



SAN DIEGO AREA

**REGIONAL
STANDARD
DRAWINGS**

STANDARD DRAWINGS FOR AGENCIES IN THE SAN DIEGO REGION

Recommended by the Regional Standards Committee
Maintained and Published by the County of San Diego
Department of Public Works
March, 2000

AMERICAN PUBLIC WORKS ASSOCIATION
ASSOCIATED GENERAL CONTRACTORS OF AMERICA
BUILDING INDUSTRY ASSOCIATION
CALIF. COUNCIL OF CIVIL ENGINEERS & LAND SURVEYORS
CARLSBAD, CITY OF
CHULA VISTA, CITY OF
CORONADO, CITY OF
DEL MAR, CITY OF
EL CAJON, CITY OF
ENCINITAS, CITY OF

ENGINEERING & GENERAL CONTRACTORS ASSOCIATION
ESCONDIDO, CITY OF
HELIK WATER DISTRICT
IMPERIAL BEACH, CITY OF
LA MESA, CITY OF
LEMON GROVE, CITY OF
NATIONAL CITY, CITY OF
OCEANSIDE, CITY OF
OTAY MUNICIPAL WATER DISTRICT
PACIFIC BELL COMPANY

POWAY, CITY OF
SAN DIEGO, CITY OF
SAN DIEGO, COUNTY OF
SAN DIEGO COUNTY ROCK PRODUCERS ASSOCIATION
SAN DIEGO GAS & ELECTRIC COMPANY
SAN MARCOS, CITY OF
SANTEE, CITY OF
SOLANA BEACH, CITY OF
VISTA, CITY OF

Regional Standards Committee

May 2000

These standard drawings have been adopted by the San Diego Regional Standards Committee for the benefit of all agencies in the San Diego area. The Regional Standards Committee membership is comprised of the County's sixteen cities, the County of San Diego, various representative districts and private industry organizations, the Pacific Telephone Company and the San Diego Gas and Electric Company as named above. The San Diego County Department of Public Works is currently providing coordination and staff support for the Regional Standards Committee.

REVISIONS

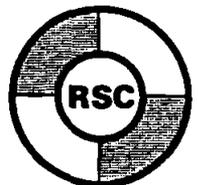
The San Diego Regional Standards Committee will continuously accept proposed revisions and/or proposed new standard drawings for review. They should be submitted to the Regional Standards staff at the Department of Public Works, County of San Diego 5555 Overland Avenue, San Diego, CA 92123, Attention: Design Engineering Section MS 0340. Should the proposed revision be very minor in nature, i.e., a grammatical error, etc., the staff will make the necessary change without taking it to the Committee. Once enough proposals have been submitted to warrant a Regional Standards Committee meeting, the staff will prepare an agenda and schedule a meeting. A blank submittal form is included after this page.

At the meeting the Committee will take one of three possible actions: approve the change, reject the change or recommend that a subcommittee further study of the change and make recommendations to the Committee. The individual or organization who submitted the change will then be notified of the Committee action. After approval of the proposed change by the Regional Standard Committee the staff will print and distribute the change to the government agencies within the San Diego County.

It is intended that the standard drawing package will be reprinted and distributed periodically incorporating all the changes approved by the Regional Standards Committee since the last printing. The reprinting will take place when the Regional Standards Committee determines enough revisions have been approved to warrant issuance of an updated drawing package. It is further intended that the Regional Standards be accepted by all agencies at the earliest possible time.



Timothy N. Stanton
Chairman, Regional Standard Committee



REVISION FOR REGIONAL STANDARDS

SPECIFICATION

DRAWING

DRAFT NO. _____

DATE _____

SUBMITTED BY:

NAME _____ PHONE _____

AGENCY _____

ADDRESS _____

SUBCOMMITTEE ACTION

ON _____
 RECOMMENDED AS MODIFIED REJECTED

REGIONAL COMMITTEE ACTION

ON _____
 RECOMMENDED AS MODIFIED REJECTED

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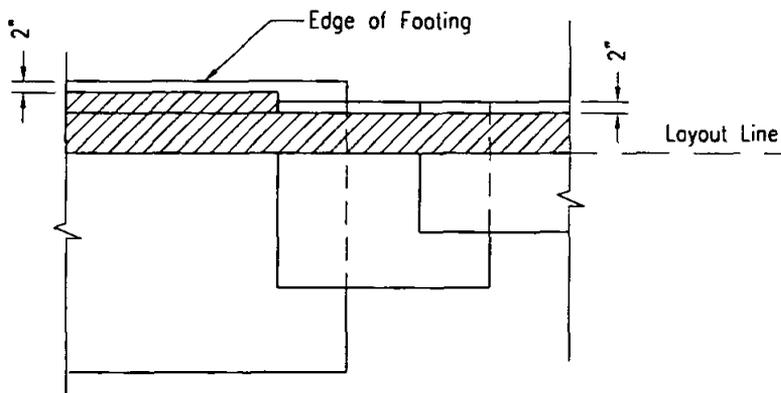
APPENDIX A

Traffic Control Plans

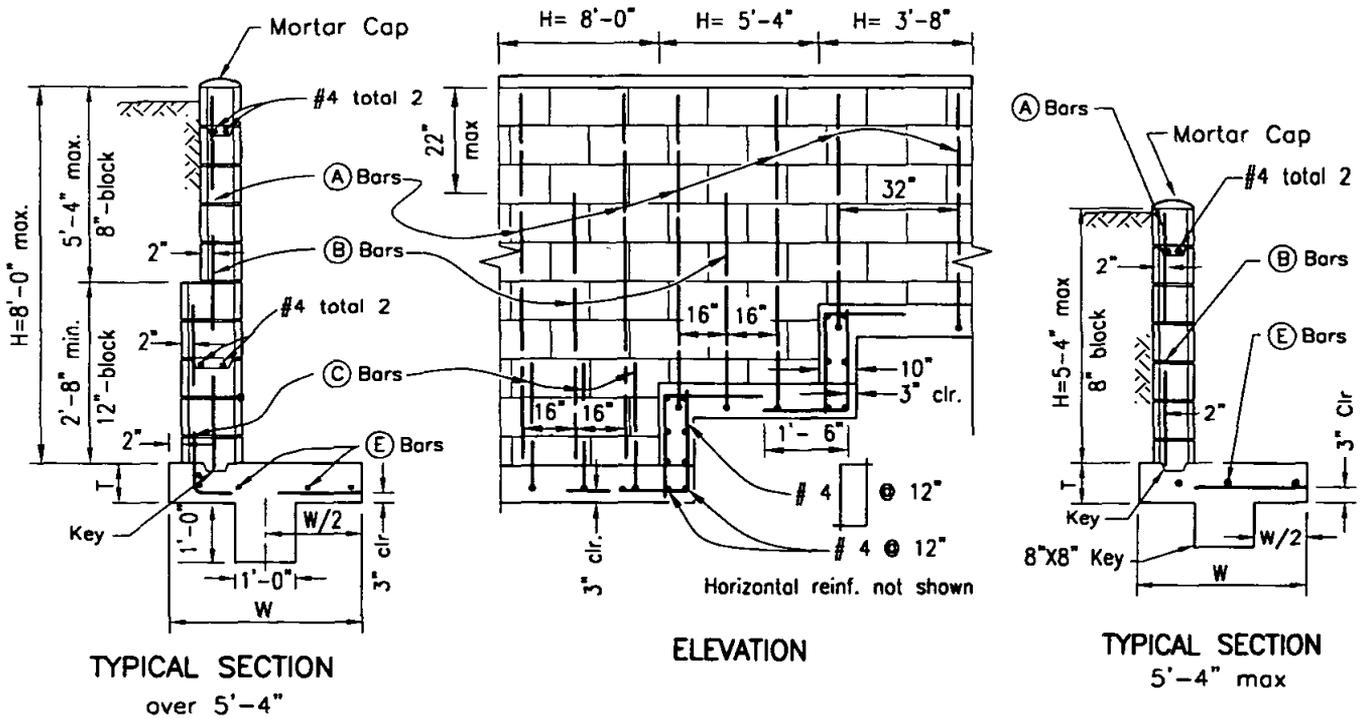
CONCRETE STRUCTURES

CONCRETE STRUCTURES

C



PLAN



ELEVATION

TYPICAL SECTION
over 5'-4"

TYPICAL SECTION
5'-4" max

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

NOTES

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

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

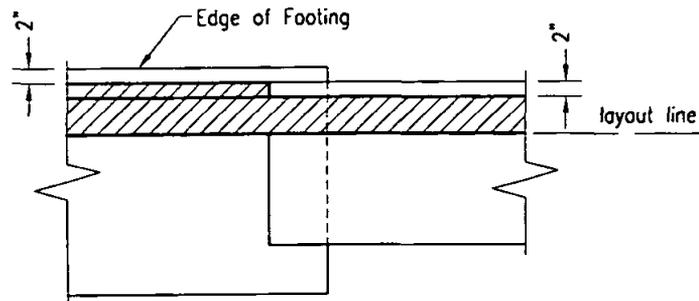
SAN DIEGO REGIONAL STANDARD DRAWING

**MASONRY RETAINING WALL
(LEVEL BACKFILL)**

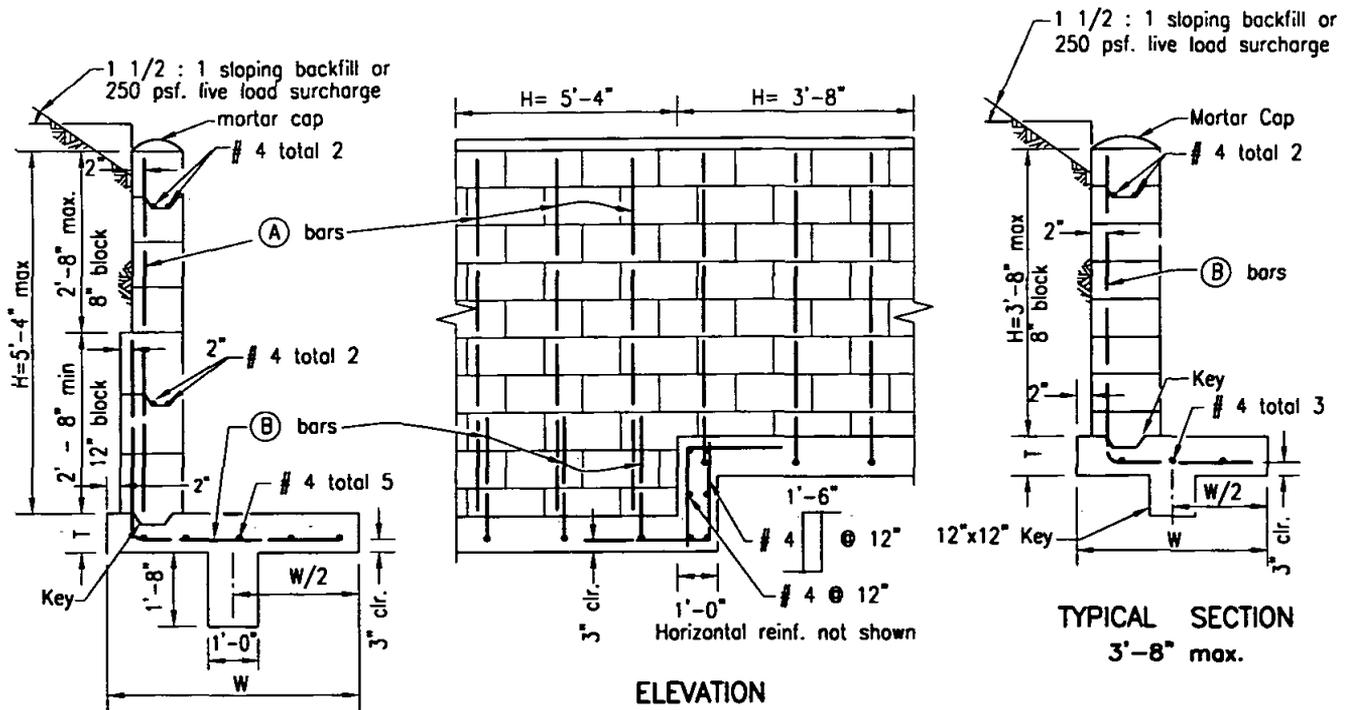
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **C-1**



PLAN



ELEVATION

TYPICAL SECTION
over 3' - 8"

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'-10"
W (min)	5'-0"	3'-9"
(A) bars	# 4 @ 16"	—
(B) bars	# 6 @ 16"	# 4 @ 16"
max. toe press. (psf)	700	550

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

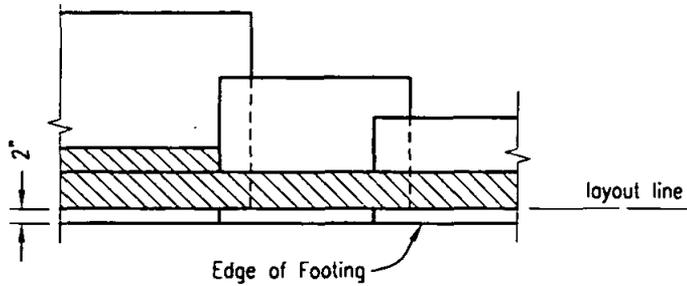
SAN DIEGO REGIONAL STANDARD DRAWING

**MANSONRY RETAINING WALL TYPE 2
(Live load Surcharge or Sloping Backfill)**

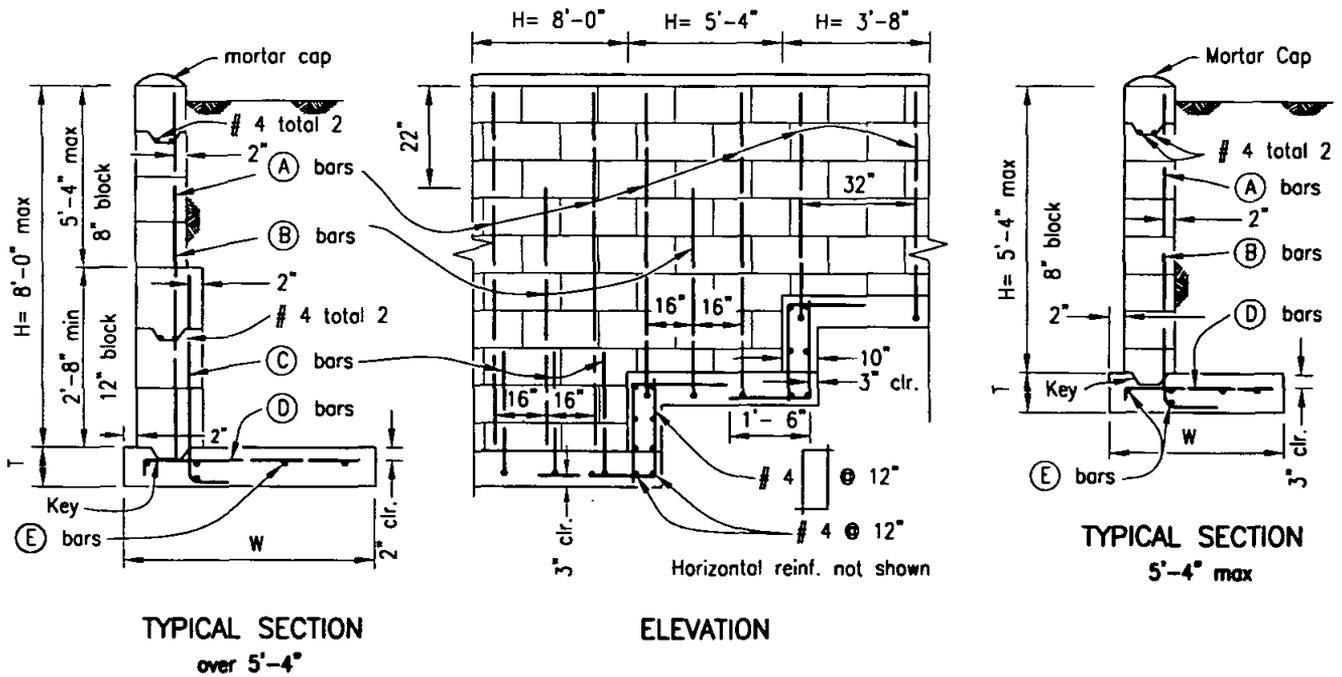
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **C-2**



PLAN



TYPICAL SECTION
over 5'-4"

ELEVATION

TYPICAL SECTION
5'-4" max

	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)	1,100		1,600	2,200

NOTES

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

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

SAN DIEGO REGIONAL STANDARD DRAWING

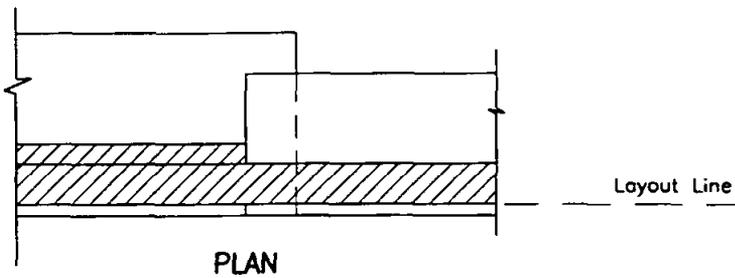
MASONRY RETAINING WALL TYPE 3
(Level Backfill)

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/60
Chairperson R.C.E. 19246 Date

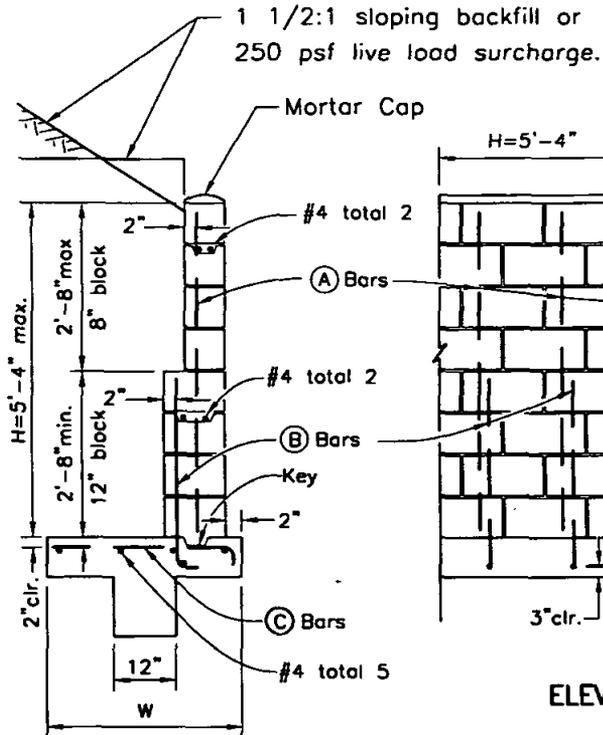
DRAWING
NUMBER

C-3

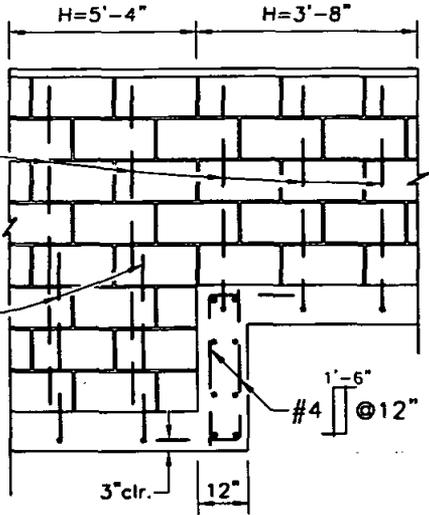


PLAN

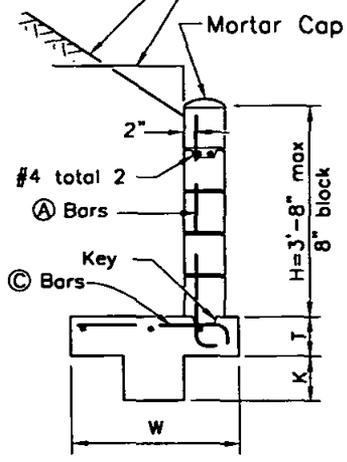
1 1/2:1 sloping backfill or
250 psf live load surcharge.



TYPICAL SECTION
over 3'-8"



ELEVATION



TYPICAL SECTION
3'-8" max

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

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

Revision	By	Approved	Date
ORIGINAL		Parkinson	02/95

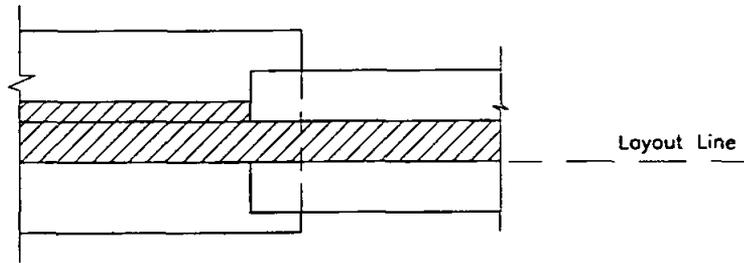
SAN DIEGO REGIONAL STANDARD DRAWING

MASONRY RETAINING WALL TYPE 4
(Live Load Surcharge or Sloping Backfill)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

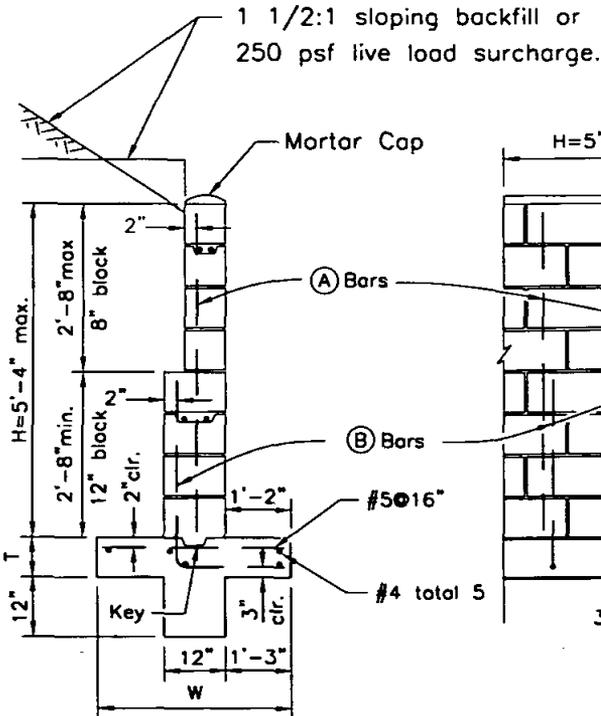
W. H. Houston 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **C-4**

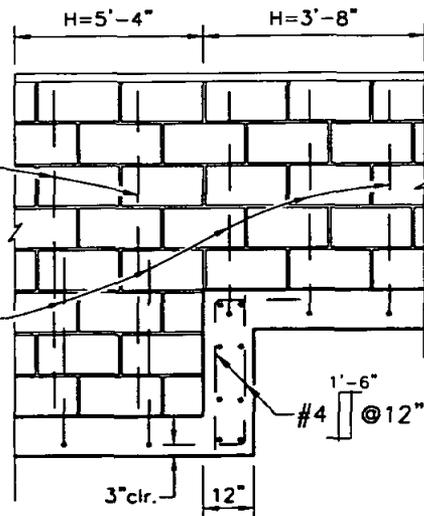


PLAN

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

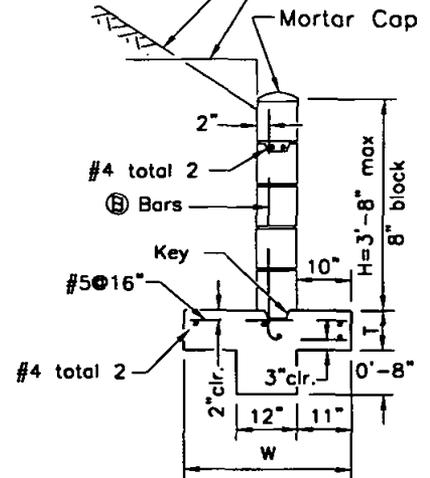


TYPICAL SECTION
over 3'-8"



ELEVATION

Horizontal reinf. not shown



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)	3'-10"	2'-9"
(A) Bars	#4@16"	—
(B) Bars	#6@16"	#4@16"
Max. Toe Press. (psf)	2,000	1,400

Revision	By	Approved	Date
ORIGINAL		Parkinson	2/95

SAN DIEGO REGIONAL STANDARD DRAWING

MASONRY RETAINING WALL TYPE 6
(Live Load Surcharge or Sloping Backfill)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **C-6**

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 1 1/2:1 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 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 bars.

MASONRY:

All reinforced masonry retaining walls 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 compacting 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.

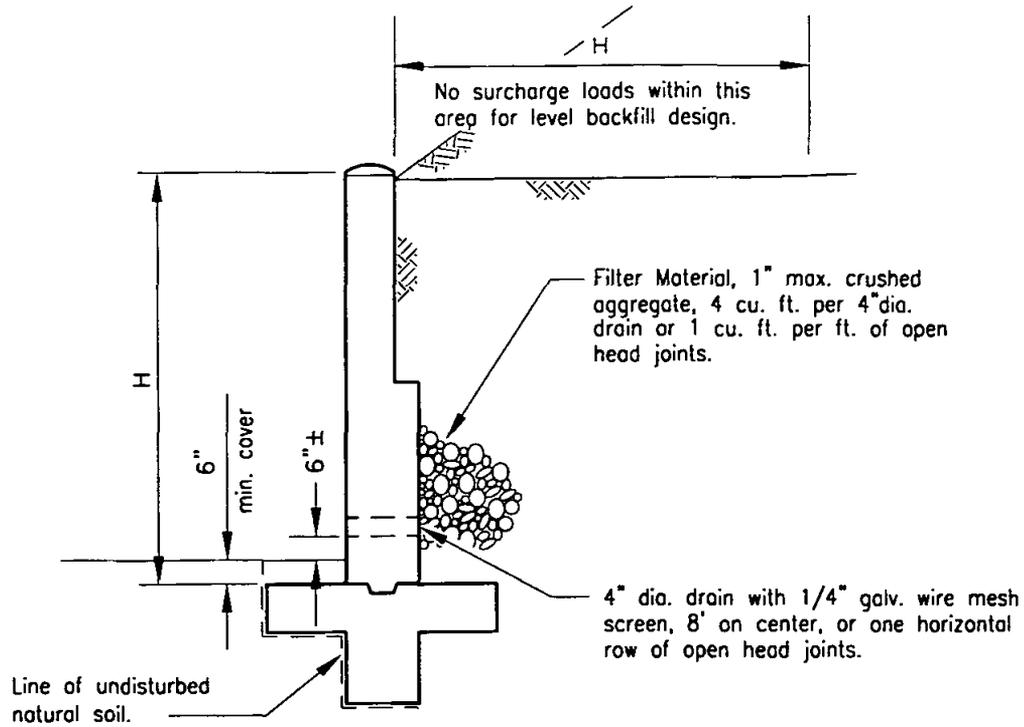
WALL DRAINS:

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

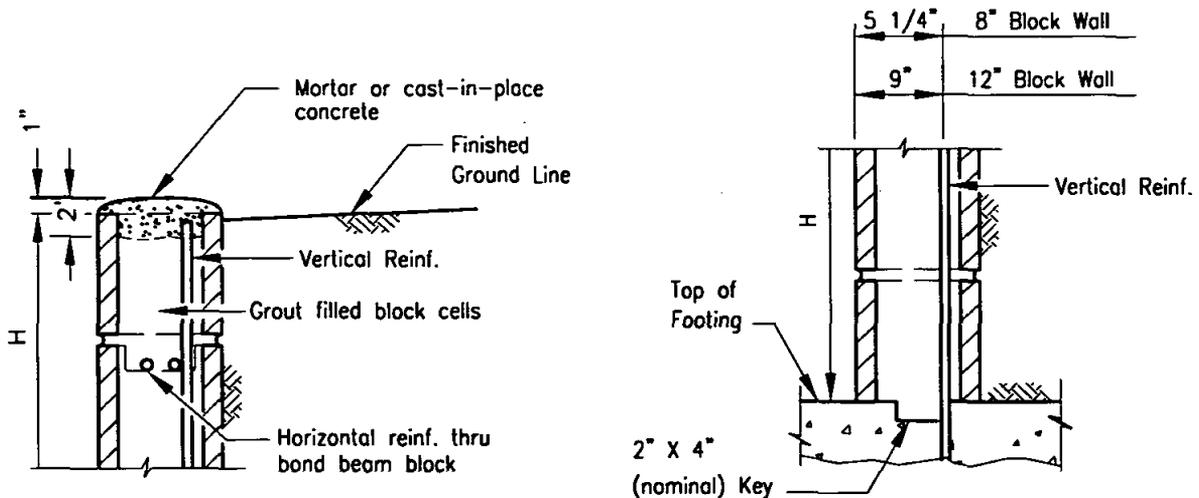
SOIL:

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	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		A. Kercheval	12/75		
				GENERAL NOTES FOR MASONRY RETAINING WALLS	<i>[Signature]</i> 3/23/00 Chairperson R.C.E. 19246 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.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

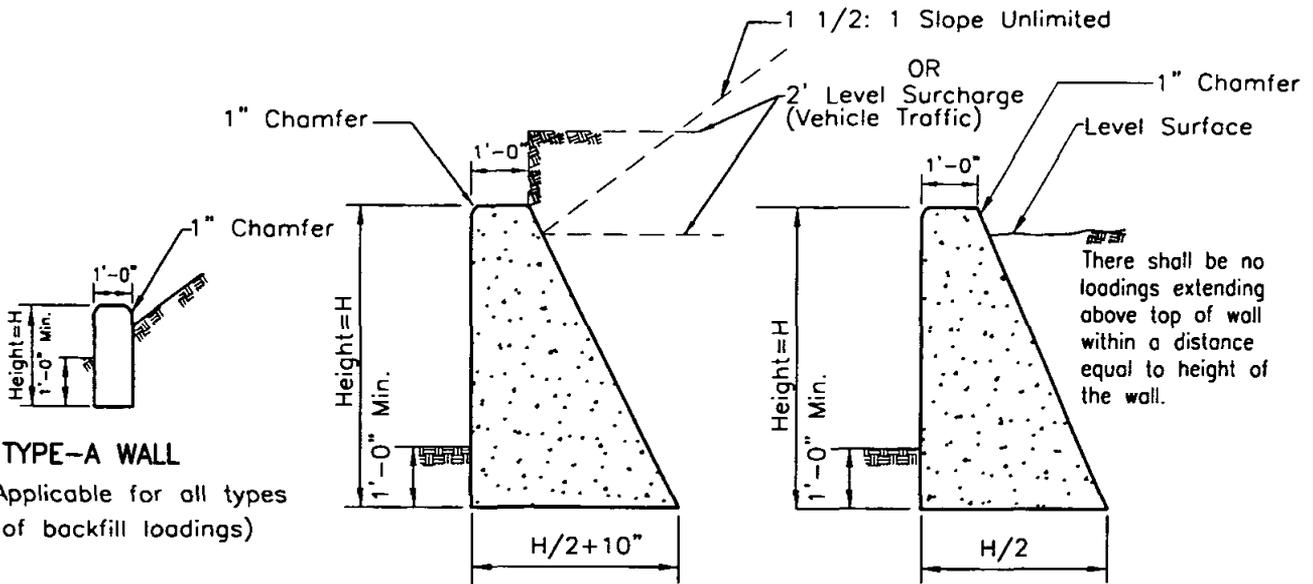
SAN DIEGO REGIONAL STANDARD DRAWING

DETAILS FOR MASONRY RETAINING WALL

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **C-8**



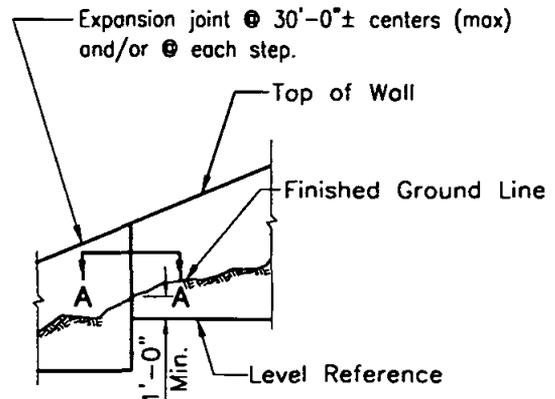
TYPE-A WALL

(Applicable for all types of backfill loadings)

TYPE-B WALL

TYPE-C WALL

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



ELEVATION

NOTE

See Standard Drawings 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
ORIGINAL		Kercheval	12/75		
GRAVITY RETAINING WALLS				 3/23/60 Chairperson R.C.E. 19246 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'.

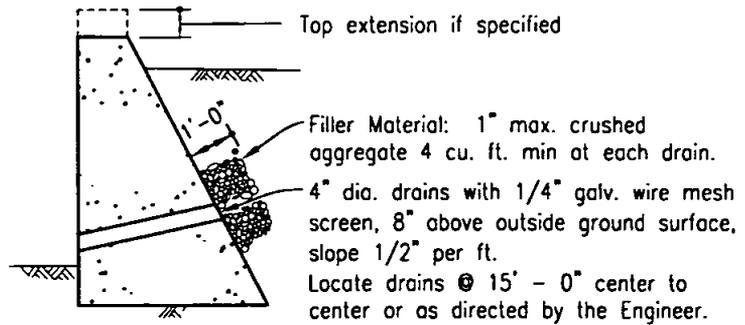
Note: Maximum toe pressure under wall footing = 1 1/2 tons. Special design required where footing material is incapable of supporting this pressure.

EXCAVATION AND BACKFILL

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

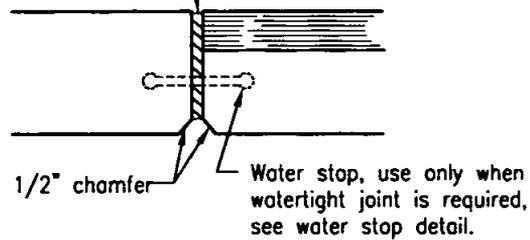
Each layer of backfill shall be moistened as directed by the Engineer and thoroughly tamped, rolled or otherwise compacted until the relative compaction is not less than 90 percent.

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.

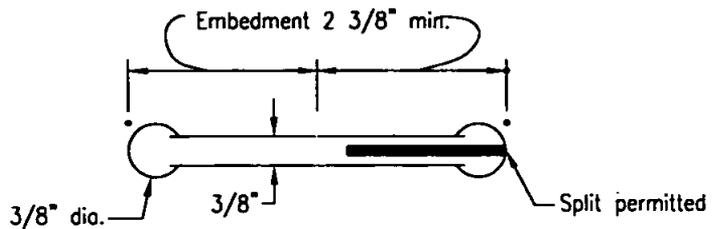


**TYPICAL DRAINAGE
 WHEN H IS GREATER
 THAN 4' - 0"**

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



SECTION A-A



RUBBER WATERSTOP

Use only when watertight joint is required.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

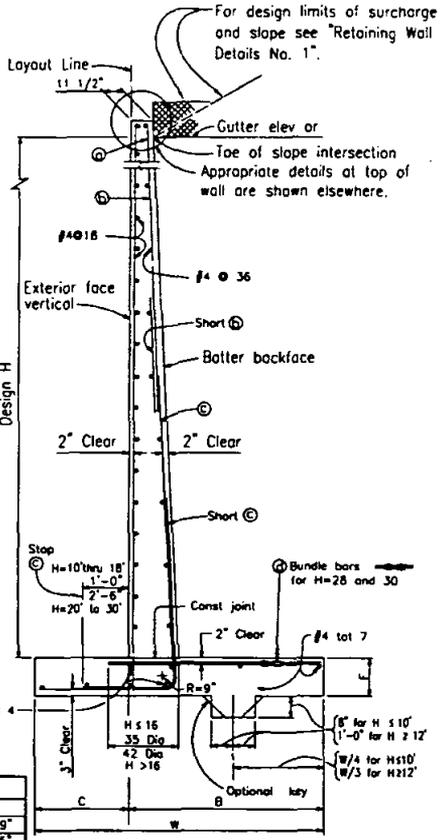
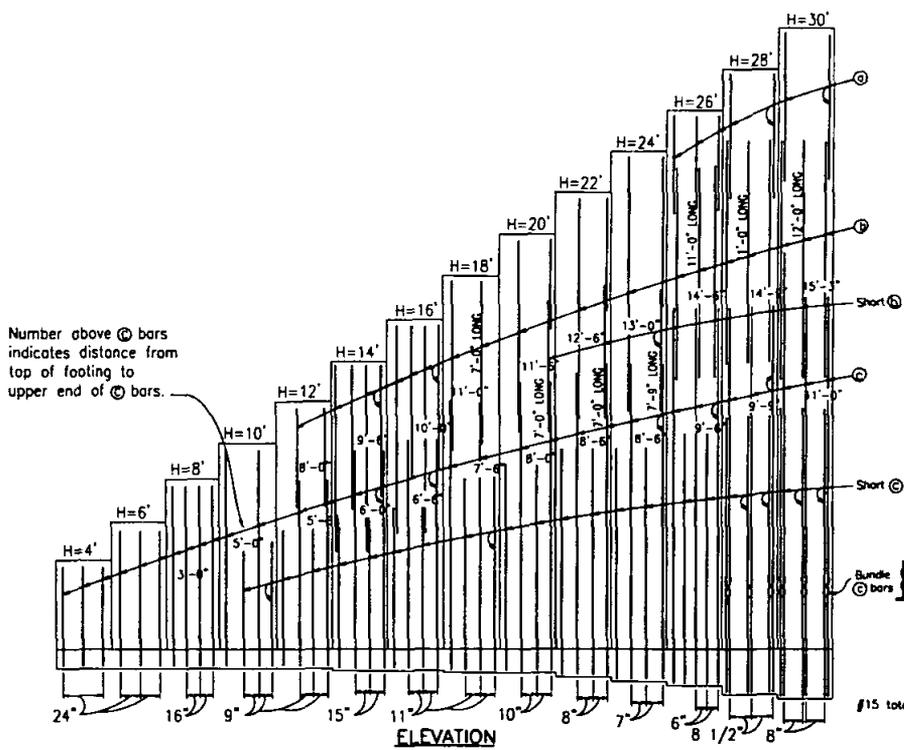
SAN DIEGO REGIONAL STANDARD DRAWING

**GENERAL NOTES AND DETAILS
 FOR GRAVITY RETAINING WALLS**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/60
 Chairperson R.C.E. 19246 Date

DRAWING NUMBER **C-10**



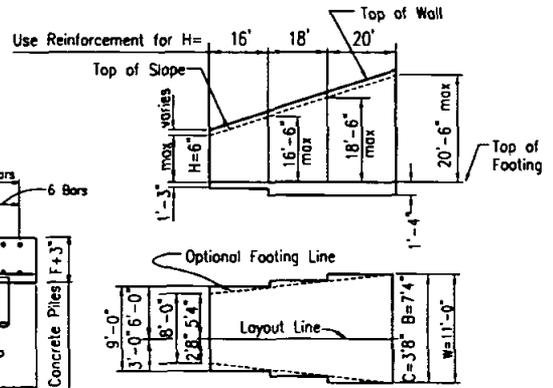
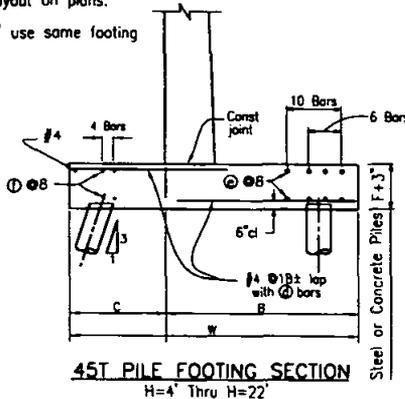
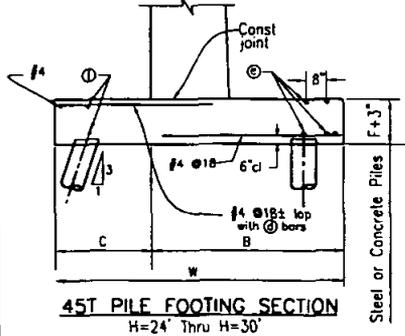
Number above © bars indicates distance from top of footing to upper end of © bars.

Note:
For details not shown and drainage notes see "Retaining Wall Details No.1." Standard Drawing C-13.
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'	14'	16'	18'	20'	22'	24'	26'	28'	30'
W	3'-2"	4'-2"	5'-2"	6'-2"	7'-2"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-3"	14'-3"	15'-3"	16'-9"
C	1'-0"	1'-4"	1'-8"	2'-0"	2'-4"	2'-8"	3'-0"	3'-4"	3'-8"	4'-0"	4'-5"	4'-9"	5'-1"	5'-5"
B	2'-2"	2'-10"	3'-6"	4'-2"	4'-10"	5'-4"	6'-0"	6'-8"	7'-4"	8'-0"	8'-10"	9'-6"	10'-2"	11'-4"
F Spread Ftg.	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"	1'-3"	1'-3"	1'-4"	1'-4"	1'-6"	1'-8"	1'-11"	2'-2"	2'-4"
Batter	1/2:12	1/2:12	1/2:12	1/2:12	1/2:12	1/2:12	1/2:12	1/2:12	1/2:12	1/2:12	5/8:12	3/4:12	3/4:12	7/8:12
© bars					#4@18	#6@30	#6@22	#7@22	#8@20	#8@16	#8@14	#8@12	#8@10-1/2	#8@8
© bars					#4@18	#6@30	#6@22	#7@22	#8@20	#8@16	#8@14	#8@12	#8@10-1/2	#8@8
© bars	#5@24	#5@24	#5@16	#5@9	#5@9	#5@15	#5@11	#5@11	#5@10	#5@10	#5@7	#5@6	#5@5-1/2	#5@5
© bars	#5@24	#5@24	#4@16	#4@9	#5@9	#5@15	#5@11	#5@11	#5@10	#5@10	#5@7	#5@6	#5@5-1/2	#5@5
Total © bars	6-#8	6-#8	10-#7	10-#7	10-#7	10-#7	6-#7	6-#7	6-#7	6-#7	4-#7	4-#7	4-#7	4-#7
Total © bars	4-#7	4-#7	4-#7	4-#7	4-#7	4-#7	4-#7	4-#7	4-#7	4-#7	2-#7	2-#7	2-#7	2-#7
2' Level surcharge	Toe Pressure k/sf	1.6	1.9	2.2	2.3	2.8	3.3	3.5	4.0	4.3	4.6	4.9	5.3	6.2
2:1 unlimited slope	Toe Pressure k/sf	1.1	1.5	2.0	2.5	2.7	3.3	3.6	4.2	4.7	5.5	5.9	6.5	7.5
1 1/2:1 limited slope	Toe Pressure k/sf	1.3	1.7	2.1	2.5	2.9	3.4	3.8	4.3	4.8	5.4	5.8	6.5	7.2
Spread Footing	Steel lbs/ft.	17	20	28	37	51	80	105	147	187	246	303	407	507
Spread Footing	Conc. cf/ft.	8.9	12.5	16.3	20.2	25.4	30.1	34.6	40.1	45.0	52.1	63.3	77.0	104.8
Pile Ftg.	Steel lbs/ft.	29	32	41	70	84	113	140	172	212	270	322	427	469
Pile Ftg.	Conc. cf/ft.	10.2	12.7	16.7	20.8	25.2	30.1	34.8	40.6	45.7	53.1	64.7	78.6	107.0

Ⓢ Denotes a bundle of 2 bars

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

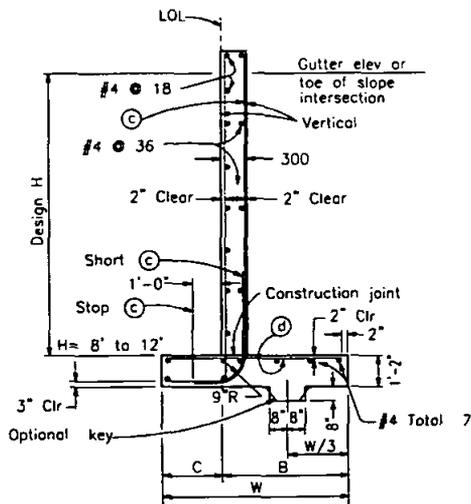


TYPICAL LAYOUT EXAMPLE
For joints required, see Details 3-3 and 3-4, drawing C-15

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

SAN DIEGO REGIONAL STANDARD DRAWING
REINFORCED CONCRETE RETAINING WALL
TYPE 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
[Signature] 3/23/60
Chairperson R.C.E. 19246 Date
DRAWING NUMBER C-11



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"	
⊙ bars	#5@24	#5@22	#5@11	#6@9	#7@7-1/2	
⊙ bars	#5@24	#5@22	#5@22	#7@18	#8@15	
Total ⊙ bars	6-#6	6-#6	6-#6	10-#7	10-#7	
Total ⊙ bars				4-#7	4-#7	
Case I - Toe Press. psf	1590	1930	2240	2550	2840	
Case II - Toe Press. psf	1060	1460	1860	2280	2700	
Spread Footing	Steel lbs/ft	15	21	27	46	70
	Conc Cf/ft	8.6	11.8	14.9	18.1	21.3
Pile Ftg	Steel lbs/ft	25	32	38	75	101
	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.

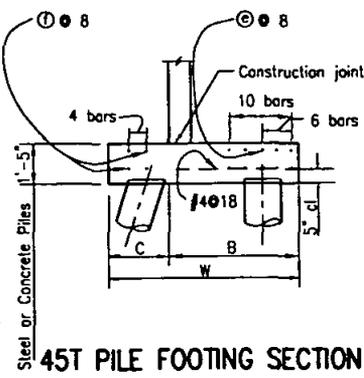
⊙ For pile footing Design H=4' use same footing dimensions as Design H=6'

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

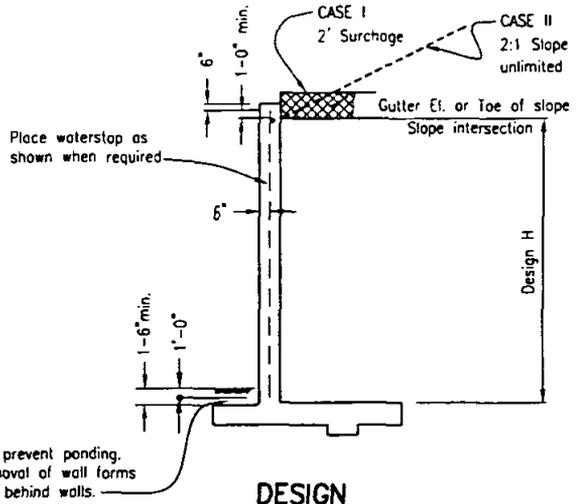
Design Data:
fc = 1300 psi f'c=3250 psi fs=24,000 psi
n = 10 earth 120 pcf

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 $\beta = 33^\circ-42^\circ$.

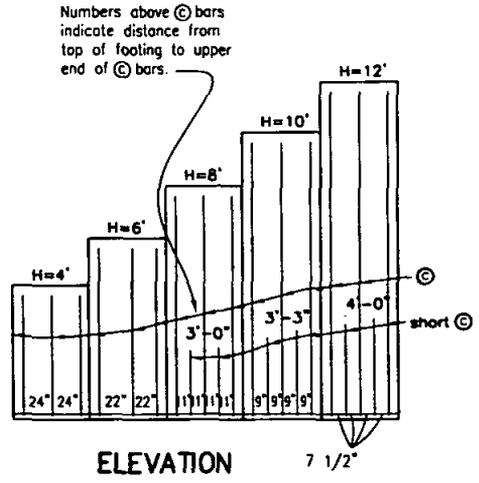


45T PILE FOOTING SECTION

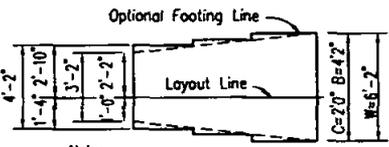
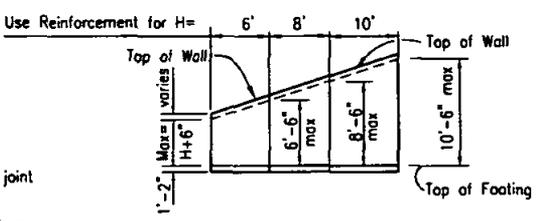


DESIGN

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, Std Dwg C-15

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

SAN DIEGO REGIONAL STANDARD DRAWING

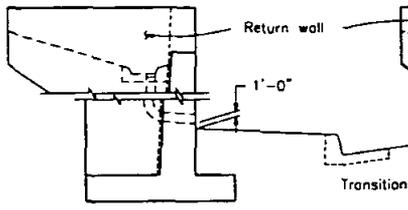
REINFORCED CONCRETE RETAINING WALL

TYPE 1A

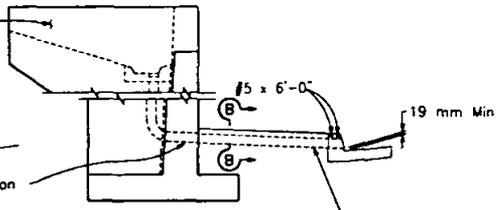
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Steaton 3/23/60
Chairperson R.C.E. 19246 Date

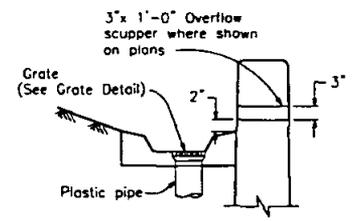
DRAWING NUMBER C-12



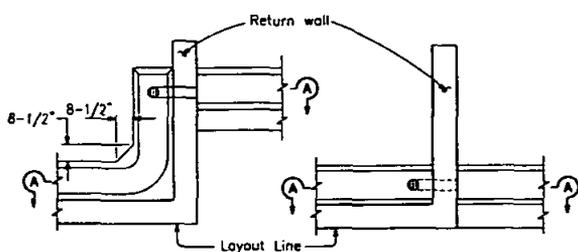
**RETAINING WALL,
FACE OF WALL OUTLET**



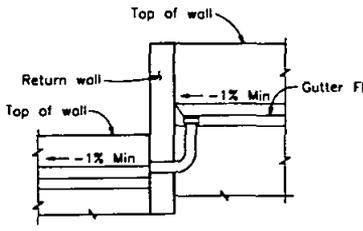
RETAINING WALL, GUTTER OUTLET



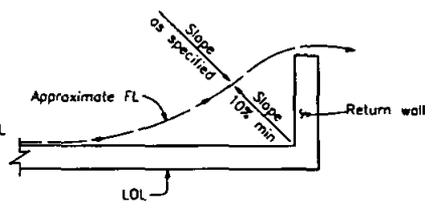
WALL DRAIN DETAIL



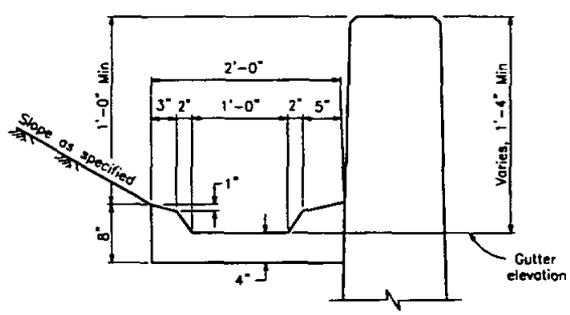
**PLAN-OFFSET WALL
DRAIN THROUGH RETURN WALL** **PLAN-CONTINUOUS WALL
DRAIN THROUGH RETURN WALL**



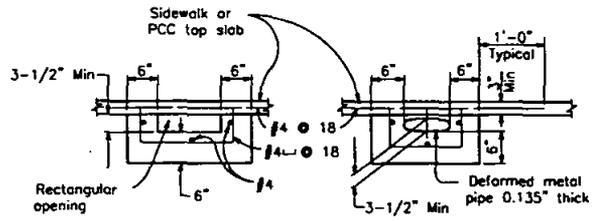
SECTION A-A



**WALL DRAINAGE
WHERE GUTTER NOT REQUIRED**



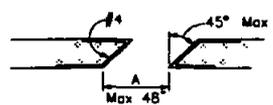
TYPICAL GUTTER DETAIL



NOTE

Area of opening to be not less than that of pipe from wall gutter. Make opening transition in wall. Edge opening in curb face to 3/4" minimum radius.

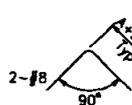
OUTLET DETAIL - SECTION B-B



Standard vertical reinf Limits of special reinf Standard vertical reinf

Standard vertical reinf above and below opening (both faces)
#6(A+3'-0") Total 2 (back face only)
(Omit for "A" less than 12")

#4 Total 6



Br Detail 3-2

Standard vertical reinforcement plus additional vertical bars corresponding in size and number to bars cut by the opening. Place half on each side. Extend the additional bars into the footing the same as other vertical wall reinforcement and to a minimum of 60 bar diameters above the top of utility opening if wall height permits. Bundle bars as required.

Horizontal reinf to be standard except as shown.

All reinf to clear opening by 2" minimum.

Expansion joints shall not be located within the limits of special reinforcing.

2-#8(A+4'-0") Total 4
(omit for "A" less than 12")

RETAINING WALL UTILITY OPENING

Max size of opening (A) = 48" To be used in conjunction with Standard Drawing C-13.



GRATE DETAIL
Sizes to fit standard hubs

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

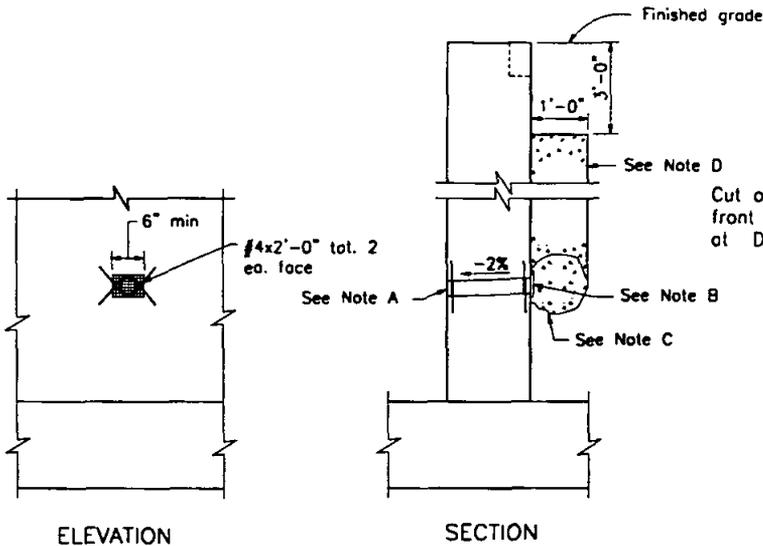
SAN DIEGO REGIONAL STANDARD DRAWING

**REINFORCED CONCRETE
RETAINING WALL DETAILS No. 2**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Steinton 3/23/00
Chairperson R.C.E. 19246 Date

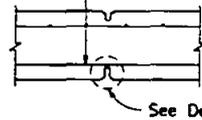
**DRAWING
NUMBER C-14**



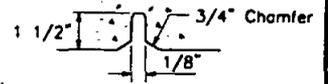
WEEP HOLE AND PERVIOUS BACKFILL
DETAIL 3-1

See Note D
Cut or butt every other
front face horizontal bar
at Detail 3-2

Joint may be formed with
1/8" hardboard and cut back
to the root of the chamfer
on the exposed face.

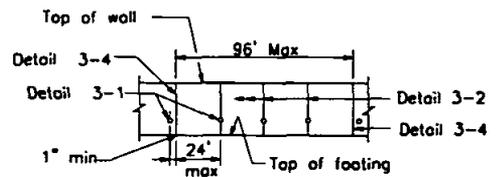


SECTION



DETAIL A

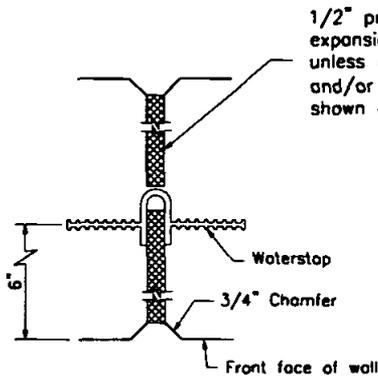
WEAKENED PLANES
DETAIL 3-2



WALL EXPANSION JOINTS
AND WEAKENED PLANES
DETAIL 3-3

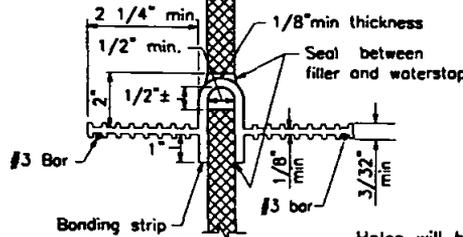
NOTES

- A. 4" diameter drain @ 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.
- B. 6" square aluminum or galvanized steel wire 4 mesh hardware cloth. (Min wire diameter 0.03") Anchor firmly to backface.
- C. One cubic foot pervious backfill material in a burlap sack, securely tied.
- D. Pervious backfill material continuous behind retaining wall.



WALL EXPANSION JOINT
DETAIL 3-4

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 water stop.
Height of ribs to be 3/32" min.



WATERSTOP
DETAIL 3-6

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
ORIGINAL		Kercheval	12/75

SAN DIEGO REGIONAL STANDARD DRAWING

REINFORCED CONCRETE
RETAINING WALL DETAILS No. 3

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

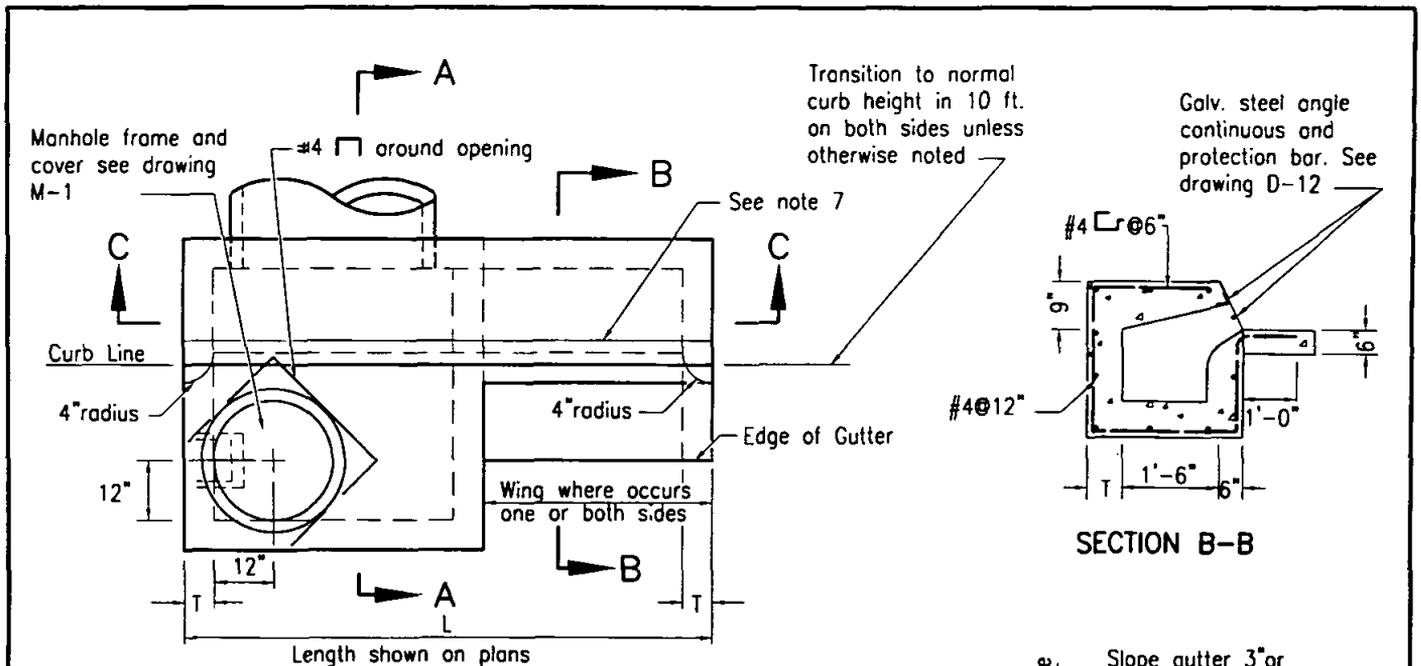
R. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING
NUMBER C-15

DRAINAGE SYSTEMS

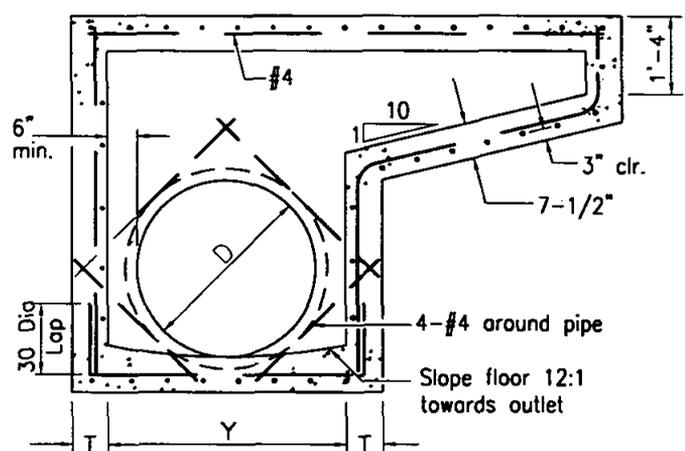
DRAINAGE SYSTEMS

D

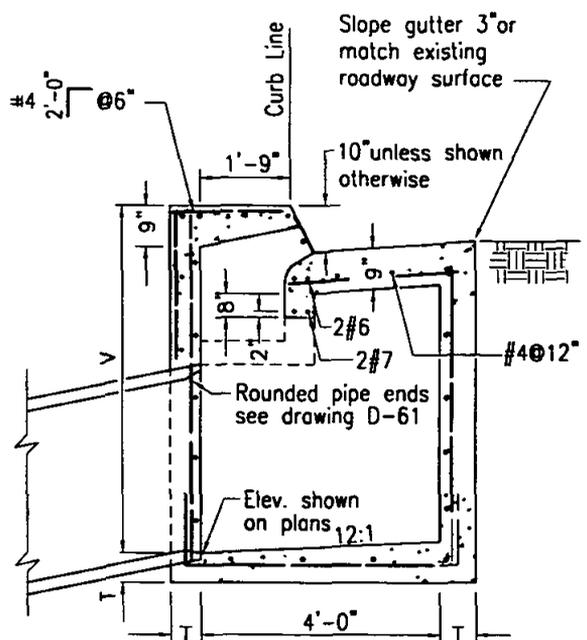


PLAN

SECTION B-B



SECTION C-C

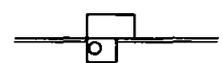


SECTION A-A

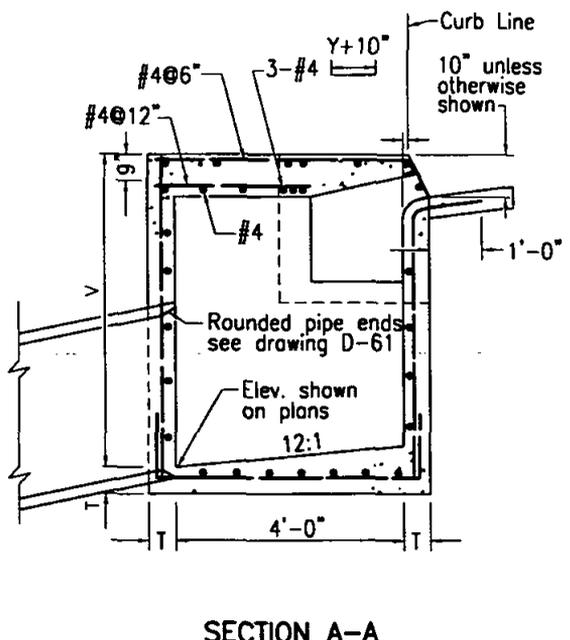
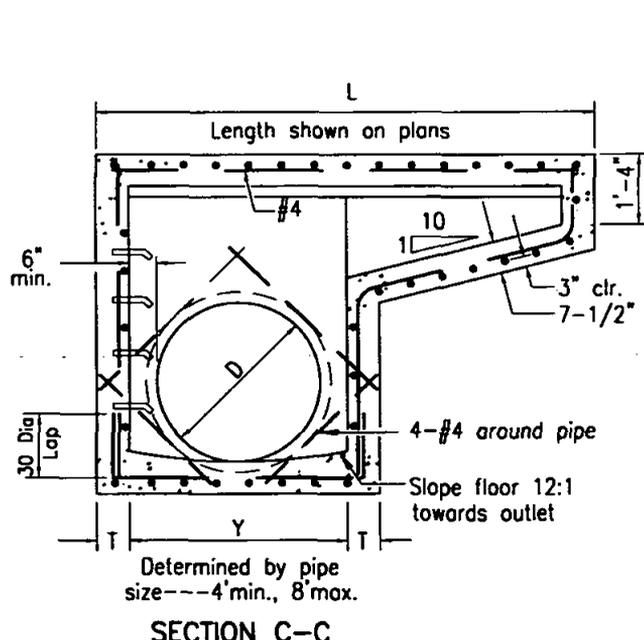
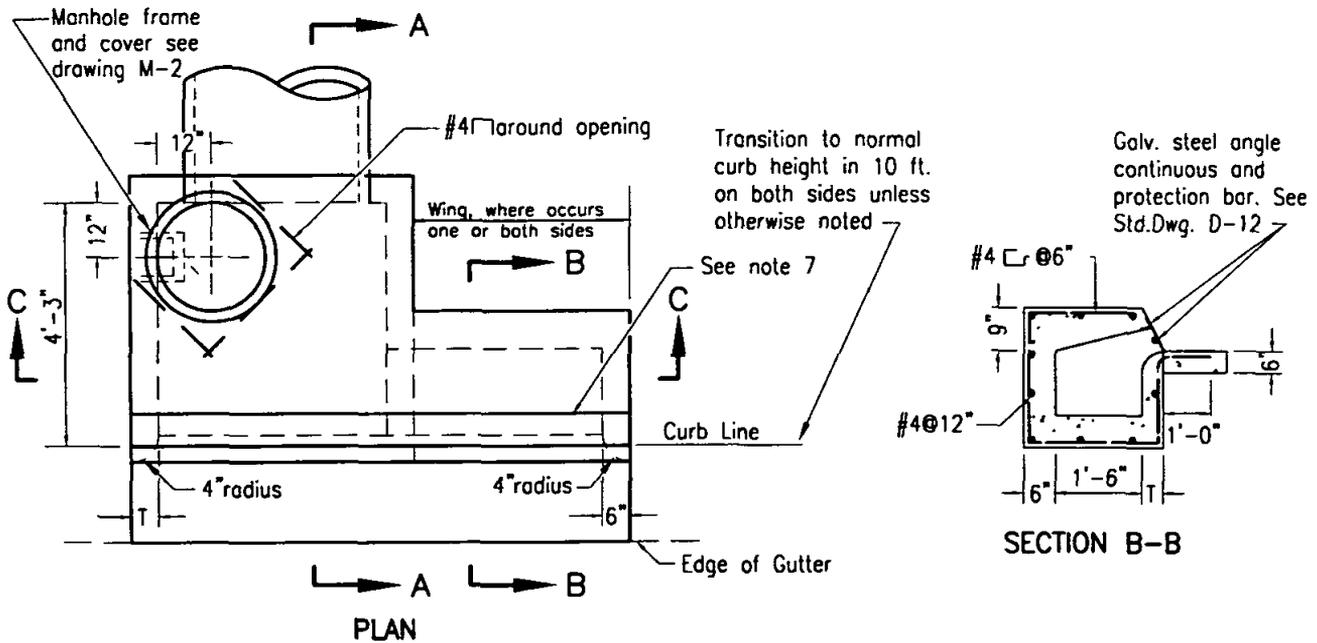
NOTES

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.

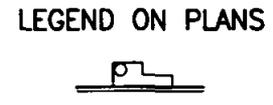
LEGEND ON PLANS



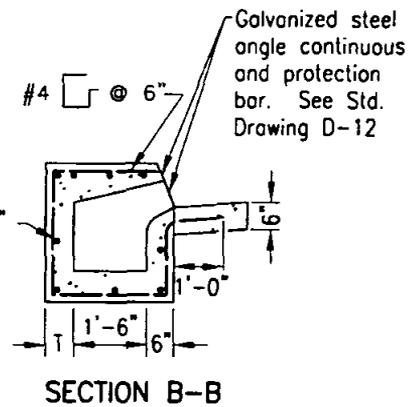
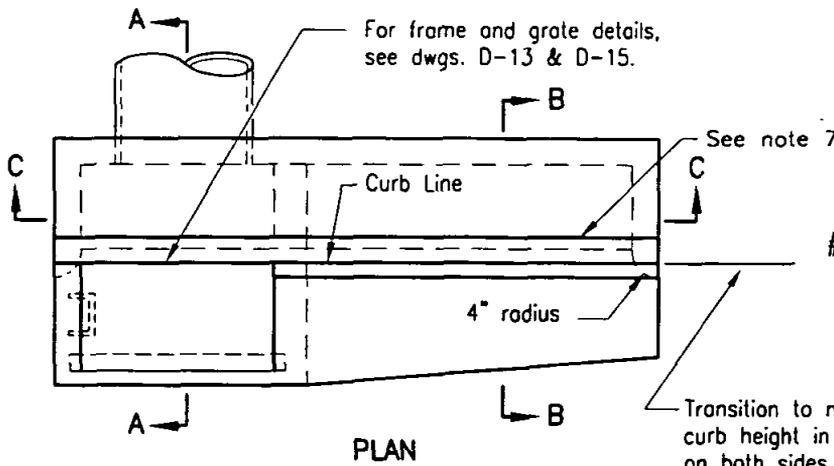
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
				CURB INLET - TYPE A	
				Chairperson R.C.E. 19246 Date 3/23/00	
				DRAWING NUMBER	D-1



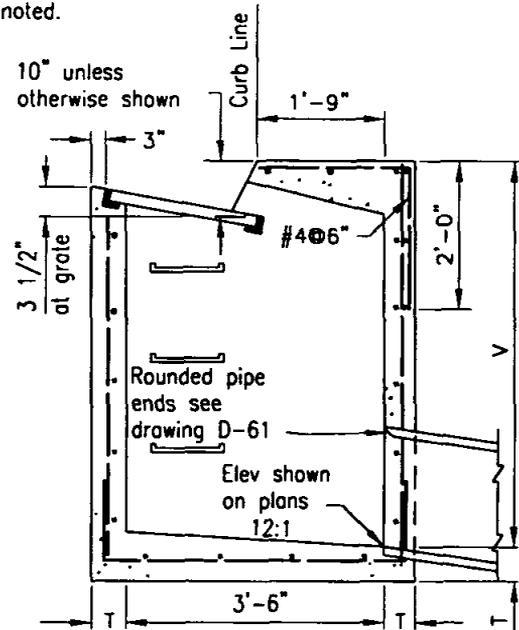
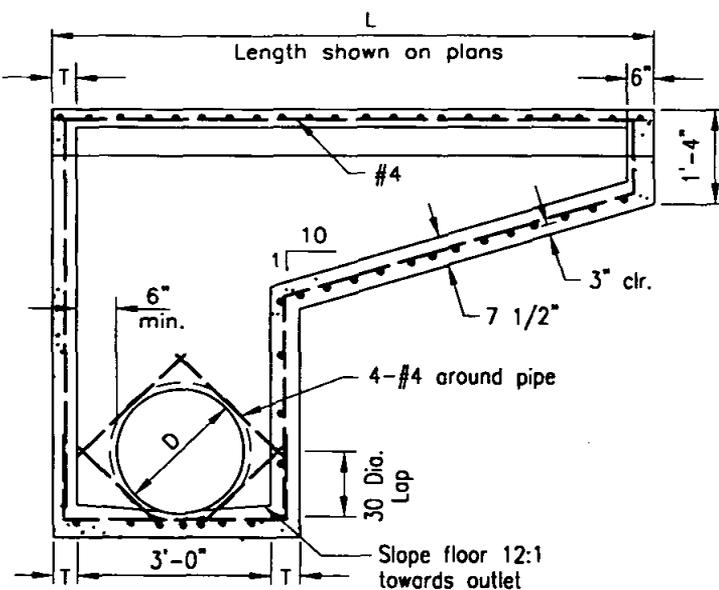
- NOTES**
1. See Standard Drawings D-11 & D-12 for additional notes and details.
 2. Types are designated as follows: (no wing)B, (one wing)B-1, (two wings)B-2.
 3. Exposed edges of concrete shall be rounded with a radius of 1/2".
 4. When V exceeds 4' steps shall be installed. See Standard Drawing D-11 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.



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
				DRAWING NUMBER D-2	



Transition to normal curb height in 10 ft. on both sides unless otherwise noted.



SECTION C-C

SECTION A-A

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



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

SAN DIEGO REGIONAL STANDARD DRAWING

CURB INLET - TYPE C

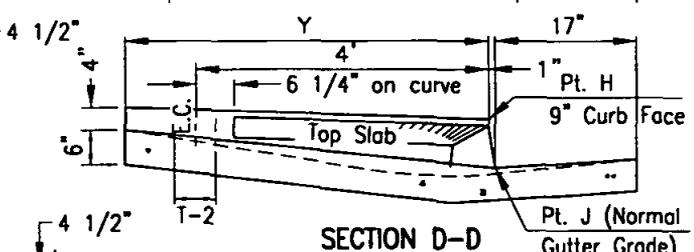
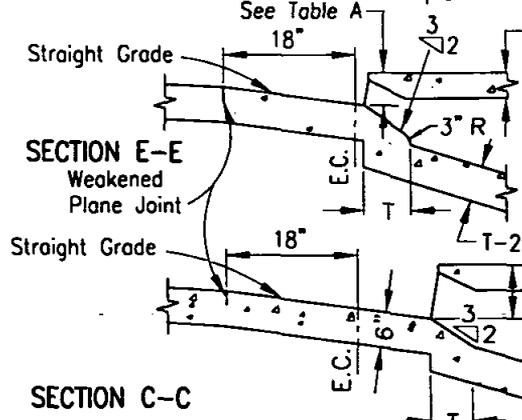
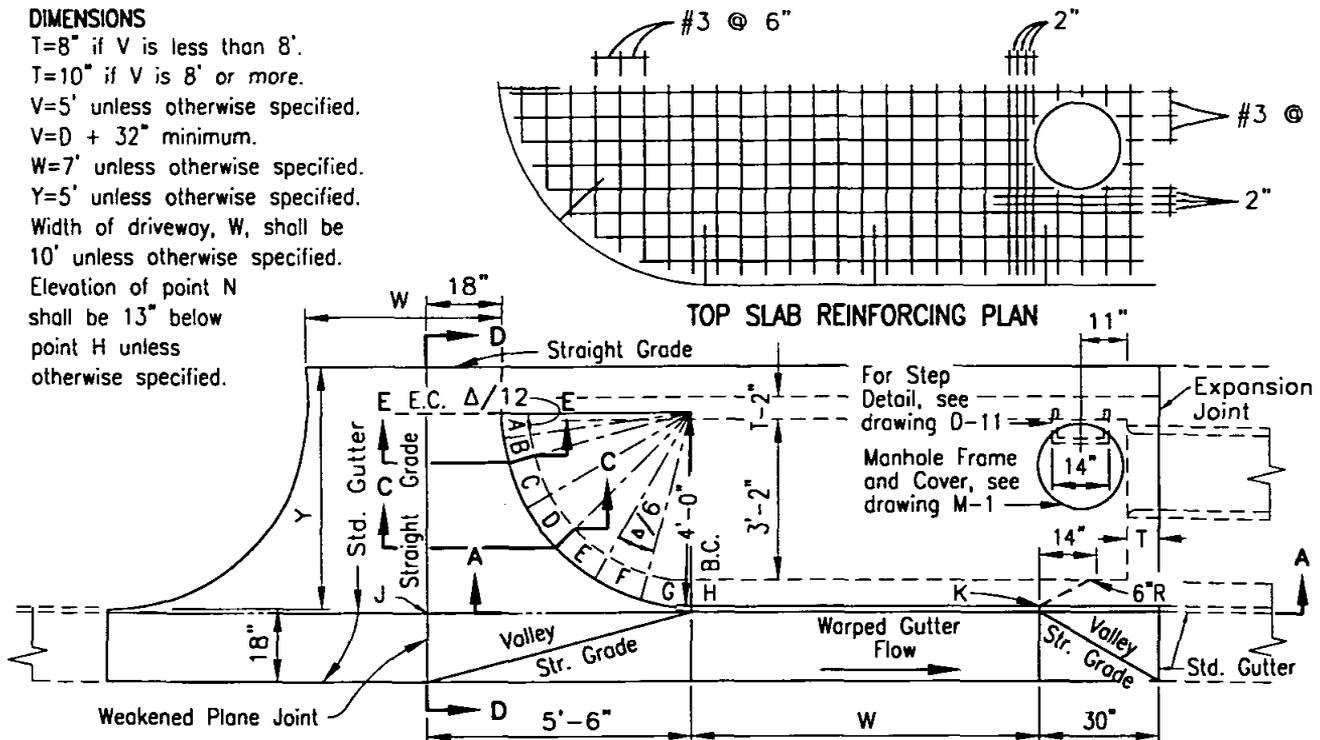
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-3**

DIMENSIONS

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.

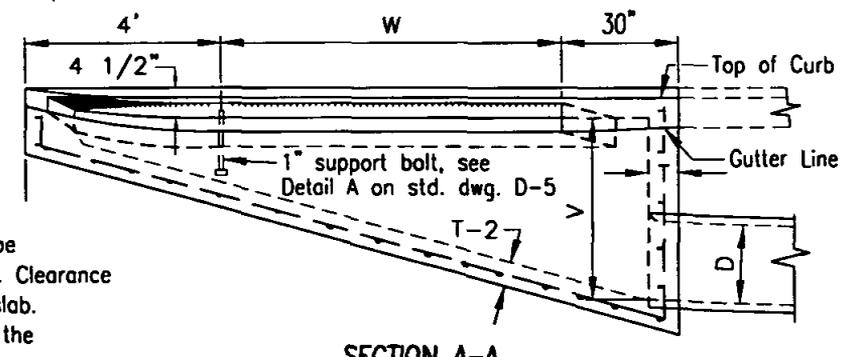


PT	A	B	C	D	E	F	G	H	K	M
F.C.	4 1/2"	5 1/4"	6"	7 1/2"	9"	9"	9"	9"	9"	8"

TABLE A

NOTES

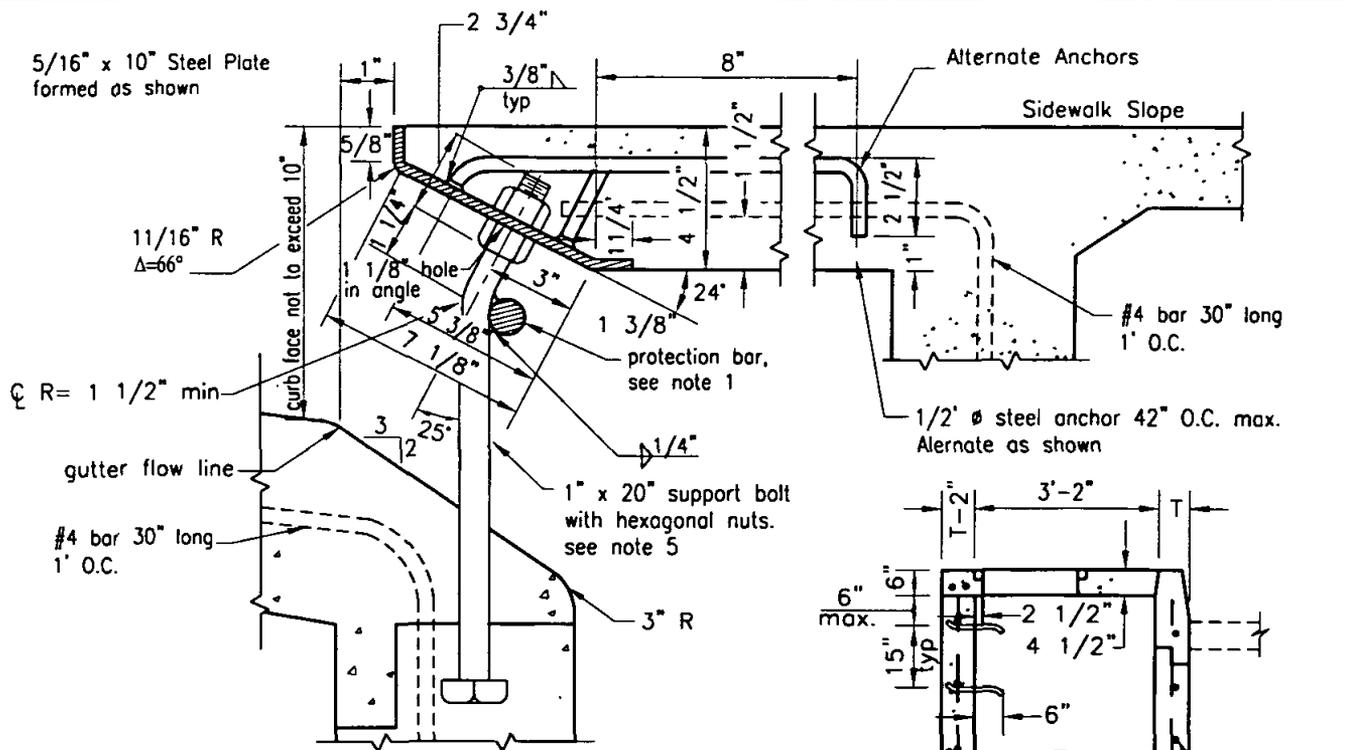
1. Steel Plate should be of one continuous piece with curve portion a circular arc.
 Length = Width+18"+circular arc.
2. #4 rebar 30" long, 1' O.C. shall be installed in top of walls for ties to top and gutters.
3. The reinforcing steel in the top slab shall be #3 bars 6" O.C. unless otherwise specified. 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

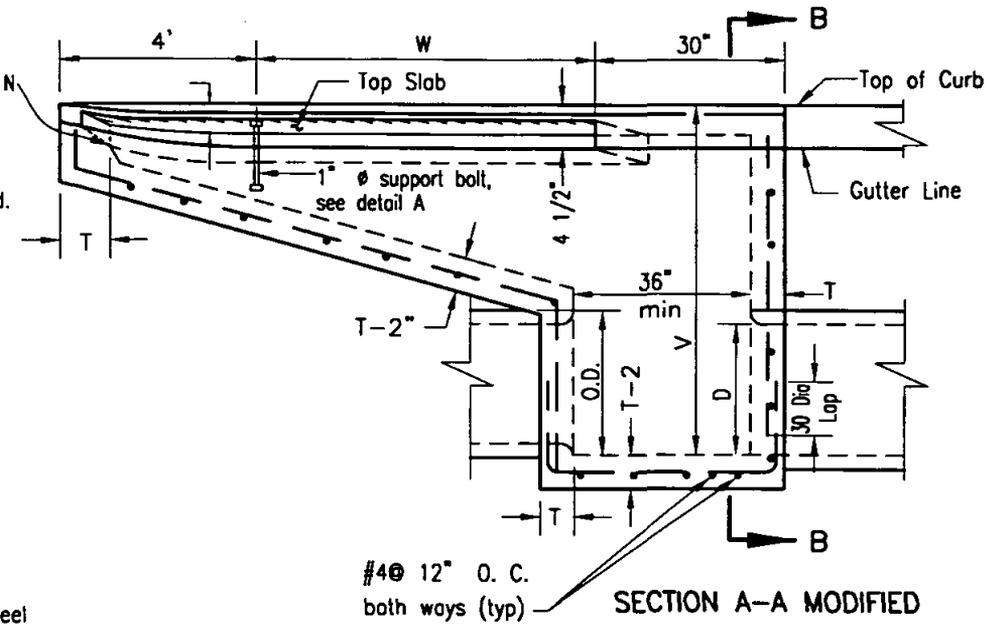
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
				CURB INLET - TYPE D	 Chairperson R.C.E. 19246 Date 3/23/00 DRAWING NUMBER D-4

5/16" x 10" Steel Plate
formed as shown



DETAIL-A

SECTION B-B



SECTION A-A MODIFIED

NOTES

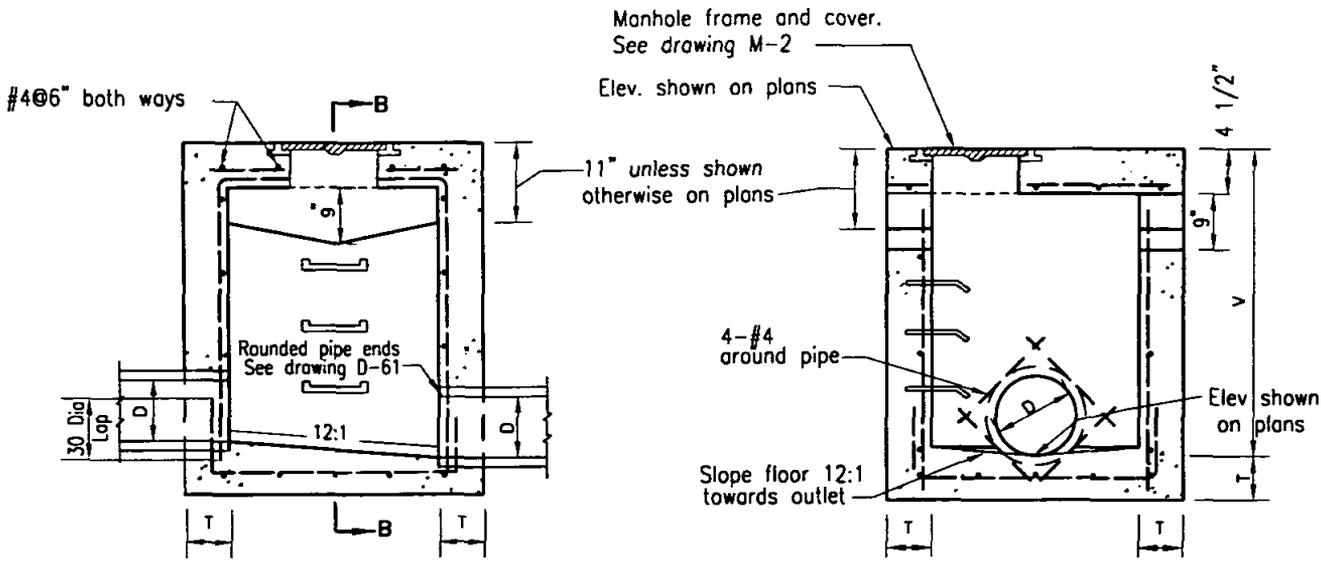
1. A plain, round steel protection bar 1" in dia. shall be installed. Bar shall be embedded 5" at each end.
2. Leave 8" hole blocked out in the bottom placing of concrete for bolts placed at same time as gutter.
3. All exposed metal parts shall be galvanized.
4. All galvanizing damaged by welding shall 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 placed when steel plate is in proper position.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

SAN DIEGO REGIONAL STANDARD DRAWING

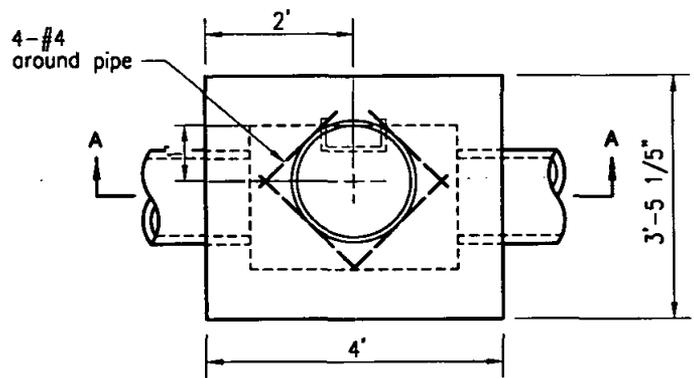
CURB INLET - TYPE D (DETAILS)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
[Signature] 3/23/80
 Chairperson R.C.E. 19246 Date
 DRAWING NUMBER **D-5**



SECTION A-A

SECTION B-B

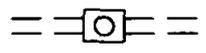


PLAN

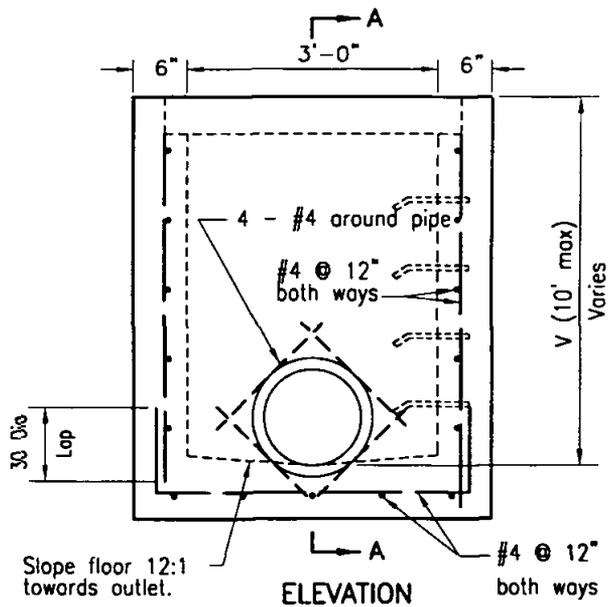
NOTE

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. Construct openings on both sides unless otherwise shown on plans.
5. Maintain 1 1/2" clear spacing between reinforcing and surface.

LEGEND ON PLANS

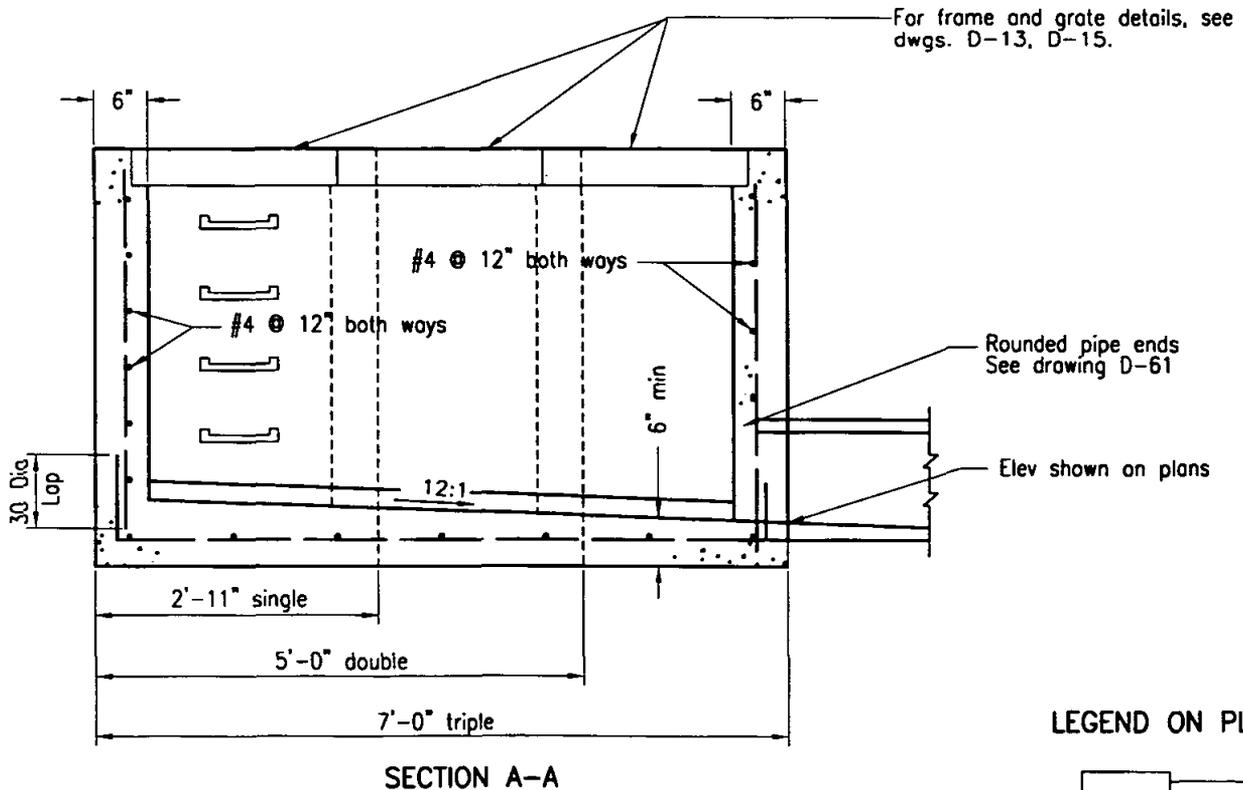


Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		CATCH BASIN - TYPE F
					DRAWING NUMBER D-7



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 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



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

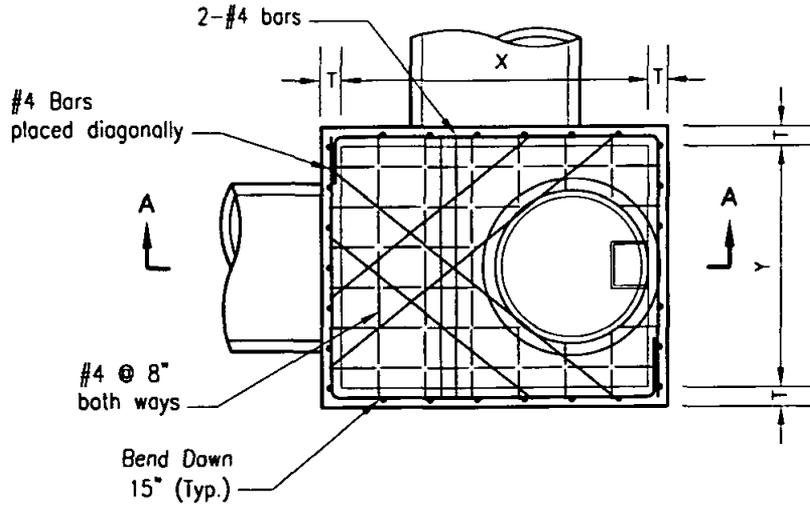
SAN DIEGO REGIONAL STANDARD DRAWING

CATCH BASIN - TYPE G

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

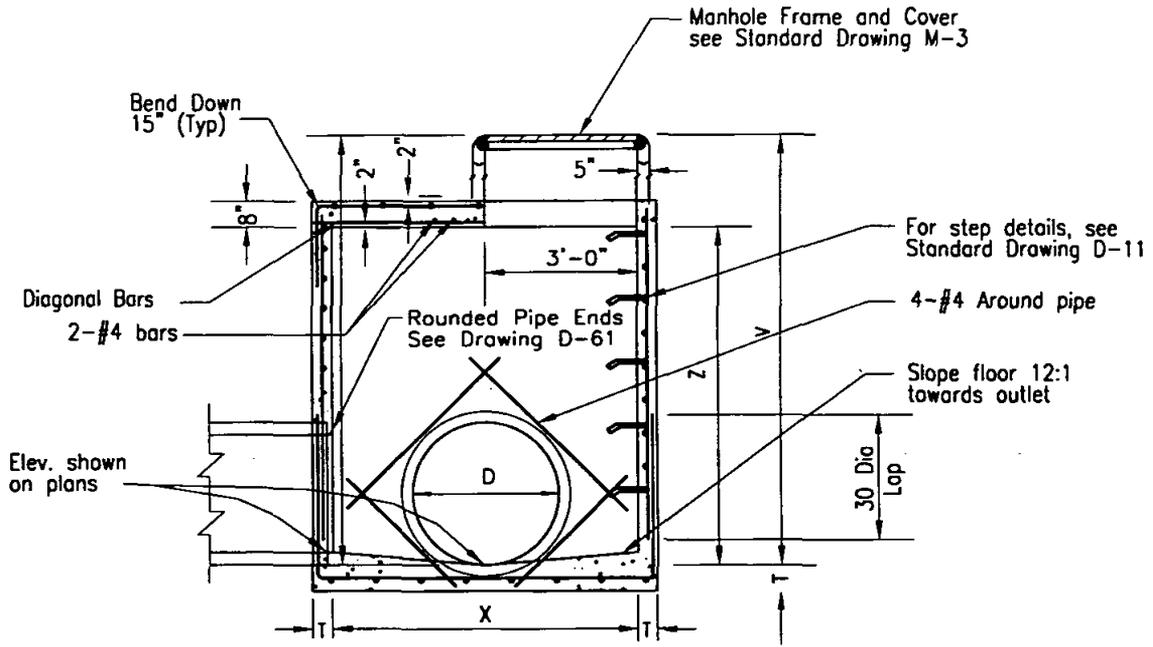
J. Stenton 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-8**



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'

PLAN



SECTION A-A

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
ORIGINAL		Kercheval	12/75

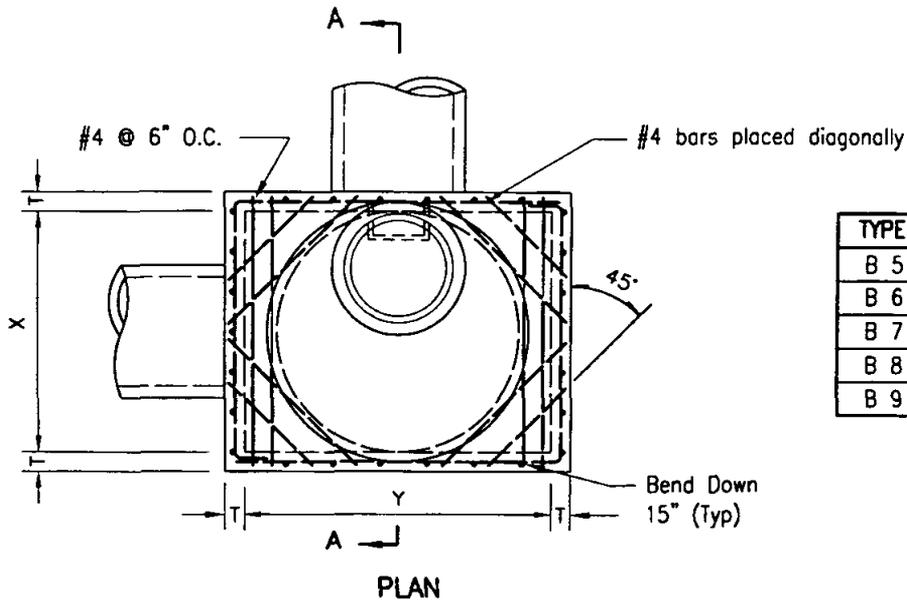
SAN DIEGO REGIONAL STANDARD DRAWING

STORM DRAIN CLEANOUT - TYPE A

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. H. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

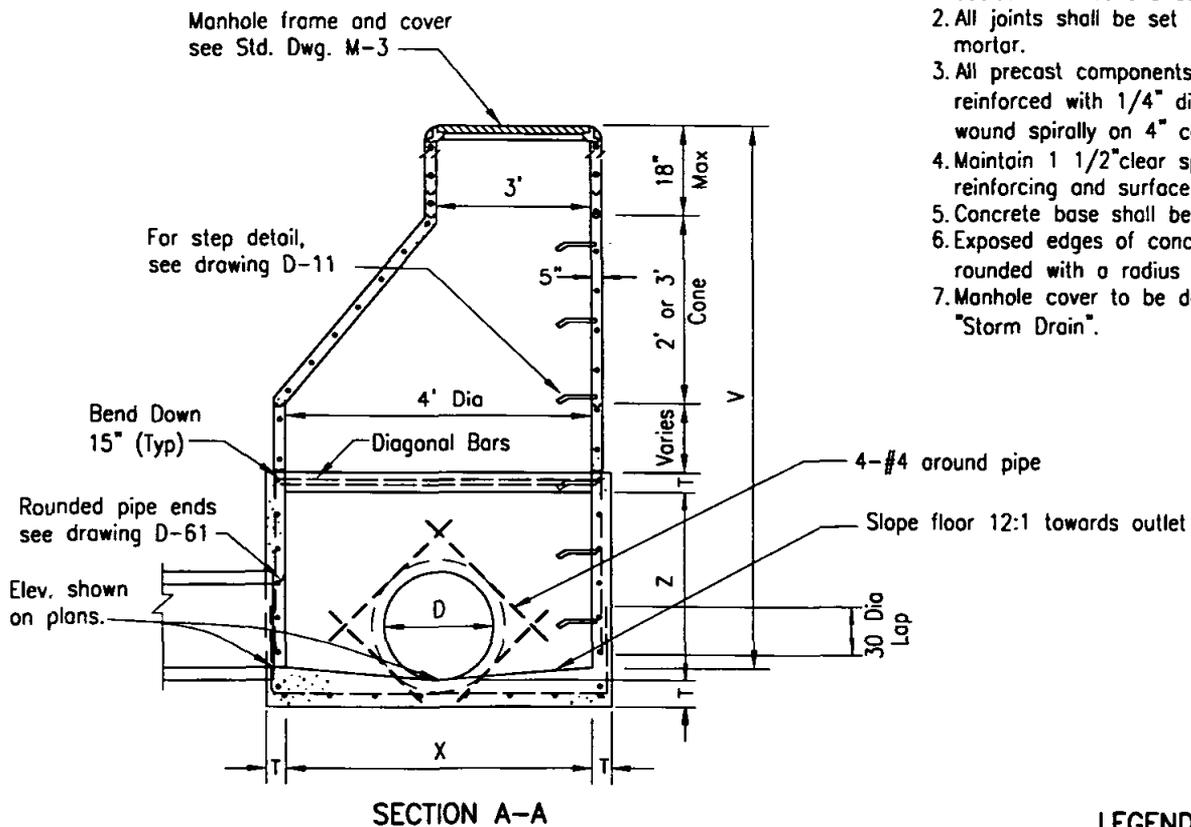
DRAWING NUMBER **D-9**



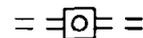
TYPE	PIPE DIA.	X	Y	Z
B 5	up to 51"	4'	5'	5'
B 6	54" to 60"	4'	6'	6'
B 7	63" to 69"	4'	7'	7'
B 8	72" to 81"	4'	8'	8'
B 9	84" to 90"	4'	9'	9'

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".



LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

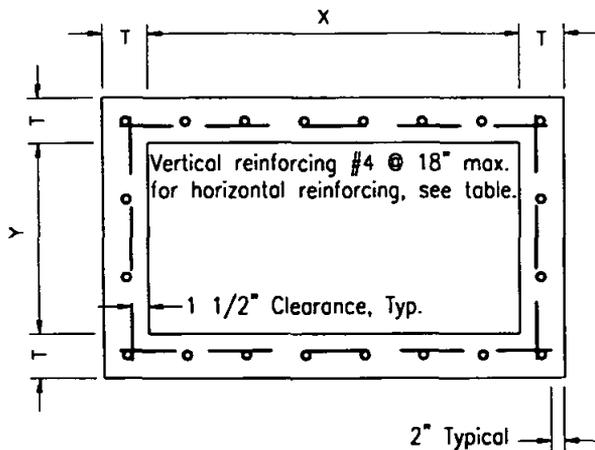
SAN DIEGO REGIONAL STANDARD DRAWING

STORM DRAIN CLEANOUT - TYPE B

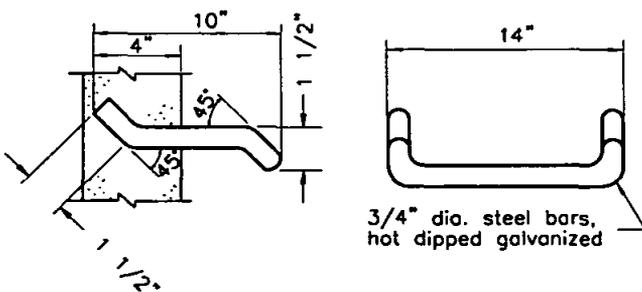
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. J. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-10**



TYPICAL BOX SECTION



STEP DETAIL

BOX SECTION REINFORCEMENT			
MAXIMUM SPAN X or Y	DEPTH V	THICKNESS 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"	6"	# 4 @ 6"	
3'-0" to 4'-0"	8'-1" to 12'-0"	6"	# 4 @ 15"
4'-1" to 5'-0"		8"	# 4 @ 12"
5'-1" to 6'-0"		8"	# 4 @ 8"
6'-1" to 8'-0"	8"	# 4 @ 6"	
3'-0" to 4'-0"	12'-1" to 16'-0"	8"	# 4 @ 12"
4'-1" to 5'-0"		8"	# 4 @ 12"
5'-1" to 6'-0"		8"	# 4 @ 8"
6'-1" to 7'-0"	8"	# 4 @ 6"	
7'-1" to 8'-0"	8"	# 5 @ 8"	
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"	10"	# 4 @ 6"	
7'-1" to 8'-0"	10"	# 5 @ 8"	
3'-0" to 4'-0"	20'-1" to 24'-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"	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 inch 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 feet, steps shall be cast into the wall at 15 inch intervals from 15 inches 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.
- Upon approval of the Agency and the Engineer, as defined by Section 6703 of the Business and Professions Code, the use of precast storm structures is acceptable as an alternate to cast-in-place. Precast units shall conform to ASTM standards and be manufactured in a permanent facility designed for that purpose.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

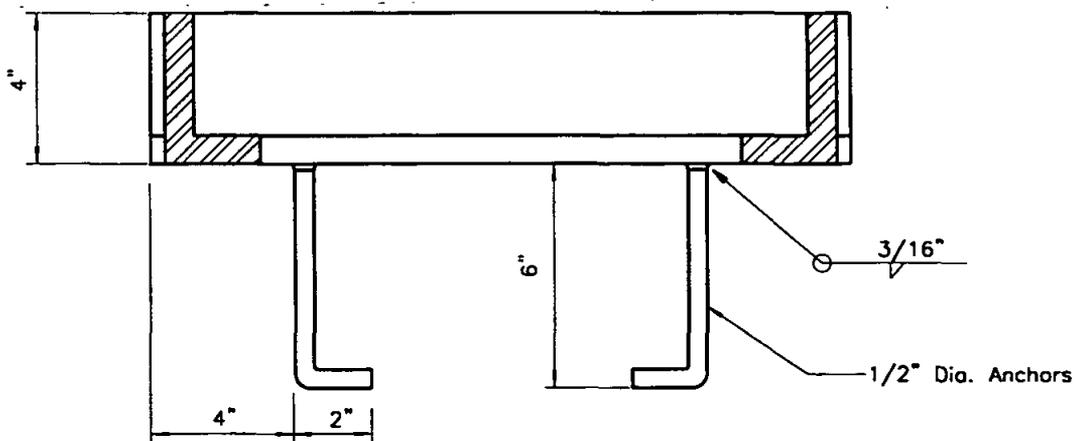
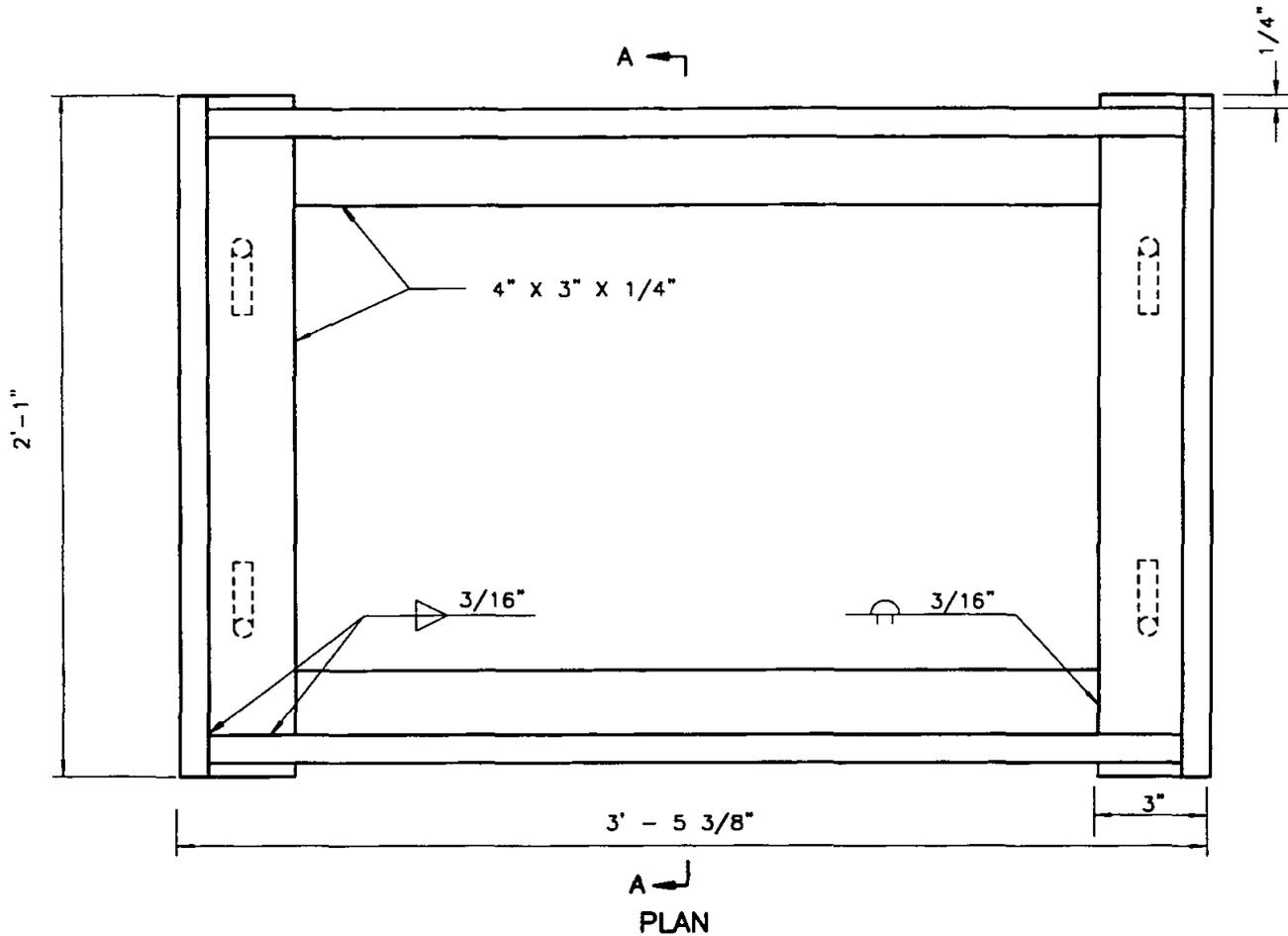
SAN DIEGO REGIONAL STANDARD DRAWING

INLETS AND CLEANOUTS
NOTES AND DETAILS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Steaton 3/23/80
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-11



NOTE
Hot dip galvanize all parts after fabrication.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

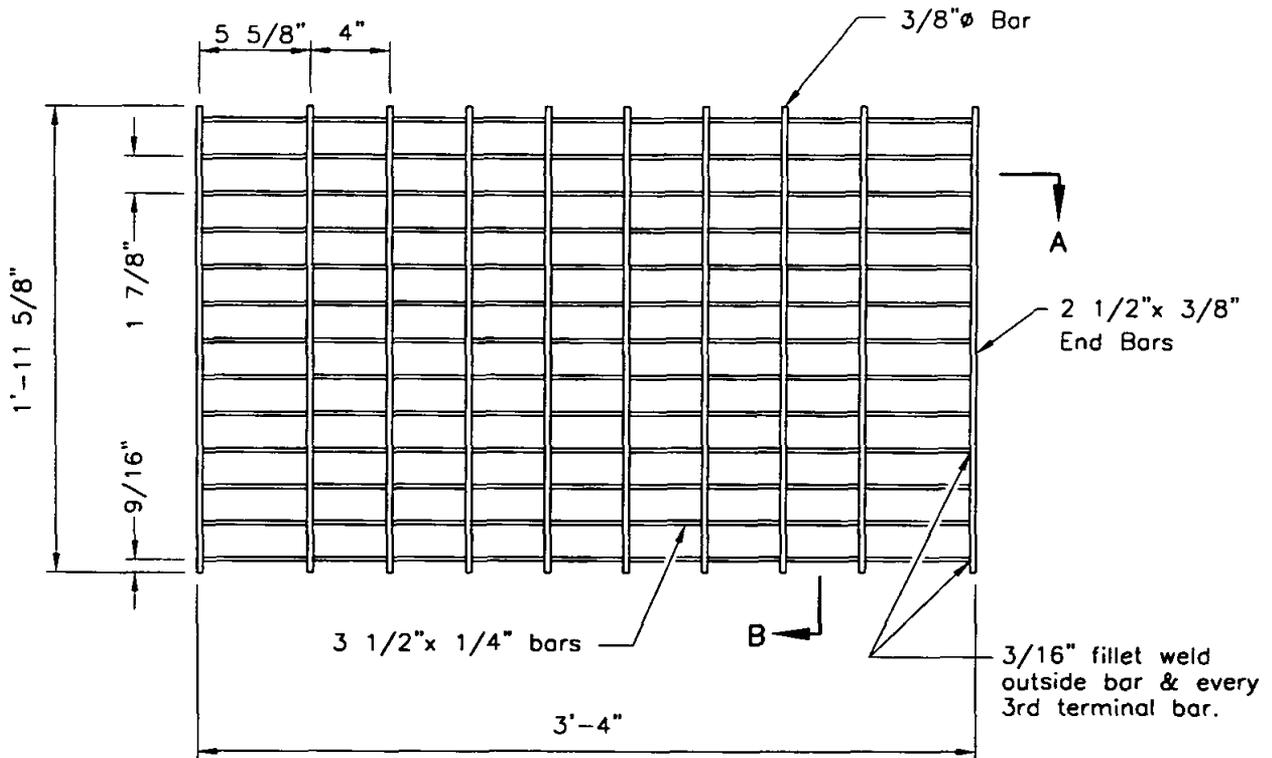
SAN DIEGO REGIONAL STANDARD DRAWING

WELDED STEEL GRATE FRAME

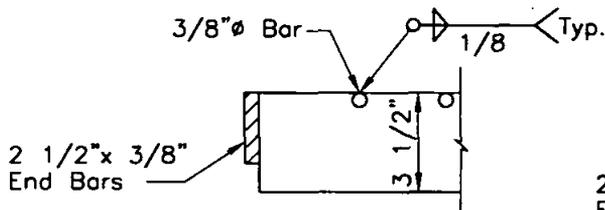
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

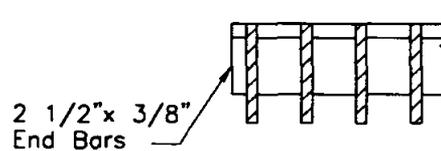
DRAWING NUMBER **D-13**



PLAN



SECTION A

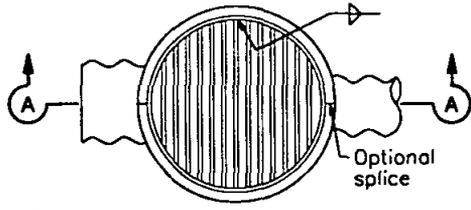


SECTION B

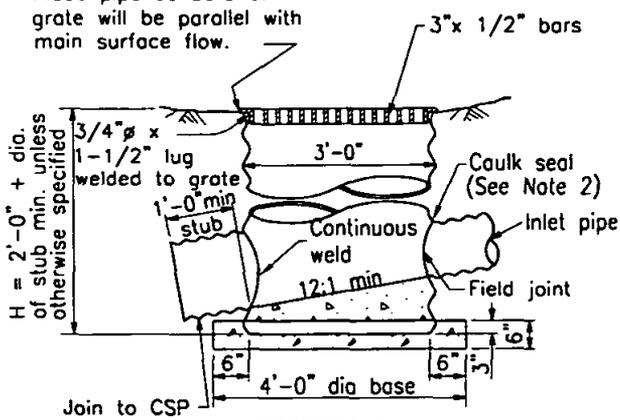
NOTES

1. Hot dip galvanize all parts after fabrication.
2. Dimensions to centerline of bars unless otherwise noted.
3. Weight: 141 pounds.
4. Not to be used in pedestrian areas.

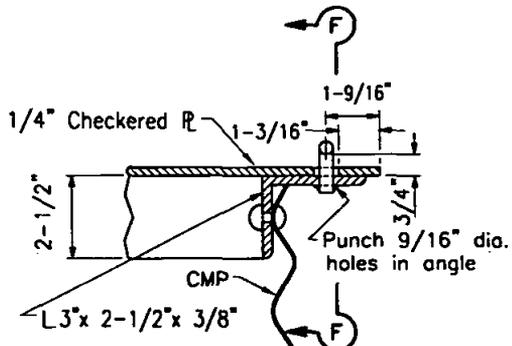
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		DRAINAGE STRUCTURE GRATE
				DRAWING NUMBER D-15	



Punch 1" hole in CSP
Place pipe so bars of grate will be parallel with main surface flow.



SECTION A-A
TYPE A

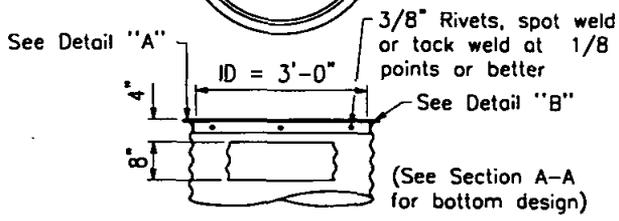


DETAIL "B"

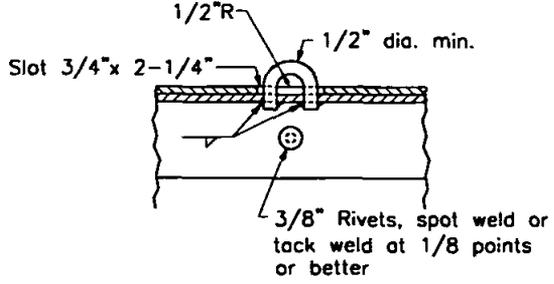
NOTES

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 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 with 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 Standard Drawing D-17 unless otherwise approved by Agency.

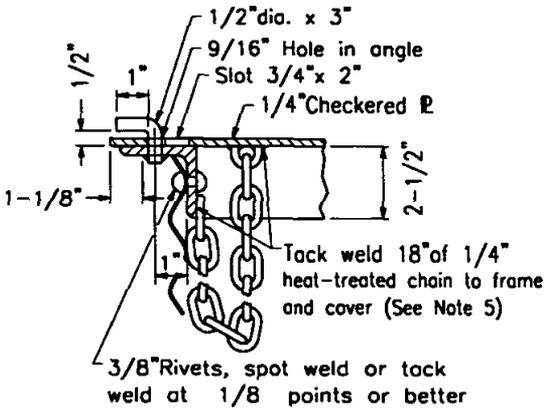
L 3"x 2-1/2"x 3/8"
Rivet, Spot Weld or Tack
Weld at 1/8 points or
better to C.S.P.



SECTION C-C
TYPE B

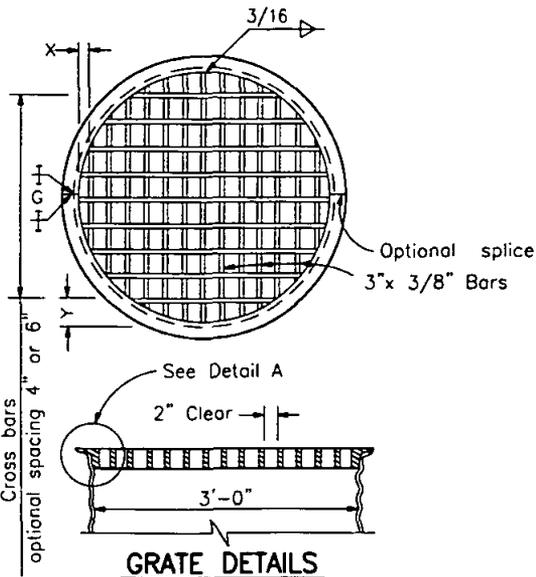


SECTION F-F

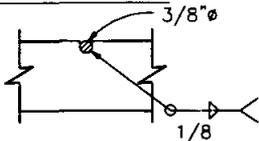


DETAIL "A"

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75	CORRUGATED STEEL PIPE INLETS TYPES A AND B		<i>[Signature]</i> 3/23/00 Chairperson R.C.E. 19246 Date	
						DRAWING NUMBER	D-16

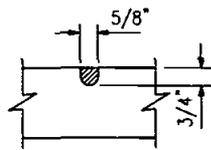


GRATE DETAILS



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

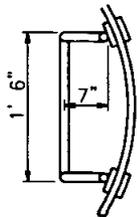
CROSS BAR DETAIL TYPE WELDED STEEL GRATE



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

GRATE BAR SPACING TABLE

TYPE	NO. OF BARS	CLEAR BAR SPACING	X	Y	
				4" SPACING	6" SPACING
Welded Steel	15	2"	9/16"	3-3/4"	5-3/4"
Cast	13	2"	2-1/8"	3-3/4"	5-3/4"



STEP DETAIL

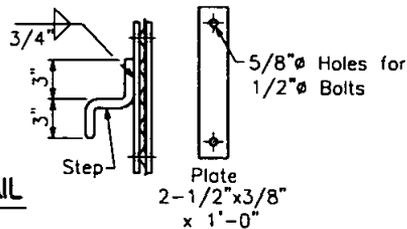
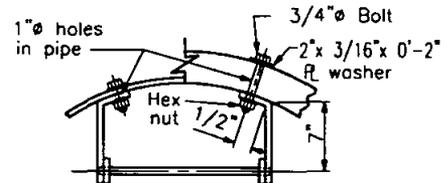
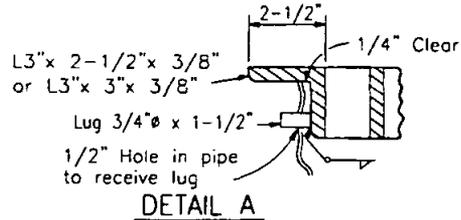


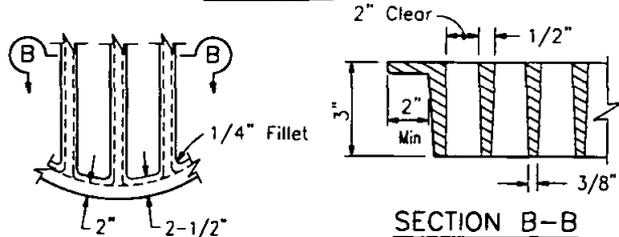
Plate 2-1/2"x3/8" x 1'-0"



LADDER DETAIL



DETAIL A

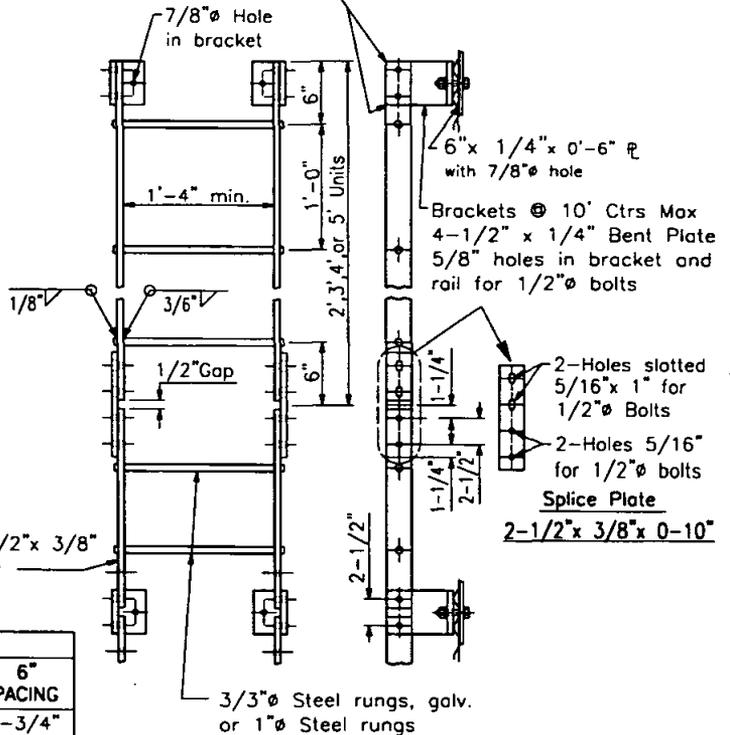


SECTION B-B

ALTERNATIVE CAST NODULAR IRON GRATE

OR CAST STEEL GRATE

Grind all exposed corners 1/4" radius



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

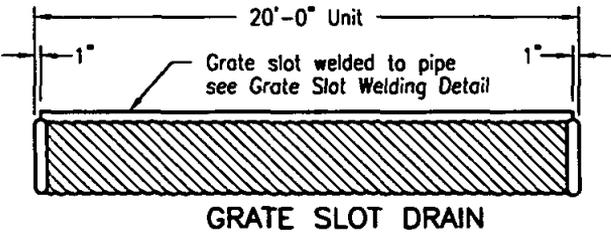
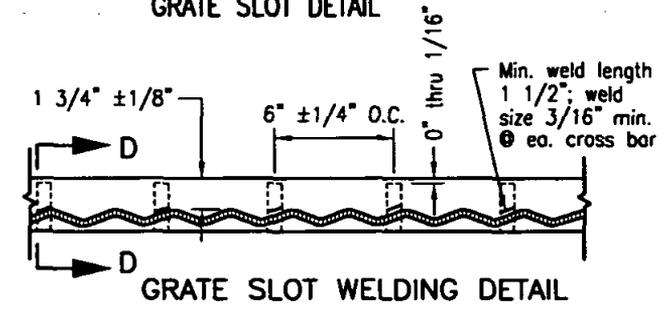
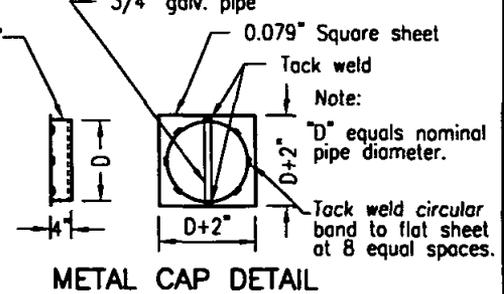
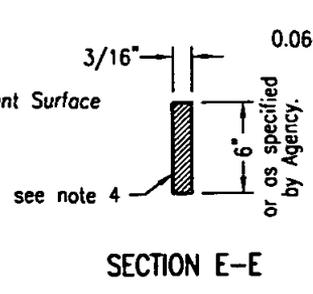
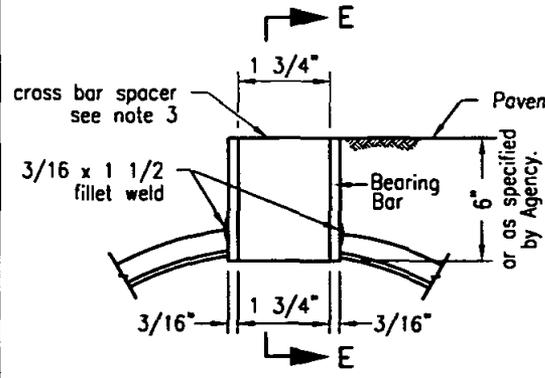
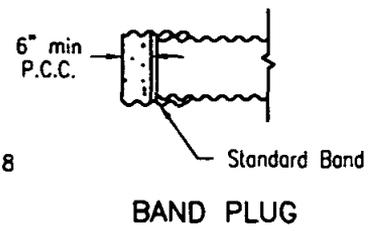
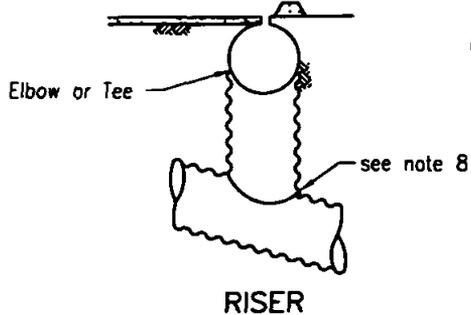
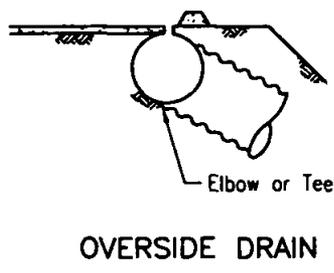
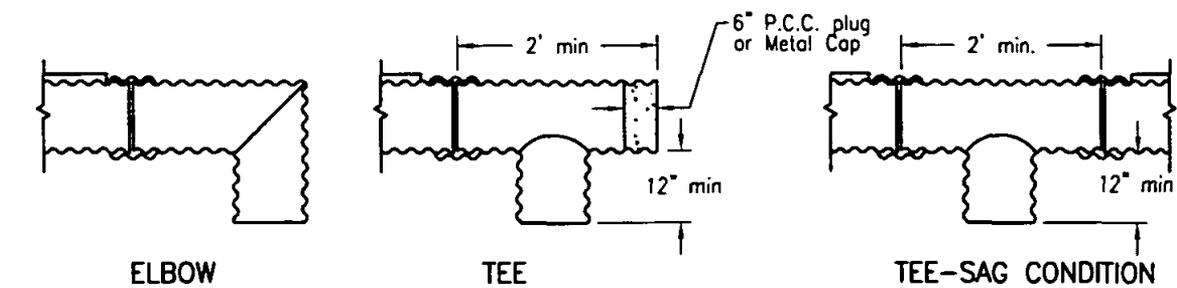
SAN DIEGO REGIONAL STANDARD DRAWING

CORRUGATED STEEL PIPE INLETS DETAILS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

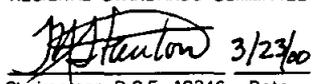
R. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

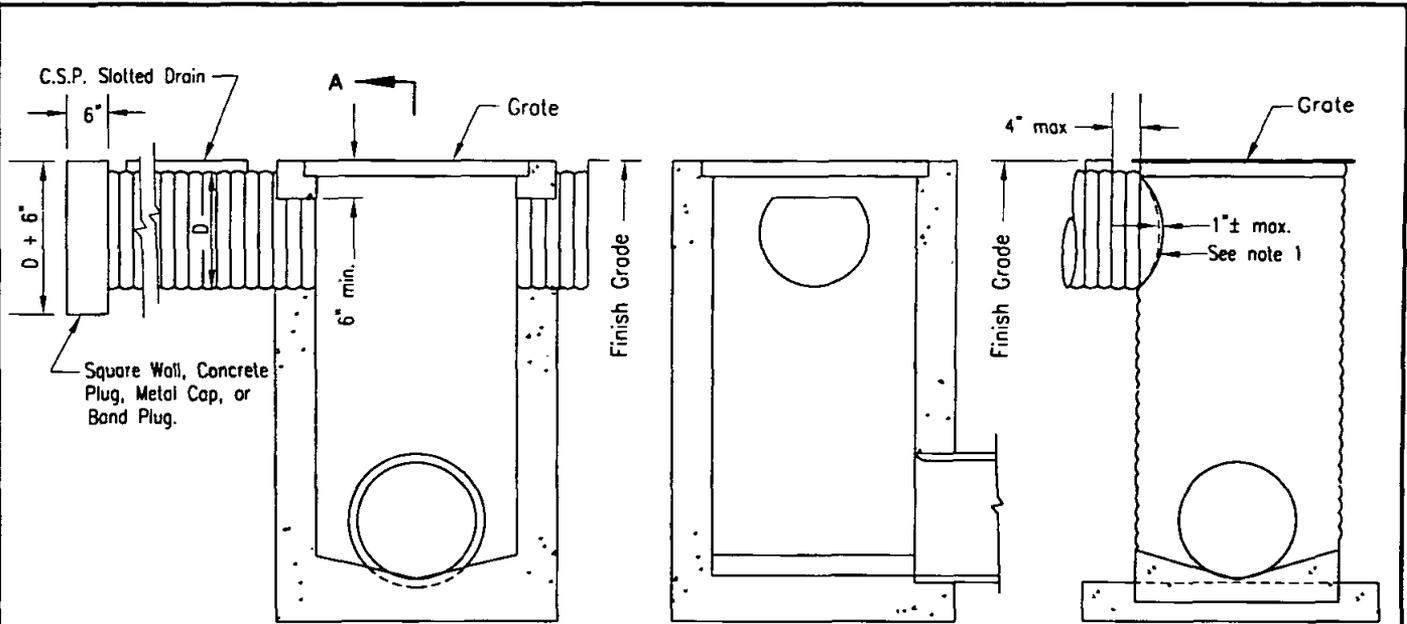
DRAWING NUMBER **D-17**



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.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE		
ORIGINAL		Kercheval	12/75				
				SLOTTED CORRUGATED STEEL PIPE DRAIN 12" THROUGH 24"	 3/23/60 Chairperson R.C.E. 19246 Date		
						DRAWING NUMBER	D-18



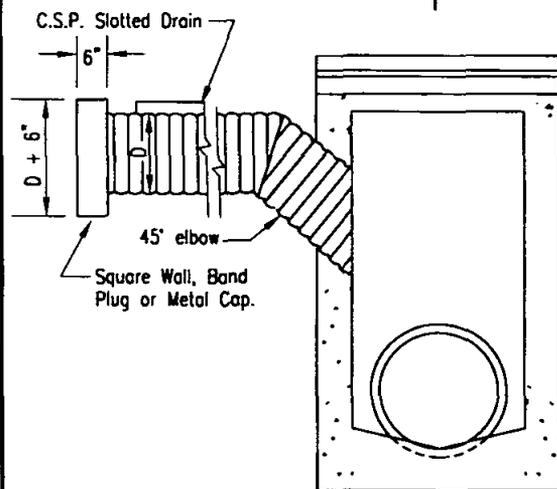
A ←

SECTION A-A

C.S.P. INLET

CATCH BASIN

B ←



B ←

SECTION B-B

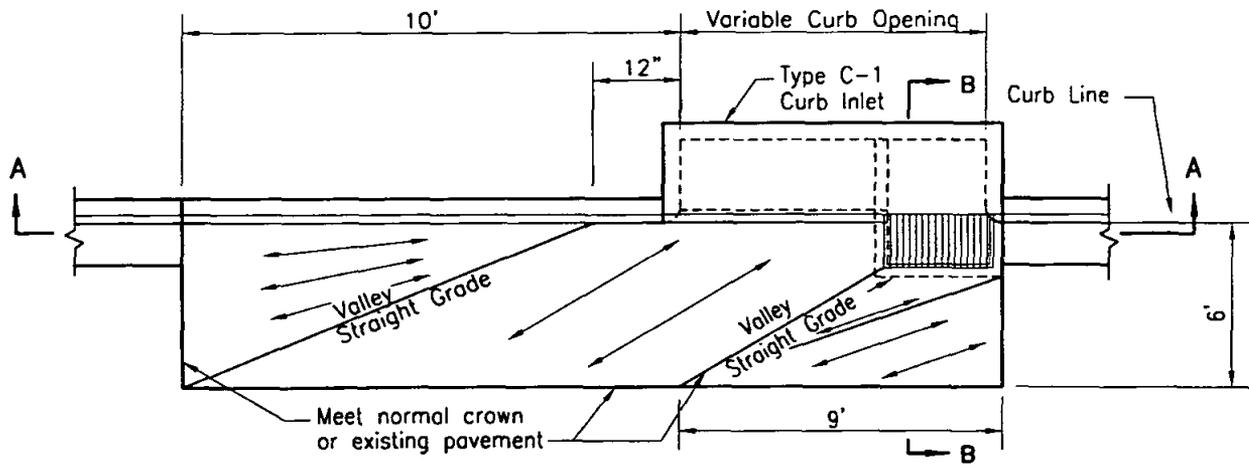
ALTERNATE SECTION B-B

INLETS

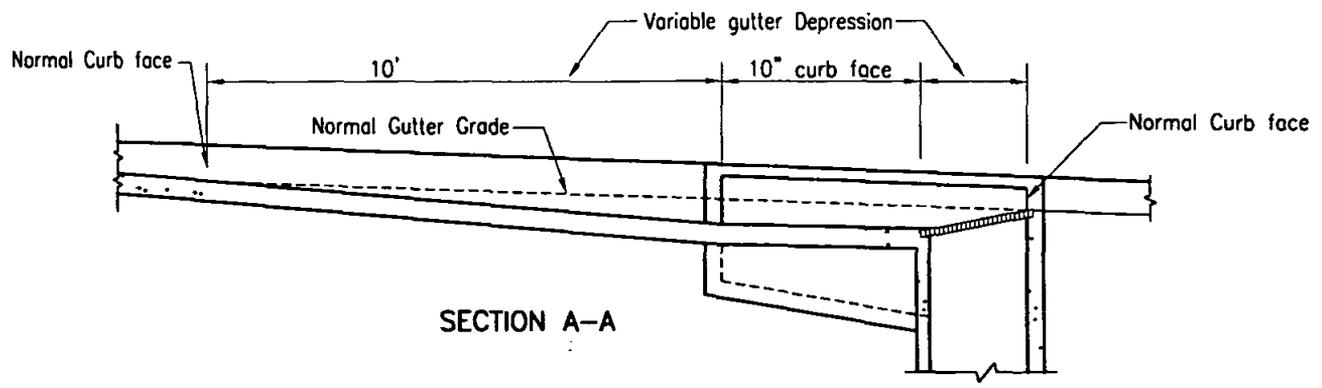
NOTES

1. Either field joint with a pliable mixture of sand, portland cement 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.

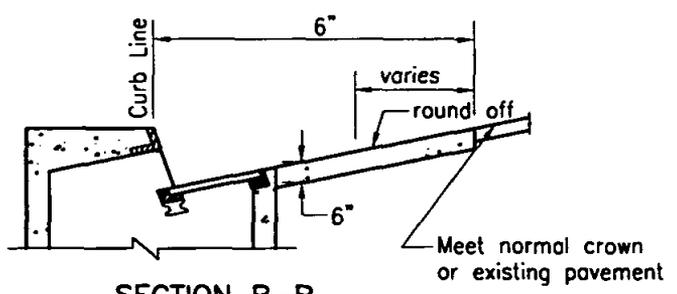
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75			<p>SLOTTED DRAIN CONNECTIONS TO STANDARD INLETS</p>
				<p>DRAWING NUMBER D-19</p>		



PLAN



SECTION A-A

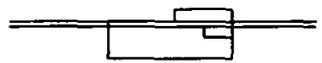


SECTION B-B

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 \leftarrow
5. Concrete shall be 520-C-2500

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

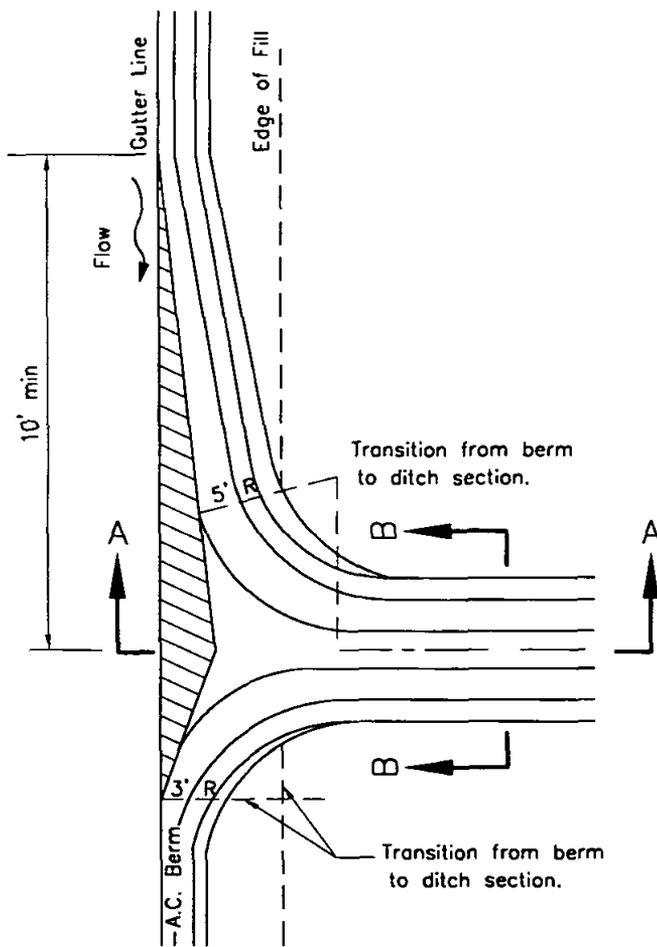
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE APRON FOR CURB INLET

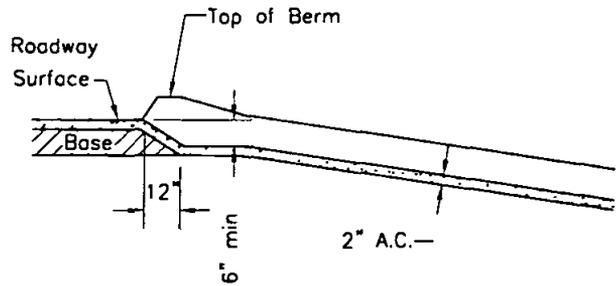
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Steaton 3/23/60
Chairperson R.C.E. 19246 Date

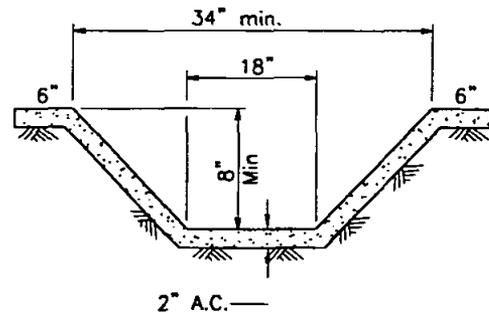
DRAWING NUMBER **D-20**



PLAN



SECTION A-A

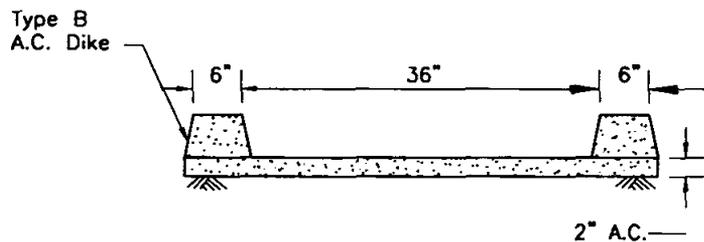


2" A.C.—

NOTE

1. Cross sectional area of ditch may be round or trapezoidal.

SECTION B-B



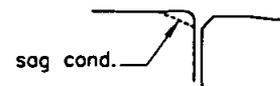
2" A.C.—

ALTERNATE SECTION B-B

NOTE

1. A.C. spillway may be used when fill is 10' or less, and where fill slope 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



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

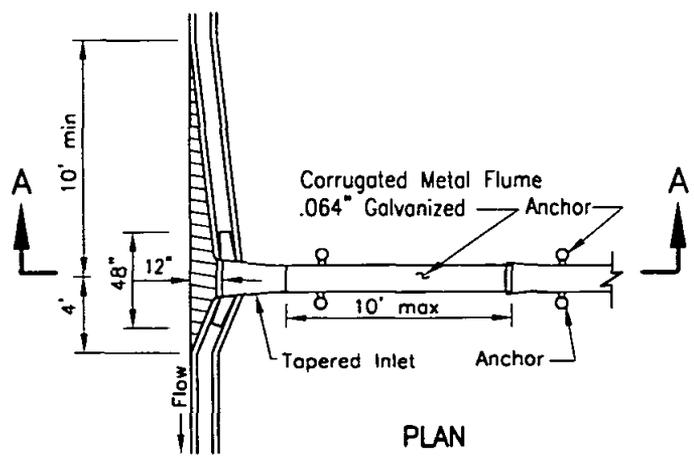
SAN DIEGO REGIONAL STANDARD DRAWING

ASPHALT CONCRETE SPILLWAY

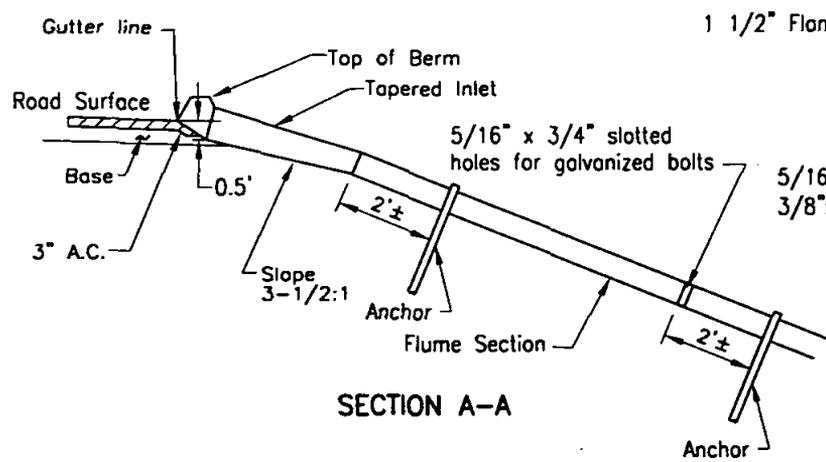
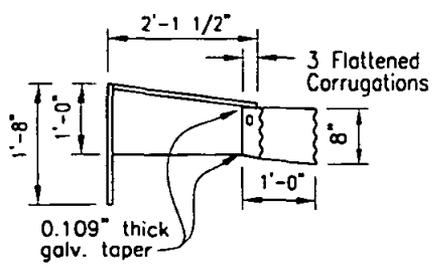
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

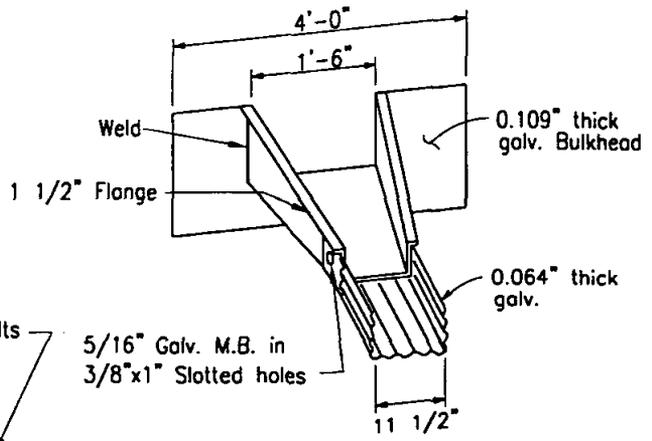
DRAWING NUMBER **D-22**



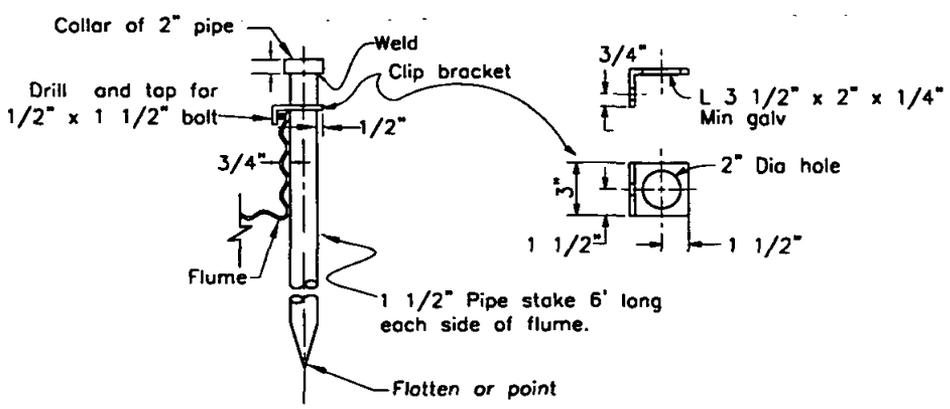
PLAN



SECTION A-A



TAPERED INLET

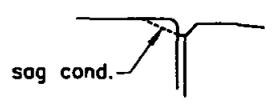


ANCHOR-DETAIL

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 condition.
3. All metal parts to be galvanized after fabrication.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

SAN DIEGO REGIONAL STANDARD DRAWING

TAPERED INLET AND DOWNDRAIN FLUME

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Steinton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-23**

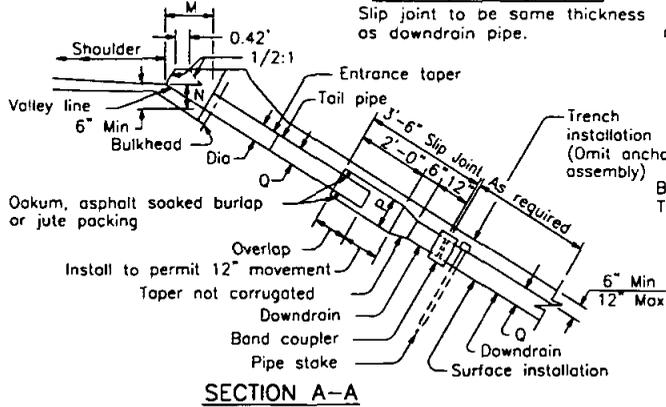
NOTE

1. Cable, slip joint or anchor assembly to be placed when specified.
2. Slip joint to be omitted when completely buried.

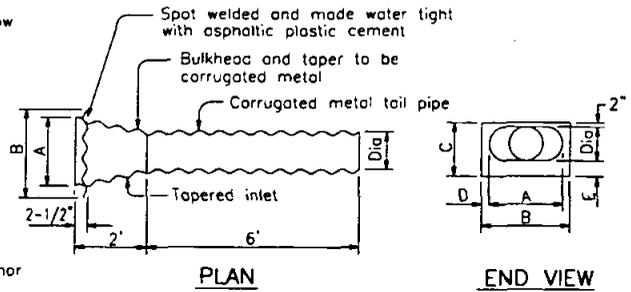
CMP dimensions as tabulated below

P	10"	15"	18"	21"	27"
Q	8"	12"	15"	18"	24"

Slip joint to be same thickness as downdrain pipe.

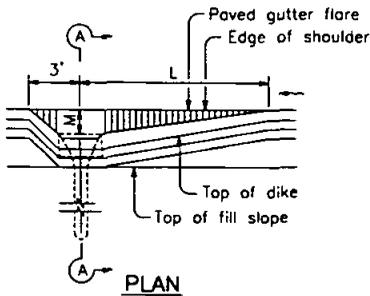


SECTION A-A



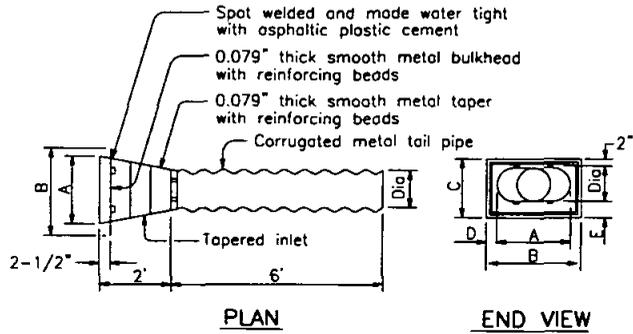
ENTRANCE TAPER ALTERNATIVE A

Bulkhead and taper of same thickness as tail pipe with 0.079" max. Tail pipe of same thickness as downdrain pipe.



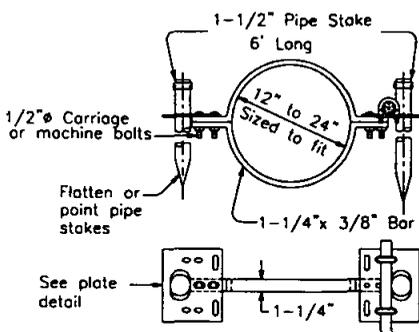
PLAN

DIA	MIN L	M	N
8"	10'	18"	8"
12"	15'	20"	12"
15"	25'	24"	15"
18"	30'	30"	16"
24"	40'	36"	18"

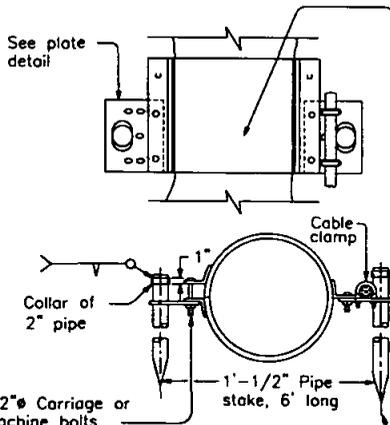


ENTRANCE TAPER ALTERNATIVE B

Tail pipe of same thickness as downdrain pipe.



ALTERNATIVE A



ALTERNATIVE B

ANCHOR ASSEMBLY

Cable and cable clamps to be used when required by the Special Provisions.

Taper joints may be welded or riveted. Dimensions to be as tabulated below for Alternatives A and B.

DIA	A	B	C	D	E	F	L
8"	16"	25 1/2"	15"	4 1/2"	5"	6'	2'
12"	18"	25 1/2"	19"	3 3/4"	5"	6'	2'
15"	21"	30"	23"	4 1/2"	6"	6'	2'
18"	24"	34"	27"	27"	7"	6'	2'
24"	34"	46"	35"	35"	9"	4'	4'

NOTES

1. All pipe stakes and hardware to be galvanized after fabrication.
2. One anchor assembly required per length of pipe. When final length exceeds 10 ft. two anchors shall be required.

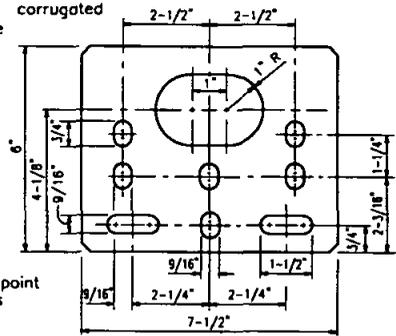


PLATE DETAIL

Material to be 1/4" plate galvanized after fabrication.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

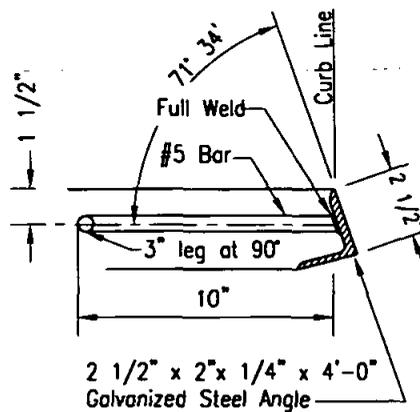
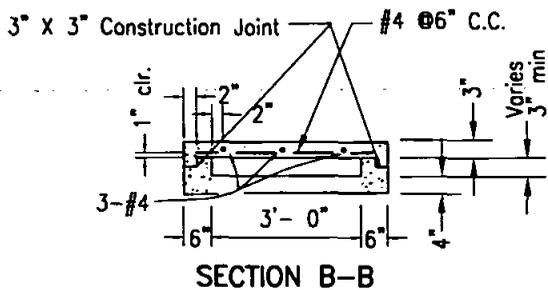
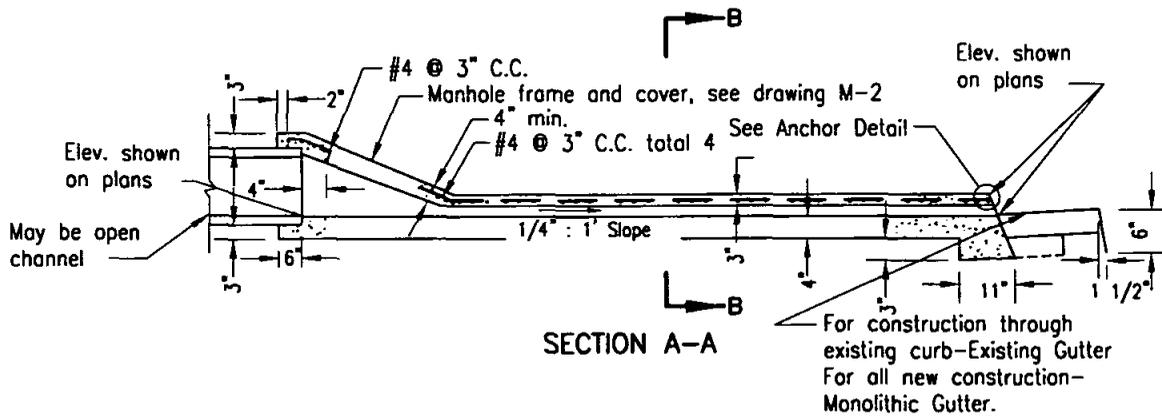
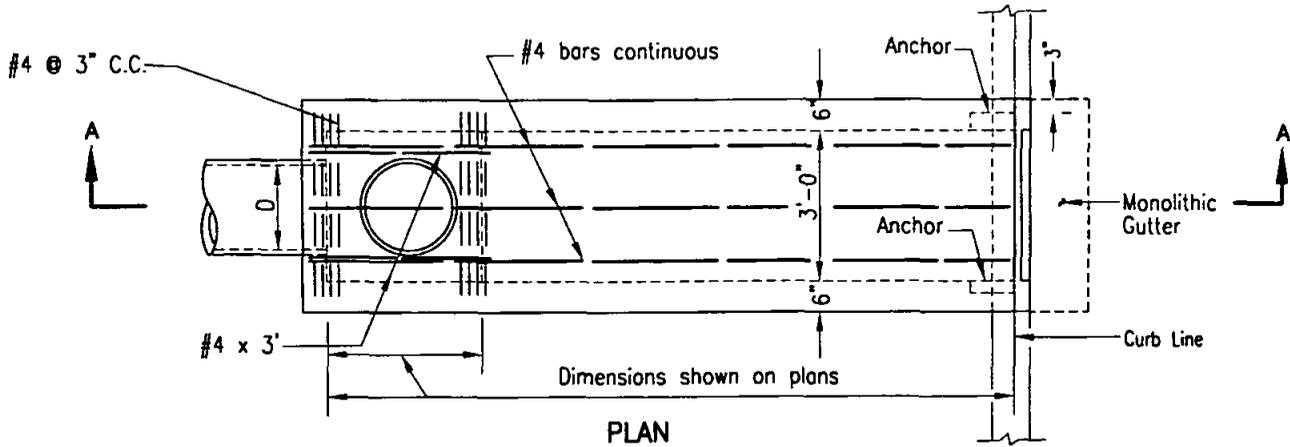
SAN DIEGO REGIONAL STANDARD DRAWING

ENTRANCE TAPER AND DOWNDRAIN PIPE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/00
Chairperson R.C.E. 19246 Date

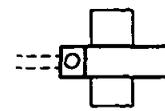
DRAWING NUMBER **D-24**



NOTES

1. Concrete shall be 560-C-3250
2. D=inside diameter of pipe or depth of channel.
3. Section to be sloped laterally with top conforming to the grades of the existing sidewalk and curb.
4. Manhole frame and cover may be deleted with open channel.
5. Trowel finish top surface and reproduce markings of existing sidewalk and curb.
6. Trowel finish floor of outlet.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

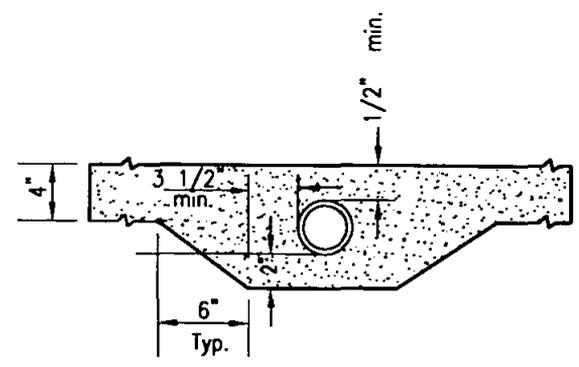
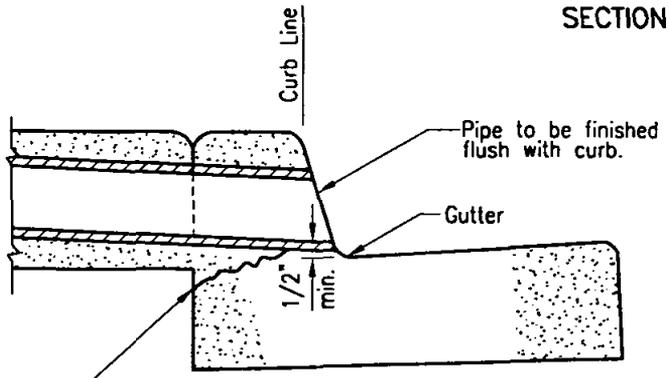
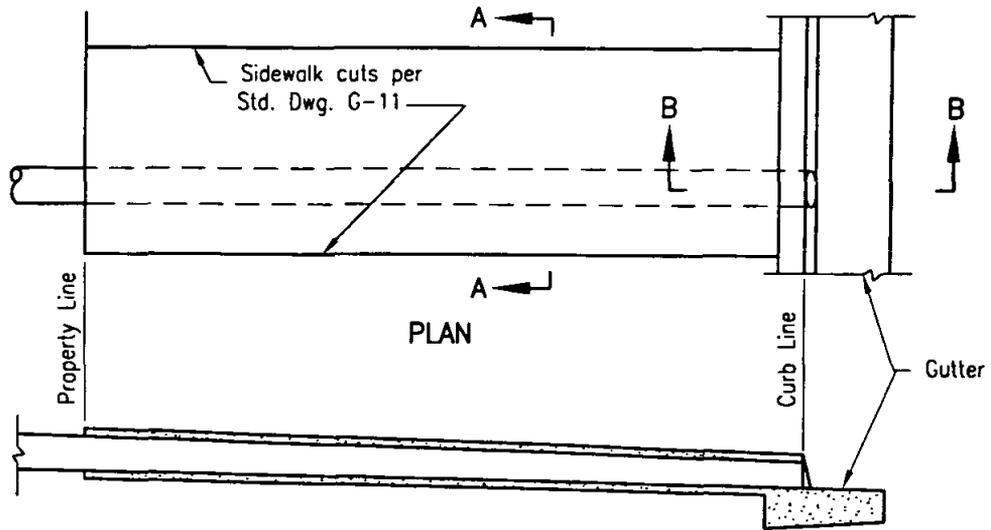
SAN DIEGO REGIONAL STANDARD DRAWING

CURB OUTLET - TYPE A

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Steunton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-25**

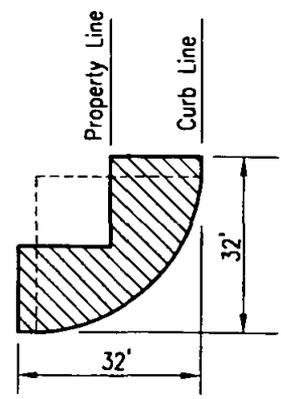


Optional break line for cuts in existing curb and gutter.

SECTION B-B

SECTION A-A

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

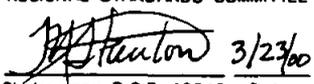


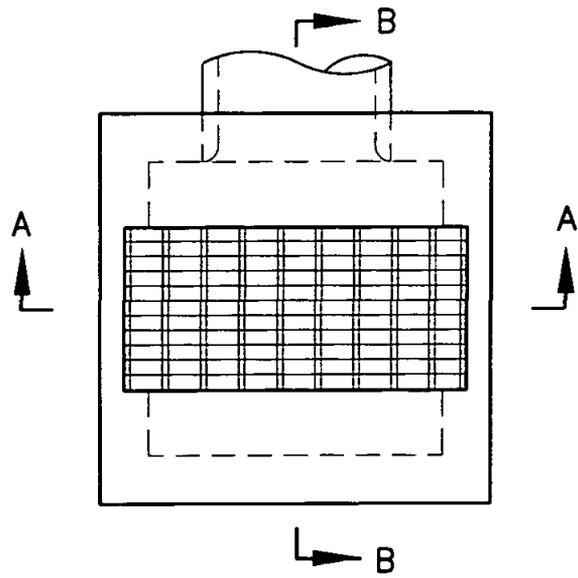
NOTES

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.

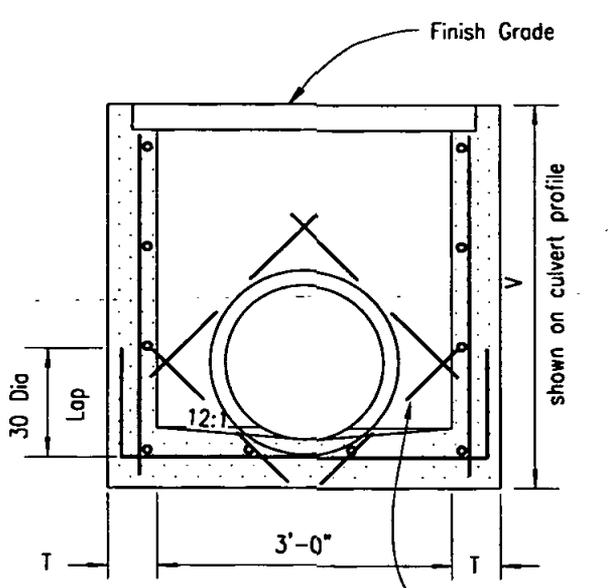
Drain shall not occupy the hatched area

BLOCK CORNER

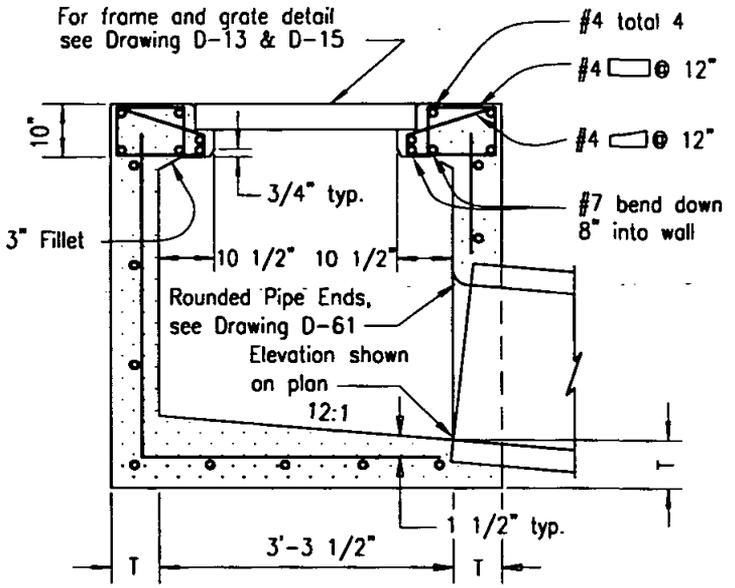
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE		
ORIGINAL		Kercheval	12/75				
				SIDEWALK UNDERDRAIN PIPE	 Chairperson R.C.E. 19246 Date 3/23/60		
						DRAWING NUMBER	D-27



PLAN



SECTION A-A

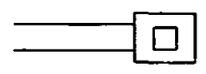


SECTION B-B

NOTES

1. See Standard Drawing D-11 for additional notes and details.
2. When "V" exceeds 4', steps shall be installed

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Solomon	7/79

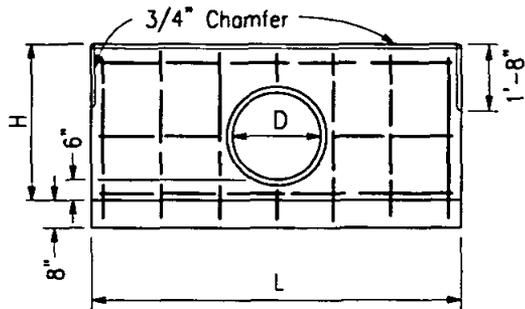
SAN DIEGO REGIONAL STANDARD DRAWING

CATCH BASIN - TYPE I

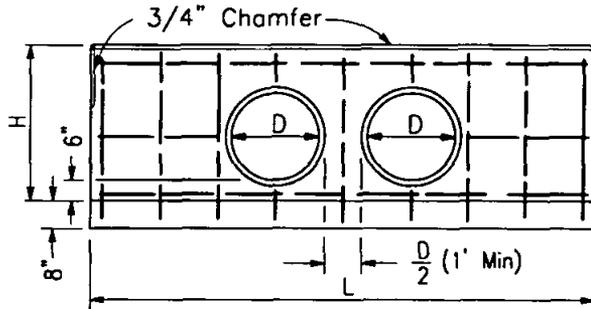
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. E. Stanton 3/23/80
Chairperson R.C.E. 19246 Date

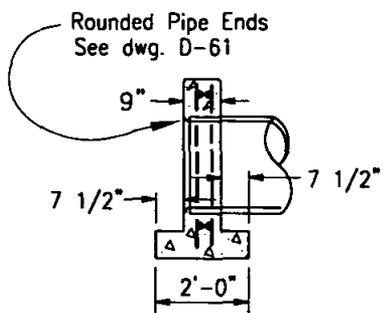
DRAWING NUMBER D-29



FRONT ELEVATION
SINGLE HEADWALL



FRONT ELEVATION
DOUBLE HEADWALL



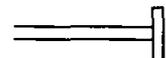
SECTION, SINGLE &
DOUBLE HEADWALLS

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 shall be #4 bars. All vertical and horizontal tie bars @ 18" maximum spacing.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

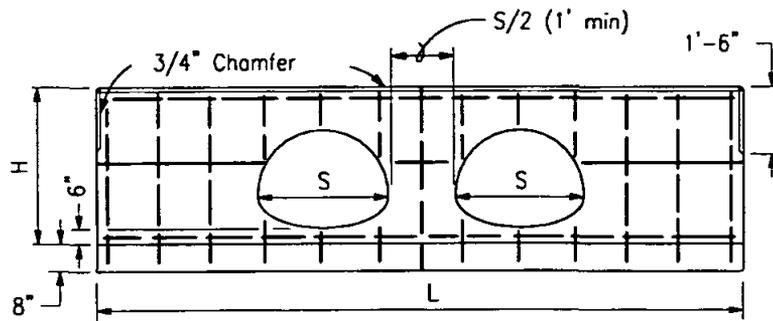
SAN DIEGO REGIONAL STANDARD DRAWING

STRAIGHT HEADWALL - TYPE A
(CIRCULAR PIPE)

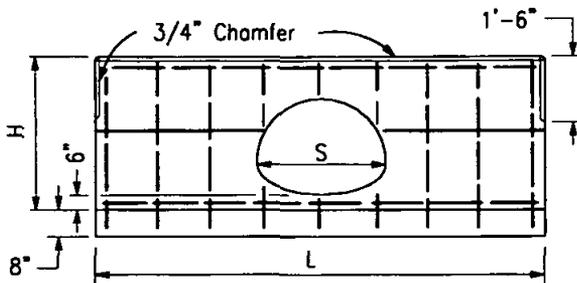
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/00
Chairperson R.C.E. 19246 Date

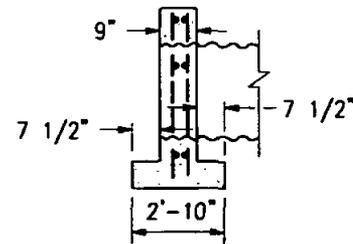
DRAWING
NUMBER **D-30**



ELEVATION - DOUBLE HEADWALL



ELEVATION - SINGLE HEADWALL



SECTION, SINGLE & DOUBLE HEADWALLS

C.S.P. ARCH SIZE	SINGLE				DOUBLE		
	H	L	Steel Lbs.	Conc C.Y.	L	Steel Lbs.	Conc C.Y.
18" x 11"	2'-7"	5'-6"	37	0.64	8'-0"	52	0.91
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

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

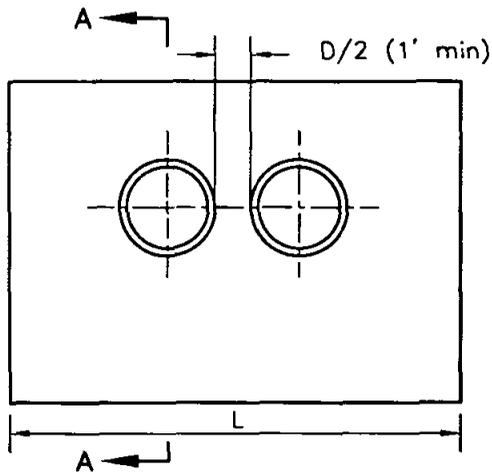
SAN DIEGO REGIONAL STANDARD DRAWING

STRAIGHT HEADWALL - TYPE A
[C.S.P. - ARCH]

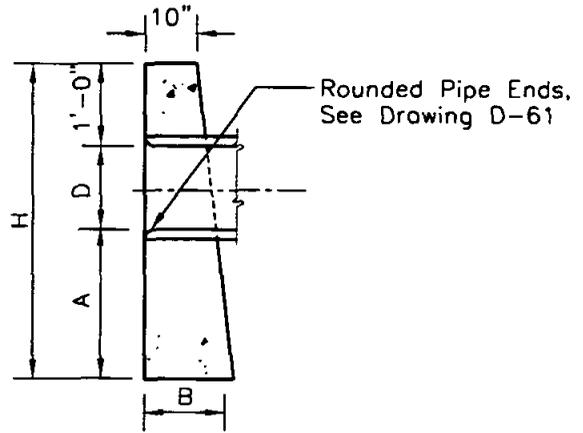
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Steuton 3/23/60
Chairperson R.C.E. 19246 Date

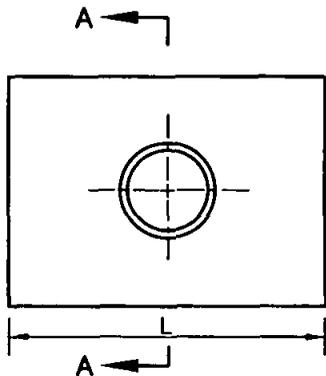
DRAWING NUMBER **D-31**



DOUBLE PIPE ELEVATION



SECTION A-A



SINGLE PIPE ELEVATION

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

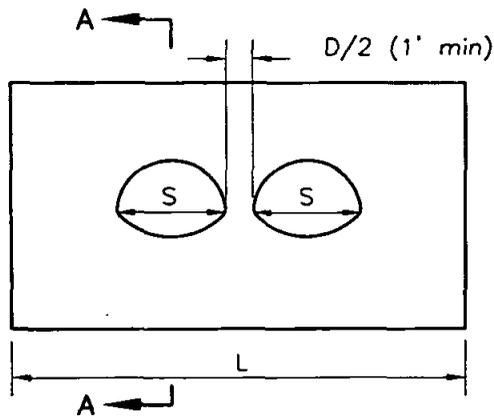
NOTES

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

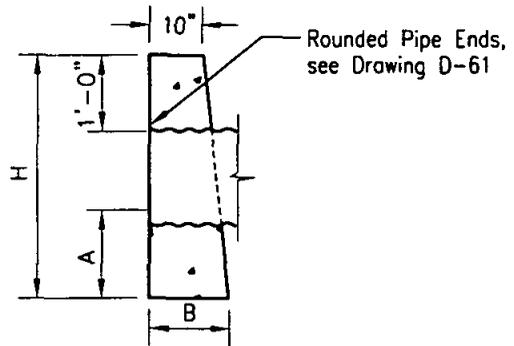
LEGEND ON PLANS



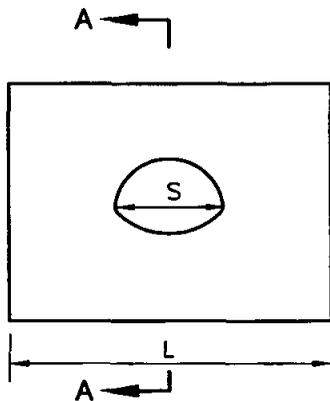
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE		
ORIGINAL		Kercheval	12/75				
				STRAIGHT HEADWALL - TYPE B (CIRCULAR PIPE)	 Chairperson R.C.E. 19246 Date 3/23/00		
						DRAWING NUMBER	D-32



DOUBLE PIPE
ELEVATION



SECTION A-A



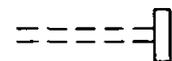
SINGLE PIPE
ELEVATION

C.S.P. ARCH SIZE	A	B	H	SINGLE		DOUBLE	
				L	Conc. C.Y.	L	Conc. C.Y.
18"x11"	2'-0"	1'-2"	3'-11"	6'	0.83	7'-3"	0.97
21"x15"	2'-0"	1'-4"	4'-1"	7'	1.08	9'-8"	1.46
24"x18"	2'-0"	1'-6"	4'-4"	8'	1.41	11'-6"	1.98
28"x20"	2'-6"	1'-8"	5'-0"	9'	1.97	12'-6"	2.66
35"x24"	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
ORIGINAL		Kercheval	12/75

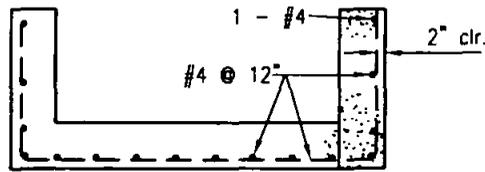
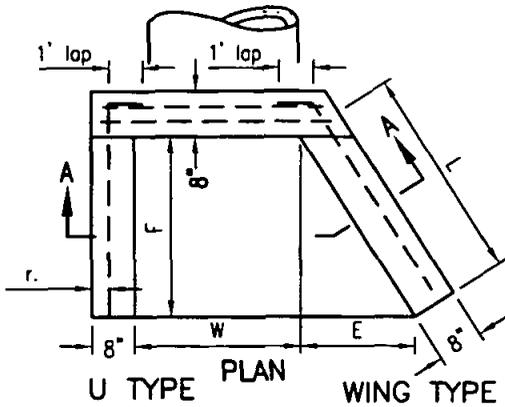
SAN DIEGO REGIONAL STANDARD DRAWING

STRAIGHT HEADWALL - TYPE B
(C.S.P. ARCH)

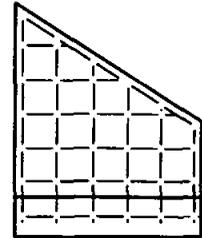
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

R. E. Heston 3/23/60
Chairperson R.C.E. 19246 Date

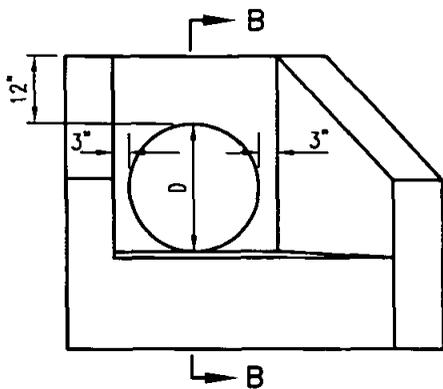
DRAWING
NUMBER **D-33**



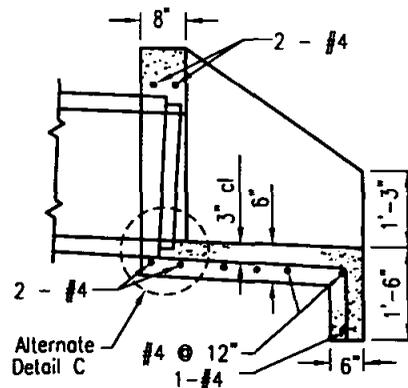
SECTION A-A



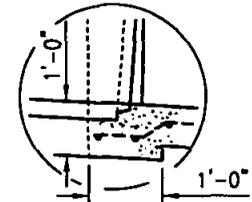
WING WALL REINFORCING



ELEVATION



SECTION B-B



ALT. DETAIL C

DIA. OF PIPE	DIMENSIONS			DOUBLE PIPE				DOUBLE PIPE					
	L	E	F	W	U TYPE		WING TYPE		W	U TYPE		WING TYPE	
					CONC.	STEEL	CONC.	STEEL		CONC.	STEEL	CONC.	STEEL
C.Y.	LBS.	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



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

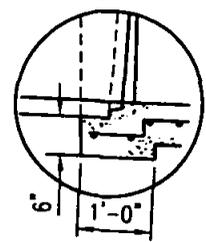
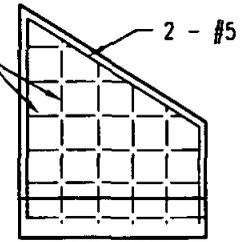
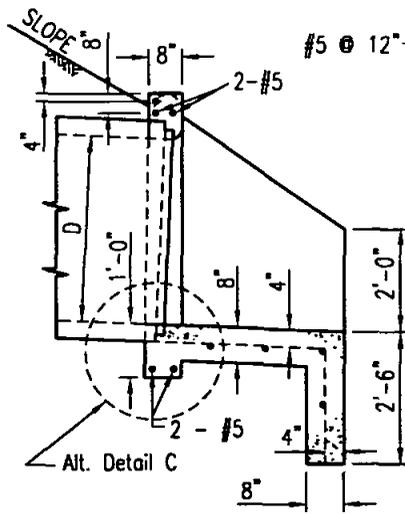
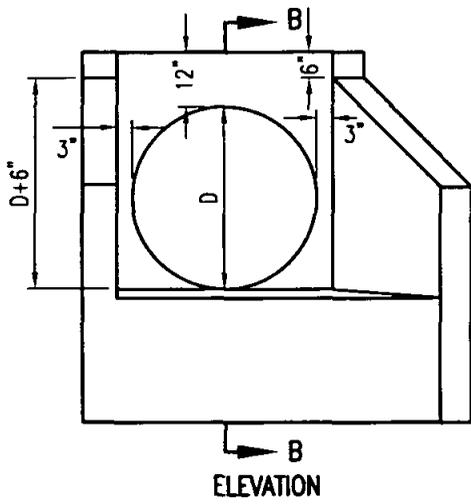
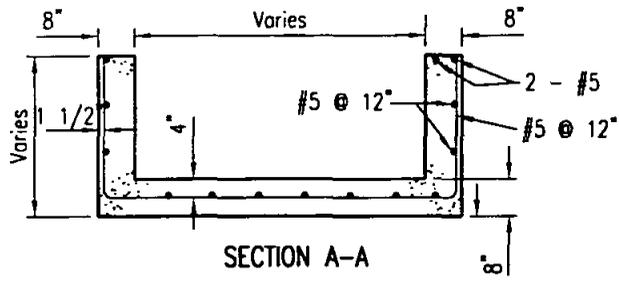
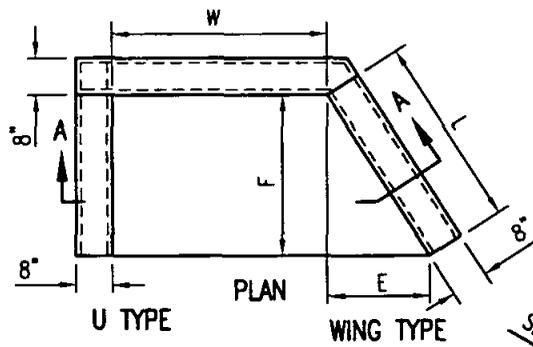
SAN DIEGO REGIONAL STANDARD DRAWING

WING AND U TYPE HEADWALLS FOR 18" TO 36" PIPES

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-34**



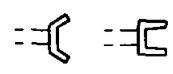
DIA. OF PIPE	DIMENSIONS				SINGLE PIPE				DOUBLE PIPE				
	L	E	F	W	U TYPE		WING TYPE		W	U TYPE		WING TYPE	
					CONC.	STEEL	CONC.	STEEL		CONC.	STEEL	CONC.	STEEL
					C.Y.	LBS.	C.Y.	LBS.		C.Y.	LBS.	C.Y.	LBS.
42"	3'-7 1/4"	2'-0"	3'-0"	4'-0"	1.57	117	1.90	135	AS SHOWN ON PLANS	2.69	190	3.16	214
48"	4'-6"	2'-6"	3'-9"	4'-6"	1.97	153	2.48	184		3.43	252	4.06	288
54"	5'-4 7/8"	3'-0"	4'-6"	5'-0"	2.41	190	3.07	246		4.24	319	5.06	368
60"	6'-3 3/4"	3'-6"	5'-3"	5'-6"	2.88	239	3.75	294		5.13	386	6.17	442
66"	7'-2 1/2"	4'-0"	6'-0"	6'-0"	3.38	294	4.52	356		6.08	454	7.20	516
72"	8'-1 3/8"	4'-6"	6'-9"	6'-6"	3.93	368	5.52	417		7.11	522	8.30	588
78"	9'-0"	5'-0"	7'-6"	7'-0"	4.50	444	6.70	503		8.20	595	9.50	693
84"	9'-10 3/4"	5'-6"	8'-3"	7'-6"	5.21	540	8.15	619		9.50	687	10.80	786

Note: Dimensions E and L apply to wing type only.

NOTES:

1. Skewed Pipes: Dimension W to be increased to take care of increased width or length due to skew of multiple pipes.
2. Tops of headwalls, on grade culverts, shall be placed parallel to profile grade when the grades are 3% or more.
3. Concrete shall be 560-C-3250
4. Exposed corners shall chamfered 3/4".
5. Multiple pipes shall be set a distance of D/2, with a 1" minimum, between outside diameters of pipes.
6. For pipe wall thickness greater than 3" use Alternate Detail-C.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

SAN DIEGO REGIONAL STANDARD DRAWING

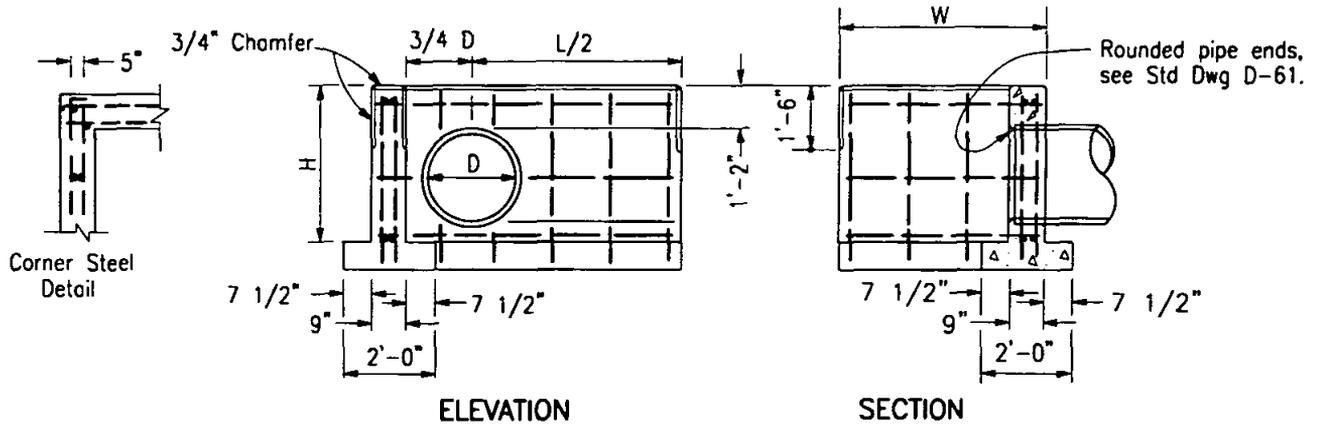
WING AND U TYPE HEADWALLS

FOR 42" TO 84" PIPE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. C. E. 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-35

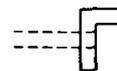


D	H	L/2	LENGTH OF W									
			3'-4"		4'-10"		6'-4"		7'-10"		9'-4"	
			Steel lbs.	Conc C.Y.	Steel lbs.	Conc C.Y.	Steel lbs.	Conc C.Y.	Steel lbs.	Conc C.Y.	Steel lbs.	Conc C.Y.
12"	2'-8"	2'-6"	50	0.79	60	0.98	—	—	—	—	—	—
15"	2'-11"	3'-0"	55	0.91	65	1.11	—	—	—	—	—	—
18"	3'-2"	3'-6"	65	1.04	75	1.25	—	—	—	—	—	—
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

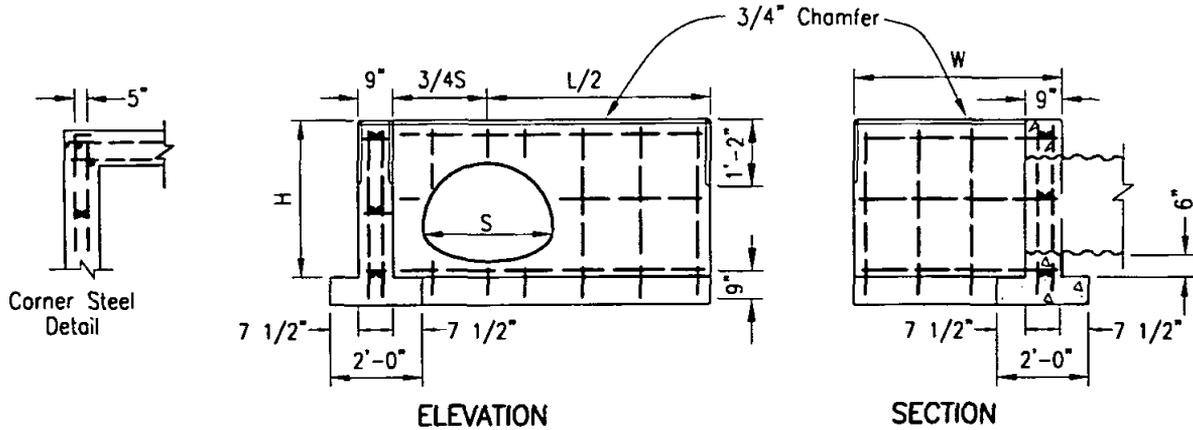
NOTES

- 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 to the end of the headwall as shown.

LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	L TYPE HEADWALLS CIRCULAR PIPES	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75			<i>[Signature]</i> 3/23/60 Chairperson R.C.E. 19246 Date
						DRAWING NUMBER D-36

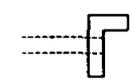


CSP ARCH SIZE	H	L/2	LENGTH OF W									
			3'-4"		4'-10"		6'-4"		7'-10"		9'-4"	
			Steel Lbs.	Conc C.Y.	Steel Lbs.	Conc C.Y.	Steel Lbs.	Conc C.Y.	Steel Lbs.	Conc C.Y.	Steel Lbs.	Conc C.Y.
18"x11"	2'-7"	2'-9"	50	0.84	60	1.03	70	1.21	80	1.39	90	1.57
21"x15"	2'-11"	3'-3"	60	1.00	65	1.18	75	1.38	90	1.58	100	1.77
24"x18"	3'-2"	3'-9"	60	1.07	70	1.32	80	1.53	95	1.74	110	1.94
28"x20"	3'-4"	4'-3"	70	1.26	80	1.47	90	1.68	100	1.90	115	2.11
35"x24"	3'-8"	5'-3"	100	1.51	110	1.74	120	1.97	140	2.20	155	2.42
42"x29"	4'-1"	6'-3"	115	1.82	130	2.06	140	2.31	155	2.55	170	2.83
49"x33"	4'-5"	7'-3"	130	2.12	145	2.37	155	2.64	170	2.90	185	3.15
57"x38"	4'-10"	8'-6"	145	2.52	160	2.79	175	3.07	190	3.35	205	3.61
64"x43"	5'-3"	9'-6"	185	2.89	200	3.11	215	3.48	235	3.77	250	4.06
71"x47"	5'-7"	10'-6"	200	3.25	215	3.56	235	3.86	250	4.17	270	4.48

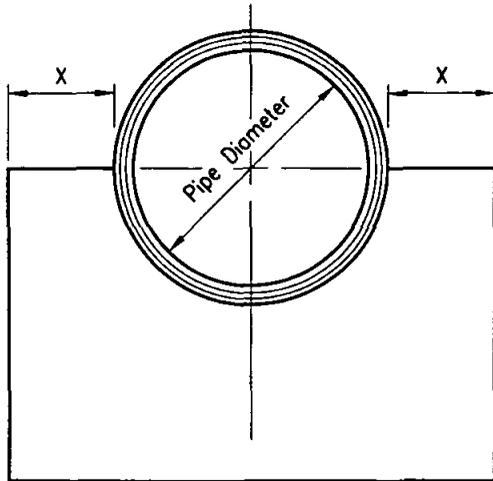
NOTES

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 S/2 (1' min.). The dimension L/2 is from the center of the pipe to the end of the headwall as shown.

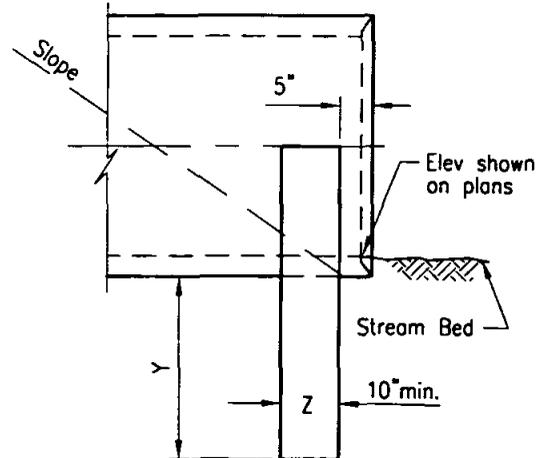
LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
				L TYPE HEADWALLS CORRUGATED STEEL PIPE ARCH	 3/23/00 Chairperson R.C.E. 19246 Date



FACE ELEVATION



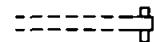
SIDE ELEVATION

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"
61" TO 60"	2'-6"	3'-0"	14"
63" & Larger	3'-0"	3'-0"	14"

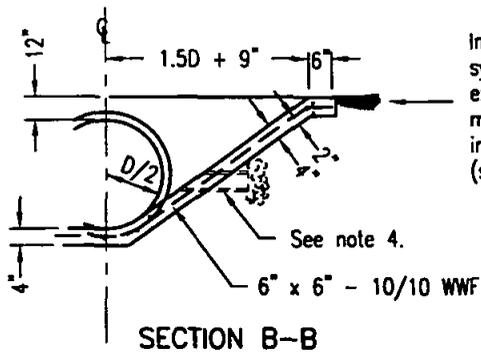
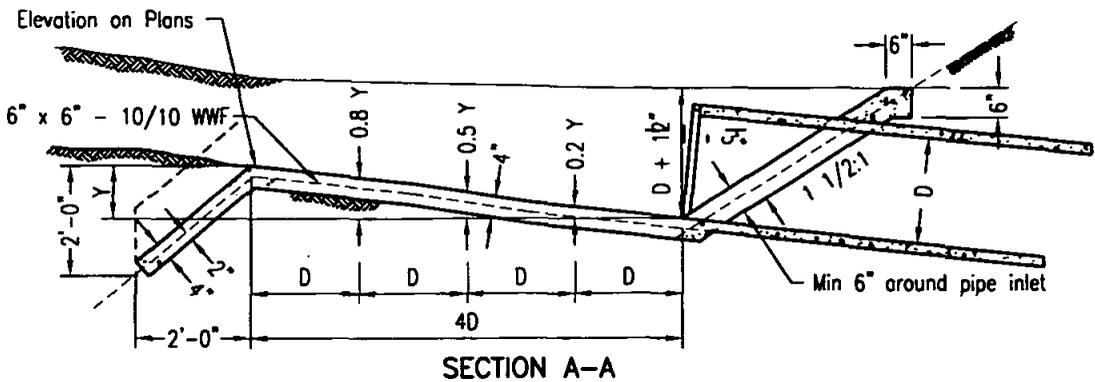
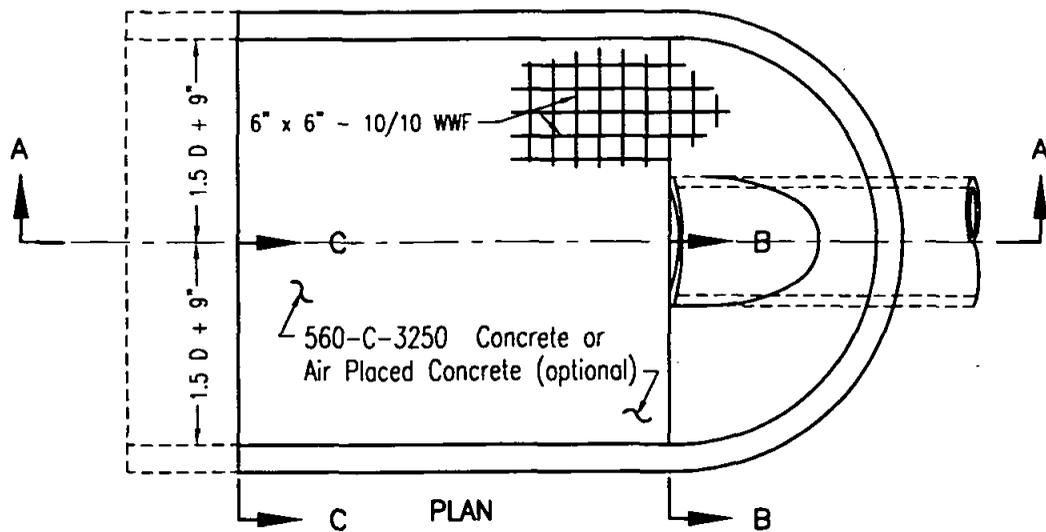
NOTES

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.

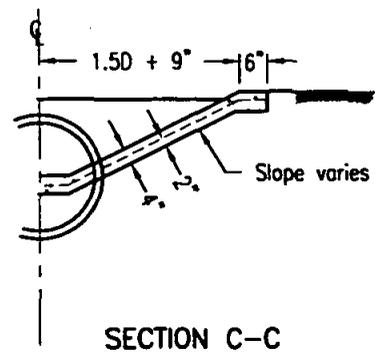
LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE <i>[Signature]</i> 3/23/00 Chairperson R.C.E. 19246 Date
ORIGINAL		Kercheval	12/75		
				CURTAIN WALL	DRAWING NUMBER D-38



Inlet constr. sym. about ζ except for multiple pipe installations (see note 1)



NOTES

1. When more than one pipe is used the profile view shown shall hold for the distance across all pipe openings. Section A-A and B-B shall be from the outermost pipe. The distance between pipes shall be $D/2$ for round and $Span/3$ for arch pipe. (12" minimum)
2. Culvert shall be cut off even with apron surface when required by the Agency.
3. Use inlet Apron only where a flared and section can not be utilized.
4. Place weep holes when required by the Agency.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

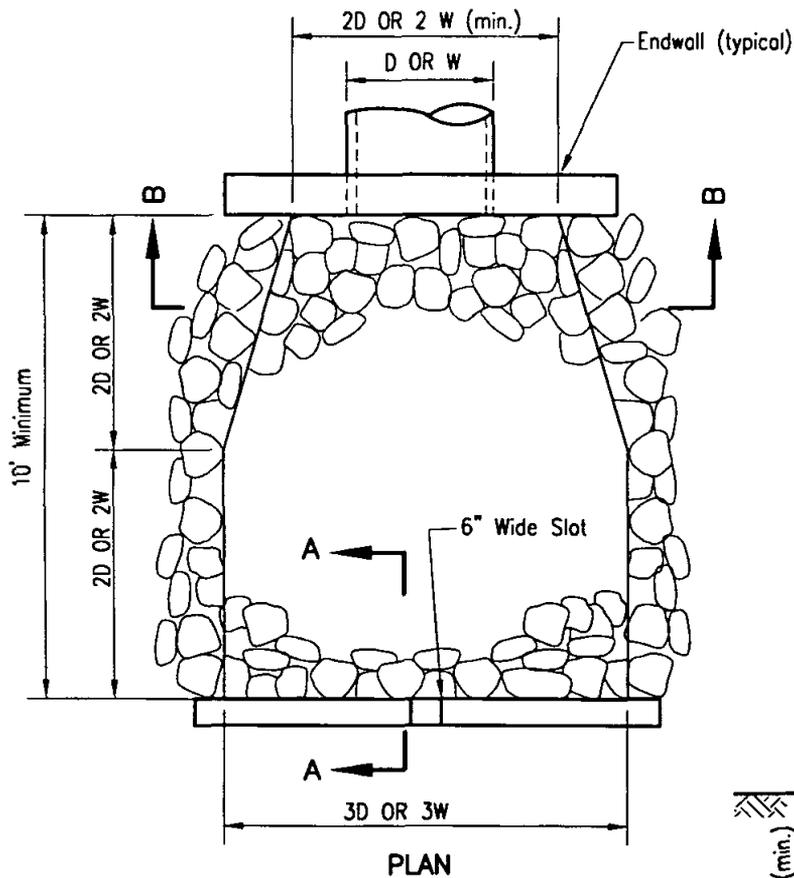
SAN DIEGO REGIONAL STANDARD DRAWING

**INLET APRON FOR CULVERTS
UP TO 42" DIAMETER**

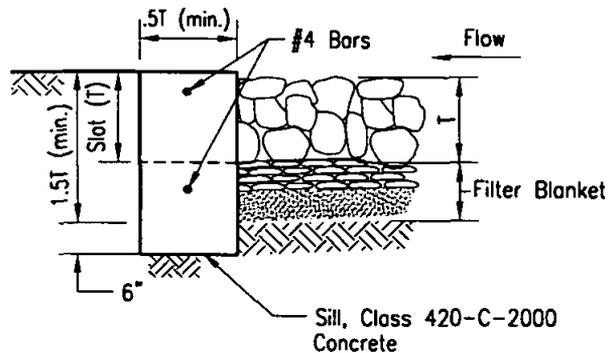
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Stenton 3/23/00
Chairperson R.C.E. 19246 Date

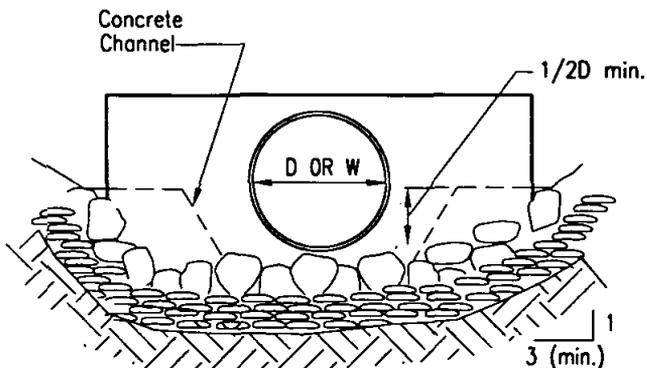
DRAWING NUMBER **D-39**



D = Pipe Diameter
W = Bottom Width of Channel



SECTION A-A



SECTION B-B

NOTES

1. Plans shall specify:
A) Rock Class and thickness (T).
B) Filter material, number of layers and thickness.
2. Rip rap shall be either quarry stone or broken concrete (if shown on the plans.) Cobbles are not acceptable.
3. Rip rap shall be placed over filter blanket which may be either granular material or filter fabric.
4. See Regional Supplement Amendments for selection of rip rap and filter blanket.
5. 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.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

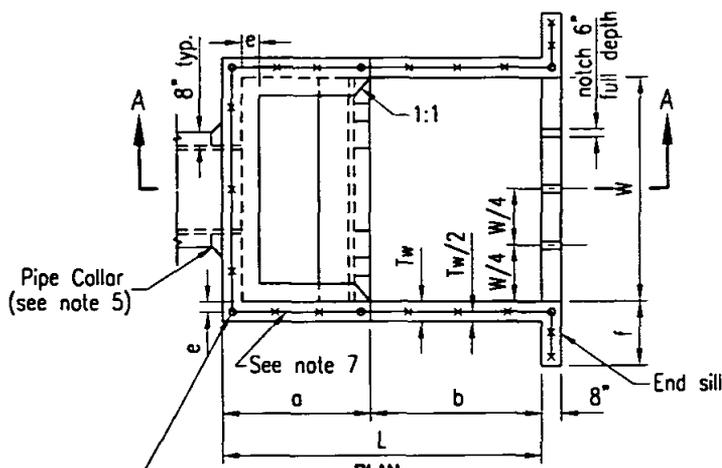
SAN DIEGO REGIONAL STANDARD DRAWING

**RIP RAP
ENERGY DISSIPATOR**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

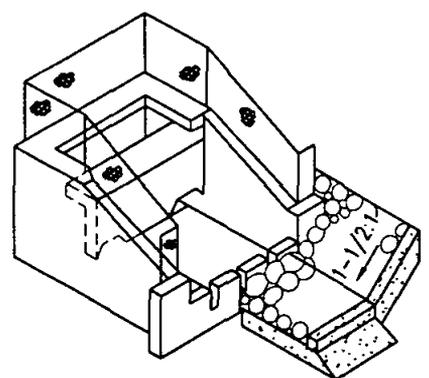
M. J. Steaton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-40**

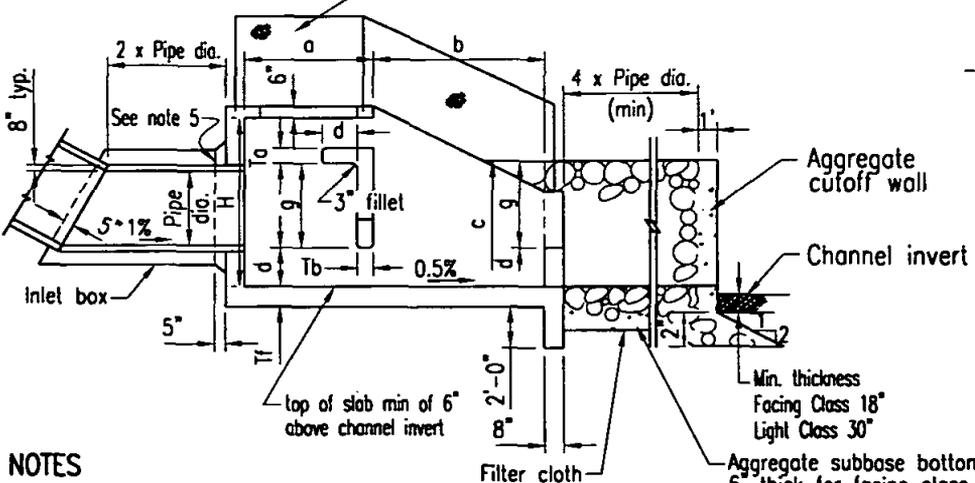


PLAN
Note: Riprap not shown.

2-#4 rebars horizontal and vertical around fence post (typical).
See note 7



PICTORIAL VIEW



SECTION B-B

NOTES

- Design
Equivalent Fluid Pressure = 60 p.c.f.
Maximum Outlet velocity = 35 p.c.f.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 maybe 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 base, minimum of 1 ft. overlaps at joints.
- Rip rap and subbase classification shall be as shown on plans.

Aggregate subbase bottom and sides
6" thick for facing class
9" thick for light class.

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
ORIGINAL		Kercheval	12/75

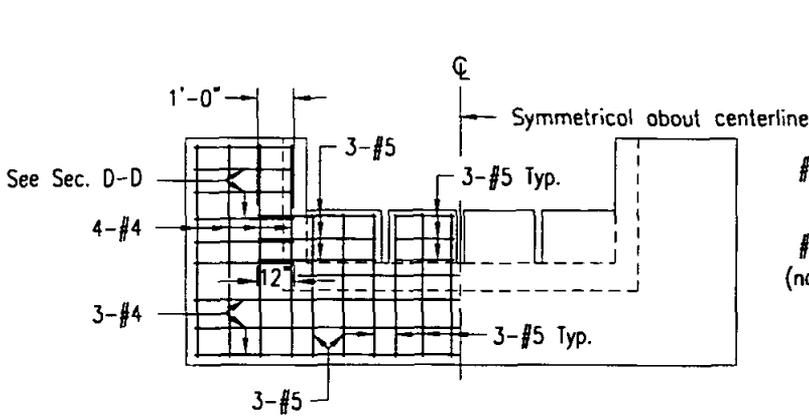
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE ENERGY DISSIPATOR

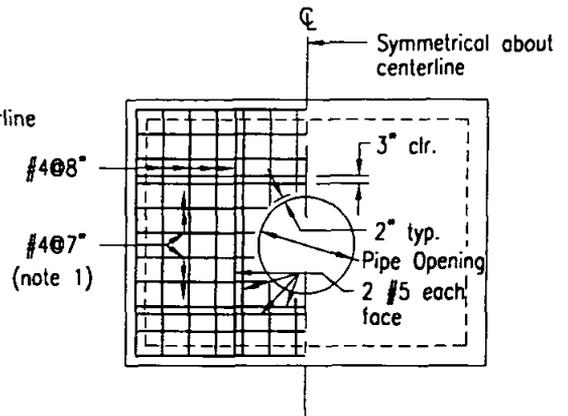
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Stenton 3/23/60
Chairperson R.C.E. 19246 Date

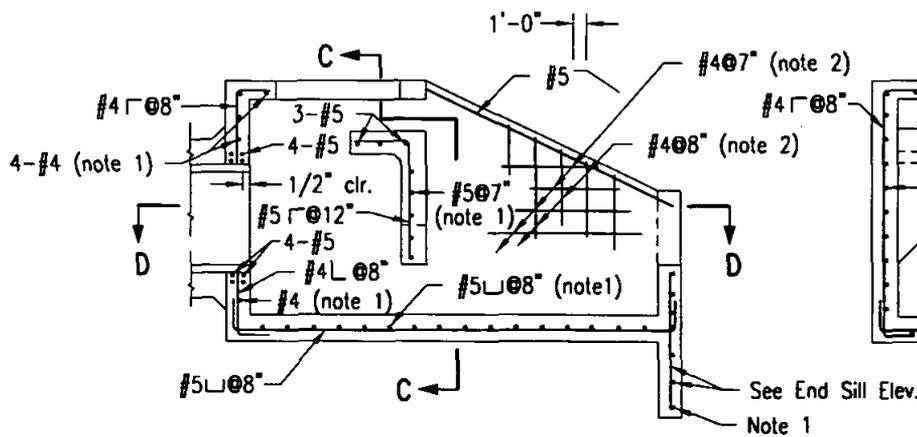
DRAWING NUMBER **D-41**



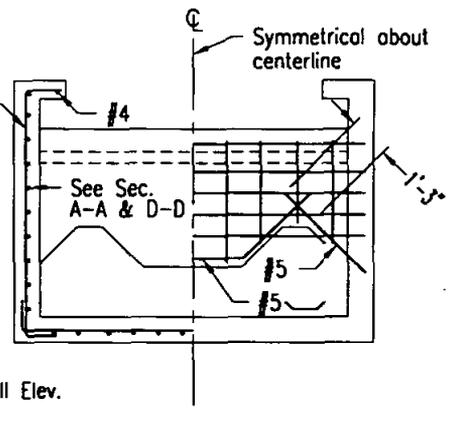
END SILL ELEVATION



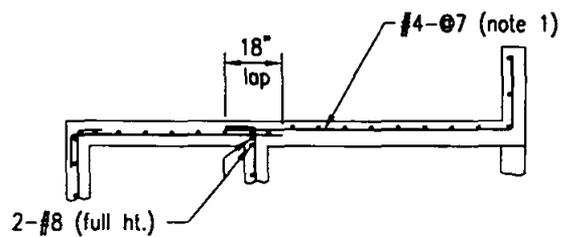
HEADWALL ELEVATION



SECTION A-A



SECTION C-C



SECTION D-D

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.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

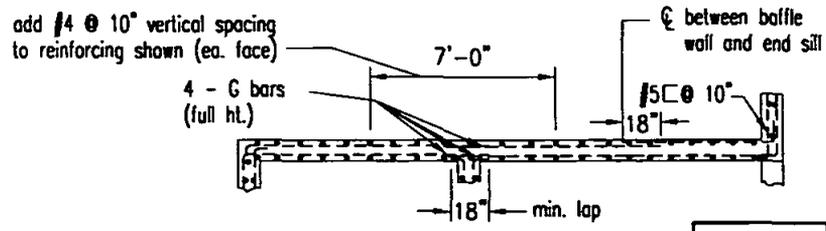
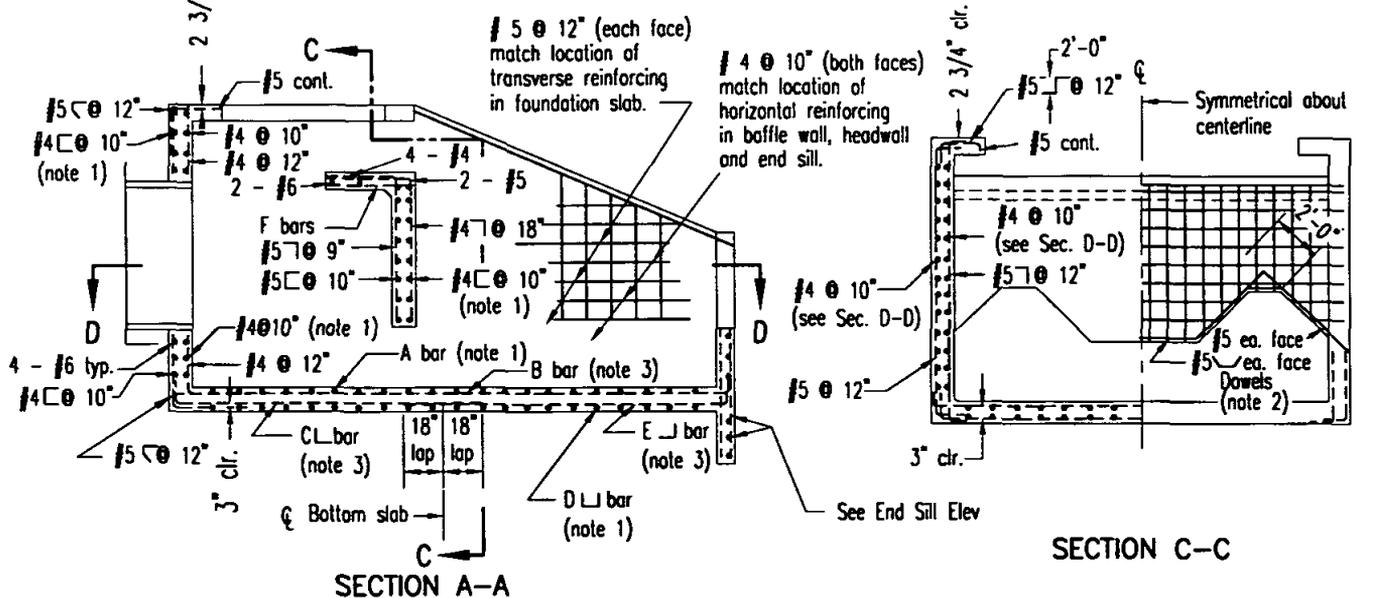
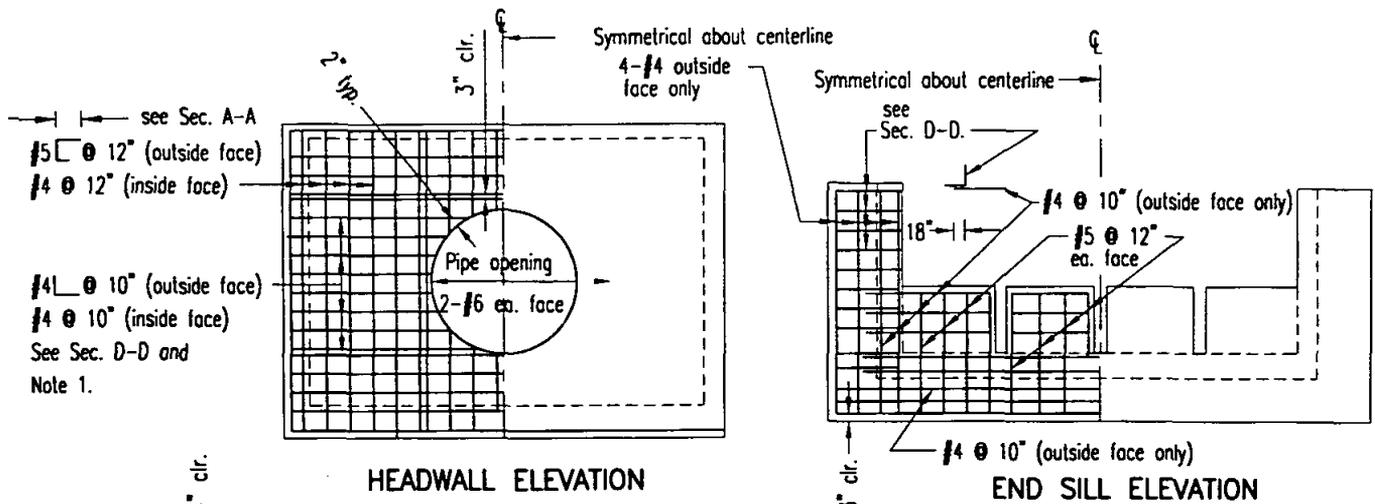
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE ENERGY DISSIPATOR
[REINFORCEMENT]
18" TO 30" DIAMETER PIPE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-42**

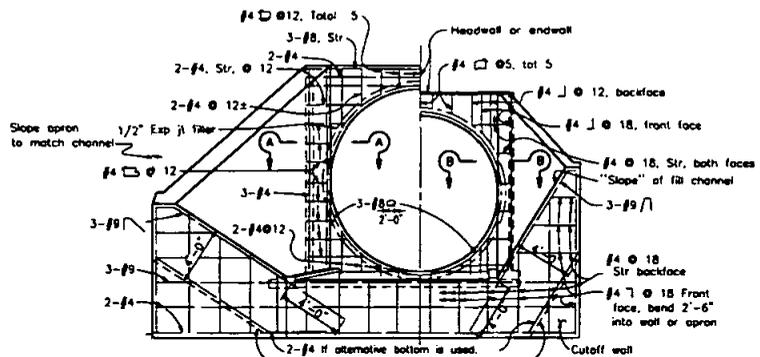


NOTES

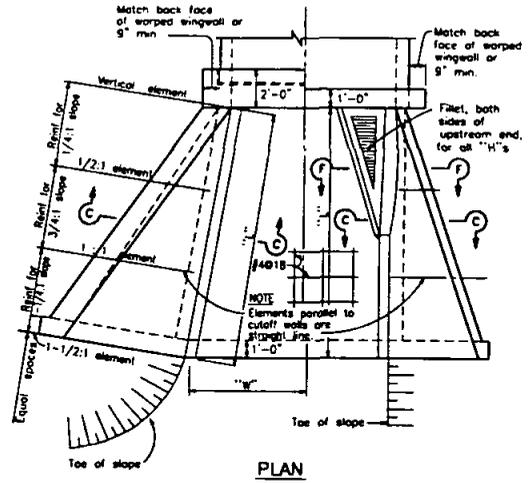
1. Match location of sidewall reinforcing.
2. Dowels having same size and spacing as wall reinforcing may be used in lieu of continuous bars at contractors option.
3. Match location of headwall or end sill reinforcing.

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	

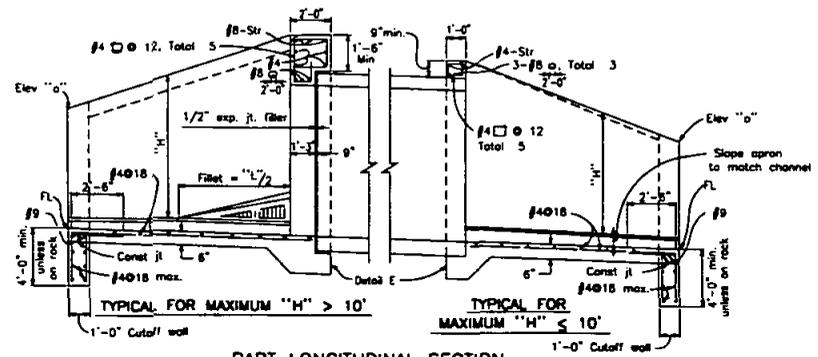
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	CONCRETE ENERGY DISSIPATOR (REINFORCEMENT) 36" TO 72" DIAMETER PIPE	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75			
						 Chairperson R.C.E. 19246 Date 3/23/00
						DRAWING NUMBER D-43



END ELEVATION
 If at upstream end, fillet is not shown

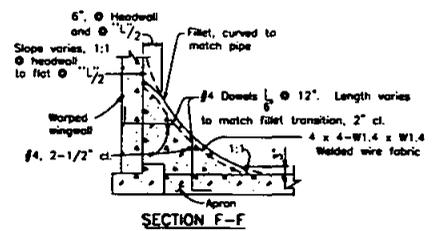


PLAN

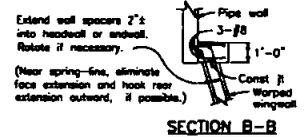


PART LONGITUDINAL SECTION

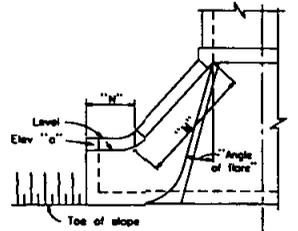
NOTE
 RCP shown. Metal pipe similar except eliminate the expansion joint and use hook bolts @ 19" spacing. Size and length provided by manufacturer.



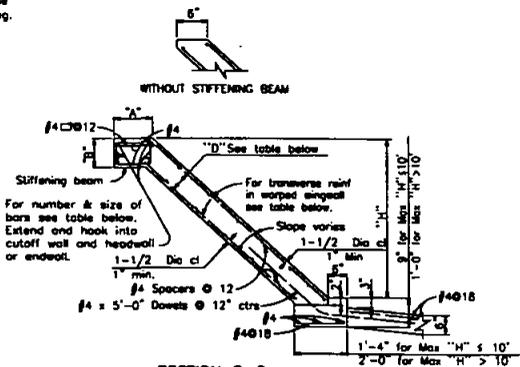
SECTION F-F



SECTION B-B

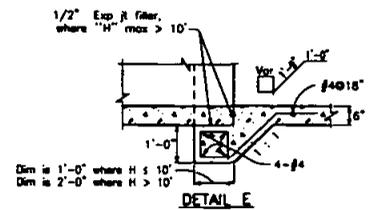


ALTERNATIVE WARPED WINGWALL



SECTION C-C

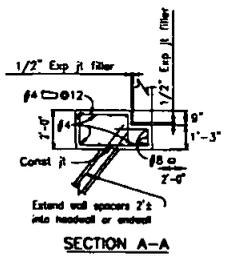
Where abrasion is anticipated, increase apron thickness to 7" minimum to provide 2" minimum reinforcement coverage.



DETAIL E

Element	WALL DIMENSIONS AND REINFORCING								STIFFENING BEAM DIMENSIONS AND REINFORCING										
	"H"	6' 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	#5@6	#7@7	#7@5	6"	No beam. Place 2-#6 in each face along top of wall.									8"
	Rear face reinf.	#4@12	#4@12	#4@12	#4@12	#4@12	#4@12	#4@12	8"										8"
3/4:1	Front face reinf.	#4@12	#4@12	#4@12	#4@12	#4@10	#4@8	#4@6	10"	"A" = 1'-0"									10"
	Rear face reinf.	#4@12	#4@12	#4@12	#4@12	#4@10	#4@7	#4@6	12"	"B" = 9"									12"
1-1/4:1	Front face reinf.	#4@12	#4@12	#4@12	#4@12	#4@12	#4@12	#4@12	14"	"A" = 1'-6"									14"
	Rear face reinf.	#4@5	#4@5	#4@5	#4@5	#4@5	#4@5	#4@5	16"	"B" = 1'-0"									16"
"D" at Cutoff Wall	6"	6"	6"	7-1/2"	8"	9-1/2"	11"	18"	Total 6-#6									18"	
"D" at Culvert	6"	6"	6"	8"	9-1/2"	11"	1'-1"	20"	Total 6-#7									20"	
									Total 6-#8										
									Total 6-#9										

NOTES Walls designed for 2' surcharge; earth density = 120 lb/cu. ft.; equivalent fluid pressure = 36 lb/cu. ft. Vary "D" of warped wall uniformly from that at cutoff wall to that at culvert, for maximum "H" > 12'. Dimensions "L", "W", "H", "M", "N", Elevation "a", Angle of flare, and end "Slope" (as apply) are shown on the plans.



SECTION A-A

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

SAN DIEGO REGIONAL STANDARD DRAWING

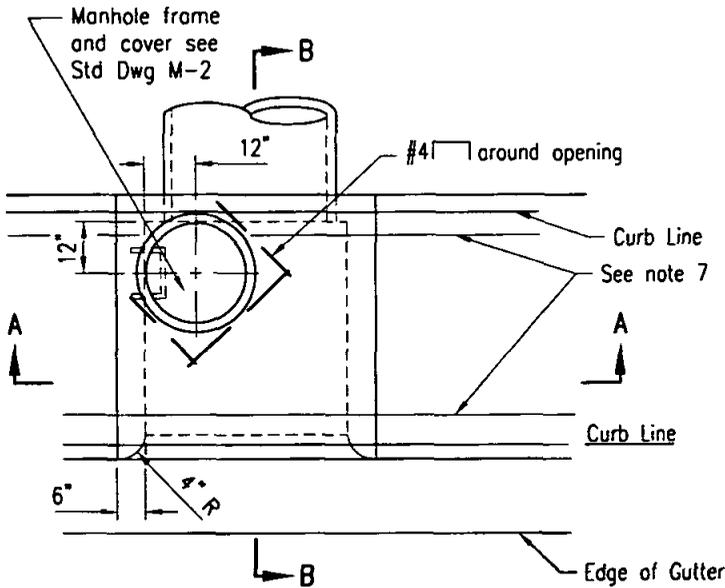
PIPE CULVERT - HEADWALLS

ENDWALLS & WARPED WINGWALLS

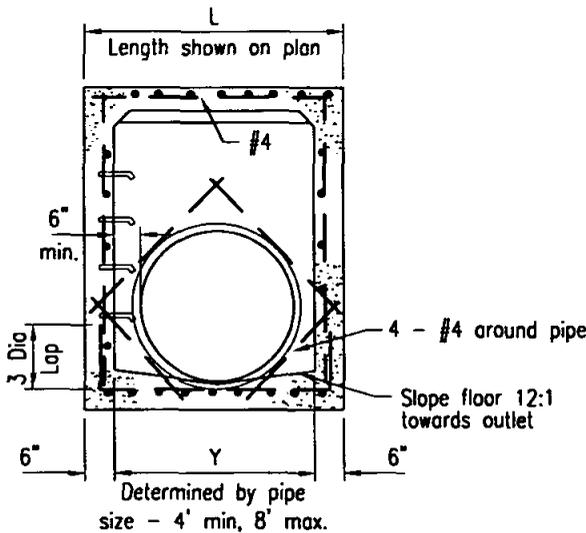
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. C. E. 3/23/90
 Chairperson R.C.E. 19246 Date

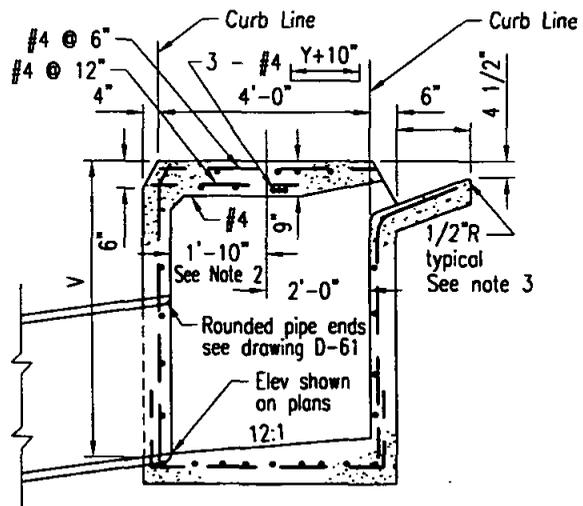
DRAWING NUMBER
D-44



PLAN



SECTION A-A

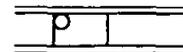


SECTION B-B

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



Revision	By	Approved	Date
ORIGINAL		H. Hecht	10/82

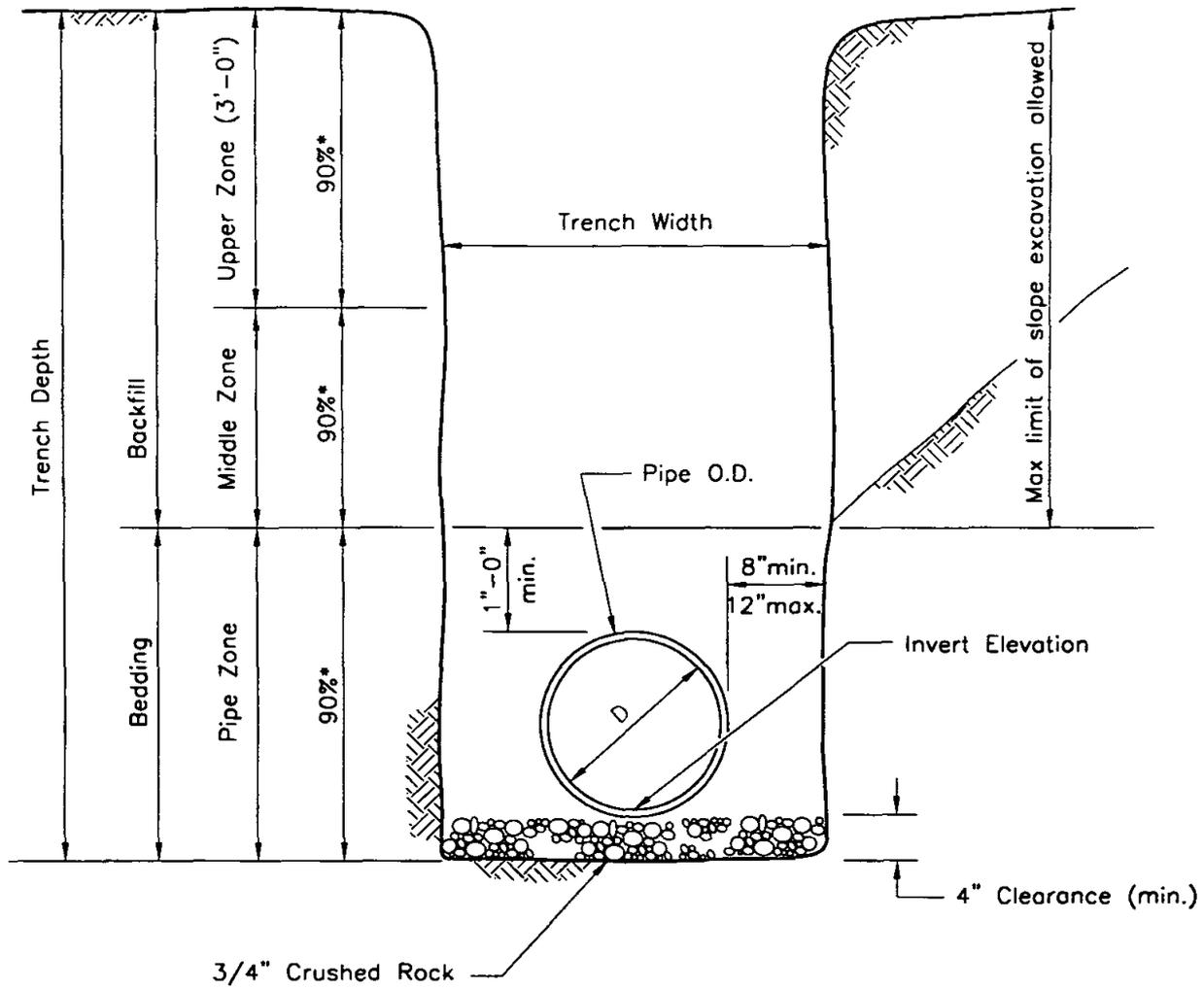
SAN DIEGO REGIONAL STANDARD DRAWING

MEDIAN CURB INLET - TYPE J

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-45

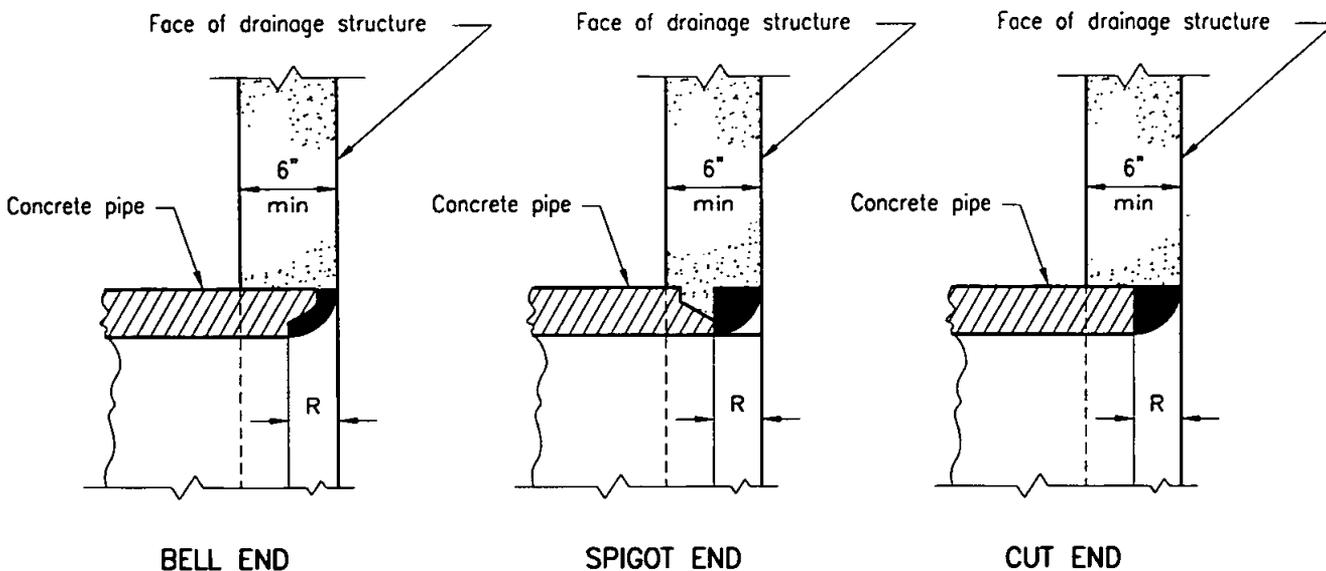


SECTION

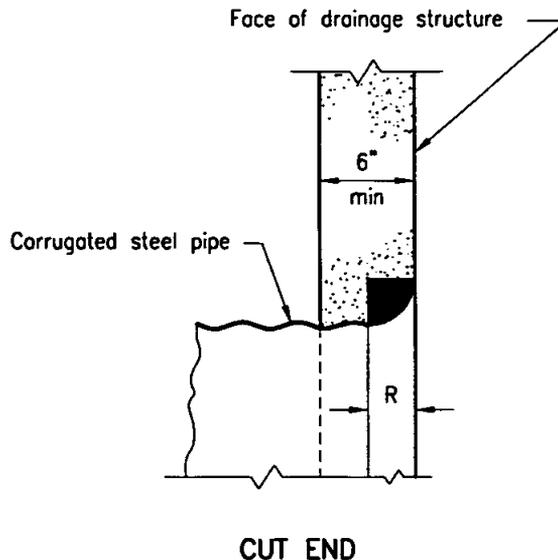
NOTES

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

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Parkinson	2/95		<i>[Signature]</i> 3/23/00 Chairperson R.C.E. 19246 Date
				PIPE BEDDING AND TRENCH BACKFILL FOR STORM DRAINS	DRAWING NUMBER D-60



R = Thickness of pipe



R = $\frac{\text{Inside diameter of pipe}}{10}$

NOTE

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

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

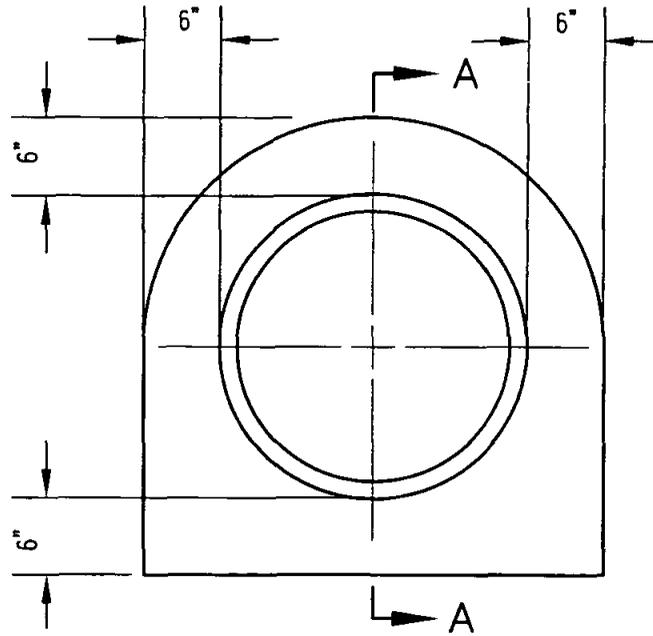
SAN DIEGO REGIONAL STANDARD DRAWING

**ROUNDED PIPE ENDS
IN DRAINAGE STRUCTURES**

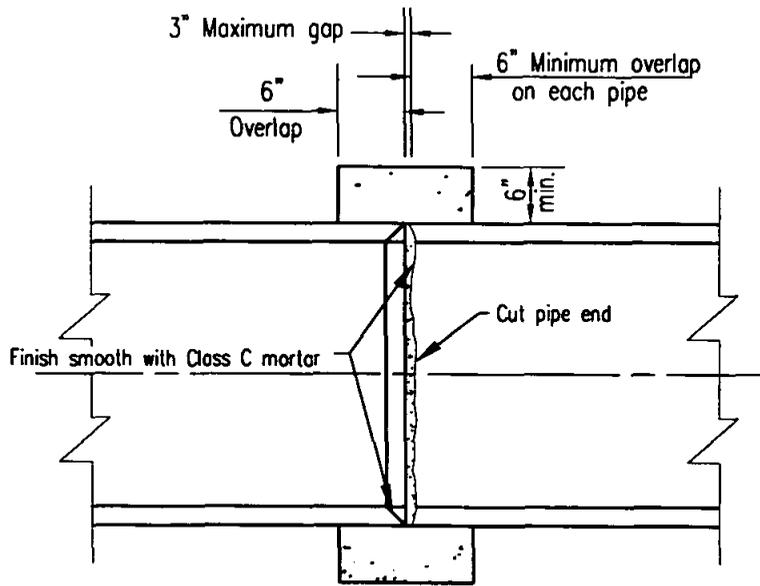
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. C. E. 3/27/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-61**



ELEVATION

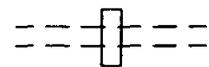


SECTION A-A

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



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

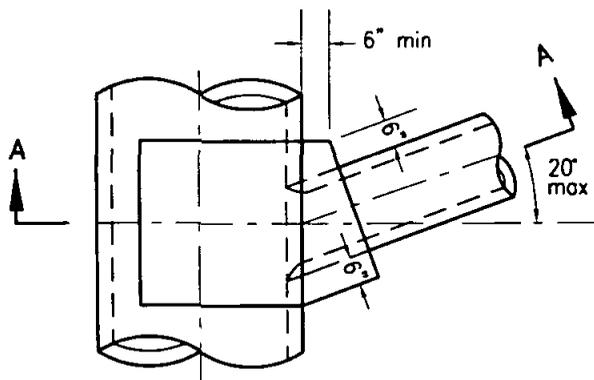
SAN DIEGO REGIONAL STANDARD DRAWING

PIPE COLLAR

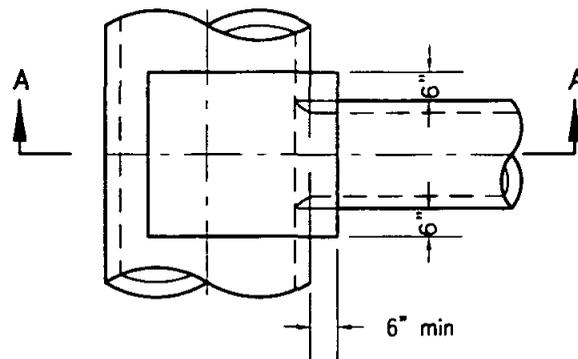
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Heston 3/23/60
Chairperson R.C.E. 19246 Date

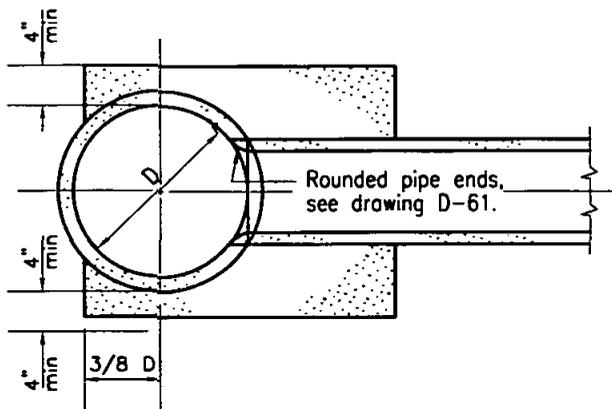
DRAWING NUMBER **D-62**



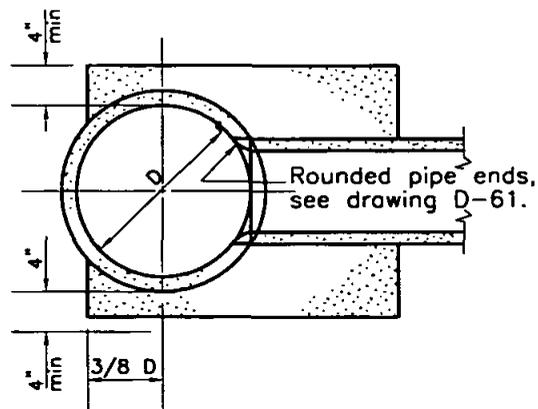
PLAN
SKEWED CONNECTION



PLAN



SECTION A-A

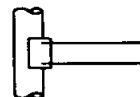


SECTION B-B

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" ID.
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
ORIGINAL		Kercheval	12/75

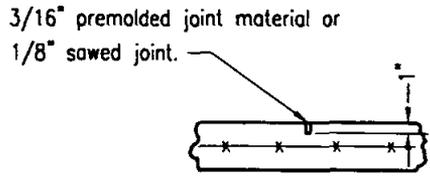
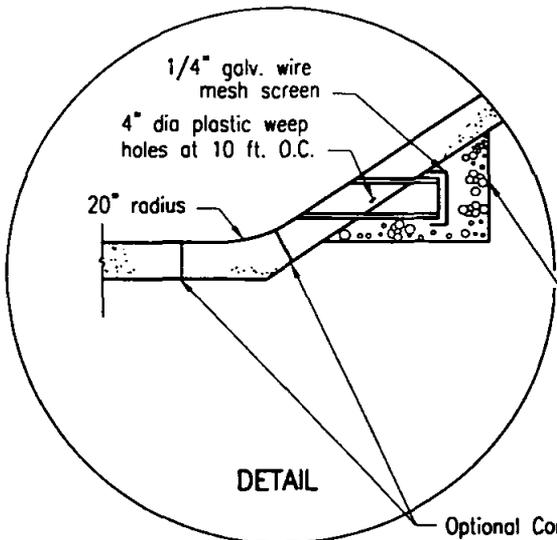
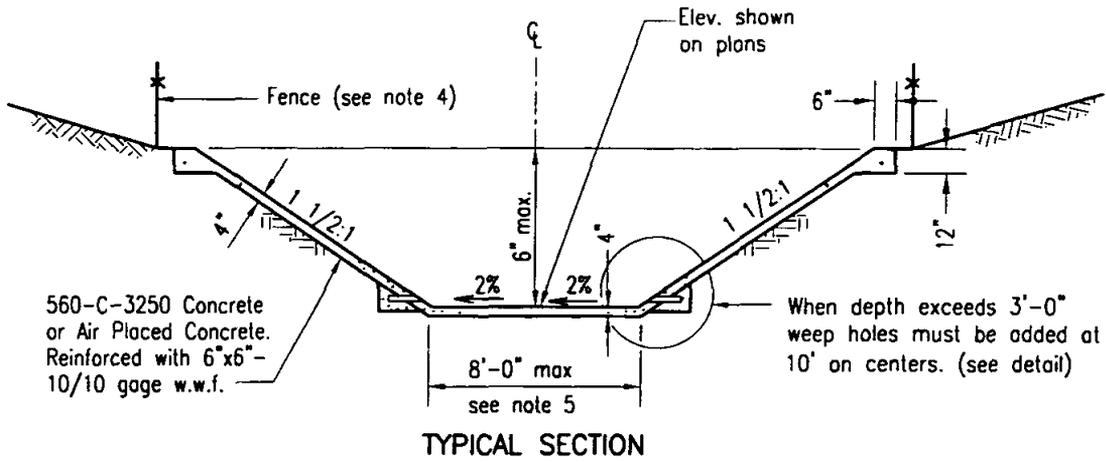
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE LUG

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

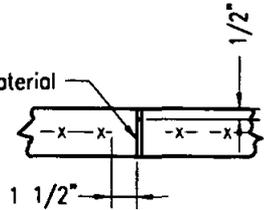
M. Stenton 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-63**



WEAKENED PLANE JOINT

1" max. graded filter material placed a minimum of 18" each side of weep hole.



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



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

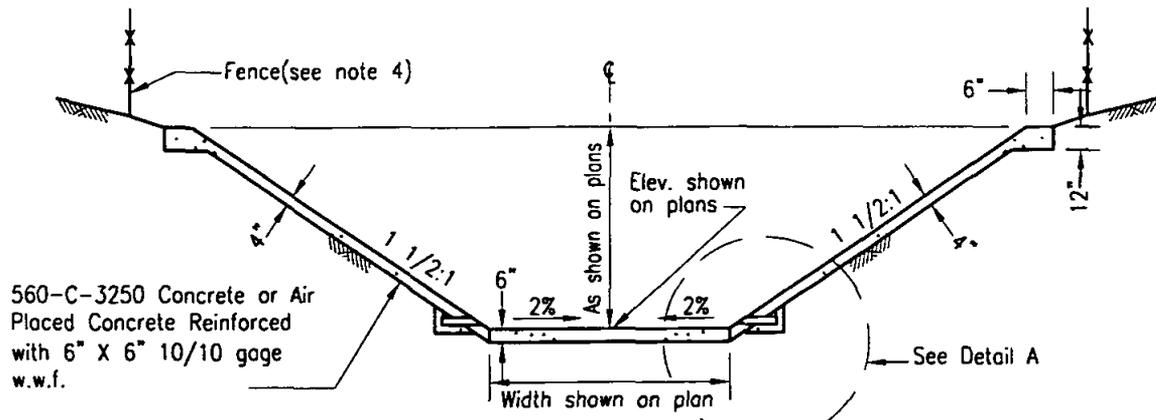
SAN DIEGO REGIONAL STANDARD DRAWING

MINOR DRAINAGE CHANNEL

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

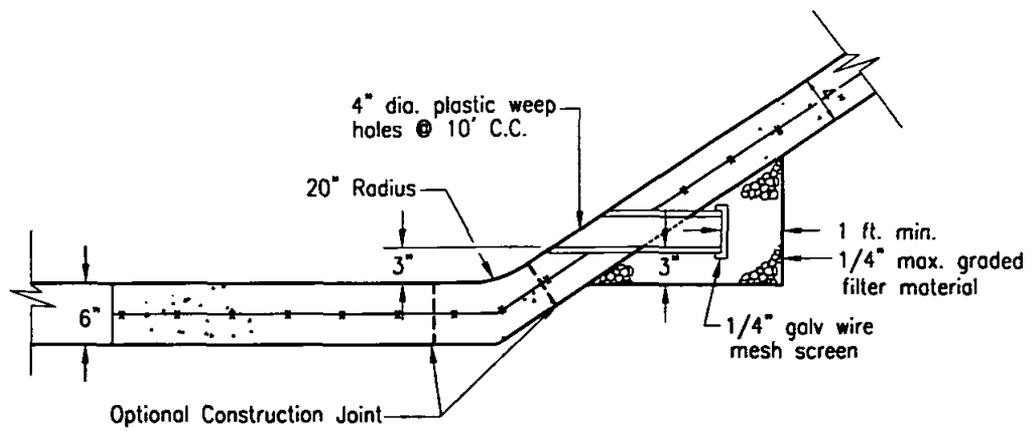
M. Stanton 3/27/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-70**

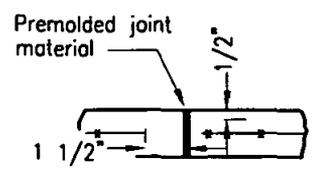


560-C-3250 Concrete or Air Placed Concrete Reinforced with 6" X 6" 10/10 gage w.w.f.

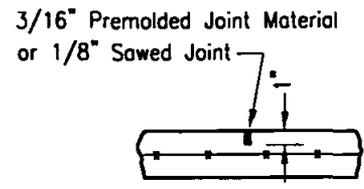
TYPICAL SECTION



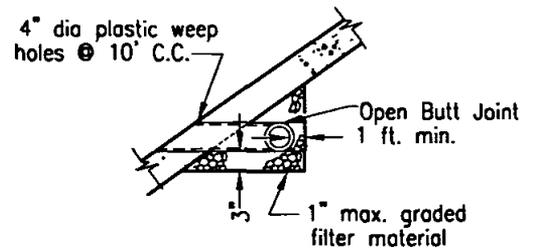
DETAIL A



EXPANSION JOINT



WEAKENED PLANE JOINT



ALTERNATE CONTINUOUS DRAIN

NOTES

1. A.C. or clay pipe may be substituted for plastic 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.

LEGEND ON PLANS

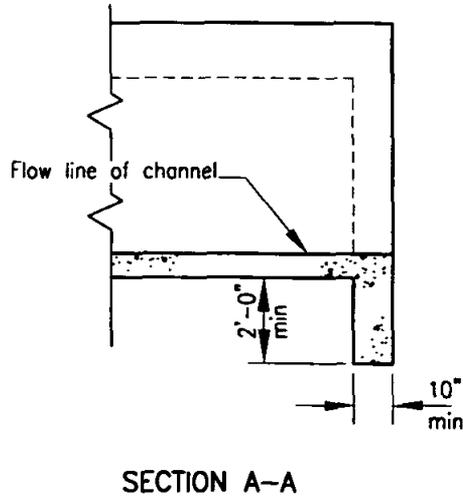
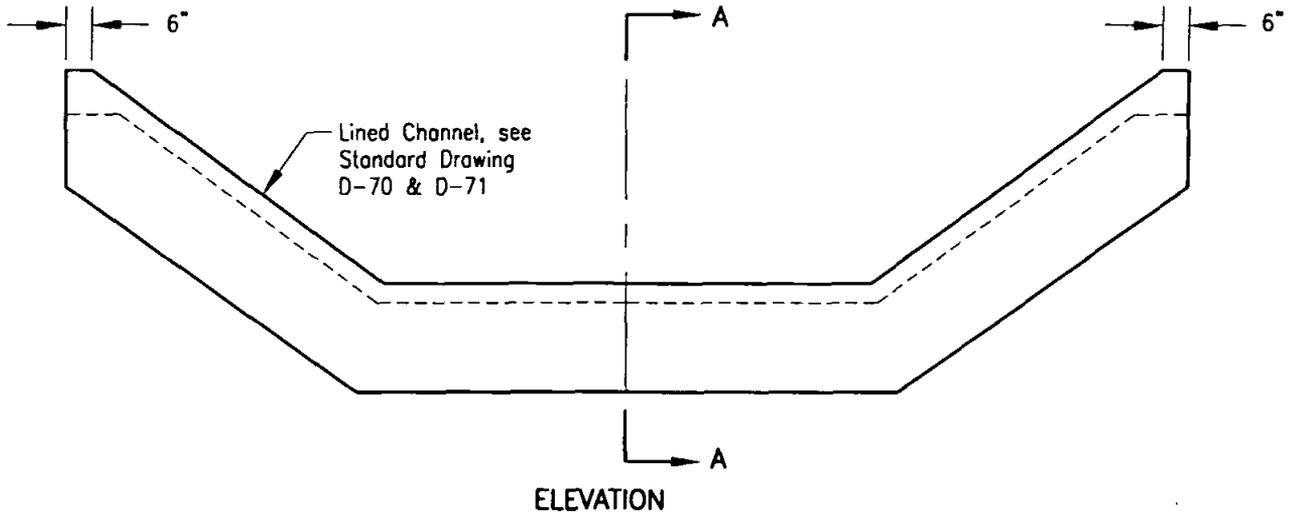


Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

SAN DIEGO REGIONAL STANDARD DRAWING

MAJOR DRAINAGE CHANNEL

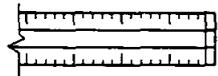
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
[Signature] 3/23/80
 Chairperson R.C.E. 19246 Date
 DRAWING NUMBER **D-71**



NOTES

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

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

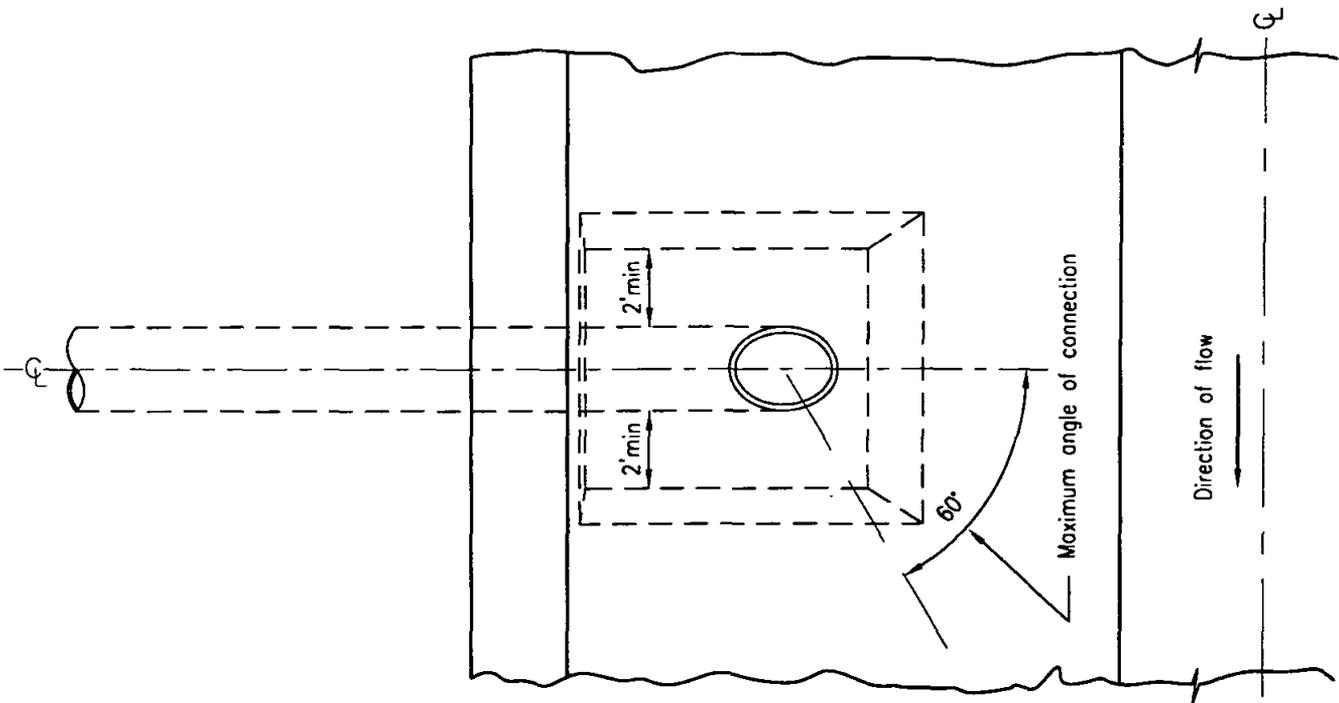
SAN DIEGO REGIONAL STANDARD DRAWING

CUTOFF WALL FOR DRAINAGE CHANNEL

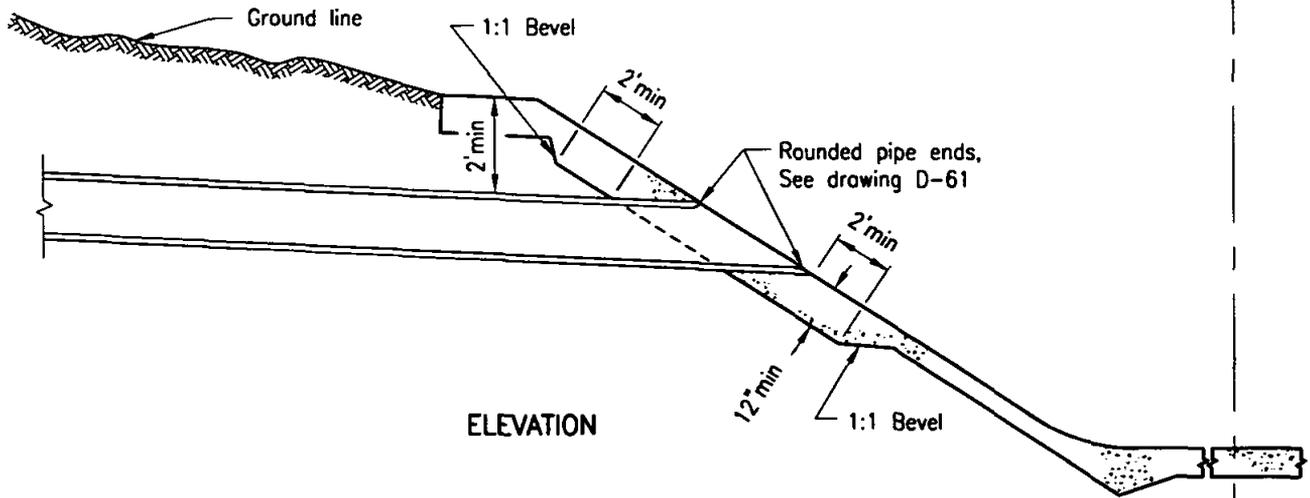
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-72**



PLAN

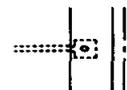


ELEVATION

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
ORIGINAL		Kercheval	12/75

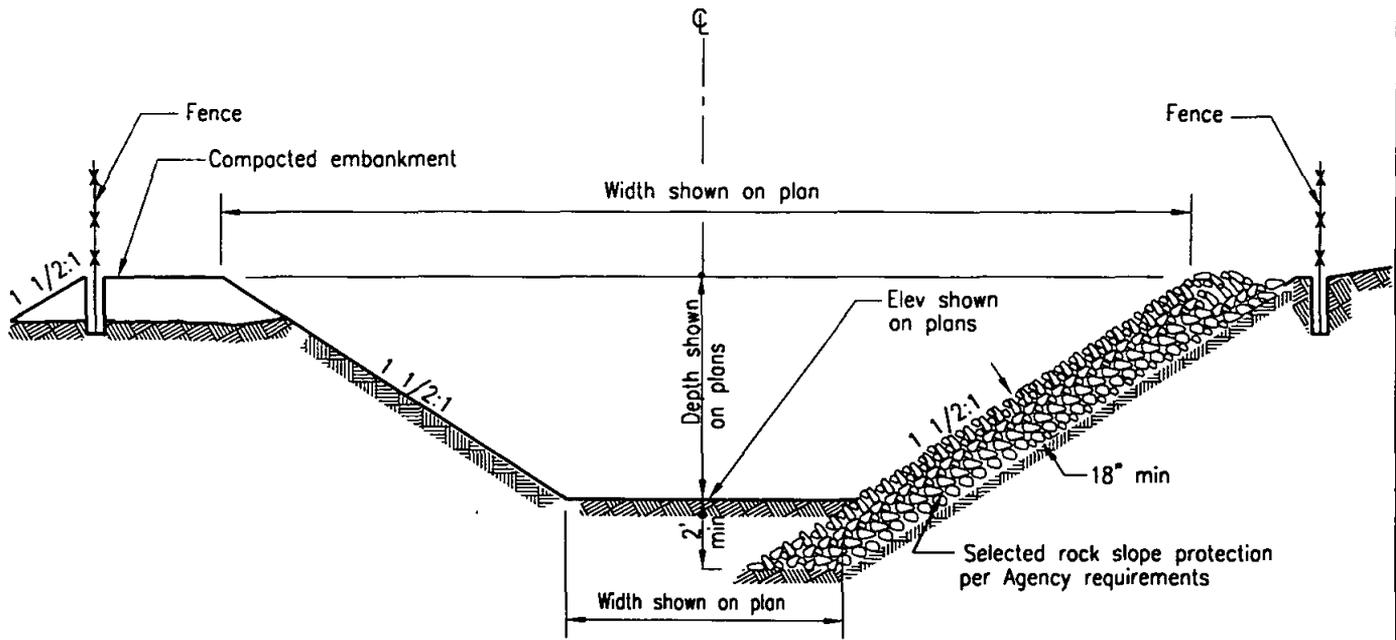
SAN DIEGO REGIONAL STANDARD DRAWING

PIPE TO CHANNEL CONNECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-73**

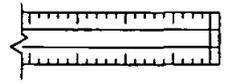


SECTION

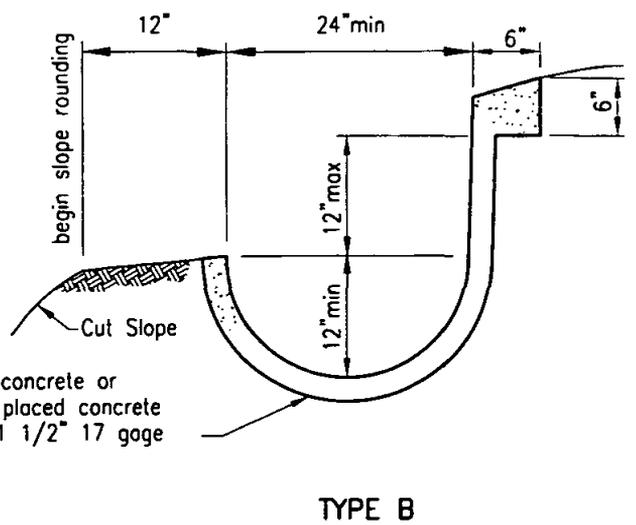
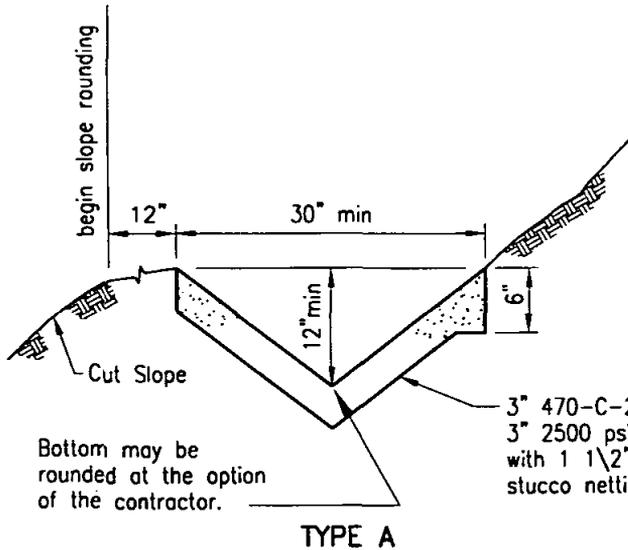
NOTE

- The following shall be as required by Agency:
- a) Low flow channel
 - b) Filter blanket
 - c) Cutoff wall
 - d) Fence

LEGEND ON PLANS



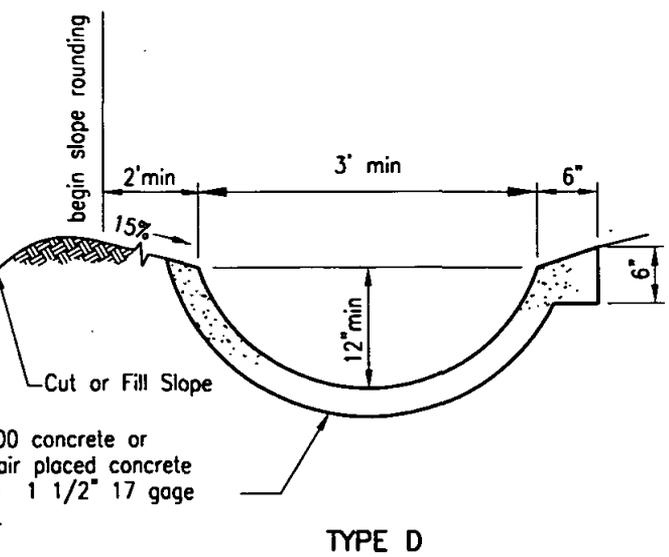
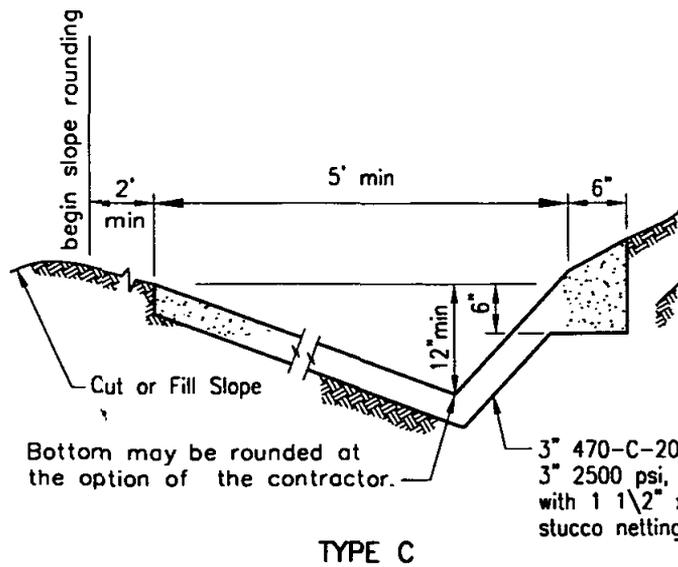
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75			
				GRADED EARTH CHANNEL	<i>[Signature]</i> 3/23/60	
					Chairperson R.C.E. 19246 Date	
					DRAWING NUMBER	D-74



TYPE A

TYPE B

BROW DITCH



TYPE C

TYPE D

TERRACE DITCH

Bottom may be rounded at the option of the contractor.

3" 470-C-2000 concrete or
3" 2500 psi, air placed concrete
with 1 1/2" x 1 1/2" 17 gage
stucco netting.

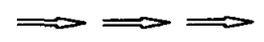
Bottom may be rounded at the option of the contractor.

3" 470-C-2000 concrete or
3" 2500 psi, air placed concrete
with 1 1/2" x 1 1/2" 17 gage
stucco netting.

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
ORIGINAL		Kercheval	12/75

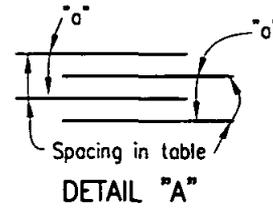
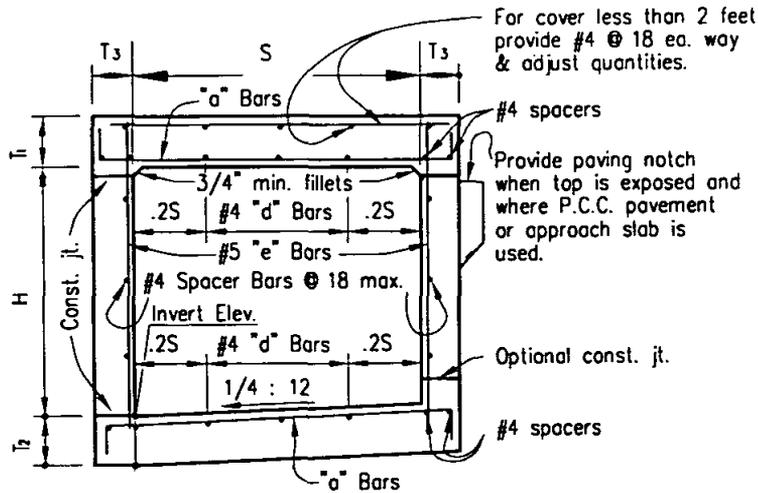
SAN DIEGO REGIONAL STANDARD DRAWING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

DRAINAGE DITCHES

[Signature] 3/23/60
Chairperson R.C.E. 19246 Date

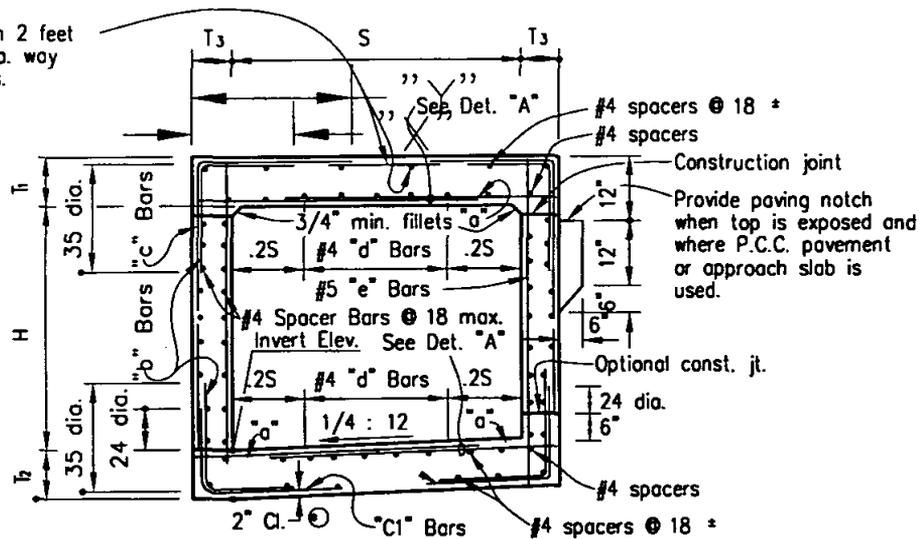
DRAWING NUMBER **D-75**



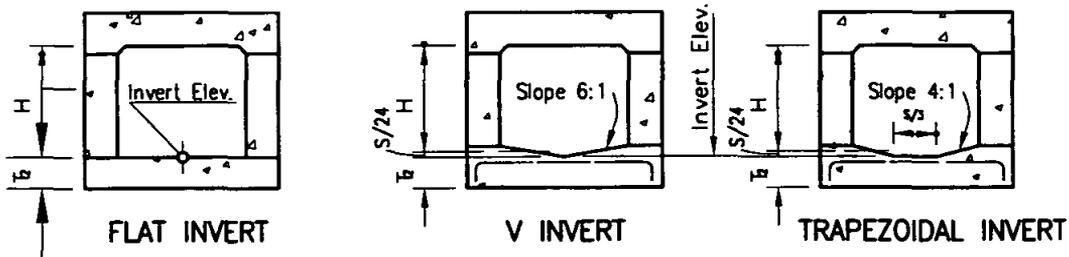
⊙ For reinforcement clearance, except at bottom, see "Miscellaneous Details."

TYPICAL SECTIONS 2' THRU 6' SPANS

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

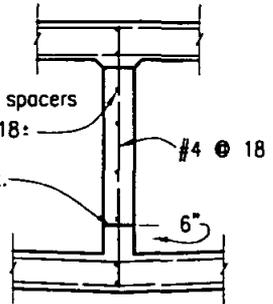
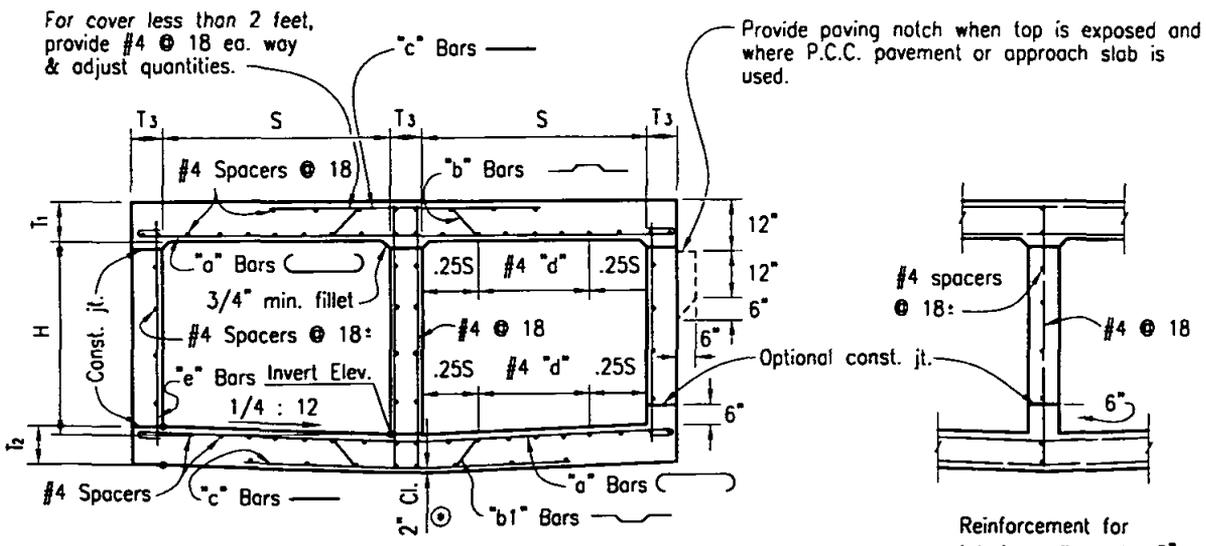


TYPICAL SECTIONS 7' THRU 12' SPANS



ALTERNATIVE INVERTS
(When shown)

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75	<p>SINGLE BOX CULVERT DETAILS NO.2</p>		 3/23/00 Chairman R.C.E. 19246 Date	
						<p>DRAWING NUMBER</p>	<p>D-76B</p>

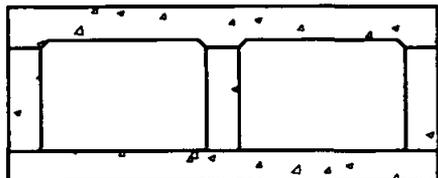


Reinforcement for interior walls under 8".

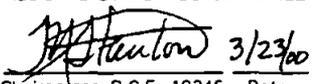
TYPICAL SECTION

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

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

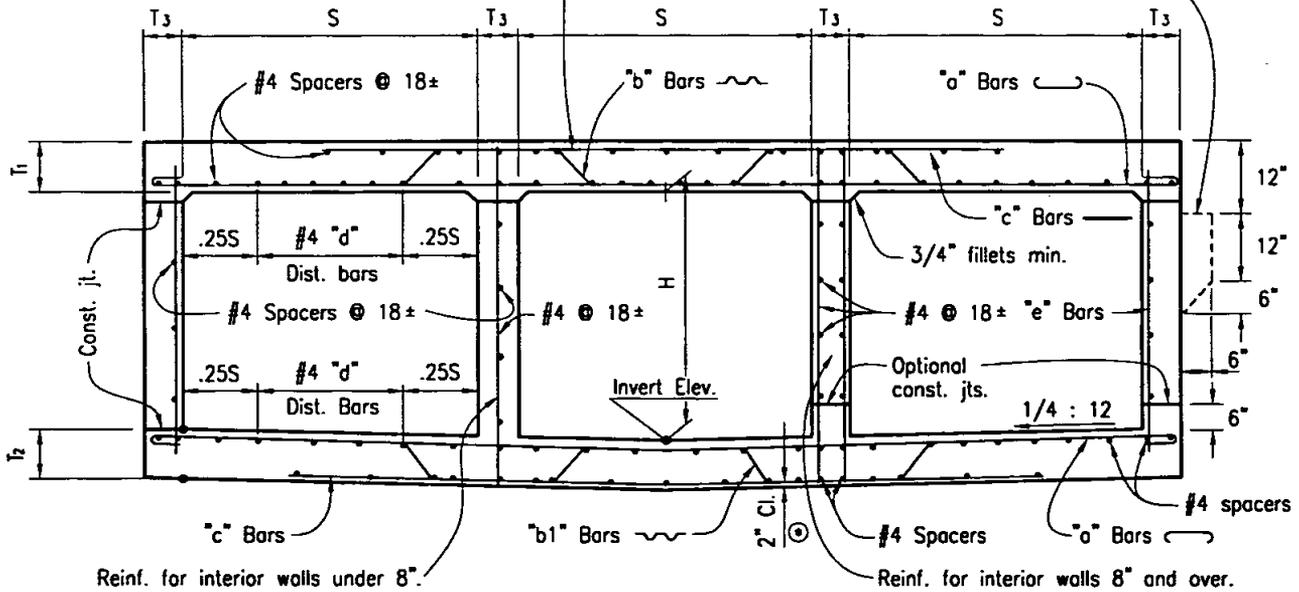


"FLAT INVERT" ALTERNATIVE
(When shown)

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		 Chairperson R.C.E. 19246 Date 3/23/60
				DOUBLE BOX CULVERT DETAILS NO. 2	DRAWING NUMBER D-77B

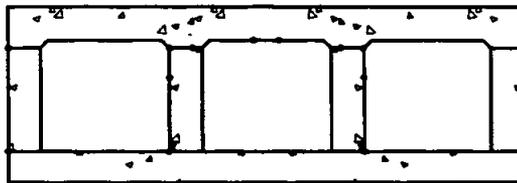
For cover less than 2 feet, extend "c" bars full length, top slab only. Provide additional #4 spacers @ 18"± and adjust quantities.

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
ORIGINAL		Kercheval	12/75

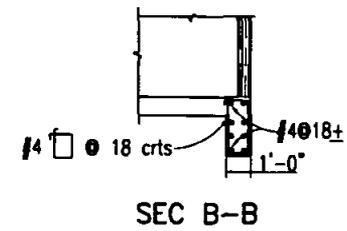
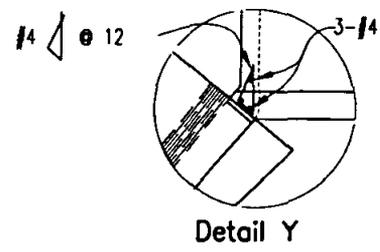
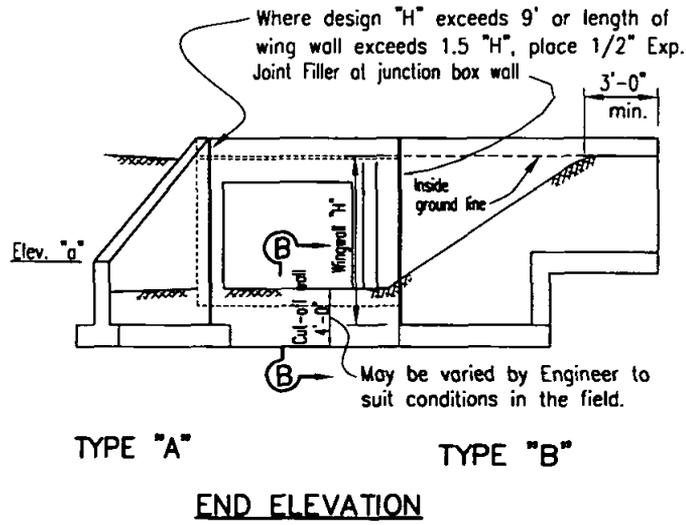
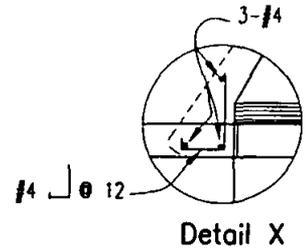
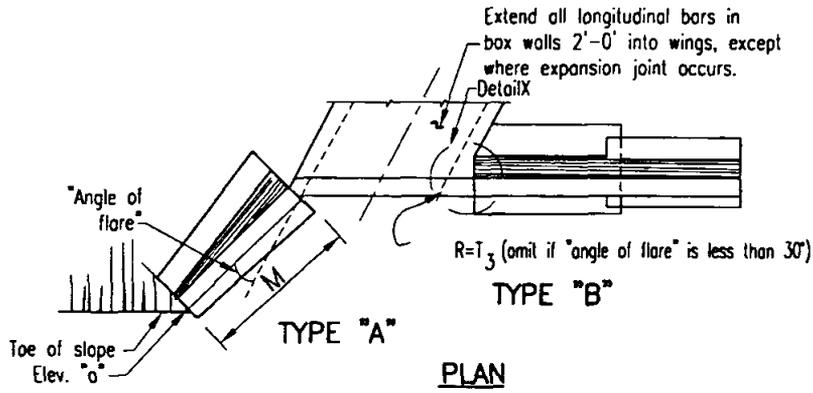
SAN DIEGO REGIONAL STANDARD DRAWING

**TRIPLE BOX CULVERT
DETAILS NO.2**

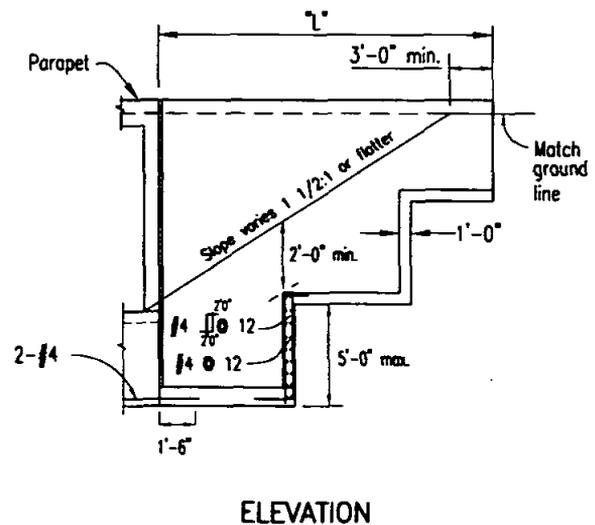
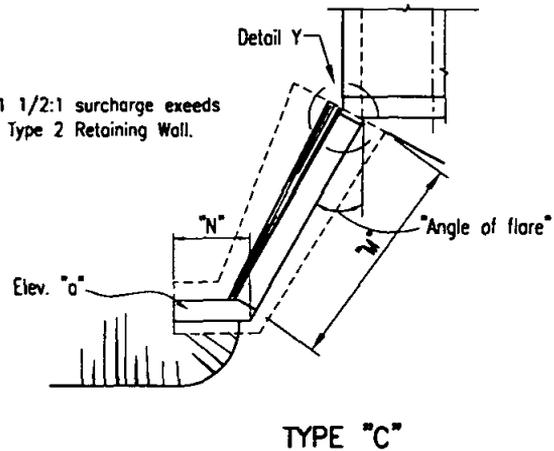
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-78B**



NOTE
Where 1 1/2:1 surcharge exceeds 5', use Type 2 Retaining Wall.



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

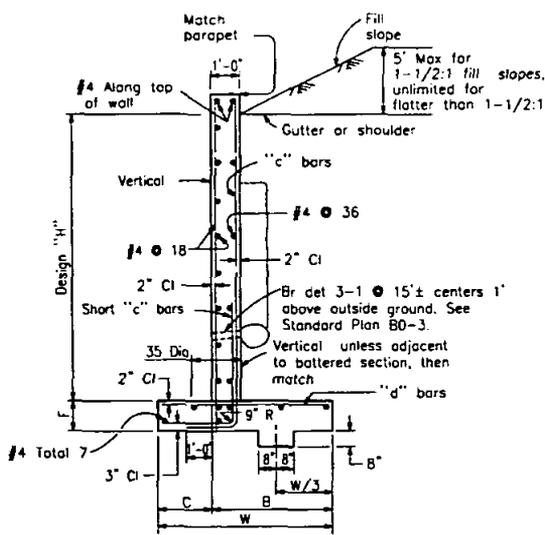
SAN DIEGO REGIONAL STANDARD DRAWING

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

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

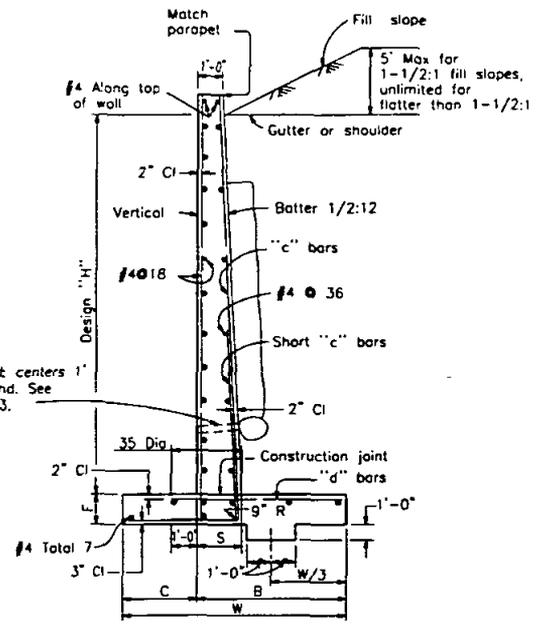
[Signature] 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-79A**



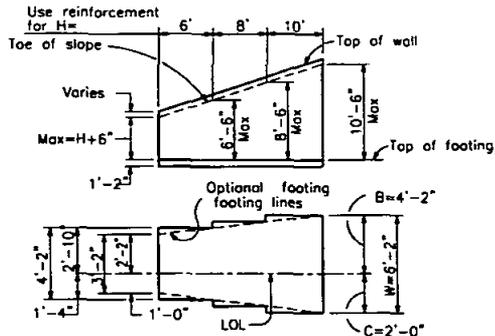
TYPICAL SECTION

H=4' Thru 12'

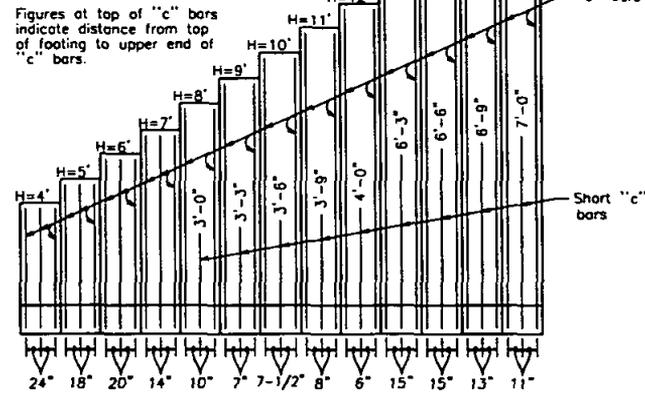


TYPICAL SECTION

H=13' Thru 16'



TYPICAL LAYOUT EXAMPLE



NOTES

Unit Stresses: $f_s = 20,000$ psi, $f_c = 1,200$ psi, $n = 10$
 Maximum Toe Pressure = 1-1/2 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' livehood surcharge, 1-1/2:1 sloping surcharge not to exceed 5' in elevation plus 2' livehood surcharge, or unlimited 2:1 surcharge. Dimensions "H", "L", "M", "N", "Elevation "a" and "Angle of flare" (as apply) are shown on the plans.
 Wall height may be exceeded by 6" before going to next greater "H". Eliminate cutoff wall if adjacent channel is paved and skew is 20' maximum.

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										1/2 : 12		
S	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-6 1/2"	1'-7"	1'-7 1/2"	1'-8"
#4 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
#4 Bars	#4@24	#4@18	#5@20	#5@14	#5@10	#6@14	#7@15	#8@16	#7@12	#8@15	#9@15	#10@13	#9@11
Conc %/ft	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 #/ft	13	16	19	25	30	37	49	62	76	73	90	104	125

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

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

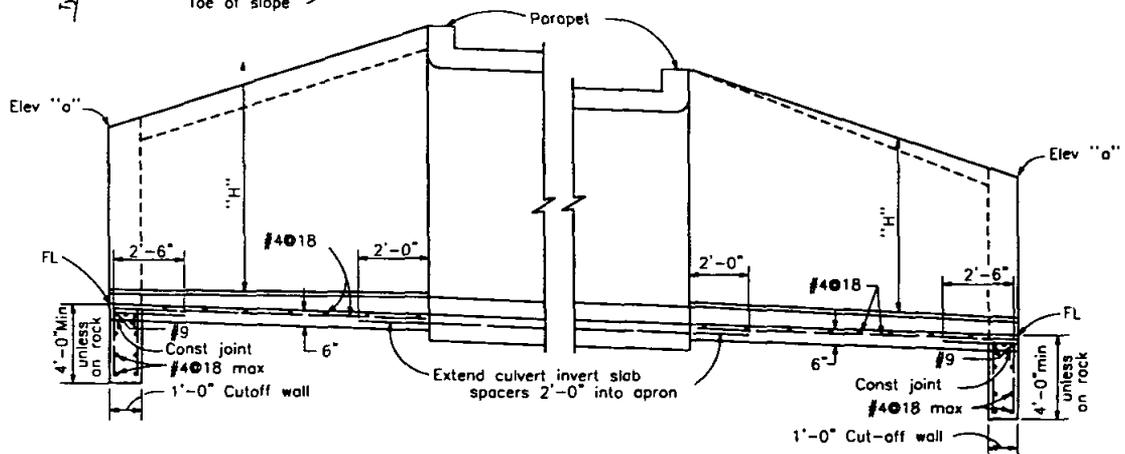
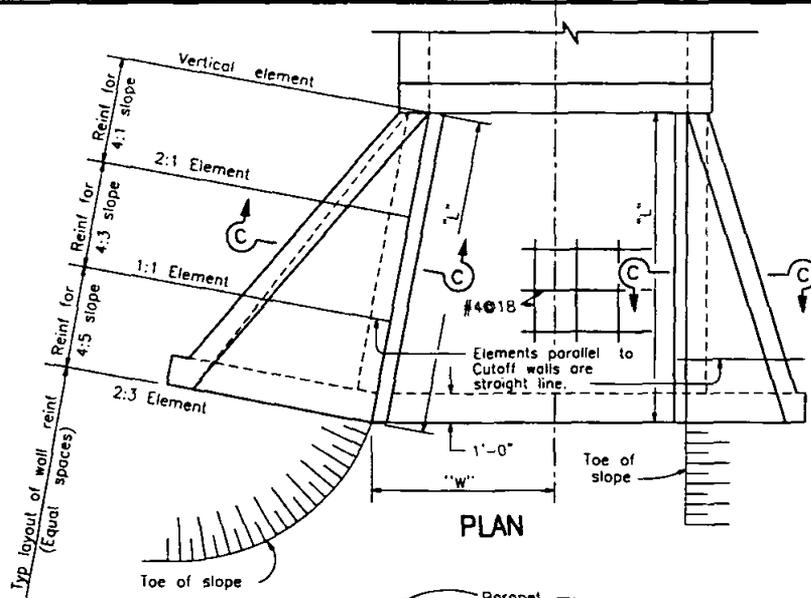
SAN DIEGO REGIONAL STANDARD DRAWING

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

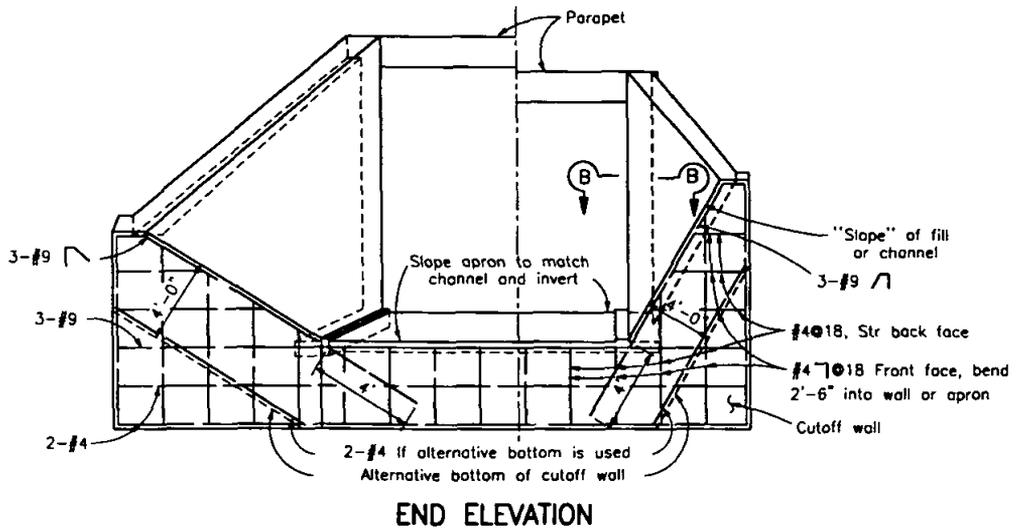
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Stanton 3/23/60
 Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-79B



TYPICAL WITH STIFFENING BEAM TYPICAL WITHOUT STIFFENING BEAM
PART LONGITUDINAL SECTION



END ELEVATION

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

SAN DIEGO REGIONAL STANDARD DRAWING

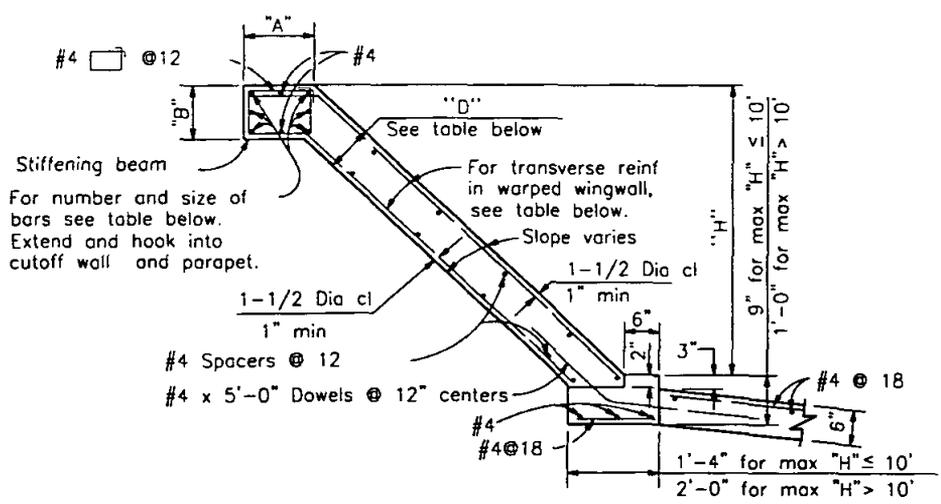
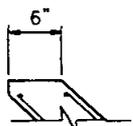
BOX CULVERT WARPED WINGWALL
DETAILS NO. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

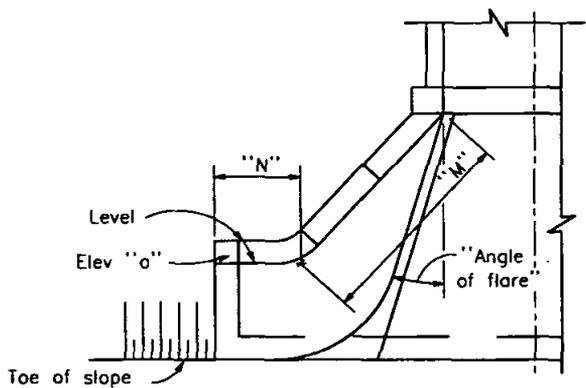
[Signature] 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-80A

WITHOUT STIFFENING BEAM

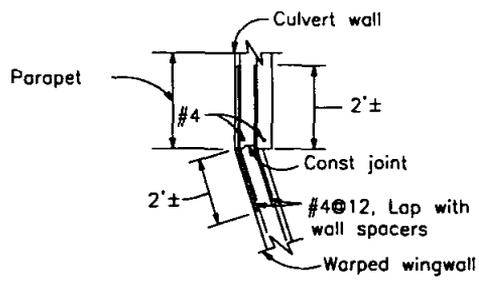


SECTION C-C



ALTERNATIVE WARPED WINGWALL

Use where additional protection to toe of embankment is required.



SECTION B-B

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

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

Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75

SAN DIEGO REGIONAL STANDARD DRAWING

BOX CULVERT WARPED WINGWALL

DETAILS No. 2

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-80B

GENERAL NOTES

QUANTITIES: Quantities are for the sloped invert slab and do not include splices in the 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 ϕ .

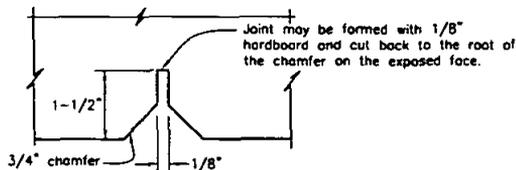
CONSTRUCTION NOTES

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 1/2" expansion joint filler at 50'± 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

CONSTRUCTION LOADS: Not permitted until concrete has reached a strength of 3,000 p.s.i. 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 C of R.C.B. otherwise, the Contractor is to submit a proposal for consideration.



BRIDGE DETAIL 3-2
(Portion)

See Standard Drawing C-15

DESIGN NOTES

SPECIFICATIONS

DESIGN: AASHTO, dated 1973, with revisions 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 breath 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: $F_s = 20,000$ psi, $N = 10$
 $F_c = 1,200$ psi

Reinforcement embedment is 1-1/2 dia. clear, min 1" and in 1/4" increments, except as noted.

Distribution "d" bars expressed as a percent of main positive reinforcement.

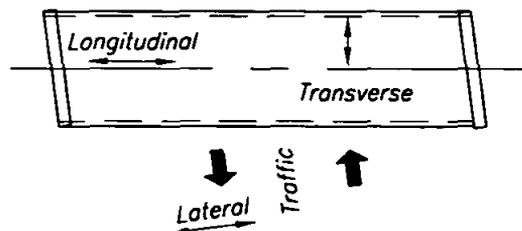
Classification "A" top slab = $\frac{100}{SPAN}$, max 50% (unless traffic longitudinal)

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 the top slab.

LIVE LOAD & R.C.B. TERMINOLOGY



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

SAN DIEGO REGIONAL STANDARD DRAWING

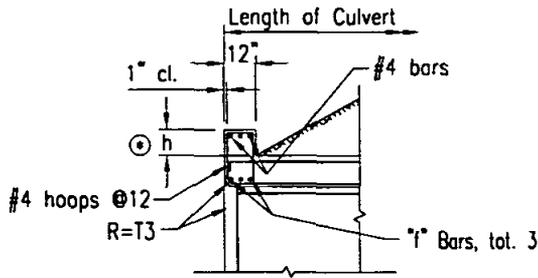
BOX CULVERT

MISCELLANEOUS DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

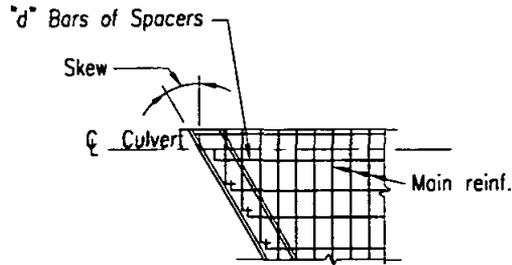
J. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-81A



⊙ h (inches) = Span (feet), 6" min.

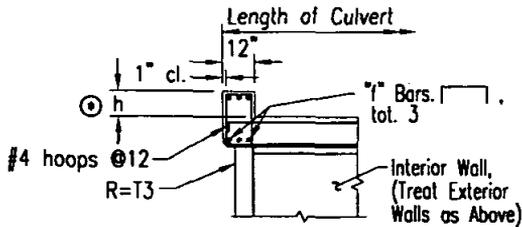
PART SECTION



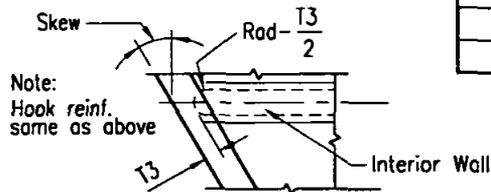
PART PLAN-SKEWED

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

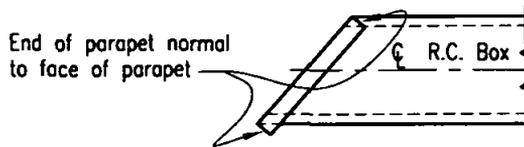


PART SECTION

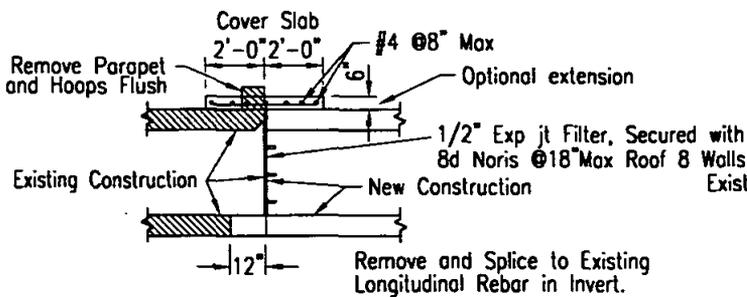


PART PLAN-SKEWED

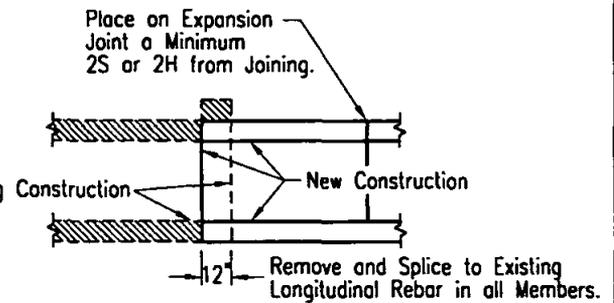
PARAPET DETAILS FOR MULTIPLE SPAN CULVERTS



PAPAPET 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
ORIGINAL		Kercheval	12/75

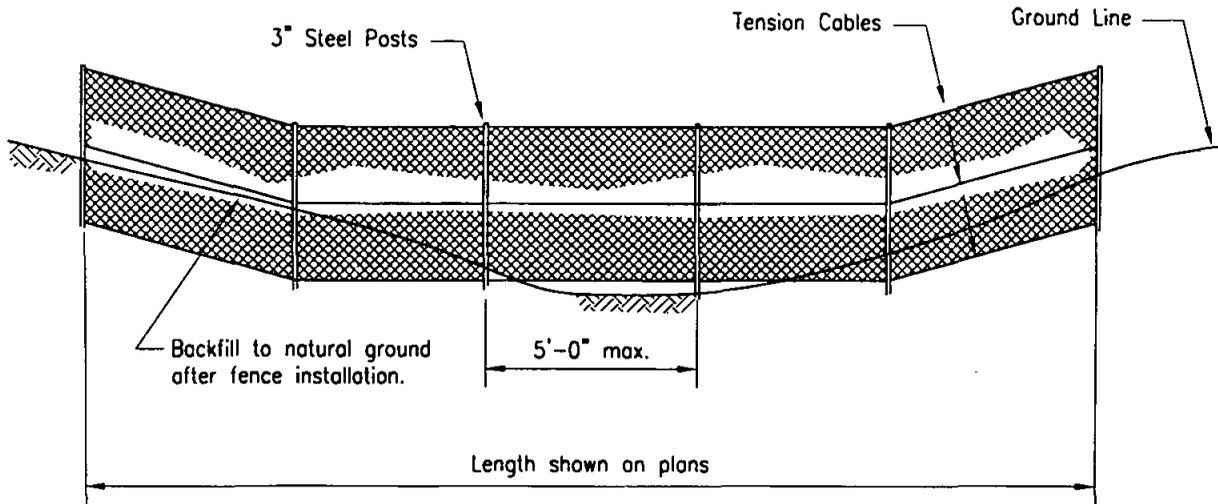
SAN DIEGO REGIONAL STANDARD DRAWING

BOX CULVERT
MISCELLANEOUS DETAILS NO. 2

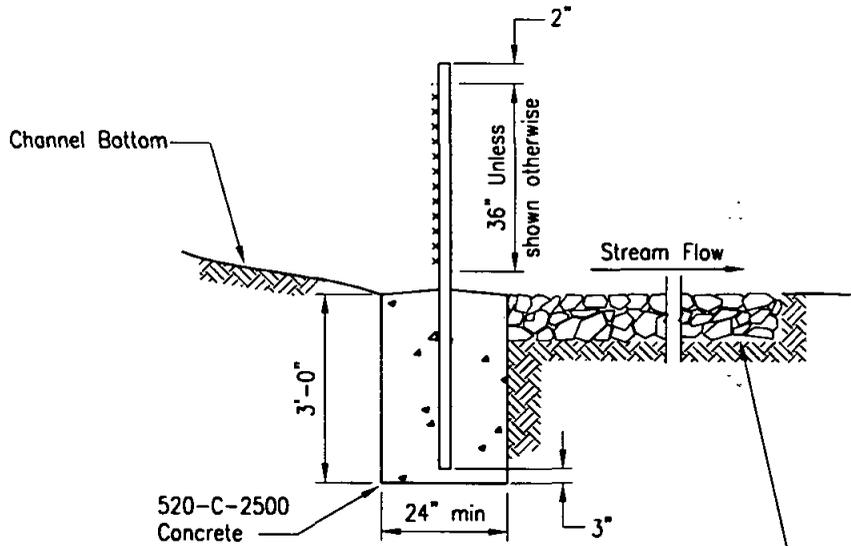
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-81B



ELEVATION



Rip Rap size and length to be shown on plans. See Standard Drawing D-40.

SECTION

NOTES:

1. Fence fabric shall be 2" mesh, 9 gage galvanized wire, chain link placed on the upstream side of the posts and tension cables.
2. Tension cable shall be 5/16" steel at 18" c/c, secured at ends with cable clamps. Secure fence to cable with No. 12 galvanized steel wire looped at 6" c/c.
3. Posts shall be 3" 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.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		H. Hecht	10/82

SAN DIEGO REGIONAL STANDARD DRAWING

DEBRIS FENCE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

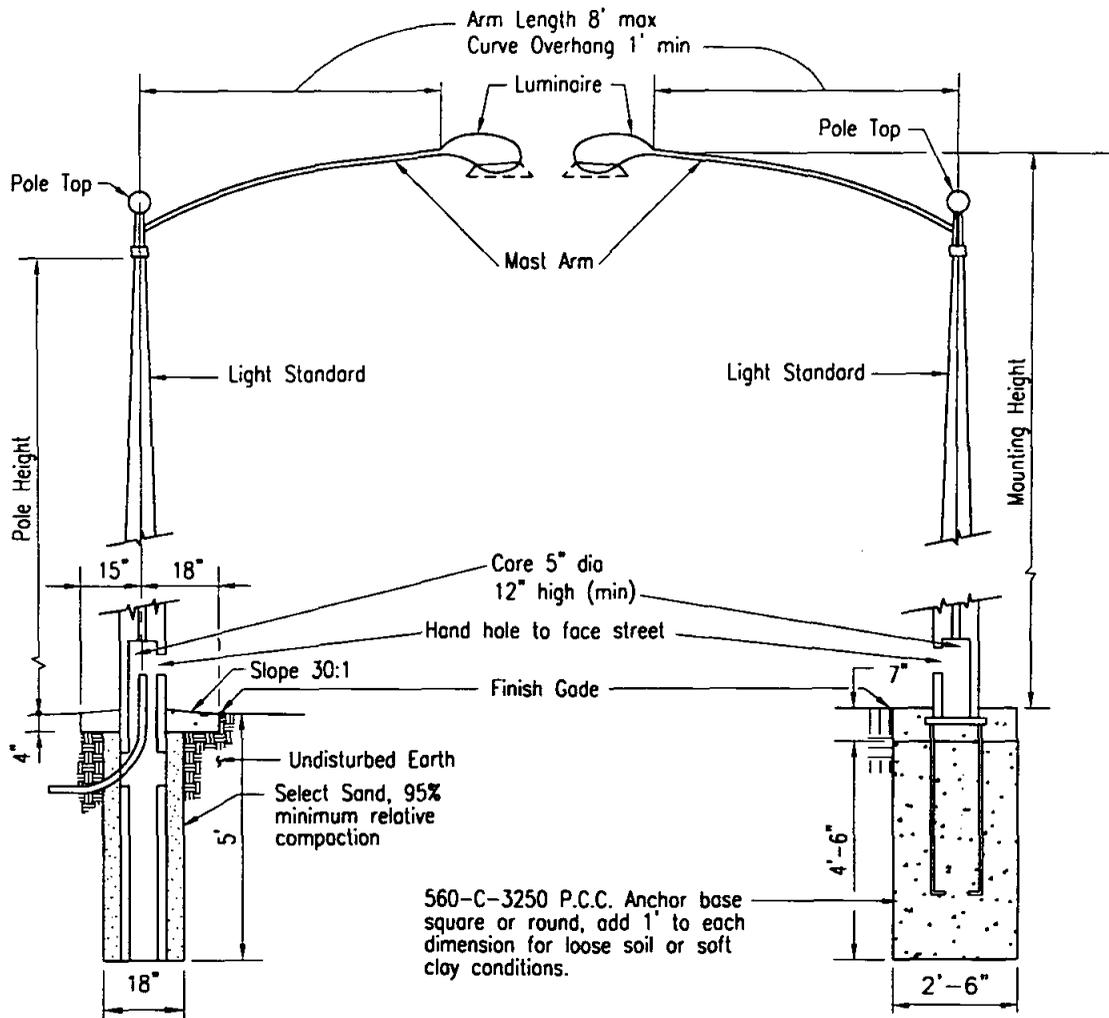
M. Stanton 3/27/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-82**

ELECTRICAL SYSTEMS

ELECTRICAL SYSTEMS

E

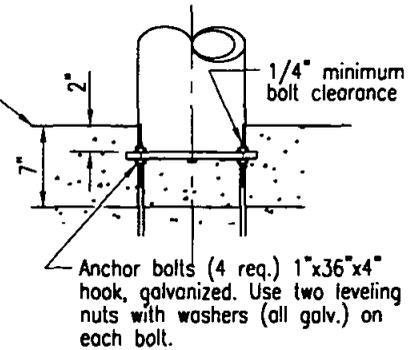


DIRECT BURIAL FOUNDATION

ANCHOR BASE 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.

Finished Grade
Anchor bolts must not protrude



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

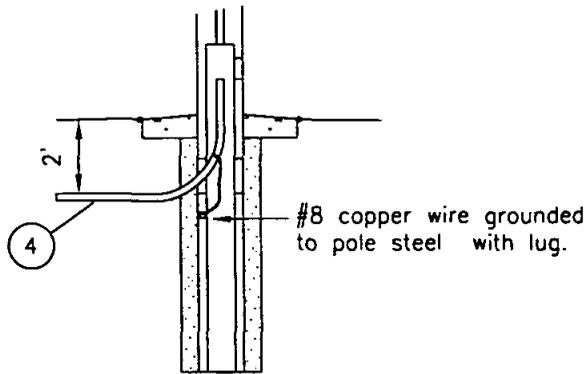
SAN DIEGO REGIONAL STANDARD DRAWING

STREET LIGHTING STANDARD

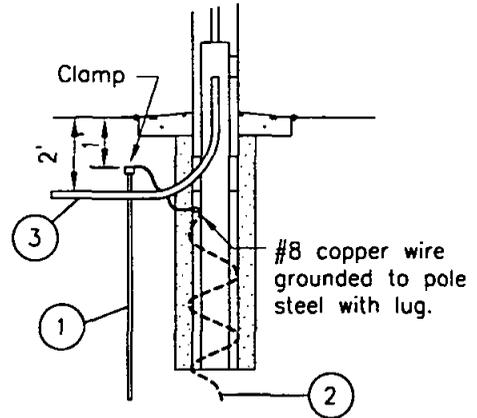
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Steuton 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **E-1**

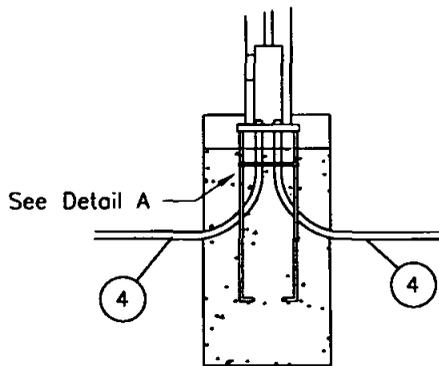


STEEL CONDUIT

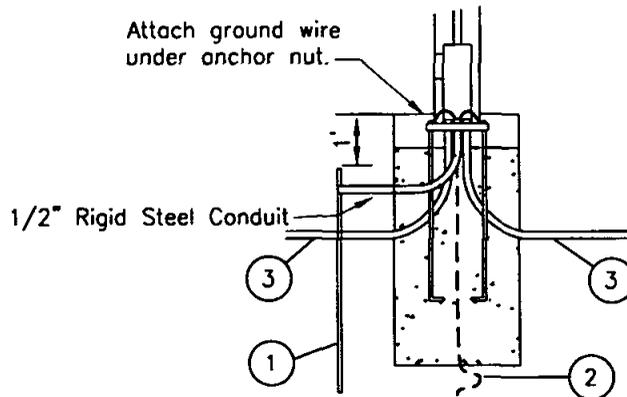


NON-METALLIC CONDUIT

DIRECT BURIAL FOUNDATION



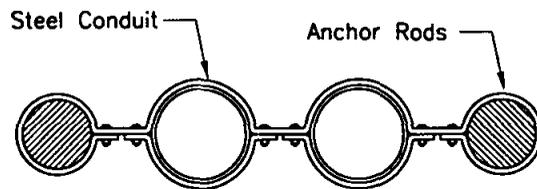
STEEL CONDUIT



NON-METALLIC CONDUIT

ANCHOR BASE FOUNDATION

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



DETAIL A

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

SAN DIEGO REGIONAL STANDARD DRAWING

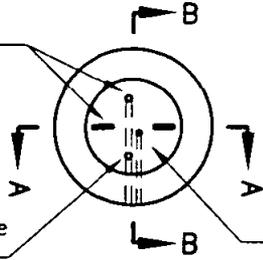
GROUNDING
OF CONCRETE LIGHTING STANDARDS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. E. Kercheval 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER E-2

1 1/2" min. cover for bars and conduits



Galvanized steel conduits. Size and number as required.

NOTE

Concrete shall be class 560-C-3250

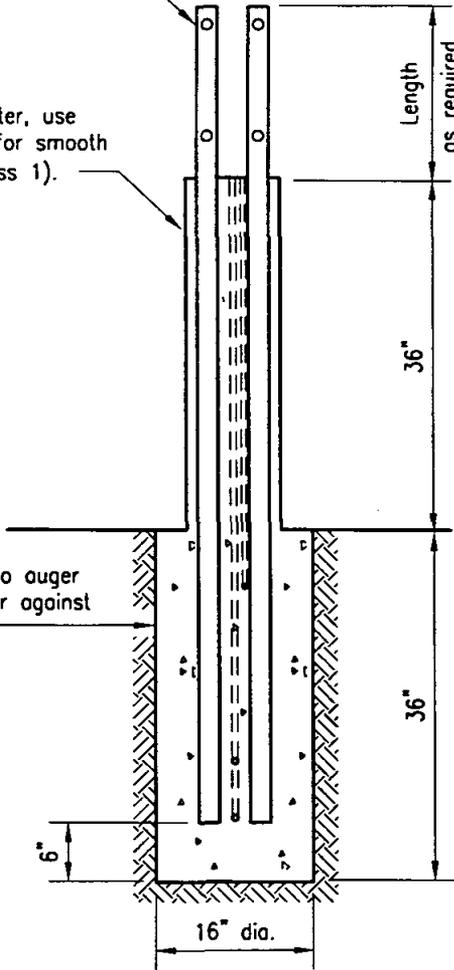
1" galvanized steel conduit for service ground (where required).

PLAN

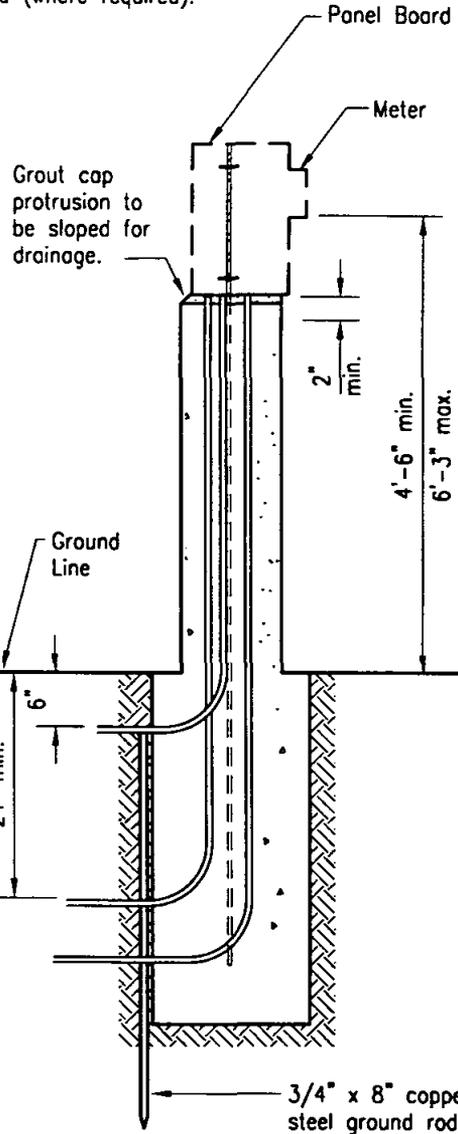
1/4" x 2" galvanized steel bars.

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
ORIGINAL		Kercheval	12/75

SAN DIEGO REGIONAL STANDARD DRAWING

**PEDESTAL FOR
ELECTRICAL EQUIPMENT**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

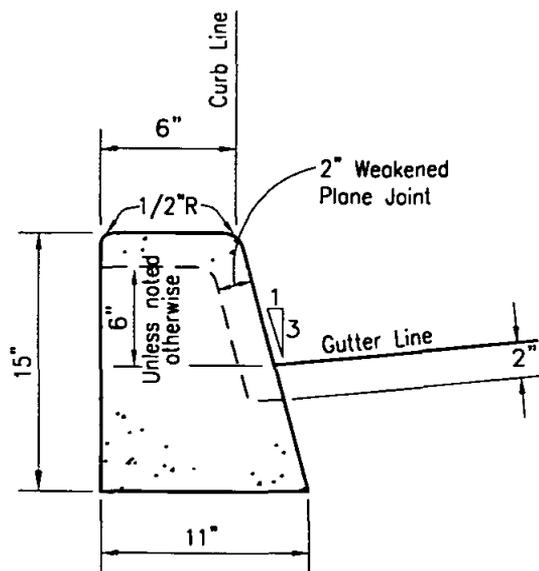
M. Steaton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **E-33**

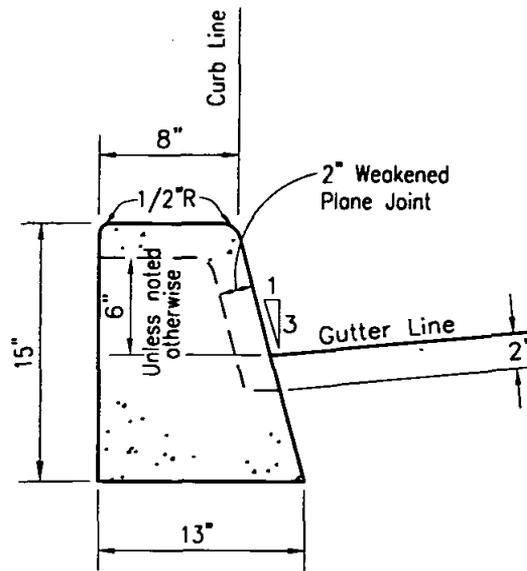
GENERAL SURFACE IMPROVEMENTS

G

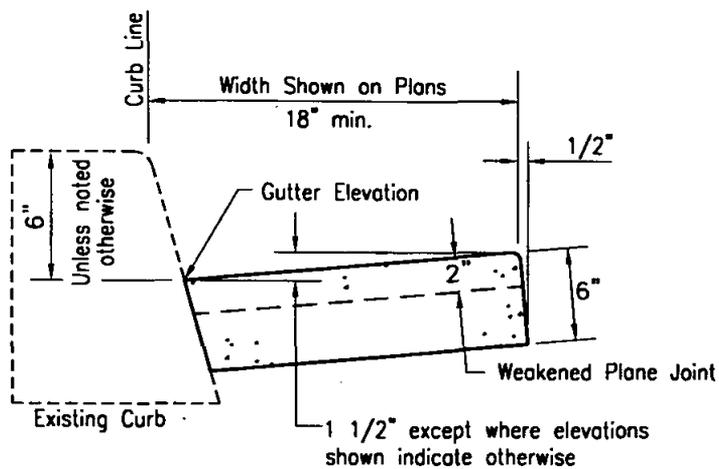
GENERAL SURFACE IMPROVEMENTS



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
ORIGINAL		Kercheval	12/75

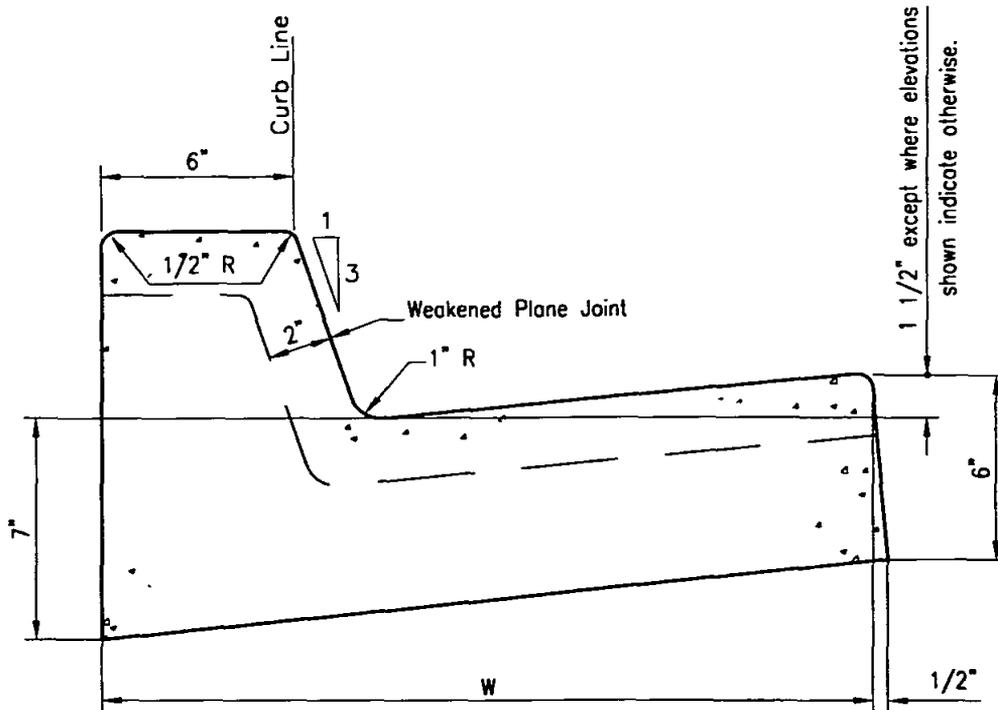
SAN DIEGO REGIONAL STANDARD DRAWING

CURBS AND GUTTER - SEPARATE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER G-1



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

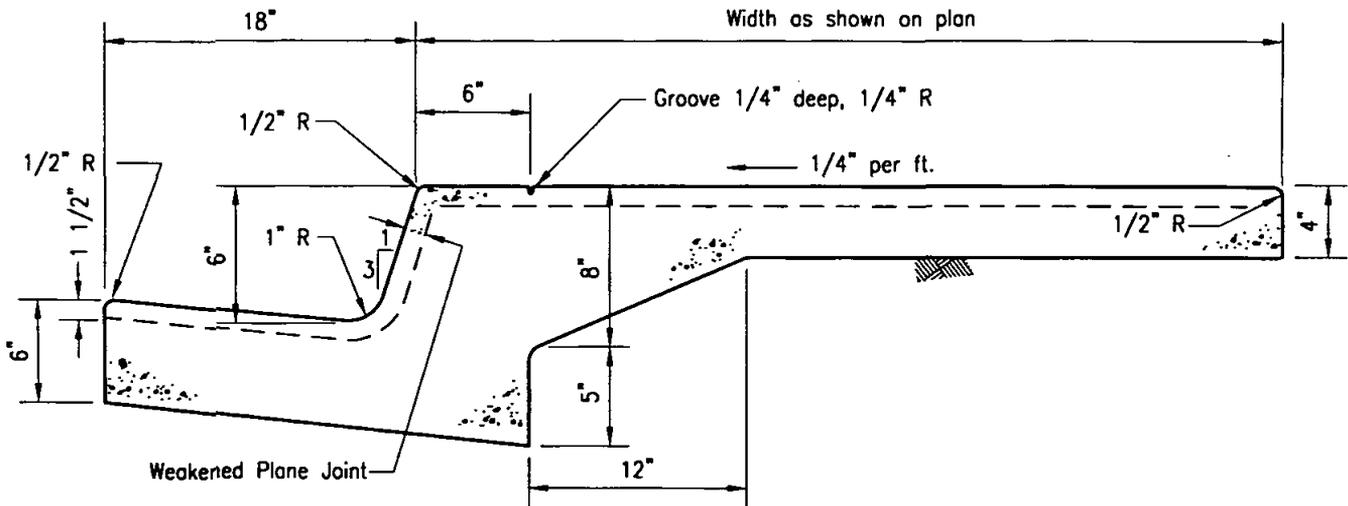
* with 6" Curb Face

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

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		CURB AND GUTTER - COMBINED
				Chairperson R.C.E. 19246 Date	
				DRAWING NUMBER G-2	



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
ORIGINAL		Kercheval	12/75

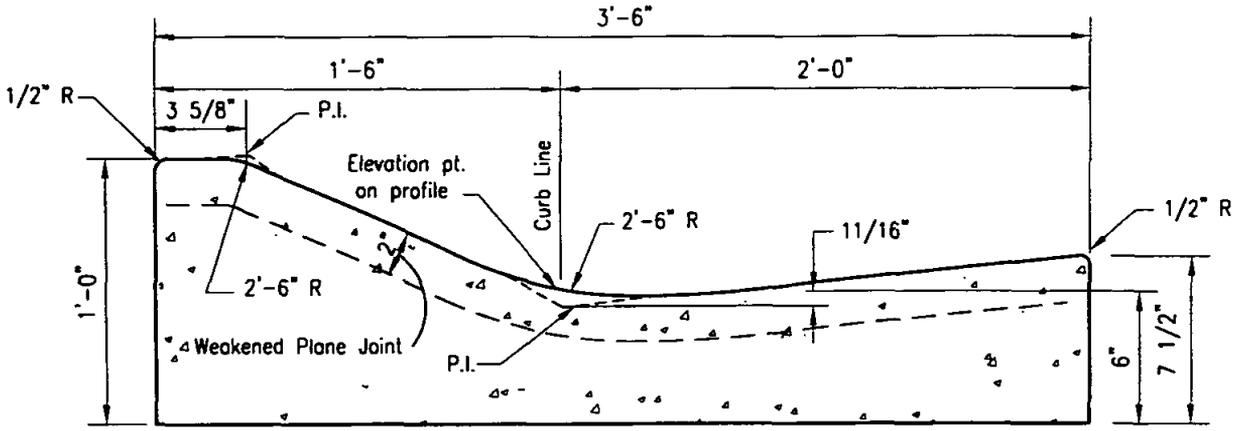
SAN DIEGO REGIONAL STANDARD DRAWING

**MONOLITHIC CURB,
GUTTER AND SIDEWALK**

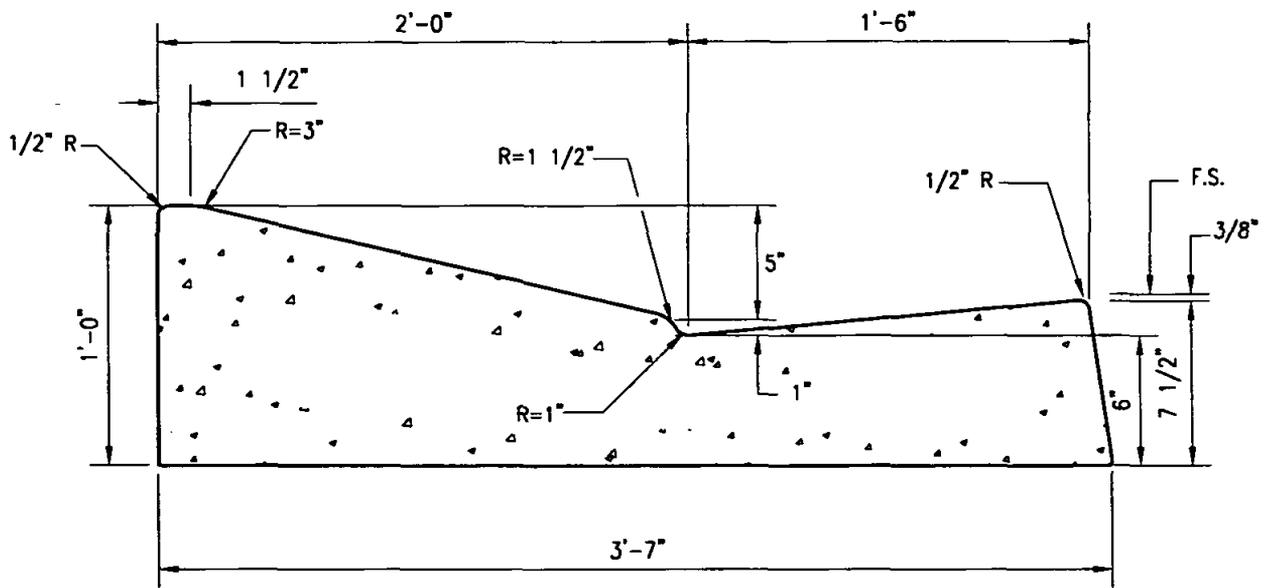
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING
NUMBER **G-3**



CURB AREA
(2.23 sq. ft.)



CURB AREA
(2.48 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. Concrete shall be 520-C-2500.
3. See Standard Drawing G-10 for joint details.

LEGEND ON PLANS

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

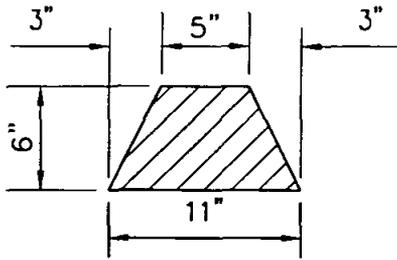
SAN DIEGO REGIONAL STANDARD DRAWING

CURB AND GUTTER - ROLLED

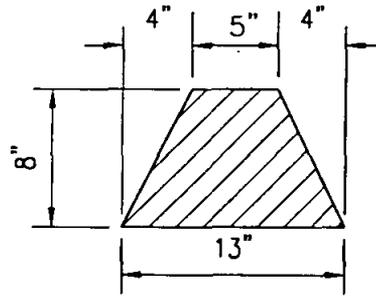
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/00
Chairperson R.C.E. 19246 Date

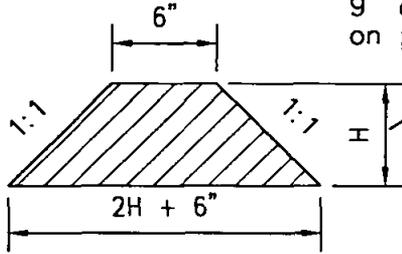
DRAWING NUMBER G-4



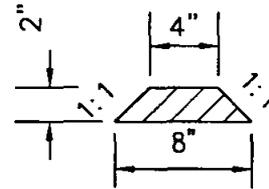
TYPE A



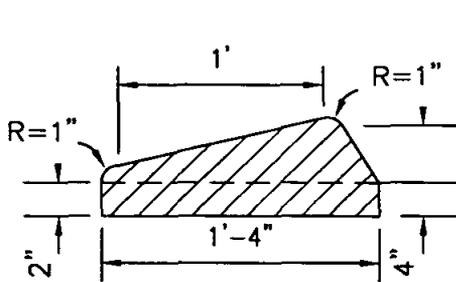
TYPE B



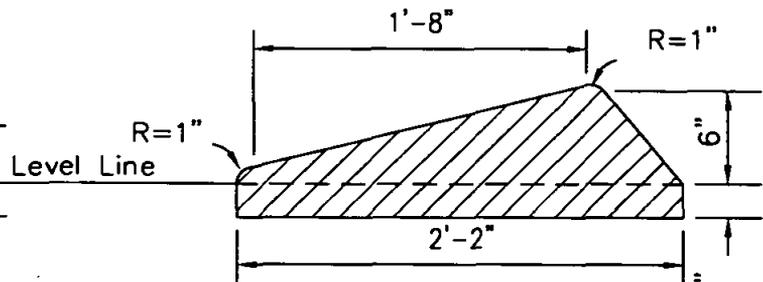
TYPE C



TYPE D

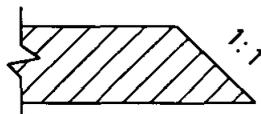


TYPE E



TYPE F

MOUNTABLE DIKES



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

ALL TYPES - SIDE VIEW

NOTES

1. Dike is to be placed on a 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

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

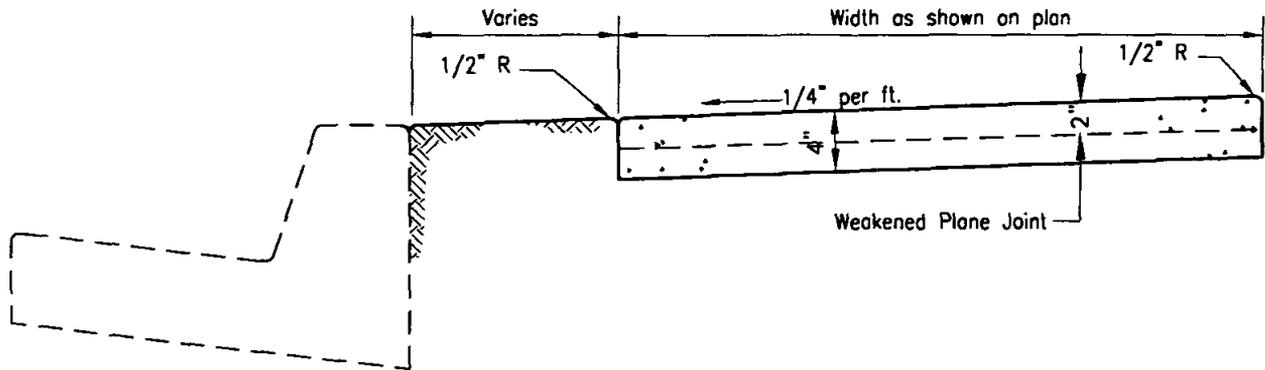
SAN DIEGO REGIONAL STANDARD DRAWING

DIKES - ASPHALT CONCRETE

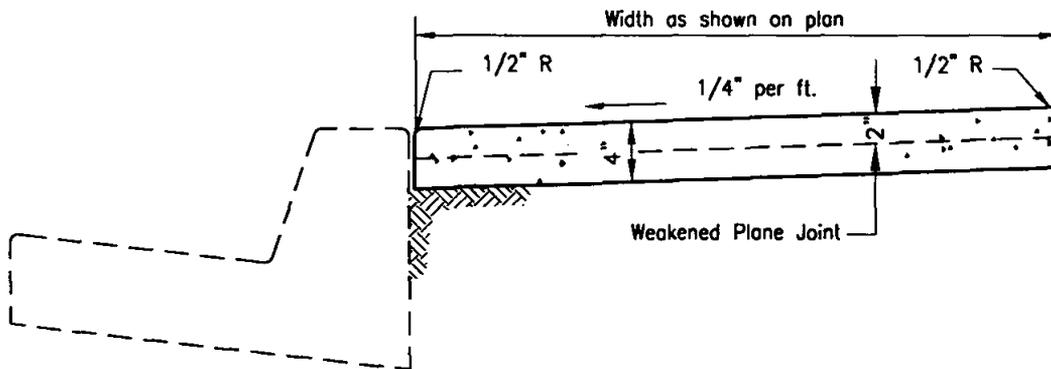
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-5**



NON-CONTIGUOUS



CONTIGUOUS

NOTES

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

LEGEND ON PLANS

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

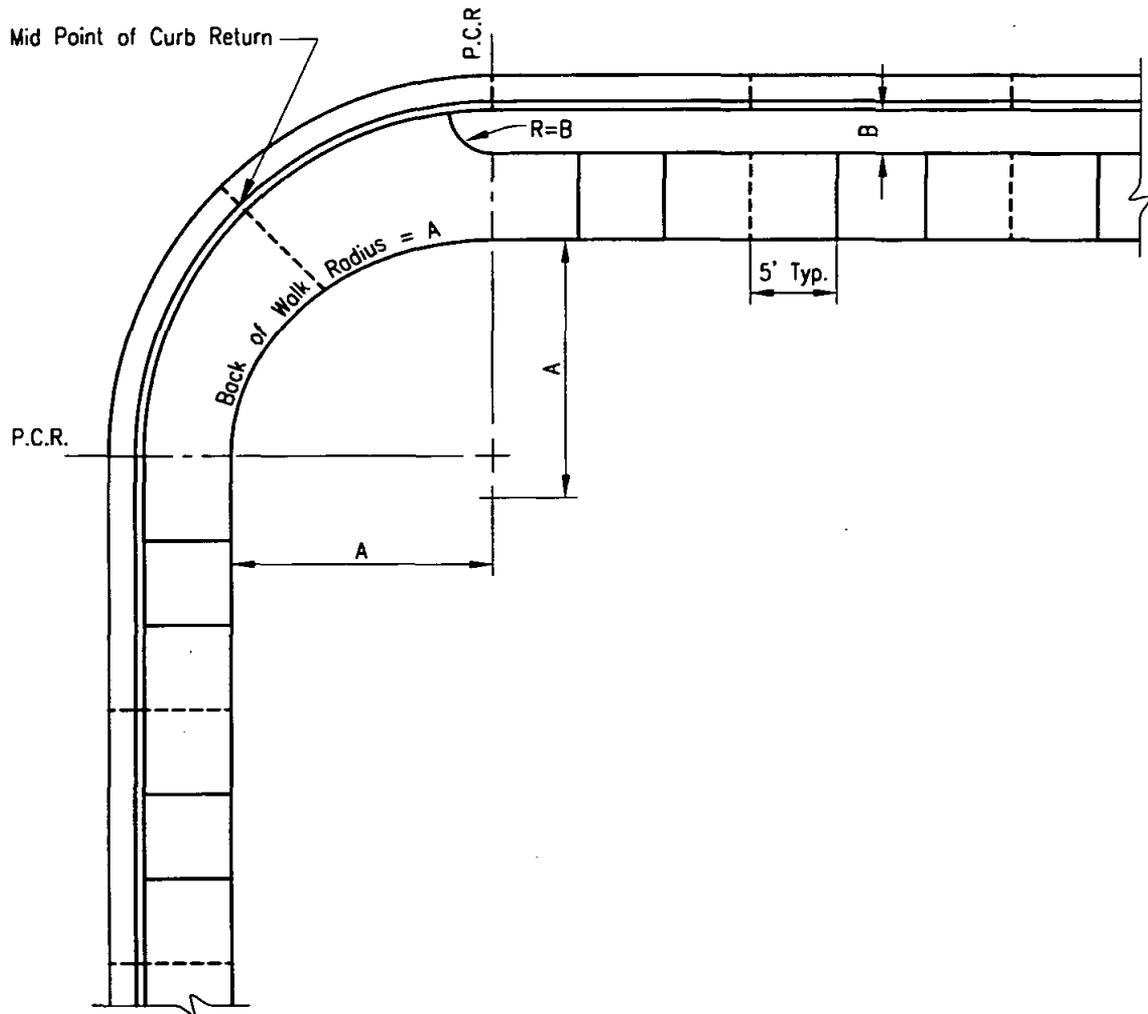
SAN DIEGO REGIONAL STANDARD DRAWING

SIDEWALK - TYPICAL SECTIONS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-7**



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
ORIGINAL		Kercheval	12/75

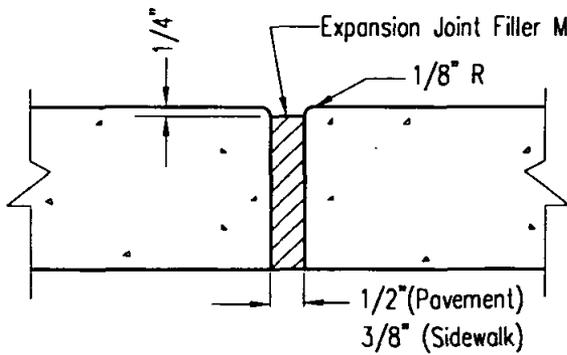
SAN DIEGO REGIONAL STANDARD DRAWING

SIDEWALK JOINT LOCATIONS

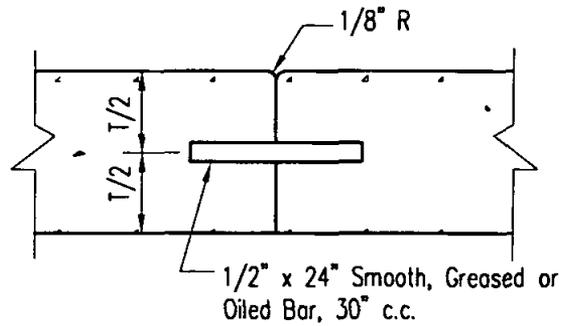
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Steinton 3/23/00
Chairperson R.C.E. 19246 Date

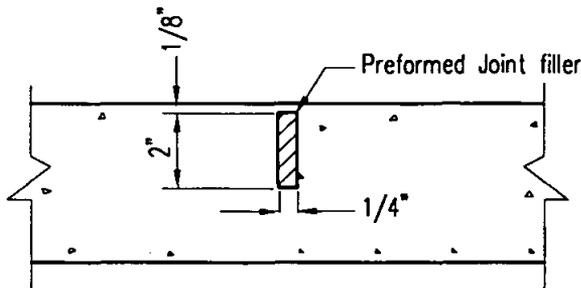
DRAWING NUMBER **G-9**



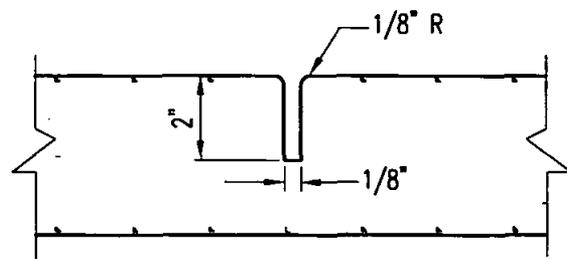
EXPANSION JOINT



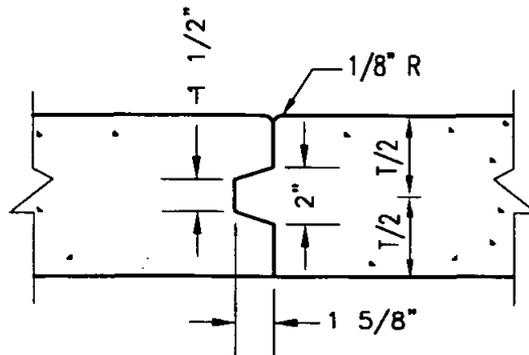
CONTACT JOINT



WEAKENED PLANE JOINT
GUTTER AND PAVEMENT



WEAKENED PLANE JOINT
CURB AND SIDEWALK



KEYED JOINT

Revision	By	Approved	Date
ORIGINAL		Parkinson	2/95

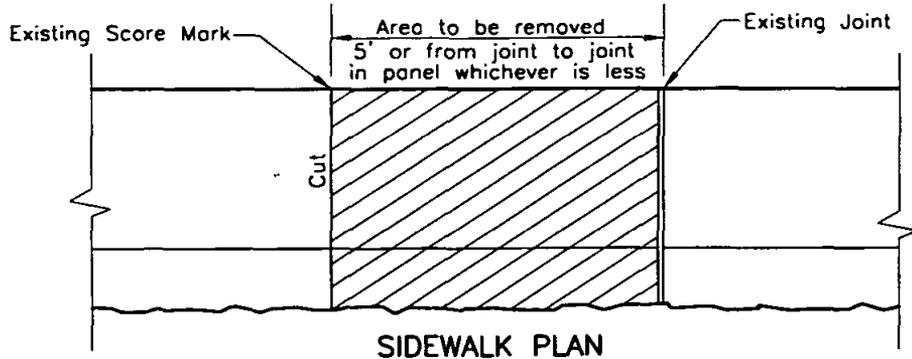
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE JOINT DETAILS

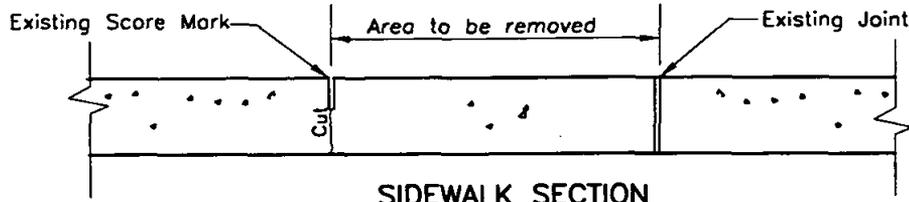
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

W. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

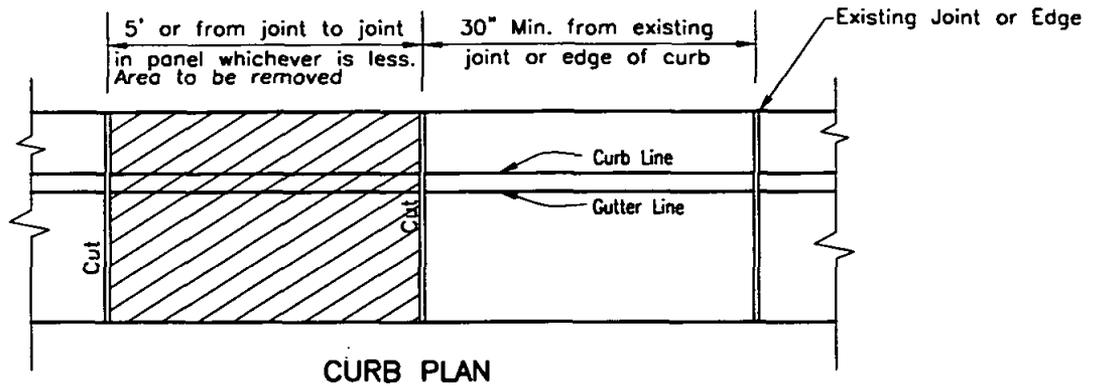
DRAWING NUMBER **G-10**



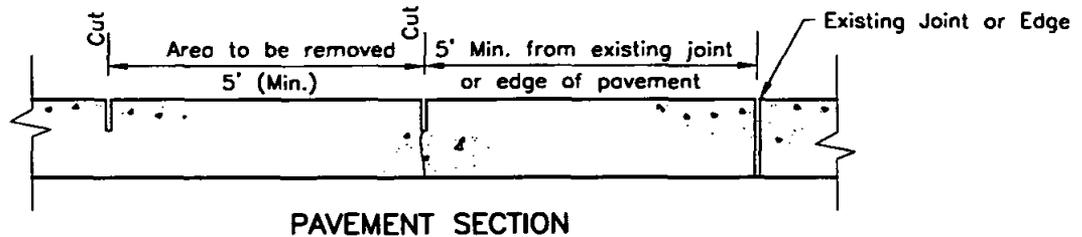
SIDEWALK PLAN



SIDEWALK SECTION



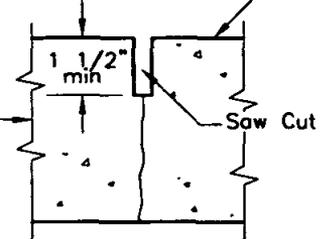
CURB PLAN



PAVEMENT SECTION

Remaining edge to be smooth and true with no shatter.

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 joint, edge or score mark.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

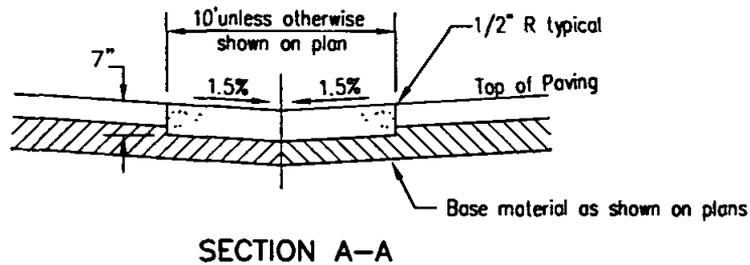
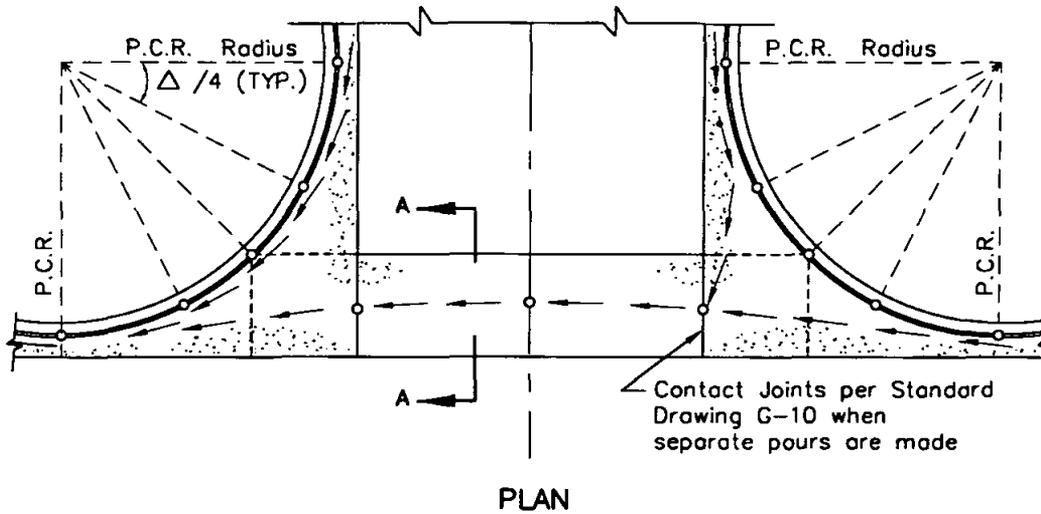
SAN DIEGO REGIONAL STANDARD DRAWING

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

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Stenton 3/29/60
Chairperson R.C.E. 19246 Date

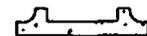
DRAWING NUMBER **G-11**



NOTES

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 depth of 12".

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

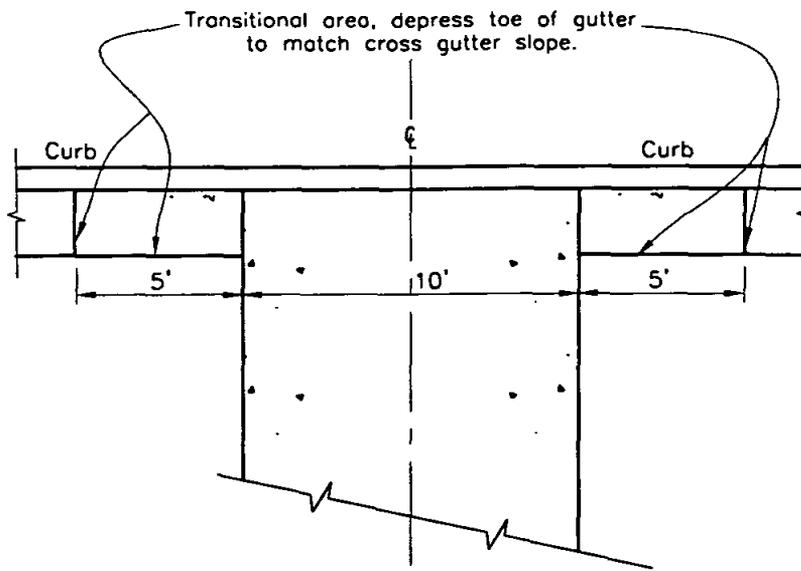
SAN DIEGO REGIONAL STANDARD DRAWING

CROSS GUTTER

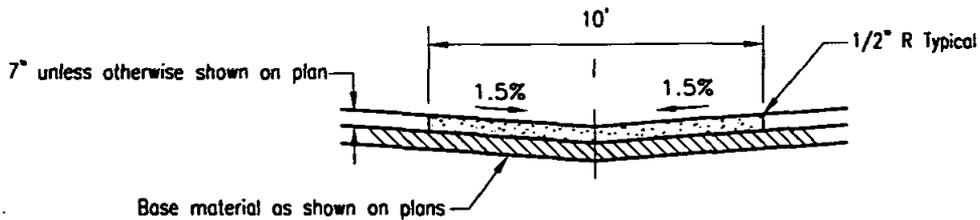
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Stenton 3/23/80
 Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-12**



PLAN



SECTION

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 depth of 12".

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

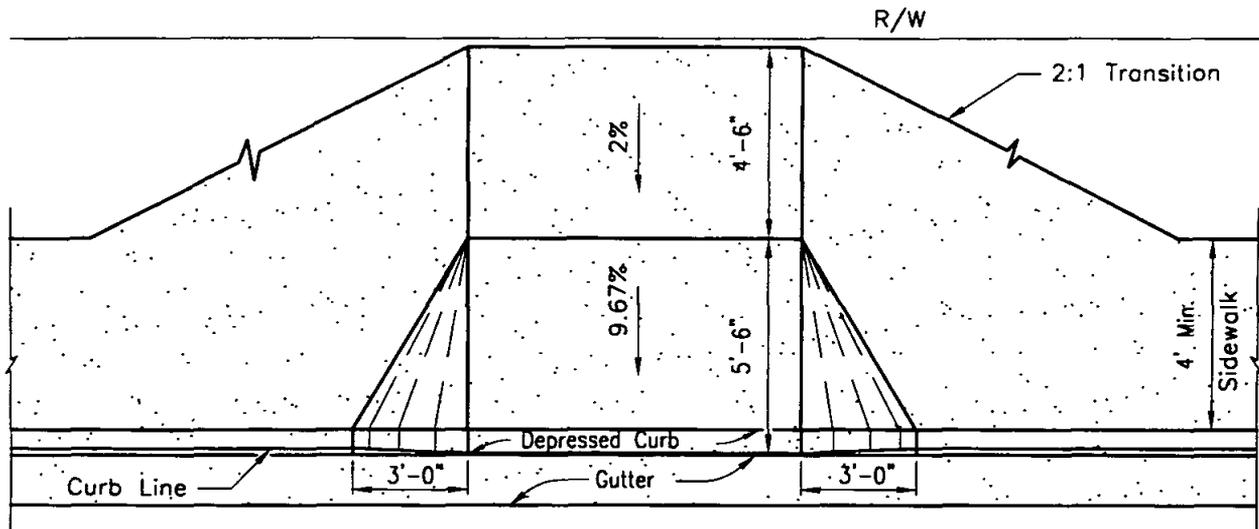
SAN DIEGO REGIONAL STANDARD DRAWING

MID-BLOCK CROSS GUTTER

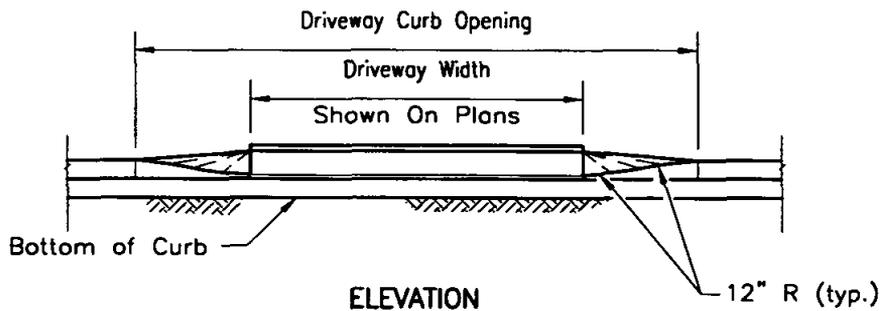
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

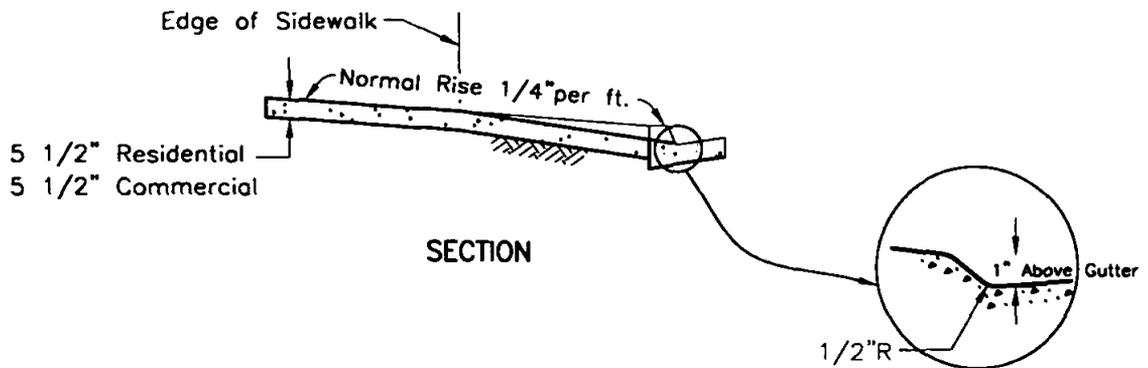
DRAWING NUMBER **G-13**



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.

Revision	By	Approved	Date
ORIGINAL		R. Munoz	4/97

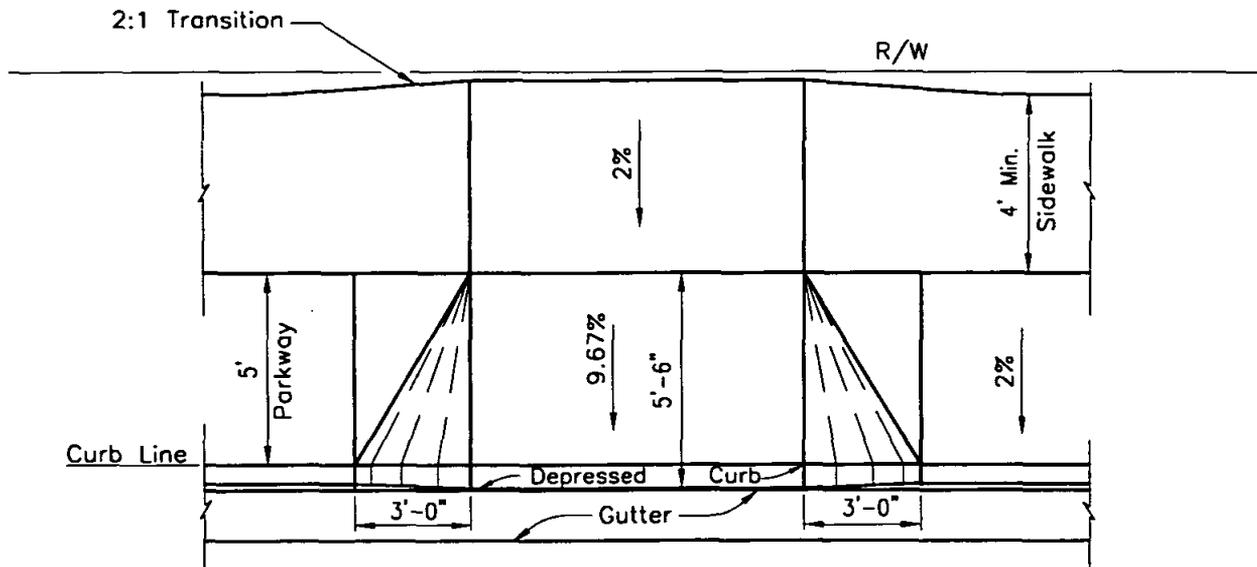
SAN DIEGO REGIONAL STANDARD DRAWING

**CONCRETE DRIVEWAY
(Contiguous Sidewalk)**

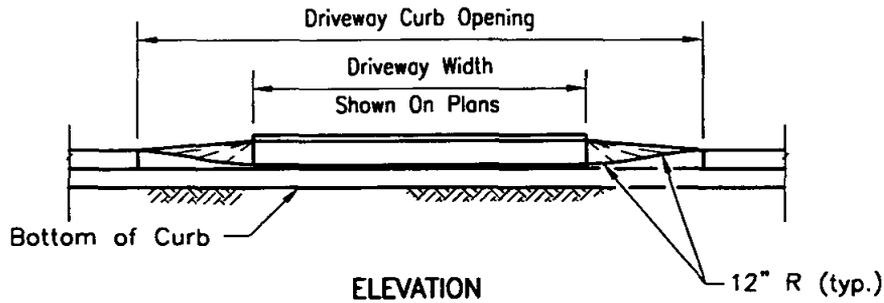
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Steaton 3/23/00
Chairperson R.C.E. 19246 Date

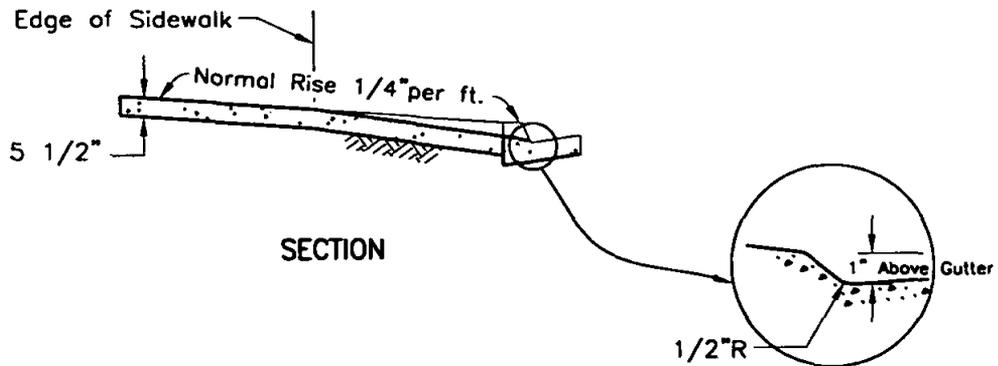
DRAWING NUMBER **G-14A**



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.

Revision	By	Approved	Date
ORIGINAL		R. Munoz	4/97

SAN DIEGO REGIONAL STANDARD DRAWING

**CONCRETE DRIVEWAY
(Non-contiguous Sidewalk)**

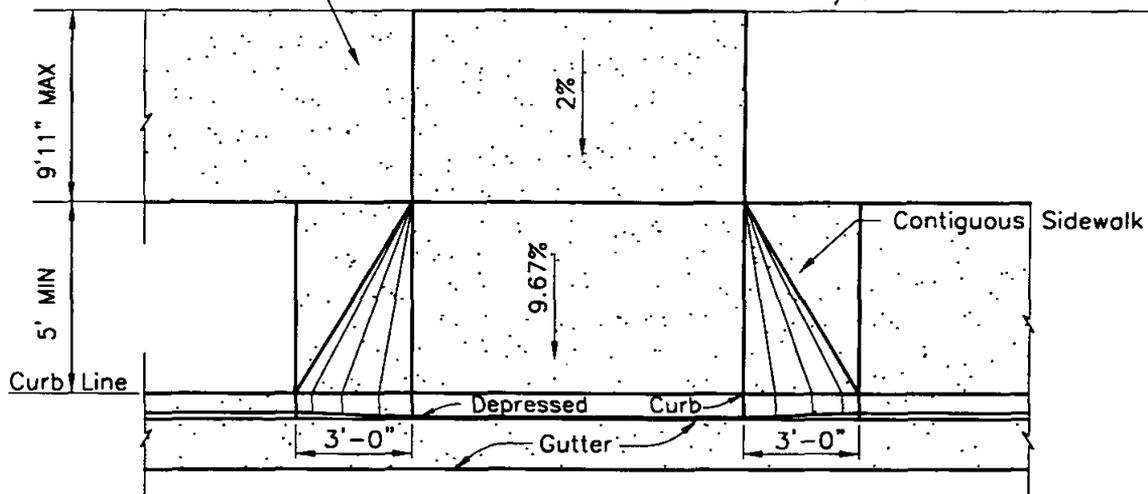
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Steaton 3/23/00
Chairperson R.C.E. 19246 Date

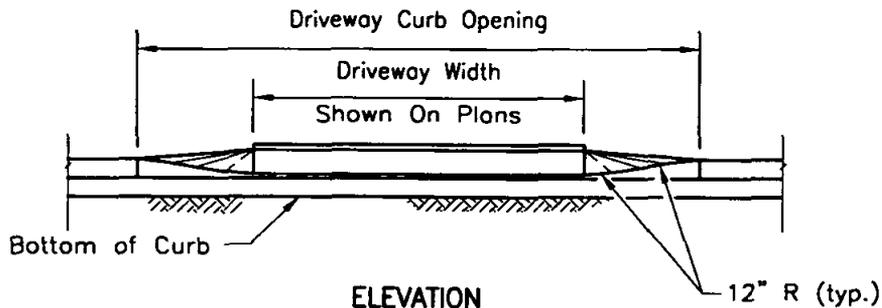
DRAWING NUMBER **G-14B**

Non-contiguous Sidewalk

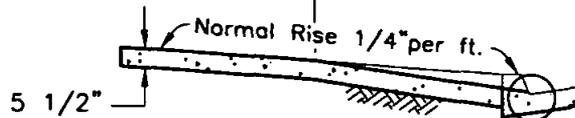
R/W



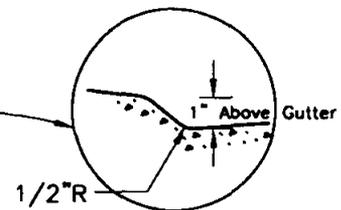
PLAN



Edge of Sidewalk



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.

Revision	By	Approved	Date
ORIGINAL		R. Munoz	4/97

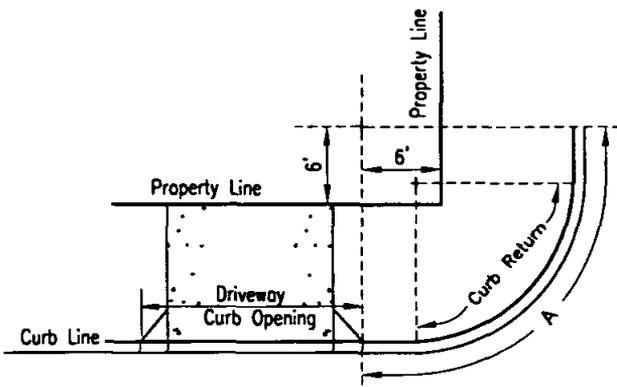
SAN DIEGO REGIONAL STANDARD DRAWING

RESIDENTIAL
CONCRETE DRIVEWAY
(PARKWAY LESS THAN 10' IN DEPTH)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

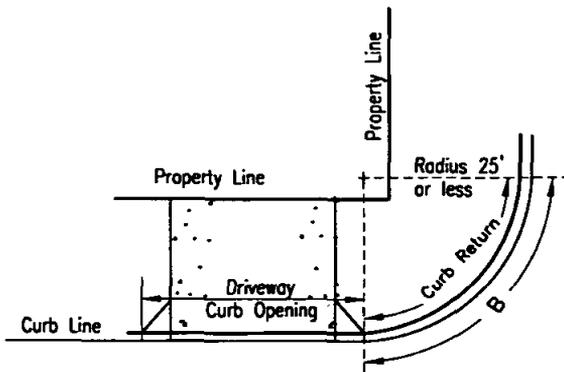
M. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-14C**



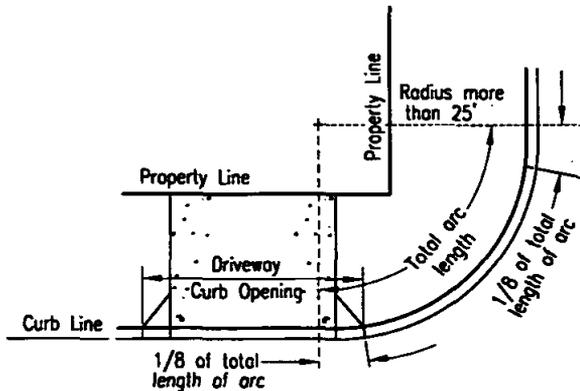
REQUIREMENT 1

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.



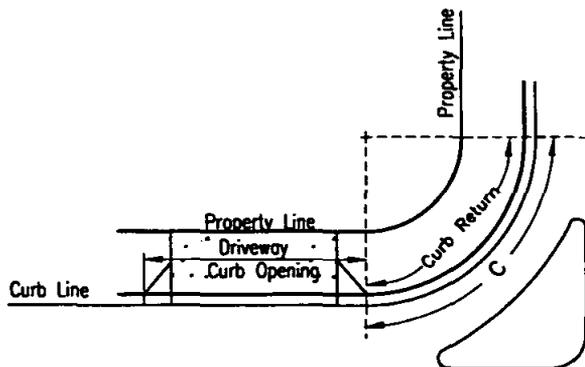
REQUIREMENT 2

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
ORIGINAL		Kercheval	12/75

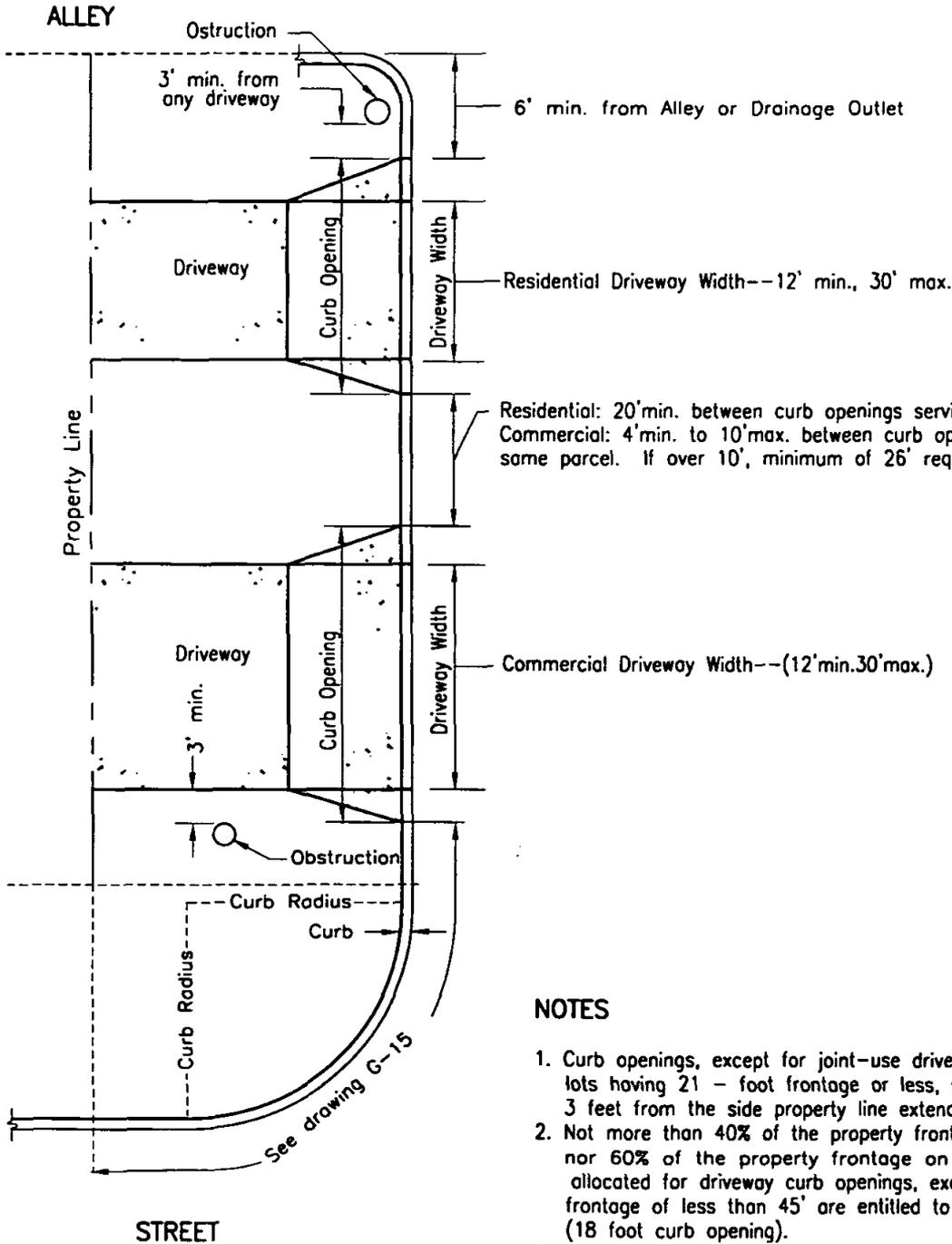
SAN DIEGO REGIONAL STANDARD DRAWING

DRIVEWAY LOCATION - ADJACENT TO CURB RETURNS AND STREET LINES

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/29/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-15**



NOTES

1. Curb openings, except for joint-use driveways and driveways 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.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

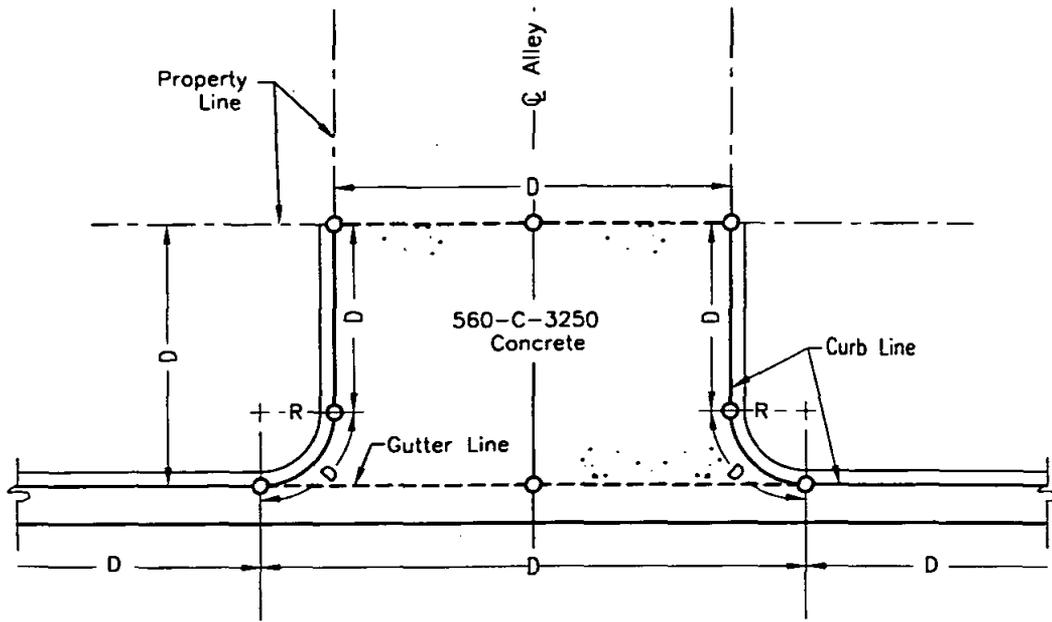
SAN DIEGO REGIONAL STANDARD DRAWING

**DRIVEWAY LOCATION
AND WIDTH REQUIREMENTS**

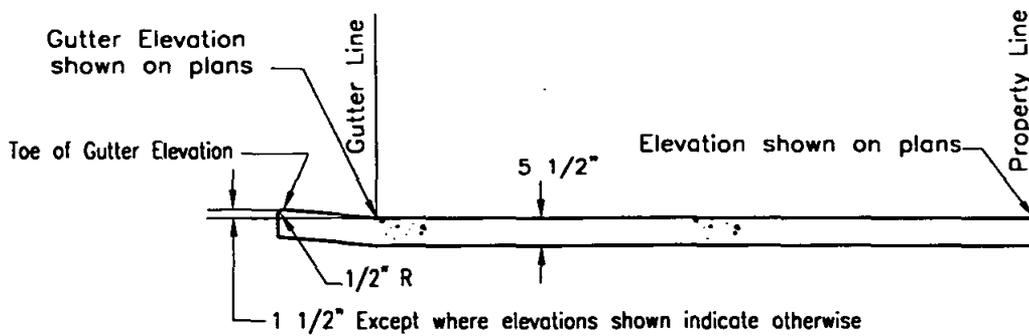
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. C. E. 3/27/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-16**



PLAN



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
ORIGINAL		Kercheval	12/75

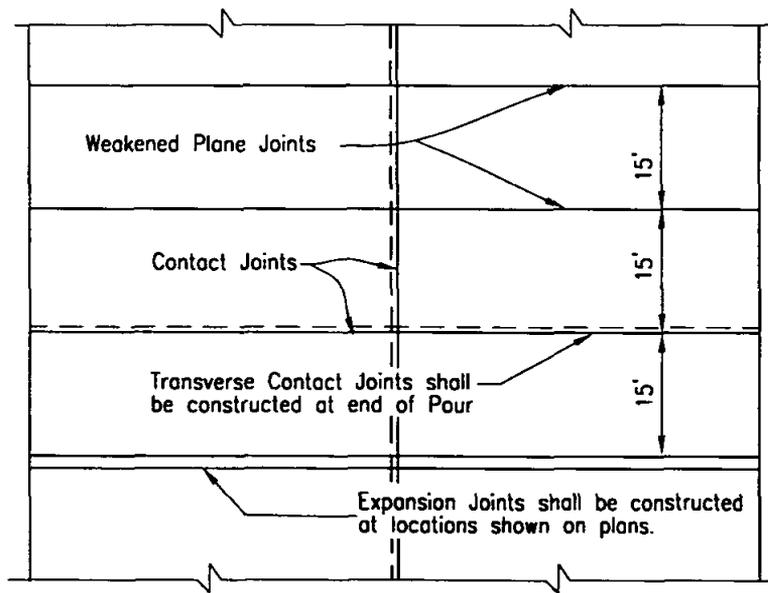
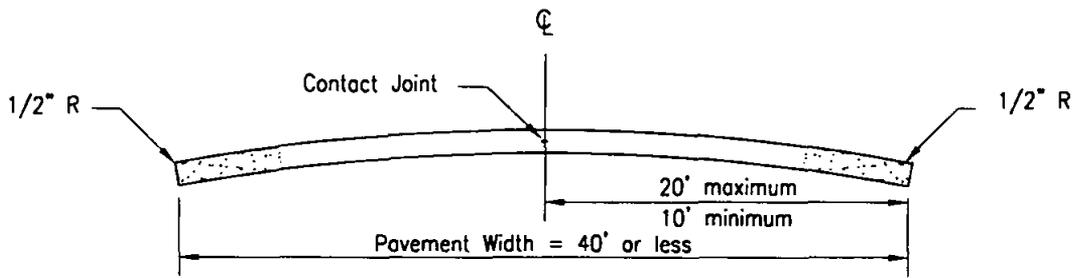
SAN DIEGO REGIONAL STANDARD DRAWING

ALLEY APRON

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Steaton 3/23/80
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-17**



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
ORIGINAL		Kercheval	12/75

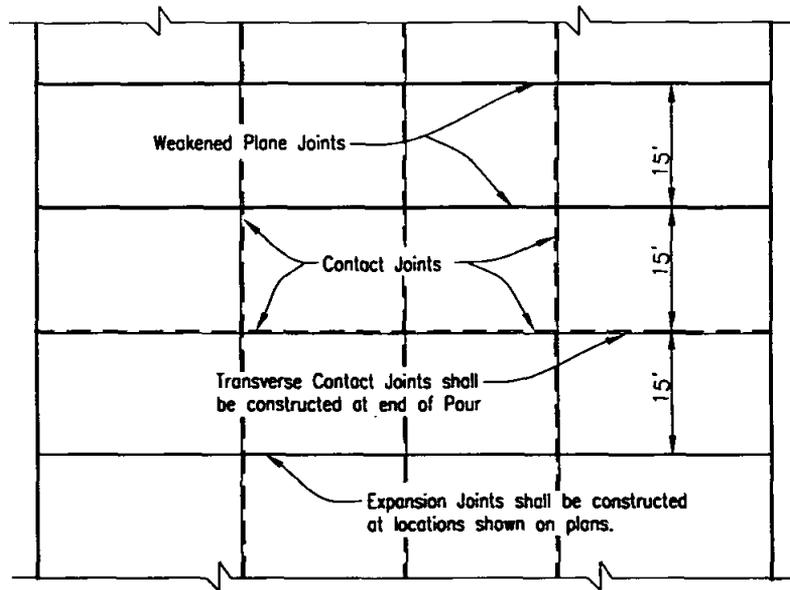
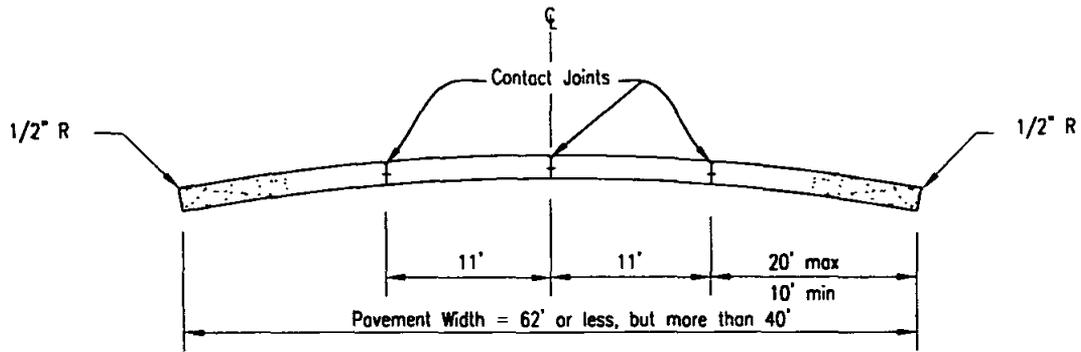
SAN DIEGO REGIONAL STANDARD DRAWING

**CONCRETE PAVEMENT
WIDTH 40' OR LESS**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/60
Chairperson R.C.E. 19246 Date

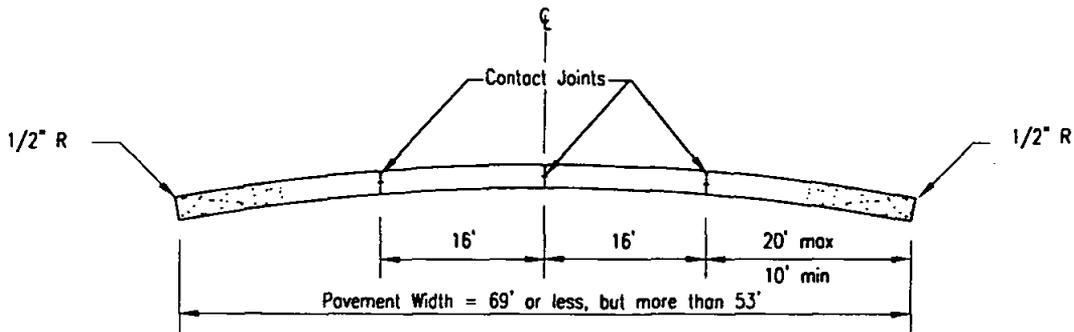
DRAWING NUMBER **G-18**



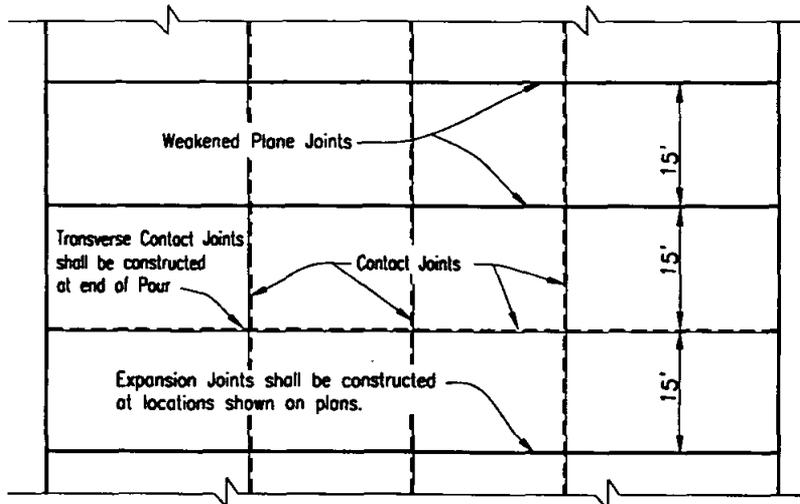
NOTES

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	
ORIGINAL		Kercheval	12/75	CONCRETE PAVEMENT WIDTH 40' TO 62'		 Chairperson R.C.E. 19246 Date 3/23/00	
						DRAWING NUMBER	G-19



SECTION



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
ORIGINAL		Kercheval	12/75

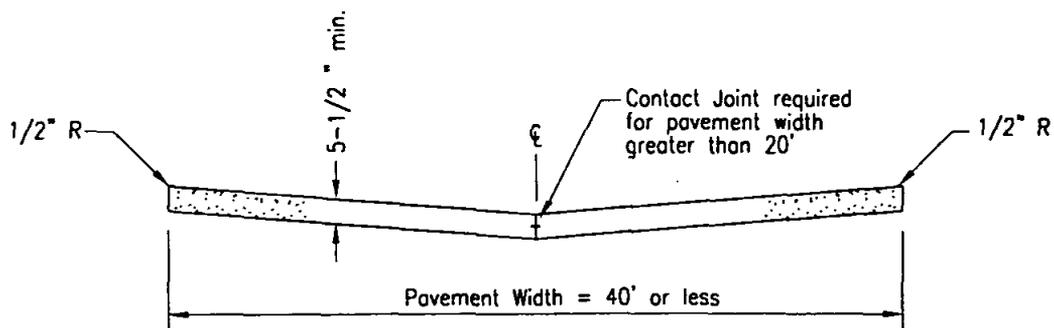
SAN DIEGO REGIONAL STANDARD DRAWING

**CONCRETE PAVEMENT, ALLEY SECTION
WIDTH 53' TO 69'**

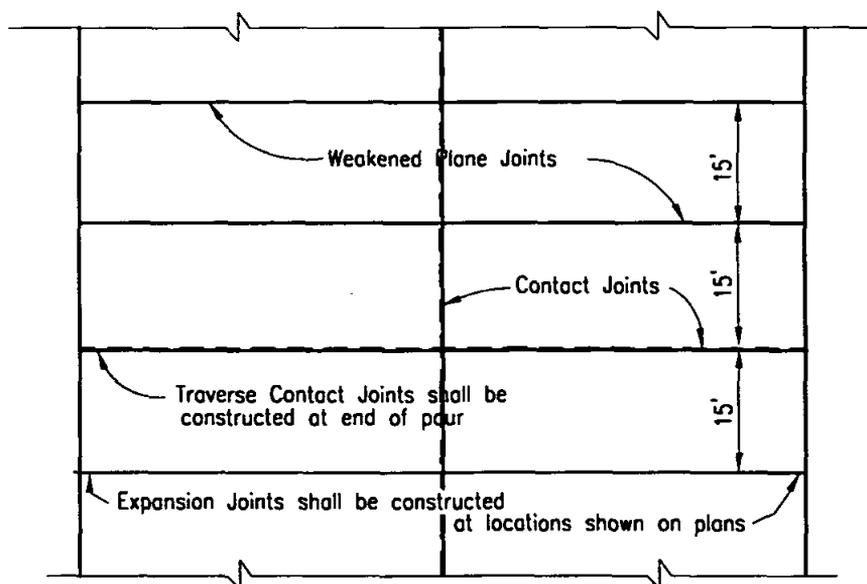
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-20**



SECTION



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
ORIGINAL		Kercheval	12/75

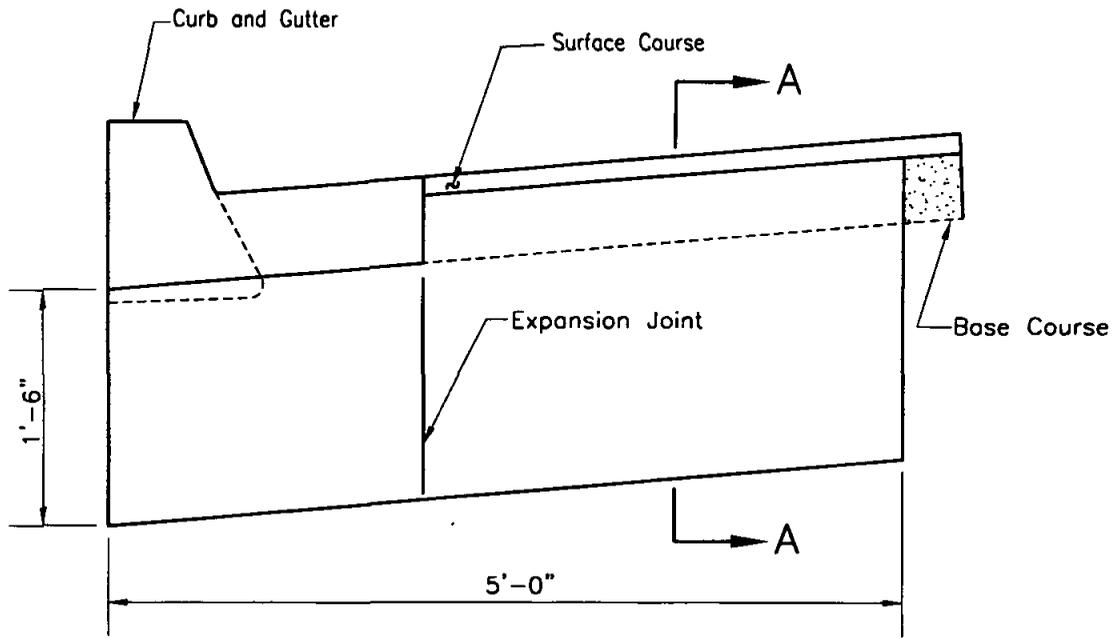
SAN DIEGO REGIONAL STANDARD DRAWING

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

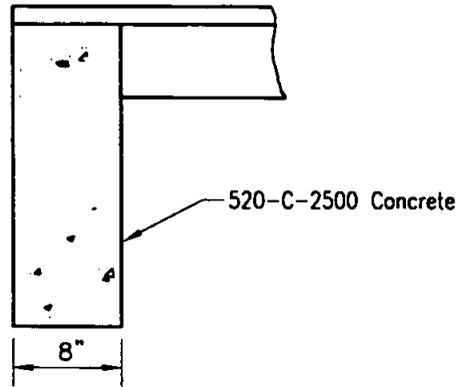
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-21**



ELEVATION



SECTION A-A

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

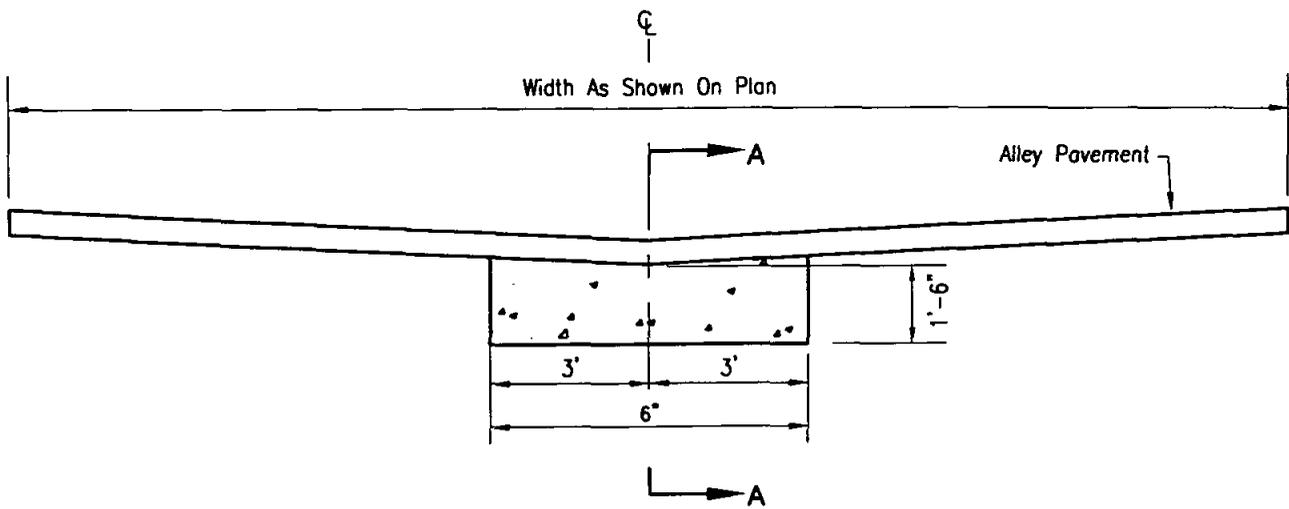
SAN DIEGO REGIONAL STANDARD DRAWING

**CUTOFF WALL
AT END OF PAVEMENT**

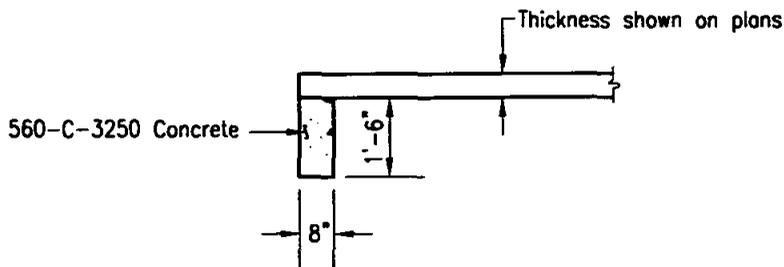
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

M. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING
NUMBER **G-22**



ELEVATION



SECTION A-A

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

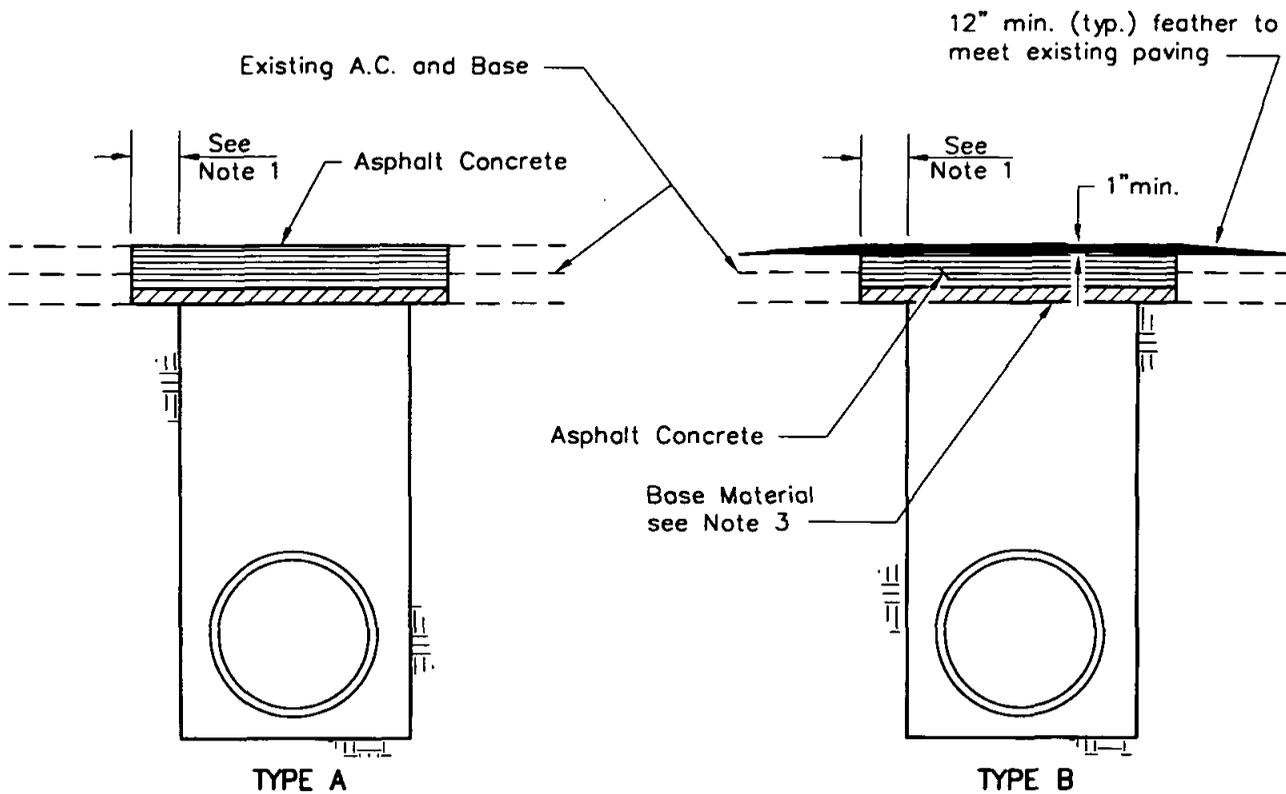
SAN DIEGO REGIONAL STANDARD DRAWING

**CUTOFF WALL
AT END OF ALLEY PAVEMENT**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Henton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-23**



NOTES

1. Trench edges to be cut a minimum of 6" wider than trench for trenches 3' wide or less, and 12" wider for trenches over 3' wide.
2. 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.
3. Base material shall be replaced to depth of existing base. A.C. may be substituted for base material.
4. A tack coat of asphaltic emulsion or paving asphalt shall be applied to existing A.C. at all contact surfaces, prior to resurfacing.
5. Asphalt 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.
6. 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.
7. Type B shall not be used on lateral crossings.
8. Sloughing of trench under pavement shall be cause for requiring additional pavement and base.

Revision	By	Approved	Date
ORIGINAL		Parkinson	2/95

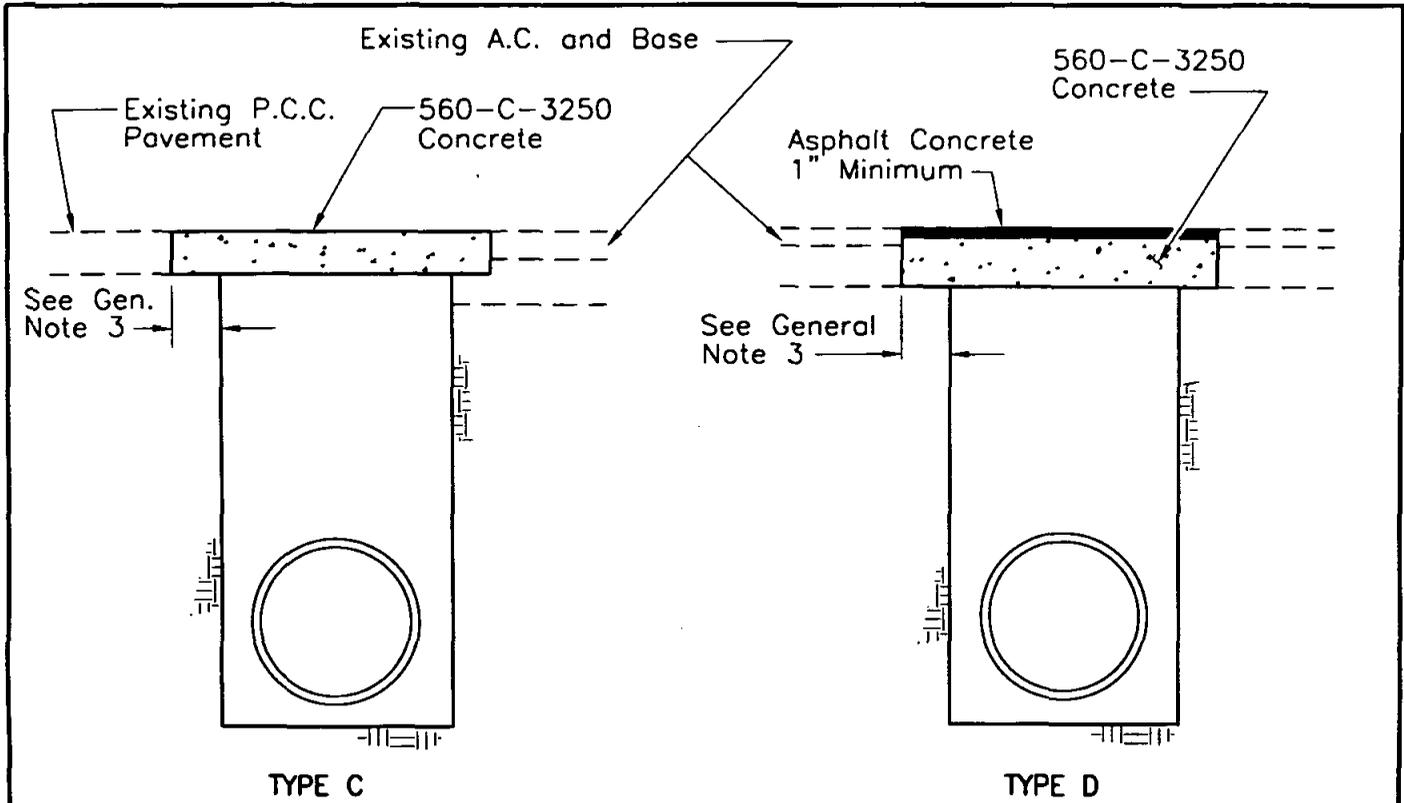
SAN DIEGO REGIONAL STANDARD DRAWING

**TRENCH RESURFACING
TYPES A & B**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-24**



GENERAL 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. Sloughing of trench under pavement shall be cause for requiring additional pavement and base.
3. Trench edges shall be cut a minimum of 6" wider than trench for trenches 3' wide or less, and 12" wider for trenches over 3' wide.

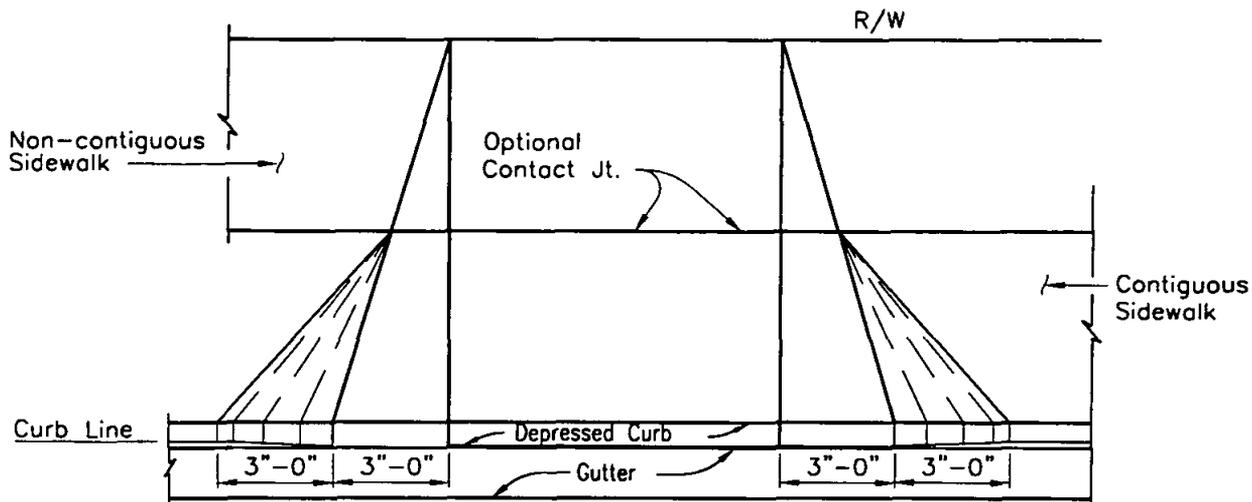
NOTES TYPE-C

1. Concrete shall be colored black where required to match existing pavement, method to be specified by Agency.
2. 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.

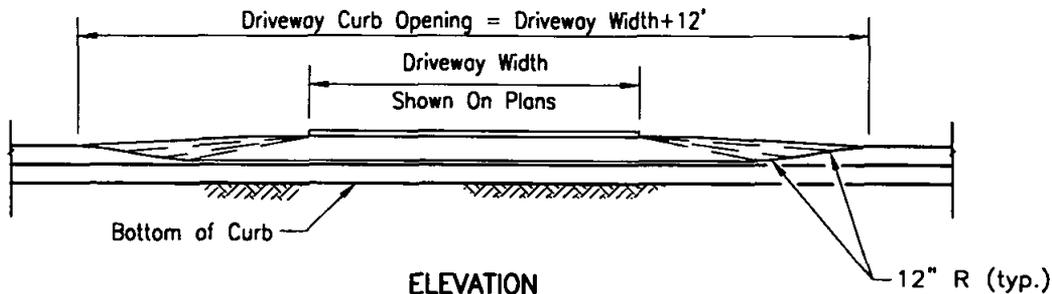
NOTES TYPE-D

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

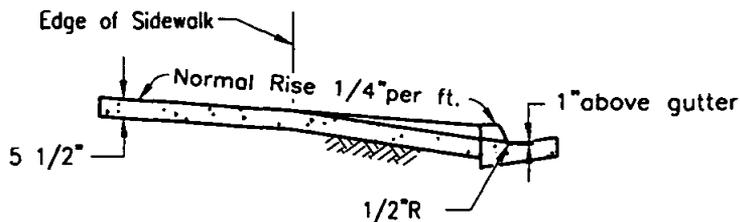
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Parkinson	2/95		TRENCH RESURFACING TYPES C & D
				DRAWING NUMBER G-25	



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 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.

Revision	By	Approved	Date
ORIGINAL		H. Hecht	10/82

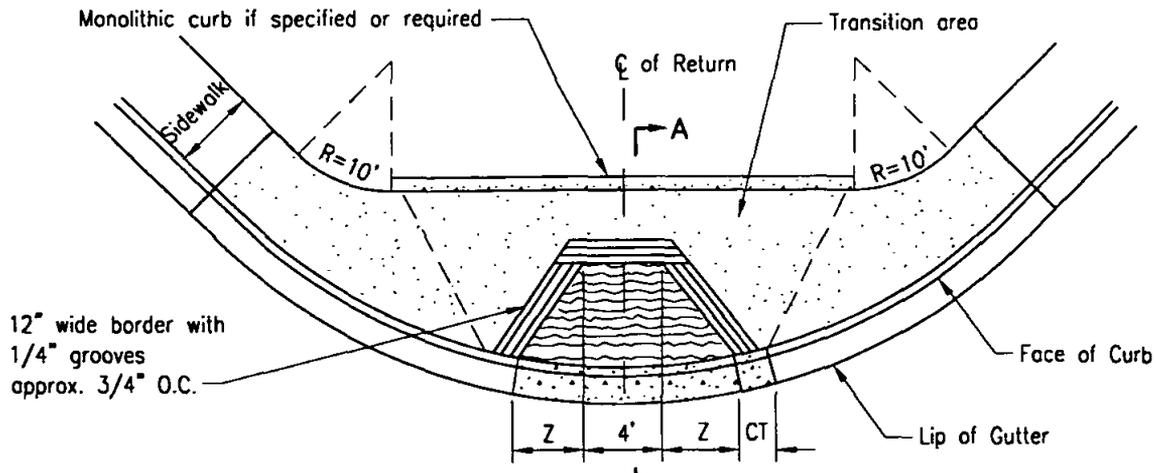
SAN DIEGO REGIONAL STANDARD DRAWING

**CONCRETE DRIVEWAY
COMMERCIAL ALTERNATE**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

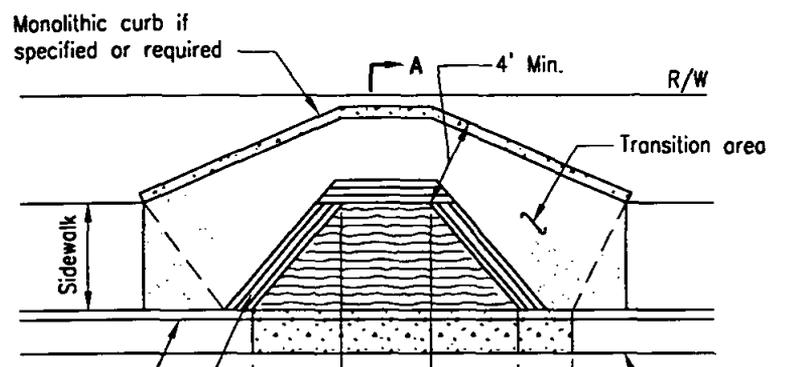
[Signature] 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER G-26



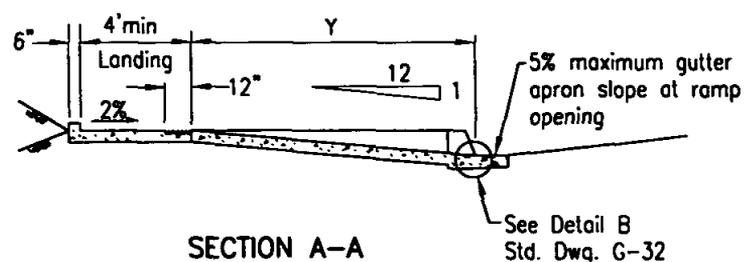
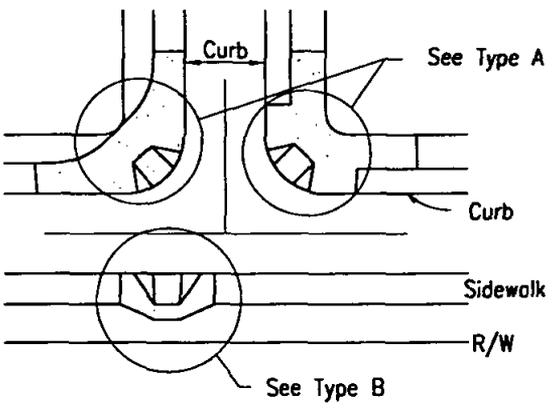
PLAN - TYPE A

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



PLAN

ELEVATION TYPE B



SECTION A-A

NOTE
See Standard Drawing G-32 for general notes.

Revision	By	Approved	Date
ORIGINAL		M. Bahmanian	4/86

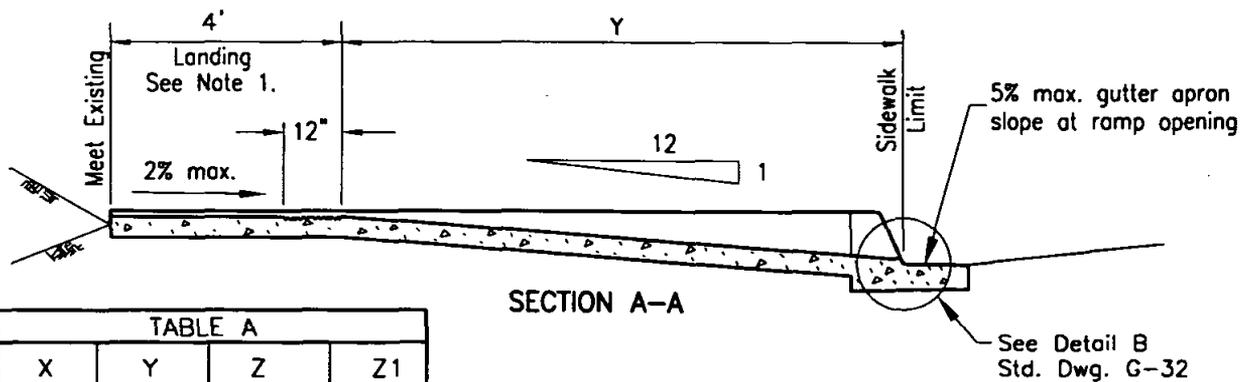
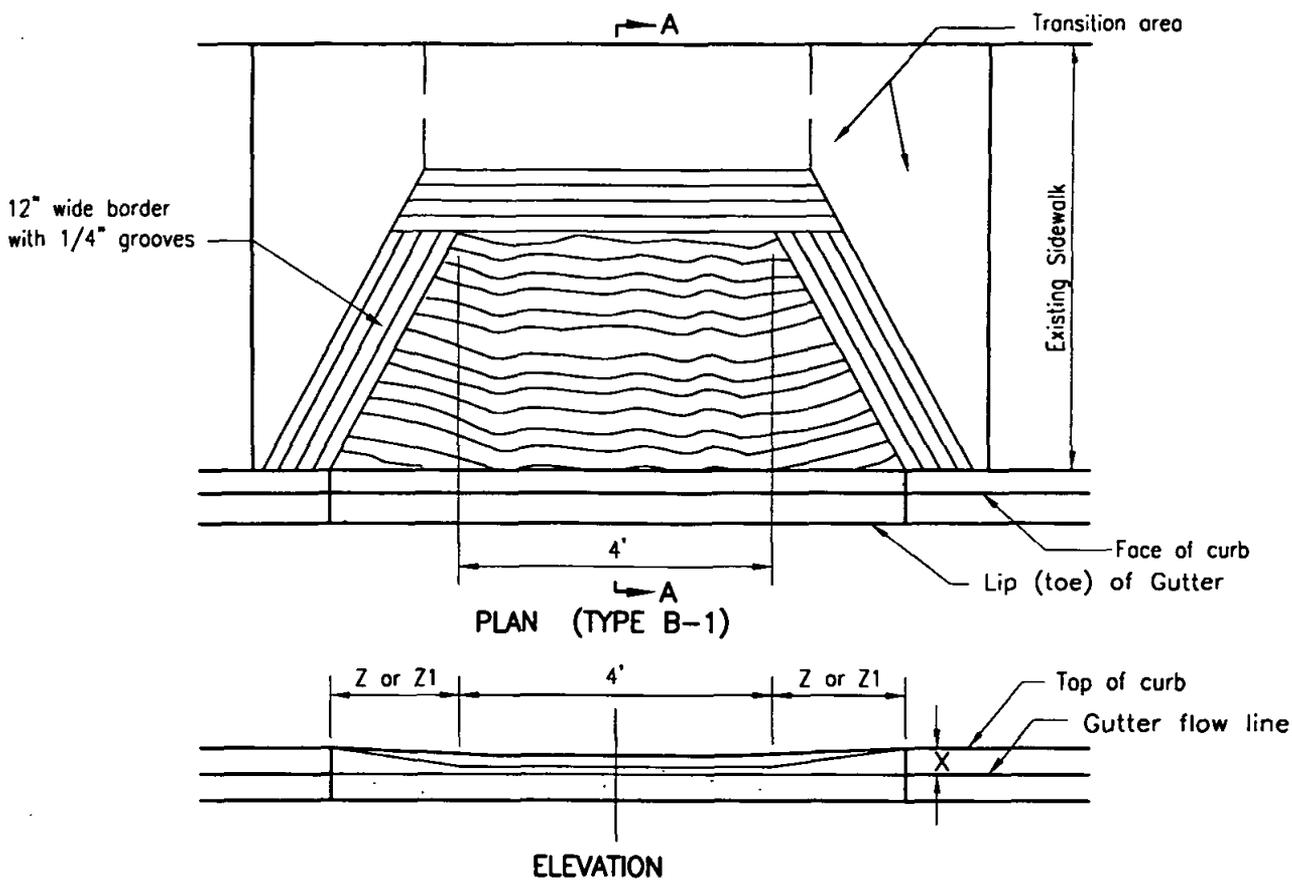
SAN DIEGO REGIONAL STANDARD DRAWING

CURB RAMP - TYPES A and B
(New Construction)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Stanton 3/23/80
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-27**



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

NOTES

1. If inadequate R/W exists to provide a 4' landing, a landing width less than 4' but at least 3' is acceptable if the side slopes are revised to 12:1 per side slope Z1 in table A.
2. See Standard Drawing G-32 for general notes.
3. Type A-1 is a designation for ramp at curb return.
4. Type B-1 is a designation for ramp at straight curb. (Shown above)
- *5. Delete 12" wide border when X=1"

Revision	By	Approved	Date
ORIGINAL		G.Parkinson	2/95

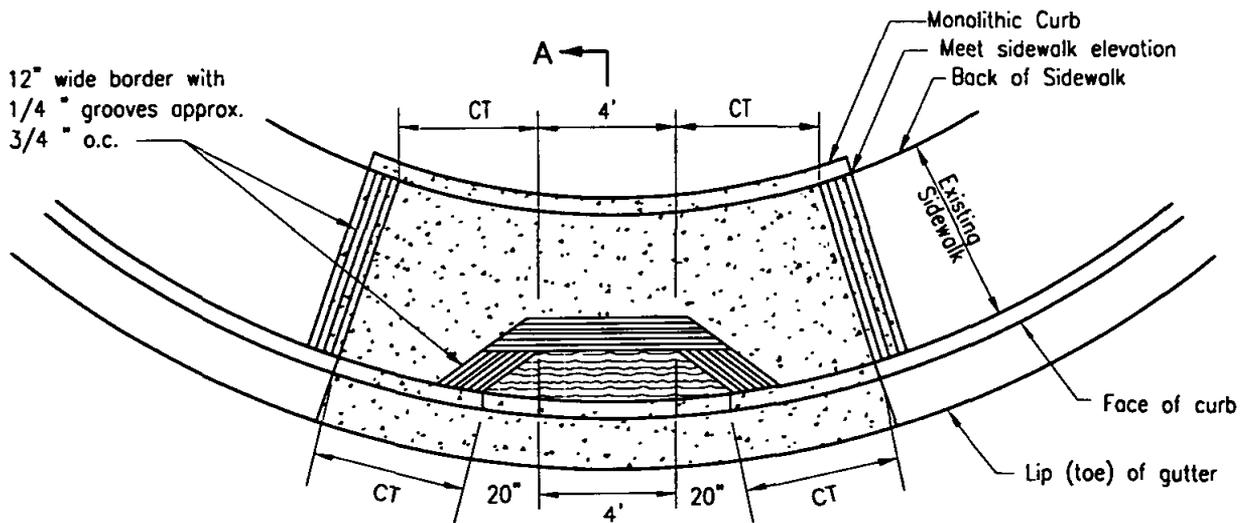
SAN DIEGO REGIONAL STANDARD DRAWING

CURB RAMP - TYPES A-1 and B-1
(For Existing Sidewalk)

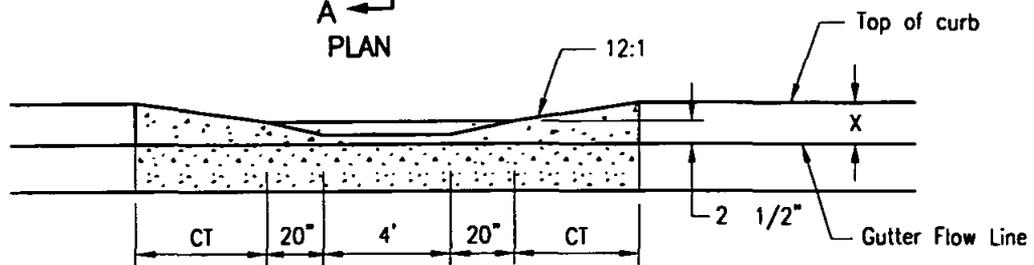
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. C. E. 3/23/00
Chairperson R.C.E. 19246 Date

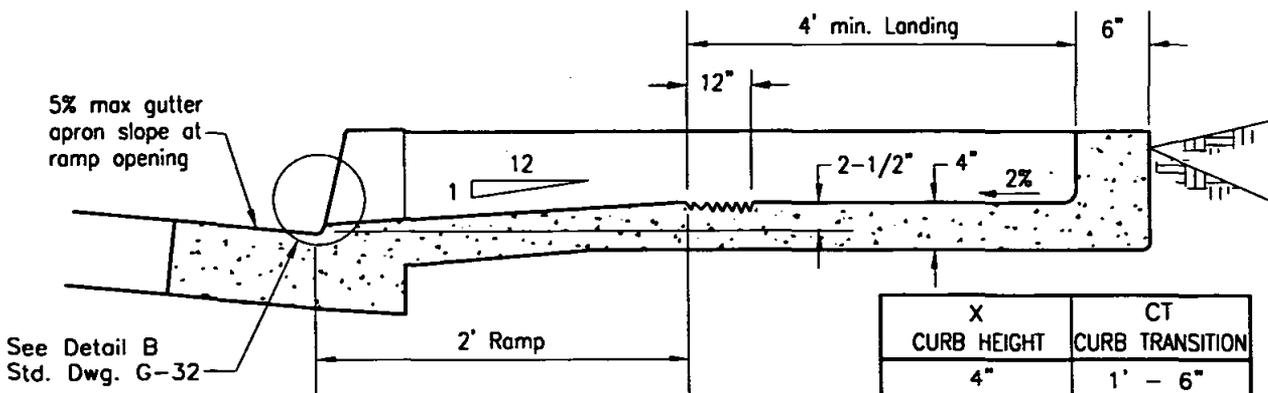
DRAWING NUMBER **G-28**



A
PLAN



ELEVATION



SECTION A-A

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

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-28 or G-30, and are not to be used in new construction.
2. See Standard Drawing G-32 for general notes.

Revision	By	Approved	Date
ORIGINAL		R. Munoz	5/97

SAN DIEGO REGIONAL STANDARD DRAWING

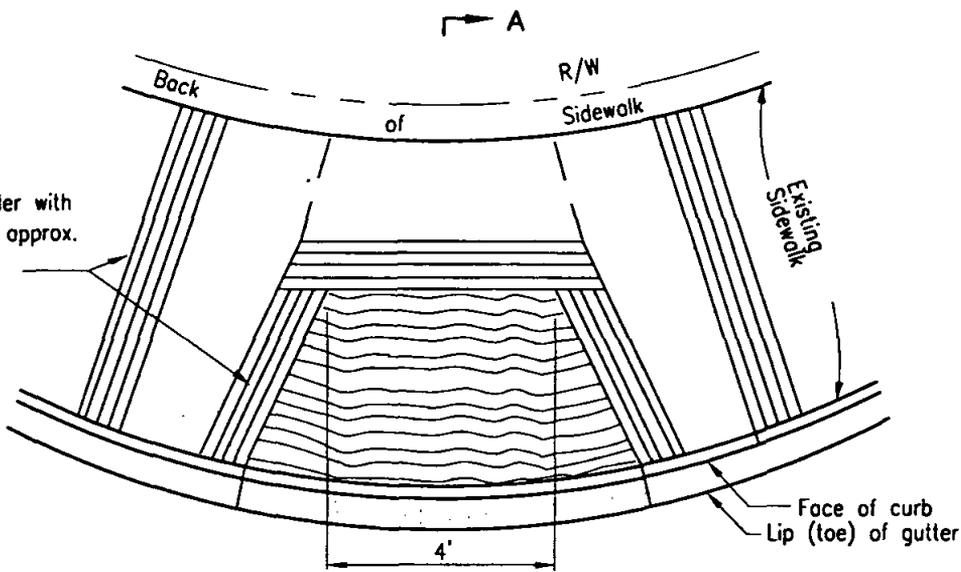
**CURB RAMP - TYPE C
(For Existing Sidewalk)**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

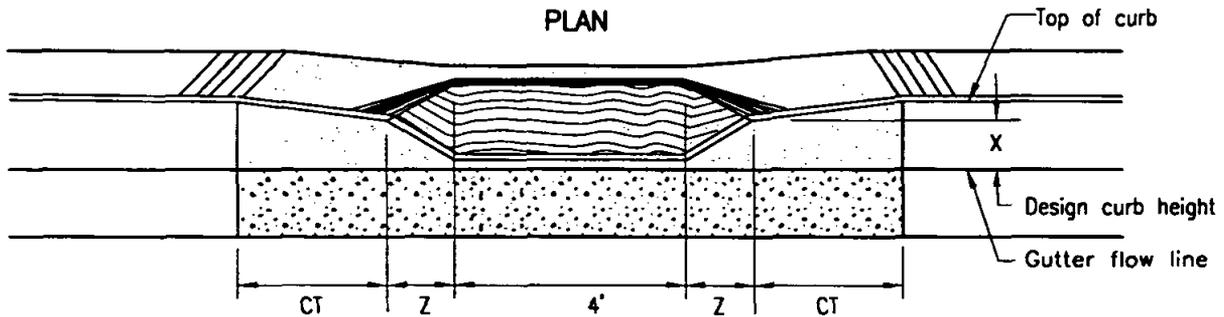
[Signature] 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-29**

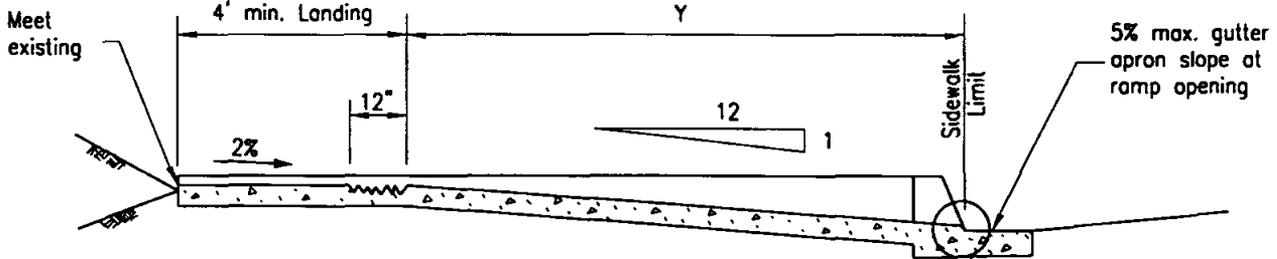
12" wide border with
1/4" grooves approx.
3/4" O.C.



PLAN



ELEVATION



SECTION A-A

TABLE A			
X	Y	Z	CT
DESIGN CURB HEIGHT	RAMP LENGTH (12:1)	SIDE SLOPE (10:1)	CURB TRANS.
1"	0'-6"	1'-6"	(SEE NOTE NO. 3)
2"	1'-6"	1'-6"	
3"	2'-6"	2'-1"	
4"	3'-6"	2'-11"	
5"	4'-6"	3'-9"	
6"	5'-6"	4'-7"	
7"	6'-6"	5'-5"	
8"	7'-6"	6'-3"	

NOTES

1. See Standard Drawing G-32 for general notes.
2. X= Design Curb Height as shown on plans.
3. Curb transition (CT) shall be 1'-0" for each one inch difference between existing curb height and design curb height.
4. If specified, construct monolithic curb at back of ramp as in Std. Dwg. G-29
5. Delete 12" inside border at ramp when X=1".

Revision	By	Approved	Date
ORIGINAL		G.Parkinson	2/95

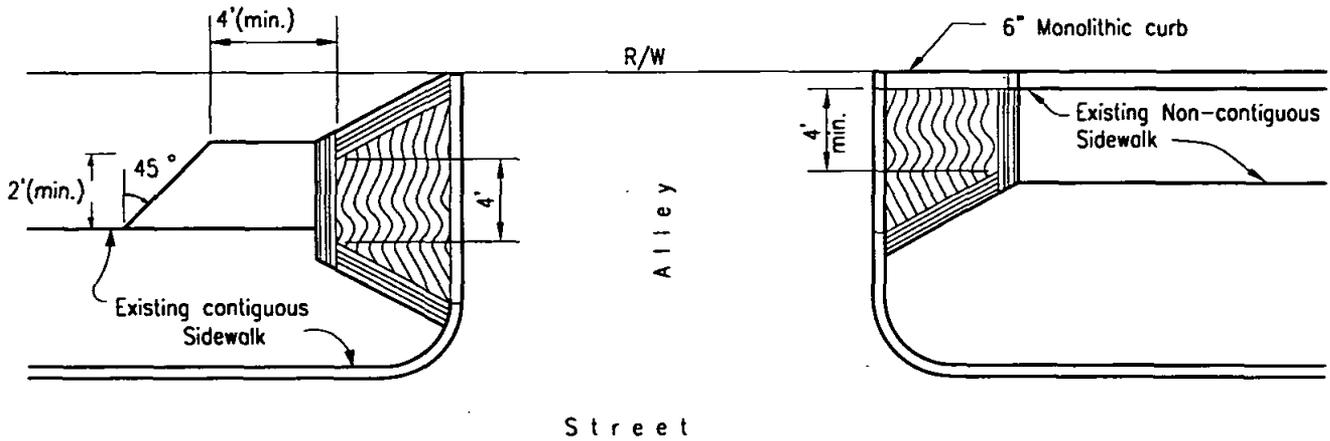
SAN DIEGO REGIONAL STANDARD DRAWING

CURB RAMP - TYPE C-1
(For Existing Sidewalk)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

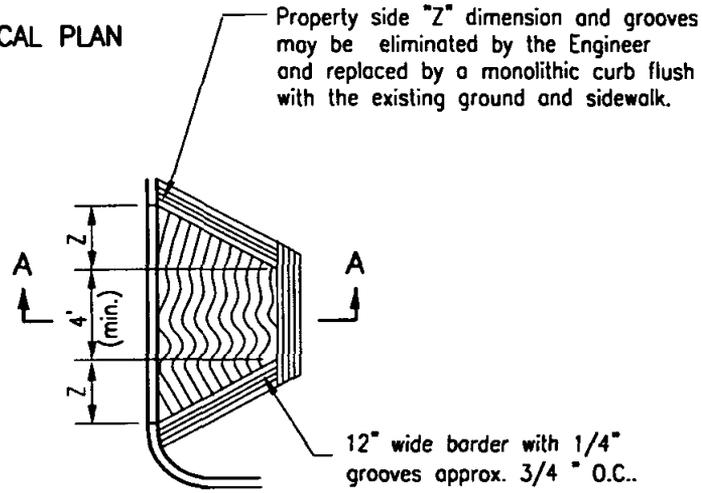
J. Steaton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-30**



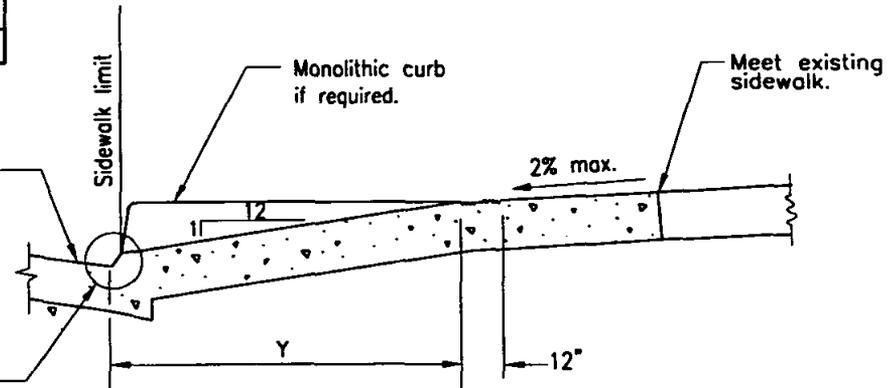
X	Y	Z
CURB HEIGHT	RAMP LENGTH (12:1)	SIDE SLOPE (10:1)
1.0"	1'-6"	1'-6"
1.5"	1'-6"	1'-6"
2.0"	1'-6"	1'-6"
2.5"	2'-0"	1'-8"
3.0"	2'-6"	2'-1"
3.5"	3'-0"	2'-6"
4.0"	3'-6"	2'-11"
4.5"	4'-0"	3'-4"
5.0"	4'-6"	3'-9"
5.5"	5'-0"	4'-2"
6.0"	5'-6"	4'-7"
6.5"	6'-0"	5'-0"
7.0"	6'-6"	5'-5"
7.5"	7'-0"	5'-10"
8.0"	7'-6"	6'-3"

TYPICAL PLAN



PLAN VIEW

5% max. gutter apron slope at ramp opening.



SECTION A-A

NOTES

- 1. See Standard Drawing G-32 for general notes.
- 2. Curb height (X) is measured at center of ramp.

Revision	By	Approved	Date
ORIGINAL		G.Parkinson	2/95

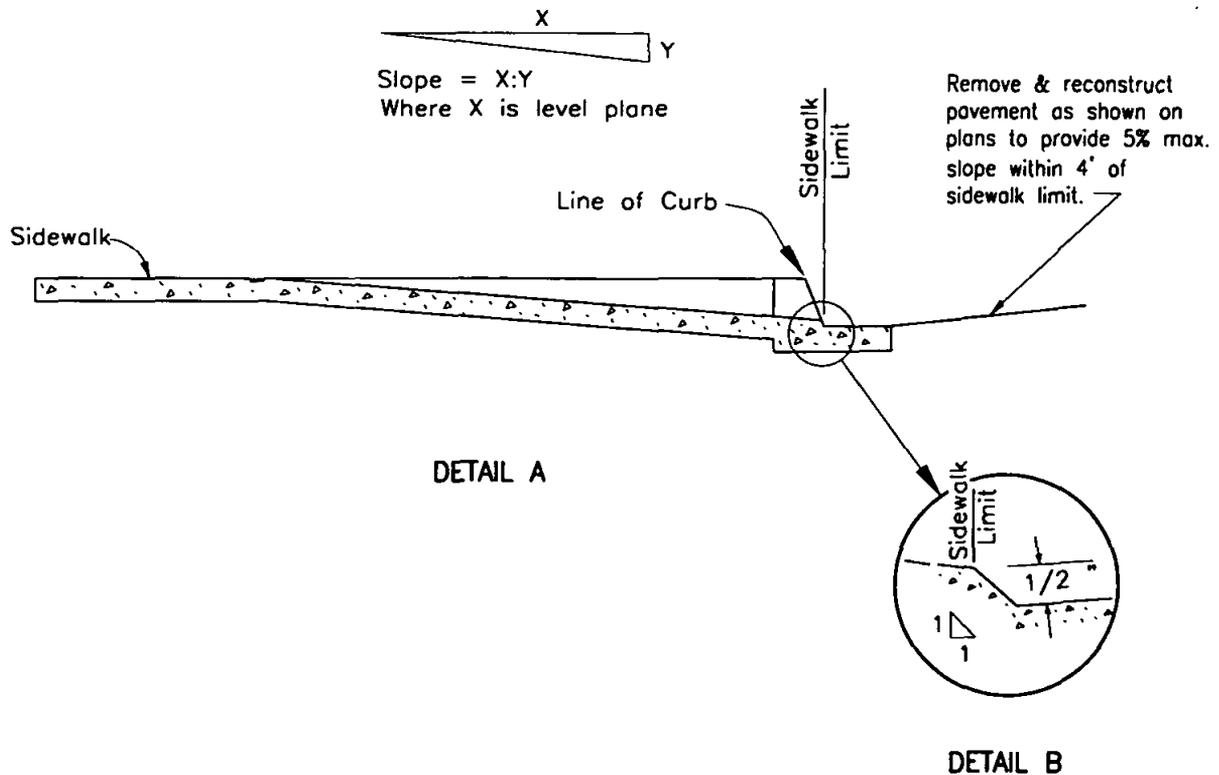
SAN DIEGO REGIONAL STANDARD DRAWING

CURB RAMP - TYPE D

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-31**



NOTES

1. The removal of existing concrete curb, gutter, sidewalk and pavement for pedestrian ramp installation shall comply with Standard Drawing G-11.
2. Areas shown thus: shall have a heavy broom "ripple" texture finish, transverse to axis of ramp contrasting visually with adjoining surfaces.
3. Areas shown thus: are the minimum required for a complete ramp installation and shall be concrete class 520-C-2500.
4. If obstructions such as inlets, utility poles, fire hydrants, etc., are encountered, the ramp locations may be adjusted upon the approval of the Resident Engineer.
5. Ramp slope shall be a minimum grade of 15:1.
6. The ramp slopes will be measured relative to the sidewalk slope, see Detail A below. Adjoining slope beyond ramp shall not exceed 20:1 (5%).

Revision	By	Approved	Date
ORIGINAL		G.Parkinson	2/95

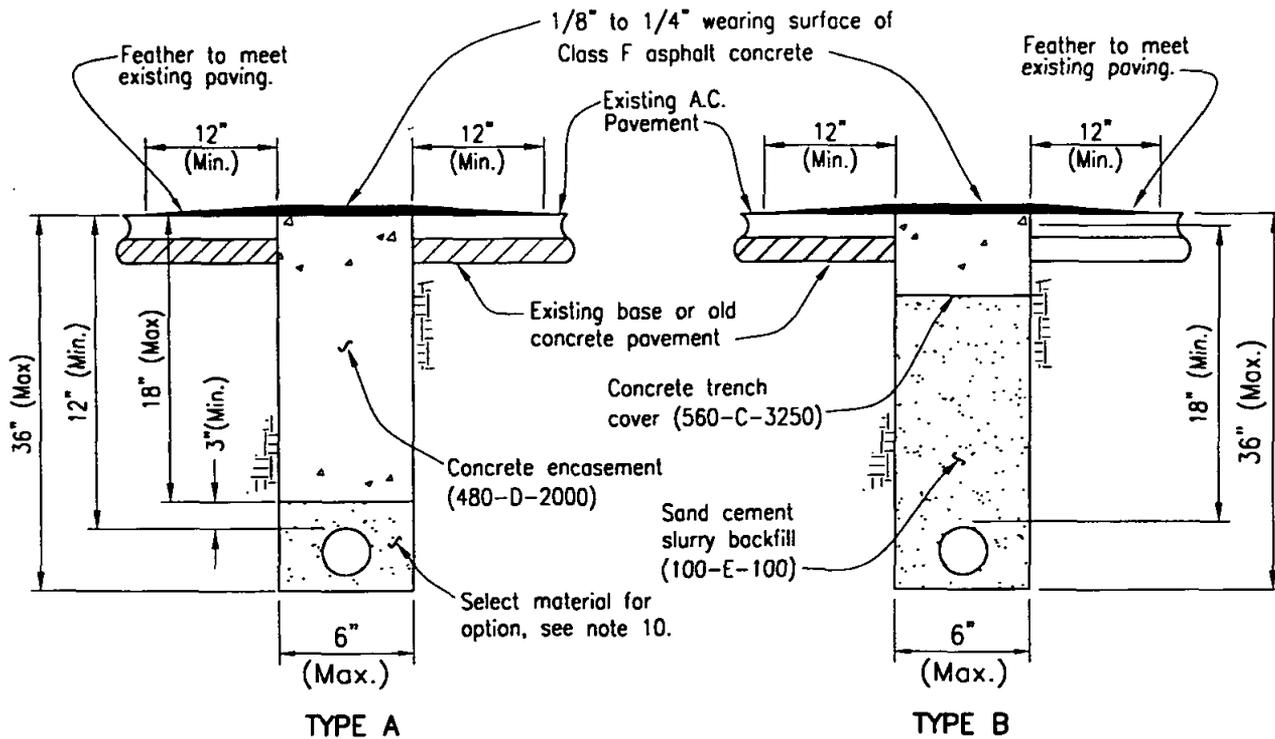
SAN DIEGO REGIONAL STANDARD DRAWING

GENERAL NOTES for CURB RAMPS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/00
Chairperson R.C.E. 19246 Date

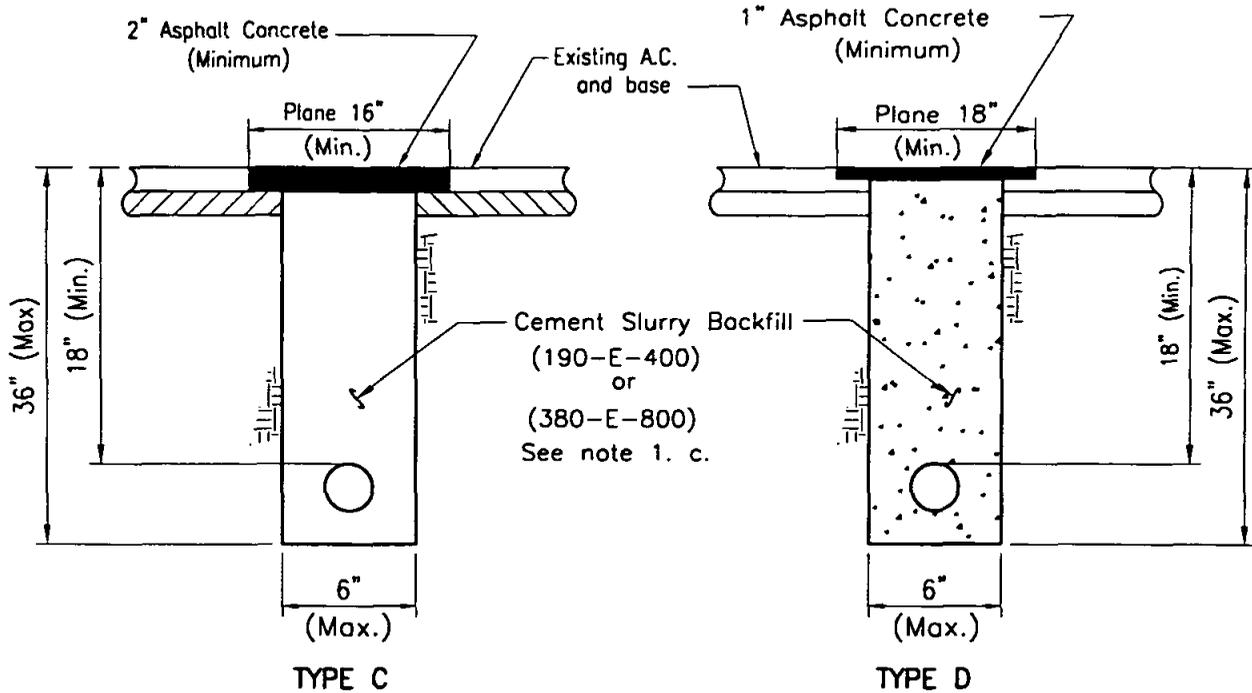
DRAWING NUMBER G-32



NOTES

1. Concrete encasement or sand cement slurry backfill shall have a minimum slump of 4 inches.
2. Concrete encasement 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 pavement grade and floated to assure proper edge match.
4. A tack coat shall be applied to the concrete and existing asphalt pavement prior to placing the new asphalt pavement wearing surface.
5. Existing A.C. pavement will not require saw cutting when using rockwheel for excavation.
6. 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.
7. Allow concrete backfill or concrete trench cover 7 calendar days minimum, but no longer than 30 calendar days to cure and dry before applying the asphalt concrete wearing surface.
8. 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.
9. 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).
10. Selected material with minimum sand equivalent of 50 shall be backfilled to 3 inches minimum above the conduit. Sand cement slurry backfill (100-E-100) may be substituted for select material.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Bahmanian	4/86		
				NARROW TRENCHING TYPES A & B BACKFILL & RESURFACING	<i>[Signature]</i> 3/23/00 Chairperson R.C.E. 19246 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 48 hours minimum to cure before resurfacing, unless approved by the Engineer.
 - 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, one half thickness of existing A.C., (1 inch minimum 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 agency's Engineer.
5. Existing A.C. pavement will not require sawcutting when using rockwheel for excavation.

Revision	By	Approved	Date
Note 3a	NL	RLM	1/97

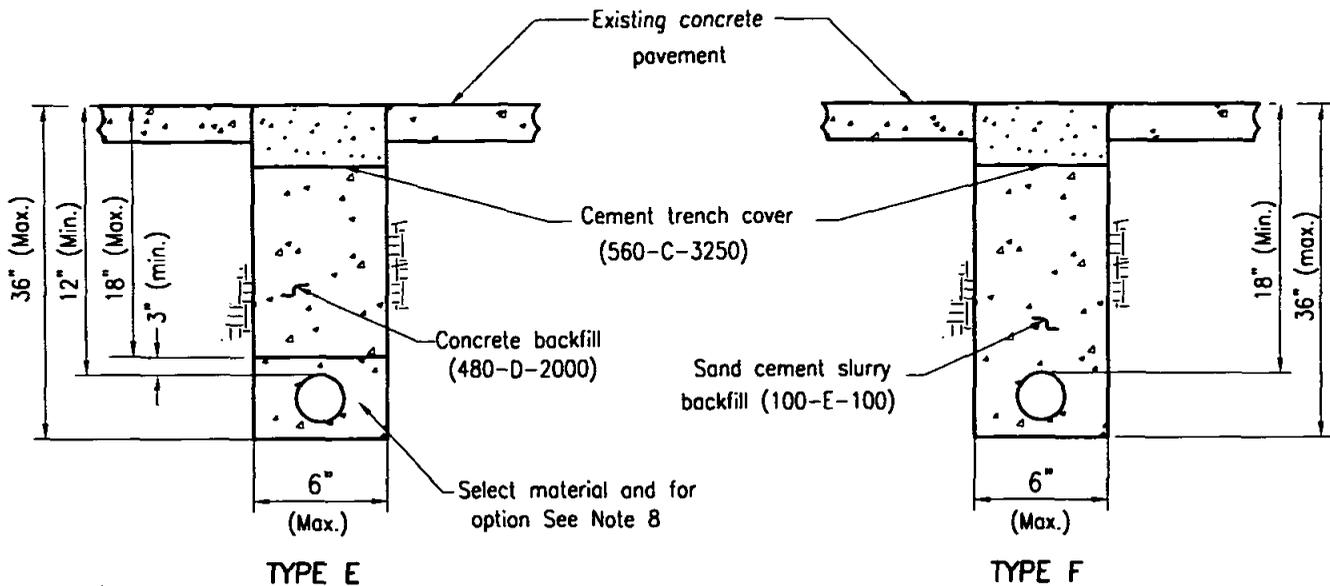
SAN DIEGO REGIONAL STANDARD DRAWING

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

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-34**



NOTES

1. Concrete slurry backfill shall have a maximum slump of 4 inches.
2. 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 5 1/2 inches thick in alley or local residential streets and 7 inches thick in all other streets.
5. Existing concrete pavement will 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 (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
ORIGINAL		Bahmanian	4/86

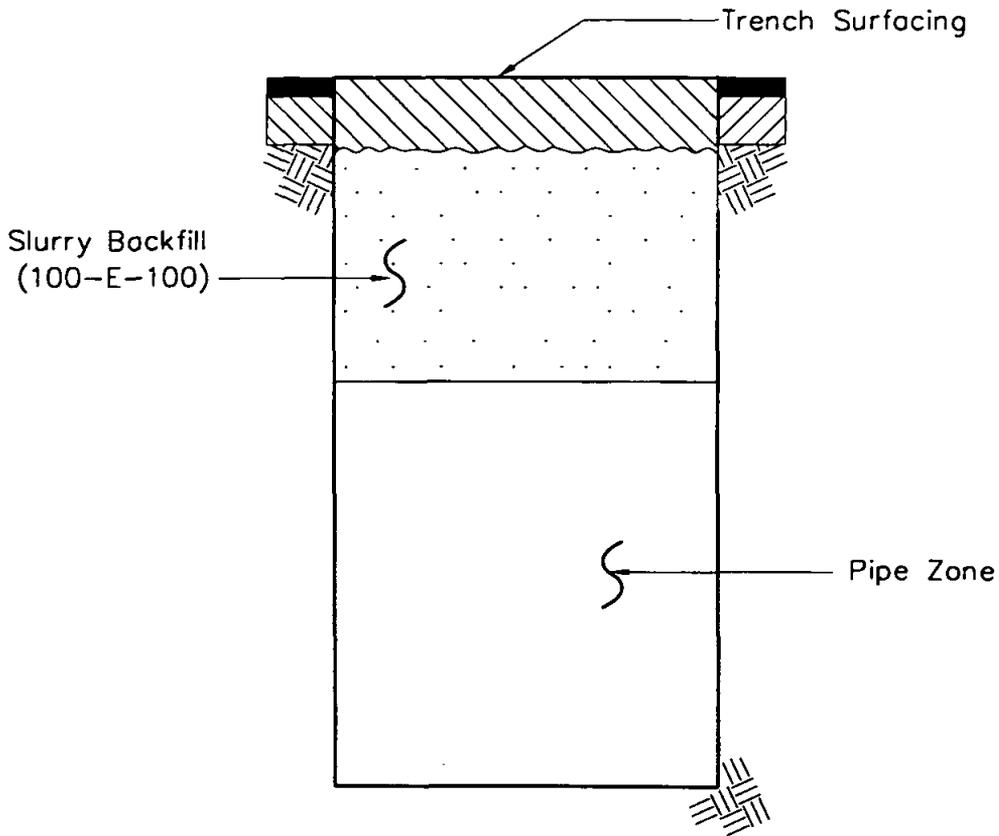
SAN DIEGO REGIONAL STANDARD DRAWING

**NARROW TRENCHING TYPES E & F
BACKFILL & RESURFACING**

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

M. J. Steaton 3/23/00
Chairperson R.C.E. 19246 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 shall not be used where it will impede subsurface drainage.

Revision	By	Approved	Date
ORIGINAL		Parkinson	9/88

SAN DIEGO REGIONAL STANDARD DRAWING

SLURRY BACKFILL

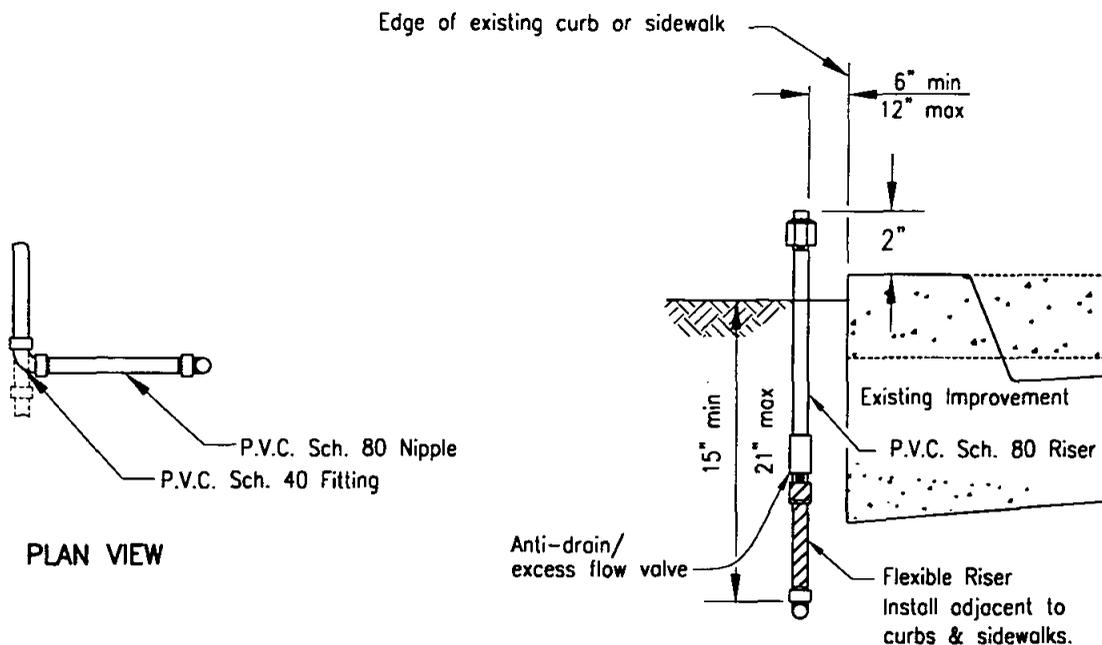
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

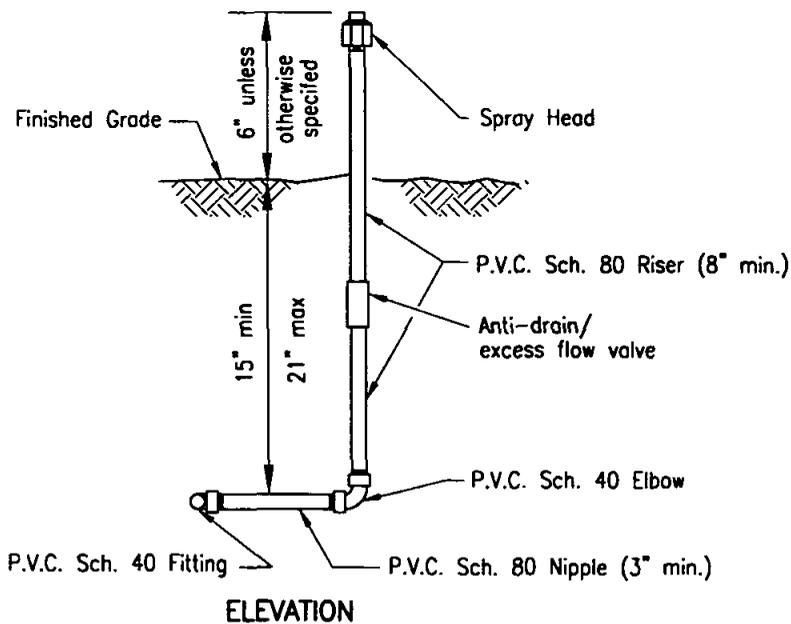
DRAWING NUMBER **G-36**

SPRINKLER IRRIGATION SYSTEMS

SPRINKLER IRRIGATION SYSTEMS



LOCATION OF SPRINKLER HEADS ADJACENT TO EXISTING IMPROVEMENTS



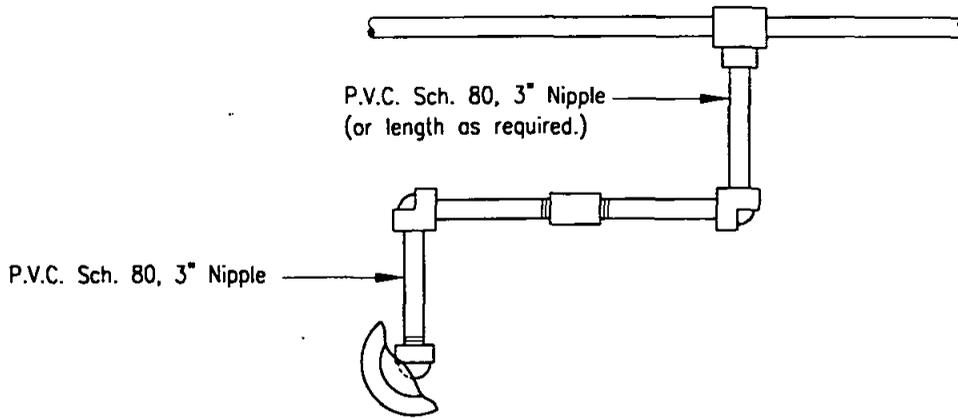
NOTES

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

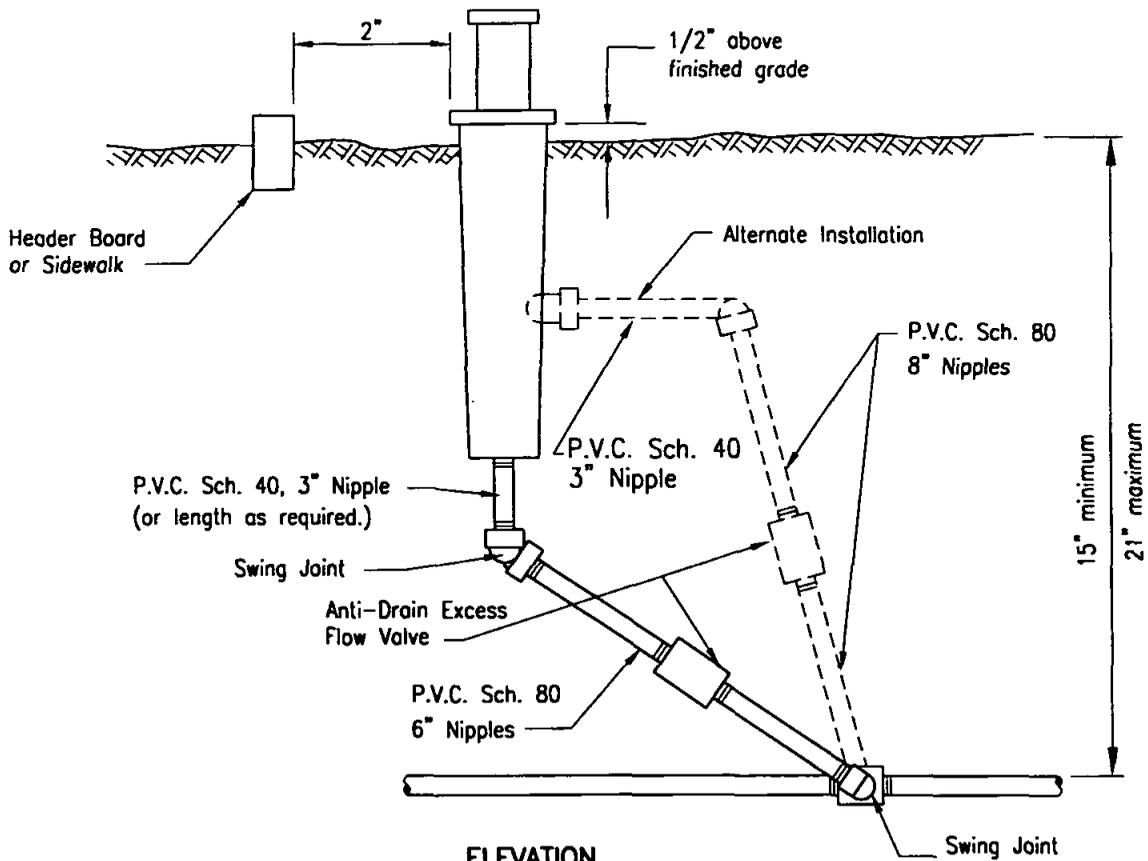
LEGEND ON PLANS

Show a number to indicate type head

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75			SHRUBBERY SPRINKLER HEAD FIXED SPRAY TYPE
				DRAWING NUMBER I-1		



PLAN



ELEVATION

NOTES

1. All fittings shall be P.V.C. Schedule 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 Valves 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
ORIGINAL		Kercheval	12/75

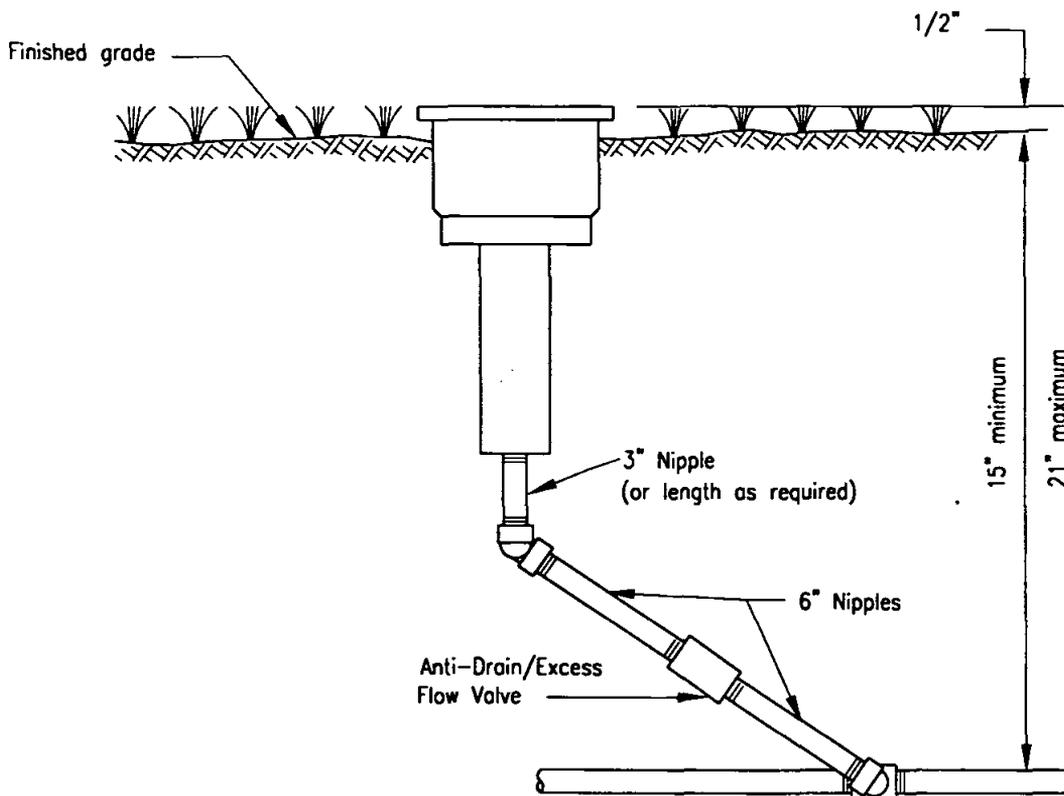
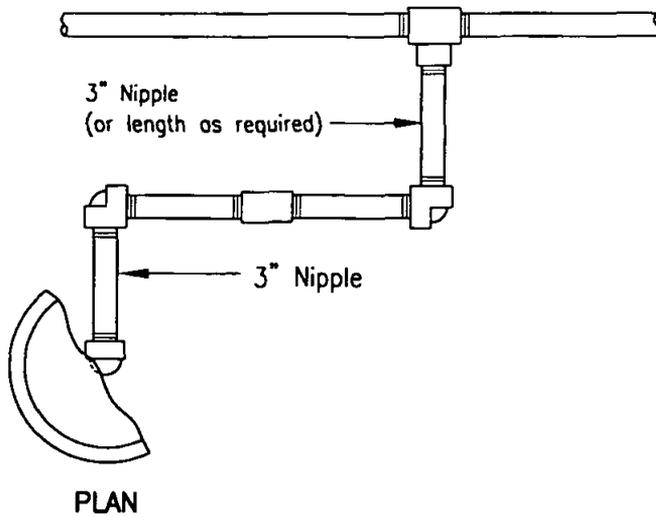
SAN DIEGO REGIONAL STANDARD DRAWING

SPRINKLER HEAD
POP UP SPRAY TYPE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER 1-2



NOTES

1. All fittings shall be P.V.C. Schedule 40.
2. All nipples shall be P.V.C. Schedule 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 Valves 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
ORIGINAL		Kercheval	12/75

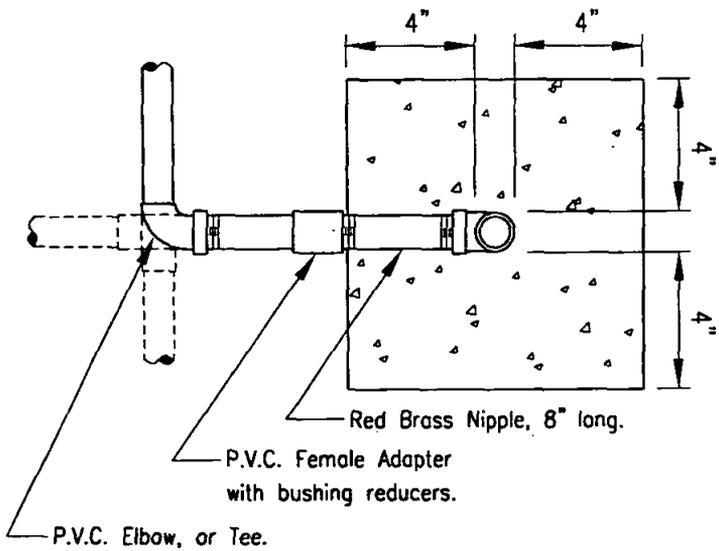
SAN DIEGO REGIONAL STANDARD DRAWING

**LAWN SPRINKLER HEAD
POP UP ROTARY (WITH SWING JOINT)**

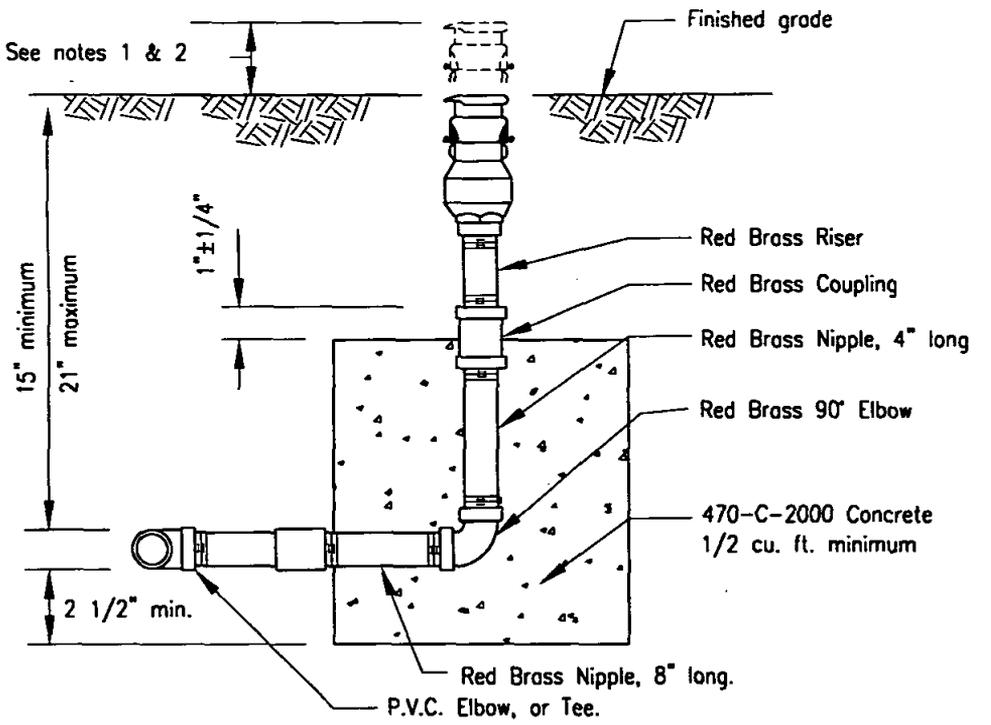
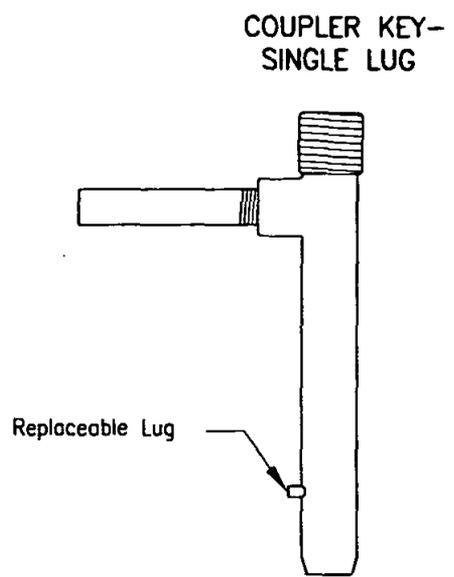
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/60
Chairperson R.C.E. 19246 Date

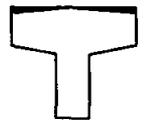
DRAWING NUMBER **1-3**



PLAN



ELEVATION



KEY FOR LOCK TOP

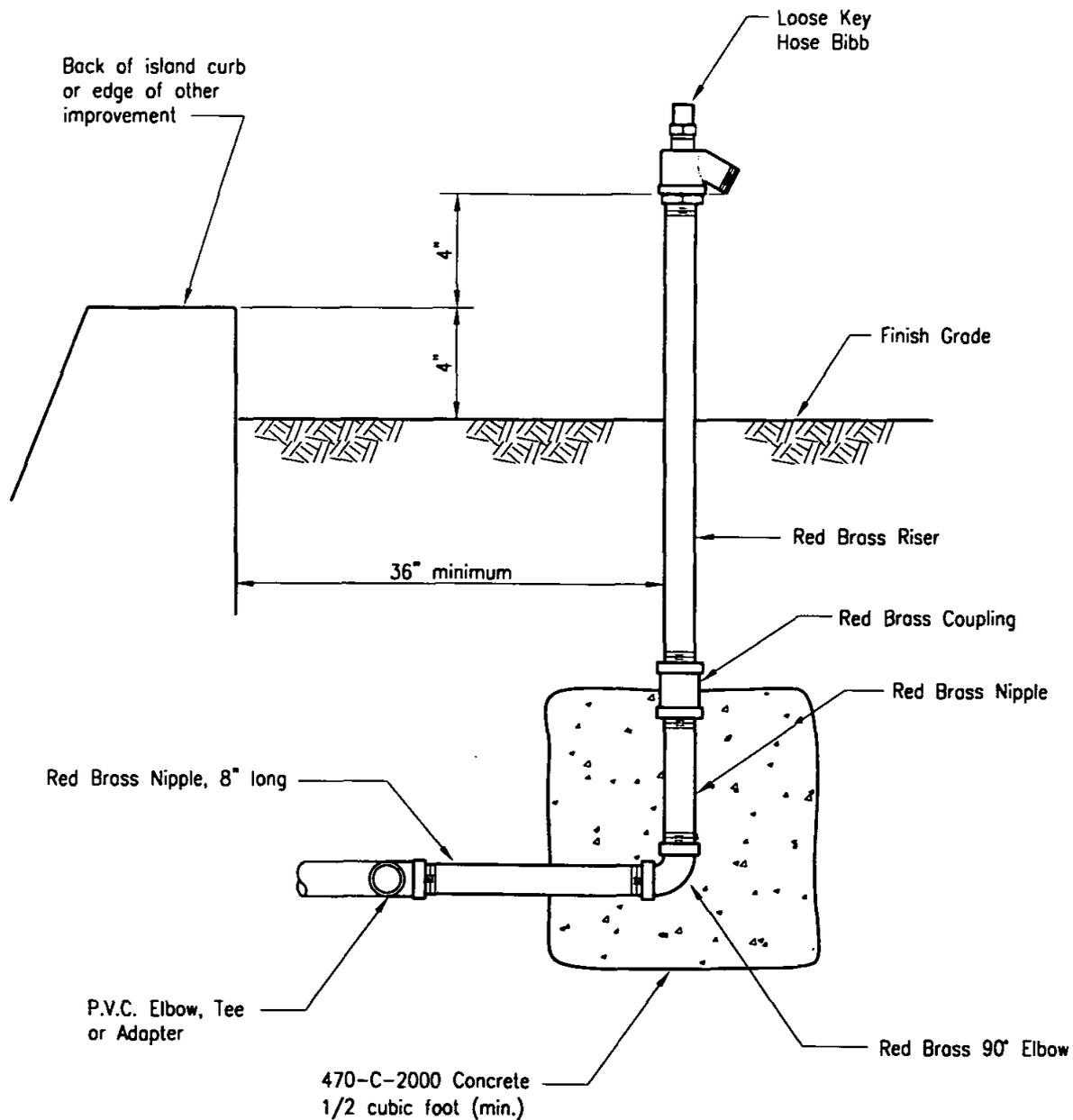
NOTES

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.

LEGEND ON PLANS

QCV

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
QUICK COUPLING VALVE				3/23/60 Chairperson R.C.E. 19246 Date	
				DRAWING NUMBER 1-5	



NOTES

1. 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.
2. 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 be riser.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

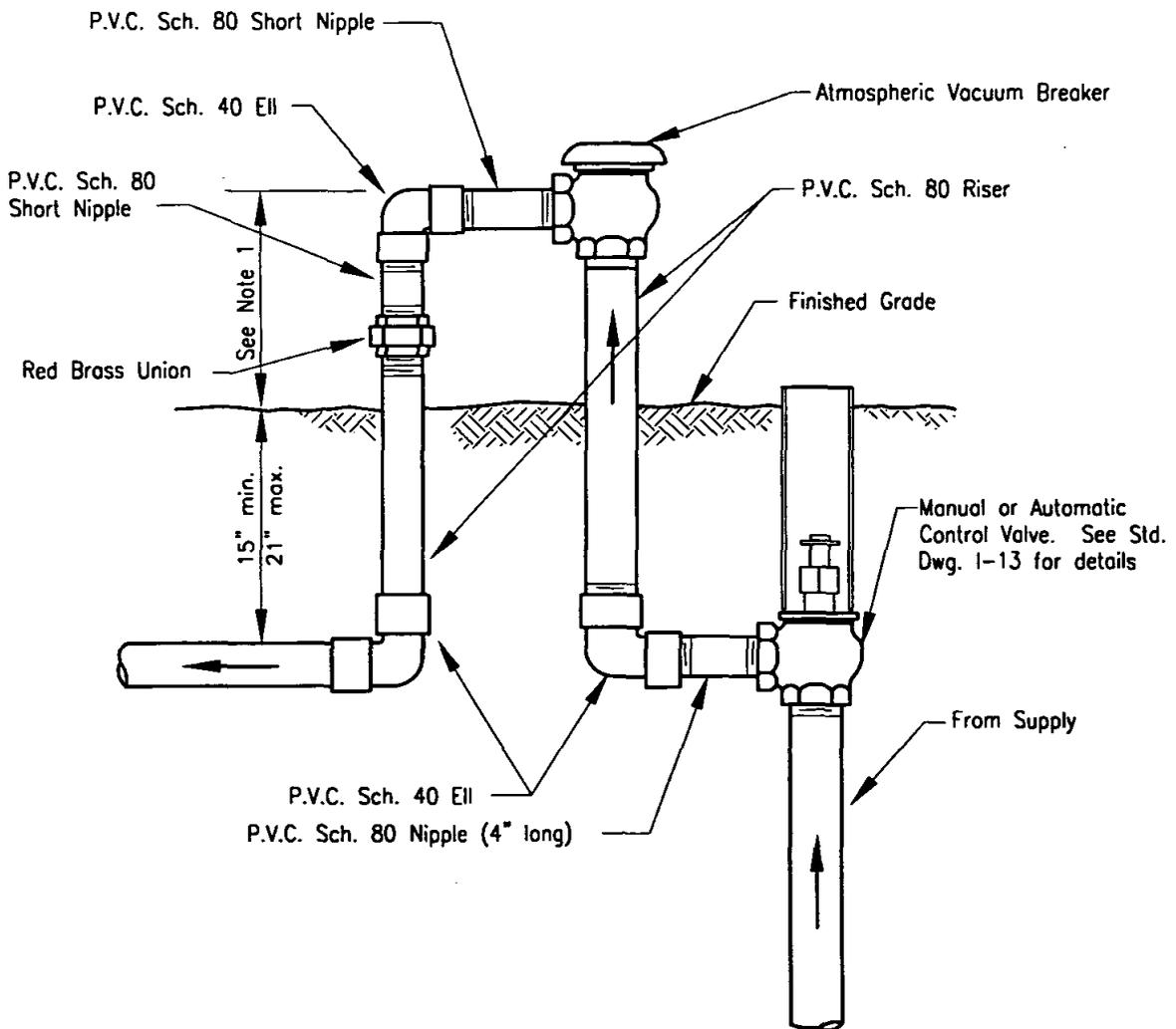
SAN DIEGO REGIONAL STANDARD DRAWING

**HOSE BIBB
(GARDEN VALVE)**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-6**



NOTES

1. Atmospheric vacuum breakers shall be installed approximately 6" above 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 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
ORIGINAL		Kercheval	12/75

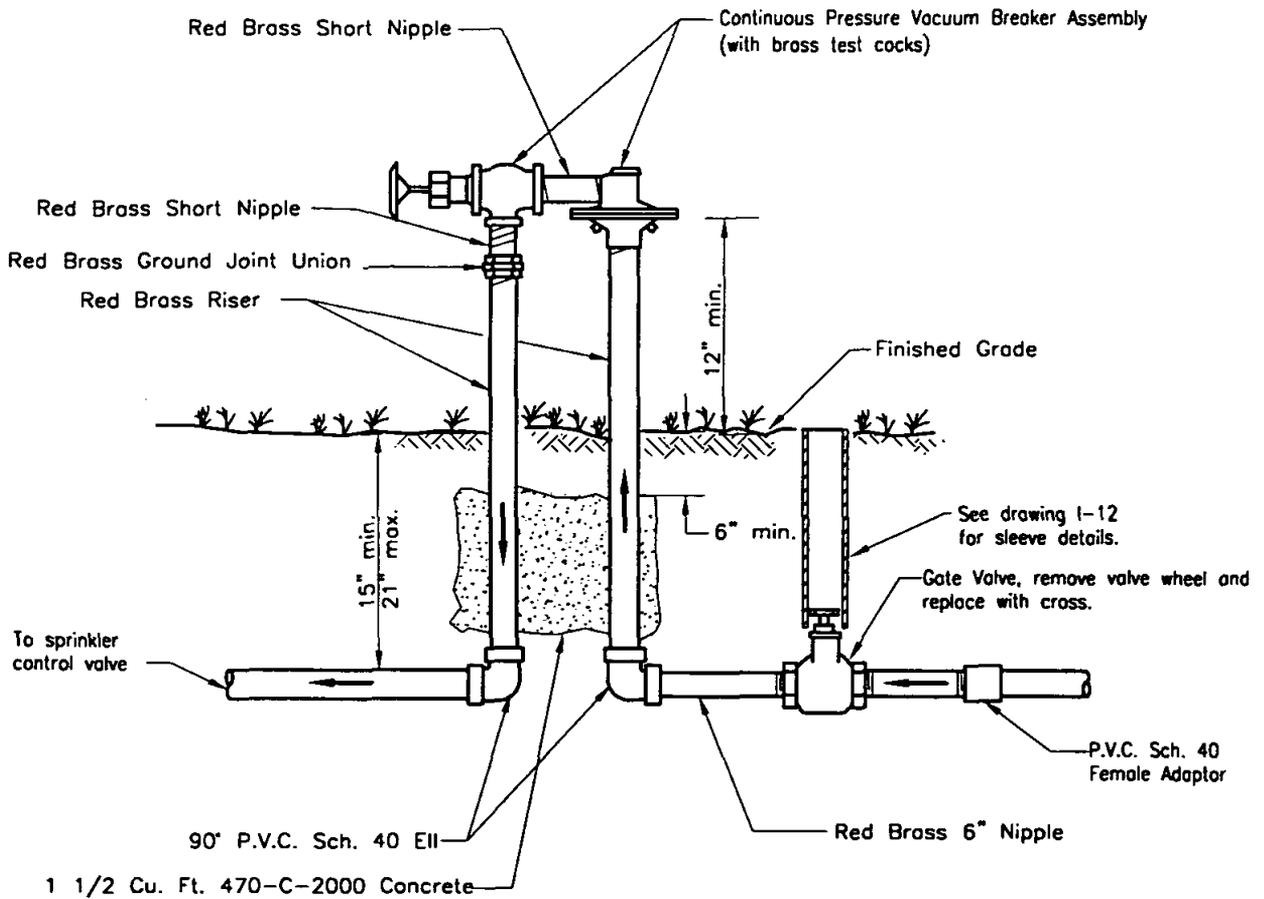
SAN DIEGO REGIONAL STANDARD DRAWING

**BACKFLOW PREVENTER
ATMOSPHERIC VACUUM BREAKER
(2" & SMALLER)**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **1-7**



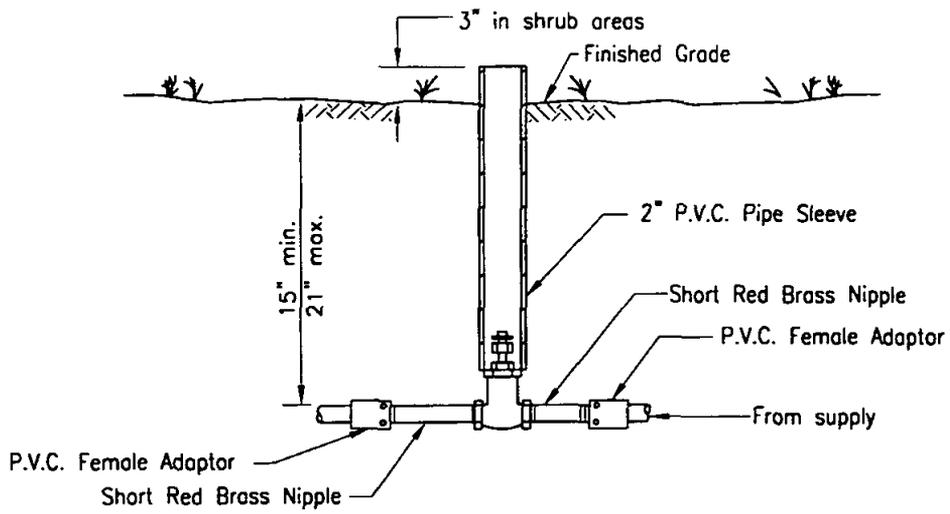
NOTES

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.

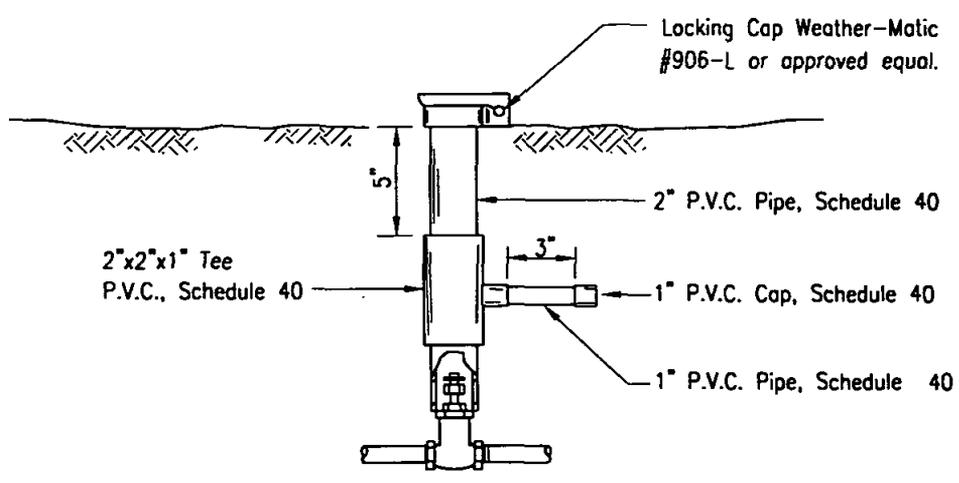
LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		BACKFLOW PREVENTER-CONTINUOUS PRESSURE VACUUM BREAKER ASSEMBLY (2" & SMALLER)
				DRAWING NUMBER	
				1-8	



STANDARD INSTALLATION



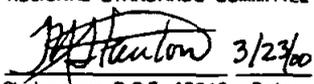
ALTERNATE PIPE SLEEVE INSTALLATION

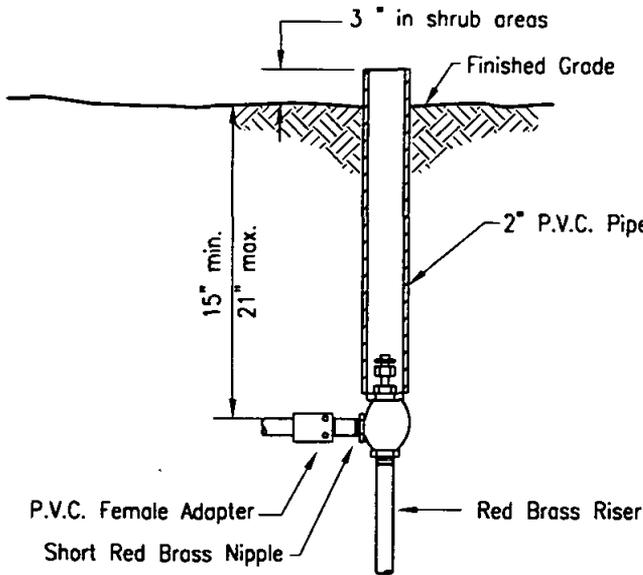
NOTES

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.

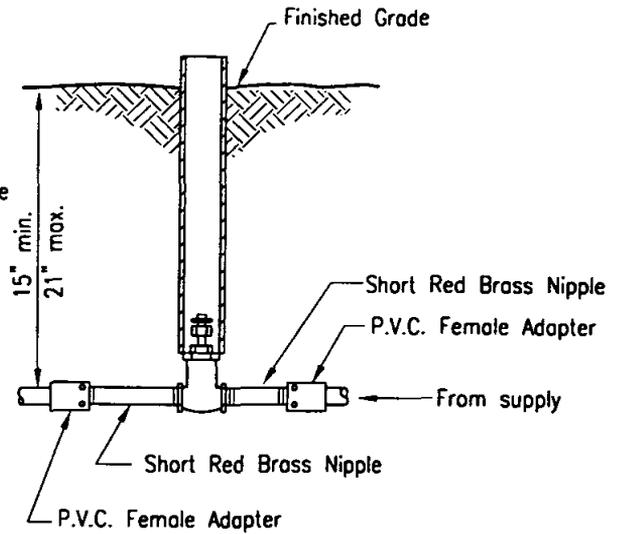
LEGEND ON PLANS



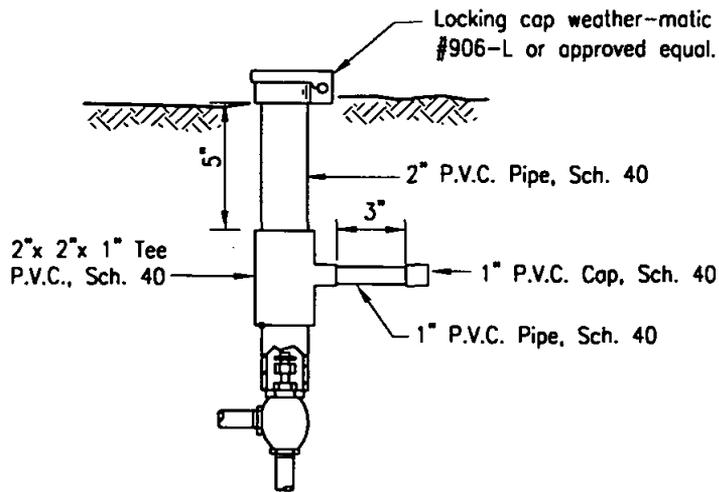
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
GATE VALVE (2" AND SMALLER)				 3/23/60 Chairperson R.C.E. 19246 Date	
				DRAWING NUMBER 1-12	



ANGLE VALVE



GLOBE VALVE
(special case 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 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



MCV

Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75

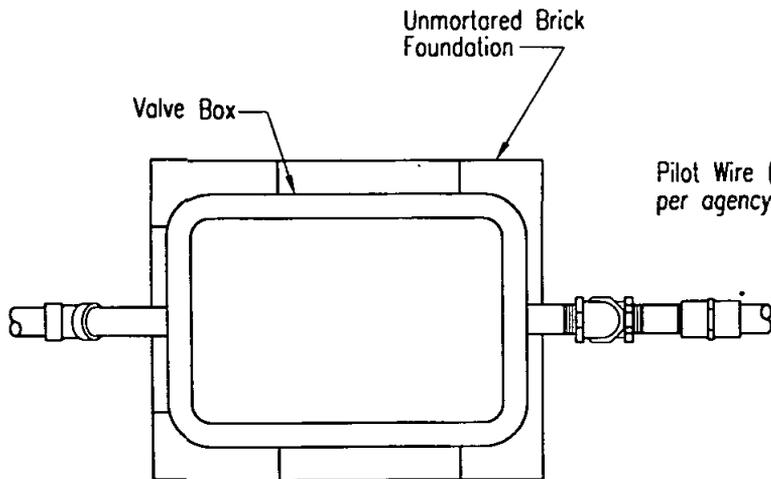
SAN DIEGO REGIONAL STANDARD DRAWING

MANUAL VALVES

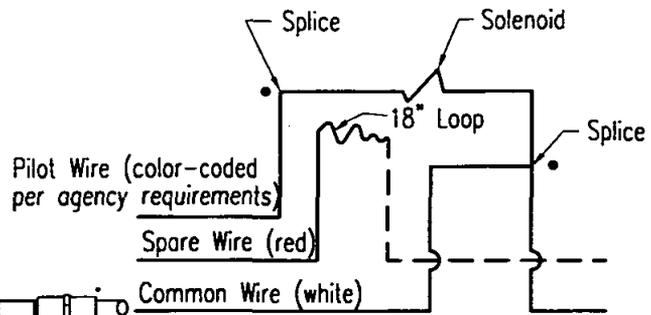
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

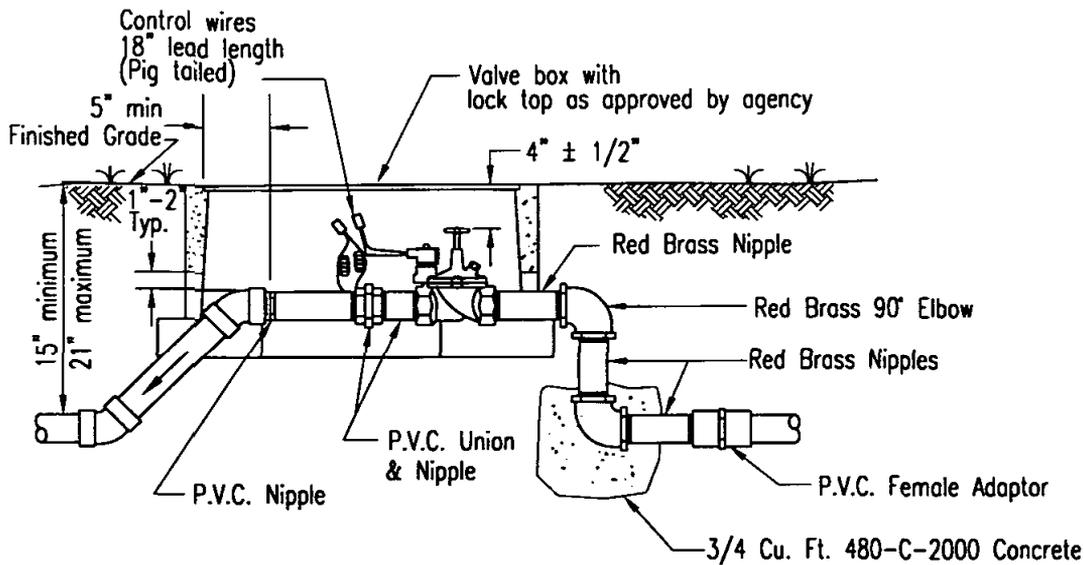
DRAWING NUMBER I-13



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 100% acrylic epoxy water proof paint. (White or yellow paint, unless otherwise specified by Agency.)
7. Clearance between piping and valve box shall be 1" to 2" typical.
8. Install only one valve per box.

LEGEND ON PLANS

▼ R.C.V

Revision	By	Approved	Date
ORIGINAL		R.Munoz	3/97

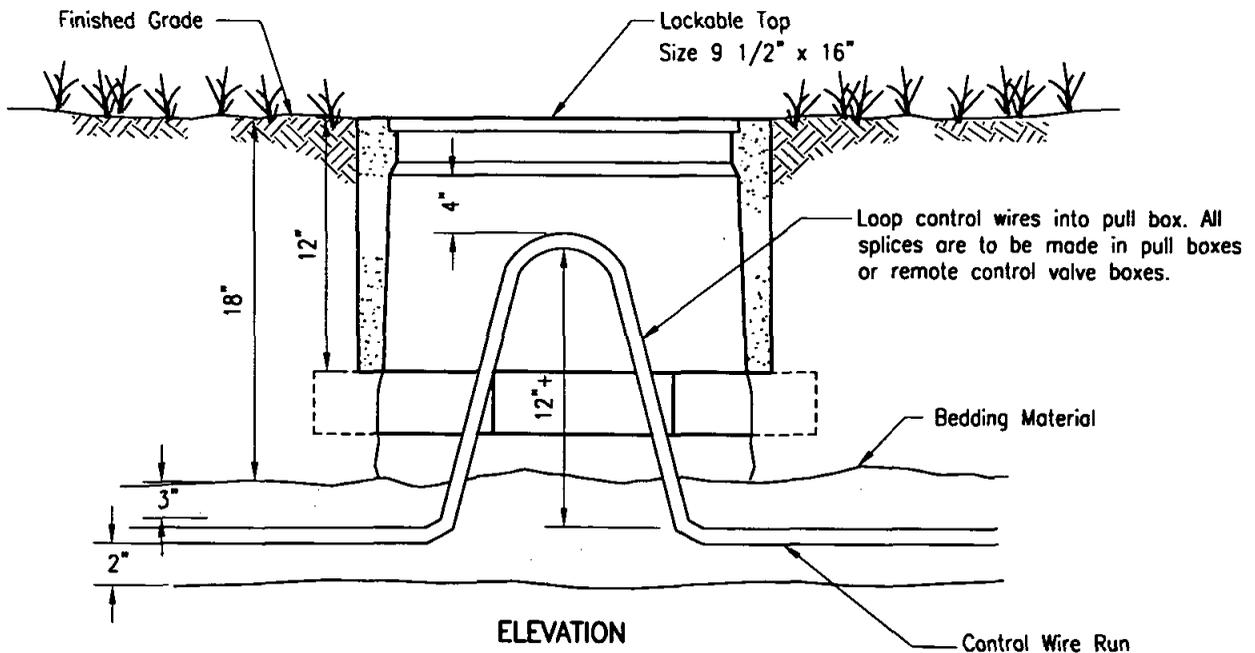
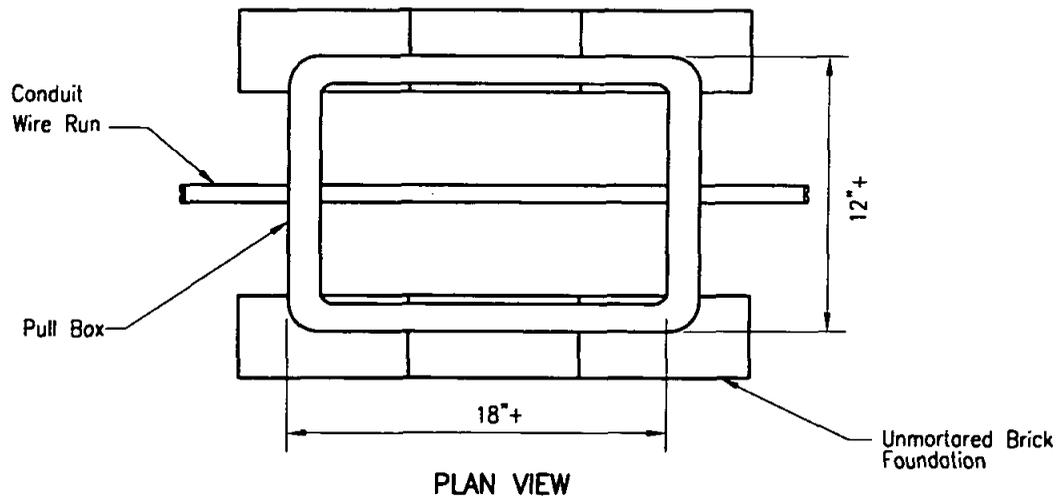
SAN DIEGO REGIONAL STANDARD DRAWING

REMOTE CONTROL VALVE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Munoz 3/27/00
Chairperson R.C.E. 19246 Date

**DRAWING
NUMBER 1-14**



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 required.

LEGEND ON PLANS



P.B.

Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75

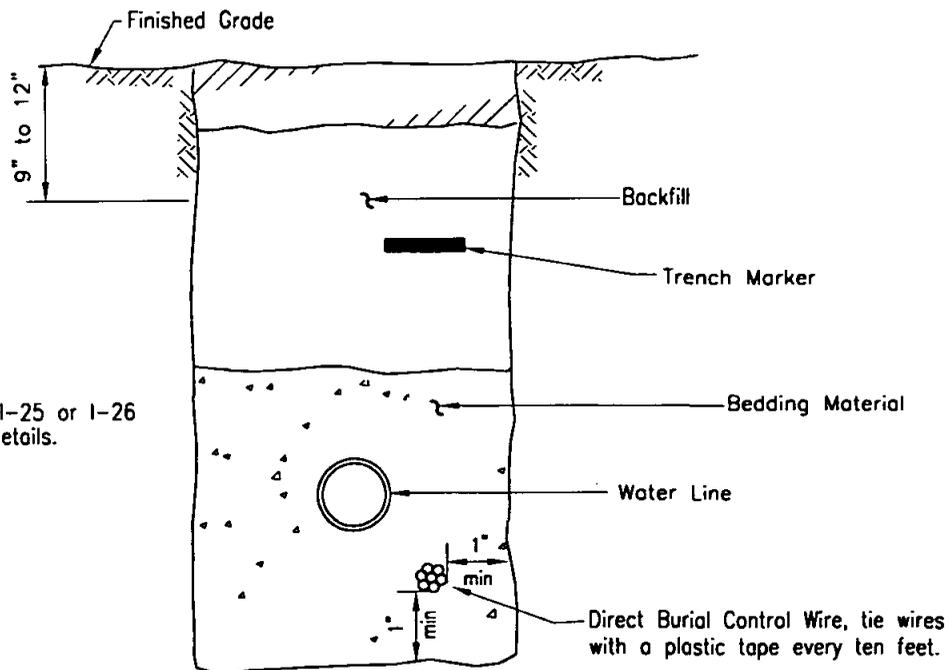
SAN DIEGO REGIONAL STANDARD DRAWING

**ELECTRICAL PULL BOX
FOR DIRECT BURIAL CONTROL WIRES
AND SPICE DETAILS**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

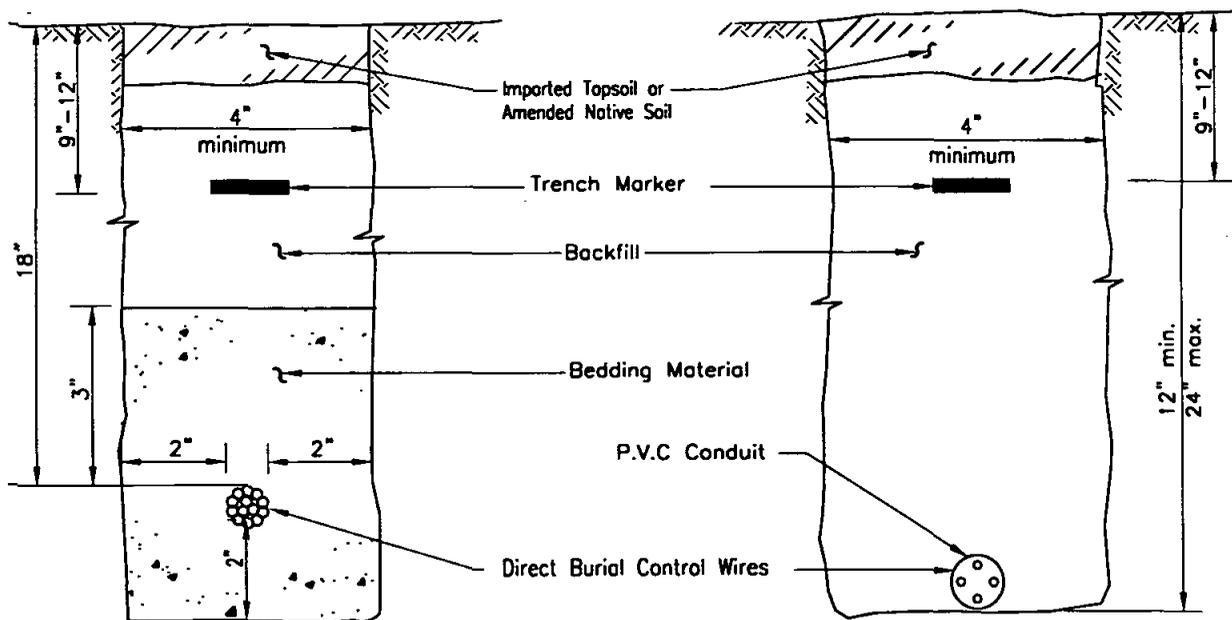
DRAWING NUMBER **I-15**



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.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

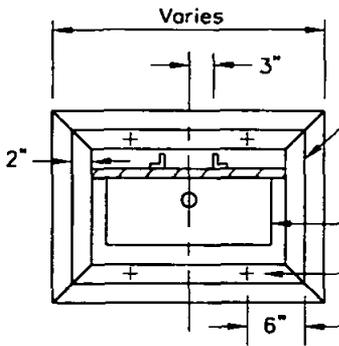
SAN DIEGO REGIONAL STANDARD DRAWING

DIRECT BURIAL CONTROL WIRE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-16**

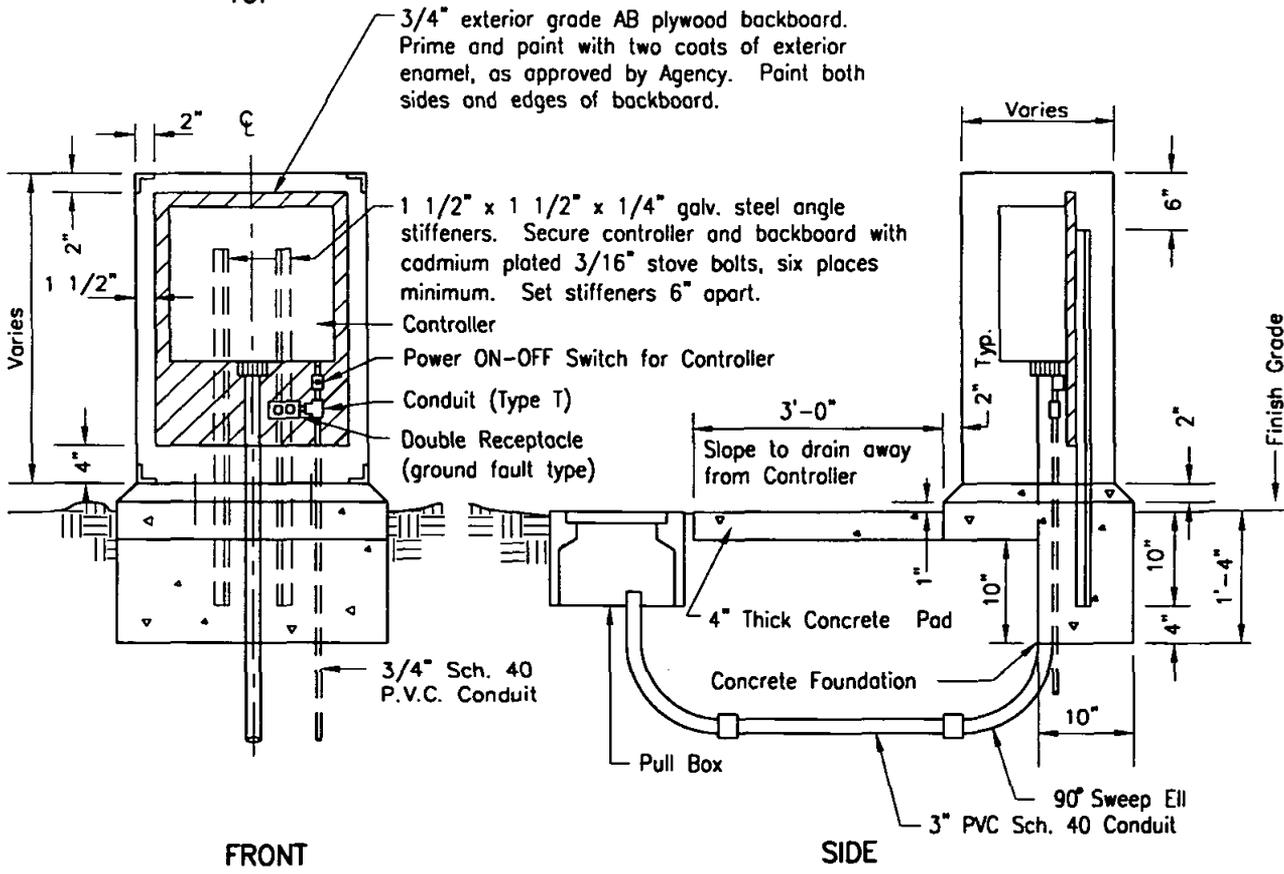


Steel enclosure as approved by Agency. Enclosure shall be painted inside and out with zinc rich primer coat and two finish coats of exterior enamel, as approved by Agency.

Controller

Anchor bolts, 1/2" dia., 4" long, cadmium plated, hook length 1" (4 places).

ξ
TOP



3/4" exterior grade AB plywood backboard. Prime and paint with two coats of exterior enamel, as approved by Agency. Paint both sides and edges of backboard.

1 1/2" x 1 1/2" x 1/4" galv. steel angle stiffeners. Secure controller and backboard with cadmium plated 3/16" stove bolts, six places minimum. Set stiffeners 6" apart.

Controller

Power ON-OFF Switch for Controller

Conduit (Type T)

Double Receptacle (ground fault type)

3/4" Sch. 40 P.V.C. Conduit

3'-0" Slope to drain away from Controller

4" Thick Concrete Pad

Concrete Foundation

Pull Box

3" PVC Sch. 40 Conduit

90° Sweep Ell

Finish Grade

FRONT

SIDE

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 receptable (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
ORIGINAL		Parkinson	5/92

SAN DIEGO REGIONAL STANDARD DRAWING

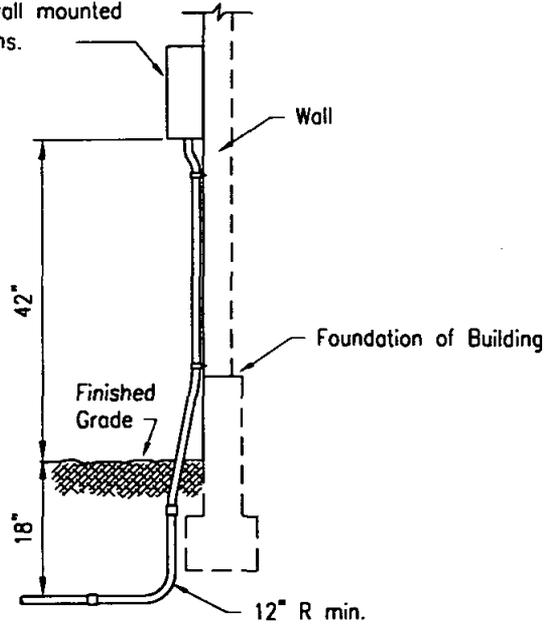
**IRRIGATION SYSTEMS
ELECTRIC CONTROLLER CLOCK
PEDESTAL MOUNTING**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/00
Chairperson R.C.E. 19246 Date

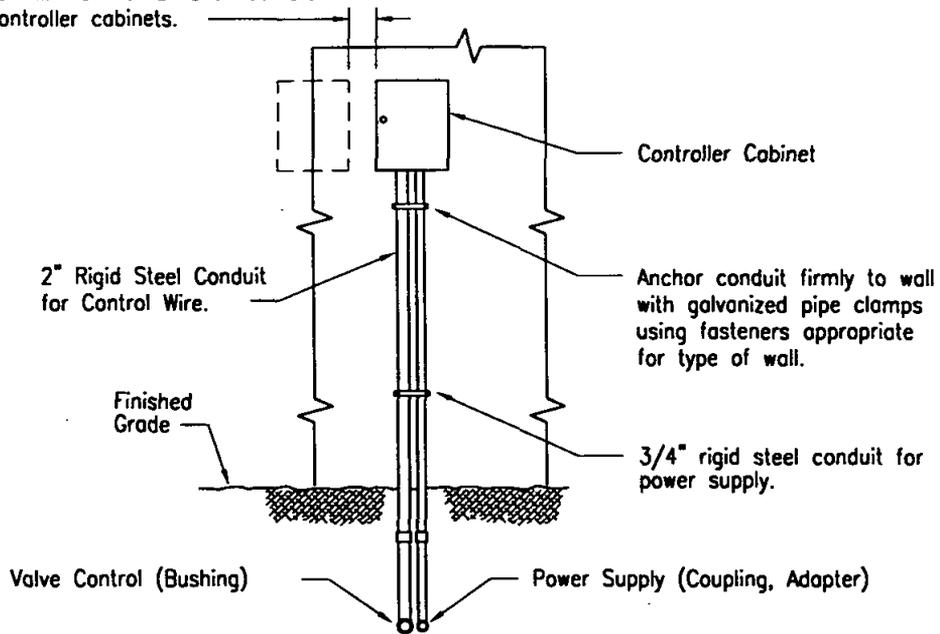
DRAWING NUMBER **1-17**

Automatic Controller clock in a weatherproof, tamperproof, lockable case: wall mounted per manufacturer's specifications.



SIDE VIEW

Where two or more controllers are mounted together, a minimum of 3" shall be left between controller cabinets.



ELEVATION

NOTES

1. For location of supply conduit and conductor, refer to the plans.
2. Controller shall be grounded to 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



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

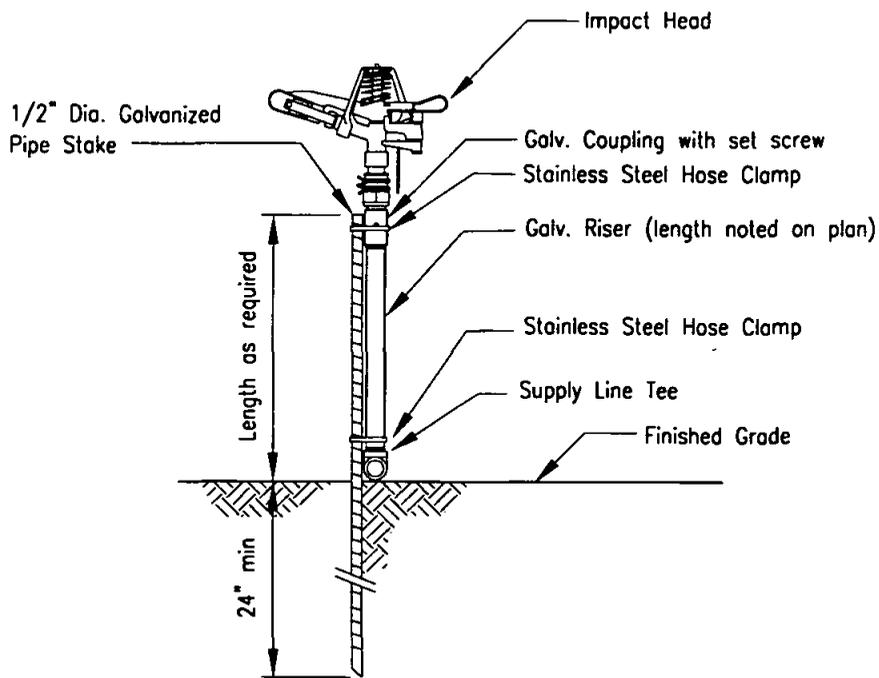
SAN DIEGO REGIONAL STANDARD DRAWING

**IRRIGATION SYSTEMS
ELECTRIC CONTROLLER CLOCK
WALL MOUNTING**

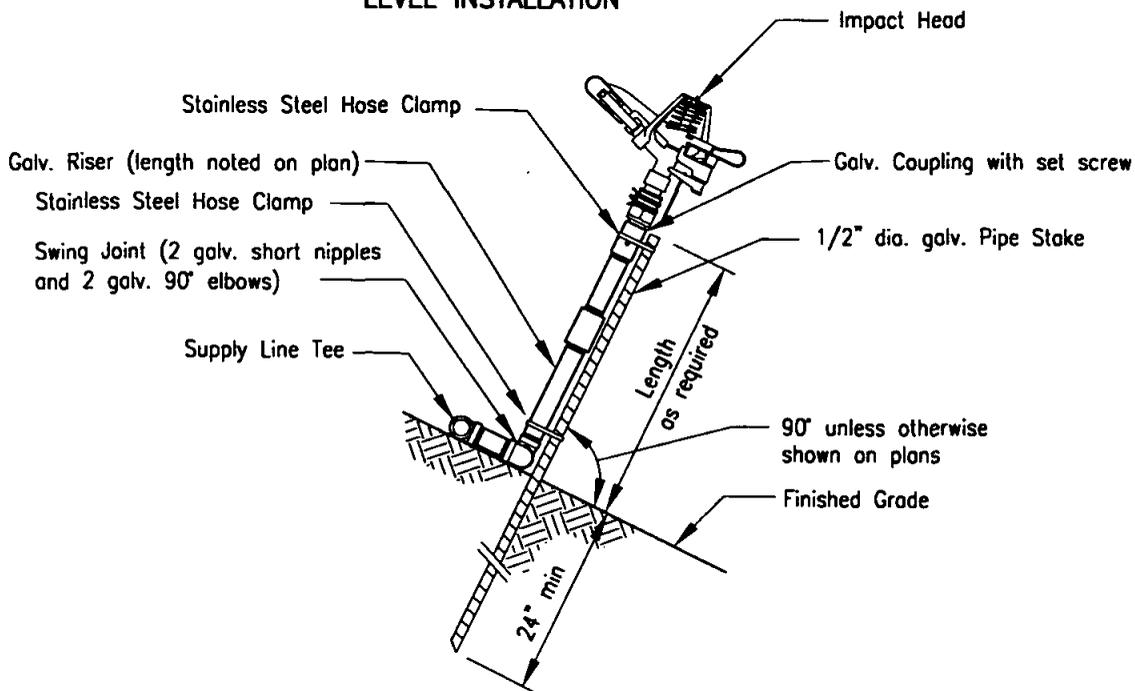
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Steaton 3/23/80
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-18**



LEVEL INSTALLATION



SLOPE INSTALLATION

LEGEND ON PLANS

Show a number to indicate type head 

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

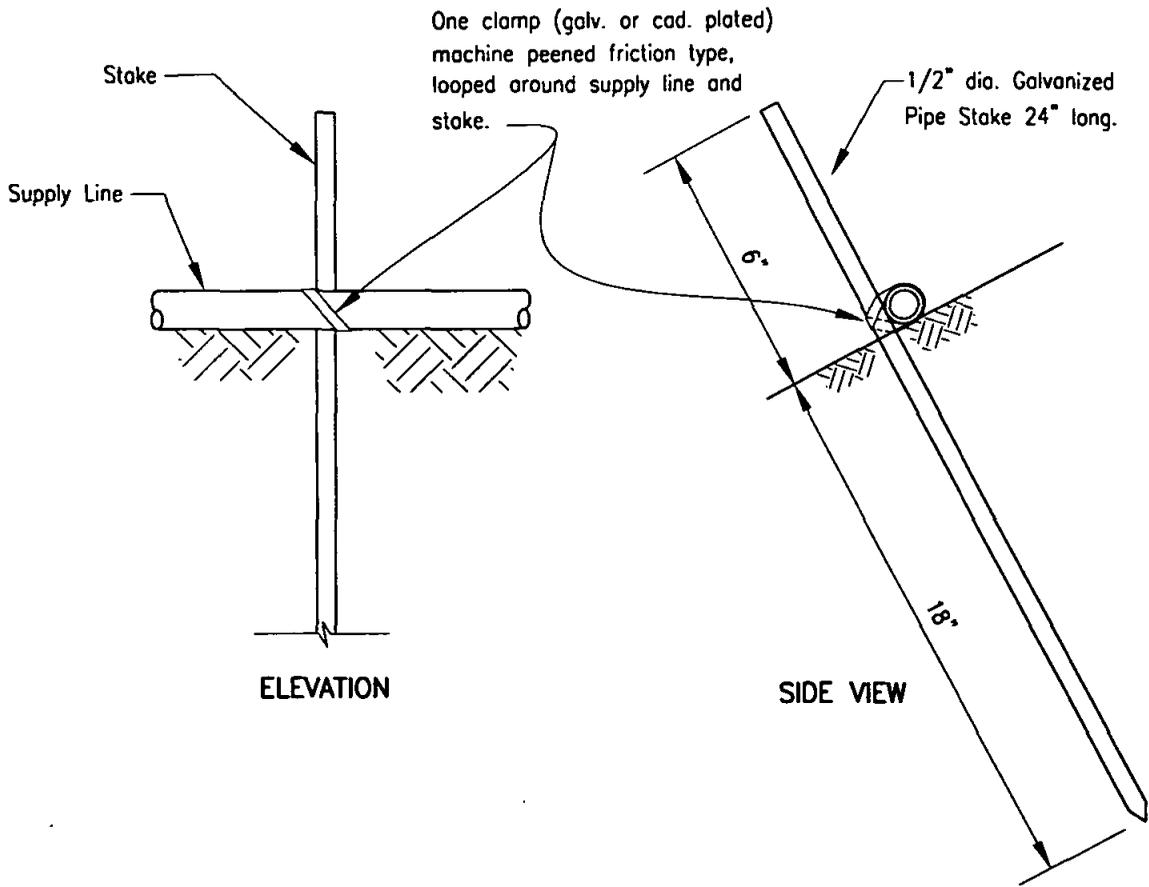
SAN DIEGO REGIONAL STANDARD DRAWING

**IMPACT HEAD
ABOVE GROUND PIPE INSTALLATIONS**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Steaton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-19**



NOTE

Stakes shall be placed no greater than 15 feet apart and at each riser.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

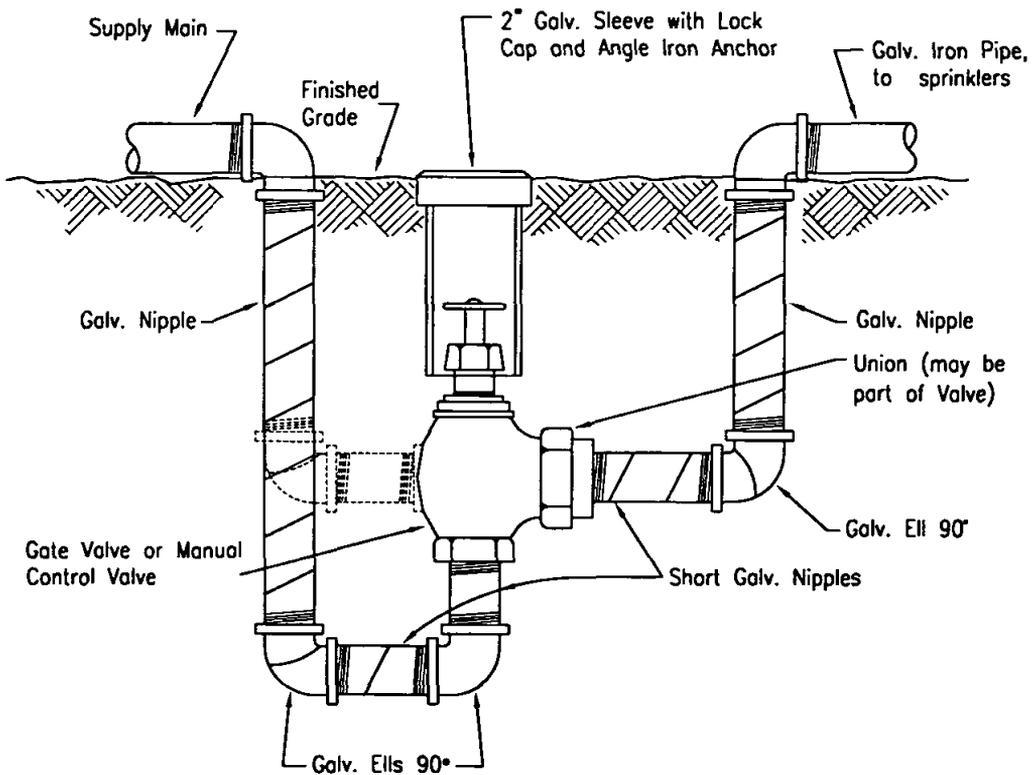
SAN DIEGO REGIONAL STANDARD DRAWING

**PINNING OF PIPE
ABOVE GROUND PIPE INSTALLATIONS**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

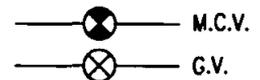
DRAWING NUMBER **1-20**



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
ORIGINAL		Kercheval	12/75

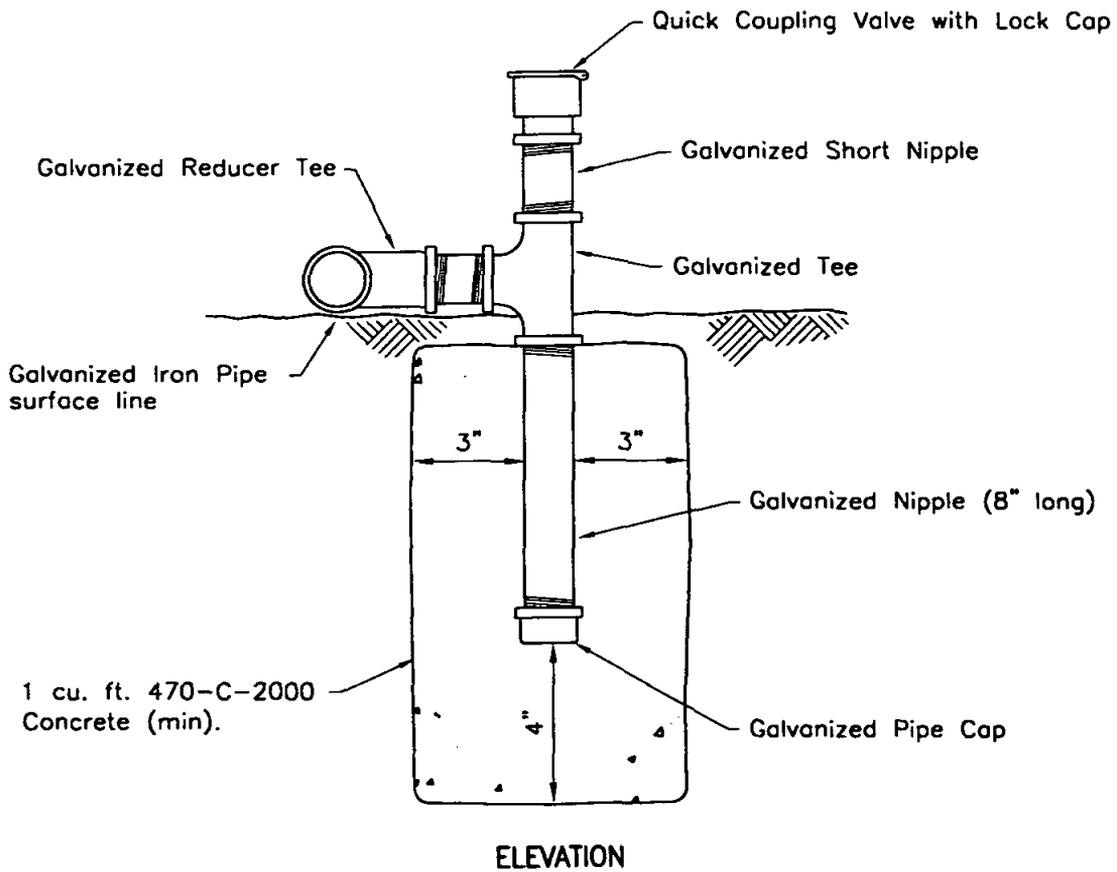
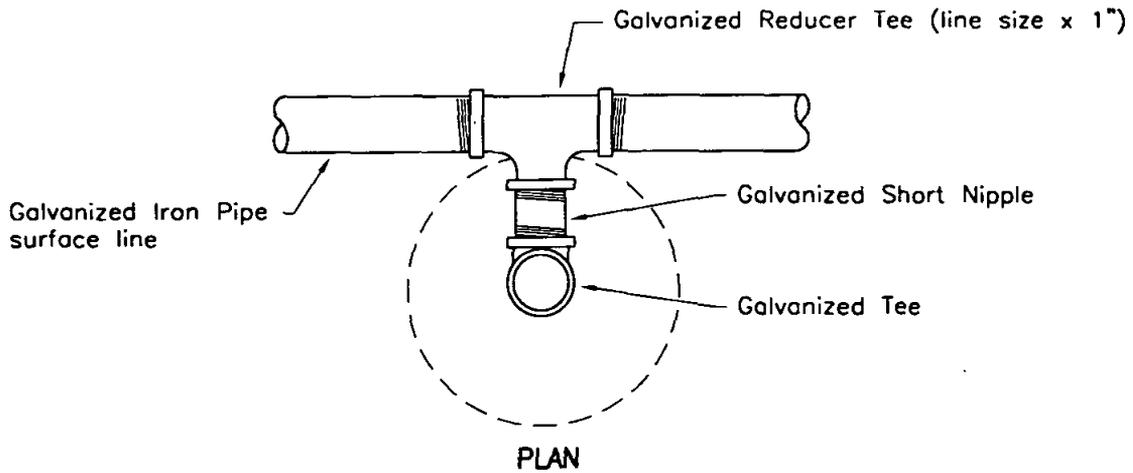
SAN DIEGO REGIONAL STANDARD DRAWING

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

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Steaton 3/23/00
Chairperson R.C.E. 19246 Date

**DRAWING
NUMBER 1-21**



LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

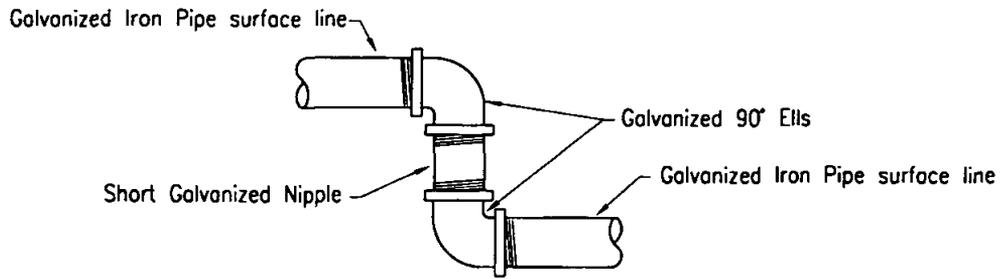
SAN DIEGO REGIONAL STANDARD DRAWING

**QUICK COUPLER ASSEMBLY
ABOVE GROUND PIPE INSTALLATIONS**

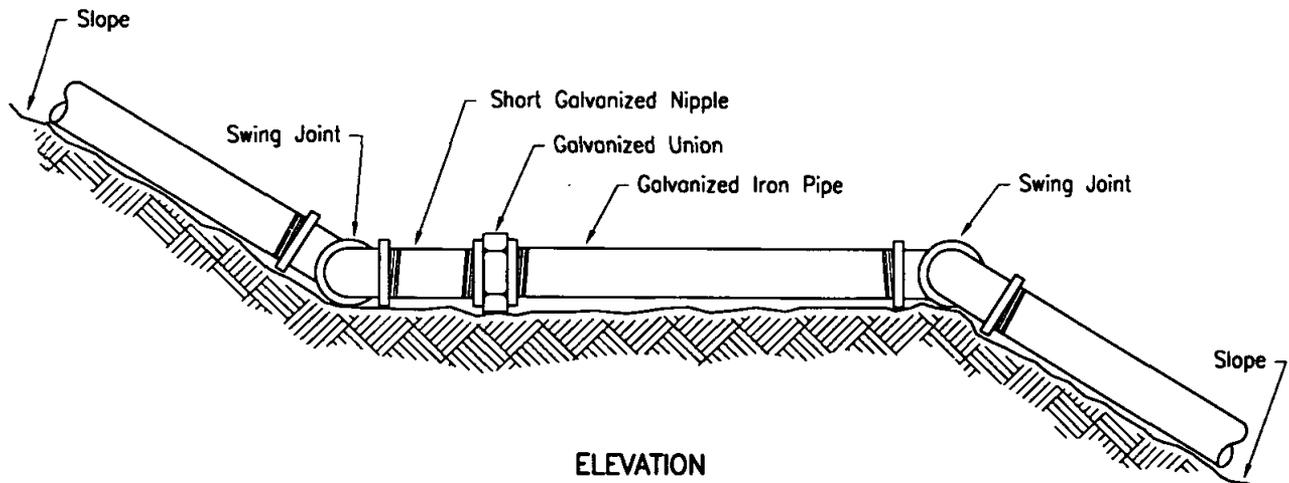
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Steinton 3/23/80
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **1-22**



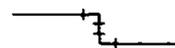
SWING JOINT DETAIL
PLAN



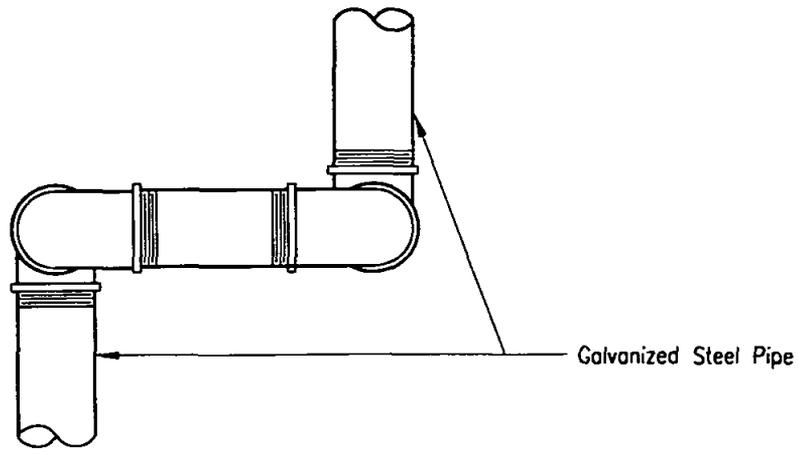
ELEVATION

NOTE
Swing Joints shall be used at each change of grade.

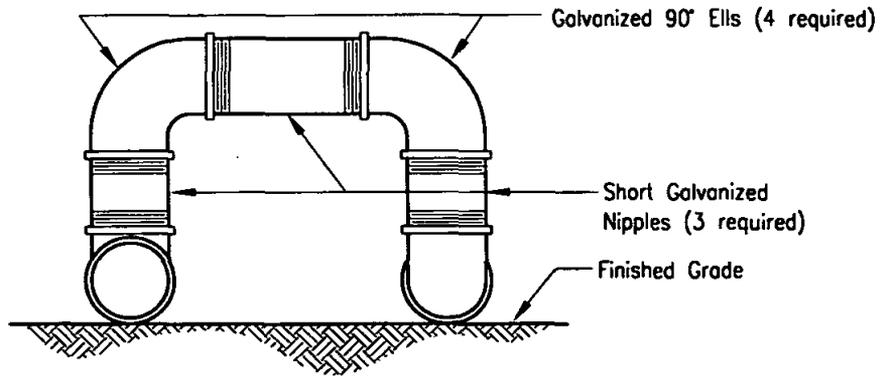
LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
				DRAWING NUMBER	1-23



PLAN

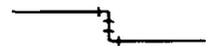


ELEVATION

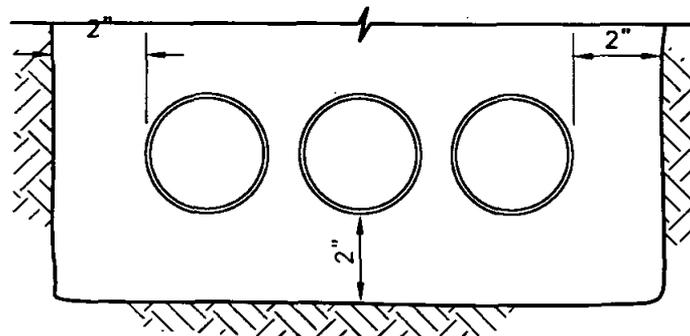
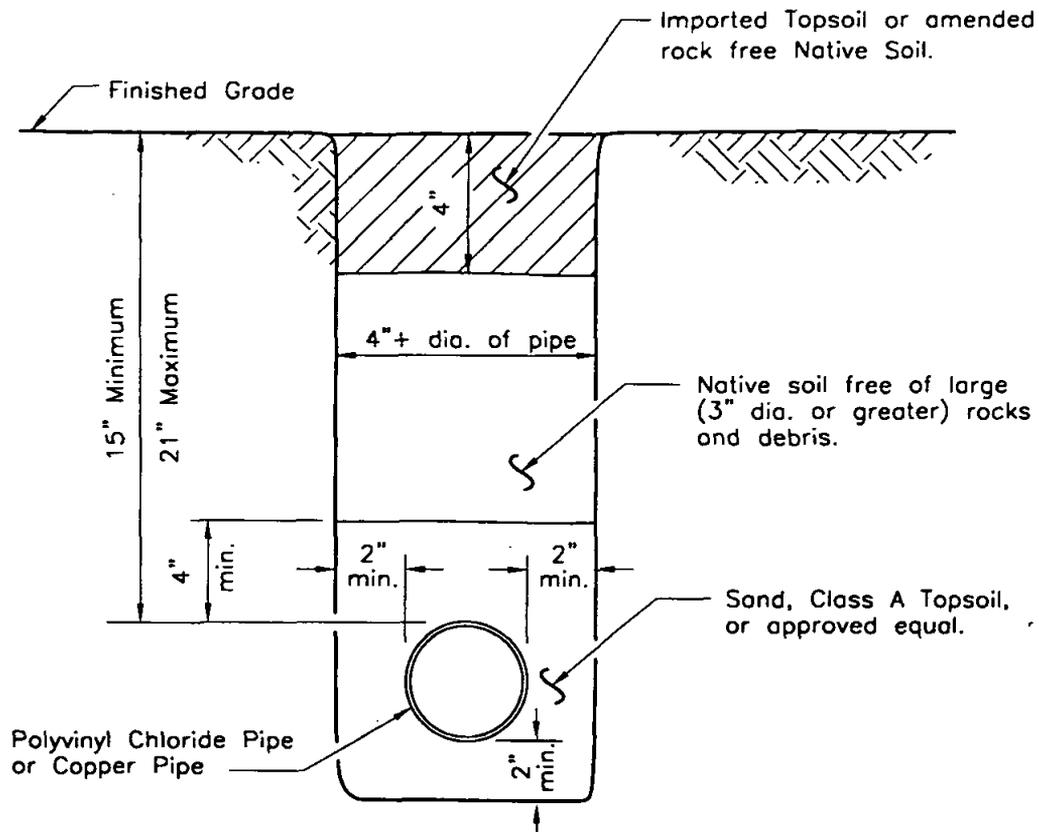
NOTES

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



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75			DOUBLE SWING JOINT ABOVE GROUND PIPE INSTALLATIONS
				DRAWING NUMBER	1-24	



Details not shown are same as above.

MULTIPLE PIPE INSTALLATION DETAIL

(non-pressure pipe only, see Note 6 for pressure pipe)

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, 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 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
ORIGINAL		Parkinson	02/95

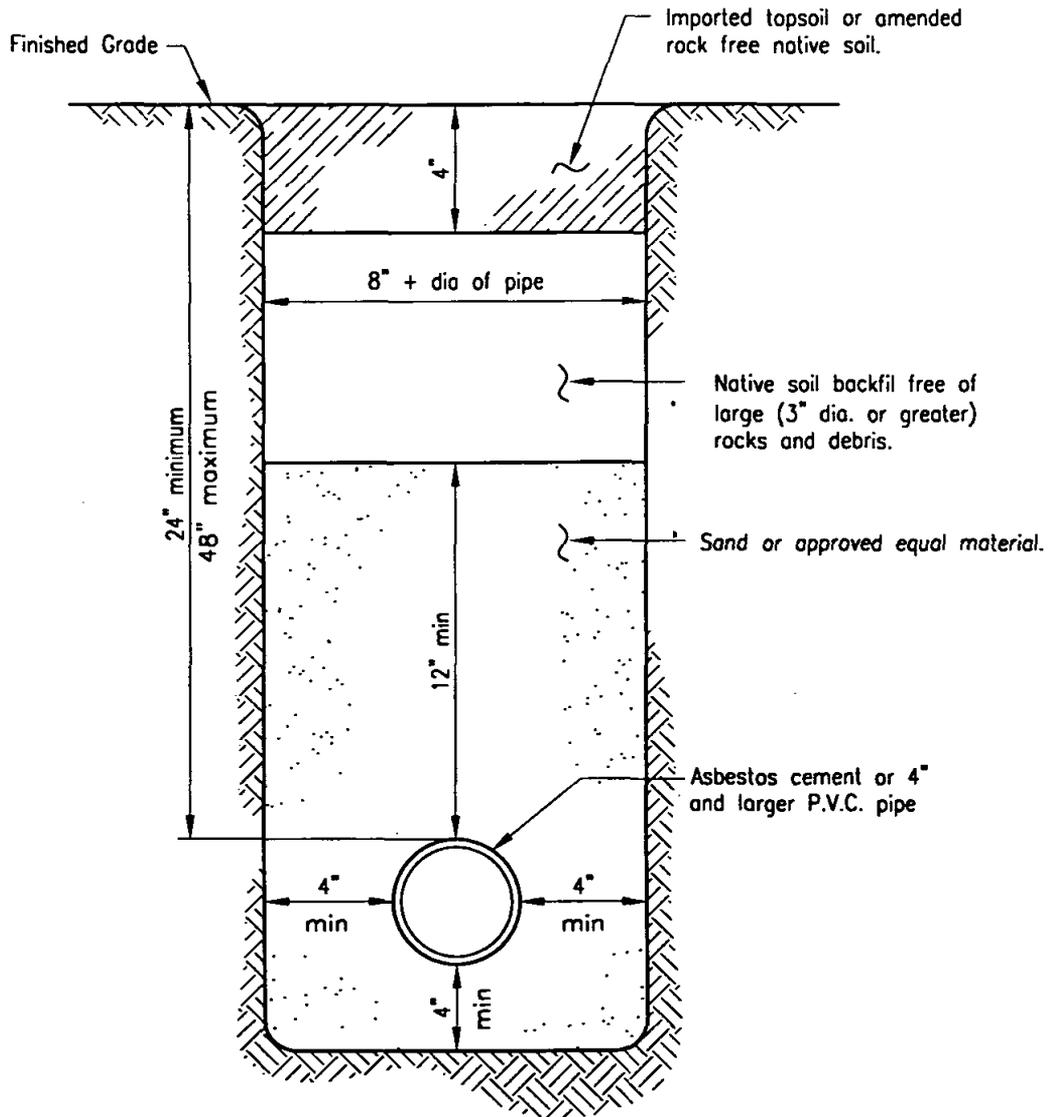
SAN DIEGO REGIONAL STANDARD DRAWING

**TRENCH DETAIL P.V.C. AND/OR
COPPER PIPE (3" AND SMALLER)**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/00
Chairperson R.C.E. 19246 Date

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.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

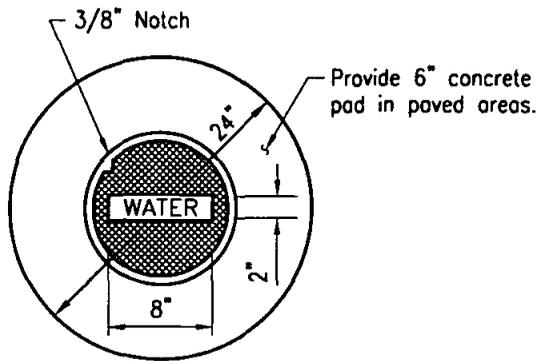
SAN DIEGO REGIONAL STANDARD DRAWING

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

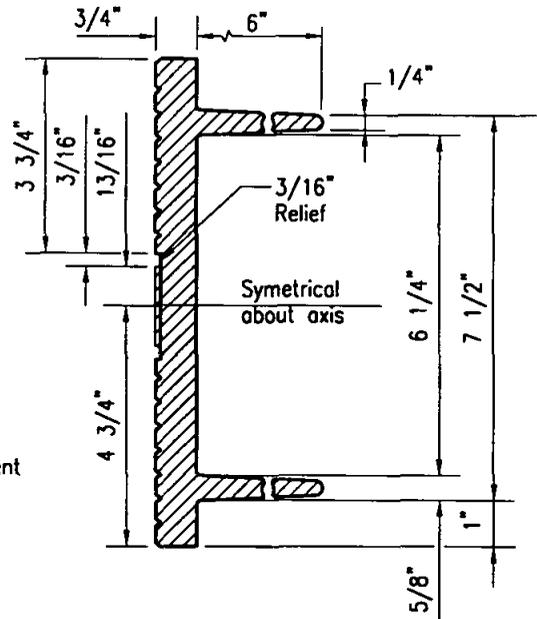
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

J. Stanton 3/23/80
Chairperson R.C.E. 19246 Date

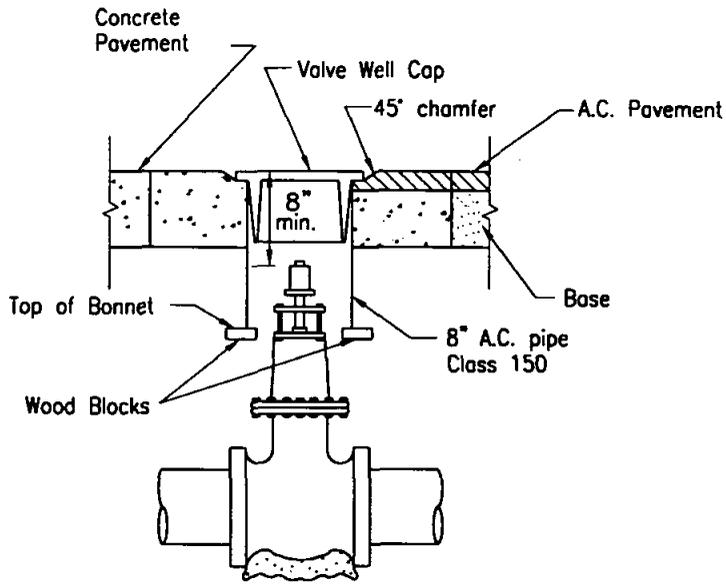
DRAWING
NUMBER **1-26**



PLAN



CAST IRON VALVE WELL CAP

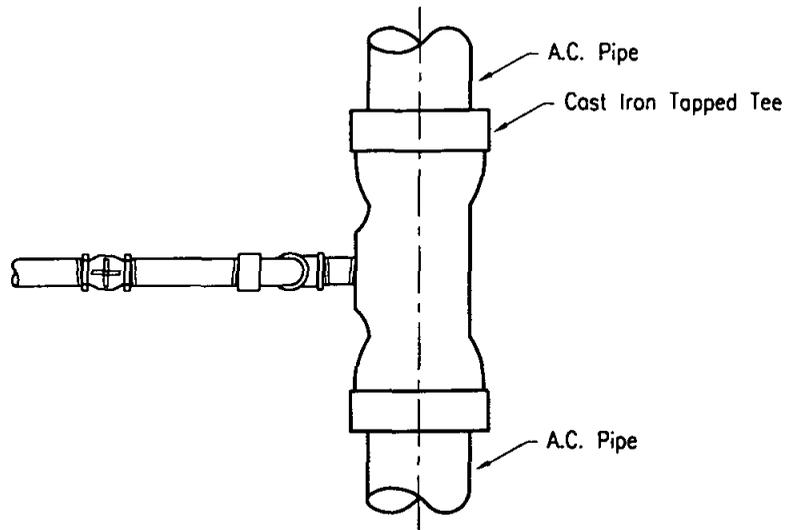


ELEVATION

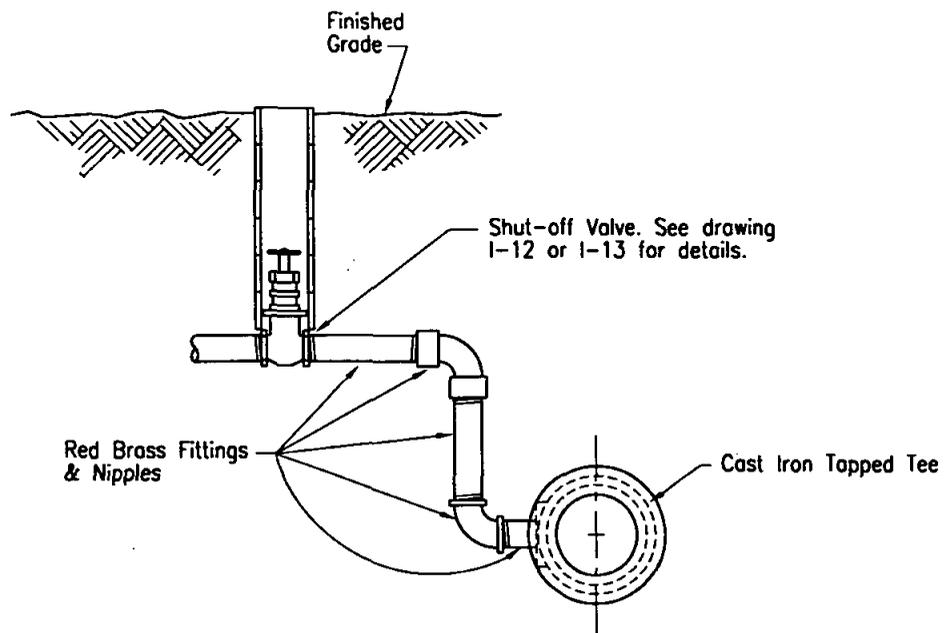
LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75			VALVE WELL AND COVER
				DRAWING NUMBER 1-27		



PLAN

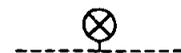


ELEVATION

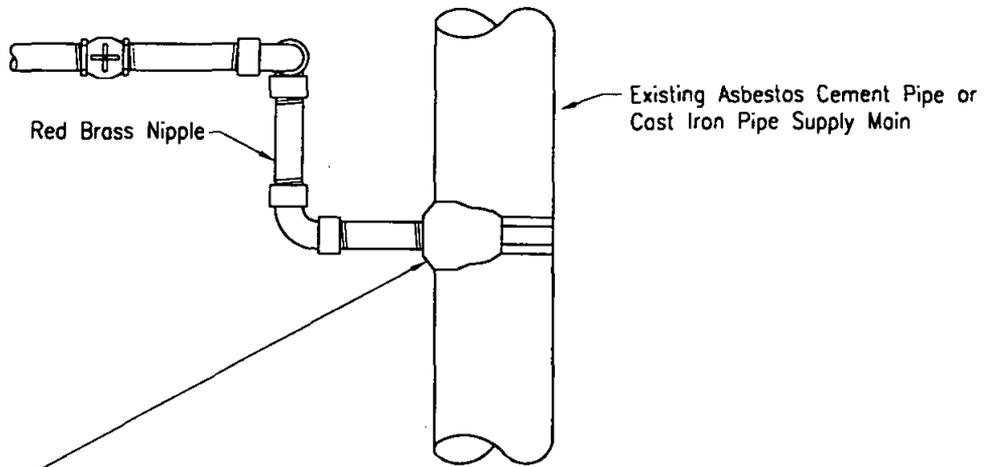
NOTES

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

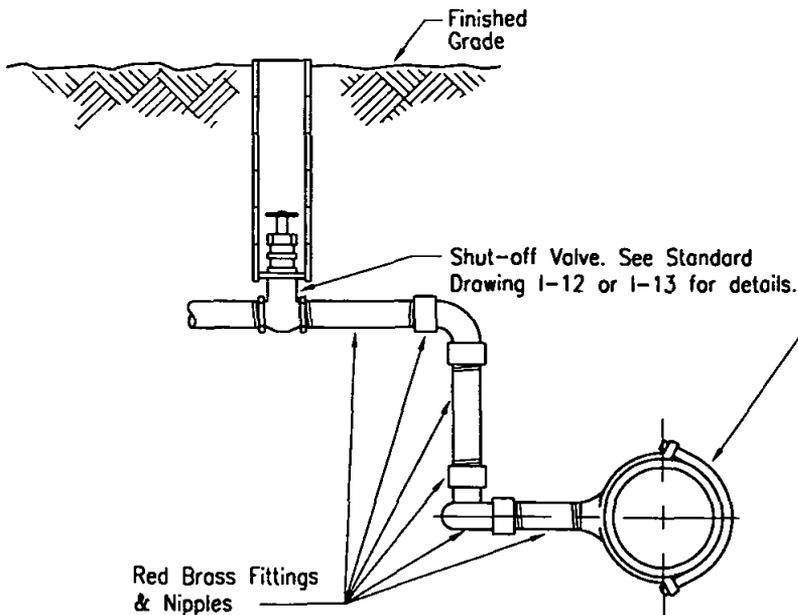


Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		CONNECTION DETAIL FOR NEW ASBESTOS CEMENT SUPPLY MAINS
				DRAWING NUMBER I-28	



PLAN

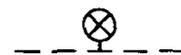
May Be: Bronze, double strap service clamp; cast iron tapped clamp coupling with stainless steel bolts; cast iron boltless tapping sleeve; or cast iron (cement mortar lined) cutting in tapped tee.



ELEVATION

NOTE
Close nipples shall not be used.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

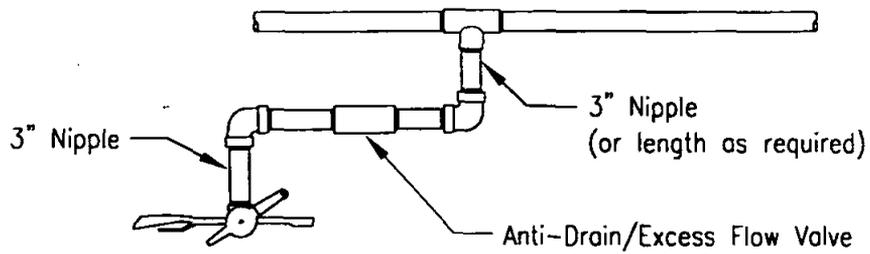
SAN DIEGO REGIONAL STANDARD DRAWING

**CONNECTION DETAIL
FOR EXISTING SUPPLY LINES**

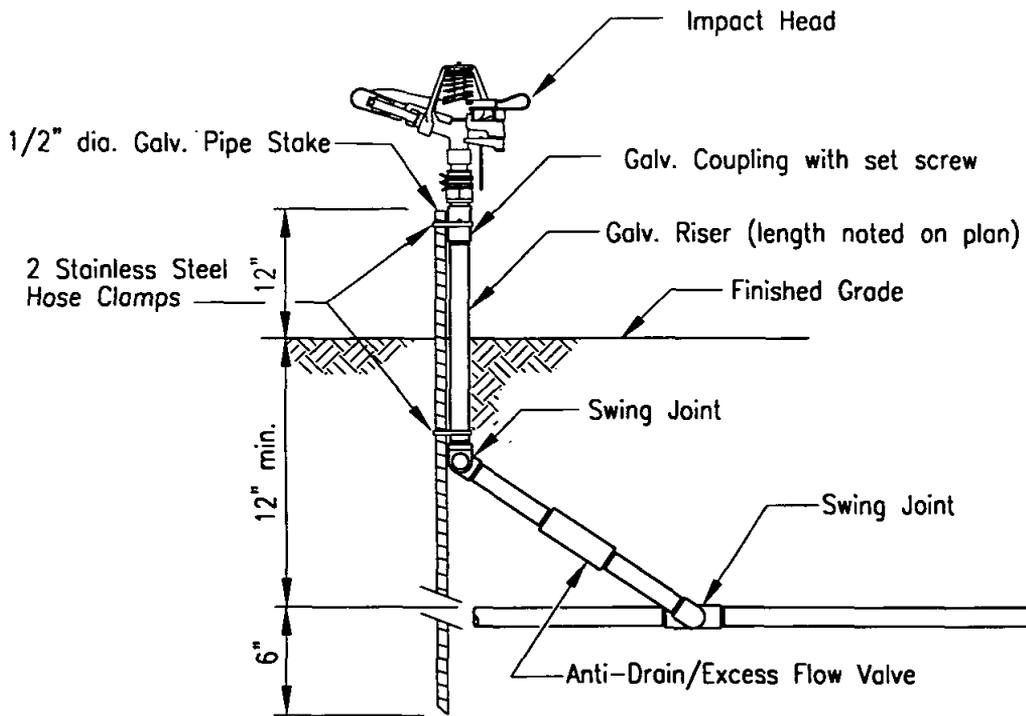
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Stanton 3/23/60
Chairperson R.C.E. 19246 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

Revision	By	Approved	Date
ORIGINAL		Solomon	7/79

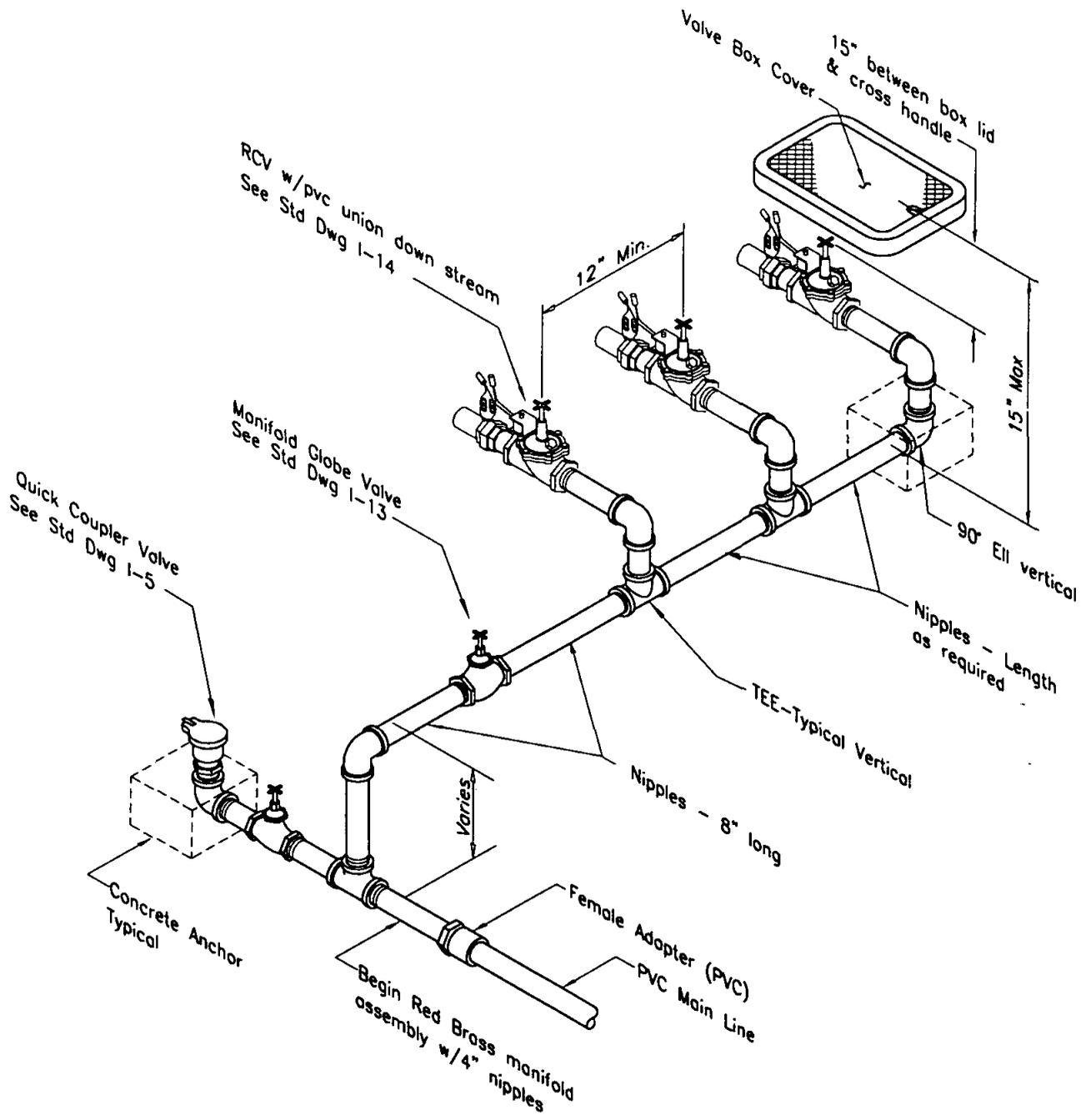
SAN DIEGO REGIONAL STANDARD DRAWING

**IMPACT HEAD
(WITH SWING JOINT)**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. C. E. 3/23/80
Chairperson R.C.E. 19246 Date

DRAWING NUMBER I-30



NOTES

1. Typical remote control valve assembly: all nipples 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 main line intersection to reach the 15 inch maximum depth.

Revision	By	Approved	Date
ORIGINAL		Parkinson	5/92

SAN DIEGO REGIONAL STANDARD DRAWING

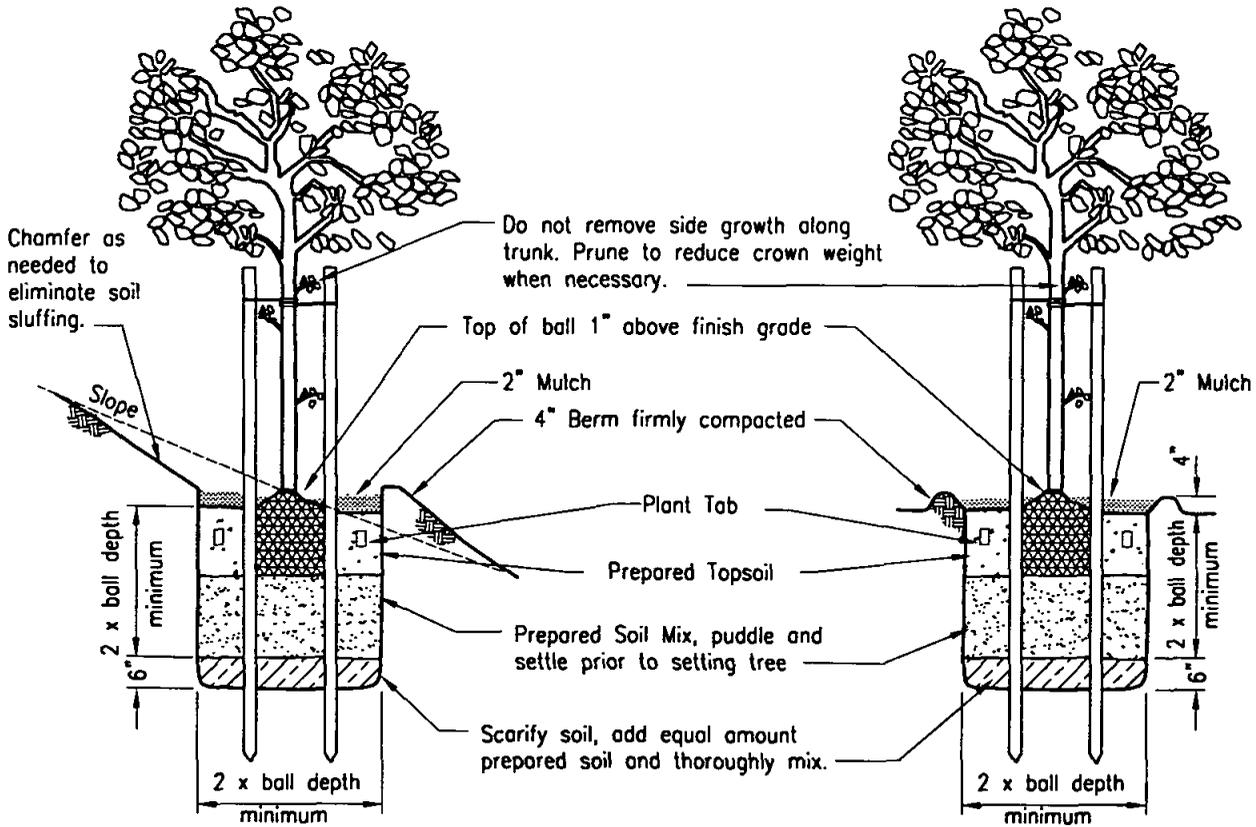
**REMOTE CONTROL VALVE
MANIFOLD ASSEMBLY**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
M. Stanton 3/23/00
 Chairperson R.C.E. 19246 Date
DRAWING NUMBER I-33

LANDSCAPING

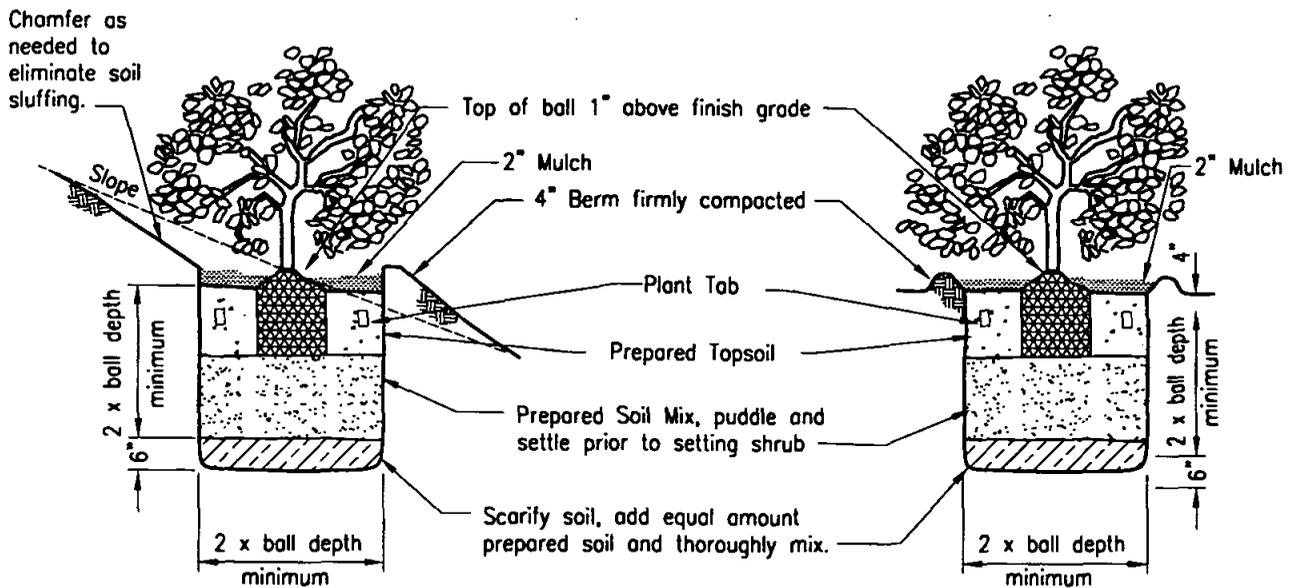
LANDSCAPING

L



TREE PLANTING - SLOPES

TREE PLANTING - LEVEL GROUND



SHRUB PLANTING - SLOPES

SHRUB PLANTING - LEVEL GROUND

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

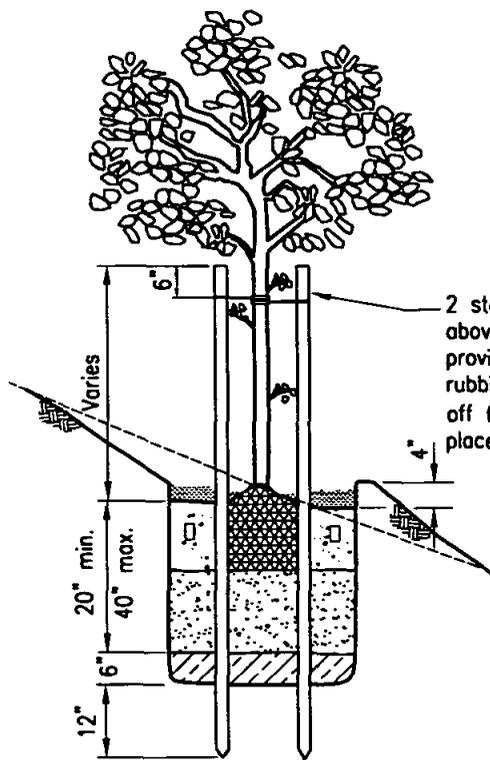
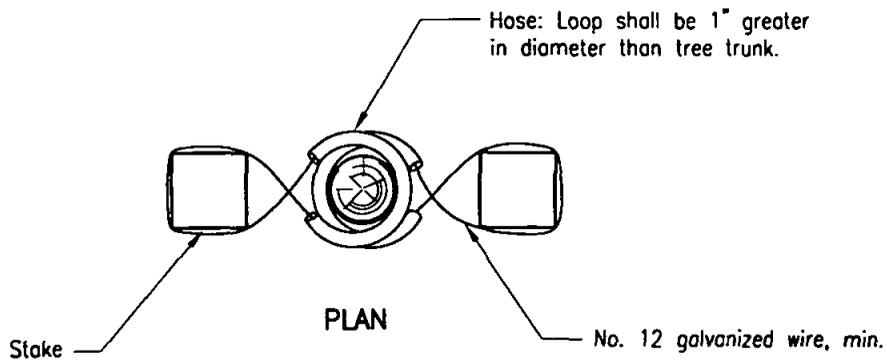
SAN DIEGO REGIONAL STANDARD DRAWING

TREE AND SHRUB PLANTING

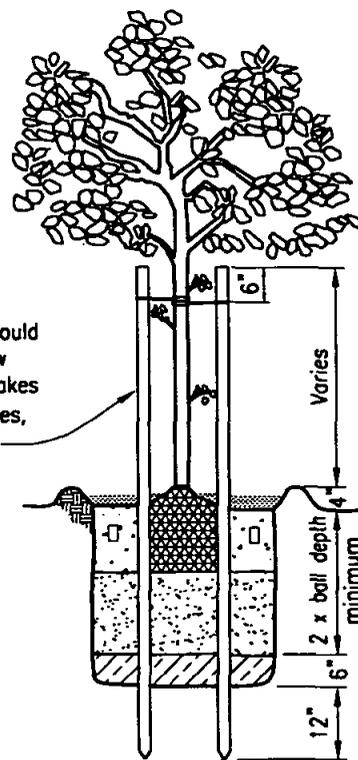
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER L-1



2 stakes and 2 ties. Tie tree trunk 6" above bending moment of tree. Tie should provide flexibility of trunk but not allow rubbing of trunk against stake. Cut stakes off 6" above ties. For single stake trees, place stake on windward side of tree.



TREE STAKING - SLOPES

TREE STAKING - LEVEL GROUND

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

SAN DIEGO REGIONAL STANDARD DRAWING

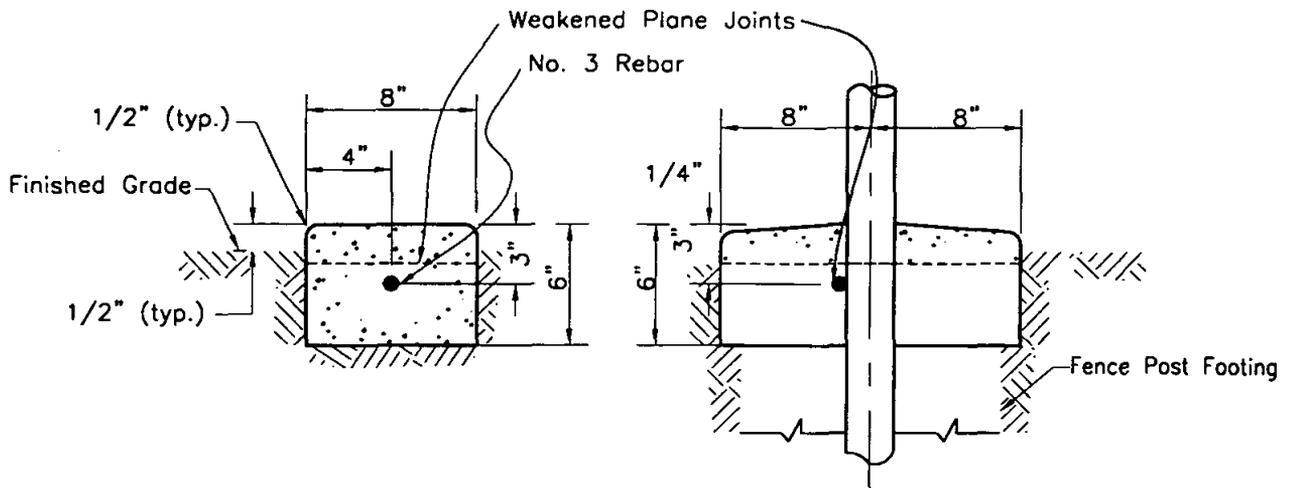
TREE STAKING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Stenton 3/23/00
Chairperson R.C.E. 19246 Date

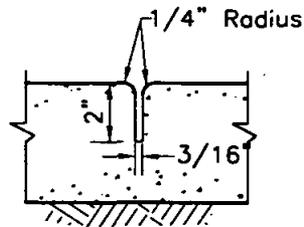
DRAWING NUMBER

L-2

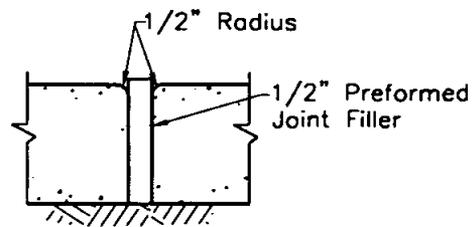


**TYPE A
SHRUB AREA**

**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-C2500 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	By	Approved	Date
ORIGINAL		H.Hecht	10/82

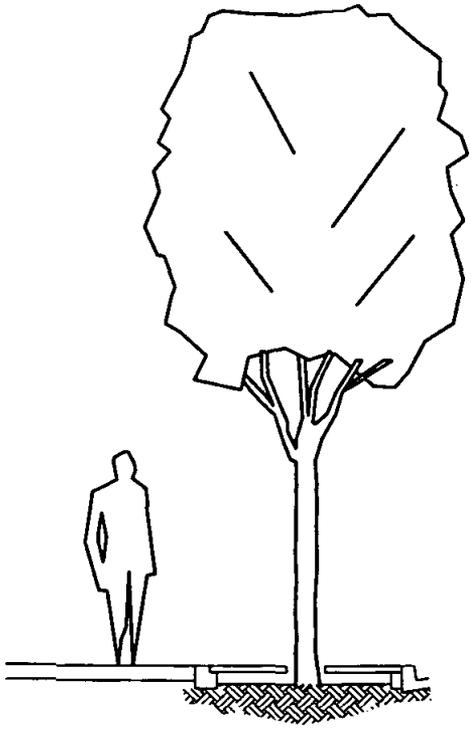
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE MOWING STRIP

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

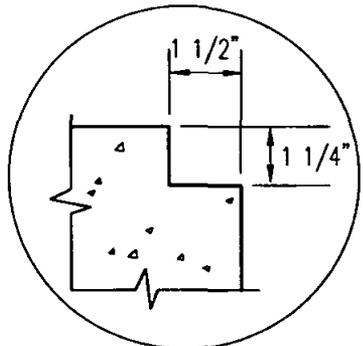
[Signature] 3/23/80
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **L-3**

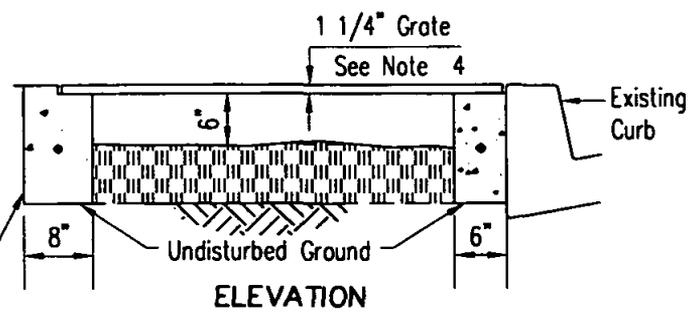


TREE SIZE

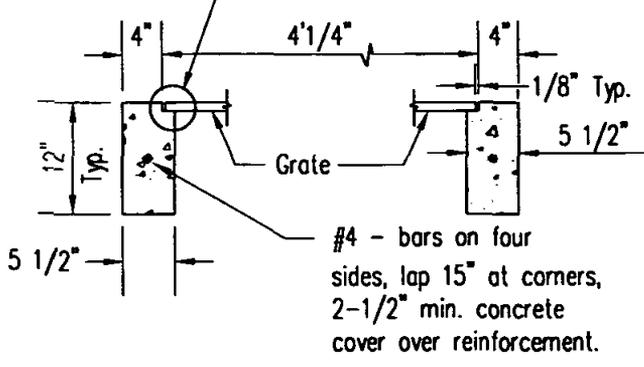
- NOTES: 1. The location and species of each tree shall have prior approval of the Agency.
2. Sidewalk to be removed for each tree planting shall be saw cut full depth.
3. Fill below grate with 3/4" x No.4 clean crushed rock. If the grate is used for security, all bolts, nuts and washers shall be hot dipped galvanized. All steel items shall be hot dipped galvanized after fabrication.
4. Grate shall be two separate pieces, 2' x 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.



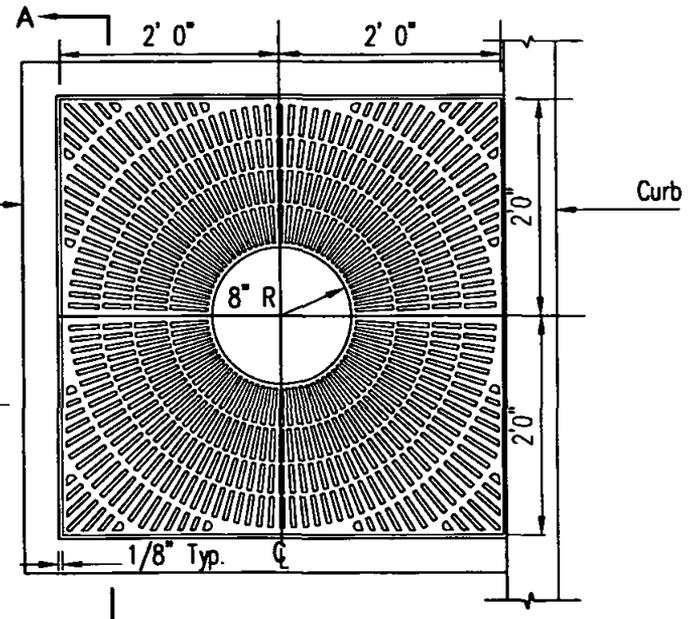
Class 520-C-2500 Concrete



ELEVATION



SECTION A-A



PLAN

Revision	By	Approved	Date
ORIGINAL		Parkinson	5/92

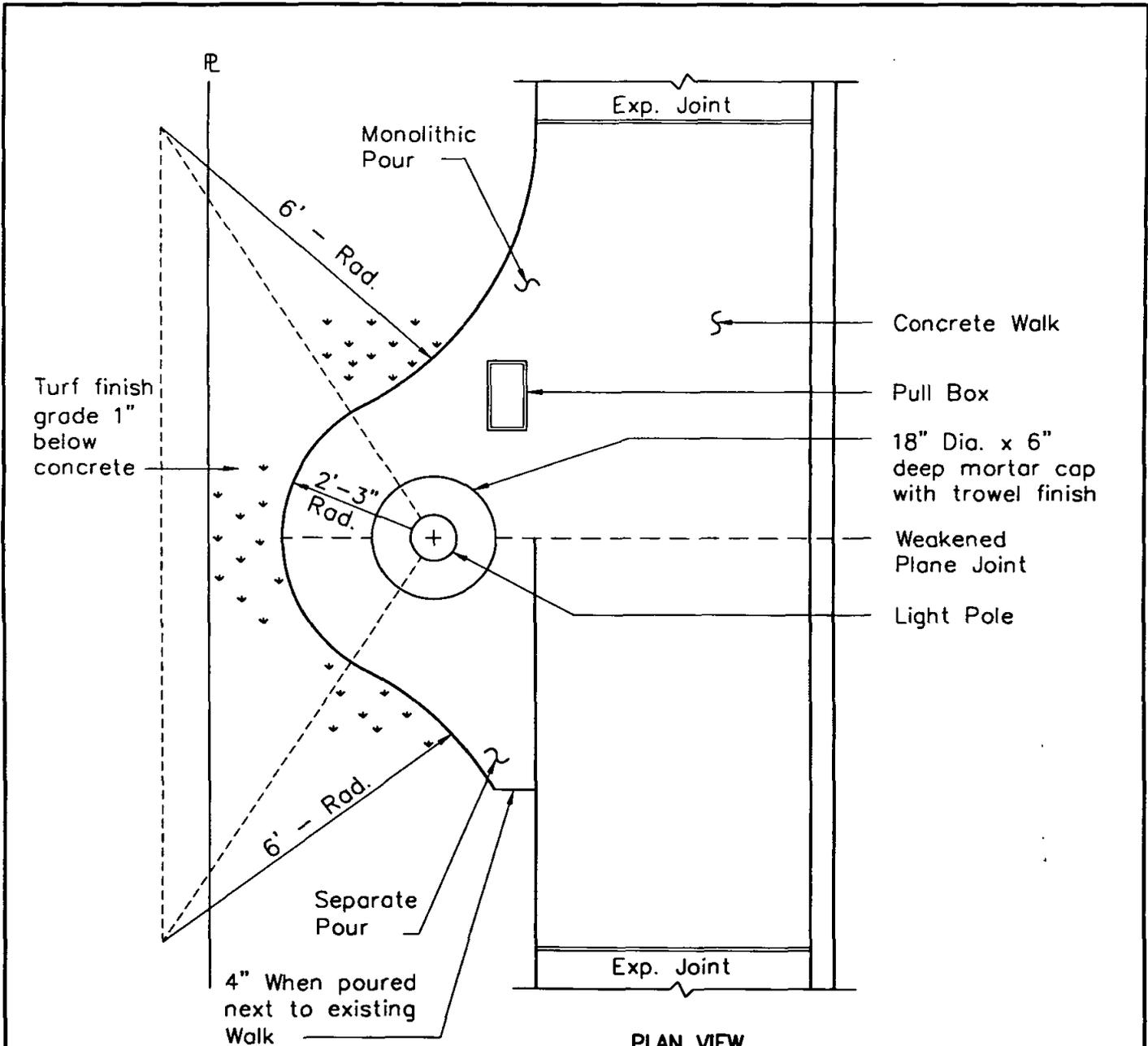
SAN DIEGO REGIONAL STANDARD DRAWING

STEEL GRATE
TREE WELL COVER

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Steaton 3/27/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **L-4**



PLAN VIEW

NOTES

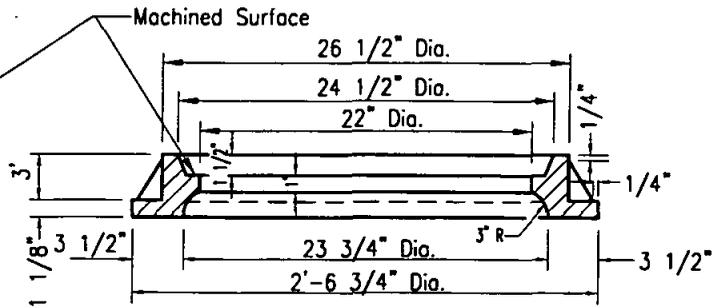
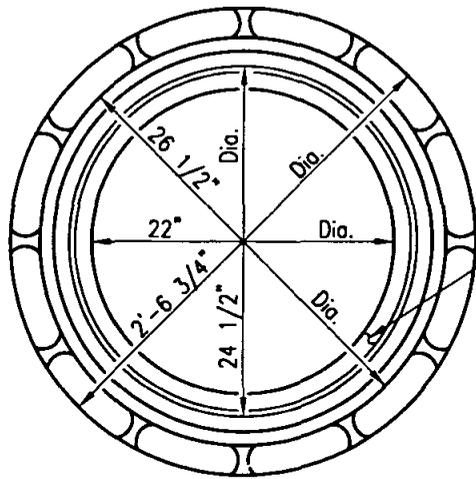
1. See Electric Plans for fixture/pole/footing details.
2. Use monolithic pour for new construction.
3. Poles shall be 6'-0" from face of curb where applicable.
4. Pole pads shall drain at 2% minimum in same direction as sidewalk.
5. Concrete pad shall be the same as specified for sidewalk.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Parkinson	9/88		<p style="text-align: center;">LIGHT POLE PAD IN TURF AREAS</p>
					<p>DRAWING NUMBER L-5</p>

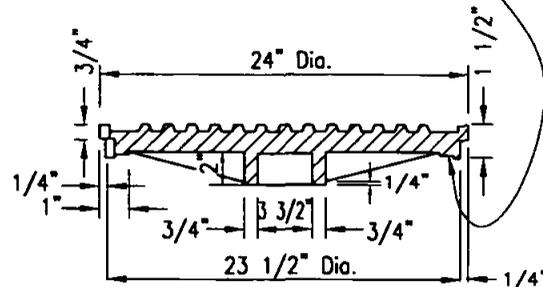
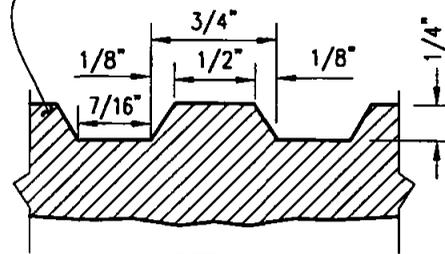
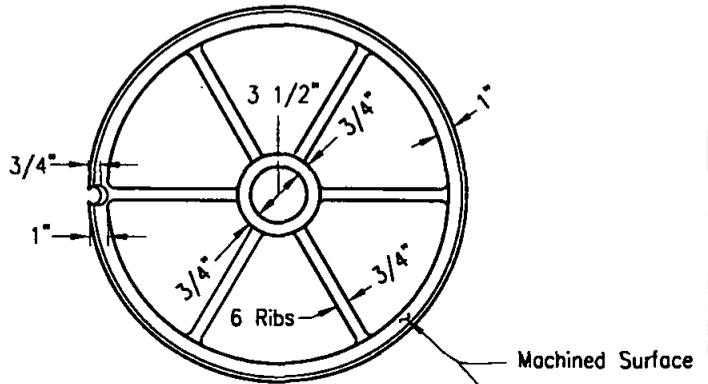
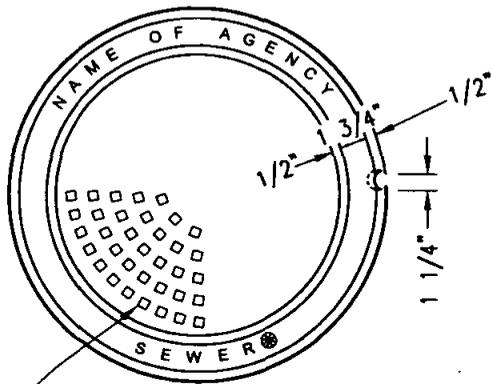
MISCELLANEOUS

M

MISCELLANEOUS



MANHOLE COVER FRAME



DETAIL

MANHOLE COVER

NOTES

1. Frame and cover shall be cast iron. Cast iron shall conform to ASTM 48, Class 35B.
2. Weights: Frame 166 - 193 lbs.
Cover 147 - 171 lbs.
3. Machine all matching surfaces and seats of frame and cover to prevent rocking.
4. Imported frames and covers shall have the country of origin marked in compliance with federal regulations.

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

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

SAN DIEGO REGIONAL STANDARD DRAWING

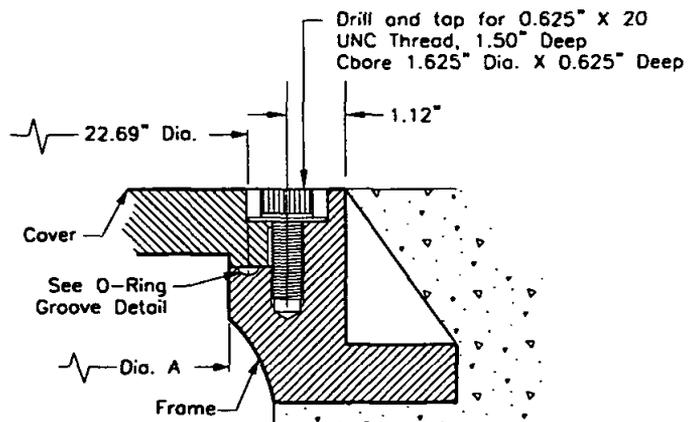
24" MANHOLE FRAME AND COVER
HEAVY DUTY

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

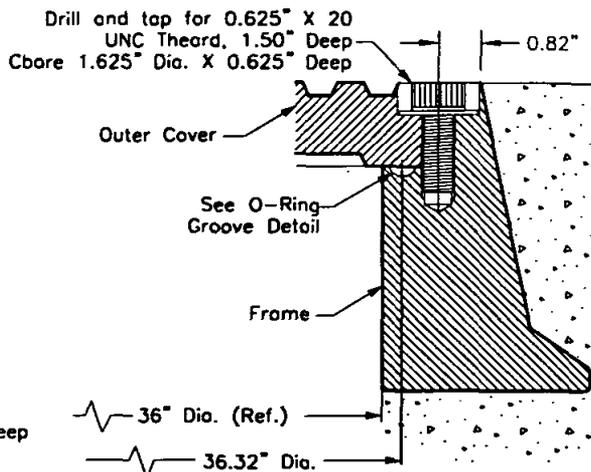
J. Stenton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER

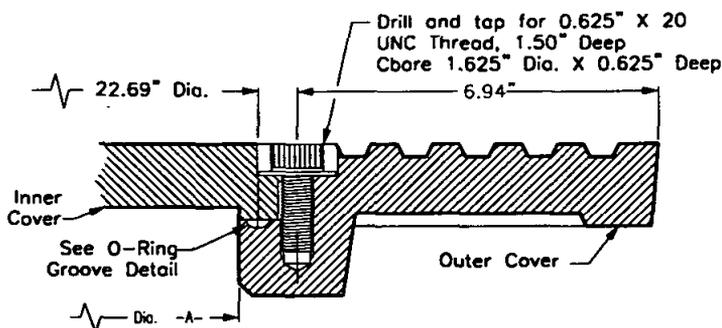
M-1



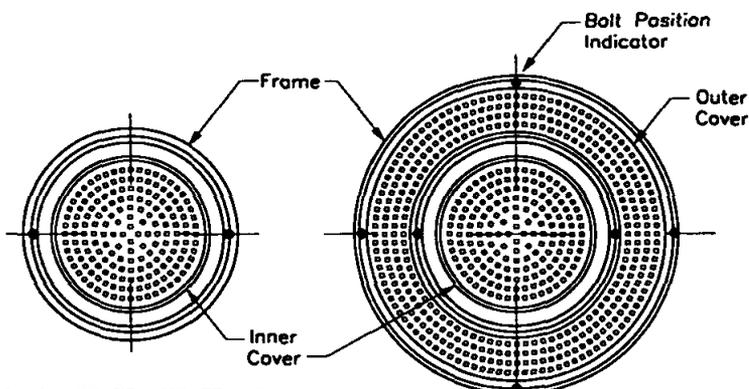
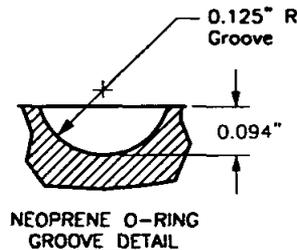
M-1 Detail:
COVER TO FRAME



M-3B Detail:
OUTER COVER TO FRAME



M-3A Detail:
INNER COVER TO OUTER COVER



M-1 COVER AND FRAME
BOLT PLACEMENT
(See Note 3)

M-3 CONCENTRIC COVERS AND FRAME
BOLT PLACEMENT
(See Note 3)

NOTES:

- 0.625" X 20 UNC THREAD, 316 STAINLESS STEEL SOCKET HEAD CAP SCREW AND 1.50" O.D. X 0.687" I.D. X 0.078 THICK 316 STAINLESS STEEL WASHER.
- 0.25" NEOPRENE O-RING GASKET SHALL BE GLUED INTO MACHINED GROOVE. GLUE SHALL MEET THE REQUIREMENTS OF MIL-M-81288 (AMEND. 1)
- BOLTDOWN PATTERNS:
 - M-1 DETAIL (24" COVER & FRAME): INSTALL TWO (2) BOLTS AT 180 DEGREES.
 - M-3A DETAIL (CONCENTRIC COVERS): BETWEEN INNER AND OUTER COVERS INSTALL TWO (2) BOLTS AT 180 DEGREES.
 - M-3B DETAIL (OUTER COVER & FRAME): BETWEEN OUTER COVER & FRAME INSTALL FOUR (4) BOLTS AT 90 DEGREES.

Revision	By	Approved	Date
ORIGINAL		Parkinson	2/95

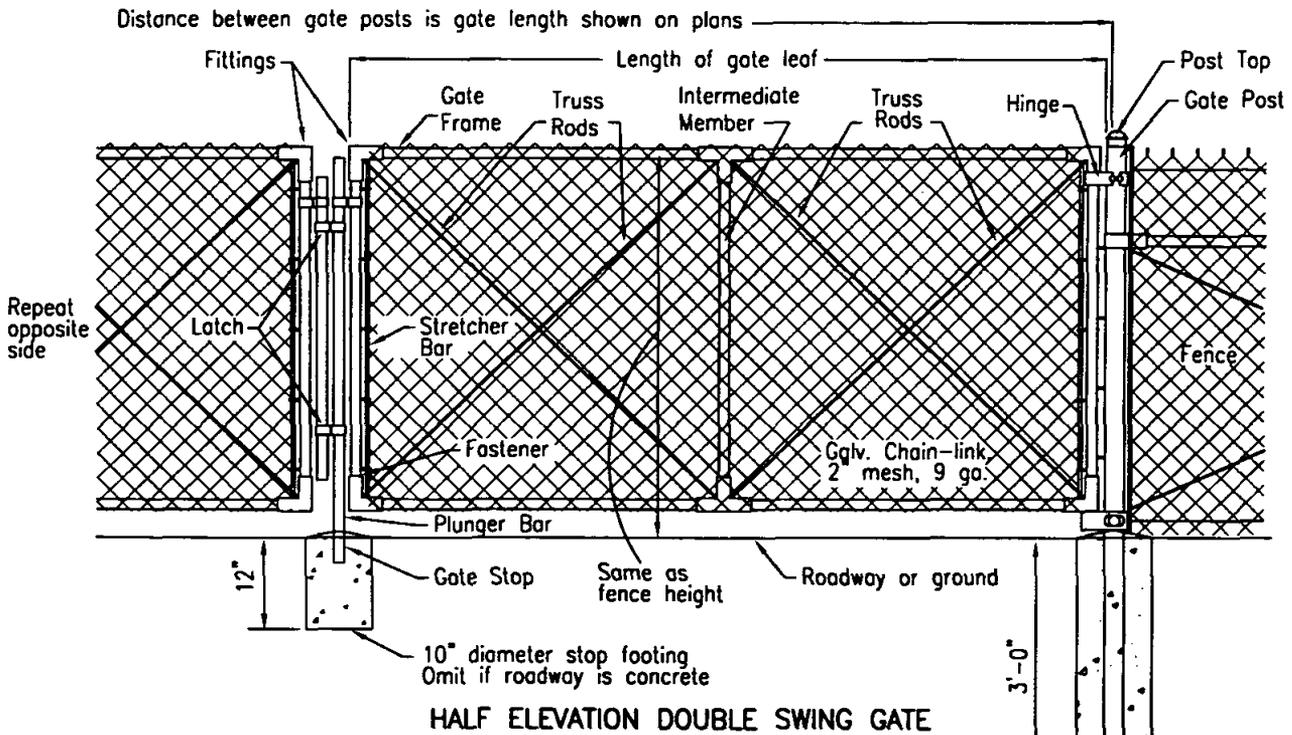
SAN DIEGO REGIONAL STANDARD DRAWING

MANHOLE COVER - LOCKING DEVICE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-4**

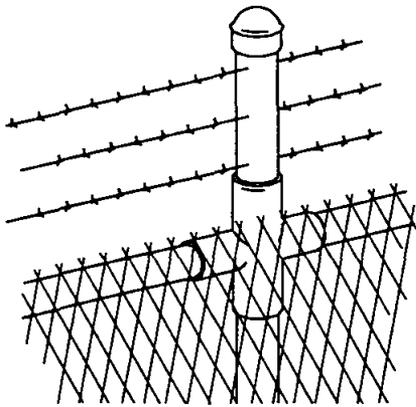


HALF ELEVATION DOUBLE SWING GATE

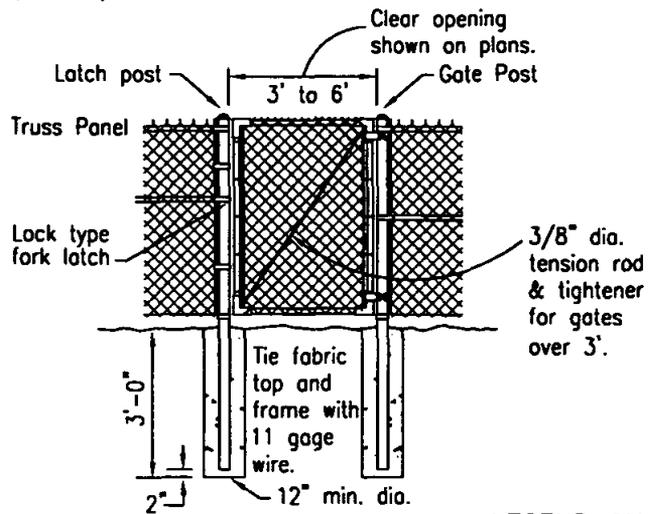
NOTES

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 Specification 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
ORIGINAL		A.Kercheval	12/75

SAN DIEGO REGIONAL STANDARD DRAWING

CHAIN LINK GATE

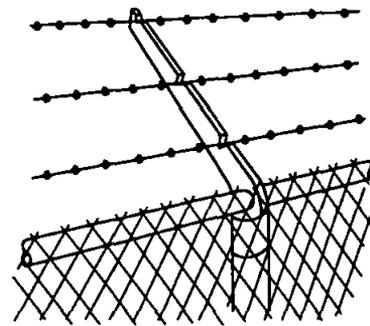
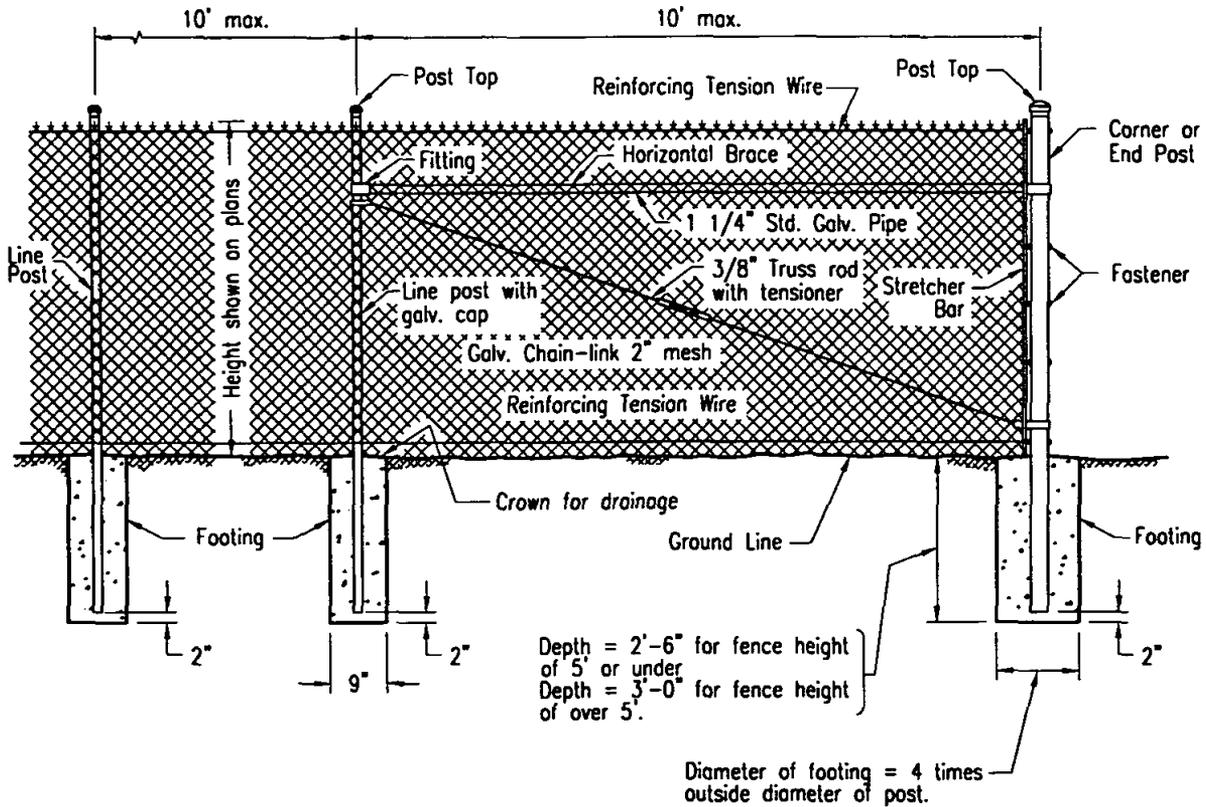
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Stanton 3/23/60

Chairperson R.C.E. 19246 Date

DRAWING NUMBER

M-5



EXTENSION ARM AND BARBED WIRE

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



Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75

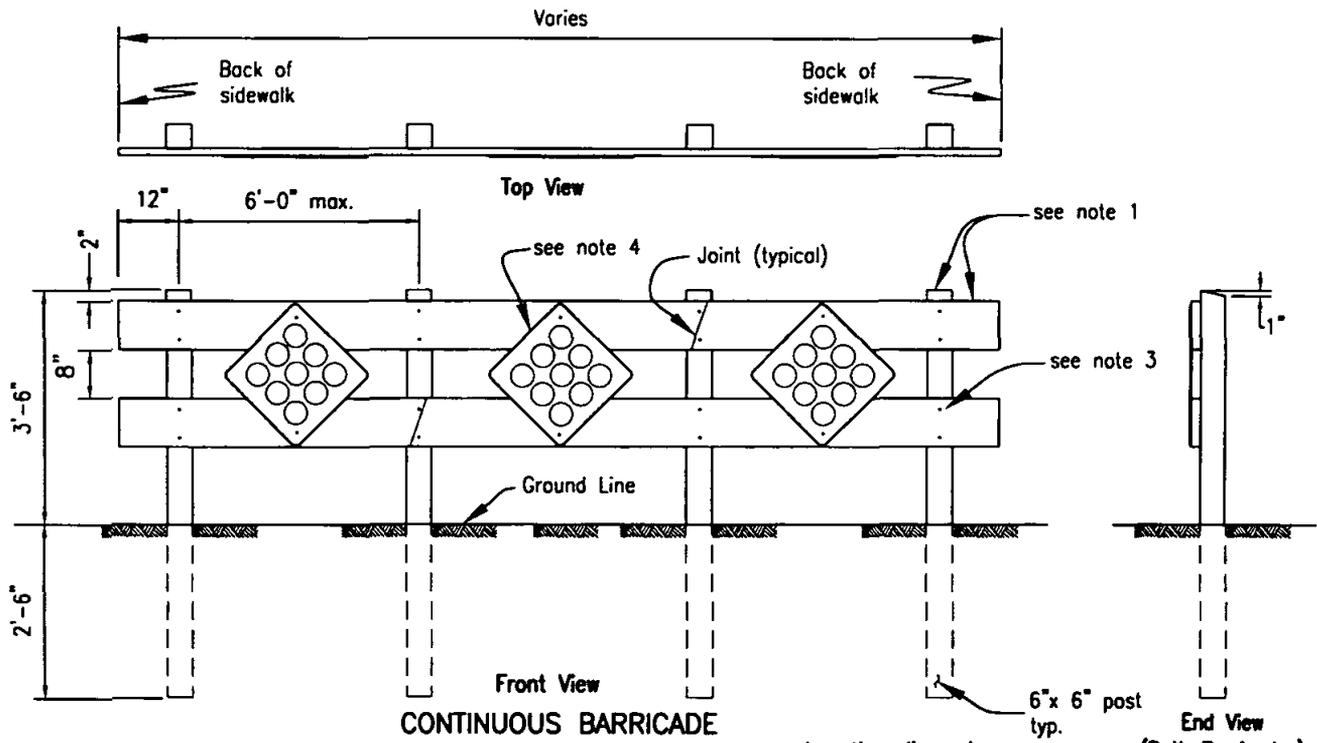
SAN DIEGO REGIONAL STANDARD DRAWING

CHAIN LINK FENCE

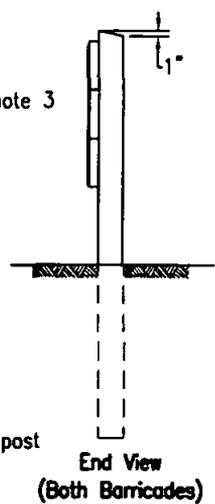
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. H. Stanton 3/23/00
 Chairperson R.C.E. 19246 Date

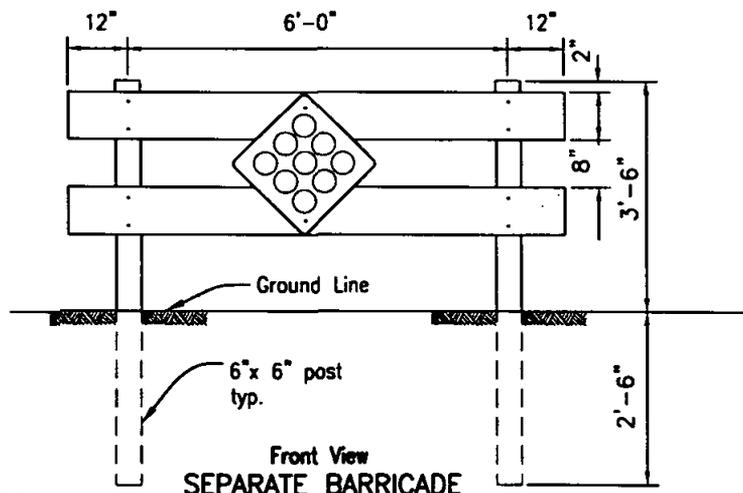
DRAWING NUMBER **M-6**



CONTINUOUS BARRICADE

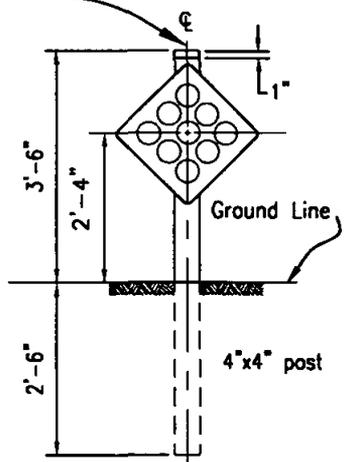


End View (Both Barricades)



SEPARATE BARRICADE

Location dimension shown on plans

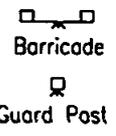


Front View GUARD POST

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"x18" - Yellow with nine (9) -3 1/4" 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 hot section metal post per Caltrans Std. Plan A74-A optional for guard post.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

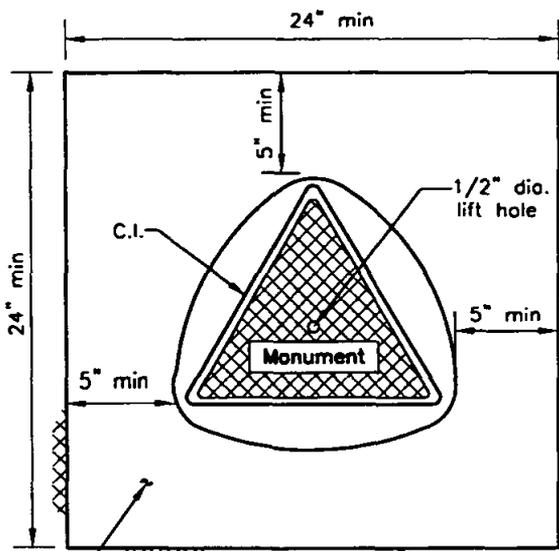
SAN DIEGO REGIONAL STANDARD DRAWING

GUARD POST AND BARRICADE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

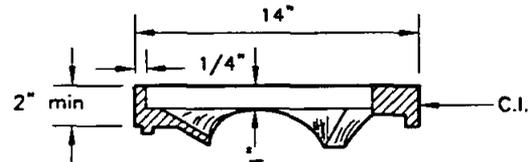
M. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-9**

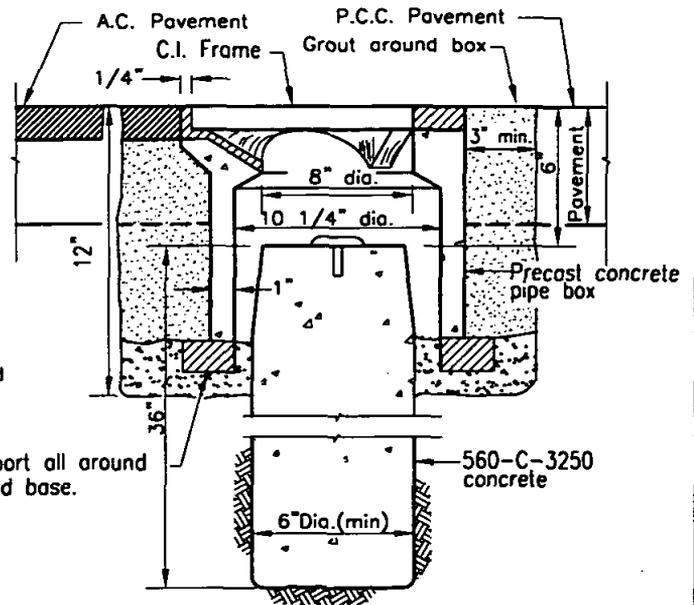


PLAN-IN UNPAVED AREA

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



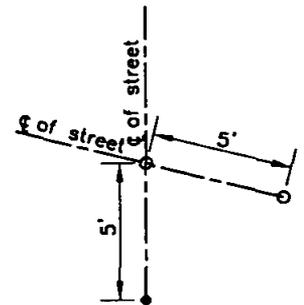
RISER RING



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.



Alteration location of monument. Tie distances shown on final subdivision map if alternate location is used.

LOCATION OF STREET SURVEY MONUMENT

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75

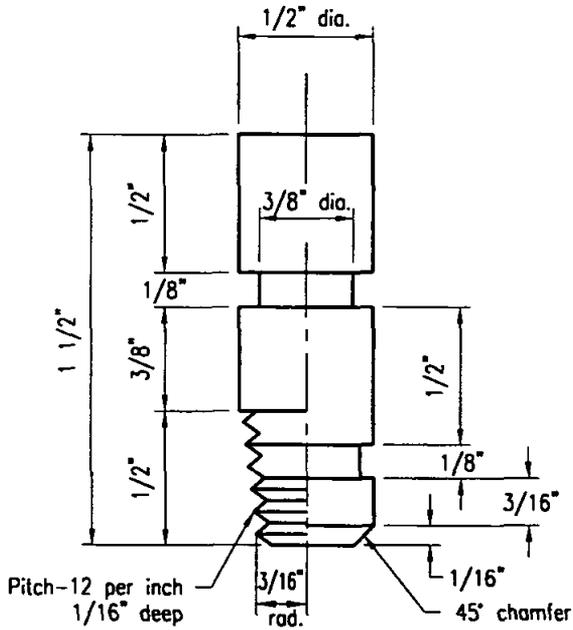
SAN DIEGO REGIONAL STANDARD DRAWING

STREET SURVEY MONUMENT

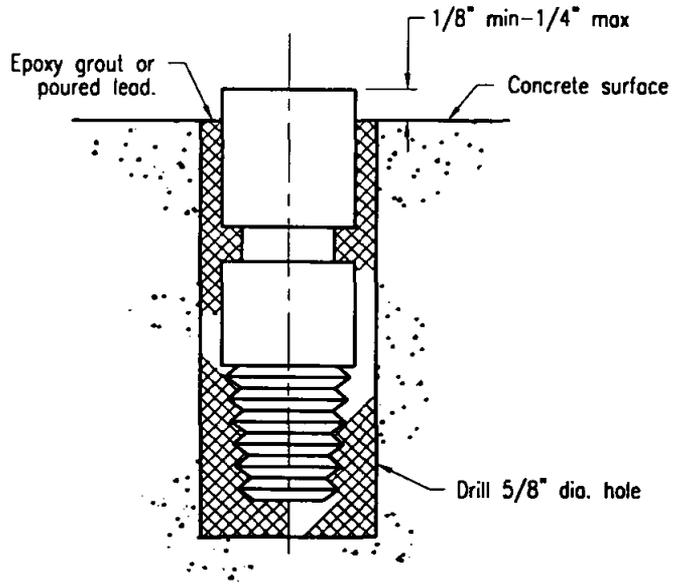
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER M-10



TYPE-A TYPE-B
ELEVATION



INSTALLATION IN EXISTING CONCRETE
(Typical for Type A or B)

NOTES

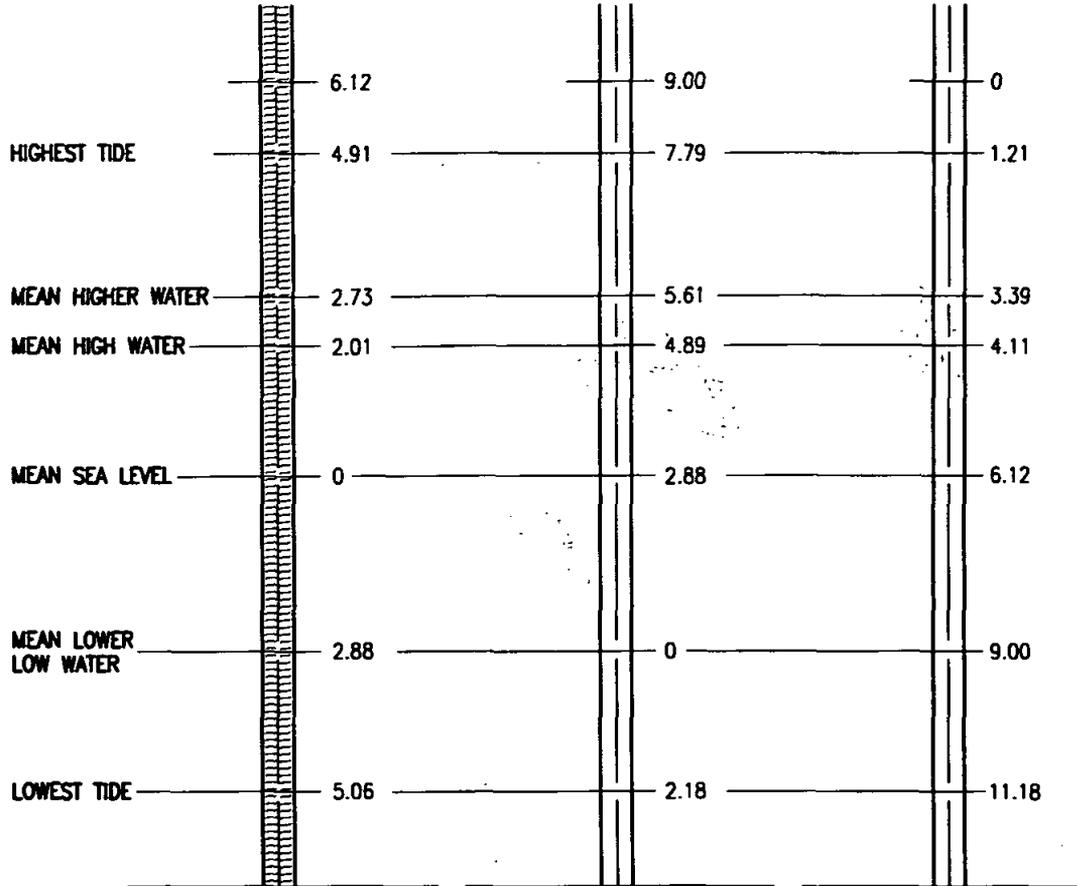
1. Material- Brass A.S.T.M. B-16. All machine tolerances $\pm 1/64$ " machine finish.
2. May be installed in fresh concrete at time of installation of concrete structure.
3. Location-in most stable, permanent location in vicinity, such as in base for street light standard or traffic signal (behind sidewalk), in curb (not near joint, on curve or near trees), on top of drainage headwall, in foundation for building or retaining wall or in concrete pads for transformers, pump stations etc.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
				DRAWING NUMBER	M-11

COUNTY OF SAN DIEGO
CITY OF SAN DIEGO
U.S.C. & G. (LAND)
U.S.G.S. STAFF

PORT OF SAN DIEGO
U.S.C. & G.
(BAY CHART)

OLD CITY OF
SAN DIEGO STAFF
(PRIOR TO MARCH 1963)



LEGEND

- U.S.C. & G. = United States Coast and Geodetic Survey.
- U.S.G.S. = United States Geological Survey.
- MEAN HIGH WATER = Mean of all high water in San Diego Bay.
- MEAN HIGHER WATER = 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 1923".

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		DATUMS
				DRAWING NUMBER M-12	

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 inacceptable 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 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.

LEGEND

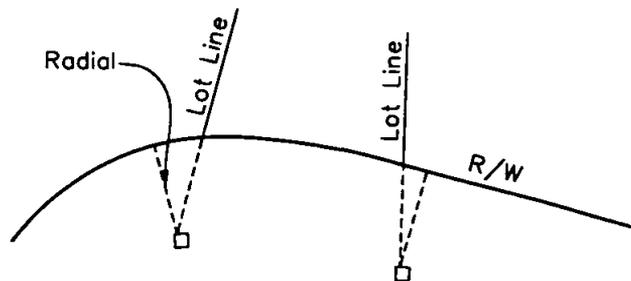
- Fd 2" Iron Pipe Marked RCE XXXX or per Map XXX unless otherwise noted
- ▲ Fd Street Survey Monument Stamped RCE XXXX or LS XXXX
- ◎ Set 2" x 24 " Iron Pipe Marked RCE XXXX or LS XXXX
- Set Lead and Disc Stamped RCE XXXX or LS XXXX
- Set ½" x 18" Iron Pipe Marked RCE XXXX or LS XXXX
- △ Set Street Survey 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.



EXAMPLE OF OFFSET DISCS

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
				SURVEY MONUMENTS	 3/23/00 Chairperson R.C.E. 19246 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 Once = 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 gal. (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

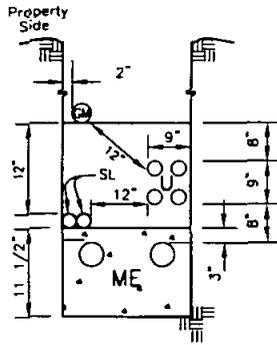
MULTIPLE PREFIX
 1/10 deci
 1/100 centi
 1/1000 milli
 1/1000000 micro

TEMPERATURE

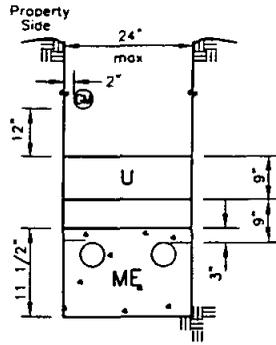
Degrees Fahrenheit = 9/5 (Degrees Celsius) + 32

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

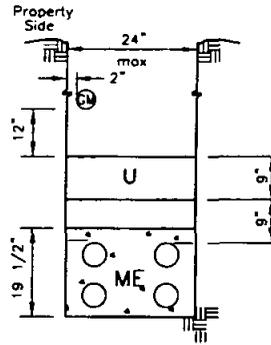
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		<i>[Signature]</i> 3/23/00 Chairperson R.C.E. 19246 Date
				METRIC EQUIVALENTS	DRAWING NUMBER M-14



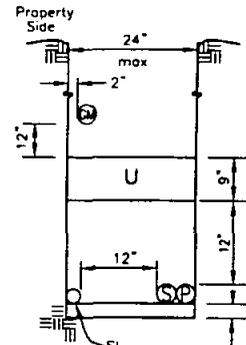
TYPE A



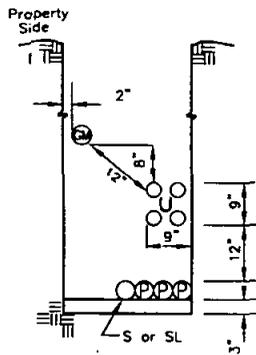
TYPE B



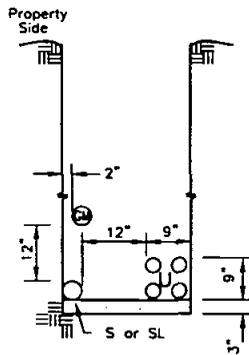
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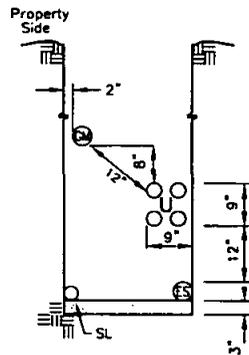
TYPE D



TYPE E



TYPE F



TYPE G

SERVICE TRENCH
ON
PUBLIC PROPERTY

Legend		Minimum 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

- All dimensions are typical unless otherwise noted.
- Generally utilities are to be installed under the applicable specifications for the particular utility and the specifications of the owner Agency.
- The location of utilities as shown by the Standard Drawing shall in no way violate existing codes or regulations applicable to individual utilities.
- Installation of sewer and/or water utilities are not permitted in the joint trenches shown above.
- Minimum depth of gas pipe may, subject to gas company inspectors approval, be reduced to 24" where necessary to clear structure crossings.
- Depth and width of trench varies.
- CATV main or trunk line conduit required along all streets, except cul-de-sac streets less than 1,000 feet in length which may be served by feeder lines only.
- CATV 1-1/2" feeder conduit shall run across streets with each power service line and capped at edge of sidewalk.
- 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.
- In no case shall CATV conduits be placed within 12" of gas lines, also conduits are not to be placed directly over gas lines.
- Catv conduit may be placed with the TELCO conduit provided the TELCO minimum depth is held.

Revision	By	Approved	Date
ORIGINAL		Parkinson	9/88

SAN DIEGO REGIONAL STANDARD DRAWING

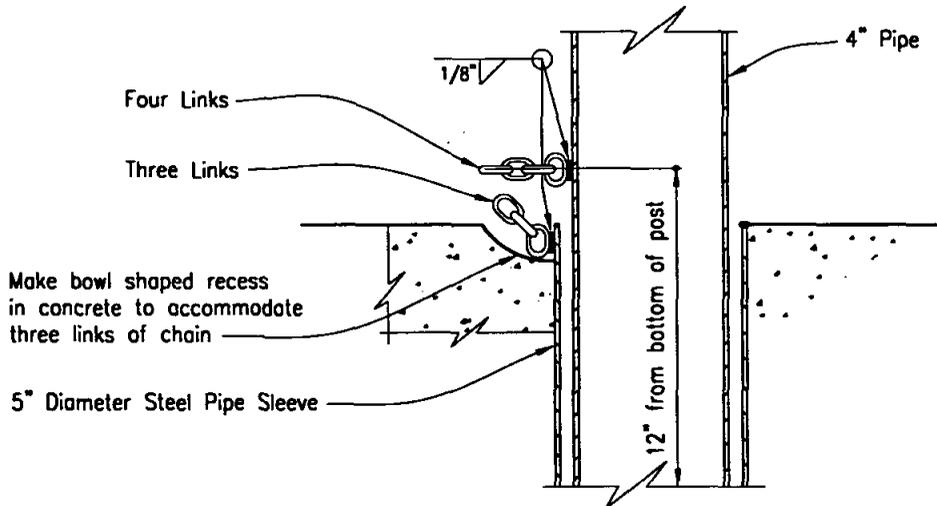
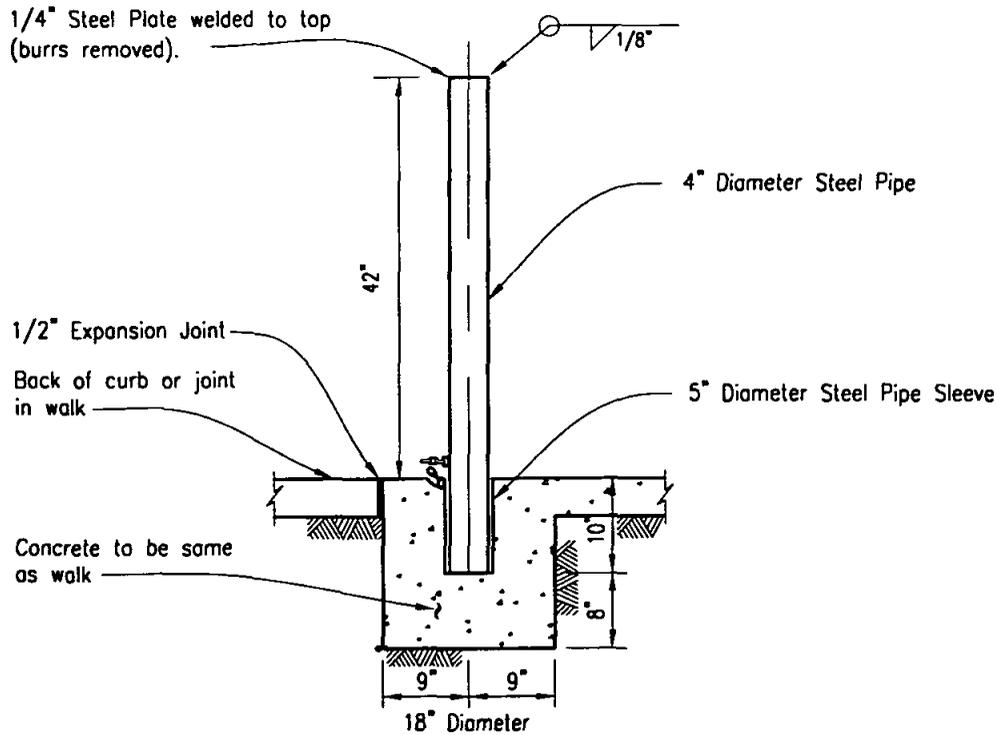
JOINT TRENCH LOCATIONS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER

M-15



HASP DETAIL

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



Revision	By	Approved	Date
ORIGINAL		Solomon	7/79

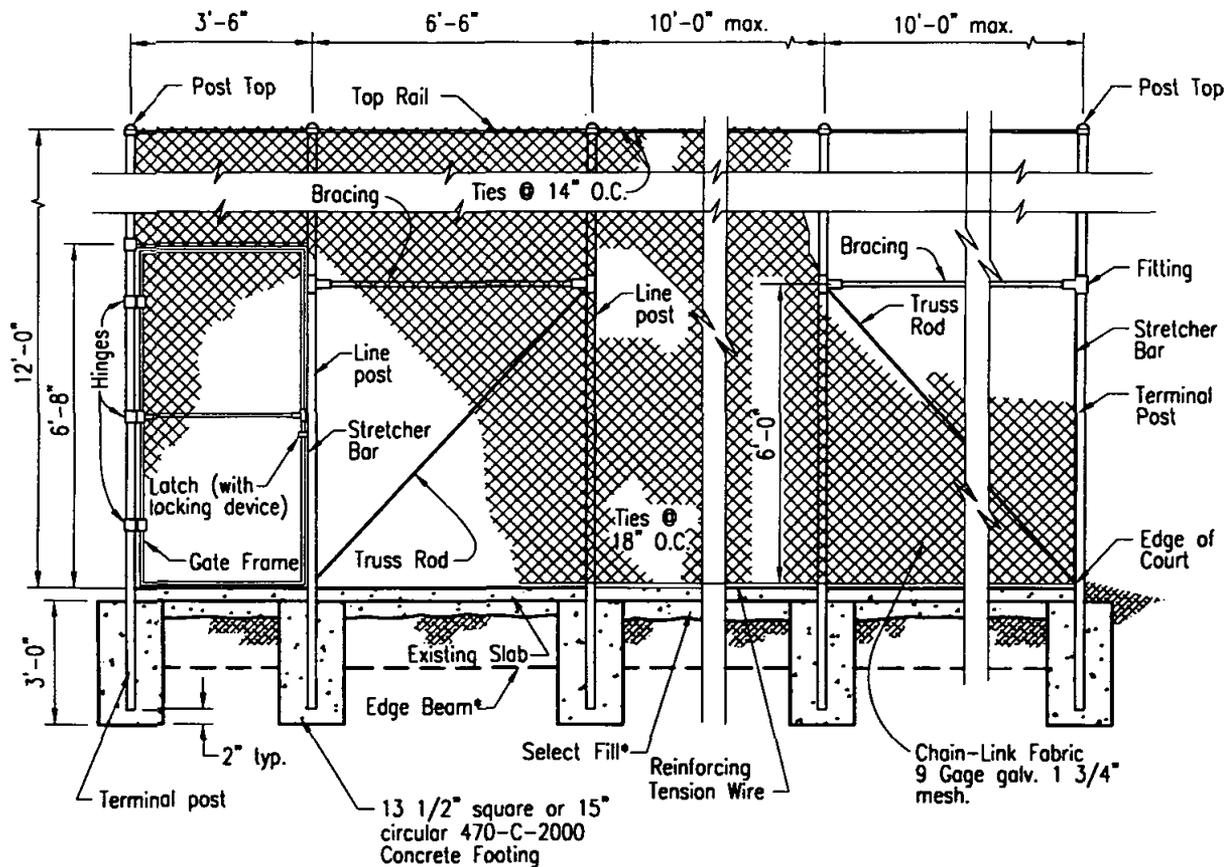
SAN DIEGO REGIONAL STANDARD DRAWING

DEMOUNTABLE POST

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-16**



* 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	By	Approved	Date
ORIGINAL		Solomon	7/79

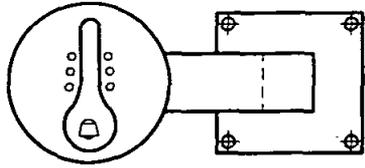
SAN DIEGO REGIONAL STANDARD DRAWING

**TENNIS COURT FENCE
CHAIN LINK**

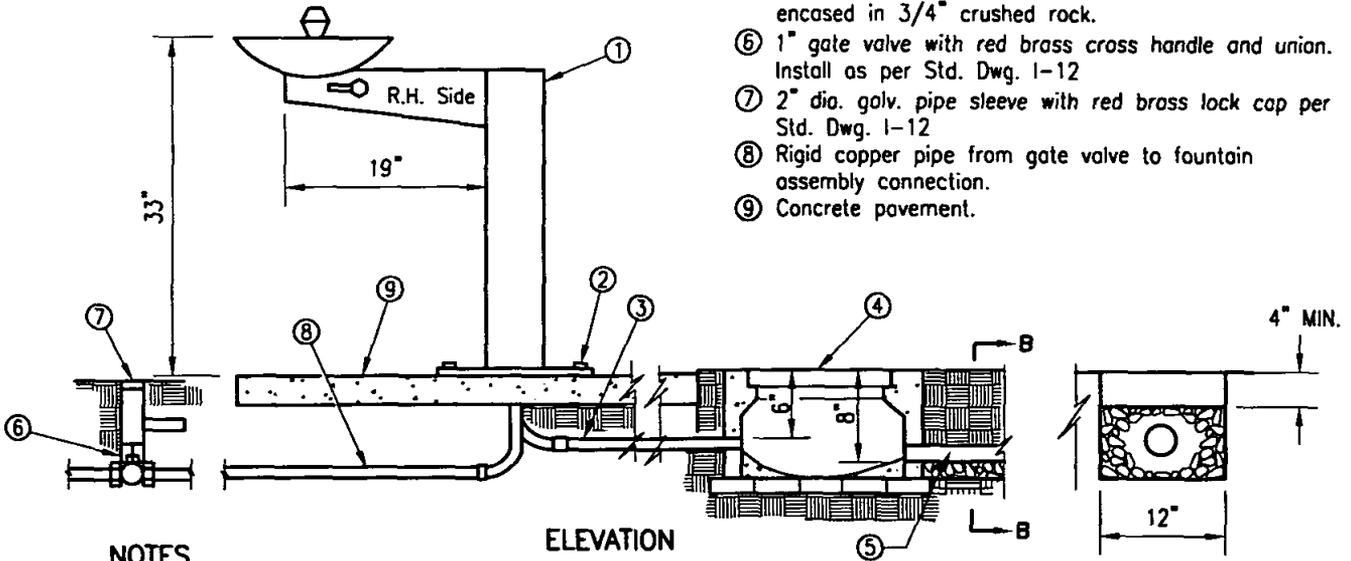
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

W. H. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-17**

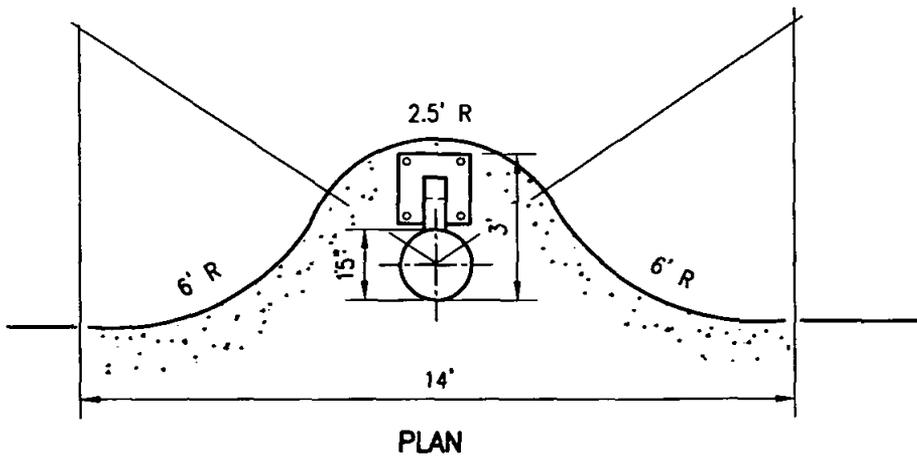


- ① Drinking Fountain - Haws model 3376 or approved equal.
- ② 3/8" dia. Expansion anchors with flat (recessed heads) screws 4 places.
- ③ 1 1/4" P.V.C. pipe with sweep 90° ell connection to fountain drain.
- ④ 9 1/2" x 16" concrete yard box with hinged locking top (Brooks No. 3HL or equal) set on red brick foundation.
- ⑤ 4" x 40 foot perforated plastic underdrain pipe, encased in 3/4" crushed rock.
- 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.



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.



LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		H. Hecht	10/82

SAN DIEGO REGIONAL STANDARD DRAWING

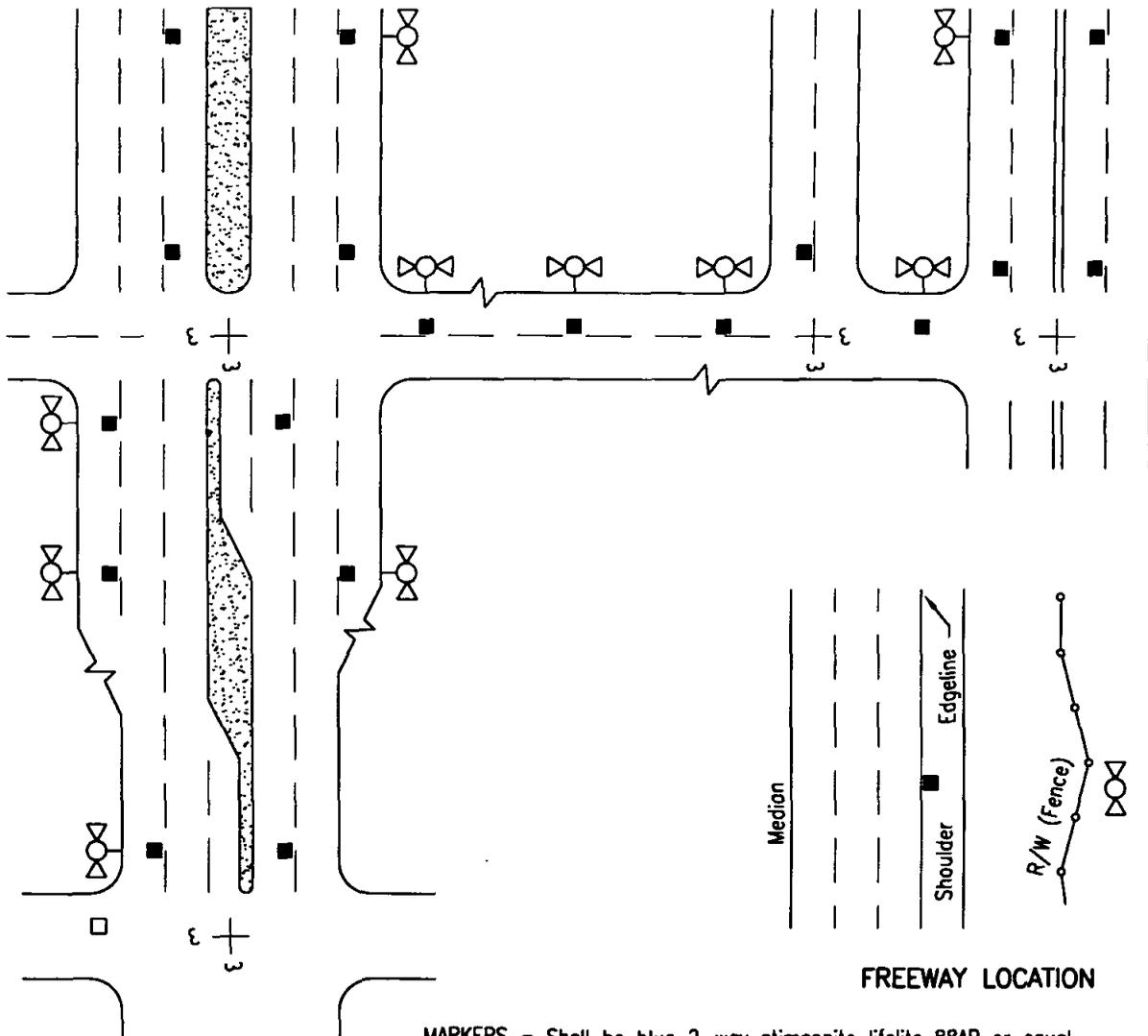
DRINKING FOUNTAIN

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER M-18

STREET LOCATIONS

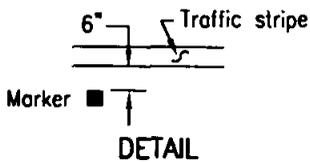


FREEWAY LOCATION

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

ADHESIVE - An ample amount of two (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 the 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 X

Revision	By	Approved	Date
ORIGINAL		H. Hecht	10/82

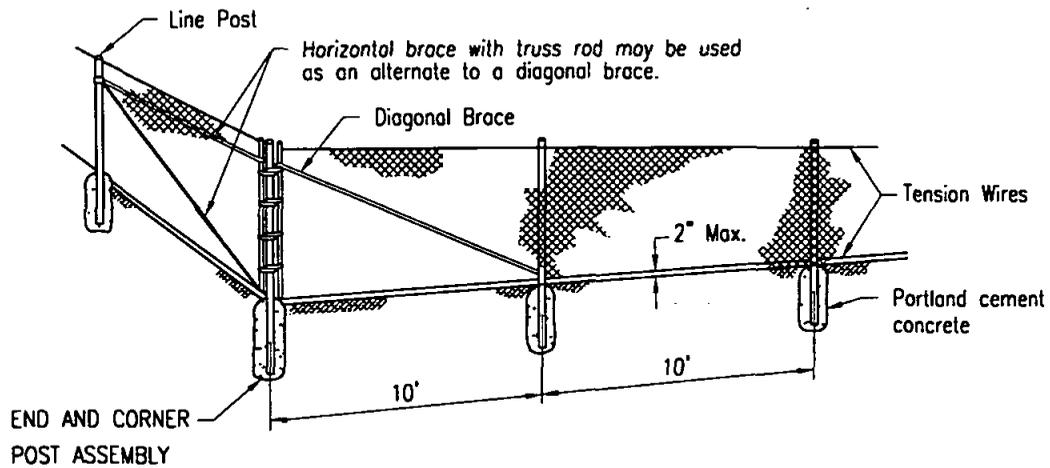
SAN DIEGO REGIONAL STANDARD DRAWING

FIRE HYDRANT MARKERS

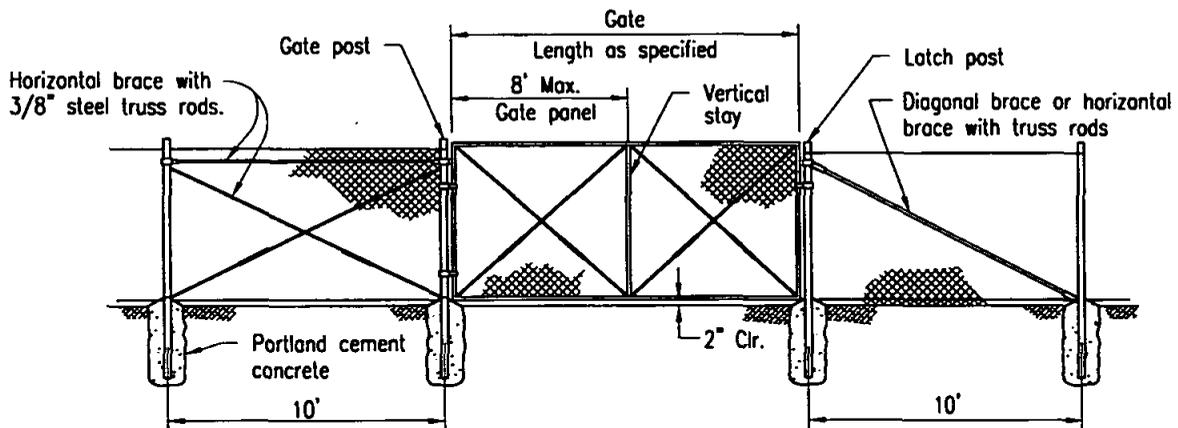
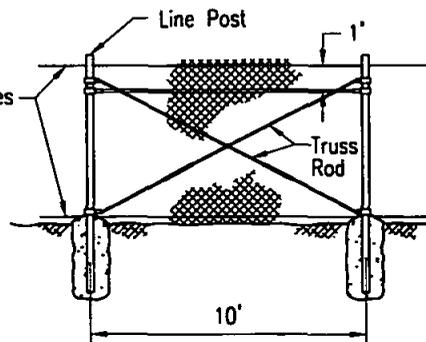
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-19**



Line posts at 1000' max. intervals braced and trussed in both directions.



Revision	By	Approved	Date
ORIGINAL		Bahmanian	4/86

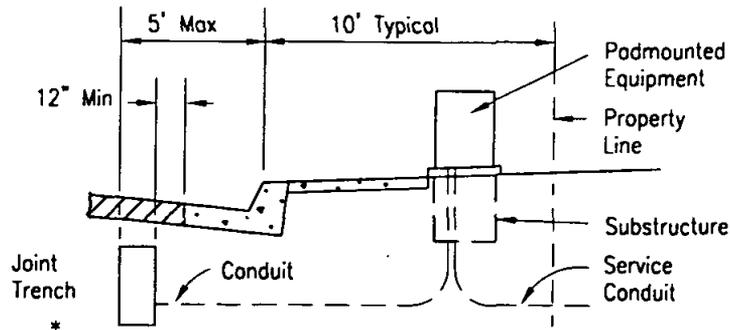
SAN DIEGO REGIONAL STANDARD DRAWING

CHAIN LINK FENCE
DETAILS

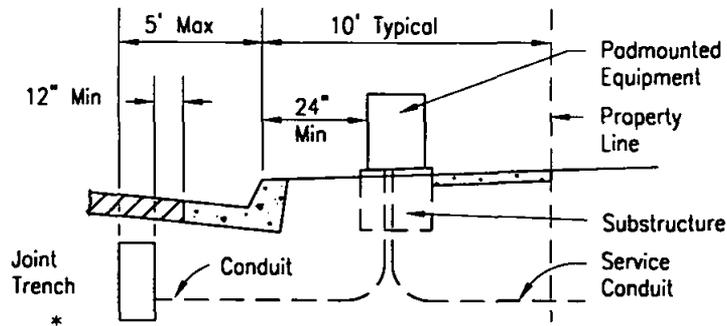
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

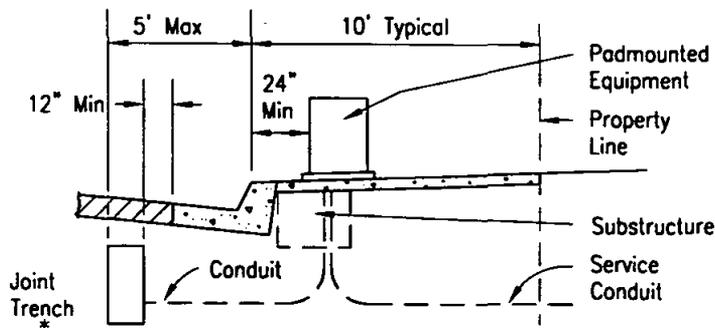
DRAWING NUMBER **M-20**



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
ORIGINAL		Parkinson	9/88

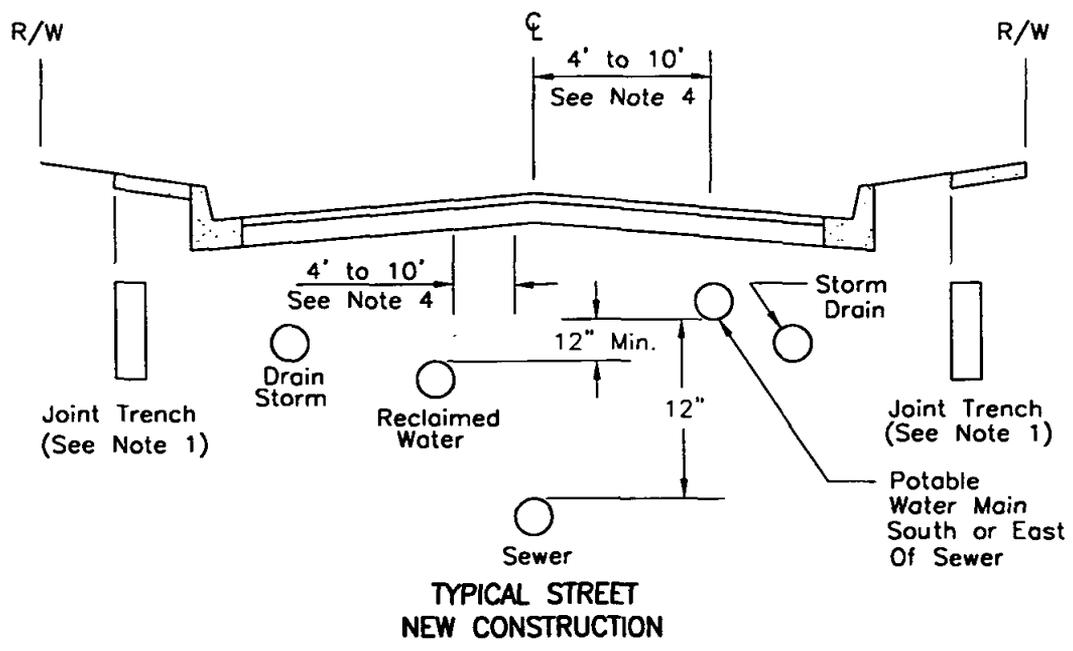
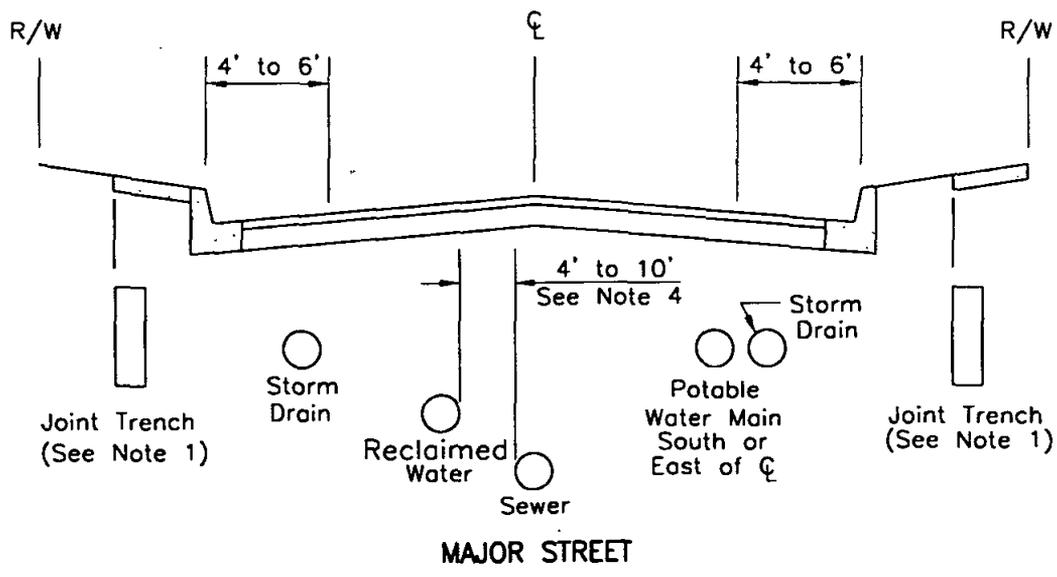
SAN DIEGO REGIONAL STANDARD DRAWING

**UNDERGROUND TYPICAL LOCATION
CONVERSION/REPLACEMENT/UPGRADE**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Steaton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-21**



NOTES

1. At catch basin locations, joint trench shall be 4 ft. minimum from back of curb to inside wall of trench. See Standard Drawing M-15 for configuration of utilities in joint trench.
2. Sewer and reclaimed water mains shall be designed to cross under potable water mains. The vertical separation between potable water and reclaimed water shall be a minimum of 12 inches.
3. Sewer and reclaimed water laterals shall cross under potable water main, with a minimum vertical separation of 12 inches.
4. Sewer and reclaimed water mains shall maintain a 10 ft. minimum horizontal separation, O.D to O.D., with any potable water or sewer/reclaimed main. This separation may be reduced utilizing special construction, with special approval from the Agency and the County Health Dept. For sewer or reclaimed water mains less than 24 inches in diameter, only Agency approval is required.

Revision	By	Approved	Date
ORIGINAL		Parkinson	2/95

SAN DIEGO REGIONAL STANDARD DRAWING

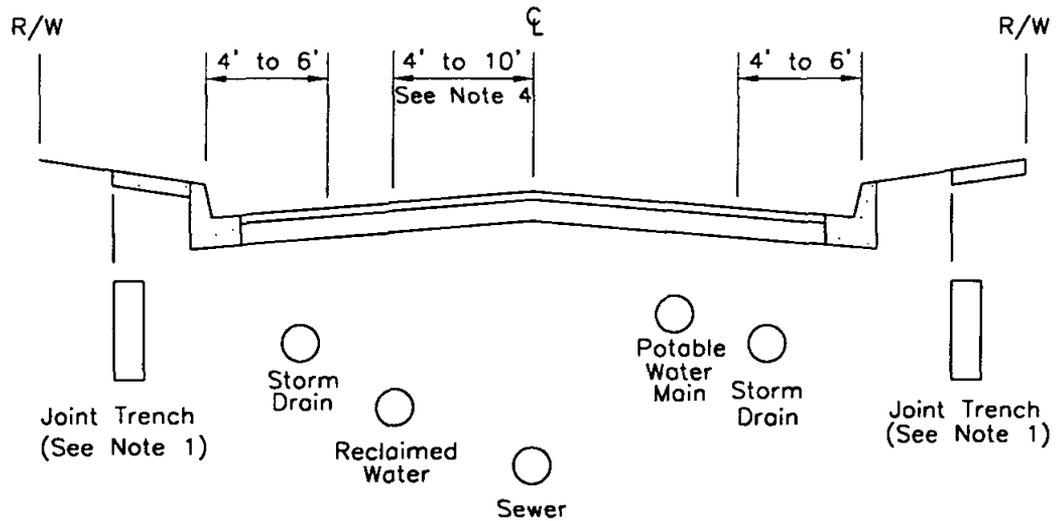
UTILITY LOCATIONS

LOCAL AND MAJOR STREETS

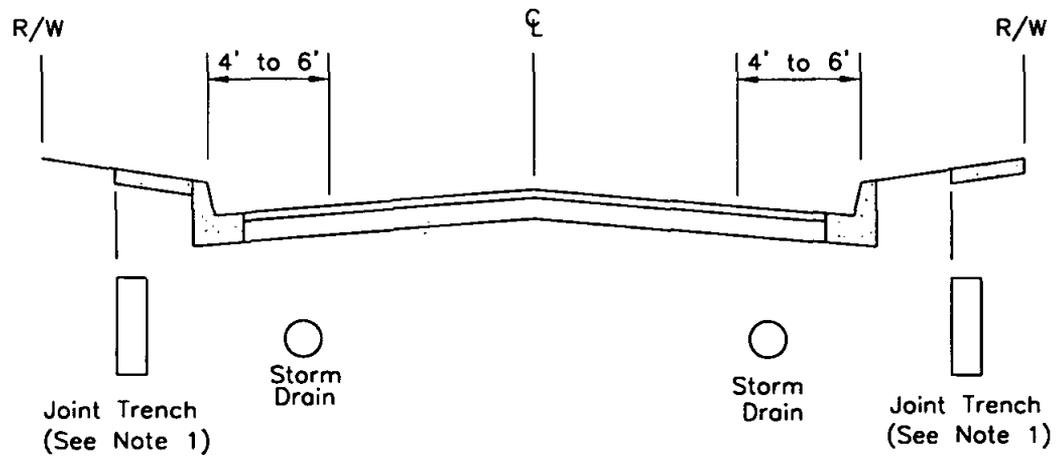
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. E. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER M-22



PRIME ARTERIAL



EXPRESSWAY

NOTES

1. At catch basin locations, joint trench shall be 4 ft. minimum from back of curb to inside wall of trench. See Standard Drawing M-15 for configuration of utilities in joint trench.
2. Sewer and reclaimed water mains shall be designed to cross under potable water mains. The vertical separation between potable water and reclaimed water shall be a minimum of 12 inches.
3. Sewer and reclaimed water laterals shall cross under potable water main, min. vertical separation of 12 inches.
4. Sewer and reclaimed water mains shall maintain a 10 ft. minimum horizontal separation, O.D to O.D., with any potable water or sewer/reclaimed main. This separation may be reduced utilizing special construction, with special approval from the Agency and the County Health Dept. For sewer or reclaimed water mains less than 24 inches in diameter, only Agency approval is required.

Revision	By	Approved	Date
ORIGINAL		G.Parkinson	2/95

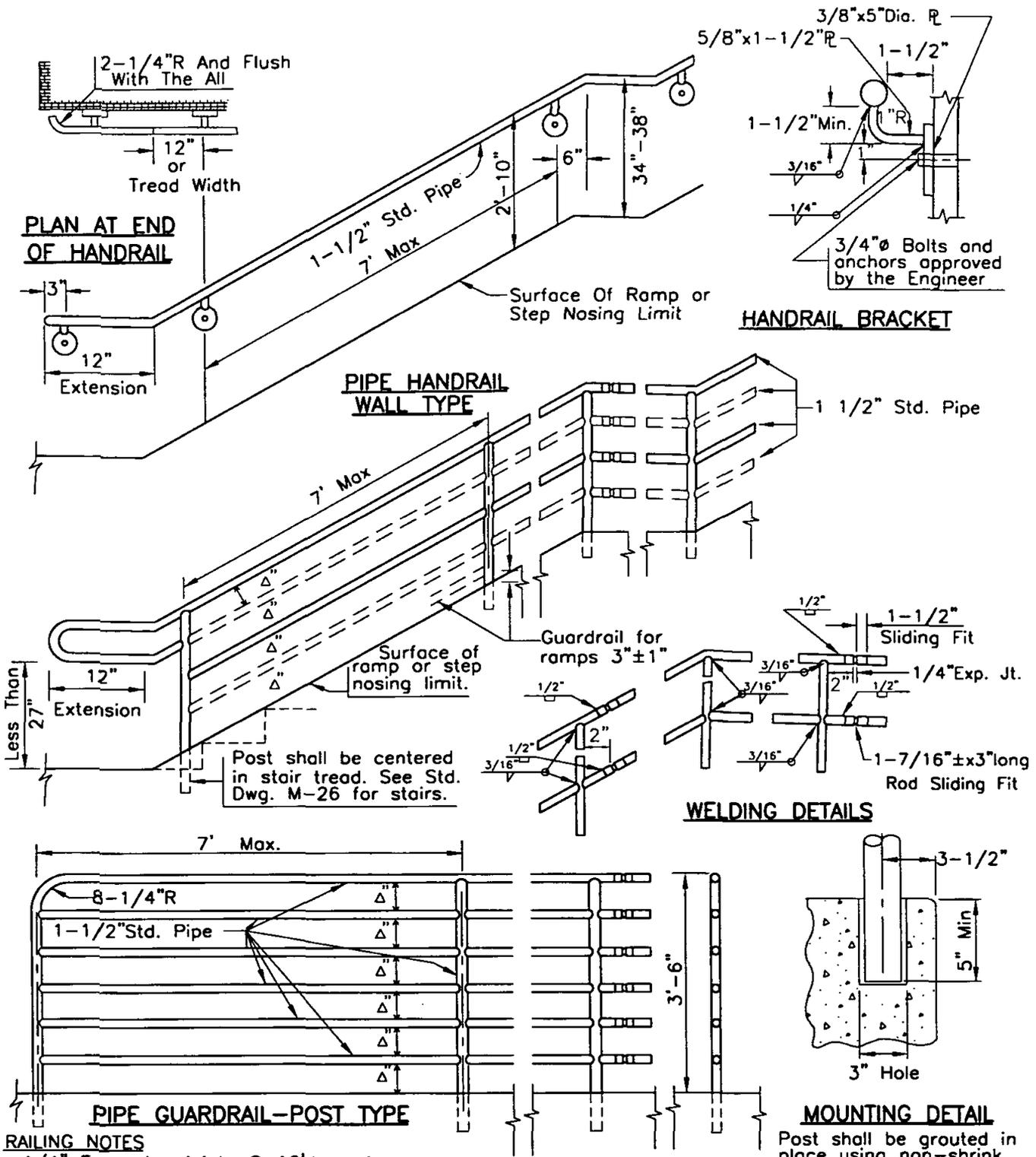
SAN DIEGO REGIONAL STANDARD DRAWING

**UTILITY LOCATIONS
PRIME ARTERIALS AND EXPRESSWAYS**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Stenton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER M-23



RAILING NOTES

1. 1/4" Expansion joints @ 16"± centers.
2. Weld and grind smooth all connections.
3. All railing to be hot dip galvanized after fabrication.
4. Pipe shall seamless steel ASTM A53 Grade B.
5. Maximum Δ = 4". Guardrails and handrails for stairs and ramps more than 30" above grade shall have intermediate rails equally spaced such that a sphere 4" in diameter cannot pass through.
6. Handrail extension for stairs, at all bottom risers, shall be 12" plus one tread width.

Revision	By	Approved	Date
ORIGINAL		G.Parkinson	2/95

SAN DIEGO REGIONAL STANDARD DRAWING

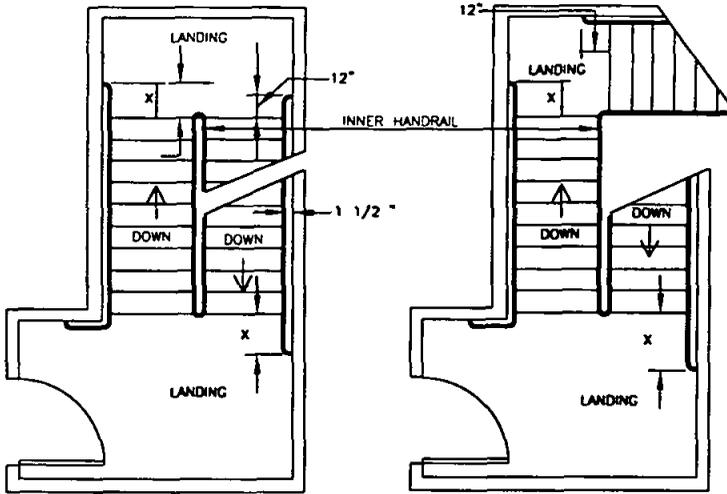
PEDESTRIAN PROTECTIVE RAILING

DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

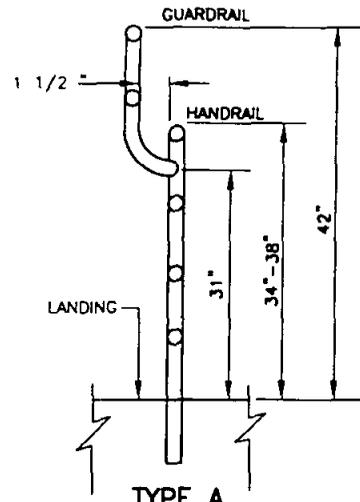
J. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-24**

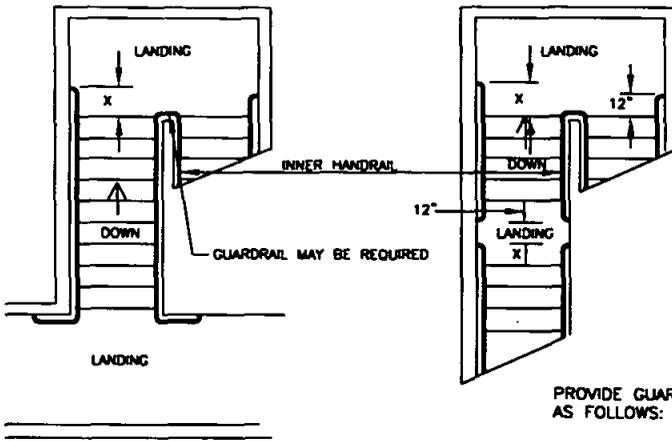


X IS THE MINIMUM HANDRAIL EXTENSION OF 12 INCHES PLUS THE WIDTH OF ONE TREAD AT EACH BOTTOM RISER.

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



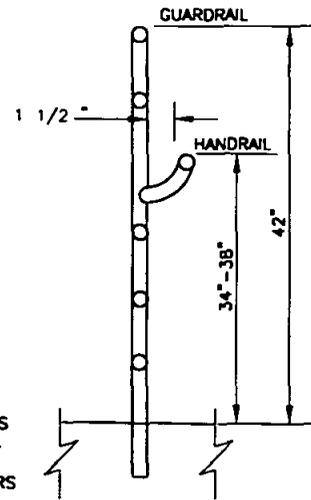
TYPE A
GUARDRAIL EXTENSION



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 B
GUARDRAIL EXTENSION

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 4 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.
4. The top of guardrails for stairways, exclusive of their landings, may have a height as specified for handrails.

Revision	By	Approved	Date
ORIGINAL		G.Parkinson	2/95

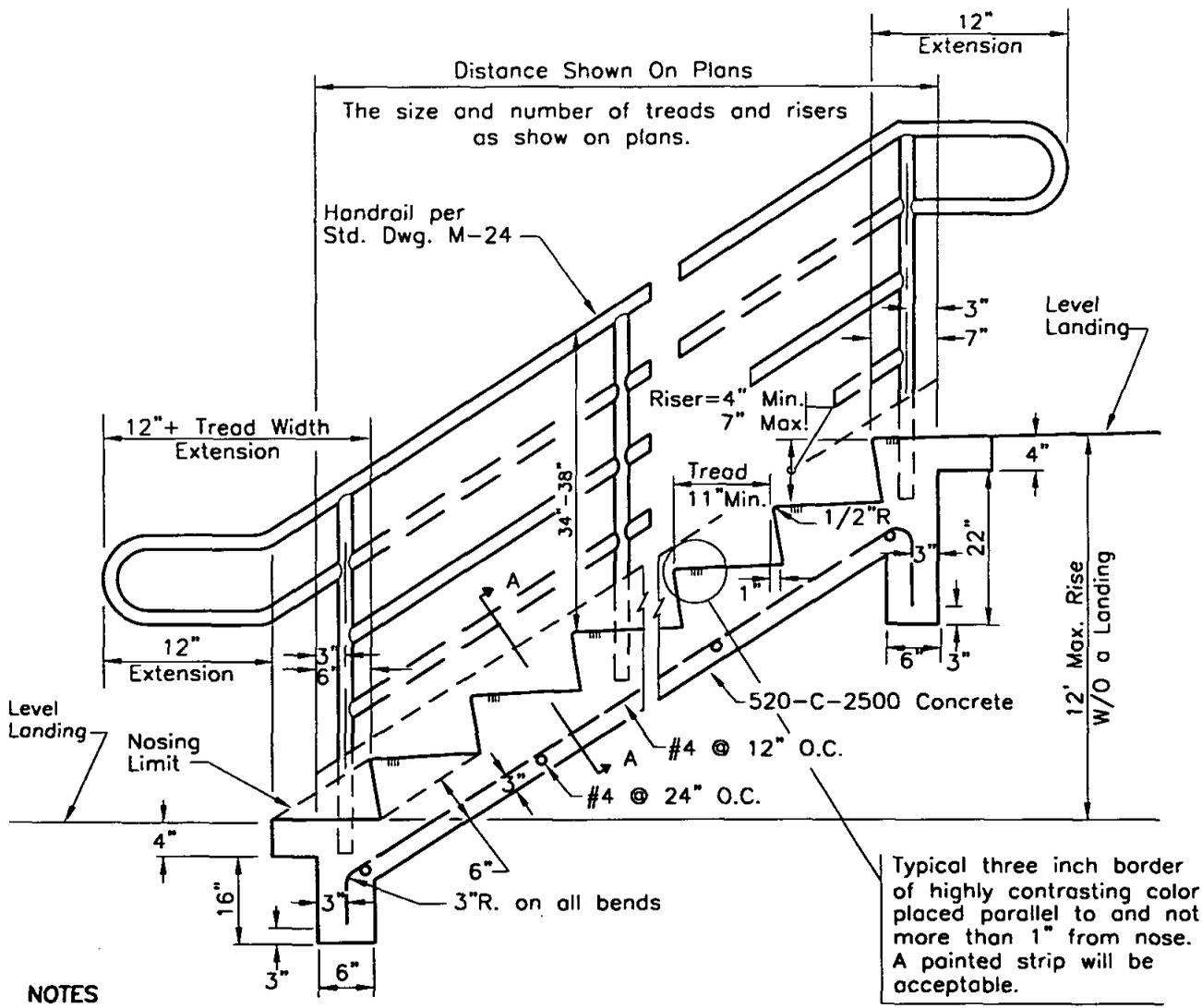
SAN DIEGO REGIONAL STANDARD DRAWING

PEDESTRIAN PROTECTIVE RAILING
DETAILS No. 2

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

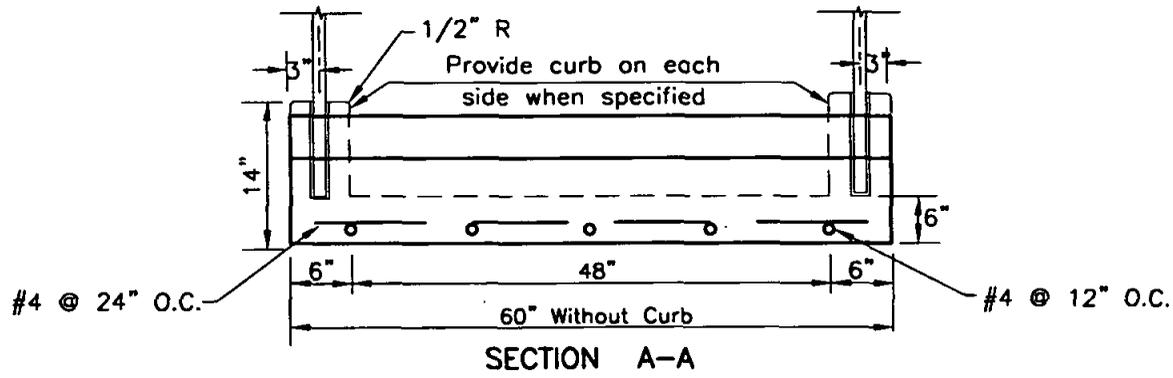
M. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING
NUMBER **M-25**

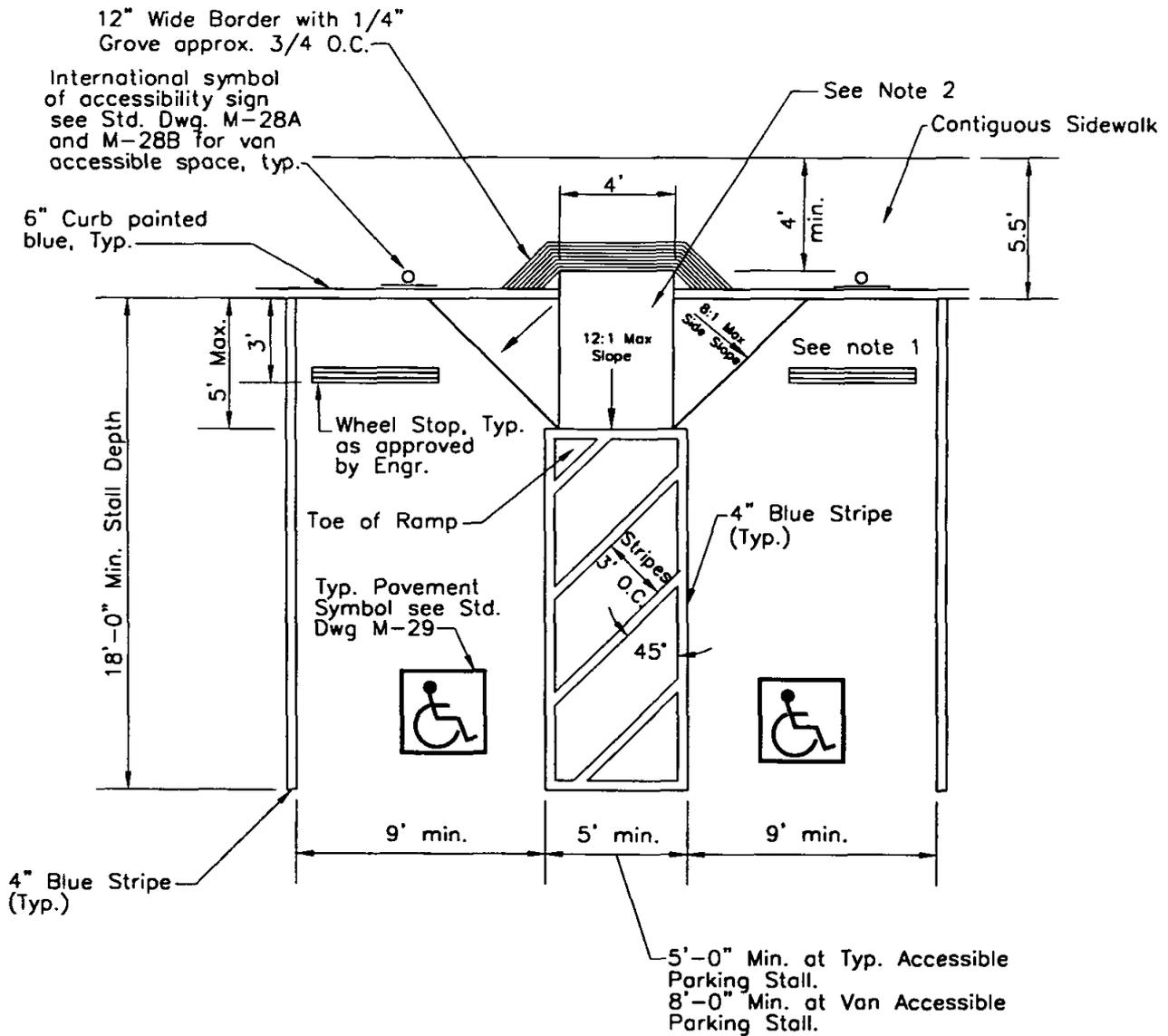


NOTES

1. Broom finish on treads, trowel finish on all other exposed surfaces.
2. 1/4" per 1' slope on treads for drainage.
3. Locate handrails on both sides.
4. Handrail may project into the required width a distance of 3-1/2" from each side of stairway.



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		G.Parkinson	2/95			<i>M. Steaton</i> 3/23/00
				CONCRETE STEPS	Chairperson R.C.E. 19246 Date	
					DRAWING NUMBER	M-26



NOTES:

1. Provide for adequate drainage.
2. For appropriate ramp alternate to conform to topographical conditions, see Std. Dwg. G-27 through G-31.
3. Slope shall not exceed 2% in any direction unless there is equivalent facilitation.
4. Blue color should match color No. 15090 in the Federal Standard 595a as specified in Section 522(b)2.

Revision	By	Approved	Date
ORIGINAL		G.Parkinson	2/95

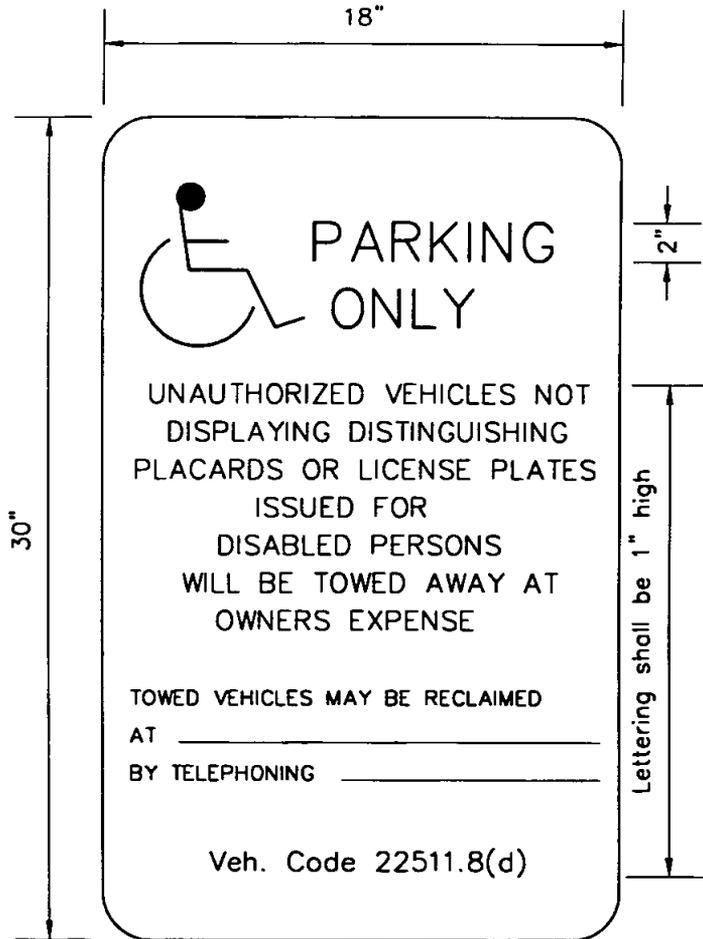
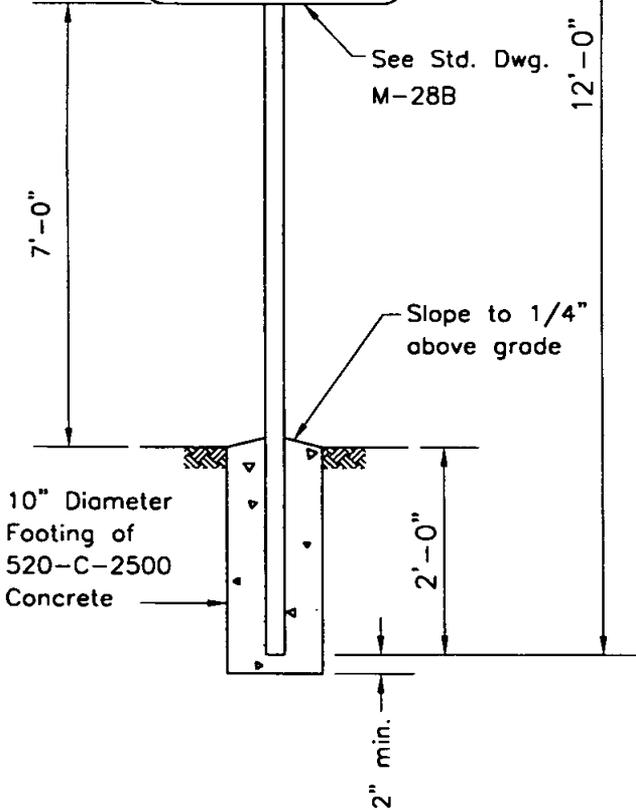
SAN DIEGO REGIONAL STANDARD DRAWING

DISABLED PARKING STALL(S)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-27A**



SIGN DETAIL

NOTES:

1. Sign shall be constructed of a minimum 0.062" thick 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. Where space is designed for van accessibility, a sign "VAN ACCESSIBLE" shall be installed.
5. Minimum van accessible vertical clearance is 8'-2".

Revision	By	Approved	Date
ORIGINAL		G.Parkinson	2/95

SAN DIEGO REGIONAL STANDARD DRAWING

DISABLED PARKING SIGN

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/00
Chairperson R.C.E. 19246 Date

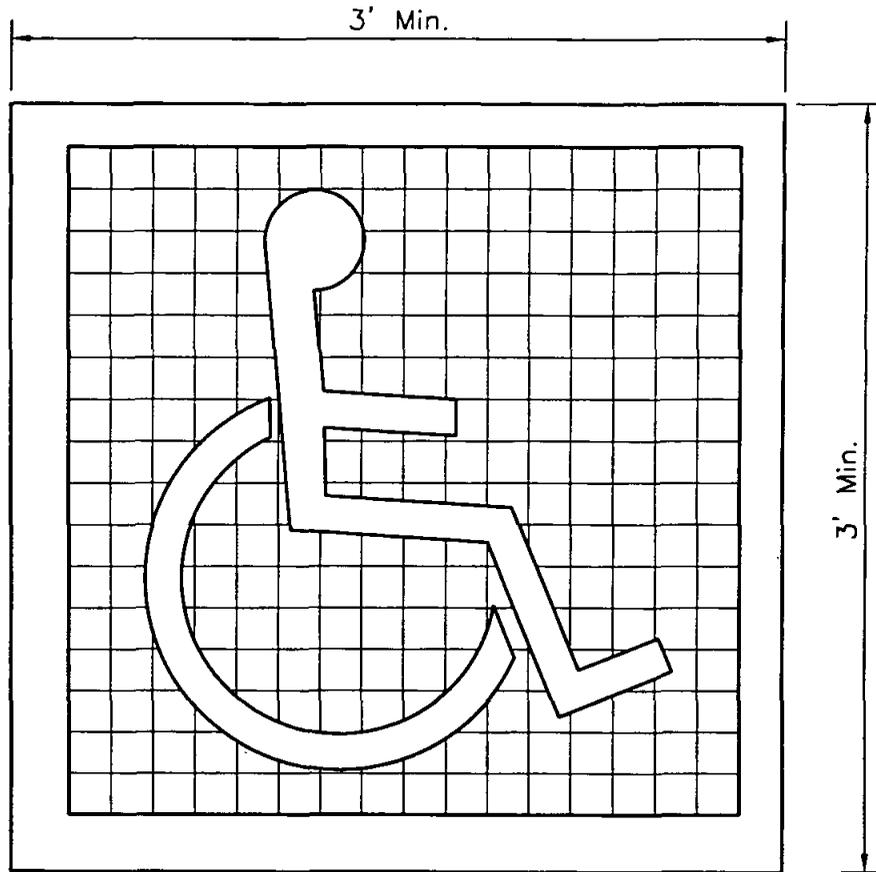
DRAWING NUMBER **M-28A**



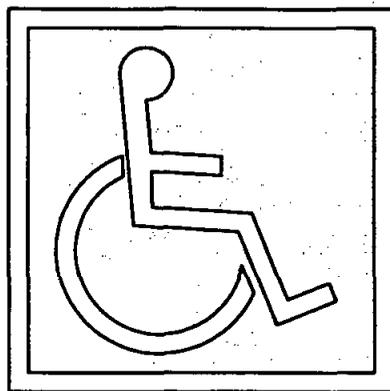
NOTES

1. Sign shall be constructed of aluminum, 0.062" minimum thickness.
2. Colors: Background—Reflectorized Blue
 Border and letters— Reflectorized White
 Blue color shall match color No. 15090 in the
 Federal Standard 595a as specified in Section 522(b)2.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		G.Parkinson	2/95		VAN ACCESSIBLE SIGN FOR DISABLED PARKING SPACE
				DRAWING NUMBER	
				M-28B	



(a) SYMBOL PROPORTIONS



INTERNATIONAL SYMBOL OF ACCESSIBILITY

(b) DISPLAY CONDITIONS

NOTES

1. Pavement symbol shall be painted white on a blue background.
2. Blue color shall match color No. 15090 in the Federal Standard 595a as specified in Section 522(b)2.

Revision	By	Approved	Date
ORIGINAL		G.Parkinson	2/95

SAN DIEGO REGIONAL STANDARD DRAWING

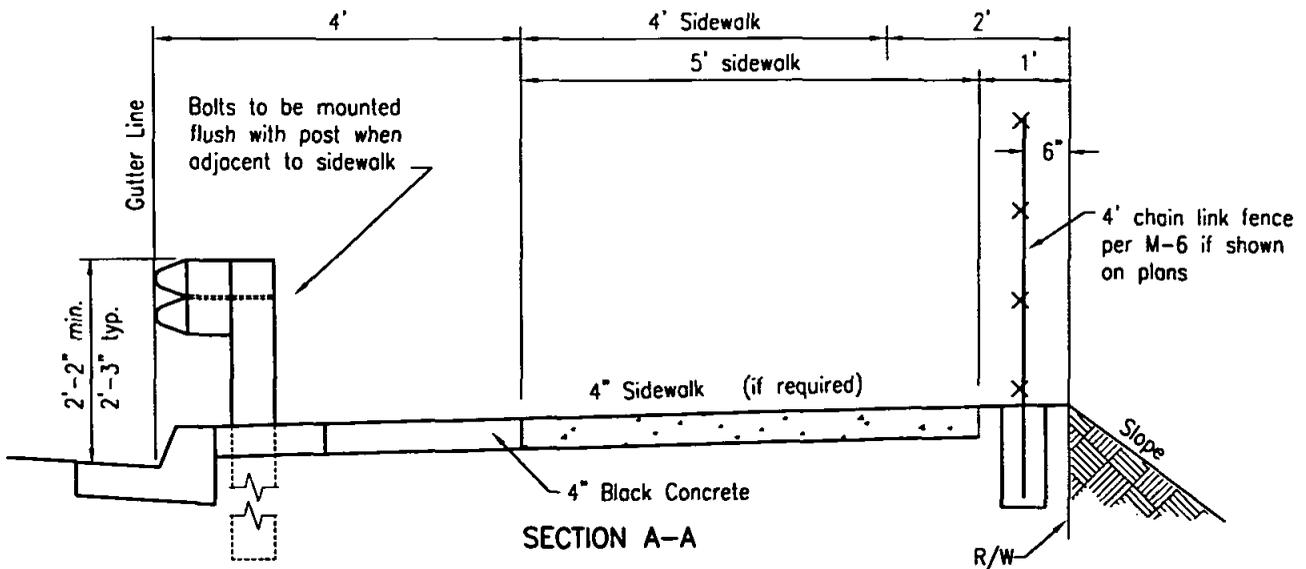
PAVEMENT SYMBOL - DISABLED PARKING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

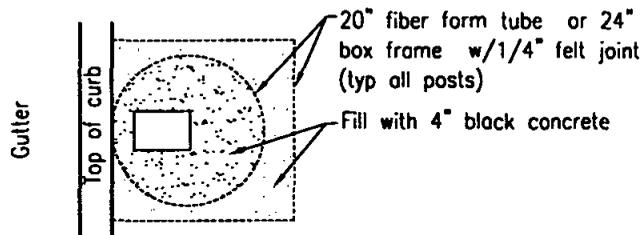
R. Steuton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER

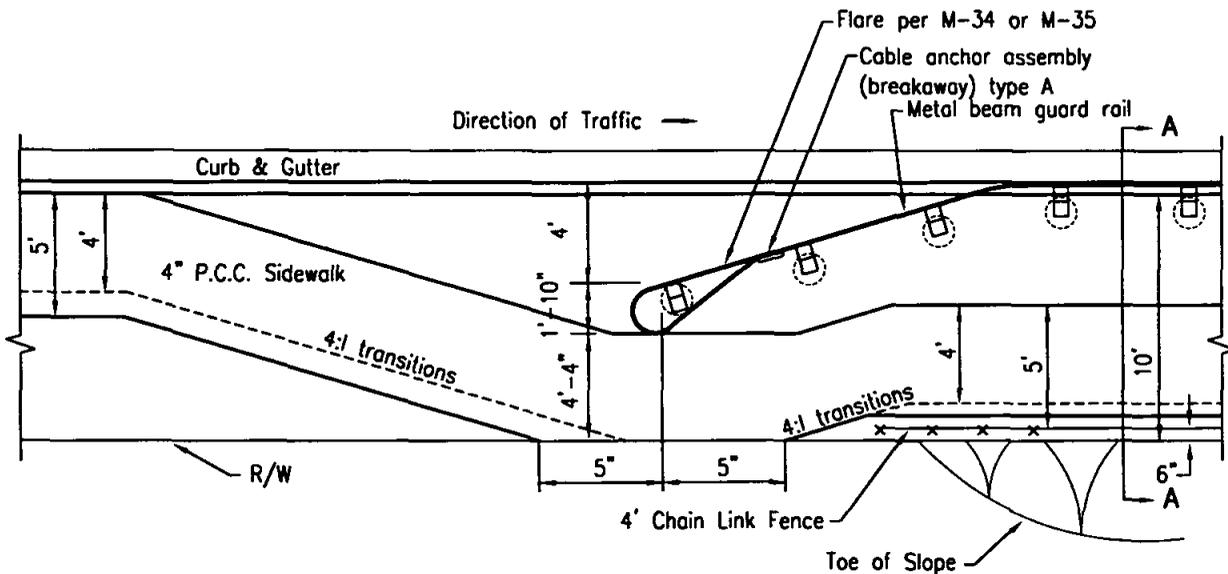
M-29



Typical for above ground obstructions—4:1 sidewalk transitions typical for use with G-7



DETAIL OF POST KNOCKOUT



Revision	By	Approved	Date
ORIGINAL		G.Parkinson	5/92

SAN DIEGO REGIONAL STANDARD DRAWING

GUARD RAIL STANDARDS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-30**

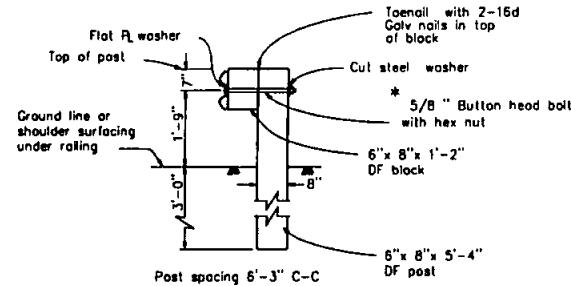
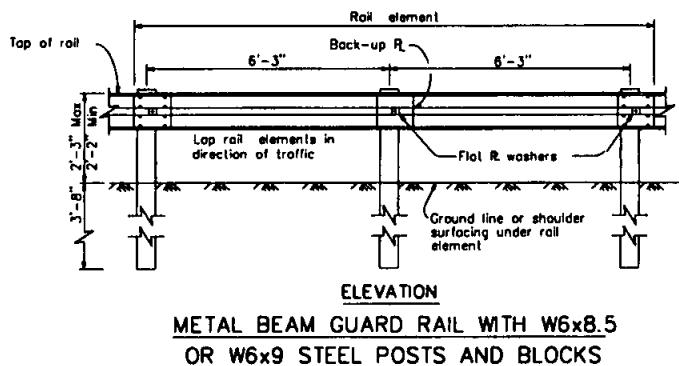
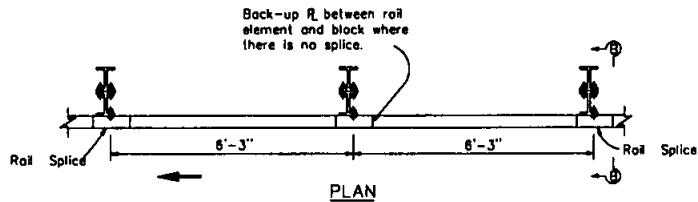
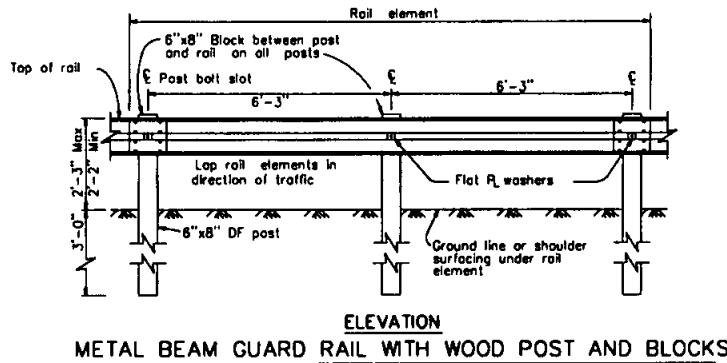
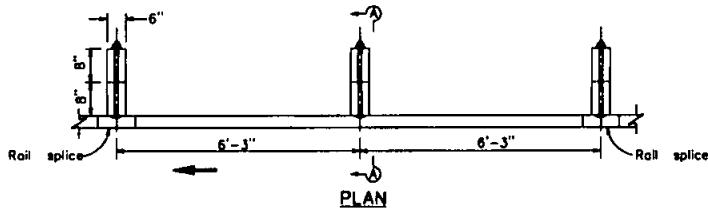
Revision
By Approved
Date

ORIGINAL
C. Parkinson
4/92

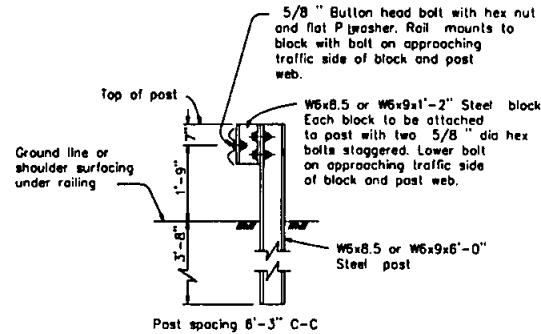
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

METAL BEAM GUARD RAILING

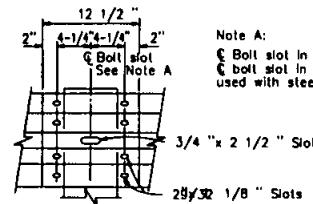
DRAWING NUMBER
M-31



SECTION A-A
* Where bolt is reversed or 5/8" threaded rod is used to mount rail, no more than 1/2" of thread may be exposed on traffic side of rail.

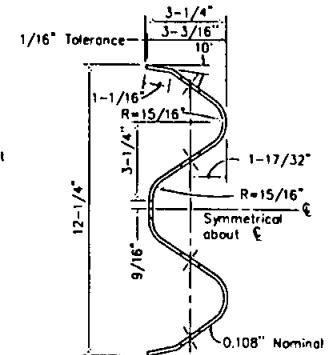


SECTION B-B



RAIL SPLICE DETAIL ELEVATION VIEW

Splice the overlapped ends of the rail elements with 5/8" x 1 1/4" button head oval shoulder bolts and 5/8" x 1 1/4" recessed hex nut in the 29/32 1/8" slots. Total 8 per rail splice; 4 per terminal section and end section. Lap rail elements in direction of traffic.



SECTION THRU RAIL ELEMENT

NOTES

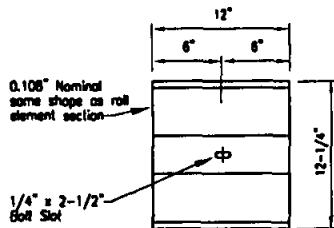
1. For details of standard hardware used to construct guard railing, see Std. Dwg. M-32.
2. For details of posts and blocks used to construct guard railing, see Std. Dwg. M-33.
3. Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
4. Top of rail to be 27" above the ground line or shoulder surfacing under the rail element.
5. For guard railing approach flares, see Std. Dwg. M-34 and M-35.
6. For embankment widening details to accommodate guard railing approach flares, see Standard Dwg. M-36.
7. For guard railing and anchor details, see Std. Dwg. M-37 and M-39.
8. For guard railing connection details to bridge railing, retaining walls and abutments, see Std. Dwg. M-40.
9. For guard railing connection details to bridge sidewalks and curbs, see Std. Dwg. M-41.
10. For dike positioning with guard railing installations, see Std. Dwg. M-36.
11. Direction of traffic indicated by →

Revision	By	Approved	Date
ORIGINAL		C. Parkinson	4/92

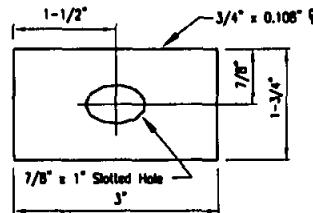
NOTES

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 sections details, see Standard Dwg. M-40.
4. For terminal section Type C. see Standard Dwg. M-38.

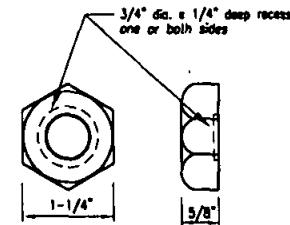
L	THREADED LENGTH
1-1/4"	Full Thread Length
2"	1-1/2" min. Thread Length
3-1/2"	1-3/4" min. Thread Length
12"	2-1/2" min. Thread Length



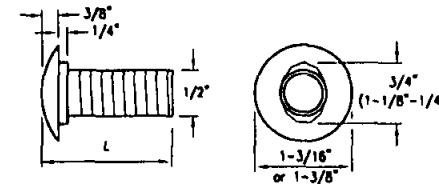
BACK-UP PLATE
See Note 2



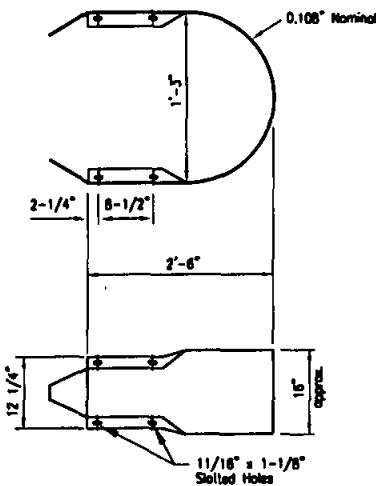
FLAT PLATE WASHER



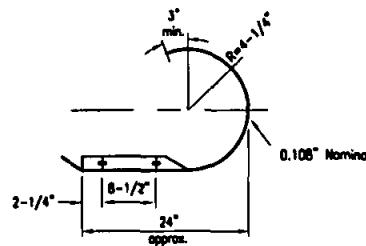
5/8" Ø RECESS NUT



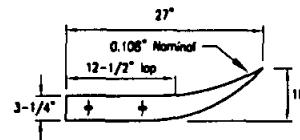
5/8" Ø BUTTON HEAD BOLT



RETURN SECTION

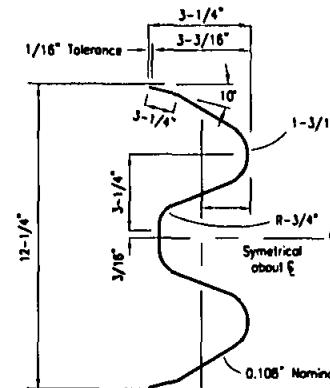


**TERMINAL SECTION
TYPE A**



Some shape as rail element section

**TERMINAL SECTION
TYPE B**



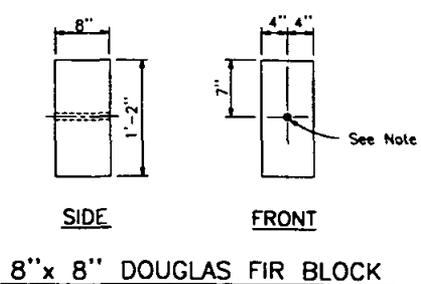
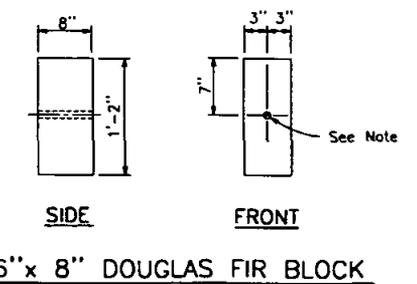
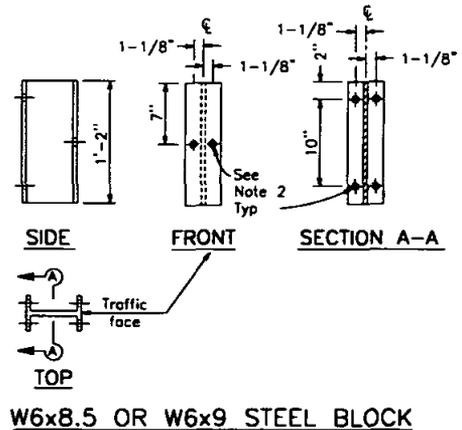
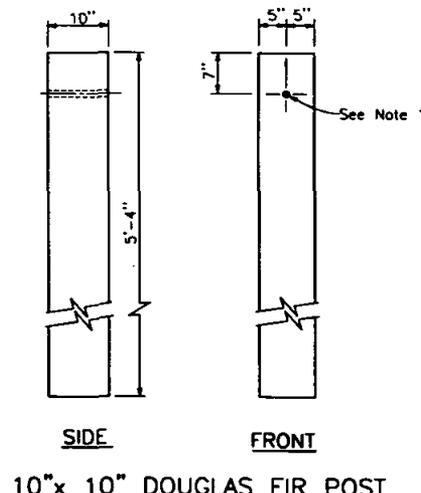
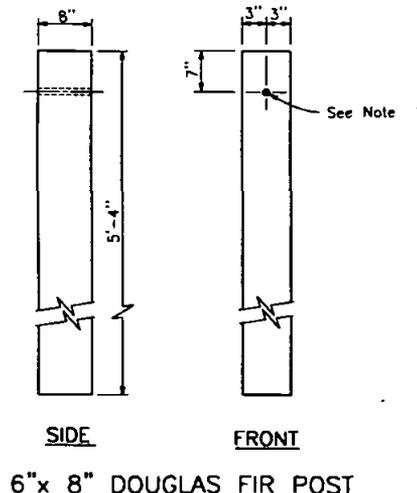
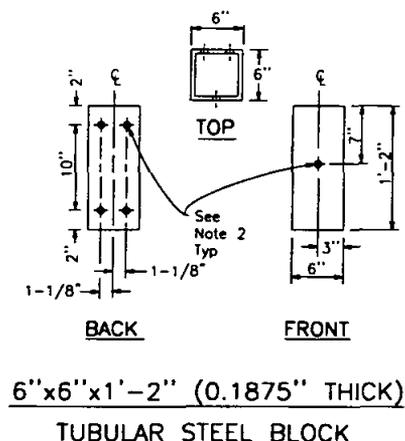
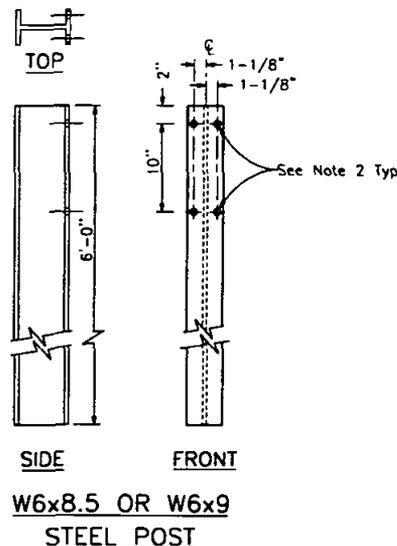
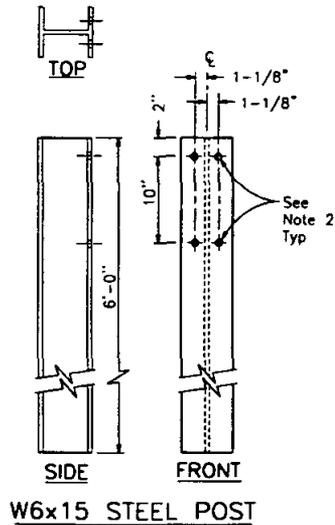
**SECTION THRU
RAIL ELEMENT**

SAN DIEGO REGIONAL STANDARD DRAWING

METAL BEAM GUARD RAILING
STANDARD HARDWARE

DRAWING
NUMBER
M-32

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE
Chapman
Chairperson R.C.E. 19246 Date 3/23/90



NOTES

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

Revision	By	Approved	Date
ORIGINAL		G.Parkinson	4/92

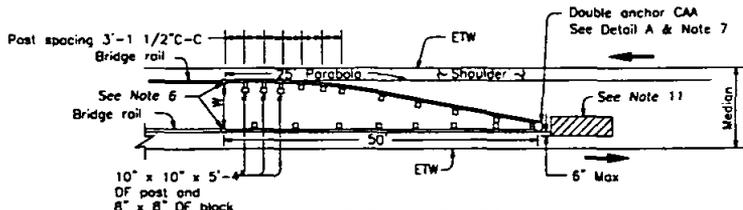
SAN DIEGO REGIONAL STANDARD DRAWING

**METAL BEAM GUARD RAILING
POSTS AND BLOCKS**

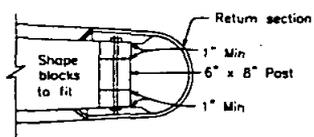
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. C. E. 3/23/00
Chairperson R.C.E. 19246 Date

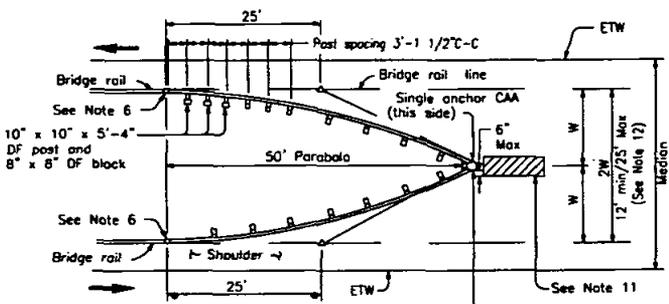
DRAWING NUMBER **M-33**



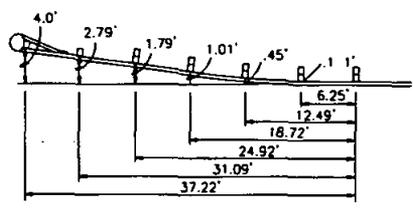
TYPE 4 FLARE
See Note 3



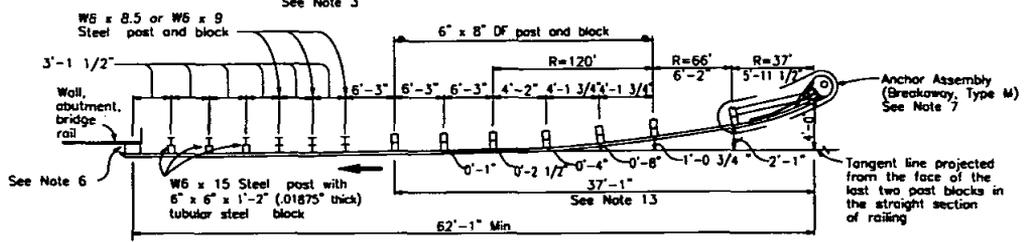
DETAIL A



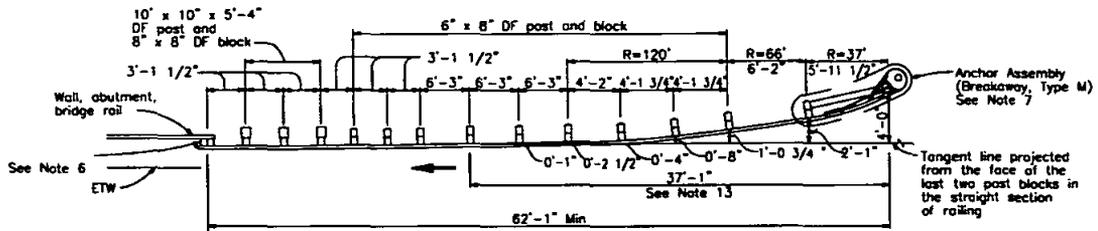
TYPE 3 FLARE
See Note 3



37'-6" PARABOLIC OFFSETS
(Parabolic offsets not to be used with Type 1M flares)



TYPE 1M FLARE
(STEEL POST INSTALLATION)
See Notes 9 and 13

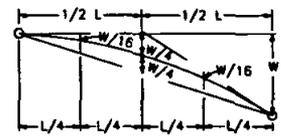


TYPE 1M FLARE
(WOOD POST INSTALLATION)
See Notes 9 and 13

NOTES

1. Post, blocks and hardware to be used are shown on Standard Drawing M-31 and M-32.
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 6" 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 6" x 1'-2" (0.1875 inch 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 \blackrightarrow
6. For connection details see Standard Drawing M-40 and M-41.
7. For end anchor details see Standard Drawing M-37 and M-39.
8. Terminal Sections not to be installed on trailing end of guard rail placed adjacent to one-way roadways.
9. The 37'-1" flared portion of Type 1M Flare is used at approach end of guard railing for embankment installations.
10. For embankment widening details to accommodate approach flares, see Revised Standard Drawing M-36.
11. Sand filled crash cushion, as shown on Standard Plan AB1, or other crash cushion approved by the Engineer is required for Type 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.
12. When width W, exceeds 12 feet; to calculate the length of parabolic flare use $L=3W$ and round to nearest 12'-6".
13. For additional requirements for the Type 1M flare installations see Standard Drawing M-37.

CAA = Cable Anchor Assembly



TYPICAL PARABOLIC LAYOUT

Revision	By	Approved	Date
ORIGINAL		G.Parkinson	4/92

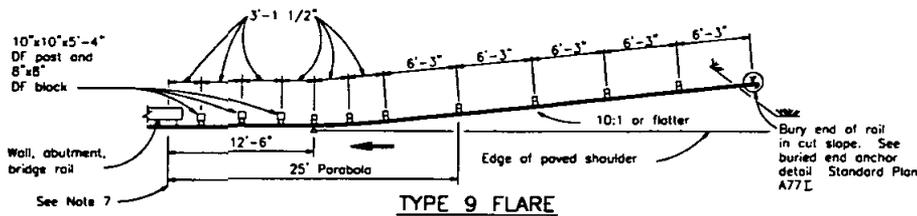
SAN DIEGO REGIONAL STANDARD DRAWING

GUARD RAIL FLARES

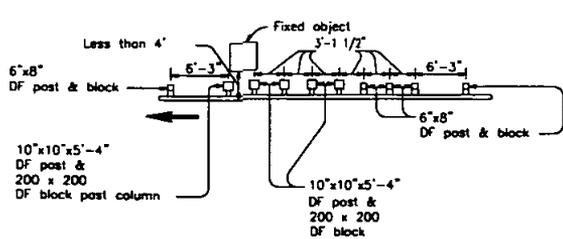
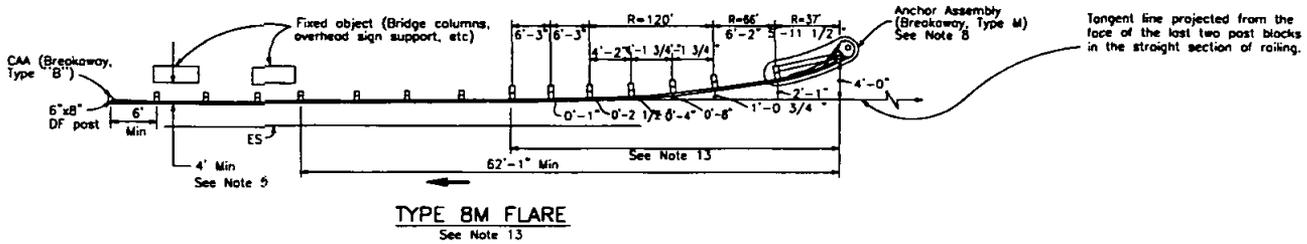
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Steaton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER M-34

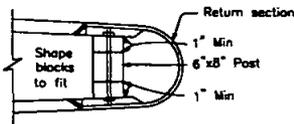


ABBREVIATION
CAA = Cable Anchor Assembly

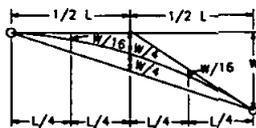


Use with Type 5, 6, and 8M flares when guard rail is less than 4' from fixed object. See Note 5. For a series of columns, additional 10'x10'x5'-4" DF post at 3'-1 1/2" center to center spacing to be used between columns. Where 10'x10" DF posts and 8'x8" DF blocks are shown, W6x15 steel posts and tubular steel 6'x6'x1'-2" (0.1875" thick) blocks may be specified where applicable. Where 6'x8" DF posts and blocks are shown, W6x8.5 or W6x9 steel posts and blocks may be specified where applicable.

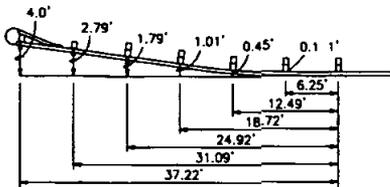
APPROACH RAILING TRANSITION DETAIL FOR FIXED OBJECT



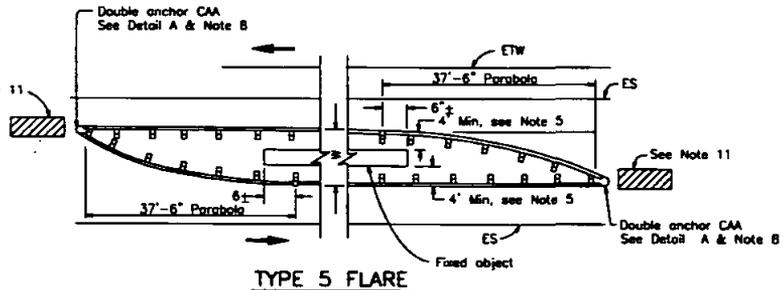
DETAIL A



TYPICAL PARABOLIC LAYOUT



37'-6" PARABOLIC OFFSETS
(Parabolic offsets not to be used with Type 8M flares.)



TYPE 5 FLARE

NOTES

1. Post, blocks and hardware to be used are shown on Standard Drawing 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 and blocks shown are 6" x 8" DF. W6x8.5 or W6x9 steel posts and blocks may be specified where applicable. Where 10" x 10" DF posts and 8" x 8" DF blocks are shown, W6x15 steel post and tubular steel 6" 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 Drawing M-40.
8. For end anchor details see Standard Drawing M-37 and M-39.
9. Terminal sections not to 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, or other crash cushion 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.
12. When width, exceeds 12 feet; to calculate the length of parabolic flare use $L=3W$ and round to nearest 12'-6".
13. For additional requirements for the Type 8M flare installations see Standard Drawing M-37.

Revision	By	Approved	Date
ORIGINAL		G.Parkinson	4/92

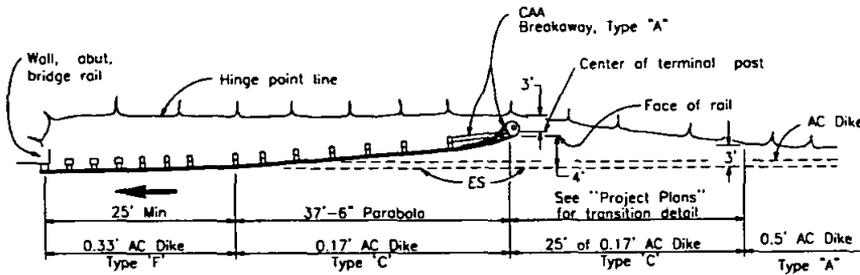
SAN DIEGO REGIONAL STANDARD DRAWING

GUARD RAIL FLARES

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

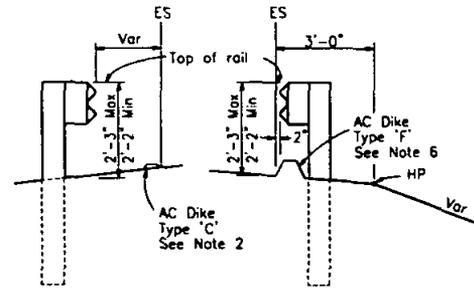
J. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-35**



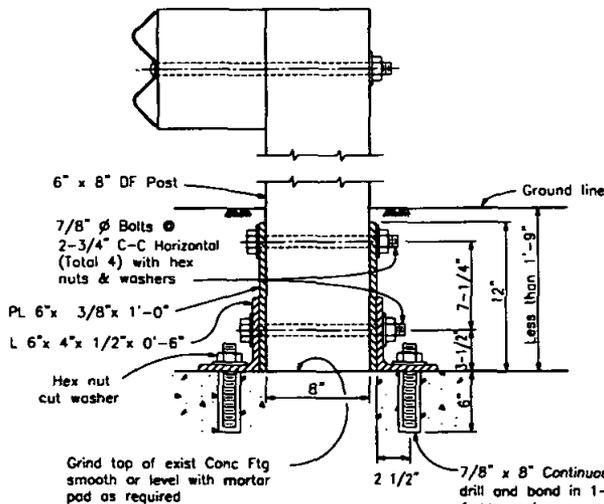
EMBANKMENT WIDENING AND DIKE PLACEMENT DIAGRAM

See Notes 1 and 2

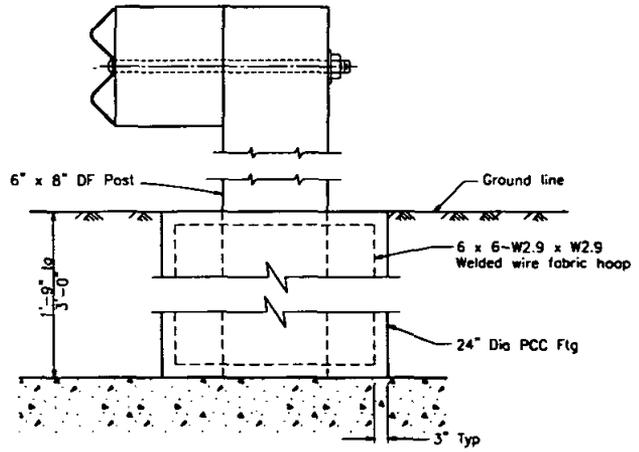


DIKE POSITIONING

(See Note 2)



DETAIL A



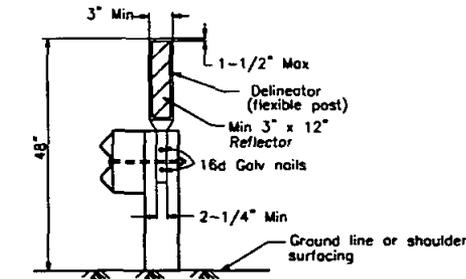
DETAIL B

Form socket in concrete to receive 6 inch x 8 inch post or place concrete around 6 inch x 8 inch post wrapped with one layer of 1/2" thick expanded polystyrene foam sheeting. Do not nail 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'-9". Use Detail B where embedment of post is between 1'-9" and 3'-0".



GUARD RAILING DELINEATION

See Note 4

NOTES

1. For guard rail flare details, see Standard Drawings M-34 and M-35.
2. When necessary to place dike in front of guard rail face, only Type 'C' dike may be used. For dike details, see Standard Drawing G-5.
3. For standard railing post embedment, see Standard Drawing M-31.
4. Guard railing delineation to be used where shown on the project plans.
5. Direction of traffic indicated by
6. When dike or curb is placed under guard railing, the maximum height of the dike or curb shall be 0.33'.

Revision	By	Approved	Date
ORIGINAL		G.Parkinson	4/92

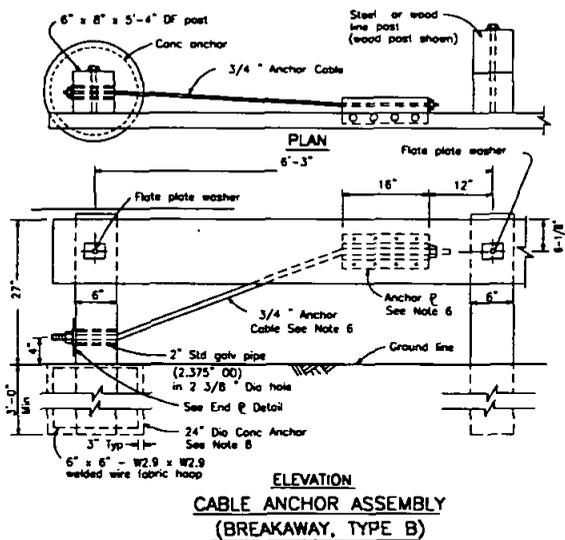
SAN DIEGO REGIONAL STANDARD DRAWING

**METAL BEAM GUARD RAILING
MISCELLANEOUS DETAILS**

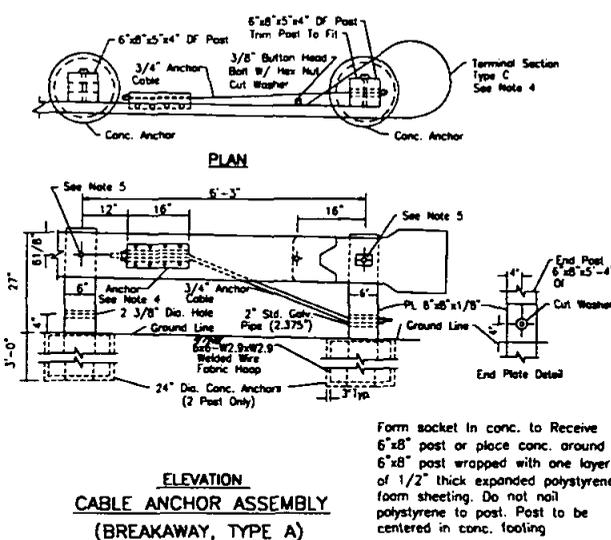
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date

**DRAWING
NUMBER M-36**

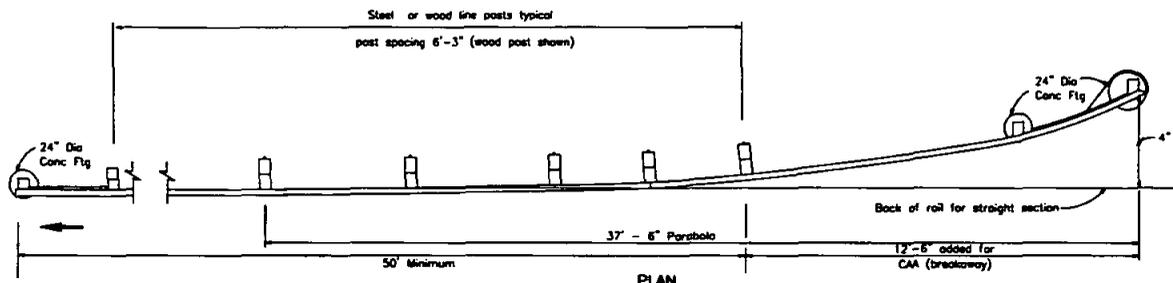


ELEVATION
CABLE ANCHOR ASSEMBLY
(BREAKAWAY, TYPE B)

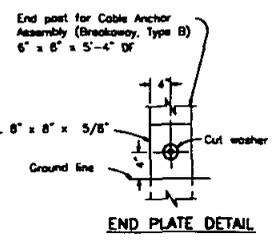
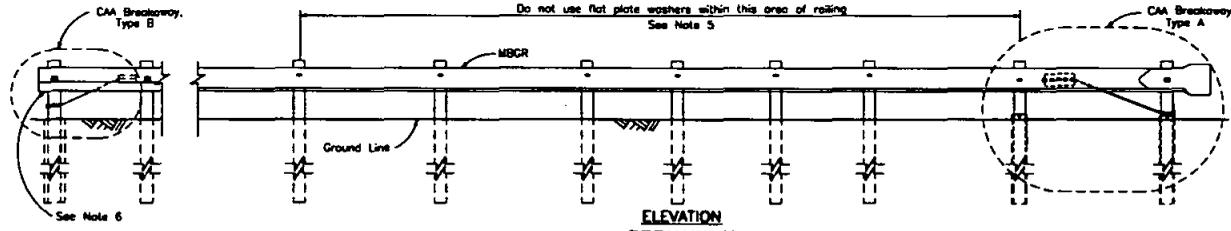


ELEVATION
CABLE ANCHOR ASSEMBLY
(BREAKAWAY, TYPE A)

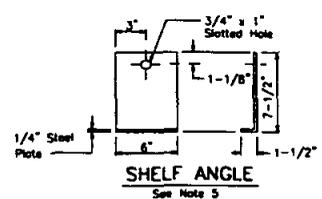
Form socket in conc. to receive 6"x8" post or place conc. around 6"x8" post wrapped with one layer of 1/2" thick expanded polystyrene foam sheeting. Do not nail polystyrene to post. Post to be centered in conc. footing.



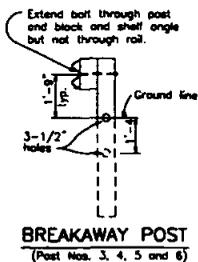
ELEVATION
BREAKAWAY
END ANCHORS



END PLATE DETAIL



SHELF ANGLE
 See Note 5



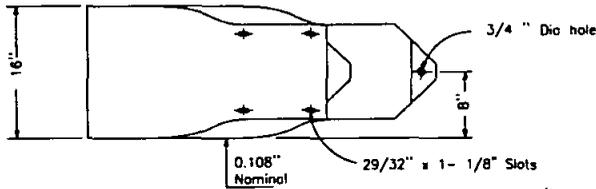
BREAKAWAY POST
 (Post Nos. 3, 4, 5 and 6)

NOTES

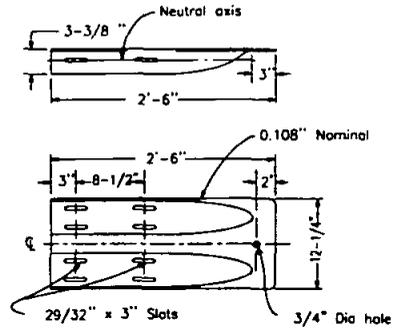
1. For typical use of cable anchor assembly (Breakaway, Type A), see Revised Standard Drawings M-34 and M-35.
2. Cable anchor assembly (Breakaway, Type B) is typically used on the trailing end of guard railing for embankment installations except two-way road beds less than 60 feet in width.
3. Direction 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	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		G.Parkinson	4/92		

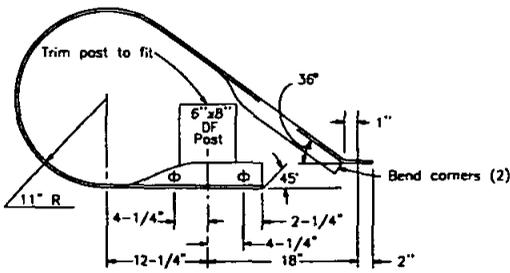
NOTE
See Standard Drawing M-37 for Breakaway End Anchor details.



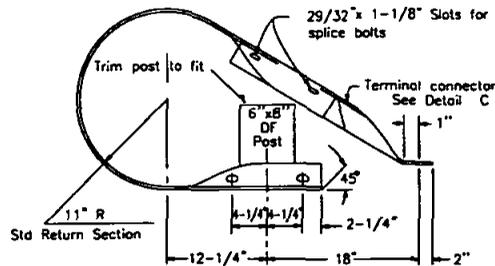
TERMINAL SECTION TYPE C - ELEVATION VIEW



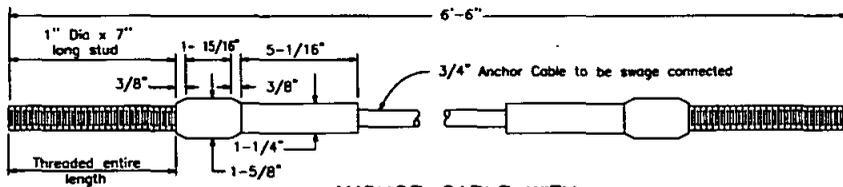
**TERMINAL CONNECTOR FOR
OPTIONAL DESIGN TERMINAL SECTION TYPE C
DETAIL C**



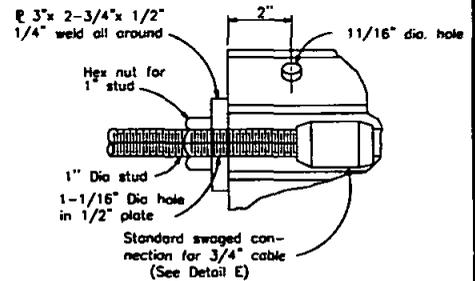
**TERMINAL SECTION TYPE C
DETAIL A**



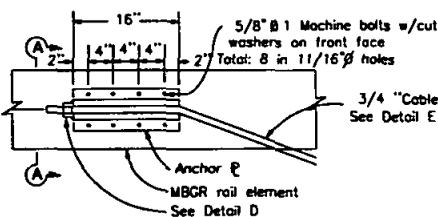
**OPTIONAL DESIGN TERMINAL SECTION TYPE C
DETAIL B**



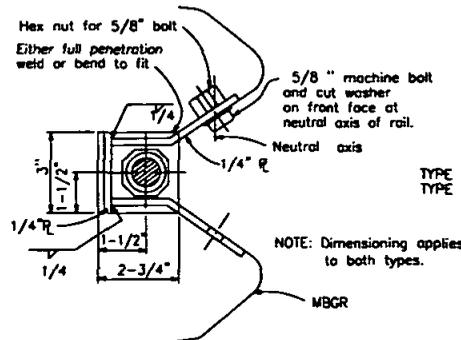
**ANCHOR CABLE WITH
SWAGED FITTING AND STUD
DETAIL E**



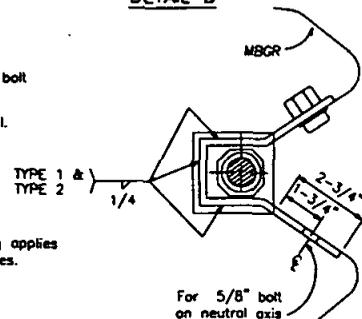
DETAIL D



ANCHOR PLATE DETAIL



**SECTION A-A
(ALTERNATIVE TYPE 1)**



**SECTION A-A
(ALTERNATIVE TYPE 2)**

Revision	By	Approved	Date
ORIGINAL		G.Parkinson	4/92

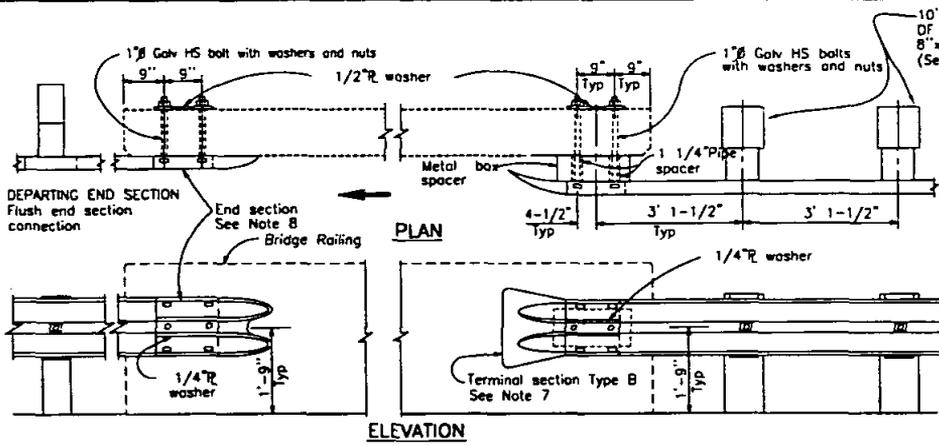
SAN DIEGO REGIONAL STANDARD DRAWING

**GUARD RAIL END ANCHORS
(BREAKAWAY HARDWARE)**

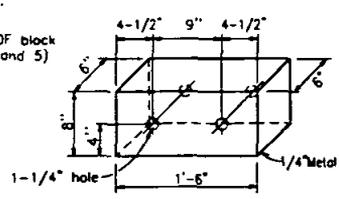
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

**DRAWING
NUMBER M-38**

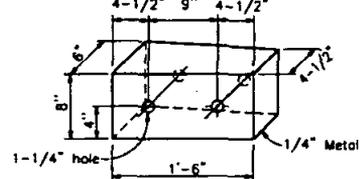


GUARD RAIL CONNECTION TO BRIDGE RAILING



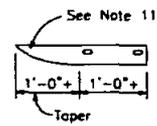
STRAIGHT METAL BOX SPACER

See Note 6
Use when approach guard rail is not tapered



TAPERED METAL BOX SPACER

See Note 6
Use when approach guard rail is tapered



END SECTION DETAILS

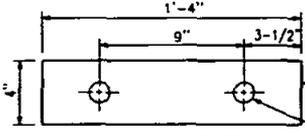
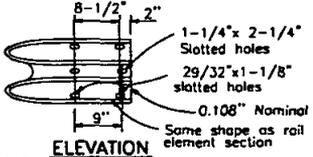


PLATE WASHER FOR BACKSIDE OF BRIDGE RAILING

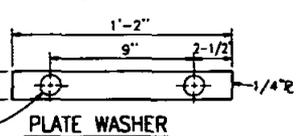
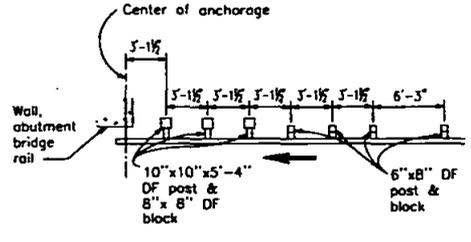
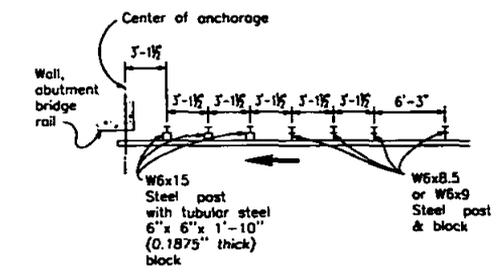
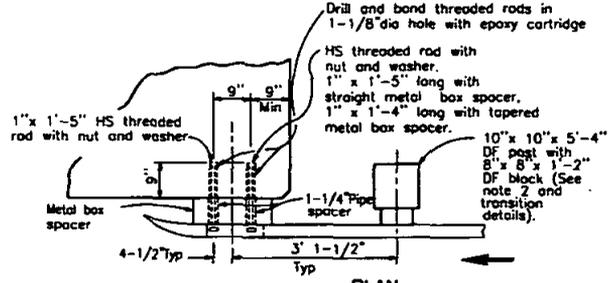


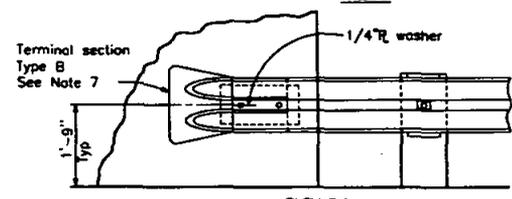
PLATE WASHER FOR GUARD RAIL



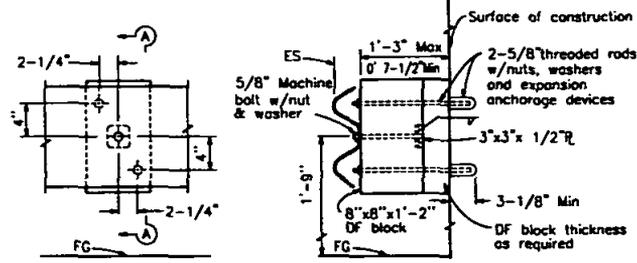
APPROACH RAILING TRANSITION WOOD POSTS



APPROACH RAILING TRANSITION STEEL POSTS



GUARD RAIL CONNECTION TO WALL OR ABUTMENT FACE



GUARD RAIL ANCHORAGE TO WALL OR ABUTMENT

NOTES

1. These connection details apply to bridge rails, abutments and retaining walls. For additional connection details for bridge railing, see the project plans.
2. Where 10"x10" DF post and 8"x 8" DF blocks are shown, W6x15 steel posts and tubular steel 6"x 6"x 1'-2" (0.1875" thick) blocks may be specified where applicable.
3. Additional details of post, blocks and hardware are shown on Standard Drawings M-32 and M-33.
4. Direction of traffic indicated by →
5. For approach railing details, see Type 1 flare on Standard Drawing M-34 and transition details on this plan.
6. 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.
7. Terminal sections will not be installed on trailing end of approach 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 Drawing M-32 for backup plate details.
8. 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 timber shims without posts where rail to wall or abutment clearance is less than 15 inches.
9. Do Not attach rail to bridge columns.
10. Use separate posts as shown on Standard Drawing M-35.
11. End sections may be cut from Type B terminal section or fabricated.

Revision	By	Approved	Date
ORIGINAL		G.Parkinson	4/92

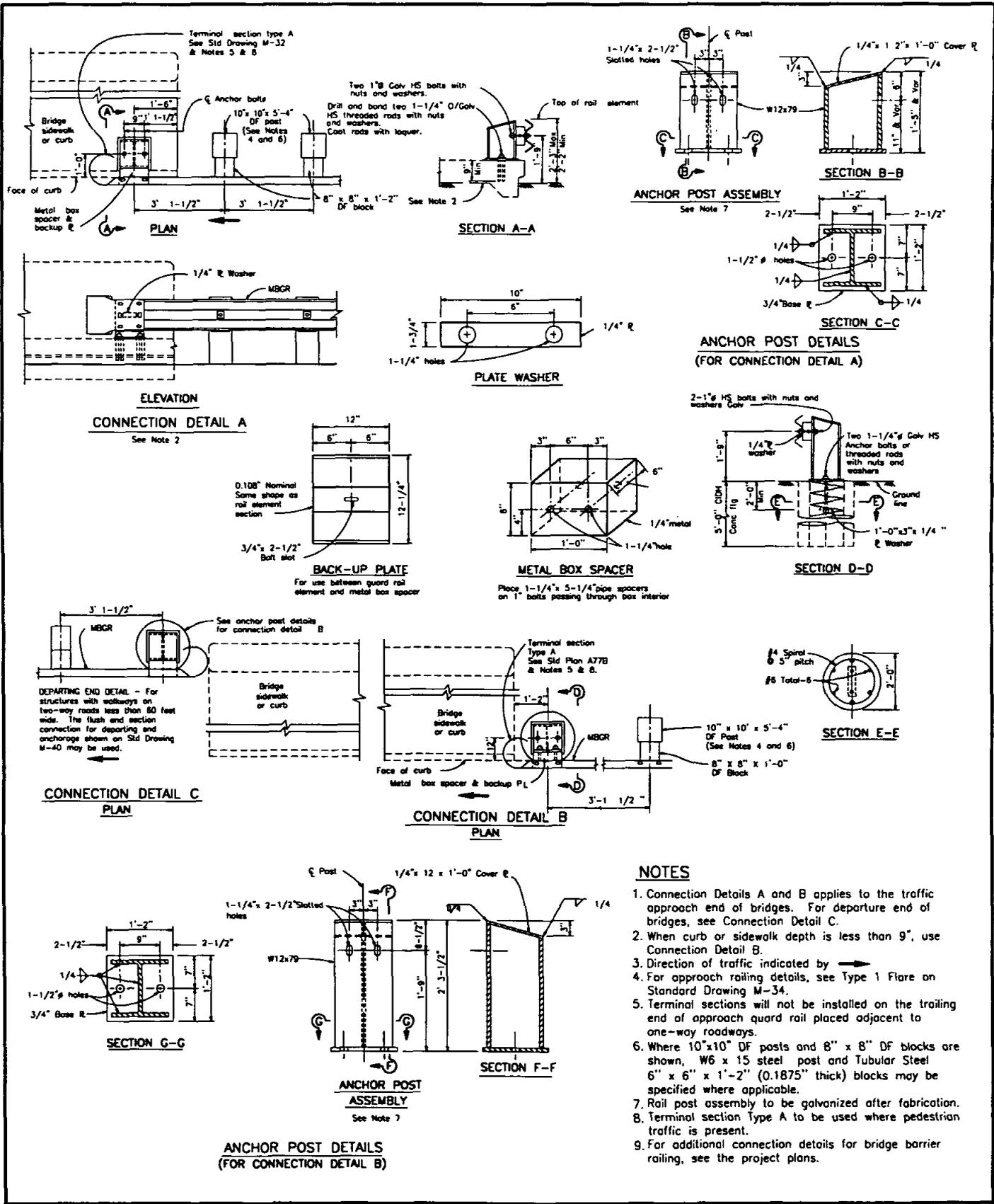
SAN DIEGO REGIONAL STANDARD DRAWING

GUARD RAIL CONNECTIONS TO BRIDGE RAILS, RETAINING WALLS AND ABUTMENTS

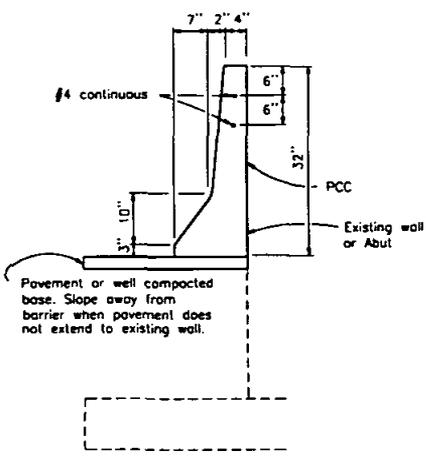
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R.C.E. 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-40**



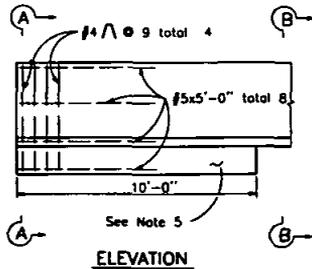
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		G.Parkinson	4/92		



**CONCRETE BARRIER
TYPE 50D**

Details similar to Type 50 except as noted

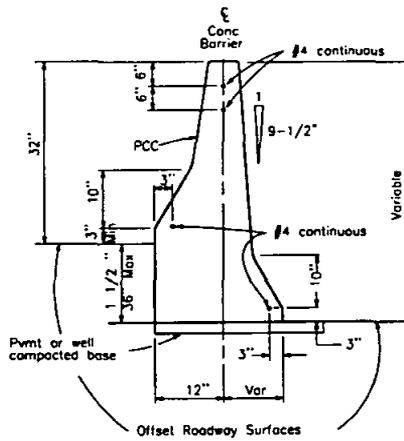
Details similar to Type 50 except as noted
Barrier End Anchor when necessary



ELEVATION

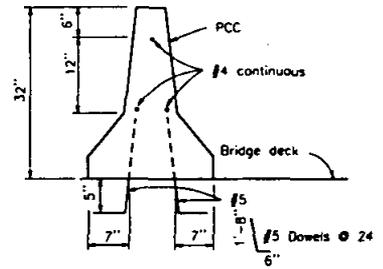
BARRIER END ANCHOR

See Note 9



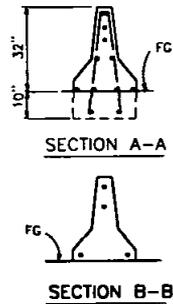
**CONCRETE BARRIER
TYPE 50C**

Offset Roadway Surfaces



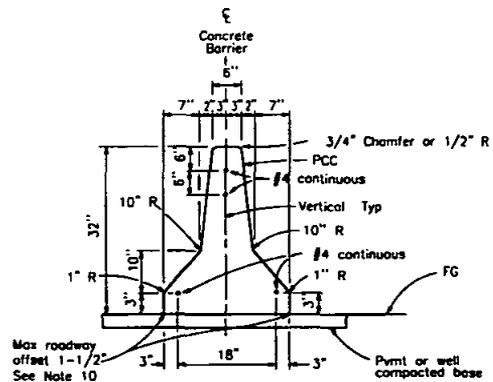
**CONCRETE BARRIER
TYPE 50A**

Details similar to Type 50 except as noted
See Note 7

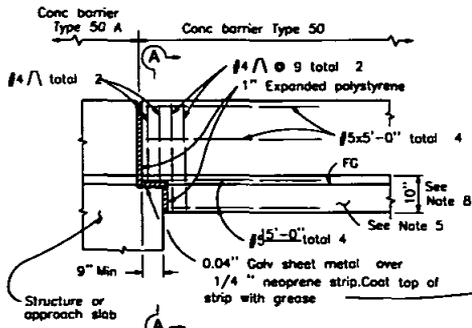


SECTION A-A

SECTION B-B

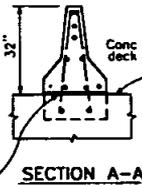


**CONCRETE BARRIER
TYPE 50**

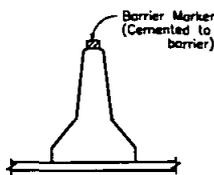


ELEVATION

CONNECTION TO STRUCTURE

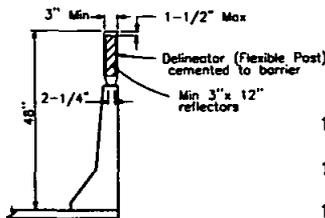


SECTION A-A



MEDIAN BARRIER DELINEATION

See Notes 11 and 12



CONCRETE BARRIER DELINEATION

(For barriers not located in median)
See Note 11

NOTES

- See Standard Drawing M-32 for concrete barrier transitions at bridge column and sign pedestals.
- Opening into existing drainage inlets shall not extend above the 3-inch vertical face at bottom of the barrier.
- Where the barrier is added to the face of an existing concrete structure, match existing weep holes.
- Contractor may submit alternative details for Engineer's approval.
- Footings monolithic or doweled with 2-#8x0'-8" @ 24. Required at barrier ends and at interruptions in barrier.
- See Standard Drawing M-33 for glare screen details.
- 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.
- 10" Barrier footing extends 10' back from structure.
- For transition to TBB see Standard Drawing M-34.
- Where roadway offset is greater than 1-1/2", see Concrete Barrier Type 50C.
- Barrier delineation to be used when required by the special provisions.
- Spacing of barrier markers to match spacing of raised pavement markers on the adjacent median edgeline pavement delineation.

Revision	By	Approved	Date
ORIGINAL		G. Parkinson	4/92

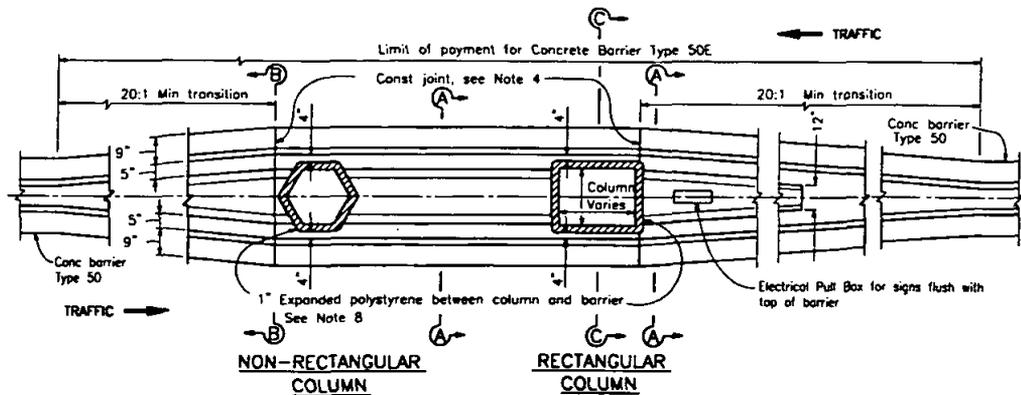
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE BARRIER - TYPE 50

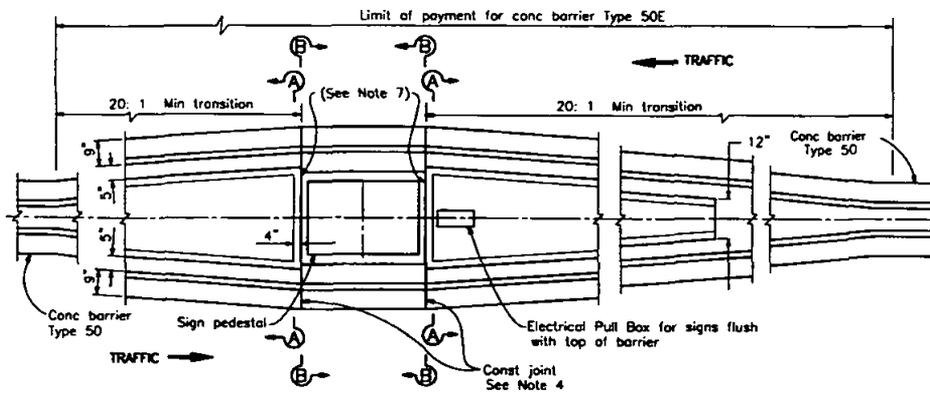
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Stenton 3/27/60
Chairperson R.C.E. 19246 Date

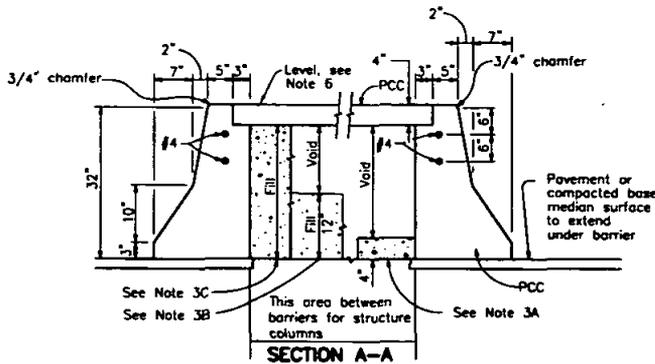
**DRAWING
NUMBER M-42**



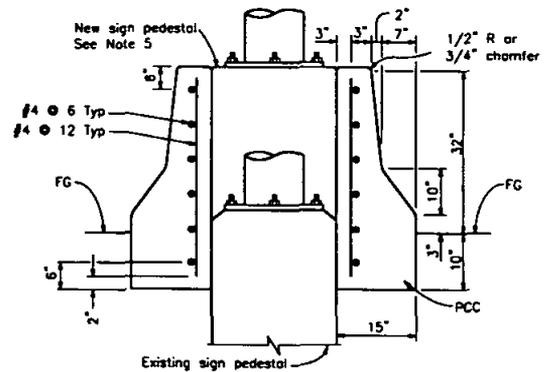
TRANSITION AT BRIDGE COLUMN



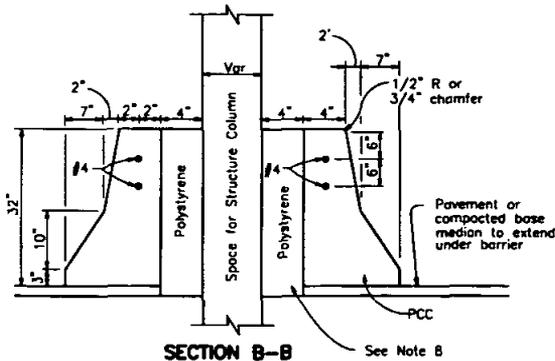
TRANSITION AT SIGN PEDESTAL



SECTION A-A



SECTION C-C



SECTION B-B

NOTES

1. See Standard Drawing M-31 for concrete barrier Type 50.
2. See Standard Drawing M-33 for concrete 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.
4. Forming material for 4" cap may remain in place.
5. Reinforcing steel shall extend continuous through construction joints.
6. See "Overhead Sign" plans for sign pedestal elevations on new construction.
7. Adjust height of barrier on low side of offset or superelevated roadways to provide level grade across top of Type 50E barrier.
8. 4" PCC vertical walls at existing sign pedestals.
9. Enclose column with 4" expanded polystyrene at locations where concrete or cement treated base encases the column.

Revision	By	Approved	Date
ORIGINAL		G.Parkinson	4/92

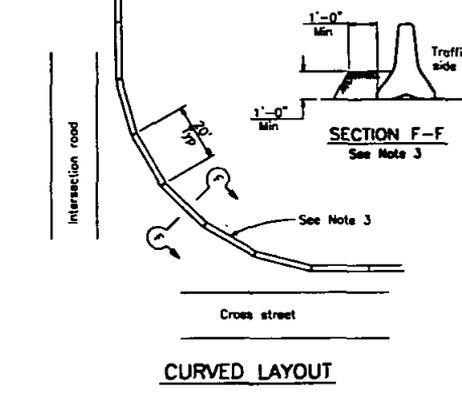
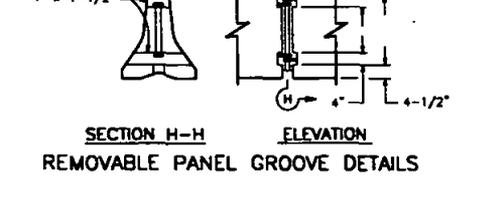
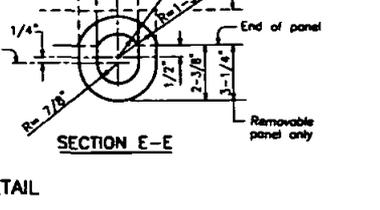
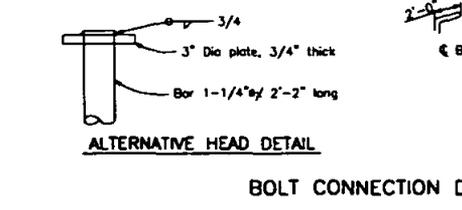
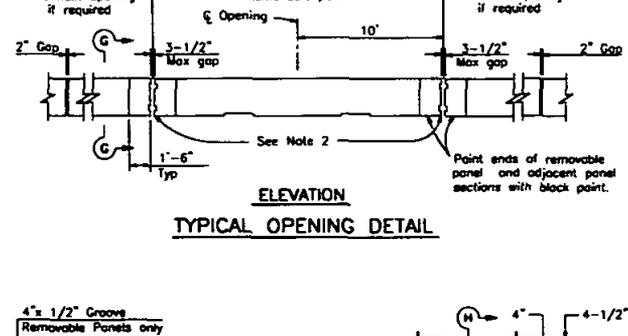
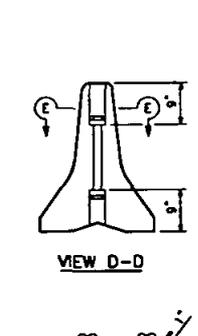
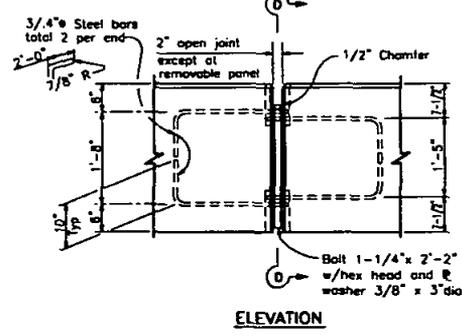
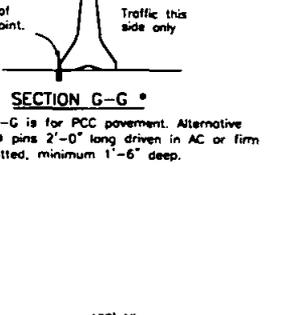
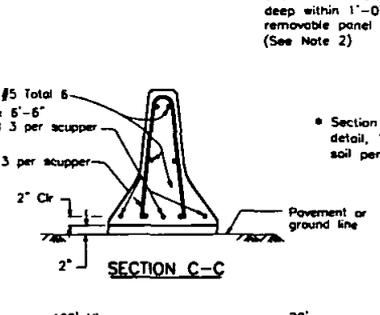
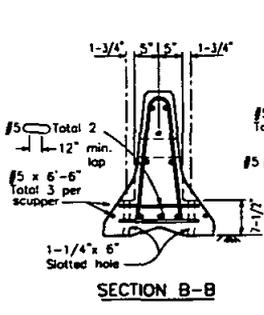
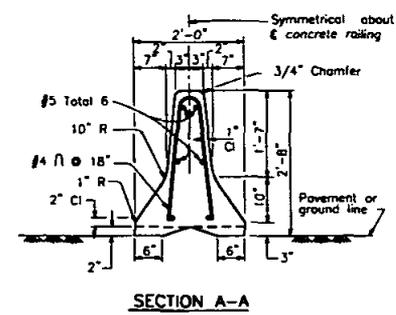
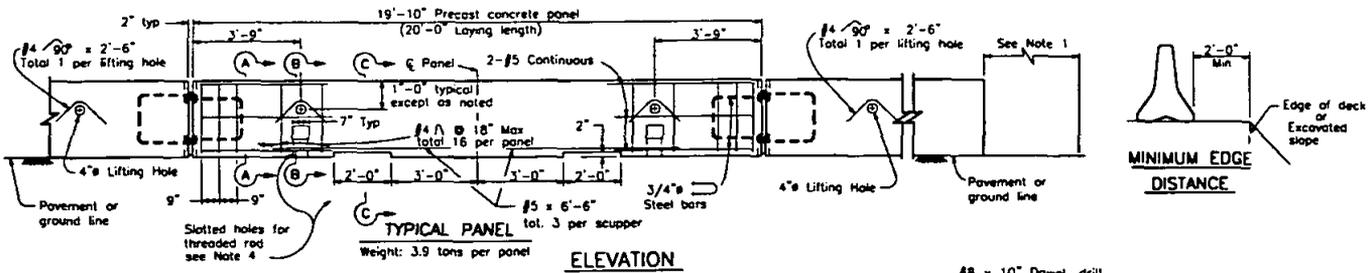
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE BARRIER - TYPE 50E

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-43**



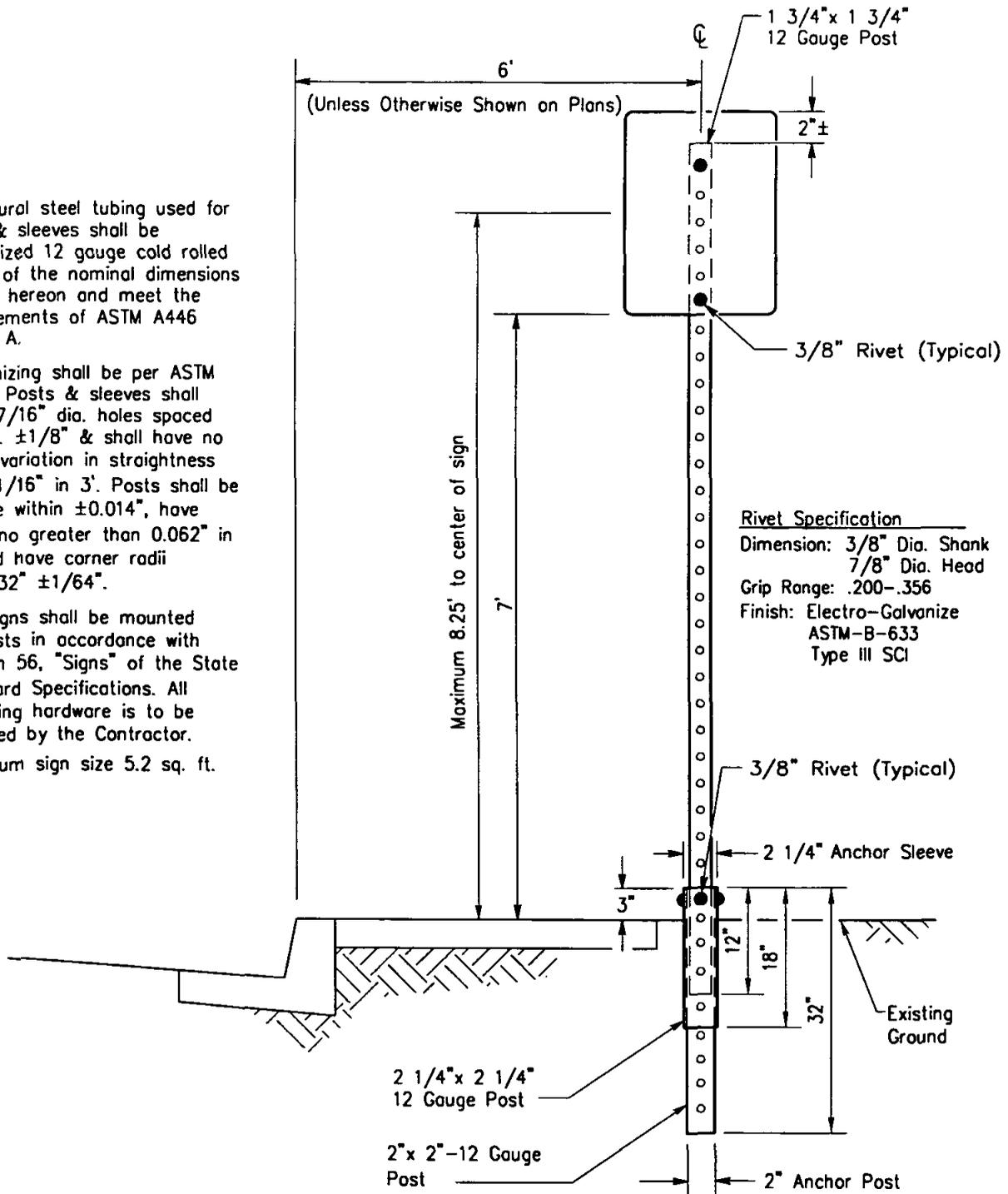
NOTES

1. For end treatment, layout and crash cushions, where needed, see Project Plans or Special Provisions.
2. All 3-1/2" gaps at removable panels are to be backed at the base with #10 x 8" dowel or 1/2" \varnothing pin each side of joint. See Section G-G.
3. Where Temporary Railing (Type K) is placed on curves and radii that are too severe to connect panels with bolted joints, the railing is to be backed continuously with earth fill. See Section F-F.
4. Attach units to deck slabs when required by Bridge Plans.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		G.Parkinson	4/92		
				TEMPORARY RAILING - TYPE K	 Chairperson R.C.E. 19246 Date:

NOTES

1. Structural steel tubing used for post & sleeves shall be galvanized 12 gauge cold rolled steel, of the nominal dimensions shown hereon and meet the requirements of ASTM A446 Grade A.
2. Galvanizing shall be per ASTM A525. Posts & sleeves shall have 7/16" dia. holes spaced 1" o.c. $\pm 1/8"$ & shall have no more variation in straightness than 1/16" in 3'. Posts shall be square within $\pm 0.014"$, have twist no greater than 0.062" in 3' and have corner radii of 5/32" $\pm 1/64"$.
3. The signs shall be mounted on posts in accordance with Section 56, "Signs" of the State Standard Specifications. All fastening hardware is to be provided by the Contractor.
4. Maximum sign size 5.2 sq. ft.



Revision	By	Approved	Date
ORIGINAL		G.Parkinson	2/95

SAN DIEGO REGIONAL STANDARD DRAWING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/00
Chairperson R.C.E. 19246 Date

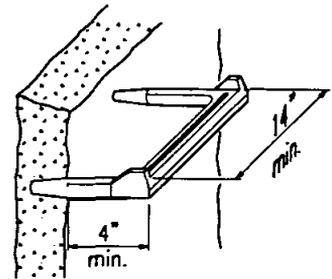
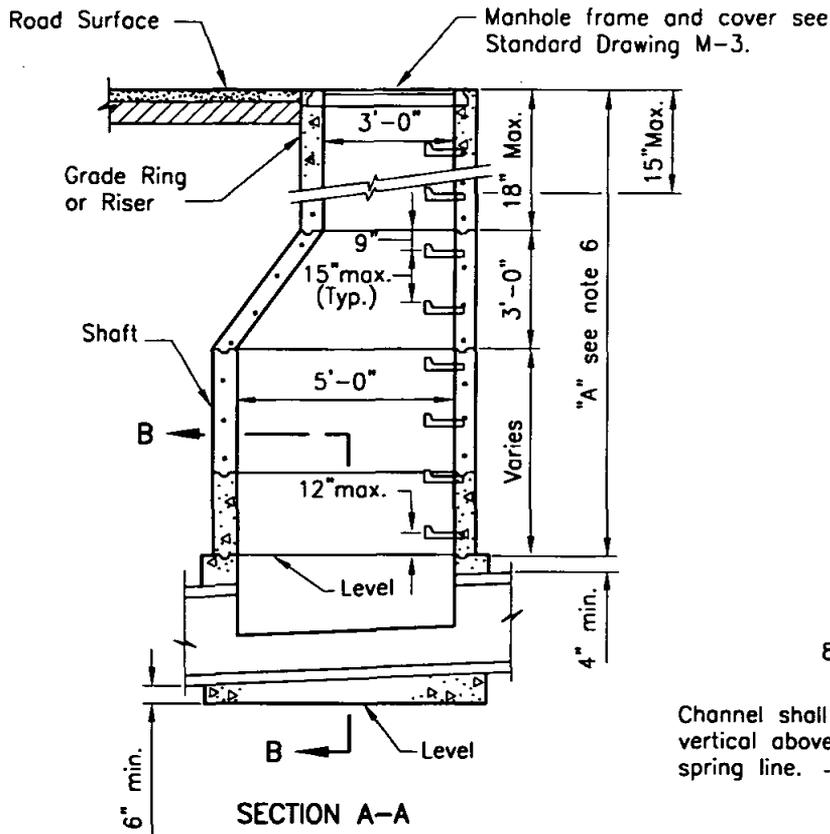
BREAK-AWAY SIGN POST

DRAWING NUMBER **M-45**

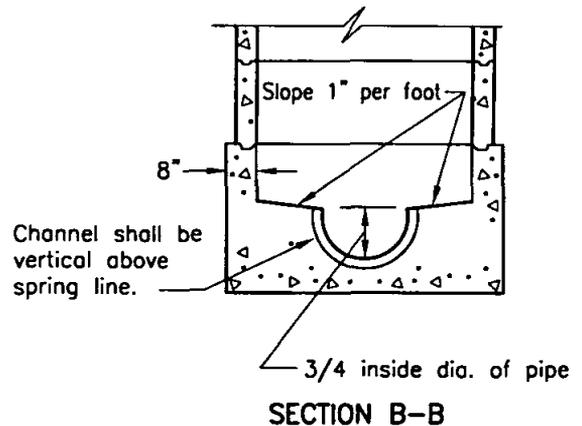
SEWERAGE SYSTEMS

SEWERAGE SYSTEMS

S



STEP DETAIL

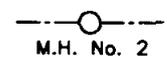


SECTION B-B

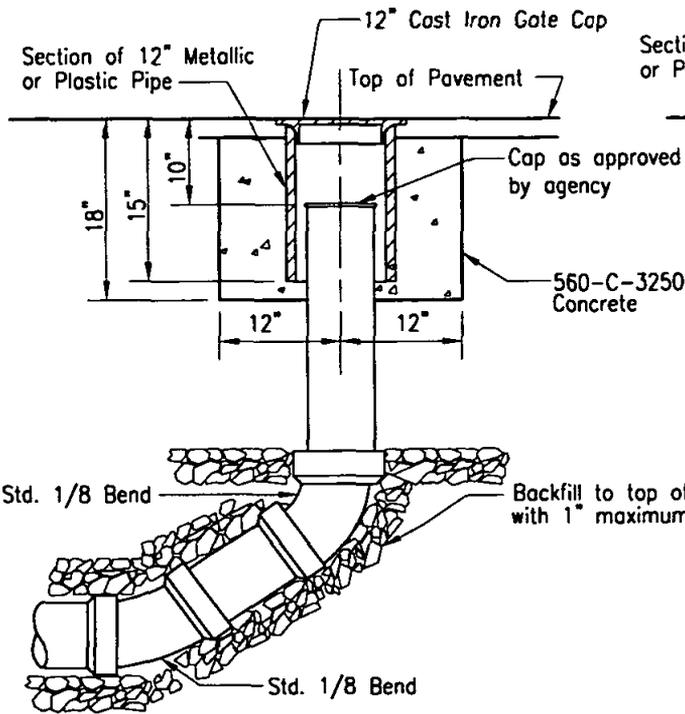
NOTES

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.
3. Vertical wall of cone shall be on the upstream side of the manhole.
4. Concrete base shall be 560-C-3250 concrete..
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 ft.)
 - B) 6" to 18" of 3' diameter grade rings and/or risers.
 - C) 5 ft. diameter shaft variable height.
 - D) Top step shall be 15 inches maximum from top of frame and cover.
7. Flexible pipe joints shall be required within 12 inches 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.

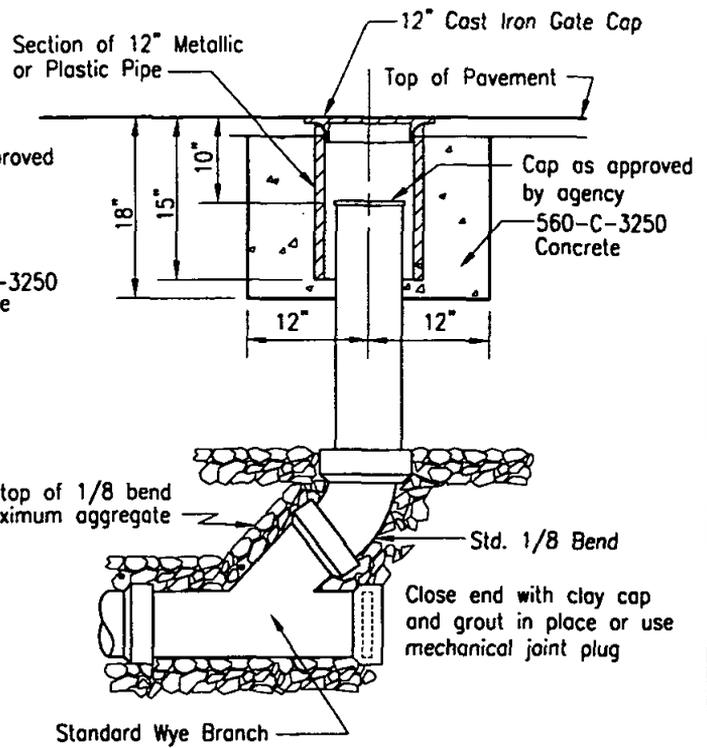
LEGEND ON PLANS



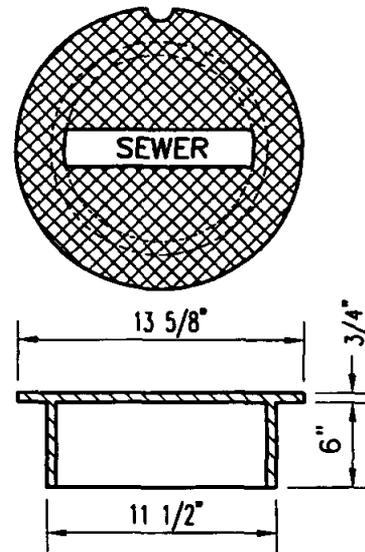
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		A.Kercheval	12/75		



TYPE A



TYPE B



**GATE CAP
(Heavy Duty)**

NOTES

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

Revision	By	Approved	Date
ORIGINAL		R. Munoz	4/97

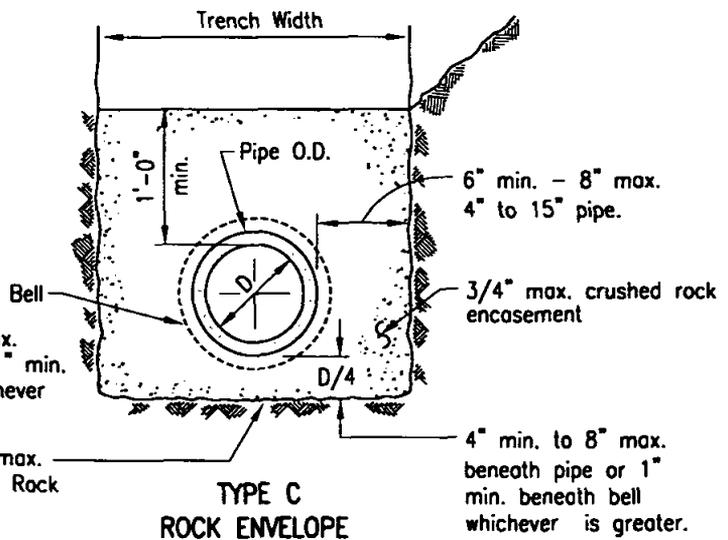
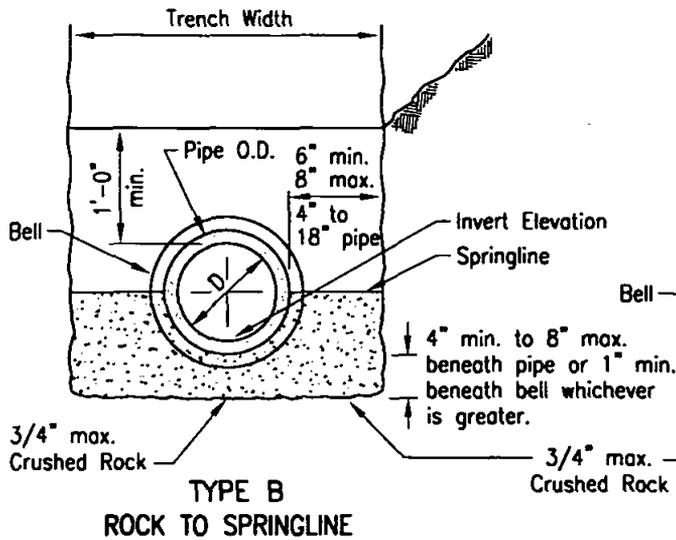
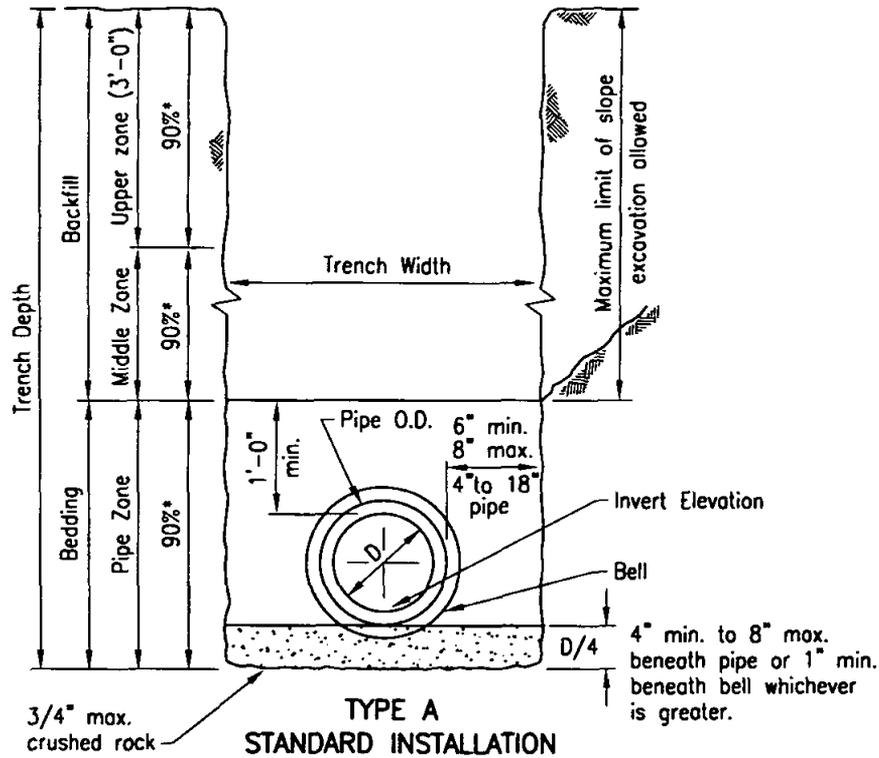
SAN DIEGO REGIONAL STANDARD DRAWING

**SEWER MAIN CLEANOUT
(8" DIAMETER MAXIMUM)**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **S-3**



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.

Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75

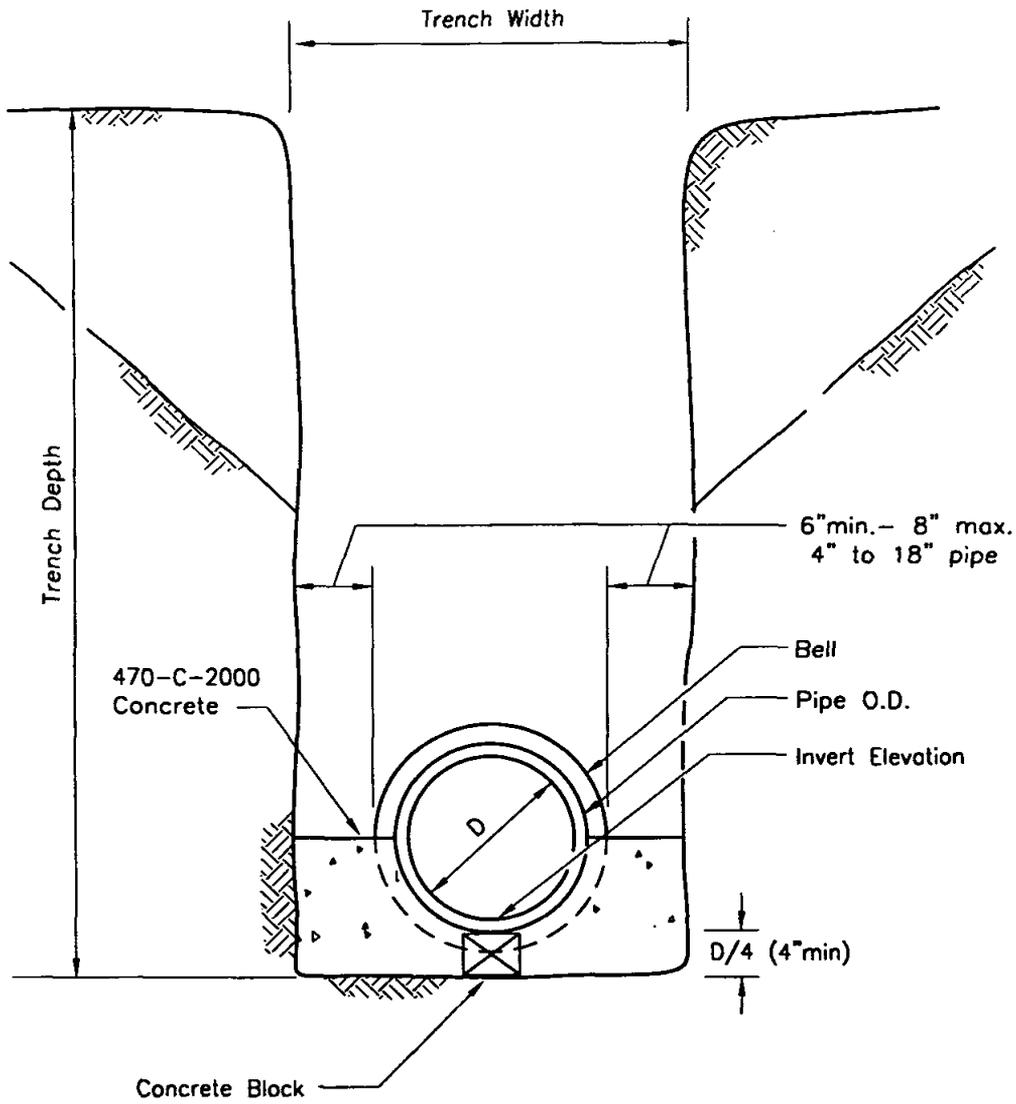
SAN DIEGO REGIONAL STANDARD DRAWING

PIPE BEDDING AND TRENCH BACKFILL FOR SEWERS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

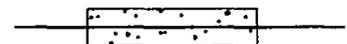
R. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **S-4**



SECTION

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75

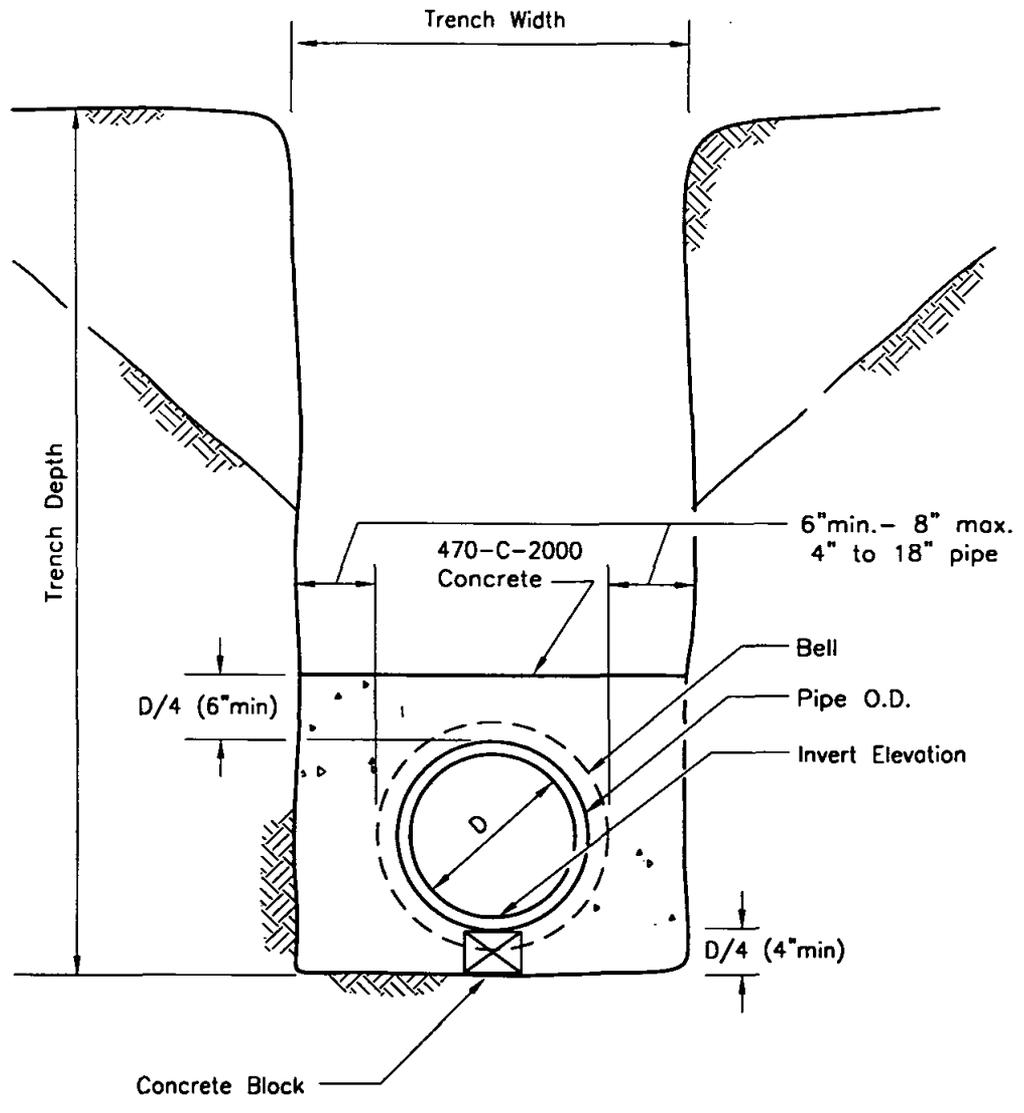
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE CRADLE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Stenton 3/23/00
Chairperson R.C.E. 19246 Date

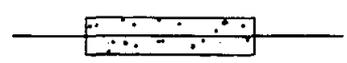
DRAWING NUMBER S-6



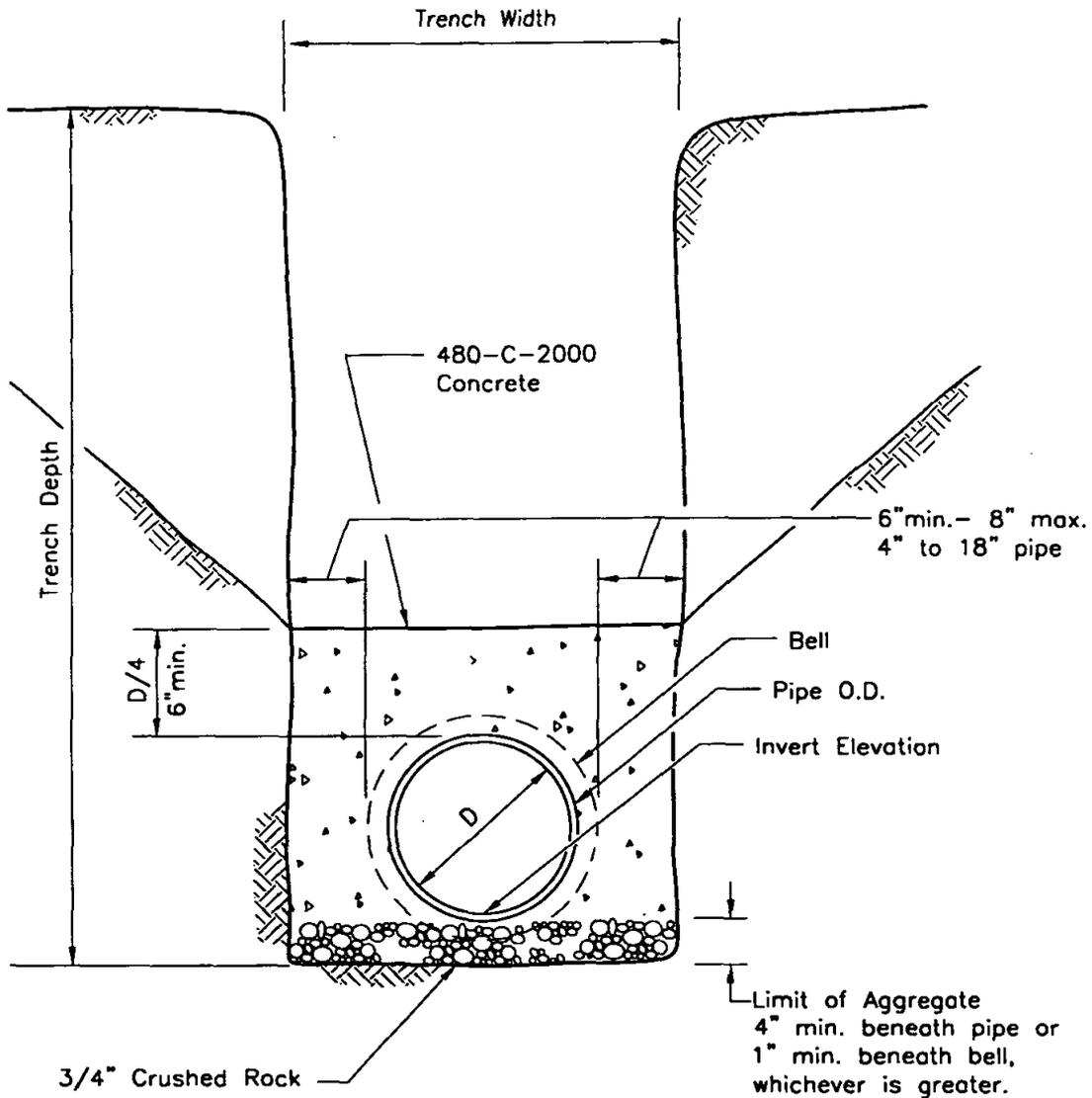
SECTION

NOTE
Encase pipe to the nearest flexible joint.

LEGEND ON PLANS

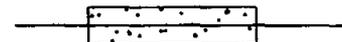


Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		A. Kercheval	12/75		



SECTION

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		G.Parkinson	2/95

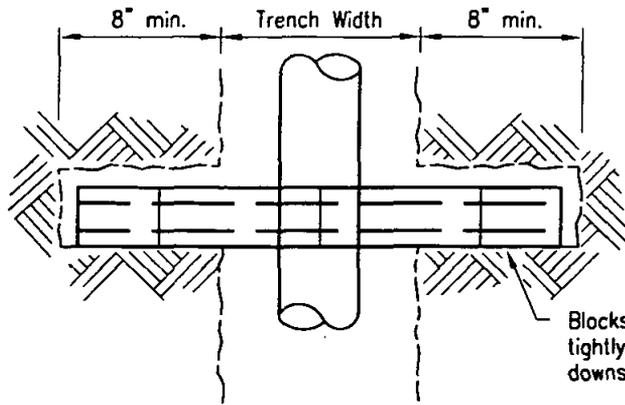
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE BACKFILL

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **S-8**

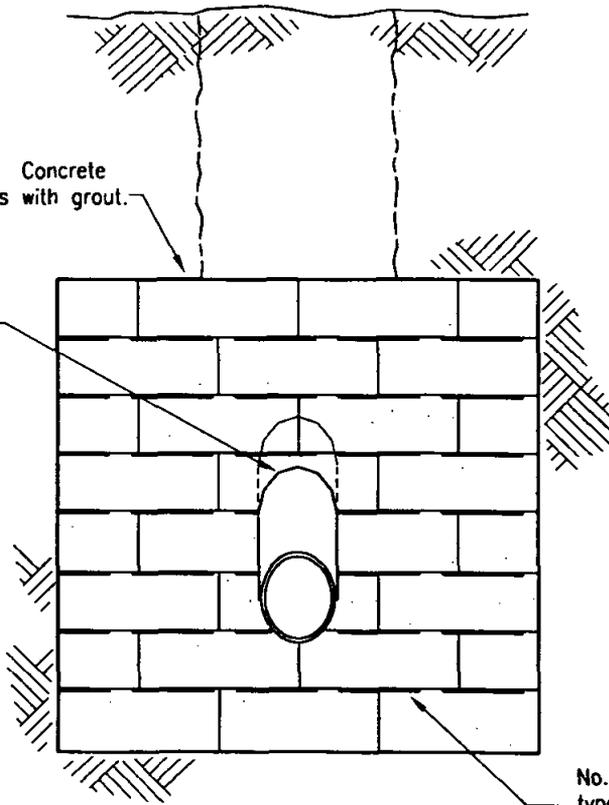


Blocks to be laid as tightly as possible to downstream side of notch.

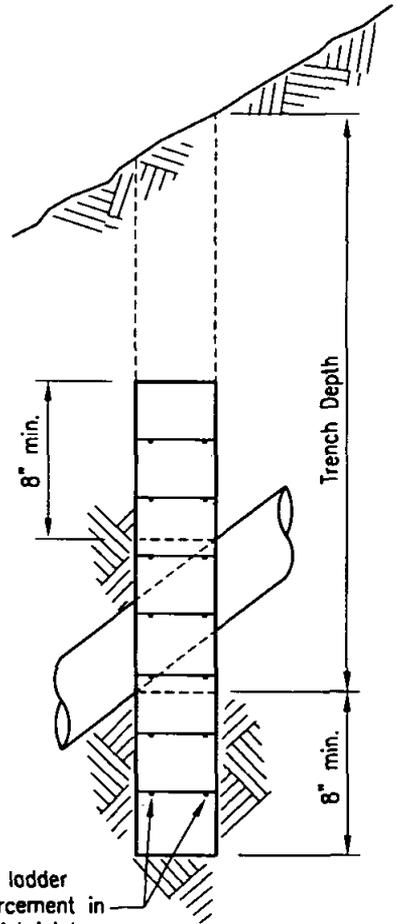
PLAN

8" x 8" x 16" Concrete Block. Fill cores with grout.

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



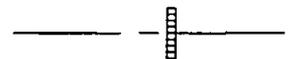
FRONT ELEVATION



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

SIDE ELEVATION

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75

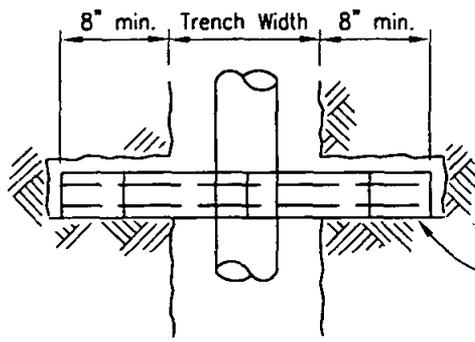
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE ANCHOR

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **S-9**



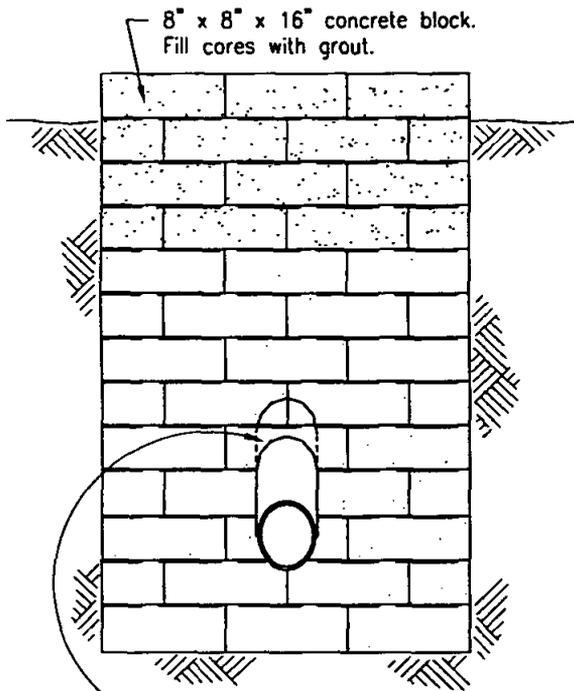
PLAN

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

NOTES

Type B:

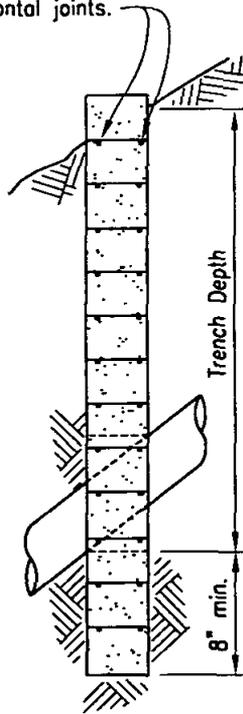
1. No vertical joints permitted.
2. Horizontal joints must overlay by 2 corrugations.
3. Corrugations to run horizontally.
4. Front Elevation and Plan views similar to Type A.



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

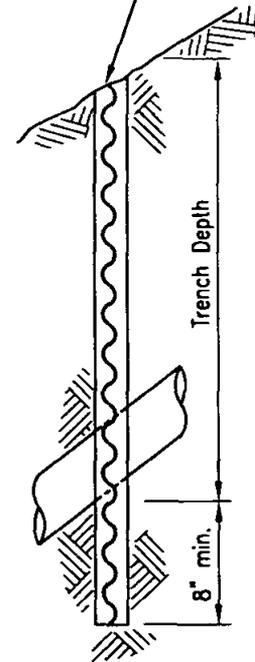
FRONT ELEVATION

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



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.

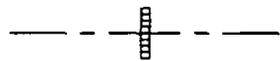


ELEVATION

TYPE B

TYPE A

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75

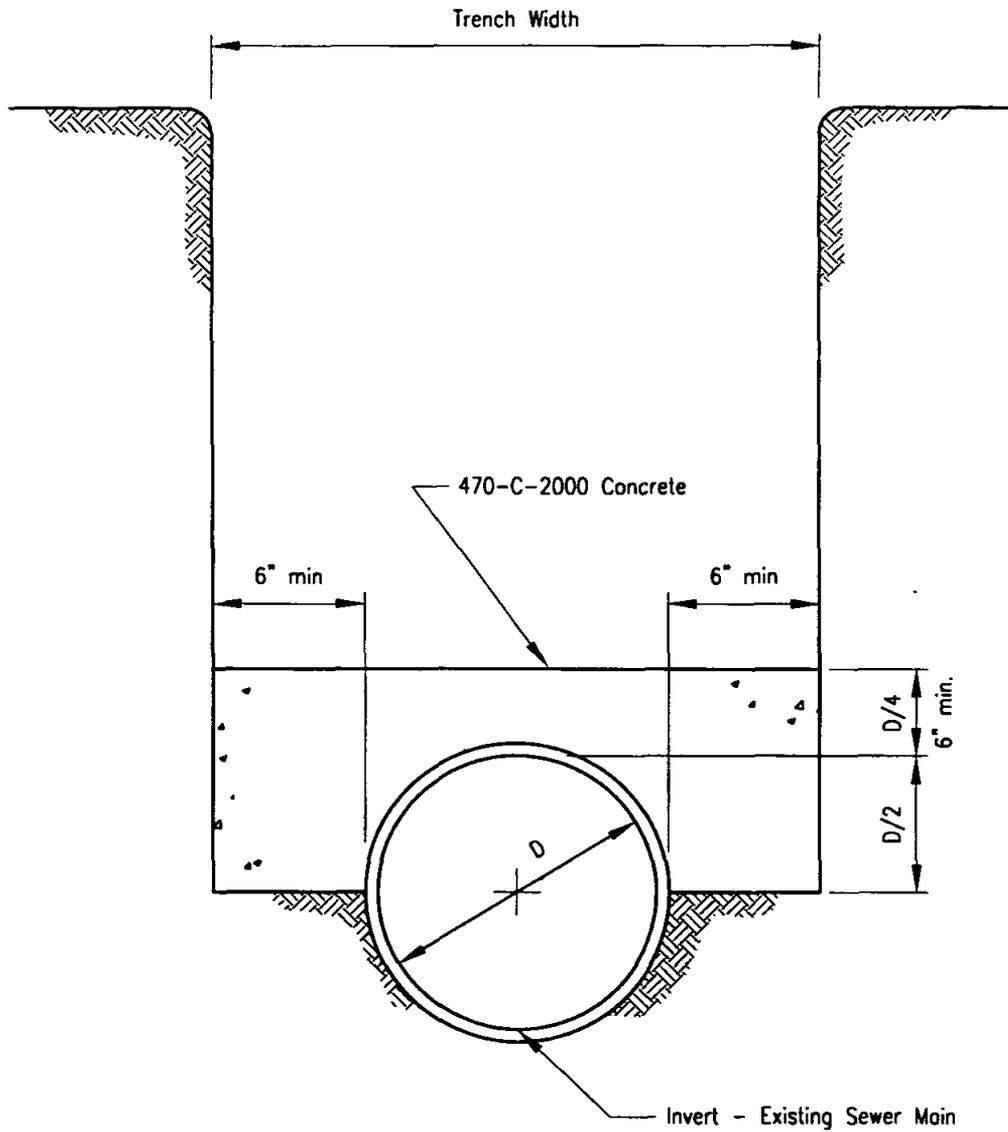
SAN DIEGO REGIONAL STANDARD DRAWING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/60
Chairperson R.C.E. 19246 Date

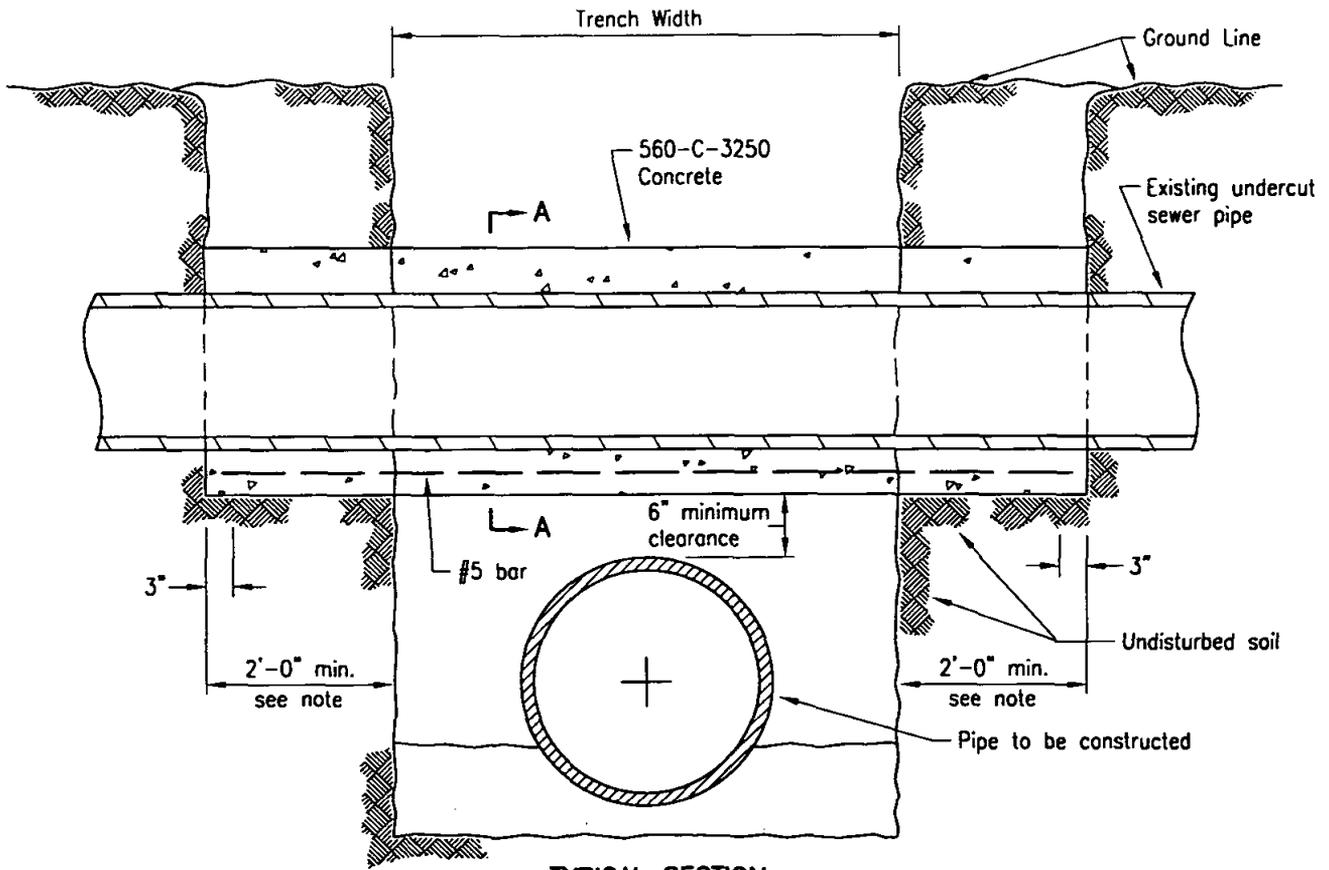
CUTOFF WALL

DRAWING NUMBER **S-10**

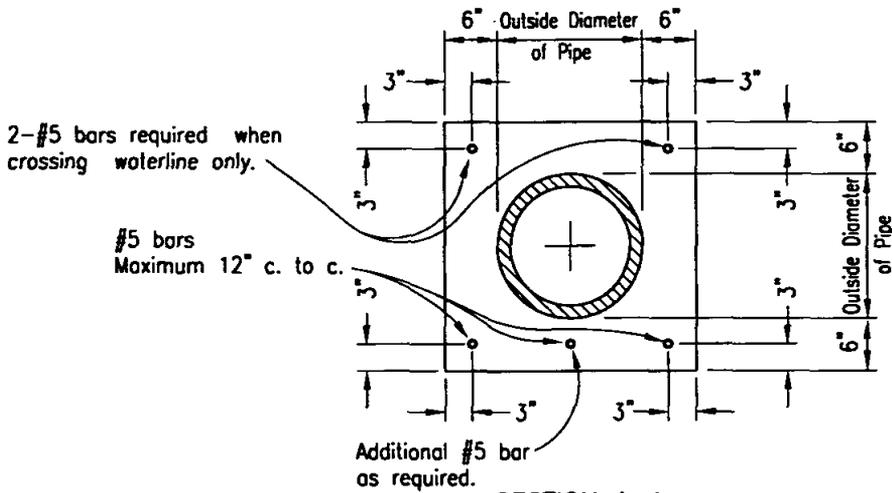


SECTION

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		A.Kercheval	12/75		CONCRETE PROTECTION FOR EXISTING SEWER PIPE
				DRAWING NUMBER S-11	



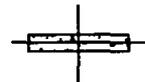
TYPICAL SECTION



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.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75

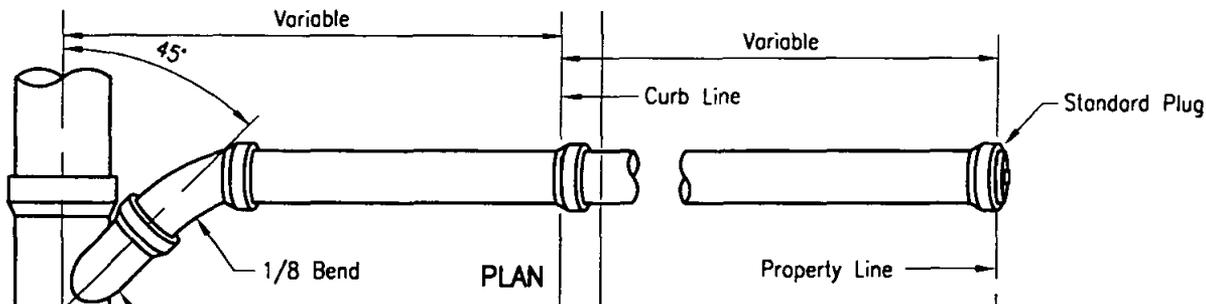
SAN DIEGO REGIONAL STANDARD DRAWING

**CONCRETE SUPPORT
FOR UNDERCUT SEWER PIPE**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

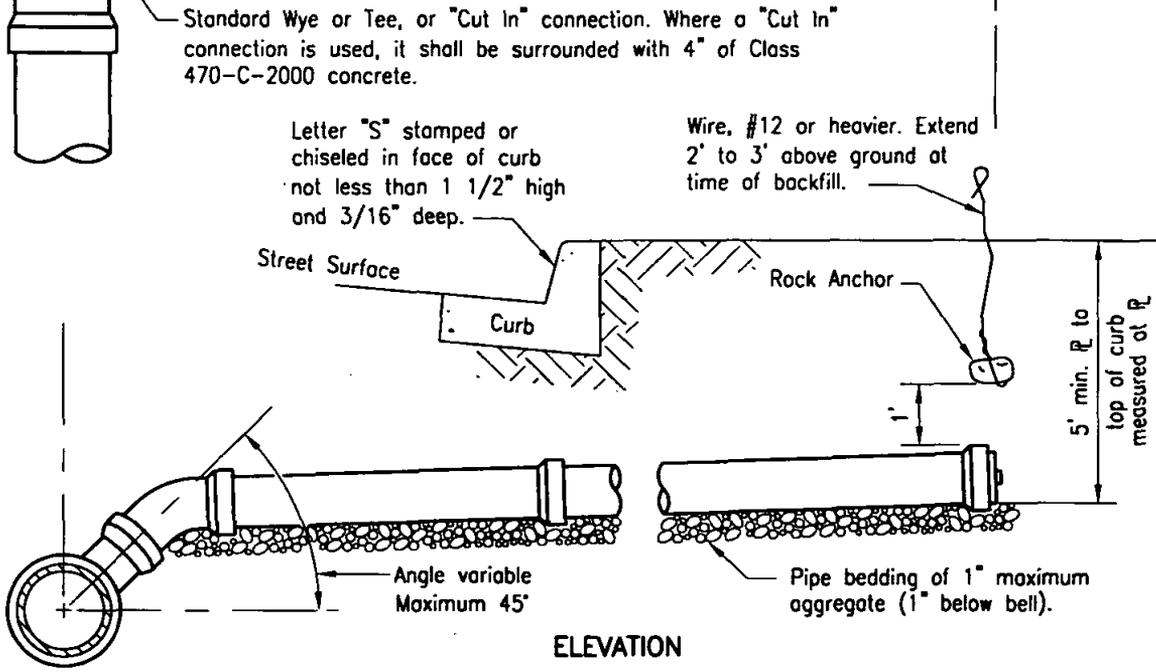
DRAWING NUMBER **S-12**



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.

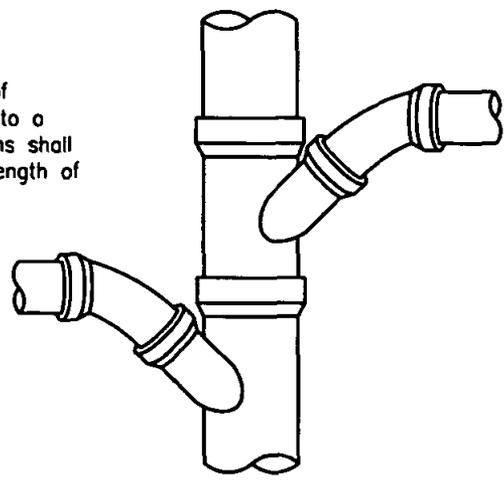
Letter "S" stamped or chiseled in face of curb not less than 1 1/2" high and 3/16" deep.

Wire, #12 or heavier. Extend 2' to 3' above ground at time of backfill.

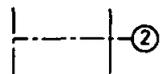


ELEVATION

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



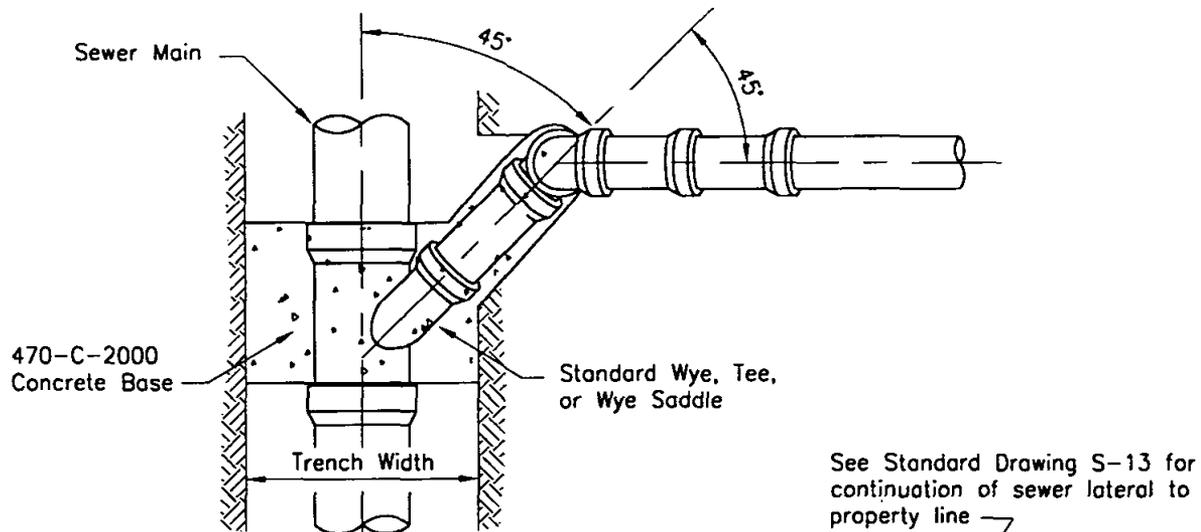
LEGEND ON PLANS



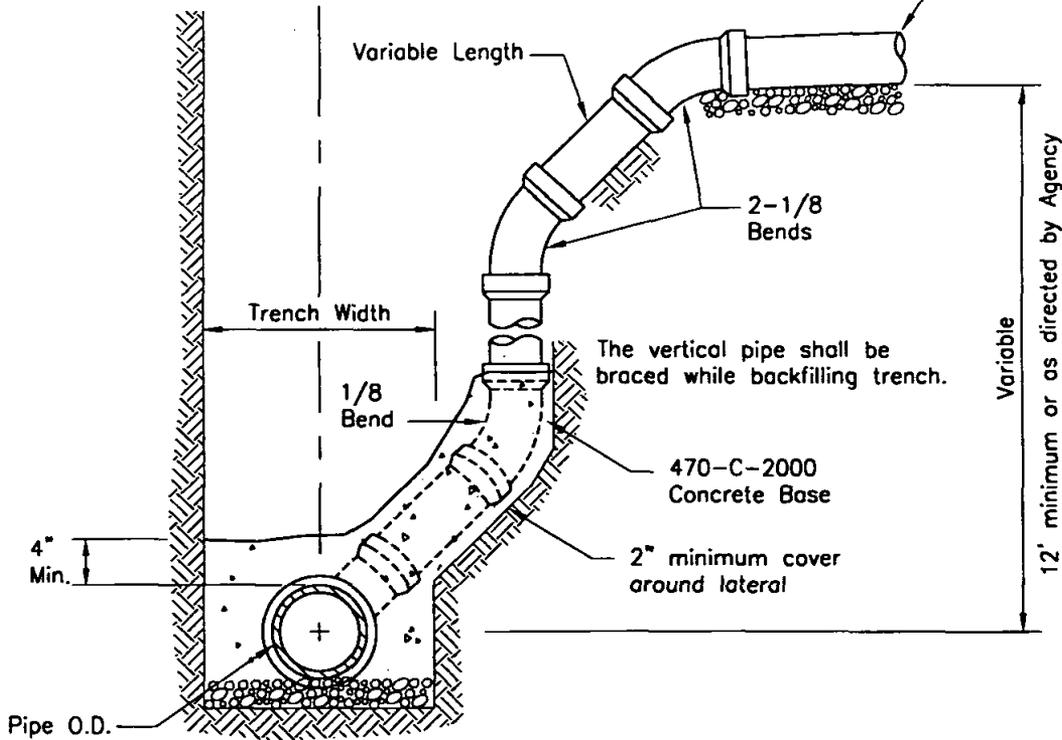
NOTES

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.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		A.Kercheval	12/75		
				DRAWING NUMBER	S-13

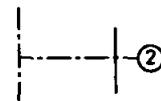


PLAN



ELEVATION

LEGEND ON PLANS



NOTE

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

Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75

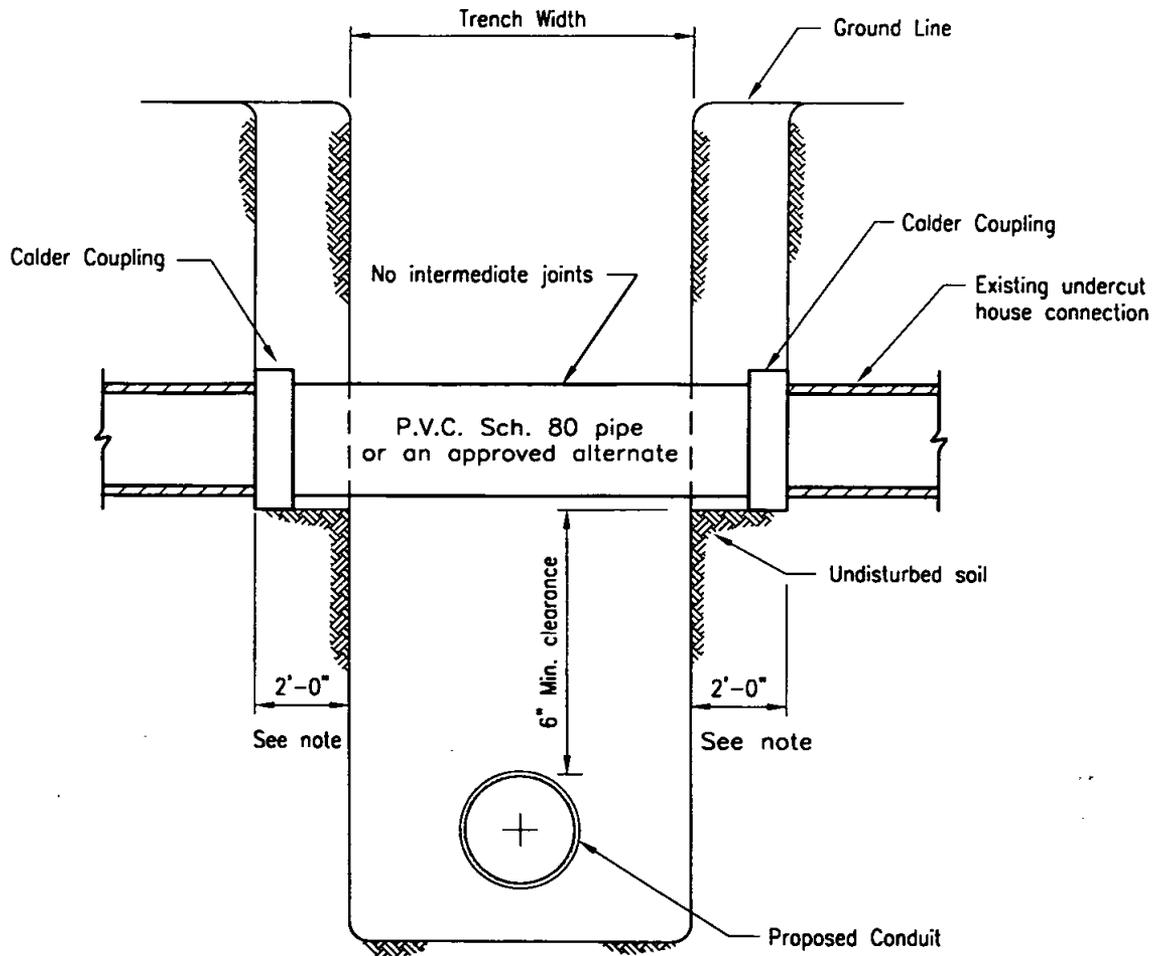
SAN DIEGO REGIONAL STANDARD DRAWING

DEEP CUT HOUSE CONNECTION
(SEWER LATERAL)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Stenton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **S-14**

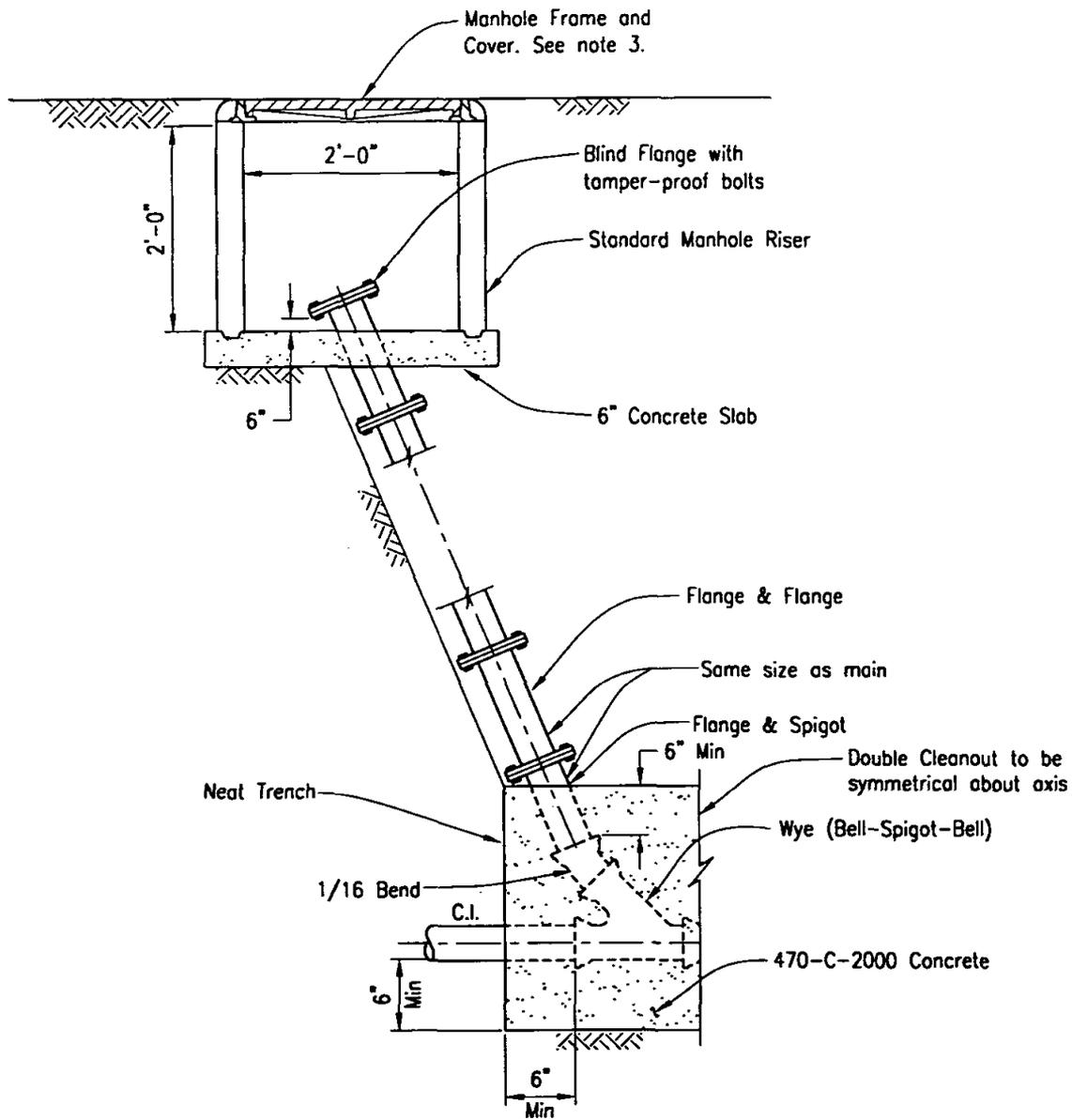


SECTION

NOTE

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

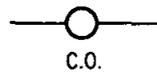
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		A.Kercheval	12/75		
				DRAWING NUMBER S-15	



NOTES

1. Similar polyvinyl chloride components may be used in accordance with A.S.T.M. Standard Specification D-3033.
2. Concrete slab shall be 560-C-3250 concrete.
3. Use heavy duty manhole frame and cover, Standard Drawing M-1, in areas subject to vehicular traffic; use light duty manhole frame and cover, Standard Drawing M-2, in all other locations.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		D. Solomon	7/79

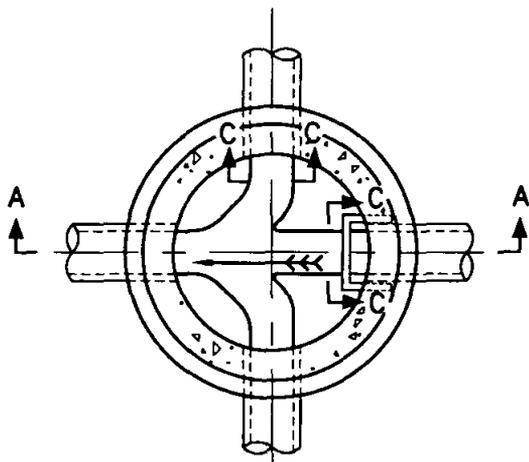
SAN DIEGO REGIONAL STANDARD DRAWING

CLEANOUT - SEWER FORCE MAIN

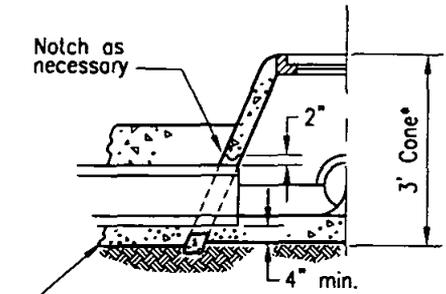
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Steuton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER S-16

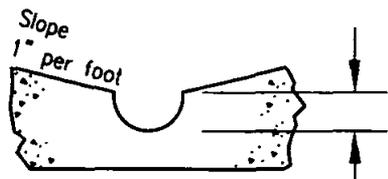


SECTION B-B

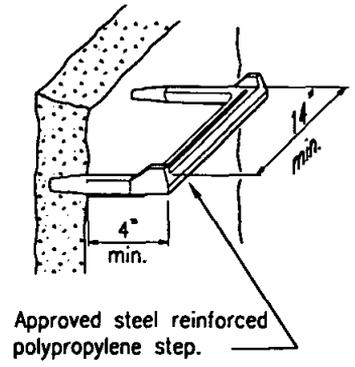


Notch as necessary
 2"
 3' Cone*
 4" min.
 Concrete Encasement or Backfill
 *Either Concentric or Eccentric Cone may be used.

HALF SECTION SHALLOW MANHOLE

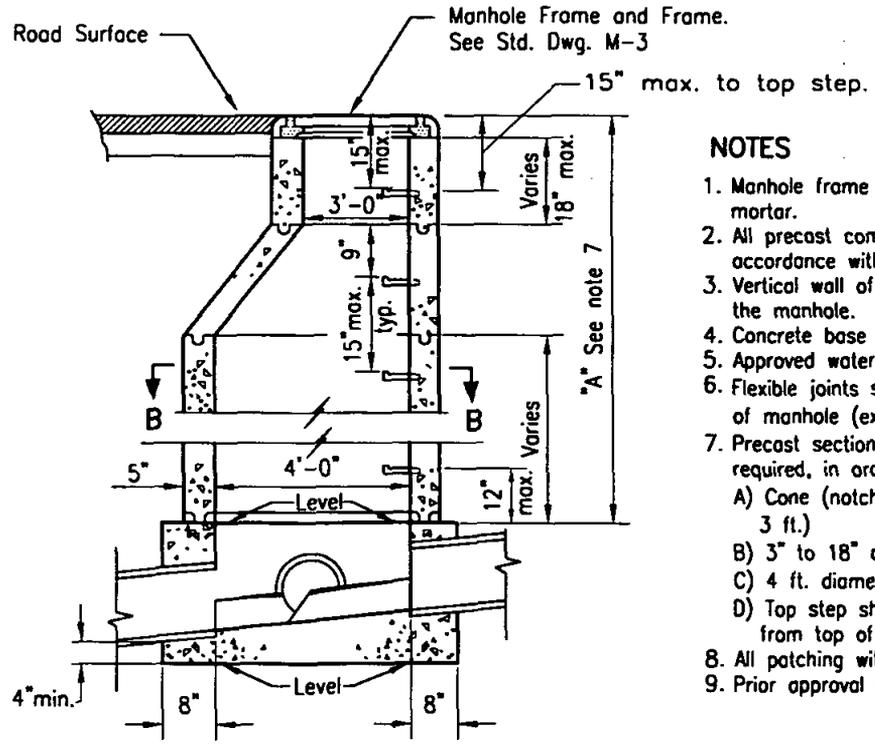


SECTION C-C



Approved steel reinforced polypropylene step.

STEP DETAIL

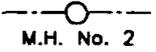


SECTION A-A

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 joints shall be required within 12" of inside face of manhole (except for plastic pipe).
7. 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 ft.)
 - B) 3" to 18" of 3' diameter grade rings and/or risers.
 - C) 4 ft. diameter shaft variable height.
 - D) Top step shall be 15 inches maximum from top of frame and cover.
8. All patching within manhole base shall be epoxy mortar.
9. Prior approval of precast base is required by the Agency.

LEGEND ON PLANS



M.H. No. 2

Revision	By	Approved	Date
ORIGINAL		D. Solomon	7/79

SAN DIEGO REGIONAL STANDARD DRAWING

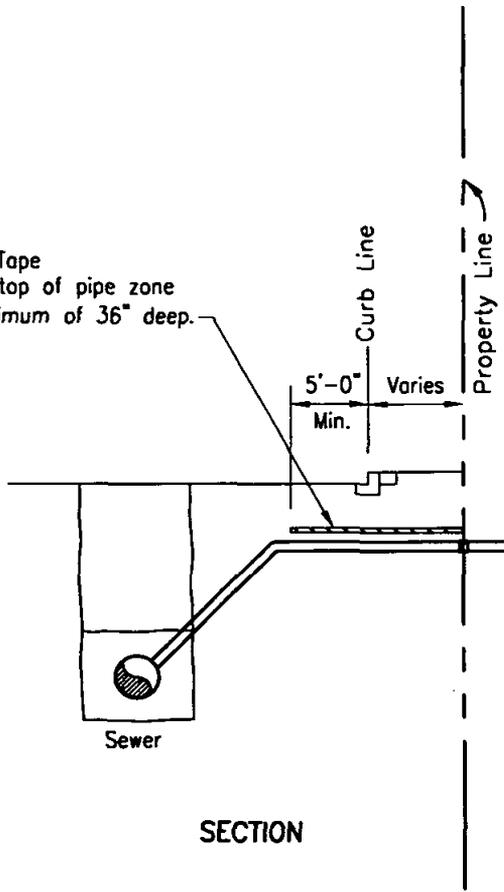
MANHOLE - 4' x 3' DIAMETER
 (FOR 15" MAXIMUM DIAMETER PIPE)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

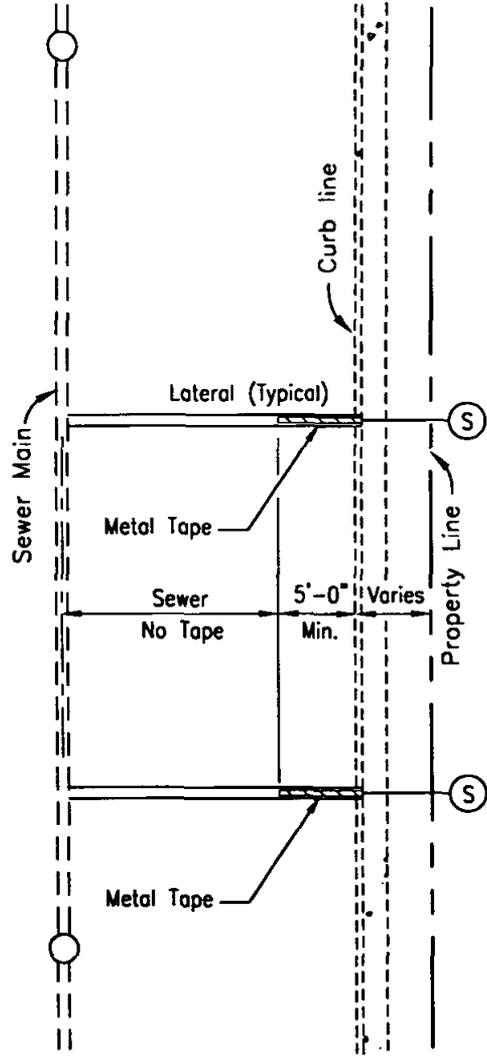
[Signature] 3/23/00
 Chairperson R.C.E. 19246 Date

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
ORIGINAL		M. Bahmanian	4/86

SAN DIEGO REGIONAL STANDARD DRAWING

**METALLIC TAPE LOCATOR
FOR NON-METALLIC SEWER PIPE**

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

M. Stanton 3/23/80
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **S-19**

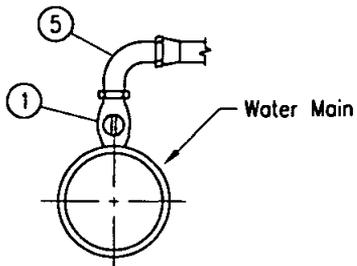
WATER SYSTEMS

W

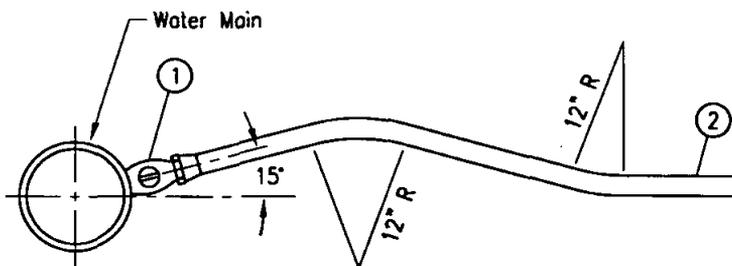
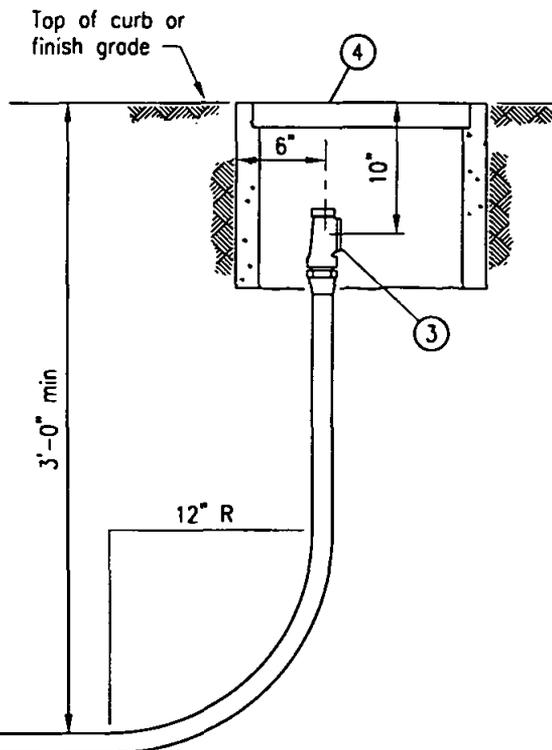
WATER SYSTEMS

NOTES

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

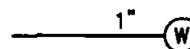


TOP TAP
(where permitted by Agency)



- ① Bronze Corporation Stop (installed with key on side and open tap) and Adapter 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
ORIGINAL		A.Kercheval	12/75

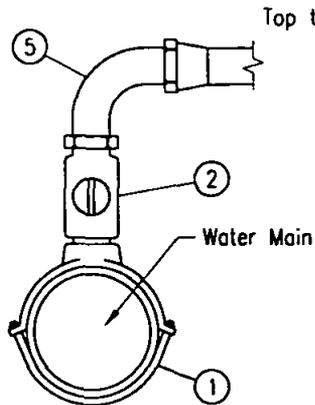
SAN DIEGO REGIONAL STANDARD DRAWING

1" WATER SERVICE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. E. Steaton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **W-1**

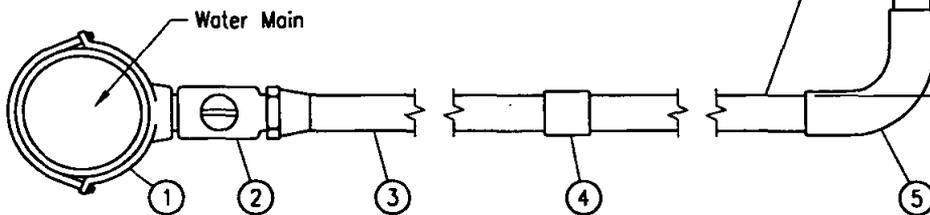
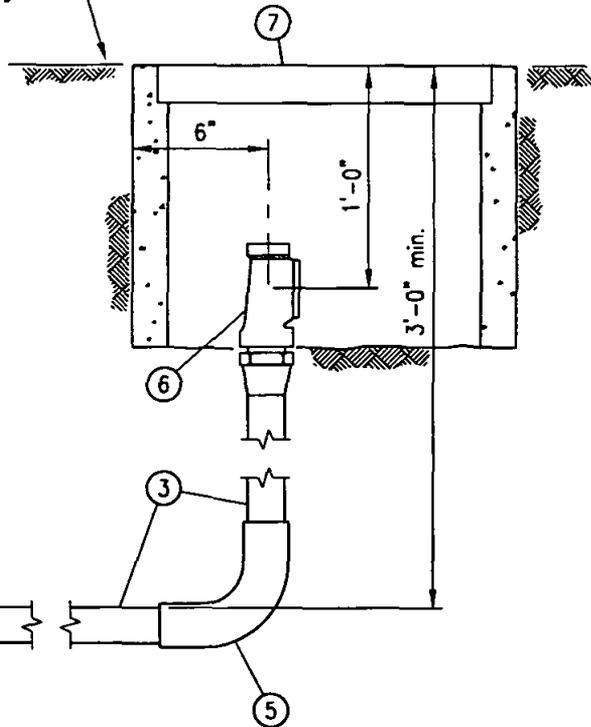


TOP TAP
(where permitted by Agency)

NOTE

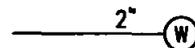
Silver Soldered Joints may be used where approved by the Agency.

Top of curb or finish grade



- 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



Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75

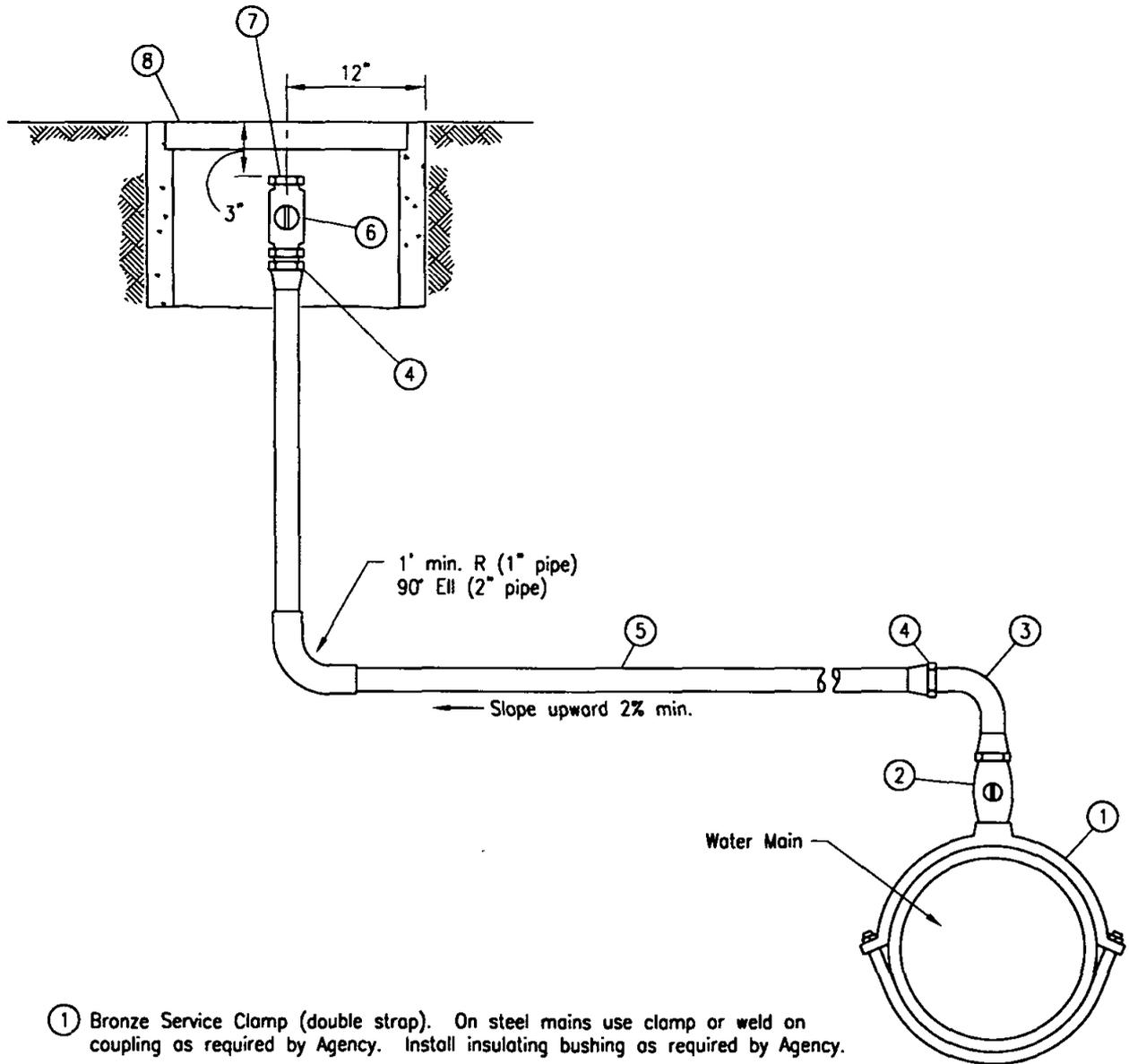
SAN DIEGO REGIONAL STANDARD DRAWING

1 1/2" AND 2" WATER SERVICES

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Henton 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **W-2**



- 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 Adapter.
- 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
ORIGINAL		A.Kercheval	12/75

SAN DIEGO REGIONAL STANDARD DRAWING

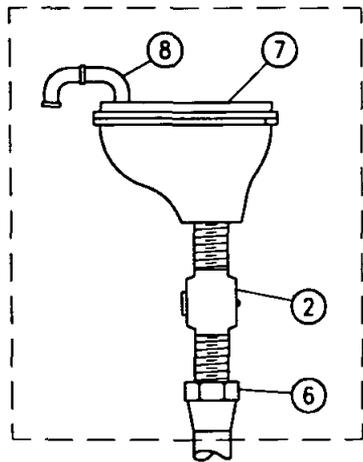
**MANUAL AIR RELEASES
1" AND 2"**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

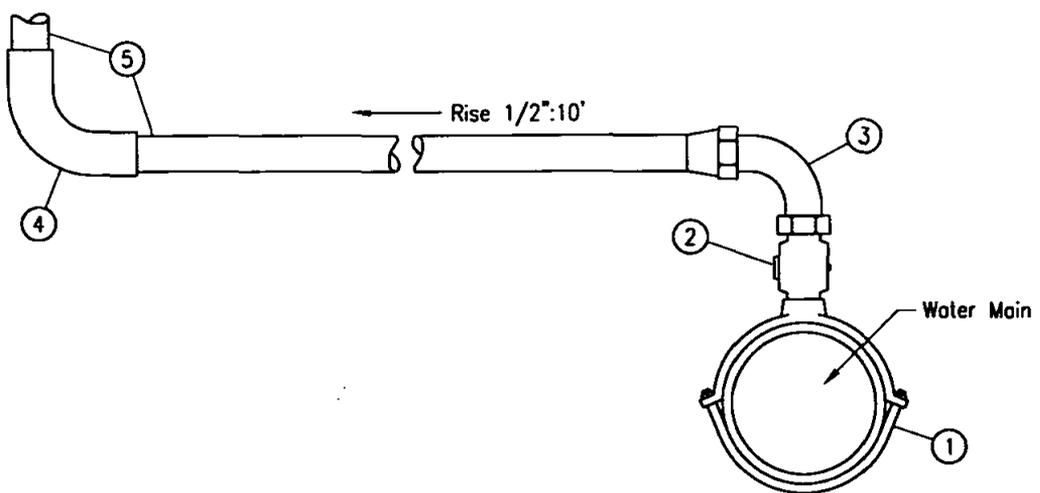
R. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER

W-3

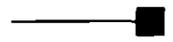


See Standard Drawing W-14, for type and location of enclosures.



- 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 Adapter.
- ⑦ Air and Vacuum Valve.
- ⑧ 2-90° Ell (not required in above metal ground enclosures).

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75

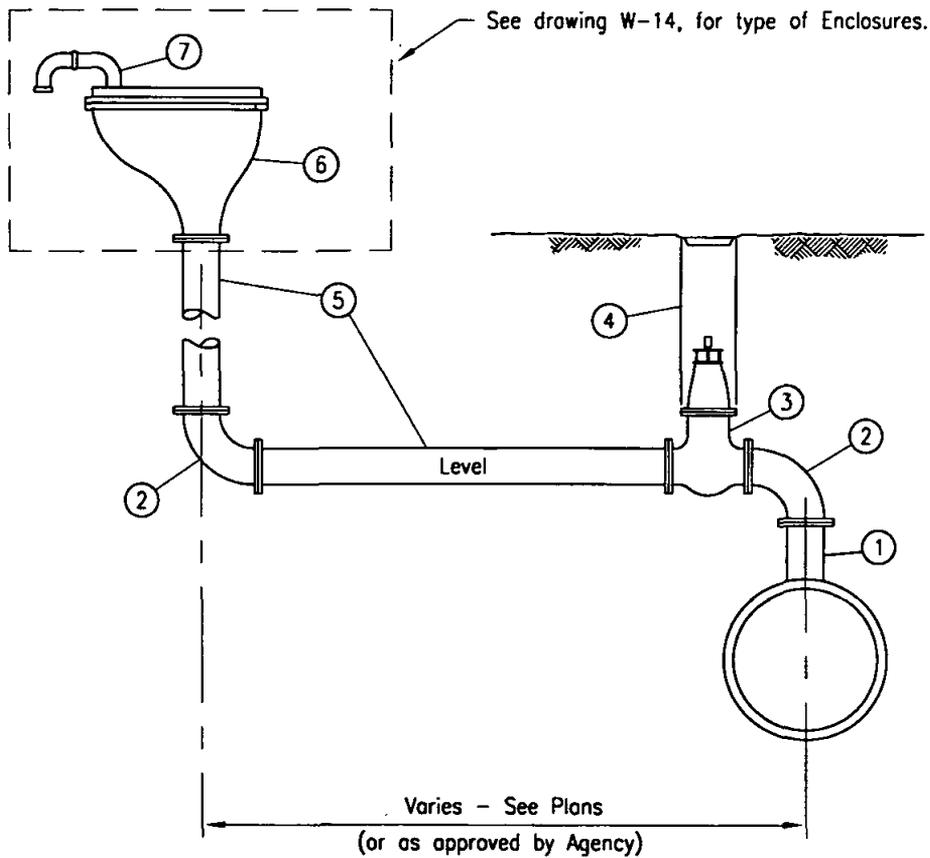
SAN DIEGO REGIONAL STANDARD DRAWING

1" AND 2" AIR AND VACUUM VALVES

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **W-4**

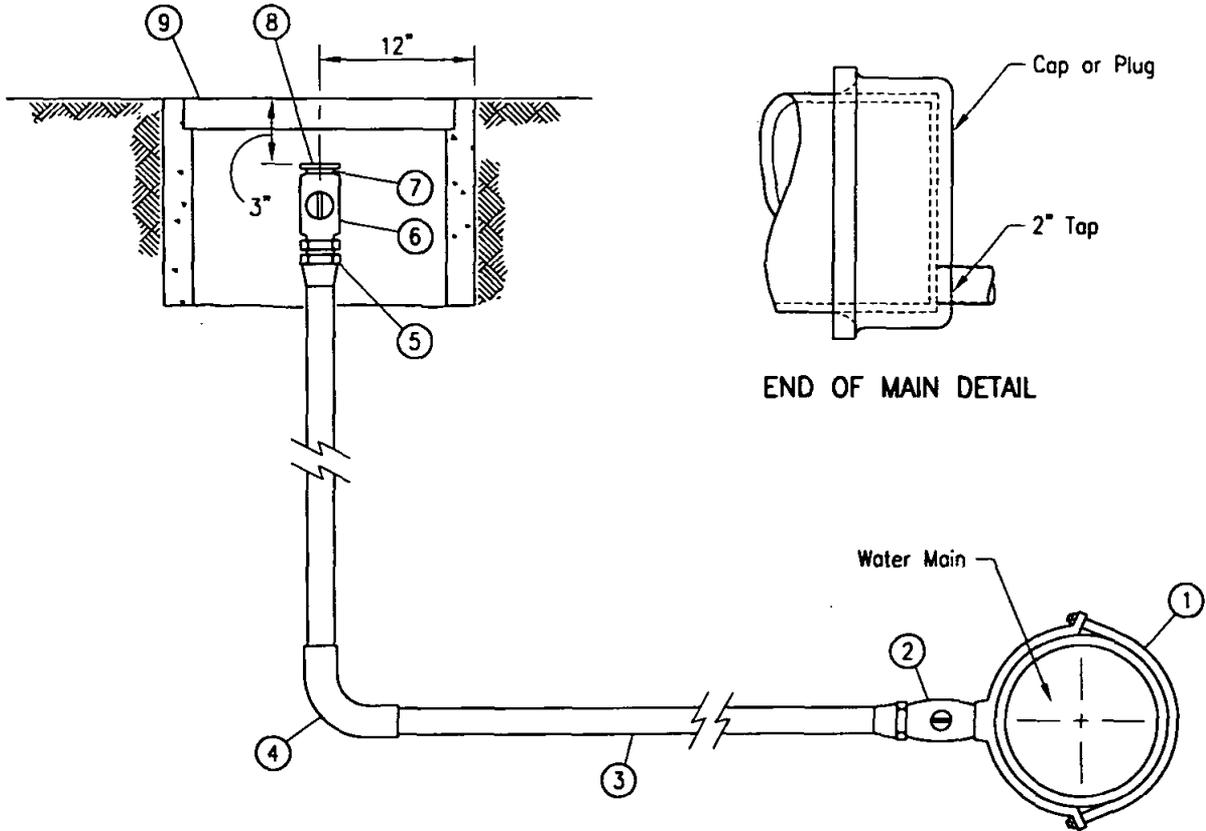


- ① Flanged Outlet, Cement Lined and Coated Steel.
- ② Flanged, 90° Ell, Cement Lined Coated Steel.
- ③ Valve
- ④ Valve Well and Cap (see Standard Drawing W-12).
- ⑤ Steel Pipe, Cement Lined and Coated.
- ⑥ Air and Vacuum Valve.
- ⑦ 2-90° Ell (not required in above metal ground enclosures).

LEGEND ON PLANS

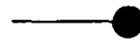


Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		A.Kercheval	12/75		
				DRAWING NUMBER	W-5



- 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 Adapter.
- 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



Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75

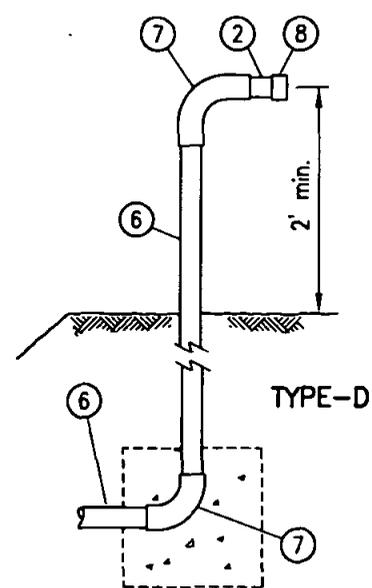
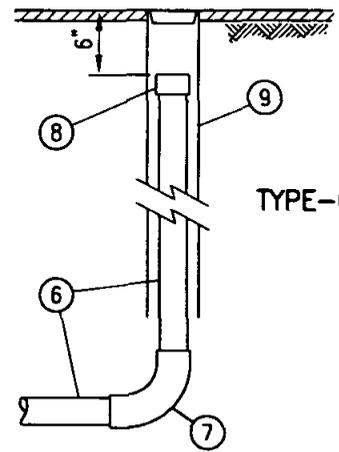
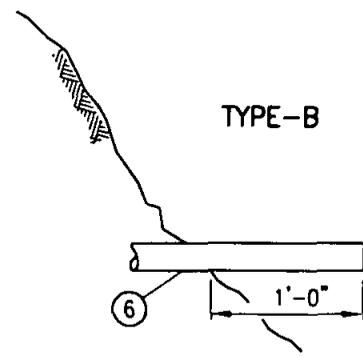
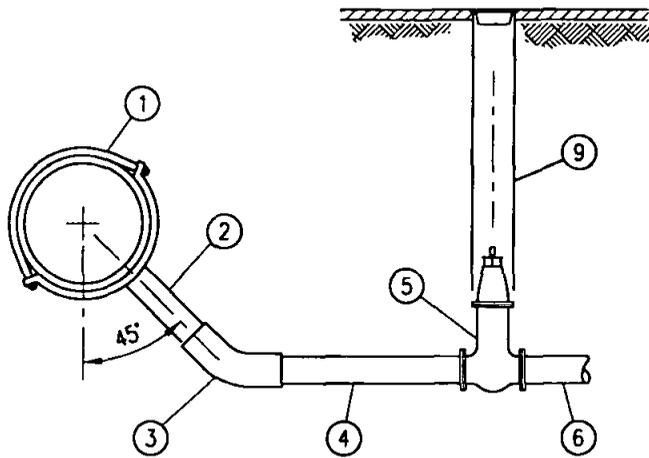
SAN DIEGO REGIONAL STANDARD DRAWING

2" BLOW-OFF ASSEMBLY - TYPE A

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **W-6**



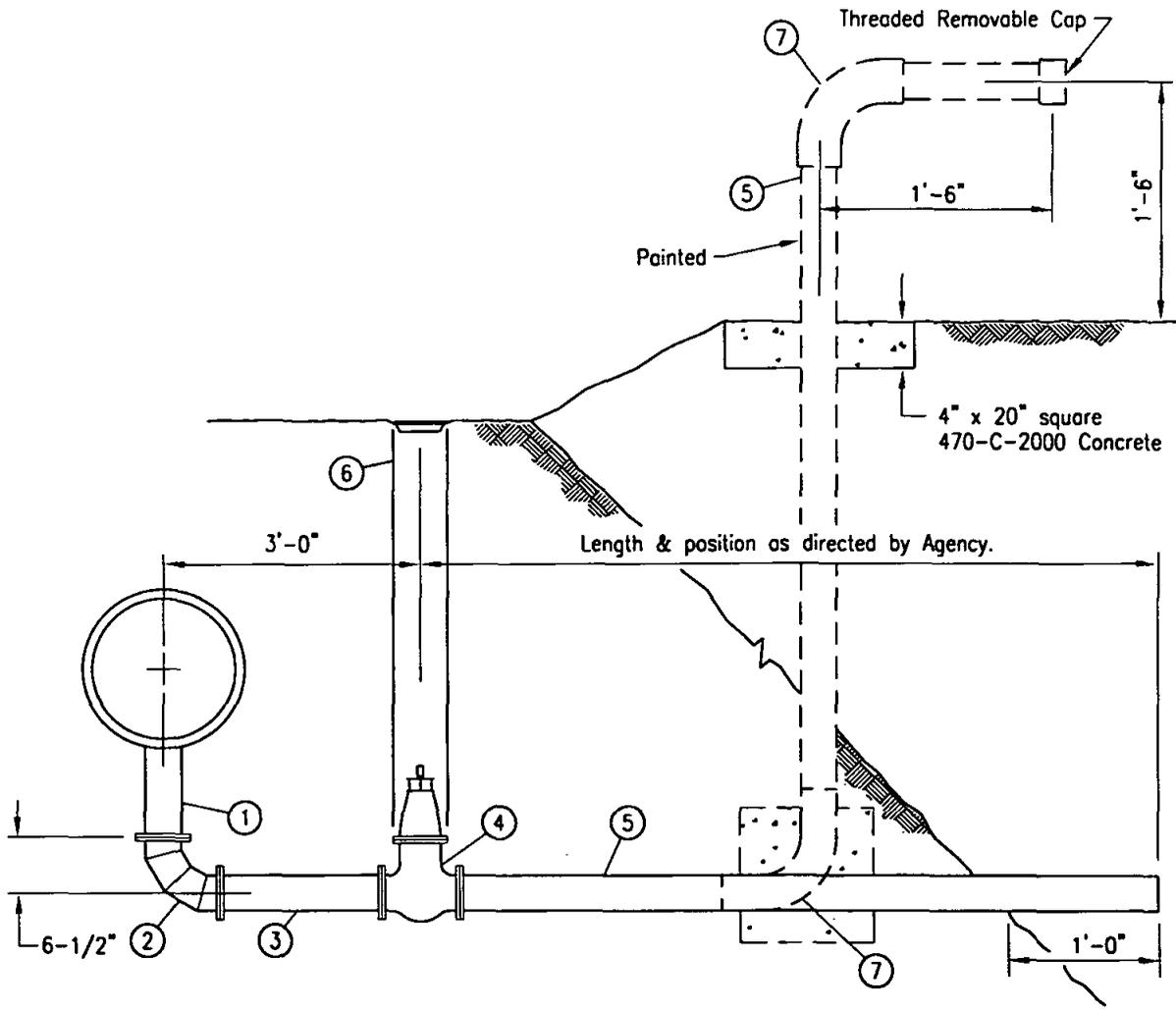
- ① Bronze Service Clamp (double strap). On steel mains use coupling as required by Agency. Install insulating bushing as required by Agency.
- ② 2" Nipple (2" x 3")
- ③ 45° Ell
- ④ 2" Nipple (2" x 6")
- ⑤ 2" Valve.
- ⑥ 2" Pipe
- ⑦ 90° Ell
- ⑧ 2" Threaded Cap.
- ⑨ Valve Well Installation, See Standard 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	
ORIGINAL		A.Kercheval	12/75			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

Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75

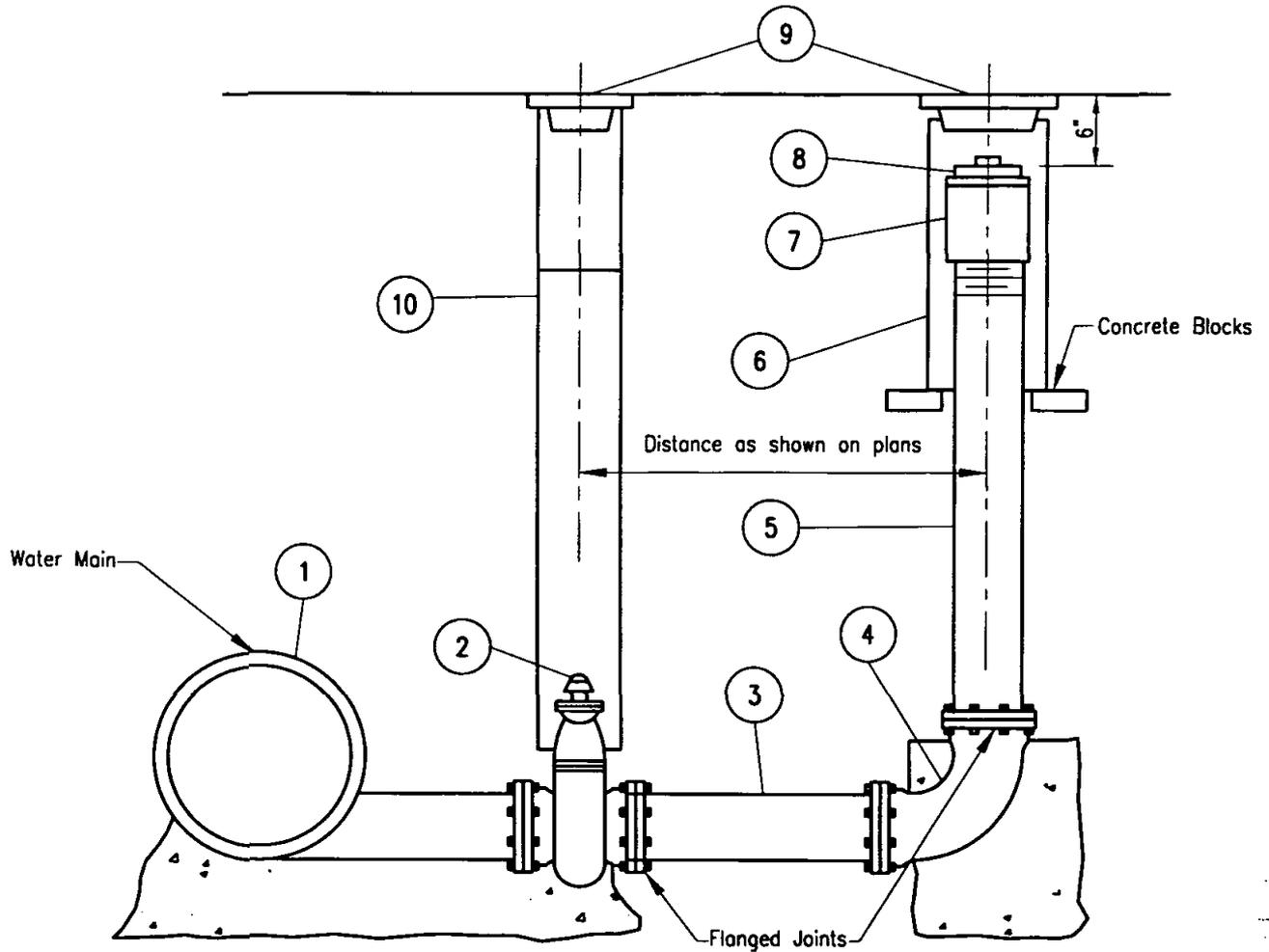
SAN DIEGO REGIONAL STANDARD DRAWING

4" AND 6" BLOW-OFF ASSEMBLIES
TYPE A

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

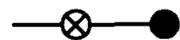
R. Stanton 3/23/80
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **W-8**



- 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
ORIGINAL		A.Kercheval	12/75

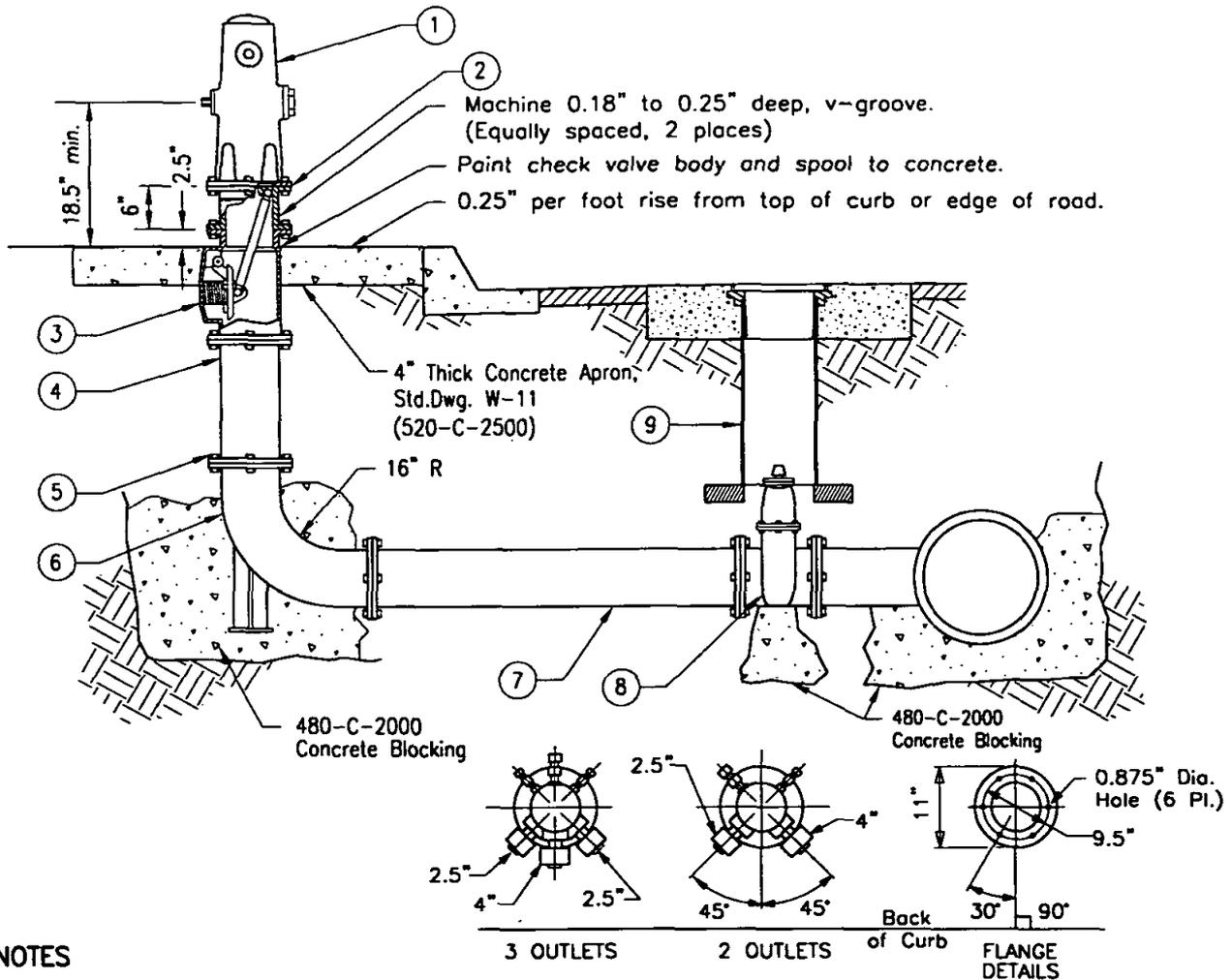
SAN DIEGO REGIONAL STANDARD DRAWING

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

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

M. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

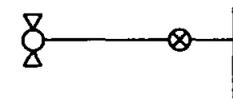
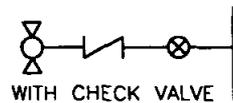
DRAWING
NUMBER **W-9**



NOTES

1. Items (4) & (7) may be cement lined and coated steel pipe where permitted.
2. Extension Spool callouts (3) & (4) maybe combined as one spool.
- (1) Fire Hydrant
- (2) 6" Extension Spool (Double Machine Grooved)
- (3) Break-Off Check Valve Body or Extension Spool as required by agency or shown on plans
- (4) Extension spool
- (5) .75" X 3" Hex Head Machine Bolts and Nuts (Typical)
- (6) Hydrant Ell
- (7) Polyvinyl Chloride (PVC) or Ductile Iron (DI) Pipe
- (8) Valve with Concrete Support, Std. Dwg. W-19 (Type A)
- (9) Valve Well and Cover, Std. Dwgs. W-12A & W-12B
- (10) See Std. Dwg. W-11 for fire hydrant locations and M-19 for fire hydrant marker location as required by agency.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		R. Munoz	3/97

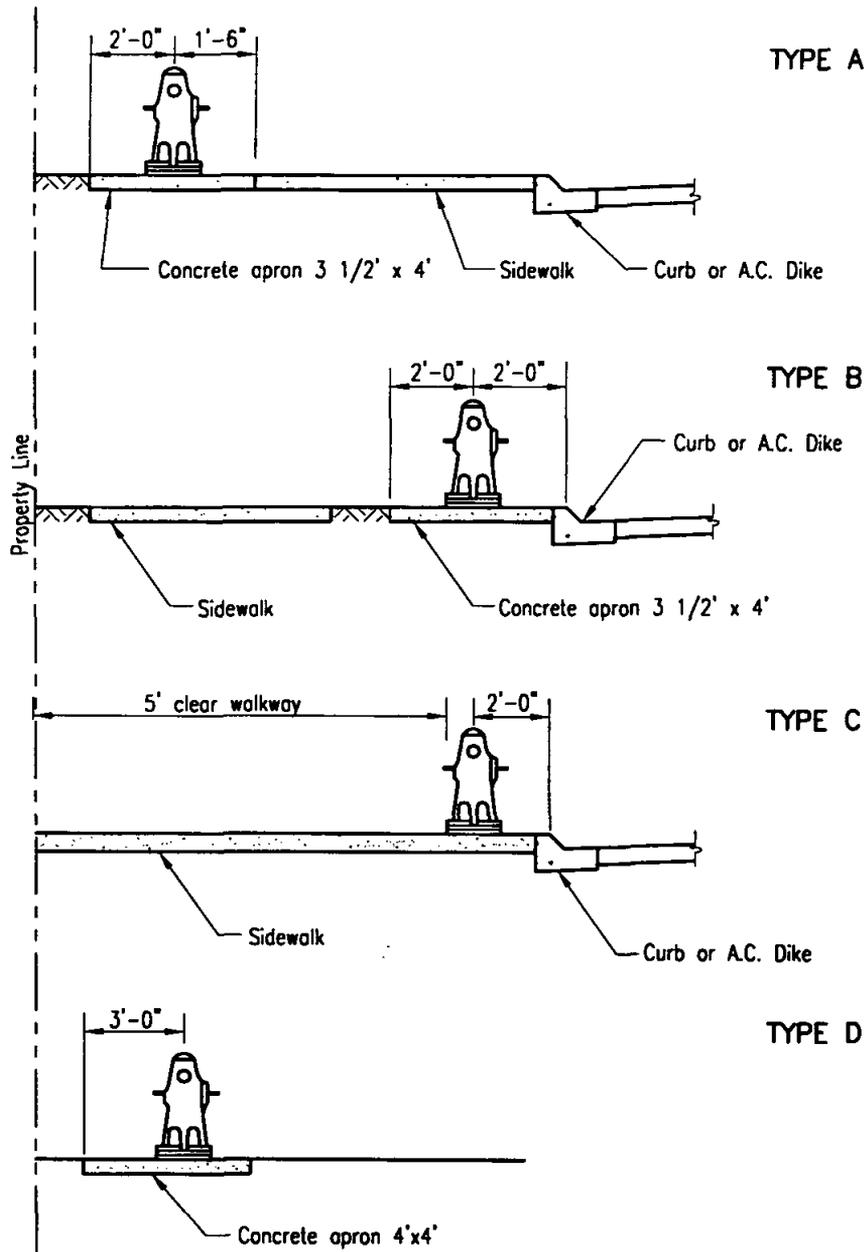
SAN DIEGO REGIONAL STANDARD DRAWING

FIRE HYDRANT INSTALLATION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

W. Heaton 3/23/00
Chairperson R.C.E. 19246 Date

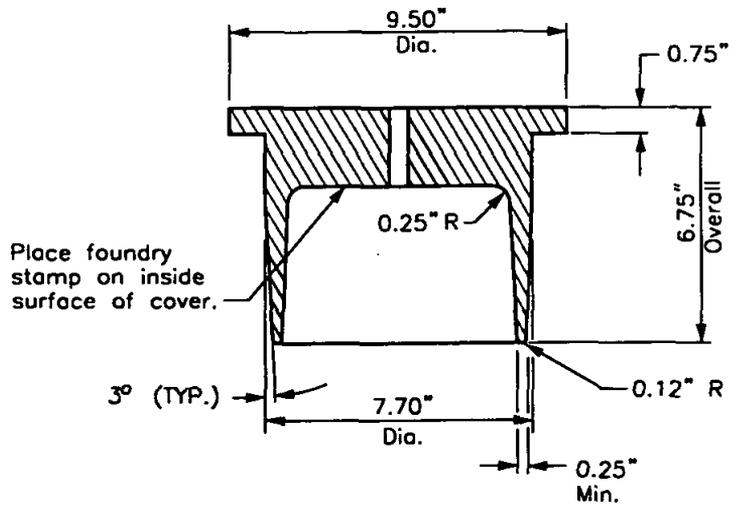
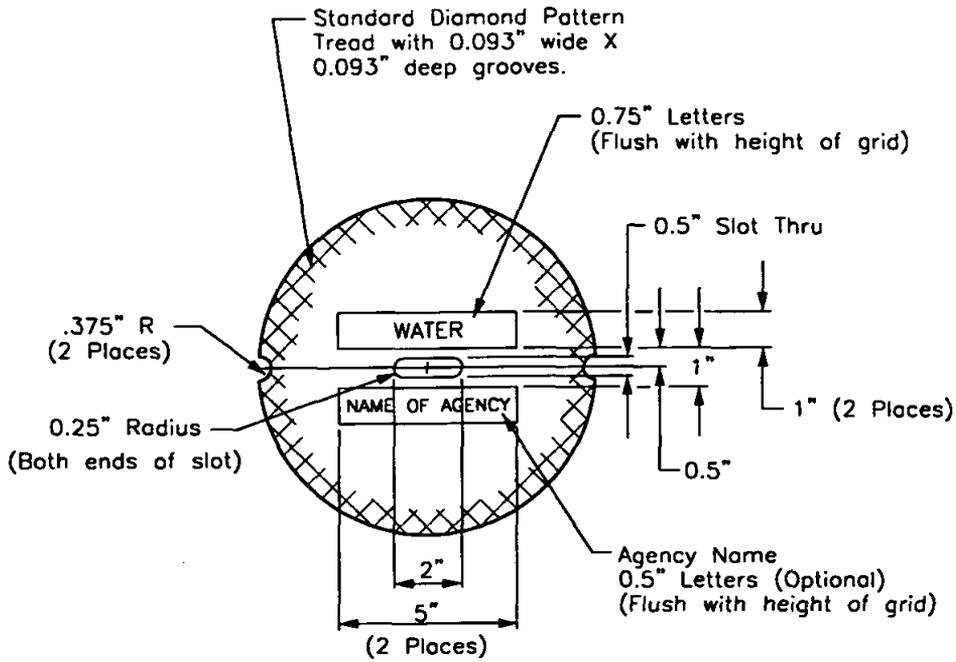
DRAWING NUMBER **W-10**



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	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		A.Kercheval	12/75		FIRE HYDRANT LOCATIONS
				DRAWING NUMBER W-11	



**CAST IRON
VALVE WELL COVER
(40 lbs. min.)**

VALVE WELL COVER PAINT CHART			
VALVE CONDITION	BUTTERFLY VALVES	GATE VALVES	BLOW-OFF VALVES
PERMANENTLY CLOSED	RED	RED	-
TEMPORARILY CLOSED	YELLOW w/RED DOT	WHITE w/RED DOT	ALUMINUM
PERMANENTLY OPEN	YELLOW	WHITE	-

Revision	By	Approved	Date
ORIGINAL		G.Parkinson	2/95

SAN DIEGO REGIONAL STANDARD DRAWING

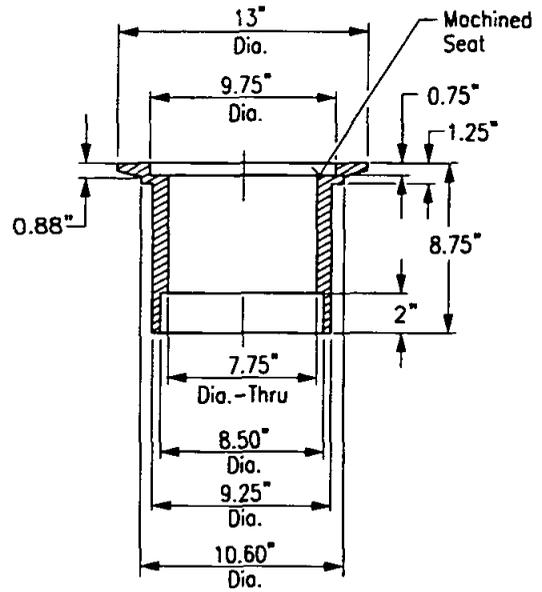
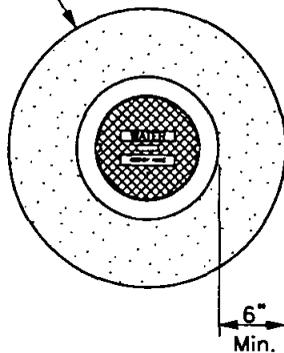
VALVE WELL COVER

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

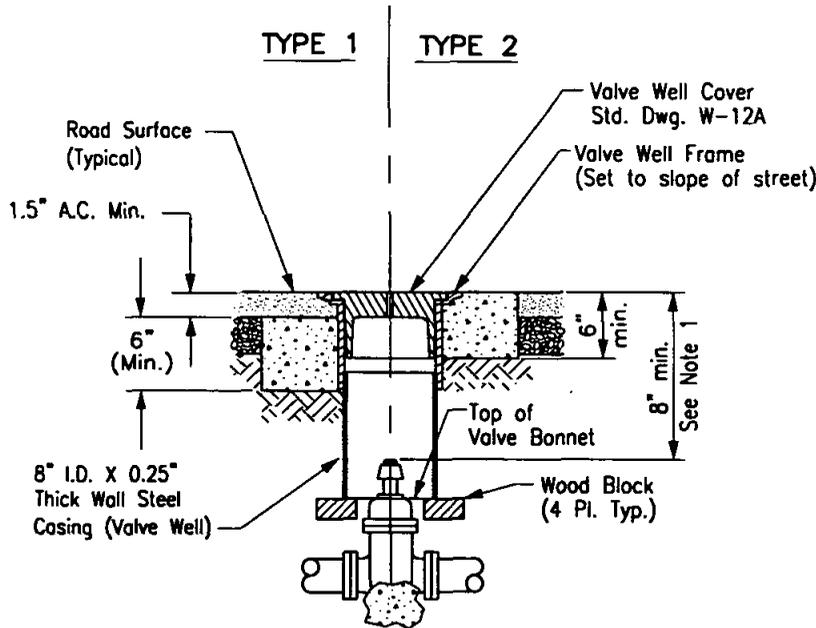
R. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **W-12A**

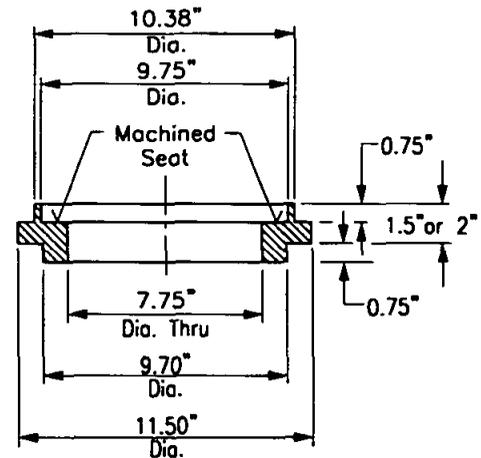
Concrete
560-C-3250



**CAST IRON
VALVE WELL FRAME**



**VALVE WELL AND FRAME
For New Installations**



CAST IRON RISER RING

For Retrofitting and
Overlay Projects

NOTES

1. Provide valve key extension for all butterfly valves.
For gate valves, provide valve key extension where this dimension exceeds 25".
2. The surface of the valve well cover shall match the street cross slope and profile.
3. See Standard Drawing W-13 for valve stem extension when required by agency.

Revision	By	Approved	Date
ORIGINAL		G.Parkinson	2/95

SAN DIEGO REGIONAL STANDARD DRAWING

**VALVE WELL FRAME
AND ASSEMBLY**

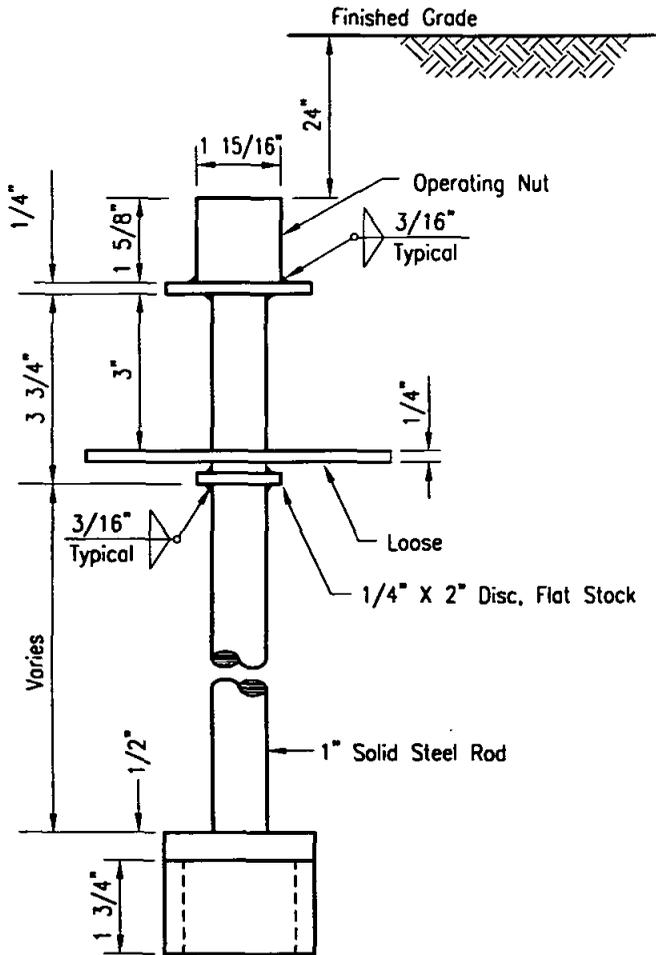
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

R. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

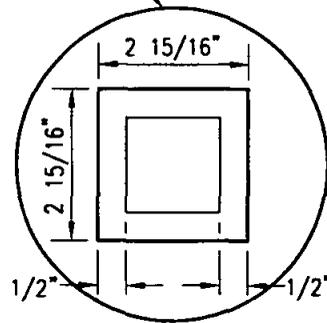
DRAWING
NUMBER

W-12B

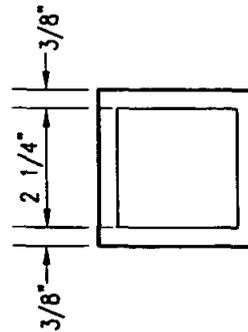
Diameter varies. Make 1/4" less than I.D. of con.



ELEVATION



TOP VIEW



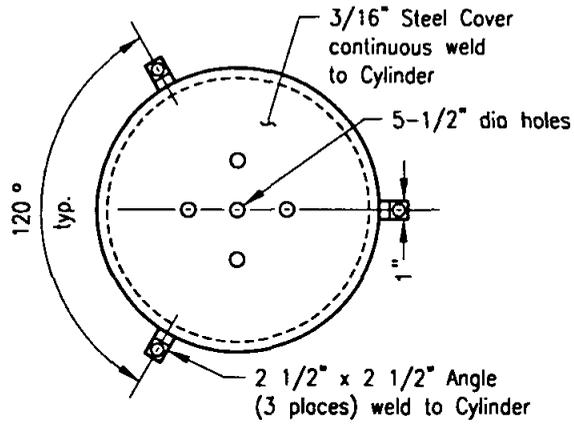
BOTTOM VIEW

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.

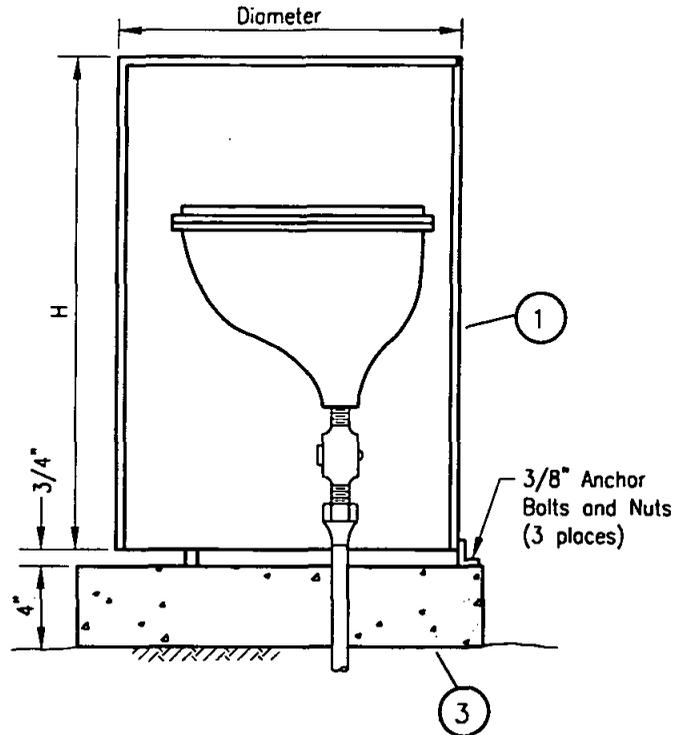
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		G. Parkinson	5/92		

DRAWING NUMBER **W-13**

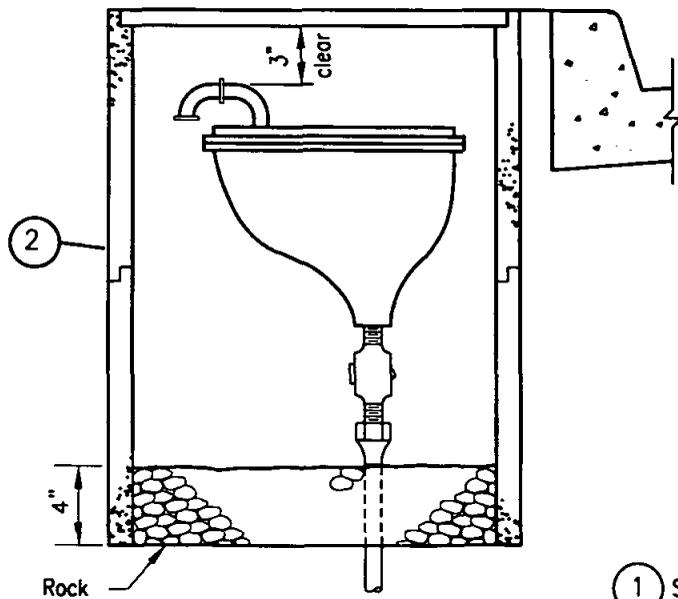


PLAN

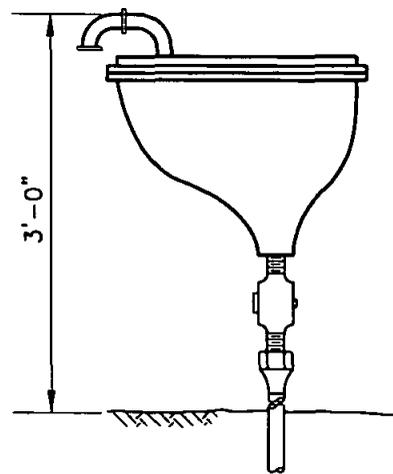
Valve Size	Dia	H
1" & 2"	14"	24"
4"	14"	30"
6"	16"	36"



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

Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75

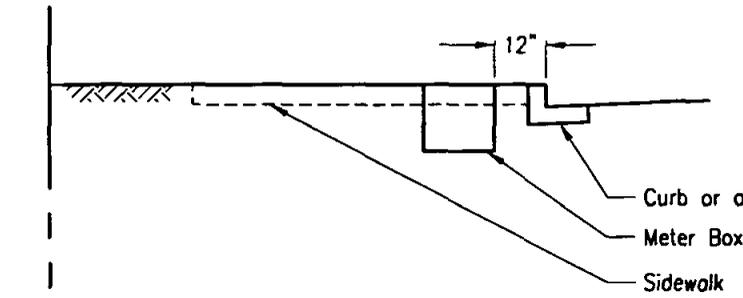
SAN DIEGO REGIONAL STANDARD DRAWING

AIR AND VACUUM VALVE ENCLOSURES

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

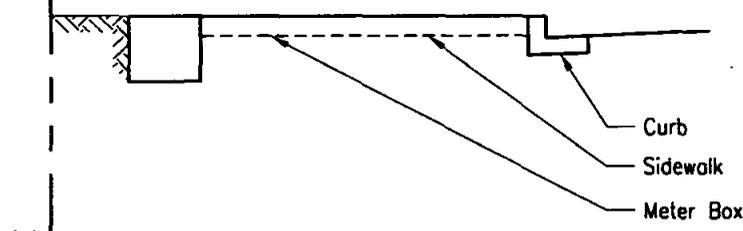
J. Steaton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **W-14**



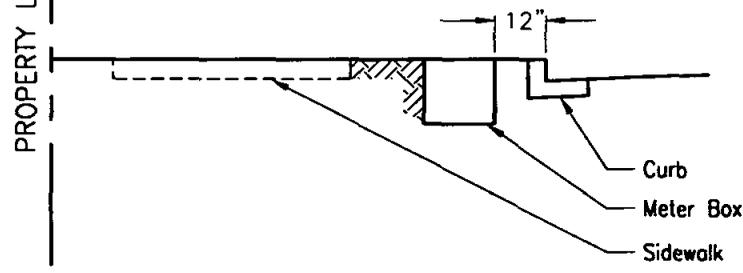
TYPE *A1
WITH OR WITHOUT COMMERCIAL
OR RESIDENTIAL SIDEWALK

Curb or asphalt berm
Meter Box
Sidewalk



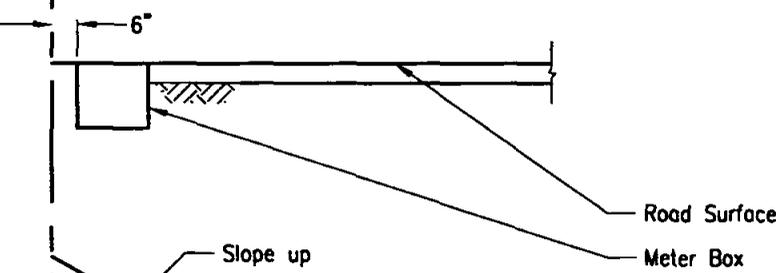
TYPE *A2
CONTIGUOUS SIDEWALK

Curb
Sidewalk
Meter Box



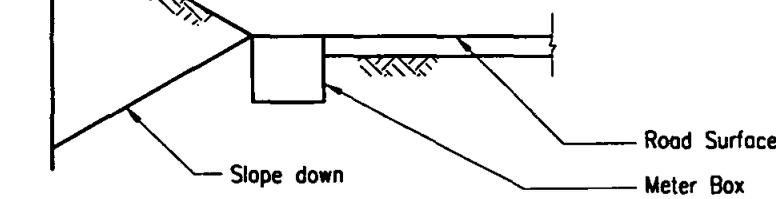
TYPE B
NON-CONTIGUOUS SIDEWALK

Curb
Meter Box
Sidewalk



TYPE C
NO CURB

Road Surface
Meter Box



TYPE D
NO CURB

Road Surface
Meter Box

PROPERTY LINE

* Agency to determine alternate

NOTE:

Meter boxes shall not be located within driveways.

Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75

SAN DIEGO REGIONAL STANDARD DRAWING

WATER METER LOCATIONS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

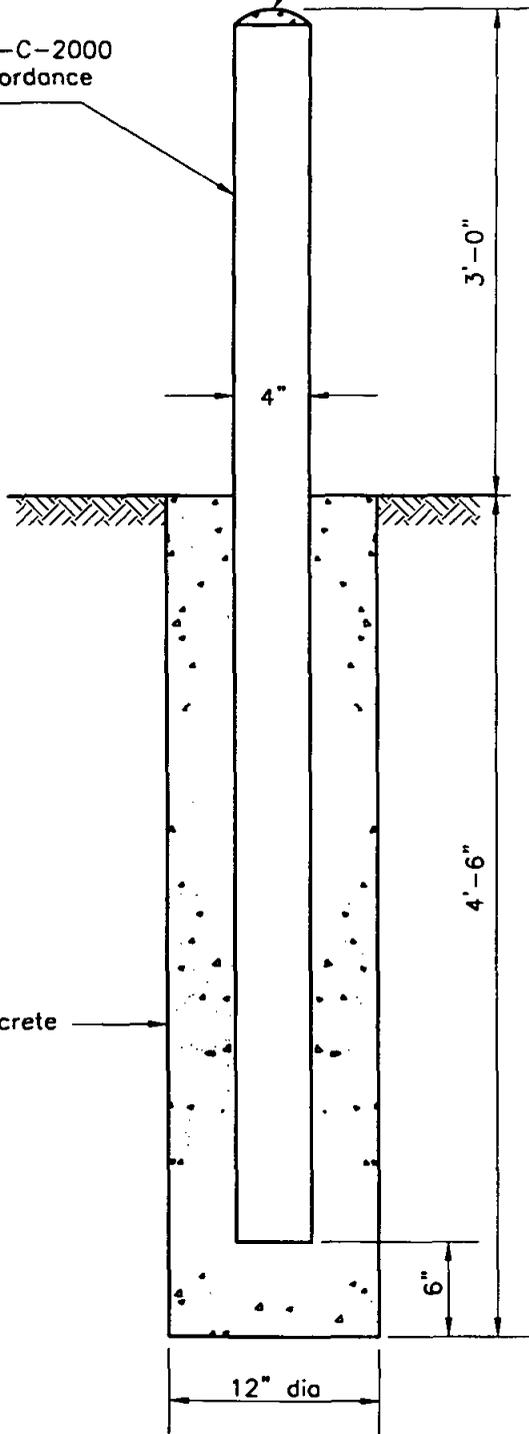
M. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

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

Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75

SAN DIEGO REGIONAL STANDARD DRAWING

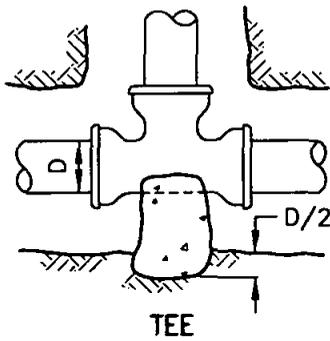
PROTECTION POST

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

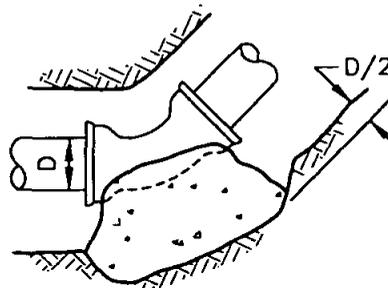
R. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER

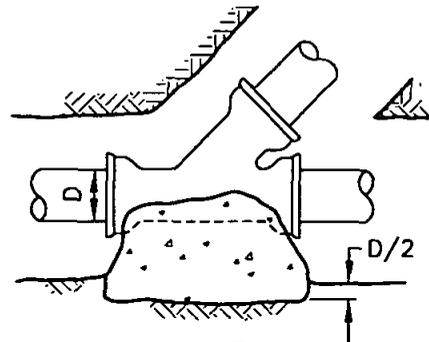
W-16



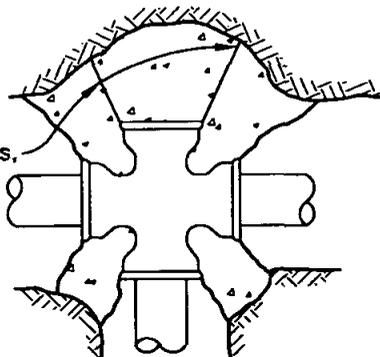
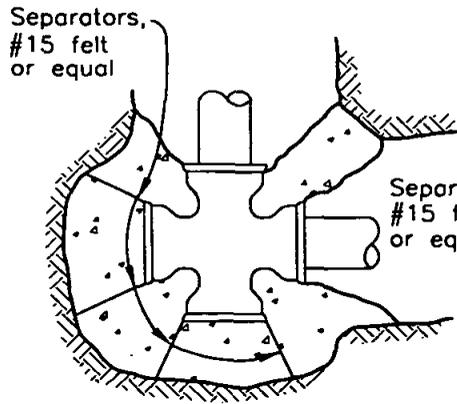
TEE



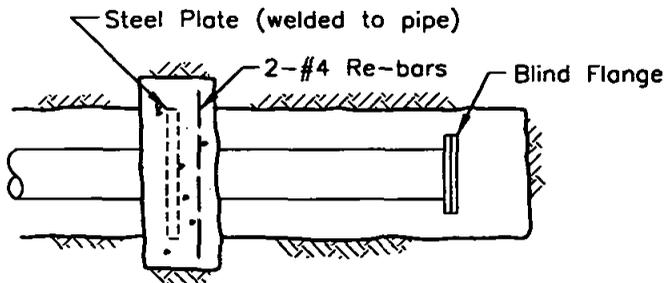
HORIZONTAL OR VERTICAL BEND



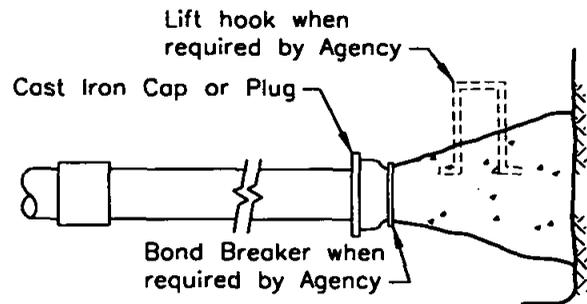
WYE



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
ORIGINAL		A.Kercheval	12/75

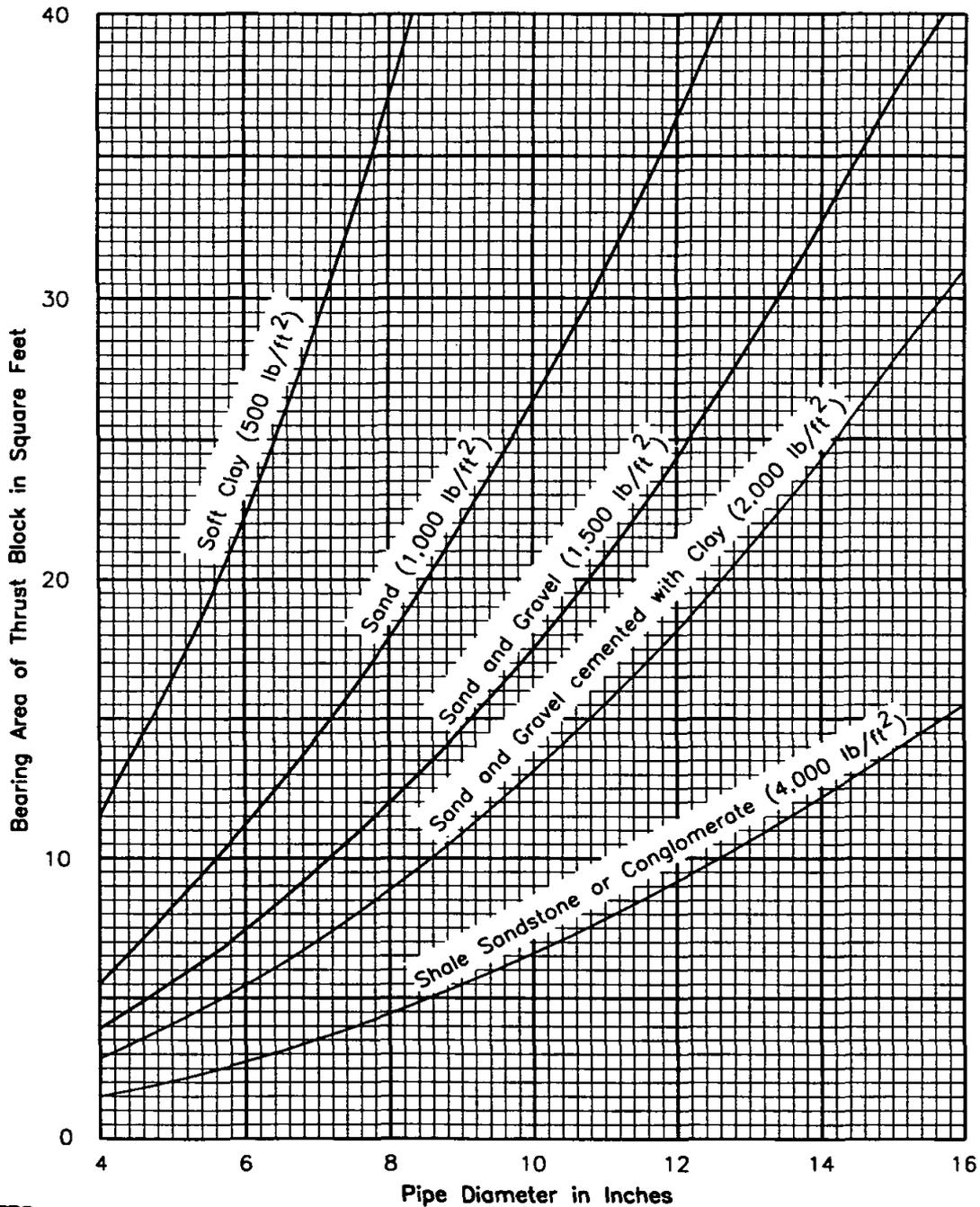
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE THRUST BLOCKS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. H. Stanton 3/23/60
 Chairperson R.C.E. 19246 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 dead ends, 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.

Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75

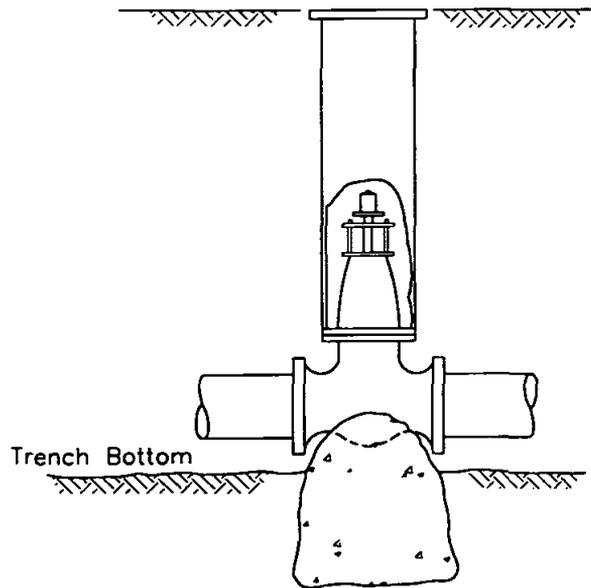
SAN DIEGO REGIONAL STANDARD DRAWING

THRUST BLOCK BEARING AREAS

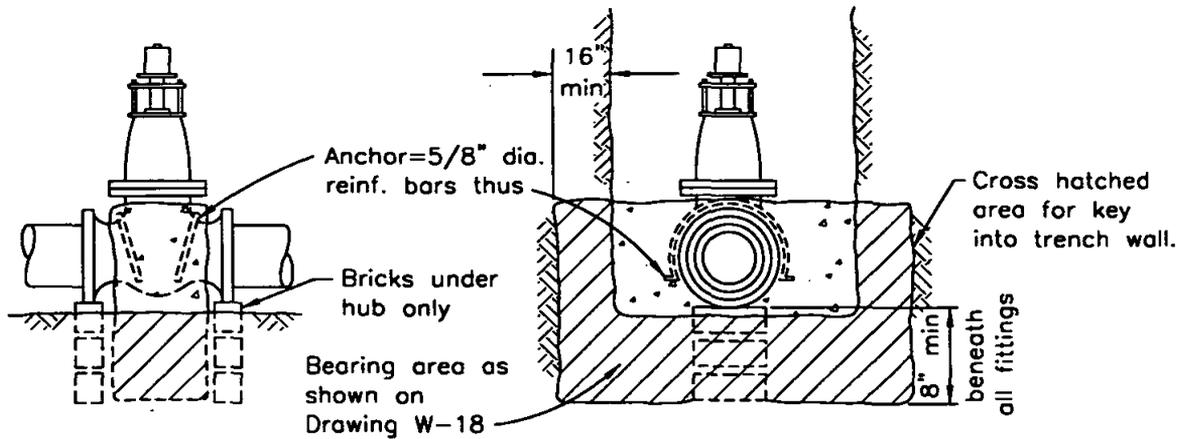
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Stanton 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **W-18**



TYPE-A SUPPORT BLOCK

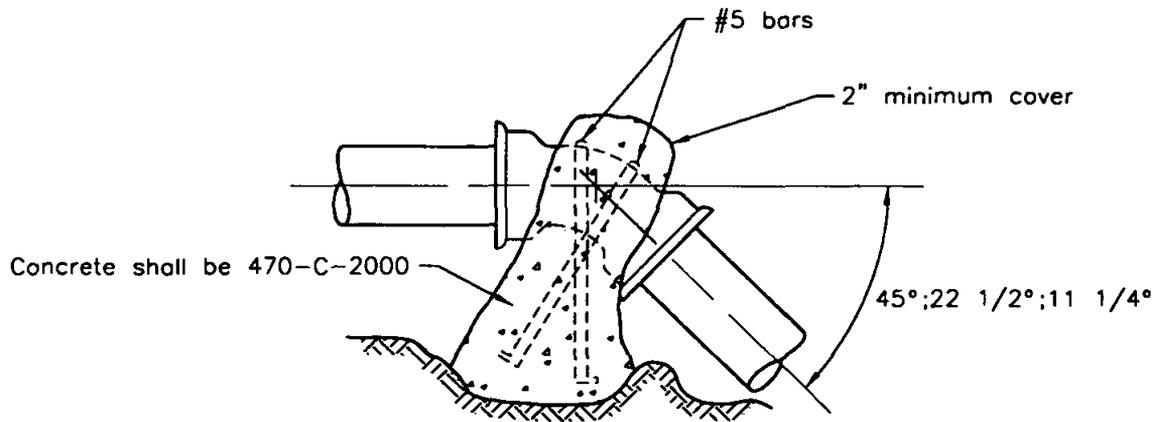


TYPE-B THRUST BLOCK

NOTE

Concrete shall be 470-C-2000.

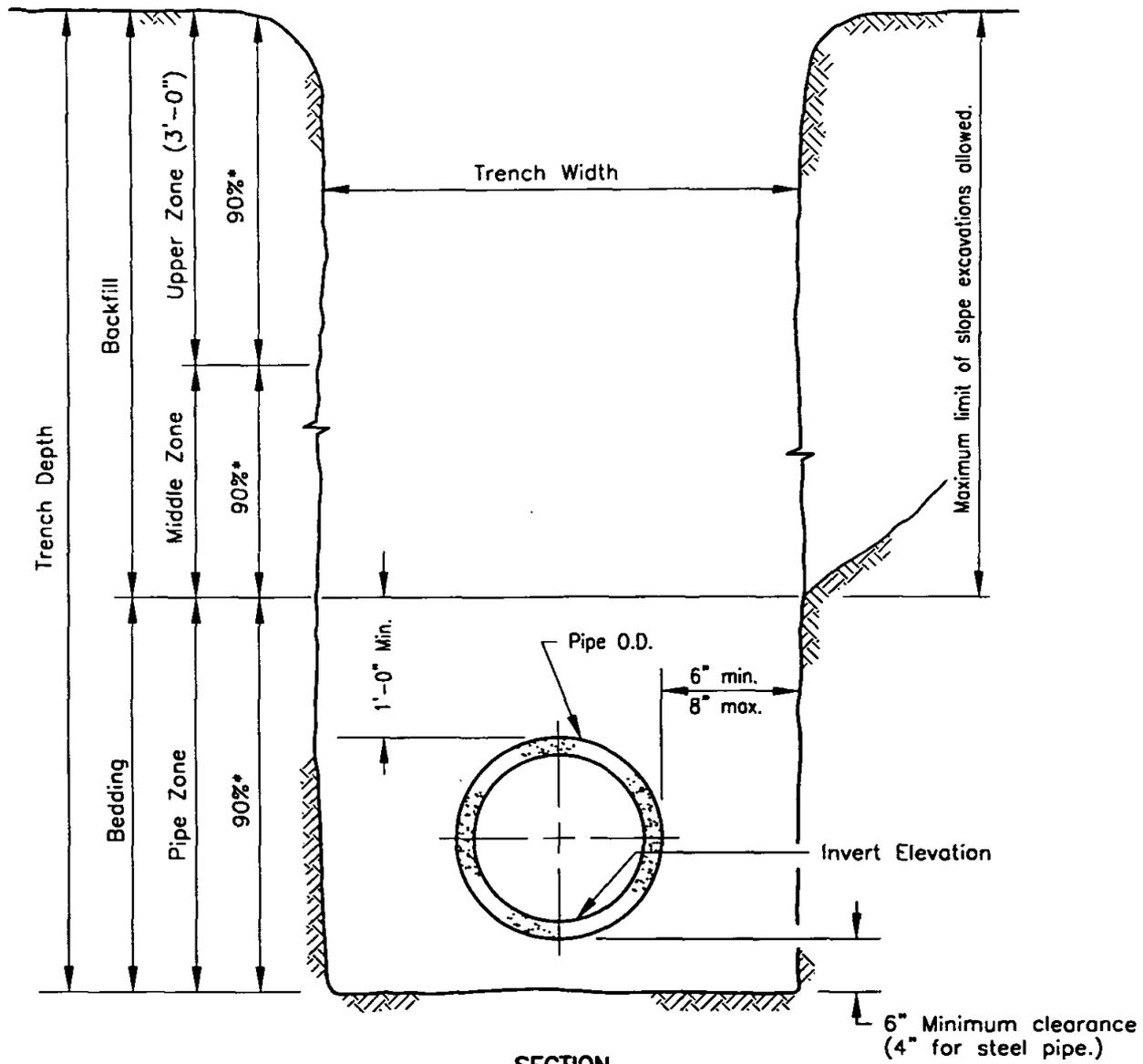
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		A.Kercheval	12/75		CONCRETE VALVE BLOCKING
				DRAWING NUMBER W-19	



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.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		A.Kercheval	12/75			
				ANCHOR BLOCK (VERTICAL BEND ONLY)	<i>[Signature]</i> 3/23/00	
					Chairperson R.C.E. 19246 Date	
					DRAWING NUMBER	W-20



SECTION

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
ORIGINAL		A.Kercheval	12/75

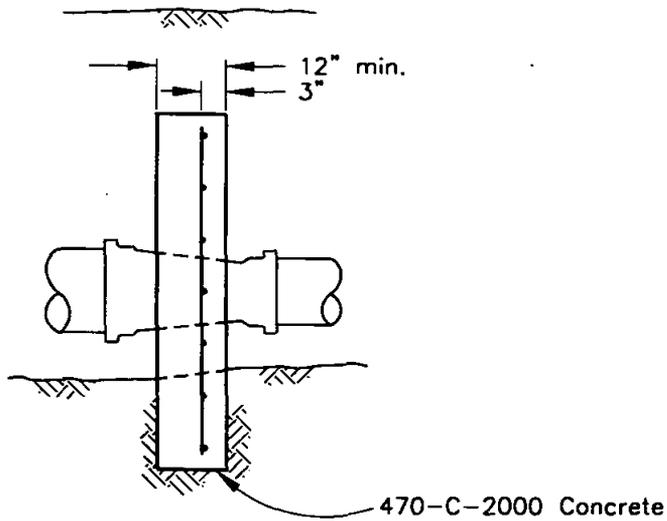
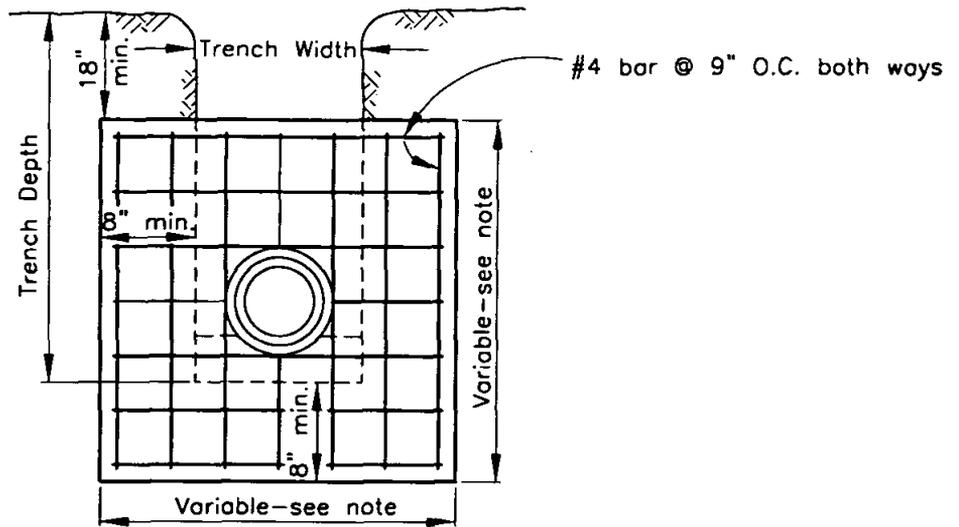
SAN DIEGO REGIONAL STANDARD DRAWING

**PIPE BEDDING AND TRENCH BACKFILL
FOR WATER MAINS**

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

[Signature] 3/23/60
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **W-21**



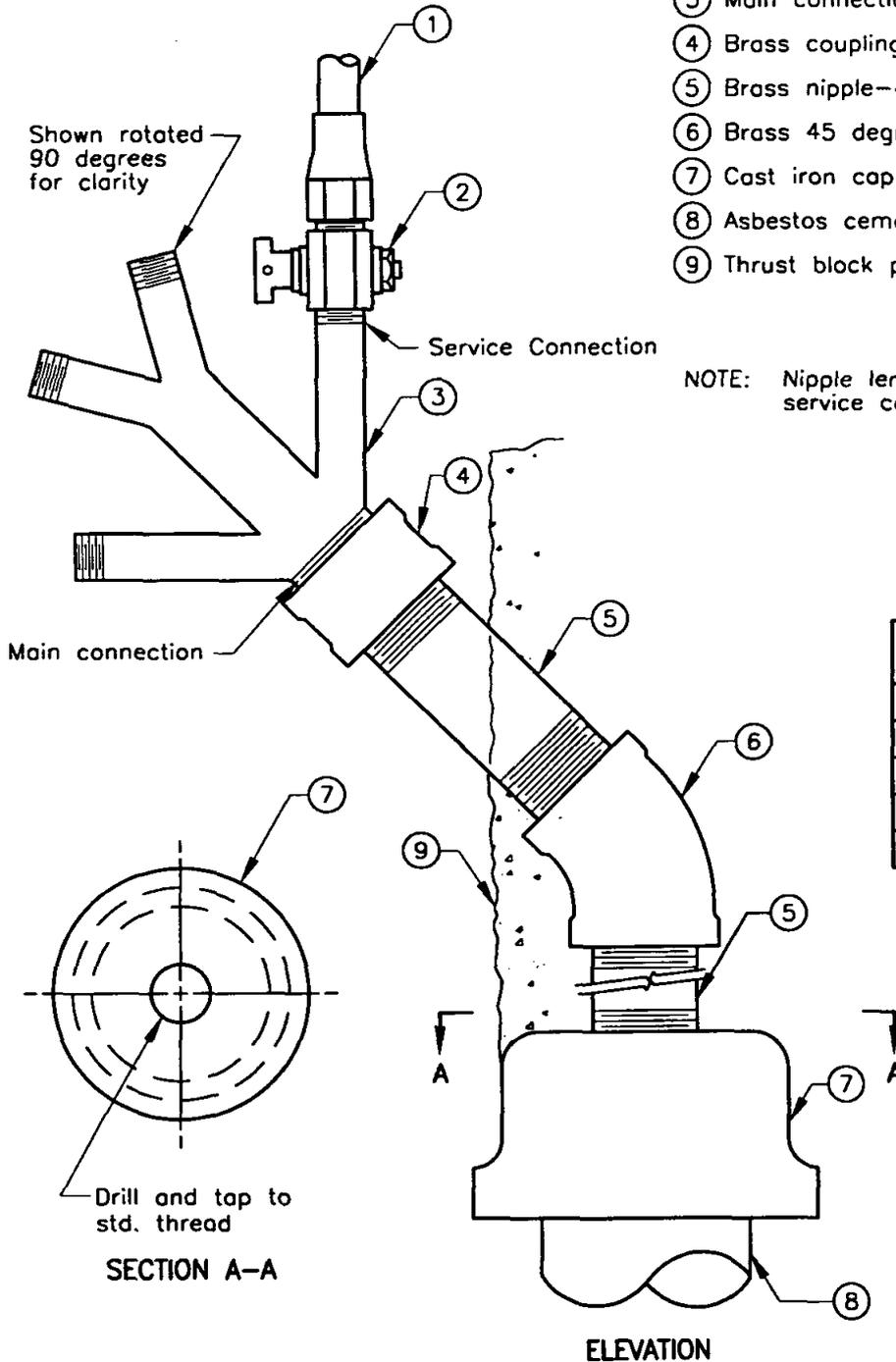
NOTE

Bearing area shall be the difference between the bearing areas required for thrust anchorage of mains on each side of reducer as found from Standard Drawing W-18, plus the area of the trench opening, except that minimum dimensions shown shall be adhered to.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		D. Solomon	7/79		
				DRAWING NUMBER	W-22

- ① 1" Water service per Std. Dwg W-1
- ② 1" Curb stop
- ③ Main connection X multiple branch connection
- ④ Brass coupling or 45 degree elbow
- ⑤ Brass nipple-4" min. length
- ⑥ Brass 45 degree elbow
- ⑦ Cast iron cap
- ⑧ Asbestos cement pipe
- ⑨ Thrust block per Std. Dwg W-17

Shown rotated
90 degrees
for clarity



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	By	Approved	Date
ORIGINAL		D. Solomon	7/79

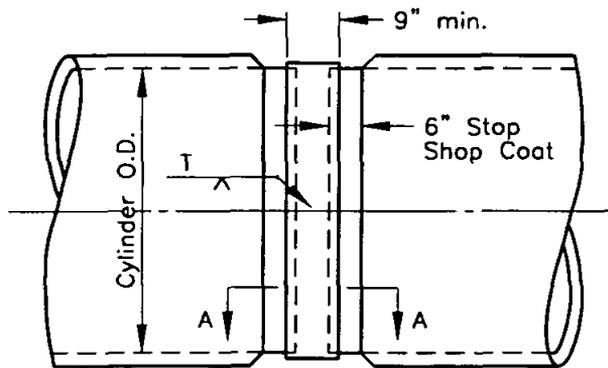
SAN DIEGO REGIONAL STANDARD DRAWING

MUTIPLE SERVICE ASSEMBLY
DEAD END MAIN

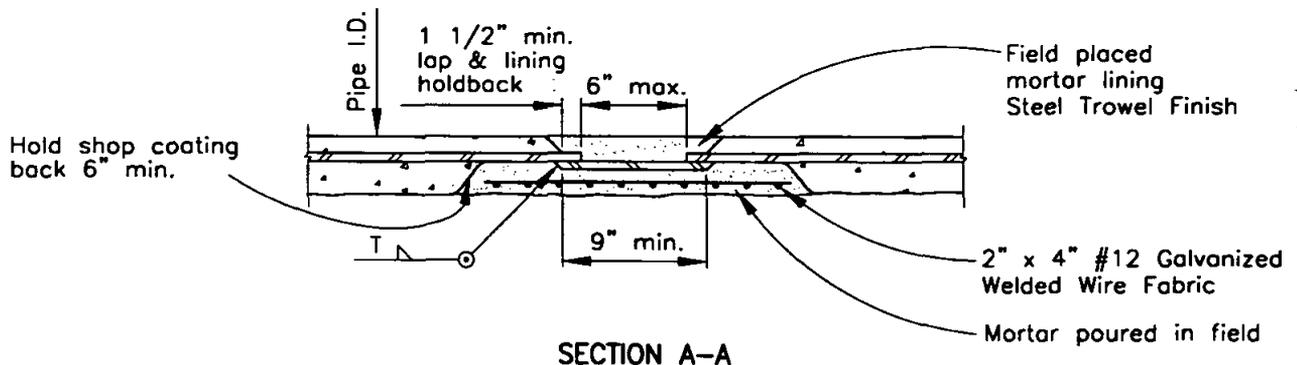
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

R. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING
NUMBER **W-23**



ELEVATION

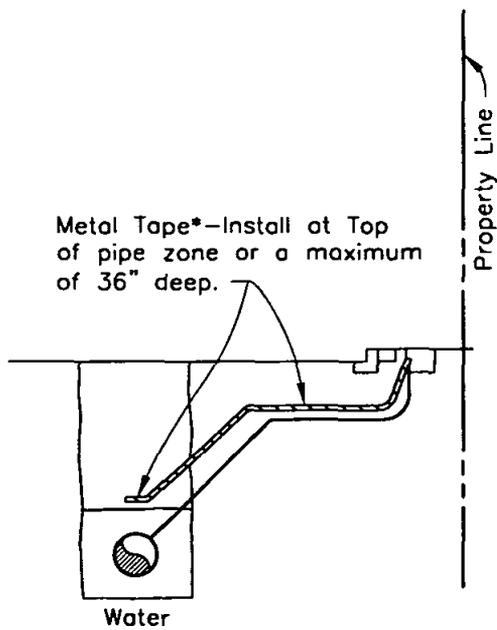


SECTION A-A

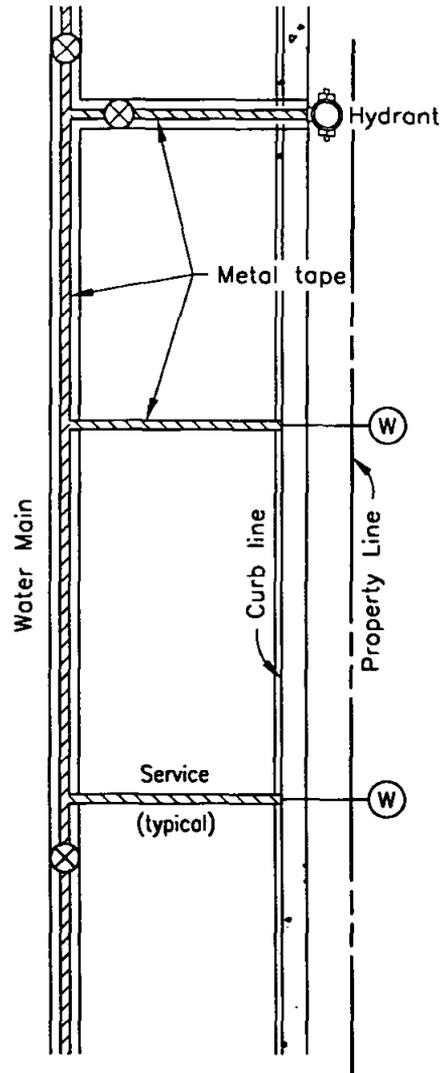
NOTE:

Contractor shall provide handholes as required to complete the work

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		D. Solomon	7/79		
				DRAWING NUMBER W-24	



SECTION



PLAN

NOTES

- 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 insure electrical continuity.
- 4. Tape shall extend into service box or well casing to allow for mark-out by continuity tester.

Revision	By	Approved	Date
ORIGINAL		M. Bahmanian	4/86

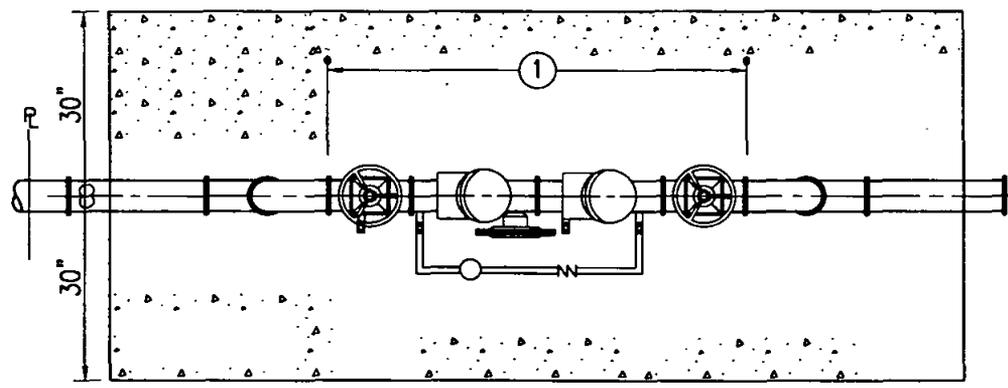
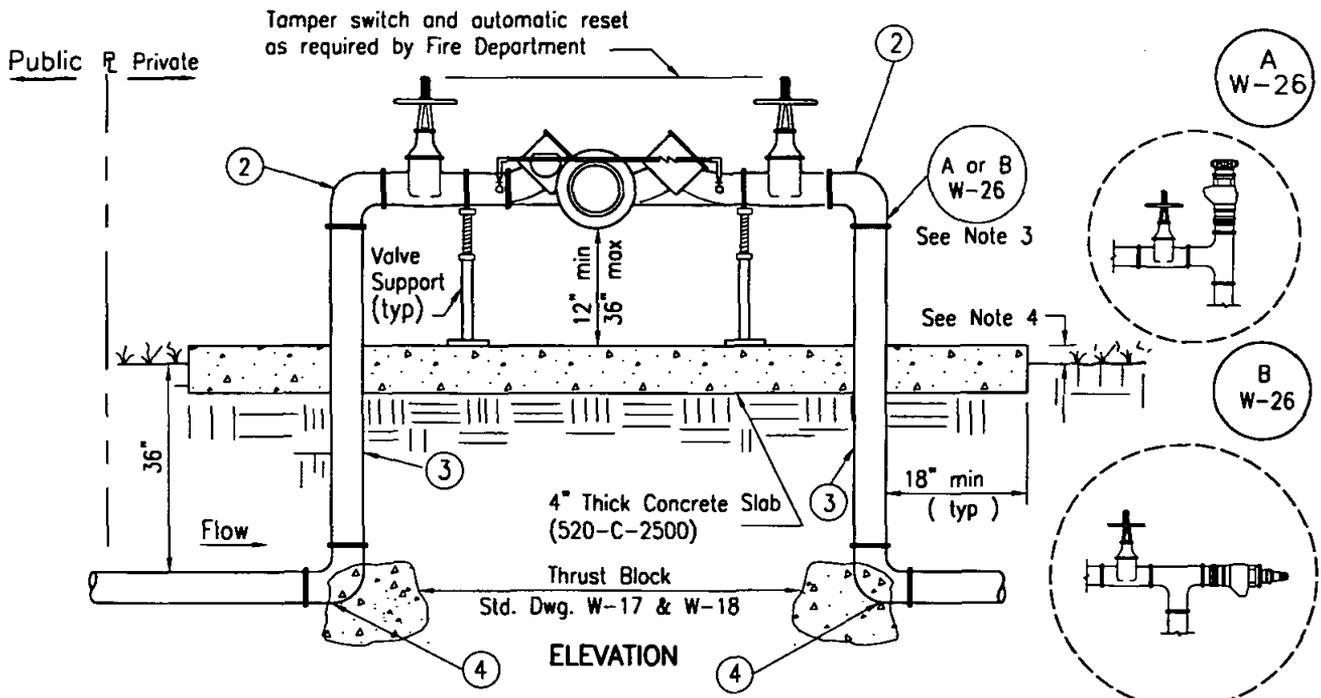
SAN DIEGO REGIONAL STANDARD DRAWING

METALLIC TAPE LOCATOR
FOR NON-METALLIC WATER PIPE

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

M. Stanton 3/23/80
Chairperson R.C.E. 19246 Date

DRAWING
NUMBER **W-25**



PLAN

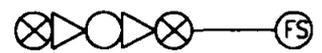
NOTES

1. Backflow preventor assembly shall be tested upon installation by a certified backflow assembly tester. Contractor shall provide the Engineer with written test results completed by a certified backflow tester prior to backflow preventor assembly's acceptance by the Engineer.
2. All pipe below grade shall be wrapped as required by agency.
3. Elbow may be replaced with Fire Department connection as required by the Fire Department.
4. Concrete pad to be 2" above grade unless installed in town area where it will be at 1" above grade. Slope to drain.
5. Valve supports as required by agency.
- ① Reduced Pressure Principle Detection Assembly shall be included in the latest edition of the "Approved for Service Isolation California Public Water Systems" issued by the State of California Department of Health Services, Office of Drinking Water.
- ② 90° Flanged Cast Iron or Ductile Iron Elbow (typ)
- ③ Flanged Ductile Iron Spool. Both ends shall be flanged (uni-flange shall not be used)
- ④ 90° Ductile Iron Flanged Elbow

W-26
A or B

Alternative installations for Fire Department connection.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		R. Munoz	3/97

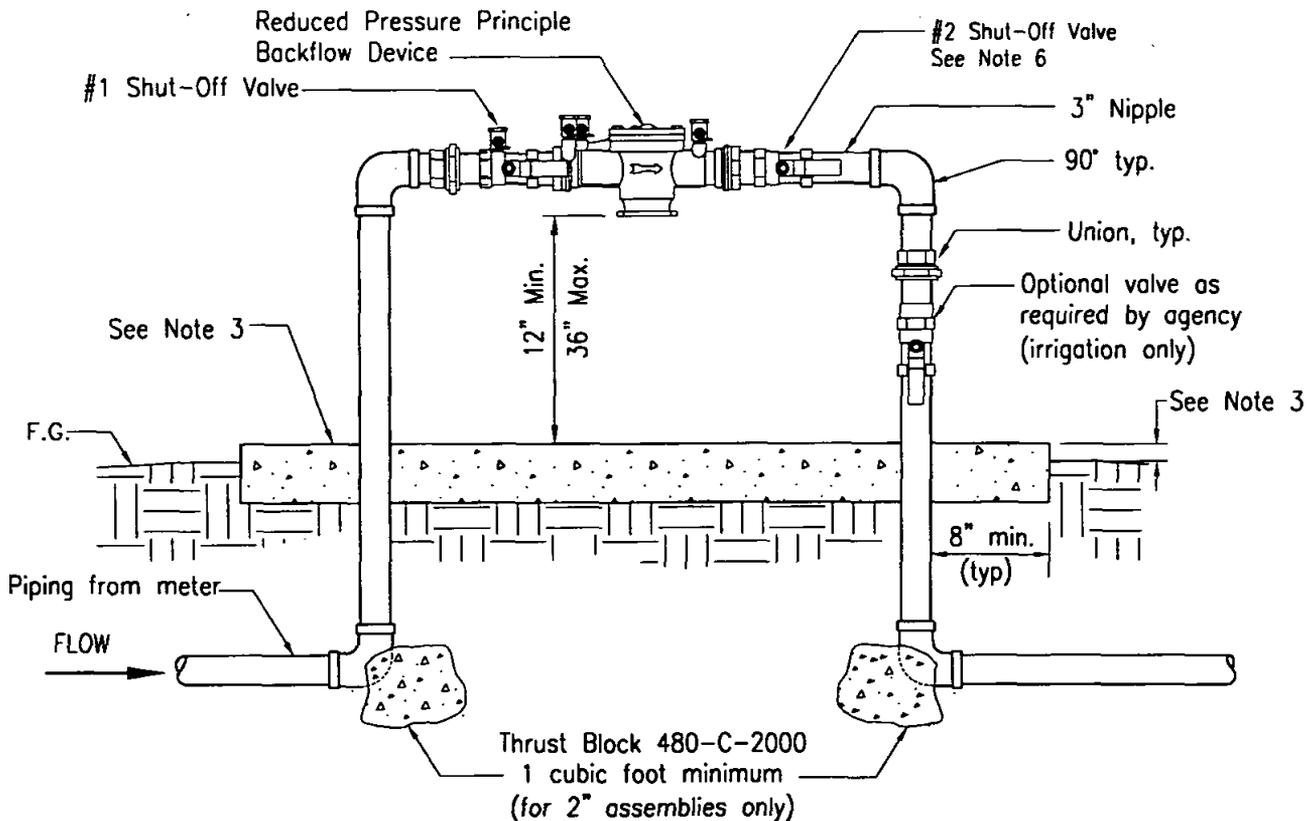
SAN DIEGO REGIONAL STANDARD DRAWING

**BACKFLOW PREVENTER REDUCED
PRESSURE PRINCIPLE DETECTOR ASSEMBLY
FOR FIRE SERVICE - 3" AND LARGER**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J. Stanton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **W-26**



NOTES

1. 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 a certified backflow tester prior to backflow preventer assembly's acceptance by the Engineer.
2. All pipe below grade shall be wrapped as required by agency.
3. Concrete pad to be 2" above grade unless installed in lawn area where it will be at 1" above grade. Concrete pad shall be 4" thick and 18" wide (min) (520-C-2500) slope to drain.
4. Reduced Pressure Principle Assembly shall be included in the latest edition of the "Approved for Service Isolation in California Public Water Systems" issued by the State of California Department of Health Services, Office of Drinking Water.
5. Regulator may be installed upstream of the backflow preventer assembly when water pressure exceeds backflow preventer assembly rating.
6. Wye strainer and downstream regulator, when required, shall be located downstream of the #2 shut off valve.
7. Protective enclosure for backflow preventer assembly shall be used at the discretion of the property owner.
8. Locate preventer assembly as close to meter as practical as approved by the agency.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		R. Munoz	3/97

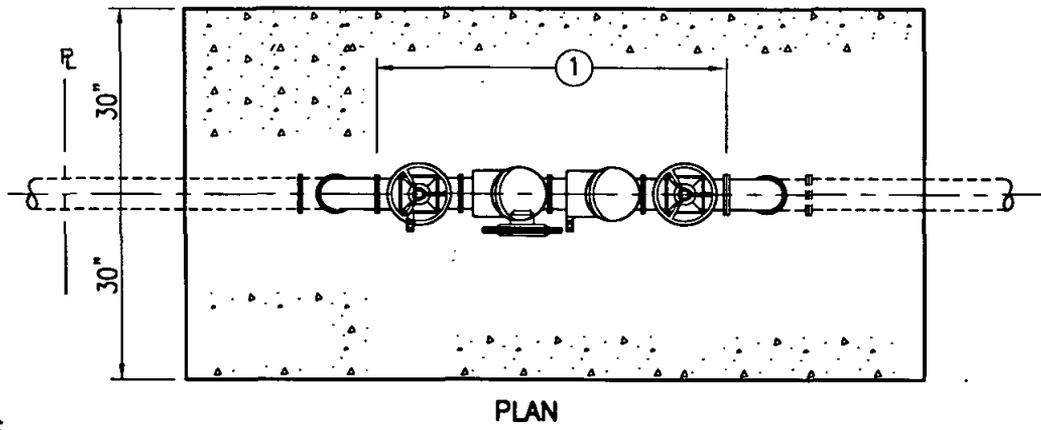
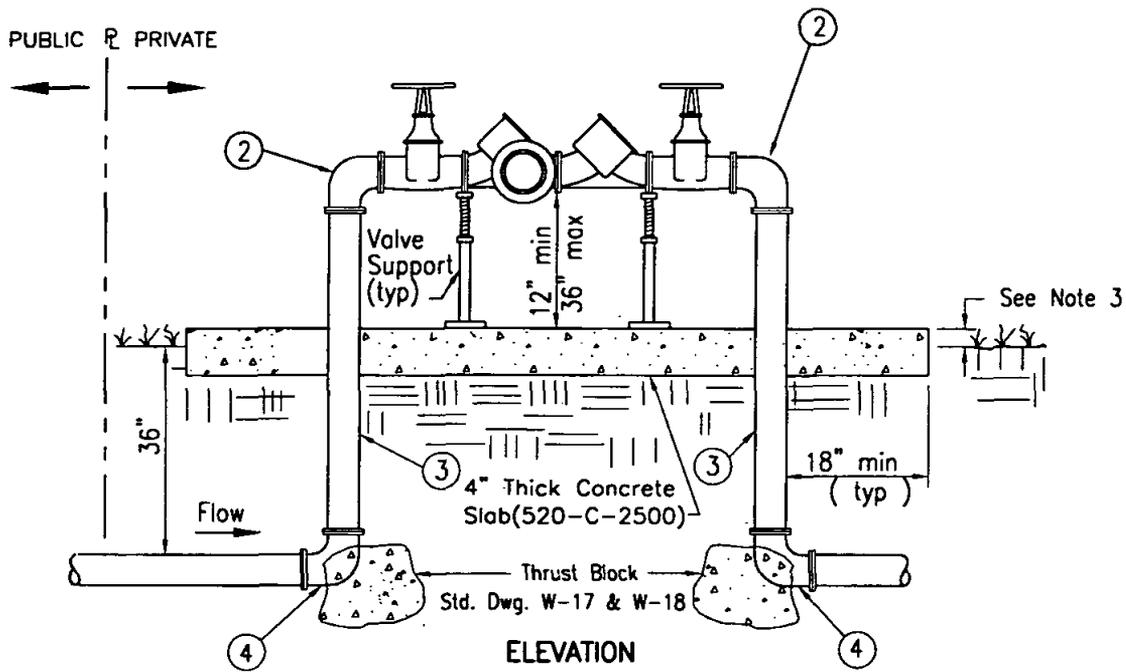
SAN DIEGO REGIONAL STANDARD DRAWING

BACKFLOW PREVENTER REDUCED PRESSURE PRINCIPLE ASSEMBLY 2" AND SMALLER

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

[Signature] 3/27/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **W-27**



NOTES

1. Backflow assembly shall be tested upon installation by a certified backflow assembly tester.
 2. All pipe below grade shall be wrapped as required by agency.
 3. Concrete pad to be 2" above grade unless installed in lawn area where it will be at 1" above grade. Slope to drain.
 4. Protective enclosure for backflow preventer assembly shall be used at the discretion of the property owner.
- ① Reduced Pressure Principle Detection Assembly shall be included in the latest edition of the "Approved for Service Isolation California Public Water Systems" issued by the State of California, Department of Health Services, Office of Drinking Water.
 - ② 90° Flanged cast iron or ductile iron elbow (typ)
 - ③ Flanged ductile iron spool. Both ends shall be flanged(uni-flange shall not be used)
 - ④ 90° ductile iron flanged elbow

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		R. Munoz	3/97

SAN DIEGO REGIONAL STANDARD DRAWING

BACKFLOW PREVENTER REDUCED PRESSURE PRINCIPLE DETECTOR ASSEMBLY 3" AND LARGER

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

R. Steaton 3/23/00
Chairperson R.C.E. 19246 Date

DRAWING NUMBER W-28

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 NUMBER
DRAWING	DWV		4-91			
ORIG.		<i>[Signature]</i>	10-8-91			
		<i>[Signature]</i>	10-4-94	GENERAL INFORMATION		

TRAFFIC CONTROL PLANS

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	APPENDIX 'A'				
	SAN DIEGO REGIONAL STANDARD	Revision	By	Approved	Date
TRAFFIC CONTROL PLANS		DRAWING	DMV		4-91
		DRAWING	FHM		8-91
		ORIG.		<i>[Signature]</i>	10-8-91
			WAJ	<i>[Signature]</i>	8-3-94
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DRAWING NUMBER TC-2					

TRAFFIC CONTROL PLANS

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TC-43	WORK WITHIN INTERSECTION - RIGHT LANE / LEFT LANE
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TC-96	SPECIAL CONDITIONS - INTERSECTION
TC-97	TYPICAL CONSTRUCTION SIGNS
TC-98	TYPICAL CONSTRUCTION SIGNS

San Diego Regional Standard

Revision	By	Approved	Date
DRAWING	DWV		4-91
ORIG.		<i>[Signature]</i>	10-8-91
		<i>[Signature]</i>	8-3-94

APPENDIX 'A'
SAN DIEGO REGIONAL STANDARD

TRAFFIC CONTROL PLANS

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DRAWING NUMBER **TC-3**

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

* $L = WS^2/60$ FOR S OF 40 MPH OR LESS; $L = WS$ FOR S GREATER THAN 40 MPH. 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 greater than 40 mph.

$L = \frac{W \times S^2}{60}$ for speeds of 40 mph or less

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

DRAWING NUMBER TC-4	APPENDIX "A"			Revision	By	Approved	Date
	SAN DIEGO REGIONAL STANDARD			DRAWING	DWV		2-91
DEVICE SPACING TABLES			ORIG.	VAJ	<i>[Signature]</i>		10-91
				DGB	<i>[Signature]</i>		8-28-94
SIGN SPACING TABLE							9-14-95
TAPER LENGTH AND CONE SPACING TABLE							

TRAFFIC CONTROL PLAN/PERMIT & PERMIT EXTENSION

Public Utility or Company: _____	Project Contact: _____	24 Hour Local Phone: _____
Address: _____	City: _____ State: _____ Zip Code: _____	Cellular: _____
Contractor/Subcontractor: _____	Project Contact: _____	Pager: _____
Address: _____	City: _____ State: _____ Zip Code: _____	Fax: _____

JOB LOCATION	BEGIN CROSS STREET	END CROSS STREET	PERMIT NO.
WORK HOURS FROM _____ A.M. TO _____ A.M. P.M.	SPEED LIMIT _____	WORK TO BE DONE	THOMAS BROS. PAGE: _____ COORD.: _____
START DATE _____	END DATE _____	1st WORK DATE EXTENSION FROM _____	TO NEW END DATE _____
		2nd WORK DATE EXTENSION FROM _____	TO NEW END DATE _____

PERMIT WORK EXTENSIONS MUST BE OBTAINED BY THE END OF PERMIT DATE

<p>REQUIREMENTS:*</p> <p>1. The contractor is responsible for promptly restoring the road back to satisfactory condition which includes, but is not limited to, paving, striping, markings, signing, and loop detection.</p> <p>2. The Agency reserves the right to observe these traffic control plans in operation and to make changes as field conditions warrant.</p> <p>3. Trenches shall be back-filled or steel-plated during non-work hours. Steel plates shall have an asphaltic ramp on all edges, securely supported so they won't rock and a sign posted near the plates identifying the contractor's name and 24 hour emergency telephone number.</p>	<p>3. (cont.) All dirt, dust, and debris shall be removed from the street at the end of each day and at the end of the job. The street shall be kept in a driveable condition at all times.</p> <p>4. Any work that creates an undue safety risk or that creates severe congestion will be shut down by the agency.</p> <p>5. A copy of all traffic requirements and traffic control plans issued by the Agency must be kept on the job site.</p> <p>6. Approval of this plan does not constitute an official Permit. Contact the Agency for information on obtaining a permit.</p>	<p>7. All travel lanes will typically be a minimum of 12 feet wide, 14 feet if adjacent to bike lanes, unless otherwise specifically approved by the Agency.</p> <p>8. Flashing arrow boards as required by the Agency.</p> <p>9. Warning (W) series signs used in work zones shall be Black on an Orange background.</p> <p>10. Cones and pylons shall have yellow reflectorized sleeves when placed along the centerline and white reflectorized sleeves along the outside shoulder.</p> <p>11. If Parking is allowed in the advance warning area, advance warning signs shall be mounted on high level devices.</p>	<p>12. The contractor shall post tow-away/no parking signs twenty-four (24) hours in advance, with day of week, date and work hours noted, and shall bag parking meters (where applicable).</p>	<p>THIS TRAFFIC CONTROL PLAN IS NOT VALID UNLESS AN APPLICABLE AGENCY PERMIT OR APPROVAL IS ATTACHED/AFFIXED</p>
<p>APPLICANTS:</p> <p>Name (print) _____</p> <p>Address _____</p> <p>Phone Number _____</p> <p>Signature _____</p>			<p>Agent of:</p> <p><input type="checkbox"/> Owner</p> <p><input type="checkbox"/> Contractor</p> <p><input type="checkbox"/> Sign/Barricade co.</p> <p><input type="checkbox"/> Other _____</p>	
<p>* SUBJECT TO LOCAL AGENCY REQUIREMENTS.</p>			<p>PERMIT APPROVED</p> <p>BY: _____</p> <p>DATE: _____</p>	

SEE ATTACHED SHEET(S) OR REFERENCED STANDARD DRAWING(S) THAT MAY BE APPLICABLE

ORIG.	DRAWING	Revision	By	Approved	Date
008	FAH				4-31
	FAH				10-28-94
	FAH				9-12-95

TRAFFIC CONTROL PLAN

SAN DIEGO REGIONAL STANDARD

APPENDIX "A"

COVER SHEET

DRAWING NUMBER TC-5

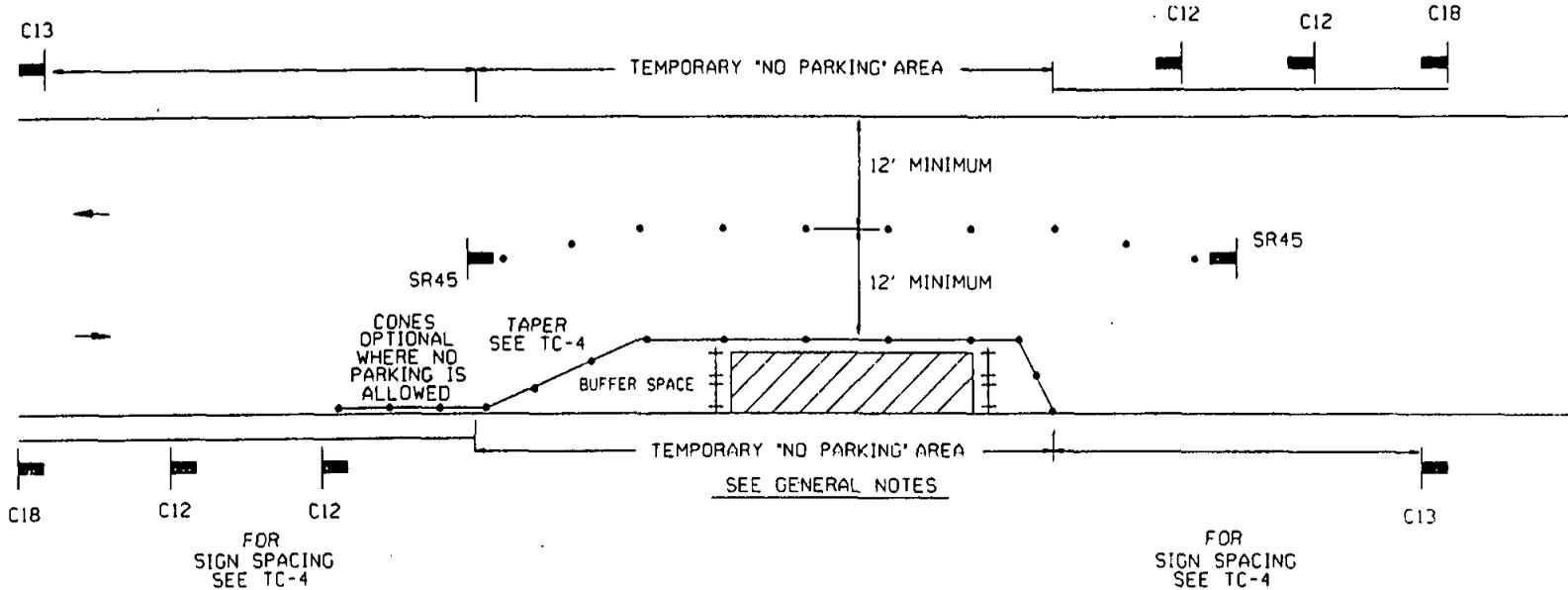
DRAWING NUMBER TC-6

SIDE OF ROAD WORK AREA
TWO LANE TRAFFIC CONTROL
WITHOUT CENTERLINE

APPENDIX "A"
SAN DIEGO REGIONAL STANICARD

FOR SIGN SPACING
SEE TC-4

FOR SIGN SPACING
SEE TC-4



LEGEND

- CONE
- ++ BARRICADE
- FLAGGER
- SIGN
- FLASHING ARROW SIGN
- WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, 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.

SUBMITTED BY:
 NAME _____
 COMPANY _____
 ADDRESS _____
 PHONE _____

Revision By Approved Date

DRAWING ORIG. DATE

4-91
 8-91
 8-23-94
 4-25-95
 5-17-95

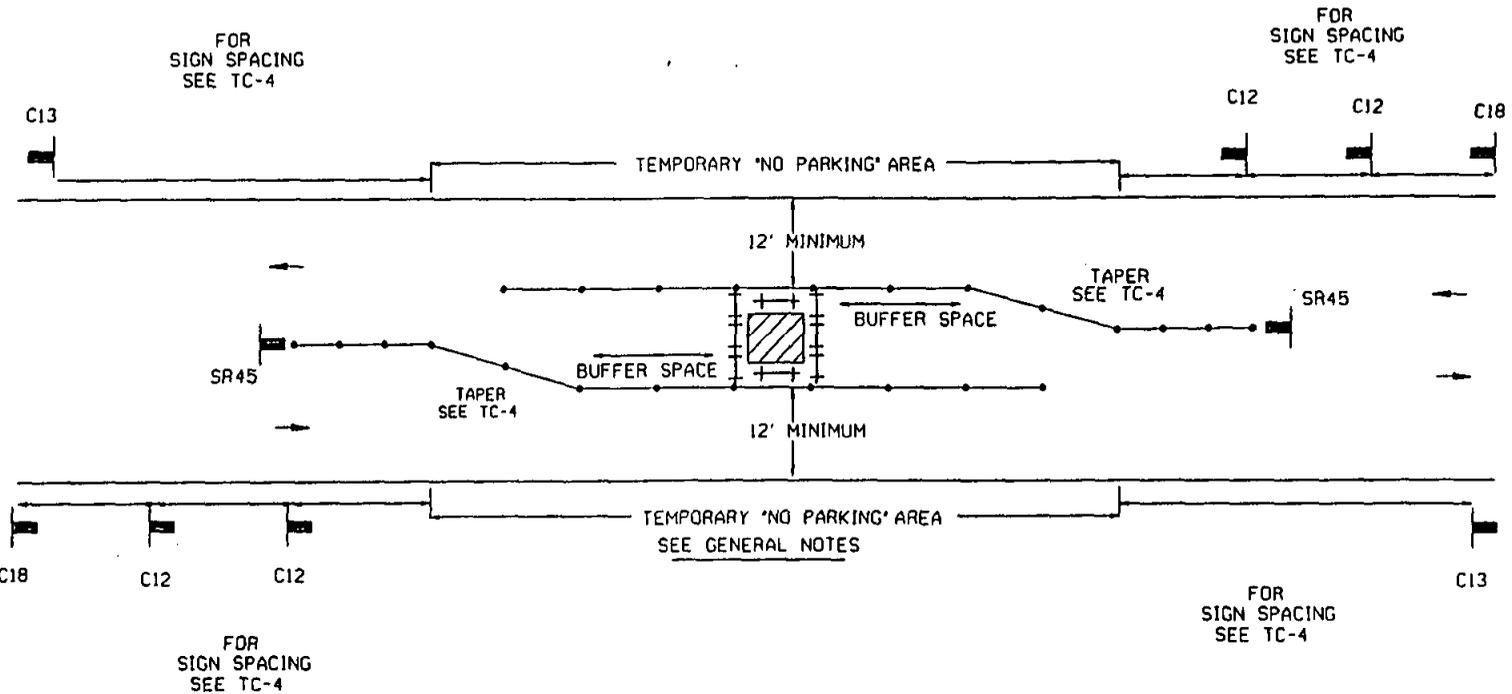
AGENCY USE

APPLICANT USE

DRAWING NUMBER
TC-8

CENTER OF ROAD WORK AREA
TWO LANE TRAFFIC CONTROL

APPENDIX 'A'
SAN DIEGO REGIONAL STANDARD



LEGEND

- CONE
- ⊕ BARRICADE
- ▬ FLAGGER
- ▬ SIGN
- ◻ FLASHING ARROW SIGN
- ▨ WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, 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 area 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.

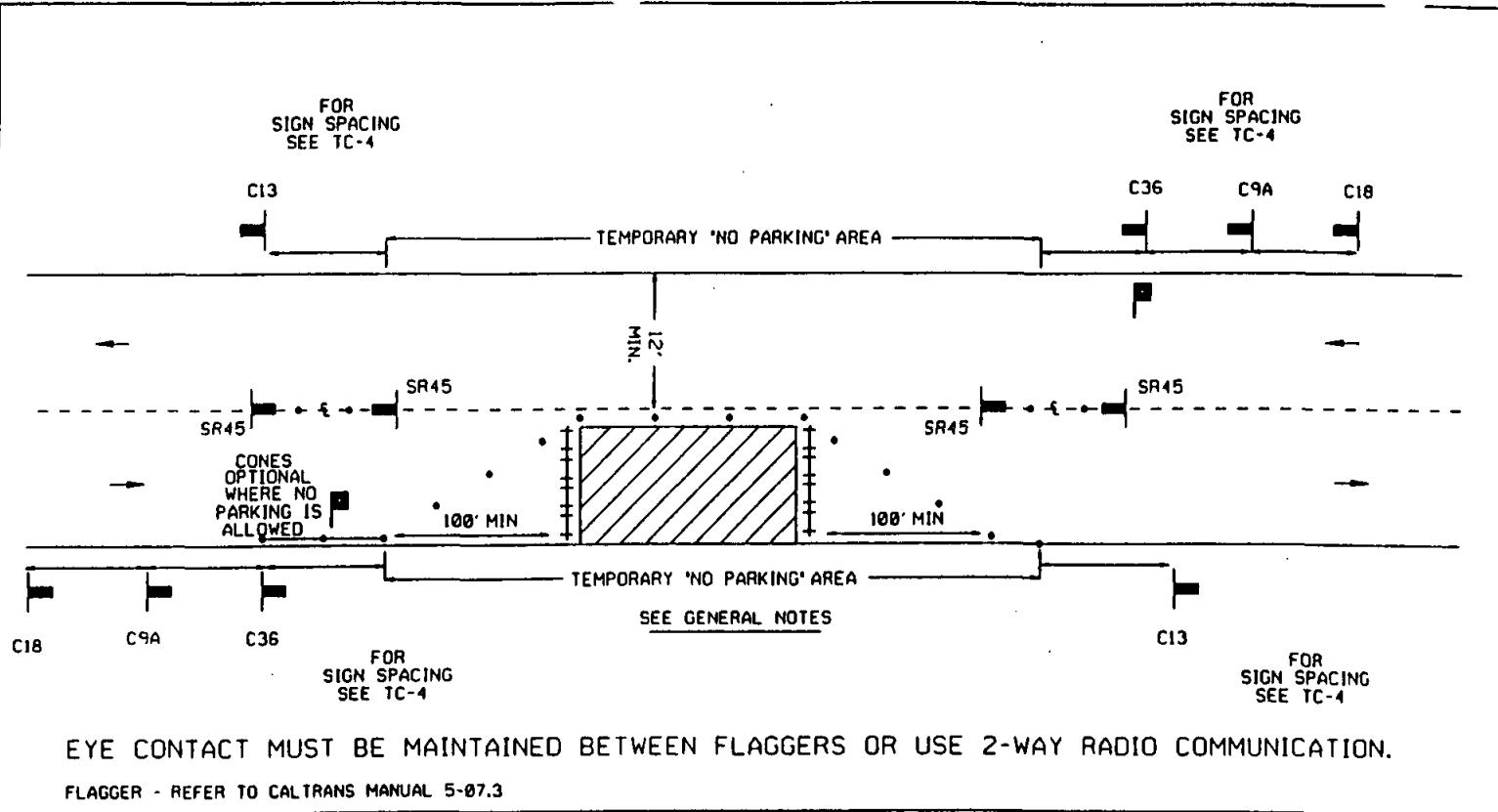
SUBMITTED BY:
 NAME _____
 COMPANY _____
 ADDRESS _____
 PHONE _____

Revision	By	Approved	Date
DRAWING	ENV	ENV	4-21
ORIG.	WAL	WAL	8-2-94
	DOB	DOB	4-14-95

AGENCY USE

APPLICANT USE

Revision	By	Approved	Date
DRAWING	DMV		4-11
ORIG.	WAL		4-11
	008		4-15-95



EYE CONTACT MUST BE MAINTAINED BETWEEN FLAGGERS OR USE 2-WAY RADIO COMMUNICATION.
 FLAGGER - REFER TO CALTRANS MANUAL 5-07.3

LEGEND

- CONE
- ++ BARRICADE
- FLAGGER
- SIGN
- FLASHING ARROW SIGN
- WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, 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.
 FLAGGER - REFER TO CALTRANS MANUAL 5-07.3

SUBMITTED BY:

NAME _____
 COMPANY _____
 ADDRESS _____
 PHONE _____

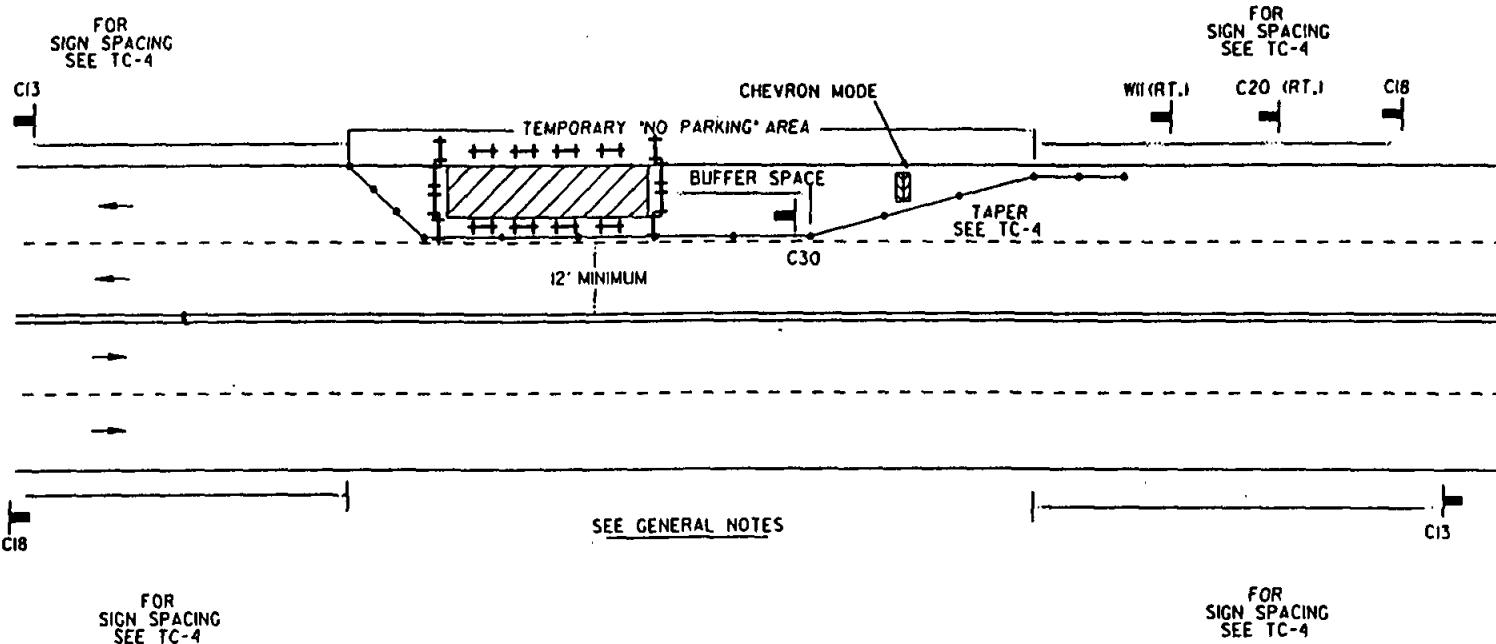
APPENDIX "A"
 SAN DIEGO REGIONAL STANDARD
SIDE OF ROAD WORK AREA
 TWO LANE TRAFFIC CONTROL
 WITH FLAGGERS

DRAWING NUMBER TC-9

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
- ⇄ BARRICADE
- 🚧 FLAGGER
- 🚦 SIGN
- 🚦 FLASHING ARROW SIGN
- ▨ WORK AREA
- ➡ TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

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.

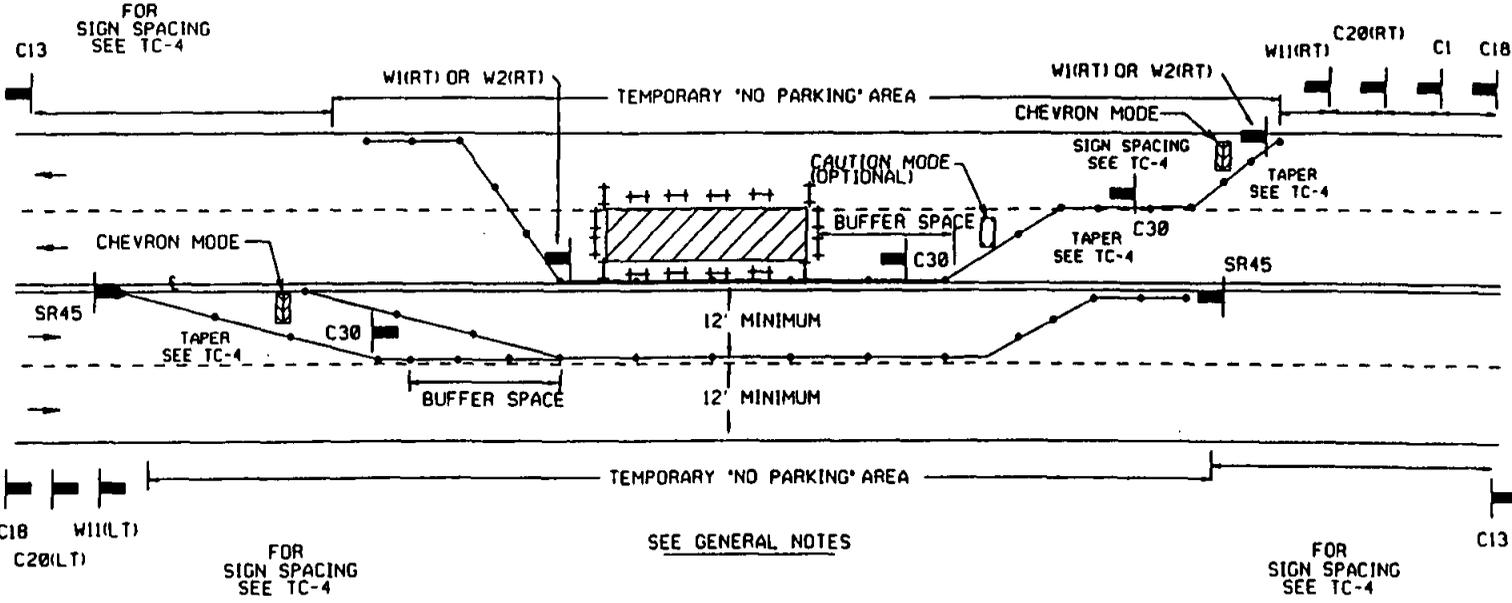
TC-5 is required for all Traffic Control Plans.

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

SUBMITTED BY:
NAME _____
COMPANY _____
ADDRESS _____
PHONE _____

Revision	By	Approved	Date
DRAWING	DW		
DRAWING	FM		
ORIG.	WJ		
	DB		

FOR SIGN SPACING SEE TC-4



FOR SIGN SPACING SEE TC-4

SEE GENERAL NOTES

FOR SIGN SPACING SEE TC-4

LEGEND

- CONE
- ⇄ BARRICADE
- ▣ FLAGGER
- ▣ SIGN
- ◻ FLASHING ARROW SIGN
- ▨ WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

GENERAL NOTES

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TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

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

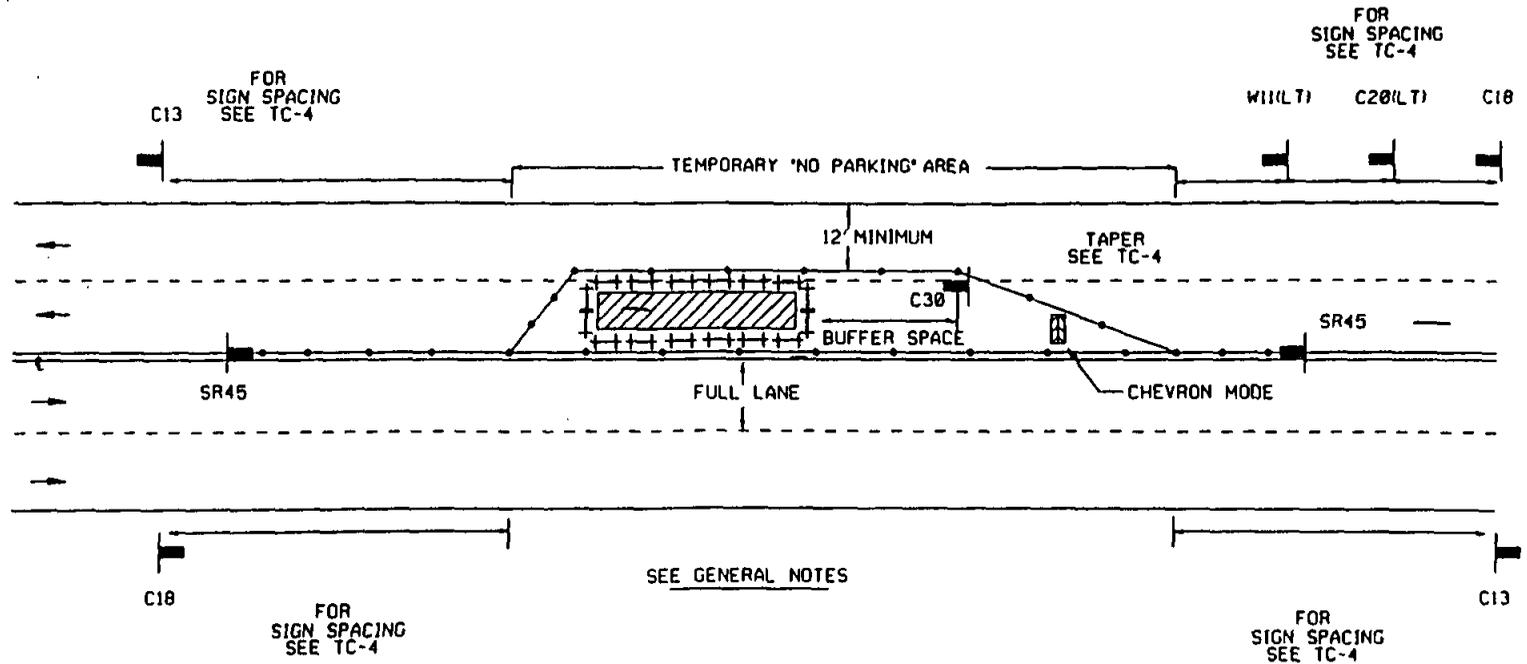
Revision	By	Approved	Date
0811C	JM	JM	4-21
	JM	JM	8-31
	JM	JM	10-31
	JM	JM	11-30
	JM	JM	1-31
	JM	JM	4-15-95

DRAWING NUMBER TC-12

CENTER OF ROAD WORK AREA
 MULTILANE TRAFFIC CONTROL WITH CENTERLINE LEFT TRAFFIC LANE CLOSURE - ONE LANE

APPENDIX 'A'
 SAN DIEGO REGIONAL STANDARD

Revision	By	Approved	Date
DRAWING	DRW		
DRAWING	DRW		



LEGEND

- CONE
- ⊕ BARRICADE
- ▣ FLAGGER
- ▣ SIGN
- ⊕ FLASHING ARROW SIGN
- ▨ WORK AREA
- ↔ TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, 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.

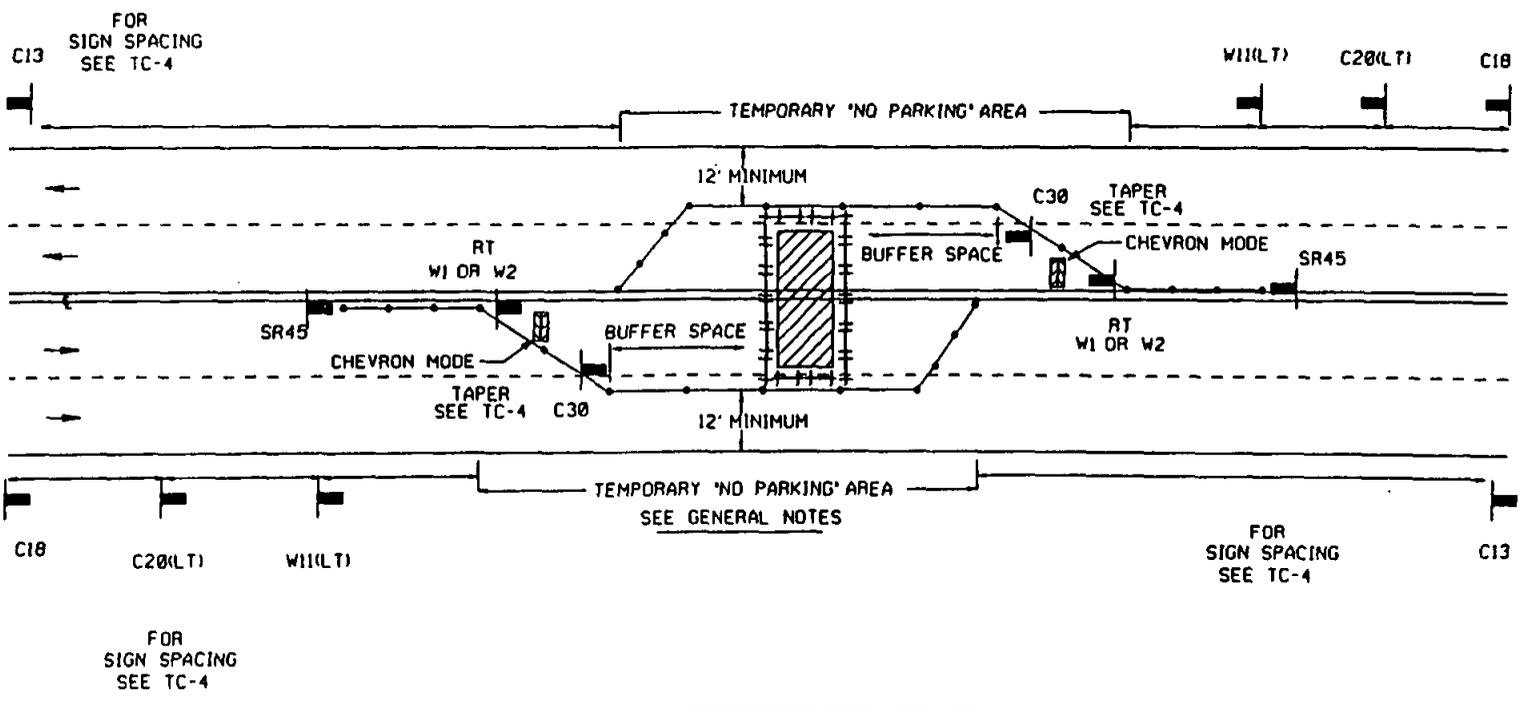
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TC-5 is required for all Traffic Control Plans.

SUBMITTED BY: _____
 NAME _____
 COMPANY _____
 ADDRESS _____
 PHONE _____

FOR SIGN SPACING SEE TC-4



AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

SUBMITTED BY:
 NAME _____
 COMPANY _____
 ADDRESS _____
 PHONE _____

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
ORIG.			
DRAWING			

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

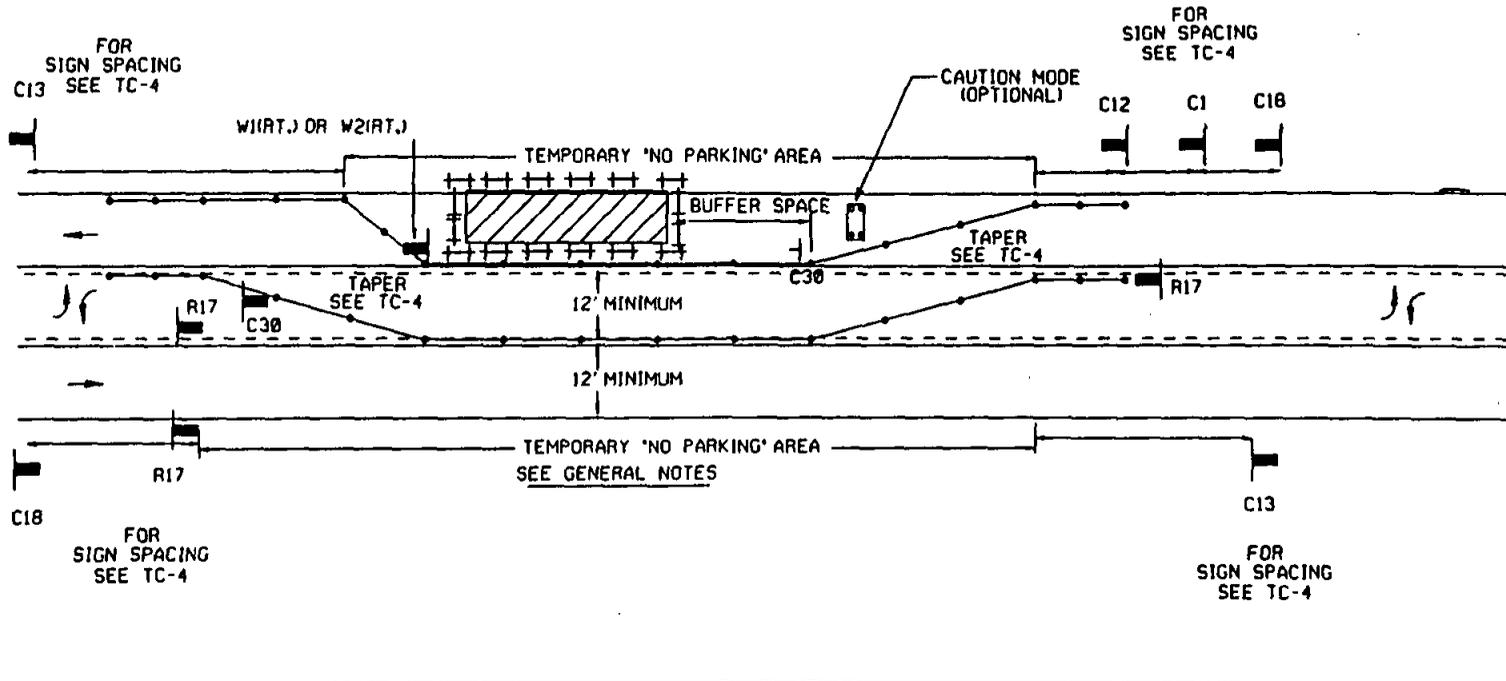
CENTER OF ROAD WORK AREA
 MULTILANE TRAFFIC CONTROL WITH CENTERLINE LEFT TRAFFIC LANE CLOSURE - TWO LANES

DRAWING NUMBER
TC-13

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
- ⇄ BARRICADE
- ▣ FLAGGER
- ▣ SIGN
- ◻ FLASHING ARROW SIGN
- ▨ WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, 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.

SUBMITTED BY:

NAME _____
 COMPANY _____
 ADDRESS _____
 PHONE _____

AGENCY USE

APPLICANT USE

Revision	By	Approved	Date
ORIG.	WJL	WJL	11-11-71
	WJL	WJL	11-11-71
	WJL	WJL	11-11-71

Revision	By	Approved	Date
DRAWING	PM		1-21
ORIG.	MM		8-11
	MM		10-21
	MM		11-21
	MM		12-21
	MM		1-21
	MM		2-21
	MM		3-21
	MM		4-21
	MM		5-21
	MM		6-21
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	MM		10-21
	MM		11-21
	MM		12-21

APPENDIX "A"

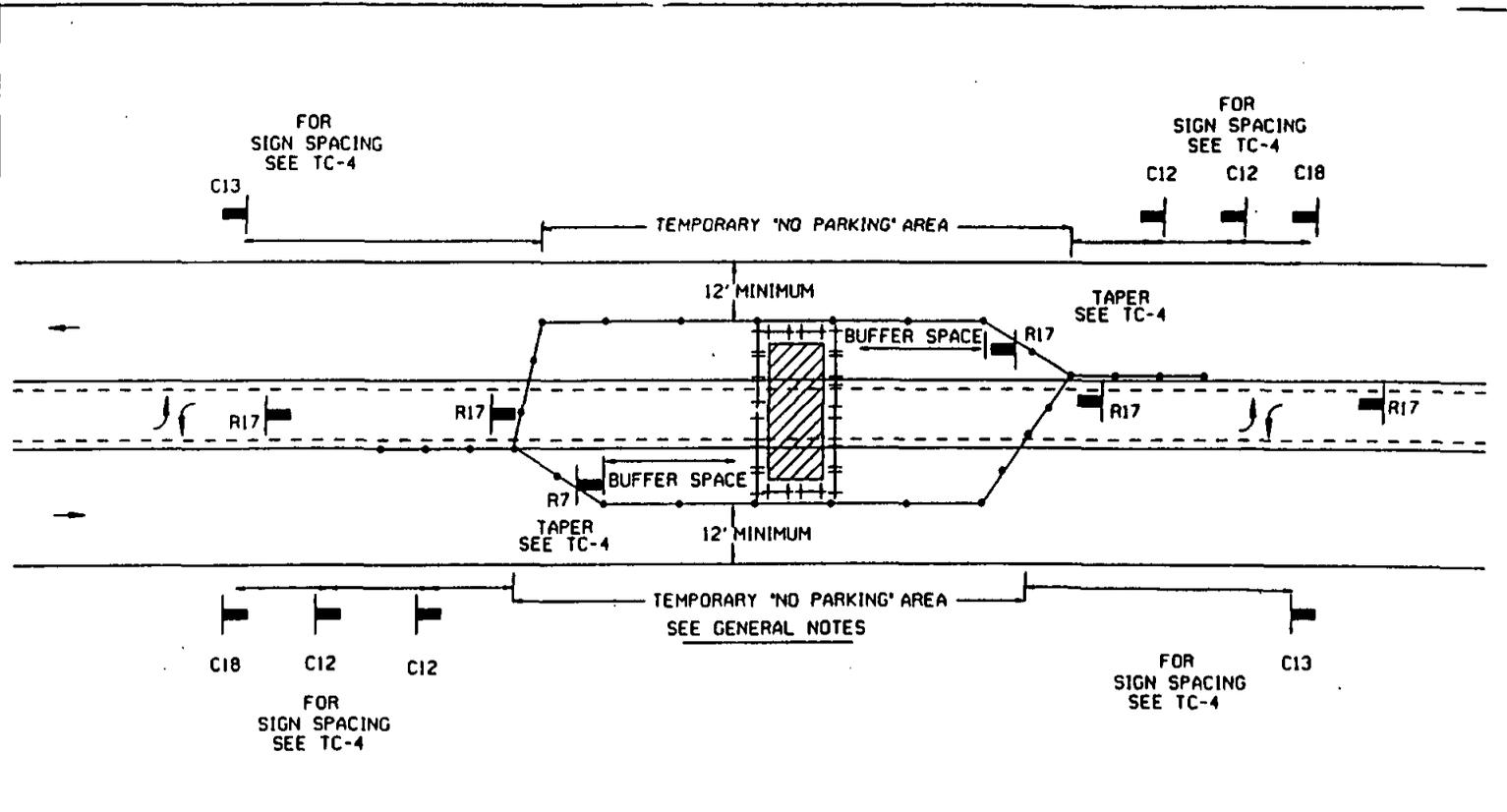
SAN DIEGO REGIONAL STANDARD

CENTER OF ROAD WORK AREA

MULTILANE TRAFFIC CONTROL WITH CENTERLINE

LEFT LANE CLOSURE - ONE LANE

DRAWING NUMBER **TC-15**



LEGEND

• CONE † BARRICADE [] FLAGGER [] SIGN [] FLASHING ARROW SIGN [] WORK AREA ← TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

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.

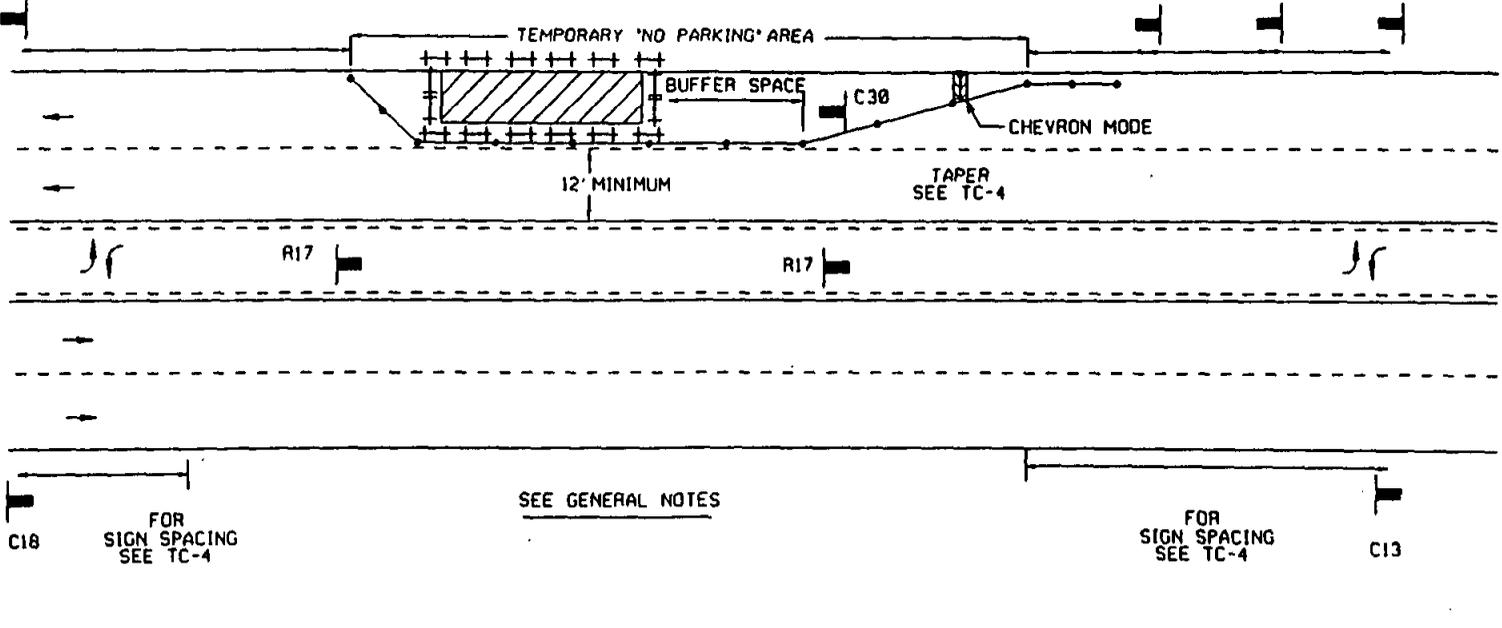
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TC-5 is required for all Traffic Control Plans.

FOR SIGN SPACING SEE TC-4

FOR SIGN SPACING SEE TC-4

W111RT) C20 (RT) C18



LEGEND

- CONE
- ++ BARRICADE
- FLAGGER
- SIGN
- FLASHING ARROW SIGN
- WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, 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 TWO WAY LEFT TURN RIGHT TRAFFIC LANE CLOSURE - ONE LANE

DRAWING NUMBER **TC-16**

Revision	By	Approved	Date
ORIG.			
DRAWING			

SUBMITTED BY:
 NAME _____
 COMPANY _____
 ADDRESS _____
 PHONE _____

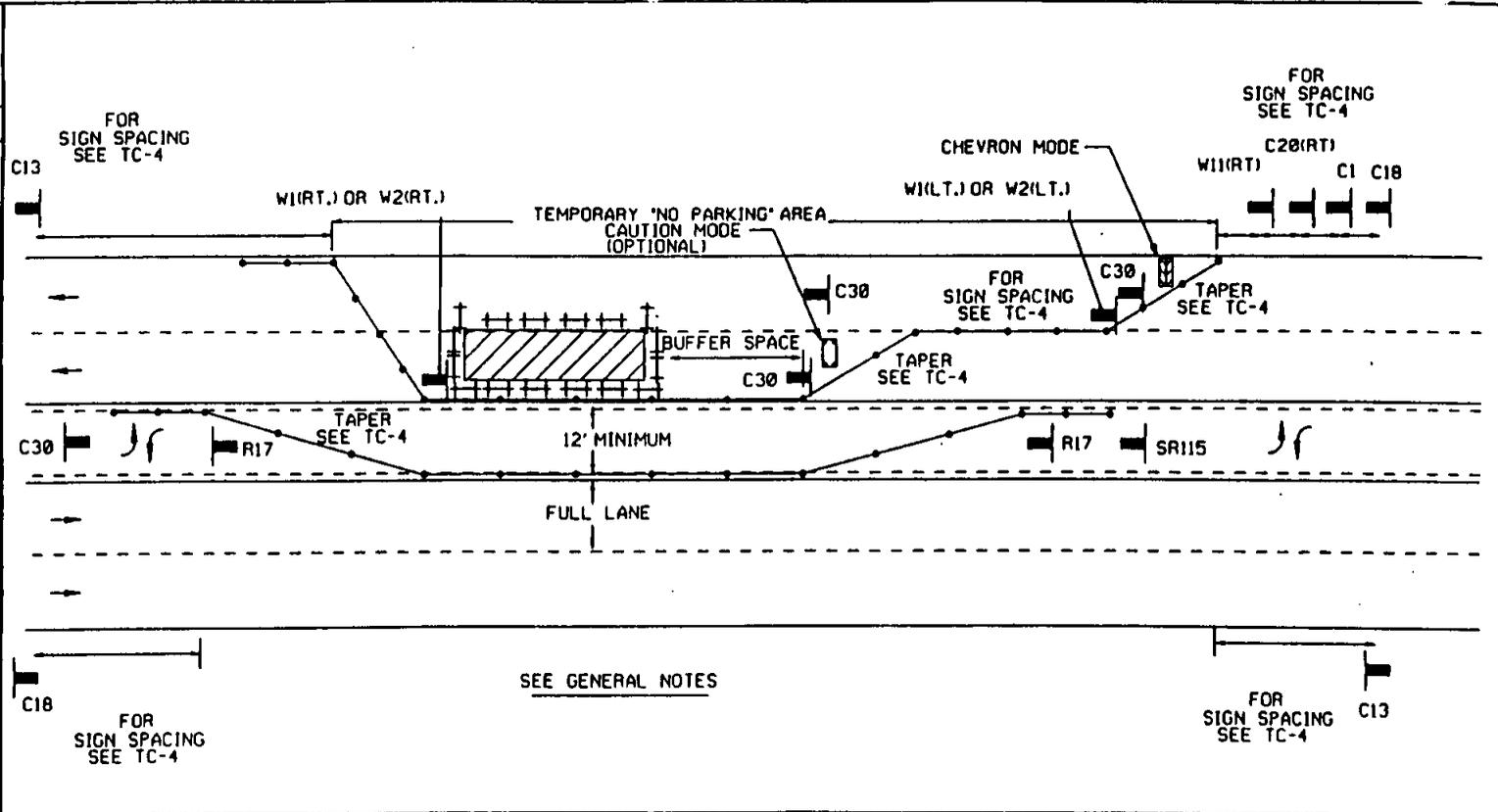
AGENCY USE

APPLICANT USE

Revision	By	Approved	Date
ORIG.	DM	DM	10-8-71
	MA	MA	11-18-71
	MA	MA	1-22-72
	MA	MA	4-25-72

APPENDIX 'A'
 SAN DIEGO REGIONAL STANDARD
CENTER OF ROAD WORK AREA
 MULTILANE TRAFFIC CONTROL WITH TWO WAY LEFT TURN
 RIGHT TRAFFIC LANE CLOSURE - TWO LANES

DRAWING NUMBER
TC-17



LEGEND

• CONE ↔ BARRICADE █ FLAGGER █ SIGN ◻ FLASHING ARROW SIGN ▨ WORK AREA ← TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

GENERAL NOTES

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TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

AGENCY USE

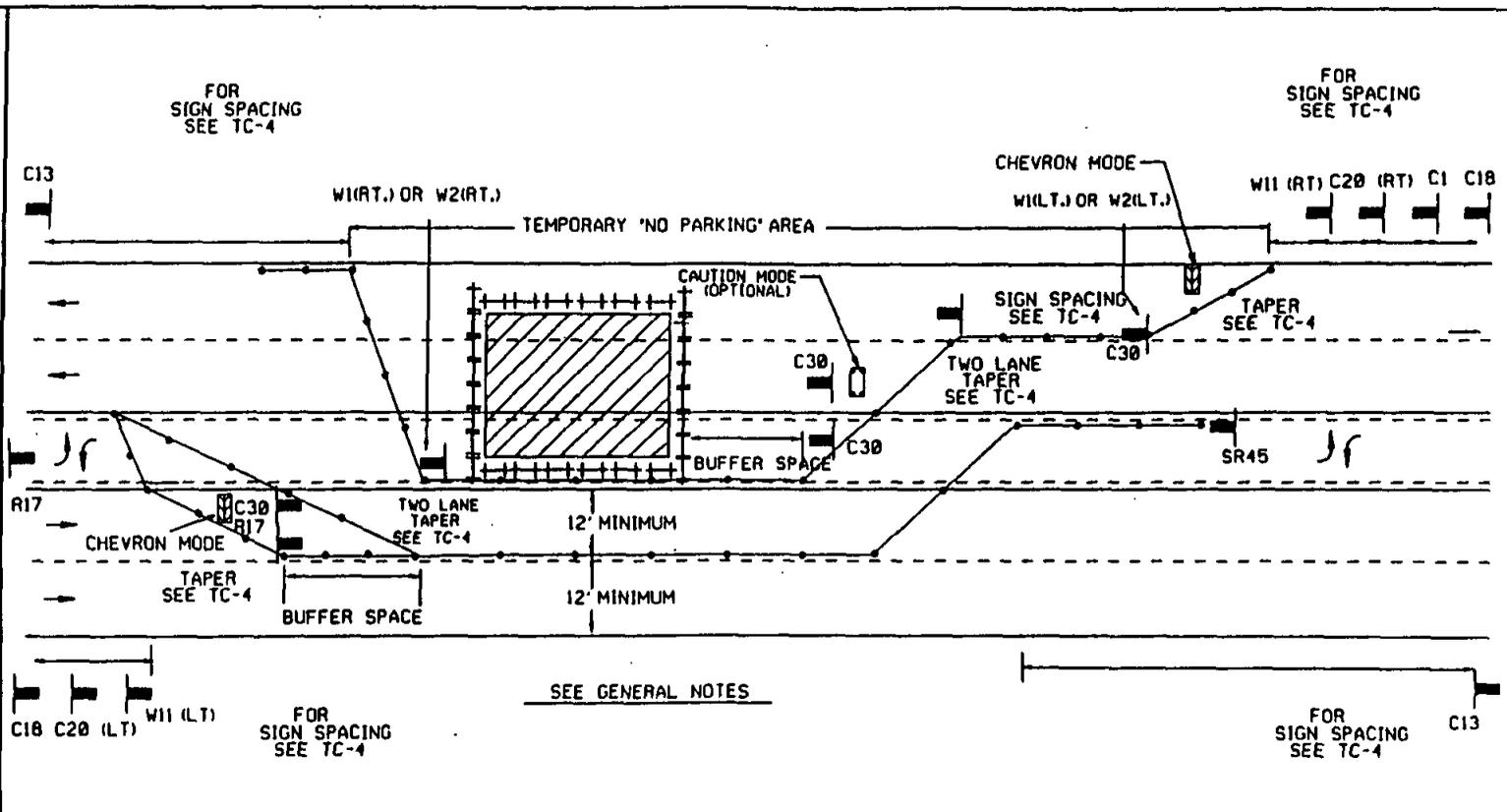
APPLICANT USE

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

DRAWING NUMBER
TC-18

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

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

GENERAL NOTES

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TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

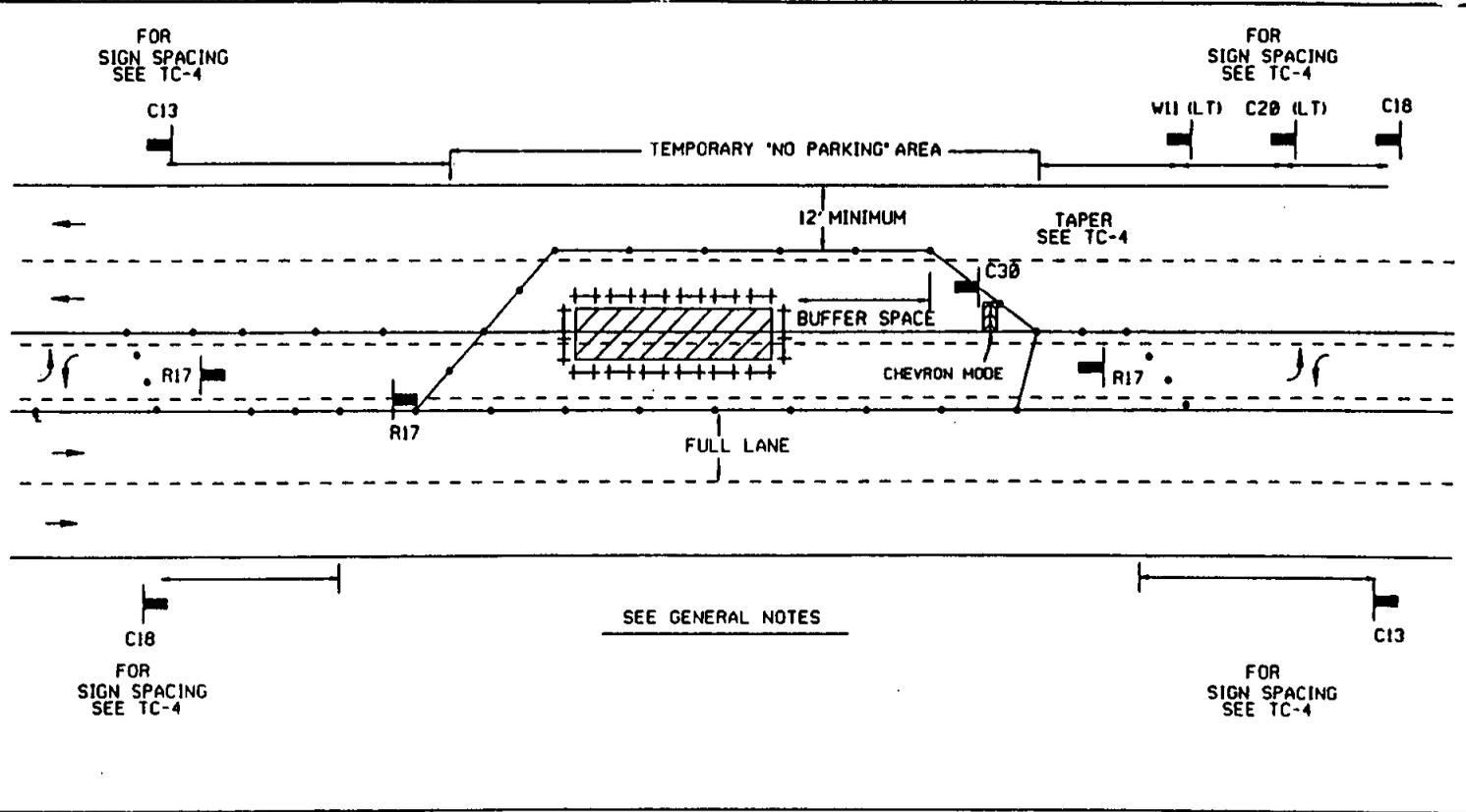
NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

Revision	By	Approved	Date
ORIG.	DM	DM	10-1-81
	DM	DM	10-1-81
	DM	DM	10-1-81
	DM	DM	10-1-81



LEGEND

• CONE † BARRICADE ■ FLAGGER □ SIGN ◻ FLASHING ARROW SIGN ▨ WORK AREA ⇄ TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

SUBMITTED BY:

NAME _____
 COMPANY _____
 ADDRESS _____
 PHONE _____

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			
ORIG.	DATE	BY	DATE
008	10-15-73	WAL	10-15-73

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

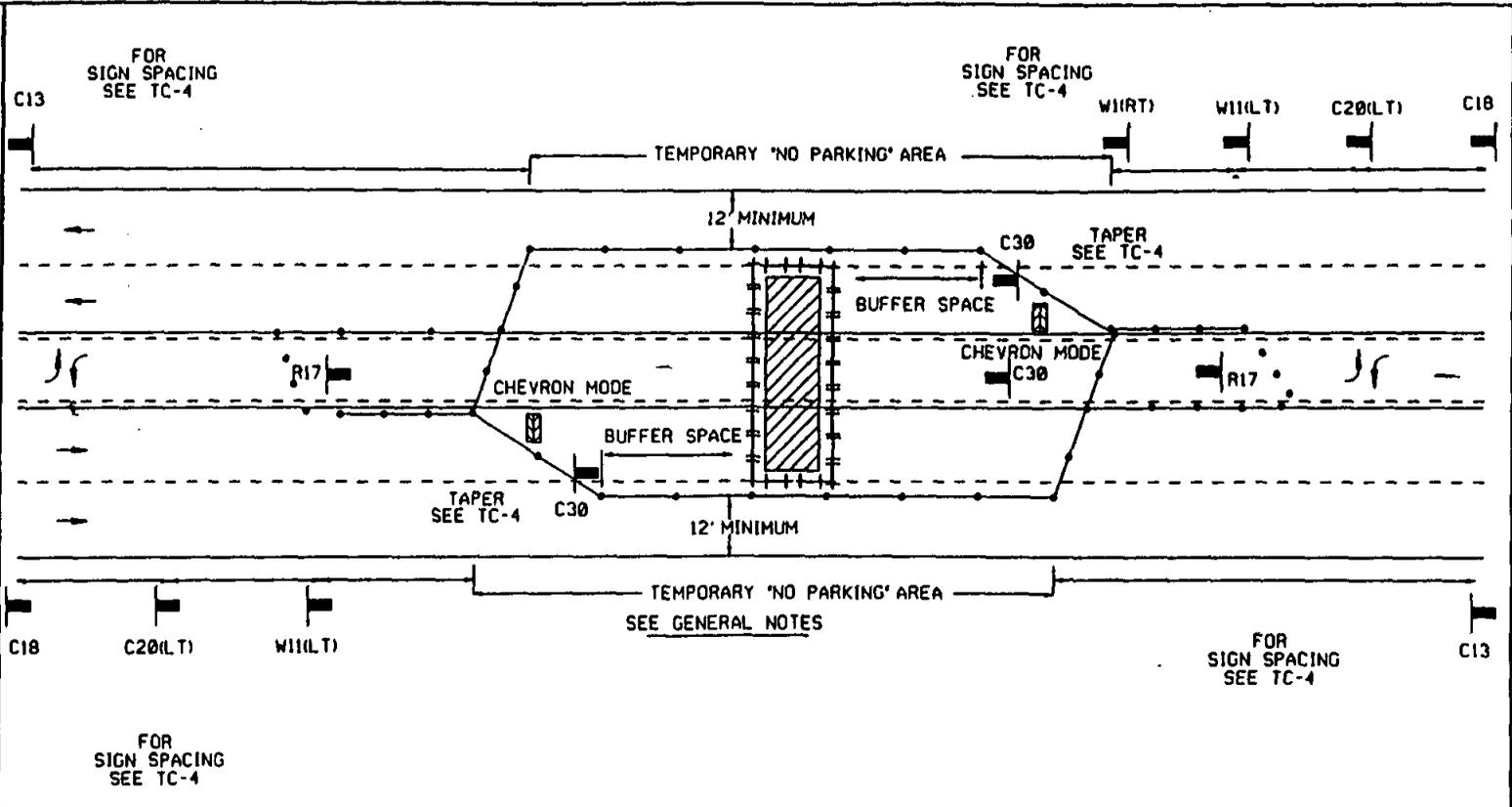
CENTER OF ROAD WORK AREA
MULTILANE TRAFFIC CONTROL WITH TWO WAY LEFT TURN
LEFT TRAFFIC LANE CLOSURE - TWO LANES

DRAWING NUMBER
TC-19

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
- †† BARRICADE
- ▣ FLAGGER
- ▣ SIGN
- ▣ FLASHING ARROW SIGN
- ▨ WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

GENERAL NOTES

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TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME _____
 COMPANY _____
 ADDRESS _____
 PHONE _____

Revision	By	Approved	Date
ORIG.	DBB	[Signature]	1-28-11
DRAWING	DBB	[Signature]	1-28-11

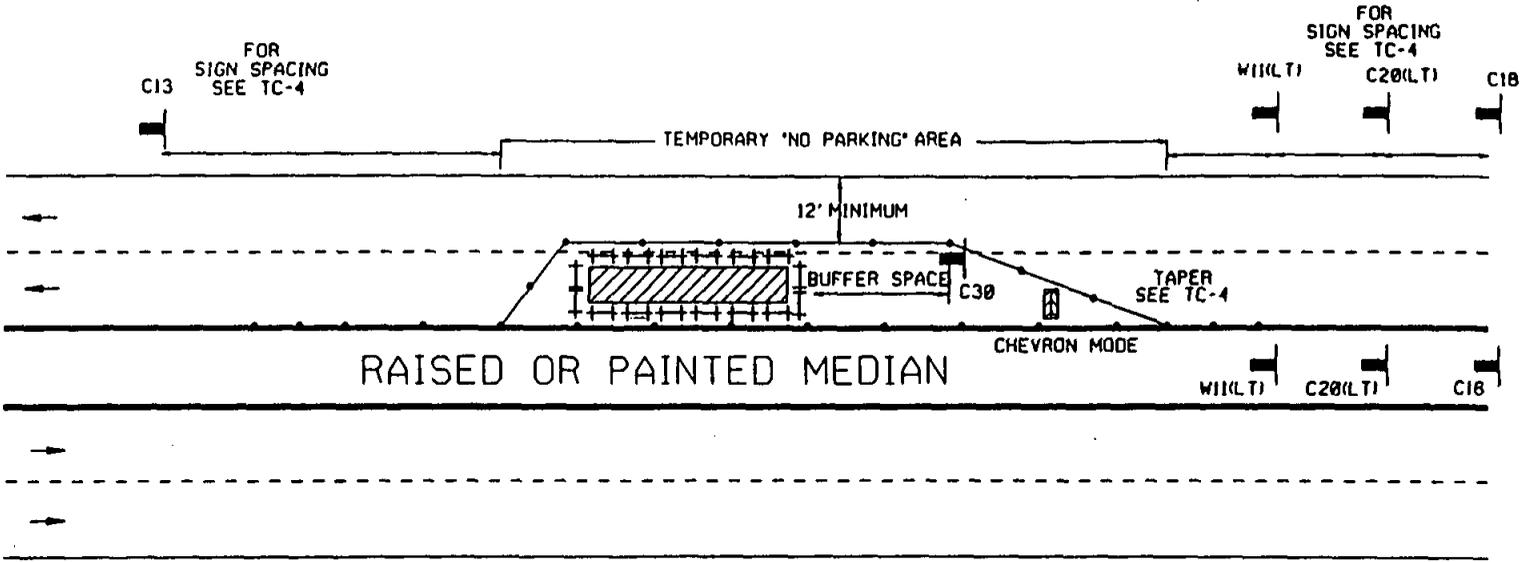
AGENCY USE

APPLICANT USE

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
- ⇄ BARRICADE
- ⚑ FLAGGER
- ⚡ SIGN
- ⚡ FLASHING ARROW SIGN
- ▨ WORK AREA
- ⇄ TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

GENERAL NOTES

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TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

Revision	By	Approved	Date
ORIG.			
DRAWING			

AGENCY USE

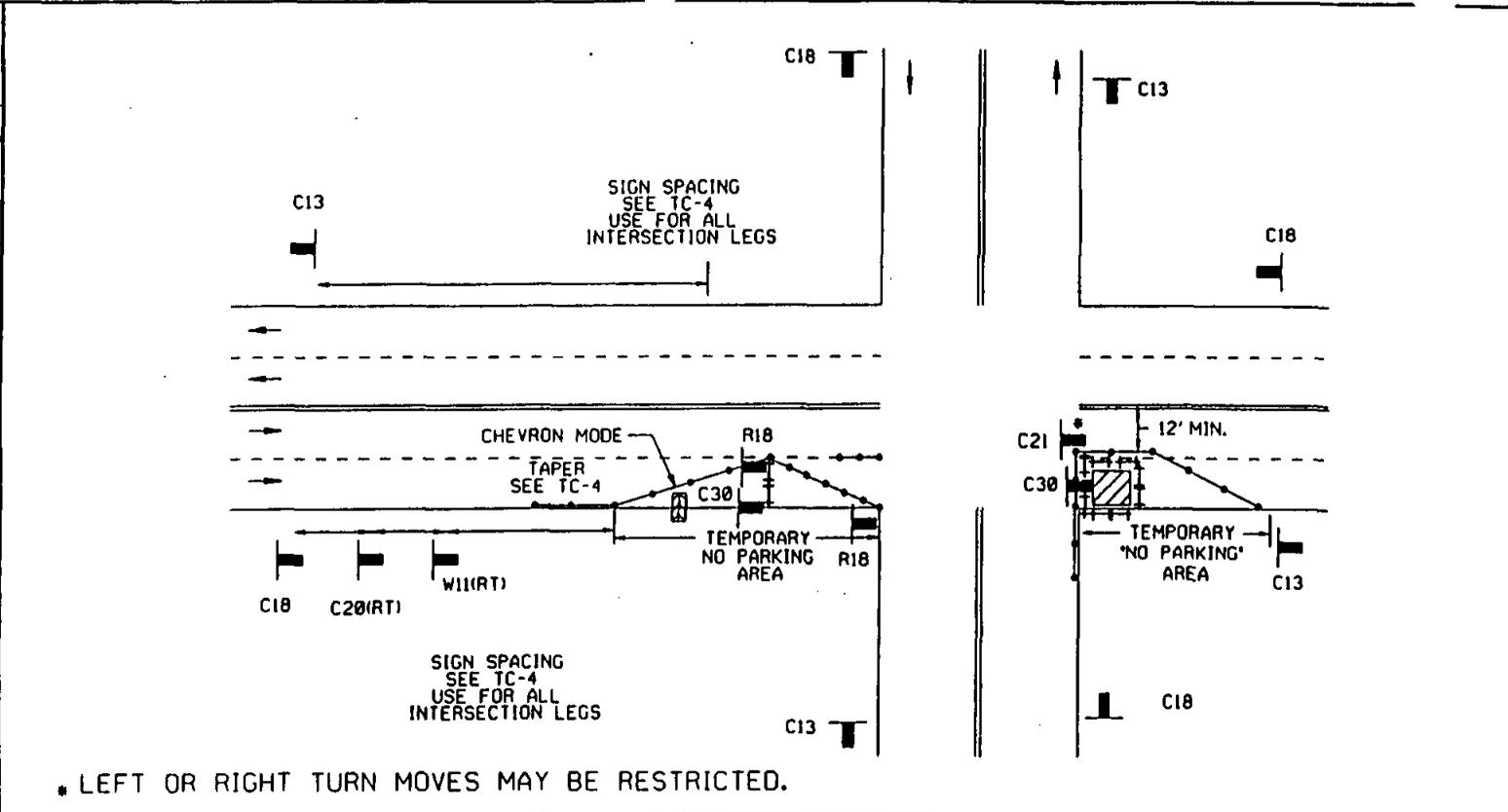
APPLICANT USE

Revision	By	Approved	Date
DRAWING	BY		
ORIG.			
	WAL		8-22-92
	DOB		4-22-95
			9-15-95

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

SIDE OF ROAD WORK AREA
INTERSECTION TRAFFIC CONTROL

DRAWING NUMBER
TC-23



LEGEND

• CONE ↔ BARRICADE 🚧 FLAGGER 🚦 SIGN ⚡ FLASHING ARROW SIGN ▨ WORK AREA → TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

GENERAL NOTES

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TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

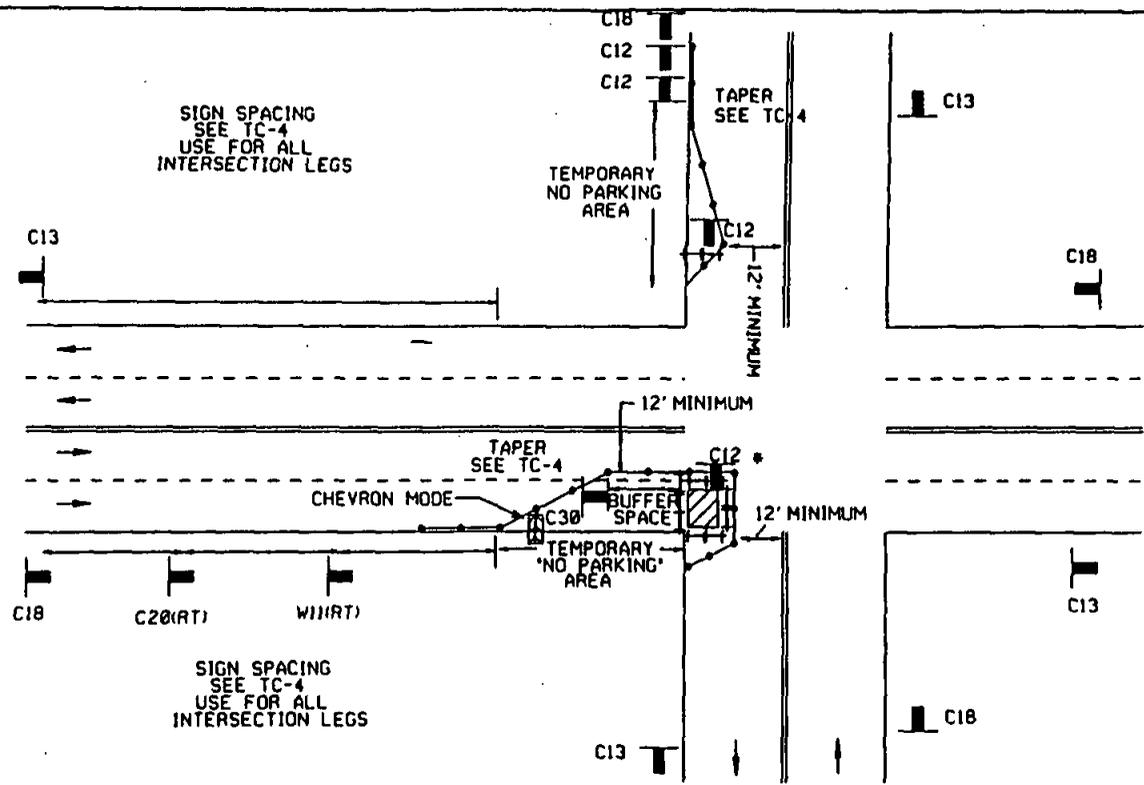
PHONE _____

AGENCY USE

APPLICANT USE

DRAWING NUMBER TC-24

APPENDIX "A"
 SAN DIEGO REGIONAL STANDARD
 SIDE OF ROAD WORK AREA
 INTERSECTION TRAFFIC CONTROL



* RIGHT TURN MOVES MAY BE RESTRICTED.

LEGEND

- CONE
- ↔ BARRICADE
- ▣ FLAGGER
- ▣ SIGN
- ▣ FLASHING ARROW SIGN
- ▨ WORK AREA
- ↔ TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

GENERAL NOTES

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TC-5 is required for all Traffic Control Plans.

SUBMITTED BY:
 NAME _____
 COMPANY _____
 ADDRESS _____
 PHONE _____

Revision	By	Approved	Date
ORIG.			

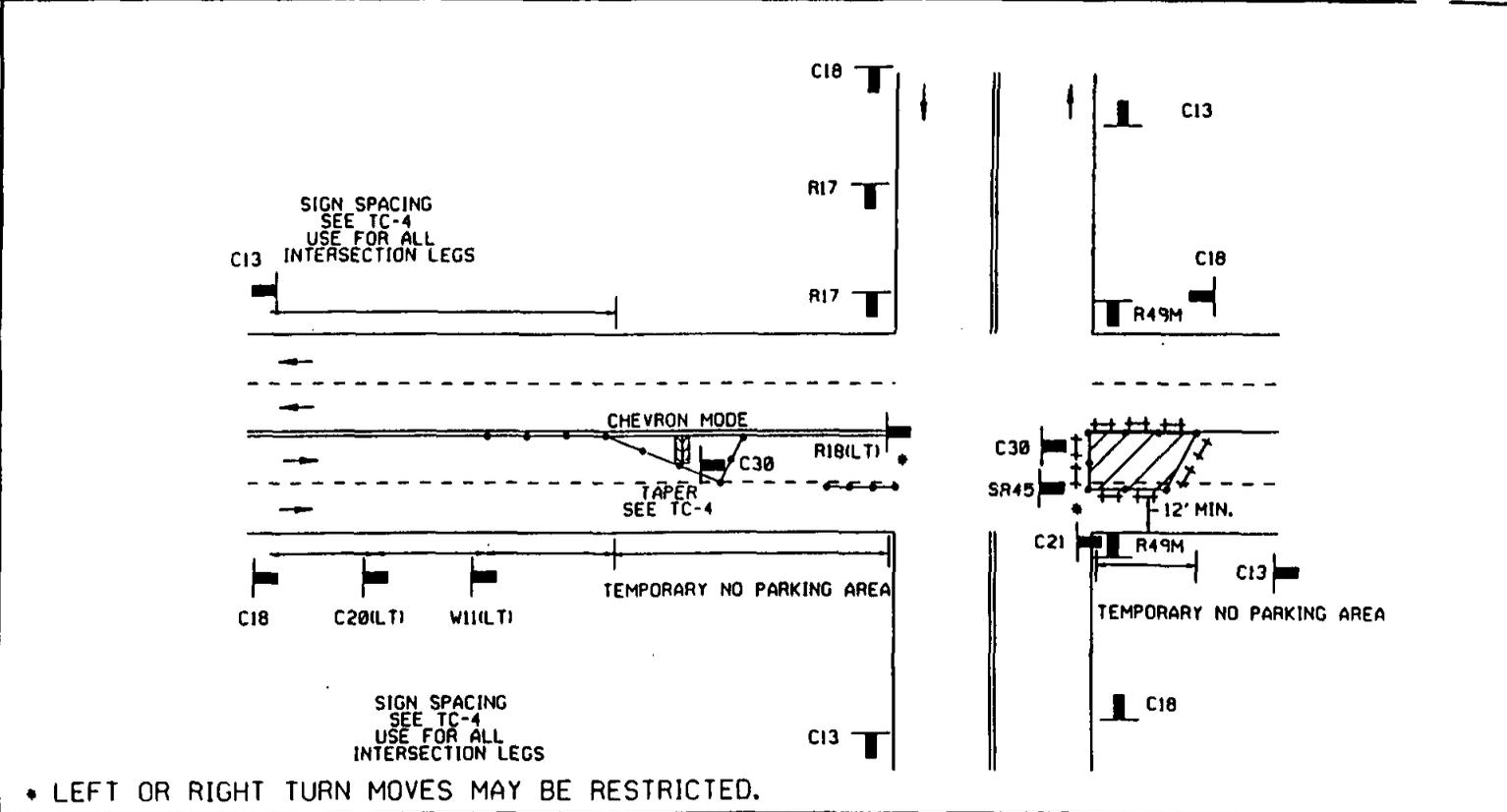
AGENCY USE

APPLICANT USE

Revision	By	Approved	Date
ORIG.	BYV		10-11-75
			11-11-75
			12-11-75
			1-15-76

APPENDIX "A"
 SAN DIEGO REGIONAL STANDARD
 CENTER OF ROAD WORK AREA
 INTERSECTION TRAFFIC CONTROL

DRAWING NUMBER
 TC-25



LEGEND

• CONE ↔ BARRICADE ■ FLAGGER ▬ SIGN ⚡ FLASHING ARROW SIGN ▨ WORK AREA ↔ TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SUBMITTED BY:

NAME _____
 COMPANY _____
 ADDRESS _____
 PHONE _____

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

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.

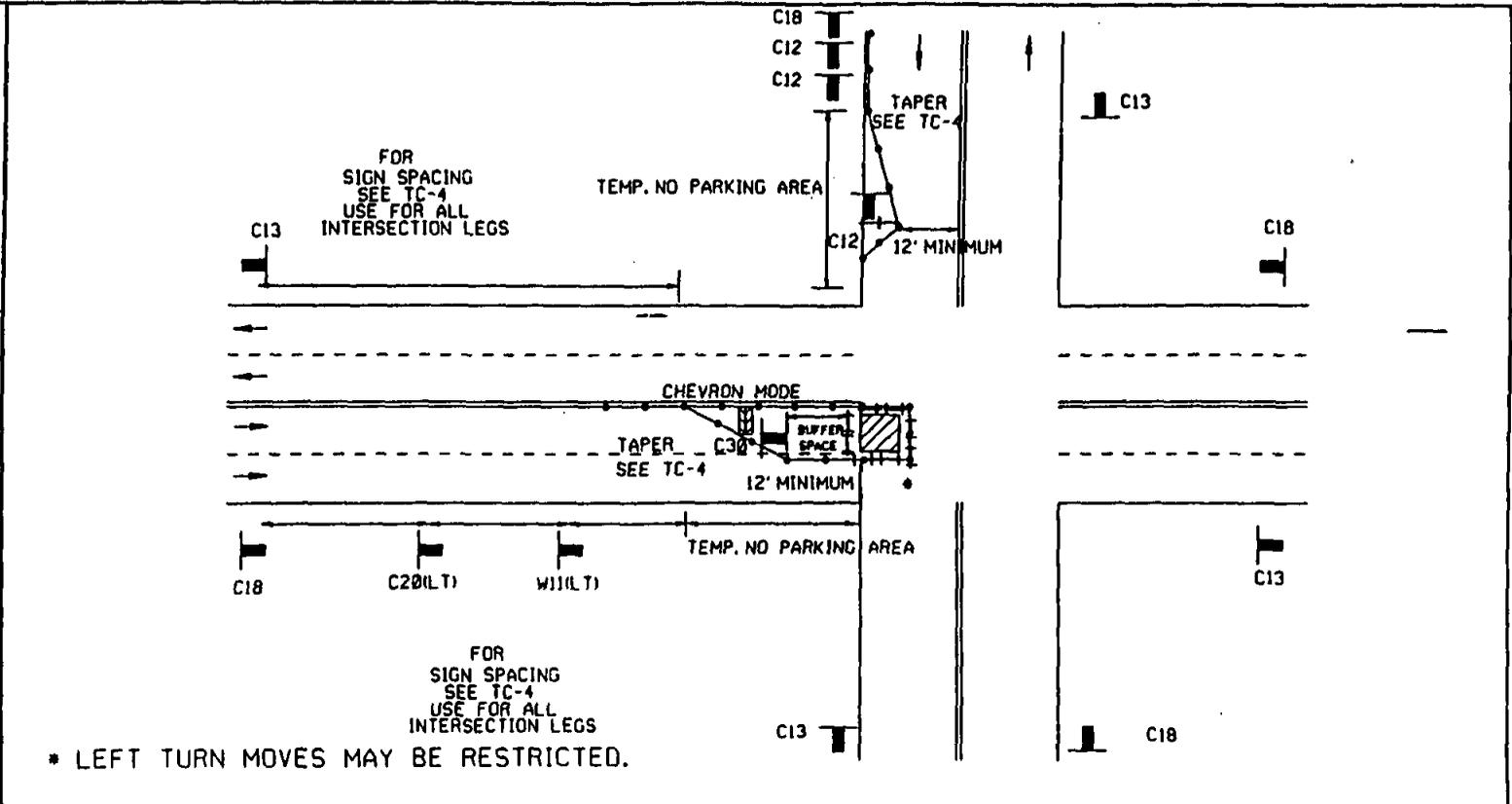
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TC-5 is required for all Traffic Control Plans.

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

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
- ++ BARRICADE
- FLAGGER
- SIGN
- FLASHING ARROW SIGN
- WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

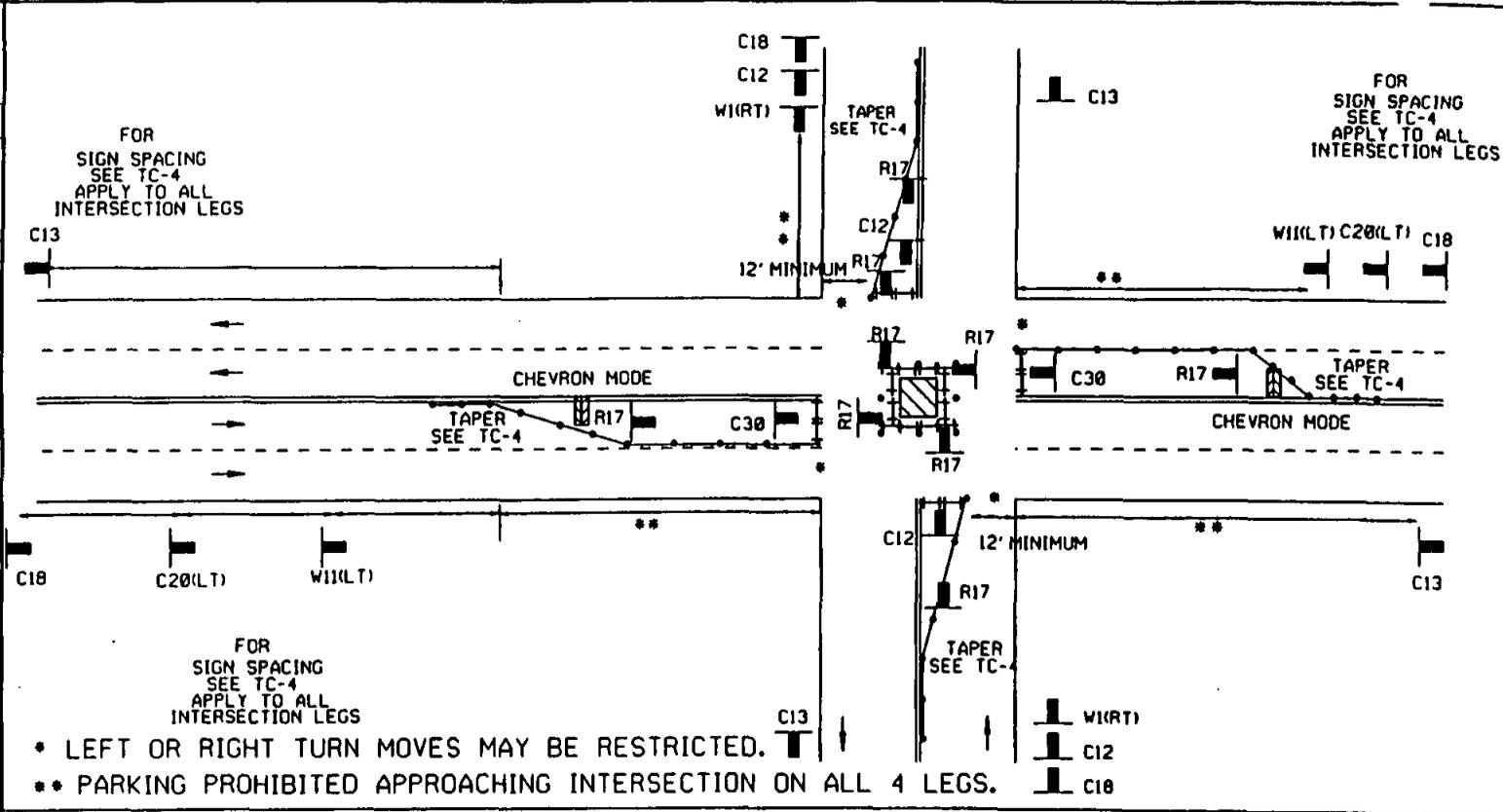
This plan MAY NOT apply when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

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.

SUBMITTED BY:
 NAME _____
 COMPANY _____
 ADDRESS _____
 PHONE _____

Revision	By	Approved	Date
ORIG.	VM	VM	11-11-81
	VM	VM	1-28-82
	VM	VM	4-15-82
	VM	VM	4-15-82



LEGEND

- CONE
- ↔ BARRICADE
- ⚑ FLAGGER
- ⚡ SIGN
- ⚡ FLASHING ARROW SIGN
- ▨ WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

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.

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

Revision	By	Approved	Date
DRAWING	DMV		8-91
ORIG.	MAI		10-8-91
	MAI		10-8-91
	MAI		10-8-91

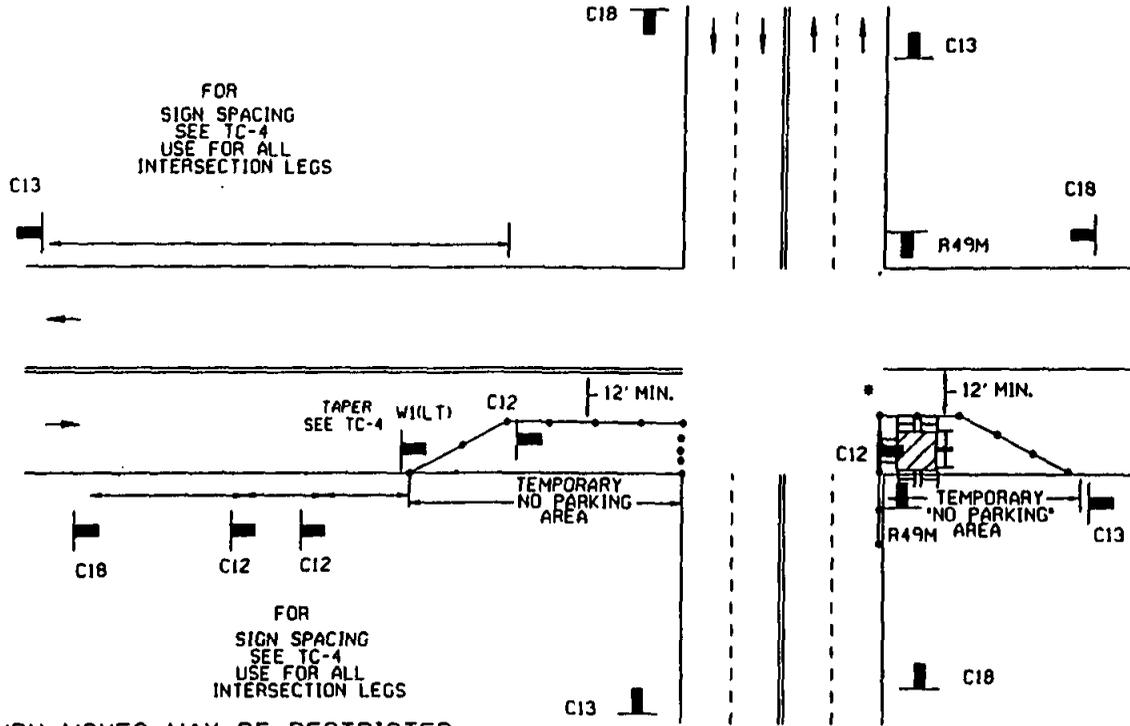
APPENDIX "A"
 SAN DIEGO REGIONAL STANDARD
 CENTER OF ROAD WORK AREA
 INTERSECTION TRAFFIC CONTROL

DRAWING NUMBER
 TC-27

DRAWING NUMBER TC-28

SIDE OF ROAD WORK AREA
INTERSECTION TRAFFIC CONTROL

APPENDIX 'A'
SAN DIEGO REGIONAL STANDARD



* RIGHT TURN MOVES MAY BE RESTRICTED.

LEGEND

- CONE
- H BARRICADE
- FLAGGER
- ▬ SIGN
- ◻ FLASHING ARROW SIGN
- ▨ WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

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.

SUBMITTED BY:

NAME _____
 COMPANY _____
 ADDRESS _____
 PHONE _____

Revision	By	Approved	Date
ORIG.	VAL		
DRAWING	DMV		

AGENCY USE

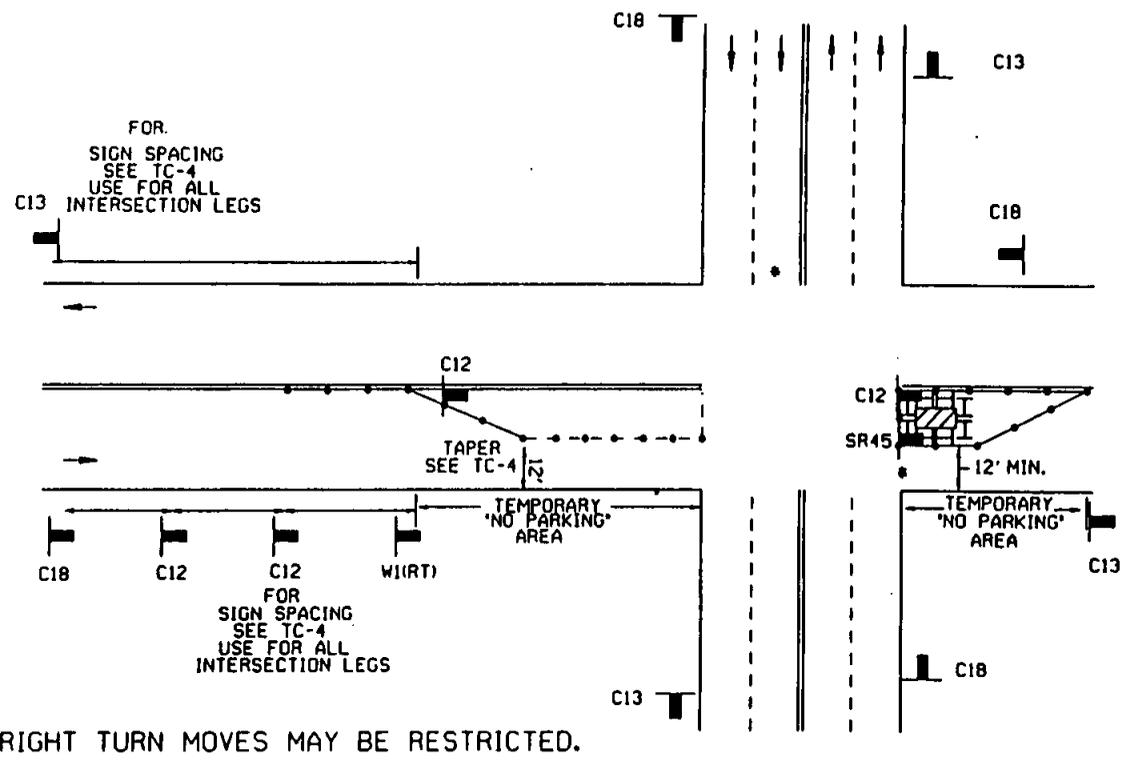
APPLICANT USE

Revision	By	Approved	Date
DRAWING	DMV		
ORIG.	MM		
	008		11-15-78

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

CENTER OF ROAD WORK AREA
INTERSECTION TRAFFIC CONTROL

DRAWING NUMBER
TC-29



LEGEND

- CONE
- H BARRICADE
- FLAGGER
- SIGN
- FLASHING ARROW SIGN
- WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

AGENCY USE

APPLICANT USE

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

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.

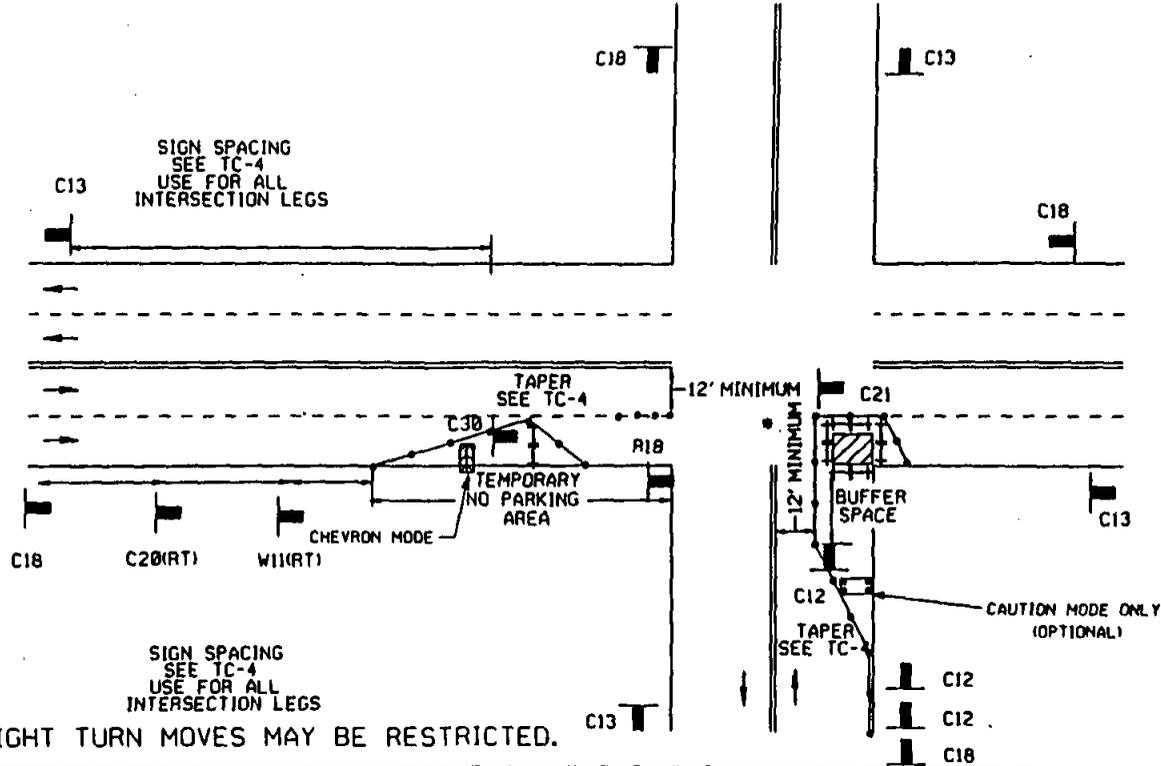
Nothing contained on this drawing shall prevent local jurisdictions from modifying changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

DRAWING NUMBER TC-30

SIDE OF ROAD WORK AREA INTERSECTION TRAFFIC CONTROL

SAN DIEGO REGIONAL STANDARD APPENDIX 'A'



LEGEND

- CONE
- ⇄ BARRICADE
- ▬ FLAGGER
- ▬ SIGN
- ◻ FLASHING ARROW SIGN
- ▨ WORK AREA
- ⇄ TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

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.

SUBMITTED BY:
 NAME _____
 COMPANY _____
 ADDRESS _____
 PHONE _____

Revision	By	Approved	Date
DRAWING	DDV		
ORIG.	DDV		
	DDV		
	DDV		

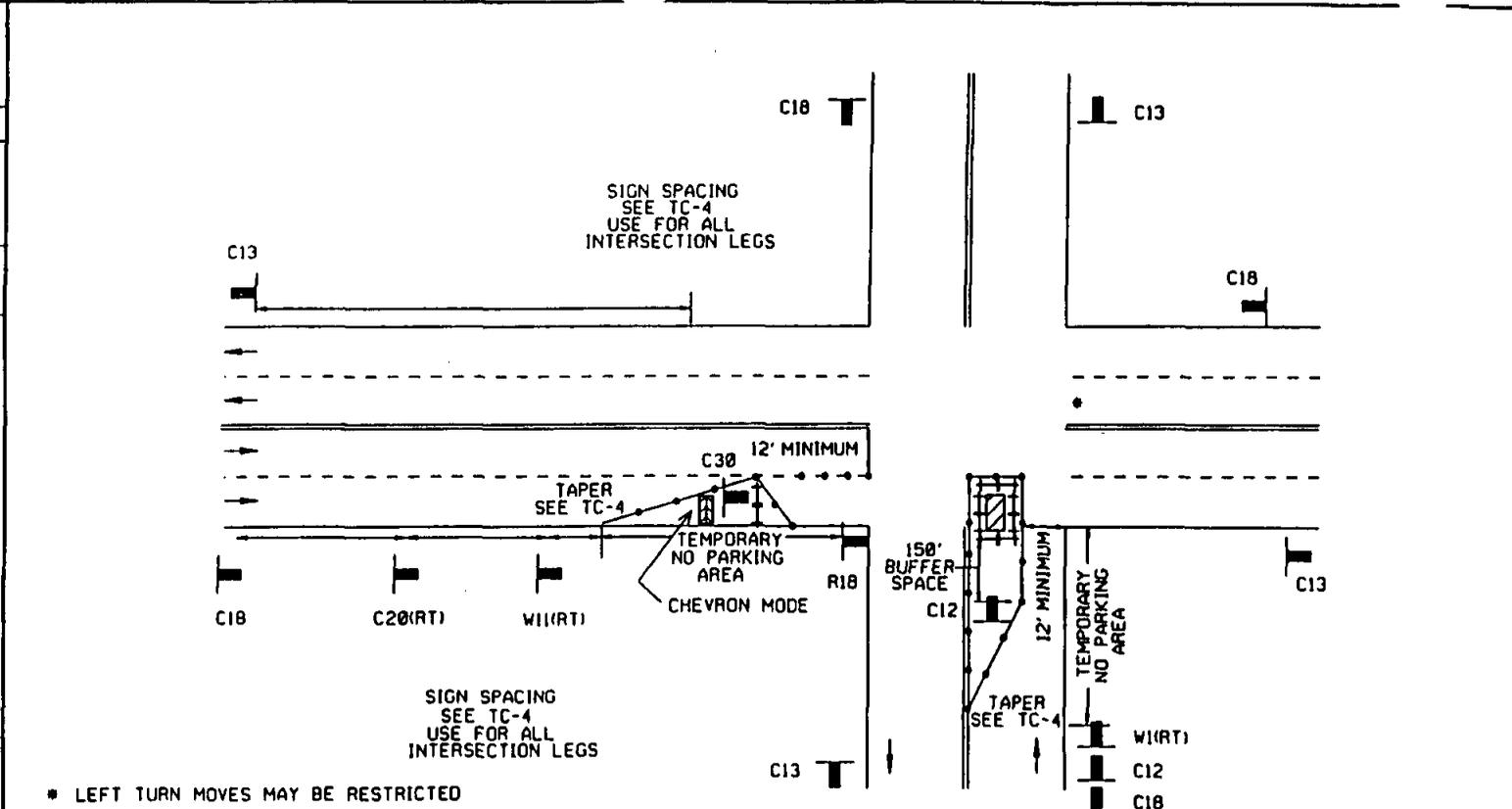
AGENCY USE

APPLICANT USE

Revision	By	Approved	Date
DRAWING	DDW		8-21-91
ORIG.	DDW		4-23-91
			4-15-95

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD
CENTER OF ROAD WORK AREA
INTERSECTION TRAFFIC CONTROL

DRAWING NUMBER
TC-31



LEGEND

• CONE ++ BARRICADE [] FLAGGER [] SIGN [] FLASHING ARROW SIGN [] WORK AREA → TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING	SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

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.

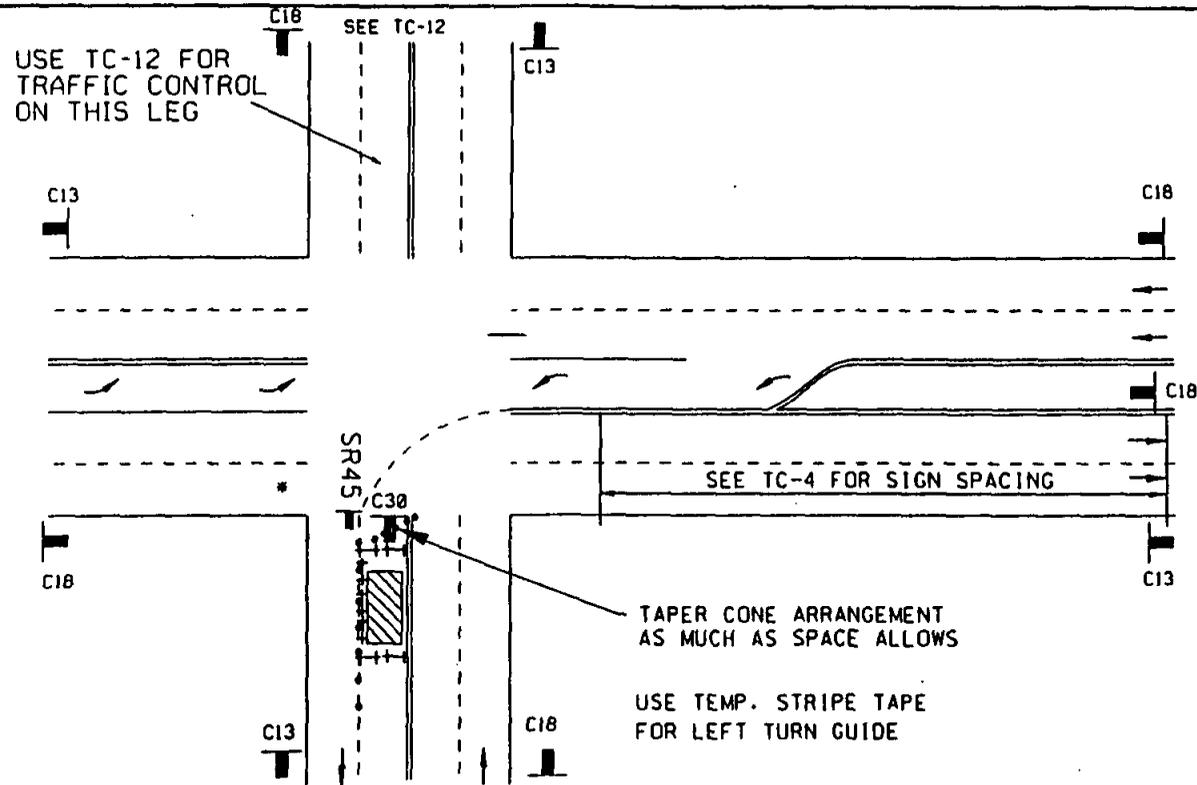
Nothing contained on this drawing shall prevent local jurisdictions from modifying, changing, or adopting new specifications deemed necessary. Criteria for position, location, and use of Traffic Control Devices is solely for the purpose of guidance to assist in the set up of the Traffic Control Plans.

TC-5 is required for all Traffic Control Plans.

DRAWING NUMBER
TC-32

SIDE OF ROAD WORK AREA
LEFT TURN INTERSECTION TRAFFIC CONTROL

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



* RIGHT TURN MOVES MAY BE RESTRICTED

LEGEND

- CONE
- ↔ BARRICADE
- FLAGGER
- ▲ SIGN
- ◻ FLASHING ARROW SIGN
- ▨ WORK AREA
- ↔ TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

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.

SUBMITTED BY:
 NAME _____
 COMPANY _____
 ADDRESS _____
 PHONE _____

Revision	By	Approved	Date
1			5-21-94
2			5-21-94
3			5-21-94
4			5-21-94

AGENCY USE

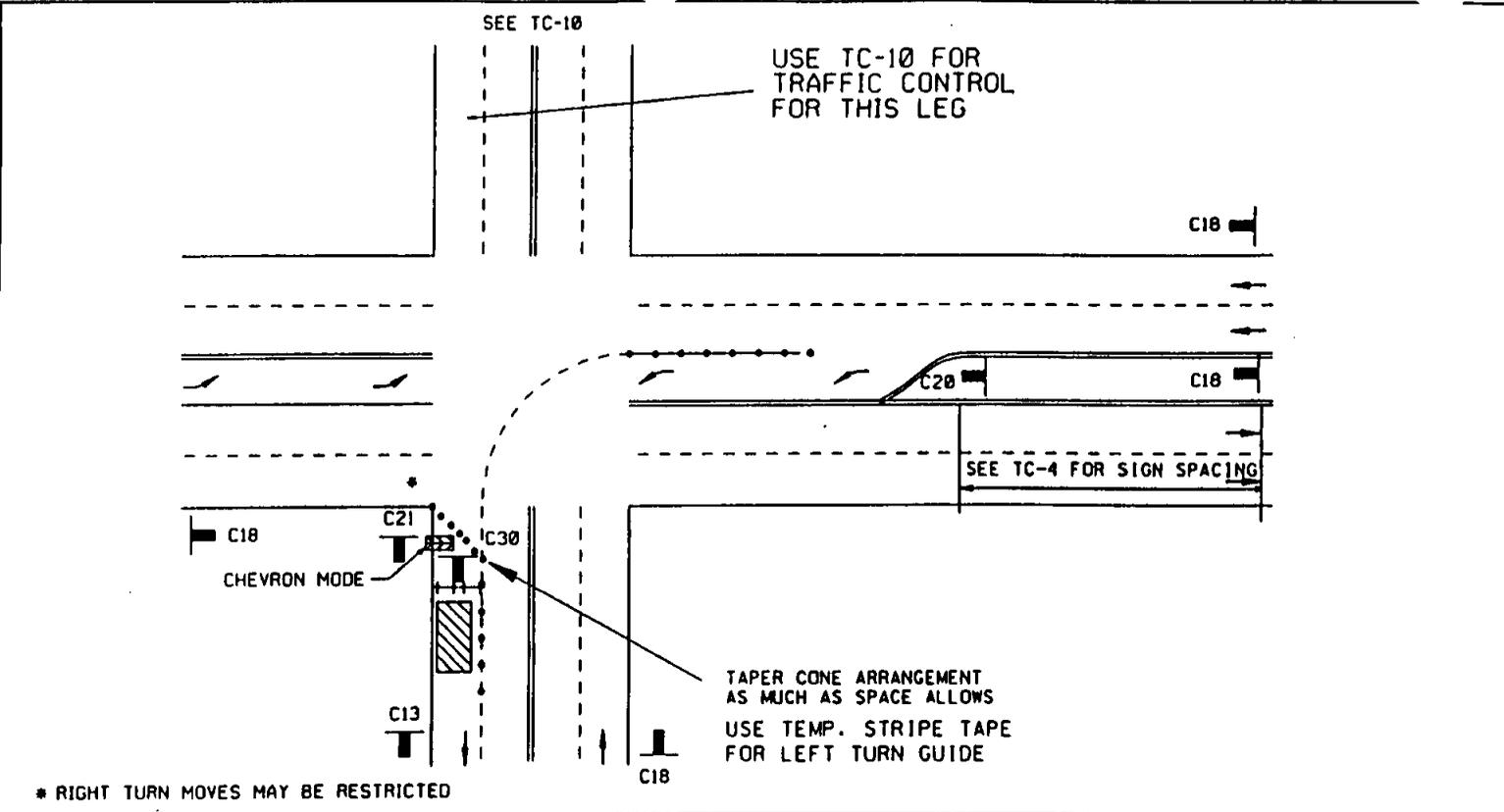
APPLICANT USE

Revision	By	Approved	Date
DRAWING	THB		2-2-74
			4-22-74
			9-18-74

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

SIDE OF ROAD WORK AREA
LEFT TURN INTERSECTION TRAFFIC CONTROL

DRAWING NUMBER TC-33



LEGEND

• CONE ↔ BARRICADE 🚧 FLAGGER 🚦 SIGN ⚡ FLASHING ARROW SIGN ▨ WORK AREA → TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

GENERAL NOTES

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

For hours of darkness, change cones to vertical barricades with steady burn lights.

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.

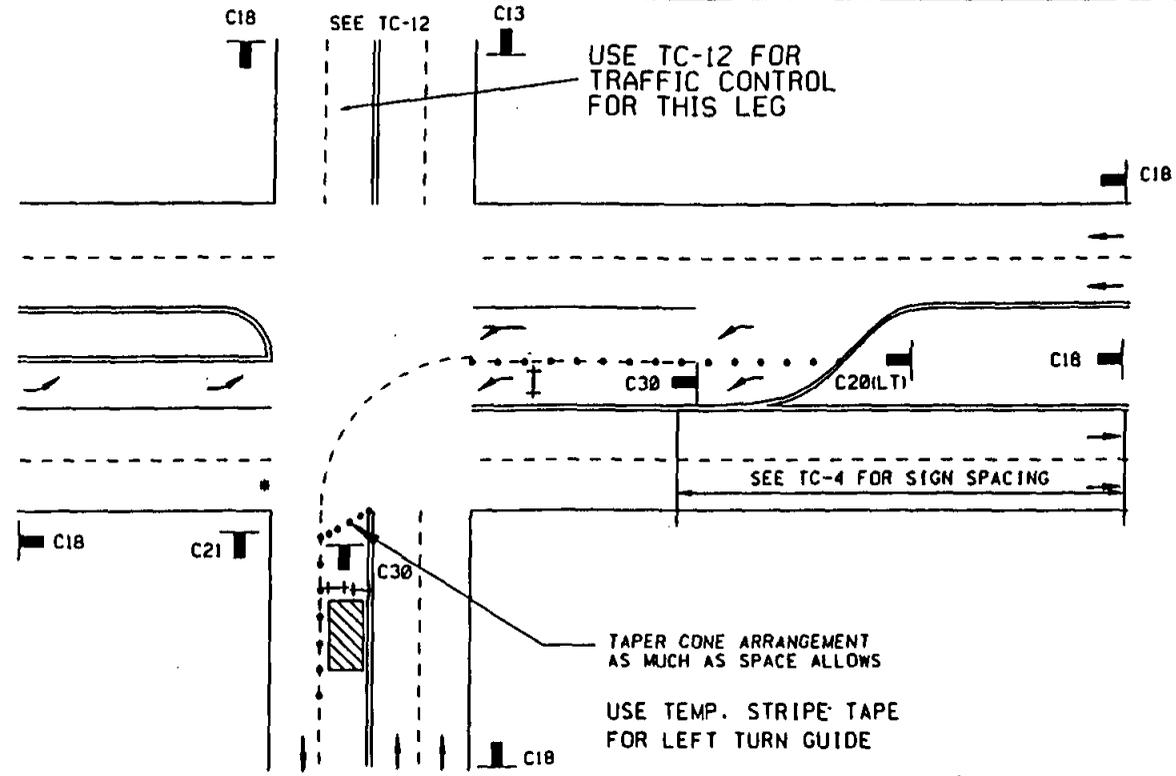
AGENCY USE

APPLICANT USE

DRAWING NUMBER TC-34

SIDE OF ROAD WORK AREA
LEFT TURN INTERSECTION TRAFFIC CONTROL

APPENDIX 'A'
SAN DIEGO REGIONAL STANDARD



* RIGHT TURNS MAY BE RESTRICTED.

LEGEND

- CONE
- ⊕ BARRICADE
- FLAGGER
- SIGN
- ⊕ FLASHING ARROW SIGN
- ▨ WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

AGENCY USE

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

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.

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

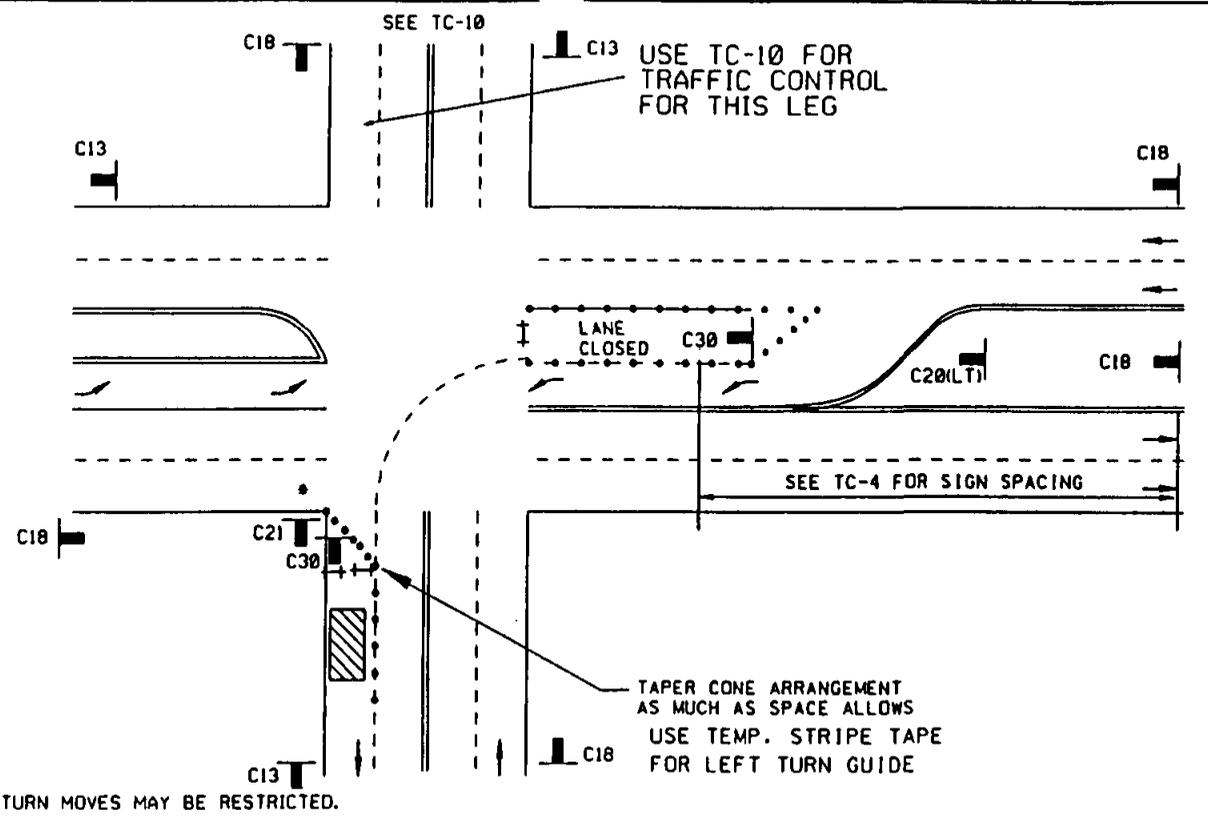
PHONE _____

Revision	By	Approved	Date
DRAWING			

Revision	By	Approved	Date
DRAWING NO	WAJ		5-21-94
			5-28-94
			5-29-94
			5-19-95

SIDE OF ROAD WORK AREA
 LEFT TURN INTERSECTION TRAFFIC CONTROL

APPENDIX 'A'
 SAN DIEGO REGIONAL STANDARD



* RIGHT TURN MOVES MAY BE RESTRICTED.

LEGEND

- CONE
- ⊃ BARRICADE
- FLAGGER
- ▬ SIGN
- ◻ FLASHING ARROW SIGN
- ▨ WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

AGENCY USE

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

GENERAL NOTES

- For hours of darkness, change cones to vertical barricades with steady burn lights.
- 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.

APPLICANT USE

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

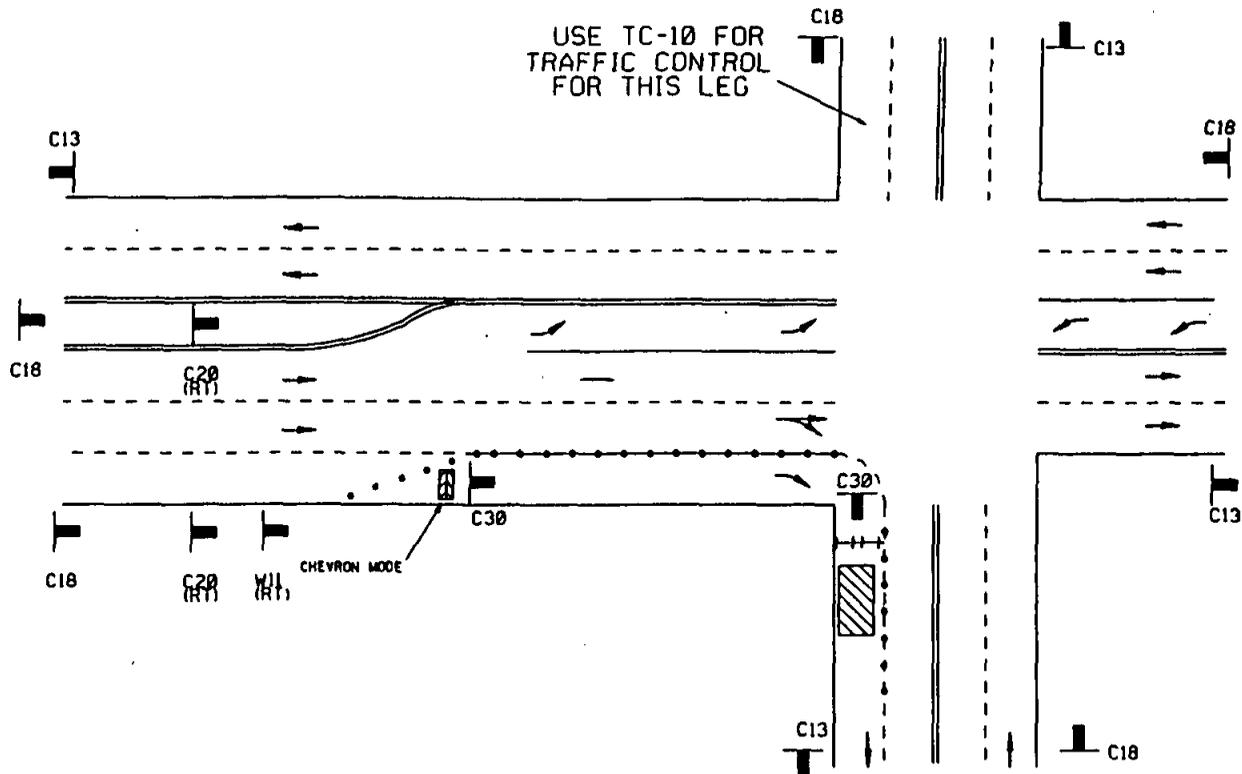
PHONE _____

DRAWING NUMBER TC-35

DRAWING NUMBER TC-36

SIDE OF ROAD WORK AREA
RIGHT TURN INTERSECTION TRAFFIC CONTROL

APPENDIX 'A'
SAN DIEGO REGIONAL STANDARD



LEGEND

- CONE
- ⇄ BARRICADE
- ▬ FLAGGER
- ▬ SIGN
- ◻ FLASHING ARROW SIGN
- ▨ WORK AREA
- ⇄ TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

GENERAL NOTES

- For hours of darkness, change cones to vertical barricades with steady burn lights.
- 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.

SUBMITTED BY:

NAME _____
 COMPANY _____
 ADDRESS _____
 PHONE _____

Revision	By	Approved	Date
001	TRB	[Signature]	5-31-94
002	TRB	[Signature]	7-26-94
003	TRB	[Signature]	2-22-95
004	TRB	[Signature]	4-15-95

AGENCY USE

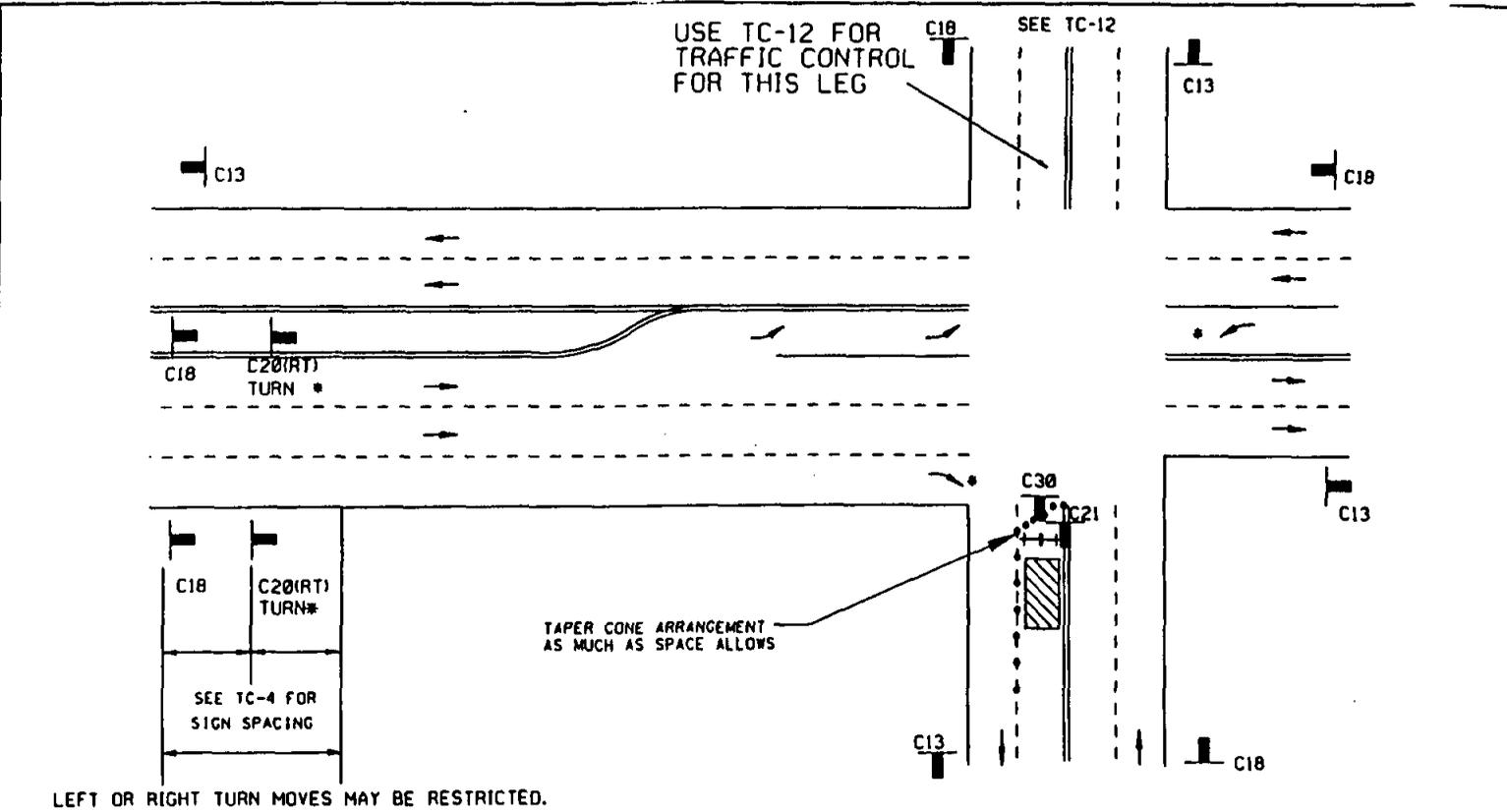
APPLICANT USE

Revision	By	Approved	Date
DRAWING	NO		5-21-94
	NO		1-22-94
	NO		4-15-93

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

SIDE OF ROAD WORK AREA
RIGHT TURN INTERSECTION TRAFFIC CONTROL

DRAWING NUMBER TC-37



LEGEND

• CONE + BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

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.

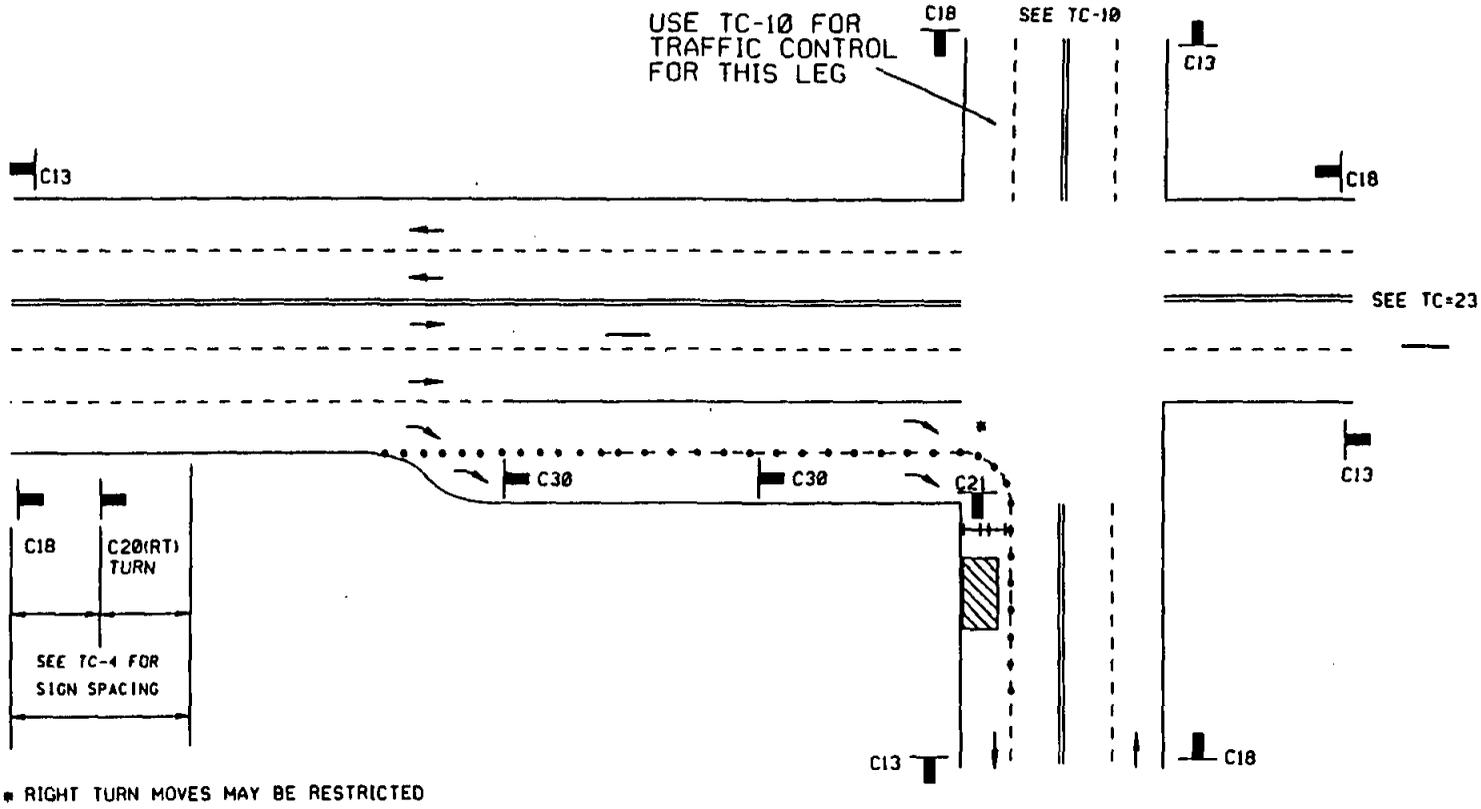
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TC-5 is required for all Traffic Control Plans.

DRAWING NUMBER TC-38

SIDE OF ROAD WORK AREA
RIGHT TURN INTERSECTION TRAFFIC CONTROL

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



LEGEND

- CONE
- ⇄ BARRICADE
- ▬ FLAGGER
- ▬ SIGN
- ◻ FLASHING ARROW SIGN
- ▨ WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE, SPACING AND TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

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.

SUBMITTED BY: _____

NAME _____

COMPANY _____

ADDRESS _____

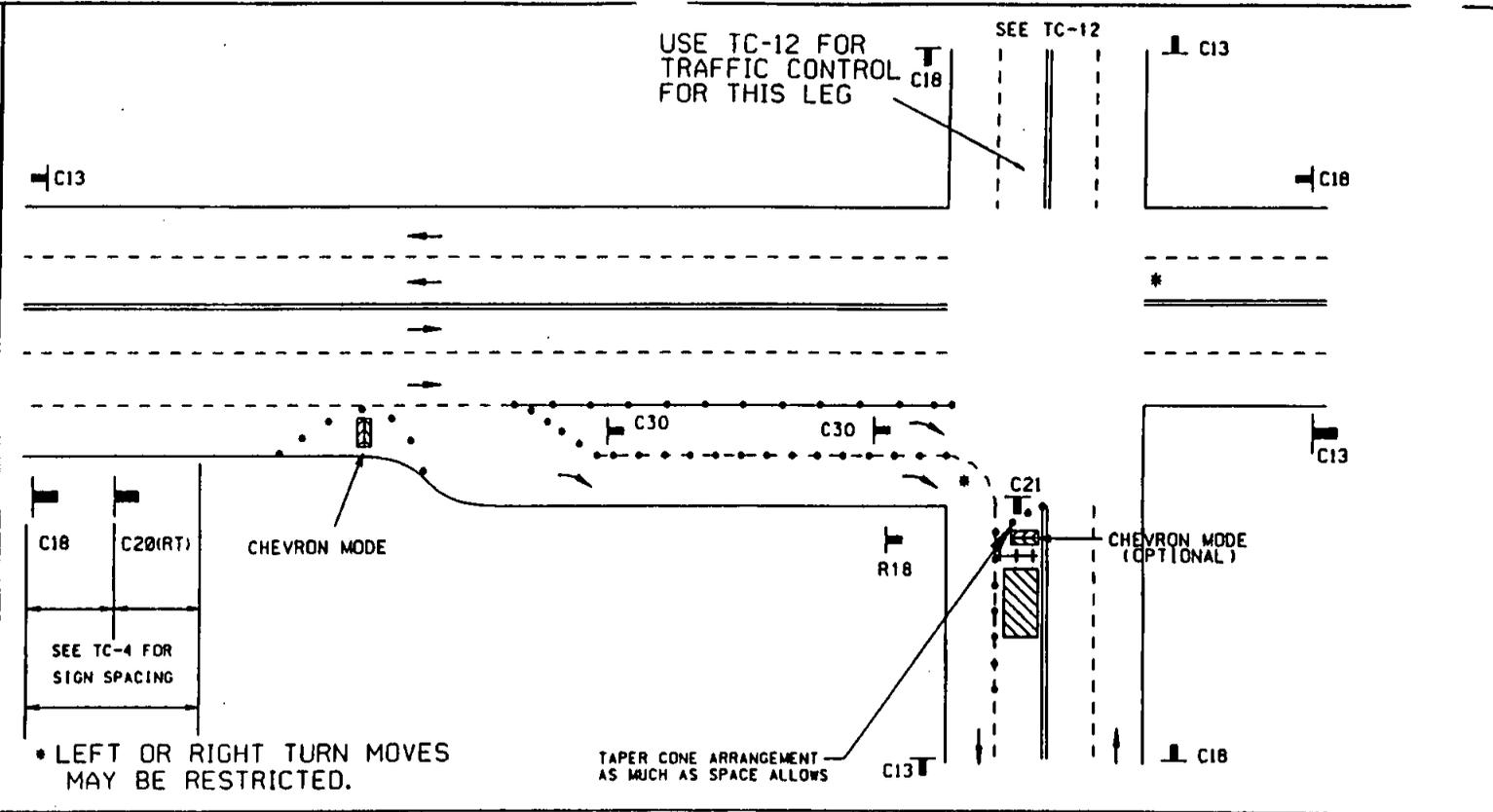
PHONE _____

Revision	By	Approved	Date
DRAWING	TRD		5-31-94
			5-23-97
			4-23-98
			4-15-98

Revision	By	Approved	Date
DRAWING	VAJ		5-31-94
	DBA		4-18-95

APPENDIX 'A'
 SAN DIEGO REGIONAL STANDARD
 SIDE OF ROAD WORK AREA
 RIGHT TURN INTERSECTION TRAFFIC CONTROL

DRAWING NUMBER
 TC-39



LEGEND

• CONE †† BARRICADE F FLAGGER T SIGN FAS FLASHING ARROW SIGN [Hatched] WORK AREA ⇨ TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

AGENCY USE

APPLICANT USE

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

Consult the local jurisdiction when preparing Traffic Control Plans near these intersections.

This plan MAY NOT apply when the work areas effect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plan for these areas.

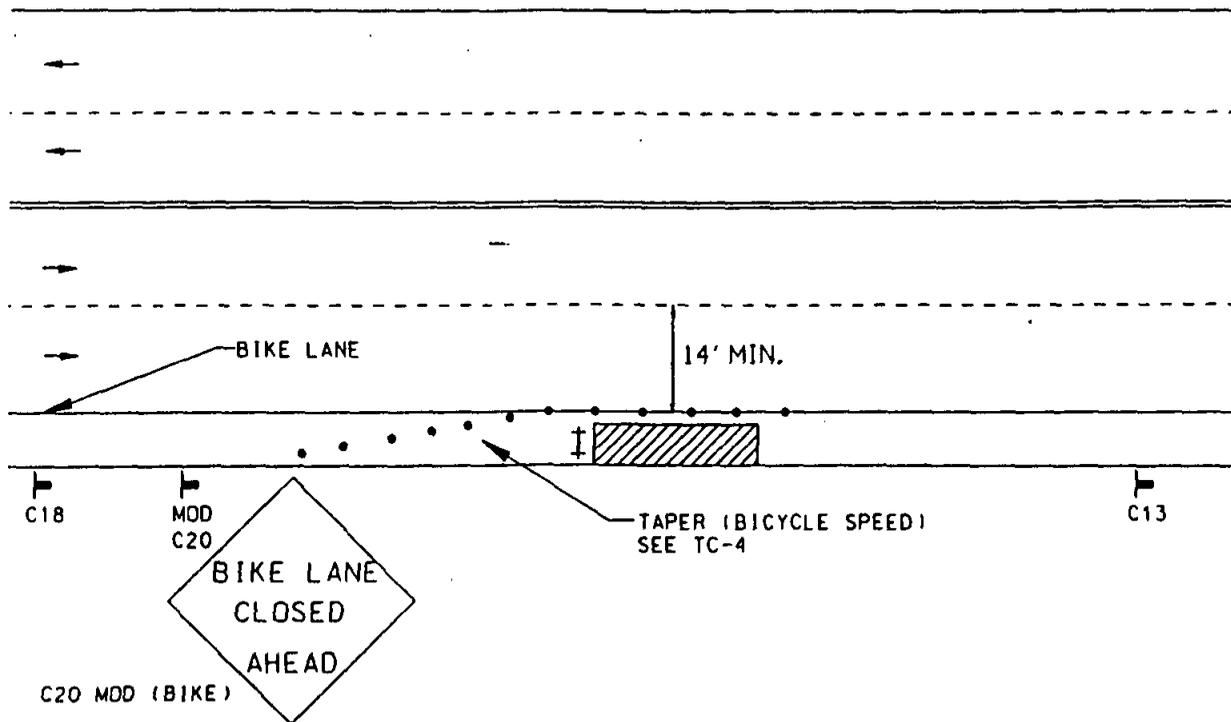
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TC-5 is required for all Traffic Control Plans.

DRAWING NUMBER TC-40

BIKE LANE CLOSURE

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



LEGEND

- CONE
- ⚡ BARRICADE
- ♠ FLAGGER
- 🚧 SIGN
- ⚡ FLASHING ARROW SIGN
- ▨ WORK AREA
- ➡ TRAFFIC DIRECTION

AGENCY ENGINEER'S 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.

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.

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

Revision	By	Approved	Date
DRAWING	TRB		7-21-94
	VAJ		9-25-94
	DBA		4-25-95
			4-15-95

AGENCY USE

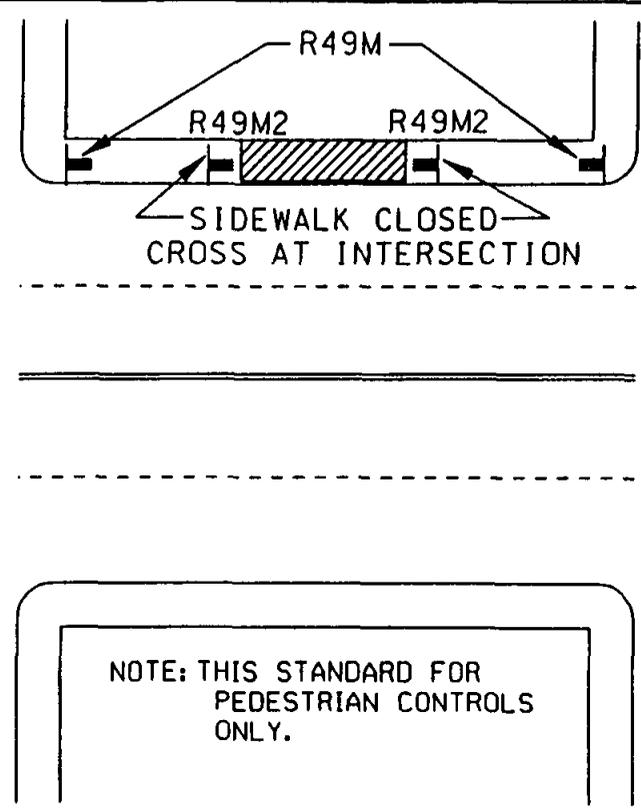
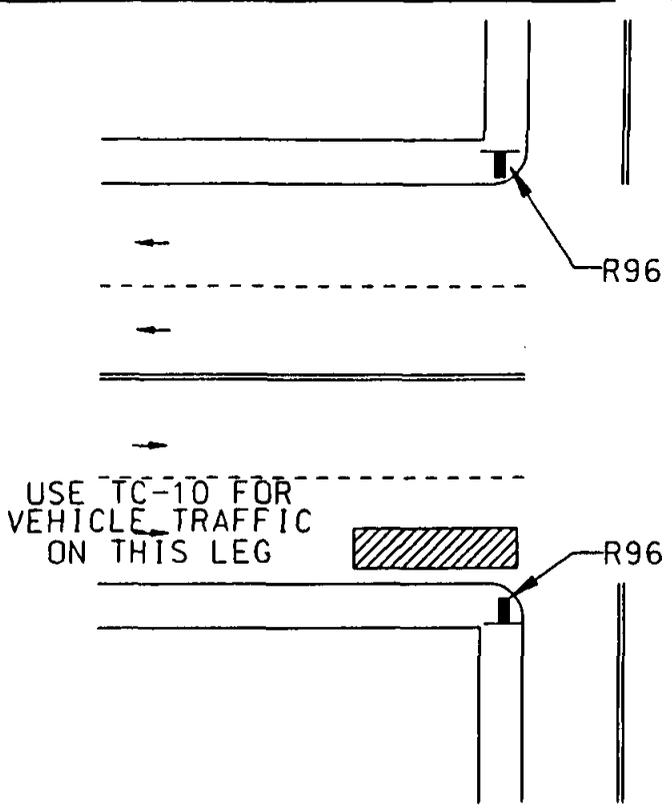
APPLICANT USE

Revision	By	Approved	Date
DRAWING	TRD		5-23-44
	WNY		6-23-44
	WNY		7-23-44
	WNY		8-15-45

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

SIDE OF ROAD WORK AREA
TYPICAL PEDESTRIAN CONTROL SIGNS

DRAWING NUMBER TC-41



LEGEND

• CONE	⊕ BARRICADE	▣ FLAGGER	▣ SIGN	◻ FLASHING ARROW SIGN	▨ WORK AREA	→ TRAFFIC DIRECTION
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AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

AGENCY USE

APPLICANT USE

SUBMITTED BY:

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

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.

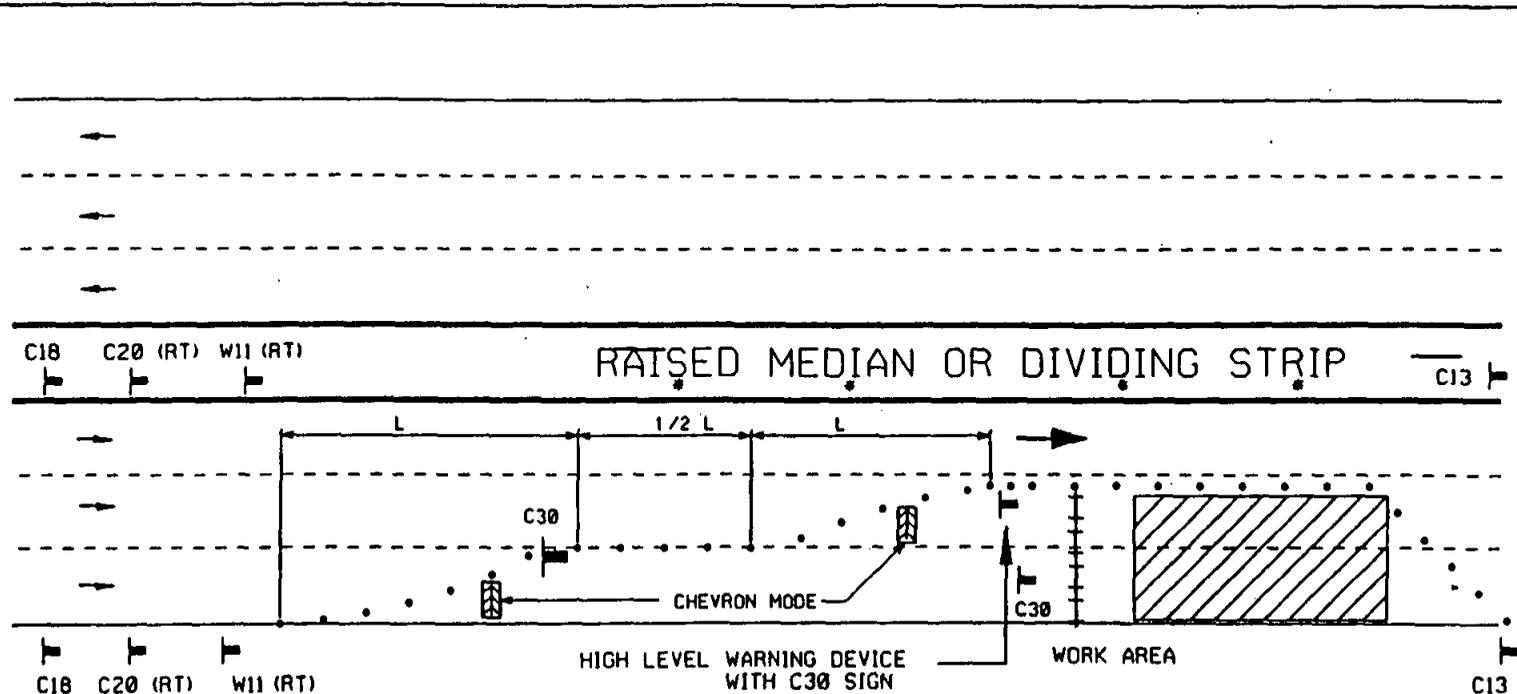
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TC-5 is required for all Traffic Control Plans.

DRAWING NUMBER
TC-42

SIDE OF ROAD WORK AREA
MULTILANE ROADWAY W/ RAISED MEDIAN

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



SIGN SPACING SEE TC-4 TABLE 1

TAPER SEE TC-4 TABLE 2

* MEDIAN MAY REQUIRE TEMPORARY PAVEMENT TO CONVEY TRAFFIC VOLUME.

LEGEND

- CONE
- ↕ BARRICADE
- ▣ FLAGGER
- ▣ SIGN
- ▣ FLASHING ARROW SIGN
- ▨ WORK AREA
- ← TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, 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.

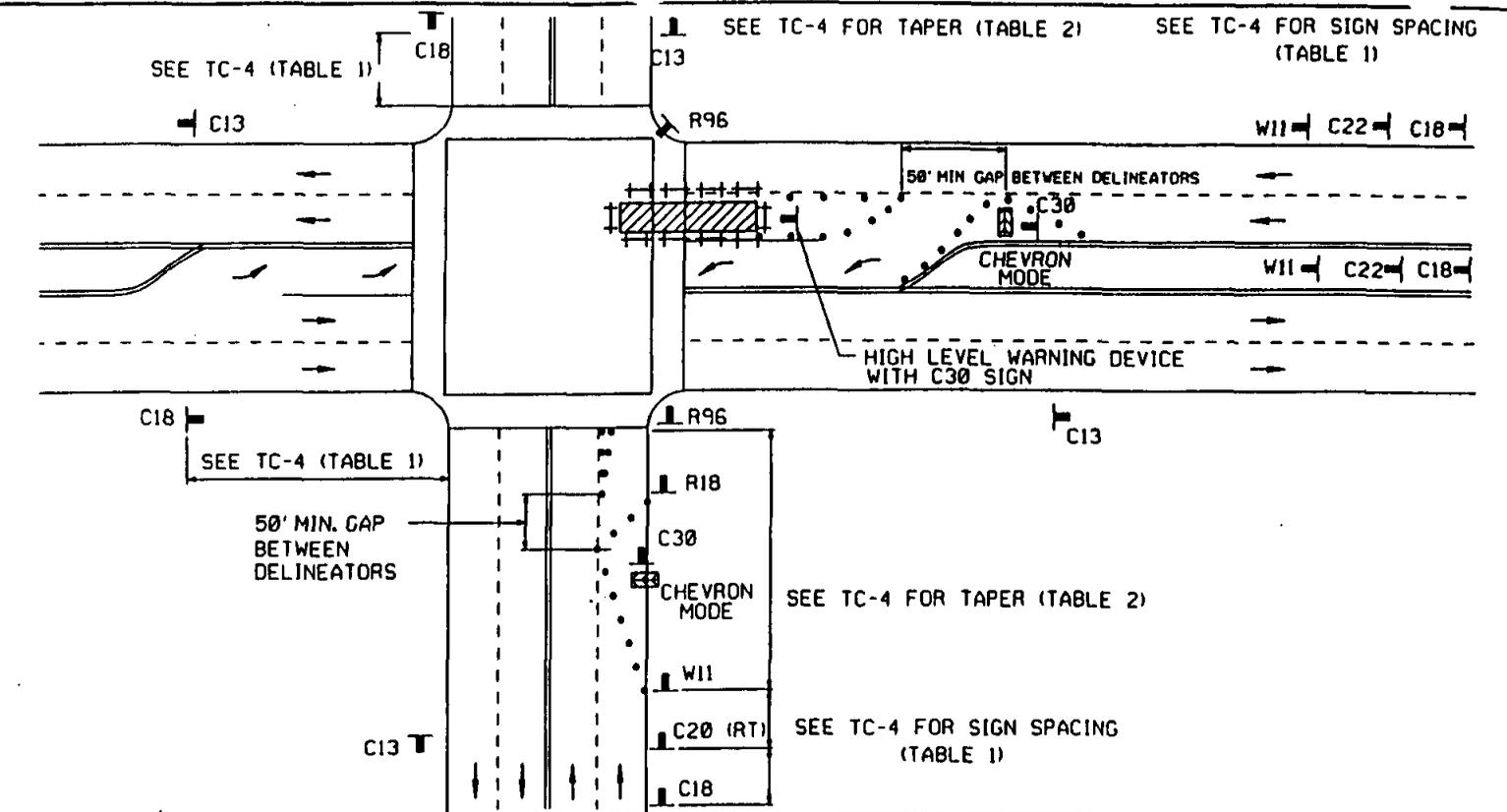
SUBMITTED BY:
 NAME _____
 COMPANY _____
 ADDRESS _____
 PHONE _____

Revision	By	Approved	Date
001	WAL	WAL	6-4
002	WAL	WAL	7-28-78
003	WAL	WAL	1-15-80

AGENCY USE

APPLICANT USE

Revision	By	Approved	Date
DRAWING	NO		6-18-94
008			1-25-95
			4-15-95



APPENDIX 'A'
 SAN DIEGO REGIONAL STANDARD
 WORK WITHIN INTERSECTION
 RIGHT LANE / LEFT LANE

LEGEND

- CONE
- ⇄ BARRICADE
- ▣ FLAGGER
- ▮ SIGN
- ◻ FLASHING ARROW SIGN
- ▨ WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

SEE TC-4 FOR SIGN, CONE SPACING AND TAPER LENGTH

GENERAL NOTES

For hours of darkness, change cones to vertical barricades with steady burn lights.

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ADDRESS _____

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DRAWING NUMBER TC-43

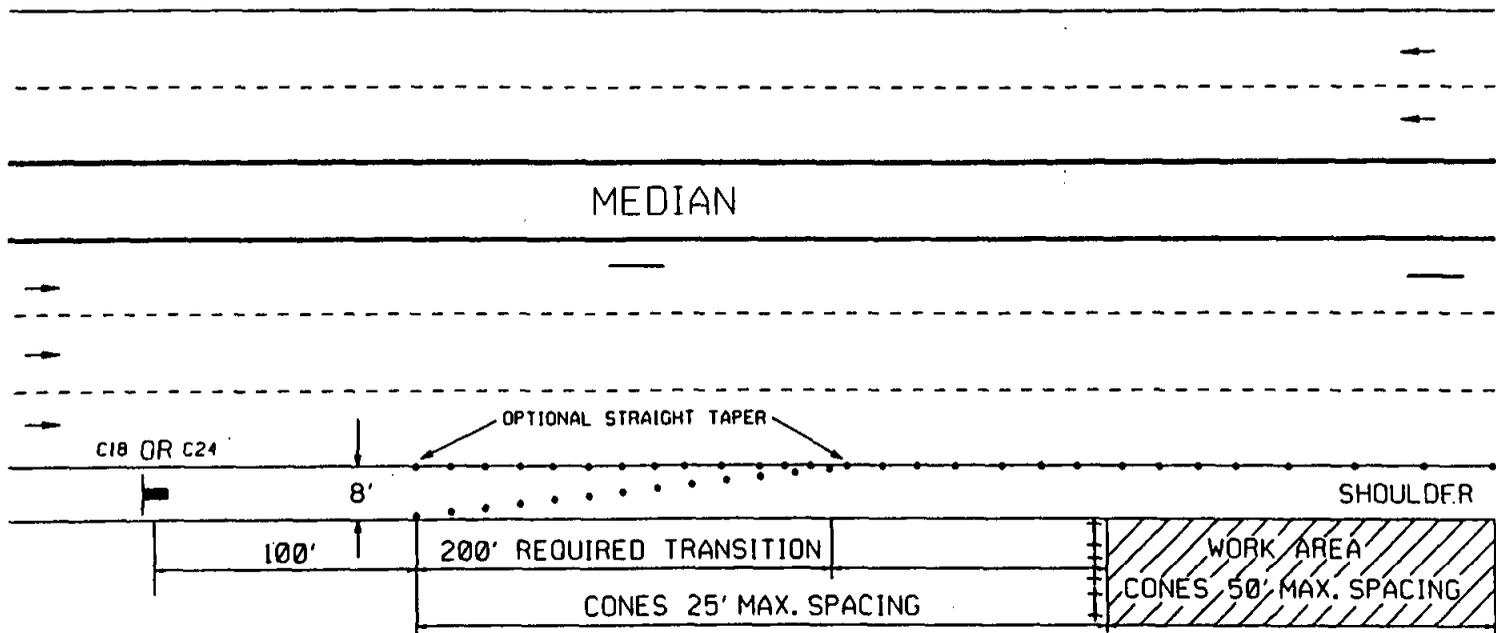
AGENCY USE

APPLICANT USE

DRAWING NUMBER TC-44

TYPICAL SHOULDER CLOSURE
MULTILANE ROADWAY WITH RAISED MEDIAN

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



LEGEND

- CONE
- ++ BARRICADE
- FLAGGER
- SIGN
- FLASHING ARROW SIGN
- WORK AREA
- TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

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SUBMITTED BY:

NAME _____
 COMPANY _____
 ADDRESS _____
 PHONE _____

Revision	By	Approved	Date
ORIGINAL	DW	[Signature]	12-11-11

AGENCY USE

APPLICANT USE

DRAWING NUMBER
TC-90

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD
SPECIAL CONDITIONS WORK AREA
TWO LANE ROADWAY
WITHOUT CENTERLINE

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

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SUBMITTED BY:

NAME _____

AGENCY _____

ADDRESS _____

PHONE _____

Revision	By	Approved	Date
ORIG.			

Revision	By	Approved	Date
DRAWING	DW		4-91
ORIG.	MA		10-8-91
			10-1-91

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

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:
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 ADDRESS _____
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DRAWING NUMBER **TC-91**

DRAWING NUMBER TC-92

SPECIAL CONDITIONS WORK AREA

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

MULTILANE ROADWAY WITH CENTERLINE

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

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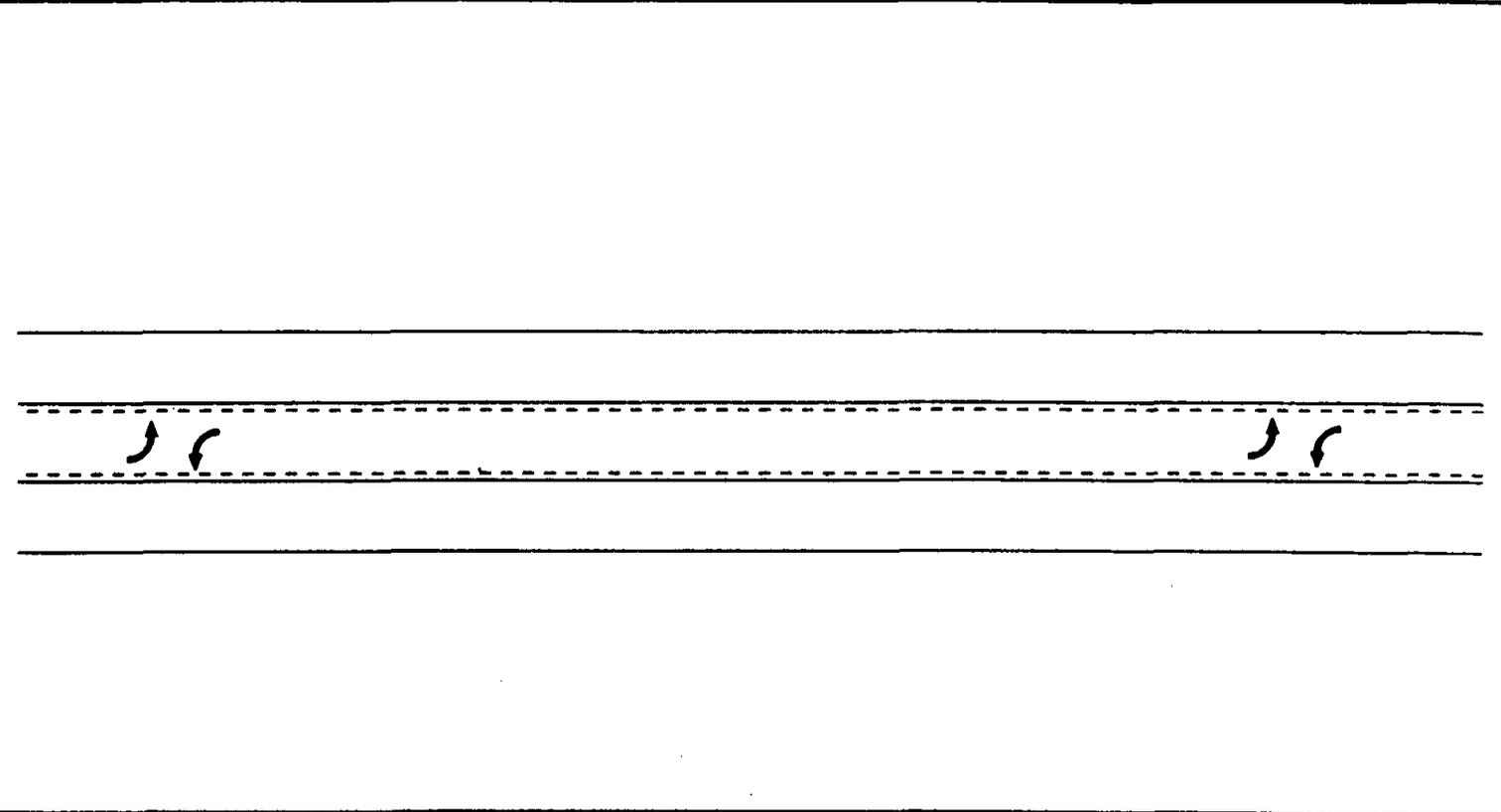
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SUBMITTED BY: _____
 NAME _____
 AGENCY _____
 ADDRESS _____
 PHONE _____

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2	MA	PL	10-8-91
3	MA	PL	10-4-94



Revision	By	Approved	Date
DRAWING	DMV		4-91
ORIG.			10-8-91
			10-1-94

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

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AGENCY _____

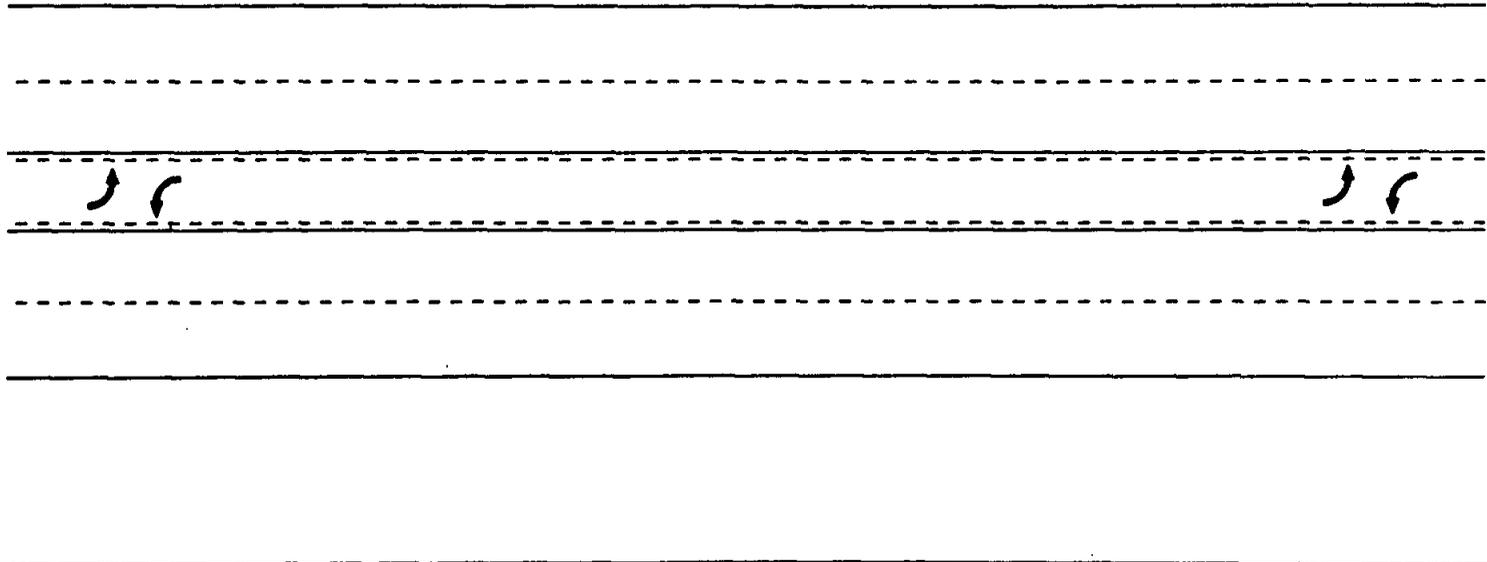
ADDRESS _____

PHONE _____

DRAWING NUMBER
TC-94

SPECIAL CONDITIONS WORK AREA
MULTI-LANE ROADWAY
WITH TWO WAY LEFT TURN LANE

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD



LEGEND

- CONE
- ↔ BARRICADE
- ▣ FLAGGER
- ▣ SIGN
- ◻ FLASHING ARROW SIGN
- ▨ WORK AREA
- ↔ TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

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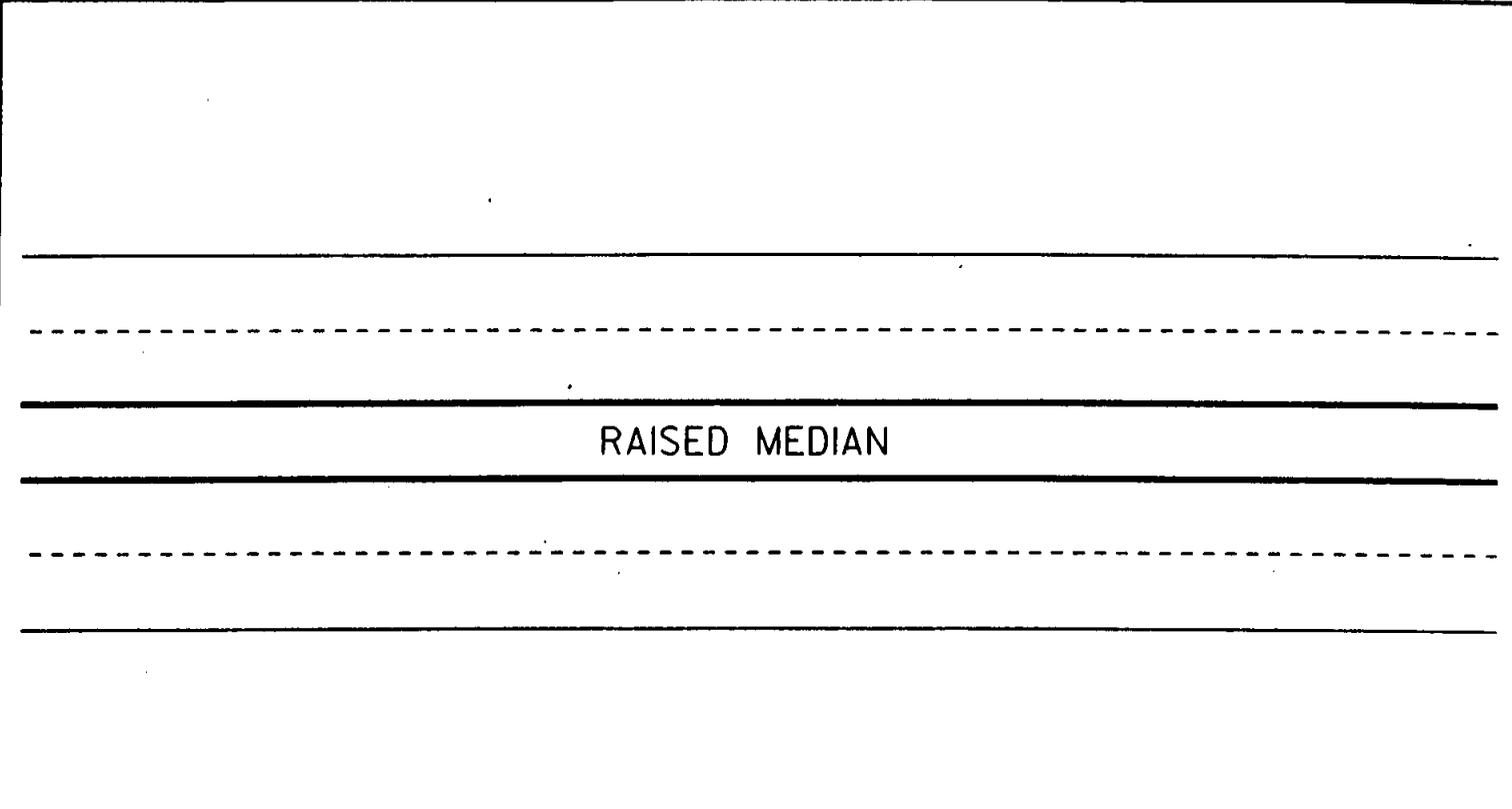
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NAME _____
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 PHONE _____

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			0-8-91
			10-1-94



Revision	By	Approved	Date
DRAWING	pmv		4-91
ORIG.			10-8-91
			10-1-94

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

SPECIAL CONDITIONS WORK AREA
MULTILANE ROADWAY
WITH RAISED MEDIAN

DRAWING NUMBER
TC-95

RAISED MEDIAN

LEGEND

- CONE
- ↔ BARRICADE
- ▣ FLAGGER
- ▣ SIGN
- ◻ FLASHING ARROW SIGN
- ▨ WORK AREA
- ↔ TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

SUBMITTED BY:
 NAME _____
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 PHONE _____

POSTED SPEED LIMIT	APPROACH SPEED	TAPER LENGTH	SPACING OF CONES	SIGN SPACING

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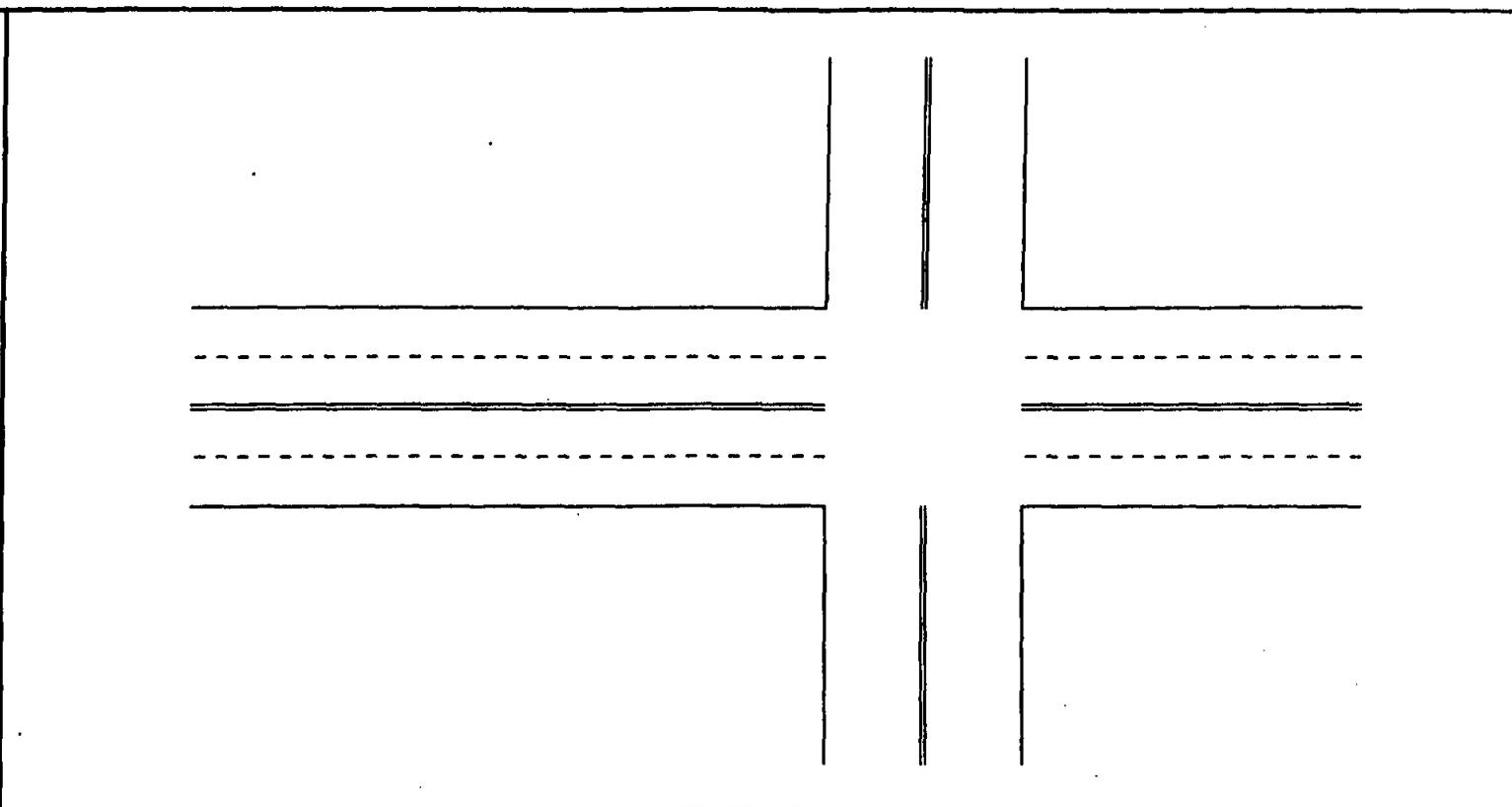
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DRAWING NUMBER
TC-96

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD
SPECIAL CONDITIONS WORK AREA
INTERSECTION



LEGEND

- CONE
- ↔ BARRICADE
- ▣ FLAGGER
- ▣ SIGN
- ◻ FLASHING ARROW SIGN
- ▨ WORK AREA
- ↔ TRAFFIC DIRECTION

TRAFFIC ENGINEERS COMMENTS

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 PHONE _____

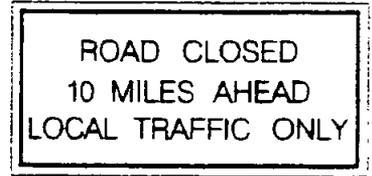
Revision	By	Approved	Date
0001	DRG	SPW	4-91
	VAL	SPW	10-8-91
			10-4-94



C1



C2



C3



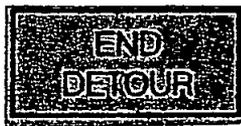
C3A



C5 (RT)



C5 (LT)



C7



C9A



C12



C13



C14



C18



C19



C20 (RT)



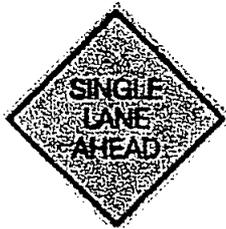
C20 (LT)

Revision	By	Approved	Date
DRAWING	TRD		6-94

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

TYPICAL CONSTRUCTION SIGNS

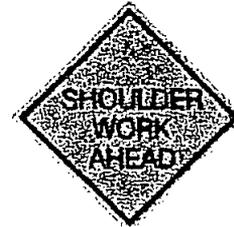
DRAWING NUMBER TC-97



C21



C23



C24



C27



C28A
FLAGGER
PADDLE



C28B
FLAGGER
PADDLE



C30



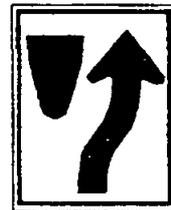
C30A



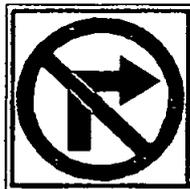
C36



R1



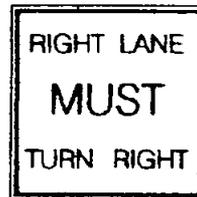
R7



R16



R17



R18(RT)



R18 (LT)



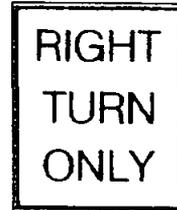
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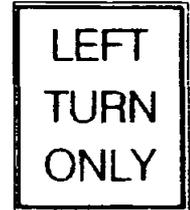
R34



R34-2



R41



R42

Revision	By	Approved	Date
DRAWING	TRD		9-94

APPENDIX 'A'
SAN DIEGO REGIONAL STANDARD

TYPICAL CONSTRUCTION SIGNS

DRAWING NUMBER TC-98



R49M



R96



SR45



W1 (RT)



W1 (LT)



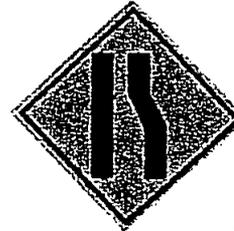
W2 (RT)



W2 (LT)



W11 (LT)



W11 (RT)

Revision	By	Approved	Date
DRAWING	TRB		9-94

APPENDIX "A"
SAN DIEGO REGIONAL STANDARD

TYPICAL CONSTRUCTION SIGNS

DRAWING NUMBER TC-99

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