

COUNTY OF SAN DIEGO

Regional Standards Drawings
March 1976

Chris: *ES*

Chuck:

Elmer: *END*

John: *R*

COUNTY OF SAN DIEGO

PUBLIC WORKS AGENCY

INTRA-AGENCY MEMO

Dan:

Jack:

DATE 3-4-76

TO: *Development Engr. & Review Staff*

FROM: *Al Krier*

SUBJECT: *New Regional Standard Drawings*

The new Regional Standard Drawings have been distributed. For those projects already in the design stage, we will not impose any new standards; they can follow the old ones. However, we may want to encourage the engineer to use certain new standards which are beneficial to all concerned.

In determining whether new standard Drawings should be used on a project, the following will apply:

If the project has not received final approval by the Planning Commission, the new standards will apply; if a project has already, as of this date, received final approval by the Plan. Comm. then the old standards can be used.

COUNTY OF SAN DIEGO
CALIFORNIA
COUNTY ENGINEER DEPARTMENT

Rev. 2/11/74
1 of 6

INDEX OF STANDARD DRAWINGS

Drainage

<u>Number</u>	<u>Description</u>
100-2	Curb Inlet, Type A-2
102-1	Cleanout, Storm Drain, Types A, B, C, D, & E
107-2	Catch Basin, Type D
108-1	Curb Inlet, Type H
111-4T	Frame and Grates for Drainage Structures
118-1	Headwalls & Endwalls Types U & Wing
122	Drop Inlet, Type C
124-1	Tapered Inlet and Down Drain Flume - Asphalt Concrete Spillway
125-1	Entrance Taper and Down Drain Pipe
126-1	Straight Headwall, Single & Double
127-1	L Type Headwall
128-1	Channel or Pipe Outlet Rock Slope Protection - Protection and Flow Interruption
129-2	Inlet Apron, Type A for Culverts up to 42" Diameter
130-1	Inlet, Culvert - Flared
140-1	Standard Single Box Culverts
141-1	Standard Double Box Culverts
142-1	Standard Triple Box Culverts
143-1	Standard Box Culvert Miscellaneous Details
144-1	Standard Culvert Headwalls & Endwalls, Types A, B. & C
145-1	Standard Culvert Headwalls & Endwalls, Types D & E
146-1	Standard Reinforced Concrete Warped Wing - Headwalls & Endwalls
147-1	Standard Construction Loads on Culverts

180-1	Safe Overfills for R.C.P. or C.M.P.
181-1	Safe Overfills for Field Assembled Plate Pipe
D-1	Headwall, Gravity Type
D-4	Notes & Details, Inlet & Cleanouts
D-5	Curb Inlet - Type A
D-6	Curb Inlet - Type B
D-7	Curb Inlet - Type C
D-9	Rounded Pipe Ends
D-11	Storm Drain Cleanout - Type A
D-12	Concrete Lug
D-14	Pipe Collar
D-15	Inlets, Type I & J
D-18	Inlet Frame & Cover
D-20	Standard Drainage Outlet (For Sidewalk Area)
D-24	Headwall, Wing & U-Type (For 42" to 84" Pipes)
D-25	Spillway Inlets & Underdrain, Type A, B, & C
D-28	Curtain Wall
D-34	Curb Inlet - Type G
D-35	Curb Outlet
D-40	Drainage Channel
D-61	Trash Fence
M-23	Manhole Frame & Cover (22")
M-54	Manhole Frame and Two Concentric Covers (36")
S-27	Concrete Anchor

24

Pavement, Sidewalk, Curb & Gutter

<u>Number</u>	<u>Description</u>
201-2	Asphalt Concrete Dikes
207-4T	Concrete Driveways
208-1T	Grading of Slopes
209	Required Setbacks
212-3T	P.C.C. Sidewalks
218-1	Street Survey Monuments
219-1	Survey Monuments Locations
220-1	Excavation & Backfill - Culverts, Retaining Walls & Headwalls
221-1	Excavation & Backfill - Roadway, Wingwalls & Slope Protection

9

222-1	Excavation & Backfill - Bridge Piers, Abutment & Adjoining Wingwalls
223-1	Standard Gutter Depressions for Type K, & K-1 Curb Inlets
224-1	Standard Gutter Depressions for Curb Inlets with Grate
225	Ramp for Curb, Gutter, & Sidewalk
226	Special Mountable Curb
227	Asphalt Concrete Driveways
231 T	Lot Grading
232 T	Fencing Cut Banks
G-11	Concrete Pavement-Alley Section (20' width, or less)
G-12	Concrete Pavement-Alley Section (20' to 40')
G-27	Cutoff Wall at End of Pavement
G-28	Cutoff Wall at End of Alley Pavement
G-32	Cross Gutter Type A
G-33	P.C.C. Curb, Gutter, Sidewalk & Pavement Removal & Replacement
G-35	Concrete Cross Gutter & Return Segment
G-39	Alley Apron
G-42	P.C.C. Joints for Pavement, Sidewalk, Curb, & Cross Gutter
G-43	Curbs & Gutters Typical Plans
G-44	6" & 8" Curb Sections & Gutter Section
G-45	Curb Sections - Types G & H
G-46	Curb Sections - Type B
G-57	Curb Section - Type "D" Roll Curb
T-9	Guard Post and Fence Assembly for Terminating Streets
T-15	Metal Beam Guard Rail Installation
T-16	Metal Beam Guard Rail Detail

25

Location & Geometrics for Pavement,
Sidewalks, Curbs, Driveways, Utilities, etc.

<u>Number</u>	<u>Description</u>
300	Subdivision Improvement Plan Title Block
301-2	Street Sign
302-1	Sidewalk Returns
303-1	Median Islands
304-3	Turnaround & calculations
305-3T	Driveway Location and Width Requirements

C

306-1	Driveway Location Adjacent to Curb Returns
307	Fire Hydrant Location
309 T	Trench Utilities Location
310-3	Typical Roadway Sections
311-1	Hillside Residential Street Alternate 1
312-1	Hillside Residential Street Alternate 2
313-1	Hillside Residential Street Alternate 3
314-1	Hillside Residential One-Way Street Alternate 4
315-1	Temporary Hammerhead Turnaround at Dead-End Street
316-1	Temporary Turnaround at Dead-End Street
317-1	Temporary Hammerhead Turnaround at Dead-End Street Hillside Standard
318	Construction Plan Symbols
P-24	Utility Line Locations

/ 3

Miscellaneous

410 T;p. 1,2,3	Ornamental Street Light
C-42	Cantilever Retaining Wall - Type 1A Elevation
C-43	Cantilever Retaining Wall - Type 1A Sections
C-44	Cantilever Retaining Wall - Type 2 Elevation & Section
C-45	Cantilever Retaining Wall - Type 2 Construction Details
C-46	Cantilever Retaining Wall - Type 3 Elevation & Section
C-47	Cantilever Retaining Wall - Type 3 Construction Details
C-48	Wing Wall Details for Cantilever Walls-Elevation
C-49	Wing Wall Details for Cantilever Walls-Sections
C-50	Counterfort Retaining Wall
C-51	Counterfort Retaining Wall
C-52	General Notes for Retaining Walls
C-53	Cantilevered Masonry Retaining Wall-Misc. Details
C-54	Cantilevered Masonry Retaining Wall-Type CM-5
C-55	Cantilevered Masonry Retaining Wall-Type CM-6 (sloping backfill)
C-56	Gravity Retaining Wall

/ 8

C-57	General Notes for Masonry Retaining Walls
C-58	Cantilevered Masonry Retaining Wall - Type LM-1
C-59	Cantilevered Masonry Retaining Wall - Type LM-2
C-60	Cantilevered Masonry Retaining Wall - Type LM-3
C-61	Cantilevered Masonry Retaining Wall - Type LM-4
C-63	Cantilevered Retaining Wall - Type L-1
C-64	Cantilevered Retaining Wall - Type L-2
C-67	Cantilevered Retaining Wall - Type L-5
M-4	Chain Link Fence
M-5	Chain Link Fence

10

Water Systems

<u>Number</u>	<u>Description</u>
700-T2	Shrubbery Sprinkler Heads Fixed Spray Type
701-T1	Lawn Sprinkler Heads Pop-up Rotary & Pop-up Spray Types
702-T2	Impact Sprinkler Head
703-T	Quick Coupling Valves
704-T	Garden Valves
705-T	Manual Valves
706-1T	Direct Burial Control Wire & Trench Detail
707-2T	Electrical Pull Box for Direct Burial Control Wires & Splice Detail
708-T1	Automatic Control Valve - Electric (angle valve)
709-T1	Automatic Control Valve - Electric (globe valve)
710-T	Electric Controller Clock Pedestal Mounting
711-T	Electric Controller Clock Wall Mounting
712-T	Atmospheric Vacuum Breaker (Type I Backflow Protection)
713-T	Continuous Pressure Vacuum Breaker Assembly (Type II Backflow Protection)
714-T1	Continuous Pressure Vacuum Breaker Assembly with Check Valves (Type III Backflow Protection)
715-T	Double Check Valve Assembly (Type IV Backflow Protection)
716-T1	Double Check Valve Assembly A.C. Pipe Service (Type IV, Backflow Protection)
717-T	Pressure Relief Valve Installed with Quick Coupling Valve

17

718-T Connection Detail for New Asbestos Cement Water Mains
 719-T Connection Detail for Existing Water Mains
 720-T Concrete Thrust Blocks for Cast Iron Fittings
 721-T Concrete Thrust Blocks Bearing Areas

4
Traffic Signals and Safety Lighting

For general information on traffic standards used by the County Engineer,
 refer to the following Department of Transportation (State of California)
 "Division of Highways" Standard Plans:

ES-1A	Traffic	Signal	&	Highway	Lighting	Installations
ES-1B	"	"	"	"	"	"
ES-2A-10	"	"	"	"	"	"
ES-2B-6	"	"	"	"	"	"
ES-3A-6	"	"	"	"	"	"
ES-3B-18	"	"	"	"	"	"
ES-3C	"	"	"	"	"	"
ES-6B-2	"	"	"	Lighting	Standards	"
ES-6C-2	"	"	"	"	"	"

9

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER	H. M. Taylor	11/10/72

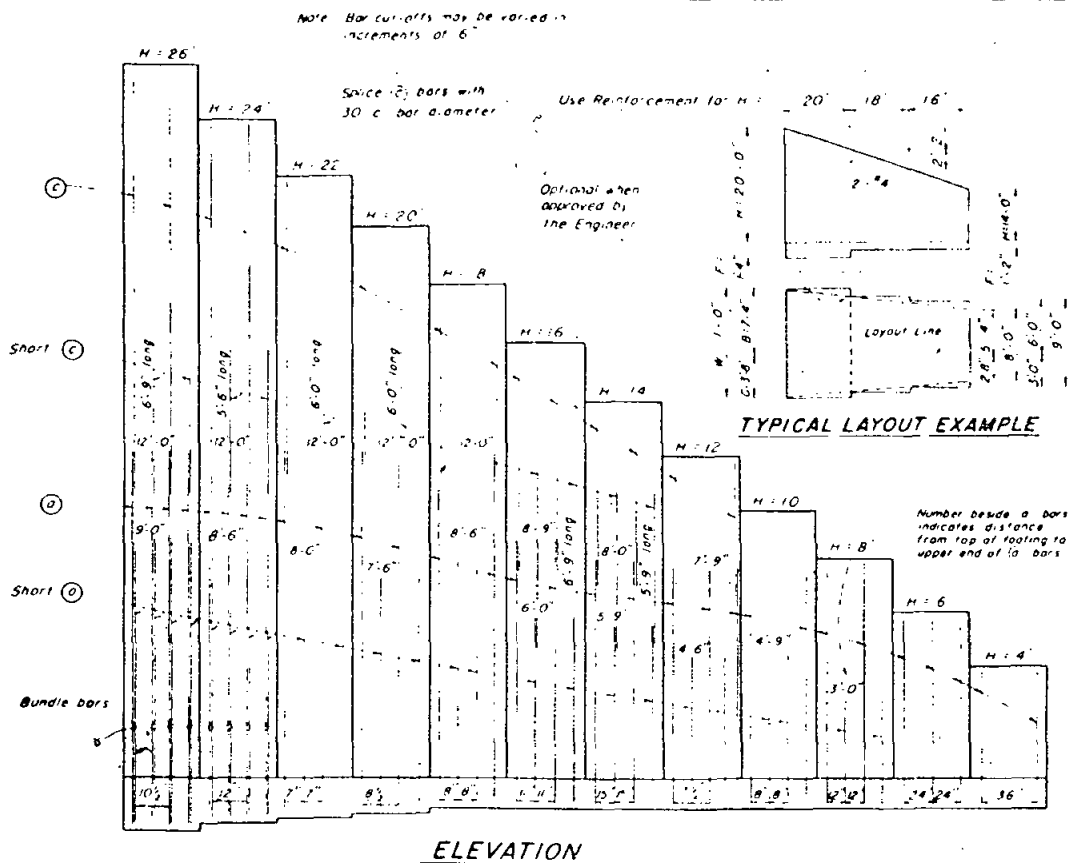
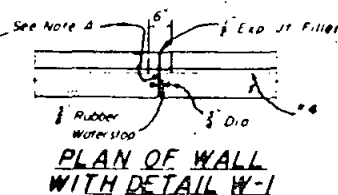
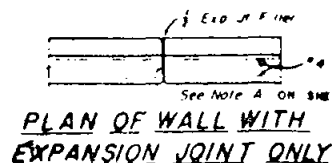
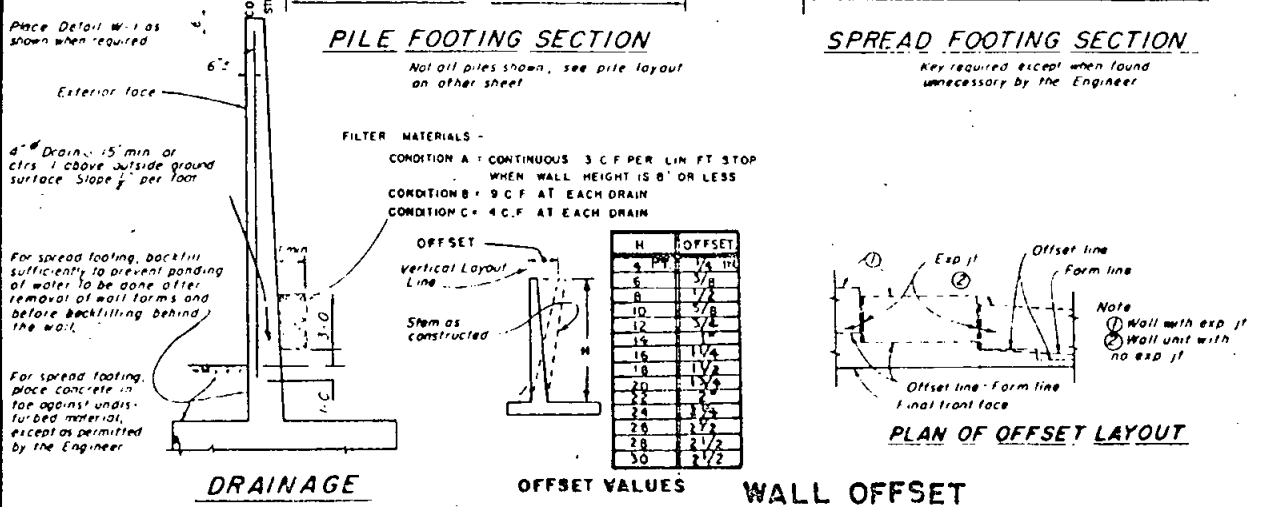
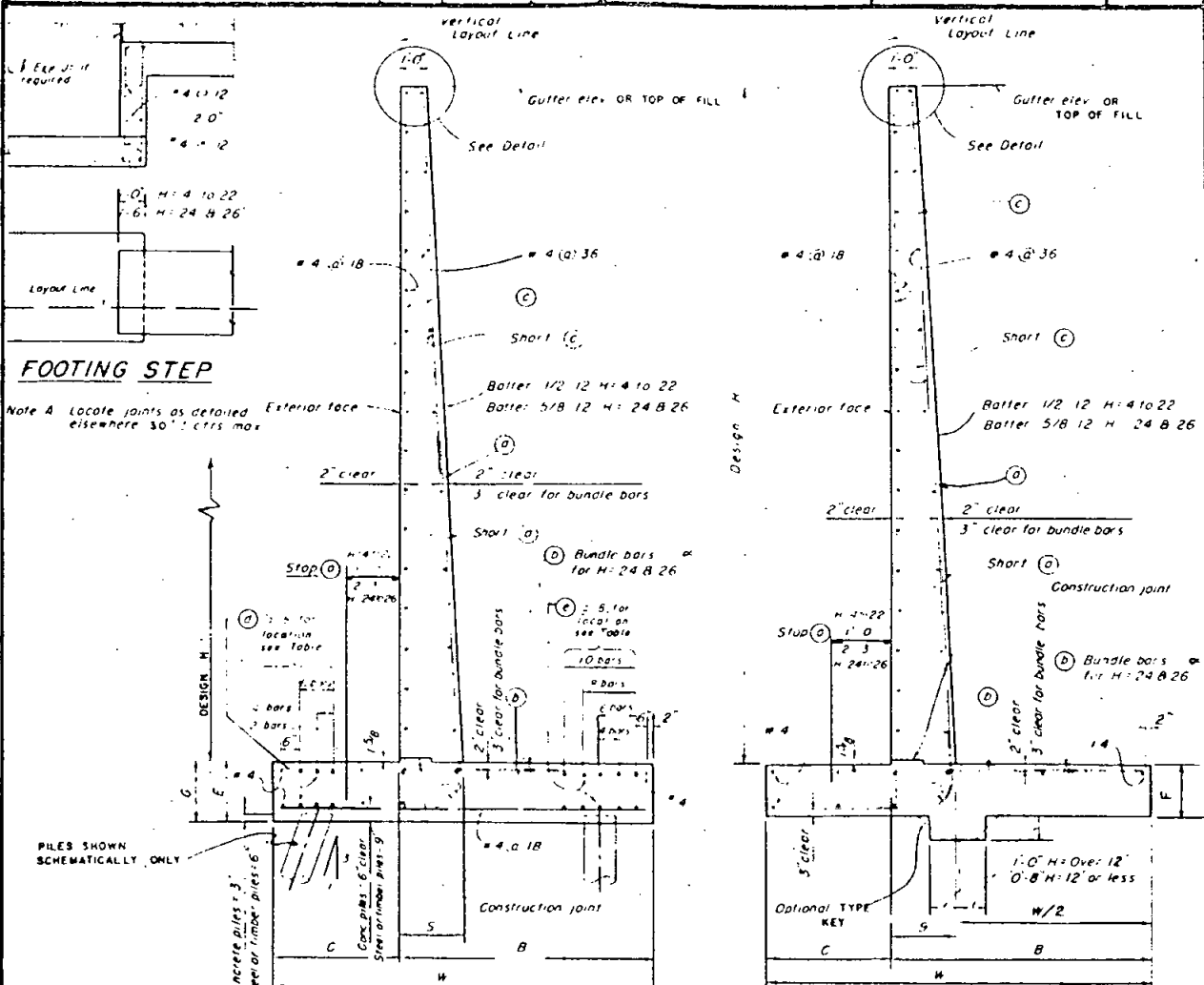


TABLE OF REINFORCING STEEL DIMENSIONS AND DATA												
H	26'	24'	22'	20'	18'	16'	14'	12'	10'	8'	6'	4'
W	14'-3"	13'-3"	12'-0"	11'-0"	10'-0"	9'-0"	8'-0"	7'-2"	6'-2"	5'-2"	4'-2"	3'-2"
C	4'-9"	4'-5"	4'-0"	3'-8"	3'-4"	3'-0"	2'-8"	2'-4"	2'-0"	1'-8"	1'-4"	1'-0"
B	9'-6"	8'-10"	8'-0"	7'-4"	6'-8"	6'-0"	5'-4"	4'-10"	4'-2"	3'-6"	2'-10"	2'-2"
F Spread Ftg.	1'-10"	1'-8"	1'-6"	1'-4"	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"
E Concrete Pile	2'-1"	1'-11"	1'-9"	1'-7"	1'-5"	1'-5"	1'-5"	1'-5"	1'-5"	1'-5"	1'-5"	1'-5"
G Steel or Timber												
Pile	2'-4"	2'-2"	2'-0"	1'-10"	1'-8"	1'-8"	1'-8"	1'-8"	1'-8"	1'-8"	1'-8"	1'-8"
S	2'-4"	2'-3"	1'-11"	1'-10"	1'-9"	1'-8"	1'-7"	1'-6"	1'-5"	1'-4"	1'-3"	1'-2"
① bars	8 @ 10"	8 @ 12"	7 @ 14"	7 @ 17"	6 @ 24"	5 @ 31"	5 @ 38"	5 @ 45"	5 @ 52"	5 @ 60"	5 @ 68"	5 @ 76"
② bars	11 @ 10"	11 @ 12"	11 @ 14"	11 @ 17"	10 @ 24"	9 @ 31"	9 @ 38"	9 @ 45"	9 @ 52"	9 @ 60"	9 @ 68"	9 @ 76"
③ bars	10 @ 10"	10 @ 12"	10 @ 14"	10 @ 17"	9 @ 24"	8 @ 31"	8 @ 38"	8 @ 45"	8 @ 52"	8 @ 60"	8 @ 68"	8 @ 76"
④ bars, number, size	2 #7	2 #7	4 #7	4 #7	4 #7	4 #7	4 #7	4 #7	4 #7	4 #7	4 #7	4 #7
⑤ bars, number, size	4 #7	4 #7	8 #7	8 #7	8 #7	8 #7	10 #7	10 #7	10 #7	10 #7	10 #7	10 #7
Toe Pressure P.S.F.	5040	4640	4480	4000	3590	3290	2980	2640	2270	1930	1570	1240
Spread Conc. C/P II	718	631	521	450	385	338	295	264	202	163	126	89
Footing Steel Wt./ft.	393	328	309	233	177	123	90	56	47	28	20	14
Conc. Conc. C/P II	73.4	64.4	53.1	45.8	39.0	34.1	29.5	25.2	20.8	16.7	12.8	8.8
Pile ftg. Steel Wt./ft.	413	348	339	262	205	60	126	92	82	39	31	24



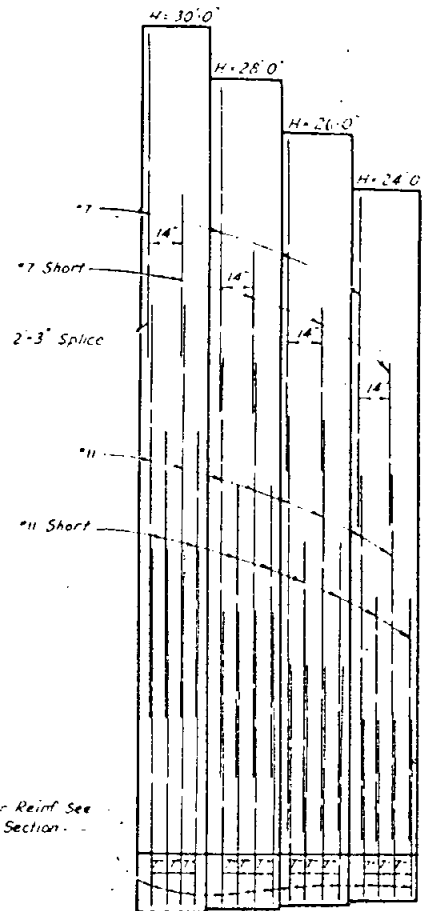
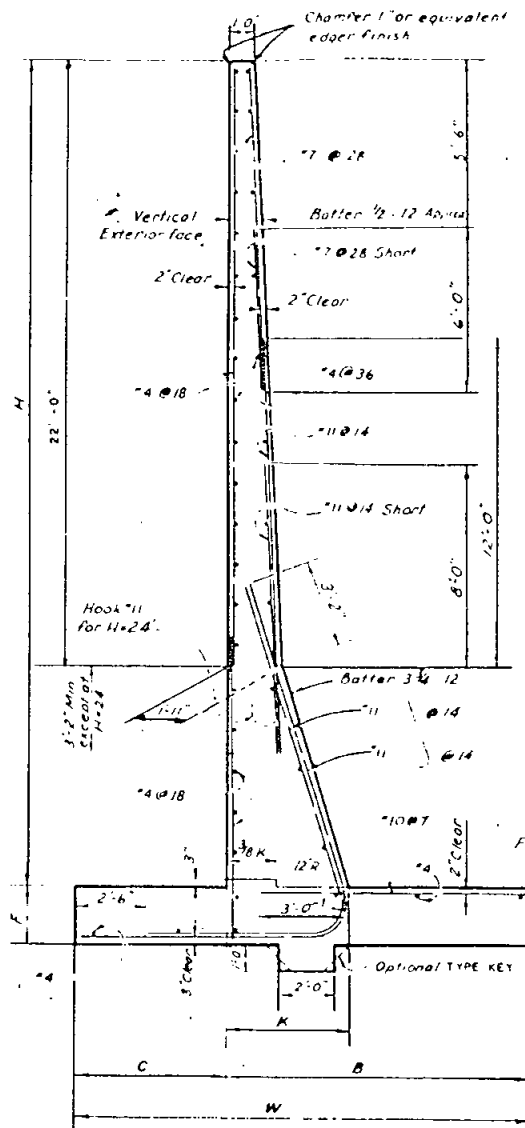
SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE NONE DRAWING NO. C-42
	CANTILEVER	RETAINING WALL	
	TYPE 1A ELEVATION		
	SEE SHEET C-52 FOR GENERAL NOTES		
	SEE DWG. NO. C-43 FOR SECTIONS		

REVISIONS				APPROVALS	
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER	



SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE NONE
	CANTILEVER RETAINING WALL		
	TYPE IA SECTIONS		
	SEE DWG. NO. C-42 FOR ELEVATION		
	SEE DWG. C-52 FOR GENERAL NOTES		DRAWING NO.
			C-43

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					H.M. Fay Jr.	11/10/72

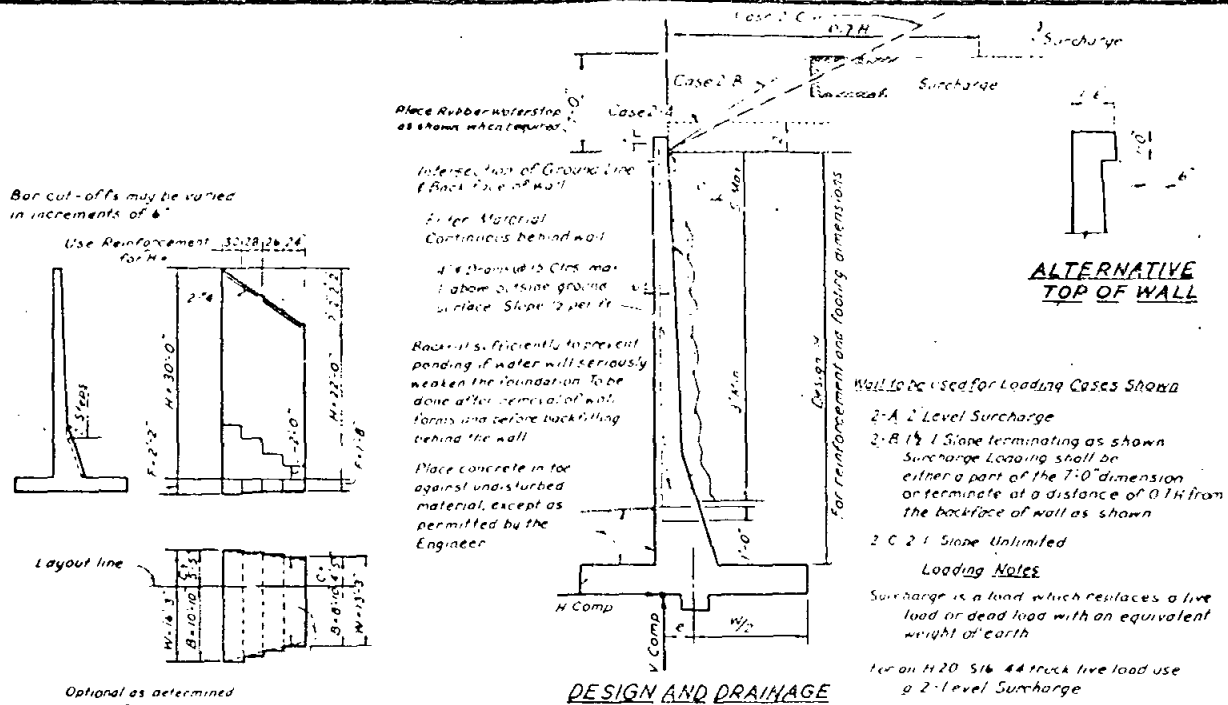


ELEVATION

TABLE OF DATA AND REINFORCEMENT				
H	30'	28'	26'	24'
W	16'-3"	15'-3"	14'-3"	13'-3"
C	5'-5"	5'-1"	4'-9"	4'-5"
B	10'-10"	10'-2"	9'-6"	8'-10"
F	2'-2"	2'-0"	1'-10"	1'-8"
K	4'-5"	3'-9"	3'-2"	2'-6"
Conc CF/ft	947	817	704	607
Reinf Lbs/ft	444	408	379	348
Total Pcs	3790	5440	5040	4650
H Comp lbs	20700	18360	15950	13730
V Comp lbs	48330	42440	36870	31730
c ft	236	243	225	208

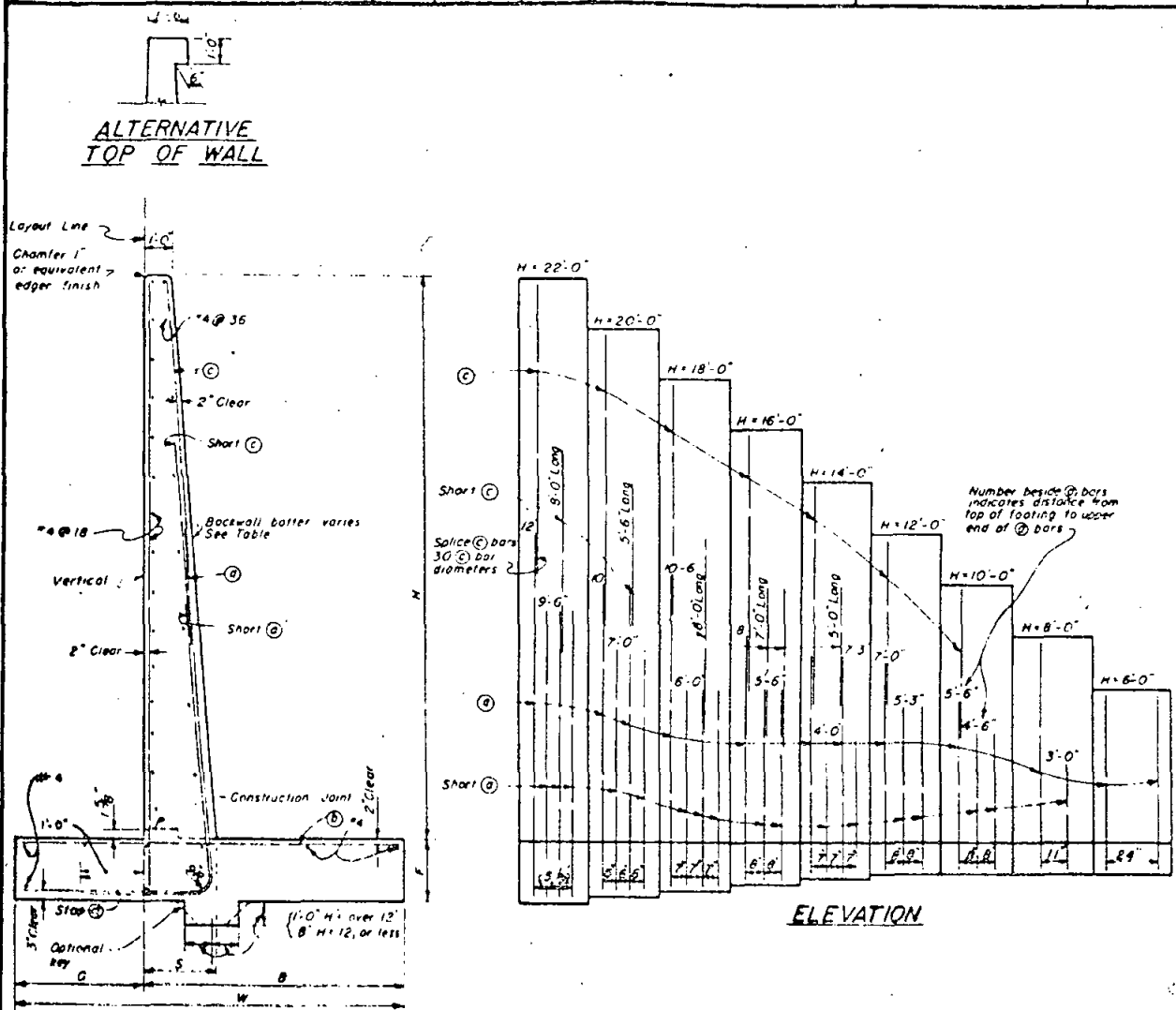
SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE NONE
	CANTILEVER RETAINING WALL		DRAWING NO. C-44
	TYPE 2 ELEVATION & SECTION		
	SEE DWG. NO. C-45	FOR CONSTRUCTION DETAILS	
	SEE SHEET C-52	FOR GENERAL NOTES	

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER	H. H. Taylor	W. H. Taylor



SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE NONE
	CANTILEVER RETAINING WALL	TYPE 2 CONSTRUCTION DETAILS	DRAWING NO.
	SEE DWG. NO. C-44 FOR ELEVATION & SECTION		C-45
	SEE SHEET C-52 FOR GENERAL NOTES		

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. H. Taylor</i>	<i>W. H. H. Taylor</i>

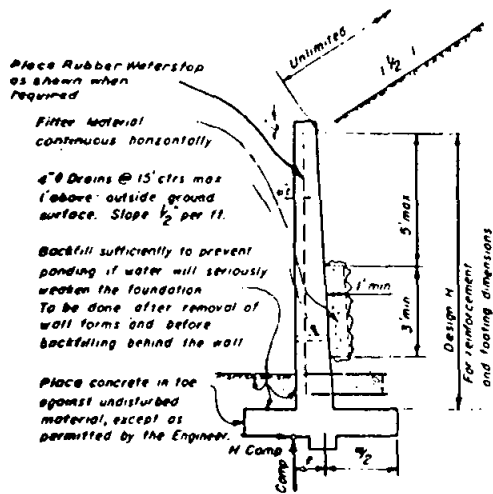


SECTION

TABLE OF REINFORCING STEEL DIMENSIONS AND DATA										
H	22	20	18	16	14	12	10	8	6	
W	14'-10"	13'-0"	11'-4"	10'-1"	8'-10"	7'-7"	6'-6"	5'-1"	3'-10"	
C	5'-8"	4'-8"	3'-10"	3'-5"	3'-0"	2'-7"	2'-2"	1'-9"	1'-4"	
R	9'-2"	8'-4"	7'-6"	6'-8"	5'-10"	5'-0"	4'-2"	3'-4"	2'-6"	
F	2'-4"	2'-1"	1'-10"	1'-7"	1'-4"	1'-2"	1'-2"	1'-2"	1'-2"	
S	2'-7 1/4"	2'-3"	1'-11 1/4"	1'-6"	1'-7"	1'-6"	1'-5"	1'-8"	1'-3"	
BW Batts	2'-12"	3'-12"	5'-12"	7'-12"	7'-12"	7'-12"	7'-12"	7'-12"	7'-12"	
C Bars	8 @ 11"	8 @ 12"	8 @ 14"	6 @ 8"	6 @ 14"	5 @ 24"	5 @ 24"	5 @ 24"	5 @ 24"	
D Bars	11 @ 5 1/2"	11 @ 6"	11 @ 7"	11 @ 8"	9 @ 7"	8 @ 8"	6 @ 8"	5 @ 11"	5 @ 24"	
E Bars	11 @ 5 1/2"	11 @ 6"	11 @ 7"	11 @ 8"	9 @ 7"	8 @ 8"	6 @ 8"	5 @ 11"	5 @ 24"	
Conc. C/L	76.3	64.6	49.2	39.3	34.9	24.8	20.4	16.2	12.2	
Steel Wt./ft.	43.4	34.9	27.3	21.1	13.9	9.4	5.4	3.2	2.1	
Toe Area	8580	6970	6390	5660	4970	4150	3370	2880	2330	
H Comp. St.	37400	30600	24257	18900	14450	10470	7360	4970	2780	
V Comp. St.	58780	48450	38390	29910	23030	16790	11900	7870	4670	
f	1.84	1.87	1.78	1.55	1.33	1.10	.94	.77	.59	
Coefficient of friction = 0.63										

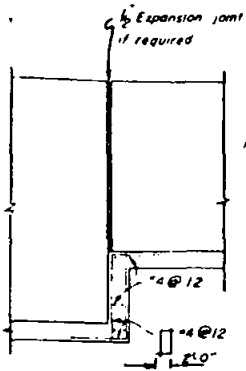
SPECIFICATION REFERENCE		COUNTY OF SAN DIEGO		STANDARD DRAWING		SCALE NONE	
		CANTILEVER RETAINING WALL		TYPE 3 ELEVATION & SECTION		DRAWING NO.	
		SEE DWG. NO. C-47		FOR CONSTRUCTION DETAILS		C-46	
		SEE SHEET C-52		FOR GENERAL NOTES			

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. M. Taylor</i>	<i>10/21/72</i>

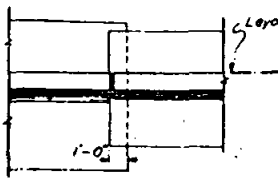


DESIGN AND DRAINAGE

Wall to be used for 1 1/2:1
Unlimited Sloping Surcharge



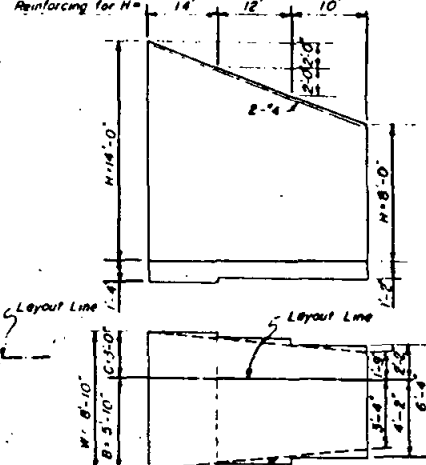
ELEVATION



PLAN

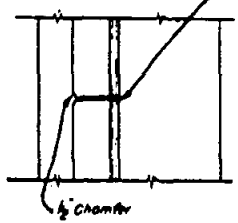
FOOTING STEPS

Note Bar cut-offs may be varied in increments of 6\"/>



TYPICAL LAYOUT EXAMPLE

1/2 Expansion joint, fill with
preformed expansion joint
filter joint to extend thru-
out height of wall only. Locate
joints at 40'± cts MAX.
OR AS SHOWN ON APPROVED PLANS.



PLAN OF EXPANSION JOINT

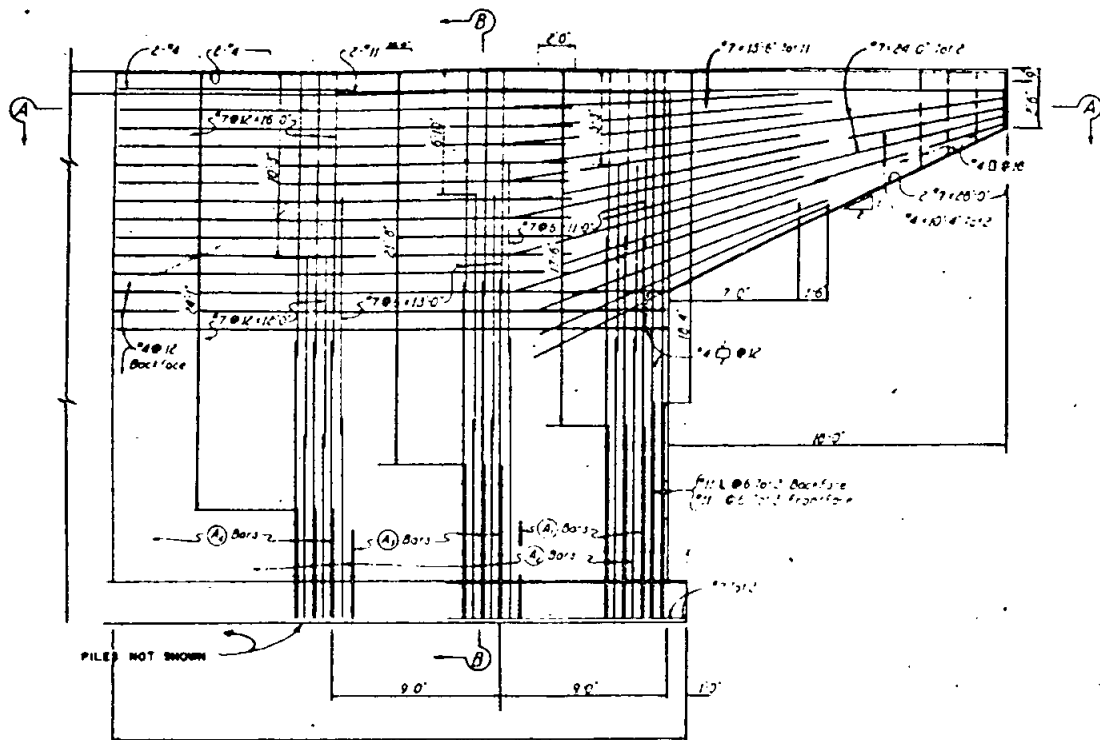


DETAIL W-1 RUBBER WATERSTOP

Use only when watertight
joint is required

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE NONE
	CANTILEVER RETAINING WALL TYPE 3 CONSTRUCTION DETAILS		DRAWING NO.
	SEE DWG. NO. C-46 FOR ELEVATION & SECTIONS		C-47
	SEE SHEET C-52 FOR GENERAL NOTES		

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. J. Taylor</i>	<i>W. L. Lee</i>



ELEVATION

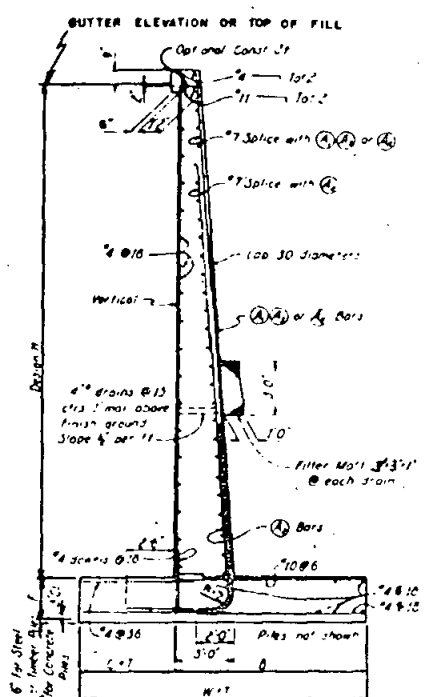
Note:
All bars to be lapped
20 diameters except as noted



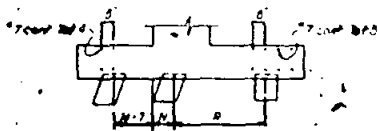
SECTION A-A

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE NONE
	WING WALL DETAILS FOR		DRAWING NO.
	CANTILEVER WALLS - ELEVATION		
	SEE DWG. NO. C-49 FOR SECTIONS		
	SEE SHEET C-52 FOR GENERAL NOTES		C-48

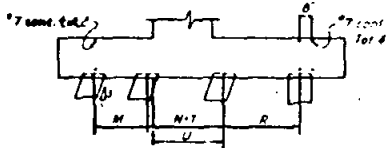
REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER	H. M. Taylor	Walter



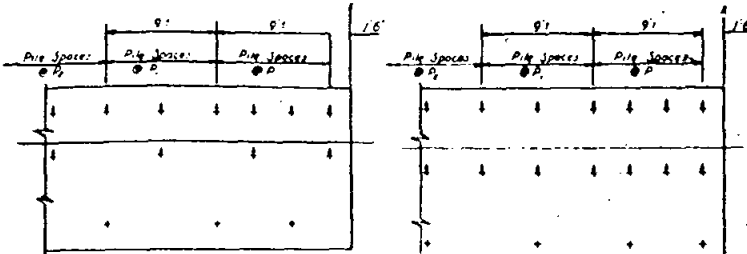
SECTION B-B



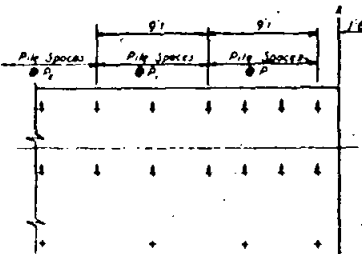
TYPICAL FOR PLANS A & B



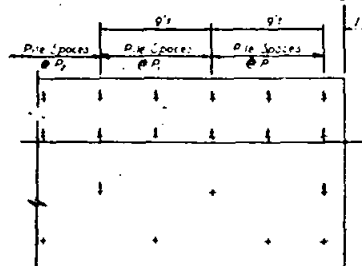
TYPICAL FOR PLAN C



PLAN A



PLAN B



PLAN C

	20	22	24	26	28
H	20	22	24	26	28
W	10'0"	12'0"	13'5"	14'5"	15'5"
B	7'0"	8'0"	8'10"	9'6"	10'2"
C	3'6"	4'0"	4'5"	4'9"	5'3"
F	1'10"	2'0"	2'5"	2'5"	2'5"
M	2'0"	2'2"	3'0"	3'6"	4'0"
U			3'0"	4'2"	4'1"
N	1'0"	1'0"	3'6"	3'9"	3'8"
R	4'6"	4'11"	5'8"	5'7"	5'9"
Wall Batter	1/4" R	1/4" R	1/4" R	1/4" R	1/4" R
A ₁ Bars	1"11@12	2"11@12 bundle	2"11@12 bundle	2"11@12 bundle	2"11@12 bundle
A ₂ Bars	1"11@12	1"11@12	1"11@12	1"11@12	1"11@12
A ₃ Bars	1"11@12	1"11@12	1"11@12	2"11@12 bundle	2"11@12 bundle
A ₄ Bars	1"11@12	1"11@12	1"11@12	1"11@12	2"11@12 bundle
Pile Load kips	64	90	64	90	64
P ₁ max	3'0"	4'9"	3'0"	4'3"	3'0"
P ₂ max	3'9"	3'5"	3'6"	4'1"	4'3"
P ₃ max	4'5"	6'0"	4'10"	6'0"	4'3"
F	0	0	6"	0	0
Plan	A	A	B	C	C

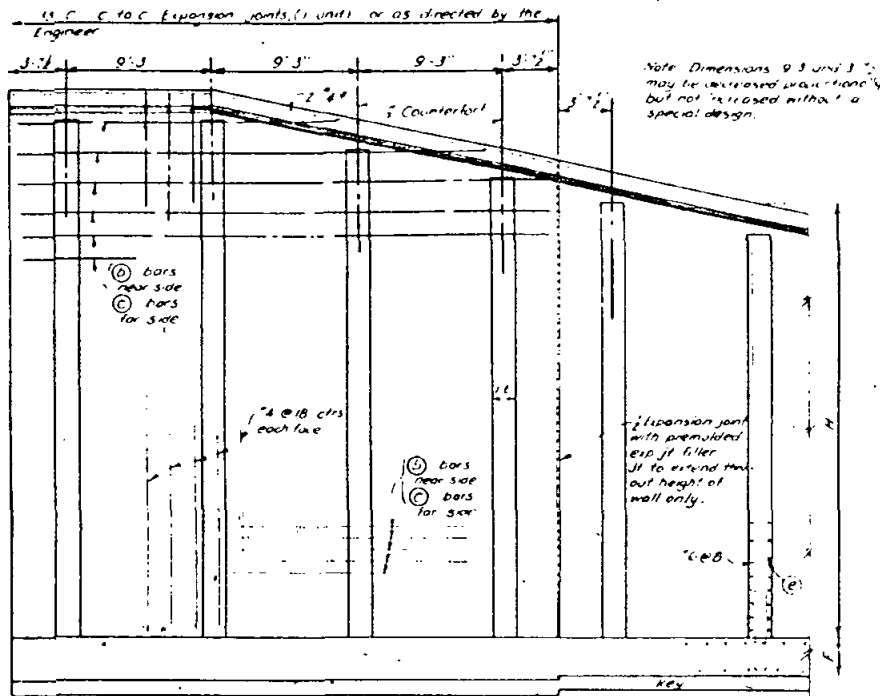
SHEETS C-46 AND C-48 ARE FOR DESIGN REFERENCE ONLY. ALL WING WALL DETAILS AND INTERPRETATIONS THEREOF SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER.

SPECIFICATION REFERENCE

COUNTY OF SAN DIEGO STANDARD DRAWING
 WING WALL DETAILS FOR
 CANTILEVER WALLS - SECTIONS
 SEE DWG. NO. C-48 FOR ELEVATION
 SEE SHEET C-52 FOR GENERAL NOTES

SCALE NONE
 DRAWING NO.
C-49

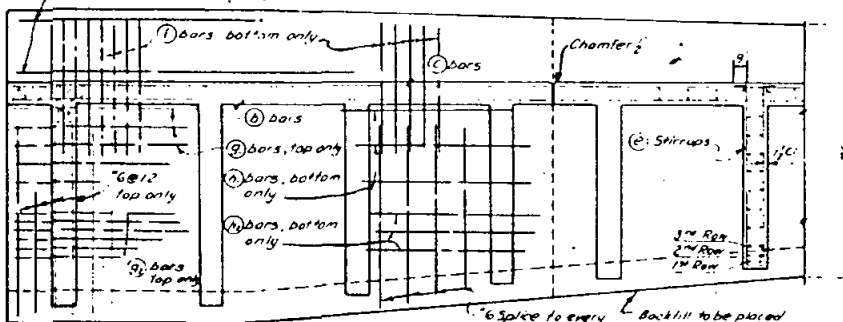
REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. H. Taylor</i>	<i>11/10/77</i>



Top of wall	(b)	(c)	(d)
2'	24	24	24
4'	24	24	24
6'	24	24	24
8'	18	24	24
10'	18	24	24
12'	15	18	18
14'	15	18	18
16'	12	18	18
18'	12	15	15
20'	12	15	15
22'	9	15	12
24'	9	12	12
26'	7	12	9
28'	7	12	9
30'	7	12	9

Note: Use reinforcing in any unit as determined by maximum "N" in that unit. Use (b), (c), and (d) bars as determined by "N" of counterfort.

ELEVATION



PLAN

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE NONE
	COUNTERFORT RETAINING WALL		DRAWING NO.
	SEE DWG. NO. C-50 FOR SECTIONS & ELEVATION		
	SEE SHEET C-52 FOR GENERAL NOTES		
			C-51

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
NOTE CHANGES	J.E.B.	D. Kuchan	2/1/82		H.M. Taylor	11/16/82

GENERAL NOTES

DESIGN

A.A.S.H.O. LATEST REVISED EDITION,
FILED IN THE GOVERNMENT
REFERENCE LIBRARY NO. 625.7.

CONSTRUCTION

COUNTY OF SAN DIEGO STANDARD SPECIFICATIONS

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.

PASSIVE BEARING PRESSURE OF FOOTING
KEY SHALL NOT EXCEED ACTUAL TOE PRESSURE.

SPECIAL FOOTING DESIGN IS REQUIRED
WHERE FOUNDATION MATERIAL IS INCAPABLE
OF SUPPORTING TOE PRESSURE
LISTED IN TABLE.

DESIGN DATA

$F_c = 1200 \text{ psi}$; $F'_c = 3000 \text{ psi}$

$F_s = 20,000 \text{ psi}$ $n = 10$

Earth = 120 pcf and equivalent fluid
pressure = 36 psf per foot of height

WALLS SHOWN FOR $1\frac{1}{2}:1$ UNLIMITED
SLOPING SURCHARGE ARE DESIGNED IN
ACCORDANCE WITH RANKINE'S FORMULA
FOR UNLIMITED SLOPING SURCHARGE WITH
 $\phi = 33^\circ 42'$.

REINFORCEMENT

COUNTY OF SAN DIEGO STANDARD SPECIFICATIONS

INTERMEDIATE GRADE, HARD GRADE, OR
RAIL STEEL DEFORMATION SHALL CONFORM
TO ASTM 305.

BARs SHALL LAP 20 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.

REINFORCEMENT (Continued)

ALL BAR EMBEDMENTS ARE CLEAR DISTANCES
TO OUTSIDE OF BAR.

SPACING FOR PARALLEL BARS IS CENTER TO
CENTER OF BARS.

RUBBER WATERSTOP

RUBBER WATERSTOP, WHEN REQUIRED,
SHALL BE FURNISHED AND PLACED AS
SPECIFIED IN THE LATEST EDITION
OF THE STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
STANDARD SPECIFICATIONS.

CONCRETE

ALL CONCRETE SHALL BE CLASS "A"
P.C.C. CONFORMING TO THE COUNTY
OF SAN DIEGO STANDARD SPECIFICATIONS.

EXCAVATION AND BACKFILL

EXCAVATION AND BACKFILL SHALL
CONFORM TO THE COUNTY OF SAN
DIEGO STANDARD SPECIFICATIONS.

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 OTHER-
WISE COMPACTED UNTIL THE RELATIVE COM-
PACTION IS NOT LESS THAN 90 PERCENT.

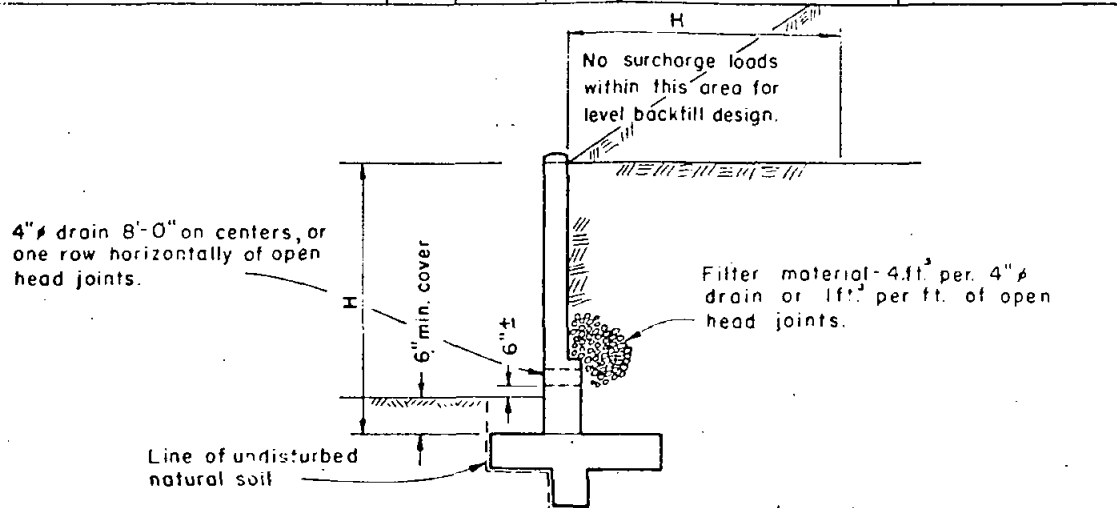
NO BACKFILL MATERIAL SHALL BE DEPOSITED
AGAINST CONCRETE RETAINING WALLS UNTIL
THE CONCRETE HAS DEVELOPED A STRENGTH
OF 2,500 POUNDS PER SQUARE INCH IN COM-
PRESSION.

SPECIAL COVERAGE

WHERE WALLS ARE CONSTRUCTED ADJACENT TO
SALT WATER, THICKNESS OF CONCRETE SHALL
BE INCREASED TO PROVIDE THREE-INCH
COVERAGE BETWEEN STEEL AND EXPOSED SUR-
FACES.

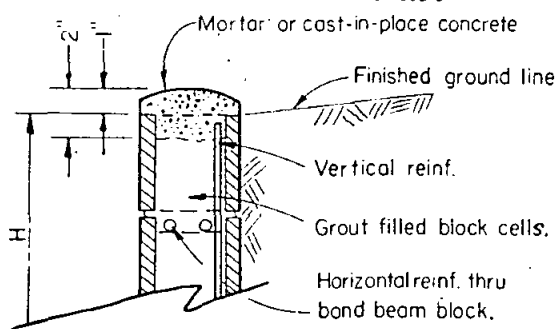
SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE
	GENERAL NOTES FOR RETAINING WALLS		DRAWING NO.
	SEE DWG. C-42 thru. C-51		C-52

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. M. Taylor</i>	<i>11/10/00</i>



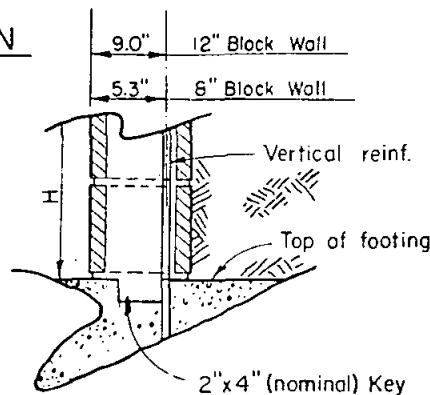
TYPICAL SECTION

no scale



CAP DETAIL

no scale



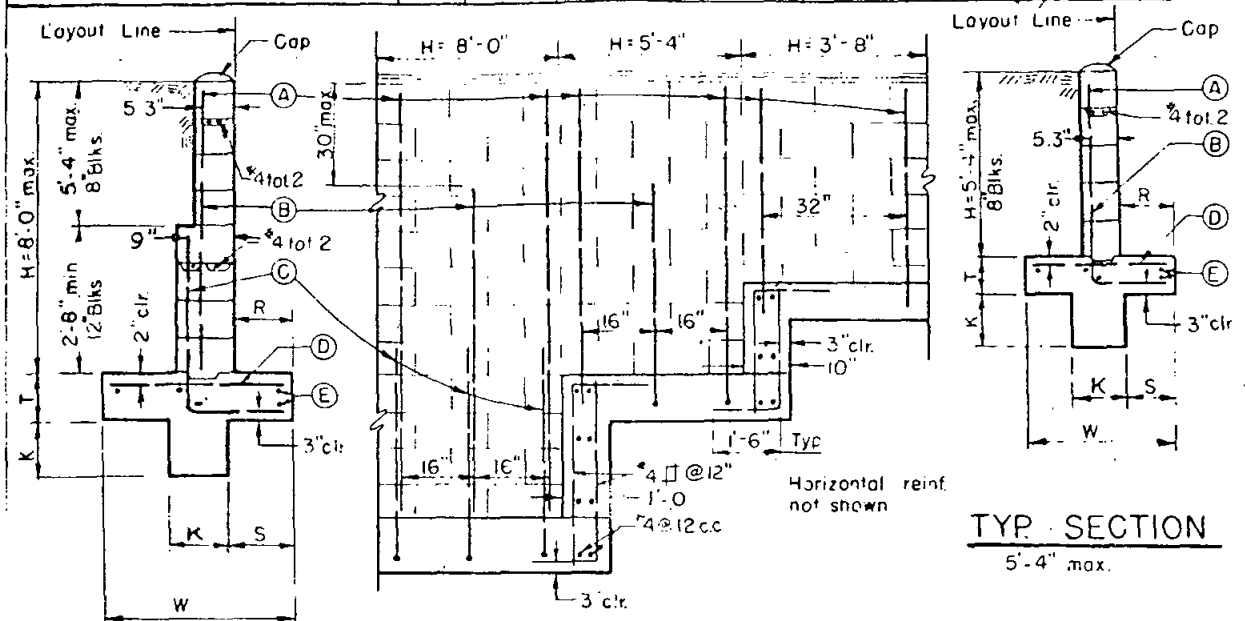
KEY DETAIL

no scale

NOTE: All masonry retaining walls shall be constructed with cap, key and drainage details as shown hereon.

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE NO SCALE
	CANTILEVERED MASONRY RETAINING WALL		DRAWING NO.
	MISCELLANEOUS DETAILS		C-53

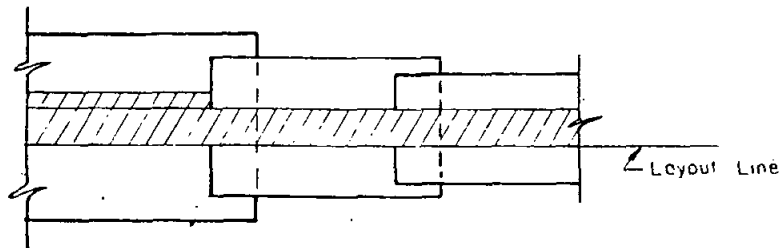
REVISIONS				APPROVALS		
DESCRIPTION	DATE	BY	CHKD	COUNTY ENGINEER	<i>H.M. Laguer</i>	<i>10/10/72</i>



TYP. SECTION
OVER 5'-4"

ELEVATION

TYP. SECTION
5'-4" max.



PLAN

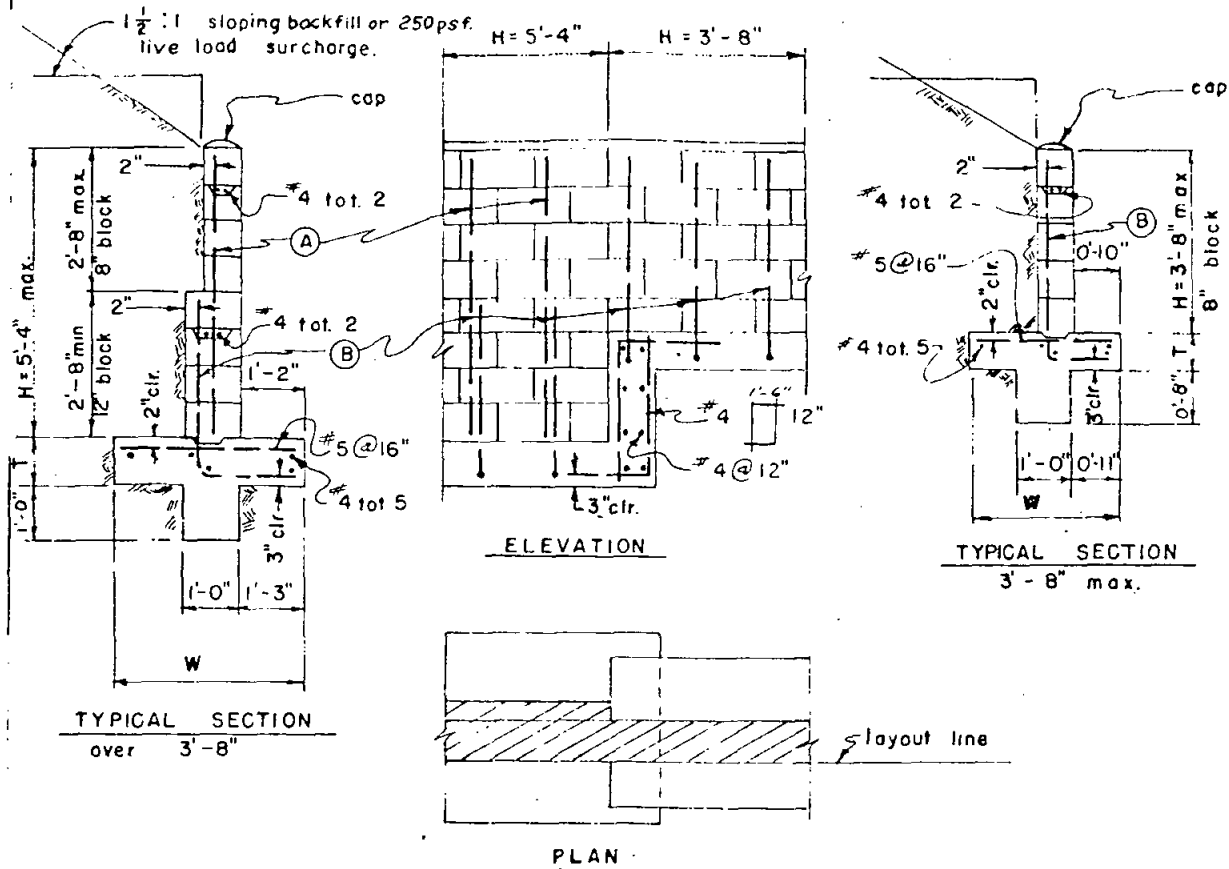
NOTES

1. Refer to Standard Drawing C-53 and C-57 for additional notes and details.
2. Fill all block cells with grout.

DIMENSIONS AND REINFORCING STEEL			
H (max)	3'-8"	5'-4"	8'-0"
T (min)	8"	10"	1'-0"
W (min)	2'-1"	3'-1"	4'-3"
R	9"	1'-2"	1'-5"
S	8 1/2"	1'-0 1/2"	1'-7 1/2"
K	8"	8"	12"
(A)	*4 @ 32 cc	*4 @ 32 cc	*4 @ 32 cc
(B)		*4 @ 32 cc	*4 @ 32 cc
(C)			*7 @ 16 cc
(D)	*4 @ 32 cc	*4 @ 16 cc	*4 @ 16 cc
(E)	*4 tot. 5	*4 tot. 5	*4 tot. 6
max soil press	774 psf	1030 psf	1660 psf

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	NONE
	CANTILEVERED MASONRY RETAINING WALL		SCALE
	TYPE CM-5		DRAWING NO.
	(LEVEL BACKFILL)		C-54

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. M. Taylor</i>	10/15/72



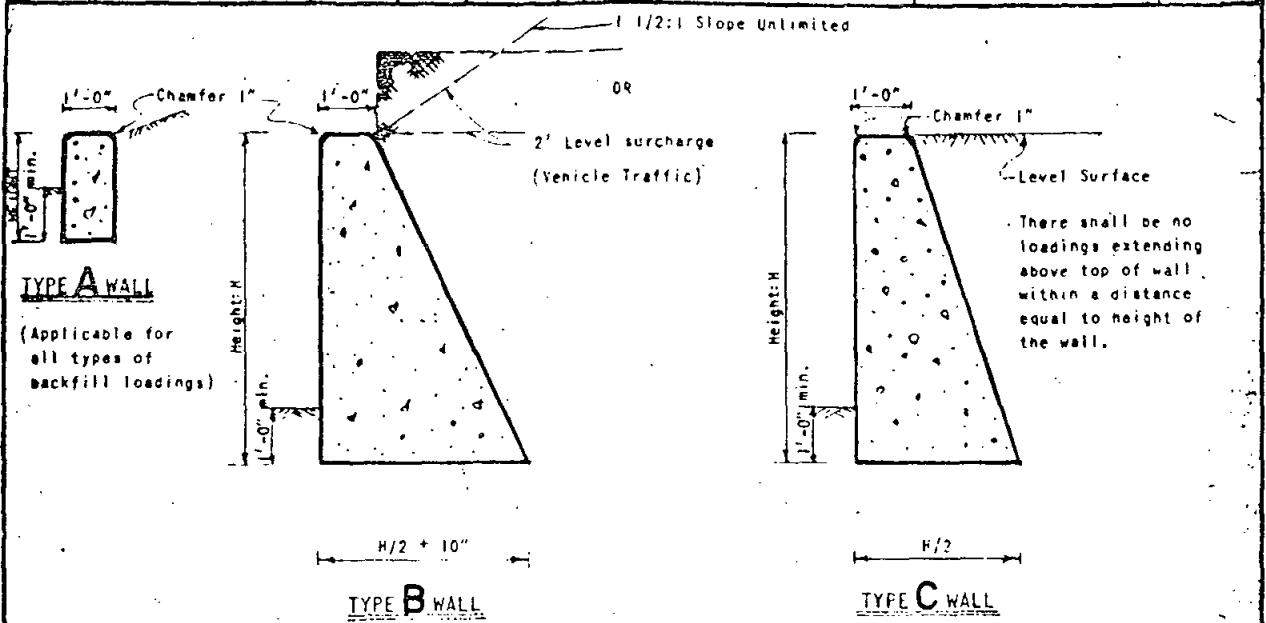
NOTE:

1. Refer to standard drawings C-53 and C-57 for additional notes and details.
2. Fill all cells with grout.

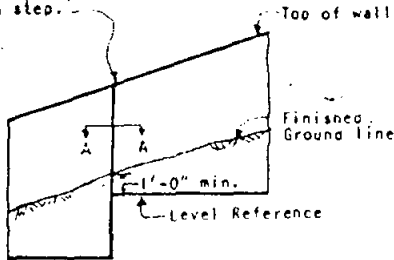
DIMENSIONS AND REINFORCING STEEL		
H max	5'-4"	3'-8"
T min	0'-10"	0'-8"
W min	3'-10"	2'-9"
(A) bars	#4 @ 16"	
(B) bars	#6 @ 16"	#4 @ 16"
MAX. TOE PRESS. P.S.F.	2000	1400

COUNTY OF SAN DIEGO	STANDARD DRAWING	NONE
CANTILEVERED MASONRY RETAINING WALL		
TYPE CM-6		
(Liveloal surcharge or sloping backfill)		
		C-55

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		

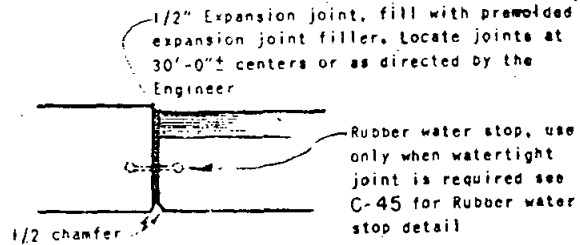


Expansion joint w 30'-0"± centers (max) and/or @ each step.



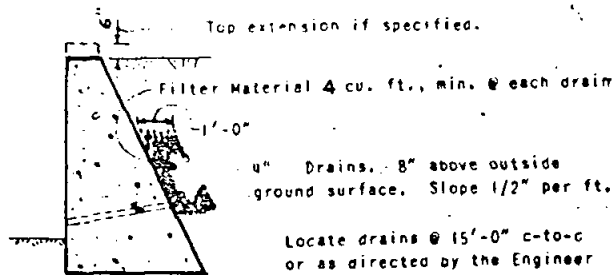
TYPICAL ELEVATION

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



SECTION A-A

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"	7.55
	5'-0"	3'-4"	10.82
	6'-0"	3'-10"	14.49
C	3'-0"	1'-6"	3.75
	4'-0"	2'-0"	6.00
	5'-0"	2'-6"	8.75
	6'-0"	3'-0"	12.00



TYPICAL DRAINAGE
WHEN H > 4'-0"

NOTE: Type A wall height may be exceeded by 3 inches before changing to Type B or Type C.

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO STANDARD DRAWING	SCALE NO SCALE
	GRAVITY RETAINING WALL	DRAWING NO.
	For General Notes see Drawing C-52 (Articles entitled "Design Conditions", "Reinforcement" and "Special Coverage" shall be voided.)	C-5

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
NOTE CHANGES	2.18.	<i>R. S. S. S.</i>	2/1/59		<i>H. M. Taylor</i>	11/20/59

GENERAL NOTES

DESIGN

A.A.S.H.O. Latest Revised Edition
Filed in the government reference library No.
625.7, and Uniform Building Code.

CONSTRUCTION

County of San Diego Standard Specifications

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 psi F_c=3000 psi
F_s=20,000 psi n=10

REINFORCED MASONRY:
F_m=600 psi F_m=200 psi
F_s=20,000 psi n=50
Earth=120 pcf and equivalent fluid
pressure=36 psf per foot of height
Walls shown for 1:1 unlimited sloping sur-
charge are designed in accordance with
Rankine's formula for unlimited sloping sur-
charge with $\phi = 33^{\circ}42'$

REINFORCEMENT

County of San Diego Standard Specifications

Intermediate grade, hard grade, or rail
steel deformation shall conform to ASTM 305.

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 out-
side of bar.

Spacing for parallel bars is center to center
of bars.

CONCRETE

All concrete shall be class "A" P.C.C. conforming
to the County of San Diego Standard Specifications.

MASONRY

All reinforced masonry retaining wall shall be
constructed of regular or light weight standard
grade "A" units conforming to ASTM designation
C-90-52 and manufactured in accordance with
requirements of the Concrete Masonry Association
Specifications. All masonry shall conform to the
regulations of the Uniform Building Code.

MASONRY MORTAR

The mortar shall consist of one (1) part portland
cement to three (3) parts graded mortar sand.
Mortar shall be tempered with lime putty in an
amount not exceeding twenty-five (25) per cent of
the volume of the cement.

MASONRY MORTAR (con't.)

Mortar in horizontal joints shall fully cover
all face shell and web members. Vertical
joints shall be buttered to a depth greater
than the thickness of the face shells of the block.
Furrowing of mortar will not be permitted.

GROUT

The grout shall consist of one (1) part port-
land cement to three (3) parts clean sand for
voids less than four inches. If desired,
Grout to be used in voids of 4" or greater
dimensions, may be mixed of one (1) part port-
land cement to two (2) parts clean sand to two
(2) parts pea gravel. Per gravel shall be
graded such that 100 per cent passes 3/8" sieve
and not more than 5 per cent passes the No. 8
sieve. All cells shall be poured solid with
grout.

EXCAVATION AND BACKFILL

Excavation and backfill shall conform to
the County of San Diego Standard Specifications.

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 per cent.

No backfill material shall be deposited against
masonry retaining walls until the grout has
developed a strength of 2,000 pounds per square
inch in compression.

OPTIONAL DESIGNS

The wall shown here is not necessarily the
most economical solution. It is an accept-
able solution for the conditions shown on the
drawings. The individual may consult a lic-
ensed engineer for more economical solutions
for a particular condition.

OPTIONAL MORTAR KEY

Embedment of the first course of block in
a poured footing may be omitted by pro-
viding a mortar key. The key is formed by
embedding a flat 2" x 4" flush with the top
of the freshly poured footing. Remove the
2" x 4" after the concrete has started to
harden.

OPTIONAL WALL DRAINS

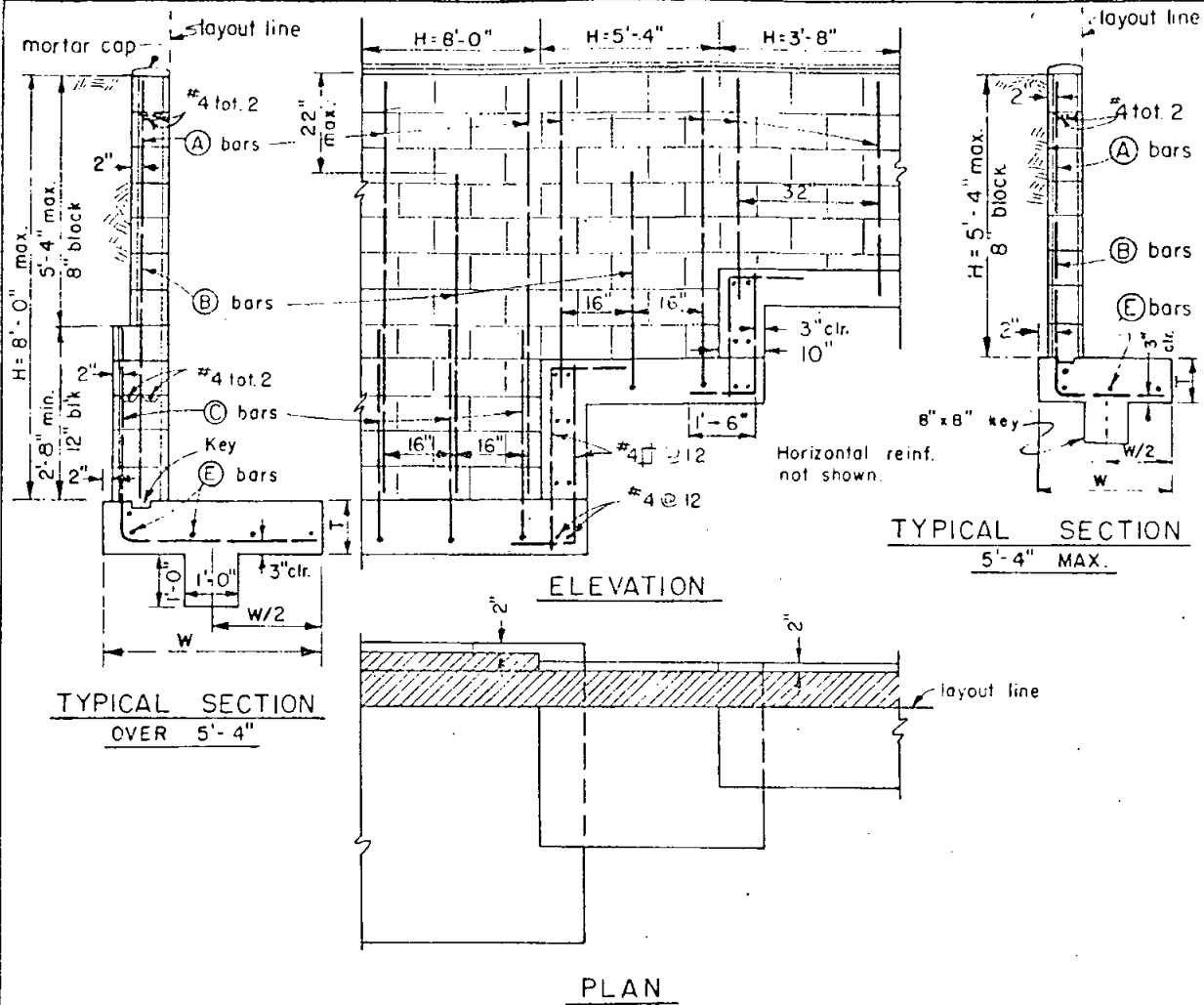
Where the steel spacing is greater than 24"
center to center, wall drains may be formed
by placing a block on its side. However all
cells below and above the said block shall be
grouted solid.

FILTER MATERIAL

See County of San Diego Standard
Specifications.

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE
	GENERAL NOTES FOR MASONRY RETAINING WALLS		DRAWING NO.
	SEE DWG. C-50 thru C-59		C-57

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. M. Long</i>	<i>11/18/82</i>



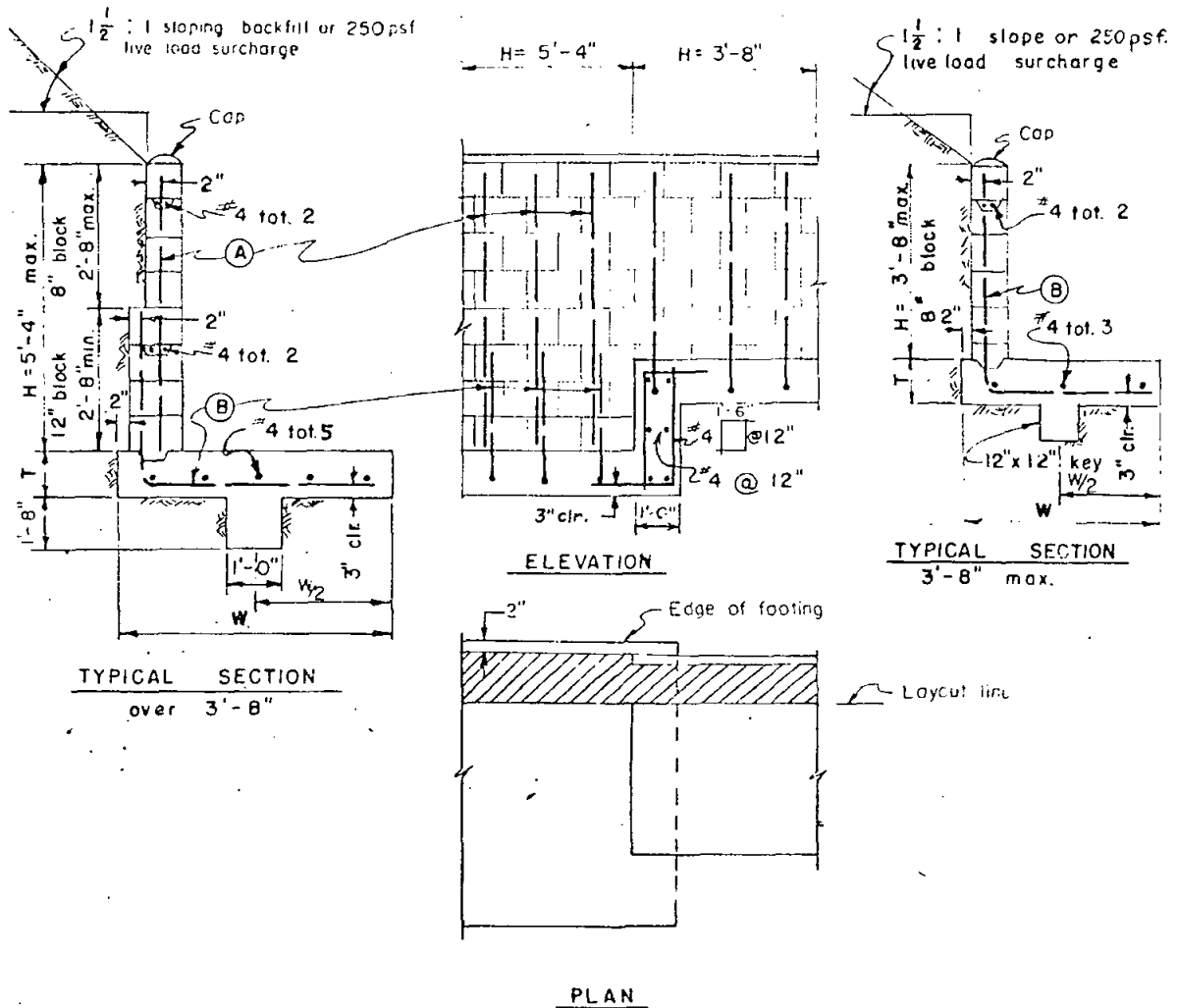
NOTES:

1. Refer to standard drawings C-53 and C-57 for additional notes and details.
2. Fill all block cells with grout.

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

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE NONE DRAWING NO. C-58
	CANTILEVERED MASONRY RETAINING WALL		
	TYPE LM-I		
	(LEVEL BACKFILL)		

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. H. Taylor</i>	<i>10/1/72</i>



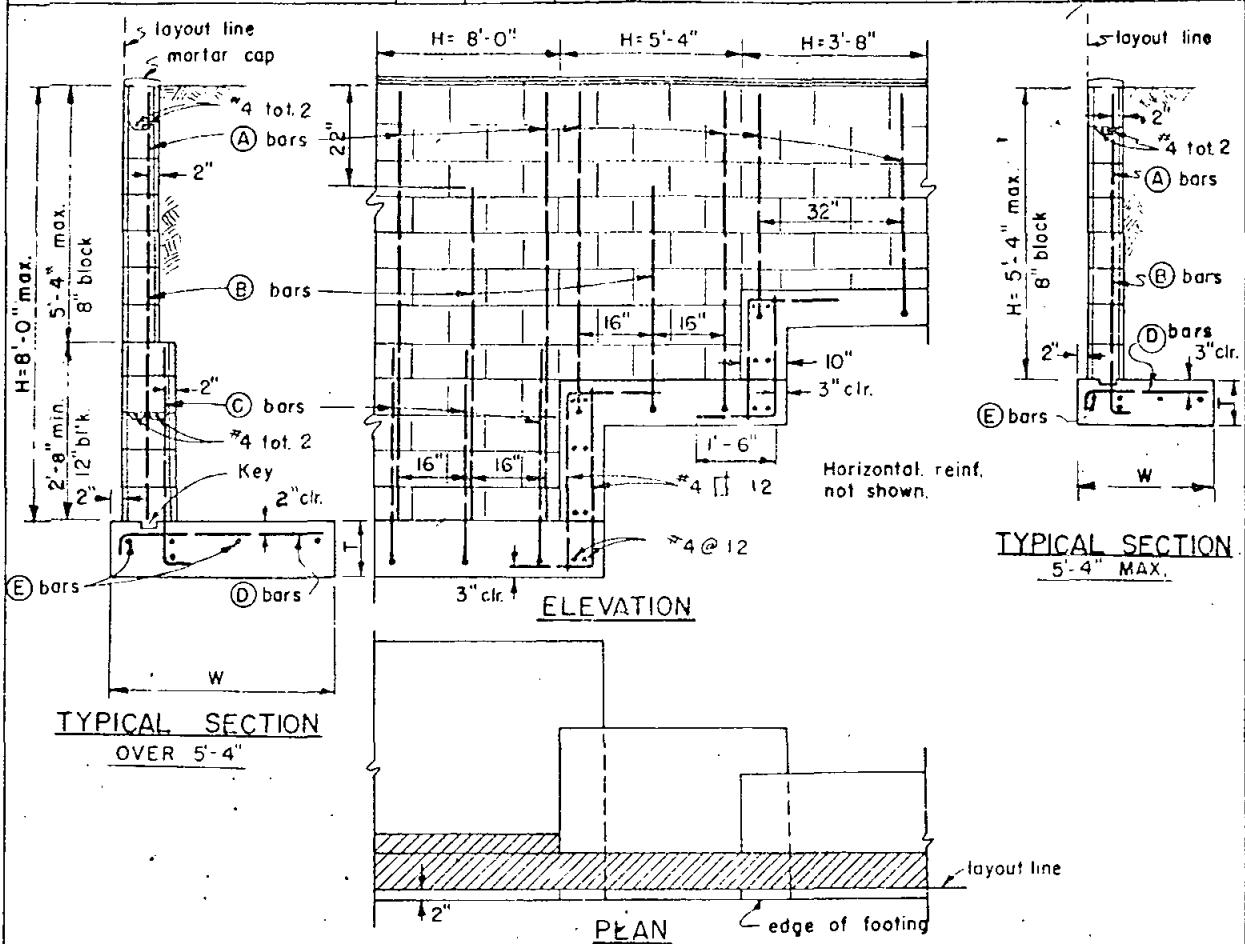
NOTE:

1. Refer to standard drawings C-53 and C-57 for additional notes and detail.
2. Fill all 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. P.S.F.	700	550

CANTILEVERED MASONRY RETAINING WALL	COUNTY OF SAN DIEGO	STANDARD DRAWING	NONE
	TYPE LM-2	(Live load surcharge or sloping backfill)	SCALE DRAWING NO. C-59

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. Taylor</i>	<i>W. J. ...</i>



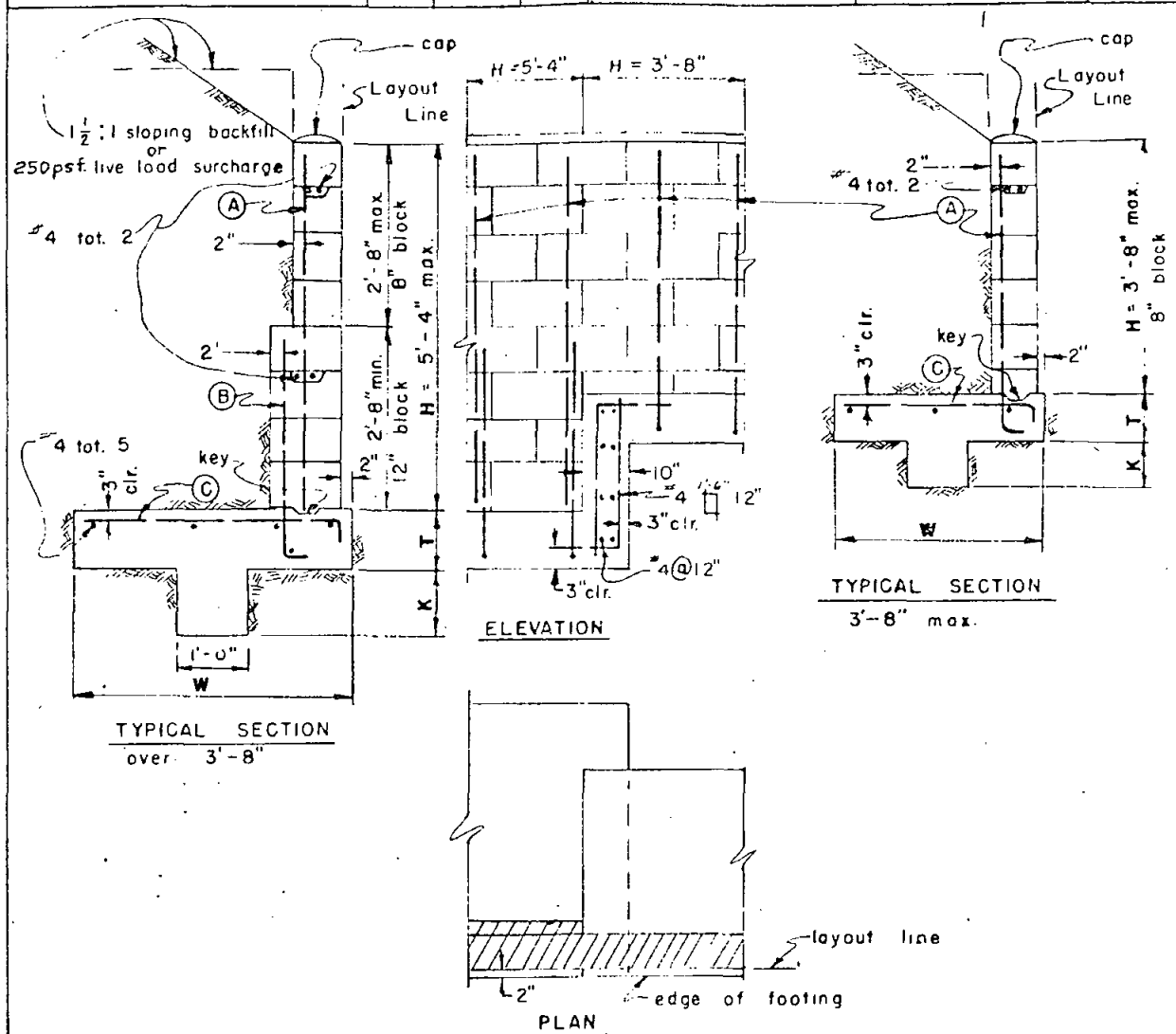
NOTES:

1. Refer to standard drawings C-53 and C-57 for additional notes and details.
2. Fill all blockcells with grout.

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

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE NONE
	CANTILEVERED MASONRY RETAINING WALL		DRAWING NO.
	TYPE LM-3		C-60
	(LEVEL BACKFILL)		

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. M. Taylor</i>	<i>W. H. Taylor</i>



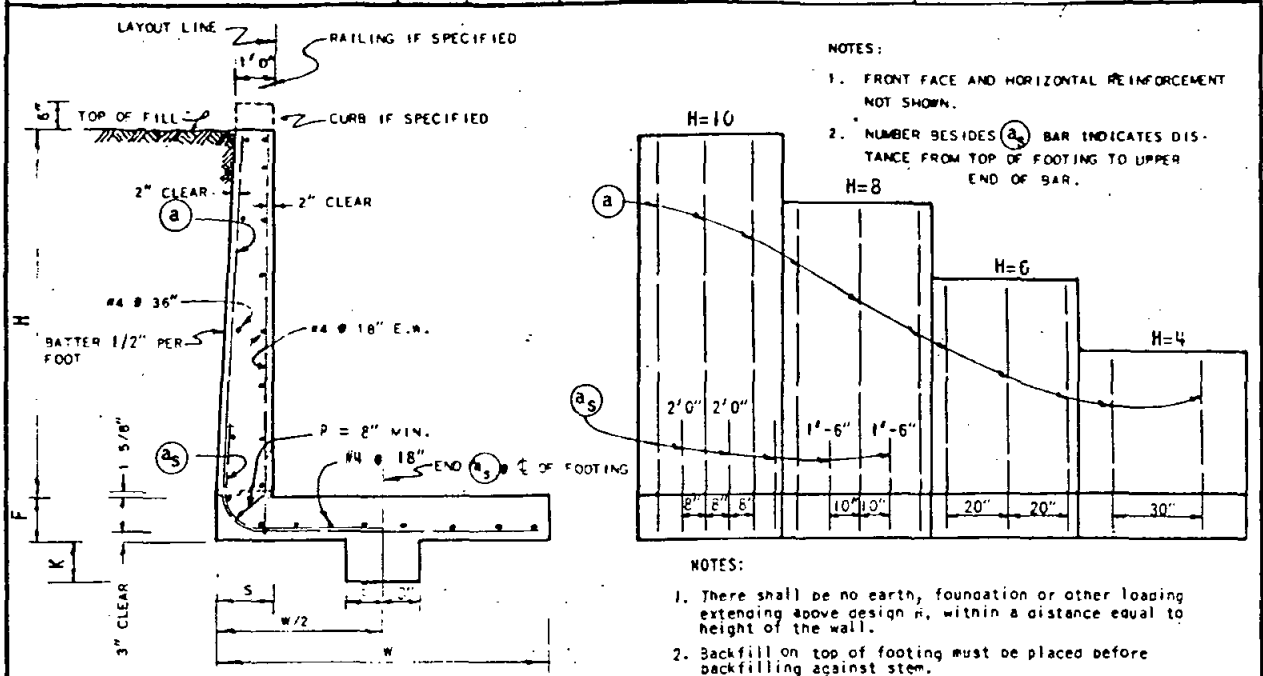
NOTE:

1. Refer to standard drawings C-53 and C-57 for additional notes and details.
2. Fill all cells with grout.

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

COUNTY	SAN DIEGO	STANDARD DRAWING	NONE
CANTILEVERED MASONRY RETAINING WALL			SCALE
TYPE LM-4			REVISIONS
(Liveload surcharge or sloping backfill)			C-61

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. M. Taylor</i>	<i>initials</i>



TYPICAL SECTION

ELEVATION

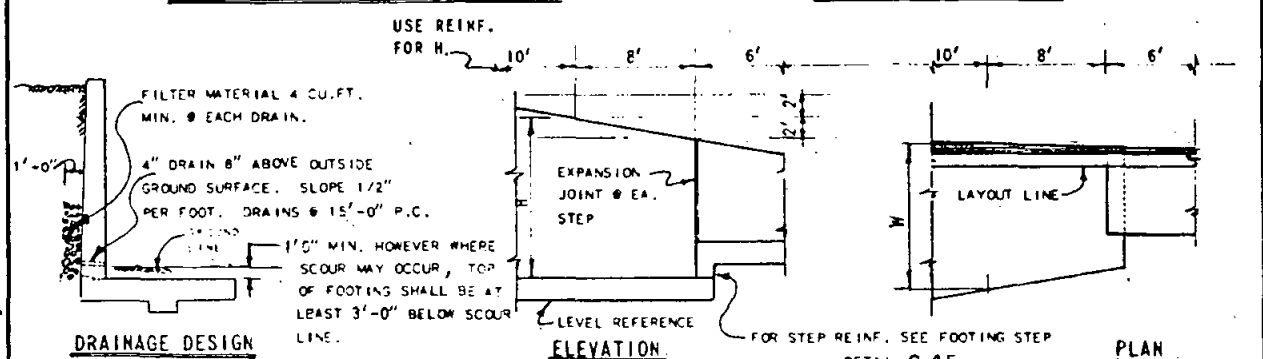
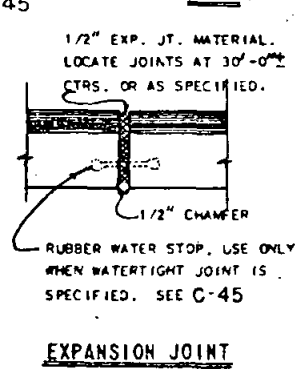
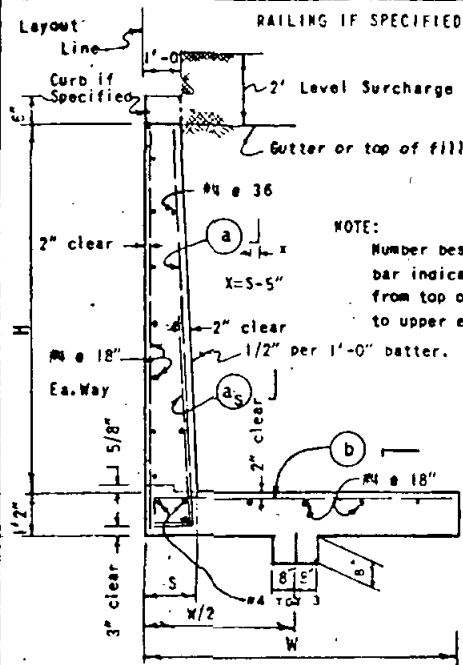


TABLE OF REINF. STEEL, DIMENSION AND DATA				
H	4'-0"	6'-0"	8'-0"	10'-0"
W	3'-0"	3'-10"	4'-10"	5'-6"
F	1'-2"	1'-3"	1'-4"	1'-5"
S	1'-2"	1'-3"	1'-4"	1'-5"
K		0'-8"	0'-8"	1'-0"
$\textcircled{a}$ bars	#4 @ 30"	#4 @ 20"	#4 @ 20"	#5 @ 16"
$\textcircled{a_s}$ bars (short)			#4 @ 20"	#5 @ 16"
Toe pressure P.S.F.	660	1070	1200	1225
Conc. CF/Ft.	7.8	12.4	16.7	23.3
Steel lbs/ft.	10.3	14.9	21.71	36.5

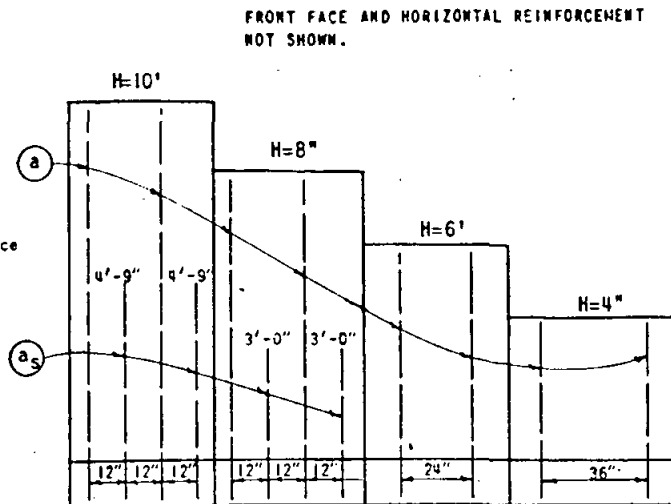


SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE no scale	
	CANTILEVER RETAINING WALL			DRAWING NO. C-63
	TYPE "L-1"			
	FOR GENERAL NOTES SEE DRAWING C-52			

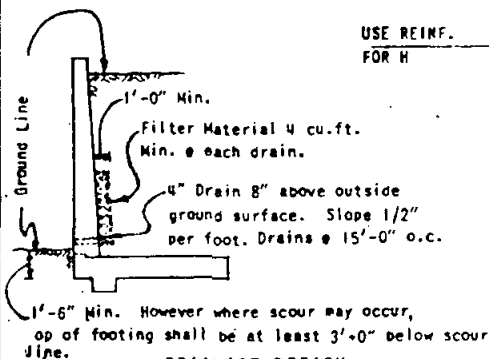
REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. M. Taylor</i>	<i>11/10/72</i>



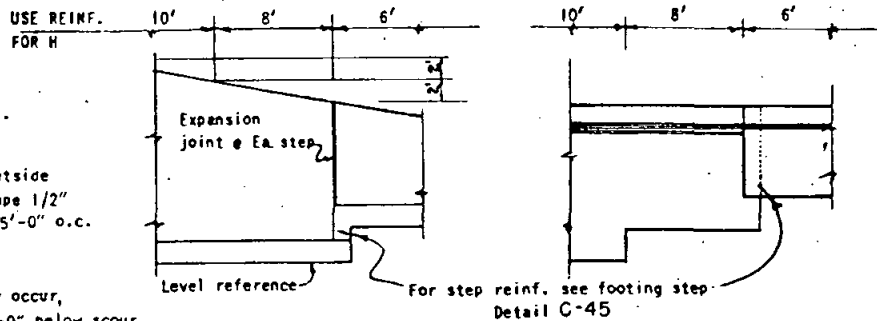
TYPICAL SECTION



ELEVATION



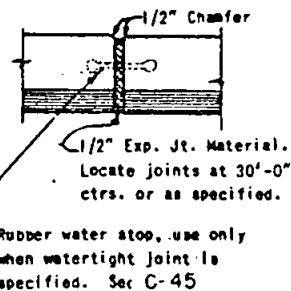
DRAINAGE DESIGN



ELEVATION

PLAN

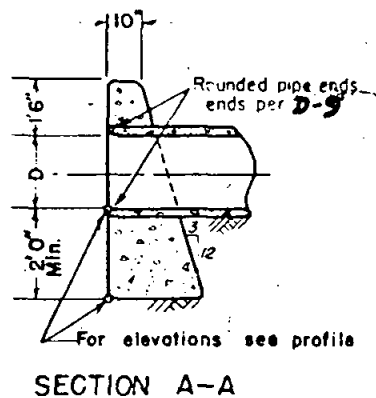
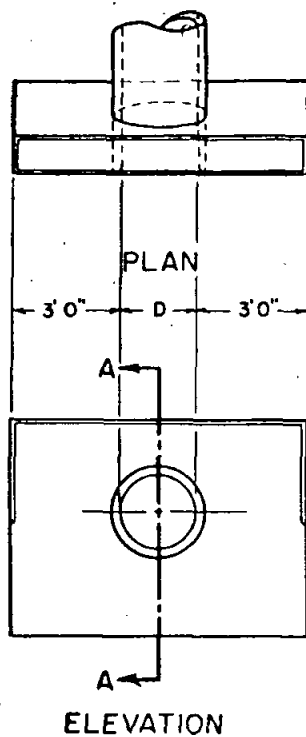
TABLE OF REINF. STEEL DIMENSIONS AND DATA				
H	4'	6'	8'	10'
W	3'-10"	5'-0"	6'-8"	8'-6"
S	1'-2"	1'-3"	1'-4"	1'-5"
(a) bars	#5 @ 36	#5 @ 24	#5 @ 24	#6 @ 24
(a _s) bars (short)			#5 @ 24	#6 @ 24
(b) bars	#5 @ 36	#5 @ 12	#6 @ 12	#7 @ 12
Toe pressure P.S.F.	1490	2180	2520	2870
Conc. CF/ft.	9.7	13.5	18.0	22.9
Steel lbs/ft.	12.8	20.5	33.0	50.2



EXPANSION JOINT

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE no scale
	CANTILEVER RETAINING WALL		DRAWING NO.
	TYPE "L-5"		C-67
	FOR GENERAL NOTES SEE DRAWING 52-EB		

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. H. Taylor</i>	<i>Wolfe</i>



GENERAL NOTES

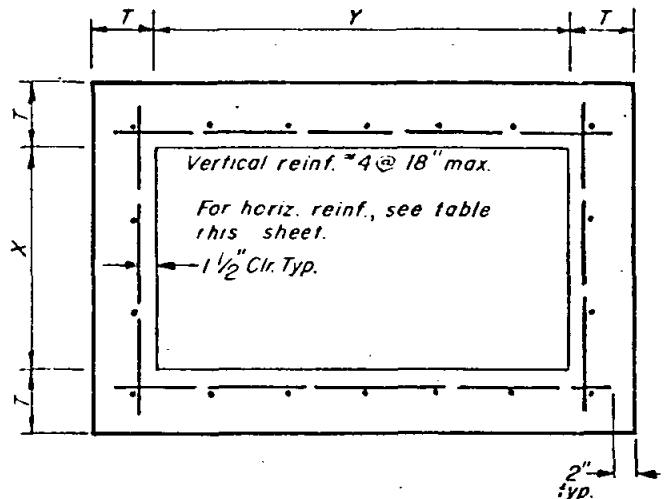
Concrete: All concrete to be Class A
 All exposed corners to be chamfered $\frac{3}{4}$ "
 Exposed surfaces to be finished.
 "D" = inside diameter of pipe.
 Min. denotes Minimum

Legend on plans: $\equiv \equiv$

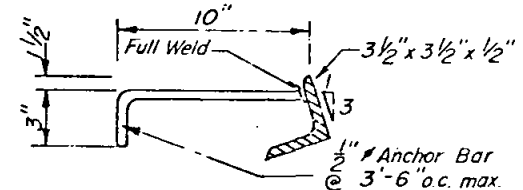
SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE 1" = 4'-0"
	GRAVITY TYPE HEADWALL		DRAWING NO. D-1

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
NOTE CHANGE	J.E.B.	A. Kucinski	2/1/78		<i>H. Taylor</i>	11/6/77

BOX SECTION REINFORCEMENT			
MAX. SPAN "X" or "Y"	DEPTH "V"	THICKNESS "T"	HORIZ. B. FLR REINF.
3'-0" to 4'-0"	4'-0"	6"	#4 @ 18"
4'-1" to 5'-0"		6"	#4 @ 12"
5'-1" to 6'-0"		6"	#4 @ 12"
6'-1" to 7'-0"		6"	#4 @ 12"
7'-1" to 8'-0"		6"	#4 @ 8"
8'-1" to 9'-0"		6"	#4 @ 18"
4'-1" to 5'-0"	4'-1"	6"	#4 @ 12"
5'-1" to 6'-0"		6"	#4 @ 12"
6'-1" to 7'-0"		6"	#4 @ 8"
7'-1" to 8'-0"	8'-0"	6"	#4 @ 6"
8'-1" to 9'-0"		6"	#4 @ 6"
9'-1" to 10'-0"		6"	#4 @ 6"
3'-0" to 4'-0"	8'-1"	6"	#4 @ 15"
4'-1" to 5'-0"		6"	#4 @ 12"
5'-1" to 6'-0"		6"	#4 @ 8"
6'-1" to 7'-0"	12'-0"	8"	#4 @ 6"
7'-1" to 8'-0"		8"	#4 @ 6"
8'-1" to 9'-0"		8"	#4 @ 6"
3'-0" to 4'-0"	12'-1"	8"	#4 @ 12"
4'-1" to 5'-0"		8"	#4 @ 12"
5'-1" to 6'-0"		8"	#4 @ 8"
6'-1" to 7'-0"	16'-0"	8"	#4 @ 6"
7'-1" to 8'-0"		8"	#4 @ 6"
8'-1" to 9'-0"		8"	#4 @ 6"
3'-0" to 4'-0"	16'-1"	8"	#4 @ 12"
4'-1" to 5'-0"		10"	#4 @ 12"
5'-1" to 6'-0"		10"	#4 @ 8"
6'-1" to 7'-0"	20'-0"	10"	#4 @ 6"
7'-1" to 8'-0"		10"	#4 @ 6"
8'-1" to 9'-0"		10"	#4 @ 6"
3'-0" to 4'-0"	20'-1"	8"	#4 @ 12"
4'-1" to 5'-0"		10"	#4 @ 12"
5'-1" to 6'-0"		10"	#4 @ 8"
6'-1" to 7'-0"	24'-0"	10"	#4 @ 6"
7'-1" to 8'-0"		12"	#5 @ 8"



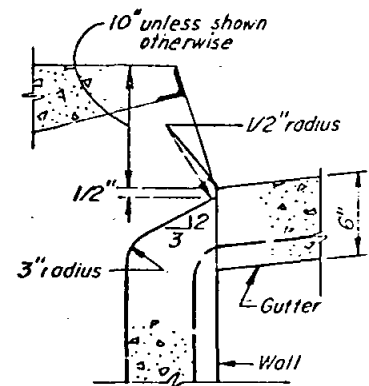
TYPICAL BOX SECTION



FACE ANGLE

NOTES

- Concrete shall be Class "A" with 1 1/2 inch maximum size aggregate.
- Unless otherwise specified reinforcing steel shall comply with this drawing.
- Reinforcing steel shall be intermediate grade deformed bars conforming to latest ASTM specifications.
- All bends shall be in accordance with the latest ACI code.
- Minimum splice length for reinforcing shall be 30 diameters.
- Floors shall have a wood trowel finish and except where used as junction boxes, shall have a minimum slope of 1 inch per foot towards the outlet.
- Face Angle shall be cast in a structure continuous for the full length "L".
- When structure depth "V" exceeds 5 feet, ladder rungs shall be cast into wall @ 15" intervals from 15" above floor to within 12" of top of structure. Where possible place rungs in wall without pipe opening, directly beneath access opening. See D-34 for details.
- Wall thickness and reinf. steel required may be decreased in accordance with table above as depth "V" to box section is decreased.
- Face angle and anchor to be hot-dipped galvanized after fabrication.
- Provide protective steel bar in throat opening when height of opening equals or exceeds 6".

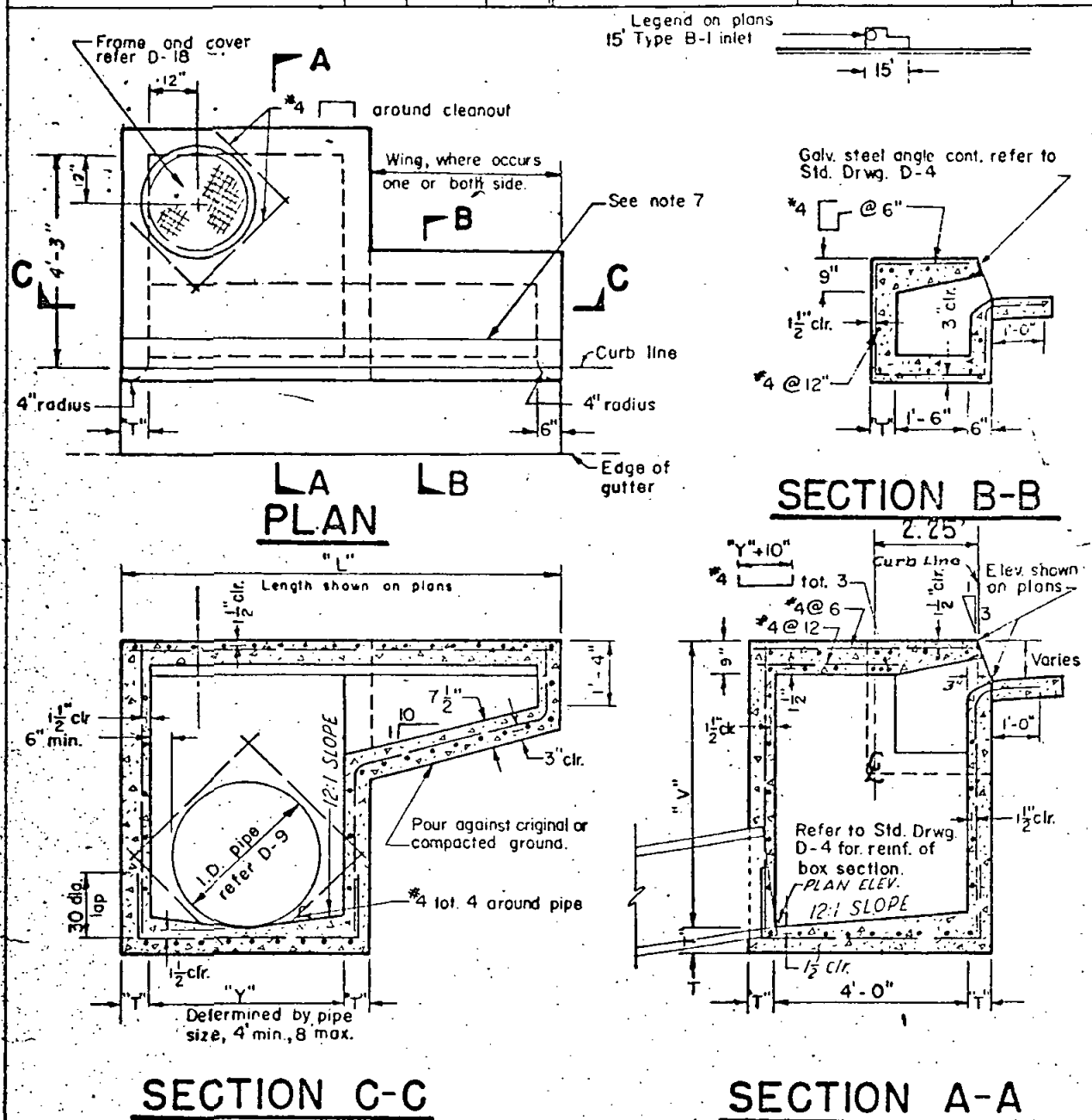


CURB INLET
THROAT OPENING

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE None
	INLETS AND CLEANOUTS		DRAWING NO.
	NOTES AND DETAILS		D-4

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	No scale
			SCALE
			DRAWING NO.
			D-5

REVISIONS				APPROVALS			
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER			

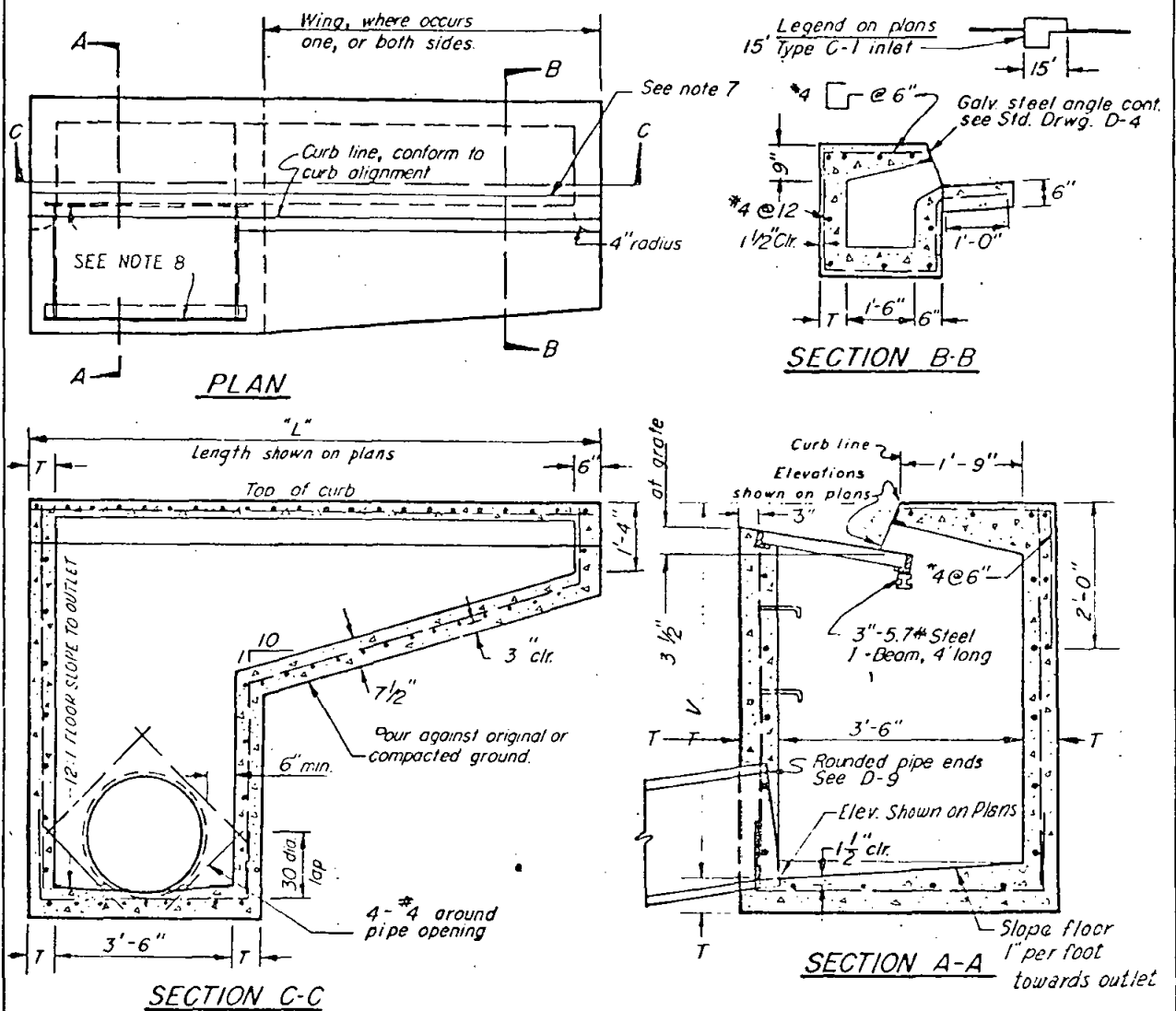


1. Refer Standard Drawing D-4 for additional notes and details.
2. Designate types as follows: No wing B, One wing B-1, Two wings B-2.
3. Exposed edges of concrete shall be rounded with a radius of $\frac{1}{2}$ inch.
4. Surface of top slab shall be finished as specified for sidewalks in the Standard Specifications and shall drain towards street at a slope of $\frac{1}{4}$ inch per foot.
5. Concrete gutter to match adjacent gutters.
6. Expansion joint material shall be placed at the ends of the inlet where the curb is to adjoin.
7. Provide $\frac{1}{4}$ " tooled groove in top slab in line with back of adjacent curb.

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	No scale SCALE
			DRAWING NO.
			D-6

CURB INLET-TYPE B

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
NOTE 8 ADDED		J. Kuchel	2/1/74		H. M. Tray	1/10/74



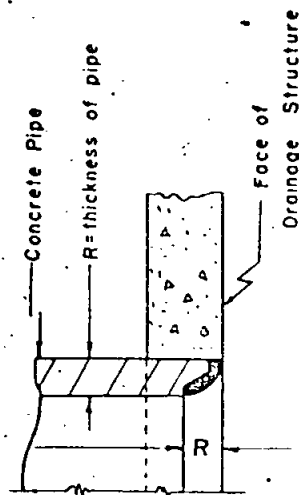
NOTES

1. Refer Standard Drawing D-4 for additional notes and details.
2. Designate types 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 inch.
4. Surface of top slab shall be finished as specified for sidewalks in the Standard Specifications and shall drain towards street at a slope of 1/4 inch per foot.
5. Concrete gutter to match adjacent gutters.
6. Expansion joint material shall be placed at the ends of the inlet where the curb is to adjoin.
7. Provide 1/4" foiled groove in top slab in line with back of adjacent curb.
8. A special size frame & grate is required.

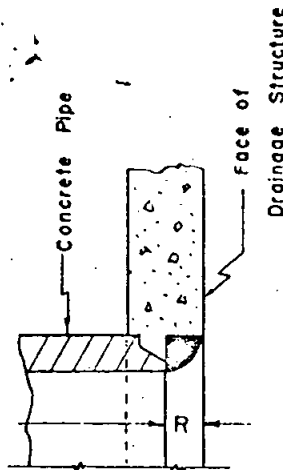
SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE None
			DRAWING NO.
			D-7

CURB INLET—TYPE C

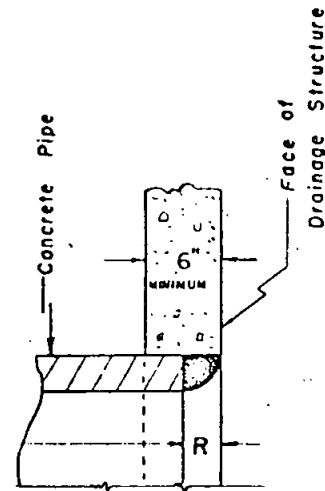
REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. J. Taylor</i>	<i>who br</i>



Bell End

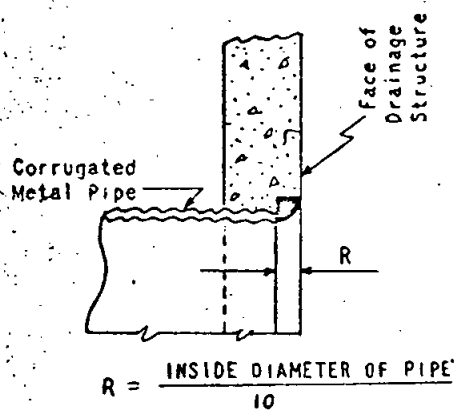


Spigot End



Cut End

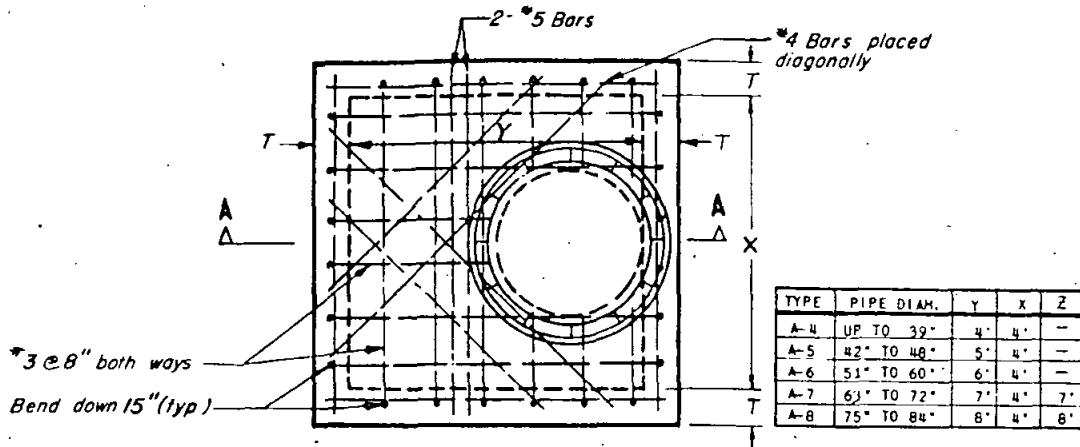
The rounded areas may be built up of Cement Mortar or poured in place with the drainage structure.



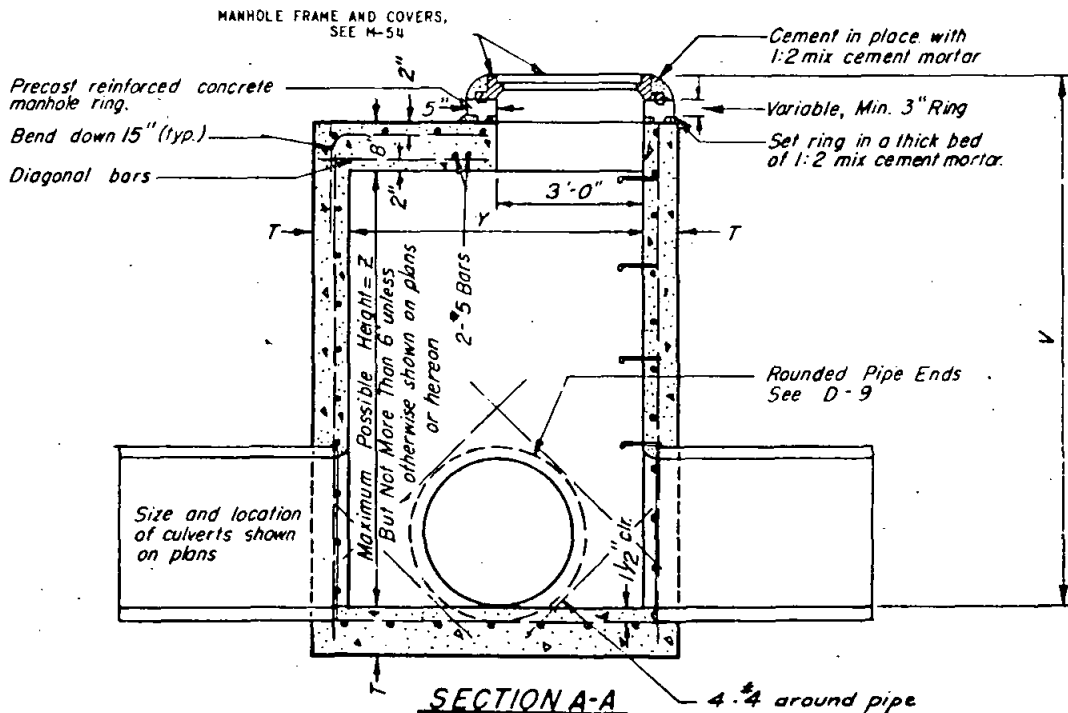
SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	0 1 2 SCALE 1/2" = 1'-0"
	ROUNDED PIPE ENDS IN DRAINAGE STRUCTURES		DRAWING NO. D-9

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>R. H. Taylor</i>	<i>11/10/22</i>

Legend on plans ☐



PLAN



SECTION A-A

NOTES

1. Refer to standard drawing D-4 for additional notes and details.
2. In unpaved areas, except streets, raise cover to 6" min. above finish grade. In streets, raise cover to finish grade.

SPECIFICATION REFERENCE

COUNTY OF SAN DIEGO

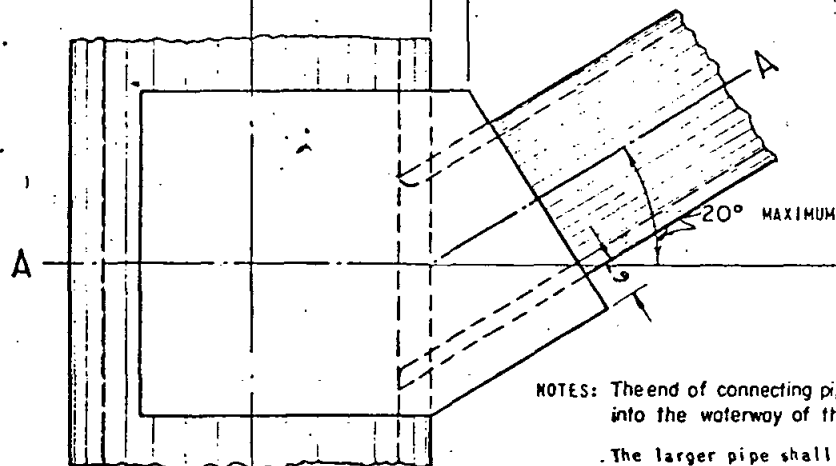
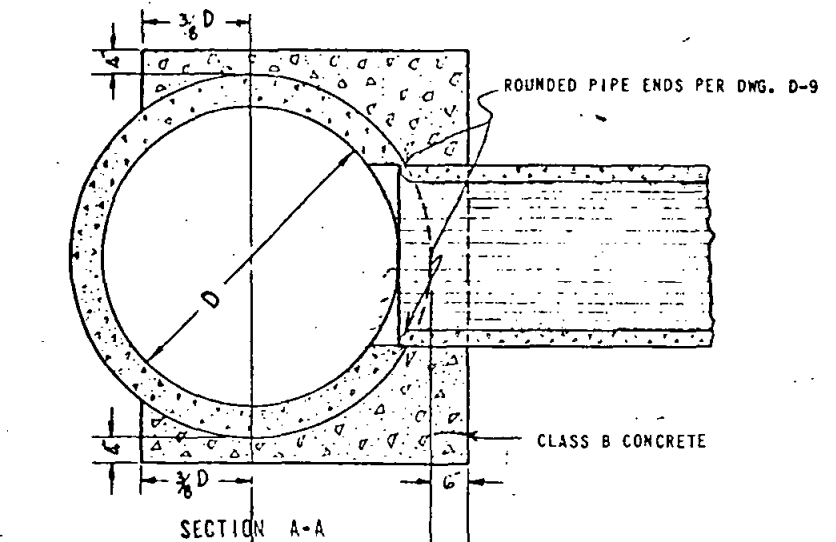
STANDARD DRAWING

STORM DRAIN CLEANOUT

TYPE A

0 1 2 FT.
SCALE 1/2" = 1'-0"
DRAWING NO.
D-11

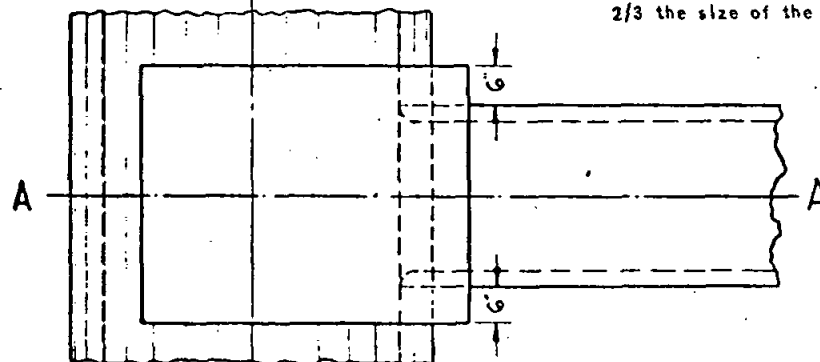
REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. M. Tany</i>	11/10/73



NOTES: The end of connecting pipe shall not project into the waterway of the larger pipe.

The larger pipe shall not be less than 24" I.D.

The smaller pipe shall not be more than 2/3 the size of the larger pipe.



Legend on plans:

SPECIFICATION REFERENCE

COUNTY OF SAN DIEGO

STANDARD DRAWING

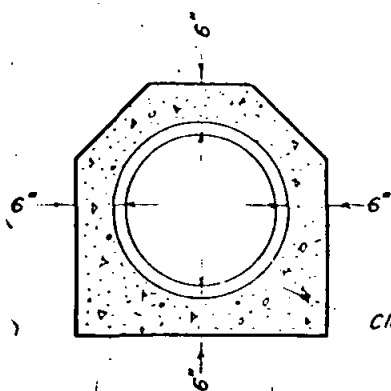
CONCRETE LUG

SCALE NONE

DRAWING NO.

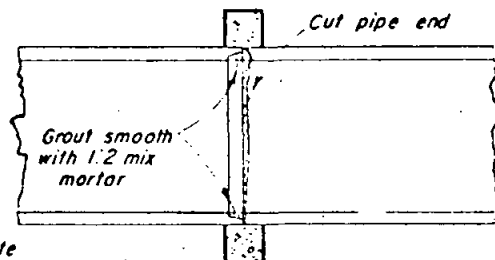
D-12

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		



Class A Concrete

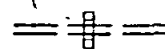
ELEVATION



6" for pipe sizes 30" and smaller
9" for pipe sizes larger than 30"

SECTION

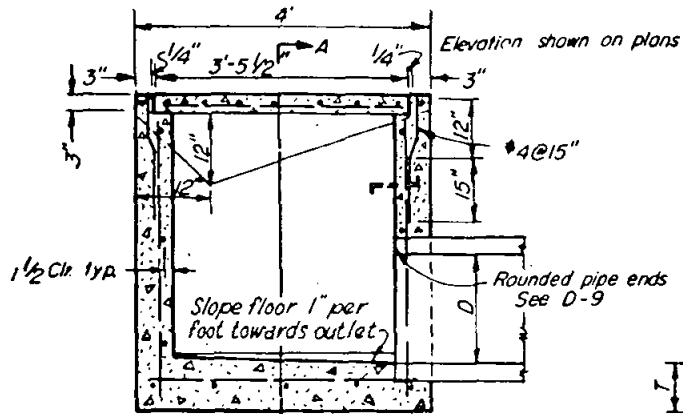
Legend on Plans



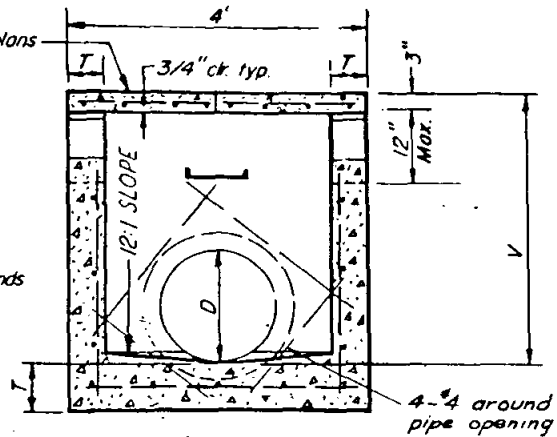
SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	0" 1'-0"
	PIPE COLLAR		SCALE 3/4" = 1'-0"
			DRAWING NO.
			D-14

REVISIONS				APPROVALS			
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER			
					H.M. Taylor	Walter	

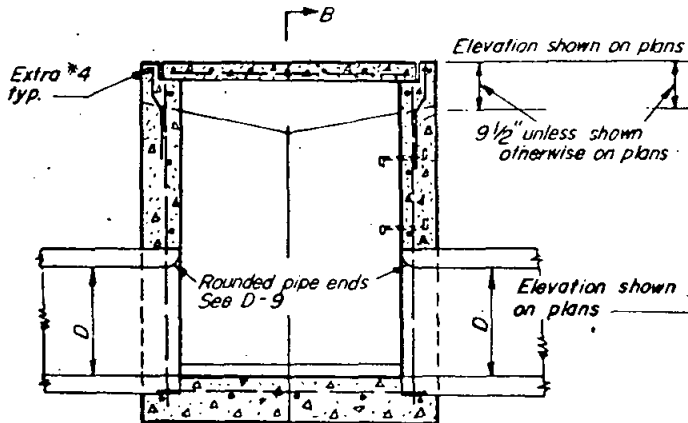
Legend on plans ==  ==



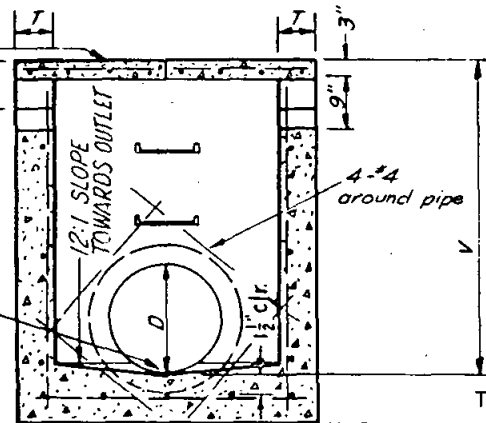
TYPE I DROP INLET



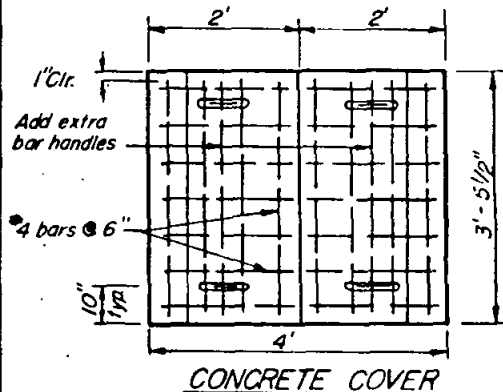
SECTION A-A



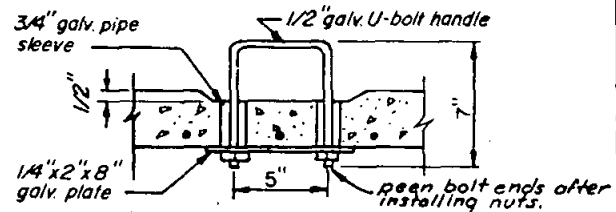
TYPE J DROP INLET



SECTION B-B



CONCRETE COVER



HANDLE DETAIL

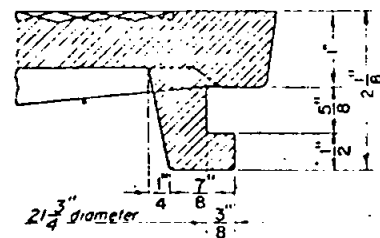
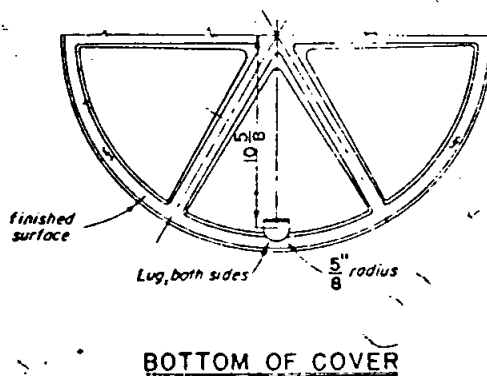
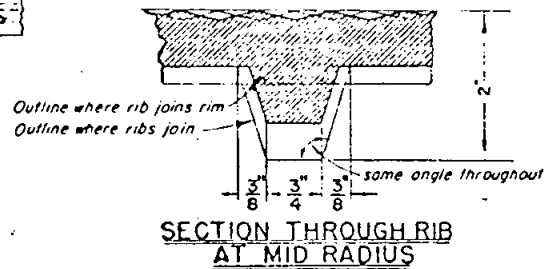
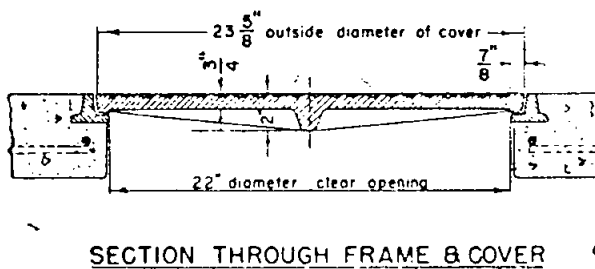
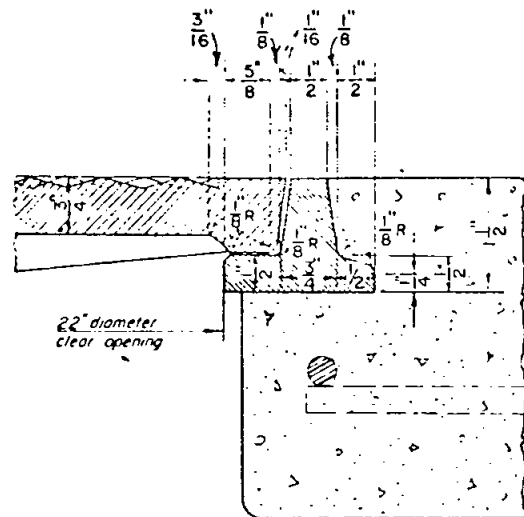
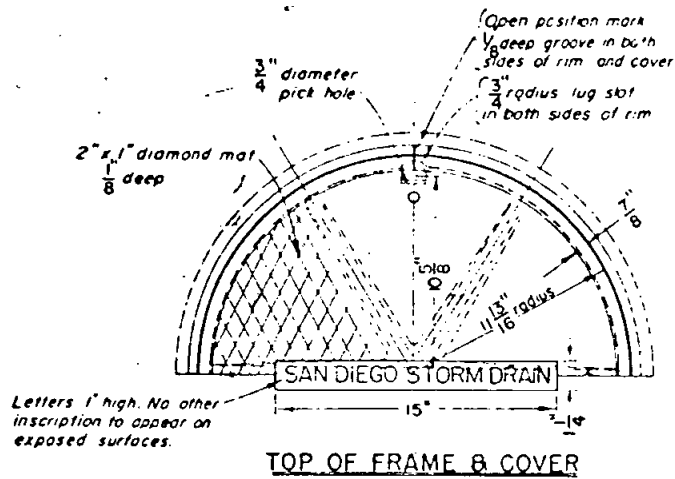
NOTES:

1. Refer to Standard Drawing D-4 for additional notes and details.
2. Type I and type J drop inlets are the same with the exception of the openings.
3. All exposed edges on top of inlet to be rounded to 1/2 inch radius.
4. Openings on both sides unless shown otherwise on plans.

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	0 1 2 FT.
			SCALE 1/2" = 1'-0"
			DRAWING NO.
			D-15

TYPE I AND TYPE J INLETS

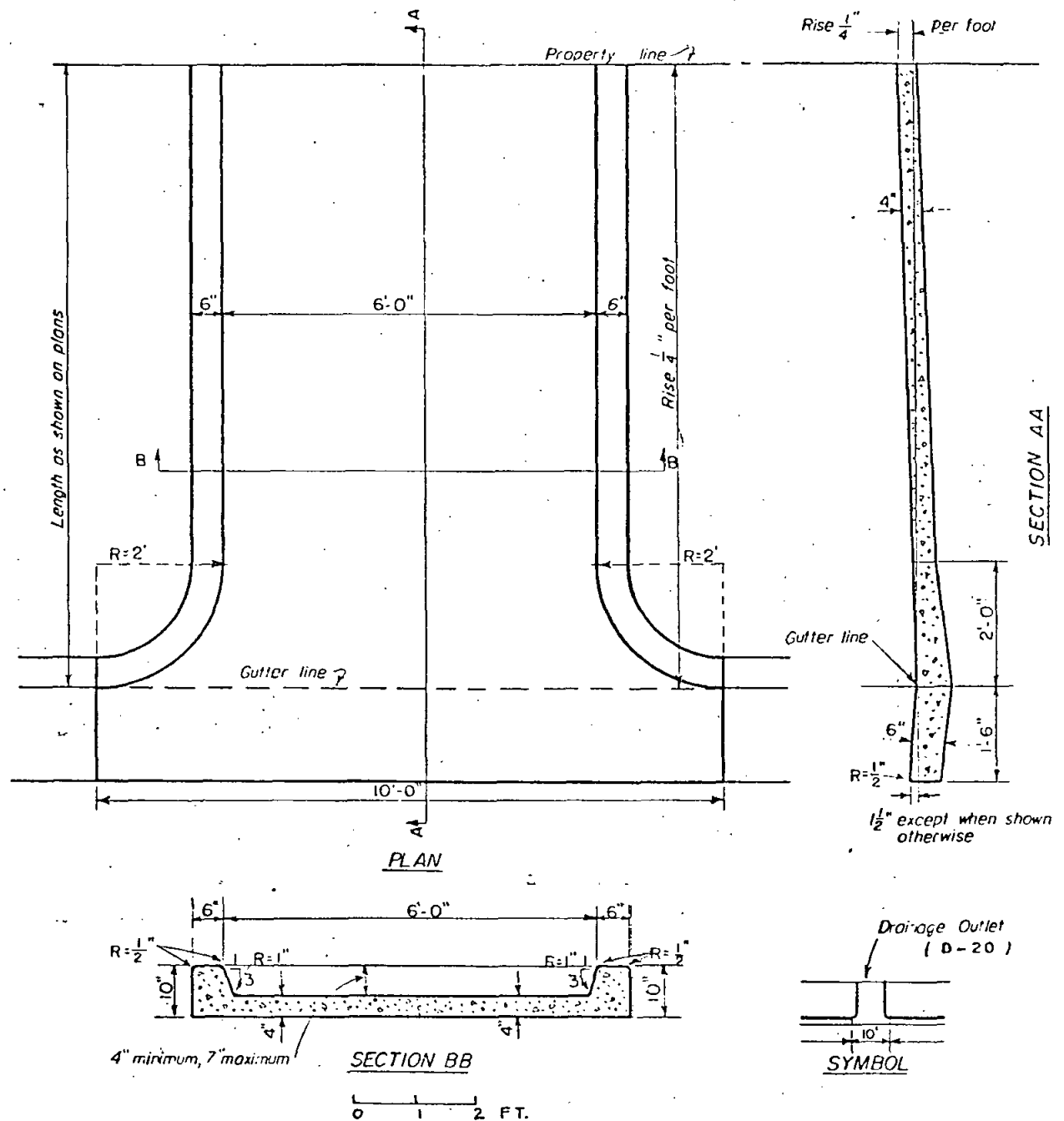
REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. M. Taylor</i>	11/10/72



Notes: Frame and cover shall be cast iron
rim frame and cover for use in sidewalk area only

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE None
	INLET FRAME AND COVER		DRAWING NO.
			D-18

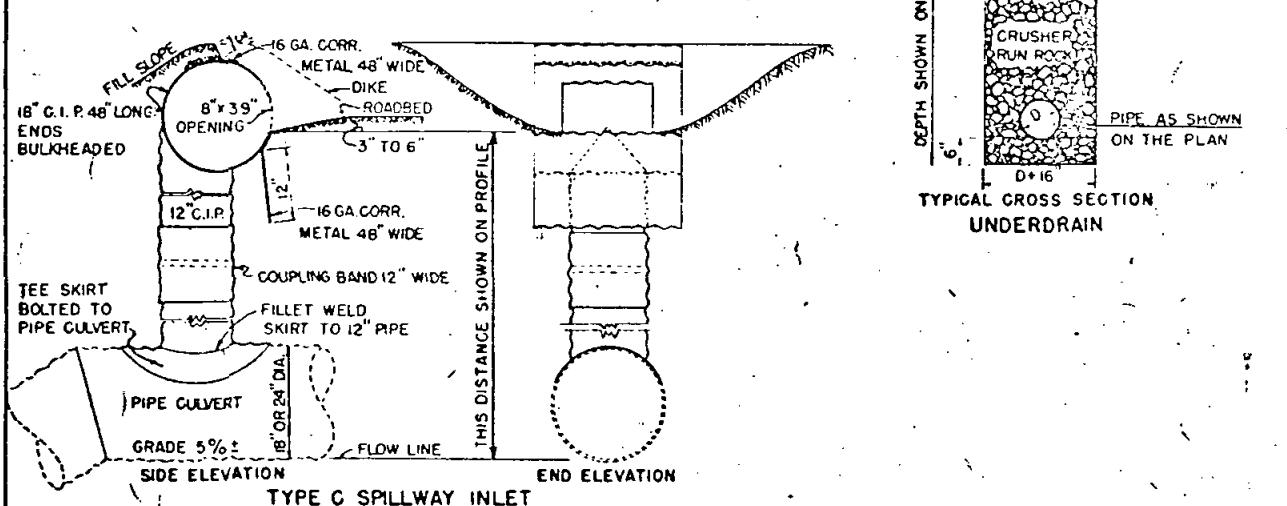
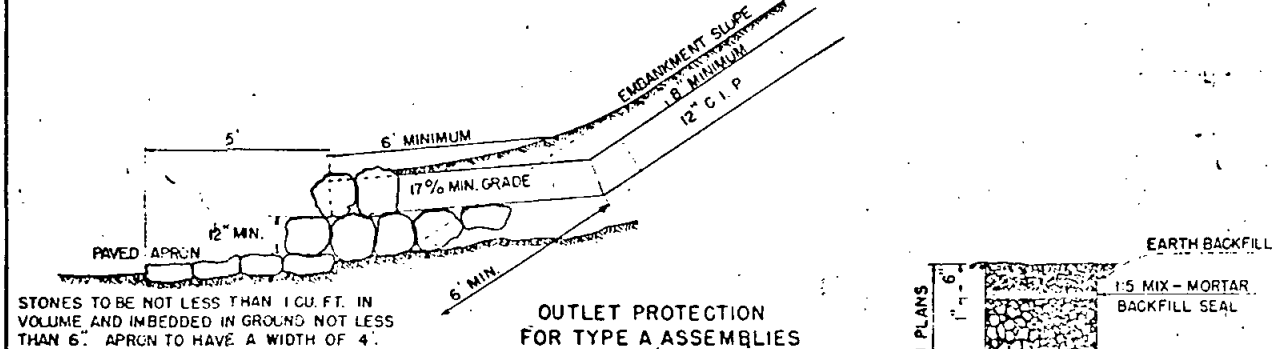
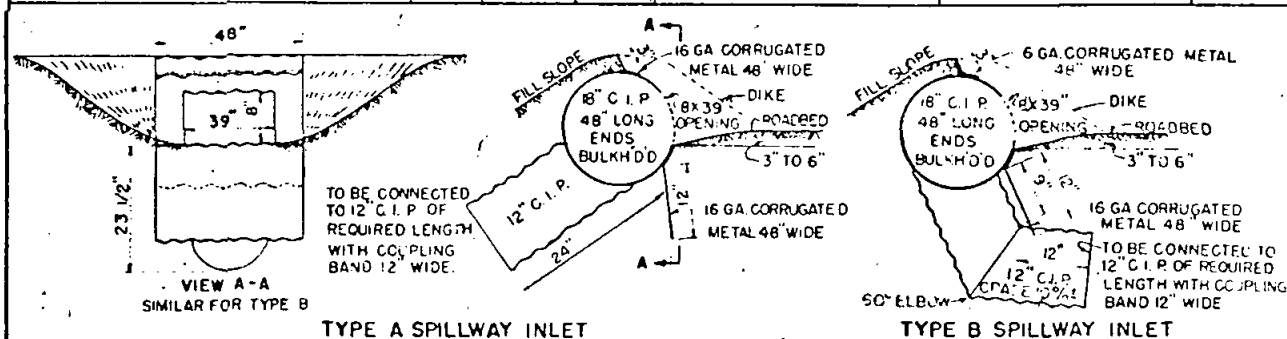
REVISIONS				APPROVALS		
DATE	DESCRIPTION	BY	APPROVED	COUNTY ENGINEER		
2/1/74	REMOVED REFER. TO CLASE "A" P.C.C.	J.E.B.	J. G. [Signature]		H. M. Taylor	11/10/72



Specification	Reference				
COUNTY OF SAN DIEGO		ENGINEERING DEPARTMENT			
		STANDARD DRAINAGE OUTLET (For Sidewalk Areas)		DRAWING NUMBER	
				D-20	

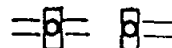
D-24

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. M. Tappan</i>	<i>11/13/70</i>



C.I.P. MEANS CORRUGATED IRON PIPE.
BULKH'D MEANS BULKHEADED.
GA. MEANS GAGE.
CORR. MEANS CORRUGATED
MIN. MEANS MINIMUM.
DIA. MEANS DIAMETER.

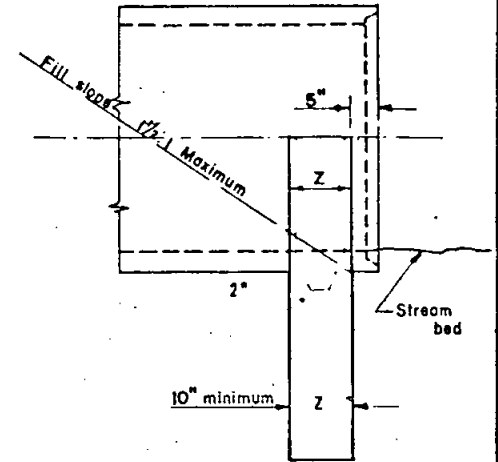
LEGEND ON PLAINS



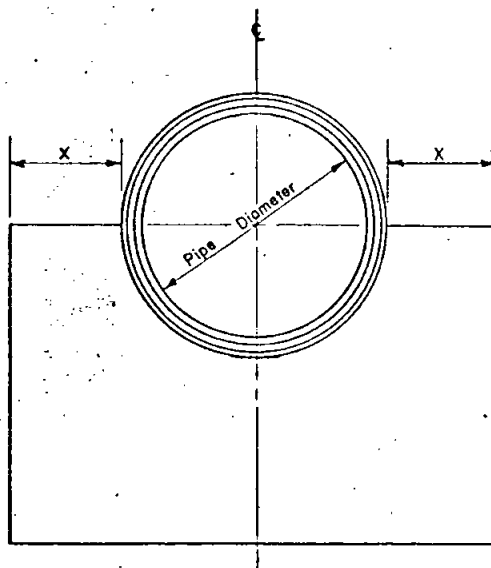
SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	NONE
	Type A, B & C Spillway Inlets and Underdrain		SCALE
			DRAWING NO.
			D-25

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. M. Taylor</i>	11-10-72

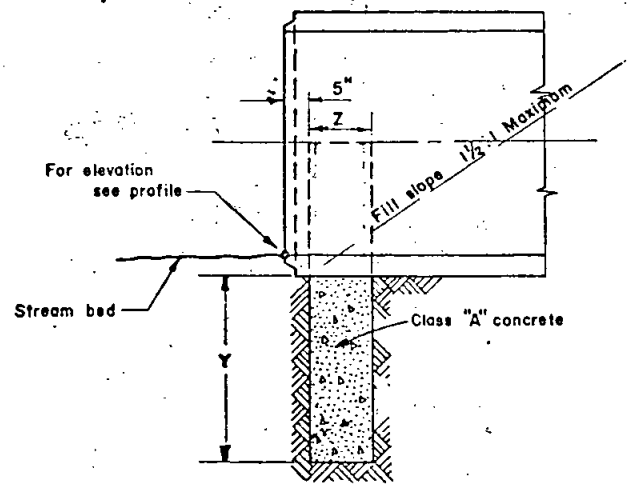
PIPE DIAMETER	X	Y	Z
12" to 24"	1'-0"	2'-0"	10"
24" to 36"	1'-6"	2'-6"	12"
39" to 48"	2'-0"	3'-0"	12"
51" to 60"	2'-6"	3'-0"	14"
63" & LARGER	3'-0"	3'-0"	14"



SIDE ELEVATION



FACE ELEVATION



CENTER LINE SECTION

GENERAL NOTES

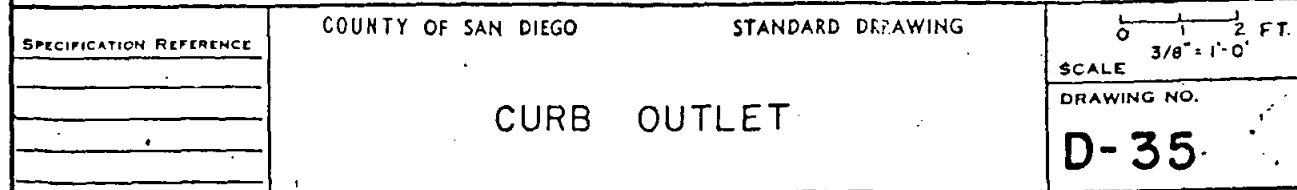
A curtain wall shall be used in place of a headwall at culvert ends where extension of the culvert is considered imminent, or no fill slope is retained.

The dimension "Y" shall be increased if unstable material is encountered.

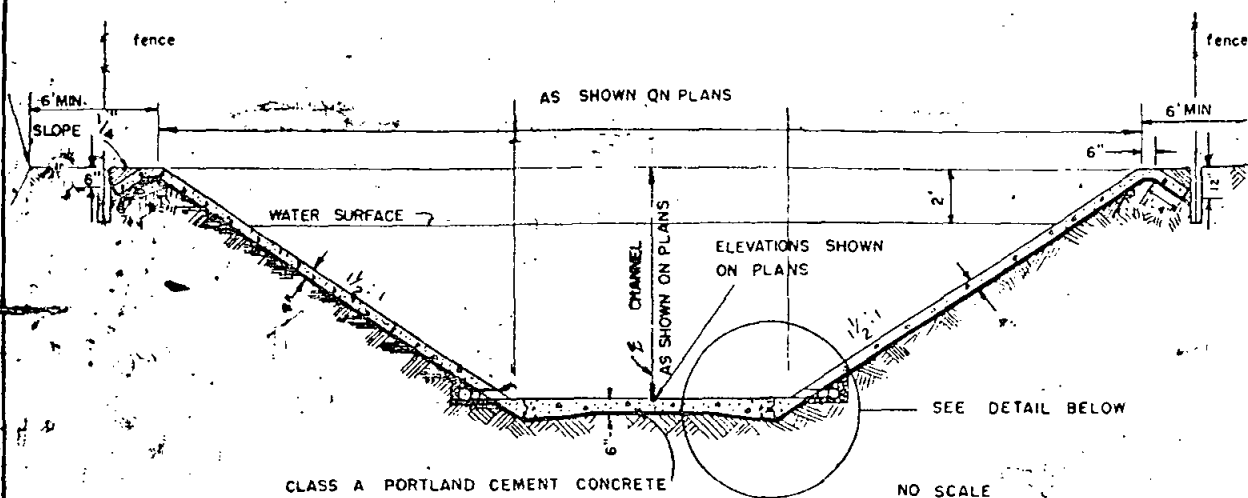
Keep the pipe-end clear of obstruction to permit easy placing of culvert extension.

Legend on plans:

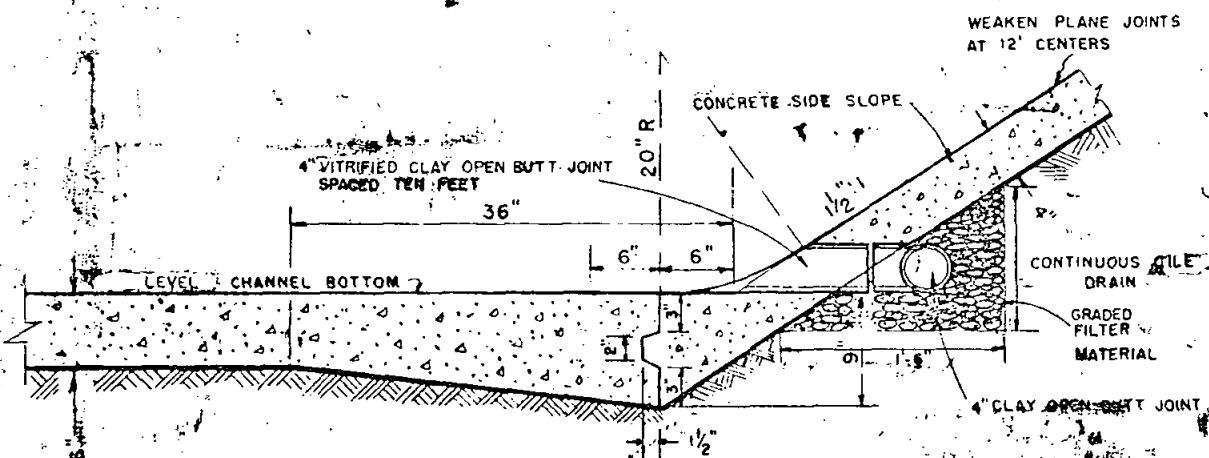
SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	 SCALE 1/2" = 1'-0"
	CURTAIN WALL		DRAWING NO.
			D-28



REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. M. Taylor</i>	11-10-78



TYPICAL CROSS SECTION OF DRAINAGE CHANNEL



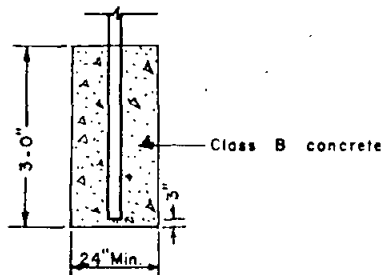
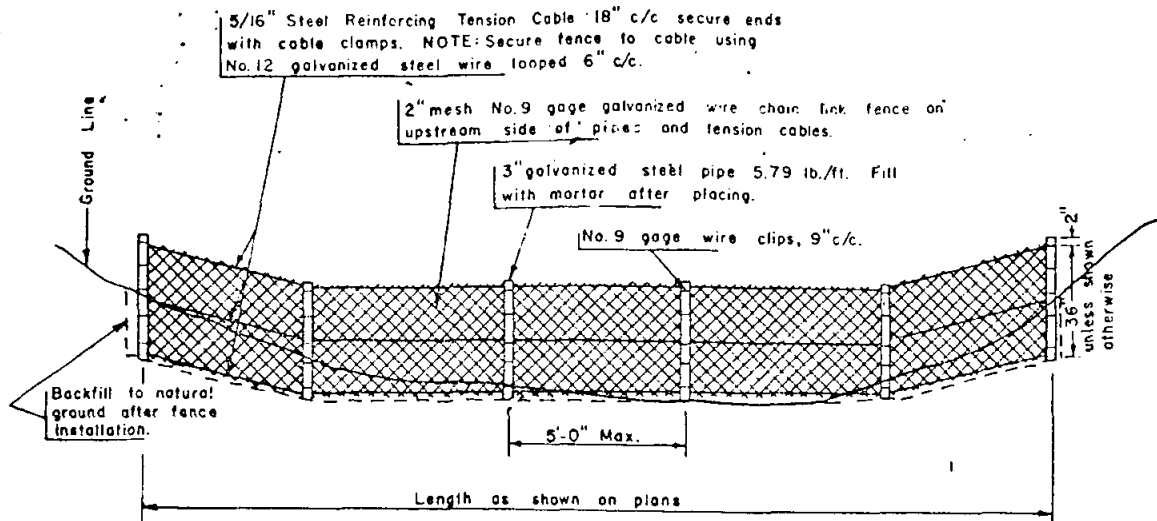
DETAIL

SCALE: 1" = 1'

LEGEND ON PLANS

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	AS SHOWN SCALE
	DRAINAGE	CHANNEL	DRAWING NO.
			B-40

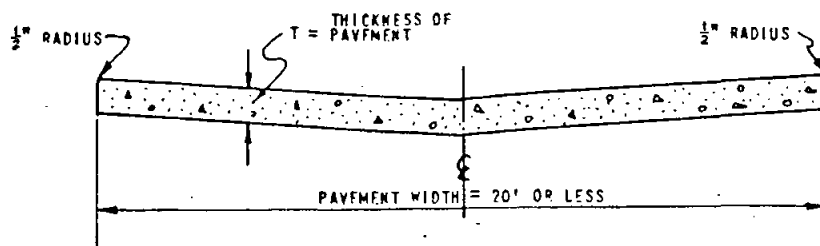
REVISIONS				APPROVALS	
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER	



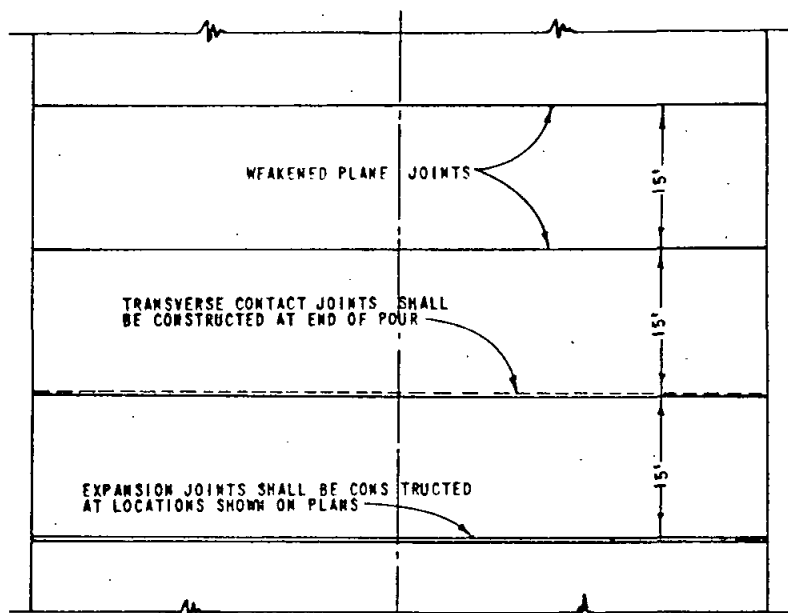
Detail of Footing

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE NONE
	TRASH FENCE		DRAWING NO
			D-61

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. J. Taylor</i>	11-10-79



TYPICAL SECTION

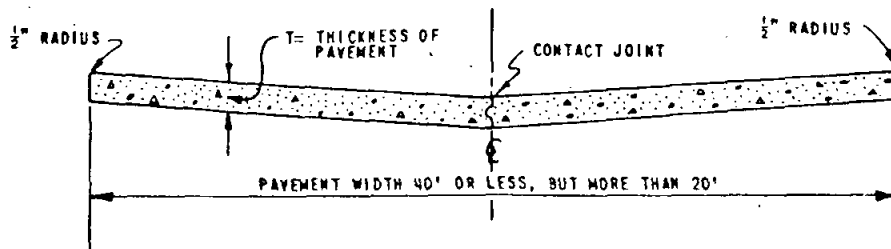


TYPICAL PLAN

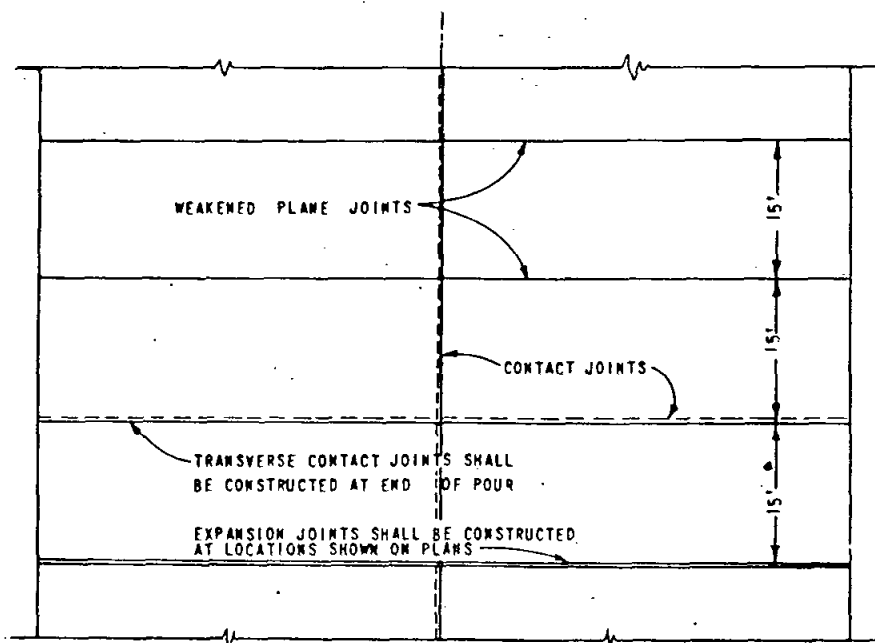
NOTE: ALL CONCRETE SHALL BE CLASS A.
 SEE STD. DWG. G-42 FOR JOINT DETAILS
 ADJUST 15' INTERVAL BETWEEN TRANSVERSE JOINTS TO
 MATCH ADJACENT EXISTING IMPROVEMENTS.

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE NONE
	CONCRETE PAVEMENT-ALLEY SECTION		DRAWING NO.
	20' width, or less		G-II

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. M. Taylor</i>	11-19-78



TYPICAL SECTION

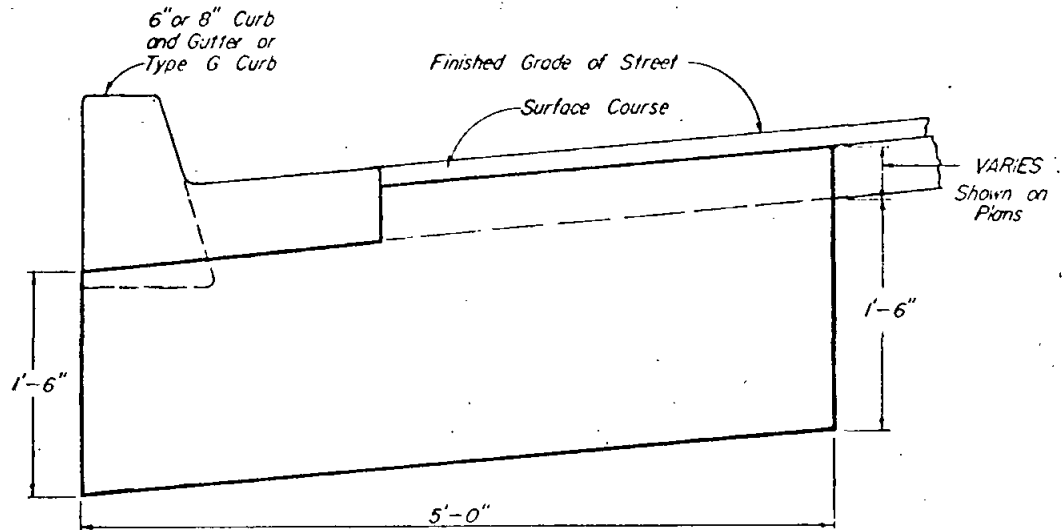


TYPICAL PLAN

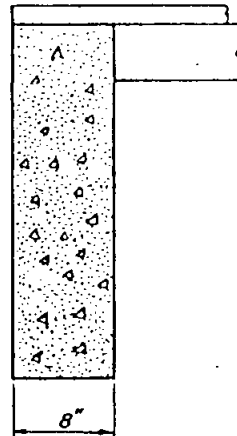
NOTE: ALL CONCRETE SHALL BE CLASS A.
SEE STD. DWG. G-42 FOR JOINT DETAILS
ADJUST 15' INTERVAL BETWEEN TRANSVERSE JOINTS
TO MATCH ADJACENT EXISTING IMPROVEMENTS.

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE NONE
	CONCRETE PAVEMENT - ALLEY SECTION		DRAWING NO.
	Pavement Width 40' or less, but more than 20'		G-12

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
REMOVED REFER. TO CLASS "A"	D.E.B.	<i>R. Nix</i>	7/1/73		<i>H. W. Taylor</i>	11-10-73



ELEVATION

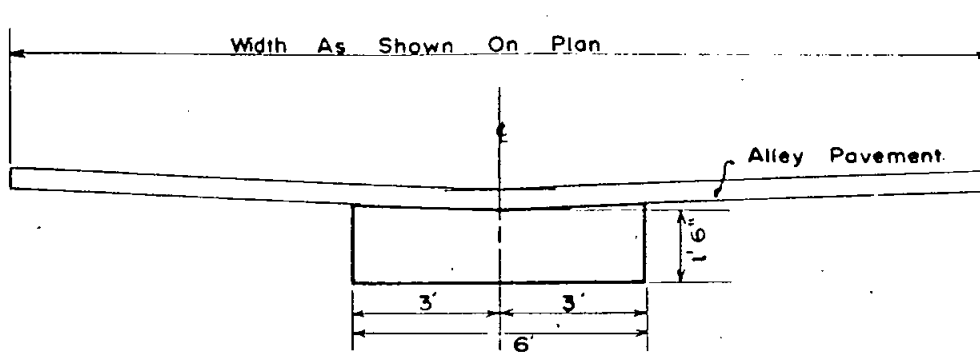


SECTION

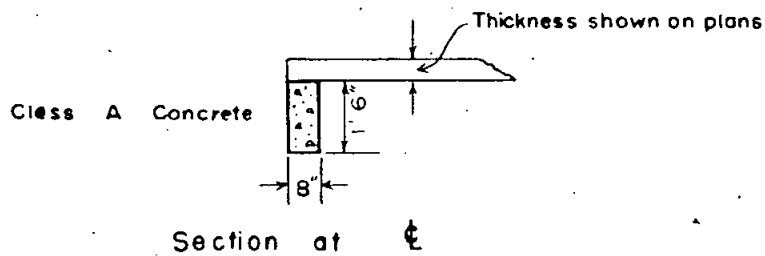
Legend on plan

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE 1"=1'-0"
	CUTOFF WALL AT END OF		DRAWING NO.
	PAVEMENT		G-27

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. W. Taylor</i>	11-10-72



ELEVATION



Section at ϵ

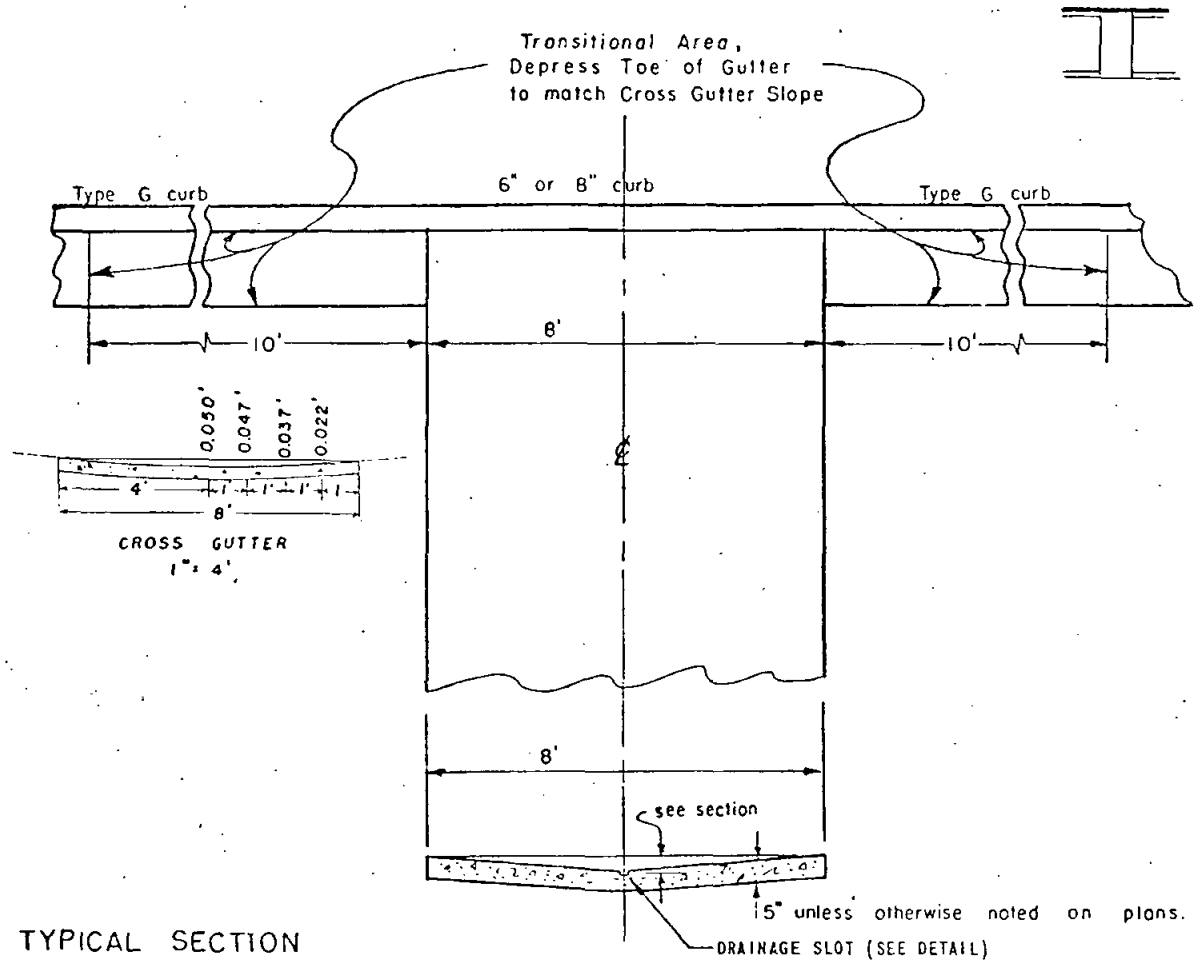
Legend on plan



SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	1" = 3'
	CUTOFF WALL		SCALE
	AT END OF ALLEY PAVEMENT		DRAWING NO.
			G-28

REVISIONS				APPROVALS		
DESCRIPTION	E.Y.	APPROVED	DATE	COUNTY ENGINEER		
NOTE CHANGES	J.E.B.	<i>[Signature]</i>	2/1/78		<i>[Signature]</i>	11-10-72

Legend as shown on the plans.



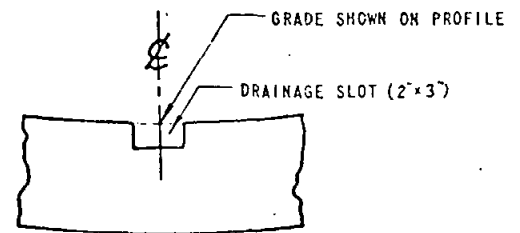
TYPICAL SECTION

NOTES:

Cross gutters shall be constructed in accordance with the County of San Diego Standard Specifications.

Cross gutter to be constructed where the drainage is carried across street and on a grade of at least 0.5%.

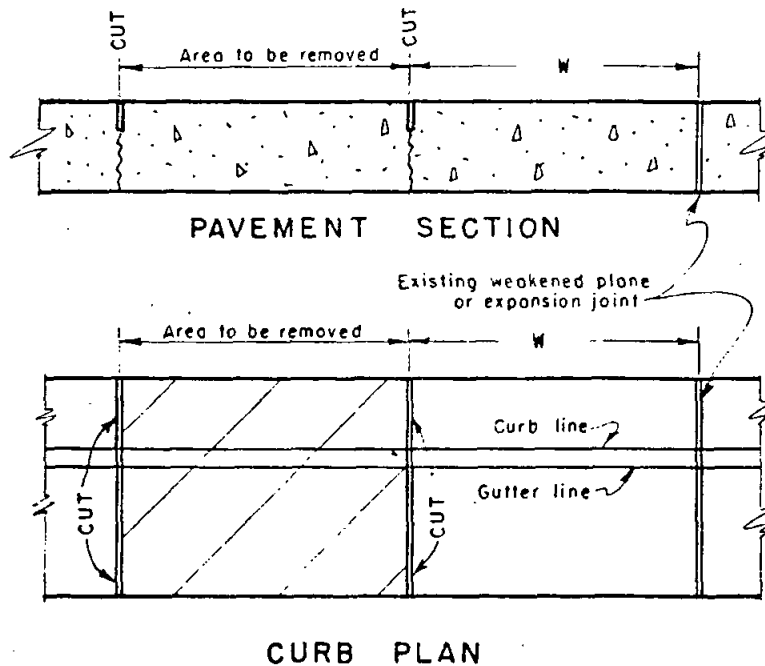
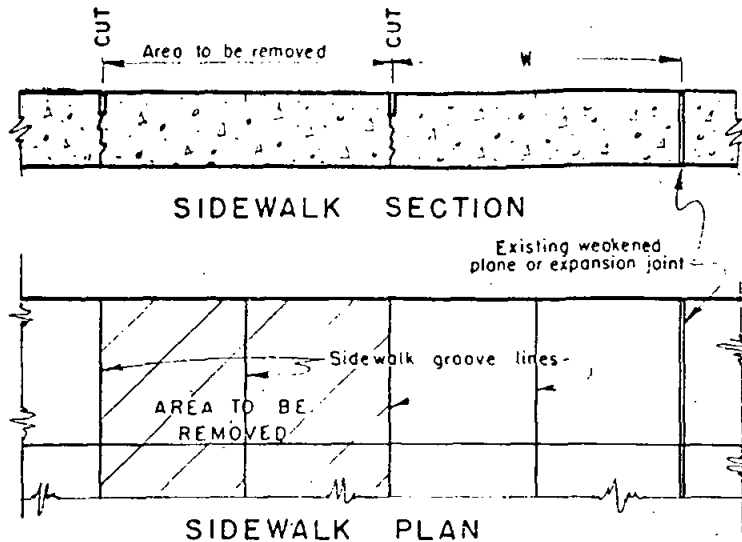
Drainage slot shall be constructed only where shown on plans. Slot shall be formed with 2"x3" (S45).



DRAINAGE SLOT DETAIL
(No Scale)

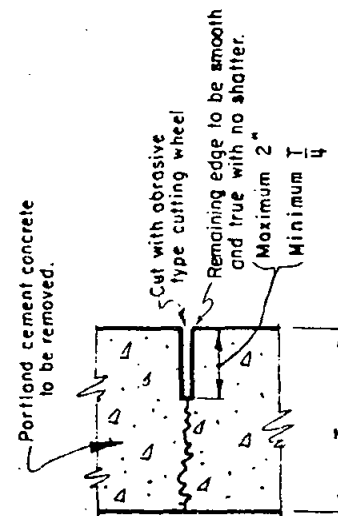
SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE 1" = 3'
	CROSS	GUTTER	DRAWING NO.
	TYPE	A	G-32

REVISIONS				APPROVALS	
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER	



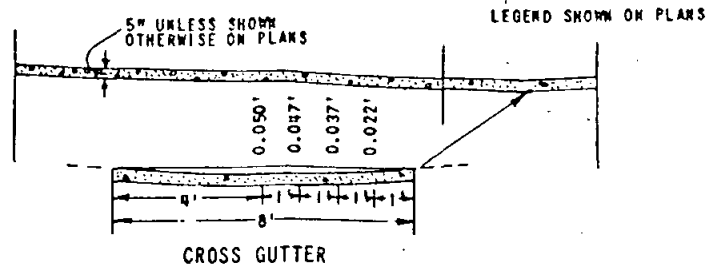
NOTES

1. Remove entire curb and gutter section to construct driveway or to replace with new curb.
2. Remove entire depressed curb and gutter section of abandoned driveways and replace with approved standard curb when other driveways are constructed to serve same property.
3. Remove existing 4" sidewalk and replace with 6" P.C.C. at locations of driveways constructed in commercial zones.
4. Remove and replace paved area adjacent to weakened plane or expansion joint when "W" is equal to or less than two feet.



SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO		STANDARD DRAWING		SCALE: NONE
	PORTLAND CEMENT CONCRETE CURB GUTTER, SIDEWALK AND PAVEMENT REMOVAL AND REPLACEMENT.				DRAWING NO.
					G-33

REVISIONS				APPROVALS	
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER	

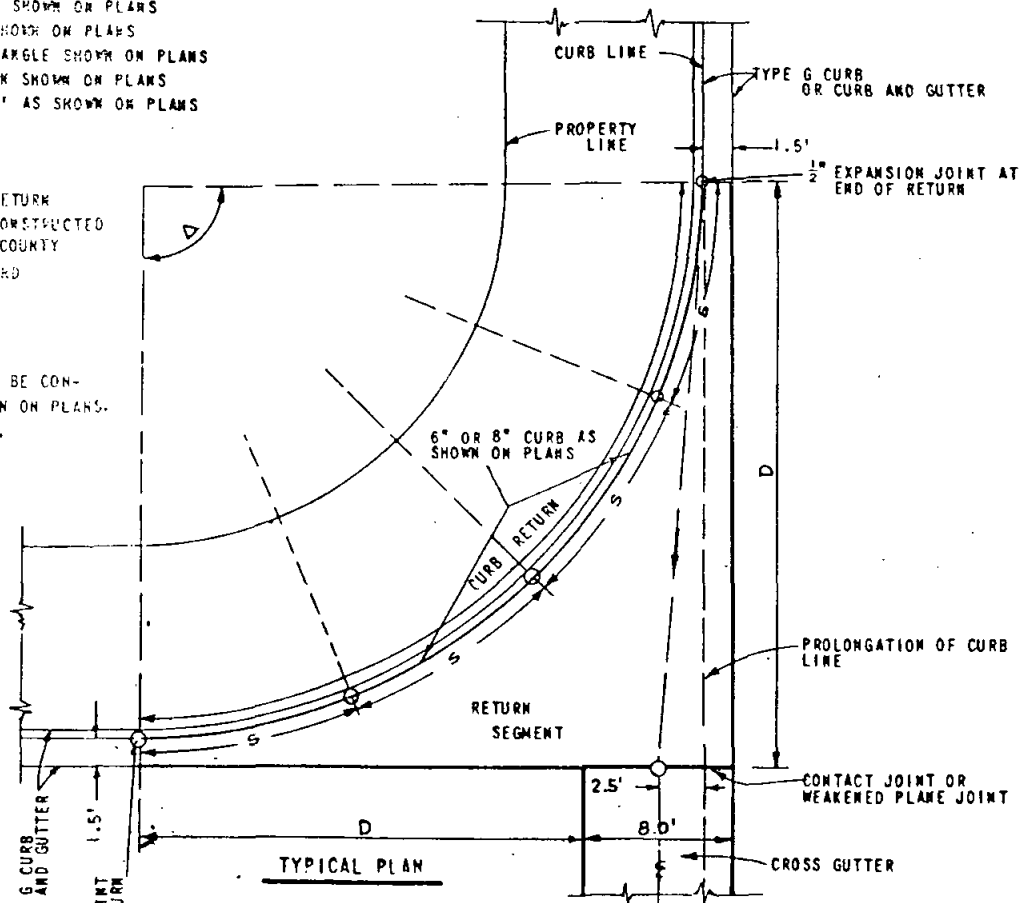


TYPICAL SECTIONS

NOTE: D = DISTANCE SHOWN ON PLANS
R = RADIUS SHOWN ON PLANS
 Δ = CENTRAL ANGLE SHOWN ON PLANS
 $\bigcirc$ = ELEVATION SHOWN ON PLANS
S = 8' TO 12' AS SHOWN ON PLANS

CROSS GUTTERS AND RETURN SEGMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH COUNTY OF SAN DIEGO STANDARD SPECIFICATIONS.

RAINAGE SLOT SHALL BE CONSTRUCTED WHERE SHOWN ON PLANS. SEE G-32 FOR DETAIL.

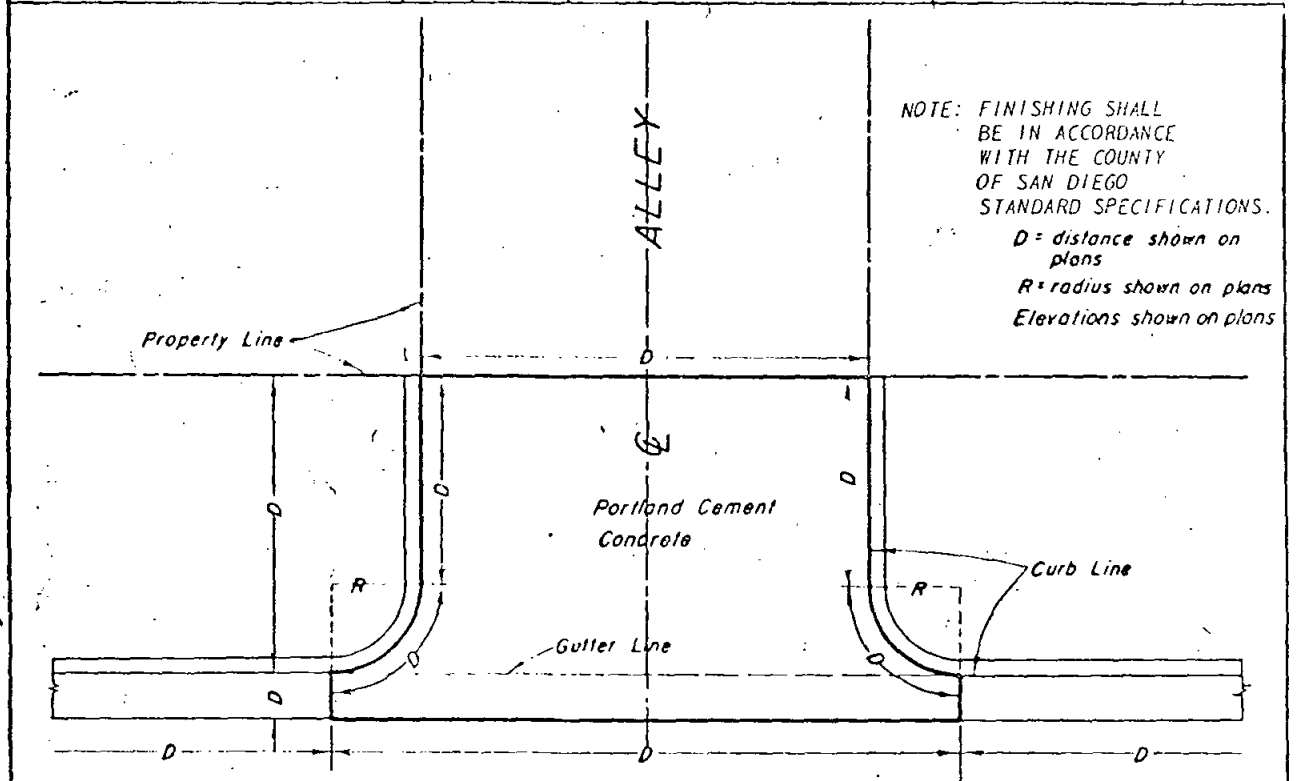


CROSS GUTTER AND RETURN SEGMENT TO BE CONSTRUCTED WHERE DRAINAGE IS CARRIED ACROSS STREET:

ALL CONCRETE SHALL BE CLASS A
ON ALL CONTACT JOINTS THE TONGUE SHALL BE POURED FIRST.
SEE STD. DWG. G-42 FOR JOINT DETAILS.

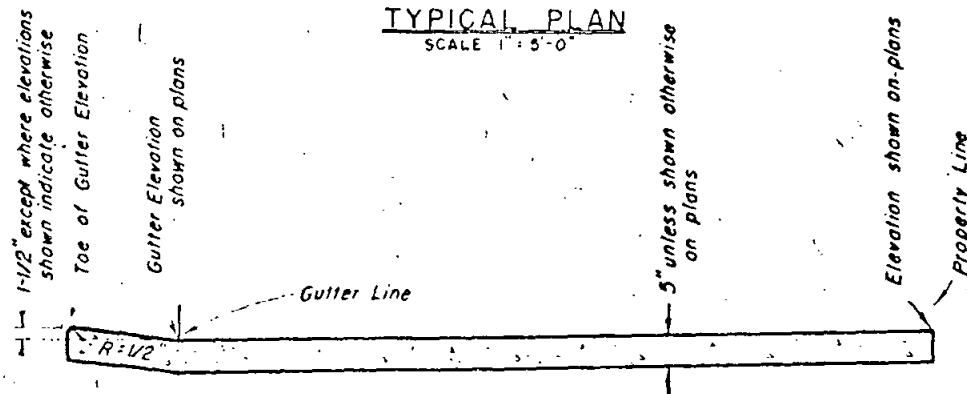
SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE AS SHOWN
	CONCRETE CROSS GUTTER AND RETURN SEGMENT		DRAWING NO.
			G-35

REVISIONS				APPROVALS	
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER	
NOTE ADDED	D.E.G.	R. Fischel	2/1/71		



NOTE: FINISHING SHALL BE IN ACCORDANCE WITH THE COUNTY OF SAN DIEGO STANDARD SPECIFICATIONS.
D = distance shown on plans
R = radius shown on plans
 Elevations shown on plans

TYPICAL PLAN
 SCALE 1" = 5'-0"



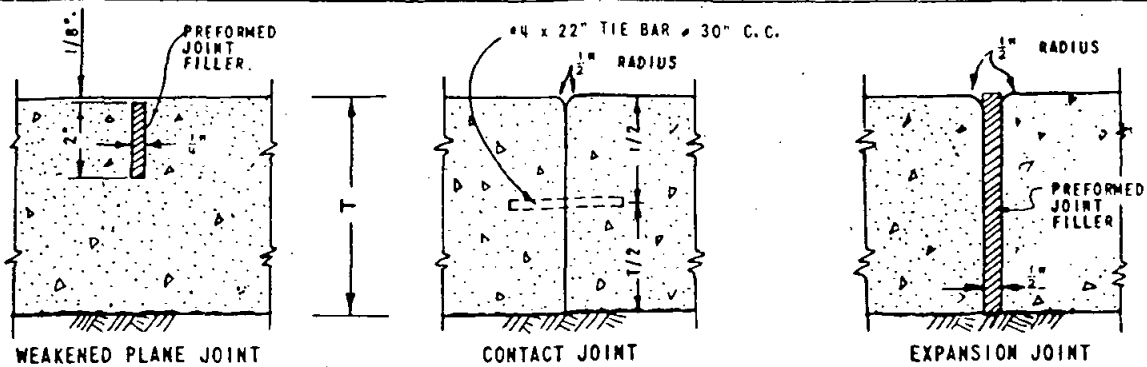
G SECTION
 SCALE 1" = 2'-0"

Legend on Plans

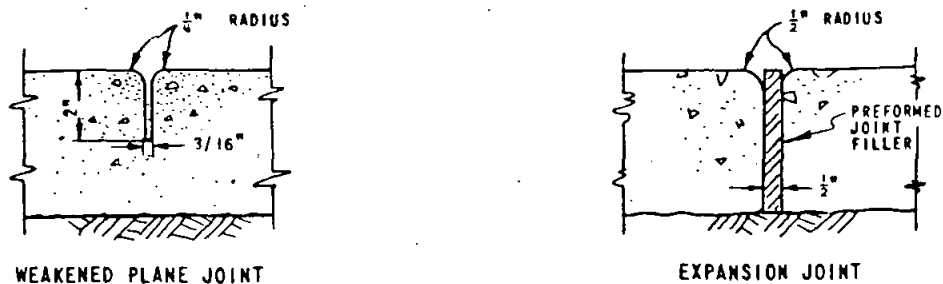


SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE
	ALLEY APRON		DRAWING NO.
			G-39

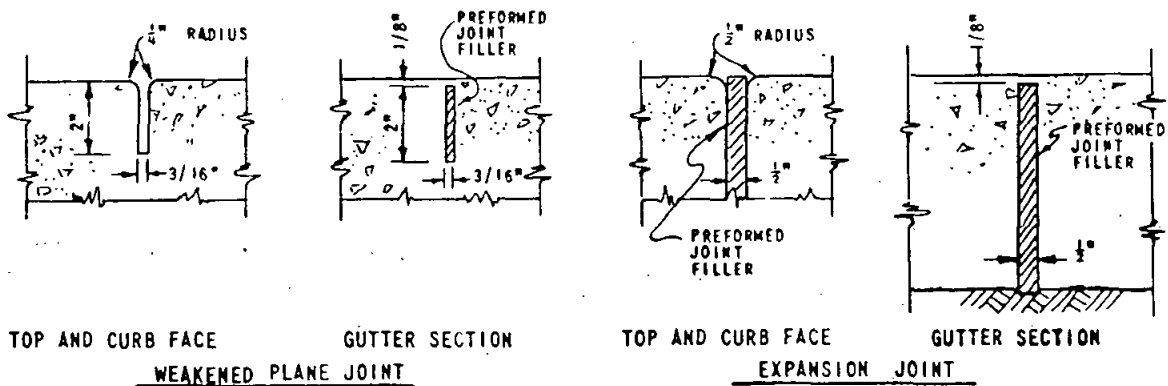
REVISIONS				APPROVALS			
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER			
					<i>H. M. Taylor</i>	<i>11-10-70</i>	



PAVEMENT



SIDEWALK



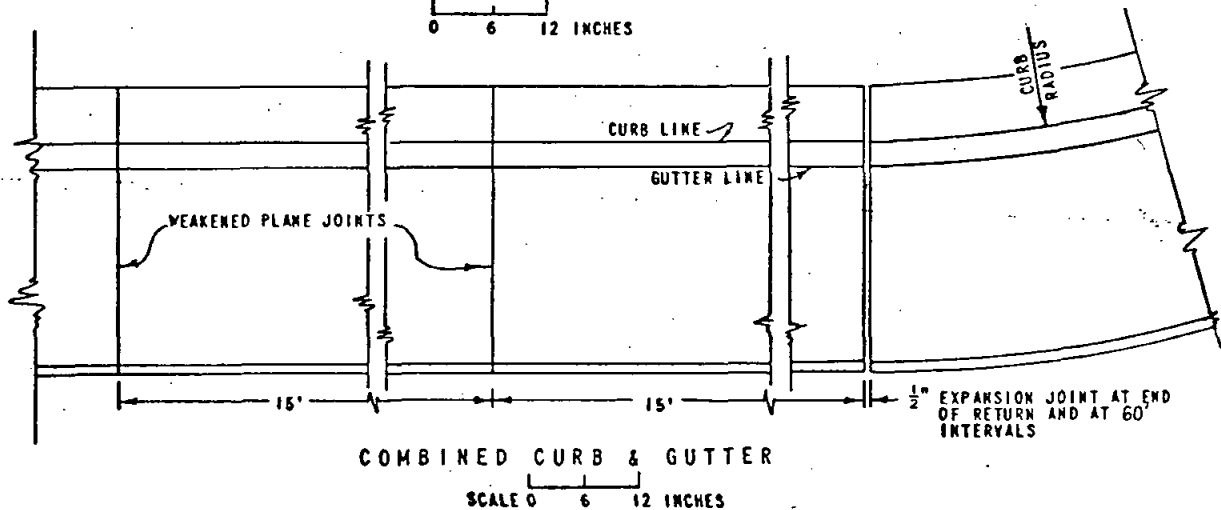
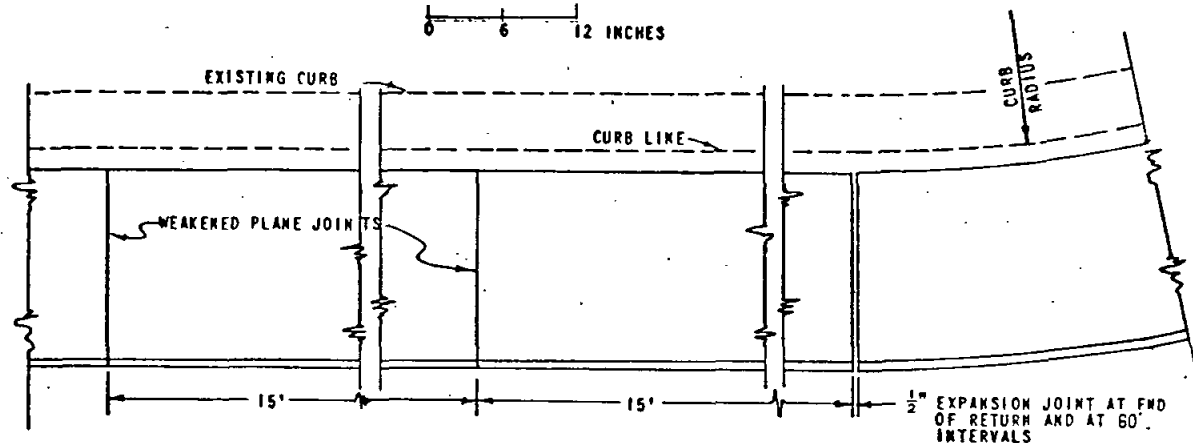
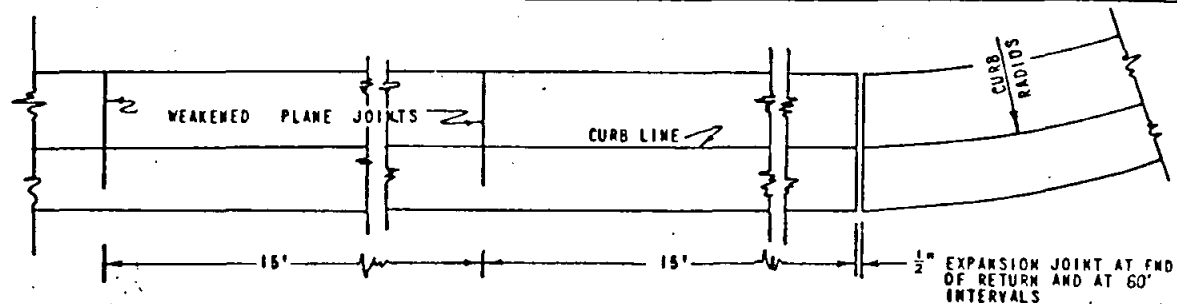
CURB

NOTE: PLACE EXPANSION JOINT FILLER MATERIAL IN TIGHT CONTACT WITH FORMS AND BASE.

WEAKENED PLANE JOINTS MAY BE SAW CUT.
SEE STANDARD SPECIFICATIONS

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE - INCHES
	PORTLAND CEMENT CONCRETE JOINTS		0 2 4
	FOR PAVEMENT, SIDEWALK, CURB		DRAWING NO.
	AND CROSS GUTTER		G-42

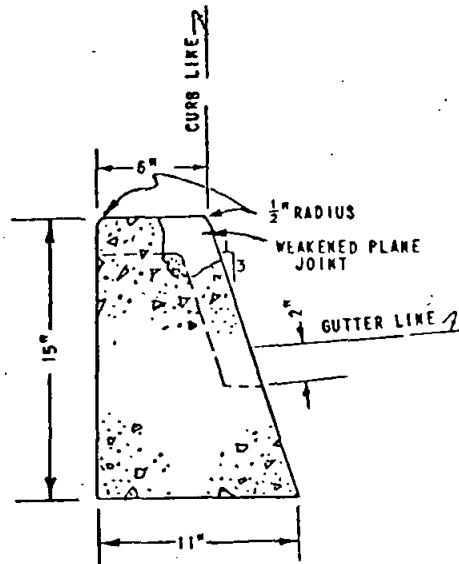
REVISIONS				APPROVALS	
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER	
REMOVE NOTE ON CLASS "A" P.C.C.	D.E.P.	<i>(Signature)</i>	2/1/74	<i>H.W. Taylor</i>	11-10-72



NOTE:
 ADJUST 15' INTERVAL BETWEEN TRANSVERSE JOINTS TO MATCH ADJACENT EXISTING IMPROVEMENTS.
 SEE STD. DWG. G-42 FOR JOINT DETAILS.
 SEE PROJECT PLANS FOR CURB TYPES.
 SEE PROJECT PLANS FOR STREET WIDTH DIMENSIONS.
 STREET AND SIDEWALK AREA WIDTHS ARE TO CURB LINE. ISLAND WIDTHS ARE TO GUTTER LINE.

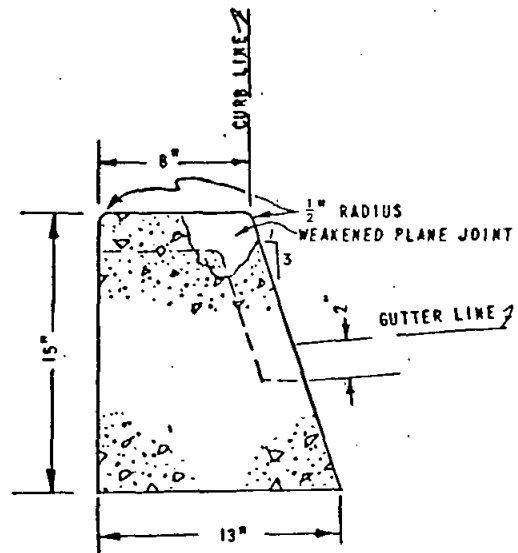
SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE AS SHOWN
	CURBS AND GUTTERS		DRAWING NO.
	TYPICAL PLANS		G-43

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
REMOVED NOTE ON CLASS "A" P.C.C.	D.E.B.	P. H. H. H. H.	2/1/78		H. H. Taylor	11-10-77



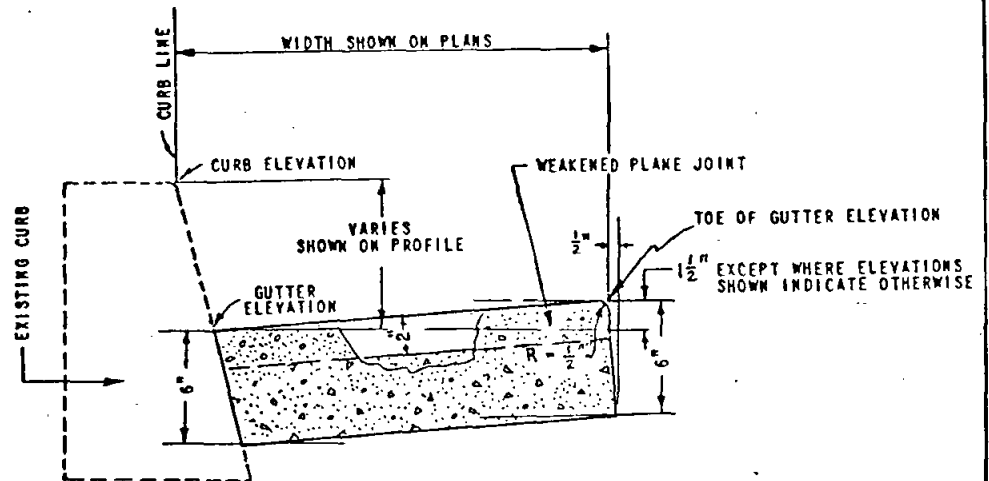
6" CURB

AREA = 0.89 SQ. FT.



8" CURB

AREA = 1.09 SQ. FT.



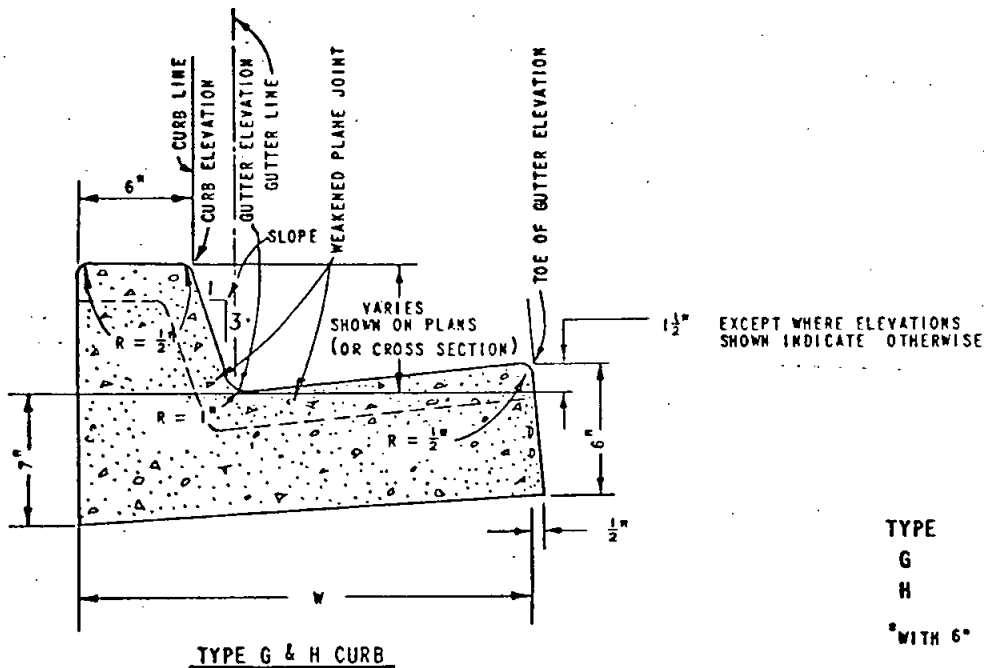
GUTTER

NOTE:

SEE DWG. G-42 FOR JOINT DETAILS.
SEE DWG. G-43 FOR TYPICAL PLANS.

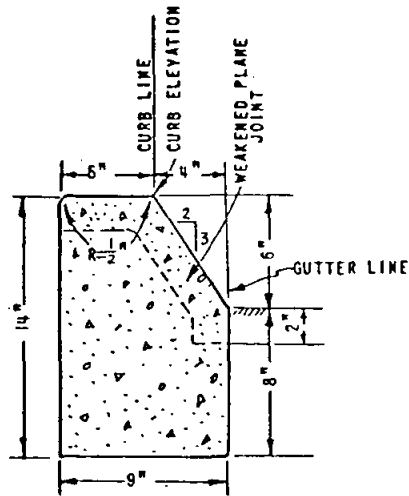
SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE - INCHES
			0 3 6
	6" & 8" CURB SECTIONS		DRAWING NO.
	& GUTTER SECTION		G-44

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
REMOVED NOTE ON CLASS "A" P.C.C.	J.E.D.	<i>R. Kuchel</i>	2/1/78		<i>H. M. Taylor</i>	11-10-77

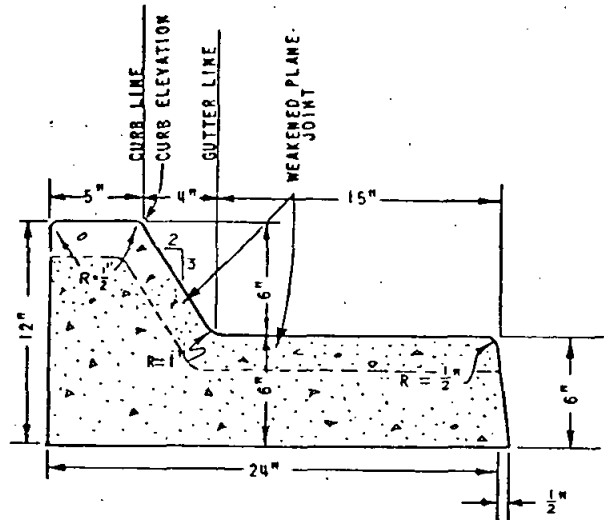


SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	0 3 6
	CURB SECTIONS		SCALE - INCHES
	TYPES G & H		DRAWING NO.
			G-45

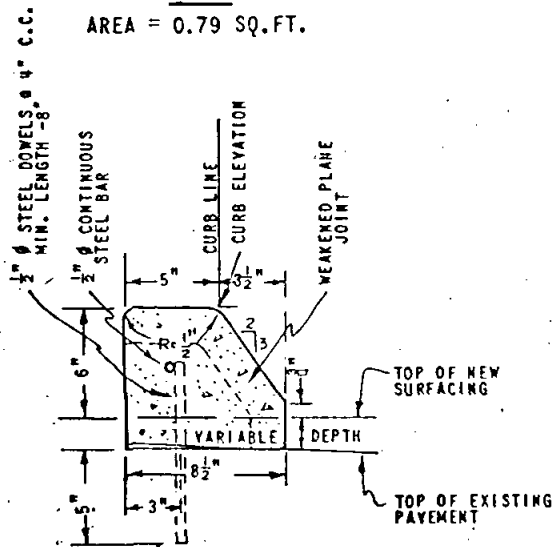
REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
REMOVED NOTE ON CLASS "A" P.C.C.	J.E.G.	A. Knecht	12/1/74		H. T. Taylor	11-13-77



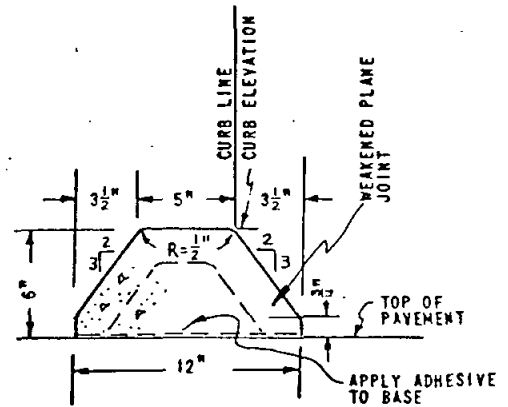
B-1
AREA = 0.79 SQ. FT.



B-2
AREA = 1.29 SQ. FT.



B-3



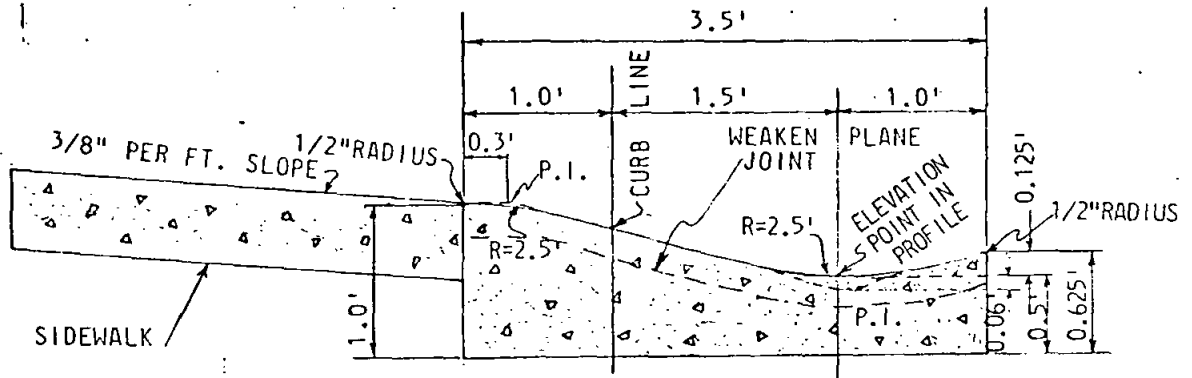
B-4
AREA = 0.35 SQ. FT.
(EXTRUDED TYPE)

NOTE:
SEE DWG. G-42 FOR JOINT DETAILS
SEE DWG. G-43 FOR TYPICAL CURB PLANS

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE - INCHES
			0 3 6
			DRAWING NO.
			G-46

CURB SECTIONS - TYPE B

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
NOTE CHANGE	J.E.B.	<i>[Signature]</i>	4/1/74		<i>H. W. Taylor</i>	4-10-74



TYPICAL SECTION

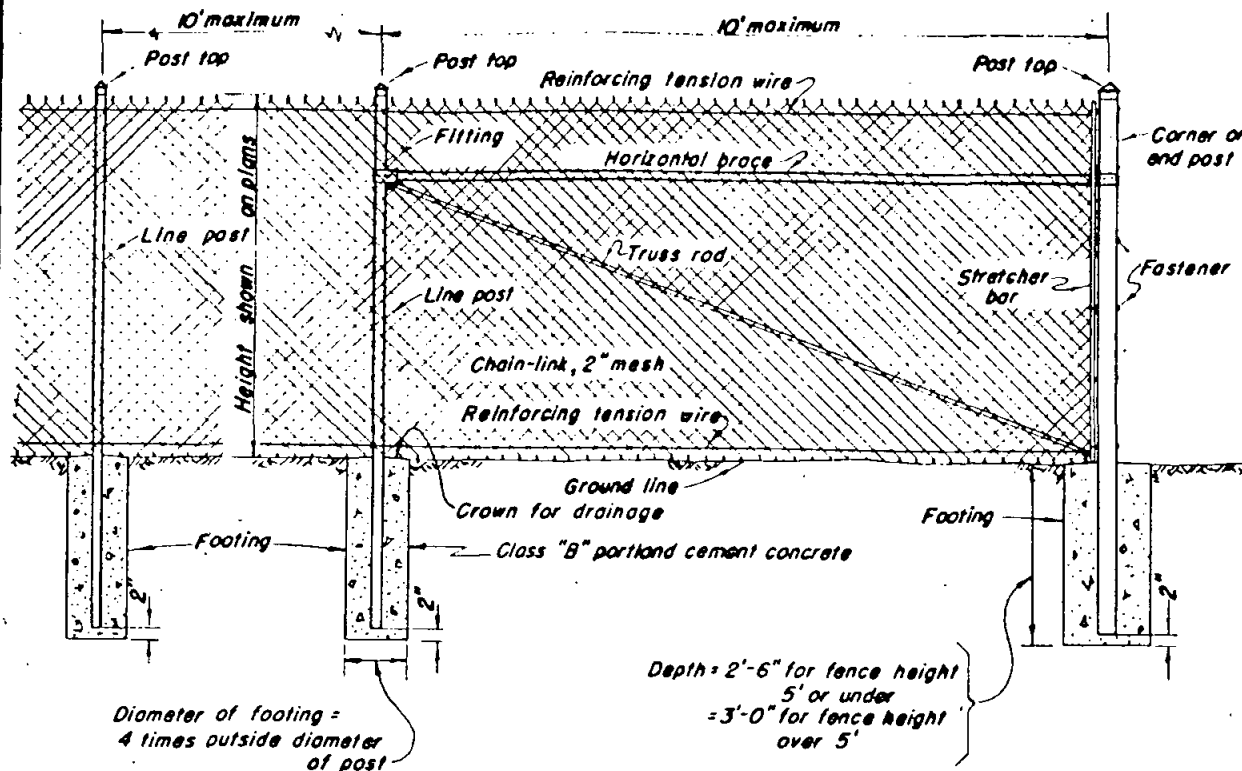
CURB AREA
2.33 ²FT.

NOTES:-

1. TRANSITION TO A TYPE "G" CURB WILL BE PROVIDED AT ALL CURB RETURNS, AT ALL DRAINAGE STRUCTURES AND AT ALL CUL-DE-SACS WITH DRAINAGE STRUCTURES.
2. ALL CONCRETE SHALL BE CLASS "B".
3. SEE DRAWING G-42 FOR JOINT DETAILS.
4. SEE DRAWING G-43 FOR TYPICAL PLANS.
5. ALL CONCRETE WATER METER BOX COVERS AND LIDS SHALL BE CAST IRON.

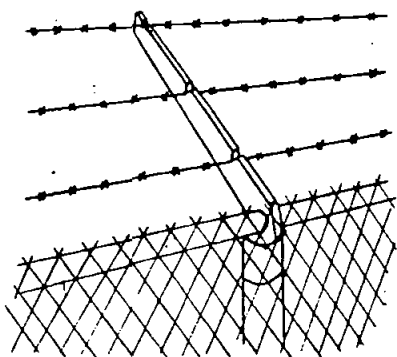
SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE NONE
		CURB SECTION	
		TYPE "D" ROLL CURBS	DRAWING NO.
			G-57

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. Taylor</i>	<i>11-11-72</i>



ELEVATION

NOTE: All footings shall be class "B" portland cement concrete



Legend on Plans -

NOTE: The following items shall be furnished and installed only when shown on the plans and/or called for in the special conditions:

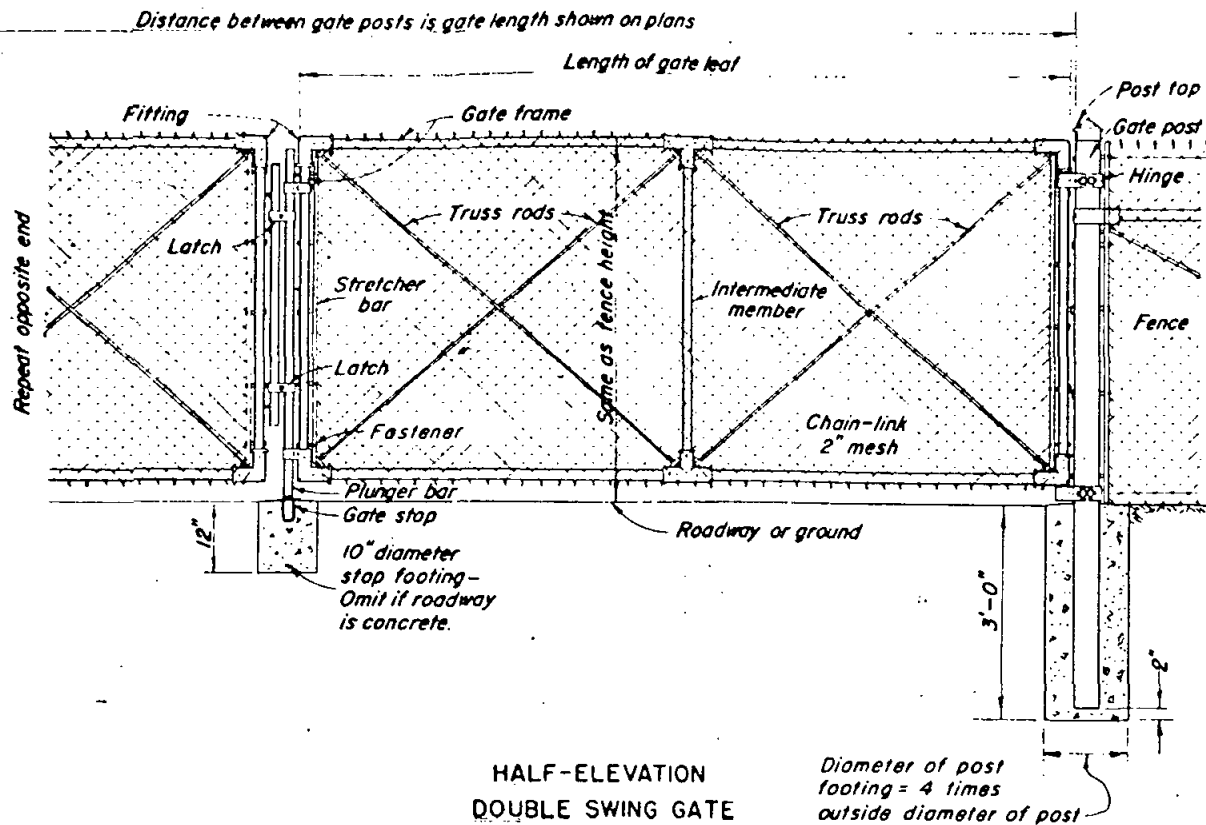
1. Barbed wire
2. Extension arm
3. Top horizontal rail

EXTENSION ARM AND BARBED WIRE

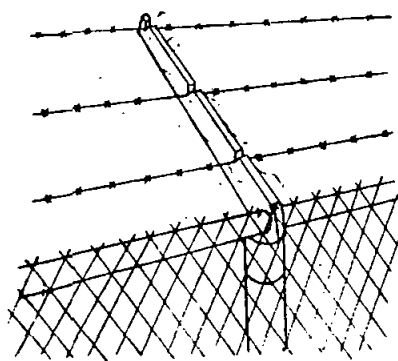
No Scale

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE $\frac{1}{2}'' = 1'-0''$
	CHAIN LINK FENCE		DRAWING NO.
			M-4

REVISIONS				APPROVALS	
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER	



NOTE: All footings shall be class "B" portland cement concrete.



EXTENSION ARM AND BARBED WIRE

No Scale

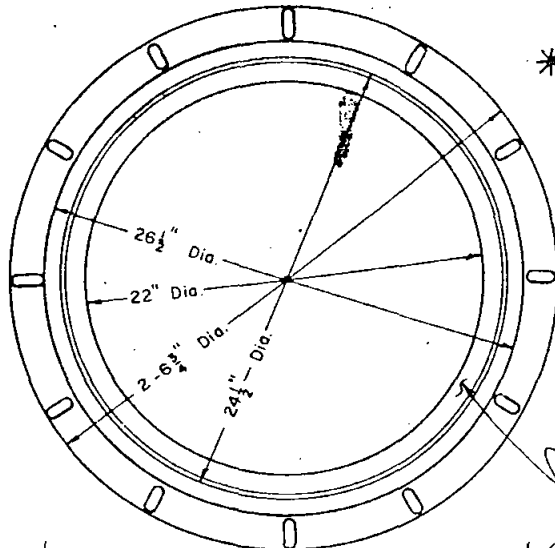
Legend on Plans - —○—x—x—x—

NOTE: The following items shall be furnished and installed only when shown on the plans and/or called for in the special conditions:

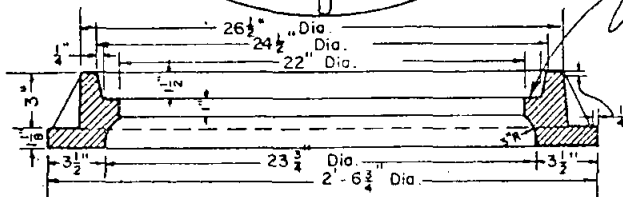
1. Barbed wire
2. Extension arm

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE
	CHAIN LINK GATE		DRAWING NO.
			M-5

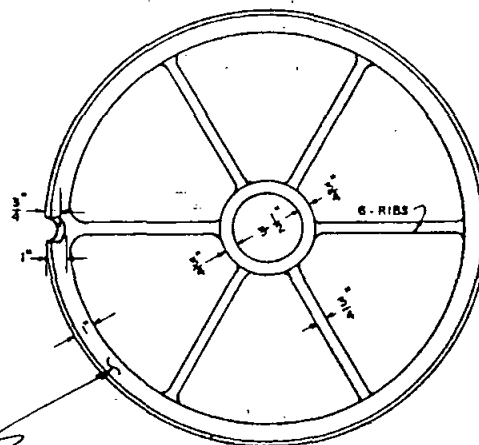
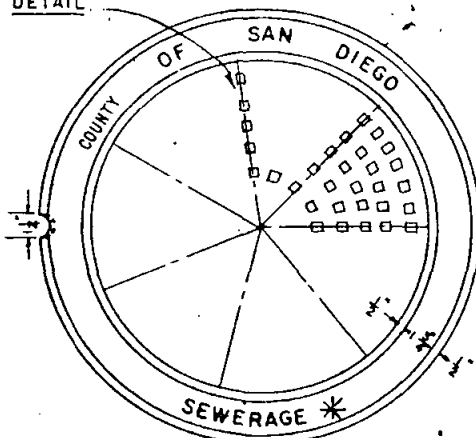
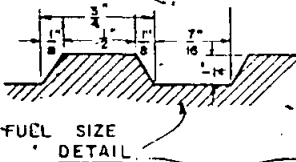
REVISIONS				APPROVALS		
DESCRIPTION	EIV	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. W. Taylor</i>	11-10-72



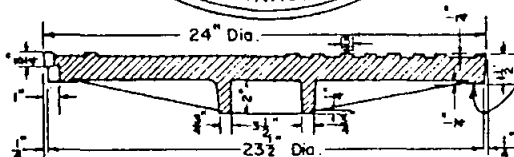
FOR	MARK
Sewer Projects	Sewerage
Storm Drain Projects	Drain
Water Projects	Water
Electrical Projects	Electric



MANHOLE COVER FRAME
CAST IRON WT. 175 LB.

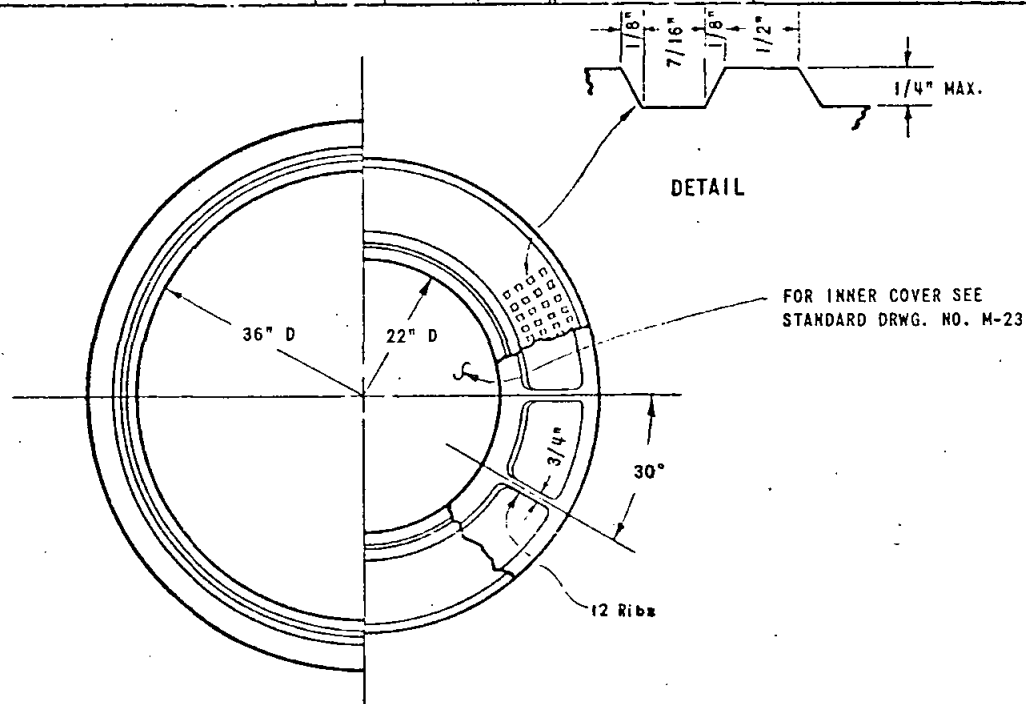


MANHOLE COVER
CAST IRON WT. 155 LB.

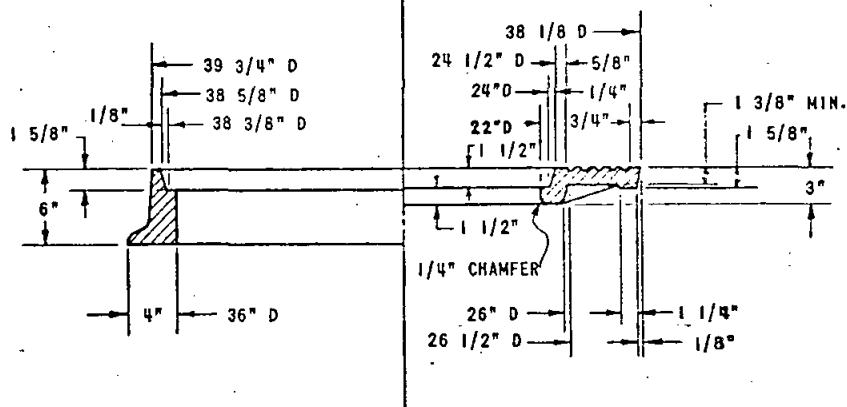


SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE $\frac{1}{2}'' = 1'$
	MANHOLE FRAME & COVER		DRAWING NO.
			M-23

REVISIONS				APPROVALS	
DESCRIPTION	By	APPROVED	DATE	COUNTY ENGINEER	
				<i>H.M. Taylor</i>	2-19-74



HALF PLAN
FRAME AND COVER



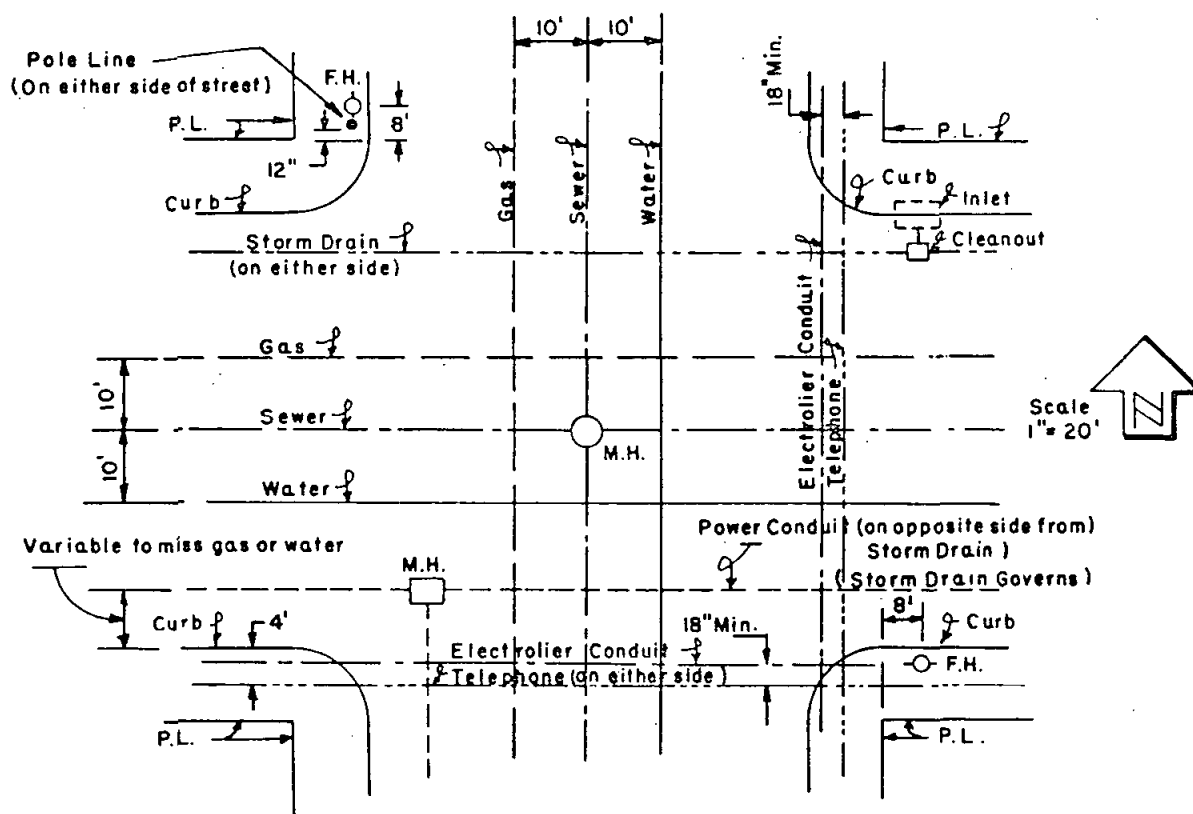
HALF SECTION
FRAME AND COVER

NOTES

- WEIGHTS:
INNER COVER - 155 LBS.
OUTER COVER - 300 LBS.
FRAME - 330 LBS.
- MATERIAL: CAST IRON
- MACHINE SEATS TO PREVENT NOISE
- FILLET RADIUS TO BE 1/2"

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE
	MANHOLE FRAME AND TWO CONCENTRIC COVERS		DRAWING NO.
			M-54

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		



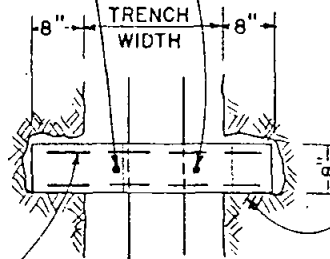
ROADWAY INTERSECTION PLAN

NOTE: This "STANDARD" is a guide only and deviations will be acceptable where conditions dictate. Dimensions shown are desirable but do not govern. The intention is to show the Relative Position of ALL UTILITIES

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE As shown
	GUIDE FOR LOCATION OF PIPES CONDUITS AND UNDERGROUND WORK IN STREETS		DRAWING NO.
			P-24

REVISIONS				APPROVALS		
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. Taylor</i>	11-10-72

5 BAR EACH SIDE OF PIPE FOR
VERTICAL TIE TO HORIZONTAL
LADDER REINFORCEMENT.

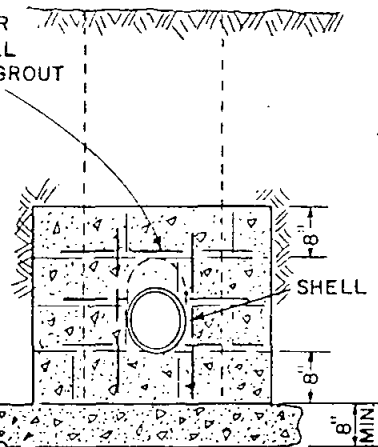


BLOCKS LAID TIGHT AS POSSIBLE
TO DOWNSTREAM PORTION OF
DAP INTO TRENCH WALL

PLAN

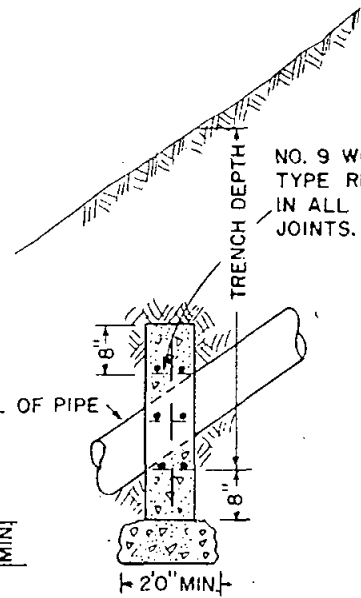
CLASS B CONCRETE
OR

8" x 8" x 16" CONCRETE
BLOCKS WITH NO. 9 LADDER
TYPE REINFORCEMENT. FILL
CORES OF BLOCKS WITH GROUT



CONCRETE
FOOTING

SECTION

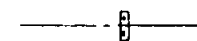


NO. 9 WIRE LADDER
TYPE REINFORCEMENT
IN ALL HORIZONTAL
JOINTS.

ELEVATION

DETAIL PLANS

LEGEND ON PLANS

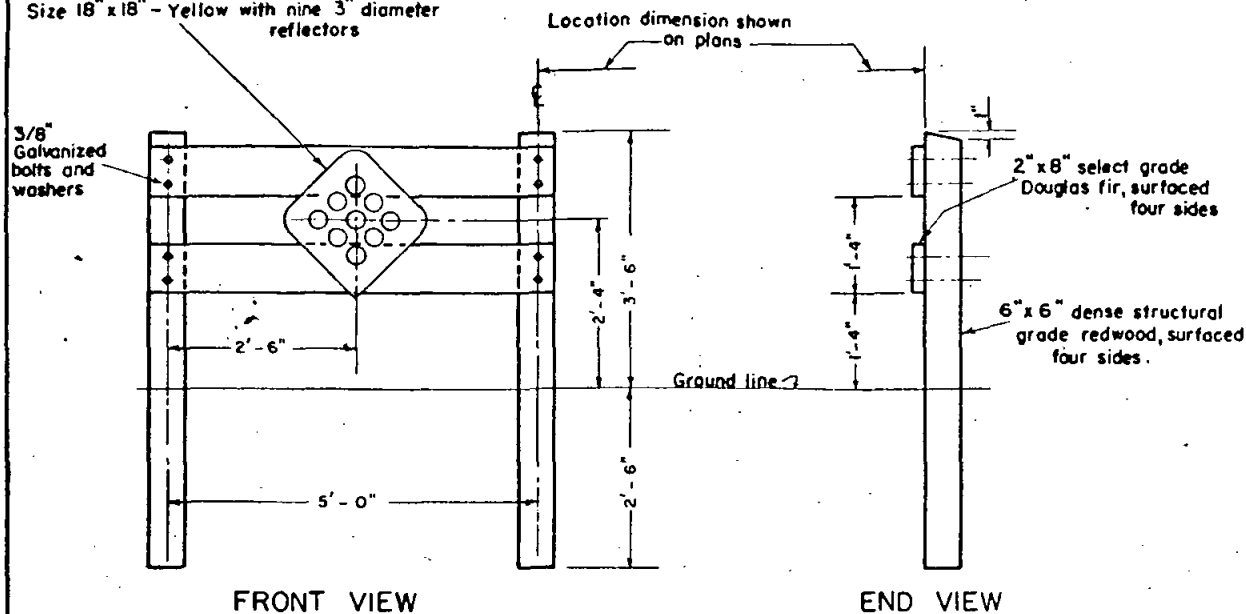


SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE NONE
			DRAWING NO.
			S-27

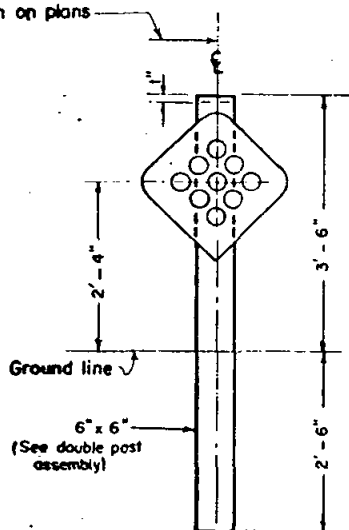
CONCRETE ANCHOR

REVISIONS				APPROVALS	
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER	
				<i>H. M. Long</i>	11-12-72

Reflector sign—California Highway Code W21R.
Size 18" x 18" — Yellow with nine 3" diameter
reflectors



Location dimension shown on plans



Type C (Double post without reflector sign)
Type CS (Double post with reflector sign)

NOTE: Install Type CS assembly
with one (1) only code W21R sign in
head-on position for each approaching
lane of traffic.

Type D (Single post without reflector sign)
Type DS (Single post with reflector sign)

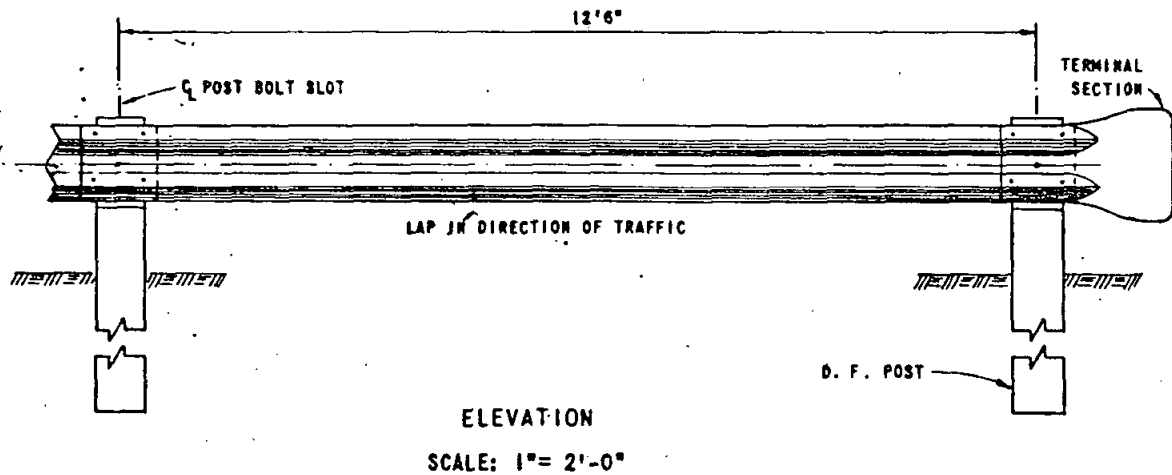
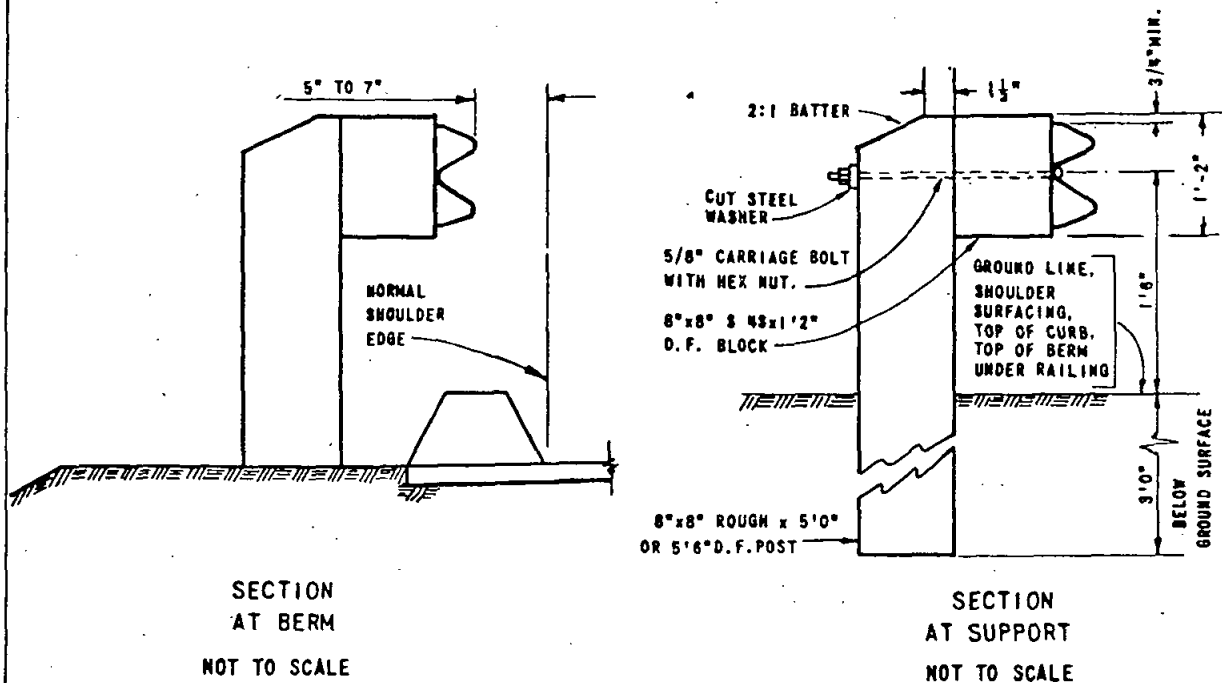
LEGEND ON PLANS



 Type CS Type DS

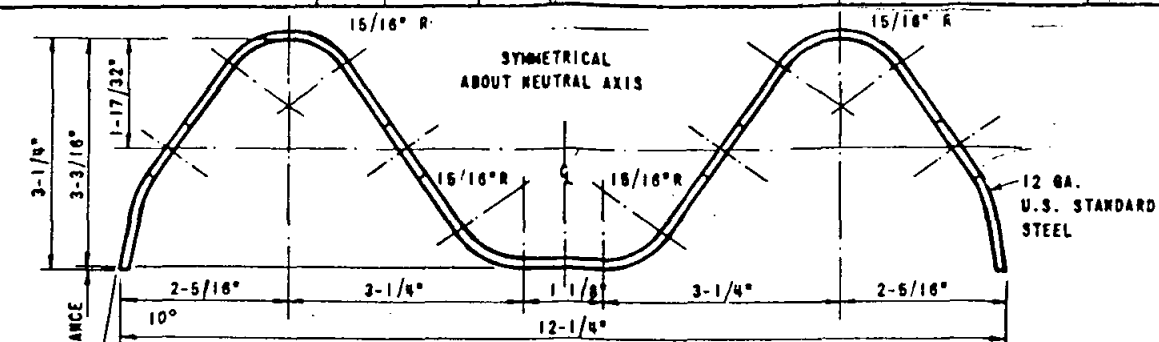
SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE 1/2" = 1'
	GUARD POST AND FENCE ASSEMBLY FOR TERMINATING STREETS		DRAWING NO. T-9

REVISIONS				APPROVALS		
DESCRIPTION	E.Y.	APPROVED	DATE	COUNTY ENGINEER		
					<i>H. Taylor</i>	11-18-77

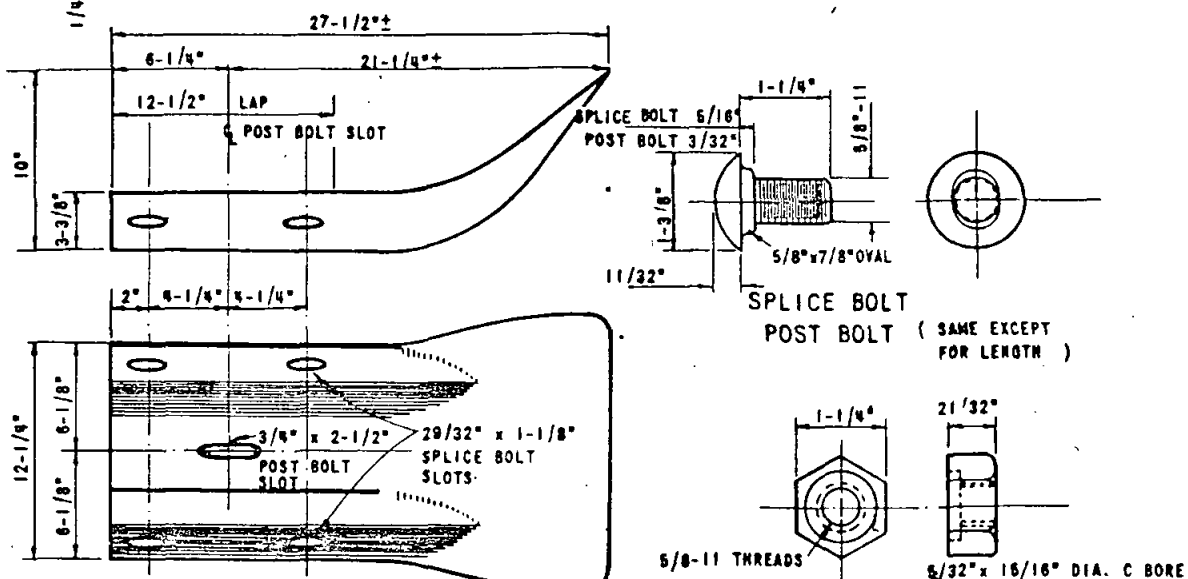


SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE AS SHOWN
	METAL BEAM GUARD RAIL INSTALLATION		DRAWING NO.
			T-15

REVISIONS				APPROVALS	
DESCRIPTION	BY	APPROVED	DATE	COUNTY ENGINEER	

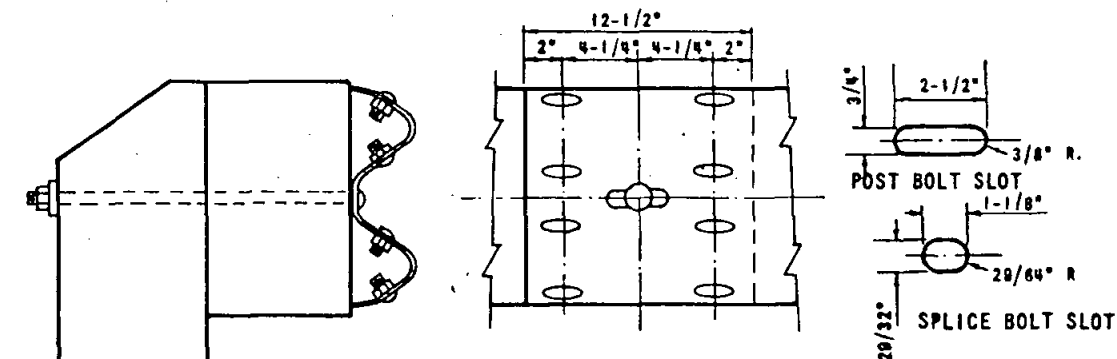


SECTION THROUGH RAIL ELEMENT



TERMINAL SECTION

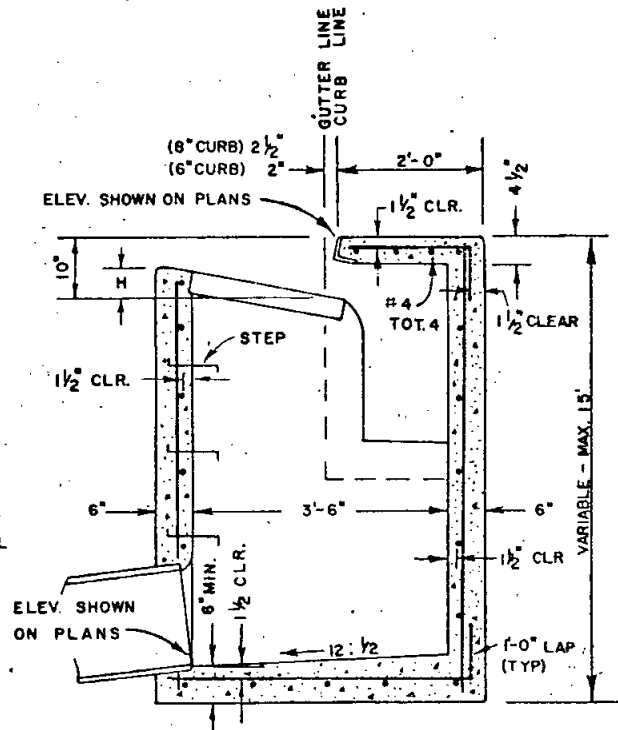
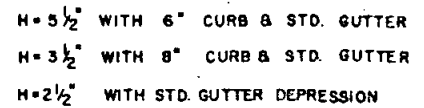
HEXAGON NUT



RAIL SPLICE DETAIL

NOTE: ALL RAIL ELEMENTS SHALL BE GALVANIZED.

SPECIFICATION REFERENCE	COUNTY OF SAN DIEGO	STANDARD DRAWING	SCALE
			NO SCALE
	METAL BEAM GUARD RAIL		DRAWING NO.
	DETAIL		T-16



HALF ELEVATION

L	Y	Z
10'	2'-0"	2'-6"
15'	3'-0"	5'-0"
20'	4'-0"	7'-0"

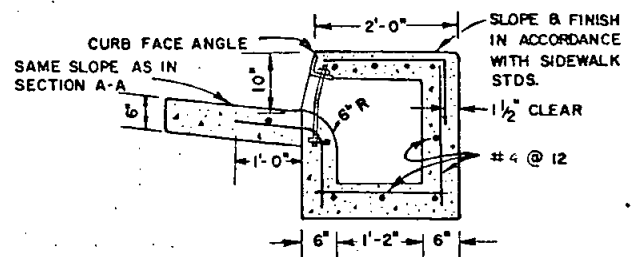
1. FOR ADDITIONAL CONSTRUCTION DETAILS SEE STD. DWG. 131,
"DRAINAGE STRUCTURE STANDARD DETAILS"

2. ALL CONCRETE TO BE CLASS "A"

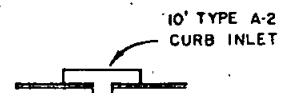
3. STD. GUTTER DEPRESSION TO BE USED WHEN REQ. BY COUNTY ENGINEER
SEE STD. DWG. 224

4. CONSTRUCT 10' TRANSITION FROM STD. CURB HEIGHT TO DEPRESSED GUTTER AT EACH END OF INLET.

5. INCREASE IN ALLOWABLE DEPTH SUBJECT TO APPROVAL OF COUNTY ENGINEER.

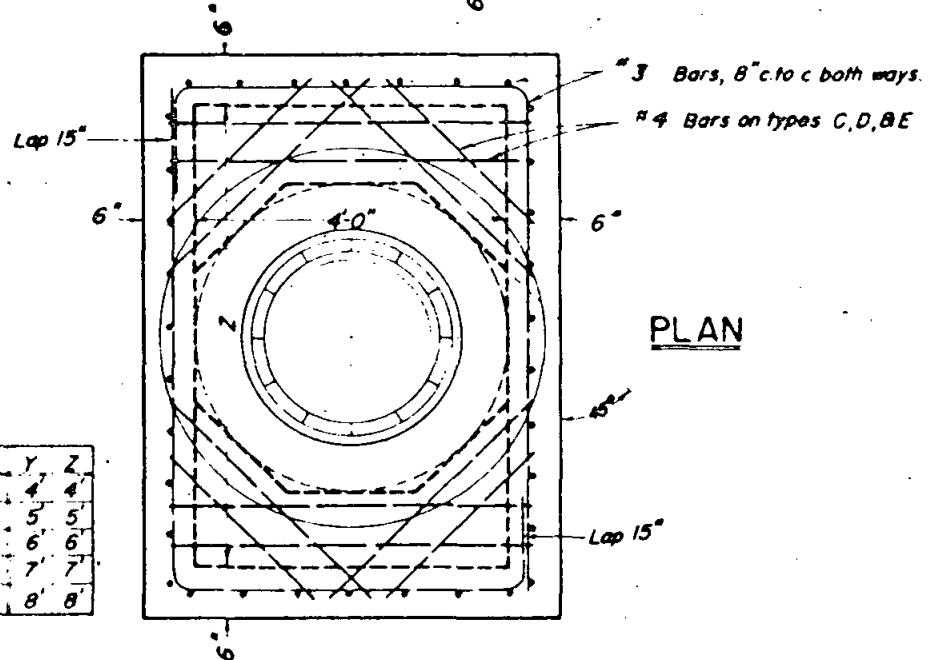
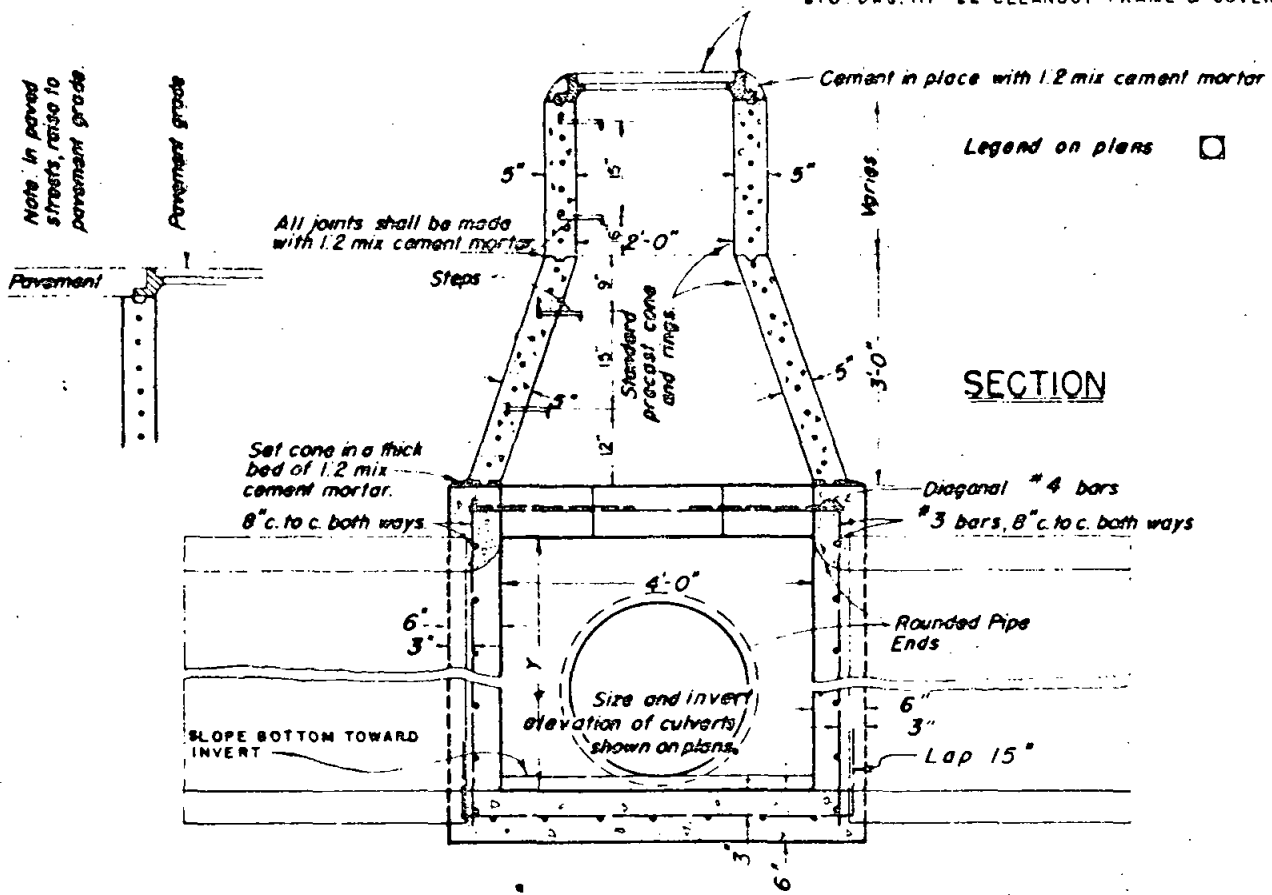


SECTION B-B



LEGEND ON PLANS

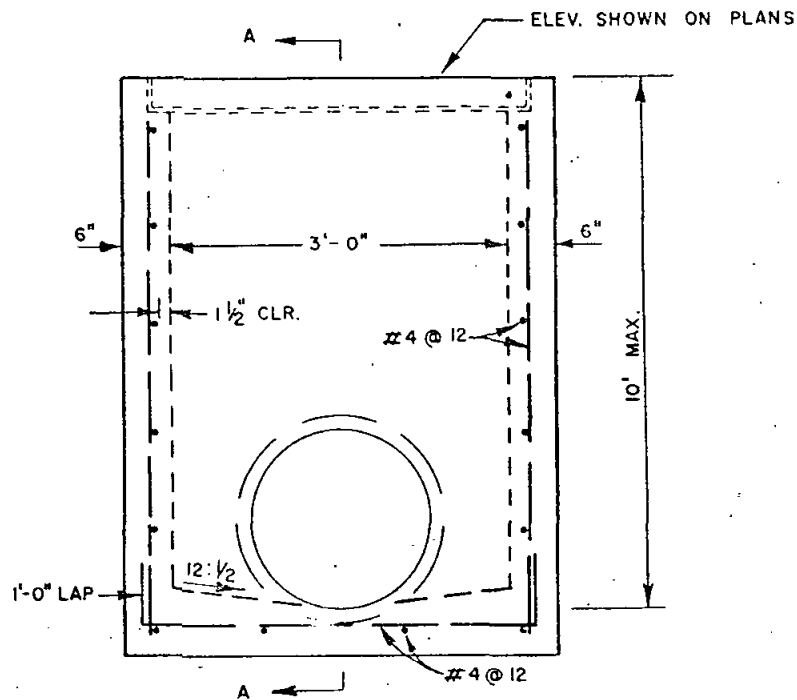
STD. SPEC. SEC. 51, 52, 73, 90					
DRAWN BY <u>BC</u>	CHECKED BY <u>BC</u>				
RECOMMENDED BY <u>[Signature]</u>	SAN DIEGO COUNTY ENGINEER DEPARTMENT	REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER	STANDARD DRAWING	SCALE: NONE			
<u>[Signature]</u> R.C.E. 8091	TYPE A-2 CURB INLET	DRAWING NUMBER 100-2			
DATE: <u>10/18/65</u>					



	Y	Z
A for pipes up to 39"	4	4
B " " " 42"-48"	5	5
C " " " 51"-60"	6	6
D " " " 63"-72"	7	7
E " " " 75"-84"	8	8

NOTE:
WHEN HEIGHT EXCEEDS 4' CAST 3/8" ROUND WROUGHT IRON STEPS IN WALL A MAXIMUM OF 15" APART. SEE SAN DIEGO COUNTY DWG 131 "DRAINAGE STRUCTURE STANDARD DETAILS"

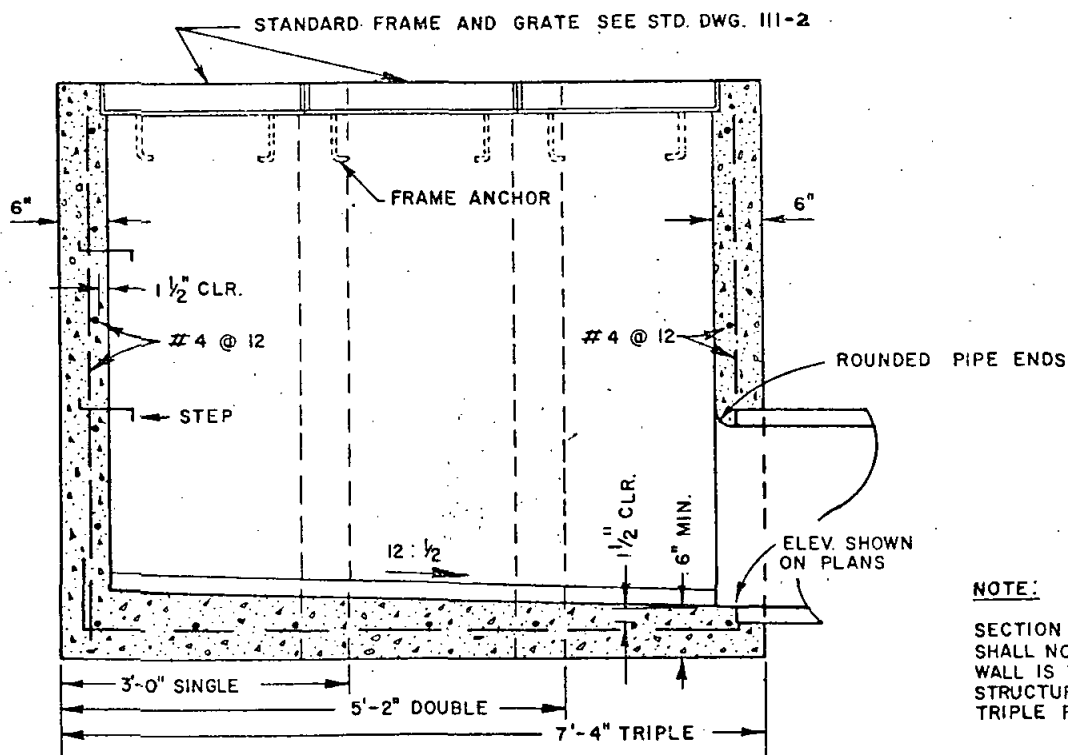
STD SPEC. SEC. 51, 52, 73, 90				
DRAWN BY <i>D.L.</i> CHECKED BY <i>Y</i>				
RECOMMENDED BY <i>[Signature]</i>	SAN DIEGO COUNTY ENGINEER DEPARTMENT	REVISION	BY	APPROVED
APPROVED BY COUNTY ENGINEER	STANDARD DRAWING	SCALE:	NONE	
<i>D.K. Olsen</i> HCE 8091	STORM DRAIN CLEANOUT	DRAWING	NUMBER	
DATE <i>10/11/1965</i>	TYPES A, B, C, D & E	102-1		



ELEVATION

NOTES

1. ALL CONCRETE SHALL BE CLASS "A"
2. FOR ADDITIONAL CONSTRUCTION DETAILS SEE STD. DWG. 131 "DRAINAGE STRUCTURE STANDARD DETAILS"
3. INCREASE IN ALLOWABLE DEPTH SUBJECT TO APPROVAL BY COUNTY ENGINEER..

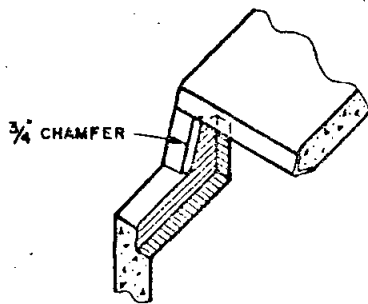


SECTION A-A

NOTE:

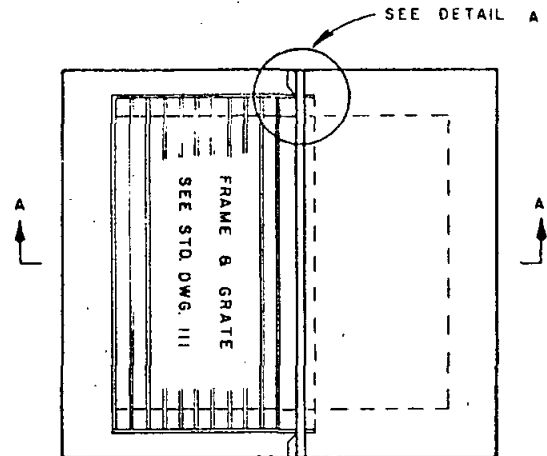
SECTION A-A SHOWS 3 SIZES AND SHALL NOT IMPLY THAT AN INTERIOR WALL IS TO BE BUILT FOR THE STRUCTURES WITH DOUBLE OR TRIPLE FRAME & GRATE.

STD. SPEC. SEC. 51, 52, 73, 90	SAN DIEGO COUNTY ENGINEER DEPARTMENT				
DRAWN BY <u>DC</u> CHECKED BY <u>SP</u>					
RECOMMENDED BY <u>[Signature]</u>		REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER		SCALE: NONE			
<u>[Signature]</u> R.C.E. 8091	TYPE "D" CATCH BASIN	DRAWING			
DATE: <u>10/18/65</u>	SINGLE, DOUBLE, OR TRIPLE	NUMBER 107-2			



DETAIL A

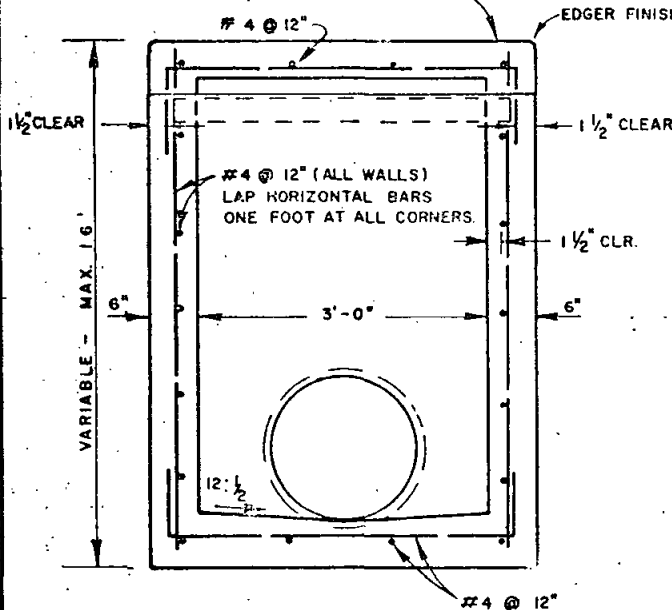
RECESS FOR GRATE REMOVAL



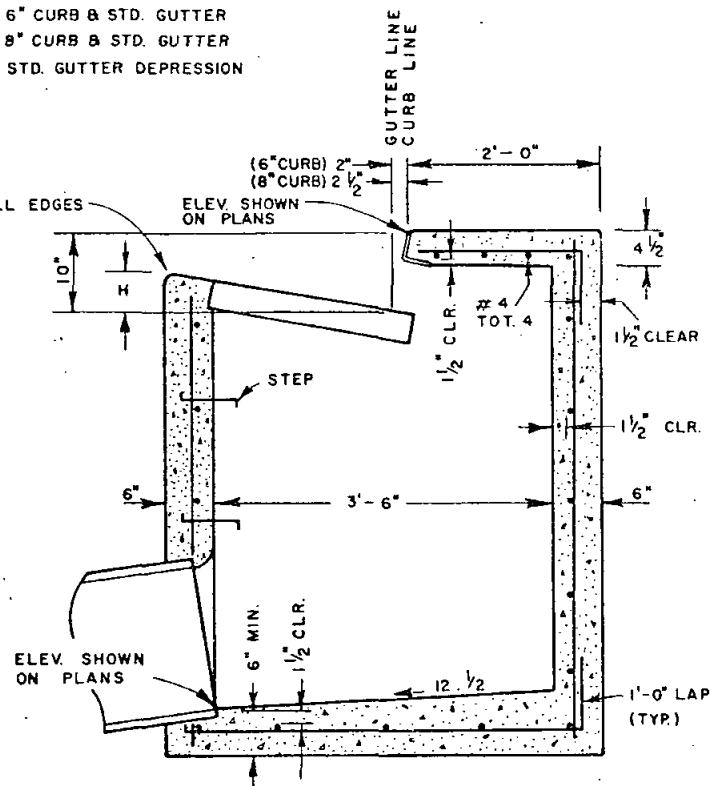
PLAN

H = 5 1/2" WITH 6" CURB & STD. GUTTER
H = 3 1/2" WITH 8" CURB & STD. GUTTER
H = 2 1/2" WITH STD. GUTTER DEPRESSION

SLOPE & FINISH IN
ACCORDANCE WITH
SIDEWALK STDS.



ELEVATION



SECTION A-A

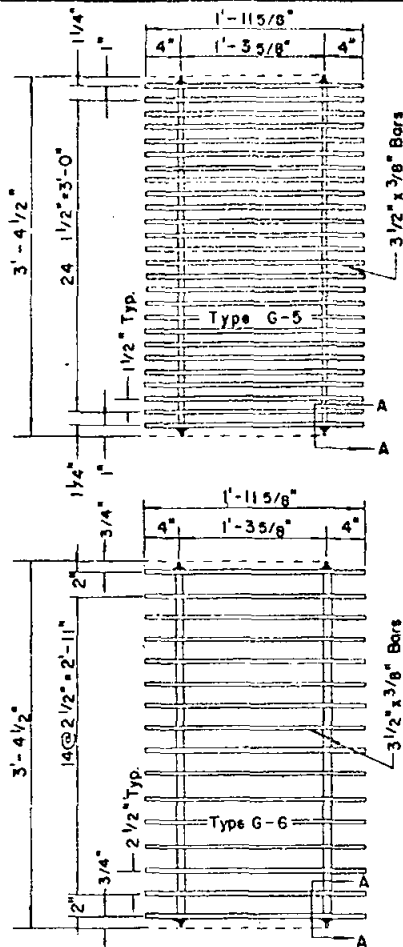
NOTES:

1. ALL CONCRETE SHALL BE CLASS 'A'
2. CONSTRUCT 10' TRANSITION FROM STD. CURB HEIGHT TO DEPRESSED GUTTER AT EACH SIDE OF INLET.
3. FOR ADDITIONAL CONSTRUCTION DETAILS SEE STD. DWG. 131. "DRAINAGE STRUCTURE STANDARD DETAILS"
4. INCREASE IN ALLOWABLE DEPTH SUBJECT TO APPROVAL OF COUNTY SURVEYOR.



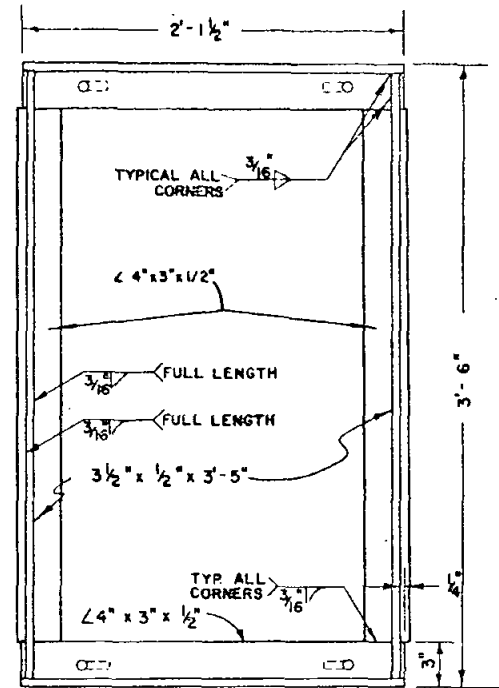
LEGEND ON PLANS

STD. SPEC. SEC. 51, 52, 73, 90	SAN DIEGO COUNTY SURVEYOR - ROAD DEPARTMENT STANDARD DRAWING	REVISION	BY	APPROVED	DATE
DRAWN BY <i>DCI</i> CHECKED BY <i>SP</i>					
RECOMMENDED BY <i>[Signature]</i>					
APPROVED BY COUNTY SURVEYOR					
<i>D. K. Schear</i> R.C.E. 8091	TYPE H CURB INLET	SCALE: NONE			
DATE: <i>10/18/05</i>		DRAWING NUMBER 108-1			



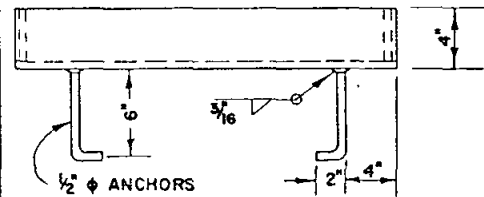
FABRICATED GRATES

(1)



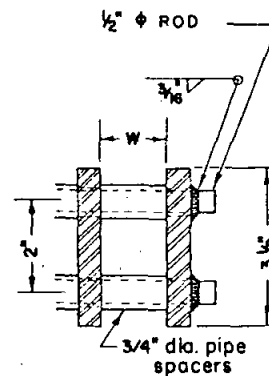
**WELDED STEEL FRAME
PLAN**

GRATE	WGT.
G - 5	261
G - 6	173
FRAME	159

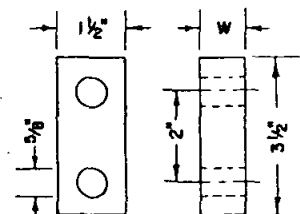


END VIEW

W = 2 1/8" for G-6 (Except end section)
W = 1 1/8" for G-5 (" " ")



SEC. A-A



**ALTERNATE
SPACER**

Notes:

1. Grate type shown on plans.

STD. SPEC. SEC. 55,70

DRAWN BY *W. J. Taylor*

CHECKED BY *W. J. Taylor*

RECOMMENDED BY *W. J. Taylor*

APPROVED BY COUNTY ENGINEER

H. W. Taylor

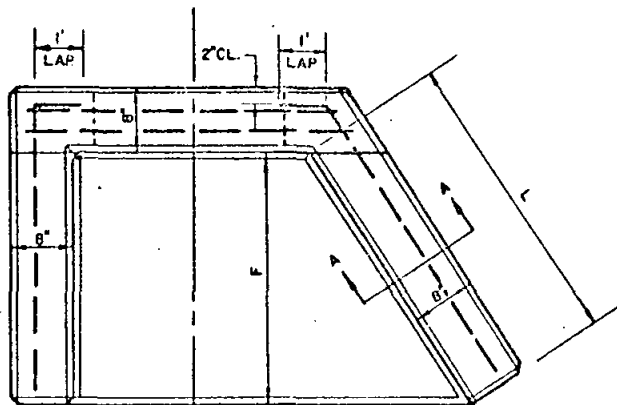
R.C.E. 11458

DATE: *Sept. 28, 1971*

**SAN DIEGO COUNTY ENGINEER DEPARTMENT
STANDARD DRAWING**

**FRAME & GRATES
FOR DRAINAGE STRUCTURES**

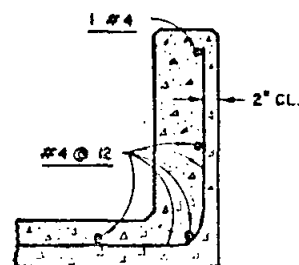
① Removed grate detail	AM.	<i>W. J. Taylor</i>	<i>2/1/71</i>
REVISION	BY	APPROVED	DATE
SCALE: NONE			
DRAWING NUMBER. III-4T			



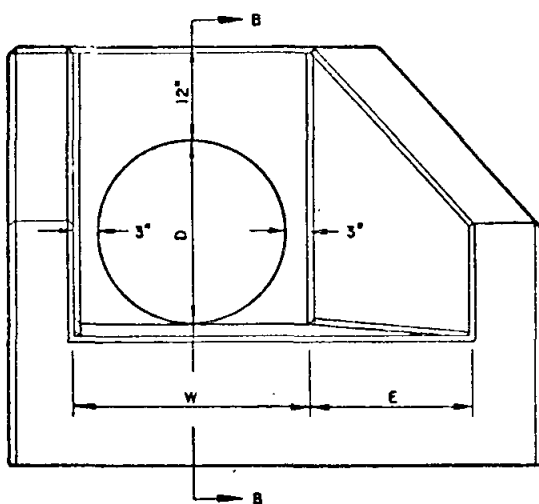
PLAN

U TYPE

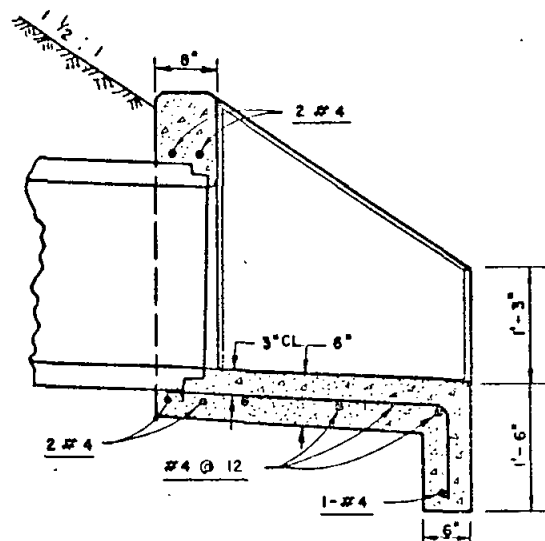
WING TYPE



SECTION A-A



ELEVATION



SECTION B-B

DIAM. OF PIPE	DIMENSIONS			SINGLE PIPE				DOUBLE PIPE					
				W	U TYPE		WING TYPE		W	U TYPE		WING TYPE	
	L	E	F		CONC.	STEEL	CONC.	STEEL		CONC.	STEEL	CONC.	STEEL
					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	4'-6"	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	5'-10"	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	7'-2"	1.68	109	1.92	123
36"	4'-11 1/2"	2'-9"	4'-1 1/2"	3'-6"	1.33	88	1.69	114	8'-6"	2.19	136	2.55	162

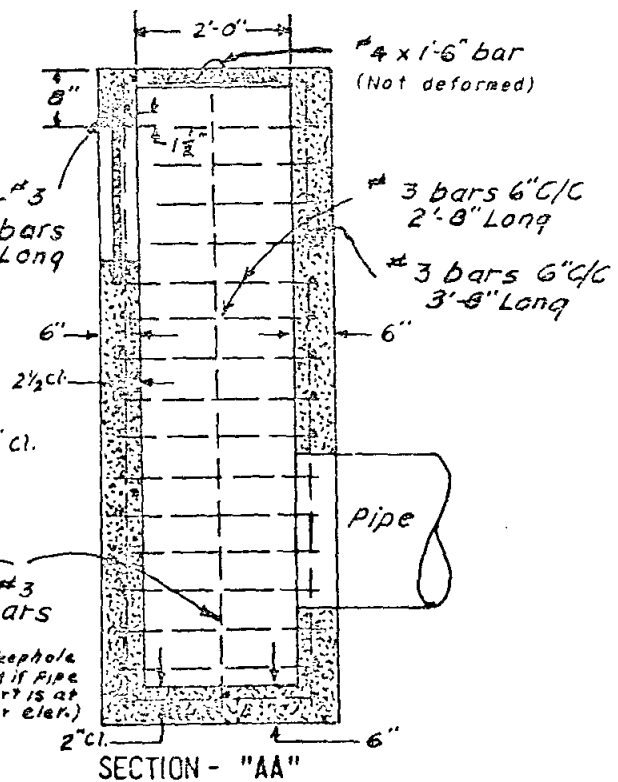
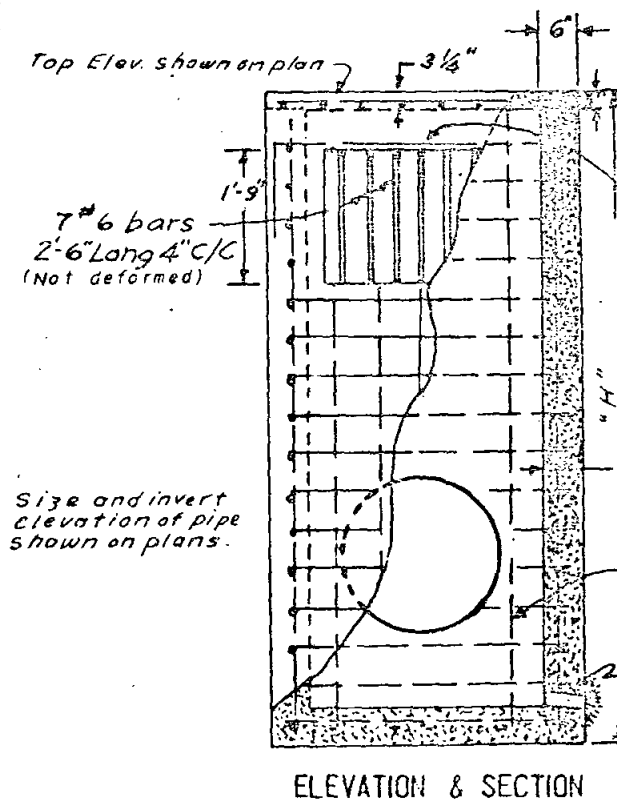
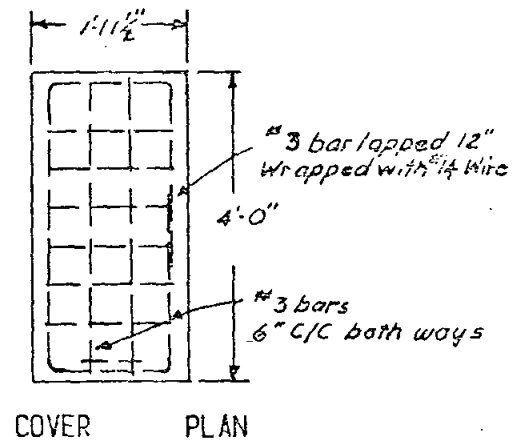
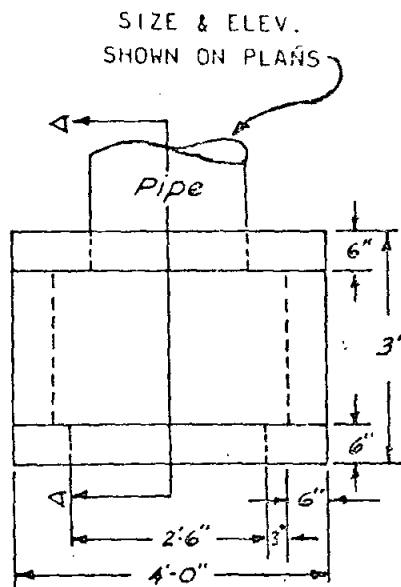
NOTES:

1. ALL CONCRETE SHALL BE CLASS A.
2. ALL EXPOSED CORNERS TO BE CHAMFERED 3/4"
3. MULTIPLE PIPES TO BE SET WITH LONGITUDINAL CENTERS OF PIPE 1 2/3 DIAMETERS APART.
4. TOP OF HEADWALL SHALL BE PLACED APPROXIMATELY PARALLEL TO PROFILE GRADE WHEN THE GRADE IS 3% OR MORE.

STD. SPEC. SEC: 51, 52, 90		SAN DIEGO COUNTY ENGINEER DEPARTMENT STANDARD DRAWING							
DRAWN BY <i>BYG</i>	CHECKED BY <i>CCG</i>								
RECOMMENDED BY <i>RTT/Shape</i>		HEADWALLS & ENDWALLS TYPES U & WING				REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER						SCALE: NONE			
<i>D. X. O'Brien</i> R.C.E. 8091						DRAWING NUMBER 118-1			
DATE: 1/15/68									

FILE NO. 11-25

Revisions	
Date	Approved



Legend on Plans ===[

SPECIFICATION REFERENCE

Sections: 51, 52, 90

County Surveyor

D. R. Speer

SAN DIEGO COUNTY

STANDARD DRAWING

STANDARD TYPE "C" DROP INLET

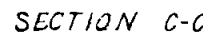
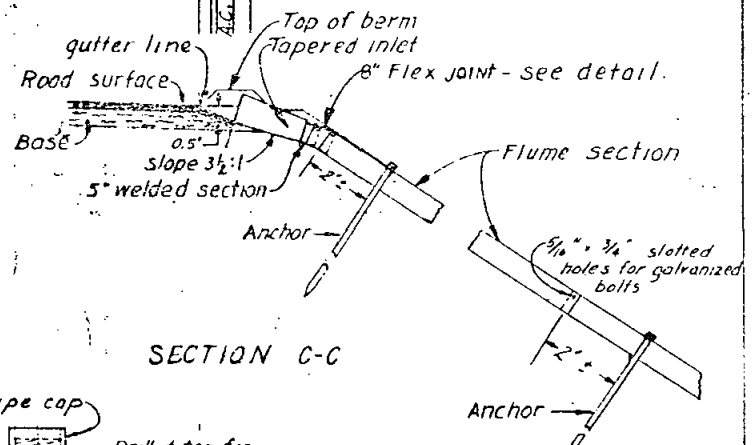
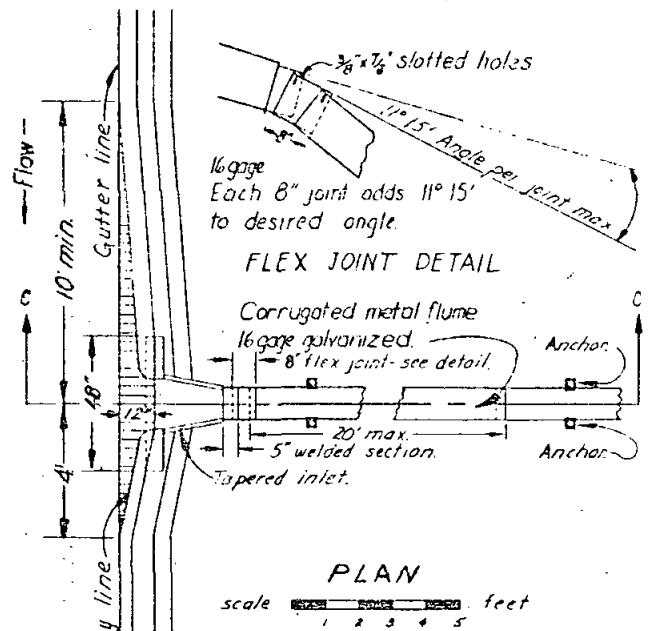
With end opening grate & Concrete cover

Scale: NONE

Drawing No.

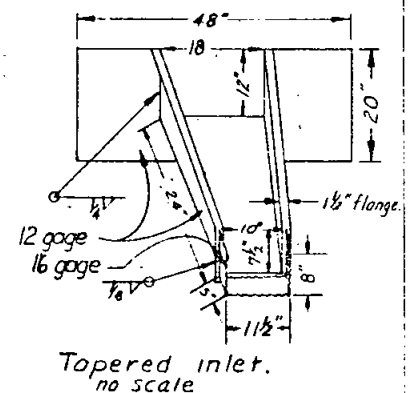
122

TAPERED INLET & DOWNDRAIN FLUME



SECTION B-B
scale  feet
NOTES

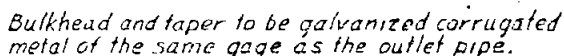
-
- Drill & tap for
 $\frac{1}{2} \times 1\frac{1}{2}$ bolt.
- bolt
- $\frac{3}{4}$ "
- $\frac{1}{2}$ "
- 3"
- $1\frac{1}{2}$ "
- 2" dia. hole
- $3\frac{1}{2} \times 2 \times \frac{1}{4}$ angle.
- Flatten or point
- Anchor detail
- scale 0 3 6 inches
- $1\frac{1}{2}$ " diam. pipe stake
 6' long.



TAPERED INLET & DOWNDRAIN FLUME
ASPHALT CONCRETE SPILLWAY

Revision	By	Approved	Date
Scale: AS shown			
Date Approved: 1-14-63			
Drawing No			
124-1			

Dist.	A	B	C	D	E	F	G	L
8"	16"	25'	15"	4 1/2"	5"	6"	18"	10'
12"	18"	25'	19"	3 1/2"	5"	9"	20"	15'
15"	21"	30"	23"	4 1/2"	6"	12"	24"	25'



14 gage smooth galv. bulkhead and taper with reinforcing beads. Taper joints may be welded or riveted.

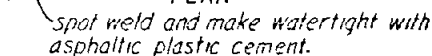
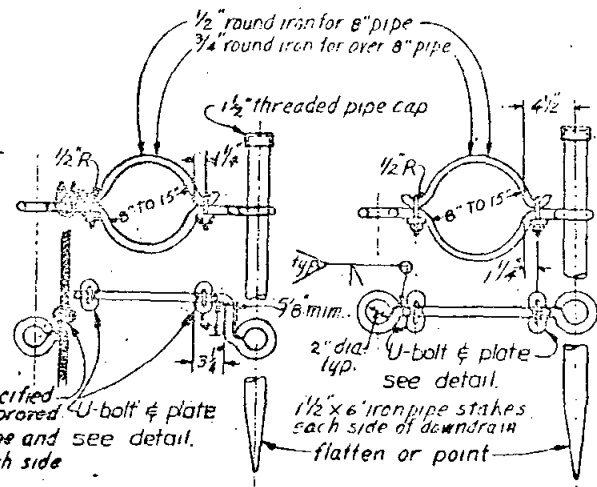


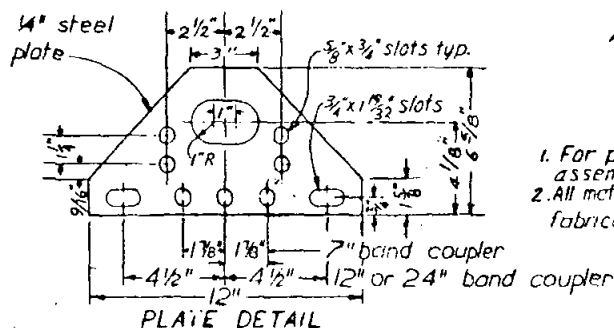
Diagram illustrating a cable clamp assembly. The assembly consists of two vertical iron pipe stakes, each labeled $\frac{1}{2} \times 6'$ iron pipe stakes each side of down drain. These stakes are connected by a horizontal band coupler at the pipe joint. A cable clamp, labeled $5/8"$ cable clamp, is shown clamping the cables. The cables are labeled cables and cable clamps to be used when specified. The diagram also shows the flattened or point of the cable clamp.

Install when specified.
5/8" x 7' reg. lay. improved U-bolt & plate
Plow steel wire rope and see detail.
5/8" cable clamp each side
of down drain.



NOTES

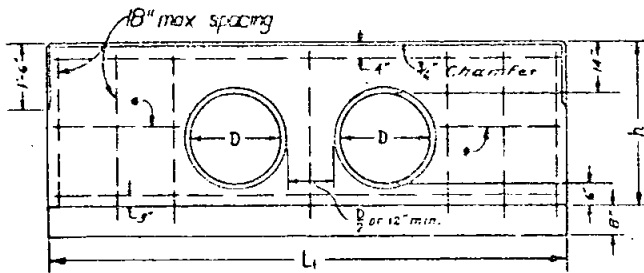
1. For payment purposes; an anchor assembly shall include 2 pipe stakes.
2. All metal parts for anchor assemblies shall be galvanized after fabrication.
3. Products similar in design and purpose may be used.
- coupler 4. Use L dimension on each side of down drain in sag location



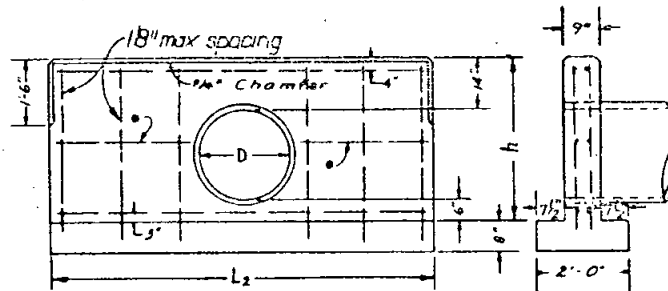
Standard Specifications
Sections: 69
Drawn by: ~~JEV~~ Check by: ~~REB~~
Recommended by: ~~CL~~ ~~amr~~
Approved by County Surveyor:
D. K. Moore P. C. 604

ENTRANCE TAPER AND DOWNDRAIN PIPE

Revision	By	Approved	Date
Scale: none			
Date Approved: 1-14-63			
Drawing No			
125-1			

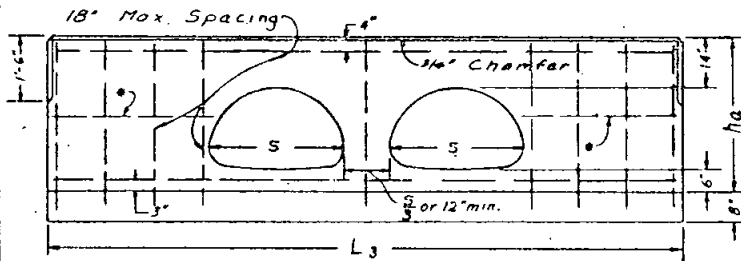


FRONT VIEW

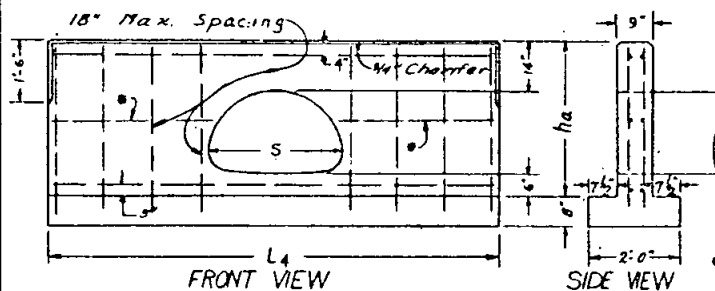


FRONT VIEW

SIDE VIEW



FRONT VIEW



FRONT VIEW

SIDE VIEW

NOTES

1. Extend vertical bars 5" into base.
2. All steel reinforcing shall be #4 deformed bars.
3. Steel shall have not less than 2" concrete cover.
4. When more than 2 pipes are used, the length of headwall shall increase by $1\frac{1}{2} D$ for round or $1\frac{1}{3} S$ for arch pipe, for each additional pipe. Quantities of concrete & steel shall be increased as required.

D In.	H ft.-In.	SINGLE				DOUBLE			
		L2 ft.-In.	Vert. Bars	Steel lbs.	Conc. C.Y.	L1 ft.-In.	Vert. Bars	Steel lbs.	Conc. C.Y.
18	3-2	7-0	12	46	0.91	9-6	14	57	1.21
21	3-5	7-6	12	49	1.02	10-6	14	62	1.34
24	3-8	8-6	12	54	1.20	11-6	14	67	1.57
27	3-11	9-6	16	70	1.39	13-0	18	85	1.84
30	4-2	10-0	16	74	1.52	14-0	18	91	2.04
33	4-5	11-0	16	79	1.73	15-0	18	96	2.25
36	4-8	12-0	16	96	1.93	16-6	18	114	2.56
39	4-11	12-6	16	101	2.09	17-6	20	126	2.79
42	5-2	13-6	16	108	2.34	18-6	20	136	3.03
45	5-5	14-6	20	129	2.60	20-0	26	167	3.38
48	5-8	15-0	20	133	2.75	21-0	26	174	3.64
51	5-11	16-0	20	140	3.03	22-6	26	183	4.02
54	6-2	17-0	20	147	3.31	23-6	26	191	4.30

Use headwall tables for concrete pipe and for C.M.P. No deduction in quantities for variations in thickness of pipe walls.

STRAIGHT HEADWALLS.
(Round Pipe)

S In.	ha ft.-In.	SINGLE				DOUBLE			
		L4 ft.-In.	Vert. Bars	Steel lbs.	Conc. C.Y.	L3 ft.-In.	Vert. Bars	Steel lbs.	Conc. C.Y.
24	2-3	7-0	12	43	0.87	9-6	14	53	1.14
25	3-0	7-6	12	46	0.93	10-6	14	58	1.26
29	3-2	8-6	12	50	1.03	12-0	14	62	1.50
36	3-6	10-0	16	67	1.35	14-0	18	83	1.61
43	5-11	12-6	16	77	1.50	16-6	18	94	2.26
50	4-3	13-6	16	84	2.00	19-0	18	104	2.70
58	4-6	15-0	20	119	2.33	22-0	22	145	3.31
65	5-0	17-0	20	128	2.81	25-0	22	157	3.92
72	5-4	20-0	24	157	3.45	28-0	24	194	4.54

STRAIGHT HEADWALLS.
(Arch Pipe)

LEGEND ON PLANS



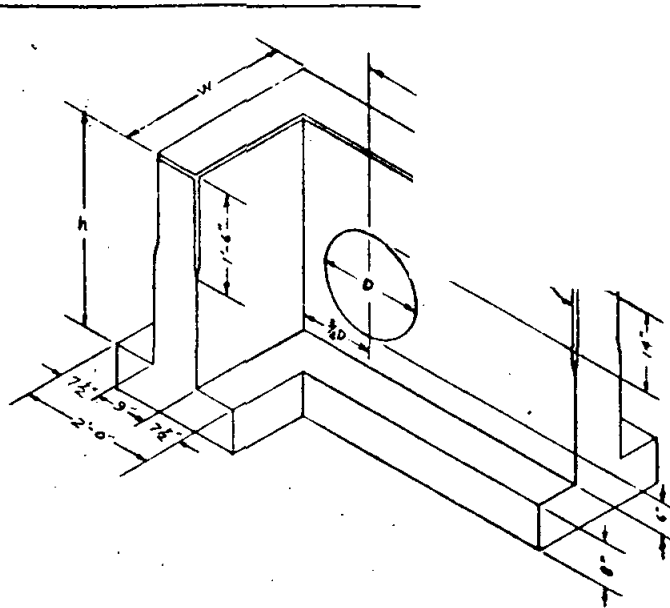
• When h or ha exceeds 4'-6" add pairs of horizontal bars as shown. Vertical spacing shall be equal.

Standard Specifications,
Sections: 51, 52, 90
Drawn by: J. L. L. Check by: P. F. B.
Recommended by: J. L. L.
Approved by County Surveyor.
D. K. S. 10/10/91

SAN DIEGO COUNTY SURVEYOR — ROAD DEPARTMENT.
STANDARD DRAWING.

STRAIGHT HEADWALL
SINGLE AND DOUBLE

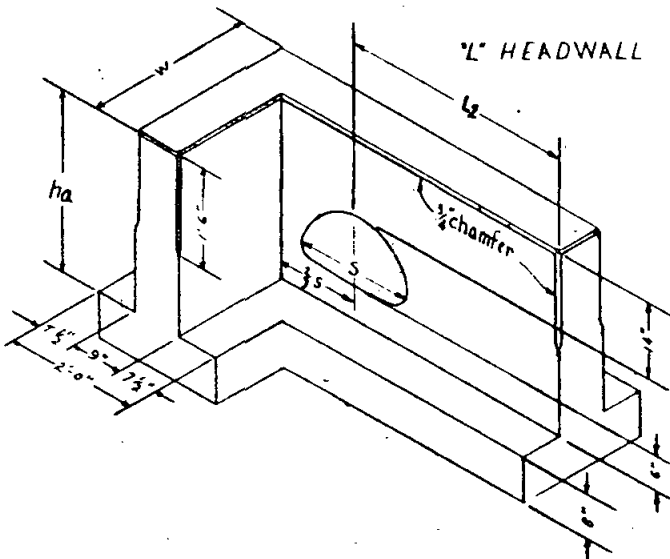
Revision: By: Approved: Date:
Scale: None
Date Approved: 1-14-63
Drawing No.
126-1



D	h	L1	LENGTH OF W					CONC. CU. YDS.
			2'-0" 10	3'-5" 10	4'-11" 10	6'-5" 10	7'-11" 10	
			3'-4" 10	4'-10" 10	6'-4" 10	7'-10" 10	9'-4" 10	
			NUMBER OF VERTICAL BARS FOR W					
			6	8	10	12	14	
ins.	ft.-ins.	ft.-ins.	Steel LBS. (*4 = .668 lbs. per ft.)					
18	3-2	3-6	40+3W	45+3W				2.59+0.14W
21	3-5	3-9	43+3W	48+3W				0.66+0.14W
24	3-8	4-3	47+3W	52+3W	58+3W			0.78+0.15W
27	3-11	4-6	51+3W	62+3W	68+3W			0.91+0.16W
30	4-2	5-0	60+3W	66+3W	73+3W	78+3W		1.00+0.17W
33	4-5	5-6	64+3W	71+3W	77+3W	83+3W		1.13+0.17W
36	4-8	6-0	74+4W	81+4W	88+4W	94+4W	101+4W	1.28+0.18W
39	4-11	6-3		85+4W	92+4W	99+4W	106+4W	1.39+0.19W
42	5-2	6-9		89+4W	97+4W	104+4W	112+4W	1.54+0.21W
45	5-5	7-3			110+4W	118+4W	126+4W	1.71+0.22W
48	5-8	7-8			113+4W	121+4W	130+4W	1.82+0.21W
51	5-11	8-0				129+4W	138+4W	2.00+0.21W
54	6-2	8-6				135+4W	144+4W	2.18+0.22W

Note: Use headwall table for concrete pipe and for C.M.P. No deduction made in quantity for variation in thickness of pipe wall.

"L" HEADWALL FOR ROUND PIPE



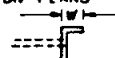
s	h _a	L ₂	LENGTH OF W					CONC. CU YDS.
			2'-0" 10	3'-5" 10	4'-11" 10	6'-5" 10	7'-11" 10	
			3'-4" 10	4'-10" 10	6'-4" 10	7'-10" 10	9'-4" 10	
			NUMBER OF VERTICAL BARS FOR W					
			6	8	10	12	14	
ins.	ft.-ins.	ft.-ins.	Steel LBS. (W4 = .668 lbs. per ft.)					
22	2-9	3-6	38+3W	43+3W				0.51+0.13W
25	3-0	3-9	42+3W	46+3W				0.57+0.13W
29	3-2	4-3	45+3W	50+3W	55+3W			0.70+0.14W
36	3-6	5-0	57+3W	63+3W	69+3W	73+3W		0.88+0.15W
43	3-11	6-3		71+3W	77+3W	82+3W	87+3W	1.10+0.16W
50	4-3	6-9		78+3W	85+3W	91+3W	98+3W	1.33+0.16W
58	4-8	7-6			100+4W	115+4W	122+4W	1.59+0.18W
65	5-0	8-6				126+4W	133+4W	1.85+0.19W
72	5-4	10-0				147+4W	159+4W	2.24+0.20W

"L" HEADWALL FOR ARCH PIPE

Note: When more than one pipe is used, the distance between pipes shall be $D/2$ or 12" min. for round pipe and $S/3$ or 12" min. for arch pipe. Dimensions $L1$ & $L2$ are from the center of the pipe nearest to the end of headwall as shown.

* When h or ha is greater than 4'-6" add pairs of horizontal bars as shown. Vertical spacing shall be equal.

LEGEND ON PLANS



show length of W on plans.

Extend vertical bar 5" into base.
All steel reinforcing shall be #4 deformed bars. Steel shall have not less than 2" concrete cover.

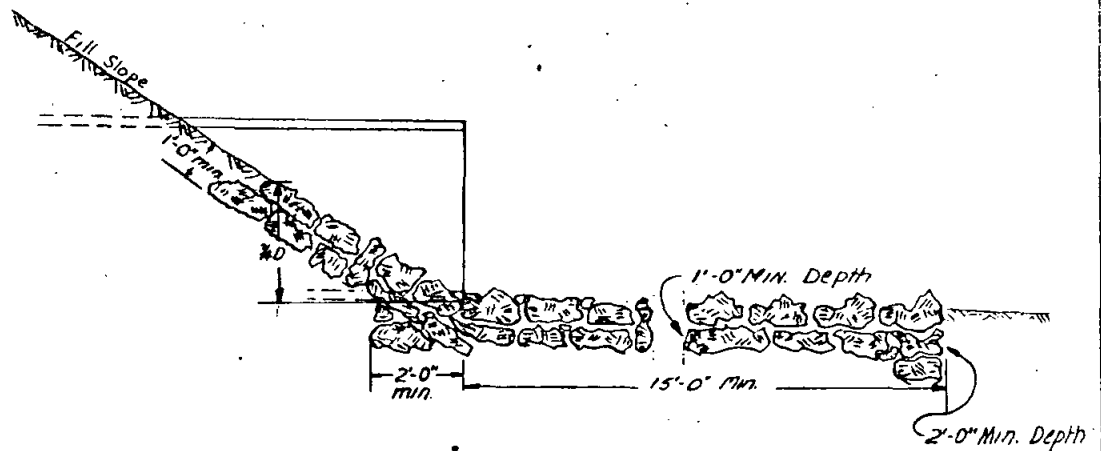
TYPICAL STEEL PLACEMENT DETAIL

Standard Specifications
Sections: 51, 52, 90
Drawn by: Drake
Checked by: RFB
Recommended by: J. J. Macman
Approved by County Surveyor:
D. K. Green R.C.E. 8091

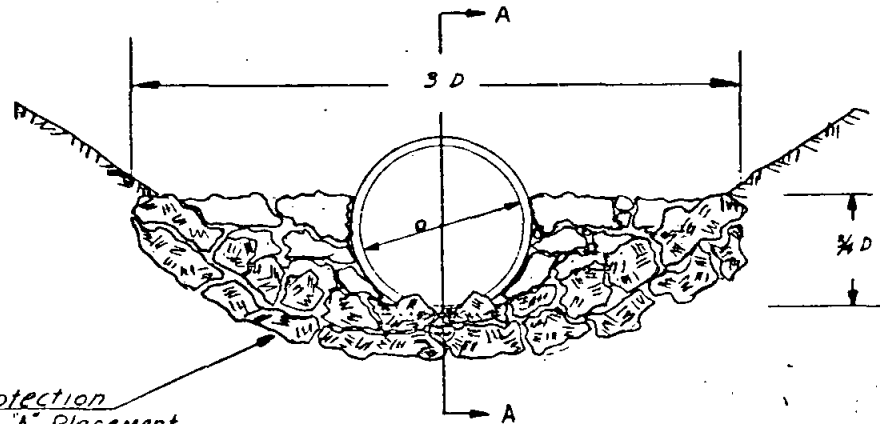
SAN DIEGO COUNTY SURVEYOR - ROAD DEPARTMENT
STANDARD DRAWING

"L" HEADWALL

Revision	By	Approved	Date
Scale: None			
Date Approved: Nov. 7, 1962			
Drawing No			
127-1			

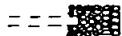


SECTION A-A



END ELEVATION OF PIPE

Legend on plan

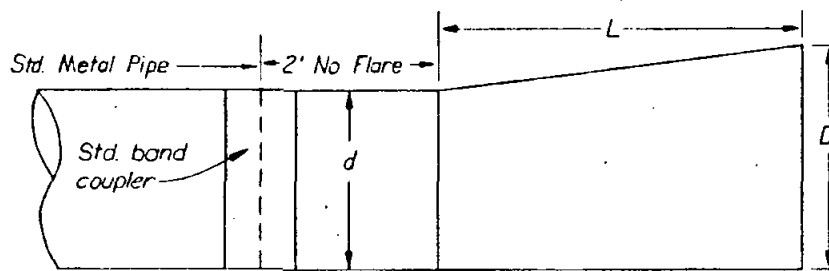


1. Shape shall conform to outlet channel.
2. Channel or pipe outlet rock slope protection shall be used when outlet velocity exceeds 10 F.P.S. and soil at outlet is susceptible to erosion.

Standard Specifications	
Sections	72
Drawn by: <i>Drake</i>	Checked by: <i>REB</i>
Recommended by: <i>A. J. Thompson</i>	
Approved by County Surveyor:	
<i>D. K. Gher</i>	<i>R. C. Bosh</i>

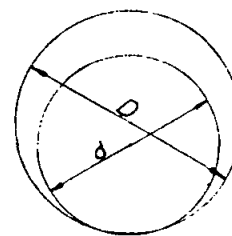
SAN DIEGO COUNTY SURVEYOR - ROAD DEPARTMENT
STANDARD DRAWING
CHANNEL OR PIPE OUTLET FOR ROCK SLOPE
PROTECTION AND FLOW INTERRUPTION

Revision	By	Approved	Date
Scale	None		
Date Approved	2-27-63		
Drawing No.	128-1		



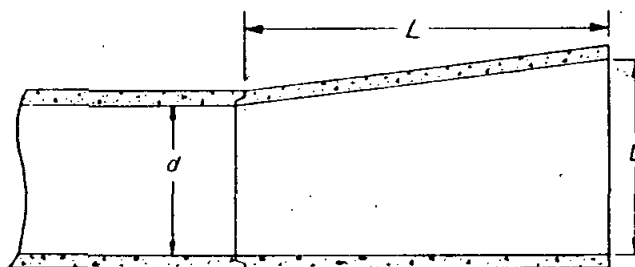
Bead weld all around before protective coating is applied

SIDE VIEW

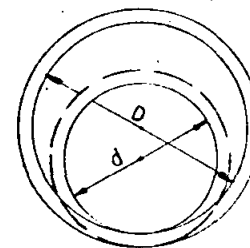


END VIEW

FLARED INLET-CORRUGATED METAL PIPE



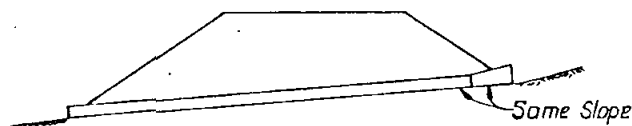
SIDE VIEW SECTION



END VIEW

Note: Wall thickness, steel, & material shall conform to Std. reinforced Conc. pipe.

FLARED INLET-REINFORCED CONCRETE PIPE



36"x240" C.M.P. (12 ga) with flared metal inlet ($d=36"$ $D=42"$)

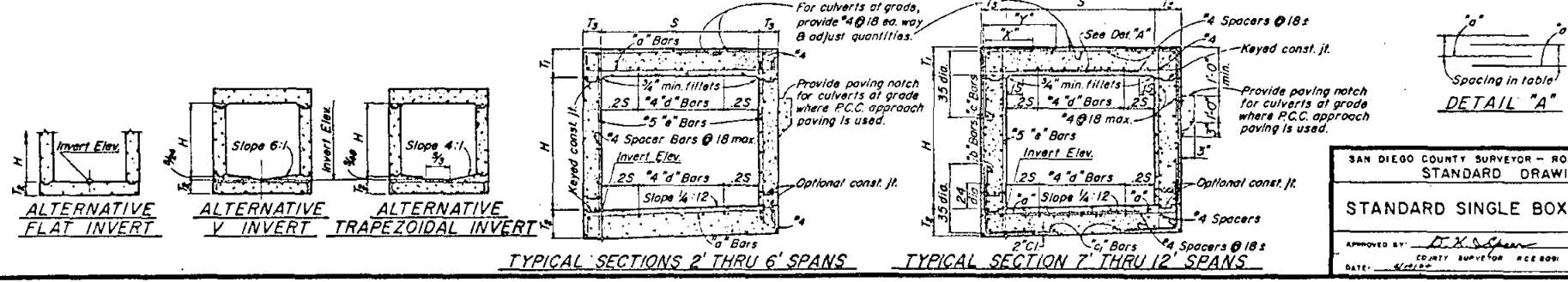
INSTALLATION EXAMPLE

General Notes

1. Type of pipe, class or gage & protective coating shall conform to the plans and standard specifications.
2. L dimension equals 8' unless noted otherwise.
3. Diameters of a flared section shall be shown on the plans.
4. The difference between the diameters "D" and "d" shall be 6" unless noted otherwise.

Standard Specifications	SAN DIEGO COUNTY SURVEYOR - ROAD DEPARTMENT STANDARD DRAWING.	Revision	By	Approved	Date					
Sections: 65, 66		Scale: None								
Drawn by: Drake		Date Approved: 2-27-63								
Checked by: <u>R.S.B.</u>		Drawing No. 130-1								
Recommended by: <u>[Signature]</u>										
Approved by County Surveyor:	CULVERT					FLARED		INLETS		
<u>D.X. Spencer</u> R.C.E. 9091										

RECOMMENDED BY: W. J. [Signature] 4/13/64
W. J. [Signature] 4/13/64

[illegible]

SAN DIEGO COUNTY SURVEYOR - ROAD DEPARTMENT
STANDARD DRAWING

STANDARD SINGLE BOX CULVERTS

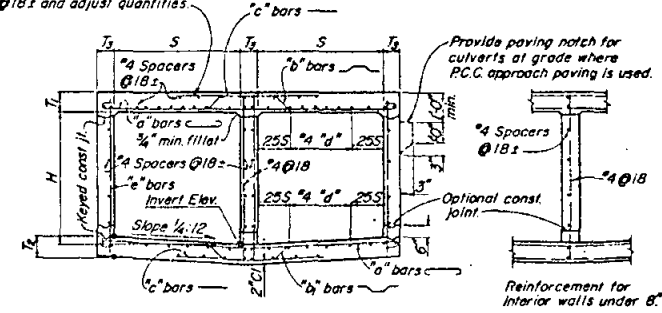
APPROVED BY: D. K. Schen DRAWING NO. 140-1
COUNTY SURVEYOR REC 8081
DATE: 6/10/80

SPAN		4'				5'				6'				8'			
HEIGHT		2'				3'				4'				5'			
STRENGTH CLASSIFICATION		A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
MAX. FILL OVER TOP		11 21 32	11 21 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34
Concrete	Top Slab	11 21 32	11 21 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34
	Bottom Slab	11 21 32	11 21 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34
Reinforcing Steel	Side Walls	11 21 32	11 21 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34
	Side Walls	11 21 32	11 21 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34
Hydraulics	Area	11 21 32	11 21 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34
	Hydraulic Radius	11 21 32	11 21 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34
Design	Entrance Capacity	11 21 32	11 21 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34
	Design Discharge	11 21 32	11 21 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34

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

SPAN		5'				6'				8'				10'			
HEIGHT		5'				6'				8'				10'			
STRENGTH CLASSIFICATION		A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
MAX. FILL OVER TOP		11 21 32	11 21 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34
Concrete	Top Slab	11 21 32	11 21 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34
	Bottom Slab	11 21 32	11 21 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34
Reinforcing Steel	Side Walls	11 21 32	11 21 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34
	Side Walls	11 21 32	11 21 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34
Hydraulics	Area	11 21 32	11 21 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34
	Hydraulic Radius	11 21 32	11 21 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34
Design	Entrance Capacity	11 21 32	11 21 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34
	Design Discharge	11 21 32	11 21 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34	11 23 34

For culverts of grade, extend "c" bars full length, top slab only, provide additional spacers @ 18" and adjust quantities.



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

SAN DIEGO COUNTY SURVEYOR - ROAD DEPARTMENT:
STANDARD DRAWING

STANDARD DOUBLE BOX CULVERTS

APPROVED BY: *[Signature]* COUNTY SURVEYOR A.C.E. 608
DATE: 11/1/74

DRAWING NO: 141-1

141-1

SPAN		4'			5'			6'			7'			8'		
HEIGHT		2'	3'	4'	2'	3'	4'	2'	3'	4'	2'	3'	4'	2'	3'	4'
STRENGTH CLASSIFICATION		A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C
MAX. FILL OVER TOP		10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'
Concrete	Top Slab	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2
	Bottom Slab	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2
	Side Bar	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4
Steel	Size Bar	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
	Spacing	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Length	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'
Reinforcing Steel	Size Bar	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	Spacing	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Length	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'
Miscellaneous	Dist. Top Slab-Tot. No.	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
	Bottom Slab-Tot. No.	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
	Side Bar	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Concrete, CY per lin. ft.		0.87	0.71	0.61	0.50	0.40	0.30	0.20	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reinft., Lbs. per lin. ft.		122	110	100	90	80	70	60	50	40	30	20	10	0	0	0
Area		6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
Vertical Radius		6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
Vertical Slope		6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
Head Factor		6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
Entrance Capacity		103	192	297	399	499	599	699	799	899	999	1099	1199	1299	1399	1499
Design Discharge		174	321	489	673	873	1089	1323	1577	1851	2145	2459	2793	3147	3521	3915

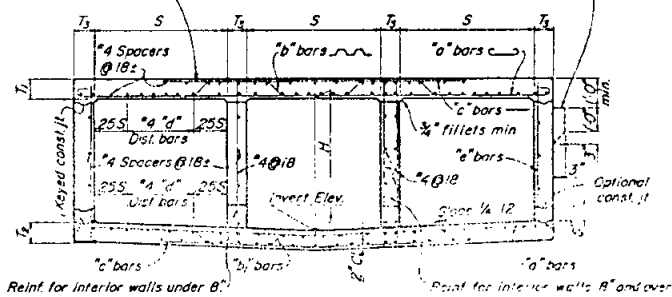
DUPLICATED FROM STATE STANDARD
 DRAWING NO. 5-51
 RECOMMENDED BY: *R. J. Mendenhall*
 DATE: 11/15/64

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

SPAN		10'			12'			14'			16'			18'		
HEIGHT		5'	6'	7'	5'	6'	7'	5'	6'	7'	5'	6'	7'	5'	6'	7'
STRENGTH CLASSIFICATION		A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C	A B C
MAX. FILL OVER TOP		2' 11' 20'	2' 11' 20'	2' 11' 20'	2' 11' 20'	2' 11' 20'	2' 11' 20'	2' 11' 20'	2' 11' 20'	2' 11' 20'	2' 11' 20'	2' 11' 20'	2' 11' 20'	2' 11' 20'	2' 11' 20'	2' 11' 20'
Concrete	Top Slab	9	10	12	9	10	12	9	10	12	9	10	12	9	10	12
	Bottom Slab	7 1/2	8 1/4	9 1/4	7 1/2	8 1/4	9 1/4	7 1/2	8 1/4	9 1/4	7 1/2	8 1/4	9 1/4	7 1/2	8 1/4	9 1/4
	Side Bar	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Steel	Size Bar	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
	Spacing	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Length	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'
Reinforcing Steel	Size Bar	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	Spacing	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Length	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'	10' 24' 38'
Miscellaneous	Dist. Top Slab-Tot. No.	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
	Bottom Slab-Tot. No.	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
	Side Bar	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Concrete, CY per lin. ft.		1.58	1.40	1.28	1.06	0.90	0.73	0.58	0.43	0.30	0.18	0.08	0.00	0.00	0.00	0.00
Reinft., Lbs. per lin. ft.		336	300	270	230	200	170	140	110	80	50	20	0	0	0	0
Area		130	180	210	240	270	300	330	360	390	420	450	480	510	540	570
Vertical Radius		167	198	208	222	230	240	250	260	270	280	290	300	310	320	330
Vertical Slope		6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
Head Factor		2.58	2.05	1.83	1.65	1.43	1.19	0.97	0.73	0.51	0.29	0.08	0.00	0.00	0.00	0.00
Entrance Capacity		1035	1359	1713	2094	2528	2929	3398	3836	4344	4821	5268	5686	6074	6432	6760
Design Discharge		1704	2241	2823	3450	4130	4868	5668	6534	7468	8471	9544	10688	11904	13192	14560

For culverts at grade, extend "c" bars full length, provide additional spacers @ 18" and adjust quantities.

Provide paving notch for culverts at grade where P.C.C. approach paving is used.



TYPICAL SECTION

SAN DIEGO COUNTY SURVEYOR — ROAD DEPARTMENT	
STANDARD DRAWING	
STANDARD TRIPLE BOX CULVERTS	
APPROVED BY: <i>R. J. Mendenhall</i>	DRAWING NO. 142-1
DATE: 11/15/64	

LOCATION NOTES

DESIGN: A.A.S.M.O. DATED 1957 WITH REVISIONS AND AS SUPPLEMENTED BY 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.

LIVE LOAD = H20-S16-44 OR ALTERNATIVE WITH 30% IMPACT FOR ALL COVER DEPTHS. NEGLECT LIVE LOAD WHEN ON SINGLE SPANS. COVER IS MORE THAN 8' AND EXCEEDS SPAN, AND ON MULTIPLE SPANS WHEN COVER EXCEEDS DISTANCE BETWEEN EXTERIOR WALLS.

CULVERTS AT GRADE TREATED AS A BRIDGE. WITH THE WHEEL LOAD ON THE INVERT SLAB DISTRIBUTED OVER 7.5' TRANSVERSELY AND THE BREADTH OF THE CULVERT LONGITUUDINALLY.

WHEEL LOADS DISTRIBUTED UNIFORMLY OVER A SQUARE, THE SIDES OF WHICH ARE 1/3 TIMES THE DEPTH OF FILL, BUT NOT LESS TRANSVERSELY THAN THE DIMENSION FOR GRADE TOP ON THE TOP SLAB, AND NOT LESS THAN 75" ON THE INVERT SLAB WHEN SUCH AREAS FROM SEVERAL 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 TOTAL WIDTH SHALL NOT EXCEED THE TOTAL WIDTH OF THE SUPPORTING SLAB.

DEAD LOAD EARTH LOAD OF 120 LBS PER CU FT. AND AN EQUIVALENT
FLUID PRESSURE OF 36 LBS PER SQ. FT. (BOTH REDUCED
30% FOR BALANCED DESIGN)
DISTRIBUTION OF WHEEL AT GRADE: $E = 1735 + 32$

UNIT STRESSES: $F_b = 20,000$ P.S.I., $N = 10$
 $F_c = 1,200$ P.S.I.

REINFORCEMENT EMBEDMENT IS 1 1/2 DIA. CLEAR, MIN 1", EXCEPT AS NOTED.

DISTRIBUTION "d" BARS EXPRESSED AS A % OF MAIN REINFORCEMENT:

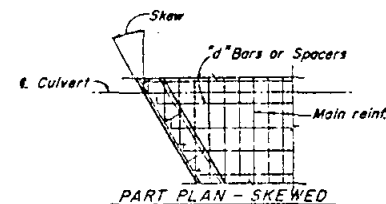
CLASSIFICATION "A" TOP SLAB = $\frac{100}{1.50 \text{ GRN}}$, MAX. 50 %

CLASSIFICATION "A" BOTTOM SLAB - MIN # 4 @ 18"

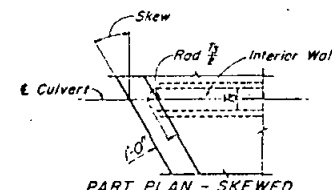
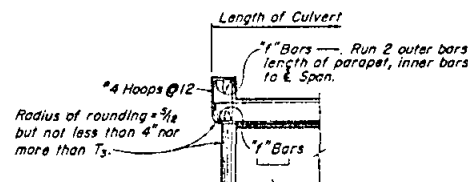
CLASSIFICATION "B", OR ABOVE, TOP AND BOTTOM SLABS MIN. # 4 @ 18"

USE OF STANDARD PLAN

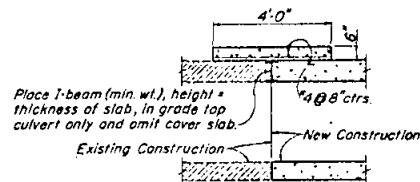
"STRENGTH CLASSIFICATION", SYMBOLIZED BY THE LETTERS "A", "B", "C" ETC., AT THE TOP OF THE DATA TABLE IS MERELY A CONVENIENT DESIGNATION FOR A PARTICULAR STRUCTURAL SECTION FOR A CULVERT OF ANY GIVEN OPENING. IT IS DICTATED BY THE COVER OR DEPTH OF FILL OVER THE TOP SLAB.



PARAPET DETAILS FOR SINGLE SPAN CULVERTS

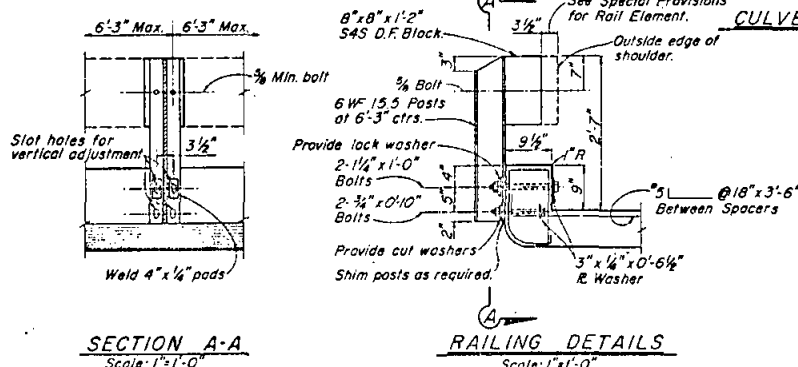


PARAPET DETAILS FOR MULTIPLE SPAN CULVERTS



SKEWED PARAPETS									
Skew Angle	Span	3	4	5	6	8	10		
0°-15°	Bar No	1	4	4	5	6	7	8	
	No of bars	2	2	2	2	3	3		
16°-30°	Bar No	1	4	5	5	6	7	8	
	No of bars	2	3	3	3	3	3		
31°-45°	Bar No	1	4	5	6	7	8		
	No of bars	3	3	3	3	3	3		
0°-65°	No. Hoops	12 cirs.							

CULVERT EXTENSION



RAILING DETAILS

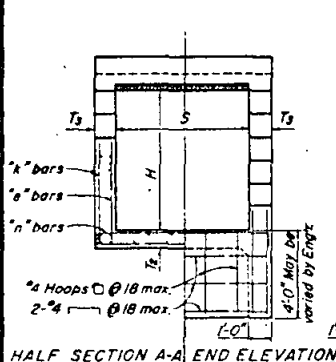
SAN DIEGO COUNTY SURVEYOR - ROAD DEPARTMENT
STANDARD DRAWING

STANDARD BOX CULVERT
MISCELLANEOUS DETAILS

APPROVED BY D. J. [Signature]
COUNTY SUPERVISOR
DATE 11/1/66

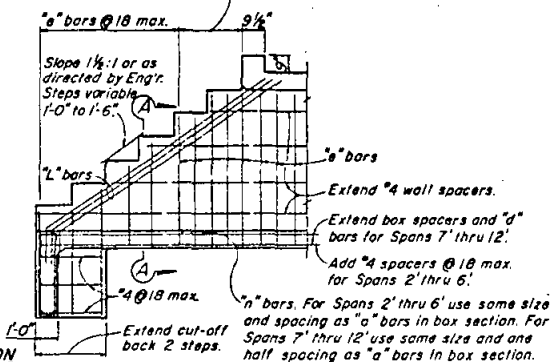
DRAWING N°
143-

Note: Dimensions S, H, T₁ and T₂ to be same as adjacent box.

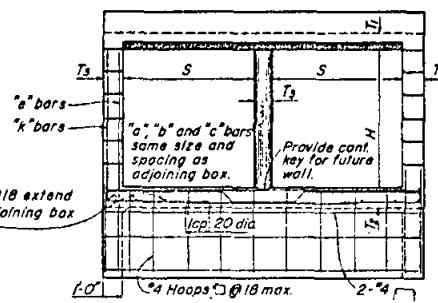


SINGLE BOX

In first two steps "e" bars cont'd. from box at same spacing.

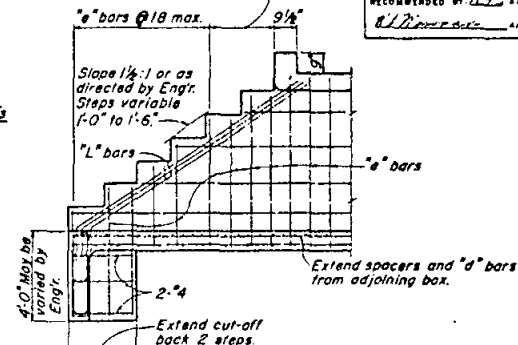


LONGITUDINAL SECTION
(Showing reinforcement in inside face)



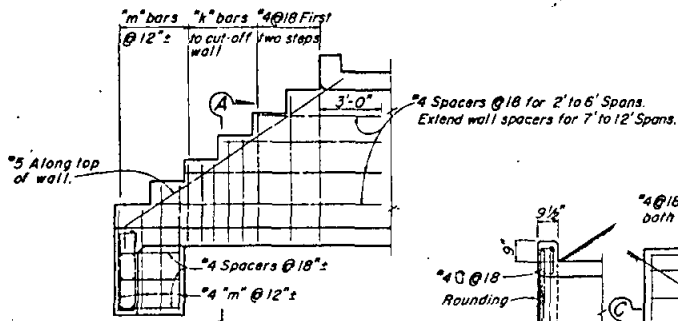
MULTIPLE BOXES

In first two steps "e" bars cont'd. from box at same spacing.

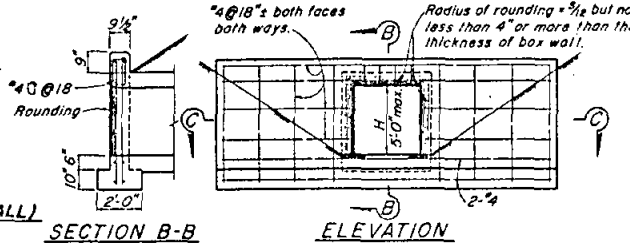


LONGITUDINAL SECTION
(Showing reinforcement in inside face)

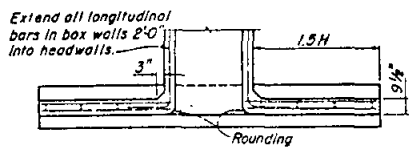
H	3'	4'	5'	6'	7'	8'	10'	12'
"k" Bar No.	4	4	5	5	5	5	5	5
"L" Bar No.	5	5	6	6	7	7	7	7
"L" Bar Number ea. wall	2	2	3	3	3	3	3	3



LONGITUDINAL SECTION
(Showing reinforcement in outside face)
TYPE "E" (STEPPED HEADWALL OR ENDWALL)



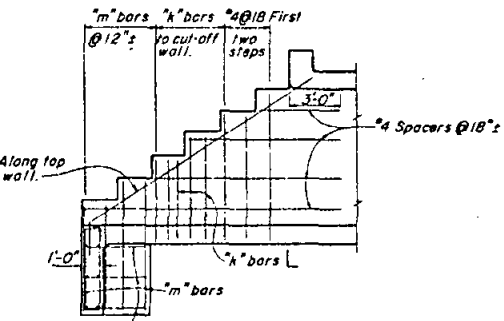
SECTION B-B



SECTION C-C
TYPE "D"

STRAIGHT HEADWALL AND ENDWALLS

Details similar for multiple span boxes.



LONGITUDINAL SECTION
(Showing reinforcement in outside face)
TYPE "E" (STEPPED HEADWALL OR ENDWALL)

SAN DIEGO COUNTY SURVEYOR - ROAD DEPARTMENT
STANDARD DRAWING

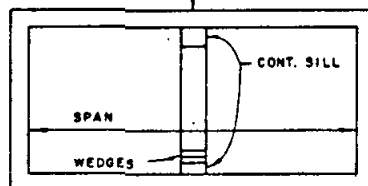
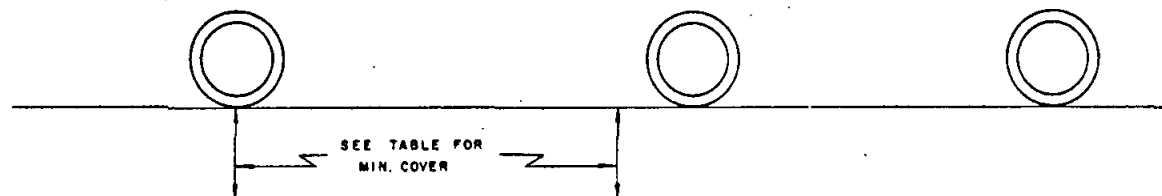
STANDARD CULVERT HEADWALLS AND ENDWALLS TYPES "D" AND "E"

APPROVED BY: *[Signature]* COUNTY SURVEYOR DATE: *[Date]*

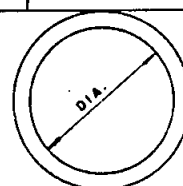
DRAWING NO. 145-1

SAN DIEGO COUNTY SURVEYOR - ROAD DEPARTMENT	
STANDARD DRAWING	
STANDARD REINFORCED CONCRETE WARPED WINGHEAD WALLS & ENDWALLS	
APPROVED BY: <i>[Signature]</i>	DRAWING NO.
COUNTY SURVEYOR R.C. GUST	146-1

DUPLICATED FROM STATE STANDARD
DRAWING NO. 088
RECOMMENDED BY *A.S.H. 10/60*
R.J. Massman 8-25/64

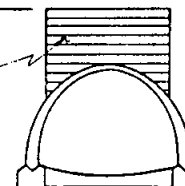


BOX CULVERTS

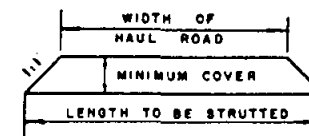


R.C. PIPES &
METAL CULVERTS

UNCOMPACTED
MATERIAL. SEE
ARCH CULVERT
DETAILS.



R.C. ARCH
CULVERTS



MINIMUM LENGTH
OF STRUTTING

	CLASSIFICATION	18-50K AXLE					50-75K AXLE					75-110K AXLE					110-150K AXLE					
		SPAN	TYPE	MIN. COVER	STRUTS REQ'D.	STRUT SIZE & SPACING	SPAN	TYPE	MIN. COVER	STRUTS REQ'D.	STRUT SIZE & SPACING	SPAN	TYPE	MIN. COVER	STRUTS REQ'D.	STRUT SIZE & SPACING	SPAN	TYPE	MIN. COVER	STRUTS REQ'D.	STRUT SIZE & SPACING	
BOX CULVERTS	A	2'TO 5'	SINGLE	4'	—	—	2'TO 5'	SINGLE	5'	—	—	2'TO 4'	SINGLE	3'	—	—	2'TO 4'	SINGLE	4'	—	—	
	A	6'	SINGLE	5'	—	—	6'	SINGLE	5'	1/2 PTS.	POSTS 4x6@3' SILLS 4x6,CONT.	5'TO 8'	SINGLE	5'	1/3 PTS.	POSTS 4x6@3' SILLS 4x6,CONT.	5'TO 8'	SINGLE	5'	1/3 PTS.	POSTS 4x6@3' SILLS 4x6,CONT.	
	A	7'TO 8'	SINGLE	5'	—	—	7'TO 8'	SINGLE	5'	—	—	7'TO 8'	SINGLE	5'	—	—	7'TO 8'	SINGLE	5'	1/4 PTS.	POSTS 4x6@3' SILLS 4x6,CONT.	
	A	10'TO 12'	SINGLE	5'	—	—	10'TO 12'	SINGLE	5'	—	—	10'TO 12'	SINGLE	5'	1/5 PTS.	POSTS 6x6@3'-6" SILLS 6x6, CONT.	10'TO 12'	SINGLE	5'	1/5 PTS.	POSTS 6x6@3' SILLS 6x6,CONT.	
	A	14'	SINGLE	3'	—	—	14'	SINGLE	3'	1/5 PTS.	POSTS 6x6@3'-6" SILLS 6x6,CONT.	14'	SINGLE	3'	1/5 PTS.	POSTS 6x6@3'-6" SILLS 6x6,CONT.	14'	SINGLE	4'	1/5 PTS.	POSTS 6x6@3'-6" SILLS 6x6,CONT.	
	A	4'TO 12'	MULTIPLE	5'	—	—	4'TO 12'	MULTIPLE	5'	—	—	4'TO 12'	MULTIPLE	5'	—	—	4'TO 12'	MULTIPLE	5'	—	—	
	B, C, D, E.	ALL	ALL	SPAN OR 1.75' MIN.	—	—	ALL	ALL	SPAN OR 1.75' MIN.	—	—	ALL	ALL	SPAN OR 1.75' MIN.	—	—	ALL	ALL	SPAN OR 1.75' MIN.	—	—	
R.C. PIPES	12" TO 36"	MIN. COVER = 2'					MIN. COVER = 3'					MIN. COVER = 4'					MIN. COVER = 4'					
	42" TO 108"	DIA. 1.75' OR 4' MIN.					DIA. 1.75' OR 4' MIN.					DIA. 1.75' OR 4' MIN.					DIA. 1.75' OR 4' MIN.					
METAL CULVERTS	PIPES	TO 120" OVER 120"	MIN. COVER = 2'					MIN. COVER = 2'					DIA. 3' OR 2' MIN.					DIA. 3' OR 3' MIN.				
	ARCHES, PIPE-ARCHES.	ALL SPAN	DIA. 5' OR 2' MIN.					DIA. 5' OR 2' MIN.					DIA. 5' OR 4' MIN.					DIA. 5' OR 4' MIN.				
			SPAN 7' OR 2' MIN.					SPAN 7' OR 2' MIN.					SPAN 3' OR 2' MIN.					SPAN 3' OR 3' MIN.				
R.C. ARCH CULVERTS	SPANS TO 14'	SPAN 2.5' OR 4' MIN.					SPAN 2.5' OR 4' MIN.					SPAN 2.5' OR 4' MIN.					SPAN 2.5' OR 4' MIN.					
	SPANS TO 22'	SPAN 3.5' OR 5' MIN.					SPAN 3.5' OR 5' MIN.					SPAN 3.5' OR 5' MIN.					SPAN 3.5' OR 5' MIN.					

NOTES: 1. LIMITS OF STRUTTING TO BE DETERMINED BY ENGINEER, BUT SHALL NOT BE LESS THAN AS SHOWN IN SKETCH. REFERENCE— STATE OF CALIFORNIA STD. BOX CULVERTS DATED OCT. 4, 1960.

ASSUMED TIME PATTERNS _____:

50K AXLE 2.0' ± 1.5'
75K AXLE 3.0' ± 2.0'
110K AXLE 3.0' ± 2.5'
150K AXLE 3.0' ± 3.0'

2. IMPACT = 50%.
TIMBER POSTS & SILLS TO BE D.F., 1400 F.
SILLS TO BE GLUED-LAMINATED OR SOLID TIMBERS.

3. ALL STRUTTING AND REMOVAL TO BE AT EXPENSE OF THE CONTRACTOR.

SAN DIEGO COUNTY SURVEYOR — ROAD DEPARTMENT
STANDARD DRAWING
STANDARD CONSTRUCTION
LOADS ON CULVERTS
APPROVED BY: *[Signature]* DRAWING NO. 147-1
DATE: AUG. 27, 1964

MAX. SAFE HEIGHTS OF OVERFILLS AND GAGE FOR
FACTORY-RIVETED CORRUGATED METAL PIPE

Diameter inches (round pipe)	Heights of Overfills in feet												Span & rise inches (arch pipe)
	less than	15 to	20 to	25 to	30 to	35 to	40 to	45 to	50 to	60 to	70 to	80 to	
	15	20	25	30	35	40	45	50	60	70	80	100	
	Min. required gage												
18		16	16	16	16	16	14	14	14	12	12	12	18 x 11
21		16	16	16	16	14	14	14	12	12	12	10	
24		14	14	14	14	14	14	12	12	12	10	10	22 x 13
30		14	14	14	14	12	12	12	10	10	8	8	29 x 18
36		12	12	12	12	10	10	10	8	8	8	8	36 x 22
42		12	12	12	10	10	8	8	8	8	8	8	
48		12	12	12	10	10	8	8	8	8	8	8	43 x 27
54		12	12	10	10	10	8	8	8	8	8		50 x 31
60		10	10	10	8	8	8						58 x 36
66		10	10	8	8								65 x 40
72		10	8	8	8								72 x 44
78		8	8	8									
84		8	8										
90		8											
96		8											

Use field assembled
plate culverts

STRENGTH & USES OF REINFORCED CONCRETE PIPE			
Class	Diameters inches	Cracking D - Load	Principal Highway Uses
I	60 - 108	8000	Not adequate for highway uses.
II	12 - 108	10000	Use outside the roadbed. Under moderately low depths of cover. This class is required for pipe shaft manholes & drop inlets.
III	12 - 108	13500	Intended for normal culvert & stormdrain uses.
IV	12 - 84	20000	Same as Class III but will sustain higher overfills.
V	12 - 72	30000	High strength pipe for severe loading conditions.

Inside diameter inclusive inches	MAX. SAFE HEIGHTS OF OVERFILL IN FEET FOR R.C.P.			
	Class II 1000 D	Class III 1350 D	Class IV 2000 D	Class V 3000 D
	Method A Backfill			
12-18	18	23	32	47
21-27	19	24	33	47
30-39	19	25	34	49
42-48	19	25	35	50
51-63	20	25	35	51
66-72	20	25	36	52
75-84	20	25	36	not listed
87-108	20	26	not listed	not listed

MINIMUM THICKNESS OF COVER			
Surface type	Pipes		Arches
	R.C.P.	C.M.P.	
Flexible pavement or unpaved	diameter 5 24" min.	diameter 5 12" min.	span 15 12" min.
Rigid pavement	diameter 5 18" min.	diameter 7 6" min. below slab	span 20

Notes

1. All pipe shall conform to current A.S.T.M. designation C-76.
2. For box culverts see standard drawings pertaining thereto.
3. Source of information for tables: A.A.S.H.O. standard spec.

Standard Specifications	SAN DIEGO COUNTY SURVEYOR - ROAD DEPARTMENT			
Section 19	STANDARD DRAWING			
Drawn by: Drake	Checked by: R.E.B.	Revision	By	Approved
Recommended by: D.K. Selman	Approved by County Surveyor	Scale	None	Approved 4-5-63
SAFE OVERFILLS FOR R.C.P. OR C.M.P.		Drawing No.		
D.K. Selman R.C.E. 8091		180-1		

MAX SAFE HEIGHTS OF OVERFILLS FOR FIELD ASSEMBLED PLATE PIPES

STRUTTED CONDITION

STANDARD 6"x2" CORRUGATIONS

Diameter inches	HEIGHT OF COVER (FEET)															
	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-70	71-80	81-90	91-100
60	12	12	12	12	12	12	12	12	12	12	10	10	8	7	5	5
66	12	12	12	12	12	12	12	12	10	10	8	8	7	5	3	3
72	12	12	12	12	12	12	12	12	10	10	8	8	7	5	3	1
78	12	12	12	12	12	12	12	10	10	8	8	7	5	3	1	
84	12	12	12	12	12	12	12	10	10	8	8	7	5	3	1	
90	12	12	12	12	12	10	10	10	8	7	7	5	3	1		
96	12	12	12	12	12	10	10	10	8	7	7	5	3	1		
102	12	12	12	10	10	10	10	8	7	5	5	3	1			
108	12	12	12	10	10	10	10	8	7	5	5	3	1			
114	10	12	10	10	10	10	8	7	5	5	3	1				
120	10	12	10	10	10	10	8	7	5	5	3	1				
126	10	10	10	10	10	8	8	7	5	3	1	1				
132	10	10	10	10	10	8	8	7	5	3	1	1				
138	10	10	10	10	8	8	7	5	3	1	1					
144	10	10	10	10	8	8	7	5	3	1	1					
150	10	10	10	8	8	8	5	3	1	1						
156	10	10	10	8	8	8	5	3	1	1						
162	10	10	10	8	8	7	5	3	1							
168	10	10	10	8	8	7	5	3	1							
174	8	10	8	8	8	5	3	1								
180	8	10	8	8	8	5	3	1								

GAGE

From AASHTO Standard Specifications for Highway Bridges, 1953 (Arts. 3.10.3 & 3.11.4) H-15 & H-20 Loading.

Notes

1. Table gives minimum gage of side and top plates with not less than 4 bolts per foot of longitudinal seam. Live load not to exceed H-20 to H-20-S-16.
2. Invert plates shall be at least one step thicker gage than the rest of the barrel.
3. The pipe diameter is measured from the inside crests.
4. Limiting height of cover may be increased 50% when 16 bolts per foot of longitudinal seam are provided and No. 1 gage metal is used.

Upper sills (continuous)

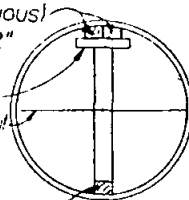
Compression cap 12" long, soft even grained wood.

Alternative wire strut

Strut spaced as shown in table.

Lower sill (continuous)

Compression caps & sills to be same dimension timber as struts. Timber for struts & sills shall be Douglas Fir common.



STRUT DETAILS

SPACING IN FEET OF TIMBER STRUTS FOR CORR. METAL & FIELD ASSEMBLED PLATE PIPE

Pipe Dia.	Strut size	Height of fill in feet								Pipe Dia.	Strut size	Height of fill in feet							
		0-20	30	40	50	60	70	80	100			0-20	30	40	50	60	70	80	100
48"	4"x4"		3.0	3.5						108"	4"x4"	6.0	4.0	3.5	3.0				
	4"x6"		6.0	5.0	4.0	3.5	3.0				4"x6"		6.0	5.0	4.0	3.5	3.0		
	6"x6"				6.0	5.0	4.5	4.0	3.5		6"x6"					4.5	4.0	3.5	
	6"x8"							6.0	5.0		6"x8"		6.0	4.0	3.0				
60"	4"x4"	6.0	4.0	3.0						120"	4"x4"	6.0	5.5	4.0	3.5	3.0			
	4"x6"		6.0	4.5	3.5	3.0					4"x6"					5.0	4.0	3.5	3.0
	6"x6"				5.5	4.5	4.0	3.5	3.0		6"x6"								
	6"x8"						5.5	4.5	4.0		6"x8"		5.0	3.5					
72"	4"x4"	5.0	3.0							132"	4"x4"	5.0	3.5						
	4"x6"	6.0	5.0	3.5	3.0						4"x6"	6.0	4.5	3.5	3.0				
	6"x6"			6.0	4.5	4.0	3.5	3.0	3.0		6"x6"			5.5	4.0	4.0	3.5	3.0	
	6"x8"					5.0	4.5	4.0	3.5		6"x8"				5.0	4.0	3.5	3.0	
84"	4"x4"	6.0	6.0	5.0	4.0	3.5	3.0			144"	4"x4"	4.5	3.0						
	4"x6"					5.0	4.5	4.0	3.5		4"x6"	5.5	4.0	3.0					
	6"x6"										6"x6"				5.0	4.0	3.5	3.0	
	6"x8"										6"x8"		4.5	3.0					
96"	4"x4"	6.0	5.5	4.5	3.5	3.0				156"	4"x4"	4.5	3.0						
	4"x6"					4.5	4.0	3.5	3.0		4"x6"	6.0	4.5	3.5	3.0				
	6"x6"										6"x6"								
	6"x8"										6"x8"		3.5						
108"	4"x4"									168"	4"x4"								
	4"x6"										4"x6"								
	6"x6"										6"x6"								
	6"x8"										6"x8"								
120"	4"x4"									180"	4"x4"								
	4"x6"										4"x6"								
	6"x6"										6"x6"								
	6"x8"										6"x8"								

Standard Specifications

Section 19

Drawn by: Drake Checked by: REB

Recommended by: G. J. K. K. K.

Approved by County Surveyor

D. K. S. S. P. R. C. E. 80%

SAN DIEGO COUNTY SURVEYOR - ROAD DEPARTMENT

STANDARD DRAWING

SAFE OVERFILLS FOR FIELD ASSEMBLED PLATE PIPE

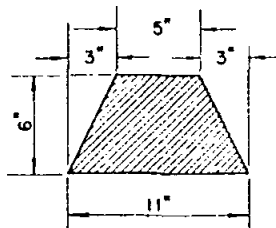
Revision By Approved Date

Scale None Approved 4-5-63

Drawing No.

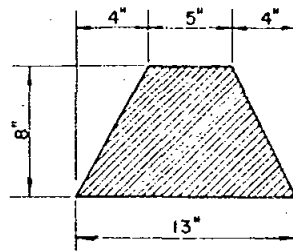
181-1

TYPE A DIKE



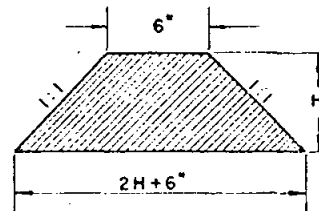
SECTION

TYPE B DIKE



SECTION

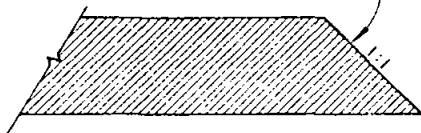
TYPE C DIKE



SECTION

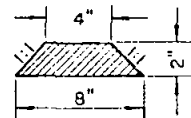
HEIGHT = 6", 8", OR 9" AS
INDICATED ON PLANS.

SLOPE END OF DIKE 1:1 WHEN NOT
JOINING OTHER IMPROVEMENTS



SIDE VIEW

TYPE D DIKE



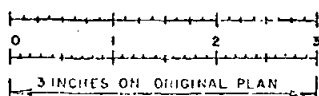
SECTION

NOTE:

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	0.02500
B	0.03740
C - 6"	0.03750
C - 8"	0.05833
C - 9"	0.07031
D	0.00586

REDUCED SCALE
USE SCALE BELOW



LEGEND ON PLAN

LABEL TYPE OF DIKE



STD. SPEC. SEC: 39

DRAWN BY *1/3* CHECKED BY *6/23*

RECOMMENDED BY *1/3*

APPROVED BY COUNTY ENGINEER

H.M. Taylor RCE 11458

DATE: *Sept. 28, 1971*

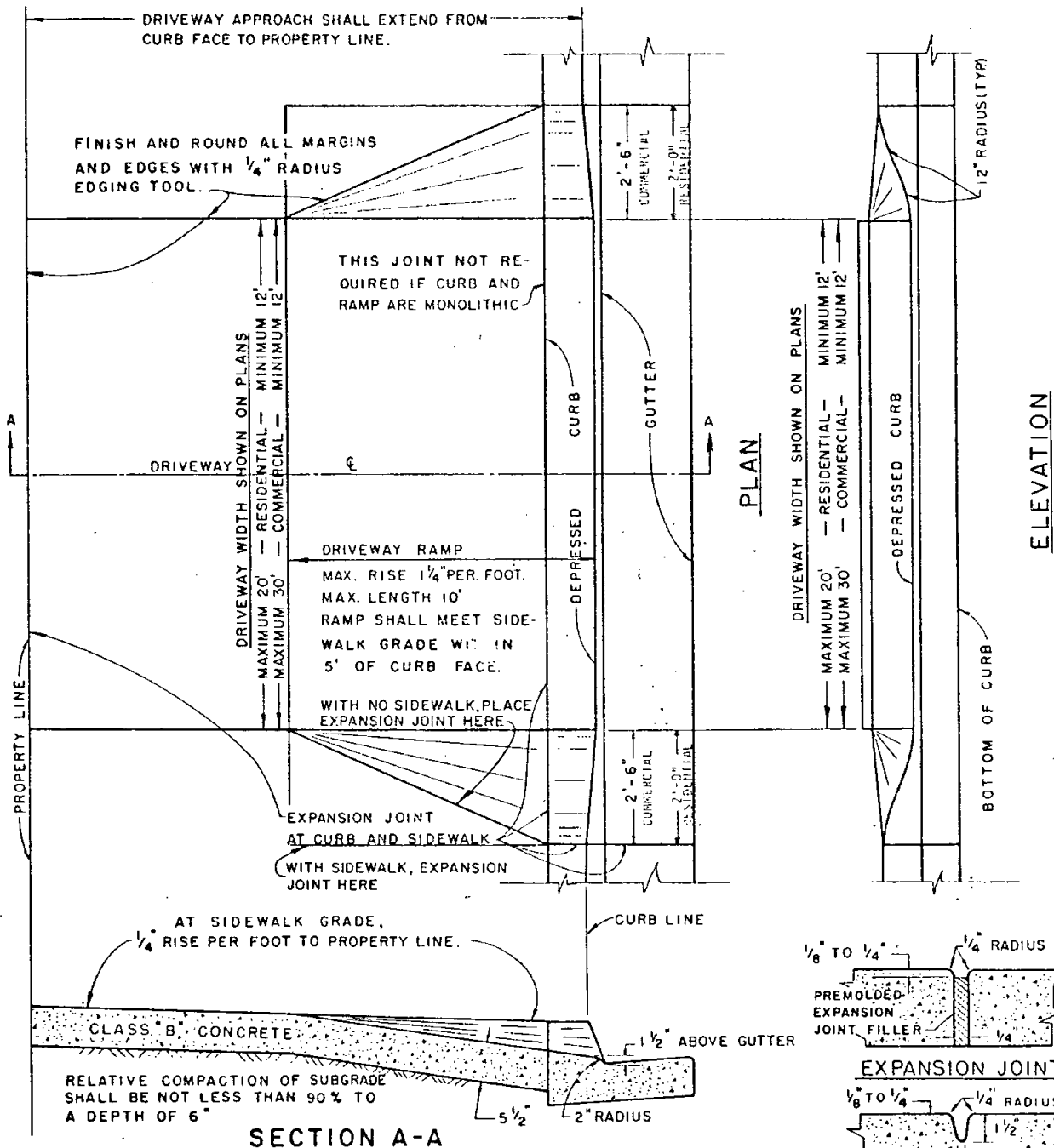
SAN DIEGO COUNTY ENGINEER DEPARTMENT
STANDARD DRAWING

ASPHALT CONCRETE DIKES

REVISION BY APPROVED DATE

SCALE: NONE

DRAWING
NUMBER 201-2



NOTE:

1. THICKER CONCRETE, CLASS "A" CONCRETE AND REINFORCEMENT ARE PERMISSIBLE. 6" CLASS III AGGREGATE BASE RECOMMENDED FOR HEAVY SERVICE.
2. WEAKENED-PLANE JOINT REQUIRED ON DRIVEWAY E FOR DRIVEWAYS 13'-20' WIDE.
3. ALTERNATE WEAKENED-PLANE JOINT MAY BE POWER DRIVEN SAW CUT, 1 1/2" MINIMUM DEPTH, 1/4" MAXIMUM WIDTH.
4. SEE STANDARD DRAWINGS 305, 306 FOR LOCATION & WIDTH REQUIREMENTS.

STD. SPEC. SEC: 51, 73, 90	SAN DIEGO COUNTY ENGINEER DEPARTMENT							
DRAWN BY <i>E.S.G.</i>	CHECKED BY <i>E.M.</i>	STANDARD DRAWING						
RECOMMENDED BY <i>[Signature]</i>	CONCRETE DRIVEWAYS				REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER					SCALE: NONE			
<i>H.M. Taylor</i> R.C.E. 11438					DRAWING NUMBER 207-4 T			
DATE: 1-8-74								

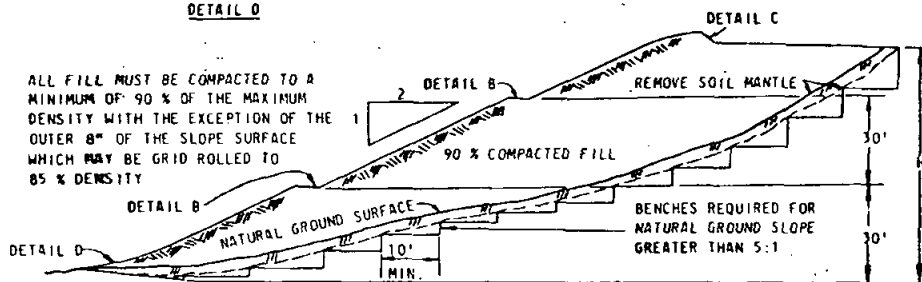
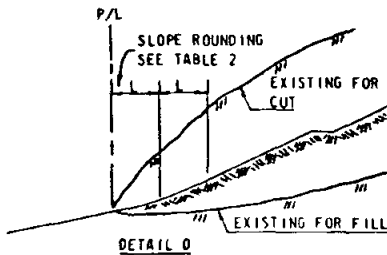
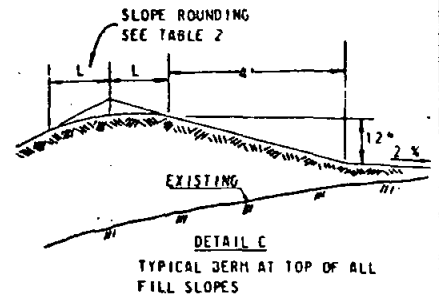
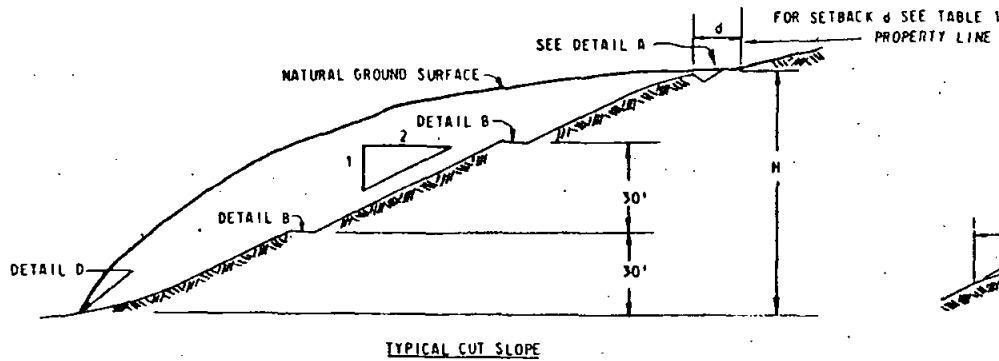
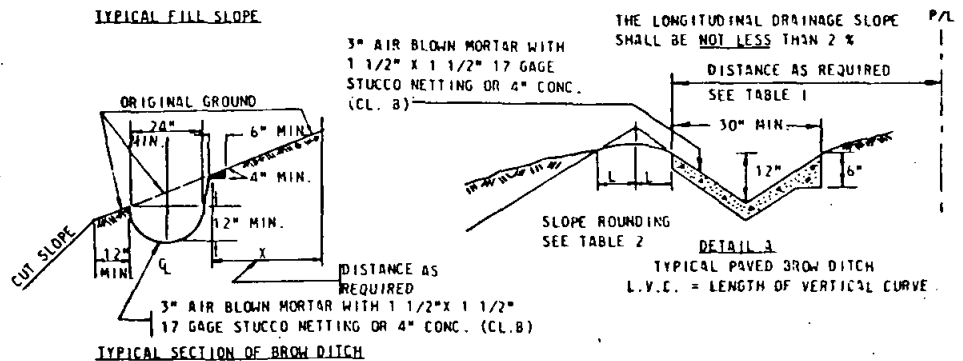


TABLE 1
REQUIRED SETBACK

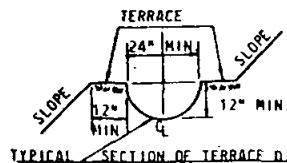
H FEET	d
0 - 15'	3'
OVER 15'	5'

TABLE 2
SLOPE ROUNDING

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



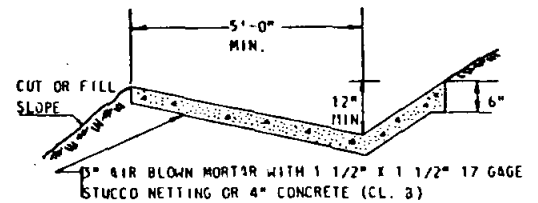
ALT. DETAIL A
TYPICAL PAVED BROW DITCH



3" AIR BLOWN MORTAR WITH 1 1/2" X 1 1/2"
17 GAGE STUCCO NETTING
OR 4" CONC. (CL. B)

MINIMUM SLOPE OF LINED DITCH SHALL
BE 2%

ALT. DETAIL B
TYPICAL TERRACE DRAIN



STD. SPEC. SEC: 19, 52, 53, 90

DRAWN BY D.W.D. CHECKED BY ME

RECOMMENDED BY ME

APPROVED BY COUNTY ENGINEER

H.M. Taylor R.C.E. 11458

DATE: 1-8-74

SAN DIEGO COUNTY ENGINEER DEPARTMENT STANDARD DRAWING

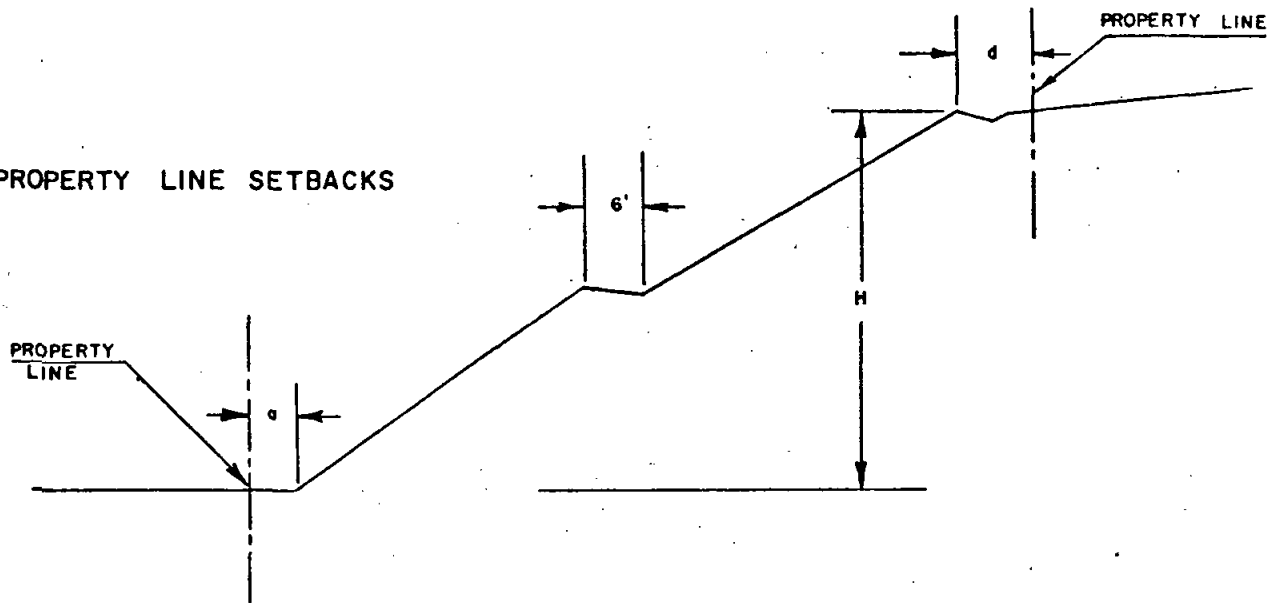
GRADING OF SLOPES

REVISION BY APPROVED DATE

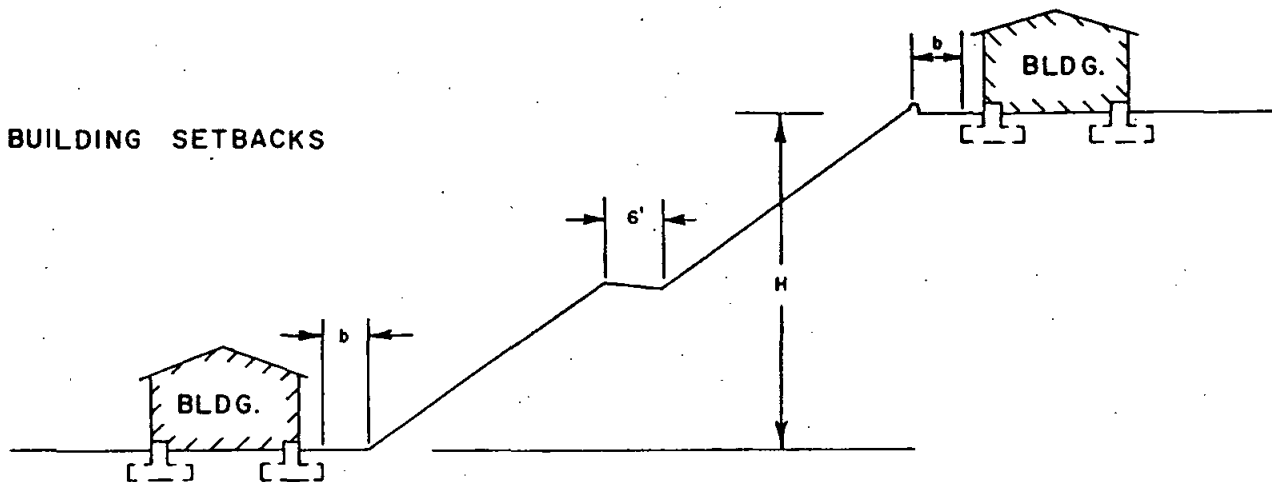
SCALE: NONE

DRAWING
NUMBER 208-1 T

PROPERTY LINE SETBACKS



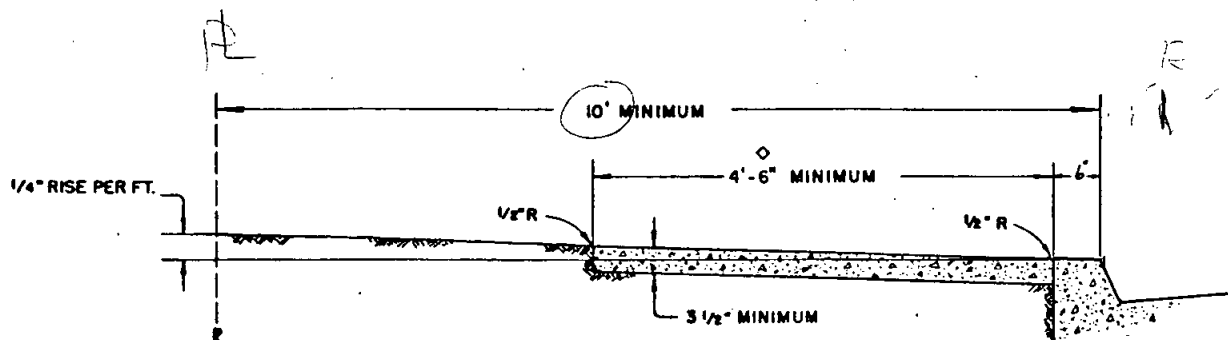
BUILDING SETBACKS



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

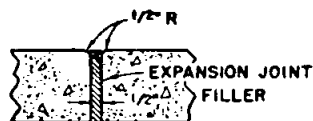
- a. DISTANCE FROM TOE OF SLOPE TO PROPERTY LINE
- b. DISTANCE FROM EDGE OF FOUNDATION TO TOE OR TOP OF SLOPE.
- d. DISTANCE FROM TOP OF SLOPE TO PROPERTY LINE.
- H. TOTAL SLOPE HEIGHT MEASURED VERTICALLY.

STD. SPEC. SEC.				
DRAWN BY <u>DCI</u>	CHECKED BY <u>W</u>			
RECOMMENDED BY <u>W</u>	SAN DIEGO COUNTY SURVEYOR-ROAD DEPARTMENT	REVISION	BY	APPROVED
APPROVED BY COUNTY SURVEYOR	STANDARD DRAWING	SCALE: NONE		DATE
<u>D. K. Olsson</u> R.C.E. 8091	REQUIRED SETBACKS	DRAWING NUMBER	209	
DATE: <u>Sept 17, 1965</u>				

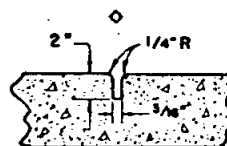


TYPICAL SECTION

LOCATE TRANSVERSELY
AT 60 FT. INTERVALS
AND AT RETURNS.



EXPANSION JOINT



LOCATE TRANSVERSELY AT
15 FT. INTERVALS BETWEEN
EXPANSION JOINTS.

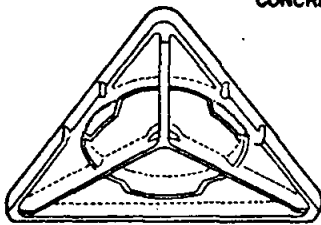
WEAKENED-PLANE JOINT

NOTES:

1. ALL CONCRETE SHALL BE CLASS "B".
2. WHERE TRAVERSED BY DRIVEWAYS, SIDEWALKS SHALL CONFORM TO DRIVEWAY REQUIREMENTS.
3. MONOLITHIC CURB, GUTTER AND SIDEWALK MAY BE USED WITH SPECIFIC APPROVAL OF THE COUNTY ENGINEER.
4. SPECIFIED INTERVALS BETWEEN TRANSVERSE JOINTS SHALL BE VARIED TO MATCH ADJACENT EXISTING IMPROVEMENTS.
5. SIDEWALK SHALL BE MARKED TRANSVERSELY AT 5 FT. INTERVALS BETWEEN EXPANSION AND WEAKENED-PLANE JOINTS WITH A SCORING TOOL THAT WILL LEAVE THE EDGES ROUNDED.
6. SIDEWALK LOCATION MAY BE VARIED, SUBJECT TO APPROVAL BY THE COUNTY ENGINEER, TO MATCH EXISTING ADJACENT IMPROVEMENTS.
7. SIDEWALK LOCATION AND WIDTH MAY BE VARIED TO ALLOW FOR ENCRDACHING UTILITIES, SUBJECT TO APPROVAL BY THE COUNTY ENGINEER.
8. WHERE EXPANSIVE SOILS ARE ENCOUNTERED A MINIMUM OF 4" CLASS 3 AGGREGATE BASE WILL BE REQUIRED AS DIRECTED BY THE COUNTY ENGINEER.
9. EXPANSION JOINT TO BE INSTALLED AT BEGINNING AND ENDING OF SIDEWALK RETURNS.

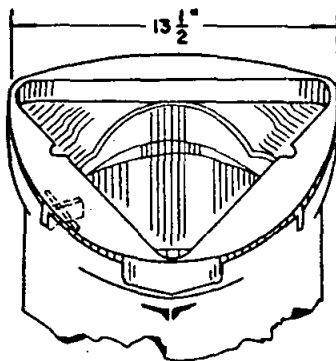
STD. SPEC. SEC. 51, 73, 90		SAN DIEGO COUNTY ENGINEER DEPARTMENT STANDARD DRAWING		CHG. NOTE 3	R/S	H. J. Taylor	8/15/70
DRAWN BY <u>LLB</u>	CHECKED BY <u>MLB</u>			○	ME		1-4-71
RECOMMENDED BY <u>[Signature]</u>		CONCRETE SIDEWALK		REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER <u>H. J. Taylor</u> R.C.E. 11458				SCALE: NONE			
DATE: <u>1-8-74</u>				DRAWING NUMBER 212-3 T			

BLACKEN SURFACE OF CONCRETE
COLLAR WITH BLACK COAT OF
EMULSIFIED ASPHALT WHILE
CONCRETE IS FRESH



CI COVER (BOTTOM VIEW)

COVER TO BE BROOKS NO. 4TT
OR EQUAL AND TO HAVE WORD
"MONUMENT" CAST IN LID. BOX
TO BE BROOKS 6" 4TT OR EQUAL



MONUMENT NOTE:

MONUMENT MAY BE FORMED BY
METAL SLEEVE, WAXED CARDBOARD
OR BY DRILLING THRU HOLE MADE
FOR MONUMENT. IF THERE IS AN
OVERCUT, THEN OVERCUT SHOULD
BE FILLED WITH CONCRETE TO
SAND LEVEL.

NOTE:

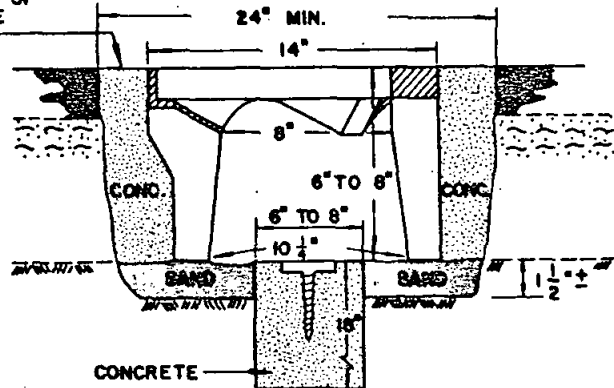
ALL REQUIRED SURVEY MONUMENTS OR MARKINGS MUST
BE COMPLETE AND IN PLACE WITHIN 30 DAYS AFTER
COMPLETION OF SUBDIVISION IMPROVEMENTS. (SEE
STANDARD DRAWING NO. 219-1)

OTHER REQUIRED SURVEY MARKERS

△ EVERY MAP OF SUBDIVISION SHALL SHOW THE FOLLOWING MONUMENTS
WHICH SHALL BE SET BY A LICENSED SURVEYOR OR ENGINEER:

BOUNDARY MONUMENTS: THE EXTERIOR BOUNDARY OF THE SUBDIVISION
SHALL BE MONUMENTED WITH PERMANENT MONUMENTS NOT SMALLER
THAN TWO INCH (2") IRON PIPES AT LEAST TWENTYFOUR INCHES (24")
LONG SET AT EACH CORNER, AT INTERMEDIATE POINTS ALONG THE
BOUNDARY NOT MORE THAN ONE THOUSAND FEET (1000') APART AND AT
THE BEGINNING AND END POINTS OF ALL CURVES; PROVIDED, IF ANY EXISTING
RECORD AND IDENTIFIED MONUMENT MEETING THE FOREGOING REQUIREMENTS
IS FOUND AT ANY SUCH CORNER OR POINT, SUCH MONUMENT MAY BE USED
IN LIEU OF A NEW MONUMENT.

LOT CORNER MONUMENTS: ALL LOT CORNERS, EXCEPT WHEN COINCIDENT WITH
EXTERIOR BOUNDARY CORNER, SHALL BE MONUMENTED WITH PERMANENT
MONUMENTS OF ONE OF THE FOLLOWING TYPES: (1) THREE-FOURTH INCH (3/4")
DIAMETER IRON PIPE AT LEAST EIGHTEEN INCHES (18") LONG, (2) ONE-HALF INCH
(1/2") DIAMETER STEEL ROD AT LEAST TWELVE INCHES (12") LONG, (3) LEAD
PLUG AND COPPER IDENTIFICATION DISKS SET IN CONCRETE SIDEWALKS OR CURBS.



MONUMENT MARKER

SOLID BRASS, 2" DIA. TOP, 3/4" x 2 1/2" SHANK,
LIETZ 526 OR APPROVED EQUAL TO BE
SET IN FRESH P.C.C. TOP OF MONUMENT TO
BE APPROX. 6" BELOW STREET SURFACE.

SURVEYOR'S NOTE

EXACT POINT TO BE DETERMINED BY ACCURATE
SURVEY AND CLEARLY PUNCHED IN TOP OF
BRASS MARKER TOGETHER WITH R.E. OR L.S.
NUMBER IN 1/8" NUMERALS.

△ ON ALL SUBDIVISIONS WITH DEFERRED MONUMENTATION, WE
WILL REQUIRE THE ENGINEER TO ADD THE FOLLOWING NOTE
TO THE LEGEND: "IN THE EVENT THE ABOVE TYPE(S) OF
MONUMENT(S) CANNOT BE SET, DUE TO UNFORSEEN
CIRCUMSTANCES, THEN I WILL AFFIX A TAG OR DISC STAMPED
L.S. _____ OR R.E. _____ IN EXISTING CONCRETE, WOOD OR
METAL STRUCTURE, OR IN EXISTING NATURAL STONE
OUTCROPPING AT THE TRUE POSITION CALLED FOR BY THIS
LEGEND SYMBOL."

STD. SPEC. SEC:		SAN DIEGO COUNTY ENGINEER DEPARTMENT			
DRAWN BY <i>204</i>		CHECKED BY <i>MS</i>		△ <i>MS</i>	
RECOMMENDED BY <i>MS</i>				REVISION BY APPROVED DATE	
APPROVED BY COUNTY ENGINEER				SCALE: NONE	
<i>H.M. Taylor</i> R.C.E. 11458		STREET SURVEY MONUMENT		DRAWING NUMBER 218-1	
DATE: <i>Aug. 16, 1978</i>					

24"X 2" GALV. IRON PIPE WITH
CONCRETE CORE & METAL DISC.
STAMPED:

L.S. NO. _____ (OR)
R.C.E. NO. _____

LEGEND ON PLANS ○

SUBDIVISION BOUNDARY MONUMENT

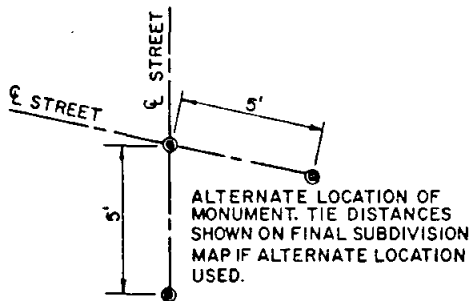
FLUSH

18"X 3/4" GALV. IRON PIPE
WITH CONCRETE CORE &
DISC STAMPED:

L.S. NO. _____ (OR)
R.C.E. NO. _____

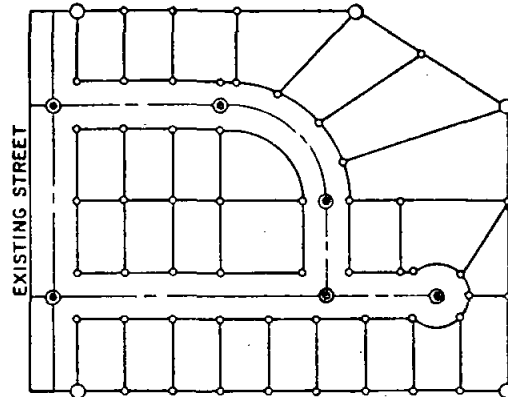
LEGEND ON PLANS ○

PROPERTY CORNER MONUMENT



LEGEND ON PLANS ●

LOCATION OF STREET SURVEY MONUMENT (STD. DRAWING NO. 218-1)

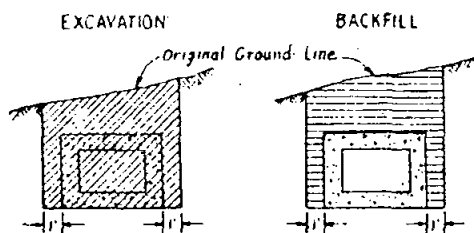


TYPICAL INSTALLATION

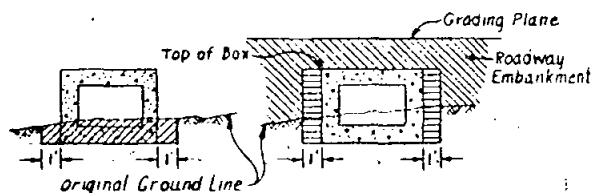
NOTES

1. **STREET SURVEY MONUMENT:**
FOR DETAILS OF PLACEMENT AND CONSTRUCTION, SEE STANDARD DRAWING NO. 218-1.
 - (a) SET ON ALL CENTERLINE INTERSECTIONS UNLESS ACTUAL LOCATION IS MODIFIED BY THE COUNTY SUBDIVISION ENGINEER AND SHOWN IN MODIFIED LOCATION ON MAP WHEN CENTER LINE INTERSECTION IS IMPRACTICAL, OFFSET 5 FEET ON CENTER LINE OF MAJOR STREET. (SEE DETAIL ABOVE). IF NEITHER CENTER LINE CAN BE OCCUPIED, TWO MONUMENTS WILL BE SET IN LINE AROUND THE POINT ON THE PERIMETER OF A 10-FOOT DIAMETER CIRCLE, WHOSE CENTER IS THE POINT.
 - (b) SET ON CENTER LINE AT INTERVALS NOT EXCEEDING 1000 FEET ON STRAIGHT RUNS.
 - (c) SET ON CENTER LINE AT POINTS OF CURVATURE.
 - (d) SET ON CENTER AT CENTER POINTS OF CUL-DE-SACS.
 - ◇ (e) SET ON CENTER LINE WHEN CENTER POINT OF CUL-DE-SAC IS OFFSET FROM CENTER LINE.
 - (f) THESE STANDARDS MAY BE MODIFIED AT THE DISCRETION OF THE COUNTY ENGINEER IN CASES WHERE STRICT COMPLIANCE THEREWITH RESULTS IN MORE MONUMENTS THAN HE 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, PROVIDED SUCH POINT IS NOT MORE THAN 300 FEET FROM THE POINT ON WHICH THE DELETED MONUMENT WOULD HAVE BEEN PLACED.
2. **PRESERVATION OF MONUMENTS:**
WHERE PLANS ARE SUBMITTED, IT SHALL BE THE RESPONSIBILITY OF THE ENGINEER OF WORK TO SHOW ALL MONUMENTS OF RECORD WHICH IT MAY BE NECESSARY TO MOVE. THE PERMITTEE SHALL NOT DISTURB ANY MONUMENTS OF RECORD FOUND ON THE LINE OF IMPROVEMENT WITHOUT PERMISSION FROM THE COUNTY ENGINEER, AND THE PERMITTEE SHALL BEAR THE EXPENSE OF RESETTling ANY MONUMENT OR STAKES WHICH MAY BE DISTURBED.
3. **COMPLETION TIME:**
ALL REQUIRED SURVEY MONUMENTS OR MARKINGS MUST BE COMPLETE AND IN PLACE WITHIN 30 DAYS AFTER COMPLETION OF SUBDIVISION IMPROVEMENTS.
4. **CALIFORNIA COORDINATE SYSTEM:**
ALTHOUGH THE USE OF THE CALIFORNIA COORDINATE SYSTEM IS OPTIONAL, SAN DIEGO COUNTY WOULD PREFER ITS USE. IF THE ENGINEER OR SURVEYOR WILL USE COORDINATE PROCEDURE, THE COUNTY WILL PROVIDE THE NEEDED TIES AND COORDINATES.

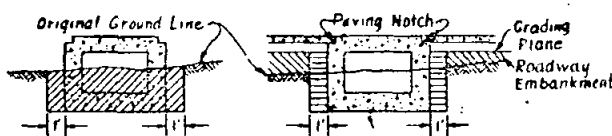
STD. SPEC. SEC:		SAN DIEGO COUNTY ENGINEER DEPARTMENT STANDARD DRAWING		◇	MEZ		
DRAWN BY <u>RLH</u>	CHECKED BY <u>MEZ</u>						
RECOMMENDED BY <u>[Signature]</u>		SURVEY MONUMENT LOCATIONS		REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER <u>H.M. Taylor</u> R.C.E. 11458				SCALE: NONE			
DATE: <u>Aug. 14, 1973</u>				DRAWING NUMBER 219-1			



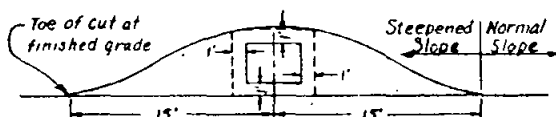
CULVERT IN TRENCH



CULVERT IN EMBANKMENT

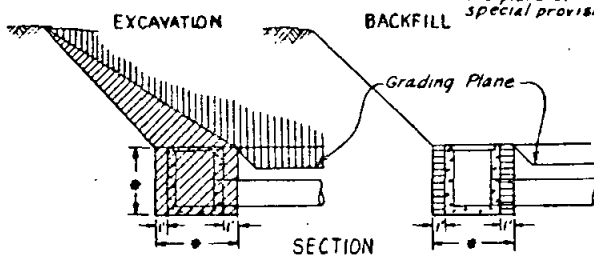


GRADE TOP OF CULVERT
BOX CULVERTS

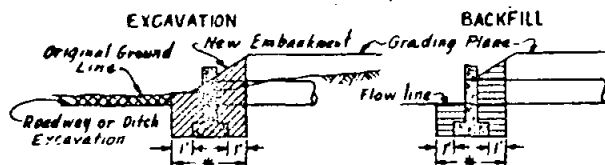


PLAN

NOTE: Slopes & dimensions may vary as shown on the plans or in the special provisions



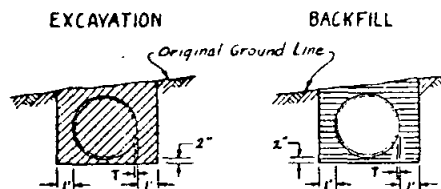
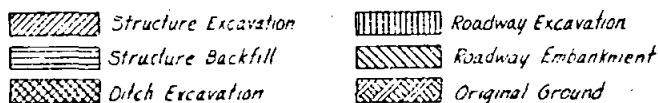
RECESSES AT CULVERT INLETS



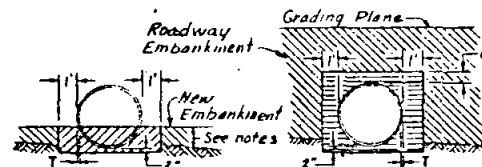
PIPE HEADWALLS

* Note: When concrete is being paid for as class A concrete (Minor Structures), the cost of excavation and backfill is included in the price paid for class A concrete (Minor Structures)

LEGEND



PIPE CULVERT IN TRENCH



PIPE CULVERT IN NEW EMBANKMENT

Height of top of embankment before excavating for pipe shall be as follows:

For pipe 24" dia. or less: 6" above top of pipe or 30" max.

For C.M.P. over 24" to 90" dia: 30" above bottom of pipe.

For C.M.P. over 90" dia: 1/2 point of dia. above bottom pipe.

For R.C.P. over 24" dia: 30" above bottom of pipe.

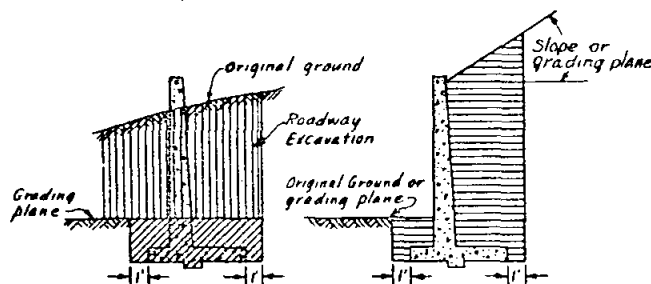
For field assembled plate culvert: 1/2 point of dia. above bottom of pipe. Structure backfill 6" above top of pipe.

For payment quantities excavation & backfill concrete pipe

T = min. wall thickness as shown in AASHTO M170 for

class III pipe, wall A. For C.M.P. T = 0.00

PIPE CULVERTS, RODS & DEADMEN
except underdrains & overside drains



RETAINING WALLS

Note: If no roadway excavation is involved at the wall Structure excavation will be measured from the original ground.

Standard Specifications

Sections: 19

Drawn by: Drake Checked by: R.E.B.

Recommended by: J.L. Freeman

Approved by County Surveyor:

D. K. Spear

SAN DIEGO COUNTY SURVEYOR - ROAD DEPARTMENT
STANDARD DRAWING

EXCAVATION AND BACKFILL
CULVERTS, RETAINING WALLS & HEADWALLS

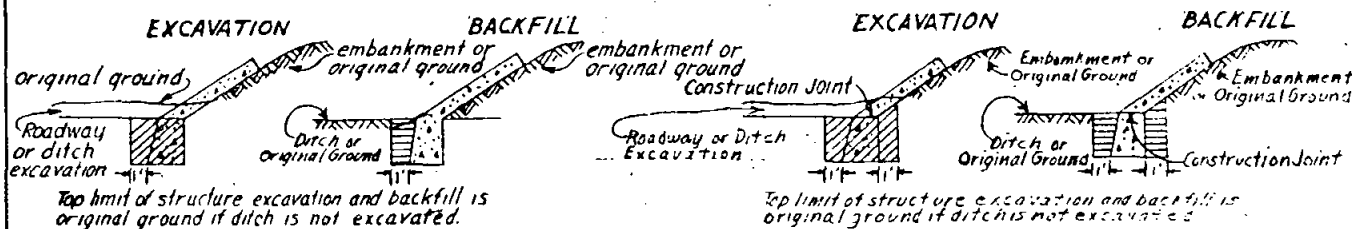
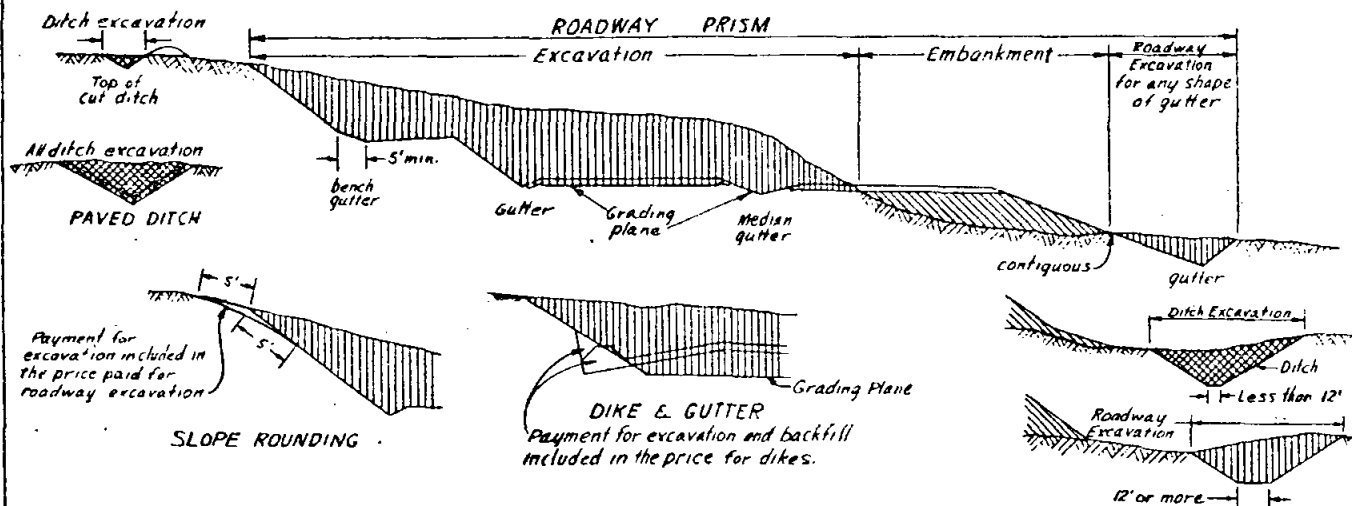
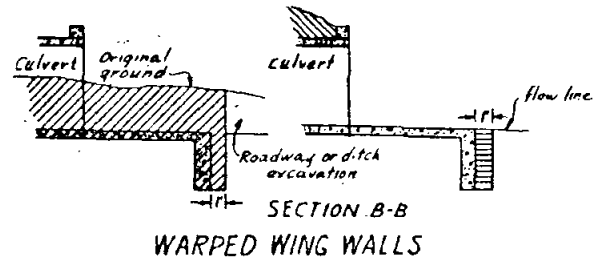
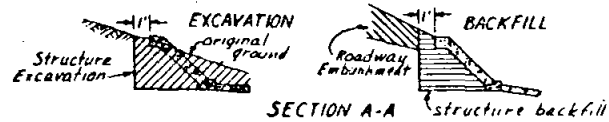
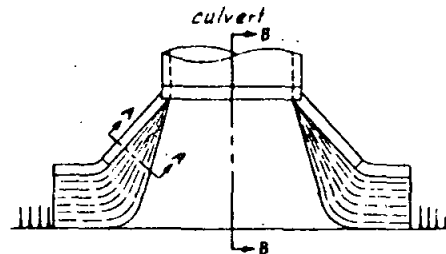
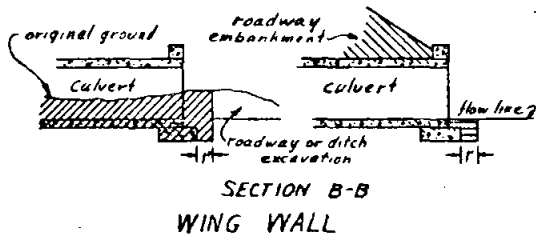
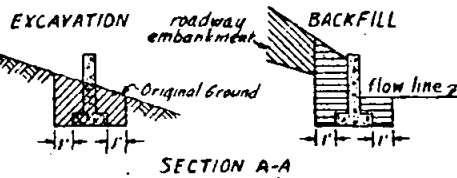
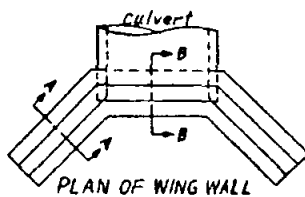
Revision: By: Approved: Date:

Scale: None

Date Approved: 1-14-63

Drawing No

220-1



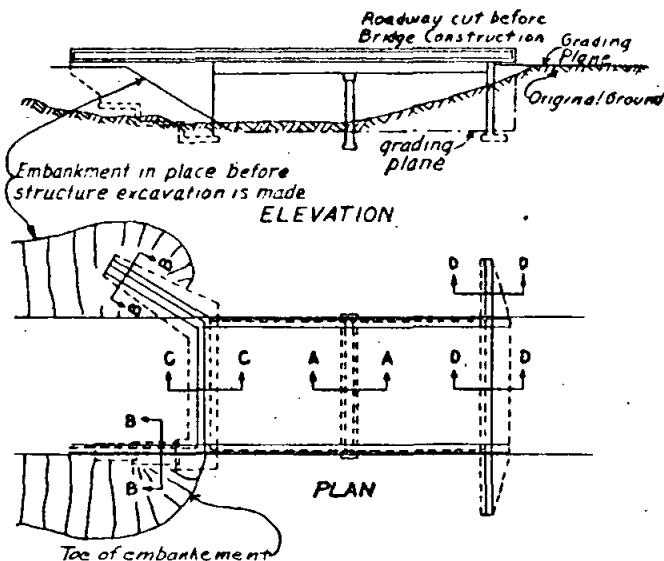
LEGEND

	Structure Excavation		Roadway Excavation
	Structure Backfill		Roadway Embankment
	Ditch Excavation		Original Ground

Standard Specifications
Sections: 19
Drawn by: <u>brake</u> Checked by: <u>REC</u>
Recommended by: <u>E. J. Wiseman</u>
Approved by County Surveyor: <u>D. X. S. [Signature]</u>

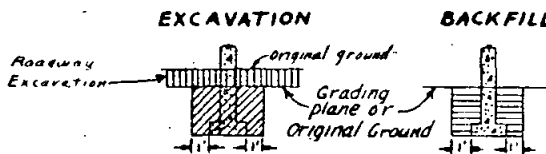
SAN DIEGO COUNTY SURVEYOR → ROAD DEPARTMENT
STANDARD DRAWING
EXCAVATION AND BACKFILL
ROADWAY, WING WALLS & SLOPE PROTECTION

Revision	By	Approved	Date
Scale:	None		
Date Approved:	1-14-63		
Drawing No	221-1		



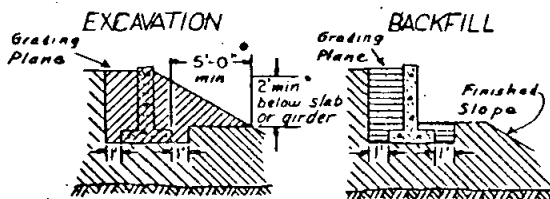
LEGEND

	Structure Excavation		Roadway Excavation
	Structure Backfill		Roadway Embankment
	Ditch Excavation		Original Ground



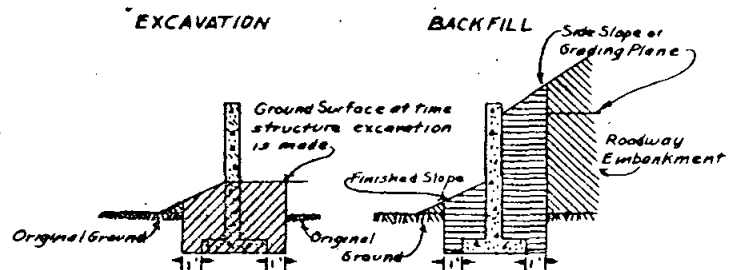
SECTION A-A

When bridge piers are in water course, quality and compaction requirements for backfill will be waived and full compensation for backfilling the excavation will be considered as included in the price paid for structure excavation.

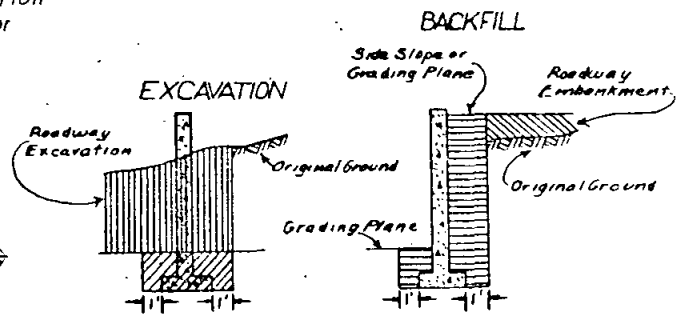


Or as shown on plans

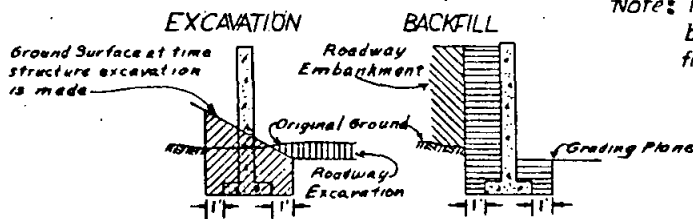
SECTION C-C
ABUTMENT IN EMBANKMENT



SECTION B-B



SECTION D-D



SECTION C-C
ABUTMENT IN ORIGINAL GROUND

Note: If no roadway excavation is involved at bridge, structure excavation will be measured from the original ground.

Standard Specifications

Sections: 19

Drawn by: *Deke* Checked by: *REB*

Recommended by: *W. J. Plummer*

Approved by County Surveyor:

D. X. Spear R.C.E. 0021

SAN DIEGO COUNTY SURVEYOR — ROAD DEPARTMENT
STANDARD DRAWING

EXCAVATION AND BACKFILL
BRIDGE PIERS, ABUTMENTS & ADJOINING WING WALLS

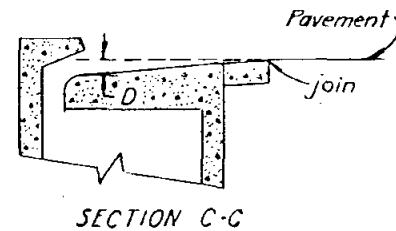
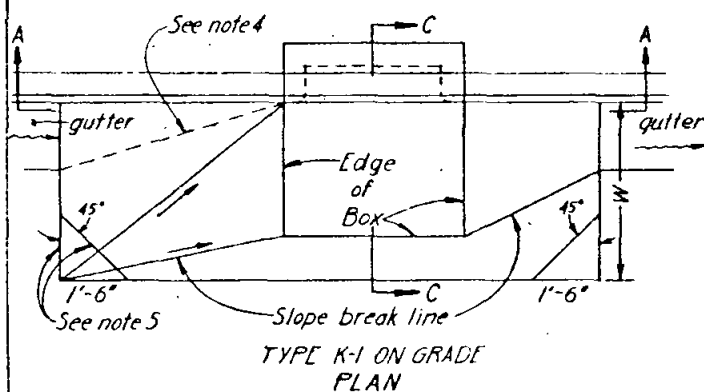
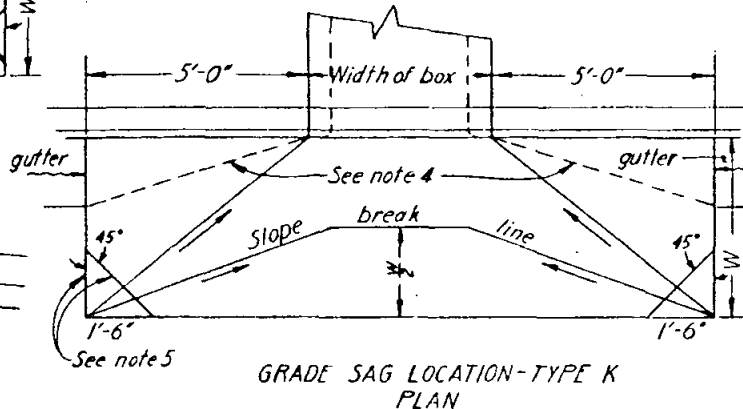
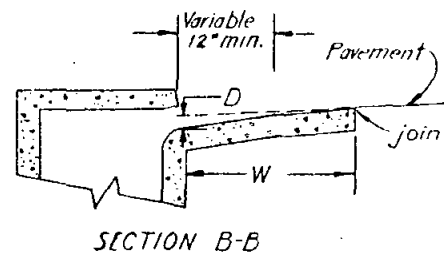
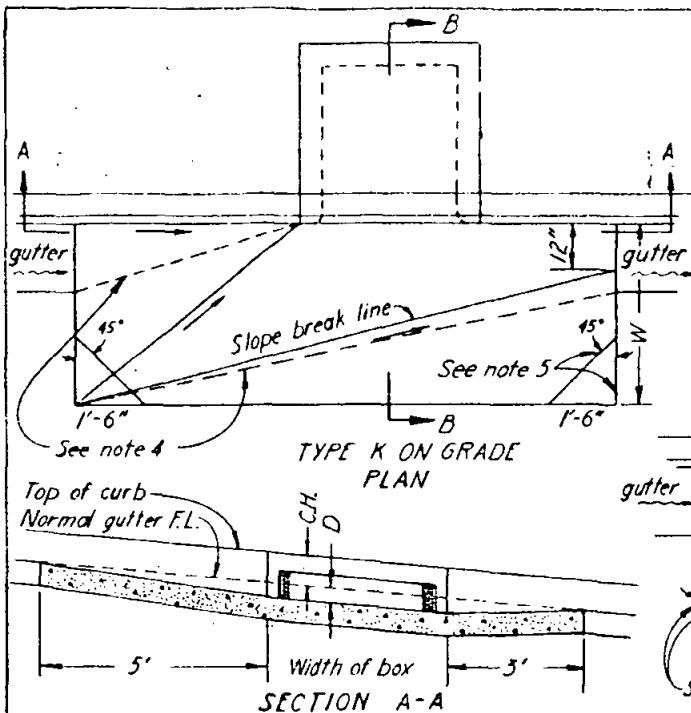
Revision # By Approved # Date #

Scale: None

Date Approved: 1-14-62

Drawing No

222-1



Notes:

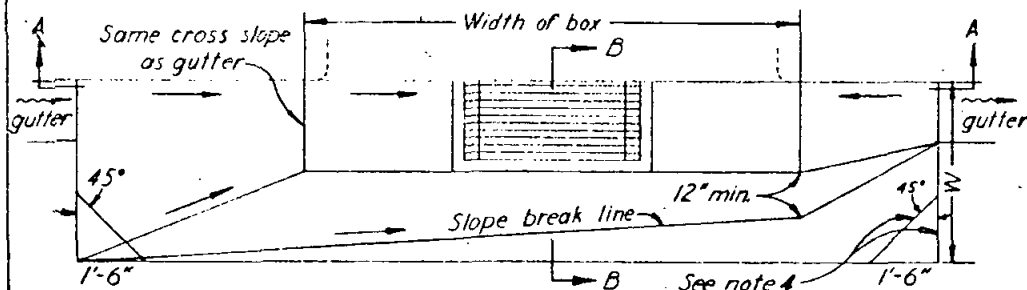
1. W = width of depressed aprons, variable 3' to 6' (use 4' unless noted otherwise).
2. D = gutter depression. It shall be 4" unless noted otherwise.
3. C.H. = curb height.
4. — = straight grade, downward slope.
5. ~ = gutter direction of flow.
6. Gutter depression to be class "A" P.C.C. 6" thick.
7. Refer to standard drawing 104-1 type K curb inlet or 105-1 type K-I curb inlet for curb opening.
8. Where cross slope of gutter is not the same as cross slope of adjacent pavement, dashed slope break lines also apply.
9. When adjacent pavement is P.C.C., corners shall be 90°. For A.C. pavement corners shall be formed at 45° as shown.

Standard Specifications	SAN DIEGO COUNTY SURVEYOR - ROAD DEPARTMENT	Revision	By	Approved	Date
Sections: 51, 90.		Scale:	None		
Drawn by: <i>DRB</i> Checked by: <i>REB</i>		Date Approved:	12/2/63		
Recommended by: <i>REB</i>		Drawing No.	223-1		
Approved by County Surveyor:					
<i>D.K. Schaefer</i> P.C.E. 8091					

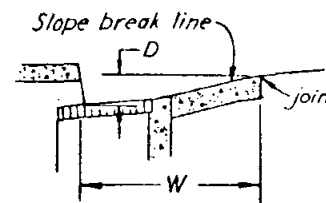
STANDARD DRAWING

STANDARD GUTTER DEPRESSIONS

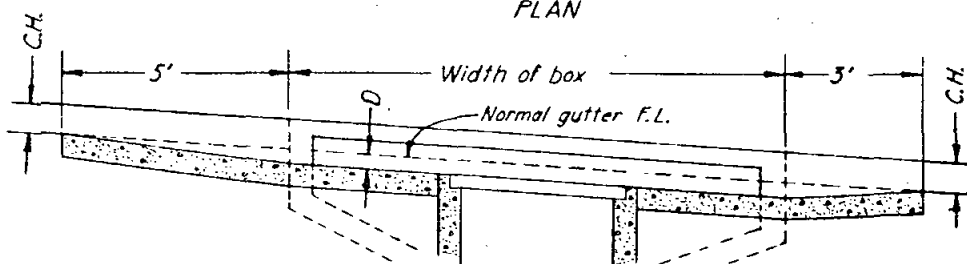
FOR TYPE K AND K-I CURB INLETS



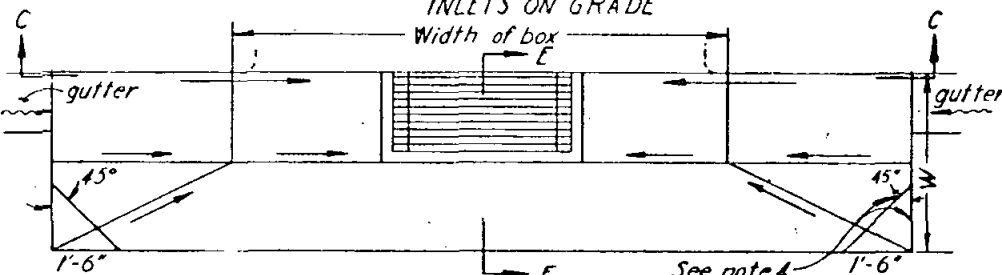
PLAN



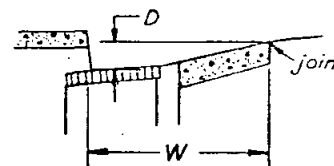
SECTION B-B



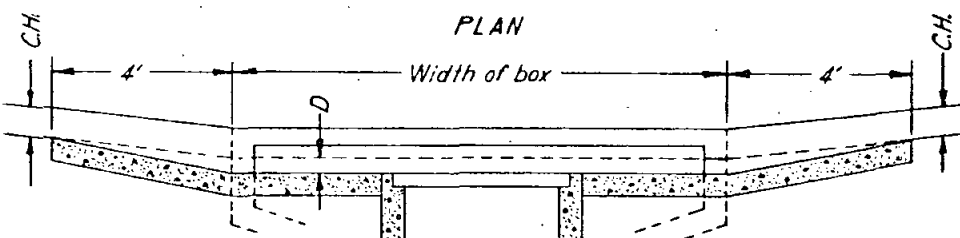
SECTION A-A
INLETS ON GRADE



PLAN



SECTION E-E



SECTION C-C
GRADE SAG LOCATION

Notes:

1. W = width of depressed aprons, variable 3' to 6' (use 4' unless noted otherwise).
D = gutter depression. It shall be 4" unless noted otherwise.
C.H. = curb height.
— = straight grade, downward slope.
~ = gutter direction of flow.
2. Gutter depression to be class "A" P.C.C., 6" thick.
3. This standard drawing shall apply to all standard curb inlets with grate.
4. When adjacent pavement is P.C.C., corners shall be formed at 90°. For AC pavement, corners shall be formed at 45° as shown.

Standard Specifications

Sections: 51, 90.

Drawn by: Drake Checked by: R.E.

Recommended by: R.E.

Approved by County Surveyor:

D.K. Speer R.C.E. 8891

SAN DIEGO COUNTY SURVEYOR - ROAD DEPARTMENT

STANDARD DRAWING

STANDARD GUTTER DEPRESSIONS
FOR CURB INLETS WITH GRATE

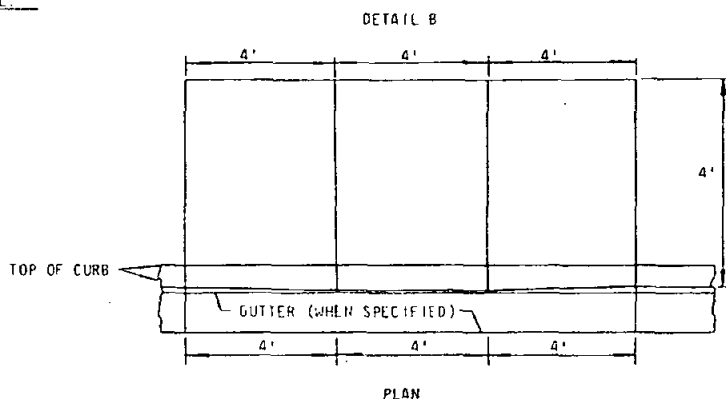
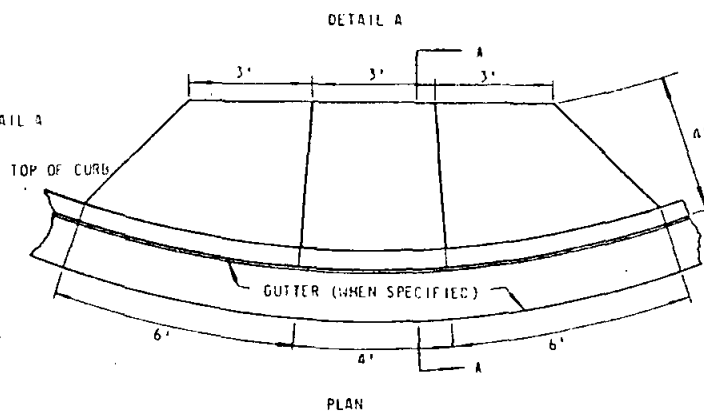
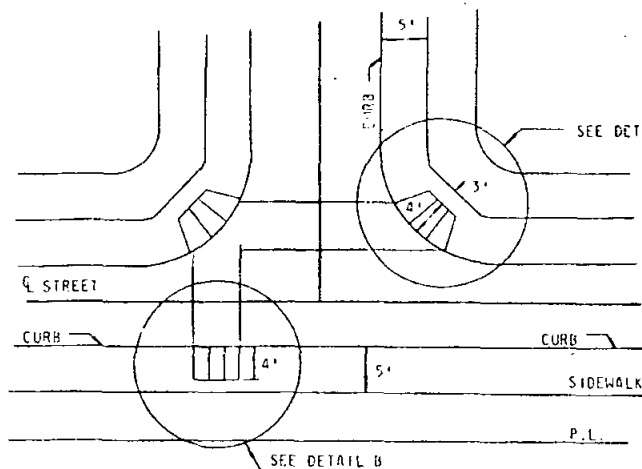
Revision By Approved Date

Scale: None

Date Approved: 12/2/63

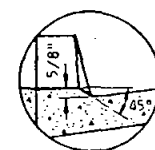
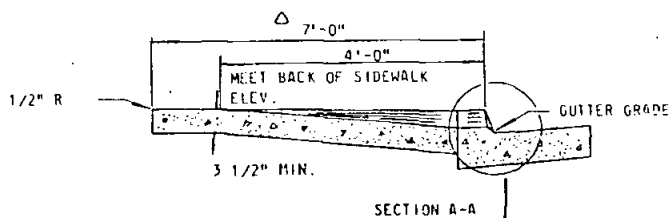
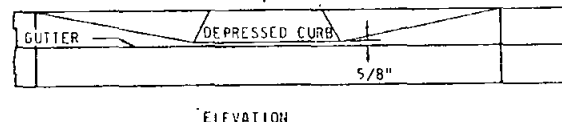
Drawing No.

224-1



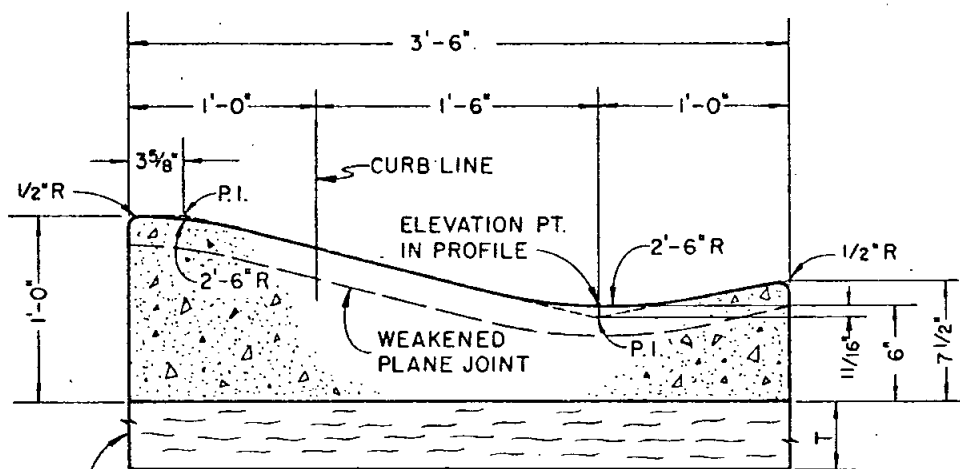
NOTES:

1. IF OBSTRUCTIONS SUCH AS INLETS, UTILITY POLES, FIRE HYDRANTS, ETC. ARE ENCOUNTERED THE LOCATION AND DIMENSIONS MAY BE ADJUSTED UPON THE APPROVAL OF THE COUNTY ENGINEER
2. TEXTURE TO BE HEAVY BROOM FINISH TRANSVERSE TO AXIS OF RAMP.
3. THE RAMP SHOWN IN DETAIL B SHALL BE CENTERED IN THE CROSSWALK.



5/8" LIP ON DEPRESSED CURB SECTION WILL BE SLOPED AT 45°

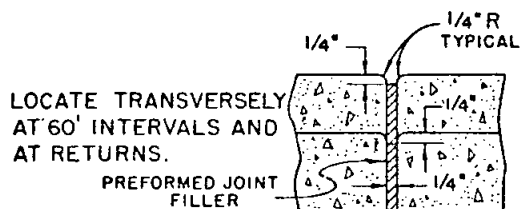
STD. SPEC. SEC: 51, 73, 90		SAN DIEGO COUNTY ENGINEER DEPARTMENT STANDARD DRAWING		Δ		2.1	1. Kachand	6/15/73	
DRAWN BY: <i>AWH</i>	CHECKED BY: <i>WJG</i>								
RECOMMENDED BY: <i>[Signature]</i>		RAMP FOR CURB, GUTTER AND SIDEWALK		REVISION		BY	APPROVED	DATE	
APPROVED BY COUNTY ENGINEER <i>[Signature]</i> R.C.E. 11458				SCALE: NONE					
DATE: 6-15-73				DRAWING NUMBER		225			



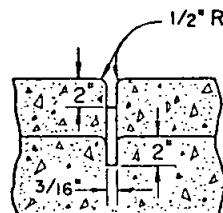
SECTION

BASE MATERIAL TO MATCH STRUCTURAL SECTION OF STREET.
THICKNESS (T) = 6" OR THE THICKNESS DETERMINED BY EXTENDING THE ROADBED GRADING PLANE UNDER THE CURB, WHICHEVER THICKNESS IS GREATER.

BASE ONLY FOR
COMMERCIAL OR
INDUSTRIAL USE.



EXPANSION JOINT



WEAKENED PLANE JOINT

THE SPECIAL MOUNTABLE CURB MAY BE USED ONLY WHERE THE FOLLOWING CONDITIONS ARE PRESENT:

1. FOR COMMERCIAL AND INDUSTRIAL ACCESS ALONG INDUSTRIAL, INDUSTRIAL CUL-DE-SAC AND INDUSTRIAL COLLECTOR STREETS WHERE CURB PARKING IS PROHIBITED.
2. FOR RESIDENTIAL ACCESS WHEN:
 - a.) LOT WIDTH IS LESS THAN 40'.
 - b.) THE STREET IS CLASSIFIED RESIDENTIAL ONLY.
 - c.) THE STREET GRADE DOES NOT EXCEED 5% AND ADEQUATE DRAINAGE IS PROVIDED FOR.

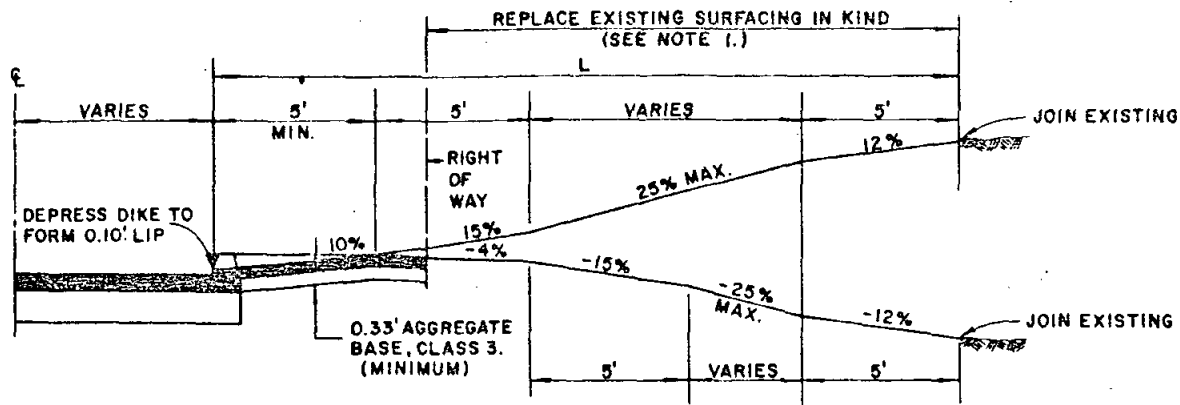
NOTES:

- ALL CONCRETE TO BE CLASS "B".
- SIDEWALK WILL BE INSTALLED AT PROPERTY LINE.
- ALL CURB RETURN RADII TO BE TYPE E CURB & GUTTER WITH MINIMUM 10' TRANSITION TO ROLL CURB PROVIDED FROM END OF RETURN.

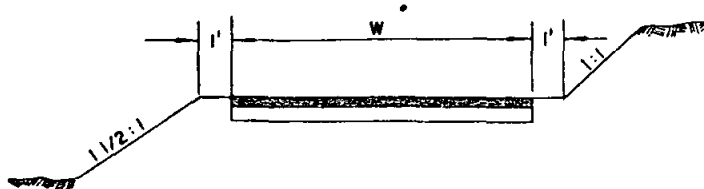
LEGEND ON PLANS

STD. SPEC. SEC:	SAN DIEGO COUNTY ENGINEER DEPARTMENT			
DRAWN BY <i>RLH</i>	STANDARD DRAWING			
CHECKED BY <i>EBL</i>				
RECOMMENDED BY <i>EBL</i>				
APPROVED BY COUNTY ENGINEER				
<i>H. M. Taylor</i> R.C.E. 11458				
DATE: <i>Jan. 12, 1970</i>				
		REVISION	BY	APPROVED DATE
		SCALE: NONE		
		DRAWING NUMBER	226	

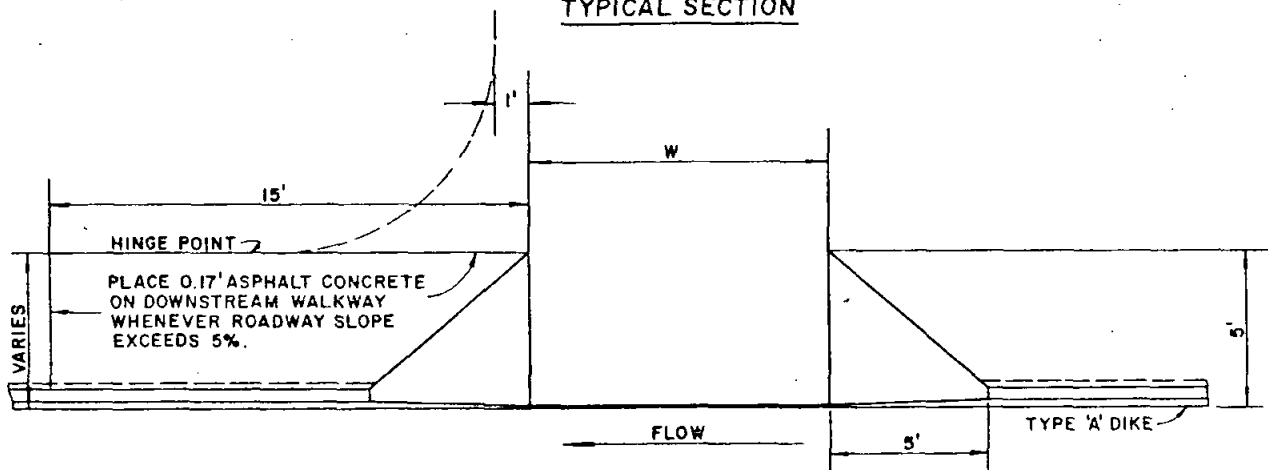
SPECIAL MOUNTABLE CURB



PROFILE



TYPICAL SECTION



PLAN

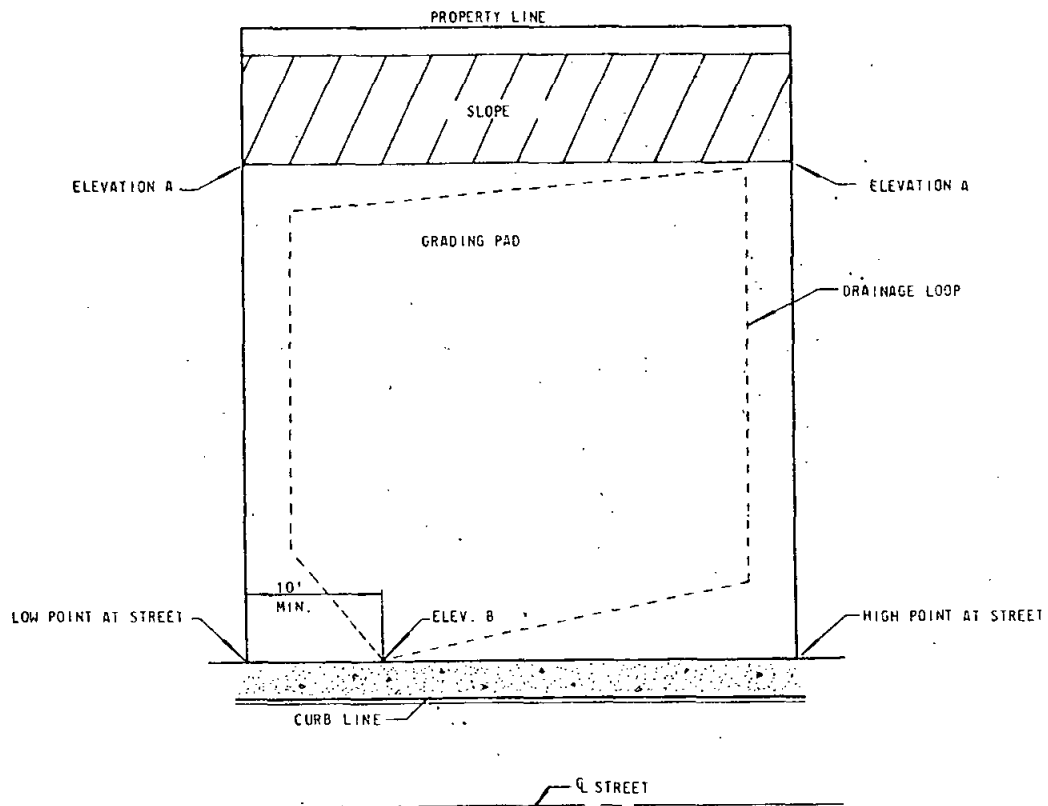
NOTES:

1. DRIVEWAYS WITH GRADES GREATER THAN 15% SHALL BE SURFACED WITH ASPHALT CONCRETE OR PORTLAND CEMENT CONCRETE.
2. MAXIMUM GRADE BREAK 14%.
3. SEE STANDARD DRAWING 207 & 211 FOR CONCRETE DRIVEWAYS.
4. SEE STANDARD DRAWING 305 & 306 FOR LOCATION & WIDTH REQUIREMENTS.

DRIVEWAY
PAVING SCHEDULE

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

STD. SPEC. SEC:		SAN DIEGO COUNTY ENGINEER DEPARTMENT STANDARD DRAWING					
DRAWN BY <i>ASG</i> CHECKED BY <i>EM</i>							
RECOMMENDED BY		ASPHALT CONCRETE DRIVEWAY		REVISION BY APPROVED DATE			
APPROVED BY COUNTY ENGINEER				SCALE: NONE			
<i>H. M. Taylor</i> R.C.E. 11458				DRAWING NUMBER 227			
DATE: <i>Dec 28, 1970</i>							

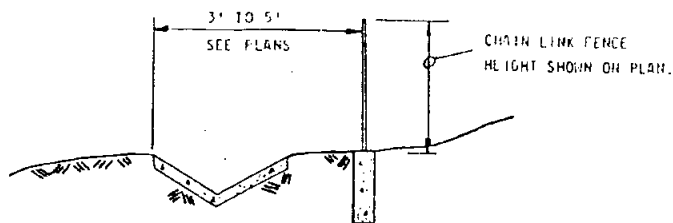


TYPICAL FINISHED GRADING

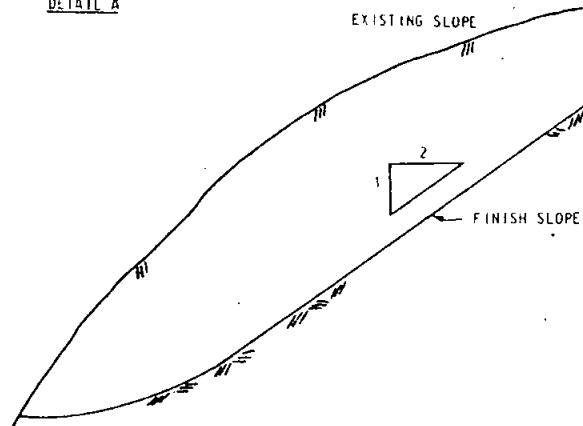
NOTES:

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

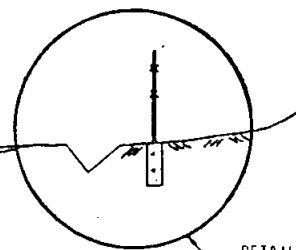
STD. SPEC. SEC: 19, 20, 90	SAN DIEGO COUNTY ENGINEER DEPARTMENT STANDARD DRAWING					
DRAWN BY <u>DMH</u> CHECKED BY <u>MC</u>			REVISION	BY	APPROVED	DATE
RECOMMENDED BY <u>MC</u>			SCALE: NONE			
APPROVED BY COUNTY ENGINEER <u>H. M. Taylor</u> R.C.E. 11458	LOT GRADING		DRAWING NUMBER 231 T			
DATE: <u>1-8-74</u>						



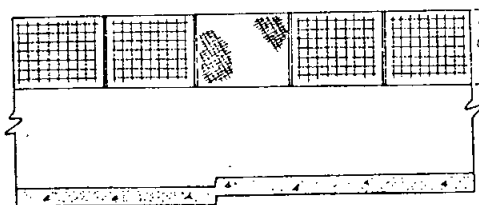
DETAIL A



FENCING CUT BANKS

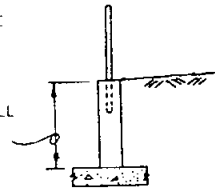


DETAIL A



CHAIN LINK FENCE
HEIGHT SHOWN ON
PLANS

RETAINING WALL
SPECIFIED ON
PLANS



RETAINING WALL & CHAIN LINK FENCE
FOR WALL HEIGHTS GREATER THAN 4 FT.

NOTES:

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

STD. SPEC. SEC: 19, 51, 52, 80	
DRAWN BY <i>P.W.A.</i>	CHECKED BY <i>[Signature]</i>
RECOMMENDED BY <i>[Signature]</i>	
APPROVED BY COUNTY ENGINEER	
<i>H.M. Taylor</i> R.C.E. 11458	
DATE: 1-8-74	

SAN DIEGO COUNTY ENGINEER DEPARTMENT
STANDARD DRAWING

FENCING CUT BANKS

REVISION	BY	APPROVED	DATE
SCALE: NONE			
DRAWING NUMBER	232	T	

BENCH MARK

Description: _____

Location : _____

Record From: _____

Elev : _____ Datum : _____

PRIVATE CONTRACT

SHEET

COUNTY OF SAN DIEGO
SURVEYOR DEPARTMENT

SHEETS

PLANS FOR IMPROVEMENTS IN
AND ADJOINING (SUBDIVISION NAME)

Recommended for Approval

Subdivision Engineer

Approved

County Surveyor

Engineer of Work

R.C.E.

Checked by

Approval Date

T.M.

COUNTY APPROVED CHANGES

No.	Description	Approved By	Date

FILE NO.

Specification Reference

County Surveyor

D. K. Speer
D.K. SPEER, R.C.E., RPSI

SAN DIEGO COUNTY

STANDARD DRAWING

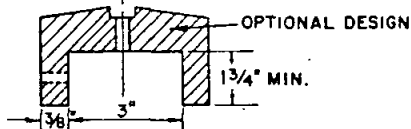
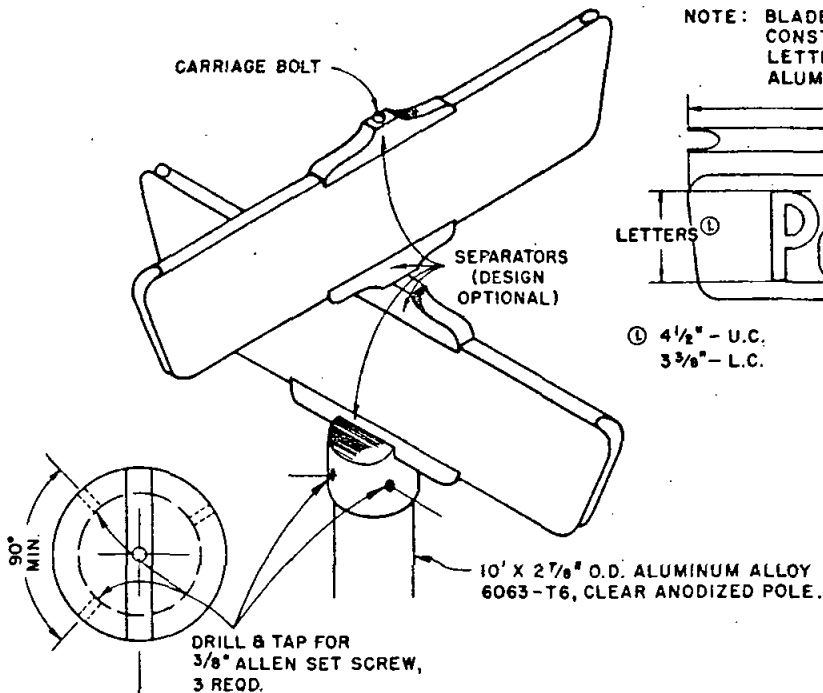
NEW SUBDIVISION
IMPROVEMENT PLAN

TITLE BLOCK

Scale as shown

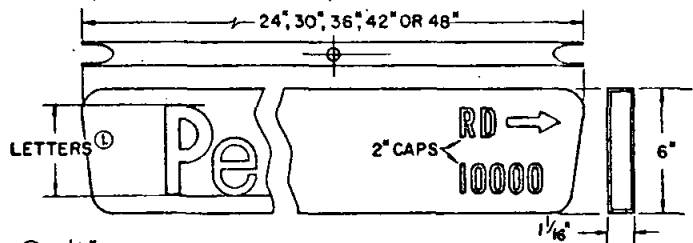
Drawing Number

300

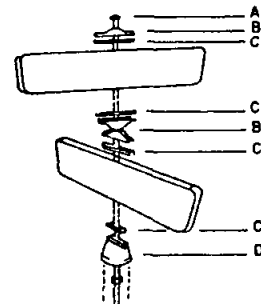


POST CAP DETAIL

NOTE: BLADE TO BE 0.063 ALUMINUM PLATE BOX CONSTRUCTION WITH BLUE PORCELAIN FINISH. LETTERS TO BE REFLECTIVE WHITE 0.004 THICK ALUMINUM FOIL, MIN. 50 C.P. PER SQ. FT.



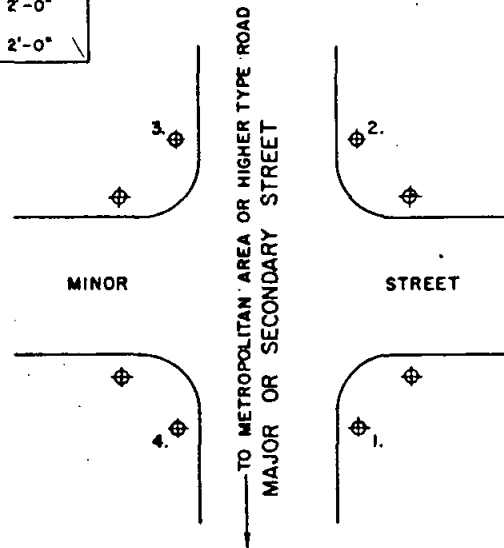
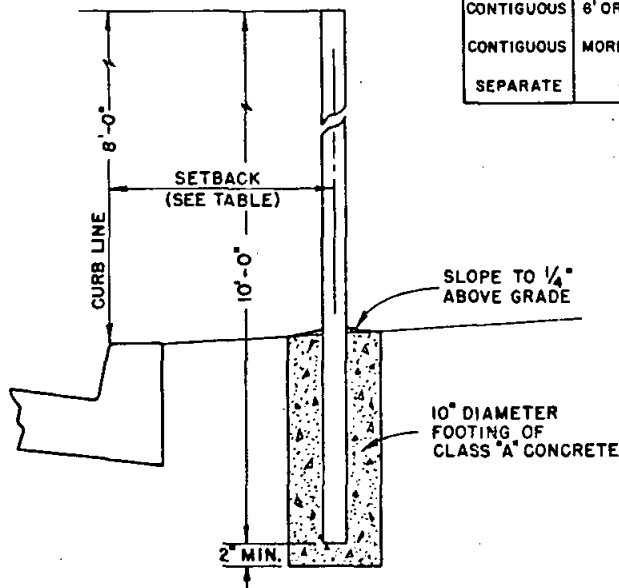
① 4 1/2\" - U.C.
3 3/8\" - L.C.



- A. 5/8\"X15 1/2\" CARRIAGE BOLT.
- B. 14 GA. ORNAMENTAL TOP AND CENTER CROSS SADDLE - STAINLESS STEEL.
- C. WEATHERPROOF COMPOSITION GASKET.
- D. GALVANIZED POSTCAP, WITH 3-5/8\" ALLEN SET SCREWS. (STAINLESS STEEL, CONE POINT)

CURB & SIDEWALK	SIDEWALK WIDTH	SETBACK
CONTIGUOUS	6' OR LESS	SIDEWALK WIDTH
CONTIGUOUS	MORE THAN 6'	2'-0"
SEPARATE	—	2'-0"

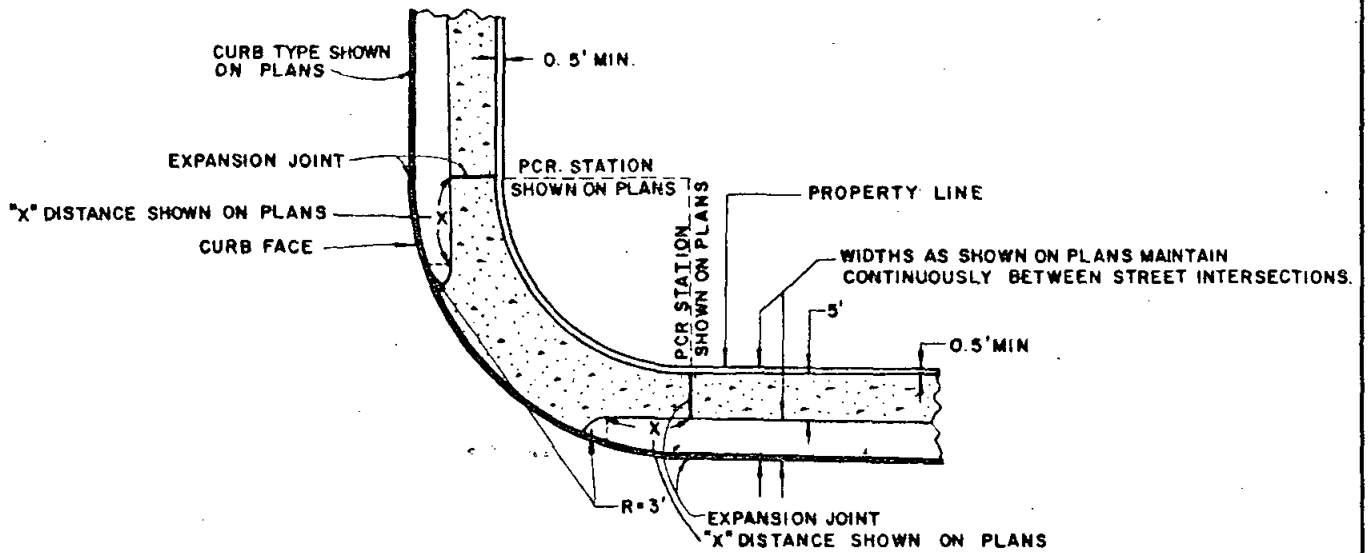
A NOTE: ATTACH CAP TO POST USING SUFFICIENT FORCE ON SCREWS TO DIMPLE POST



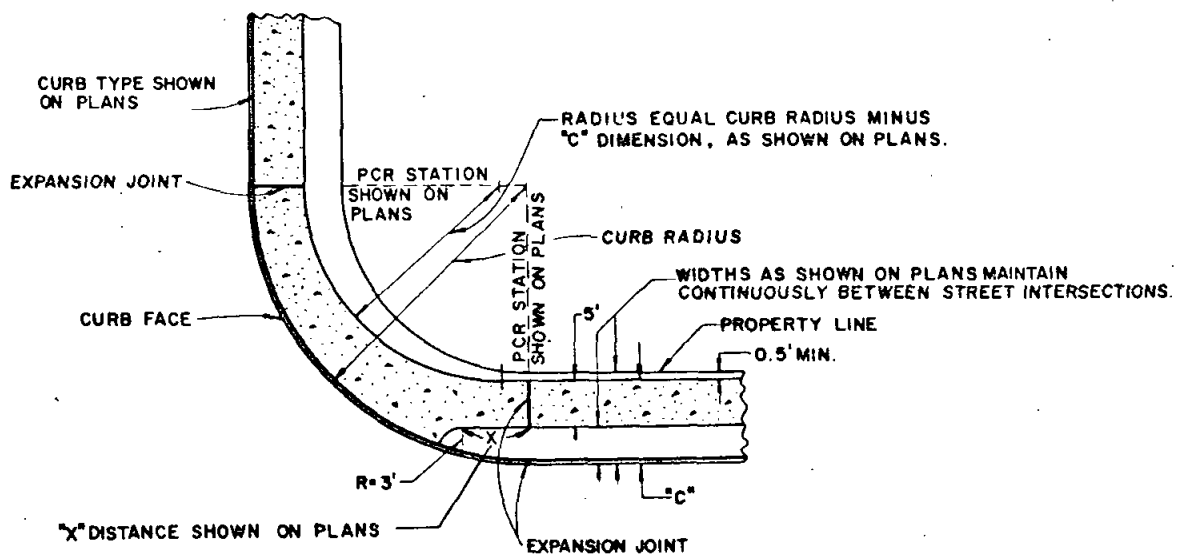
STREET NAME SIGN LOCATION

(NUMBERS INDICATE PRIORITY OF LOCATION SELECTION)

STD. SPEC. SEC: SEC. 56	SAN DIEGO COUNTY ENGINEER DEPARTMENT		A		32.0	A. Kuchera	2/1/71
DRAWN BY E.M.G. CHECKED BY ELL	STANDARD DRAWING						
RECOMMENDED BY [Signature]							
APPROVED BY COUNTY ENGINEER							
H.M. Taylor R.C.E. 11458							
DATE: 5-19-71							
STANDARD STREET SIGN			REVISION BY APPROVED DATE				
			SCALE:				
			DRAWING NUMBER 301-2				



**SIDEWALK INTERSECTION DETAIL
NON-CONTIGUOUS**

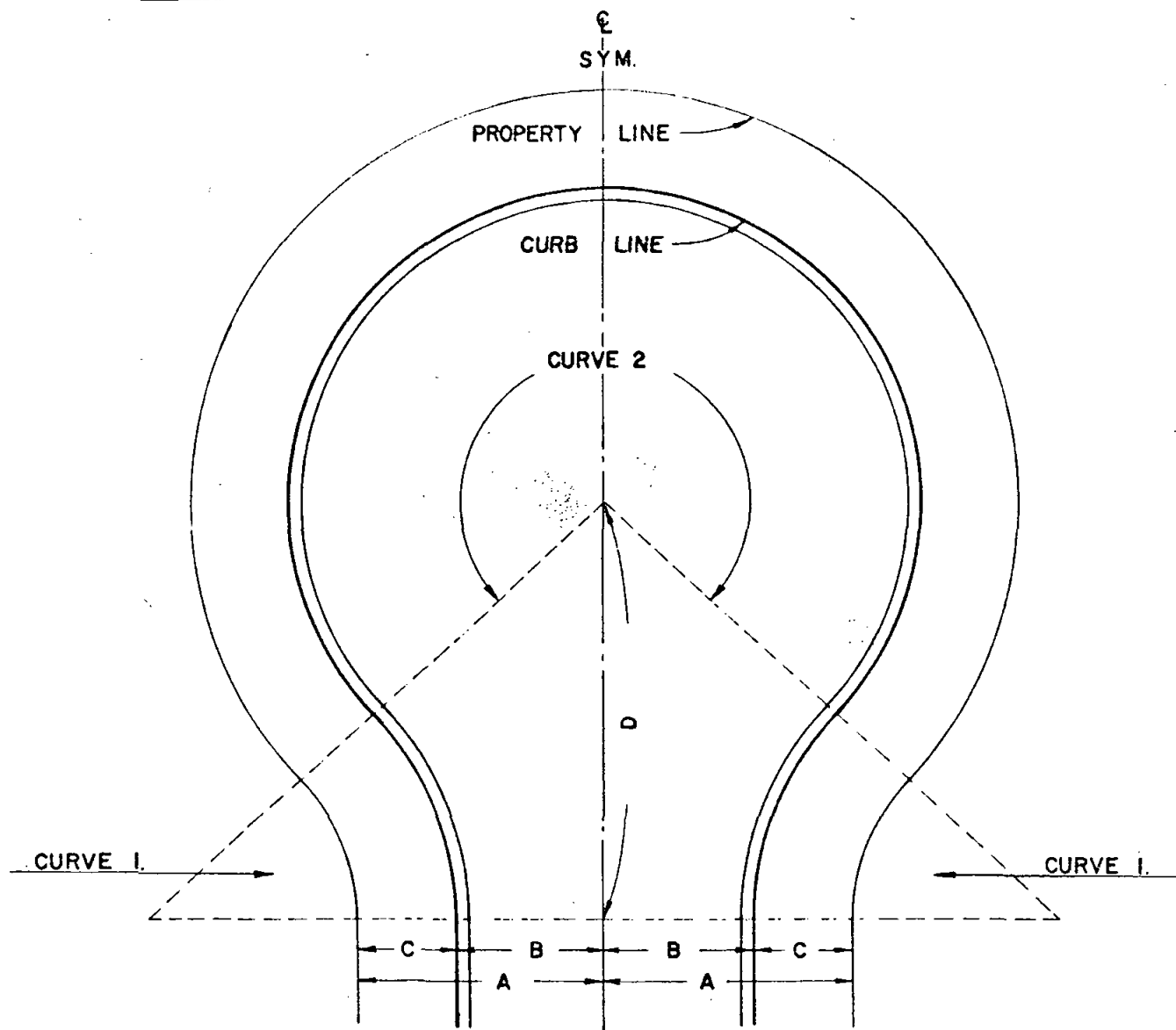


**SIDEWALK INTERSECTION DETAIL
TRANSITION-CONTIGUOUS TO NON-CONTIGUOUS**

NOTE:
1. SEE STANDARD DRAWING 212 FOR CONSTRUCTION DETAILS.

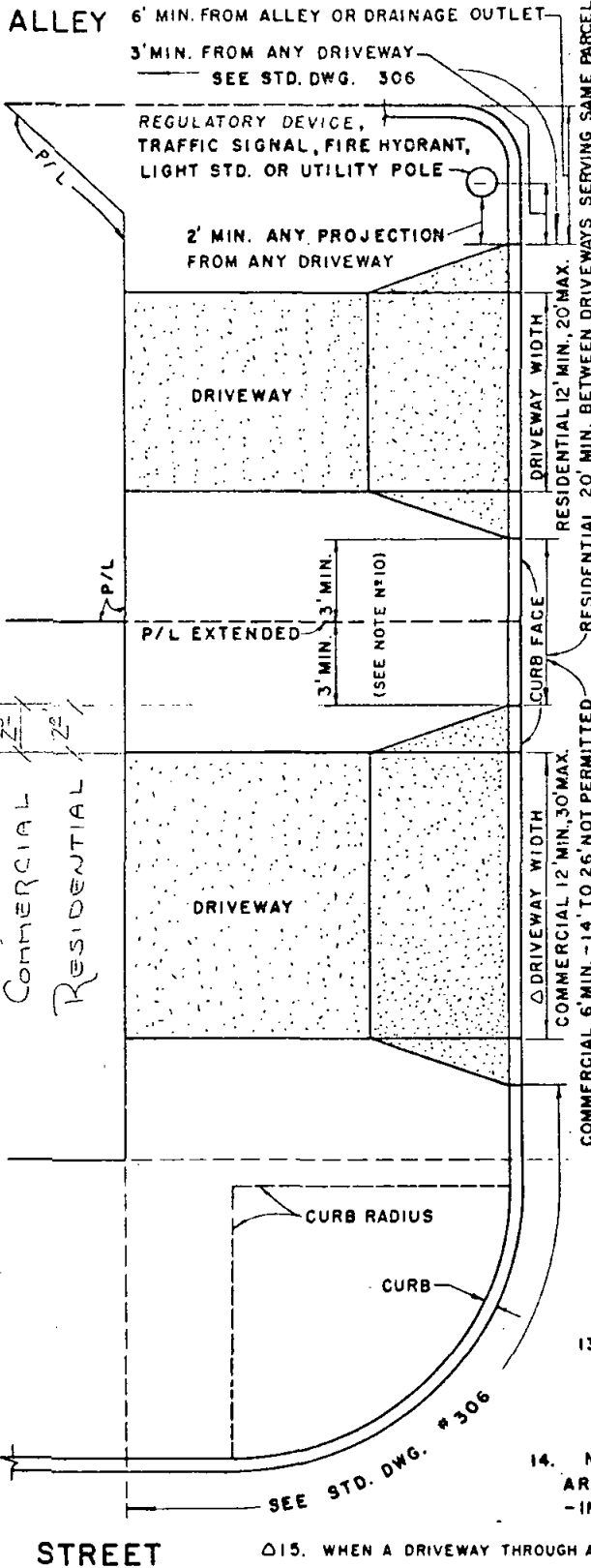
STD. SPEC. SEC: 51,73,90.		SAN DIEGO COUNTY ENGINEER DEPARTMENT STANDARD DRAWING							
DRAWN BY <u>ESG</u>	CHECKED BY <u>EM</u>								
RECOMMENDED BY _____		SIDEWALK RETURNS				REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER									
<u>H. M. Taylor</u> R.C.E. 11458						SCALE:			
DATE: <u>Dec 28, 1979</u>						DRAWING NUMBER 302-1			

REVISION	BY	APPROVED	DATE
SCALE: NONE			
DRAWING NUMBER		303-1	



DIMENSIONS					CURVE 1.						CURVE 2					
R _W	A	B	C	D	Δ	CURB			PROP.			Δ	CURB		PROP.	
						R	L	T	R	L	T		R	L	R	L
52'	26'	16'	10'	50.95'	46°42'30"	32'	26.09'	13.82'	22'	17.93'	9.50'	273°25'00"	38'	181.34'	48'	229.06'
56'	28'	18'	10'	50.99'	42°50'00"	37'	27.66'	14.52'	27'	20.18'	10.59'	265°40'00"	38'	176.20'	48'	222.56'
60'	30'	20'	10'	68.15'	29°35'31"	100'	51.65'	26.41'	90'	46.48'	23.77'	239°11'02"	38'	158.63'	48'	200.38'
72'	36'	26'	10'	81.39'	32°51'36"	100'	57.35'	29.49'	90'	51.62'	26.54'	245°43'12"	50'	214.43'	60'	257.32'

STD. SPEC. SEC:	SAN DIEGO COUNTY ENGINEER DEPARTMENT				
DRAWN BY <u>Y.M.</u>	CHECKED BY <u>CRJ</u>	STANDARD DRAWING			
RECOMMENDED BY			REVISION	BY	APPROVED DATE
APPROVED BY COUNTY ENGINEER			SCALE: NONE		
<u>H.M. Poy</u> R.C.E. 11458	TURNAROUND AND CALCULATIONS		DRAWING NUMBER 304-3		
DATE: <u>Dec 28, 1979</u>					

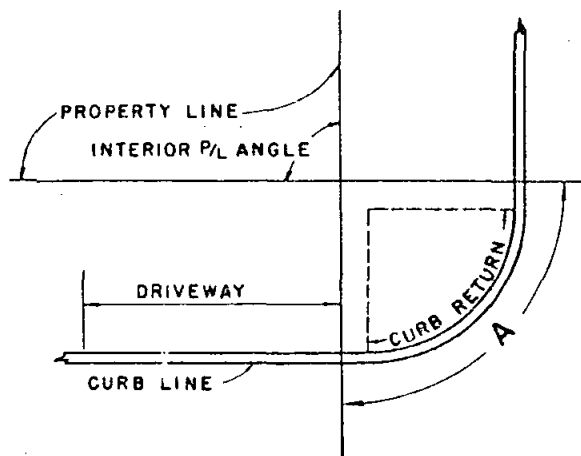


GENERAL DRIVEWAY REQUIREMENTS

1. DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD SPECIFICATIONS AND DRAWINGS OF THE COUNTY OF SAN DIEGO.
2. A RESIDENTIAL DRIVEWAY IS ONE THAT SERVES THREE (3) DWELLING UNITS OR LESS, OR FARMS OR RANCHES NOT USED AS RETAIL OUTLETS. ALL OTHER DRIVEWAYS ARE CLASSIFIED AS COMMERCIAL DRIVEWAYS.
3. STANDARD DRIVEWAY WIDTH SHALL BE TOTAL WIDTH OF CURB OPENING EXCLUDING CURB TRANSITIONS.
4. THE MAXIMUM WIDTH OF RESIDENTIAL DRIVEWAYS SHALL BE 20 FEET, MINIMUM 12 FEET.
5. THE MAXIMUM WIDTH OF COMMERCIAL DRIVEWAYS SHALL BE 30 FEET, MINIMUM 12 FEET. (RECOMMENDED 17 FEET MINIMUM.)
6. PORTLAND CEMENT CONCRETE DRIVEWAY APPROACHES SHALL EXTEND TO PROPERTY SIDE OF SIDEWALK OR, IF THERE IS NO SIDEWALK, TO WITHIN SIX INCHES OF THE PROPERTY LINE.
7. WHERE PORTLAND CEMENT CONCRETE CURBS ARE NOT INSTALLED, DRIVEWAY APPROACHES SHALL NOT BE CONSTRUCTED OF PORTLAND CEMENT CONCRETE.
8. LOCATION AND EXTENT OF ALL COMMERCIAL DRIVEWAYS SHALL BE SUBJECT TO APPROVAL OF THE COUNTY ENGINEER.
9. 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 COUNTY ENGINEER.
10. DRIVEWAYS, EXCEPT 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.
11. NOT MORE THAN 60% OF THE PROPERTY FRONTAGE MAY BE ALLOCATED FOR DRIVEWAYS ON ANY ONE LOT, EXCEPT THAT LOTS HAVING FRONTAGE OF 25 FEET OR LESS ARE ENTITLED TO ONE 15 FOOT DRIVEWAY.
12. DRIVEWAY LOCATIONS AND GRADES SHALL NOT INTERFERE WITH PLANNED ULTIMATE GRADING WITHIN THE RIGHT OF WAY.
13. PORTLAND CEMENT CONCRETE CURB OPENINGS (DEPRESSED CURBS) WILL BE PERMITTED ONLY IN THOSE LOCATIONS WHERE COMPLETE STANDARD PORTLAND CEMENT CONCRETE DRIVEWAYS ARE TO BE CONSTRUCTED CONCURRENTLY.
14. NO CONCRETE SHALL BE PLACED UNTIL FORMS AND SUBGRADE ARE INSPECTED BY THE COUNTY ENGINEER DEPARTMENT OR BUILDING INSPECTION DEPARTMENT.

15. WHEN A DRIVEWAY THROUGH A PORTLAND CEMENT CONCRETE CURB IS ABANDONED, OR IS MOVED TO ANOTHER LOCATION SERVING THE SAME PROPERTY, THE OWNER SHALL INSTALL FULL HEIGHT CURB ACROSS THE SUPERFLUOUS OPENING AND SHALL FILL THE DEPRESSION BEHIND THE CURB.

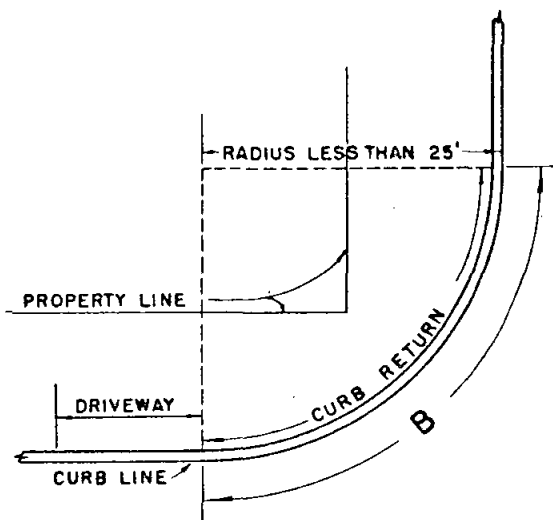
STD. SPEC. SEC:	SAN DIEGO COUNTY ENGINEER DEPARTMENT STANDARD DRAWING	Δ	216	H. M. Taylor	DATE
DRAWN BY <u>R.S.G.</u> CHECKED BY <u>LM</u>					
RECOMMENDED BY	DRIVEWAY LOCATION AND WIDTH REQUIREMENTS	REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER		SCALE: NONE			
<u>H. M. Taylor</u> R.C.E. 11458		DRAWING NUMBER 305-3T			
DATE: <u>DEC 28, 1910</u>					



REQUIREMENT 1

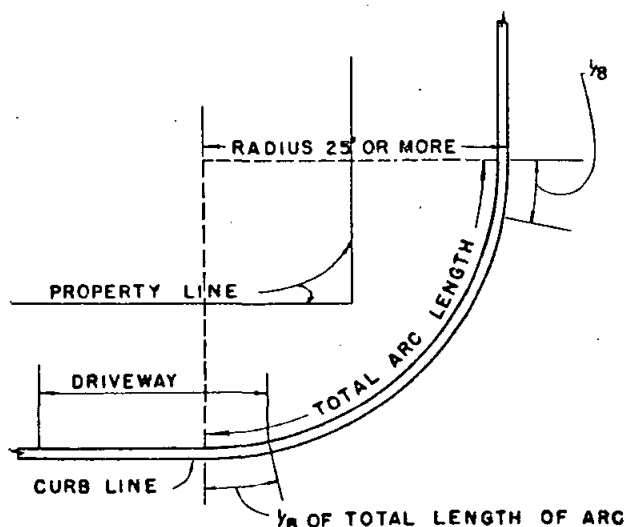
NO PORTION OF ANY DRIVEWAY SHALL BE PERMITTED WITHIN THE INTERSECTION OF THE PROLONGED PROPERTY LINES AND THE CURB AS SHOWN BY ARC "A".

WHEN THE INTERIOR PROPERTY LINE ANGLE BETWEEN TWO STREETS IS LESS THAN 70°, NO DRIVEWAY ENCROACHMENT INTO THE CURB RETURN WILL BE MADE WITHOUT APPROVAL OF THE COUNTY SURVEYOR-ROAD COMMISSIONER.



REQUIREMENT 2

NO PORTION OF ANY DRIVEWAY SHALL BE PERMITTED IN THE CURB RETURN WHERE THE RADIUS OF THE CURB IS LESS THAN 25 FEET, AS SHOWN BY ARC "B".

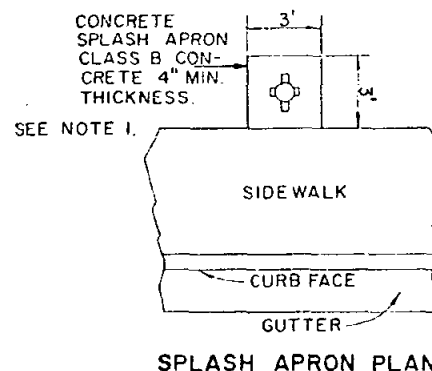
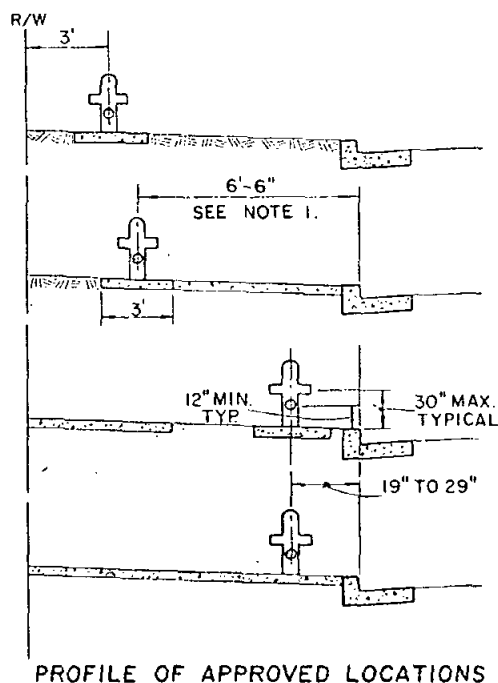
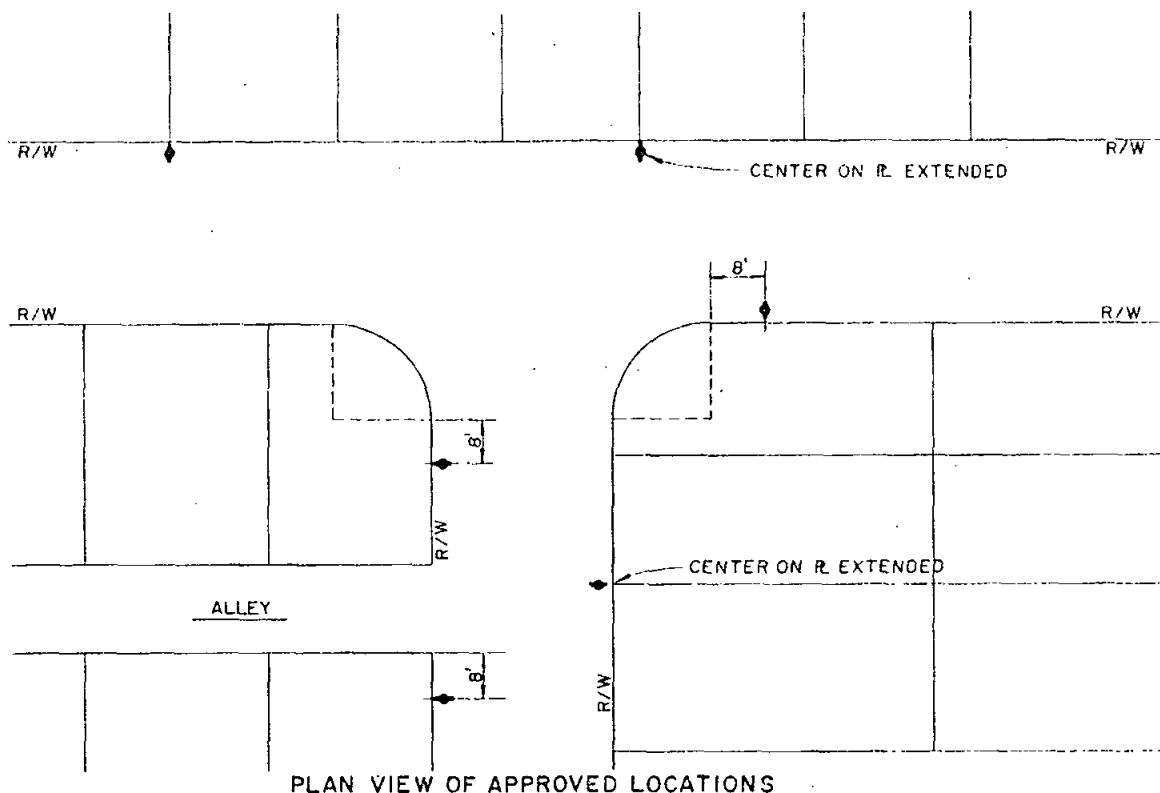


REQUIREMENT 3

ON ALL CURB RETURNS WHERE THE RADIUS IS 25 FEET OR MORE, DRIVEWAYS MAY ENCROACH UPON EACH END OF THE RETURN A DISTANCE EQUAL TO $12\frac{1}{2}\%$ OR $\frac{1}{8}$ 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, AND PROVIDED THE CURB ENCROACHMENT IS APPROVED BY THE SURVEYOR-ROAD COMMISSIONER.

NO DRIVEWAY SHALL BE PERMITTED WITHIN A CURB RETURN WITHIN THREE FEET OF A REGULATORY DEVICE.

STD. SPEC. SEC.				
DRAWN BY <u>D.R.</u> CHECKED BY <u>ASW</u>				
RECOMMENDED BY <u>R. Massman</u>	SAN DIEGO COUNTY SURVEYOR - ROAD DEPARTMENT	REVISION	BY	APPROVED
APPROVED BY COUNTY SURVEYOR	STANDARD DRAWING	SCALE	NONE	
<u>D.K. Sheen</u> R.C.E. 8091	DRIVEWAY LOCATION	DRAWING	306-1	
DATE: <u>July 14, 1964</u>	ADJACENT TO CURB RETURNS	NUMBER		

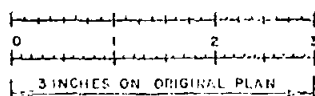


NOTES

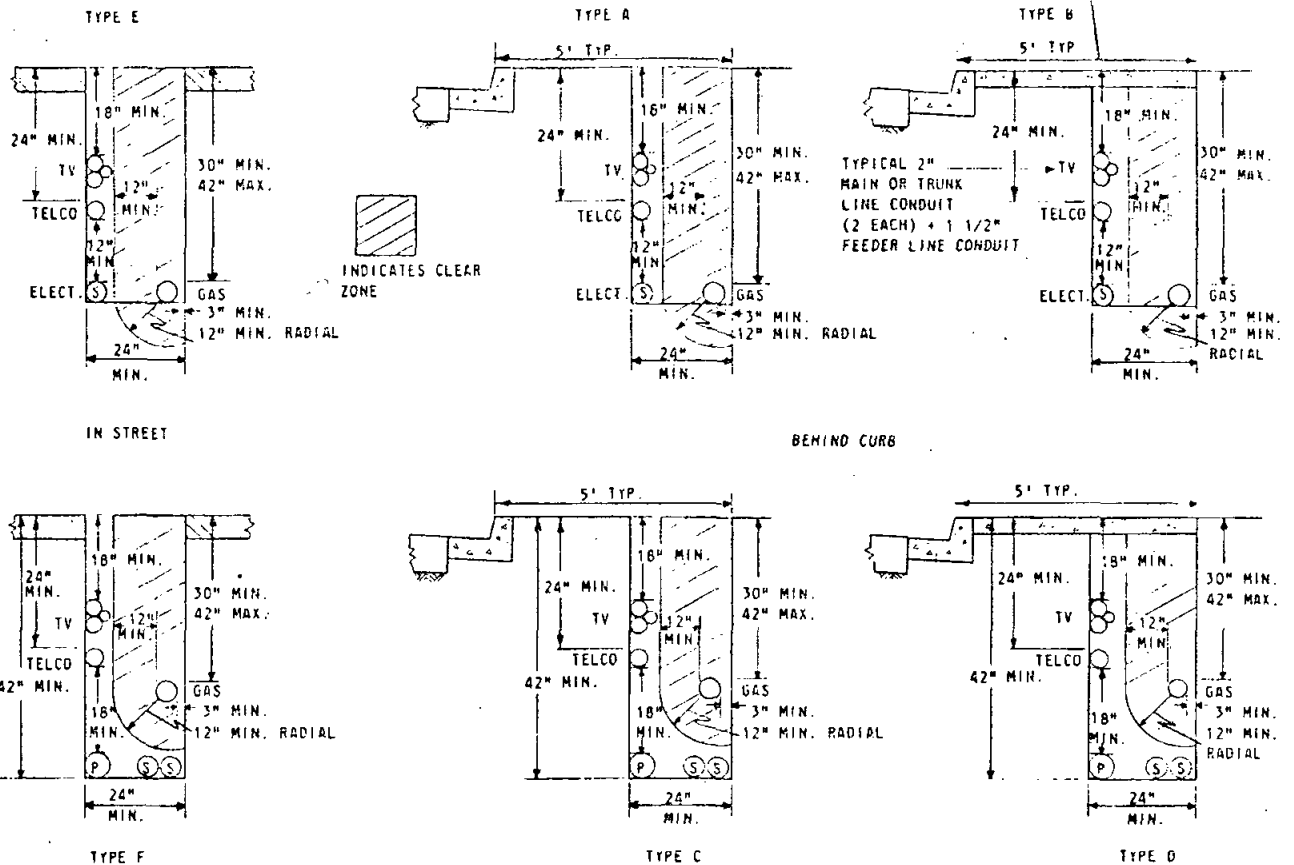
1. FOR CONTIGUOUS SIDEWALK WHERE DISTANCE FROM BACK OF SIDEWALK TO PROPERTY LINE IS 3'-6" MIN., INSTALL AS SHOWN. WHEN DISTANCE FROM HYDRANT TO TOP OR TOE OF SLOPE IS LESS THAN 2'-0", SPECIAL HYDRANT PROTECTION WILL BE REQUIRED.
2. HARDWARE DETAILS WILL BE THOSE OF THE APPLICABLE DISTRICT INVOLVED.
3. A 3'-0" x 3'-0" SPLASH APRON AROUND ALL INSTALLATIONS WHERE NOT PART OF SIDEWALK.

REDUCED SCALE

USE SCALE BELOW



STD. SPEC. SEC: 19.90	SAN DIEGO COUNTY ENGINEER DEPARTMENT STANDARD DRAWING				
DRAWN BY <i>[Signature]</i>	CHECKED BY <i>[Signature]</i>	FIRE HYDRANT LOCATION	REVISION	BY	APPROVED
RECOMMENDED BY <i>[Signature]</i>					
APPROVED BY COUNTY ENGINEER <i>H. M. Taylor</i> R.C.E. 1165R			SCALE: NONE		
DATE: Sept. 24, 1976			DRAWING NUMBER 307		

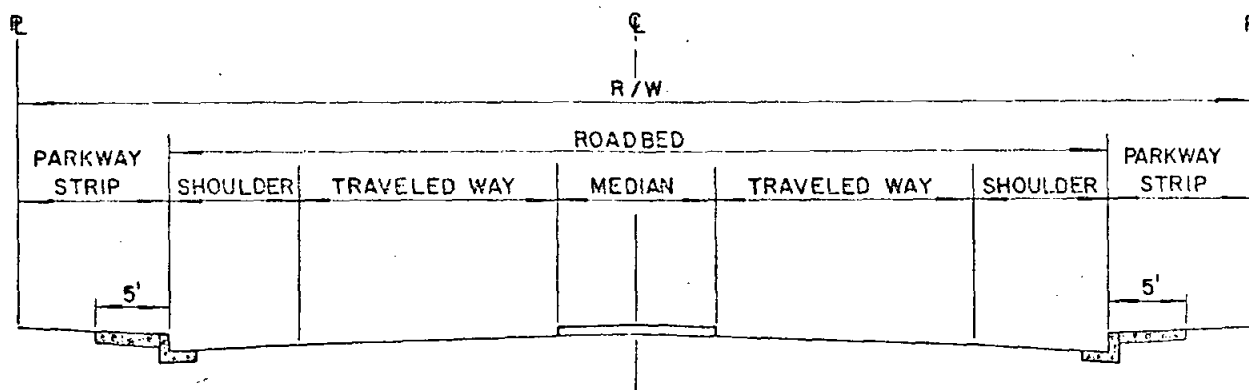


GENERAL NOTES:

1. GENERALLY UTILITIES ARE TO BE INSTALLED UNDER THE APPLICABLE SPECIFICATIONS FOR THE PARTICULAR UTILITY AND THE SPECIFICATIONS OF THE OWNER AGENCY.
2. WHERE MULTIPLE DUCTS (OTHER THAN SHOWN) ARE TO BE PLACED A SPECIAL JOINT TRENCH DETAIL SHALL BE DESIGNED AND APPROVAL OF PARTICIPATING UTILITIES OBTAINED.
3. GAS MAIN TO BE PLACED ON PROPERTY SIDE OF TRENCH. ELECTRIC PRIMARY SHOULD BE DIAGONALLY OPPOSITE GAS MAIN WHERE POSSIBLE (TYPES C, D & F).
4. INSTALLATION OF SEWER AND/OR WATER UTILITIES ARE NOT PERMITTED IN THE JOINT TRENCH SHOWN ABOVE.
5. MINIMUM DEPTH TO TOP OF GAS PIPE MAY, SUBJECT TO GAS COMPANY INSPECTORS APPROVAL, BE REDUCED TO 24" WHERE NECESSARY TO CLEAR FOREIGN STRUCTURE CROSSINGS.
6. DEPTH AND WIDTH OF TRENCH VARIES.
7. WHEN APPROVED BY ALL UTILITIES CONCERNED SECONDARY ELECTRIC, TELEPHONE AND CATV MAY BE CONCURRENTLY INSTALLED WITH RANDOM SEPARATION.
8. CATV MAIN OR TRUNK LINE CONDUIT REQUIRED ALONG ALL STREETS EXCEPT CUL-DE-SAC STREETS LESS THAN 2500' IN LENGTH MAY BE SERVED BY FEEDER LINES ONLY.
9. CATV 1 1/2" FEEDER CONDUIT SHALL RUN ACROSS STREETS WITH EACH POWER SERVICE LINE AND CAPPED AT EDGE OF SIDEWALK.
10. 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 LOCATION OF THE CATV SYSTEM.
11. IN NO CASE SHALL CATV CONDUITS BE PLACED WITHIN 12" OF ELECTRIC OR GAS LINES. ALSO CONDUITS ARE NOT TO BE PLACED DIRECTLY OVER GAS LINES.
12. CATV CONDUIT MAY BE PLACED WITH THE TELCO CONDUIT PROVIDED THE TELCO MIN. DEPTH IS HELD.
13. THE LOCATION OF UTILITIES AS SHOWN BY THE STANDARD DRAWING SHALL IN NO WAY VIOLATE EXISTING CODES OR REGULATIONS APPLICABLE TO INDIVIDUAL UTILITIES.
14. TYPES A, B & E APPLY WHEN AN ELECTRIC SECONDARY CONDUIT ONLY IS USED. TYPES C, D, AND F APPLY WHEN AN ELECTRIC PRIMARY (& SECONDARY) CONDUIT IS USED.

STD. SPEC. SEC:		SAN DIEGO COUNTY ENGINEER DEPARTMENT			
DRAWN BY <u>7.2.B.</u>		CHECKED BY <u>9.2.A.</u>		STANDARD DRAWING	
RECOMMENDED BY <u>[Signature]</u>		JOINT TRENCH UTILITIES		REVISION BY APPROVED DATE	
APPROVED BY COUNTY ENGINEER		LOCATION		SCALE: NONE	
<u>R. J. [Signature]</u> R.C.E. 11458				DRAWING NUMBER 309T	
DATE: <u>1-12-73</u>					

TYPICAL ROADWAY SECTION SYMMETRICAL ABOUT CENTERLINE



TYPE OF ROAD OR STREET	R/W	ROADBED	TRAVELED WAY	SHOULDER	MEDIAN	PARKWAY STRIP
PRIME ARTERIAL TRAFFIC VOLUME OF 16,000 V.P.D. OR MORE	126'	106'	36'	8'	18'	10'
MAJOR ROAD TRAFFIC VOLUME 10,000 TO 16,000 V.P.D.	102'	82'	24'	8'	18'	10'
COLLECTOR ROAD TRAFFIC VOLUME 5,000 TO 10,000 V.P.D.	84'	64'	24'	8'	0'	10'
RESIDENTIAL COLLECTOR STREET TRAFFIC VOLUME FROM 150 TO 700 DWELLING UNITS	60'	40'	12'	8'	0'	10'
RESIDENTIAL STREET TRAFFIC VOLUME FROM 150 DWELLING UNITS OR LESS	56'	36'	12'	6'	0'	10'
RESIDENTIAL CUL-DE-SAC STREET TRAFFIC VOLUME FROM 20 UNITS OR LESS, 600' MAX. LENGTH	52'	32'	12'	4'	0'	10'
RESIDENTIAL LOOP STREET TRAFFIC VOLUME FROM 20 UNITS OR LESS, 600' MAX. LENGTH	52'	32'	12'	4'	0'	10'
* COMM. & IND. COLLECTOR STREET TRAFFIC VOLUME FROM COMMERCIAL OR INDUSTRIAL ST'S.	88'	68'	24'	10'	0'	10'
* COMM. & IND. STREET TRAFFIC VOLUME FROM ABUTTING COMMERCIAL LOTS	72'	52'	16'	10'	0'	10'
* COMM. & IND. CUL-DE-SAC STREET TRAFFIC VOLUME FROM ABUTTING COMMERCIAL LOTS	72'	52'	16'	10'	0'	10'
FRONTAGE ROAD ADJACENT TO FREEWAY RIGHT OF WAY		SEE	NOTE	N ^o 4		

* COMM. & IND. = COMMERCIAL & INDUSTRIAL

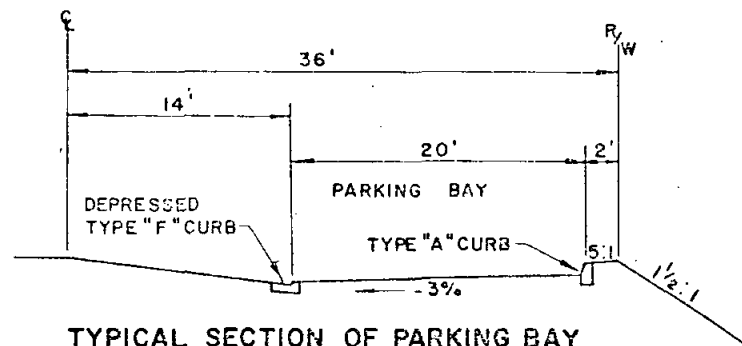
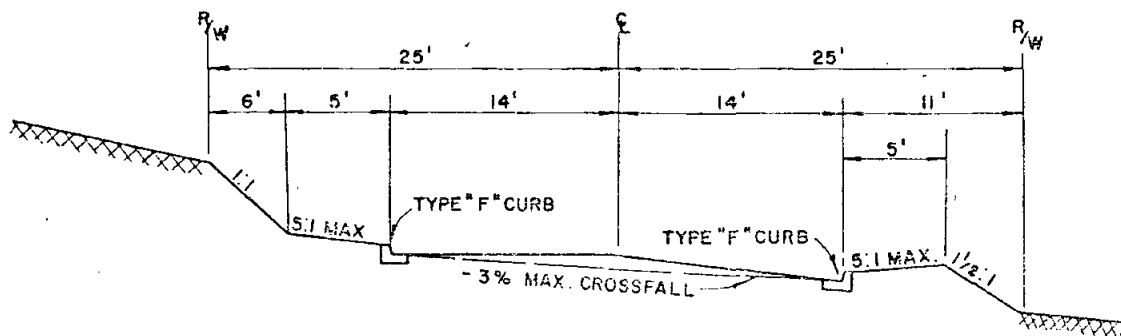
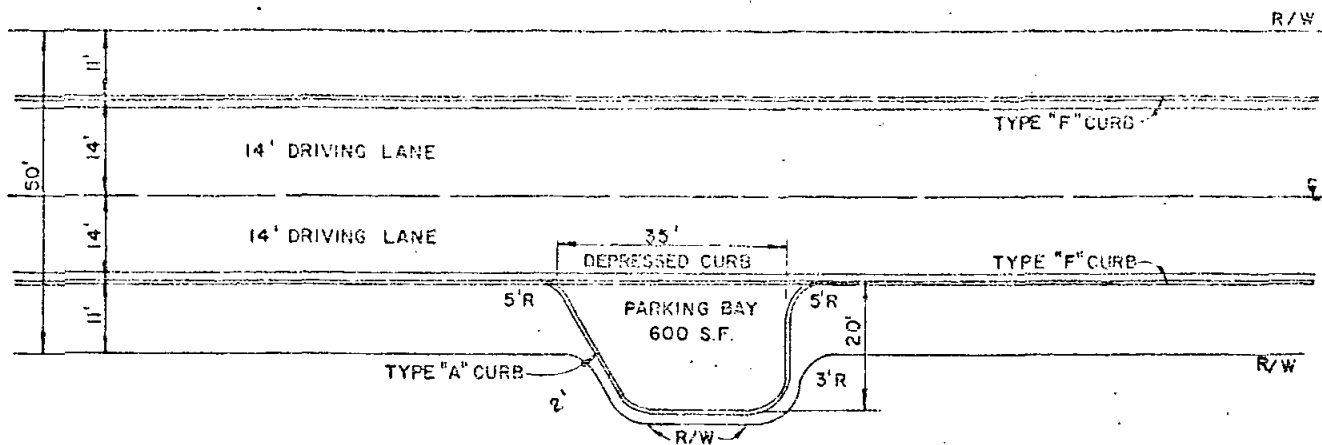
NOTE: 1. STREET CLASSIFICATIONS (EXCEPT PRIME ARTERIAL) AND TYPICAL ROADWAY SECTIONS FROM SAN DIEGO COUNTY TECHNICAL ROAD POLICY (JAN. 6, 1964).

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

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

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

STD. SPEC. SEC. 39, 41, 73, 90					
DRAWN BY <u>COB</u> CHECKED BY <u>BFH</u>					
RECOMMENDED BY <u>[Signature]</u>	SAN DIEGO COUNTY ENGINEER DEPARTMENT	REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER	STANDARD DRAWING	SCALE: NONE			
<u>H. M. Taylor</u> R.C.E. 11450	TYPICAL ROADWAY SECTIONS	DRAWING NUMBER	310-3		
DATE: <u>12-22-71</u>					



NOTES:

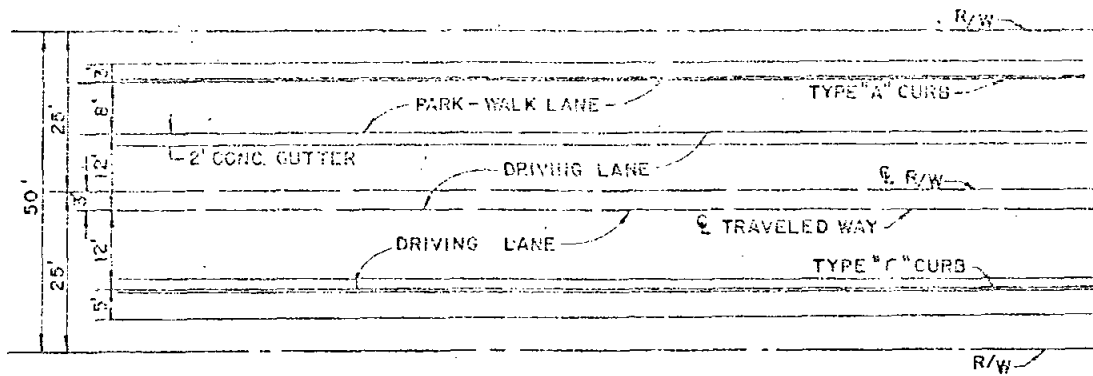
1. SEE SAN DIEGO COUNTY STANDARD DRAWINGS AND SAN DIEGO COUNTY TECHNICAL ROAD POLICY FOR CURB, SIDEWALK & ROADWAY REQUIREMENTS.
2. NATURAL SLOPE EXCEEDS 20% AS DEFINED IN SAN DIEGO COUNTY TECHNICAL ROAD POLICY SECT. 4.22
3. REQUIRED: ONE 600 SQUARE FOOT PERPENDICULAR PARKING BAY PER LOT. THE SURVEYOR-ROAD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

PARKING STALLS PER LOT.

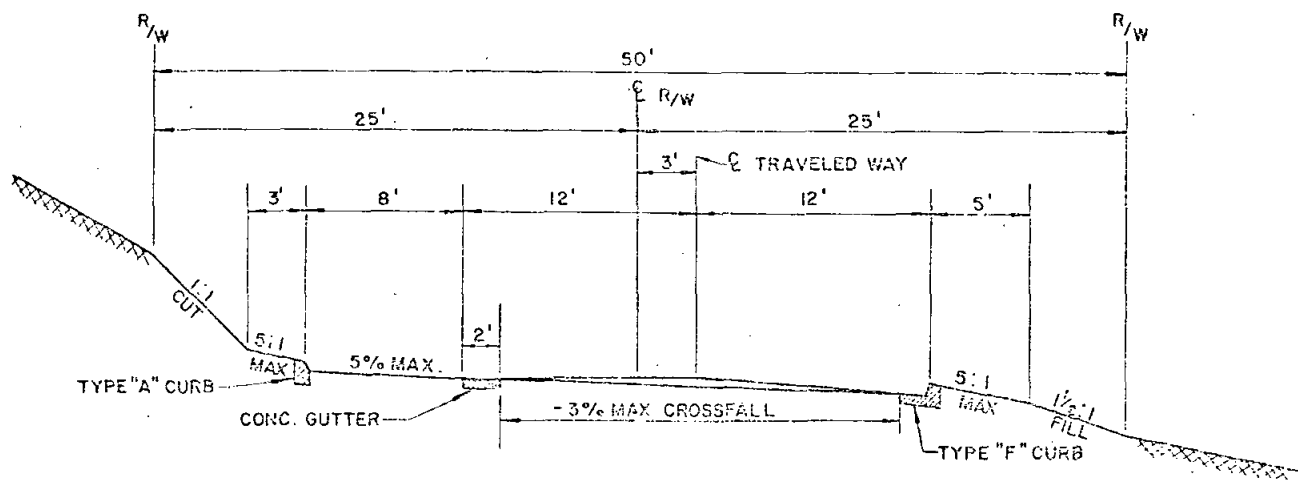
4. USE OF THIS STREET SECTION LIMITED TO AREAS IN WHICH AT LEAST 80% OF THE LOTS HAVE A NET AREA NOT LESS THAN 20,000 SQUARE FEET.

STD. SPEC. SEC. 75, 90, 92.					
DRAWN BY <u>JMS</u> CHECKED BY <u>JEP</u>					
RECOMMENDED BY <u>R. J. M...</u>	SAN DIEGO COUNTY SURVEYOR-ROAD DEPARTMENT	REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY SURVEYOR	STANDARD DRAWING	SCALE:	NONE		
<u>D. K. B...</u> R.C.E. 6091	HILLSIDE RESIDENTIAL STREET	DRAWING			
DATE: <u>12/30/64</u>	ALTERNATE No. 1	NUMBER			

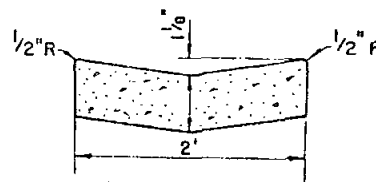
311-1



PLAN



TYPICAL ROADWAY SECTION



CONCRETE GUTTER
DETAIL

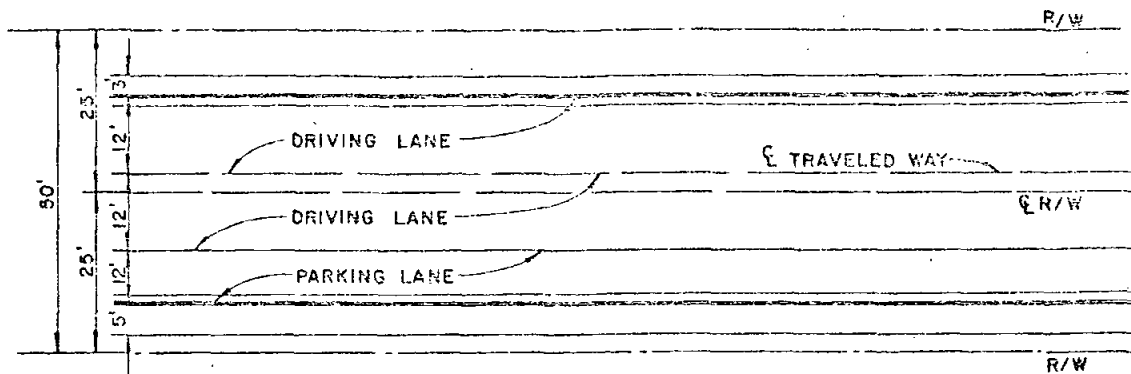
NOTES:

1. SEE SAN DIEGO COUNTY STANDARD DRAWINGS AND SAN DIEGO COUNTY TECHNICAL ROAD POLICY FOR CURB, SIDEWALK & ROADWAY REQUIREMENTS.
2. NATURAL SLOPE EXCEEDS 20% AS DEFINED IN SAN DIEGO COUNTY TECHNICAL ROAD POLICY SECT. 4.22
3. USE OF THIS STREET SECTION LIMITED TO AREAS IN WHICH AT LEAST 80% OF THE LOTS HAVE A NET AREA

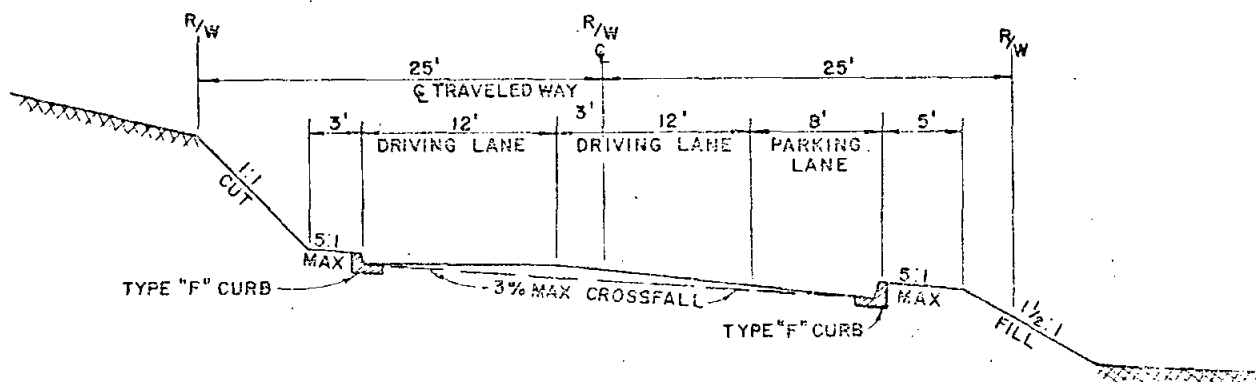
OF NOT LESS THAN 20,000 SQUARE FEET.

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

STD. SPEC. SEC. 73, 90, 92					
DRAWN BY <i>JM/ey</i> CHECKED BY <i>VEP</i>					
RECOMMENDED BY <i>[Signature]</i>		SAN DIEGO COUNTY SURVEYOR-ROAD DEPARTMENT		REVISION	
APPROVED BY COUNTY SURVEYOR		STANDARD DRAWING		BY	
<i>[Signature]</i> R.C.E. 8001		HILLSIDE RESIDENTIAL STREET		APPROVED	
DATE: <i>12-2-84</i>		ALTERNATE No. 2		DATE	
				SCALE: NONE	
				DRAWING NUMBER 312-1	



PLAN

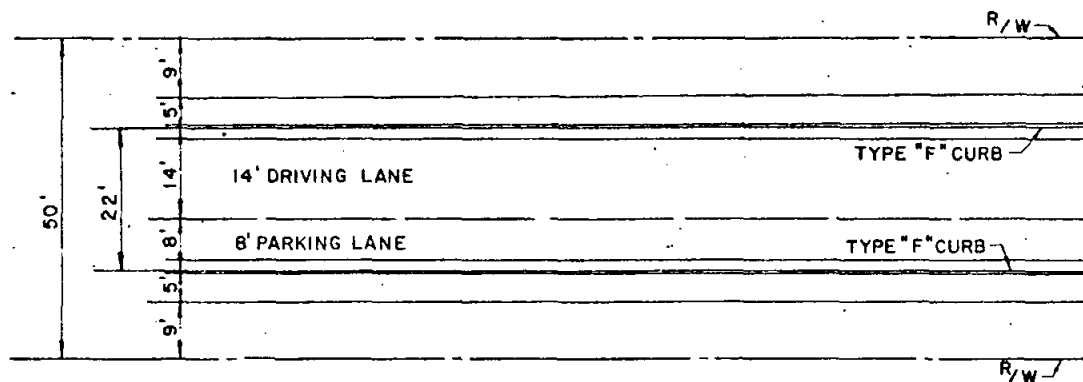


TYPICAL ROADWAY SECTION

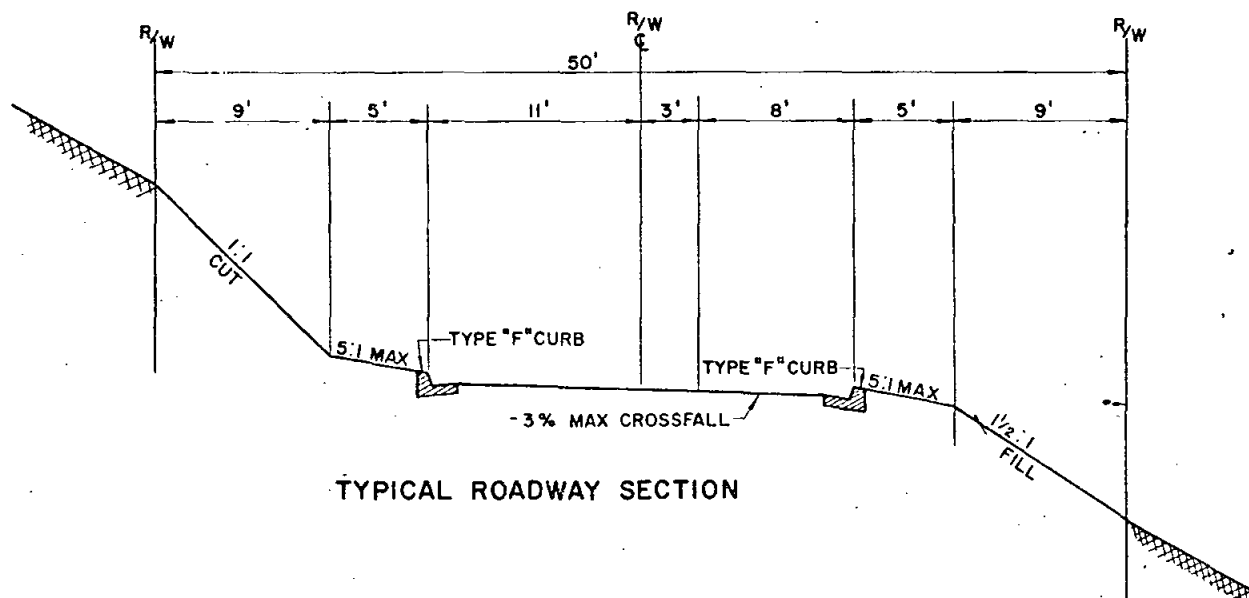
NOTES:

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

STD. SPEC. SEC. 73, 80, 92							
DRAWN BY <u>JM/ey</u> CHECKED BY <u>JSD</u>							
RECOMMENDED BY <u>R. J. W. [Signature]</u>		SAN DIEGO COUNTY SURVEYOR-ROAD DEPARTMENT		REVISION		BY	
APPROVED BY COUNTY SURVEYOR		STANDARD DRAWING		SCALE: NONE		APPROVED	
<u>D. H. [Signature]</u> DEC 1991		HILLSIDE RESIDENTIAL STREET		DRAWING		313-1	
DATE: <u>12/2/91</u>		ALTERNATE No 3		NUMBER			



PLAN



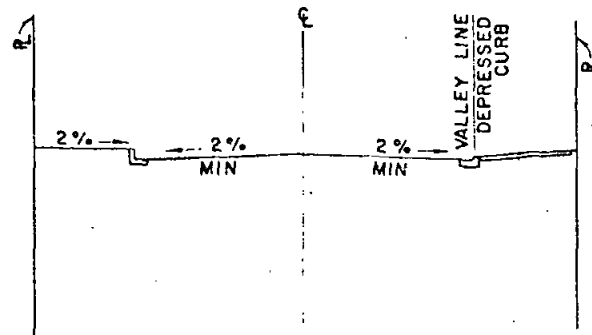
TYPICAL ROADWAY SECTION

NOTES:

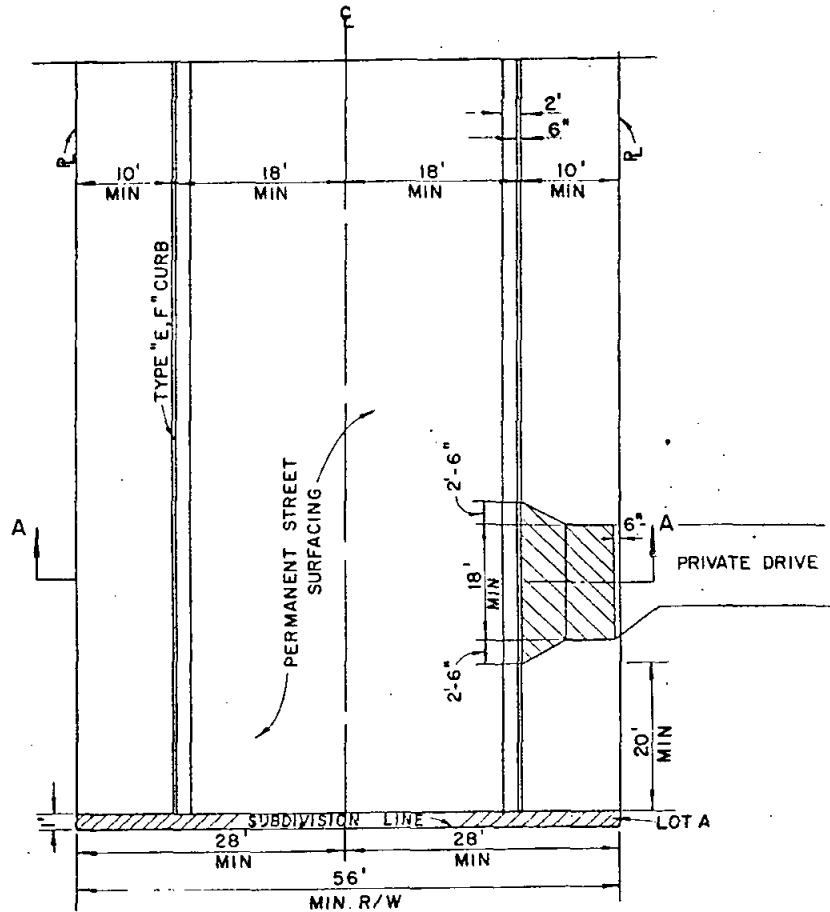
1. SEE SAN DIEGO COUNTY STANDARD DRAWINGS AND SAN DIEGO COUNTY TECHNICAL ROAD POLICY FOR CURB, SIDEWALK & ROADWAY REQUIREMENTS.
2. NATURAL SLOPE EXCEEDS 20% AS DEFINED IN SAN DIEGO COUNTY TECHNICAL ROAD POLICY SECT. 4.22
3. MAXIMUM LENGTH BETWEEN CONNECTIONS TO CROSSING TWO-WAY STREETS SHALL BE 1200 FT.
4. USE OF THIS STREET SECTION LIMITED TO:
 - A. AREAS IN WHICH AT LEAST 80% OF THE LOTS HAVE A NET AREA OF NOT LESS THAN 20,000 SQUARE FEET.
 - B. STREET PATTERN ALLOWS RETURN TO POINT OF ORIGIN IN ONE MILE OR LESS.
5. USE OF HILLSIDE RESIDENTIAL STREET STANDARDS ARE APPLICABLE ONLY TO STREETS CLASSIFIED AS RESIDENTIAL, RESIDENTIAL CUL-DE-SAC, OR RESIDENTIAL LOOP STREETS, AND ARE NOT APPLICABLE TO STREETS IN AREAS ZONED FOR COMMERCIAL, INDUSTRIAL OR MULTIPLE RESIDENTIAL USE.

STD. SPEC. SEC. 73, 90, 92					
DRAWN BY <u>JEP</u> CHECKED BY <u>JEP</u>					
RECOMMENDED BY <u>JEP</u>	SAN DIEGO COUNTY SURVEYOR-ROAD DEPARTMENT	REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY SURVEYOR	STANDARD DRAWING	SCALE: NONE			
<u>Dr. H. J. Speer</u> R.C.E. 8091	HILLSIDE RESIDENTIAL ONE-WAY STREET	DRAWING			
DATE: <u>12/30/64</u>	ALTERNATE No. 4	NUMBER			

314-1



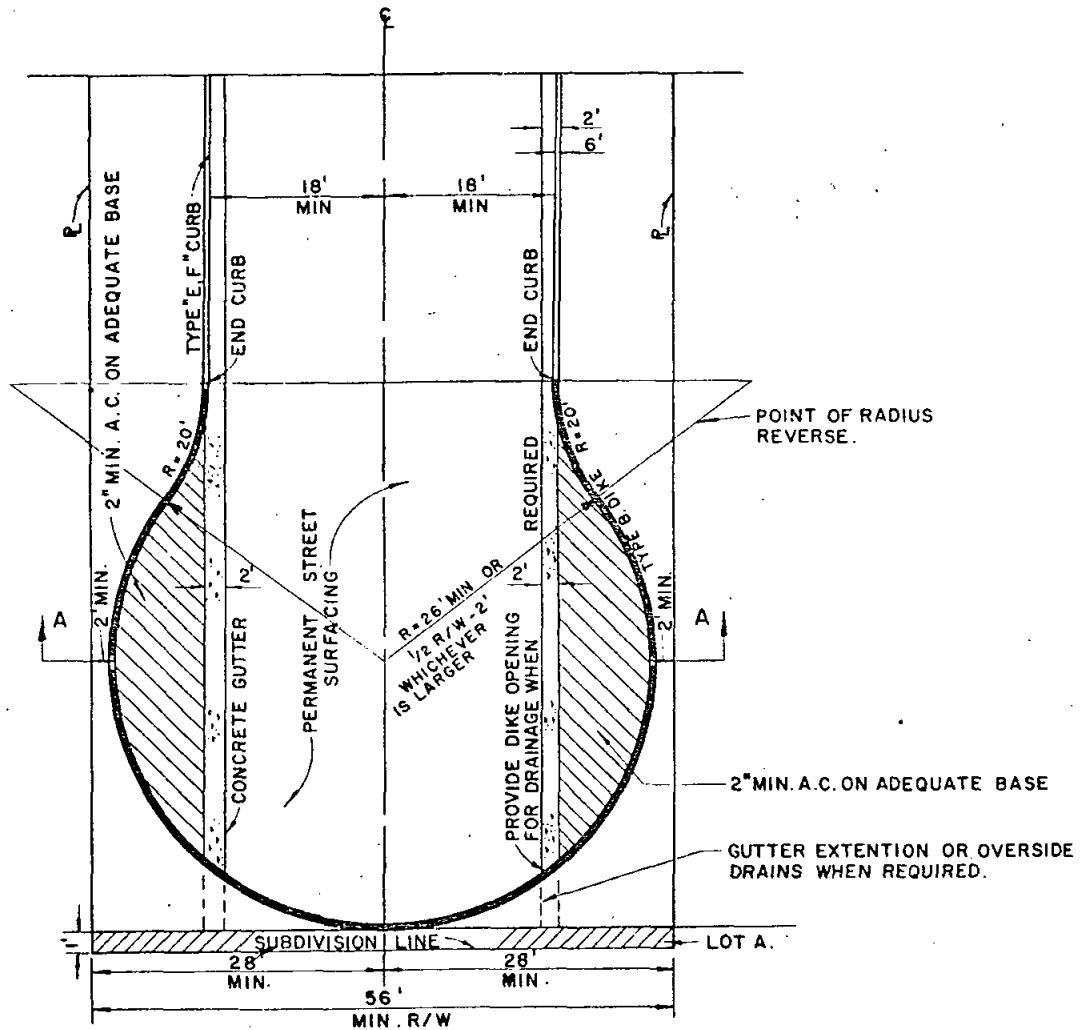
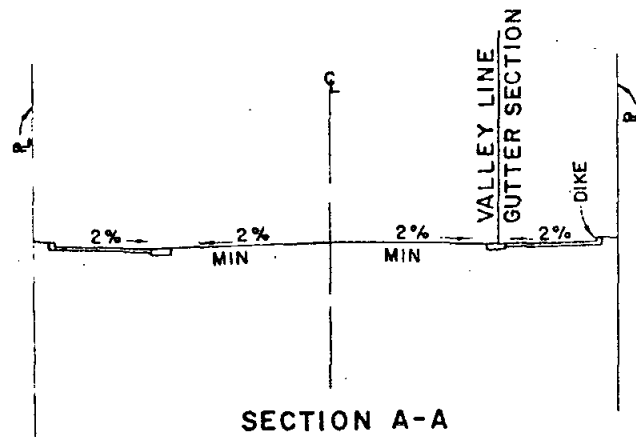
SECTION A-A



NOTE:

1. TEMPORARY HAMMERHEAD TURN-AROUND TO BE CONSTRUCTED IN COMPLIANCE WITH REQUIREMENTS FOR CONCRETE RESIDENTIAL DRIVEWAYS, CURRENT SAN DIEGO COUNTY STANDARD DRAWINGS. LOCATION TO BE GOVERNED BY DRIVEWAY LOCATION REQUIREMENTS CURRENT SAN DIEGO COUNTY STANDARD DRAWINGS AND THIS STANDARD DRAWING.
2. FOR USE ON EITHER 36' OR 40' WIDTH STREETS.

STD. SPEC. SEC.					
DRAWN BY <u>JMCY</u> CHECKED BY <u>KED</u>					
RECOMMENDED BY <u>D. K. Sullivan</u>	SAN DIEGO COUNTY SURVEYOR-ROAD DEPARTMENT				REVISION
APPROVED BY COUNTY SURVEYOR	STANDARD DRAWING				BY
<u>D. K. Sullivan</u> R.C.E. 8091	TEMPORARY HAMMERHEAD TURN-AROUND				APPROVED
DATE: <u>12/30/84</u>	AT DEAD-END STREET				DATE
					SCALE: NONE
					DRAWING NUMBER 315-1



NOTE:

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

STD. SPEC. SEC.					
DRAWN BY <u>JM'Y</u> CHECKED BY <u>JEP</u>					
RECOMMENDED BY <u>D. X. Osborn</u>	SAN DIEGO COUNTY SURVEYOR-ROAD DEPARTMENT				REVISION
APPROVED BY COUNTY SURVEYOR	STANDARD DRAWING				BY
<u>D. X. Osborn</u> R.C.E. 8091	TEMPORARY TURN-AROUND AT DEAD-END STREET.				APPROVED
DATE <u>12/30/69</u>					DATE
					SCALE: NONE
					DRAWING NUMBER
					316-1

PROPOSED CONSTRUCTION

LINES

ULTIMATE CENTERLINE (C) *

STAGE CONSTRUCTION LINE

INTERSECTING ROADS & STREETS

RIGHT OF WAY LINE

EQUATION OR RADIUS LINE

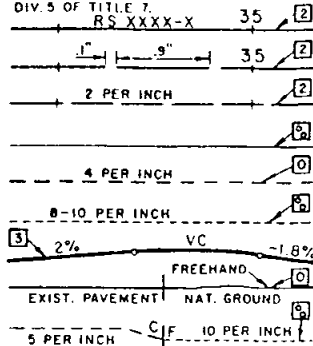
OFFSET TIE

GRADE LINES ON PROFILES

GROUND LINES ON PROFILES

SLOPE LIMIT LINES

* INDICATES CENTER LINE ESTABLISHED IN ACCORDANCE WITH S.D. COUNTY CODE, DIV. 5 OF TITLE 7.



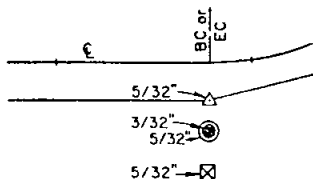
POINTS

BC & EC

PI OR ANGLE PT.

C MONUMENT

BENCH MARK



CONSTRUCTION

PAVEMENT EDGE & SHOULDERS

A/C DIKE (LABEL TYPE)

CURB & GUTTER (LABEL TYPE)

CULVERT

DOWNDRAIN, A/C SPILLWAY

DROP INLET

BOX CULVERT

HEADWALL, STANDARD

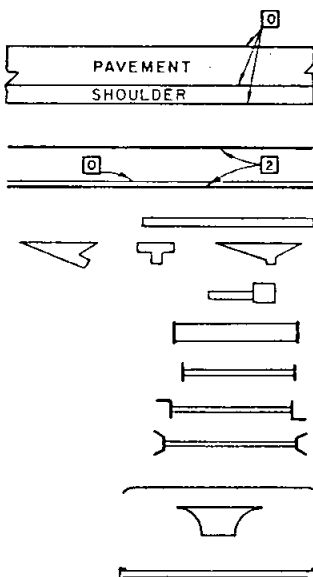
HEADWALL "L" TYPE

HEADWALL & WINGWALL

GUARD RAIL

DRIVEWAY APRONS A/C

UTILITY DUCT (LABEL)



DRIVEWAY APRONS P.C.C.

CONCRETE CROSS GUTTER

SIDEWALK

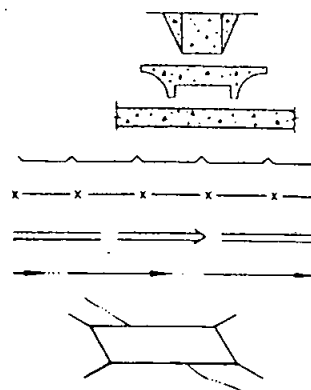
RETAINING WALL

FENCE (LABEL TYPE)

DITCH, LINED

DITCH, UNLINED

BRIDGE



UTILITIES

GAS LINE

WATER LINE

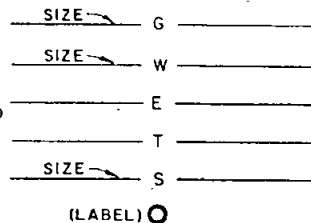
ELECTRIC CABLE

TELEPHONE CABLE

SEWER LINE

UTILITY MANHOLE

UNDERGROUND ONLY



STRUCTURAL SYMBOLS

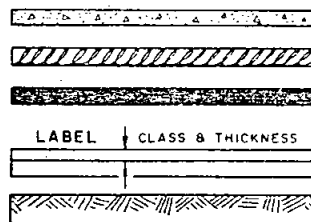
PORTLAND CEMENT CONCRETE

ASPHALT CONCRETE (EXISTING)

ROAD OIL MIX OR ASPHALT CONCRETE SURFACING

BASE MATERIAL

ORIGINAL GROUND



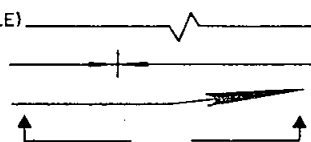
MISCELLANEOUS SYMBOLS

CONTRACTED LINE (NOT TO SCALE)

LIMIT ARROWS

PROJECT, WORK LIMIT

CUTTING PLANE



CADASTRAL SYMBOLS

LAND LINES

TOWNSHIP LINES

SECTION LINES

GRANT LINE (RHO BOUNDARY OR INDIAN RESERVATION)

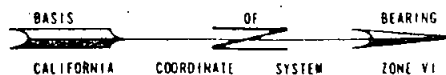
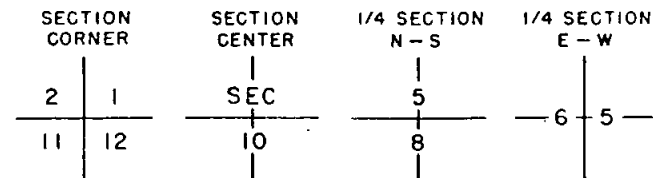
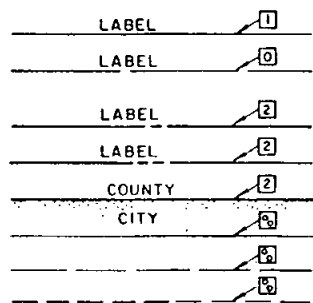
SUBDIVISION BOUNDARY LINE

CITY / COUNTY BOUNDARY LINE

PROPERTY LINE

LOT LINE

EASEMENT LINE



STD. SPEC. SEC: NONE

DRAWN BY *SL* CHECKED BY *BER*

RECOMMENDED BY *SL*

APPROVED BY COUNTY ENGINEER

H. M. Taylor R.C.E. 11458

DATE: 2-18-70

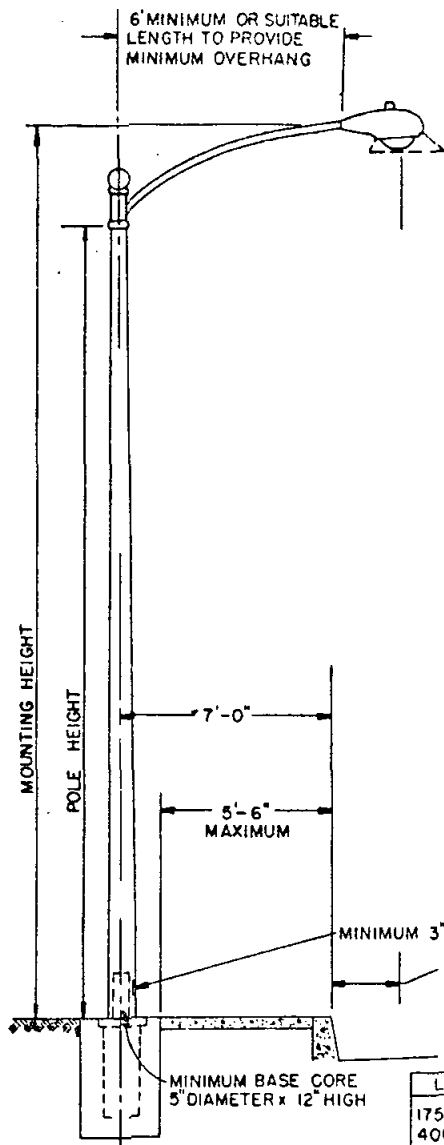
SAN DIEGO COUNTY ENGINEER DEPARTMENT
STANDARD DRAWING

CONSTRUCTION PLAN SYMBOLS

REVISION BY APPROVED DATE

SCALE: NONE

DRAWING
NUMBER 318



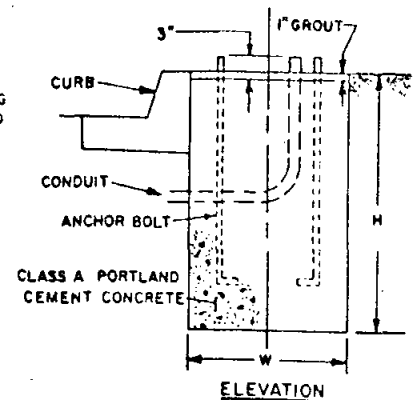
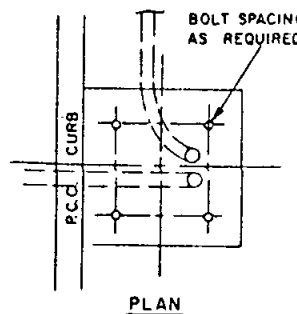
INSTALLATION BEHIND CONTIGUOUS SIDEWALK

TABLE OF MOUNTING HEIGHT

LAMP SIZE *	POLE HEIGHT	MOUNTING HEIGHT
175 WATT (7000 Lumen)	25' ± 2'	27' ± 1'
400 WATT (20,000 ")	28' ± 2'	31' ± 1'
1000 WATT (55,000 ")	35' ± 2'	38' ± 1'

*ALL LAMPS SHALL BE IMPROVED-COLOR PHOSPHOR-COATED MERCURY VAPOR TYPES.

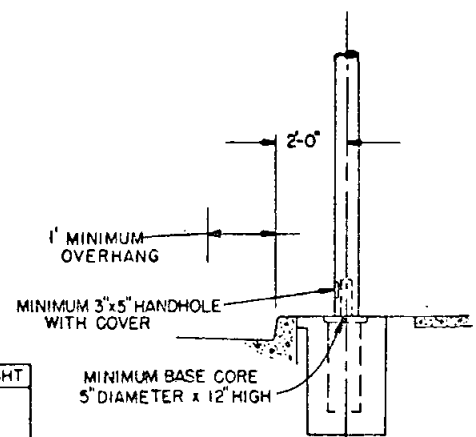
FOUNDATION



FOUNDATION DATA

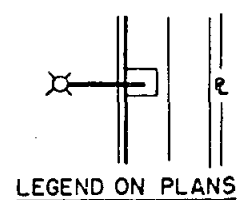
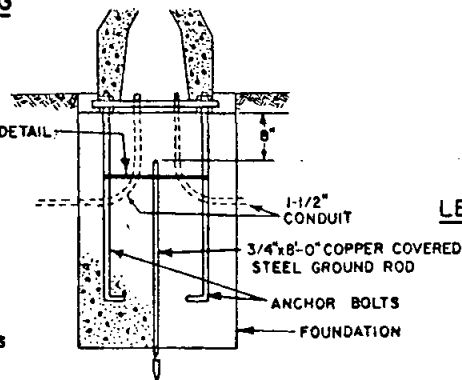
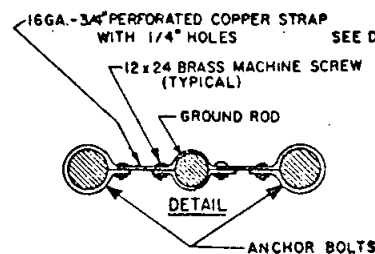
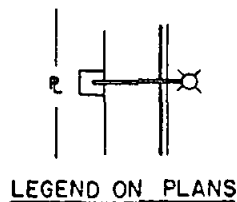
POLE HEIGHT	DIMENSION		ANCHOR BOLTS ① NO.-DIA. x LGTH x HOOK
	H	W	
THRU 25' ②	4'-0"	2'-6" SQUARE	4- 1" x 36" x 4"
26' THRU 30' ③	4'-0"	3'-0" SQUARE	4- 1" x 36" x 4"
UP TO 35' ③	5'-0"	3'-0" SQUARE	4- 1" x 36" x 4"

NOTES: ① ANCHOR BOLTS & NUTS SHALL BE GALVANIZED
 ② LUMINAIRE 6' MAX. CANTILEVER.
 ③ LUMINAIRE 12' MAX. CANTILEVER.



INSTALLATION BEHIND CURB

GROUNDING



STD. SPEC. SEC:

DRAWN BY *SP*

CHECKED BY *SP*

RECOMMENDED BY *SP*

APPROVED BY COUNTY ENGINEER

H.M. Taylor R.C.E. 11458

DATE: 12-21-18

SAN DIEGO COUNTY ENGINEER DEPARTMENT
STANDARD DRAWING

ORNAMENTAL STREET LIGHTS

REVISION BY APPROVED DATE

SCALE: NONE

DRAWING
NUMBER

410-T
PAGE 1

NOTES

LAMPS

175 WATT (7000 LUMEN) PHOSPHOR-COATED MERCURY VAPOR ANSI LAMP DESIGNATION H39-22KC/DX
or
400 WATT (20,000 LUMEN) PHOSPHOR-COATED MERCURY VAPOR ANSI LAMP DESIGNATION H33-IGL/DX
or
1000 WATT (55,000 LUMEN) PHOSPHOR-COATED MERCURY VAPOR ANSI LAMP DESIGNATION H36-15GW/DX
AS SPECIFIED.

LUMINAIRES

HORIZONTAL BURNING TYPE WITH INTEGRAL CONSTANT WATTAGE BALLAST, PHOTOELECTRIC CONTROL,
AND GLASS REFRACTOR.

ANSI SHORT DISTRIBUTION, SEMI-CUTOFF CLASSIFICATION, TYPE II DISTRIBUTION FOR 7000 LUMEN UNITS.
ANSI SHORT DISTRIBUTION, SEMI-CUTOFF CLASSIFICATION, TYPE III DISTRIBUTION FOR OTHER SIZES.

MAST ARMS

TWO-INCH DIAMETER, STANDARD GALVANIZED STEEL OR ALUMINUM, SELF-SUPPORTING, WITHOUT
BRACES, SCROLLS, OR RODS.

DAVIT-STYLE UNITS ARE NOT PERMITTED.

ARMS PERPENDICULAR TO STREET CENTERLINE UNLESS INDICATED OTHERWISE ON THE PLANS.

POLE TOPS

GALVANIZED STEEL OR CAST ALUMINUM ALLOY, SECURED BY A MINIMUM OF TWO SCREWS.

MISCELLANEOUS HARDWARE

CADMIUM-COATED, HOT DIPPED GALVANIZED, OR STAINLESS STEEL.

POLES

ROUND PRESTRESSED CONCRETE WITH EXPOSED BLACK AND WHITE MARBLE AGGREGATE FINISH.
HANDHOLE TO FACE STREET.

WIRING

MINIMUM NO. 10 GA. TW STRANDED COPPER TO BALLAST.

NEUTRAL LEG OF LIGHTING CONDUCTORS GROUNDED TO BASE OF STANDARD.

HOT LEG OF LIGHTING CONDUCTORS FUSED WITH 10 AMP. SLO-BLO MIDGET FERRULE-TYPE FUSE (BUSS
FMN 10 OR EQUIVALENT) IN PLUG CONNECTOR (FUSETRON HEB OR EQUIVALENT) IN BASE OF STANDARD.

SPLICES

PERMITTED IN PULL BOXES AND LIGHTING STANDARD BASES ONLY.

SHALL BE MADE USING AN APPROVED CONNECTOR SIMILAR TO SCOTCHLOCK OR CRIMP-TYPE COMPRESSION
TAP SIMILAR TO TXB CAT. NO. 54710, INSERTING THE CONNECTION IN AN EPOXY RESIN MIXTURE
MIXED IN A PLASTIC CONTAINER, ALL SUPPLIED AS A KIT. KIT SHALL BE SIMILAR AND EQUAL
TO 3M 60. SCOTCHLOCK NO. 3578 CONNECTOR SEALING PACK.

CONDUIT & CONDUCTORS

ALL ABS PLASTIC CONDUIT SHALL BE 1-1/2" HEAVY WALL, EQUAL TO BALDWIN EXTRUDED PRODUCTS,
INC., BALDWIN ABSOLUTE ABS ELECTRICAL CONDUIT, AND SHALL CONFORM TO THE WESTERN
UNDERGROUND COMMITTEE SPECIFICATION NO. 31

CABLE-IN-DUCT SHALL CONSIST OF 2 CONDUCTORS PREASSEMBLED WITHIN A PLIABLE 3/4"
HIGH DENSITY POLYETHYLENE DUCT. MINIMUM CONDUCTORS SHALL BE A.W.G. SIZE NO. 10, 7-
STRAND COPPER WITH U.S.E. INSULATION OR A.W.G. SIZE NO. 8, 7 STRAND ALUMINUM WITH U.S.E.
INSULATION, WITH ONE BLACK AND ONE YELLOW LEAD UNLESS SHOWN OTHERWISE ON THE PLANS.

STD. SPEC. SEC:		SAN DIEGO COUNTY ENGINEER DEPARTMENT STANDARD DRAWING			
DRAWN BY <i>ENM</i>	CHECKED BY <i>AP</i>			REVISION	BY
RECOMMENDED BY <i>[Signature]</i>				APPROVED	DATE
APPROVED BY COUNTY ENGINEER		ORNAMENTAL STREET LIGHTS		SCALE: NONE	
<i>H.M. Taylor</i> R.C.E. 11458				DRAWING NUMBER 410-T	
DATE: 12-21-78				PAGE 2	

CONDUIT AND CONDUCTORS

POLYETHYLENE DUCT SHALL BE HIGH DENSITY, TYPE III POLYETHYLENE RESISTANT TO ABRASION
MOISTURE, ALKALIS, SALTS, DETERGENTS, AND OTHER CHEMICALS. DUCT SHALL NOT ROT,
RUST OR CORRODE AND SHALL BE IMPERVIOUS TO ELECTROLYTIC ENVIRONMENT.

CABLE-IN-DUCT SHALL BE LIGHT, EASY TO HANDLE, FLEXIBLE AND SHALL BE SUITABLE FOR
INSTALLATION DIRECTLY IN THE GROUND WITHOUT ADDITIONAL PROTECTIVE COATINGS OR
WRAPS BEING REQUIRED.

SERVICE LINES SHALL BE LOCATED UNDER SIDEWALKS WHEREVER PRACTICAL.

SERVICE ENTRANCE

CONDUIT SHALL BE 1-1/2" HEAVY WALL ABS PLASTIC.

FOR CABLE-IN-DUCT SERVICE, THE CABLE-IN-DUCT SHALL BE INSTALLED IN THE SERVICE
ENTRANCE CONDUIT TO PROVIDE COMPLETE CABLE-IN-DUCT SERVICE TO THE HANDHOLE.

FOUNDATION

SEE DET. L DRAWING.

GROUNDING

SEE DETAIL DRAWING

MISCELLANEOUS REQUIREMENTS

PRIOR TO INSTALLATION OF ANY PART OF THE STREET LIGHTING SYSTEM, THE CONTRACTOR
SHALL FURNISH THE COUNTY ENGINEER, FOR APPROVAL, A COMPLETE CATALOG LISTING
OF ALL PROPOSED EQUIPMENT.

UPON COMPLETION OF THE STREET LIGHTING SYSTEM INSTALLATION, THE CONTRACTOR
SHALL FURNISH, AT HIS OWN EXPENSE, THE NECESSARY PERSONNEL AND EQUIPMENT
TO DEMONSTRATE SATISFACTORY OPERATION OF THE LIGHTING SYSTEM TO THE ENGINEER.

STD. SPEC. SEC:		SAN DIEGO COUNTY ENGINEER DEPARTMENT STANDARD DRAWING					
DRAWN BY: <i>JMM</i>	CHECKED BY: <i>DP</i>						
RECOMMENDED BY: <i>[Signature]</i>		ORNAMENTAL STREET LIGHTS		REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER				SCALE: NONE			
<i>H.M. Taylor</i> R.C.E. 11458				DRAWING NUMBER 410-T			
DATE: <i>12-21-73</i>				PAGE 3			

COUNTY OF SAN DIEGO

COUNTY ENGINEER & ROAD DEPARTMENT

CONFERENCE NOTES

Date April 17, 1974 Time started 2:00 P.M. Time completed 3:00 P.M.

Requested by: John R. Cousino

Location: Conference Room, Building 5, County Operations Center

Subject: To discuss suitable alternate materials and clarifications of present County Standards for ornamental street lights.

Conferees:

<u>Name</u>	<u>Title</u>	<u>Organization</u>
John R. Cousino	Associate C.E.	County Engineer Dept.
Donald L. Weiss	Associate C.E.	County Engineer Dept.
Gil Scott	Traffic Signal Tech. III	Dept. of Gen'l. Services
Irvin J. Klein	Assistant C.E.	County Engineer Dept.
R. A. McBride	Southern Contracting Co., Inc.	

The meeting was held to discuss suitable alternate materials and clarifications of present County Standards for ornamental street lights. The following items were agreed on to submit for acceptance as standards.

1. Conduit - Three alternates are recommended:
 - a. Rigid Metal Pipe - 1" minimum diameter.
 - b. PVC Pipe - 1" minimum diameter - Schedule 40 (Type II).
 - c. ABS Pipe - 1 1/2" minimum diameter - heavy wall (strength comparable to Schedule 40 PVC).
2. Wiring -
 - a. Use Minimum No. 10 G T.W. standard copper, one black and one white to be used as the neutral leg.
 - b. It was generally agreed that aluminum wire was not desirable for use. If it can be determined that copper wire is in short supply, Minimum No. 8, 7 strand aluminum wire should be considered as acceptable.
3. It was generally agreed that 1/2" cable-in-duct was not acceptable for use.

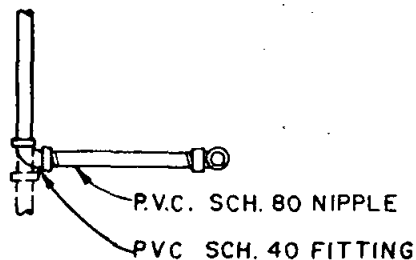
4. If 3/4" cable-in-duct meets all the requirements described on dwg. 410.T it can be used. If the yellow wire is not available, white marking tape can be used to designate the neutral leg.
5. Where possible - all references to brand name products should be eliminated. The possibility of referencing to the National Electric Code was discussed.
6. The use of pull boxes was discussed as a requirement. It was suggested that pull boxes should be required at a maximum of 350 foot intervals adjacent to the street light bases.

Actions Remaining

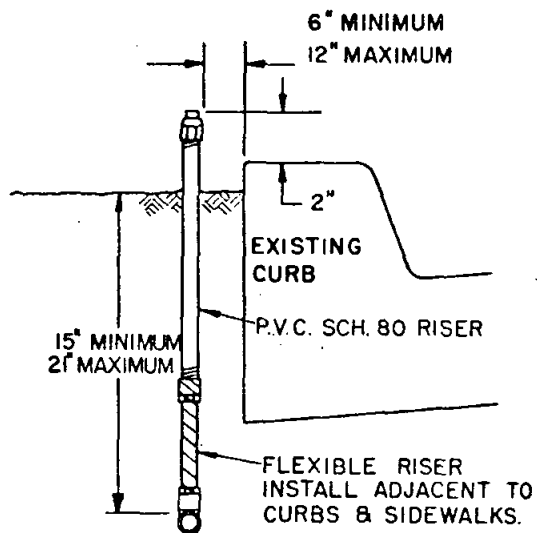
1. Mr. McBride will have a recommended standard prepared which will reflect the thinking of the National Electrical Contractors Association.
2. Mr. McBride will supply the County with a copy of the National Electrical Code to be studied for possible reference in our standards.
3. Mr. Klein will determine the proper designation for ABS conduit (equal strength of Schedule 40 PVC).
4. Mr. Klein will investigate what changes are necessary in our standard dwgs (including the requirement for pull boxes) and submit the recommended changes to the County Engineer for approval.

Notes prepared by J. R. Cousino

cc J. R. Cousino; D. L. Weiss; G. Scott; I. J. Klein; R. A. McBride

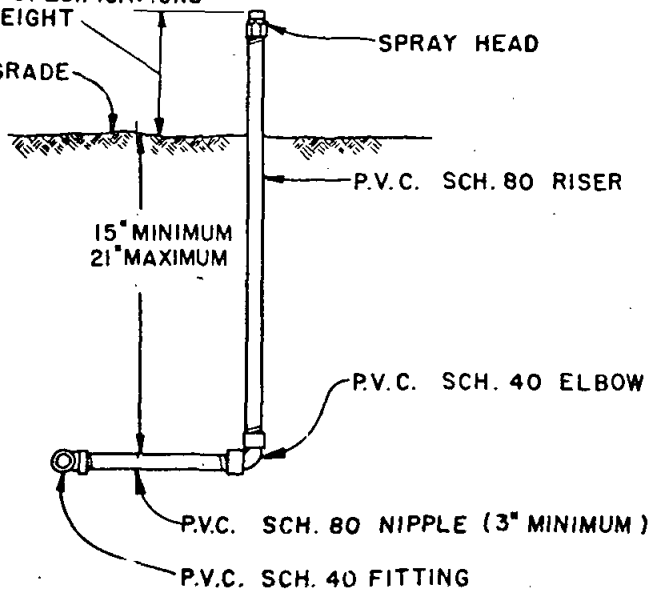


PLAN VIEW



SEE IRRIGATION SPECIFICATIONS
FOR HEIGHT

FINISHED GRADE



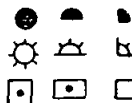
ELEVATION

SYMBOLS:

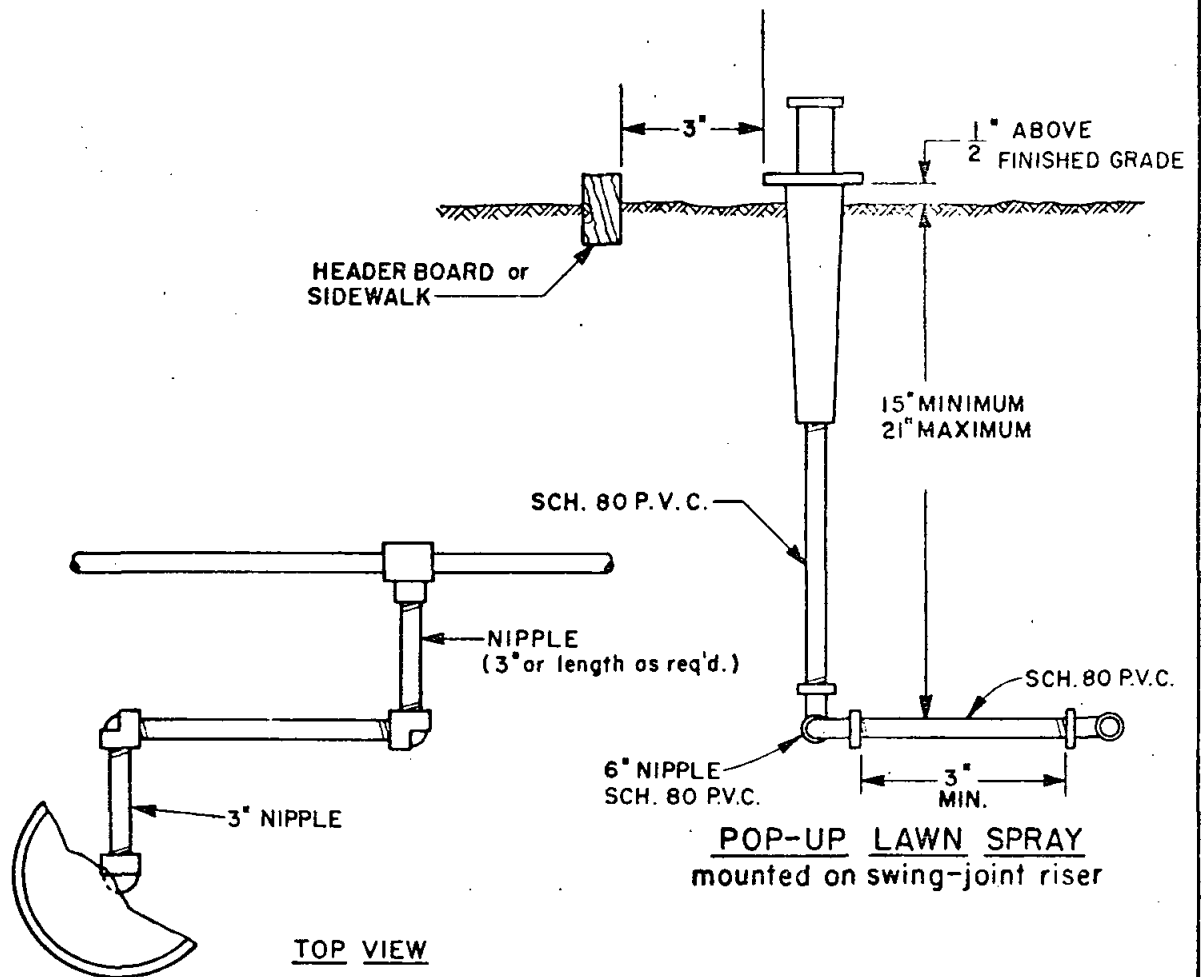
SHRUBBERY SPRAY

STREAM SPRAY

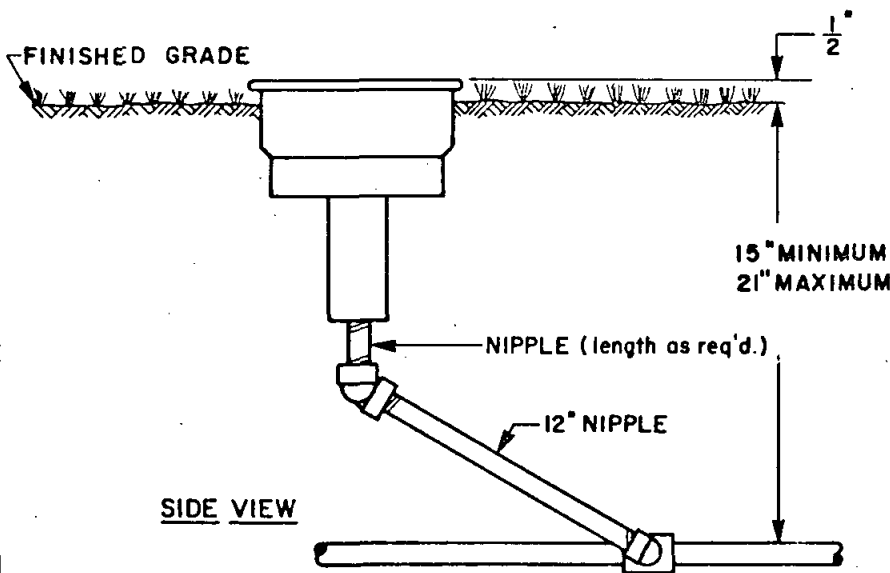
RECTANGULAR SPRAY



STD. SPEC. SEC.:	SAN DIEGO COUNTY ENGINEER DEPARTMENT STANDARD DRAWING	Added			
DRAWN BY: <i>J.M.M.</i> CHECKED BY: <i>A.B.</i>		Flex. Riser	<i>AB</i>	<i>AB</i>	<i>7/10/88</i>
RECOMMENDED BY: <i>W.P. Secor</i>		REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER <i>H.M. Taylor</i> R.C.E. 11458	SHRUBBERY SPRINKLER HEADS FIXED SPRAY TYPE	SCALE: NONE			
DATE: <i>7-25-88</i>		DRAWING NUMBER 700-T-2			



POP-UP LAWN SPRAY
mounted on swing-joint riser



ROTARY POP-UP SPRINKLER
mounted on swing-joint riser

NOTES:

1. ALL NIPPLES AND FITTINGS FOR ROTARY POP-UP SPRINKLER TO BE THREADED SCH. 80 P.V.C. PIPE.
2. ALL SPRAY HEADS SHALL CLEAR EDGE OF SIDEWALKS OR OTHER IMPROVEMENTS BY 3".

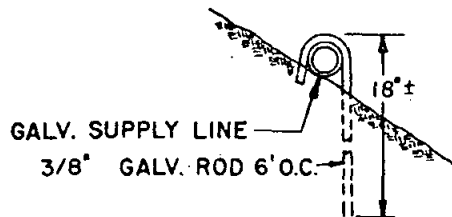
SYMBOL: ROTARY POP-UP
 POP-UP

STD. SPEC. SEC. :
DRAWN BY <i>mm</i> CHECKED BY <i>ALP</i>
RECOMMENDED BY <i>W.P. Dean</i>
APPROVED BY COUNTY ENGINEER <i>H. J. Taylor</i> R.C.E. 11458
DATE: <i>1-25-72</i>

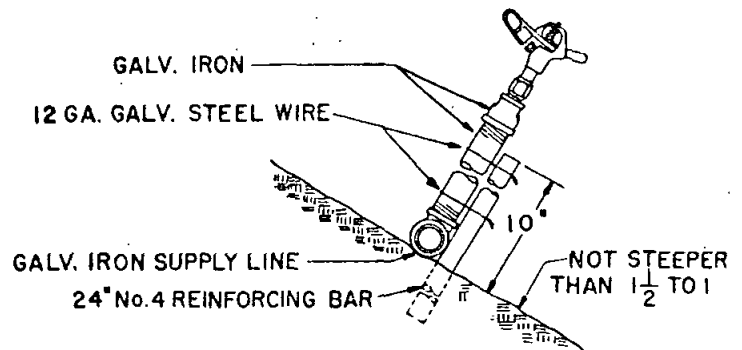
SAN DIEGO COUNTY ENGINEER DEPARTMENT
STANDARD DRAWING

LAWN SPRINKLER HEADS
POP-UP ROTARY & POP-UP SPRAY TYPES

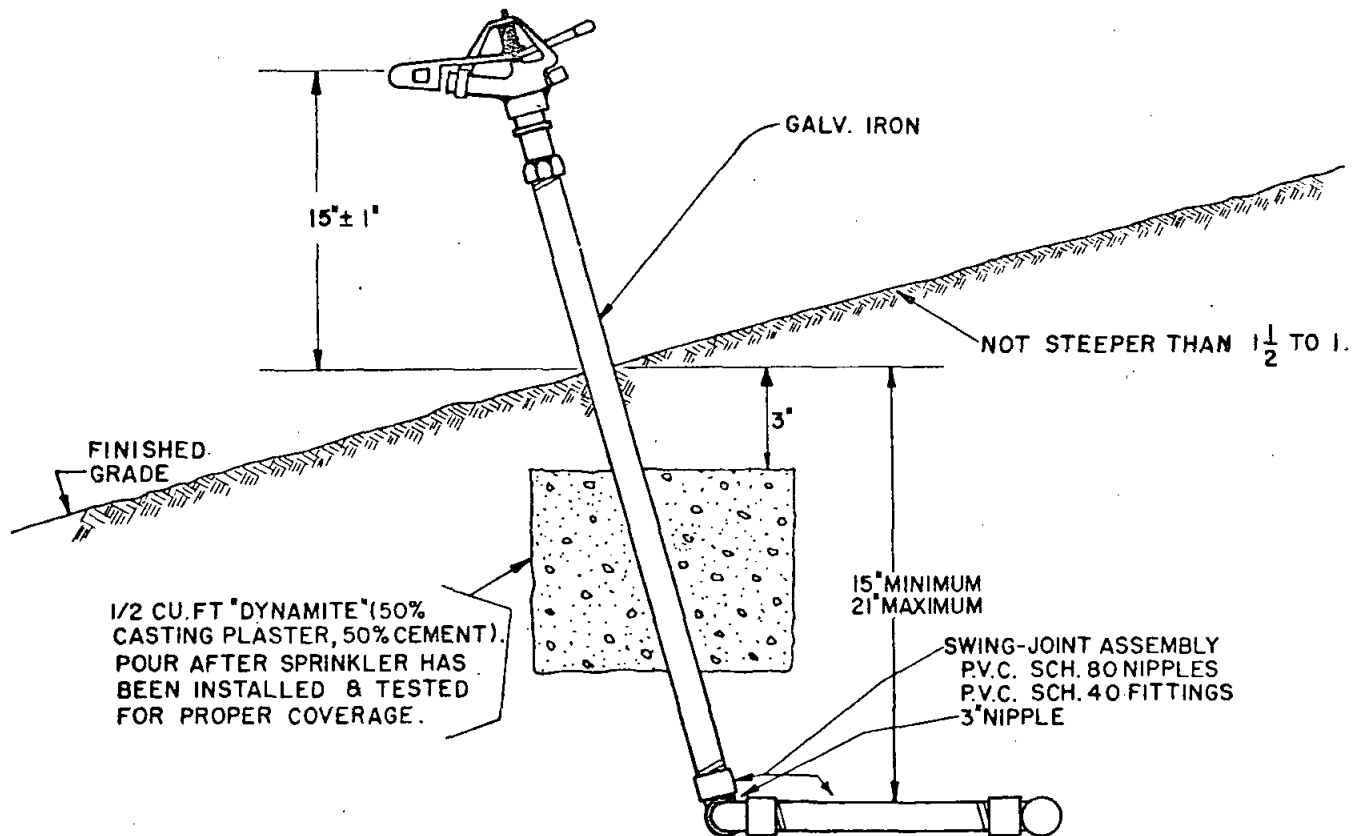
Checked Nipple Sanitary	<i>AB</i>	<i>W.P. Dean</i>	<i>1/10/72</i>
REVISION	BY	APPROVED	DATE
SCALE: NONE			
DRAWING NUMBER		701-T-1	



SPECIAL ABOVE-GROUND INSTALLATION
SUPPLY LINE ANCHOR DETAIL



SPECIAL ABOVE-GROUND INSTALLATION
SPRINKLER STAKING DETAIL



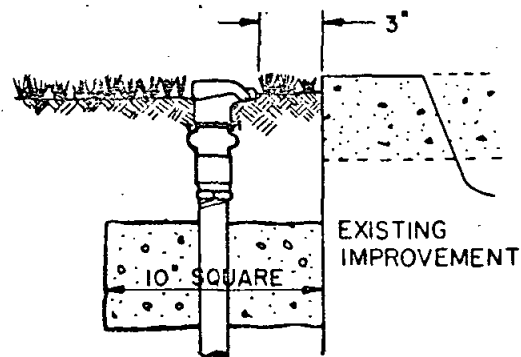
NORMAL INSTALLATION

NOTE:

USE OF SPECIAL ABOVE-GROUND SPRINKLER INSTALLATION MUST HAVE THOROUGH JUSTIFICATION.
INSTALLATION SHALL NOT COMMENCE UNTIL AUTHORIZED IN WRITING BY THE COUNTY ENGINEER

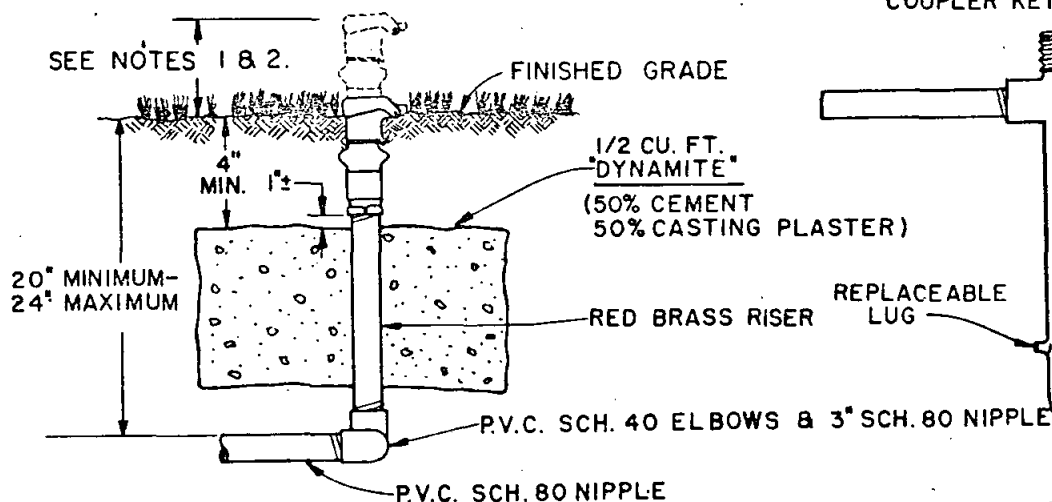
SYMBOLS:

STD. SPEC. SEC:		SAN DIEGO COUNTY ENGINEER DEPARTMENT STANDARD DRAWING		Change Iron Nipple	
DRAWN BY: <i>DM</i>	CHECKED BY: <i>MS</i>				
RECOMMENDED BY: <i>W.P. Seaver</i>				REVISION	BY
APPROVED BY COUNTY ENGINEER				APPROVED	DATE
<i>H.M. Taylor</i> R.C.E. 11458		IMPACT SPRINKLER HEAD		SCALE: NONE	
DATE: 7-25-70				DRAWING NUMBER 702-T-2	



LOCATION OF QUICK COUPLING VALVES
ADJACENT TO EXISTING IMPROVEMENTS.

PLAN VIEW

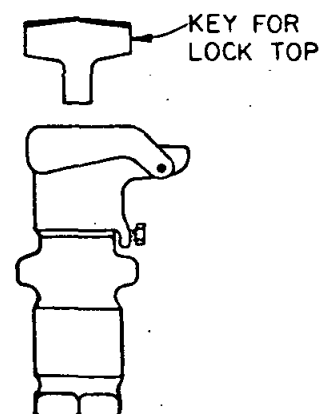
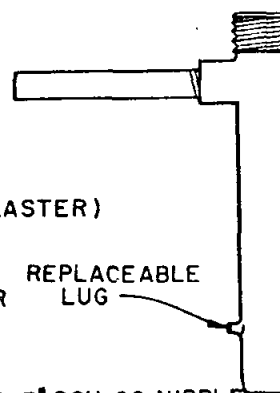


ELEVATION

NOTES:

- NOTES:
1. ALL QUICK COUPLING VALVES INSTALLED IN NEW LAWN AREAS SHALL BE INSTALLED ONE-HALF (1/2) INCH ABOVE THE PROPOSED FINISHED GRADE.
 2. ALL QUICK COUPLING VALVES INSTALLED IN SHRUB BEDS SHALL BE INSTALLED FOUR (4) INCHES ABOVE FINISHED GRADE.

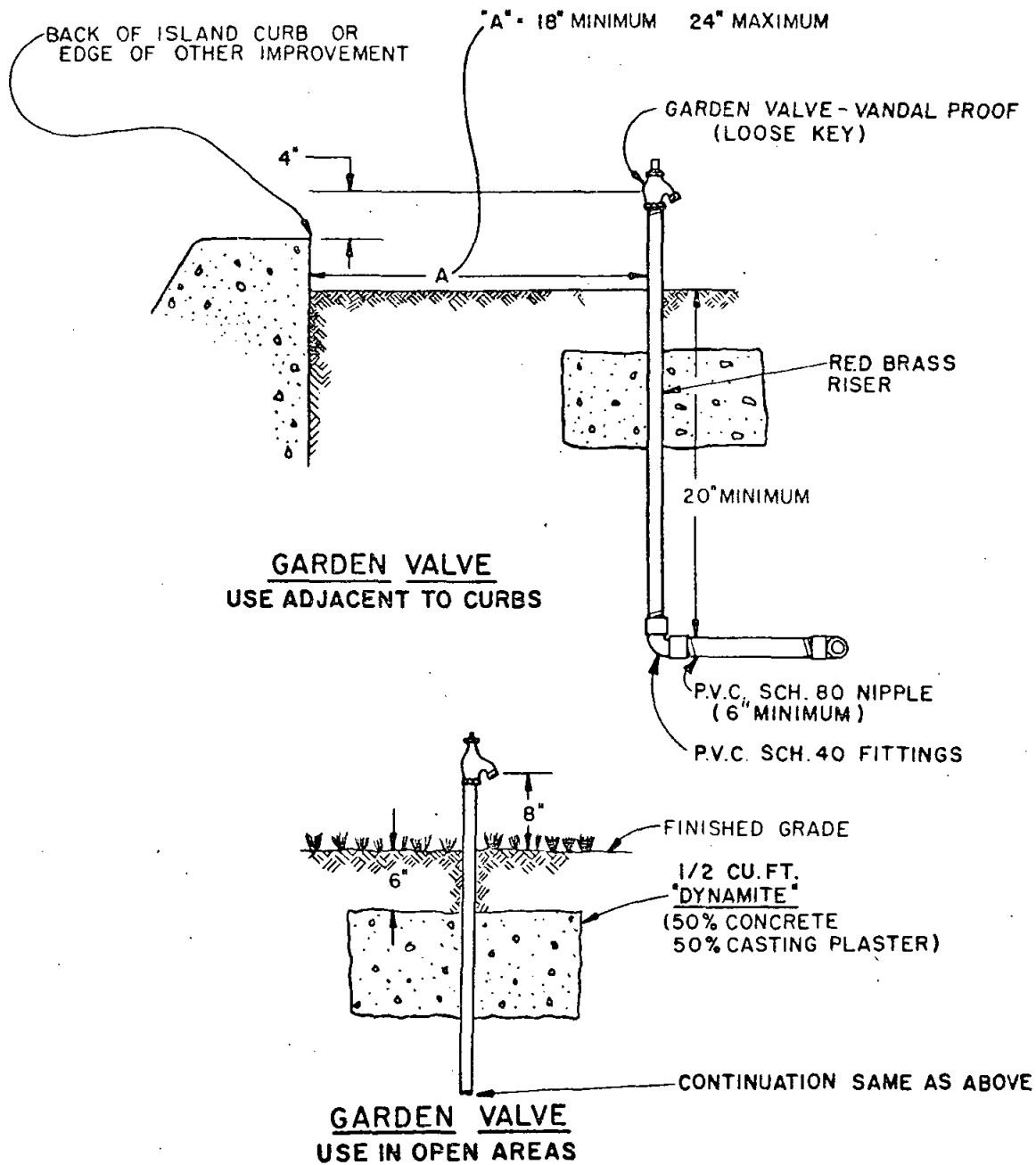
COUPLER KEY— SINGLE LUG



TWO PIECE LOCK TOP
QUICK-COUPPLING VALVE

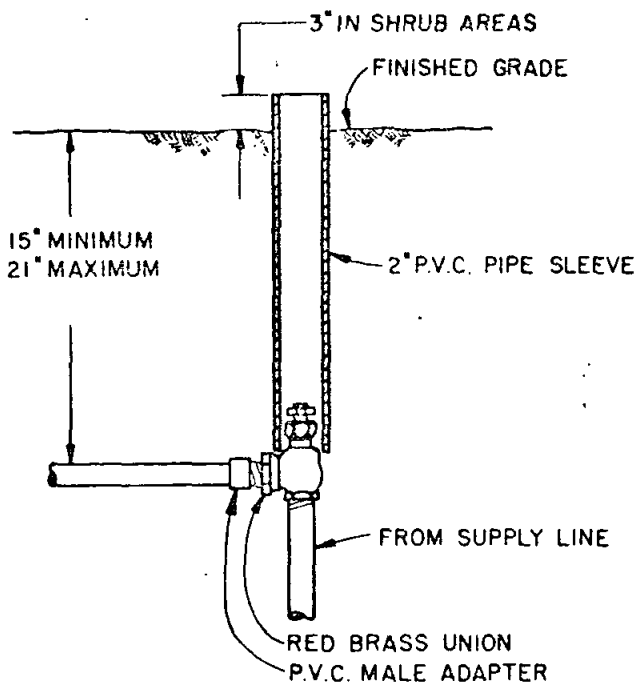
SYMBOL: $\otimes$ Q.C.V.

STD. SPEC. SEC:	SAN DIEGO COUNTY ENGINEER DEPARTMENT					
DRAWN BY <u>J.M.M.</u> CHECKED BY <u>W.P. Seaton</u>	STANDARD DRAWING					
RECOMMENDED BY <u>W.P. Seaton</u>	QUICK COUPLING VALVES		REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER			SCALE: NONE			
<u>H.M. Taylor</u> R.C.E. 11458			DRAWING NUMBER 703-T			
DATE: <u>7-25-72</u>						

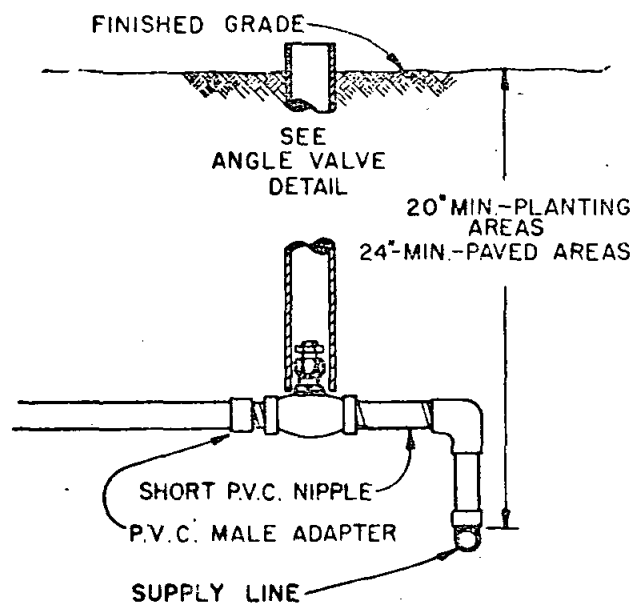


SYMBOL: σ

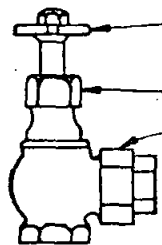
STD. SPEC. SEC.:	SAN DIEGO COUNTY ENGINEER DEPARTMENT					
DRAWN BY: <i>JMM</i> CHECKED BY: <i>AC</i>	STANDARD DRAWING					
RECOMMENDED BY: <i>W.P. Seese</i>	GARDEN VALVES		REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER			SCALE: NONE			
<i>H. H. Taylor</i> R.C.E. 11458			DRAWING NUMBER			
DATE: <i>7-26-72</i>			704-T			



ANGLE VALVE



GLOBE VALVE



ALL MANUAL VALVES SHALL BE FURNISHED WITH A STANDARD MANUAL CONTROL VALVE CROSS

REMOVABLE BONNET AND PACKING GLAND NUT.

ALL MANUAL ANGLE VALVES SHALL BE INSTALLED WITH A UNION ON THE DOWNSTREAM SIDE OF THE VALVE. THE UNION MAY BE PART OF THE VALVE OR FURNISHED SEPARATELY-UNIONS SHALL BE GROUND JOINT, RED BRASS.

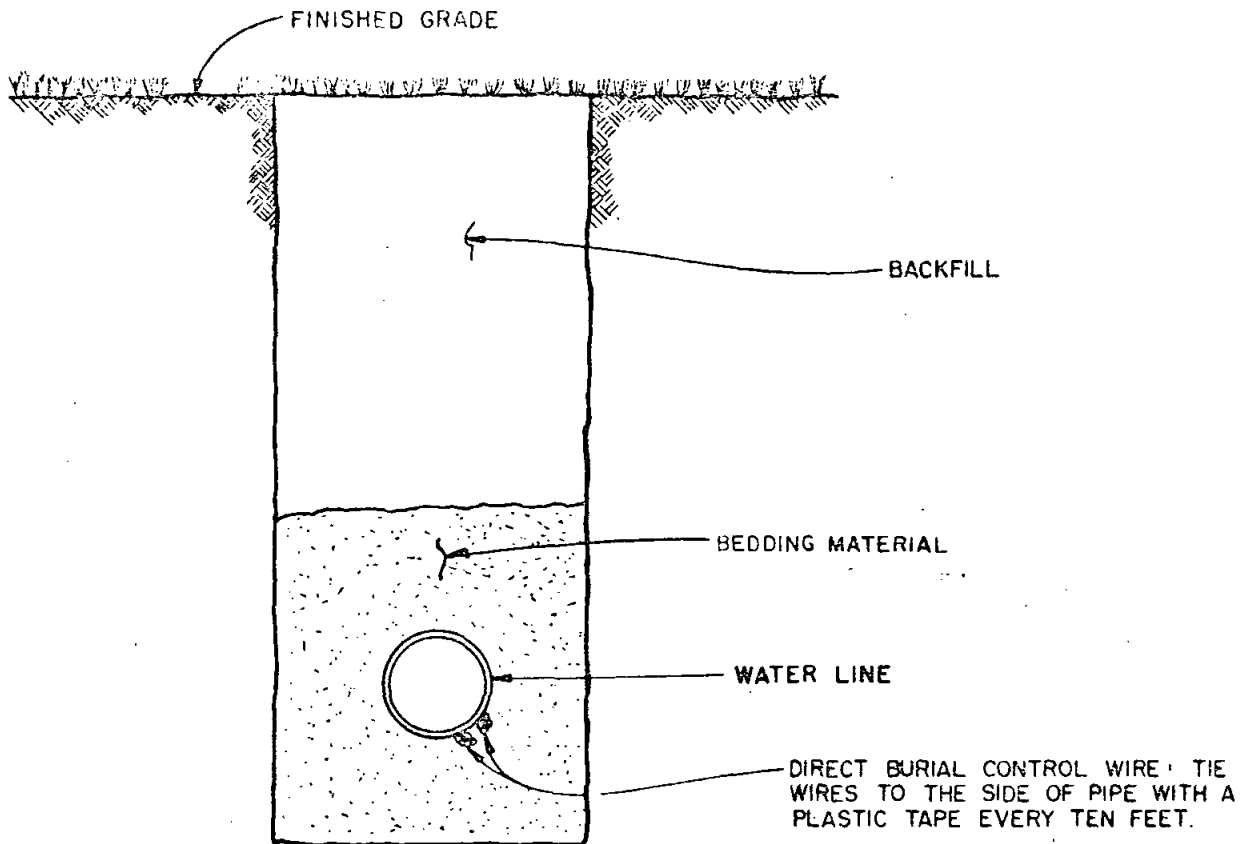
ORISEAL VALVES, MANUAL CONTROL VALVES, AND OTHER MANUAL VALVES SHALL BE INSTALLED ACCORDING TO THIS STANDARD WITH VALVE SIZES AS SHOWN ON THE PLANS.

UNLESS SHOWN OTHERWISE ON THE PLANS, ALL VALVES SHALL BE INSTALLED WITHIN TWELVE (12) INCHES OF THE WATER MAIN

SYMBOLS:

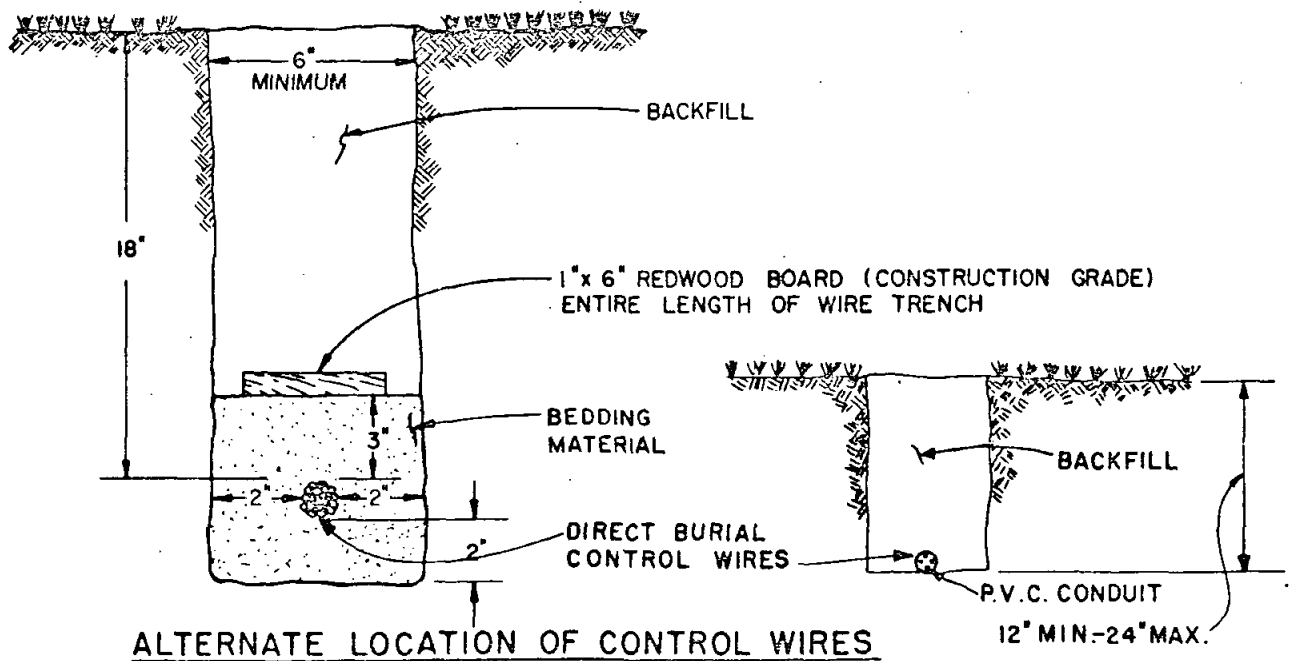
MANUAL CONTROL ANGLE VALVE ⊗ MCV
 MANUAL CONTROL GLOBE VALVE ⊗ MCV
 ORISEAL VALVE ⊗ OV
 GATE VALVE ⊗ GV

STD. SPEC. SEC. :	SAN DIEGO COUNTY ENGINEER DEPARTMENT						
DRAWN BY <i>MDL</i> CHECKED BY <i>ABR</i>	STANDARD DRAWING						
RECOMMENDED BY <i>W.P. Seem</i>	MANUAL VALVES			REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER				SCALE: NONE			
<i>H. W. Taylor</i> R.C.E. 11450				DRAWING			
DATE: <i>7-25-72</i>				NUMBER 705-T			



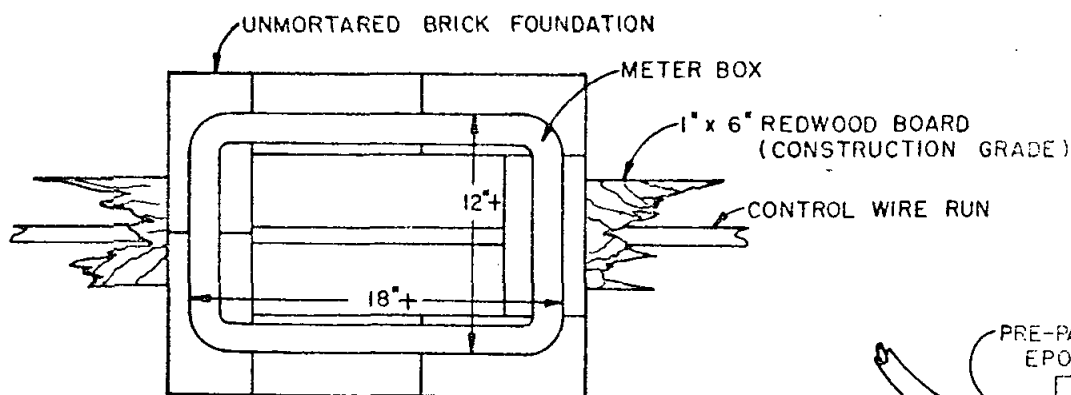
NORMAL LOCATION OF CONTROL WIRES

SEE IRRIGATION SPECIFICATIONS FOR ADDITIONAL INFORMATION ON TRENCH SIZE, BACKFILL AND DIRECT BURIAL WIRE INSTALLATION.

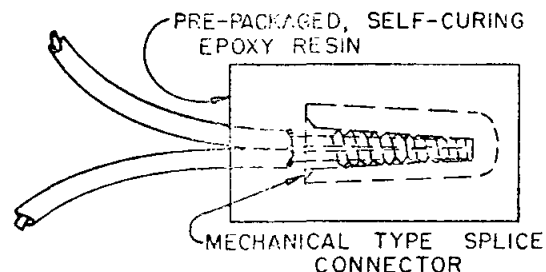


ALTERNATE LOCATION OF CONTROL WIRES

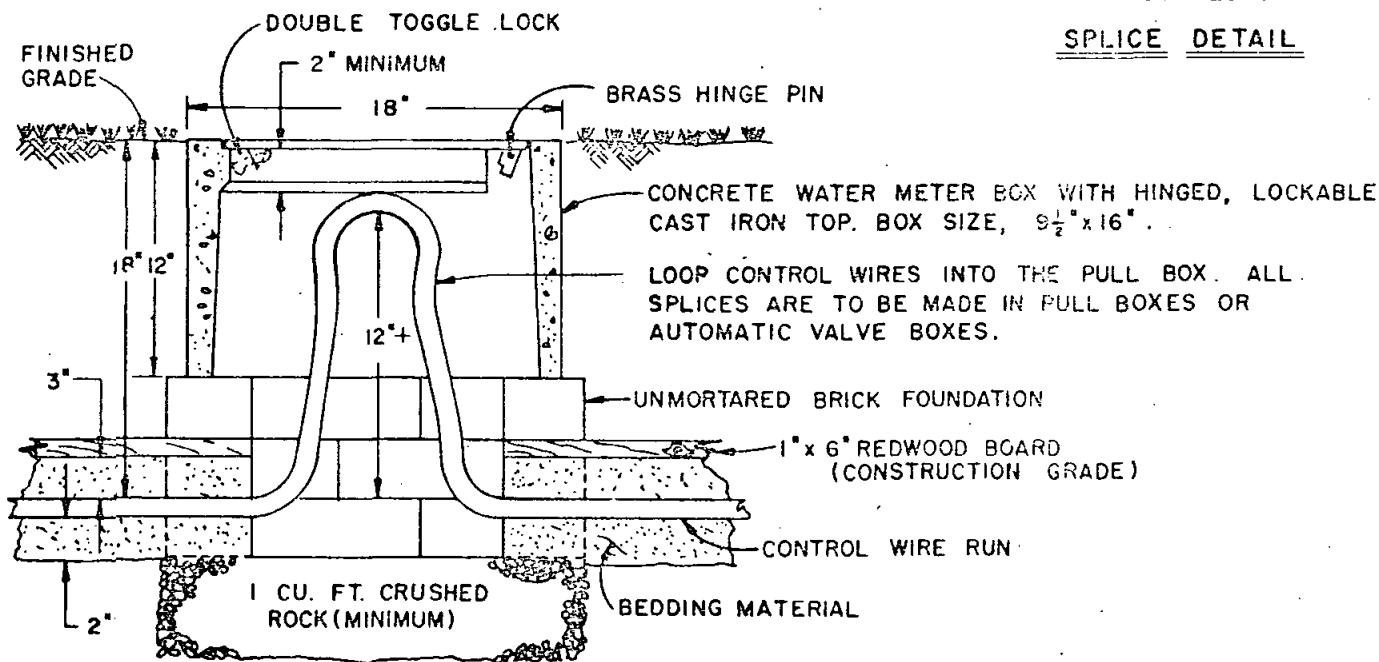
STD. SPEC. SEC.	SAN DIEGO COUNTY ENGINEER DEPARTMENT	DRAWING MATERIAL	706	APPROVED	12/1/74
DRAWN BY <i>M.M.</i> CHECKED BY <i>M.P.</i>	STANDARD DRAWING	REVISION	BY	APPROVED	DATE
RECOMMENDED BY <i>W.P. Secor</i>	DIRECT BURIAL CONTROL WIRE & TRENCH DETAIL	SCALE: NONE			
APPROVED BY COUNTY ENGINEER		DRAWING NUMBER	706-IT		
<i>H.M. Taylor</i> R.C.E. 11458					
DATE: <i>7-25-74</i>					



PLAN VIEW



SPICE DETAIL



ELEVATION

NOTES:

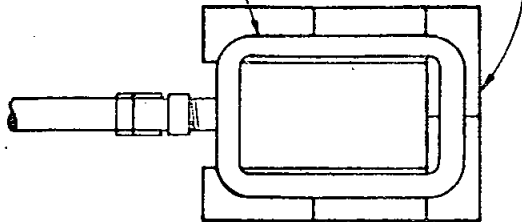
1. INSTALL PULL BOXES AS SHOWN ON THE PLANS.
2. AT JUNCTIONS WHERE RUNS COMBINE, SPLICE COMMON GROUND IN PULL BOX.
3. PULL BOX COVER SHALL BE PERMANENTLY MARKED "ELECTRIC".
4. CONDUCTORS FOR EACH CONTROLLER CLOCK SHALL BE HARNESSSED SEPARATELY AND AT SUFFICIENT INTERVALS TO MAINTAIN A DEFINITE BUNDLE.

SYMBOL: P.B.

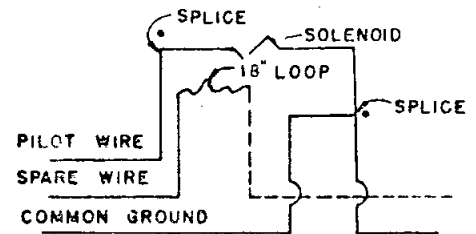
STD. SPEC. SEC.:		SAN DIEGO COUNTY ENGINEER DEPARTMENT		Change 1: None	MB	MB	7/25/78
DRAWN BY: <u>DB</u> CHECKED BY: <u>MB</u>		STANDARD DRAWING		BEDDING MATERIAL	DB	MB	7/25/78
RECOMMENDED BY: <u>W.P. Seem</u>		ELECTRICAL PULL BOX FOR DIRECT BURIAL CONTROL WIRES & SPLICE DETAIL		REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER				SCALE: NONE			
<u>H. R. Taylor</u> R.C.E. 11450				DRAWING NUMBER 707-2T			
DATE: <u>7-25-78</u>							

UNMORTARED BRICK FOUNDATION

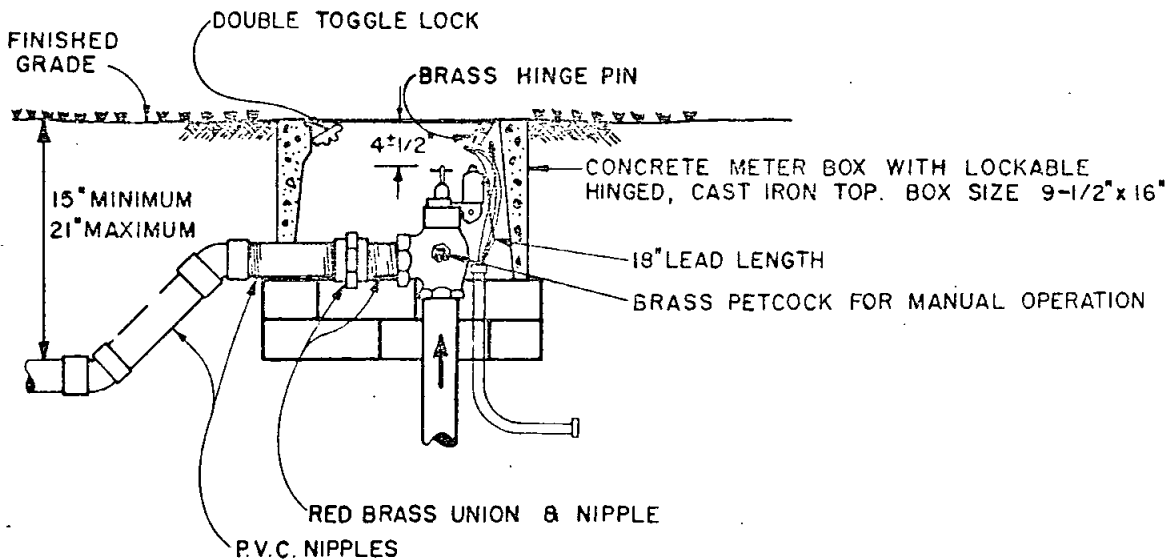
METER BOX



PLAN VIEW



TYPICAL ELEMENTARY DIAGRAM FOR WIRING
ELECTRIC AUTOMATIC CONTROL VALVE

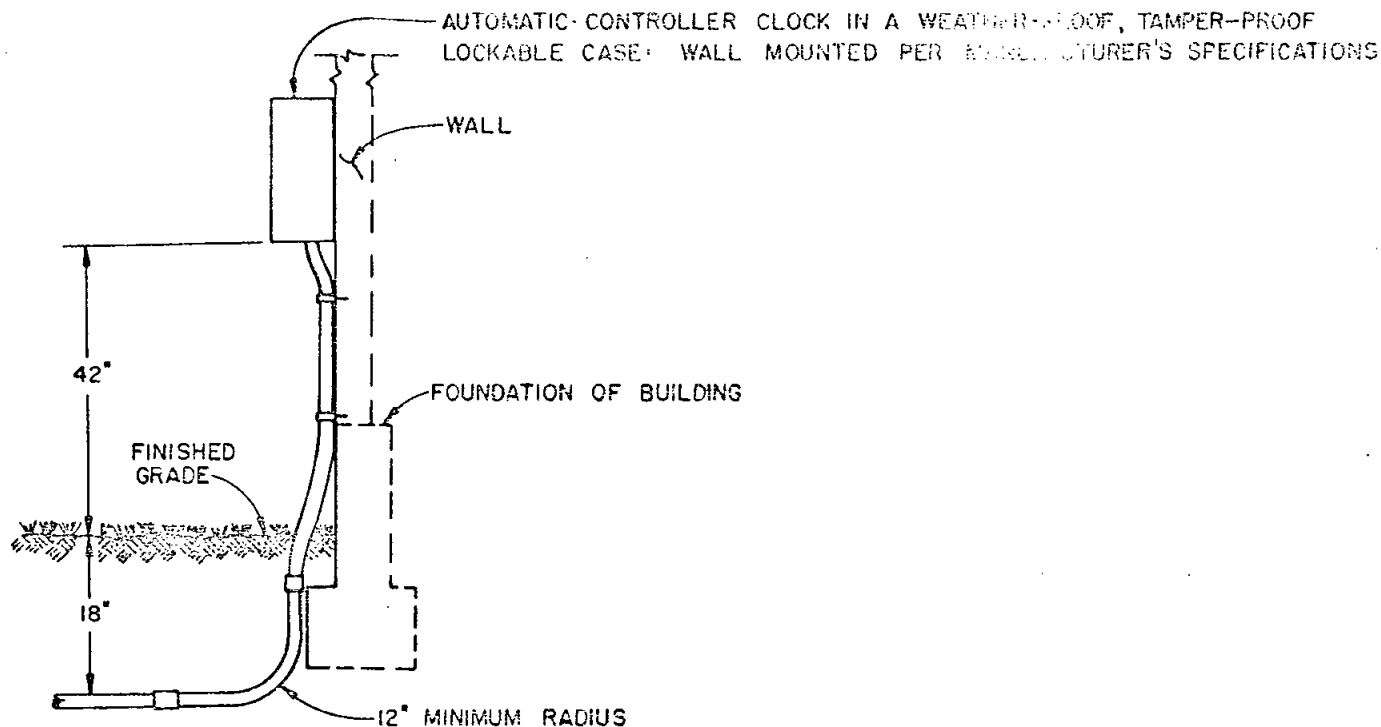


ELEVATION

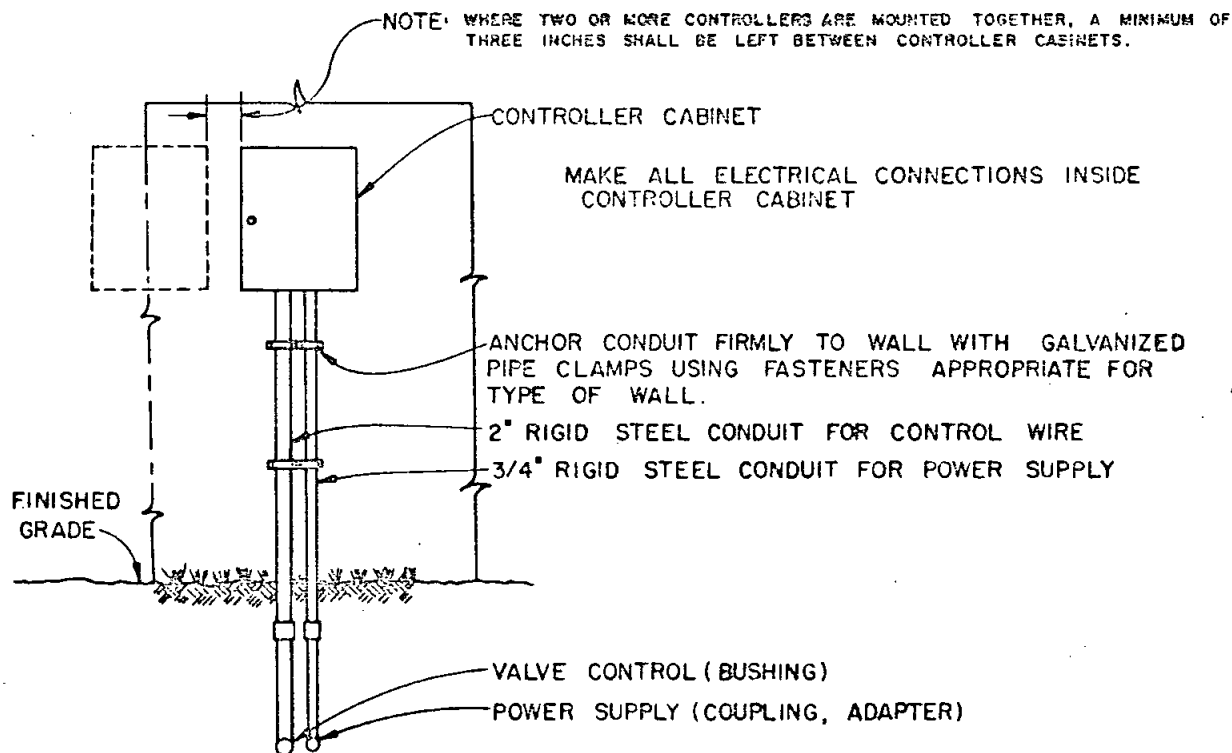
NOTE: NO SPLICING SHALL BE MADE OUTSIDE OF THE VALVE BOX EXCEPT
THAT MADE IN A PULL-BOX (SEE STD. DWG. 707).

SYMBOL:  A.V. No. _____

STD. SPEC. SEC.:	SAN DIEGO COUNTY ENGINEER DEPARTMENT STANDARD DRAWING	Position of Valve			
DRAWN BY <i>J.M.M.</i> CHECKED BY <i>J.H.S.</i>					
RECOMMENDED BY <i>W.P. Lee</i>	AUTOMATIC CONTROL VALVE — — ELECTRIC (ANGLE VALVE)	REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER		SCALE: NONE			
<i>H.P. Taylor</i> P. C. 11458		DRAWING NUMBER 708-T-1			
DATE: 7-25-20					



SIDE VIEW

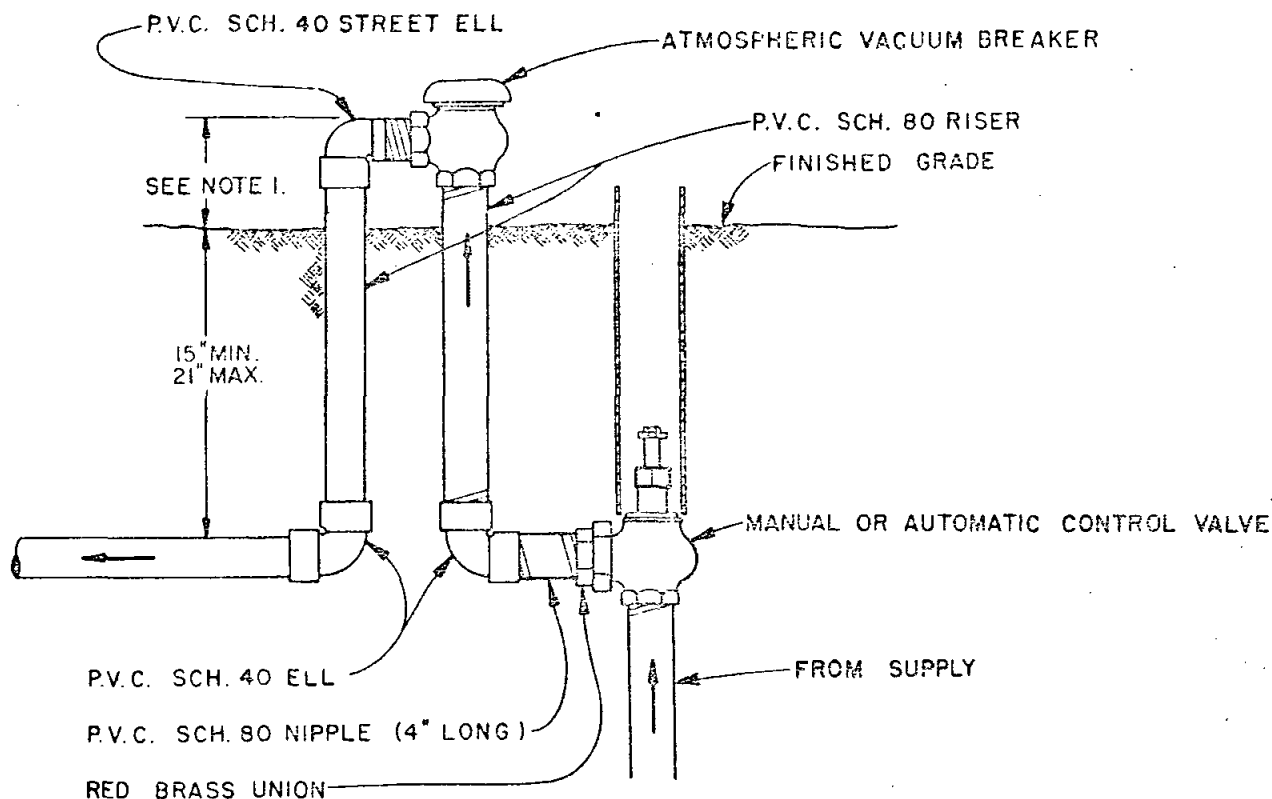


FRONT VIEW

FOR LOCATION OF SUPPLY CONDUIT & CONDUCTOR, REFER TO THE PLANS & THE SAN DIEGO COUNTY ELECTRICAL CODE

SYMBOL: W

STD. SPEC. SEC.:	SAN DIEGO COUNTY ENGINEER DEPARTMENT				
DRAWN BY: <i>AMM</i> CHECKED BY: <i>ABP</i>	STANDARD DRAWING				
RECOMMENDED BY: <i>W. B. ...</i>		REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER		SCALE: NONE			
<i>W. B. ...</i> R.C.F. 11458	ELECTRIC CONTROLLER CLOCK	DRAWING			
DATE: <i>7-25-19</i>	WALL MOUNTING	NUMBER 711-T			

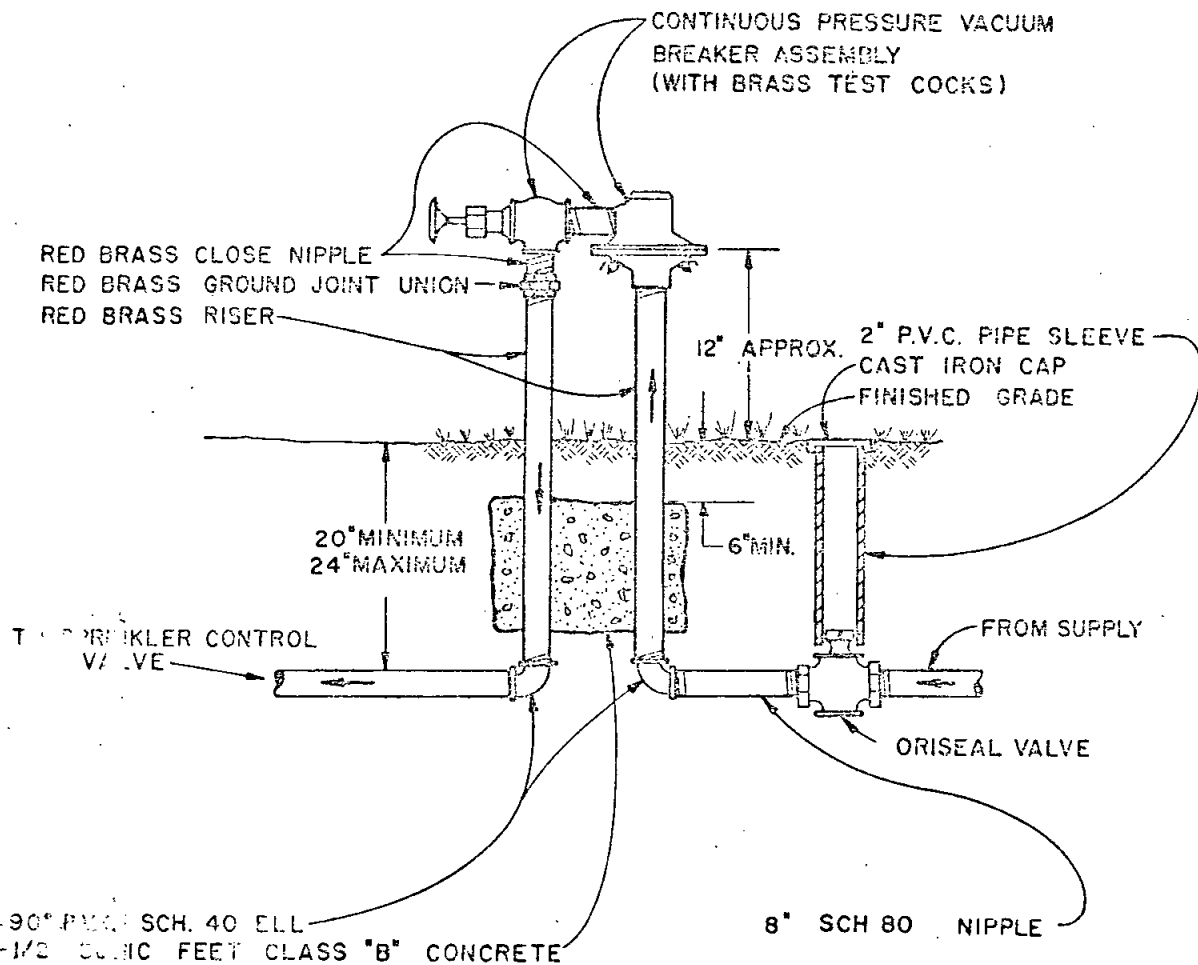


NOTE:

1. ATMOSPHERIC VACUUM BREAKERS SHALL BE INSTALLED APPROX. 6" ABOVE THE FINISHED GRADE AND ABOVE A SUFFICIENT NUMBER OF SPRINKLER HEADS CLOSEST TO VACUUM BREAKER SO AT NO TIME WILL IT BE SUBJECTED TO BACK PRESSURE OR DRAINAGE.
2. ALL FITTINGS INCLUDING THE ATMOSPHERIC VACUUM BREAKER SHALL NOT BE OF SMALLER SIZE THAN THE VALVE.
3. FOR USE ON LINES 2 INCHES AND SMALLER.

SYMBOL: (A) A.V.B.

STD. SPEC. SEC. _____	SAN DIEGO COUNTY ENGINEER DEPARTMENT STANDARD DRAWING				
DRAWN BY <u>AM</u> CHECKED BY <u>AM</u>					
RECOMMENDED BY <u>AM</u>	ATMOSPHERIC VACUUM BREAKER (TYPE 1 BACKFLOW PROTECTION)	REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER		SCALE: NONE			
<u>AM</u> R.C.E. 11458		DRAWING NUMBER 712-T			
DATE: <u>7-25-72</u>					

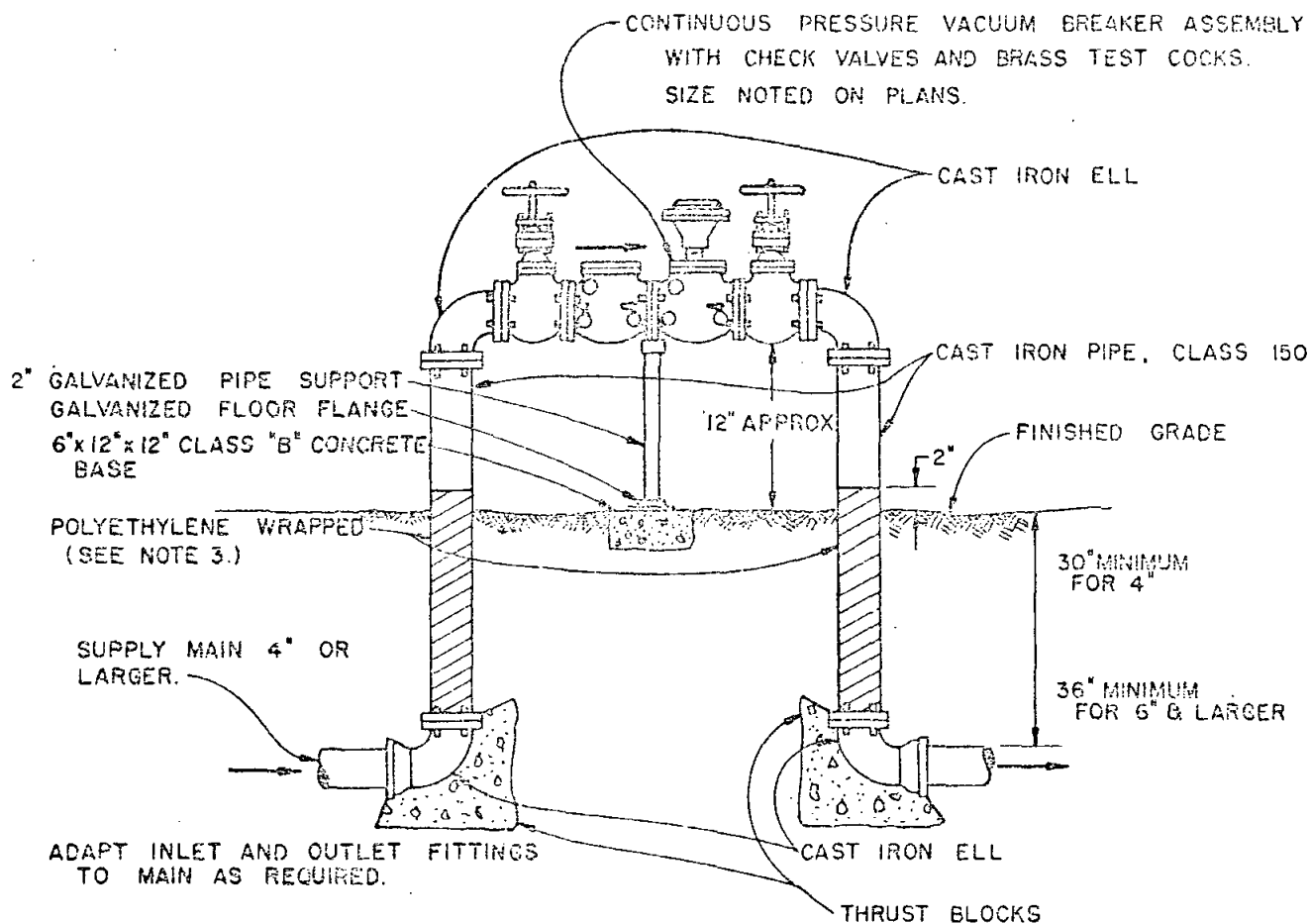


1. CONTINUOUS PRESSURE VACUUM BREAKERS SHALL BE INSTALLED ABOVE A SUFFICIENT NUMBER OF SPRINKLER HEADS TO BE EXPOSED TO VACUUM BREAKER SO AT NO TIME WILL IT BE SUBJECTED TO BACK PRESSURE OR DRAINAGE.

2. FOR USE ON LINES TWO INCHES AND SMALLER.

SYMBOL: (V) P.V.B.

STD. SPEC. SEC.:	SAN DIEGO COUNTY ENGINEER DEPARTMENT				
DRAWN BY: <i>J.M.D.</i> CHECK: <i>J.M.D.</i>	STANDARD DRAWING				
RECOMMENDED BY: <i>J.M.D.</i>	CONTINUOUS PRESSURE VACUUM BREAKER	REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER:	ASSEMBLY	SCALE: NONE			
DATE: <i>1. 10. 1968</i>	(TYPE II BACKFLOW PROTECTION)	DRAWING NUMBER 713-T			

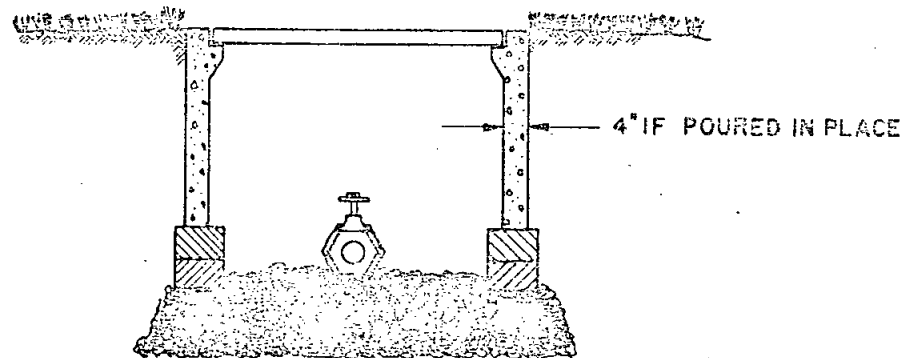
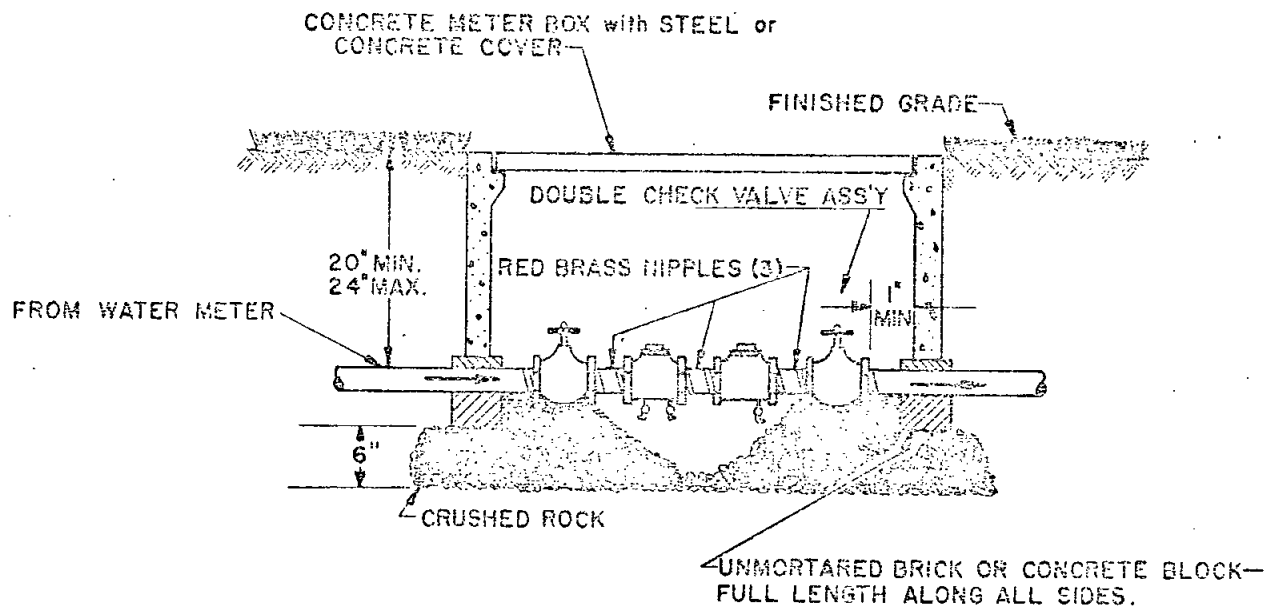


NOTES:

1. ALL FITTINGS ON ASSEMBLY SHALL BE FLANGED.
2. CAST IRON PIPE SHALL BE POLYETHYLENE WRAPPED.
3. CAST IRON PIPE AND FITTINGS SHALL BE CEMENT LINED.
4. PRESSURE VACUUM BREAKER ASSEMBLY SHALL BE INSTALLED ABOVE A SUFFICIENT NUMBER OF SPRINKLER HEADS CLOSEST TO VACUUM BREAKER SO AT NO TIME WILL IT BE SUBJECTED TO BACK PRESSURE OR DRAINAGE.
5. FOR USE ON LINES FOUR INCHES AND LARGER.

SYMBOL: ☒☑☑☒

STD. SPEC. SEC.:	SAN DIEGO COUNTY ENGINEER DEPARTMENT	Drawn	By	Checked	By
DRAWN BY: <i>M.M.</i> CHECKED BY: <i>W.C.</i>	STANDARD DRAWING				
RECOMMENDED BY: <i>W.C.</i>	CONTINUOUS PRESSURE VACUUM BREAKER ASSEMBLY	REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER	WITH CHECK VALVES	SCALE: NONE			
<i>W.C.</i> H.C.E. 11450	(TYPE III BACKFLOW PROTECTION)	DRAWING NUMBER 714-T-1			
DATE: <i>2-2-77</i>					

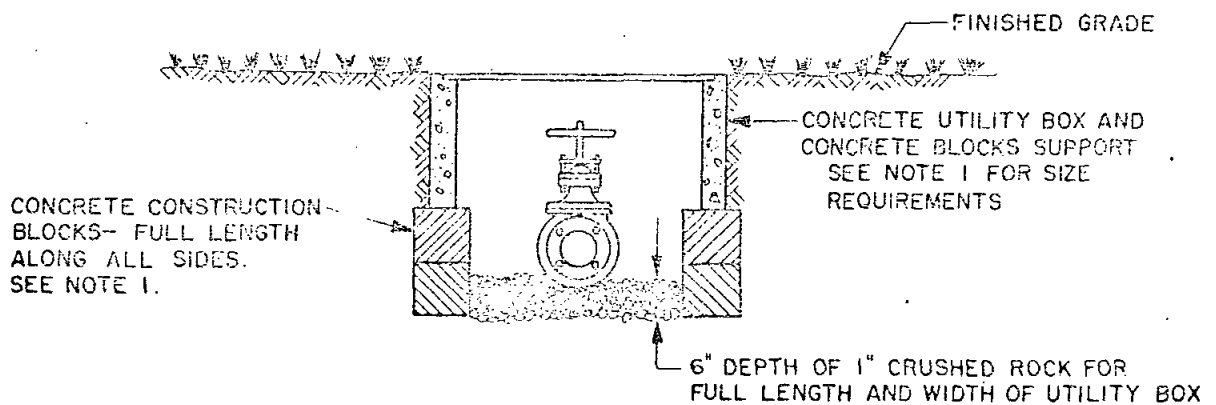
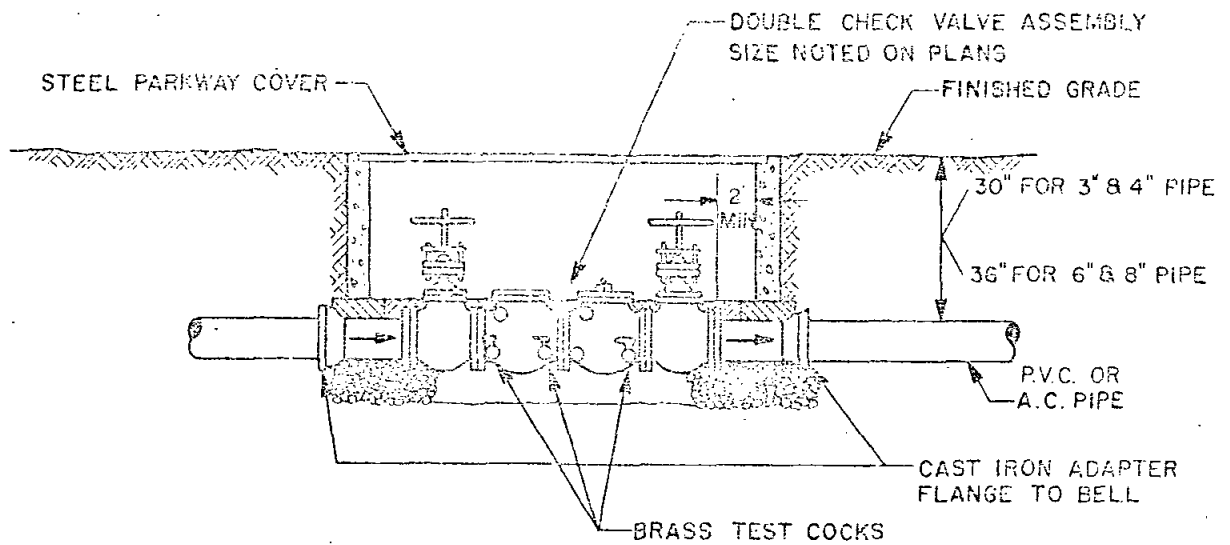


NOTES:

1. NOT FOR USE IN TRAFFIC AREAS.
2. FOR USE ON WATER MAINS OF ALL SIZES.

SYMBOL:

STD. SPEC. SEC:		SAN DIEGO COUNTY ENGINEER DEPARTMENT					
DRAWN BY: <i>11/22</i>		CHECKED BY: <i>AS</i>		STANDARD DRAWING			
RECOMMENDED BY: <i>W.P. Lacer</i>						REVISION	
APPROVED BY: COUNTY ENGINEER						BY	
<i>11/22</i> <i>W.P. Lacer</i> R.C.E. 11458						APPROVED	
DATE: <i>11-22-72</i>						DATE	
DOUBLE CHECK VALVE ASSEMBLY (TYPE IV BACKFLOW PROTECTION)				SCALE: NONE			
				DRAWING NUMBER 715-T			

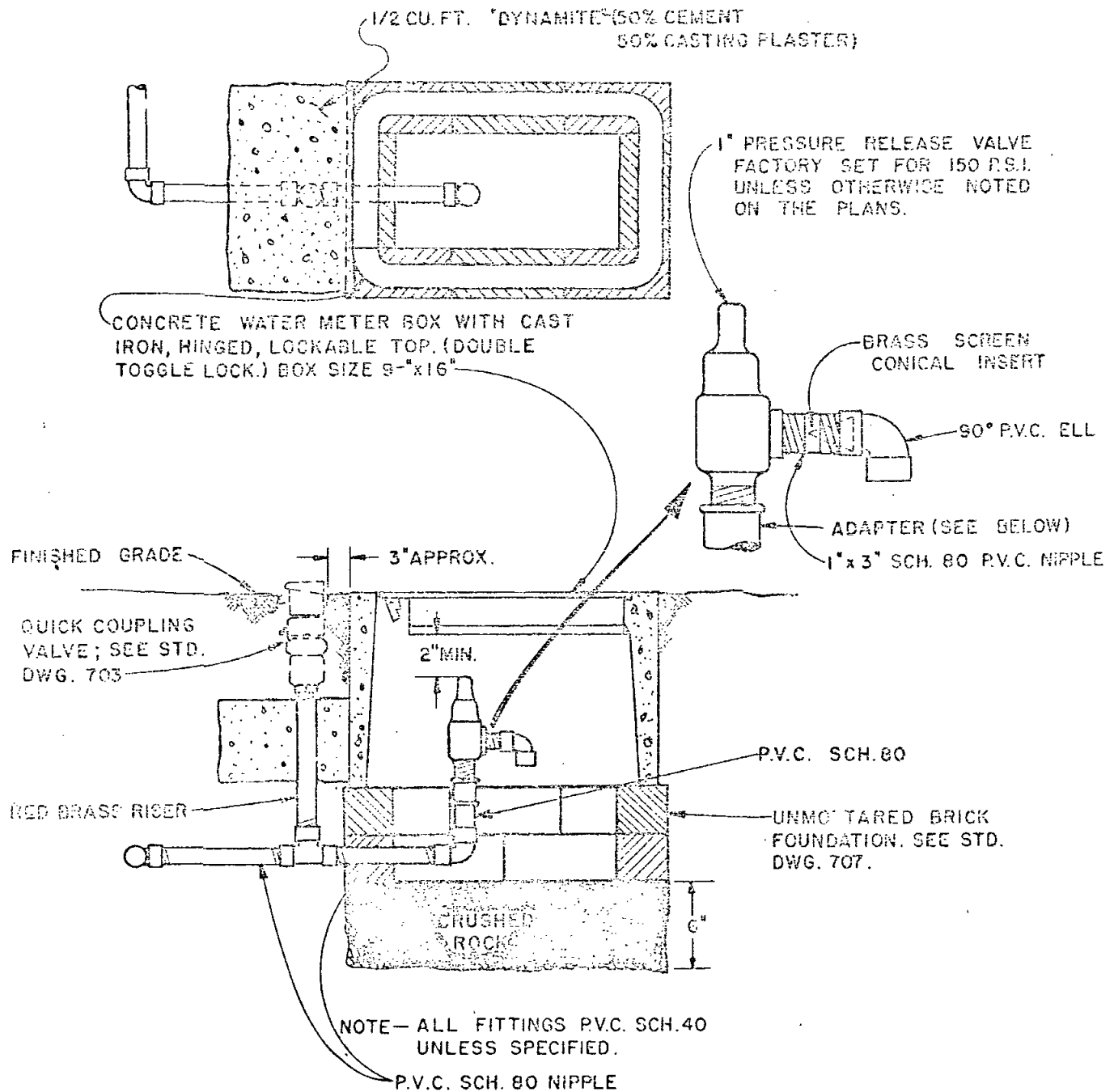


NOTES:

1. 3" & 4" PIPE: 2'-6" x 4'-0" UTILITY BOX WITH 4" WALLS.
6" & 8" PIPE: 3'-2" x 6'-0" UTILITY BOX WITH 4" WALLS.
2. NOT FOR USE IN TRAFFIC AREAS.
3. FOR USE ON WATER MAINS 3" OR LARGER.

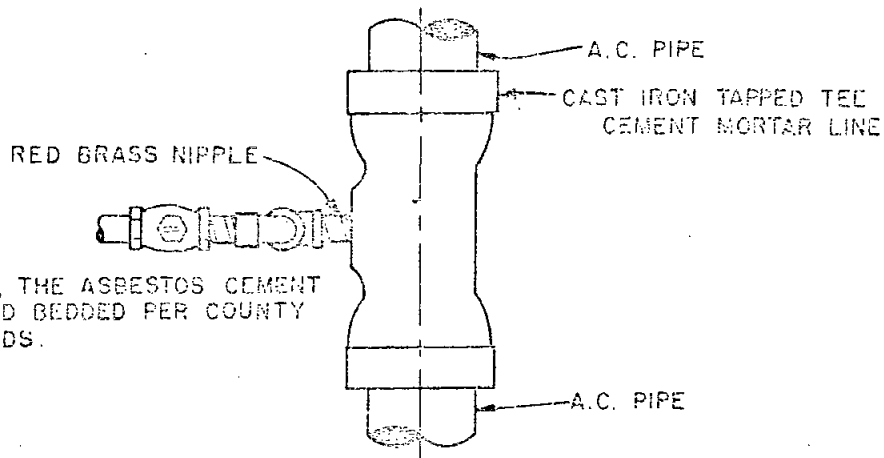
SYMBOL:

STD. SPEC. SEC:	SAN DIEGO COUNTY ENGINEER DEPARTMENT		Scale: P.C. Service	DATE: 1/15/75
DRAWN BY: <i>[Signature]</i>	STANDARD DRAWING		REVISION	DATE
CHECKED BY: <i>[Signature]</i>			BY	APPROVED
RECOMMENDED BY: <i>[Signature]</i>	DOUBLE CHECK VALVE ASSEMBLY		SCALE: NONE	
APPROVED BY COUNTY ENGINEER	P.V.C. or A.C. PIPE SERVICE		DRAWING NUMBER 716-T-1	
DATE: 7-25-75	(TYPE IV BACKFLOW PROTECTION)			

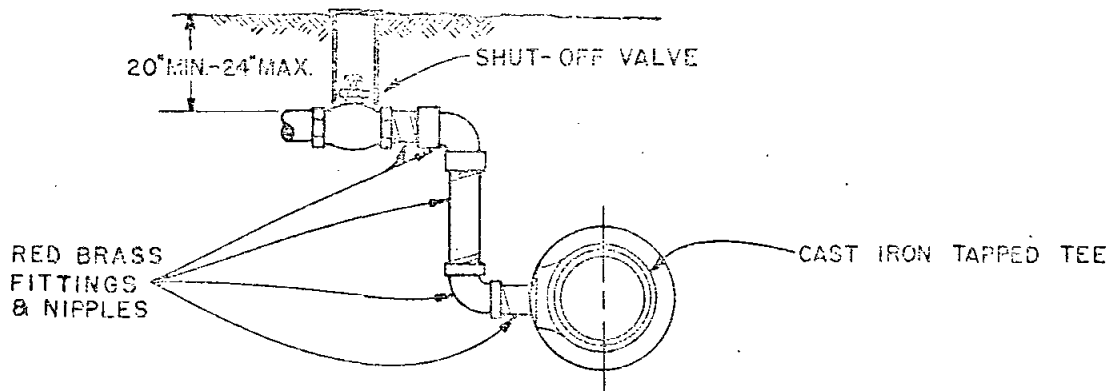


SYMBOL: (V) P.R.V.

STD. SPEC. SEC. 1	SAN DIEGO COUNTY ENGINEER DEPARTMENT			
DRAWN BY: <i>[Signature]</i>	STANDARD DRAWING.			
CHECKED BY: <i>[Signature]</i>				
RECOMMENDED BY: <i>[Signature]</i>				
APPROVED BY: COUNTY ENGINEER				
DATE: <i>[Signature]</i> R.C.E. 11458				
PRESSURE RELIEF VALVE installed with QUICK COUPLING VALVE				
				REVISION
				BY
				APPROVED
				DATE
				SCALE: NONE
				DRAWING NUMBER
				717-T

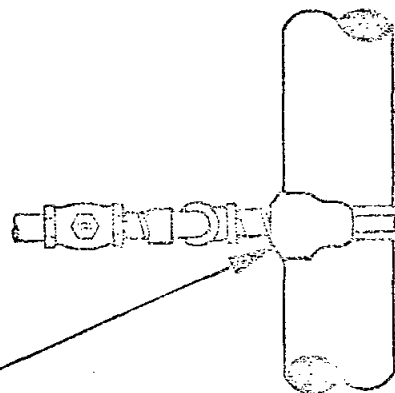


NOTE: IN ALL CASES, THE ASBESTOS CEMENT PIPE SHALL BE SAND BEDDED PER COUNTY ENGINEER STANDARDS.



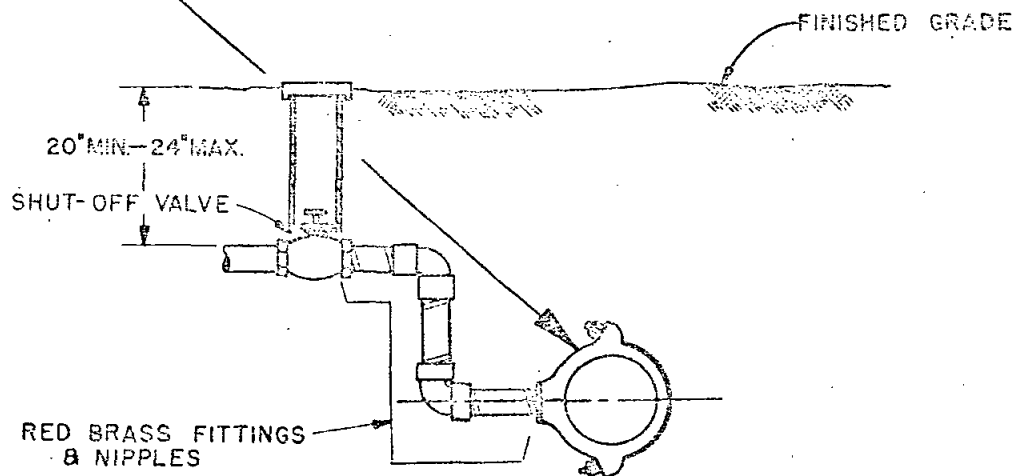
SYMBOL:

STD. SPEC. SEC. 1	SAN DIEGO COUNTY ENGINEER DEPARTMENT			
DRAWN BY: <i>S.M.M.</i> CHECKED BY: <i>C.A.C.</i>	STANDARD DRAWING			
RECOMMENDED BY: <i>H.P. Jones</i>		REVISION	BY	APPROVED
APPROVED BY COUNTY ENGINEER	CONNECTION DETAIL FOR NEW ASBESTOS CEMENT WATER MAINS	SCALE: NONE		
<i>H.P. Jones</i> A.C.E. 11450		DRAWING NUMBER 718-T		
DATE: <i>1-25-74</i>				



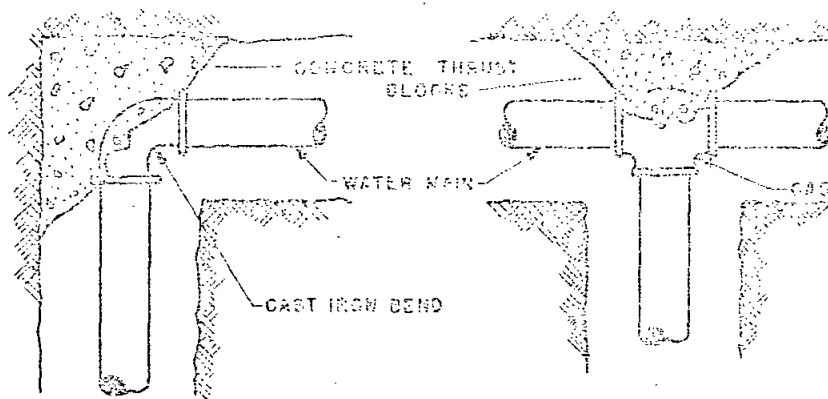
EXISTING ASBESTOS CEMENT PIPE OR
CAST IRON PIPE WATER MAIN.

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.



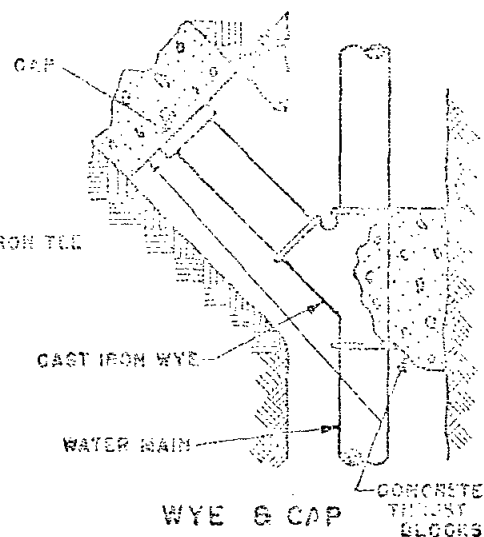
SYMBOL:

STD. SPEC. SEC.:	SAN DIEGO COUNTY ENGINEER DEPARTMENT					
DRAWN BY: <i>W. J. M.</i> CHECKED BY: <i>W. J. M.</i>	STANDARD DRAWING					
RECOMMENDED BY: <i>W. J. M.</i>			REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER			SCALE NONE			
<i>W. J. M.</i> P.E. 1409	CONNECTION DETAIL FOR EXISTING WATER MAINS		DRAWING NUMBER 719T			
DATE: <i>1-25-22</i>						

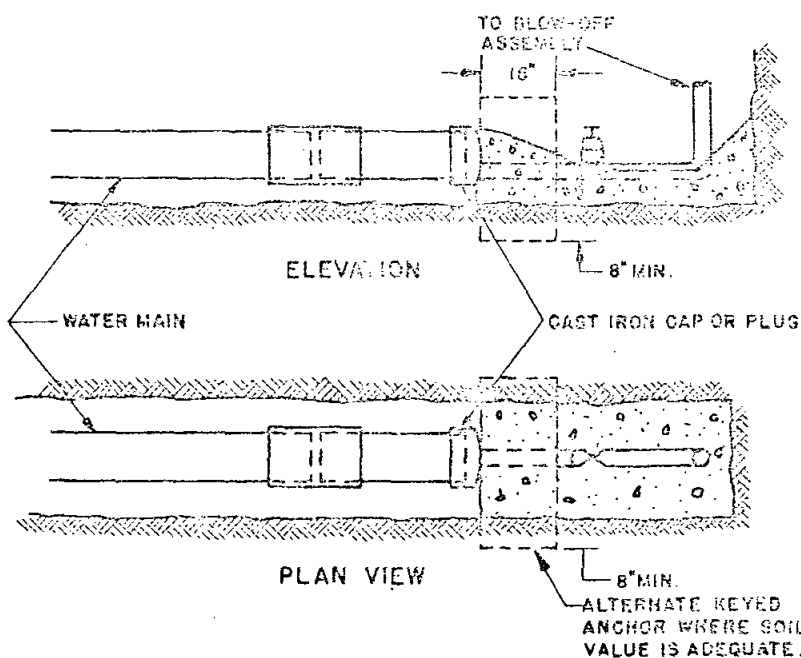


BEND

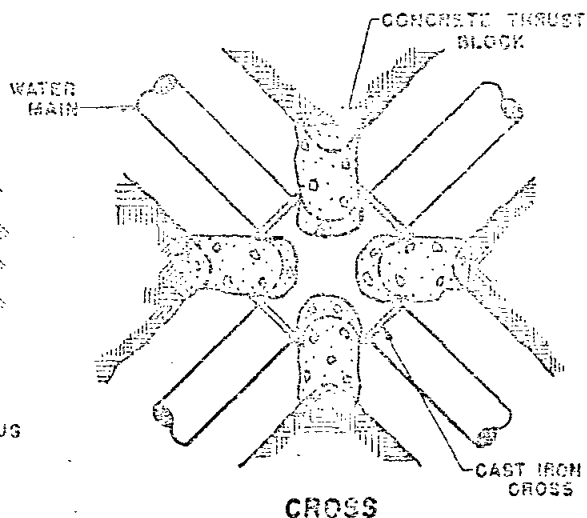
TEE



WYE & CAP



BLOW-OFF



CROSS

NOTES:

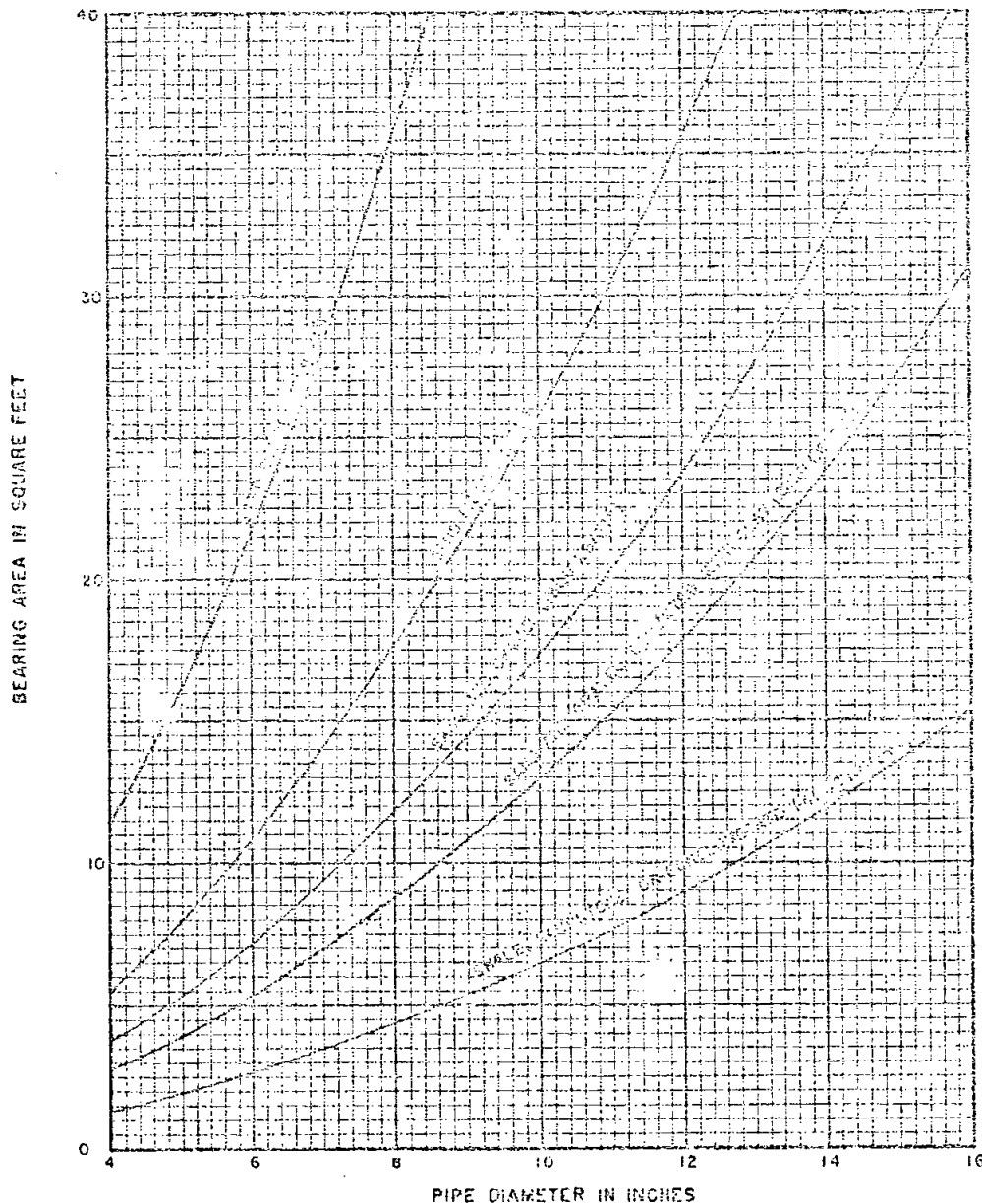
1. BEARING AREAS FOR THRUST BLOCKS SHALL DEPEND ON PRESSURE & PIPE SIZE. FOR BEARING AREAS SEE STD. DWG. 721.
2. ALL CONCRETE FOR THRUST BLOCKS SHALL BE CLASS "B".
3. CONCRETE ANCHORS ARE TO BE KEPT CLEAR OF ALL PIPE & VALVE JOINTS.
4. THRUST BLOCKS ARE TO BE USED WHERE PIPE SIZES DIFFER IN CROSS AND WHEN ONE OR MORE OPENINGS ARE PLUGGED.

STD. SPEC. SEC. 1	SAN DIEGO COUNTY ENGINEER DEPARTMENT STANDARD DRAWING	REVISION	BY	APPROVED	DATE
DRAWN BY <i>W.C.</i> CHECKED BY <i>W.C.</i>					
RECOMMENDED BY <i>W.C.</i>					
APPROVED BY COUNTY ENGINEER					
DATE <i>1-2-71</i>					
CONCRETE THRUST BLOCKS for CAST IRON FITTINGS		SCALE: NONE			
		DRAWING NUMBER 720-T			

NOTES:

1. BASED ON 225 PSI TEST PRESSURE AND BEARING VALUES OF DRY SOILS.
2. VALUES FROM CURVES ARE FOR TEES & BLAD ENDS, I.e. STRAIGHT-LINE THRUST.
FOR 90° BEND: 1/2 VALUE FROM CURVE.

25°	0.8
22 1/2°	0.4
3. FOR CONDITIONS NOT COVERED BY CURVES, SPECIAL THRUST BLOCKS MUST BE COMPUTED & APPROVED BY THE COUNTY ENGINEER DEPARTMENT
4. THRUST BLOCKS DIMENSIONED ON PLANS ARE BASED ON 2000 LB/30 FT. BEARING VALUES, OR AS OTHERWISE NOTED.
5. FOR LOCATION OF THRUST BLOCKS SEE STD. DWG. 720.



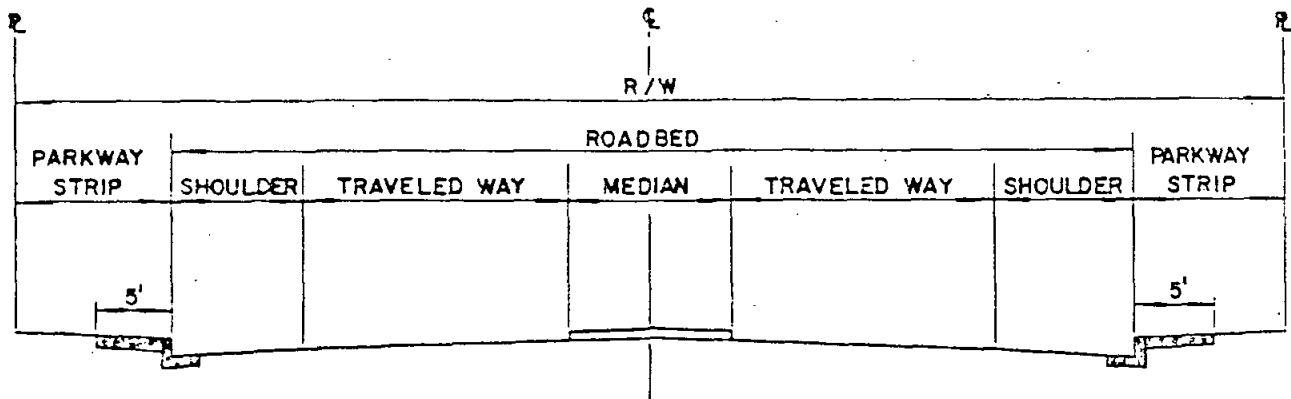
STD. SPEC. SEC. 1 DRAWN BY <i>W.H.</i> CHECKED BY <i>W.H.</i> RECOMMENDED BY <i>W.H.</i> APPROVED BY COUNTY ENGINEER DATE: <i>10/1/50</i>	SAN DIEGO COUNTY ENGINEER DEPARTMENT STANDARD DRAWING CONCRETE THRUST BLOCKS BEARING AREAS	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">REVISION</td> <td style="width: 20%;">BY</td> <td style="width: 20%;">APPROVED</td> <td style="width: 40%;">DATE</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td colspan="4">SCALE: NONE</td> </tr> <tr> <td colspan="2">DRAWING NUMBER</td> <td colspan="2">721-T</td> </tr> </table>	REVISION	BY	APPROVED	DATE					SCALE: NONE				DRAWING NUMBER		721-T	
REVISION	BY	APPROVED	DATE															
SCALE: NONE																		
DRAWING NUMBER		721-T																

COUNTY OF SAN DIEGO

INDEX OF DESIGN STANDARDS

<u>Number</u>	<u>Title</u>
DS-1	Typical Roadway Sections
DS-2	Hillside Residential Street, Alt. No. 1
DS-3	Hillside Residential Street, Alt. No. 2
DS-4	Hillside Residential Street, Alt. No. 3
DS-5	Temporary Turn-Around at Dead-End Street
DS-6	Turn-Around and Calculations
DS-7	Asphalt Concrete Driveway
DS-8	Lot Grading
DS-9	Fencing, Cut Banks
DS-10	Grading of Slopes
DS-11	Required Setbacks
DS-12	Construction Plan Symbols
DS-13	Standard Street Sign

TYPICAL ROADWAY SECTION SYMMETRICAL ABOUT CENTERLINE



TYPE OF ROAD OR STREET	R/W	ROADBED	TRAVELED WAY	SHOULDER	MEDIAN	PARKWAY STRIP
PRIME ARTERIAL TRAFFIC VOLUME OF 16,000 V.P.D. OR MORE	126'	106'	36'	8'	18'	10'
MAJOR ROAD TRAFFIC VOLUME 10,000 TO 16,000 V.P.D.	102'	82'	24'	8'	18'	10'
COLLECTOR ROAD TRAFFIC VOLUME 5,000 TO 10,000 V.P.D.	84'	64'	24'	8'	0'	10'
RESIDENTIAL COLLECTOR STREET TRAFFIC VOLUME FROM 150 TO 700 DWELLING UNITS	60'	40'	12'	8'	0'	10'
RESIDENTIAL STREET TRAFFIC VOLUME FROM 150 DWELLING UNITS OR LESS	56'	36'	12'	6'	0'	10'
RESIDENTIAL CUL-DE-SAC STREET TRAFFIC VOLUME FROM 20 UNITS OR LESS, 600' MAX. LENGTH	52'	32'	12'	4'	0'	10'
RESIDENTIAL LOOP STREET TRAFFIC VOLUME FROM 20 UNITS OR LESS, 600' MAX. LENGTH	52'	32'	12'	4'	0'	10'
* COMM. & IND. COLLECTOR STREET TRAFFIC VOLUME FROM COMMERCIAL OR INDUSTRIAL ST'S	88'	68'	24'	10'	0'	10'
* COMM. & IND. STREET TRAFFIC VOLUME FROM ABUTTING COMMERCIAL LOTS	72'	52'	16'	10'	0'	10'
* COMM. & IND. CUL-DE-SAC STREET TRAFFIC VOLUME FROM ABUTTING COMMERCIAL LOTS	72'	52'	16'	10'	0'	10'
FRONTAGE ROAD ADJACENT TO FREEWAY RIGHT OF WAY		SEE	NOTE	N# 4		

* COMM. & IND. = COMMERCIAL & INDUSTRIAL

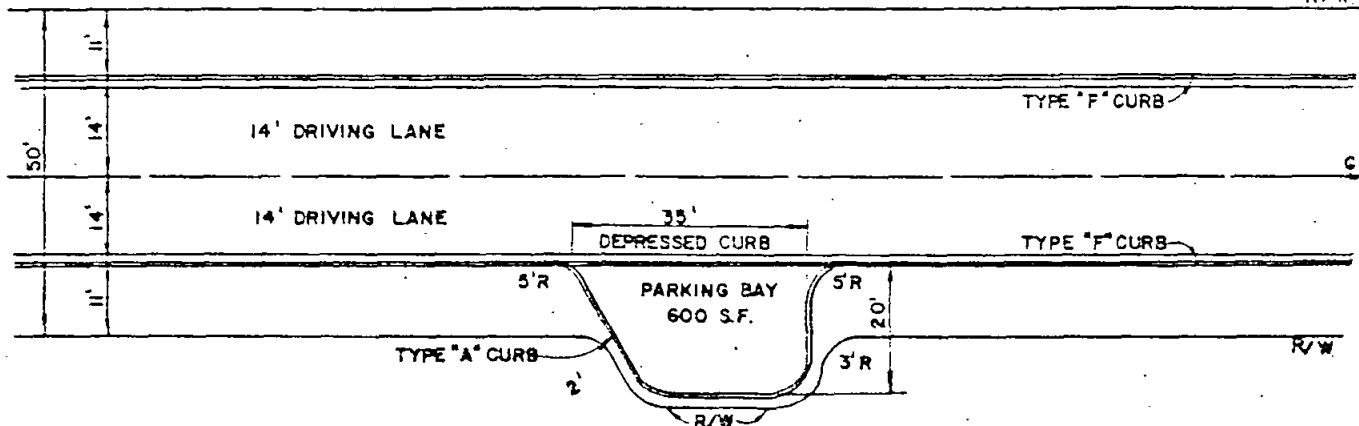
NOTE: 1. STREET CLASSIFICATIONS (EXCEPT PRIME ARTERIAL) AND TYPICAL ROADWAY SECTIONS FROM SAN DIEGO COUNTY TECHNICAL ROAD POLICY (JAN. 6, 1964).

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

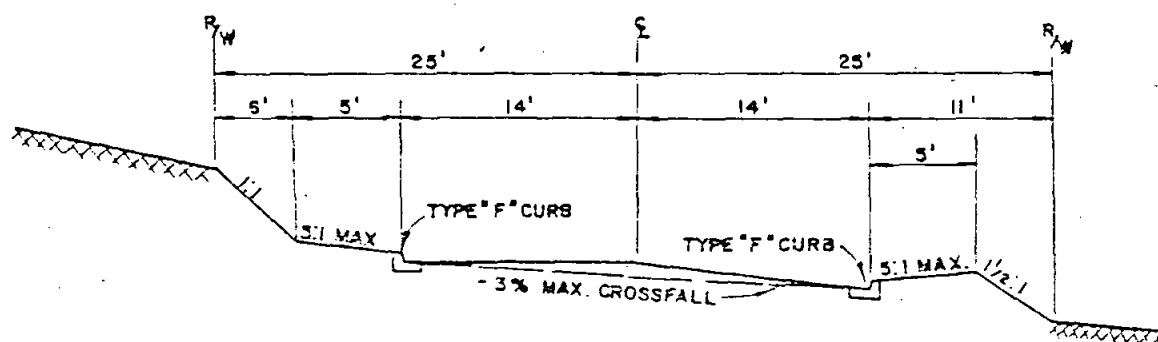
3. SEE SAN DIEGO COUNTY STANDARD DRAWINGS AND SAN DIEGO COUNTY TECHNICAL ROAD POLICY FOR SIDEWALK, CURBS, AND ROADWAY REQUIREMENTS.

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

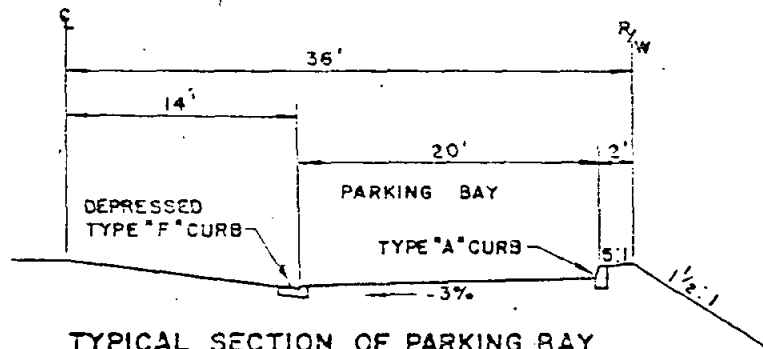
DRAWN BY _____	CHECKED BY _____	SAN DIEGO COUNTY DESIGN STANDARD	REVISION _____			
RECOMMENDED BY <u>WJB</u>			REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER			FORMERLY STANDARD DRAWING 310-3			
DATE <u>2/24/73</u>			NUMBER DS-1			
H2-1111 R.C.E. 10358		TYPICAL ROADWAY SECTIONS				



PLAN



TYPICAL ROADWAY SECTION



TYPICAL SECTION OF PARKING BAY

NOTES:

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

PARKING STALLS PER LOT.

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

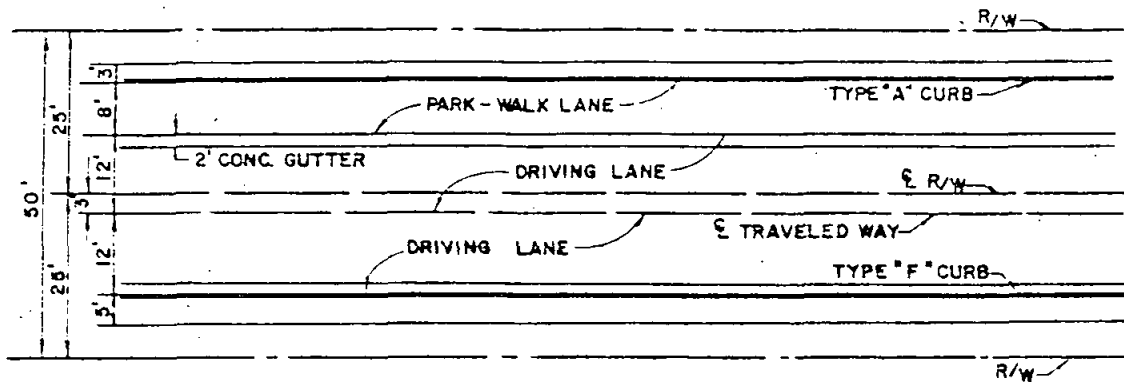
DRAWN BY _____	CHECKED BY _____
RECOMMENDED BY <i>[Signature]</i>	
APPROVED BY COUNTY ENGINEER <i>[Signature]</i>	
R.C.E. 10359	
DATE 2/24/75	

SAN DIEGO COUNTY DESIGN STANDARD

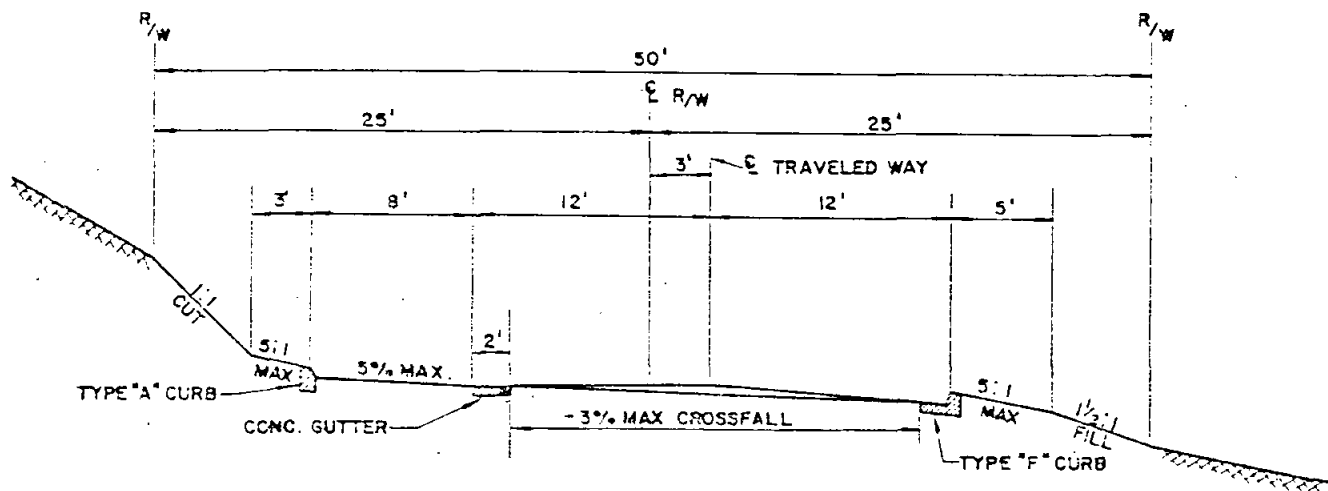
HILLSIDE RESIDENTIAL STREET

ALTERNATE No. 1

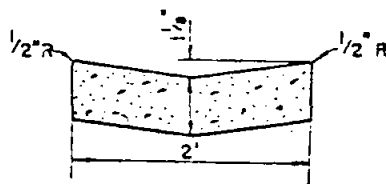
REVISION	BY	APPROVED	DATE
FORMERLY STANDARD DRAWING 311-1			
NUMBER		DS-2	



PLAN



TYPICAL ROADWAY SECTION



CONCRETE GUTTER
DETAIL

NOTES:

1. SEE SAN DIEGO COUNTY STANDARD DRAWINGS AND SAN DIEGO COUNTY TECHNICAL ROAD POLICY FOR CURB, SIDEWALK & ROADWAY REQUIREMENTS.
2. NATURAL SLOPE EXCEEDS 20% AS DEFINED IN SAN DIEGO COUNTY TECHNICAL ROAD POLICY SECT. 4.22
3. USE OF THIS STREET SECTION LIMITED TO AREAS IN WHICH AT LEAST 30% OF THE LOTS HAVE A NET AREA

OF NOT LESS THAN 20,000 SQUARE FEET.

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

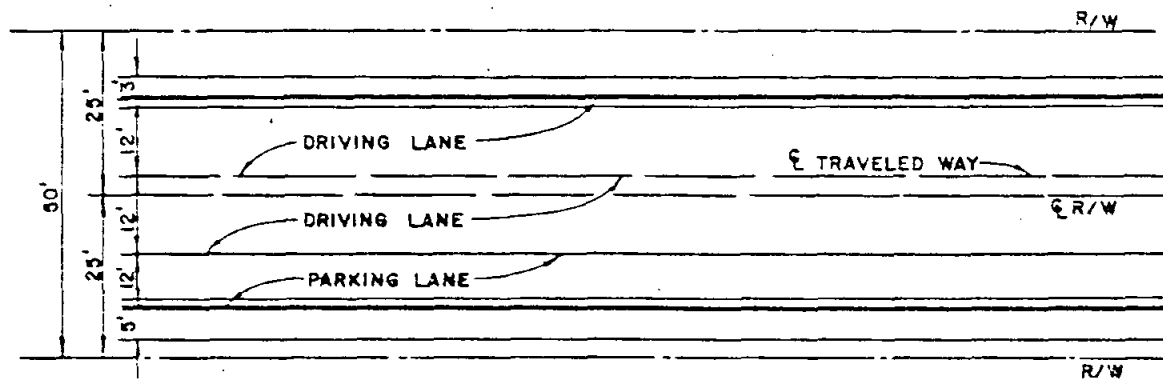
DRAWN BY	CHECKED BY
RECOMMENDED BY	
APPROVED BY COUNTY ENGINEER	
DATE	

SAN DIEGO COUNTY DESIGN STANDARD

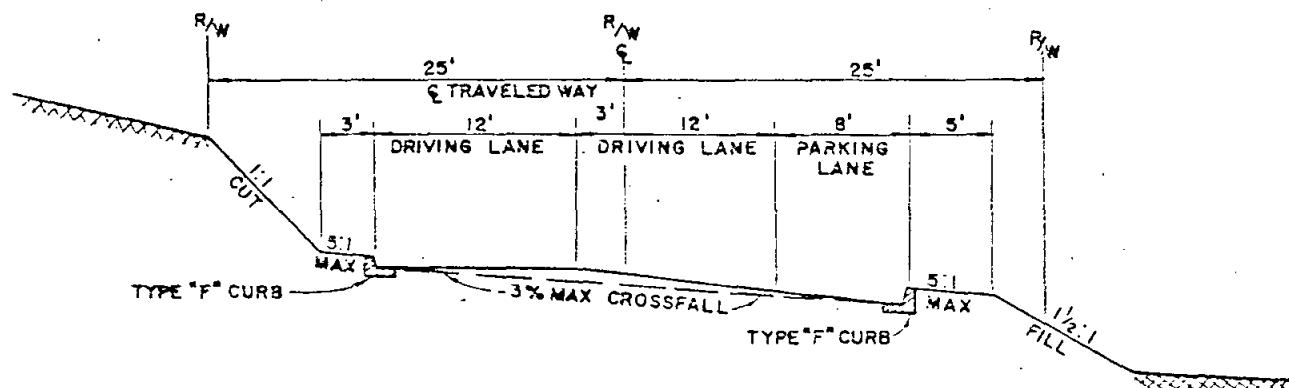
HILLSIDE RESIDENTIAL STREET

ALTERNATE No. 2

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



PLAN



TYPICAL ROADWAY SECTION

NOTES:

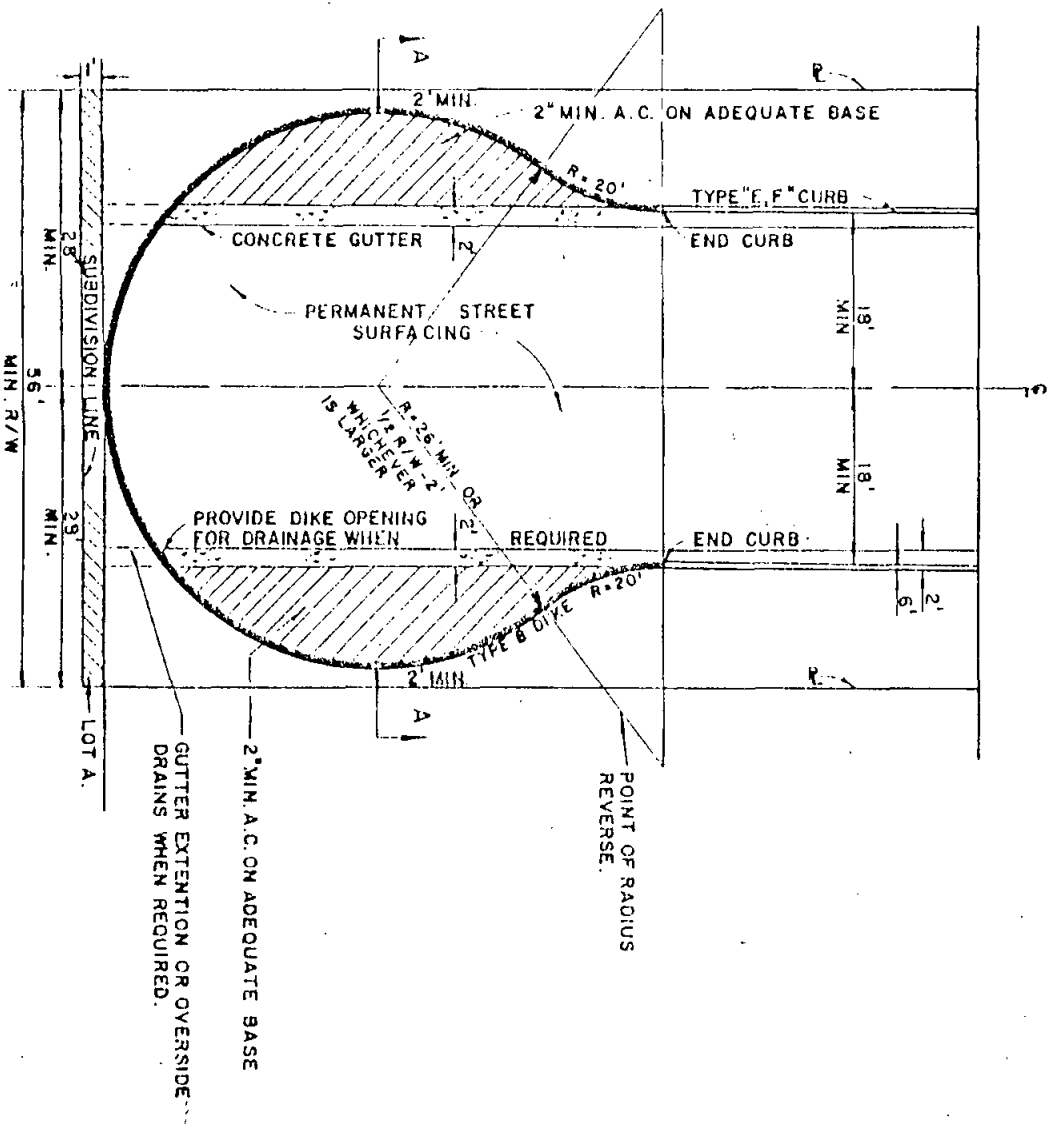
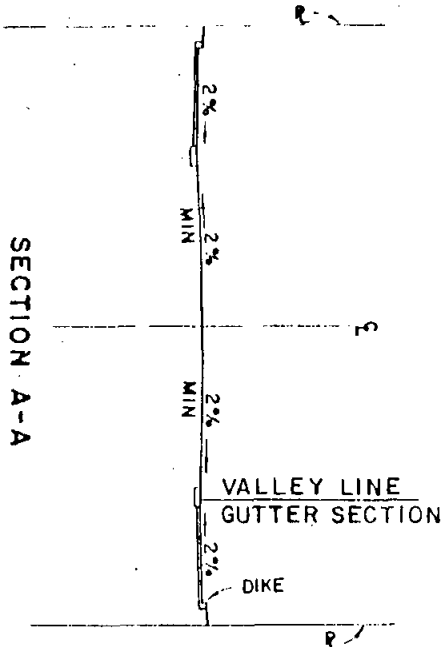
1. SEE SAN DIEGO COUNTY STANDARD DRAWINGS AND SAN DIEGO COUNTY TECHNICAL ROAD POLICY FOR CURB, SIDEWALK & ROAD REQUIREMENTS.
2. NATURAL SLOPE EXCEEDS 20% AS DEFINED IN SAN DIEGO COUNTY TECHNICAL ROAD POLICY SECT. 4.22.
3. USE OF THIS STREET SECTION LIMITED TO AREAS IN WHICH AT LEAST 80% OF THE LOTS HAVE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

DRAWN BY	CHECKED BY
RECOMMENDED BY	
APPROVED BY COUNTY ENGINEER	
DATE	

SAN DIEGO COUNTY DESIGN STANDARD

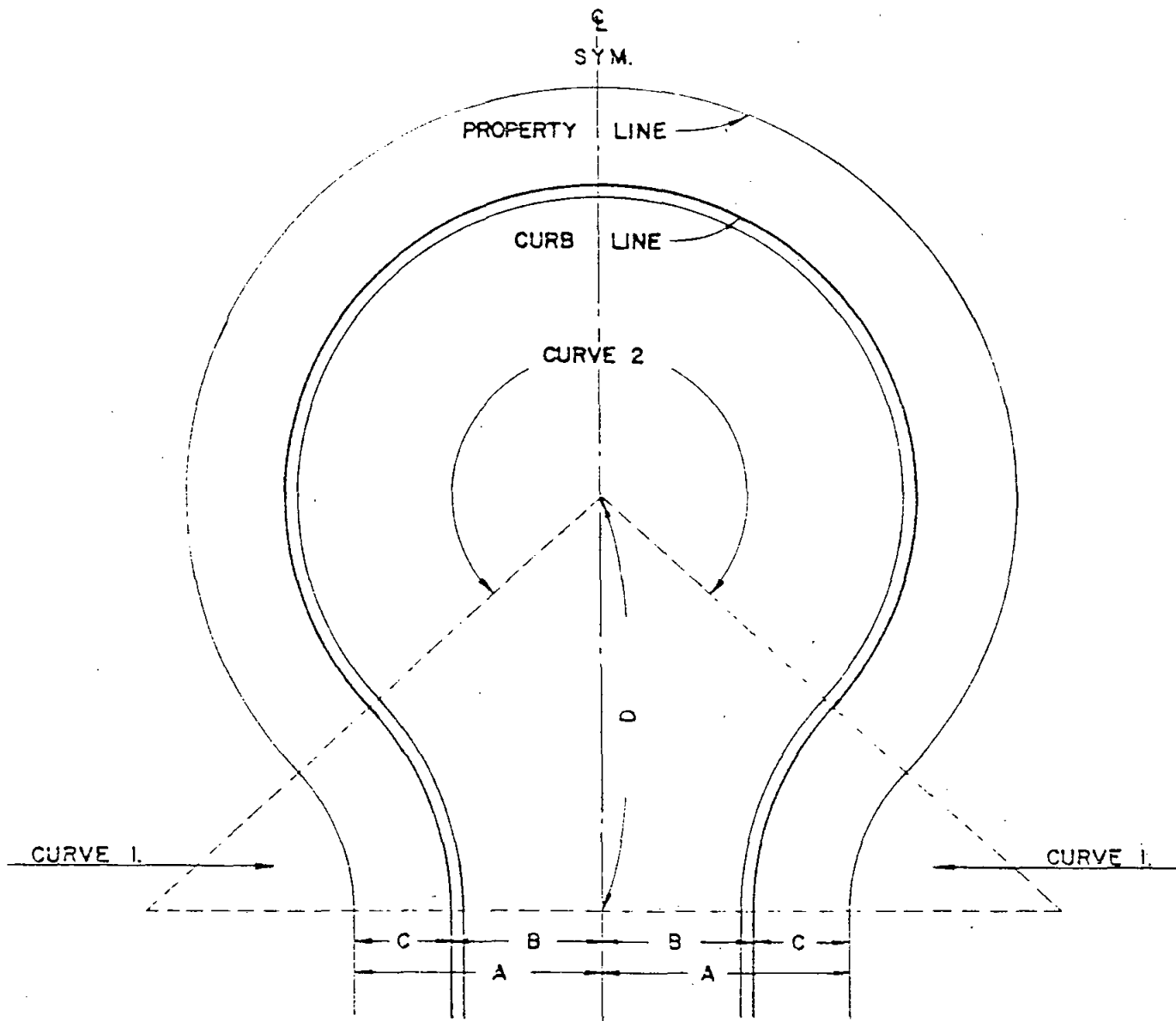
HILLSIDE RESIDENTIAL STREET
ALTERNATE No. 3

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



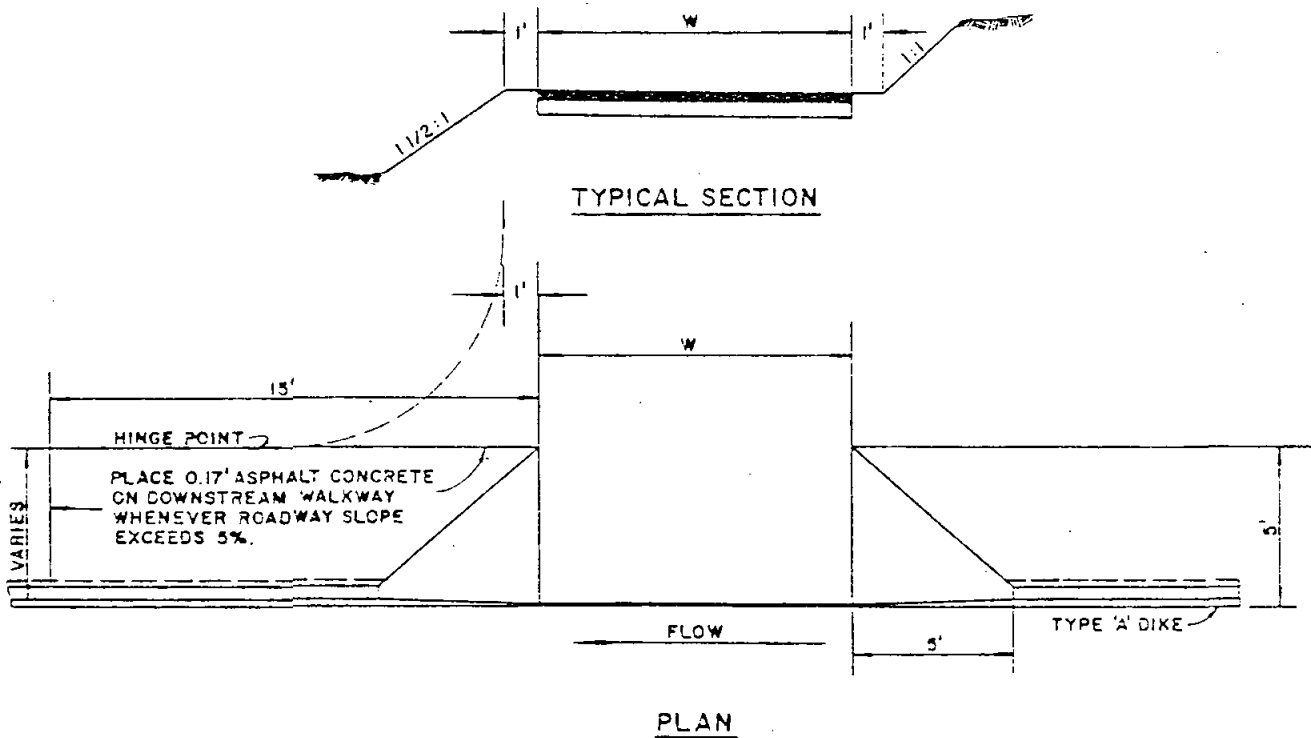
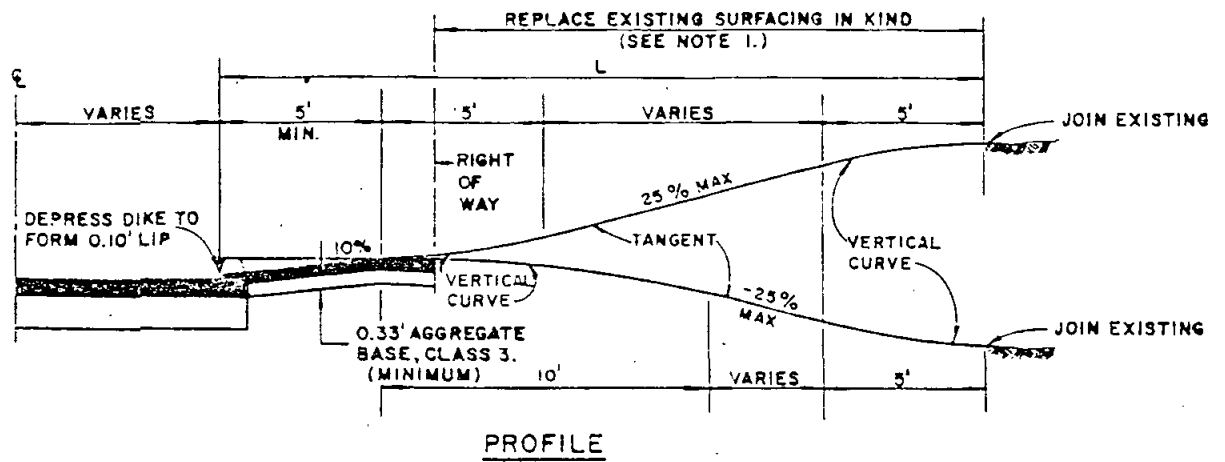
NOTE:
1. FOR USE ON EITHER 36' OR 40' WIDTH STREETS.

DRAWN BY _____	CHECKED BY _____	SAN DIEGO COUNTY DESIGN STANDARD	TEMPORARY TURN-AROUND AT DEAD-END STREET	T. STUBBINS & ASSOCIATES, Inc. 1000 K STREET, SAN DIEGO, CALIF. 92101	
RECOMMENDED BY <u>H. J. JONES</u>					
APPROVED BY COUNTY ENGINEER <u>H. J. JONES</u> S.A.C.E. 10339					
DATE <u>3/14/76</u>					
		REVISION	BY	APPROVED	DATE
		FORWERTY STANDARD DRAWING 314-1			
		NUMBER	DS-5		



DIMENSIONS					CURVE 1.							CURVE 2						
R _W	A	B	C	D	Δ	CURB			PROP.			Δ	CURB			PROP.		
						R	L	T	R	L	T		R	L	T			
52'	26'	16'	10'	50.95'	46°42' 30"	32'	26.09'	13.82'	22'	17.93'	9.50'	273°25' 00"	38'	181.34'	43'	229.06'		
56'	28'	18'	10'	50.99'	42°50' 00"	37'	27.66'	14.52'	27'	20.18'	10.59'	255°40' 00"	38'	175.20'	48'	222.56'		
60'	30'	20'	10'	62.15'	29°35' 31"	100'	51.65'	26.41'	90'	46.48'	23.77'	239°11' 02"	39'	158.63'	48'	200.33'		
72'	36'	25'	10'	81.39'	32°31' 36"	100'	37.35'	29.49'	90'	51.62'	26.34'	245°43' 12"	50'	214.43'	60'	257.32'		

DRAWN BY _____	CHECKED BY _____	SAN DIEGO COUNTY DESIGN STANDARD	FORMERLY STANDARD DRAWING 304-3			
RECOMMENDED BY <u>L. L. B.</u>			REVISION	BY	APPROVED	DATE
APPROVED BY, COUNTY ENGINEER			FORMERLY STANDARD DRAWING 304-3			
<u>H. H. H.</u> I.R.C.E. 10359			NUMBER DS-6			
DATE <u>2/7/76</u>		TURNAROUND AND CALCULATIONS				



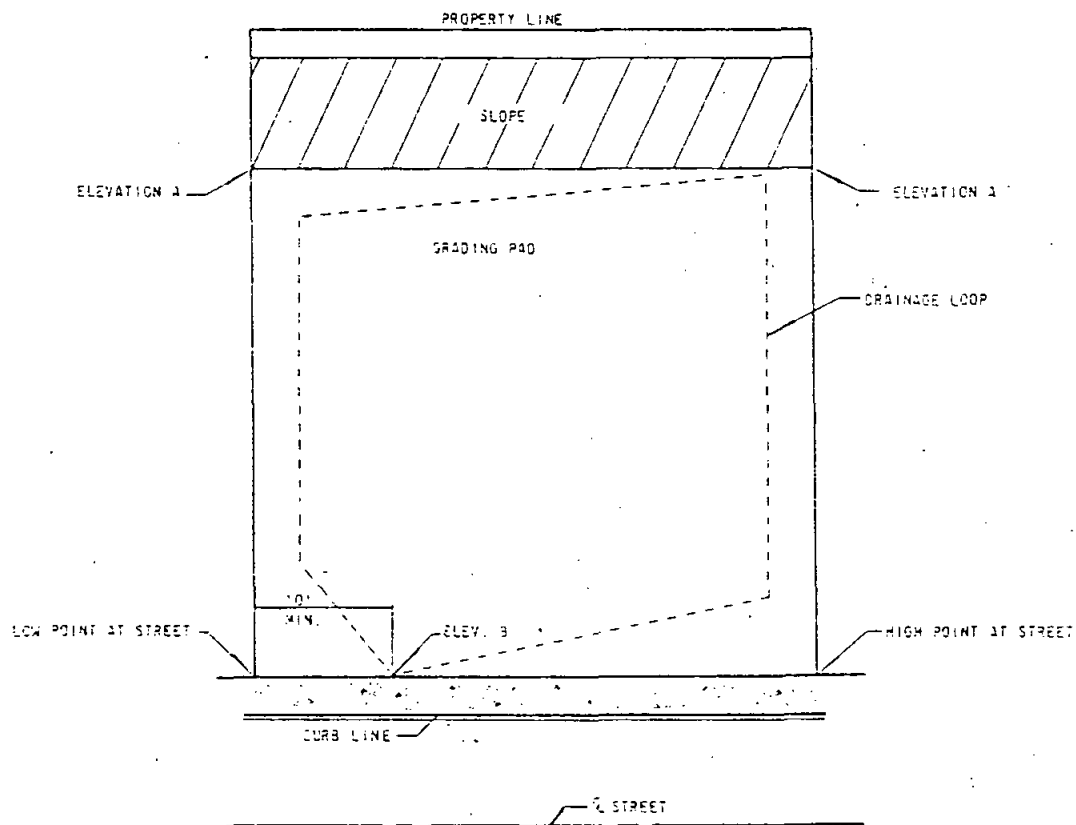
NOTES:

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

DRIVEWAY PAVING SCHEDULE

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

DRAWN BY _____	CHECKED BY _____	SAN DIEGO COUNTY DESIGN STANDARD	TITLE <u>RCV Roadway Design</u>			
RECOMMENDED BY <u>WTS</u>			% to VC <u>RCV Roadway Design</u>			
APPROVED BY COUNTY ENGINEER			REVISION	BY	APPROVED	DATE
<u>H. H. H.</u> (P.C.E. 10358)			FORMERLY STANDARD DRAWING 227			
DATE <u>1/22/71</u>		ASPHALT CONCRETE DRIVEWAY	NUMBER DS-7			

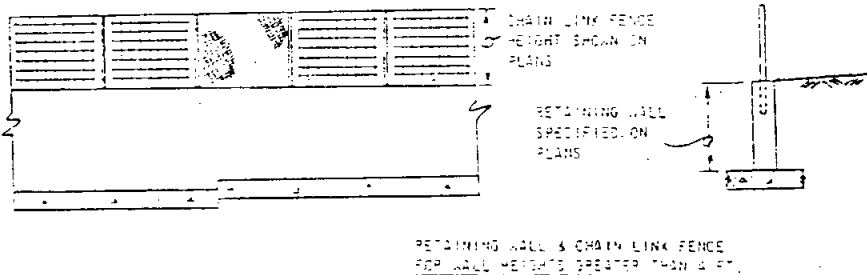
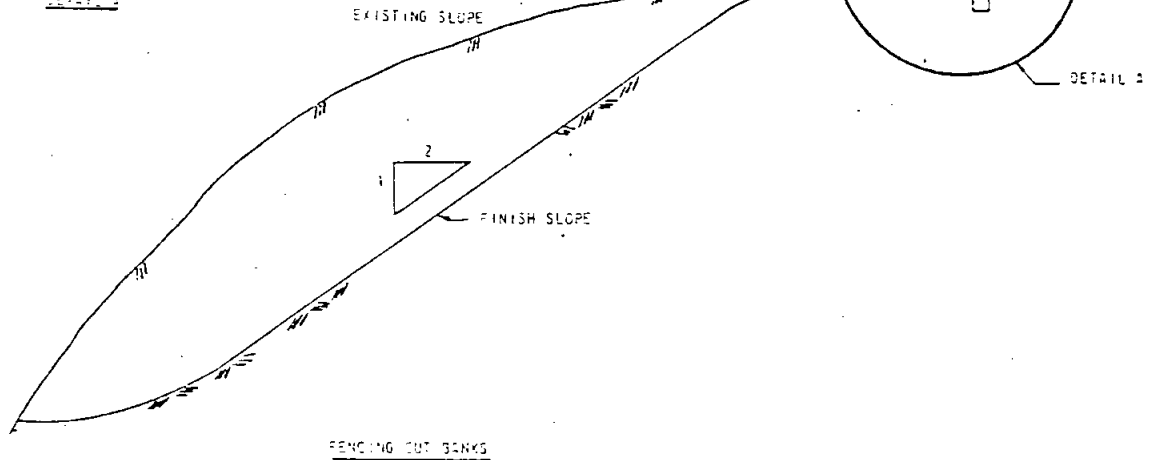
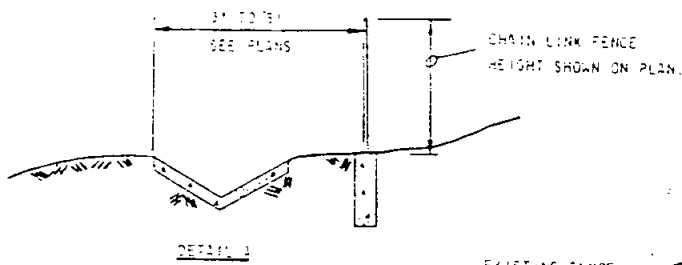


TYPICAL FINISHED GRADING

NOTES:

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

DRAWN BY _____	CHECKED BY _____	SAN DIEGO COUNTY DESIGN STANDARD	REVISION	BY	APPROVED	DATE
RECOMMENDED BY <u>WCB</u>						
APPROVED BY COUNTY ENGINEER		LOT GRADING	FORMERLY STANDARD DRAWING 2317			
<u>Richard J.C.E. 10358</u>						
DATE <u>7/14/76</u>			NUMBER DS-8			



NOTES:

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

DRAWN BY _____	CHECKED BY _____	SAN DIEGO COUNTY DESIGN STANDARD	REVISION BY APPROVED DATE		
RECOMMENDED BY <u>WEP</u>			FORMERLY STANDARD DRAWING 232T		
APPROVED BY/COUNTY ENGINEER _____			NUMBER DS-9		
DATE <u>2/26/76</u>	R.C.E. 10358				

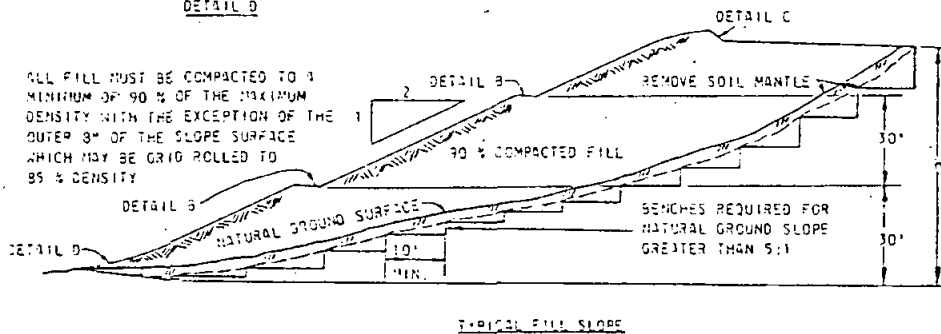
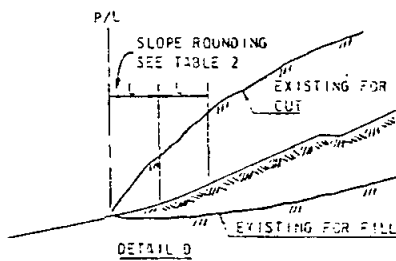
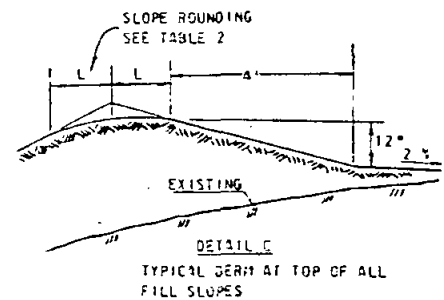
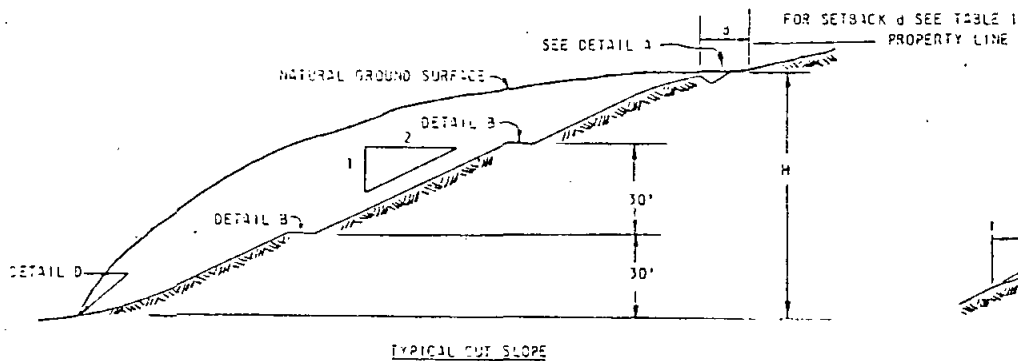


TABLE 1
REQUIRED SETBACK

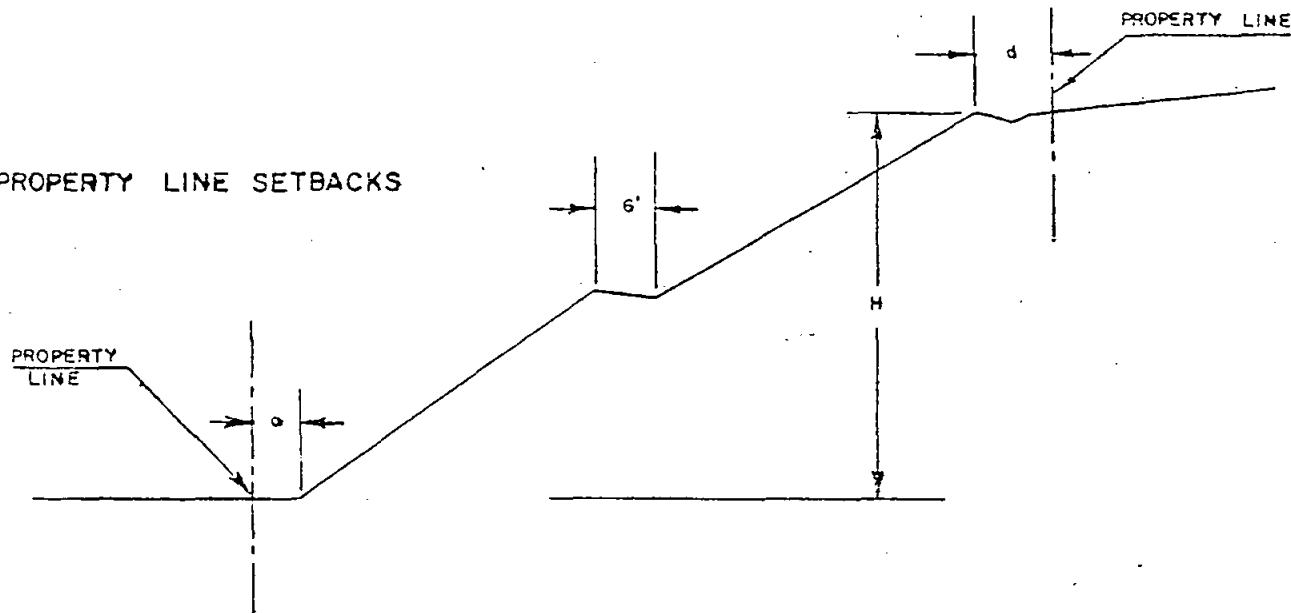
H FEET	S
0 - 15'	3'
OVER 15'	5'

TABLE 2
SLOPE ROUNDING

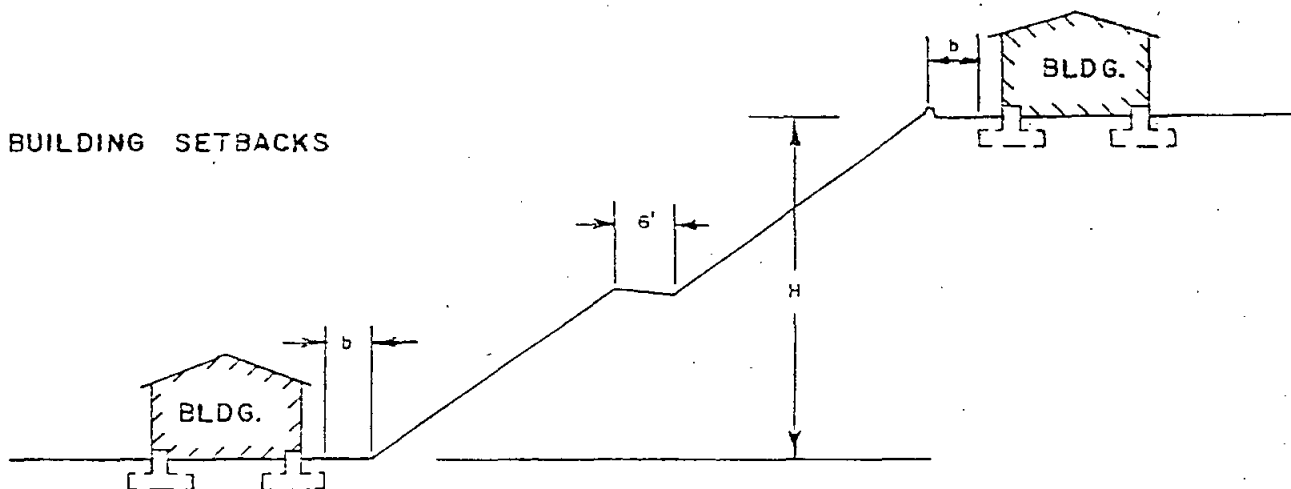
H FEET	L FEET
0' - 5'	-
5' - 20'	2.5'
20' - 40'	5'
OVER 40'	10'

DRAWN BY _____	CHECKED BY _____	SAN DIEGO COUNTY DESIGN STANDARD	T. P. L. 3-2-10 <i>U. K. L. R. P. 10/10/10</i>			
RECOMMENDED BY <i>WCB</i>			REVISION	BY	APPROVED	DATE
APPROVED BY COUNTY ENGINEER <i>H. P. L. R.C.E. 10358</i>			FORMERLY STANDARD DRAWING 208-17			
DATE <i>7/27/76</i>			NUMBER DS - 10			
GRADING OF SLOPES						

PROPERTY LINE SETBACKS



BUILDING SETBACKS



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

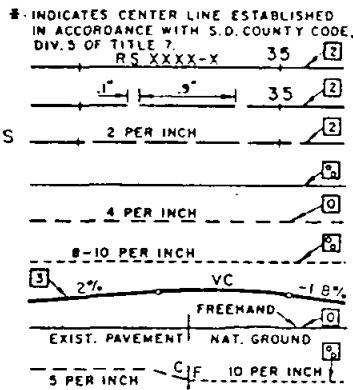
- a. DISTANCE FROM TOE OF SLOPE TO PROPERTY LINE
- b. DISTANCE FROM EDGE OF FOUNDATION TO TOE OR TOP OF SLOPE.
- d. DISTANCE FROM TOP OF SLOPE TO PROPERTY LINE.
- H. TOTAL SLOPE HEIGHT MEASURED VERTICALLY.

DRAWN BY _____	CHECKED BY _____	SAN DIEGO COUNTY DESIGN STANDARD	REVISION	BY	APPROVED	DATE
RECOMMENDED BY <u>WFB</u>			FORMERLY STANDARD DRAWING 209			
APPROVED BY COUNTY ENGINEER <u>[Signature]</u> S.C.E. 10358			NUMBER DS - 11			
DATE <u>7/22/76</u>						

PROPOSED CONSTRUCTION

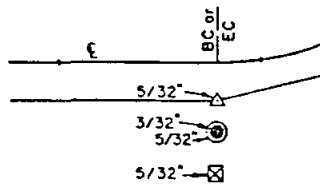
LINES

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



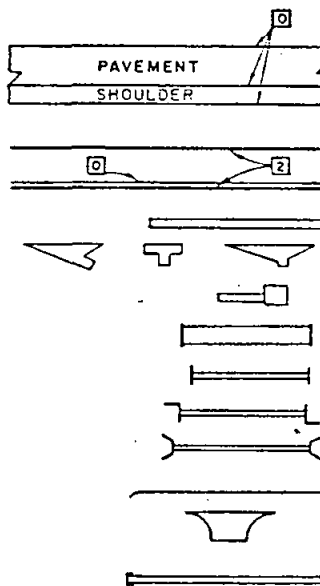
POINTS

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

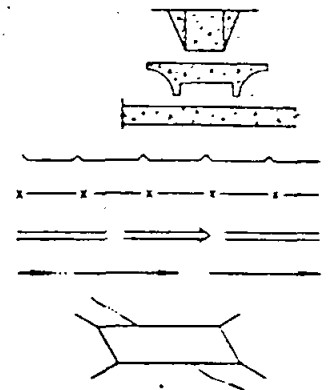


CONSTRUCTION

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

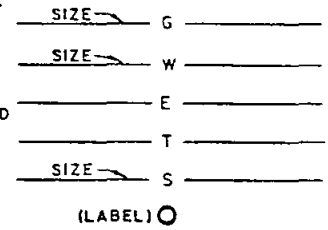


DRIVEWAY APRONS P C C
CONCRETE CROSS GUTTER
SIDEWALK
RETAINING WALL
FENCE (LABEL TYPE)
DITCH, LINED
DITCH, UNLINED
BRIDGE



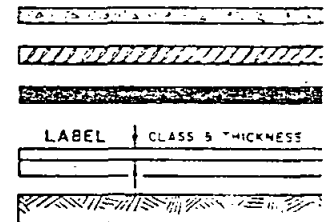
UTILITIES

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



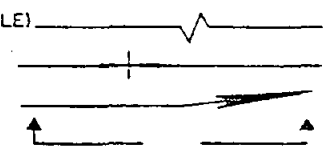
STRUCTURAL SYMBOLS

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



MISCELLANEOUS SYMBOLS

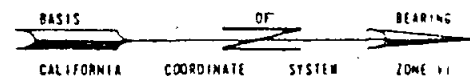
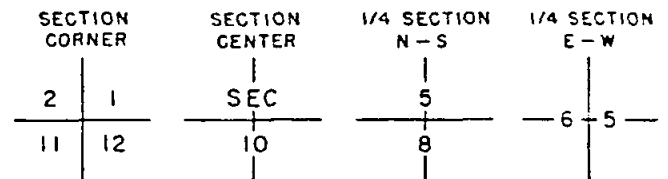
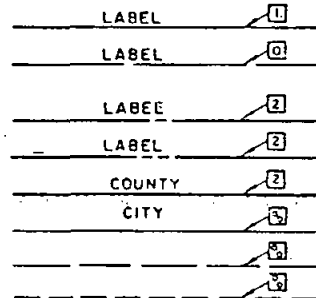
CONTRACTED LINE (NOT TO SCALE)
LIMIT ARROWS
PROJECT, WORK LIMIT
CUTTING PLANE



CADASTRAL SYMBOLS

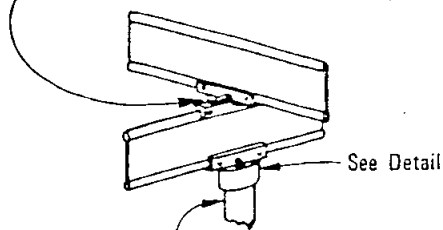
LAND LINES

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

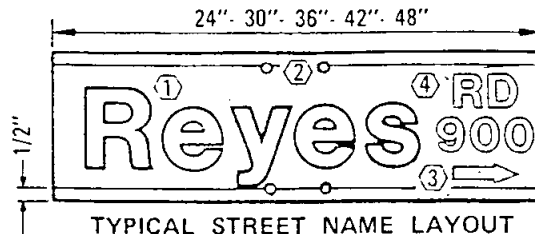


DRAWN BY	CHECKED BY	SAN DIEGO COUNTY DESIGN STANDARD	TITLE			
RECOMMENDED BY			REVISION			
APPROVED BY COUNTY ENGINEER			BY			
			APPROVED			
		CONSTRUCTION PLAN SYMBOLS	DATE			
			FORMERLY STANDARD DRAWING			
DATE			NUMBER DS-12			

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



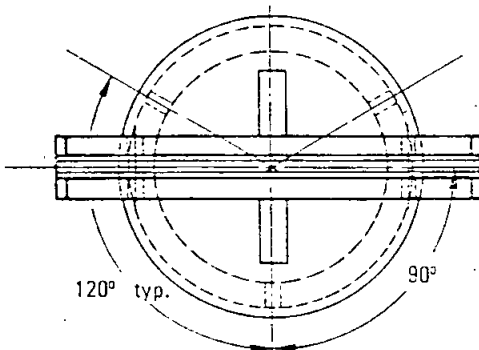
10' x 2 7/8" O.D. aluminum alloy 6063-T6, clear anodized pole.



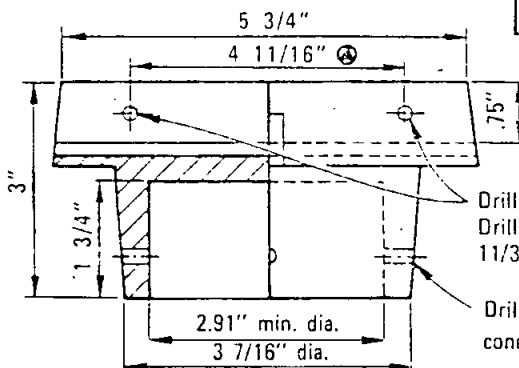
TYPICAL STREET NAME LAYOUT

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

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



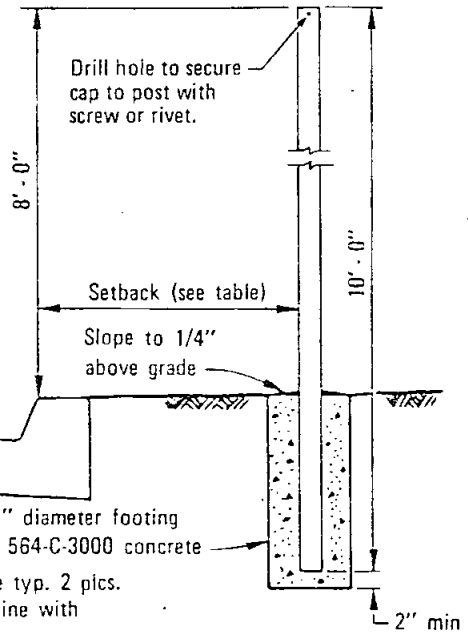
POST CAP DETAIL



HALF-SECTION DETAIL

.281" slot

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

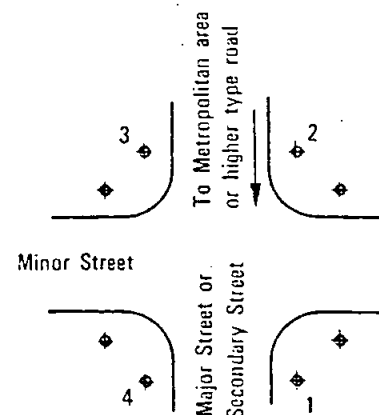


Drill 11/32" hole thru near side flange typ. 2 plcs. Drill and tap for 5/16"—18 bolts in line with 11/32" diameter holes.

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

NOTES

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



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

DRAWN BY <i>CR</i>	CHECKED BY <i>RF</i>
RECOMMENDED BY <i>RF</i>	
APPROVED BY COUNTY ENGINEER	
<i>K. L. Bunker</i> R.C.E. 10358	
DATE <i>10/6/76</i>	

SAN DIEGO COUNTY DESIGN STANDARD

STANDARD STREET SIGN

CAP. DIM.	C.S.	D.S.	10/6/76
REVISION	BY	APPROVED	DATE
FORMERLY STANDARD DRAWING 301-2			
NUMBER		DS-13	

STATE COORDINATE FACTORS FOR CONVERTING GROUND DISTANCES TO GRID DISTANCES

ELEVATION FACTOR

FORMULA IN SPECIAL PUBLICATION Nº 235, PAGE 13.

$$F = 1 - \frac{H}{R}$$

H = ELEVATION (AVG. FOR SHORT JOBS)
R = 20,906,000' (RADIUS OF EARTH)

$$\frac{H}{R} = \frac{1.00000000}{20,906,000} = \frac{.}{.} *$$

SCALE FACTOR

Y COORDINATE AT POINT = , , .

Y Coord.	a	°	'	=	, .
	b	°	'	=	, .
	c	Diff.		=	, .

Y COORD.	a	°	'	=	, .
	b	°	'	=	, .
	d	Diff.		=	, .

$$\frac{d}{c} = \frac{, .}{, .} = e .$$

SCALE

b	°	'	=	.
a	°	'	=	.
f	Diff.		=	.

$$SF = (b) - [(f)(e)]$$

f	=	.
e	=	.
(f)(e)	=	.

b	=	.
(f)(e)	=	.
SF	=	.

COMBINED FACTOR

$$. * . = .$$

DRAWN BY _____	SAN DIEGO COUNTY ENGINEER DEPARTMENT DESIGN STANDARDS	REVISION	BY	APPROVED	DATE
CHECKED BY _____					
RECOMMENDED BY _____					
APPROVED BY _____	GRID DISTANCES	DRAWING NUMBER			
PRINCIPAL CIVIL ENG. OFF.					
DATE _____					

TABLE of OFFSETS from TANGENT for CIRCULAR CURVES

RADIUS	DISTANCE FROM EC OR BC (ALONG TANGENTS)											
	50'	100'	150'	200'	250'	300'	400'	500'	600'	700'	800'	1000'
20,000	0.05	0.25	0.56	1.00	1.56	2.25	4.00	6.25	9.00	12.25	16.01	25.02
15,000	0.09	0.33	0.75	1.33	2.08	3.00	5.33	8.34	12.01	16.34	21.35	33.37
10,000	0.13	0.50	1.13	2.00	3.13	4.50	8.00	12.51	18.02	24.53	32.05	50.13
9,000	0.14	0.56	1.25	2.22	3.47	5.00	8.89	13.90	20.02	27.26	35.62	55.73
8,000	0.16	0.63	1.41	2.50	3.91	5.63	10.01	15.64	22.53	30.68	40.10	62.75
7,000	0.18	0.71	1.61	2.65	4.47	6.43	11.44	17.80	25.76	35.09	45.87	71.80
6,000	0.21	0.83	1.88	3.33	5.21	7.51	13.35	20.67	30.08	40.97	53.57	83.92
5,000	0.25	1.00	2.25	4.00	6.25	9.01	16.03	25.05	36.13	49.24	64.42	101.02
4,500	0.28	1.11	2.50	4.45	6.95	10.01	17.81	27.65	40.18	54.78	71.69	112.52
4,000	0.31	1.25	2.81	5.00	7.82	11.27	20.05	31.37	45.26	61.73	80.82	127.02
3,500	0.36	1.43	3.22	5.72	8.94	12.83	22.93	35.90	51.81	70.71	92.66	145.90
3,000	0.42	1.67	3.75	6.67	10.44	15.04	26.79	41.85	60.61	82.81	108.63	171.57
2,500	0.50	2.00	4.50	8.01	12.53	18.07	32.20	50.51	73.07	100.00	131.45	208.71
2,000	0.63	2.50	5.63	10.03	15.69	22.63	40.41	63.51	92.12	126.50	165.97	257.95
1,800	0.70	2.78	6.26	11.15	17.45	25.18	45.01	70.81	102.94	141.69	187.55	283.34
1,700	0.74	2.94	6.63	11.81	18.48	26.68	47.73	75.19	109.40	150.81	200.00	325.23
1,600	0.78	3.12	7.05	12.55	19.65	28.38	50.81	80.13	116.76	161.25	214.36	351.00
1,500	0.83	3.34	7.52	13.39	20.98	30.31	54.32	85.79	125.23	173.35	231.14	380.00
1,400	0.89	3.58	8.05	14.35	22.50	32.52	58.36	92.33	135.09	187.55	251.09	377.61
1,300	0.96	3.85	8.68	15.43	24.27	35.09	63.07	100.00	145.74	204.55	275.31	
1,250	1.00	4.01	9.03	16.10	25.26	36.53	65.73	104.36	153.41	214.39	289.53	
1,200	1.04	4.17	9.41	16.78	26.33	38.11	68.63	109.13	160.77	225.32	305.57	
1,100	1.14	4.55	10.28	18.34	28.79	41.70	75.31	120.20	178.05	251.47		
1,000	1.25	5.01	11.31	20.20	31.75	46.06	83.49	133.95	200.00	285.66		
900	1.39	5.57	12.59	22.50	35.42	51.47	93.77					
800	1.56	6.28	14.19	25.40	40.07	58.39	107.18					
750	1.67	6.70	15.15	27.16	42.89	62.61						
700	1.79	7.18	16.26	29.18	46.17	67.54						
650	1.93	7.74	17.54	31.53	50.00	73.37						
600	2.09	8.39	19.05	34.32	54.56	80.39						
550	2.28	9.17	20.85	37.65	60.10							
500	2.51	10.10	23.03	41.74	66.99							
450	2.79	11.25	25.74	46.89								
400	3.14	12.70	29.19	53.59								
300	4.20	17.16	40.19									
200	6.35	25.80	67.71									
100	13.40											

DERIVATION of TABLE

GIVEN: R & X

SOUGHT: OFFSET Y

$$(1) \sin \Delta = \frac{X}{R}$$

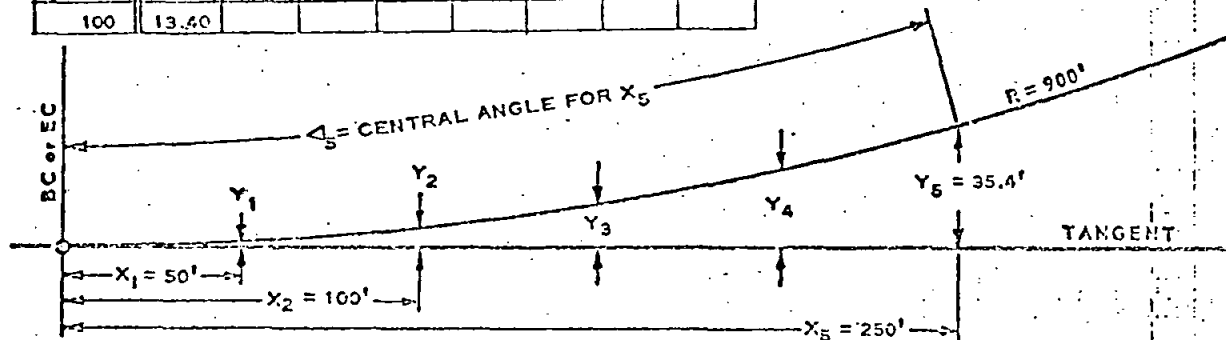
$$(2) Y = R \text{ VERS } \Delta = R (1 - \cos \Delta)$$

GIVEN: Y & X

SOUGHT: R

$$(1) \tan \frac{\Delta}{2} = \frac{Y}{X}$$

$$(2) R = \frac{X}{\sin \Delta}$$



NOTE: - For approx. results the simpler formula $(Y = \frac{X^2}{2R})$ may be used. (The error is 1% when $X = 0.2R$)

This table may be used for other Radii by moving decimal equally in R, X, & Y.

DRAWN BY _____
 CHECKED BY _____
 RECOMMENDED BY _____

APPROVED BY _____
 PRINCIPAL CIVIL ENG. OFF.
 DATE _____

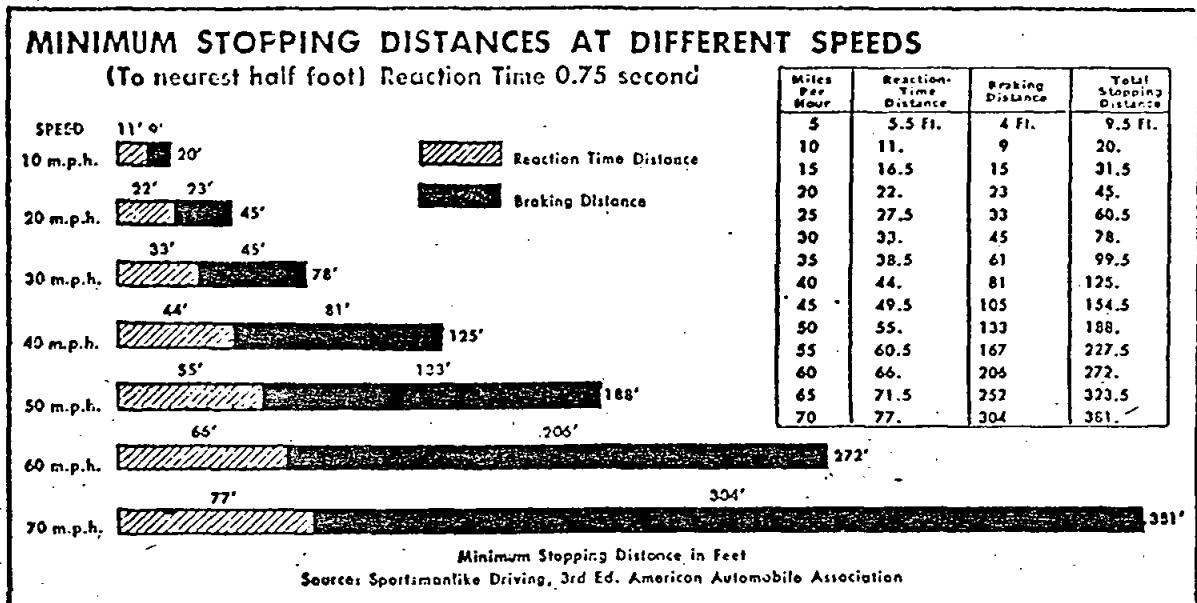
SAN DIEGO COUNTY ENGINEER DEPARTMENT
 DESIGN STANDARDS

CURVE TANGENT OFFSETS

REVISION BY APPROVED

DRAWING
 NUMBER

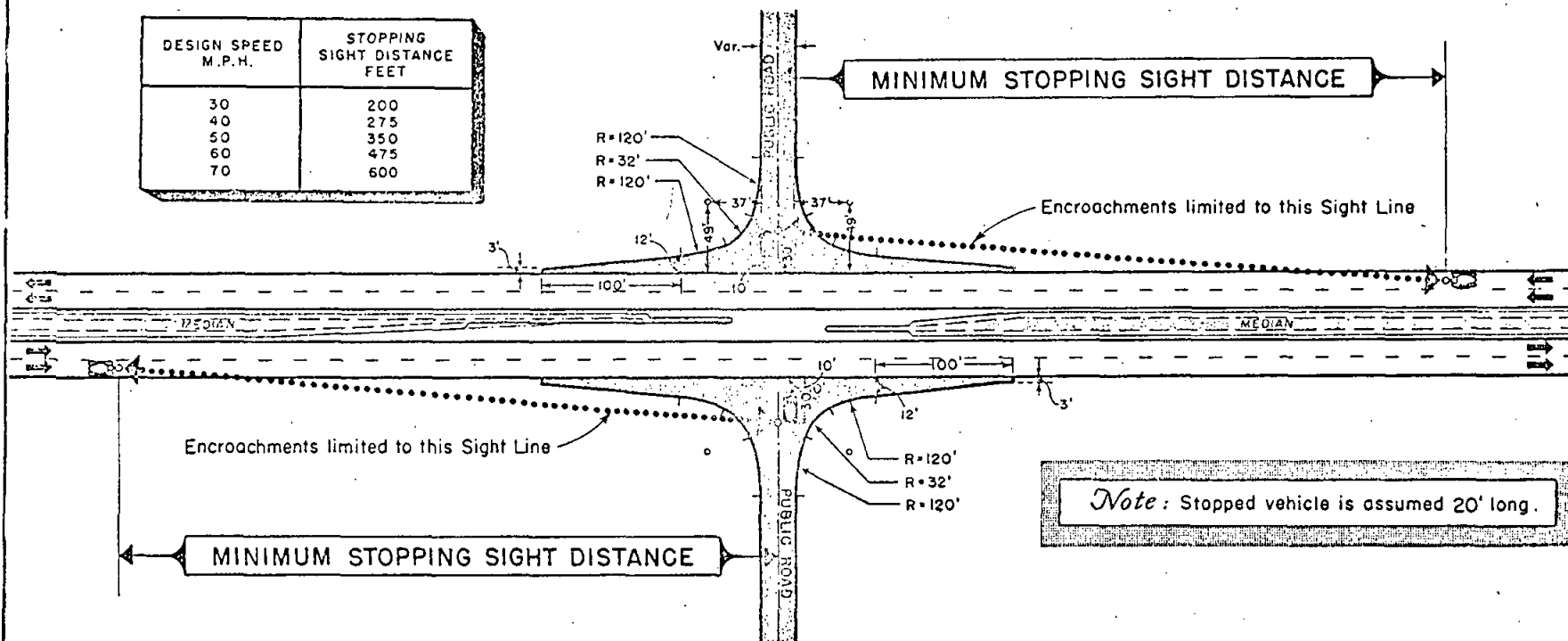
SPEED AND DISTANCE CHART



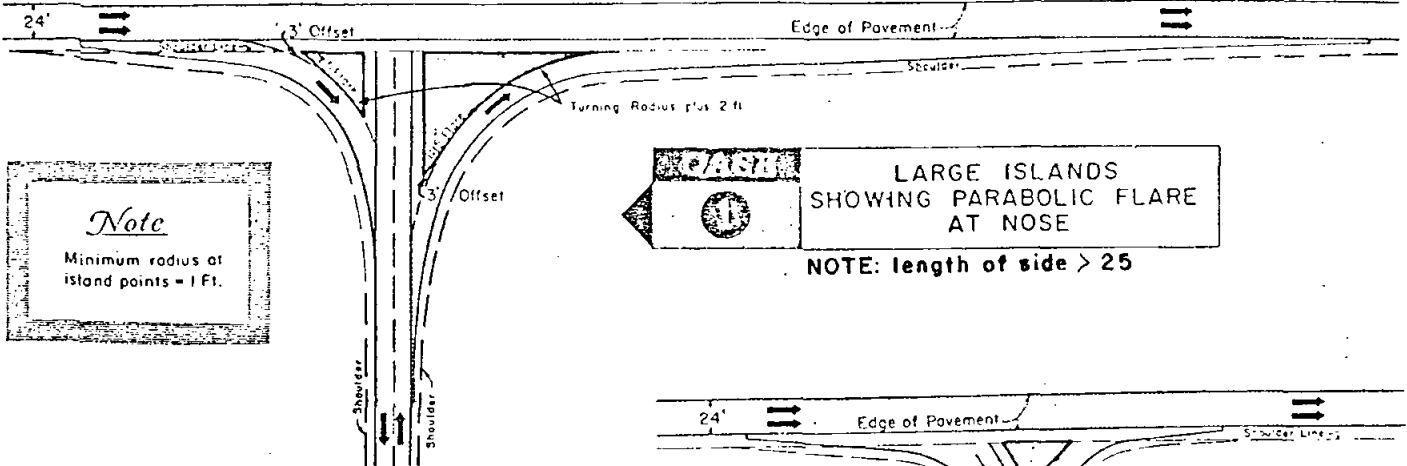
Prepared by Public Safety Department
AUTOMOBILE CLUB OF SOUTHERN CALIFORNIA

DRAWN BY _____ CHECKED BY _____ RECOMMENDED BY _____ APPROVED BY _____ PRINCIPAL CIVIL ENG. OFF. DATE _____	SAN DIEGO COUNTY ENGINEER DEPARTMENT DESIGN STANDARDS SPEED AND DISTANCE CHART	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left;">REVISION</th> <th style="text-align: left;">BY</th> <th style="text-align: left;">APPROVED</th> <th style="text-align: left;">DATE</th> </tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table> DRAWING NUMBER	REVISION	BY	APPROVED	DATE												
REVISION	BY	APPROVED	DATE															

DESIGN SPEED M.P.H.	STOPPING SIGHT DISTANCE FEET
30	200
40	275
50	350
60	475
70	600



DRAWN BY _____	CHECKED BY _____	RECOMMENDED BY _____	APPROVED BY _____	PRINCIPAL CIVIL ENG. OFF. DATE _____	SAN DIEGO COUNTY ENGINEER DEPARTMENT DESIGN STANDARDS	INTERSECTION SIGHT DISTANCE	DRAWING NUMBER	
					REVISION	BY	APPROVED	DATE

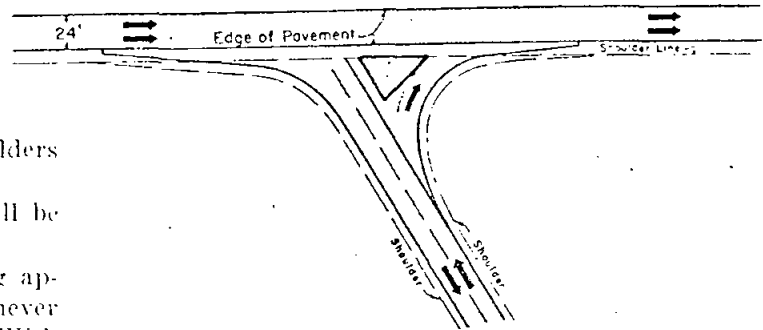


Traffic Islands

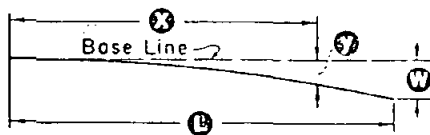
Traffic islands shall not encroach on the shoulders of the through facility.

In general, curbs outlining traffic islands shall be a mountable type.

At separate turning lanes, island noses facing approaching traffic shall be offset and flared whenever the curbs are offset less than the shoulder width. With reference to the normal curb line, noses on the left of traffic shall be offset 3 feet and noses on the right shall be offset 5 feet. Table gives standard parabolic flares to be used in island design. On curved alignment, parabolic flares may be omitted for small triangular traffic islands whose sides are less than 25 feet long. (See Case 2)



Parabolic Curb Flares Commonly Used



$$y = \frac{WX^2}{L^2}$$

- L = Length of flare in feet
- W = Maximum offset in feet
- X = Distance along base line in feet
- Y = Offset from base line in feet

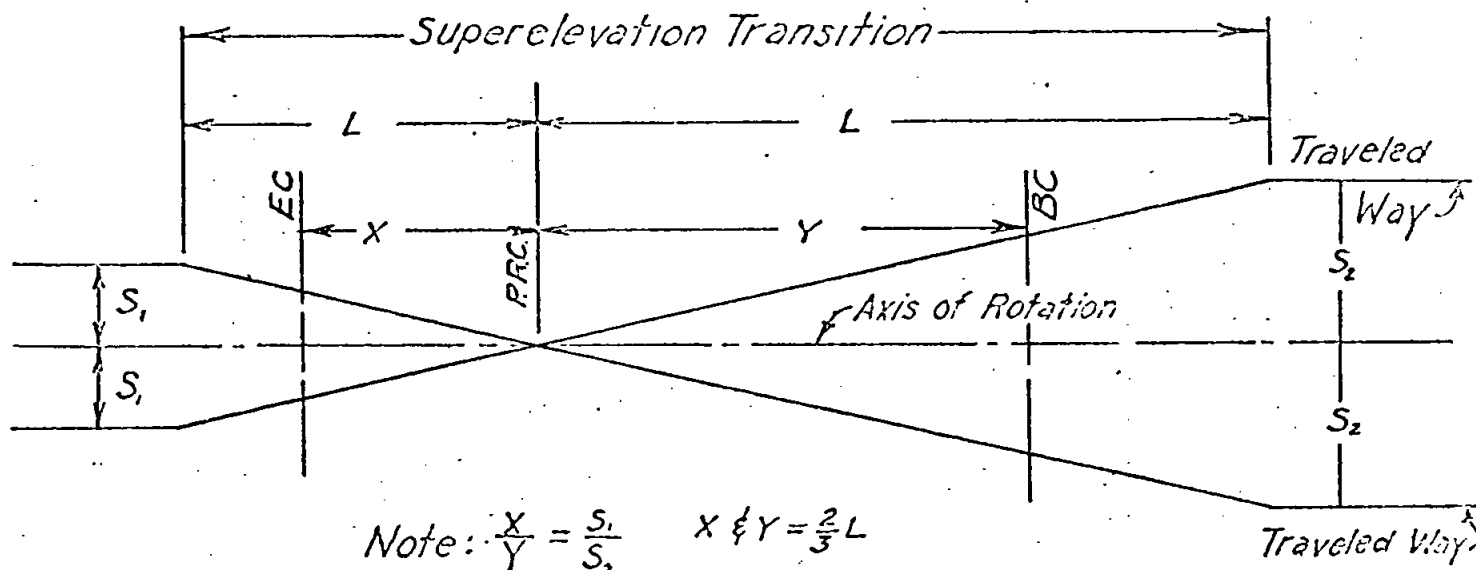
W is shown in table thus 500

OFFSET IN FEET FOR GIVEN 'X' DISTANCE

Distance L Length of flare	10	15	20	25	30	40	45	50	60	70	75	80	90	100	110	120
25	0.80	1.60	3.20	5.00												
50	0.40		1.60		3.60	6.40		10.00								
50	0.20		0.80		1.80	3.20		5.00								
100	0.10		0.40		0.90	1.60		2.50	3.60	4.90		6.40	8.10	10.00		
45	0.15		0.59		1.33	2.37	3.00									
75	0.09		0.36		0.80	1.42		2.22	3.20	4.36	5.00					
90	0.07		0.30		0.67	1.19		1.85	2.67	3.63		4.74	6.00			
120	0.06		0.22		0.50	0.89		1.39	2.00	2.72		3.56	4.50	5.56	6.72	8.00

DRAWN BY _____	SAN DIEGO COUNTY ENGINEER DEPARTMENT DESIGN STANDARDS	REVISION	BY	APPROVED	DATE
CHECKED BY _____					
RECOMMENDED BY _____					
APPROVED BY _____	TYPICAL ISLAND DESIGN	DRAWING NUMBER			
PRINCIPAL CIVIL ENG. OFF. _____					
DATE _____					

SUPERELEVATION TRANSITION



Superelevation	Minimum X or Y	L (Ft.)
8%	133'	200
7%	117'	175
6%	100'	150
5%	83'	125
4%	67'	100
2%	33'	50

Example:

For reversing curves with a 2%
superelevation, the minimum distance
from the EC to the BC is $2 \times 33 = 66\text{ft.}$

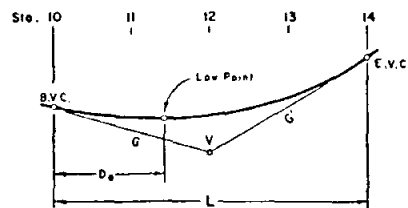
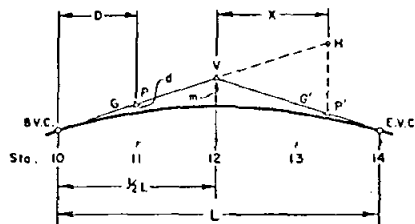
DRAWN BY _____
 CHECKED BY _____
 RECOMMENDED BY _____
 APPROVED BY _____
 PRINCIPAL CIVIL ENG. OFF.
 DATE _____

SAN DIEGO COUNTY ENGINEER DEPARTMENT
 DESIGN STANDARDS

REVERSING CURVES

REVISION	BY	APPROVED	DATE

DRAWING
NUMBER



VERTICAL CURVES

WHERE

$$1 \quad m = \frac{(G' - G) L}{8}$$

$$2 \quad m = \frac{1}{2} \left(\frac{\text{Elev. B.V.C.} + \text{Elev. E.V.C.}}{2} - \text{Elev. V} \right)$$

$$3 \quad d = m \left(\frac{D}{L/2} \right)^2 = \frac{4m}{L^2} D^2$$

$$4 \quad d = \frac{D^2 (G' - G)}{2L}$$

$$5 \quad X = \frac{100 (H - P')}{(G - G')}$$

$$6 \quad S = G - D \left(\frac{G - G'}{L} \right)$$

$$7 \quad D_0 = \frac{L G}{G - G'}$$

L = Length of curve — 100 ft. units or stations.

G and G' = Grade rates — percent.

m = Middle ordinate — ft.

d = Correction from grade line to curve — ft.

D = Distance from B.V.C. or E.V.C. to any point on curve — stations.

S = Slope of the tangent to the curve at any point — percent.

X = Distance, from P' to V — ft.

H = Elevation of grade G produced to station of P'

P and P' = Elevation on respective grades.

D₀ = Distance to low or high point from extremity of curve — stations.

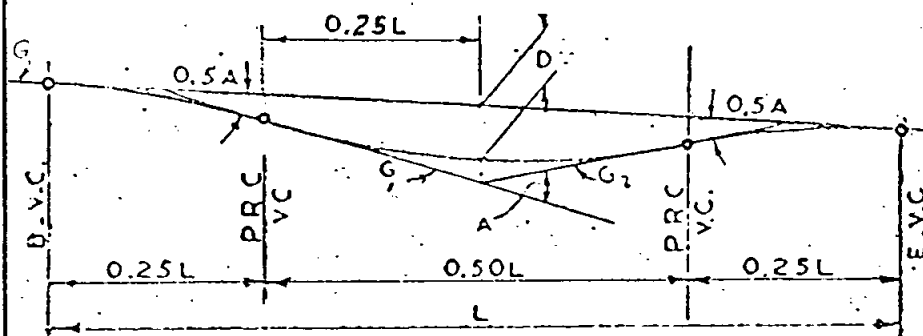
NOTES

A rising grade carries a plus sign while a falling grade carries a minus sign.

Thus in a crest vertical curve as above, G carries a plus sign and G' a minus sign when progressing in the direction of the stationing. When progressing in the opposite direction, G becomes a minus grade and G' a plus grade.

DRAWN BY _____	SAN DIEGO COUNTY ENGINEER DEPARTMENT DESIGN STANDARDS	REVISION	BY	APPROVED	DATE
CHECKED BY _____					
RECOMMENDED BY _____					
APPROVED BY _____	VERTICAL CURVES	DRAWING NUMBER			
PRINCIPAL CIVIL ENG. OFF.					
DATE _____					

THREE REVERSING VERTICAL CURVES CROSSING A DIP OR SUMMIT.
ALL CURVES WITH EQUAL RATES OF GRADE CHANGE.

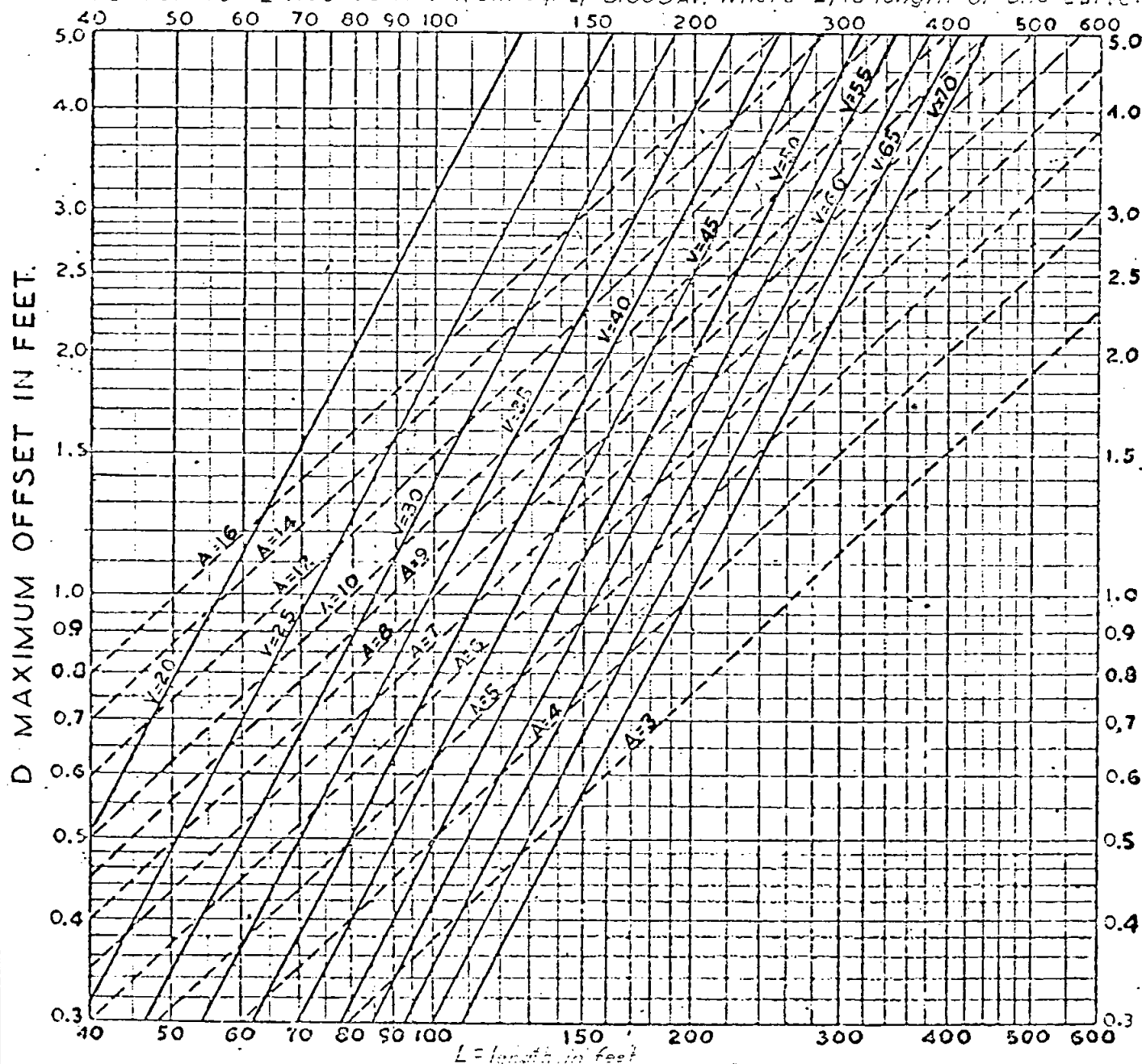


Example

Given: $D=2$ ft. $V=50$ MPH $G_1=5\%$
On horizontal line $D=2$ ft. find
intersection with $V=50$ and read
 $L=200$ and $A=8$. Then $G_1=5\%$ and
and $G_2=3\%$ and curves can be plotted.

$L=2.83V\sqrt{D}$ $G_1=0.5A+G$ $G_2=0.5A-G$
 L = Length - ft. V = Velocity - MPH - V
 A = Algebraic difference in grades - %
 D = Maximum offset - ft.
 G = Ruling grade - %

Formula for L was derived from eq. $L=0.005AV$. Where L is length of one curve.



DRAWN BY _____
CHECKED BY _____
RECOMMENDED BY _____
APPROVED BY _____
PRINCIPAL CIVIL ENG. OFF.
DATE _____

SAN DIEGO COUNTY ENGINEER DEPARTMENT
DESIGN STANDARDS

COMFORTABLE SPEED ON VERTICAL CURVES

REVISION	BY	APPROVED	TE

DRAWING
NUMBER

SUPERELEVATION TRANSITION

FORMULAE		EXPLANATION OF TERMS
2 LANE ROADS	* $L_s = 2500 S$	(L) = Length of superelevation runoff - ft.
MULTILANE ROADS	* $L_s = 3600 S$	(S) = Superelevation rate - ft./ft.
RAMPS	$L_s = 2500 S$ if possible	
Minimum $L_s = 150$ ft		

* Adjust computed length to nearest 10 ft. length divisible by 3

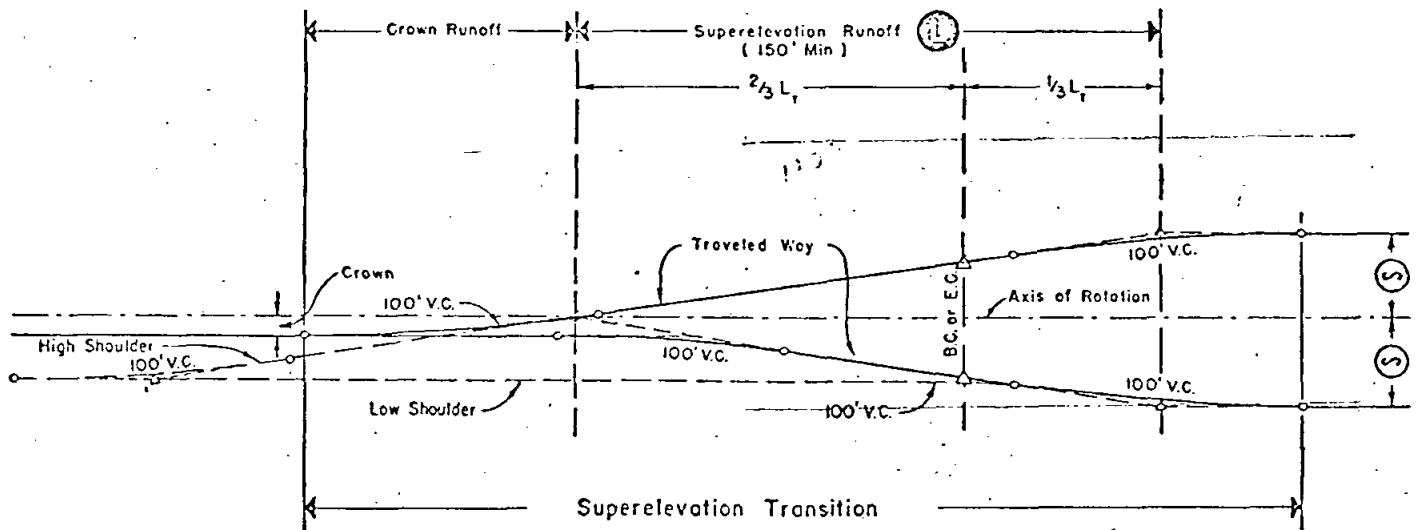


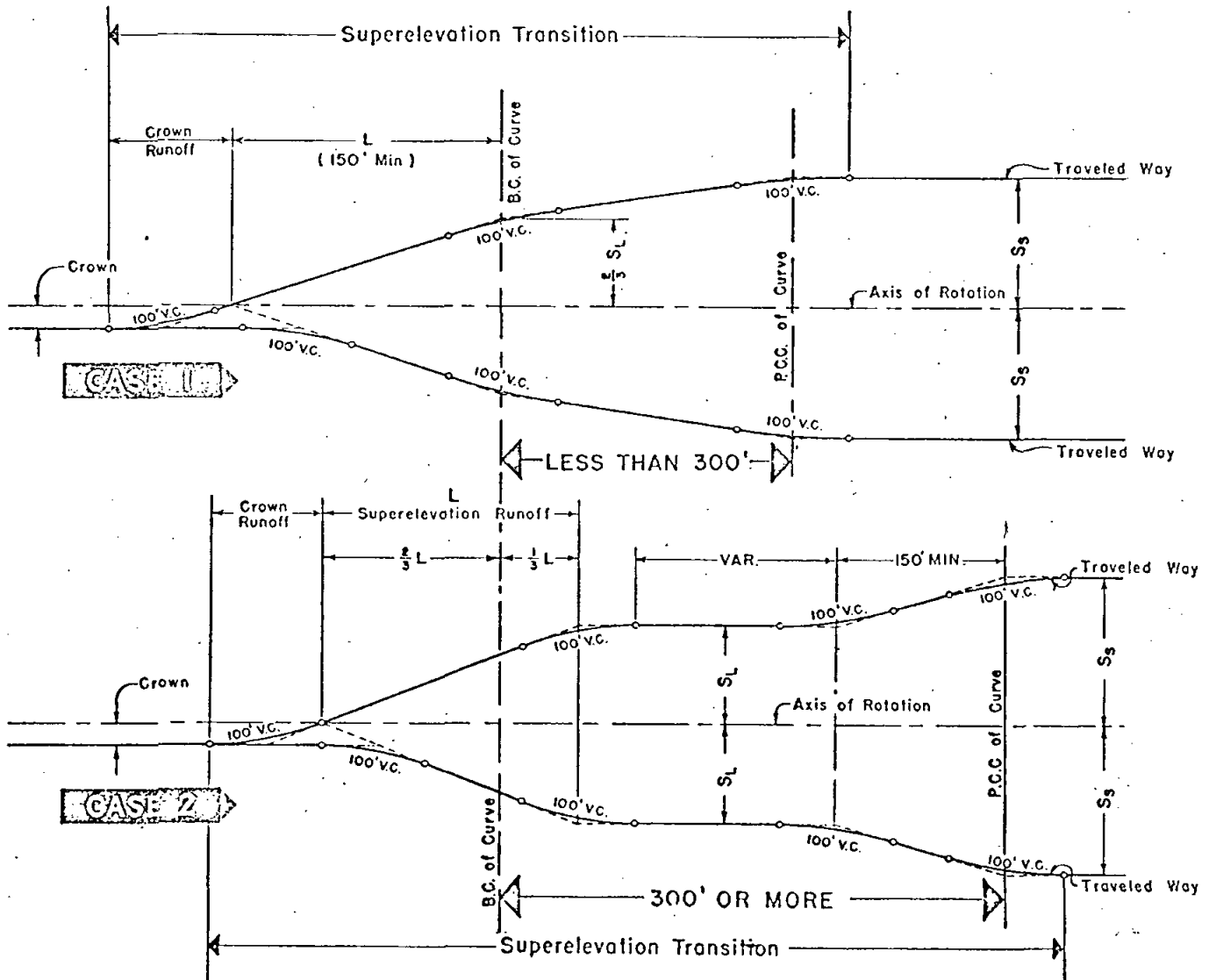
TABLE OF "L" LENGTHS

2-Lane highways and ramps		Multilane highways	
S—foot/foot	L—feet	S—foot/foot	L—feet
0.02 to 0.06	150	0.02 to 0.04	150
0.07	180	0.05	180
0.08	210	0.06	210
0.09	240	0.07	270
0.10	240	0.08	300
0.11	270	0.09	330
0.12	300	0.10	360
		0.11	390
		0.12	420

DRAWN BY _____ CHECKED BY _____ RECOMMENDED BY _____ APPROVED BY _____ PRINCIPAL CIVIL ENG. OFF. DATE _____	SAN DIEGO COUNTY ENGINEER DEPARTMENT DESIGN STANDARDS	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>REVISION</th> <th>BY</th> <th>APPROVED</th> <th>DATE</th> </tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table> DRAWING NUMBER	REVISION	BY	APPROVED	DATE												
REVISION	BY	APPROVED	DATE															

SUPERELEVATION OF COMPOUND CURVES

L = Length of superlevation runoff - ft.
 S_S = Superelevation rate for smaller radius curve - ft./ft. or percent
 S_L = Superelevation rate for larger radius curve - ft./ft. or percent



DRAWN BY _____
 CHECKED BY _____
 RECOMMENDED BY _____
 APPROVED BY _____
 PRINCIPAL CIVIL ENG. OFF.
 DATE _____

SAN DIEGO COUNTY ENGINEER DEPARTMENT
 DESIGN STANDARDS

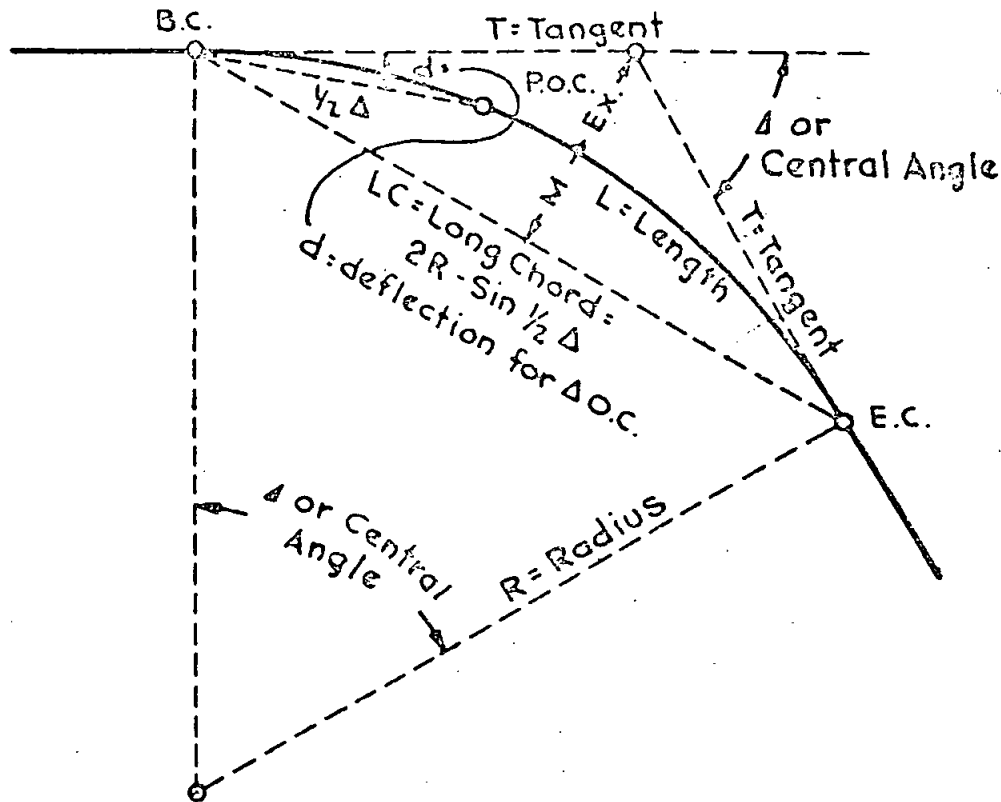
REVISION	BY	APPROVED	DATE

DRAWING
 NUMBER

LENGTHS OF CIRCULAR ARCS RADIUS=1							
Deg.	Length	Deg.	Length	Min.	Length	Sec.	Length
1	.0174533	61	1.0546508	1	.0002909	1	.0000048
2	.0349066	62	1.0821041	2	.0005818	2	.0000097
3	.0523599	63	1.0995574	3	.0008727	3	.0000145
4	.0698132	64	1.1170107	4	.0011636	4	.0000194
5	.0872665	65	1.1344640	5	.0014544	5	.0000242
6	.1047198	66	1.1519173	6	.0017453	6	.0000291
7	.1221730	67	1.1693706	7	.0020362	7	.0000339
8	.1396263	68	1.1868239	8	.0023271	8	.0000388
9	.1570795	69	1.2042772	9	.0026180	9	.0000436
10	.1745329	70	1.2217305	10	.0029089	10	.0000485
11	.1919862	71	1.2391838	11	.0031998	11	.0000533
12	.2094395	72	1.2566371	12	.0034907	12	.0000582
13	.2268928	73	1.2740904	13	.0037815	13	.0000630
14	.2443461	74	1.2915436	14	.0040724	14	.0000679
15	.2617994	75	1.3089969	15	.0043633	15	.0000727
16	.2792527	76	1.3264502	16	.0046542	16	.0000776
17	.2967060	77	1.3439035	17	.0049451	17	.0000824
18	.3141593	78	1.3613568	18	.0052360	18	.0000873
19	.3316126	79	1.3788101	19	.0055269	19	.0000921
20	.3490659	80	1.3962634	20	.0058178	20	.0000970
21	.3665191	81	1.4137167	21	.0061087	21	.0001018
22	.3839724	82	1.4311700	22	.0063995	22	.0001067
23	.4014257	83	1.4486233	23	.0066904	23	.0001115
24	.4188790	84	1.4660766	24	.0069813	24	.0001164
25	.4363323	85	1.4835299	25	.0072722	25	.0001212
26	.4537856	86	1.5009832	26	.0075631	26	.0001261
27	.4712389	87	1.5184364	27	.0078540	27	.0001309
28	.4886922	88	1.5358897	28	.0081449	28	.0001357
29	.5061455	89	1.5533430	29	.0084358	29	.0001405
30	.5235988	90	1.5707963	30	.0087266	30	.0001454
31	.5410521	91	1.5882496	31	.0090175	31	.0001503
32	.5585054	92	1.6057029	32	.0093084	32	.0001551
33	.5759587	93	1.6231562	33	.0095993	33	.0001600
34	.5934119	94	1.6406095	34	.0098902	34	.0001648
35	.6108652	95	1.6580628	35	.0101811	35	.0001697
36	.6283185	96	1.6755161	36	.0104720	36	.0001745
37	.6457718	97	1.6929694	37	.0107629	37	.0001791
38	.6632251	98	1.7104227	38	.0110538	38	.0001832
39	.6806784	99	1.7278760	39	.0113446	39	.0001879
40	.6981317	100	1.7453293	40	.0116355	40	.0001939
41	.7155850	101	1.7627825	41	.0119264	41	.0001988
42	.7330383	102	1.7802358	42	.0122173	42	.0002036
43	.7504916	103	1.7976891	43	.0125082	43	.0002085
44	.7679449	104	1.8151424	44	.0127991	44	.0002133
45	.7853982	105	1.8325957	45	.0130900	45	.0002182
46	.8028515	106	1.8500490	46	.0133809	46	.0002230
47	.8203047	107	1.8675023	47	.0136717	47	.0002279
48	.8377580	108	1.8849556	48	.0139626	48	.0002327
49	.8552113	109	1.9024089	49	.0142535	49	.0002376
50	.8726646	110	1.9198622	50	.0145444	50	.0002424
51	.8901179	111	1.9373155	51	.0148353	51	.0002473
52	.9075712	112	1.9547688	52	.0151262	52	.0002521
53	.9250245	113	1.9722221	53	.0154171	53	.0002570
54	.9424778	114	1.9896753	54	.0157080	54	.0002618
55	.9599311	115	2.0071286	55	.0159989	55	.0002666
56	.9773844	116	2.0245819	56	.0162897	56	.0002715
57	.9948377	117	2.0420352	57	.0165805	57	.0002763
58	1.0122910	118	2.0594885	58	.0168715	58	.0002812
59	1.0297443	119	2.0769418	59	.0171624	59	.0002860
60	1.0471976	120	2.0943951	60	.0174533	60	.0002909

DRAWN BY _____	SAN DIEGO COUNTY ENGINEER DEPARTMENT DESIGN STANDARDS	REVISION	BY	APPROVED	DATE
CHECKED BY _____					
RECOMMENDED BY _____					
APPROVED BY _____	CIRCULAR ARC LENGTHS	DRAWING NUMBER			
PRINCIPAL CIVIL ENG. OFF.					
DATE _____					

CURVE FUNCTIONS



R = Radius;
 T = Tangent distance;
 $B.C.$ = Beginning of Curve;
 $E.C.$ = End of Curve; Ex = External;
 L = Length of Curve; LC = Long Chord;
 $P.I.$ = Point of Intersection; Δ = Delta or Central Angle;
 d = Deflection for Point on Curve; M = Middle Ordinate.

Curve Data required are: Δ , Radius, Tangent, Length and External, Obtained as follows: -

$$\Delta = \text{Given}; \tan \frac{1}{2} \Delta = \frac{T}{R}$$

$$R = \text{Given}; R = \frac{T}{\tan \frac{1}{2} \Delta}$$

$$T = R \tan \frac{1}{2} \Delta$$

$$L = \frac{2\pi R \Delta}{360^\circ} \text{ or } L = R \text{ func } \Delta. \text{ See Table 4D.1.0-2:}$$

$$Ex = R \text{ exsec } \frac{1}{2} \Delta; M = R \text{ vers } \frac{1}{2} \Delta$$

$$d (\text{min.}) = \frac{1718.88}{R} \text{ arc length, See Deflection Table 4D.1.0-3.}$$

DRAWN BY _____
CHECKED BY _____
RECOMMENDED BY _____
APPROVED BY _____
PRINCIPAL CIVIL ENG. OFF. _____
DATE _____

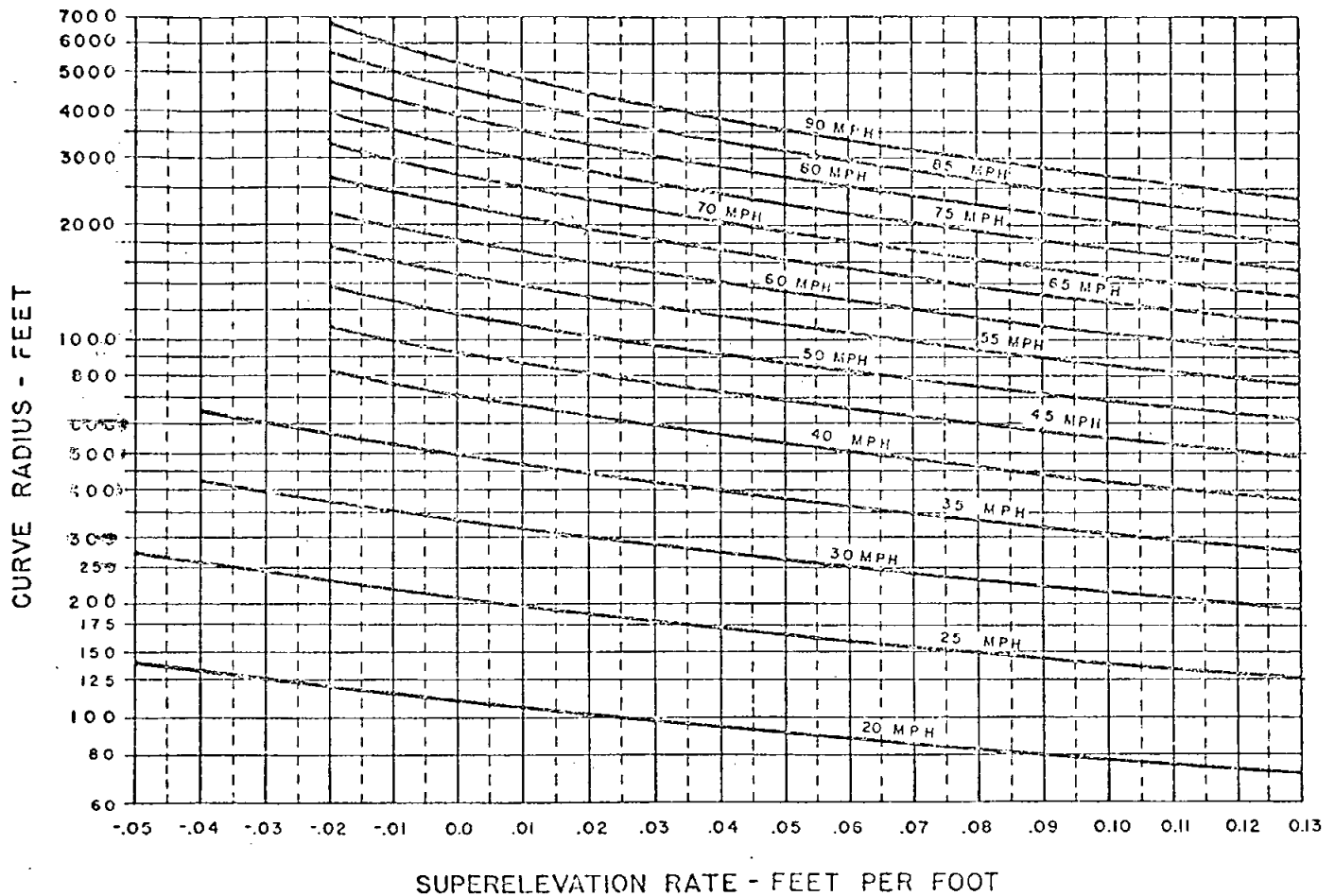
SAN DIEGO COUNTY ENGINEER DEPARTMENT
DESIGN STANDARDS

HORIZONTAL CURVE

REVISION	BY	APPROVED	TE

DRAWING
NUMBER

SAFE SPEED ON HORIZONTAL CURVE

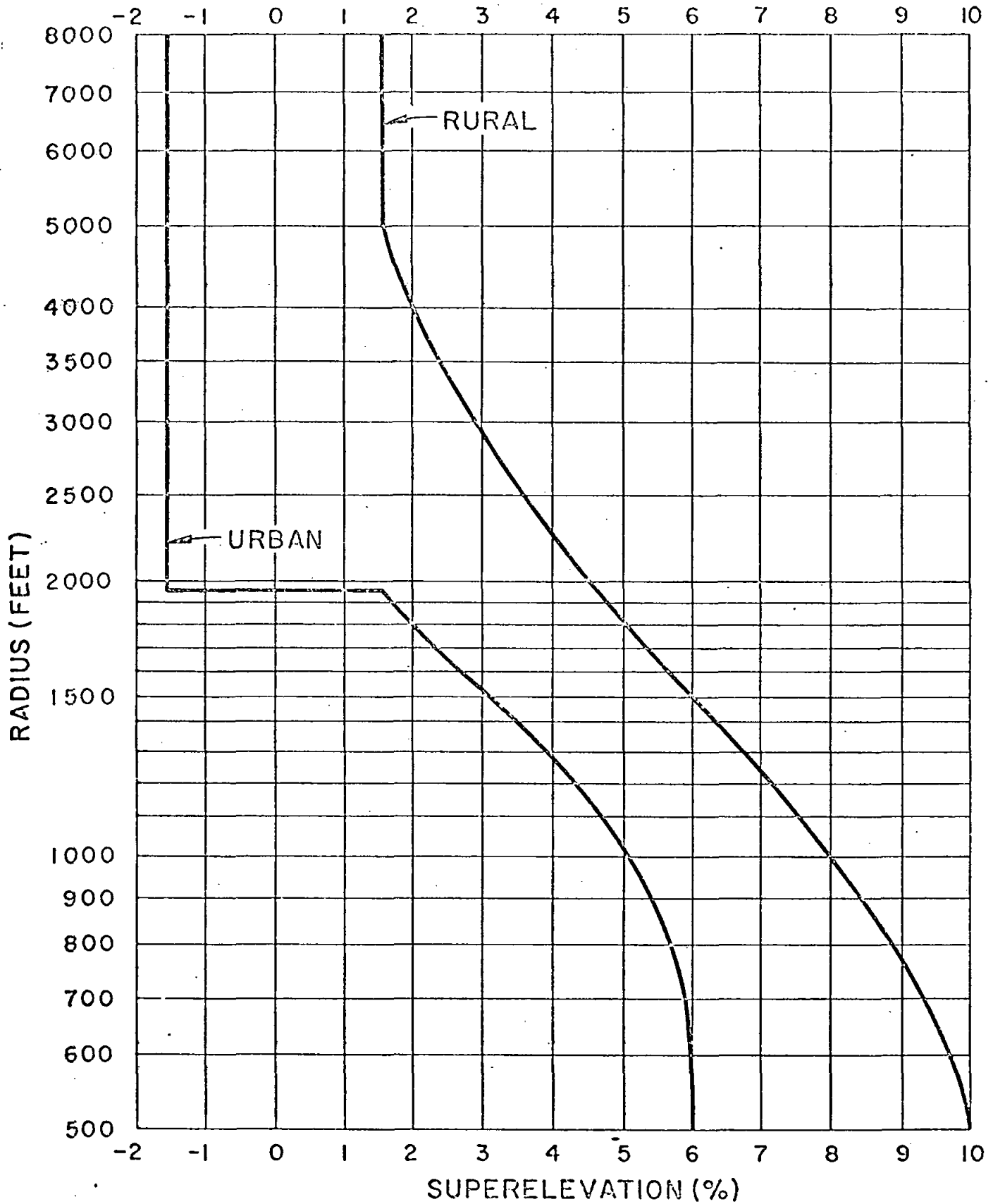


SPEED	FRICTION FACTOR
20	0.24
30	0.18
40	0.15
50	0.14
60	0.13
70	0.12
80	0.11
90	0.10 (Extrapolated)

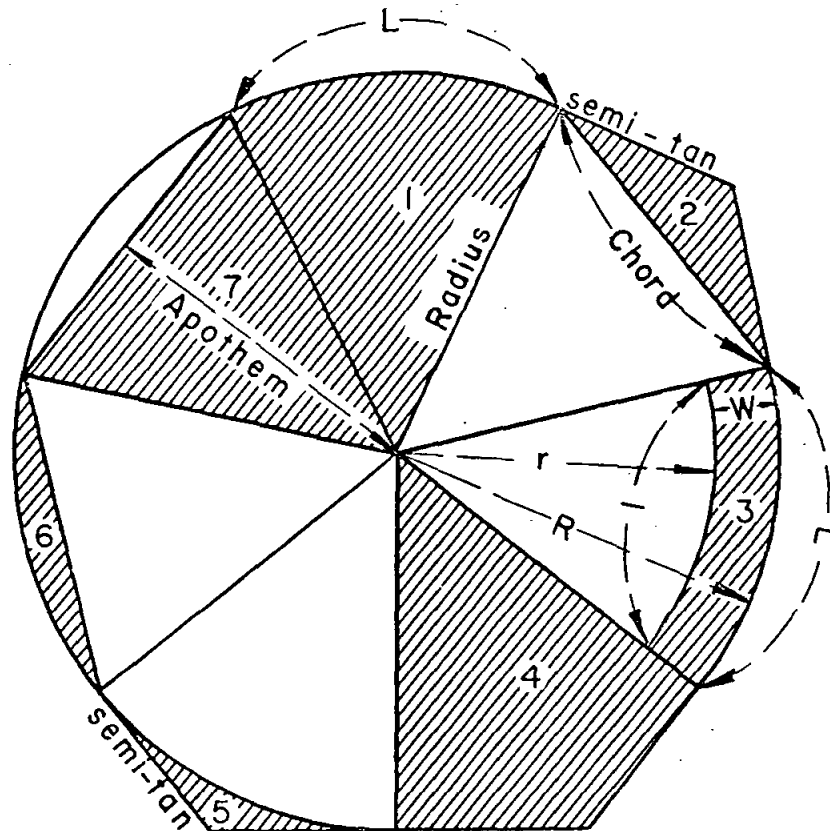
S = SUPERELEVATION
 F = FRICTION FACTOR
 V = SPEED IN MILES PER HOUR
 R = RADIUS IN FEET

$$S + F = \frac{0.067 V^2}{R}$$

DRAWN BY _____	SAN DIEGO COUNTY ENGINEER DEPARTMENT DESIGN STANDARDS	REVISION	BY	APPROVED	DATE
CHECKED BY _____					
RECOMMENDED BY _____					
APPROVED BY _____		DRAWING NUMBER			
PRINCIPAL CIVIL ENG. OFF. DATE _____					



DRAWN BY _____	SAN DIEGO COUNTY ENGINEER DEPARTMENT DESIGN STANDARDS	REVISION	BY	APPROVED	D.
CHECKED BY _____					
RECOMMENDED BY _____					
APPROVED BY _____	SUPERELEVATION RURAL AND URBAN STANDARDS	DRAWING NUMBER			
PRINCIPAL CIVIL ENG. OFF. DATE _____					



1. $\frac{1}{2}RL$. Or, $\frac{1}{2}R^2\theta$. The sector, - a basic figure.
2. $\tan \frac{\Delta}{2} (R \cdot \sin \frac{\Delta}{2})^2$. Or, $R \cdot \text{semi tan} - \frac{1}{2} \text{Apothem} \cdot \text{Chord}$
3. $\frac{1}{2}\theta(R^2 - r^2)$. Or, $\frac{1}{2}R \cdot L - \frac{1}{2}r \cdot l$. Or, $\frac{L+l}{2}W$, Or, $\frac{\theta}{2} \cdot (R+r)W$.
4. $R^2 \tan \frac{\Delta}{2}$. Or, $R \cdot \text{semi tan}$.
5. $R^2 (\tan \frac{\Delta}{2} - \frac{\theta}{2})$. Or, $R \cdot \text{semi tan} - \frac{1}{2}RL$.
6. $\frac{1}{2}R^2(\theta - \sin \Delta)$. Or, $\frac{1}{2}R \cdot L - \frac{1}{2} \text{Apothem} \cdot \text{Chord}$.
7. $\frac{1}{2}R^2 \cdot \sin \Delta$. Or, $\frac{1}{2} \text{Apothem} \cdot \text{Chord}$.

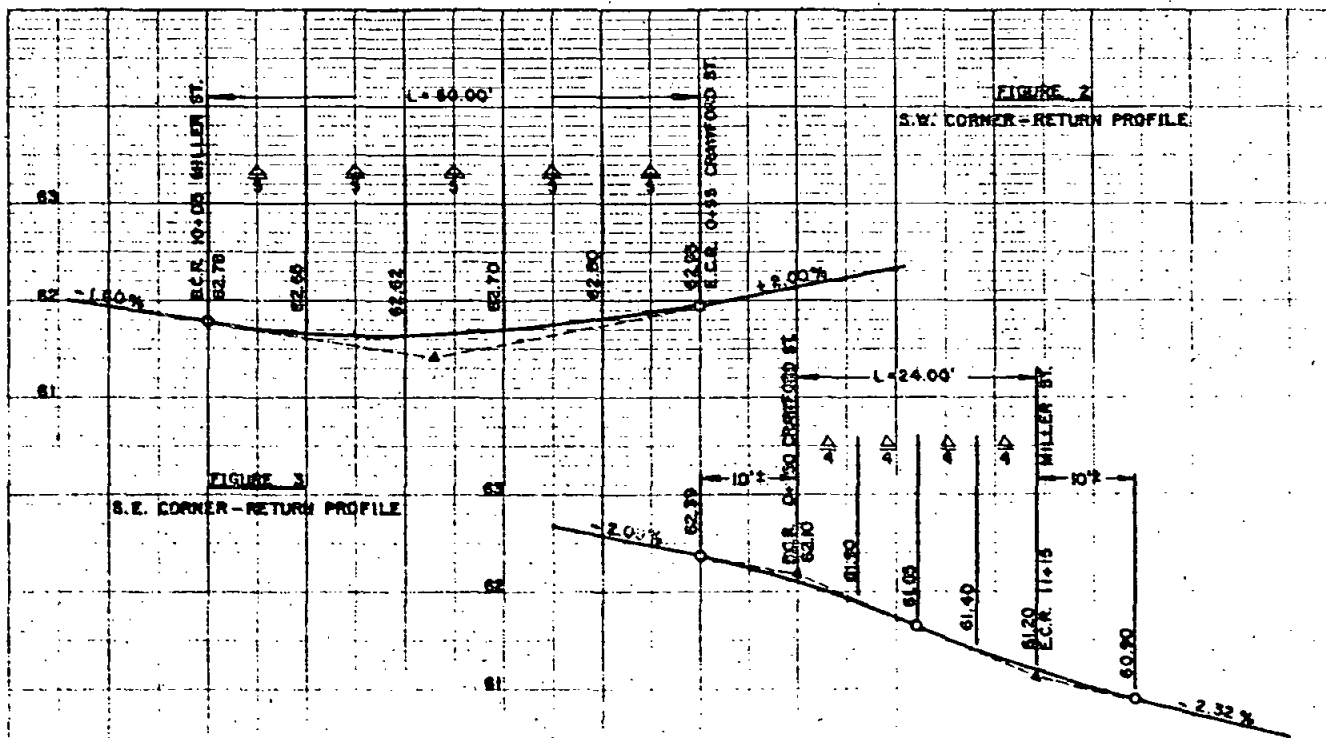
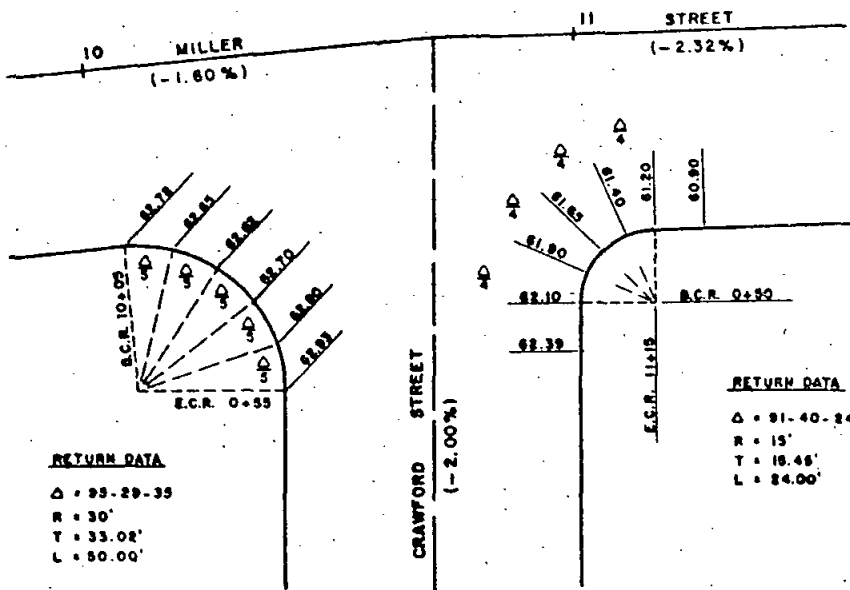
IN THE ABOVE : Δ is the central angle in degrees.
 θ is the central angle in radians.

DRAWN BY _____	SAN DIEGO COUNTY ENGINEER DEPARTMENT DESIGN STANDARDS	REVISION	BY	APPROVED	DATE
CHECKED BY _____					
RECOMMENDED BY _____					
APPROVED BY _____	CIRCULAR AREA SEGMENT FORMULA	DRAWING NUMBER			
PRINCIPAL CIVIL ENG. OFF.					
DATE _____					

DESIGN PROCEDURE

1. CALCULATE RETURN CURVE DATA.
2. ESTABLISH ELEVATIONS OF B.C.R. AND E.C.R.
3. THE ELEVATIONS OF B.C.R. AND E.C.R. ARE PLOTTED IN PROPER RELATION ON RETURN PROFILE AND STREET GRADES ARE NOTED. STREET GRADE LINES ARE THEN EXTENDED UNTIL THEY INTERSECT EITHER SOMEWHERE BETWEEN B.C.R. AND E.C.R., AS IN FIGURE 2; OR IF ELSEWHERE, AS IN FIGURE 3, THE B.C.R. AND E.C.R. ARE CONNECTED WITH A STRAIGHT LINE.
4. THE ARC OF THE RETURN IS THEN DIVIDED INTO EQUAL SEGMENTS IN TERMS OF DELTA (e. i. $\Delta/2$, $\Delta/3$ ECT.) IN BOTH PLAN AND PROFILE.
5. WITH EITHER A FRENCH CURVE OR RAILWAY CURVE, DRAW AN APPROPRIATE SMOOTH CURVE BETWEEN B.C.R. AND E.C.R. (FIGURE 2) OR TO A PREDETERMINED DISTANCE FROM THESE POINTS (FIGURE 3).
6. TRANSFER ELEVATIONS OF INTERMEDIATE POINTS AS OBSERVED ON THE PROFILE TO THE PLAN.

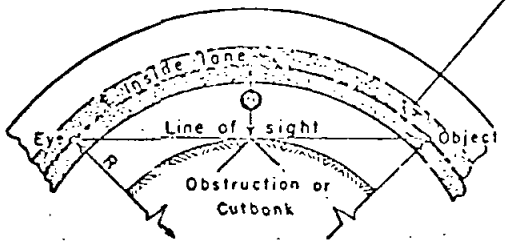
FIGURE 1



DRAWN BY _____	CHECKED BY _____	SAN DIEGO COUNTY ENGINEER DEPARTMENT DESIGN STANDARDS	REVISION	BY	APPROVED	DATE
RECOMMENDED BY _____						
APPROVED BY _____						
PRINCIPAL CIVIL ENG. OFFICE						
DATE: _____		CURB RETURNS	DRAWING NUMBER			

STOPPING SIGHT DISTANCE ON HORIZONTAL CURVES

Sight distance (S) measured along this line



Height of eye- 3.75 feet ... Height of object- 0.50 feet

Line of sight is 2.0 feet above & inside lane at point of obstruction

S- SIGHT DISTANCE IN FEET
R- RADIUS OF & INSIDE LANE IN FEET
m- DISTANCE FROM & INSIDE LANE IN FEET
V- DESIGN SPEED FOR S IN M.P.H.

Angle is expressed in degrees.

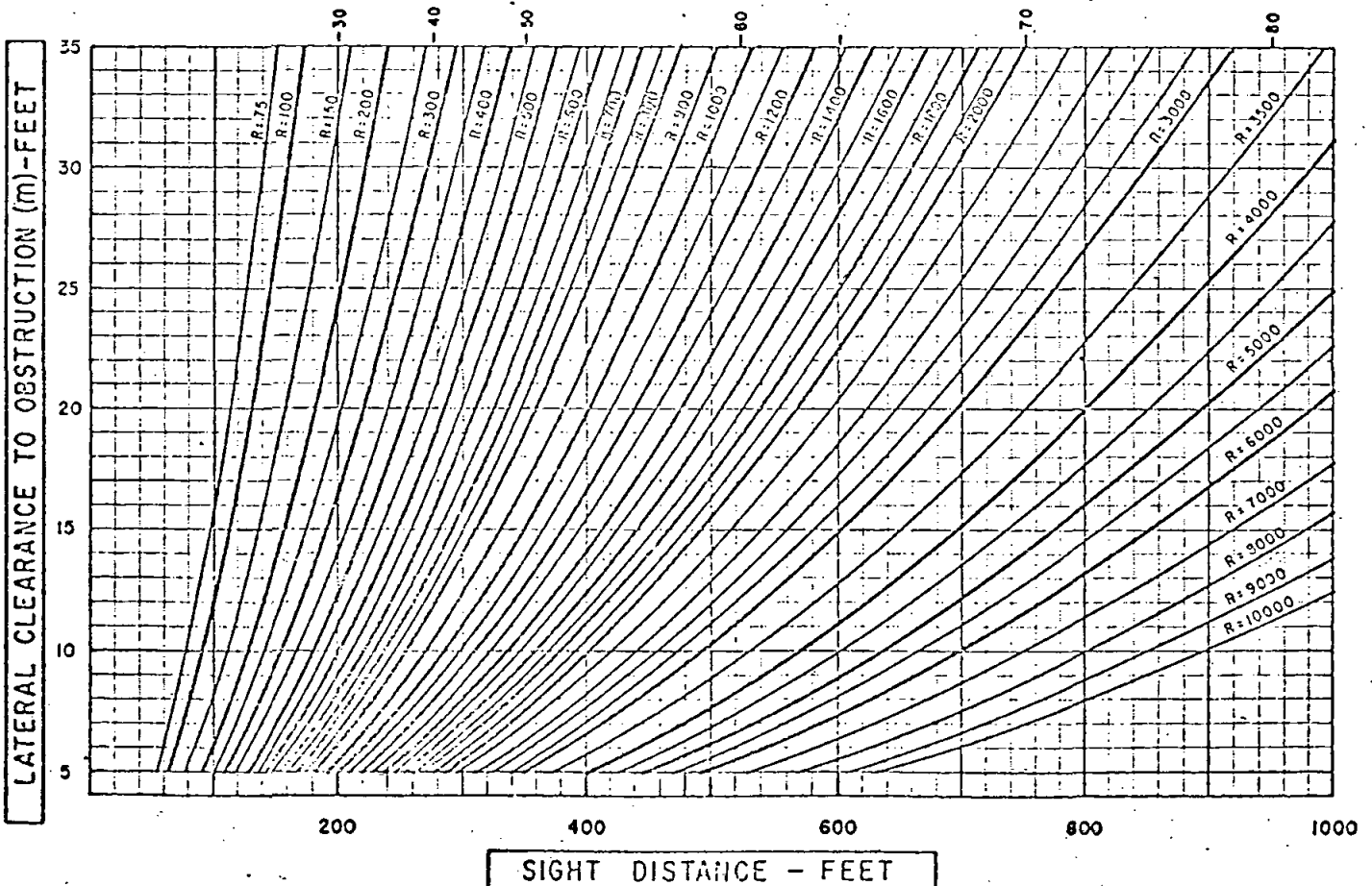
$$m = R \left[\cos^2 \left(\frac{28.353}{R} \right) \right]$$

$$S = \frac{R}{28.55} \left[\cos^{-1} \left(\frac{R-m}{R} \right) \right]$$

Formula applies only when
S is equal to or less than
length of curve.

DESIGN SPEED M.P.H.	SIGHT DISTANCE FEET
30	200
40	275
50	350
60	525
65	600
70	750
75	850
80	950

DESIGN SPEED



DRAWN BY _____
CHECKED BY _____
RECOMMENDED BY _____
APPROVED BY _____
PRINCIPAL CIVIL ENG. OFF.
DATE _____

SAN DIEGO COUNTY ENGINEER DEPARTMENT
DESIGN STANDARDS

REVISION BY APPROVED DATE

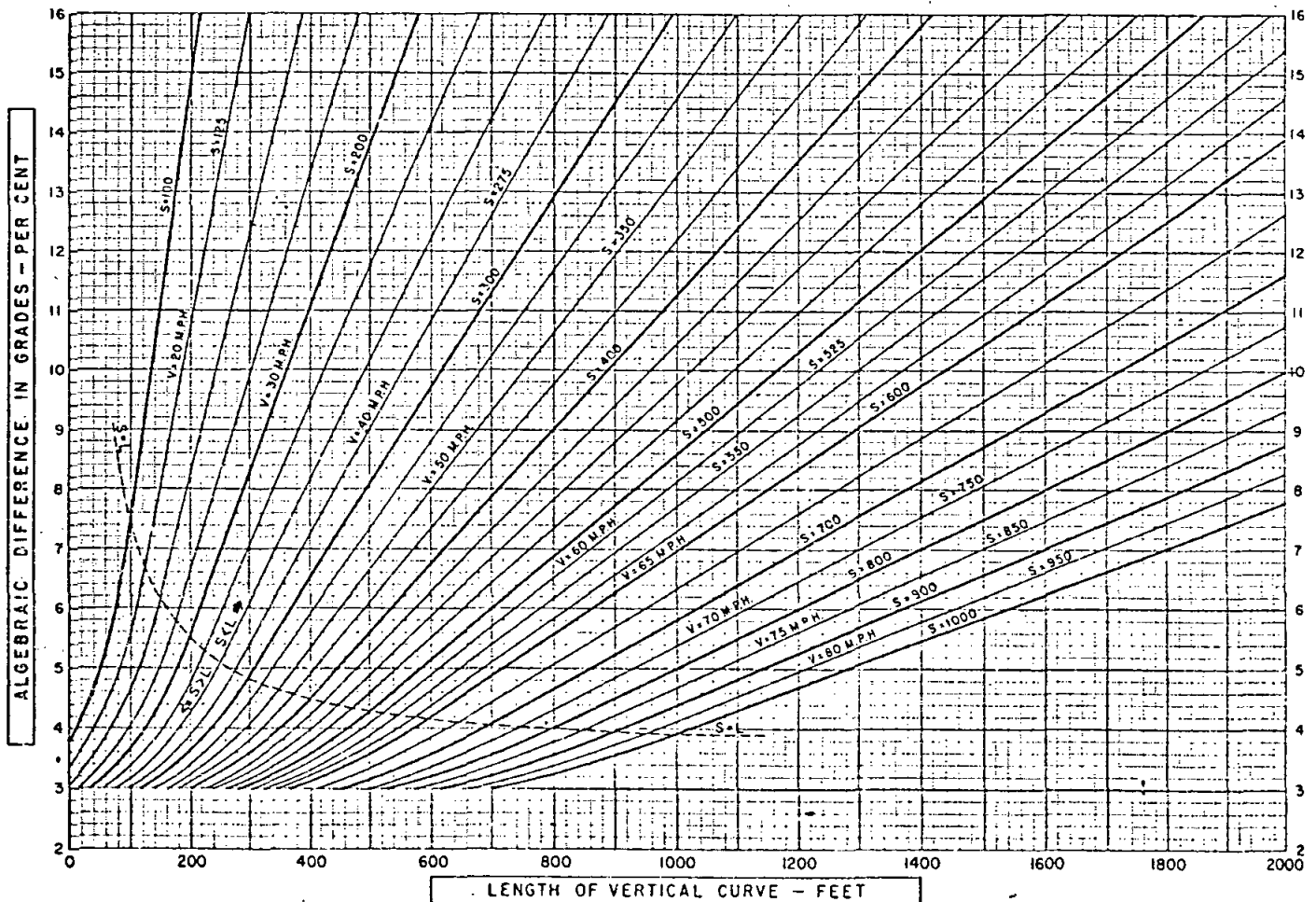
DRAWING
NUMBER

A diagram showing a car on a road with a 1% grade. A horizontal line represents the road surface, sloping downwards from left to right. A vertical line segment of 2.0' is shown below the road surface. A horizontal line with a 1% grade is shown above the road surface. A circle with the number 5 is located on the horizontal line above the road surface.

U.S. - 440-365

1 = ^{ASL}
700 : 355

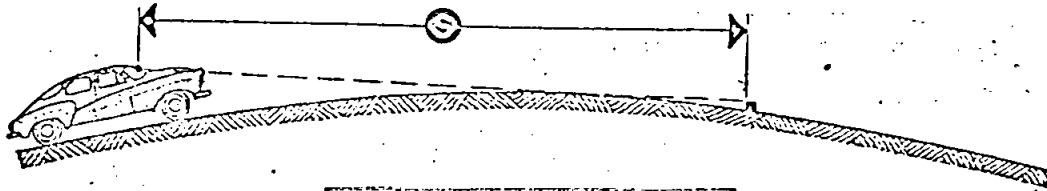
DESIGN SPEED M.P.H.	SIGHT DISTANCE FEET
30	200
40	275
50	350
60	525
65	600
70	750
75	850
80	950



DRAWING
NUMBER

STOPPING SIGHT DISTANCE ON CREST VERTICAL CURVES

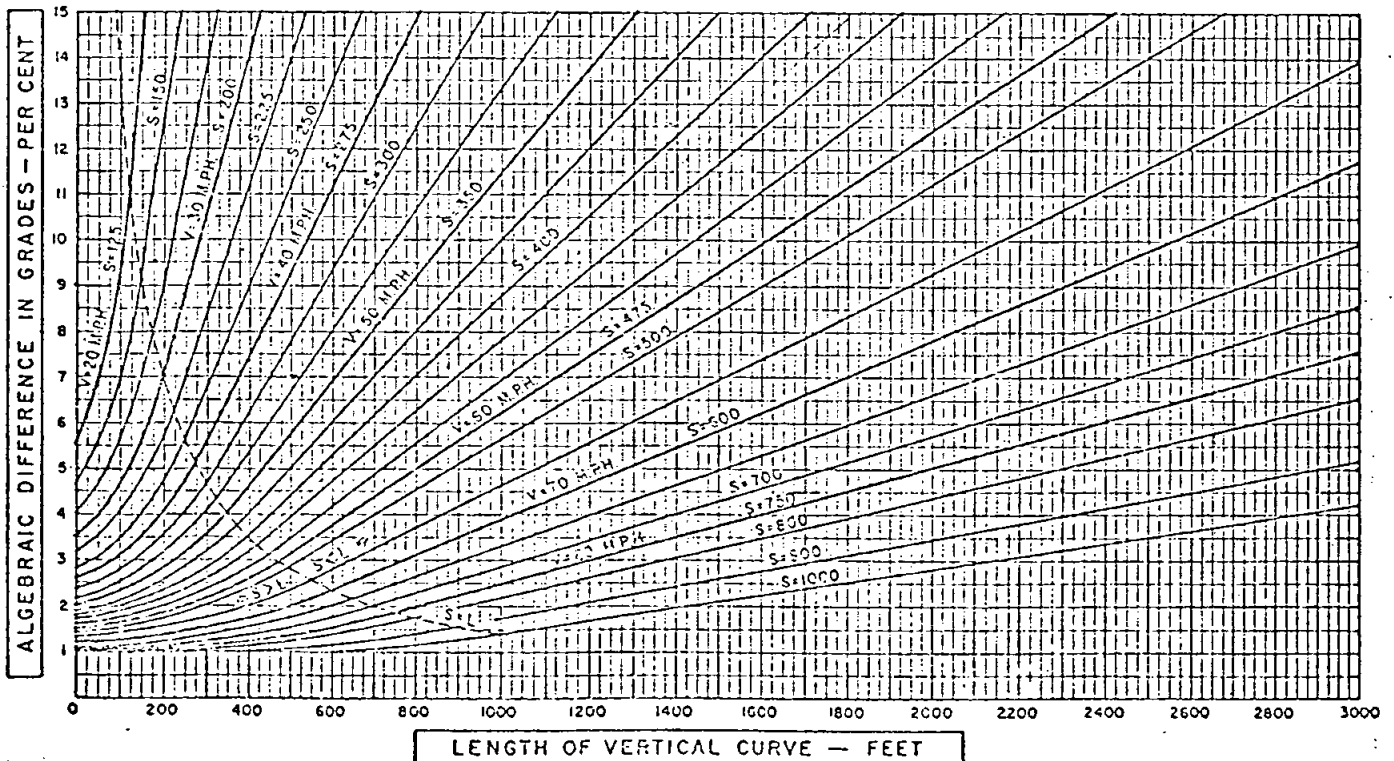
Height of eye 3.75 feet
Height of object 0.50 feet



L = Curve length - feet
A = Algebraic grade difference - %
S = Sight distance - Ft.
V = Design speed - M.P.H. for "S"

WHEN $S > L$	WHEN $S < L$
$L = \frac{VS^2}{A}$	$L = \frac{AS^2}{245}$

DESIGN SPEED M.P.H.	SIGHT DISTANCE 160 FEET
30	200
40	275
50	350
60	475
65	550
70	600
75	675
80	750



DRAWN BY _____
CHECKED BY _____
RECOMMENDED BY _____
APPROVED BY _____
PRINCIPAL CIVIL ENG. OFF.
DATE _____

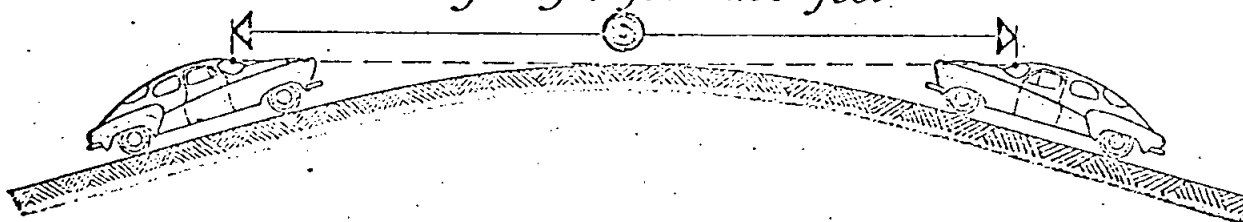
SAN DIEGO COUNTY ENGINEER DEPARTMENT
DESIGN STANDARDS

REVISION	BY	APPROVED	DATE

DRAWING
NUMBER

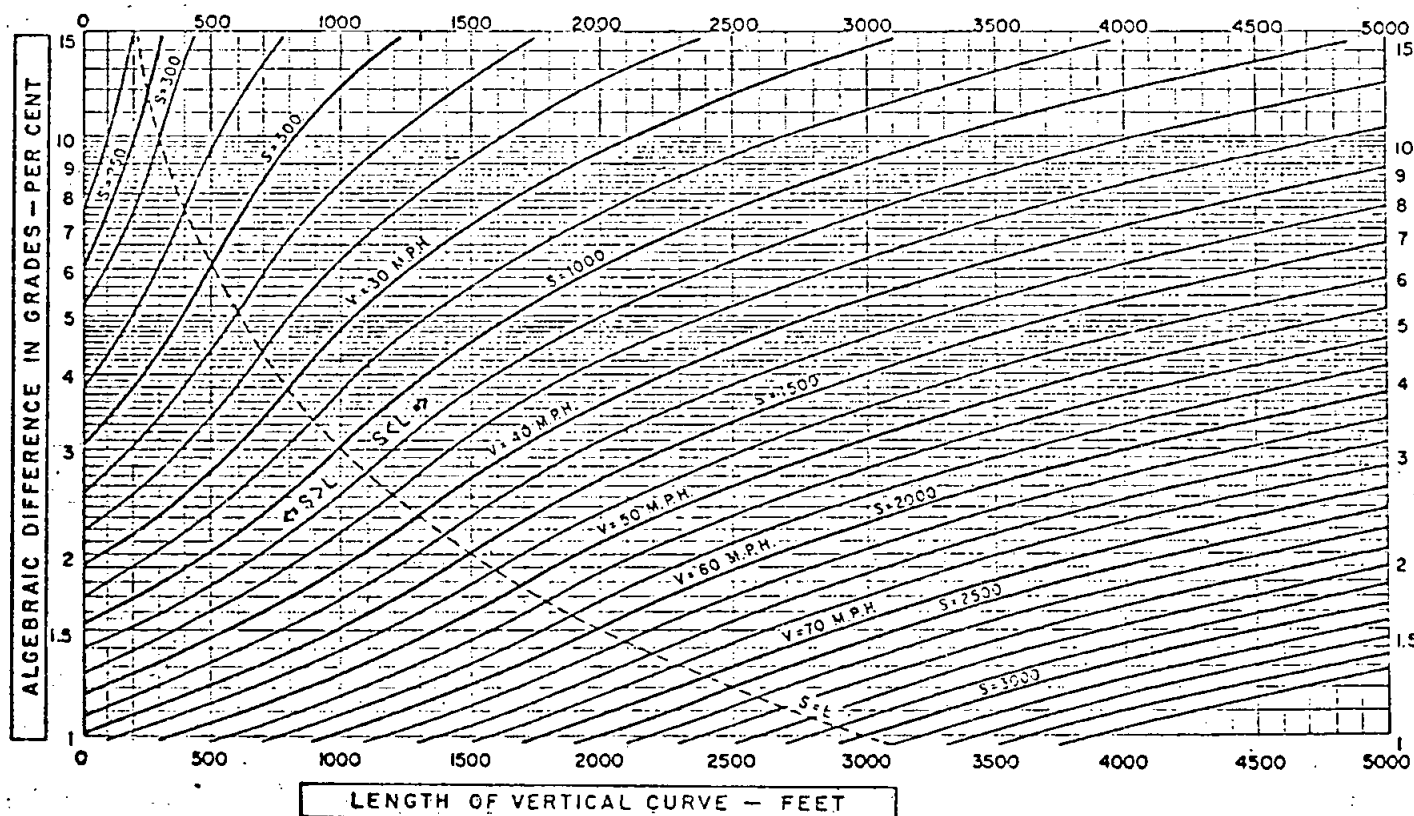
PASSING SIGHT DISTANCE ON CREST VERTICAL CURVES

Height of eye 3.75 feet
Height of object 4.00 feet



L • LENGTH OF VERTICAL CURVE IN FEET A • ALGEBRAIC DIFFERENCE IN GRADE RATE IN % S • SIGHT DISTANCE IN FEET V • DESIGN SPEED IN M.P.H. FOR S	
WHEN $S > L$	WHEN $S < L$
$L = 2S \frac{3100}{A}$	$L = \frac{AS^2}{3100}$

DESIGN SPEED M.P.H.	SIGHT DISTANCE FEET
30	800
40	1300
50	1700
60	2000
70	2400



DRAWN BY _____
CHECKED BY _____
RECOMMENDED BY _____
APPROVED BY _____
PRINCIPAL CIVIL ENG. OFF. _____
DATE _____

SAN DIEGO COUNTY ENGINEER DEPARTMENT
DESIGN STANDARDS

REVISION	BY	APPROVED

DRAWING
NUMBER

COMFORTABLE SPEED ON VERTICAL CURVES

L = LENGTH OF PARABOLIC VERTICAL CURVE - FT.
 A = ALGEBRAIC DIFFERENCE IN GRADES - %
 V = VELOCITY - MILES PER HOUR
 R = RADIUS OF CIRCULAR CURVE WHICH IS IDENTICAL WITH PARABOLA - FT.
 θ = ANGLE WHOSE TANGENT IS 0.005A
 $L = 0.005AV^2$
 $R = 0.5V^2$

$$R = \frac{L}{2 \sin \theta} = \frac{100L}{A}$$

MAXIMUM DIFFERENCE BETWEEN PARABOLA AND CIRCLE - $\frac{L}{4 \sin \theta}$ (EXSEC- θ -VERSINO).

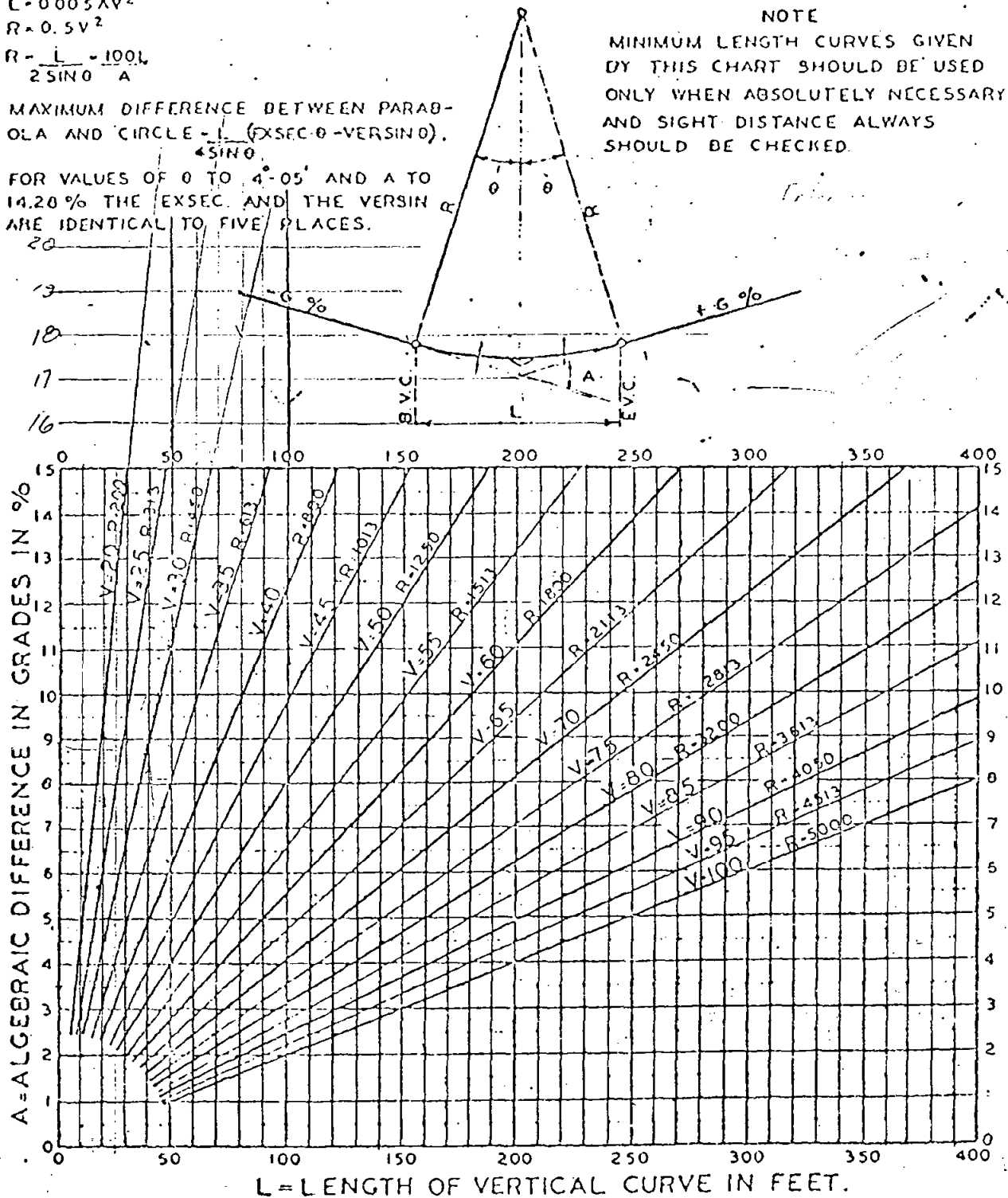
FOR VALUES OF θ TO $4^\circ 05'$ AND A TO 14.20% THE EXSEC. AND THE VERSIN ARE IDENTICAL TO FIVE PLACES.

FOR PLATTING CURVES TO ANY SCALE WITH RAILROAD CURVES

$$R(\text{INCHES}) = \frac{R(\text{FEET})(\text{VER SCALE})}{(\text{HOR SCALE})^2}$$

NOTE

MINIMUM LENGTH CURVES GIVEN BY THIS CHART SHOULD BE USED ONLY WHEN ABSOLUTELY NECESSARY AND SIGHT DISTANCE ALWAYS SHOULD BE CHECKED.



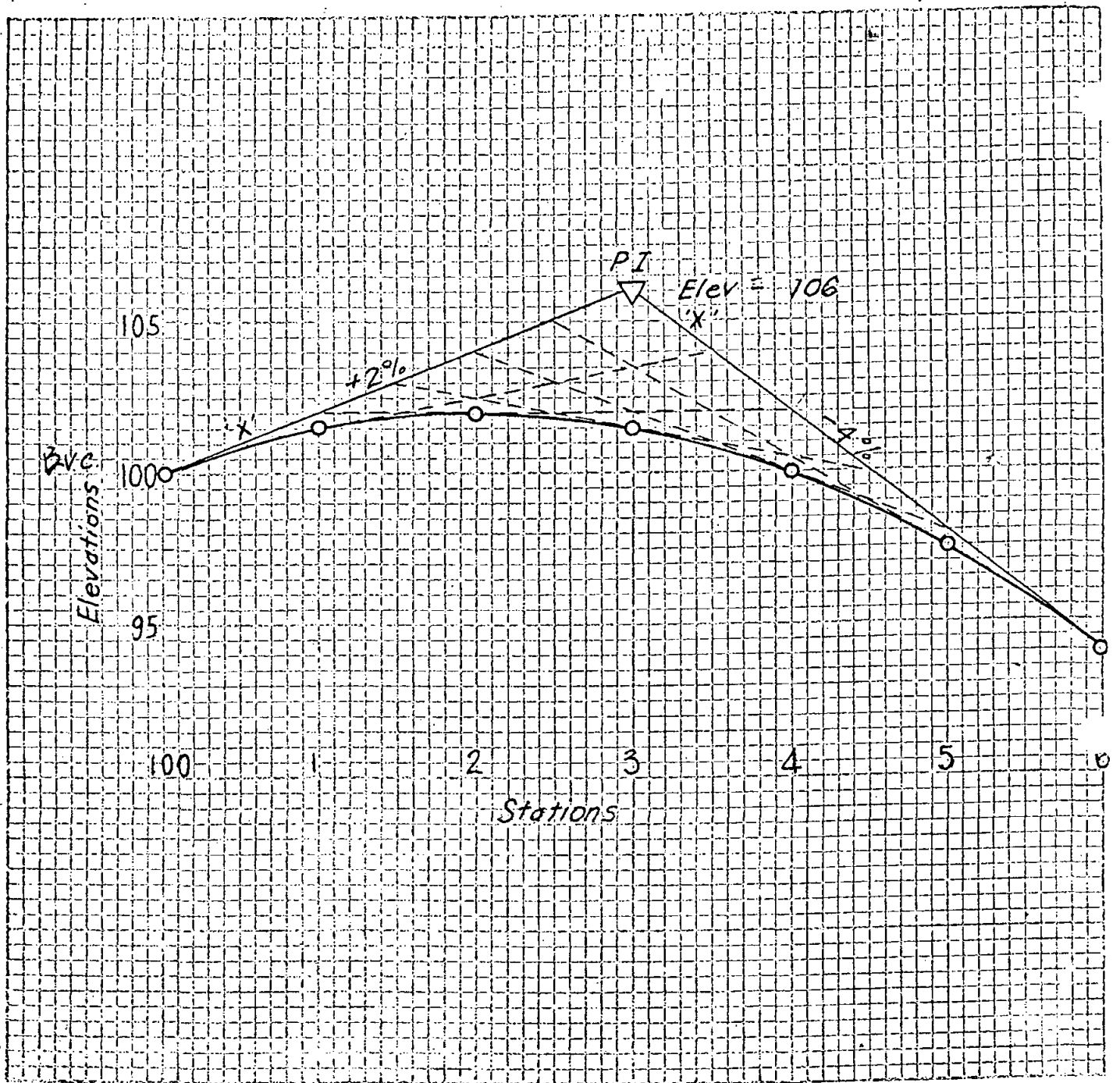
DRAWN BY _____
 CHECKED BY _____
 RECOMMENDED BY _____
 APPROVED BY _____
 PRINCIPAL CIVIL ENG. OFF.
 DATE _____

SAN DIEGO COUNTY ENGINEER DEPARTMENT
 DESIGN STANDARDS

VERTICAL CURVE SPEED

REVISION	BY	APPROVED	DATE

DRAWING
 NUMBER



This sheet illustrates a convenient method of plotting vertical curves. To locate a point on the curve proceed as follows: Draw a straight line between a point on the back tangent "X" stations ahead of the BVC and a point on the forward tangent "X" station ahead of the P.I. A point on the curve is located at the intersection of this line and the station line "2X" stations ahead of the BVC.

DRAWN BY _____	SAN DIEGO COUNTY ENGINEER DEPARTMENT DESIGN STANDARDS	REVISION	BY	APPROVED	E
CHECKED BY _____					
RECOMMENDED BY _____					
APPROVED BY _____	VERTICAL CURVE PLOTTING	DRAWING NUMBER			
PRINCIPAL CIVIL ENG. OFF. DATE _____					