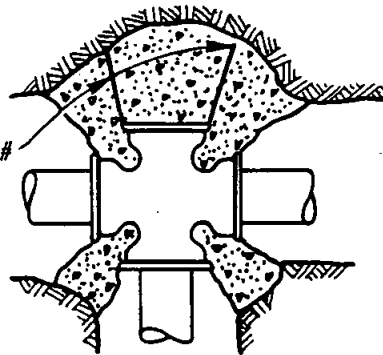
HORIZONTAL OR
VERTICAL BEND



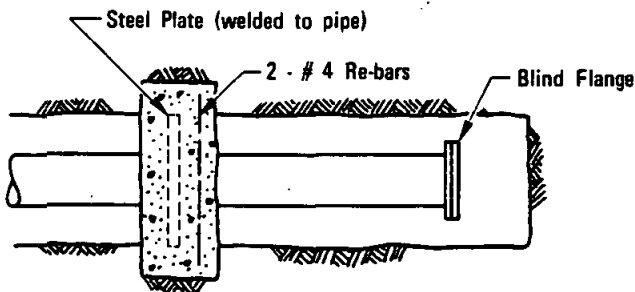
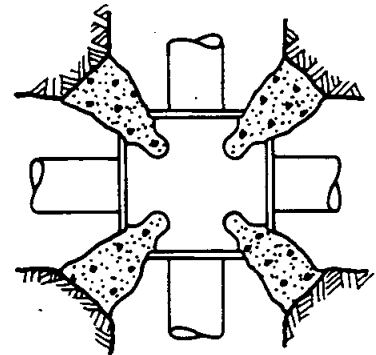
WYE



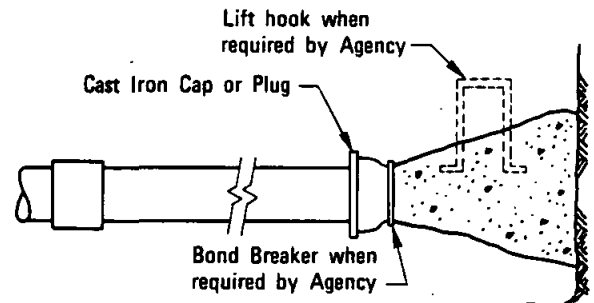
Separators, 15#
felt or equal



CROSS BLOCKING



STEEL PIPE
PLAN



A.C. PIPE
ELEVATION

DEAD END BLOCKING

NOTES

1. Concrete shall be 470 - C - 2000.
2. See Standard Drawing W-18 for bearing areas.

Revision	By	Approved	Date

SAN DIEGO REGIONAL STANDARD DRAWING

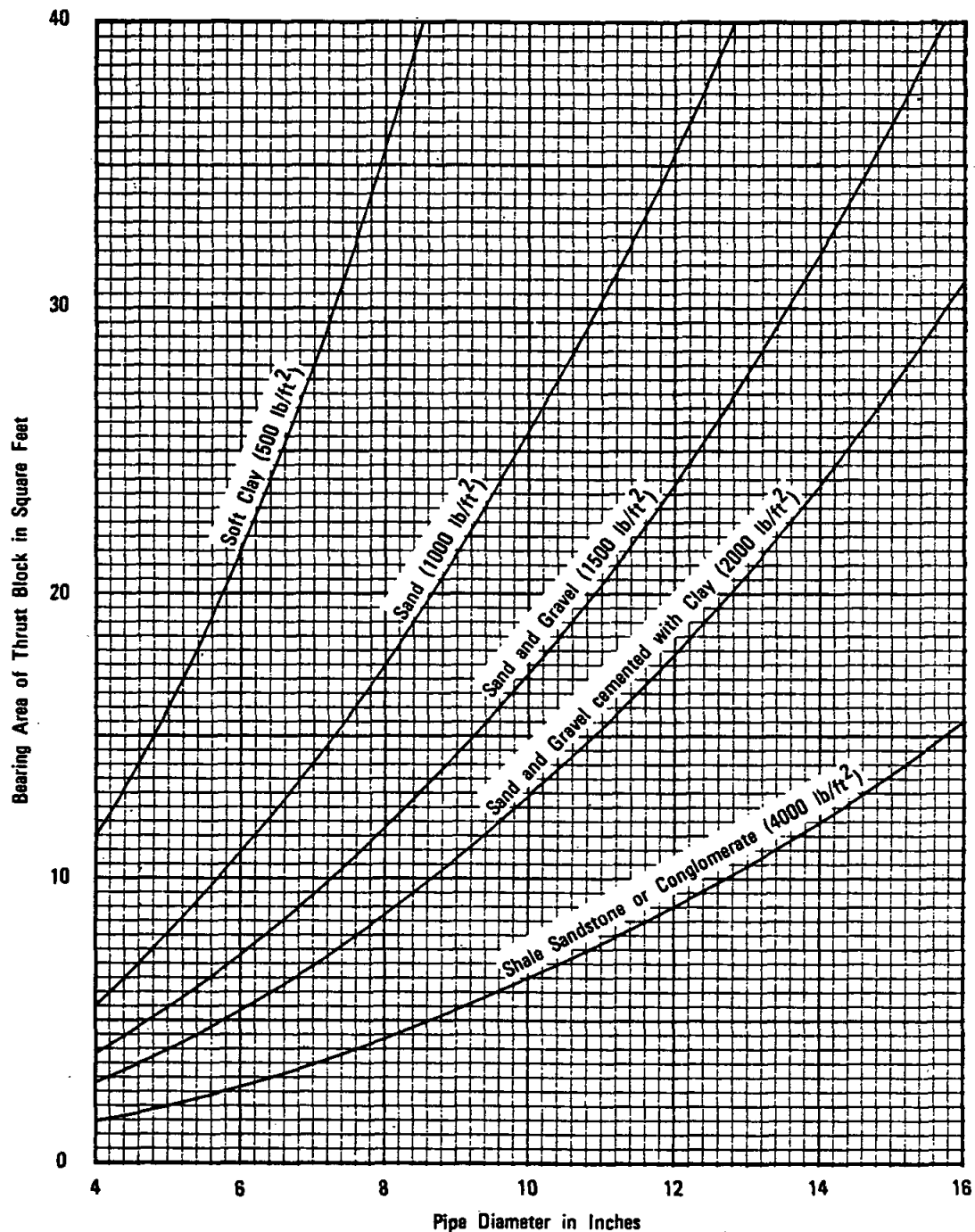
CONCRETE THRUST BLOCKS

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen A. Kuehn Dec. 1975
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER

W-17



NOTES

1. Based on 225 psi test pressure and bearing values of dry soils.
2. Values from curves are for tees and deadends, i.e.; straight line thrust.
For 90° bend: 1.4 value from curve.
For 45° bend: 0.8 value from curve.
For 22 1/2° bend: 0.4 value from curve.
3. For conditions not covered by curves, special thrust blocks must be computed and approved.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allen A. Kuehn Dec. 1975
Coordinator R.C.E. 1988 Date

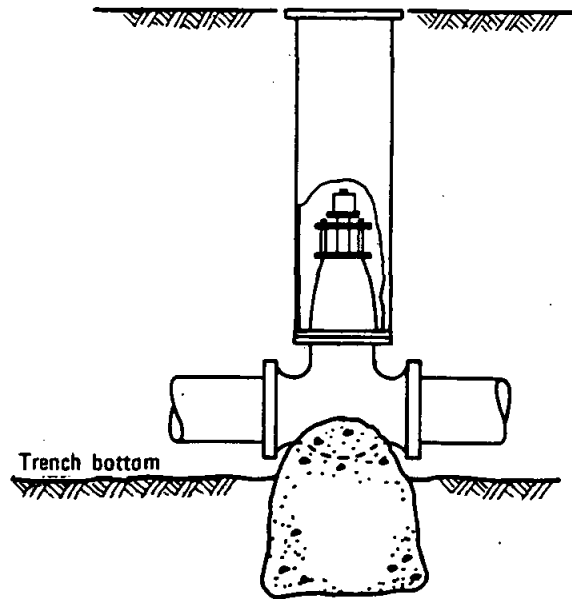
SAN DIEGO REGIONAL STANDARD DRAWING

DRAWING
NUMBER

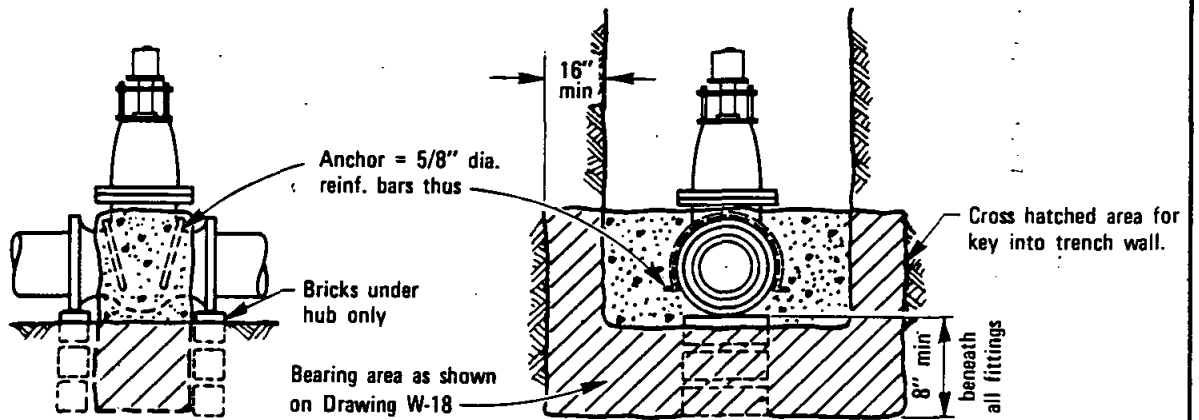
W-18

THRUST BLOCK BEARING AREAS

Revision	By	Approved	Date



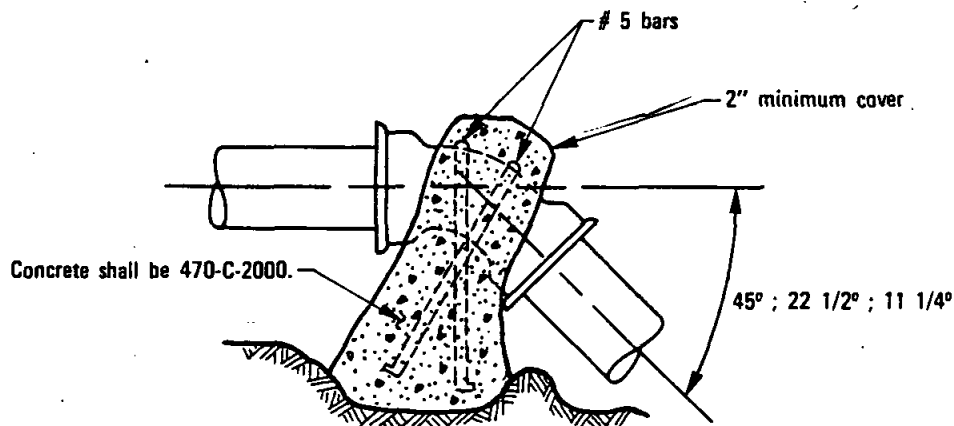
TYPE-A SUPPORT BLOCK



TYPE-B THRUST BLOCK

NOTE
Concrete shall be 470-C-2000.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
				CONCRETE VALVE BLOCKING		<i>Alfred G. Kerschbaum</i>	<i>Dec. 1975</i>
						Coordinator	R.C.E. 19807
							Date
						DRAWING NUMBER	W-19



Pipe Nominal Dia	Cubic Ft. Of Concrete Required per 100 P.S.I. Pressure*		
	45°	22 1/2°	11 1/4°
4	7	4	2
6	15	8	4
8	27	14	7
10	**	21	11
12	**	**	16

- * Increase volumes shown in proportion to pressures existing when pressure testing pipeline.
- ** Special design required.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Alfred O. Knechtel Dec. 1975
Coordinator R.C.E. 19807 Date

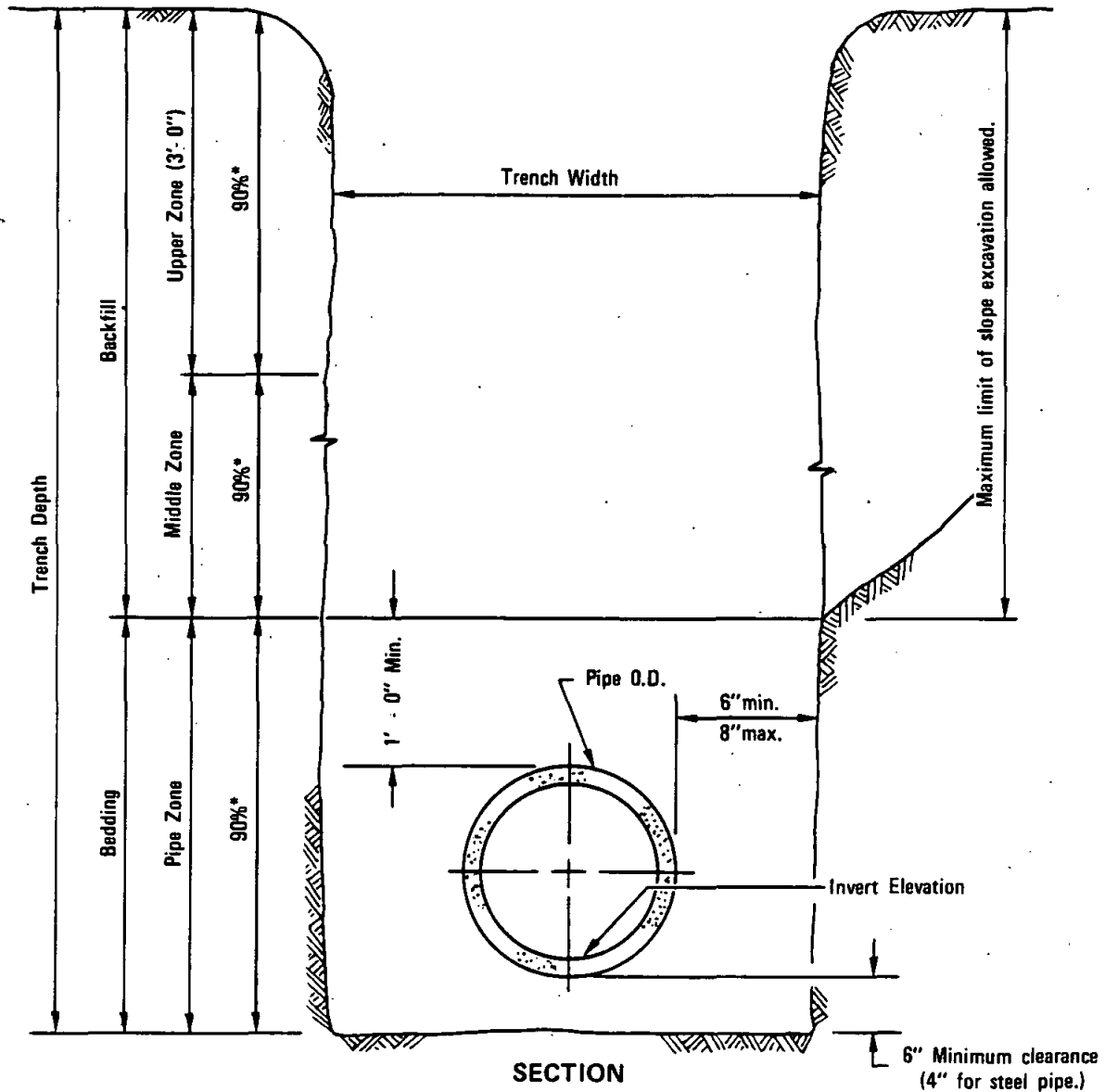
DRAWING
NUMBER

W-20

SAN DIEGO REGIONAL STANDARD DRAWING

**ANCHOR BLOCK
(VERTICAL BEND ONLY)**

Revision	By	Approved	Date



NOTES

1. For trenching on improved streets see standard drawing G-24 or G-25 for resurfacing details.
2. (*) indicates minimum relative compaction.
3. Bedding material shall either be sand, gravel, crushed aggregate or native free draining granular material having a sand equivalent (SE) of not less than (50) and an expansion coefficient, when saturated with water, of not more than 0.5 of one percent (0.5%).

Revision	By	Approved	Date
Section	2	D.S.	7-77
Reference	17	M.B.	10-82
Compact	10	M.B.	5-86
Note 3	51	2.2.	5-92

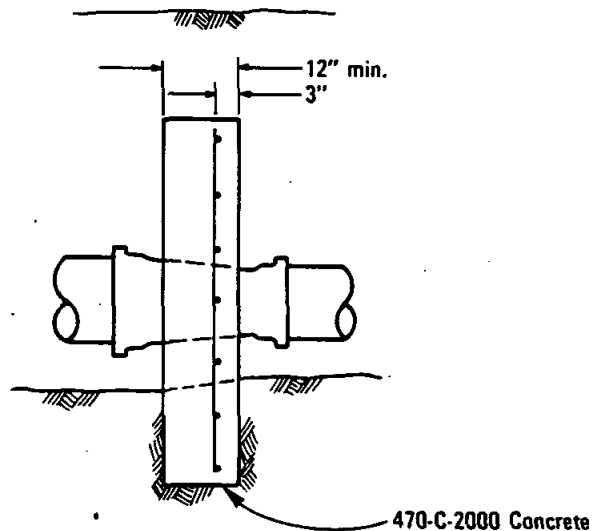
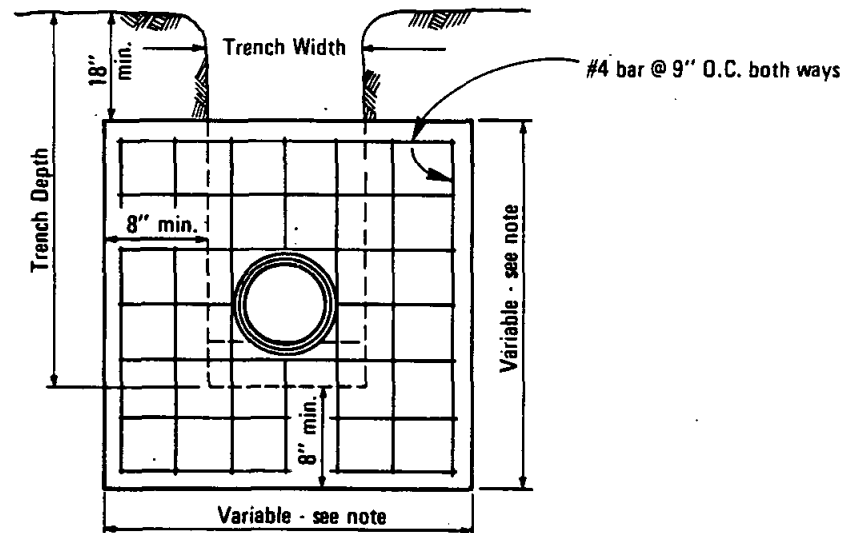
SAN DIEGO REGIONAL STANDARD DRAWING

PIPE BEDDING AND TRENCH BACKFILL FOR WATER MAINS

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

Allan O. Kershner *Dec. 1975*
Coordinator R.C.E. 19807 Date

DRAWING
NUMBER **W-21**



NOTE:

Bearing area shall be the difference between the bearing areas required for thrust anchorage of mains on each side of reducer as found from Std. Dwg. W-18 plus the area of the trench opening, except that minimum dimensions shown shall be adhered to.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

David J. Solomon July 1979
Coordinator R.C.E. 25291 Date

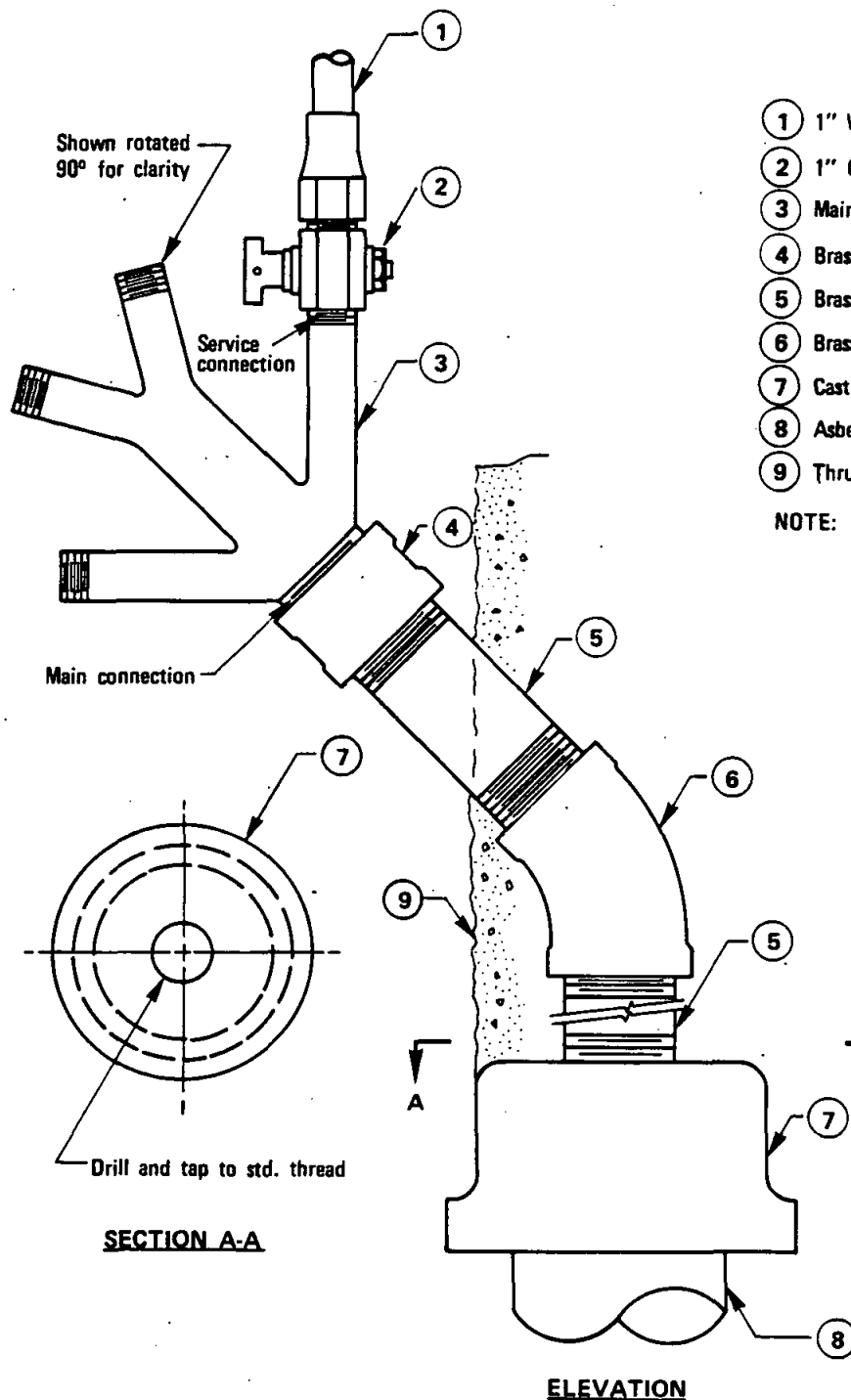
DRAWING
NUMBER

W-22

SAN DIEGO REGIONAL STANDARD DRAWING

**THRUST ANCHOR FOR
WATER MAIN REDUCER - 4 THRU 16 INCH**

Revision	By	Approved	Date

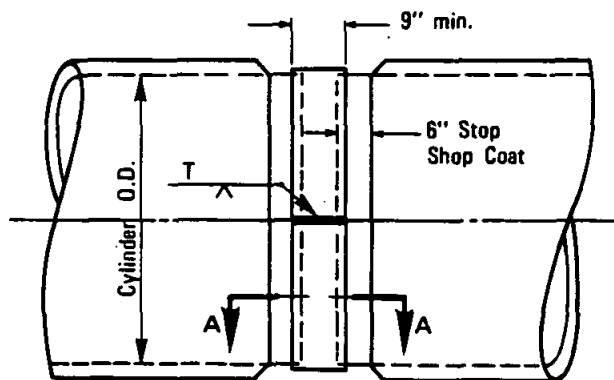


- ① 1" Water service per Dwg W-1
- ② 1" Curb stop
- ③ Main connection X multiple branch connection
- ④ Brass coupling or 45° elbow
- ⑤ Brass nipple - 4" min. length
- ⑥ Brass 45° elbow
- ⑦ Cast iron cap
- ⑧ Asbestos cement pipe
- ⑨ Thrust block per Dwg W-17

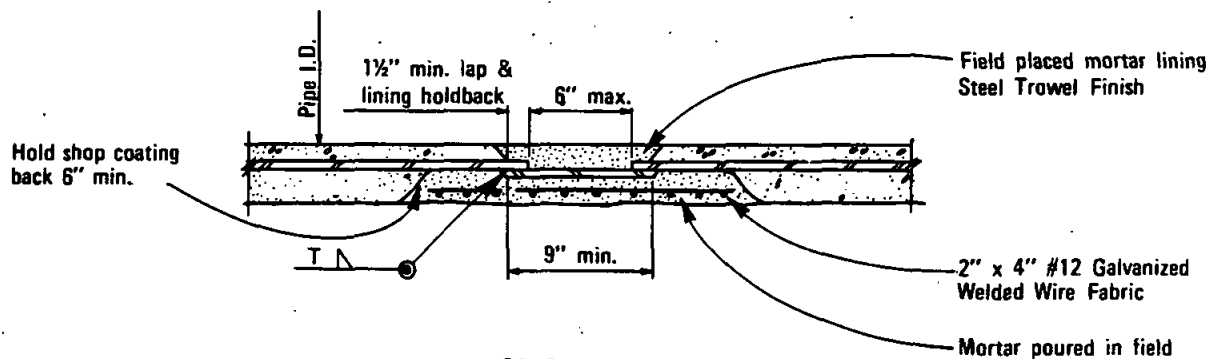
NOTE: Nipple lengths to be sufficient to allow service connection to clear thrust block.

Service Connection	Main Connection Item 5
2	1 1/4"
3	1 1/2"
4	2"
6	2 1/2"
8	3"

Revision	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
MULTIPLE SERVICE ASSEMBLY DEAD END MAIN			<i>David J. Williams</i> July 1979 Coordinator R.C.E. 25291 / Date	
DRAWING NUMBER			W-23	



ELEVATION



SECTION A-A

NOTE:

Contractor shall provide handholes as required to complete the work

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

David J. Solomon July 1979
Coordinator R.C.E. 25291 Date

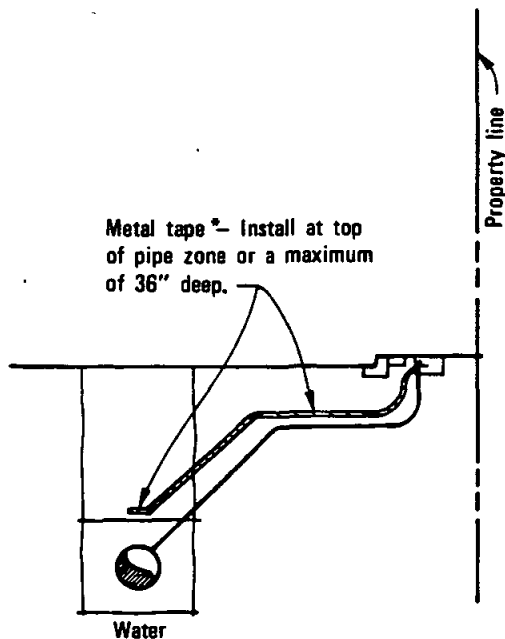
SAN DIEGO REGIONAL STANDARD DRAWING

SPLIT BUTT STRAP

DRAWING
NUMBER

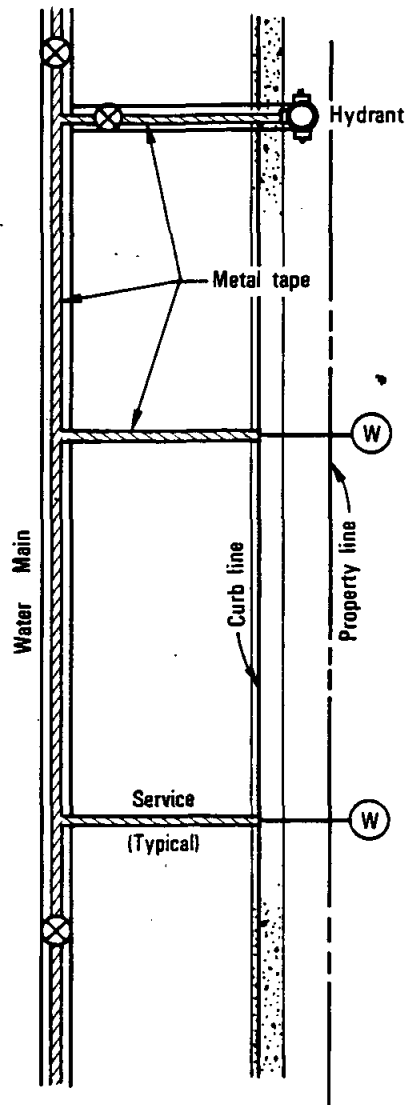
W-24

Revision	By	Approved	Date



SECTION

- * 1. Use 2" tape for depths of 30" or less.
- 2. Use 3" tape for depths greater than 30".
- 3. Adequately bond service tape to main tape to ensure electrical continuity.
- 4. Tape shall extend into service box or well casing to allow for mark-out by continuity tester.



PLAN

Revision	By	Approved	Date
Notes 3,4	JP	LD.	5/92

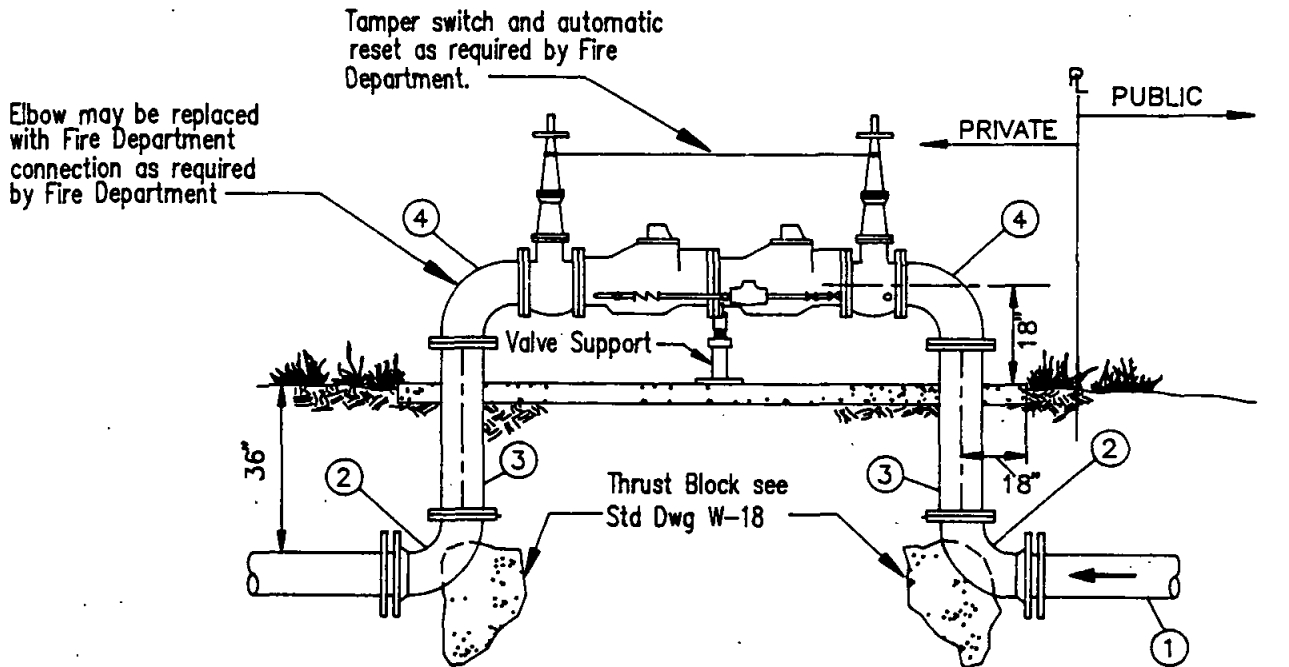
SAN DIEGO REGIONAL STANDARD DRAWING

METALLIC TAPE LOCATOR FOR NON-METALLIC WATER PIPE

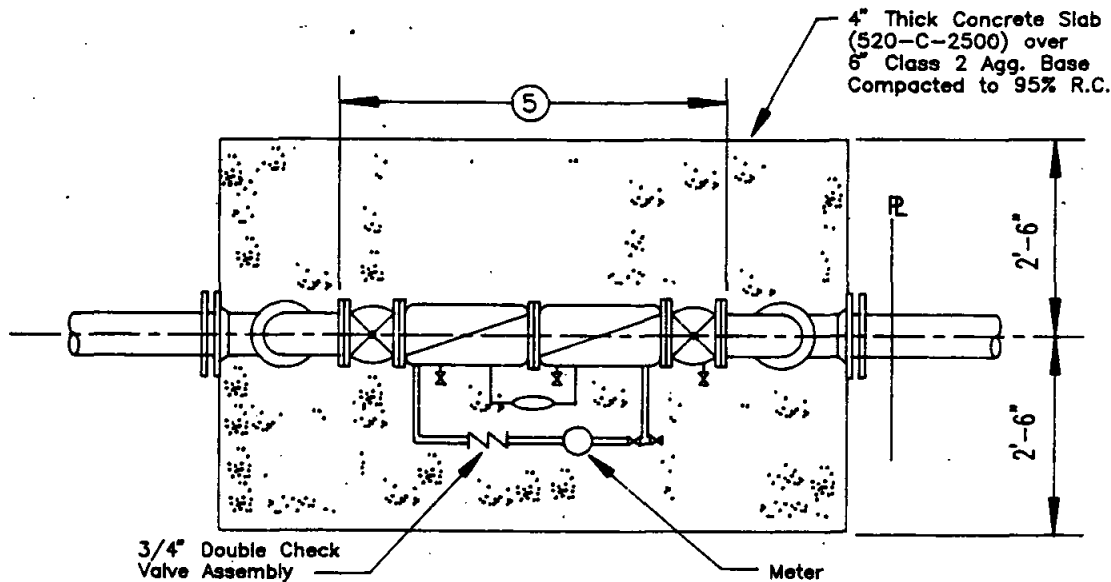
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

M. Behrman 4-25-96
Coordinator R.C.E. C21133 Date

DRAWING
NUMBER **W-25**



ELEVATION



PLAN

NOTES

1. Public water main.
2. 90° ductile iron elbow: flange x flange; flange x ring tight; flange x mechanical joint (uni-flange shall not be used).
3. Flanged ductile iron spool (both ends shall be flanged).
4. 90° flanged ductile iron elbow.
5. Factory assembled Double Checked Detector Assembly/Reduced Pressure Detection Assembly with resilient seat shut off. Valves approved by the Dept. of Health Services, Office of Drinking Water.
6. Backflow preventer assembly shall be tested upon installation by a certified backflow assy. tester. Contractor shall provide the Engineer with written test results completed by a certified tester prior to the acceptance by the Engineer.

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

SAN DIEGO REGIONAL STANDARD DRAWING

Revision	By	Approved	Date

BACKFLOW PREVENTER
REDUCED PRESSURE PRINCIPLE

DRAWING
NUMBER W-26

APPENDIX "A"

TRAFFIC CONTROL PLANS

TRAFFIC CONTROL PLANS

PAGE 1 OF 41

REVISION	BY	APPROVED	DATE	SAN DIEGO REGIONAL STANDARD - APPENDIX "A"	DWG. NO.
				TRAFFIC CONTROL PLANS	TC

TRAFFIC CONTROL PLANS

GENERAL INFORMATION

The Traffic Control Plans depicted in this Appendix are intended to supplement Chapter 5 of the Caltrans Manual in providing guidance and information on preparing traffic control plans in an urban environment. Other references, such as the W.A.T.C.H. manual, may also provide useful information on traffic control procedures. It should be understood that implementation of traffic control plans must conform with the latest edition of the Caltrans Traffic Manual (Chapter 5).

Chapter 5 of the Caltrans Traffic Manual, Traffic Controls for Construction and Maintenance Work Zones, is published by the State of California, Department of Transportation (Caltrans). This manual is issued to provide the basic standards for uniform types of warning signs, lights, and devices to be placed upon any public roadway or street by a person engaged in performing work which interferes with or endangers the safe movement of traffic upon such highway or street, in accordance with Section 21400 of the California Vehicle Code.

It is the responsibility of the Contractor or Organization performing work on, or adjacent to, a roadway to install and maintain such devices which are necessary to provide safe passage for the traveling public through the work area and for the safety of the workers. Before work begins, traffic control plans for handling traffic through a construction or maintenance project shall be approved by the engineer of the public agency or authority having jurisdiction over the roadway.

Typical plans for intersections that are controlled by a traffic signal or a multi-way stop are not identified in this Appendix. These intersections require special attention in the preparation of traffic control plans. The approving agency should be notified prior to the preparation of traffic control plans when the work is in or near these intersections.

Special attention is also needed on the traffic control plans when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Notification of the approving agency is desirable prior to the preparation of the plan when bicycles and pedestrian routes are affected by the work.

Nothing contained in this Appendix shall prevent local jurisdictions from modifying, changing, or adopting new specifications deemed necessary. The text and typical drawings in this Appendix are not a legal standard. Criteria for position, location, and use of traffic control devices is furnished solely for the purpose of guidance and information to assist in the preparation of traffic control plans.

Revision	By	Approved	Date	APPENDIX "A" SAN DIEGO REGIONAL STANDARD	
DRAWING	DWV		4-91		
ORIG.		<i>[Signature]</i>	10-8-91	TRAFFIC CONTROL PLANS	DRAWING NUMBER TC-1
		<i>[Signature]</i>	4-2-92		
				GENERAL INFORMATION	

TRAFFIC CONTROL PLANS

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TC-16	SIDE OF ROAD - MULTILANE w/TWO-WAY LEFT-TURN - ONE RIGHT LANE
TC-17	SIDE OF ROAD - MULTILANE w/TWO-WAY LEFT-TURN - TWO RIGHT LANES
TC-18	SIDE OF ROAD - MULTILANE w/TWO-WAY LEFT-TURN - THREE RIGHT LANES
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TC-23	SIDE OF ROAD - INTERSECTION - WORK ON MAIN STREET - FAR SIDE
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DRAWING NUMBER	TC-2	APPENDIX "A" SAN DIEGO REGIONAL STANDARD TRAFFIC CONTROL PLANS TABLE OF CONTENTS	Revision	By	Approved	Date
			DRAWING	DWV		4-91
			DRAWING	FWW		8-91
			ORIG.			10-8-91

TRAFFIC CONTROL PLANS

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TC- 92	SPECIAL CONDITIONS - MULTILANE ROADWAY w/CENTERLINE
TC- 93	SPECIAL CONDITIONS - MULTILANE ROADWAY w/TWO-WAY LEFT-TURN
TC- 94	SPECIAL CONDITIONS - MULTILANE ROADWAY w/TWO-WAY LEFT-TURN
TC- 95	SPECIAL CONDITIONS - MULTILANE ROADWAY w/RAISED MEDIAN
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TC- 97	TYPICAL CONSTRUCTION SIGNS
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Revision	By	Approved	Date	APPENDIX "A" SAN DIEGO REGIONAL STANDARD	
DRAWING	dwv		4-91		
ORIG.		<i>[Signature]</i>	10-8-91	TRAFFIC CONTROL PLANS TABLE OF CONTENTS	DRAWING NUMBER TC-3
		<i>[Signature]</i>	4-2-92		

TABLE 1

RECOMMENDED SIGN SPACING FOR ADVANCE WARNING SIGN SERIES

APPROACH SPEED (MPH)	MINIMUM DISTANCE IN FEET BETWEEN SIGNS AND FROM LAST SIGN TO TAPER	MAXIMUM DEVICE SPACING IN FEET	MINIMUM TAPER LENGTHS FOR LANE WIDTHS *		
			10 FT	11 FT	12 FT
25	150-200	25	105	115	125
30	200-300	30	150	165	180
35	250-400	35	205	225	245
40	350-500	40	265	295	320
45	500-750	45	450	495	540
50	500-1000	50	500	550	600
55+	500-1500	50	550	605	660

* $L = WS \frac{2}{60}$ FOR S OF 40 MPH OR LESS; $L = WS$ FOR S OF 45 MPH OR MORE.
TAPER LENGTHS SHOWN ARE ROUNDED TO NEAREST 5 FEET.

TABLE 2

RECOMMENDED TAPER LENGTH AND DEVICE SPACING FOR CHANNELIZING TAPERS

APPROACH SPEED (MPH)	TAPER LENGTH (L) *	SPACING OF CONES ALONG TAPER (FEET) +
25	125	25
30	180	30
35	245	35
40	320	40
45	540	45
50	600	50
50+	1000	50

NOTES:

Taper Formula

$L = S \times W$ for speeds >
40 mph.

$L = \frac{W \times S^2}{60}$ for speeds <
40 mph.

Where:

L = Minimum length of taper

S = Numerical value of
APPROACH speed prior
to work (mph)

W = Width of offset. (feet)

(*) Based on 12-foot wide lane. This column
is also appropriate for lane widths less than 12 feet

APPENDIX "A" SAN DIEGO REGIONAL STANDARD

DEVICE SPACING TABLES SIGN SPACING TABLE TAPER LENGTH AND CONE SPACING TABLE

DRAWING
NUMBER TC-4

Revision	By	Approved	Date
DRAWING	DWV		4-91
DRAWING	FMM		8-91
ORIG.			10-8-91
			7-2-92

Revision By Approved Date		Agency: _____ Address: _____ Phone: _____ Fax: _____	
DRAWING P.T. 4-91		TRAFFIC CONTROL PLAN	
ORG. 10-8-91		JOB LOCATION BEGIN CROSS STREET END CROSS STREET PERMIT NO.	
WTR 11 10-8-91		WORK HOURS continuous FROM A.M. TO A.M. SPEED LIMIT WORK TO BE DONE	
START DATE END DATE WORK DATE EXTENSION FROM TO NEW END DATE WORK DATE EXTENSION FROM TO NEW END DATE		WORK DATE EXTENSION FROM TO NEW END DATE WORK DATE EXTENSION FROM TO NEW END DATE	
CONTRACTOR ADDRESS CITY, STATE, ZIP TELEPHONE		PROJECT CONTACT 24 HOUR TELEPHONE FAX NUMBER	
REQUIREMENTS:		THIS TRAFFIC CONTROL PLAN IS NOT VALID UNLESS AN APPLICABLE PERMIT IS ATTACHED	
1. The contractor is responsible for restoring the road back to satisfactory condition which will include, but is not limited to, paving, striping, markings, signing, and loop detection.		2. The Agency reserves the right to observe these traffic control plans in operation and to make changes as field conditions warrant.	
3. Trench will be backfilled or steel-plated during non-working hours. Steel plates shall have asphaltic ramp on all edges. All dirt, dust, and debris shall be removed from street at end of each day and at the end of the job. The street shall be in driveable condition at all times.		4. Any work that creates an undue safety risk or creates severe congestion will be shut down by the Agency.	
5. A copy of all traffic requirements and traffic control plans issued by the Agency must be kept on the job site.		6. Approval of this plan does not constitute an official permit. Contact the Agency for information on obtaining a permit.	
7. All travel lanes will typically be a minimum of 12 feet wide unless otherwise approved specifically by the local jurisdiction.		8. Flashing arrow boards as required by the local jurisdiction.	
9. Warning (W) series signs used in work zones shall be Black on Orange.		10. Cones and pylons shall have yellow reflectorized sleeves along centerline, white reflectorized sleeves along outside shoulder.	
11. If parking is allowed in advance warning area, advance warning signs should be mounted on high level devices.		SEE ATTACHED SHEET(S) FOR TRAFFIC CONTROL PLAN LAYOUT STANDARD DRAWINGS MAY BE APPLICABLE	

TRAFFIC CONTROL PLAN

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

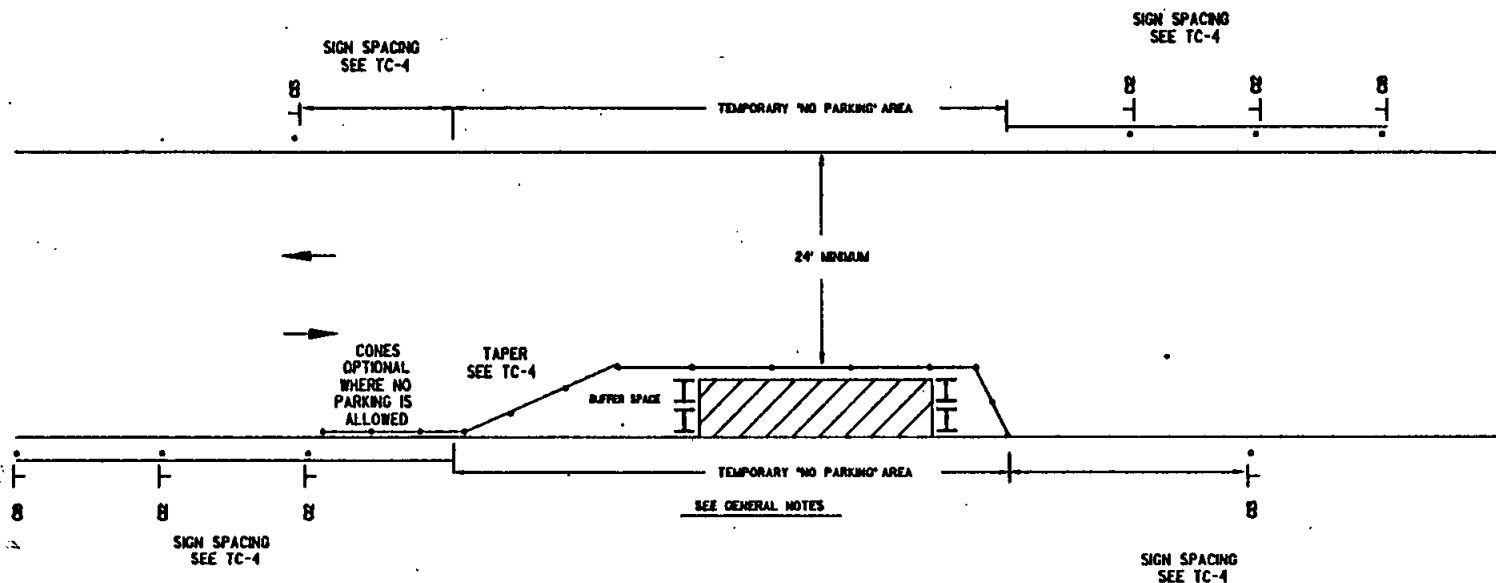
COVER SHEET

DRAWING NUMBER TC-5

DRAWING
NUMBER TC-6

SIDE OF ROAD WORK AREA
TWO LANE TRAFFIC CONTROL
WITHOUT CENTERLINE

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



LEGEND

● CONE H BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
AGENCY _____
ADDRESS _____
PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

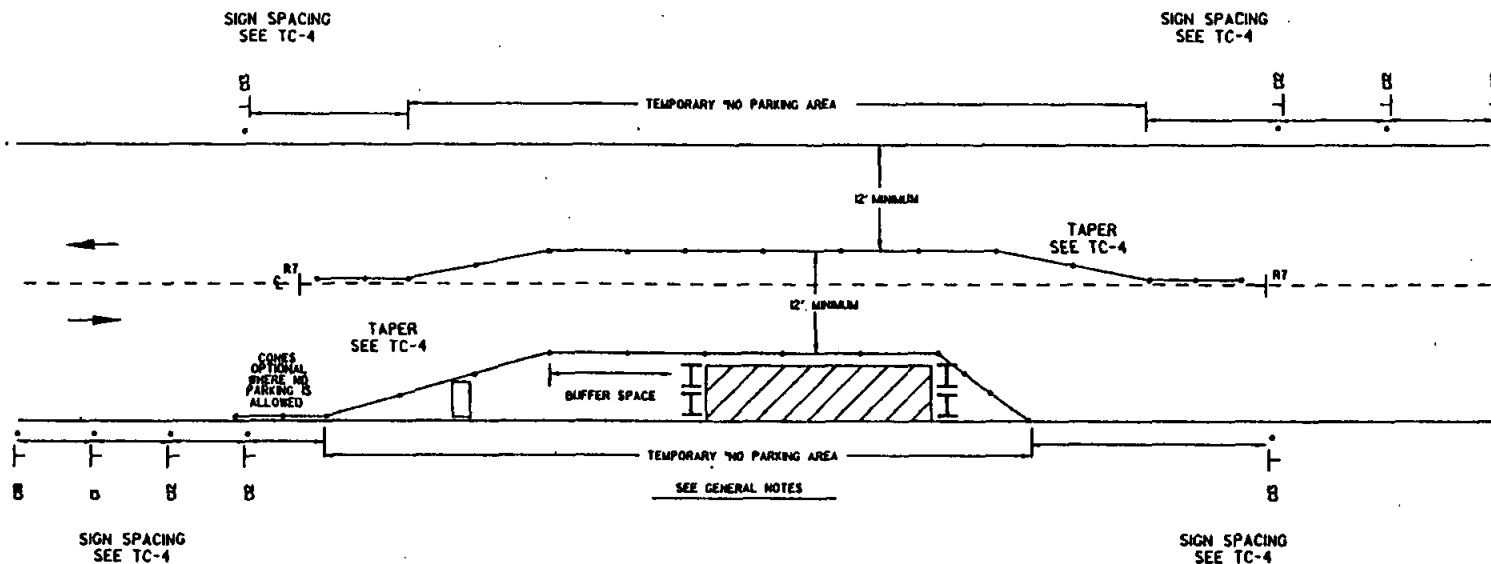
This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

Revision	By	Approved	Date
DRAWING	DM		4-91
DRAWING	PM		8-91
ORIG.			10-8-91



LEGEND

● CONE H BARRICADE ■ FLAGGER T SIGN □ FLASHING ARROW SIGN ▨ WORK AREA ↔ TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
 AGENCY _____
 ADDRESS _____
 PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

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TC-5 is required for all Traffic Control Plans.

Revision	By	Approved	Date
DRAWING	DRW		4-91
DRAWING	PLD		8-91
ORIG.			10-8-91

SIDE OF ROAD WORK AREA

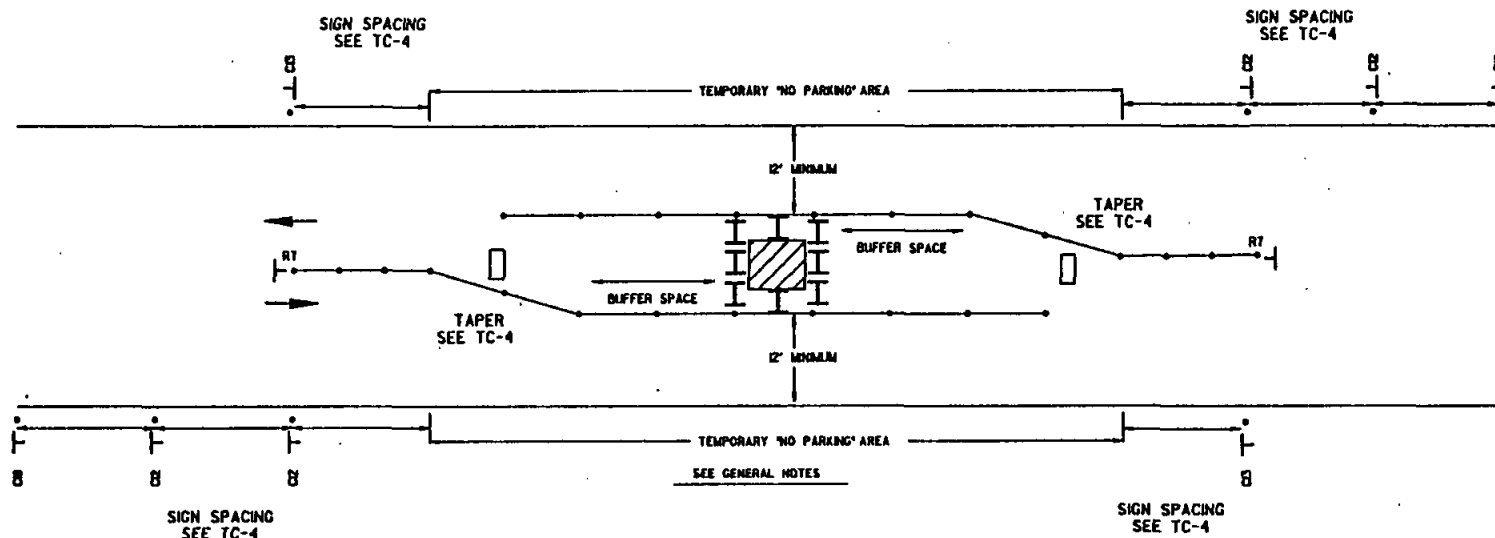
APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

TWO LANE TRAFFIC CONTROL
WITH CENTERLINE

DRAWING
NUMBER TC-7

DRAWING
NUMBER TC-8

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD
CENTER OF ROAD WORK AREA
TWO LANE TRAFFIC CONTROL



LEGEND

● CONE H BARRICADE ■ FLAGGER T SIGN □ FLASHING ARROW SIGN ▨ WORK AREA → TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
AGENCY _____
ADDRESS _____
PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

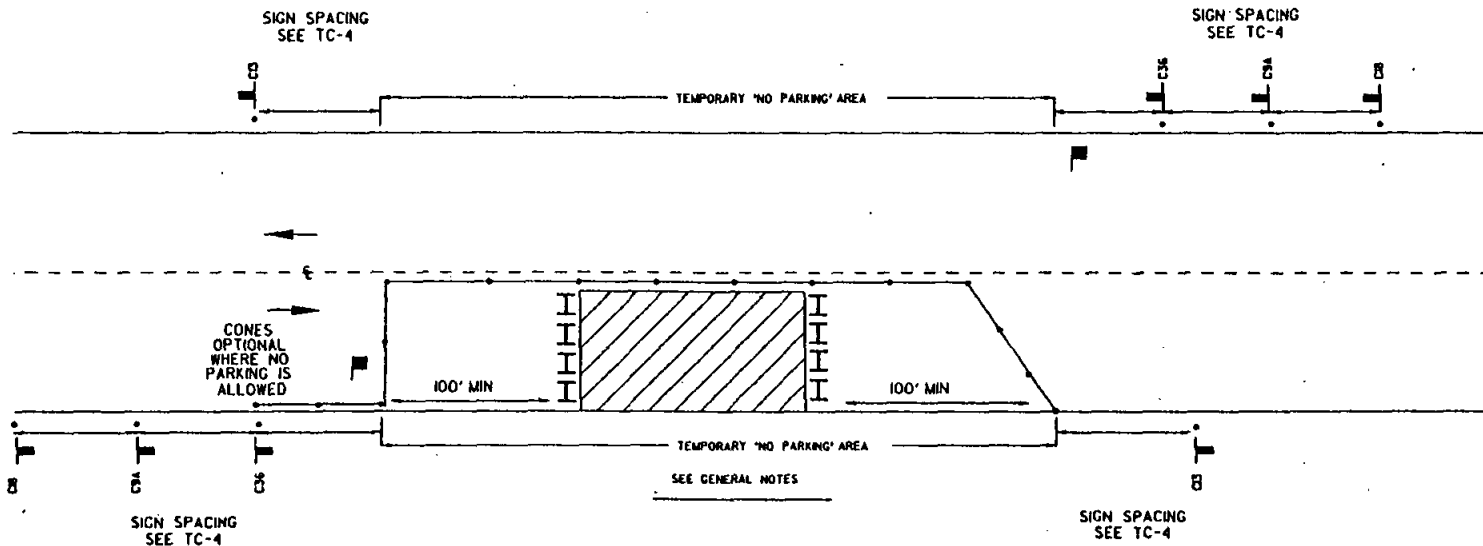
This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

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TC-5 is required for all Traffic Control Plans.

Revision	By	Approved	Date
DRAWING	DRY		4-91
DRAWING	FW		8-91
ORIG.			10-8-91

REFER TO CALTRANS MANUAL 5-07.3



EYE CONTACT MUST BE MAINTAINED BETWEEN FLAGGERS OR USE 2-WAY RADIO COMMUNICATION.

LEGEND

● CONE H BARRICADE ■ FLAGGER T SIGN □ FLASHING ARROW SIGN ▨ WORK AREA → TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
 AGENCY _____
 ADDRESS _____
 PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying, changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

APPENDIX 'A'
 SAN DIEGO REGIONAL STANDARD
 SIDE OF ROAD WORK AREA
 TWO LANE TRAFFIC CONTROL
 WITH FLAGGERS

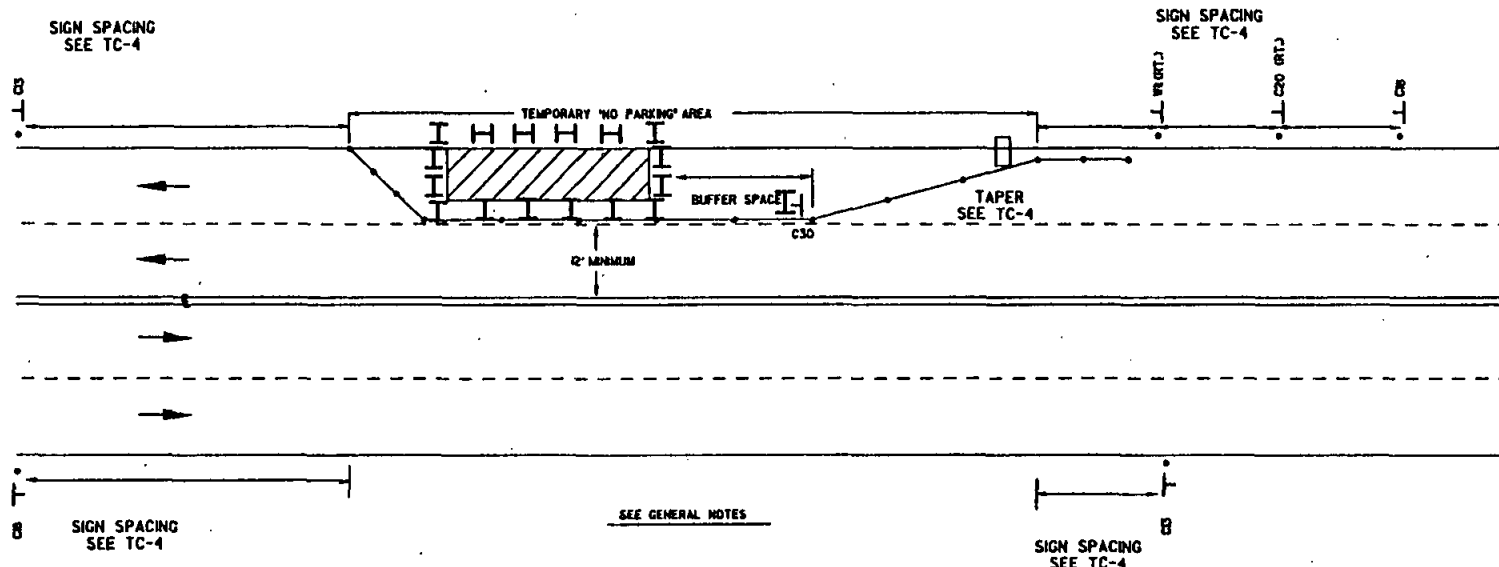
DRAWING
 NUMBER TC-9

Revision	By	Approved	Date
DRAWING	DWV		4-91
DRAWING	FMM		8-91
ORIG.			10-8-91
			7-2-92

DRAWING
NUMBER TC-10

SIDE OF ROAD WORK AREA
MULTILANE TRAFFIC CONTROL WITH CENTERLINE
RIGHT TRAFFIC LANE CLOSURE - ONE LANE

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



LEGEND

● CONE H BARRICADE FLAGGER T SIGN □ FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
AGENCY _____
ADDRESS _____
PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

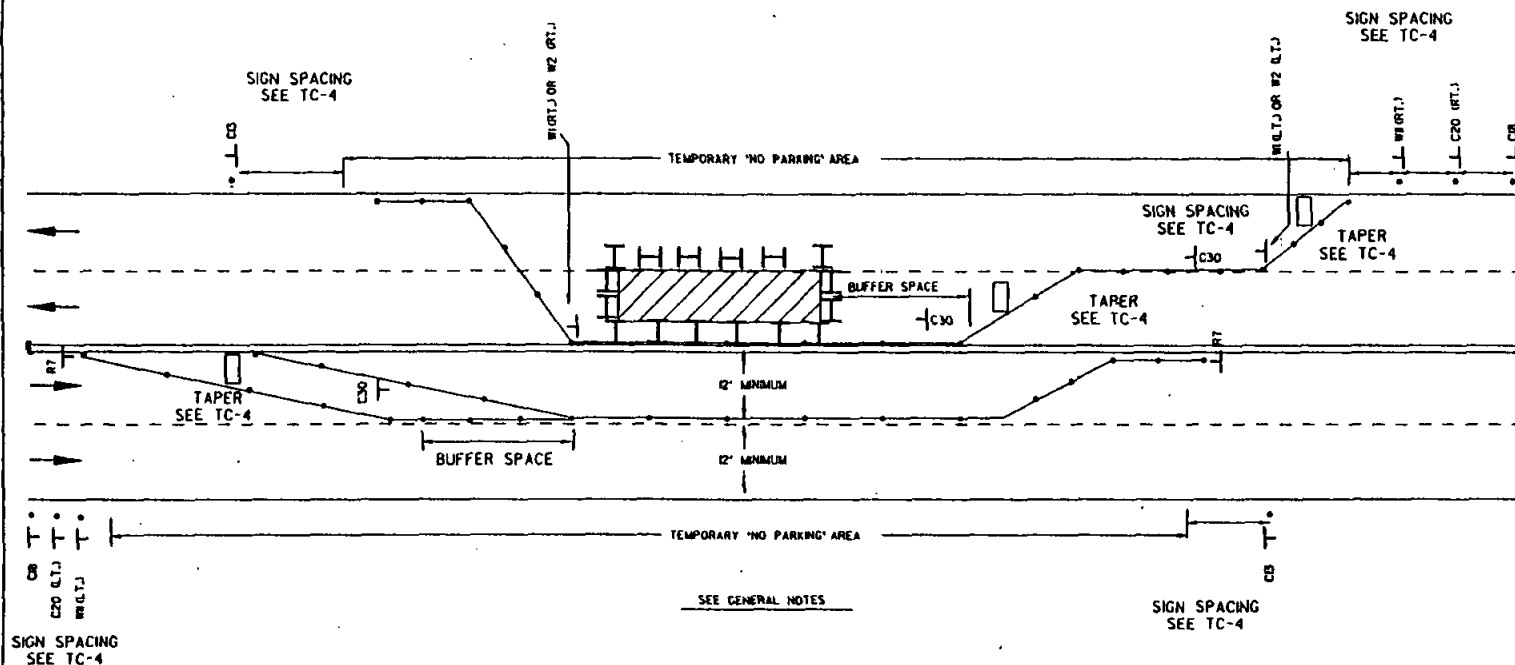
Revision	By	Approved	Date
DRAWING	DW		4-91
DRAWING	PM		8-91
ORIG.			10-8-91

Revision	By	Approved	Date
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DRAWING	PM		8-91
ORIG.			10-9-91
			11-18-91
			4-2-92

APPENDIX "A" SAN DIEGO REGIONAL STANDARD

SIDE OF ROAD WORK AREA MULTILANE TRAFFIC CONTROL WITH CENTERLINE RIGHT TRAFFIC LANE CLOSURE - TWO LANES

DRAWING
NUMBER TC-11



LEGEND

● CONE H BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
AGENCY _____
ADDRESS _____
PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

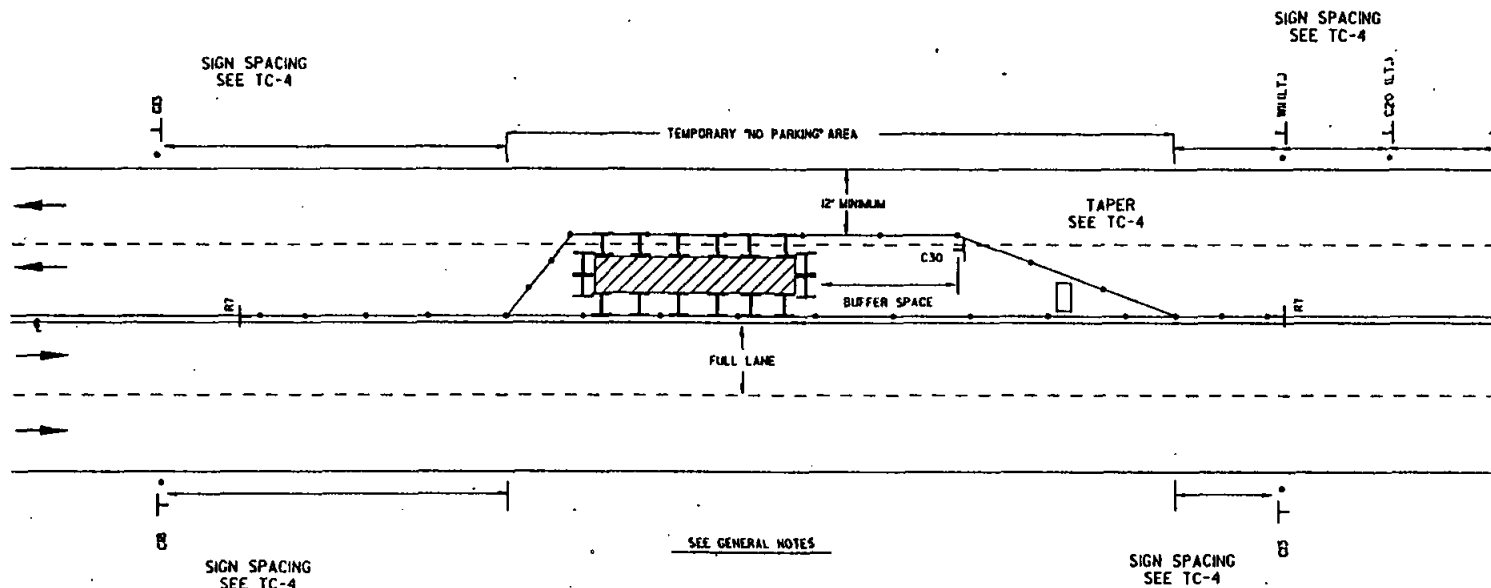
This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

DRAWING
NUMBER TC-12

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD
CENTER OF ROAD WORK AREA
MULTILANE TRAFFIC CONTROL WITH CENTERLINE
LEFT TRAFFIC LANE CLOSURE - ONE LANE



LEGEND

● CONE H BARRICADE ■ FLAGGER T SIGN □ FLASHING ARROW SIGN ▨ WORK AREA ↔ TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
AGENCY _____
ADDRESS _____
PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

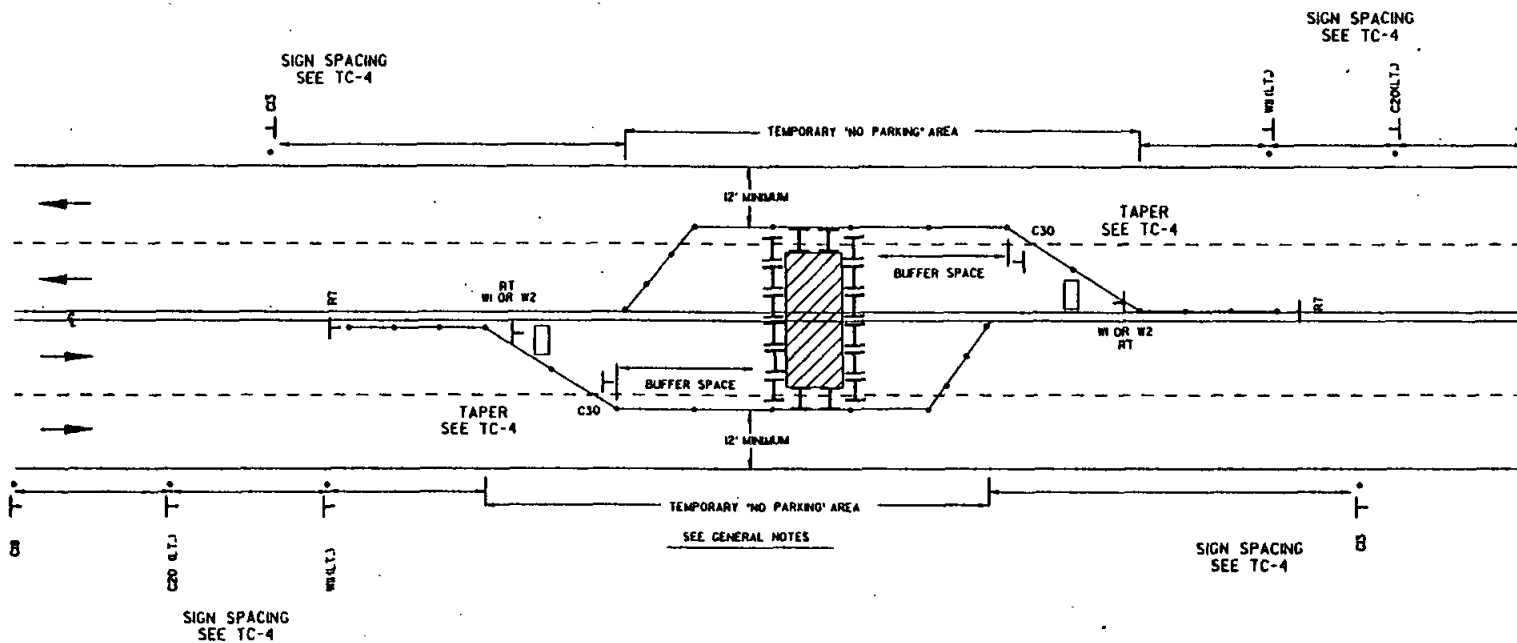
Revision	By	Approved	Date
DRAWING	DMV		4-91
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ORIG.			10-8-91

Revision	By	Approved	Date
DRAWING	DAY		4-91
ORIG.	FILE		8-91
			10-8-91
			11-2-92

APPENDIX "A" SAN DIEGO REGIONAL STANDARD

CENTER OF ROAD WORK AREA MULTILANE TRAFFIC CONTROL WITH CENTERLINE LEFT TRAFFIC LANE CLOSURE - TWO LANES

DRAWING
NUMBER TC-13



LEGEND

● CONE T BARRICADE ■ FLAGGER T SIGN □ FLASHING ARROW SIGN ▨ WORK AREA → TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
AGENCY _____
ADDRESS _____
PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

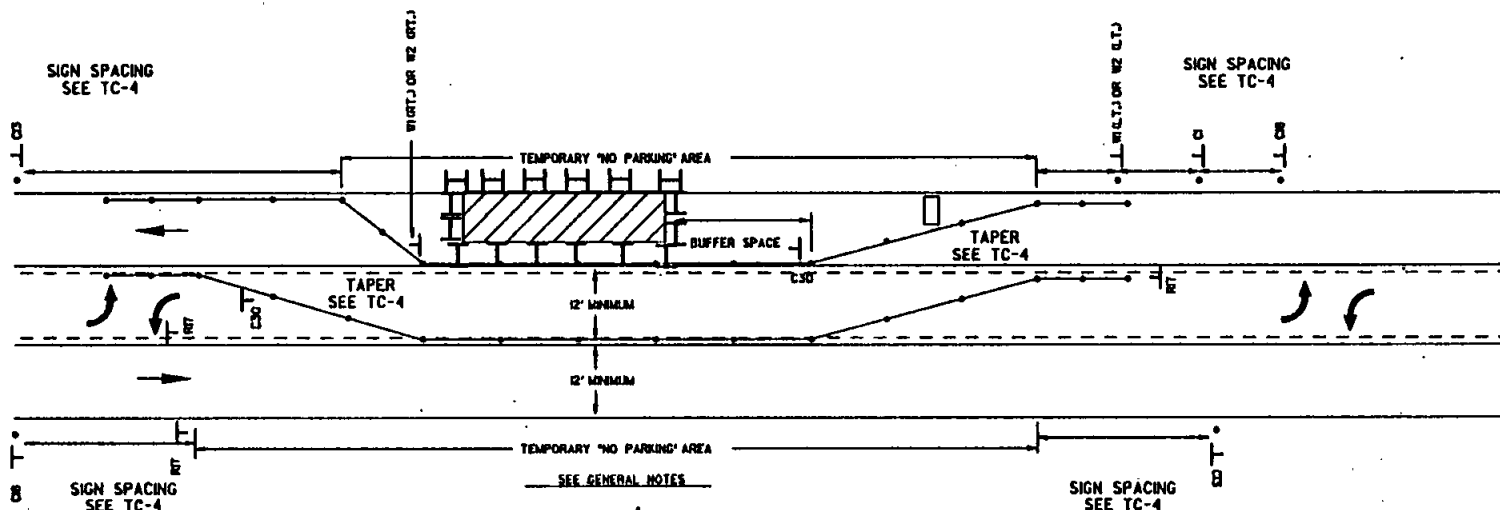
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TC-5 is required for all Traffic Control Plans.

DRAWING
NUMBER TC-14

SIDE OF ROAD WORK AREA
MULTILANE TRAFFIC CONTROL WITH TWO WAY LEFT TURN
RIGHT LANE TRAFFIC CLOSURE - ONE LANE

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



LEGEND

- CONE H BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
AGENCY _____
ADDRESS _____
PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

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TC-5 is required for all Traffic Control Plans.

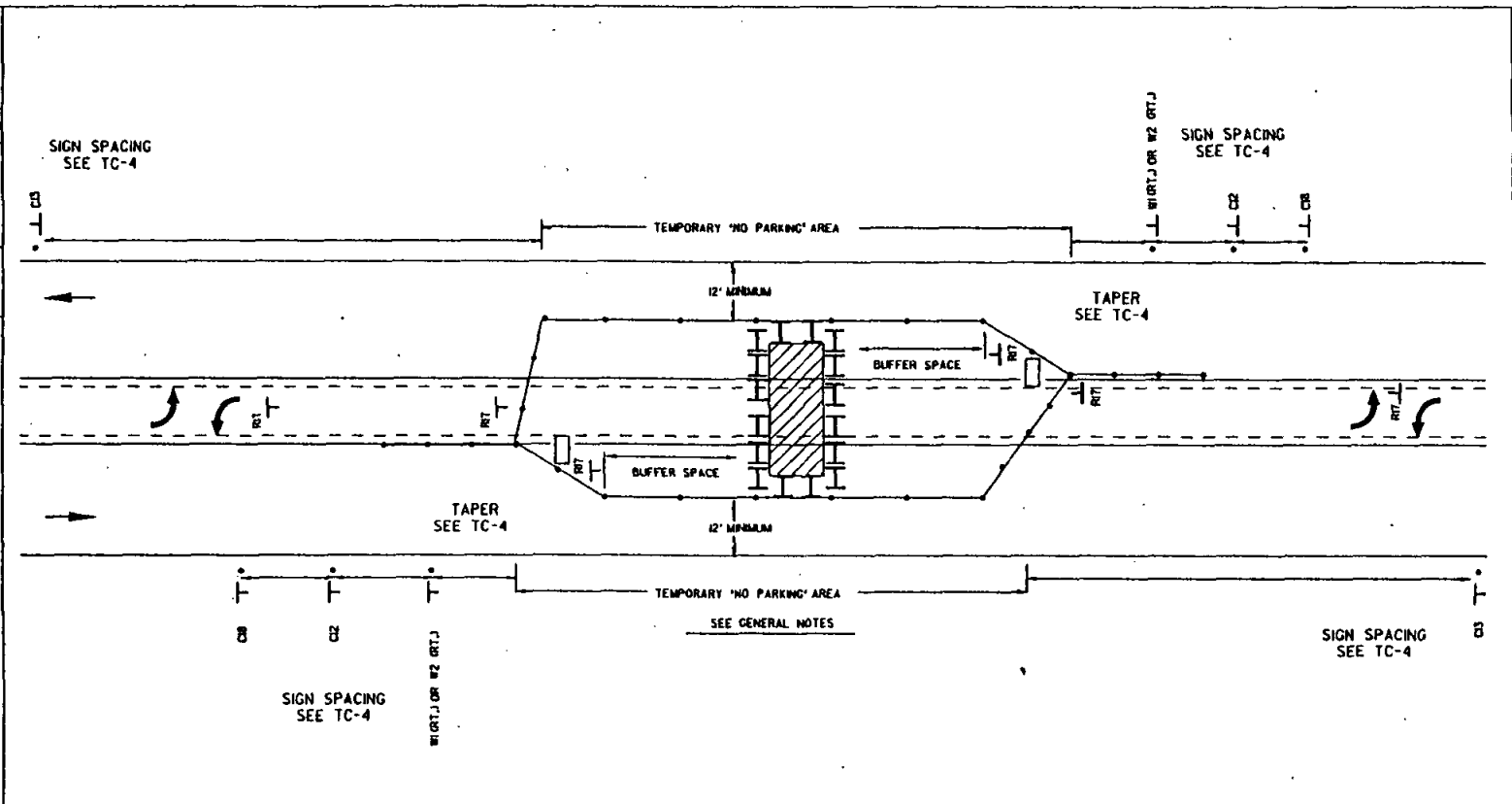
Revision	By	Date
DRAWING	DEV	4-91
DRAWING	PM	8-91
ORIG.		10-9-91
		11-18-91
		4-2-92

Revision	By	Approved	Date
DRAWING	DW		4-91
DRAWING	PM		8-91
ORIG.			10-8-91
			4-2-92

APPENDIX 'A'
SAN DIEGO REGIONAL STANDARD

CENTER OF ROAD WORK AREA
MULTILANE TRAFFIC CONTROL WITH CENTERLINE
LEFT LANE CLOSURE - ONE LANE

DRAWING NUMBER TC-15



LEGEND

● CONE T BARRICADE ■ FLAGGER T SIGN □ FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
 AGENCY _____
 ADDRESS _____
 PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

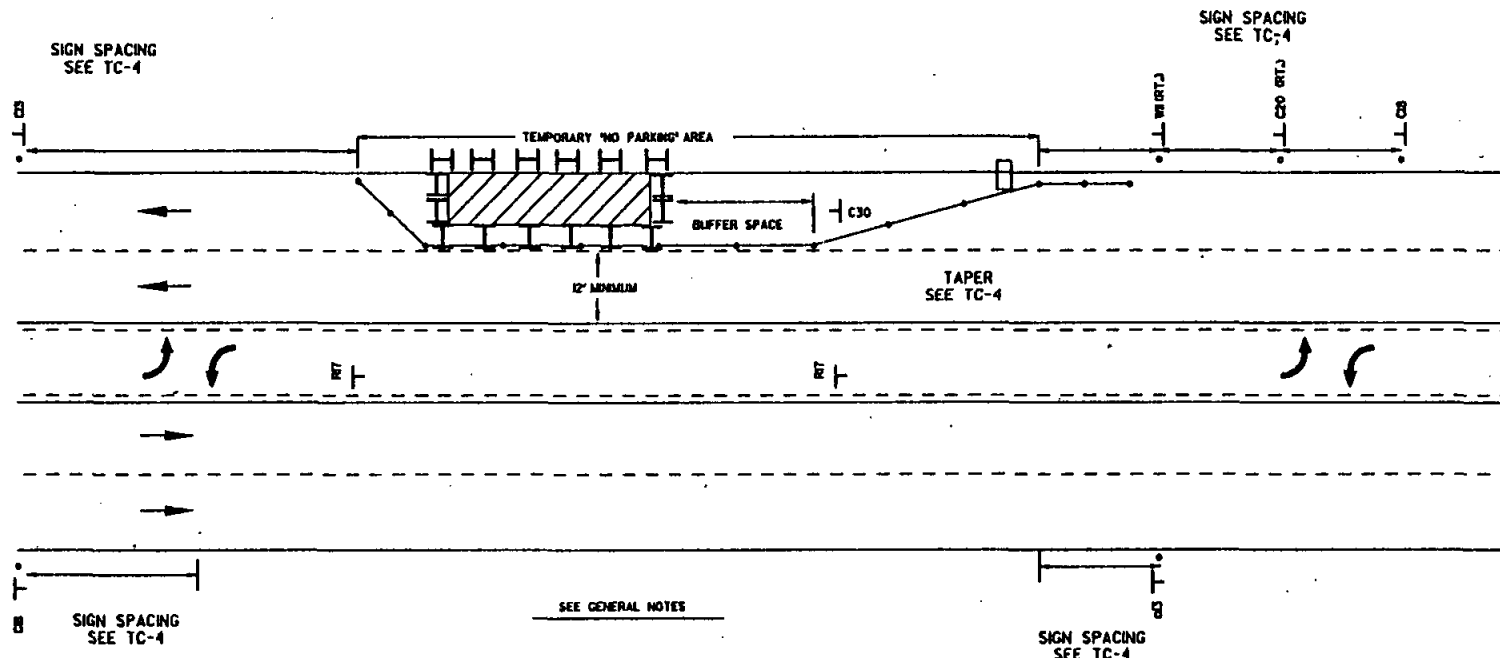
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TC-5 is required for all Traffic Control Plans.

DRAWING
NUMBER TC-16

SIDE OF ROAD WORK AREA
MULTILANE TRAFFIC CONTROL WITH TWO WAY LEFT TURN
RIGHT TRAFFIC LANE CLOSURE - ONE LANE

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



SEE GENERAL NOTES

LEGEND

● CONE H BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
AGENCY _____
ADDRESS _____
PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

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TC-5 is required for all Traffic Control Plans.

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

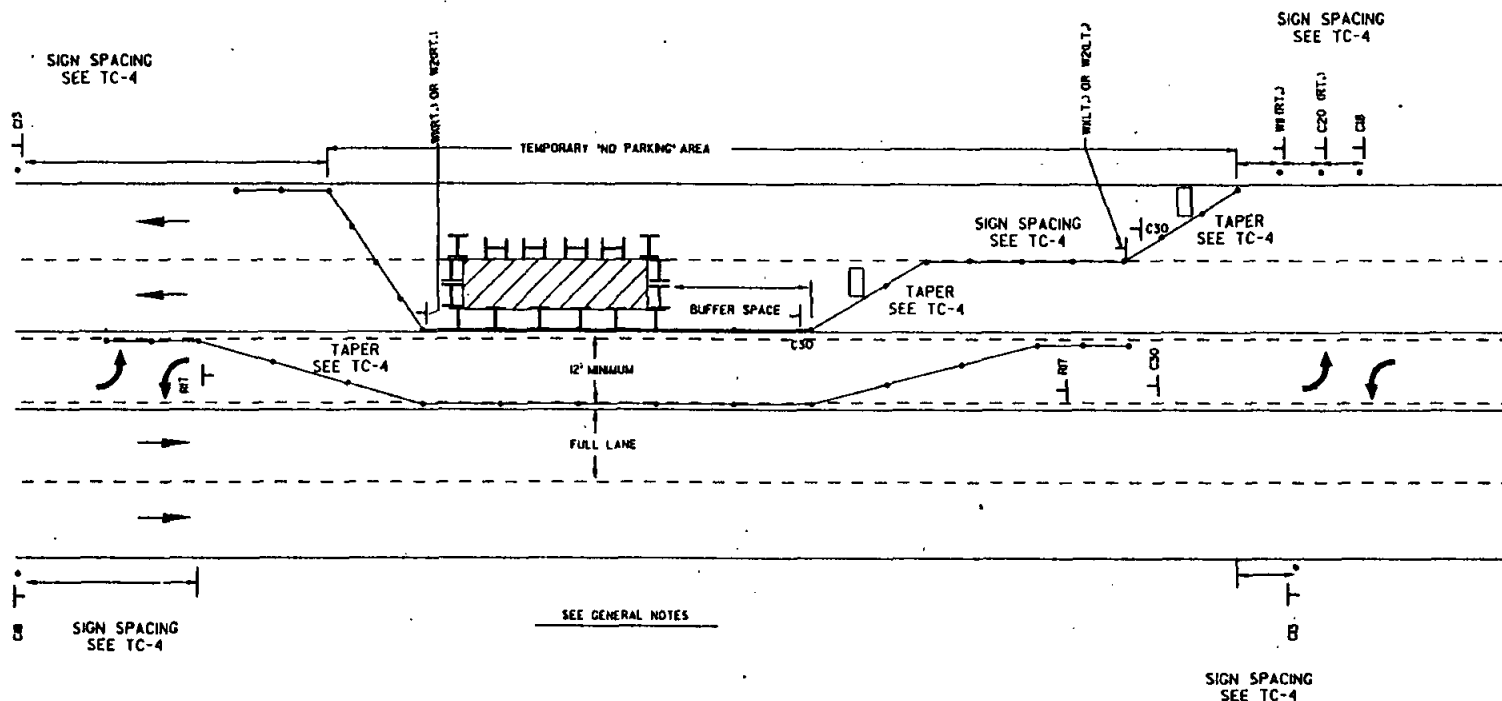
Revision By Date
DRAWING DW 4-91
DRAWING PM 8-91
ORIG. 10-8-91
4-2-92

Revision	By	Approved	Date
DRAWING	DAY		4-91
DRAWING	PM		8-91
ORIG.			10-9-91
			11-18-91
			1-2-92

APPENDIX "A" SAN DIEGO REGIONAL STANDARD

SIDE OF ROAD WORK AREA MULTILANE TRAFFIC CONTROL WITH TWO WAY LEFT TURN RIGHT TRAFFIC LANE CLOSURE - TWO LANES

DRAWING
NUMBER TC-17



LEGEND

● CONE H BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
AGENCY _____
ADDRESS _____
PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

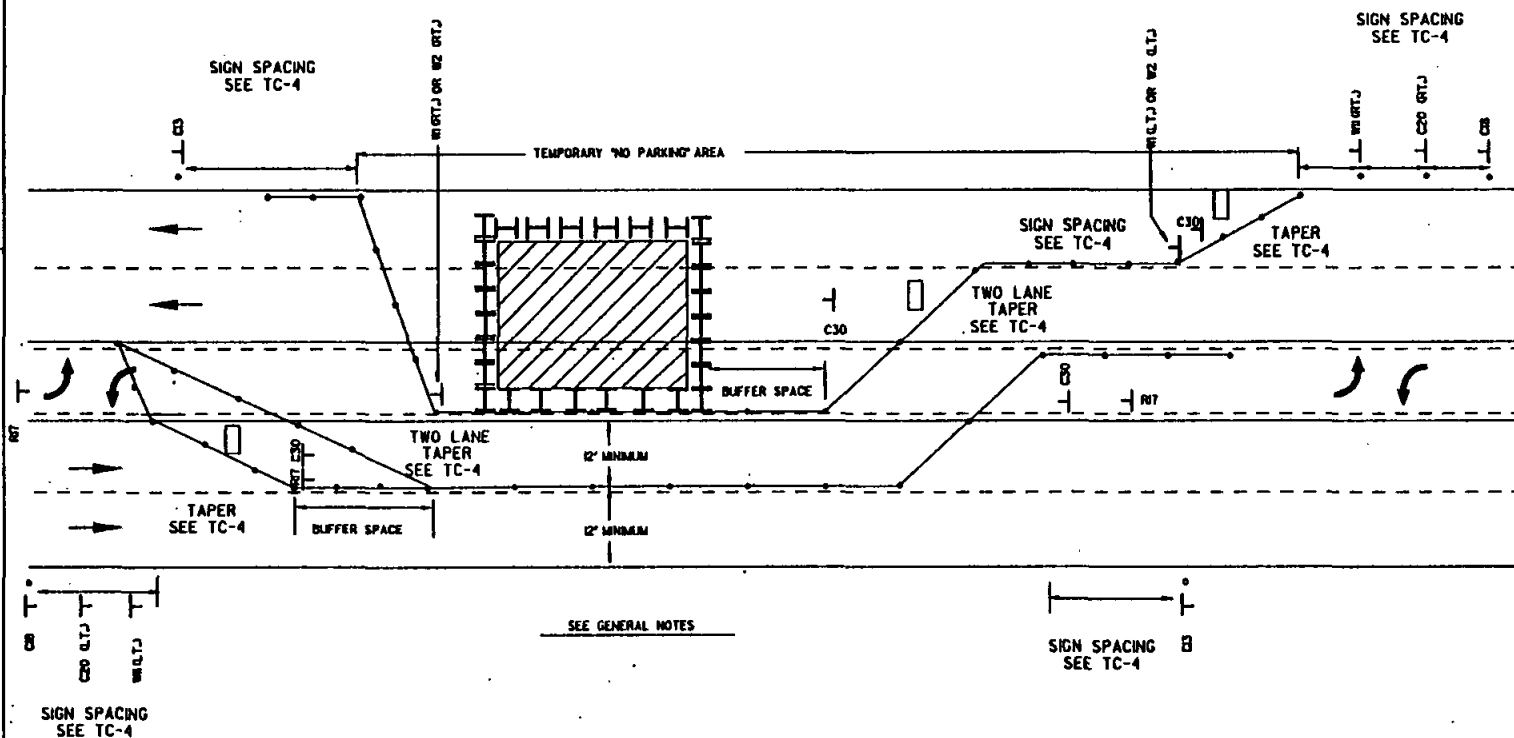
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TC-5 is required for all Traffic Control Plans.

SIDE OF ROAD WORK AREA
MULTILANE TRAFFIC CONTROL WITH TWO WAY LEFT TURN
RIGHT TRAFFIC LANE CLOSURE - THREE LANES

APPENDIX 'A'

SAN DIEGO REGIONAL STANDARD



LEGEND

 CONE
 BARRICADE
 FLAGGER
 SIGN
 FLASHING ARROW SIGN
 WORK AREA
 TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

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TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME _____

AGENCY

ADDRESS

PHONE

Revision	By	Approved	Date
DRAWING	DRW		4-91
DRAWING	PLM		8-91
ORIG.		<i>[Signature]</i>	10-9-91

ORIG.

[illegible]

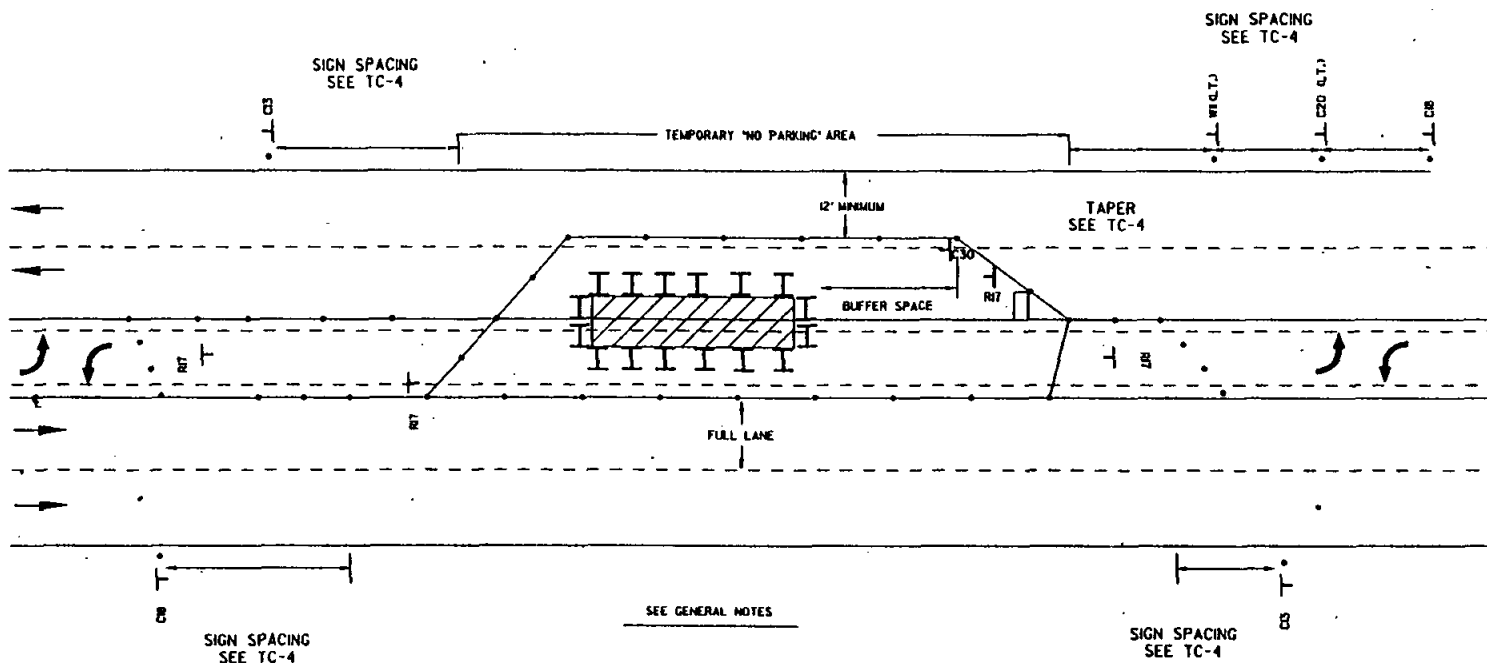
5-6-01

Revision	By	Approved	Date
DRAWING	BY		4-91
DRAWING	PLAN		8-91
ORIG.			10-8-91

APPENDIX "A" SAN DIEGO REGIONAL STANDARD

CENTER OF ROAD WORK AREA MULTILANE TRAFFIC CONTROL WITH TWO WAY LEFT TURN LEFT TRAFFIC LANE CLOSURE - TWO LANES

DRAWING
NUMBER TC-19



LEGEND

● CONE H BARRICADE ■ FLAGGER T SIGN □ FLASHING ARROW SIGN ▨ WORK AREA ⇄ TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
AGENCY _____
ADDRESS _____
PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

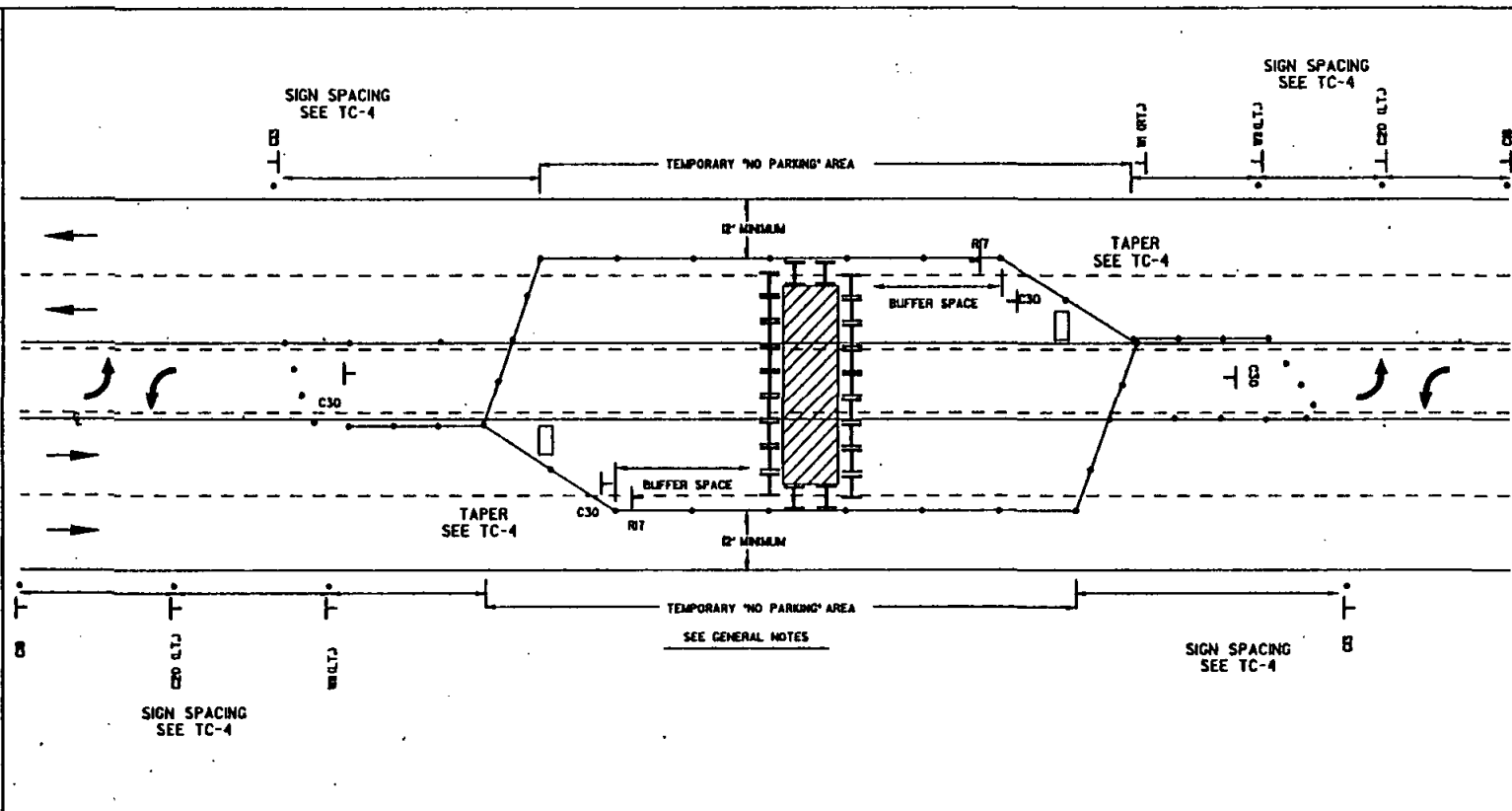
Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

DRAWING
NUMBER TC-20

CENTER OF ROAD WORK AREA
MULTILANE TRAFFIC CONTROL WITH CENTERLINE
LEFT LANE TRAFFIC LANE CLOSURE - THREE LANES

SAN DIEGO REGIONAL STANDARD
APPENDIX "A"



LEGEND

- CONE
- H BARRICADE
- FLAGGER
- T SIGN
- FLASHING ARROW SIGN
- ▨ WORK AREA
- ↔ TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
 AGENCY _____
 ADDRESS _____
 PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

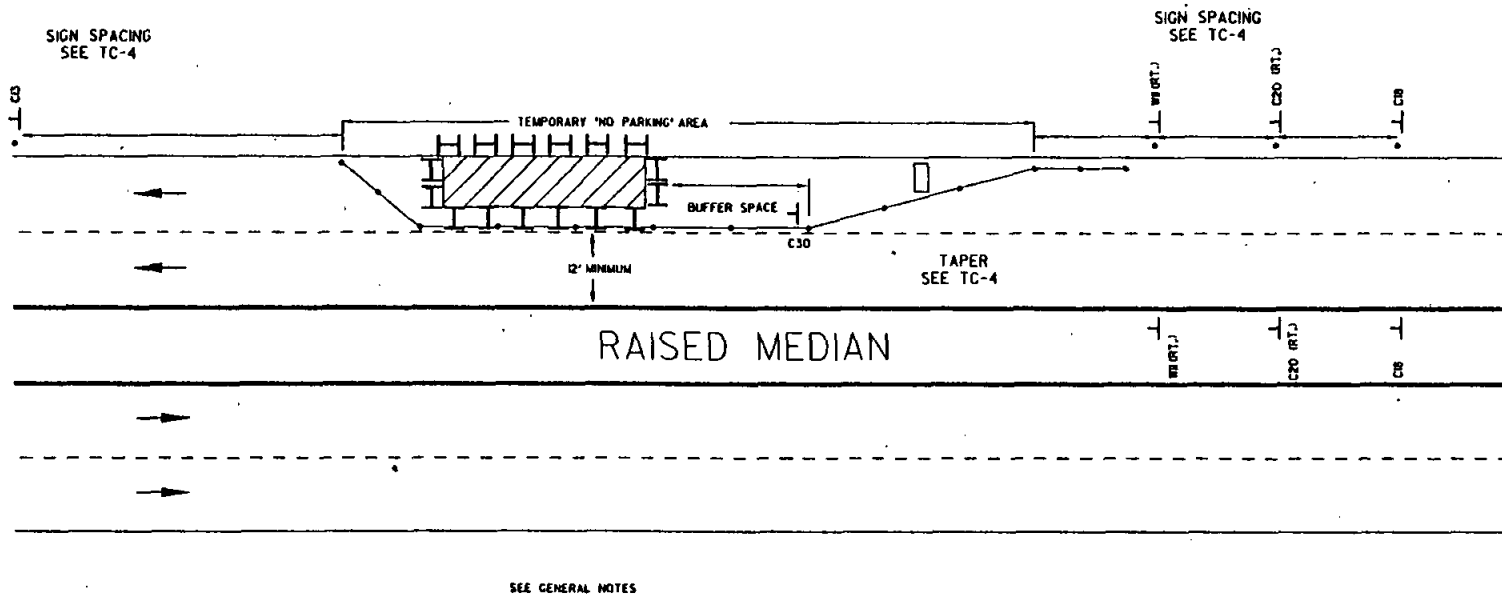
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TC-5 is required for all Traffic Control Plans.

Revision	By	Approved	Date
DRAWING	DRW		4-91
DRAWING	FLD		8-91
ORIG.			10-8-91



LEGEND

● CONE H BARRICADE FLAGGER T SIGN □ FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
 AGENCY _____
 ADDRESS _____
 PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

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TC-5 is required for all Traffic Control Plans.

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

SIDE OF ROAD WORK AREA
MULTILANE TRAFFIC CONTROL WITH RAISED MEDIAN
RIGHT TRAFFIC LANE CLOSURE - ONE LANE

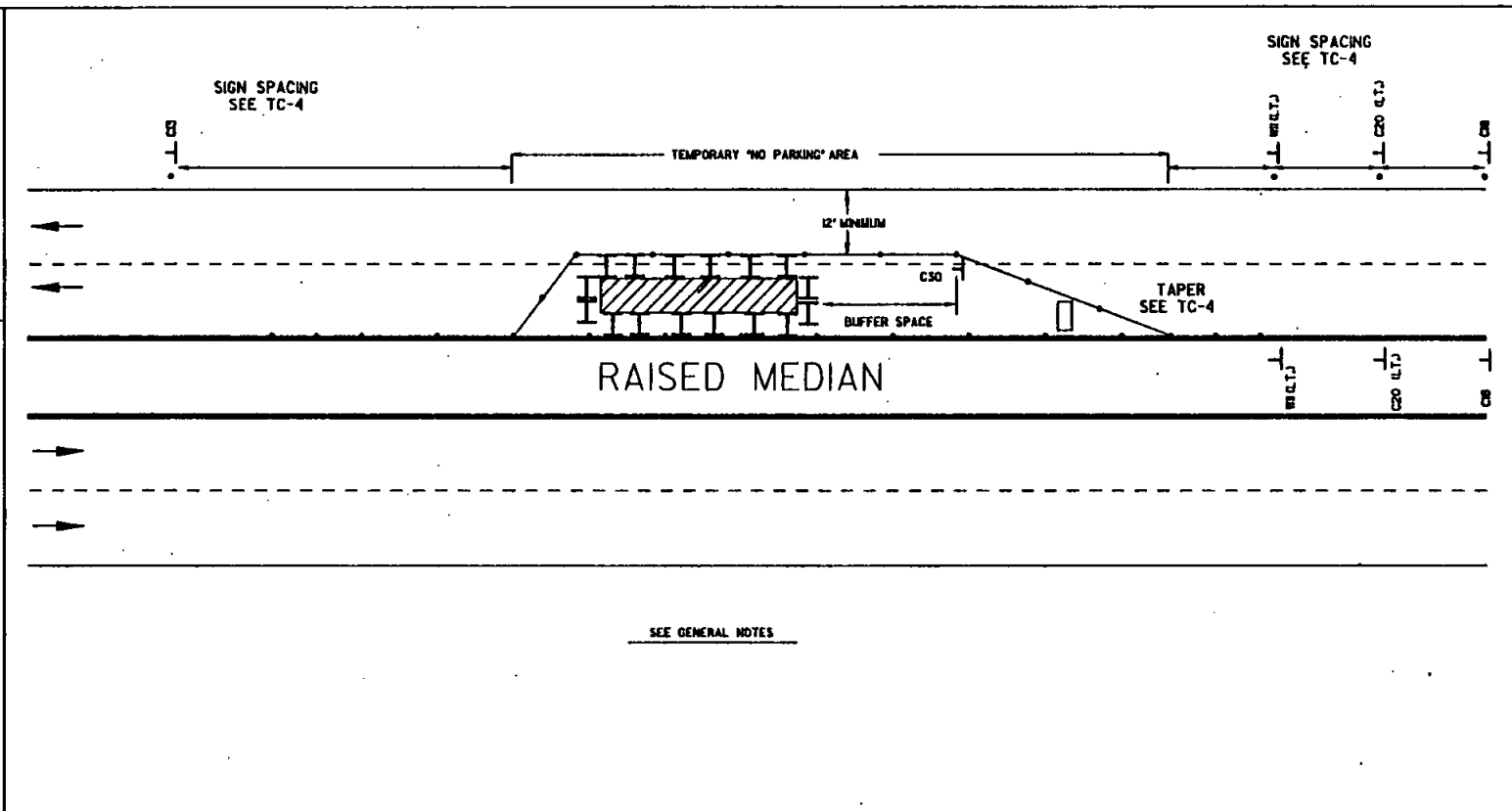
DRAWING
NUMBER TC-21

Revision	By	Approved	Date
DRAWING	DRY		4-91
DRAWING	PAW		8-91
ORIG.			10-8-91

DRAWING
NUMBER TC-22

CENTER OF ROAD WORK AREA
MULTILANE TRAFFIC CONTROL WITH RAISED MEDIAN
LEFT TRAFFIC LANE CLOSURE - ONE LANE

APPENDIX 'A'
SAN DIEGO REGIONAL STANDARD



SEE GENERAL NOTES

LEGEND

● CONE H BARRICADE ■ FLAGGER T SIGN □ FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
AGENCY _____
ADDRESS _____
PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

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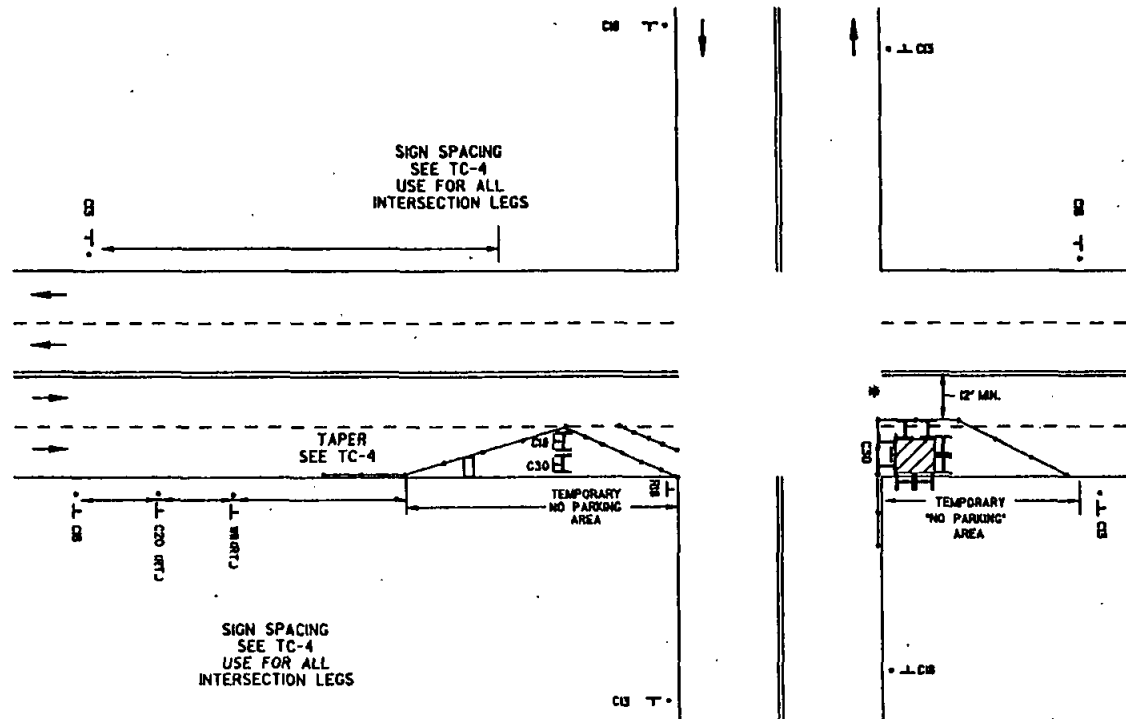
SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

Revision	By	Approved	Date
DRAWING	DMV		4-8-91
ORIG.	PLM		8-91
			10-8-91
			4-2-92

Revision	By	Approved	Date
DRAWING	DRW		4-91
DRAWING	PAW		8-91
ORIC.			10-8-91
			4-2-92

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD
SIDE OF ROAD WORK AREA
INTERSECTION TRAFFIC CONTROL

DRAWING
NUMBER **TC-23**



• LEFT OR RIGHT TURN MOVES MAY BE RESTRICTED.

LEGEND

● CONE T BARRICADE ■ FLAGGER T SIGN □ FLASHING ARROW SIGN ▨ WORK AREA → TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
AGENCY _____
ADDRESS _____
PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

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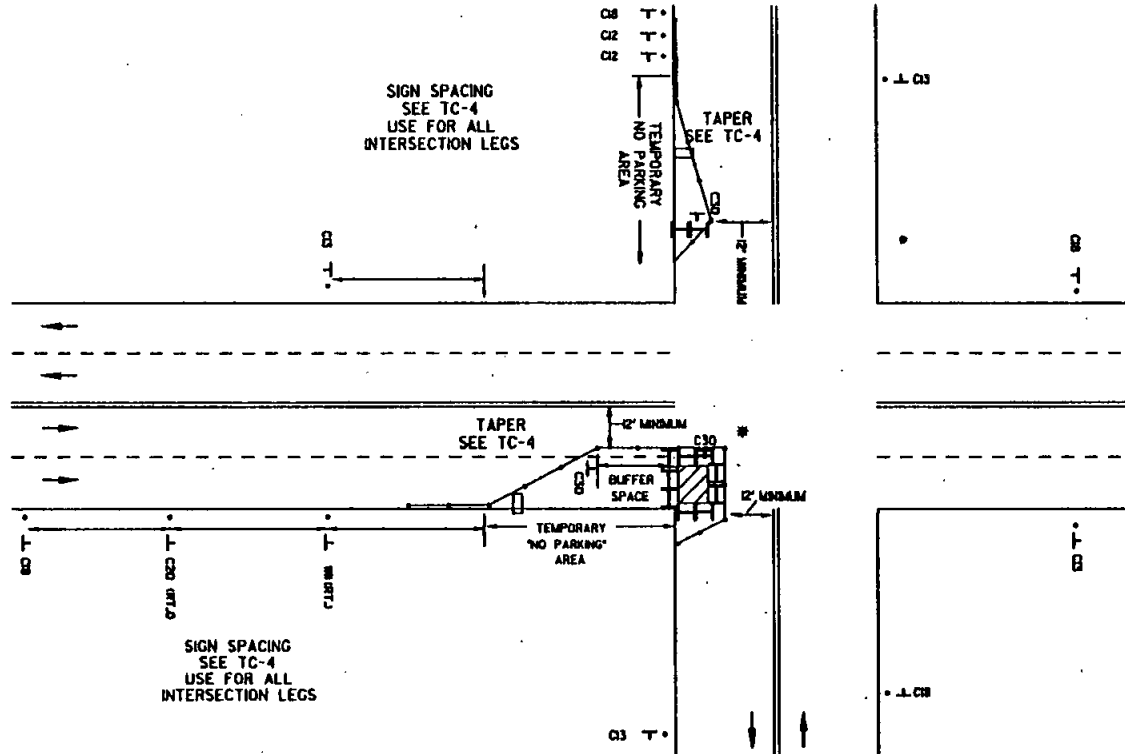
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TC-5 is required for all Traffic Control Plans.

DRAWING
NUMBER TC-24

SIDE OF ROAD WORK AREA INTERSECTION TRAFFIC CONTROL

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



• RIGHT TURN MOVES MAY BE RESTRICTED.

LEGEND

● CONE T BARRICADE ■ FLAGGER T SIGN □ FLASHING ARROW SIGN ▨ WORK AREA ⇄ TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

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TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME _____
AGENCY _____
ADDRESS _____
PHONE _____

Revision By Approved Date

DRAWING DW 4-91

ORIG. FM 8-91

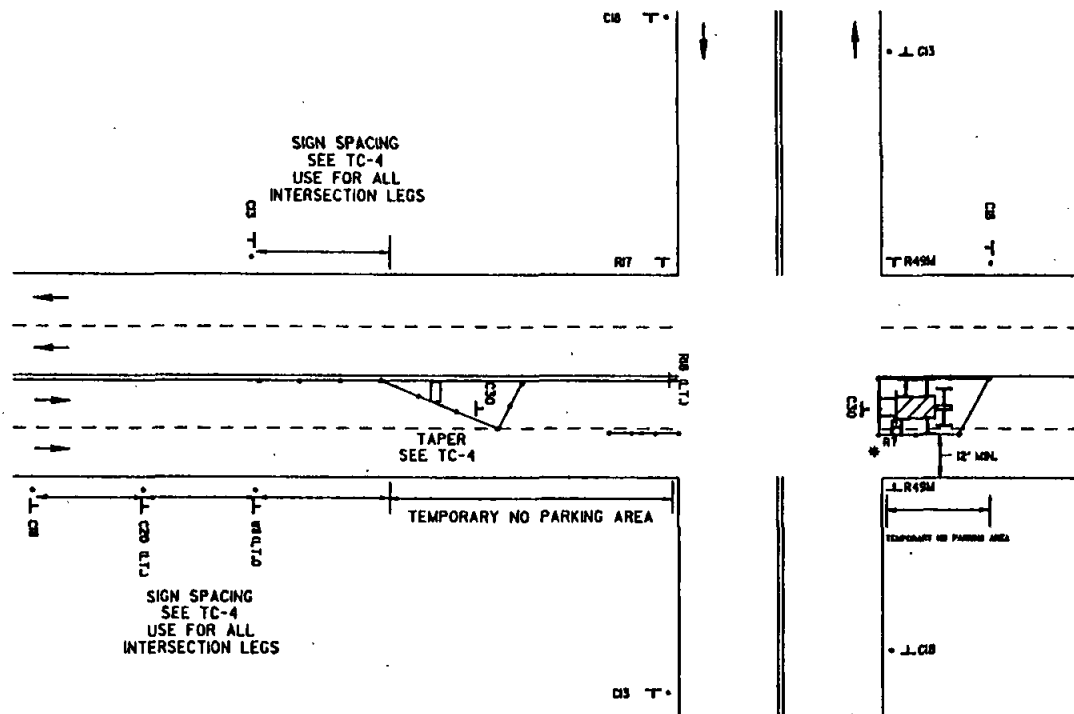
10-8-91

11-2-91

Revision	By	Approved	Date
DRAWING	DMV		4-91
ORIG.	DMV		8-91
			10-8-91
			4-2-92

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD
CENTER OF ROAD WORK AREA
INTERSECTION TRAFFIC CONTROL

DRAWING
NUMBER
TC-25



• LEFT OR RIGHT TURN MOVES MAY BE RESTRICTED.

LEGEND

● CONE H BARRICADE ■ FLAGGER T SIGN □ FLASHING ARROW SIGN ▨ WORK AREA → TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
 AGENCY _____
 ADDRESS _____
 PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

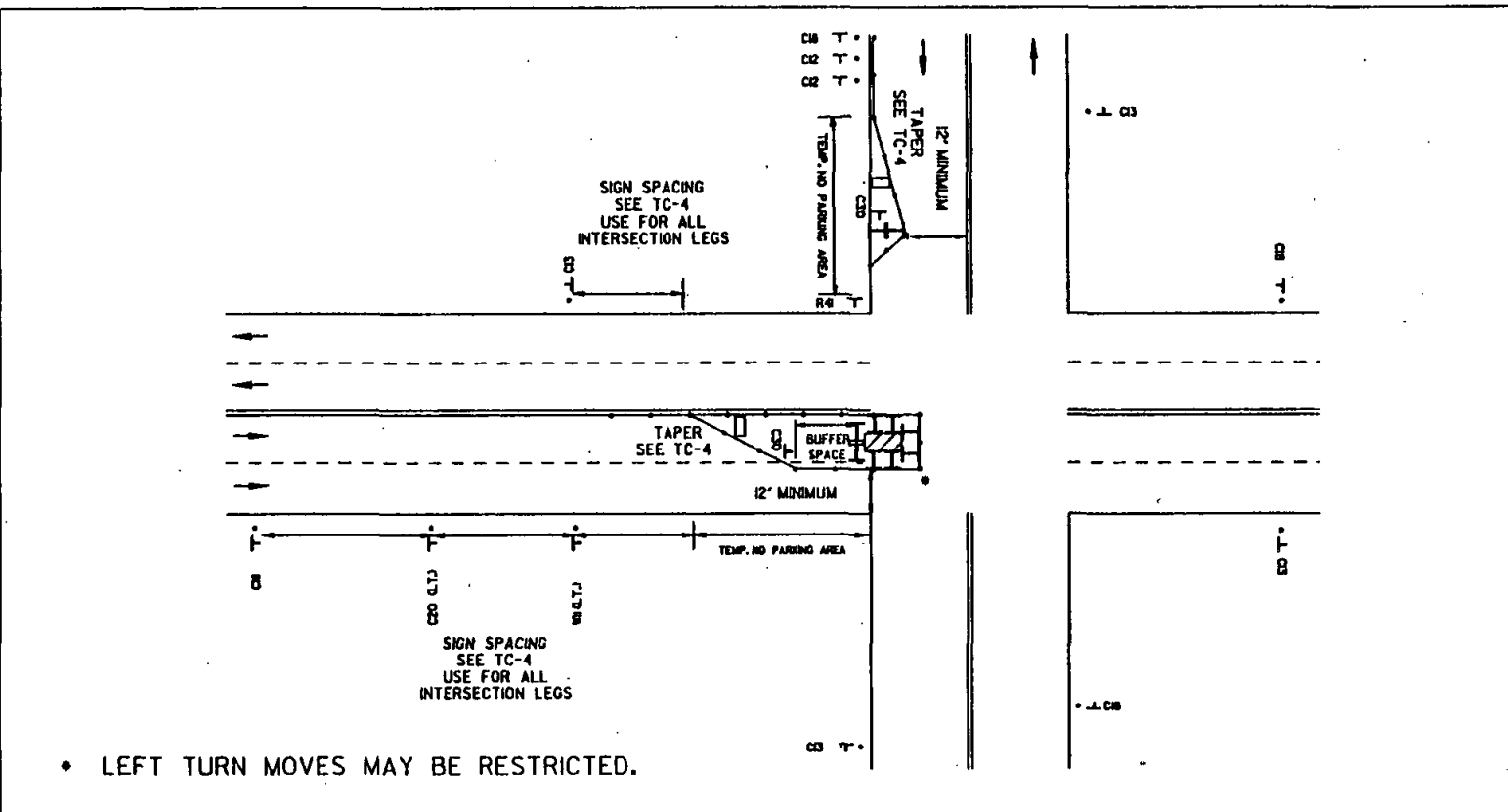
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TC-5 is required for all Traffic Control Plans.

DRAWING
NUMBER TC-26

APPENDIX 'A'
SAN DIEGO REGIONAL STANDARD
CENTER OF ROAD WORK AREA
INTERSECTION TRAFFIC CONTROL



• LEFT TURN MOVES MAY BE RESTRICTED.

LEGEND

● CONE H BARRICADE FLAGGER T SIGN □ FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
AGENCY _____
ADDRESS _____
PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

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TC-5 is required for all Traffic Control Plans.

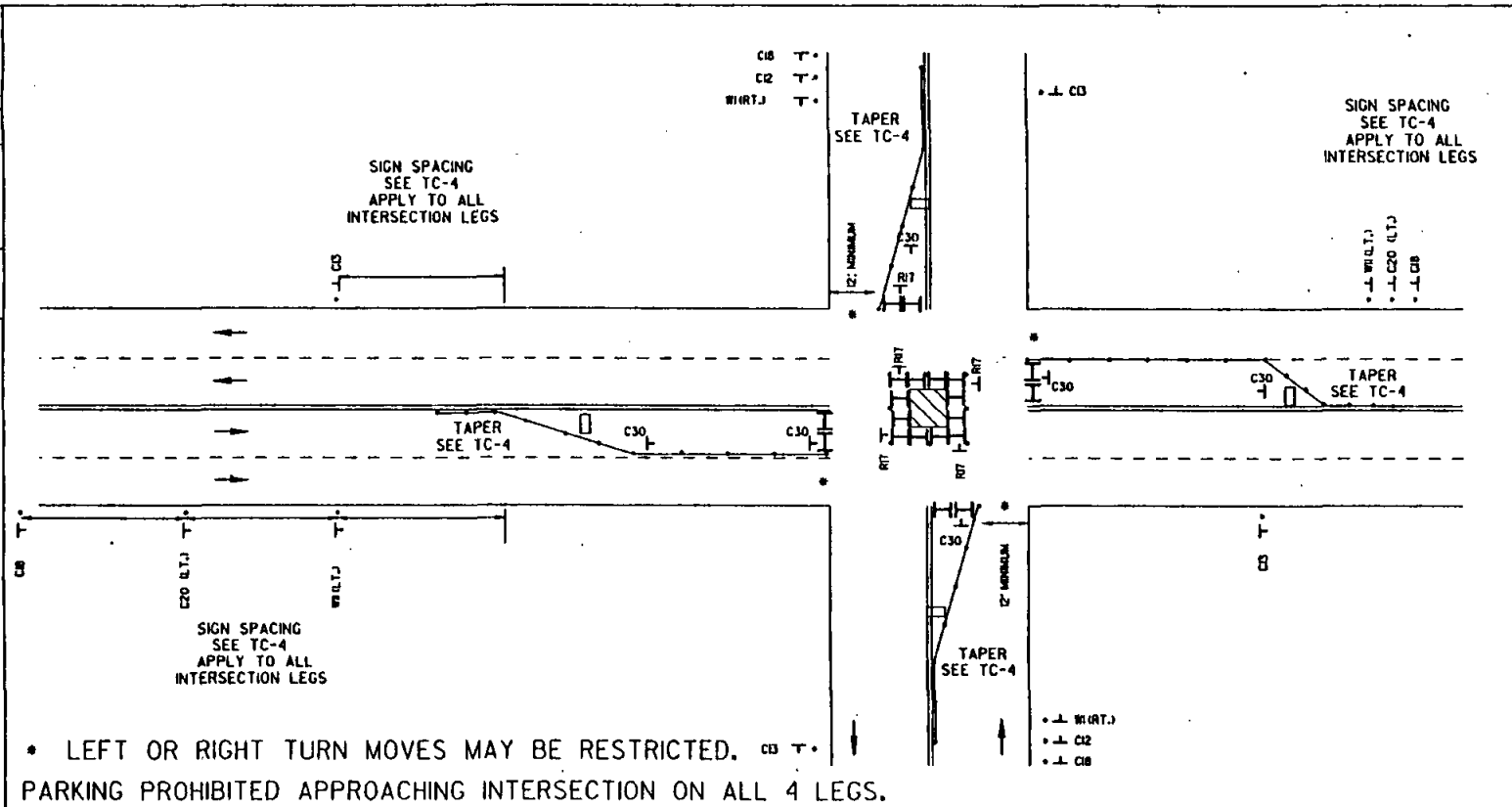
SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

Revision	By	Approved	Date
DRAWING	DMV		4-91
DRAWING	FLM		8-91
ORIG.			10-8-91
			11-18-91
			11-27-91

Revision	By	Approved	Date
DRAWING	DRY		4-91
DRAWING	FUM		8-91
ORIG.			10-8-91
			4-2-92

APPENDIX 'A'
SAN DIEGO REGIONAL STANDARD
CENTER OF ROAD WORK AREA
INTERSECTION TRAFFIC CONTROL

DRAWING
NUMBER
TC-27



LEGEND

- CONE T BARRICADE F FLAGGER T SIGN □ FLASHING ARROW SIGN ▨ WORK AREA → TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____

AGENCY _____

ADDRESS _____

PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

GENERAL NOTES

For hours of darkness, change cones to verticalbarricades with steady burn lights.

This plan DOES NOT apply at signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic ControlPlans near these intersections.

This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic ControlPlan for these areas.

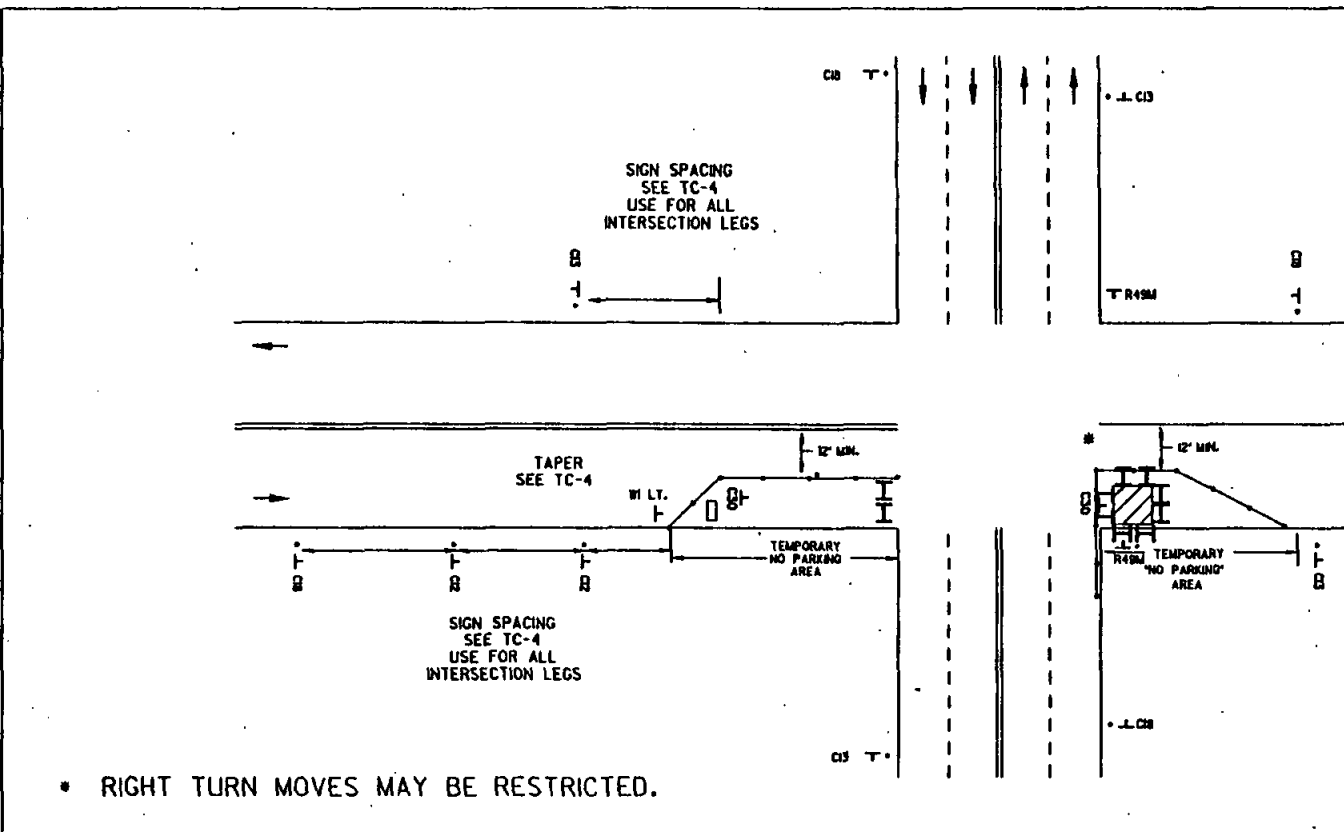
Nothing contained on this drawing shallprevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic ControlDevices is solely for the purpose of guidance to assist in the set up of the Traffic ControlPlans.

TC-5 is required for allTraffic ControlPlans.

DRAWING
NUMBER TC-28

SIDE OF ROAD WORK AREA INTERSECTION TRAFFIC CONTROL

APPENDIX 'A'
SAN DIEGO REGIONAL STANDARD



LEGEND

● CONE H BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:
NAME _____
AGENCY _____
ADDRESS _____
PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

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TC-5 is required for all Traffic Control Plans.

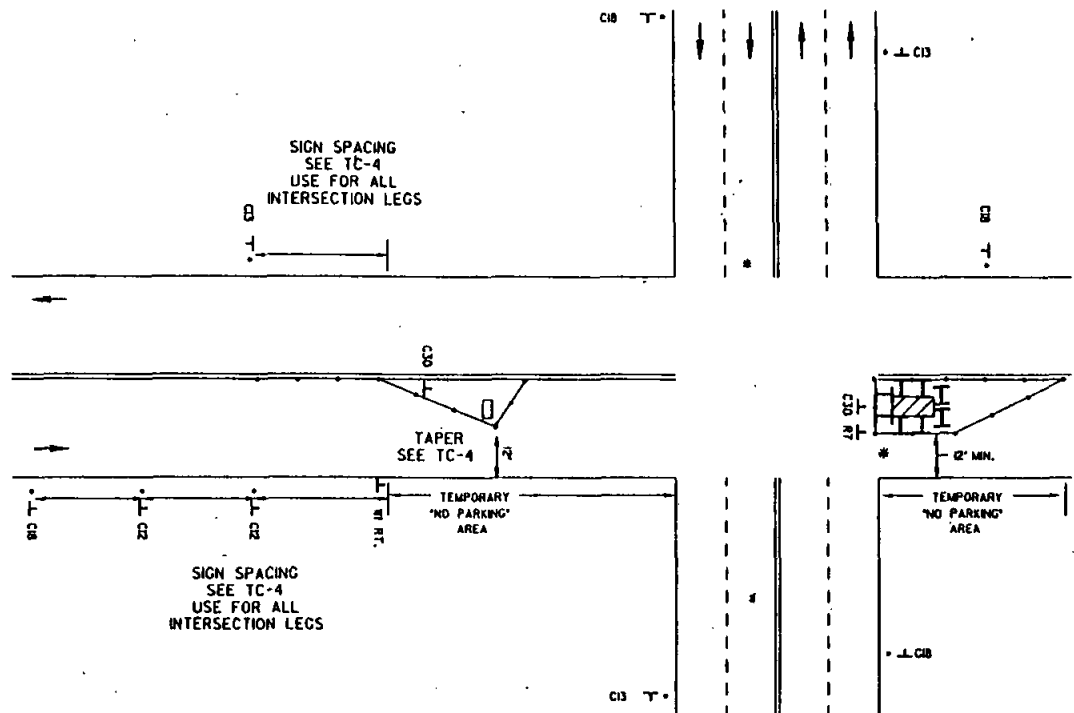
Revision	By	Approved	Date
DRAWING			4-91
DRAWING			8-91
ORIG.			10-8-91

Revision	By	Approved	Date
DRAWING	DRW		4-91
DRAWING	FWD		8-91
ORIG.			10-8-91
			1-2-92

APPENDIX "A" SAN DIEGO REGIONAL STANDARD

CENTER OF ROAD WORK AREA INTERSECTION TRAFFIC CONTROL

DRAWING
NUMBER TC-29



- LEFT OR RIGHT TURN MOVES MAY BE RESTRICTED.

LEGEND

● CONE H BARRICADE FLAGGER T SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
AGENCY _____
ADDRESS _____
PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

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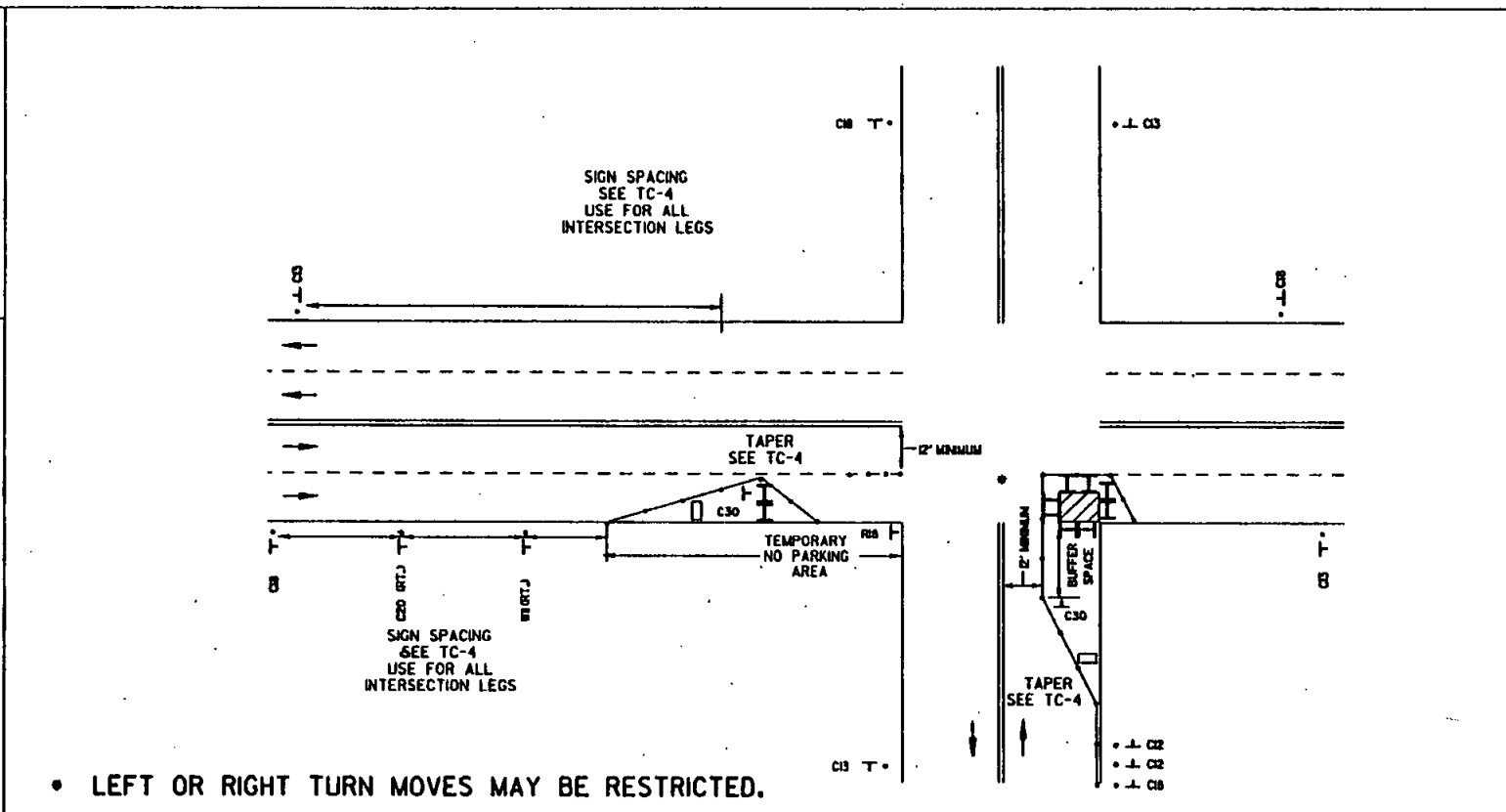
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TC-5 is required for all Traffic Control Plans.

DRAWING
NUMBER TC-30

SIDE OF ROAD WORK AREA INTERSECTION TRAFFIC CONTROL

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



LEGEND

● CONE H BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____
AGENCY _____
ADDRESS _____
PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

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Revision
DRAWING
ORIG.
BY
APPROVED
DATE
4-91
10-8-91
11-2-91

Revision DRAWING ORIG.	By DW	Approved 	Date 4-91 10-8-91		APPENDIX "A" SAN DIEGO REGIONAL STANDARD SPECIAL CONDITIONS WORK AREA TWO LANE ROADWAY WITH CENTERLINE										
				LEGEND											
				CONE BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION											
TRAFFIC ENGINEERS COMMENTS 				<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">POSTED SPEED LIMIT</th> <th style="width: 15%;">APPROACH SPEED</th> <th style="width: 15%;">TAPER LENGTH</th> <th style="width: 15%;">SPACING OF CONES</th> <th style="width: 15%;">SIGN SPACING</th> </tr> <tr> <td style="height: 20px;"></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING						SEE TC-4 FOR SIGN AND CONE SPACING AND TAPER LENGTH
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				DRAWING NUMBER TC-91											

Revision	By	Approved	Date
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ORIG.			10-8-91

APPENDIX "A" SAN DIEGO REGIONAL STANDARD

SPECIAL CONDITIONS WORK AREA MULTILANE ROADWAY WITH CENTERLINE

DRAWING
NUMBER TC-92

=====

LEGEND

● CONE H BARRICADE ■ FLAGGER T SIGN □ FLASHING ARROW SIGN  WORK AREA  TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:

NAME _____

AGENCY _____

ADDRESS _____

PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

GENERAL NOTES

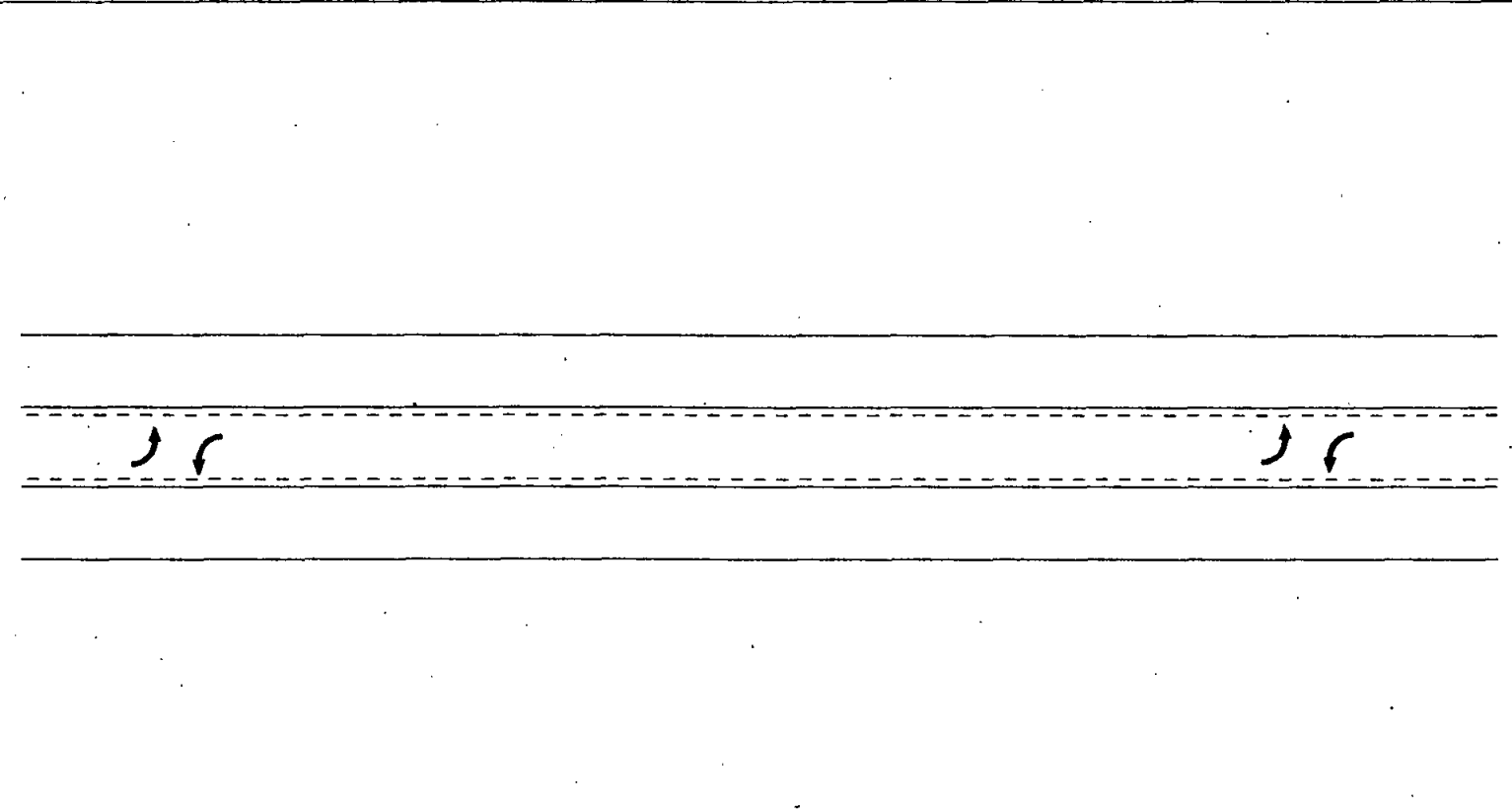
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TC-5 is required for all Traffic Control Plans.



LEGEND

- CONE H BARRICADE ■ FLAGGER T SIGN □ FLASHING ARROW SIGN ▨ WORK AREA ↔ TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:
NAME _____
AGENCY _____
ADDRESS _____
PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

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ORIG.			10-8-91

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD
SPECIAL CONDITIONS WORK AREA

TWO LANE ROADWAY
WITH TWO WAY LEFT TURN LANE

DRAWING
NUMBER TC-93

LEGEND

● CONE
⊥ BARRICADE
▣ FLAGGER
└ SIGN
◻ FLASHING ARROW SIGN
▨ WORK AREA
⇄ TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR
SIGN AND CONE
SPACING AND
TAPER LENGTH

SUBMITTED BY:

NAME _____

AGENCY _____

ADDRESS _____

PHONE _____

GENERAL NOTES

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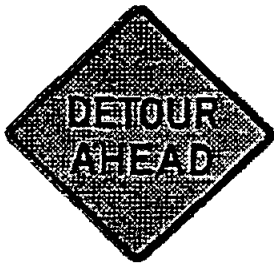
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Revision	By	Approved	Date	APPENDIX "A" SAN DIEGO REGIONAL STANDARD SPECIAL CONDITIONS WORK AREA MULTILANE ROADWAY WITH TWO WAY LEFT TURN LANE
DRAWING	DRW		4-91	
ORIG.			10-8-91	

DRAWING NUMBER **TC-94**

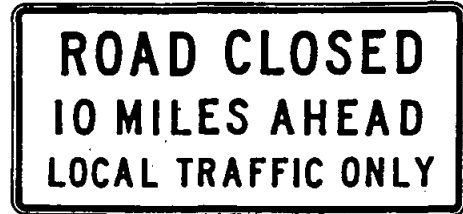
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APPENDIX "A" SAN DIEGO REGIONAL STANDARD SPECIAL CONDITIONS WORK AREA INTERSECTION	LEGEND ● CONE ⊥ BARRICADE ▣ FLAGGER ⊥ SIGN ◻ FLASHING ARROW SIGN ▨ WORK AREA ⇄ TRAFFIC DIRECTION <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <th style="width: 15%;">POSTED SPEED LIMIT</th> <th style="width: 15%;">APPROACH SPEED</th> <th style="width: 15%;">TAPER LENGTH</th> <th style="width: 15%;">SPACING OF CONES</th> <th style="width: 15%;">SIGN SPACING</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table> SEE TC-4 FOR SIGN AND CONE SPACING AND TAPER LENGTH	POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING							
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DRAWING NUMBER TC-96													



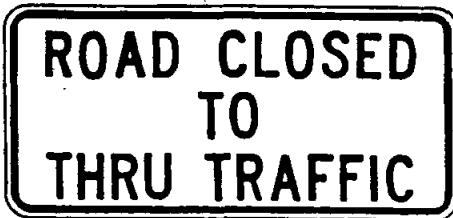
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C2



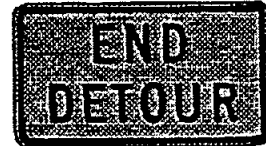
C3



C3A



C5 (RT)



C7



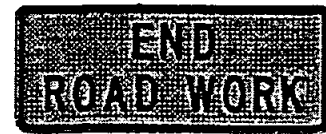
C9A



C12



C13



C14



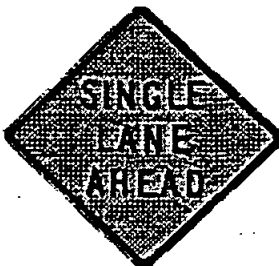
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C19



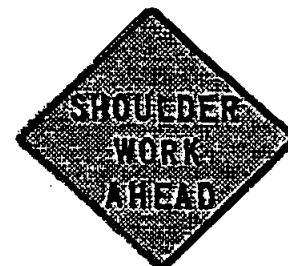
C20 (RT)



C21



C23



C24

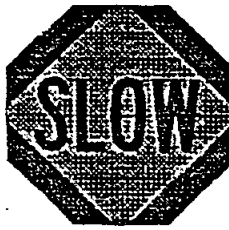
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Drawing					
				TYPICAL CONSTRUCTION SIGNS	DRAWING NUMBER TC-97



C27



C28A
FLAGGER
PADDLE



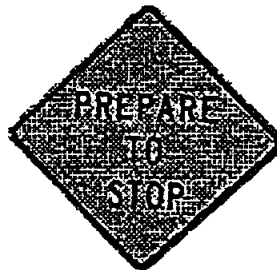
C28B
FLAGGER
PADDLE



C30



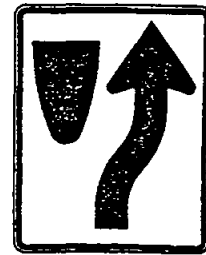
C30A



C36



R1



R7



R16



R17



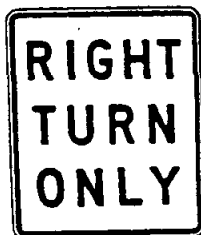
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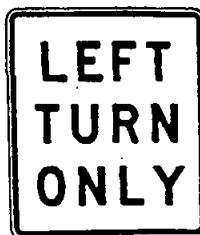
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R34



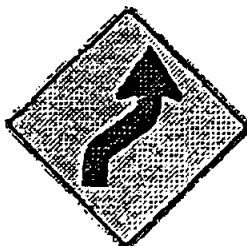
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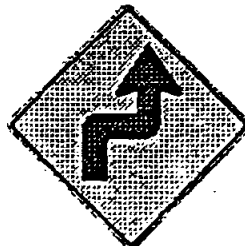
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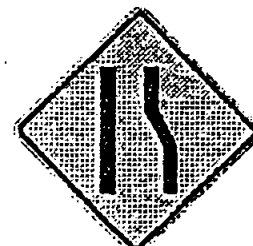
R49M



W1 (RT)



W2 (RT)



W11 (RT)

Revision	By	Approved	Date	APPENDIX A SAN DIEGO REGIONAL STANDARD DRAWING	
ORIG.			10-8-91	TYPICAL CONSTRUCTION SIGNS	
			11-18-91		
			4-6-92		
				DRAWING NUMBER	TC-98

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