



STANDARD DRAWINGS FOR AGENCIES IN THE SAN DIEGO REGION

Recommended by the Regional Standards Committee  
Maintained and Published by the County of San Diego  
Department of Public Works  
October 2018  
[www.regional-stds.com](http://www.regional-stds.com)



**Mission Statement:** Cost effective government through regional construction standards for San Diego area agencies.

### **FOREWORD**

These 2018 San Diego Area Regional Standard Drawings (Regional Standard Drawings) have been prepared and adopted by the San Diego Regional Standards Committee (RSC) for use in the San Diego Region by local agencies. The San Diego Region is defined as the land area within the boundaries of the County of San Diego. **Each Agency decides which drawings it will approve for use on a project.**

The RSC was established under San Diego County Board of Supervisors Policy I-50 in 1973 and the County Department of Public Works provides coordination and staff support for the Regional Standards Committee. The RSC membership is open to the City Engineers, Directors of Public Works, District Engineers and Heads of Engineering, or their designees, from the County of San Diego, cities all water and sewer districts, utility companies, construction associations, consultant associations, and various private industry organizations within the San Diego Region. The RSC Chair is selected by the RSC members and serves a three-year term.

The Regional Standard Drawings are published every three years, however as changes are adopted updates are posted on the Web Site:

<http://www.regional-stds.com>.

The website also contains Information about membership, operating procedures, meeting schedules, agenda and minutes, standard drawings and Regional Supplements, a link to the Greenbook Committee, member agencies, and a form for submitting proposed revisions.

**The 2018 San Diego Regional Standard Drawings** continue to use English only units. The 2012 Edition discontinued the use of dual units and adopted English imperial units only based on the State of California and most other states returning to English only units. The 2018 Greenbook continues to have English imperial units followed by metric units in parenthesis.

Users of the Regional Standard Drawings are encouraged to submit proposed changes to the RSC on line or by mail to:

County of San Diego  
Department of Public Works  
Attention: Ray A. Perdido, RSC Coordinator  
5500 Overland Avenue, 3<sup>rd</sup> Floor, STE 0320  
San Diego, CA 92123-1295  
[Ray.Perdido@sdcounty.ca.gov](mailto:Ray.Perdido@sdcounty.ca.gov)



The following is a list of the County of San Diego Coordinator and the subcommittee chairpersons who over the last three years have made this publication possible by integrating the input from all agencies in the County:

Ray A. Perdido	County of San Diego Coordinator	County of San Diego
Katie Odiorne	Website Manager	City of Coronado
Samson Engeda	Retaining Walls Committee Co-Chair	County of San Diego
Dave Hicks	Retaining Walls Committee Co-Chair	City of Chula Vista
Matt Widelski	Drainage Systems Committee Chair	City of Encinitas
Dennis Gerschoffer	Dry Utilities, Traffic, and Misc. Co-Chair	SDG&E
Teala Cotter	Traffic Control Plans and Misc. Co-Chair	City of Oceanside
Krisando Equipado	General Surface Facilities Committee Chair	County of San Diego
Eric Wildberger	Landscape and Irrigation Committee Chair	City of San Diego
Dennis Gerschoffer	Traffic/Lighting/Electrical Committee Co-Chair	SDG&E
Zoubir Ouadah	Traffic/Lighting/Electrical Committee Co-Chair	County of San Diego
Gigi Finley	Traffic/Lighting/Electrical Committee Co-Chair	County of San Diego
Krisando Equipado	ADA Committee Chair	County of San Diego
Blair Knoll	Water / Sewer Committee Chair	San Dieguito Water District

Timothy N. Stanton, PE  
Chair, San Diego Regional Standards Committee

# TABLE OF CONTENTS



## TABLE OF CONTENTS

### **SECTION C - CONCRETE STRUCTURES**

C-01	Masonry Retaining Wall Type 1 Level Backfill With 2-in Heel	C-14	Reinforced Concrete Retaining Wall Details No. 2
C-02	Masonry Retaining Wall Type 2 (Live Load Surcharge or Sloping Backfill)	C-15	Reinforced Concrete Retaining Wall Details No. 3
C-03	Masonry Retaining Wall Type 3 (Level Backfill)		<b><u>DRAINAGE SYSTEMS</u></b>
C-04	Masonry Retaining Wall Type 4 (Live Load Surcharge or Sloping Backfill)	D-01	Curb Inlet - Type A
C-05	Masonry Retaining Wall Type 5 (Level Backfill)	D-02	Curb Inlet - Type B
C-06	Masonry Retaining Wall Type 6 (Live Load Surcharge or Sloping Backfill)	D-03A	Curb Inlet - Type C
C-07	General Notes for Masonry Retaining Walls	D-03B	Concrete Apron for Type C Curb Inlet
C-08	Details for Masonry Retaining Wall	D-07	Catch Basin - Type F
C-09	Gravity Retaining Walls	D-08	Catch Basin - Type G
C-10	General Notes and Details for Gravity Retaining Walls	D-09	Storm Drain Cleanout - Type A
C-11A	Reinforced Concrete Retaining Wall Type 1 Elevation	D-10	Storm Drain Cleanout - Type B
C-11B	Reinforced Concrete Retaining Wall Type 1 Spread Footing	D-11A	Inlets and Cleanouts - Notes and Details
C-11C	Reinforced Concrete Retaining Wall Type 1 Pile Footing	D-11B	Inlets and Cleanouts - Notes and Details
C-11D	Reinforced Concrete Retaining Wall Type 1 Dimensions and Steel Table	D-12	Curb Inlet Opening
C-12A	Reinforced Concrete Retaining Wall Type 1A	D-13	Welded Steel Grate Frame
C-12B	Reinforced Concrete Retaining Wall Type 1A	D-15	Drainage Structure Grate
C-13A	Reinforced Concrete Retaining Wall Details No. 1	D-16	Corrugated Steel Pipe Inlets Types A & B
C-13B	Reinforced Concrete Retaining Wall Details No. 1	D-17A	Corrugated Steel Pipe Inlets, Details
C-13C	Reinforced Concrete Retaining Wall Details No. 1	D-17B	Corrugated Steel Pipe Inlets, Details
C-13D	Reinforced Concrete Retaining Wall Details No. 1	D-18	Slotted Corrugated Steel Pipe Drains 12" through 24"
		D-19	Slotted Drain Connections to Standard Inlets
		D-22	Asphalt Concrete Spillway
		D-23	Tapered Inlet and Downdrain Flume
		D-25A	Curb Outlet - Type A

## TABLE OF CONTENTS

D-25B	Modified Curb Outlet – Type A	D-44B	Pipe Culvert - Headwalls, Endwalls and Warped Wingwalls
D-27	Sidewalk Underdrain Pipe	D-44C	Pipe Culvert - Headwalls, Endwalls and Warped Wingwalls
D-29	Catch Basin - Type 1	D-44D	Pipe Culvert - Headwalls, Endwalls and Warped Wingwalls
D-30	Straight Headwall - Type A (Circular Pipe)	D-45	Median Curb Inlet – Type J
D-31	Straight Headwall - Type A (C.S.P. - Arch)	D-60	Pipe Bedding and Trench Backfill for Storm Drains
D-32	Straight Headwall - Type B (Circular Pipe)	D-61	Rounded Pipe Ends in Drainage Structures
D-33	Straight Headwall - Type B (C.S.P. - Arch)	D-62	Pipe Collar
D-34	Wing and U Type Headwalls for 18" to 36" Pipes	D-63	Concrete Lug
D-35A	Wing and U Type Headwalls for 42" to 84" Pipes	D-70	Minor Drainage Channel
D-35B	Wing and U Type Headwalls for 42" to 84" Pipes	D-71	Major Drainage Channel
D-36	L Type Headwalls - Circular Pipes	D-72	Cutoff Wall for Drainage Channel
D-37	L Type Headwalls - CSP Arch Pipes	D-73	Pipe to Channel Connection
D-38	Curtain Wall	D-74	Graded Earth Channel
D-39	Inlet Apron for Culverts Up to 42" Diameter	D-75	Drainage Ditches
D-40	Rip Rap Energy Dissipater	D-76A	Single Box Culvert, Details No. 1
D-41A	Concrete Energy Dissipater	D-76B	Single Box Culvert, Details No. 1
D-41B	Concrete Energy Dissipater	D-76C	Single Box Culvert, Details No. 1
D-42	Concrete Energy Dissipater (Reinforcement) 18" to 30" Diameter Pipe	D-76D	Single Box Culvert, Details No. 1
D-43A	Concrete Energy Dissipater (Reinforcement) 36" to 72" Diameter Pipe	D-76E	Single Box Culvert, Details No. 1
D-43B	Concrete Energy Dissipater (Reinforcement) 36" to 72" Diameter Pipe	D-76F	Single Box Culvert, Details No. 1
D-43C	Concrete Energy Dissipater (Reinforcement) 36" to 72" Diameter Pipe	D-76G	Single Box Culvert, Details No. 2
D-44A	Pipe Culvert - Headwalls, Endwalls and Warped Wingwalls	D-77A	Double Box Culvert, Details No. 1
		D-77B	Double Box Culvert, Details No. 1
		D-77C	Double Box Culvert, Details No. 1

## TABLE OF CONTENTS

D-77D	Double Box Culvert, Details No. 1
D-77E	Double Box Culvert, Details No. 1
D-77F	Double Box Culvert, Details No. 1
D-77G	Double Box Culvert, Details No. 2
D-78A	Triple Box Culvert, Details No. 1
D-78B	Triple Box Culvert, Details No. 1
D-78C	Triple Box Culvert, Details No. 1
D-78D	Triple Box Culvert, Details No. 1
D-78E	Triple Box Culvert, Details No. 1
D-78F	Triple Box Culvert, Details No. 1
D-78G	Triple Box Culvert, Details No. 2
D-79A	Box Culvert Wingwall Types A, B and C, Details No. 1
D-79B	Box Culvert Wingwall Types A, B and C, Details No. 2
D-79C	Box Culvert Wingwall Types A, B and C, Details No. 3
D-79D	Box Culvert Wingwall Types A, B and C, Details No. 4
D-79E	Box Culvert Wingwall Types A, B and C, Details No. 5
D-79F	Box Culvert Wingwall Types A, B and C, Details No. 6
D-80A	Box Culvert Warped Wingwall, Details No. 1
D-80B	Box Culvert Warped Wingwall, Details No. 2
D-80C	Box Culvert Warped Wingwall, Details No. 3
D-81A	Box Culvert, Miscellaneous Details No. 1
D-81B	Box Culvert, Miscellaneous Details No. 2
D-82	Debris Fence

### **ELECTRICAL SYSTEMS**

E-01	Street Lighting Standard
E-02	Grounding of Concrete Lighting Standards
E-03	Pedestal for Electrical Equipment

### **GENERAL SURFACE IMPROVEMENTS**

G-01	Curbs and Gutter-Separate
G-02	Curb and Gutters - Combined
G-03	Monolithic Curb, Gutter and Sidewalk
G-04A	Curb and Gutter – Rolled
G-04B	Curb and Gutter to Rolled Curb Transition
G-05	Dikes - Asphalt Concrete
G-06	Curbs and Gutter - Medians
G-07	Sidewalk - Typical Sections
G-09	Sidewalk Joint Locations
G-10	Concrete Joint Details
G-11	Concrete Curb, Gutter, Sidewalk & Pavement Removal and Replacement
G-12	Cross Gutter
G-13	Mid-Block Cross Gutter
G-14A	Concrete Driveway (Contiguous Sidewalk)
G-14B	Concrete Driveway (Non-contiguous Sidewalk)
G-14C	Residential Concrete Driveway (Parkway less than 10' in depth)
G-14D	Concrete Driveway (for Confined Right-of- Way)
G-14E	Concrete Driveway (Alley Type)

## TABLE OF CONTENTS

G-14F	Concrete Driveway Type B (Contiguous Sidewalk)	G-37	Temporary Turnaround at Dead End Street
G-14G	Asphalt Concrete Driveway	G-38	Parking Bay
G-15	Driveway Location – Adjacent to Curb Returns and Street Lines	<b><u>SECTION I - SPRINKLER IRRIGATION SYSTEMS</u></b>	
G-16	Driveway Location and Width Requirements	I-01	Shrub Spray Head, on Fixed Riser
G-17	Alley Apron	I-02	Rotor or Impact Head on Fixed Riser
G-18	Concrete Pavement, Width 40' or Less	I-03	Rotor, Spray or Bubbler Pop-Up Head
G-19	Concrete Pavement, Width 42' to 62'	I-04	Deep Root Tree Bubbler
G-20	Concrete Pavement, Alley Section, Width 52' to 72'	I-05	Quick Coupling Valve
G-21	Concrete Pavement, Alley Section, Width 40' or Less	I-09	Flow Sensor
G-22	Cutoff Wall at End of Pavement	I-10	Irrigation Master Valve
G-23	Cutoff Wall at End of Alley Pavement	I-11	Isolation Ball Valve - 2" and Smaller
G-24A	Trench Resurfacing Asphalt Concrete Streets	I-12	Isolation Globe/Gate Valve – 2 ½" and Larger
G-24B	Trench Resurfacing Notes and Details	I-13	Isolation Globe Valve (2" and Smaller)
G-25	Trench Resurfacing PCC Surfaced Streets	I-14	Remote Control Valve
G-26	Concrete Driveway Commercial Alternate	I-15	Electrical Pull Box for Direct Burial Control Wires and Splicing Notes
G-27	Curb Ramp - Types A and B (New Construction)	I-16	Control Wire Installation
G-28	Curb Ramp - Types A-1 and B-1 (For Existing Sidewalk)	I-17	Automatic Irrigation Controller Pedestal Mounted
G-29	Curb Ramp - Type C (For Existing Sidewalk)	I-18	Automatic Irrigation Controller Indoor Wall Mounted
G-30	Truncated Domes	I-19	Solar Irrigation Controller
G-31	Curb Ramp - Type D	I-20	On-Grade Pipe Stabilization – Temporary Installation
G-32A	General Notes for Curb Ramps	I-23	Swing Joint and Pipe Installation on Slopes above Ground
G-32B	Notes for Curb Ramps	I-24	Double Swing Joint- Above Ground Pipe Installations
G-33	<b>Narrow Trenches Trenching &amp; Backfilling</b>	I-25	Irrigation Trench PVC or Copper Pipe
G-36	Slurry Backfill		

## TABLE OF CONTENTS

I-26	Irrigation Trench Detail 4" and Larger P.V.C. Mainline	M-08	Narrow Trenches - Trenching & Backfilling - Shallow Conduit Depth
I-32	Remote Control Valve Manifold Assembly with PVC Pipe (Temporary Systems)	M-09	Guard Post and Barricade
I-33	Remote Control Valve Manifold Assembly with Brass Pipe	M-10A	Street Survey Monument
I-35	Remote Control Valve Drip Irrigation	M-10B	Street Survey Monument – Overlay Adjustment
I-36	Air/Vacuum Relief Valve	M-10C	Street Survey Monument - Notes
I-37	Drip Irrigation Flush Valve (Automatic)	M-11	Bench Mark - Brass Plug
<b><u>SECTION L - LANDSCAPING</u></b>			
L-01	Tree Planting & Staking	M-12	Datums
L-02	Shrub Planting	M-13	Survey Monuments
L-03	Concrete Mowing Strip	M-14	Metric Equivalents
L-04	Tree Grate	M-15	Joint Trench Location
L-05	Light Pole Pad in Turf Areas	M-16	Demountable Post
L-06	Root Control Barrier	M-17	Tennis Court Fence Chain Link
L-07	Palm Tree Planting	M-18	Drinking Fountain
<b><u>SECTION M - MISCELLANEOUS</u></b>			
M-01	24" Manhole Frame and Cover, Heavy Duty	M-19	Fire Hydrant Markers
M-02	24" Manhole Frame and Cover, Light Duty	M-20	Chain Link Fence, Details
M-03A	36" Manhole Frame and Two Concentric Covers, Heavy Duty	M-21	Underground Typical Location, Conversion/Replacement/Upgrade
M-03B	36" Manhole Frame Light Weight-Heavy Duty	M-22	Utility Locations, Local and Major Streets
M-04	Manhole Cover Locking Device	M-23	Utility Locations Prime Arterials and Expressways
M-05	Chain Link Gate	M-24	Pedestrian Protective Railing, Details No. 1
M-06	Chain Link Fence	M-25	Pedestrian Protective Railing, Details No. 2
M-07	Narrow Trenches - Trenching & Backfilling	M-26	Concrete Steps
M-07A	Narrow Trenches - Trenching & Backfilling	M-27A	Disabled Parking Stall(s)
		M-27B	Diagonal Disabled Parking Stall(s)
		M-28A	Disabled Parking Sign
		M-28B	Van Accessible Sign for Disabled Parking Space

## TABLE OF CONTENTS

M-29	Pavement Symbol, Disabled Parking	<b><u>SECTION W - WATER SYSTEMS</u></b>
M-30	Guard Rail Reference Note	WA-01 2" Manual Air Valve
M-45	Break-Away Sign Post	WA-02 2" Automatic Combination Air Release and Air/Vacuum Valve Installations
	<b><u>SECTION S - SEWERAGE SYSTEMS</u></b>	WA-04 4" and 6" Automatic Combination Air Release and Air/Vacuum Valve Installations
SC-01	Sewer Cleanout	WA-06 Air and Vacuum Valve Enclosure Locations
SM-01	48" Diameter Precast Manhole Installation	WB-01 2" Blow-Off Installation
SM-02	60" Diameter Precast Manhole Installation	WB-02 4" and 6" Blow-Off Installation – Type A
SM-03	Sewer Manhole Base	WB-03 4" and 6" Blow-Off Assemblies in Street – Type B
SM-04	Manhole Pipe Connectors	WB-04 Blow-Off Installation from end of Mains and from Steel Mains
SM-05	Manhole Miscellaneous Details	WB-05 Temporary 2" Blow-Off Installation
SM-07	Manhole Coating and Lining System	WF-01 6" Fire Hydrant Installation
SM-08	Existing Manhole Abandonment	WF-02 6" Fire Hydrant Installation with Break-Off Check Valve
SP-01	Warning/Identification Tape Installation	WF-04 Fire Hydrant Locations and Port Orientation
SP-02	Pipe Bedding and Trench Backfill for Sewer Facilities	WF-05 4" and Larger Fire Service Installation
SP-03	Concrete Protection for Sewer Pipe	WM-04 Protection Post Installation
SP-05	Slope Protection Installations	WP-01 Warning/Identification Tape and Tracer Wire Installations
SP-07	Cut-Off Wall Installation in Traveled Areas	WP-02 Pipe Bedding and Trench Backfill for Potable and Recycled Water Mains
SP-09	Pipe Support for Undercut Sewer Mains or Sewer Laterals	WP-03 Cutting and Plugging Abandoned Water, Recycled Water and Sewer Mains
SS-01	4" and 6" Sewer Lateral Installation	WP-05 Slope Protection Installations
SS-02	4" and 6" Deep-Cut Sewer Lateral Installation	WP-07 Cut-Off Wall Installation in Traveled Areas
SS-03	Sewer Lateral Notes and Detail	WP-09 Pipe Support for Undercut Sewer Mains or Sewer Laterals
SS-04	4" and 6" Sewer Cut-In Wye Connections	WR-01 Reduced Pressure Backflow Prevention Device (¾" Thru 2")

## TABLE OF CONTENTS

- WR-02 3" and Larger Reduced Pressure Backflow  
Prevention Device
- WS-01 1" Water Service Installation
- WS-02 2" Water Service Installation
- WS-03 Meter Box Locations for Water and Recycled  
Water Appurtenances
- WS-04 4" or 6" Fireline/Master Meter Installation
- WT-01 Concrete Thrust and Anchor Block  
Installations
- WV-01 Gate Well Cap Installation for Valves 4" and  
Larger
- WV-02 Gate Well Cap & Can Installation for Valves 4"  
and Larger
- WV-03 Gate Well Identification
- WV-04 Steel Valve Stem Extension for Valves 4" and  
Larger
- WV-05 Steel Valve Stem Extension for Valves 2" and  
Smaller

### **APPENDIX A**

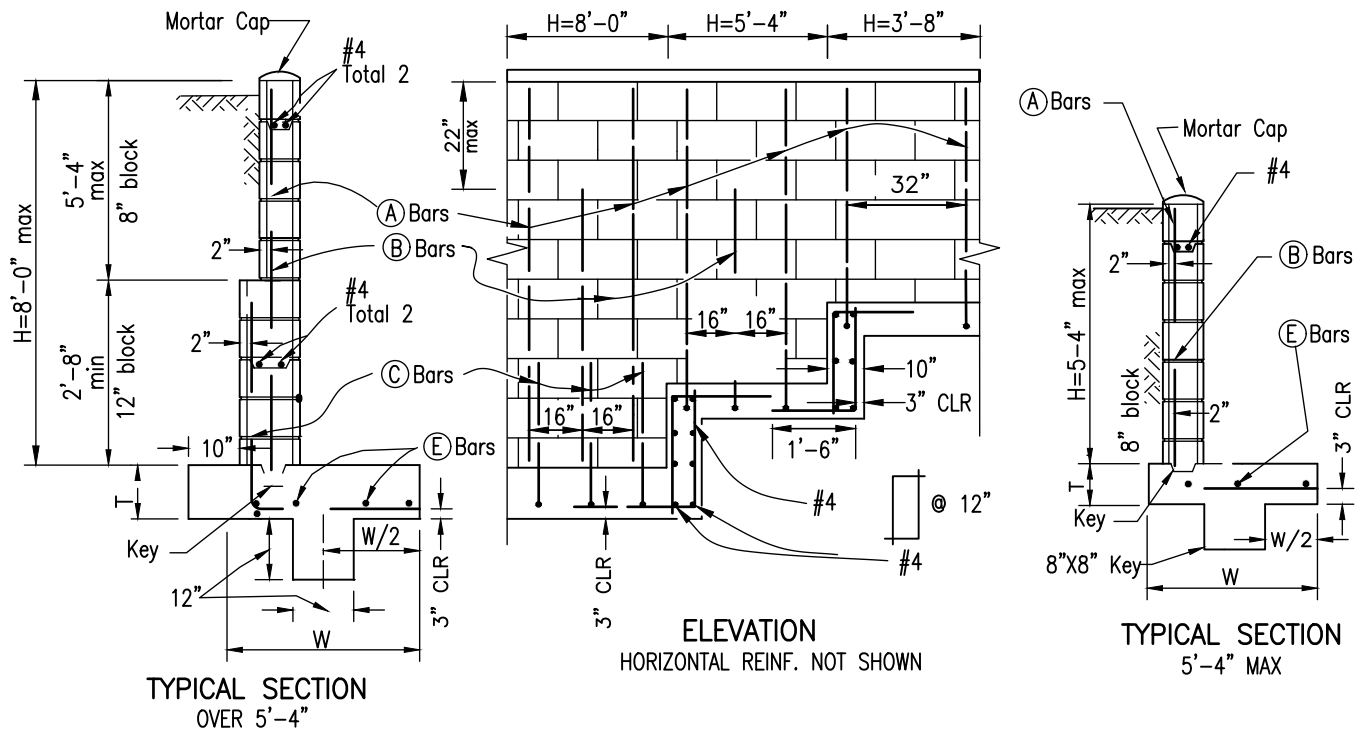
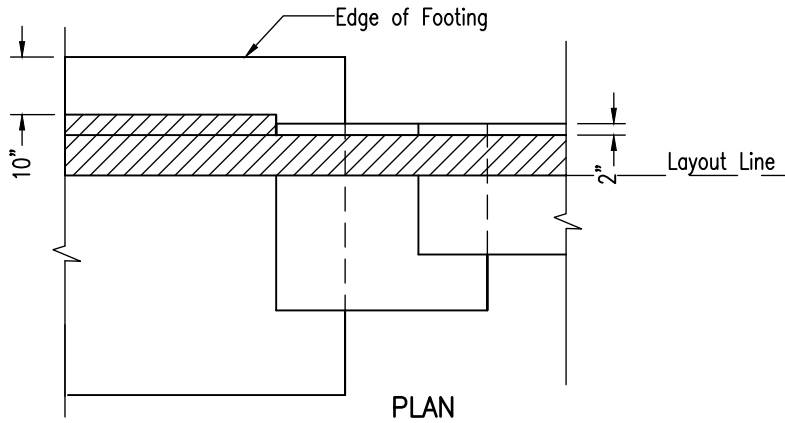
Traffic Control Plans

# CONCRETE STRUCTURES

CONCRETE STRUCTURES

C

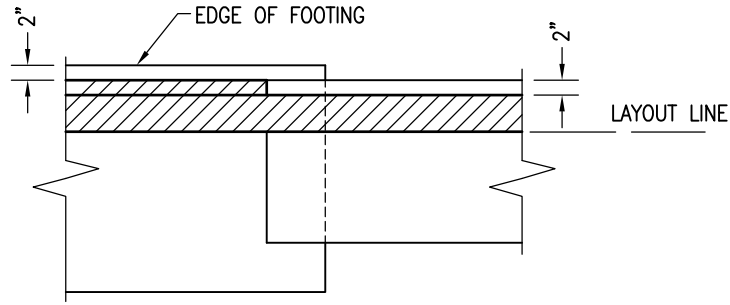




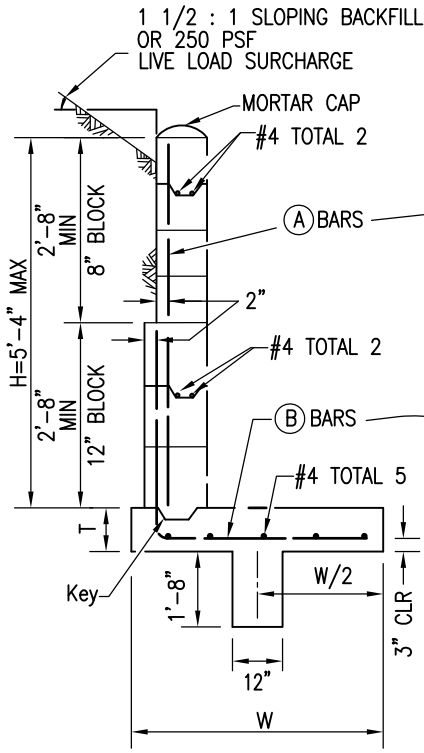
DIMENSIONS AND REINFORCING STEEL			
H (MAX)	3'-8"	5'-4"	8'-0"
T (MIN)	0'-11"	1'-0"	1'-4"
W (MIN)	2'-7"	3'-8"	5'-10"
(A) BARS	#4@32"	#4@16"	#5@24"
(B) BARS	---	#4@16"	#5@24"
(C) BARS	---	---	#6@16"
(E) BARS	#4 TOTAL 4	#4 TOTAL 5	#4 TOTAL 6
MAX SOIL PRESSURE	1500 PSF	2000 PSF	3000 PSF

- NOTES: 1. SEE C-7 AND C-8 FOR ADDITIONAL NOTES AND DETAILS.  
2. FILL ALL BLOCK CELLS WITH GROUT.

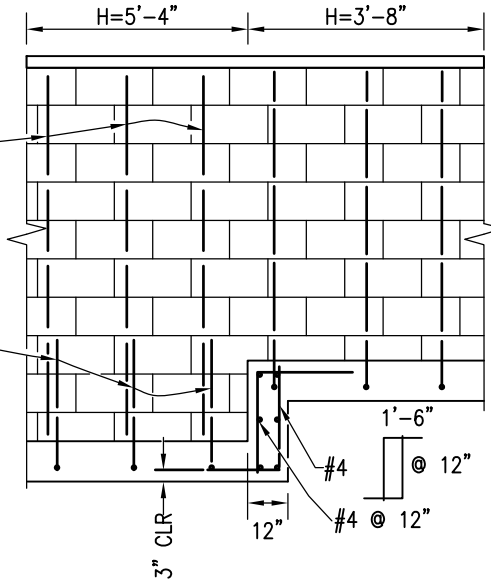
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		MASONRY RETAINING WALL TYPE 1 LEVEL BACKFILL WITH 10-IN HEEL
Add Metric		T. Stanton	03/03	<i>T. Stanton</i> 10/25/2018	
Delete Metric	S.S.	T. Shell	03/11	Chairperson R.C.E. 19246 Date	
Reviewed	TS	T. Stanton	11/15	DRAWING NUMBER	
Reviewed	DH	T. Stanton	09/17	C-01	



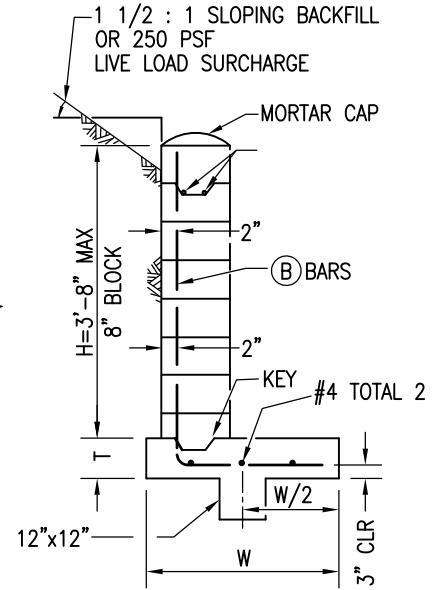
PLAN



TYPICAL SECTION OVER 3'-8"



ELEVATION  
HORIZONTAL REINF. NOT SHOWN



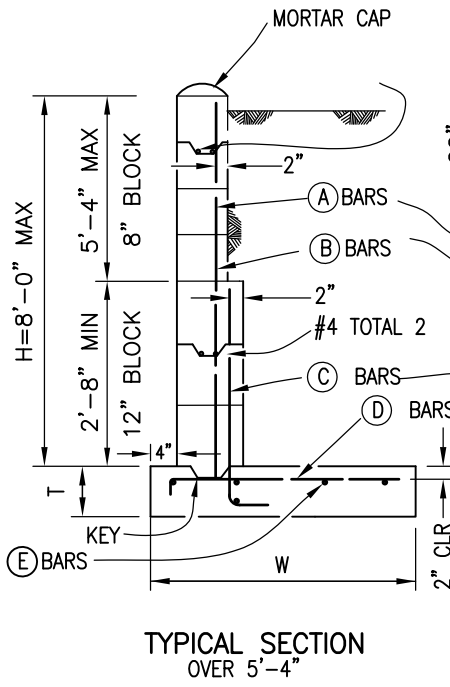
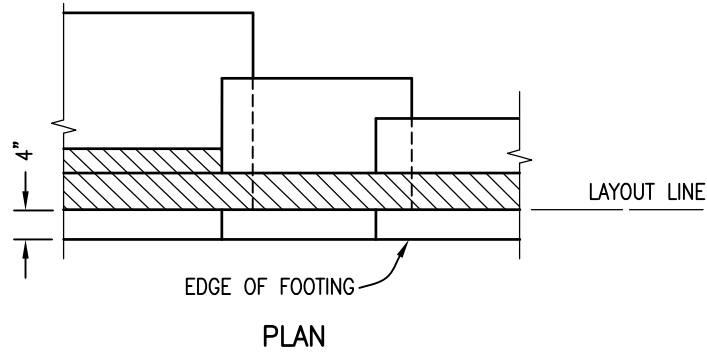
TYPICAL SECTION  
3'-8" MAX

DIMENSIONS AND REINFORCING STEEL		
H (MAX)	5'-4"	3'-8"
T (MIN)	1'-1"	0'-10"
W (MIN)	5'-0"	3'-9"
(A) BARS	#4@16"	---
(B) BARS	#5@16"	#4@16"
MAX SOIL PRESSURE	1000 PSF	800 PSF

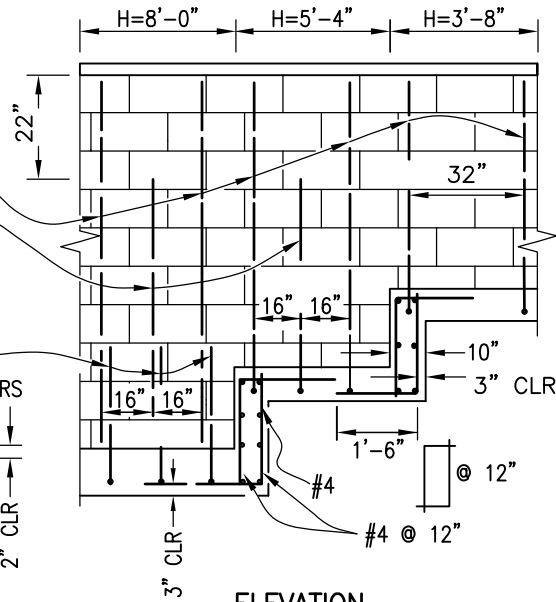
NOTES:

- SEE C-7 AND C-8 FOR ADDITIONAL NOTES AND DETAILS.
- FILL ALL BLOCK CELLS WITH GROUT.

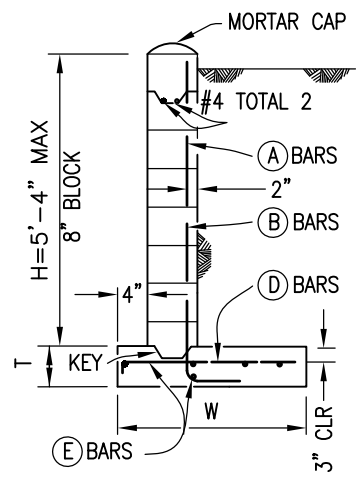
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		MASONRY RETAINING WALL TYPE 2 (LIVE LOAD SURCHARGE OR SLOPING BACKFILL)
Add Metric		T. Stanton	03/03	<i>T. Stanton</i> 10/25/2018	
Delete Metric	S.S.	T. Shell	03/11	Chairperson R.C.E. 19246 Date	
Reviewed	TS	T. Stanton	11/15	DRAWING NUMBER	
Revised	DH	T. Stanton	09/17	C-02	



TYPICAL SECTION  
OVER 5'-4"



ELEVATION  
HORIZONTAL REINF. NOT SHOWN



TYPICAL SECTION  
5'-4" MAX

DIMENSIONS AND REINFORCING STEEL			
H (MAX)	3'-8"	5'-4"	8'-0"
T (MIN)	0'-8"	1'-1"	1'-3"
W (MIN)	2'-4"	3'-9"	5'-3"
(A) BARS	#4@32"	#5@16"	#4@24"
(B) BARS	---	#5@16"	#4@24"
(C) BARS	---	---	#6@16"
(D) BARS	#4@32"	#5@12"	#6@16"
(E) BARS	#4 TOTAL 4	#4 TOTAL 5	#4 TOTAL 6
MAX SOIL PRESSURE	1100 PSF	2500 PSF	3000 PSF

NOTES: 1. SEE C-7 AND C-8 FOR ADDITIONAL NOTES AND DETAILS.  
2. FILL ALL BLOCK CELLS WITH GROUT.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Delete Metric	S.S.	T. Shell	03/11
Reviewed	TS	T. Stanton	11/15
Revised	DH	T. Stanton	09/17

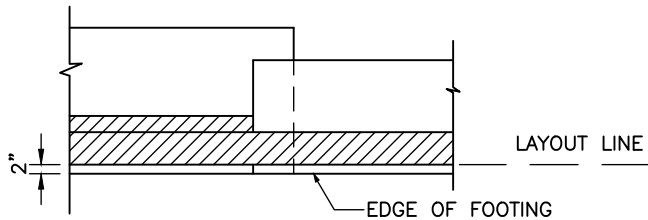
SAN DIEGO REGIONAL STANDARD DRAWING

MASONRY RETAINING WALL TYPE 3  
(LEVEL BACKFILL)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

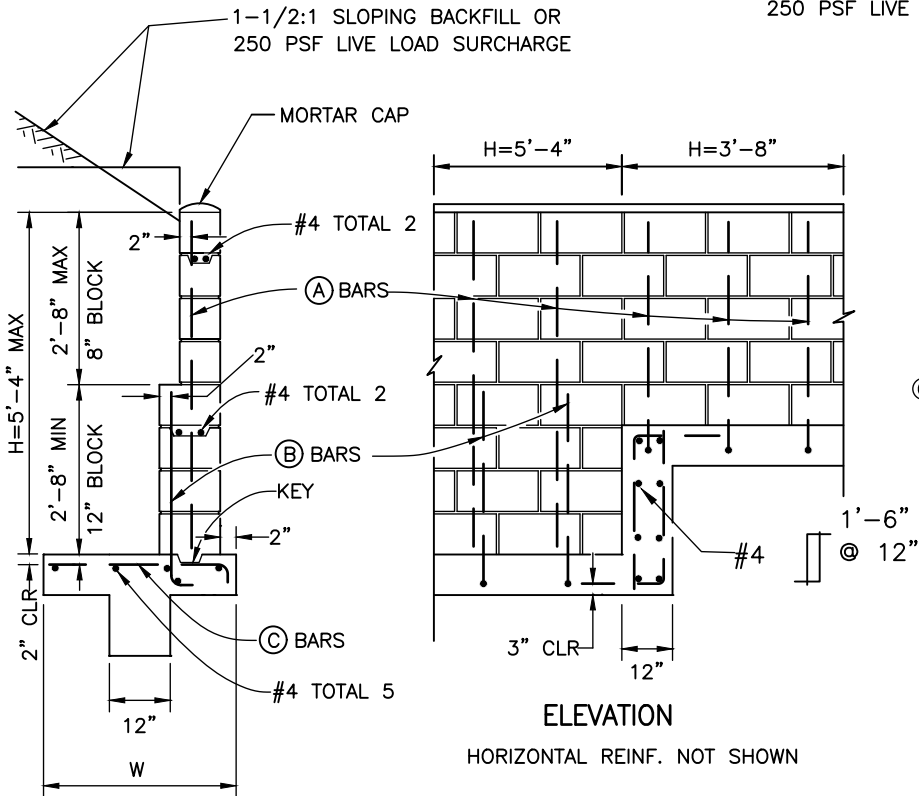
*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER C-03



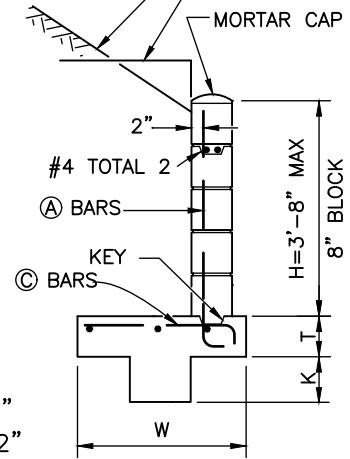
PLAN

1-1/2:1 SLOPING BACKFILL OR  
250 PSF LIVE LOAD SURCHARGE



ELEVATION

HORIZONTAL REINF. NOT SHOWN



TYPICAL SECTION

3'-8" MAX

TYPICAL SECTION


OVER 3'-8"

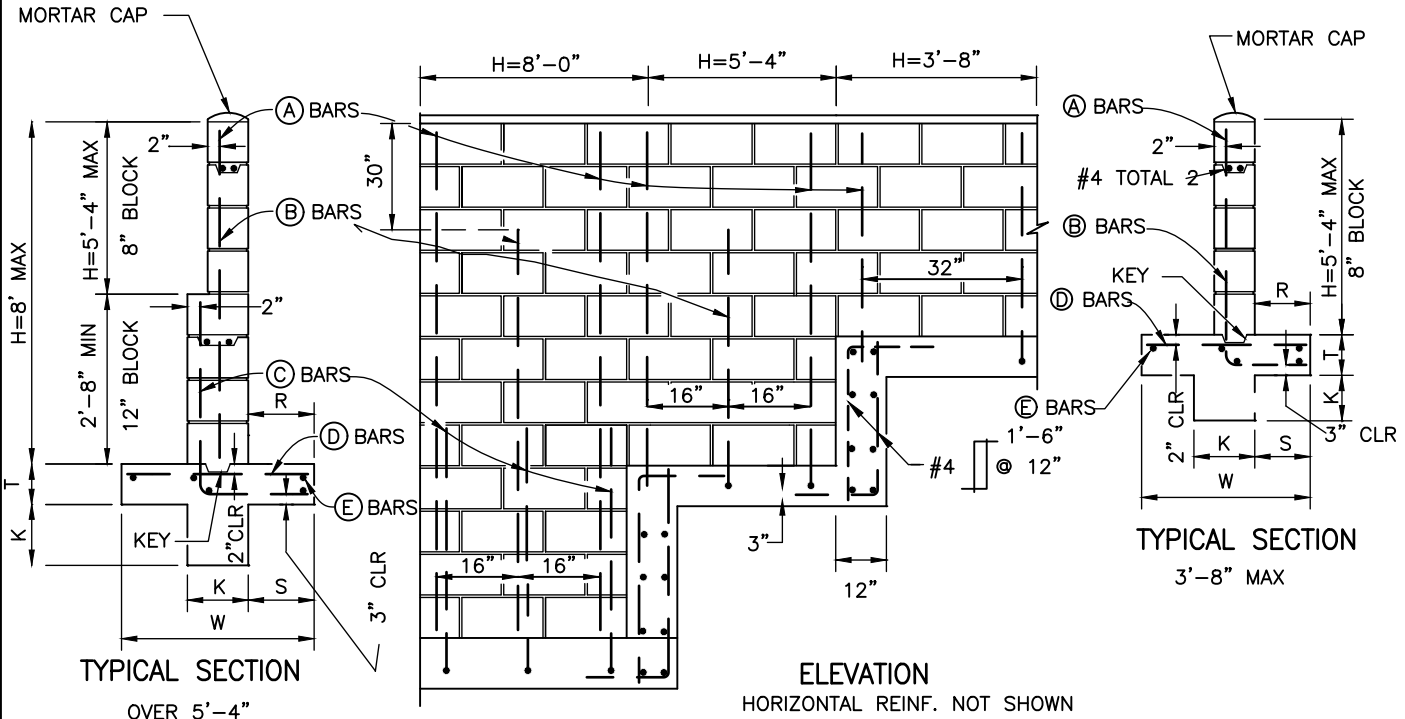
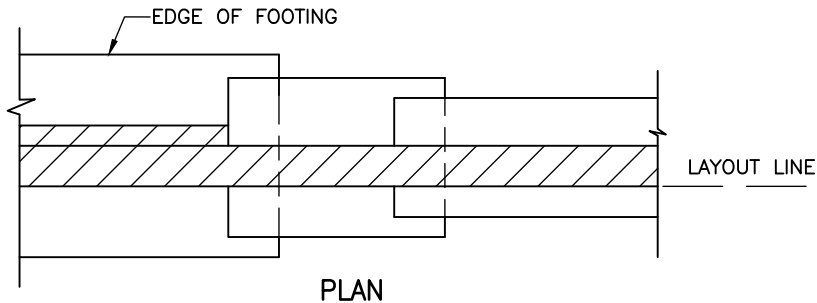
DIMENSIONS AND REINFORCING STEEL

H (MAX)	5'-4"		3'-8"	
T (MIN)	0'-10"		0'-8"	
W (MIN)	4'-0"		3'-0"	
(A) BARS	#4@16"		#4@16"	
(B) BARS	#6@16"		---	
SURCHARGE	sloping	live load	sloping	live load
(C) BARS	#6@8"	#6@16"	#6@16"	#6@16"
K (MIN)	1'-0"	0'-8"	1'-0"	0'-8"
TOE PRESS.	2700 PSF	1900 PSF	1700 PSF	1430 PSF

NOTES:

- SEE C-7 AND C-8 FOR ADDITIONAL NOTES AND DETAILS.
- FILL ALL BLOCK CELLS WITH GROUT.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Parkinson	02/95		
Add Metric		T. Stanton	03/03	MASONRY RETAINING WALL TYPE 4 (LIVE LOAD SURCHARGE OR SLOPING BACKFILL)	 Chairperson R.C.E. 19246 Date 10/25/2018
Reformatted		T. Stanton	04/06		
Delete Metric	S.S.	T. Shell	03/11		
Reviewed	TS	T. Stanton	11/15		
					DRAWING NUMBER C-04

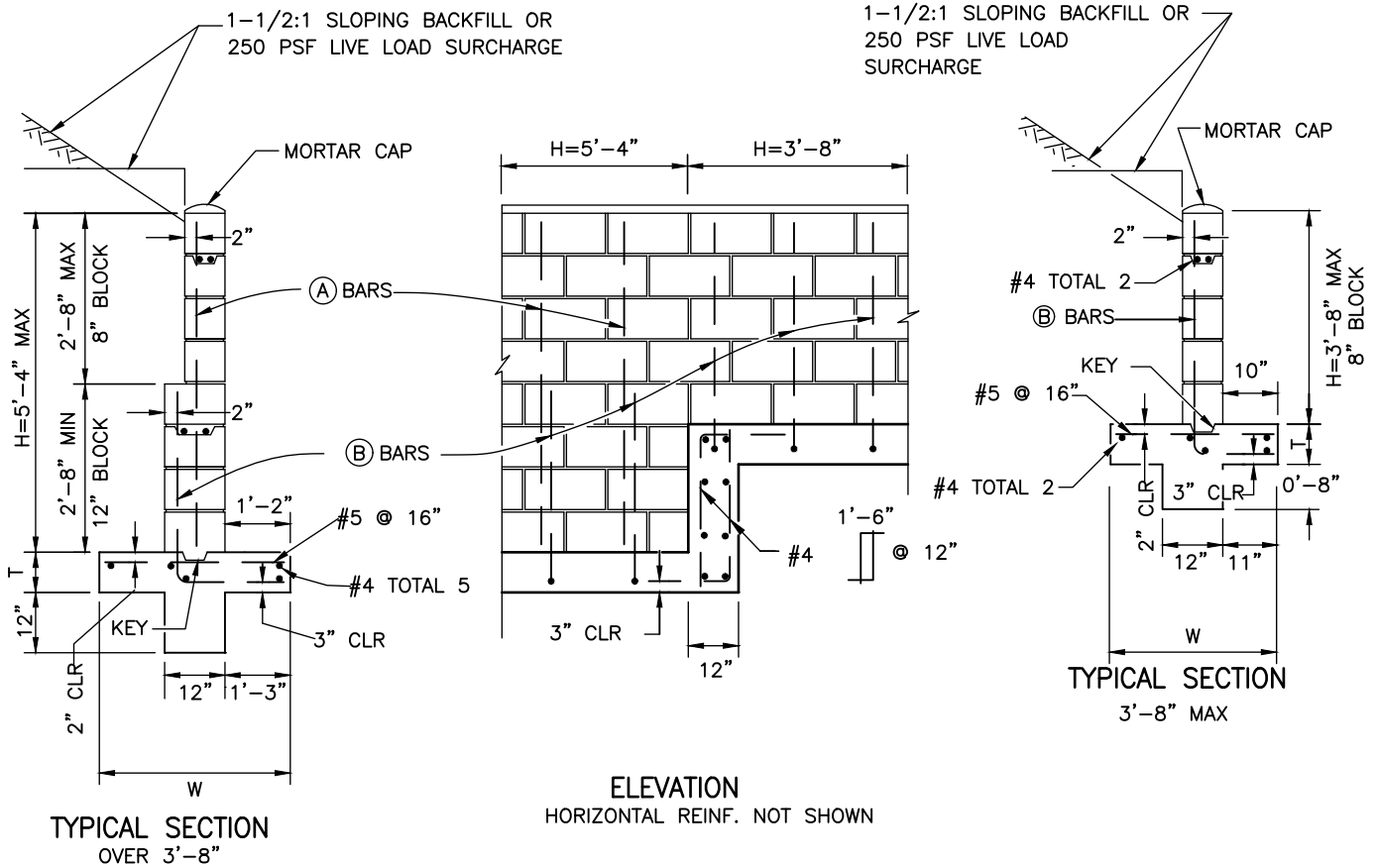
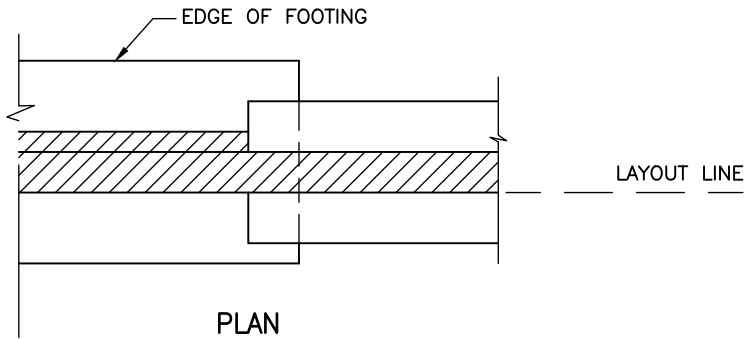


DIMENSIONS AND REINFORCING STEEL			
H (MAX)	3'-8"	5'-4"	8'-0"
T (MIN)	0'-8"	0'-10"	1'-0"
W (MIN)	2'-1"	3'-1"	4'-3"
R	0'-9"	1'-2"	1'-5"
S	0'-8 1/2"	1'-1 1/2"	1'-7 1/2"
K	0'-8"	0'-8"	1'-0"
(A) BARS	#4@32"	#4@32"	#4@32"
(B) BARS	—	#4@32"	#4@32"
(C) BARS	—	—	#7@16"
(D) BARS	#4@32"	#4@16"	#4@16"
(E) BARS	#4 total 5	#4 total 5	#4 total 6
MAX TOE PRESSURE	774 psf	1,030 psf	1,660 psf

**NOTES:**

1. SEE C-7 AND C-8 FOR ADDITIONAL NOTES AND DETAILS.
2. FILL ALL BLOCK CELLS WITH GROUT.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Parkinson	2/95		
Add Metric		T. Stanton	03/03	MASONRY RETAINING WALL TYPE 5 (LEVEL BACKFILL)	 Chairperson R.C.E. 19246 Date 10/25/2018
Delete Metric	S.S.	T. Shell	03/11		
Reviewed	TS	T. Stanton	11/15		
				DRAWING NUMBER	C-05



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 PRESSURE	2,000 PSF	1,400 PSF

**NOTES:**

1. SEE C-7 AND C-8 FOR ADDITIONAL NOTES AND DETAILS.
2. FILL ALL BLOCK CELLS WITH GROUT.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Parkinson	2/95		
Add Metric		T. Stanton	03/03		
Delete Metric	S.S.	T. Shell	03/11		
Reviewed	TS	T. Stanton	11/15		
				DRAWING NUMBER	C-06

**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:**

Fc=1200 psi      F'c=3000 psi  
Fs=20,000 psi      n=10

**Reinforced Masonry:**

F'm=600 psi      Fm=200 psi  
Fs=20,000 psi      n=50  
Earth=120 pcf and Equivalent Fluid  
Pressure=36 psf per foot of height

Walls shown for 1 1/2:1 unlimited sloping surcharge are designed in accordance with Rankline's formula for unlimited sloping surcharge with a  $\phi = 42'$ .

**REINFORCEMENT:**

Intermediate grade, hard grade, or rail steel deformation shall conform ASTM A615, A616, A617. Bars shall lap 40 diameters, where spliced, unless otherwise shown on the plans. Bends shall conform to the Manual of Standard Practice, A.C.1. Backing for hooks is four diameters. All bar embedments are clear distances to outside of bar. Spacing for parallel bars is center to center bars.

**MASONRY:**

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

**JOINTS:**

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

**CONCRETE:**

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

**BACKFILL:**

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

**FENCING:**

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

**INSPECTIONS:**

Call for inspections as follows:

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

Where cleanout holes are provided:

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

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

**CONCRETE GROUT AND MORTAR MIXES:**

Concrete grout shall attain a minimum compressive strength of 2,000 psi in 28 days and mortar shall attain 1,800 psi in 28 days.

All cells shall be filled with grout. Rod or vibrate consolidation. Bring grout within 10 minutes of pouring to insure grout to a point 2" from the top of masonry units when grouting of second lift is to be continued at another time.

**MORTAR KEY:**

To insure proper bonding between the footing and the first course of block, a mortar key shall be formed by embedding a flat 2 x 4 flush with and at the top of the freshly poured footing. The 2 x 4 should be removed after the concrete has started to harden (approximately 1 hour).

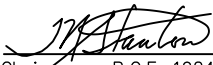
A mortar key may be omitted if the first course of block is set into the fresh concrete when the footing is poured, and a good bond is obtained.

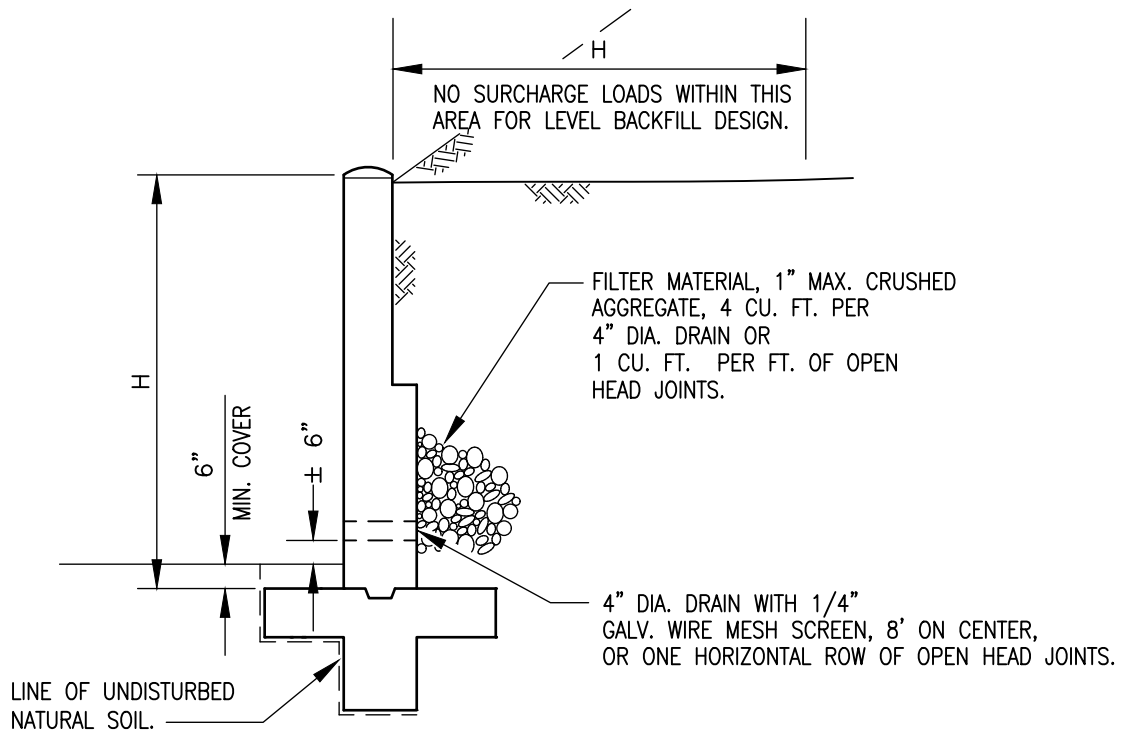
**WALL DRAINS:**

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

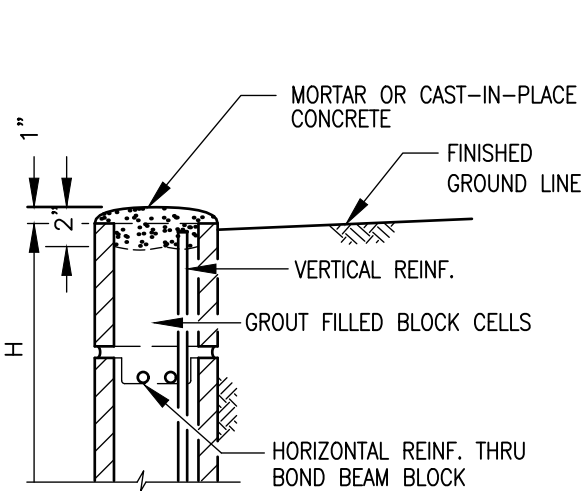
**SOIL:**

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

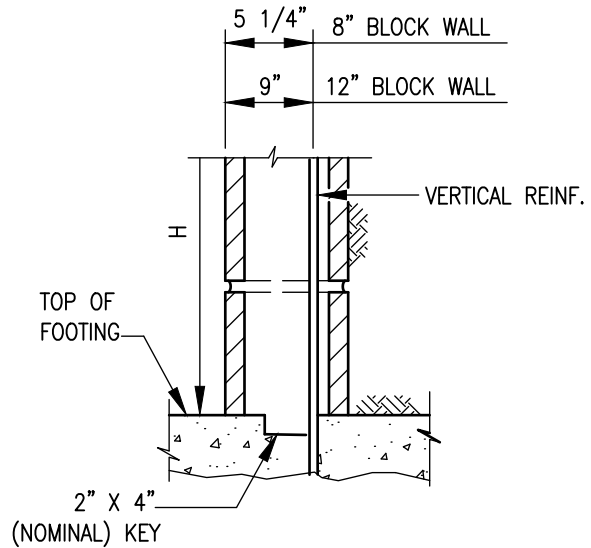
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING  <b>GENERAL NOTES FOR MASONRY RETAINING WALLS</b>	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE   10/25/2018 Chairperson R.C.E. 19246 Date
ORIGINAL		A. Kercheval	12/75		
Add Metric		T. Stanton	03/03		
Delete Metric	S.S.	T. Shell	03/11		
Reviewed	GT	T. Stanton	09/15		
				DRAWING NUMBER	C-07



TYPICAL SECTION



CAP DETAIL



KEY DETAIL

NOTES:

1. ALL MASONRY RETAINING WALLS SHALL BE CONSTRUCTED WITH CAP, KEY AND DRAINAGE DETAILS AS SHOWN HEREON.
2. 4" DIAMETER DRAIN MAY BE FORMED BY PLACING A BLOCK ON IT'S SIDE.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Delete Metric	S.S.	T. Shell	03/11
Reviewed	TS	T. Stanton	11/15

SAN DIEGO REGIONAL STANDARD DRAWING

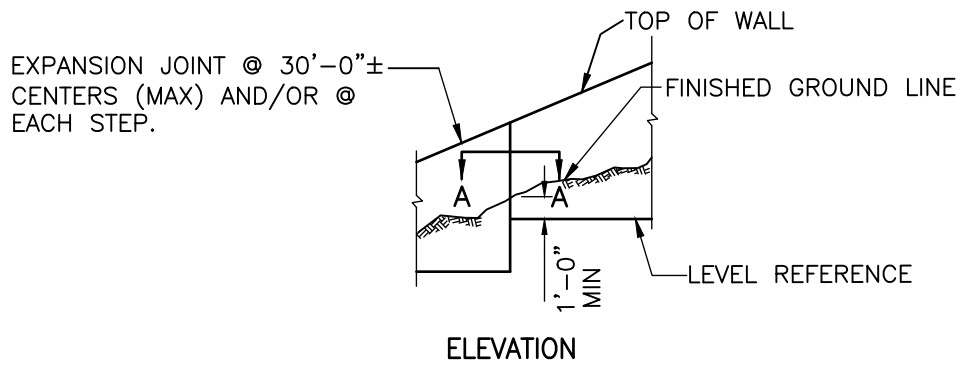
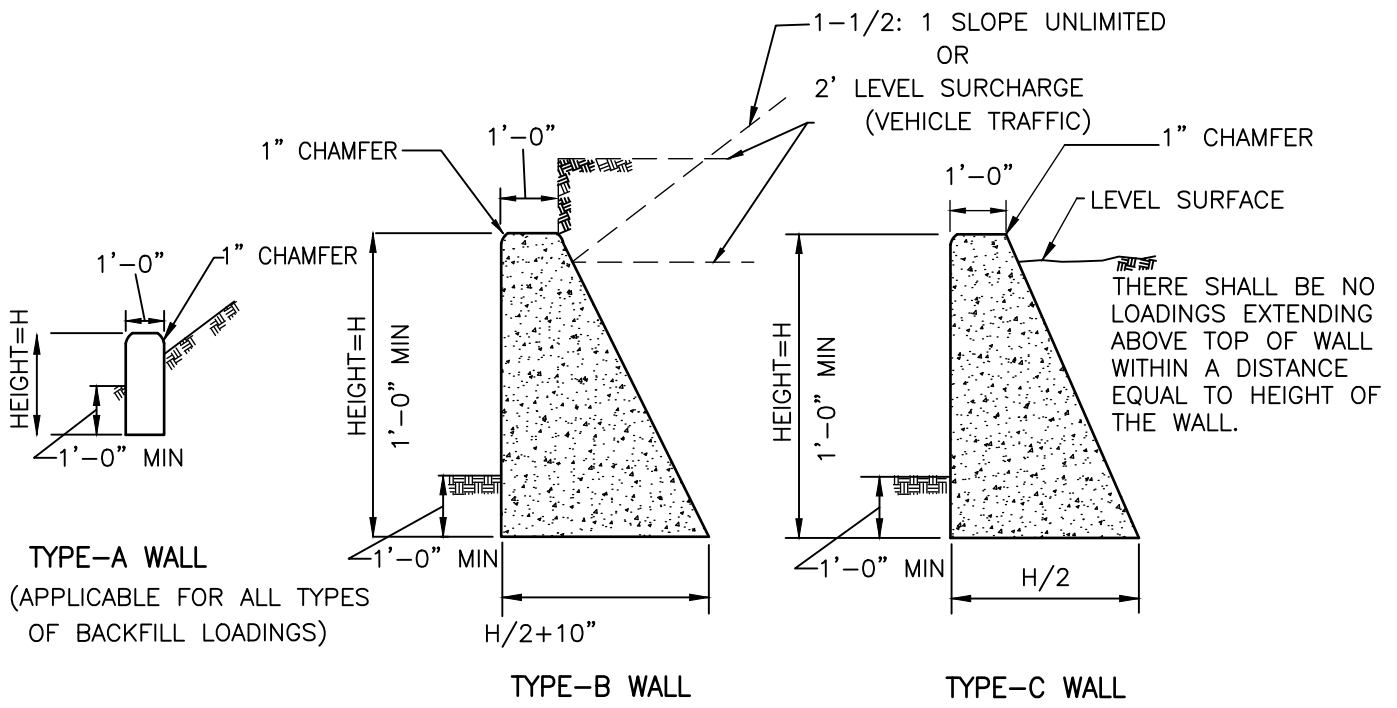
DETAILS FOR MASONRY RETAINING WALL

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER C-08





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

**NOTE:**  
SEE C-10 FOR SECTION A-A, NOTES AND DETAILS.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75		GRAVITY RETAINING WALLS	<i>T. Stanton</i> 10/25/2018
Add Metric		T. Stanton	03/03	Chairperson R.C.E. 19246 Date		
Delete Metric	S.S.	T. Shell	03/11	DRAWING NUMBER		C-09
Reviewed	TS	T. Stanton	11/15			

**CONCRETE**

CONCRETE SHALL BE 560-C-3250.

**DESIGN CONDITIONS**

WALLS ARE TO BE USED FOR THE LOADING CONDITIONS SHOWN FOR EACH TYPE WALL. DESIGN H MAY BE EXCEEDED BY SIX INCHES BEFORE GOING TO NEXT SIZE.

**DESIGN DATA**

FC = 1200 PSI  
 F'C = 3000 PSI  
 EARTH = 120 PCF  
 AND EQUIVALENT FLUID PRESSURE=36 PSF PER FOOT OF HEIGHT

WALLS SHOWN FOR 1-1/2:1 UNLIMITED SLOPING SURCHARGE ARE DESIGNED IN ACCORDANCE WITH RANKINE'S FORMULA FOR UNLIMITED SLOPING SURCHARGE WITH  $\phi = 42'$ .

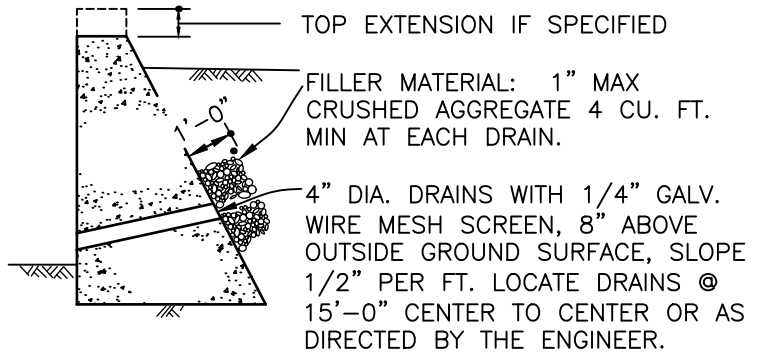
NOTE: MAXIMUM TOE PRESSURE UNDER WALL FOOTING = 1-1/2 TONS/SQ. FT. SPECIAL DESIGN REQUIRED WHERE FOOTING MATERIAL IS INCAPABLE OF SUPPORTING THIS PRESSURE.

**EXCAVATION AND BACKFILL**

COMPACTION OF BACKFILL MATERIAL BY JETTING OR PONDING WITH WATER WILL NOT BE PERMITTED.

EACH LAYER OF BACKFILL SHALL BE MOISTENED AS DIRECTED BY THE ENGINEER AND THOROUGHLY TAMPED, ROLLED OR OTHERWISE COMPACTED UNTIL THE RELATIVE COMPACTION IS NOT LESS THAN 90 PERCENT.

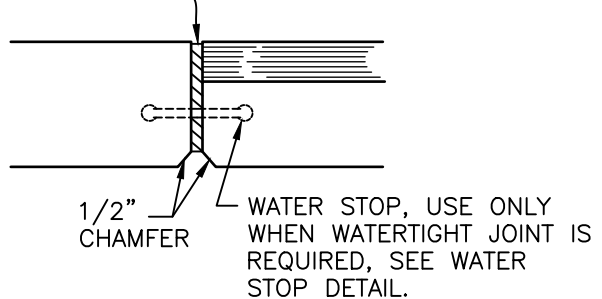
NO BACKFILL MATERIAL SHALL BE DEPOSITED AGAINST CONCRETE RETAINING WALLS UNTIL THE CONCRETE HAS DEVELOPED A STRENGTH OF 2,500 PSI IN COMPRESSION AS DETERMINED BY TEST CYLINDERS, OR UNTIL 28 DAYS AFTER WALL HAS BEEN PLACED.



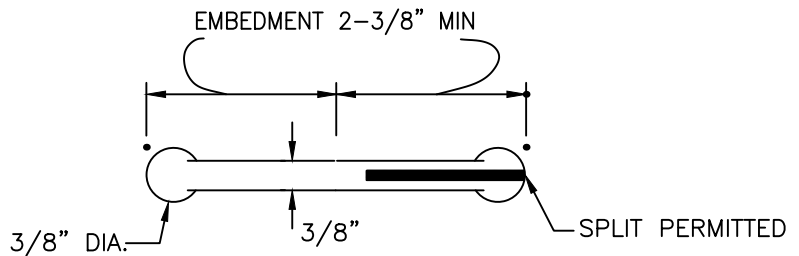
**TYPICAL DRAINAGE**

WHEN H IS GREATER THAN 4'-0"

1/2" EXPANSION JOINT, FILL WITH PREMOLDED EXPANSION JOINT FILLER. LOCATE JOINTS AT APPROX. 30'-0" CENTERS OR AS DIRECTED BY THE ENGINEER.



**SECTION A-A**



**RUBBER WATERSTOP**

USE ONLY WHEN WATERTIGHT JOINT IS REQUIRED.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Delete Metric	S.S.	T. Shell	03/11
Reviewed	TS	T. Stanton	11/15

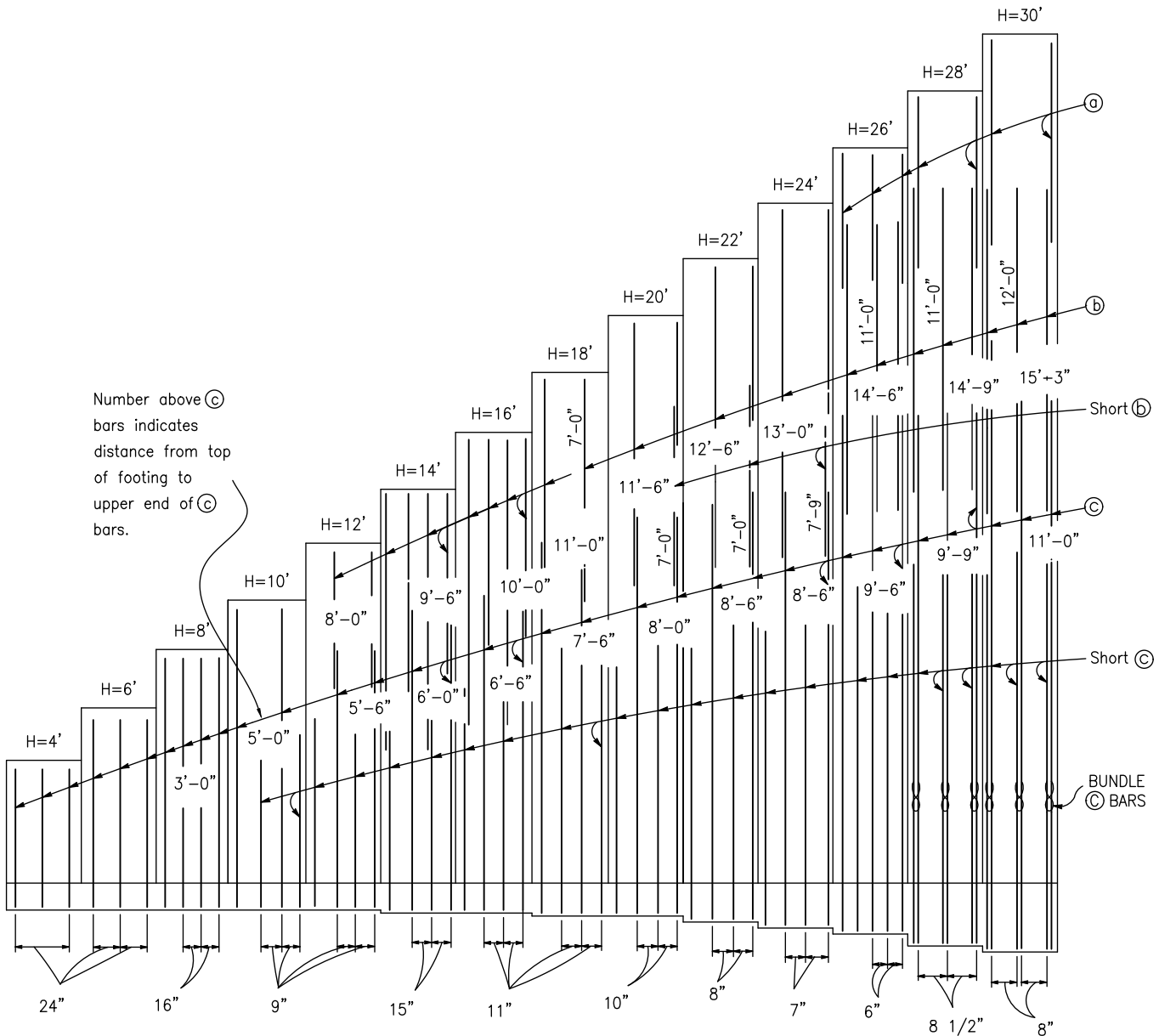
SAN DIEGO REGIONAL STANDARD DRAWING

GENERAL NOTES AND DETAILS  
 FOR GRAVITY RETAINING WALLS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
 Chairperson R.C.E. 19246 Date

DRAWING NUMBER C-10



**ELEVATION**

NOTES:

1. FOR SPREAD FOOTING SECTION SEE C-11B
2. FOR TYPICAL LAYOUT EXAMPLE SEE C-11C
3. FOR 45T PILE FOOTING SECTION SEE C-11C
4. FOR TABLE OF REINFORCING STEEL DIMENSIONS AND DATA SEE C-11D

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Delete Metric	S.S.	T. Shell	03/11
Reviewed	TS	T. Stanton	11/15

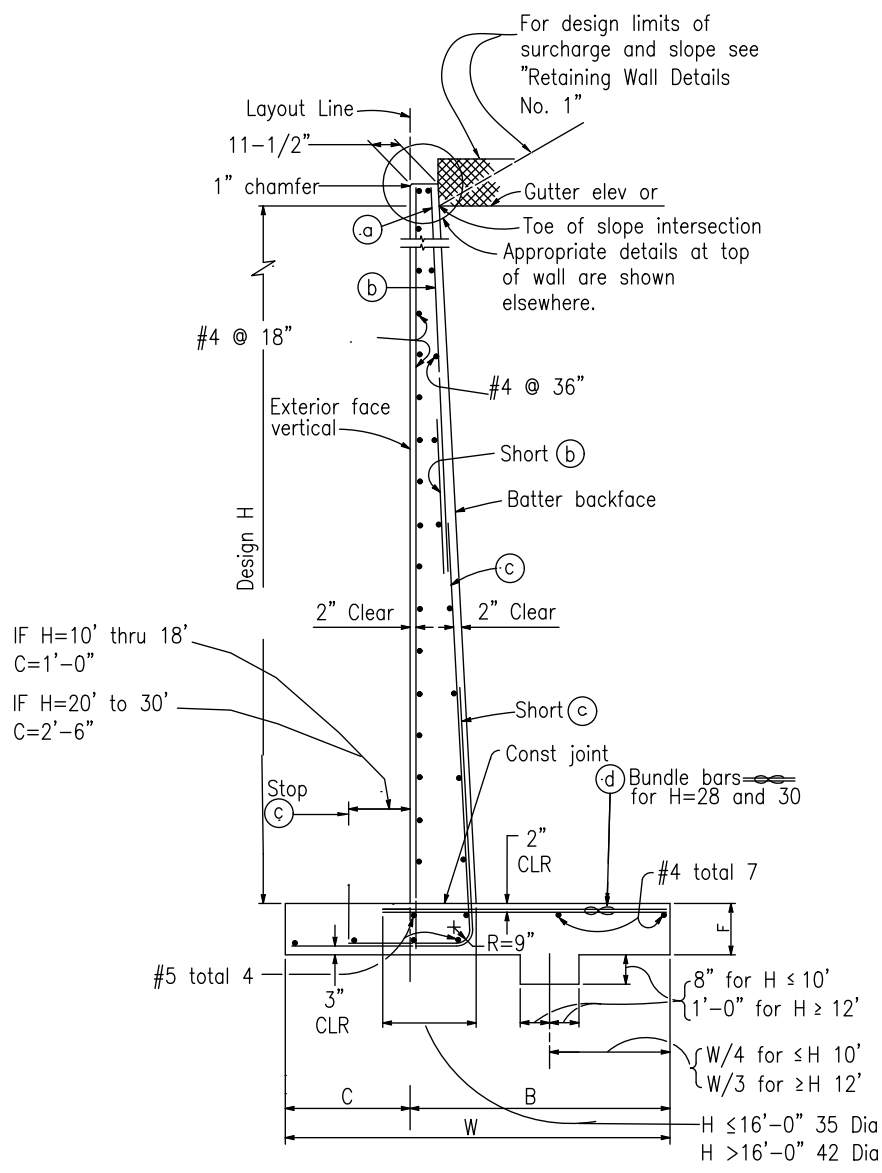
SAN DIEGO REGIONAL STANDARD DRAWING

REINFORCED CONCRETE RETAINING WALL  
TYPE 1 – ELEVATION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER C-11A

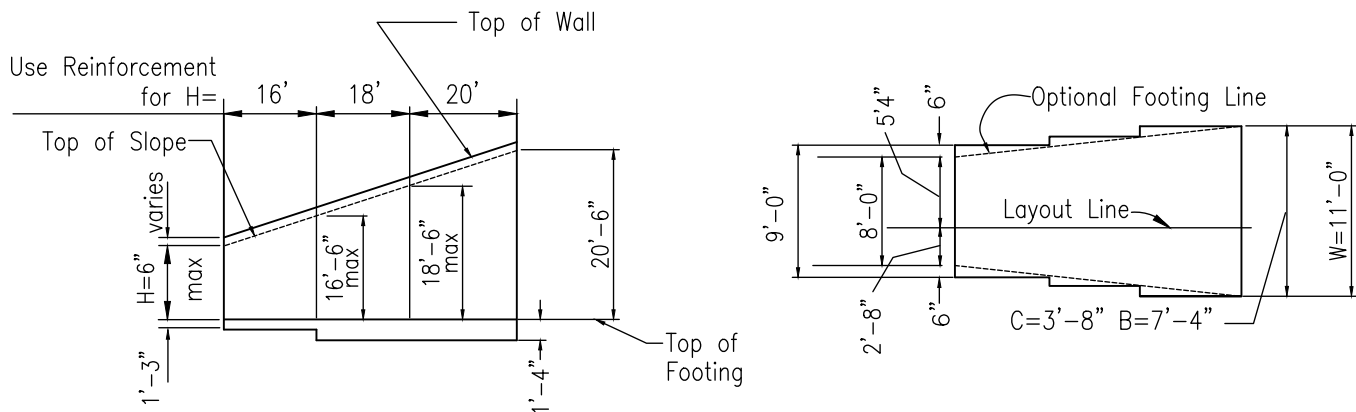


SPREAD FOOTING SECTION

NOTES:

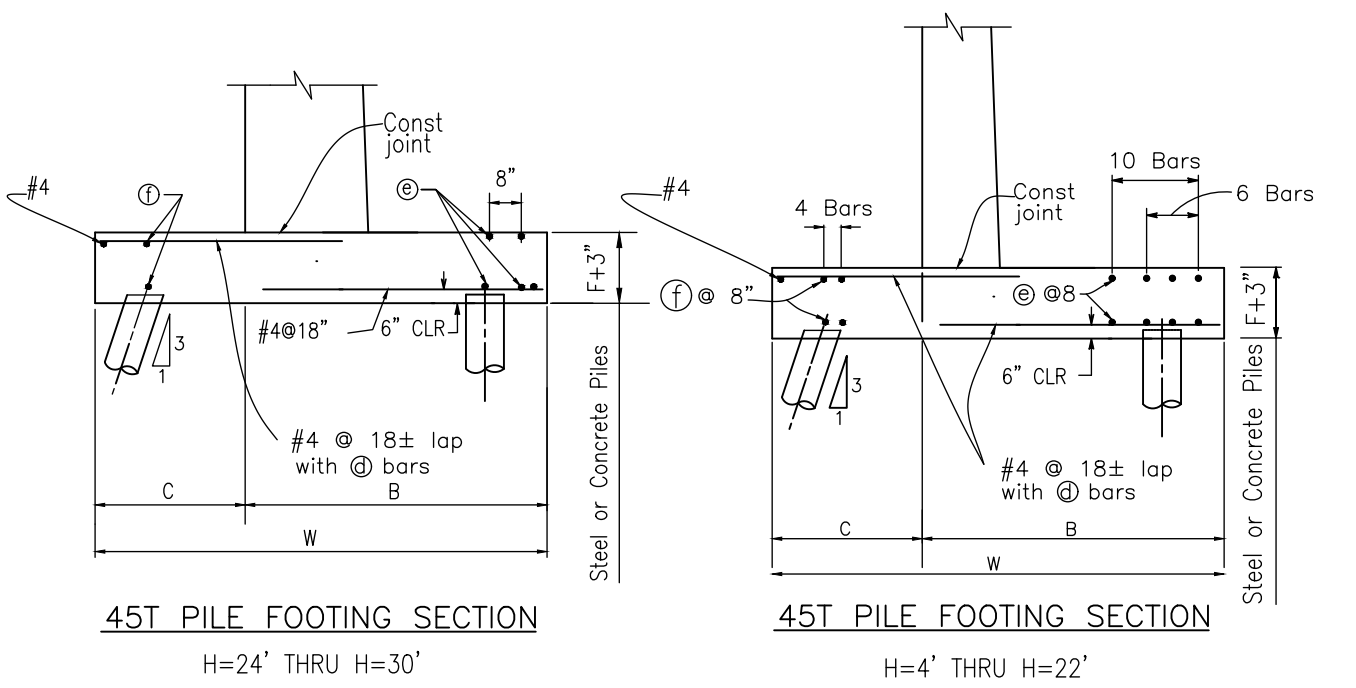
- FOR DETAILS NOT SHOWN AND DRAINAGE NOTES SEE "RETAINING WALL DETAILS NO.1".  
STANDARD DRAWINGS C-13A TO C-13D.
- QUANTITIES APPLY TO DESIGN H PORTION AND EXCLUDE THE ADDED PORTION ABOVE "GUTTER ELEVATION".

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75	REINFORCED CONCRETE RETAINING WALL TYPE 1 - SPREAD FOOTING		 10/25/2018 Chairperson R.C.E. 19246 Date	
Add Metric		T. Stanton	03/03				
Delete Metric	S.S.	T. Shell	03/11				
Reviewed	TS	T. Stanton	11/15				
				DRAWING NUMBER	C-11B		



TYPICAL LAYOUT EXAMPLE

FOR JOINTS REQUIRED, SEE DETAILS 3-3 AND 3-4, DRAWING C-15



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Delete Metric	S.S.	T. Shell	03/11
Reviewed	TS	T. Stanton	11/15

SAN DIEGO REGIONAL STANDARD DRAWING

REINFORCED CONCRETE RETAINING WALL

TYPE 1 – PILE FOOTING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER C-11C

TABLE OF REINFORCING STEEL DIMENSIONS AND DATA

Design H	4'	6'	8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'
W	3'-2"	4'-2"	5'-2"	6'-2"	7'-2"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-3"	14'-3"	15'-3"	16'-9"
C	1'-0"	1'-4"	1'-8"	2'-0"	2'-4"	2'-8"	3'-0"	3'-4"	3'-8"	4'-0"	4'-5"	4'-9"	5'-1"	5'-5"
B	2'-2"	2'-10"	3'-6"	4'-2"	4'-10"	5'-4"	6'-0"	6'-8"	7'-4"	8'-0"	8'-10"	9'-6"	10'-2"	11'-4"
F Spread Ftg.	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"	1'-3"	1'-3"	1'-4"	1'-4"	1'-6"	1'-8"	1'-11"	2'-2"	2'-4"
Batter	1/2:12	1/2:12	1/2:12	1/2:12	1/2:12	1/2:12	1/2:12	1/2:12	1/2:12	1/2:12	5/8:12	3/4:12	3/4:12	7/8:12
⊙bars	—	—	—	—	—	—	—	—	—	—	—	#6@24	#6@17	#6@16
⊙bars	—	—	—	—	#4@18	#6@30	#6@22	#7@22	#8@20	#8@16	#8@14	#8@12	#8@8-1/2	#8@8
⊙bars	#5@24	#5@24	#5@16	#5@9	#6@9	#9@15	#9@11	#10@11	#11@10	#11@8	#11@7	#11@6	#10@8-1/2	#10@8
⊙bars	#5@24	#5@24	#4@16	#4@9	#5@9	#8@15	#8@11	#10@11	#10@11	#10@8	#10@7	#10@6	#9@8-1/2	#9@8
Total ⊙ bars	6-#6	6-#6	10-#7	10-#7	10-#7	10-#7	6-#7	6-#7	6-#7	6-#7	4-#7	4-#7	4-#7	4-#7
Total ⊕ bars				4-#7	4-#7	4-#7	4-#7	4-#7	4-#7	4-#7	2-#7	2-#7	2-#7	2-#7
2' Level surcharge	1.6	1.9	2.2	2.3	2.8	3.3	3.5	4.0	4.3	4.6	4.9	5.3	5.7	6.2
2:1 unlimited slope	1.1	1.5	2.0	2.5	2.7	3.3	3.6	4.2	4.7	5.5	5.9	6.5	7.1	7.5
1-1/2:1 limited slope	1.3	1.7	2.1	2.5	2.9	3.4	3.8	4.3	4.8	5.4	5.8	6.5	7.2	7.5
Spread Footing	17	20	28	37	51	80	105	147	187	246	303	407	449	507
Pile ftg.	8.9	12.5	16.3	20.2	25.4	30.1	34.6	40.1	45.0	52.1	63.3	77.0	88.1	104.8
	29	32	41	70	84	113	140	172	212	270	322	427	469	528
	10.2	12.7	16.7	20.8	25.2	30.1	34.8	40.6	45.7	53.1	64.7	78.6	89.9	107.0

Note: Reinforcement detailed is to be placed in addition to that shown for spread footing. All piles not shown, see Pile Layout on plans. \*For pile footing Design H=4' use same footing dimensions as Design H=6' †Denotes a bundle of 2 bars

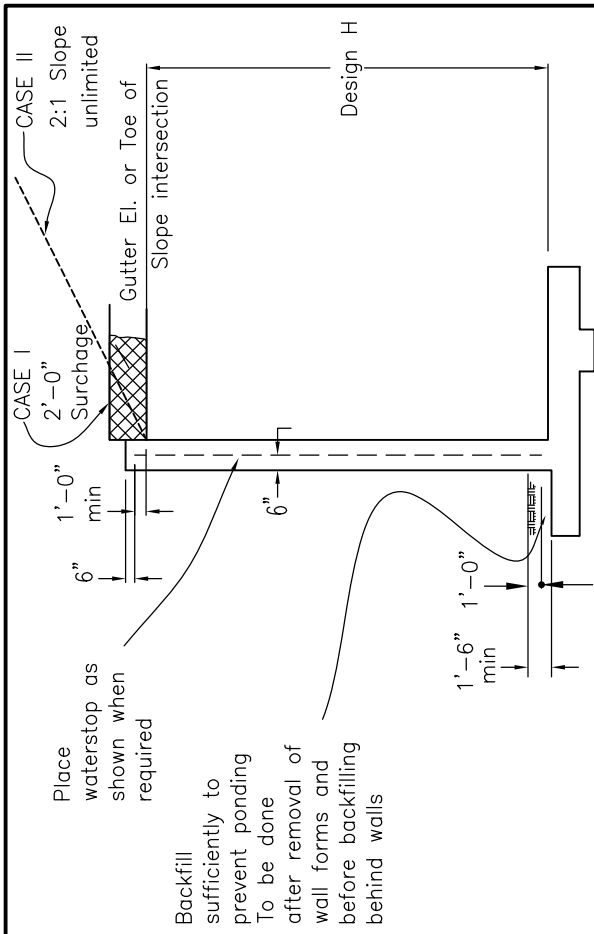
Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Delete Metric	S.S.	T. Shell	03/11
Reviewed	TS	T. Stanton	11/15

SAN DIEGO REGIONAL STANDARD DRAWING  
 REINFORCED CONCRETE RETAINING WALL  
 TYPE 1 – DIMENSION AND STEEL TABLE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

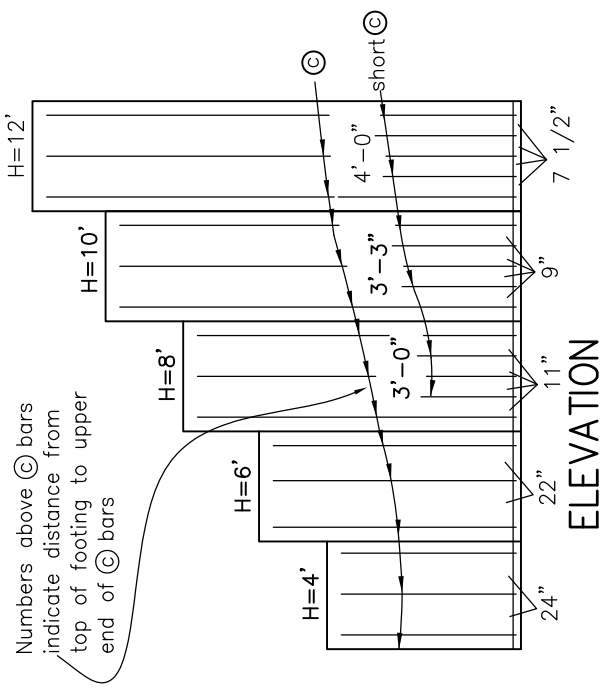
*T. Stanton* 10/25/2018  
 Chairperson R.C.E. 19246 Date

DRAWING NUMBER C-11D



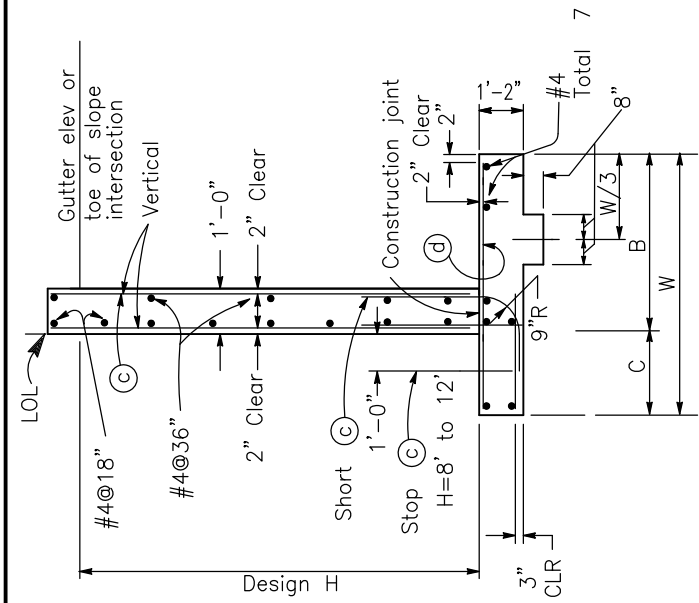
**DESIGN**

For drainage notes and other details, see "Retaining Wall Details No.1" Drawing C-13A to C-13D



**ELEVATION**

Numbers above © bars indicate distance from top of footing to upper end of © bars



**SPREAD FOOTING SECTION**

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

**NOTES:**

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

**Design Data:**

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

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

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

**NOTE:**

Reinforcement detailed is to be placed in addition to that shown for spread footing. All piles not shown. see File Layout on plans.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Delete Metric	S.S.	T. Shell	03/11
Reviewed	TS	T. Stanton	11/15

SAN DIEGO REGIONAL STANDARD DRAWING

REINFORCED CONCRETE RETAINING WALL  
TYPE 1A

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER C-12A

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Delete Metric	S.S.	T. Shell	03/11
Reviewed	TS	T. Stanton	11/15

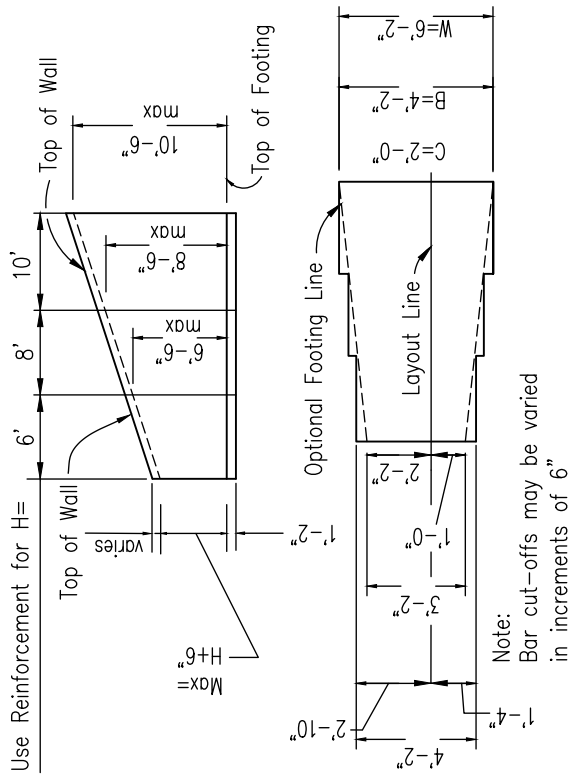
SAN DIEGO REGIONAL STANDARD DRAWING

REINFORCED CONCRETE RETAINING WALL  
TYPE 1A

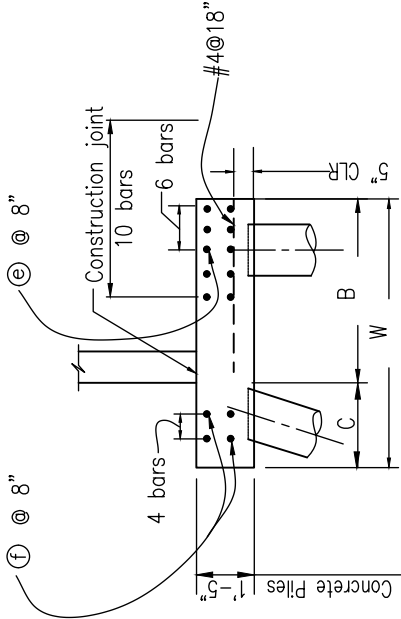
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER C-12B



45T PILE FOOTING SECTION



TYPICAL LAYOUT EXAMPLE

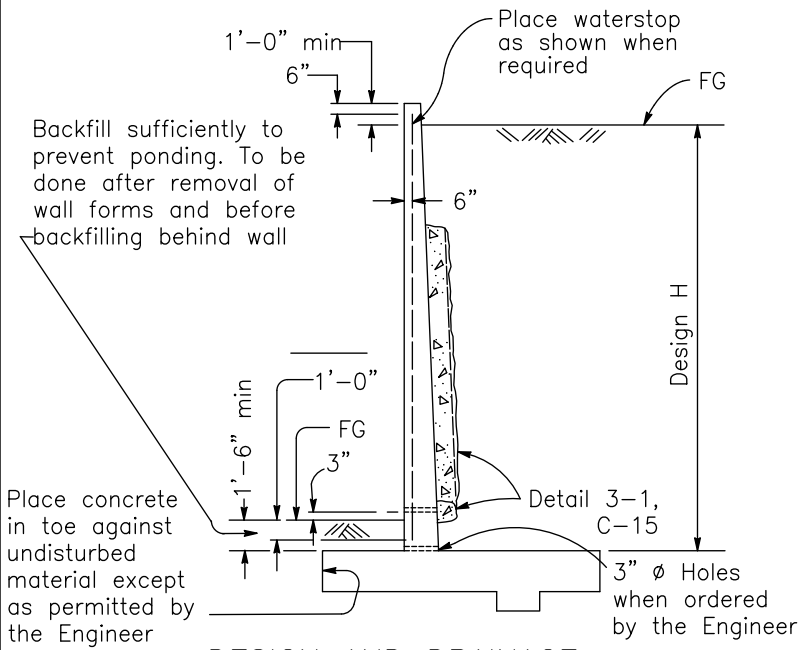
For joints required, see Details 3-3 and 3-4, Std Dwg C-15

TABLE OF REINFORCING STEEL DIMENSIONS AND DATA

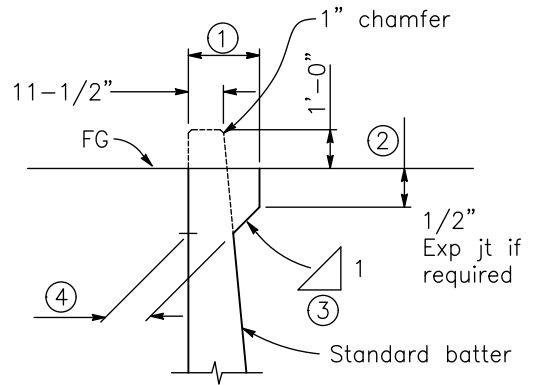
Design H	* 4'	6'	8'	10'	12'
W	3'-2"	4'-2"	5'-2"	6'-2"	7'-2"
C	1'-0"	1'-4"	1'-8"	2'-0"	2'-4"
B	2'-2"	2'-10"	3'-6"	4'-2"	4'-10"
© bars	#5@24"	#5@22"	#5@11"	#6@9"	#7@7-1/2"
© bars	#5@24"	#5@22"	#5@22"	#7@18"	#8@15"
Total © bars	6-#6	6-#6	6-#6	10-#7	10-#7
Total © bars	6-#6	6-#6	6-#6	4-#7	4-#7
Case I - Toe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

Note:  
Quantities apply to Design H portion and exclude the added portion above "Gutter Elevation". \*For pile footing Design H=4' use same footing dimensions as Design H=6'.



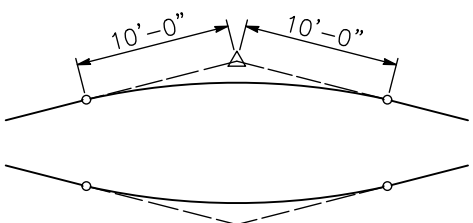


**DESIGN AND DRAINAGE**



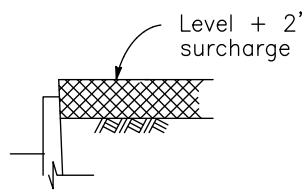
Dimensions ①, ② and ③ to be as shown elsewhere in the project plans  
 ④ Stem width at base of haunch to be determined as shown

**STEM WIDTH AT BASE OF HAUNCH**

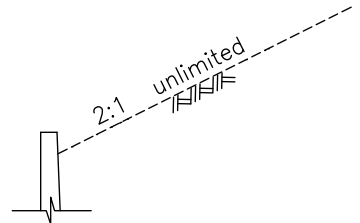


**20' VC AT TOP OF WALL SLOPE CHANGE**

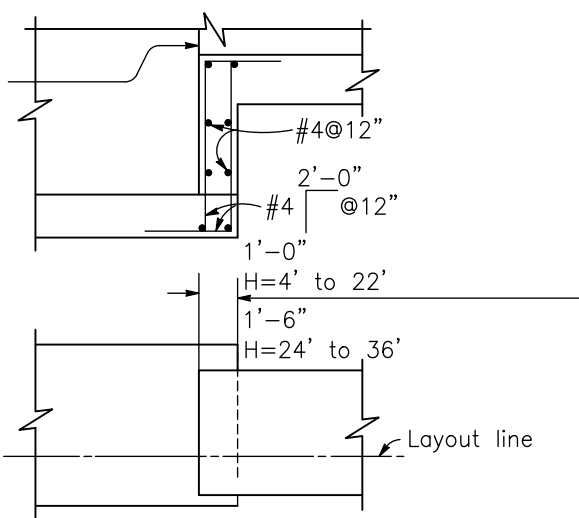
Where shown on the plans



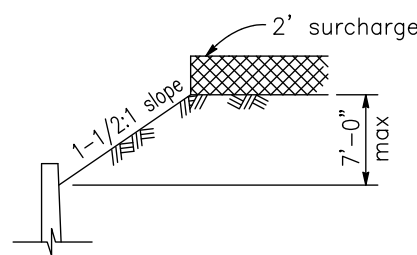
**CASE I**



**CASE II**



**FOOTING STEP**



**CASE III**

**DETAIL OF DESIGN LOADING CASES**

- CASE I Level + 2' surcharge
- CASE II 2:1 unlimited slope
- CASE III 1-1/2:1 limited slope (7'-0" max height) + 2' surcharge

NOTE: Surcharge limits shown apply to retaining walls Type 1 and 3

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Delete Metric	S.S.	T. Shell	03/11
Reviewed	TS	T. Stanton	11/15

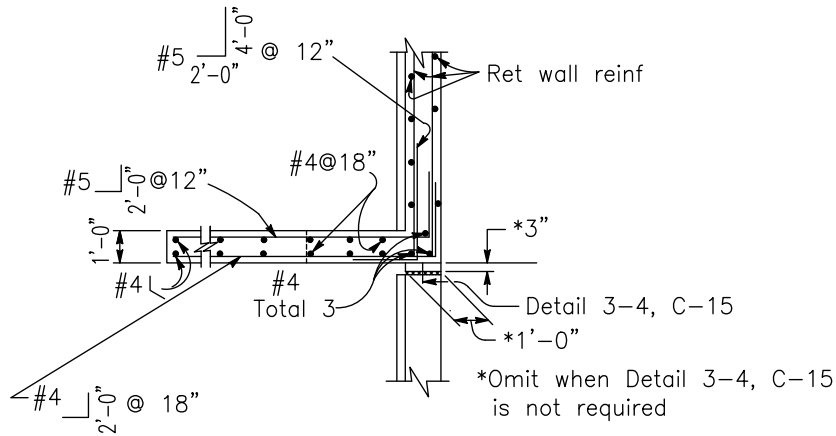
SAN DIEGO REGIONAL STANDARD DRAWING

**REINFORCED CONCRETE  
 RETAINING WALL DETAILS No. 1**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

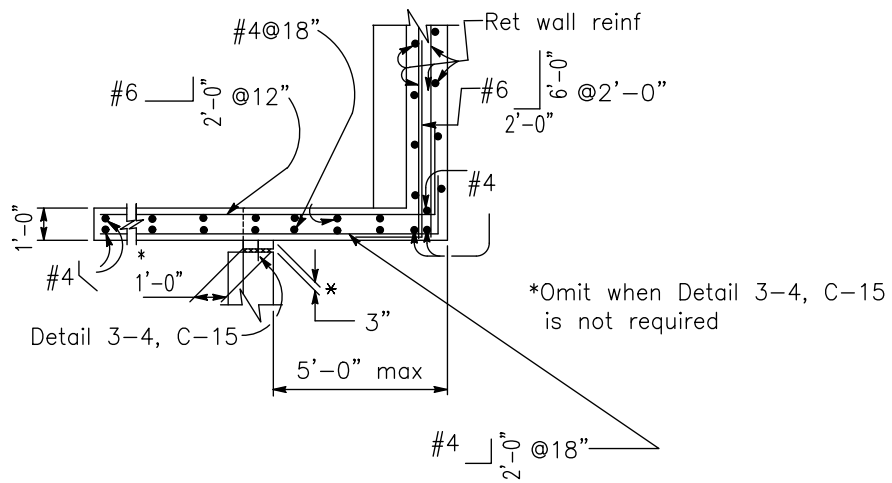
*M. Stanton* 10/25/2018  
 Chairperson R.C.E. 19246 Date

**DRAWING NUMBER C-13A**



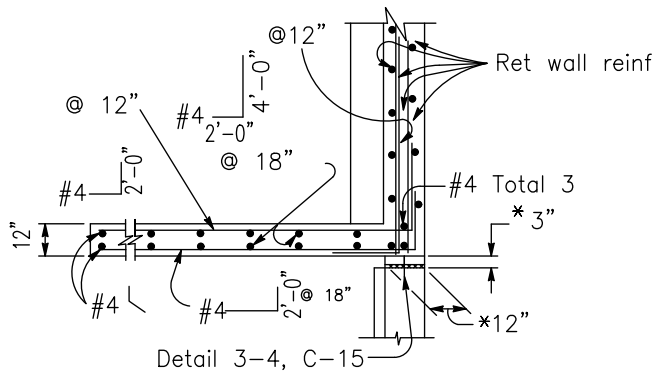
PLAN

(For return wall type "A")



PLAN

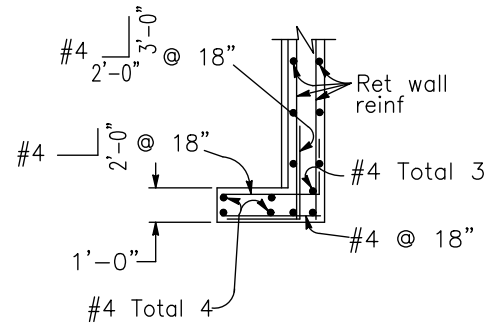
(For return wall type "B")



\* Omit when Detail 3-4, C-15 is not required

PLAN

(For return wall type "C")



PLAN

(For return wall type "D")

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Delete Metric	S.S.	T. Shell	03/11
Reviewed	TS	T. Stanton	11/15

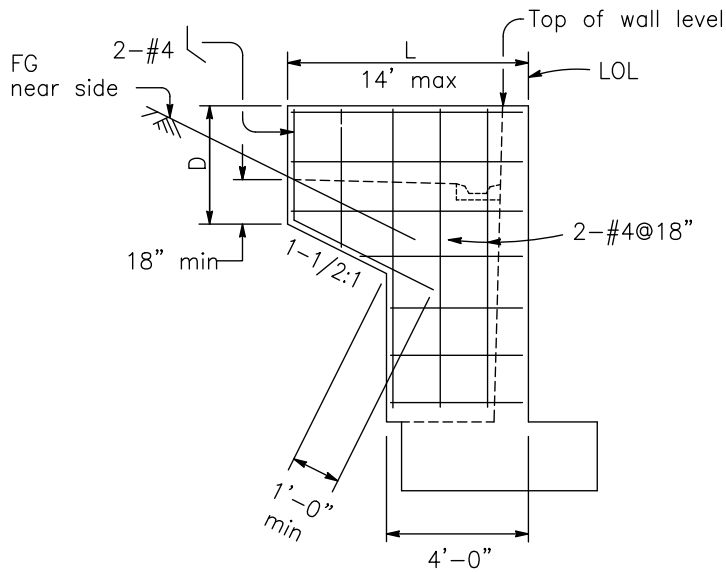
SAN DIEGO REGIONAL STANDARD DRAWING

REINFORCED CONCRETE  
RETAINING WALL DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

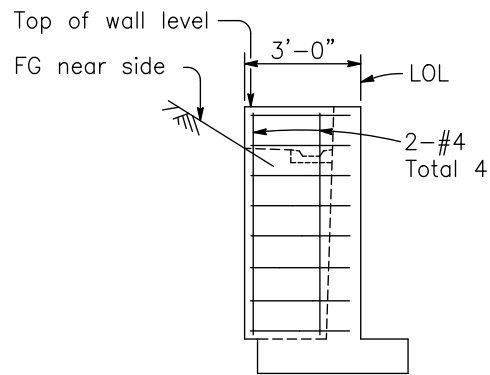
DRAWING NUMBER C-13B



ELEVATION

RETURN WALL TYPE A

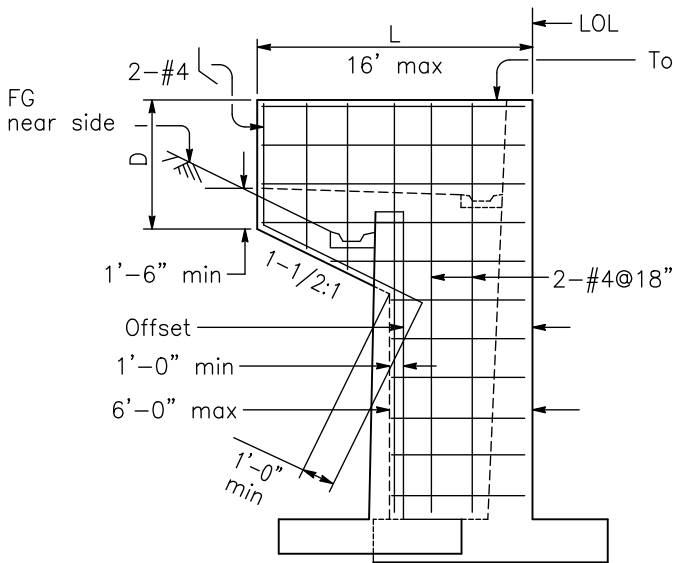
Use where H=8' or less



ELEVATION

RETURN WALL TYPE D

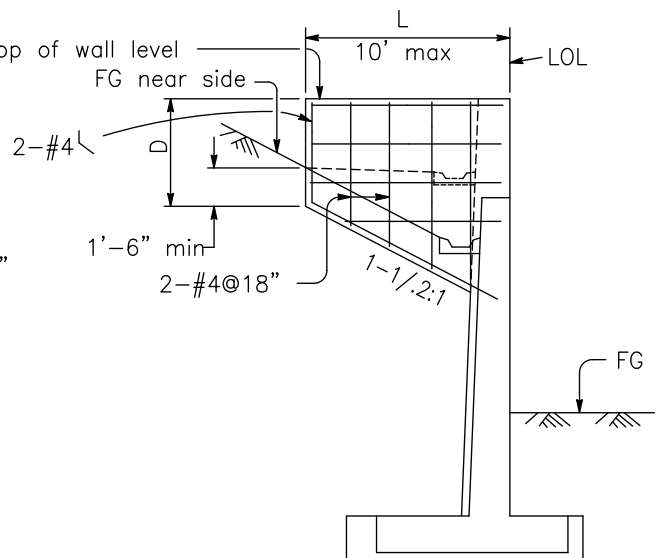
Use where H=6' or less



ELEVATION

RETURN WALL TYPE B

Use where H=10' or more on offset walls



ELEVATION

RETURN WALL TYPE C

Use where H=10' or more on straight walls

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Delete Metric	S.S.	T. Shell	03/11
Reviewed	TS	T. Stanton	11/15

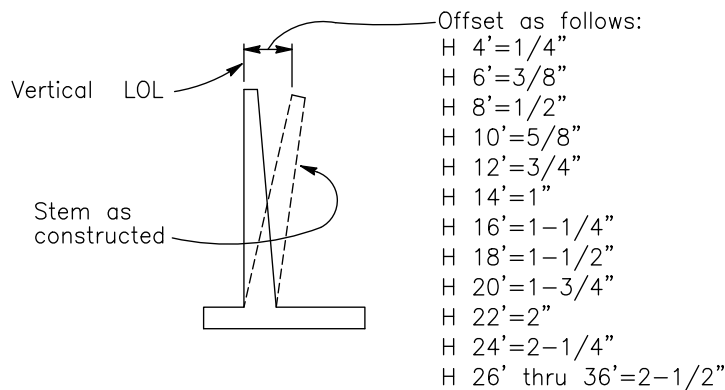
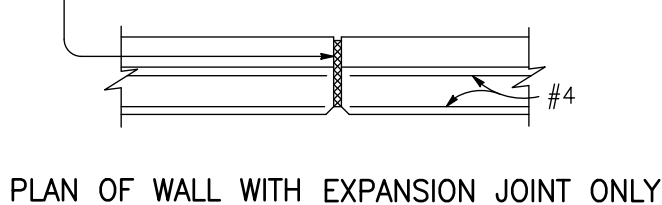
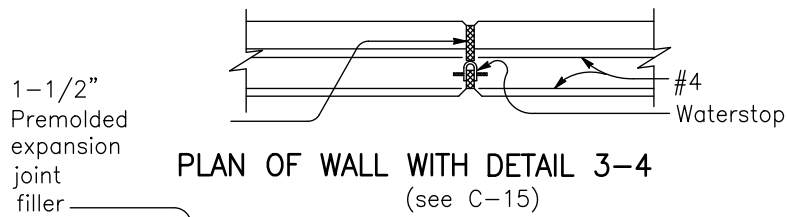
SAN DIEGO REGIONAL STANDARD DRAWING

REINFORCED CONCRETE  
RETAINING WALL DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER C-13C



### APPROX. WALL OFFSET VALUES

Not required for wall Types 3 and 4.  
 Values for offsetting forms to be determined by the Engineer.

### NOTES

#### Design Conditions:


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

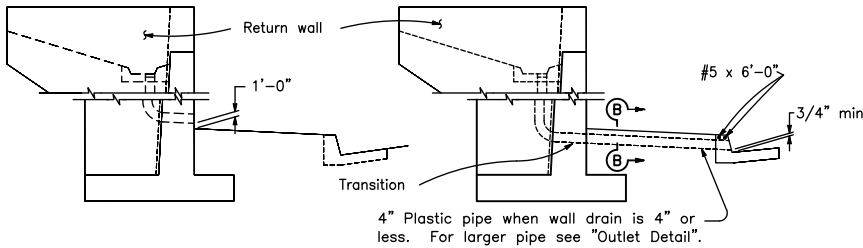
#### Design Data:

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

Equivalent fluid pressure =  
 36 pcf maximum for determination of toe pressure.  
 27 pcf minimum for determination of heel pressure.

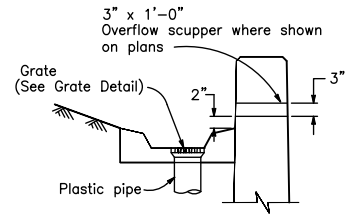
Earth pressures for 2:1 unlimited slope, 1-1/2:1 slope, and 1-1/2:1 unlimited slope, determined from Rankine's formula with  $\phi = 33^\circ - 42^\circ$ .

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75	REINFORCED CONCRETE RETAINING WALL DETAILS No. 1		 Chairperson R.C.E. 19246 Date 10/25/2018
Add Metric		T. Stanton	03/03			
Delete Metric	S.S.	T. Shell	03/11			
Reviewed	TS	T. Stanton	11/15			
						DRAWING NUMBER C-13D

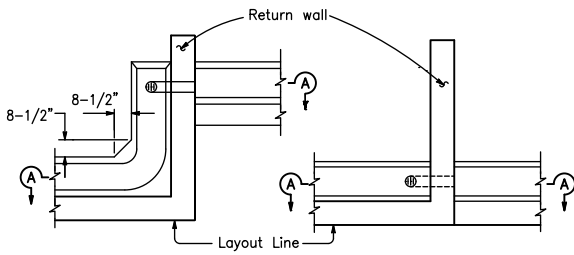


**RETAINING WALL,  
FACE OF WALL OUTLET**

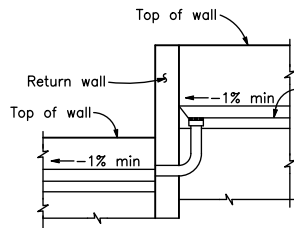
**RETAINING WALL, GUTTER OUTLET**



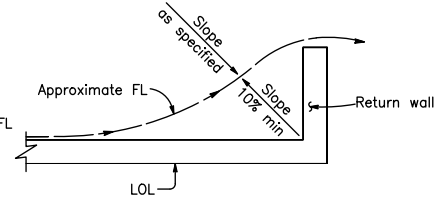
**WALL DRAIN DETAIL**



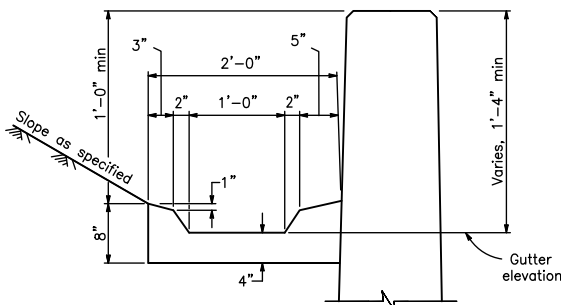
**PLAN-OFFSET WALL    PLAN-CONTINUOUS WALL  
DRAIN THROUGH RETURN WALL**



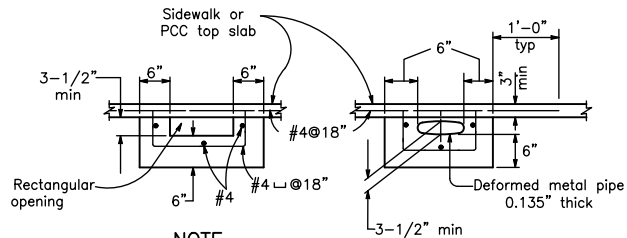
**SECTION A-A**



**WALL DRAINAGE  
WHERE GUTTER NOT REQUIRED**



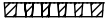
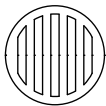
**TYPICAL GUTTER DETAIL**



**NOTE**

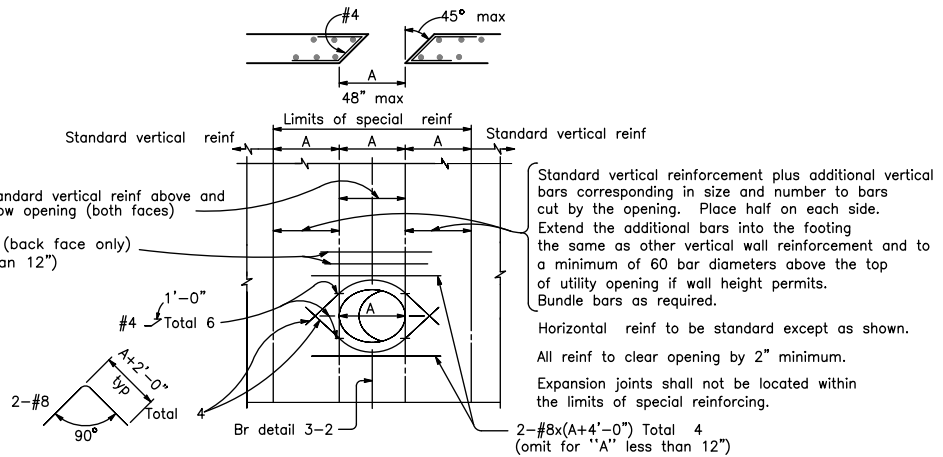
Area of opening to be not less than that of pipe from wall gutter. Make opening transition in wall. Edge opening in curb face to 3/4" minimum radius.

**OUTLET DETAIL - SECTION B-B**



**GRATE DETAIL**

Sizes to fit standard hubs



**RETAINING WALL UTILITY OPENING**

Max size of opening (A) = 48" to be used in conjunction with C-13

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Delete Metric	S.S.	T. Shell	03/11
Reviewed	TS	T. Stanton	11/15

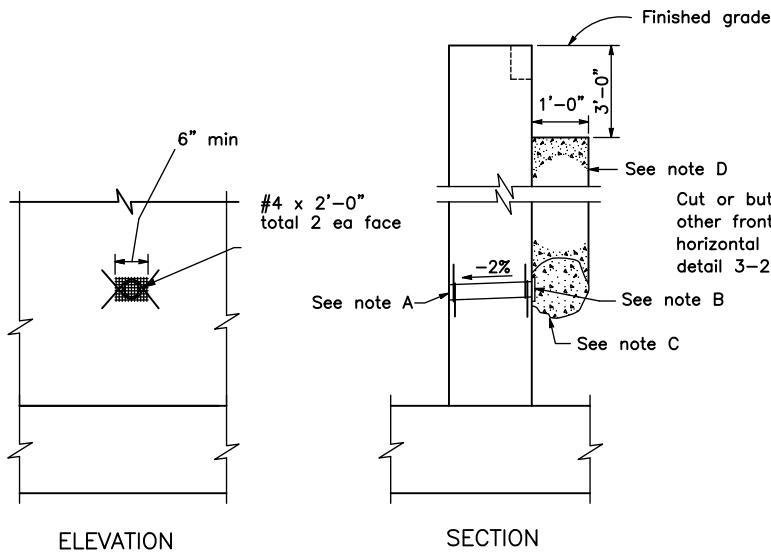
SAN DIEGO REGIONAL STANDARD DRAWING

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

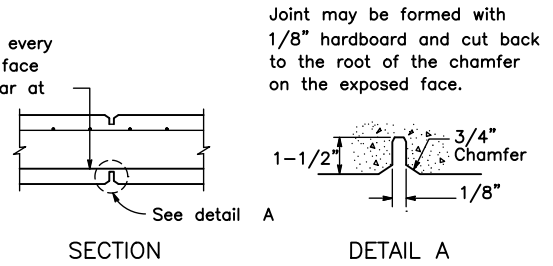
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

**DRAWING  
NUMBER    C-14**



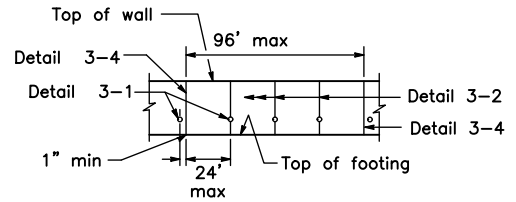
WEEP HOLE AND PERVIOUS BACKFILL  
DETAIL 3-1



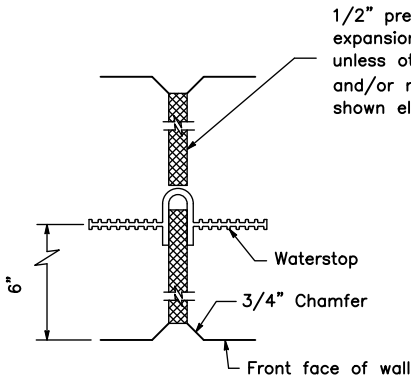
WEAKENED PLANES  
DETAIL 3-2

NOTES

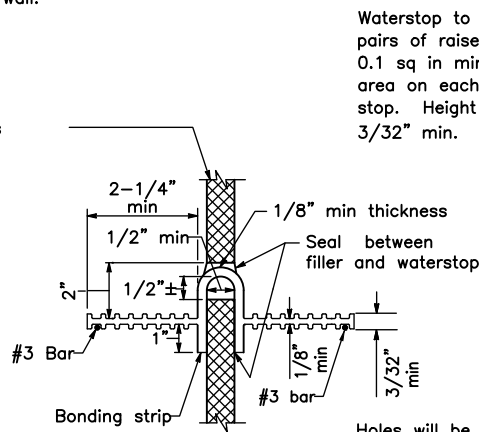
- A. 4" diameter drain @ 25' max center to center (9' c-c for Type 3 and 9'-3" c-c for Type 4 Retaining Walls). For walls adjacent to sidewalks or curbs, provide 4" cast iron or asbestos cement pipe under the sidewalk to discharge thru curb face. Exposed wall drains shall be located 3" ± above finished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



WALL EXPANSION JOINTS  
AND WEAKENED PLANES  
DETAIL 3-3



WALL EXPANSION JOINT  
DETAIL 3-4



WATERSTOP  
DETAIL 3-6

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

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

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Delete Metric	S.S.	T. Shell	03/11
Reviewed	TS	T. Stanton	11/15

SAN DIEGO REGIONAL STANDARD DRAWING

REINFORCED CONCRETE  
RETAINING WALL DETAILS No. 3

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

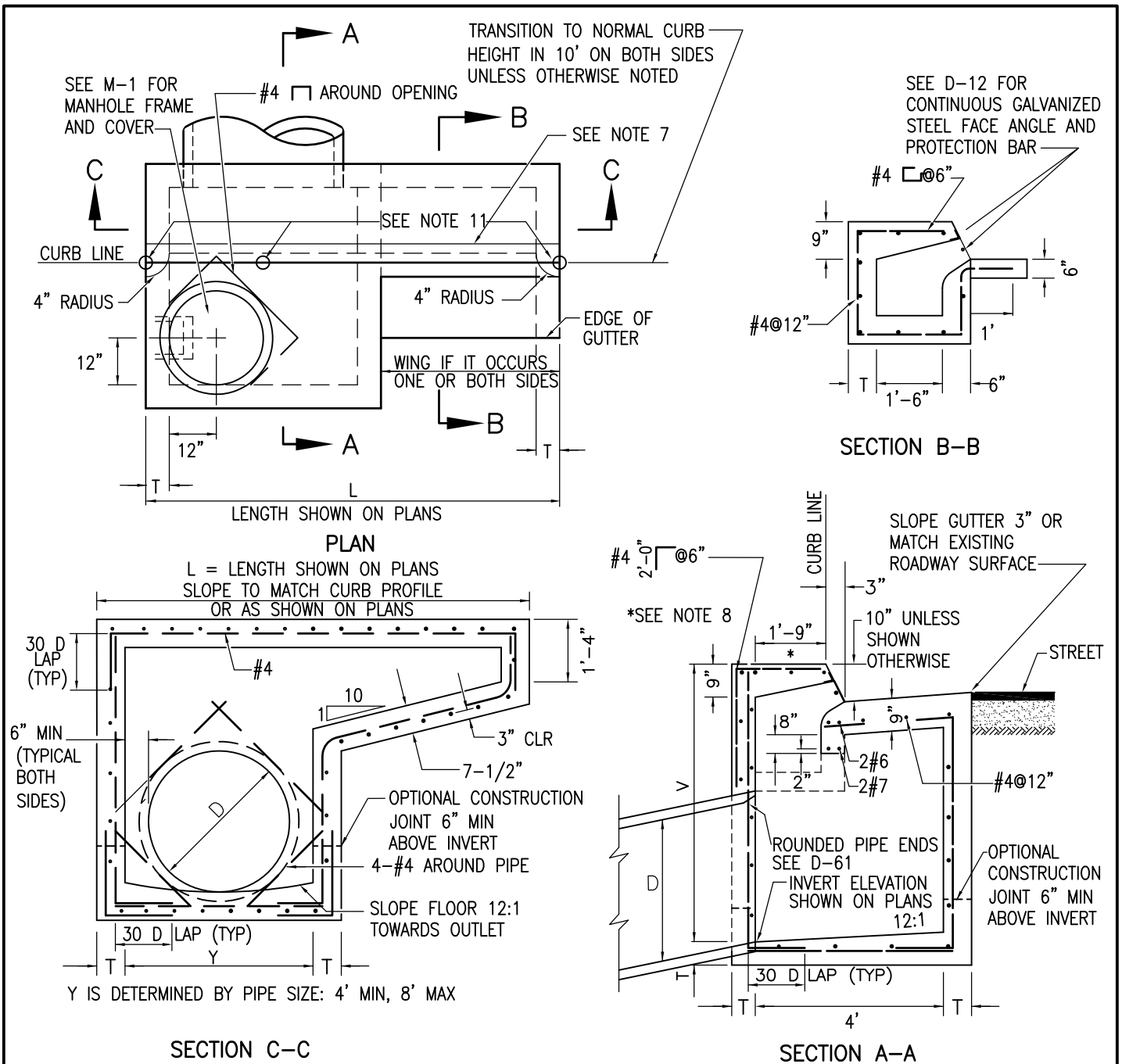
*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER C-15

# **DRAINAGE SYSTEMS**

**DRAINAGE SYSTEMS**

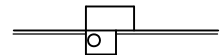
**D**



**NOTES**

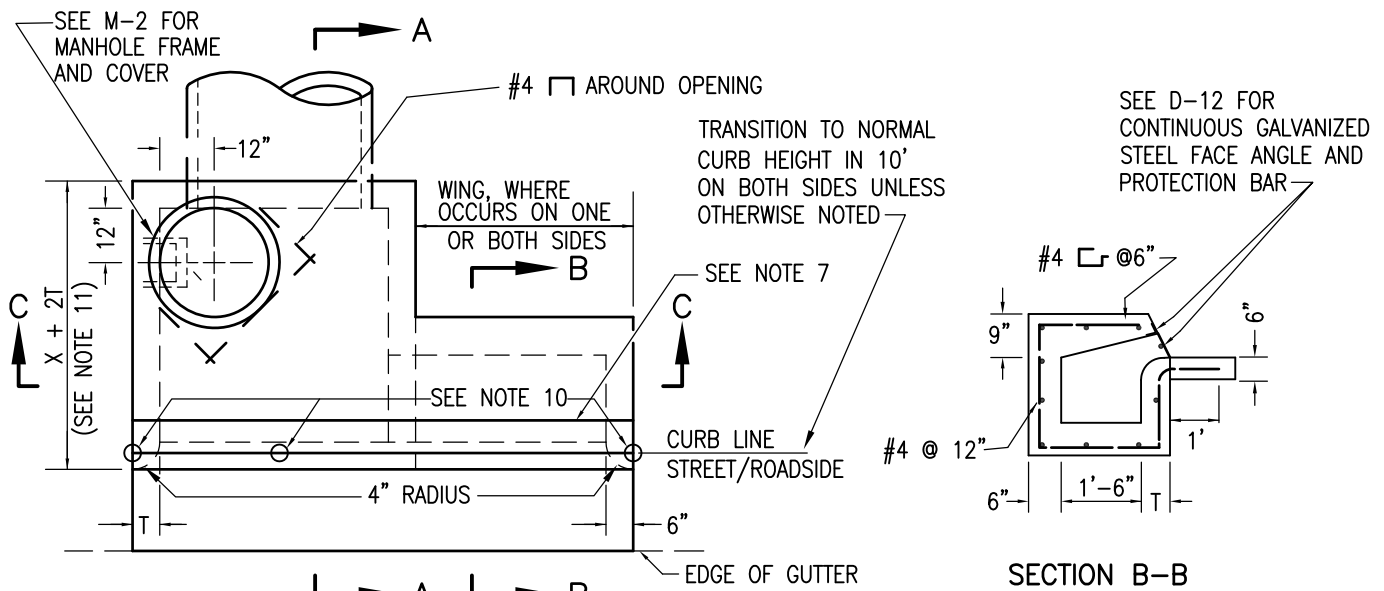
1. SEE D-11A, D-11B, & D-12 FOR ADDITIONAL NOTES AND DETAILS.
2. TYPES ARE DESIGNED ON PLANS AS FOLLOWS: A (NO WING), A-1 (ONE WING), OR A-2 (TWO WINGS).
3. EXPOSED EDGES OF CONCRETE SHALL BE ROUNDED WITH A RADIUS OF 1/2".
4. STEPS SHALL BE INSTALLED WHEN V EXCEEDS 4'. SEE D-11A FOR DETAILS.
5. CONCRETE GUTTER TO MATCH ADJACENT GUTTERS.
6. AN EXPANSION JOINT SHALL BE PLACED AT THE ENDS OF THE INLET WHERE THE CURB IS TO ADJOIN.
7. PROVIDE 1/4" TOOLED GROOVE IN TOP SLAB IN LINE WITH BACK OF ADJACENT CURB.
8. SURFACE OF TOP SLAB TO MATCH SIDEWALK FINISH AND SLOPE.
9. MAINTAIN 1-1/2" CLEAR SPACING BETWEEN REINFORCING AND CONCRETE SURFACE UNLESS OTHERWISE NOTED.
10. IF REQUIRED BY LOCAL AGENCY, EXTEND TOP SLAB STEEL REINFORCEMENT 12" INTO ADJACENT SIDEWALK.
11. ELEVATIONS SHALL BE SHOWN ON PLANS WHERE INDICATED BY "O" SYMBOL.

**LEGEND ON PLANS**



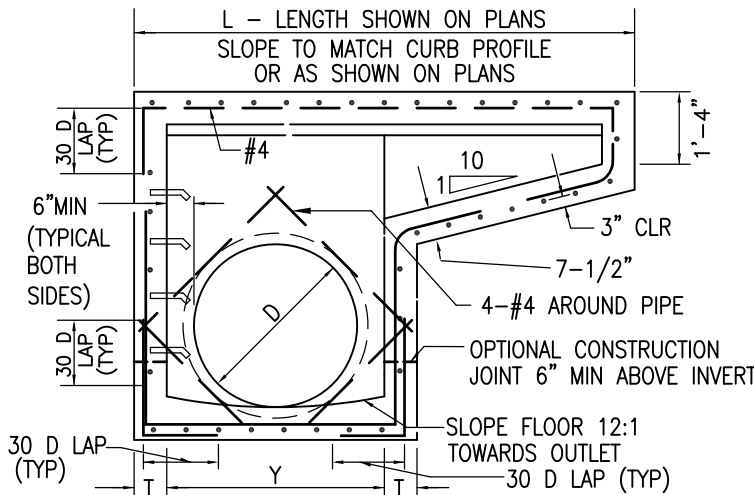
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Edited		T. Stanton	02/09	CURB INLET - TYPE A	<i>M. Stanton</i> 10/25/2018
Edited	S.S.	T. Regello	03/11		Chairperson R.C.E. 19246 Date
Edited	T.R.	T. Regello	10/15		DRAWING NUMBER
Edited	M.W.	M. Widelski	10/18		D-01



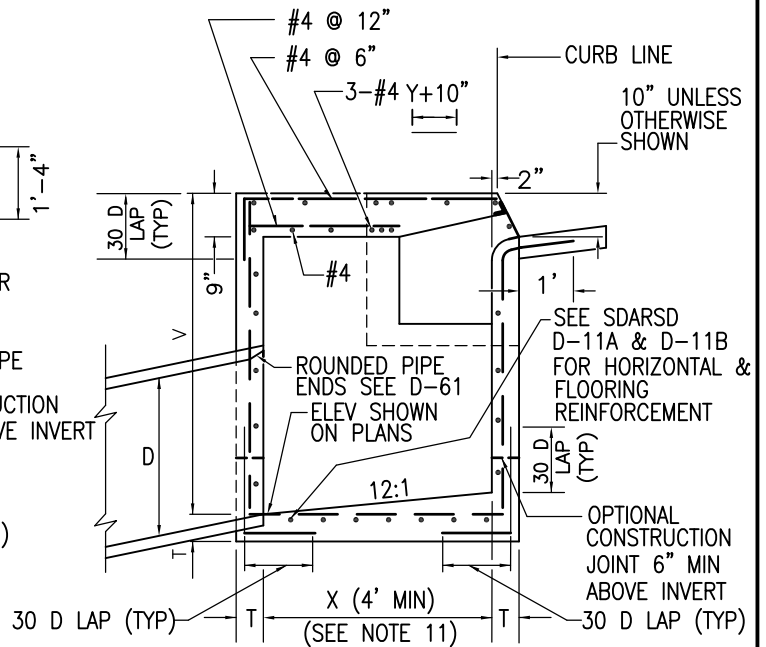


PLAN

SECTION B-B



SECTION C-C




SECTION A-A

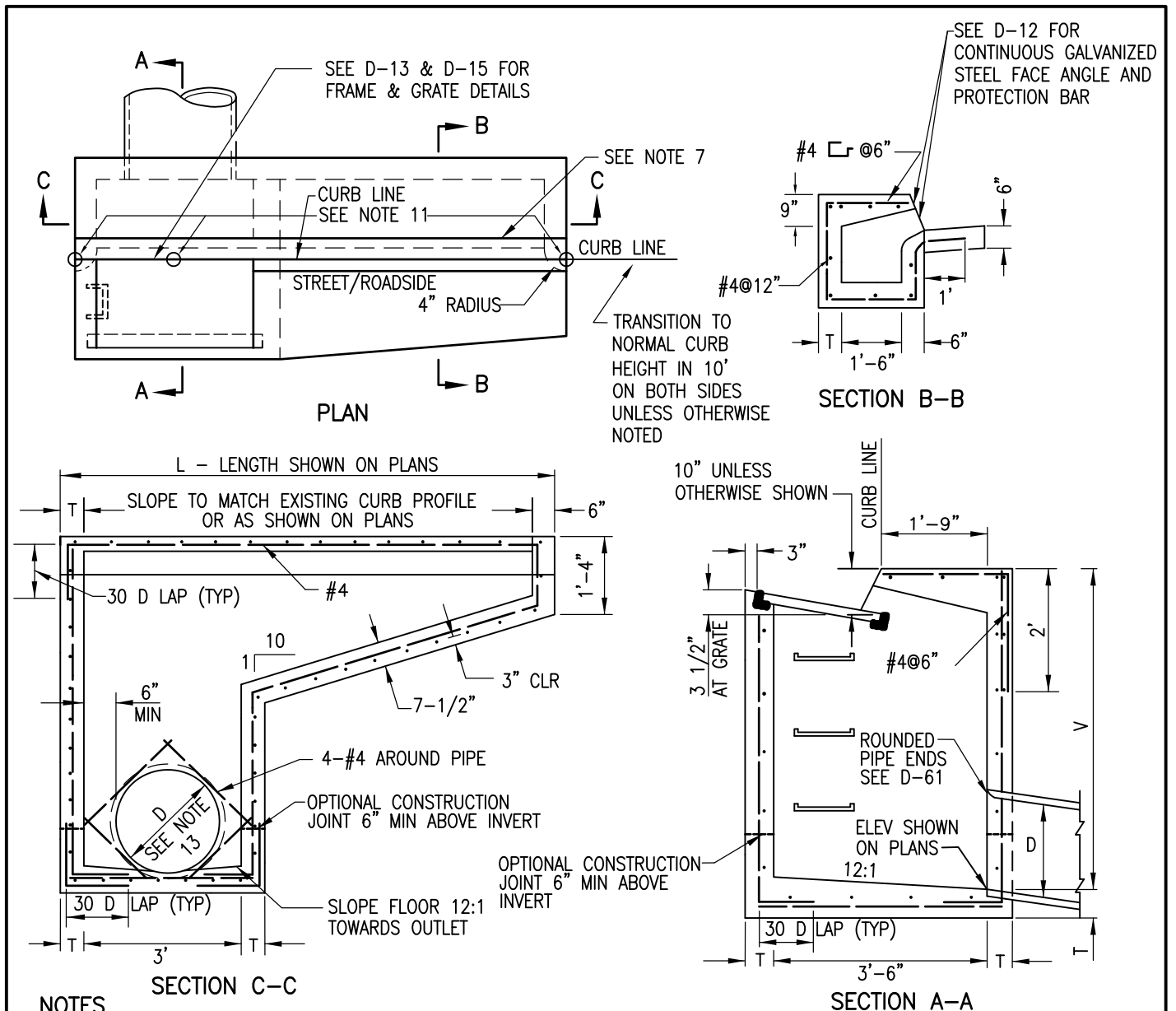
NOTES

1. SEE D-11A, D-11B & D-12 FOR ADDITIONAL NOTES AND DETAILS.
2. TYPES ARE DESIGNATED ON PLANS AS FOLLOWS: B (NO WING), B-1 (ONE WING) or B-2 (TWO WINGS).
3. MAINTAIN 1-1/2" CLEAR SPACING BETWEEN REINFORCING AND CONCRETE SURFACE UNLESS OTHERWISE NOTED.
4. STEPS SHALL BE INSTALLED WHEN V EXCEEDS 4'. SEE D-11A FOR DETAILS.
5. CONCRETE GUTTER TO MATCH ADJACENT GUTTERS.
6. AN EXPANSION JOINT SHALL BE PLACED AT THE ENDS OF THE INLET WHERE THE CURB IS TO ADJOIN.
7. PROVIDE 1/4" TOOLED GROOVE IN TOP SLAB IN LINE WITH BACK OF ADJACENT CURB.
8. SURFACE OF TOP SLAB TO MATCH SIDEWALK FINISH AND SLOPE.
9. IF REQUIRED BY LOCAL AGENCY, EXTEND TOP SLAB STEEL REINFORCEMENT 12" INTO ADJACENT SIDEWALK.
10. ELEVATIONS SHALL BE SHOWN ON PLANS WHERE INDICATED BY "O" SYMBOL.
11. IF REQUIRED BY LOCAL AGENCY, ENLARGE CURB INLET TOP TO WIDTH OF ADJACENT SIDEWALK (X + 2T NOT TO EXCEED 5'-6") BY LENGTH OF INLET INCLUDING WING(S). REINFORCING STEEL SHALL BE EXTENDED ACROSS ENLARGED TOP TO CLEAR DISTANCES SHOWN.

LEGEND ON PLANS



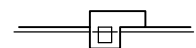
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75	CURB INLET - TYPE B		 10/25/2018 Chairperson R.C.E. 19246 Date
Edited		T. Stanton	02/09			
Edited	S.S.	T. Regello	03/11			
Edited	T.R.	T. Regello	10/15			
Edited	M.W.	M. Widelski	10/18			
						DRAWING NUMBER D-02



**NOTES**

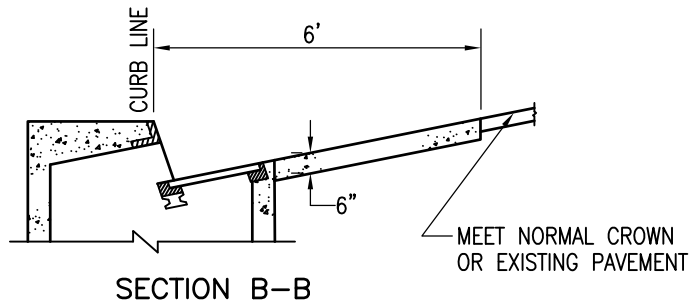
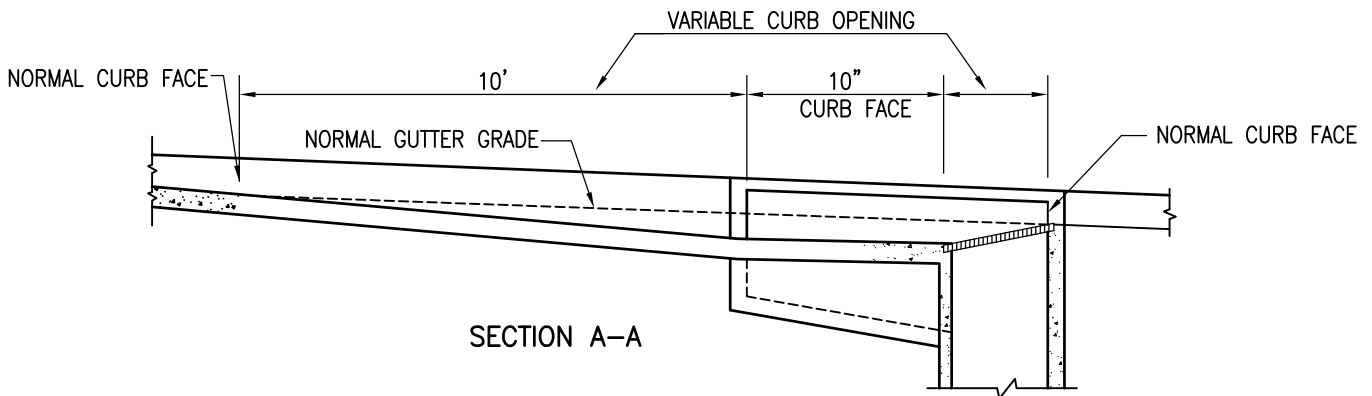
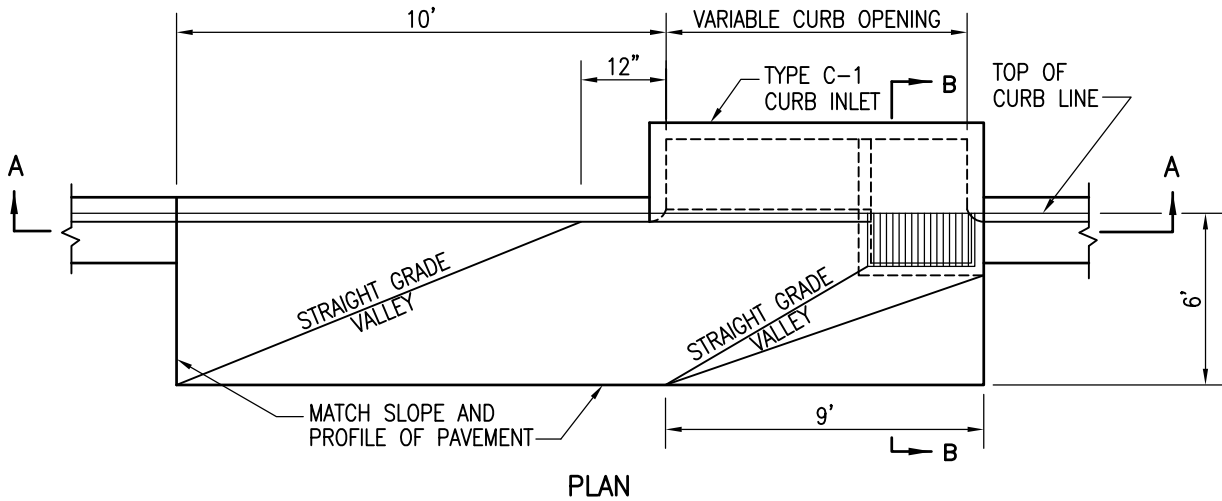
1. SEE D-11A THROUGH D-15 FOR ADDITIONAL NOTES AND DETAILS.
2. TYPES ARE DESIGNATED ON PLANS AS FOLLOWS: C (NO WING), C-1 (ONE WING) or C-2 (TWO WINGS).
3. EXPOSED EDGES OF CONCRETE SHALL BE ROUNDED WITH A RADIUS OF 1/2".
4. STEPS SHALL BE INSTALLED WHEN V EXCEEDS 4'. SEE D-11A FOR DETAILS.
5. CONCRETE GUTTER TO MATCH ADJACENT GUTTERS.
6. AN EXPANSION JOINT SHALL BE PLACED AT THE ENDS OF THE INLET WHERE THE CURB IS TO ADJOIN.
7. PROVIDE 1/4" TOOLED GROOVE IN TOP SLAB IN LINE WITH BACK OF ADJACENT CURB.
8. SURFACE OF TOP SLAB TO MATCH SIDEWALK FINISH AND SLOPE.
9. MAINTAIN 1-1/2" CLEAR SPACING BETWEEN REINFORCING AND CONCRETE SURFACE UNLESS OTHERWISE NOTED.
10. WHERE INLET IS TO BE CONSTRUCTED ON GRADE AND CONCRETE APRON PER D-03B IS REQUIRED, LIFT DOWN-GRADE END OF GRATE AS SHOWN ON D-03B.
11. IF REQUIRED BY LOCAL AGENCY, EXTEND TOP SLAB STEEL REINFORCEMENT 12" INTO ADJACENT SIDEWALK.
12. ELEVATIONS SHALL BE SHOWN ON PLANS WHERE INDICATED BY "O" SYMBOL.
13. DIAMETER "D" SHALL BE 24" MAXIMUM; FOR LARGER DIAMETER PIPES THIS DRAWING MUST BE MODIFIED.

**LEGEND ON PLANS**



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		CURB INLET - TYPE C
Replaced D-3		T. Stanton	02/09		
Edited	S.S.	T. Regello	03/11		
Edited	T.R.	T. Regello	10/15		
Edited	M.W.	M. Widelski	10/18		
DRAWING NUMBER					D-03A

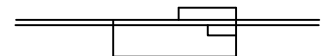
 10/25/2018  
 Chairperson R.C.E. 19246 Date



**NOTES**

1. CURB AND APRON TO BE MONOLITHIC POUR.
2. USE OF FALSE HEADER AT VALLEYS AND SLOPE BREAK LINE IS OPTIONAL.
3. EXTEND VERTICAL STEEL FROM INLET STRUCTURE INTO CONCRETE APRON AS SHOWN ON SECTION B-B OF D-03A.
4. CONCRETE SHALL BE 520-C-2500.

**LEGEND ON PLANS**



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Replaced D-20		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

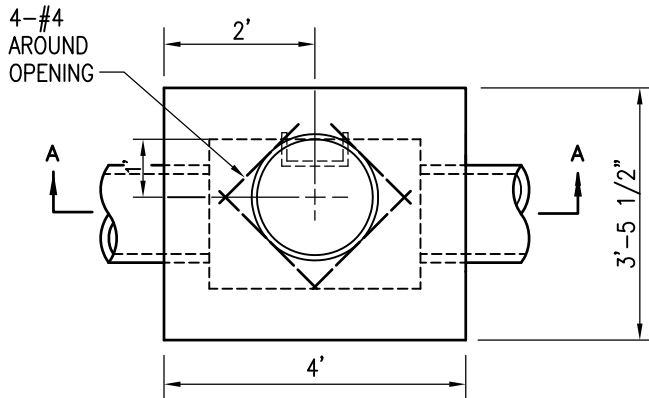
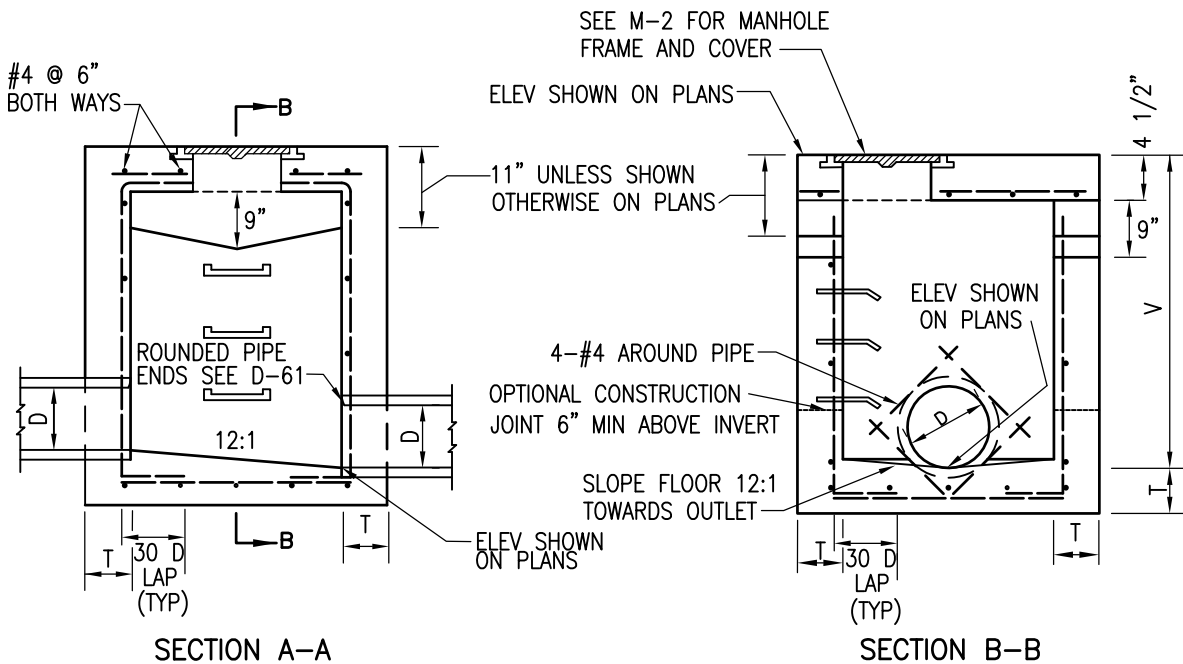
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE APRON FOR TYPE C CURB INLET

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-03B



PLAN

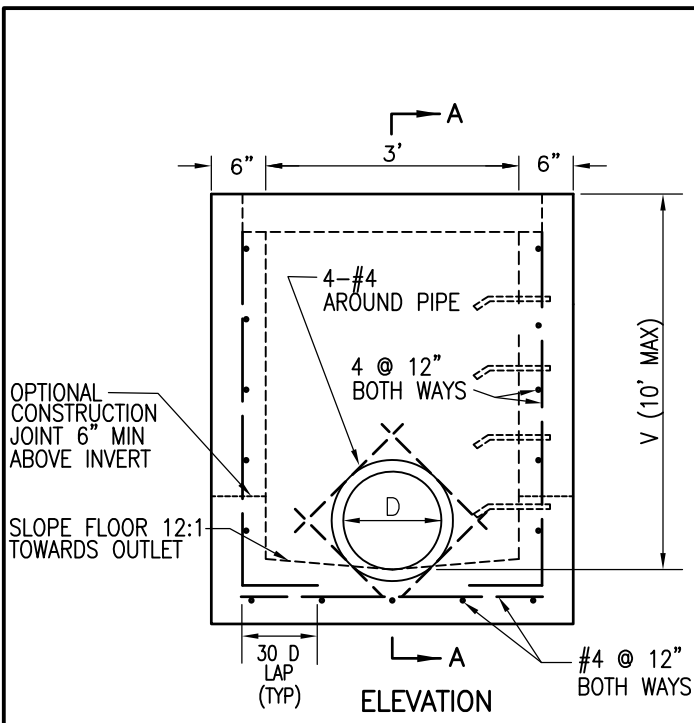
NOTES

1. SEE D-11A & 11B FOR ADDITIONAL NOTES AND DETAILS.
2. WHEN V EXCEEDS 4' STEPS SHALL BE INSTALLED. SEE D-11A FOR DETAILS.
3. EXPOSED EDGES OF CONCRETE SHALL BE ROUNDED WITH A RADIUS OF 1/2".
4. CONSTRUCT OPENINGS ON BOTH SIDES UNLESS OTHERWISE SHOWN ON PLANS.
5. MAINTAIN 1-1/2" CLEAR SPACING BETWEEN REINFORCING AND CONCRETE SURFACE.
6. INSTALL 1" STEEL PROTECTION BAR ACROSS OPENING.
7. DIAMETER "D" SHALL BE 18" MAX, FOR LARGER DIAMETER PIPES THIS DRAWING MUST BE MODIFIED. PIPE DIAMETERS TO BE SHOWN ON PLANS.
8. IF CONSTRUCTED ADJACENT TO SIDEWALK, THE SURFACE OF THE TOP SLAB OF THE CATCH BASIN SHALL MATCH THE SIDEWALK SLOPE AND FINISH.

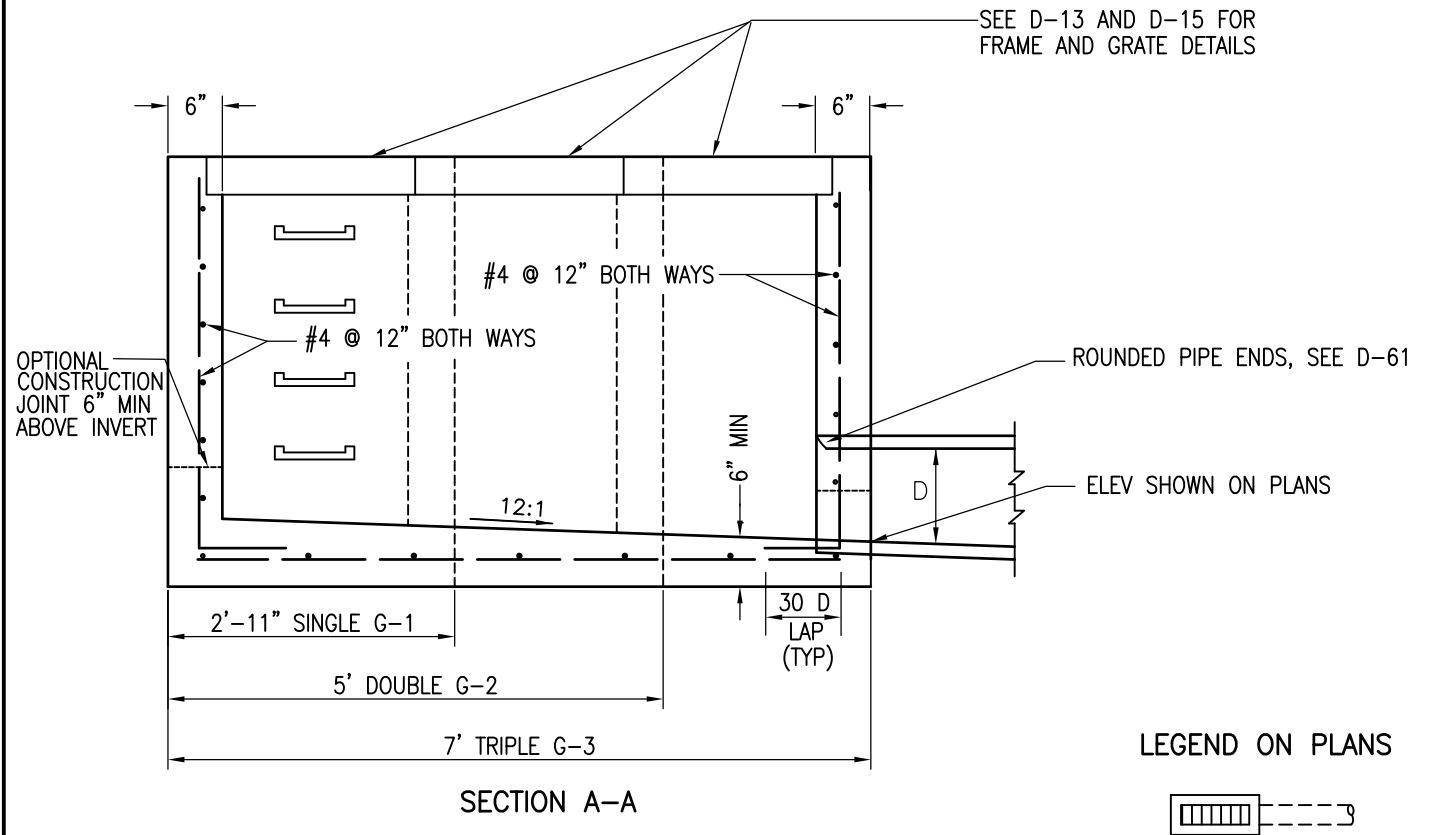
LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	
ORIGINAL		Kercheval	12/75	<p>CATCH BASIN - TYPE F</p>	
Edited		T. Stanton	02/09		
Edited	S.S.	T. Regello	03/11		
Edited	T.R.	T. Regello	10/15		
Edited	M.W.	M. Widelski	10/18		
				<p>RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE</p> <p><i>T. Stanton</i> 10/25/2018 Chairperson R.C.E. 19246 Date</p>	
				<p>DRAWING NUMBER D-07</p>	



- NOTES**
1. SEE D-11A AND D-11B FOR ADDITIONAL NOTES AND DETAILS.
  2. STEPS SHALL BE INSTALLED WHEN V EXCEEDS 4'. SEE D-11A FOR DETAILS.
  3. MAINTAIN 1-1/2" CLEAR SPACING BETWEEN REINFORCING AND CONCRETE SURFACE.
  4. INCREASE IN ALLOWABLE DEPTH SUBJECT TO APPROVAL BY LOCAL AGENCY.
  5. SECTION A-A SHOWS 3 SIZES AND SHALL NOT IMPLY THAT AN INTERIOR WALL IS TO BE BUILT FOR THE STRUCTURES WITH DOUBLE OR TRIPLE FRAME AND GRATE.
  6. EXPOSED EDGES OF CONCRETE SHALL BE ROUNDED WITH RADIUS OF 1/2".
  7. DESIGNATE TYPES AS FOLLOWS: SINGLE G-1, DOUBLE G-2 OR TRIPLE G-3.
  8. ONLY END BEARING GRATES SHALL BE USED. SEE D-15.




Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

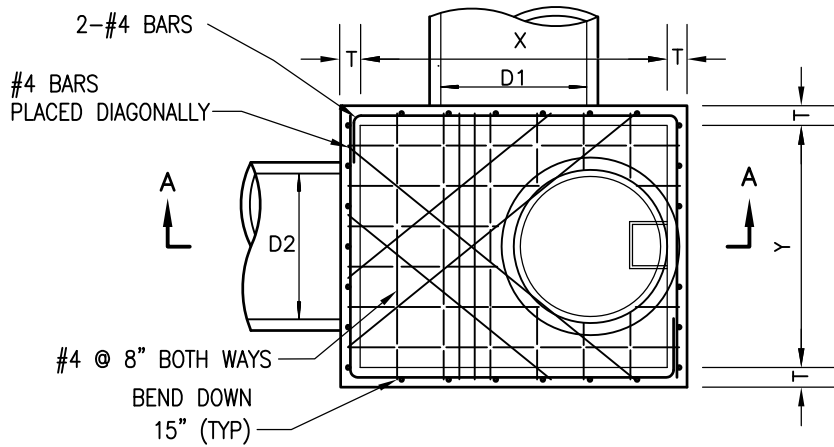
SAN DIEGO REGIONAL STANDARD DRAWING

CATCH BASIN - TYPE G

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

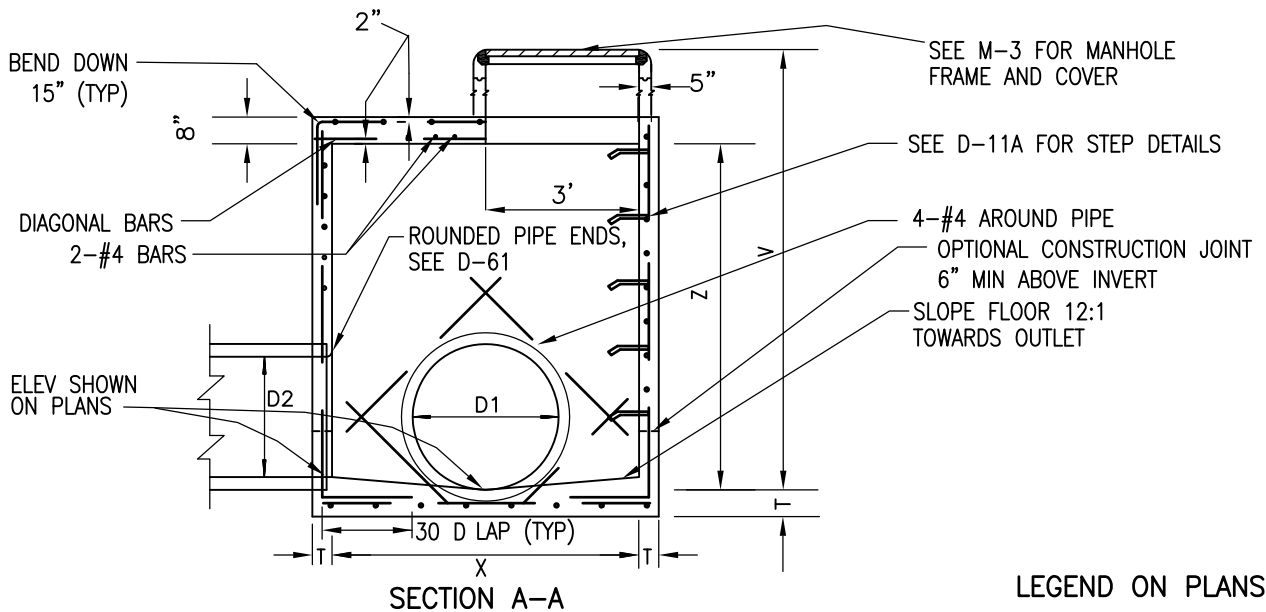
 10/25/2018  
 Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-08



PLAN

TYPE	PIPE DIAMETER (D1)	X	Y (SEE NOTE 8)	Z (Max)
A4	UP TO 39"	4'	4'	6'
A5	42" TO 48"	5'	4'	6'
A6	51" TO 60"	6'	4'	6'
A7	63" TO 66"	7'	4'	7'
A8	69" TO 78"	8'	4'	8'




SECTION A-A

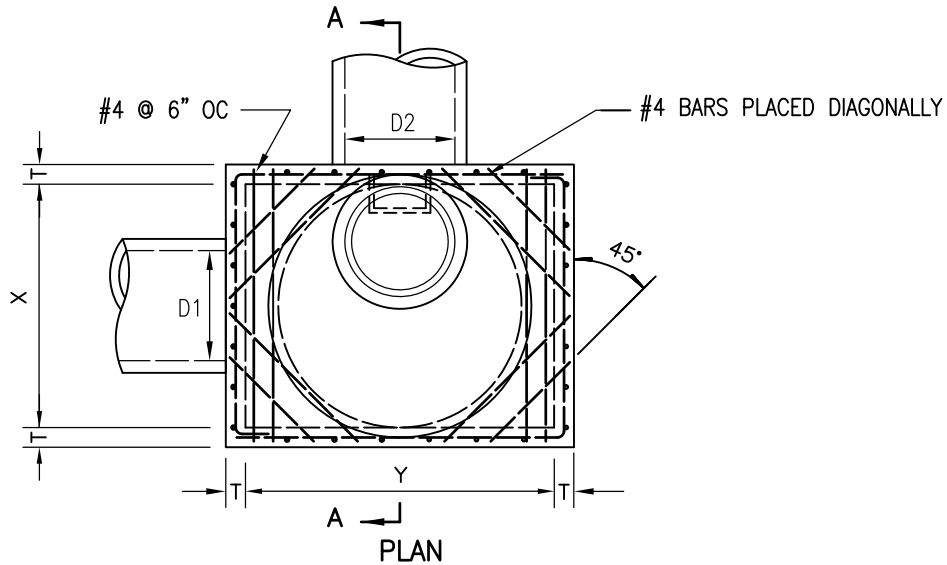
LEGEND ON PLANS



NOTES

1. SEE D-11A AND D-11B FOR ADDITIONAL NOTES AND DETAILS.
2. CONCRETE BASE SHALL BE 560-C-3250.
3. ALL PRECAST COMPONENTS SHALL BE REINFORCED WITH 1/4" DIAMETER STEEL, WOUND SPIRALLY ON 4' CENTERS.
4. ALL JOINTS SHALL BE SET IN CLASS C MORTAR.
5. MAINTAIN 1-1/2" CLEAR SPACING BETWEEN REINFORCING AND CONCRETE SURFACE UNLESS OTHERWISE NOTED.
6. EXPOSED EDGES OF CONCRETE SHALL BE ROUNDED WITH A 1/2" RADIUS.
7. MANHOLE COVER TO BE MARKED "STORM DRAIN".
8. MODIFICATIONS TO "Y" DIMENSION IS REQUIRED IF PIPE (D2) EXCEEDS 39".
9. IF CONSTRUCTED ADJACENT TO SIDEWALK, TOP OF MANHOLE AND SLAB TO MATCH SIDEWALK SLOPE AND FINISH.

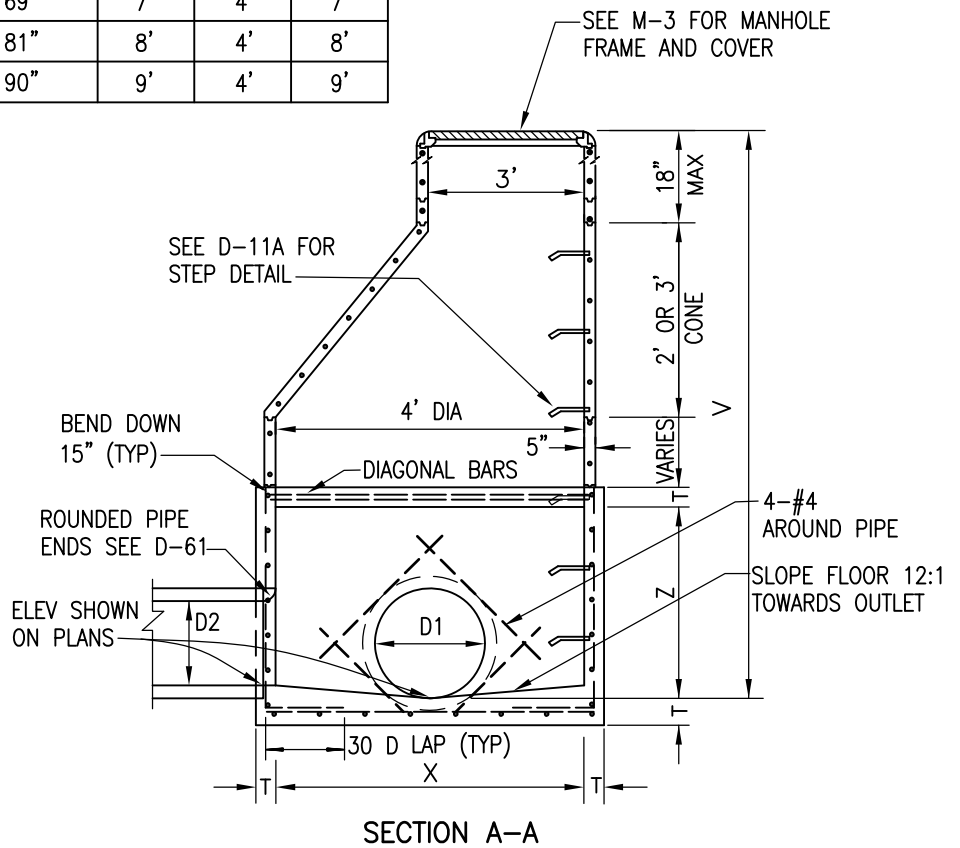
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	
ORIGINAL		Kercheval	12/75	STORM DRAIN CLEANOUT - TYPE A	
Edited		T. Stanton	02/09		
Edited	S.S.	T. Regello	03/11		
Edited	T.R.	T. Regello	10/15		
Edited	M.W.	M. Widelski	10/18		
				RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
				 10/25/2018 Chairperson R.C.E. 19246 Date	
				DRAWING NUMBER D-09	



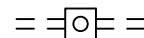
TYPE	PIPE DIAMETER (D1)	X	Y	Z
B5	UP TO 51"	5'	4'	5'
B6	54" to 60"	6'	4'	6'
B7	63" to 69"	7'	4'	7'
B8	72" to 81"	8'	4'	8'
B9	84" to 90"	9'	4'	9'

**NOTES**

1. SEE D-11A & D-11B FOR ADDITIONAL NOTES AND DETAILS.
2. ALL JOINTS SHALL BE SET IN CLASS C MORTAR.
3. ALL PRECAST COMPONENTS SHALL BE REINFORCED WITH 1/4" DIAMETER STEEL WOUND SPIRALLY ON 4" CENTERS.
4. MAINTAIN 1-1/2" CLEAR SPACING BETWEEN REINFORCING AND CONCRETE SURFACE.
5. CONCRETE BASE SHALL BE 560-C-3250.
6. EXPOSED EDGES OF CONCRETE SHALL BE ROUNDED WITH A 1/2" RADIUS.
7. MANHOLE COVER TO BE MARKED "STORM DRAIN".
8. MODIFICATIONS TO "Y" DIMENSION REQUIRED IF PIPE (D2) EXCEEDS 39".
9. IF CONSTRUCTED ADJACENT TO SIDEWALK, TOP OF MANHOLE TO MATCH SIDEWALK SLOPE.



**LEGEND ON PLANS**



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Reformatted		T. Stanton	04/06
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	M.W.	M. Widelski	10/18

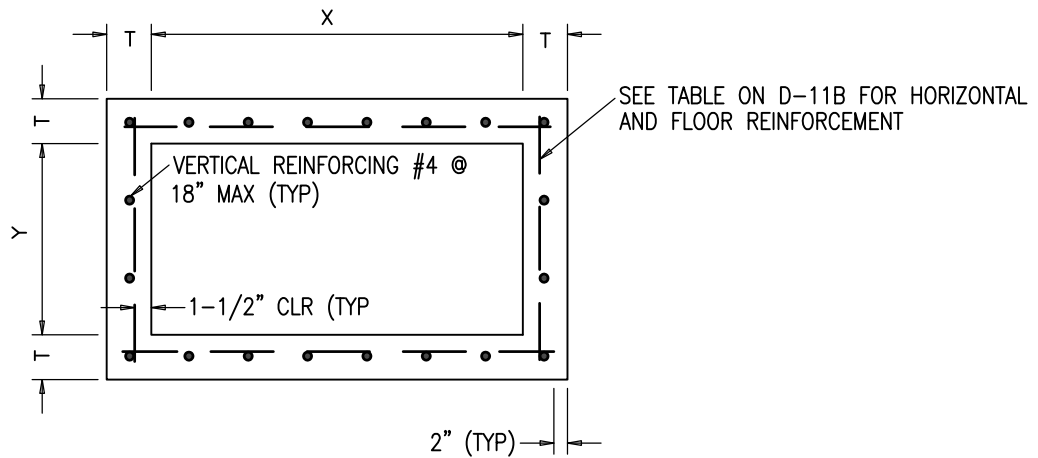
**SAN DIEGO REGIONAL STANDARD DRAWING**

**STORM DRAIN CLEANOUT - TYPE B**

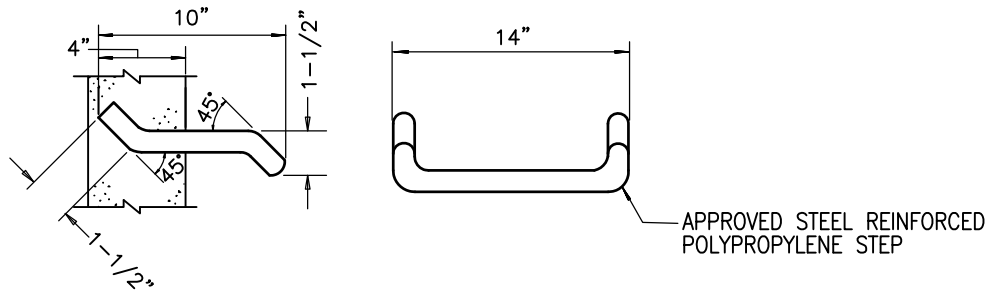
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-10**




TYPICAL BOX SECTION



STEP DETAIL

NOTES

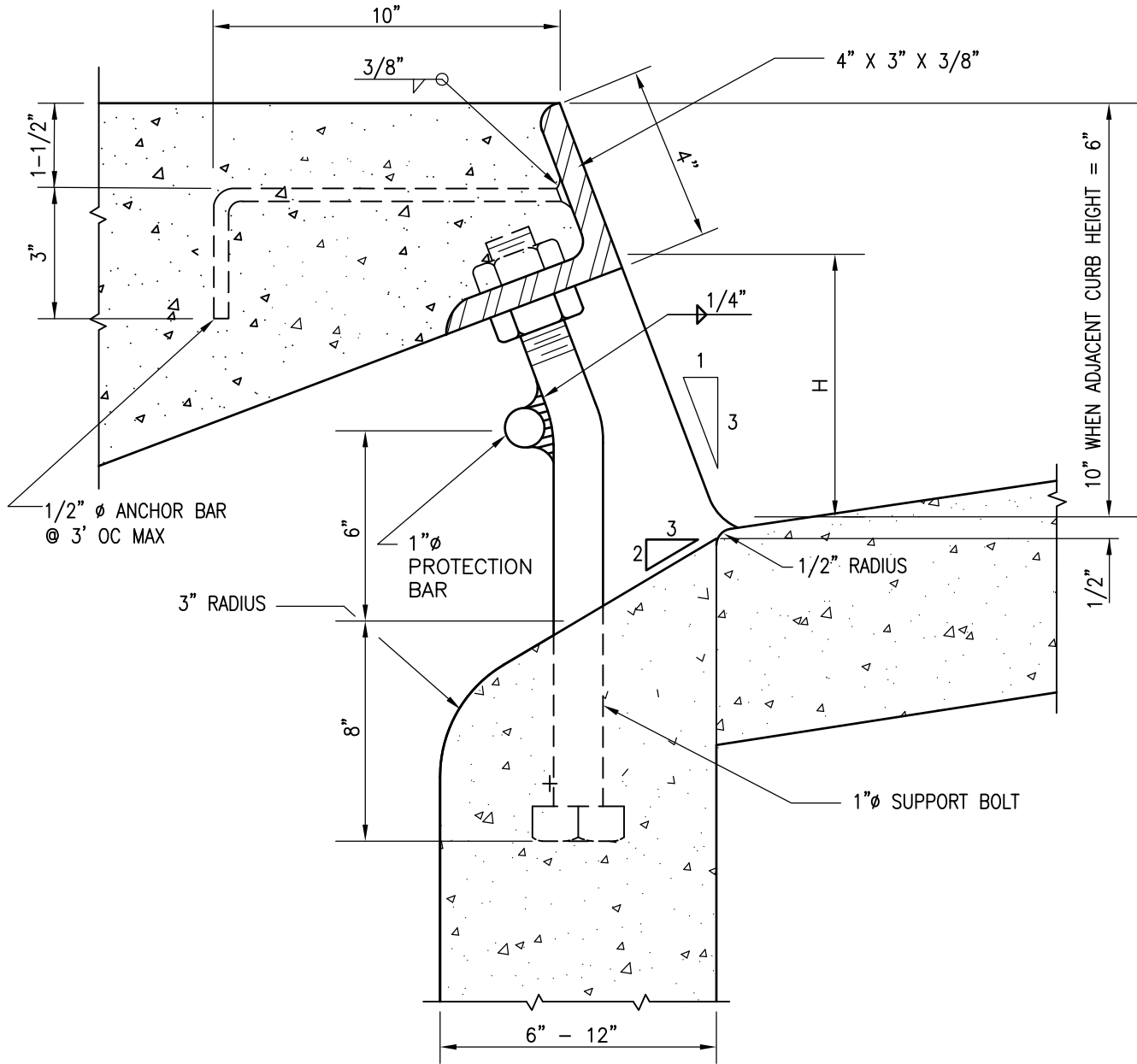
1. CONCRETE SHALL BE 560-C-3250 UNLESS OTHERWISE NOTED.
2. REINFORCING STEEL SHALL COMPLY WITH THIS DRAWING (D-11A AND D-11B) UNLESS OTHERWISE SPECIFIED.
3. REINFORCING STEEL SHALL BE INTERMEDIATE GRADE DEFORMED BARS CONFORMING TO LATEST ASTM SPECIFICATIONS.
4. BENDS SHALL BE IN ACCORDANCE WITH LATEST ACI CODE.
5. MINIMUM SPLICE LENGTH FOR REINFORCING SHALL BE 30 DIAMETERS.
6. FLOOR SHALL HAVE A WOOD TROWEL FINISH AND, EXCEPT WHERE USED AS JUNCTION BOXES, SHALL HAVE A MINIMUM SLOPE OF 1:12 TOWARD THE OUTLET.
7. DEPTH V IS MEASURED FROM THE TOP OF THE STRUCTURE TO THE FLOWLINE OF THE BOX.
8. WALL THICKNESS AND REINFORCING STEEL REQUIRED MAY BE DECREASED IN ACCORDANCE WITH TABLE ON D-11B.
9. WALL THICKNESS SHALL BE STEPPED ON THE OUTSIDE OF THE BOX.
10. WHEN THE STRUCTURE DEPTH V EXCEEDS 4', STEPS SHALL BE CAST INTO THE WALL AT 15" INTERVALS FROM 15" ABOVE FLOOR TO WITHIN 12" OF TOP OF STRUCTURE. WHERE POSSIBLE, PLACE STEPS IN WALL WITHOUT PIPE OPENING, OTHERWISE OVER OPENING OF SMALLEST DIAMETER.
11. ALTERNATE STEP MAY BE AN APPROVED STEEL REINFORCED POLYPROPYLENE STEP.
12. UPON APPROVAL OF THE AGENCY, THE USE OF PRECAST STORM STRUCTURES IS ACCEPTABLE AS AN ALTERNATE TO CAST-IN-PLACE. PRECAST UNITS SHALL CONFORM TO ASTM STANDARDS AND BE MANUFACTURED IN A PERMANENT FACILITY DESIGNED FOR THAT PURPOSE.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		INLETS AND CLEANOUTS NOTES AND DETAILS
Edited		T. Stanton	02/09		
Edited	S.S.	T. Regello	03/11		
Edited	T.R.	T. Regello	10/15		
Edited	M.W.	M. Widelski	10/18		
					 10/25/2018 Chairperson R.C.E. 19246 Date
					DRAWING NUMBER D-11A



BOX SECTION REINFORCEMENT (HORIZONTAL AND FLOOR)			
MAXIMUM SPAN X OR Y	DEPTH V	THICKNESS T	HORIZONTAL AND FLOOR REINFORCEMENT SIZE AND SPACING
3' TO 4'	4'	6"	#4 @ 18"
4'-1" TO 7'			#4 @ 12"
7'-1" TO 8'			#4 @ 8"
3' TO 4'	4'-1" TO 8'	6"	#4 @ 18"
4'-1" TO 5'			#4 @ 12"
5'-1" TO 6'			#4 @ 8"
6'-1" TO 8'			#4 @ 6"
3' TO 4'	8'-1" TO 12'	6"	#4 @ 15"
4'-1" TO 5'		8"	#4 @ 12"
5'-1" TO 6'			#4 @ 8"
6'-1" TO 8'			#4 @ 6"
3' TO 4'	12'-1" TO 16'	8"	#4 @ 12"
4'-1" TO 5'			#4 @ 12"
5'-1" TO 6'			#4 @ 8"
6'-1" TO 7'			#4 @ 6"
7'-1" TO 8'			#5 @ 8"
3' TO 4'	16'-1" TO 20'	8"	#4 @ 12"
4'-1" TO 5'		10"	#4 @ 12"
5'-1" TO 6'			#4 @ 8"
6'-1" TO 7'			#4 @ 6"
7'-1" TO 8'			#5 @ 8"
3' TO 4'	20'-1" TO 24'	8"	#4 @ 12"
4'-1" TO 5'		10"	#4 @ 12"
5'-1" TO 6'			#4 @ 8"
6'-1" TO 7'			#4 @ 6"
7'-1" TO 8'			12"

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75		INLETS AND CLEANOUTS NOTES AND DETAILS	<i>M. Heaton</i> 10/25/2018 Chairperson R.C.E. 19246 Date
Reformatted		T. Stanton	04/06	DRAWING NUMBER		D-11B
Edited	S.S.	T. Regello	03/11			
Edited	T.R.	T. Regello	10/15			
Edited	M.W.	M. Widelski	10/18			



**NOTES**

1. FACE ANGLE SHALL BE CAST CONTINUOUSLY INTO STRUCTURE FOR THE ENTIRE LENGTH "L".
2. ALL EXPOSED METAL PARTS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
3. WHEN CURB INLET OPENING HEIGHT (H) EXCEEDS 6", INSTALL 1"Ø STEEL PROTECTION BAR. STEEL PROTECTION BAR SHALL BE EMBEDDED 8" INTO CURB INLET.
4. INSTALL ADDITIONAL BARS AT 3-1/2" CLEAR SPACING ABOVE FIRST STEEL PROTECTION BAR WHEN OPENING EXCEEDS 13".
5. WHEN CURB INLET OPENING LENGTH EXCEEDS 8' INSTALL 1"Ø STEEL SUPPORT BOLTS SPACED AT NOT MORE THAN 5' OC.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

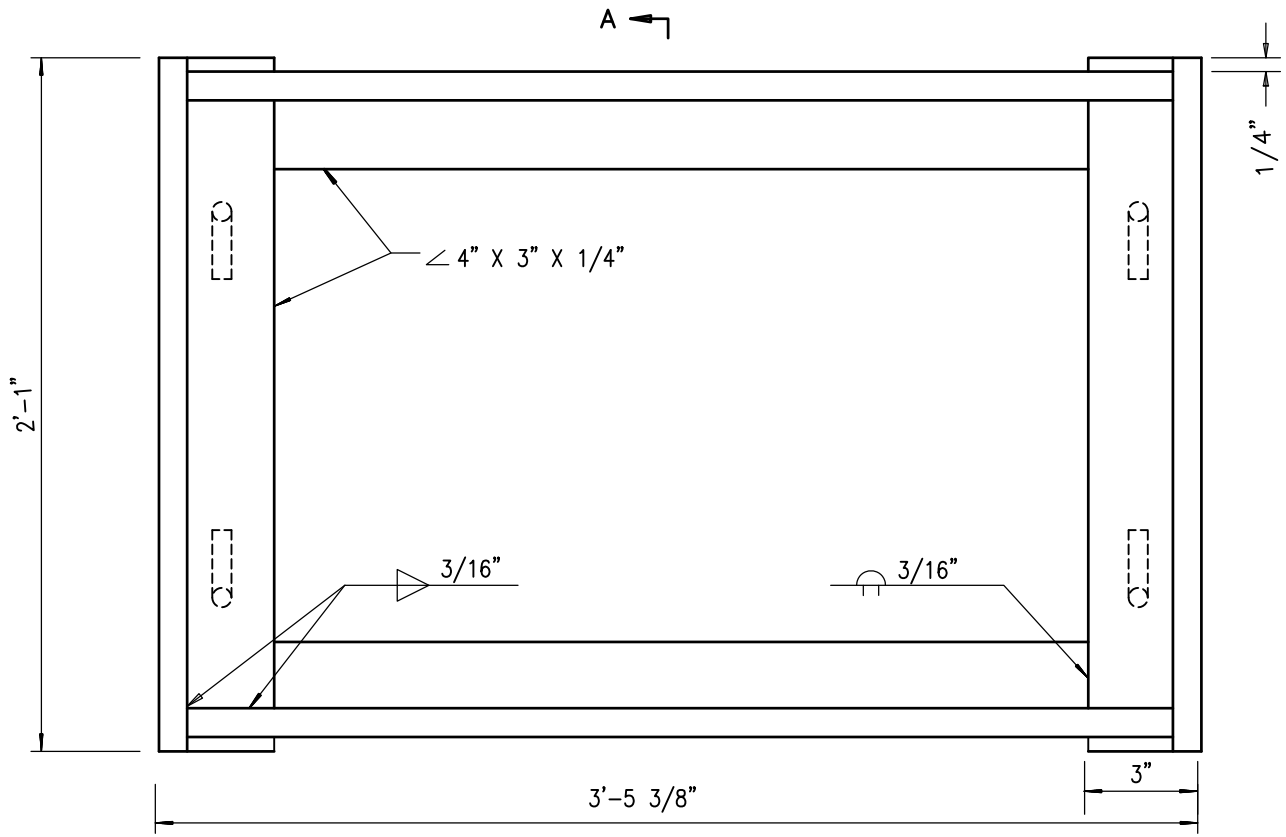
SAN DIEGO REGIONAL STANDARD DRAWING

CURB INLET OPENING

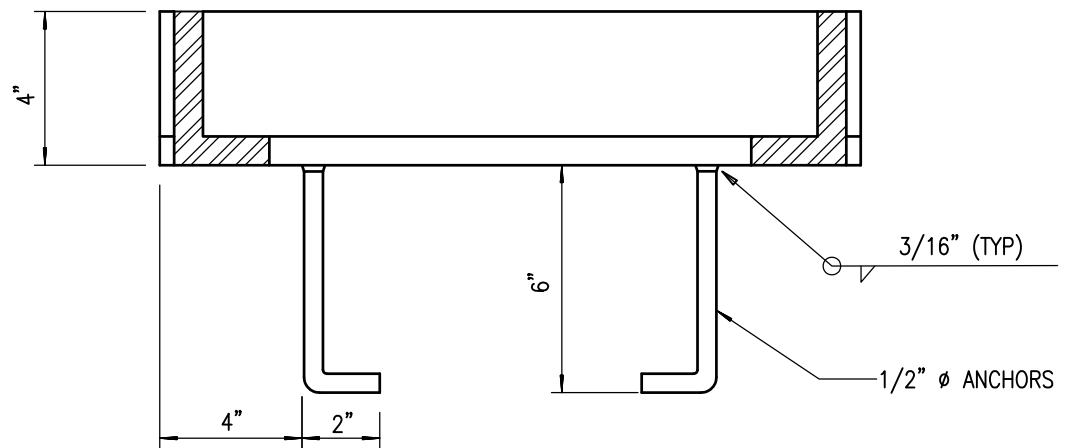
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
 Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-12



A ←  
PLAN



SECTION A-A

**NOTE**  
HOT-DIP GALVANIZE ALL PARTS AFTER FABRICATION.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

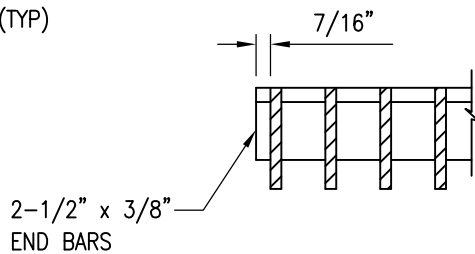
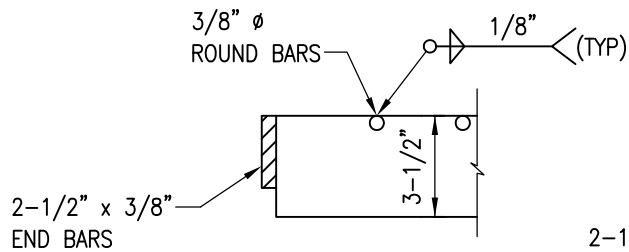
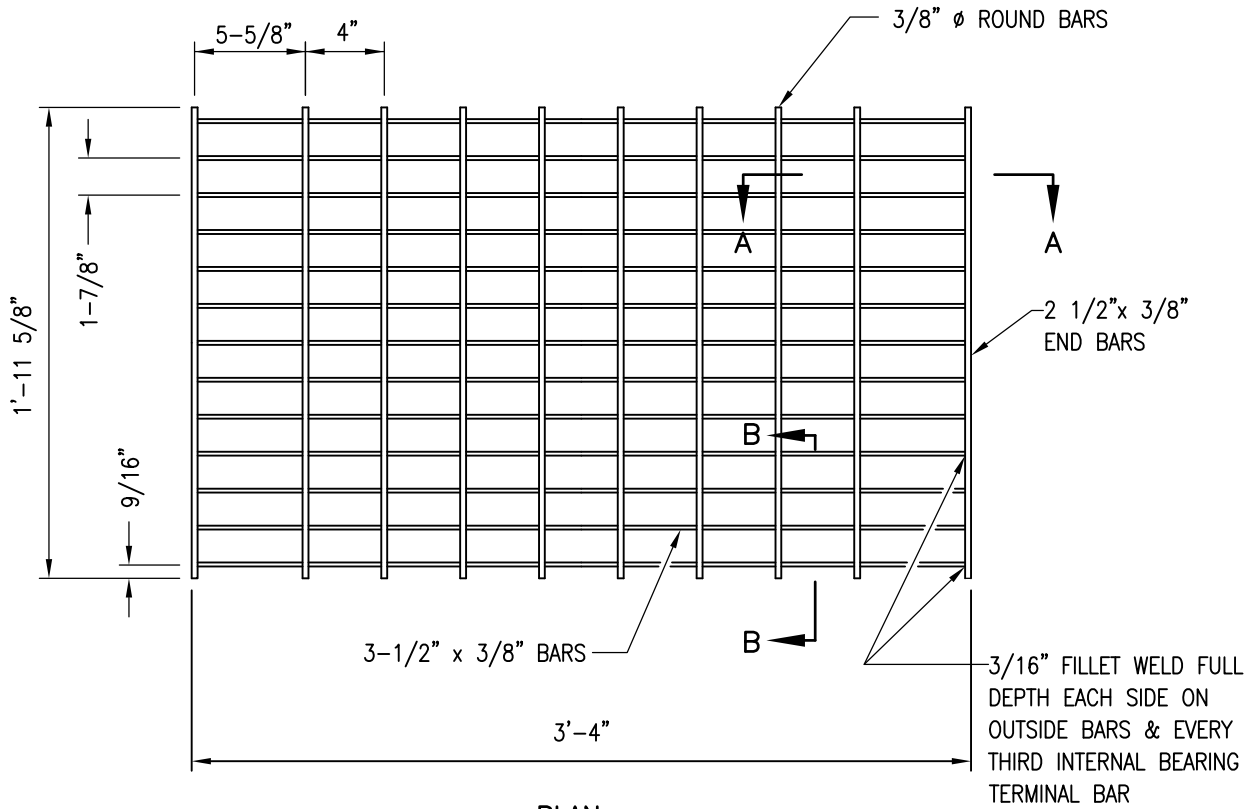
SAN DIEGO REGIONAL STANDARD DRAWING

WELDED STEEL GRATE FRAME

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Heaton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-13



**NOTES**

1. HOT-DIP GALVANIZE ALL PARTS AFTER FABRICATION.
2. DIMENSIONS ARE TO CENTERLINE OF BARS UNLESS OTHERWISE NOTED.
3. NOT TO BE USED IN PEDESTRIAN AREAS.
4. WEIGHT: 200 POUNDS +/-.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

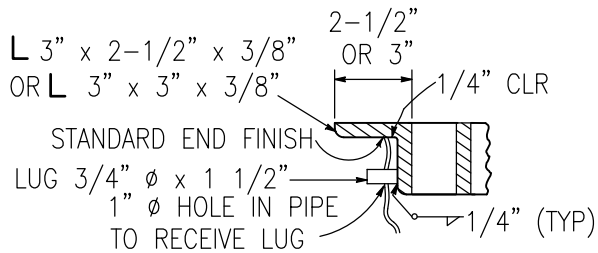
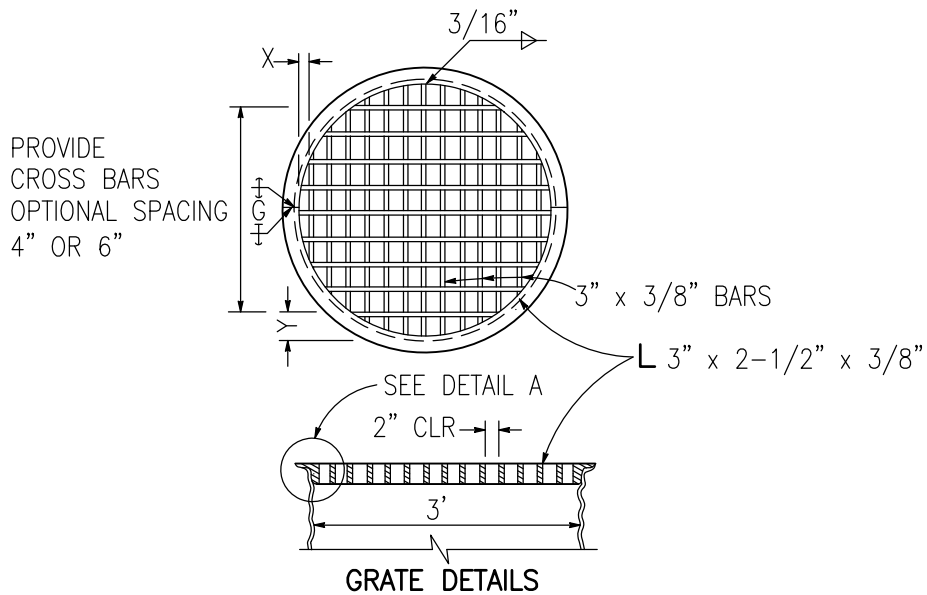
DRAINAGE STRUCTURE GRATE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

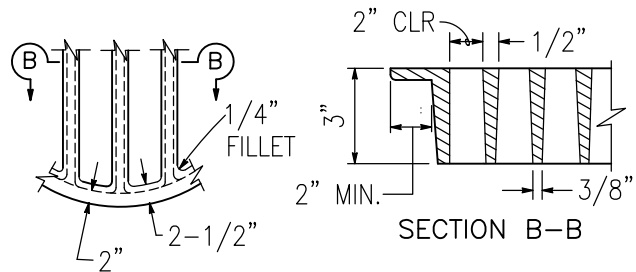
*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-15

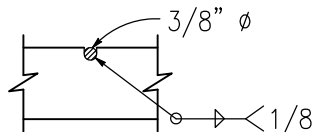




DETAIL A

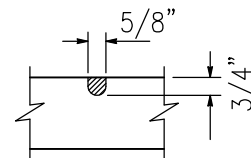


ALTERNATIVE CAST NODULAR IRON GRATE  
OR CAST STEEL GRATE



3/8"  $\phi$  CROSS BARS MAY BE FILLET WELDED,  
RESISTANCE WELDED OR ELECTROFORGED TO  
BEARING BARS.

CROSS BAR DETAIL TYPE  
WELDED STEEL GRATE



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

GRATE BAR SPACING TABLE

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

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

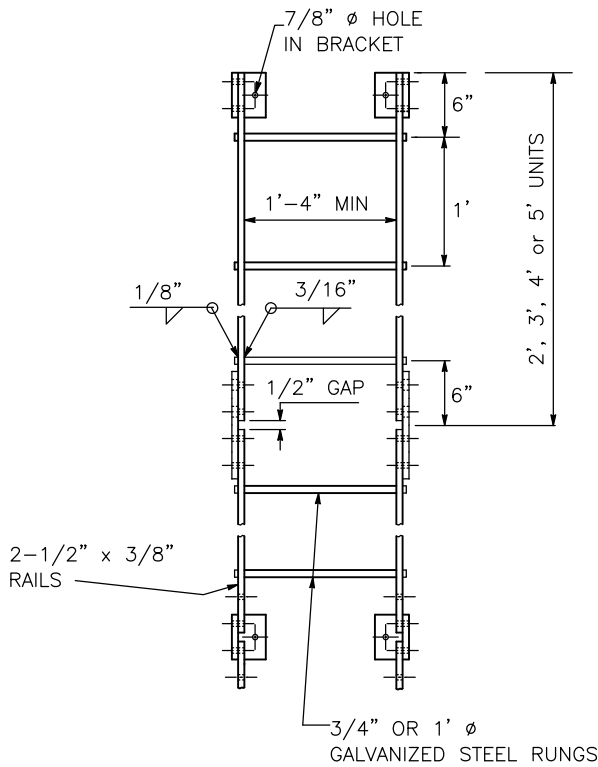
CORRUGATED STEEL PIPE INLETS,  
DETAILS

RECOMMENDED BY THE SAN DIEGO  
REGIONAL STANDARDS COMMITTEE

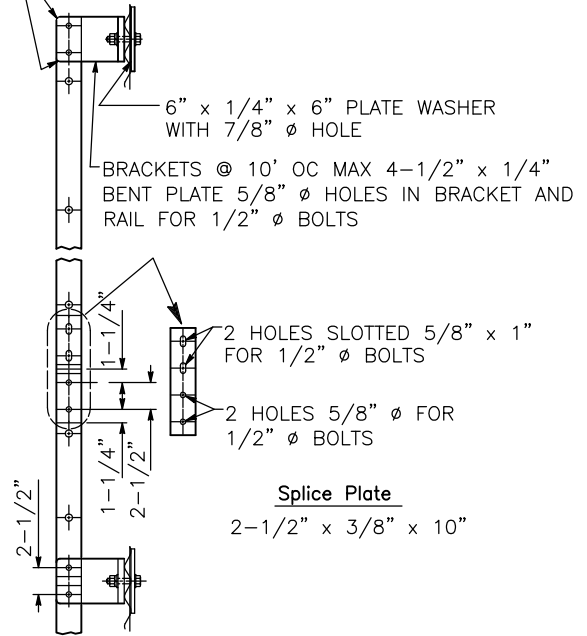
*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING  
NUMBER D-17A

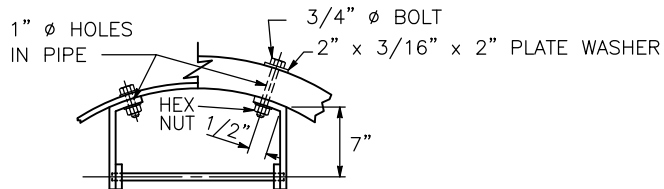
GRIND ALL EXPOSED  
CORNERS 1/4" RADIUS



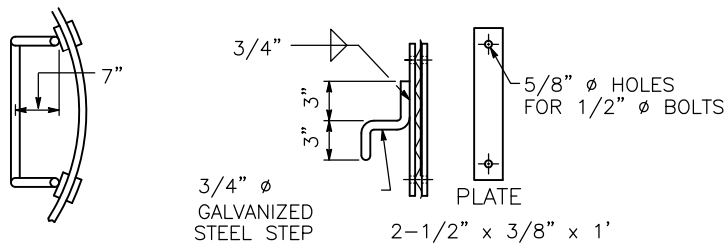
FRONT VIEW



SIDE VIEW



LADDER DETAIL  
H=5' OR GREATER



STEP DETAIL  
H=3'-6" TO 4'-11"

**NOTE**

SEE NOTE 3 ON D-16 FOR  
LADDER REQUIREMENTS.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

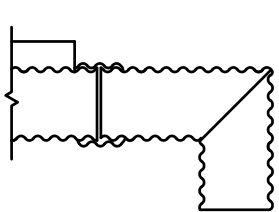
SAN DIEGO REGIONAL STANDARD DRAWING

CORRUGATED STEEL PIPE INLETS,  
DETAILS

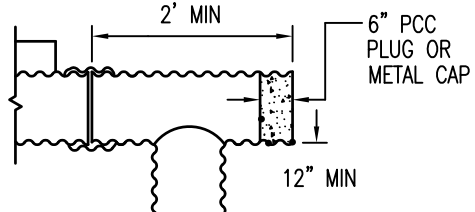
RECOMMENDED BY THE SAN DIEGO  
REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

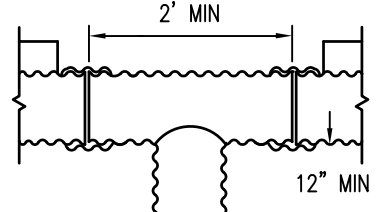
DRAWING  
NUMBER D-17B



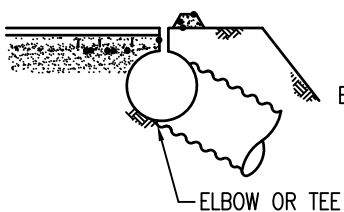
ELBOW



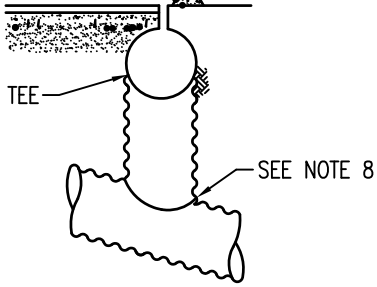
TEE



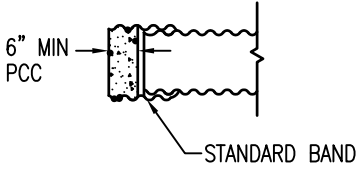
TEE-SAG CONDITION



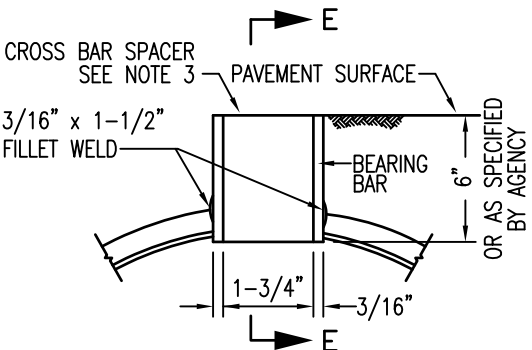
OVERSIDE DRAIN



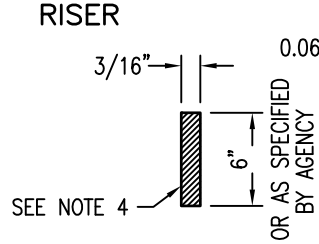
RISER



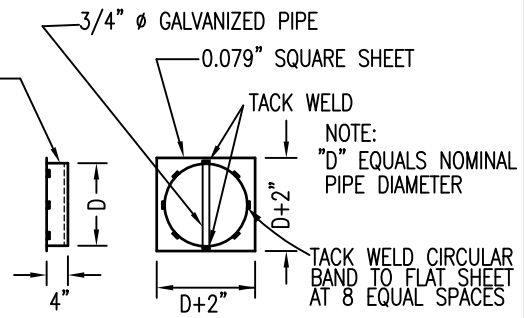
BAND PLUG



SECTION D-D  
GRATE SLOT DETAIL



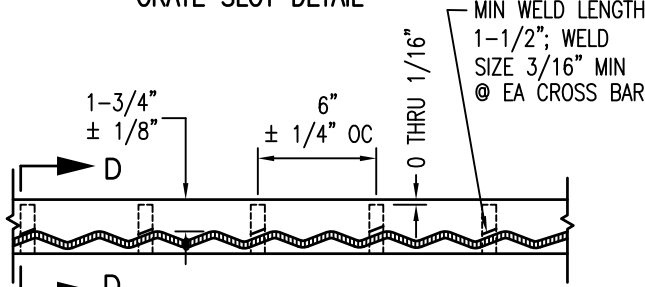
SECTION E-E



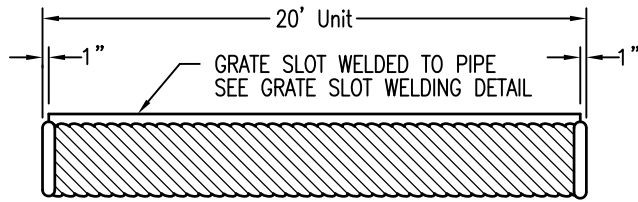
METAL CAP DETAIL

NOTES

1. DRAIN SEAMS MAY BE CONSTRUCTED BY RIVETING OR RESISTANCE SPOT-WELDING, CONTINUOUS HELICAL LOCK SEAM OR HELICAL WELDING SEAM AT EQUAL CENTERS.
2. EACH DRAIN SECTION SHALL BE ASSEMBLED WITH STANDARD COUPLING BANDS.
3. CROSS BAR SPACER OF GRATE SHALL BE PRESSURE FUSED OR PLUG WELDED TO BEARING BARS IN SUCH A MANNER AS TO DEVELOP THE STRENGTH OF THE CROSS BAR SPACER.
4. CROSS BAR SPACER (SECTION E-E) MAY DIFFER FROM THAT SHOWN PROVIDED SECTION AREA IS EQUAL OR GREATER.
5. GRATE MATERIAL SHALL BE A WELDABLE GRADE OF STEEL COMPLYING TO THE REQUIREMENTS OF ASTM A 36.
6. THE MAXIMUM VARIANCE FROM A STRAIGHT LINE FROM THE EXTREME TOP CORNERS OF THE BEARING BAR SHALL BE 1/2" IN 20'.
7. INSTALLATION LENGTHS SHALL BE 10' OR MULTIPLES THEREOF.
8. EITHER FIELD JOINT SEALED WITH A PLIABLE MIXTURE OF SAND, PORTLAND CEMENT AND EMULSIFIED ASPHALT (MIXTURE OF 1 PART PORTLAND CEMENT, 3 - 5 PARTS SAND AND 1-1/2 PARTS SSI EMULSIFIED ASPHALT), OR CONTINUOUS WELD.



GRATE SLOT WELDING DETAIL



GRATE SLOT DRAIN

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

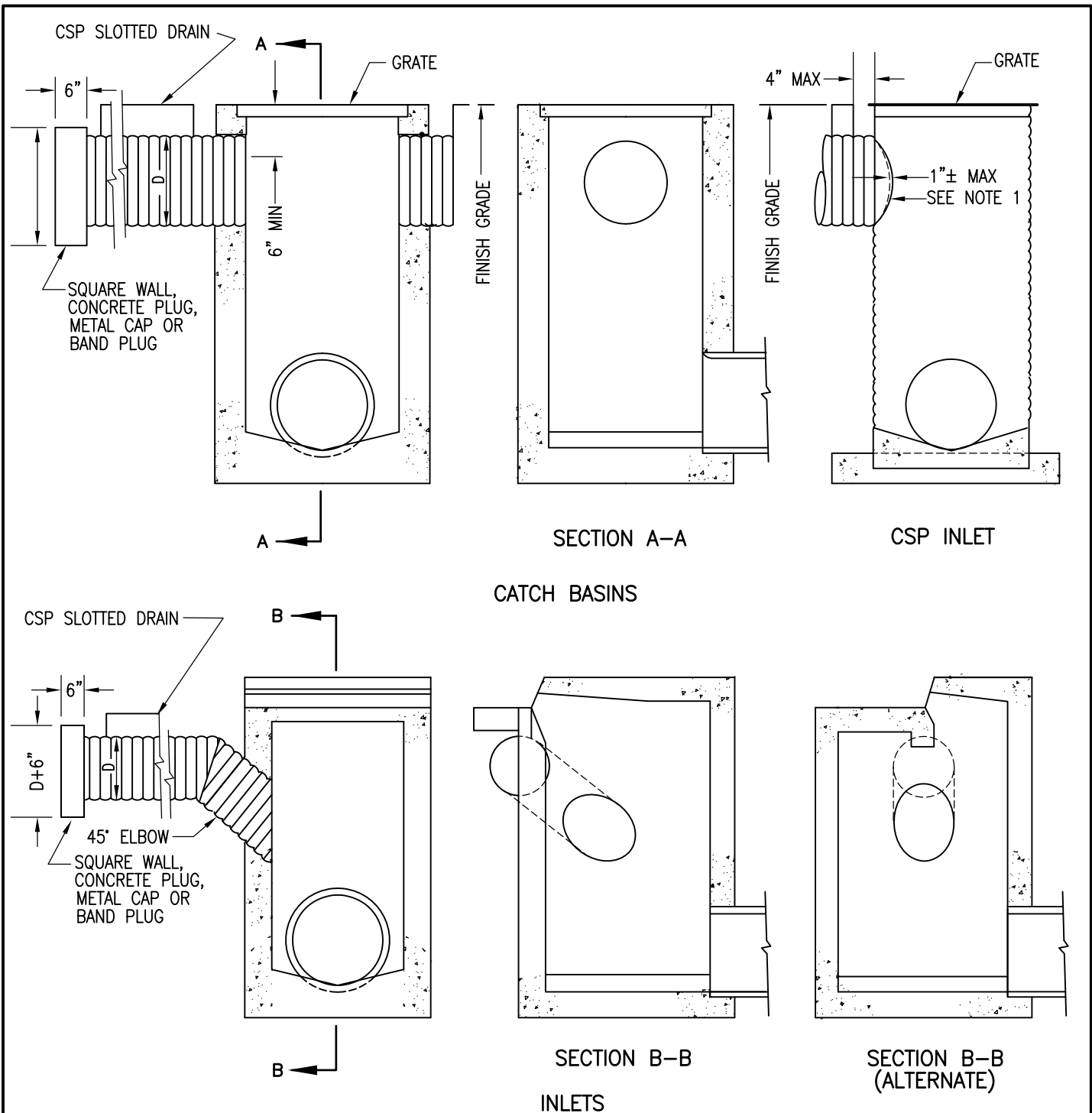
SLOTTED CORRUGATED STEEL PIPE DRAINS  
12" THROUGH 24"

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-18





**NOTES**

1. EITHER FIELD JOINT WITH A PLIABLE MIXTURE OF SAND, PORTLAND CEMENT AND EMULSIFIED ASPHALT (MIXTURE OF 1 PART PORTLAND CEMENT, 3-5 PARTS SAND AND 1-1/2 PARTS SSI EMULSIFIED ASPHALT), OR CONTINUOUS WELD.
2. SEE D-18 FOR ADDITIONAL NOTES AND DETAILS.
3. SLOTTED DRAIN INSTALLATIONS SHALL BE ENCASED WITH 6" PCC 520-C-2500 ALL AROUND AND SHALL BE POURED MONOLITHICALLY WITH THE CURB AND GUTTER.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

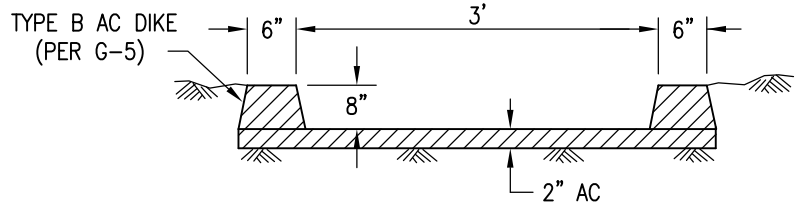
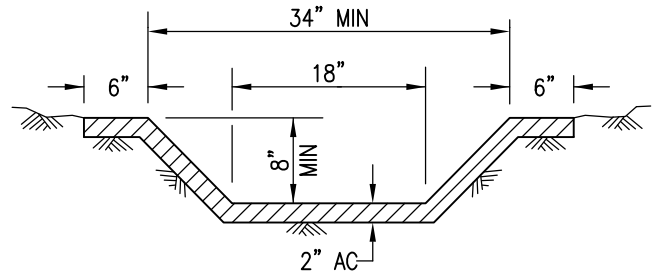
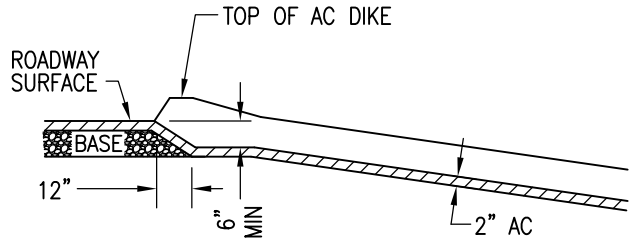
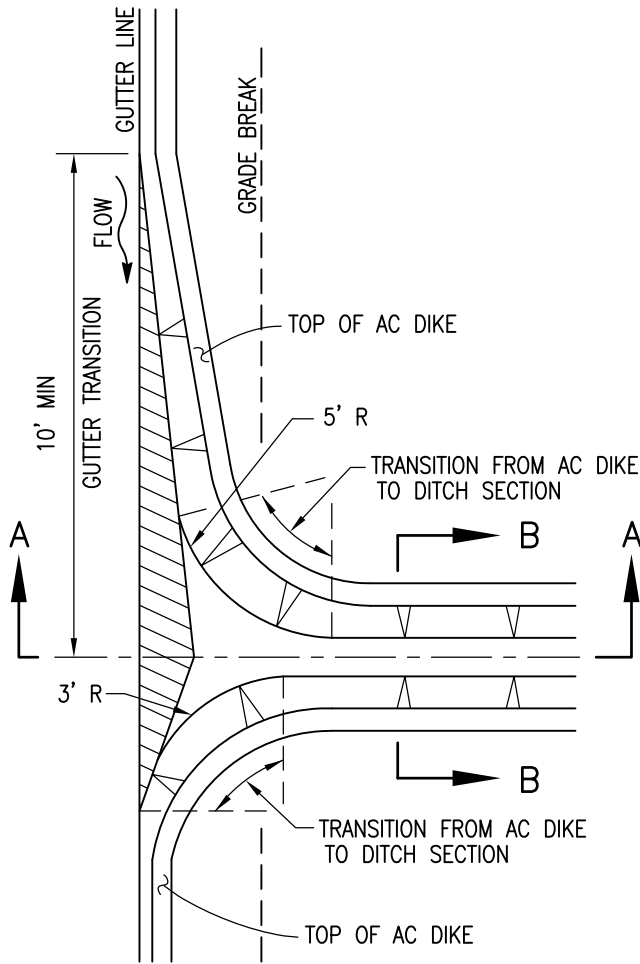
SAN DIEGO REGIONAL STANDARD DRAWING

SLOTTED DRAIN CONNECTIONS  
TO STANDARD INLETS

RECOMMENDED BY THE SAN DIEGO  
REGIONAL STANDARDS COMMITTEE

*M. Heaton* 10/25/2018  
Chairperson R.C.E. 19246 Date

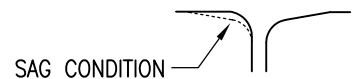
DRAWING  
NUMBER D-19



**NOTES**

1. AC SPILLWAY MAY BE USED WHEN FILL IS 10' OR LESS, AND WHERE FILL SLOPE IS 1-1/2:1 OR FLATTER.
2. USE 10' MIN LENGTH OF GUTTER TRANSITION ON EACH SIDE OF DOWNDRAIN IN SAG CONDITION.
3. CROSS SECTIONAL AREA OF DITCH (SECTION B-B) MAY BE TRAPEZOIDAL OR SEMI-CIRCULAR; SEMI-CIRCULAR SECTIONAL AREA MUST PROVIDE AN EQUAL FLOW CAPACITY AS TRAPEZOIDAL.

**LEGEND ON PLANS**



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

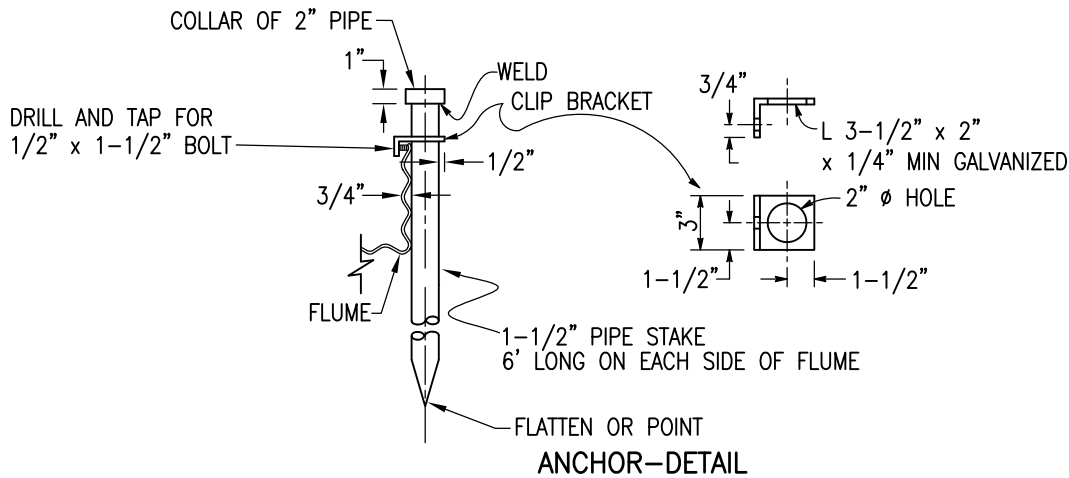
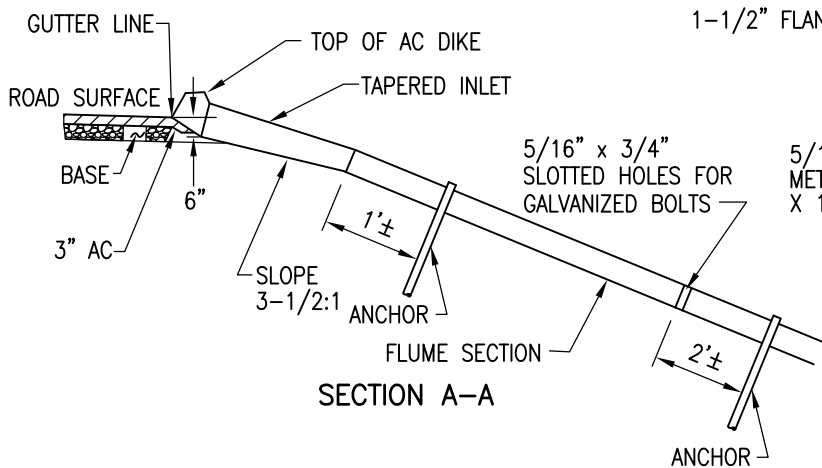
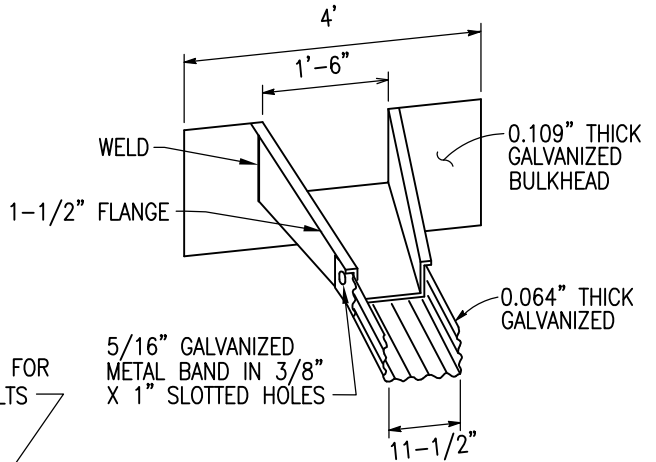
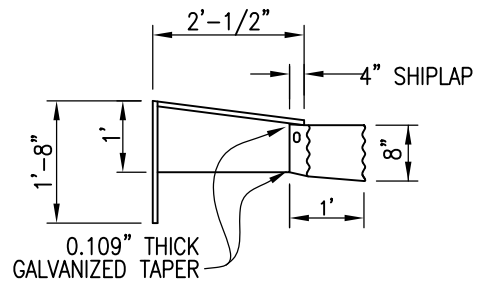
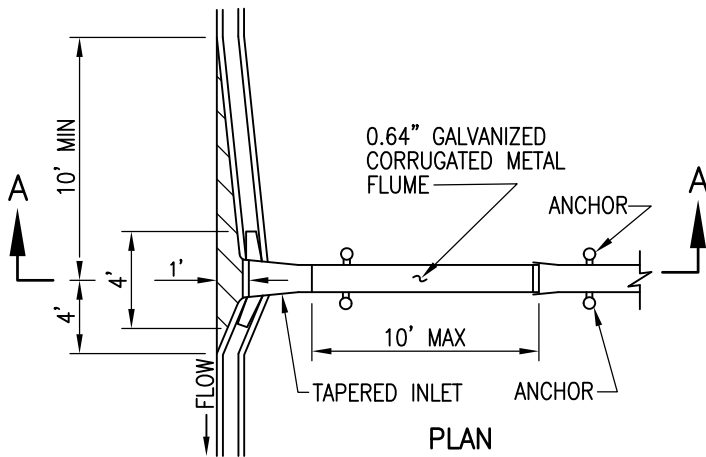
SAN DIEGO REGIONAL STANDARD DRAWING

ASPHALT CONCRETE SPILLWAY

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

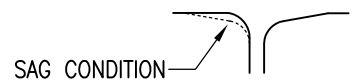
DRAWING NUMBER D-22




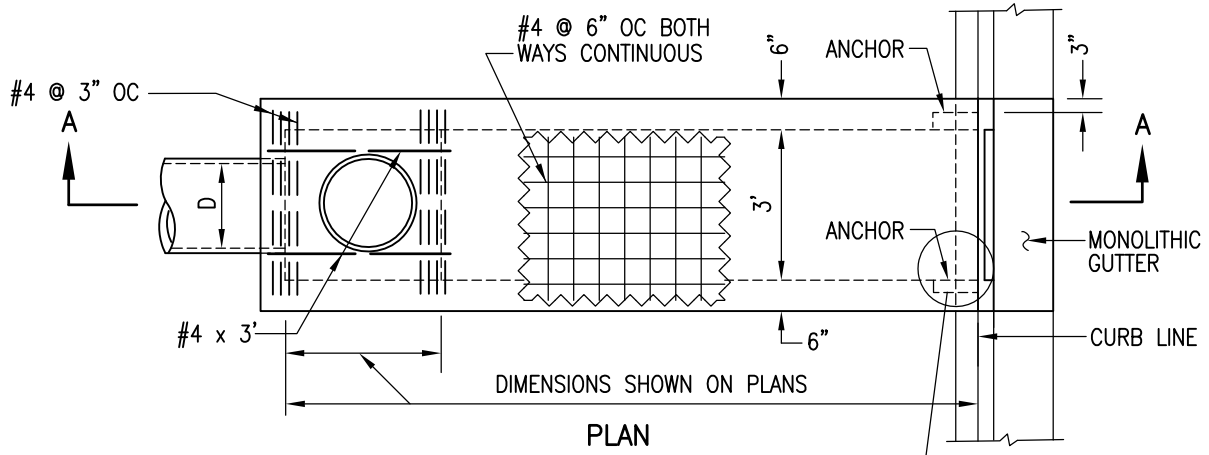
**NOTES**

1. DOWNDRAIN FLUME MAY BE USED WHERE FILL SLOPE IS 1-1/2:1 OR FLATTER.
2. USE 10' MIN LENGTH OF GUTTER TRANSITION ON EACH SIDE OF DOWNDRAIN IN SAG CONDITION.
3. ALL METAL PARTS TO BE GALVANIZED AFTER FABRICATION.

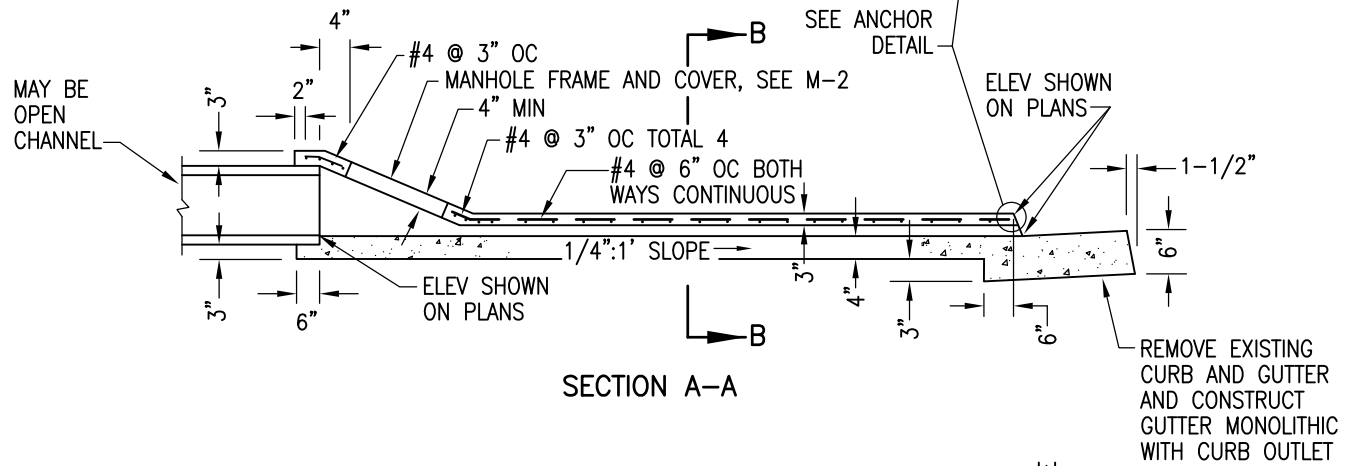
**LEGEND ON PLANS**



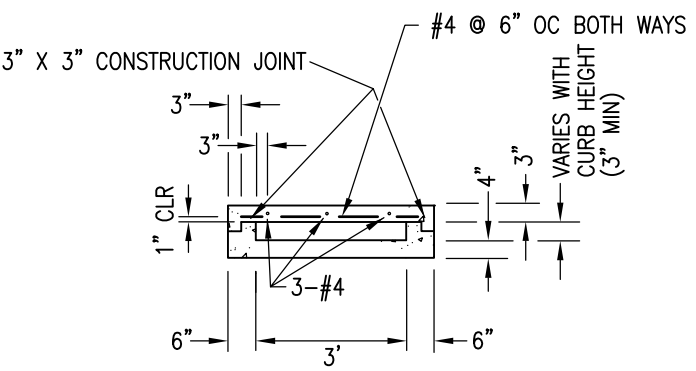
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Edited		T. Stanton	02/09	TAPERED INLET AND DOWNDRAIN FLUME	 10/25/2018 Chairperson R.C.E. 19246 Date
Edited	S.S.	T. Regello	03/11		
Edited	T.R.	T. Regello	10/15		
Edited	M.W.	M. Widelski	10/18		
				DRAWING NUMBER	D-23



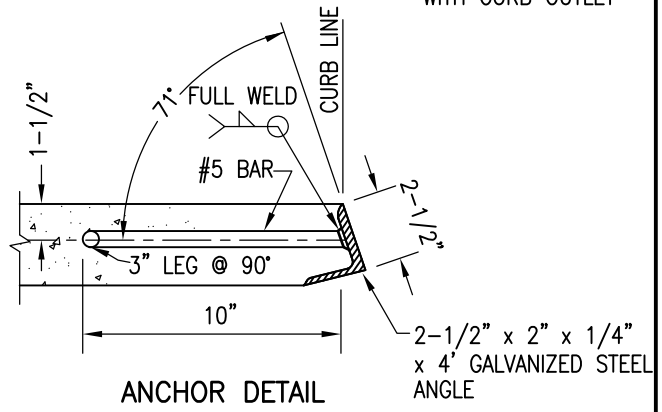
PLAN



SECTION A-A



SECTION B-B

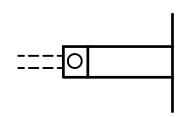


ANCHOR DETAIL

NOTES

1. CONCRETE SHALL BE 560-C-3250.
2. D = INSIDE DIAMETER OF PIPE OR DEPTH OF CHANNEL.
3. SECTION TO BE SLOPED LATERALLY WITH TOP CONFORMING TO THE GRADES OF THE EXISTING SIDEWALK AND CURB.
4. MANHOLE FRAME AND COVER MAY BE DELETED WITH OPEN CHANNEL.
5. TROWEL FINISH TOP SURFACE AND REPRODUCE MARKINGS OF EXISTING SIDEWALK AND CURB.
6. TROWEL FINISH FLOOR OF OUTLET.
7. PROVIDE 1/4" TOOLED GROOVE IN TOP SLAB IN LINE WITH BACK OF ADJACENT CURB.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Revised		T.Stanton	11/08
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

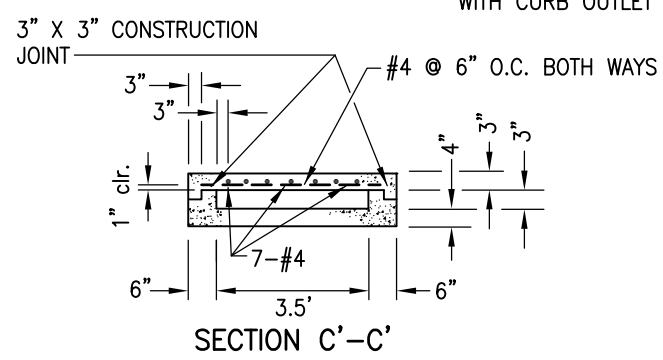
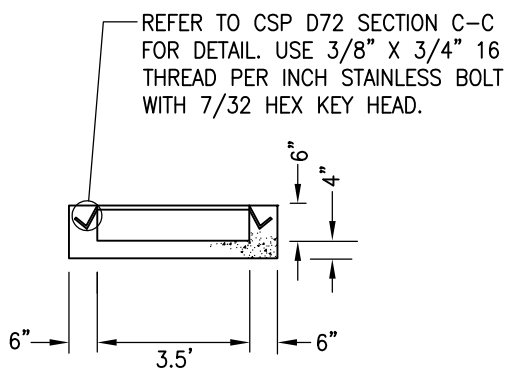
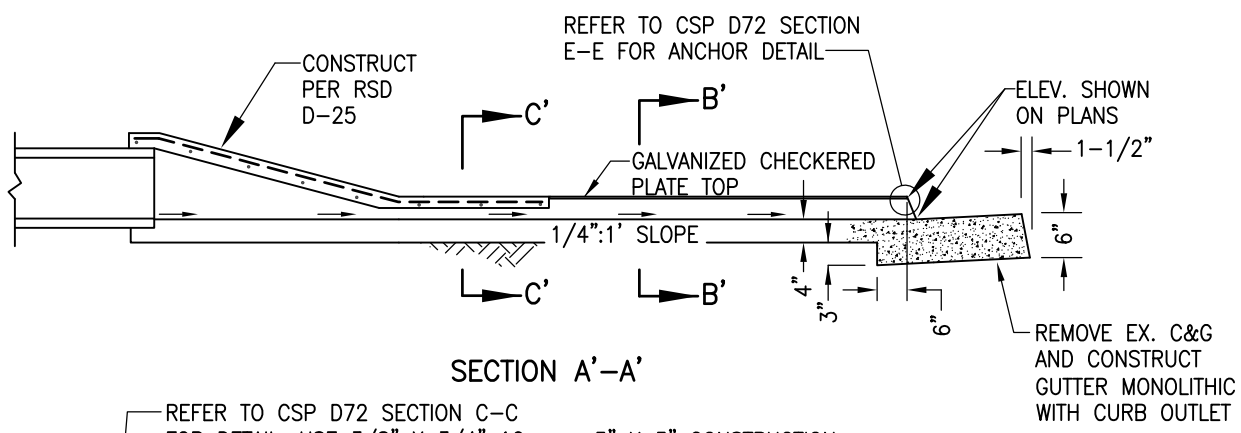
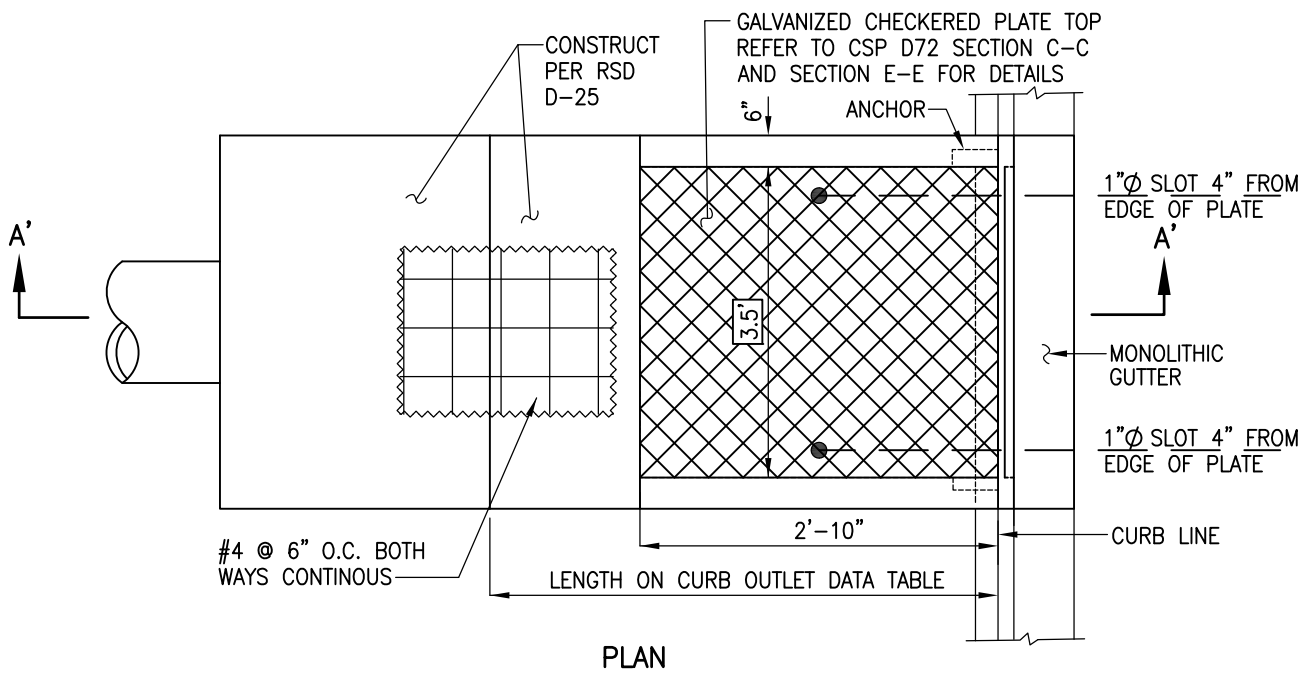
SAN DIEGO REGIONAL STANDARD DRAWING

CURB OUTLET - TYPE A

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

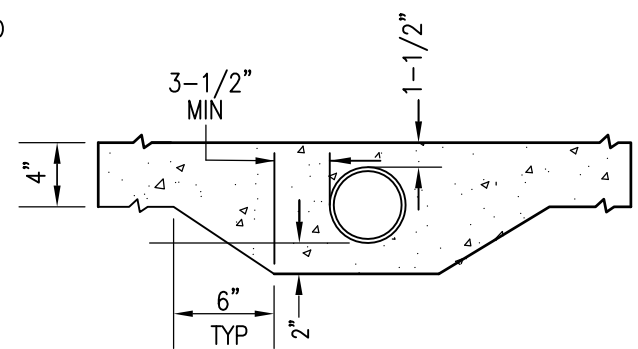
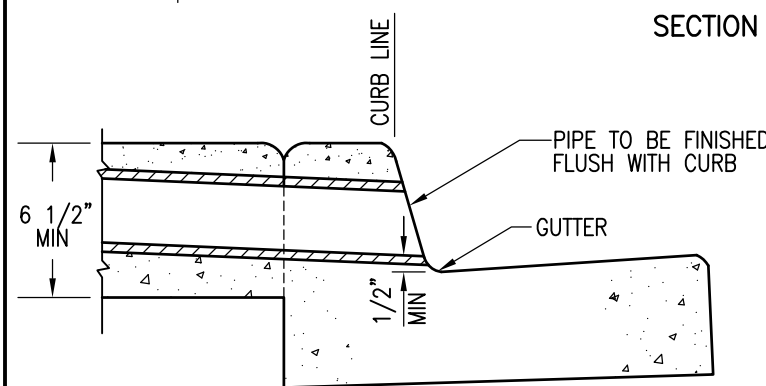
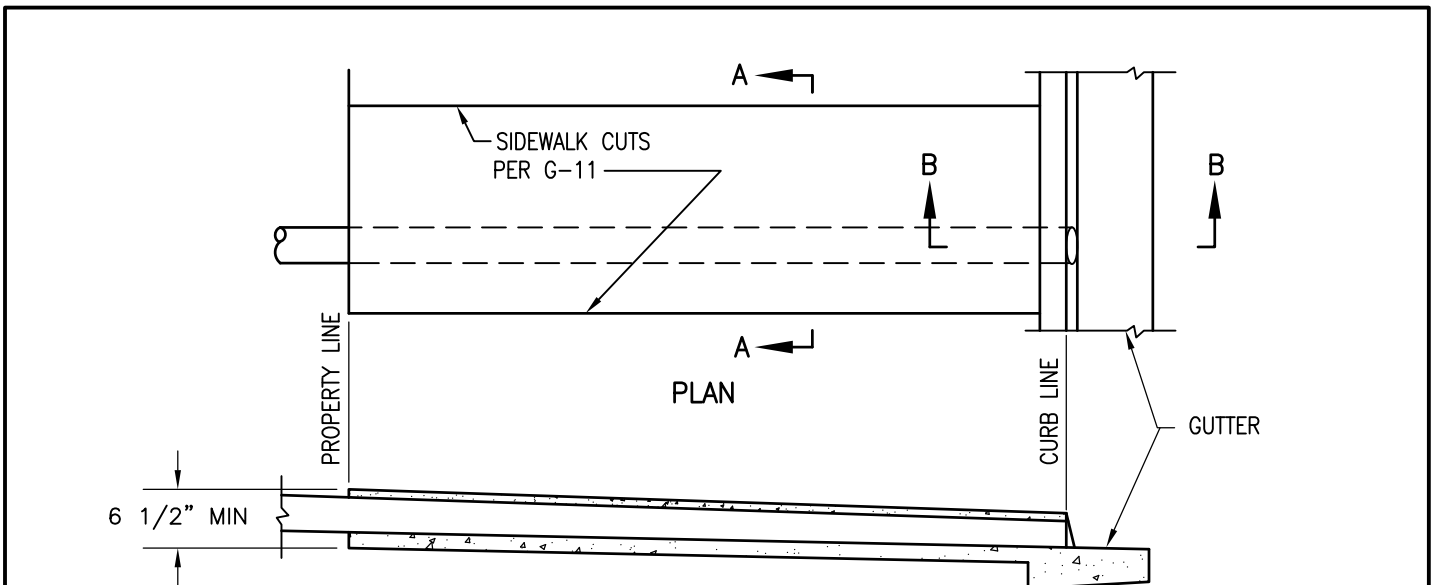
DRAWING NUMBER **D-25A**



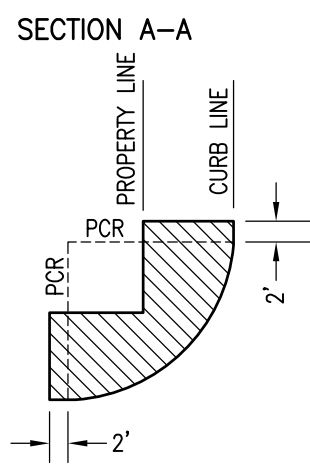
**NOTES**

1. CONCRETE SHALL BE 560-C-3250.
2. SECTION TO BE SLOPED LATERALLY WITH TOP CONFORMING TO THE GRADES OF THE EXISTING SIDEWALK AND CURB.
3. TROWEL FINISH TOP SURFACE AND REPRODUCE MARKINGS OF EXISTING SIDEWALK AND CURB.
4. TROWEL FINISH FLOOR OF OUTLET.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Widelski	8/18		
Edited	M.W.	M. Widelski	10/18	MODIFIED CURB OUTLET - TYPE B	 10/25/2018 Chairperson R.C.E. 19246 Date
				DRAWING NUMBER <b>D-25B</b>	



APPROVED DRAIN PIPE SIZES	
PIPE SIZE	CURB HEIGHT AT CURB FACE
3"	6" TO 8"
4"	8"
6"	10"



**NOTES**

1. PIPE SHALL BE ONE CONTINUOUS LENGTH FROM PROPERTY LINE TO CURB LINE.
2. MULTIPLE PIPES TO BE SET A MINIMUM DISTANCE OF D/2 APART (3 MAX).
3. CONCRETE SHALL BE 520-C-2500.
4. PIPE SHALL BE CIRCULAR RIGID PLASTIC OR APPROVED EQUAL.
5. CORING OF EXISTING CURB MAY BE USED AS AN ALTERNATIVE.
6. PROVIDE 1/4" TOOLED GROOVE IN TOP SLAB IN LINE WITH BACK OF ADJACENT CURB.

DRAIN SHALL NOT BE CONSTRUCTED WITHIN THE HATCHED AREA  
**BLOCK CORNER**

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Reformatted		T.Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

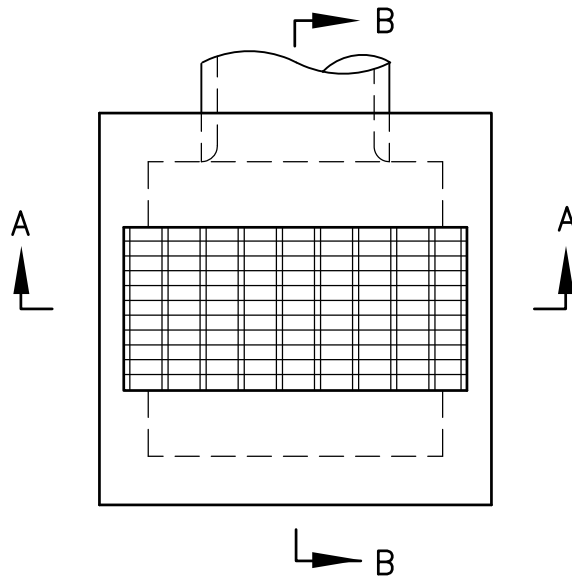
SAN DIEGO REGIONAL STANDARD DRAWING

SIDEWALK UNDERDRAIN PIPE

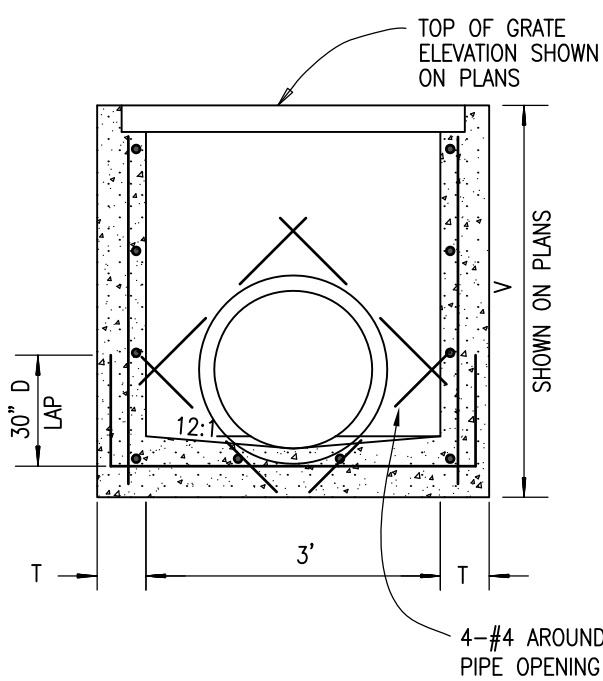
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Heaton* 10/25/2018  
Chairperson R.C.E. 19246 Date

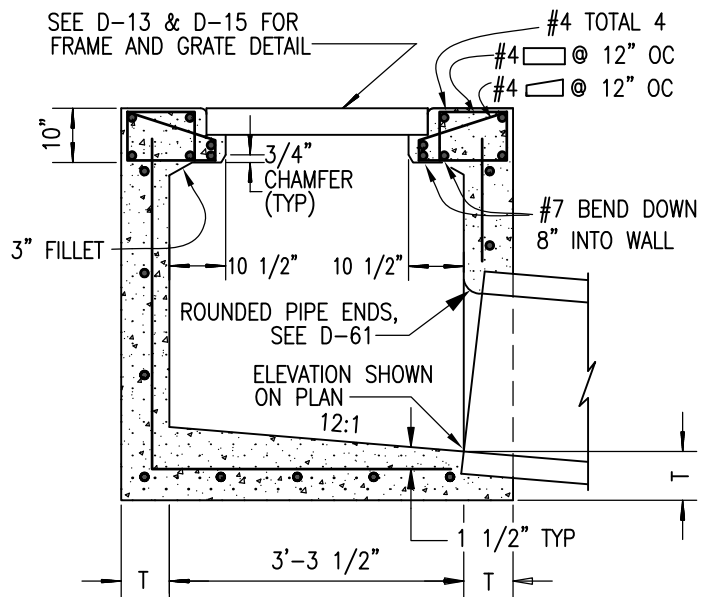
DRAWING NUMBER D-27



PLAN



SECTION A-A

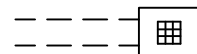


SECTION B-B

NOTES

1. A TYPE I CATCH BASIN IS SPECIFIED FOR LARGE DIAMETER PIPES OR FOR HEAVY TRAFFIC LOADS (NOTES EXTRA STEEL REINFORCEMENT IN UPPER CORNERS).
2. SEE D-11A & D-11B FOR ADDITIONAL NOTES AND DETAILS.
3. WHEN V EXCEEDS 4', STEPS SHALL BE INSTALLED PER D-11A.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Solomon	7/79
Reformatted		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

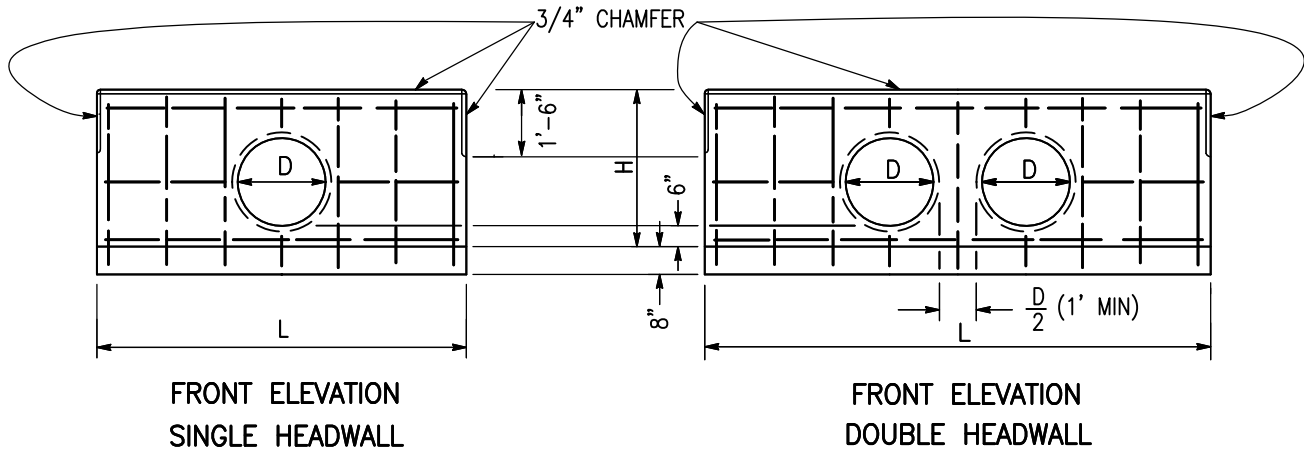
SAN DIEGO REGIONAL STANDARD DRAWING

CATCH BASIN - TYPE I

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

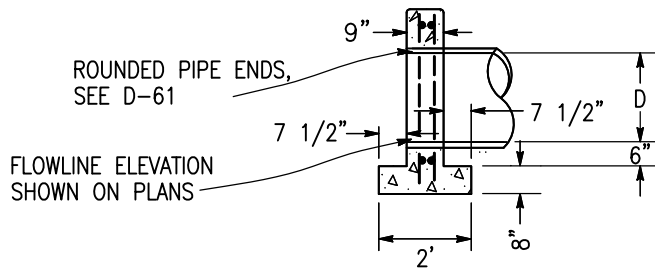
*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-29



FRONT ELEVATION  
SINGLE HEADWALL

FRONT ELEVATION  
DOUBLE HEADWALL



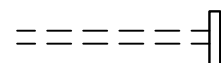
SECTION, SINGLE &  
DOUBLE HEADWALLS

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

NOTES

1. CONCRETE SHALL BE 560-C-3250.
2. ALL REINFORCING SHALL BE #4 BARS. ALL VERTICAL AND HORIZONTAL TIE BARS @ 18" MAXIMUM SPACING.
3. EXPOSED CORNERS SHALL BE 3/4" CHAMFERED.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

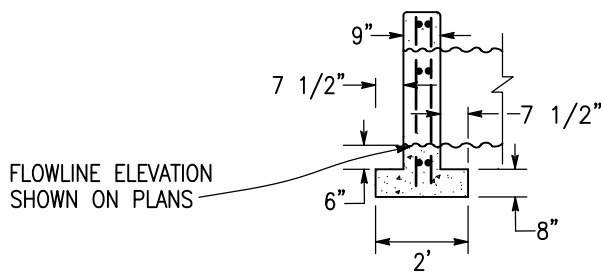
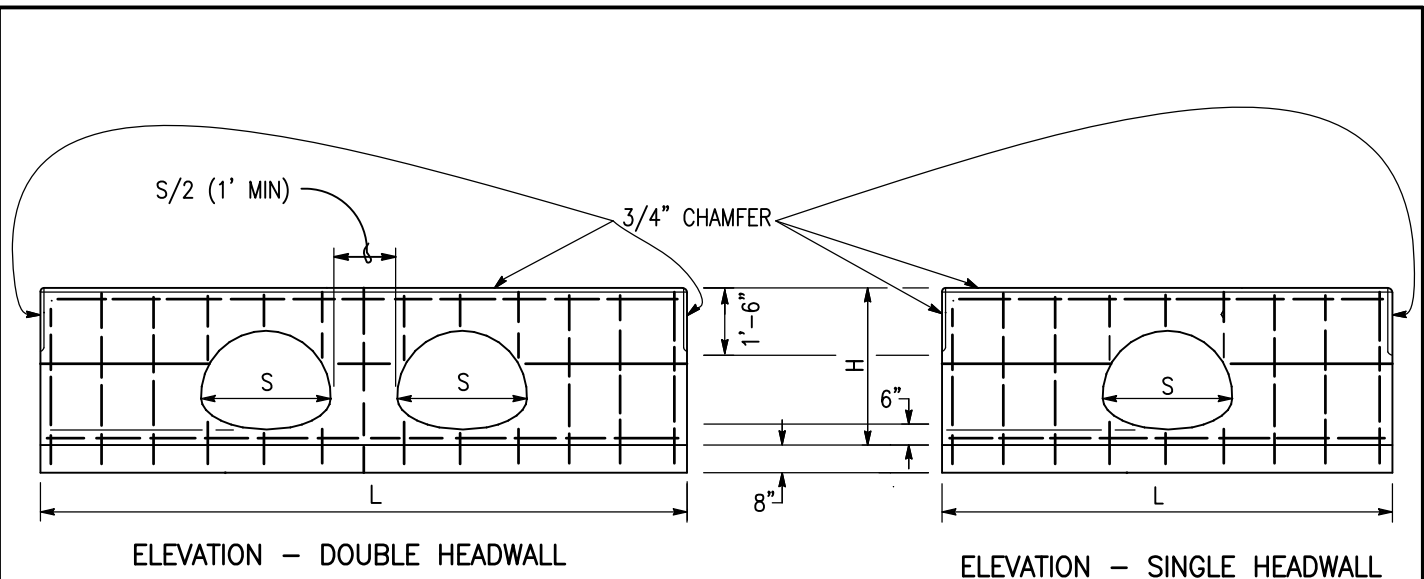
STRAIGHT HEADWALL - TYPE A  
[CIRCULAR PIPE]

RECOMMENDED BY THE SAN DIEGO  
REGIONAL STANDARDS COMMITTEE

*M. Heaton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING  
NUMBER D-30



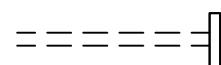


C.S.P. ARCH SIZE (INCHES)	SINGLE				DOUBLE		
	H (FT/IN)	L (FT/IN)	STEEL (POUNDS)	CONCRETE (C.Y.)	L (FT/IN)	STEEL (POUNDS)	CONCRETE (C.Y.)
18x11	2'-7"	5'-6"	37	0.64	8'	52	0.91
21x15	2'-11"	6'-6"	45	0.80	10'	60	1.22
24x18	3'-2"	7'-6"	50	0.96	11'-6"	70	1.45
28x20	3'-4"	8'-6"	60	1.12	13'-6"	90	1.76
35x24	3'-8"	10'-6"	85	1.47	15'-6"	120	2.16
42x29	4'-1"	12'-6"	110	1.76	18'	145	2.57
49x33	4'-5"	14'-6"	130	2.26	21'	170	3.13
57x38	4'-10"	17'	155	2.81	24'-6"	210	3.86
64x43	5'-3"	19'	175	3.31	27'	230	4.42
71x47	5'-7"	21'	195	3.81	30'	255	5.09

**NOTES**

1. CONCRETE SHALL BE 560-C-3250.
2. ALL REINFORCING SHALL BE #4 BARS. ALL VERTICAL AND HORIZONTAL TIE BARS @ 18" MAXIMUM SPACING.
3. EXPOSED CORNERS SHALL BE 3/4" CHAMFERED.

**LEGEND ON PLANS**



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

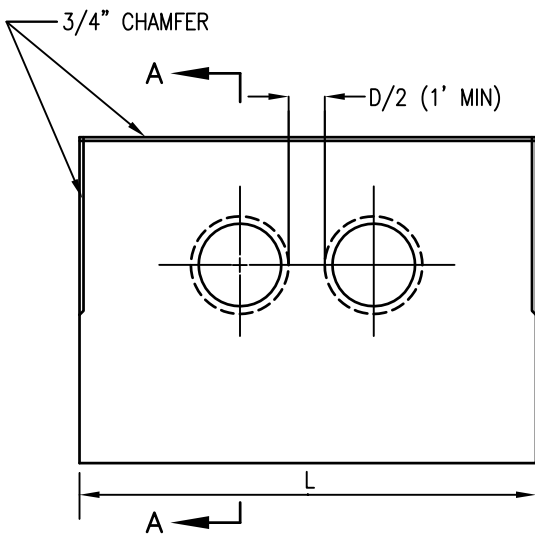
SAN DIEGO REGIONAL STANDARD DRAWING

STRAIGHT HEADWALL - TYPE A  
[CORRUGATED STEEL PIPE - ARCH]

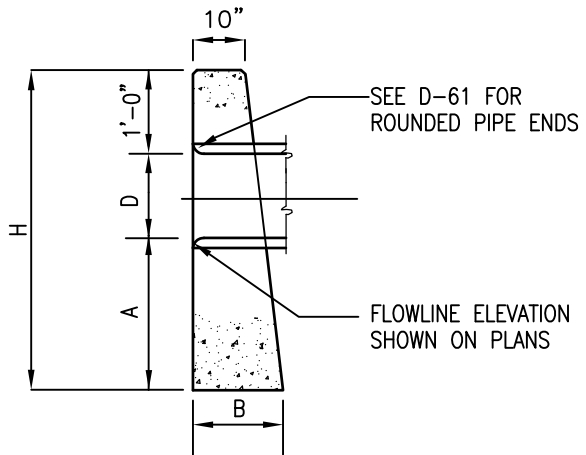
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Heaton* 10/25/2018  
Chairperson R.C.E. 19246 Date

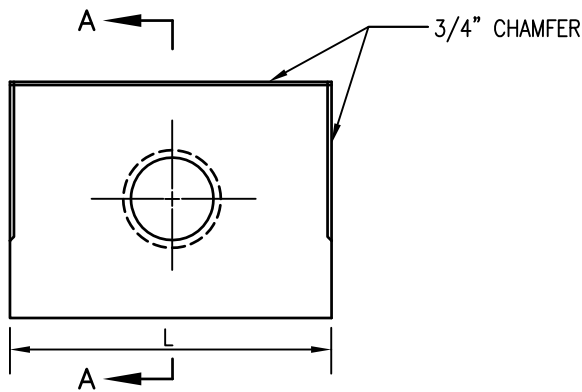
DRAWING NUMBER D-31



DOUBLE PIPE ELEVATION



SECTION A-A



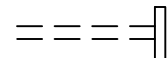
SINGLE PIPE ELEVATION

D	A	B	H	SINGLE		DOUBLE	
				L	CONCRETE (C.Y.)	L	CONCRETE (C.Y.)
12"	2'	1'	4'	4'	0.45	5'-8"	.62
15"	2'	1'-1"	4'-3"	5'	0.63	7'-1"	.85
18"	2'	1'-2"	4'-6"	6'	0.83	8'-6"	1.12
24"	2'-6"	1'-5"	5'-6"	8'	1.54	11'-4"	2.09
30"	2'-6"	1'-9"	6'	10'	2.41	14'-2"	3.26
36"	3'	2'	7'	12'	3.74	17'	5.05

NOTES

1. CONCRETE SHALL BE 560-C-3250.
2. EXPOSED CORNERS SHALL BE 3/4" CHAMFERED.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	T. Regello	10/18

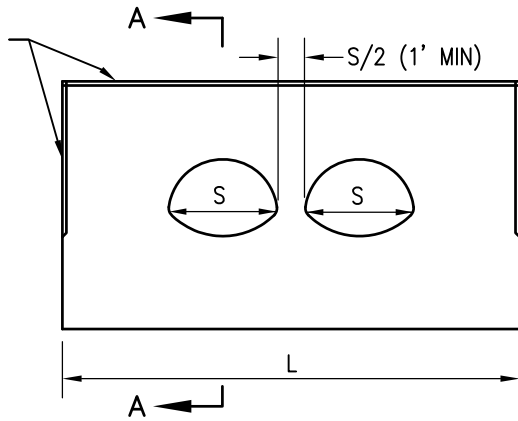
SAN DIEGO REGIONAL STANDARD DRAWING

STRAIGHT HEADWALL - TYPE B  
[CIRCULAR PIPE]

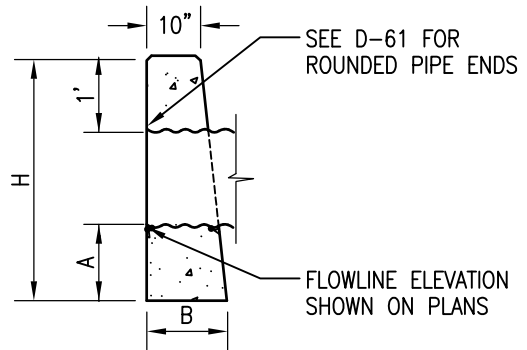
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

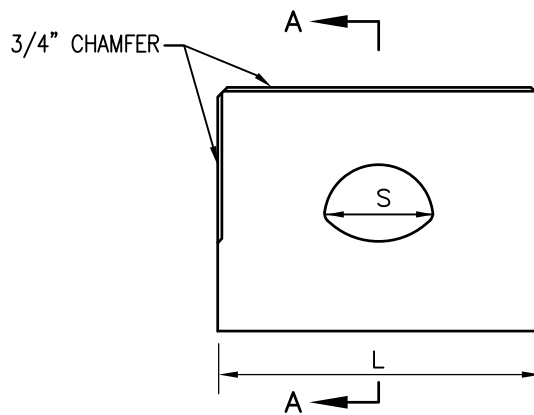
DRAWING NUMBER D-32



DOUBLE PIPE ELEVATION



SECTION A-A



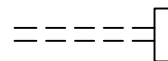
SINGLE PIPE ELEVATION

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

NOTES

1. CONCRETE SHALL BE 560-C-3250.
2. EXPOSED CORNERS SHALL BE 3/4" CHAMFERED.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	T.R.	M. Widelksi	10/18

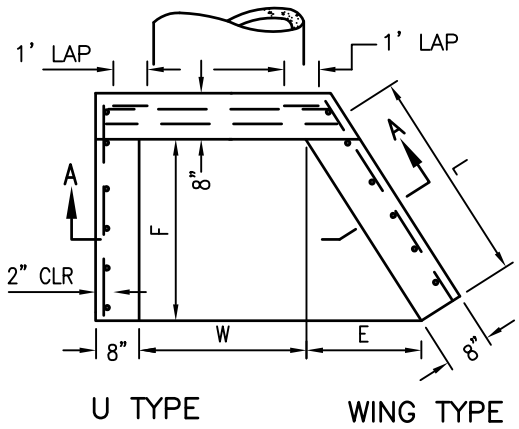
SAN DIEGO REGIONAL STANDARD DRAWING

STRAIGHT HEADWALL - TYPE B  
[CORRUGATED STEEL PIPE - ARCH]

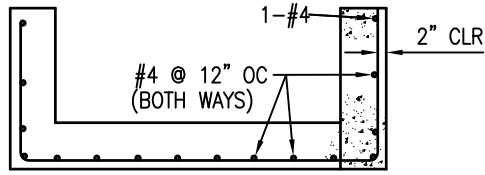
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Heaton* 10/25/2018  
Chairperson R.C.E. 19246 Date

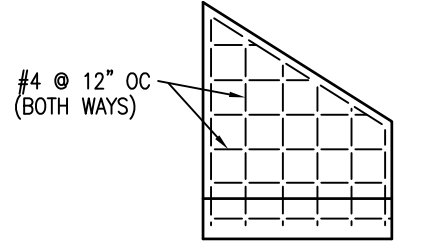
DRAWING NUMBER D-33



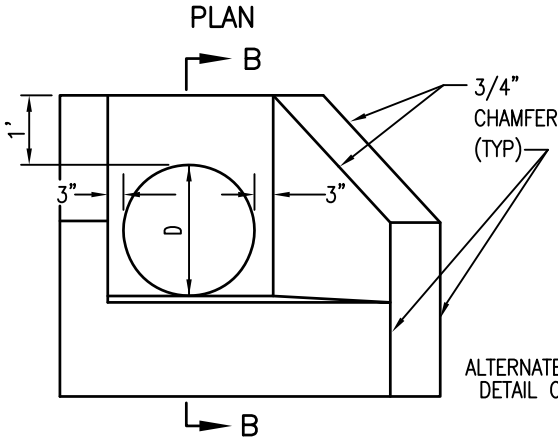
U TYPE WING TYPE



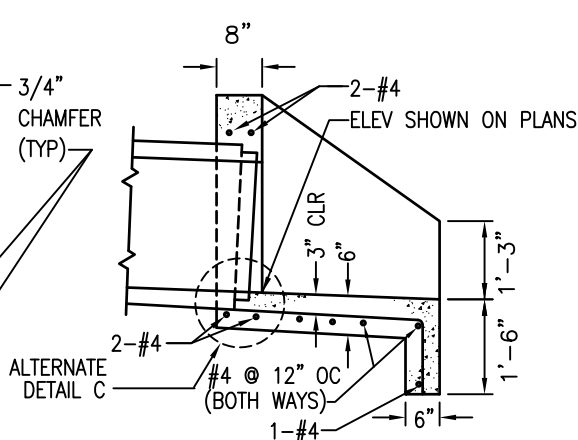
SECTION A-A



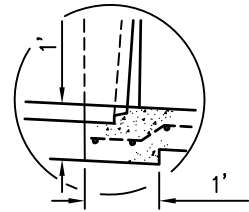
WING WALL REINFORCING



ELEVATION



SECTION B-B



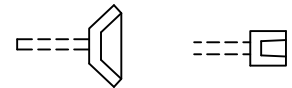
ALT DETAIL C

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

NOTES

1. CONCRETE SHALL BE 560-C-3250.
2. EXPOSED CORNERS SHALL BE 3/4" CHAMFERED.
3. MULTIPLE PIPES SHALL BE SET A DISTANCE OF D/2, WITH A 1' MIN BETWEEN OUTSIDE DIAMETERS OF PIPES.
4. TOP OF HEADWALL SHALL BE PLACED APPROXIMATELY PARALLEL TO PROFILE GRADE WHEN THE GRADE IS 3% OR MORE.
5. SKEWED PIPES: DIMENSION W SHALL BE INCREASED IN WIDTH OR LENGTH DUE TO SKEW OR MULTIPLE PIPES.
6. USE ALTERNATE DETAIL C FOR PIPE WALL THICKNESS GREATER THAN 3".

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Reformatted		T. Stanton	04/06
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

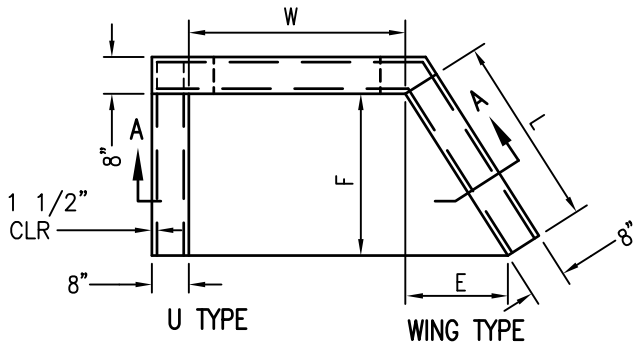
SAN DIEGO REGIONAL STANDARD DRAWING

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

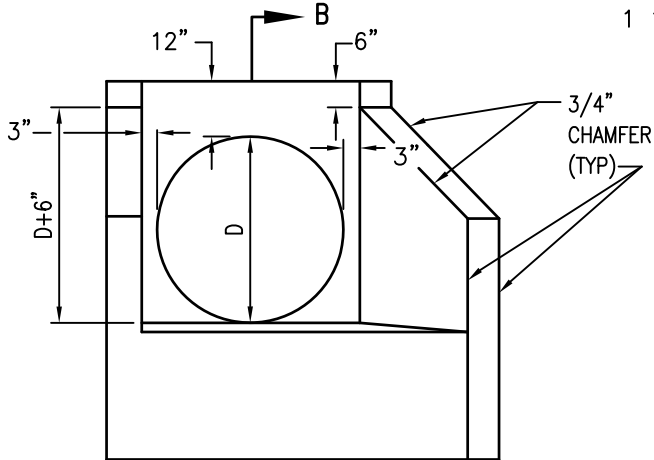
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

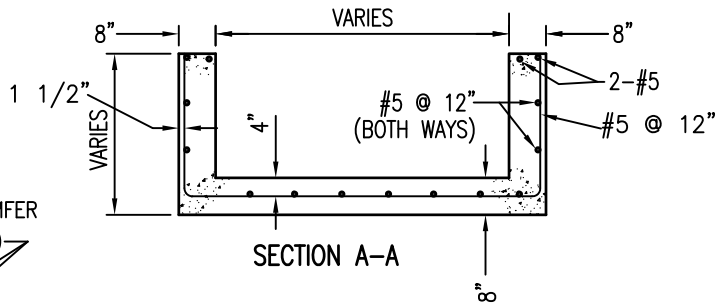
DRAWING NUMBER D-34



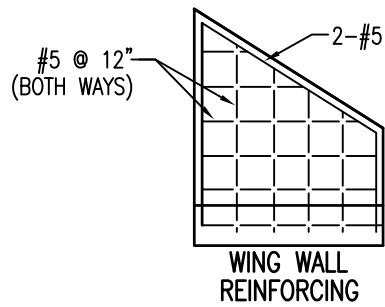
PLAN



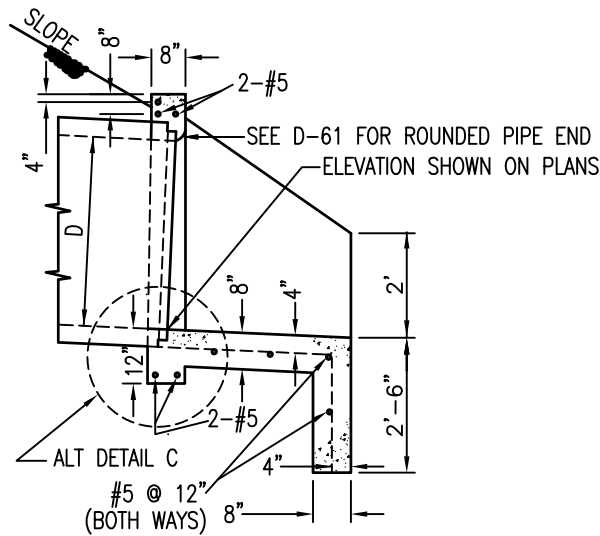
B  
ELEVATION



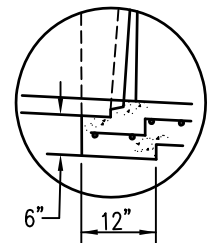
SECTION A-A



WING WALL  
REINFORCING

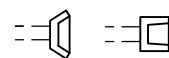


SECTION B-B



ALT DETAIL C

LEGEND ON PLANS



**NOTE**

SEE D-35B FOR DIMENSION TABLE AND GENERAL NOTES.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

WING AND U TYPE HEADWALLS  
FOR 42" TO 84" PIPE

RECOMMENDED BY THE SAN DIEGO  
REGIONAL STANDARDS COMMITTEE

*M. Heaton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-35A

**TABLE OF DIMENSIONS AND QUANTITIES  
FOR HEADWALLS SHOWN ON D-35A**

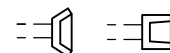
NOTE: DIMENSIONS E AND L APPLY TO WING TYPE ONLY.


Ø OF PIPE	DIMENSIONS			SINGLE PIPE					DOUBLE PIPE				
				W	U TYPE		WING TYPE		W	U TYPE		WING TYPE	
	L	E	F		CONC. (CY)	STEEL (LBS)	CONC. (CY)	STEEL (LBS)		CONC. (CY)	STEEL (LBS)	CONC. (CY)	STEEL (LBS)
42"	3'-7 1/4"	2'	3'	4'	1.57	117	1.90	135	10'	2.69	190	3.16	214
48"	4'-6"	2'-6"	3'-9"	4'-6"	1.97	153	2.48	184	11'-4"	3.43	252	4.06	288
54"	5'-4 7/8"	3'	4'-6"	5'	2.41	190	3.07	246	12'-8"	4.24	319	5.06	368
60"	6'-3 3/4"	3'-6"	5'-3"	5'-6"	2.88	239	3.75	294	14'	5.13	386	6.17	442
66"	7'-2 1/2"	4'	6'	6'	3.38	294	4.52	356	15'-4"	6.08	454	7.20	516
72"	8'-1 3/8"	4'-6"	6'-9"	6'-6"	3.93	368	5.52	417	16'-8"	7.11	522	8.30	588
78"	9'	5'	7'-6"	7'	4.50	444	6.70	503	18'	8.20	595	9.50	693
84"	9'-10 3/4"	5'-6"	8'-3"	7'-6"	5.21	540	8.15	619	19'-4"	9.50	687	10.80	786

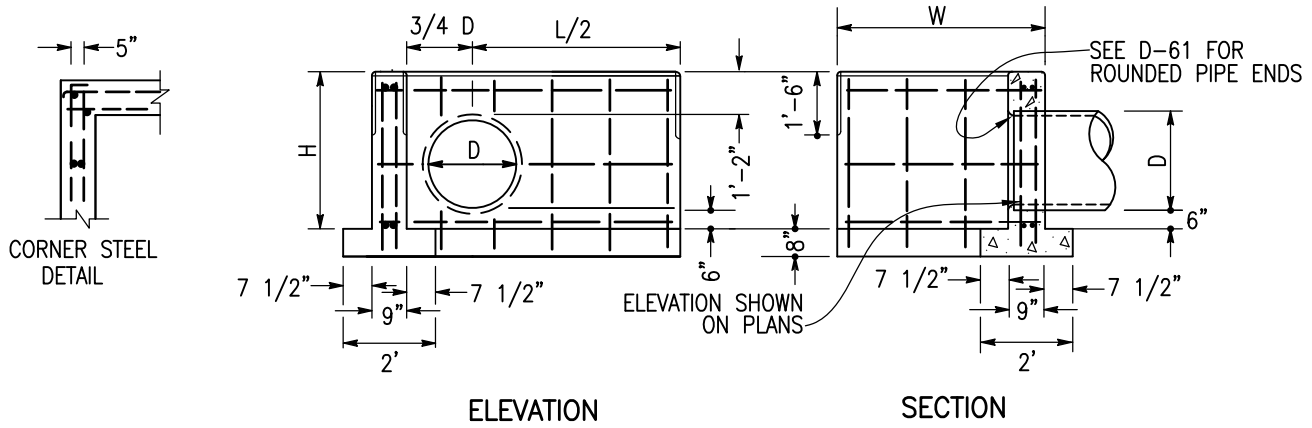
**NOTES**

1. SKEWED PIPES: DIMENSION W TO BE INCREASED TO TAKE CARE OF INCREASED WIDTH OR LENGTH DUE TO SKEW OF MULTIPLE PIPES.
2. TOP OF HEADWALL SHALL BE PLACED APPROXIMATELY PARALLEL TO PROFILE GRADE WHEN THE GRADE IS 3% OR MORE.
3. CONCRETE SHALL BE 560-C-3250.
4. EXPOSED CORNERS SHALL BE 3/4" CHAMFERED.
5. MULTIPLE PIPES SHALL BE SET A DISTANCE OF D/2, WITH A 1' MINIMUM, BETWEEN OUTSIDE DIAMETERS OF PIPES.
6. USE ALTERNATE DETAIL C FOR PIPE WALL THICKNESS GREATER THAN 3".

**LEGEND ON PLANS**



Revision	By	Approved	Date	<b>SAN DIEGO REGIONAL STANDARD DRAWING</b>	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Edited		T. Stanton	02/09	<b>WING AND U TYPE HEADWALLS FOR 42" TO 84" PIPE</b>	 10/25/2018 Chairperson R.C.E. 19246 Date
Edited	S.S.	T. Regello	03/11		
Edited	T.R.	T. Regello	10/15		
Edited	M.W.	M. Widelski	10/18		

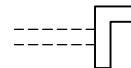


D	H	L/2	W									
			3'-4"		4'-10"		6'-4"		7'-10"		9'-4"	
			STEEL (LBS)	CONCRETE (C.Y.)	STEEL (LBS)	CONCRETE (C.Y.)	STEEL (LBS)	CONCRETE (C.Y.)	STEEL (LBS)	CONCRETE (C.Y.)	STEEL (LBS)	CONCRETE (C.Y.)
12"	2'-8"	2'-6"	50	0.79	60	0.98	—	—	—	—	—	—
15"	2'-11"	3'	55	0.91	65	1.11	—	—	—	—	—	—
18"	3'-2"	3'-6"	65	1.04	75	1.25	—	—	—	—	—	—
21"	3'-5"	3'-9"	75	1.15	90	1.36	—	—	—	—	—	—
24"	3'-8"	4'-3"	85	1.29	100	1.51	110	1.74	—	—	—	—
27"	3'-11"	4'-9"	90	1.44	105	1.67	115	1.91	—	—	—	—
30"	4'-2"	5'	95	1.55	110	1.80	120	2.05	135	2.29	—	—
33"	4'-5"	5'-6"	105	1.71	120	1.97	135	2.23	150	2.48	—	—
36"	4'-8"	6'	110	1.88	125	2.15	140	2.41	155	2.68	170	2.95
39"	4'-11"	6'-3"	—	—	150	2.28	170	2.56	185	2.84	200	3.12
42"	5'-2"	6'-9"	—	—	155	2.42	175	2.76	190	3.05	210	3.34
45"	5'-5"	7'-3"	—	—	—	—	180	2.97	200	3.27	215	3.57
48"	5'-8"	7'-6"	—	—	—	—	190	3.13	216	3.44	230	3.75
51"	5'-11"	8'	—	—	—	—	—	—	220	3.67	235	3.99
54"	6'-2"	8'-6"	—	—	—	—	—	—	235	3.91	250	4.24

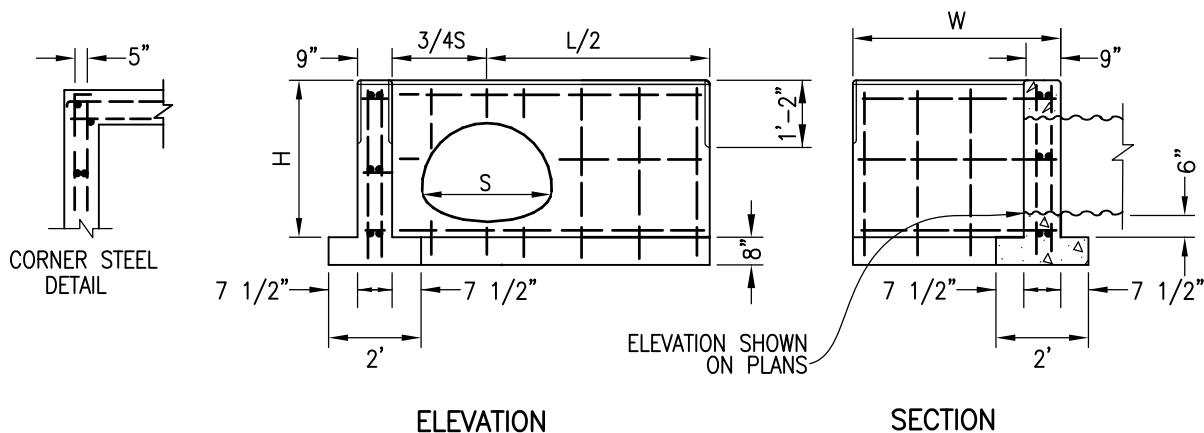
**NOTES**

1. CONCRETE SHALL BE 560-C-3250.
2. ALL REINFORCING STEEL SHALL BE #4 BARS. ALL VERTICAL AND HORIZONTAL TIE BARS SHALL HAVE 18" MAXIMUM SPACING.
3. WHEN MULTIPLE PIPES ARE USED, THE DISTANCE BETWEEN PIPES SHALL BE D/2 (1' MIN). THE DIMENSION L/2 IS FROM THE CENTER OF THE PIPE TO THE END OF THE HEADWALL AS SHOWN.
4. EXPOSED CORNERS SHALL BE 3/4" CHAMFERED.

**LEGEND ON PLANS**



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75			
Edited		T. Stanton	02/09	L TYPE HEADWALLS [CIRCULAR PIPES]	<i>M. Stanton</i> 10/25/2018	
Edited	S.S.	T. Regello	03/11		Chairperson R.C.E. 19246 Date	
Edited	T.R.	T. Regello	10/15		DRAWING NUMBER	D-36
Edited	M.W.	M. Widelski	10/18			

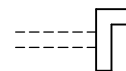


CSP ARCH SIZE	H	L/2	LENGTH OF W									
			3'-4"		4'-10"		6'-4"		7'-10"		9'-4"	
			STEEL (LBS)	CONCRETE (C.Y.)	STEEL (LBS)	CONCRETE (C.Y.)	STEEL (LBS)	CONCRETE (C.Y.)	STEEL (LBS)	CONCRETE (C.Y.)	STEEL (LBS)	CONCRETE (C.Y.)
18"x11"	2'-7"	2'-9"	50	0.84	60	1.03	70	1.21	80	1.39	90	1.57
21"x15"	2'-11"	3'-3"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

**NOTES**

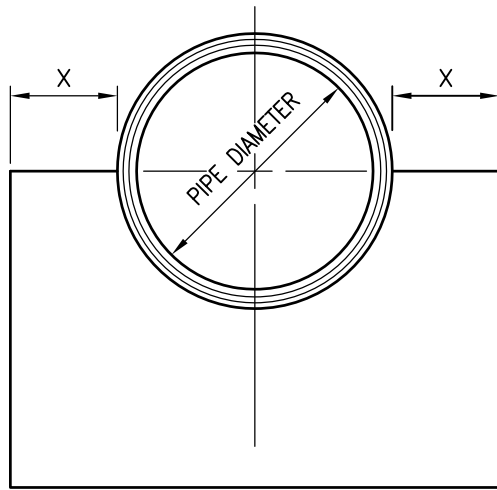
1. CONCRETE SHALL BE 560-C-3250.
2. ALL REINFORCING STEEL SHALL BE #4 BARS. ALL VERTICAL AND HORIZONTAL TIE BARS SHALL HAVE 18" MAXIMUM SPACING.
3. WHEN MULTIPLE PIPES ARE USED, THE DISTANCE BETWEEN PIPES SHALL BE S/2 (1' MIN). THE DIMENSION L/2 IS FROM THE CENTER OF THE PIPE TO THE END OF THE HEADWALL AS SHOWN.
4. EXPOSED CORNERS SHALL BE 3/4" CHAMFERED.

**LEGEND ON PLANS**

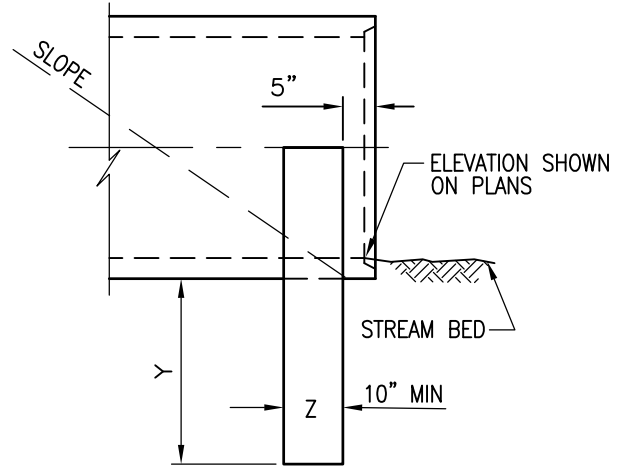


Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Reformatted		T. Stanton	04/06	L TYPE HEADWALLS [CORRUGATED STEEL PIPE - ARCH]	<i>M. Heaton</i> 10/25/2018 Chairperson R.C.E. 19246 Date
Edited	S.S.	T. Regello	03/11		
Edited	T.R.	T. Regello	10/15		
Edited	M.W.	M. Widelski	10/18		
					DRAWING NUMBER D-37





FACE ELEVATION



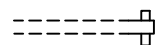
SIDE ELEVATION

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

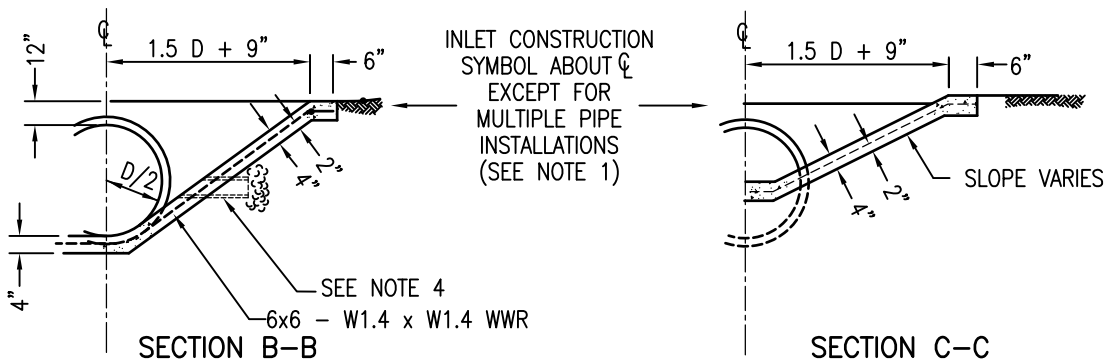
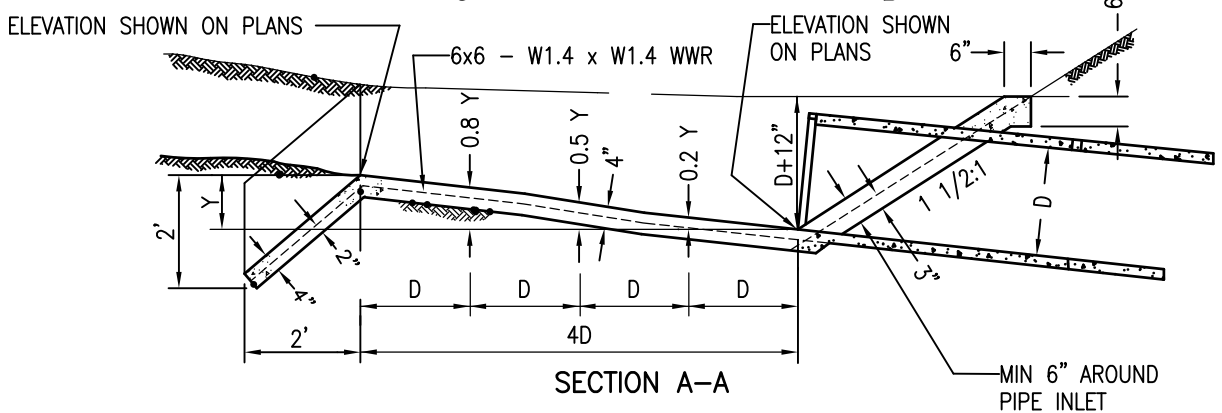
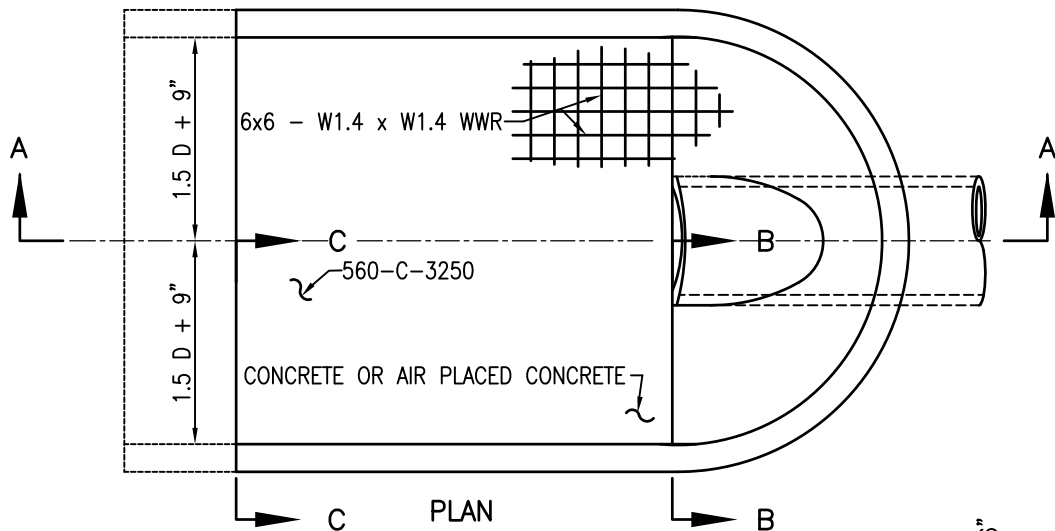
**NOTES**

1. USE A CURTAIN WALL AT THE END OF A CULVERT INSTEAD OF A HEADWALL WHEN IT IS LIKELY THAT THE CULVERT WILL BE EXTENDED IN THE NEAR FUTURE, OR WHEN A HEADWALL IS NOT NEEDED TO RETAIN THE PIPE BACKFILL.
2. CONCRETE SHALL BE 560-C-3250.
3. KEEP THE PIPE-END CLEAR OF OBSTRUCTIONS TO PERMIT EASY PLACING OF CULVERT EXTENSION.

**LEGEND ON PLANS**



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		CURTAIN WALL
Reformatted		T. Stanton	04/06		
Edited	S.S.	T. Regello	03/11		
Edited	T.R.	T. Regello	10/15		
Edited	M.W.	M. Widelski	10/18		
					 10/25/2018 Chairperson R.C.E. 19246 Date
					DRAWING NUMBER D-38



**NOTES**

1. WHEN MORE THAN ONE PIPE IS USED THE PROFILE VIEW SHOWN SHALL HOLD THE DISTANCE ACROSS ALL PIPE OPENINGS. SECTION A-A AND B-B SHALL BE FROM THE OUTERMOST PIPE. THE DISTANCE BETWEEN PIPES SHALL BE  $D/2$  FOR ROUND AND  $SPAN/3$  FOR ARCH PIPE (1' MINIMUM).
2. CULVERT SHALL BE CUT OFF EVEN WITH APRON SURFACE WHEN REQUIRED BY THE AGENCY.
3. USE INLET APRON ONLY WHERE A FLARED END SECTION CANNOT BE UTILIZED.
4. PLACE WEEP HOLES WHEN REQUIRED BY AGENCY.

**LEGEND ON PLANS**



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Reformatted		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

INLET APRON FOR CULVERTS  
UP TO 42" DIAMETER

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

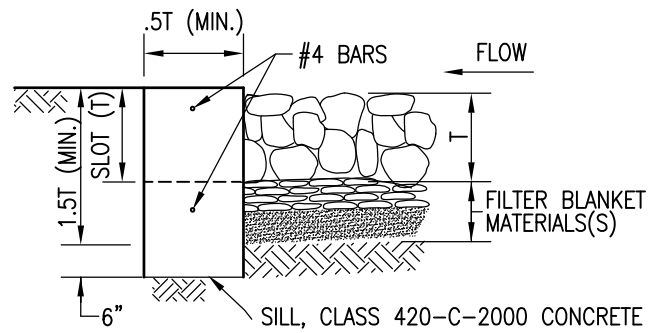
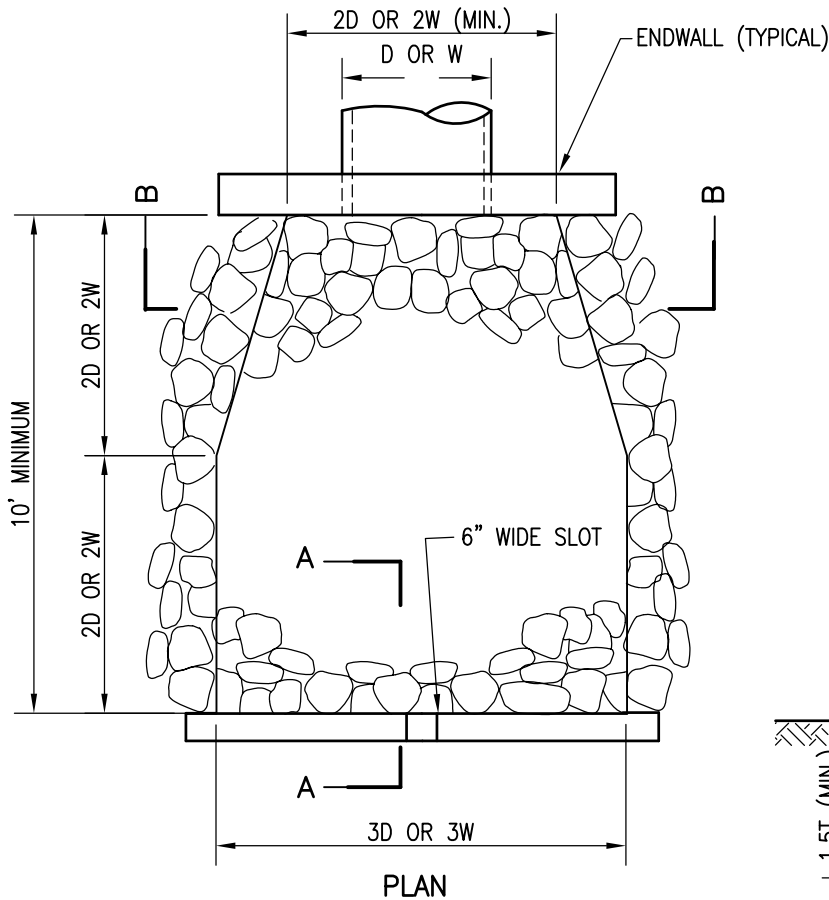
DRAWING NUMBER D-39

TABLE 7-1 (BELOW) PER JULY 2005  
SAN DIEGO COUNTY DRAINAGE DESIGN MANUAL

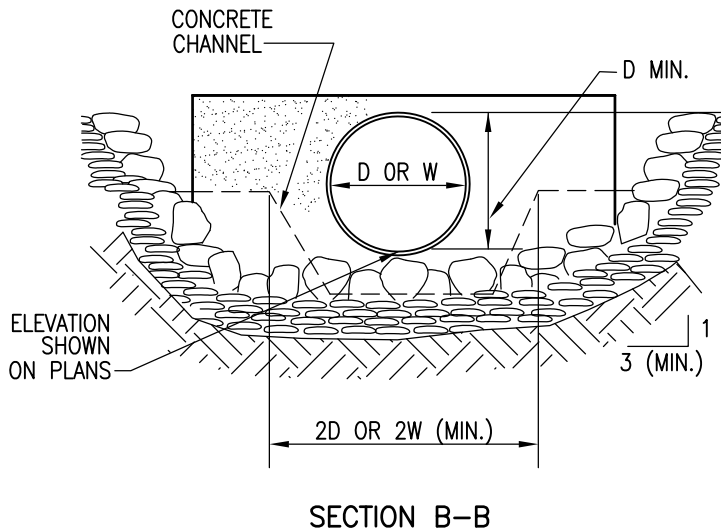
DESIGN VELOCITY (FT/SEC) *	ROCK CLASS	RIP-RAP THICKNESS "T" (MIN)
6-10	NO. 2 BACKING	1.1 FT
10-12	1/4 TON	2.7 FT
12-14	1/2 TON	3.5 FT
14-16	1 TON	4.4 FT
16-18	2 TON	5.4 FT

\* OVER 20 FT/SEC REQUIRES SPECIAL DESIGN

D = PIPE DIAMETER  $\phi$   
W = BOTTOM WIDTH OF CHANNEL



SECTION A-A



SECTION B-B

NOTES

- PLANS SHALL SPECIFY:  
(A) ROCK CLASS AND RIP-RAP THICKNESS (T). T SHALL BE AT LEAST 1.5 TIMES THE NOMINAL EQUIVALENT DIAMETER OF STONE ( $d_{50}$ ) OF THE SPECIFIED RIP-RAP.  
(B) FILTER BLANKET MATERIAL, NUMBER OF LAYERS AND THICKNESS.
- RIP-RAP SHALL BE EITHER QUARRY STONE OR BROKEN CONCRETE (IF SHOWN ON PLANS). COBBLES ARE NOT ACCEPTABLE.
- RIP-RAP SHALL BE PLACED OVER FILTER BLANKET MATERIAL, WHICH MAY BE EITHER GRANULAR MATERIAL OR NON-WOVEN GEOTEXTILE FILTER FABRIC; MATERIAL AT WEIGHT SPECIFIED IN PLANS OR SPECIFICATIONS.
- SEE TABLE 200-1.7 IN THE SAN DIEGO REGIONAL SUPPLEMENT TO GREENBOOK FOR SELECTION OF FILTER BLANKET.
- RIP-RAP ENERGY DISSIPATORS SHALL BE DESIGNATED AS EITHER TYPE 1 OR TYPE 2. TYPE 1 SHALL BE WITH CONCRETE SILL; TYPE 2 SHALL BE WITHOUT SILL.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Rip Rap Table		S. Brady	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

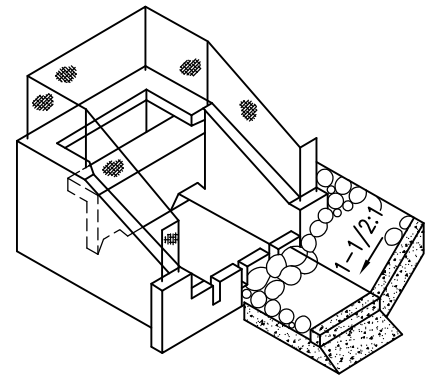
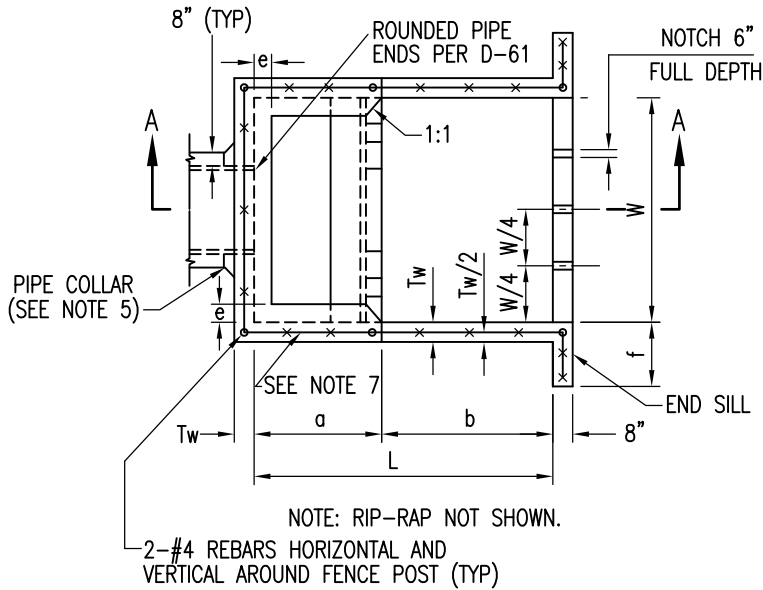
SAN DIEGO REGIONAL STANDARD DRAWING

RIP RAP  
ENERGY DISSIPATER

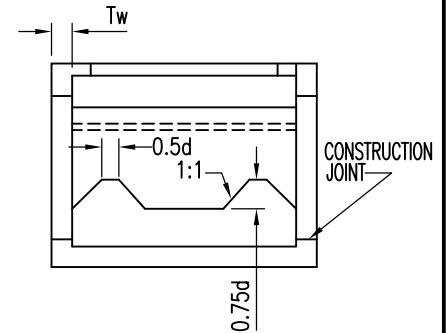
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

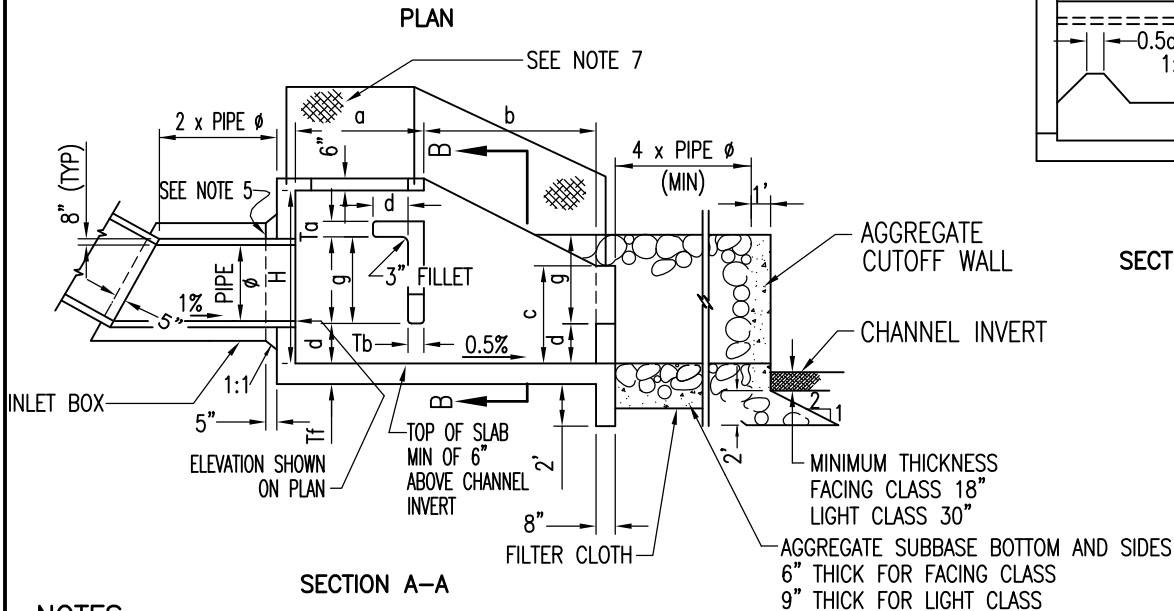
DRAWING NUMBER D-40



PICTORIAL VIEW



SECTION B-B



SECTION A-A

**NOTES**

1. DESIGN: EQUIVALENT FLUID PRESSURE (EARTH LOADING) = 60 PCF  
MAXIMUM OUTLET VELOCITY = 35 FPS
2. CONCRETE SAHLL BE 560-C-3250.
3. REINFORCING SHALL CONFORM TO ASTM DESIGNATION A615 AND MAY BE GRADE 40 OR 60. REINFORCING SHALL BE PLACED TO HAVE 2" OF CONCRETE COVER UNLESS NOTED OTHERWISE. SPLICES SHALL NOT BE PERMITTED EXCEPT AS INDICATED ON THE PLANS.
4. FOR PIPE GRADES NOT EXCEEDING 20%, INLET BOX MAY BE OMITTED.
5. CONSTRUCT PIPE COLLAR AS SHOWN IF INLET BOX IS OMITTED.
6. UNLESS NOTED OTHERWISE, ALL REINFORCING BAR BENDS SHALL BE FABRICATED WITH STANDARD HOOKS.
7. EMBED FIVE FOOT HIGH CHAIN LINK FENCING POST 18" DEEP INTO WALLS AND ENCASE WITH CLASS B MORTAR.
8. IN SANDY AND SILTY SOIL:
  - A) RIP-RAP AND AGGREGATE BASE CUTOFF WALL REQUIRED AT THE END OF ROCK APRON.
  - B) FILTER CLOTH (POLYFILTER X OR EQUIVALENT) SHALL BE INSTALLED ON NATIVE SOIL BASE, MINIMUM OF 1 FT OVERLAPS AT JOINTS.
9. RIP-RAP AND SUBBASE CLASSIFICATION SHALL BE SHOWN ON PLANS.

SEE D-41B FOR DIMENSIONS.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE ENERGY DISSIPATER


RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

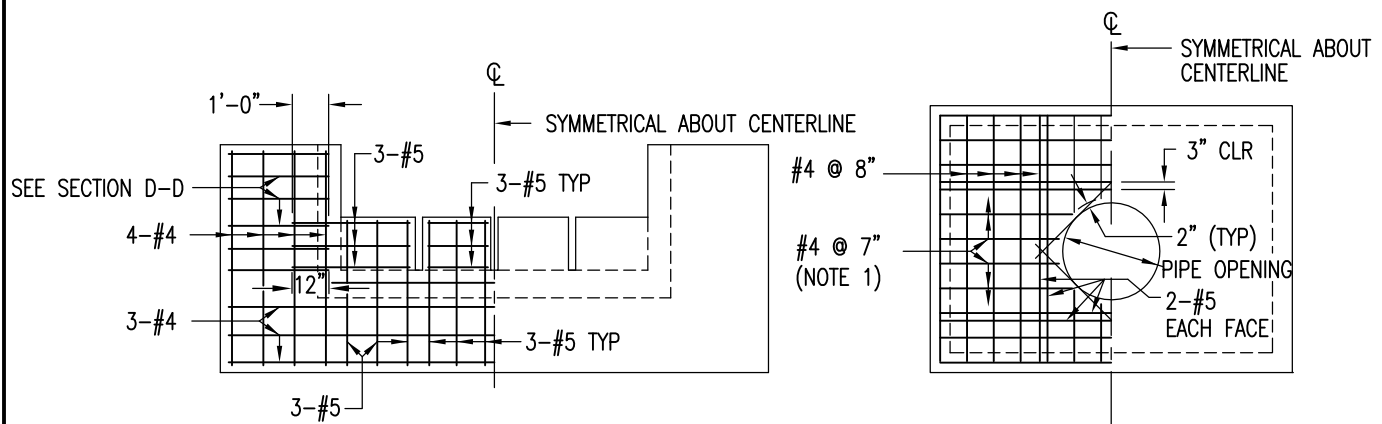
*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-41A

**CONCRETE ENERGY DISSIPATER DIMENSION TABLE  
(SEE D-41A FOR STRUCTURE DETAILS)**

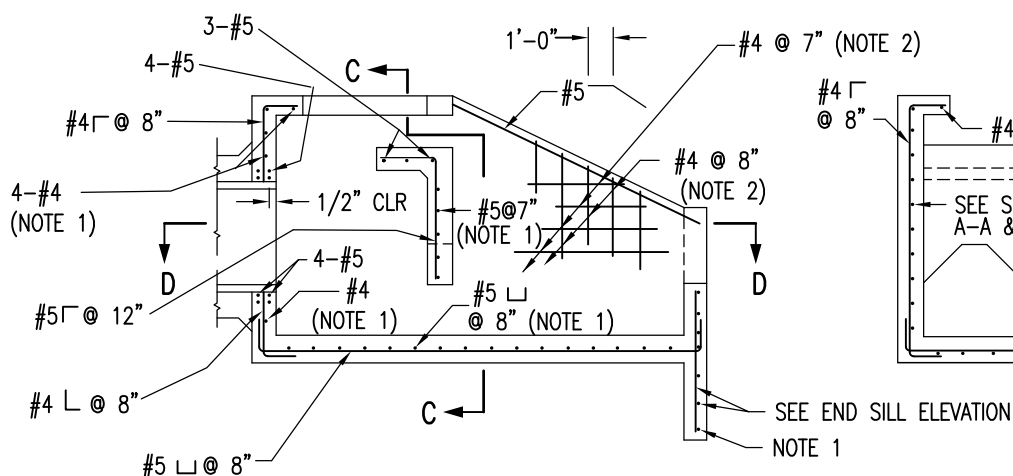
PIPE Ø (IN)	18	24	30	36	42	48	54	60	72
AREA (SF)	1.77	3.14	4.91	7.07	9.62	12.57	15.90	19.63	28.27
MAX Q (CFS)	21	38	59	85	115	151	191	236	339
W	5'-6"	6'-9"	8'	9'-3"	10'-6"	11'-9"	13'	14'-3"	16'-6"
H	4'-3"	5'-3"	6'-3"	7'-3"	8'	9'	9'-9"	10'-9"	12'-3"
L	7'-4"	9'	10'-8"	12'-4"	14'	15'-8"	17'-4"	19'	22'
a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

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75		CONCRETE ENERGY DISSIPATER	 10/25/2018
Edited		T. Stanton	02/09	Chairperson R.C.E. 19246		Date
Edited	S.S.	T. Regello	03/11	DRAWING NUMBER		D-41B
Edited	T.R.	T. Regello	10/15			
Edited	M.W.	M. Widelski	10/18			

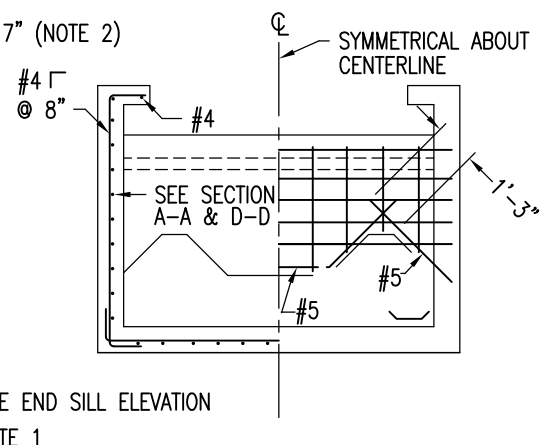


END SILL ELEVATION

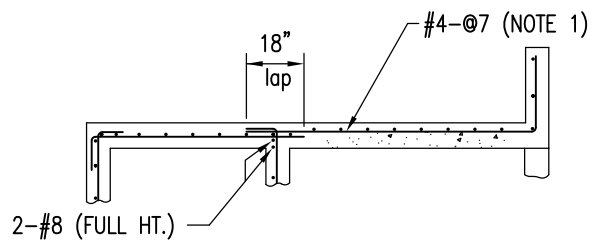
HEADWALL ELEVATION



SECTION A-A



SECTION C-C

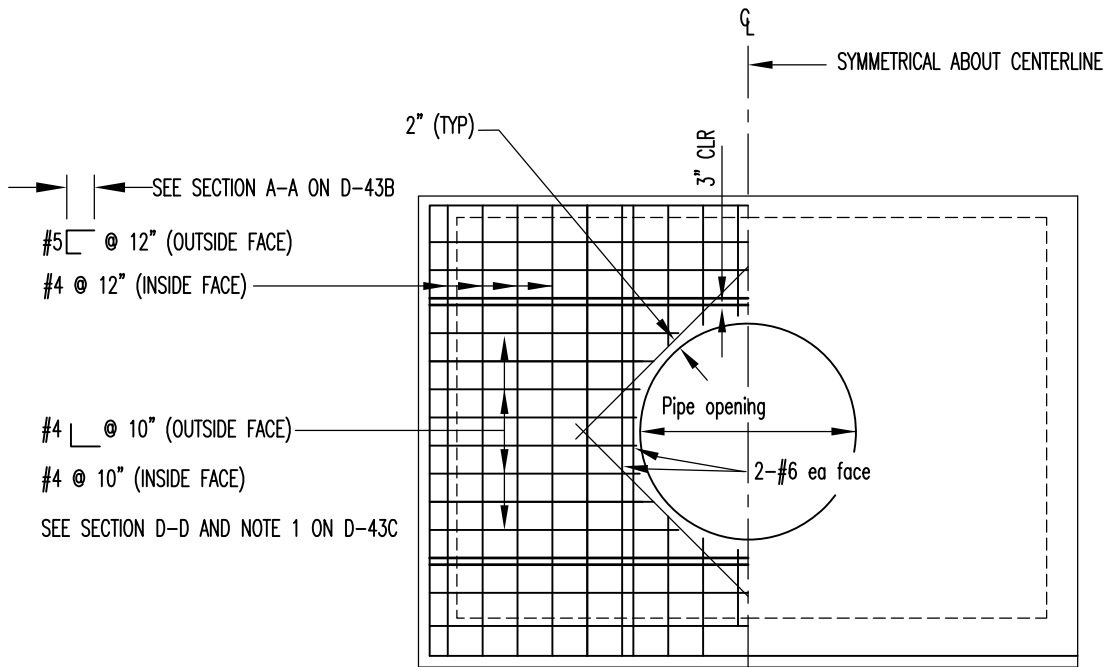


SECTION D-D

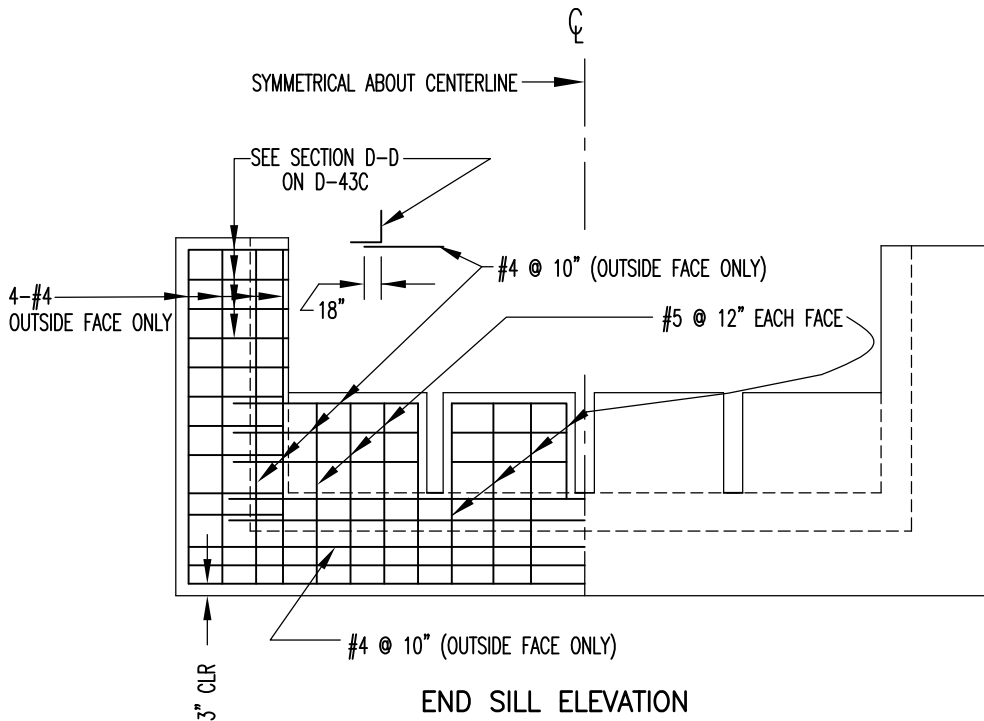
**NOTES**

1. PLACE REINFORCING, AS NOTED, AT CENTER OF WALL (OR SLAB).
2. MATCH LOCATION OF REINFORCING WITH THAT IN HEADWALL, END SILL AND FOUNDATION SLAB.
3. ALL REINFORCING SHALL BE PLACED WITH 2" CONCRETE COVER, UNLESS NOTED OTHERWISE.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75	<b>CONCRETE ENERGY DISSIPATER [REINFORCEMENT] 18" TO 30" DIAMETER PIPE</b>		10/25/2018 Chairperson R.C.E. 19246 Date
Edited		T. Stanton	02/09			
Edited	S.S.	T. Regello	03/11			
Edited	T.R.	T. Regello	10/15			
Edited	M.W.	M. Widelski	10/18			
				DRAWING NUMBER		D-42



HEADWALL ELEVATION



END SILL ELEVATION

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE ENERGY DISSIPATER  
[REINFORCEMENT]  
36" TO 72" DIAMETER PIPE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

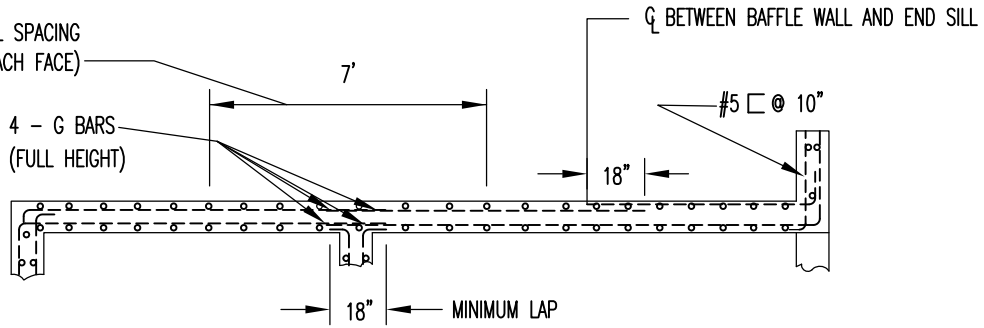
*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-43A





ADD #4 @ 20" VERTICAL SPACING  
TO REINFORCING SHOWN (EACH FACE)




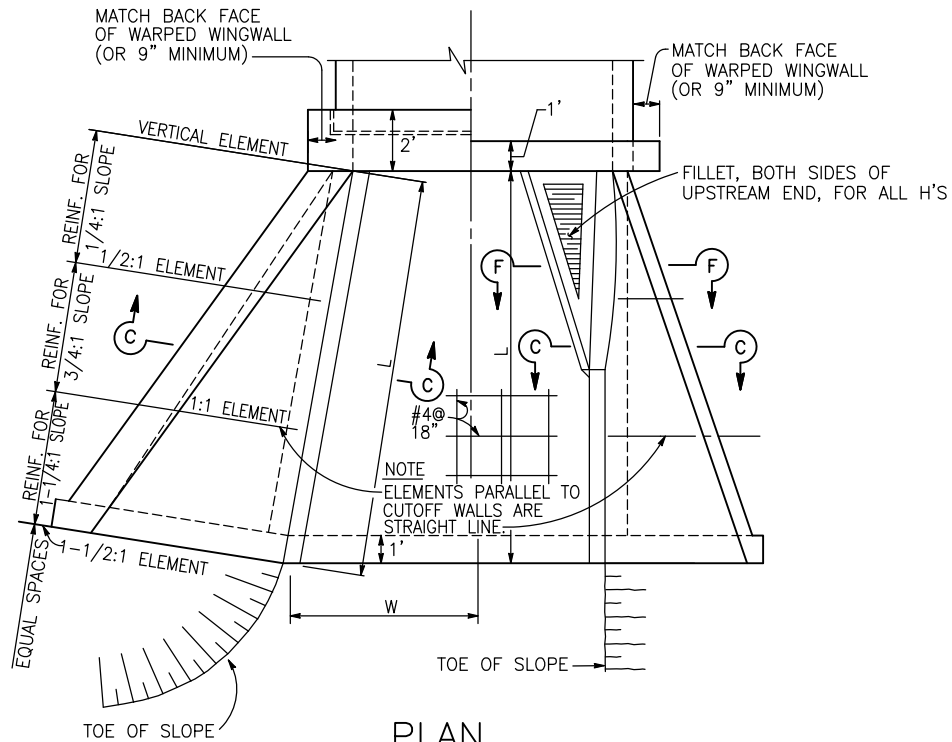
### SECTION D-D

PIPE $\phi$ (IN.)	36"	42"	48"	54"	60"	72"
A BAR	# 5 @ 12"		#6 @ 12"		#7 @ 12"	
B BAR	# 5 @ 12"			#6 @ 12"		
C BAR	# 4 @ 12"			#5 @ 12"		
D BAR	# 4 @ 12"		#5 @ 12"		#6 @ 12"	
E BAR	# 4 @ 12"			#5 @ 12"		
F BAR	# 4 @ 9"			#5 @ 9"		#6 @ 9"
G BAR		# 7			# 11	

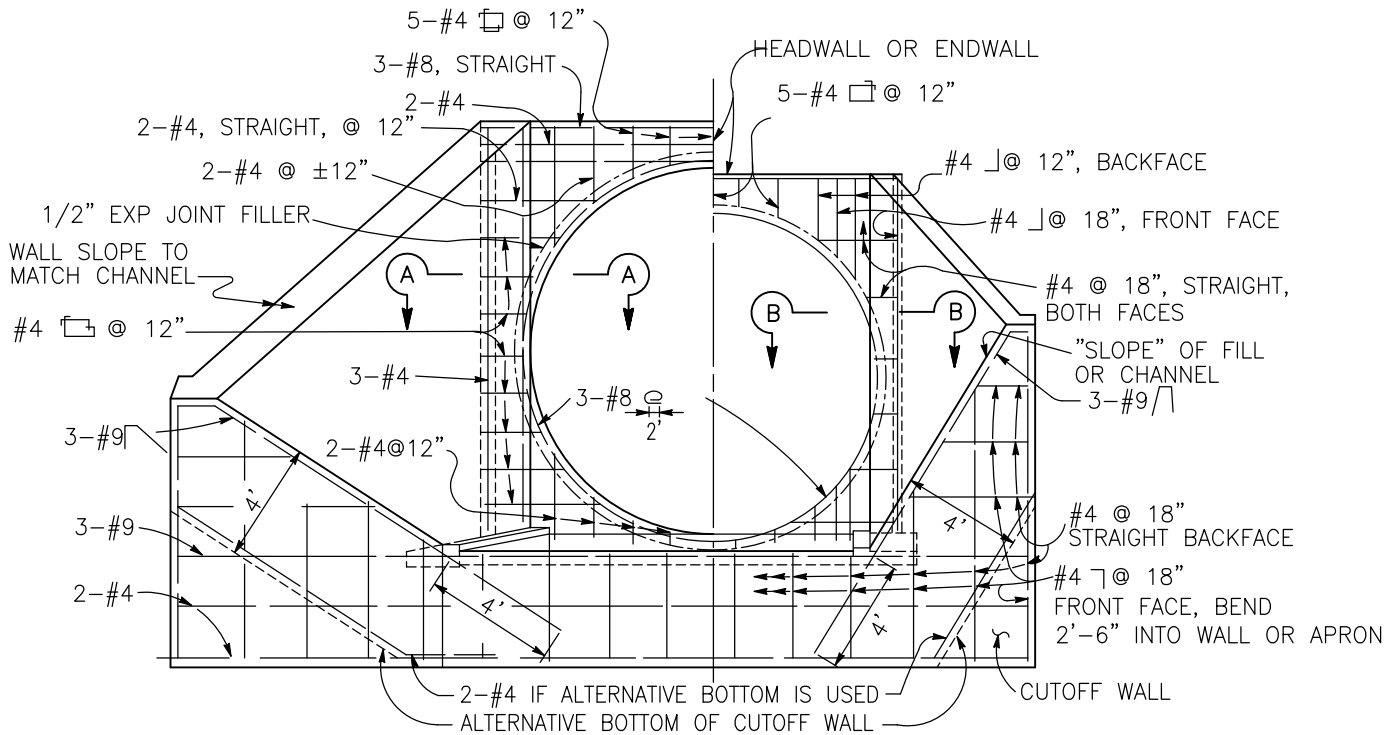
#### NOTES

1. MATCH LOCATION OF SIDEWALL REINFORCING.
2. DOWELS WITH SAME SIZE AND SPACING AS WALL REINFORCING MAY BE USED IN LIEU OF CONTINUOUS BARS AT CONTRACTOR'S OPTION.
3. MATCH LOCATION OF HEADWALL OR END SILL REINFORCING.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75	CONCRETE ENERGY DISSIPATER [REINFORCEMENT] 36" TO 72" DIAMETER PIPE		 10/25/2018 Chairperson R.C.E. 19246 Date
Edited		T. Stanton	02/09			
Edited	S.S.	T. Regello	03/11			
Edited	T.R.	T. Regello	10/15			
Edited	M.W.	M. Widelski	10/18			
				DRAWING NUMBER		D-43C



PLAN



TYPICAL FOR MAXIMUM H > 10'

TYPICAL FOR MAXIMUM H ≤ 10'

END ELEVATION

NOTE

SEE NOTES ON D-44D.

IF AT UPSTREAM END, FILLET IS NOT SHOWN

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Reformatted		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

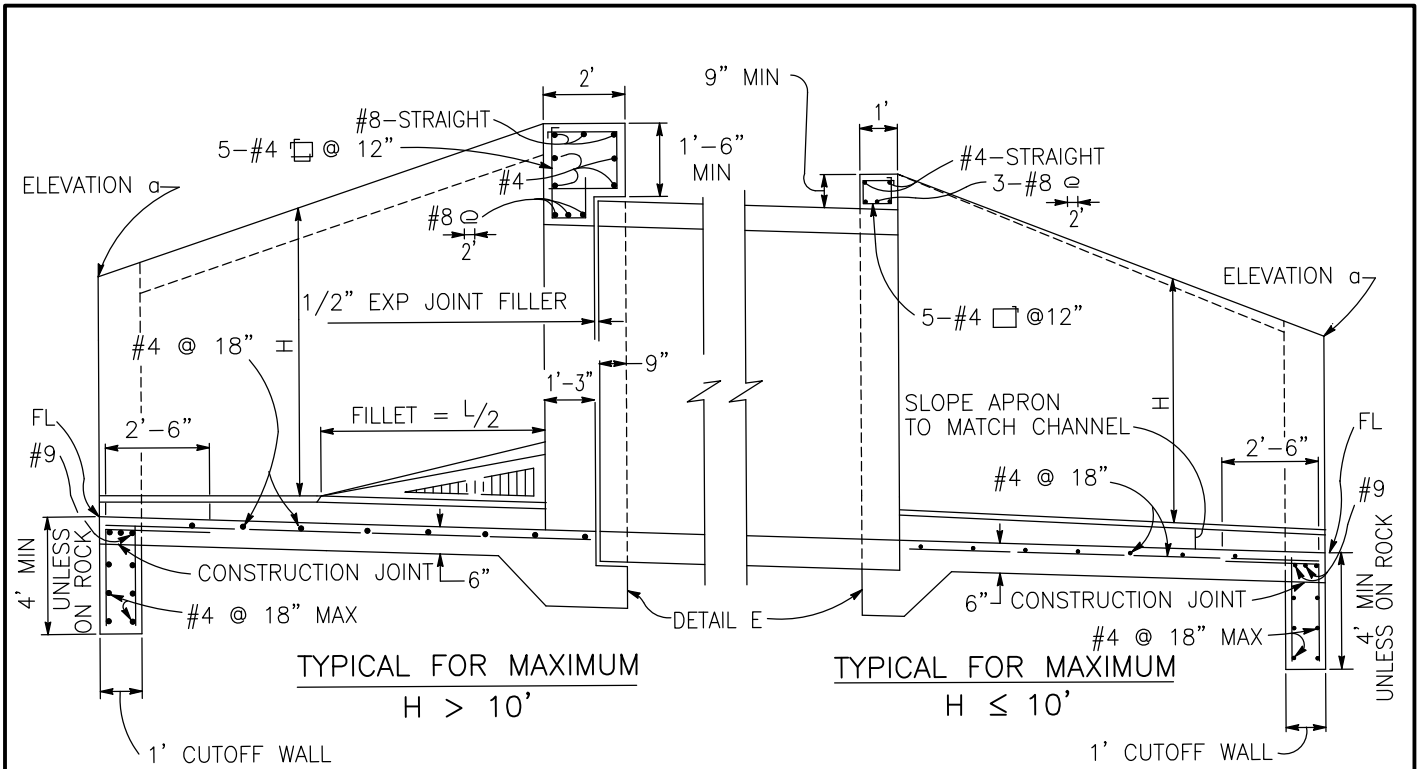
SAN DIEGO REGIONAL STANDARD DRAWING

PIPE CULVERT - HEADWALLS,  
ENDWALLS & WARPED WINGWALLS

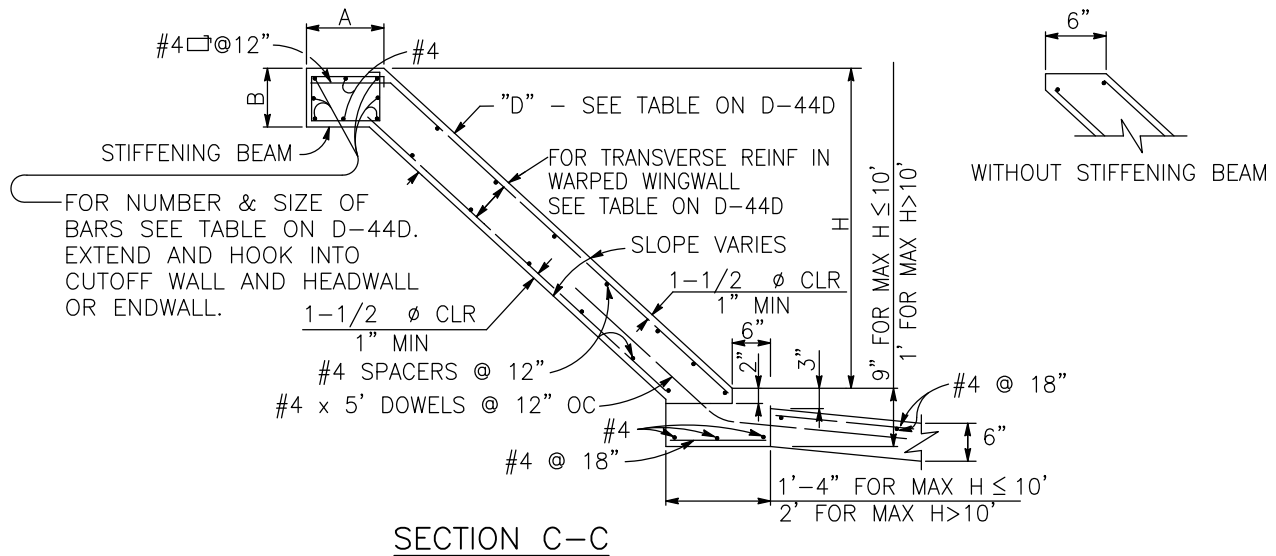
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-44A



**PART LONGITUDINAL SECTION**

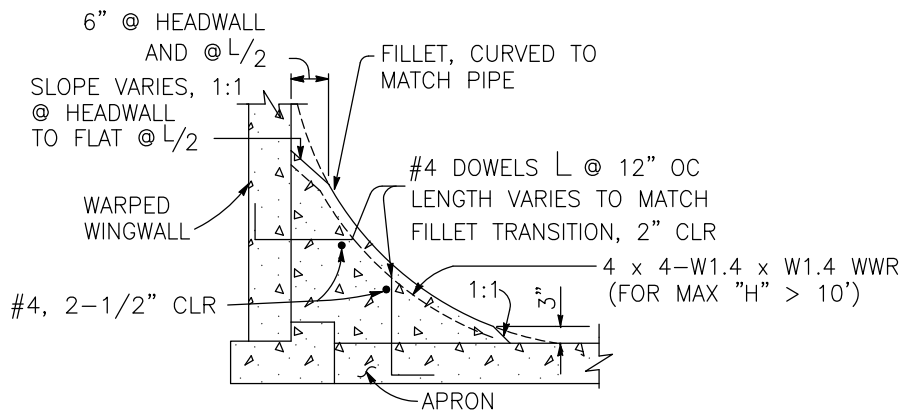


**SECTION C-C**

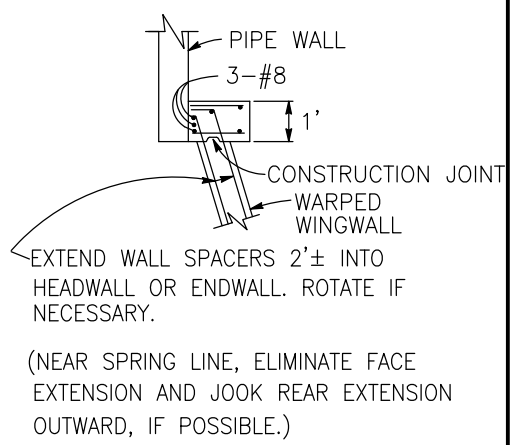
**NOTES**

1. RCP IS SHOWN. WHEN USING METAL PIPE ELIMINATE THE EXPANSION JOINT AND USE HOOK BOLTS @ 19"± SPACING (SIZE AND LENGTH PROVIDED BY MANUFACTURER).
2. WHERE ABASION IS ANTICIPATED, INCREASE APRON THICKNESS TO 7" MINIMUM TO PROVIDE 2" MINIMUM REINFORCEMENT COVERAGE.

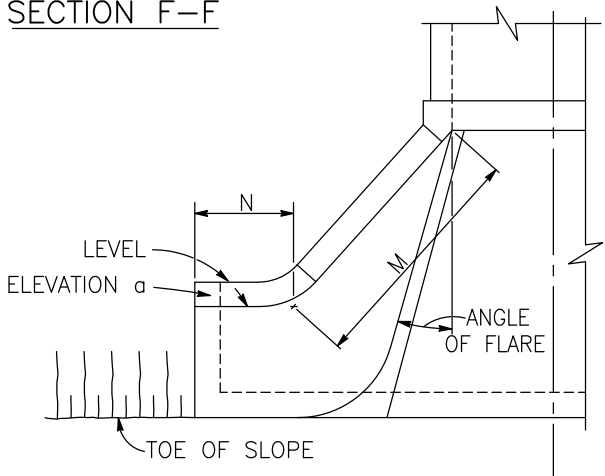
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Reformatted		T. Stanton	04/06	PIPE CULVERT – HEADWALLS, ENDWALLS & WARPED WINGWALLS	<i>M. Stanton</i> 10/25/2018 Chairperson R.C.E. 19246 Date
Edited	S.S.	T. Regello	03/11		DRAWING NUMBER D-44B
Edited	T.R.	T. Regello	10/15		
Edited	M.W.	M. Widelski	10/18		



SECTION F-F

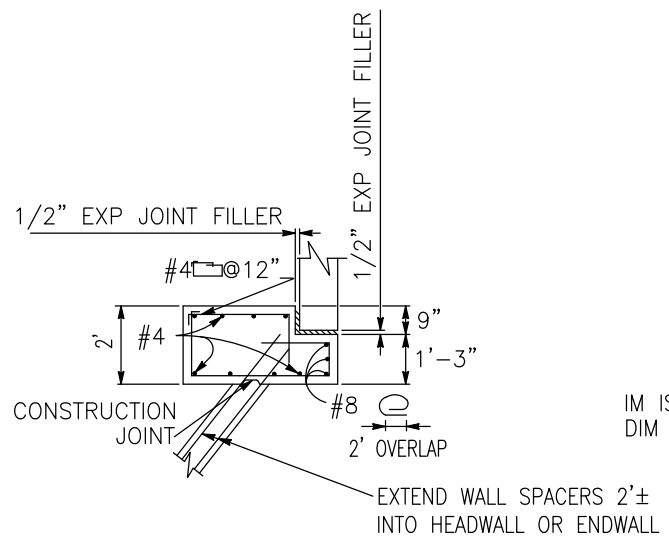


SECTION B-B

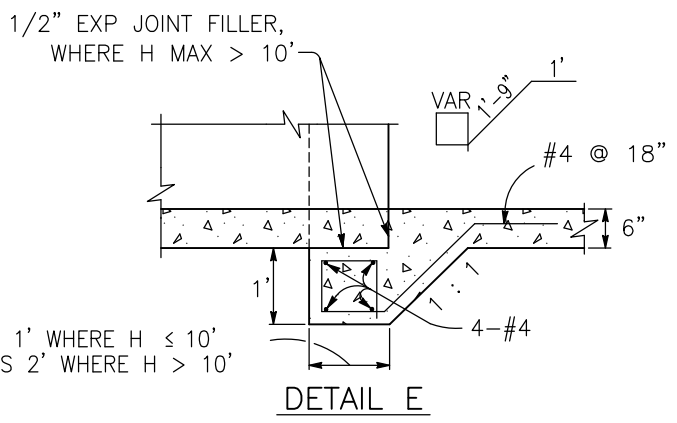


ALTERNATIVE WARPED WINGWALL

USE WHERE ADDITIONAL PROTECTION TO TOE OF EMBANKMENT IS REQUIRED. IF AT UPSTREAM END, FILLET IS NOT SHOWN.



SECTION A-A



DETAIL E

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Reformatted		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

**SAN DIEGO REGIONAL STANDARD DRAWING**

**PIPE CULVERT – HEADWALLS,  
ENDWALLS & WARPED WINGWALLS**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

**DRAWING NUMBER D-44C**

**WARPED WINGWALLS (ALL MEASUREMENTS IN FEET AND/OR INCHES UNLESS OTHERWISE NOTED)**

ELEMENT SLOPE	H	WALL DIMENSIONS AND REINFORCING										STIFFENING BEAM DIMENSIONS AND REINFORCING									
		8'OR LESS	10'	12'	14'	16'	18'	20'	20'	12'	14'	16'	18'	20'	25'	30'	35'	40' OR MORE			
1/4:1	FRONT FACE REINF #4@12	#4@7	#5@7	#4@12	#5@5	#6@6	#7@7	#7@6	#7@6	#4@12	#4@12	#4@12	#4@12	NO BEAM. PLACE 2-#6 IN EACH FACE ALONG TOP OF WALL.							
3/4:1	FRONT FACE REINF #4@12	#4@12	#4@12	#4@12	#4@10	#4@10	#4@8	#4@8	#4@8	#4@12	#4@12	#4@12	#4@12	A= 1'							
1-1/4:1	FRONT FACE REINF #4@12	#4@12	#4@12	#4@12	#4@12	#4@12	#4@12	#4@12	#4@12	#4@12	#4@12	#4@12	#4@12	B= 9"							
D AT CUTOFF WALL	FRONT FACE REINF #4@8	#4@8	#4@8	#4@5	#5@6	#6@7	#6@7	#6@7	#6@7	#6@7	#6@7	#6@7	#6@7	TOTAL 6-#6							
D AT CULVERT	FRONT FACE REINF #4@8	#4@8	#4@8	#4@5	#5@6	#6@7	#6@7	#6@7	#6@7	#6@7	#6@7	#6@7	#6@7	TOTAL 6-#7							
		6"	6"	6"	7-1/2"	8"	9-1/2"	11"	11"	11"	11"	11"	11"	TOTAL 6-#8							
		6"	6"	6"	8"	9-1/2"	11"	11"	11"	11"	11"	11"	11"	TOTAL 8-#9							

**NOTES**

1. WALLS DESIGNED FOR 2' SURCHARGE; EARTH DENSITY = 120 # / CF; EQUIVALENT FLUID PRESSURE = 36 #/CF
2. VARY "D" AT WARPED WALL UNIFORMLY FROM THAT AT CUTOFF WALL TO THAT AT CULVERT, FOR MAXIMUM H > 12'.
3. DIMENSIONS "L", "W", "H", "M", "N", "ELEVATION α", "ANGLE OF FLARE", AND END "SLOPE" (AS APPLY) ARE SHOWN ON THE PLANS.
4. ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 3/4".

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

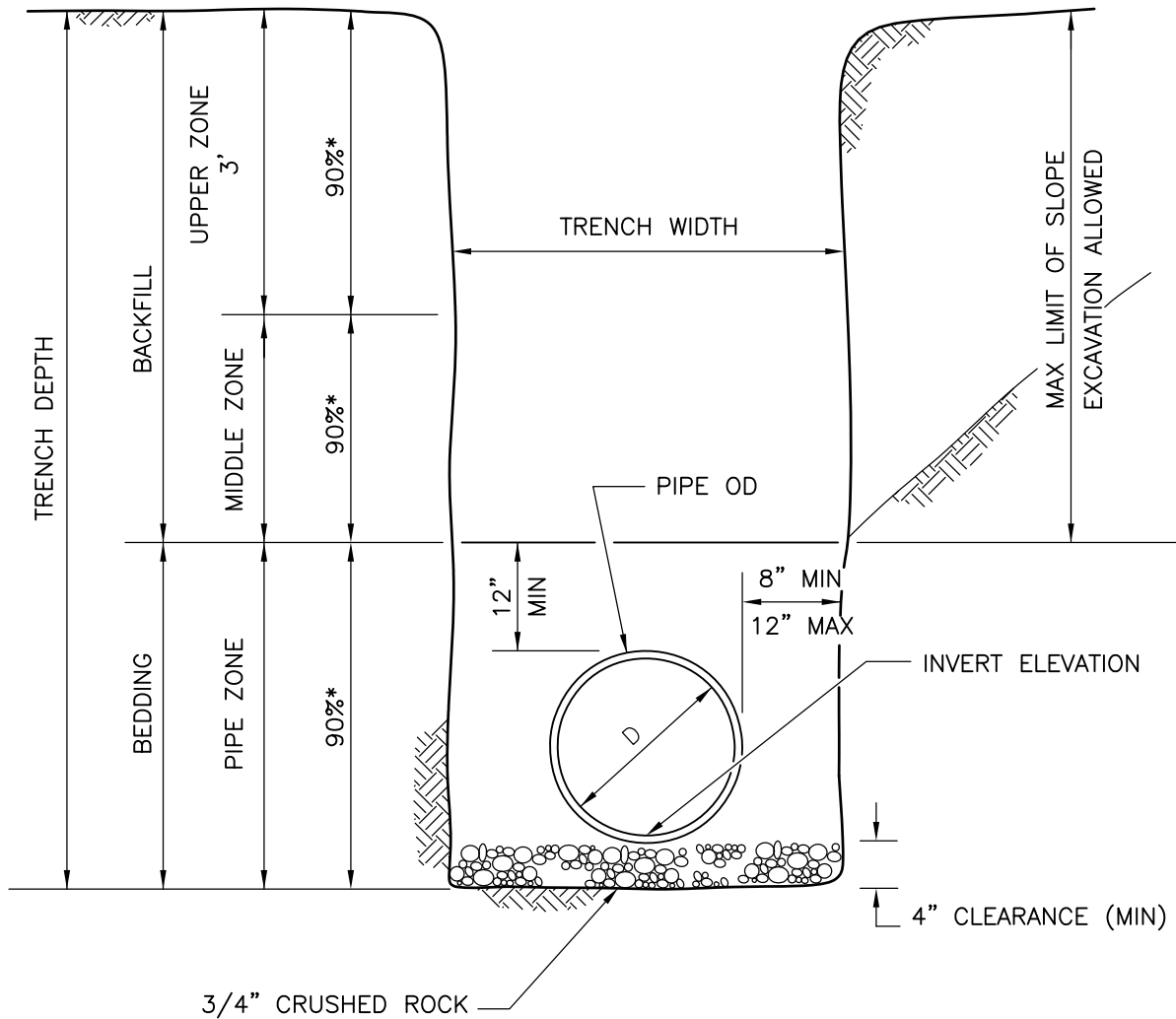
PIPE CULVERT – HEADWALLS,  
ENDWALLS & WARPED WINGWALLS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-44D



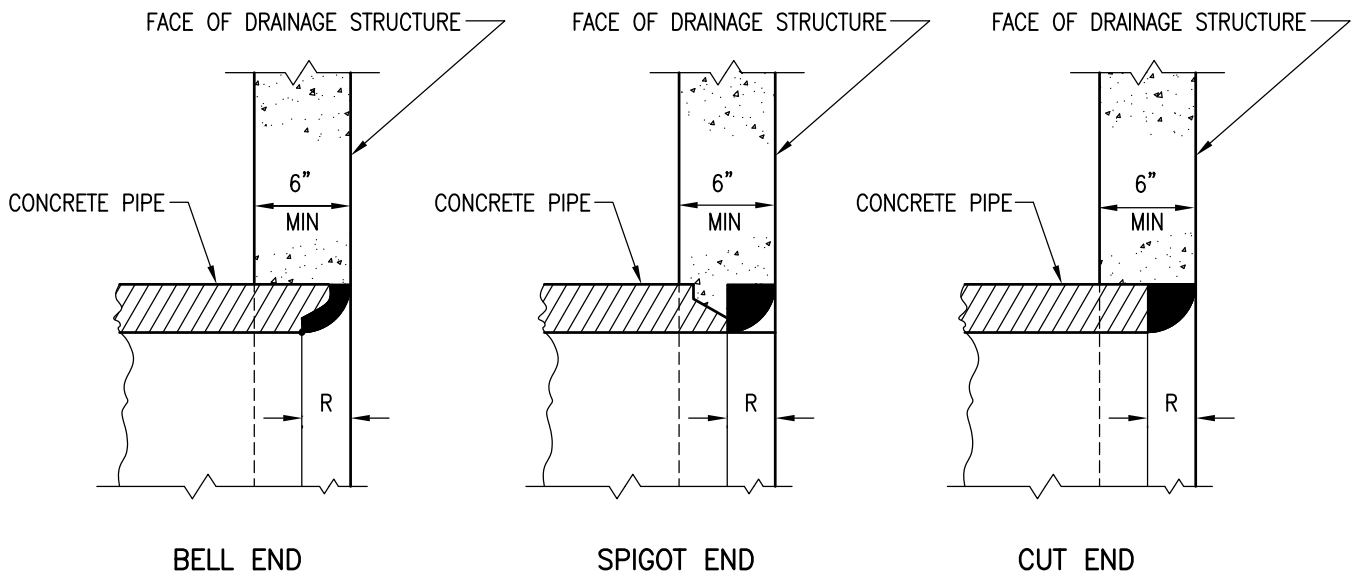


SECTION

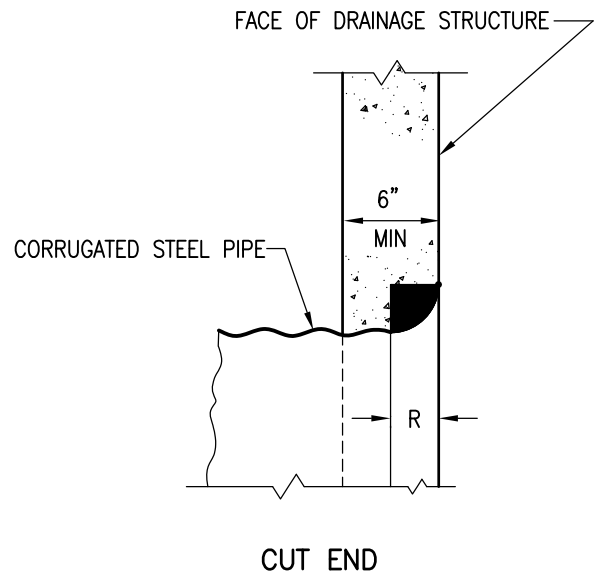
NOTES

1. SEE G-24A AND G-24B OR G-25 FOR RESURFACING DETAILS ON IMPROVED STREETS.
2. (\*) INDICATES MINIMUM RELATIVE COMPACTION.
3. TOP 12" OF TRENCH BACKFILL IN STREET SECTION SHALL BE 95% RELATIVE COMPACTION UNLESS SPECIFIED OTHERWISE.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Reformatted		T. Stanton	04/06	PIPE BEDDING AND TRENCH BACKFILL FOR STORM DRAINS	<i>M. Heaton</i> 10/25/2018
Edited	S.S.	T. Regello	03/11		Chairperson R.C.E. 19246 Date
Edited	T.R.	T. Regello	10/15		
Edited	M.W.	M. Widelski	10/18		DRAWING NUMBER D-60



R = THICKNESS OF PIPE



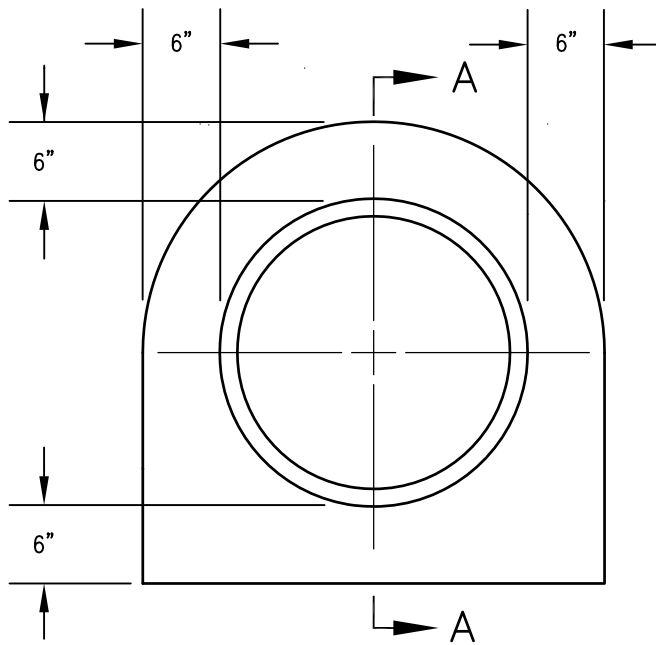
R =  $\frac{\text{INSIDE DIAMETER OF PIPE}}{10}$

**NOTE**

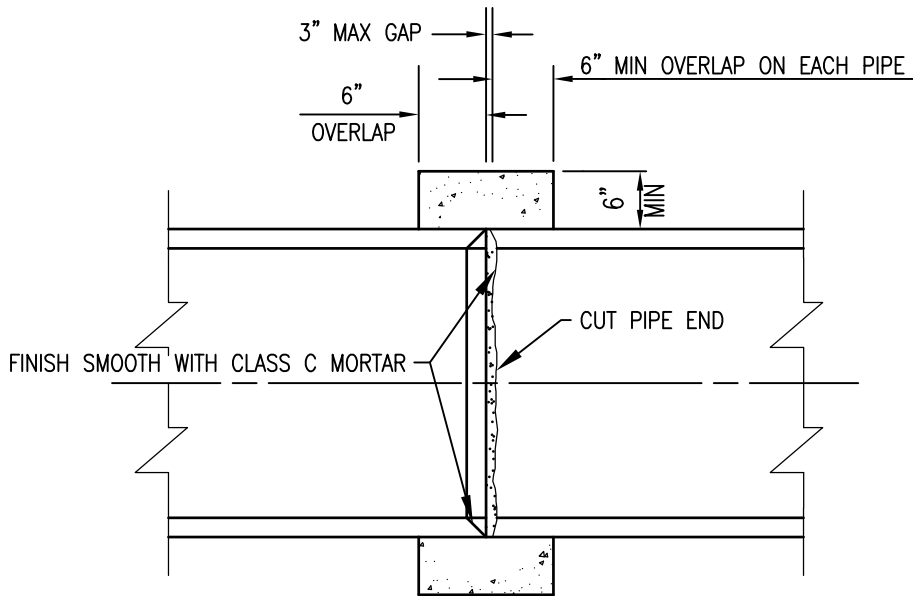
THE ROUNDED AREAS MAY BE BUILT UP OF CEMENT MORTAR OR POURED IN PLACE WITH THE DRAINAGE STRUCTURE.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		<b>ROUNDED PIPE ENDS IN DRAINAGE STRUCTURES</b>
Reviewed		T. Stanton	04/06	DRAWING NUMBER	
Edited	S.S.	T. Regello	03/11	D-61	
Edited	T.R.	T. Regello	10/15		
Edited	M.W.	M. Widelski	10/18		





ELEVATION

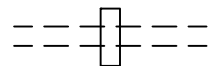


SECTION A-A

NOTES

1. PIPE COLLAR DOES NOT HAVE TO BE FINISHED IF COVERED.
2. CONCRETE SHALL BE 560-C-3250.
3. AN INTERNAL FORM SHALL BE USED WHERE GAP EXCEEDS 3" BUT IS NOT MORE THAN 6".

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Reviewed		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

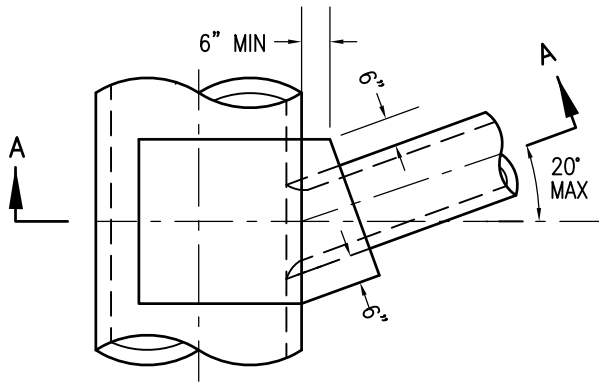
SAN DIEGO REGIONAL STANDARD DRAWING

PIPE COLLAR

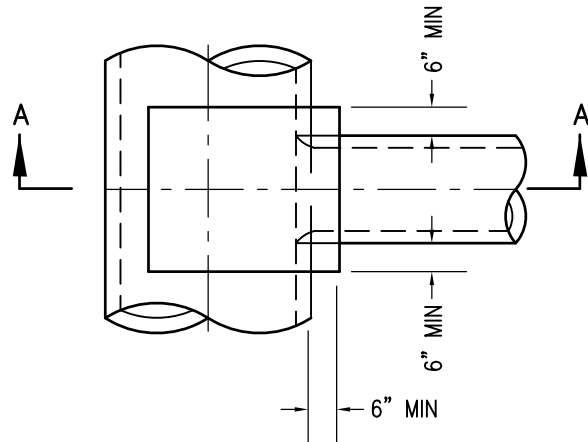
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Heaton* 10/25/2018  
Chairperson R.C.E. 19246 Date

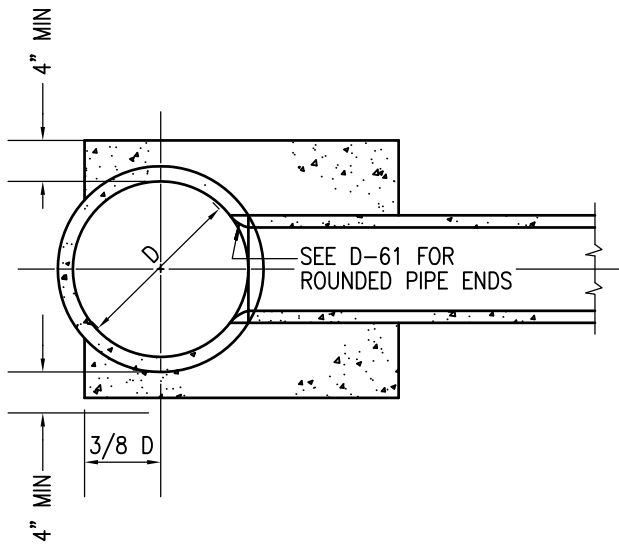
DRAWING NUMBER D-62



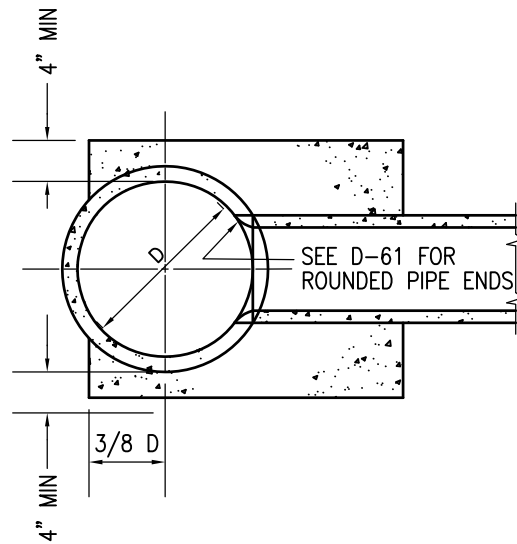
PLAN  
SKEWED CONNECTION



PLAN



SECTION A-A

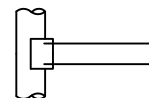


SECTION B-B

NOTES

1. THE END OF THE CONNECTING PIPE SHALL NOT PROJECT INTO THE WATERWAY OF THE LARGER PIPE.
2. THE LARGER PIPE SHALL NOT BE LESS THAN 24" ID.
3. THE OD OF THE SMALLER PIPE SHALL NOT BE MORE THAN 2/3 THE SIZE OF THE ID OF THE LARGER PIPE.
4. CONCRETE SHALL BE 470-C-2000.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Reviewed		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

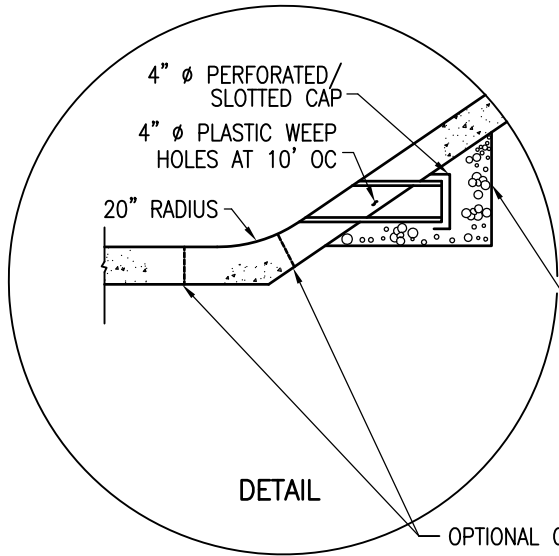
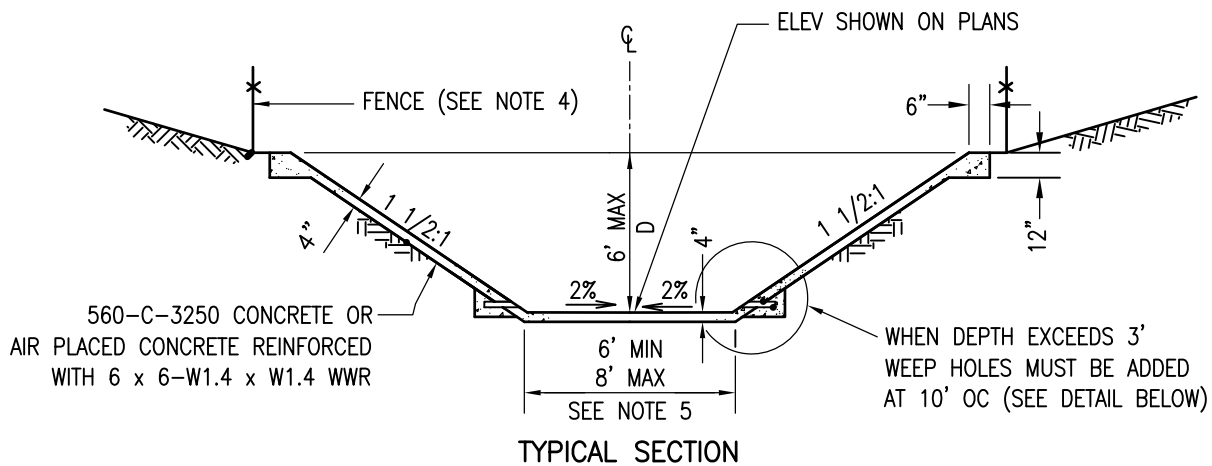
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE LUG

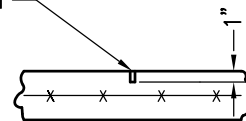
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Heaton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-63



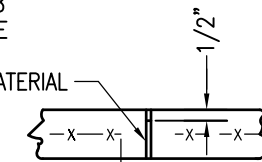
3/16" PREMOLDED JOINT MATERIAL  
OR 1/8" SAWED JOINT



WEAKENED PLANE JOINT

1" MAX CRUSHED ROCK FILTER MATERIAL  
PLACED A MINIMUM OF 18"  
EACH SIDE OF WEEP HOLE

PREMOLDED JOINT MATERIAL

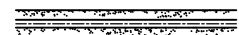


EXPANSION JOINT

**NOTES**

1. CLAY PIPE MAY BE SUBSTITUTED FOR PLASTIC PIPE AT WEEP HOLES.
2. WEAKENED PLANE JOINTS SHALL BE PLACED EVERY 12' TO 15'. EXPANSION JOINT SHALL BE PLACED AT ALL CHANGES OF SECTION AND AT ENDS OF CURVES.
3. CUTOFF WALLS SHALL BE CONSTRUCTED AT EACH END OF THE CHANNEL ALONG THE FULL WIDTH OF THE SECTION. SEE D-72.
4. CHAINLINK FENCE INSTALLATION SHALL BE AS REQUIRED BY AGENCY.
5. SEE D-71 FOR BOTTOM WIDTHS GREATER THAN 8 FEET.
6. MINIMUM REINFORCEMENT IS SHOWN.
7. ALTERNATE INVERT: 2% CROSS SECTIONAL SLOPE TOWARD ONE SIDE OF CHANNEL.

**LEGEND ON PLANS**



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Reformatted		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

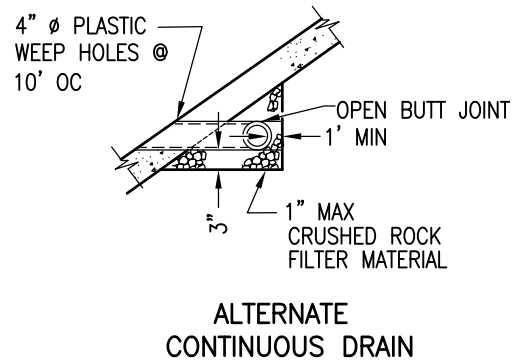
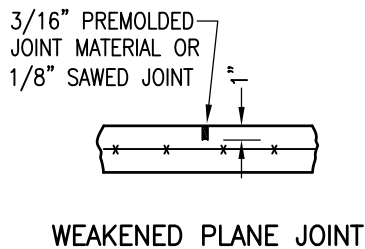
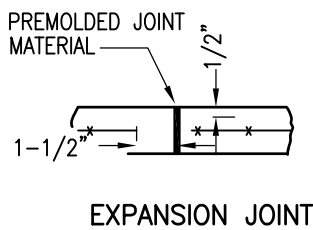
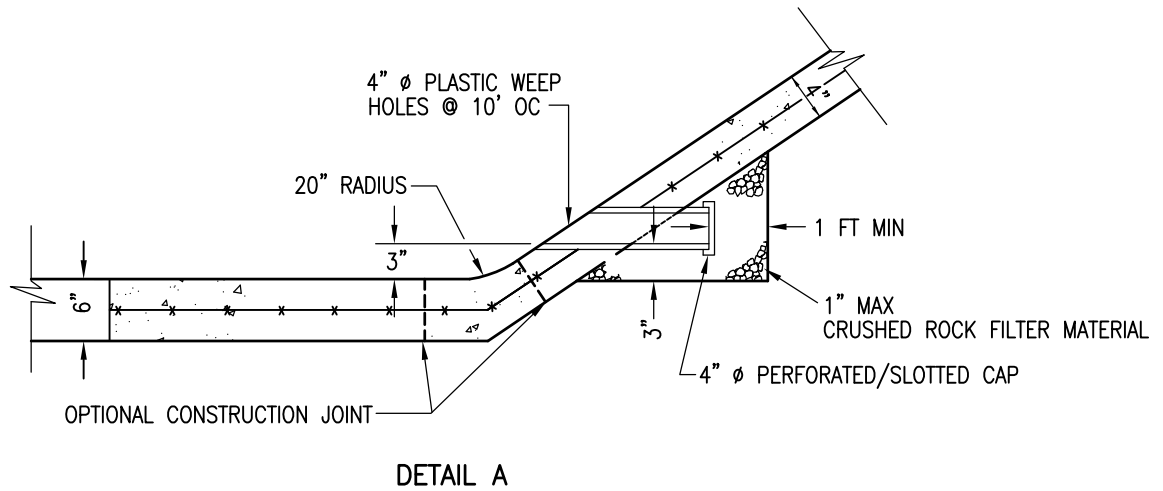
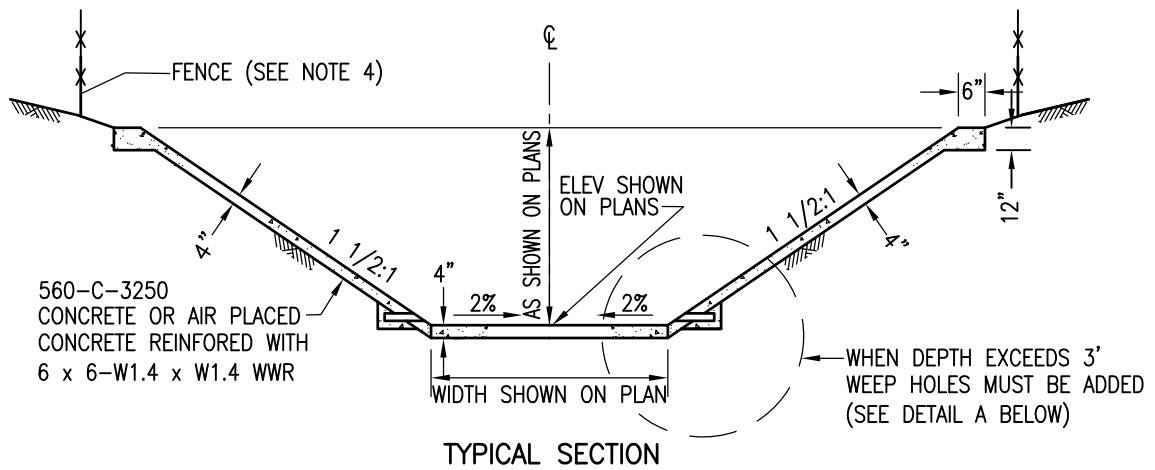
SAN DIEGO REGIONAL STANDARD DRAWING

MINOR DRAINAGE CHANNEL

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-70



**NOTES**

1. CLAY PIPE MAY BE SUBSTITUTED FOR PLASTIC PIPE AT WEEP HOLES.
2. WEAKENED PLANE JOINT SHALL BE PLACED EVERY 12' TO 15'. EXPANSION JOINTS SHALL BE PLACED AT ALL CHANGES OF SECTION AND AT ENDS OF CURVES.
3. CUTOFF WALLS SHALL BE CONSTRUCTED AT EACH END OF THE CHANNEL ALONG THE FULL WIDTH OF SECTION. SEE D-72.
4. CHAINLINK FENCE SHALL BE INSTALLED AS REQUIRED BY AGENCY.
5. MINIMUM REINFORCEMENT IS SHOWN.
6. MINIMUM BOTTOM WIDTH SHALL BE 6' TO FACILITATE CLEANING.

**LEGEND ON PLANS**



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Reviewed		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

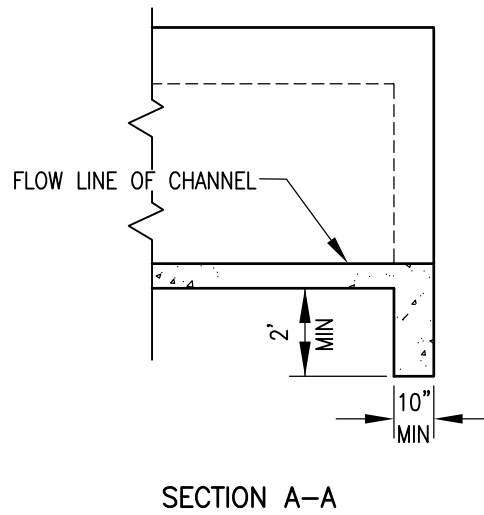
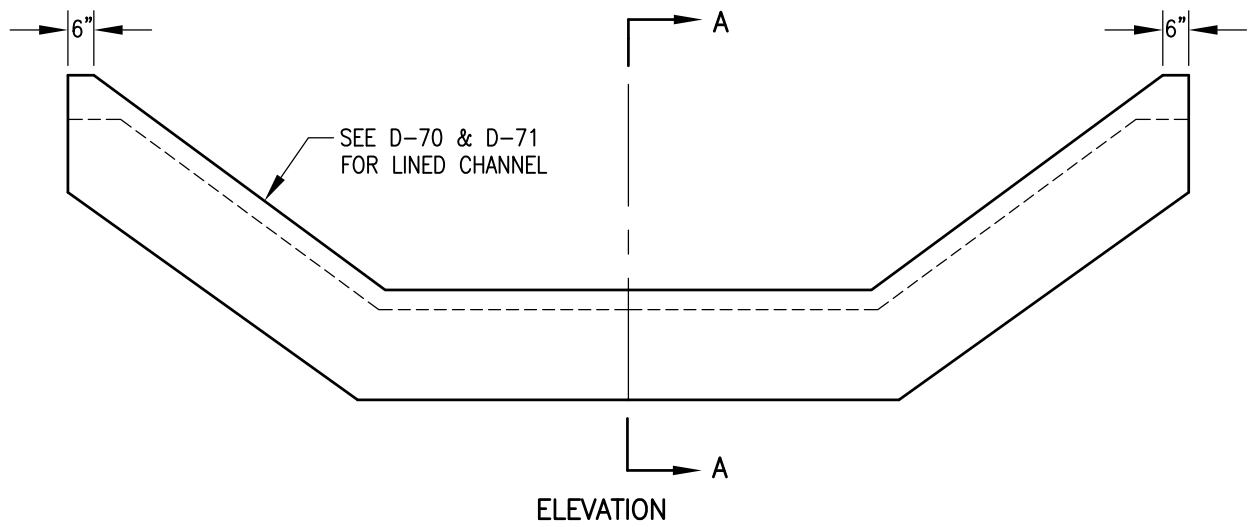
SAN DIEGO REGIONAL STANDARD DRAWING

MAJOR DRAINAGE CHANNEL

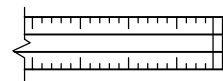
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-71



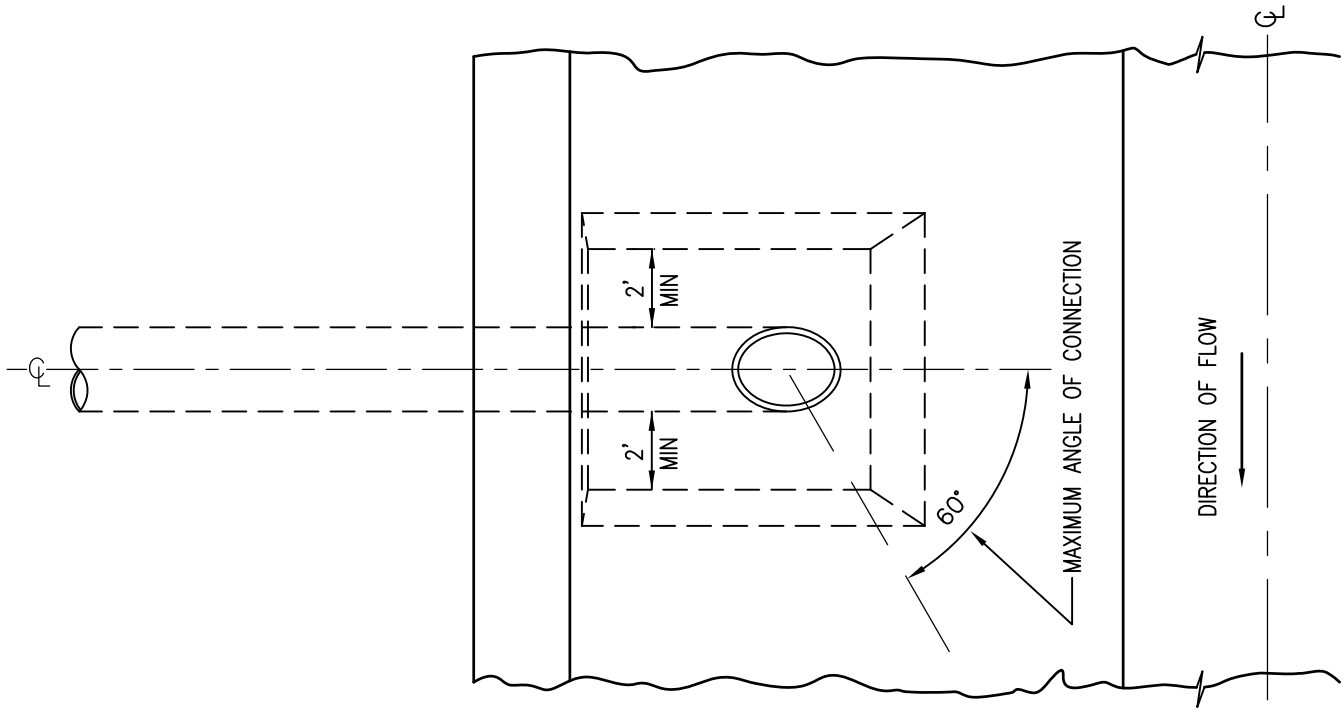
LEGEND ON PLANS



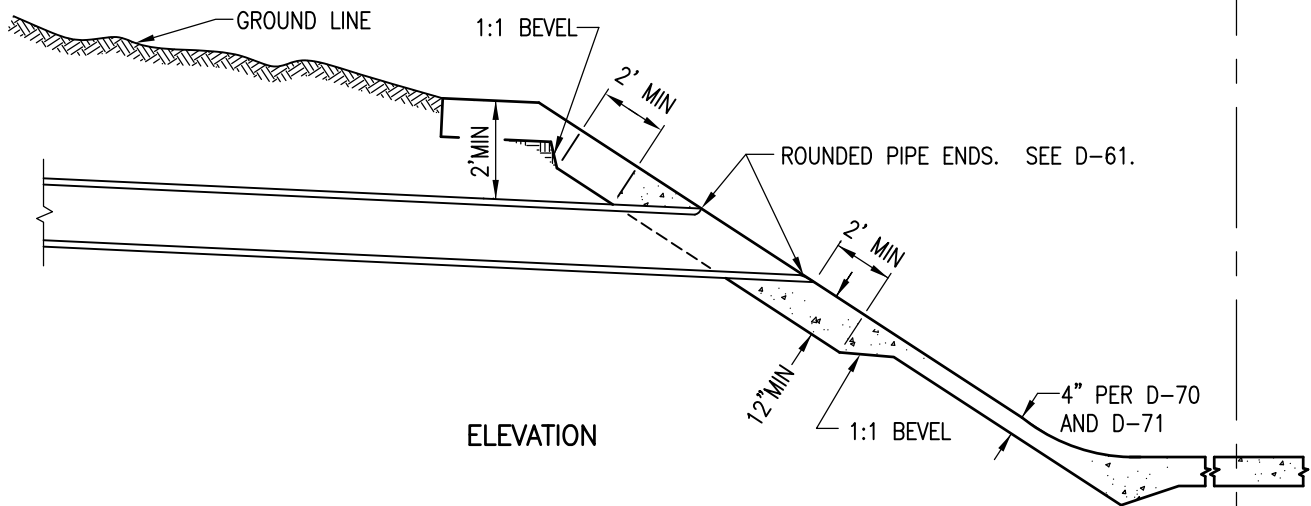
NOTES

1. THICKNESS AND WALL DEPTH SHALL BE AS SHOWN ON PLAN.
2. REINFORCING IN CUTOFF WALL SHALL BE THE SAME AS THAT REQUIRED IN CHANNEL.
3. CONCRETE SHALL BE 560-C-3250.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		CUTOFF WALL FOR DRAINAGE CHANNEL
Reviewed		T. Stanton	04/06		
Edited	S.S.	T. Regello	03/11		
Edited	T.R.	T. Regello	10/15		
Edited	M.W.	M. Widelski	10/18		
					 10/25/2018 Chairperson R.C.E. 19246 Date
					DRAWING NUMBER D-72



PLAN

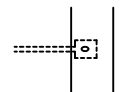


ELEVATION

NOTES:

1. CONCRETE SHALL BE 560-C-3250.
2. PIPE SHALL CONNECT TO CHANNEL AS HIGH AS POSSIBLE AND NOT BE CONSTRUCTED DIRECTLY ABOVE A WEEP HOLE.
3. THE MAXIMUM ANGLE OF CONNECTION IS 60° DOWNSTREAM. IN NO CASE SHALL THE PIPE ANGLE UPSTREAM.
4. INSTALL 6 x 6-W1.4 x W1.4 WWR IN CONCRETE AROUND PIPE.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Reviewed		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

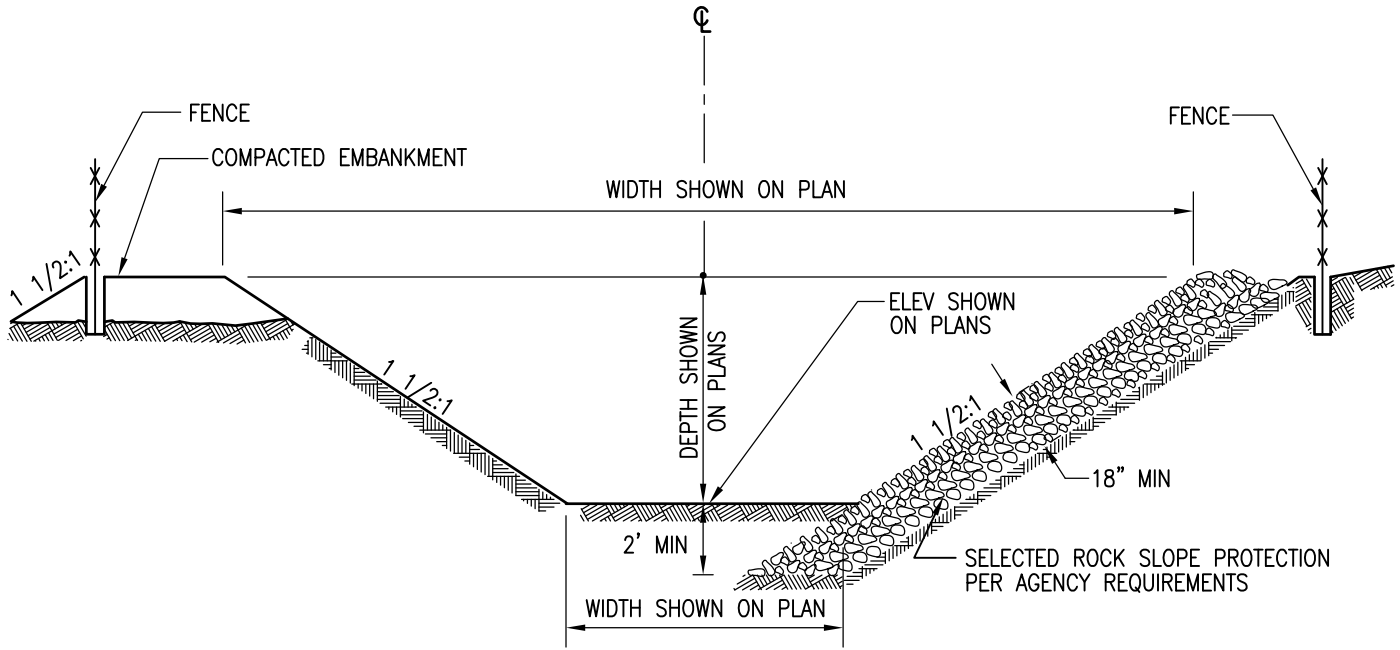
SAN DIEGO REGIONAL STANDARD DRAWING

PIPE TO CHANNEL CONNECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Heaton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-73



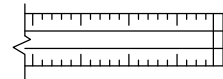
SECTION

**NOTE**

THE FOLLOWING SHALL BE SPECIFIED BY AGENCY AND INCLUDED IN THE PLAN DESIGN:

- A) LOW FLOW CHANNEL LOCATION
- B) FILTER BLANKET THICKNESS, TYPE AND LOCATION
- C) CUTOFF WALL
- D) FENCE

**LEGEND ON PLANS**



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Reviewed		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

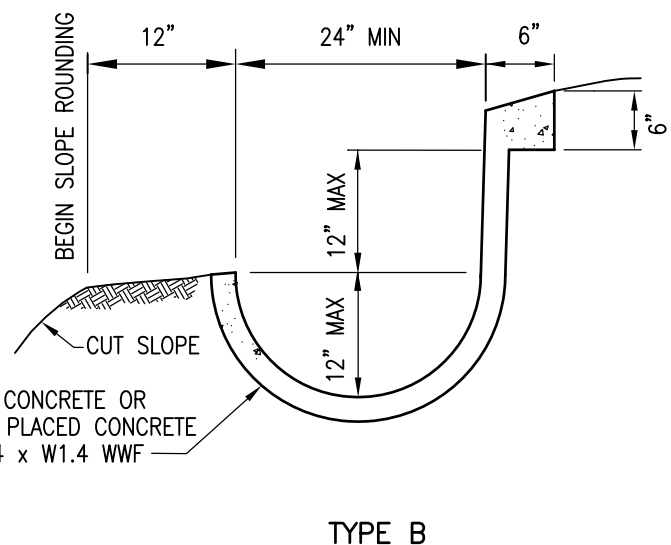
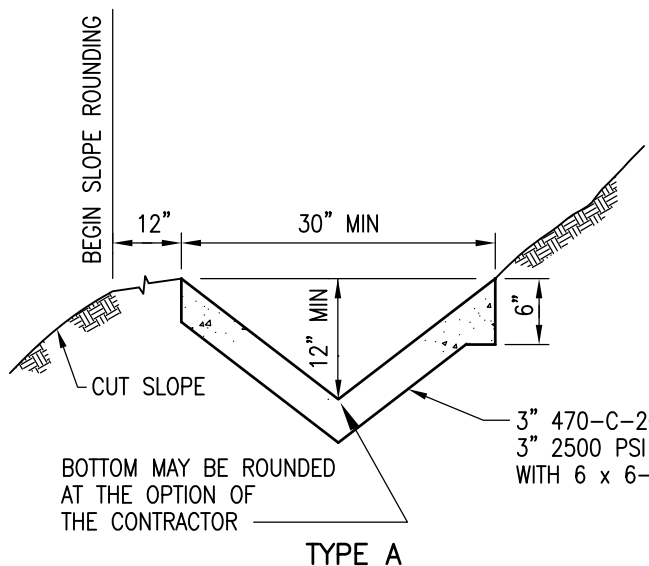
SAN DIEGO REGIONAL STANDARD DRAWING

GRADED EARTH CHANNEL

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Heaton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-74



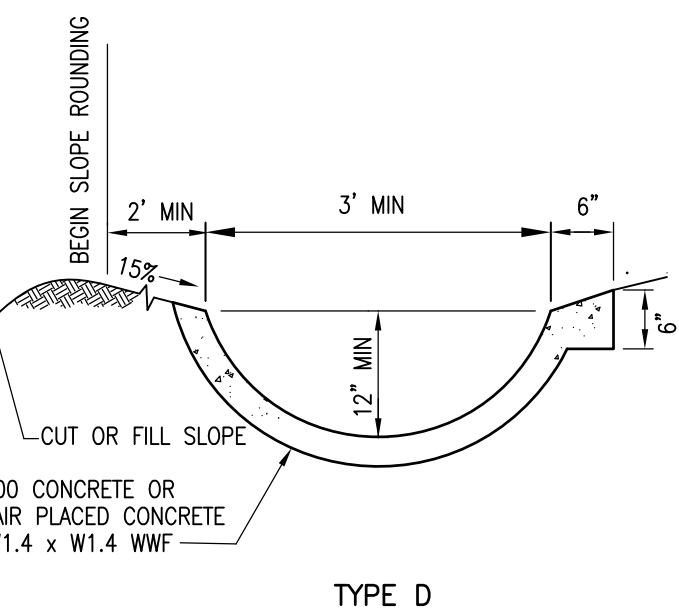
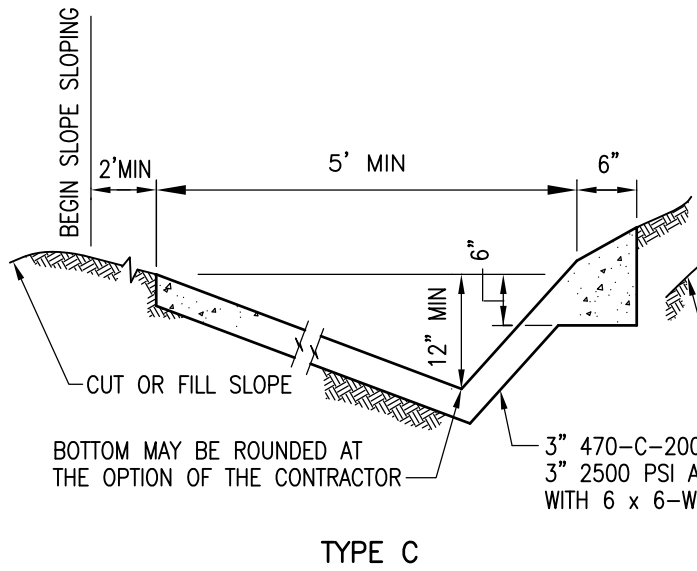
TYPE A

TYPE B

BROW DITCH

3" 470-C-2000 CONCRETE OR  
3" 2500 PSI AIR PLACED CONCRETE  
WITH 6 x 6-W1.4 x W1.4 WWF

BOTTOM MAY BE ROUNDED  
AT THE OPTION OF  
THE CONTRACTOR



TYPE C

TYPE D

TERRACE DITCH

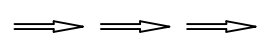
3" 470-C-2000 CONCRETE OR  
3" 2500 PSI AIR PLACED CONCRETE  
WITH 6 x 6-W1.4 x W1.4 WWF

BOTTOM MAY BE ROUNDED  
AT THE OPTION OF THE CONTRACTOR

NOTES

1. LONGITUDINAL SLOPE OF LINED DITCH SHALL BE 2% MINIMUM.
2. USE A 6" THICKENED EDGE ON BOTH SIDES OF THE DRAINAGE DITCH WHEN THE DRAINAGE DITCH IS BUILT DOWN A GRADED SLOPE.

LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Reviewed		T. Stanton	04/06	DRAINAGE DITCHES	10/25/2018 Chairperson R.C.E. 19246 Date
Edited	S.S.	T. Regello	03/11		
Edited	T.R.	T. Regello	10/15		
Edited	M.W.	M. Widelski	10/18		
				DRAWING NUMBER D-75	



Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

SINGLE BOX CULVERT  
DETAILS No.1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-76A

SPANS UP TO 5' (all measurements in feet and/or inches)

SPAN	2'			3'			4'			5'																	
	1'-6"	2'	2'	2'	3'	3'	2'	3'	3'	2'	3'	3'	4'	4'	5'												
HEIGHT	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	C	D									
STRENGTH CLASSIFICATION																											
MAX FILL OVER TOP	66	38	38	66	28	28	37	50	37	28	37	50	37	28	11	26	35	46									
Top Slab	T1	6	6	6	1/4	1/4	8	8	7	8	7	8	9	7	1/2	8	7	1/2	8	7	1/2	10	1/2				
Bottom Slab	T2	6	6	6	1/4	1/4	8	8	7	8	7	8	9	7	1/2	8	7	1/2	10	1/2	8	9	1/2	10	1/2		
Sidewalls	T3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
Size Bar "	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5		
"a" Spacing	3	1/2	3	1/2	3	1/2	3	1/2	4	5	4	1/2	5	4	1/2	5	4	1/2	5	4	1/2	5	4	1/2	5	4	1/2
Length	3-2	3-2	4-2	4-2	5-3	5-3	5-3	5-2	5-3	5-3	5-3	5-2	5-3	5-3	6-3	6-3	6-2	6-2	6-3	6-3	6-2	6-2	6-2	6-2	6-2	6-2	
"d" Dist. Bars	2	2	3	3	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Top Slab-No. of Bars	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Bottom Slab-No. of Bars	18	18	18	12	1/4	18	18	17	13	9	1/2	18	18	17	13	13	13	11	18	12	8	1/2	6	1/2	1/2	3	
Spacers	12	12	12	12	12	12	12	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	16	
Concrete: C.Y. per lin. ft.	0.17	0.18	0.23	0.27	0.31	0.29	0.33	0.40	0.36	0.40	0.43	0.32	0.37	0.36	0.41	0.40	0.44	0.51	0.54	0.43	0.48	0.55	0.57	0.57	0.57	0.57	
Reinf. lbs per lin. ft.	27	29	34	36	46	44	45	47	48	52	64	57	56	59	57	61	60	68	75	63	65	77	87	87	87	87	

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 7' (ALL MEASUREMENTS IN FEET AND/OR INCHES UNLESS NOTED OTHERWISE)

SPAN	7'																	
	3'		4'		5'		6'		7'		7'							
HEIGHT	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	C	
STRENGTH CLASSIFICATION	16	26	16	26	16	26	16	26	16	26	16	26	16	26	16	26	35	
MAX FILL OVER TOP																		
TOP SLAB	T <sub>1</sub>	7 1/4	8 1/4	7 1/4	8 1/4	7 1/4	8 1/4	7 1/4	8 1/4	7 1/4	8 1/4	7 1/4	8 1/4	7 1/4	8 1/4	7 1/4	8 1/4	3/4
BOTTOM SLAB	T <sub>2</sub>	7 1/2	8 3/4	7 1/2	8 3/4	7 1/2	8 3/4	7 1/2	8 3/4	7 1/2	8 3/4	7 1/2	8 3/4	7 1/2	8 3/4	7 1/2	8 3/4	10 1/2
SIDEWALLS	T <sub>3</sub>	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	8 1/2
"a" SIZE BAR #	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6
"a" SPACING	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	9
"a" LENGTH	6-8	6-9	6-8	6-9	6-8	6-9	6-8	6-9	6-8	6-9	6-8	6-9	6-8	6-9	6-8	6-9	6-10	6-10
"b" SIZE BAR #	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6
"b" SPACING	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	9
"b" DIMENSION "X"	1-3	1-4	1-3	1-4	1-3	1-4	1-3	1-4	1-3	1-4	1-3	1-4	1-3	1-4	1-3	1-4	1-4	1-8
"b" LENGTH	3-1	3-2	3-1	3-2	3-1	3-2	3-1	3-2	3-1	3-2	3-1	3-2	3-1	3-2	3-1	3-2	3-1	3-10
"c" SIZE BAR #	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6
"c" SPACING	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	9
"c" DIMENSION "Y"	1-10	1-11	1-10	1-11	1-10	1-11	1-10	1-11	1-10	1-11	1-10	1-11	1-10	1-11	1-10	1-11	1-11	2-3
"c" LENGTH	5-2	5-4	6-2	6-4	7-2	7-4	7-2	7-4	7-2	7-4	7-2	7-4	7-2	7-4	7-2	7-4	8-2	8-10
"c" SIZE BAR #	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6
"c" SPACING	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	9
"c" DIMENSION "Y"	1-10	1-11	1-10	1-11	1-10	1-11	1-10	1-11	1-10	1-11	1-10	1-11	1-10	1-11	1-10	1-11	1-11	2-3
"c" LENGTH	3-8	3-10	3-8	3-10	3-8	3-10	3-8	3-10	3-8	3-10	3-8	3-10	3-8	3-10	3-8	3-10	3-10	4-6
"d" TOP SLAB-NO. OF BARS	7	4	7	4	7	4	7	4	7	4	7	4	7	4	7	4	7	4
"d" BOTTOM SLAB-NO. OF BARS	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
"e" BARS SPACING	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
SPACERS TOTAL NUMBER	24		28		28		28		28		28		28		28		36	
CONCRETE: C.Y. PER LIN. FT.	0.47	0.56	0.51	0.60	0.55	0.64	0.58	0.68	0.62	0.72	0.66	0.76	0.70	0.80	0.74	0.84	0.88	0.89
REINFORCING LBS. PER LIN. FT.	107	130	114	138	118	143	125	150	132	158	136	163	143	170	150	176	184	184

**NOTE**  
 FOR BOXES OF HEIGHT LESS THAN THAT SHOWN IN TABLE, USE NEXT GREATER TABLE HEIGHT SLABS, WALL DIMENSIONS AND REINFORCING STEEL. MAKE CHANGES TO BAR LENGTHS AND NUMBER OF SPACERS AND QUANTITIES AS NECESSARY.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING  SINGLE BOX CULVERT DETAILS No.1	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE   10/25/2018 Chairperson R.C.E. 19246 Date
ORIGINAL		A. Kercheval	12/75		
Edited		T. Regello	02/09		
Edited	S.S.	T. Regello	03/11		
Edited	T.R.	T. Regello	10/15		
Edited	M.W.	M. Widelski	10/18	DRAWING NUMBER D-76C	



SPAN 10' (ALL MEASUREMENTS IN FEET AND/OR INCHES UNLESS NOTED OTHERWISE)

SPAN	10'														
	4'		5'		6'		7'		8'		9'		10'		
HEIGHT	A	B	A	B	A	B	A	B	A	B	A	B	A	B	C
STRENGTH CLASSIFICATION															
MAX FILL OVER TOP															
TOP SLAB															
Bottom Slab															
Sidewalls															
"a"															
"b"															
"c"															
"c <sub>1</sub> "															
"d"															
"e"															
SPACERS															
TOTAL NUMBER															
CONCRETE: C.Y. PER LIN. FT.															
REINFORCING LBS. PER LIN. FT.															

NOTE  
FOR BOXES OF HEIGHT LESS THAN THAT SHOWN IN TABLE, USE NEXT GREATER TABLE HEIGHT SLABS, WALL DIMENSIONS AND REINFORCING STEEL. MAKE CHANGES TO BAR LENGTHS AND NUMBER OF SPACERS AND QUANTITIES AS NECESSARY.

Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

SINGLE BOX CULVERT  
DETAILS No.1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. A. Hanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-76E

SPAN 12' (ALL MEASUREMENTS IN FEET AND/OR INCHES UNLESS NOTED OTHERWISE)

SPAN	12'																	
	6'			7'			8'			9'			10'			12'		
HEIGHT	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
STRENGTH CLASSIFICATION	5	16	24	5	16	24	5	16	24	5	16	24	5	16	24	5	16	24
MAX FILL OVER TOP	8 3/4	11 1/4	14 1/4	8 3/4	11 1/4	14 1/4	8 3/4	11 1/4	14 1/4	8 3/4	11 1/4	14 1/4	8 3/4	11 1/4	14 1/4	8 3/4	11 1/4	14 1/4
TOP SLAB	T <sub>1</sub>			T <sub>1</sub>			T <sub>1</sub>			T <sub>1</sub>			T <sub>1</sub>			T <sub>1</sub>		
BOTTOM SLAB	T <sub>2</sub>			T <sub>2</sub>			T <sub>2</sub>			T <sub>2</sub>			T <sub>2</sub>			T <sub>2</sub>		
SIDEWALKS	T <sub>3</sub>			T <sub>3</sub>			T <sub>3</sub>			T <sub>3</sub>			T <sub>3</sub>			T <sub>3</sub>		
CONC																		
REINFORCING STEEL																		
"a"																		
"b"																		
"c"																		
"c <sub>1</sub> "																		
SPACERS	36	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44
CONCRETE: C.Y. PER LIN. FT.	0.99	1.38	1.03	1.44	1.08	1.52	1.18	1.58	1.90	1.30	1.65	1.98	1.41	1.78	2.13	1.41	1.78	2.13
REINFORCING LBS. PER LIN. FT.	203	293	213	304	218	311	223	317	387	231	326	397	243	341	415	243	341	415

NOTE FOR BOXES OF HEIGHT LESS THAN THAT SHOWN IN TABLE,, USE NEXT GREATER TABLE HEIGHT SLABS, WALL DIMENSIONS AND REINFORCING STEEL. MAKE CHANGES TO BAR LENGTHS AND NUMBER OF SPACERS AND QUANTITIES AS NECESSARY.

Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

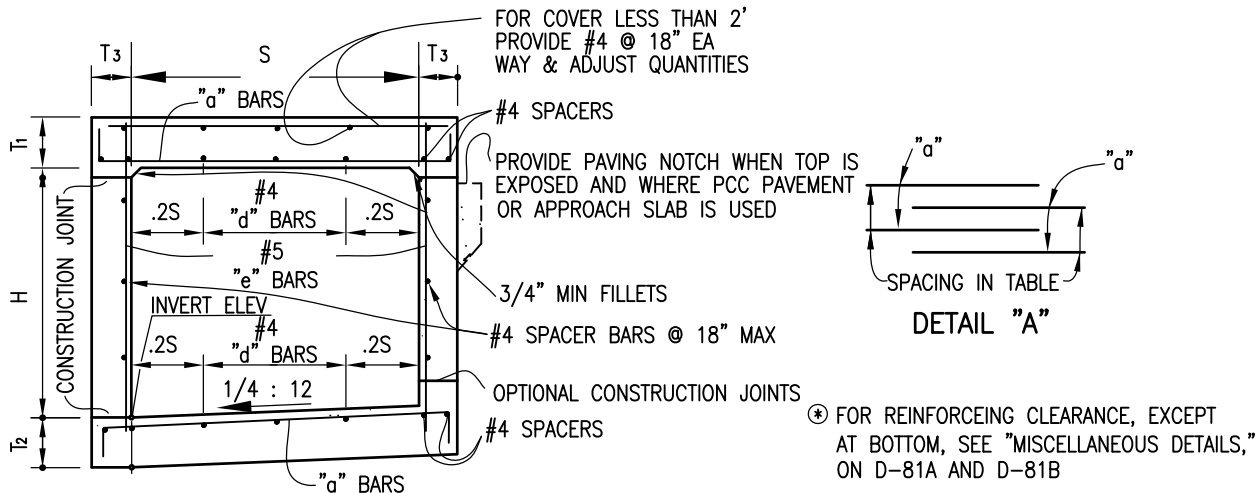
SAN DIEGO REGIONAL STANDARD DRAWING

SINGLE BOX CULVERT  
DETAILS No.1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

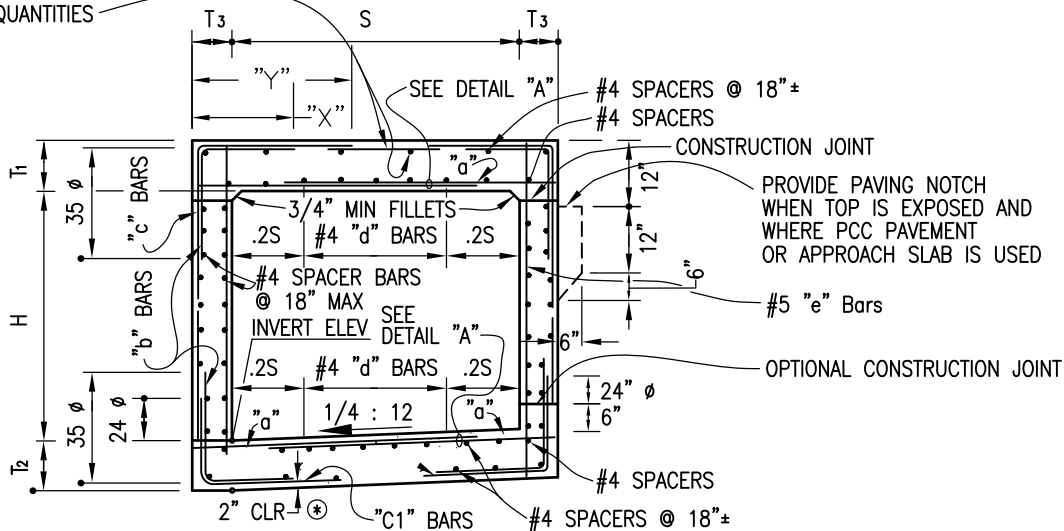
*M. A. Hanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-76F

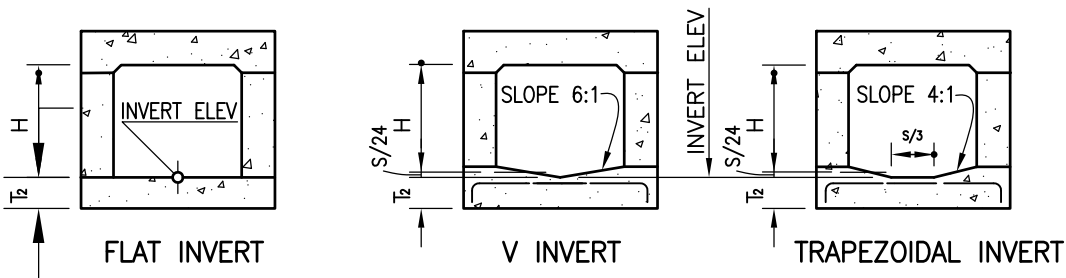


TYPICAL SECTIONS 2' THRU 6' SPANS

FOR COVER LESS THAN 2' PROVIDE #4 @ 18" EA WAY & ADJUST QUANTITIES



TYPICAL SECTIONS 7' THRU 12' SPANS



ALTERNATIVE INVERTS  
(WHEN SPECIFIED ON PLANS)

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Reviewed		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

SINGLE BOX CULVERT  
DETAILS NO.2

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-76G

SPAN 4' (ALL MEASUREMENTS IN FEET AND/OR INCHES UNLESS NOTED OTHERWISE)

SPAN	4'											
	2'				3'				4'			
HEIGHT	A	B	C	D	A	B	C	D	A	B	C	D
STRENGTH CLASSIFICATION	11	21	32	46	11	23	34	46	11	23	34	46
MAX FILL OVER TOP	6 1/2	6 1/2	7 1/4	8 1/2	6 1/2	6 1/2	7 1/2	8 1/2	6 1/2	6 1/2	7 1/2	8 1/2
TOP SLAB	T1											
BOTTOM SLAB	T2											
SIDEWALLS	T3											
SIZE BAR #	6	6	6	6	6	6	6	6	6	6	6	6
"a" SPACING	5	4	4	4	5	4	4	4	5	4	4	4
LENGTH	10-3	10-2	10-2	10-2	10-3	10-2	10-2	10-2	10-3	10-2	10-2	10-2
"b" SPACING	5	5	5	5	5	5	5	5	5	5	5	5
"b" or "b1" LENGTH	11	11	9	9	11	10 1/2	8 1/2	7 1/2	11	10 1/2	8 1/2	7 1/2
"b1" LENGTH	9-4	9-4	9-6	9-6	9-4	9-4	9-6	9-7	9-4	9-4	9-6	9-7
"b1" LENGTH	9-4	9-5	9-6	9-6	9-4	9-4	9-6	9-7	9-4	9-4	9-6	9-7
"c" SPACING	4	5	5	5	4	5	5	5	4	5	5	5
LENGTH	11	11	9	9	11	10 1/2	8 1/2	7 1/2	11	10 1/2	8 1/2	7 1/2
"d" DIST BARS	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6
"e" BARS	10	6	6	6	10	6	6	6	10	6	6	6
SPACERS NUMBER	6	6	6	6	6	6	6	6	6	6	6	6
CONCRETE: C.Y. PER LIN. FT.	0.47	0.51	0.57	0.63	0.53	0.57	0.63	0.69	0.59	0.63	0.69	0.75
REINFORCING LBS. PER LIN. FT.	81	74	84	84	84	79	91	101	87	85	99	111

NOTE

FOR BOXES OF HEIGHT LESS THAN THAT SHOWN IN TABLE, USE NEXT GREATER TABLE HEIGHT SLABS, WALL DIMENSIONS AND REINFORCING STEEL. MAKE CHANGES TO BAR LENGTHS AND NUMBER OF SPACERS AND QUANTITIES AS NECESSARY. NUMBER OF "d" BARS IN TABLE IS SLAB TOTAL FOR BOTH CELLS.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

DOUBLE BOX CULVERT  
DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. A. Hanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-77A



SPAN 5' (ALL MEASUREMENTS IN FEET AND/OR INCHES UNLESS NOTED OTHERWISE)

SPAN	2'						3'						4'						5'									
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	D			
STRENGTH CLASSIFICATION	6	36	36	6	24	36	6	23	34	6	23	34	6	23	34	6	23	34	6	23	34	6	23	34	6	23	34	46
MAX FILL OVER TOP	6	3/4	9 1/4	6	3/4	9 1/4	6	3/4	9 1/4	6	3/4	9 1/4	6	3/4	9 1/4	6	3/4	9 1/4	6	3/4	9 1/4	6	3/4	9 1/4	6	3/4	9 1/4	10 1/4
TOP SDAB	T1																											
BOTTOM SLAB	T2																											
CONC.	T3																											
SIDEWALLS																												
SIZE BAR #	5	4	4	5	4	4	5	4	4	5	4	4	5	4	4	5	4	4	5	4	4	5	4	4	5	4	4	4
"a" SPACING	10	8 1/2	10	10	8 1/2	10	10	8 1/2	10	10	8 1/2	10	10	8 1/2	10	10	8 1/2	10	10	8 1/2	10	10	8 1/2	10	10	8 1/2	9	
LENGTH	12-3	12-2	12-2	12-3	12-2	12-2	12-3	12-2	12-2	12-3	12-2	12-2	12-3	12-2	12-2	12-3	12-2	12-2	12-3	12-2	12-2	12-3	12-2	12-2	12-3	12-2	12-2	
SIZE BAR #	5	5	6	5	5	6	5	5	6	5	5	6	5	5	6	5	5	6	5	5	6	5	5	6	5	5	6	6
SPACING	10	8 1/2	10	10	8 1/2	10	10	8 1/2	10	10	8 1/2	10	10	8 1/2	10	10	8 1/2	10	10	8 1/2	10	10	8 1/2	10	10	8 1/2	9	
LENGTH "b" or "b1"	11-5	11-6	11-7	11-5	11-6	11-7	11-5	11-6	11-7	11-5	11-6	11-7	11-5	11-6	11-7	11-5	11-6	11-7	11-5	11-6	11-7	11-5	11-6	11-7	11-5	11-6	11-8	
LENGTH "b1"	11-4	11-6	11-7	11-4	11-6	11-7	11-4	11-6	11-7	11-4	11-6	11-7	11-4	11-6	11-7	11-4	11-6	11-7	11-4	11-6	11-7	11-4	11-6	11-7	11-4	11-6	11-8	
SIZE BAR #	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6	6
"c" SPACING	10	8 1/2	10	10	8 1/2	10	10	8 1/2	10	10	8 1/2	10	10	8 1/2	10	10	8 1/2	10	10	8 1/2	10	10	8 1/2	10	10	8 1/2	9	
LENGTH	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	
"d" DIST TOP SLAB-TOT. NO.	12	6	6	12	6	6	12	6	6	12	6	6	12	6	6	12	6	6	12	6	6	12	6	6	12	6	6	6
BARS BOTTOM SLAB-TOT. NO.	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
"e" SIZE BAR #	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	6
BARS SPACING	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	9	
SPACERS NUMBER	23			26			29			32																		
CONCRETE: C.Y. PER LIN. FT.	0.58	0.69	0.80	0.63	0.75	0.86	0.69	0.80	0.89	0.74	0.86	0.97	0.74	0.86	0.97	0.74	0.86	0.97	0.74	0.86	0.97	0.74	0.86	0.97	0.74	0.86	1.04	
REINFORCING LBS. PER LIN. FT.	99	100	109	103	104	112	106	109	119	109	116	126	109	116	126	109	116	126	109	116	126	109	116	126	109	116	148	

NOTE

FOR BOXES OF HEIGHT LESS THAN THAT SHOWN IN TABLE, USE NEXT GREATER TABLE HEIGHT SLABS, WALL DIMENSIONS AND REINFORCING STEEL. MAKE CHANGES TO BAR LENGTHS AND NUMBER OF SPACERS AND QUANTITIES AS NECESSARY. NUMBER OF "d" BARS IN TABLE IS SLAB TOTAL FOR BOTH CELLS.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

DOUBLE BOX CULVERT  
DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING  
NUMBER D-77B

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING





DOUBLE BOX CULVERT  
DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. A. Hanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-77C

SPAN 6' (ALL MEASUREMENTS IN FEET AND/OR INCHES UNLESS NOTED OTHERWISE)

SPAN	6'													
	3'			4'			5'			6'				
HEIGHT	A	B	C	A	B	C	A	B	C	A	B	C	D	
STRENGTH CLASSIFICATION	4	20	34	4	20	34	4	19	33	4	19	33	43	
MAX FILL OVER TOP														
Top Slab	T1	7 1/4	8 1/4	10 1/2	7 1/4	8 1/4	10 1/2	7 1/4	8 1/4	10 1/2	7 1/4	8 1/4	10 1/2	12
Bottom Slab	T2	7 1/4	9 1/2	11 1/2	7 1/4	9 1/2	11 1/2	7 1/4	9 1/2	11 1/2	7 1/4	9 1/2	11 1/2	12 3/4
Sidewalls	T3	6	6	6	6	6	6	6	6	6	6	6	6	7 1/2
"a" 		5	4	4	5	4	4	5	4	4	5	4	4	4
"b" 		9 1/2	11	8 1/2	9 1/2	11	8 1/2	9 1/2	11	8 1/2	9 1/2	11	8 1/2	10 1/2
SPACING	14-3	14-2	14-2	14-3	14-2	14-2	14-3	14-2	14-2	14-3	14-2	14-2	14-2	
LENGTH														
SIZE BAR #	5	6	6	5	6	6	5	6	6	5	6	6	7	
SPACING	9 1/2	11	8 1/2	9 1/2	11	8 1/2	9 1/2	11	8 1/2	9 1/2	11	8 1/2	10 1/2	
LENGTH	13-6	13-6	13-8	13-6	13-6	13-8	13-6	13-6	13-8	13-6	13-6	13-8	13-8	
"b" or "b1" 		13-5	13-7	13-8	13-5	13-7	13-8	13-5	13-6	13-8	13-5	13-6	13-8	14-2
LENGTH														
SIZE BAR #	4	6	6	4	6	6	4	6	6	4	6	6	7	
SPACING	9 1/2	11	8 1/2	9 1/2	11	8 1/2	9 1/2	11	8 1/2	9 1/2	11	8 1/2	10 1/2	
LENGTH	6-6	6-6	6-6	6-6	6-6	6-6	6-6	6-6	6-6	6-6	6-6	6-6	6-6	
"d" DIST BARS 		12	6	6	12	6	6	12	6	6	12	6	6	6
BOTTOM SLAB-TOT. NO.		6	6	6	6	6	6	6	6	6	6	6	6	6
SIZE BAR #		4	4	4	4	4	4	4	4	4	4	4	4	5
BARS		18	18	16	18	14	8 1/2	18	10	9 1/2	18	11	9	6
SPACING														
SPACERS NUMBER		30			33			36			36			
CONCRETE: C.Y. PER LIN. FT.	0.77	0.90	1.08	0.82	0.96	1.13	0.88	1.01	1.19	0.93	1.07	1.25	1.47	
REINFORCING LBS. PER LIN. FT.	121	119	147	125	124	155	128	131	164	129	137	177	201	

NOTE

FOR BOXES OF HEIGHT LESS THAN THAT SHOWN IN TABLE, USE NEXT GREATER TABLE HEIGHT SLABS, WALL DIMENSIONS AND REINFORCING STEEL. MAKE CHANGES TO BAR LENGTHS AND NUMBER OF SPACERS AND QUANTITIES AS NECESSARY. NUMBER OF "d" BARS IN TABLE IS SLAB TOTAL FOR BOTH CELLS.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

DOUBLE BOX CULVERT  
DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. A. Hanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-77D

SPAN 8' (ALL MEASUREMENTS IN FEET AND/OR INCHES UNLESS NOTED OTHERWISE)

SPAN	8'															
	4'			5'			6'			7'			8'			
HEIGHT	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	D
STRENGTH CLASSIFICATION	3	14	25	3	14	25	3	14	25	3	14	25	3	14	25	37
MAX FILL OVER TOP	8 1/2	9 1/2	12	8 1/2	9 1/2	12	8 1/2	9 1/2	12	8 1/2	9 1/2	12 1/4	8 1/2	9 1/2	12 1/4	14 1/4
TOP SLAB	T1															
BOTTOM SLAB	T2															
SIDEWALLS	T3															
SIZE BAR #	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
SPACING	12	9 1/2	10 1/2	12	9 1/2	10	12	9 1/2	10	11 1/2	9 1/2	10	11 1/2	9 1/2	10	8 1/2
LENGTH	18-4	18-2	18-2	18-4	18-2	18-2	18-4	18-2	18-2	18-4	18-2	18-2	18-7	18-5	18-5	18-8
SIZE BAR #	6	6	7	6	6	7	6	6	7	6	6	7	6	6	7	6
SPACING	12	9 1/2	10 1/2	12	9 1/2	10	12	9 1/2	10	11 1/2	9 1/2	10	11 1/2	9 1/2	10	8 1/2
LENGTH "b"	17-7	17-8	17-9	17-7	17-8	17-9	17-7	17-8	17-9	17-7	17-8	17-9	17-10	17-10	17-10	18-3
LENGTH "b1"	17-5	17-8	17-9	17-5	17-8	17-9	17-5	17-8	17-9	17-5	17-8	17-9	17-10	17-10	17-11	18
SIZE BAR #	4	6	7	4	6	7	4	6	7	4	6	7	4	6	7	4
SPACING	12	9 1/2	10 1/2	12	9 1/2	10	12	9 1/2	10	11 1/2	9 1/2	10	11 1/2	9 1/2	10	8 1/2
LENGTH	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-7	8-7	8-7	8-7	8-7	8-8
"d" DIST TOP SLAB-TOT. NO. BARS	16	8	8	16	8	8	16	8	8	16	8	8	16	8	8	8
BOTTOM SLAB-TOT. NO. BARS	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
SIZE BAR #	4	4	5	4	4	5	4	4	5	4	4	5	4	4	5	4
SPACING	18	18	10 1/2	18	12	10	18	11 1/2	10	14	9 1/2	7 1/2	11 1/2	8 1/2	7 1/2	9
SPACERS NUMBER	41			44			44			47			50			60
CONCRETE: C.Y. PER LIN. FT.	1.08	1.30	1.55	1.14	1.37	1.61	1.19	1.42	1.66	1.32	1.56	1.83	1.39	1.62	1.99	2.27
REINFORCING LBS. PER LIN. FT.	169	175	200	172	181	218	173	188	229	185	199	248	191	207	284	314

NOTE

FOR BOXES OF HEIGHT LESS THAN THAT SHOWN IN TABLE, USE NEXT GREATER TABLE HEIGHT SLABS, WALL DIMENSIONS AND REINFORCING STEEL. MAKE CHANGES TO BAR LENGTHS AND NUMBER OF SPACERS AND QUANTITIES AS NECESSARY. NUMBER OF "d" BARS IN TABLE IS SLAB TOTAL FOR BOTH CELLS.

SPAN 10' (ALL MEASUREMENTS IN FEET AND/OR INCHES UNLESS NOTED OTHERWISE)

SPAN	10'																		
	5'			6'			7'			8'			10'						
STRENGTH CLASSIFICATION	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	D
MAX FILL OVER TOP	2	17	30	2	17	30	2	17	30	2	16	29	2	16	29	2	16	29	36
TOP SLAB	8 3/4	12 3/4	16	8 3/4	12 3/4	16	8 3/4	12 3/4	16	8 3/4	12 3/4	16	8 3/4	12 3/4	16	8 3/4	12 3/4	16	17 1/2
BOTTOM SLAB	8 1/4	13 1/2	16 1/2	8 1/4	13 1/2	16 1/2	8 1/4	13 3/4	16 3/4	8 1/4	13 3/4	16 3/4	8 3/4	13 1/2	18 1/4	8 3/4	13 1/2	16 1/2	18 1/2
SIDEWALLS	6	6	6	6	6	6	6	6 1/2	7	7	7	7 1/2	7	7 1/2	7 1/2	8	8	9	10
"a" SIZE BAR #	6	4	4	6	4	4	6	4	4	6	4	4	6	4	4	6	4	4	4
"a" SPACING	11	10	10	11	9 1/2	10	11	9 1/2	10	11	10	10	11	10	10	11	10	10	9
LENGTH	22-4	22-2	22-2	22-4	22-2	22-2	22-4	22-4	22-5	22-4	22-4	22-5	22-7	22-5	22-7	22-10	22-8	22-11	23-2
"b" SIZE BAR #	6	7	8	6	7	8	6	7	8	6	7	8	6	7	8	6	7	8	8
"b" SPACING	11	10	10	11	9 1/2	10	11	9 1/2	10	11	9 1/2	10	11	10	10	11	10	10	9
LENGTH "b" or "b1"	21-7	21-10	22	21-7	21-10	22	21-7	21-11	22-3	21-7	21-11	22-3	21-10	22-1	22-4	22-9	22-1	22-9	23-1
LENGTH "b1"	21-5	21-10	22	21-5	21-10	22	21-5	21-11	22-3	21-5	21-11	22-3	21-9	22	22-4	22-9	22	22-8	23-2
"c" SIZE BAR #	6	7	8	6	7	8	6	7	8	6	7	8	6	7	8	6	7	8	8
"c" SPACING	11	10	10	11	9 1/2	10	11	9 1/2	10	11	9 1/2	10	11	10	10	11	10	10	9
LENGTH	10-6	10-6	10-6	10-6	10-6	10-6	10-6	10-7	10-7	10-6	10-7	10-7	10-7	10-7	10-8	10-8	10-8	10-9	10-10
"d" DIST TOP SLAB-TOT. NO. BARS	18	10	10	18	10	10	18	10	10	18	10	10	18	10	10	18	10	10	10
BOTTOM SLAB-TOT. NO. BARS	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
"e" SIZE BAR #	4	4	5	4	4	5	4	4	5	4	4	5	4	4	5	4	4	5	6
"e" SPACING	18	10	10	18	6	6 1/2	14	6	6 1/2	14	6	6 1/2	14	8 1/2	6	7 1/2	7	5 1/2	5
SPACERS NUMBER	48			48			51			54			64			68			
CONCRETE: C.Y. PER LIN. FT.	1.40	2.05	2.46	1.45	2.07	2.48	1.51	2.18	2.64	1.68	2.27	2.74	1.68	2.27	2.74	1.92	2.51	3.05	3.41
REINFORCING LBS. PER LIN. FT.	236	254	310	238	274	324	243	280	339	252	278	355	252	278	355	279	327	400	476

**NOTE**  
 FOR BOXES OF HEIGHT LESS THAN THAT SHOWN IN TABLE, USE NEXT GREATER TABLE HEIGHT SLAB, WALL DIMENSIONS AND REINFORCING STEEL.  
 MAKE CHANGES TO BAR LENGTHS AND NUMBER OF SPACERS AND QUANTITIES AS NECESSARY. NUMBER OF "d" BARS IN TABLE IS SLAB TOTAL FOR BOTH CELLS.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

DOUBLE BOX CULVERT  
 DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. A. Heaton* 10/25/2018  
 Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-77E

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

DOUBLE BOX CULVERT  
DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. A. Hanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-77F

SPAN 12' (ALL MEASUREMENTS IN FEET AND/OR INCHES UNLESS NOTED OTHERWISE)

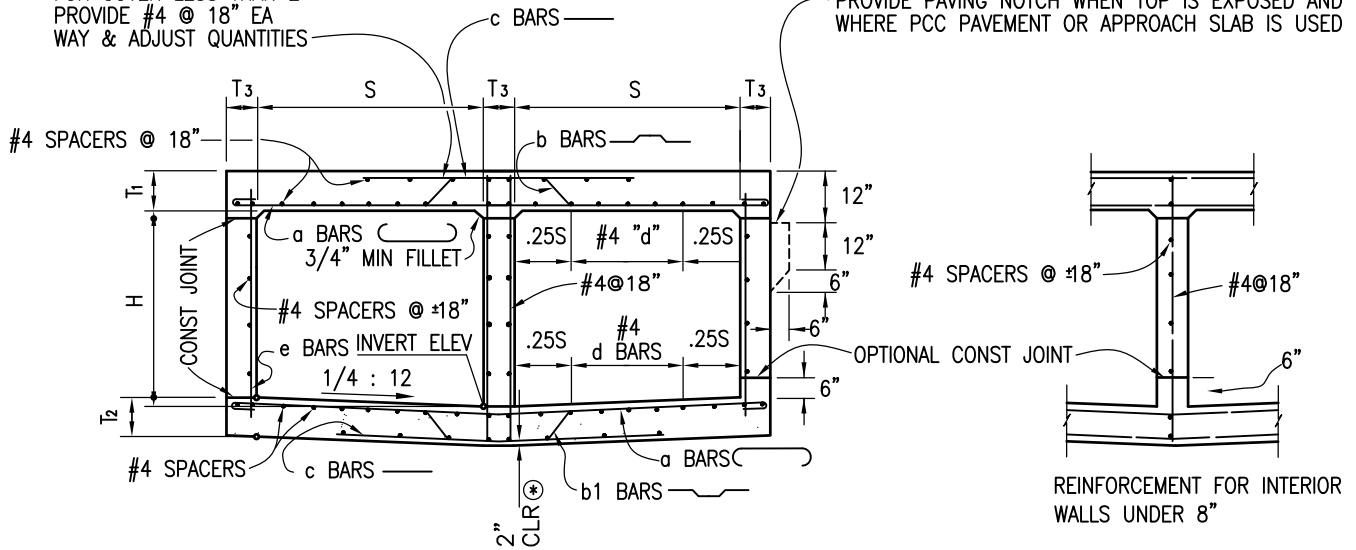
SPAN	12'																			
	6'			7'			8'			9'			10'			12'				
HEIGHT	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	D	
STRENGTH CLASSIFICATION																				
MAX. FILL OVER TOP	2	14	26	2	14	26	2	14	26	2	14	26	2	14	26	2	14	26	36	
TOP SLAB	T <sub>1</sub>	10	14	17 1/2	10	14 1/4	17 1/2	10	14 1/4	17 3/4	10	14 1/4	17 3/4	10	14 1/4	17 3/4	10	14 1/4	17 3/4	20 3/4
BOTTOM SLAB	T <sub>2</sub>	9 1/4	14 3/4	18	9 1/4	15	18 1/4	9 3/4	15	18 1/2	10	15 1/4	18 3/4	10 1/4	15 1/4	18 3/4	10 1/2	15 1/4	19 1/4	21 1/4
SIDEWALLS	T <sub>3</sub>	6	6	6 1/2	7	7	7	8	8	8 1/2	9	9	9	9	9	9 1/2	11	11	11	12
SIZE BAR #	6	4	4	6	4	4	6	4	4	6	4	4	6	4	4	6	4	4	4	
SPACING	9	11 1/2	9	9	11 1/2	9	9	11	8 1/2	9	11	8 1/2	9	11	8 1/2	9	11	8 1/2	9	
LENGTH	26-4	26-2	26-4	26-7	26-5	26-5	26-10	26-8	26-10	27-1	26-11	26-11	27-1	26-11	27-3	27-5	27-1	27-2	27-5	
SIZE BAR #	6	8	8	6	8	8	6	8	8	6	8	8	6	8	8	6	8	8	9	
SPACING	9	11 1/2	9	9	11 1/2	9	9	11	8 1/2	9	11	8 1/2	9	11	8 1/2	9	11	8 1/2	9	
LENGTH	25-8	25-10	26-3	25-11	26-1	26-4	26-2	26-4	26-9	26-5	26-9	26-9	26-4	26-8	27-2	27-4	26-4	26-11	27-5	
SIZE BAR #	5	8	8	5	8	8	5	8	8	5	8	8	5	8	8	5	8	8	9	
SPACING	9	11 1/2	9	9	11 1/2	9	9	11	8 1/2	9	11	8 1/2	9	11	8 1/2	9	11	8 1/2	9	
LENGTH	12-6	12-6	12-7	12-7	12-7	12-7	12-8	12-8	12-9	12-9	12-9	12-9	12-9	12-9	12-11	12-11	12-9	12-10	12-11	
"d" DIST BARS	24	10	10	24	10	10	24	10	10	24	10	10	24	10	10	24	10	10	10	
BOTTOM SLAB-TOT. NO.	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
SIZE BAR #	4	4	5	4	4	5	4	4	5	4	5	7	4	5	7	4	7	8	8	
BARS	18	8	8	15	6	6 1/2	12	5 1/2	6	9	7 1/2	8 1/2	8	8 1/2	8 1/2	8	8 1/2	8	7	
SPACERS NUMBER	52			55			68			68			72			76				
CONCRETE: C.Y. PER LIN. FT.	1.84	2.59	3.16	1.97	2.77	3.28	2.19	2.93	3.59	2.38	0.74	3.69	4.25	2.48	3.23	3.86	4.49	5.67	4.30	
REINFORCING LBS. PER LIN. FT.	309	317	401	316	330	415	336	363	460	345	374	485	578	351	394	519	582	673	673	

NOTE

FOR BOXES OF HEIGHT LESS THAN THAT SHOWN IN TABLE, USE NEXT GREATER TABLE HEIGHT SLABS, WALL DIMENSIONS AND REINFORCING STEEL. MAKE CHANGES TO BAR LENGTHS AND NUMBER OF SPACERS AND QUANTITIES AS NECESSARY. NUMBER OF "d" BARS IN TABLE IS SLAB TOTAL FOR BOTH CELLS.

FOR COVER LESS THAN 2'  
 PROVIDE #4 @ 18" EA  
 WAY & ADJUST QUANTITIES

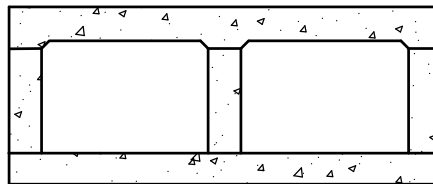
PROVIDE PAVING NOTCH WHEN TOP IS EXPOSED AND  
 WHERE PCC PAVEMENT OR APPROACH SLAB IS USED



**TYPICAL SECTION**

(SHOWING REINFORCEMENT FOR INTERIOR WALLS 8" AND OVER)

⊙ FOR REINFORCEMENT CLEARANCE, EXCEPT AT BOTTOM, SEE "MISCELLANEOUS DETAILS," ON D-81A AND D-81B.



**"FLAT INVERT" ALTERNATIVE**  
 (WHEN SPECIFIED)

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Reviewed		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	T. Regello	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

DOUBLE BOX CULVERT  
 DETAILS NO. 2

RECOMMENDED BY THE SAN DIEGO  
 REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
 Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-77G

SPAN 4' (ALL MEASUREMENTS IN FEET AND/OR INCHES UNLESS NOTED OTHERWISE)

SPAN	4'								
	2'			3'			4'		
HEIGHT	A	B	C	A	B	C	A	B	C
STRENGTH CLASSIFICATION	10	24	38	10	24	38	10	24	38
MAX FILL OVER TOP	6 1/4	6 1/4	7 1/4	6 1/4	6 1/4	7 1/4	6 1/4	6 1/4	7 1/4
CONC. TOP SLAB	T1	6	7	8 1/4	6	7	8 1/4	6	7
BOTTOM SLAB	T2	6	6	6	6	6	6	6	6
SIDEWALLS	T3	5	4	5	4	5	5	4	5
"a" SIZE BAR #	11	11 1/2	13	11	11 1/2	13	11	11 1/2	13
SPACING	14-9	14-8	14-9	14-9	14-8	14-9	14-9	14-8	14-9
LENGTH	5	5	6	5	5	6	5	5	6
"b" SIZE BAR #	11	11 1/2	13	11	11 1/2	13	11	11 1/2	13
SPACING	14-2	14-2	14-3	14-2	14-2	14-3	14-2	14-2	14-3
LENGTH "b"	14	14-2	14-3	14	14-2	14-3	14	14-2	14-3
LENGTH "b1"	4	5	6	4	5	6	4	5	6
"c" SIZE BAR #	11	11 1/2	13	11	11 1/2	13	11	11 1/2	13
SPACING	9	9	9	9	9	9	9	9	9
LENGTH	15	9	9	15	9	9	15	9	9
"d" DIST TOP SLAB-TOT. #	9	9	9	9	9	9	9	9	9
BARS BOTTOM SLAB-TOT. #	4	4	4	4	4	4	4	4	5
"e" SIZE BAR #	18	18	18	18	18	18	18	18	18
BARS SPACING	34	34	34	34	34	34	34	34	34
SPACERS NUMBER	0.67	0.71	0.81	0.75	0.79	0.89	0.82	0.86	0.96
CONCRETE: C.Y. PER LIN. FT.	122	110	133	127	115	138	131	122	147
REINFORCING LBS PER LIN. FT.									

NOTE

FOR BOXES OF HEIGHT LESS THAN THAT SHOWN IN TABLE, USE NEXT GREATER TABLE HEIGHT SLABS, WALL DIMENSIONS AND REINFORCING STEEL. MAKE CHANGES TO BAR LENGTHS AND NUMBER OF SPACERS AND QUANTITIES AS NECESSARY. NUMBER OF "d" BARS IN TABLE IS SLAB TOTAL FOR ALL CELLS.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

TRIPLE BOX CULVERT  
DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. A. Hanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-78A

SPAN 5' (ALL MEASUREMENTS IN FEET AND/OR INCHES UNLESS OTHERWISE NOTED)

SPAN	5'														
	2'			3'			4'			5'					
HEIGHT	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
STRENGTH CLASSIFICATION	8	17	26	8	17	26	8	17	26	8	17	26	8	17	26
MAX FILL OVER TOP	8	17	26	8	17	26	8	17	26	8	17	26	8	17	26
TOP SLAB	6 3/4	6 3/4	7 1/2	6 3/4	6 3/4	7 1/2	6 3/4	6 3/4	7 1/2	6 3/4	6 3/4	7 1/2	6 3/4	6 3/4	7 1/2
BOTTOM SLAB	6 1/4	7 1/4	8 1/2	6 1/4	7 1/4	8 1/2	6 1/4	7 1/4	8 1/2	6 1/4	7 1/4	8 1/2	6 1/4	7 1/4	8 1/2
SIDEWALLS	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
SIZE BAR #	5	4	5	5	4	5	5	4	5	5	4	5	5	4	5
SPACING	10	11 1/2	13	10	11 1/2	13	10	11 1/2	13	10	11 1/2	13	10	11 1/2	13
LENGTH	17-9	17-8	17-9	17-9	17-8	17-9	17-9	17-8	17-9	17-9	17-8	17-9	17-9	17-8	17-9
SIZE BAR #	5	5	6	5	5	6	5	5	6	5	5	6	5	5	6
SPACING	10	11 1/2	13	10	11 1/2	13	10	11 1/2	13	10	11 1/2	13	10	11 1/2	13
LENGTH "b"	17-3	17-3	17-3	17-3	17-3	17-3	17-3	17-3	17-3	17-3	17-3	17-3	17-3	17-3	17-3
LENGTH "b1"	17	17-2	17-4	17	17-2	17-4	17	17-2	17-4	17	17-2	17-4	17	17-2	17-4
SIZE BAR #	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6
SPACING	10	11 1/2	13	10	11 1/2	13	10	11 1/2	13	10	11 1/2	13	10	11 1/2	13
LENGTH	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
"d" DIST TOP SLAB-TOT. #	18	9	9	18	9	9	18	9	9	18	9	9	18	9	9
BARS BOTTOM SLAB-TOT. #	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
SIZE BAR #	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
BARS	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
SPACING	34	34	38	34	34	38	34	34	38	34	34	38	34	34	38
SPACERS NUMBER	0.82	0.87	0.98	0.90	0.95	1.05	0.97	1.02	1.13	1.04	1.11	1.23	1.04	1.11	1.23
CONCRETE: C.Y. PER LIN. FT.	150	126	153	155	130	157	157	136	161	161	143	181	161	143	181
REINFORCING LBS. PER LIN. FT.	150	126	153	155	130	157	157	136	161	161	143	181	161	143	181
QUAN															

NOTE

FOR BOXES OF HEIGHT LESS THAN THAT SHOWN IN TABLE, USE NEXT GREATER TABLE HEIGHT SLABS, WALL DIMENSIONS AND REINFORCING STEEL. MAKE CHANGES TO BAR LENGTHS AND NUMBER OF SPACERS AND QUANTITIES AS NECESSARY. NUMBER OF "d" BARS IN TABLE IS SLAB TOTAL FOR ALL CELLS.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Wideliski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

TRIPLE BOX CULVERT  
DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-78B



SPAN 6' (ALL MEASUREMENTS IN FEET AND/OR INCHES UNLESS NOTED OTHERWISE)

SPAN	6'															
	3'			4'			5'			6'						
HEIGHT	A	B	C	A	B	C	A	B	C	A	B	C	D			
STRENGTH CLASSIFICATION	3	13	23	3	13	23	3	13	23	3	13	23	30			
MAX FILL OVER TOP																
TOP SLAB	T1	7 1/2	7 1/2	8 1/4	7 1/2	8 1/4	7 1/2	7 1/2	8 1/4	9 1/4	7 1/2	7 1/2	8 1/4	9 1/4		
BOTTOM SLAB	T2	6	7 3/4	9 1/4	6	7 3/4	9 1/4	6	8	9 1/4	10	6	8	9 1/4	10 1/4	
CONC SIDEWALLS	T3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
SIZE BAR #		6	5	5	6	5	6	5	6	5	5	5	5	5	5	
SPACING		13	14	11 1/2	13	14	11 1/2	13	14	11 1/2	10	13	14	11 1/2	10	
LENGTH		20-10	20-9	20-9	20-10	20-9	20-9	20-10	20-9	20-9	20-9	20-10	20-9	20-9	20-9	
SIZE BAR #	"a"	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
SPACING		13	14	11 1/2	13	14	11 1/2	13	14	11 1/2	10	13	14	11 1/2	10	
LENGTH	"b" or "b1"	20-3	20-3	20-5	20-3	20-3	20-5	20-3	20-3	20-3	20-5	20-3	20-3	20-5	20-6	
SIZE BAR #	"b1"	20	20-2	20-5	20	20-2	20-5	20	20-2	20-2	20-5	20	20	20-5	20-7	
SPACING	"c"	4	6	6	4	6	6	4	6	6	6	4	6	6	6	
LENGTH		13	14	11 1/2	13	14	11 1/2	13	14	11 1/2	10	13	14	11 1/2	10	
TOP SLAB-TOT. #	"d" DIST	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
BOTTOM SLAB-TOT. #	BARS	18	9	9	18	9	9	18	9	9	9	18	9	9	9	
SIZE BAR #	"e"	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
SPACING	BARS	18	18	18	18	18	11 1/2	18	18	11 1/2	12	10	18	8	12	10
SPACERS NUMBER		40	40	40	40	40	40	40	40	40	52	48	48	48	48	
CONCRETE: C.Y. PER LIN. FT.		1.05	1.15	1.29	1.12	1.23	1.37	1.19	1.32	1.44	1.55	1.27	1.39	1.52	1.64	
REINFORCING LBS. PER LIN. FT.		181	168	196	183	170	200	187	177	209	235	192	187	221	249	

NOTE

FOR BOXES OF HEIGHT LESS THAN THAT SHOWN IN TABLE, USE NEXT GREATER TABLE HEIGHT SLABS, WALL DIMENSIONS AND REINFORCING STEEL. MAKE CHANGES TO BAR LENGTHS AND NUMBER OF SPACERS AND QUANTITIES AS NECESSARY. NUMBER OF "d" BARS IN TABLE IS SLAB TOTAL FOR ALL CELLS.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

TRIPLE BOX CULVERT  
DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. A. Hanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-78C

SPAN 8' (ALL MEASUREMENTS IN FEET AND/OR INCHES UNLESS NOTED OTHERWISE)

SPAN	8'																	
	4'			5'			6'			7'			8'					
HEIGHT	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
STRENGTH CLASSIFICATION	2	11	20	2	11	20	2	11	20	2	11	20	2	11	20	2	11	20
MAX FILL OVER TOP	8 1/4	8 1/4	10 1/4	8 1/4	8 1/4	10 1/4	8 1/4	8 1/4	10 1/4	8 1/4	8 1/4	10 1/4	8 1/4	8 1/4	10 1/4	8 1/4	8 1/4	10 1/4
TOP SLAB	11	6 1/2	9	11	6 1/2	9 1/4	11	6 1/2	9 1/4	11	6 3/4	9 1/4	11	6 3/4	9 1/4	11	6 3/4	9 1/4
BOTTOM SLAB	6	6	6	6	6	6	6	6	6	6	6	6 1/2	6	6	6 1/2	6	6	6 1/2
SIDEWALLS	11 1/2	12	12	11 1/2	12	12	11 1/2	12	12	11 1/2	12	12	11 1/2	12	12	11 1/2	12	12
SIZE BAR #	26-10	26-9	26-9	26-10	26-9	26-9	26-10	26-9	26-9	26-10	26-9	26-9	26-10	26-9	26-9	26-10	26-9	26-9
SPACING	6	6	7	6	6	7	6	6	7	6	6	7	6	6	7	6	6	7
LENGTH "a"	11 1/2	26-5	26-7	11 1/2	26-5	26-7	11 1/2	26-5	26-7	11 1/2	26-5	26-7	11 1/2	26-5	26-7	11 1/2	26-5	26-7
LENGTH "b" or "b1"	26	26-4	26-7	26	26-5	26-7	26	26-5	26-7	26	26-5	26-7	26	26-5	26-7	26	26-5	26-7
LENGTH "b1"	4	6	7	4	6	7	4	6	7	4	6	7	4	6	7	4	6	7
SIZE BAR #	11 1/2	17	17	11 1/2	17	17	11 1/2	17	17	11 1/2	17	17	11 1/2	17	17	11 1/2	17	17
SPACING	24	12	12	24	12	12	24	12	12	24	12	12	24	12	12	24	12	12
LENGTH	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
"d" DIST TOP SLAB-TOT. #	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
BARS BOTTOM SLAB-TOT. #	18	18	12	18	12	12	18	12	12	18	12	12	18	12	12	18	12	12
SIZE BAR #	58	62	62	58	62	62	58	62	62	58	62	62	58	62	62	58	62	62
SPACERS NUMBER	1.47	1.67	1.99	1.54	1.76	2.06	1.62	1.84	2.14	1.71	1.91	2.26	1.80	2.00	2.32	1.90	2.10	2.46
CONCRETE: C.Y. PER LIN. FT.	261	250	301	266	257	310	267	264	320	276	277	336	283	295	347	283	295	347
REINFORCING LBS. PER LIN. FT.	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62
QUAN.	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62

NOTE

FOR BOXES OF HEIGHT LESS THAN THAT SHOWN IN TABLE, USE NEXT GREATER TABLE HEIGHT SLABS, WALL DIMENSIONS AND REINFORCING STEEL. MAKE CHANGES TO BAR LENGTHS AND NUMBER OF SPACERS AND QUANTITIES AS NECESSARY. NUMBER OF "d" BARS IN TABLE IS SLAB TOTAL FOR ALL CELLS.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

TRIPLE BOX CULVERT  
DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Heaton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-78D

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

TRIPLE BOX CULVERT  
DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Heaton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-78E

SPAN 10' (ALL EASUREMENTS IN FEET AND/OR INCHES UNLESS NOTED OTHERWISE)

SPAN	10'															
	5'			6'			7'			8'			10'			
STRENGTH CLASSIFICATION	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	D
MAX FILL OVER TOP	2	11	20	2	11	20	2	11	20	2	11	20	2	11	20	28
TOP SLAB	T1	9	10	12	9	10	12	9	10	12	9	10	12	14 1/4	14 1/2	14 1/2
BOTTOM SLAB	T2	7 1/2	10 3/4	13	7 1/2	10 3/4	13	7 1/2	10 3/4	13	7 3/4	11	13	15	15	15
SIDEWALLS	T3	6	6	6	6	6	6	6	6	6	6	6	6	7 1/2	8 1/2	9
SIZE BAR #	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	7
SPACING	10 1/2	13	10	10 1/2	13	10	10 1/2	13	10	10 1/2	13	10	10 1/2	13	10	11
LENGTH	32-10	32-10	32-10	32-10	32-10	32-10	32-10	32-10	32-10	32-10	32-10	32-10	33-4	33-8	33-8	33-10
SIZE BAR #	6	7	7	6	7	7	6	7	7	6	7	7	6	7	7	7
SPACING	10 1/2	13	10	10 1/2	13	10	10 1/2	13	10	10 1/2	13	10	10 1/2	13	10	11
LENGTH "b"	32-6	32-7	32-10	32-6	32-7	32-10	32-6	32-7	33	32-10	32-11	33-4	33-4	33-11	33-11	33-5
LENGTH "b1"	32-2	32-7	32-11	32-2	32-7	32-11	32-2	32-7	33-1	32-6	32-11	33-5	32-11	33-5	33-5	33-11
SIZE BAR #	5	7	7	5	7	7	5	7	7	5	7	7	5	7	7	7
SPACING	10 1/2	13	10	10 1/2	13	10	10 1/2	13	10	10 1/2	13	10	10 1/2	13	10	11
LENGTH	21	21	21	21	21	21	21	21	21-1	21-2	21-2	21-3	21-4	21-5	21-5	21-6
"d" DIST TOP SLAB-TOT. #	27	15	15	27	15	15	27	15	15	27	15	15	27	15	15	15
BARS BOTTOM SLAB-TOT. #	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
SIZE BAR #	4	4	5	4	5	6	4	6	7	4	6	7	4	6	7	8
BARS	18	13	10	18	13	10	13	13	10	10 1/2	12	10	10 1/2	11	10 1/2	9
SPACERS NUMBER	68			68			72			76			94			102
CONCRETE: C.Y. PER LIN. FT.	1.98	2.40	2.82	2.06	2.48	2.90	2.13	2.55	3.03	2.34	2.77	3.23	2.68	3.18	3.73	4.22
REINFORCING LBS. PER LIN. FT.	358	372	470	359	379	482	367	391	502	377	402	514	421	453	577	632

NOTE

FOR BOXES OF HEIGHT LESS THAN THAT SHOWN IN TABLE, USE NEXT GREATER TABLE HEIGHT SLABS, WALL DIMENSIONS AND REINFORCING STEEL. MAKE CHANGES TO BAR LENGTHS AND NUMBER OF SPACERS AND QUANTITIES AS NECESSARY. NUMBER OF "d" BARS IN TABLE IS SLAB TOTAL FOR ALL CELLS.

SPAN 12' (ALL MEASUREMENTS IN FEET AND/OR INCHES UNLESS NOTED OTHERWISE)

SPAN	12'																			
	6'			7'			8'			9'			10'			12'				
HEIGHT	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	D	
STRENGTH CLASSIFICATION	2	10	18	2	10	18	2	10	18	2	11	20	2	11	20	2	11	20	30	
MAX FILL OVER TOP																				
TOP SLAB	T1	10 1/4	11 1/2	14	10 1/4	11 1/2	14	10 1/4	11 1/2	14	10 1/4	12	14 3/4	17 3/4	10 1/4	12	14 3/4	17 3/4	14 3/4	17 3/4
BOTTOM SLAB	T2	8 1/4	12	14 1/2	8 1/2	12	14 3/4	8 3/4	12 1/2	15 1/2	18 1/4	8 3/4	12 1/2	15 1/2	18 1/4	9	12 3/4	15 3/4	18 1/4	
SIDEWALLS	T3	6	6	6 1/2	6	6	7	7	7 1/2	8	8	8	9	10	10 1/2	9	9	10 1/2	12	
SIZE BAR #	7	6	7	7	6	7	7	6	7	7	6	7	7	6	7	7	6	7	8	7
SPACING	12	11	11 1/2	12	11	11 1/2	12	11	11 1/2	12	10 1/2	11	11 1/2	11	11 1/2	12	10 1/2	11	11 1/2	11
LENGTH	39-1	38-10	39-3	39-1	38-10	39-5	39-2	39-7	39-9	39-6	40-1	40-10	39-9	39-6	40-1	41	40-1	39-10	40-7	41-6
SIZE BAR #	7	7	8	7	7	8	7	7	8	7	7	8	7	7	8	7	7	8	7	8
SPACING	12	11	11 1/2	12	11	11 1/2	12	11	11 1/2	12	10 1/2	11	11 1/2	11	11 1/2	12	10 1/2	11	11 1/2	11
LENGTH	38-7	38-9	39-3	38-7	38-9	39-5	38-11	39-1	39-7	39-3	39-6	40-2	39-6	40-2	41	39-7	39-10	40-8	41-6	41-6
"a" DIST BARS	38-3	38-7	39-2	38-3	38-9	39-5	38-7	39-1	39-7	39	39-6	40-2	39	39-6	40-2	41	39-4	39-10	40-9	41-6
"b1" LENGTH	6	7	8	6	7	8	6	7	8	6	7	8	6	7	8	6	7	8	7	8
"c" SIZE BAR #	12	11	11 1/2	12	11	11 1/2	12	11	11 1/2	12	10 1/2	11	11 1/2	11	11 1/2	12	10 1/2	11	11 1/2	11
SPACING	25	25	25-1	25	25	25-2	25-2	25-3	25-4	25-4	25-4	25-8	25-4	25-4	25-6	25-6	25-6	25-9	25-6	26
LENGTH	36	15	15	36	15	15	36	15	15	36	15	15	36	15	15	36	15	15	36	15
"d" DIST BARS	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
BOTTOM SLAB-TOT. #	4	4	6	4	4	6	4	4	6	4	4	6	4	4	6	4	5	7	8	8
"e" SIZE BAR #	18	7	11 1/2	12	5 3/4	11 1/2	12	5 1/2	9	10	10 1/2	11	11 1/2	11	11 1/2	12	10 1/2	11	6 1/2	9
SPACING																				
SPACERS NUMBER	76	3.18	3.82	2.70	3.26	3.98	2.88	3.45	4.13	3.13	3.79	4.61	3.23	3.89	4.72	3.62	4.28	5.24	6.18	
CONCRETE: C.Y. PER LIN. FT.	2.60	489	505	628	497	516	637	505	527	654	582	719	872	548	606	745	575	636	793	963
REINFORCING LBS. PER LIN. FT.																				

NOTE

FOR BOXES OF HEIGHT LESS THAN THAT SHOWN IN TABLE, USE NEXT GREATER TABLE HEIGHT SLABS, WALL DIMENSIONS AND REINFORCING STEEL. MAKE CHANGES TO BAR LENGTHS AND NUMBER OF SPACERS AND QUANTITIES AS NECESSARY. NUMBER OF "d" BARS IN TABLE IS SLAB TOTAL FOR ALL CELLS.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

TRIPLE BOX CULVERT  
DETAILS No. 1

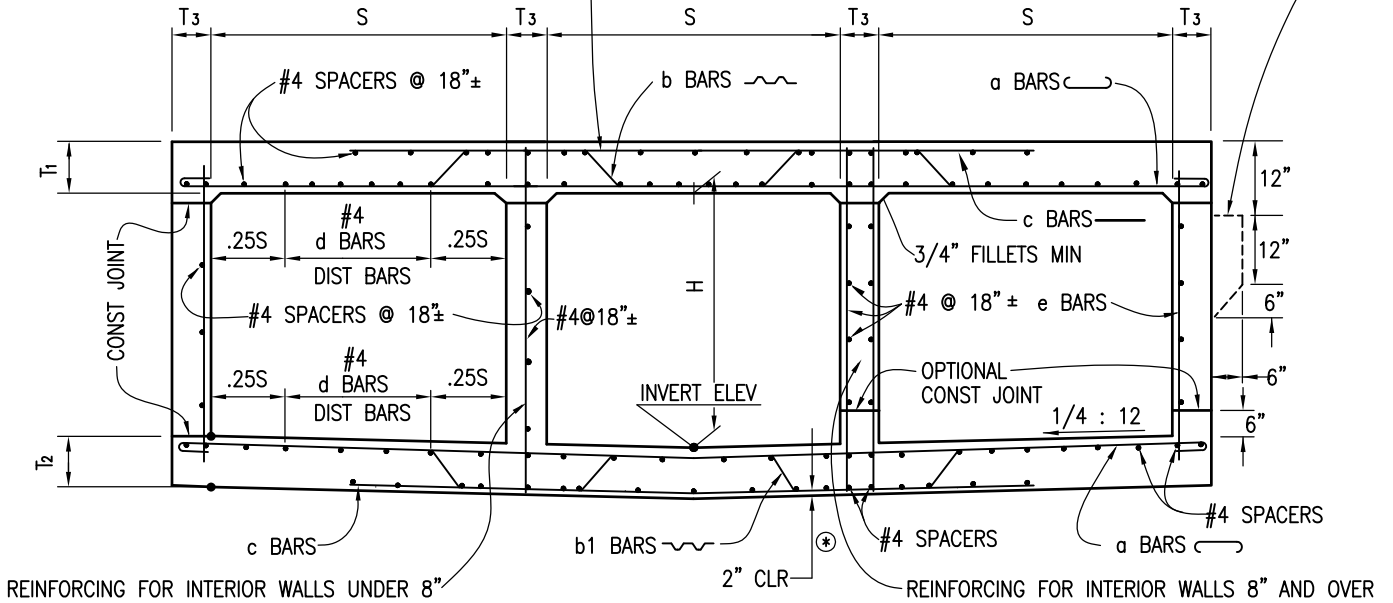
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. A. Hanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-78F

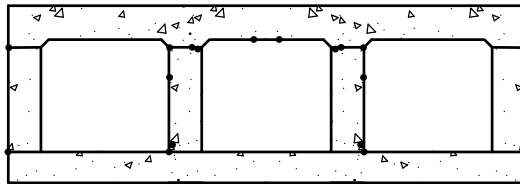
FOR COVER LESS THAN 2', EXTEND c BARS FULL LENGTH, TOP SLAB ONLY. PROVIDE ADDITIONAL #4 @ 18"± AND ADJUST QUANTITIES

PROVIDE PAVING NOTCH WHEN TOP IS EXPOSED AND WHERE PCC PAVEMENT OR APPROACH SLAB IS USED



TYPICAL SECTION

⊗ FOR REINFORCEMENT CLEARANCE, EXCEPT AT BOTTOM, SEE "MISCELLANEOUS DETAILS" ON D-81A AND D-81B.

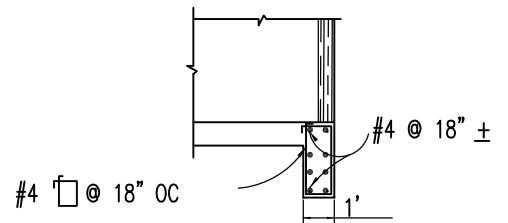
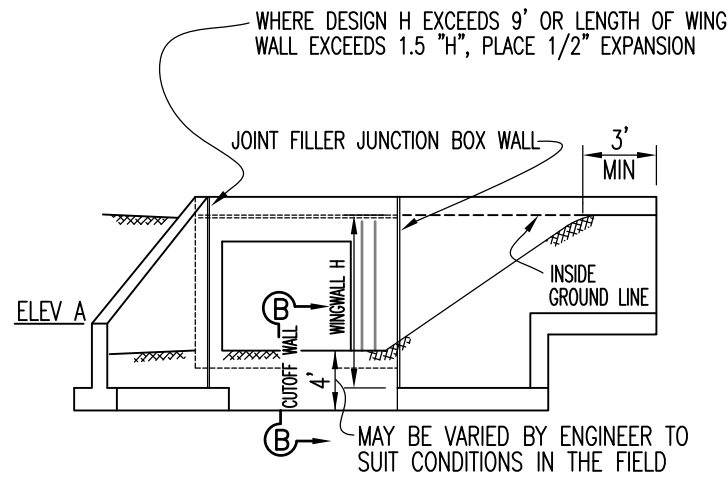
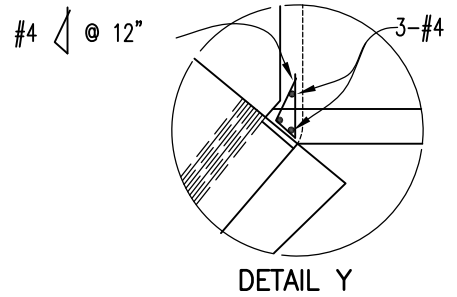
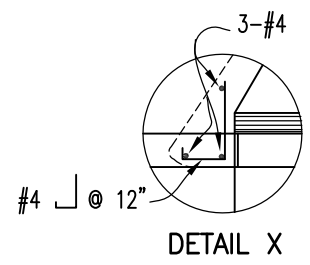
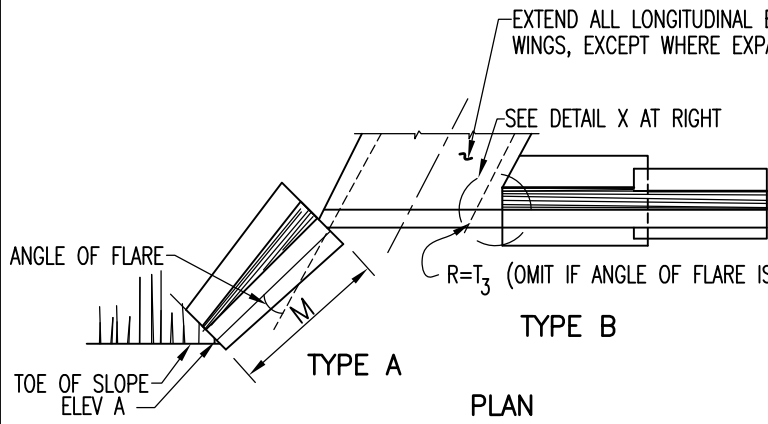


FLAT INVERT ALTERNATIVE  
(WHEN SPECIFIED)

NOTES

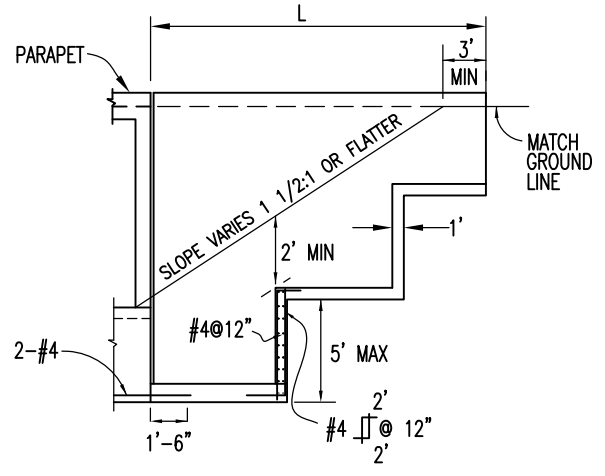
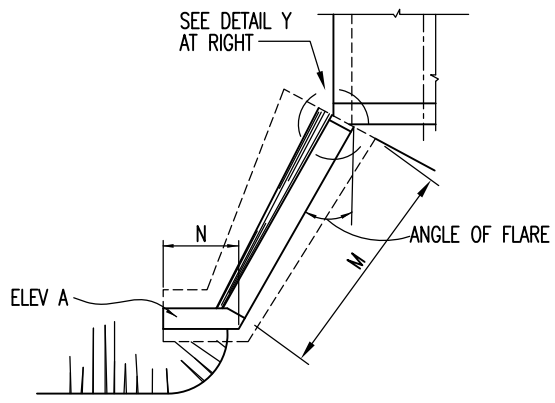
1. SPACERS SHALL BE #4 @ 18" OC IN TOP SLAB AND SIDEWALL MATS.
2. REMAINING #4 SPACERS SHALL BE QUALLY DISTRIBUTED IN BOTTOM SLAB MATS.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75	TRIPLE BOX CULVERT DETAILS NO.2		 Chairperson R.C.E. 19246 Date
Reviewed		T. Stanton	04/06			
Edited	S.S.	T. Regello	03/11			
Edited	T.R.	T. Regello	10/15			
Edited	M.W.	M. Widelski	10/18			
				DRAWING NUMBER		D-78G



TYPE A TYPE B  
END ELEVATION


SECTION B-B

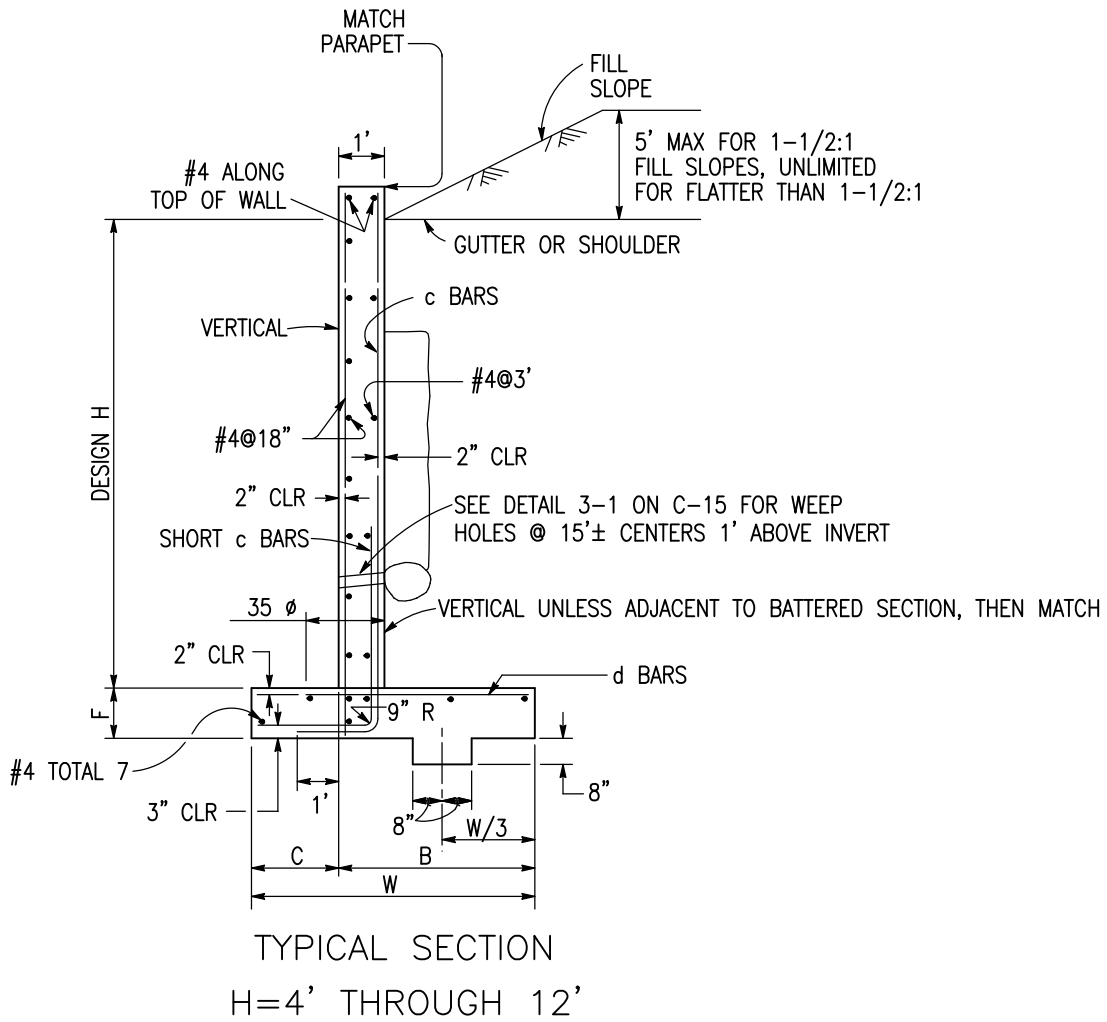


TYPE C

ELEVATION


**NOTE**  
USE TYPE 2 RETAINING WALL WHERE 1 1/2:1 SURCHARGE EXCEEDS 5\'.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75	<b>BOX CULVERT WINGWALL TYPES A, B &amp; C DETAILS NO. 1</b>		 Chairperson R.C.E. 19246 Date
Reviewed		T. Stanton	04/06			
Edited	S.S.	T. Regello	03/11			
Edited	T.R.	T. Regello	10/15			
Edited	M.W.	M. Widelski	10/18			
				DRAWING NUMBER		D-79A



**NOTE**

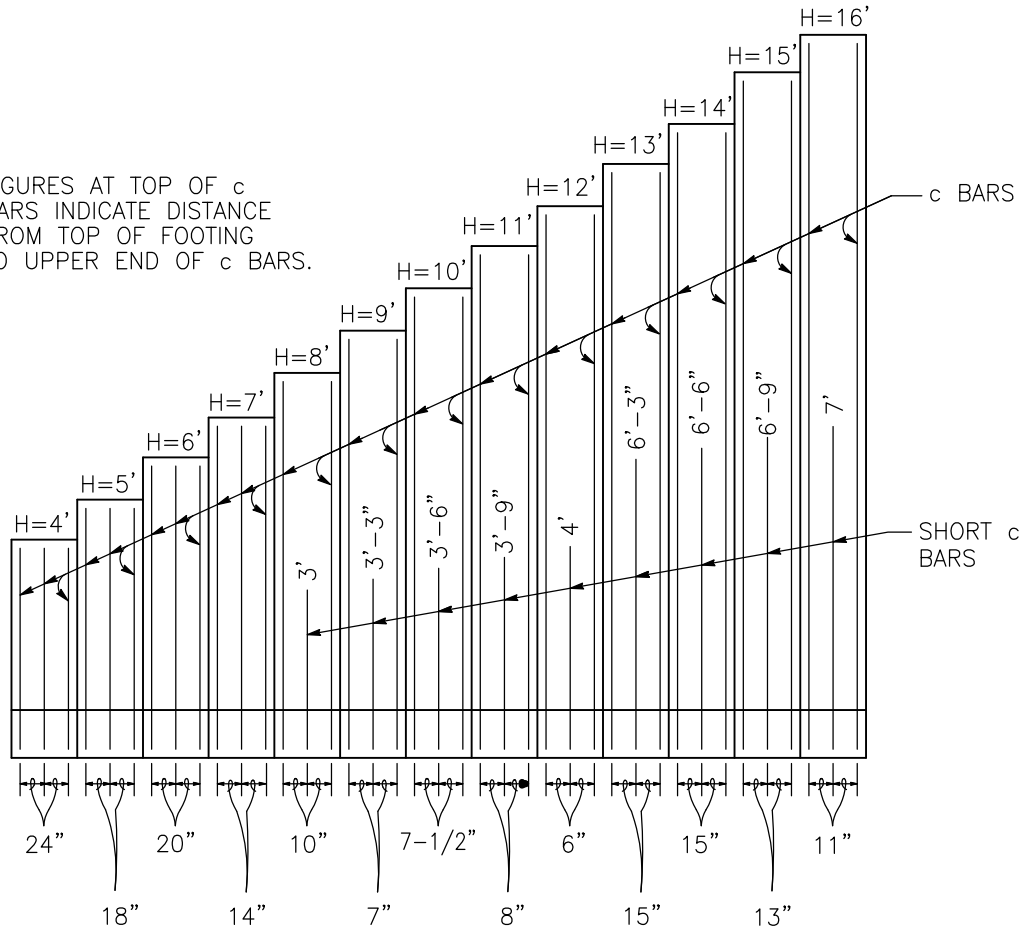
SEE D-79C IF BOX CULVERT WINGWALL HEIGHT EXCEEDS 12'.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75	BOX CULVERT WINGWALL TYPES A, B & C DETAILS NO. 2		 Chairperson R.C.E. 19246 Date
Reviewed		T. Stanton	04/06			
Edited	S.S.	T. Regello	03/11			
Edited	T.R.	T. Regello	10/15			
Edited	M.W.	M. Widelski	10/18			
				DRAWING NUMBER		D-79B



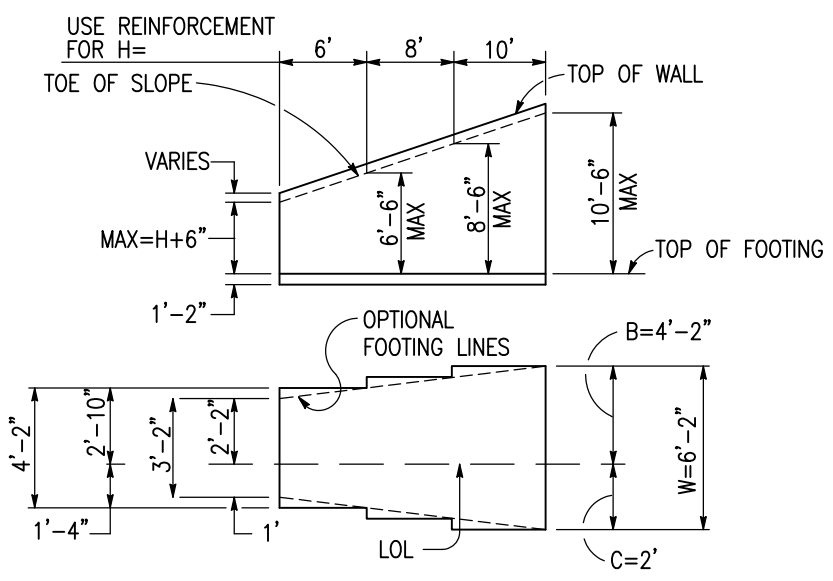


FIGURES AT TOP OF c BARS INDICATE DISTANCE FROM TOP OF FOOTING TO UPPER END OF c BARS.



TYPICAL LAYOUT EXAMPLE 1

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75	BOX CULVERT WINGWALL TYPES A, B & C DETAILS NO. 4		<i>M. Heaton</i> 10/25/2018	
Edited		T. Regello	02/09			Chairperson R.C.E. 19246	Date
Edited	S.S.	T. Regello	03/11				
Edited	T.R.	T. Regello	10/15				
Edited	M.W.	M. Widelski	10/18				
						DRAWING NUMBER D-79D	



TYPICAL LAYOUT EXAMPLE 2

NOTES

1. UNIT STRESSES:  $F_s = 20,000$  PSI,  $F_c = 1,200$  PSI,  $N = 10$ . MAXIMUM TOE PRESSURE = 1-1/2 TONS/SQ. FT. ELEVATIONS, LENGTH AND ANGLE OF FLARE OF WINGS MAY BE VARIED BY THE ENGINEER TO SUIT CONDITIONS ENCOUNTERED IN THE FIELD.
2. WALLS DESIGNED FOR 2' LIVE LOAD SURCHARGE, 1-1/2:1 SLOPING NOT TO EXCEED 5' IN ELEVATION PLUS 2' LIVE LOAD SURCHARGE, OR UNLIMITED 2:1 SURCHARGE. DIMENSIONS H, L, M, N, ELEVATION A AND ANGLE OF FLARE (AS APPLY) ARE SHOWN ON THE PLANS.
3. WALL HEIGHT MAY BE EXCEEDED BY 6" BEFORE GOING TO NEXT GREATER H. ELIMINATE CUTOFF WALL IF ADJACENT CHANNEL IS PAVED AND SKEW IS 20° MAXIMUM.

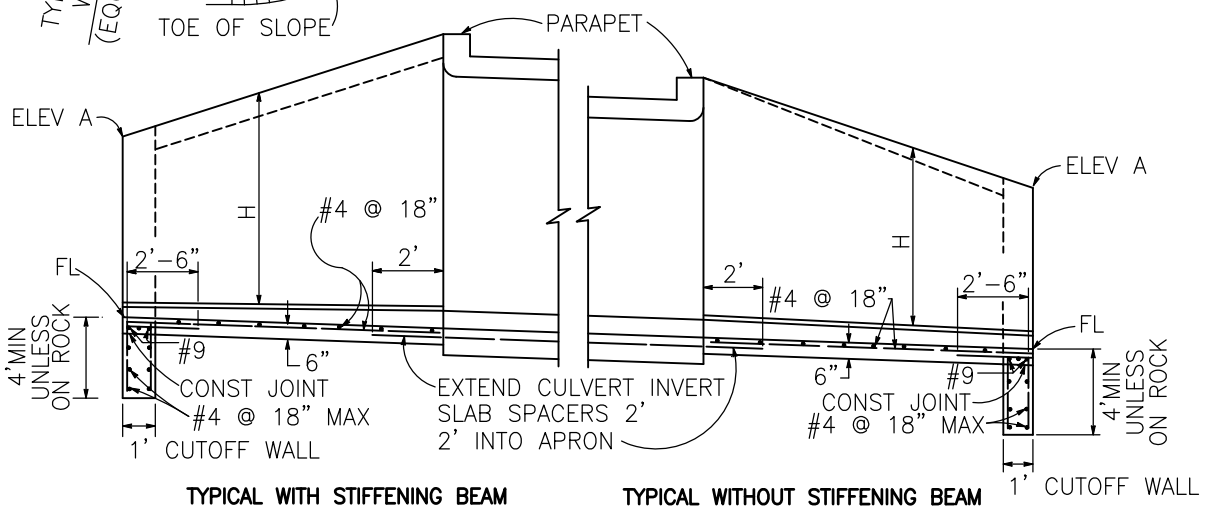
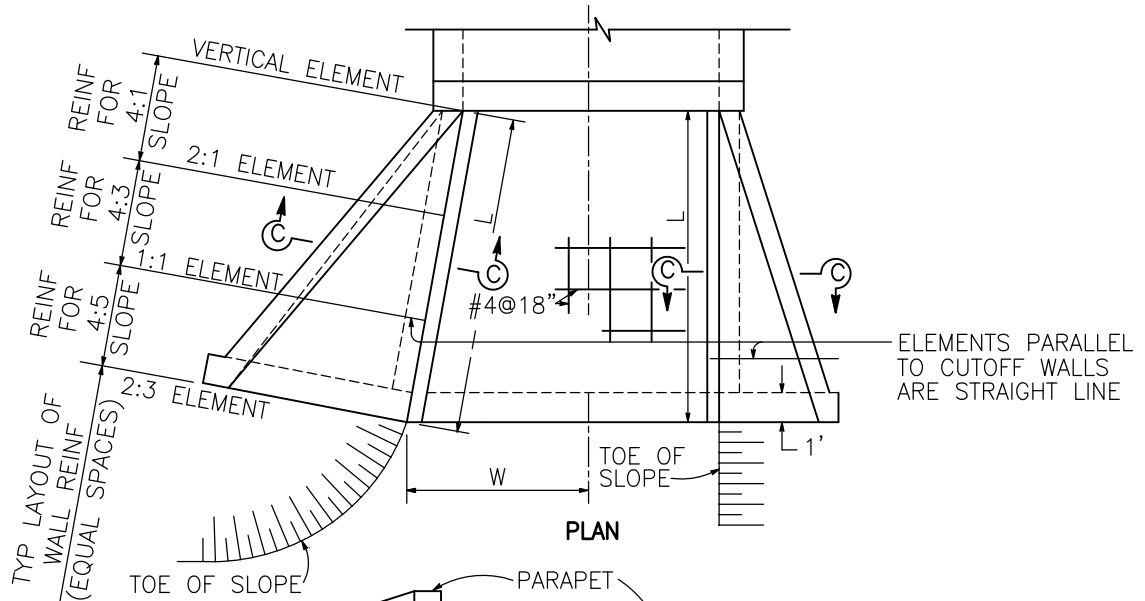
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75			
Edited		T. Regello	02/09	BOX CULVERT WINGWALL TYPES A, B & C DETAILS NO. 5	<i>M. Heaton</i> 10/25/2018	
Edited	S.S.	T. Regello	03/11		Chairperson R.C.E. 19246 Date	
Edited	T.R.	T. Regello	10/15		DRAWING NUMBER	D-79E
Edited	M.W.	M. Widelski	10/18			

H	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
W	3'-2"	3'-8"	4'-2"	4'-8"	5'-2"	5'-8"	6'-2"	6'-8"	7'-2"	7'-8"	8'-2"	8'-8"	9'-2"
C	1'	1'-2"	1'-4"	1'-6"	1'-8"	1'-10"	2'	2'-2"	2'-4"	2'-6"	2'-8"	2'-10"	3'
B	2'-2"	2'-6"	2'-10"	3'-2"	3'-6"	3'-10"	4'-2"	4'-6"	4'-10"	5'-2"	5'-6"	5'-10"	6'-2"
F	←————— 1'-2" —————→												
BATTER	←————— NONE —————→									←————— 1/2 : 12 —————→			
S	1'	1'	1'	1'	1'	1'	1'	1'	1'	1'-6 1/2"	1'-7"	1'-7 1/2"	1'-8"
c BARS	#4@24	#4@18	#5@20	#5@14	#5@10	#5@7	#6@7 1/2	#7@8	#7@6	#9@15	#10@15	#10@13	#10@11
d BARS	#4@24	#4@18	#5@20	#5@14	#5@10	#6@14	#7@15	#8@16	#7@12	#8@15	#9@15	#10@13	#9@11
CONC CY/LF	0.32	0.38	0.44	0.49	0.55	0.61	0.67	0.73	0.79	1.02	1.10	1.18	1.26
REINF #/LF	13	16	19	25	30	37	49	62	76	73	90	104	125

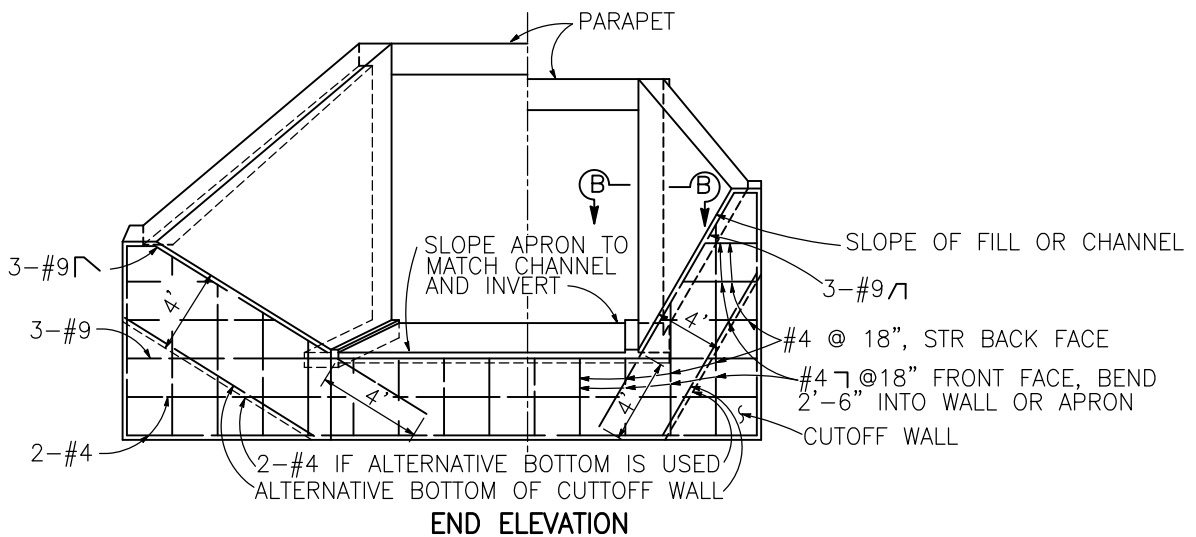
**NOTE**

QUANTITIES DO NOT INCLUDE THAT PORTION ABOVE THE DESIGN H LIMIT.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		BOX CULVERT WINGWALL TYPES A, B & C DETAILS NO. 6
Edited		T. Regello	02/09	Chairperson R.C.E. 19246 Date	
Edited	S.S.	T. Regello	03/11	DRAWING NUMBER	
Edited	T.R.	T. Regello	10/15	D-79F	
Edited	M.W.	M. Widelski	10/18		



PART LONGITUDINAL SECTION



END ELEVATION

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Reviewed		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

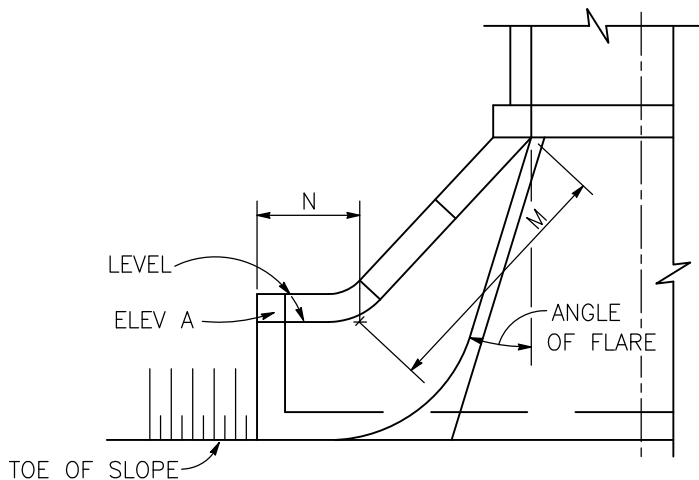
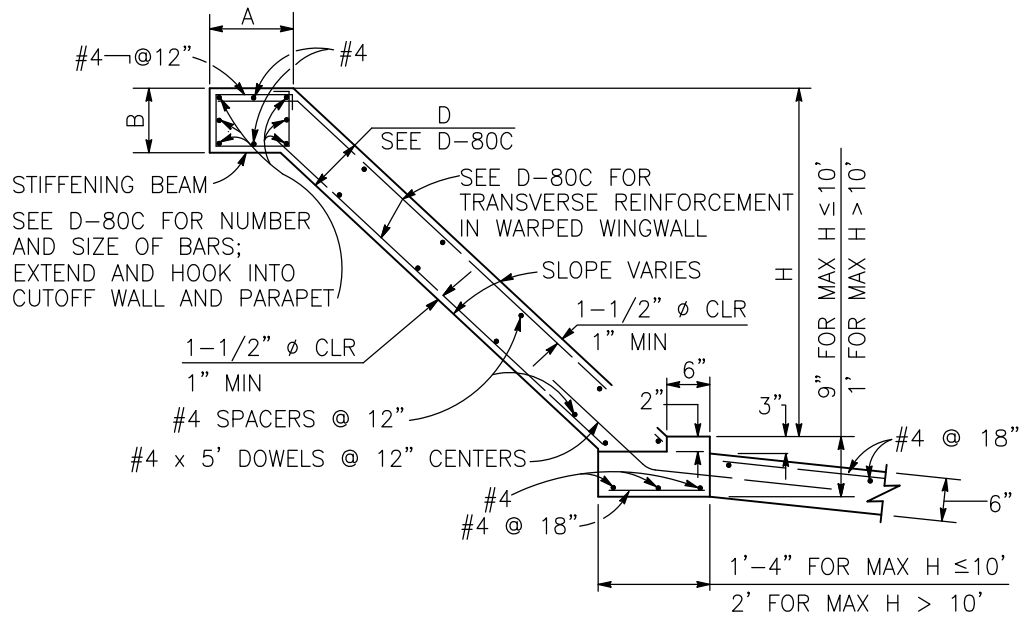
SAN DIEGO REGIONAL STANDARD DRAWING

BOX CULVERT WARPED WINGWALL  
 DETAILS NO. 1

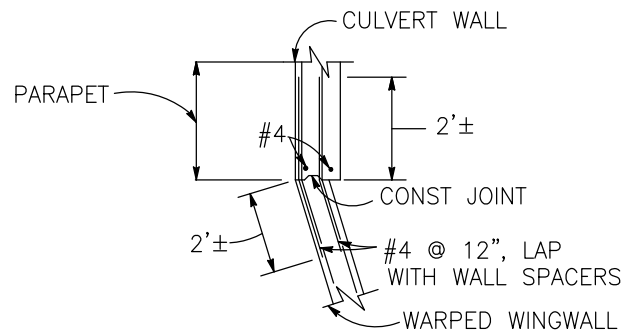
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
 Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-80A



USE WHERE ADDITIONAL PROTECTION TO TOE OF EMBANKMENT IS REQUIRED



**NOTES**

1. WALLS DESIGNED FOR 2' SURCHARGE; EARTH DENSITY = 120 LBS./CU. FT.; EQUIVALENT FLUID PRESSURE = 36 LBS./CU. FT.
2. VARY D OF WARPED WALL UNIFORMLY FROM THAT AT CUTOFF WALL TO THAT AT CULVERT, FOR MAXIMUM H > 12'.
3. WHERE ABRASION IS ANTICIPATED INCREASE APRON THICKNESS TO 7" MINIMUM TO PROVIDE 2" MINIMUM REINFORCEMENT COVERAGE.
4. DIMENSIONS L, W, H, M, N, ELEVATION A, ANGLE OF FLARE, AND END SLOPE (AS APPLY) ARE SHOWN ON THE PLANS.
5. CONCRETE SHALL BE 560-C-3250 AND REINFORCING STEEL SHALL BE MINIMUM GRADE 40 (UNLESS SPECIFIED OTHERWISE).

Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75
Reformatted		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

BOX CULVERT WARPED WINGWALL  
DETAILS No. 2

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-80B

WALL DIMENSIONS AND REINFORCING								
ELEMENT SLOPE	H	8' OR LESS	10'	12'	14'	16'	18'	20'
1/4:1	FRONT FACE REINF	#4@12	#4@ 7	#5@ 7	#5@ 5	#6@ 6	#7@ 7	#7@ 6
	REAR FACE REINF	#4@12	#4@12	#4@12	#4@12	#4@12	#4@12	#4@12
3/4:1	FRONT FACE REINF	#4@12	#4@12	#4@12	#4@12	#4@10	#4@ 8	#4@ 6
	REAR FACE REINF	#4@12	#4@12	#4@12	#4@10	#4@ 7	#4@ 6	#5@ 8
1-1/4:1	FRONT FACE REINF	#4@12	#4@12	#4@12	#4@12	#4@12	#4@12	#4@12
	REAR FACE REINF	#4@ 8	#4@ 8	#4@ 5	#5@ 6	#6@ 7	#6@ 6	#7@ 6
D AT CUTOFF WALL		6"	6"	6"	7-1/2"	8"	9-1/2"	11"
D AT CULVERT		6"	6"	6"	8"	9-1/2"	11"	1'-1"

STIFFENING BEAM DIMENSIONS AND REINFORCING										
H MAX	L	12'	14'	16'	18'	20'	25'	30'	35'	40' OR MORE
6'		NO BEAM. PLACE 2-#6 IN EACH								
8'		FACE ALONG TOP OF								
10'		WALL.								
12'		A=1'								
14'		B=9"								
16'		TOTAL 6-#6								
18'		TOTAL 6-#7								
20'		TOTAL 8-#9								

Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75
Reviewed		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

BOX CULVERT WARPED WINGWALL  
DETAILS No. 3

RECOMMENDED BY THE SAN DIEGO  
REGIONAL STANDARDS COMMITTEE

*M. Heaton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING  
NUMBER D-80C

## GENERAL NOTES

**QUANTITIES:** Quantities are for the sloped invert slab and do not include splices in the longitudinal bars, nor temperature reinforcement for exposed top culvert, nor concrete or reinforcement for parapets or cutoff walls.

**SPECIAL COVERAGE:** Box standard plans are not to be used for culverts in a corrosive environment or where there is a severe abrasive flow condition.

**DESIGNATION:** Show on plans as span x height-strength classification x length (e.g. 4 x 4-A x 60'), followed by alternatives.

**ALTERNATIVES:** Invert will be sloped unless "Trapezoidal Invert", "Flat Invert" or "V Invert" is included in designation. Ends of culvert will be rounded unless "Square Ends" are designated. Parapets will be as shown unless "\_\_\_ ft. parapet" is designated in plans. Such designations may be different for inlet and outlet ends.

**REINFORCEMENT PLACEMENT:** Main Reinforcement is positioned transverse or, for curved culverts, radial. When radial reinforcing spacing is measured along C/L.

## CONSTRUCTION NOTES

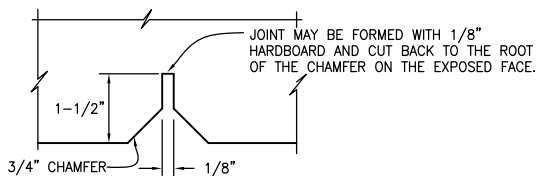
**CONCRETE:** Bottom slab & walls shall be Class 560-B-3250. Top slab shall be Class 560-C-3250.

**EXPANSION JOINTS:** Bottom Slab - No expansion joints shall be placed.

Top Slab and Walls - When cover is less than span length, place 1/2" expansion joint filler at 50'± centers outside the paved roadway lanes and place weakened plane joints per Detail A of Weakened Planes Detail 3-2 of C-15 at 30'± centers under paved roadway lanes. When cover depth is greater than span length, place 1/2" expansion joint filler at 30'± centers and additional 1/2" expansion joints at locations of change of foundation character as directed by the Engineer.

**CONSTRUCTION LOADS:** Not permitted until concrete has reached a strength of 3,000 p.s.i. or age of 28 days, whichever occurs first, and falsework plans have been submitted by the Contractor to the Engineer and approved.

**CONSTRUCTION JOINTS:** Temporary joints may be permitted if normal (or radial) to C/L of RCB. Otherwise, the Contractor is to submit a proposal for consideration.



DETAIL A OF WEAKENED PLANES DETAIL 3-2  
(PORTION OF STANDARD DRAWING C-15)

## DESIGN NOTES

### SPECIFICATIONS

**DESIGN:** AASHTO's publication titled A Policy on Geometric Design of Highways, dated 1984, with revisions as supplemented by State of California Bridge Planning and Design Manual.

Sections designed for culvert in a trench on hard foundation or culvert untrenched on yielding foundation. Special design will be required for culverts on piles or rock foundations.

### LOADING

**LIVE LOAD:** For legal highway loads, use HS20-44 or alternative with 30% impact for all cover depths with no impact on invert.

**COVER LESS THAN 2':** Wheel load distribution on the top slab is  $E=0.175S+3.2'$  longitudinally and concentrated along the span. Wheel load distribution on the invert slab is 7.5' longitudinally and uniformly over the breadth of the culvert.

**COVER 2' OR MORE:** Wheel loads distributed uniformly over a square, the sides of which are 1.75 times the depth of cover, but not less longitudinally than E on the top slab, or 7.5' on the invert slab when such areas from several wheel concentrations overlap. The total load shall be considered as uniformly distributed over the area defined by the outside limits of the individual areas, but the overall longitudinal dimension shall not exceed the total length of the supporting slab. Neglect live load, on single spans when cover is more than 8' and exceeds span, and on multiple spans when cover exceeds distance between exterior walls.

**DEAD LOAD:** Earth load of 120 pcf and an equivalent fluid pressure of 36 pcf, reduced to 84 pcf and 25 pcf respectively for clear spans of 20' or less.

**UNIT STRESSES:**  $F_s = 20,000$  psi,  $N = 10$   
 $F_c = 1,200$  psi

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

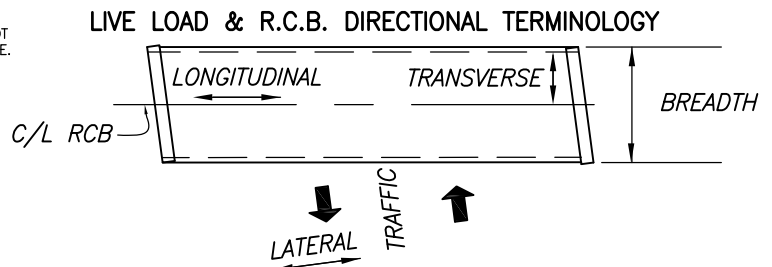
Distribution "d" bars expressed as a percent of main positive reinforcement.


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

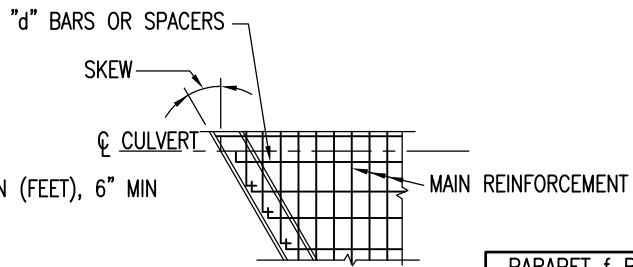
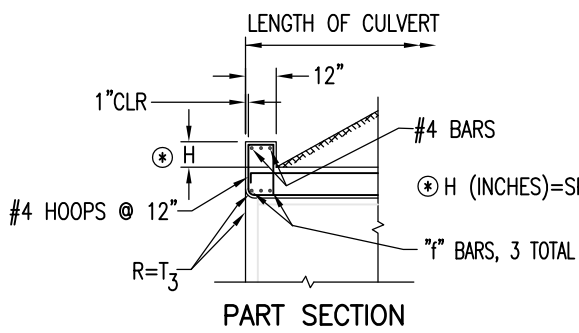
Classification "B" to "E": Top and bottom slabs #4 @ 18" max.

### USE OF STANDARD DRAWING

"Strength Classification," as symbolized by the letters ("A", "B", "C" or "D") at the top of the data table is merely a convenient designation for a particular structural section for a culvert of any given opening. It is dictated by the cover or depth of fill over the the top slab.

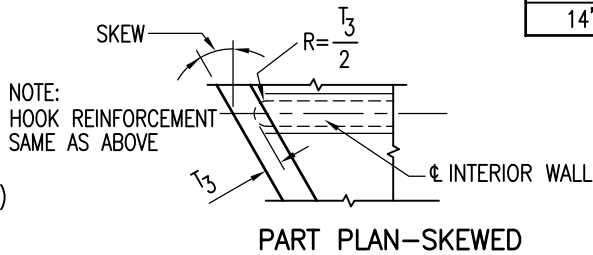
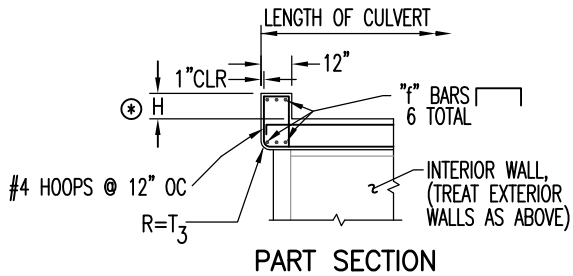


Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	
ORIGINAL		Kercheval	12/75	<b>BOX CULVERT</b> <b>MISCELLANEOUS DETAILS No. 1</b>	
Reviewed		T. Stanton	04/06		
Edited	S.S.	T. Regello	03/11		
Edited	T.R.	T. Regello	10/15		
Edited	M.W.	M. Widelski	10/18		
				RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE  10/25/2018 Chairperson R.C.E. 19246 Date	
				DRAWING NUMBER <b>D-81A</b>	

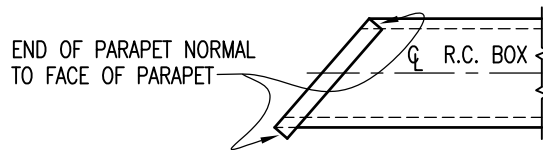


PARAPET f BAR SIZE				
SPAN (S)	SKEW ANGLE	0° TO 15°	16° TO 30°	31° TO 45°
	4'		#4	#4
6'		#4	#4	#5
8'		#4	#5	#6
10'		#5	#6	#7
12'		#6	#7	#8
14'		#7	#8	#9

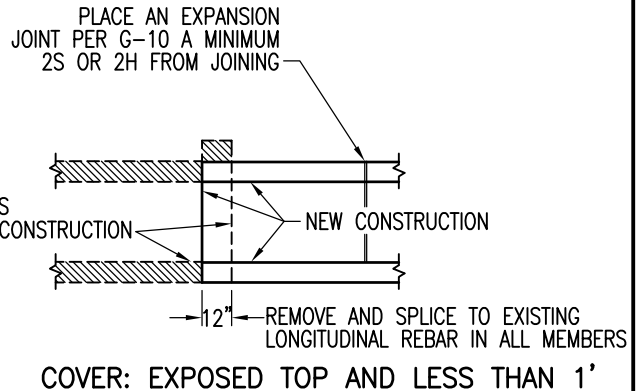
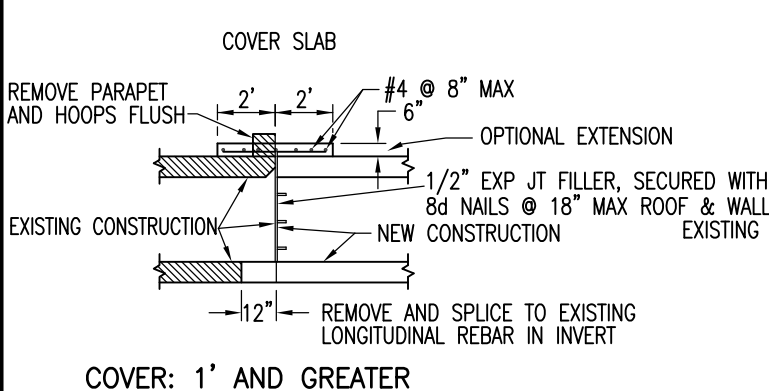
PARAPET DETAILS FOR SINGLE SPAN CULVERTS



PARAPET DETAILS FOR MULTIPLE SPAN CULVERTS



PARAPET DETAIL FOR SKEWED CULVERTS W/O WINGWALLS



CULVERT EXTENSION  
20° SKEW MAXIMUM

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Reviewed		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

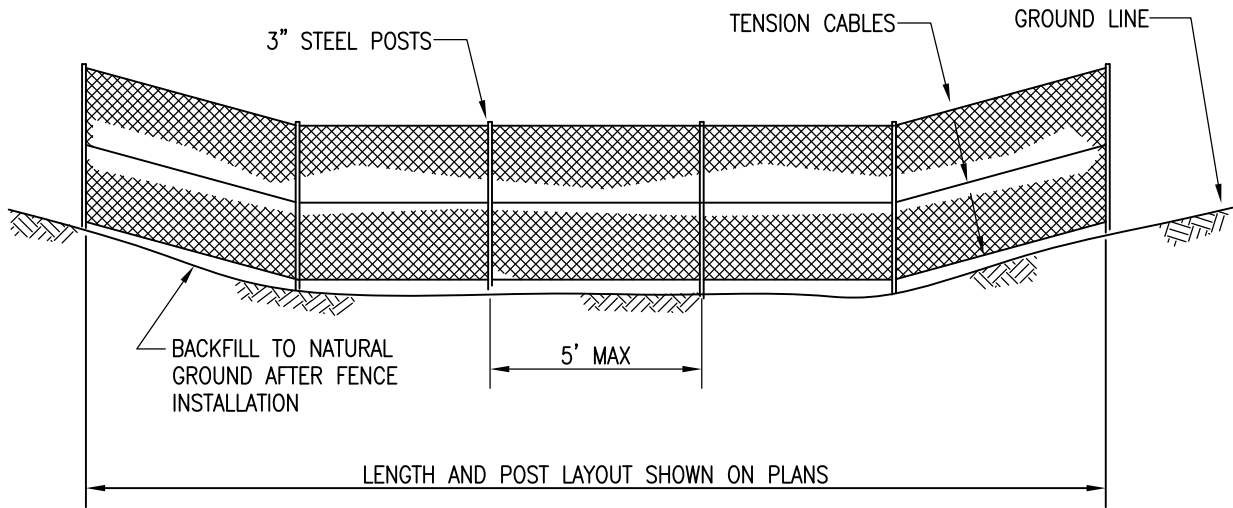
BOX CULVERT  
MISCELLANEOUS DETAILS NO. 2

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

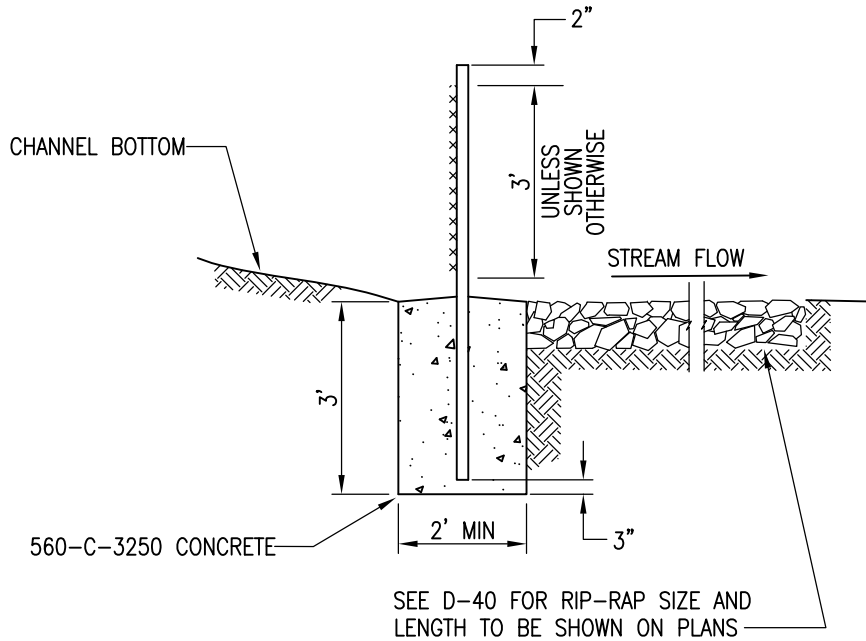
*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-81B





ELEVATION

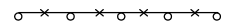


SECTION

NOTES

1. FENCE FABRIC SHALL BE 2" mesh, 9 GAGE GALVANIZED STEEL WIRE, PLACED ON THE UPSTREAM SIDE OF THE POSTS AND TENSION CABLES.
2. TENSION CABLE SHALL BE 5/16"  $\phi$  STEEL @ 18" OC, SECURED AT ENDS WITH CABLE CLAMPS. SECURE FENCE TO CABLE WITH 12 GAGE GALVANIZED STEEL WIRE LOOPED @ 6" OC.
3. POSTS SHALL BE 3" STEEL PIPE, 5.79 LBS./FT. FILL WITH MORTAR AFTER PLACING.
4. FENCE FABRIC SHALL BE SECURED TO POSTS WITH 9 GAGE WIRE CLIPS @ 9" OC.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		H. Hecht	10/82
Reviewed		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

DEBRIS FENCE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

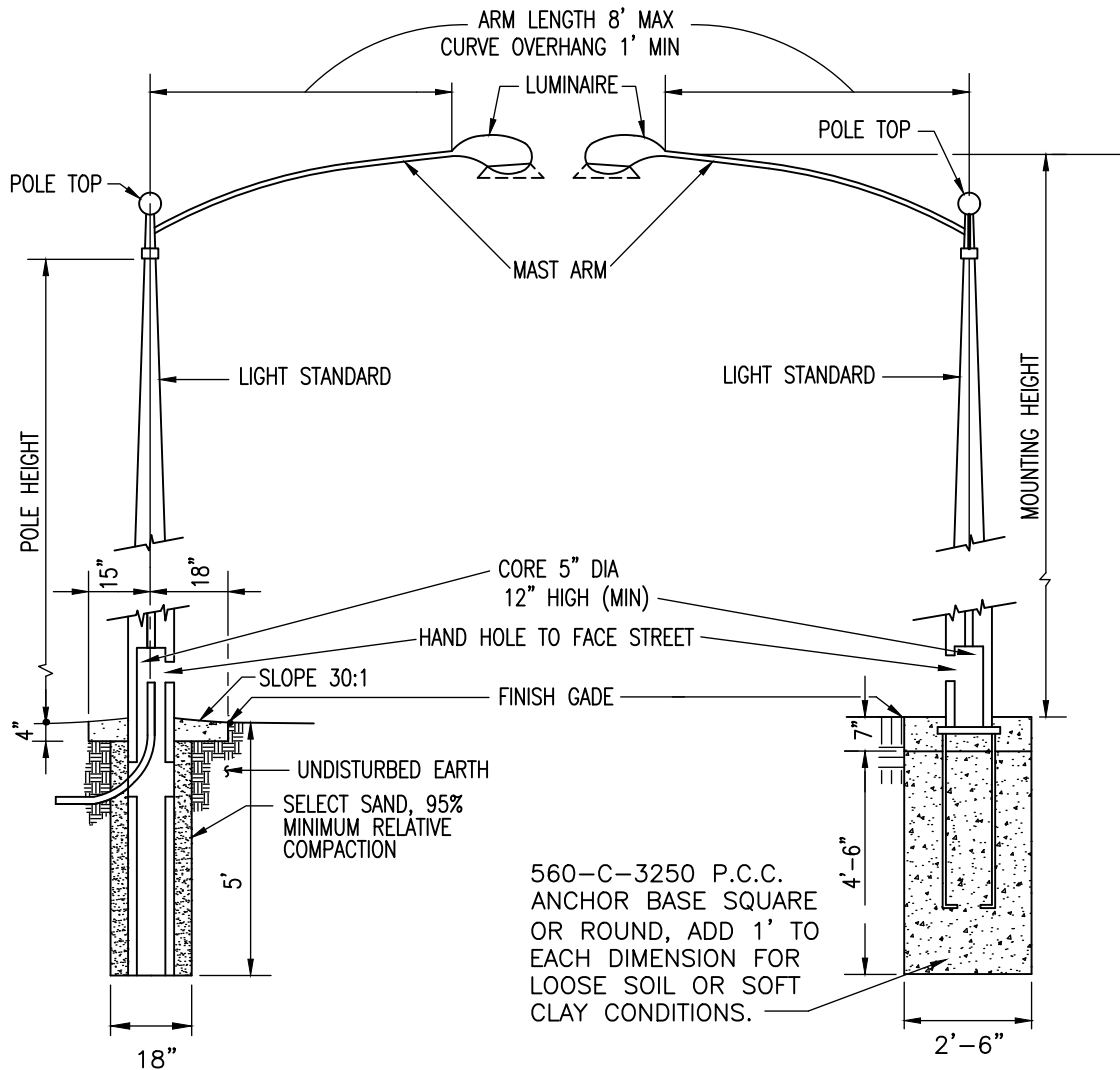
*M. Heaton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-82

# **ELECTRICAL SYSTEMS**

**ELECTRICAL SYSTEMS**

**E**

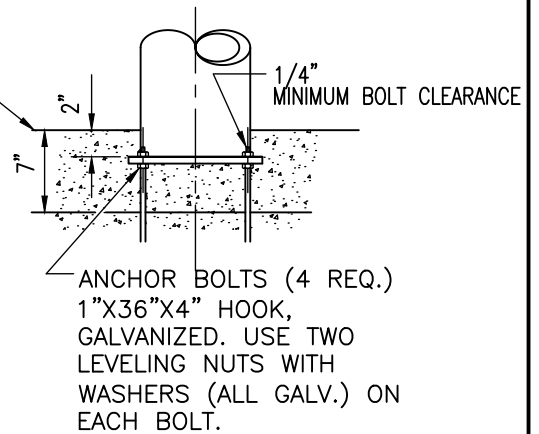


**DIRECT BURIAL FOUNDATION**

**ANCHOR BASE FOUNDATION**

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

FINISHED GRADE  
ANCHOR BOLTS MUST  
NOT PROTRUDE



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Reviewed		T. Stanton	04/06
Delete Metric		D. Gerschoffer	06/12
Reviewed		D. Gerschoffer	06/18

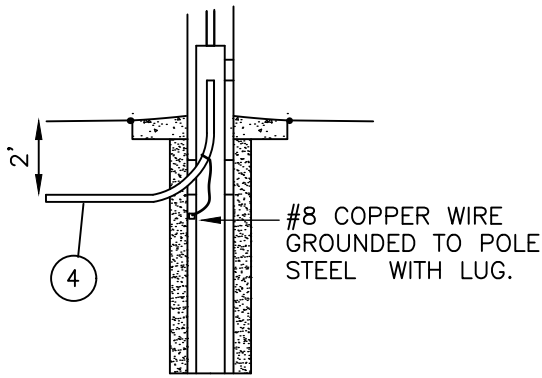
SAN DIEGO REGIONAL STANDARD DRAWING

STREET LIGHTING  
STANDARD

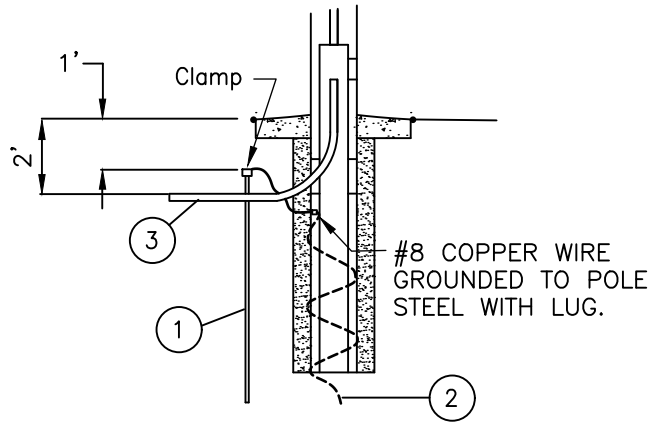
RECOMMENDED BY THE SAN DIEGO  
REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING  
NUMBER E-01

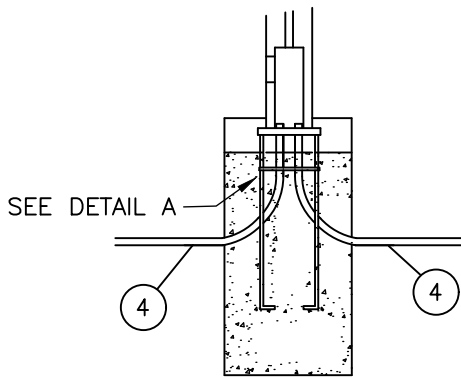


STEEL CONDUIT

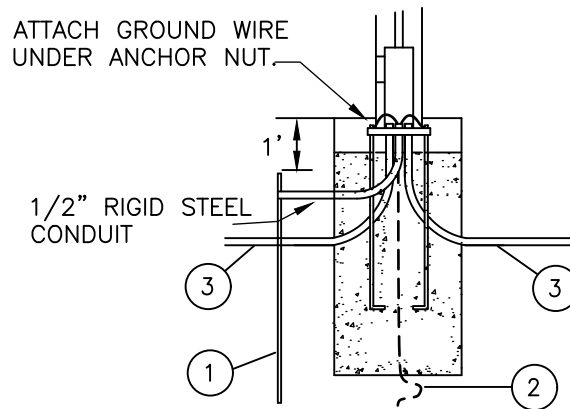


NON-METALLIC CONDUIT

DIRECT BURIAL FOUNDATION



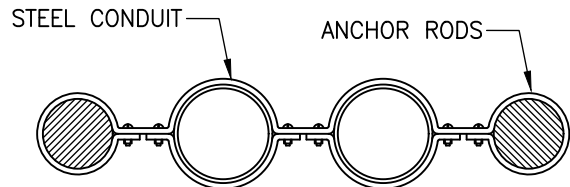
STEEL CONDUIT



NON-METALLIC CONDUIT

ANCHOR BASE FOUNDATION

- ① 3/4" X 8' COPPER COVERED STEEL GROUND ROD.
- ② ALTERNATE GROUND: 15' NO. 4 STRANDED COPPER WIRE, COILED.
- ③ APPROVED NON-METALLIC CONDUIT.
- ④ STEEL CONDUIT.



DETAIL A

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Delete Metric		D. Gerschoffer	06/12
Reviewed		D. Gerschoffer	12/15
Reviewed		D. Gerschoffer	06/18

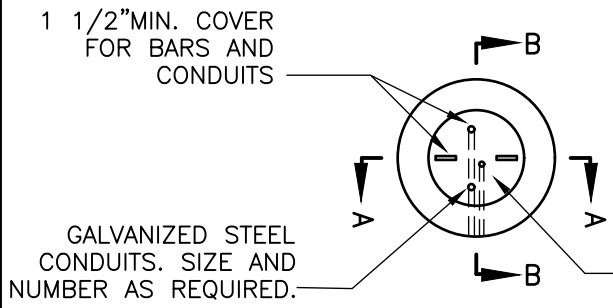
SAN DIEGO REGIONAL STANDARD DRAWING

GROUNDING  
OF CONCRETE LIGHTING STANDARDS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER E-02



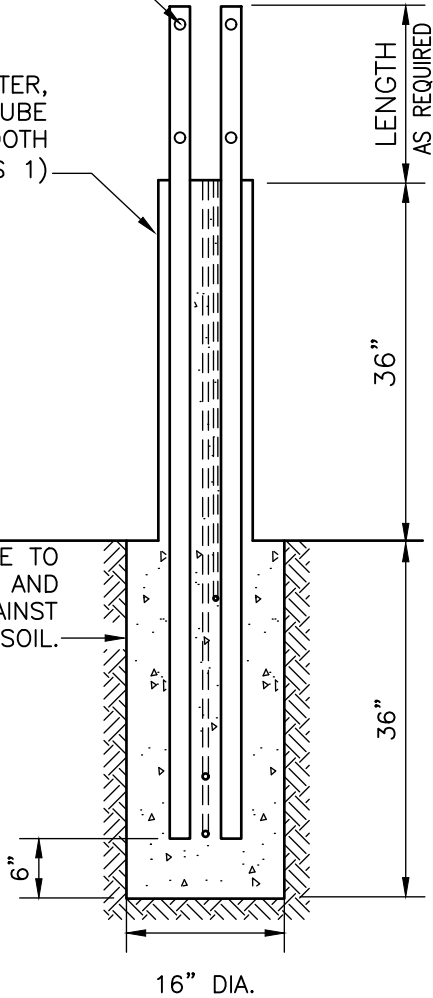
PLAN

1" GALVANIZED STEEL CONDUIT FOR SERVICE GROUND (WHERE REQUIRED).

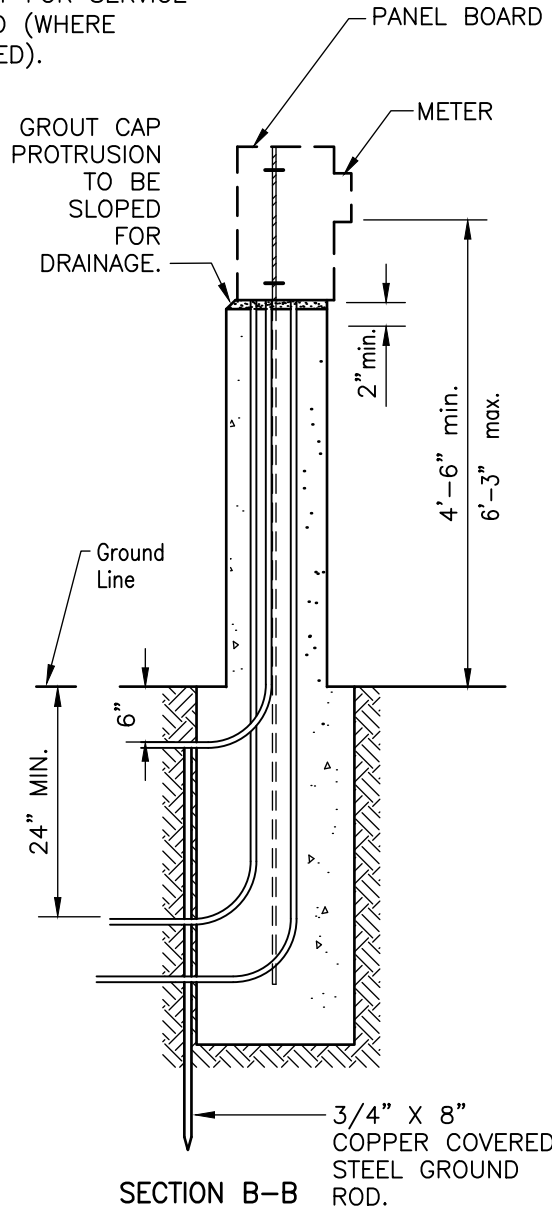
1/4" X 2" GALVANIZED STEEL BARS.

10" DIAMETER, USE SONOTUBE FOR SMOOTH FINISH (CLASS 1)

PERMISSIBLE TO AUGER HOLE AND POUR AGAINST SOIL.



SECTION A-A  
STEEL & CONCRETE DIMENSIONS



SECTION B-B  
CONDUIT & EQUIPMENT

NOTE: CONCRETE SHALL BE CLASS 560-C-3250

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Delete Metric		D. Gerschoffer	06/12
Reviewed		D. Gerschoffer	12/15
Reviewed		D. Gerschoffer	06/18

SAN DIEGO REGIONAL STANDARD DRAWING

PEDESTAL FOR ELECTRICAL EQUIPMENT

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

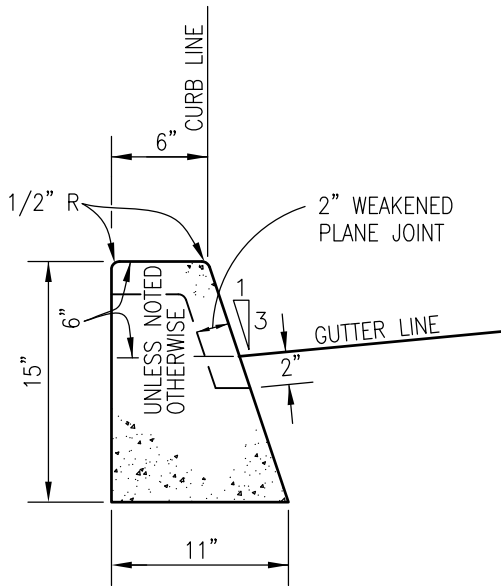
*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER E-03

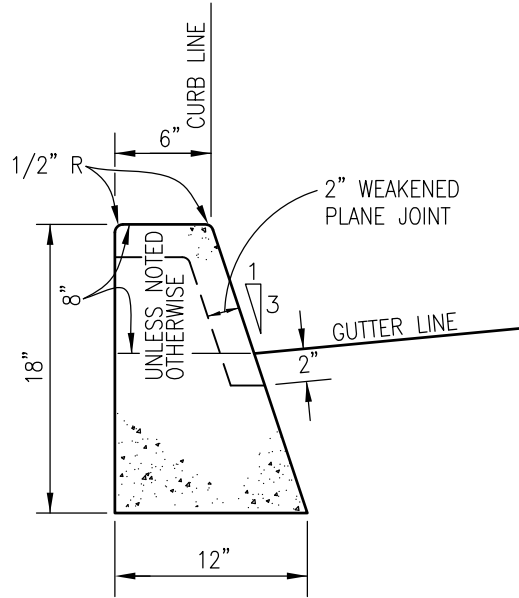
# **GENERAL SURFACE IMPROVEMENTS**

**G**

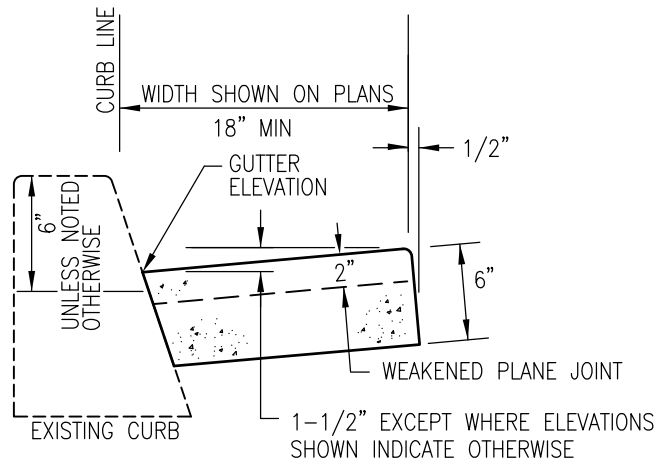
**GENERAL SURFACE IMPROVEMENTS**



**6" CURB**  
AREA=0.89 Sq. Ft.



**8" CURB**  
AREA=1.12 Sq. Ft.



**GUTTER**

**NOTES:**

1. CONCRETE SHALL BE 520-C-2500.
2. SEE STANDARD DRAWINGS G-9 AND G-10 FOR JOINT DETAILS.
3. SLOPE TOP OF CURB 2% MAX TOWARD GUTTER.

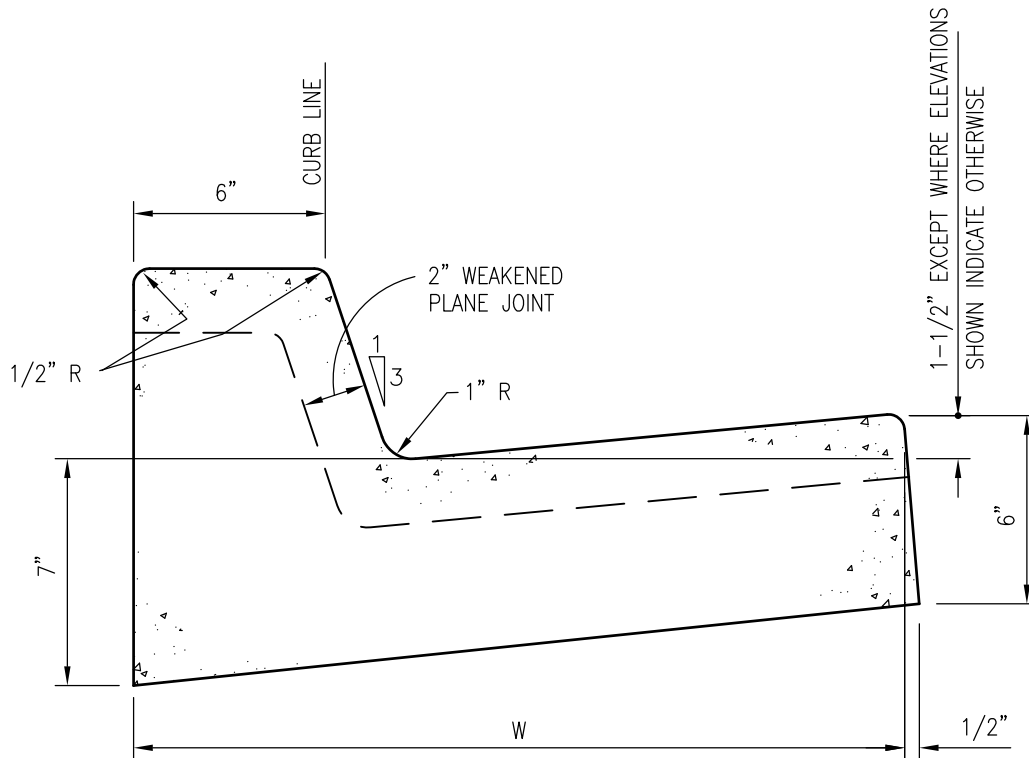
LEGEND ON PLANS

Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
ADD METRIC		T. STANTON	03/03
REFORMATTED		T. STANTON	04/06
UPDATED	MR	MR/CV	11/11
UPDATED	CV	CV	12/15

SAN DIEGO REGIONAL STANDARD DRAWING

**CURBS AND GUTTER – SEPARATE**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
<i>M. Heaton</i>	10/25/2018
Chairperson R.C.E. 19246	Date
DRAWING NUMBER	G-01



TYPE	W	*AREA
G	24"	1.34 SQ. FT.
H	30"	1.60 SQ. FT.

\* 6" CURB HEIGHT

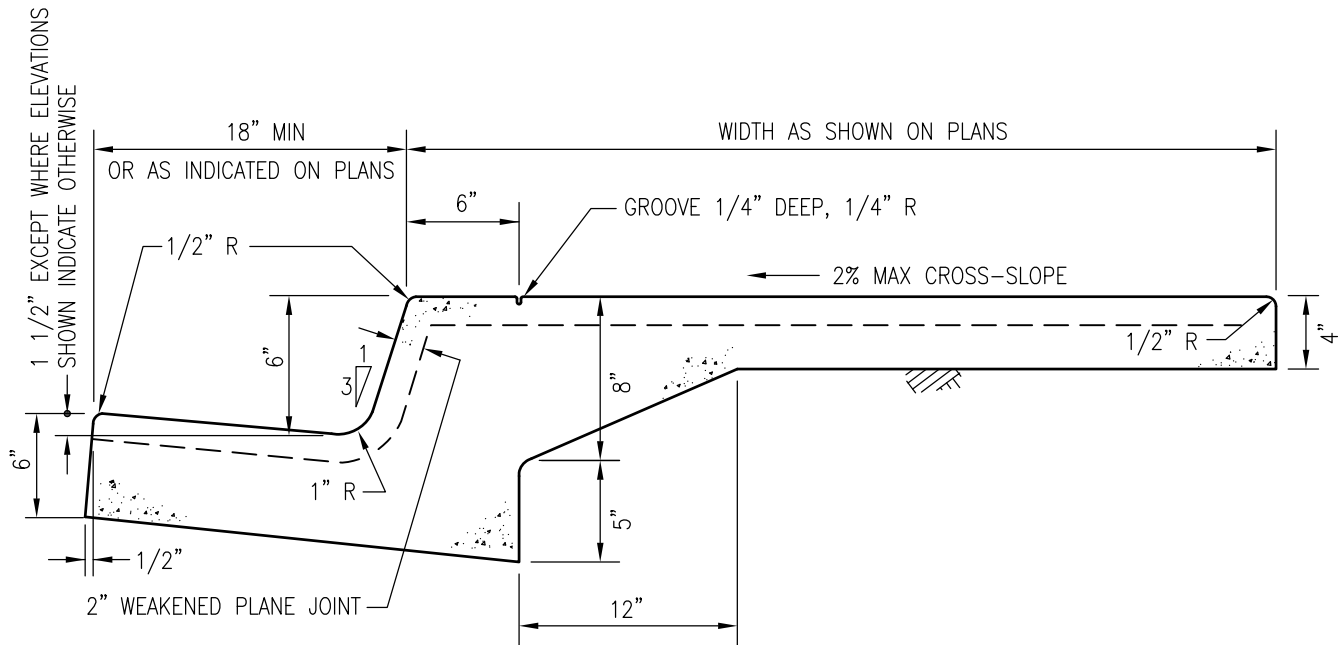
**NOTES:**

1. CONCRETE SHALL BE 520-C-2500.
2. SEE STANDARD DRAWINGS G-9 AND G-10 FOR JOINT DETAILS.
3. SLOPE TOP OF CURB 2% MAX TOWARD GUTTER.

LEGEND ON PLANS

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		KERCHEVAL	12/75		CURB AND GUTTER - COMBINED
ADD METRIC		T. STANTON	03/03		
REFORMATTED		T. STANTON	04/06	DRAWING NUMBER	
UPDATED	MR	MR/CV	11/11	G-02	
UPDATED	CV	CV	12/15		

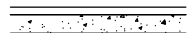




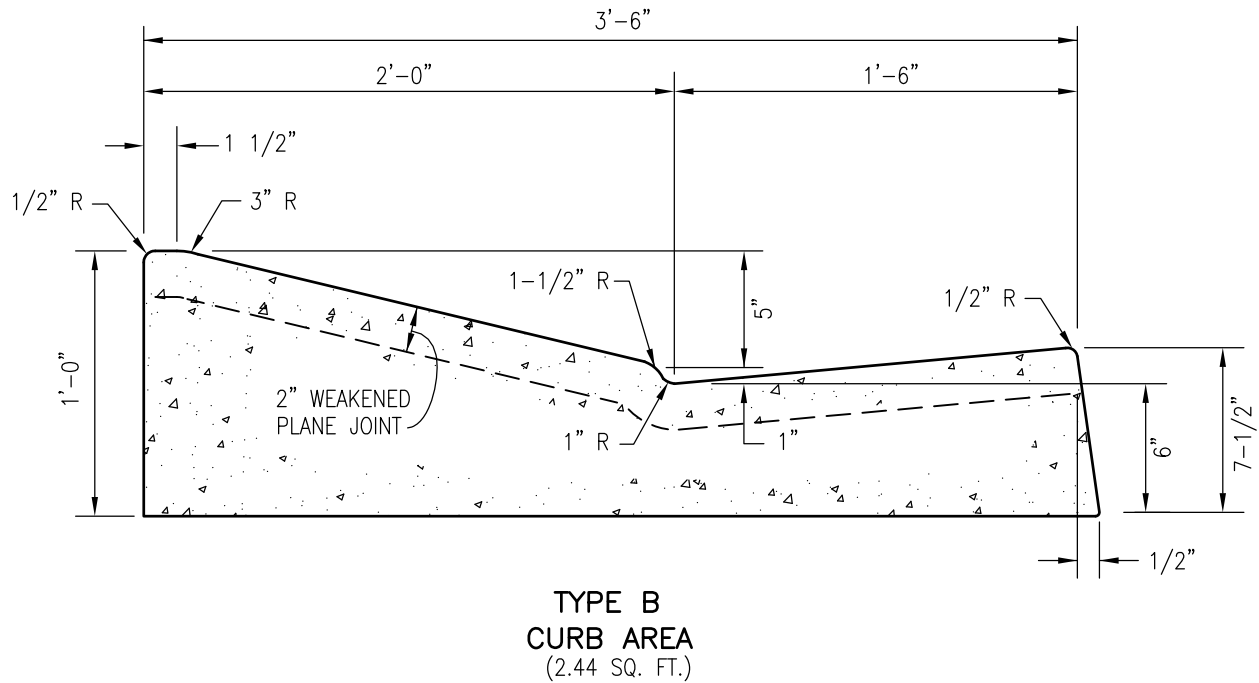
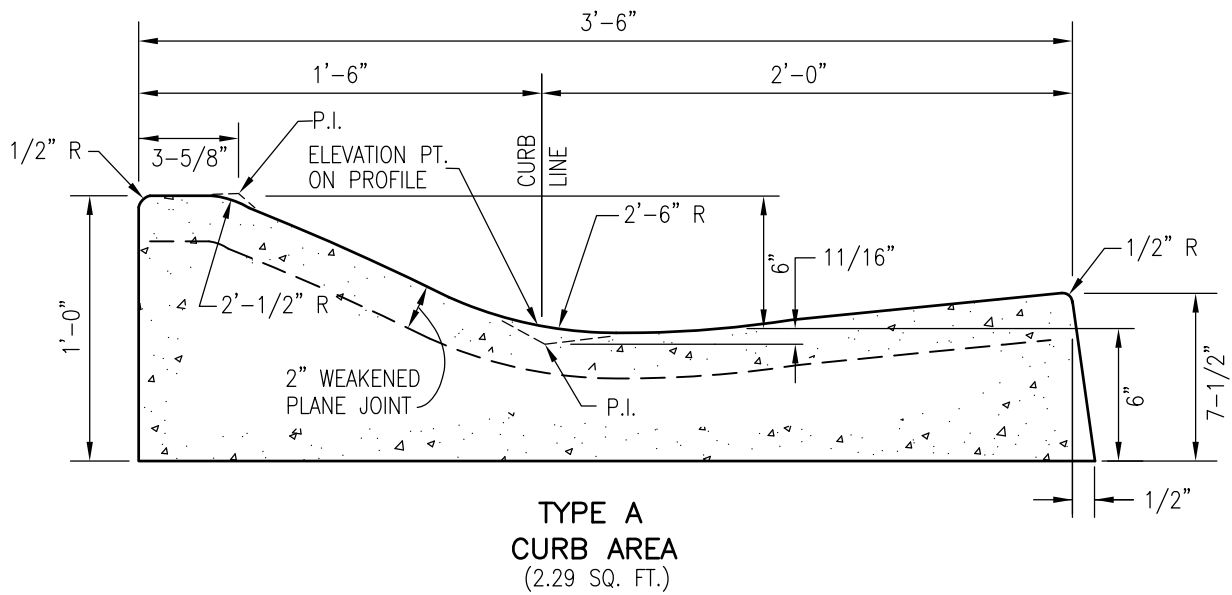
**NOTES:**

1. CONCRETE SHALL BE 520-C-2500.
2. SEE STANDARD DRAWINGS G-9 AND G-10 FOR JOINT DETAILS.
3. MONOLITHIC CURB, GUTTER AND SIDEWALK IS TO BE USED WITH AGENCY APPROVAL ONLY.

LEGEND ON PLANS



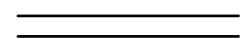
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		KERCHEVAL	12/75		<b>MONOLITHIC CURB, GUTTER AND SIDEWALK</b>
ADD METRIC		T. STANTON	03/03		
REFORMATTED		T. STANTON	04/06	DRAWING NUMBER	
UPDATED	MR	MR/CV	11/11	G-03	
UPDATED	CV	CV	12/15		



**NOTES:**

1. TRANSITION TO TYPE G OR H CURB AT ALL CURB RETURNS, EXCEPT WHERE CURB RAMPS ARE PROVIDED, AND AT ALL CUL-DE-SACS WITH DRAINAGE STRUCTURES. SEE STANDARD DRAWING G-4B FOR DETAILS.
2. CONCRETE SHALL BE 520-C-2500.
3. SEE STANDARD DRAWINGS G-9 AND G-10 FOR JOINT DETAILS.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
ADD METRIC		T. STANTON	03/03
REFORMATTED		T. STANTON	04/06
UPDATED	MR	MR/CV	11/11
UPDATED	CV	CV	12/15

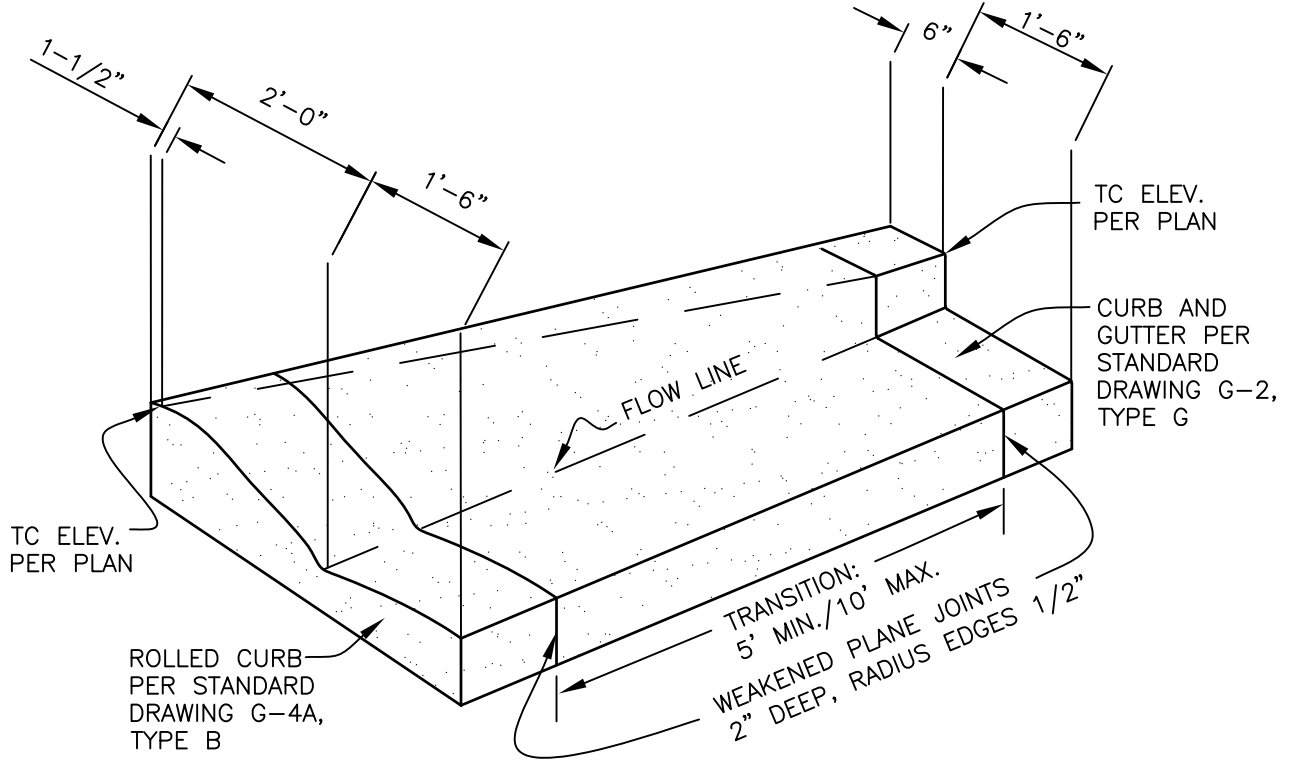
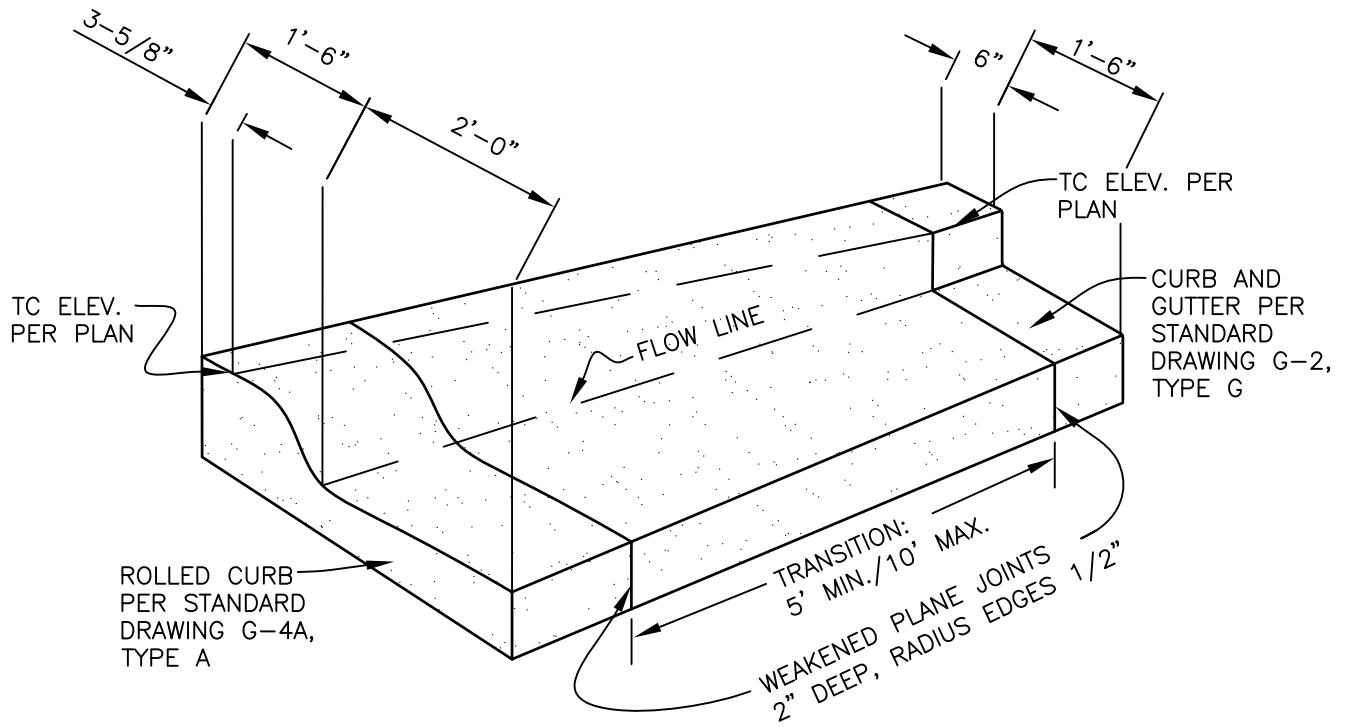
SAN DIEGO REGIONAL STANDARD DRAWING

CURB AND GUTTER – ROLLED

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER G-4A



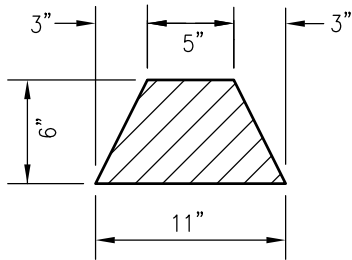
**NOTES:**

1. REFER TO RSD G-2, TYPE G AND G-4A FOR SPECIFIC DIMENSIONS RELATED TO EACH TYPE OF CURB.
2. TRANSITIONS SHOULD OCCUR ALONG THE BACK OF CURB, HOLDING EDGE OF PAVEMENT PARALLEL AND CONCENTRIC WITH STREET CENTERLINE. ALTERNATE ALIGNMENTS MAY BE REQUIRED AND ARE AT AGENCY'S DISCRETION.

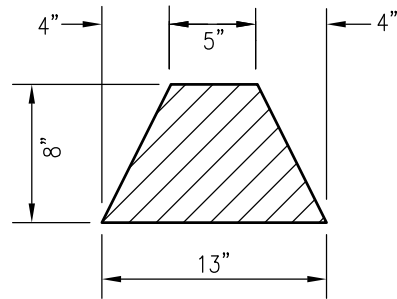
LEGEND ON PLANS



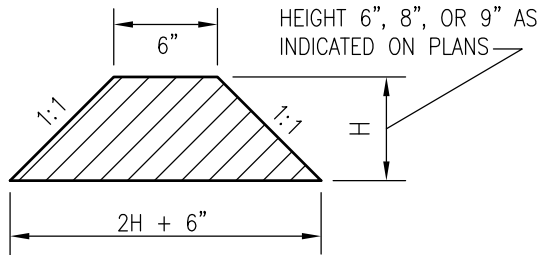
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
NEW	DM	MR/CV	11/11		
UPDATED	CV	CV	12/15	<b>CURB AND GUTTER TO ROLLED CURB TRANSITION</b>	 Chairperson R.C.E. 19246 Date 10/25/2018
				DRAWING NUMBER G-04B	



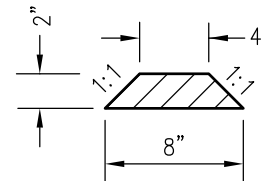
TYPE A



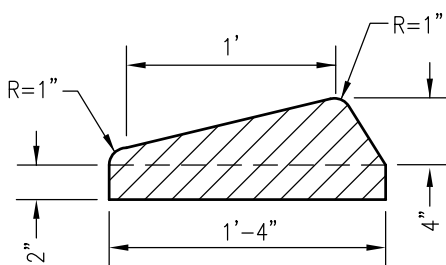
TYPE B



TYPE C

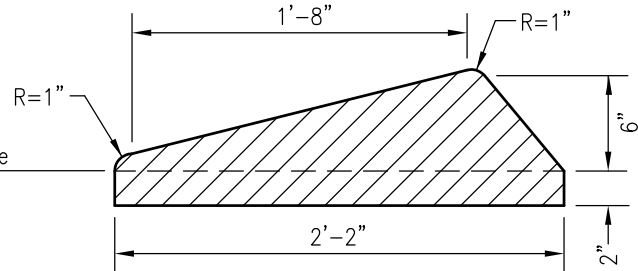


TYPE D

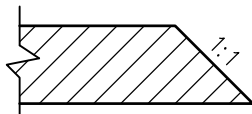


TYPE E  
(MOUNTABLE DIKE)

Level Line



TYPE F  
(MOUNTABLE DIKE)



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

ALL TYPES - SIDE VIEW

NOTES:

1. DIKES SHALL BE PLACED ON A 2" SECTION OF A.C. SURFACING, EXTENDING THROUGHOUT THE WIDTH OF THE DIKE.
2. PG-70-10 GRADE ASPHALT TO BE USED FOR ALL DIKES.
3. SHAPE AND COMPACT DIKES WITH AN EXTRUSION MACHINE OR OTHER EQUIPMENT CAPABLE OF SHAPING AND COMPACTING THE MATERIAL TO THE REQUIRED CROSS-SECTION.

APPROX. DIKE QUANTITIES

TYPE	REQD PER LIN. FT.
A	0.0250 TON
B	0.0375 TON
C-6"	0.0375 TON
C-8"	0.0583 TON
C-9"	0.0702 TON
D	0.0062 TON
E	0.0407 TON
F	0.0623 TON

LEGEND ON PLANS

Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
ADD METRIC		T. STANTON	03/03
REFORMATTED		T. STANTON	04/06
UPDATED	MR	MR/CV	11/11
REVIEWED	CV	CV	12/15

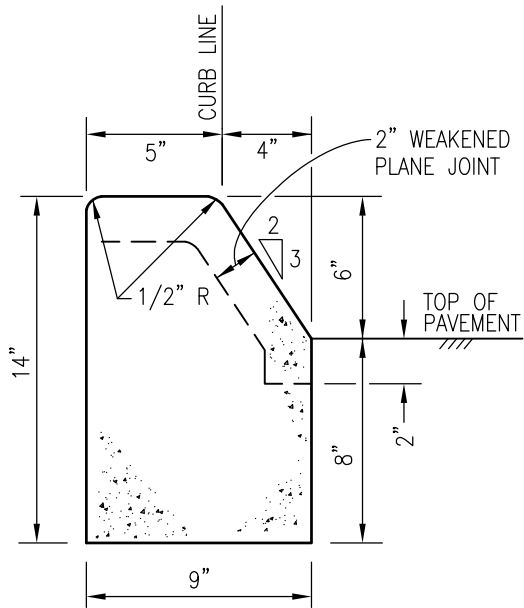
SAN DIEGO REGIONAL STANDARD DRAWING

DIKES - ASPHALT CONCRETE

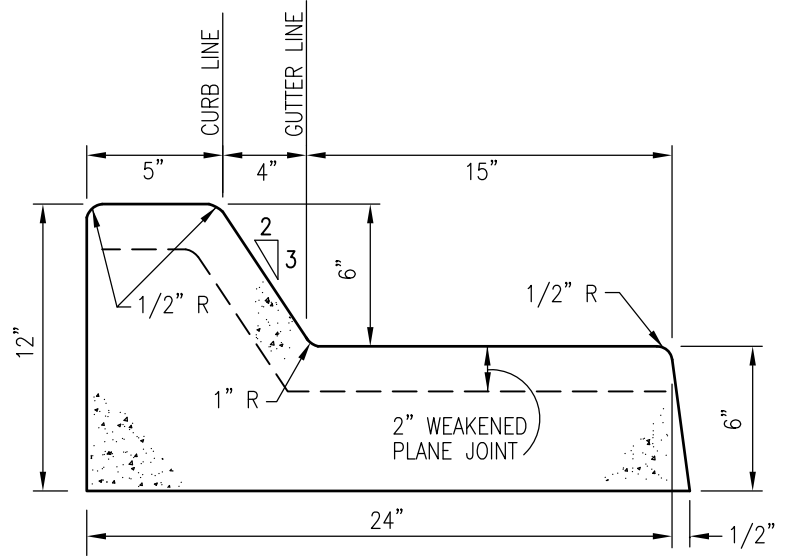
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

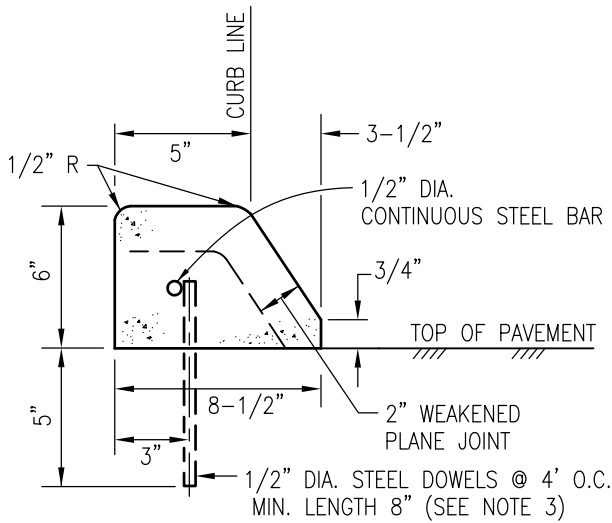
DRAWING NUMBER G-05



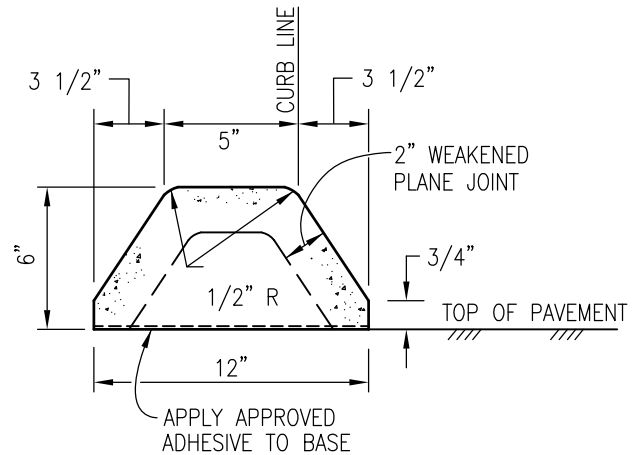
**B-1**  
AREA=0.79 SQ. FT.



**B-2**  
AREA=1.29 SQ. FT.



**B-3**  
AREA=0.29 SQ. FT.



**B-4**  
AREA=0.35 SQ. FT.

**NOTES:**

1. CONCRETE SHALL BE 520-C-2500.
2. SEE STANDARD DRAWINGS G-9 AND G-10 FOR JOINT DETAILS.
3. EXTRUDED TYPE B-3 CURB SHALL BE ANCHORED TO EXISTING PAVEMENT BY PLACING STEEL DOWELS AND REINFORCING STEEL AS SHOWN OR BY USING AN APPROVED ADHESIVE.
4. SLOPE TOP OF CURB 2% MAX TOWARD GUTTER/PAVEMENT.

**LEGEND ON PLANS**

(FOR TYPE B-2)

(FOR ALL OTHER TYPES)

Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
ADD METRIC		T. STANTON	03/03
REFORMATTED		T. STANTON	04/06
UPDATED	MR	MR/CV	11/11
REVIEWED	CV	CV	12/15

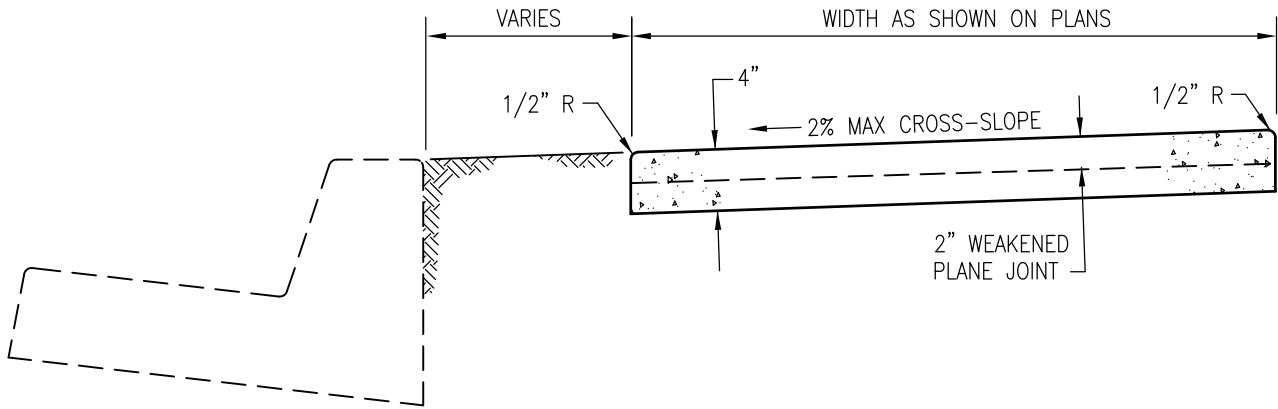
SAN DIEGO REGIONAL STANDARD DRAWING

**CURBS AND GUTTER - MEDIANS**

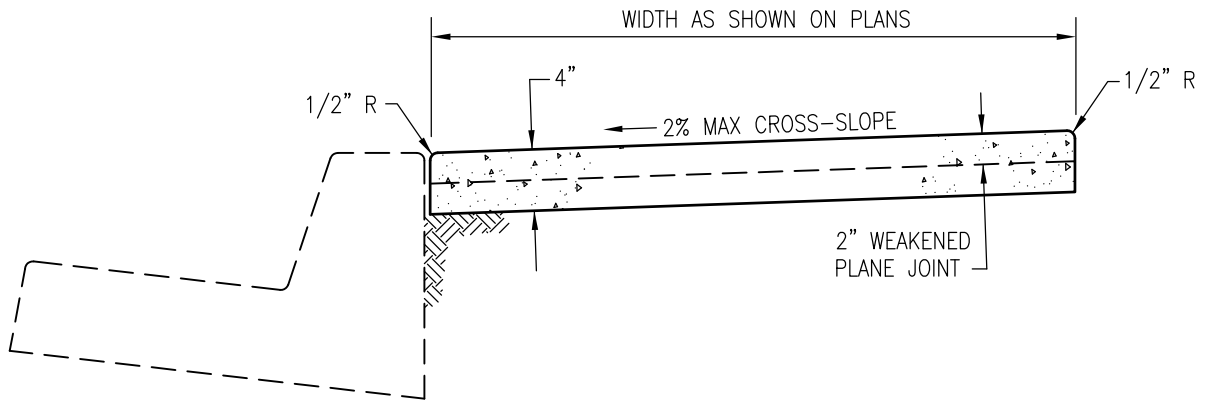
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

10/25/2018  
Chairperson R.C.E. 19246 Date

**DRAWING NUMBER G-06**



NON-CONTIGUOUS

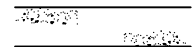


CONTIGUOUS

**NOTES:**

1. CONCRETE SHALL BE 520-C-2500.
2. SEE STANDARD DRAWINGS G-9 AND G-10 FOR JOINT DETAILS.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
ADD METRIC		T. STANTON	03/03
REFORMATTED		T. STANTON	04/06
UPDATED	MR	MR/CV	11/11
REVIEWED	CV	CV	12/15

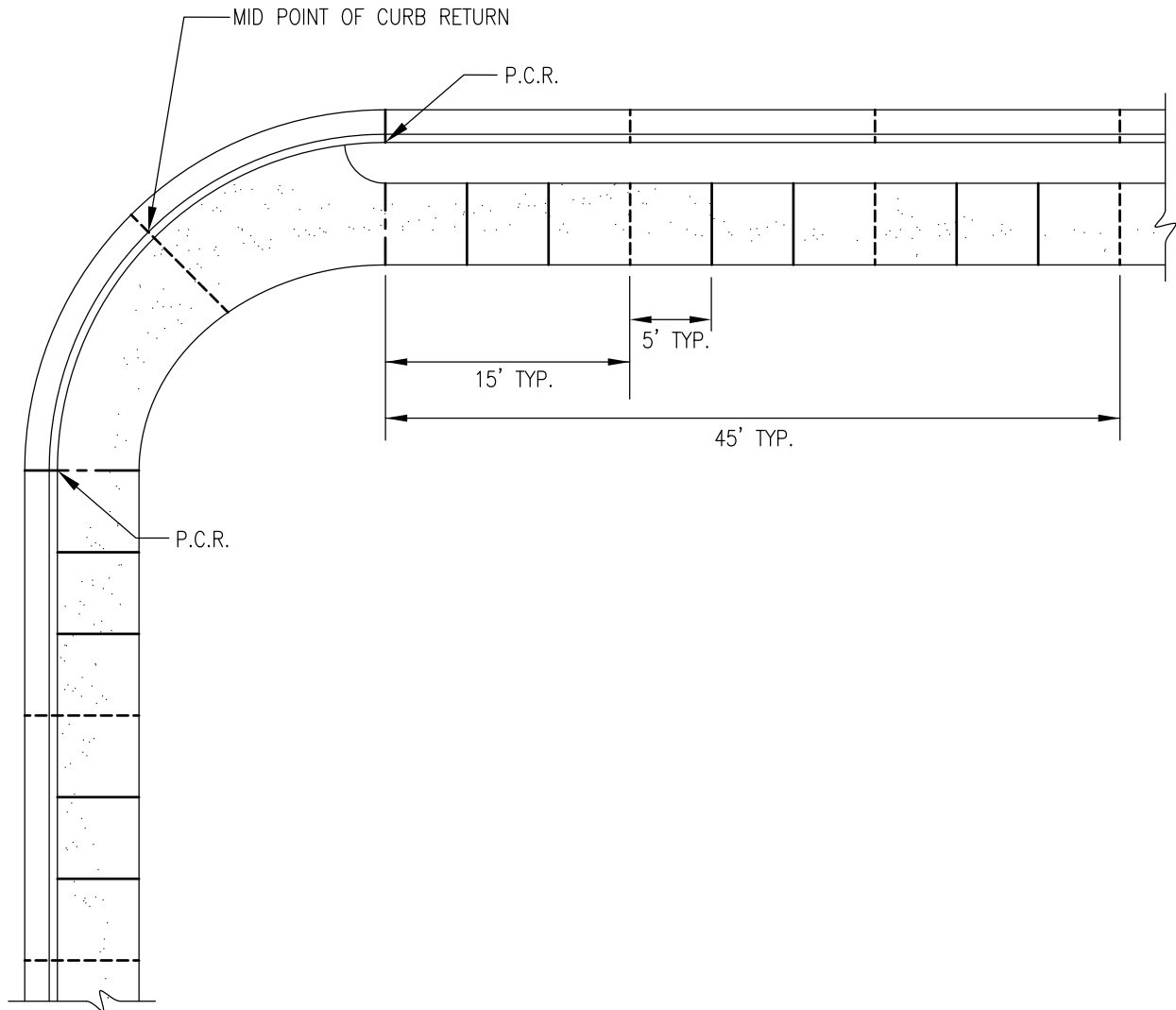
SAN DIEGO REGIONAL STANDARD DRAWING

SIDEWALK - TYPICAL SECTIONS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER G-07



**NOTES:**

1. EXPANSION JOINTS AT CURB RETURNS, ADJACENT TO STRUCTURES AND AT 45' INTERVALS. (SEE STANDARD DRAWING G-10).
2. WEAKENED PLANE JOINTS AT MID POINT OF CURB RETURN, WHEN REQUIRED, AND AT 15' INTERVALS FROM P.C.R. (SEE STANDARD DRAWING G-10).
3. 1/4" GROOVES WITH 1/4" RADIUS EDGES AT 5' INTERVALS.

Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
ADD METRIC		T. STANTON	03/03
REFORMATTED		T. STANTON	04/06
REVIEWED	CV	CV	12/15

SAN DIEGO REGIONAL STANDARD DRAWING

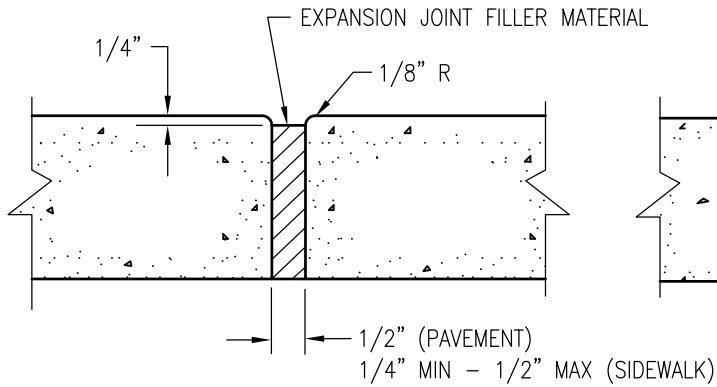
---

SIDEWALK JOINT LOCATIONS

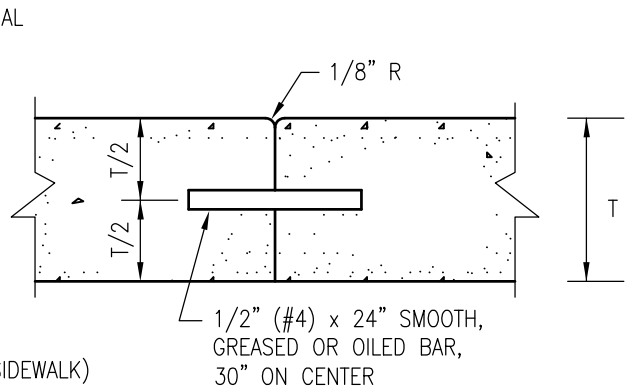
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

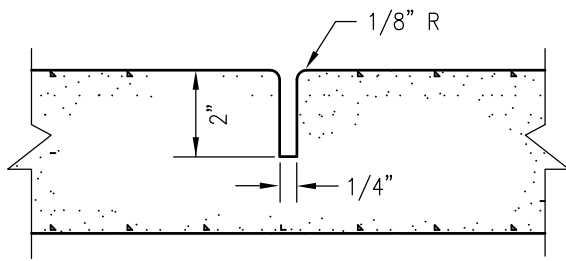
**DRAWING NUMBER**      **G-09**



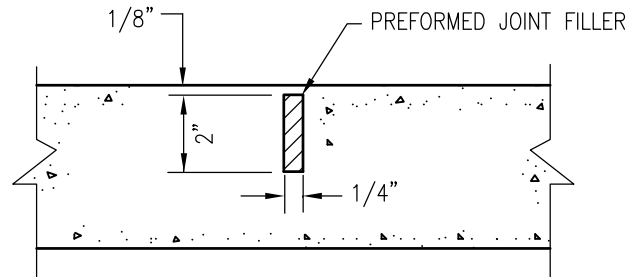
EXPANSION JOINT



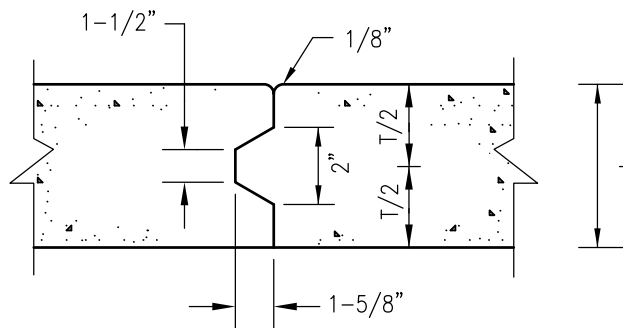
CONTACT JOINT



WEAKENED PLANE JOINT  
CURB AND SIDEWALK



WEAKENED PLANE JOINT  
GUTTER AND CONCRETE PAVEMENT



KEYED JOINT

Revision	By	Approved	Date
ORIGINAL		PARKINSON	02/95
ADD METRIC		T. STANTON	03/03
REFORMATTED		T. STANTON	04/06
UPDATED	CV	MR/CV	11/11
REVIEWED	CV	CV	12/15

SAN DIEGO REGIONAL STANDARD DRAWING

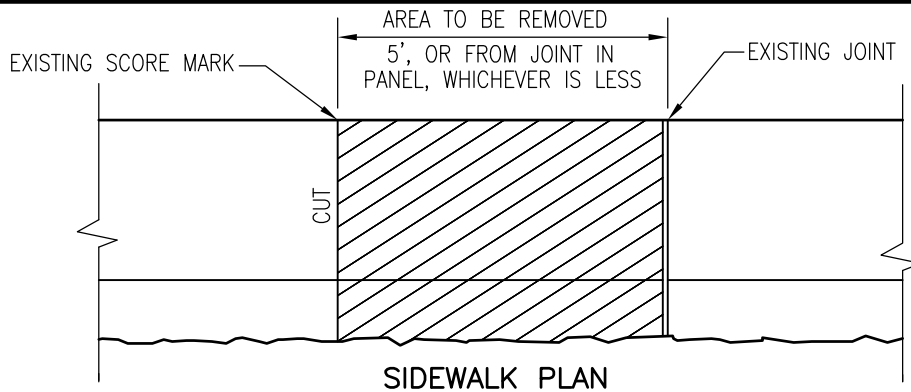
CONCRETE JOINT DETAILS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

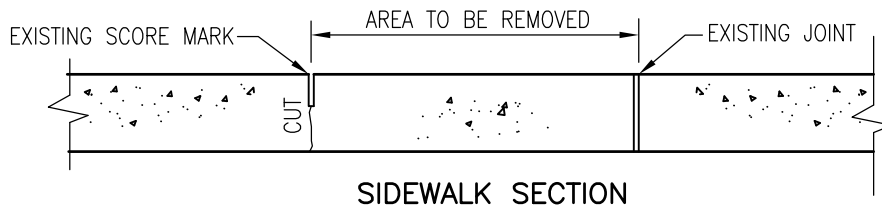
*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER G-10

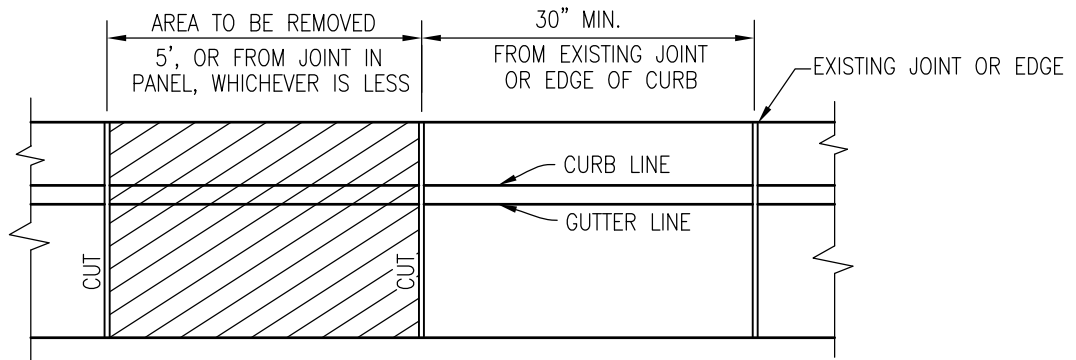




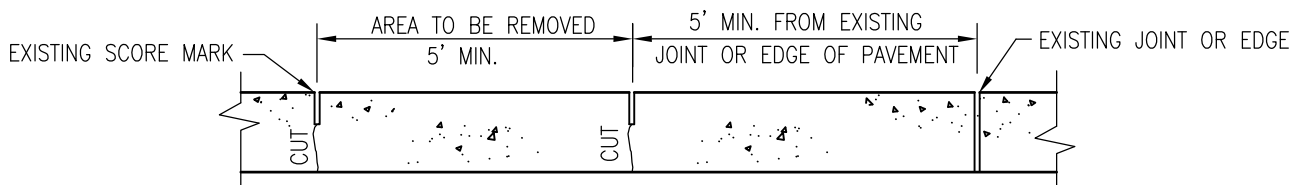
SIDEWALK PLAN



SIDEWALK SECTION



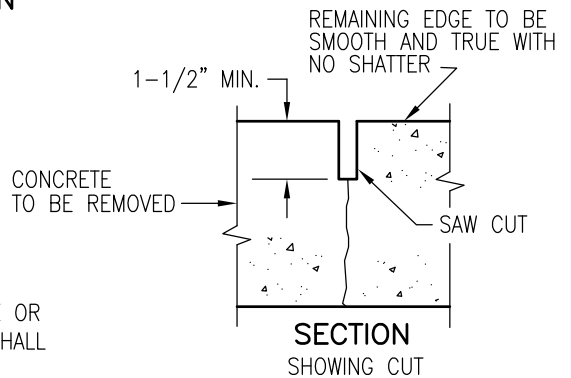
CURB PLAN



PAVEMENT SECTION

**NOTE:**

1. SIDEWALK CROSS SLOPE SHALL BE 2% MAX.
2. WHEN DISTANCE FROM "AREA TO BE REMOVED" TO EXISTING JOINT, EDGE OR SCORE MARK IS LESS THAN MINIMUM SHOWN, "AREA TO BE REMOVED" SHALL BE EXTENDED TO JOINT, EDGE OR SCORE MARK.



Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
ADD METRIC		T. STANTON	03/03
REFORMATTED		T. STANTON	04/06
UPDATED	CV	MR/CV	11/11
REVIEWED	CV	CV	12/15

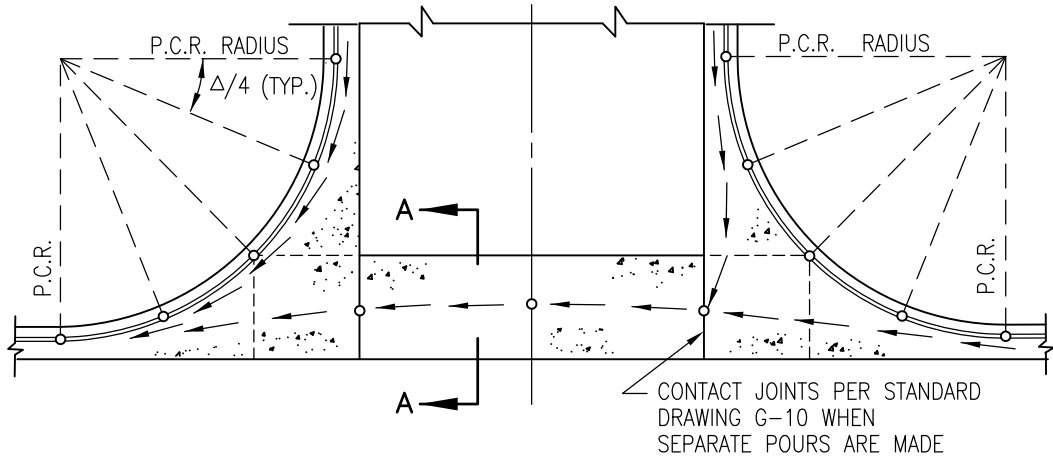
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE CURB, GUTTER,  
SIDEWALK AND PAVEMENT  
REMOVAL AND REPLACEMENT

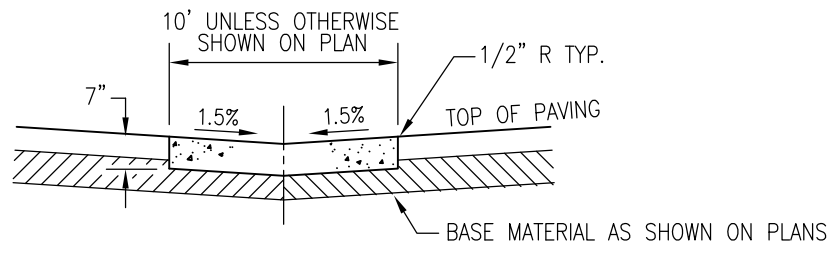
RECOMMENDED BY THE SAN DIEGO  
REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER G-11



PLAN

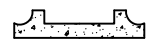


SECTION A-A

NOTES:

1. CONCRETE SHALL BE 560-C-3250.
2. ----- = WEAKENED PLANE JOINTS.
3. ← ← ← = TYPICAL FLOWLINES.
4. ○ = ELEVATIONS TO BE SHOWN ON PLANS.
5. RETURN SEGMENTS TO BE 7" THICK.
6. CURB BETWEEN P.C.R.S SHALL BE CONSIDERED AS PART OF THE CROSS GUTTER.
7. IN ALL CASES SUBGRADE SHALL BE COMPACTED TO 95% MIN. RELATIVE COMPACTION TO DEPTH OF 12".

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
ADD METRIC		T. STANTON	03/03
REFORMATTED		T. STANTON	04/06
UPDATED	CV	MR/CV	11/11
REVIEWED	CV	CV	12/15

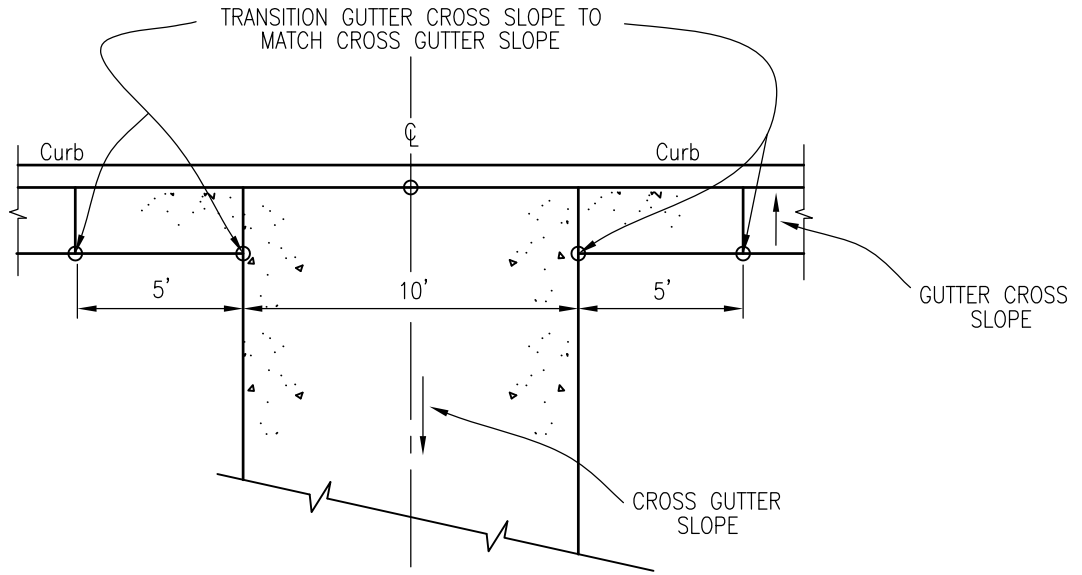
SAN DIEGO REGIONAL STANDARD DRAWING

CROSS GUTTER

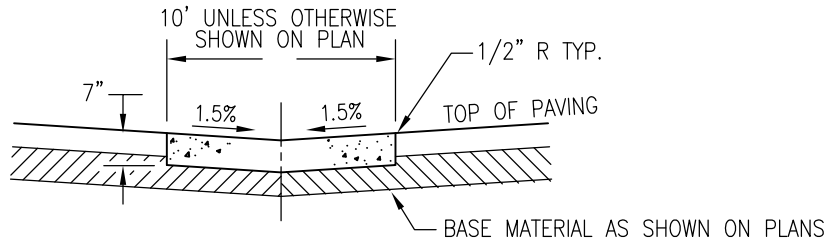
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
 Chairperson R.C.E. 19246 Date

DRAWING NUMBER G-12



PLAN

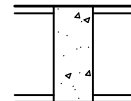


SECTION

**NOTES:**

1. CROSS GUTTER TO BE CONSTRUCTED WHERE THE DRAINAGE IS CARRIED ACROSS THE STREET.
2. MINIMUM ALLOWABLE CROSS GUTTER SLOPE IS 0.5%.
3. CONCRETE SHALL BE 560-C-3250.
4. IN ALL CASES SUBGRADE SHALL BE COMPACTED TO 95% MINIMUM RELATIVE COMPACTION TO DEPTH OF 12".
5. ○ = ELEVATIONS SHOWN ON PLANS.

**LEGEND ON PLANS**



Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
ADD METRIC		T. STANTON	03/03
REFORMATTED		T. STANTON	03/03
UPDATED	CV	MR/CV	11/11
UPDATED	CV	CV	12/15

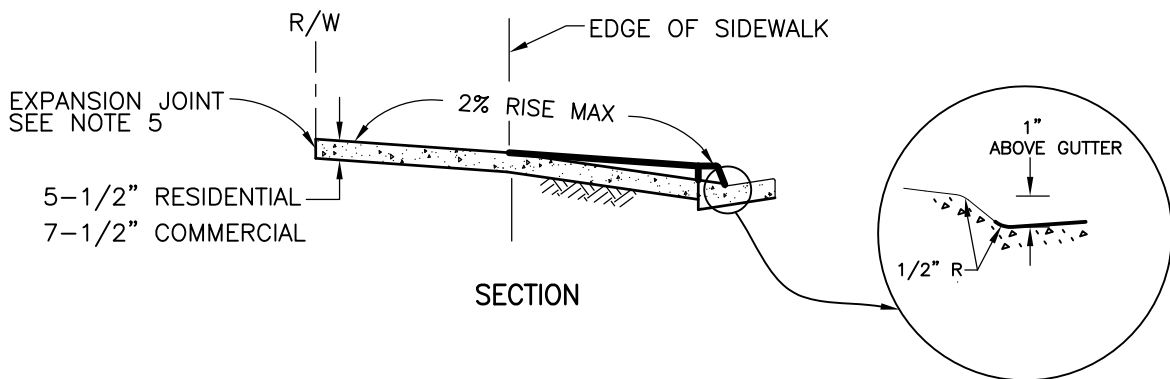
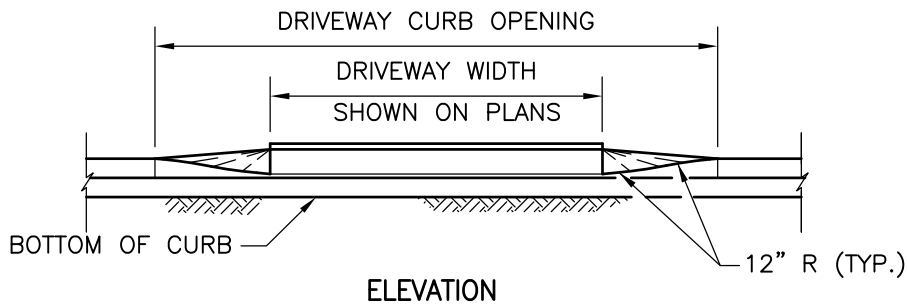
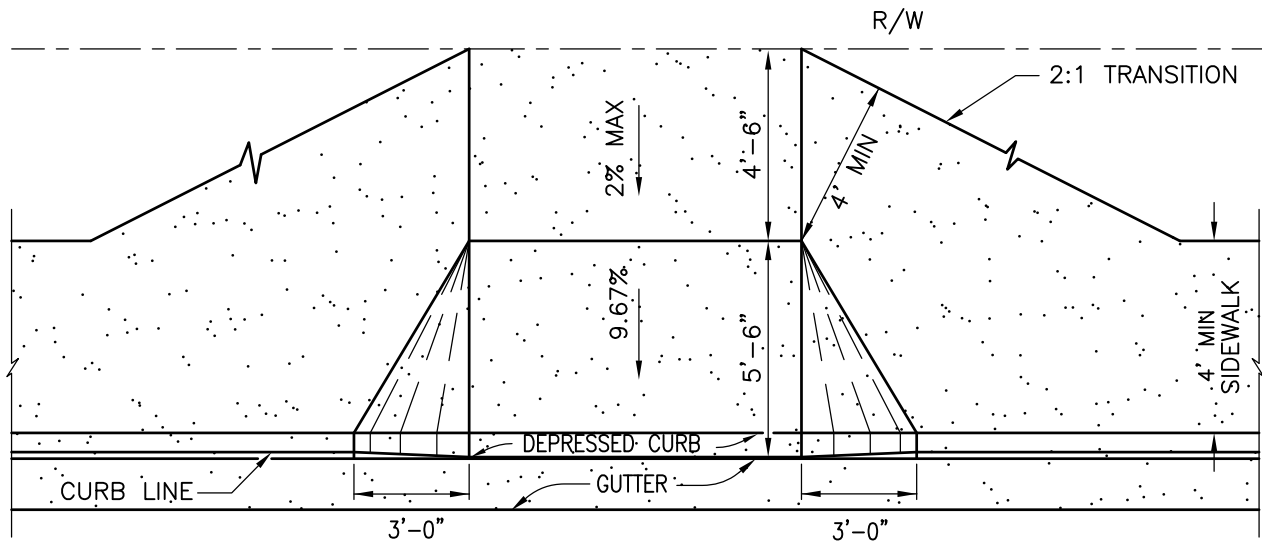
SAN DIEGO REGIONAL STANDARD DRAWING

MID-BLOCK CROSS GUTTER

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER G-13



**NOTES:**

1. NO CONCRETE SHALL BE PLACED UNTIL FORMS AND SUBGRADE ARE INSPECTED BY THE AGENCY.
2. FOR RESIDENTIAL USE, CONCRETE SHALL BE 520-C-2500; FOR COMMERCIAL USE, CONCRETE SHALL BE 560-C-3250.
3. SEE STANDARD DRAWINGS G-15 AND G-16 FOR WIDTH AND LOCATION REQUIREMENTS.
4. DRIVEWAY RAMP TO EXTEND 10' FROM CURB FACE OR TO PROPERTY LINE WHICHEVER IS LESS.
5. PLACE EXPANSION JOINT AT RIGHT-OF-WAY OR 10' WHICHEVER IS LESS.
6. SEE STANDARD DRAWINGS G-2 AND G-10 FOR CURB AND JOINT DETAILS.
7. DIMENSIONS SHOWN REFLECT A 6" CURB HEIGHT.

Revision	By	Approved	Date
ORIGINAL		R. MUNOZ	4/97
ADD METRIC		T. STANTON	03/03
REVIEWED		T. STANTON	04/06
UPDATED	MR	MR/CV	02/12
UPDATED	CV	CV	12/15

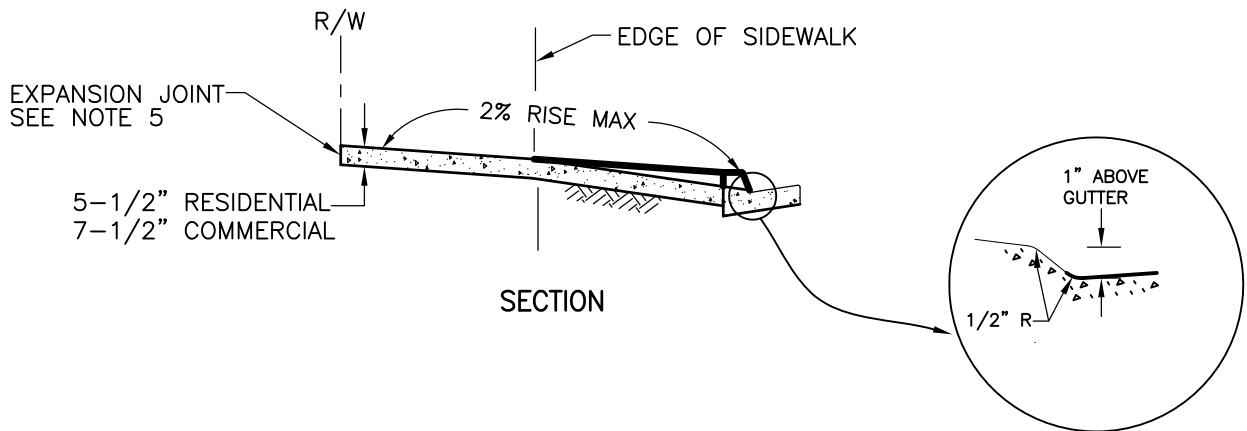
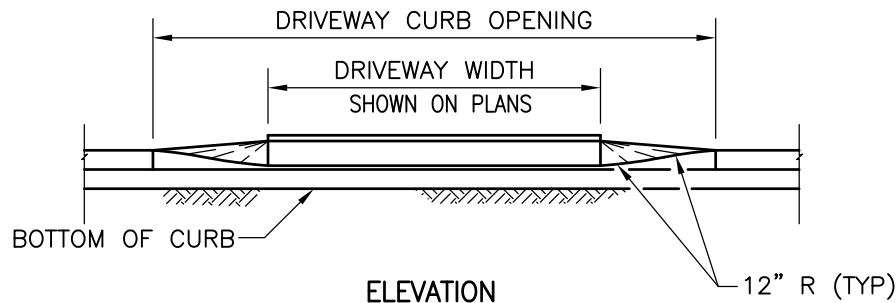
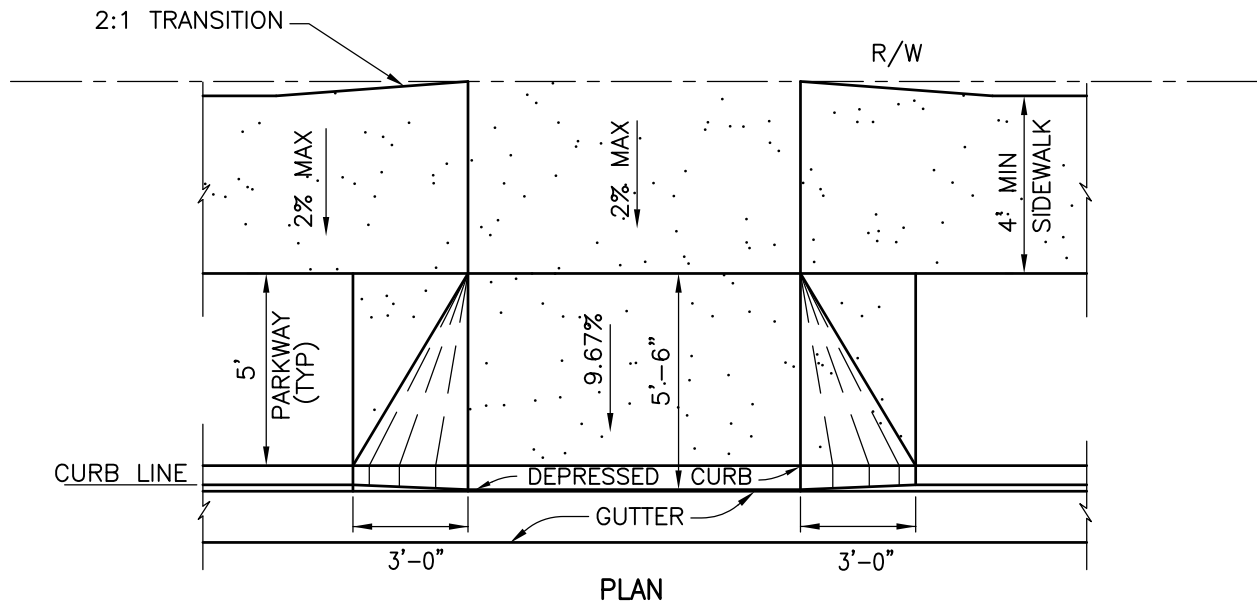
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE DRIVEWAY - TYPE A  
(CONTIGUOUS SIDEWALK)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

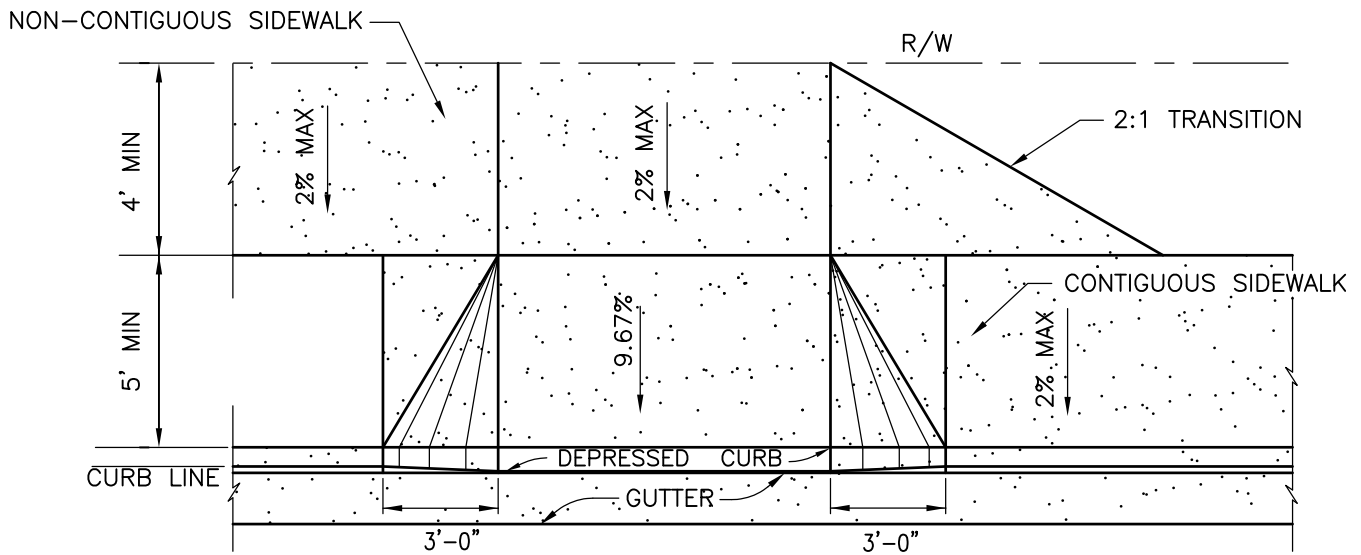
DRAWING NUMBER G-14A



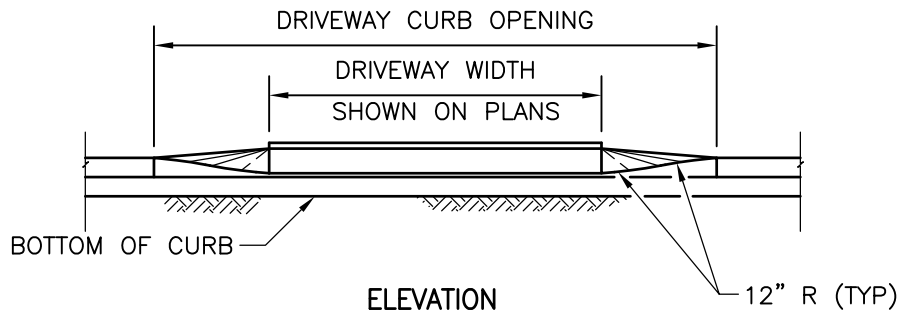
**NOTES:**

1. NO CONCRETE SHALL BE PLACED UNTIL FORMS AND SUBGRADE ARE INSPECTED BY THE AGENCY.
2. FOR RESIDENTIAL USE, CONCRETE SHALL BE 520-C-2500; FOR COMMERCIAL USE, CONCRETE SHALL BE 560-C-3250.
3. SEE STANDARD DRAWINGS G-15 AND G-16 FOR WIDTH AND LOCATION REQUIREMENTS.
4. DRIVEWAY RAMP TO EXTEND TO 10' FROM CURB FACE OR TO PROPERTY LINE WHICHEVER IS LESS.
5. PLACE EXPANSION JOINT AT RIGHT-OF-WAY OR 10', WHICHEVER IS LESS.
6. SEE STANDARD DRAWINGS G-2 AND G-10 FOR CURB AND JOINT DETAILS.
7. DIMENSIONS SHOWN REFLECT A 6" CURB HEIGHT.

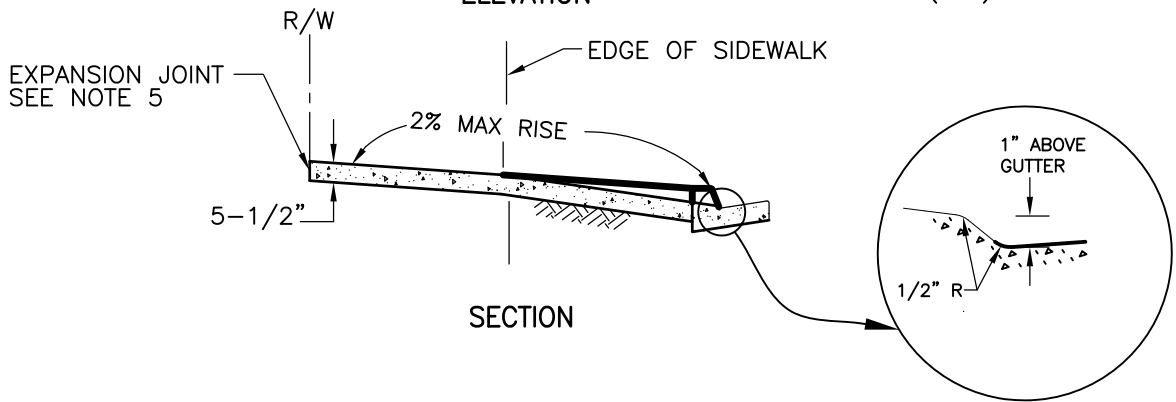
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		R. MUNOZ	4/97	<b>CONCRETE DRIVEWAY (NON-CONTIGUOUS SIDEWALK)</b>		 Chairperson R.C.E. 19246 Date 10/25/2018
ADD METRIC		T. STANTON	03/03			
REFORMATTED		T. STANTON	04/06			
UPDATED	MR	MR/CV	02/12			
UPDATED	CV	CV	12/15			
				DRAWING NUMBER		G-14B



PLAN



ELEVATION



SECTION

NOTES:

1. NO CONCRETE SHALL BE PLACED UNTIL FORMS AND SUBGRADE ARE INSPECTED BY THE AGENCY.
2. CONCRETE SHALL BE 520-C-2500.
3. SEE STANDARD DRAWINGS G-15 AND G-16 FOR WIDTH AND LOCATION REQUIREMENTS.
4. DRIVEWAY RAMP TO EXTEND 10' FROM FACE OF CURB OR TO PROPERTY LINE WHICHEVER IS LESS.
5. PLACE EXPANSION JOINT AT RIGHT-OF-WAY OR 10', WHICHEVER IS LESS.
6. SEE STANDARD DRAWINGS G-2 AND G-10 FOR CURB AND JOINT DETAILS.
7. DIMENSIONS SHOWN REFLECT A 6" CURB HEIGHT.

Revision	By	Approved	Date
ORIGINAL		R. MUNOZ	4/97
ADD METRIC		T. STANTON	03/03
REFORMATTED		T. STANTON	04/06
UPDATED	MR	MR/CV	02/12
UPDATED	CV	CV	12/15

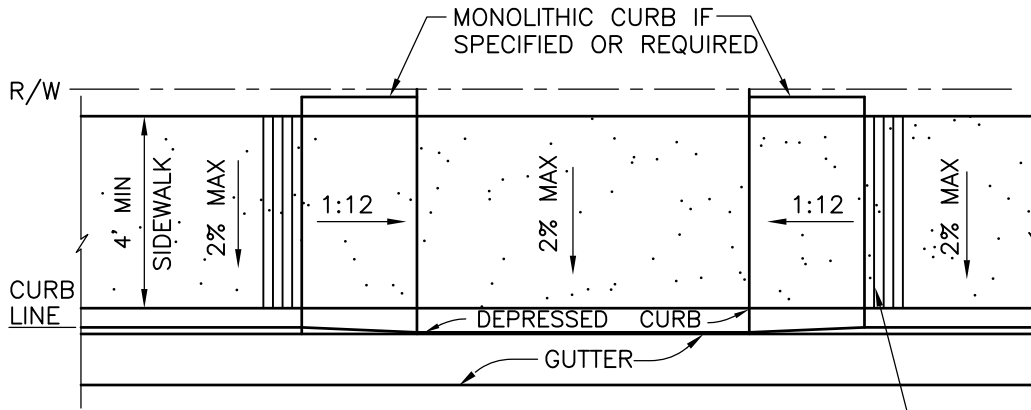
SAN DIEGO REGIONAL STANDARD DRAWING

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

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

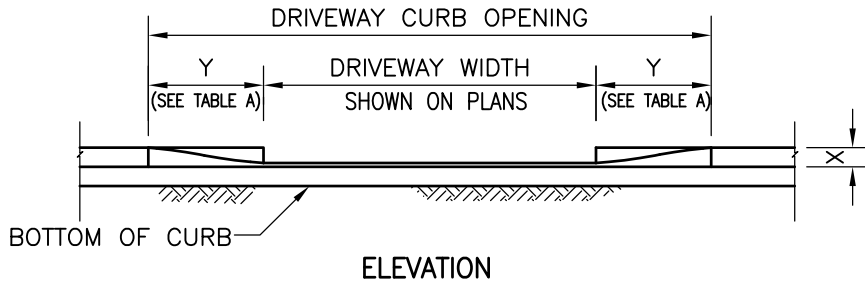
*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER G-14C



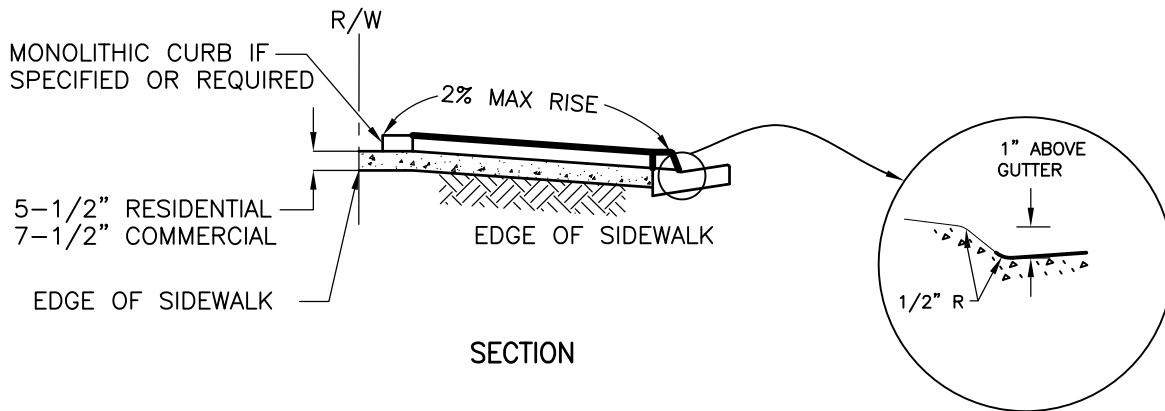
PLAN

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



ELEVATION

TABLE A	
X	Y
CURB HEIGHT	RAMP LENGTH
1"	0'-0"
2"	1'-0"
3"	2'-0"
4"	3'-0"
5"	4'-0"
6"	5'-0"
7"	6'-0"
8"	7'-0"



SECTION

NOTES:

1. NO CONCRETE SHALL BE PLACED UNTIL FORMS AND SUBGRADE ARE INSPECTED BY THE AGENCY.
2. FOR RESIDENTIAL USE, CONCRETE SHALL BE 520-C-2500; FOR COMMERCIAL USE, CONCRETE SHALL BE 560-C-3250.
3. SEE STANDARD DRAWINGS G-15 AND G-16 FOR WIDTH AND LOCATION REQUIREMENTS.
4. SEE STANDARD DRAWINGS G-2 AND G-10 FOR CURB AND JOINT DETAILS.
5. PLACE EXPANSION JOINT AT RIGHT-OF-WAY.
6. DIMENSIONS SHOWN REFLECT A 6" CURB HEIGHT.
7. RAMP LENGTH CALCULATIONS ARE BASED ON X-1" TO ACCOUNT FOR THE 1" DRIVEWAY LIP.

Revision	By	Approved	Date
ORIGINAL	HH	T. STANTON	02/03
ADD METRIC		T. STANTON	03/03
REVIEWED		T. STANTON	04/06
UPDATED	MR	MR/CV	02/12
UPDATED	CV	CV	12/15

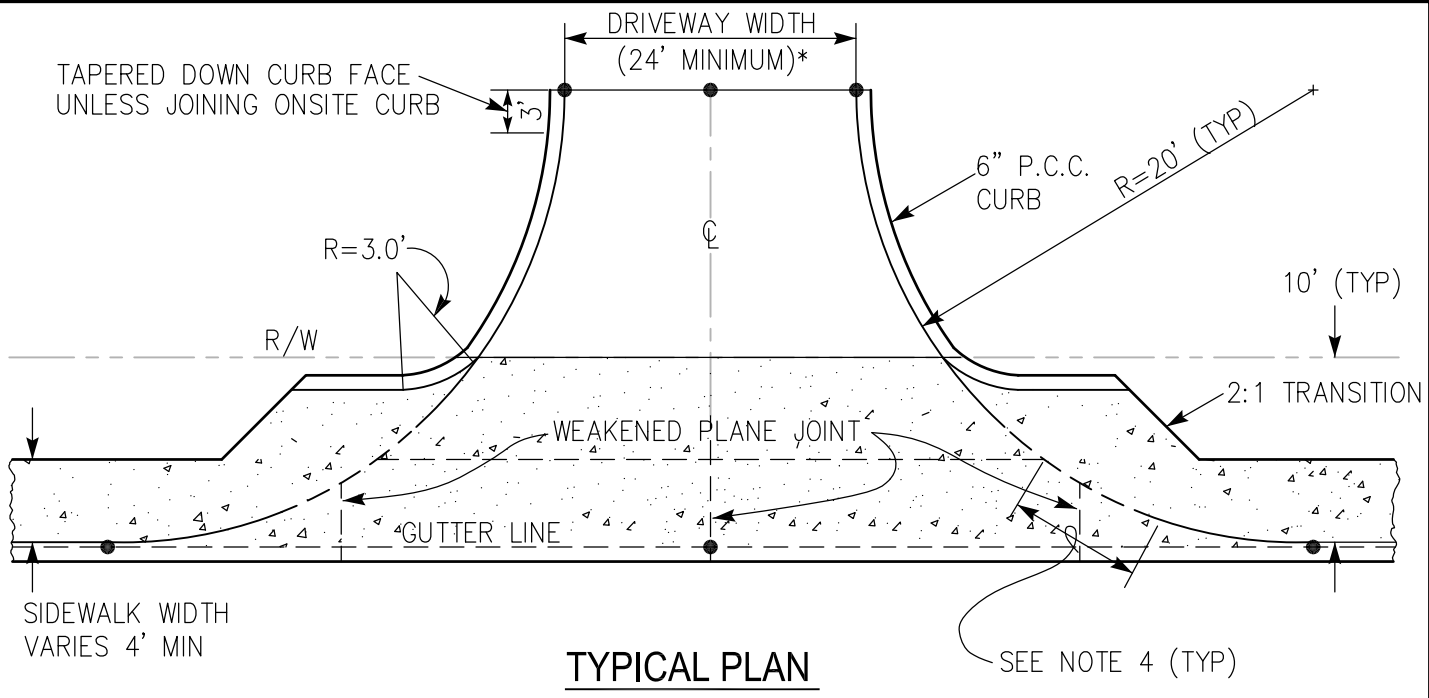
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE DRIVEWAY  
(FOR CONFINED RIGHT-OF-WAY)

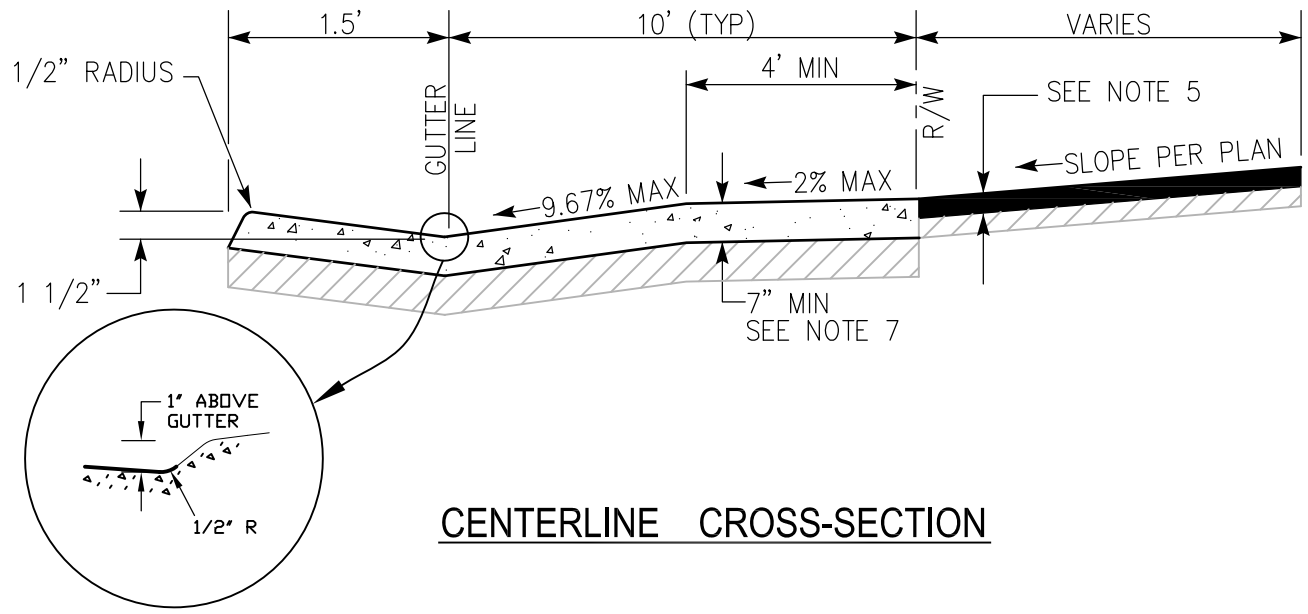
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER G-14D



**TYPICAL PLAN**

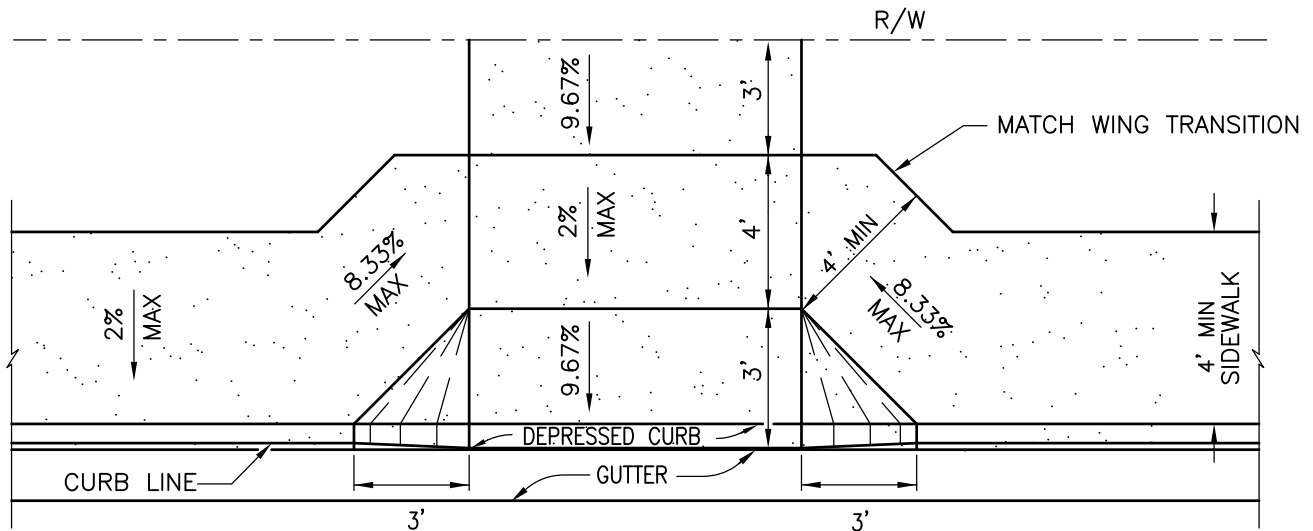


**CENTERLINE CROSS-SECTION**

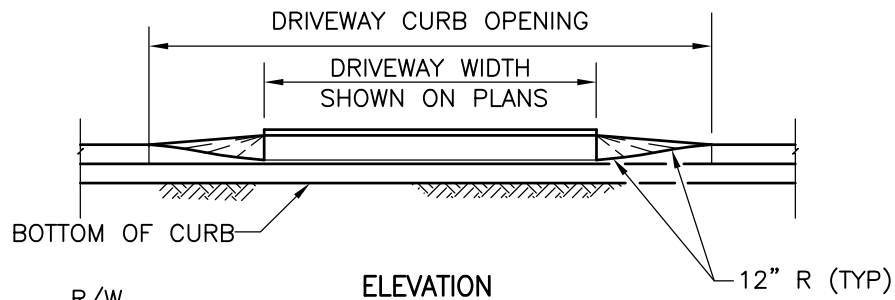
1. \* OR AS REQUIRED BY THE AGENCY.
2. ● = ELEVATION SHOWN ON PLANS (TOP OF CURB, AND GUTTER ELEVATION)
3. ALL CONCRETE SHALL BE 560-C-3250
4. TRANSITION FROM FULL HEIGHT CURB TO NO CURB. 6FT TRANSITION FOR 5FT WIDE SIDEWALK AND 8FT TRANSITION FOR 6FT WIDE SIDEWALK.
5. PAVEMENT STRUCTURAL SECTION SHALL BE SHOWN ON PLANS.
6. SEE G-2 AND G-10 FOR CURB AND JOINT DETAILS.
7. BASE MATERIAL AS SHOWN ON PLANS.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
NEW	MR	MR/CV	09/11		 Chairperson R.C.E. 19246 Date
UPDATED	CV	CV	12/15	<b>CONCRETE DRIVEWAY (ALLEY TYPE)</b>	

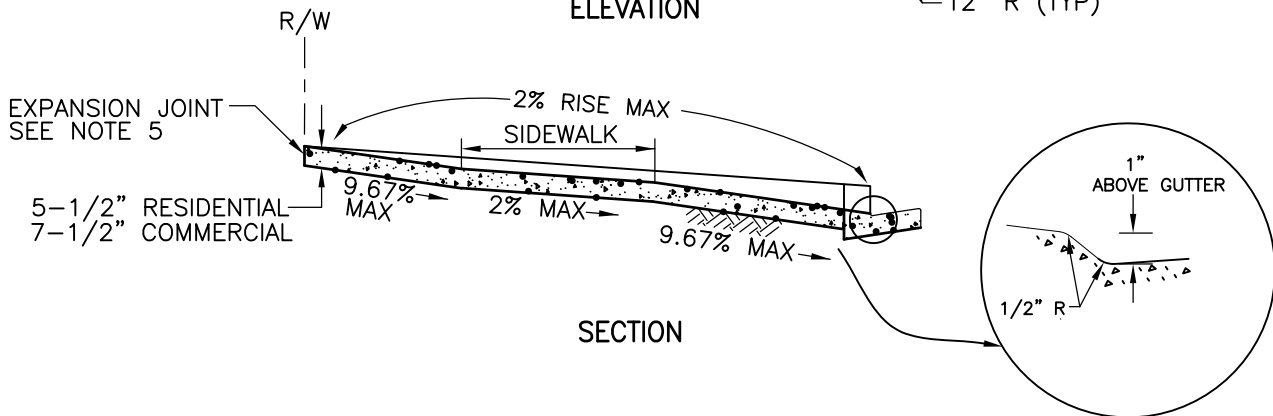




PLAN



ELEVATION



SECTION

NOTES:

1. NO CONCRETE SHALL BE PLACED UNTIL FORMS AND SUBGRADE ARE INSPECTED BY AGENCY.
2. FOR RESIDENTIAL USE, CONCRETE SHALL BE 520-C-2500; FOR COMMERCIAL USE, CONCRETE SHALL BE 560-C-3250.
3. SEE STANDARD DRAWINGS G-15 AND G-16 FOR WIDTH AND LOCATION REQUIREMENTS.
4. DRIVEWAY RAMP TO EXTEND TO 10' FROM CURB FACE OR TO RIGHT-OF-WAY, WHICHEVER IS LESS.
5. PLACE EXPANSION JOINT AT RIGHT-OF-WAY OR 10', WHICHEVER IS LESS.
6. SEE STANDARD DRAWINGS G-2 AND G-10 FOR CURB AND JOINT DETAILS.
7. DIMENSIONS SHOWN REFLECT A 6" CURB HEIGHT.

Revision	By	Approved	Date
NEW	MR	MR/CV	02/12
UPDATED	CV	CV	12/15

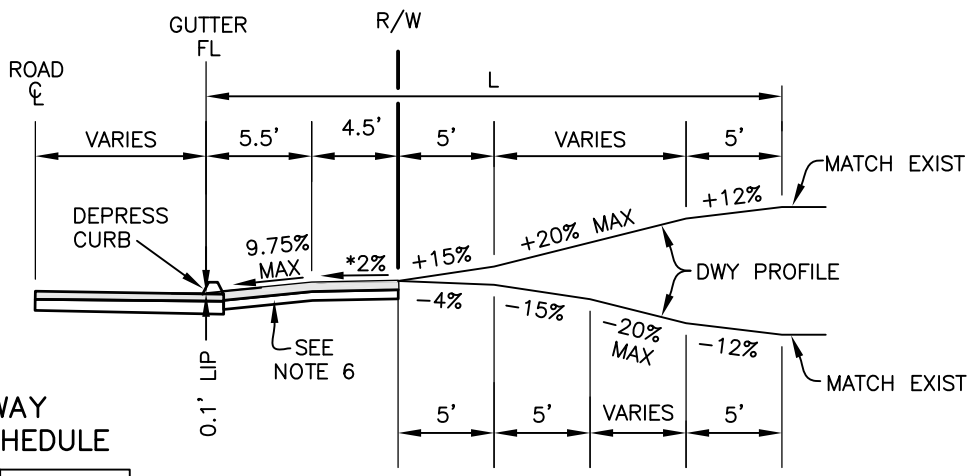
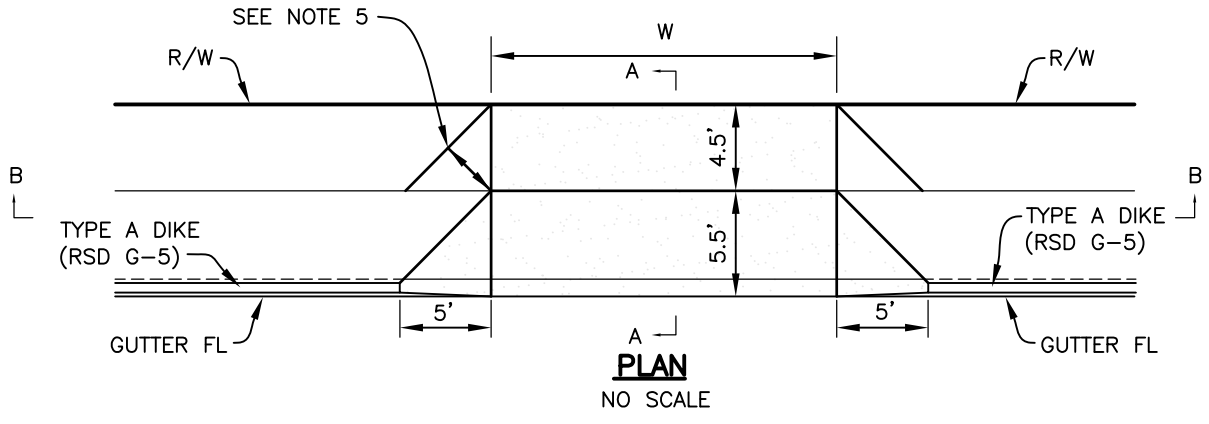
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE DRIVEWAY – TYPE B  
(CONTIGUOUS SIDEWALK)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

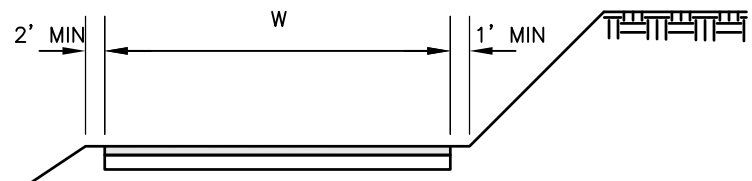
DRAWING NUMBER G-14F



**DRIVEWAY PAVING SCHEDULE**

MINIMUM DEPTH OF A.C.	GRADE
2"	0-15%
3"	16-20%

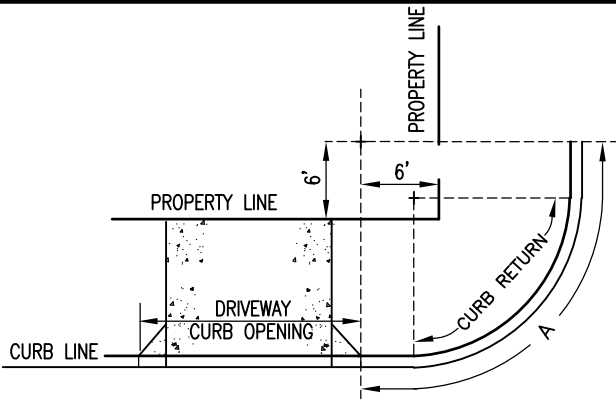
MIN DEPTHS PER COUNTY FIRE STDS. LOCAL AGENCY REQUIREMENTS MAY VARY.



**NOTES:**

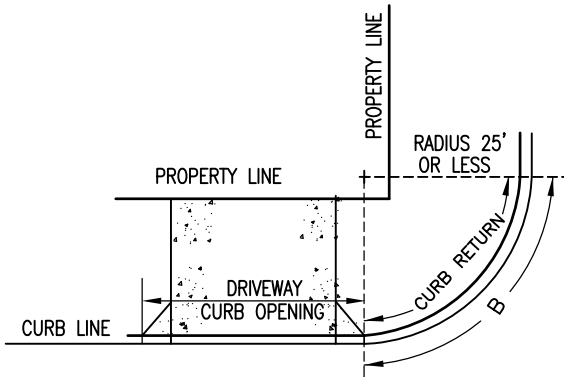
1. DRIVEWAY PROFILE, WIDTH (W) AND LENGTH (L) SHALL BE SHOWN ON PLANS.
2. DRIVEWAYS WITH GRADES GREATER THAN 15% SHALL BE SURFACED WITH ASPHALT CONCRETE (AC) OR PORTLAND CEMENT CONCRETE (PCC).
3. MAXIMUM GRADE BREAK 14% (5' MINIMUM VERTICAL CURVE PREFERRED).
4. SEE SAN DIEGO AREA REGIONAL STANDARD DRAWINGS G-15 & G-16 FOR DRIVEWAY LOCATION & WIDTH REQUIREMENTS AND G-14 SERIES FOR PCC DRIVEWAYS.
5. 4' MINIMUM ADA ACCESS WHEN WALKWAYS ARE PROVIDED.
6. 4" MINIMUM AC OVER 6" MINIMUM BASE, UNLESS OTHERWISE INDICATED ON PLANS.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
NEW	MR	MR/CV	09/11		<b>ASPHALT CONCRETE DRIVEWAY</b>
UPDATED	CV	CV	12/15	DRAWING NUMBER	
				G-14G	



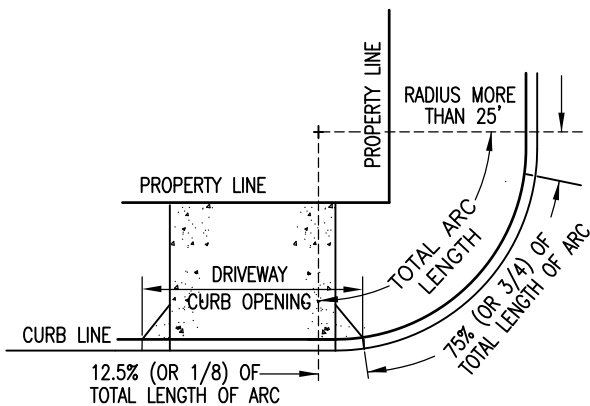
**REQUIREMENT 1**

NO PORTION OF ANY CURB OPENING SHALL BE PERMITTED WITHIN 6' OF THE INTERSECTION OF THE PROLONGED PROPERTY LINES AND THE CURB SHOWN BY ARC A.



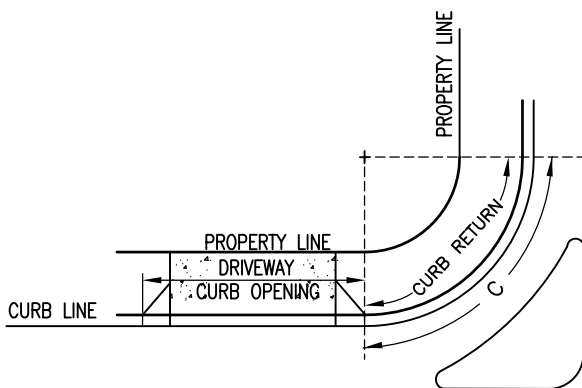
**REQUIREMENT 2**

NO PORTION OF ANY CURB OPENING SHALL BE PERMITTED IN THE CURB RETURN WHERE THE RADIUS OF CURB IS 25' OR LESS, AS SHOWN BY ARC B.



**REQUIREMENT 3**

ON ALL CURB RETURNS WHERE THE RADIUS IS MORE THAN 25', CURB OPENINGS MAY ENCRUCH UPON EACH END OF THE RETURN A DISTANCE EQUAL TO 12.5% (OR 1/8) OF THE TOTAL LENGTH OF THE ARC ON THE CURB RETURN, THUS LEAVING AT LEAST 75% (OR 3/4) OF THE LENGTH OF ARC ON THE RETURN FACE FREE FROM DRIVEWAY ENCRUCHMENT, PROVIDED REQUIREMENT 1 IS MET.



**REQUIREMENT 4**

NO PORTION OF ANY CURB OPENING SHALL BE PERMITTED IN THE CURB RETURN WHERE A SEPARATE TURNING MOVEMENT IS PROVIDED, AS SHOWN BY ARC C.

Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
ADD METRIC		T. STANTON	03/03
REVIEWED		T. STANTON	04/06
UPDATED	MR	MR/CV	02/12
UPDATED	CV	CV	12/15

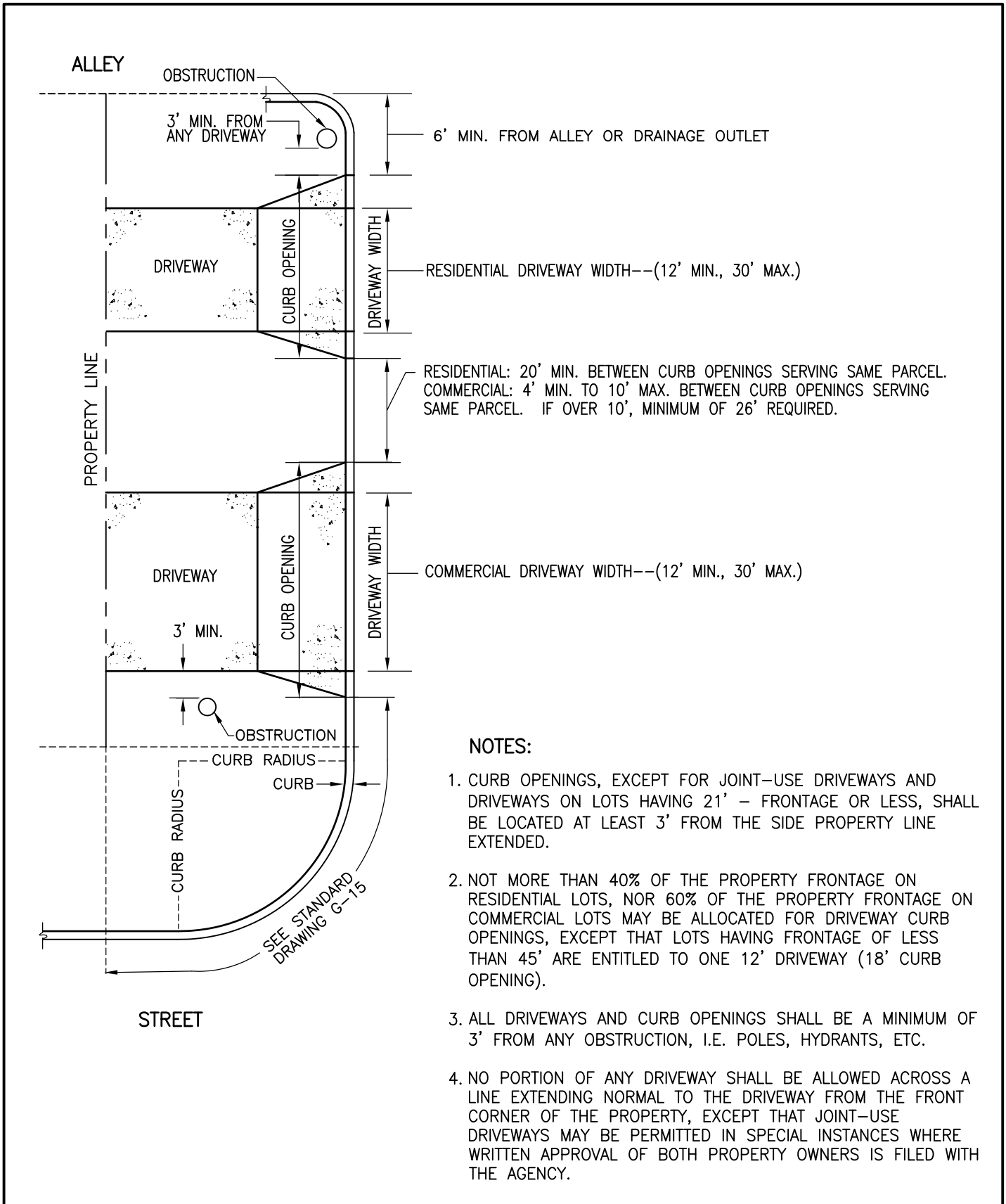
SAN DIEGO REGIONAL STANDARD DRAWING

DRIVEWAY LOCATION – ADJACENT TO CURB RETURNS AND STREET LINES

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER G-15



**NOTES:**

1. CURB OPENINGS, EXCEPT FOR JOINT-USE DRIVEWAYS AND DRIVEWAYS ON LOTS HAVING 21' - FRONTAGE OR LESS, SHALL BE LOCATED AT LEAST 3' FROM THE SIDE PROPERTY LINE EXTENDED.
2. NOT MORE THAN 40% OF THE PROPERTY FRONTAGE ON RESIDENTIAL LOTS, NOR 60% OF THE PROPERTY FRONTAGE ON COMMERCIAL LOTS MAY BE ALLOCATED FOR DRIVEWAY CURB OPENINGS, EXCEPT THAT LOTS HAVING FRONTAGE OF LESS THAN 45' ARE ENTITLED TO ONE 12' DRIVEWAY (18' CURB OPENING).
3. ALL DRIVEWAYS AND CURB OPENINGS SHALL BE A MINIMUM OF 3' FROM ANY OBSTRUCTION, I.E. POLES, HYDRANTS, ETC.
4. NO PORTION OF ANY DRIVEWAY SHALL BE ALLOWED ACROSS A LINE EXTENDING NORMAL TO THE DRIVEWAY FROM THE FRONT CORNER OF THE PROPERTY, EXCEPT THAT JOINT-USE DRIVEWAYS MAY BE PERMITTED IN SPECIAL INSTANCES WHERE WRITTEN APPROVAL OF BOTH PROPERTY OWNERS IS FILED WITH THE AGENCY.

Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
ADD METRIC		T. STANTON	03/03
REVIEWED		T. STANTON	04/06
UPDATED	MR	MR/CV	03/12
UPDATED	CV	CV	12/15

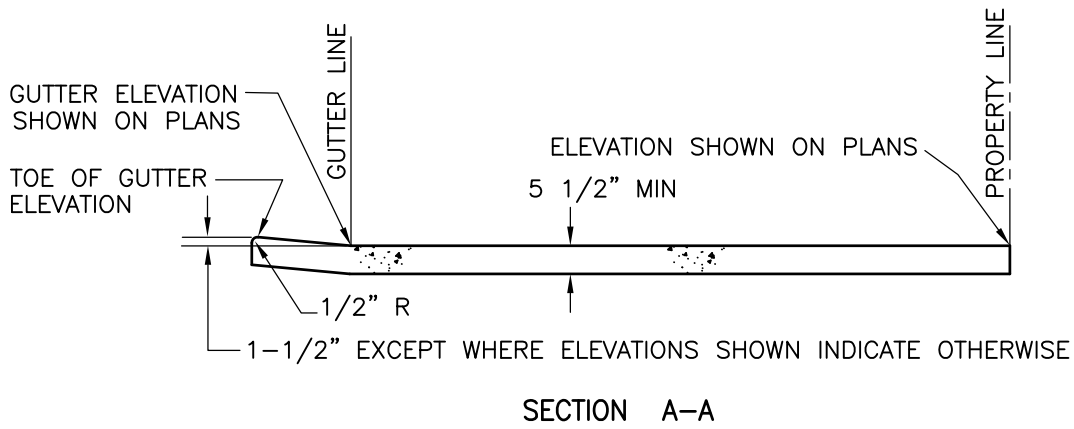
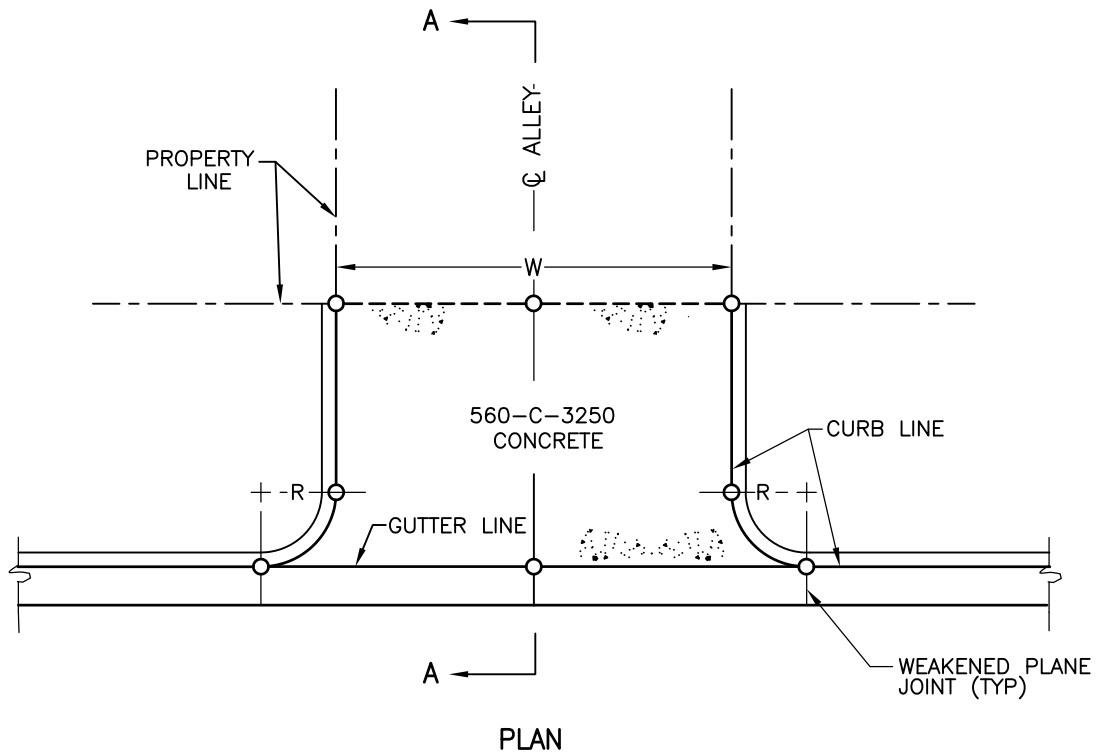
SAN DIEGO REGIONAL STANDARD DRAWING

DRIVEWAY LOCATION  
AND WIDTH REQUIREMENTS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

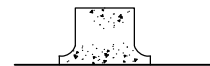
DRAWING NUMBER G-16



**NOTES:**

1. SIDEWALK RAMPS SHALL BE INSTALLED AS REQUIRED BY AGENCY.
2. W = WIDTH SHOWN ON PLANS.
3. R = RADIUS SHOWN ON PLANS (3' MINIMUM).
4. ○ = ELEVATION SHOWN ON PLANS (TOP OF CURB AND GUTTER ELEV.)
5. --- = 1/2" EXPANSION JOINTS.

**LEGEND ON PLANS**



Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
ADD METRIC		T. STANTON	03/03
REVIEWED		T. STANTON	04/06
UPDATED	MR	MR/CV	03/12
UPDATED	CV	CV	12/15

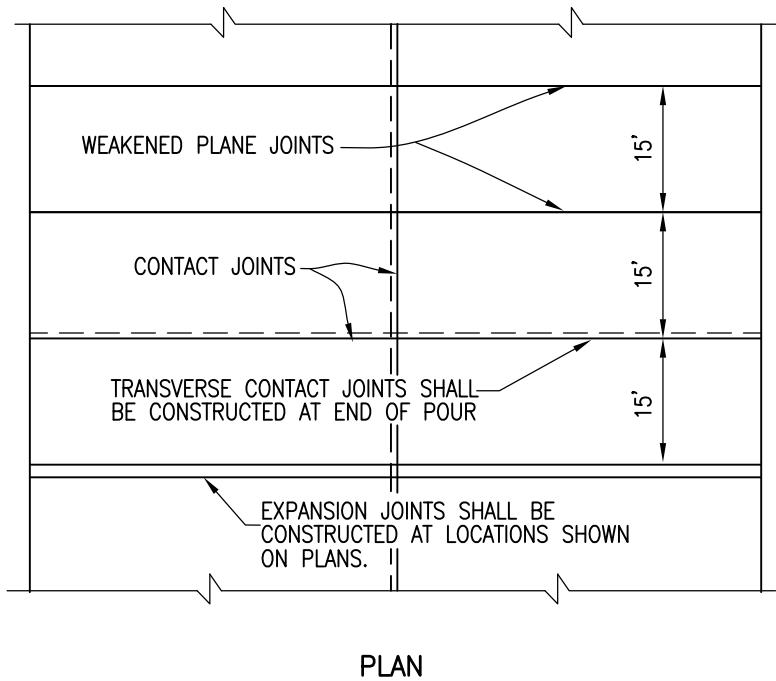
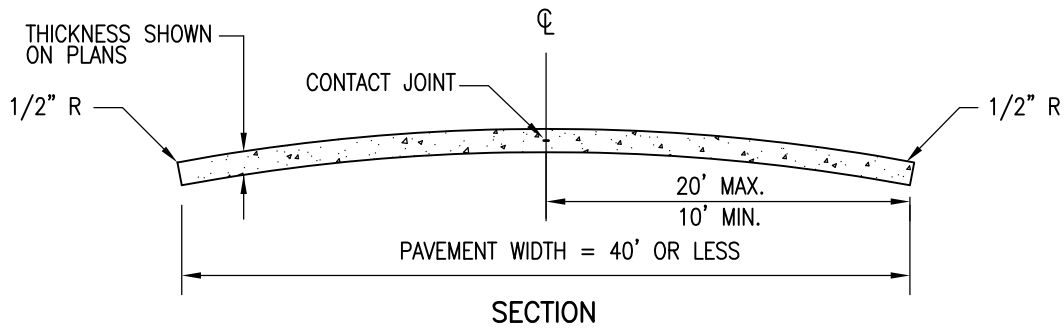
SAN DIEGO REGIONAL STANDARD DRAWING

**ALLEY APRON**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-17**



**NOTES:**

1. CONCRETE SHALL BE 560-C-3250.
2. SEE STANDARD DRAWING G-10 FOR JOINT DETAILS.
3. ADJUST 15' INTERVAL BETWEEN TRANSVERSE JOINTS TO MATCH ADJACENT EXISTING IMPROVEMENTS.

Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
ADD METRIC		T. STANTON	03/03
REVIEWED		T. STANTON	04/06
UPDATED	MR	MR/CV	03/12
UPDATED	CV	CV	12/15

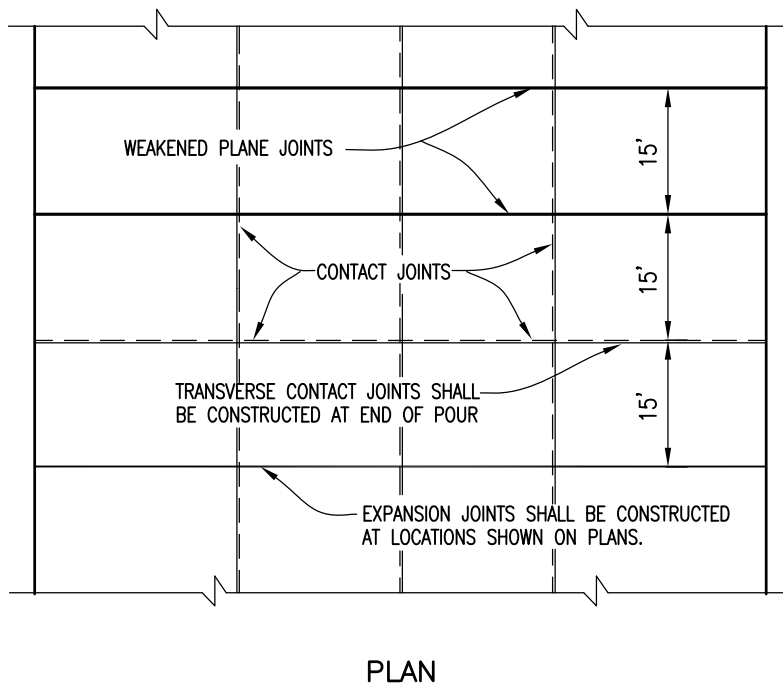
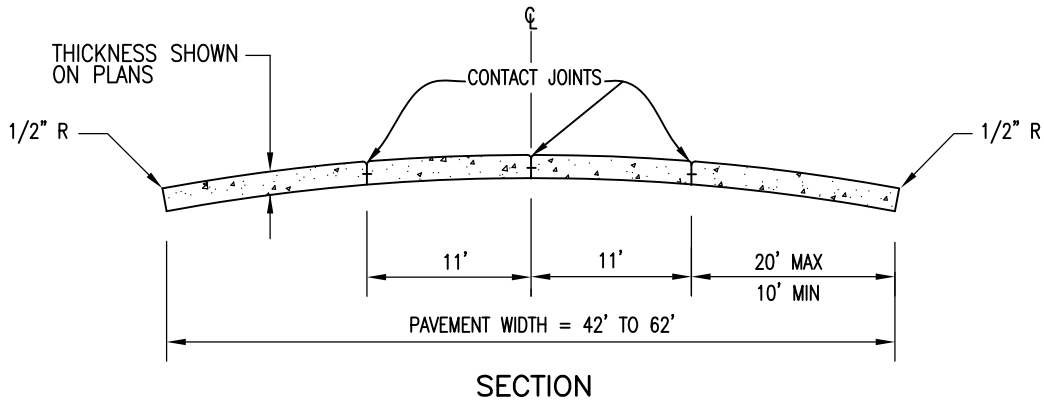
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE PAVEMENT  
WIDTH 40' OR LESS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER G-18



**NOTES:**

1. CONCRETE SHALL BE 560-C-3250.
2. SEE STANDARD DRAWING G-10 FOR JOINT DETAILS.
3. ADJUST 15' INTERVAL BETWEEN TRANSVERSE JOINTS TO MATCH ADJACENT EXISTING IMPROVEMENTS.

Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
ADD METRIC		T. STANTON	03/03
REVIEWED		T. STANTON	04/06
UPDATED	MR	MR/CV	03/12
UPDATED	CV	CV	12/15

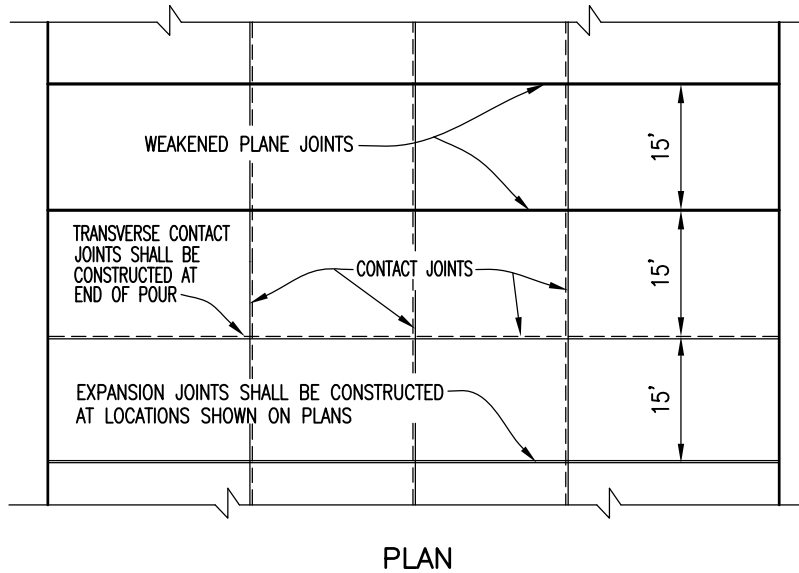
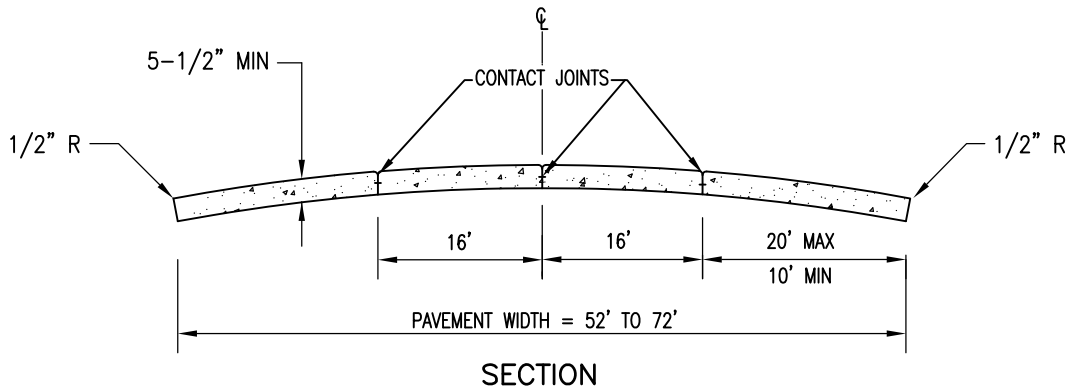
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE PAVEMENT  
WIDTH 42' TO 62'

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER G-19



**NOTES:**

1. CONCRETE SHALL BE 560-C-3250.
2. SEE STANDARD DRAWING G-10 FOR JOINT DETAILS.
3. ADJUST 15' INTERVAL BETWEEN TRANSVERSE JOINTS TO MATCH ADJACENT EXISTING IMPROVEMENTS.

Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
ADD METRIC		T. STANTON	03/03
REVIEWED		T. STANTON	04/06
UPDATED	MR	MR/CV	03/12
UPDATED	CV	CV	12/15

SAN DIEGO REGIONAL STANDARD DRAWING

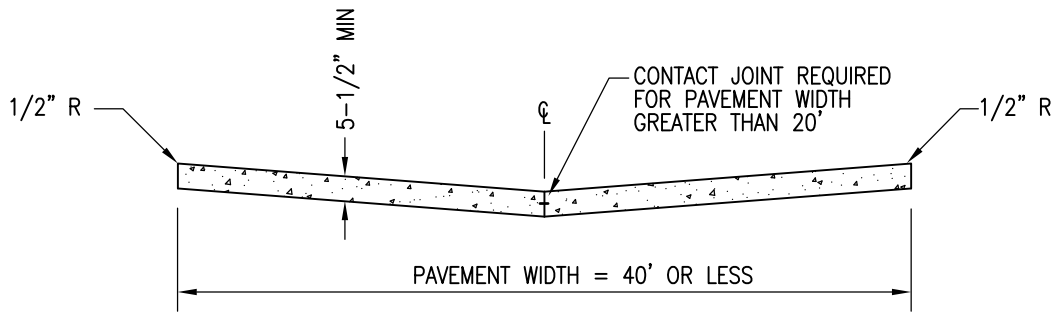
CONCRETE PAVEMENT, ALLEY SECTION  
WIDTH 52' TO 72'

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

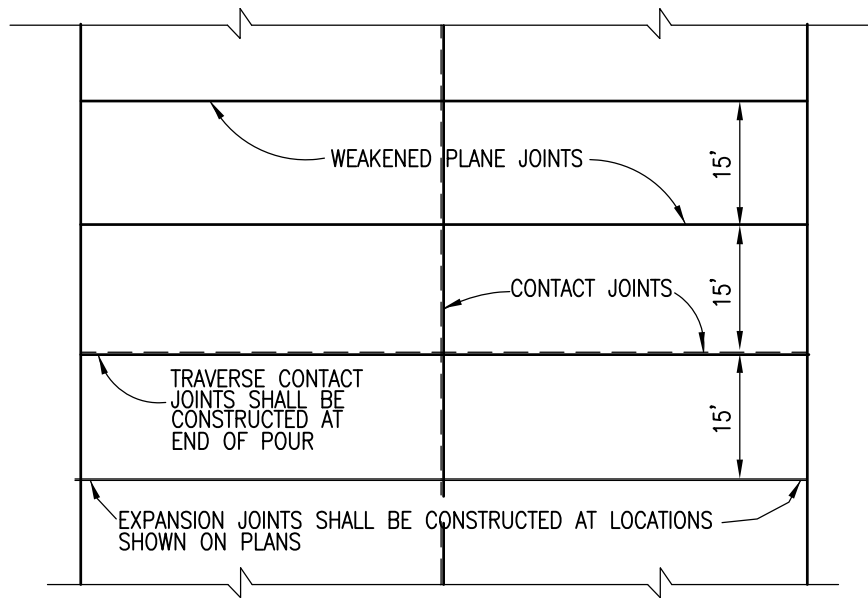
*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER G-20





SECTION

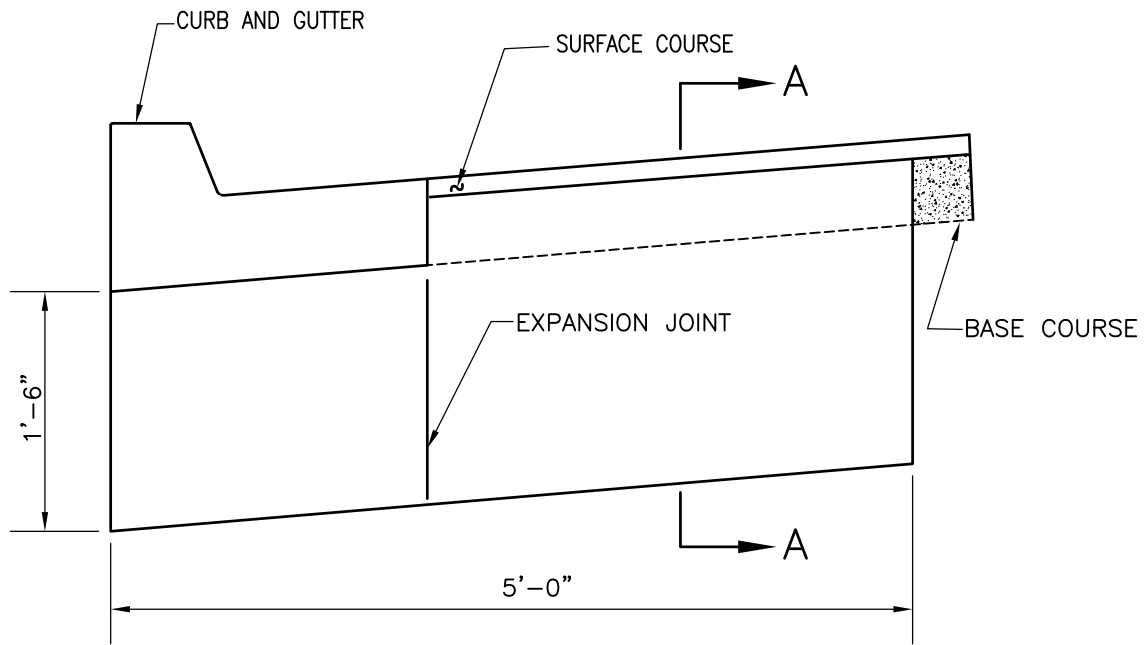


PLAN

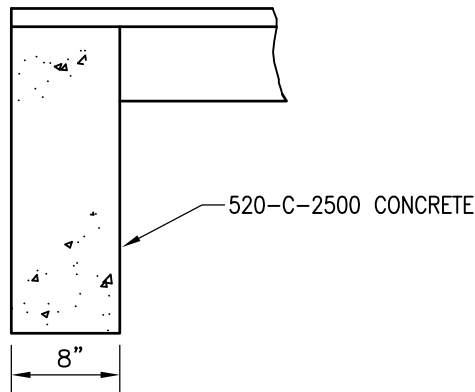
NOTES:

1. CONCRETE SHALL BE 560-C-3250.
2. SEE STANDARD DRAWING G-10 FOR JOINT DETAILS.
3. ADJUST 15' INTERVAL BETWEEN TRANSVERSE JOINTS TO MATCH ADJACENT EXISTING IMPROVEMENTS.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		KERCHEVAL	12/75		CONCRETE PAVEMENT ALLEY SECTION, WIDTH 40' OR LESS
ADD METRIC		T. STANTON	03/03	<i>T. Stanton</i> 10/25/2018	
REVIEWED		T. STANTON	04/06	Chairperson R.C.E. 19246 Date	
UPDATED	MR	MR/CV	03/12	DRAWING NUMBER	
UPDATED	CV	CV	03/12	G-21	



ELEVATION

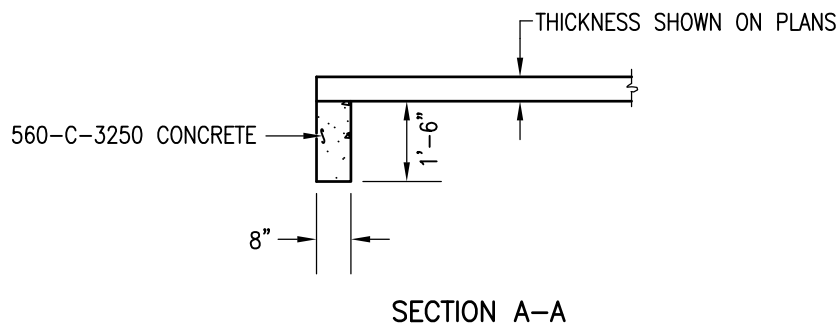
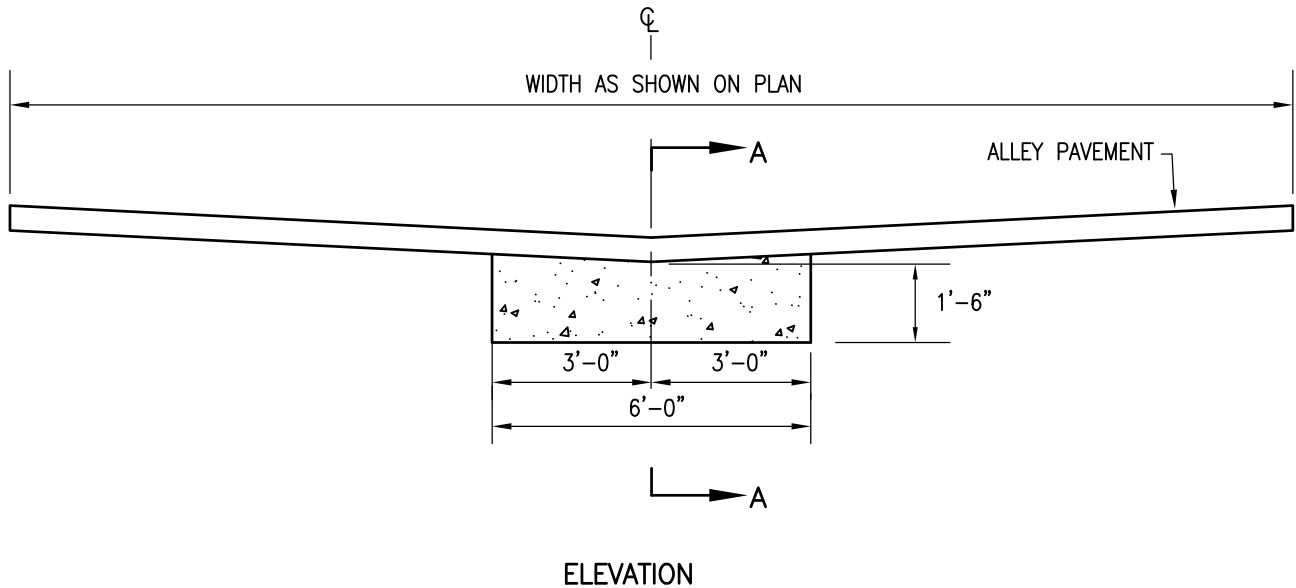


SECTION A-A

LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		KERCHEVAL	12/75		<p>CUTOFF WALL AT END OF PAVEMENT</p>
ADD METRIC		T. STANTON	03/03		
REVIEWED		T. STANTON	04/06	<p>DRAWING NUMBER G-22</p>	
UPDATED	MR	MR/CV	03/12		
UPDATED	CV	CV	12/15		



LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
ADD METRIC		T. STANTON	03/03
REVIEWED		T. STANTON	04/06
UPDATED	MR	MR/CV	03/12
UPDATED	CV	CV	12/15

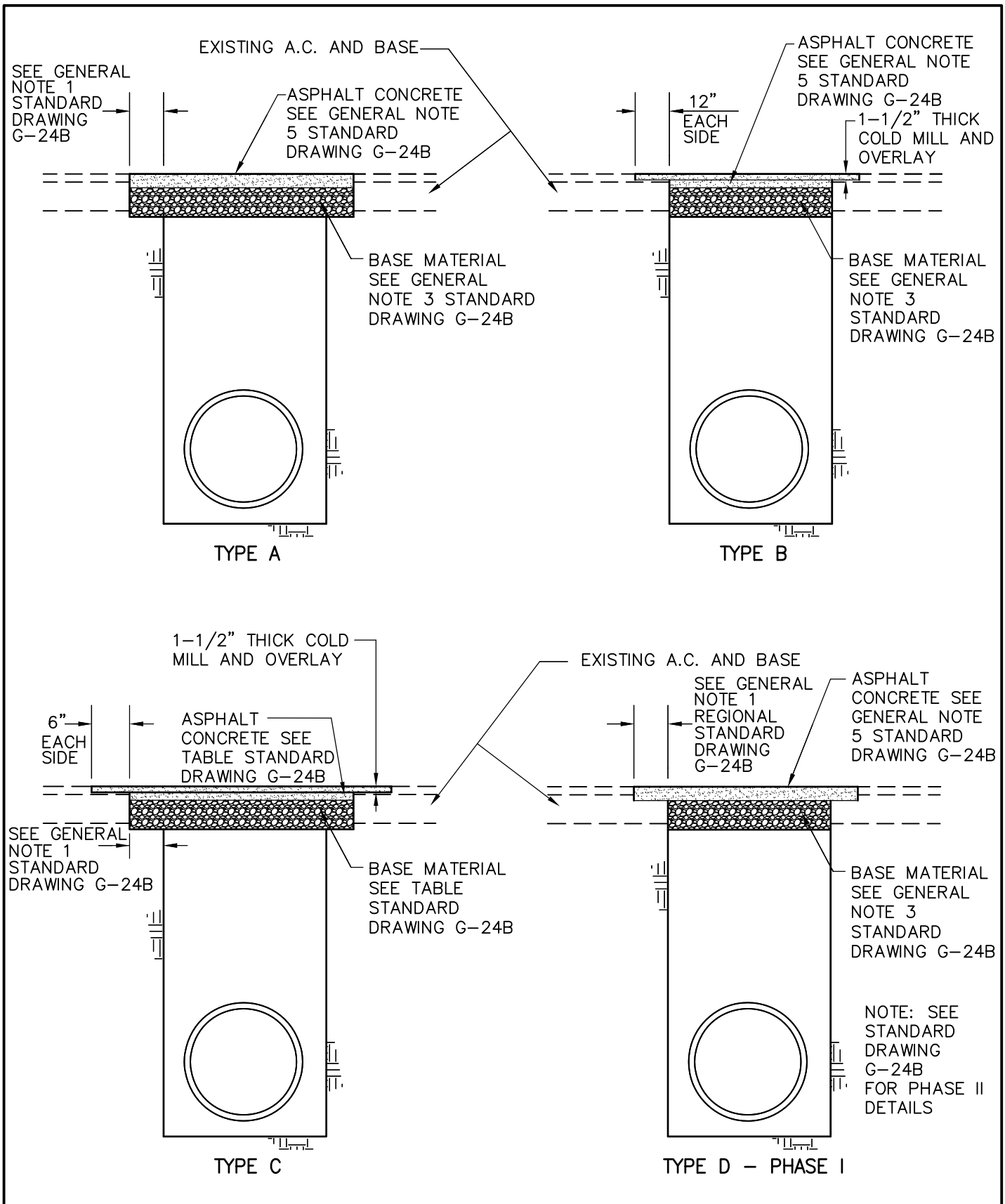
SAN DIEGO REGIONAL STANDARD DRAWING

CUTOFF WALL  
AT END OF ALLEY PAVEMENT

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

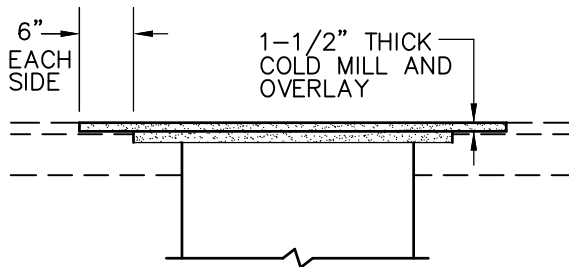
DRAWING NUMBER G-23



Revision	By	Approved	Date
ORIGINAL		PARKINSON	02/95
ADD METRIC		T. STANTON	03/03
REVIEWED		T. STANTON	04/06
UPDATED	MR	MR/CV	03/12
REVIEWED	CV	CV	12/15

SAN DIEGO REGIONAL STANDARD DRAWING  
  
 TRENCH RESURFACING  
 ASPHALT CONCRETE STREETS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE  
  
*R. Stanton* 10/25/2018  
 Chairperson R.C.E. 19246 Date  
 DRAWING NUMBER G-24A



**TYPE D – PHASE II  
FINISH PAVING**

TYPE C TRENCH		
	ASPHALT	ASPHALT PLUS BASE
MIX DESIGN	3/4" TYPE III CLASS B3	3/4" TYPE III CLASS B3 PLUS CLASS II BASE
ALLEYS	8.0"	ASPHALT THICKNESS TO EQUAL EXISTING PLUS 1", MIN 4" TO MAX 9" COMBINED ASPHALT PLUS BASE 18" MIN.
LOCAL – 4 LANE COLLECTOR	10.0"	
MAJOR OR GREATER	12.0"	

**GENERAL NOTES:**

- TRENCH EDGES TO BE SAWCUT A MINIMUM OF 6" WIDER THAN TRENCH FOR 3' WIDE OR LESS, AND 12" WIDER FOR TRENCHES OVER 3' WIDE ON EACH SIDE OF TRENCH, EXCEPT TYPE B.
- EXISTING A.C. SHALL BE SAWCUT AND REMOVED IN SUCH A MANNER SO AS NOT TO TEAR, BULGE, OR DISPLACE ADJACENT PAVEMENT. EDGES SHALL BE CLEAN AND VERTICAL. ALL CUTS SHALL BE PARALLEL OR PERPENDICULAR TO STREET CENTERLINE, WHEN PRACTICAL.
- BASE MATERIAL SHALL MATCH THE THICKNESS OF EXISTING BASE OR AS SHOWN ON PLAN. A.C. MAY BE SUBSTITUTED FOR BASE MATERIAL WITH PRIOR AGENCY APPROVAL. TYPE C – SEE TABLE.
- A TACK COAT OF ASPHALTIC EMULSION OR PAVING ASPHALT SHALL BE APPLIED TO EXISTING A.C. OR P.C.C. CONTACT SURFACES PRIOR TO RESURFACING.
- ASPHALT CONCRETE RESURFACING:
  - MINIMUM TOTAL THICKNESS SHALL BE ONE INCH GREATER THAN EXISTING A.C. OR AS SHOWN ON PLAN.
  - A.C. SHALL BE HOT PLANT MIX.
  - TYPE C – SEE TABLE.
- ALL A.C. RESURFACING SHALL BE SEAL COATED WITH AN EMULSIFIED ASPHALT AND COVERED WITH SAND. CHIP SEALING SHALL BE APPLIED AS REQUIRED BY AGENCY.
- PAVEMENT FABRIC SHALL BE INSTALLED WHEN REQUIRED BY AGENCY.

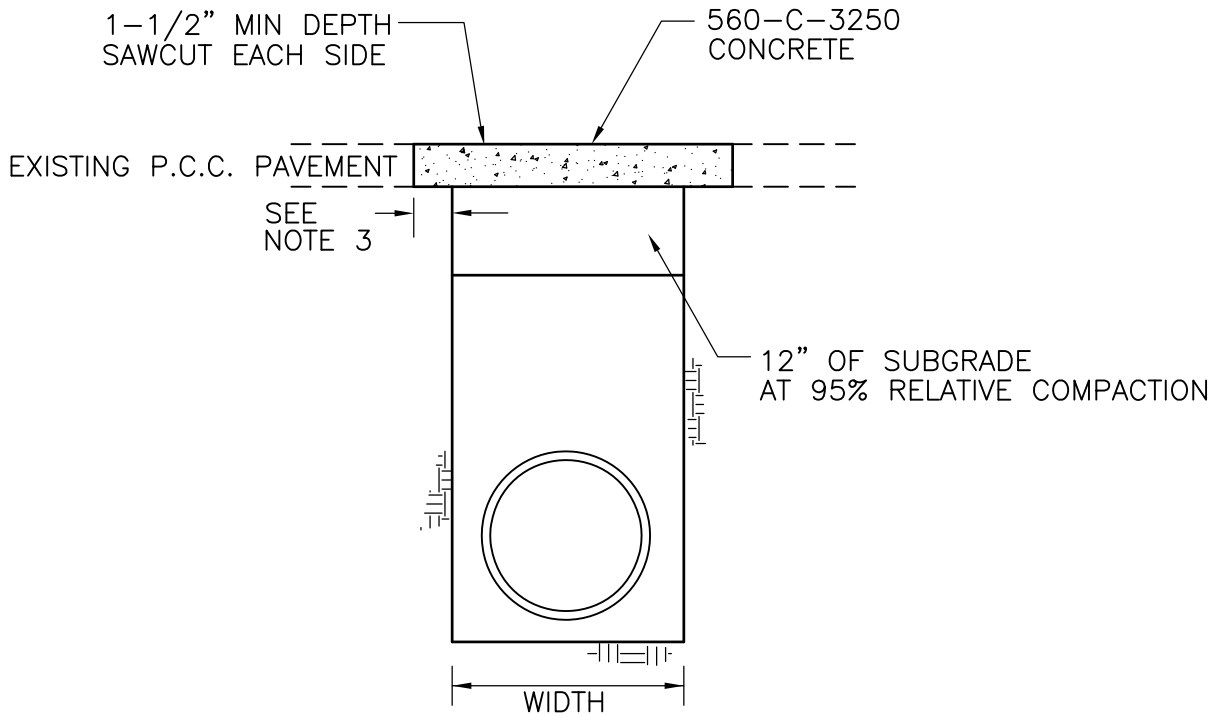
**TYPE B & C NOTES:**

- ASPHALT TRENCH CAPS IN STREETS NOT RECEIVING A FULL WIDTH OVERLAY PRIOR TO ACCEPTANCE SHALL BE BASE-PAVED TO MATCH EXISTING ADJACENT PAVEMENT SURFACE. NO LESS THAN 30 DAYS AFTER INITIAL ASPHALT PLACEMENT, TRENCH CAP SHALL BE MILLED AS SHOWN AND RESURFACED WITH 1/2" TYPE III CLASS C2 ASPHALT.
- UPON APPROVAL OF ALL PIPELINE TESTING AND TIE-INS FROM THE AGENCY, THE CONTRACTOR SHALL COLD MILL THE TRENCH REPAIR TO A DEPTH OF 1-1/2", ONE FOOT WIDER THAN THE TRENCH WIDTH ON BOTH SIDES. WHEN EDGE OF COLD MILL LINE IS WITHIN 18" OF ANY STRUCTURE, EDGE OF PAVEMENT, ADJACENT TRENCH, OR OTHER PAVING JOIN LINE, THE COLD MILL SHALL BE EXTENDED TO THE EXISTING STRUCTURE, JOIN LINE, OR EDGE OF PAVEMENT.
- ANY STREET TRENCH 7 FEET IN WIDTH OR GREATER AND LONGER THAN 100 FEET IN OVERALL LENGTH SHALL BE RECONSTRUCTED AS DIRECTED BY AGENCY.

**TYPE D NOTES:**

- ALL AREAS OF EXISTING AC LESS THAN 48" WIDE REMAINING AFTER TRENCHING SHALL BE COLD MILLED AND PAVED PER TYPE D – PHASE II FINISH PAVING DETAIL.
- PHASE II PAVING SHALL BE COMPLETED NOT EARLIER THAN 14 CALENDAR DAYS AND NOT LATER THAN 75 CALENDAR DAYS AFTER PHASE I PAVING.

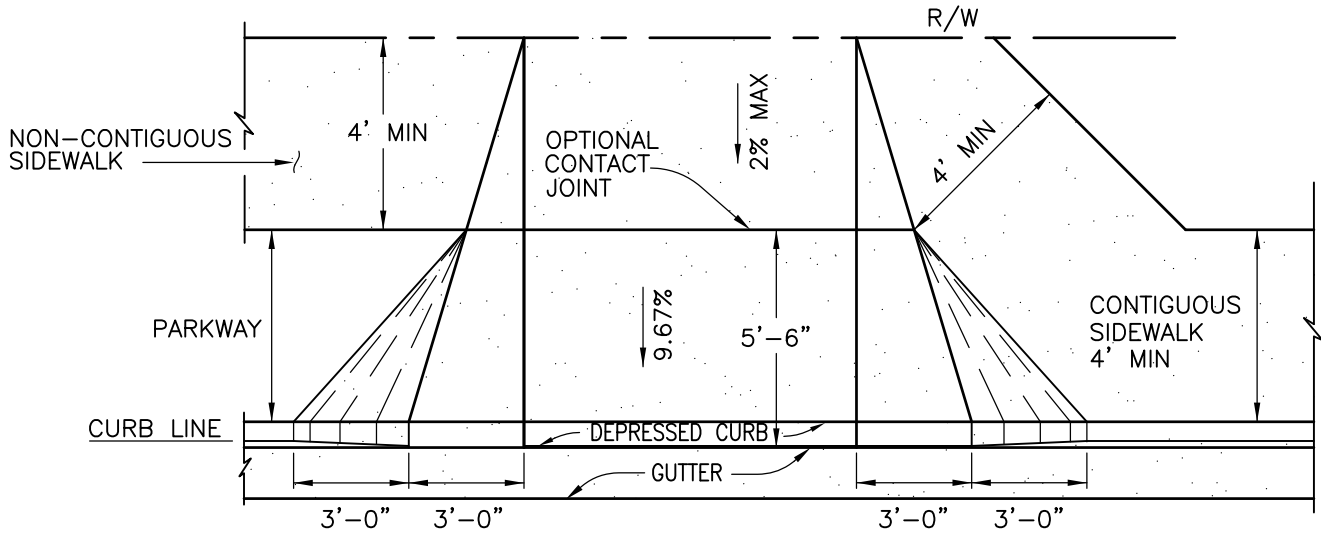
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL	MR	MR/CV	03/12		<b>TRENCH RESURFACING NOTES AND DETAILS</b>	<i>M. Stanton</i> 10/25/2018
REVIEWED	CV	CV	12/15	Chairperson R.C.E. 19246 Date		
				DRAWING NUMBER		G-24B



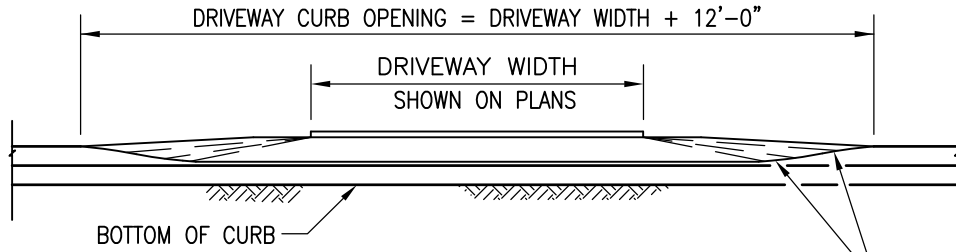
**NOTES:**

1. EXISTING CONCRETE PAVEMENT SHALL BE SAWCUT AND REMOVED. PRIOR TO PLACING CONCRETE, PAVEMENT EDGES SHALL BE TRIMMED TO NEAT HORIZONTAL AND VERTICAL LINES.
2. UNLESS OTHERWISE SPECIFIED, CONCRETE TRENCH COVER SHALL BE A MINIMUM OF 5-1/2" FOR ALLEYS, 7" FOR LOCAL THROUGH FOUR LANE COLLECTOR STREETS, AND 9" THICK FOR ALL MAJOR OR GREATER STREET CLASSIFICATIONS.
3. TRENCH EDGES TO BE CUT A MINIMUM OF 6" WIDER THAN TRENCH FOR 3' WIDE OR LESS AND 12" WIDER FOR TRENCHES OVER 3' WIDE, ON EACH SIDE OF TRENCH.
4. ANY STREET TRENCH 7' IN WIDTH OR GREATER AND LONGER THAN 100' IN LENGTH SHALL BE CONSTRUCTED WITH THE PAVEMENT SECTION PER PLAN OR LOCAL AGENCY REQUIREMENT. STREET TRENCH SECTIONS 7' IN WIDTH OR GREATER BUT LESS THAN 100' IN OVERALL LENGTH SHALL BE SURFACED TO A THICKNESS OF 1" GREATER THAN REQUIRED BY NOTE 2 OR AS INDICATED ON PLAN.
5. IN FOUR-LANE MAJOR OR GREATER STREETS, AN APPROVED SET ACCELERATING ADMIXTURE SUCH AS CALCIUM CHLORIDE SHALL BE USED IN CONCRETE.

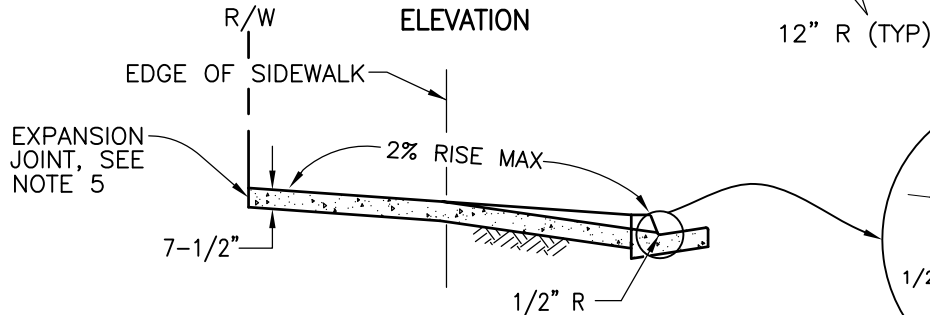
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		PARKINSON	02/95		
ADD METRIC		T. STANTON	03/03	<b>TRENCH RESURFACING PCC SURFACED STREETS</b>	<i>T. Stanton</i> 10/25/2018
REVIEWED		T. STANTON	04/06		Chairperson R.C.E. 19246 Date
UPDATED	MR	MR/CV	03/12		DRAWING NUMBER
REVIEWED	CV	CV	12/15		G-25



PLAN



ELEVATION



SECTION

NOTES:

1. NO CONCRETE SHALL BE PLACED UNTIL FORMS AND SUBGRADE ARE APPROVED BY THE AGENCY.
2. CONCRETE SHALL BE 560-C-3250.
3. SEE STANDARD DRAWINGS G-15 AND G-16 FOR WIDTH AND LOCATION REQUIREMENTS.
4. DRIVEWAY RAMP TO EXTEND TO 10' FROM CURB FACE OR TO PROPERTY LINE WHICHEVER IS LESS. (FOR COMMERCIAL DRIVEWAYS ONLY)
5. PLACE EXPANSION JOINT AT R/W OR 10', WHICHEVER IS LESS.
6. SEE STANDARD DRAWINGS G-2 AND G-10 FOR CURB AND JOINT DETAILS.
7. DIMENSIONS REFLECT A 6' CURB HEIGHT.

Revision	By	Approved	Date
ORIGINAL		H. HECHT	10/82
ADD METRIC		T. STANTON	03/03
REVIEWED		T. STANTON	04/06
UPDATED	MR	MR/CV	03/12
UPDATED	CV	CV	12/15

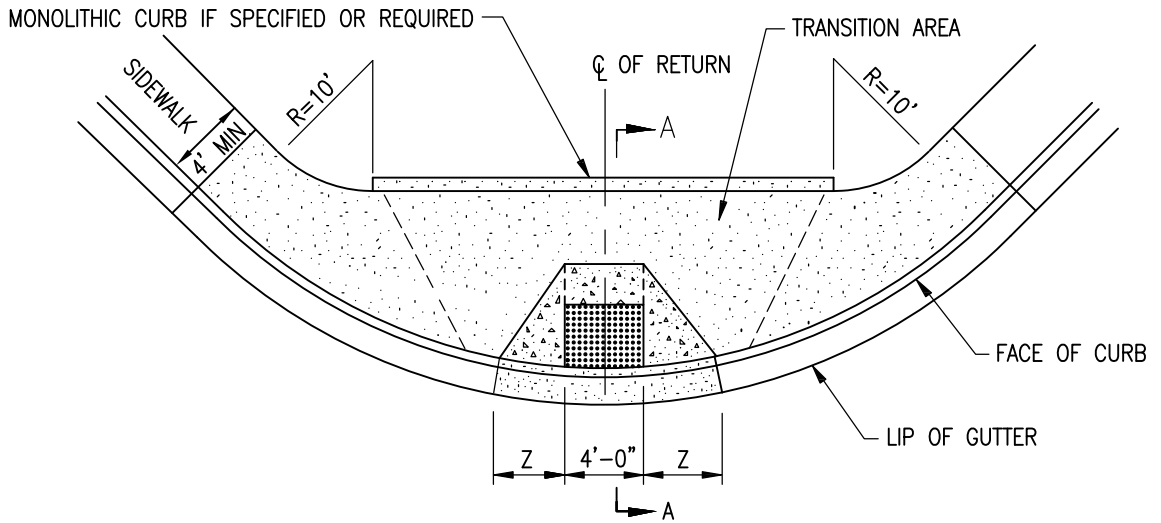
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE DRIVEWAY  
COMMERCIAL ALTERNATE

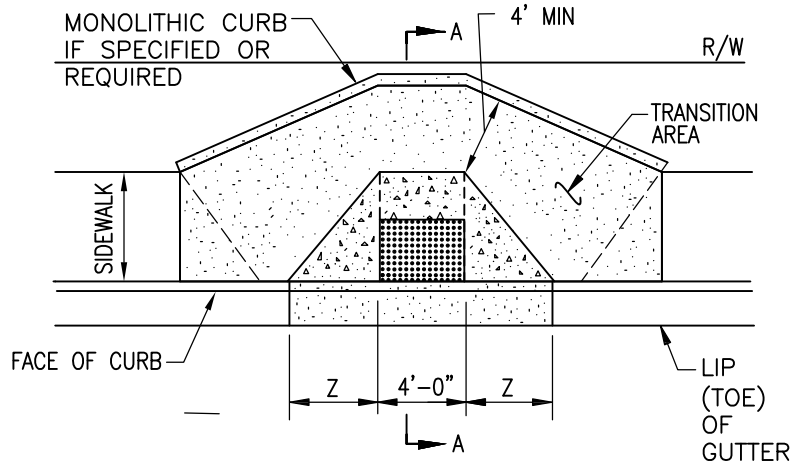
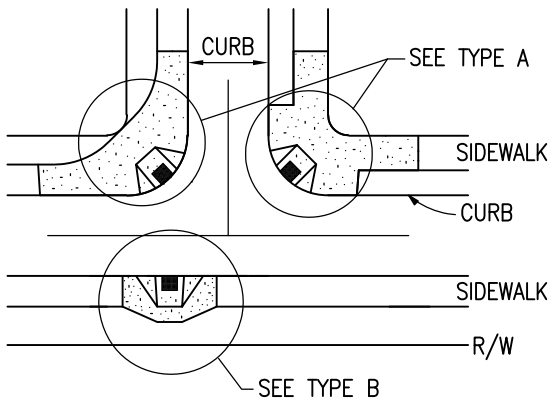
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

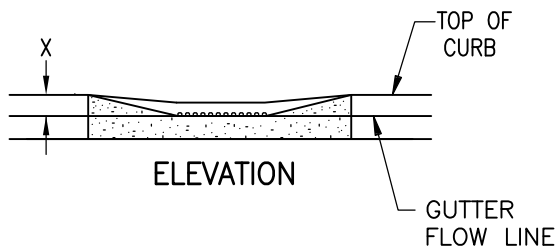
DRAWING NUMBER G-26



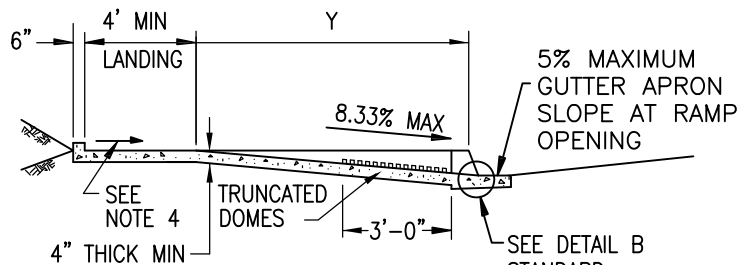
PLAN - TYPE A



PLAN - TYPE B



ELEVATION



SECTION A-A

NOTES:

1. SEE STANDARD DRAWING G-32A FOR GENERAL NOTES.
2. FOR TRUNCATED DOMES DETAILS, SEE STANDARD DRAWING G-30.
3. Z SIDE SLOPE SHALL BE 10:1.
4. LANDING CROSS SLOPE SHALL BE 2.0% MAX IN BOTH DIRECTIONS.
5. SEE STANDARD DRAWING G-32B FOR X, Y, AND Z DETAILS.

Revision	By	Approved	Date
ORIGINAL		BAHMANIAN	04/86
REVISED		T. STANTON	04/06
UPDATED	MR	MR/CV	03/12
REVIEWED	CV	CV	12/15
REVISED	KE	TS/RAP	11/17

SAN DIEGO REGIONAL STANDARD DRAWING

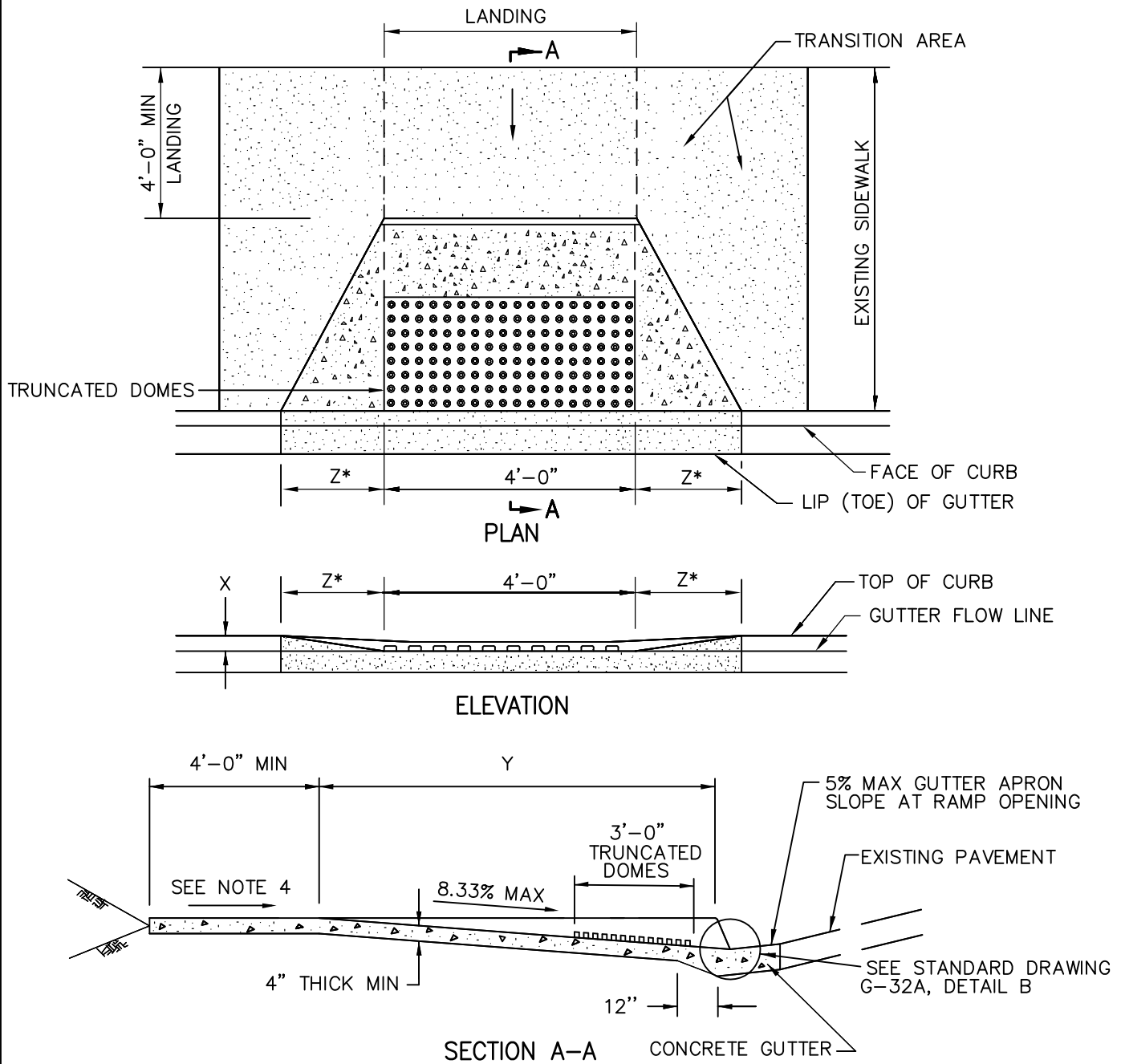
CURB RAMP - TYPES A AND B  
(NEW CONSTRUCTION)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER G-27





**NOTES:**

1. SEE STANDARD DRAWING G-32A FOR GENERAL NOTES.
2. TYPE A-1 IS A DESIGNATION FOR RAMP AT CURB RETURN.
3. TYPE B-1 IS A DESIGNATION FOR RAMP AT STRAIGHT CURB (SHOWN ABOVE).
4. LANDING CROSS SLOPE SHALL BE 2.0% MAX IN BOTH DIRECTIONS.
5. FOR TRUNCATED DOMES DETAIL, SEE STANDARD DRAWING G-30.
6. SEE STANDARD DRAWING G-32B FOR X, Y, AND Z\* DETAILS.

Revision	By	Approved	Date
ORIGINAL		BAHMANIAN	02/95
REVISED		T. STANTON	04/06
UPDATED	MR	MR/CV	03/12
UPDATED	CV	CV	12/15
REVISED	KE	TS/RAP	11/17

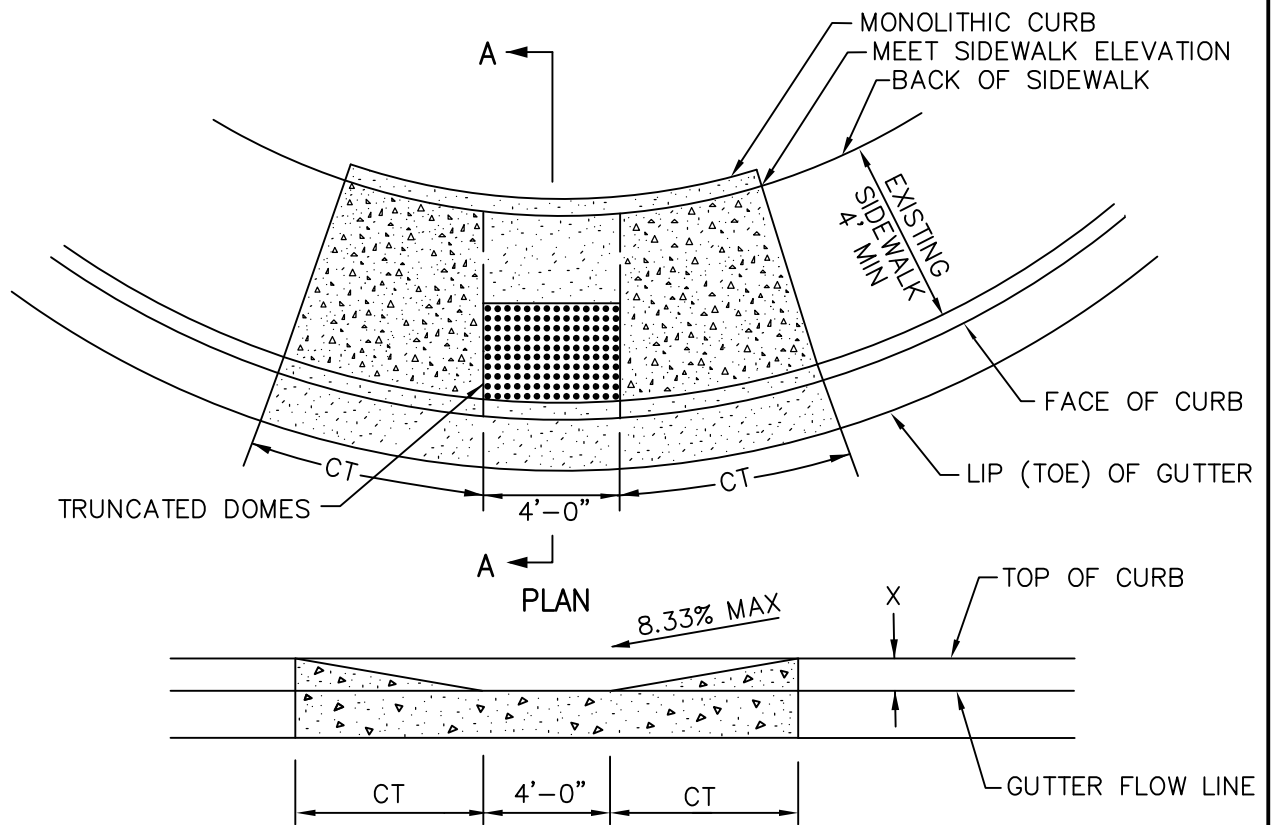
SAN DIEGO REGIONAL STANDARD DRAWING

**CURB RAMP – TYPES A-1 AND B-1**  
(FOR EXISTING SIDEWALK)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

**DRAWING NUMBER**      **G-28**



ELEVATION

SECTION A-A

SEE STANDARD DRAWING G-32A, DETAIL B

NOTES:

1. TYPE C ARE ONLY TO BE USED TO MITIGATE EXISTING CONDITIONS WHERE INADEQUATE RIGHT OF WAY EXISTS. TYPE C RAMP IS NOT TO BE USED IN NEW CONSTRUCTION, UNLESS APPROVED BY AGENCY.
2. SEE STANDARD DRAWING G-32A FOR GENERAL NOTES.
3. LANDING CROSS SLOPE SHALL BE 2.0% MAX IN BOTH DIRECTIONS.
4. FOR TRUNCATED DOMES, SEE STANDARD DRAWING G-30.
5. CT (CURB TRANSITION) SHALL BE 8.33% MAXIMUM.
6. SEE STANDARD DRAWING G-32B FOR X, Y, AND CT DETAILS.

Revision	By	Approved	Date
ORIGINAL		R. MUNOZ	05/97
REVISED		T. STANTON	04/06
UPDATED	MR	MR/CV	03/12
UPDATED	CV	T. STANTON	12/15
UPDATED	KE	T. STANTON	10/18

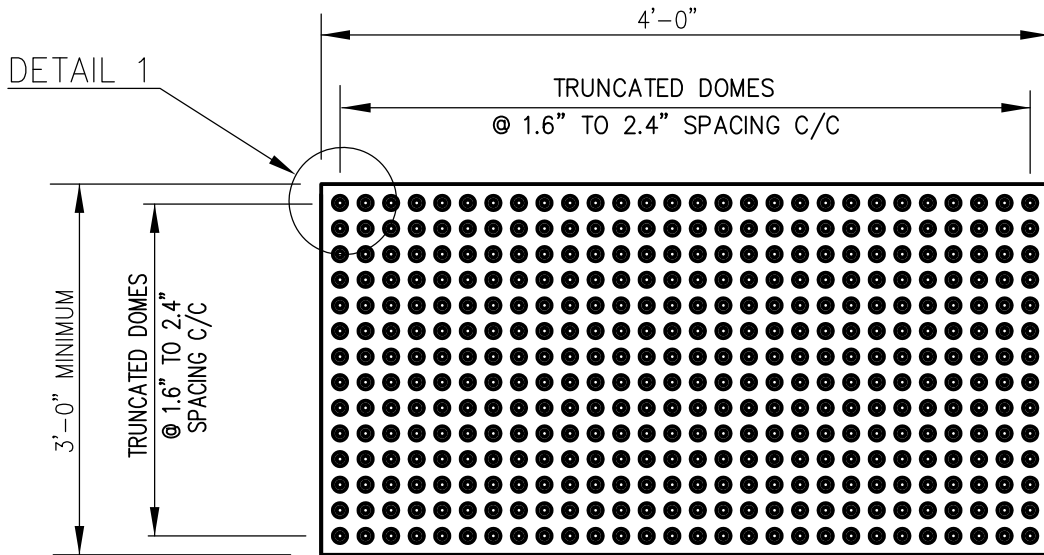
SAN DIEGO REGIONAL STANDARD DRAWING

CURB RAMP - TYPE C  
(FOR EXISTING SIDEWALK)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER G-29

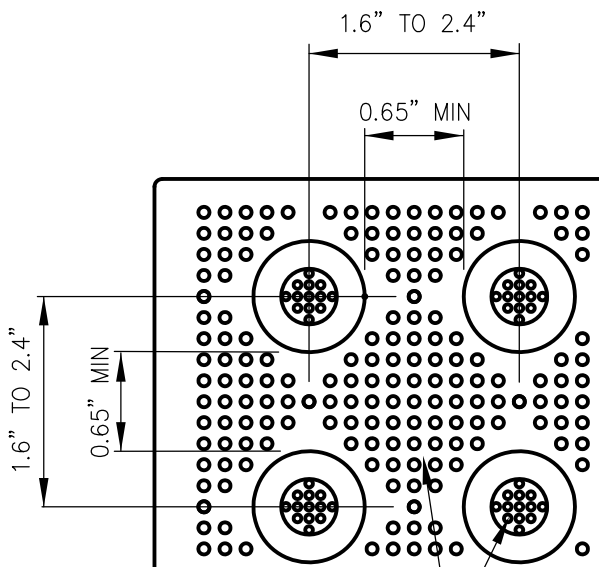


PLAN - TILE

NOT TO SCALE

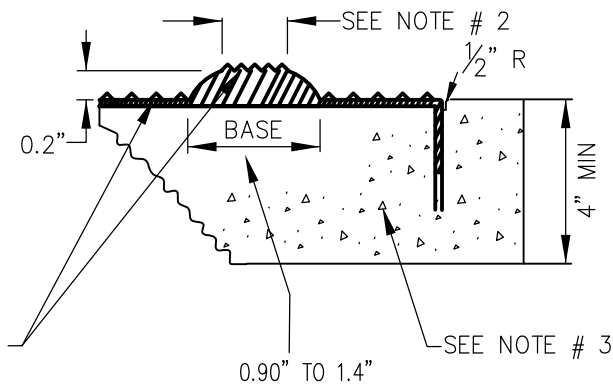
NOTES

1. DETECTABLE WARNING SURFACE COLOR SHALL BE YELLOW CONFORMING TO FEDERAL STANDARDS 595B TABLE IV, COLOR NO. 33538, OR AS SPECIFIED BY THE AGENCY. COLOR SHALL BE HOMOGENEOUS THROUGHOUT THE TILE.
2. TRUNCATED DOME TOP DIAMETER OF 50% OF THE BASE DIAMETER MINIMUM TO 65% OF THE BASE DIAMETER MAXIMUM.



DETAIL 1  
NOT TO SCALE

NOTE:  
PATTERN, SIZE &  
ORIENTATION ARE  
PER MANUFACTURER'S  
RECOMMENDATION



Revision	By	Approved	Date
ORIGINAL		PARKINSON	02/95
ADD METRIC		T. STANTON	03/03
UPDATE		D. DAVIES	12/04
UPDATED	MR	MR/CV	03/12
UPDATED	MR	MR/CV	03/12

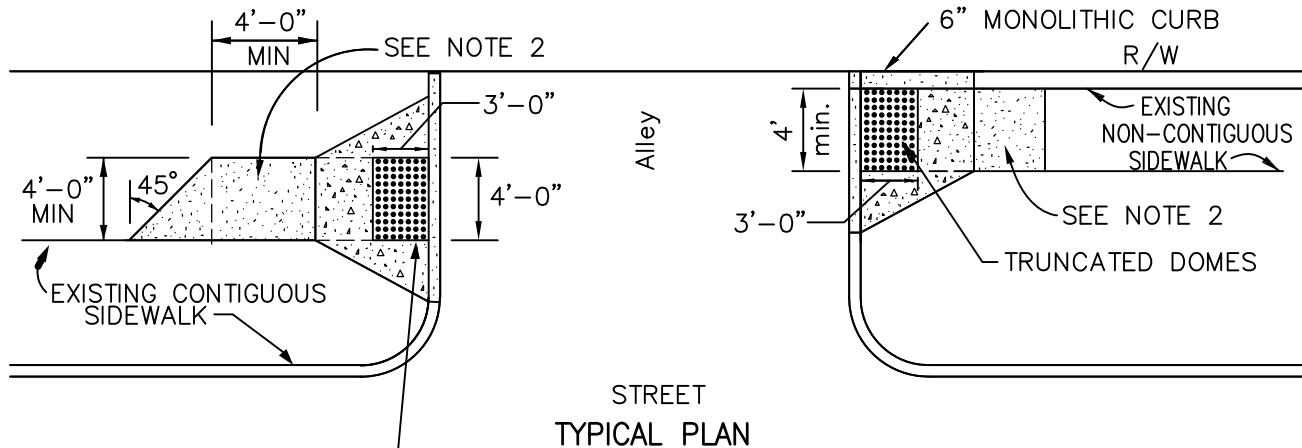
SAN DIEGO REGIONAL STANDARD DRAWING

TRUNCATED DOMES

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

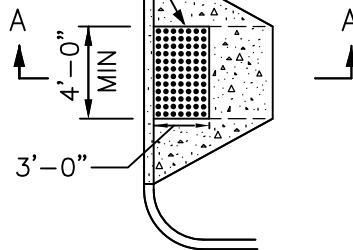
*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER G-30

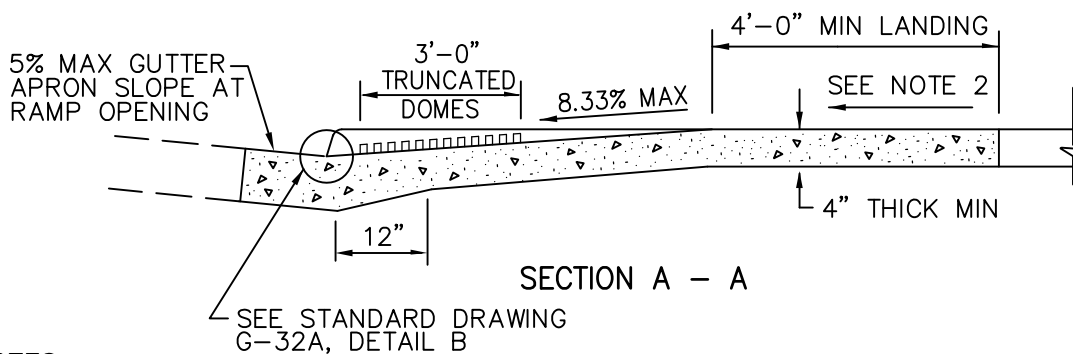


TRUNCATED DOMES

THE RAMP SIDE FLARES AND GROOVES MAY BE ELIMINATED BY THE ENGINEER AND REPLACED WITH A MONOLITHIC CURB FLUSH WITH THE EXISTING GROUND AND SIDEWALK.




PLAN VIEW

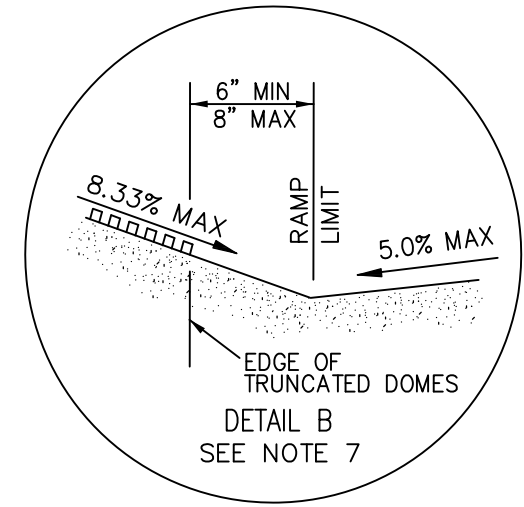
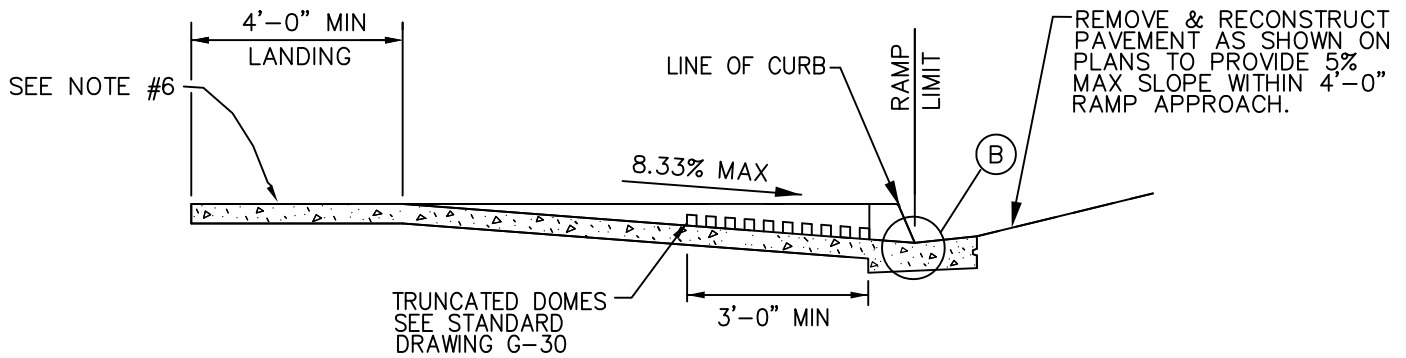


SECTION A - A


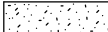
NOTES

1. SEE STANDARD DRAWING G-32A FOR GENERAL NOTES.
2. LANDING CROSS SLOPE SHALL BE 2.0% MAX IN BOTH DIRECTIONS.
3. FOR TRUNCATED DOMES DETAILS, SEE STANDARD DRAWING G-30.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		PARKINSON	02/95	CURB RAMP - TYPE D		 Chairperson R.C.E. 19246 Date 10/25/2018
REVISED		T. STANTON	04/06			
UPDATED	MR	MR/CV	03/12			
UPDATED	CV	CV	12/15			
REVISED	KE	TS/RAP	11/17			
						DRAWING NUMBER G-31



**NOTES**

1. THE REMOVAL OF EXISTING CONCRETE CURB, GUTTER, SIDEWALK, AND PAVEMENT FOR PEDESTRIAN RAMP INSTALLATION SHALL COMPLY WITH STANDARD DRAWING G-11. FOR CONSTRUCTION OF CURB RAMPS ON EXISTING SIDEWALKS, REMOVAL OF ADDITIONAL SIDEWALK MAY BE REQUIRED TO COMPLY WITH ADA REQUIREMENTS TO MEET EXISTING GRADE.
2. CONCRETE SHALL BE CLASS 520-C-2500.
3. AREAS SHOWN THUS:  SHALL HAVE A MEDIUM TO HEAVY BROOM TEXTURE FINISH, PERPENDICULAR TO THE AXIS OF THE RAMP. AREAS SHOWN THUS:  ARE THE MINIMUM REQUIRED FOR A COMPLETE RAMP INSTALLATION.
4. IF OBSTRUCTIONS SUCH AS INLETS, UTILITY POLES, FIRE HYDRANTS, ETC., ARE ENCOUNTERED, THE RAMP LOCATIONS MAY BE ADJUSTED UPON THE APPROVAL OF THE AGENCY.
5. THE RAMP SLOPES WILL BE MEASURED RELATIVE TO THE SIDEWALK SLOPE. ADJOINING SLOPE BEYOND THE RAMP SHALL NOT EXCEED 20:1 (5%).
6. LANDING CROSS SLOPE SHALL BE 2.0% MAX IN BOTH DIRECTIONS.
7. EDGE OF TRUNCATED DOME PANEL SHALL BE LOCATED 6" MINIMUM AND 8" MAXIMUM FROM THE GUTTER FLOWLINE.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		PARKINSON	02/95		GENERAL NOTES FOR CURB RAMPS
REVISED		T. STANTON	04/06	Chairperson R.C.E. 19246	
UPDATED	MR	MR/CV	03/12	Date	
REVIEWED	CV	CV	12/15	DRAWING NUMBER	
REVIEWED	KE	TS/RAP	11/17	G-32A	

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

TYPE A AND B CURB RAMPS

TABLE B			
X	Y	Z	Z1
CURB HEIGHT	RAMP LENGTH (12:1)	SIDE SLOPE (10:1)	SIDE SLOPE (12:1)
1"	1'-0"	1'-6"	1'-0"
2"	2'-0"	1'-8"	2'-0"
3"	3'-0"	2'-6"	3'-0"
4"	4'-0"	3'-4"	4'-0"
5"	5'-0"	4'-2"	5'-0"
6"	6'-0"	5'-0"	6'-0"
7"	7'-0"	5'-10"	7'-0"
8"	8'-0"	6'-8"	8'-0"

TYPE A-1 AND B-1 CURB RAMPS

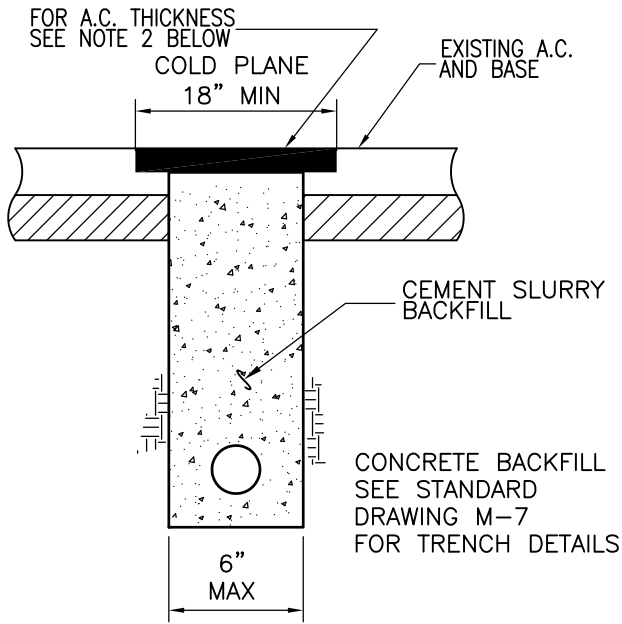
TABLE C	
X	CT
CURB HEIGHT	CURB TRANS. (12:1)
4"	4'-0"
5"	5'-0"
6"	6'-0"
7"	7'-0"
8"	8'-0"
9"	9'-0"
10"	10'-0"
11"	11'-0"
12"	12'-0"
13"	13'-0"

TYPE C CURB RAMP

NOTES

1. DIMENSIONS X, Y, Z, Z1, AND CT MAY BE DETERMINED BY USING THE TABLES ON THIS SHEET WITH PRIOR AGENCY APPROVAL. WITHOUT AGENCY APPROVAL, DIMENSIONS SHOULD NOT EXCEED THE MAXIMUM SLOPE OR RATIO PROVIDED.
2. Z\* REFERS TO Z OR Z1 IN TABLE B. Z SIDE SLOPE SHALL BE 10:1, EXCEPT PER NOTE 3.
3. FOR TYPE A-1 AND B-1 CURB RAMPS, WHERE A 4' LANDING CANNOT BE CONSTRUCTED DUE TO INADEQUATE RIGHT OF WAY, A 3' MINIMUM LANDING IS ACCEPTABLE WITH PRIOR AGENCY APPROVAL AND PROVIDED THE SIDE SLOPES ARE REVISED TO 12:1 PER SIDE SLOPE Z1 IN TABLE B.

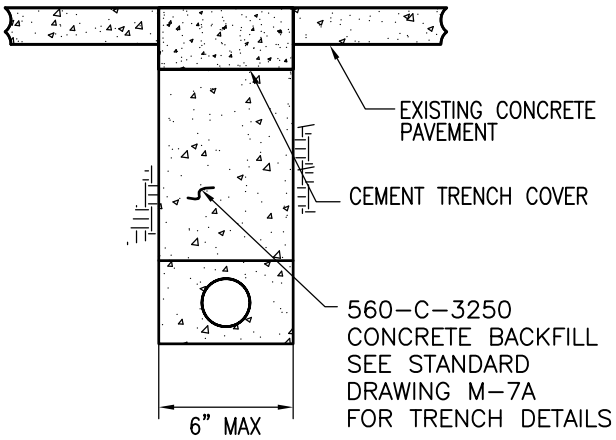
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL	MR	MR/CV	03/12		NOTES FOR CURB RAMPS	 10/25/2018
UPDATED	CV	CV	12/15	Chairperson R.C.E. 19246 Date		
				DRAWING NUMBER		G-32B



TYPE B

NOTES

1. A TACK COAT SHALL BE APPLIED TO THE CEMENT SLURRY BACKFILL AND EXISTING ASPHALT PAVEMENT PRIOR TO PLACING THE NEW ASPHALT SURFACE.
2. ASPHALTIC CONCRETE RESURFACING:
  - A. ALLOW CEMENT SLURRY BACKFILL SEVEN DAYS MINIMUM TO CURE BEFORE COLD PLANING.
  - B. THICKNESS OF ASPHALTIC CONCRETE SHALL BE A MINIMUM OF 2" OR AS SPECIFIED BY THE AGENCY'S ENGINEER.
  - C. A.C. SHALL BE HOT MIX.
3. A.C. SHALL BE SEALED OR CHIP SEALED WHEN REQUIRED BY THE AGENCY'S ENGINEER.



TYPE C

NOTES

1. CONCRETE SHALL BE SCREEDED OFF TO MATCH EXISTING PAVEMENT GRADE AND FLOATED TO ASSURE PROPER EDGE MATCH.
2. CONCRETE TRENCH COVER SHALL BE A MINIMUM OF 5-1/2" THICK IN ALLEY OR LOCAL RESIDENTIAL STREETS AND 7" THICK IN OTHER STREETS.
3. EXISTING CONCRETE PAVEMENT WILL REQUIRE SAWCUTTING WHEN USING ROCKWHEEL FOR EXCAVATION.
4. IN MAJOR OR PRIME ARTERIAL STREETS, AN APPROVED SET ACCELERATING ADMIXTURE, SUCH AS CALCIUM CHLORIDE, MAY BE USED ONLY WITH PRIOR APPROVAL OF THE AGENCY'S ENGINEER.

Revision	By	Approved	Date
ORIGINAL	HH	T. STANTON	11/02
ADD METRIC		T. STANTON	03/03
REVIEWED		T. STANTON	04/06
UPDATED	MR	MR/CV	03/12
REVIEWED	CV	CV	12/15

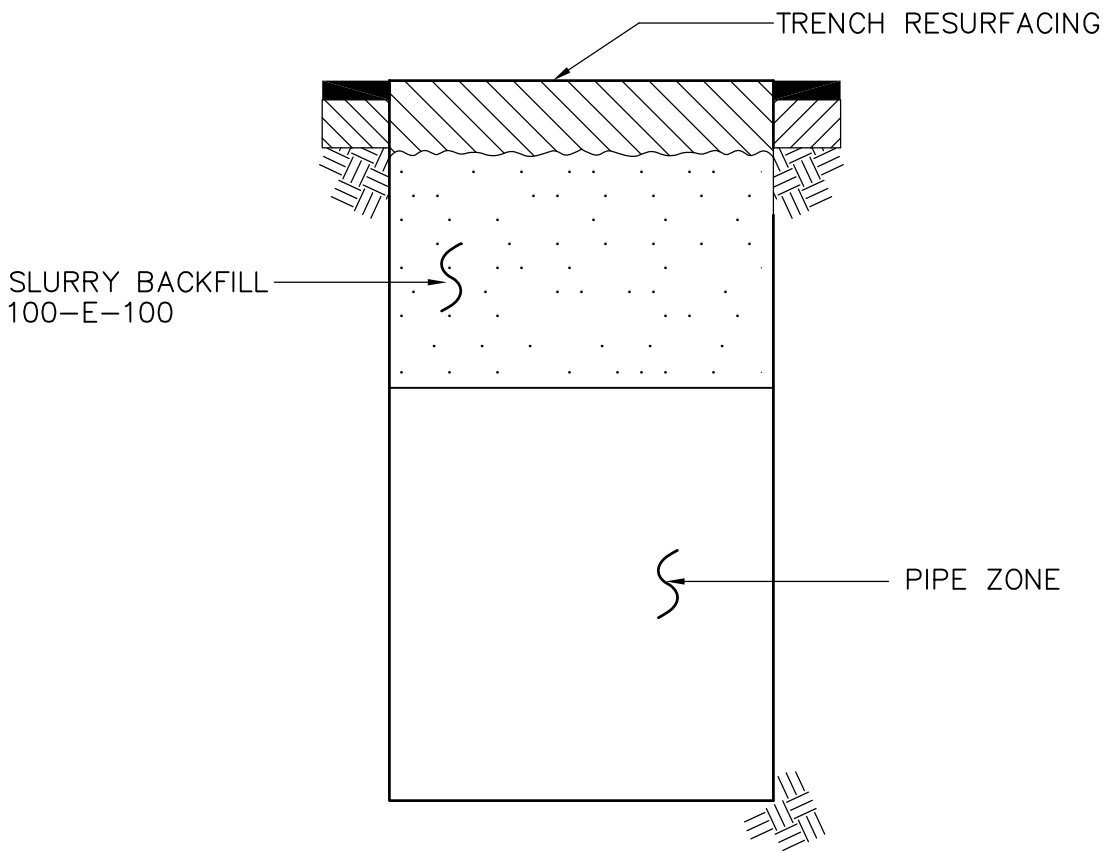
SAN DIEGO REGIONAL STANDARD DRAWING

NARROW TRENCHES  
TRENCHING & BACKFILLING

RECOMMENDED BY THE SAN DIEGO  
REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING  
NUMBER G-33

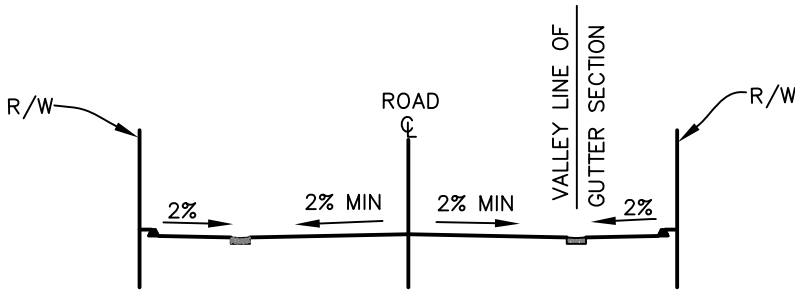


**NOTES**

1. TRENCH RESURFACING SHALL BE DONE ACCORDING TO AGENCY'S REQUIREMENTS.
2. THE SAND USED FOR THE SLURRY BACKFILL SHALL MEET THE REQUIREMENTS (SUBSECTION 400-3.2) LISTED IN THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. SLURRY SHALL CURE FOR SEVEN DAYS PRIOR TO TRENCH RESURFACING.
3. SLURRY BACKFILL SHALL NOT BE USED WHERE IT WILL IMPEDE SUBSURFACE DRAINAGE.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		PARKINSON	09/88		SLURRY BACKFILL	<i>T. Stanton</i> 10/25/2018
ADD METRIC		T. STANTON	03/03	Chairperson R.C.E. 19246 Date		
REVIEWED		T. STANTON	04/06	DRAWING NUMBER		G-36
UPDATED	MR	MR/CV	03/12			
UPDATED	CV	CV	12/15			

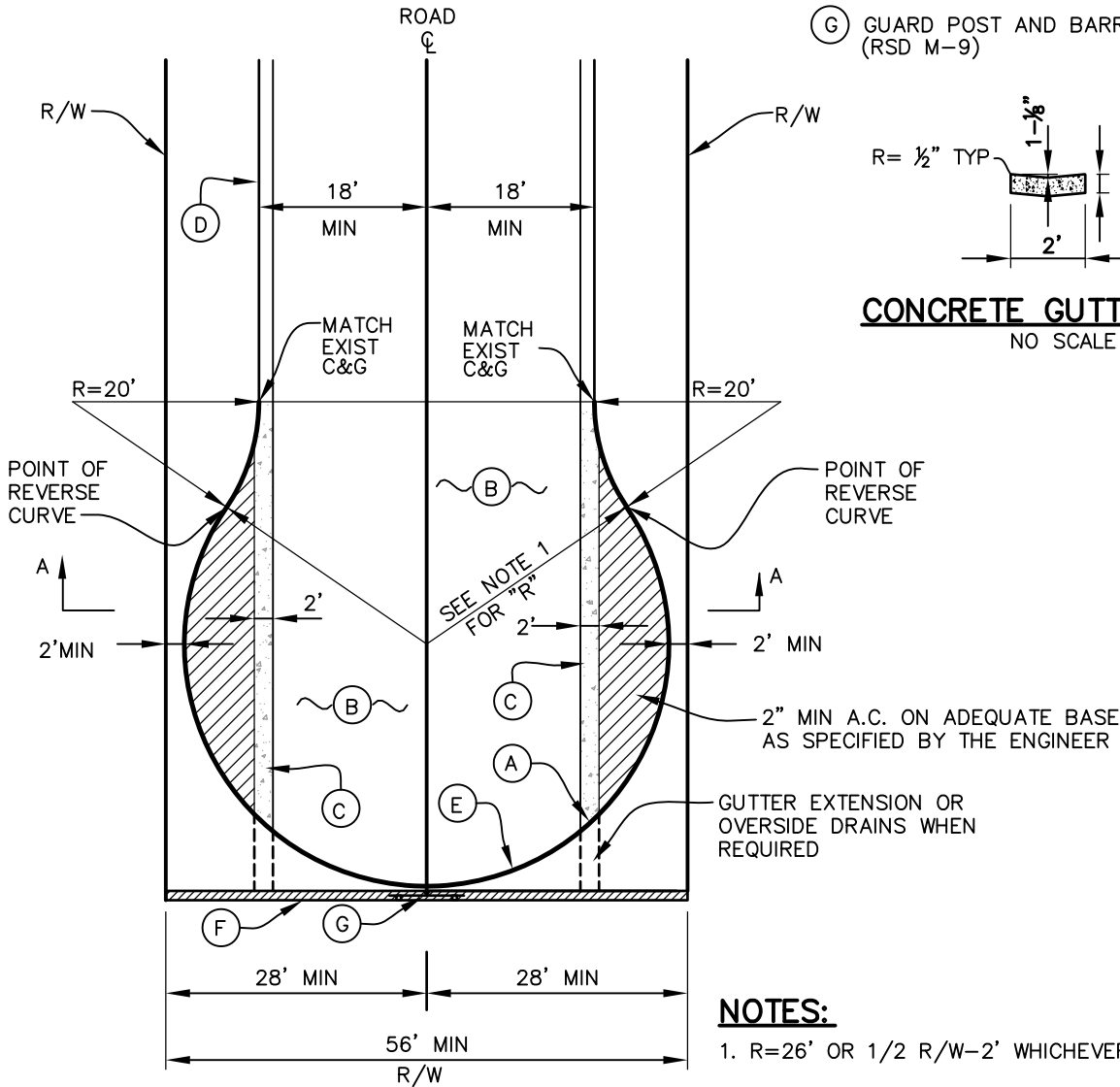




**SECTION A-A**  
NO SCALE

**LEGEND**

- (A) PROVIDE DIKE OPENING FOR DRAINAGE WHEN REQUIRED.
- (B) PERMANENT STREET SURFACING.
- (C) CONCRETE GUTTER (SEE DETAIL).
- (D) TYPE G C&G (RSD G-2).
- (E) TYPE B DIKE (RSD G-5).
- (F) END OF TEMPORARY IMPROVEMENTS.
- (G) GUARD POST AND BARRICADE (RSD M-9)



**TEMPORARY TURNAROUND**  
NO SCALE

**CONCRETE GUTTER DETAIL**  
NO SCALE

**NOTES:**

1. R=26' OR 1/2 R/W-2' WHICHEVER IS GREATER.

Revision	By	Approved	Date
NEW	MR	MR/CV	09/11
REVIEWED	CV	CV	12/15

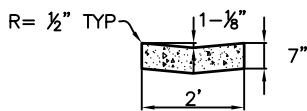
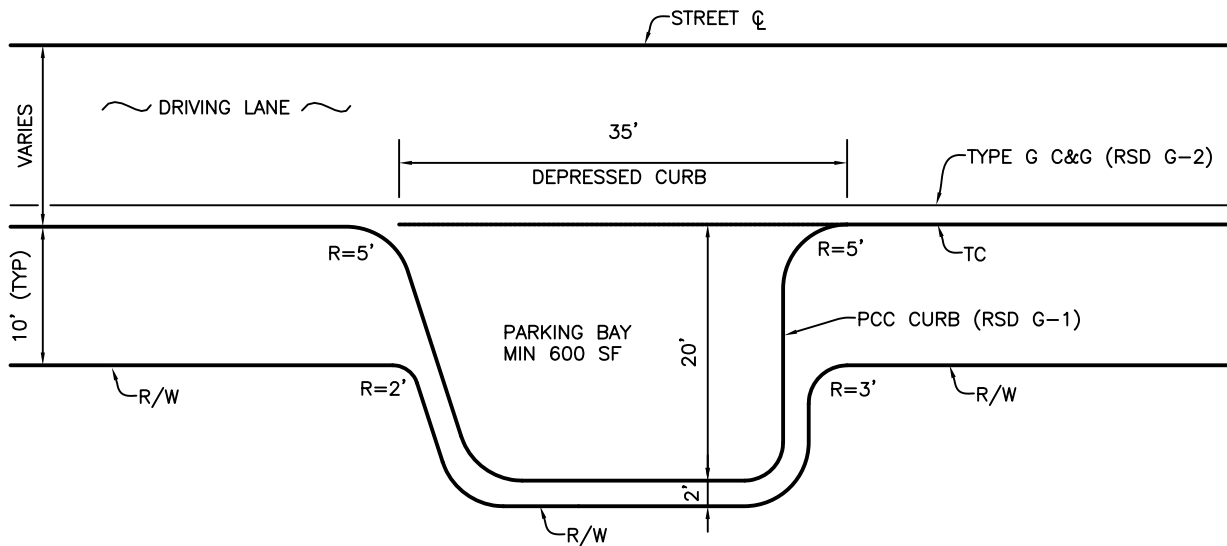
SAN DIEGO REGIONAL STANDARD DRAWING

TEMPORARY TURNAROUND  
AT DEAD END STREET

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

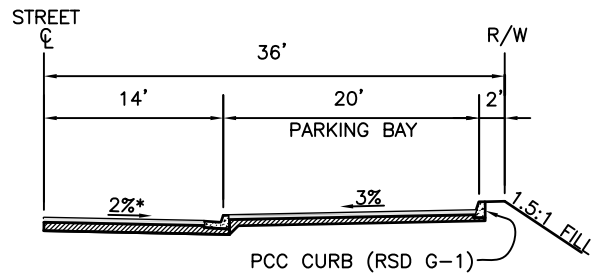
*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER G-37



**CONCRETE GUTTER DETAIL**  
NO SCALE

**PLAN**  
NO SCALE



**TYPICAL PARKING BAY SECTION**  
NO SCALE

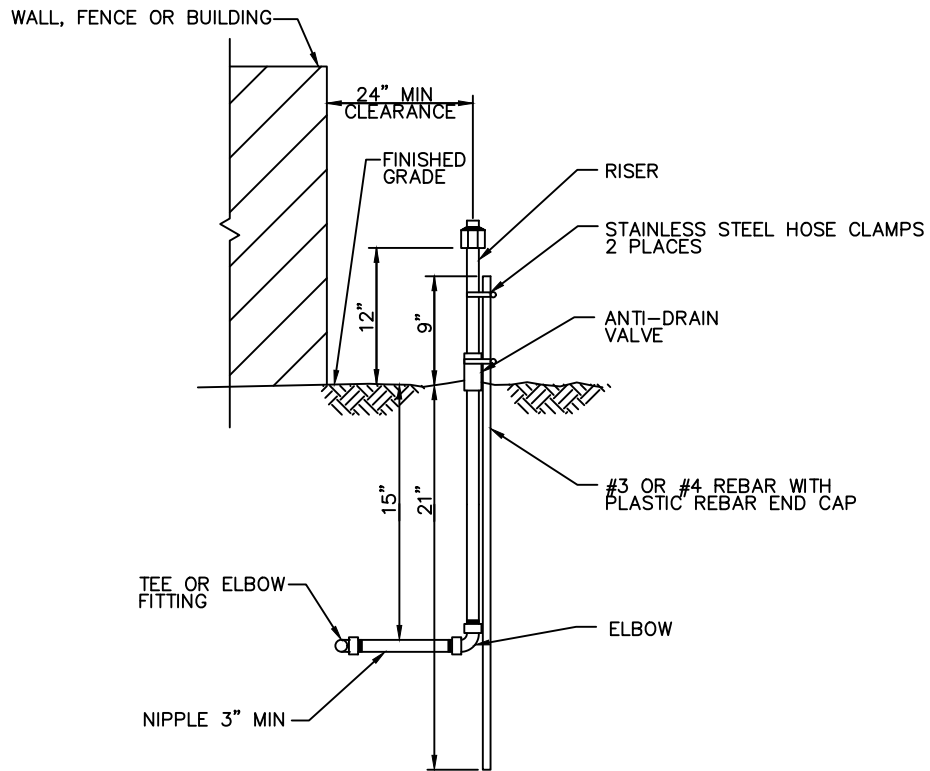
\* MAX 3% CROSSFALL/SUPERELEVATION

**NOTES:**

1. CURB AND GUTTER (C&G) SHALL CONFORM TO SAN DIEGO AREA REGIONAL STANDARD DRAWINGS (RSD)
2. CONCRETE GUTTER SHALL BE POURED NON-CONTIGUOUS TO PROVIDE EXPANSION JOINTS.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
NEW	AT	MR/CV	09/11	<b>PARKING BAY</b>		 Chairperson R.C.E. 19246 Date 10/25/2018
REVIEWED	CV	CV	12/15			
				DRAWING NUMBER		G-38

# **SPRINKLER IRRIGATION SYSTEMS**



**NOTES:**

1. FITTINGS SHALL BE PVC SCH 40.
2. NIPPLES AND RISERS SHALL BE PVC SCH 80.
3. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS.
4. CLOSE NIPPLES SHALL NOT BE USED.
5. NO FIXED RISERS IN RIGHT-OF-WAY OR WITHIN 10' OF VEHICULAR OR PEDESTRIAN TRAFFIC.
6. ANTI-DRAIN VALVES SHALL BE INSTALLED UNDER ALL HEADS.

LEGEND ON PLANS

SHOW A NUMBER TO INDICATE TYPE HEAD 

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15
Reviewed	EW	T. Stanton	10/18

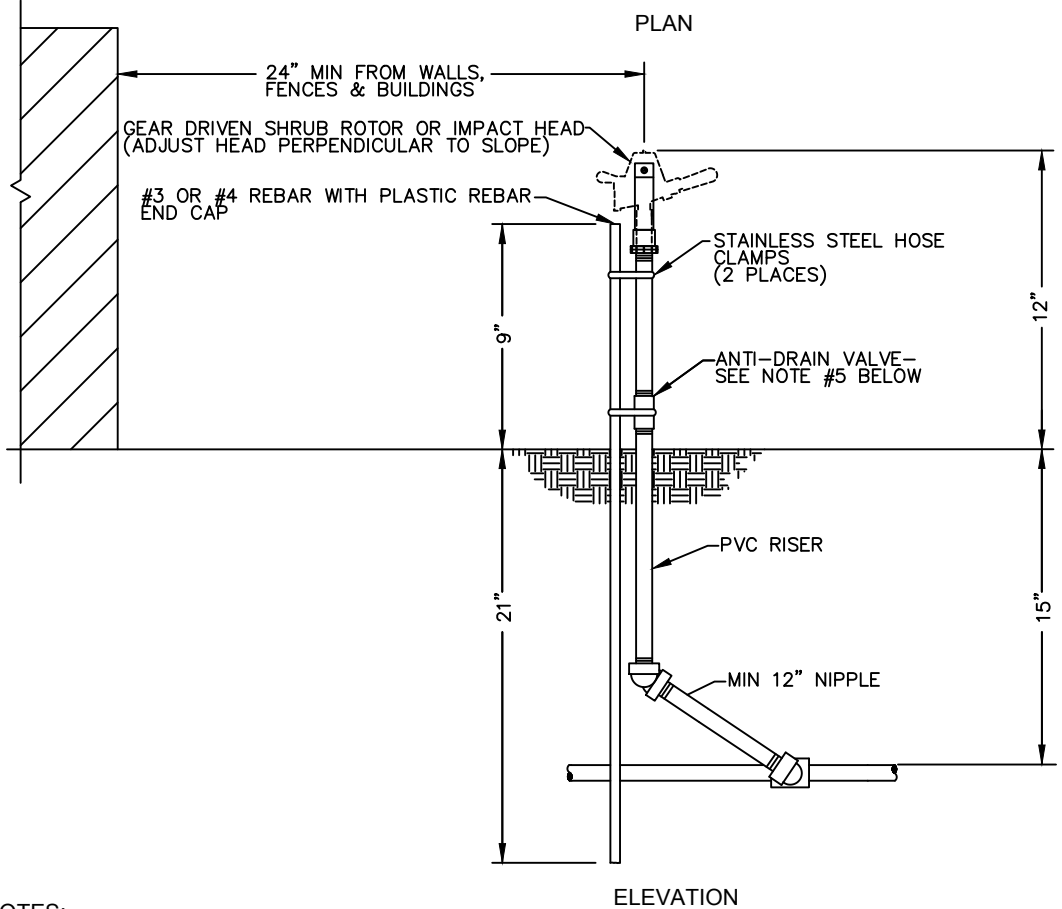
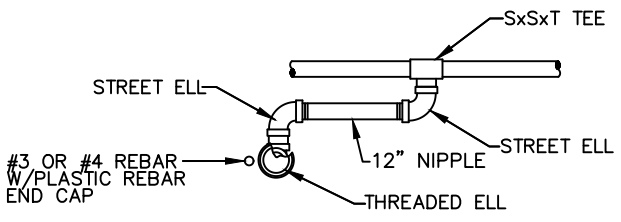
SAN DIEGO REGIONAL STANDARD DRAWING

SHRUB SPRAY HEAD  
ON FIXED RISER

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

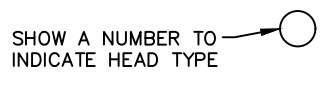
DRAWING NUMBER 1-01



**NOTES:**

1. FITTINGS SHALL BE PVC SCH 40.
2. NIPPLES AND RISERS SHALL BE PVC SCH 80.
3. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS.
4. CLOSE NIPPLES SHALL NOT BE USED.
5. ANTI-DRAIN VALVES SHALL BE INSTALLED UNDER OR IN ALL HEADS.
6. NO FIXED RISERS ALLOWED IN RIGHT-OF-WAY OR WITHIN 10' OF VEHICULAR OR PEDESTRIAN TRAFFIC.

**LEGEND ON PLANS**



Revision	By	Approved	Date
ORIGINAL		Parkinson	05/92
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15
Reviewed	EW	T. Stanton	10/18

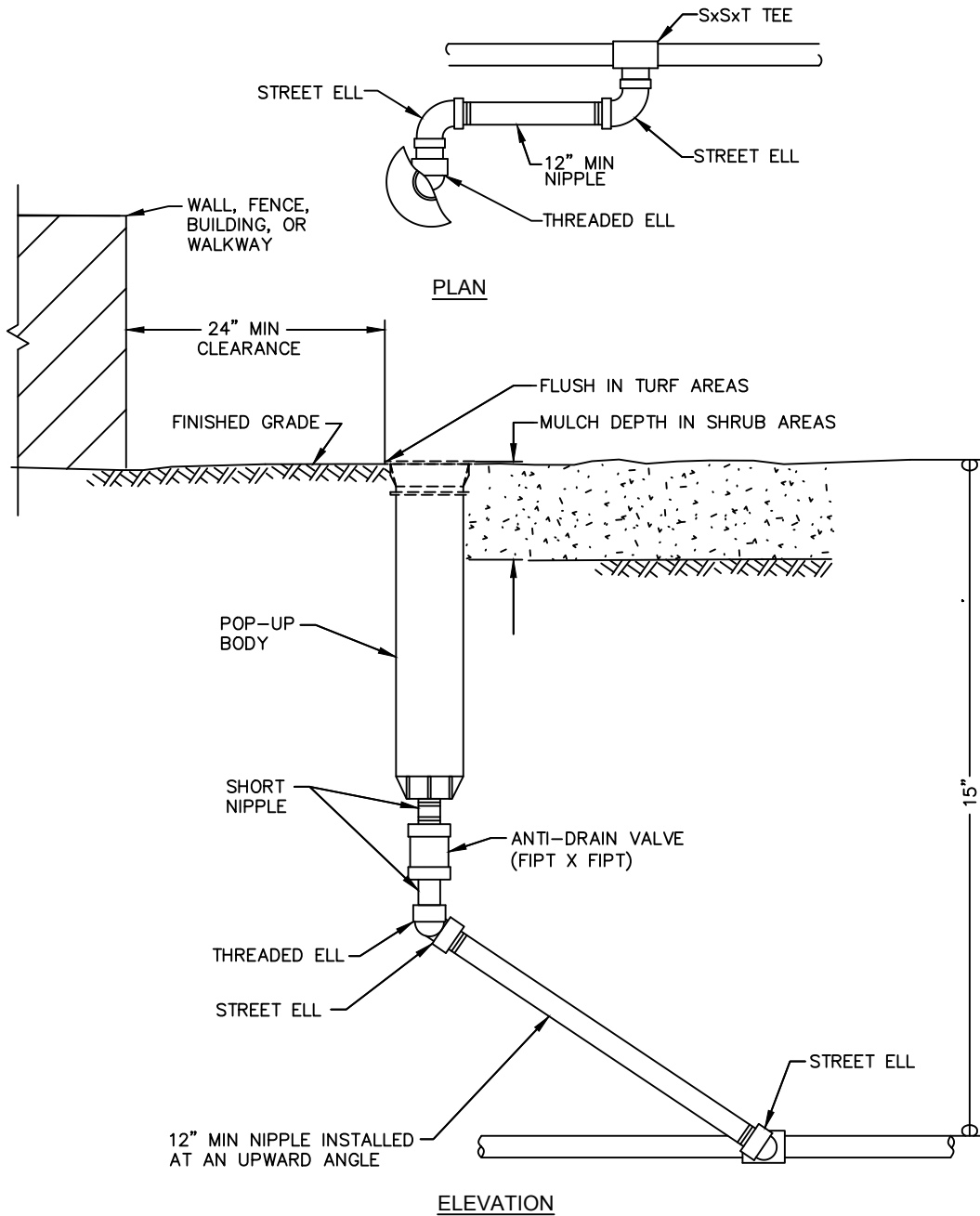
**SAN DIEGO REGIONAL STANDARD DRAWING**

**ROTOR OR IMPACT HEAD  
ON FIXED RISER**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

**DRAWING NUMBER 1-02**



**NOTES:**

1. FITTINGS SHALL BE PVC SCH 40.
2. NIPPLES AND RISERS SHALL BE PVC SCH 80.
3. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS.
4. CLOSE NIPPLES SHALL NOT BE USED.
5. ANTI-DRAIN VALVES SHALL BE INSTALLED UNDER OR IN ALL HEADS.
6. LATERAL DEPTH SHALL BE 18" WHEN 12" POP-UP BODIES ARE USED.

**LEGEND ON PLANS**

SHOW A NUMBER TO INDICATE TYPE HEAD

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15
Reviewed	EW	T. Stanton	10/18

**SAN DIEGO REGIONAL STANDARD DRAWING**

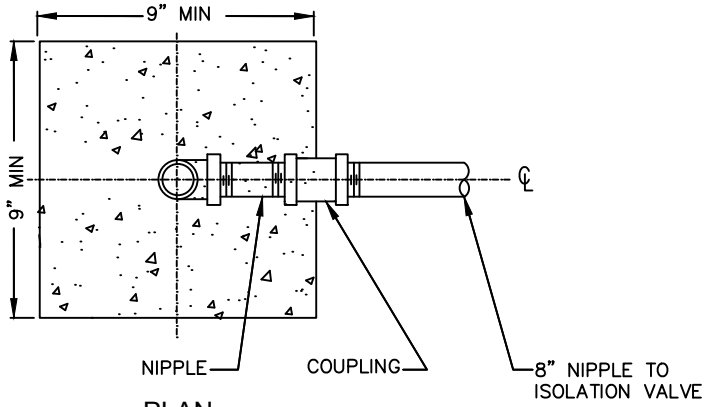
**ROTOR, SPRAY, OR BUBBLER  
POP-UP HEAD**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

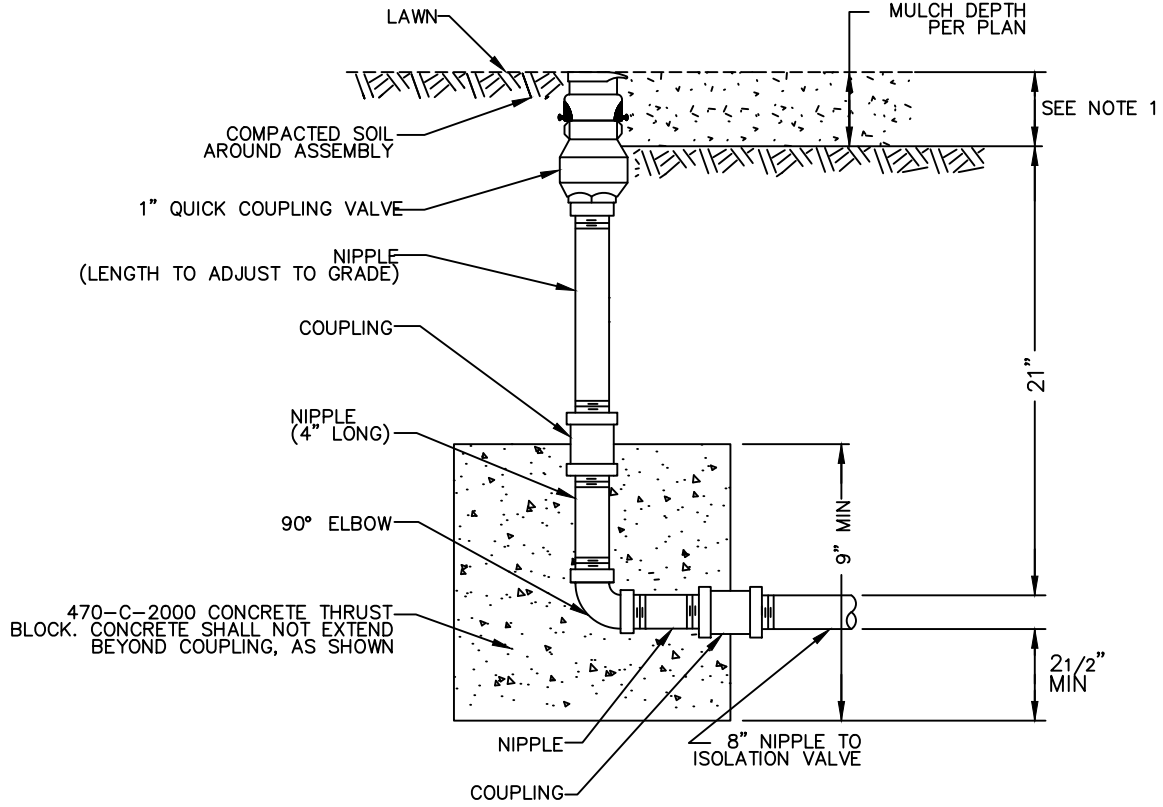
*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

**DRAWING NUMBER 1-03**





**PLAN**



**ELEVATION**

**NOTES:**

1. QUICK COUPLING VALVES SHALL BE SET FLUSH IN LAWN AND PER MULCH DEPTH ABOVE FINISH GRADE IN SHRUB / GROUNDCOVER AREAS.
2. CLOSE NIPPLES SHALL NOT BE USED.
3. NIPPLES, COUPLINGS, AND ELBOWS SIZE SHALL BE 1" RED BRASS.
4. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS.
5. UPON PROJECT ACCEPTANCE, THE CONTRACTOR SHALL PROVIDE TWO SETS OF APPROPRIATE QUICK CUPLER VALVE KEY WITH 1" BRASS BALL VALVE AND SWIVEL ADAPTER INCLUDED IN THE ASSEMBLY.
6. INSTALL VALVE BOX PER AGENCY STANDARDS.

**LEGEND ON PLANS**

QCV

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15
Reviewed	EW	T. Stanton	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

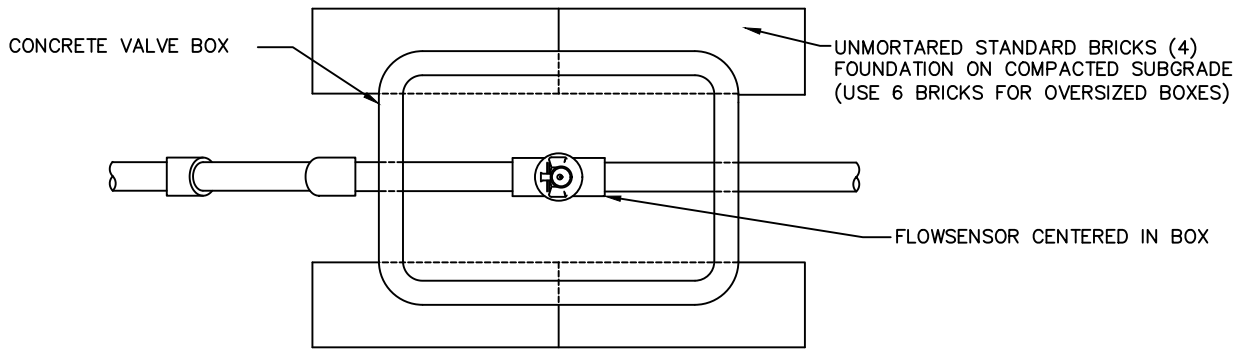
**QUICK COUPLING VALVE**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

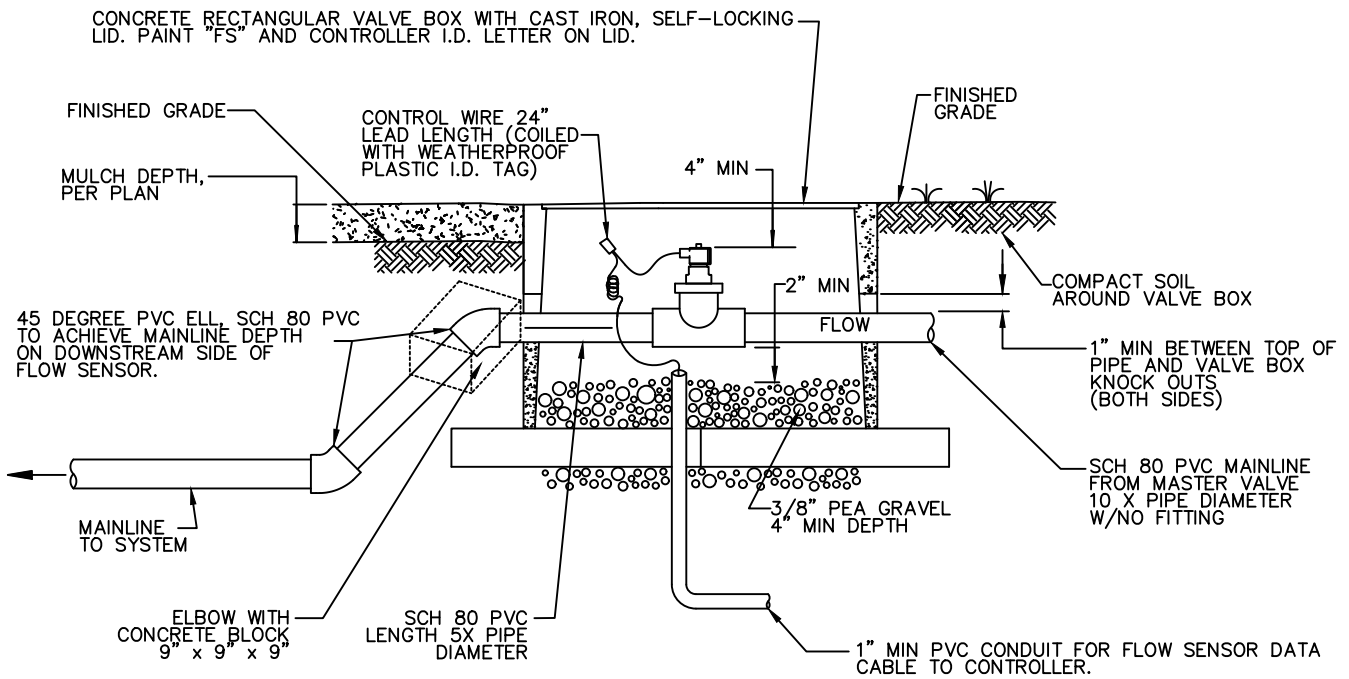
*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER 1-05





PLAN




ELEVATION

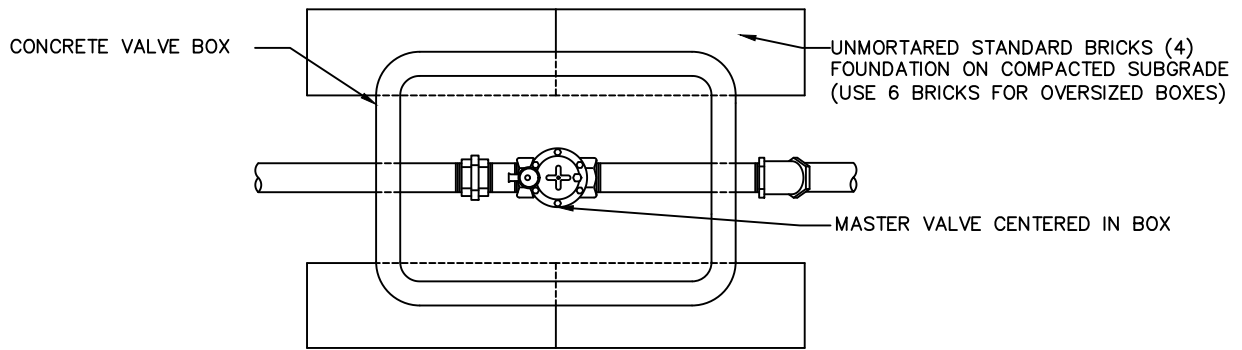
NOTES:

1. SPLICES SHALL BE SOLDERED WITH A PROPERLY SET MECHANICAL SPLICE CONNECTOR, ENTIRELY ENCLOSED IN SELF-CURING RESIN AND SHALL BE COMPLETELY WATER-PROOF.
2. SEAL CONDUIT OPENINGS WITH ELECTRICAL SEALANT.
3. KNOCK OUTS SHALL NOT BE ENLARGED.
4. INSTALL ONLY ONE FLOW SENSOR PER BOX.
5. VALVE BOXES SHALL BE SET PERPENDICULAR TO HARDSCAPE PER MULCH DEPTH IN SHRUB / GROUNDCOVER AREAS. IF NECESSARY TO BE SET IN TURF, VALVE BOXES SHALL BE SET FLUSH WITH FINISHED GRADE.

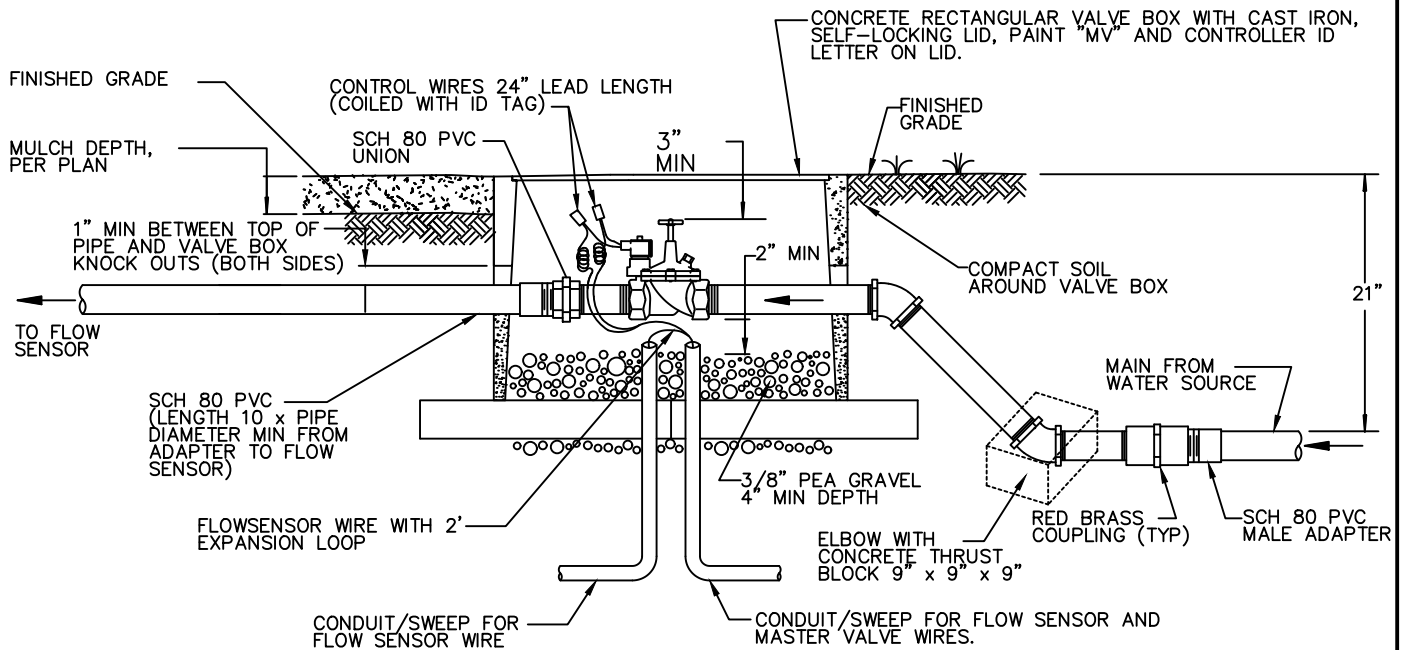
LEGEND ON PLANS

(F) FS

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL	KA	N. Batta	11/11		FLOW SENSOR
Delete Metric	KA	N. Batta	11/11		
Reviewed	KA	N. Batta	10/15		
Reviewed	EW	T. Stanton	10/18		
					 10/25/2018 Chairperson R.C.E. 19246 Date
					DRAWING NUMBER 1-09



PLAN



ELEVATION

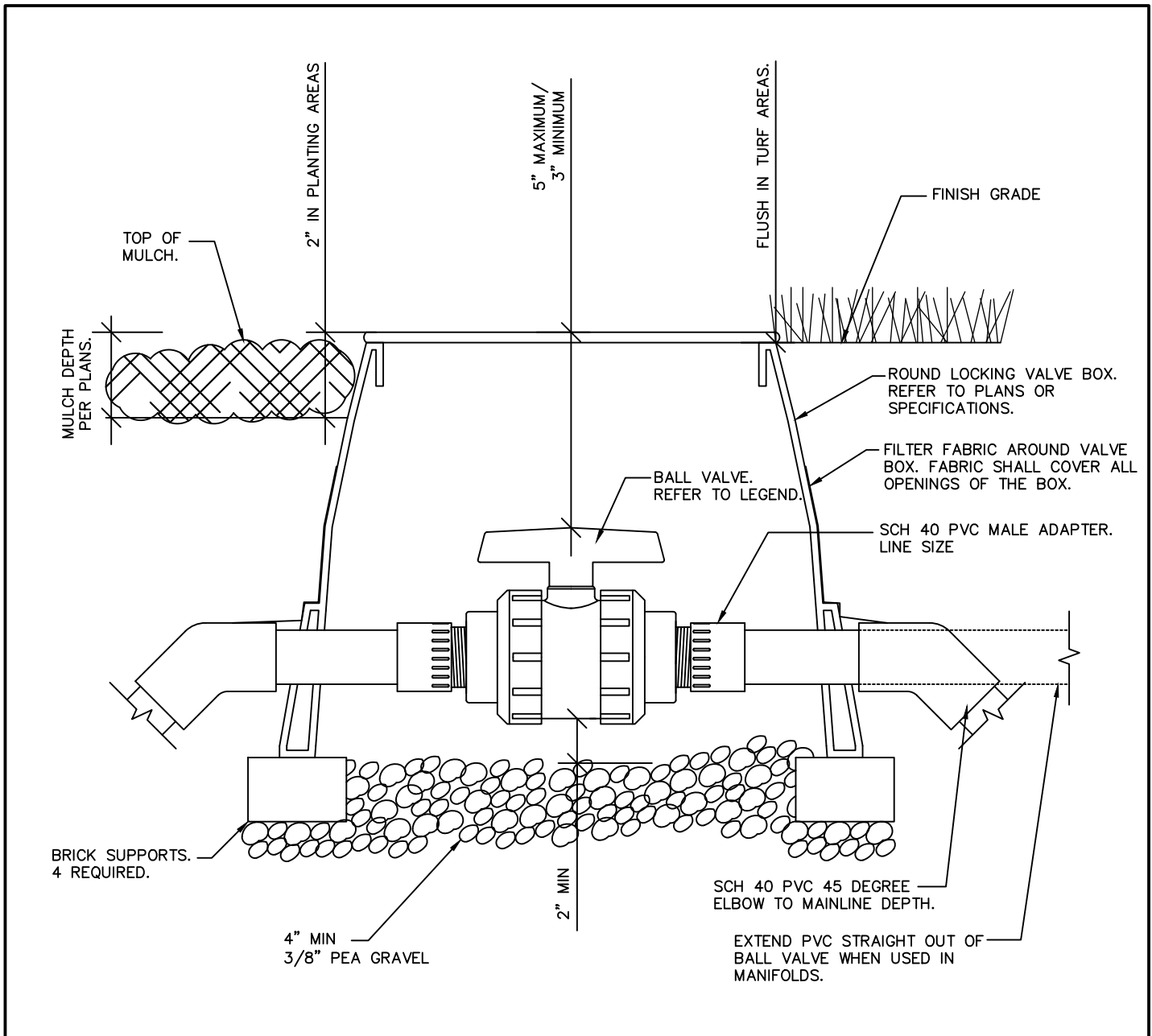
NOTES:

1. SPLICING SHALL BE MADE IN VALVE BOXES AND PULL BOXES ONLY. SEE STANDARD DRAWING SDI-115 FOR SPLICE / SOLDERING NOTES.
2. SPLICES SHALL BE SOLDERED WITH A PROPERLY SET MECHANICAL SPLICE CONNECTOR, ENTIRELY ENCLOSED IN SELF-CURING RESIN AND SHALL BE COMPLETELY WATER-PROOF.
3. SEAL CONDUIT OPENINGS WITH ELECTRICAL CONDUIT SEALANT AS APPROVED BY THE AGENCY.
4. PVC CONDUIT SHALL BE 1" MINIMUM.
5. VALVE / CONTROLLER IDENTIFICATION SHALL BE LABELED OUTSIDE ON THE VALVE BOX LID AND TAGGED INSIDE THE BOX ON THE VALVE.
6. KNOCK OUTS SHALL NOT BE ENLARGED.
7. INSTALL ONLY ONE VALVE PER BOX.
8. VALVE BOXES SHALL BE SET PERPENDICULAR TO HARDSCAPE, ABOVE FINISHED GRADE IN SHRUB / GROUND COVER AREAS, PER MULCH DEPTH. IF NECESSARY TO BE SET IN TURF, VALVE BOXES SHALL BE SET FLUSH WITH FINISHED GRADE.
9. CLOSE NIPPLES SHALL NOT BE USED.
10. NIPPLES, ELBOWS, AND FITTINGS SHALL BE THREADED RED BRASS, FROM COUPLING THROUGH THE MASTER VALVE. PIPE AND FITTINGS DOWNSTREAM SHALL BE SCH 80 PVC.
11. TEFLON TAPE SHALL BE USED ON THREADED CONNECTOR.

LEGEND ON PLANS


▼ MV

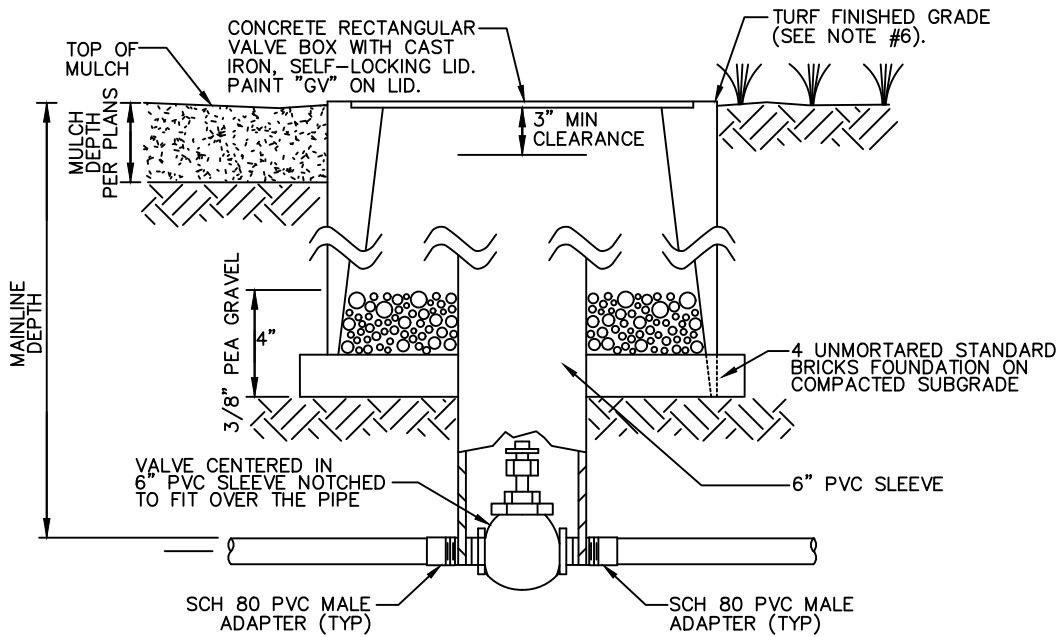
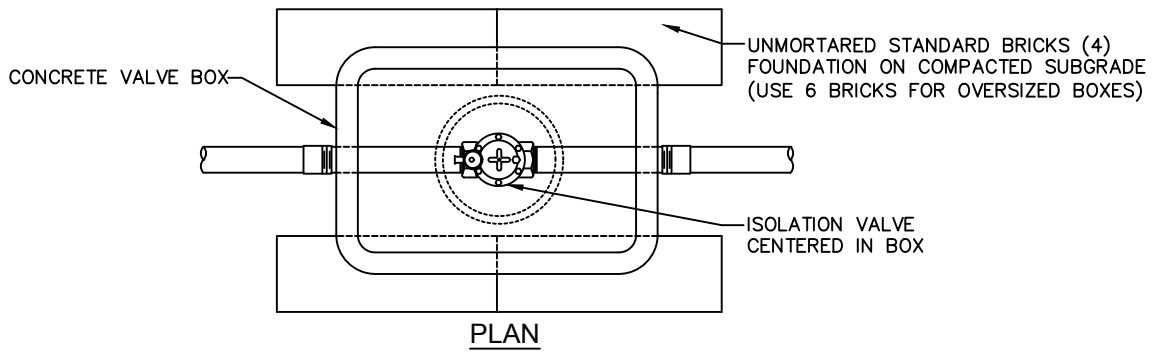
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	
ORIGINAL		Kercheval	12/75	IRRIGATION MASTER VALVE	
Delete Metric	KA	N. Batta	11/11		
Reviewed	KA	N. Batta	10/15		
Reviewed	EW	T. Stanton	10/18		
				RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
				 10/25/2018 Chairperson R.C.E. 19246 Date	
				DRAWING NUMBER 1-10	



**NOTES:**

1. TEFLON TAPE, 3/4" WIDE, SHALL BE USED ON ALL THREADED CONNECTIONS
2. CLOSE NIPPLES SHALL NOT BE USED.
3. ALL PVC PIPE USED IN MANIFOLD ASSEMBLIES SHALL BE OF THE SAME CLASS AS SPECIFIED FOR THE MAINLINE.
4. ALL PLASTIC VALVE BOXES SHALL BE HEAT BRANDED WITH THE APPROPRIATE IDENTIFICATION. REFER TO PLANS AND SPECIFICATIONS.
5. DO NOT CUT ADDITIONAL HOLES IN VALVES BOXES.
6. ADD SINGLE UNIONS ON EACH SIDE OF VALVE WHEN TRUE UNION BALL VALVES ARE NOT USED.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75		ISOLATION BALL VALVE 2" AND SMALLER	 10/25/2018 Chairperson R.C.E. 19246 Date
Delete Metric	KA	N. Batta	11/11	DRAWING NUMBER		I-11
Reviewed	KA	N. Batta	10/15			
Reviewed	EW	T. Stanton	10/18			



**NOTES:**

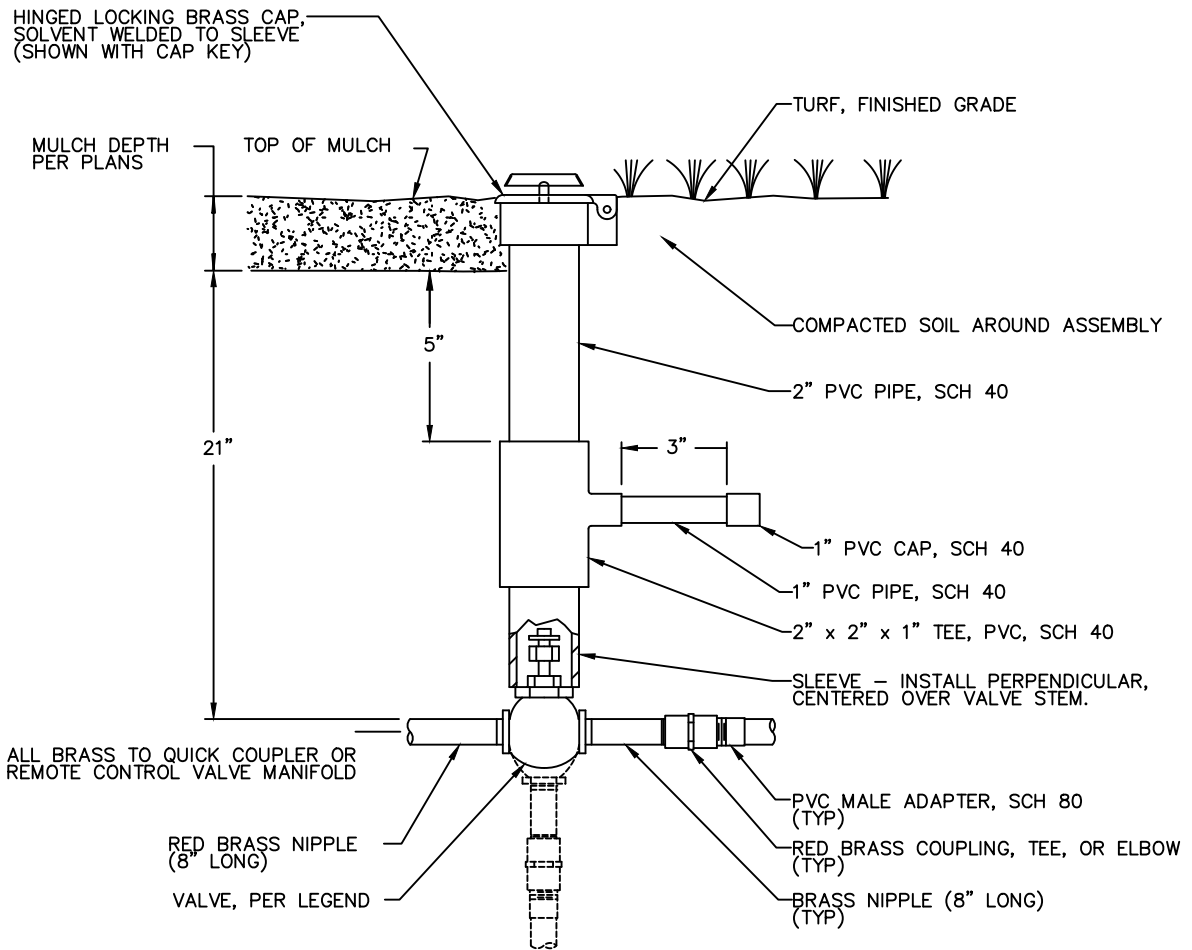
1. GLOBE VALVES SHALL BE FURNISHED WITH A STANDARD BRONZE CROSS HANDLE, CENTERED IN PIPE SLEEVE.
2. VALVE SHALL BE INSTALLED WITHIN 12" OF HARDSCAPE.
3. GLOBE VALVES SHALL BE FURNISHED WITH A REMOVABLE BONNET AND PACKING GLAND NUT.
4. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS.
5. VALVE BOX SHALL BE MOUNTED FLUSH WITH FINISH GRADE IN TURF AREAS AND PER MULCH DEPTH IN SHRUB AREAS.
6. LOCATE OUTSIDE OF TURF WHEN POSSIBLE.
7. GATE VALVE SHALL BE USED ONLY ON LOOPED MAINLINE.
8. VALVE BOX SHALL BE SET PERPENDICULAR TO HARDSCAPE.
9. PROVIDE TWO VALVE KEYS TO OPERATE VALVE AT DEPTH.

**LEGEND ON PLANS**



GATE VALVE GLOBE VALVE

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL	KA	N. Batta	11/11		ISOLATION GLOBE/GATE VALVE 2 1/2" AND LARGER
Delete Metric	KA	N. Batta	11/11		
Reviewed	KA	N. Batta	10/15		
Reviewed	EW	T. Stanton	10/18	DRAWING NUMBER 1-12	



**NOTES:**

1. GLOBE VALVES SHALL BE FURNISHED WITH A STANDARD BRONZE CROSS HANDLE, CENTERED IN PIPE SLEEVE.
2. VALVES SHALL BE INSTALLED WITHIN 12" OF HARDSCAPE.
3. GLOBE VALVES SHALL BE FURNISHED WITH A REMOVABLE BONNET AND PACKING GLAND NUT.
4. CLOSE NIPPLES SHALL NOT BE USED.
5. LOCKING CAP SHALL BE MOUNTED FLUSH WITH FINISHED GRADE IN TURF AREAS AND ABOVE FINISHED GRADE IN SHRUB AREAS, PER DEPTH OF MULCH.
6. PROVIDE APPROPRIATE LOCKING CAP KEY AND VALVE KEY TO OPERATE VALVE AT DEPTH.
7. LOCATE OUTSIDE OF TURF WHEN POSSIBLE.
8. TEFLON TAPE SHALL BE USED ON ALL THREADED CONNECTIONS.
9. WHEN INSTALLED AS MAINLINE ISOLATION VALVE, NIPPLES AND FITTINGS MAY BE SCH 80 PVC.
10. INSTALL VALE BOX PER AGENCY STANDARDS.

**LEGEND**



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15
Reviewed	EW	T. Stanton	10/18

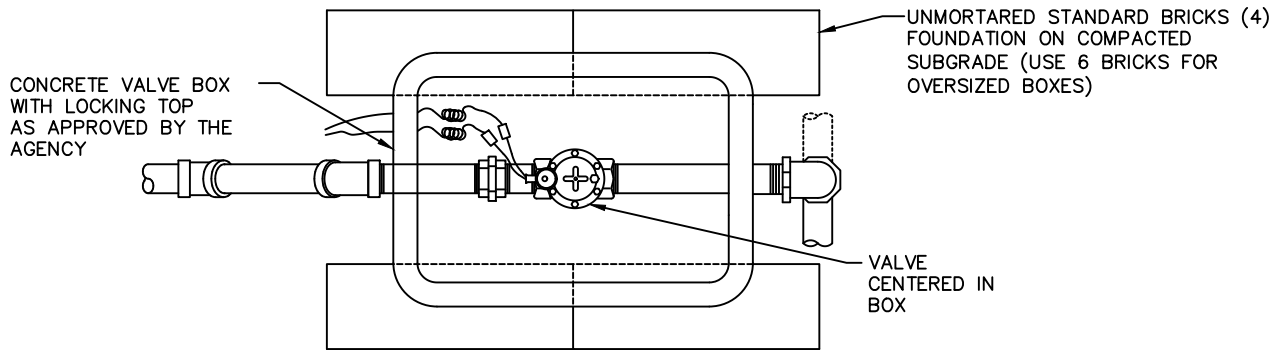
SAN DIEGO REGIONAL STANDARD DRAWING

ISOLATION BALL VALVE  
2" AND SMALLER

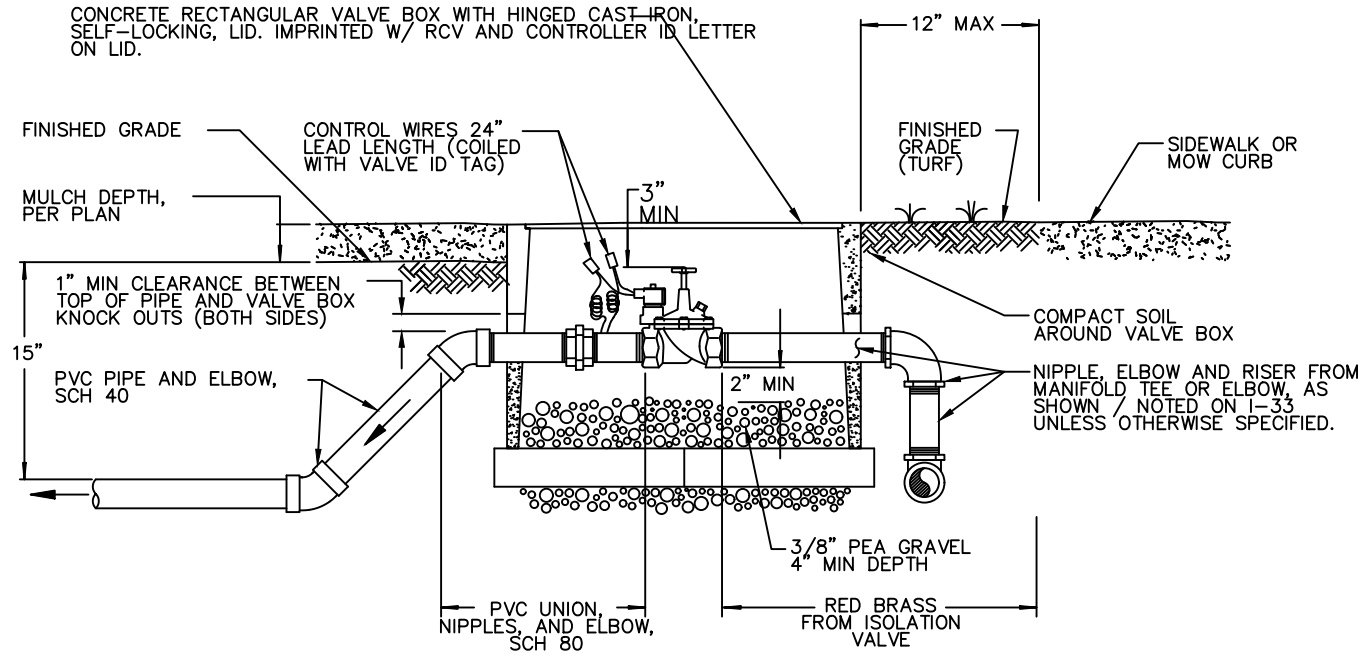
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER 1-13



PLAN



ELEVATION

NOTES:

1. SPlicing SHALL BE MADE IN VALVE BOXES AND PULL BOXES ONLY. SEE I-15 FOR SPlice /SOLDERING NOTES.
2. SPlices SHALL BE SOLDERED WITH A PROPERLY SET MECHANICAL SPlice CONNECTOR, ENTIRELY ENCLOSED IN SELF-CURING RESIN AND SHALL BE COMPLETELY WATER-PROOF.
3. KNOCK OUTS SHALL NOT BE ENLARGED.
4. INSTALL ONLY ONE VALVE PER BOX.
5. VALVE BOXES SHALL BE SET PERPENDICULAR TO HARDSCAPE, ABOVE FINISHED GRADE IN SHRUB / GROUNDcover AREAS, PER MULCH DEPTH. IF NECESSARY TO BE SET IN TURF, VALVE BOXES SHALL BE SET FLUSH WITH FINISHED GRADE.
6. CLOSE NIPPLES SHALL NOT BE USED.
7. NIPPLES, ELBOWS, AND FITTINGS SHALL BE THREADED RED BRASS FROM ISOLATION VALVE THROUGH THE VALVE, UNLESS OTHERWISE SPECIFIED.
8. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS

LEGEND ON PLANS

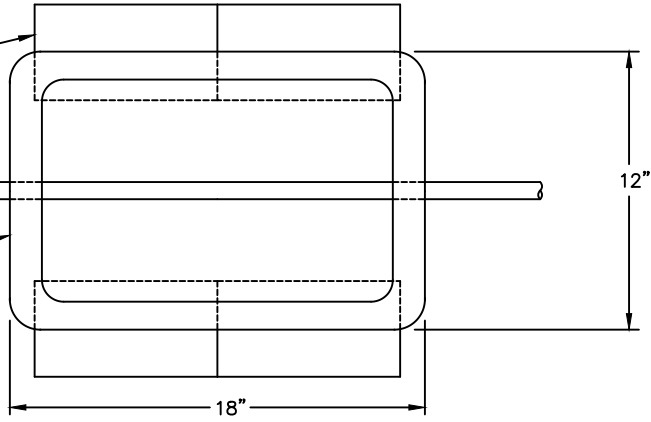
▼ RCV

<table border="1"> <thead> <tr> <th>Revision</th> <th>By</th> <th>Approved</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>ORIGINAL</td> <td></td> <td>R. Munoz</td> <td>03/97</td> </tr> <tr> <td>Delete Metric</td> <td>KA</td> <td>N. Batta</td> <td>11/11</td> </tr> <tr> <td>Reviewed</td> <td>KA</td> <td>N. Batta</td> <td>10/15</td> </tr> <tr> <td>Reviewed</td> <td>EW</td> <td>T. Stanton</td> <td>10/18</td> </tr> </tbody> </table>				Revision	By	Approved	Date	ORIGINAL		R. Munoz	03/97	Delete Metric	KA	N. Batta	11/11	Reviewed	KA	N. Batta	10/15	Reviewed	EW	T. Stanton	10/18	<p>SAN DIEGO REGIONAL STANDARD DRAWING</p> <p>REMOTE CONTROL VALVE</p>		<p>RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE</p> <p><i>T. Stanton</i> 10/25/2018 Chairperson R.C.E. 19246 Date</p> <p>DRAWING NUMBER 1-14</p>	
Revision	By	Approved	Date																								
ORIGINAL		R. Munoz	03/97																								
Delete Metric	KA	N. Batta	11/11																								
Reviewed	KA	N. Batta	10/15																								
Reviewed	EW	T. Stanton	10/18																								

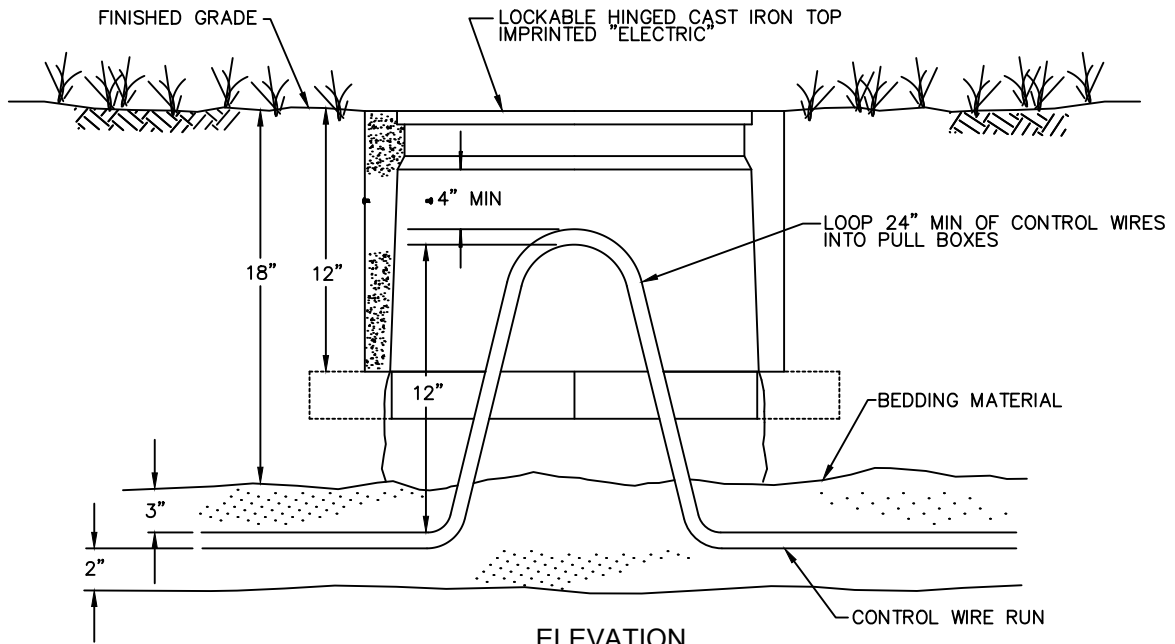
UNMORTARED STANDARD BRICKS (4)  
FOUNDATION ON COMPACTED SUBGRADE  
(USE 6 BRICKS FOR OVERSIZED BOXES)

CONDUIT WIRE RUN

CONCRETE PULL BOX



PLAN VIEW

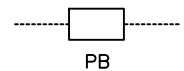


ELEVATION

NOTES:

1. INSTALL PULL BOXES AS SHOWN ON PLANS AND AT EACH END OF CONDUITS. SWEEPS RUNNING UNDER VEHICULAR PAVEMENT.
2. PULL BOX COVER SHALL BE PERMANENTLY MARKED "ELECTRIC".
3. CONDUCTORS FOR EACH CONTROLLER CLOCK SHALL BE HARNESSSED SEPARATELY AND AT SUFFICIENT INTERVALS TO MAINTAIN A DEFINITE BUNDLE.
4. SPLICES SHALL ONLY BE MADE IN PULL BOXES, WITH A PROPERLY SET MECHANICAL SPLICE CONNECTOR, SOLDERED WITH METALLIC ALLOY, ENTIRELY ENCLOSED IN SELF-CURING RESIN AND SHALL BE COMPLETELY WATER-PROOF.
5. SPARE WIRE ENDS SHALL BE INSULATED IN THE SAME MANNER AS WIRE SPLICES.
6. MINIMUM SIZE PULL BOX SHALL BE AS SHOWN ABOVE. LARGER BOXES MAY BE NECESSARY TO MEET 4" CLEARANCE REQUIRED.
7. NO SPLICES SHALL BE PERMITTED ON WIRE RUNS OF LESS THAN 300'.
8. THE LETTER "E" SHALL BE STAMPED OR CHISELED ON THE IMPROVEMENT (CURB-SIDEWALK) DIRECTLY ABOVE THE CONTROL WIRE.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15
Reviewed	EW	T. Stanton	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

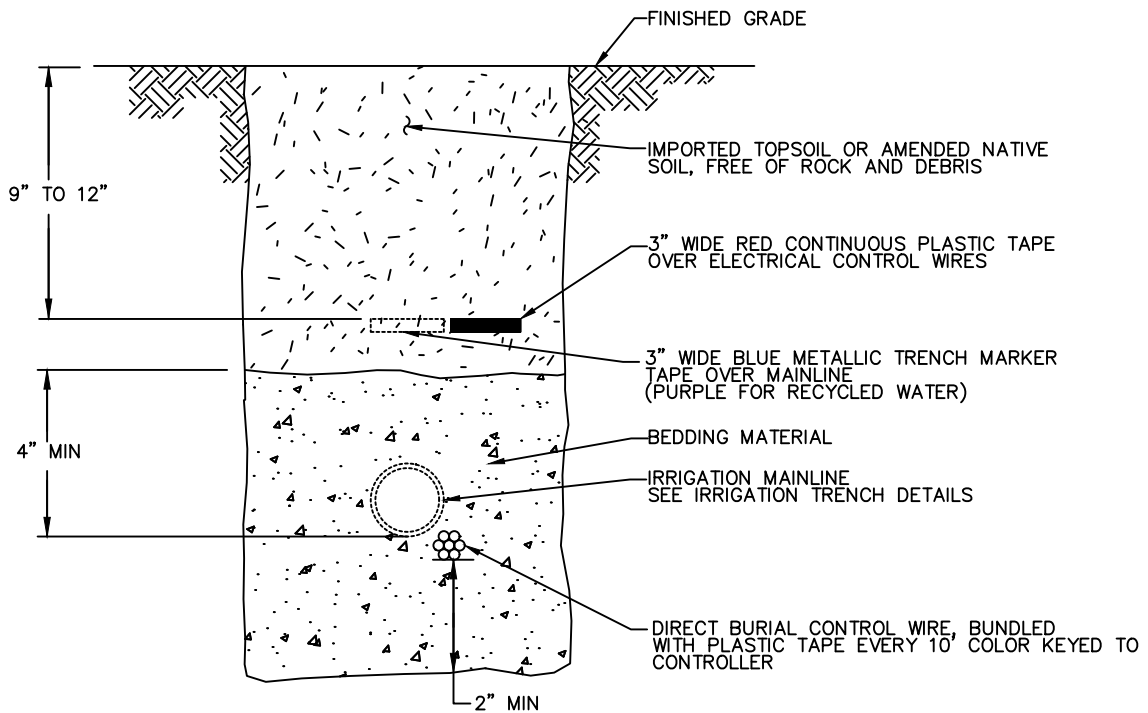
ELECTRICAL PULL BOX  
FOR DIRECT BURIAL CONTROL WIRES  
AND SPLICING NOTES

RECOMMENDED BY THE SAN DIEGO  
REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING  
NUMBER

I-15

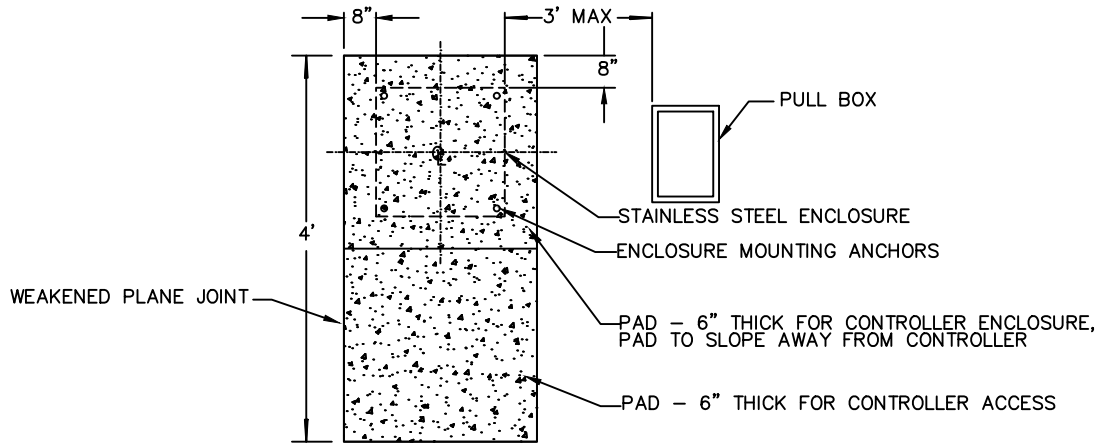


**NOTES:**

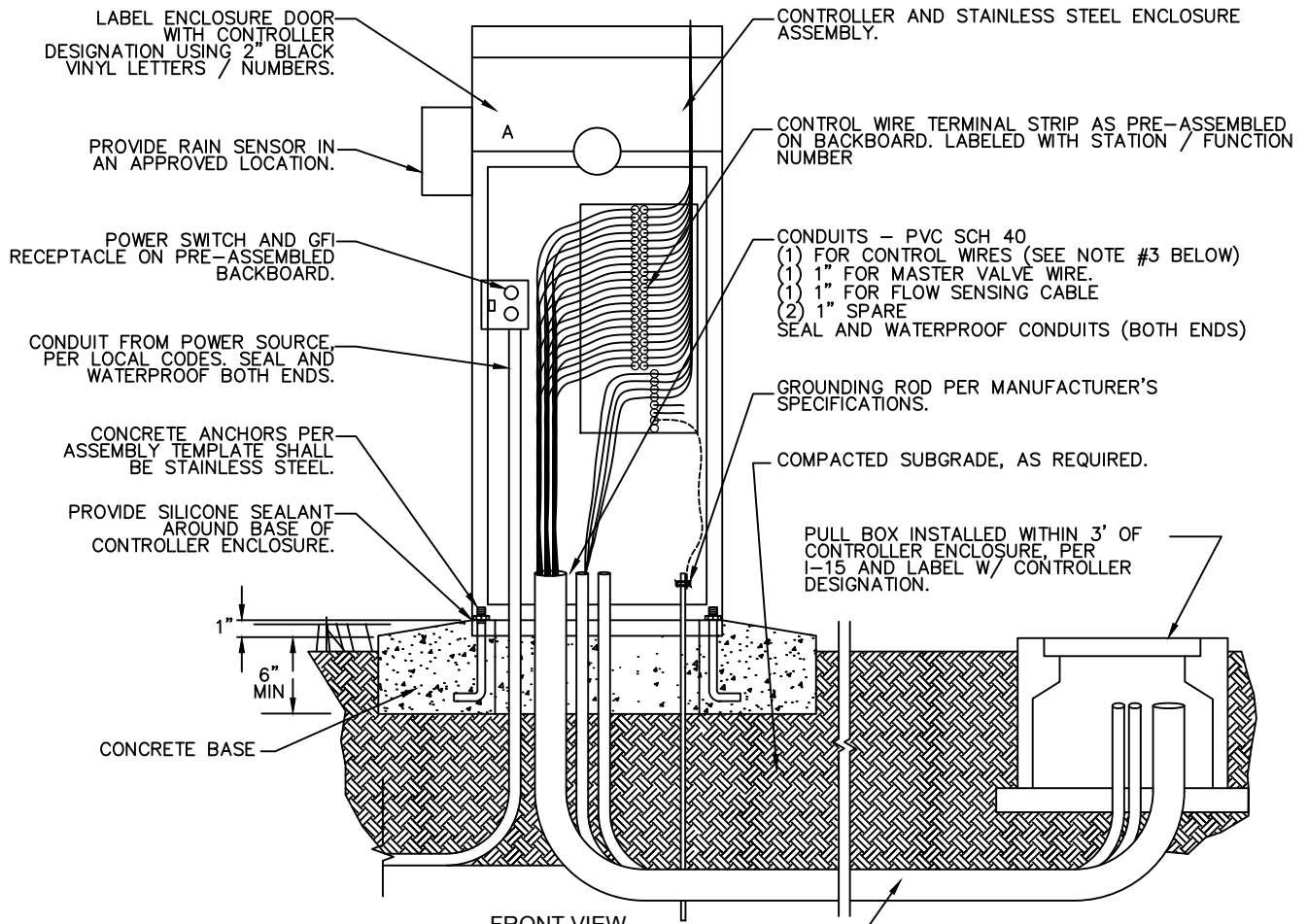
1. BEDDING MATERIAL SHALL BE SE 50 PLASTER OR MORTAR SAND.
2. WIRES WHICH RUN UNDER PAVED AREAS SHALL BE INSTALLED IN PVC CONDUIT TWICE THE DIAMETER OF THE WIRE BUNDLE (2" MINIMUM SIZE), EXTENDING 12" MINIMUM BEYOND EDGE OF PAVEMENT.
3. THE LETTER E SHALL BE STAMPED OR CHISELED ON THE IMPROVEMENT(CURB-SIDEWALK) DIRECTLY ABOVE THE CONTROL WIRE / CABLE.
4. WHEN CONTROL WIRING CANNOT BE INSTALLED IN A PIPE TRENCH, IT SHALL BE INSTALLED A MINIMUM 18" BELOW FINISH GRADE BUNDLED WITH PLASTIC TAPE.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75		CONTROL WIRE INSTALLATION	<i>T. Stanton</i> 10/25/2018
Delete Metric	KA	N. Batta	11/11	Chairperson R.C.E. 19246		Date
Reviewed	KA	N. Batta	10/15			
Reviewed	EW	T. Stanton	10/18			
					DRAWING NUMBER 1-16	





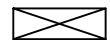
PLAN VIEW (FOR CONCRETE PAD)



NOTES:

1. ALL CONTROLLER ASSEMBLIES AND OPTIONS SHALL BE COMPLETELY PRE-ASSEMBLED IN A STAINLESS STEEL ENCLOSURE.
2. CONTROL WIRE CONDUIT SHALL BE TWICE THE DIAMETER OF THE WIRE BUNDLE, 2" MINIMUM.
3. PROVIDE SEPARATE CIRCUIT BREAKER FOR CONTROLLER(S) AT ELECTRICAL CONTROL PANEL AND LABEL.
4. SEAL CONDUIT OPENINGS WITH ELECTRICAL SEALANT, AS APPROVED BY THE AGENCY.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15
Reviewed	EW	T. Stanton	10/18

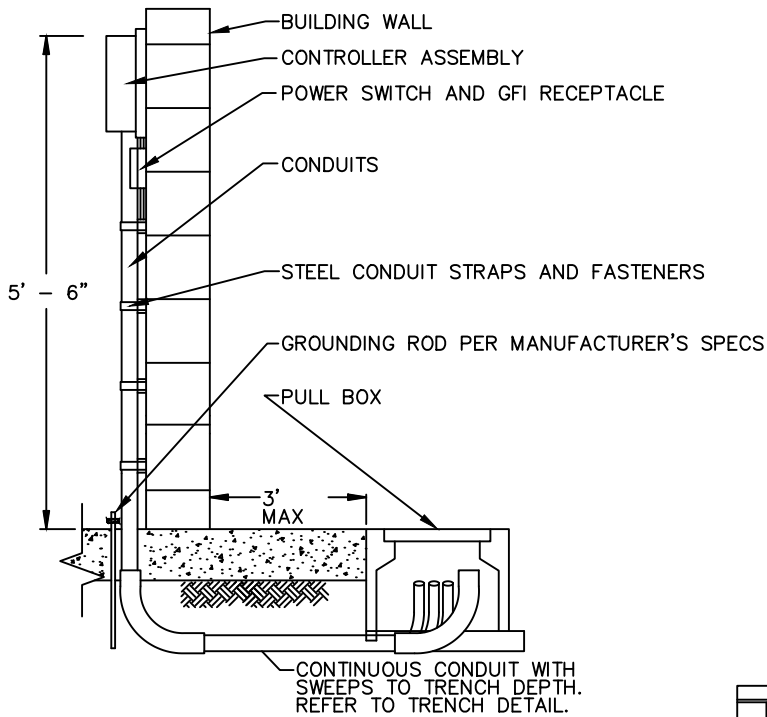
SAN DIEGO REGIONAL STANDARD DRAWING

AUTOMATIC IRRIGATION CONTROLLER  
PEDESTAL MOUNTED

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER I-17



LEGEND ON PLANS



SIDE VIEW

LABEL ENCLOSURE DOOR WITH CONTROLLER DESIGNATION USING 2" BLACK VINYL LETTERS/NUMBERS.

BUILDING WALL

CONTROLLER

POWER SOURCE CONDUIT

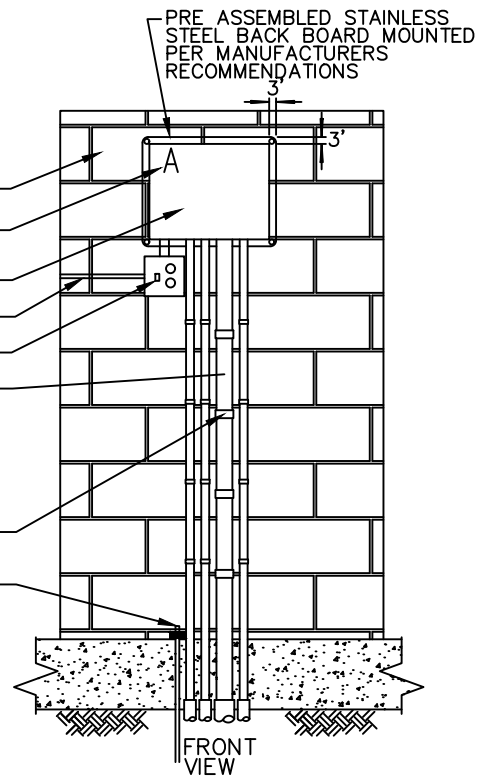
POWER SWITCH AND GFI RECEPTACLE

CONDUITS - PVC SCH 40  
SEAL CONDUITS AT BOTH ENDS  
(1) FOR CONTROL WIRES.  
SEE NOTE #1 BELOW.

(1) 1" FOR MASTER VALVE WIRE.  
(1) 1" FOR FLOW SENSING CABLE.  
(2) 1" SPARE.

STEEL CONDUIT STRAPS AND FASTENERS,  
4 PER CONDUIT.

GROUNDING ROD  
PER MANUFACTURER SPECS



FRONT VIEW

NOTES:

1. CONTROL WIRE CONDUIT SHALL BE TWICE THE DIAMETER OF THE WIRE BUNDLE, 2" MINIMUM.
2. PROVIDE SEPARATE CIRCUIT BREAKERS FOR CONTROLLER(S) AT ELECTRICAL CONTROL PANEL, AND LABEL.
3. PROVIDE RAIN SENSOR AND INSTALL IN AN APPROVED LOCATION.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15
Reviewed	EW	T. Stanton	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

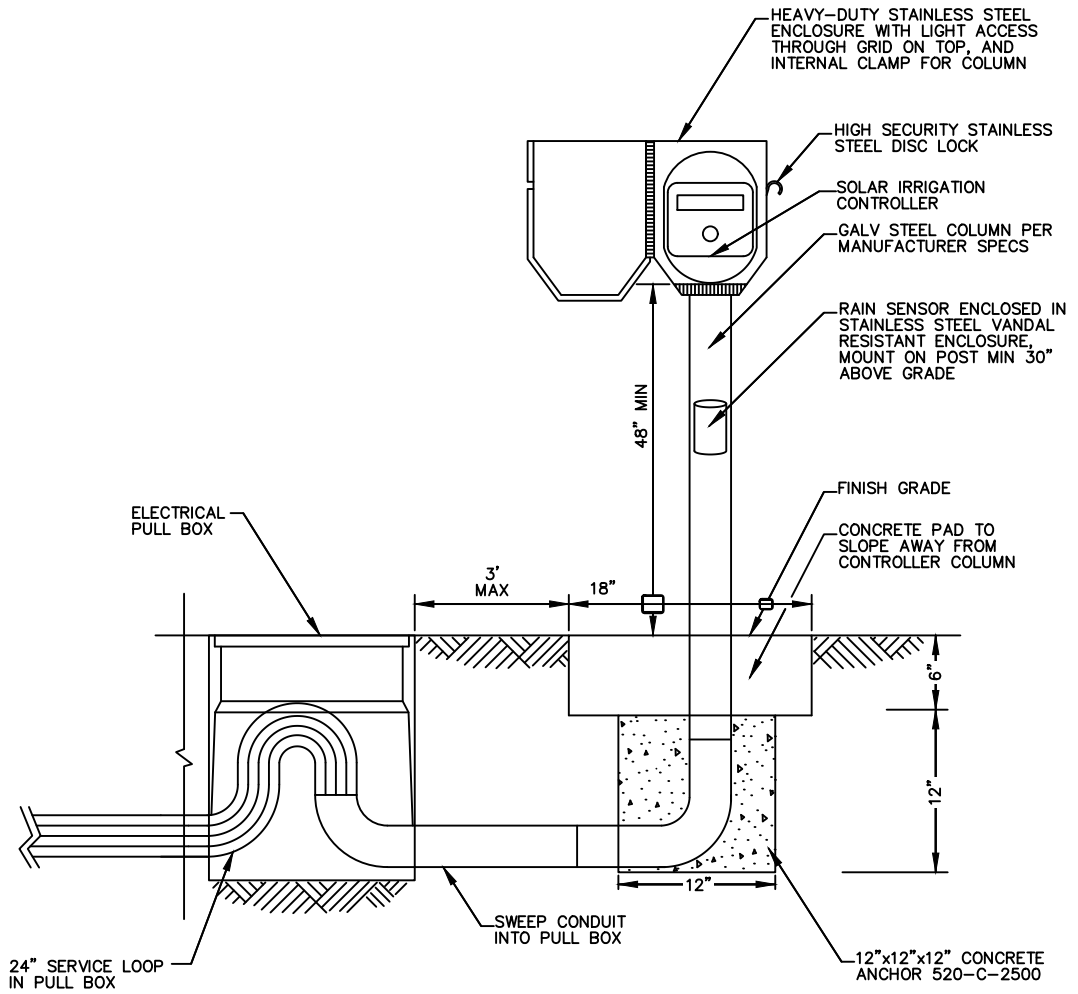
AUTOMATIC IRRIGATION CONTROLLER  
INDOOR WALL MOUNTED

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

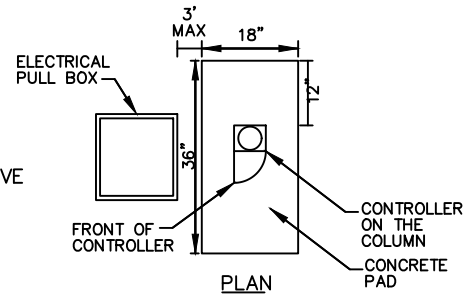
DRAWING  
NUMBER

I-18



NOTES:

1. PROVIDE SOLENOID ADAPTOR TO SUPPORT SOLAR CLOCK FUNCTION ON VALVE.
2. MAXIMUM RUN OF CONTROL WIRE TO REMOTE CONTROL VALVE (RCV) IS 1500' UNLESS OTHERWISE SPECIFIED.
3. SEAL CONDUIT OPENINGS WITH ELECTRICAL SEALANT.



Revision	By	Approved	Date
ORIGINAL	KA	T. Stanton	10/11
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15
Reviewed	EW	T. Stanton	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

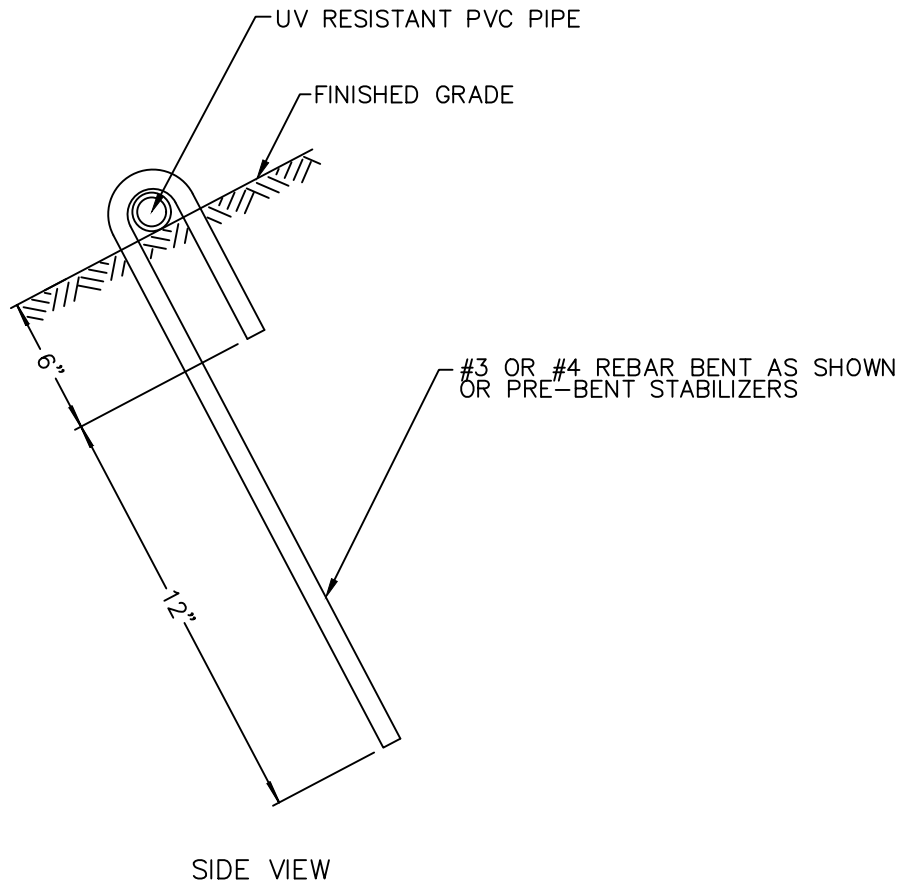
---

SOLAR IRRIGATION CONTROLLER

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

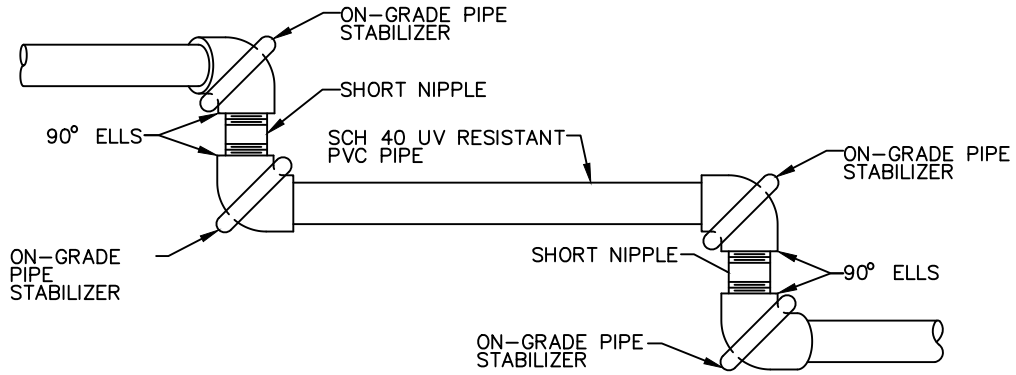
DRAWING NUMBER 1-19



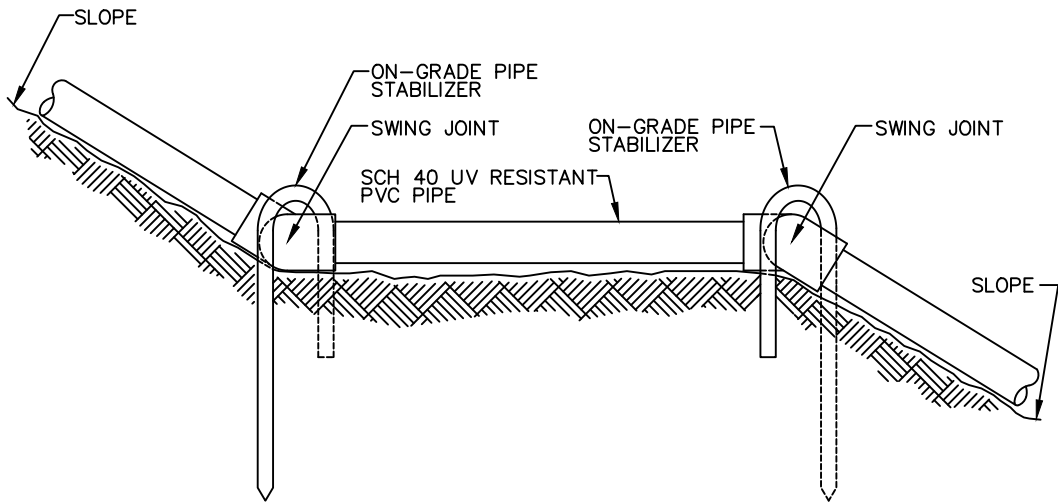
NOTE:

STABILIZERS SHALL BE PLACED NO GREATER THAN 10' APART,  
AT EACH RISER AND AT ALL FITTINGS.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Delete Metric	KA	N. Batta	11/11	ON-GRADE PIPE STABILIZATION TEMPORARY INSTALLATION	<i>T. Stanton</i> 10/25/2018
Reviewed	KA	N. Batta	10/15		Chairperson R.C.E. 19246 Date
Reviewed	EW	T. Stanton	10/18		DRAWING NUMBER 1-20



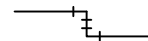
PLAN



ELEVATION

NOTE:  
SWING JOINTS SHALL BE USED AT EACH CHANGE OF GRADE.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15
Reviewed	EW	T. Stanton	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

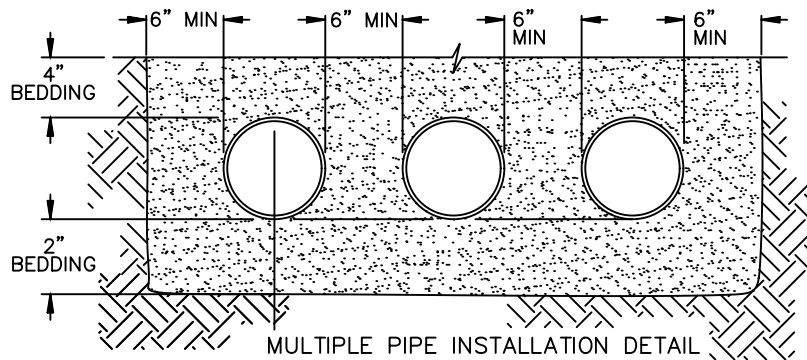
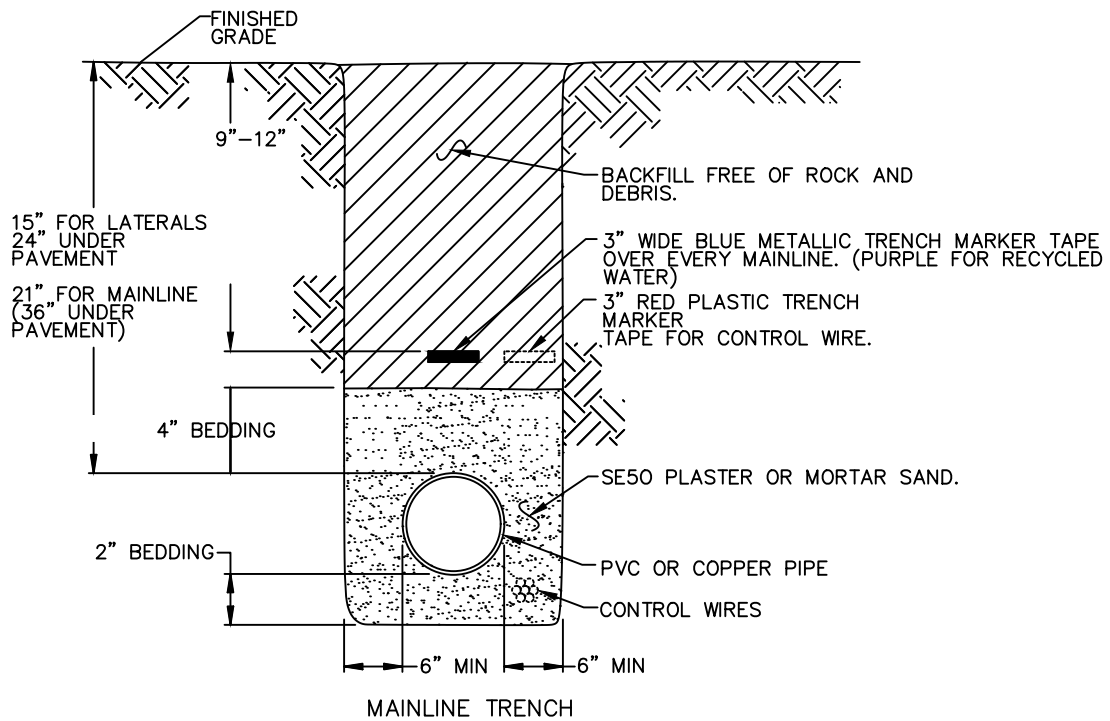
---

SWING JOINT AND PIPE INSTALLATION  
ON SLOPES ABOVE GROUND

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE


*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

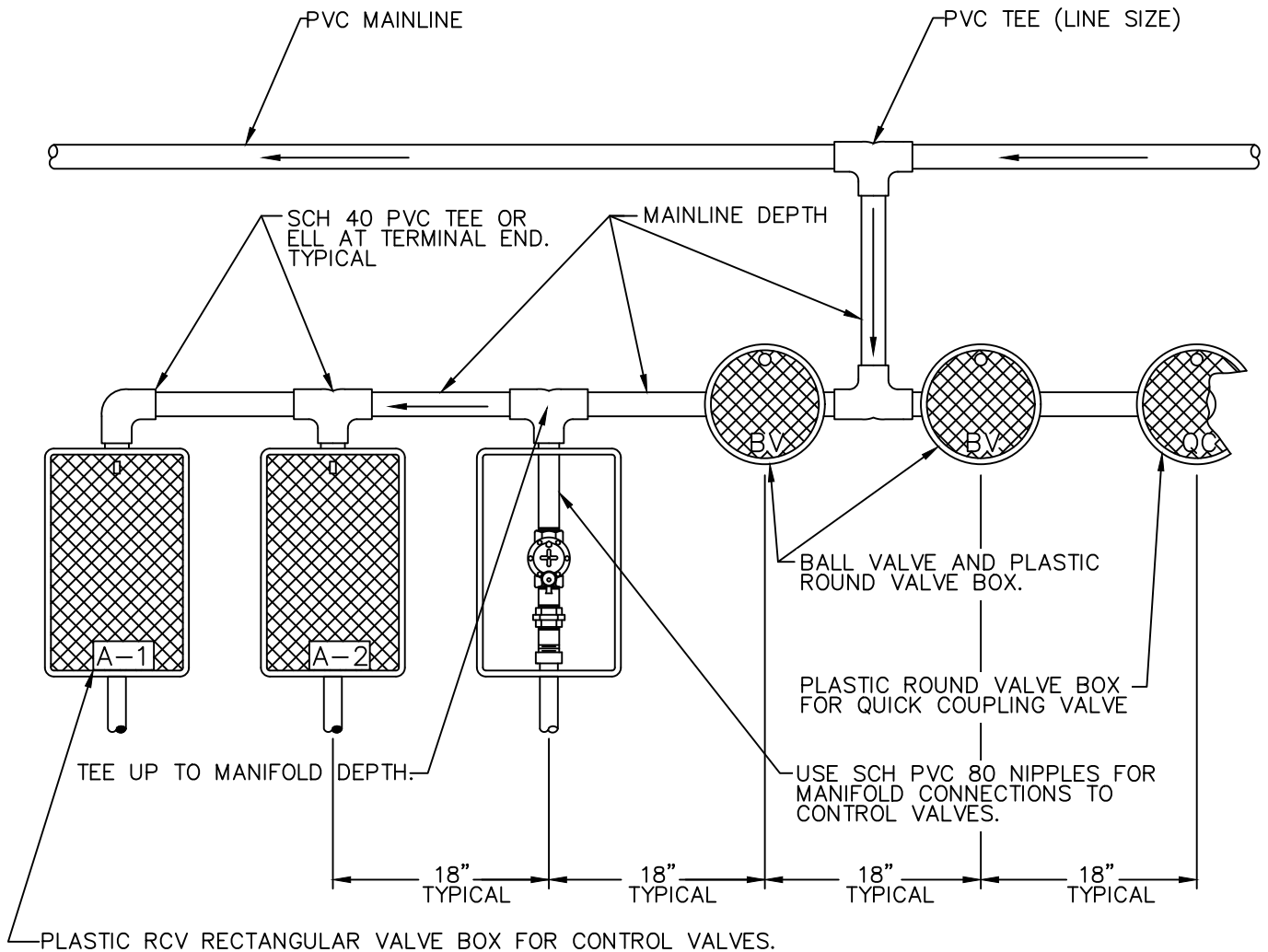
DRAWING NUMBER 1-23



NOTES:

1. BACKFILL MATERIAL SHALL BE COMPACTED TO A RELATIVE COMPACTION OF 90% MINIMUM.
2. PIPE SHALL LAY FREE IN THE TRENCH WITH NO INDUCED STRAIN AND WITH SUFFICIENT ALLOWANCE FOR EXPANSION AND CONTRACTION.
3. PVC PIPE UNDER PAVEMENT SHALL BE INSTALLED IN A SCH 40 PVC SLEEVE TWICE THE DIAMETER OF THE PIPE (2" MINIMUM SIZE) AND EXTEND 12" MINIMUM BEYOND THE EDGE OF PAVEMENT.
4. THE LETTER "W" SHALL BE STAMPED OR CHISELED ON THE IMPROVEMENT (CURB/ SIDEWALK) DIRECTLY ABOVE THE PRESSURE PIPELINE SLEEVE.
5. NO PVC PRESSURE PIPELINE SHALL BE INSTALLED WITHIN 3' OF ANY UTILITY, UNLESS OTHERWISE SPECIFIED.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75	IRRIGATION TRENCH PVC OR COPPER PIPE		 Chairperson R.C.E. 19246 Date 10/25/2018
Delete Metric	KA	N. Batta	11/11			
Reviewed	KA	N. Batta	10/15			
Reviewed	EW	T. Stanton	10/18			
						DRAWING NUMBER 1-25



NOTES:

1. PVC PIPE USED IN MANIFOLD ASSEMBLIES SHALL BE THE SAME CLASS AS SPECIFIED FOR THE MAINLINE.
2. VALVE BOXES SHALL BE HEAT BRANDED WITH CONTROLLER AND VALVE IDENTIFICATION.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15
Reviewed	EW	T. Stanton	10/18

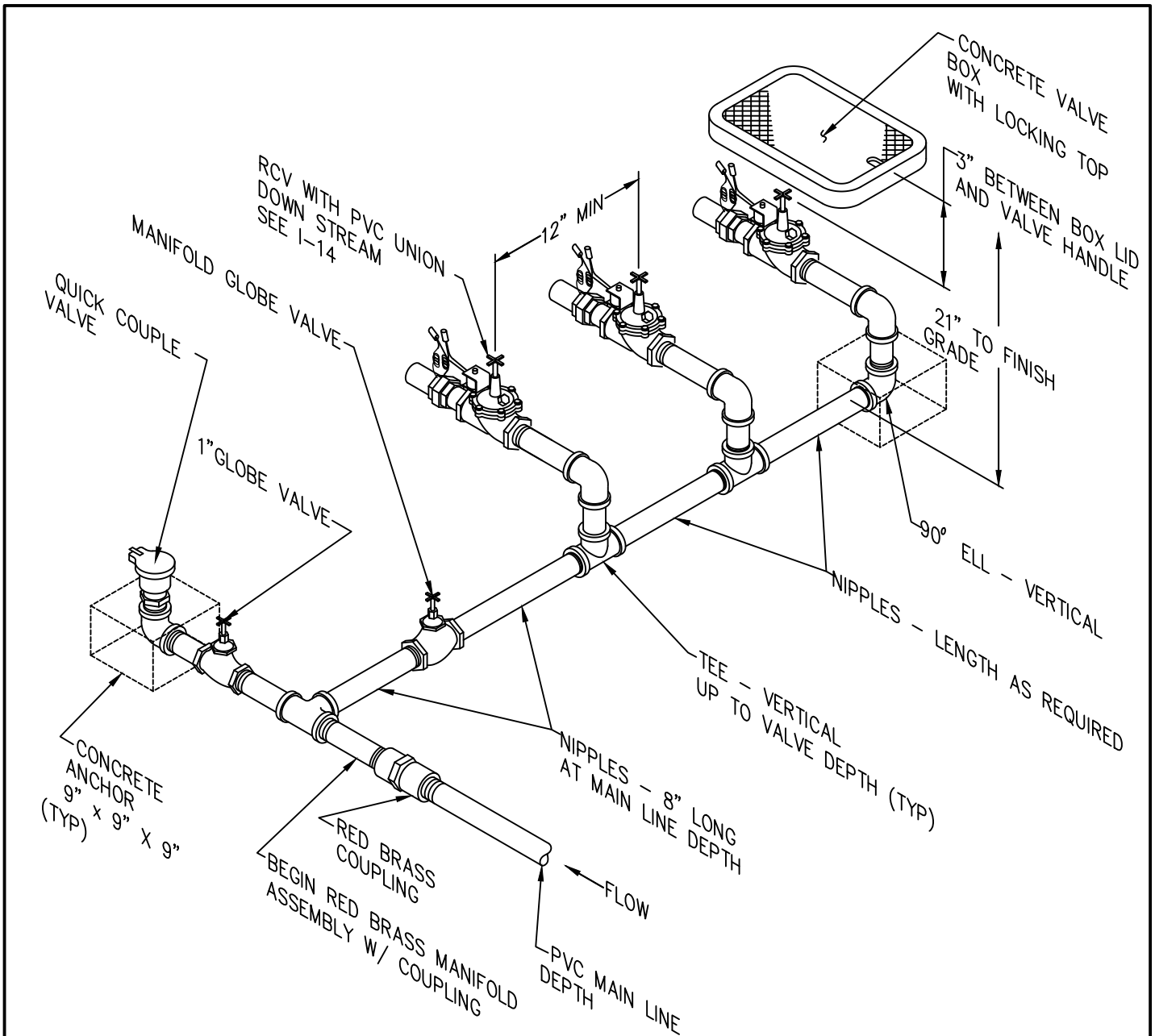
SAN DIEGO REGIONAL STANDARD DRAWING

REMOTE CONTROL VALVE MANIFOLD  
ASSEMBLY WITH PVC PIPE (TEMPORARY  
SYSTEMS)

RECOMMENDED BY THE SAN DIEGO  
REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING  
NUMBER 1-32

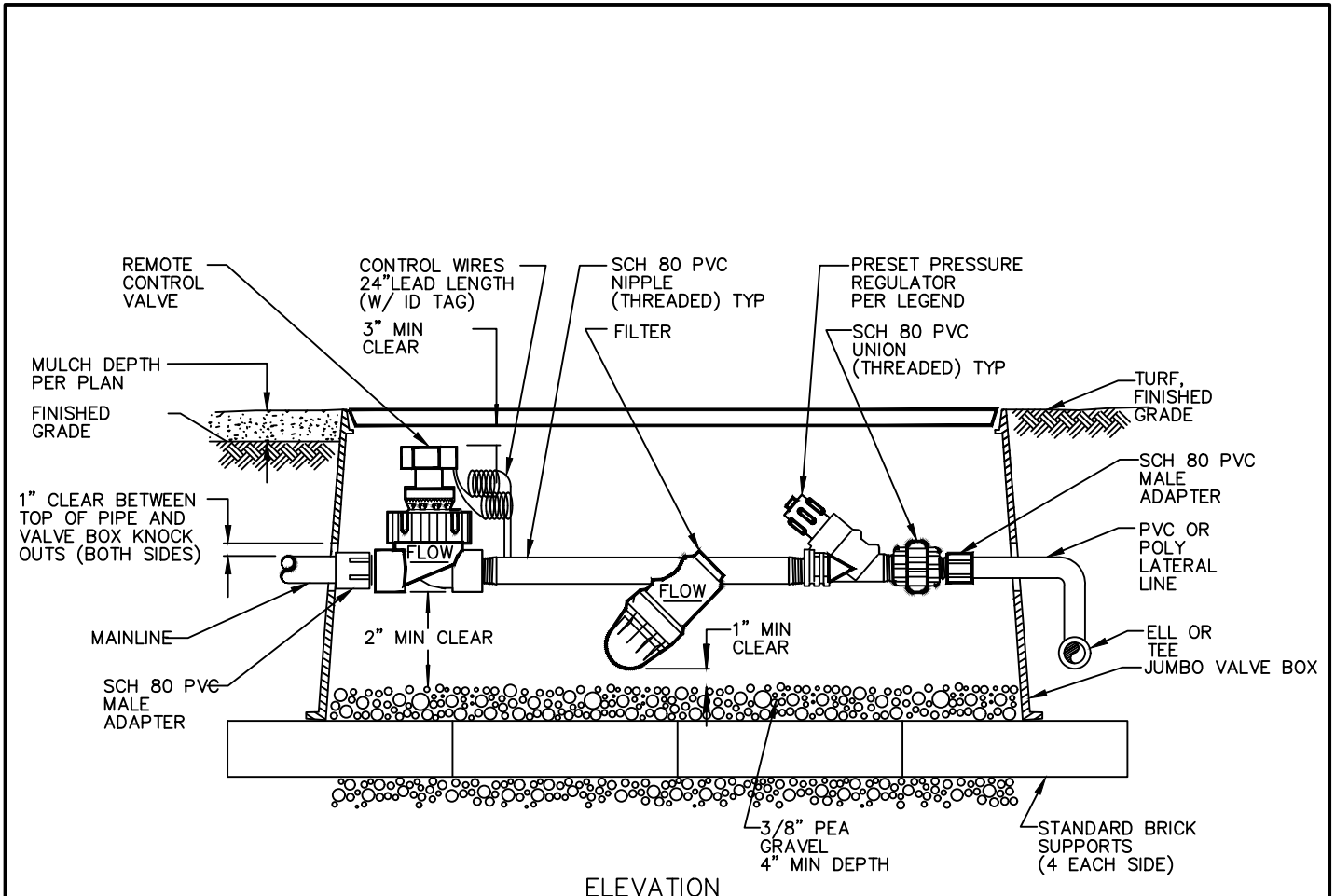


NOTES:

1. ALL PIPES, NIPPLES, AND FITTINGS AFTER MALE ADAPTER SHALL BE RED BRASS.
2. VALVE AND CONTROLLER IDENTIFICATION SHALL BE LABELED OUTSIDE ON THE VALVE BOX LID AND TAGGED INSIDE THE BOX ON THE VALVE.
3. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75	REMOTE CONTROL VALVE MANIFOLD ASSEMBLY WITH BRASS PIPE		 Chairperson R.C.E. 19246 Date 10/25/2018
Delete Metric	KA	N. Batta	11/11			
Reviewed	KA	N. Batta	10/15			
Reviewed	EW	T. Stanton	10/18			
						DRAWING NUMBER 1-33





ELEVATION

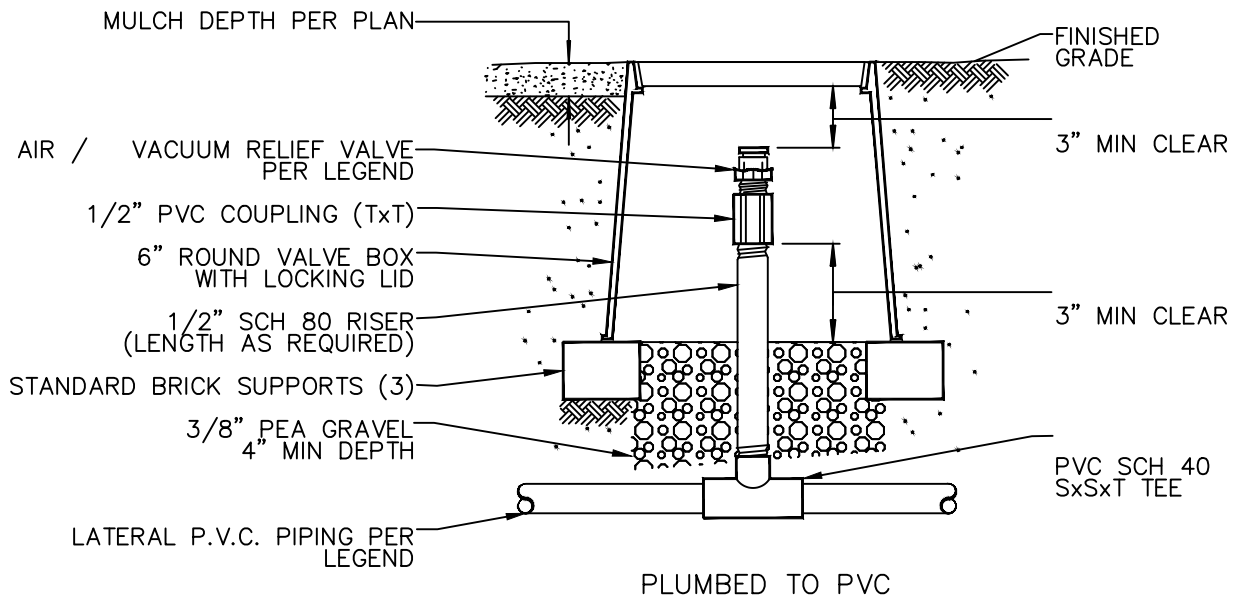
NOTES:

1. WIRE SPlicing SHALL BE MADE IN VALVE BOXES AND PULL BOXES ONLY. SEE I-15 FOR SPlice / SOLDERING NOTES.
2. SPARE WIRES TERMINATING IN VALVE BOXES SHALL HAVE THEIR ENDS INSULATED, THE SAME AS FOR A SPlice.
3. WHEN TWO OR MORE VALVES ARE INSTALLED IN THE SAME LOCATION, SEE REMOTE CONTROL VALVE MANIFOLD ASSEMBLY.
4. VALVE / CONTROLLER IDENTIFICATION SHALL BE PERMANENTLY LABELED EXTERNALLY ON THE VALVE BOX AND INTERNALLY, WITH A PERMANENT IDENTIFICATION TAG ATTACHED TO THE VALVE.
5. KNOCK OUTS SHALL NOT BE ENLARGED UNLESS APPROVED BY THE AGENCY.
6. INSTALL ONLY ONE VALVE ASSEMBLY PER BOX.
7. VALVE BOXES SHALL BE SET PERPENDICULAR TO HARDSCAPE, A MAXIMUM 12 INCHES FROM EDGE OF HARDSCAPE, 2" ABOVE FINISHED GRADE IN SHRUB / GROUNDCOVER AREAS, PER MULCH DEPTH. IF NECESSARY TO BE SET IN TURF, VALVE BOXES SHALL BE SET FLUSH WITH FINISHED GRADE.
8. CLOSE NIPPLES SHALL NOT BE USED.
9. FILTER SHALL BE INSTALLED TO ALLOW FOR MAINTENANCE ACCESS.
10. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS.

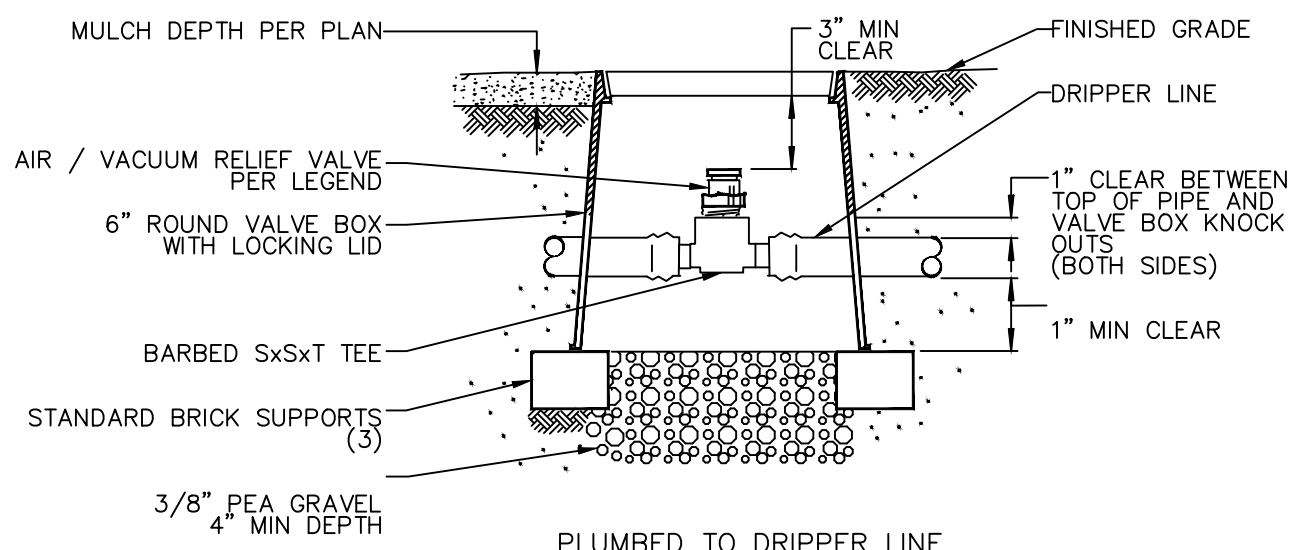
LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		M. Caro	12/75		
Delete Metric	KA	N. Batta	11/11	REMOTE CONTROL VALVE DRIP IRRIGATION	<i>T. Stanton</i> 10/25/2018
Reviewed	KA	N. Batta	10/15		Chairperson R.C.E. 19246 Date
Reviewed	EW	T. Stanton	10/18		DRAWING NUMBER 1-35



PLUMBED TO PVC



PLUMBED TO DRIPPER LINE

NOTES:

1. INSTALL AIR / VACUUM RELIEF VALVE AT HIGH POINT(S) IN VALVE CIRCUIT.
2. HEAT-BRAND VALVE BOX LID "AR".
3. VALVE SHALL BE CENTERED IN BOX.
4. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS.

LEGEND ON PLANS

(A)

Revision	By	Approved	Date
ORIGINAL		M. Caro	1/06
UPDATE	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15
Reviewed	EW	T. Stanton	10/18

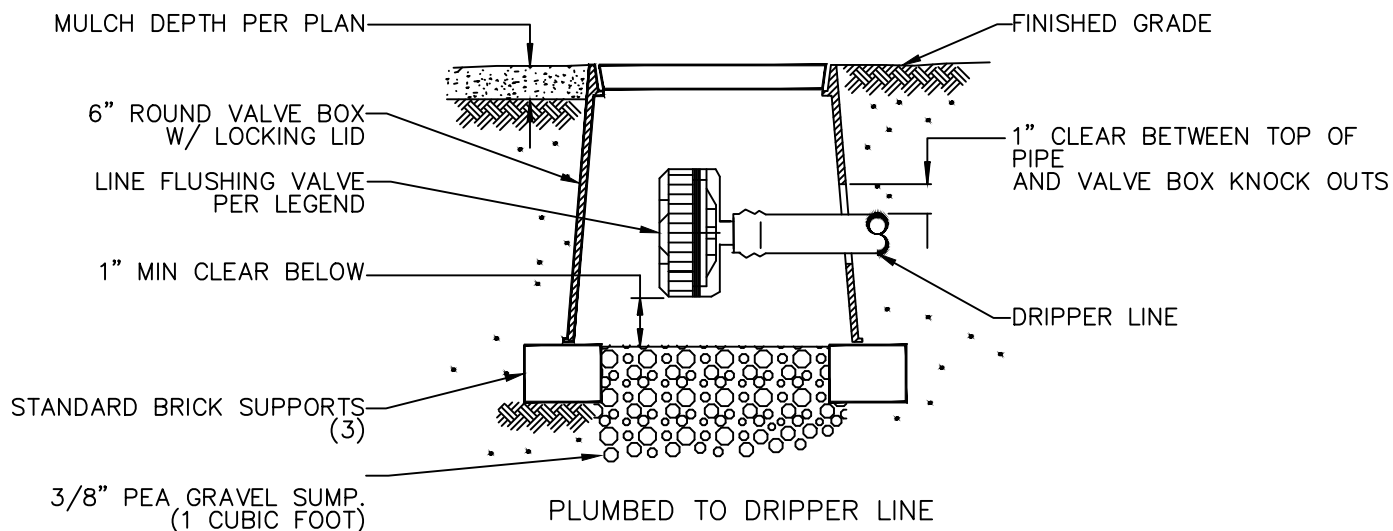
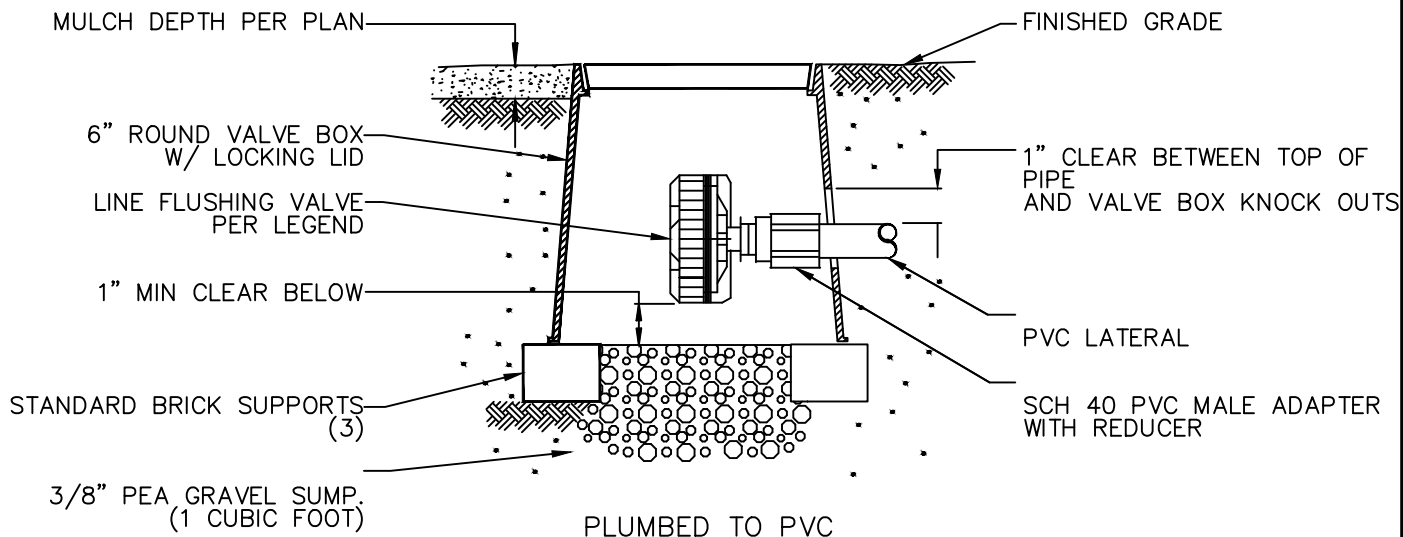
SAN DIEGO REGIONAL STANDARD DRAWING

AIR / VACUUM RELIEF VALVE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER 1-36



NOTES:

1. INSTALL FLUSH VALVE(S) AT THE LOWEST POINTS IN THE VALVE CIRCUIT
2. HEAT BRAND VALVE BOX LIDS "FV".
3. VALVE SHALL BE CENTERED IN BOX.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL	RH	A. Oskoui	12/75
UPDATE	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15
Reviewed	EW	T. Stanton	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

DRIP IRRIGATION  
FLUSH VALVE (AUTOMATIC)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

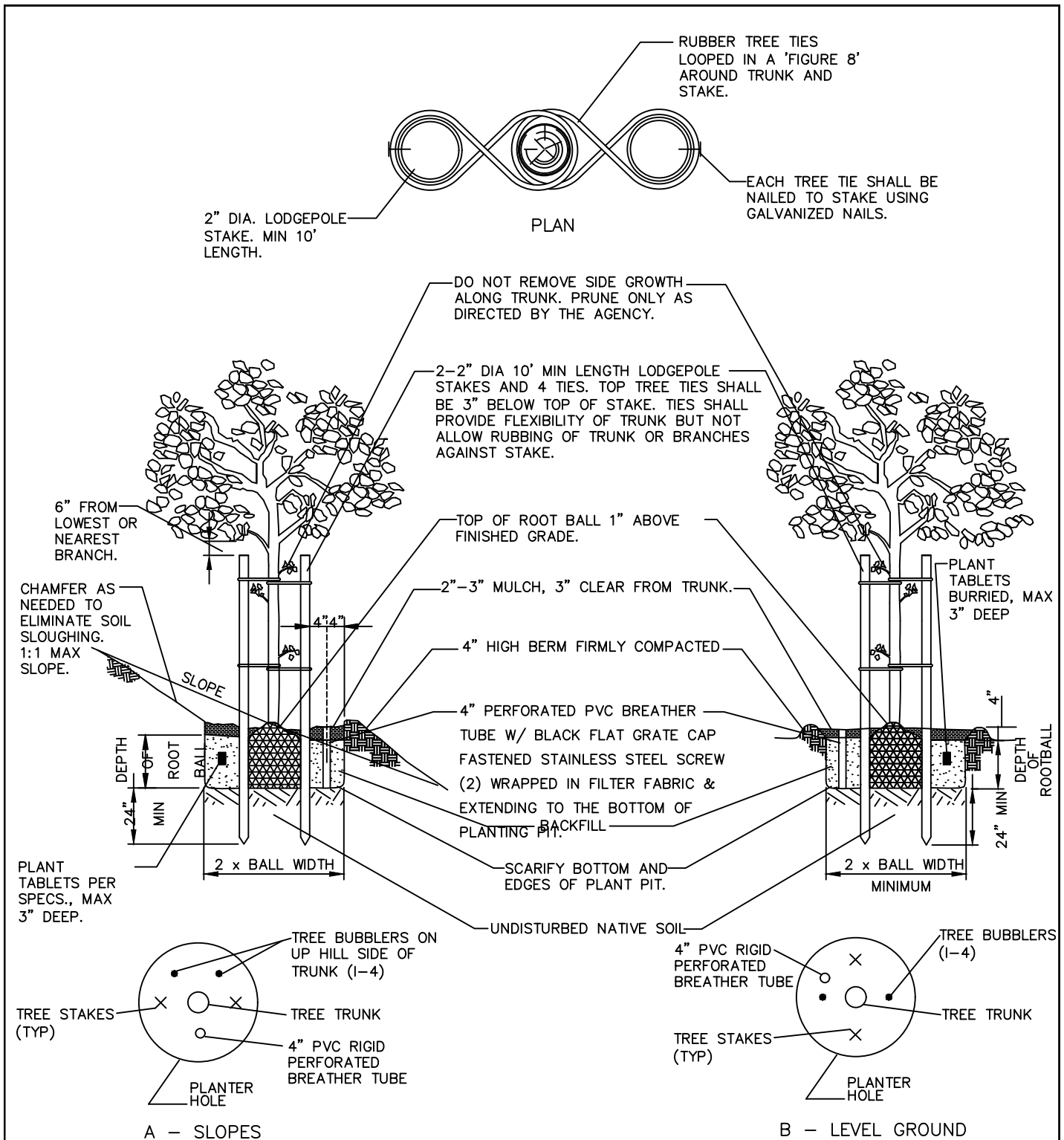
*E. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER 1-37

# LANDSCAPING

LANDSCAPING

L



**NOTES**

1. DOUBLE STAKE 15 GAL. AND LARGER TREES. SINGLE STAKE TREES SMALLER THAN 15 GAL.
2. FOR SINGLE STAKED TREES, PLACE STAKE ON WINDWARD SIDE OF TREE.
3. LOCATE STAKES OUTSIDE OF ROOTBALL.
4. PROVIDE MINIMUM DISTANCE FROM OTHER OBJECTS AS FOLLOWS:  
 20' TRAFFIC SIGNALS, 12' STREET LIGHTS, 10' FIRE HYDRANTS, SEWER LINES AND SDG&E FOR PAD MOUNTED EQUIPMENT, AND 5' UNDERGROUND SDG&E ELECTRIC AND GAS LINES.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Delete Metric	SJG	N. Batta	06/11
Reviewed	HM	T. Stanton	10/15
Reviewed	EW	T. Stanton	10/18

**SAN DIEGO REGIONAL STANDARD DRAWING**

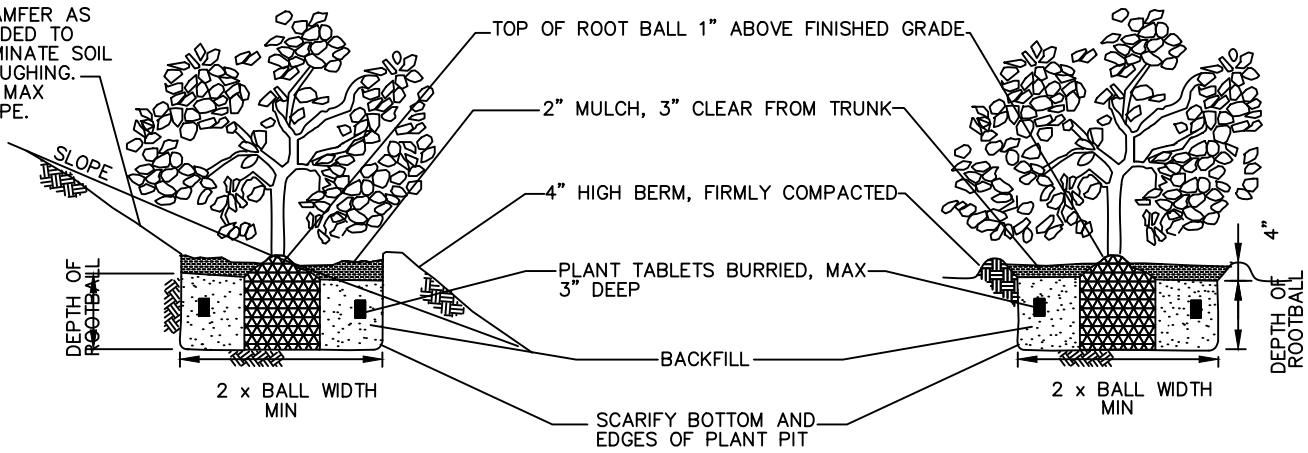
**TREE PLANTING AND STAKING**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
 Chairperson R.C.E. 19246 Date

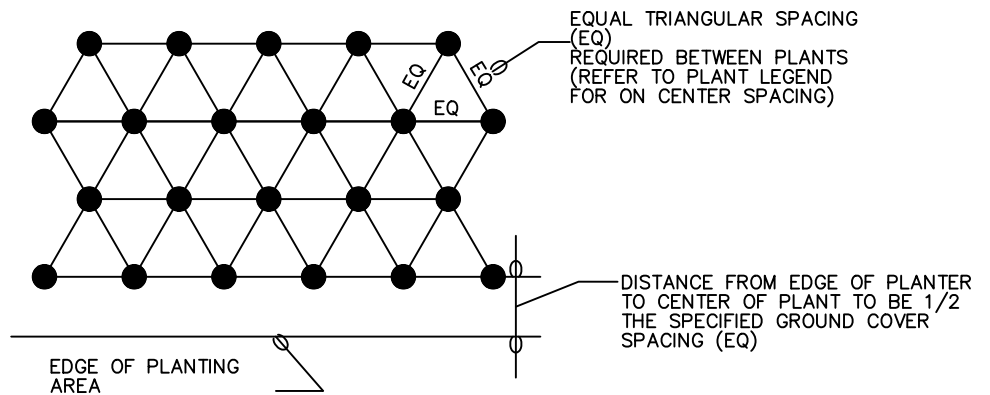
**DRAWING NUMBER**      **L-01**

CHAMFER AS NEEDED TO ELIMINATE SOIL SLOUGHING. 1:1 MAX SLOPE.



SHRUB PLANTING – SLOPES

SHRUB PLANTING – LEVEL GROUND



GROUND COVER SPACING

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Delete Metric	KA	N. Batta	06/11
Reviewed	HM	T. Stanton	10/15
Reviewed	EW	T. Stanton	10/18

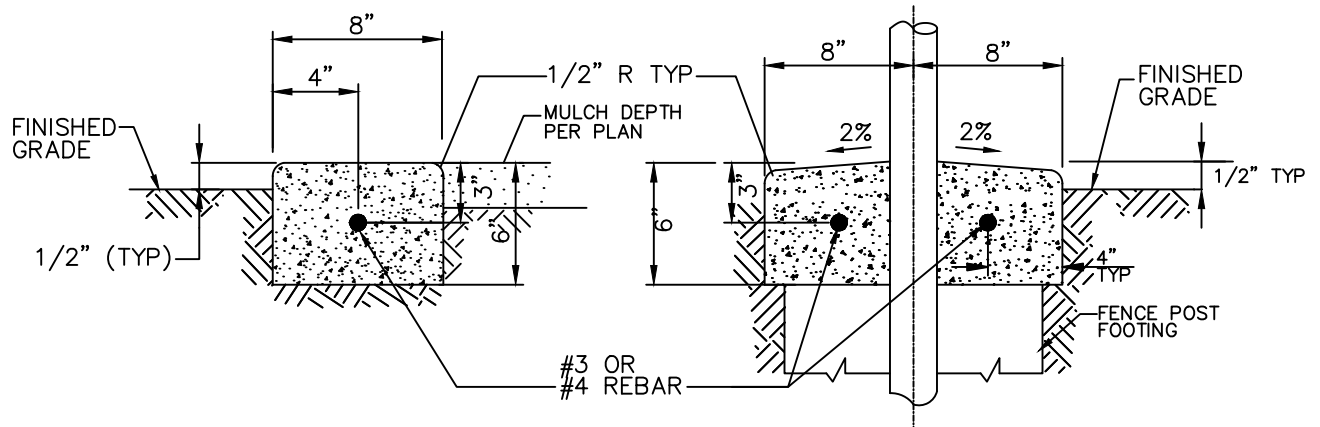
SAN DIEGO REGIONAL STANDARD DRAWING

SHRUB PLANTING/GROUND COVER SPACING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

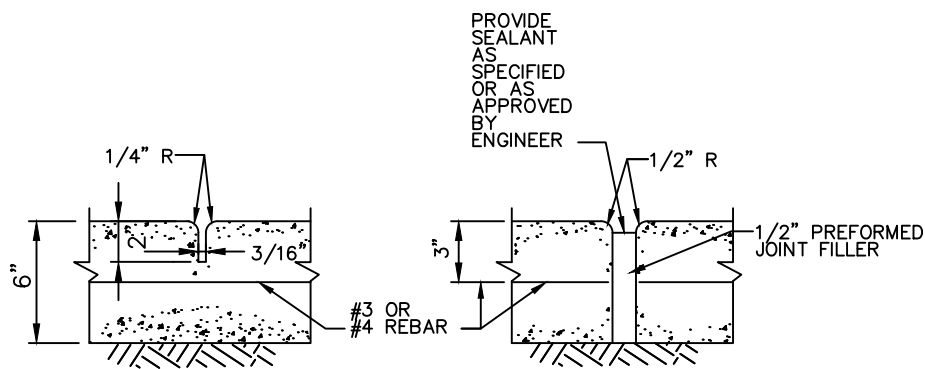
*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER L-02



TYPE A  
ALL AREAS  
EXCEPT  
UNDER  
FENCES

TYPE B  
UNDER FENCES



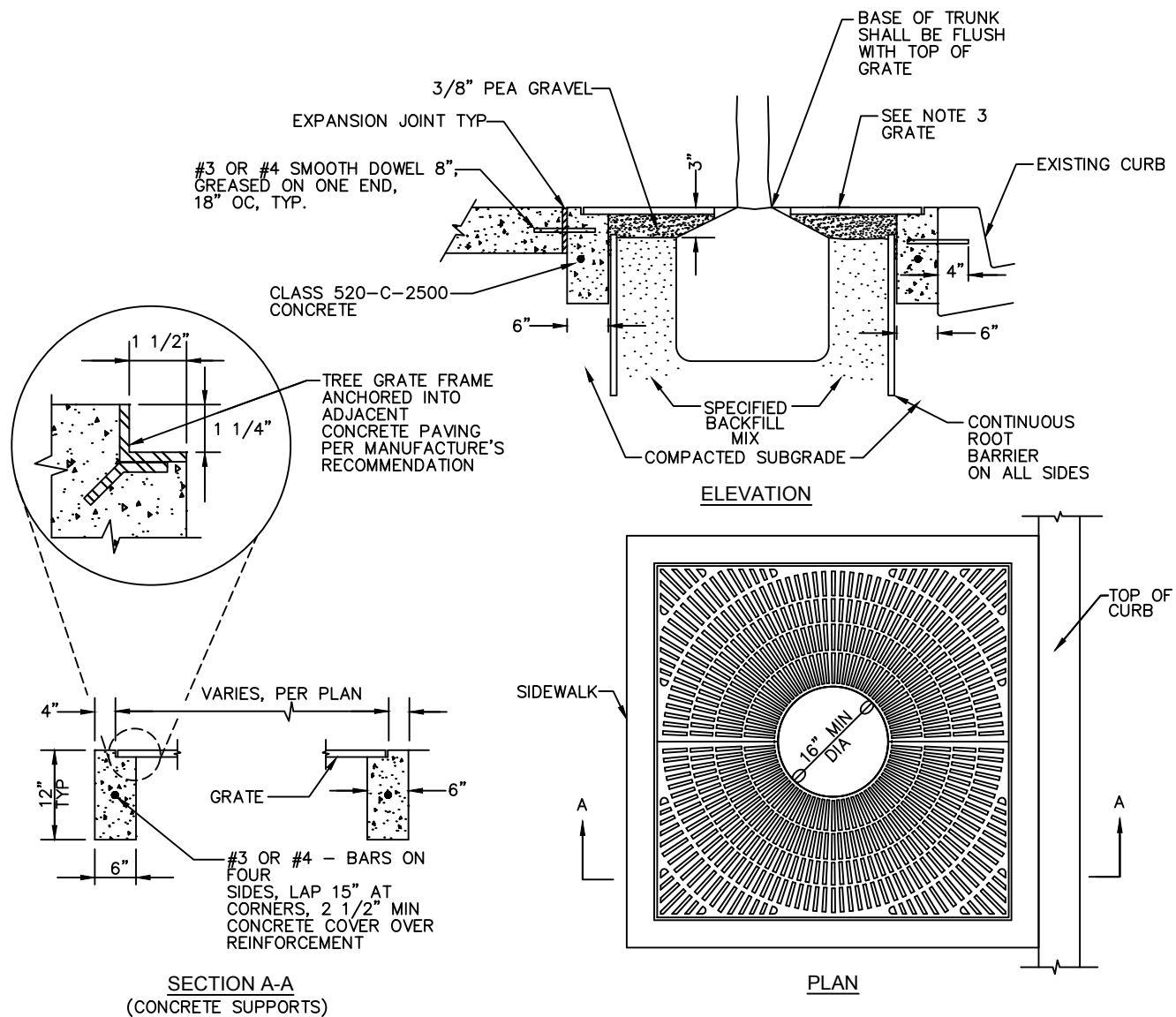
WEAKENED PLANE JOINT  
MAX 20' OC

EXPANSION JOINT  
MAX 120' OC

NOTES

1. REBAR SHALL BE CONTINUOUS WITH 12" OVERLAP WHERE SPLICED.
2. CONCRETE SHALL BE CLASS 520-C-2500 AND SAME COLOR AS ADJACENT CONCRETE AND HAVE A SMOOTH TROWEL FINISH.
3. INSTALL WEAKENED PLANE JOINTS AT EACH FENCE POST.
4. INSTALL EXPANSION JOINTS WHERE THE MOWING STRIP ABUTS CONCRETE IMPROVEMENT AND AT LOCATION APPROVED BY THE AGENCY.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		CONCRETE MOWING STRIP
Delete Metric	KA	N. Batta	06/11		
Reviewed	HM	T. Stanton	10/15		
Reviewed	EW	T. Stanton	10/18		
					 10/25/2018 Chairperson R.C.E. 19246 Date
					DRAWING NUMBER L-03



**NOTES:**

1. CONCRETE TO BE REMOVED FOR EACH TREE PLANTING SHALL BE SAW CUT FULL DEPTH.
2. BOLTS, NUTS AND WASHERS SHALL BE GRADE 316 STAINLESS STEEL. GRATE FRAME SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION. ALL GRATES SHALL BE REMOVABLE & FASTENERS SHALL BE ACCESSIBLE TO MAINTENANCE .
3. GRATES SHALL BE MINIMUM 40 SQUARE FEET IN SIZE, AND 2 SEPARATE PIECES, UNLESS OTHERWISE SPECIFIED ON THE PLANS. SLOT OPENINGS IN GRATE DESIGN SHALL HAVE 3/8" MAXIMUM WIDTH. GRATE DESIGNS AND INSTALLATION SHALL BE IN ACCORDANCE WITH CURRENT ADA STANDARDS AND THE LATEST EDITION OF THE CALIFORNIA BUILDING CODE, WITH A MINIMUM UNIFORM LIVE LOAD OF 250 POUNDS PER SQUARE FOOT IN SIDEWALKS.
4. IMMEDIATE NOTIFICATION SHALL BE GIVEN TO THE ENGINEER OF ANY BELOW GRADE IMPROVEMENTS ENCOUNTERED.
5. SET GRATE IN FRAME PRIOR TO PLACEMENT OF PAVEMENT. ANY WARPED OR NON-FLUSH FITTING GRATES SHALL BE REPLACED.
6. TREE SHALL BE CENTERED IN GRATE OPENING. GRATES SHALL HAVE A PERMANENT SLIP RESISTANT FINISH.
7. ADJACENT SIDEWALK SHALL HAVE A MINIMUM CLEARANCE WIDTH OF 4' FROM THE EDGE OF GRATE.
8. GRATE SHALL BE UNIFORM WITH ADJACENT GRADE.
9. PROVIDE MINIMUM DISTANCE FROM OTHER OBJECTS AS FOLLOWS: 12' STREET LIGHTS, 10' FIRE HYDRANTS, 10' SEWER LINES, AND 20' TRAFFIC SIGNALS.
10. SUBMIT GRATE DESIGN FOR APPROVAL.

Revision	By	Approved	Date
ORIGINAL		Parkinson	05/92
Delete Metric	KA	N. Batta	06/11
Reviewed	HM	T. Stanton	10/15
Reviewed	EW	T. Stanton	10/18

**SAN DIEGO REGIONAL STANDARD DRAWING**

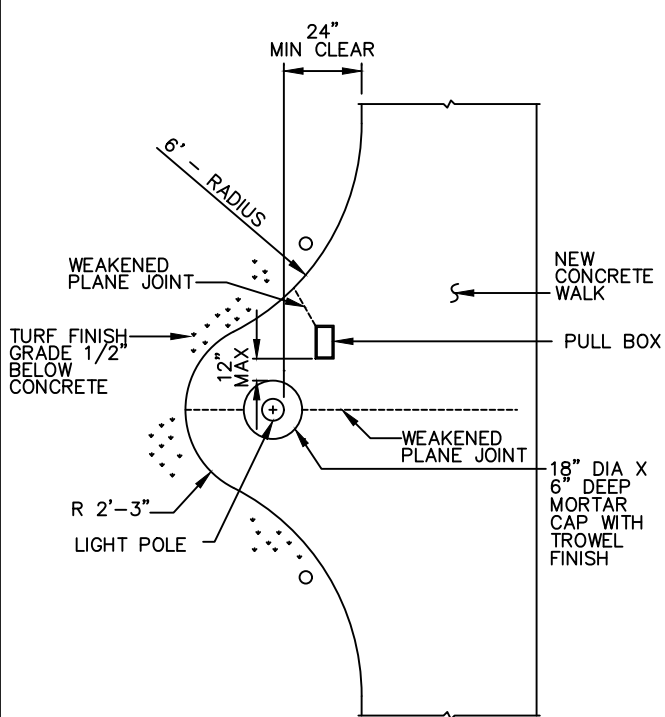
**TREE GRATE**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

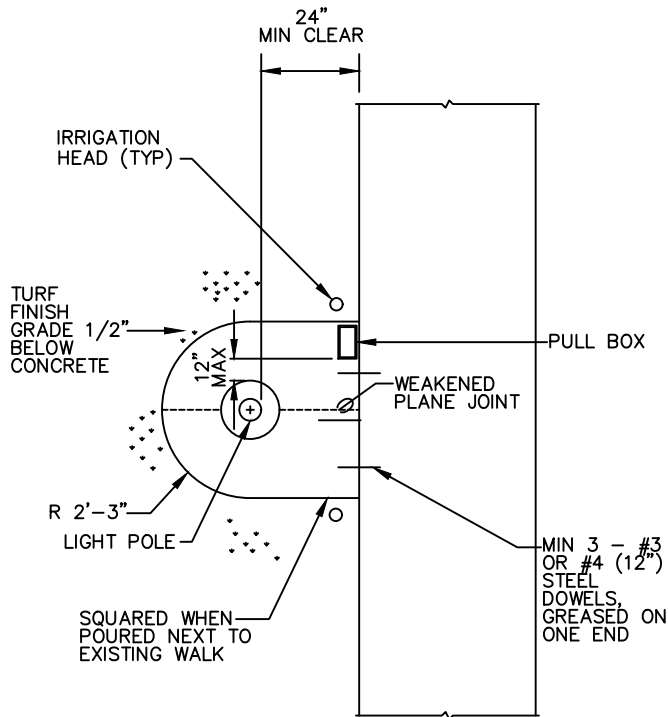
*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

**DRAWING NUMBER** L-04





MONOLITHIC CONCRETE PLACEMENT



PAD WHEN ADJACENT TO EXISTING CONCRETE

NOTES:

1. USE MONOLITHIC PLACEMENT FOR NEW CONSTRUCTION.
2. POLE PADS SHALL DRAIN AT 1.5% MINIMUM IN SAME DIRECTION AS SIDEWALK.
3. CONCRETE PAD SHALL BE THE SAME AS SPECIFIED FOR SIDEWALK.
4. LOCATE LIGHT POLES OUTSIDE OF TURF AREAS AND AWAY FROM TREES AS APPROVED BY THE ENGINEER UNLESS SPECIFIED OTHERWISE
5. PULL BOX WITH BOLT-DOWN LID MINIMUM 6" FROM ALL EDGES (POLYMER EDGED BOX WITH BRICK FOUNDATION)
6. IRRIGATION HEAD SHALL BE 6 INCHES FROM ADJACENT CURBS, WALKS, PAVING AND SIMILAR IMPROVEMENTS.

Revision	By	Approved	Date
ORIGINAL		Parkinson	09/88
Delete Metric	KA	N. Batta	06/11
Revised	HM	T. Stanton	10/15
Revised	EW	T. Stanton	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

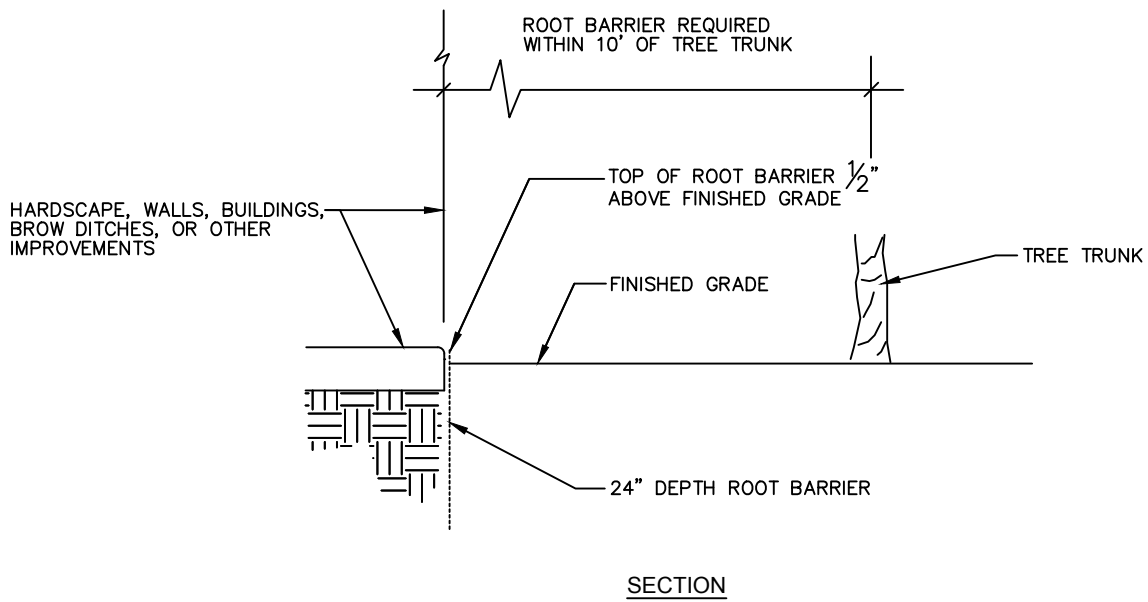
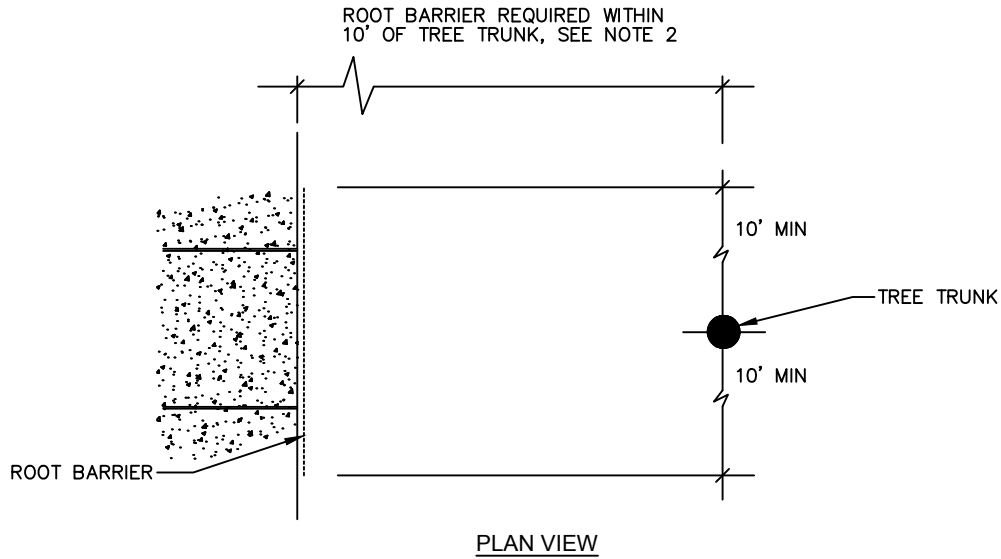
---

LIGHT POLE PAD IN TURF AREAS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

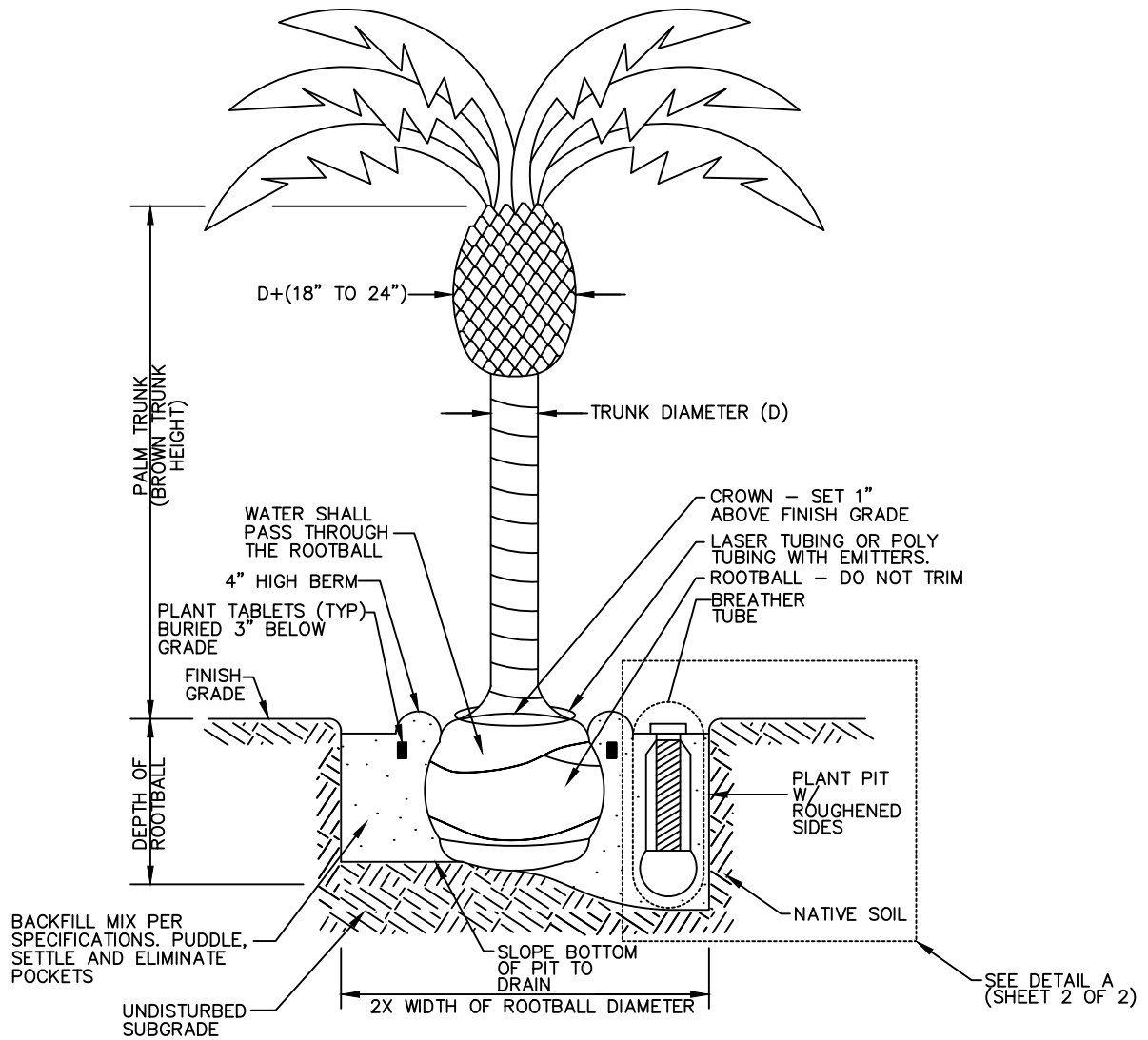
DRAWING NUMBER L-05



NOTES:

1. ROOT BARRIER SHALL BE INSTALLED ADJACENT TO THE IMPROVEMENT AND NOT AROUND THE ROOTBALL.
2. ROOT BARRIER REQUIRED WHEN TREE TRUNK IS WITHIN 10' OF HARDSCAPE, WALLS, BUILDINGS, BROW DITCHES, OR OTHER IMPROVEMENTS.
3. FOR ROOT BARRIER INSTALLATION WITH THE TREE GRATES SEE L-4.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		M. Caro	02/06		ROOT CONTROL BARRIER
Add Metric		T. Stanton	03/03	Chairperson R.C.E. 19246 Date	
Delete Metric	KA	N. Batta	06/11	DRAWING NUMBER	
Reviewed	HM	T. Stanton	10/15	L-06	
Reviewed	EW	T. Stanton	10/18		

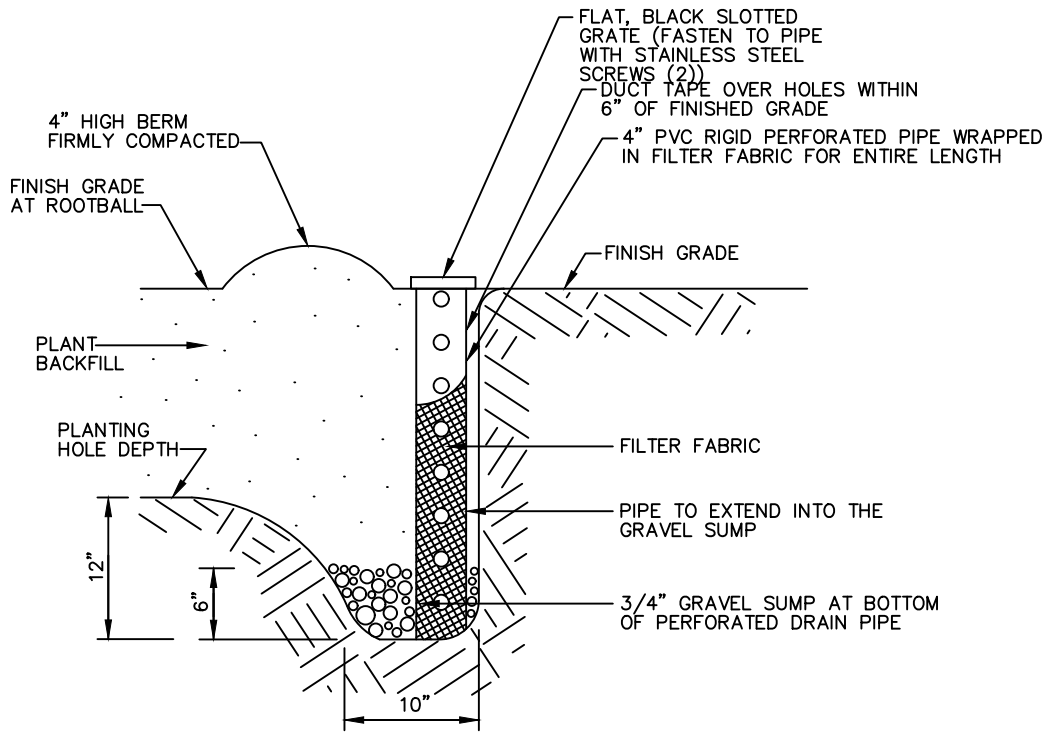


**NOTES:**

1. TIE PALM FRONDS TOGETHER WITH BIODEGRADABLE SISAL TWINE. TWINE SHALL BE REMOVED AFTER 90 DAYS OF TRANSPLANTING UNLESS OTHERWISE DIRECTED BY THE AGENCY.
2. PALM TRUNKS SHALL BE SKINNED, TRIMMED, AND VERTICAL.
3. STEM DIAMETER REQUIREMENT APPLIES ONLY TO PHOENIX SPECIES.

SHEET 1 OF 2

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL	KA	N. Batta	06/11		PALM TREE PLANTING	<i>T. Stanton</i> 10/25/2018
Reviewed	HM	T. Stanton	10/15			Chairperson R.C.E. 19246 Date
Reviewed	EW	T. Stanton	10/18	DRAWING NUMBER L-07		



DETAIL - A  
BREATHER TUBE

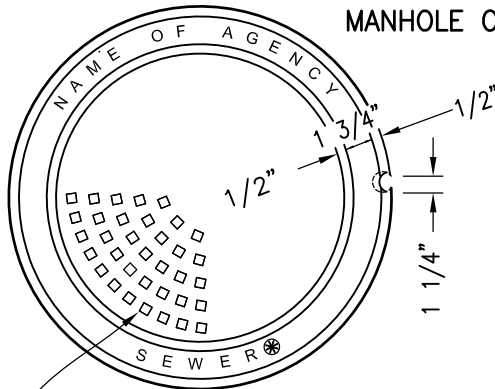
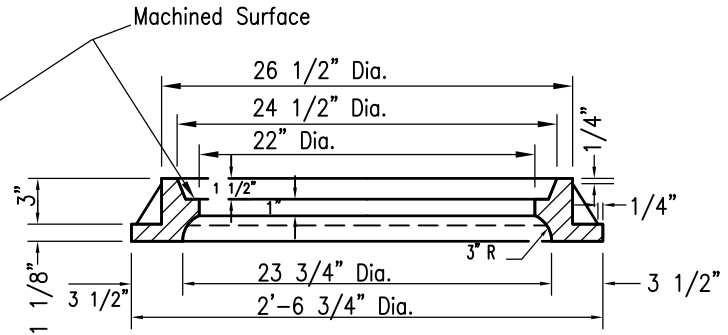
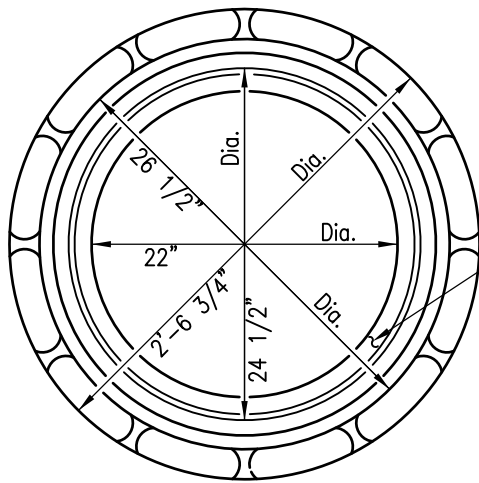
SHEET 2 OF 2

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL	KA	N. Batta	06/11		PALM TREE PLANTING
Reviewed	HM	T. Stanton	10/15	Chairperson R.C.E. 19246 Date	
Reviewed	EW	T. Stanton	10/18	DRAWING NUMBER	
				L-07	

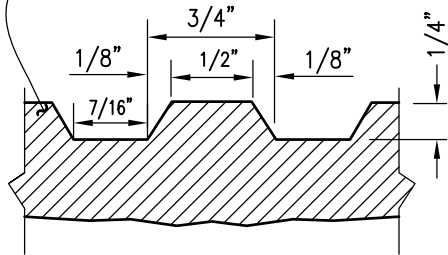
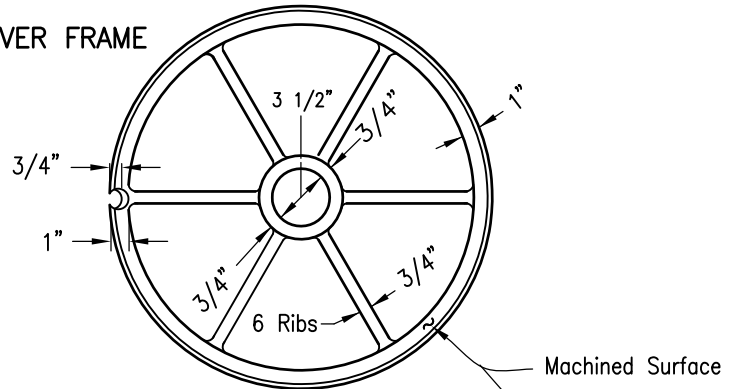
# MISCELLANEOUS

**M**

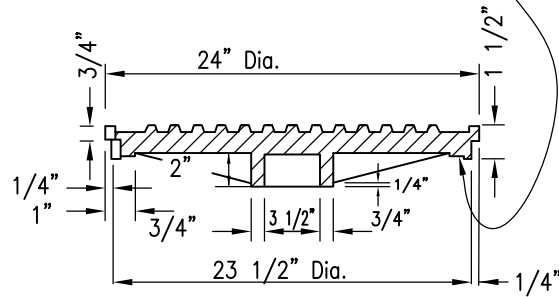
MISCELLANEOUS



MANHOLE COVER FRAME



DETAIL



MANHOLE COVER

NOTES

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

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

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Delete Metric		D. Gerschoffer	05/12
Reviewed		T. Stanton	12/15
Reviewed		T. Stanton	10/18

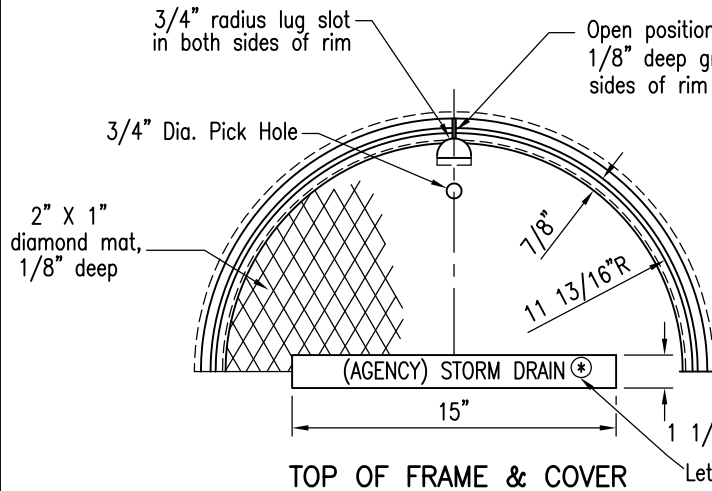
SAN DIEGO REGIONAL STANDARD DRAWING

24" MANHOLE FRAME AND COVER  
HEAVY DUTY

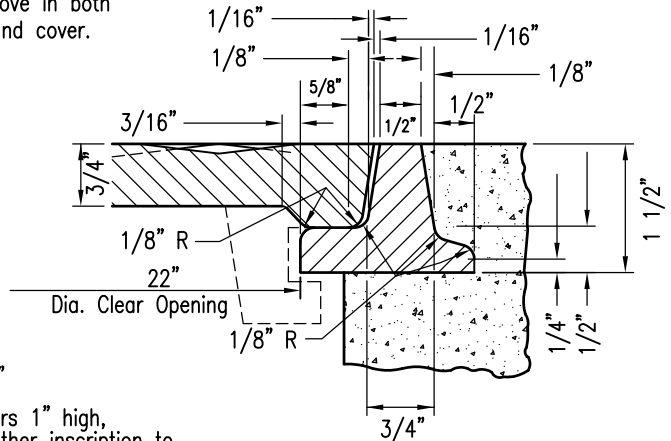
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

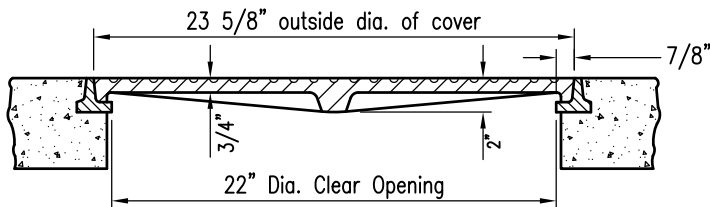
DRAWING NUMBER M-01



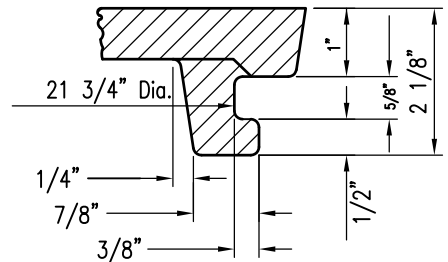
TOP OF FRAME & COVER



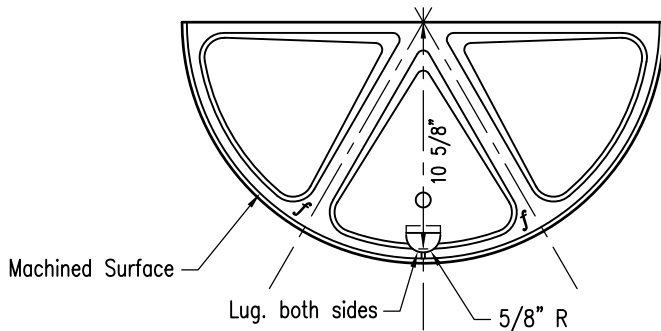
SECTION THROUGH RIM



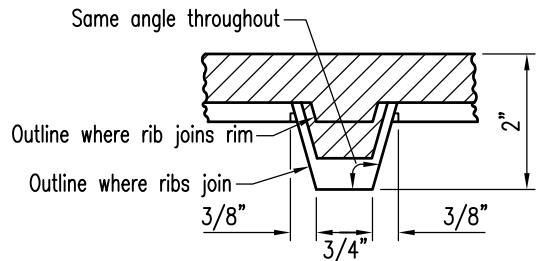
SECTION THROUGH FRAME & COVER



SECTION THROUGH LUG



BOTTOM OF COVER



SECTION THROUGH RIB AT MID RADIUS

**NOTES**

1. Frame and cover shall be cast iron. Cast iron shall conform to ASTM 48, Class 30.
2. Frame and cover for use in non-traffic area only.
3. Weights: Frame 29 lbs - 33 lbs.  
Cover 95 lbs. - 110 lbs.
4. Imported frames and covers shall have the country of origin marked in compliance with federal regulations.

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

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Delete	Metric	D. Gerschoffer	05/12
Reviewed		D. Gerschoffer	12/15
Reviewed		D. Gerschoffer	10/18

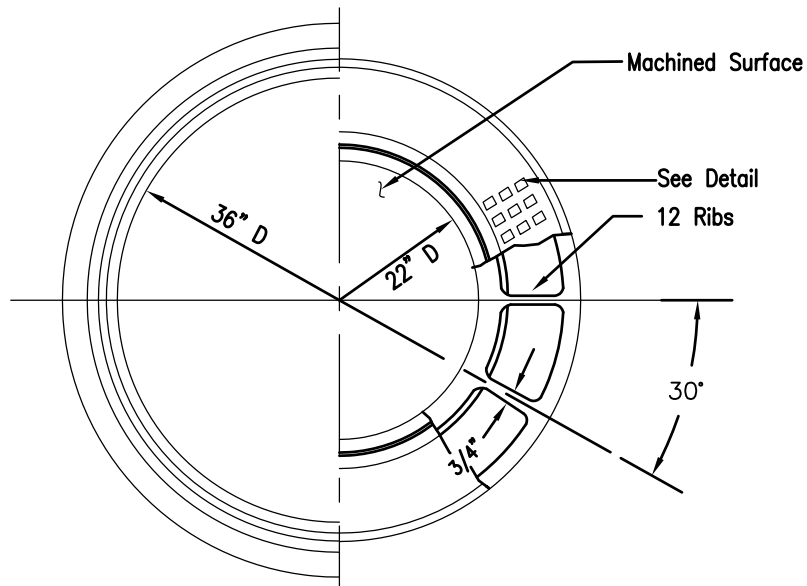
SAN DIEGO REGIONAL STANDARD DRAWING

24" MANHOLE FRAME AND COVER  
LIGHT DUTY

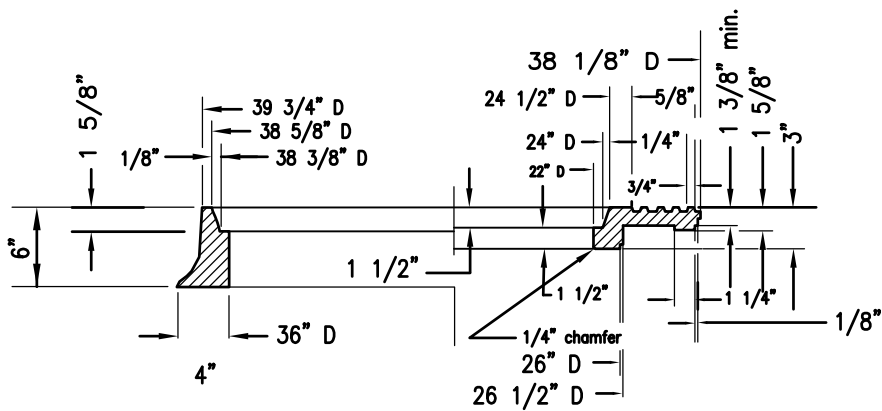
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER M-02



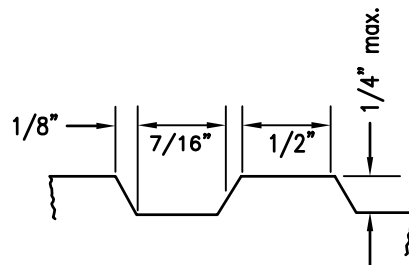
HALF PLAN FRAME & COVER



HALF SECTION FRAME & COVER

NOTES

1. Frame and cover shall be cast iron. Cast iron shall conform to ASTM 48, Class 35B.
2. Weights: Frame 314 lbs - 363 lbs.  
Outer Cover 285 lbs - 330 lbs.  
Inner Cover 147 lbs - 171 lbs.
3. Machine all matching surfaces and seats of frame and cover to prevent rocking.
4. Imported frames and covers shall have the country of origin marked in compliance with federal regulations.



DETAIL

Revision	By	Approved	Date
UPDATED	DG	T. STANTON	12/15
REVIEWED	DG	T. STANTON	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

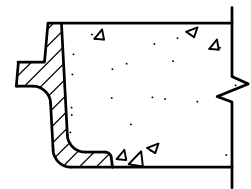
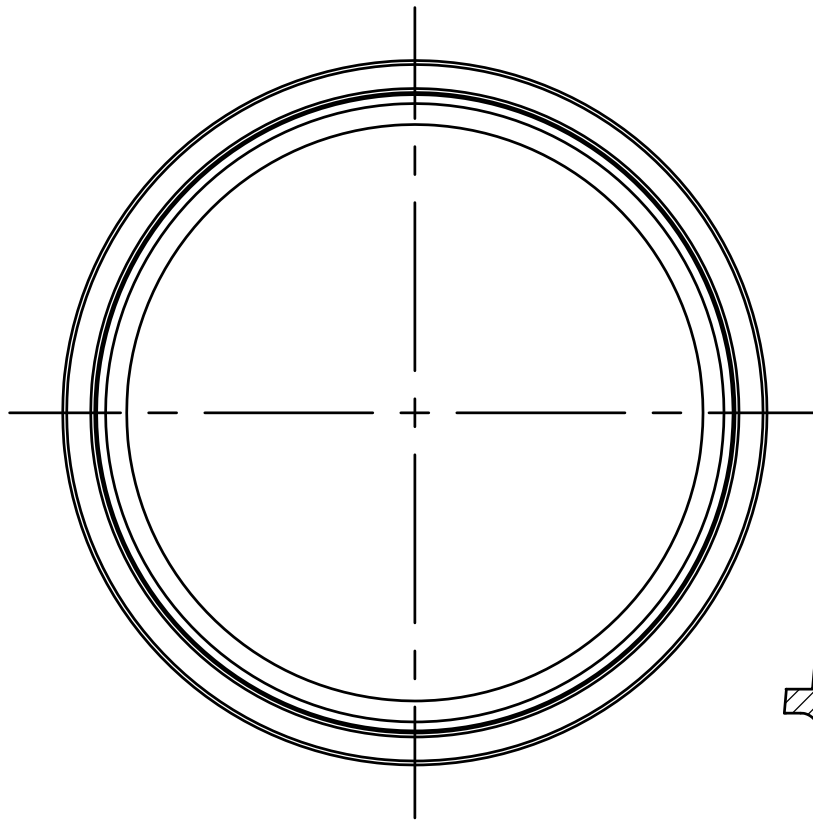
36" MANHOLE FRAME  
AND TWO CONCENTRIC COVERS  
HEAVY DUTY

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

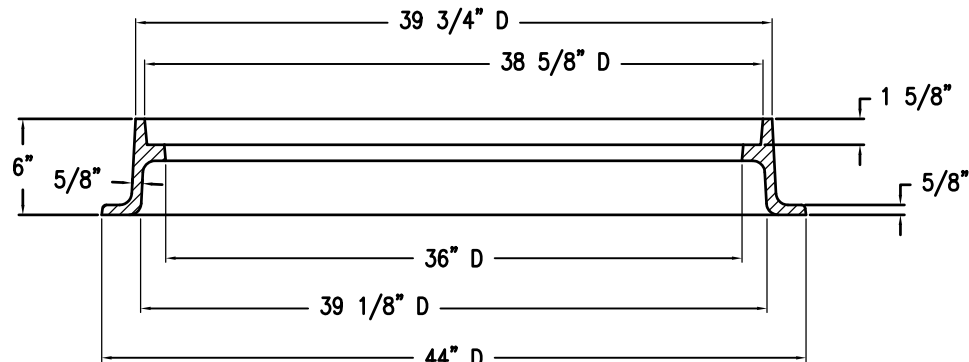
*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER M-03A





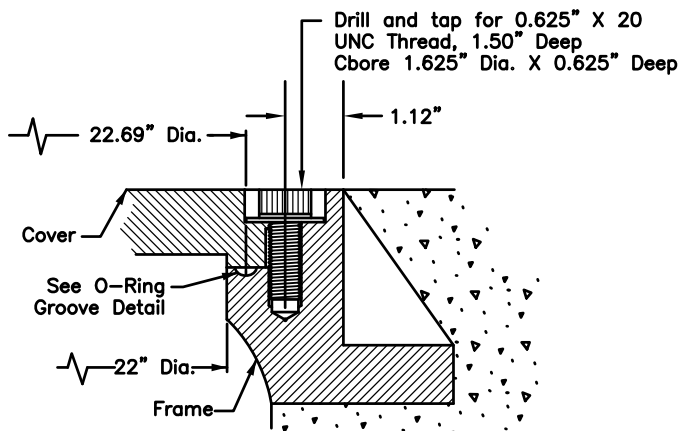
DETAIL OF AC PAVING



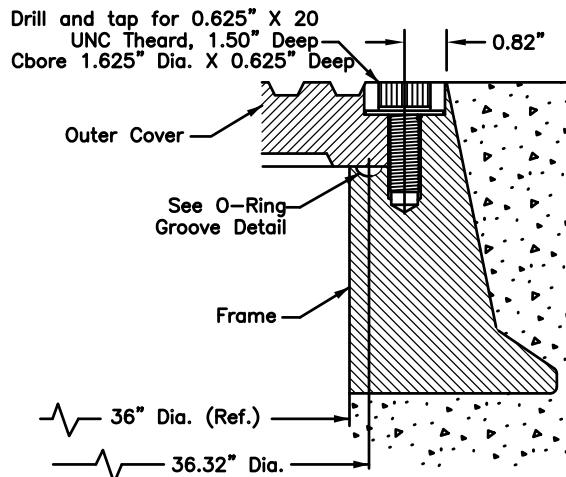
NOTES

1. FRAME SHALL BE CAST IRON. CAST IRON SHALL CONFORM TO ASTM 48, CLASS 35B.
2. WEIGHT: FRAME 212 LBS.
3. USE COVER SHOWN ON M-03A.
4. MACHINE ALL MATCHING SURFACES AND SEATS OF FRAME AND COVER TO PREVENT ROCKING.
5. IMPORTED FRAMES AND COVERS SHALL HAVE THE COUNTRY OF ORIGIN MARKED IN COMPLIANCE WITH FEDERAL REGULATIONS.
6. COVER CANNOT BE BOLTED TO THIS FRAME.

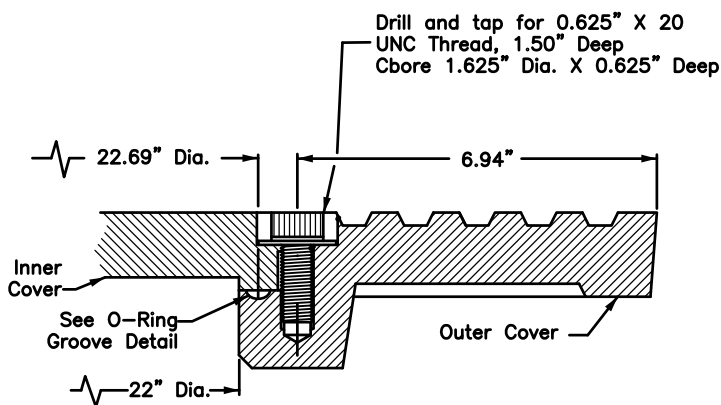
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Updated		D. Gerschoffer	15-Dec		<p>36" MANHOLE FRAME LIGHTWEIGHT - HEAVY DUTY</p>	 10/25/2018 Chairperson R.C.E. 19246 Date
REVIEWED		D. Gerschoffer	10/18			
				DRAWING NUMBER		M-03B



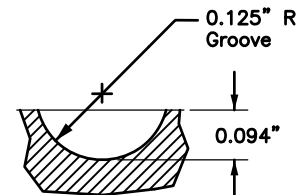
M-01 Detail:  
COVER TO FRAME



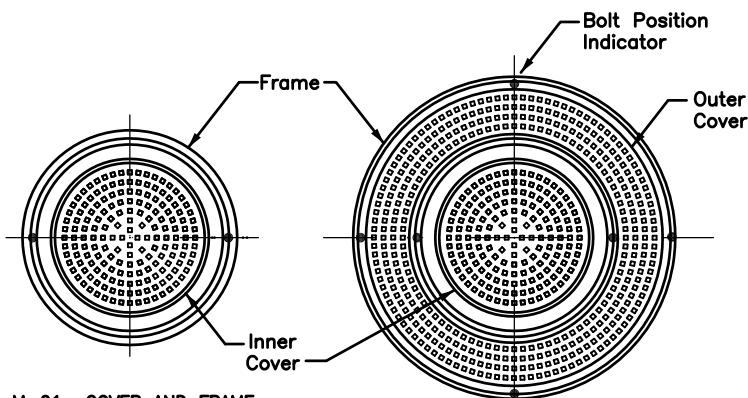
M-03A Detail:  
OUTER COVER TO FRAME



M-03A Detail:  
INNER COVER TO OUTER COVER



NEOPRENE O-RING  
GROOVE DETAIL



M-01 COVER AND FRAME  
BOLT PLACEMENT  
(See Note 3)

M-03A CONCENTRIC COVERS AND FRAME  
BOLT PLACEMENT  
(See Note 3)

NOTES:

1. 0.625" X 20 UNC THREAD, 316 STAINLESS STEEL SOCKET HEAD CAP SCREW AND 1.50" O.D. X 0.687" I.D. X 0.078" THICK 316 STAINLESS STEEL WASHER.
2. 0.25" NEOPRENE O-RING GASKET SHALL BE GLUED INTO MACHINED GROOVE. GLUE SHALL MEET THE REQUIREMENTS OF MIL-M-81288 (AMEND. 1)
3. BOLTDOWN PATTERNS:
  - M-01 DETAIL (24" COVER & FRAME): INSTALL TWO (2) BOLTS AT 180 DEGREES.
  - M-03A DETAIL (CONCENTRIC COVERS): BETWEEN INNER AND OUTER COVERS INSTALL TWO (2) BOLTS AT 180 DEGREES.

Revision	By	Approved	Date
ORIGINAL		Parkinson	2/95
Updated		D. Gerschoffer	12/15
Reviewed		D. Gerschoffer	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

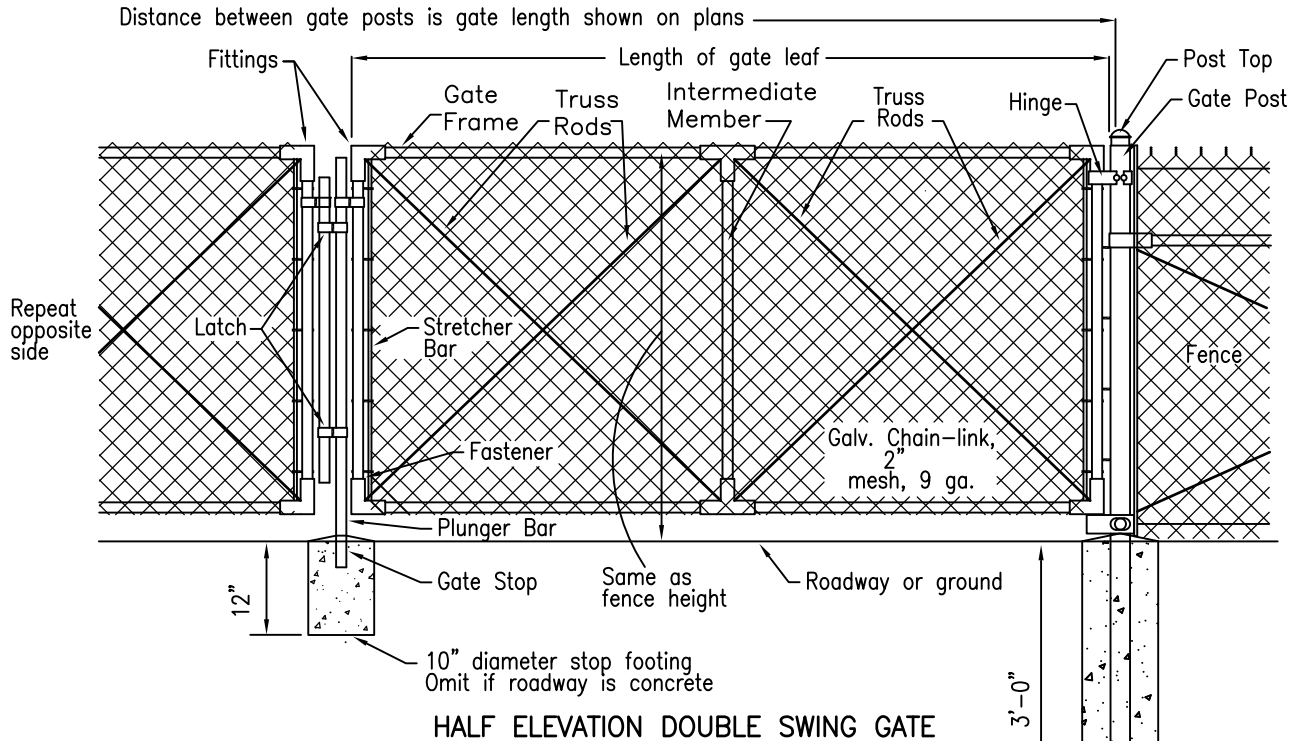
MANHOLE COVER – LOCKING DEVICE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018

Chairperson R.C.E. 19246 Date

DRAWING NUMBER M-04



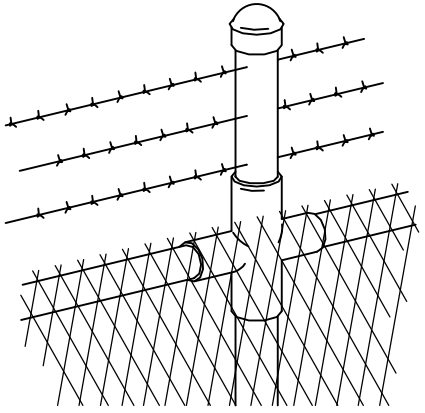
HALF ELEVATION DOUBLE SWING GATE

NOTES

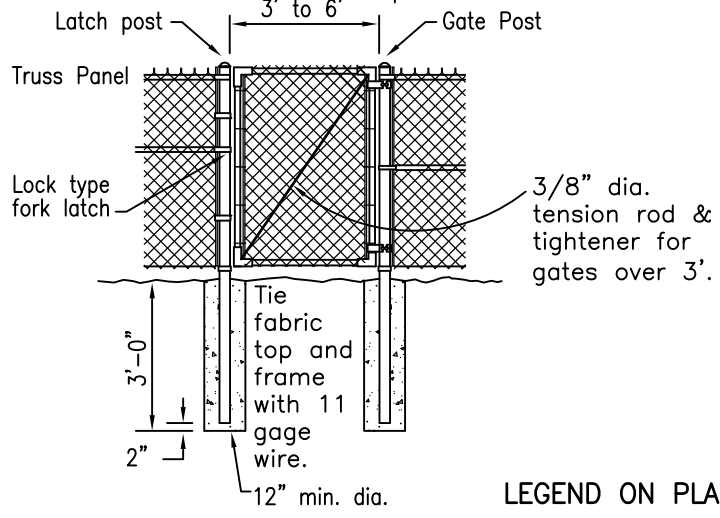
1. All footings shall be 520-C-2500 concrete.
2. The following items shall be furnished and installed only when shown on the plans and/or called for in the special provisions:
  - a. Barbed wire
  - b. Extension post
3. Chain link fence shall conform to Section 206-6 of the Standard Specification for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

Diameter of footing = 4 times outside diameter of post.

Clear opening shown on plans.

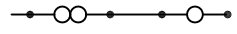


EXTENSION POST AND BARBED WIRE



WALK GATE

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75
Delete	Metric	D. Gerschoffer	05/12
Reviewed		D. Gerschoffer	12/15
Reviewed		D. Gerschoffer	10/18

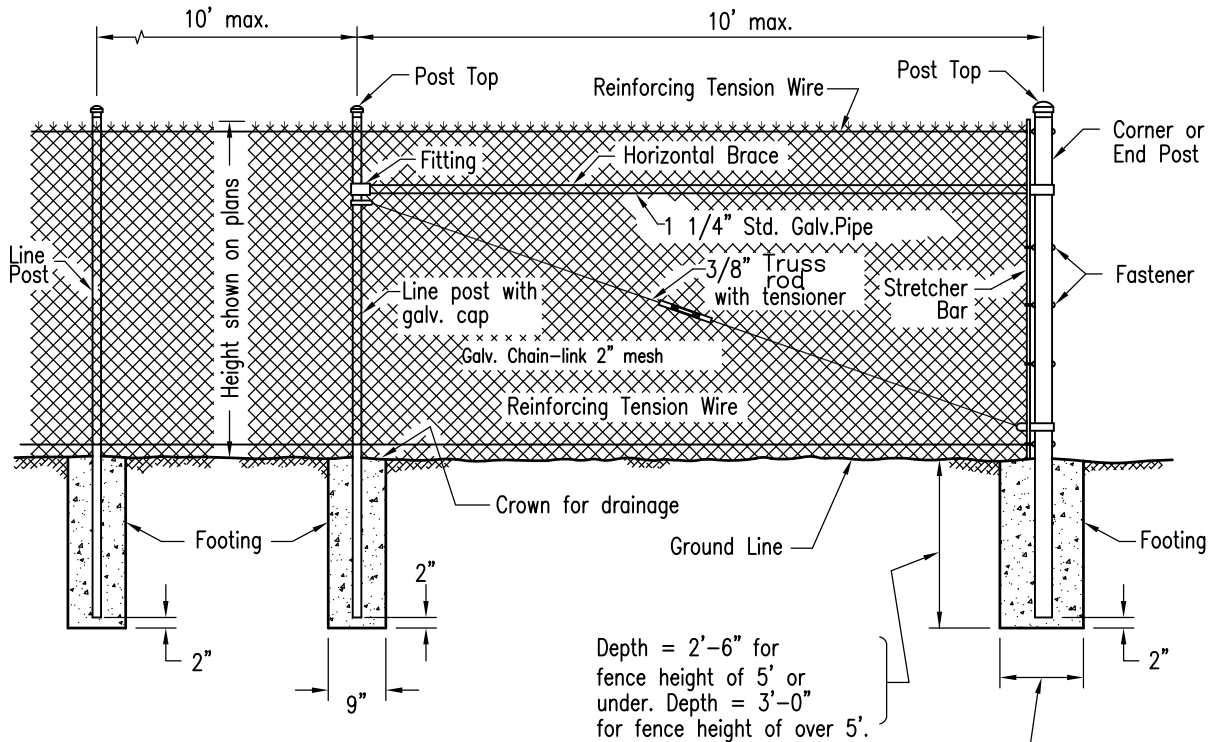
SAN DIEGO REGIONAL STANDARD DRAWING

CHAIN LINK GATE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

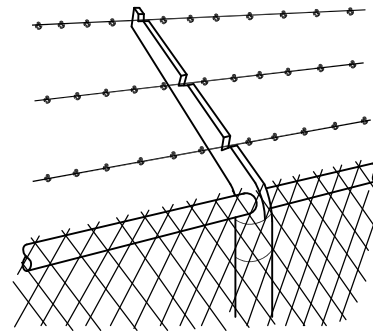
*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER M-05



Depth = 2'-6" for fence height of 5' or under. Depth = 3'-0" for fence height of over 5'.

Diameter of footing = 4 times outside diameter of post.

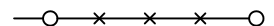


EXTENSION ARM AND BARBED WIRE

**NOTES**

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

**LEGEND ON PLANS**



Revision	By	Approved	Date
ORIGINAL		A.Kercheval	12/75
Delete	Metric	D. Gerschoffer	05/12
Reviewed		D. Gerschoffer	12/15
Reviewed		D. Gerschoffer	10/18

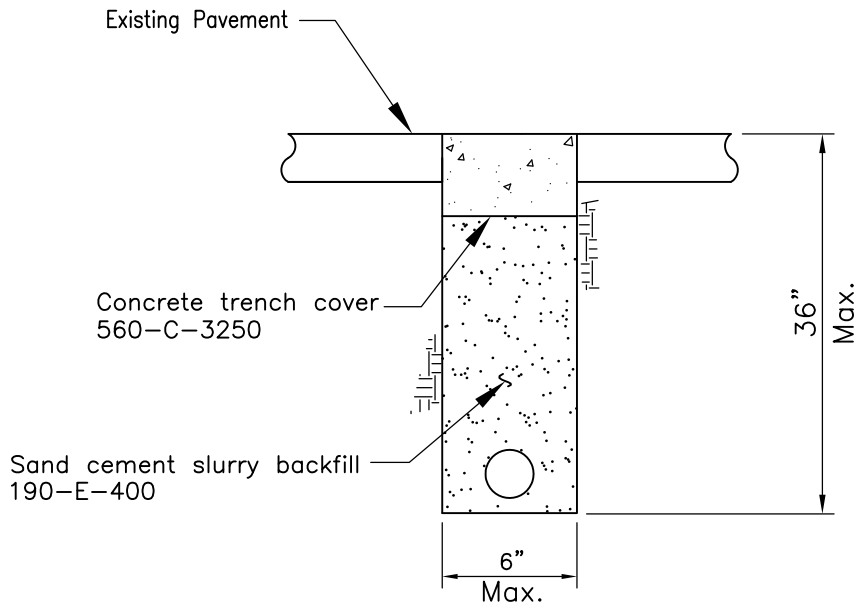
SAN DIEGO REGIONAL STANDARD DRAWING

**CHAIN LINK FENCE**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

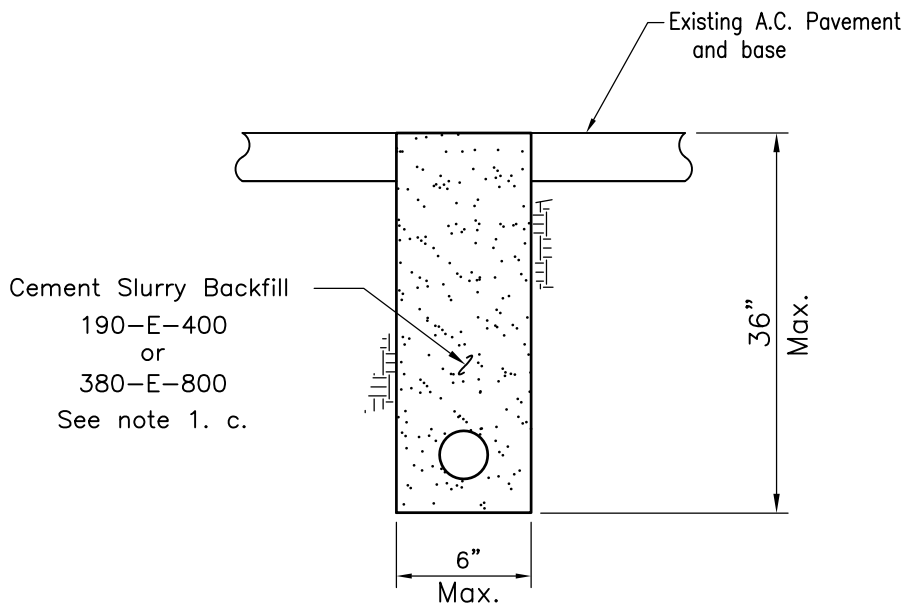
DRAWING NUMBER M-06



**NOTES**

1. Concrete encasement or sand cement slurry backfill shall have a minimum slump of 4".
2. Sand cement slurry backfill shall be thoroughly consolidated to encase conduits. Tampers or vibrators shall be used.
3. Concrete shall be screeded off to match pavement grade and floated to assure proper edge match.
4. Existing pavement will not require saw cutting when using rockwheel for excavation except when the existing pavement is concrete and trench finish is concrete.
5. All cuts shall be parallel or perpendicular to street centerline, when practical.
6. Allow concrete backfill or concrete trench cover 7 calendar days minimum, but no longer than 30 calendar days to cure and dry before applying any road surface finishes.
7. In major or prime arterial streets, an approved set accelerating admixture, such as calcium chloride, may be used only with prior approval of the Agency's Engineer otherwise the contractor shall protect the trench with the approval of the agency's Engineer.
8. See drawing G-33 for narrow trench resurfacing.
9. See table on drawing M-15 for standard minimum conduit depths.

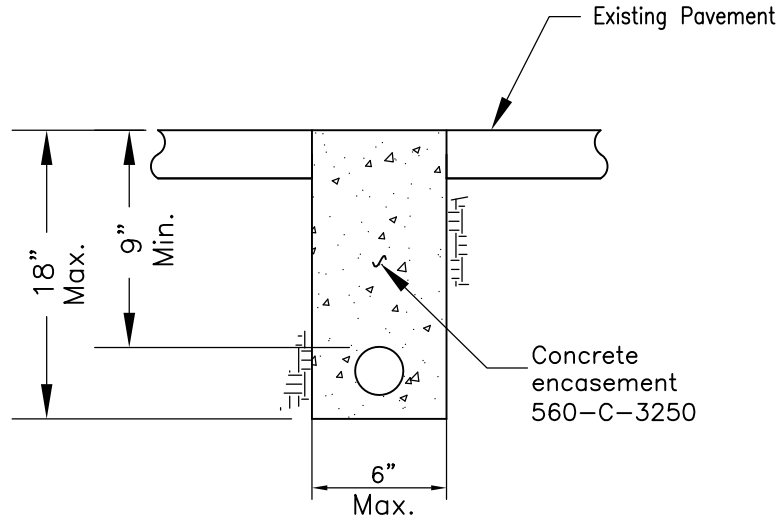
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Reviewed	DG	T. Stanton	10/18		
				NARROW TRENCHES TRENCHING & BACKFILLING	DRAWING NUMBER M-07



**NOTES**

1. Cement Slurry Backfill:
  - a. Cement slurry backfill shall have a maximum slump of 4".
  - b. Cement slurry backfill shall be thoroughly consolidated to encase conduits. Tampers or vibrators shall be used.
  - c. Cement slurry backfill shall be as follows:
    - Alleys and local residential streets ..... Class 190-E-400
    - All other streets ..... Class 380-E-800
2. Existing A.C. pavement will not require sawcutting when using rockwheel for excavation.
3. All cuts shall be parallel or perpendicular to street centerline, when practical.
4. See drawing G-33 for narrow trench resurfacing.
5. See table on drawing M-15 for standard minimum conduit depths.

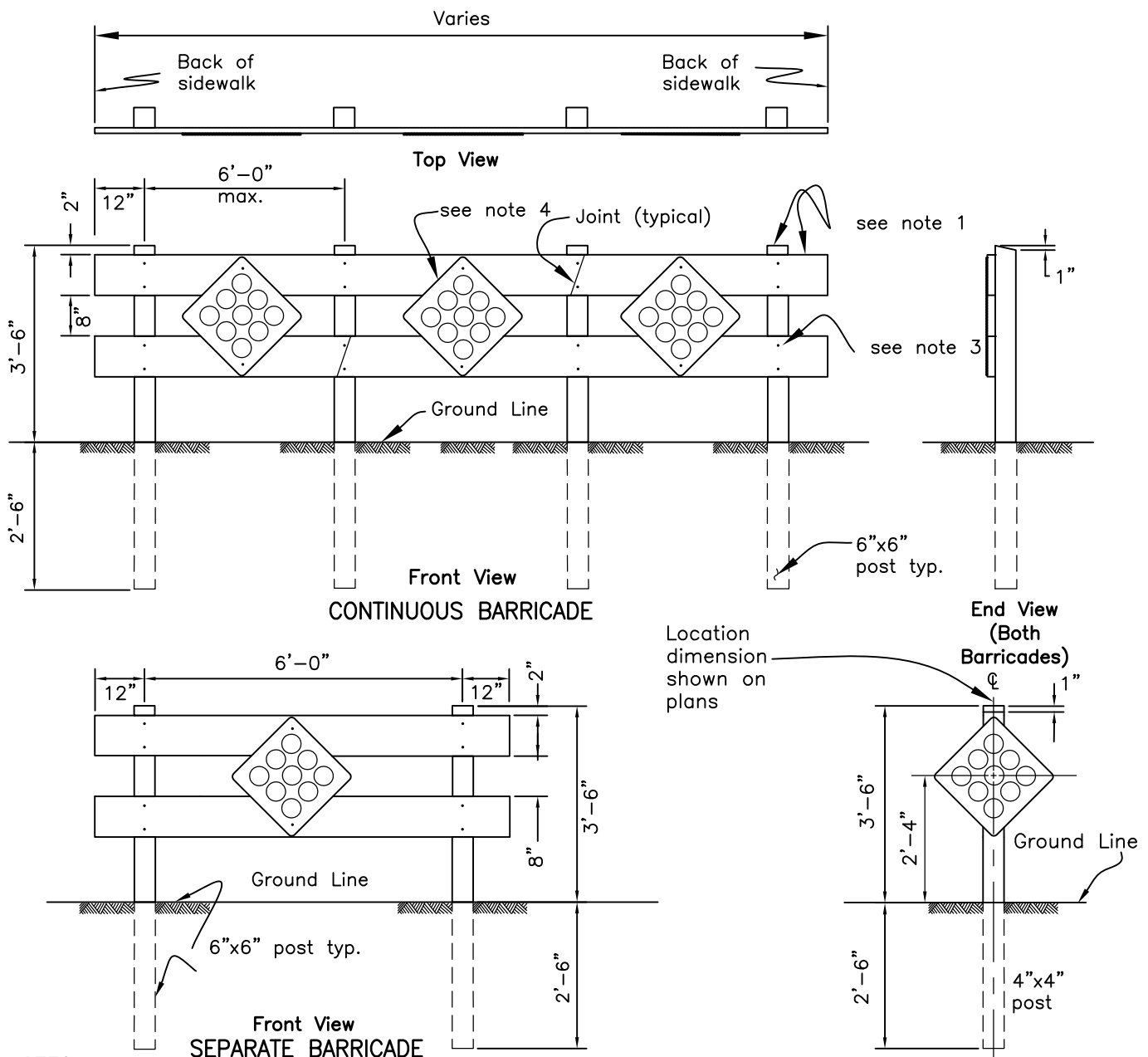
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Reviewed	DG	T. Stanton	10/18		
				NARROW TRENCHES TRENCHING & BACKFILLING	DRAWING NUMBER M-07A



**NOTES**

1. Concrete encasement or backfill shall have a minimum slump of 4".
2. Concrete encasement and/or sand cement slurry backfill shall be thoroughly consolidated to encase conduits. Tampers or vibrators shall be used.
3. Concrete shall be screeded off to match pavement grade and floated to assure proper edge match.
4. Existing pavement will not require saw cutting when using rockwheel for excavation except when the existing pavement is concrete and trench finish is concrete.
5. All cuts shall be parallel or perpendicular to street centerline, when practical.
6. Allow concrete backfill or concrete trench cover 7 calendar days minimum, but no longer than 30 calendar days to cure and dry before applying any road surface finishes.
7. In major or prime arterial streets, an approved set accelerating admixture, such as calcium chloride, may be used only with prior approval of the Agency's Engineer otherwise the contractor shall protect the trench with the approval of the Agency's Engineer.
8. This type of trench shall be permitted for supply cables of 750 volts or less. See California Public Utility Commission General Order No. 128, Rule 33.4 D.(1)(b) and where the conduit can not be placed at the proper recommended depth.
9. See drawing G-33 for narrow trench resurfacing.
10. This detail shall be used only when there is underground conflicts. See table on drawing M-15 for standard minimum conduit depths.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Reviewed	DG	T. Stanton	10/18			
				NARROW TRENCHES TRENCHING & BACKFILLING SHALLOW CONDUIT DEPTH	 10/25/2018 Chairperson R.C.E. 19246 Date	
					DRAWING NUMBER M-08	

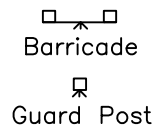


**NOTES**

1. Posts to be structural grade redwood or pressure treated (with wood preservative) Douglas Fir, surfaced four sides; cross pieces to be 2"x8" select grade Douglas Fir, surfaced four sides.
2. All exposed portions of barricades shall be painted with two coats of white exterior enamel over prime coat.
3. Connections shall be made with 3/8" x 6" galvanized lag screws with one (1) washer each.
4. Object Marker fasteners to be 3/8" x 1 1/2" galvanized lag screws.
5. Object Markers (reflector signs) per most current edition of the CA MUTCD shall be used:
  - a. Type 1 Object Markers (yellow): OM1-1, OM1-2, or OM1-3.
  - b. Type 4 Object Markers (red): OM4-1, OM4-2, or OM4-3.
  - c. Red object markers shall be used on dead end streets. In all others cases, yellow object markers shall be used.
  - d. Reflector material shall be plastic or other approved reflectorized material.
  - e. Sign material shall be aluminum alloy 60661-T6 or 5052-H38, aluminum thickness 0.063".
6. 6' long hot section metal post per Caltrans Std. Plan A74-A optional for guard post

**Front View  
GUARD  
POST**

**LEGEND ON PLANS**



Revision	By	Approved	Date
Updated	TC	T. Stanton	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

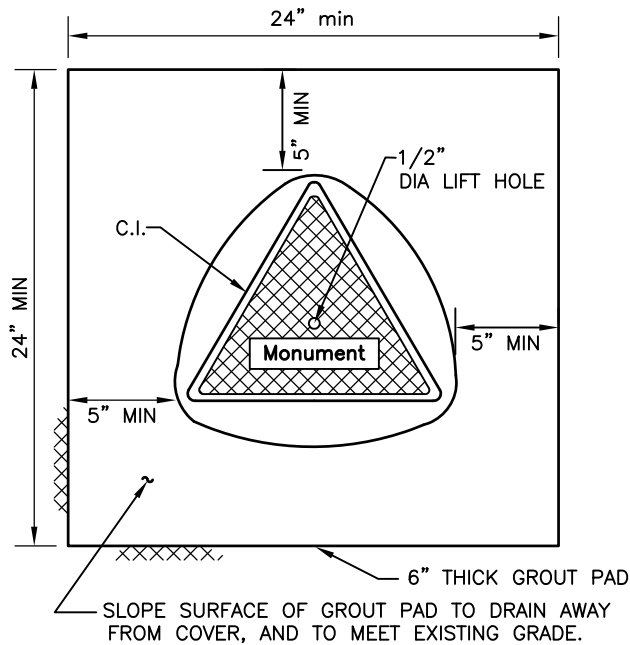
**GUARD POST AND BARRICADE**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

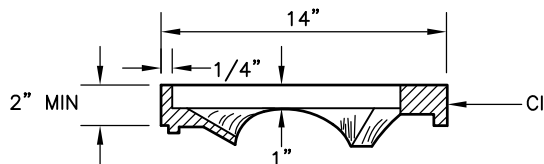
*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER M-09

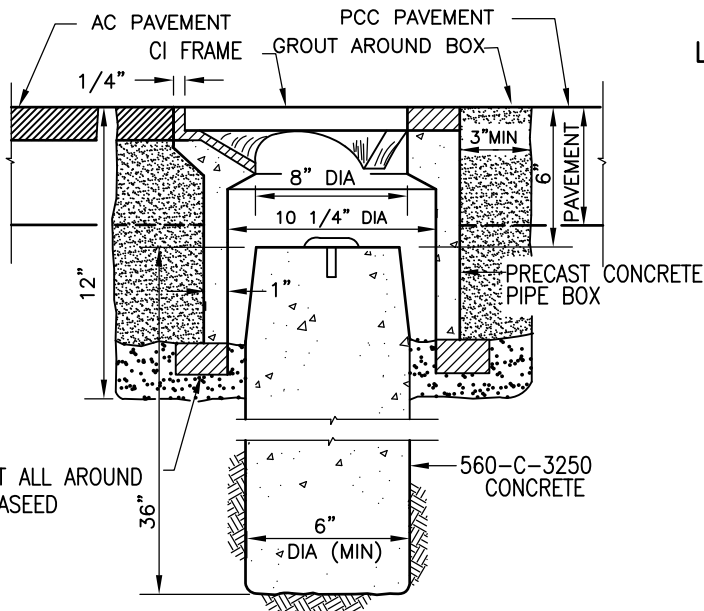




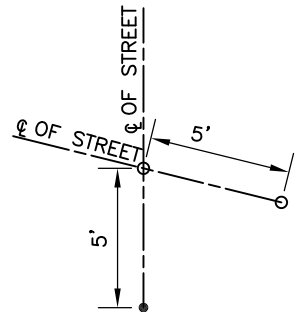
PLAN-IN UNPAVED AREA



RISER RING



TYPICAL MONUMENT SECTION IN PAVED AREA



ALTERATION LOCATION OF MONUMENT. TIE DISTANCES SHOWN ON FINAL SUB-DIVISION MAP IF ALTERNATE LOCATION IS USED  
SEE ADDITIONAL STREET SURVEY MONUMENT NOTES ON M-10B

LOCATION OF STREET SURVEY MONUMENT

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Revised		D. Gerschoffer	09/15

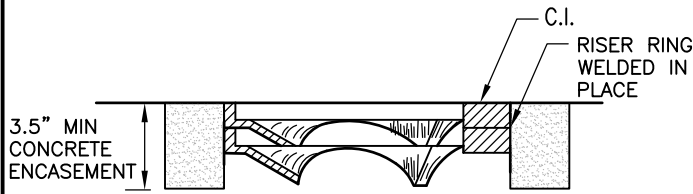
SAN DIEGO REGIONAL STANDARD DRAWING

STREET SURVEY MONUMENT

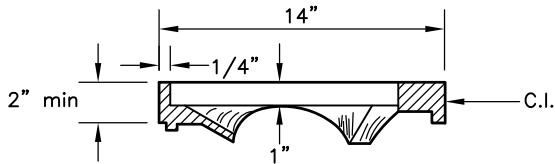
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER M-10A

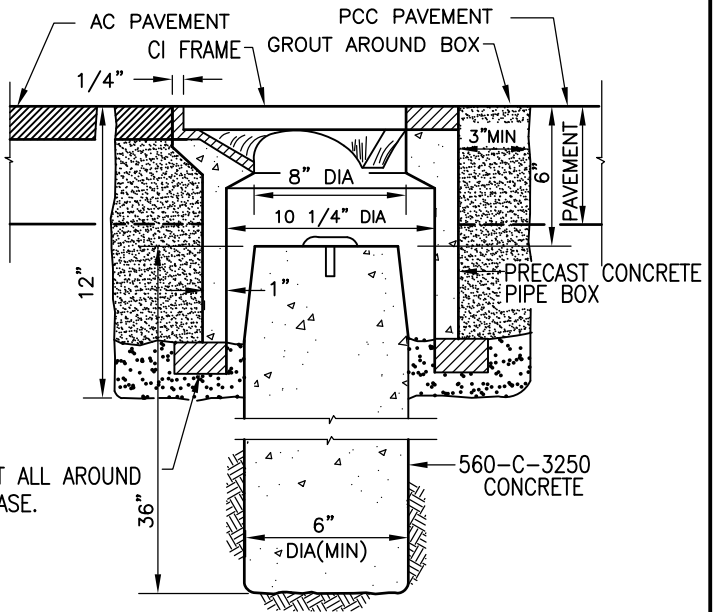


RISER RING WELDED TO EXISTING RING

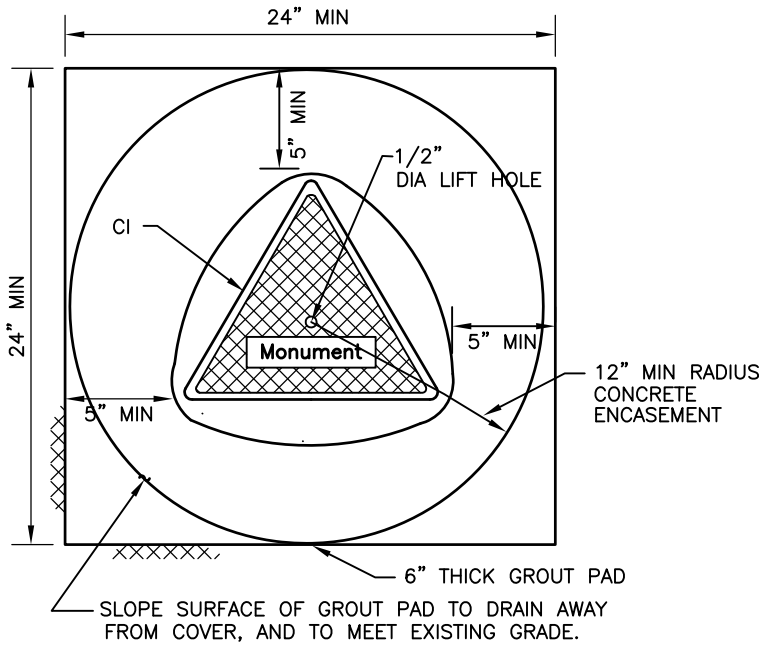


RISER RING

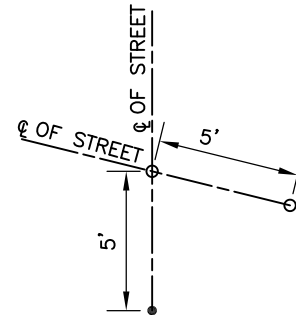
BRICK SUPPORT ALL AROUND ON 2" SAND BASE.



TYPICAL MONUMENT SECTION IN PAVED AREA



PLAN-IN UNPAVED AREA



ALTERATION LOCATION OF MONUMENT. TIE DISTANCES SHOWN ON FINAL SUB-DIVISION MAP IF ALTERNATE LOCATION IS USED. SEE ADDITIONAL STREET SURVEY MONUMENT NOTES ON M-10B

LOCATION OF STREET SURVEY MONUMENT

Revision	By	Approved	Date
New		T.Stanton	10/15
Revised		D.Gerschoffer	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

STREET SURVEY MONUMENT  
OVERLAY ADJUSTMENT

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

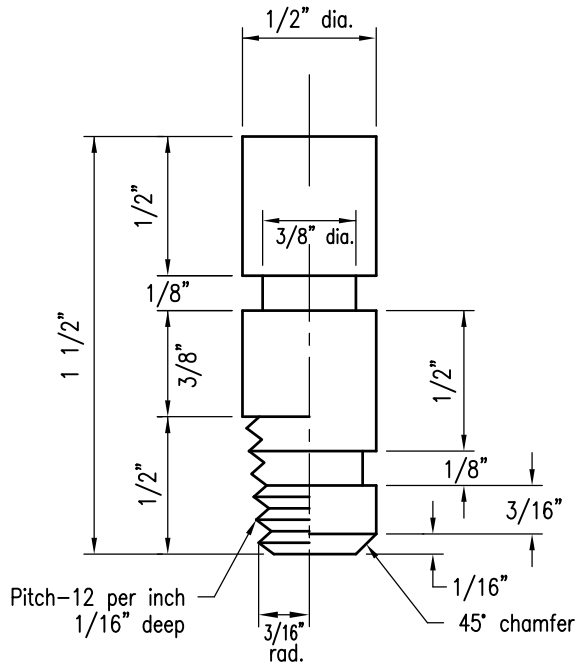
*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER M-10B

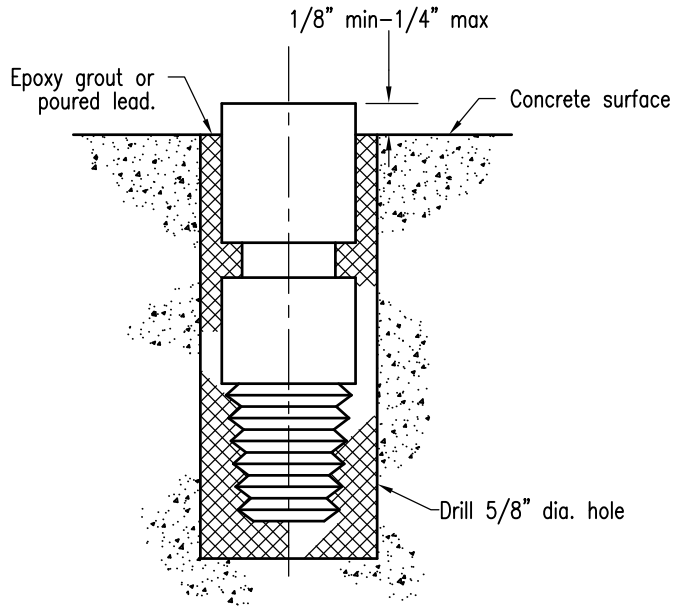
## NOTES

1. COVER AND FRAME TO BE CAST INTEGRALLY WITH PIPE BOX.
2. MONUMENT BASE MAY BE CAST IN PLACE OR PRECAST.
3. FORM AND TAPER EXPOSED UPPER 6" OF CAST-IN-PLACE BASE TO A TOP DIAMETER OF 5". (PRECAST BASE SHALL BE SAND BACKFILLED)
4. MONUMENT MARKER SHALL BE A DOMED BRASS, 3" IN DIAMETER.
5. MONUMENT LOCATION:
  - A) SET ON ALL CENTERLINE INTERSECTIONS UNLESS ACTUAL LOCATION IS MODIFIED BY THE AGENCY AND SHOWN IN MODIFIED LOCATION ON MAP. WHEN CENTERLINE INTERSECTIO IS IMPRACTICAL, OFFSET 5' ON CENTERLINE OF MAJOR STREET, (SEE DETAIL AT RIGHT). IF NEITHER CETERLINE CAN BE OCCUPIED, TWO MONUMENTS WILL BE SET IN LINE AROUND THE FRONT ON THE PERIMETER OF A 10' DIAMETER CIRCLE, WHOSE CENTER IS THE POINT.
  - B) SET ON CENTERLINE AT INTERVALS NOT EXCEEDING 1000' ON STRAIGHT RUNS.
  - C) SET ON CENTERLINE AT POINTS OF CURVATURE.
  - D) SET ON CENTER AT CENTER POINTS OF CUL-DE-SACS.
  - E) SET ON CENTERLINE WHEN CENTER POINT OF CUL-DE-SAC IS OFFSET FROM CENTERLINE.
  - F) THESE STANDARDS MAY BE MODIFIED AT THE DISCRETION OF THE THE AGENCY IN CASES WHERE STRICT COMPLIANCE THEREWITH RESULTS IN MORE MONUMENTS THAN IT CONSIDERS NECESSARY. THE FOLLOWING TECHNIQUE FOR REDUCING THE NUMBER OF MONUMENTS WILL BE ROUTINE.
  - G) SUBSTITUTION OF ONE MONUMENT ON THE "POINT OF INTERSECTION" FOR MONUMENTS AT THE "BEGINNING OF CURVE" AND THE "ENDING OF CURVE" WHEN THE "POINT OF INTERSECTION" FALLS WITHIN THE PAVEMENT AREA.
  - H) DELETION OF ANY MONUMENT OTHERWISE REQUIRED BY THESE STANDARDS WHEN ITS POSITION CAN BE DETERMINED BY TURNING ONE ANGLE FROM A POINT ON A STRAIGHT LINE BETWEEN TWO OTHER MONUMENTS, PROVIDING SUCH POINT IS NOT MORE THAN 300' FROM THE POINT ON WHICH THE DELETED MONUMENT WOULD HAVE BEEN PLACED.
  - I) FOR RAISING STREET SURVEY MONUMENT TO FINISH GRADE, RISER RING IS TO BE WELDED TO EXISTING RING AND BROUGHT TO SURFACE. ALL WELDING MUST BE DONE TO THE EXTERIOR OF THE RISER RING. NO INTERIOR WELDS ARE TO BE DONE. ENCASE RISER RING IN FAST SETTING CONCRETE WITH A MINIMUM OF 3.5" THICKNESS. CONCRETE MUST OBTAIN 1600 PSI BEFORE TRAFFIC USE, AND HAVE A MINIMUM STRENGTH OF 3250 PSI.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		STREET SURVEY MONUMENT NOTES
Reviewed		T. Stanton	09/15		
Delete Metric		D. Gerschoffer	05/12		
Note 4 Rev		D. Gerschoffer	02/14		
Note 1 Rev		D. Gerschoffer	10/18		
				DRAWING NUMBER	M-10C



TYPE-A TYPE-B  
ELEVATION



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

**NOTES**

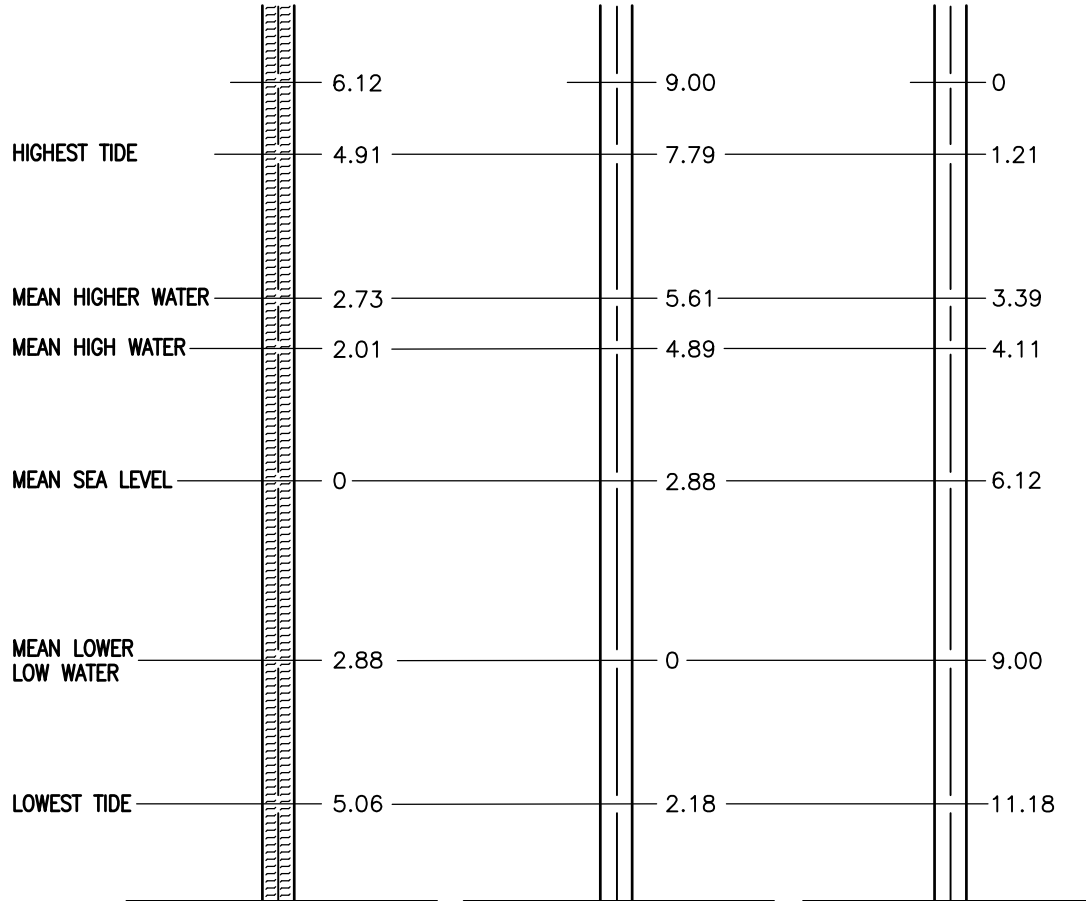
1. Material- Brass A.S.T.M. B-16. All machine tolerances  $\pm 1/64$ " machine finish.
2. May be installed in fresh concrete at time of installation of concrete structure.
3. Location-in most stable, permanent location in vicinity, such as in base for street light standard or traffic signal (behind sidewalk),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

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75	BENCH MARK - BRASS PLUG		 10/25/2018 Chairperson R.C.E. 19246 Date
Add Metric		T. Stanton	03/03			
Delete Metric		D. Gerschoffer	05/12			
Revised		D. Gerschoffer	09/15			
Reviewed		D. Gerschoffer	10/18			
				DRAWING NUMBER		M-11

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

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

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



**LEGEND**

- U.S.C. & G. = United States Coast and Geodetic Survey.
- U.S.G.S. = United States Geological Survey.
- MEAN HIGH WATER = Mean of all high water in San Diego Bay.
- MEAN HIGHER WATER = Mean of all higher water in San Diego Bay. Bay charts and topography up to the mean high tide based on zero at the mean lower low water.

**SOURCE**

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

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		<b>DATUMS</b>
Add Metric		T. Stanton	03/03		
Delete Metric		D. Gerschoffer	05/12		
Revised		D. Gerschoffer	09/15		
Reviewed		D. Gerschoffer	10/18		
					DRAWING NUMBER <b>M-12</b>

**FOUND MONUMENTS**

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

**SET MONUMENTS – Criteria for Locating and Character**

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

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

- a. An iron pipe of minimum two inch diameter not less than 2' in length placed upright in the ground so that the top of said pipe is flush with the surface. Said pipe shall be filled with a metal or cement plug at least three inches in depth and centered with a metal tack and disc; or
- b. A metal plug with tack and disc set flush with the surface in portland cement concrete sidewalk, curb or pavement; or other monument satisfactory to the City Engineer or County Surveyor. The metal plug shall be anchored 1" deep in sidewalk.

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

**LEGEND**

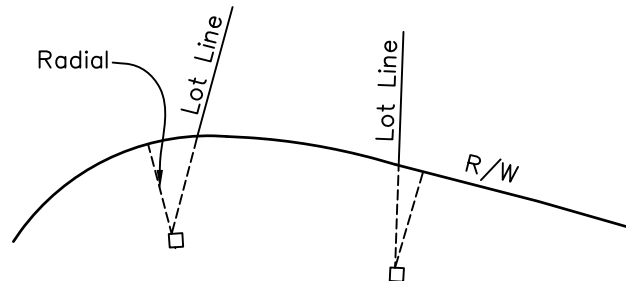
- Fd 2" Iron Pipe Marked RCE XXXX or per Map XXX unless otherwise noted
- ▲ Fd Street Survey Monument Stamped RCE XXXX or LS XXXX
- ◎ Set 2" x 24" Iron Pipe Marked RCE XXXX or LS XXXX
- Set Lead and Disc Stamped RCE XXXX or LS XXXX
- Set ½" x 18" Iron Pipe Marked RCE XXXX or LS XXXX
- △ Set Street Survey Monument Stamped RCE XXXX or LS XXXX per Standard Drawing M-10

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

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

Unless otherwise shown on this map:

1. All lot corners except as described below will be monumented by a ½" by 18" iron pin stamped (RCE or LS number).
2. Lot corners along the sideline of dedicated street right of way will be monumented by a disc stamped (RCE or LS number), set along an extension of the lot line at an offset of \_\_\_ in the (curb, sidewalk). The offset shall be measured radially, or at right angles, to the right of way line. (See example below.)
3. All points of curve of the sidelines of dedicated streets will be monumented by a disc stamped (RCE or LS number), set at an offset of \_\_\_ in the (curb, sidewalk). The offset shall be measured radially.



**EXAMPLE OF OFFSET DISCS**

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Revised		D. Gerschoffer	09/15	SURVEY MONUMENTS	<i>M. Stanton</i> 10/25/2018 Chairperson R.C.E. 19246 Date
Reviewed		D. Gerschoffer	10/18		DRAWING NUMBER M-13

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

WEIGHT

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

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

AREA

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

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

VOLUME

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

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

CAPACITY

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

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

LENGTH

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

MULTIPLE PREFIX  
 1000000 mega  
 1000 kilo  
 100 hecto  
 10 deka

METRIC PREFIX

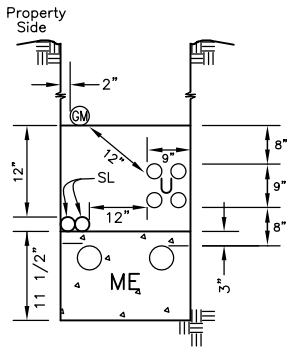
MULTIPLE PREFIX  
 1/10 deci  
 1/100 centi  
 1/1000 milli  
 1/1000000 micro

TEMPERATURE

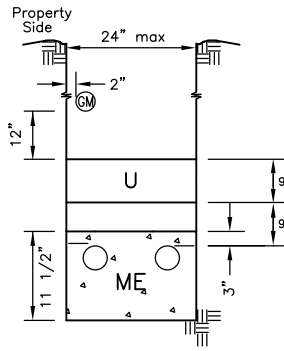
Degrees Fahrenheit = 9/5 (Degrees Celsius) + 32

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

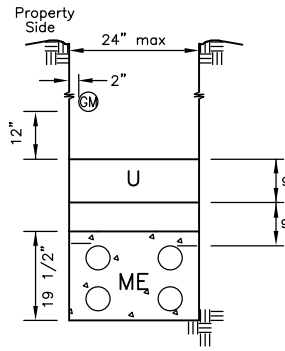
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		METRIC EQUIVALENTS
Revised		D. Gerschoffer	09/15	DRAWING NUMBER	
Reviewed		D. Gerschoffer	10/18	M-14	



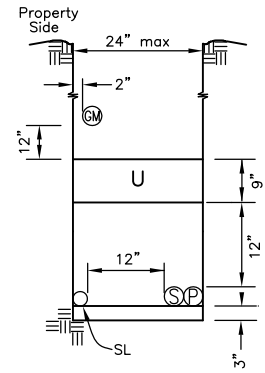
TYPE A



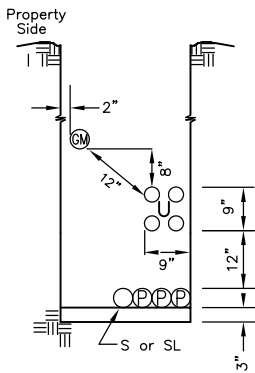
TYPE B



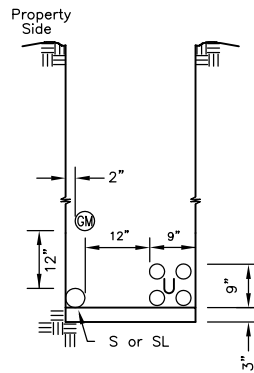
TYPE C



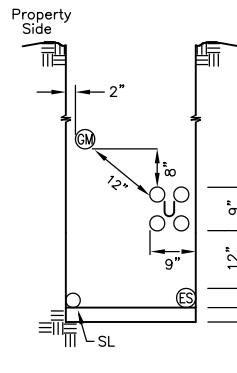
TYPE D



TYPE E



TYPE F



TYPE G

SERVICE TRENCH  
ON  
PUBLIC PROPERTY

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

NOTES

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

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Revised		D. Gerschoffer	09/15
Reviewed		D. Gerschoffer	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

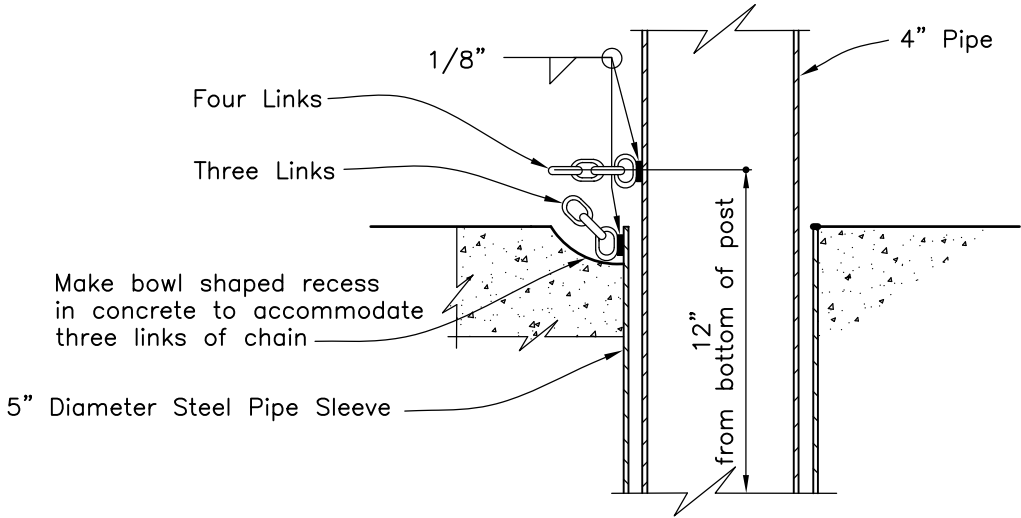
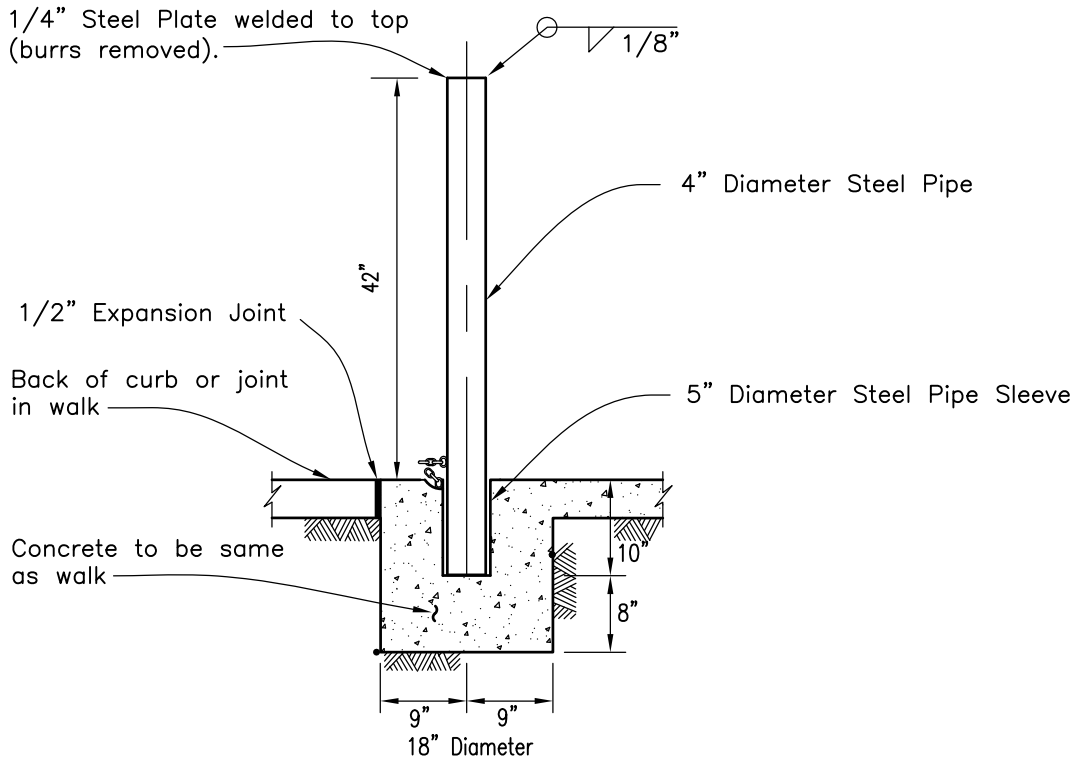
JOINT TRENCH LOCATIONS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. A. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER M-15





HASP DETAIL

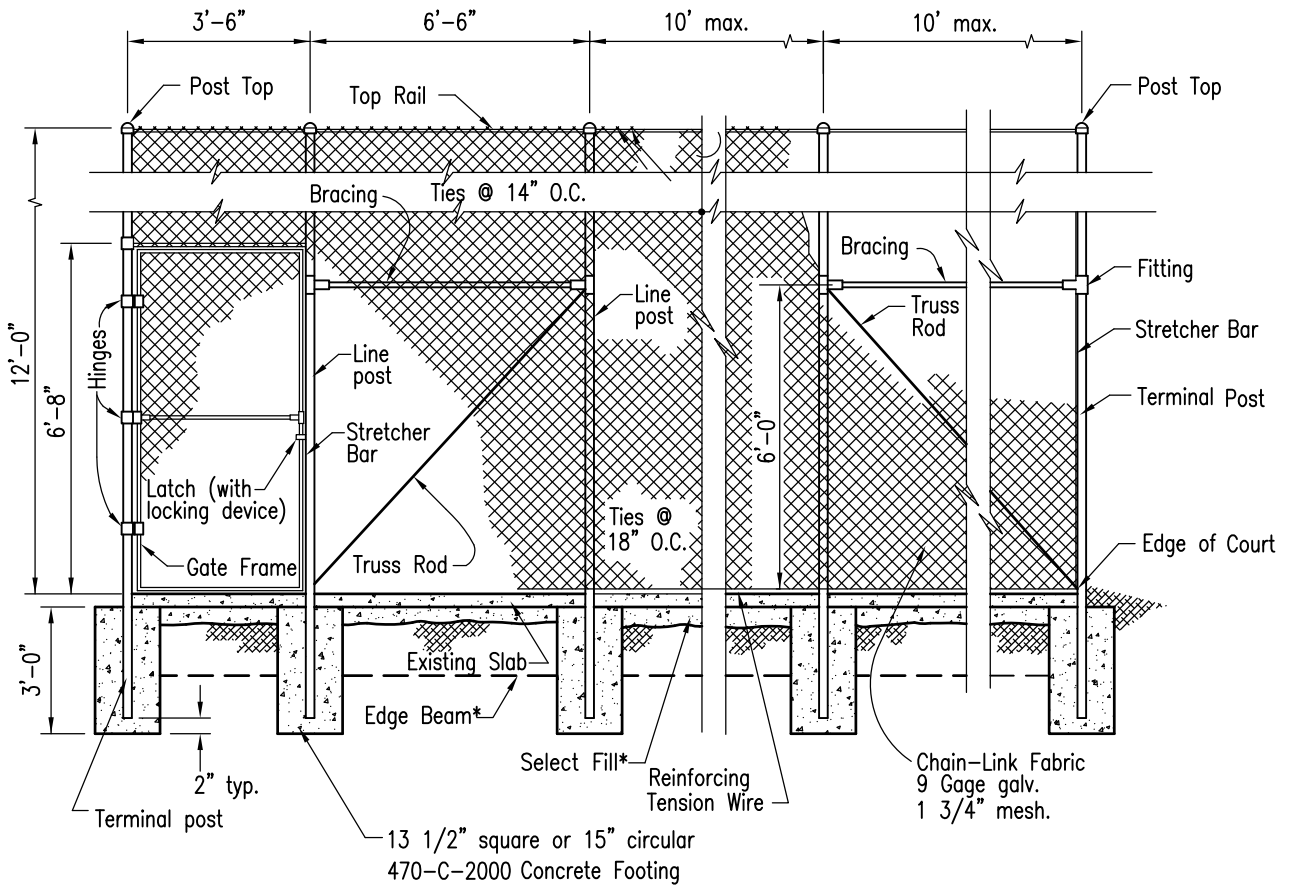
NOTES

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

LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Revised		D. Gerschoffer	09/15	DEMOUNTABLE POST	<i>M. A. Hanton</i> 10/25/2018 Chairperson R.C.E. 19246 Date
Reviewed		D. Gerschoffer	10/18		DRAWING NUMBER M-16



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

### ELEVATION

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

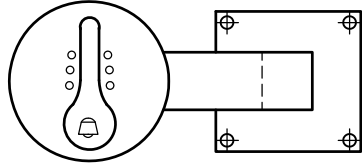
#### NOTE:

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

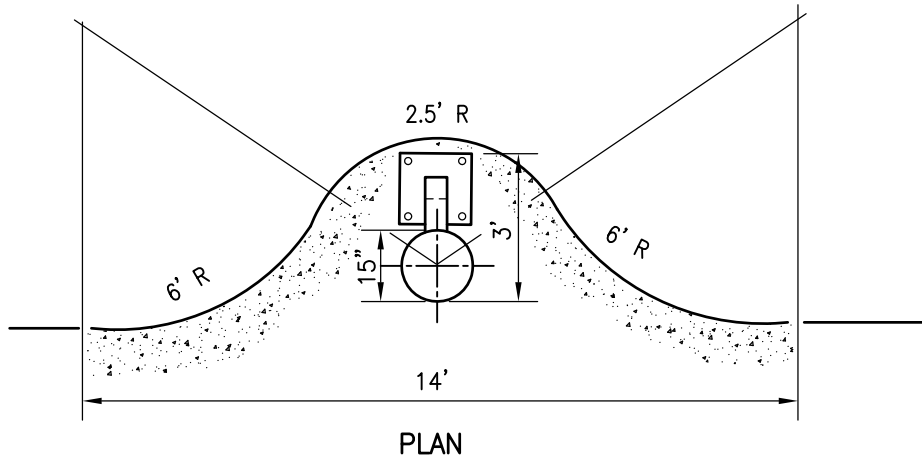
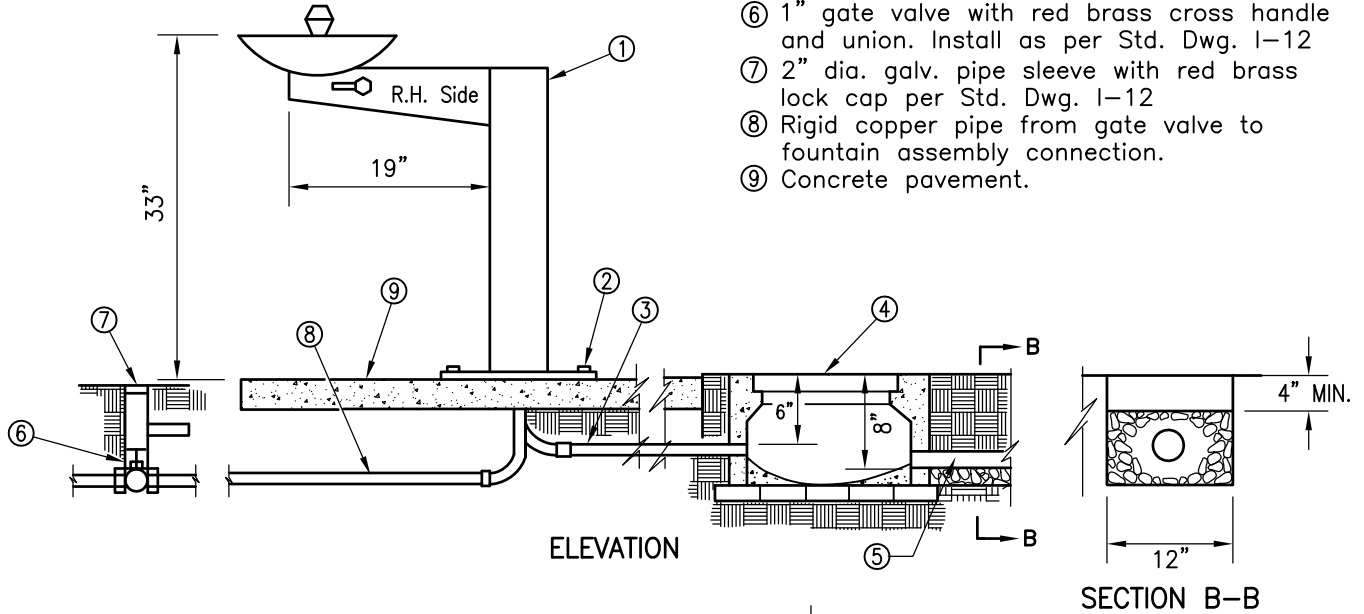
#### CAUTION:

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

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		<b>TENNIS COURT FENCE CHAIN LINK</b>
Revised		D. Gerschoffer	09/15		
Reviewed		D. Gerschoffer	10/18	DRAWING NUMBER	



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



**NOTES**

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

**LEGEND ON PLANS**



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Revised		D. Gerschoffer	09/15
Reviewed		D. Gerschoffer	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

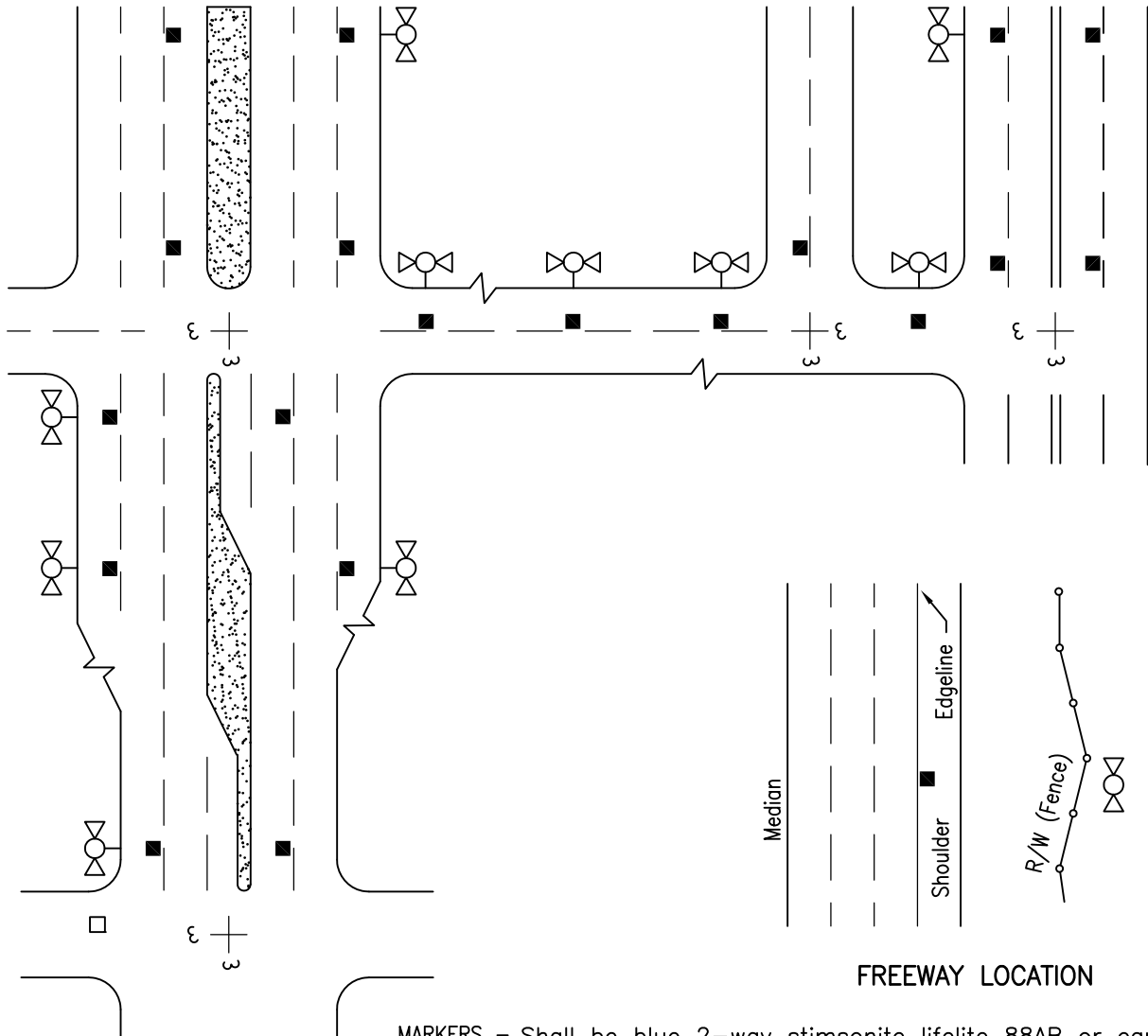
**DRINKING FOUNTAIN**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER M-18

## STREET LOCATIONS

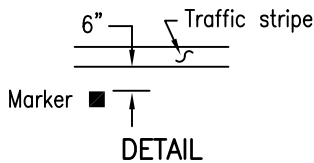


## FREEWAY LOCATION

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

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

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



### NOTES

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

### LEGEND ON PLANS

- Marker
- Fire Hydrant

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Revised		D. Gerschoffer	09/15
Reviewed		D. Gerschoffer	10/18

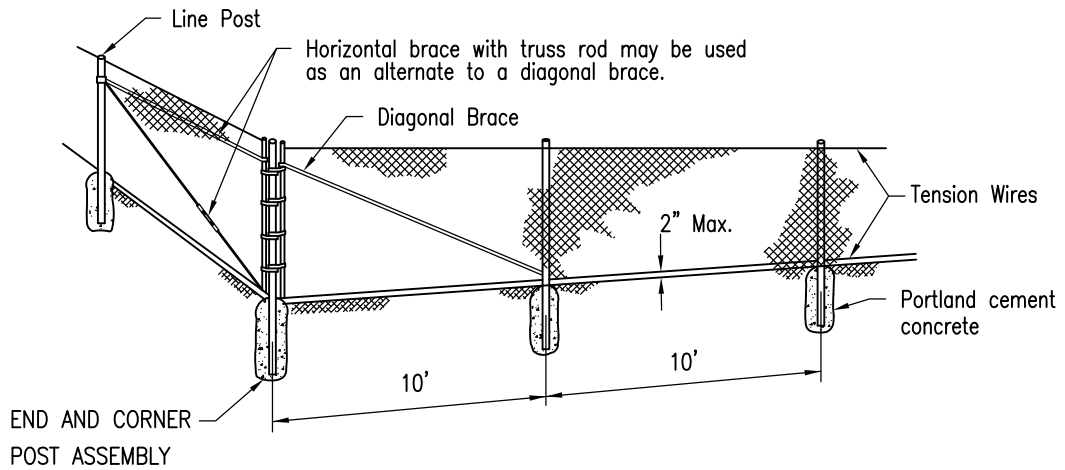
SAN DIEGO REGIONAL STANDARD DRAWING

FIRE HYDRANT MARKERS

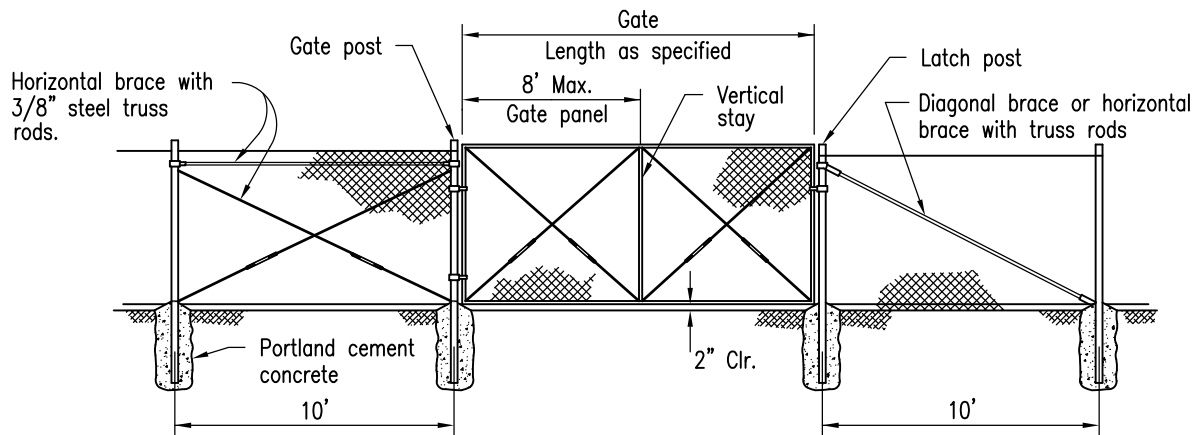
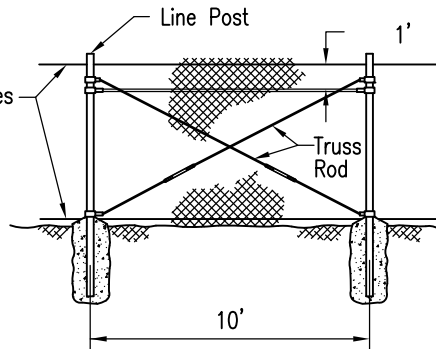
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-19**



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



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Revised		D. Gerschoffer	09/15
Reviewed		D. Gerschoffer	10/18

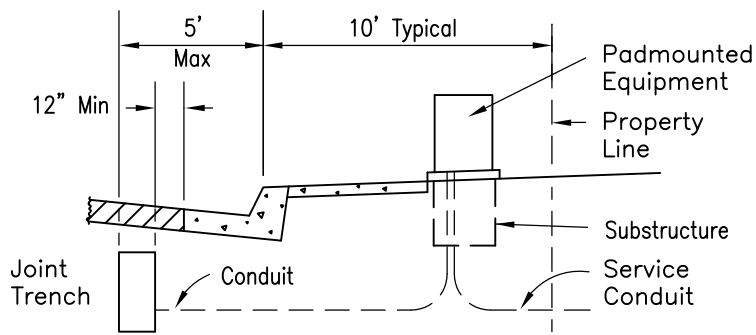
SAN DIEGO REGIONAL STANDARD DRAWING

CHAIN LINK FENCE  
DETAILS

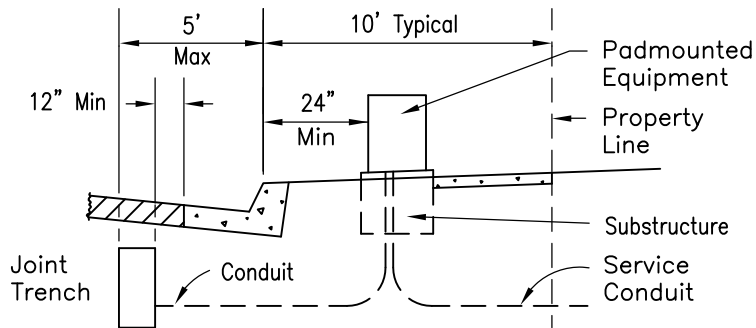
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

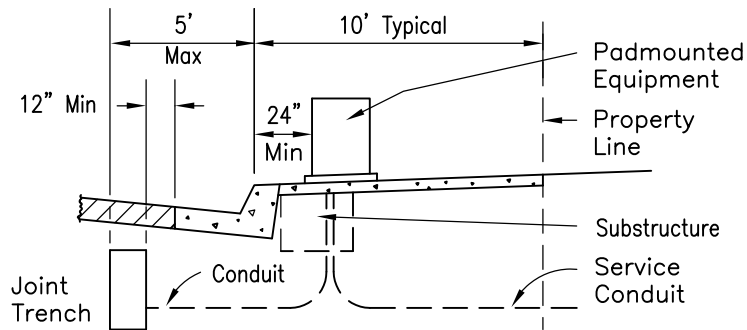
DRAWING NUMBER M-20



SIDEWALK NEXT TO CURB



SIDEWALK NEXT TO PROPERTY LINE

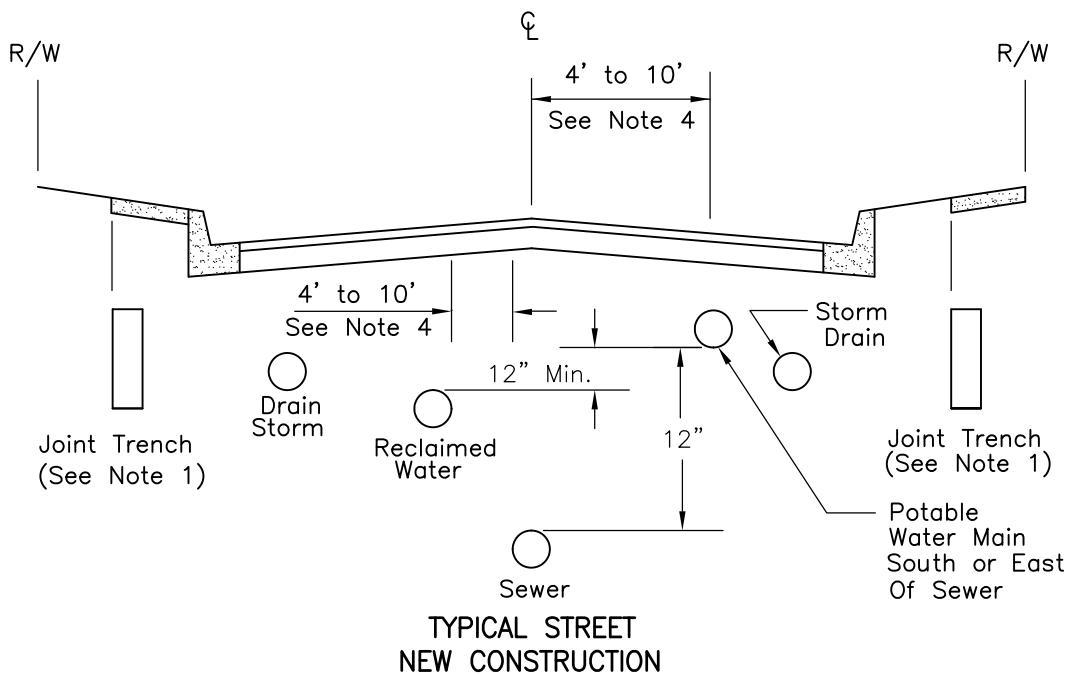
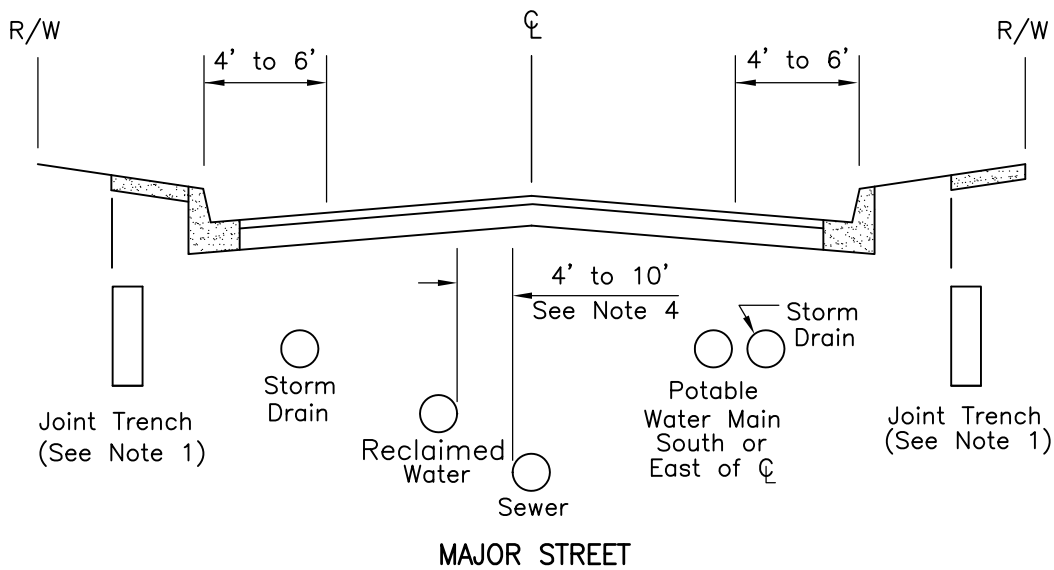


SIDEWALK NEXT TO CURB AND PROPERTY LINE

**NOTES**

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

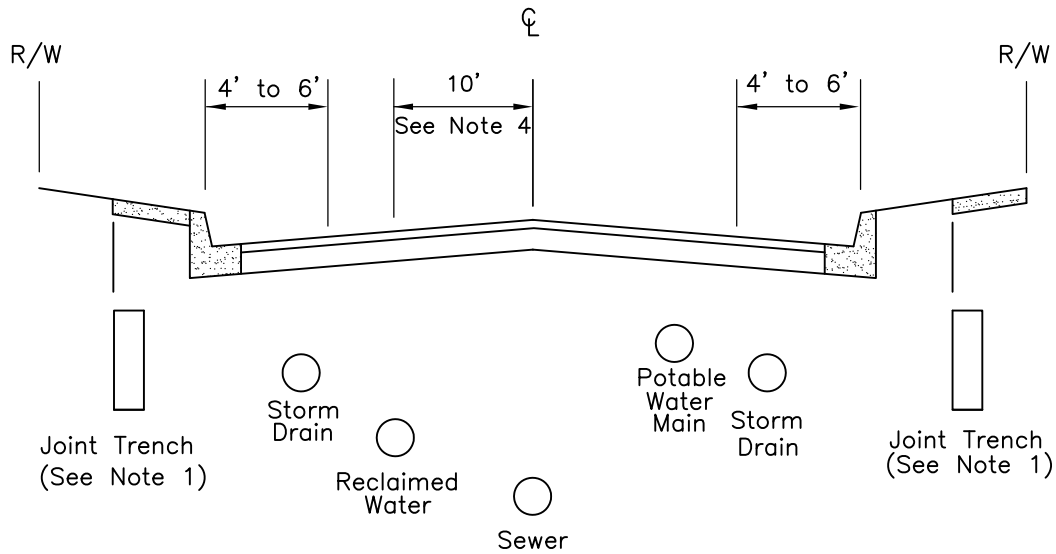
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		UNDERGROUND TYPICAL LOCATION CONVERSION/REPLACEMENT/ UPGRADE
Revised		D. Gerschoffer	09/15	DRAWING	
Revised		D. Gerschoffer	10/18	NUMBER	
				M-21	



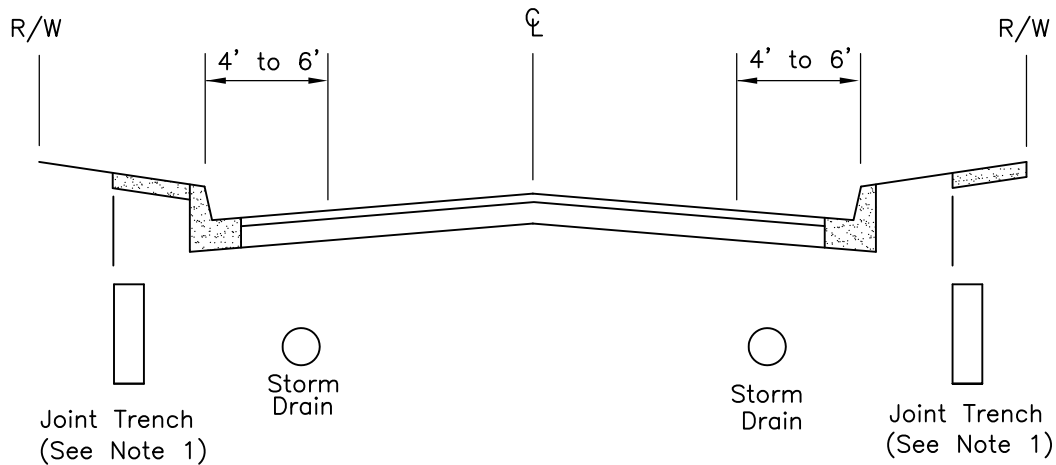
**NOTES**

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

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		UTILITY LOCATIONS LOCAL AND MAJOR STREETS
Revised		D. Gerschoffer	09/15		
Reviewed		D. Gerschoffer	10/18		



PRIME ARTERIAL



EXPRESSWAY

NOTES

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

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Revised		D. Gerschoffer	09/15
Reviewed		D. Gerschoffer	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

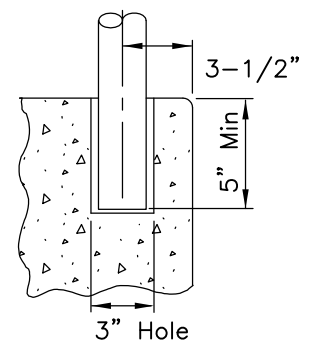
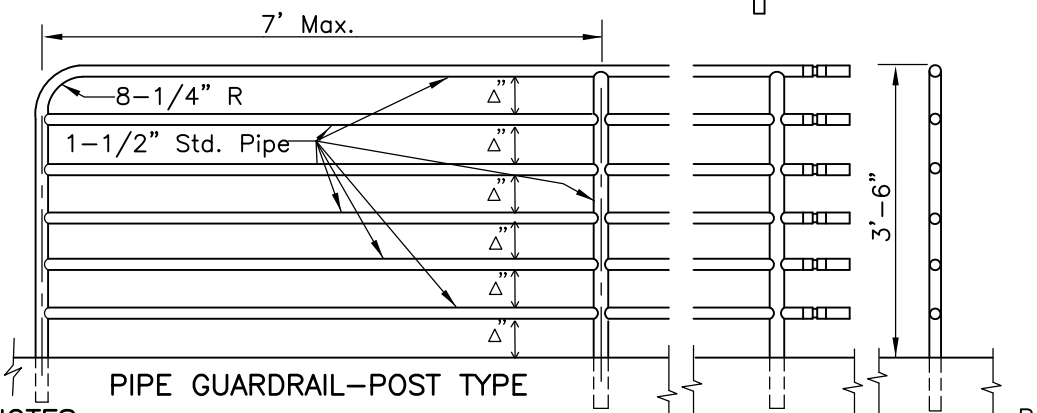
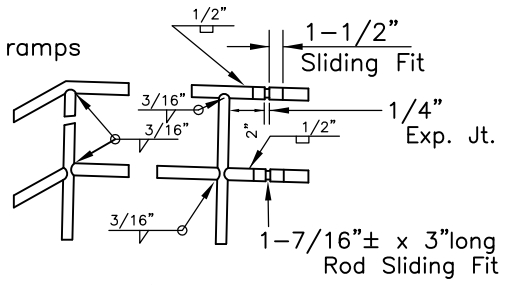
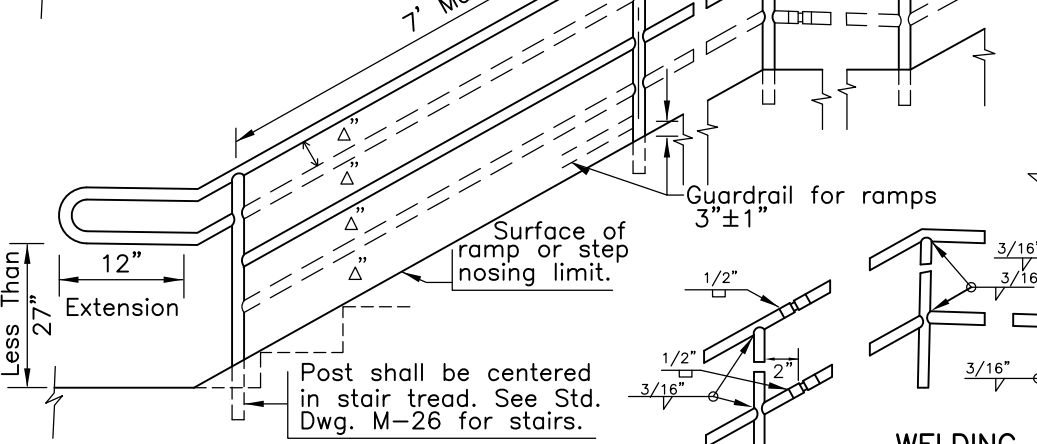
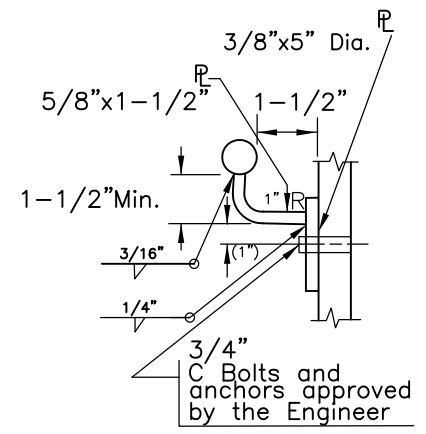
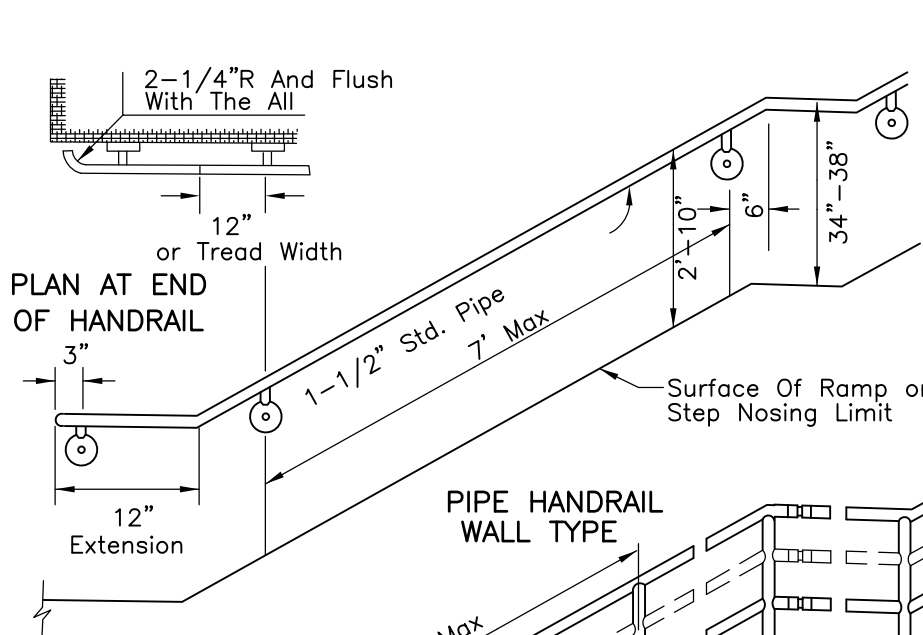
UTILITY LOCATIONS  
PRIME ARTERIALS  
AND EXPRESSWAYS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER M-23





**NOTES**

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

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Revised		D. Gerschoffer	09/15
Reviewed		D. Gerschoffer	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

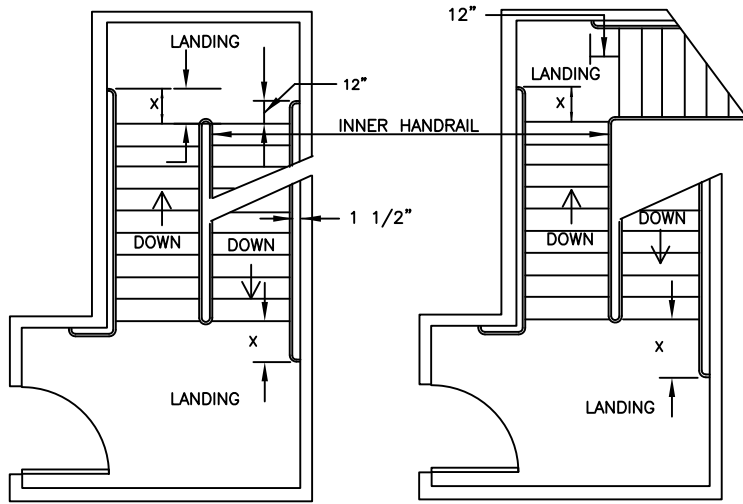
**PEDESTRIAN PROTECTIVE RAILING**

DETAILS NO. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

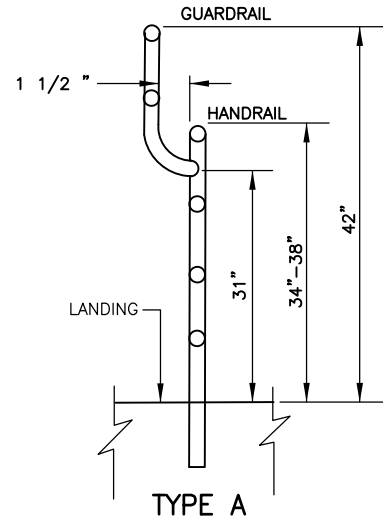
*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

**DRAWING NUMBER M-24**

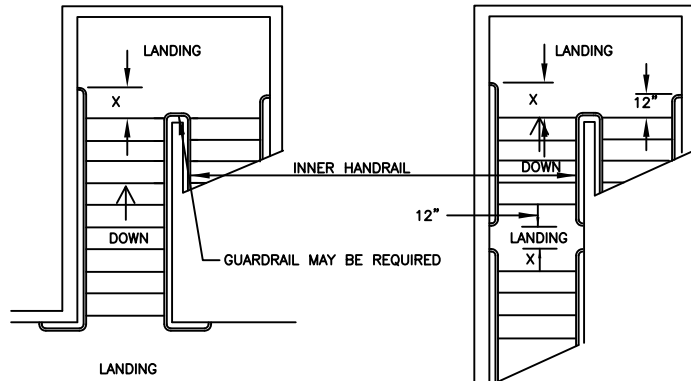


X IS THE MINIMUM HANDRAIL EXTENSION OF 12 INCHES PLUS THE WIDTH OF ONE TREAD AT EACH BOTTOM RISER.

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



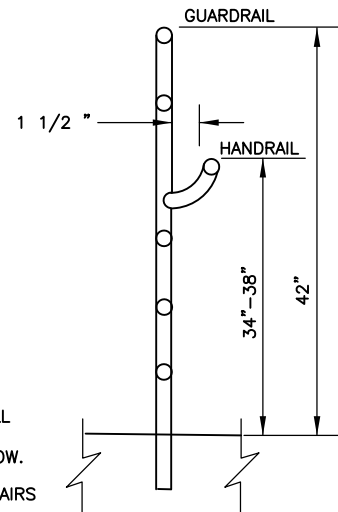
TYPE A  
GUARDRAIL EXTENSION



STAIR HANDRAILS

PROVIDE GUARDRAIL EXTENSIONS AS FOLLOWS:

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



TYPE B  
GUARDRAIL EXTENSION

NOTES

1. Post type guardrails, and handrails for stairs or landings 30" or less above grade or floor below shall have only one intermediate rail centered between the step nosing limit (or if specified the top of curb) and top of railing.
2. Post type guardrails, and handrails for stairs or landings more than 30" above grade or floor below shall have intermediate rails equally spaced such that a sphere 4" in diameter cannot pass through.
3. Where handrail extensions interfere with transverse walkways the horizontal portions shall not encroach but be turned away from stairs and parallel to walkway.
4. The top of guardrails for stairways, exclusive of their landings, may have a height as specified for handrails.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Revised		D. Gerschoffer	09/15
Reviewed		D. Gerschoffer	10/18

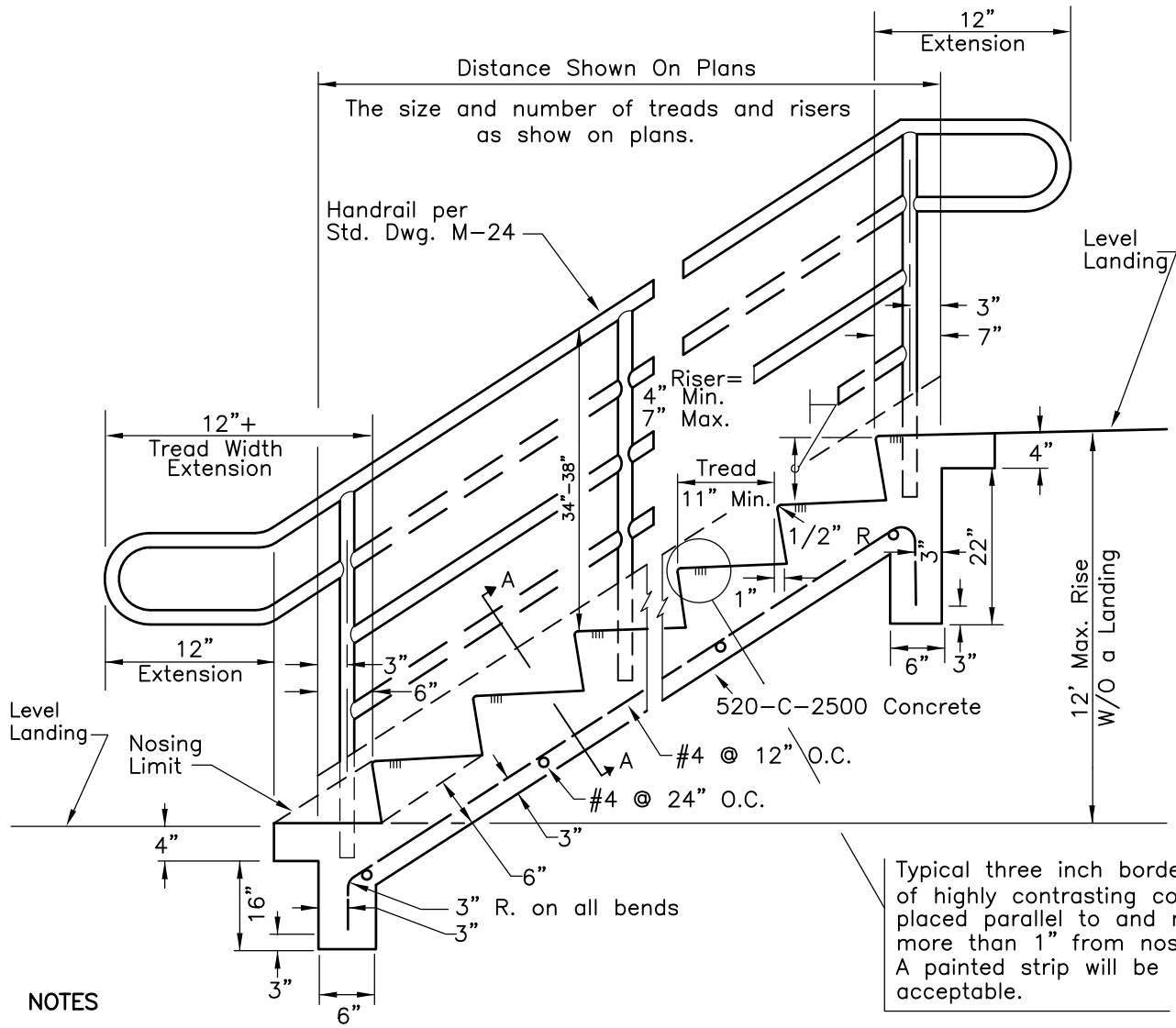
SAN DIEGO REGIONAL STANDARD DRAWING

PEDESTRIAN PROTECTIVE RAILING  
DETAILS NO. 2

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

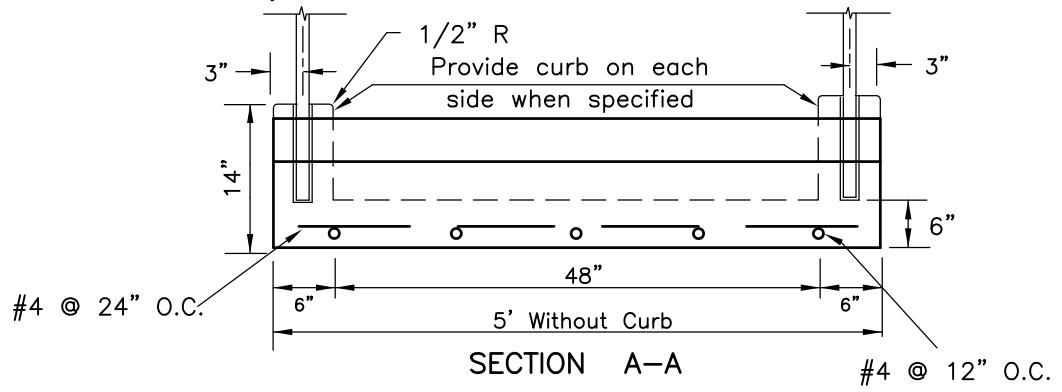
DRAWING NUMBER M-25



Typical three inch border of highly contrasting color placed parallel to and not more than 1" from nose. A painted strip will be acceptable.

**NOTES**

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

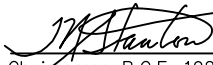


Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Revised		D. Gerschoffer	09/15
Reviewed		D. Gerschoffer	10/18

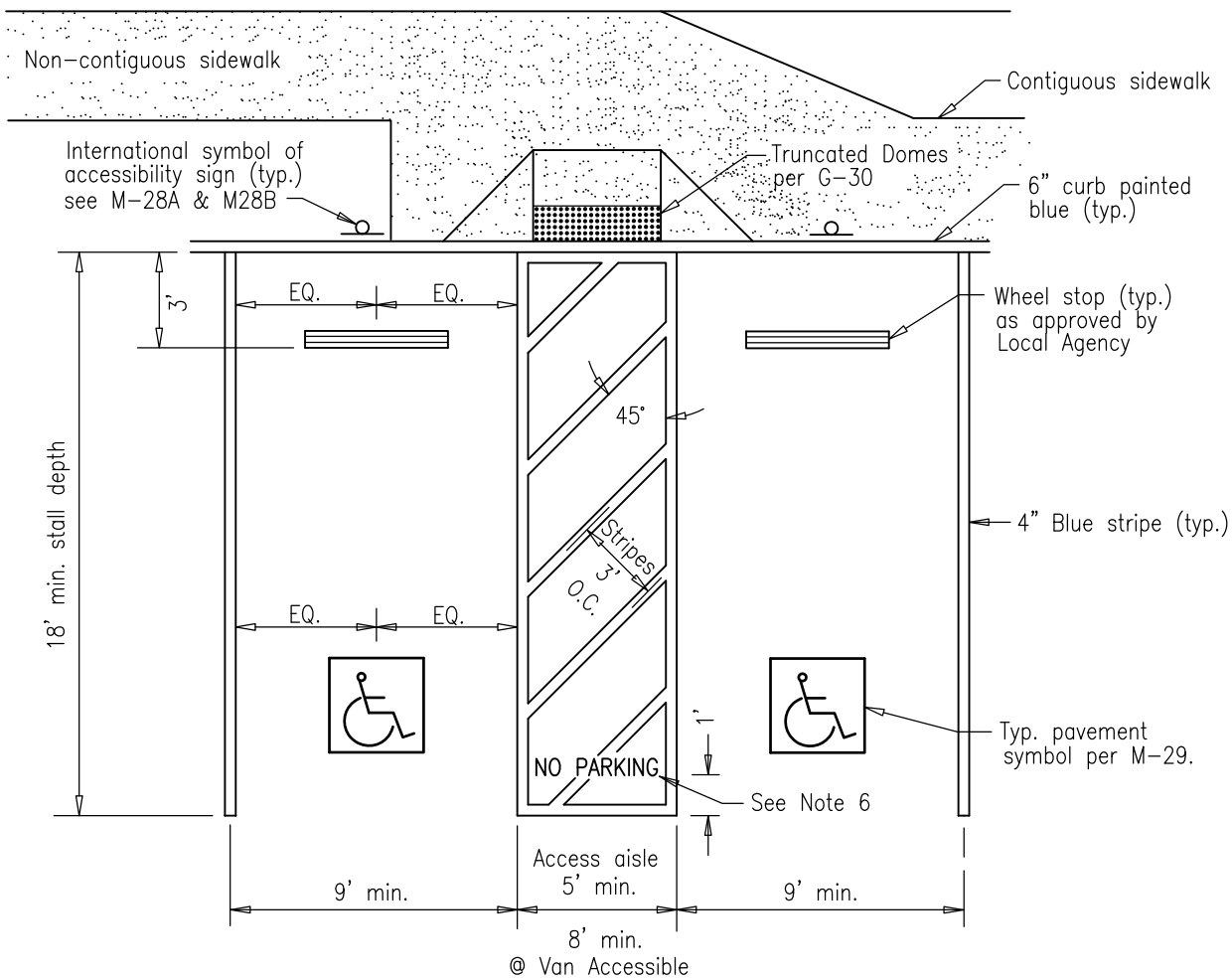
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE STEPS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

 10/25/2018  
 Chairperson R.C.E. 19246 Date

DRAWING NUMBER M-26



**NOTES:**

1. Provide for adequate drainage.
2. For appropriate ramp alternate to conform to topographical conditions, see standard drawings G-27 through G-32B.
3. Blue color should match color No. 15090 in the Federal Standard 595a as specified in Section 522(b)2.
4. If only one accessible parking stall is going to be provided, the access aisle shall be 8' (van accessible) and located on the passenger side.
5. Sidewalk cross slope shall not exceed 2.0%.
6. "NO PARKING" 12" high stencil marking, reflective white over blue stripes.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Revised		D. Gerschoffer	09/15
Reviewed		K. Equipado	10/18

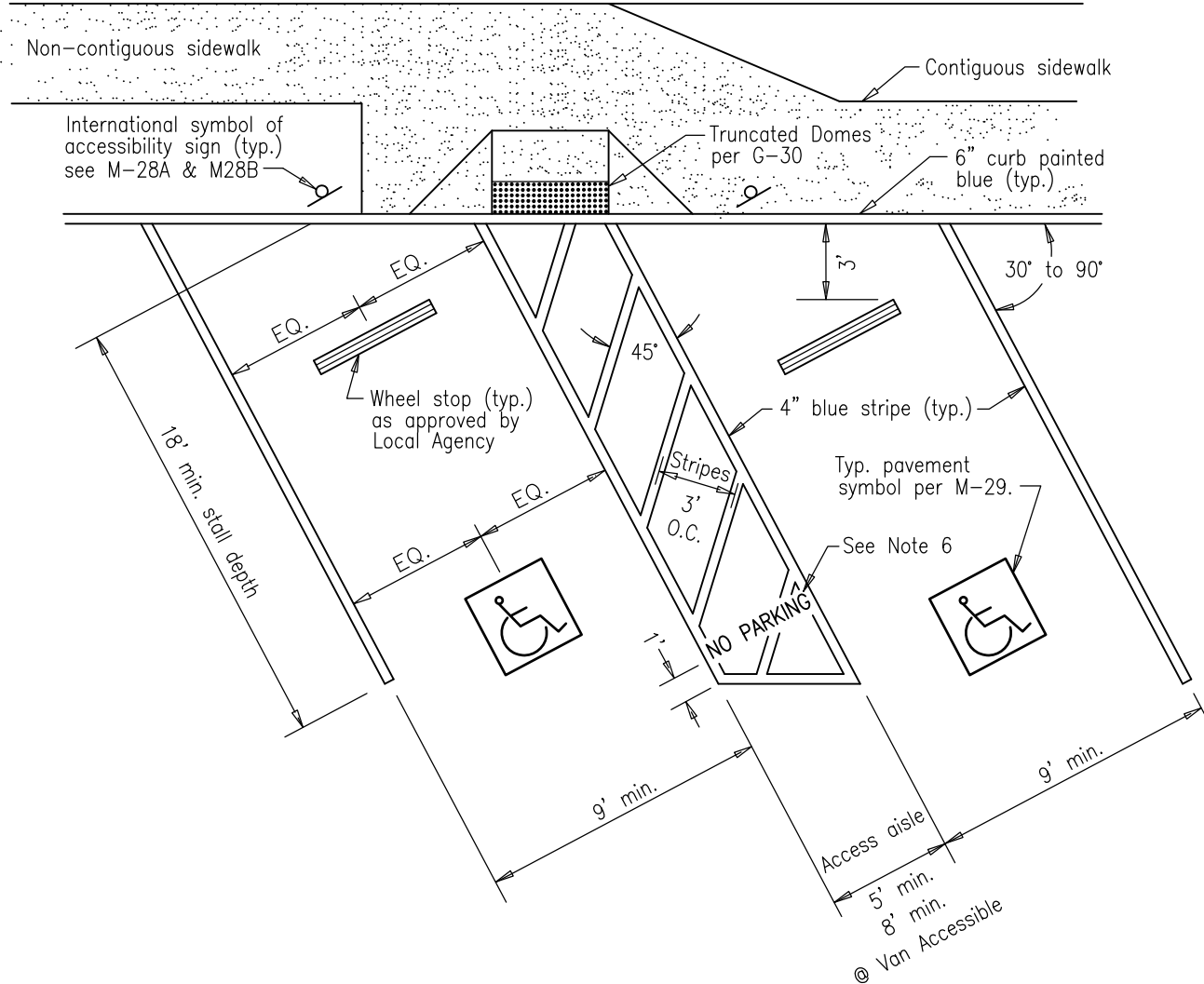
SAN DIEGO REGIONAL STANDARD DRAWING

DISABLED PARKING STALL(S)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER M-27A



**NOTES:**

1. Provide for adequate drainage.
2. For appropriate ramp alternate to conform to topographical conditions, see standard drawings G-27 through G-32B.
3. Blue color should match color No. 15090 in the Federal Standard 595a as specified in Section 522(b)2.
4. If only one accessible parking stall is going to be provided, the access aisle shall be 8' (van accessible) and located on the passenger side.
5. Sidewalk cross slope shall not exceed 2.0%.
6. "NO PARKING" 12" high stencil marking, reflective white over blue stripes.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Revised		D. Gerschoffer	09/15
Reviewed		K. Equipado	10/18

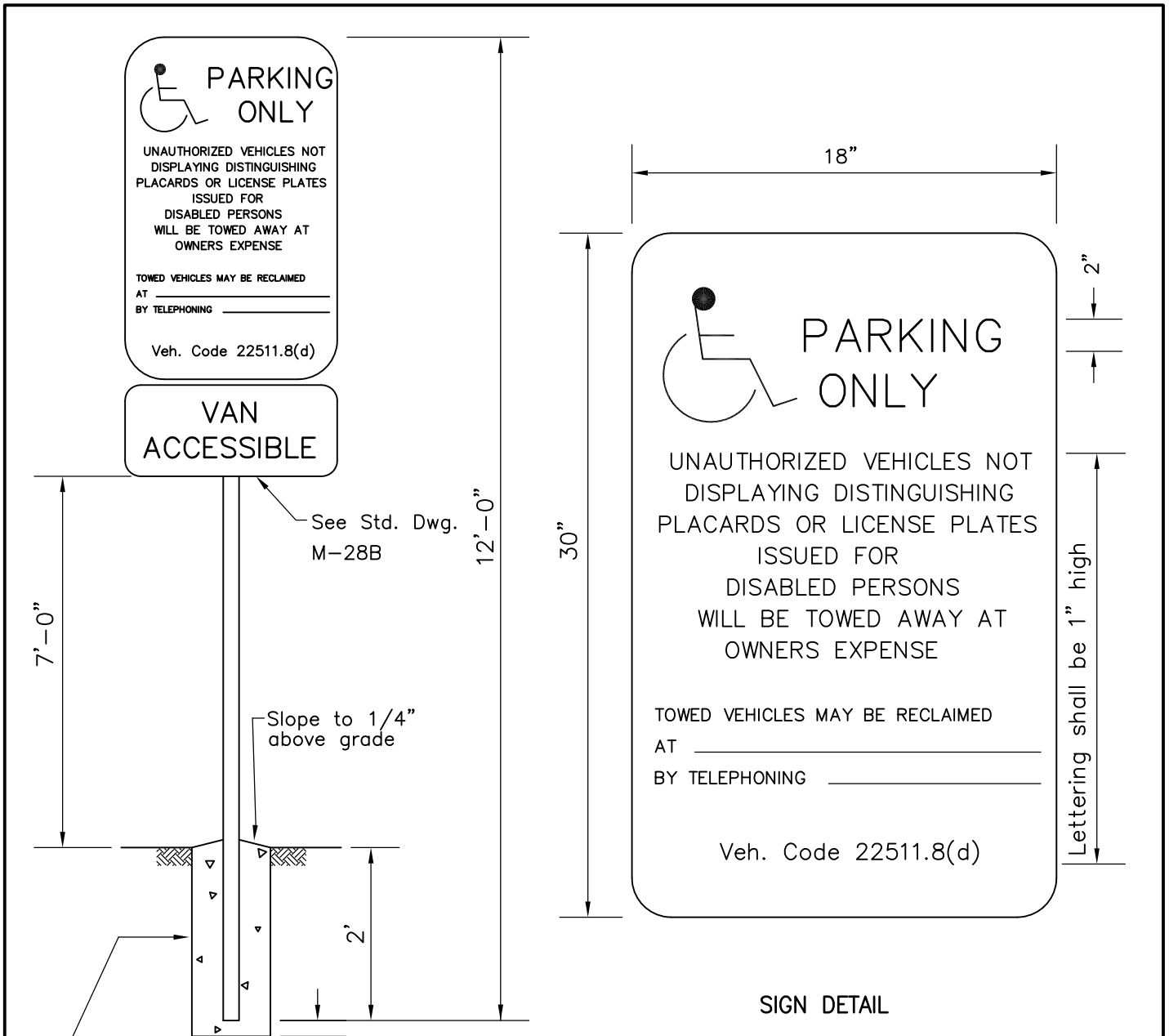
SAN DIEGO REGIONAL STANDARD DRAWING

DIAGONAL DISABLED  
PARKING STALL(S)

RECOMMENDED BY THE SAN DIEGO  
REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER M-27B



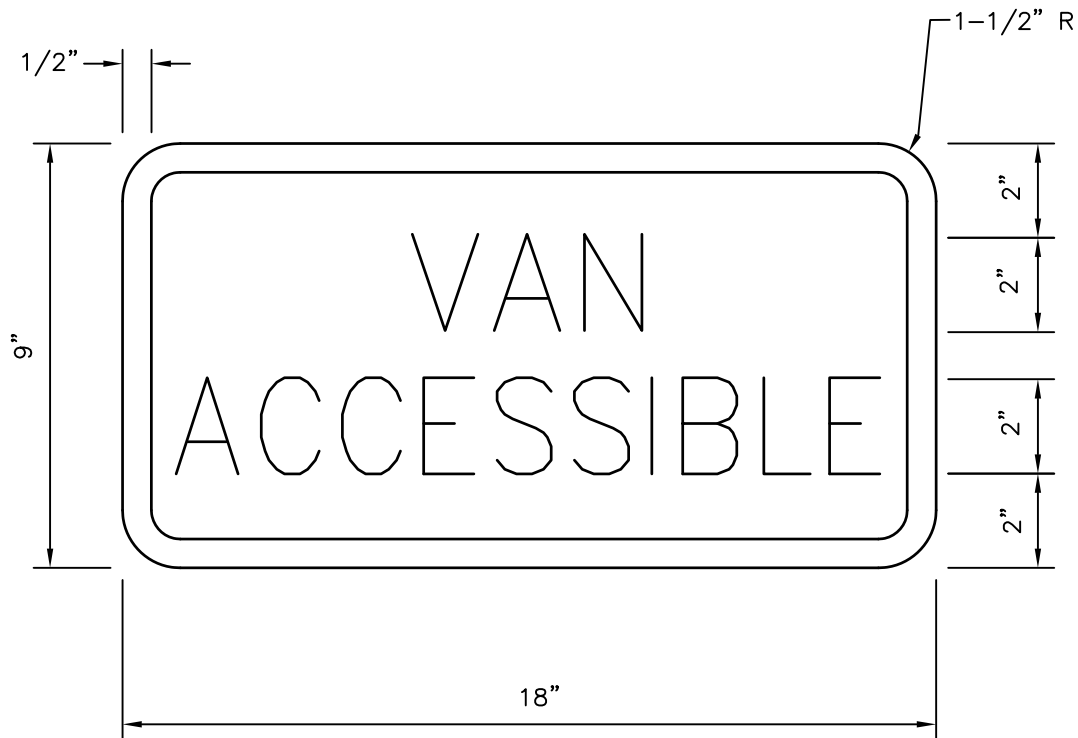
SIGN DETAIL

10" Diameter Footing of 520-C-2500 Concrete

NOTES:

1. Sign shall be constructed of a minimum 0.062" thick aluminum.
2. Lettering, symbol and border shall be reflectorized white, on a blue background.
3. Lettering shall be 1" and 2" high.
4. Where space is designed for van accessibility, a sign "VAN ACCESSIBLE" shall be installed.
5. Minimum van accessible vertical clearance is 8'-2".

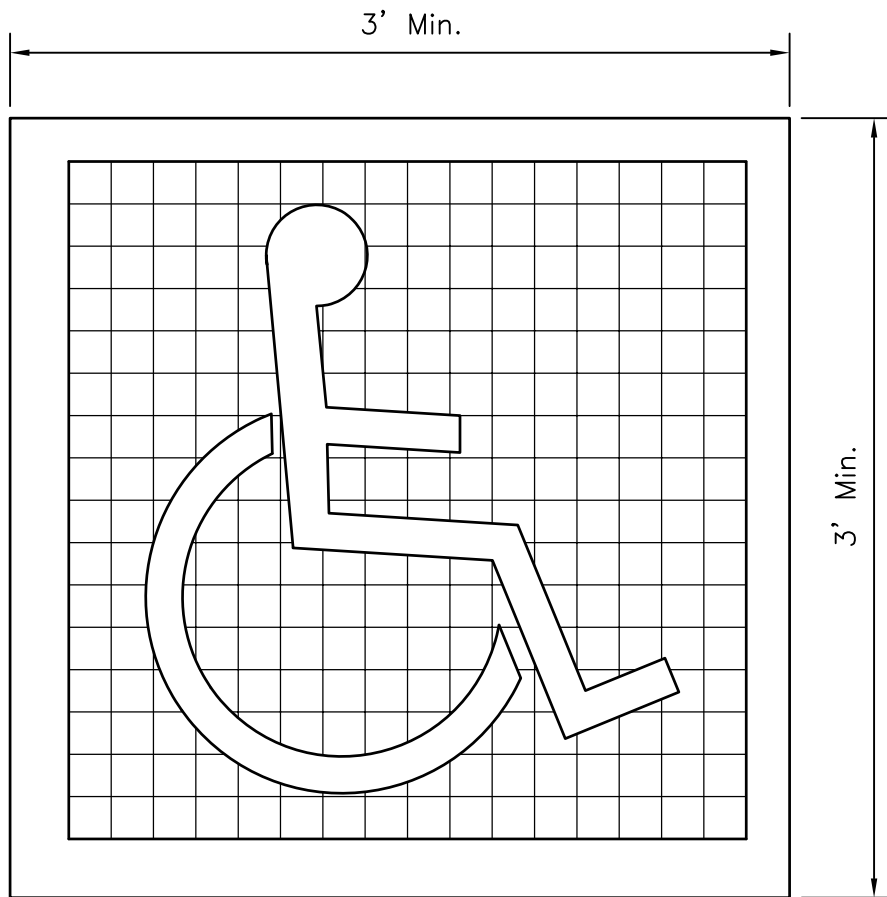
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		DISABLED PARKING SIGN
Revised		D. Gerschoffer	09/15	DRAWING NUMBER	
Reviewed		K. Equipado	10/18	M-28A	



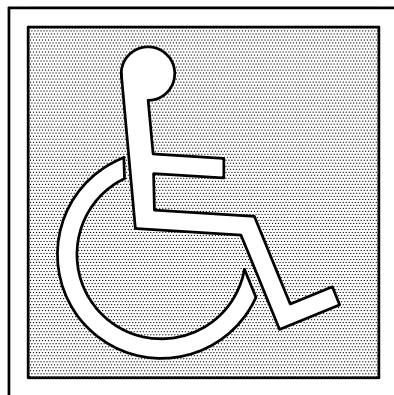
**NOTES**

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

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		VAN ACCESSIBLE SIGN FOR DISABLE PARKING SPACE
Revised		D. Gerschoffer	09/15	Chairperson R.C.E. 19246 Date	
Reviewed		K. Equipado	10/18	DRAWING NUMBER M-28B	



(a) SYMBOL PROPORTIONS



← INTERNATIONAL SYMBOL OF ACCESSIBILITY

(b) DISPLAY CONDITIONS

**NOTES**

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

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Revised		D. Gerschoffer	09/15		PAVEMENT SYMBOL— DISABLED PARKING
Reviewed		K. Equipado	10/18	Chairperson R.C.E. 19246 Date	
				DRAWING NUMBER M-29	

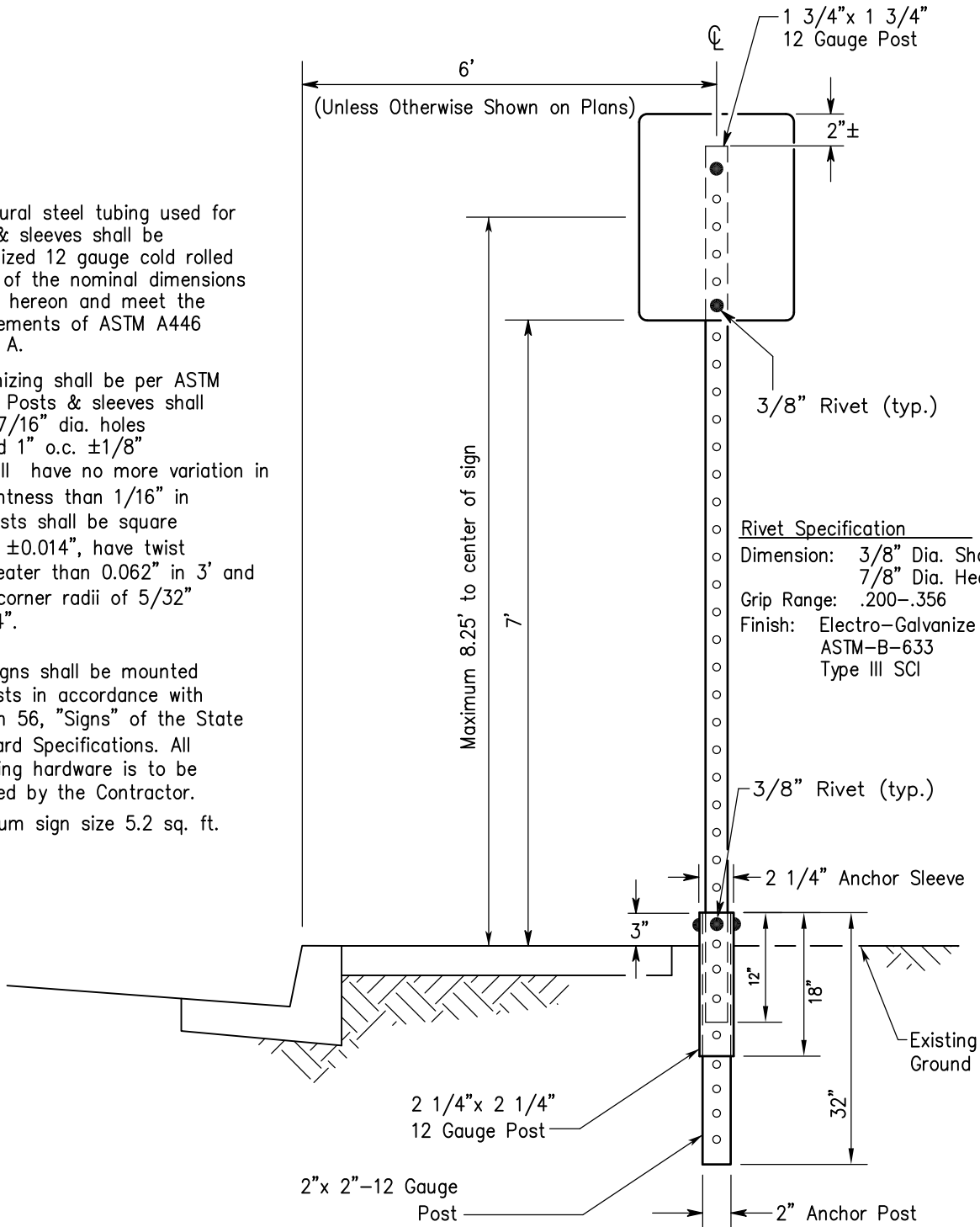


FOR GUARDRAIL STANDARDS USE:  
 Caltrans "Standard Plans for  
 Construction of Local  
 Streets and Roads"

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		G. Parkinson	05/92		GUARD RAIL REFERENCE NOTE
Revised		D. Gerschoffer	09/15		
Reviewed		K. Equipado	10/18	DRAWING NUMBER M-30	

**NOTES**

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



Rivet Specification  
 Dimension: 3/8" Dia. Shank  
 7/8" Dia. Head  
 Grip Range: .200-.356  
 Finish: Electro-Galvanize  
 ASTM-B-633  
 Type III SCI

Revision	By	Approved	Date
ORIGINAL		G. Parkinson	02/95
Revised		D. Gerschoffer	09/15
Reviewed		K. Equipado	10/18

**SAN DIEGO REGIONAL STANDARD DRAWING**

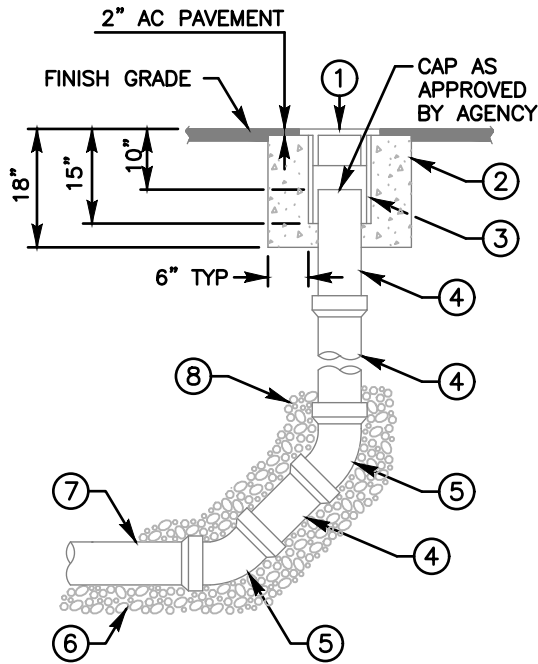
**BREAK-AWAY SIGN POST**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

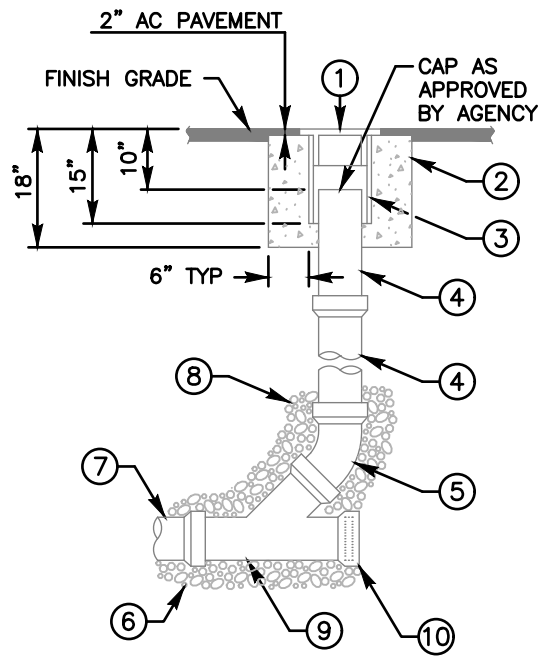
*M. Stanton* 10/25/2018  
 Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-45**

# SEWERAGE SYSTEMS



**TYPE A**  
MAINS FOR 6" AND 8"



**TYPE B**  
SEWER LATERAL  
CLEANOUT

**NOTES:**

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) CLEANOUTS TO BE INSTALLED AT THE END OF MAINS WHERE INDICATED ON THE PLANS
- 3) CLEANOUT PIPE TO BE SAME SIZE AND MATERIAL AS SEWER MAIN UP TO 8"
- 4) BACKFILL TO TOP OF 45° BEND WITH 3/4" CRUSHED ROCK
- 5) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST

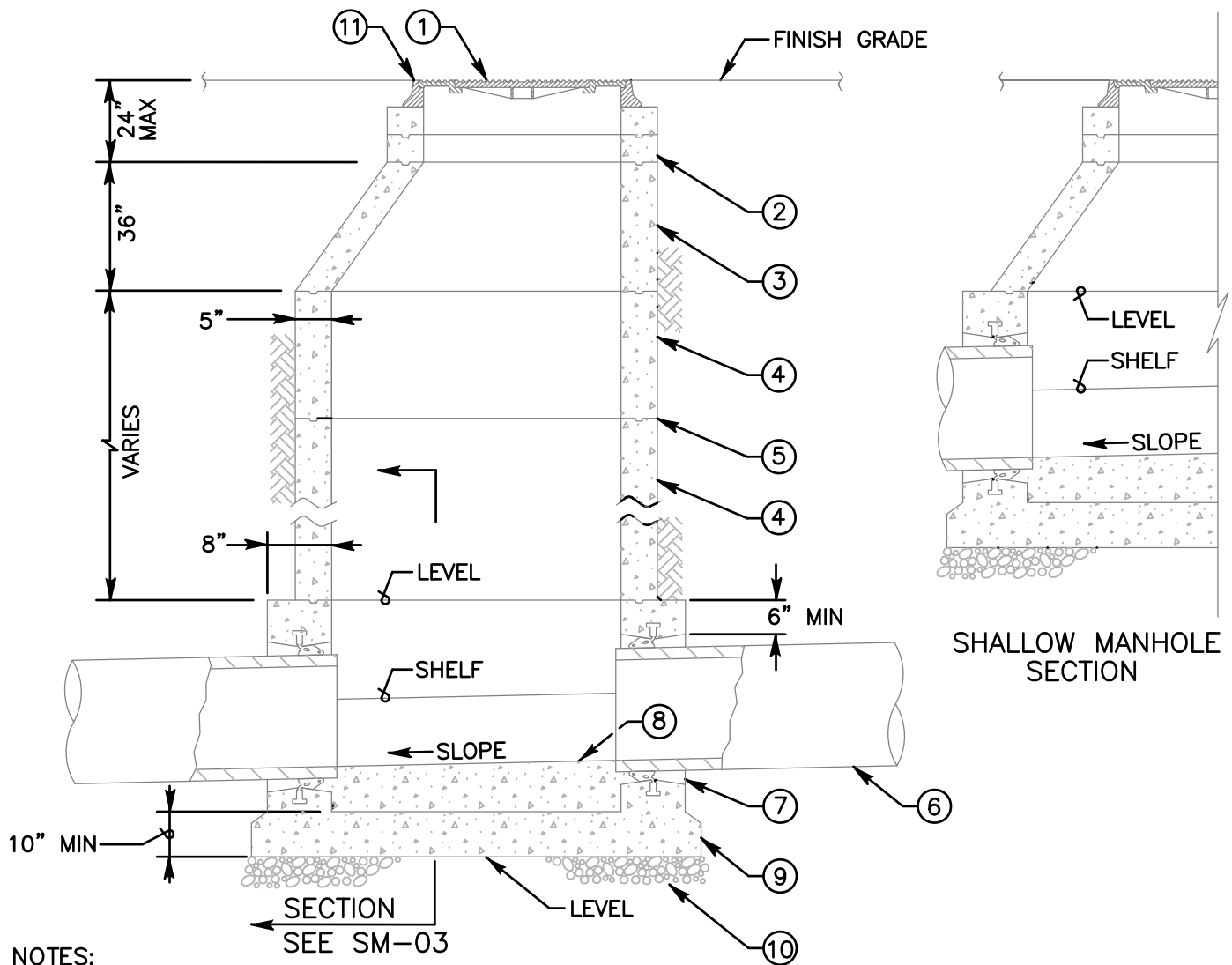


LEGEND ON PLANS

ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	12" CI CLEANOUT BOX COVER MARKED 'SEWER' AND AGENCY NAME AS REQUIRED	⑤	45° ELBOW
②	CONCRETE RING	⑥	3/4" CRUSHED ROCK PIPE BEDDING
③	12" PVC, C-900 x 15" LONG (CLEANOUT BOX)	⑦	SEWER MAIN
④	SIZE x REQUIRED LENGTH PVC PIPE	⑧	3/4" CRUSHED ROCK SEE NOTE 4
		⑨	STANDARD WYE BRANCH
		⑩	INSTALL PLUG AND CONCRETE LUG

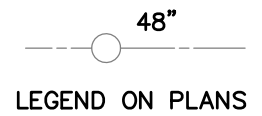
  

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Replaced S-03		J. Tomasulo	03/05	SEWER CLEANOUT	 Chairperson R.C.E. 19246 Date
Delete Metric	MR	B. KNOLL	03/11		
Reviewed	BK	B. KNOLL	04/15		
Reviewed	BK	B. KNOLL	10/18		
					DRAWING NUMBER SC-01



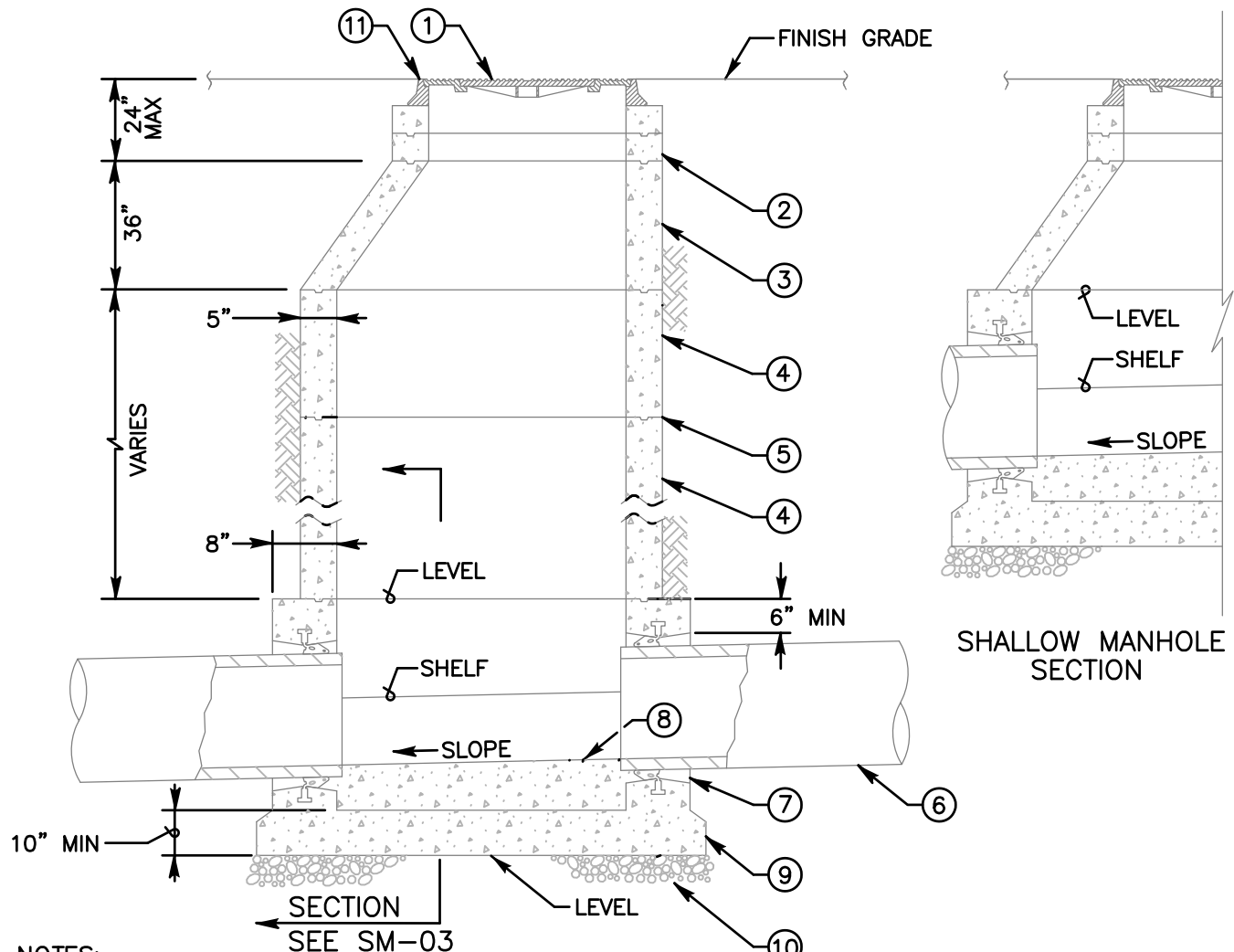
**NOTES:**

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) VERTICAL WALL OF CONE TO BE ON THE UPSTREAM SIDE OF MANHOLE SEE SM-05 FOR ACCESS LOCATIONS
- 3) FOR MANHOLE BASES SEE SM-03
- 4) MANHOLES FOR MAINS 18" AND LARGER SHALL BE COATED AND LINED PER SM-07
- 5) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST



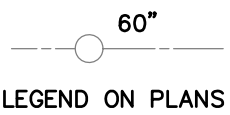
ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	36" MANHOLE FRAME AND TWO CONCENTRIC COVERS SEE S.D.R.S.D. M-3	⑦	MANHOLE PIPE CONNECTOR SEE SM-04
②	36" DIA GRADE RING(S) 6" TO 18" HIGH	⑧	FIELD INSTALLED INVERT SEE SM-04
③	ECCENTRIC CONE SEE NOTE 2	⑨	CONCRETE BASE, PRECAST OR CAST IN PLACE
④	48" DIA RING(S) VARIABLE HEIGHT	⑩	6" OF 3/4" CRUSHED ROCK
⑤	WATER TIGHT JOINTS SEE SM-05	⑪	MANHOLE DETAIL SEE SM-05
⑥	SEWER MAIN		

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Replaced S-02		J. Tomasulo	03/05	48" DIAMETER PRECAST MANHOLE INSTALLATION	 Chairperson R.C.E. 19246 Date 10/25/2018
Delete Metric	MR	B. KNOLL	03/11		
Reviewed	BK	B. KNOLL	04/15		
Reviewed	BK	B. KNOLL	10/18		
				DRAWING NUMBER	SM-01




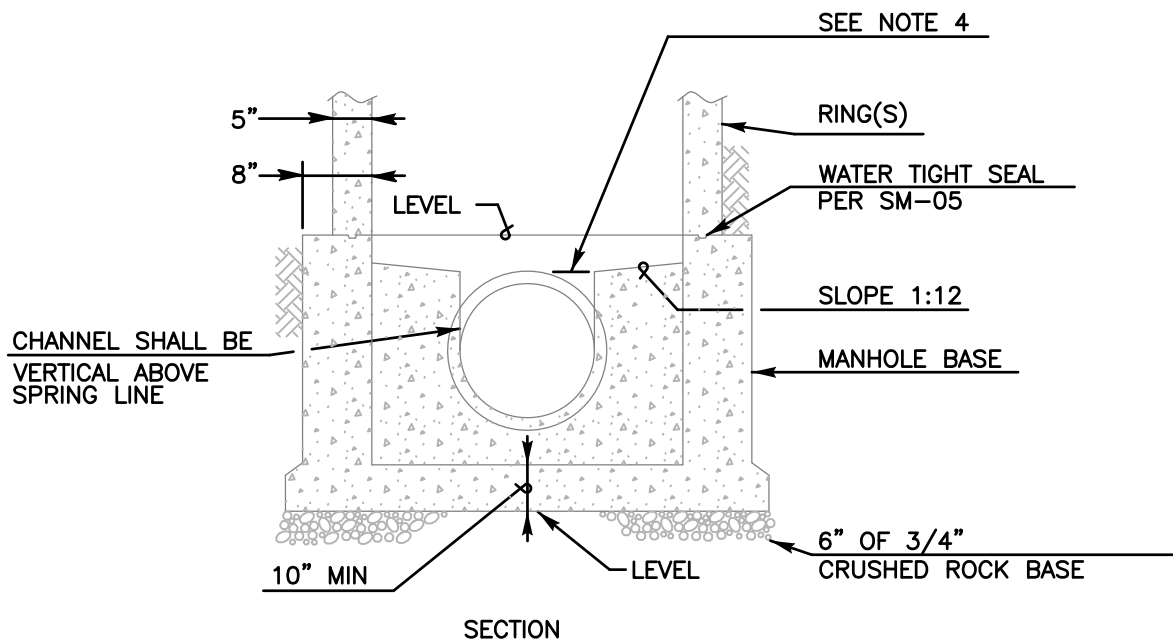
**NOTES:**

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) VERTICAL WALL OF CONE TO BE ON THE UPSTREAM SIDE OF MANHOLE SEE SM-05 FOR ACCESS LOCATIONS
- 3) FOR MANHOLE BASES SEE SM-03
- 4) MANHOLES FOR MAINS 18" AND LARGER SHALL BE COATED AND LINED PER SM-07
- 5) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST




ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	36" MANHOLE FRAME AND TWO CONCENTRIC COVERS SEE S.D.R.S.D. M-3	⑦	MANHOLE PIPE CONNECTOR SEE SM-04
②	36" DIA GRADE RING(S) 6" TO 18" HIGH	⑧	FIELD INSTALLED INVERT SEE SM-04
③	ECCENTRIC CONE SEE NOTE 2	⑨	CONCRETE BASE, PRECAST OR CAST IN PLACE
④	60" DIA RING(S) VARIABLE HEIGHT	⑩	6" OF 3/4" CRUSHED ROCK
⑤	WATER TIGHT JOINTS SEE SM-05	⑪	MANHOLE DETAIL SEE SM-05
⑥	SEWER MAIN		

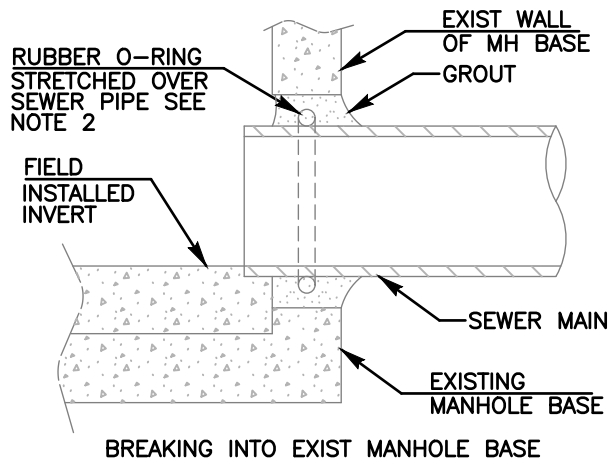
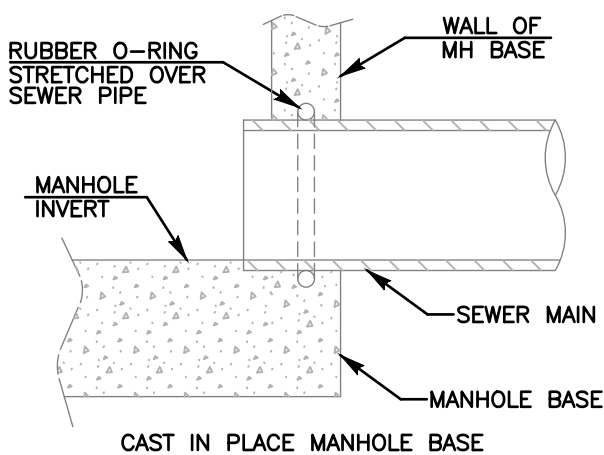
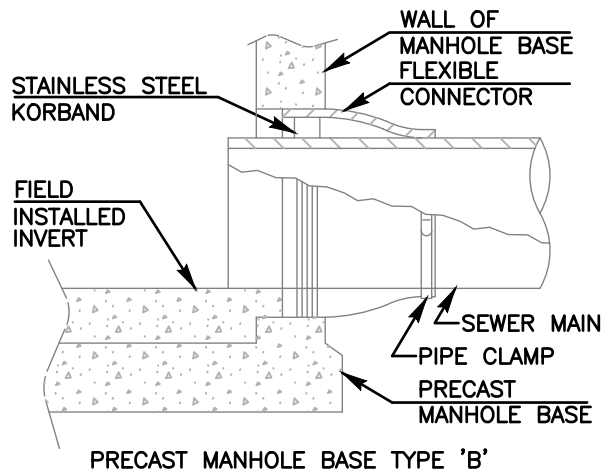
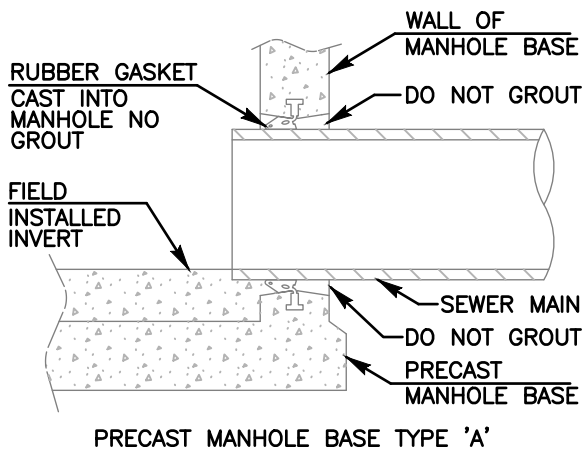
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Replaced S-02		J. Tomasulo	03/05	60" DIAMETER PRECAST MANHOLE INSTALLATION	 10/25/2018 Chairperson R.C.E. 19246 Date
Delete Metric	MR	B. KNOLL	03/11		
Reviewed	BK	B. KNOLL	04/15		
Reviewed	BK	B. KNOLL	10/18		
				DRAWING NUMBER	SM-02



NOTES:


- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) FOR MANHOLE INSTALLATIONS SEE SM-01 AND SM-02
- 3) MANHOLE BASES FOR MAINS 18" AND LARGER SHALL BE COATED PER SM-07
- 4) LOWEST POINT ON SHELF SHALL BE EVEN WITH TOP OF PIPE
- 5) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		SEWER MANHOLE BASE
Replaced S-02		J. Tomasulo	03/05		
Delete Metric	MR	B. KNOLL	03/11		
Reviewed	BK	B. KNOLL	04/15		
Reviewed	BK	B. KNOLL	10/18		
					 10/25/2018 Chairperson R.C.E. 19246 Date
					DRAWING NUMBER SM-03

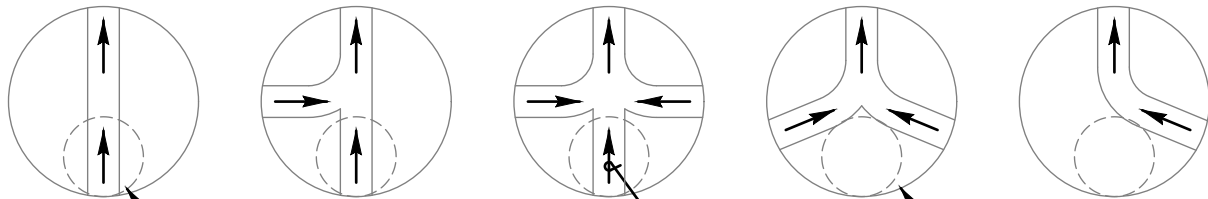


NOTES:

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) A RUBBER O-RING OR A FLEXIBLE CONNECTOR (AS SHOWN IN PRECAST MANHOLE BASE TYPE 'B') CAN BE USED WHEN BREAKING INTO EXISTING MANHOLE
- 3) FOR MANHOLES REQUIRING COATING AND LINING SEE SM-07
- 4) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75	MANHOLE PIPE CONNECTORS		 10/25/2018 Chairperson R.C.E. 19246 Date
Replaced S-02		J. Tomasulo	03/05			
Delete Metric	MR	B. KNOLL	03/11			
Reviewed	BK	B. KNOLL	04/15			
Reviewed	BK	B. KNOLL	10/18			
						DRAWING NUMBER SM-04



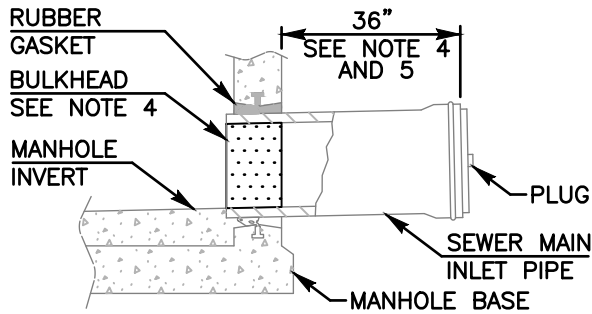


MANHOLE SHAFT  
OPENING (TYP)  
SEE NOTE 2

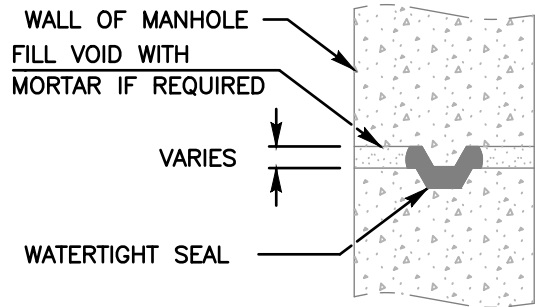
DIRECTION OF  
FLOW (TYP)

MANHOLE (TYP)

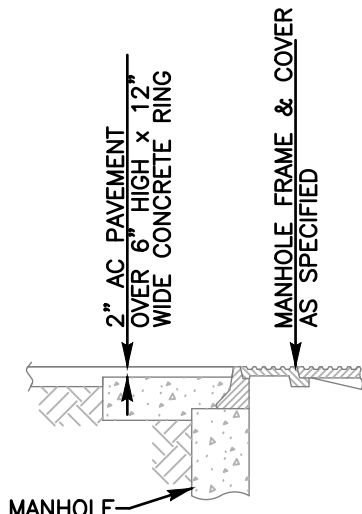
MANHOLE ACCESS LOCATION PLAN VIEW



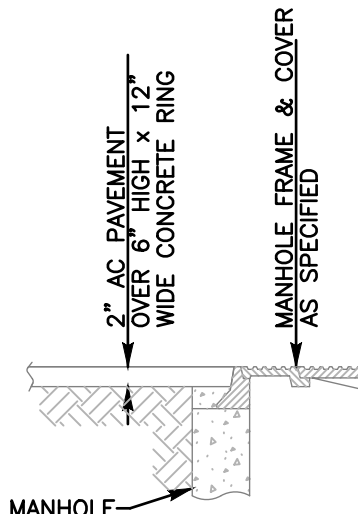
MANHOLE STUB OUT FOR FUTURE CONNECTION



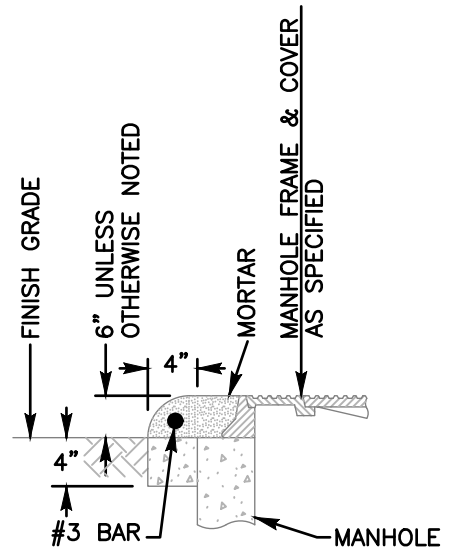
WATERTIGHT MANHOLE JOINT



PAVED AND  
TRAVELED AREAS  
TYPE A



PAVED AND  
TRAVELED AREAS  
TYPE B



UNPAVED, UNTRAVELED,  
SHOULDER AREAS, AREAS  
IN EASEMENTS  
TYPE C

NOTES:

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) VERTICAL WALL OF CONE TO BE ON THE UP STREAM SIDE OF MANHOLE
- 3) FOR MANHOLES REQUIRING COATING AND LINING SEE SM-07
- 4) STUBS SHALL BE BULKHEADED AT THE MANHOLE END
- 5) SEWER MAIN TO BE LAID WITH BELLS UP-GRADE
- 6) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Stanton	05/08
Delete Metric	MR	B. KNOLL	03/11
Reviewed	BK	B. KNOLL	04/15
Reviewed	BK	B. KNOLL	10/18

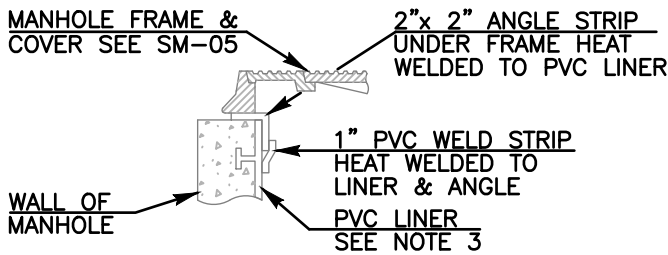
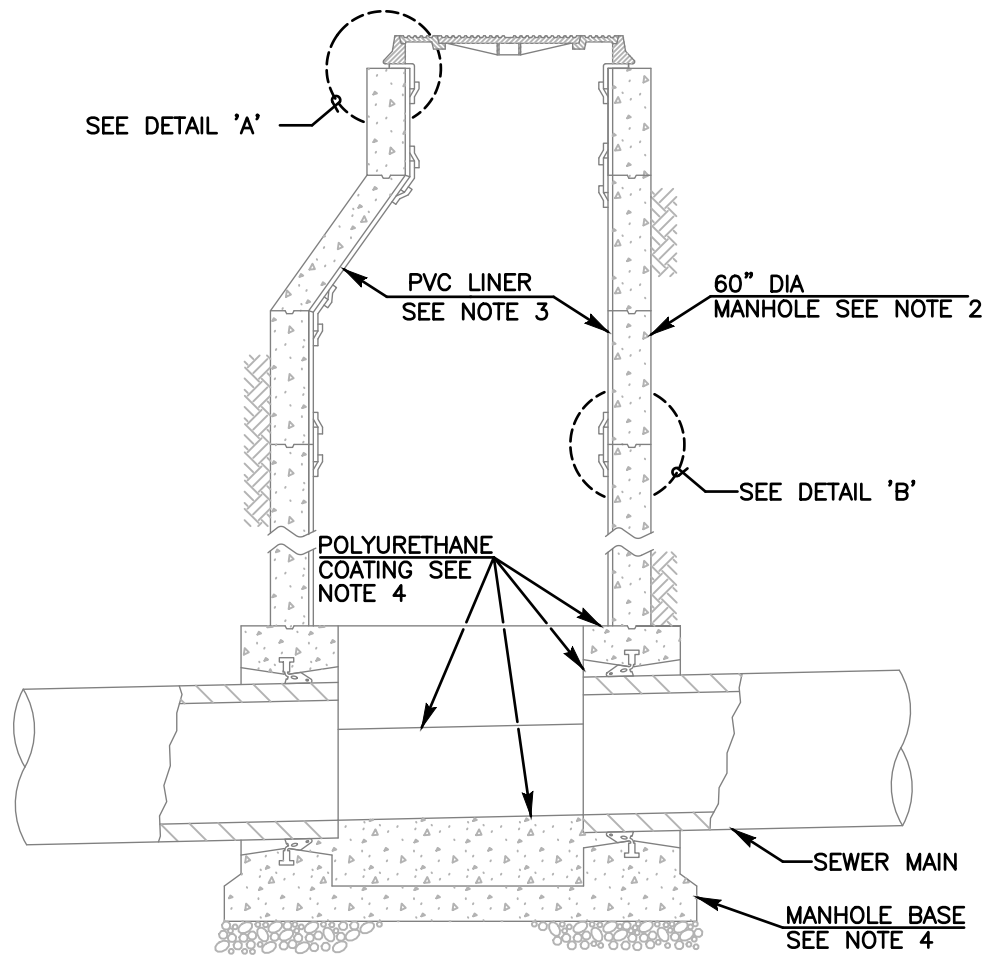
SAN DIEGO REGIONAL STANDARD DRAWING

MANHOLE MISCELLANEOUS  
DETAILS

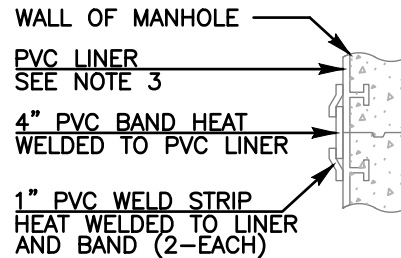
RECOMMENDED BY THE SAN DIEGO  
REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING  
NUMBER SM-05



DETAIL "A" MANHOLE  
FRAME & COVER

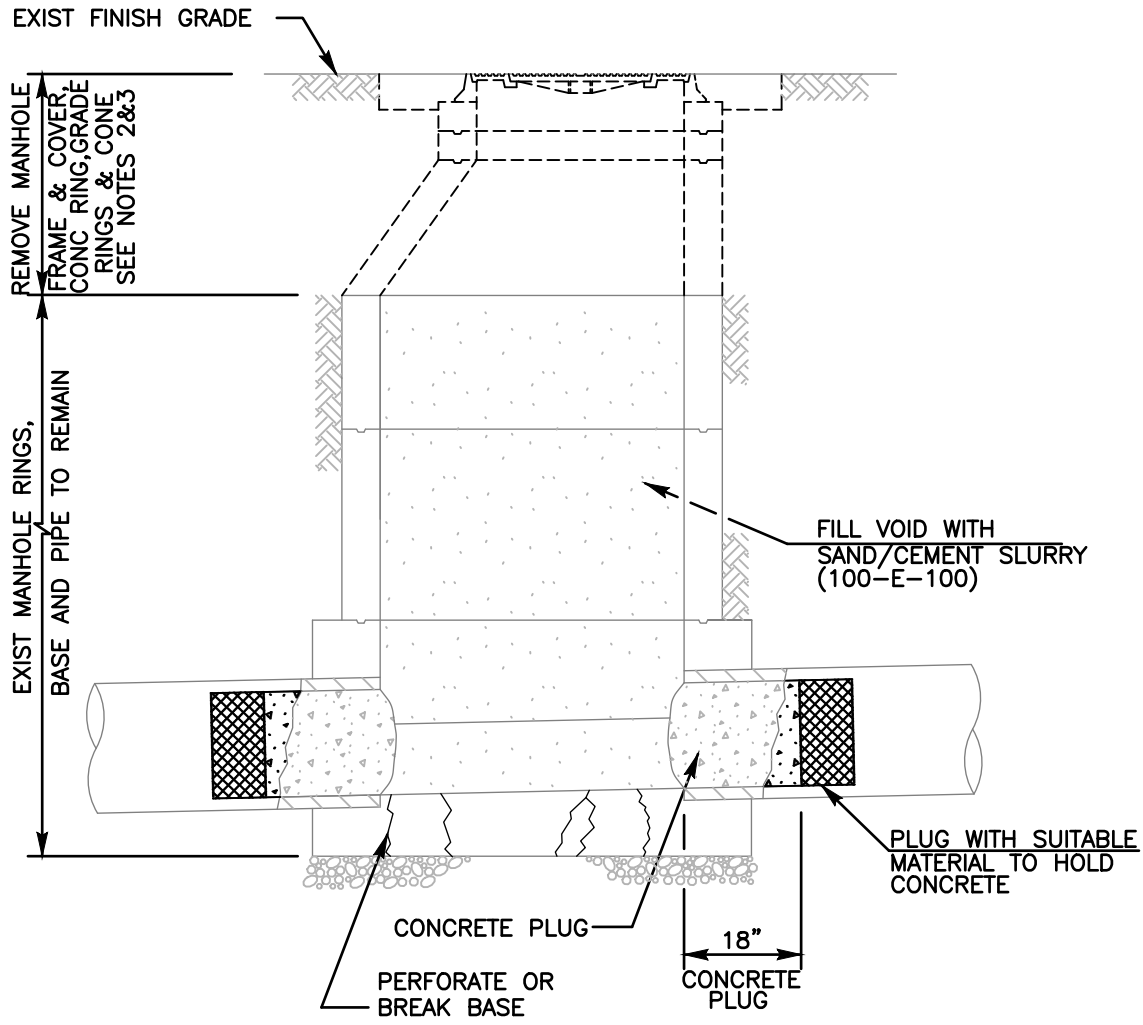


DETAIL "B" MANHOLE  
JOINT SECTIONS

**NOTES:**

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) MANHOLES FOR SEWER MAINS 18" AND LARGER SHALL BE COATED AND LINED
- 3) MANHOLE SHAFT AND CONE SECTIONS, AND GRADE RINGS SHALL HAVE A PVC LINER PLACED WITH T-SHAPED SUPPORTS INTEGRALLY CAST INTO THE CONCRETE (OR AGENCY APPROVED EQUAL TO PVC LINER)
- 4) ELASTOMERIC POLYURETHANE COATING SHALL BE APPLIED TO THE INTERIOR OF MANHOLE BASES
- 5) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		<p>MANHOLE COATING AND LINING SYSTEM</p>
Replaced S-02		J. Tomasulo	03/05		
Delete Metric	MR	B. KNOLL	03/11	DRAWING NUMBER	
Note 3	BK	B. KNOLL	04/15	SM-07	
Reviewed	BK	B. KNOLL	10/18		



**NOTES:**

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) ALL SALVAGED MATERIAL BECOMES PROPERTY OF AGENCY OF JURISDICTION
- 3) BACKFILL PER AGENCY'S REQUIREMENT
- 4) FOR CUTTING & PLUGGING ABANDONED SEWER MAINS SEE WP-03

—○—  
 LEGEND ON PLANS

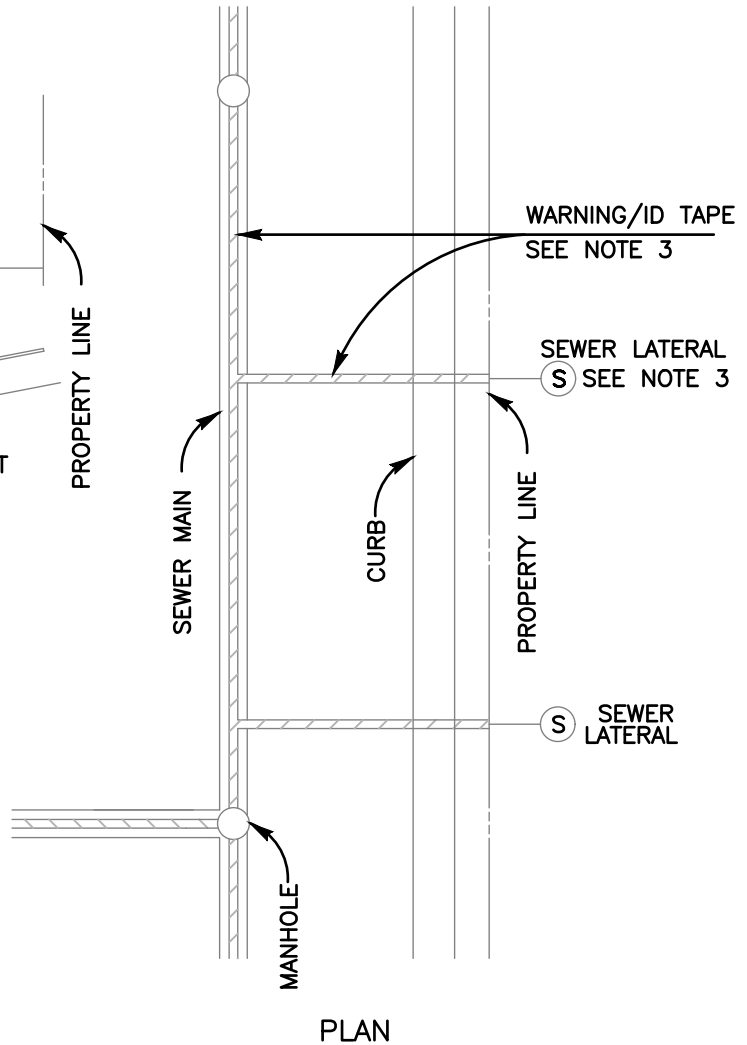
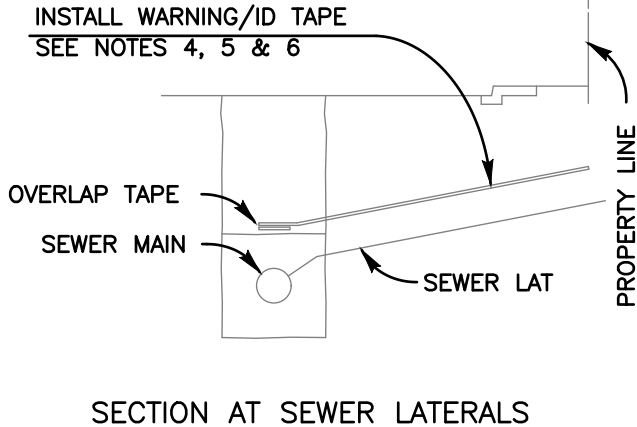
Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Replaced S-02		J. Tomasulo	03/05
Delete Metric	MR	B. KNOLL	03/11
Add Call-out	BK	B. KNOLL	04/15
Reviewed	BK	B. KNOLL	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

RECOMMENDED BY THE SAN DIEGO  
 REGIONAL STANDARDS COMMITTEE

EXISTING MANHOLE  
 ABANDONMENT

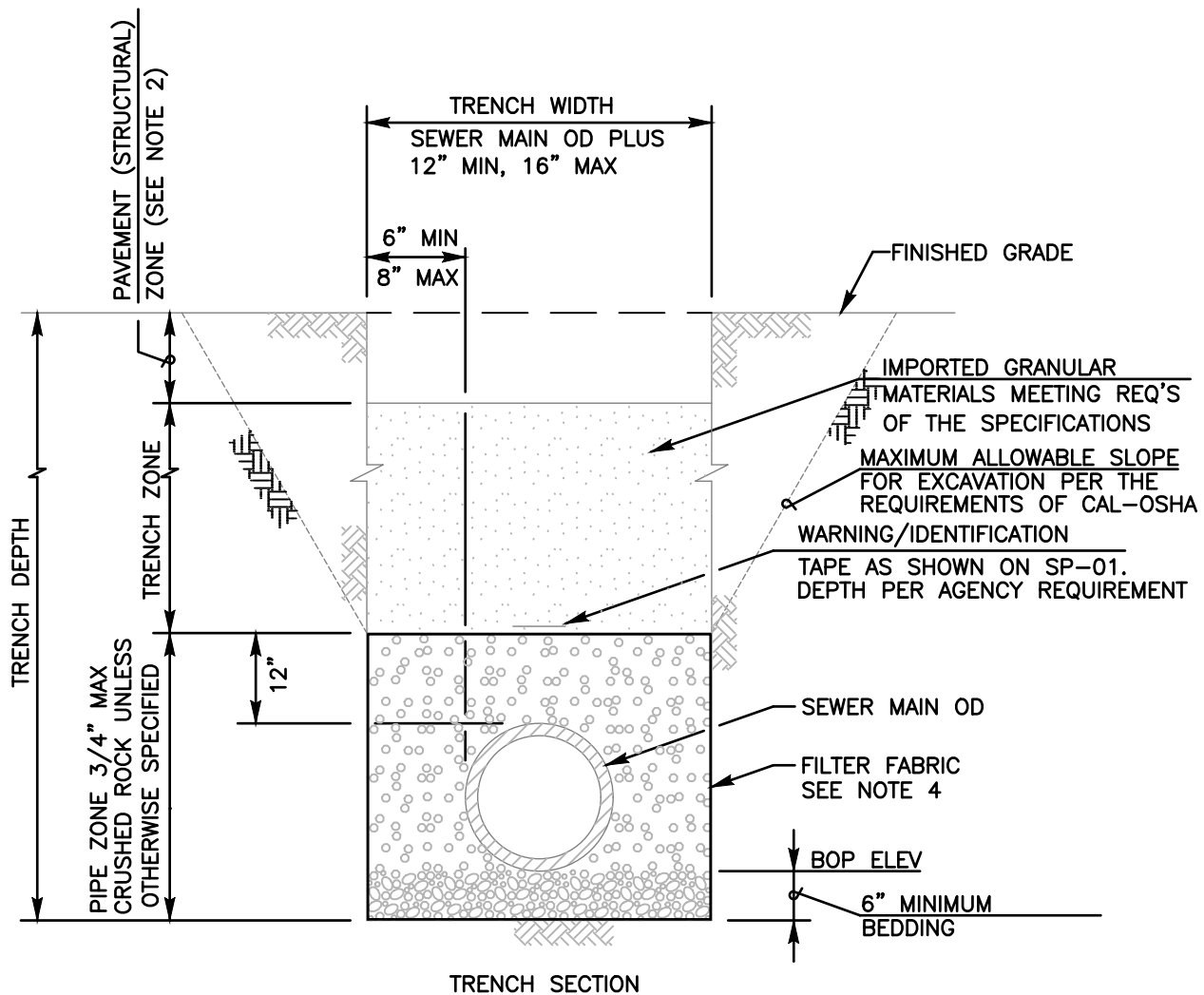
  
 10/25/2018  
 Chairperson R.C.E. 19246 Date  
 DRAWING NUMBER SM-08



**NOTES:**

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) WARNING/IDENTIFICATION TAPE SHALL BE INSTALLED AS SPECIFIED BY AGENCY
- 3) STAMP OR CHISEL A 2" HIGH 'S' IN CURB FACE TO IDENTIFY SEWER LATERAL LOCATION
- 4) FOR SEWER LATERALS EXTEND TAPE TO PROPERTY LINE
- 5) DEPTH OF WARNING/IDENTIFICATION TAPE AS SPECIFIED BY AGENCY
- 6) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		<b>WARNING/IDENTIFICATION TAPE INSTALLATION</b>
Replaced S-19		J. Tomasulo	03/05		
Delete Metric	MR	B. KNOLL	03/11	DRAWING NUMBER	
Reviewed	BK	B. KNOLL	04/15	SP-01	
Reviewed	BK	B. KNOLL	10/18		

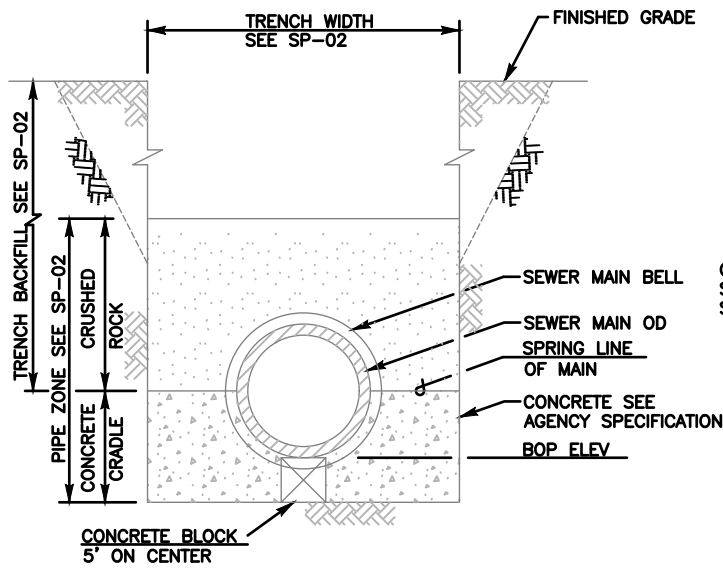


TRENCH SECTION

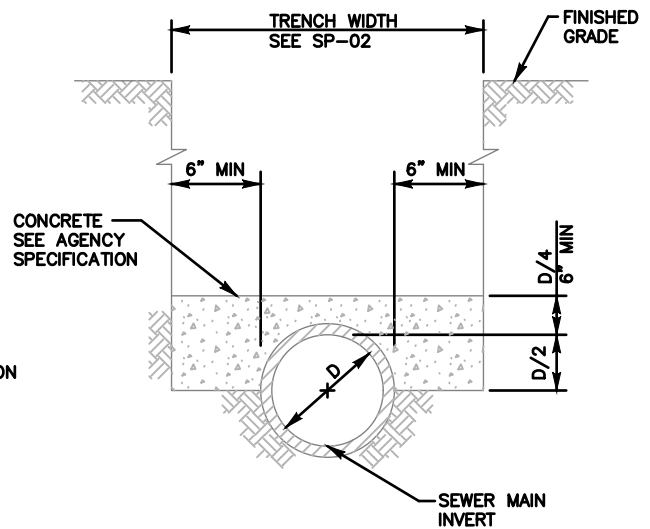
NOTES:

- 1) REFER TO AGENCY SPECIFICATIONS FOR TRENCHING, BACKFILLING AND COMPACTING WHERE APPLICABLE
- 2) PAVING OR PAVEMENT REPAIR TO BE DONE IN ACCORDANCE WITH AGENCY OF JURISDICTION
- 3) EXCAVATE BELL HOLES AT EACH JOINT TO PERMIT PROPER ASSEMBLY AND INSPECTION OF THE ENTIRE JOINT
- 4) FILTER FABRIC AS REQUIRED BY AGENCY OF JURISDICTION (WITH A MINIMUM 12" OVERLAP).

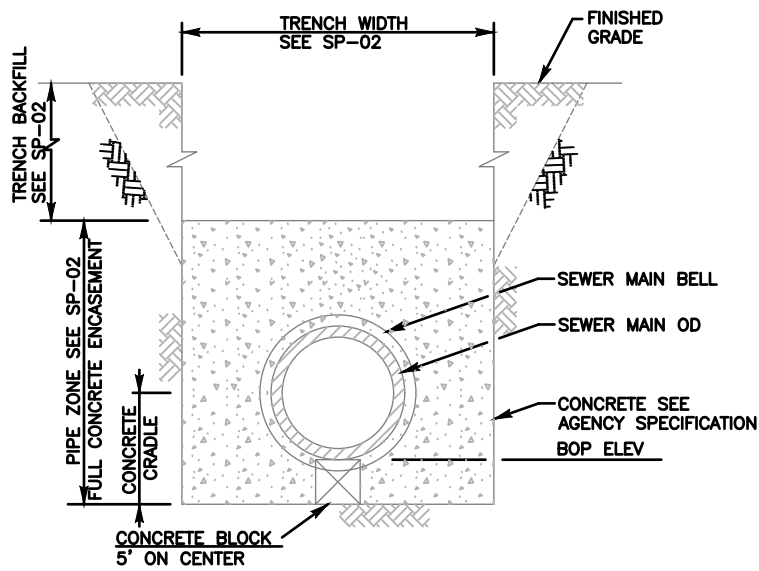
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		<p>PIPE BEDDING AND TRENCH BACKFILL FOR SEWER FACILITIES</p>
Replaced S-04		J. Tomasulo	03/05	DRAWING NUMBER	
Delete Metric	MR	B. KNOLL	03/11	SP-02	
Reviewed	BK	B. KNOLL	04/15		
Reviewed	BK	B. KNOLL	10/18		



TRENCH SECTION  
CONCRETE PIPE CRADLE



TRENCH SECTION  
CONCRETE PROTECTION



TRENCH SECTION  
CONCRETE PIPE ENCASEMENT

NOTES:

- 1) REFER TO AGENCY SPECIFICATIONS FOR TRENCHING, BACKFILLING AND COMPACTING WHERE APPLICABLE
- 2) CONCRETE CRADLE SHALL BE USED WHEN THE TRENCH WIDTH AT THE UPPER LIMIT OF THE PIPE ZONE EXCEEDS THE MAX WIDTH SPECIFIED ON SP-02 AND OR DIRECTED BY AGENCY'S ENGINEER
- 3) FOR PIPE BEDDING AND TRENCH BACKFILL SEE SP-02



LEGEND ON PLANS

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Replaced S-06		J. Tomasulo	03/05
Delete Metric	MR	B. KNOLL	03/11
Reviewed	BK	B. KNOLL	04/15
Reviewed	BK	B. KNOLL	10/18

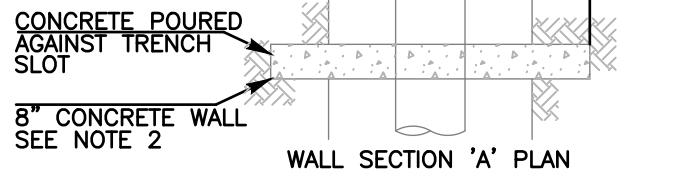
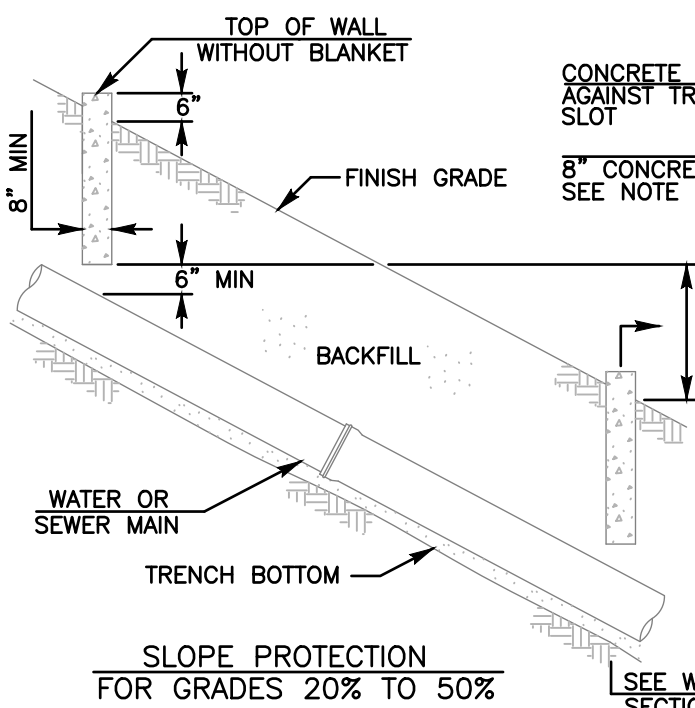
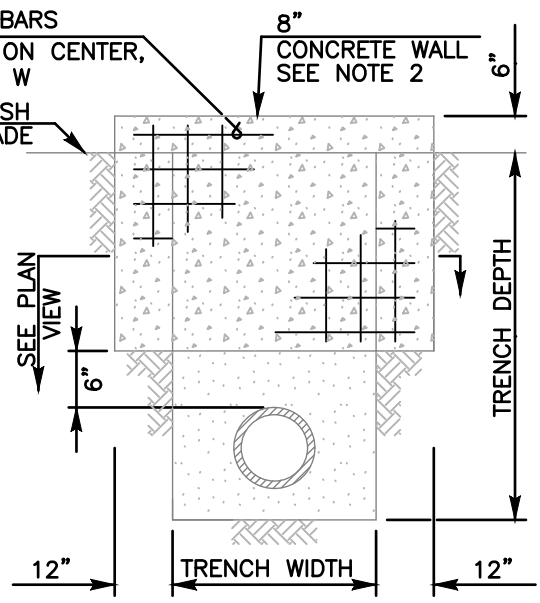
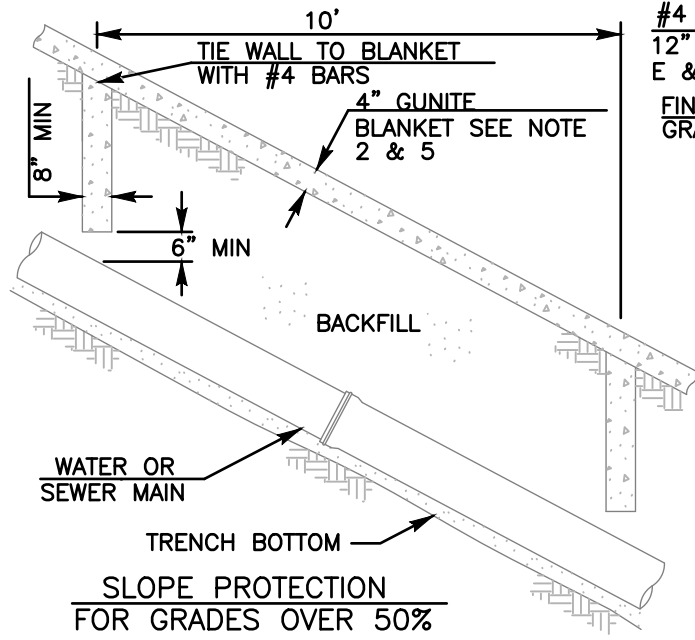
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE PROTECTION FOR  
SEWER PIPE

RECOMMENDED BY THE SAN DIEGO  
REGIONAL STANDARDS COMMITTEE

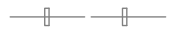
*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER SP-03



NOTES:

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) THE DETAILS SHOWN REPRESENT THE MINIMUM REQUIRED. THE ENGINEER OF WORK IS REQUIRED TO PROVIDE A SUBMITTAL TO THE AGENCY OF JURISDICTION FOR REVIEW AND APPROVAL BY THE AGENCY'S ENGINEER PRIOR TO INSTALLATION
- 3) WALLS SHALL BE REINFORCED CONCRETE OR 8" x 8" x 16" CONCRETE BLOCK, REINFORCED AND ALL CORES FILLED WITH GROUT SEE SPECIFICATIONS
- 4) FOR GRADES OVER 50%, SLOPE PROTECTION SHALL ALSO INCLUDE AC PAVING, CONCRETE SLAB OR GUNITE BLANKET PLACED OVER THE PIPELINE ALIGNMENT
- 5) 4" GUNITE BLANKET WITH 6" SQUARE x 10 GAGE WIRE FABRIC AT THE ENGINEERS DISCRETION



LEGEND ON PLANS

Revision	By	Approved	Date
ORIGINAL		J. Tomasulo	03/05
Delete Metric	MR	B. KNOLL	03/11
Reviewed	BK	B. KNOLL	04/15
Reviewed	BK	B. KNOLL	10/18

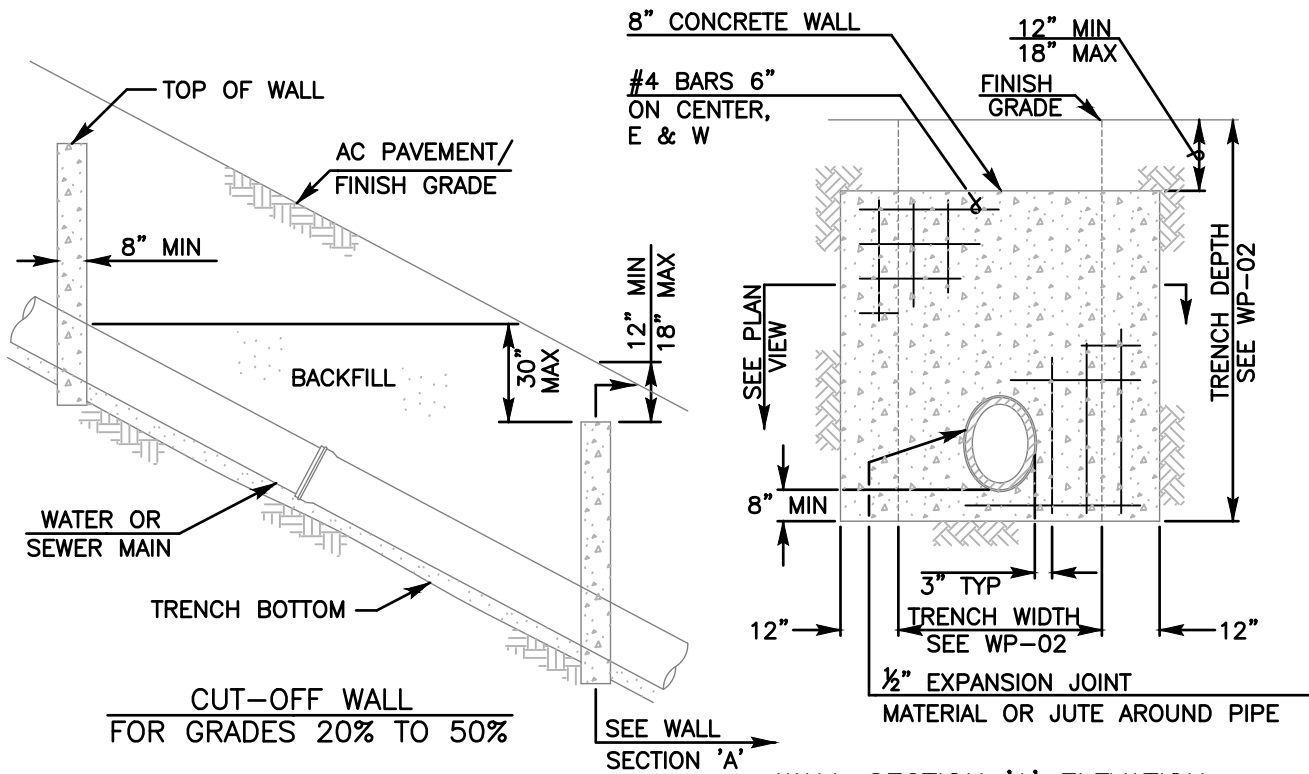
SAN DIEGO REGIONAL STANDARD DRAWING

SLOPE PROTECTION INSTALLATIONS

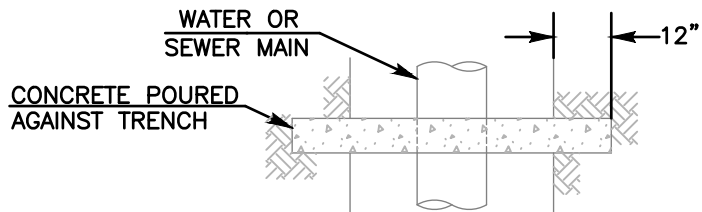
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER SP-05



WALL SECTION 'A' ELEVATION



WALL SECTION 'A' PLAN

**NOTES:**

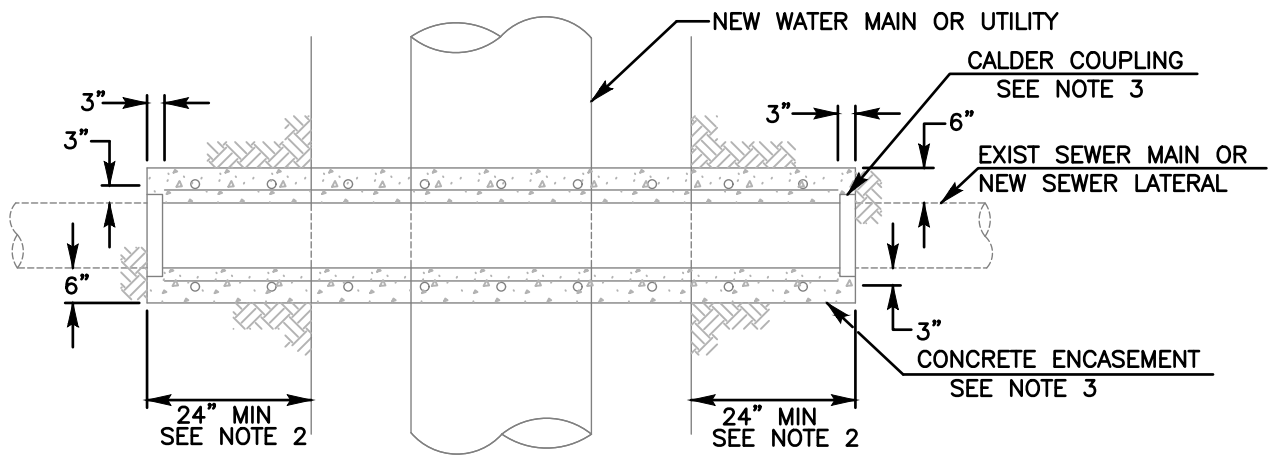
- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) FOR USE AS TRENCH BACKFILL STABILIZATION IN TRAVELED AREAS
- 3) THE DETAILS SHOWN REPRESENT THE MINIMUM REQUIRED. THE ENGINEER OF WORK IS REQUIRED TO PROVIDE A SUBMITTAL TO THE AGENCY OF JURISDICTION FOR REVIEW AND APPROVAL BY THE AGENCY'S ENGINEER PRIOR TO INSTALLATION
- 4) WALLS SHALL BE REINFORCED CONCRETE OR 8" x 8" x 16" CONCRETE BLOCK, REINFORCED AND ALL CORES FILLED WITH GROUT SEE SPECIFICATIONS (HOR. 2-#4@32", VERT. 1-#4@8")
- 5) FOR GRADES OVER 50% SEE WP-05/SP-05



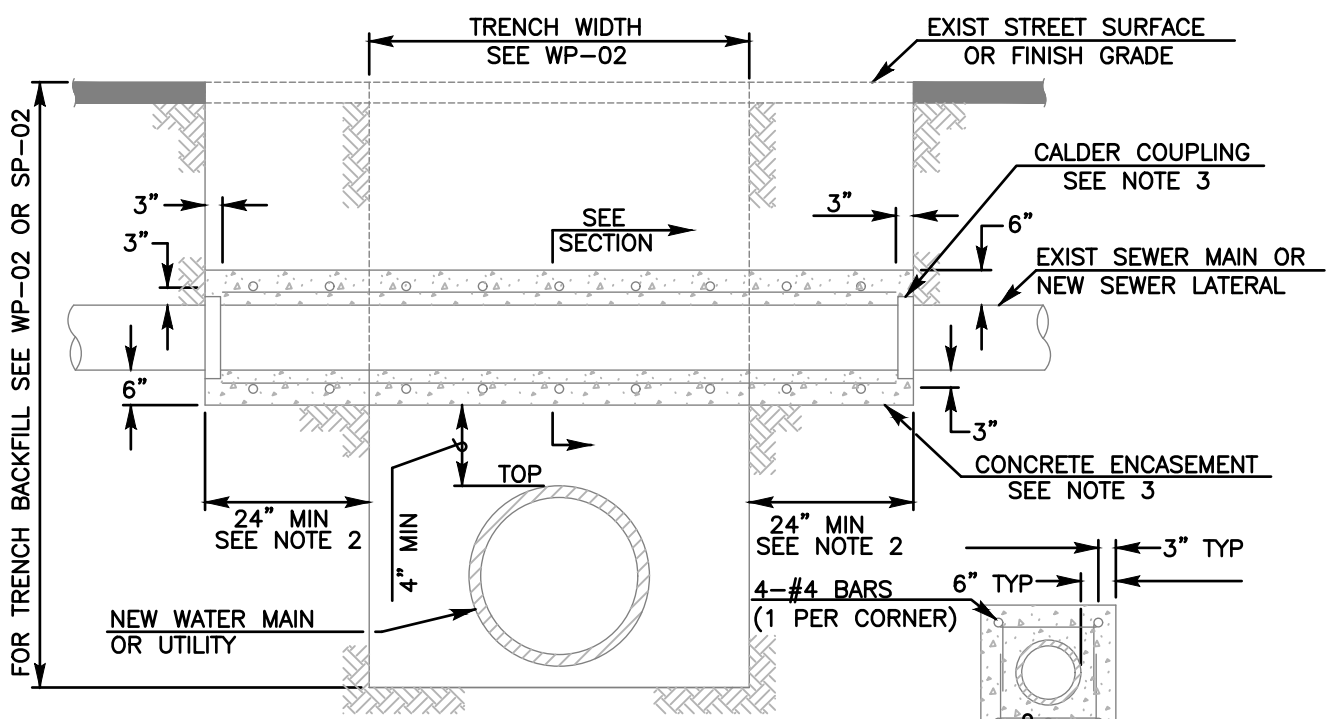
LEGEND ON PLANS

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		J. Tomasulo	03/05	CUT-OFF WALL INSTALLATION IN TRAVELED AREAS		 Chairperson R.C.E. 19246 Date 10/25/2018
Delete Metric	MR	B. KNOLL	04/11			
Note 4	BK	B. KNOLL	04/15			
Reviewed	BK	B. KNOLL	10/18			
				DRAWING NUMBER	SP-07	





PLAN



ELEVATION



ENCASEMENT SECTION

NOTES:

- 1) REFER TO AGENCY SPECIFICATIONS FOR PROTECTION OF EXISTING FACILITIES
- 2) ENCASEMENT SHALL EXTEND TO FIRST JOINT BEYOND BOTH SIDES OF TRENCH (24" MIN, 48" MAX OF SUITABLE NATIVE SUPPORT BEYOND EDGE OF TRENCH).
- 3) CONCRETE ENCASEMENT REQUIRED FOR SEWER MAINS ONLY. CALDER COUPLINGS REQUIRED FOR SEWER LATERALS ONLY. SEWER LATERALS TO BE REPLACED WITH SCH. 80 PVC WITH NO INTERMEDIATE JOINTS.
- 4) FOR PIPE BEDDING AND TRENCH BACKFILL SEE WP-02 OR SP-02.

LEGEND ON PLANS

Revision	By	Approved	Date
ORIGINAL		J. Tomasulo	03/05
Delete Metric	MR	B. KNOLL	03/11
Reviewed	BK	B. KNOLL	04/15
Reviewed	BK	B. KNOLL	10/18

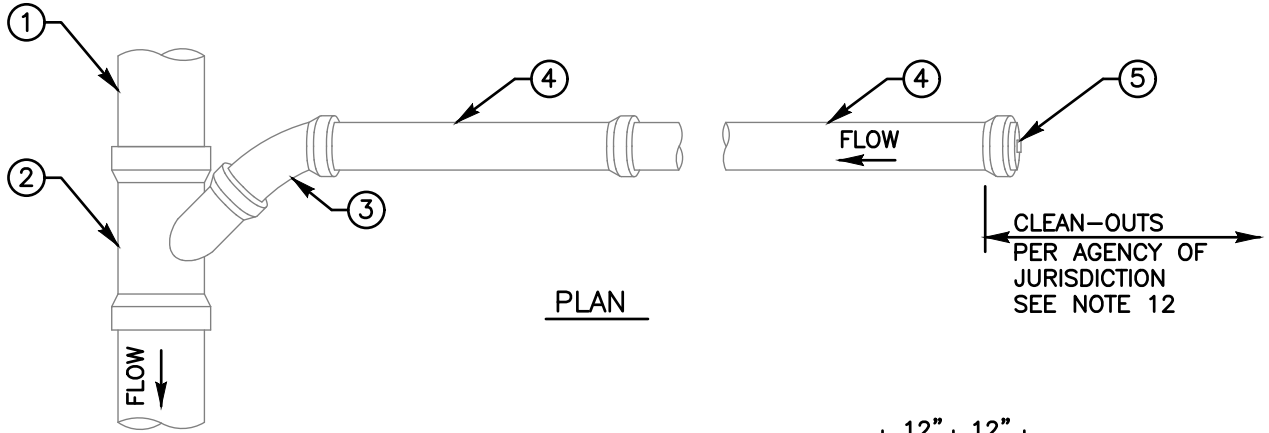
SAN DIEGO REGIONAL STANDARD DRAWING

PIPE SUPPORT FOR UNDERCUT  
SEWER MAINS OR SEWER LATERALS

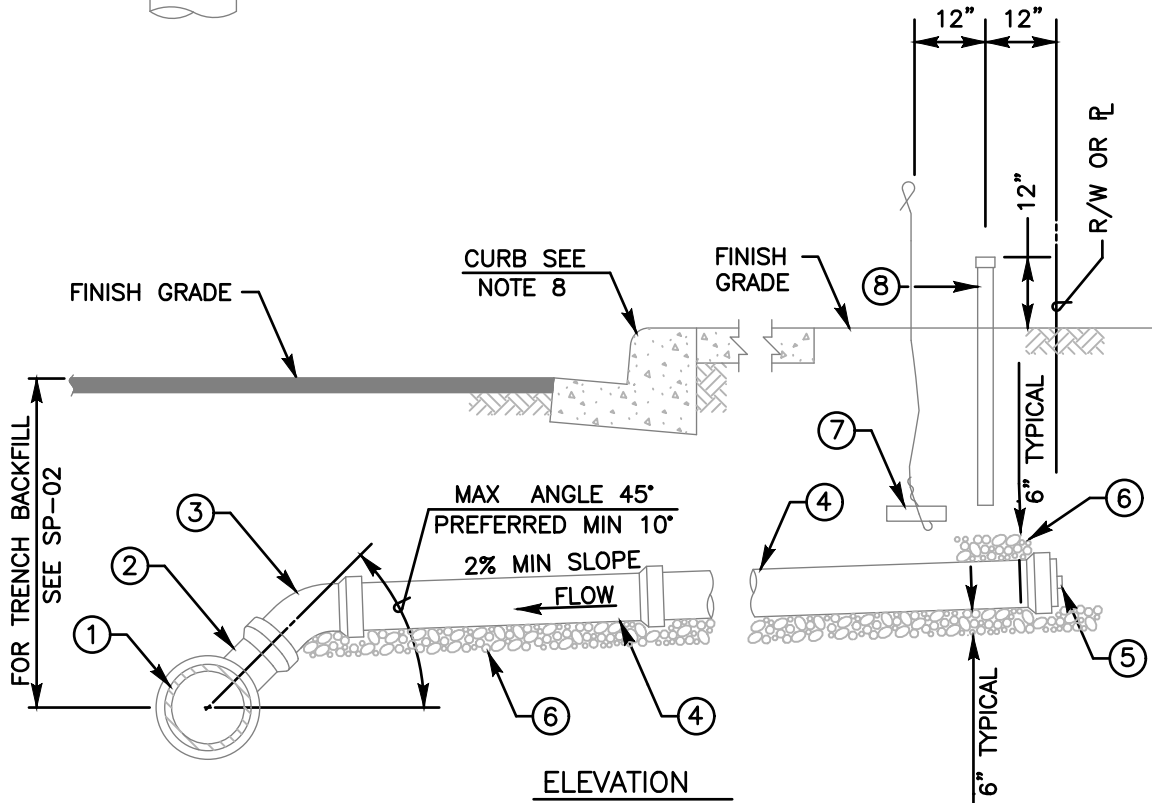
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER SP-09



PLAN



ELEVATION

(INDICATE SIZE)

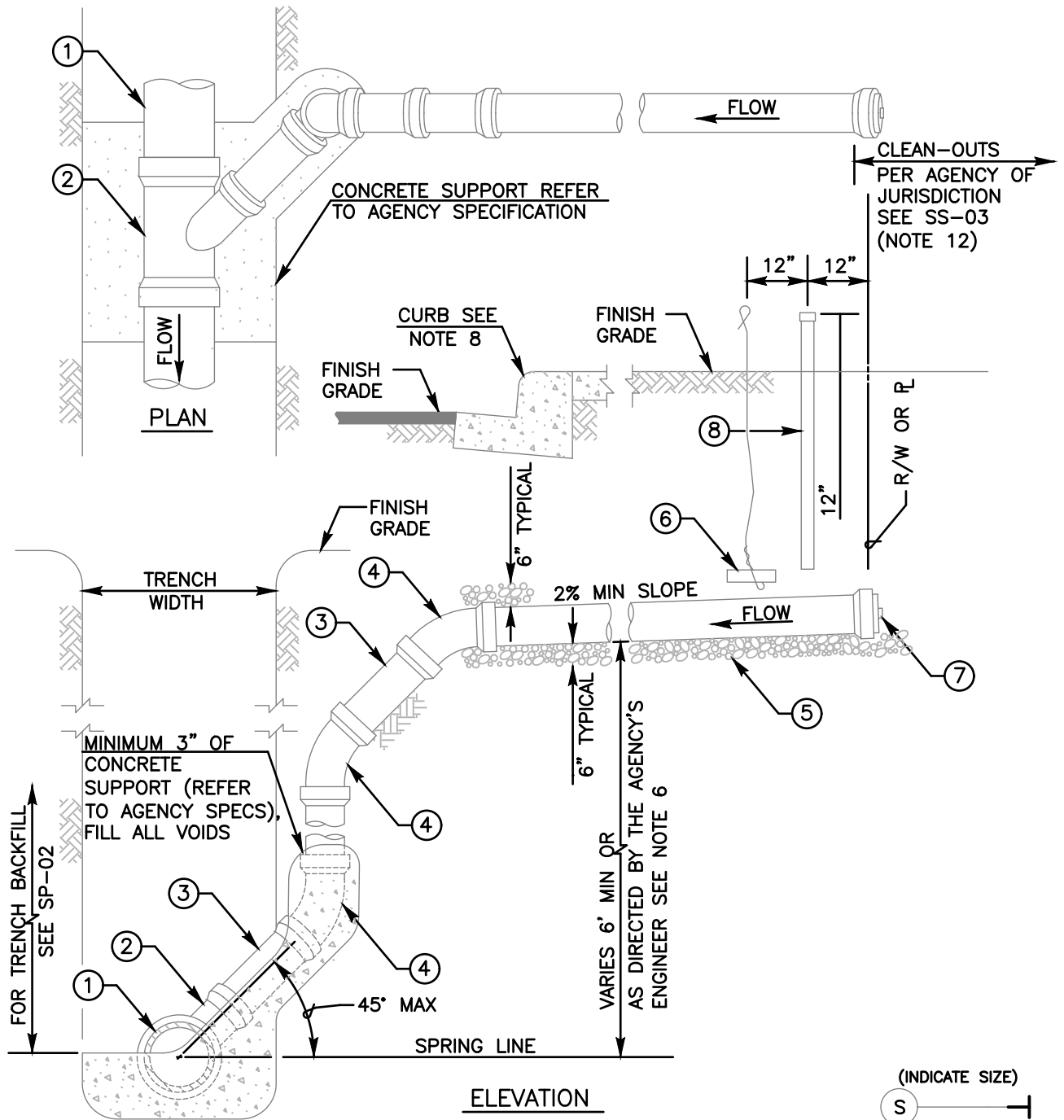


LEGEND ON PLANS

FOR SEWER LATERAL NOTES SEE DETAIL SS-03

ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	SEWER MAIN	⑤	PLUG OR CAP
②	45° WYE	⑥	3/4" MAXIMUM CRUSHED ROCK
③	45° ELBOW	⑦	#9 WIRE ATTACHED TO A BRICK
④	PIPE LATERAL SEE NOTE 3 & 5	⑧	4" PVC PIPE WITH GLUED CAP

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75	4" AND 6" SEWER LATERAL INSTALLATION		 10/25/2018 Chairperson R.C.E. 19246 Date
Replaced S-13		J. Tomasulo	03/05			
Delete Metric	MR	B. KNOLL	03/11			
Reviewed	BK	B. KNOLL	04/15			
Reviewed	BK	B. KNOLL	10/18			
				DRAWING NUMBER	SS-01	

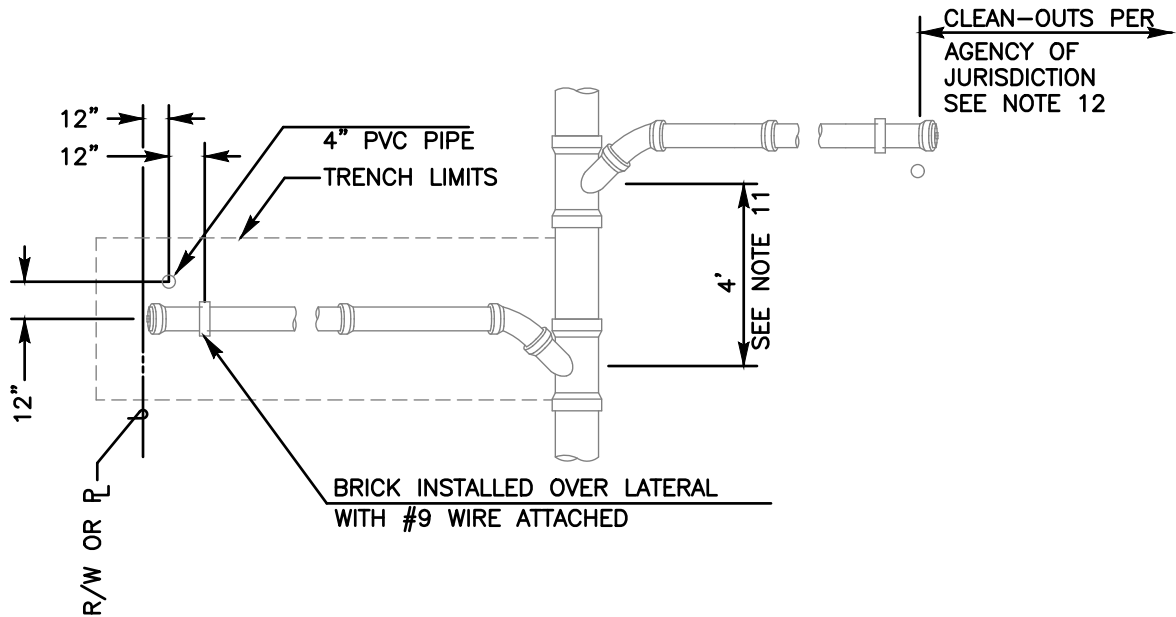


FOR SEWER LATERAL NOTES SEE DETAIL SS-03

(INDICATE SIZE)  
 S ———— |  
 LEGEND ON PLANS

ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	SEWER MAIN	⑤	3/4" MAXIMUM CRUSHED ROCK
②	45° WYE	⑥	#9 WIRE ATTACHED TO A BRICK
③	PIPE	⑦	PLUG OR CAP
④	45° ELBOW	⑧	4" PVC PIPE WITH GLUED CAP

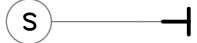
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75	4" AND 6" DEEP-CUT SEWER LATERAL INSTALLATION		 Chairperson R.C.E. 19246 Date 10/25/2018
Add Metric		T. Stanton	03/03			
Replaced S-14		J. Tomasulo	03/05			
Delete Metric	MR	B. KNOLL	03/11			
Reviewed	BK	B. KNOLL	10/18			
						DRAWING NUMBER SS-02



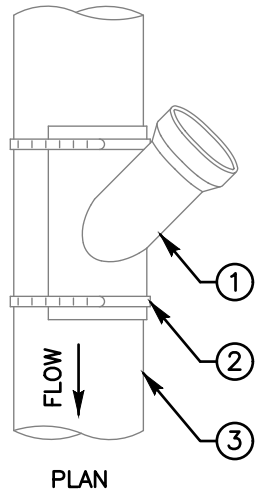
SEWER LATERAL DETAIL  
SEE NOTE 10 BELOW

NOTES:

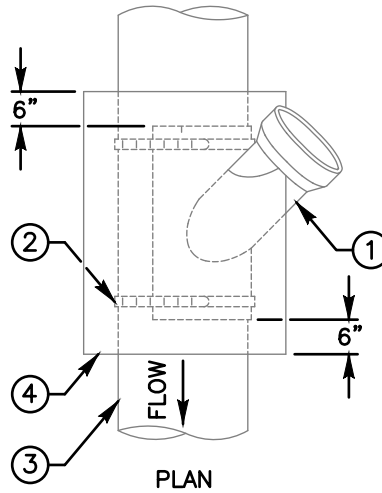
- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) IN NO CASE SHALL LATERAL CONNECT DIRECTLY ON TOP OF SEWER MAIN
- 3) LATERAL SHALL BE INSTALLED TO PROPERTY LINE UNLESS SPECIFIED ON PLANS
- 4) MINIMUM 4' COVER ABOVE LATERAL AT PROPERTY LINE
- 5) LATERAL TO HAVE A MINIMUM SLOPE OF 2%
- 6) VERTICAL PIPE SHALL BE BRACED WHILE BACKFILLING TRENCH
- 7) INSTALL WARNING/IDENTIFICATION TAPE AS SHOWN ON SP-01
- 8) STAMP OR CHISEL A 2" HIGH "S" IN CURB FACE OVER LATERAL TO IDENTIFY SEWER LATERAL LOCATION
- 9) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST
- 10) FOR SEWER LATERAL INSTALLATIONS SEE SS-01 AND SS-02
- 11) FOR SEWERS SPECIFIED AS PVC PIPE, A MINIMUM 3' SECTION OF PIPE IS REQUIRED BETWEEN FITTINGS
- 12) SEWER CLEAN-OUT SEE SC-01 TYPE B AS REQUIRED BY AGENCY OF JURISDICTION

(INDICATE SIZE)  
  
 LEGEND ON PLANS

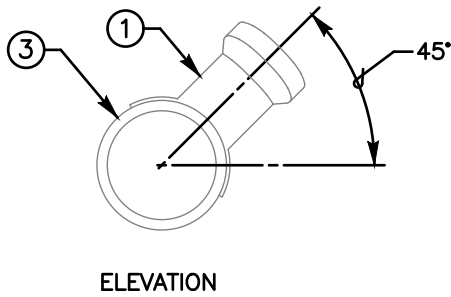
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Add Metric		T. Stanton	03/03		
Replaced S-13		J. Tomasulo	03/05		
Delete Metric	MR	B. KNOLL	03/11		
Reviewed	BK	B. KNOLL	10/18		
				DRAWING NUMBER	SS-03



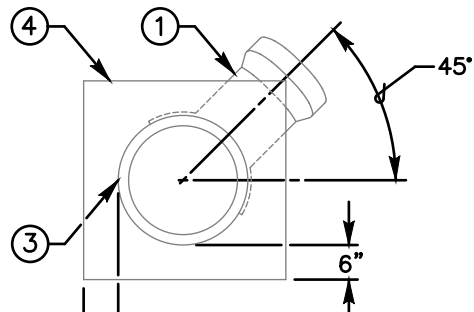
PLAN



PLAN



ELEVATION



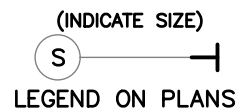
ELEVATION

CUT IN WYE CONNECTION  
TYPE A


CUT IN WYE CONNECTION  
TYPE B

NOTES:

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) CONNECTIONS TO EXISTING SEWER MAINS TO BE MADE BY AGENCY PERSONNEL IN ACCORDANCE WITH SPECIFICATIONS UNLESS OTHERWISE NOTED ON PLANS
- 3) IN NO CASE SHALL CONNECTION BE MADE DIRECTLY ON TOP OF SEWER MAIN
- 4) NO MORE THAN ONE CUT IN WYE WILL BE ALLOWED FOR EACH LENGTH OF EXISTING VCP SEWER MAIN
- 5) FOR SEWER LATERAL INSTALLATION SEE SS-01 AND SS-02
- 6) FOR TRENCH BACKFILL SEE SP-02
- 7) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST



ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	45° SADDLE WYE WITH GASKET	③	EXISTING SEWER MAIN
②	STAINLESS STEEL HOSE CLAMPS (2-EACH)	④	CONCRETE ENCASUREMENT

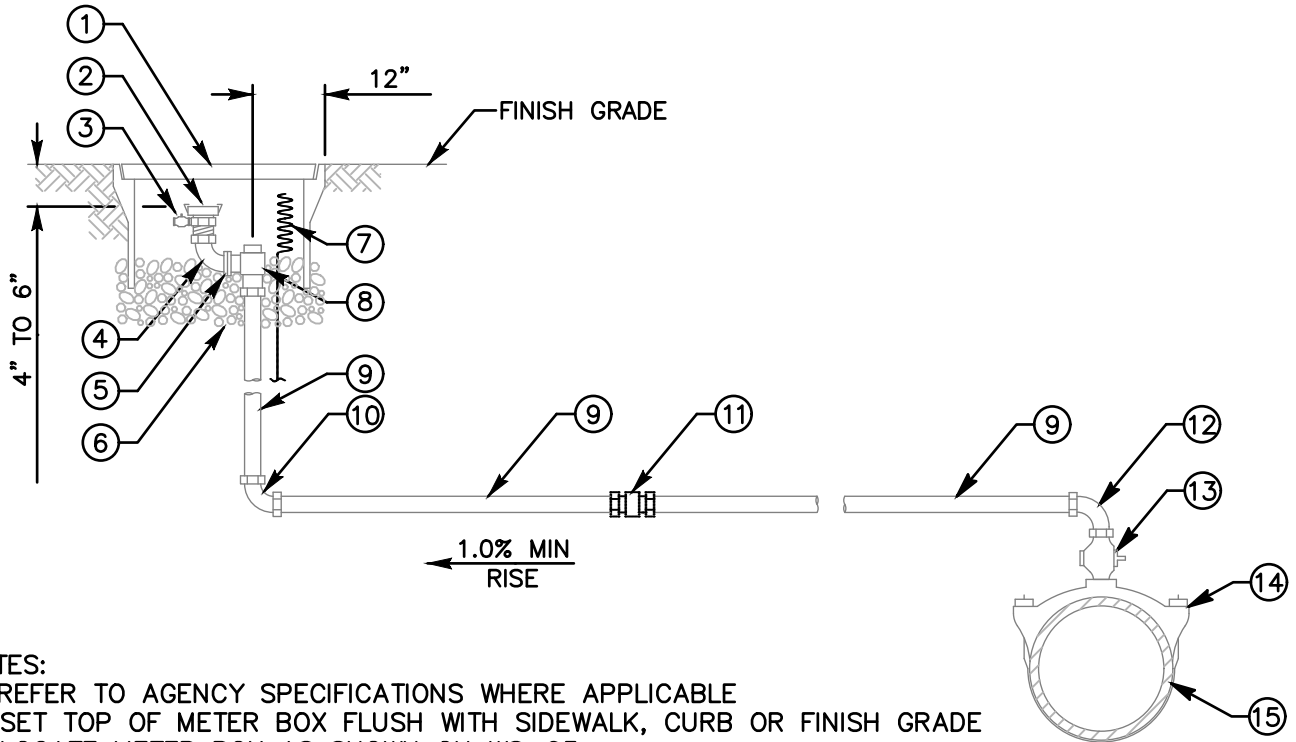
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		4" AND 6" SEWER CUT-IN WYE CONNECTIONS
Replaced S-13		J. Tomasulo	03/05		
Delete Metric	MR	B. KNOLL	03/11		
Reviewed	BK	B. KNOLL	04/15		
Reviewed	BK	B. KNOLL	10/18		
					 10/25/2018 Chairperson R.C.E. 19246 Date
					DRAWING NUMBER SS-04

# WATER SYSTEMS



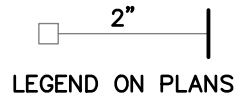
WATER SYSTEMS

W




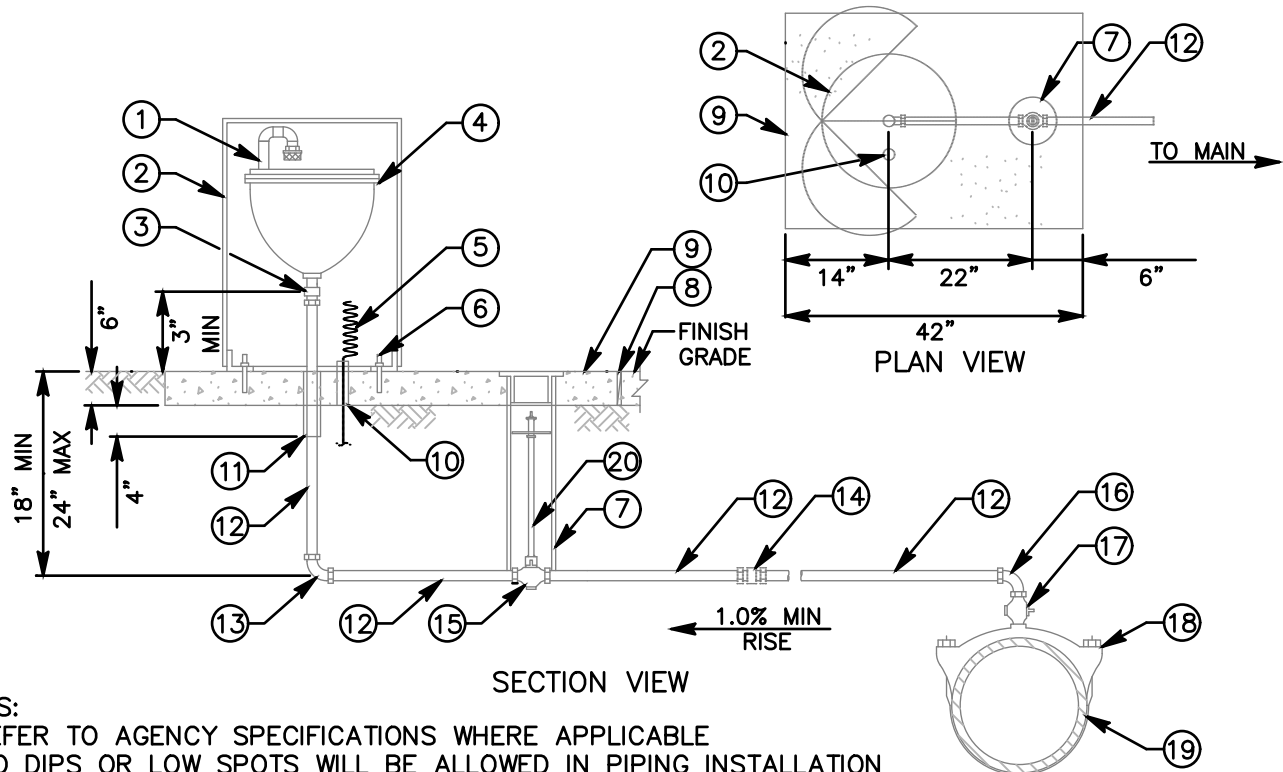
**NOTES:**

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) SET TOP OF METER BOX FLUSH WITH SIDEWALK, CURB OR FINISH GRADE
- 3) LOCATE METER BOX AS SHOWN ON WS-03
- 4) INSTALL WARNING/IDENTIFICATION TAPE AS SHOWN ON WP-01
- 5) MANUAL AIR VALVE INSTALLATION AT END OF MAIN TO BE SADDLED 24" FROM END CAP
- 6) MANUAL AIR VALVE ASSEMBLIES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN AGENCY'S SPECIFICATIONS
- 7) ON STEEL MAINS USE WELD ON COUPLINGS, ON DUCTILE IRON MAINS USE DUCTILE IRON SERVICE SADDLES (INSULATING BUSHINGS ARE REQUIRED)
- 8) CAM & GROOVE ADAPTER SHALL BE DRILLED AND TAPPED AS REQUIRED FOR THE PRESSURE RELEASE PET COCK
- 9) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST



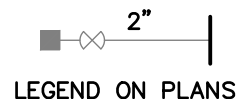
ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	POLYMER METER BOX WITH LID 17" x 30", SEE NOTE 3	⑧	2" BRONZE COMP x FLG ANGLE METER STOP WITH LOCK WING
②	2" CAM & GROOVE ADAPTER x MIPT WITH LOCKING DUST CAP, SEE NOTE 8	⑨	2" x REQUIRED LENGTH COPPER PIPE TYPE "K" RIGID OR SOFT
③	1/4" PRESSURE PET COCK	⑩	2" 90° BRONZE COMPRESSION ELL
④	2" 90° BRONZE MIPT x FIPT ELL	⑪	2" BRONZE COMPRESSION COUPLING COPPER TO COPPER (IF REQUIRED)
⑤	2" OVAL METER FLANGE FLG x FIPT, WITH GASKET	⑫	2" 90° BRONZE FIPT x COMP ELL
⑥	3/8" ROCK 4" TO 6" DEEP	⑬	2" BRONZE MIPT x MIPT CORPORATION STOP
⑦	TRACER WIRE (AS REQUIRED), SEE WP-01	⑭	SIZE x 2" SERVICE SADDLE
		⑮	WATER MAIN

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING  2" MANUAL AIR VALVE	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE   Chairperson R.C.E. 19246 Date 10/25/2018
ORIGINAL		Kercheval	12/75		
Add Metric		T. Stanton	03/03		
Replaced W-03		J. Tomasulo	10/04		
Delete Metric	MR	B. KNOLL	03/11		
Updated	BK	B. KNOLL	10/18	DRAWING NUMBER	WA-01




**NOTES:**

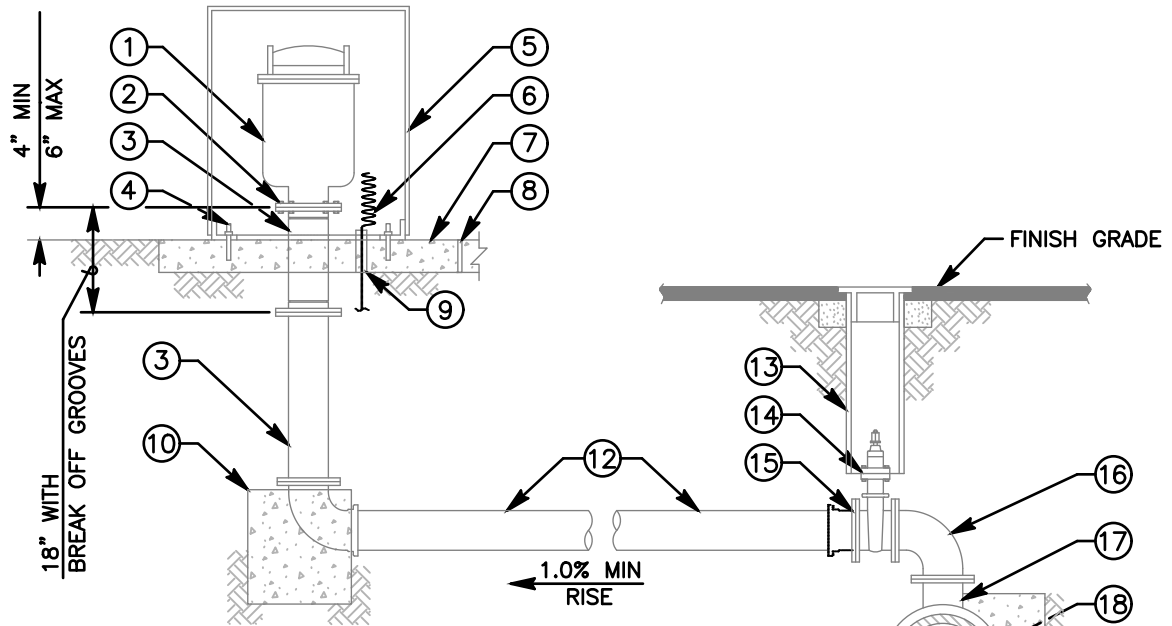
- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) NO DIPS OR LOW SPOTS WILL BE ALLOWED IN PIPING INSTALLATION
- 3) LOCATE ENCLOSURE AS SHOWN ON WA-06
- 4) INSTALL WARNING/IDENTIFICATION TAPE AS SHOWN ON WP-01
- 5) AIR & VACUUM VALVES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN AGENCY'S SPECIFICATIONS
- 6) ON STEEL MAINS USE WELD ON COUPLINGS, ON DUCTILE IRON MAINS USE DUCTILE IRON SERVICE SADDLES (INSULATING BUSHINGS ARE REQUIRED)
- 7) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST



ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	2" PVC SCH 80 CLOSE NIPPLE & 2-SCH 80 STREET ELLS & INSECT SCREEN	⑪	2" x 1/2" BLACK FOAM SLEEVE
②	VALVE ENCLOSURE	⑫	2" x REQUIRED LENGTH COPPER PIPE TYPE "K" RIGID OR SOFT
③	2" MIPT x COMPRESSION ADAPTER	⑬	2" 90° BRONZE COMPRESSION ELL
④	2" AUTOMATIC COMBINATION AIR RELEASE & AIR/VACUUM VALVE	⑭	2" BRONZE COMPRESSION COUPLING COPPER TO COPPER (IF REQUIRED)
⑤	TRACER WIRE (AS REQUIRED), SEE WP-01	⑮	2" COMP BALL VALVE W/ TEE HEAD
⑥	1/2" x 3" STAINLESS STEEL DROP-IN ANCHORS (3 EA @ 120° APART)	⑯	2" 90° BRONZE FIPT x COMP ELL
⑦	4" SDR 35 SEWER PIPE GATE WELL WITH CAP	⑰	2" BRONZE MIPT x MIPT CORPORATION STOP
⑧	COLD JOINT STRIP	⑱	SIZE x 2" SERVICE SADDLE
⑨	3'-6" x 2'-6" x 6" THICK CONCRETE SLAB	⑲	WATER MAIN
⑩	1" PVC CONDUIT FOR TRACER WIRE INSTALLED 2" ABOVE SLAB	⑳	VALVE STEM EXTENSION, SEE WV-05

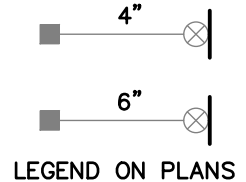
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75			
Add Metric		T. Stanton	03/03	2" AUTOMATIC COMBINATION AIR RELEASE & AIR/VACUUM VALVE INSTALLATIONS	 Chairperson R.C.E. 19246 Date 10/25/2018	
Replaced W-04		J. Tomasulo	10/04			
Delete Metric	MR	B. KNOLL	03/11			
Updated	BK	B. KNOLL	10/18			
					DRAWING NUMBER	WA-02





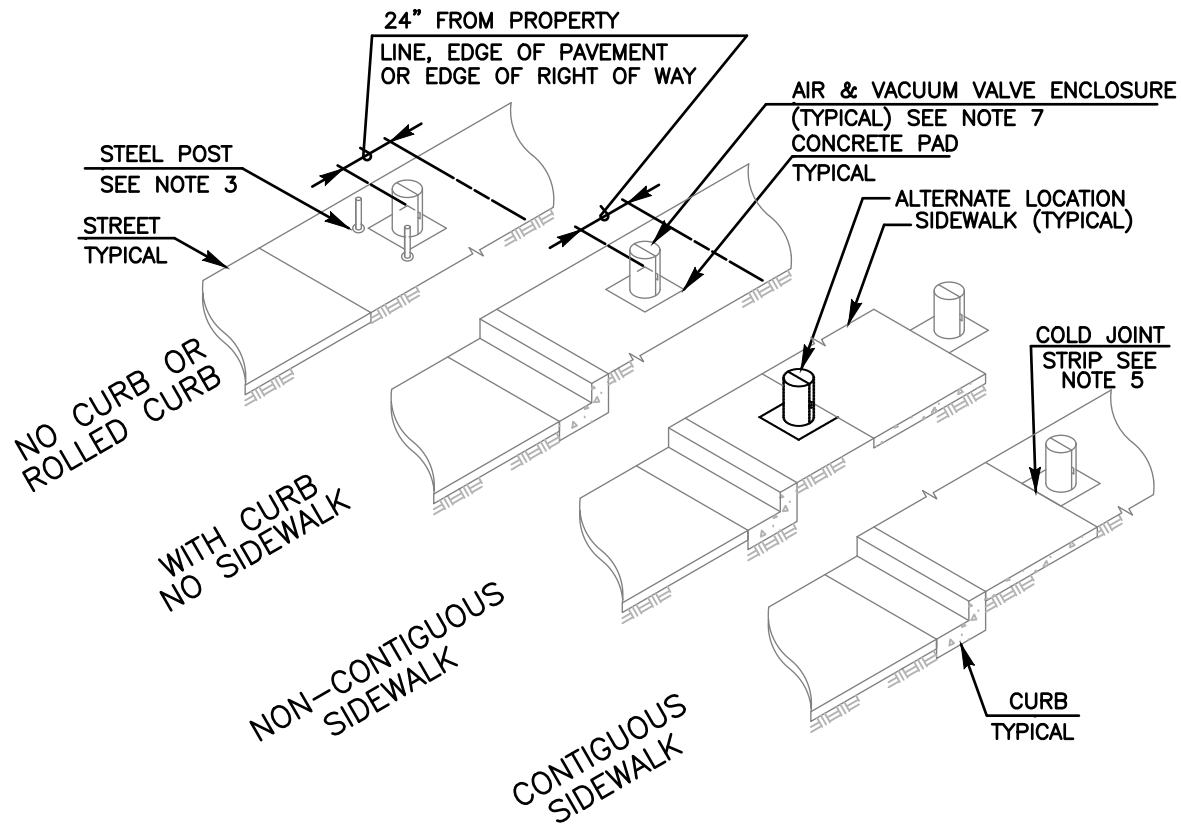
**NOTES:**

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) NO DIPS OR LOW SPOTS WILL BE ALLOWED IN PIPING INSTALLATION
- 3) LOCATE ENCLOSURE AS SHOWN ON WA-06
- 4) INSTALL WARNING/IDENTIFICATION TAPE AS SHOWN ON WP-01
- 5) BREAK-AWAY BOLTS SHALL BE 5/8" x 3" WITH 3/8" HOLE DRILLED IN THE SHAFT OF THE BOLT. INSTALL WITH NUTS ON TOP OF THE FLANGE. BOLT SHAFT SHALL BE FILLED WITH SILICONE SEALANT
- 6) AIR & VACUUM VALVES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN AGENCY'S SPECIFICATIONS
- 7) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST



ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	4" OR 6" AUTOMATIC COMBINATION AIR RELEASE & AIR/VACUUM VALVE ASSEMBLY	⑩	CONCRETE THRUST/ANCHOR BLOCK SEE WT-01
②	BREAK-AWAY BOLTS, SEE NOTE 5	⑪	4" OR 6" FLG x MJ/PO 90° BEND
③	4" OR 6" FLANGED 8-BOLT DUCTILE IRON PIPE x REQ'D LENGTH (MAX OF 2 SPOOLS)	⑫	4" OR 6" C-900 PVC PIPE
④	5/8" x 3" STAINLESS STEEL DROP-IN ANCHORS (3 EA @ 120° APART)	⑬	GATE WELL WITH CAP SEE WV-01 OR WV-02
⑤	VALVE ENCLOSURE	⑭	4" OR 6" FLG x MJ/PO/FLG RWGV
⑥	TRACER WIRE (AS REQUIRED), SEE WP-01	⑮	4" OR 6" FLG x MJ/PO ADAPTER (IF REQUIRED)
⑦	42" x 42" x 6" THICK CONCRETE SLAB	⑯	4" OR 6" FLANGE 90° BEND
⑧	COLD JOINT STRIP	⑰	SIZE x 4" OR 6" MJ/PO/FLG x FLG TEE
⑨	1" PVC CONDUIT FOR TRACER WIRE INSTALLED 2" ABOVE SLAB	⑱	WATER MAIN

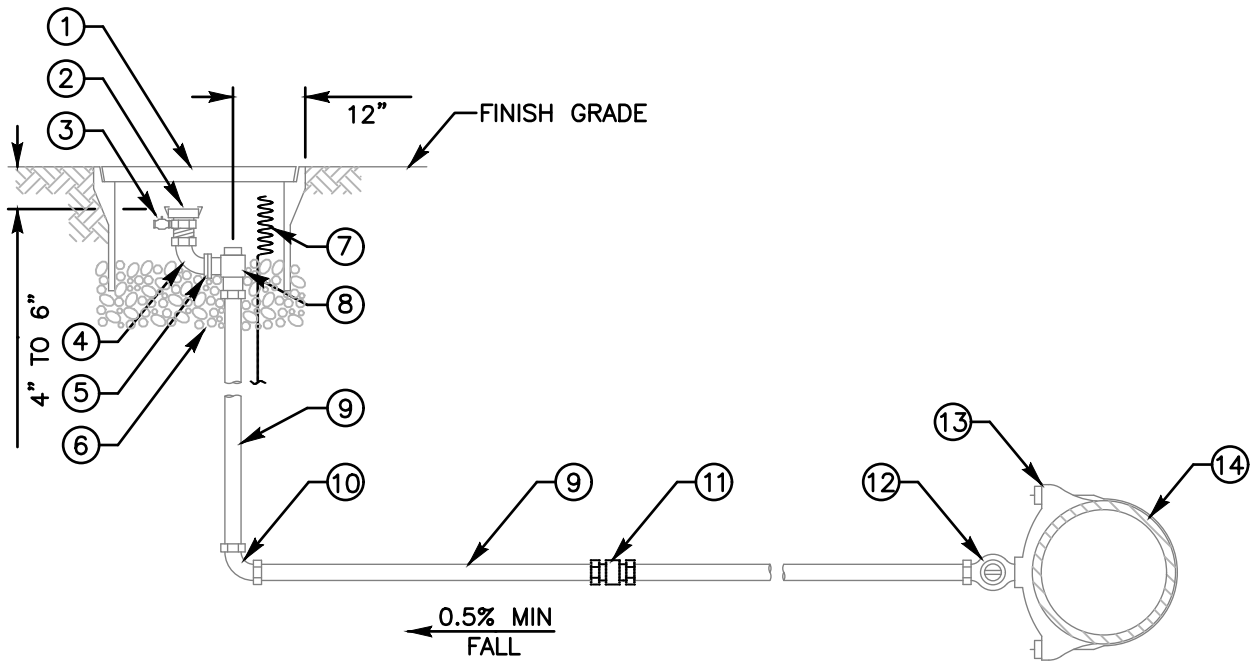
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75			
Add Metric		T. Stanton	03/03	4" & 6" AUTOMATIC COMBINATION AIR RELEASE & AIR/VACUUM VALVE INSTALLATIONS	 Chairperson R.C.E. 19246 Date 10/25/2018	
Replaced W-05		J. Tomasulo	10/04			
Delete Metric	MR	B. KNOLL	03/11			
Updated	BK	B. KNOLL	10/18			
					DRAWING NUMBER	WA-04



**NOTES:**

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) REFER TO WA-02 AND WA-04
- 3) PROTECTION POSTS SHALL BE INSTALLED AS CALLED FOR ON THE PLANS OR AS DIRECTED BY THE ENGINEER PER WM-04
- 4) AN EASEMENT MAY BE NEEDED DEPENDING ON LOCATION OF ENCLOSURE
- 5) IF THE CONCRETE SLAB IS TO BE INSTALLED ADJACENT TO A CONCRETE CURB OR SIDEWALK A COLD JOINT STRIP SHALL BE INSTALLED
- 6) AIR & VACUUM VALVES & APPURTENANCES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN THE AGENCY'S SPECIFICATIONS
- 7) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		<b>AIR &amp; VACUUM VALVE ENCLOSURE LOCATIONS</b>
Add Metric		T. Stanton	03/03		
Replaced W-14		J. Tomasulo	10/04		
Delete Metric	MR	B. KNOLL	03/11		
Updated	BK	B. KNOLL	10/18		
				DRAWING NUMBER	



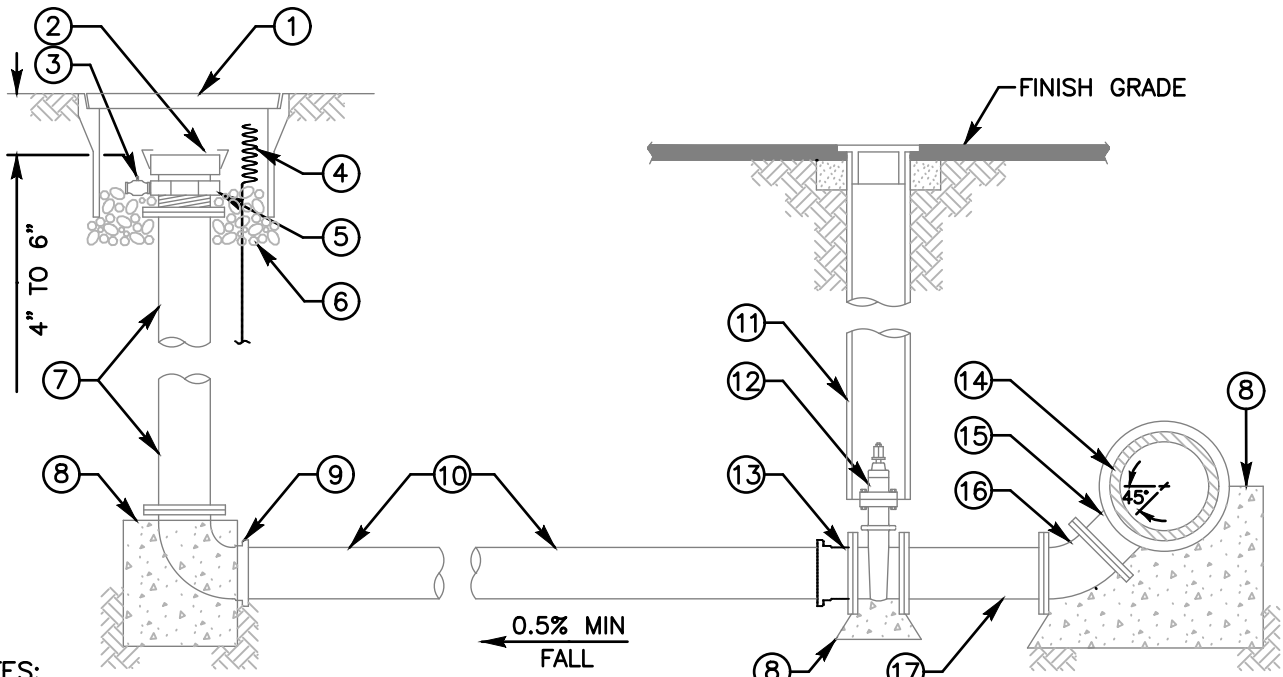
**NOTES:**

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) SET TOP OF METER BOX FLUSH WITH SIDEWALK, CURB OR FINISH GRADE
- 3) LOCATE METER BOX AS SHOWN ON WS-03
- 4) INSTALL WARNING/IDENTIFICATION TAPE AS SHOWN ON WP-01
- 5) FOR BLOW-OFF INSTALLATION AT END OF MAIN SEE WB-04
- 6) BLOW-OFF ASSEMBLIES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN AGENCY'S SPECIFICATIONS
- 7) ON STEEL MAINS USE WELD ON COUPLINGS, ON DUCTILE IRON MAINS USE DUCTILE IRON SERVICE SADDLES (INSULATING BUSHINGS ARE REQUIRED)
- 8) CAM & GROOVE ADAPTER SHALL BE DRILLED AND TAPPED AS REQUIRED FOR THE PRESSURE PET COCK
- 9) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST

2" LEGEND ON PLANS

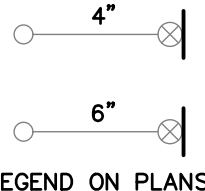
ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	POLYMER METER BOX WITH LID 17" x 30", SEE NOTE 3	⑧	2" BRONZE COMP x FLG ANGLE METER STOP WITH LOCK WING
②	2" CAM & GROOVE ADAPTER x MIPT WITH LOCKING DUST CAP, SEE NOTE 8	⑨	2" x REQUIRED LENGTH COPPER PIPE TYPE "K" RIGID OR SOFT
③	1/4" PRESSURE PET COCK	⑩	2" 90° BRONZE COMPRESSION ELL
④	2" 90° BRONZE MIPT x FIPT ELL	⑪	2" BRONZE COMPRESSION COUPLING COPPER TO COPPER (IF REQUIRED)
⑤	2" OVAL METER FLANGE FLG x FIPT, WITH GASKET	⑫	2" BRONZE MIPT x COMP CORPORATION STOP
⑥	3/8" ROCK 4" TO 6" DEEP	⑬	SIZE x 2" SERVICE SADDLE
⑦	TRACER WIRE (AS REQUIRED), SEE WP-01	⑭	WATER MAIN

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75		2" BLOW-OFF INSTALLATION	10/25/2018
Add Metric		T. Stanton	03/03	Chairperson R.C.E. 19246 Date		
Replaced W-06		J. Tomasulo	10/04	DRAWING NUMBER		WB-01
Delete Metric	MR	B. KNOLL	03/11			
Updated	BK	B. KNOLL	10/18			



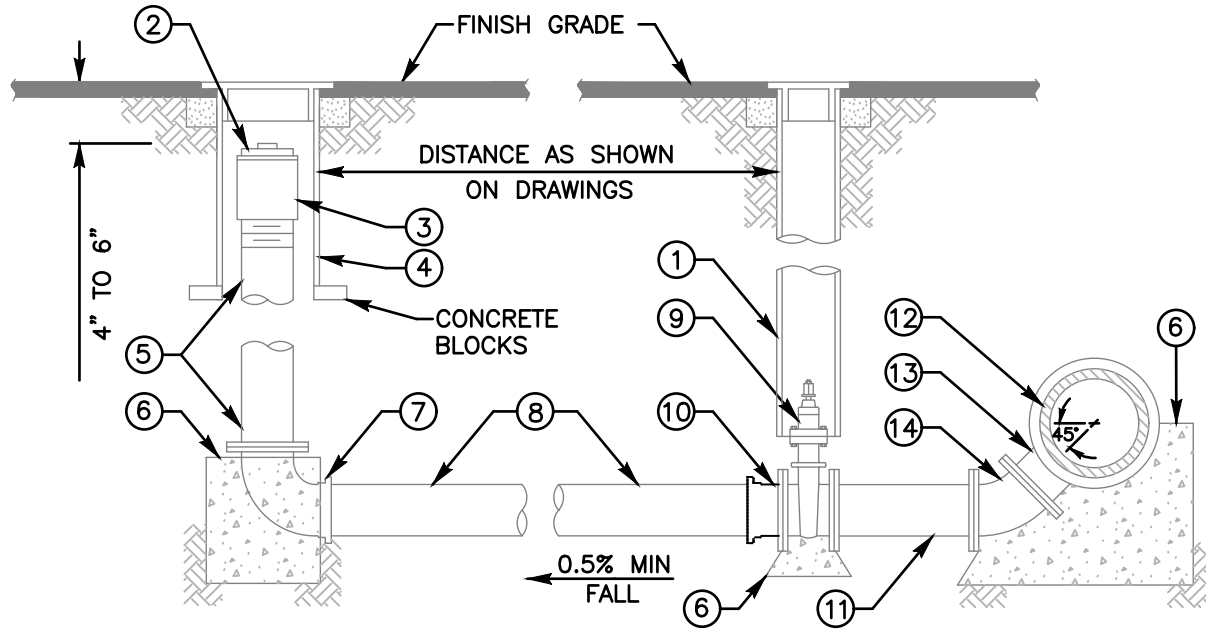
**NOTES:**

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) SET TOP OF METER BOX FLUSH WITH SIDEWALK, CURB OR FINISH GRADE
- 3) LOCATE METER BOX AS SHOWN ON WS-03
- 4) INSTALL WARNING/IDENTIFICATION TAPE AS SHOWN ON WP-01
- 5) FOR BLOW-OFF INSTALLATION AT END OF MAIN SEE WB-04
- 6) BLOW-OFF ASSEMBLIES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN AGENCY'S SPECIFICATIONS
- 7) 45° BEND SHALL BE USED FOR MAINS UP TO 30". 90° BEND SHALL BE USED FOR MAINS IN EXCESS OF 30" AS DIRECTED BY THE ENGINEER
- 8) CAM & GROOVE ADAPTER SHALL BE DRILLED AND TAPPED AS REQUIRED FOR THE PRESSURE PET COCK
- 9) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST



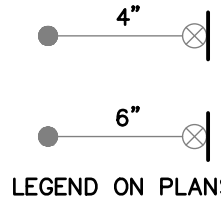
ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	POLYMER METER BOX WITH LID 17" x 30", SEE NOTE 3	⑨	4" OR 6" FLG x MJ/PO 90° BEND
②	4" OR 6" CAM & GROOVE ADAPTER x MIPT WITH LOCKING DUST CAP, SEE NOTE 8	⑩	4" OR 6" C-900 PVC PIPE
③	1/4" PRESSURE PET COCK	⑪	GATE WELL WITH CAP SEE WV-01 OR WV-02
④	TRACER WIRE (AS REQUIRED), SEE WP-01	⑫	4" OR 6" FLG x MJ/PO/FLG RWGV
⑤	4" OR 6" FLANGED COMPANION x FIPT	⑬	4" OR 6" FLG x MJ/PO ADAPTER (IF REQUIRED)
⑥	3/8" ROCK 4" TO 6" DEEP	⑭	WATER MAIN
⑦	4" OR 6" FLG DI PIPE x REQUIRED LENGTH (MAXIMUM OF 2 SPOOLS)	⑮	SIZE x 4" OR 6" MJ/PO/FLG x FLG TEE
⑧	CONCRETE THRUST BLOCK SEE WT-01	⑯	4" OR 6" FLANGED 45° BEND
		⑰	4" OR 6" x 24" FLG DI SPOOL

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Add Metric		T. Stanton	03/03	4" & 6" BLOW-OFF INSTALLATION TYPE A	 Chairperson R.C.E. 19246 Date 10/25/2018
Replaced W-08		J. Tomasulo	10/04		
Delete Metric	MR	B. KNOLL	03/11		
Updated	BK	B. KNOLL	10/18		
				DRAWING NUMBER	WB-02



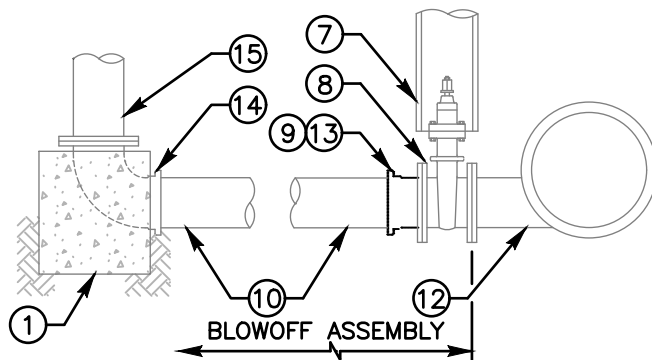
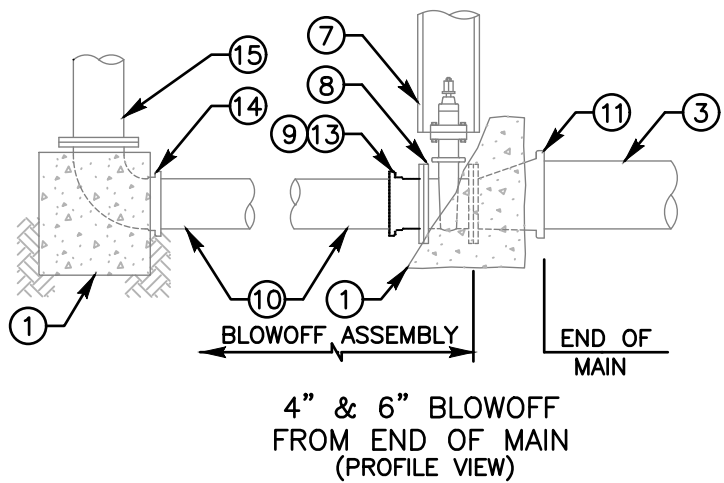
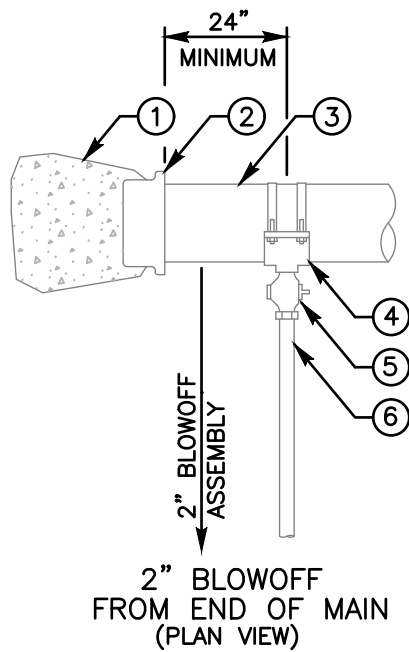
**NOTES:**

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) FOR BLOW-OFF INSTALLATION AT END OF MAIN SEE WB-04
- 3) BLOW-OFF ASSEMBLIES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN AGENCY'S SPECIFICATIONS
- 4) ON STEEL MAINS USE WELD ON COUPLINGS, ON DUCTILE IRON MAINS USE DUCTILE IRON SERVICE SADDLES (INSULATING BUSHINGS ARE REQUIRED)
- 5) 45° BEND SHALL BE USED FOR MAINS UP TO 30". 90° BEND SHALL BE USED FOR MAINS IN EXCESS OF 30" AS DIRECTED BY THE ENGINEER
- 6) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST



ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	GATE WELL WITH CAP SEE WV-01 OR WV-02	⑧	4" OR 6" C-900 PVC PIPE
②	GALVANIZED IRON PLUG	⑨	4" OR 6" FLG x MJ/PO/FLG RWGV
③	GALVANIZED IRON COUPLING, THREADED	⑩	4" OR 6" FLG x MJ/PO ADAPTER (IF REQUIRED)
④	10" STEEL GATE WELL WITH CAP	⑪	4" OR 6" x 24" FLG DI SPOOL
⑤	4" OR 6" FLG DI PIPE x REQUIRED LENGTH (MAXIMUM OF 2 SPOOLS)	⑫	WATER MAIN
⑥	CONCRETE THRUST BLOCK SEE WT-01	⑬	SIZE x 4" OR 6" MJ/PO/FLG x FLG TEE
⑦	4" OR 6" FLG x MJ/PO 90° BEND	⑭	4" OR 6" FLANGED 45° BEND, SEE NOTE 5

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Add Metric		T. Stanton	03/03	4" & 6" BLOW-OFF ASSEMBLIES IN STREET TYPE B	<i>T. Stanton</i> 10/25/2018 Chairperson R.C.E. 19246 Date
Replaced W-09		J. Tomasulo	10/04		
Delete Metric	MR	B. KNOLL	03/11		
Updated	BK	B. KNOLL	10/18		
					DRAWING NUMBER WB-03



**NOTES:**

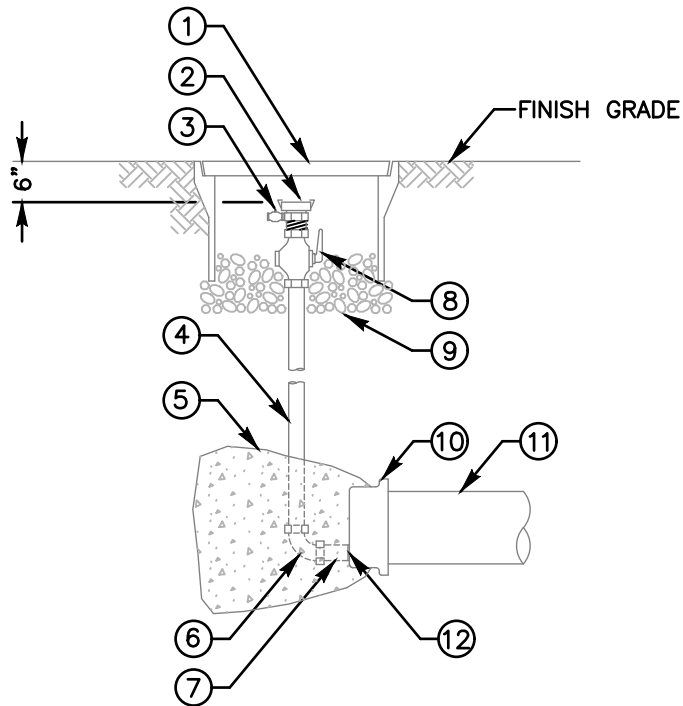
- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) BLOW-OFF ASSEMBLIES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN AGENCY'S SPECIFICATIONS
- 3) FOR 2" BLOW-OFFS ON STEEL MAINS USE WELD ON COUPLINGS, ON DUCTILE IRON MAINS USE DUCTILE IRON SERVICE SADDLES (INSULATING BUSHINGS ARE REQUIRED)
- 4) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST

4" & 6" BLOWOFF FROM END OF MAIN (PROFILE VIEW)

4" & 6" BLOWOFF FROM STEEL MAIN (PROFILE VIEW)

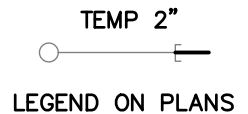
ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	CONCRETE THRUST BLOCKS SEE WT-01	⑧	FLG x MJ/PO/FLG RWGV
②	DI END CAP	⑨	FLG x MJ/PO ADAPTER (IF REQUIRED)
③	WATER MAIN	⑩	C-900 PVC PIPE
④	SIZE x 2" SERVICE SADDLE	⑪	FLG x MJ/PO ECCENTRIC DI REDUCER
⑤	2" BRONZE MIPT x COMP CORPORATION STOP	⑫	MAIN SIZE x BLOWOFF SIZE FLANGE MANUFACTURED STEEL TANGENTIAL OUTLET
⑥	2" x REQ'D LENGTH COPPER PIPE TYPE "K" RIGID OR SOFT	⑬	FLG x MJ/PO BEND (IF REQUIRED)
⑦	GATE WELL WITH CAP SEE WV-01 & WV-02	⑭	FLG x MJ/PO 90° BEND
		⑮	FLG DI PIPE x REQUIRED LENGTH (MAXIMUM OF 2 SPOOLS)

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Add Metric		T. Stanton	03/03	BLOW-OFF INSTALLATION FROM END OF MAINS AND FROM STEEL MAINS	 Chairperson R.C.E. 19246 Date 10/25/2018
Replaced W-07		J. Tomasulo	10/04		
Delete Metric	MR	B. KNOLL	03/11		
Updated	BK	B. KNOLL	10/18		
					DRAWING NUMBER WB-04




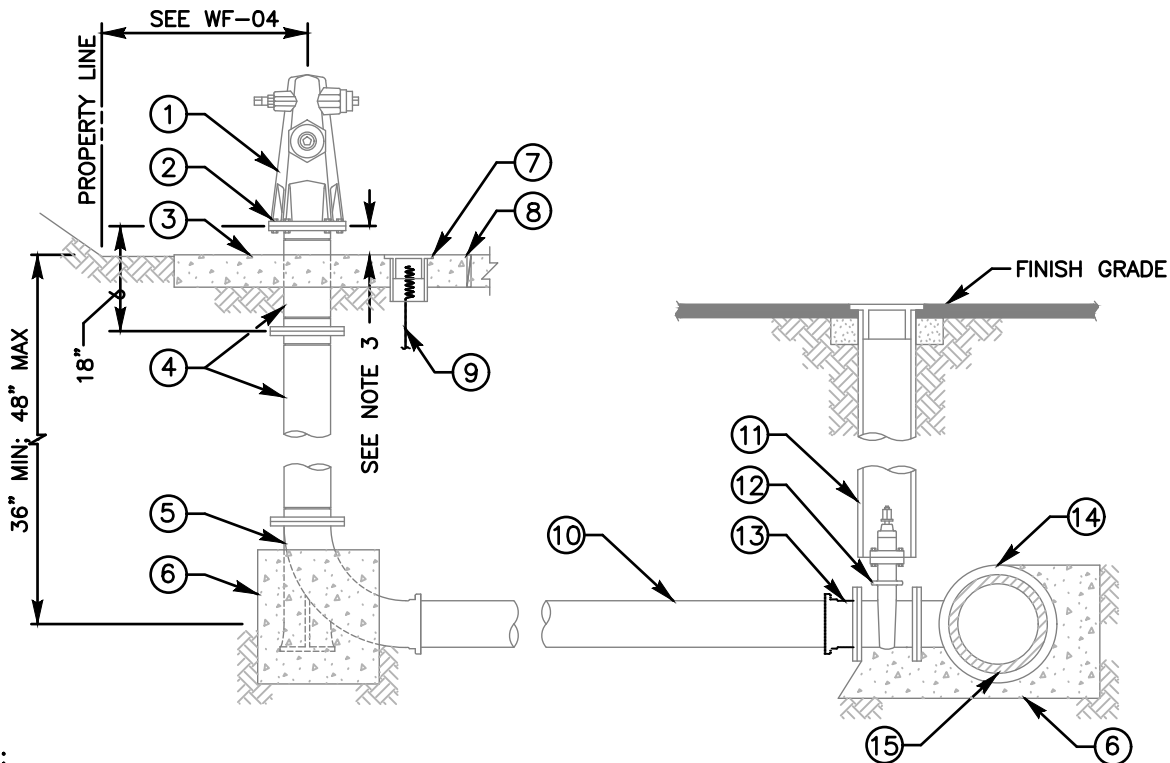
NOTES:

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) SET TOP OF METER BOX 2" ABOVE FINISH GRADE
- 3) BLOW-OFF ASSEMBLIES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN AGENCY'S SPECIFICATIONS
- 4) THE CONSTRUCTION OF A TEMPORARY BLOW-OFF FOR THE USE OF TESTING AND FLUSHING OF NEW MAINS ONLY
- 5) CAM & GROOVE ADAPTER SHALL BE DRILLED AND TAPPED AS REQUIRED FOR THE PRESSURE PET COCK
- 6) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST



ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	POLYMER METER BOX WITH LID 17" x 30"	⑥	2" 90° BRONZE IRON PIPE THREAD BY COMPRESSION ELL
②	2" CAM & GROOVE ADAPTER x MIPT WITH LOCKING DUST CAP, SEE NOTE 5	⑦	2" CLOSE NIPPLE IPT
③	1/4" PRESSURE PET COCK	⑧	2" COMPRESSION x FIPT BALL VALVE WITH HANDLE
④	2" x REQUIRED LENGTH COPPER PIPE TYPE "K" RIGID OR SOFT	⑨	3/8" ROCK 6" DEEP
⑤	CONCRETE THRUST BLOCK SEE WT-01	⑩	DI END CAP WITH 2.5" FIPT OUTLET
		⑪	WATER MAIN
		⑫	NYLON DIELECTRIC BUSHING (2.5" x 2")

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75			
Add Metric		T. Stanton	03/03	TEMPORARY 2" BLOW-OFF INSTALLATION	 Chairperson R.C.E. 19246 Date 10/25/2018	
Replaced W-07		J. Tomasulo	10/04			
Delete Metric	MR	B. KNOLL	03/11		DRAWING NUMBER	WB-05
Updated	BK	B. KNOLL	10/18			




**NOTES:**

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) THE NUMBER OF OUTLETS SHALL BE AS SHOWN ON PLANS
- 3) FIRE HYDRANT FLANGE SHALL BE 6" ± 1" ABOVE TOP OF CURB OR SPLASH PAD SEE PLANS FOR ELEVATION
- 4) LOCATE FIRE HYDRANT AS SHOWN ON WF-04
- 5) INSTALL WARNING/IDENTIFICATION TAPE AS SHOWN ON WP-01
- 6) FIRE HYDRANT FLANGE BOLTS SHALL BE BREAK AWAY BOLTS INSTALLED WITH NUTS ON TOP OF THE FLANGE. BOLT SHAFT SHALL BE FILLED WITH SILICONE SEALANT
- 7) CONNECTIONS TO STEEL MAINS WILL BE MADE IN ACCORDANCE WITH AGENCY'S SPECIFICATIONS
- 8) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST

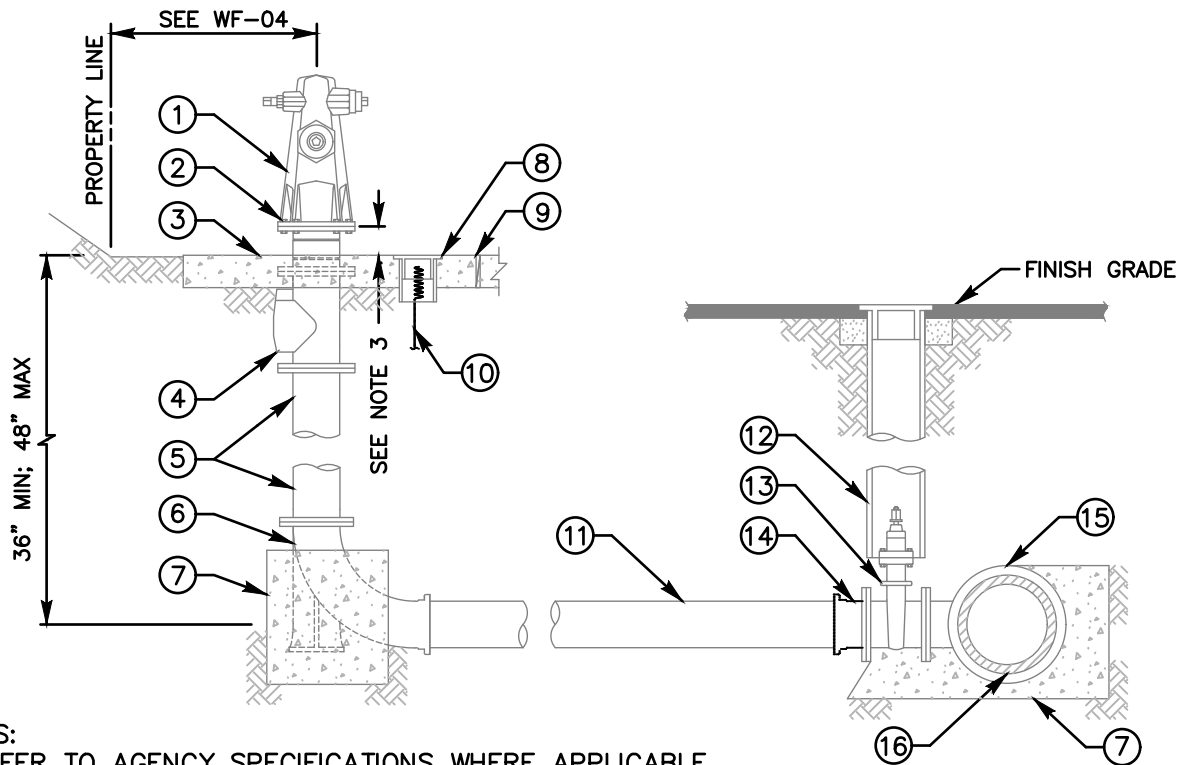


LEGEND ON PLANS

ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	6" FIRE HYDRANT SEE NOTE 2	⑧	COLD JOINT STRIP
②	BREAK-AWAY BOLTS, SEE NOTE 6	⑨	TRACER WIRE (AS REQUIRED) PER WP-01
③	4' x 4' x 6" THICK CONCRETE SPLASH PAD	⑩	6" C-900 PVC PIPE
④	6" FLANGE DI HYDRANT EXTENSION SPOOL(S) WITH BREAK OFF GROOVES (MAXIMUM OF 2 SPOOLS)	⑪	GATE WELL WITH CAP SEE WV-01 OR WV-02
⑤	6" x 16" LONG RADIUS FLG x MJ/PO BURY ELL	⑫	6" FLG x MJ/PO/FLG RWGV
⑥	CONCRETE THRUST BLOCK SEE WT-01	⑬	6" FLG x MJ/PO ADAPTER (IF REQUIRED)
⑦	TRACER WIRE ACCESS PORT, 4" x 8" LONG SDR 35 SEWER PIPE W/ CAP (AS-REQUIRED)	⑭	SIZE x 6" MJ/PO/FLG x FLG TEE
		⑮	WATER MAIN

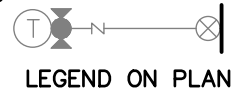
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING  <b>6" FIRE HYDRANT INSTALLATION</b>	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE   Chairperson R.C.E. 19246 Date 10/25/2018
ORIGINAL		Kercheval	12/75		
Add Metric		T. Stanton	03/03		
Replaced W-10		J. Tomasulo	10/04		
Delete Metric	MR	B. KNOLL	03/11		
Updated	BK	B. KNOLL	10/18	DRAWING NUMBER	WF-01





**NOTES:**

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) THE NUMBER OF OUTLETS SHALL BE AS SHOWN ON PLANS
- 3) TOP FLANGE OF BREAK-OFF CHECK VALVE SHALL BE SET WITHIN THE CONCRETE PAD. BREAK OFF GROOVE, MINIMUM OF ONE, SHALL BE PLACED ABOVE THE PAD
- 4) LOCATE FIRE HYDRANT AS SHOWN ON WF-04
- 5) INSTALL WARNING/IDENTIFICATION TAPE AS SHOWN ON WP-01
- 6) FIRE HYDRANT FLANGE BOLTS SHALL BE A307 ZINC-PLATED BOLTS INSTALLED WITH NUTS ON TOP OF THE FLANGE. BREAK AWAY BOLTS SHALL NOT BE USED
- 7) CONNECTIONS TO STEEL MAINS WILL BE MADE IN ACCORDANCE WITH AGENCY'S SPECIFICATIONS
- 8) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST



ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	6" FIRE HYDRANT SEE NOTE 2	⑨	COLD JOINT STRIP
②	BOLTS, SEE NOTE 6	⑩	TRACER WIRE (AS REQUIRED) PER WP-01
③	4' x 4' x 8" THICK CONCRETE SPLASH PAD	⑪	6" C-900 PVC PIPE
④	6" BREAK-OFF CHECK VALVE	⑫	GATE WELL WITH CAP SEE WV-01 OR WV-02
⑤	6" FLANGE DI SPOOL(S) (MAXIMUM OF 2 SPOOLS) NO GROOVES	⑬	6" FLG x MJ/PO/FLG RWGV
⑥	6" x 16" LONG RADIUS FLG x MJ/PO BURY ELL	⑭	6" FLG x MJ/PO ADAPTER (IF REQUIRED)
⑦	CONCRETE THRUST BLOCK SEE WT-01	⑮	SIZE x 6" MJ/PO/FLG x FLG TEE
⑧	TRACER WIRE ACCESS PORT, 4" x 8" LONG SDR 35 SEWER PIPE W/ CAP (AS-REQUIRED)	⑯	WATER MAIN

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W-10		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Updated	BK	B. KNOLL	10/18

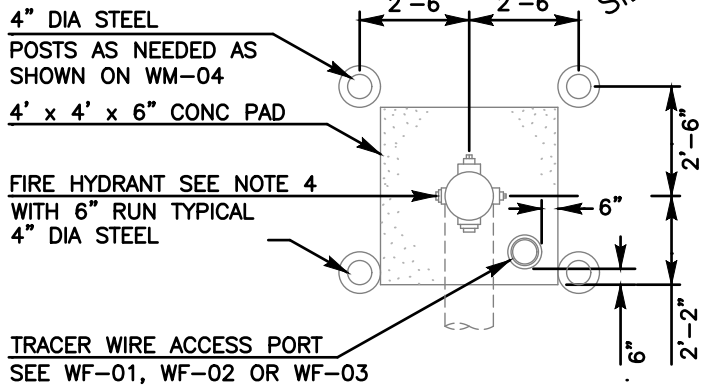
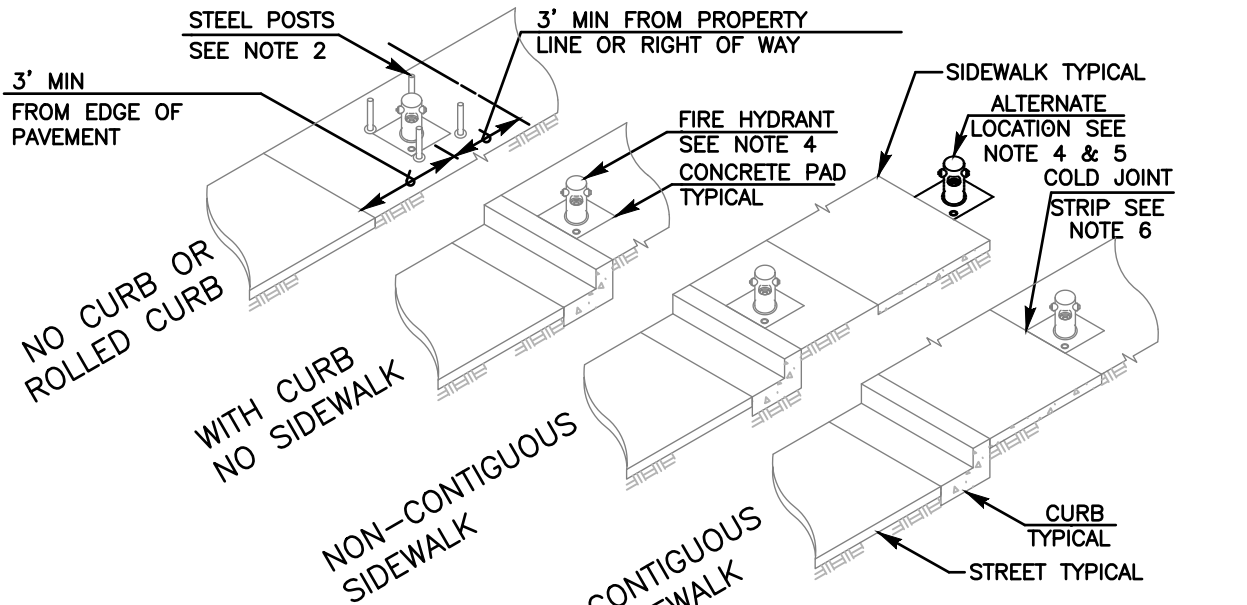
SAN DIEGO REGIONAL STANDARD DRAWING

6" FIRE HYDRANT INSTALLATION WITH  
BREAK-OFF CHECK VALVE

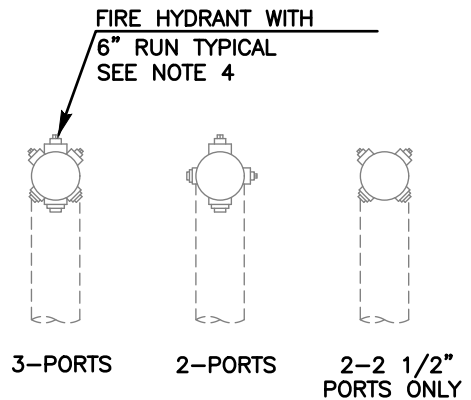
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER WF-02



PROTECTION POST LOCATIONS



PORT ORIENTATION

NOTES:

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) PROTECTION POSTS SHALL BE INSTALLED AS CALLED FOR ON THE PLANS OR AS DIRECTED BY THE ENGINEER PER WM-04
- 3) LOCATE FIRE HYDRANT AS SHOWN ABOVE OR AS DIRECTED BY THE ENGINEER
- 4) FIRE HYDRANTS SHALL BE INSTALLED WITH THE LARGEST PORT PERPENDICULAR TO THE STREET
- 5) AN EASEMENT MAY BE NEEDED DEPENDING ON LOCATION OF FIRE HYDRANT
- 6) IF THE CONCRETE SLAB IS TO BE INSTALLED ADJACENT TO A CONCRETE CURB OR SIDEWALK A COLD JOINT STRIP SHALL BE INSTALLED
- 7) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W-11		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Updated	BK	B. KNOLL	10/18

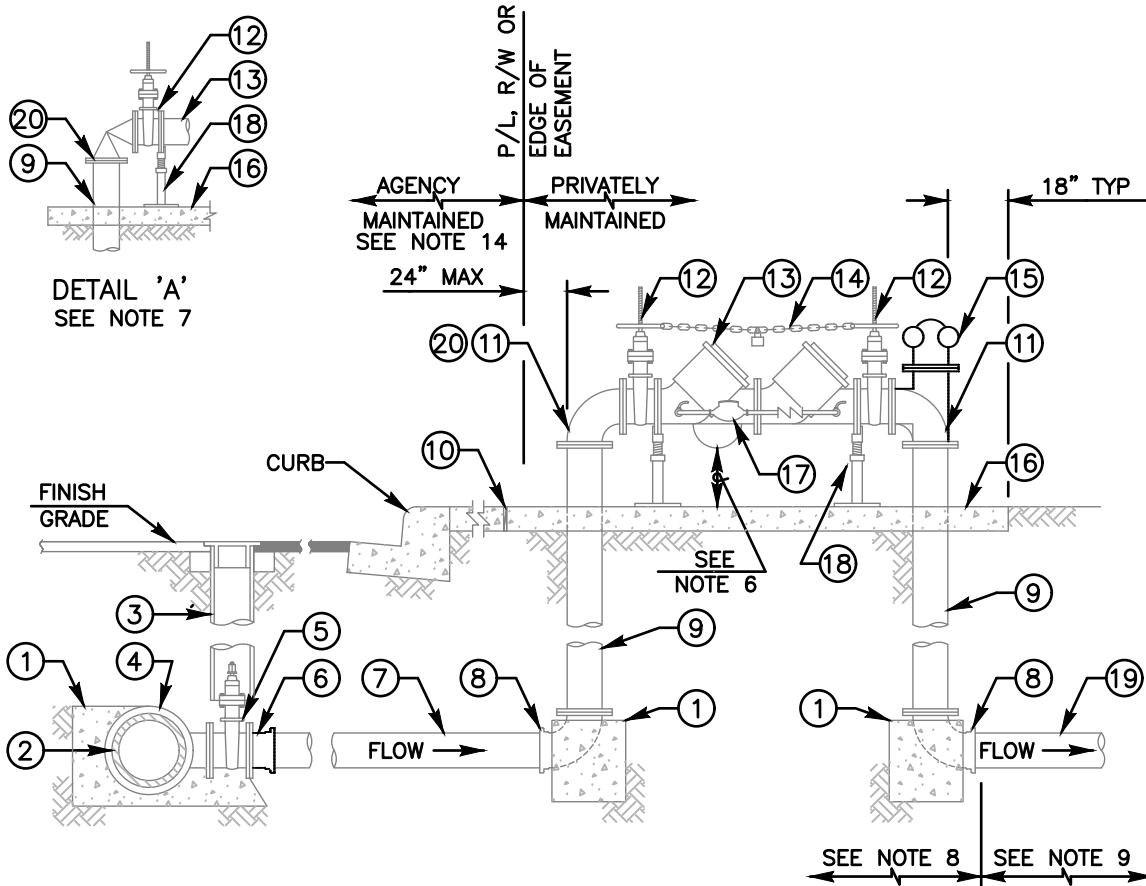
SAN DIEGO REGIONAL STANDARD DRAWING

FIRE HYDRANT LOCATIONS AND PORT ORIENTATION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER WF-04



FOR NOTES REGARDING THE INSTALLATION OF  
FIRE SERVICES SEE WF-05 SHEET 2 OF 2

RPFS  LEGEND ON PLANS

ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	CONCRETE THRUST BLOCK SEE WT-01	⑬	RPDA UNLESS OTHERWISE SPECIFIED BY AGENCY OF JURISDICTION SEE NOTE 4
②	WATER MAIN	⑭	CHAIN WITH KNOX LOCK SEE NOTE 4
③	GATE WELL WITH CAP SEE WV-01 OR WV-02	⑮	FLANGED TEE WITH "FDC" SEE NOTE 4
④	SIZE x SIZE MJ/PO/FLG x FLG TEE	⑯	CONCRETE SLAB AS REQUIRED BY AGENCY OF JURISDICTION. MINIMUM 4" THICK x 36" WIDE x AS REQUIRED
⑤	FLG x MJ/PO/FLG RWGV		
⑥	FLG x MJ/PO ADAPTER (IF REQUIRED)	⑰	3/4" BYPASS, METER & RP DEVICE
⑦	C-900 PVC PIPE	⑱	ADJUSTABLE VALVE SUPPORT
⑧	MJ/PO x FLG 90° BEND	⑲	PVC OR DI PIPE SEE NOTE 9
⑨	FLANGED DUCTILE IRON PIPE	⑳	FLANGED ANGLE PRESSURE REDUCING VALVE SEE NOTE 7
⑩	COLD JOINT STRIP		
⑪	FLANGED 90° BEND, SEE NOTE 7		
⑫	FLANGED OS&Y RWGV WITH HAND WHEEL		

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Add Metric		T. Stanton	03/03		
Replaced W-26		J. Tomasulo	10/04		
Delete Metric	MR	B. KNOLL	03/11		
Updated	BK	B. KNOLL	10/18	4" AND LARGER FIRE SERVICE INSTALLATION	 10/25/2018 Chairperson R.C.E. 19246 Date DRAWING NUMBER WF-05 (1 OF 2)

NOTES:

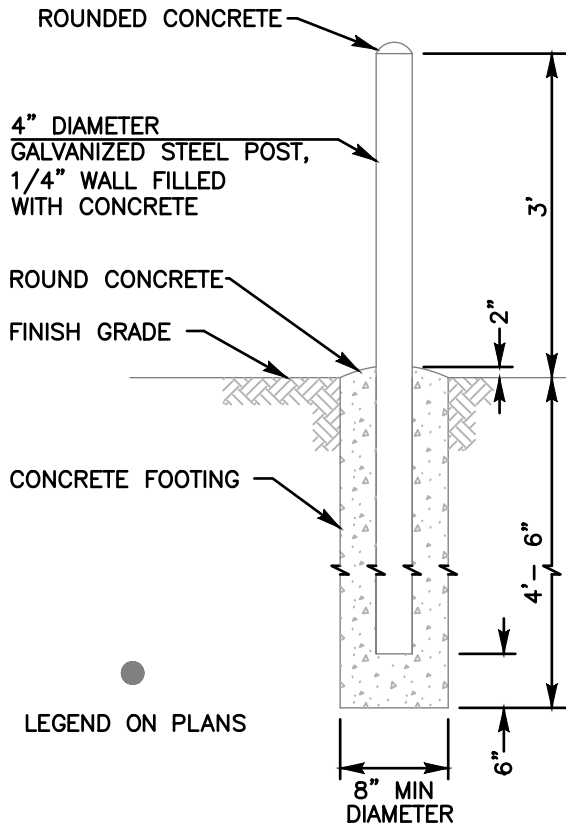
- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) INSTALL WARNING/IDENTIFICATION TAPE AS SHOWN ON WP-01
- 3) LOCATION OF FIRE SERVICES SHALL BE AS DIRECTED BY THE FIRE DEPARTMENT OF JURISDICTION. FIRE SERVICES SHOULD BE LOCATED IN SUCH A MANNER THAT WILL ALLOW THE DEVICE TO BE READILY ACCESSIBLE FOR INSPECTION, REPAIR, AND USAGE
- 4) TAMPER SWITCH, AUTOMATIC RESET, CHAIN WITH KNOX LOCK, AND FIRE DEPARTMENT CONNECTION ("FDC") SHALL BE AS REQUIRED BY THE FIRE DEPARTMENT OF JURISDICTION
- 5) BALL VALVE TEST COCKS SHALL BE PROVIDED AND LOCATED PER THE MANUFACTURES RECOMMENDATIONS AND THE REQUIREMENTS OF THE WATER AGENCY STANDARDS
- 6) INSTALL FIRE SERVICES SO THAT THE DISTANCE BETWEEN THE BOTTOM OF THE RELIEF DIAPHRAM AND THE CONCRETE SLAB OR FINISH GRADE IS 12" MINIMUM AND 24" MAXIMUM
- 7) INSTALL AN ANGLE PRESSURE REDUCING VALVE IN LIEU OF THE FIRST 90° BEND WHEN SYSTEM STATIC PRESSURE EXCEEDS 150 PSI OR WHEN RECOMMENDED BY THE BACKFLOW MANUFACTURER
- 8) INSTALL PIPE AND RELATED APPURTENANCES IN THIS AREA PER THE REQUIREMENTS OF THE WATER AGENCY STANDARDS
- 9) INSTALL PIPE AND RELATED APPURTENANCES IN THIS AREA AS REQUIRED BY THE FIRE DEPARTMENT OF JURISDICTION
- 10) ABOVE GROUND APPURTENANCES SHALL BE PAINTED AND IDENTIFIED AS CALLED FOR BY THE FIRE DEPARTMENT OF JURISDICTION
- 11) TESTING SHALL BE CONDUCTED AS CALLED FOR IN AGENCY'S SPECIFICATIONS PRIOR TO ACCEPTANCE BY THE DISTRICT
- 12) CONNECTIONS TO STEEL MAINS SHALL BE IN ACCORDANCE WITH AGENCY'S SPECIFICATIONS
- 13) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST
- 14) AGENCY RESPOSIBILITY ENDS AT EDGE OF PROPERTY LINE, RIGHT OF WAY, OR EASEMENT.

FOR DETAILS REGARDING THE INSTALLATION OF  
FIRE SERVICES SEE WF-05 SHEET 1 OF 2

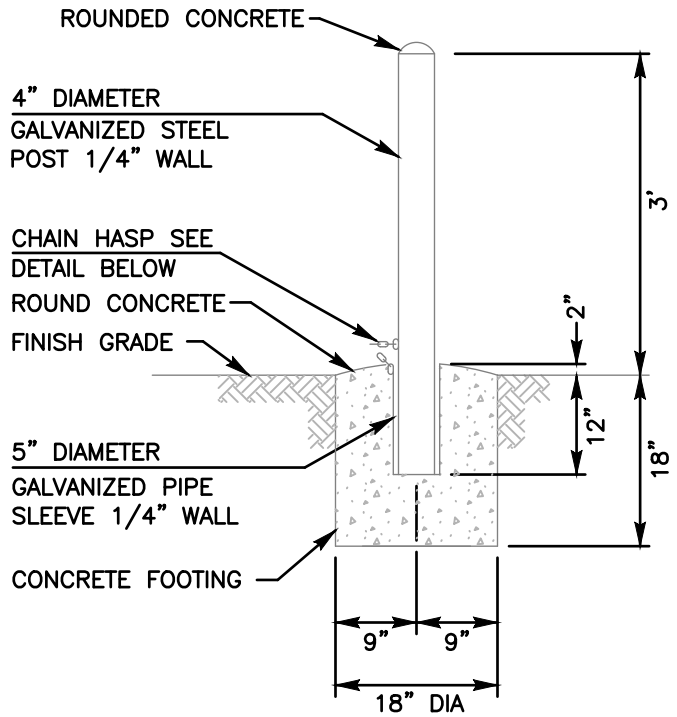


LEGEND ON PLANS

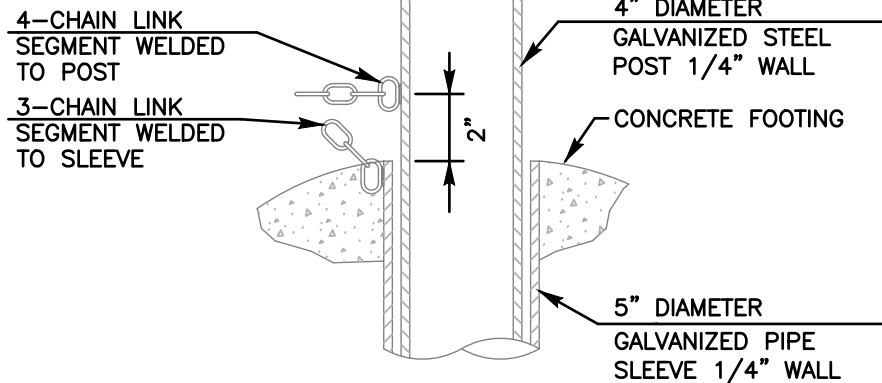
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		4" AND LARGER FIRE SERVICE INSTALLATION NOTES
Add Metric		T. Stanton	03/03		
Replaced W-26		J. Tomasulo	10/04		
Delete Metric	MR	B. KNOLL	03/11		
Updated	BK	B. KNOLL	10/18		
					DRAWING NUMBER WF-05 (2 OF 2)



PROTECTION POST TYPE "A"



DEMOUNTABLE PROTECTION POST TYPE "B"



CHAIN HASP DETAIL

NOTES:

- 1) TYPE "A" AND TYPE "B" PROTECTION POSTS SHALL BE INSTALLED WHERE INDICATED ON THE APPROVED PLANS OR AS DIRECTED BY THE ENGINEER. SDG&E REQUIREMENTS DICTATE IN AREAS OF SDG&E EQUIPMENT
- 2) CHAIN TO BE 1/4" PROOF COIL CHAIN GALVANIZED STEEL. WELD 4-LINK SEGMENT TO POST AND 3-LINK SEGMENT TO SLEEVE
- 3) TYPE "A" AND TYPE "B" PROTECTION POSTS SHALL BE COATED USING SAFETY YELLOW IN ACCORDANCE WITH AGENCY'S STANDARDS

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W-16		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Updated	BK	B. KNOLL	10/18

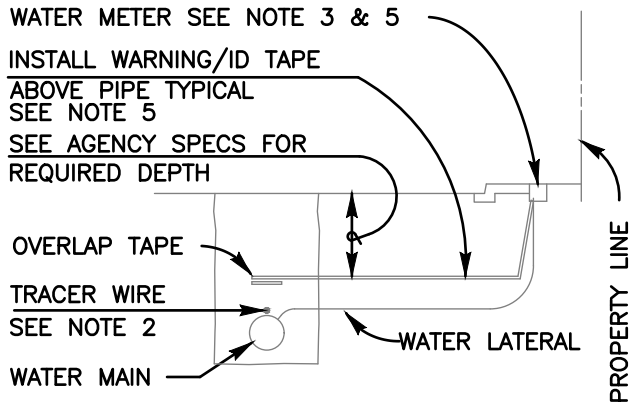
SAN DIEGO REGIONAL STANDARD DRAWING

PROTECTION POST INSTALLATION

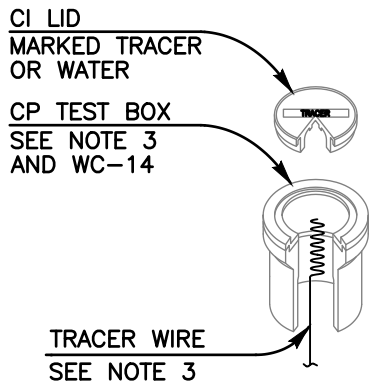
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/2018  
 Chairperson R.C.E. 19246 Date

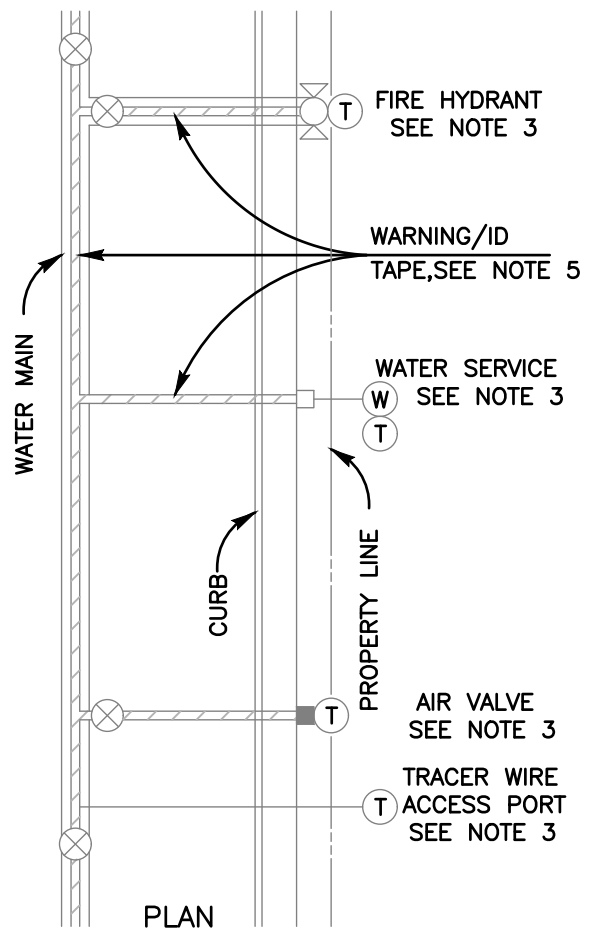
DRAWING NUMBER WM-04



SECTION AT WATER LATERALS



TRACER WIRE ACCESS PORT (CP BOX) DETAIL



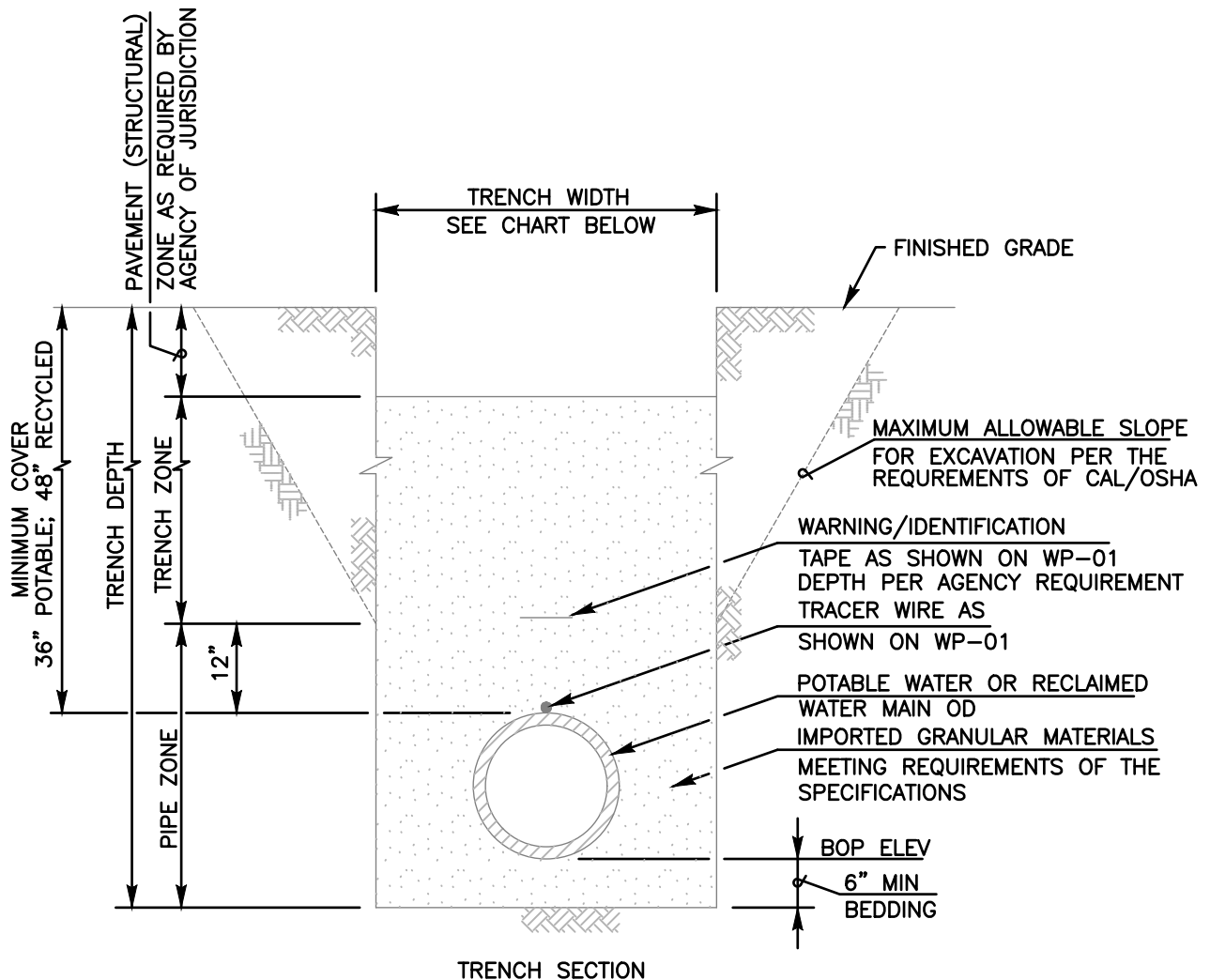
PLAN

NOTES:

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) WHERE SPECIFIED, TRACER WIRE AND OR WARNING ID TAPE, TO RUN CONTINUOUSLY ALONG THE ENTIRE LENGTH OF WATER MAINS. WIRE SHALL BE SECURED TO THE PIPE AND MAINTAINED ON PIPE CENTERLINE DURING TRENCH BACKFILL
- 3) TRACER WIRE ACCESS PORTS SHALL BE INSTALLED WITHIN THE CONCRETE SPLASH PAD OF ALL FIRE HYDRANTS IN ACCORDANCE WITH THE STANDARD DRAWINGS. TRACER WIRE MAY TERMINATE WITHIN METER BOX, BLOWOFF BOX OR AIR VALVE PER AGENCY'S SPECIFICATIONS. TRACER WIRE MAY TERMINATE IN A CP TEST BOX ONLY IF NO OTHER APPURTENANCE EXISTS WITHIN THE REQUIRED 1,000' INTERVAL. ALL BURIED WIRES THAT REQUIRE TRENCHING TO A TEST BOX LOCATION SHALL BE INSTALLED, WITHOUT SPLICE, IN A CONDUIT IN THE TRENCH AT A MINIMUM DEPTH OF 24"
- 4) WIRE SPLICE CONNECTORS SHALL BE SILICONE FILLED TYPE
- 5) WARNING/IDENTIFICATION TAPE SHALL BE INSTALLED ABOVE THE PIPE AS SPECIFIED AND RUN CONTINUOUSLY ALONG THE ENTIRE LENGTH OF THE PIPE AND ALL RELATED APPURTENANCES
- 6) FOR PIPE BEDDING AND TRENCH BACKFILL SEE WP-02
- 7) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST

  
 LEGEND ON PLANS  
 (TRACER WIRE)

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Add Metric		T. Stanton	03/03	WARNING/IDENTIFICATION TAPE AND TRACER WIRE INSTALLATIONS	 10/25/2018 <small>Chairperson R.C.E. 19246 Date</small>
Replaced W-25		J. Tomasulo	10/04		
Delete Metric	MR	B. KNOLL	03/11		
Updated	BK	B. KNOLL	10/18		
					DRAWING NUMBER WP-01



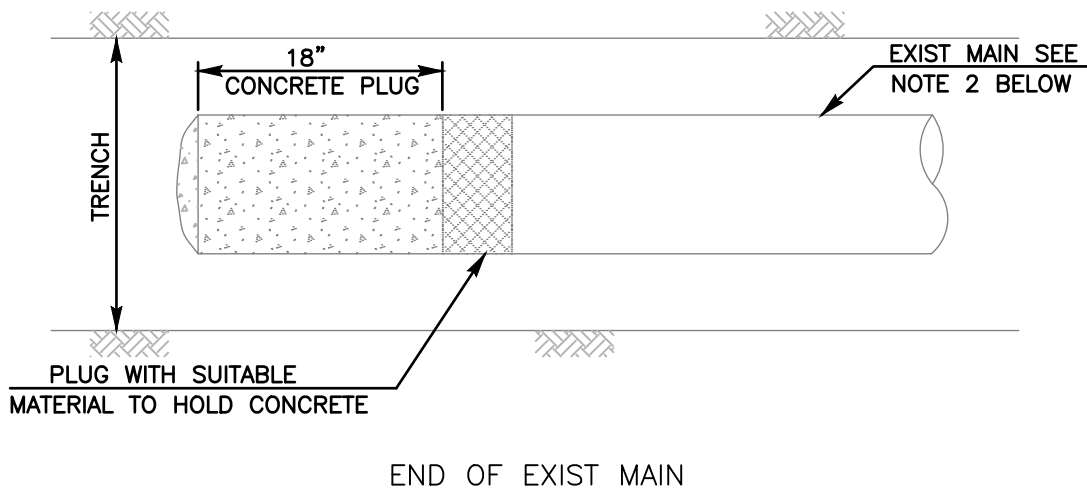
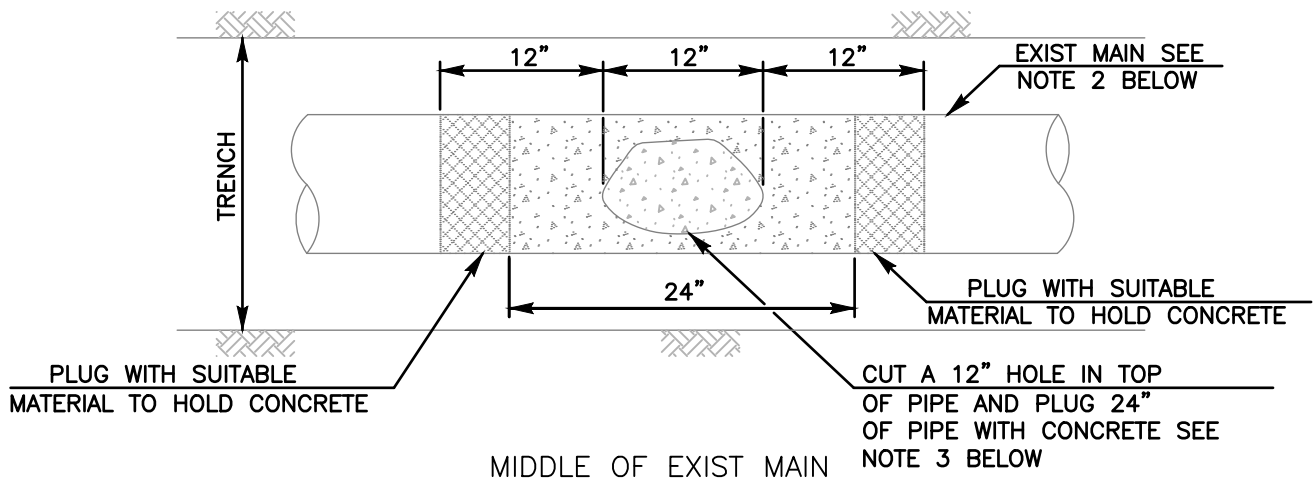
**NOTES:**

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) PAVING OR PAVEMENT REPAIR TO BE DONE IN ACCORDANCE TO CITY OR COUNTY STANDARDS
- 3) EXCAVATE BELL HOLES AT EACH PIPE JOINT TO PERMIT PROPER ASSEMBLY AND INSPECTION OF THE ENTIRE JOINT
- 4) ALL PIPELINE TRENCHES SHALL BE EXCAVATED SO THAT THE DISTANCE BETWEEN TRENCH WALLS AT THE TOP OF PIPE SHALL BE AS SHOWN BELOW:

**TRENCH WIDTH**

NOMINAL PIPE INSIDE DIAMETER	MINIMUM DISTANCE	MAXIMUM DISTANCE
4" & SMALLER	18"	28"
6" & 8"	24"	32"
10" & 12"	28"	36"
16" THRU 36"	OD PLUS 24"	OD PLUS 36"

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		10/25/2018 Chairperson R.C.E. 19246 Date
Add Metric		T. Stanton	03/03	PIPE BEDDING AND TRENCH BACKFILL FOR POTABLE AND RECYCLED WATER MAINS	DRAWING NUMBER WP-02
Replaced W-21		J. Tomasulo	10/04		
Delete Metric	MR	B. KNOLL	03/11		
Updated	BK	B. KNOLL	10/18		

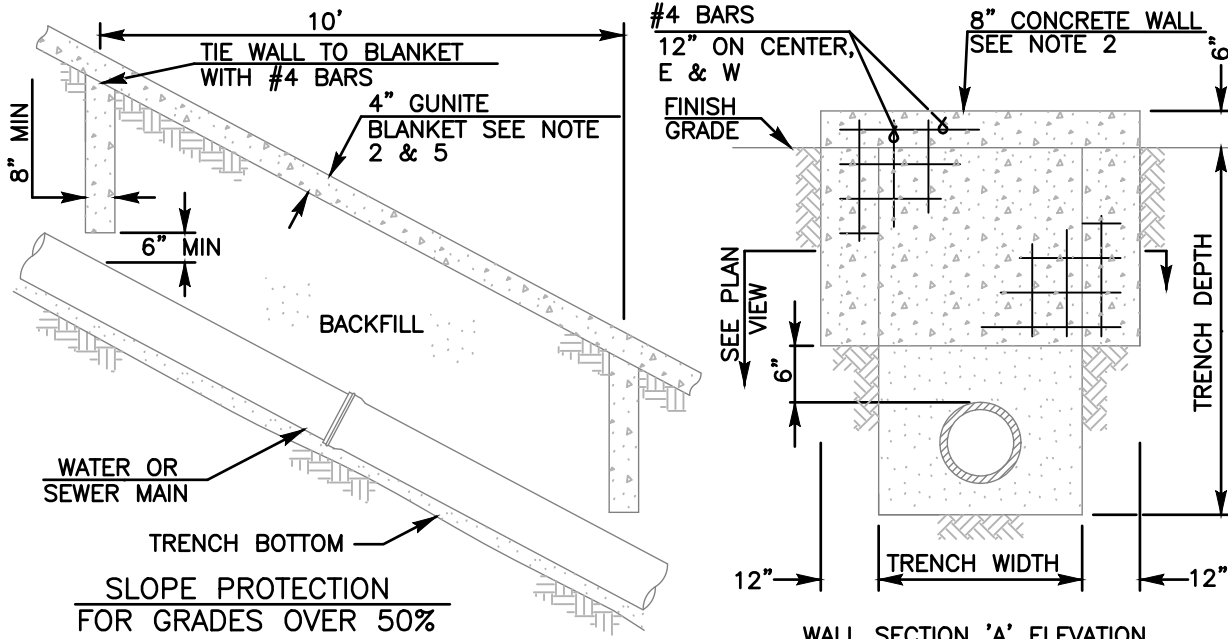


NOTES:

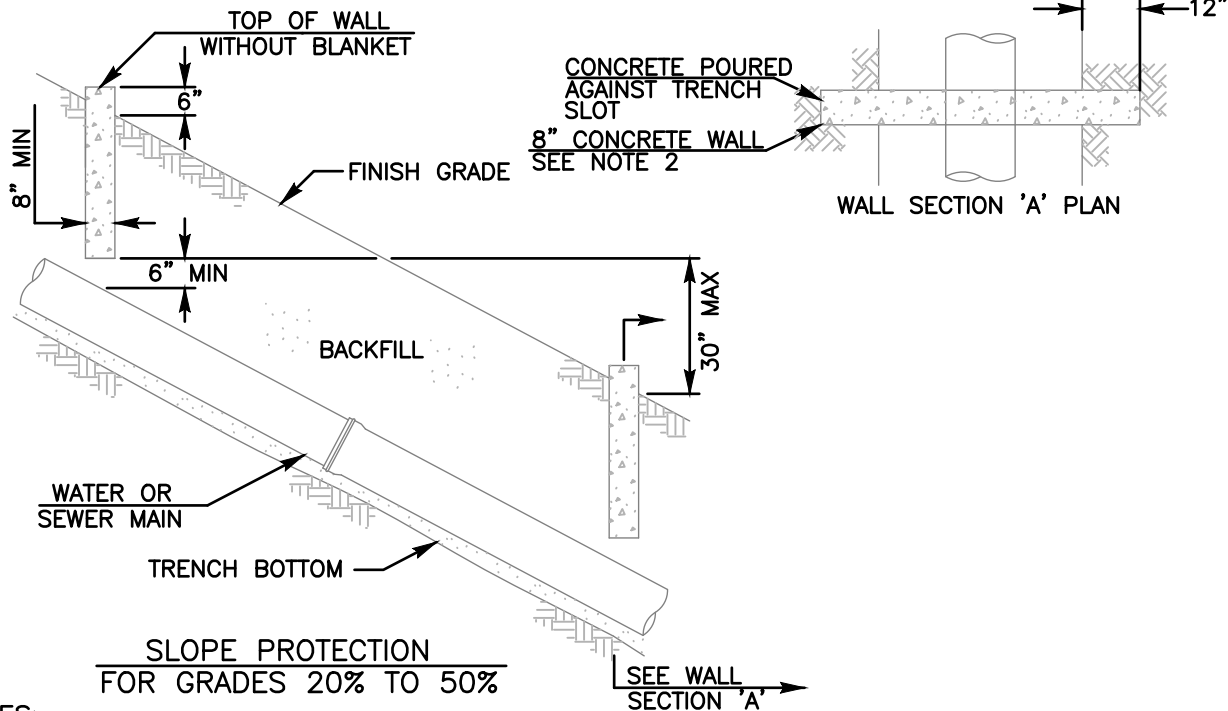
- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) WATER AND RECYCLED WATER MAINS AND SEWER LATERALS 4" DIAMETER AND SMALLER SHALL HAVE A SHORT SECTION OF PIPE REMOVED AND PIPE ENDS ENCASED IN CONCRETE
- 3) EXISTING MAIN TO BE PLUGGED WITH CONCRETE OR PRESSURE GROUTED AT INTERVALS OF ABOUT 200' OR AS DIRECTED BY THE ENGINEER
- 4) EXISTING MAINS 16" AND LARGER REQUIRE THE ENTIRE LENGTH OF THE PIPE TO BE FILLED BY PRESSURE GROUTING OR BY BLOWN SAND
- 5) EXISTING VALVES SHALL BE TURNED TO THE CLOSED POSITION. REMOVE GATE WELL AND REPLACE WITH COMPACTED BACKFILL
- 6) FOR ABANDONMENT OF MANHOLES SEE SM-08
- 7) PRIOR AGENCY APPROVAL REQUIRED FOR CUTTING AND PLUGGING

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		J. Tomasulo	10/04		CUTTING AND PLUGGING ABANDONED WATER, RECYCLED WATER AND SEWER MAINS
Delete Metric	MR	B. KNOLL	03/11	DRAWING NUMBER WP-03	
Updated	BK	B. KNOLL	10/18		





WALL SECTION 'A' ELEVATION



WALL SECTION 'A' PLAN

NOTES:

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) THE DETAILS SHOWN REPRESENT THE MINIMUM REQUIRED. THE ENGINEER OF WORK IS REQUIRED TO PROVIDE A SUBMITTAL TO THE AGENCY OF JURISDICTION FOR REVIEW AND APPROVAL BY THE AGENCY'S ENGINEER PRIOR TO INSTALLATION
- 3) WALLS SHALL BE REINFORCED CONCRETE OR 8" x 8" x 16" CONCRETE BLOCK, REINFORCED AND ALL CORES FILLED WITH GROUT SEE SPECIFICATIONS
- 4) FOR GRADES OVER 50%, SLOPE PROTECTION SHALL ALSO INCLUDE AC PAVING, CONCRETE SLAB OR GUNITE BLANKET PLACED OVER THE PIPELINE ALIGNMENT
- 5) 4" GUNITE BLANKET WITH 6" SQUARE x 10 GAGE WIRE FABRIC AT THE ENGINEERS DISCRETION

LEGEND ON PLANS

Revision	By	Approved	Date
ORIGINAL		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Updated	BK	B. KNOLL	10/18

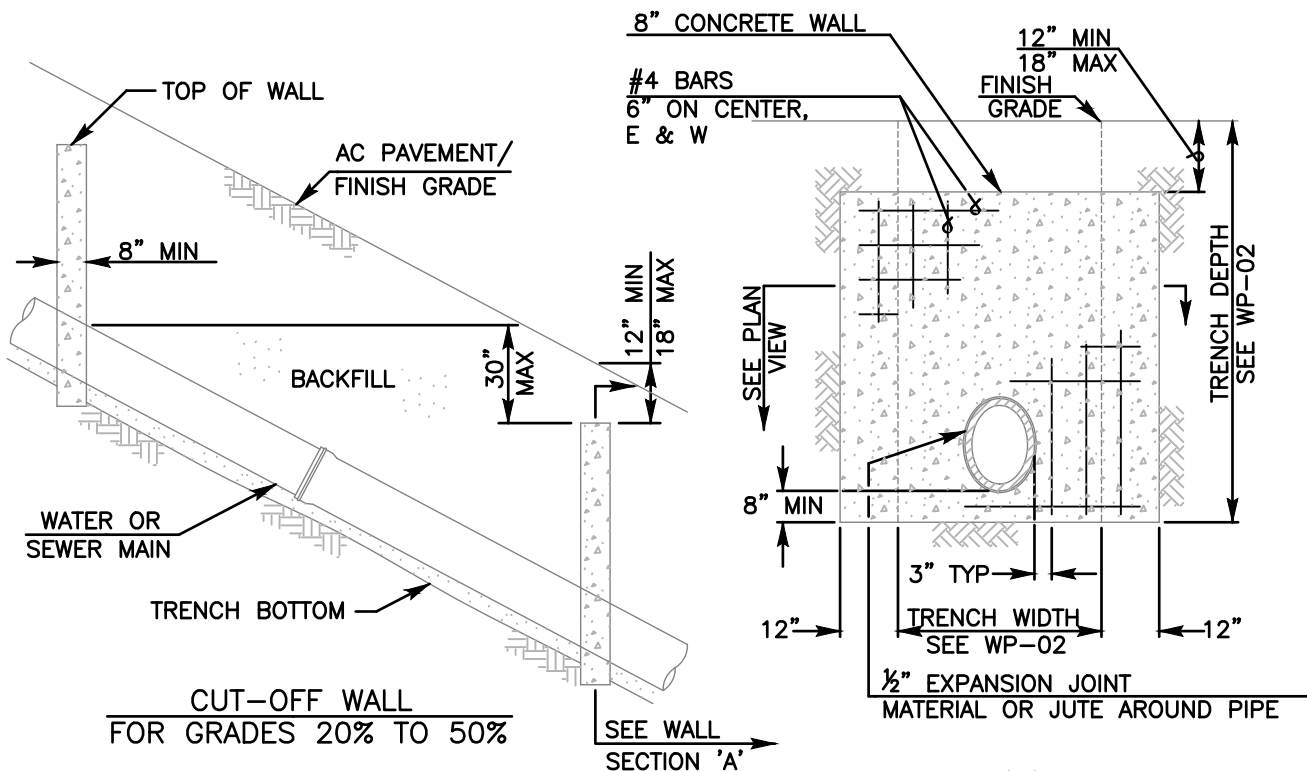
SAN DIEGO REGIONAL STANDARD DRAWING

SLOPE PROTECTION INSTALLATIONS

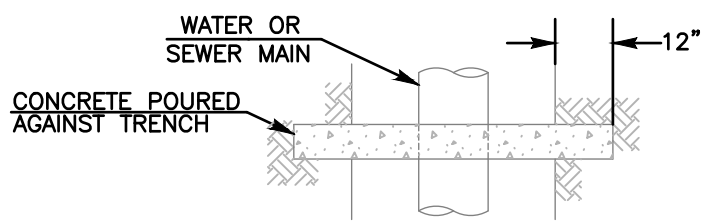
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*17/1/2018* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING NUMBER WP-05



WALL SECTION 'A' ELEVATION



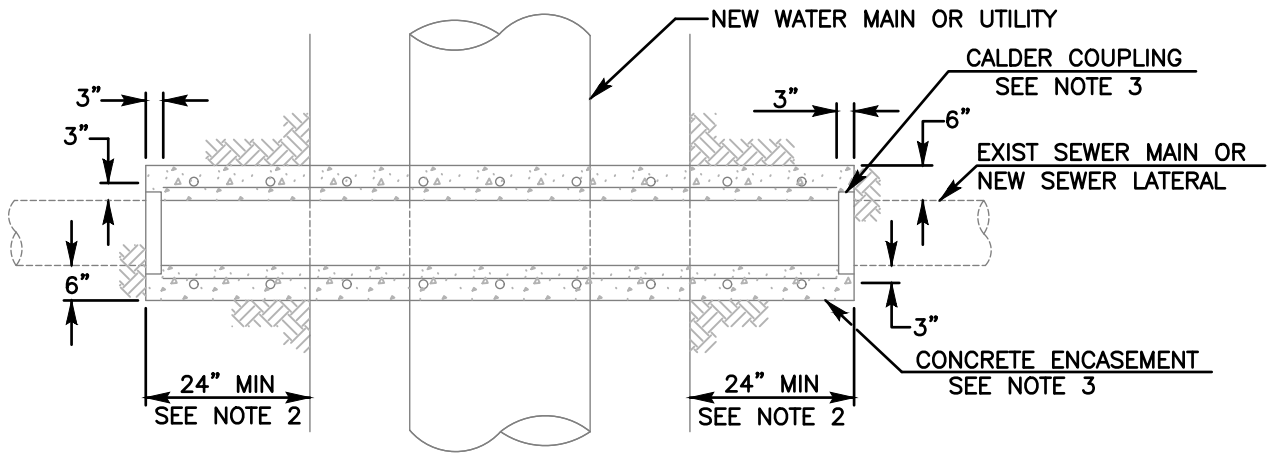
WALL SECTION 'A' PLAN

NOTES:

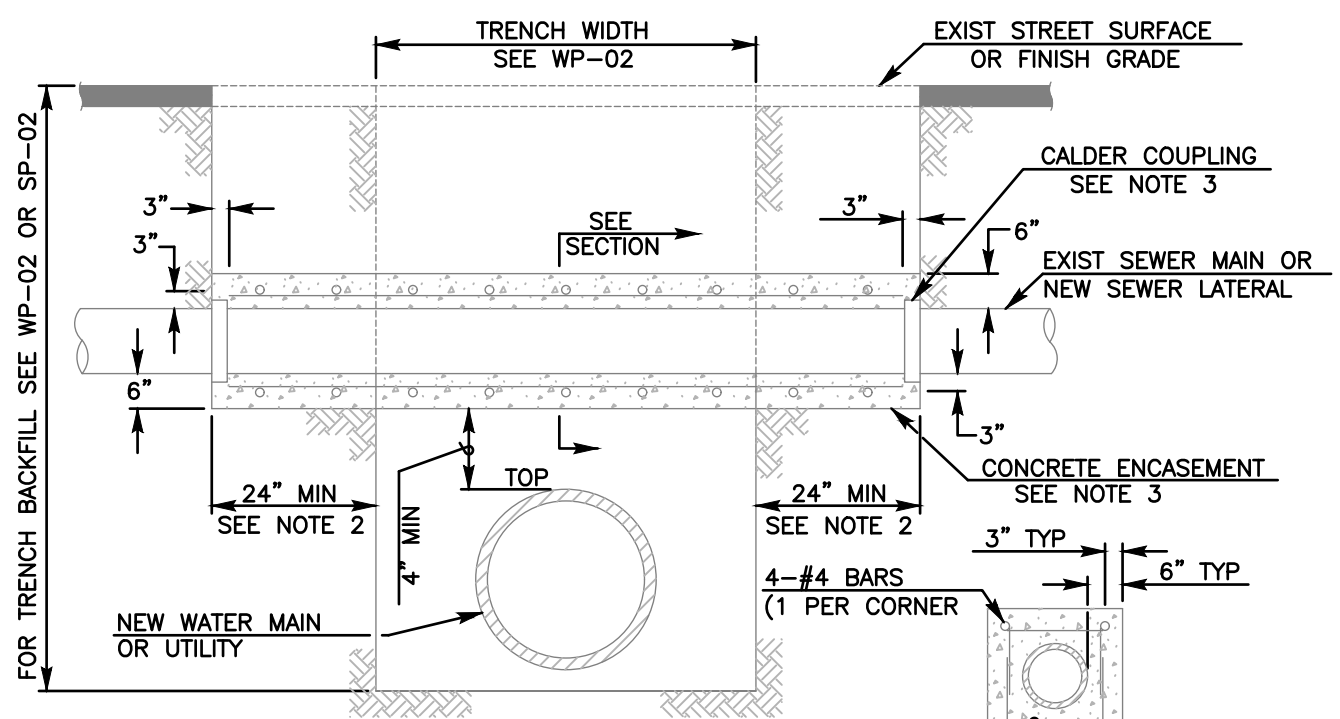
- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) FOR USE AS TRENCH BACKFILL STABILIZATION IN TRAVELED AREAS
- 3) THE DETAILS SHOWN REPRESENT THE MINIMUM REQUIRED. THE ENGINEER OF WORK IS REQUIRED TO PROVIDE A SUBMITTAL TO THE AGENCY OF JURISDICTION FOR REVIEW AND APPROVAL BY THE AGENCY'S ENGINEER PRIOR TO INSTALLATION
- 4) WALLS SHALL BE REINFORCED CONCRETE OR 8" x 8" x 16" CONCRETE BLOCK, REINFORCED AND ALL CORES FILLED WITH GROUT SEE SPECIFICATIONS
- 5) FOR GRADES OVER 50% SEE WP-05/SP-05

— — —  
LEGEND ON PLANS

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		J. Tomasulo	10/04		
Delete Metric	MR	B. KNOLL	03/11	CUT-OFF WALL INSTALLATION IN TRAVELED AREAS	<i>M. Stanton</i> 10/25/2018 Chairperson R.C.E. 19246 Date
Updated	BK	B. KNOLL	10/18		DRAWING NUMBER WP-07



PLAN



ELEVATION

ENCASEMENT SECTION

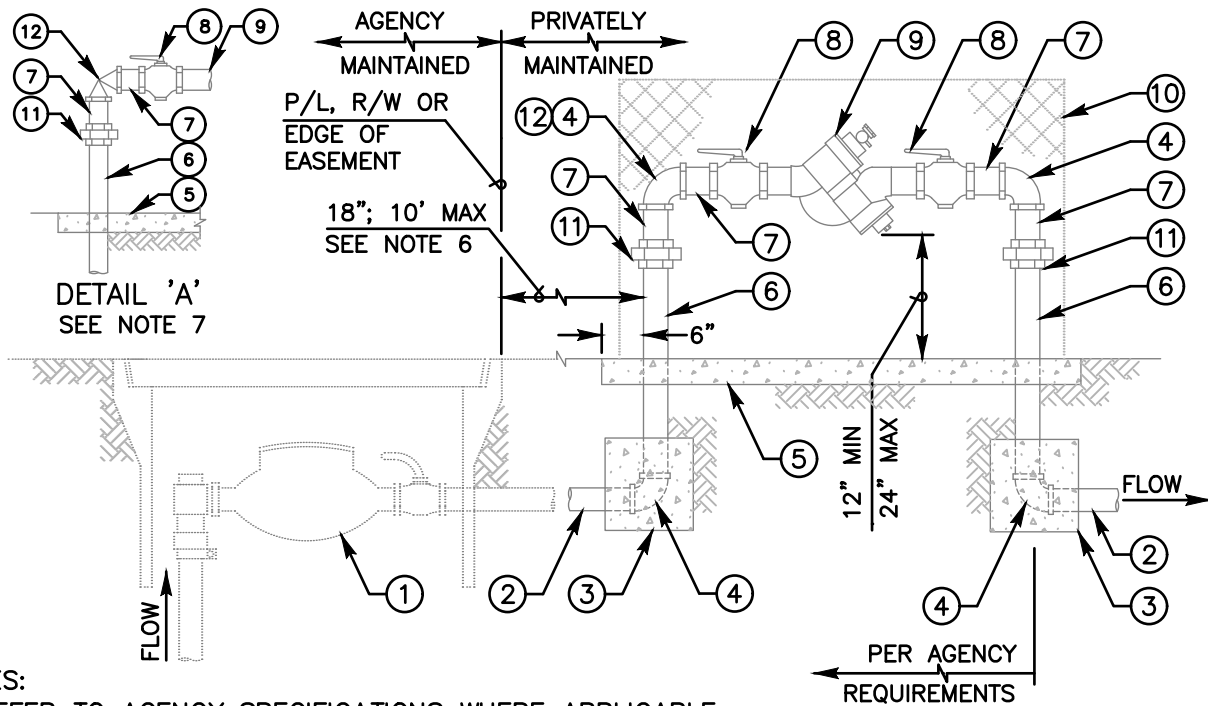
NOTES:

- 1) REFER TO AGENCY SPECIFICATIONS FOR PROTECTION OF EXISTING FACILITIES
- 2) ENCASEMENT SHALL EXTEND TO FIRST JOINT BEYOND BOTH SIDES OF TRENCH (24" MIN, 48" MAX OF SUITABLE NATIVE SUPPORT BEYOND EDGE OF TRENCH).
- 3) CONCRETE ENCASEMENT REQUIRED FOR SEWER MAINS ONLY. CALDER COUPLINGS REQUIRED FOR SEWER LATERALS ONLY. SEWER LATERALS TO BE REPLACED WITH SCH. 80 PVC WITH NO INTERMEDIATE JOINTS.
- 4) FOR PIPE BEDDING AND TRENCH BACKFILL SEE WP-02 OR SP-02.



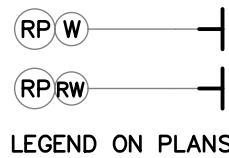
LEGEND ON PLANS

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		J. Tomasulo	10/04		PIPE SUPPORT FOR UNDERCUT SEWER MAINS OR SEWER LATERALS
Delete Metric	MR	B. KNOLL	03/11		
Updated	BK	B. KNOLL	10/18	DRAWING NUMBER WP-09	



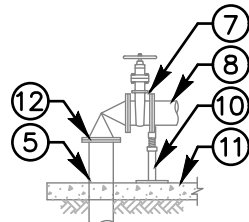
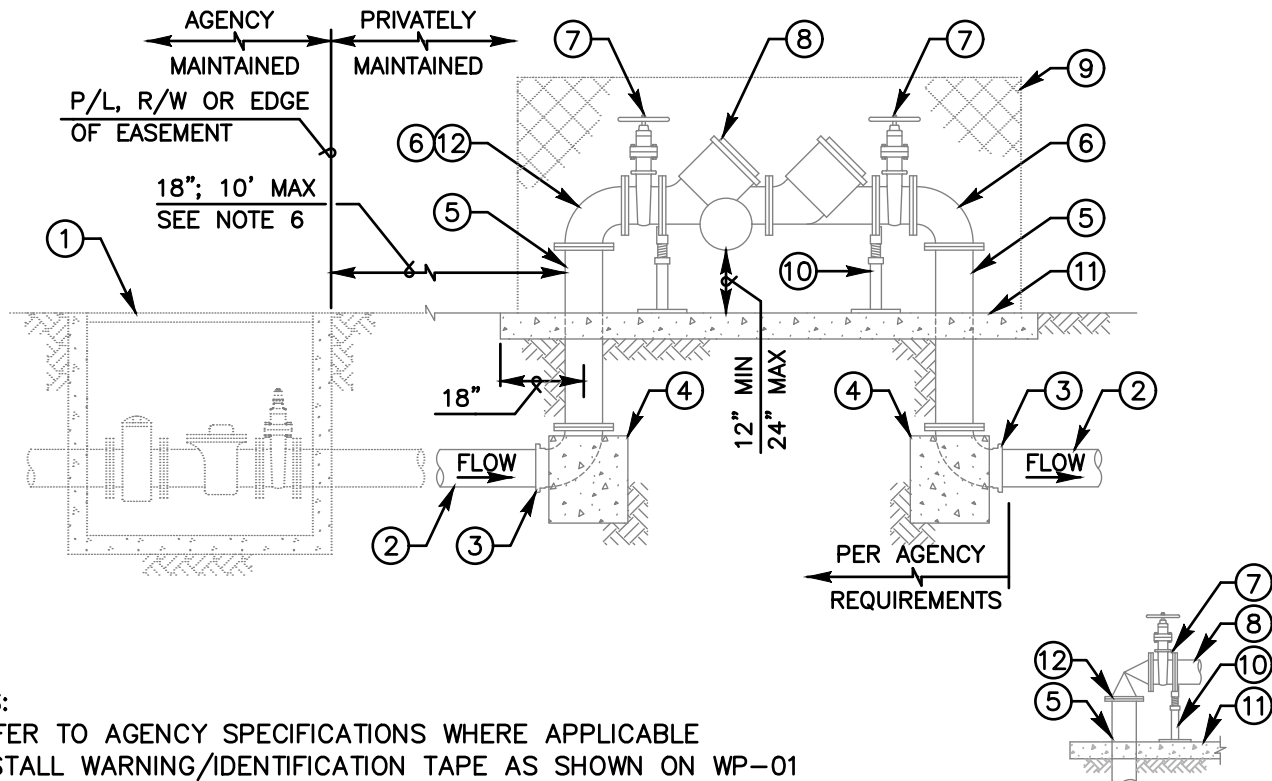
**NOTES:**

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) INSTALL WARNING/IDENTIFICATION TAPE AS SHOWN ON WP-01
- 3) LOCATE BACKFLOW PREVENTION DEVICE (BPD) IN SUCH A MANNER THAT WILL ALLOW THE DEVICE TO BE READILY ACCESSIBLE FOR INSPECTION AND REPAIR
- 4) STRAINERS SHALL NOT BE INSTALLED PRIOR TO THE FIRST SHUT-OFF VALVE
- 5) ALL ABOVE GROUND PIPING, UNIONS, ELBOWS, & NIPPLES SHALL BE SOLDERED OR THREADED BRASS
- 6) INSTALL A CASING ENCASED IN CONCRETE WHEN THE DISTANCE BETWEEN THE METER BOX AND THE RISER TO THE BPD EXCEEDS 18"
- 7) INSTALL AN ANGLE PRESSURE REDUCING VALVE IN LIEU OF THE FIRST 90° ELL WHEN SYSTEM PRESSURE EXCEEDS 150 PSI PER AGENCY SPECIFICATIONS
- 8) TESTING SHALL BE CONDUCTED IN ACCORDANCE WITH AGENCY SPECIFICATIONS PRIOR TO ACCEPTANCE
- 9) BPD & APPURTENANCES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN AGENCY SPECIFICATIONS
- 10) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST
- 11) BACKFLOW AND WATER METER SHALL BE OF EQUAL SIZE



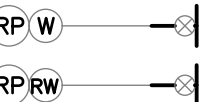
ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	METER BOX & METER ASSEMBLY SEE WS-01 & WS-02	⑥	BRASS OR COPPER PIPE SEE NOTE 5
②	SCH 80 PVC, BRASS OR COPPER PIPE	⑦	3" LONG NIPPLE SEE NOTE 5
③	CONCRETE THRUST BLOCK SEE WT-01	⑧	BALL VALVE "SHUT-OFF"
④	90° ELL SEE NOTES 5 & 7	⑨	REDUCED PRESSURE BACKFLOW DEVICE
⑤	CONCRETE SLAB, MINIMUM 4" THICK x 18" WIDE	⑩	ENCLOSURE (OPTIONAL)
		⑪	UNION SEE NOTE 5
		⑫	ANGLE PRV SEE NOTES 5 & 7

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Replaced W-27		J. Tomasulo	10/04	<b>3/4" THRU 2" REDUCED PRESSURE BACKFLOW PREVENTION DEVICE</b>	 Chairperson R.C.E. 19246 Date 10/25/2018
Delete Metric	MR	B. KNOLL	03/11		
Add Note 11	BK	B. KNOLL	04/15		
Updated	BK	B. KNOLL	10/18		
				DRAWING NUMBER	WR-01




NOTES:

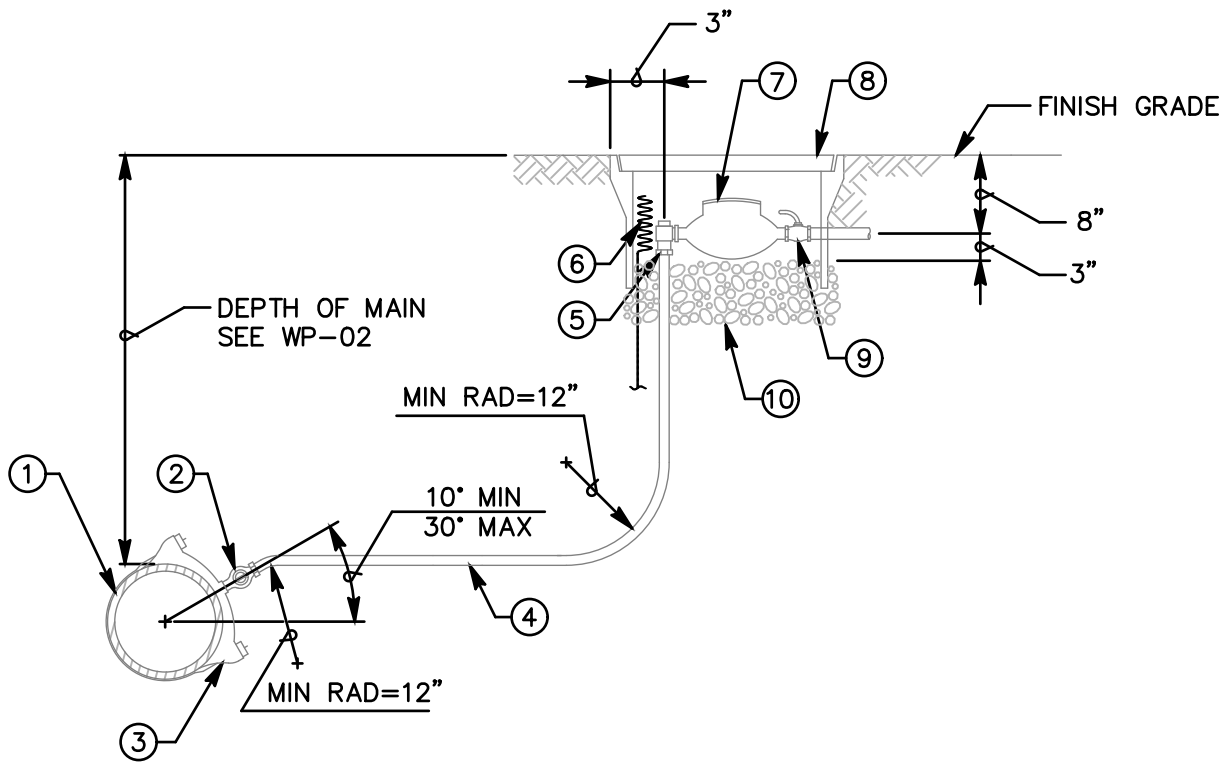
- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) INSTALL WARNING/IDENTIFICATION TAPE AS SHOWN ON WP-01
- 3) LOCATE BACKFLOW PREVENTION DEVICE (BPD) IN SUCH A MANNER THAT WILL ALLOW THE DEVICE TO BE READILY ACCESSIBLE FOR INSPECTION AND REPAIR
- 4) STRAINERS SHALL NOT BE INSTALLED PRIOR TO THE FIRST SHUT-OFF VALVE
- 5) INSTALL A CASING ENCASED IN CONCRETE WHEN THE DISTANCE BETWEEN THE METER BOX AND THE RISER TO THE BPD EXCEEDS 18"
- 6) INSTALL AN ANGLE PRESSURE REDUCING VALVE IN LIEU OF THE FIRST 90° ELL WHEN SYSTEM PRESSURE EXCEEDS 150 PSI PER AGENCY SPECIFICATIONS
- 7) TESTING SHALL BE CONDUCTED IN ACCORDANCE WITH AGENCY SPECIFICATIONS PRIOR TO ACCEPTANCE
- 8) BPD & APPURTENANCES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN AGENCY SPECIFICATIONS
- 9) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST



LEGEND ON PLANS

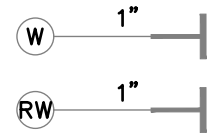
ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	METER VAULT & METER ASSEMBLY SEE WS-04	⑦	FLANGED RESILIENT WEDGE GATE VALVE
②	PVC OR DUCTILE IRON PIPE	⑧	REDUCED PRESSURE BACKFLOW DEVICE
③	FLG x FLG OR MJ/PO x FLG 90° BEND	⑨	ENCLOSURE (OPTIONAL)
④	CONCRETE THRUST BLOCK SEE WT-01	⑩	ADJUSTABLE VALVE SUPPORT
⑤	FLANGED DUCTILE IRON PIPE	⑪	CONCRETE SLAB, MINIMUM 4" THICK x 36" WIDE
⑥	FLANGED 90° BEND, SEE NOTE 6	⑫	FLANGED ANGLE PRESSURE REDUCING VALVE SEE NOTE 6

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Add Metric		T. Stanton	03/03	3" AND LARGER REDUCED PRESSURE BACKFLOW PREVENTION DEVICE	 10/25/2018 Chairperson R.C.E. 19246 Date
Replaced W-28		J. Tomasulo	10/04		
Delete Metric	MR	B. KNOLL	03/11		
Updated	BK	B. KNOLL	10/18	DRAWING NUMBER	WR-02




NOTES:

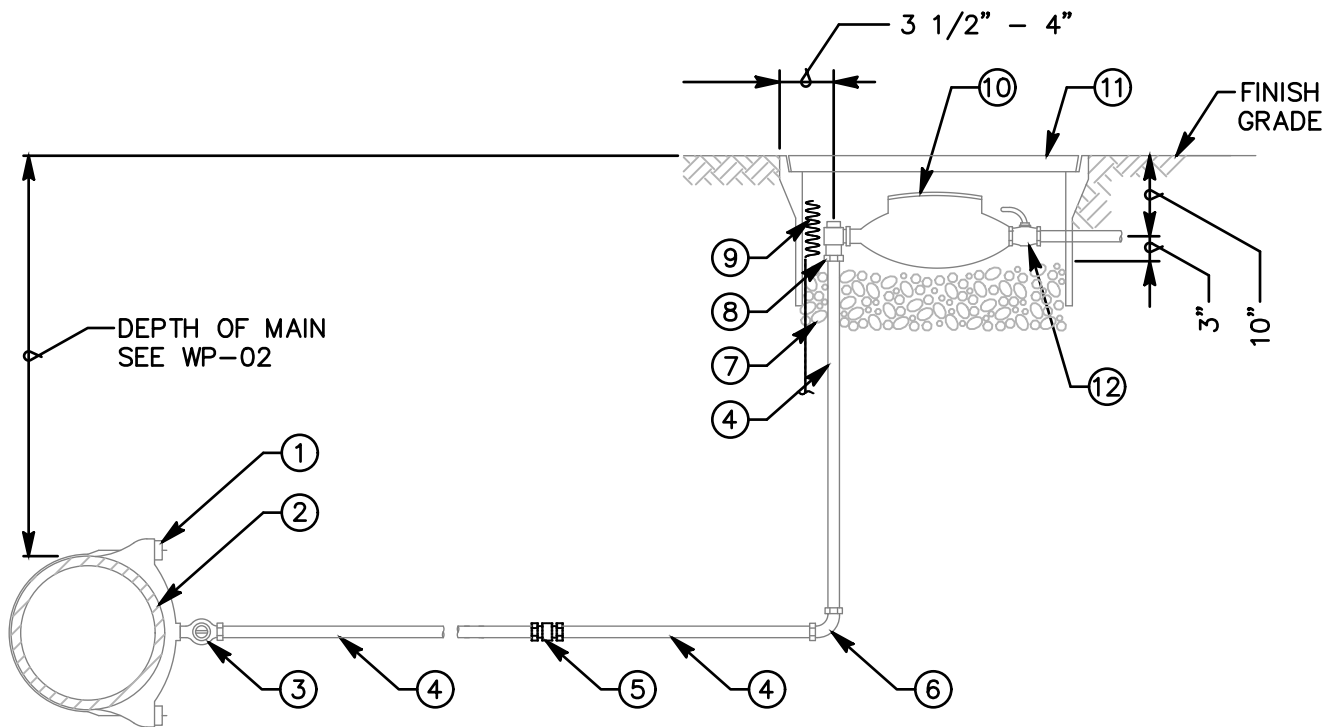
- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) INSTALL CORPORATION STOP WITH KEY IN THE SIDE POSITION
- 3) SET TOP OF METER BOX FLUSH WITH SIDEWALK, CURB, OR FINISH GRADE
- 4) LOCATE METER BOX AS SHOWN ON WS-03
- 5) INSTALL WARNING/IDENTIFICATION TAPE AS SHOWN ON WP-01
- 6) WATER LATERALS INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN AGENCY SPECIFICATIONS
- 7) SILVER SOLDER JOINTS SHALL NOT BE USED
- 8) ON STEEL MAINS USE WELD ON COUPLINGS, ON DUCTILE IRON MAINS USE DUCTILE IRON SERVICE SADDLES (INSULATING BUSHINGS ARE REQUIRED)
- 9) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST



LEGEND ON PLANS

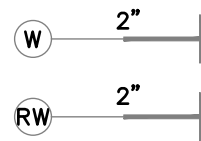
ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	WATER MAIN	⑦	WATER METER FURNISHED & INSTALLED BY THE WATER AGENCY OF JURISDICTION
②	1" BRONZE CORPORATION STOP	⑧	METER BOX WITH LID, 10" x 20"
③	SIZE x 1" SERVICE SADDLE	⑨	CUSTOMER SHUT-OFF VALVE (LOCKABLE) FURNISHED AND INSTALLED BY THE WATER AGENCY OF JURISDICTION
④	1" x REQUIRED LENGTH COPPER PIPE TYPE "K" SOFT	⑩	3/8" ROCK, 4" TO 6" DEEP
⑤	1" BRONZE ANGLE METER STOP WITH LOCKWING		
⑥	TRACER WIRE (AS REQUIRED), SEE WP-01		

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Add Metric		T. Stanton	03/03	1" WATER SERVICE INSTALLATION	 Chairperson R.C.E. 19246 Date 10/25/2018
Replaced W-01		J. Tomasulo	10/04		
Delete Metric	MR	B. KNOLL	03/11		
Updated	BK	B. KNOLL	10/18		
				DRAWING NUMBER	WS-01



**NOTES:**

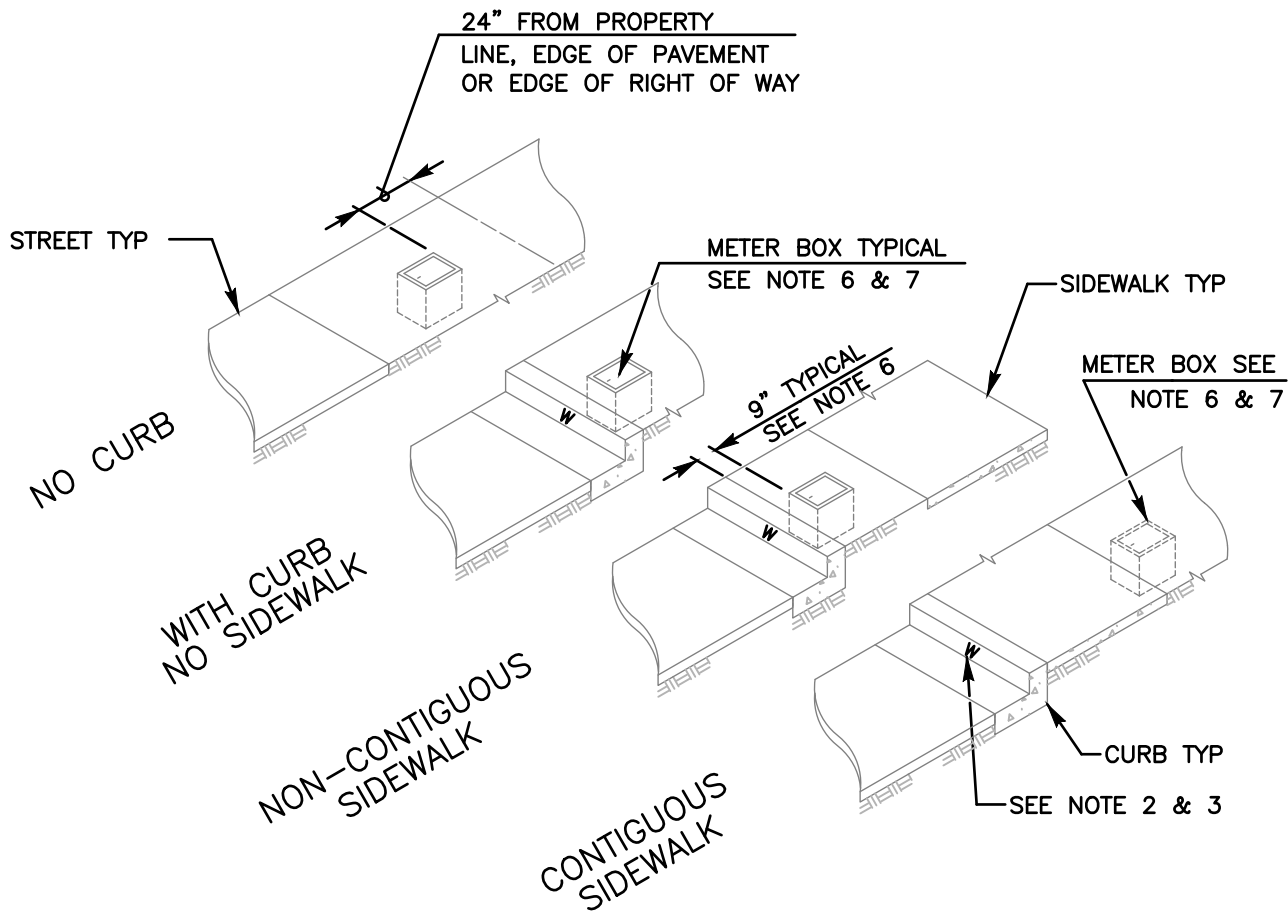
- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) INSTALL CORPORATION STOP WITH KEY IN THE SIDE POSITION
- 3) SET TOP OF METER BOX FLUSH WITH SIDEWALK, CURB, OR FINISH GRADE
- 4) LOCATE METER BOX AS SHOWN ON WS-03
- 5) INSTALL WARNING/IDENTIFICATION TAPE AS SHOWN ON WP-01
- 6) WATER LATERALS INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN AGENCY SPECIFICATIONS
- 7) SILVER SOLDER JOINTS SHALL NOT BE USED
- 8) ON STEEL MAINS USE WELD ON COUPLINGS, ON DUCTILE IRON MAINS USE DUCTILE IRON SERVICE SADDLES (INSULATING BUSHINGS ARE REQUIRED)
- 9) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST



LEGEND ON PLANS

ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	SIZE x 2" SERVICE SADDLE	⑦	3/8" ROCK, 4" TO 6" DEEP
②	WATER MAIN	⑧	2" BRONZE ANGLE METER STOP WITH LOCKWING
③	2" BRONZE CORPORATION STOP	⑨	TRACER WIRE (AS REQUIRED), SEE WP-01
④	2" x REQUIRED LENGTH COPPER PIPE TYPE "K" SOFT/RIGID OR UNLESS OTHERWISE SPECIFIED BY AGENCY OF JURISDICTION	⑩	WATER METER FURNISHED AND INSTALLED BY THE WATER AGENCY OF JURISDICTION
⑤	2" BRONZE COMPRESSION COUPLING COPPER TO COPPER (IF REQUIRED)	⑪	METER BOX WITH LID, 17"x 30"
⑥	2" BRONZE COMPRESSION ELL	⑫	CUSTOMER SHUT-OFF VALVE (LOCKABLE)

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Add Metric		T. Stanton	03/03	2" WATER SERVICE INSTALLATION	10/25/2018 Chairperson R.C.E. 19246 Date
Replaced W-02		J. Tomasulo	10/04		
Delete Metric	MR	B. KNOLL	03/11		
Updated	BK	B. KNOLL	10/18		
				DRAWING NUMBER	WS-02

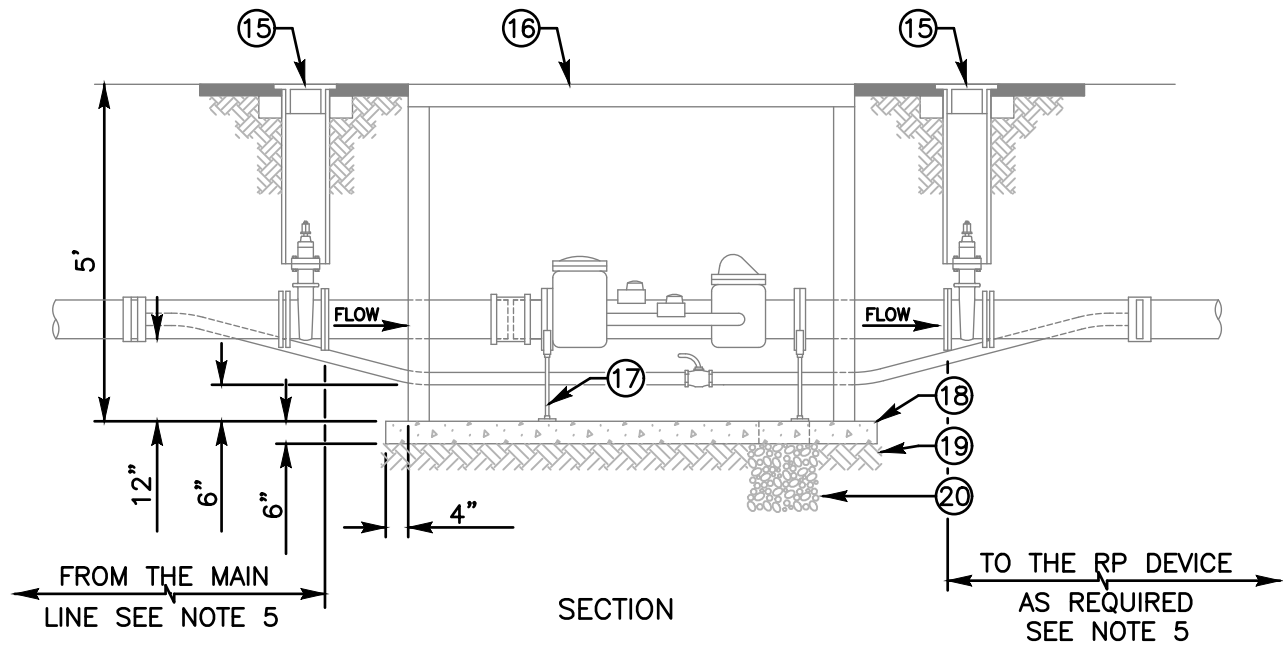
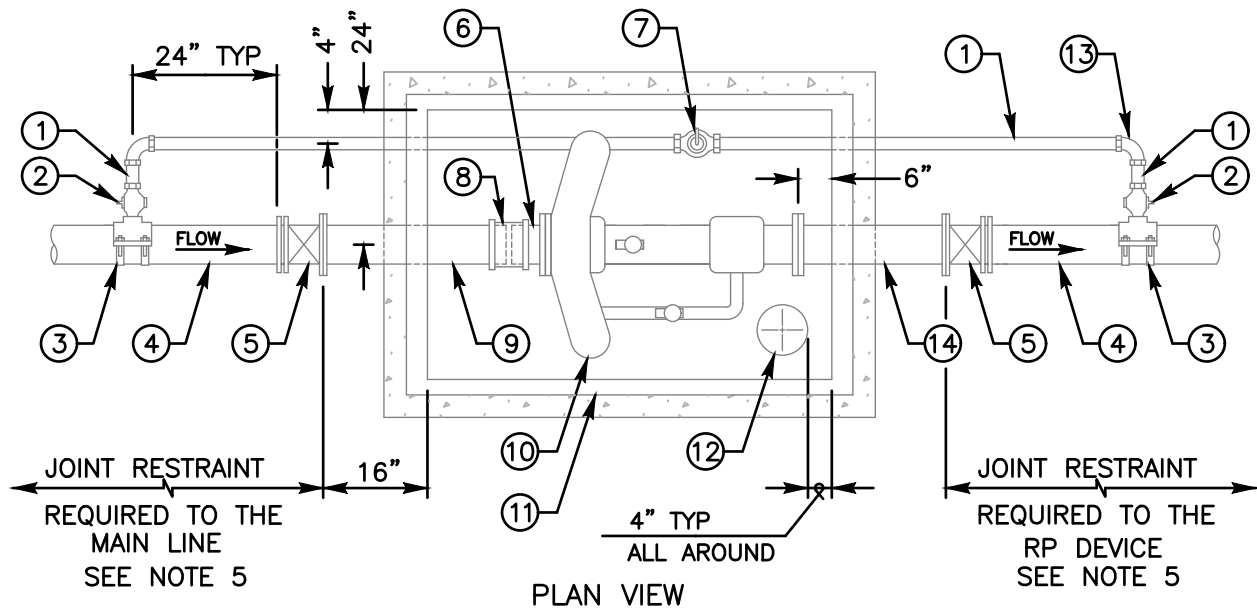


NOTES:

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) STAMP OR CHISEL A 2" HIGH 'W' IN CURB FACE TO IDENTIFY POTABLE WATER SERVICE LOCATION
- 3) STAMP OR CHISEL A 2" HIGH 'RW' IN CURB FACE TO IDENTIFY RECYCLED WATER SERVICE LOCATION
- 4) METER BOXES ARE NOT TO BE INSTALLED IN DRIVEWAYS, SIDEWALKS OR WITHIN PAVED ROADWAYS
- 5) MULTIPLE METER BOXES SHALL BE INSTALLED WITH A MINIMUM OF 9" BETWEEN BOXES
- 6) METER BOX SHALL BE INSTALLED 9" FROM THE BACK OF BERM, CURB, OR SIDEWALK (TYP)
- 7) AN EASEMENT MAY BE NEEDED DEPENDING ON LOCATION OF METER BOX
- 8) METER BOXES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN AGENCY'S SPECIFICATIONS
- 9) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Add Metric		T. Stanton	03/03	METER BOX LOCATIONS FOR WATER AND RECYCLED WATER APPURTENANCES	<i>T. Stanton</i> 10/25/2018
Replaced W-15		J. Tomasulo	10/04		Chairperson R.C.E. 19246 Date
Delete Metric	MR	B. KNOLL	03/11		DRAWING NUMBER
Updated	BK	B. KNOLL	10/18		WS-03





FOR MATERIAL DESCRIPTIONS AND NOTES SEE WS-04 (2 OF 2)

(INDICATE SIZE)



LEGEND ON PLANS

Revision	By	Approved	Date
ORIGINAL		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Updated	BK	B. KNOLL	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

4" OR 6" FIRELINE/MASTER METER  
INSTALLATION

RECOMMENDED BY THE SAN DIEGO  
REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/2018  
Chairperson R.C.E. 19246 Date

DRAWING  
NUMBER WS-04 (1 OF 2)

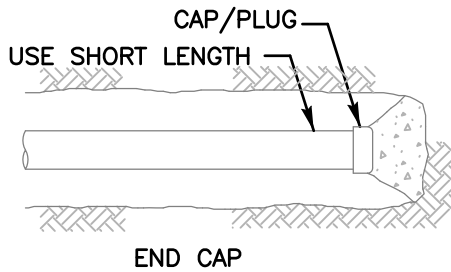
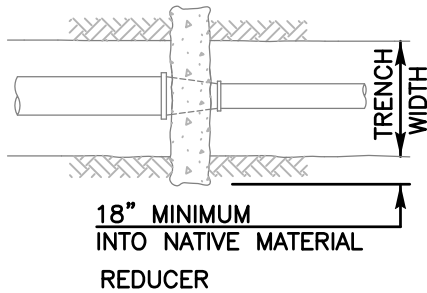
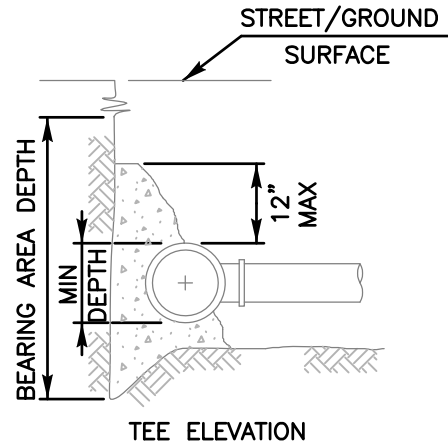
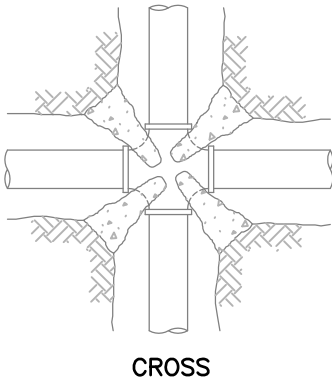
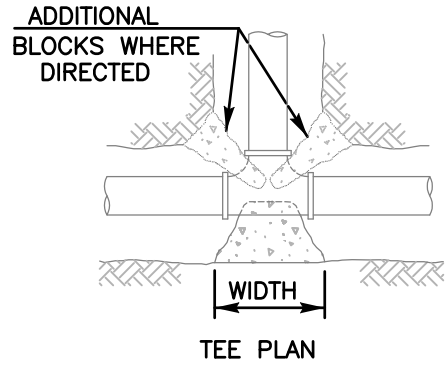
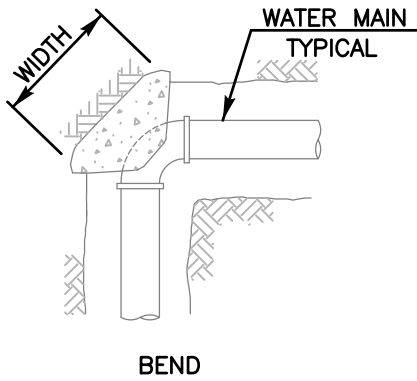
FOR DRAWING OF THE METER INSTALLATION SEE WS-04 (SHEET 1 OF 2)

NOTES:

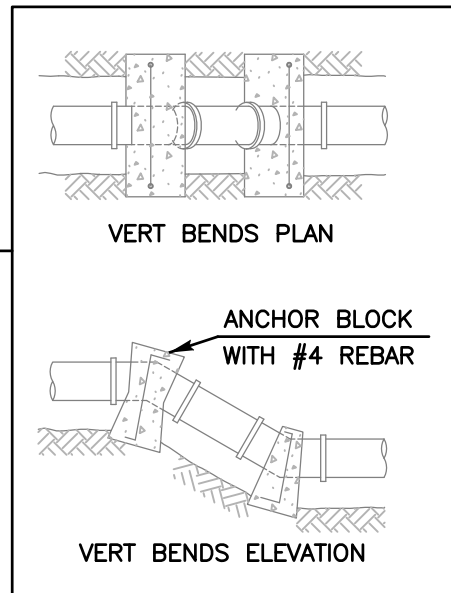
- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) TO BE USED WHERE BOTH DOMESTIC SERVICE AND FIRE PROTECTION ARE INSTALLED ON THE SAME PRIVATE SYSTEM
- 3) LOCATION OF METER SHALL BE APPROVED BY THE DISTRICT ENGINEER PRIOR TO INSTALLATION IN ACCORDANCE WITH STANDARD DWG WS-06
- 4) 8" OR 10" METERS TO BE DESIGNED BY AN ENGINEER AND SUBMITTED FOR AGENCY'S APPROVAL AS NEEDED ON A CASE-BY-CASE BASIS
- 5) JOINT RESTRAINT SHALL BE IN ACCORDANCE WITH AGENCY SPECIFICATIONS
- 6) METERS SHALL BE FURNISHED AND INSTALLED BY THE AGENCY OF JURISDICTION
- 7) 4" METER REQUIRES A 48" x 60" VAULT 6" METER REQUIRES A 48" x 72" VAULT
- 8) IN AREAS WHERE GROUND WATER IS PRESENT THE AGENCY'S ENGINEER MAY REQUIRE A SEALED SUMP TO BE CONSTRUCTED
- 9) CONNECTIONS TO STEEL WATER MAINS SHALL BE IN ACCORDANCE WITH AGENCY SPECIFICATIONS
- 10) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST

ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	2" x REQUIRED LENGTH TYPE "K" COPPER PIPE	⑪	FRP VAULT WITH HINGED ACCESS DOOR, SEE NOTE 7
②	2" BRONZE CORPORATION STOP	⑫	12" DIAMETER x 6" LONG PVC PIPE
③	LINE SIZE x 2" SERVICE SADDLE	⑬	2" 90° COMPRESSION ELL (TYPICAL)
④	4" OR 6" PVC PIPE	⑭	LINE SIZE x 24" LONG FLANGED DUCTILE-IRON SPOOL
⑤	4" OR 6" FLG x MJ RWGV MECHANICALLY RESTRAINED, SEE NOTE 5	⑮	8" GATE WELL. SEE WV-01 & WV-02
⑥	LINE SIZE x 6" LONG FLG x PE DUCTILE-IRON SPOOL	⑯	HINGED VAULT ACCESS DOOR
⑦	2" COMPRESSION, LOCKABLE BALL VALVE	⑰	ADJUSTABLE PIPE SUPPORT (TYPICAL)
⑧	4" OR 6" FLEXIBLE COUPLING	⑱	6" CLASS "B" CONCRETE FLOOR WITH #3 BARS @ 12" C.C.
⑨	LINE SIZE x 30" LONG FLG x PE DUCTILE-IRON SPOOL	⑲	6" DG BASE COMPACTED TO 90%
⑩	4" OR 6" FIRELINE METER SEE NOTE 6	⑳	12" DIAMETER x 12" DEEP, ¾" GRAVEL SUMP, SEE NOTE 8

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		J. Tomasulo	10/04		
Delete Metric	MR	B. KNOLL	03/11	4" OR 6" FIRELINE/MASTER METER INSTALLATION	<i>M. Stanton</i> 10/25/2018
Updated	BK	B. KNOLL	10/18		Chairperson R.C.E. 19246 Date
					DRAWING NUMBER WS-04 (2 OF 2)



SEE NOTE 2 BELOW



**NOTES:**

- 1) FOR ADDITIONAL THRUST BLOCKS, ANCHOR BLOCKS AND NOTES SEE WT-01 (2 OF 3) & (3 OF 3)
- 2) THE ANCHOR BLOCKS ON VERTICAL BENDS REQUIRE AGENCY APPROVAL

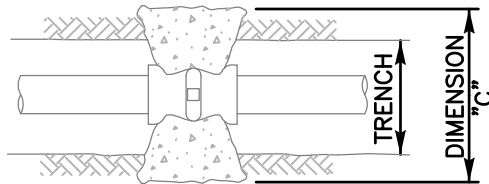
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		<b>CONCRETE THRUST AND ANCHOR BLOCK INSTALLATIONS</b>
Repl. W-17 through W-22		J. Tomasulo	10/04		
Delete Metric	MR	B. KNOLL	03/11	<b>DRAWING NUMBER WT-01 (1 OF 3)</b>	
Reviewed	MR	B. KNOLL	10/15		
Reviewed	MR	B. KNOLL	10/18		

VALVE SUPPORT BLOCK

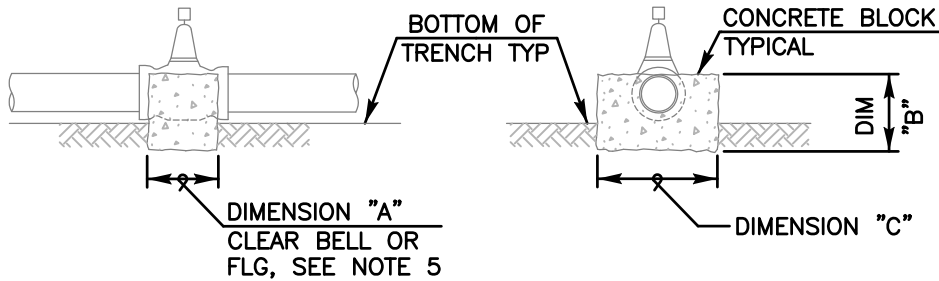
VALVE SIZE	DIMENSION "A"	DIMENSION "B"
4"	12"	12"
6"	12"	12"
8"	13"	14"
10"	14"	16"
12"	15"	18"
DIMENSION "C" = TRENCH WIDTH PLUS TWO TIMES THE PIPE DIAMETER		

THRUST AND ANCHOR BLOCKS

MINIMUM BEARING AREA IN SQUARE FOOT SEE NOTE 2				
MAIN SIZE	TEES	90° BEND	45° BEND	22½° BEND
4"	4	5	3	1.5
6"	8	10	5	2.5
8"	12	16	9	4.5
10"	17	24	13	6.5
12"	24	33	19	9.5



VALVE SUPPORT PLAN

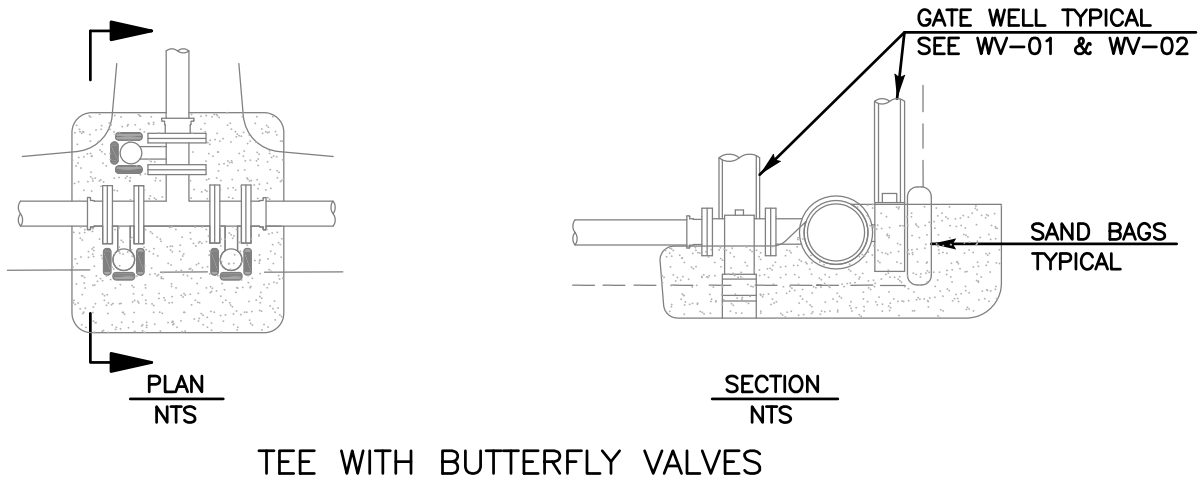
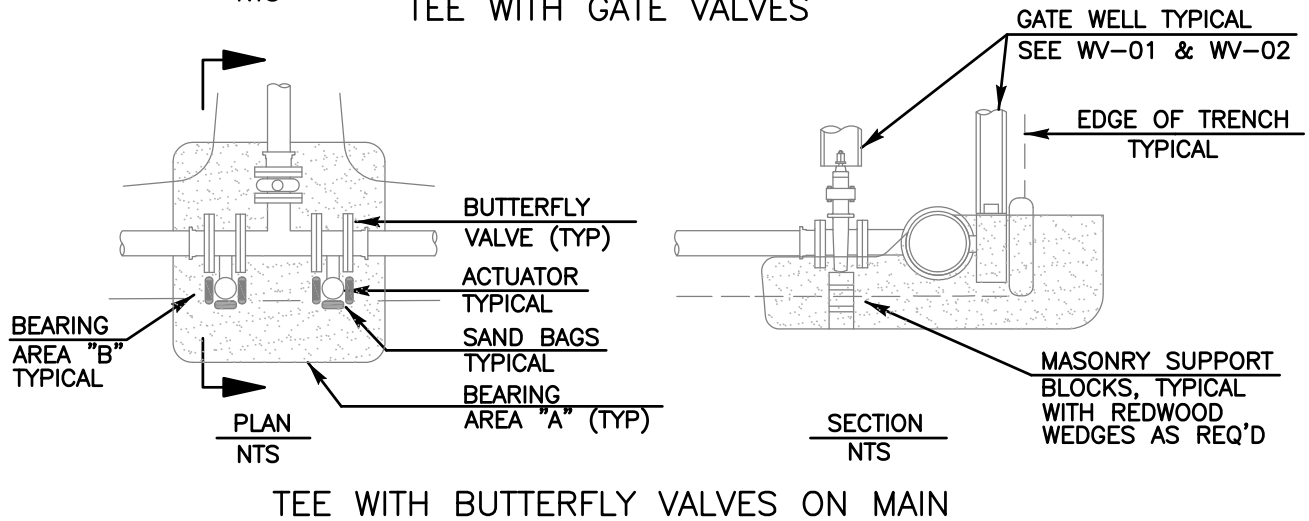
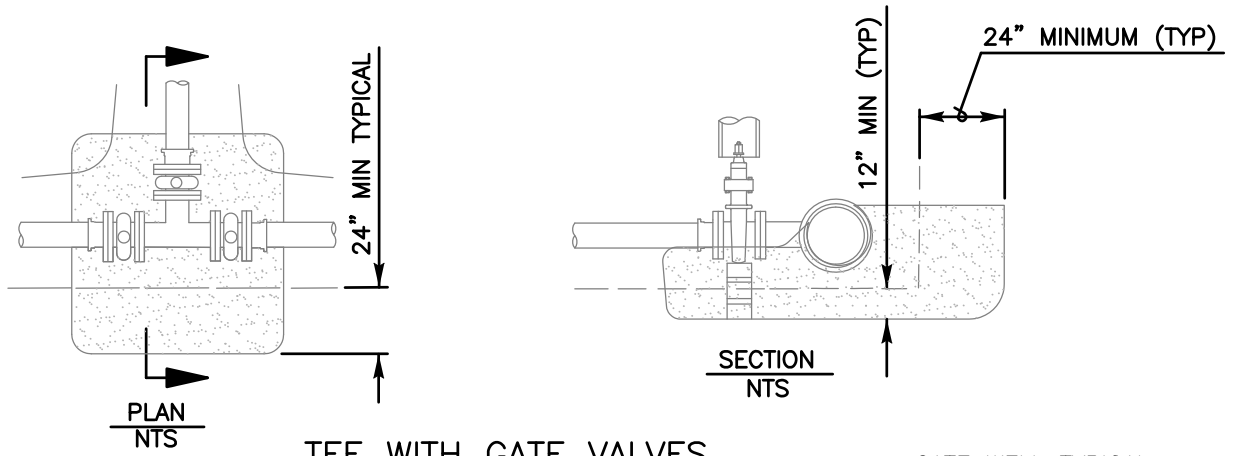


VALVE SUPPORT ELEVATION

NOTES:

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) BEARING AREA BASED ON SOIL BEARING VALUE OF 1500 PSF AND 225 PSI LINE PRESSURE AND A MINIMUM OF 36" COVER  
FOR BEARING= 1000 PSF, 1.5 x AREA SHOWN  
FOR BEARING= 500 PSF, 3.0 x AREA SHOWN
- 3) DESIGN ENGINEER SHALL DETERMINE SIZES, REFER TO AGENCY SPECIFICATIONS FOR THRUST AND ANCHOR BLOCK SIZING
- 4) THRUST BLOCKS SHALL BE CENTERED ON THE FITTING SO THAT THE BEARING AREA IS EXACTLY OPPOSITE THE RESULTANT DIRECTION OF THRUST
- 5) CONCRETE SHALL BE PLACED SO THAT FITTINGS AND VALVES WILL BE ACCESSIBLE FOR REPAIR OR REPLACEMENT
- 6) ALL THRUST AND ANCHOR BLOCKS SHALL BE POURED AGAINST WETTED UNDISTURBED SOIL
- 7) FOR MINIMUM CONCRETE CURING TIME REFER TO AGENCY SPECIFICATIONS
- 8) FOR ADDITIONAL THRUST BLOCKS SEE WT-01 (1 OF 3) & (3 OF 3)

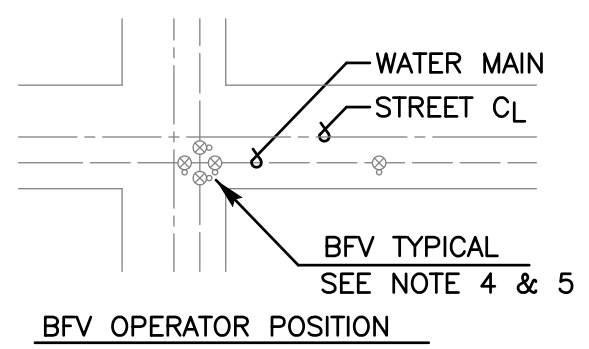
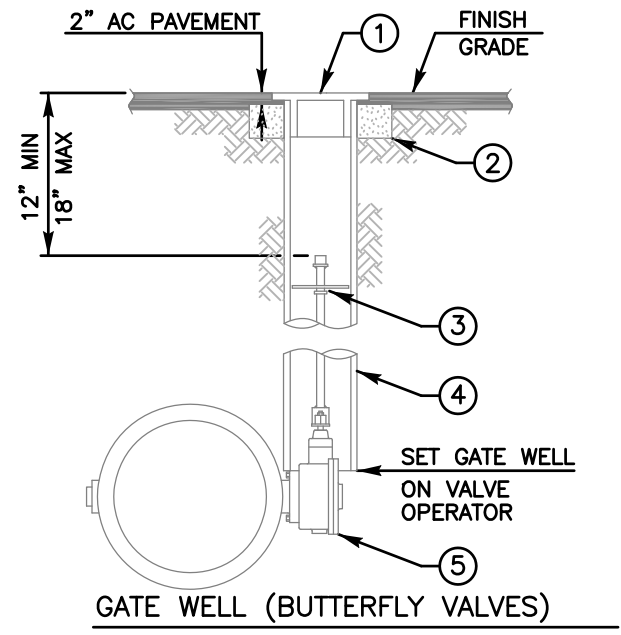
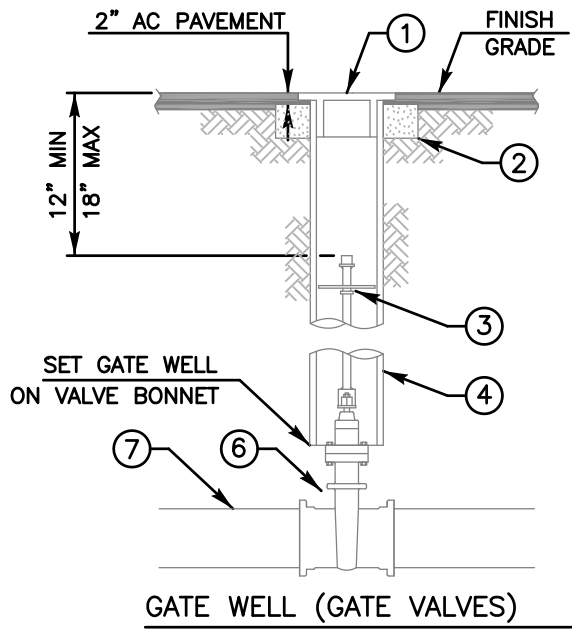
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		CONCRETE THRUST AND ANCHOR BLOCK INSTALLATIONS
Repl. W-17 through W-22		J. Tomasulo	10/04	Chairperson R.C.E. 19246 Date	
Delete Metric	MR	B. KNOLL	03/11	DRAWING NUMBER WT-01 (2 OF 3)	
Reviewed	MR	B. KNOLL	10/15		
Reviewed	MR	B. KNOLL	10/18		



NOTES:

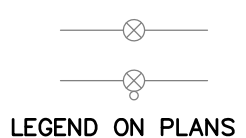
- 1) BEARING AREA "B" MUST BE EQUAL TO OR GREATER THAN THE AREA REQUIRED FOR A 90° ELBOW INSTALLATION
- 2) INSTALL SAND BAGS AROUND BUTTERFLY VALVE ACTUATOR TO ISOLATE IT FROM CONCRETE
- 3) BFV'S INSTALLED AT CROSSES OR TEES REQUIRE A FLANGED DUCTILE IRON SPOOL TO BE INSTALLED BETWEEN THE FITTING AND VALVE IN ACCORDANCE WITH THE AGENCY SPECIFICATIONS

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		CONCRETE THRUST AND ANCHOR BLOCK INSTALLATIONS
Repl. W-17 through W-22		J. Tomasulo	10/04		
Delete Metric	MR	B. KNOLL	03/11		
Reviewed	MR	B. KNOLL	10/15		
Reviewed	MR	B. KNOLL	10/18		
					 10/25/2018 Chairperson R.C.E. 19246 Date
					DRAWING NUMBER WT-01 (3 OF 3)



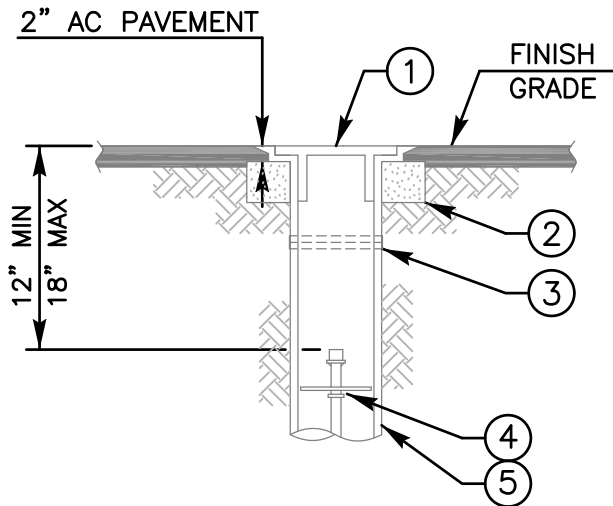
**NOTES:**

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) VALVES DEEPER THAN 5' REQUIRE A VALVE STEM EXTENSION
- 3) EXTENSION STEMS SHALL NOT BE ATTACHED/BOLTED TO OPERATING NUT
- 4) GATE WELL AND CAP SHALL BE SET SO THAT NO MORE THAN TWO 1" ADJUSTMENT RINGS ARE USED
- 5) BFV OPERATORS TO BE LOCATED TO THE CURBLINE SIDE OF WATER MAIN
- 6) BFV'S INSTALLED AT CROSSES OR TEES REQUIRE A FLANGED DUCTILE IRON SPOOL TO BE INSTALLED BETWEEN THE FITTING AND VALVE IN ACCORDANCE WITH THE AGENCY'S SPECIFICATIONS
- 7) GATE WELLS AND CAPS SHALL BE IDENTIFIED AS DESCRIBED ON WV-03
- 8) FOR INLINE VALVE ANCHOR BLOCK INSTALLATION SEE WT-02
- 9) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST

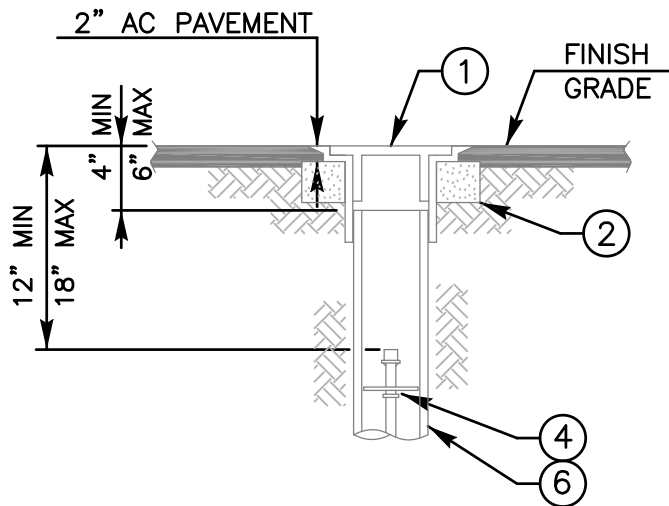


ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	GATE WELL WITH CAP SEE NOTE 7	④	8" PVC CL 200, C-900 PIPE x REQUIRED LENGTH GATE WELL SEE NOTE 7
②	6" HIGH x 6" WIDE COMPACTED ASPHALT-CONCRETE RING	⑤	BUTTERFLY VALVE
③	VALVE STEM EXTENSION SEE NOTES 2 & 3	⑥	RESILIENT WEDGE GATE VALVE
		⑦	WATER MAIN

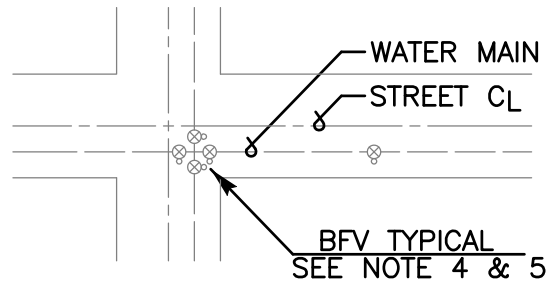
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Repl. W-12A and W-12B		J. Tomasulo	10/04	GATE WELL CAP INSTALLATION, FOR VALVES 4" AND LARGER	<i>M. Stanton</i> 10/25/2018 Chairperson R.C.E. 19246 Date
Delete Metric	MR	B. KNOLL	03/11		DRAWING NUMBER WV-01
Reviewed	MR	B. KNOLL	10/15		
Reviewed	MR	B. KNOLL	10/18		



8" GATE WELL TYPE A



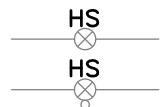
6" GATE WELL TYPE B



BFV OPERATOR POSITION

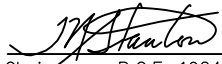
**NOTES:**

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) VALVES DEEPER THAN 5' REQUIRE A VALVE STEM EXTENSION
- 3) EXTENSION STEMS SHALL NOT BE ATTACHED/BOLTED TO OPERATING NUT
- 4) GATE WELL AND CAP SHALL BE SET SO THAT NO MORE THAN TWO 1" ADJUSTMENT RINGS ARE USED
- 5) BFV OPERATORS TO BE LOCATED TO THE CURBLINE SIDE OF WATER MAIN
- 6) BFV'S INSTALLED AT CROSSES OR TEES REQUIRE A FLANGED DUCTILE IRON SPOOL TO BE INSTALLED BETWEEN THE FITTING AND VALVE IN ACCORDANCE WITH THE AGENCY'S SPECIFICATIONS
- 7) GATE WELLS AND CAPS SHALL BE IDENTIFIED AS DESCRIBED ON WV-03
- 8) FOR INLINE VALVE ANCHOR BLOCK INSTALLATION SEE WT-02
- 9) GATE WELL TYPE AS APPROVED BY AGENCY
- 10) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST



LEGEND ON PLANS

ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	GATE WELL WITH CAP SEE NOTE 7	④	VALVE STEM EXTENSION SEE NOTES 2 & 3
②	6" HIGH x 6" WIDE COMPACTED ASPHALT-CONCRETE RING	⑤	8" PVC CL 200, C-900 PIPE x REQUIRED LENGTH GATE WELL SEE NOTE 7
③	CAULDER COUPLING	⑥	6" PVC CL 200, C-900 PIPE x REQUIRED LENGTH GATE WELL SEE NOTE 7

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
		J. Tomasulo	10/04	GATE WELL CAP & CAN INSTALLATION, FOR VALVES 4" AND LARGER	 10/25/2018 Chairperson R.C.E. 19246 Date
Delete Metric	MR	B. KNOLL	03/11		
Reviewed	MR	B. KNOLL	10/15		
Reviewed	MR	B. KNOLL	10/18		
					DRAWING NUMBER WV-02



RECYCLED  
WATER



POTABLE  
WATER

GATE WELL LIDS  
SEE NOTE 2 BELOW

COLOR	GATE WELL LIDS USED FOR:
RED	NORMALLY CLOSED SYSTEM VALVES (NCV)
PURPLE	RECYCLED WATER VALVES: LINE VALVES & AIR VALVES
YELLOW	POTABLE WATER VALVES: LINE VALVES, FIRE SERVICES, & AIR VALVES
WHITE	FIRE HYDRANTS

GATE WELL LID COLORS  
SEE NOTE 5 BELOW

COLOR	GATE WELL AND LIDS USED FOR:
RED	NORMALLY CLOSED SYSTEM VALVES (NCV)
WHITE	RESILIENT WEDGE GATE VALVES
GREEN	BUTTERFLY VALVES

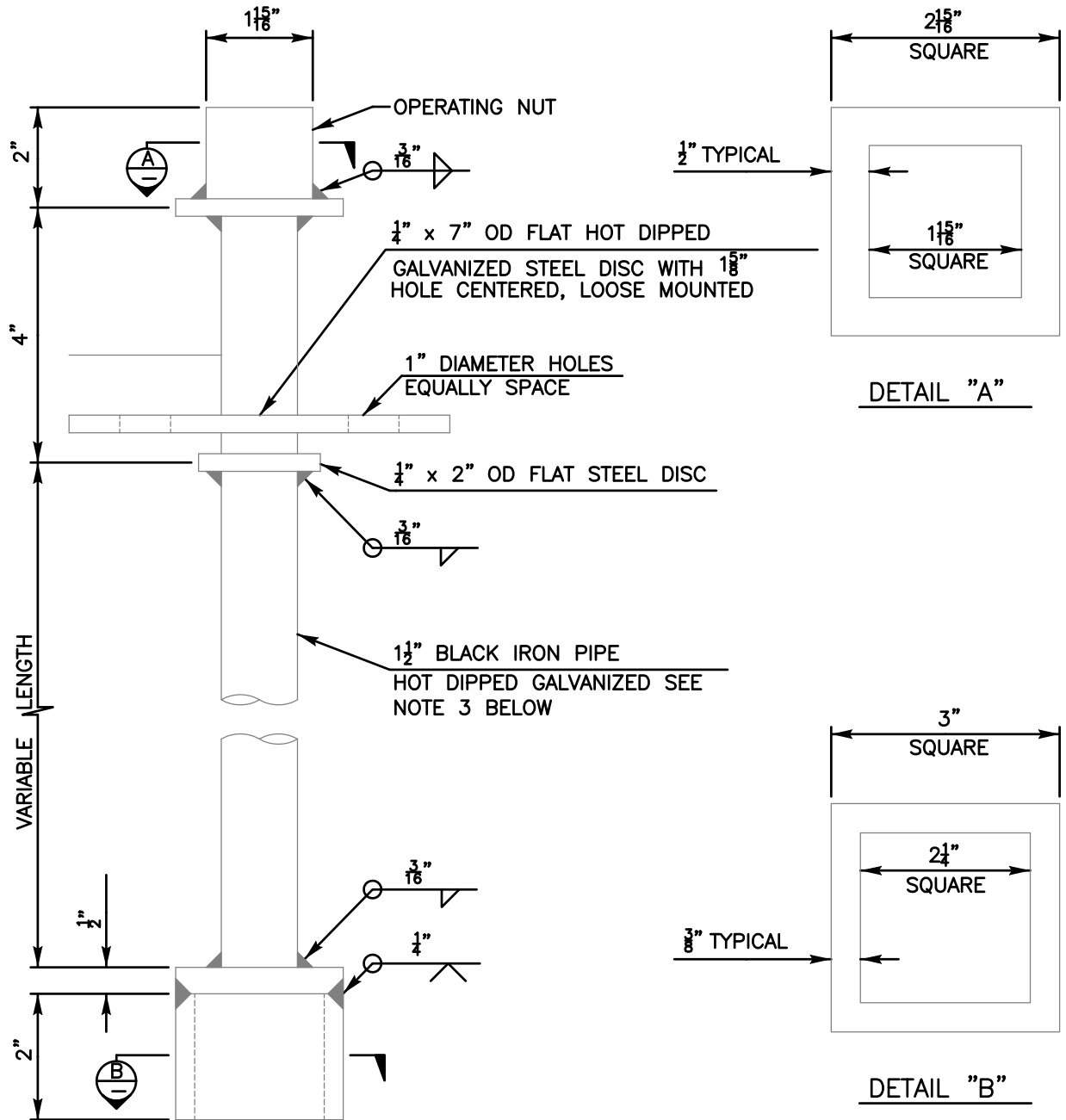
PAINTED IDENTIFICATION MARKING  
SEE NOTE 4 BELOW

NOTES:

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) GATE WELL LIDS SHALL BE CAST WITH THE "AGENCY NAME" AND THE WORD "WATER" FOR USE WITH POTABLE WATER SYSTEMS AND "RECYCLED" FOR USE WITH RECYCLED WATER SYSTEMS. LIDS SHALL INCLUDE A 1" LIFTING SLOT
- 3) PVC GATE WELLS SHALL BE MANUFACTURED IN WHITE OR BLUE FOR USE WITH POTABLE WATER, AND PURPLE FOR USE WITH RECYCLED WATER
- 4) THE INSIDE PORTIONS OF THE GATE WELL LID AND PVC GATE WELL SHALL BE IDENTIFIED WITH A PAINTED IDENTIFICATION MARKING.
- 5) THE TOP EXTERIOR PORTION OF GATE WELL LIDS SHALL BE PAINTED WITH COLORS TO IDENTIFY THE USE OF THE VALVE INSTALLED, AS SHOWN ABOVE
- 6) INSTALLATION FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN AGENCY'S SPECIFICATIONS AND AS NOTED ABOVE
- 7) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST


Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		GATE WELL IDENTIFICATION
Repl. W-12A and W-12B		J. Tomasulo	10/04		
Delete Metric	MR	B. KNOLL	03/11		
Reviewed	MR	B. KNOLL	10/15		
Reviewed	MR	B. KNOLL	10/18		
				DRAWING NUMBER	WV-03

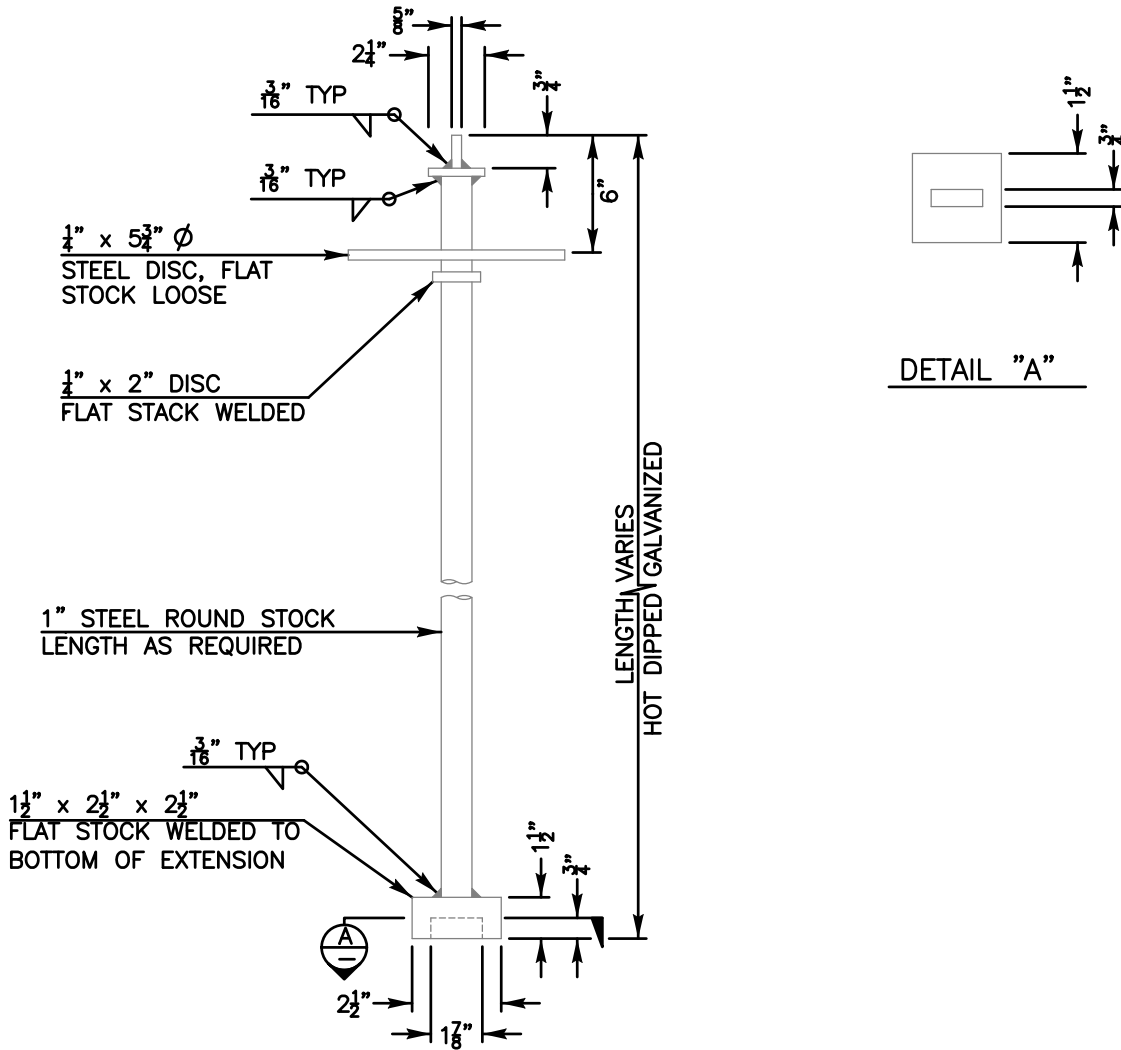




NOTES:

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE AND STANDARD DRAWINGS WV-01 AND WV-02
- 2) STEEL EXTENSION STEMS SHALL BE USED ONLY WHERE THE MAXIMUM LENGTHS OF THE EXTENSION EXCEEDS 8' AND AT THE REQUEST OF THE AGENCY'S ENGINEER
- 3) EXTENSION STEMS SHALL BE ROUND OR SQUARE STEEL TUBING OF SOLID DESIGN (NO PINNED COUPLINGS PERMITTED)
- 4) VALVES DEEPER THAN 5' REQUIRE A VALVE STEM EXTENSION
- 5) EXTENSION STEMS SHALL NOT BE ATTACHED/BOLTED TO OPERATING NUT OF THE VALVE
- 6) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		G.Parkinson	5/92		
Replaced W-13		J. Tomasulo	10/04		
Delete Metric	MR	B. KNOLL	03/11	STEEL VALVE STEM EXTENSION FOR VALVES 4" AND LARGER	 Chairperson R.C.E. 19246 Date 10/25/2018
Reviewed	MR	B. KNOLL	10/15		
Reviewed	MR	B. KNOLL	10/18		
				DRAWING NUMBER	WV-04



NOTES:

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) EXTENSION STEMS SHALL BE ROUND STEEL TUBING OF SOLID DESIGN (NO PINNED COUPLINGS PERMITTED)
- 3) VALVES DEEPER THAN 5' AND 2" AIR VALVES REQUIRE A VALVE STEM EXTENSION OR AS REQUIRED BY THE AGENCY OF JURISDICTION
- 4) EXTENSION STEMS SHALL NOT BE ATTACHED/BOLTED TO OPERATING NUT OF THE VALVE
- 5) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		G.Parkinson	5/92		STEEL VALVE STEM EXTENSION FOR VALVES 2" AND SMALLER
Replaced W-13		J. Tomasulo	10/04	Chairperson R.C.E. 19246 Date	
Delete Metric	MR	B. KNOLL	03/11	DRAWING NUMBER	
Reviewed	MR	B. KNOLL	10/15	WV-05	
Reviewed	MR	B. KNOLL	10/18		

# **APPENDIX "A"**

## **TRAFFIC CONTROL PLANS**

# TRAFFIC CONTROL PLANS

## GENERAL INFORMATION

SAN DIEGO REGIONAL STANDARDS TRAFFIC CONTROL PLANS ARE COMPILED BY UTILIZING PREVIOUSLY DEVELOPED AND STATE APPROVED TRAFFIC CONTROL PLANS CREATED BY BOTH THE 2010 CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (CA MUTCD) AND THE 2010 CALIFORNIA JOINT UTILITIES TRAFFIC CONTROL MANUAL (CJUTCM). THEIR CONSISTENT COMMITMENT TO SAFE AND EFFECTIVE TEMPORARY TRAFFIC CONTROL ARE REFLECTED IN THE TRAFFIC CONTROL PLANS CONTAINED IN THIS SECTION.

PART 6 OF THE CA MUTCD MANUAL "TEMPORARY TRAFFIC CONTROL" IS PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION. THE CJUTCM IS PREPARED BY A PANEL REPRESENTING CALIFORNIA UTILITIES, WHO'S WORK ROUTINELY IMPACTS THE PUBLIC RIGHT OF WAY. BOTH MANUALS HAVE BEEN APPROVED BY THE CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS). THESE MANUALS IN COMBINATION ARE ISSUED TO PROVIDE THE BASIC STANDARD FOR THE UNIFORM TYPES OF WARNING DEVICES, LIGHTS, AND OTHER DEVICES PLACED UPON ANY PUBLIC ROADWAY OR STREET. ANY PERSON ENGAGED IN PERFORMING WORK THAT INTERFERES WITH OR ENDANGERS THE MOVEMENT OF TRAFFIC UPON A STREET OR HIGHWAY MUST DO SO SAFELY IN ACCORDANCE WITH SECTIONS 21367 AND 21400 OF THE CALIFORNIA VEHICLE CODE.

THE TYPICAL APPLICATION DRAWING FOUND IN THIS CHAPTER CAN BE USED BY ANY INDIVIDUAL, UTILITY OR CONTRACTOR WHO NEEDS TO PROVIDE TEMPORARY TRAFFIC CONTROL TO COMPLETE THEIR WORK. THE INTENT OF THIS CHAPTER IS TO BE A RESOURCE FOR MUNICIPALITIES AND JURISDICTIONS TO REFER OTHERS AS WELL AS THEIR OWN CREWS WHO NEED TO ERECT TEMPORARY TRAFFIC CONTROL.

BEFORE WORK BEGINS, TRAFFIC CONTROL PLANS ADDRESSING VEHICLE, BIKE, AND PEDESTRIAN TRAFFIC THROUGH A CONSTRUCTION ZONE MAY NEED TO BE APPROVED BY THE PUBLIC AGENCY OR AUTHORITY HAVING JURISDICTION OVER THE ROADWAY. NOTHING CONTAINED IN THIS CHAPTER SHALL PREVENT LOCAL JURISDICTIONS FROM MODIFYING, CHANGING, OR ADOPTING NEW SPECIFICATIONS THEY DEEM NECESSARY. THE TEXT AND TYPICAL DRAWINGS IN THIS CHAPTER ARE NOT A LEGAL STANDARD. CRITERIA FOR POSITION, LOCATION, AND USE OF TRAFFIC CONTROL DEVICES ARE FURNISHED SOLELY FOR THE PURPOSE OF GUIDANCE AND INFORMATION TO ASSIST IN THE PREPARATION OF TEMPORARY TRAFFIC CONTROL PLANS.

IT IS THE RESPONSIBILITY OF THE CONTRACTOR OR ORGANIZATION PERFORMING WORK ON, OR ADJACENT TO, A ROADWAY TO INSTALL AND MAINTAIN THE PROPER TRAFFIC CONTROL DEVICES WHICH ARE NECESSARY TO PROVIDE SAFETY FOR BOTH THE TRAVELING PUBLIC AND THE WORKERS.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
TEXT	BUSS		2/11	TRAFFIC CONTROL PLANS	 10/25/18 Chairperson R.C.E. 19246
Reviewed	DG	D.Gerschoffer	9/15		
Reviewed	TC	T.Cotter	10/18		
					DRAWING NUMBER TCP-01

# TRAFFIC CONTROL PLANS

## TABLE OF CONTENTS

TCP-01	GENERAL INFORMATION
TCP-02A	TABLE OF CONTENTS
TCP-02B	TABLE OF CONTENTS (CONTINUED)
TCP-03	TYPICAL CONSTRUCTION SIGNS
TCP-04	DEVICE SPACING TABLES
TCP-05A	TRAFFIC CONTROL PLAN COVER SHEET
TCP-05B	TRAFFIC CONTROL PLAN COVER SHEET (CONTINUED)
TCP-05C	AGENCY ENGINEER'S COMMENTS/GENERAL NOTES SHEET
TCP-06	SIDE OF THE ROAD - ROAD W/O CENTERLINE
TCP-07A	SIDE OF THE ROAD - TWO LANE W/CENTERLINE
TCP-07B	MULTI-LANE EDGE OF GUTTER CLOSURE
TCP-07C	SIDE OF ROAD - SHOULDER CLOSED
TCP-08	CENTER OF ROAD - TWO LANE W/O CENTERLINE
TCP-09	SIDE OF ROAD - TWO LANE W/FLAGGERS - 1 LANE CLOSED
TCP-10A	SIDE OF ROAD - MULTILANE W/CENTERLINE - 1 LANE CLOSED
TCP-10B	SIDE OF ROAD - MULTILANE W/CENTERTURN - 1 LANE CLOSED
TCP-10C	SIDE OF ROAD - MULTILANE W/MEDIAN - 1 LANE CLOSED
TCP-11	CENTER OF ROAD - MULTILANE W/CENTERLINE - RIGHT 2 LANES CLOSED
TCP-12A	SIDE OF ROAD - MULTILANE W/CENTERLINE - LEFT LANE CLOSED
TCP-12B	SIDE OF ROAD - MULTILANE W/MEDIAN - LEFT LANE CLOSED
TCP-13A	CENTER OF ROAD - MULTILANE W/CENTERLINE - LEFT LANES CLOSED
TCP-13B	CENTER OF ROAD - MULTILANE W/CENTERTURN - CENTER AND LEFT LANES CLOSED
TCP-14	SIDE OF ROAD - MULTILANE LANE SHIFT TO CENTERTURN LANE
TCP-15	CENTER OF ROAD - MULTILANE W/CENTERTURN CLOSURE
TCP-16A	SIDE OF ROAD - SINGLE LEFT LANE CLOSURE - ONE WAY STREET
TCP-16B	CENTER OF ROAD - DOUBLE LEFT LANE CLOSURE - ONE WAY STREET
TCP-16C	SIDE OF ROAD - SINGLE RIGHT LANE CLOSURE - ONE WAY STREET
TCP-16D	CENTER OF ROAD - DOUBLE RIGHT LANE CLOSURE - ONE WAY STREET
TCP-17	CENTER OF ROAD - MULTILANE W/CENTERTURN - 2 RIGHT LANES CLOSED
TCP-18	CENTER OF ROAD - MULTILANE CLOSURE OF CENTERTURN, RIGHT AND LEFT LANES CLOSED
TCP-19	CENTER OF ROAD - MULTILANE CLOSURE OF CENTERTURN & 1 LEFT LANE
TCP-20	SIDE OF ROAD - MULTILANE W/MEDIAN LEFT 2 LANES CLOSED
TCP-21	SIDE OF ROAD - MULTILANE W/MEDIAN RIGHT 2 LANES CLOSED
TCP-22	CENTER OF ROAD - MULTILANE-MIDDLE LANE CLOSED
TCP-23	SIDE OF ROAD - MULTILANE BEYOND INTERSECTION RIGHT 1 LANE CLOSED
TCP-24	SIDE OF ROAD - MULTILANE BEYOND INTERSECTION LEFT LANE CLOSED
TCP-25	INTERSECTION - MULTILANE INTERSECTION RIGHT 1 LANE CLOSED
TCP-26	INTERSECTION - MULTILANE INTERSECTION LEFT LANE CLOSED
TCP-27A	INTERSECTION - MULTILANE MIDDLE INTERSECTION
TCP-27B	INTERSECTION - MULTILANE MIDDLE INTERSECTION W/MEDIANS & TURNS
TCP-28	SIDE OF ROAD - BEYOND INTERSECTION PARKING AREA CLOSED
TCP-29	SIDE OF ROAD - BEYOND INTERSECTION TRAFFIC SHIFT TO PARKING AREA
TCP-30	INTERSECTION - MULTILANE INTERSECTION RIGHT LANE/SHOULDER CLOSED
TCP-31	INTERSECTION - MULTILANE INTERSECTION RIGHT/CENTER LANE CLOSED

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE   10/25/18 Chairperson R.C.E. 19246	SAN DIEGO REGIONAL STANDARD DRAWING	Revision	By	Approved	Date
	TRAFFIC CONTROL PLANS	TEXT	BUSS		2/11
REVISED		DG	T.Stanton	9/15	
REVISED		TC	T.Cotter	10/18	
DRAWING NUMBER	TCP-02A				

# TRAFFIC CONTROL PLANS

## TABLE OF CONTENTS

TCP-32	CENTER OF ROAD - MULTILANE LEFT LANE CLOSED
TCP-33	SIDE OF ROAD - MULTILANE RIGHT LANE CLOSED
TCP-34	CENTER OF ROAD - MULTILANE LEFT TURN LANE AND LEFT LANE CLOSED
TCP-35	SIDE OF ROAD - MULTILANE LEFT TURN LANE AND RIGHT LANE CLOSED
TCP-36	SIDE OF ROAD - MULTILANE RIGHT TURN & LANE CLOSED
TCP-37	CENTER OF ROAD - MULTILANE LEFT LANE CLOSED
TCP-38	SIDE OF ROAD - MULTILANE 1 RIGHT TURN & RIGHT LANE CLOSED
TCP-39	CENTER OF ROAD - MULTILANE REDUCED RIGHT TURN LANES
TCP-40	INTERSECTION - MULTILANE INTERSECTION LANE REDUCTIONS
TCP-41	CENTER OF ROAD - MULTILANE CLOSED LEFT TURN LANES
TCP-43	CENTER OF ROAD - MULTILANE RIGHT/CENTER LANES CLOSED ONE WAY
TCP-44	CENTER OF ROAD - MULTILANE LEFT AND CENTER LANES CLOSED
TCP-46	CENTER OF ROAD - MULTILANE RIGHT/LEFT LANES CLOSED
TCP-47	INTERSECTION - MULTI-LANE/LEFT LANE CLOSURES
TCP-48A	SIDE OF ROAD - HALF STREET CLOSED (1 OF 2)
TCP-48B	SIDE OF ROAD - HALF STREET CLOSED (2 OF 2)
TCP-49	STREET CLOSURE (2-WAY) - VARIOUS LANE CLOSURES
TCP-50	STREET CLOSURE (1-WAY) - VARIOUS LANE CLOSURES
TCP-51	SIDEWALK - SIDEWALK CLOSED
TCP-52	SIDEWALK - SIDEWALK CLOSED 1/2 BLOCK W/MID BLOCK CROSSING
TCP-53	SIDEWALK - SIDEWALK CLOSED & SHIFT TO PARKING AREA
TCP-54	BIKE LANE CLOSURE
TCP-55	BIKE & TRAVEL LANE CLOSURE

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING  <b>TRAFFIC CONTROL PLANS</b>	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
TEXT	BUSS		2/11		 10/25/18 Chairperson R.C.E. 19246
REVISED	DG	T.Stanton	9/15		
REVISED	TC	T.Cotter	10/18		
					DRAWING NUMBER TCP-02B



R1-1



R3-1R  
R3-2L



R3-5R



R3-7R  
R3-7L



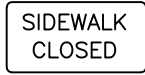
R4-7



R4-7A



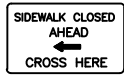
R9-3A



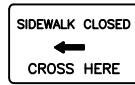
R9-9



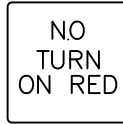
R9-10



R9-11



R9-11A



R10-11



R11-2



R11-4



R26



W1-3R  
W1-3L



W1-4R  
W1-4L



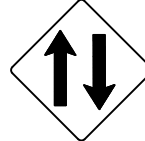
W3-4



W4-2R  
W4-2L



W5-1



W6-3



W8-6



W12-1



W20-1



W20-2



W20-3



W20-4



W20-5R  
W20-5L



W21-5



C24 (CA)



W20-5(BIKE)



C12



C20R  
C20L



SC3



C27



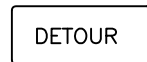
C30



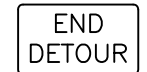
C30A



C30(BIKE)



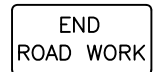
M4-8



M4-8A



M4-10R  
M4-10L



G20-2



C9A



R1-1  
(FLAGGER PADDLES)



W20-8



W11-1



W16-1P



R4-11



W8-11



W1-6(R&L)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-03

SAN DIEGO REGIONAL STANDARD DRAWING

TYPICAL CONSTRUCTION SIGNS

Revision	By	Approved	Date
TEXT	BUSS		2/11
REVISED	DG	T.Stanton	9/15
REVISED	TC	T.Cotter	10/18

**TABLE 1**

RECOMMENDED SIGN SPACING FOR ADVANCE WARNING SIGN SERIES AND  
MINIMUM TAPER LENGTH

A APPROACH SPEED (S) (MPH)	B MINIMUM DISTANCE (FEET) BETWEEN SIGNS AND FROM LAST SIGN TO TAPER	C MINIMUM TAPER LENGTHS (L) (FEET) FOR 12-FOOT LANE		
		L	1/2L	1/3L
		25	100	125
30	250	180	90	60
35	250	245	123	82
40	350	320	160	107
45	500	540	270	180
50	500	600	300	200
55+	1000	660	330	220

L FOR MERGE TAPER  
1/2L FOR SHIFT TAPER  
1/3L FOR SHOULDER TAPER

**TABLE 2**

RECOMMENDED TAPER LENGTH AND MAXIMUM CHANNELIZER/CONE SPACING

A APPROACH SPEED (S) (MPH)	B BUFFER LENGTH (FEET)	C MAX CONE SPACING		
		TAPER	TANGENT	CONFLICT(*)
25	155	25	50	12
30	200	30	60	15
35	250	35	70	17
40	305	40	80	20
45	360	45	90	22
50	425	50	100	25
55+	495	55	100	27

NOTES:

Taper Formula

$L = S \times W$  FOR SPEEDS GREATER THAN 40 MPH

$L = \frac{W \times S^2}{60}$  FOR SPEEDS OF 40 MPH OR LESS

WHERE:

L = MINIMUM LENGTH OF TAPER (FEET)

S = APPROACH SPEED (MPH) = POSTED SPEED LIMIT OR OFF-PEAK 85TH % SPEED PRIOR TO WORK STARTING OR ANTICIPATED OPERATING SPEED

W = WIDTH OF OFFSET (FEET)

(\*) FACING OPPOSING TRAFFIC, ADJACENT TO WORK AREA OR CONFLICTING WITH EXISTING STRIPING

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
Revised	BUSS		2/11		
Reviewed	DG	T.Stanton	9/15	DEVICE SPACING TABLES SIGN SPACING TABLE TAPER LENGTH AND CONE SPACING TABLE	<i>T. Stanton</i> 10/25/18
Reviewed	TC	T.Cotter	10/18		Chairperson R.C.E. 19246
					DRAWING NUMBER TCP-04



# TRAFFIC CONTROL PLAN/PERMIT & PERMIT EXTENSION

Public Utility or Company: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Project Contact: \_\_\_\_\_

24 Hour Local Phone: \_\_\_\_\_  
 Cellular: \_\_\_\_\_  
 Pager: \_\_\_\_\_  
 Fax: \_\_\_\_\_

Contractor/ Subcontractor: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Project Contact: \_\_\_\_\_

24 Hour Local Phone: \_\_\_\_\_  
 Cellular: \_\_\_\_\_  
 Pager: \_\_\_\_\_  
 Fax: \_\_\_\_\_

JOB LOCATION

BEGIN CROSS STREET \_\_\_\_\_ END CROSS STREET \_\_\_\_\_

PERMIT NO. \_\_\_\_\_

THOMAS BROS. PAGE: \_\_\_\_\_

COORD.: \_\_\_\_\_

TO NEW END DATE \_\_\_\_\_

2nd WORK DATE EXTENSION FROM \_\_\_\_\_ TO NEW END DATE \_\_\_\_\_

WORK HOURS	SPEED LIMIT	WORK TO BE DONE
FROM _____ TO _____	_____	_____
START DATE _____	END DATE _____	1st WORK DATE EXTENSION FROM _____ TO NEW END DATE _____

**PERMIT WORK EXTENSIONS MUST BE OBTAINED BEFORE THE END OF PERMIT DATE**

**REQUIREMENTS:**

- The contractor is responsible for promptly restoring the road back to satisfactory condition which includes, but is not limited to, paving, striping, markings, signing, and loop detection.
- The Agency reserves the right to observe these traffic control plans in operation and to make changes as field conditions warrant.
- Trenches shall be back-filled or steel-plated during non-work hours. Steel plates shall have an asphaltic ramp on all edges, or recessed and flush w/road surface securely supported so they won't rock and a sign posted near the plates identifying the contractors name and 24 hour emergency telephone number.
- All travel lanes will typically be a minimum of 12 feet wide, 14 feet if adjacent to closed bike lanes, unless otherwise specifically approved by the Agency.
- Flashing arrow boards as required by the Agency.
- Warning (W) series signs used in work zones shall be Black on an Orange background.
- Cones and pylons shall have white reflectorized sleeves when placed along the centerline or along the outside shoulder.
- If parking is allowed in the advance warning area, advance warning signs shall be mounted on high level devices.
- All conflicting signs shall be covered

13. The contractor shall post tow-away/no parking signs at least forty eight (48) hours in advance, with the day of week, date and work hours noted, and shall bag parking meters (where applicable). \*

The applicant is responsible for complete representation of the actual road conditions shown on this plan including, but not limited to, existing striping and marking, signing, sidewalks, and bike lanes.

**APPLICANTS:**  
 Name (print) \_\_\_\_\_  
 Address \_\_\_\_\_  
 Phone Number \_\_\_\_\_  
 Signature \_\_\_\_\_

Agent of:  
 Owner  
 Contractor  
 Sign/Barricade co.  
 Other \_\_\_\_\_

(CITY STAMP HERE)

PERMIT APPROVED

By: \_\_\_\_\_  
 DATE: \_\_\_\_\_

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*R.C.E. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-05A

SAN DIEGO REGIONAL STANDARD DRAWING

COVER SHEET

TRAFFIC CONTROL PLAN

Revision	By	Approved	Date
Revised	Buss		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

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

# TRAFFIC CONTROL PLAN/PERMIT & PERMIT EXTENSION

Public Utility or Company: \_\_\_\_\_ Project Contact: \_\_\_\_\_  
 Address: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_  
 City: \_\_\_\_\_

Contractor/Subcontractor: \_\_\_\_\_ Project Contact: \_\_\_\_\_  
 Address: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_  
 City: \_\_\_\_\_

JOB LOCATION: BEGIN CROSS STREET \_\_\_\_\_ END CROSS STREET \_\_\_\_\_ PERMIT NO. \_\_\_\_\_  
 WORK TO BE DONE: \_\_\_\_\_

WORK HOURS: FROM \_\_\_\_\_ TO \_\_\_\_\_ A.M. P.M. SPEED LIMIT \_\_\_\_\_  
 continuous

START DATE \_\_\_\_\_ END DATE \_\_\_\_\_ TO NEW END DATE \_\_\_\_\_  
 FROM \_\_\_\_\_ TO NEW END DATE \_\_\_\_\_

THOMAS BROS. PAGE: \_\_\_\_\_ COORD.: \_\_\_\_\_ TO NEW END DATE \_\_\_\_\_

## PERMIT WORK EXTENSIONS MUST BE OBTAINED BEFORE THE END OF PERMIT DATE

REQUIREMENTS (continued):

14. Place W20-1 and G20-2 signs on all side streets with the construction zone and per TCP-4 as field conditions permit.

15. Flaggers shall be illuminated at night per the most current CA MUTCD.

16. All traffic control devices shall conform with the most current CA MUTCD requirements regarding minimum retro-reflectivity, minimum size, and usage. Larger device sizes may be specified by the Agency.

17. Traffic control signs shall not be modified in the field with duct tape, electrical tape, or any other non-approved method.

18. The Contractor shall be responsible for identifying the locations of schools that will be affected in the area of the impending work. Due to peak volumes of pedestrian and vehicular traffic associated with schools, the Contractor may be required to delay the start of construction operations until after school is in session and complete construction operations before school is out of session.

19. Existing signs that conflict with temporary traffic control may be bagged, covered, and removed by the Contractor per the Agency. Signs that are removed shall be handled with care so that they may be later re-installed or returned to the Agency in good condition as directed by the Agency.

20. Contractor shall notify all affected emergency services at least one (1) week in advance.

21. For signalized intersections, the Contractor shall coordinate with Agency to determine how to operate the signal.

The applicant is responsible for complete representation of the actual road conditions shown on this plan including, but not limited to, existing striping and marking, signing, sidewalks, and bike lanes.

APPLICANTS:  
 Name (print) \_\_\_\_\_  
 Address \_\_\_\_\_  
 Phone Number \_\_\_\_\_  
 Signature \_\_\_\_\_

Agent of:  
 Owner  
 Contractor  
 Sign/Barricade co.  
 Other \_\_\_\_\_

(CITY STAMP HERE)

PERMIT APPROVED \_\_\_\_\_  
 By: \_\_\_\_\_  
 DATE: \_\_\_\_\_

SUBJECT TO LOCAL AGENCY REQUIREMENTS  
 SEE ATTACHED SHEET(S) OR REFERENCED STANDARD DRAWING(S) THAT MAY BE APPLICABLE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-05B

SAN DIEGO REGIONAL STANDARD DRAWING

COVER SHEET

TRAFFIC CONTROL PLAN

Revision	By	Approved	Date
Revised	Buss		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SUBMITTED BY:

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

PHONE \_\_\_\_\_

(AGENCY USE)

AGENCY ENGINEER'S COMMENTS

---



---



---



---



---



---



---



---



---



---

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

GENERAL NOTES

For hours of darkness, change comes to vertical barricades with steady burn lights. This plan MAY NOT apply to signalized or multi-way stop intersections. Consult the local jurisdiction when preparing Traffic Control Plans near these intersections. this plan MAY NOT apply when the work areas affect bike lanes, sidewalks pedestrian access and curved or narrow roadways. Consult the approving agency when preparing the Traffic Control Plans or these areas.

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

TCP is required for all Traffic Control Plans.

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-05C

SAN DIEGO REGIONAL STANDARD DRAWING

AGENCY ENGINEER'S COMMENTS  
GENERAL NOTES COVER SHEET

Revision	By	Approval	Date
Revised	BUSS		2/11
Revised	DG	T. Stanton	9/15
Revised	TC	T. Cotter	10/18

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Stanton	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

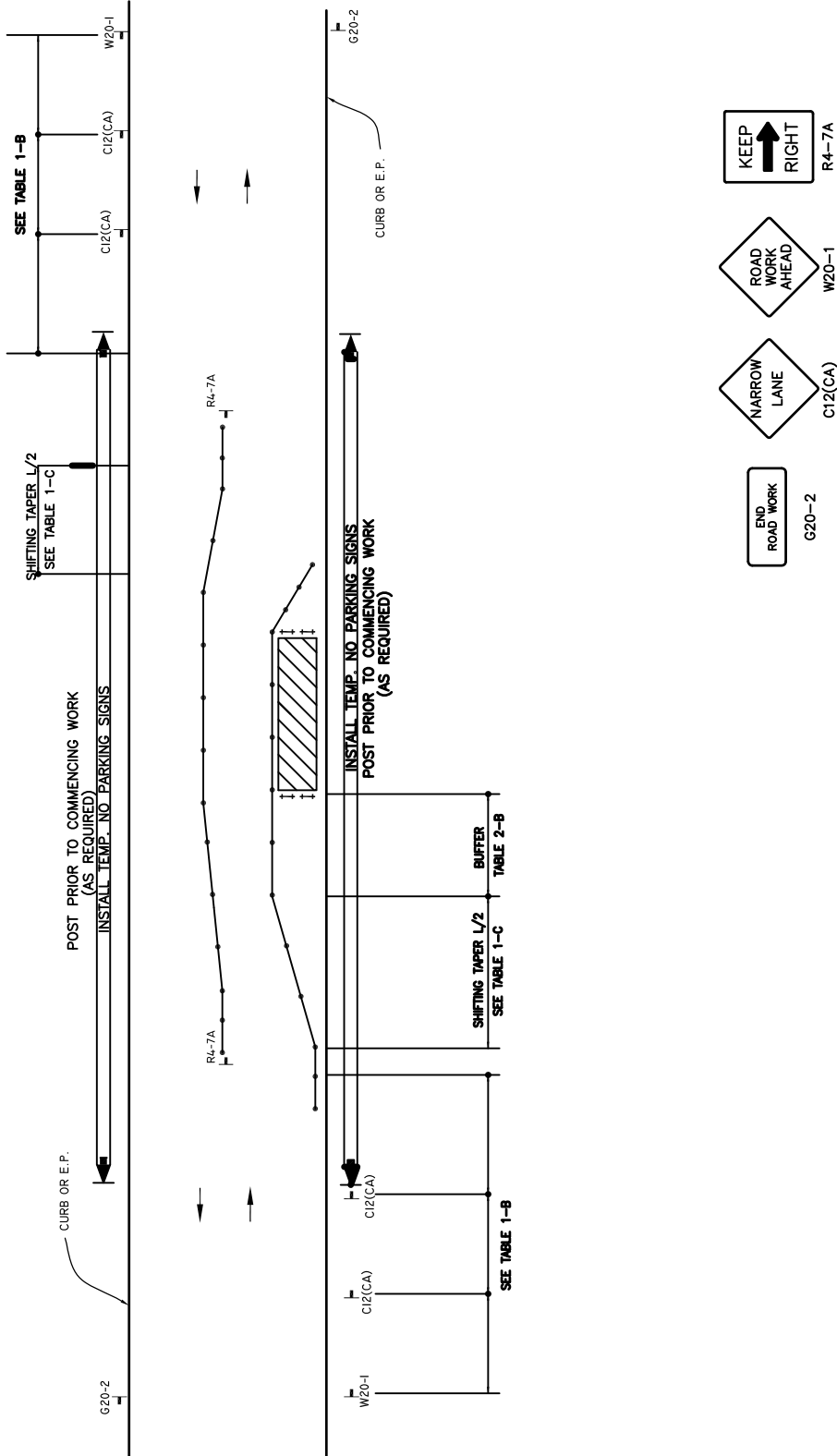
SIDE OF ROAD WORK AREA  
TWO LANE TRAFFIC CONTROL  
WITHOUT CENTERLINE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

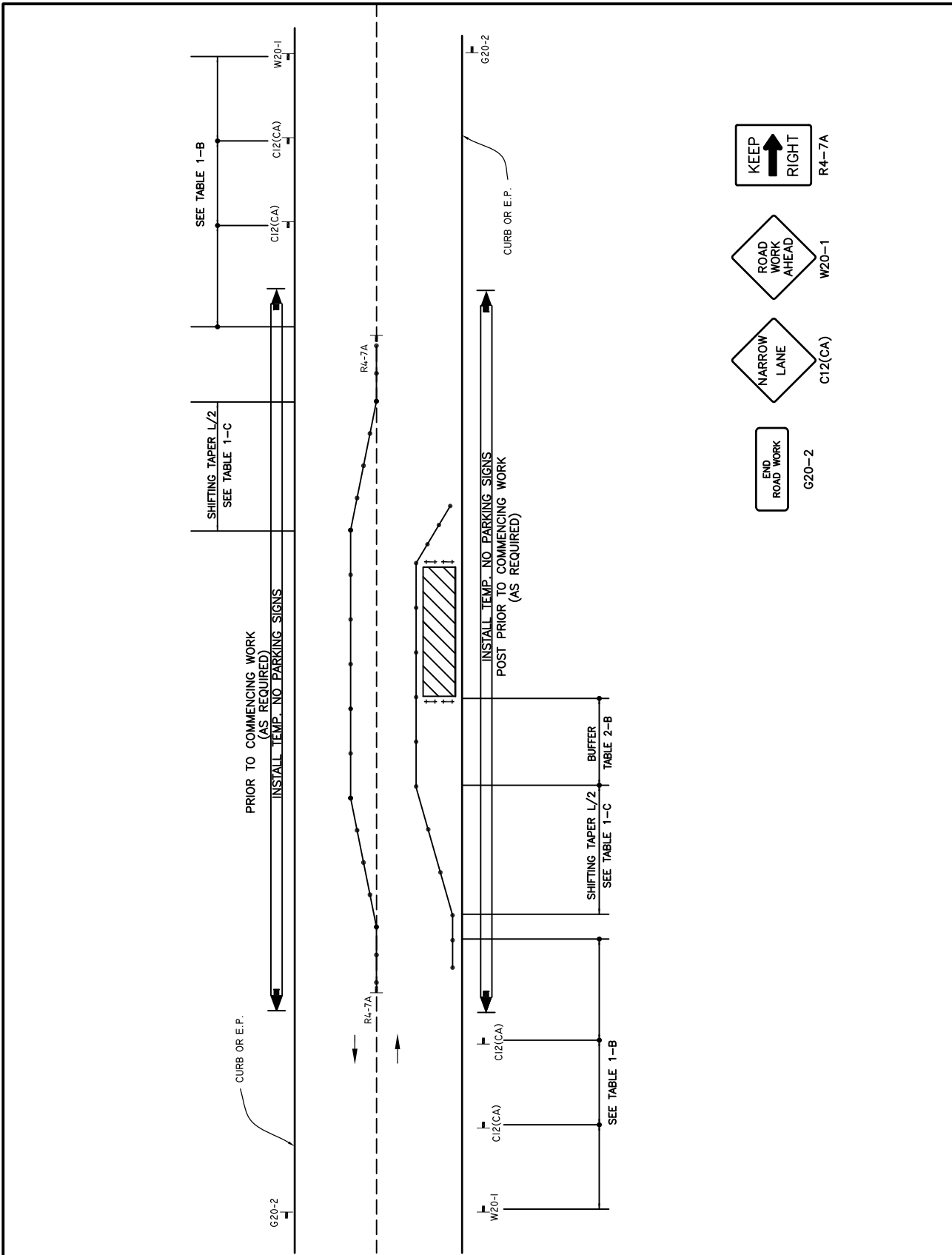
Chairperson R.C.E. 19246

DRAWING NUMBER TCP-06



**LEGEND**

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



**LEGEND**

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

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

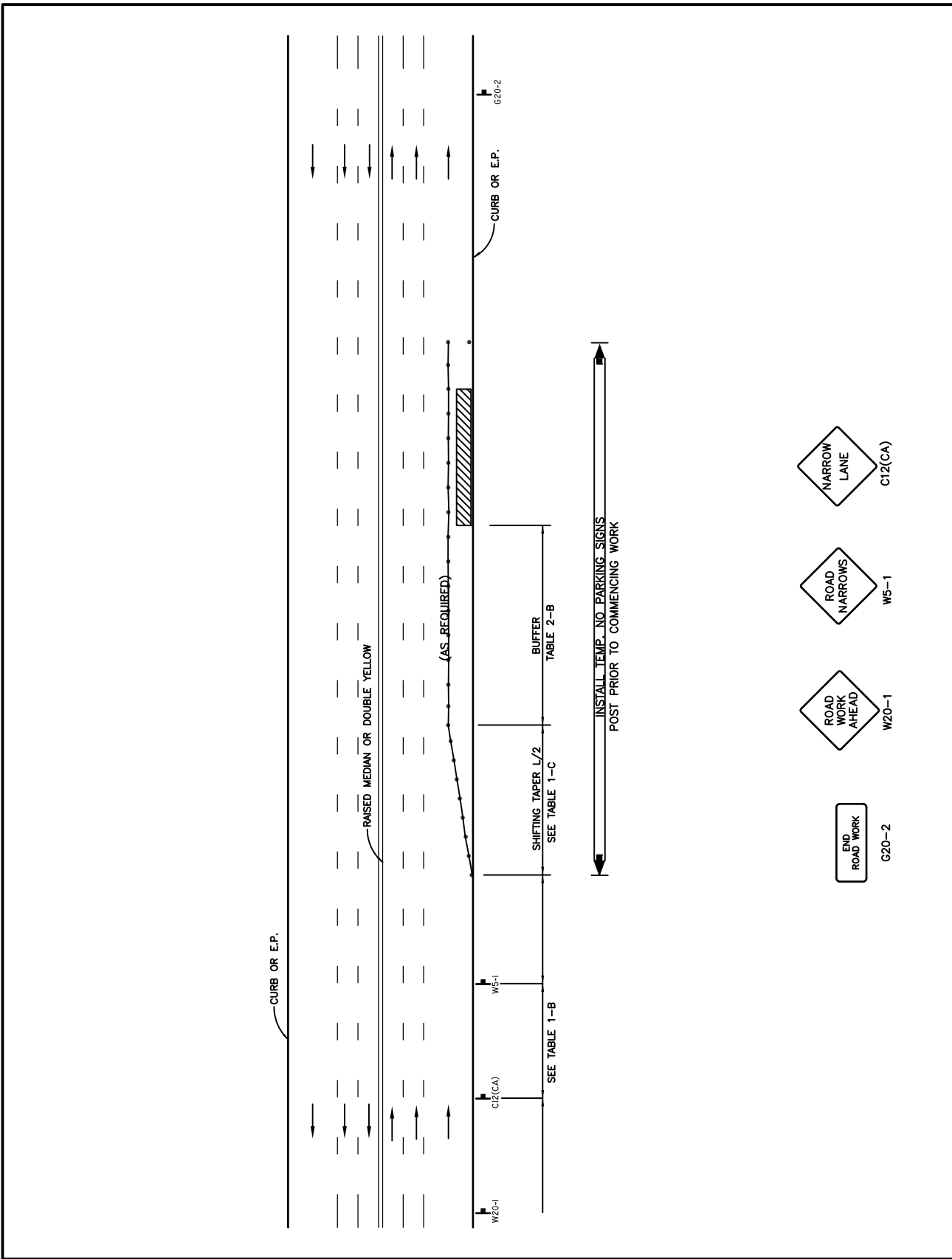
*T. Stanton* 10/25/18  
Chairperson R.C.E. 19246

DRAWING NUMBER TCP-07A

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA  
TWO LANE TRAFFIC CONTROL  
WITH CENTERLINE

Revision	By	Approved	Date
Revised	Buss		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Stanton	10/18



**LEGEND**

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

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Stanton	1/18
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

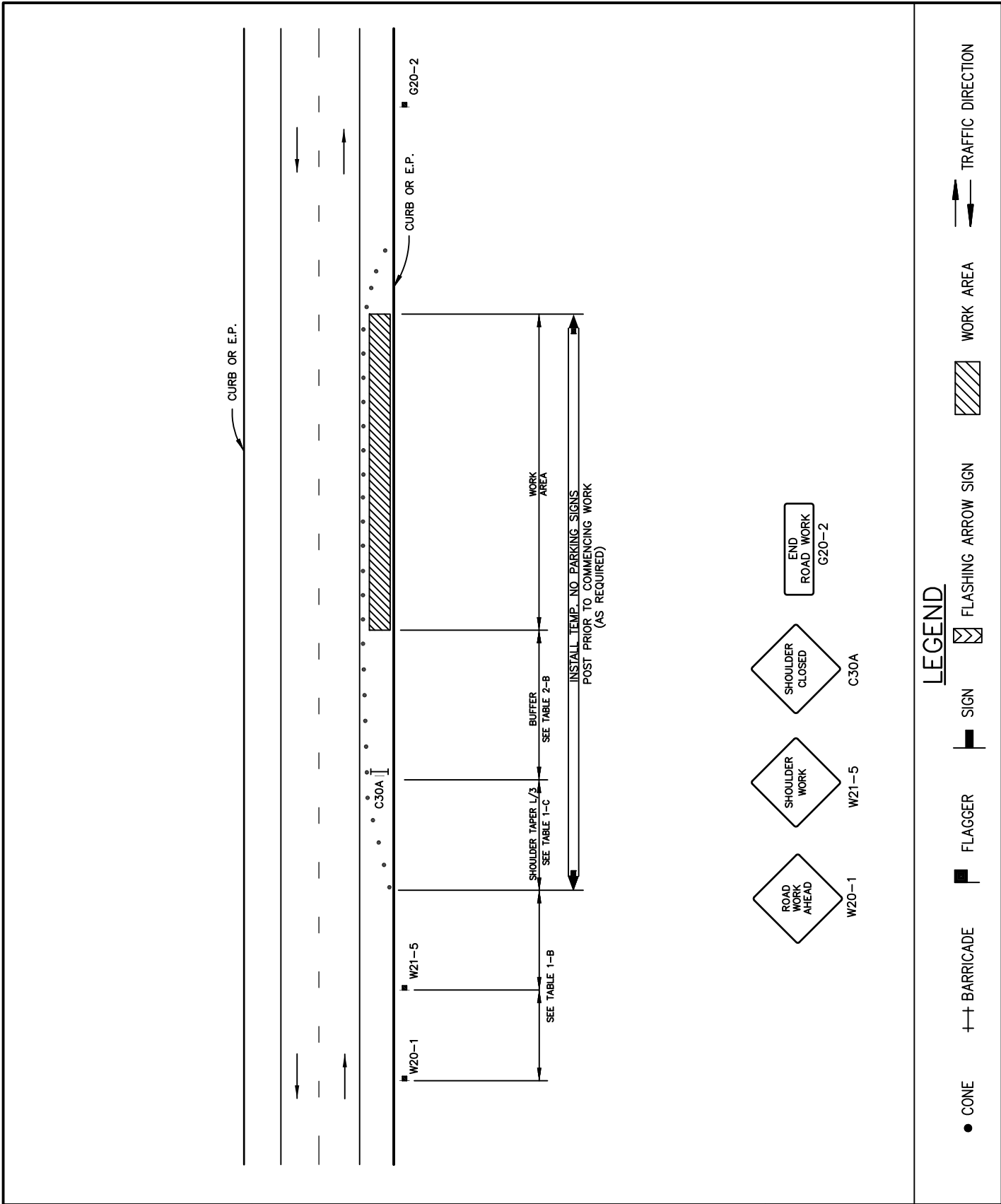
**SIDE OF WORK AREA  
MULTI-EDGE OF GUTTER CLOSURE**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chafferson R.C.E. 19246

DRAWING NUMBER TCP-07B



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

SAN DIEGO REGIONAL STANDARD DRAWING

*M. Stanton* 10/25/18  
 Chairperson R.C.E. 19246

SIDE OF ROAD WORK AREA  
 SHOULDER CLOSURE

Revision	By	Approval	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Stanton	1/18
Revised	TC	T.Cotter	10/18

DRAWING NUMBER TCP-07C

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

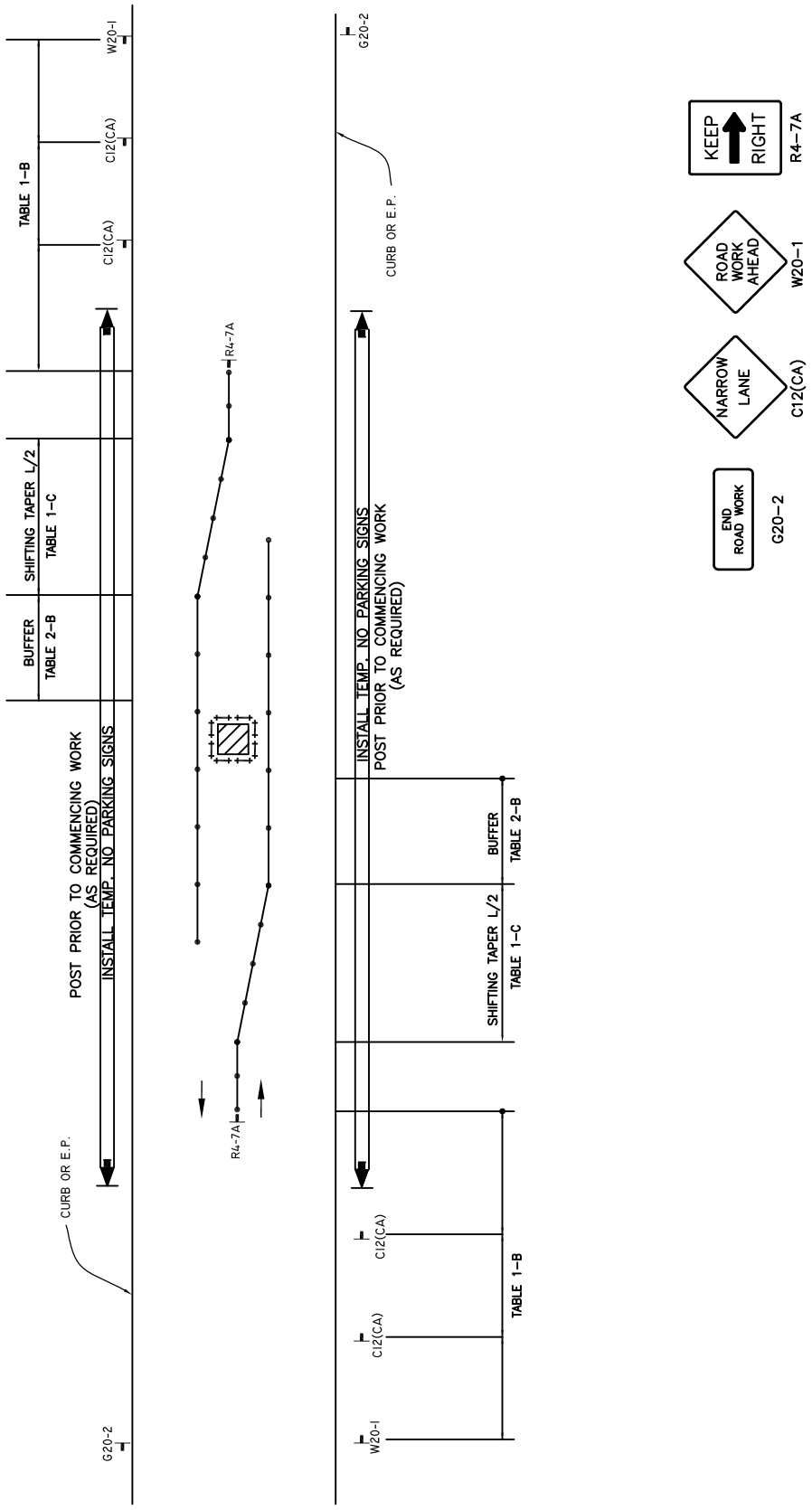
SAN DIEGO REGIONAL STANDARD DRAWING

CENTER OF ROAD WORK AREA  
TWO LANE TRAFFIC CONTROL  
W/O CENTERLINE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18  
Chairperson R.C.E. 19246

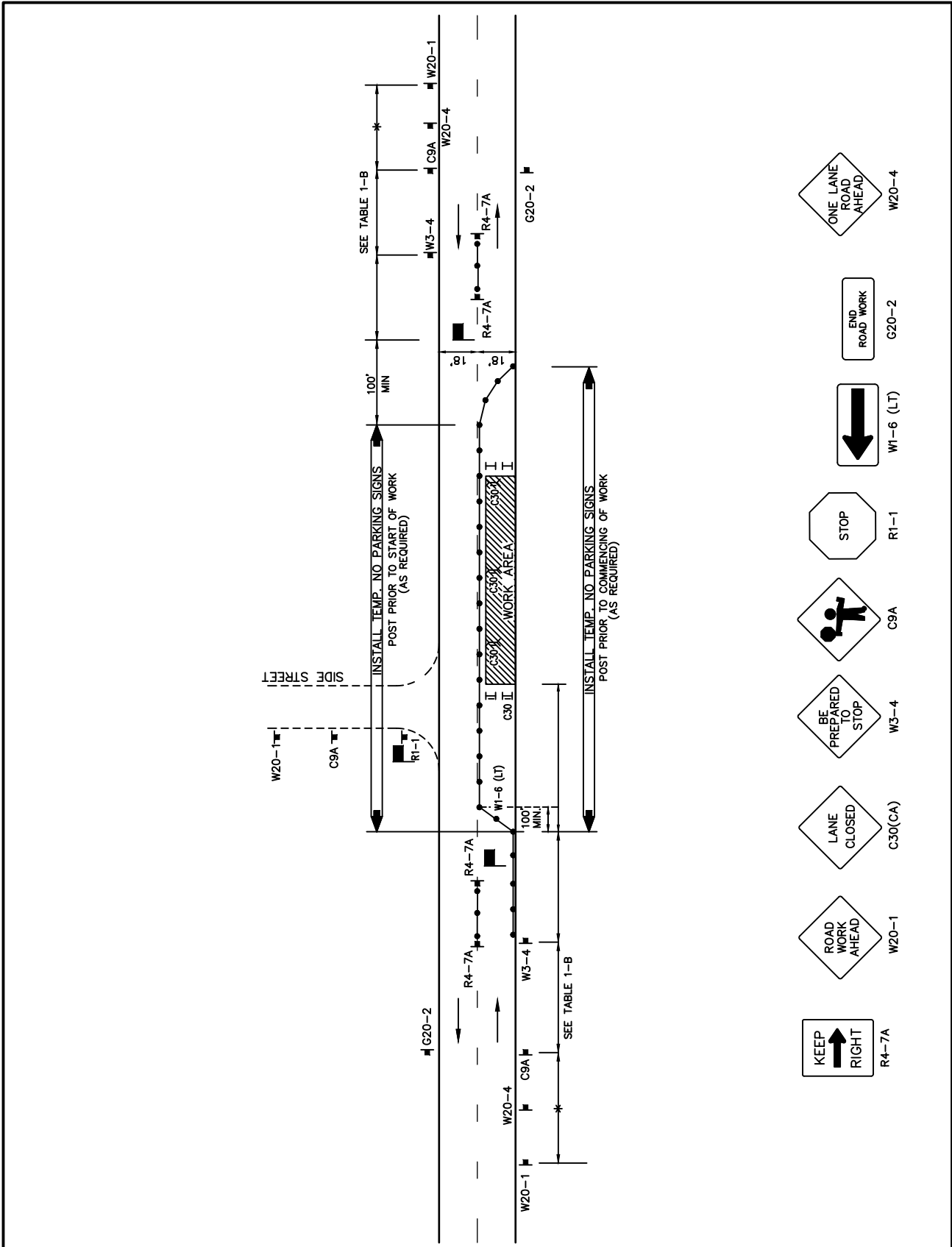
DRAWING NUMBER TCP-08



LEGEND

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





### LEGEND

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

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

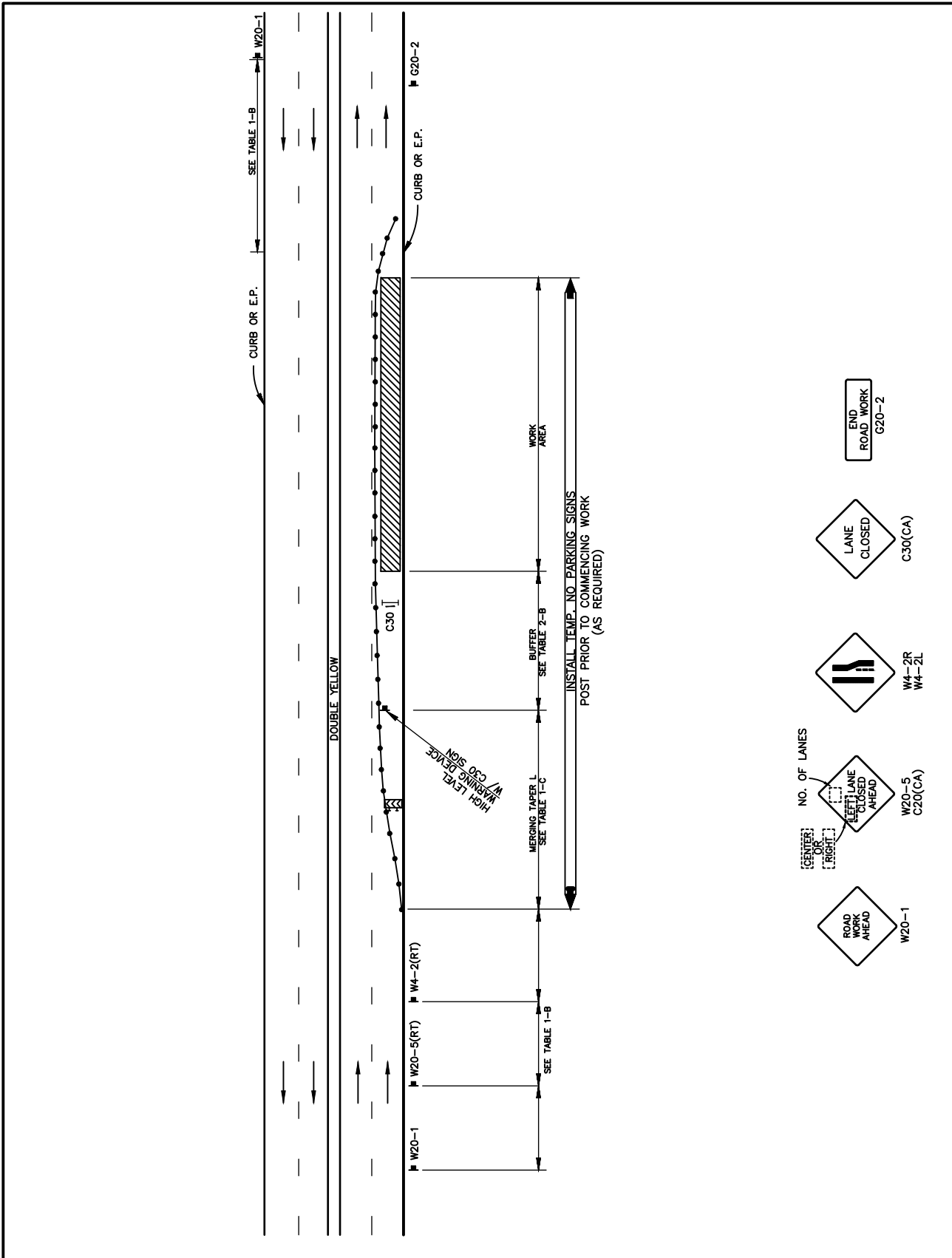
*T. Stanton* 10/25/18  
Chairperson R.C.E. 19246

DRAWING NUMBER TCP-09

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA  
TWO LANE TRAFFIC CONTROL WITH FLAGGERS

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



**LEGEND**

- Ⓢ TRAFFIC SIGNAL   ● CONE   †† BARRICADE   ▬ FLAGGER
- ⚡ FLASHING ARROW SIGN   ▨ WORK AREA   ↕ TRAFFIC DIRECTION
- ◊ LANE CLOSED   C30(CA)
- ◊ NO. OF LANES   W4-2R   W4-2L
- ◊ LEFT LANE CLOSED AHEAD   W20-5   C20(CA)
- ◊ ROAD ROAD AHEAD   W20-1
- ◻ END ROAD WORK   G20-2

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

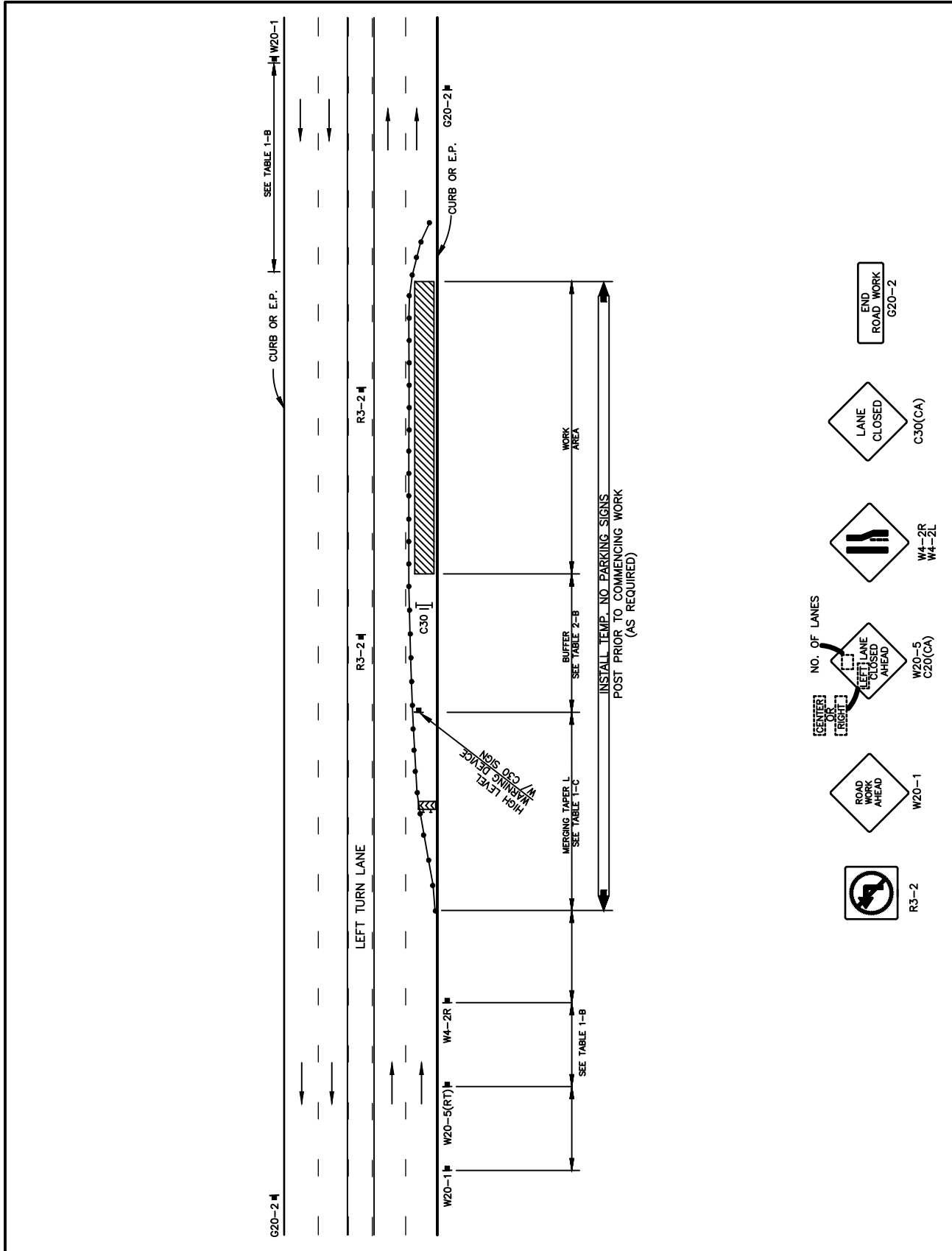
SAN DIEGO REGIONAL STANDARD DRAWING

**SIDE OF ROAD WORK AREA**  
 MULTILANE TRAFFIC CONTROL WITH CENTERLINE  
 RIGHT LANE TRAFFIC CLOSURE - ONE LANE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18  
 Chairperson R.C.E. 19246

DRAWING NUMBER TCP-10A



**LEGEND**

- ⊙ TRAFFIC SIGNAL
- CONE
- + BARRICADE
- ▬ FLAGGER
- ▬ SIGN
- ▨ FLASHING ARROW SIGN
- ▨ WORK AREA
- ↔ TRAFFIC DIRECTION

NO. OF LANES

ROAD WORK AHEAD W20-1

LEFT LANE CLOSED AHEAD W20-5 C20(CA)

LANE CLOSED C30(CA)

END ROAD WORK G20-2

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-10B

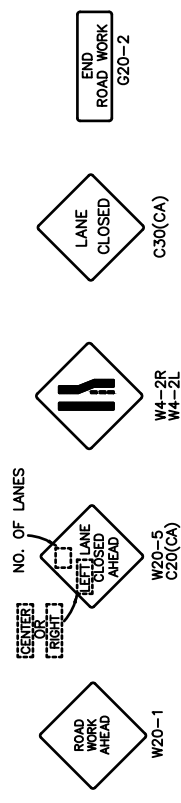
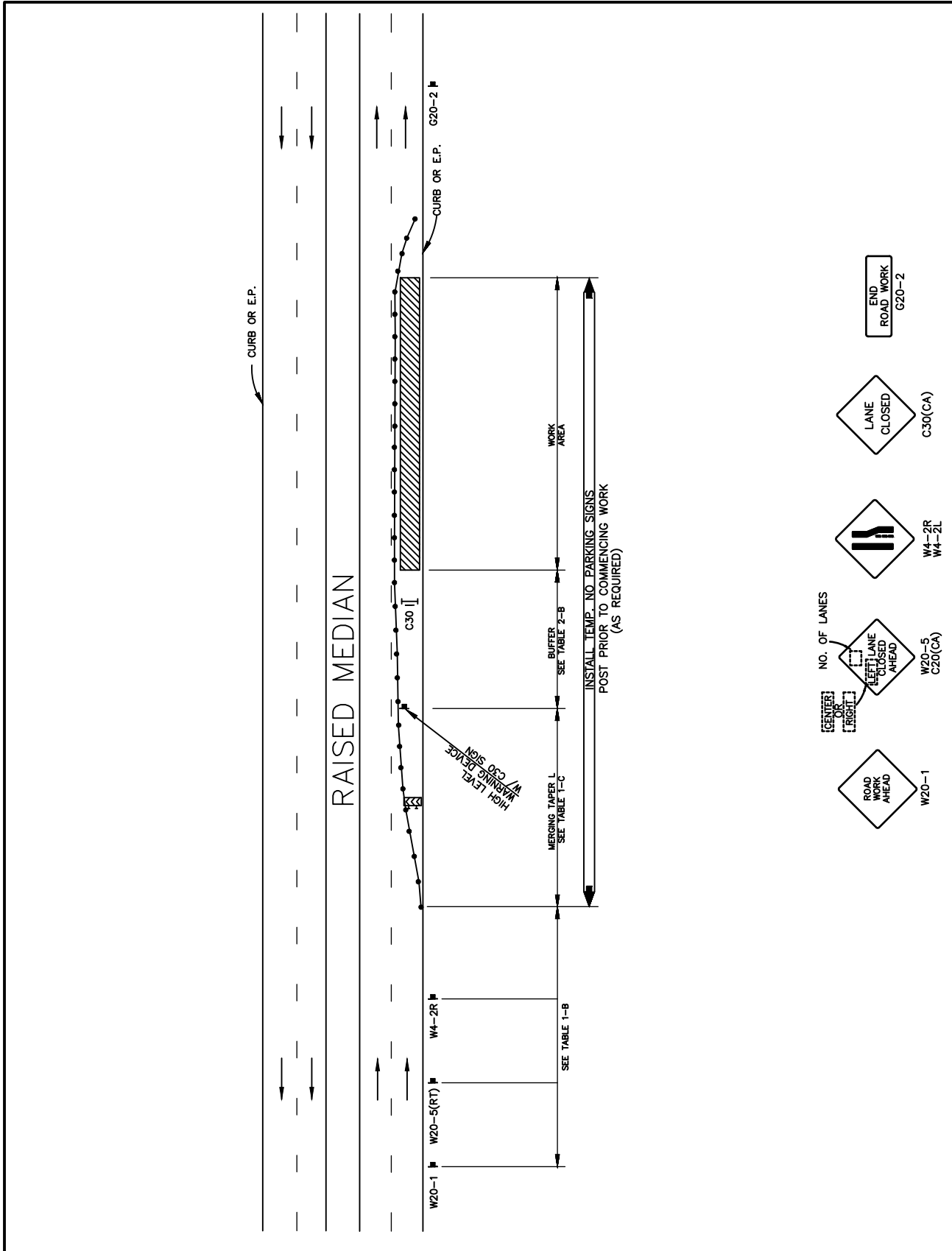
SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA

MULTILANE TRAFFIC CONTROL WITH TWO WAY LEFT TURN

RIGHT TRAFFIC LANE CLOSURE - ONE LANE CLOSED

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



**LEGEND**

- ⊙ TRAFFIC SIGNAL
- CONE
- ++ BARRICADE
- ▬ FLAGGER
- ⊠ SIGN
- ▨ FLASHING ARROW SIGN
- ▨ WORK AREA
- ↔ TRAFFIC DIRECTION

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

**SIDE OF ROAD WORK AREA**

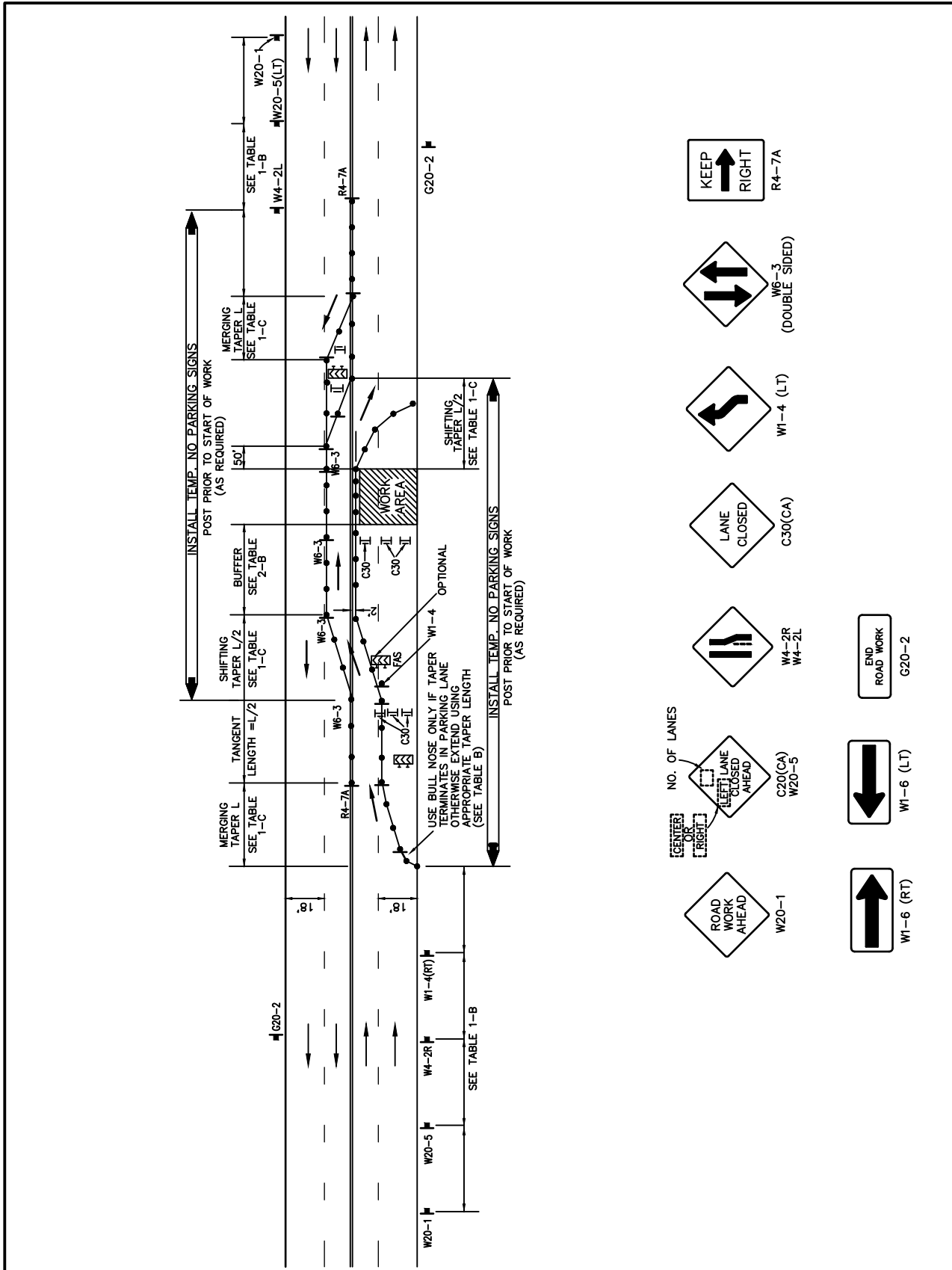
MULTILANE TRAFFIC CONTROL WITH RAISED MEDIAN  
RIGHT TRAFFIC LANE CLOSURE - ONE LANE CLOSED

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER **TCP-10C**



- W20-1
- W1-6 (RT)
- W1-6 (LT)
- W4-2R  
W4-2L
- C20(CA)  
W20-5
- W1-4 (LT)
- W6-3  
(DOUBLE SIDED)
- R4-7A
- G20-2

**LEGEND**

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

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-11

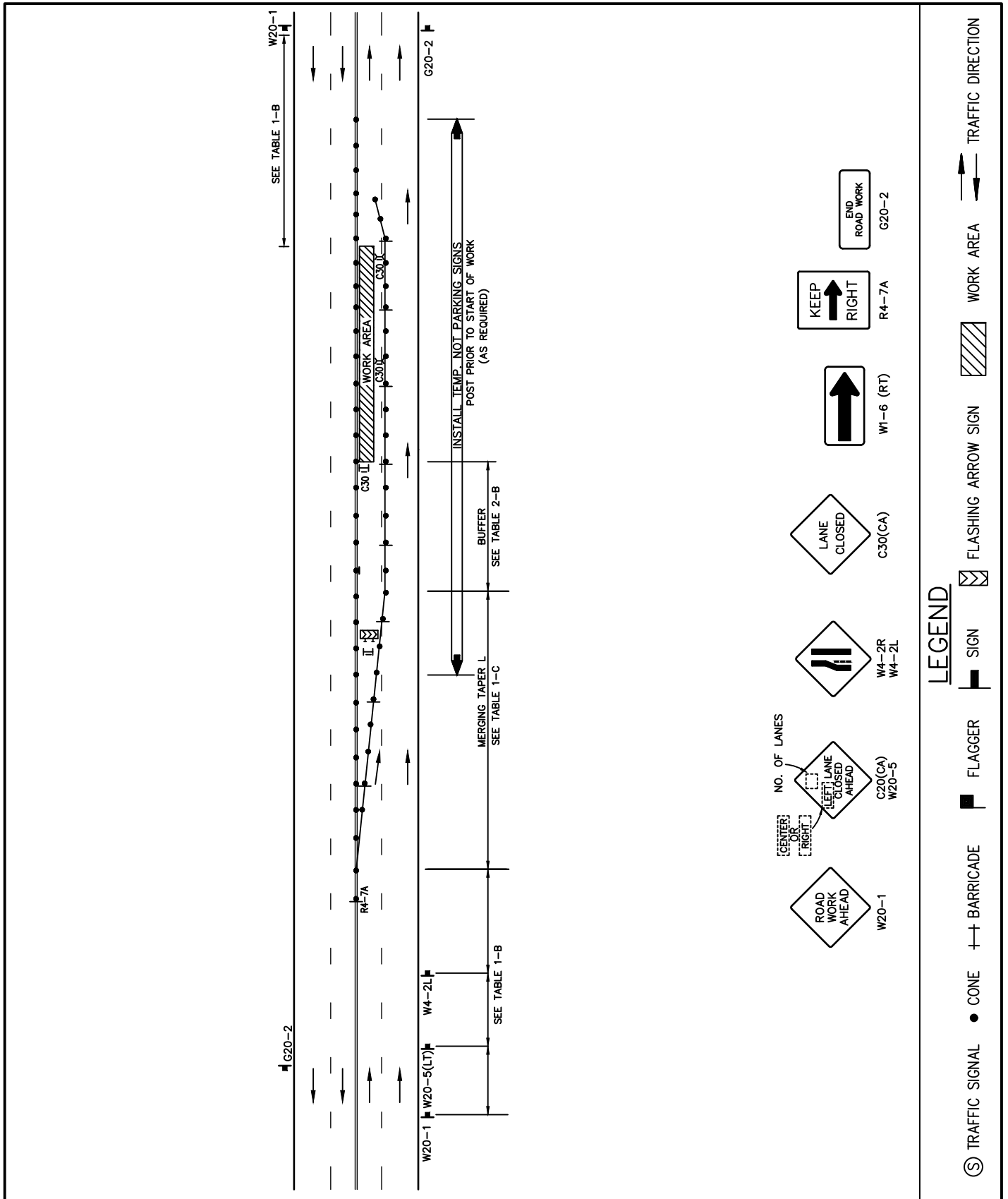
SAN DIEGO REGIONAL STANDARD DRAWING

CENTER OF ROAD WORK AREA

MULTILANE TRAFFIC CONTROL WITH CENTERLINE

RIGHT TRAFFIC LANE CLOSURE - TWO LANES CLOSED

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

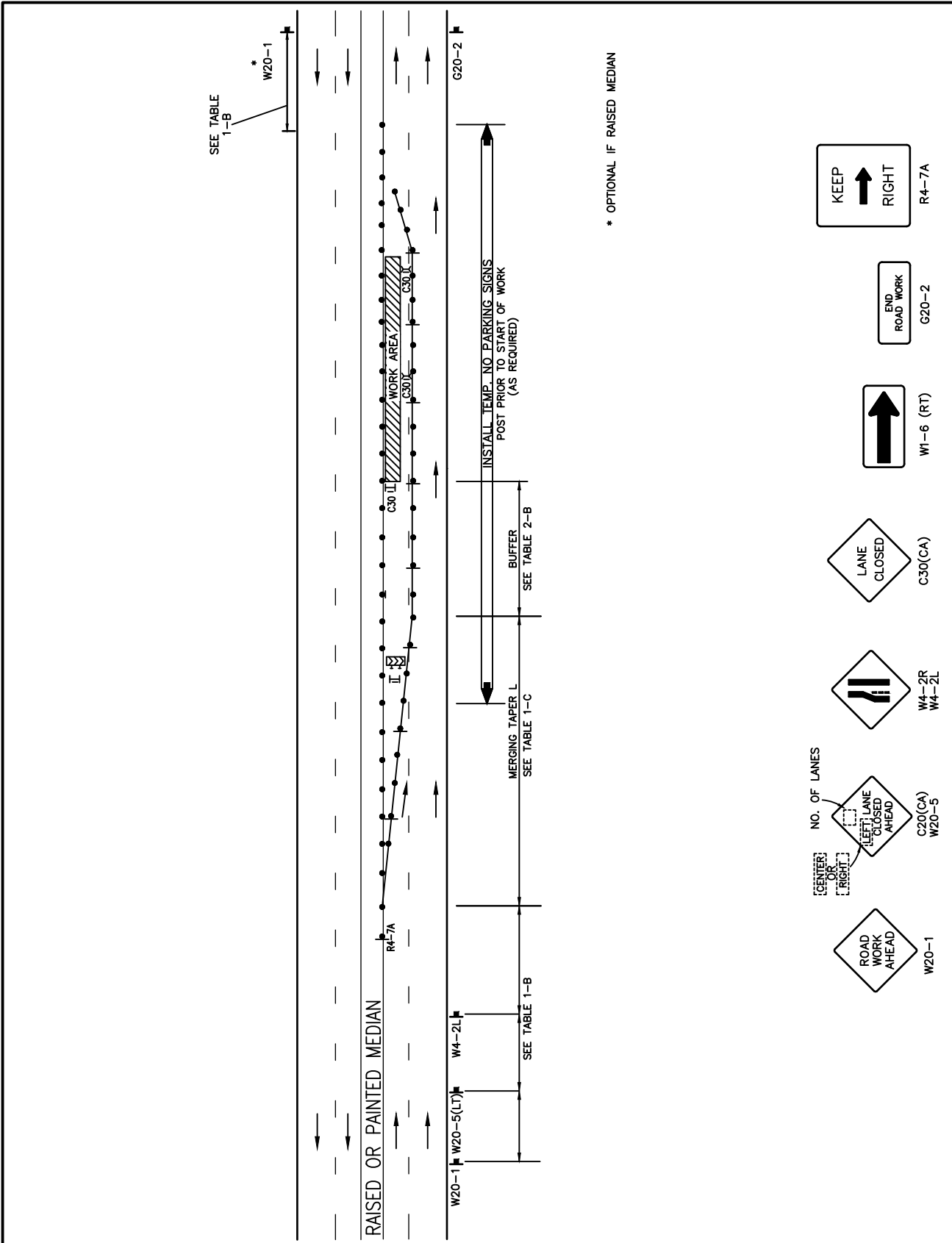
**SIDE OF ROAD WORK AREA**  
 MULTILANE TRAFFIC CONTROL WITH CENTERLINE  
 LEFT TRAFFIC LANE CLOSURE—ONE LANE CLOSED

RECOMMENDED BY THE SAN DIEGO  
 REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING  
 NUMBER TCP-12A



**LEGEND**

- ⊙ TRAFFIC SIGNAL   • CONE   †† BARRICADE   ▬ FLAGGER   ⊞ SIGN   ⊞ FLASHING ARROW SIGN   ▨ WORK AREA   ⇄ TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-12B

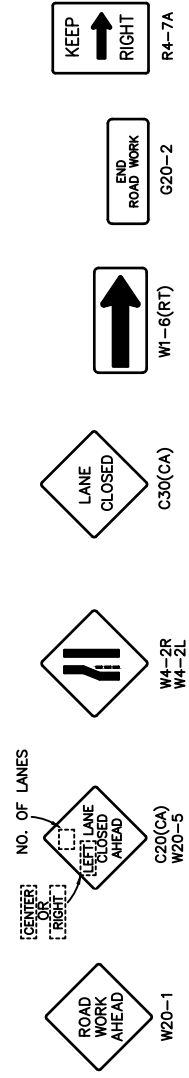
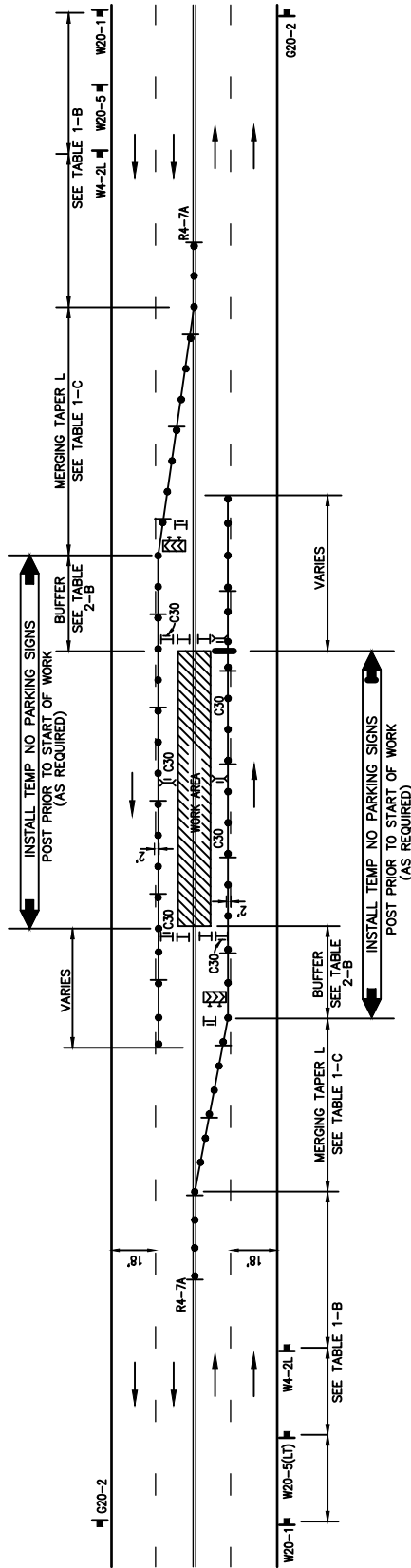
SAN DIEGO REGIONAL STANDARD DRAWING

**SIDE OF ROAD WORK AREA**

MULTILANE TRAFFIC CONTROL WITH RAISED MEDIAN

LEFT LANE TRAFFIC LANE CLOSURE - ONE LANE CLOSED

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	9/18



**LEGEND**

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

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

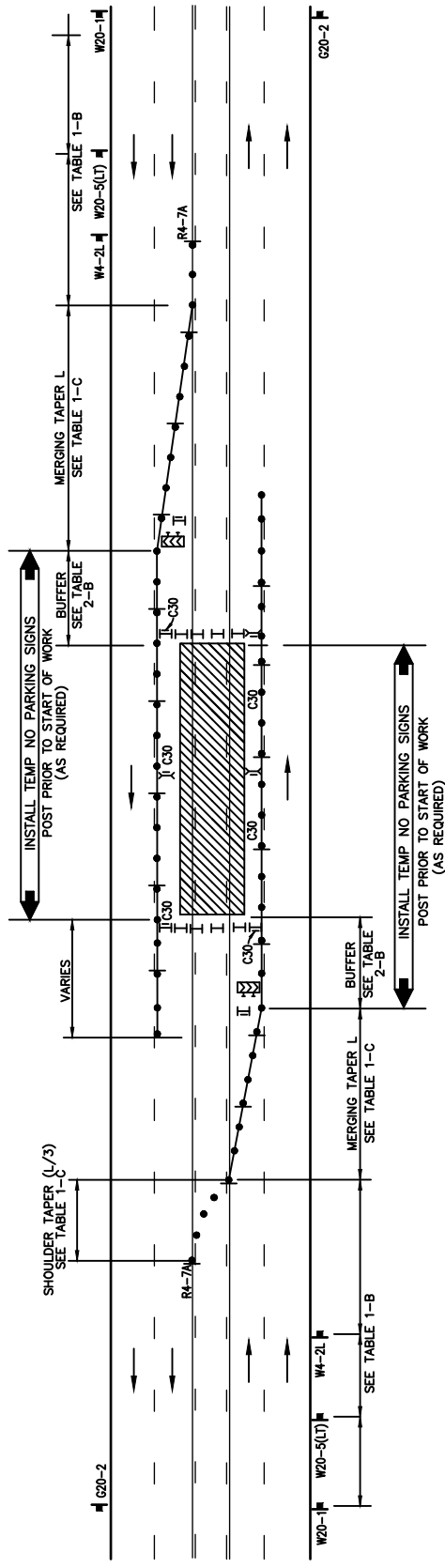
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER **TCP-13A**





- ⑤ TRAFFIC SIGNAL
- CONE
- ++ BARRICADE
- FLAGGER
- SIGN
- FLASHING ARROW SIGN
- WORK AREA
- TRAFFIC DIRECTION

**LEGEND**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-13B

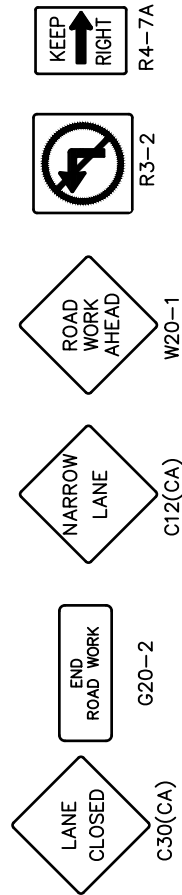
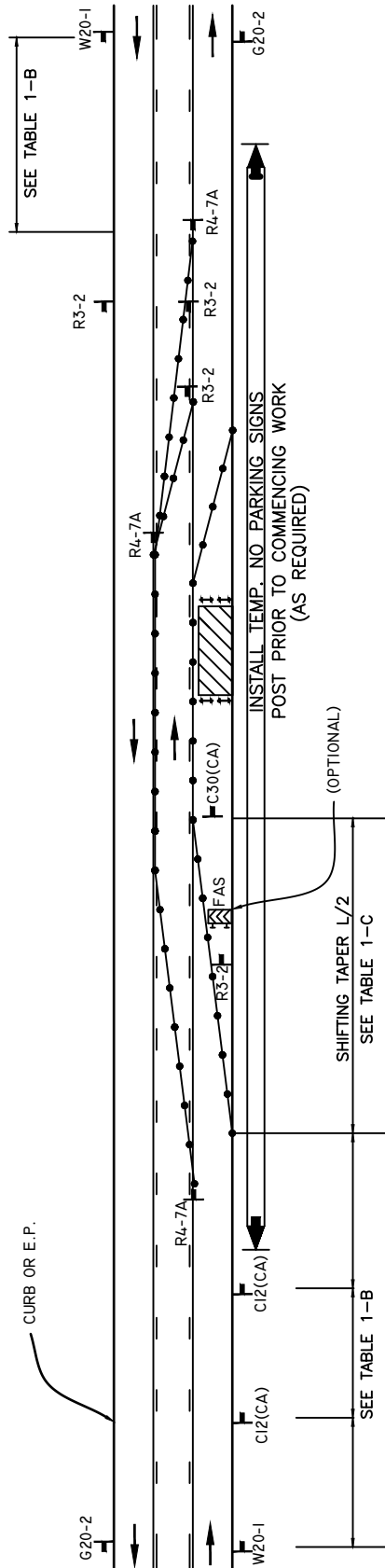
SAN DIEGO REGIONAL STANDARD DRAWING

CENTER OF ROAD WORK AREA

MULTILANE TRAFFIC CONTROL WITH CENTER TURN LANE

LEFT TRAFFIC LANE CLOSURE - THREE LANES

Revision	BY	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



**LEGEND**

- ⊙ TRAFFIC SIGNAL   ● CONE   ⊕ BARRICADE   ■ FLAGGER   □ SIGN   ▨ FLASHING ARROW SIGN   ▨ WORK AREA   ⇄ TRAFFIC DIRECTION

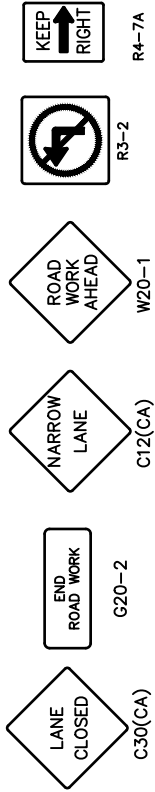
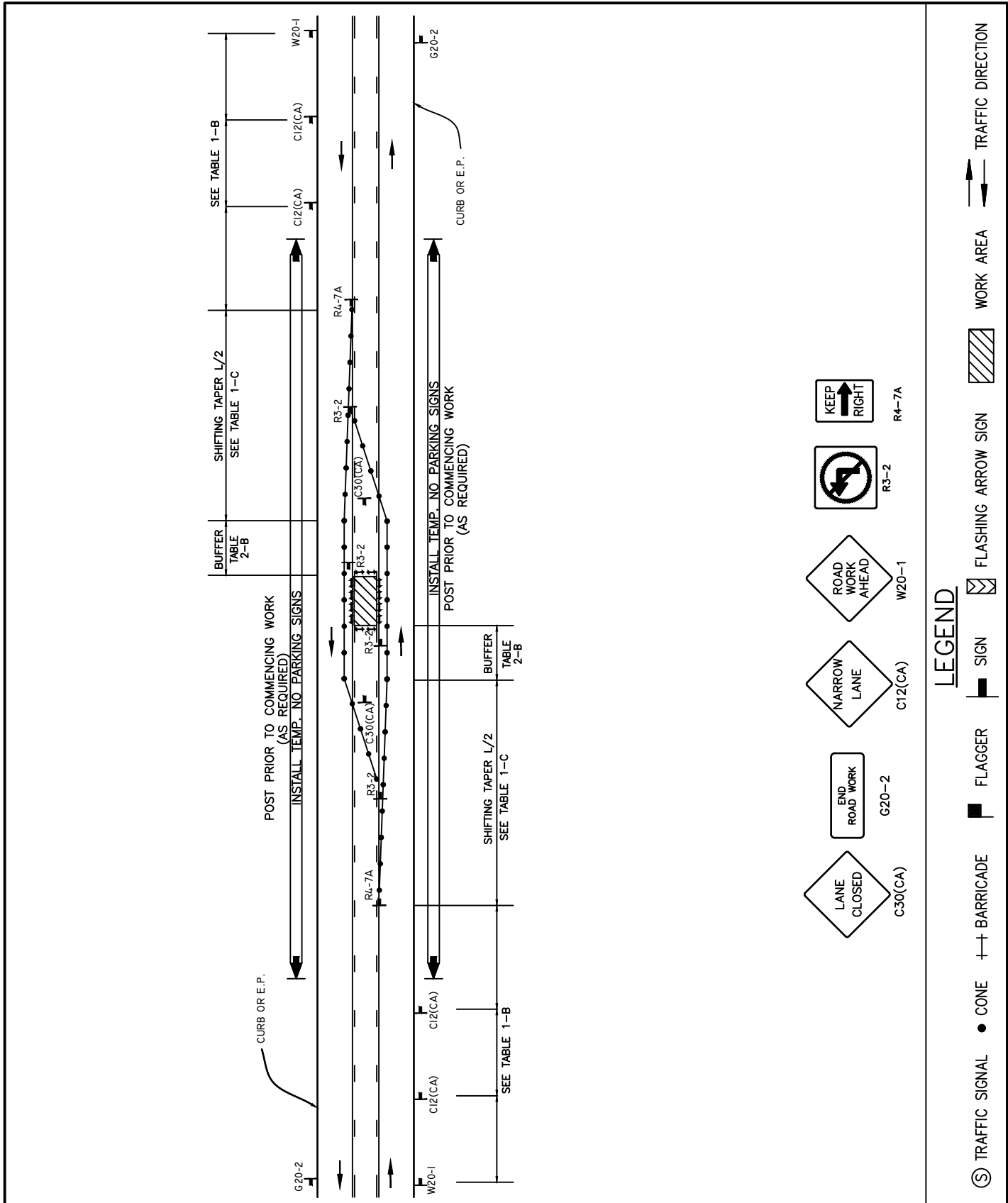
Revision	BY	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

**SIDE OF ROAD WORK AREA**  
 MULTILANE TRAFFIC CONTROL WITH TWO WAY TURN  
 RIGHT LANE TRAFFIC CLOSURE - ONE LANE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE  
*T. Stanton* 10/25/18  
 Chairperson R.C.E. 19246

DRAWING NUMBER TCP-14



**LEGEND**

- ⊙ TRAFFIC SIGNAL   ● CONE   †† BARRICADE   ■ FLAGGER   □ SIGN   ▨ FLASHING ARROW SIGN   ▨ WORK AREA   ⇄ TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-15

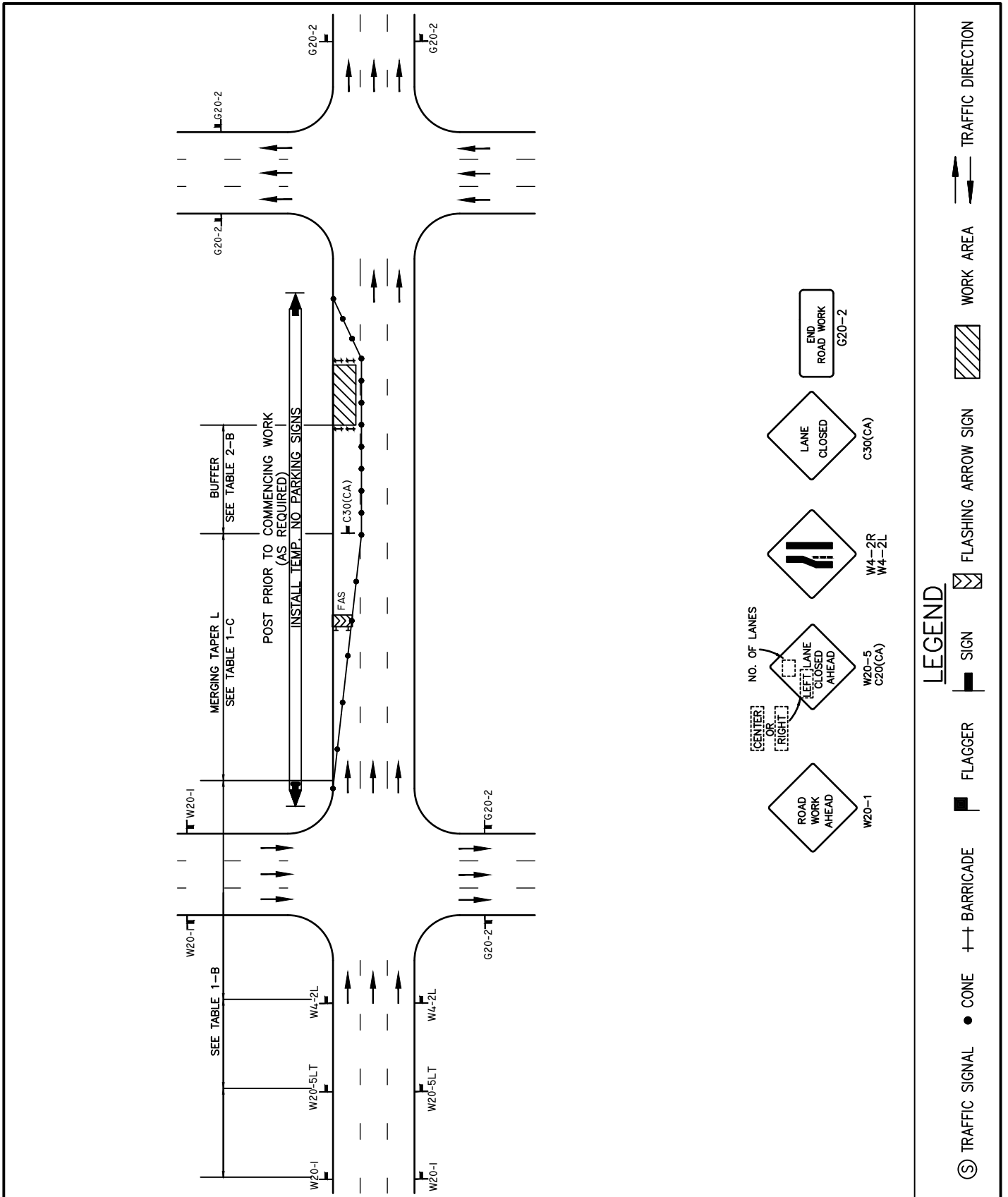
SAN DIEGO REGIONAL STANDARD DRAWING

**CENTER OF ROAD WORK AREA**

MULTILANE TRAFFIC CONTROL WITH TWO WAY LEFT TURN

CENTER TURN LANE CLOSURE - ONE LANE

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

**SIDE OF ROAD WORK AREA**

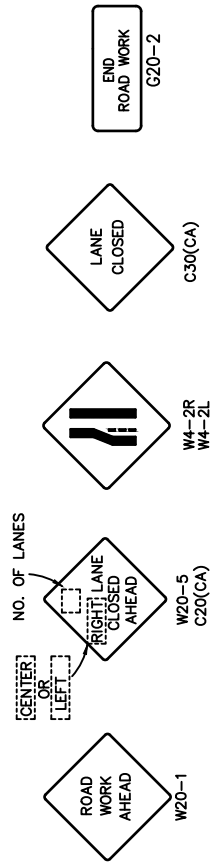
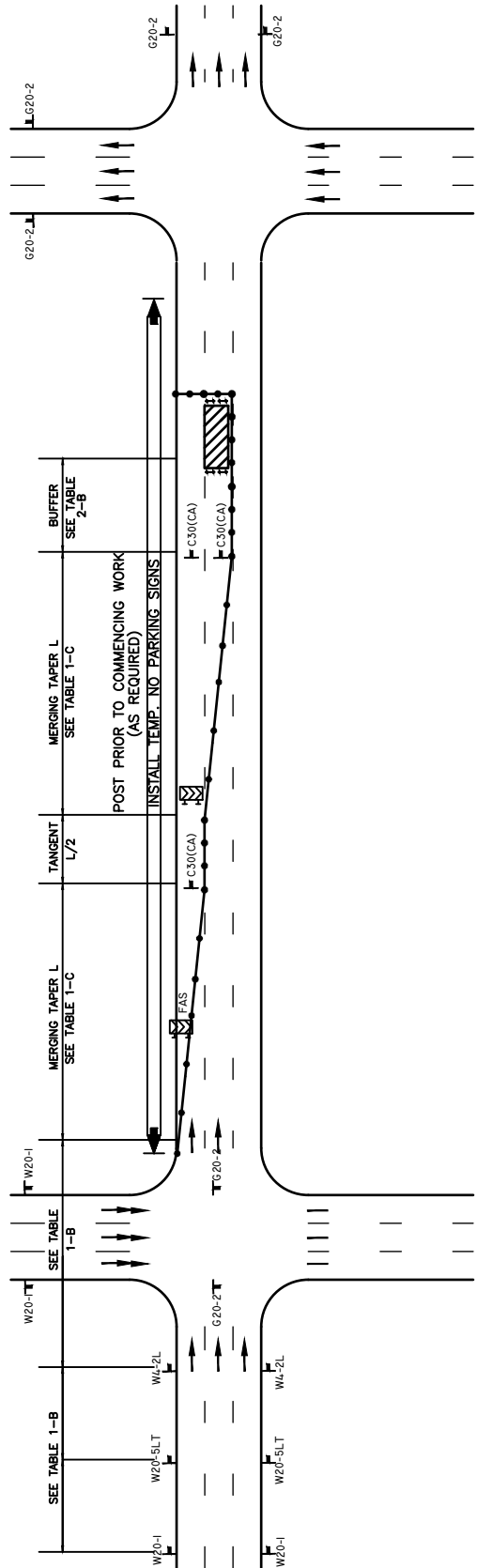
SINGLE LEFT LANE CLOSURE FOR ONE WAY STREET

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER **TCP-16A**



**LEGEND**

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

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

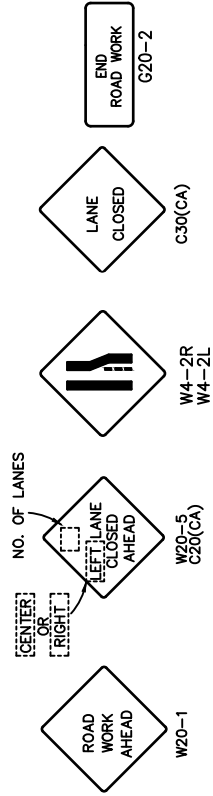
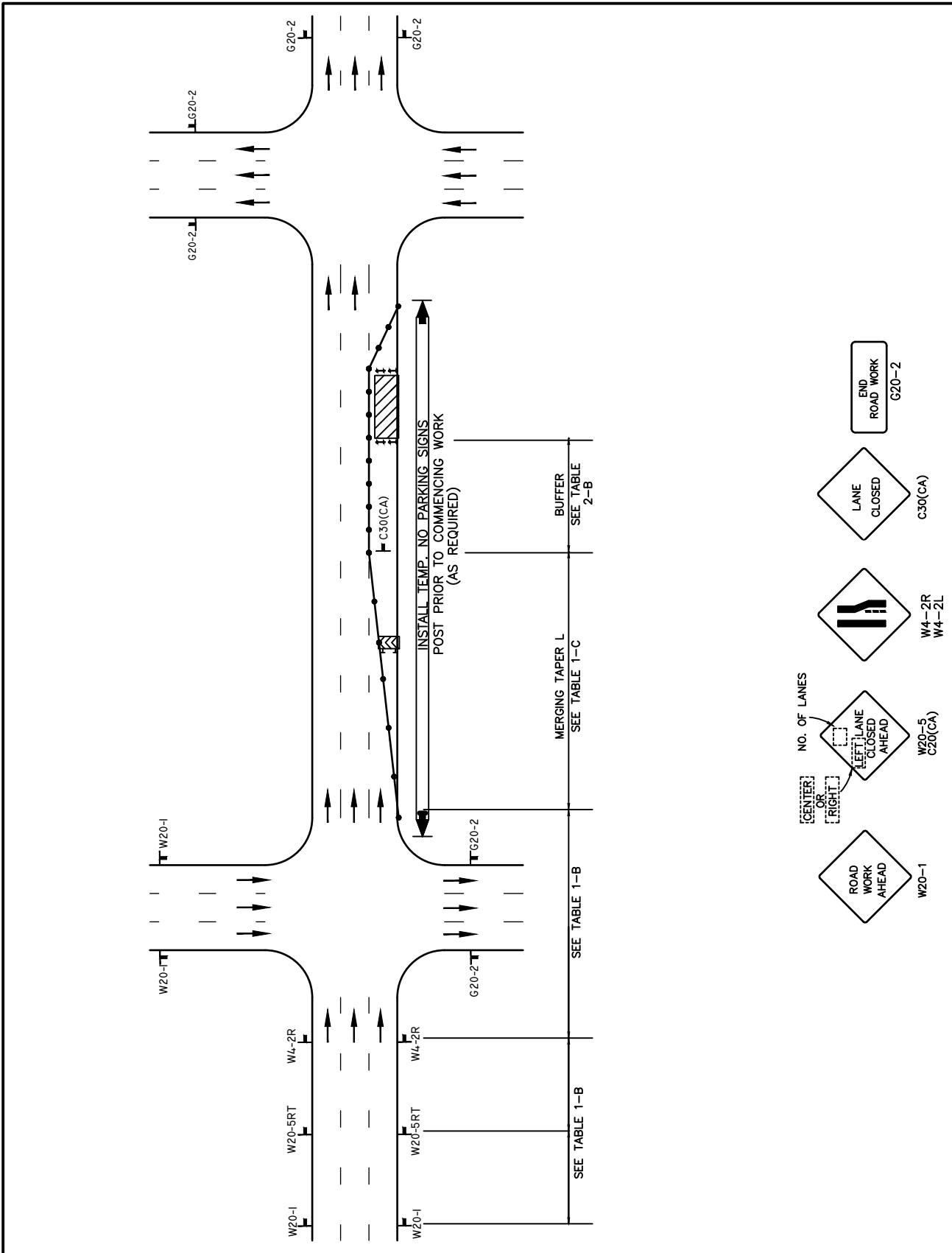
Chairperson R.C.E. 19246

DRAWING NUMBER TCP-16B

SAN DIEGO REGIONAL STANDARD DRAWING

CENTER OF ROAD WORK AREA  
DOUBLE LEFT LANE CLOSURE-ONE WAY STREET

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



**LEGEND**

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

**SIDE OF ROAD WORK AREA**

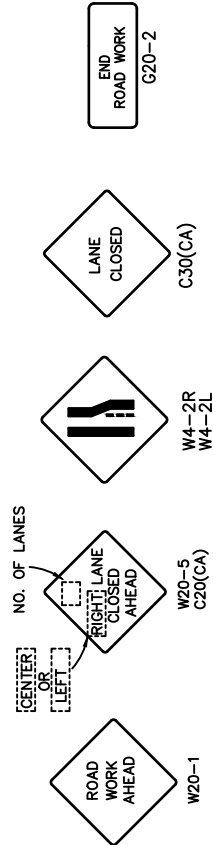
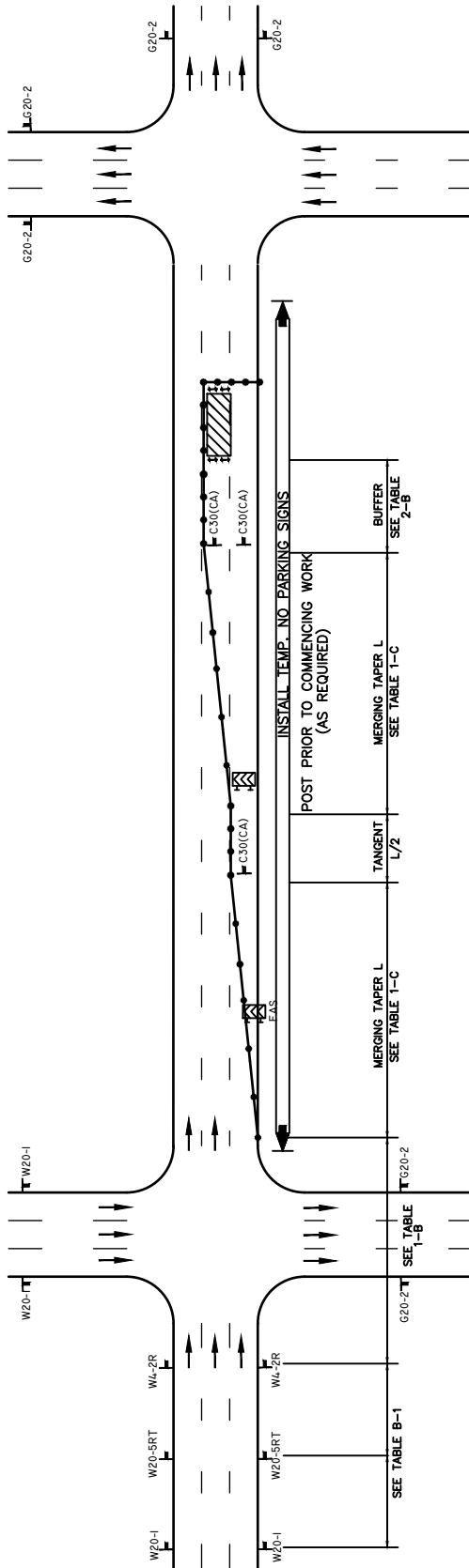
SINGLE RIGHT LANE CLOSURE FOR ONE WAY ST

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-16C



**LEGEND**

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

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

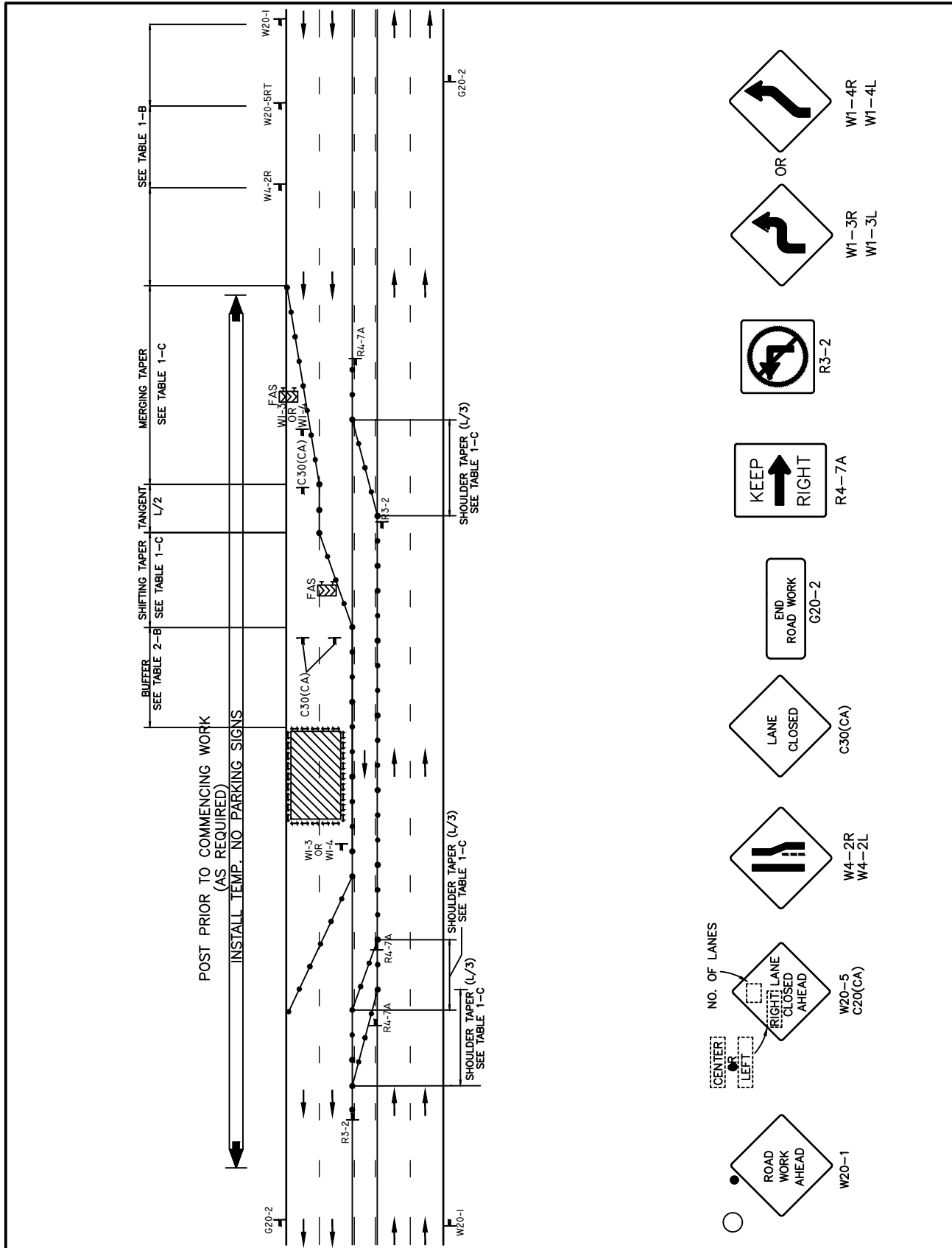
*T. Stanton* 10/25/18  
Chairperson R.C.E. 19246

DRAWING NUMBER TCP-16D

SAN DIEGO REGIONAL STANDARD DRAWING

CENTER OF ROAD WORK AREA  
DOUBLE RIGHT LANE CLOSURE FOR ONE WAY ST

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



**LEGEND**

- TRAFFIC SIGNAL
- CENTER OR LEFT
- NO. OF LANES
- ◇ ROAD WORK AHEAD W20-1
- ◇ RIGHT LANE CLOSED AHEAD W20-5 C20(CA)
- ◇ LANE CLOSED C30(CA)
- ◇ END ROAD WORK G20-2
- ◇ KEEP RIGHT R4-7A
- ◇ NO RIGHT TURN R3-2
- ◇ OR
- ◇ W1-3R W1-3L
- ◇ W1-4R W1-4L
- SIGN
- FLASHING ARROW SIGN
- ▨ WORK AREA
- TRAFFIC DIRECTION
- BARRICADE
- FLAGGER
- CONE
- ++ BARRICADE

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

**CENTER OF ROAD WORK AREA**

MULTILANE TRAFFIC CONTROL WITH TWO WAY LEFT TURN  
RIGHT TRAFFIC LANE CLOSURE - TWO LANES

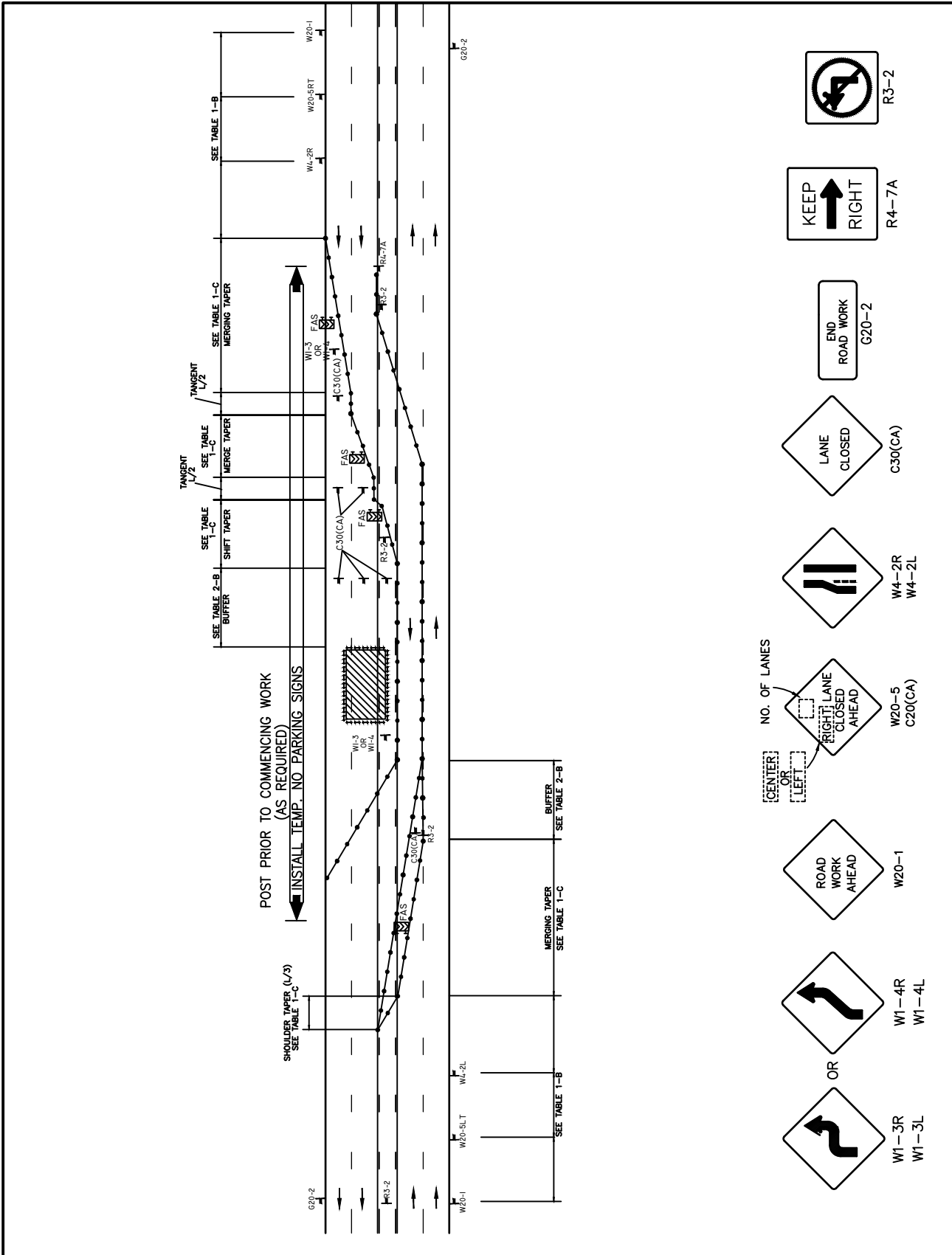
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-17





RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-18

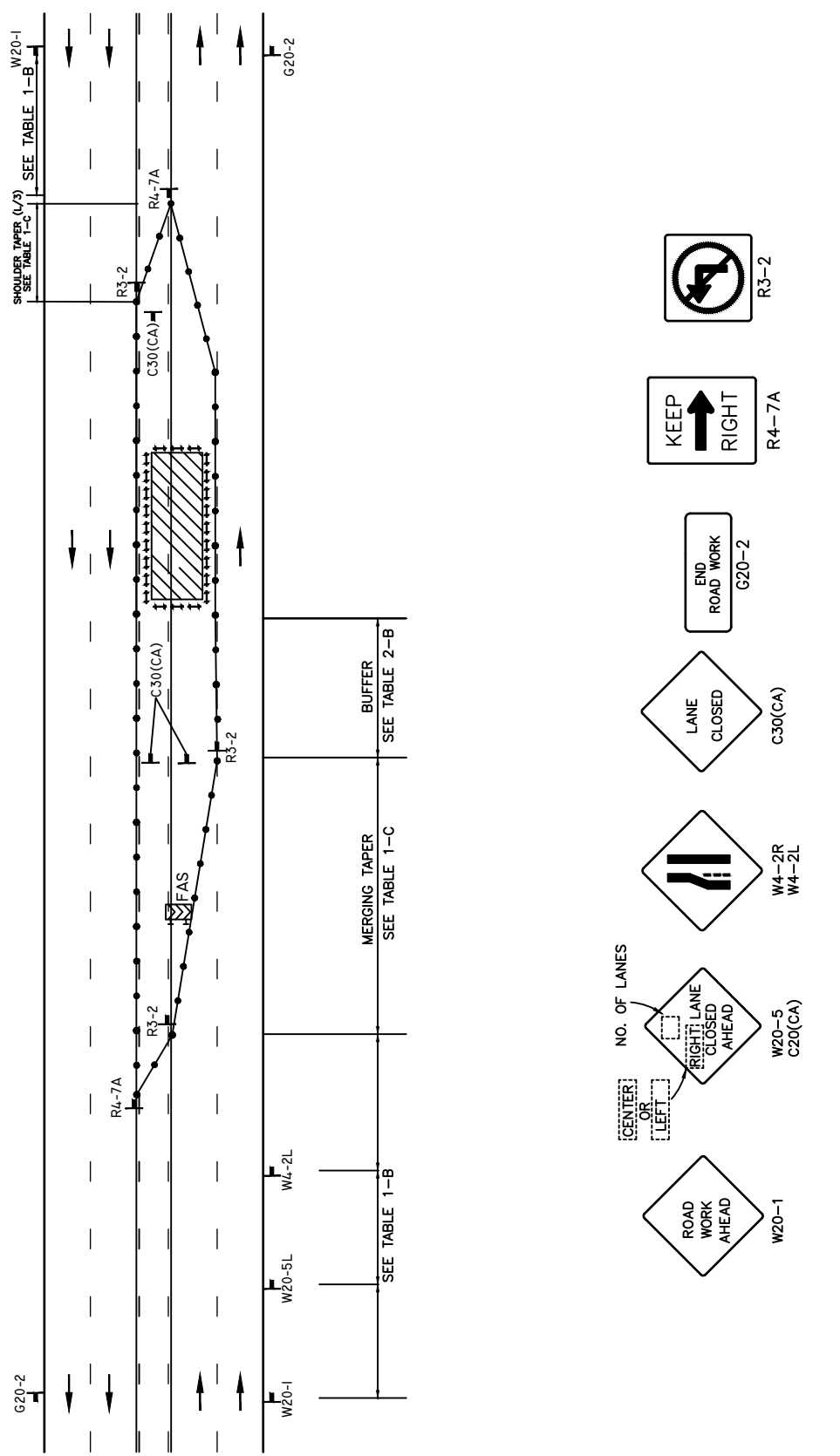
SAN DIEGO REGIONAL STANDARD DRAWING

CENTER OF ROAD WORK AREA

MULTILANE TRAFFIC CONTROL WITH TWO WAY LEFT TURN

RIGHT & LEFT TRAFFIC LANE CLOSURE - THREE LANES

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



- CONE
  - + + BARRICADE
  - █ FLAGGER
  - █ SIGN
  - ⚡ FLASHING ARROW SIGN
  - ▨ WORK AREA
  - ↔ TRAFFIC DIRECTION
- 
- LEGEND**
- W20-1
  - W20-5  
C20(CA)
  - C30(CA)
  - G20-2
  - R4-7A
  - R3-2

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

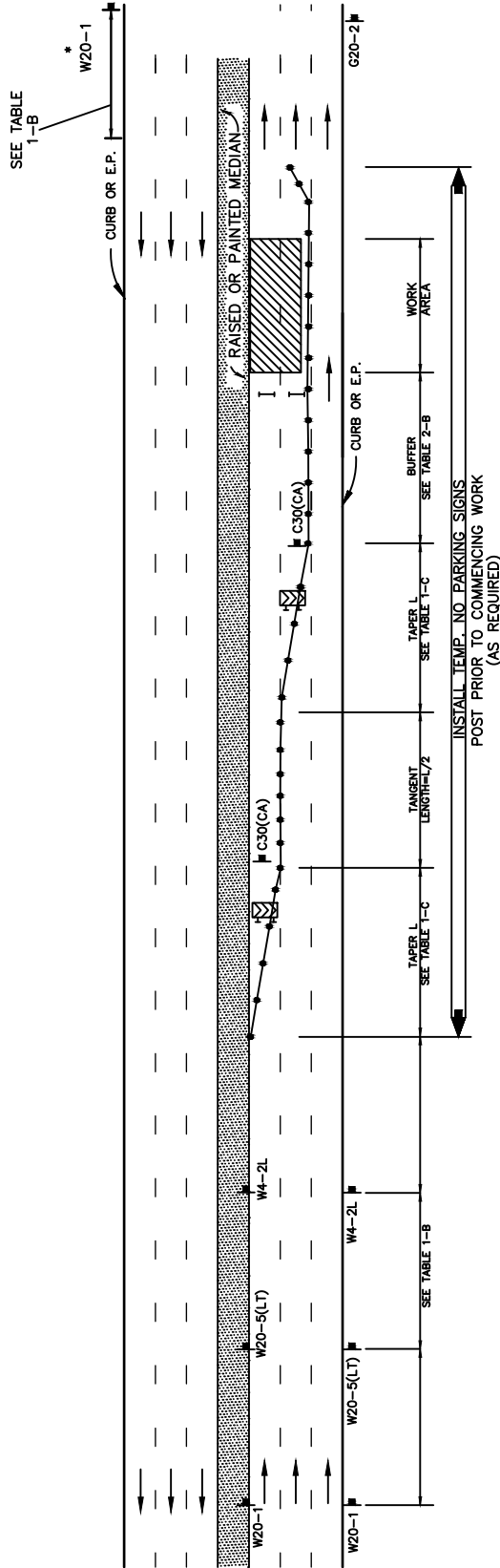
**CENTER OF ROAD WORK AREA**  
 MULTILANE TRAFFIC CONTROL WITH TWO WAY LEFT TURN  
 CENTERTURN & LEFT LANE CLOSURE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

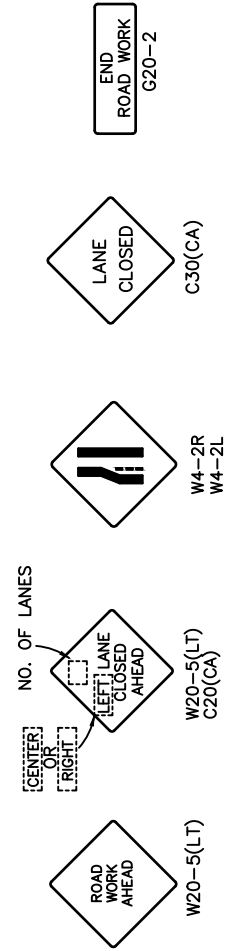
*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

**DRAWING NUMBER** TCP-19



\* OPTIONAL IF RAISED MEDIAN



**LEGEND**

- ⊙ TRAFFIC SIGNAL ● CONE + BARRICADE
- ▬ FLAGGER
- ▬ SIGN
- ▬ FLASHING ARROW SIGN
- ▨ WORK AREA
- ↔ TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

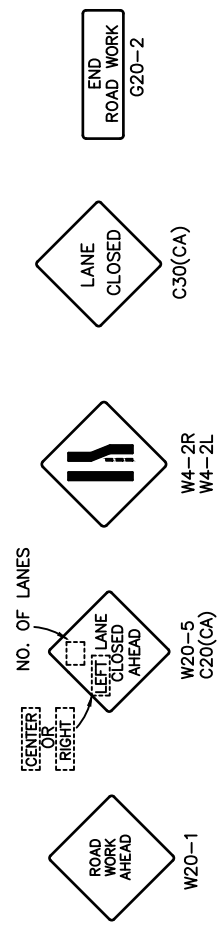
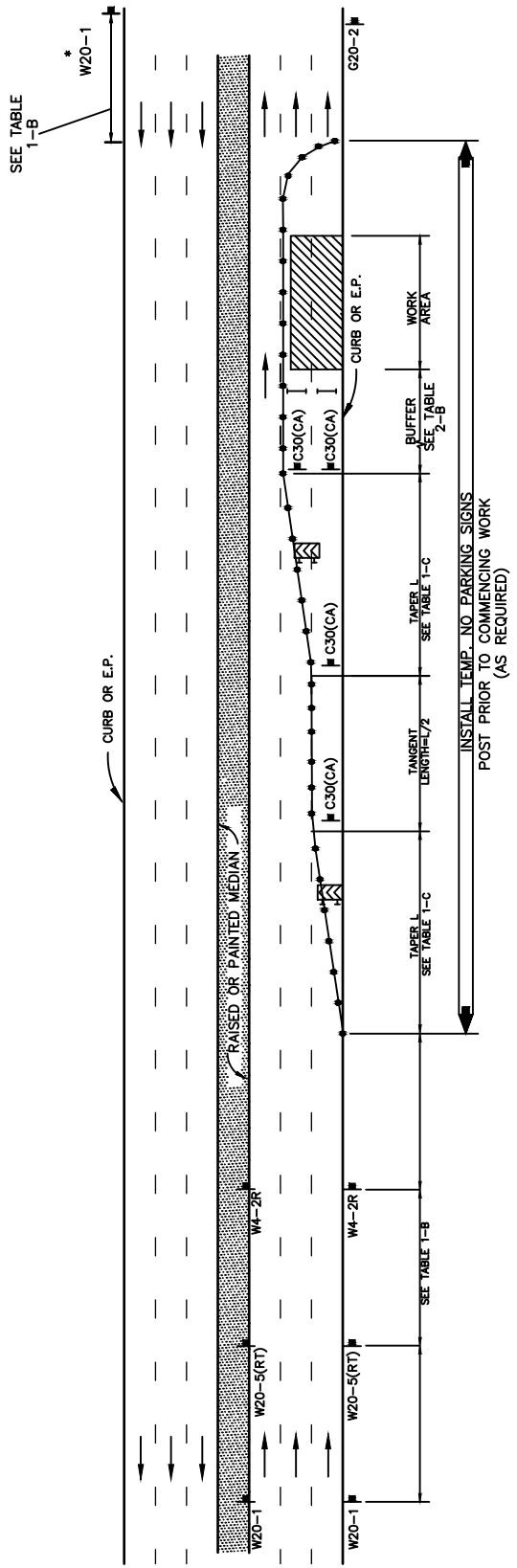
Chairperson R.C.E. 19246

DRAWING NUMBER TCP-20

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA  
MULTILANE ROADWAY WITH RAISED MEDIAN  
DOUBLE LEFT LANE CLOSURE

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Stanton	10/18



**LEGEND**

- Ⓢ TRAFFIC SIGNAL
- CONE
- ⊥ BARRICADE
- ⊥ FLAGGER
- ⊥ SIGN
- ⊥ FLASHING ARROW SIGN
- ▨ WORK AREA
- ↔ TRAFFIC DIRECTION

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

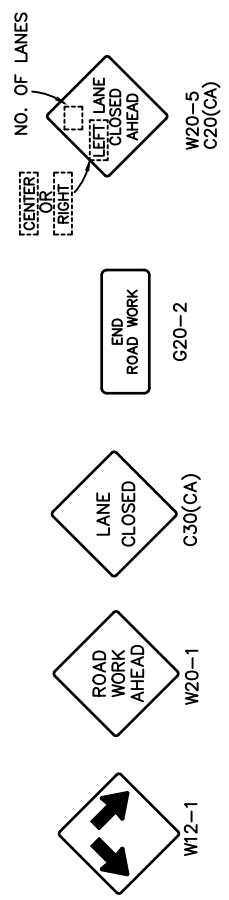
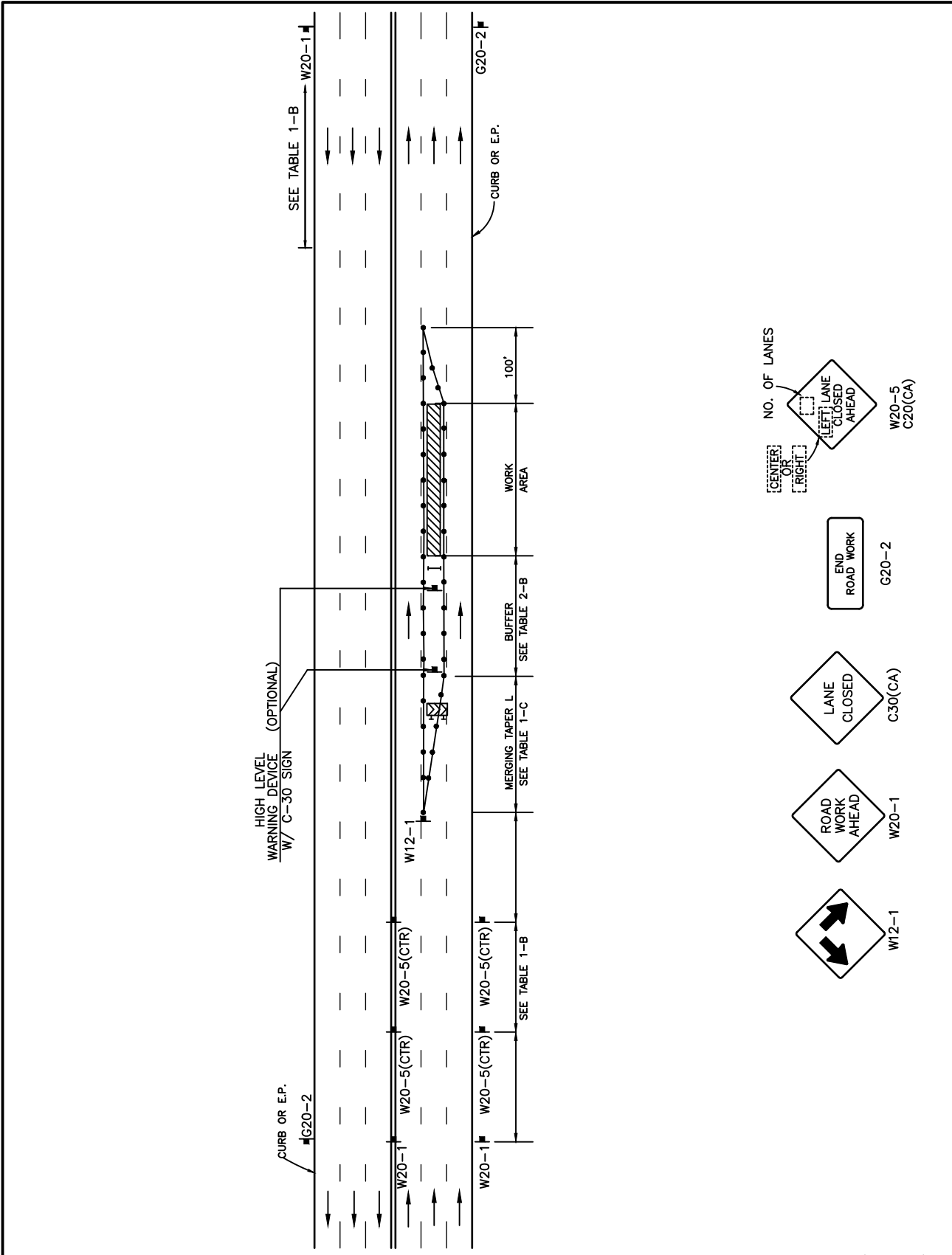
**SIDE OF ROAD WORK AREA**  
MULTILANE ROADWAY WITH RAISED MEDIAN  
DOUBLE RIGHT LANE CLOSURE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER **TCP-21**



**LEGEND**

- Ⓢ TRAFFIC SIGNAL
- CONE
- ⊥ BARRICADE
- ⚑ FLAGGER
- SIGN
- ▨ FLASHING ARROW SIGN
- ▨ WORK AREA
- ↔ TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/18

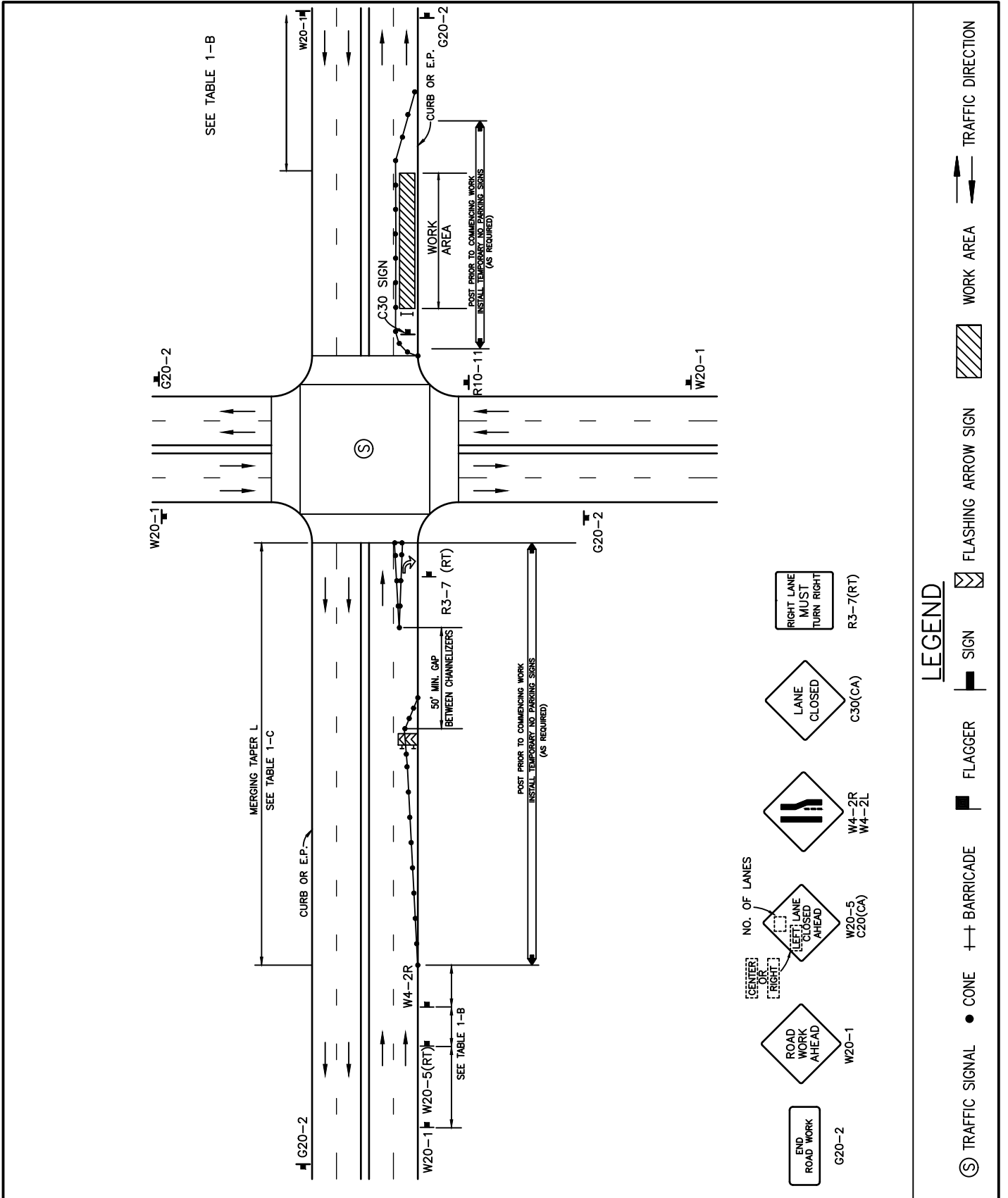
Chairperson R.C.E. 19246

DRAWING NUMBER TCP-22

SAN DIEGO REGIONAL STANDARD DRAWING

CENTER OF ROAD WORK AREA  
MIDDLE LANE CLOSURE

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

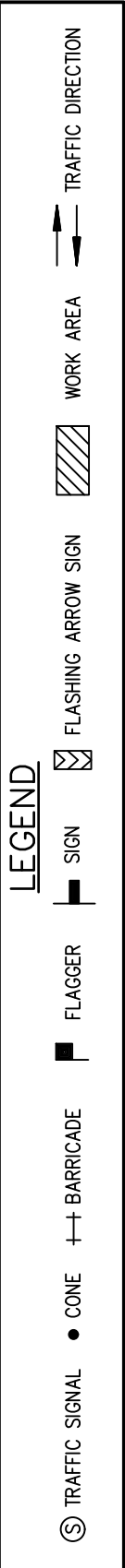
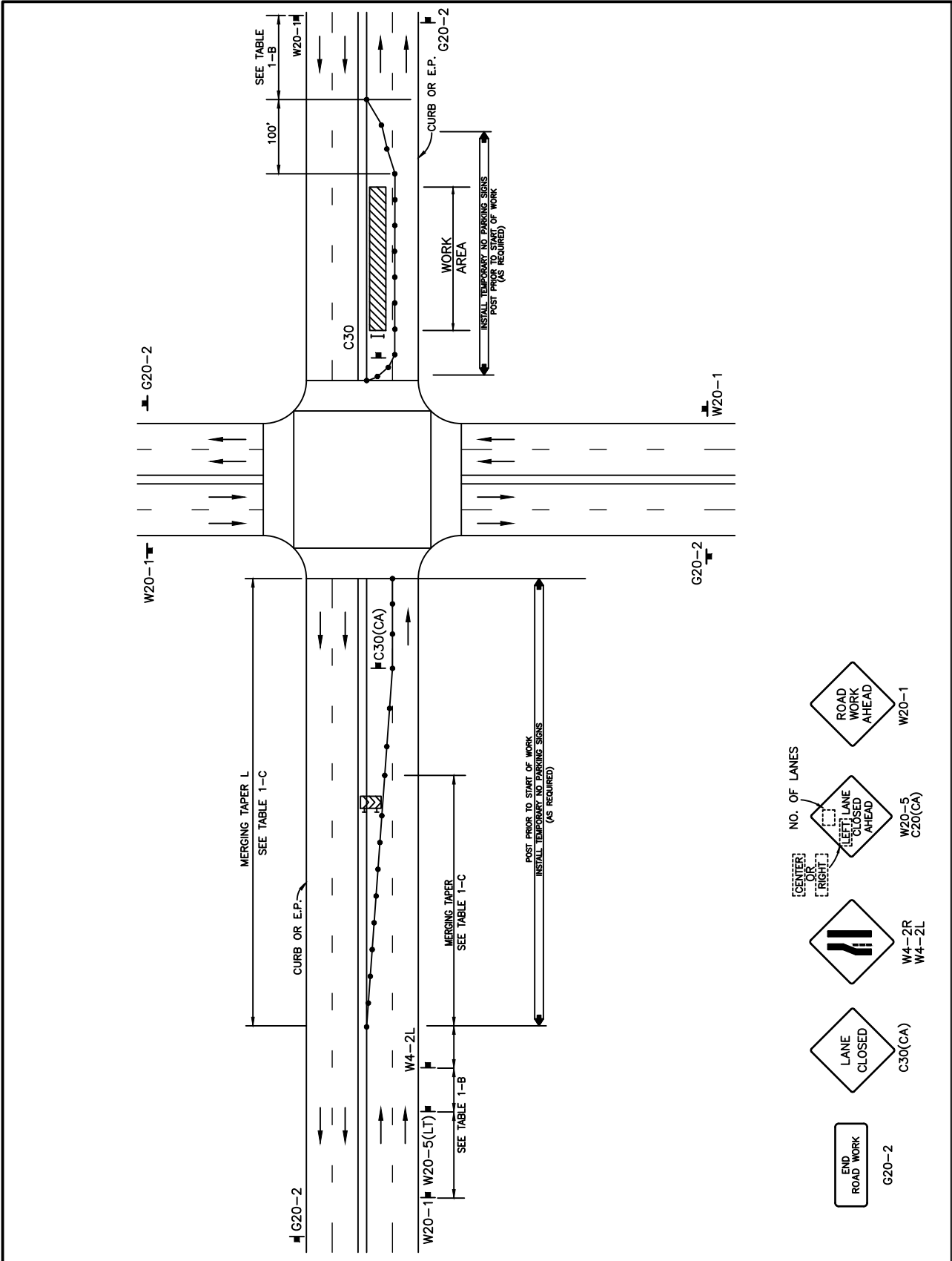
**SIDE OF ROAD WORK AREA**  
WORK BEYOND INTERSECTION RIGHT LANE CLOSURE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER **TCP-23**



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18  
Chairperson R.C.E. 19246

DRAWING NUMBER TCP-24

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA  
WORK BEYOND INTERSECTION LEFT LANE CLOSURE

Revision	By	Approved	Date
Revised	Buss		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

**INTERSECTION OF ROAD WORK AREA**

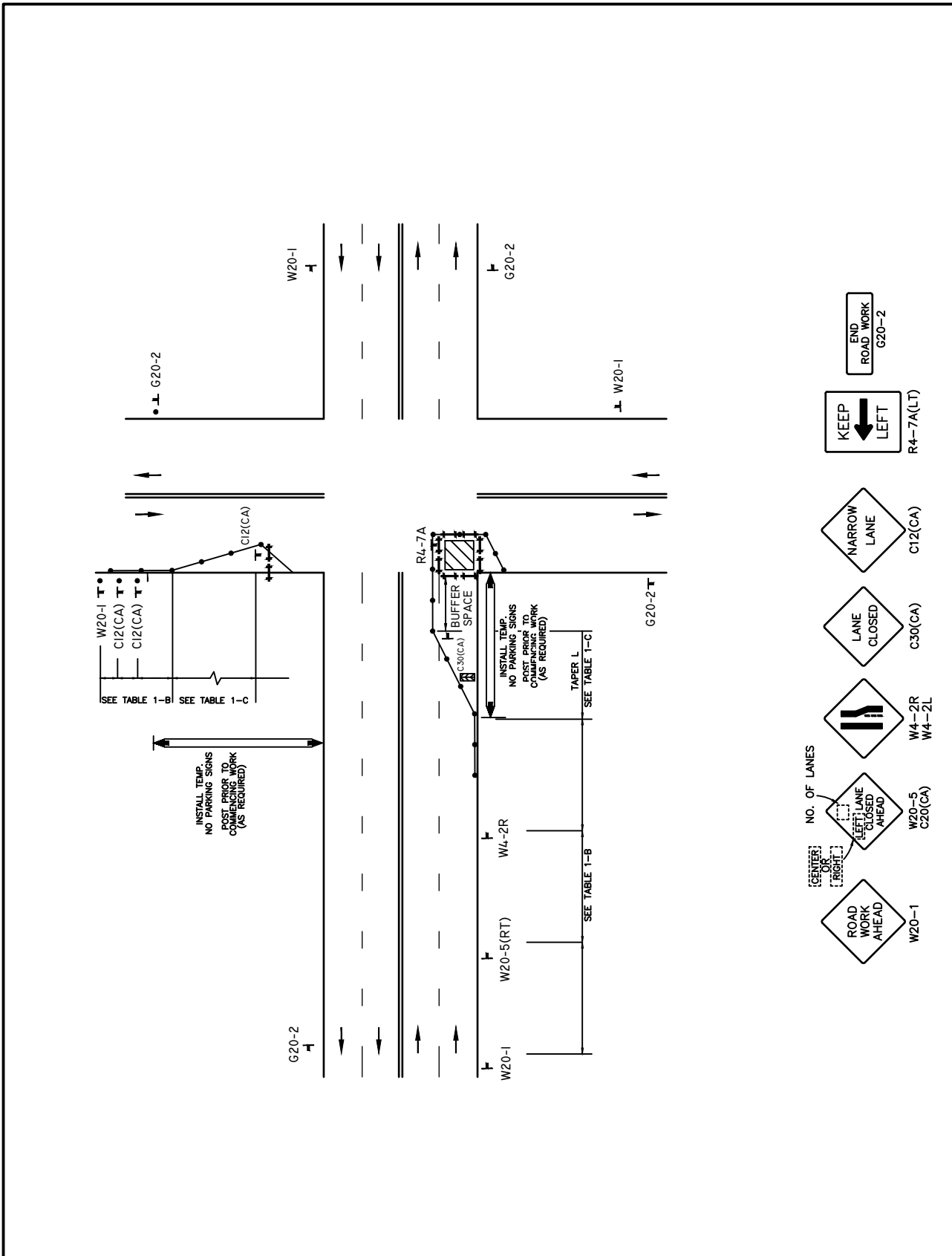
INTERSECTION TRAFFIC CONTROL  
RIGHT LANE CLOSED

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

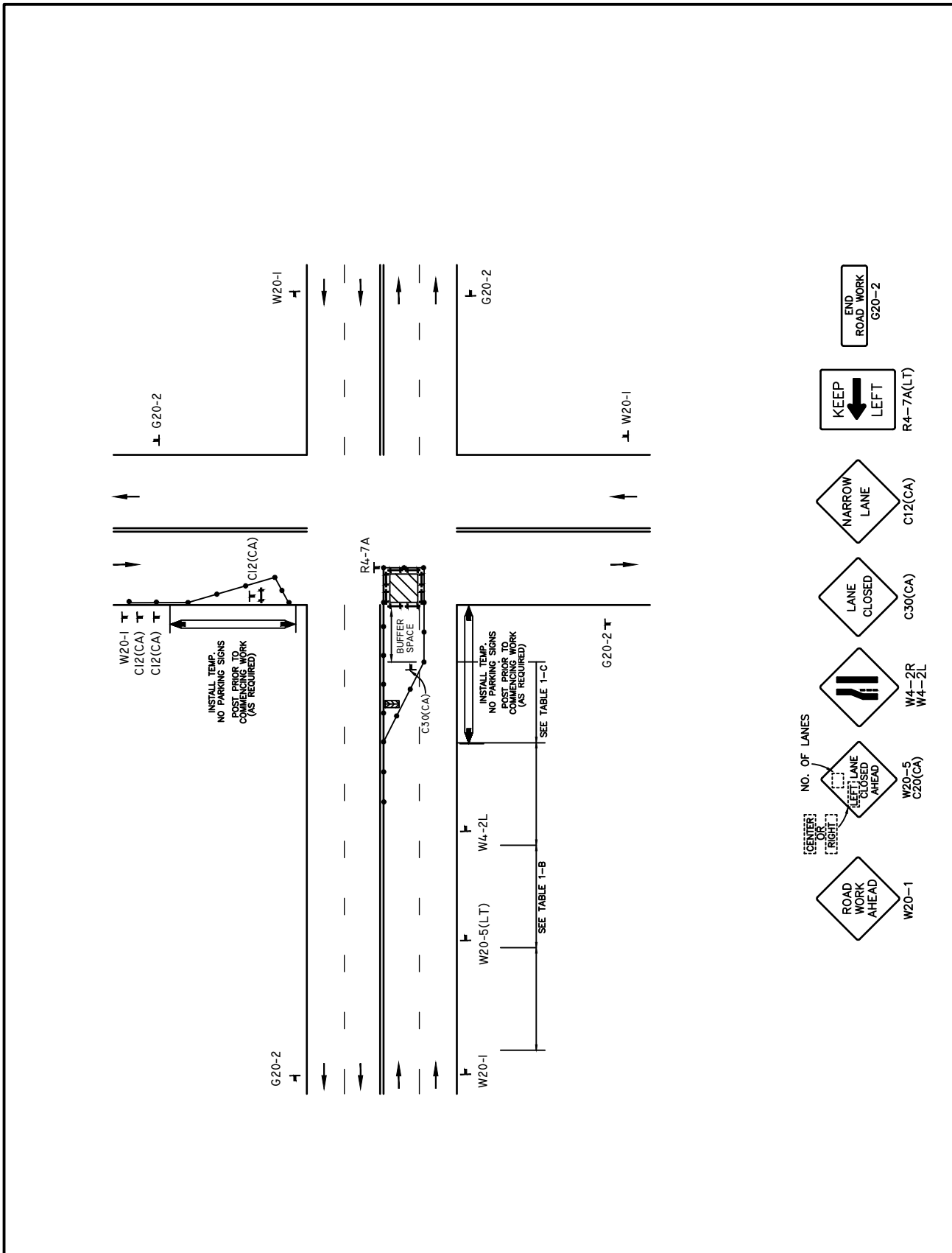
DRAWING NUMBER TCP-25



**LEGEND**

- ⊙ TRAFFIC SIGNAL
- CONE
- ⊕ BARRICADE
- ▬ FLAGGER
- ▬ SIGN
- ⊠ FLASHING ARROW SIGN
- ▨ WORK AREA
- ↔ TRAFFIC DIRECTION





**LEGEND**

⊙	TRAFFIC SIGNAL	●	CONE	++	BARRICADE	⬛	FLAGGER	⬛	SIGN	⊠	FLASHING ARROW SIGN	▨	WORK AREA	↔	TRAFFIC DIRECTION
---	----------------	---	------	----	-----------	---	---------	---	------	---	---------------------	---	-----------	---	-------------------

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

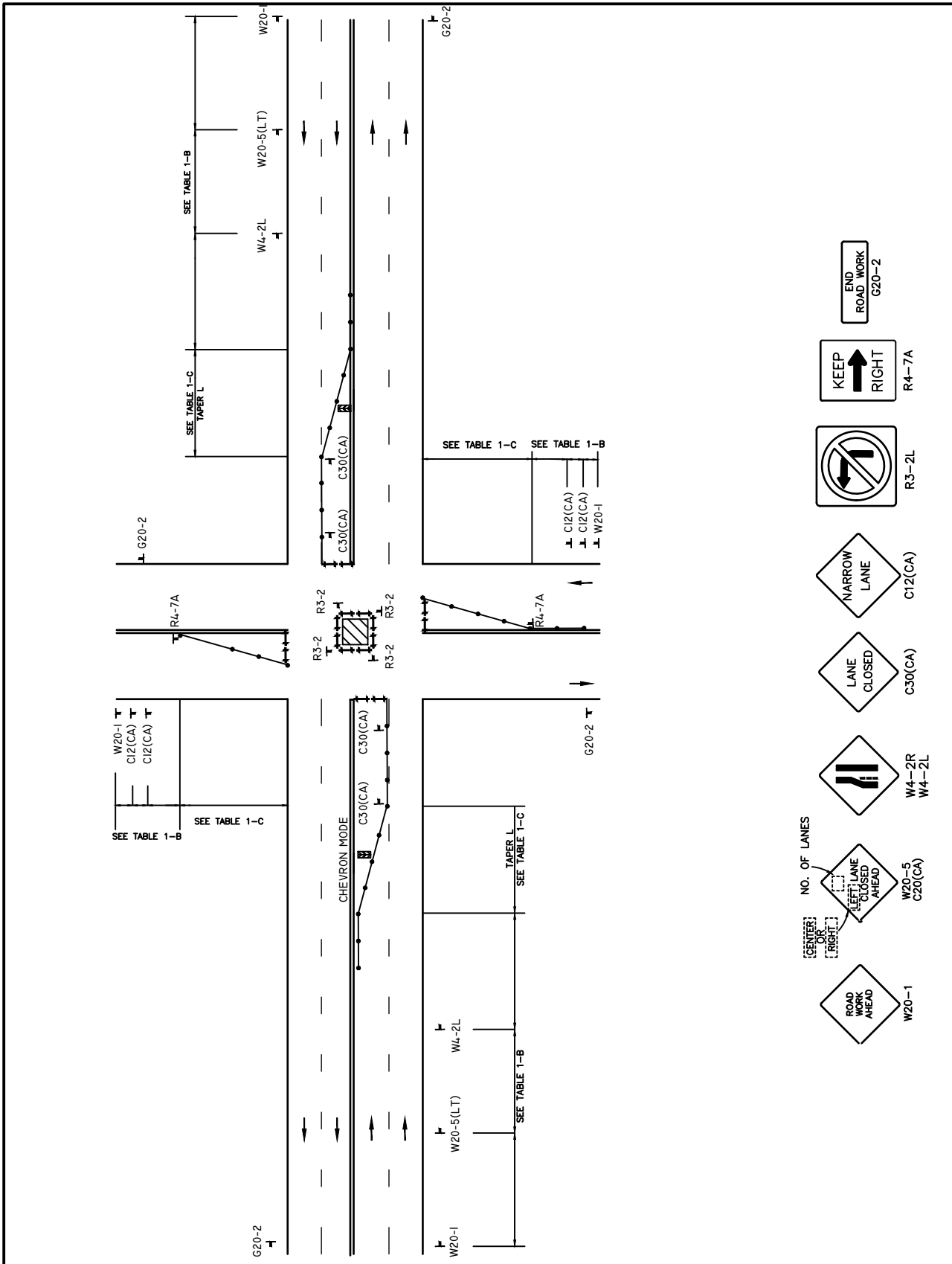
Chairperson R.C.E. 19246

DRAWING NUMBER TCP-26

SAN DIEGO REGIONAL STANDARD DRAWING

INTERSECTION OF ROAD WORK AREA  
INTERSECTION TRAFFIC CONTROL  
LEFT LANE CLOSED

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



**LEGEND**

	TRAFFIC SIGNAL		CONE		BARRICADE		FLAGGER		FLASHING ARROW SIGN		WORK AREA		TRAFFIC DIRECTION
	SIGN		NARROW LANE		LANE CLOSED		FLAGGER		FLASHING ARROW SIGN		WORK AREA		TRAFFIC DIRECTION

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

INTERSECTION OF ROAD WORK AREA

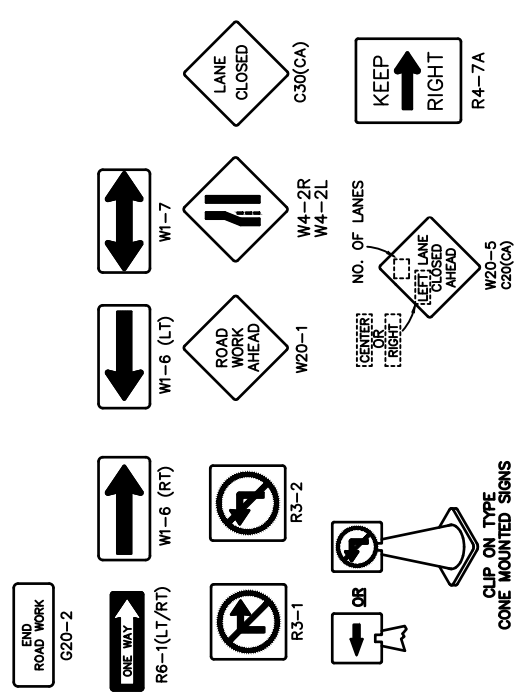
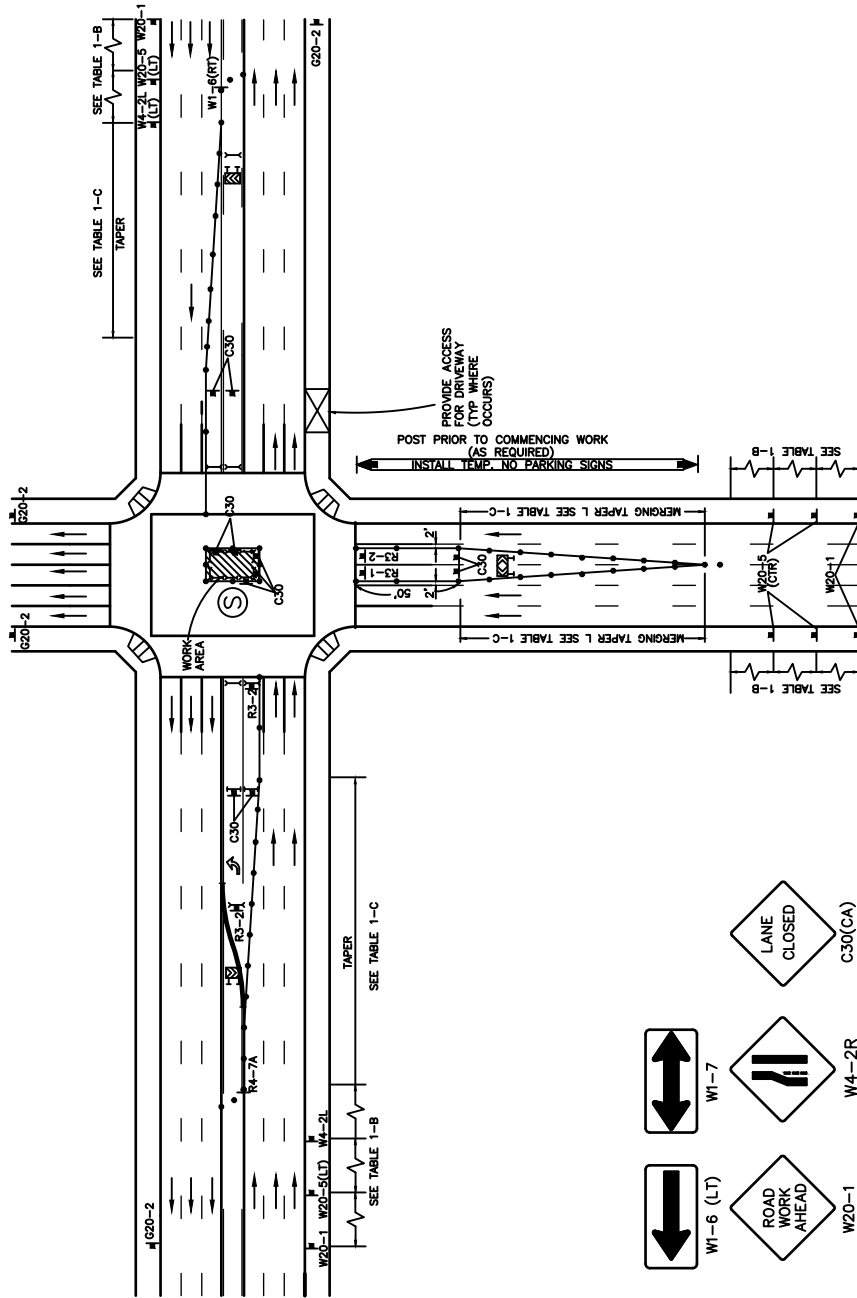
INTERSECTION TRAFFIC CONTROL

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-27A



**LEGEND**

- Ⓢ TRAFFIC SIGNAL
- CONE
- ⊥ BARRICADE
- ▬ FLAGGER
- ▨ SIGN
- ⚡ FLASHING ARROW SIGN
- ▨ WORK AREA
- TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

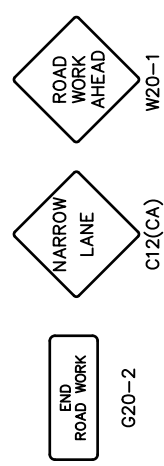
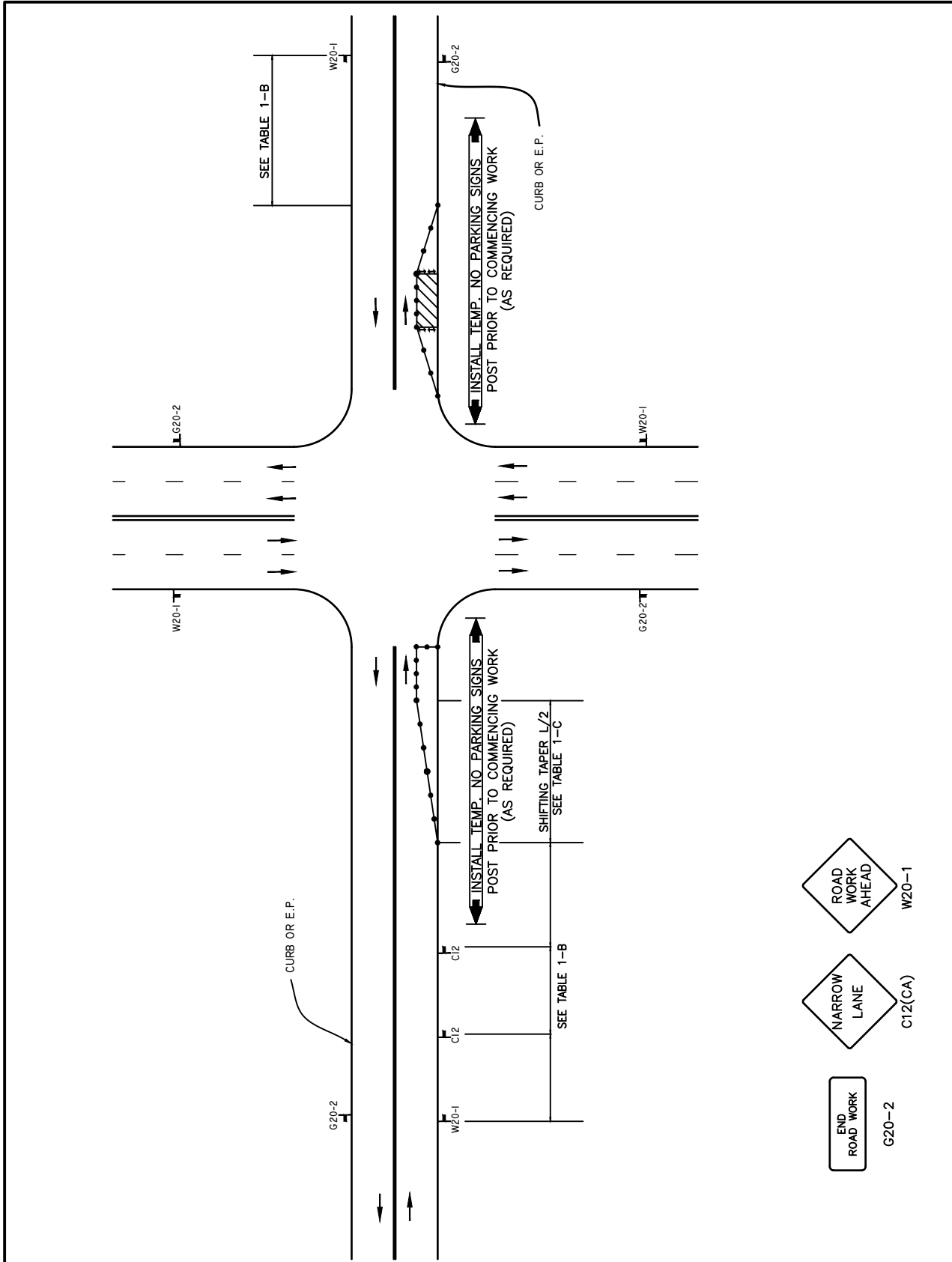
DRAWING NUMBER TCP-27B

SAN DIEGO REGIONAL STANDARD DRAWING

INTERSECTION OF ROAD WORK AREA

MULTILANE MIDDLE INTERSECTION W/MEDIANS & TURNS

Revision	By	Approval	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



**LEGEND**

- Ⓢ TRAFFIC SIGNAL    ● CONE    + BARRICADE    █ FLAGGER    █ SIGN    ☒ FLASHING ARROW SIGN    ▨ WORK AREA    ⇄ TRAFFIC DIRECTION

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

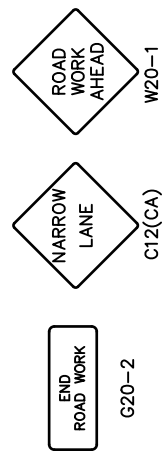
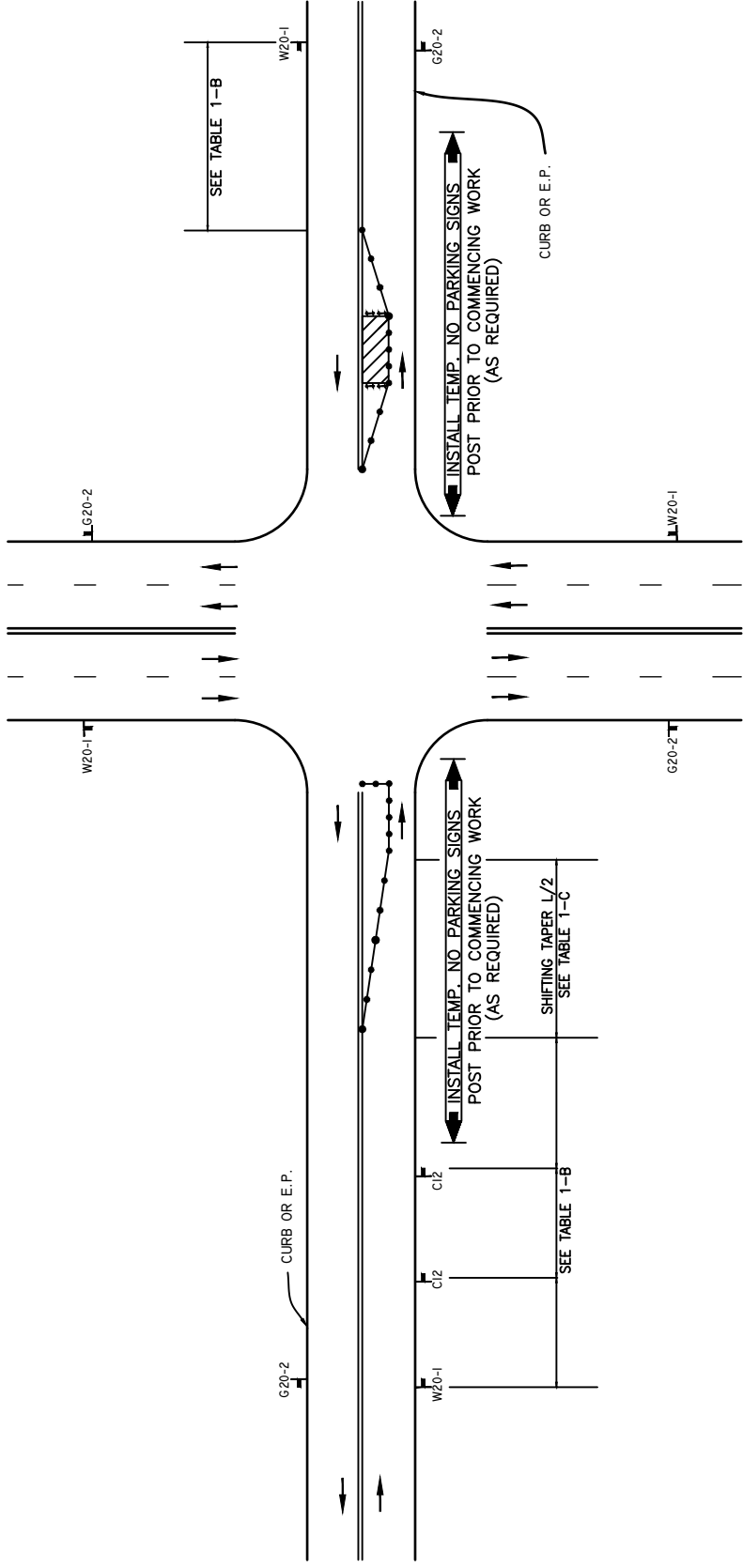
**SIDE OF ROAD WORK AREA**  
 WORK BEYOND INTERSECTION TRAFFIC CONTROL  
 PARKING AREA CLOSED

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

**DRAWING NUMBER TCP-28**



**LEGEND**

- Ⓢ TRAFFIC SIGNAL   ● CONE   + BARRICADE   ■ FLAGGER   □ SIGN   ▨ FLASHING ARROW SIGN   ▨ WORK AREA   ⇄ TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

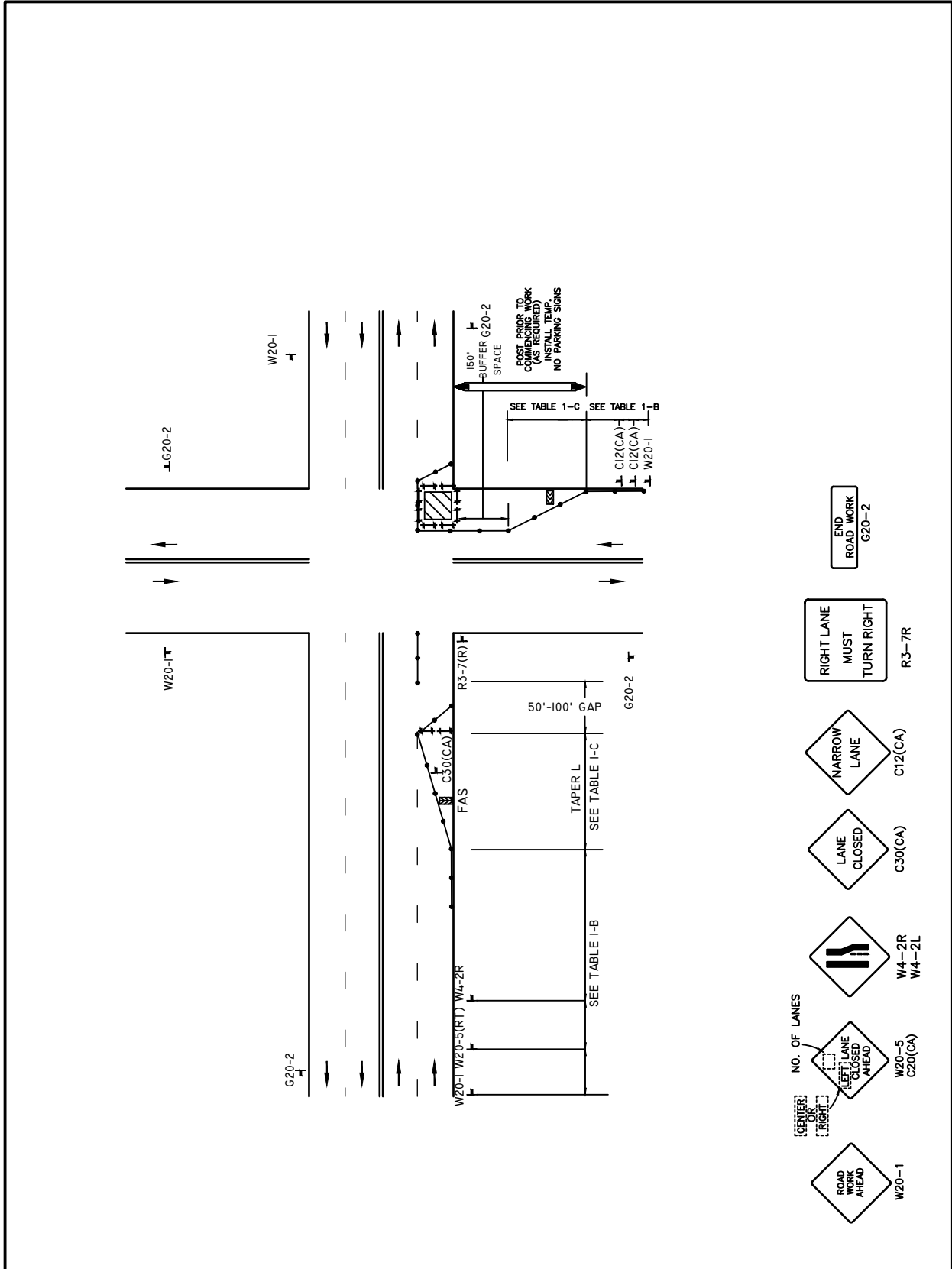
DRAWING NUMBER TCP-29

SAN DIEGO REGIONAL STANDARD DRAWING

**SIDE OF ROAD WORK AREA**

WORK BEYOND INTERSECTION PARKING AREA

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



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

**LEGEND**

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

**INTERSECTION OF ROAD WORK AREA**

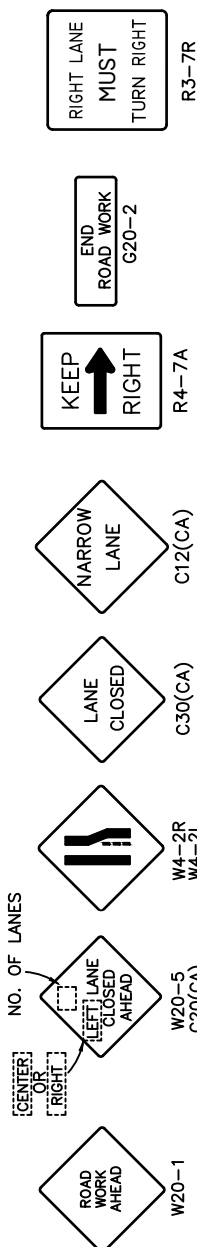
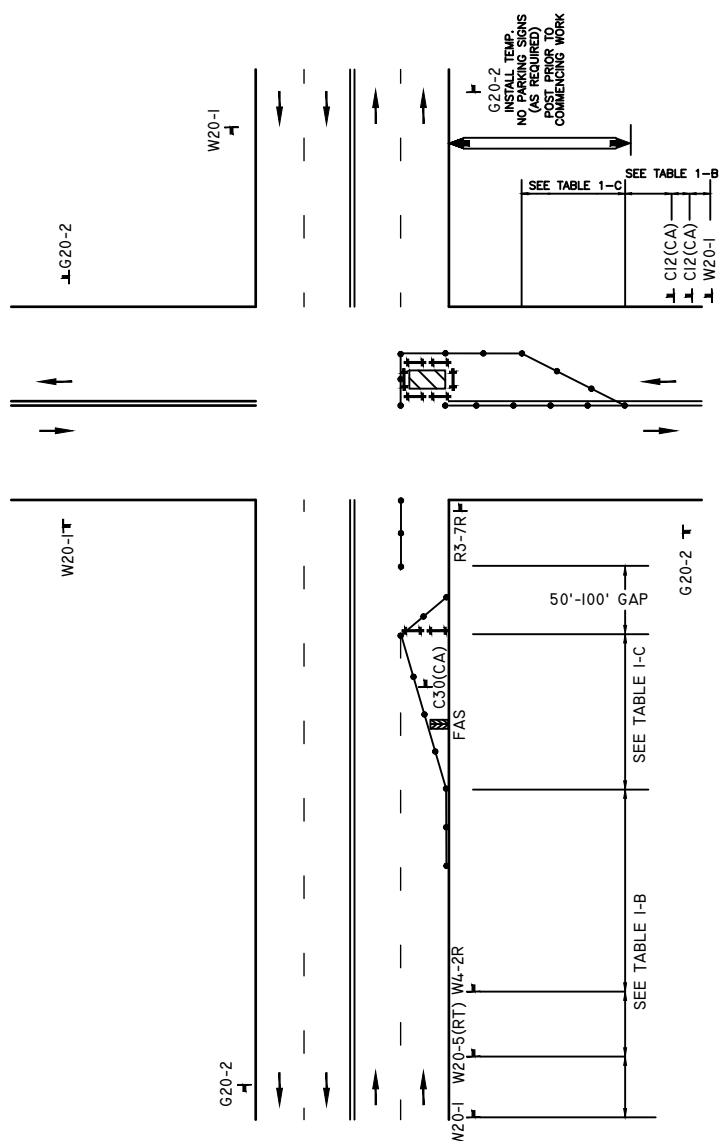
INTERSECTION TRAFFIC CONTROL  
RIGHT LANE & SHOULDER CLOSED

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-30



**LEGEND**



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-31

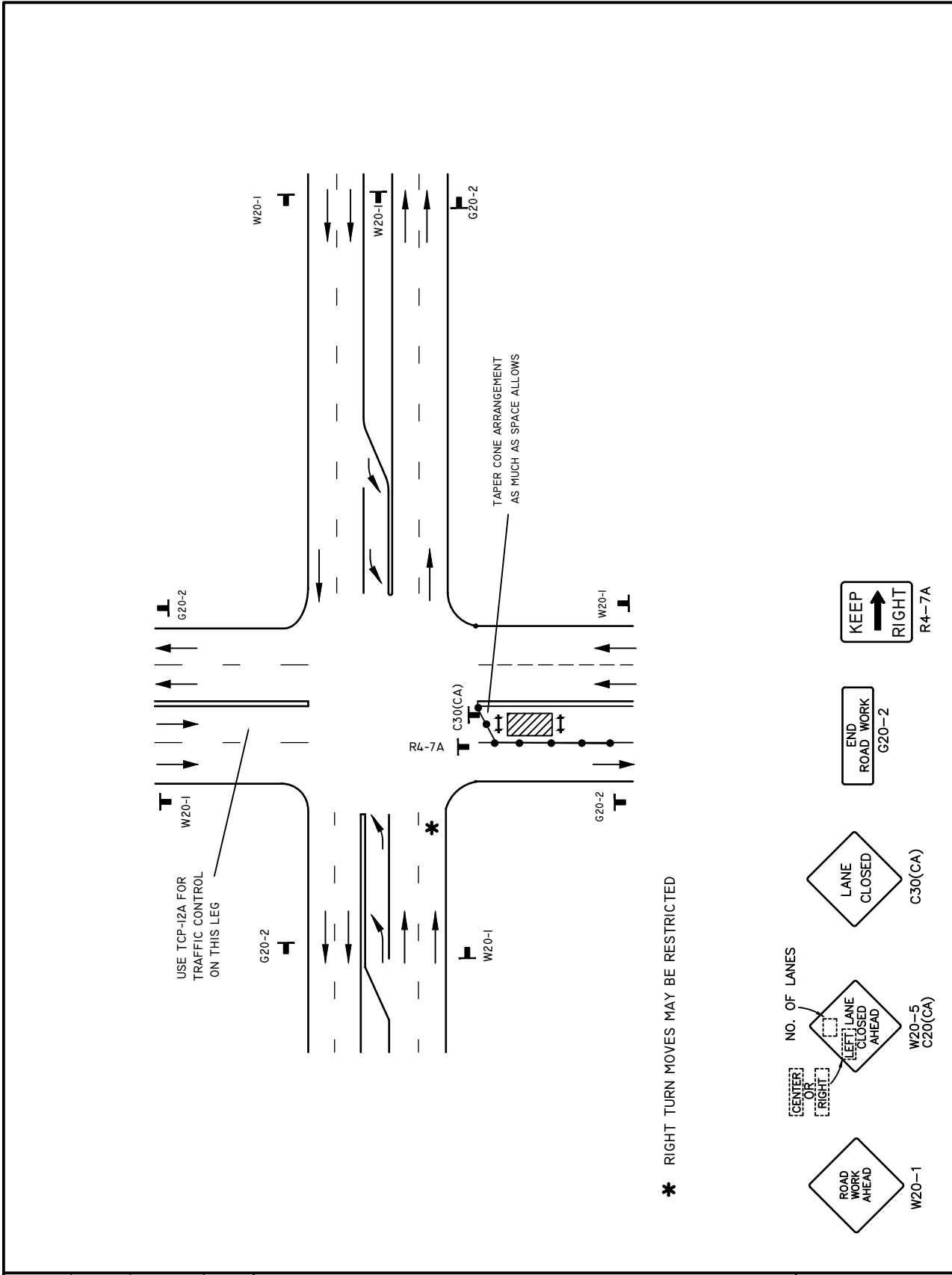
SAN DIEGO REGIONAL STANDARD DRAWING

INTERSECTION OF ROAD WORK AREA

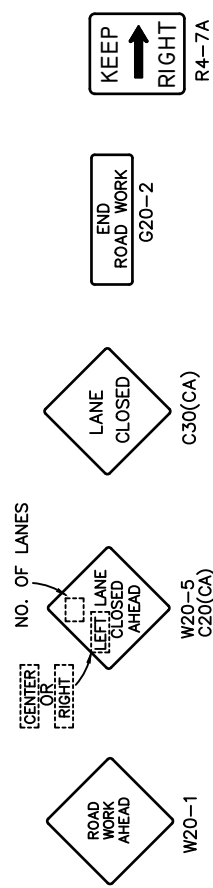
INTERSECTION TRAFFIC CONTROL

RIGHT & CENTER LANE CLOSED

Revision	By	Approval	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



\* RIGHT TURN MOVES MAY BE RESTRICTED



**LEGEND**

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

**CENTER OF ROAD WORK AREA**

LEFT TURN INTERSECTION TRAFFIC CONTROL

LEFT LANE CLOSED

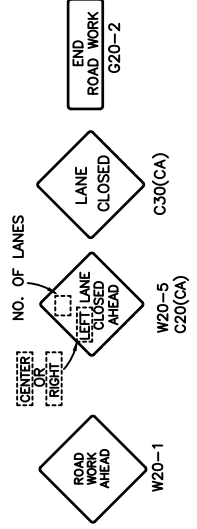
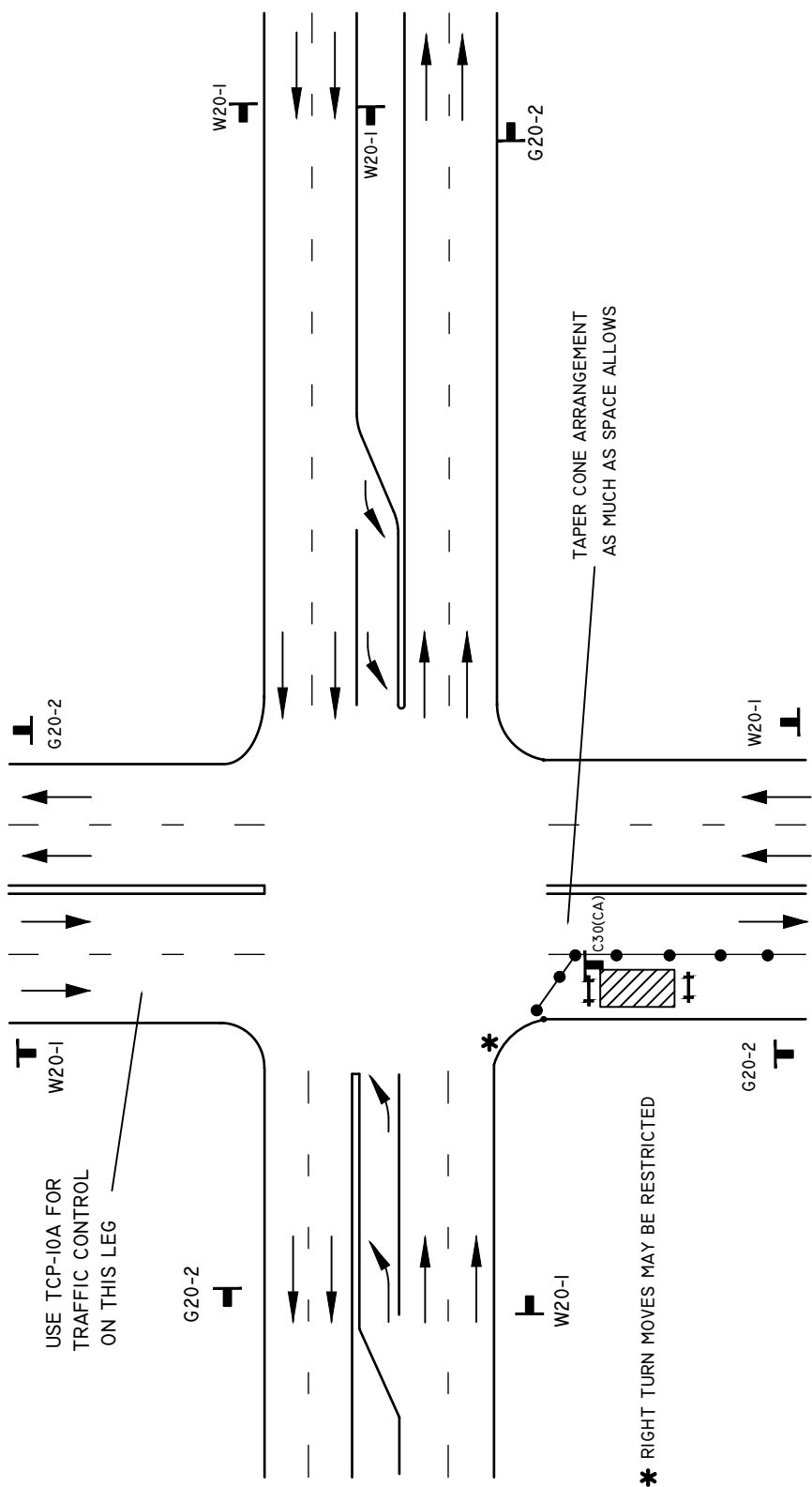
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-32





**LEGEND**

- Ⓢ TRAFFIC SIGNAL
- CONE
- ⊢ BARRICADE
- █ FLAGGER
- ⊞ SIGN
- ▨ FLASHING ARROW SIGN
- ▨ WORK AREA
- ↔ TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18  
Chairperson R.C.E. 19246

DRAWING NUMBER TCP-33

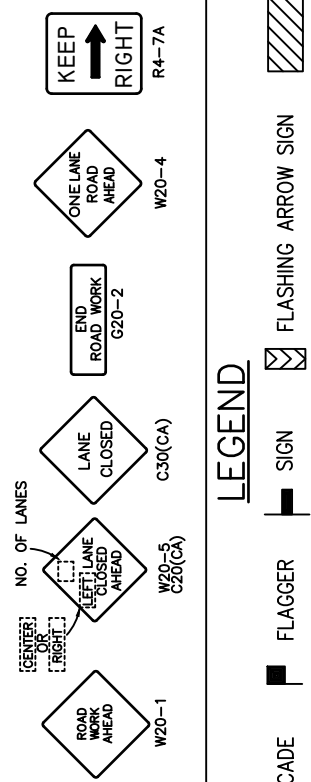
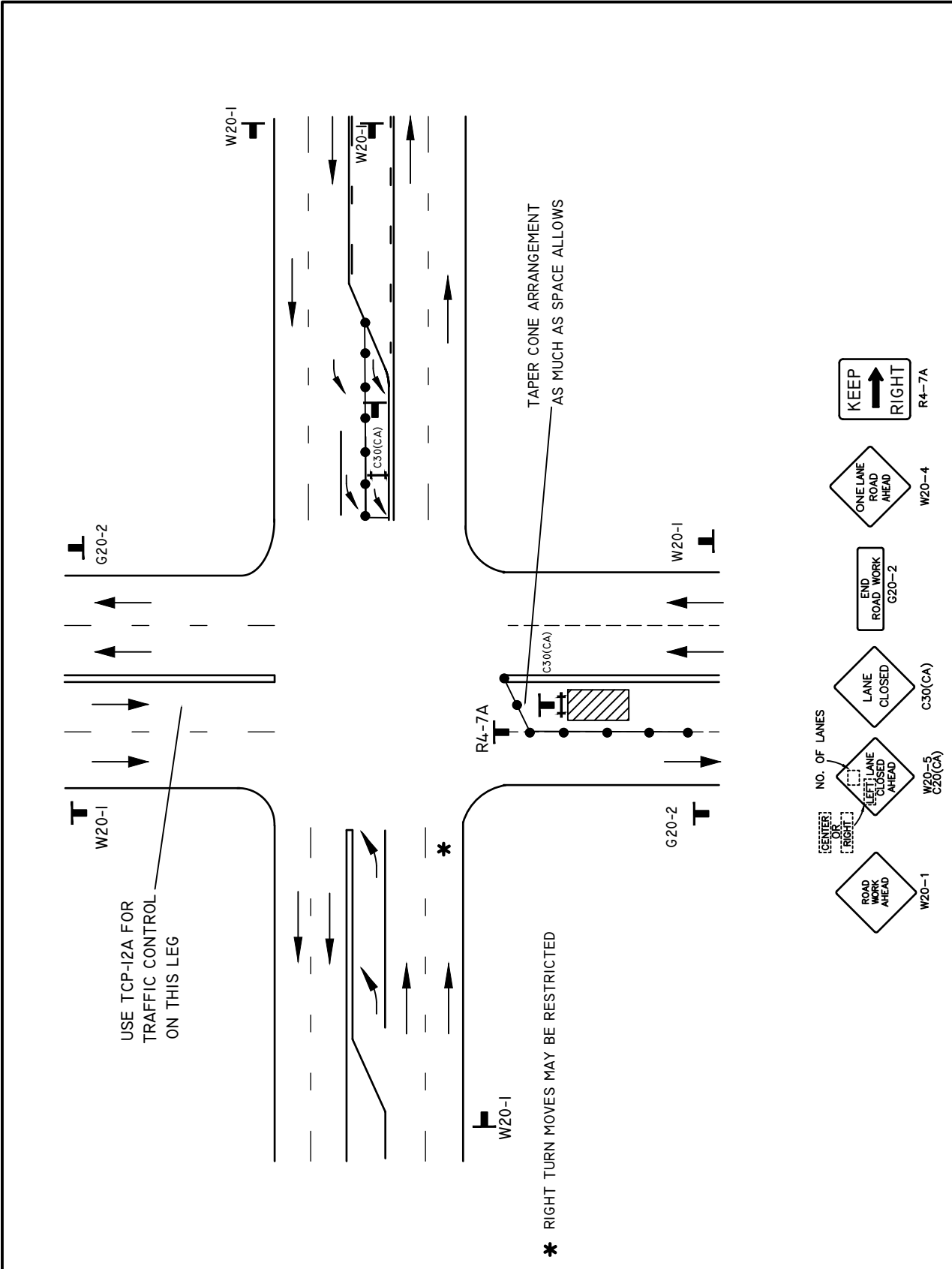
SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA

MULTILANE INTERSECTION TRAFFIC CONTROL

RIGHT LANE CLOSED

Revision	By	Approval	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

CENTER OF ROAD WORK AREA

LEFT TURN INTERSECTION TRAFFIC CONTROL

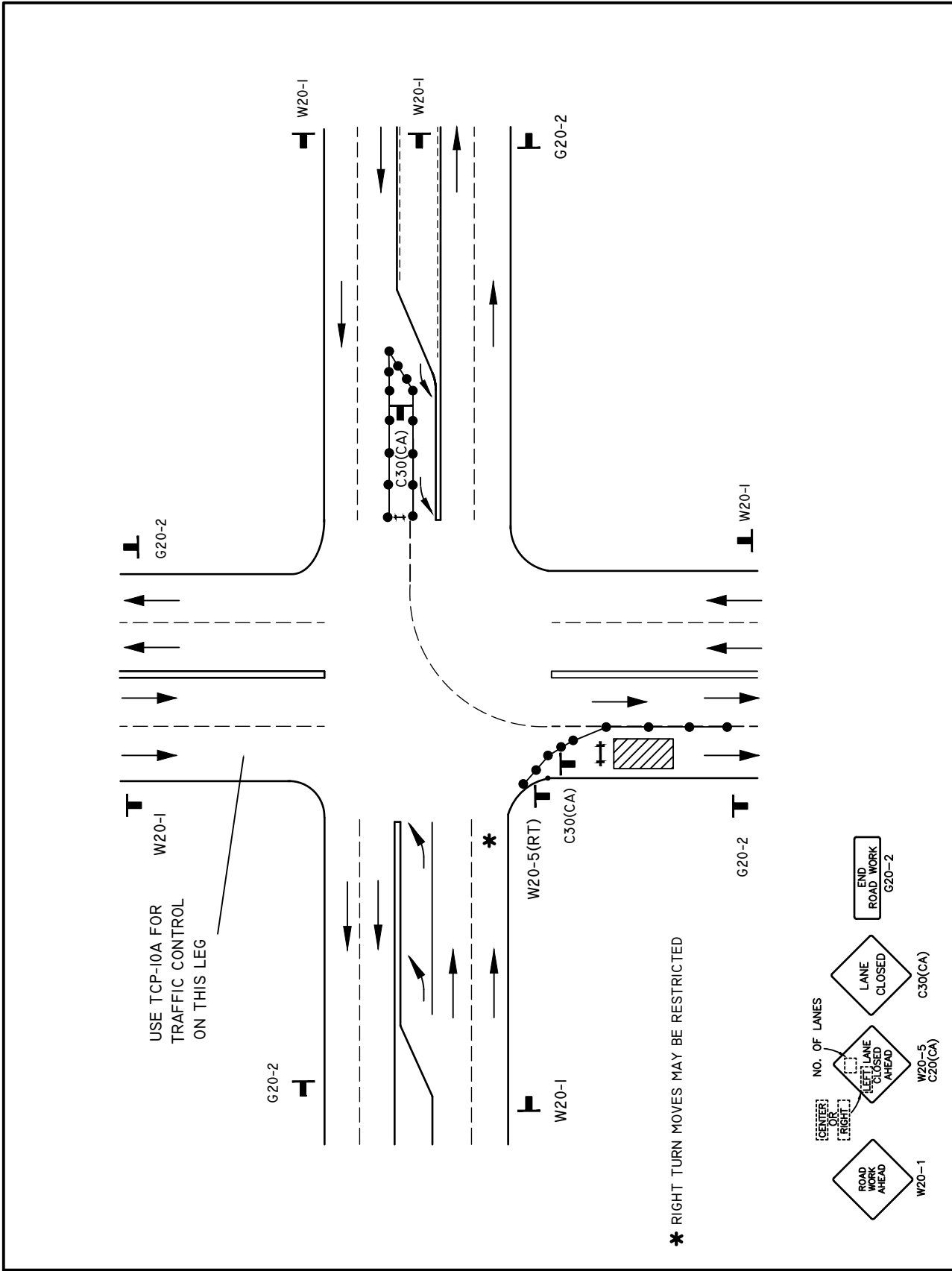
LEFT TURN LANE AND LEFT LANE CLOSED

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-34



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

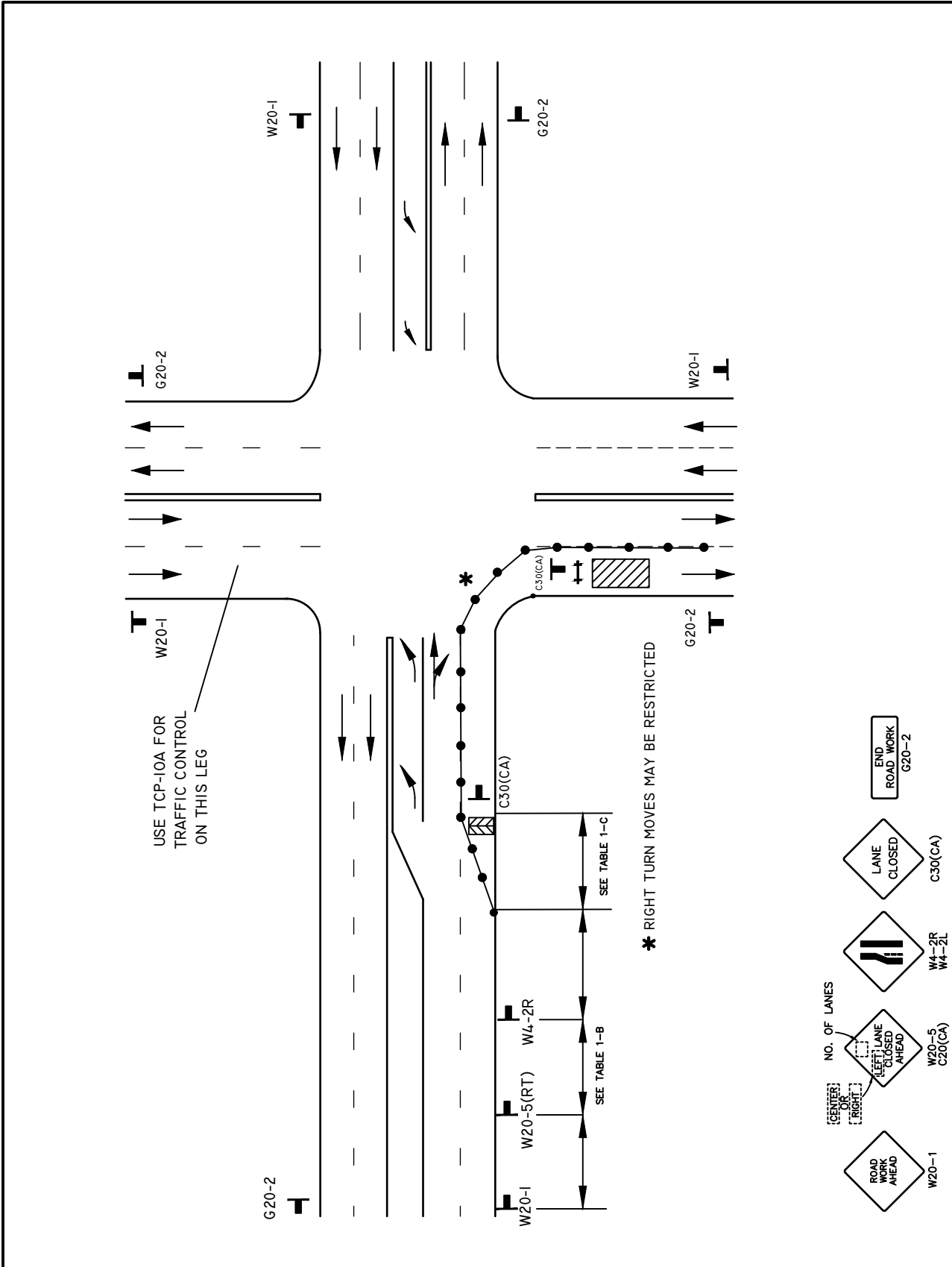
*M. Stanton* 10/25/18  
Chairperson R.C.E. 19246

DRAWING NUMBER TCP-35

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA  
INTERSECTION TRAFFIC CONTROL  
LEFT TURN LANE AND RIGHT LANE CLOSED

Revision	By	Approval	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

**SIDE OF ROAD WORK AREA**

RIGHT TURN INTERSECTION TRAFFIC CONTROL

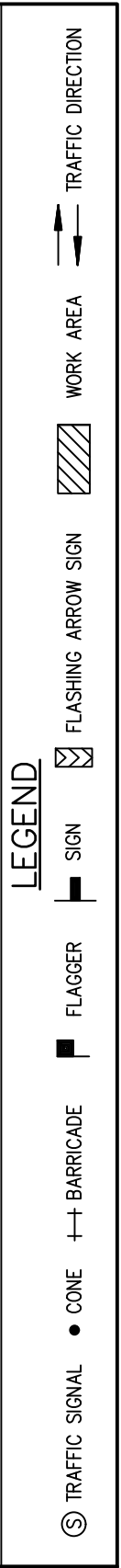
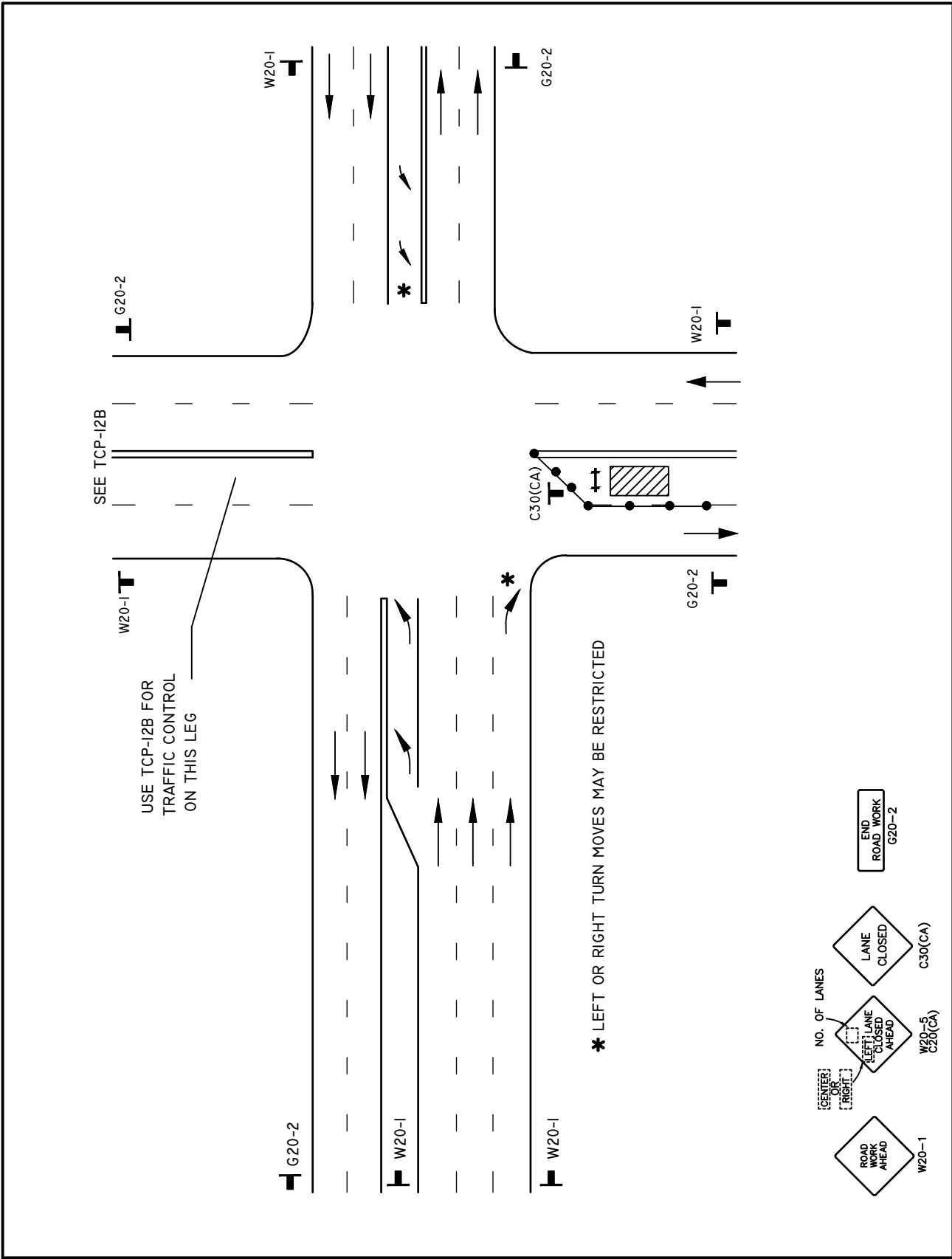
RIGHT TURN AND RIGHT LANE CLOSED

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-36



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/18

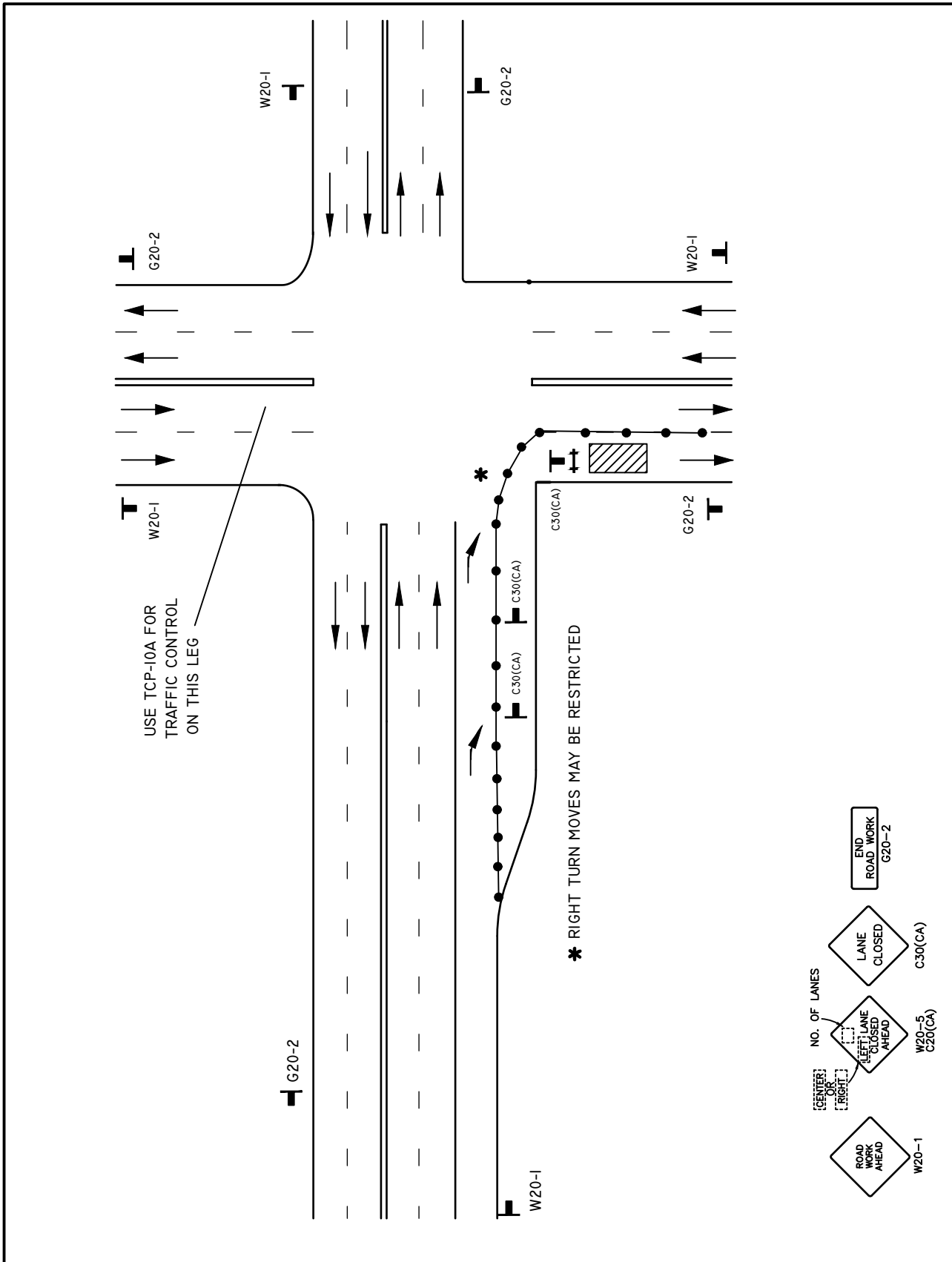
Chairperson R.C.E. 19246

DRAWING NUMBER TCP-37

SAN DIEGO REGIONAL STANDARD DRAWING

CENTER OF ROAD WORK AREA  
MULTILANE INTERSECTION TRAFFIC CONTROL  
LEFT LANE CLOSED

Revision	By	Approval	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

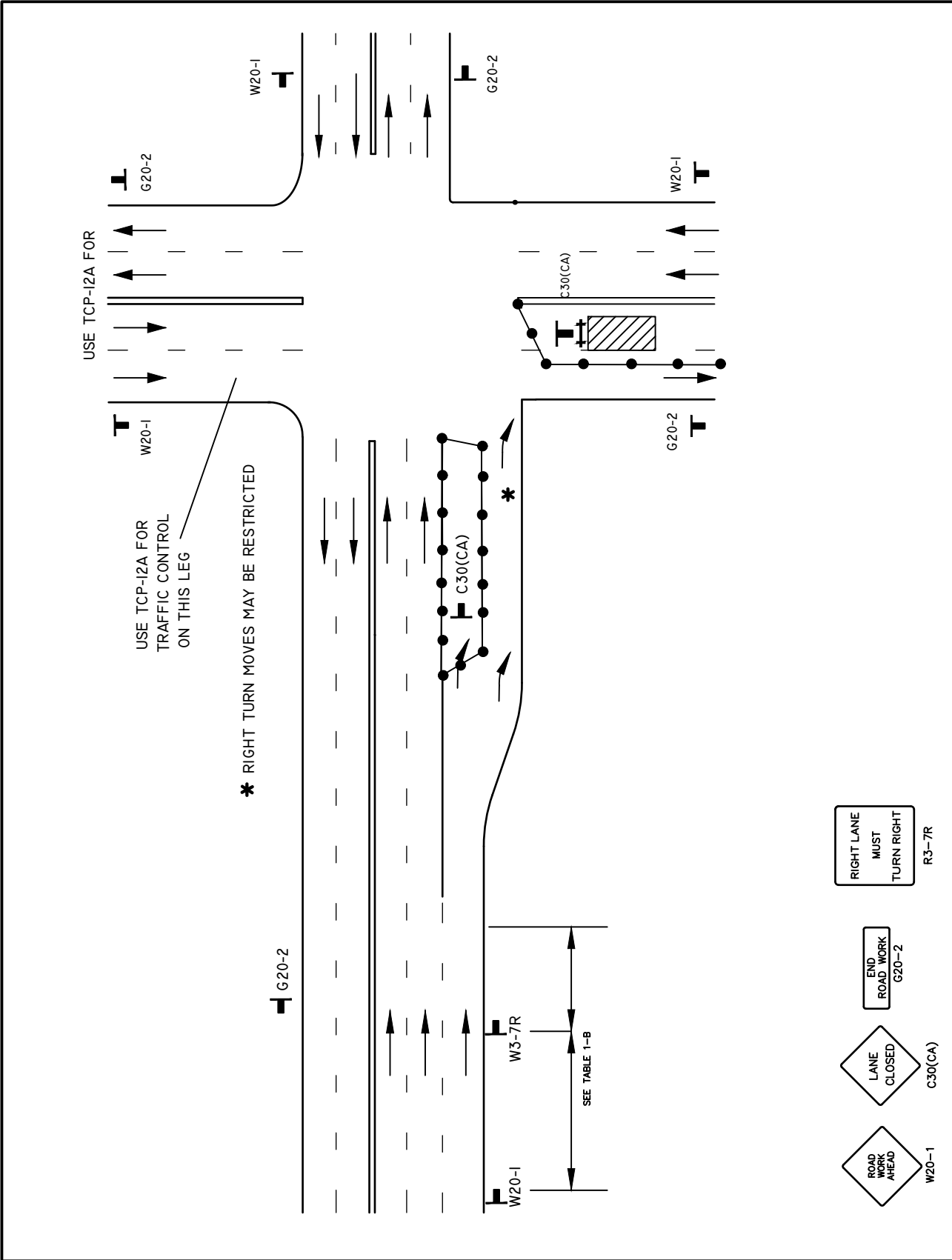
SAN DIEGO REGIONAL STANDARD DRAWING

**SIDE OF ROAD WORK AREA**  
 RIGHT TURN INTERSECTION TRAFFIC CONTROL  
 RIGHT TURN LANE AND RIGHT LANE CLOSED

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18  
 Chairperson R.C.E. 19246

DRAWING NUMBER TCP-38



**LEGEND**

- ⊙ TRAFFIC SIGNAL
- CONE
- ◆ ROAD WORK AHEAD W20-1
- ◆ LANE CLOSED C30(CA)
- ⊞ END ROAD WORK G20-2
- ⊞ RIGHT LANE MUST TURN RIGHT R3-7R
- FLAGGER
- SIGN
- ▨ FLASHING ARROW SIGN
- ▨ WORK AREA
- ⇄ TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-39

SAN DIEGO REGIONAL STANDARD DRAWING

CENTER OF ROAD WORK AREA  
RIGHT TURN INTERSECTION TRAFFIC CONTROL

Revision	By	Approval	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

INTERSECTION OF ROAD WORK AREA

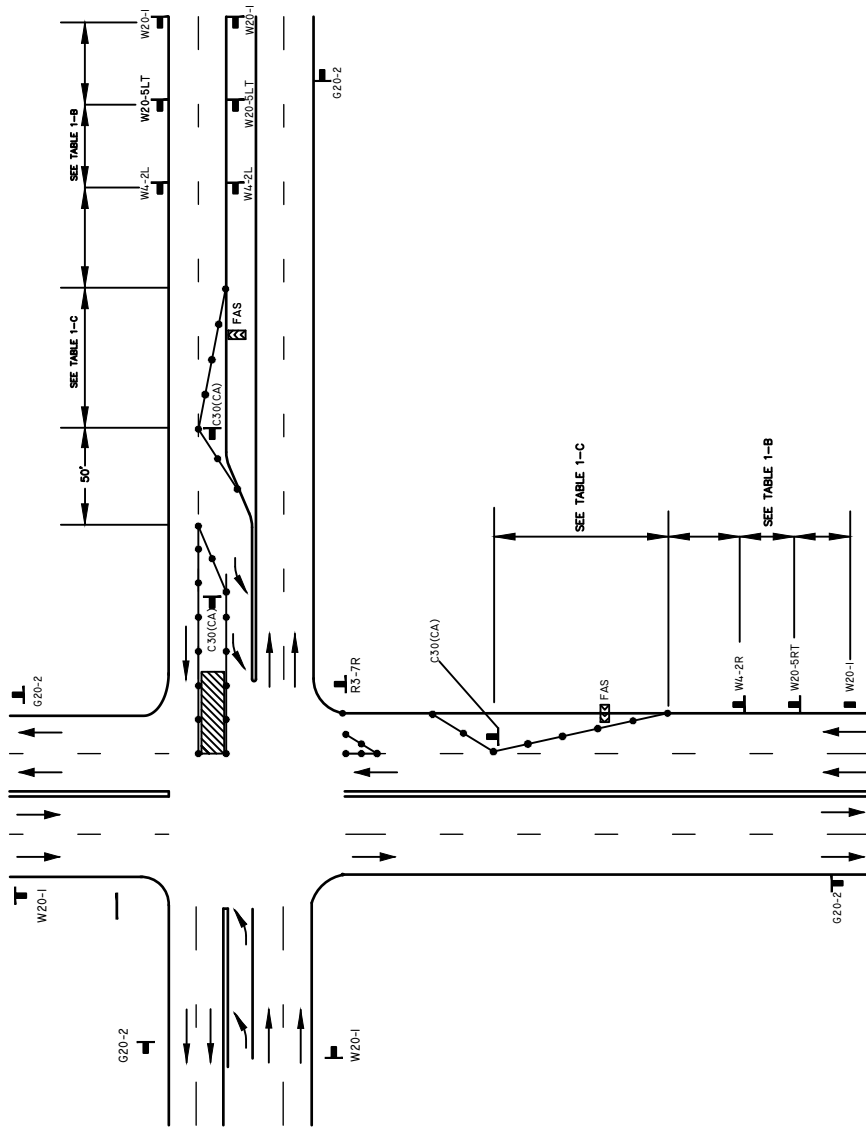
MULTI-LANE INTERSECTION LANE REDUCTIONS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

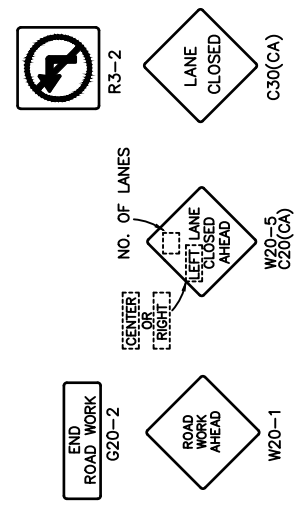
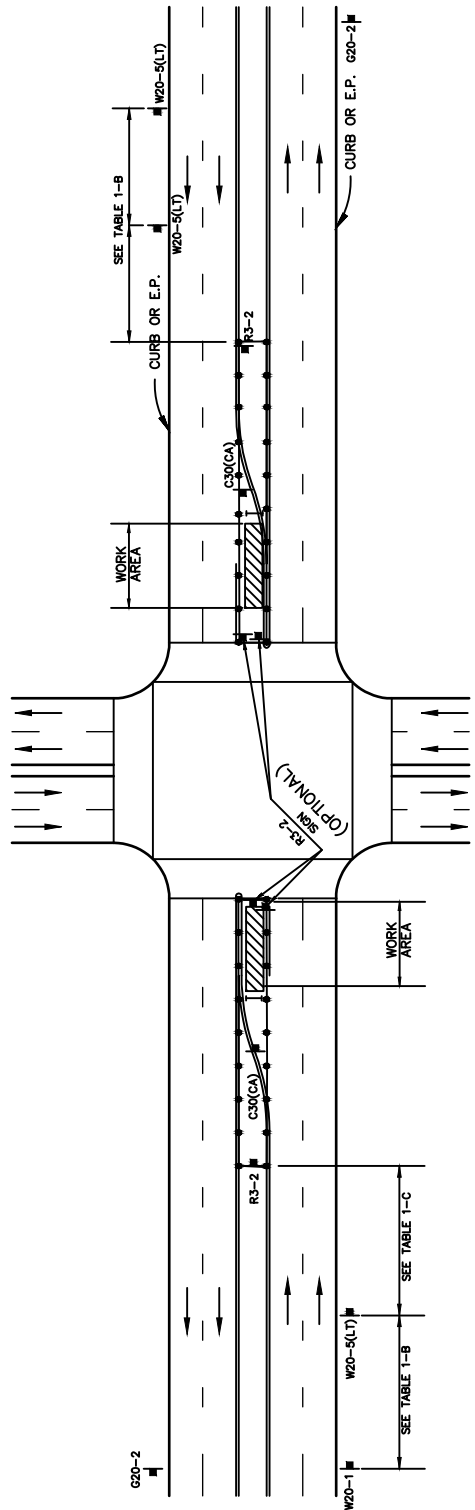
DRAWING NUMBER TCP-40



- NO. OF LANES
- ROAD MARK AHEAD W20-1
  - LEFT LANE CLOSED AHEAD W20-5 C20(CA)
  - LANE CLOSED C30(CA)
  - END ROAD WORK G20-2
  - RIGHT LANE MUST TURN RIGHT R3-7R

- LEGEND**
- Ⓢ TRAFFIC SIGNAL
  - CONE
  - ++ BARRICADE
  - FLAGGER
  - ▣ SIGN
  - ▨ FLASHING ARROW SIGN
  - ▨ WORK AREA
  - ↔ TRAFFIC DIRECTION





**LEGEND**

- Ⓢ TRAFFIC SIGNAL   ● CONE   †† BARRICADE   ■ FLAGGER   □ SIGN   ◻ FLASHING ARROW SIGN   ▨ WORK AREA   ⇄ TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

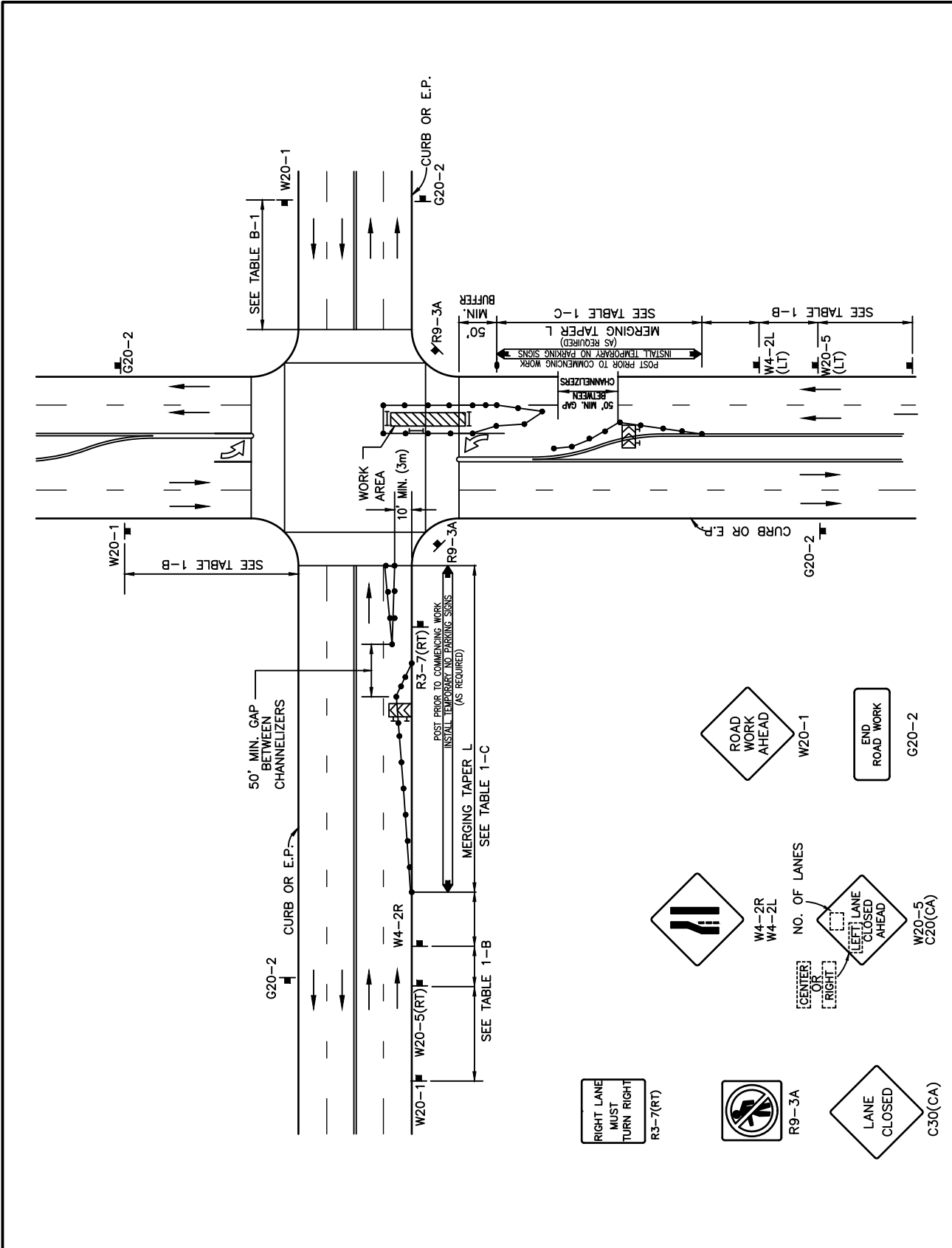
DRAWING NUMBER TCP-41

SAN DIEGO REGIONAL STANDARD DRAWING

**CENTER OF ROAD WORK AREA**

WORK BEYOND INTERSECTION LEFT TURN LANE CLOSURE

Revision	By	Approval	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



**LEGEND**

- CONE
- ++ BARRICADE
- FLAGGER
- SIGN
- FLASHING ARROW SIGN
- WORK AREA W20-1
- TRAFFIC DIRECTION

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

**CENTER OF ROAD WORK AREA**

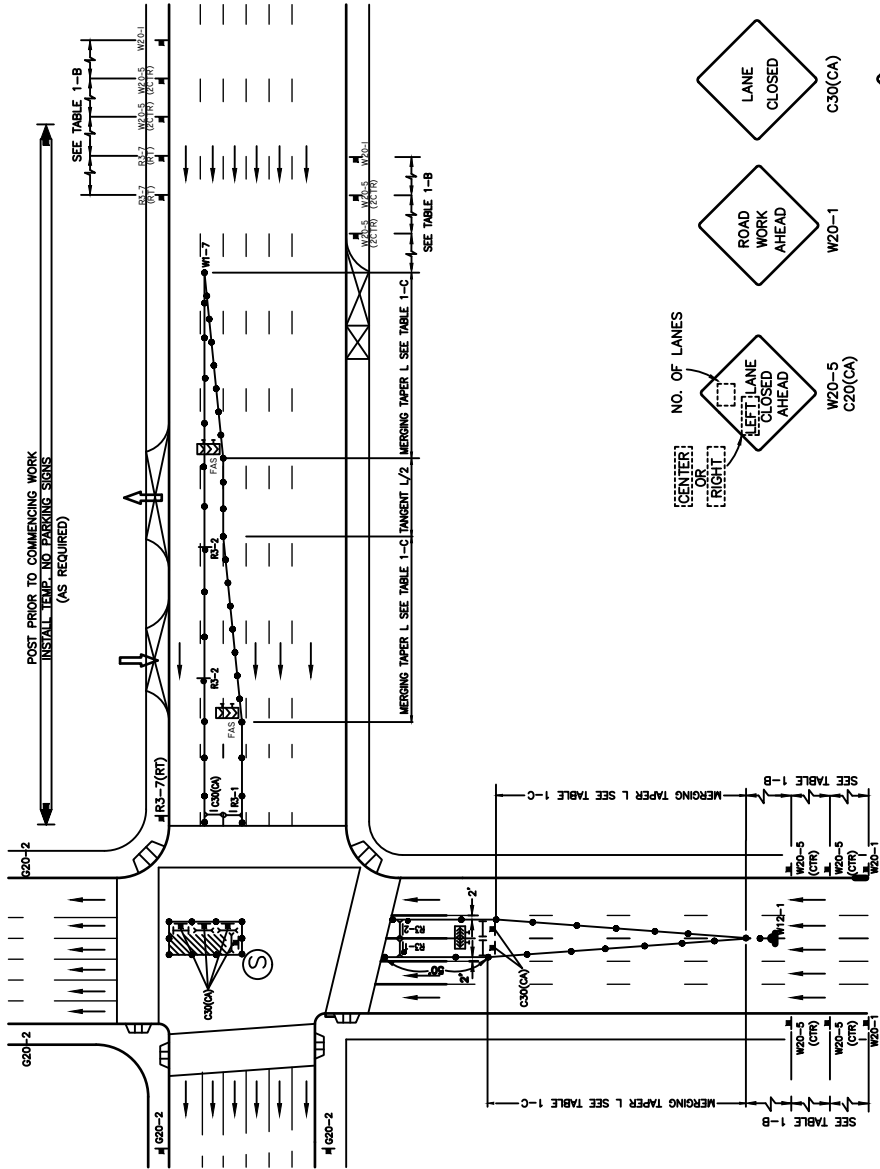
WORK WITHIN INTERSECTION  
RIGHT LANE /LEFT LANE CLOSURE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-42



NO. OF LANES  
 [CENTER] OR [RIGHT]

RIGHT LANE MUST TURN RIGHT R3-7(RT)

R3-2

R3-1

LANE CLOSED C30(CA)

ROAD WORK AHEAD W20-1

NO. OF LANES [CENTER] OR [RIGHT] LEFT LANE CLOSED AHEAD W20-5 C20(CA)

W12-1

END ROAD WORK G20-2

W1-7

ONE WAY R6-1(L/T/RT)

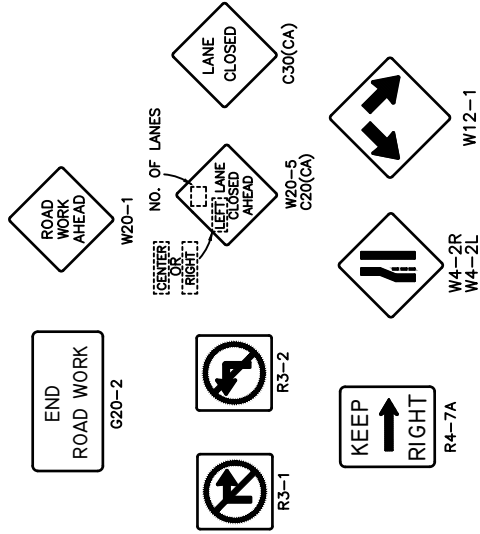
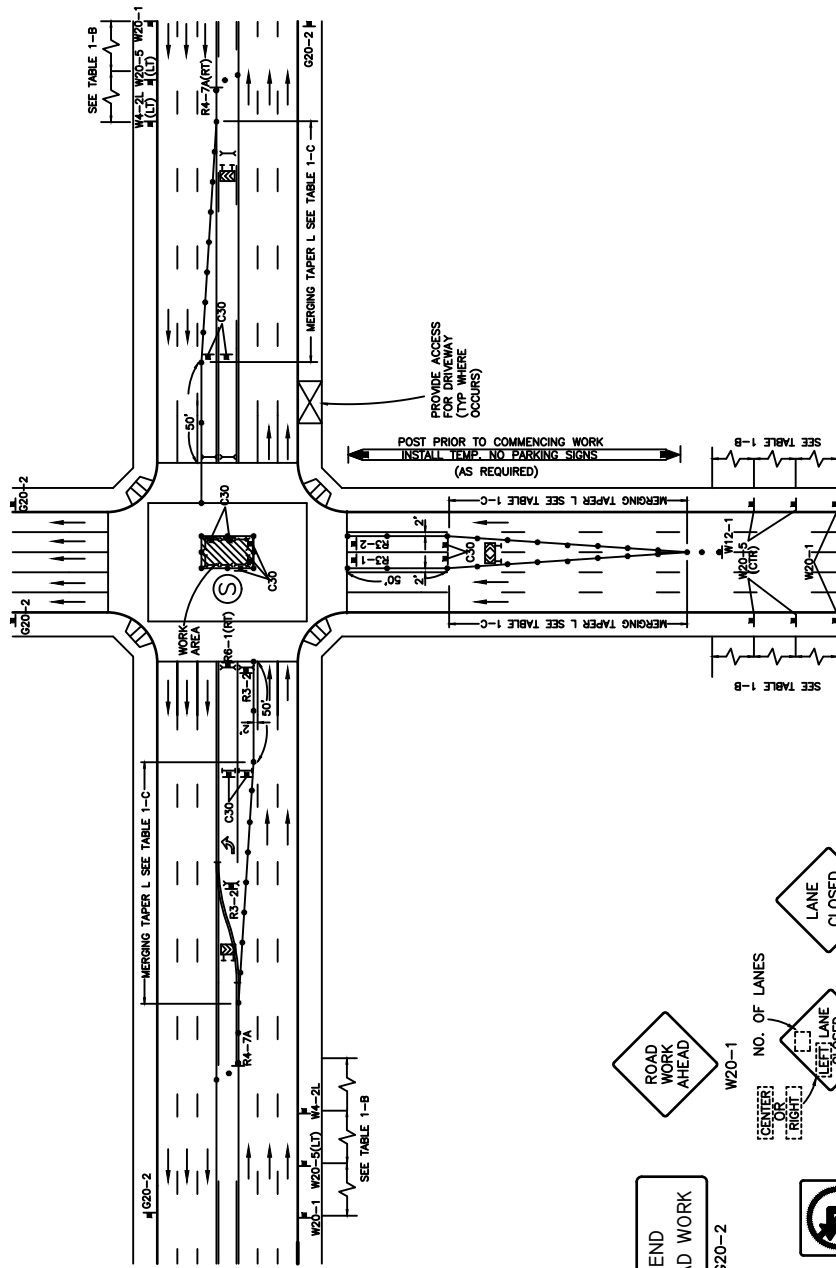
**LEGEND**

- ⊙ TRAFFIC SIGNAL
- CONE
- ⊢ BARRICADE
- █ FLAGGER
- ▬ SIGN
- ▨ FLASHING ARROW SIGN
- ▨ WORK AREA
- ↔ TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE  
*T. Stanton* 10/25/18  
 Chairperson R.C.E. 19246  
 DRAWING NUMBER TCP-43

SAN DIEGO REGIONAL STANDARD DRAWING  
 CENTER OF ROAD WORK AREA  
 RIGHT LANE/CENTER LANE CLOSURE ONE WAY

Revision	By	Approval	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



**LEGEND**

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

**CENTER OF ROAD WORK AREA**

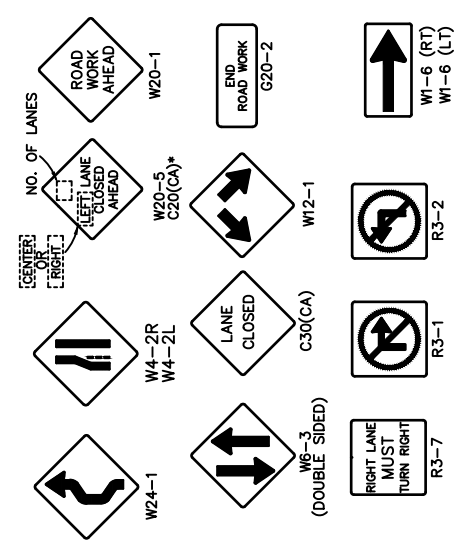
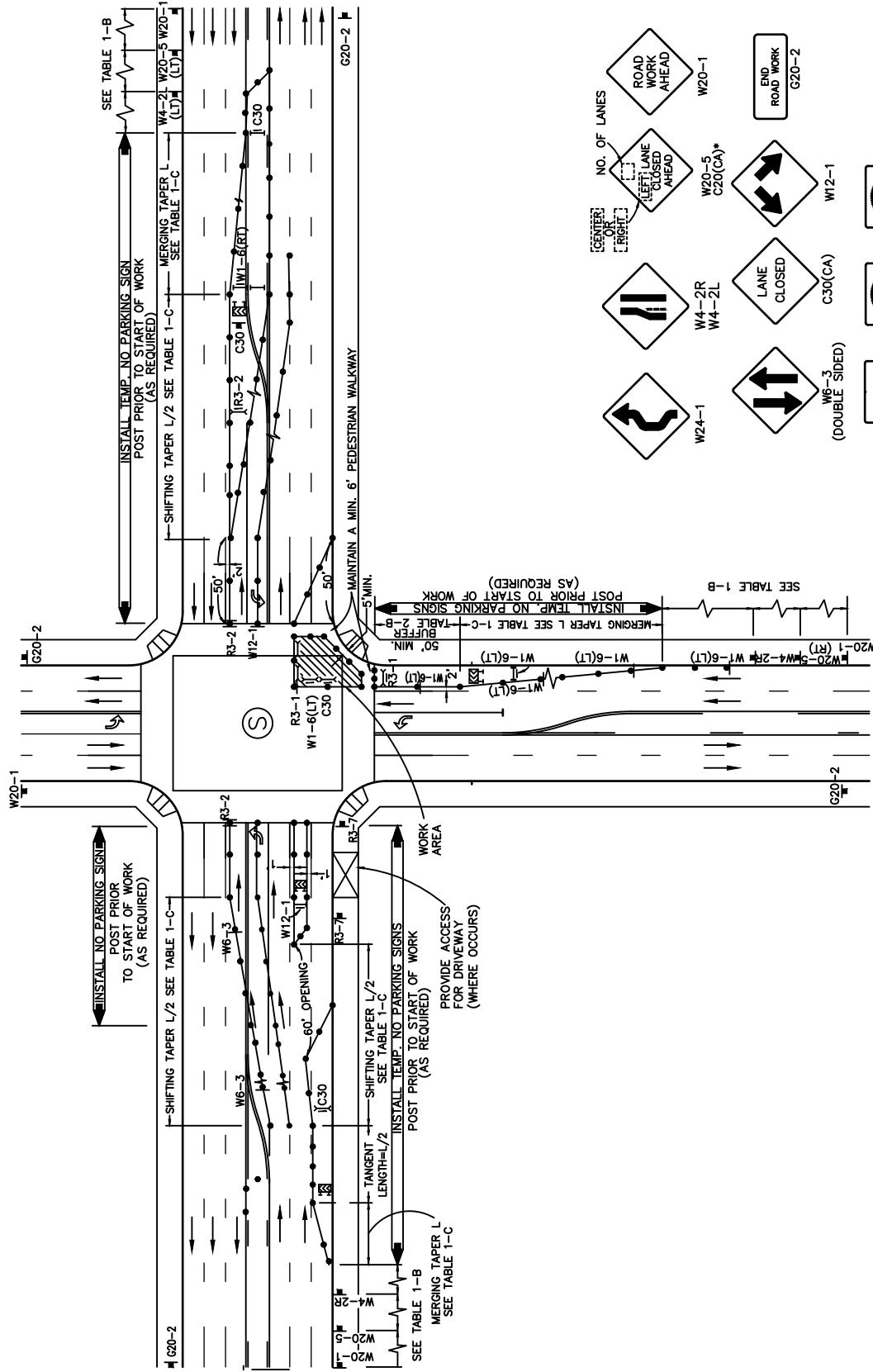
LEFT AND CENTER LANE CLOSURES

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-44



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

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

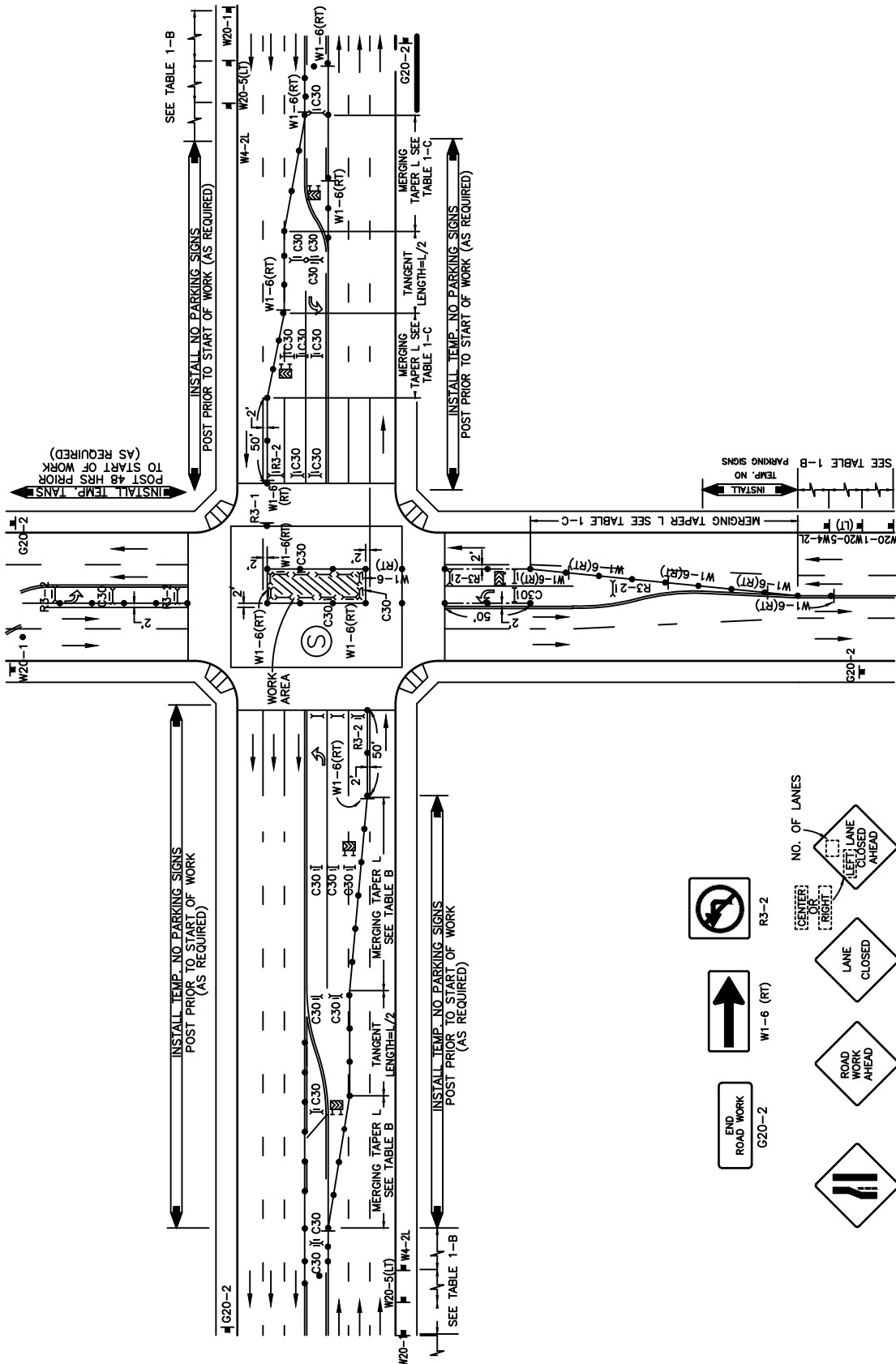
Chairperson R.C.E. 19246

DRAWING NUMBER TCP-45

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA  
RIGHT LANE CLOSURES

Revision	By	Approval	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

**CENTER OF ROAD WORK AREA**

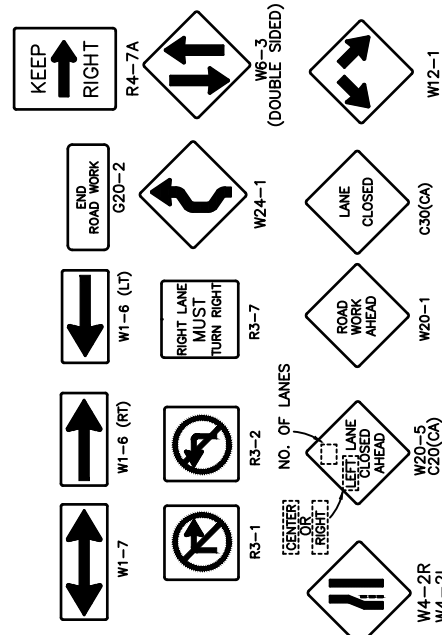
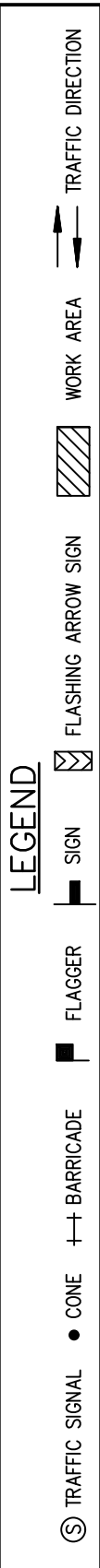
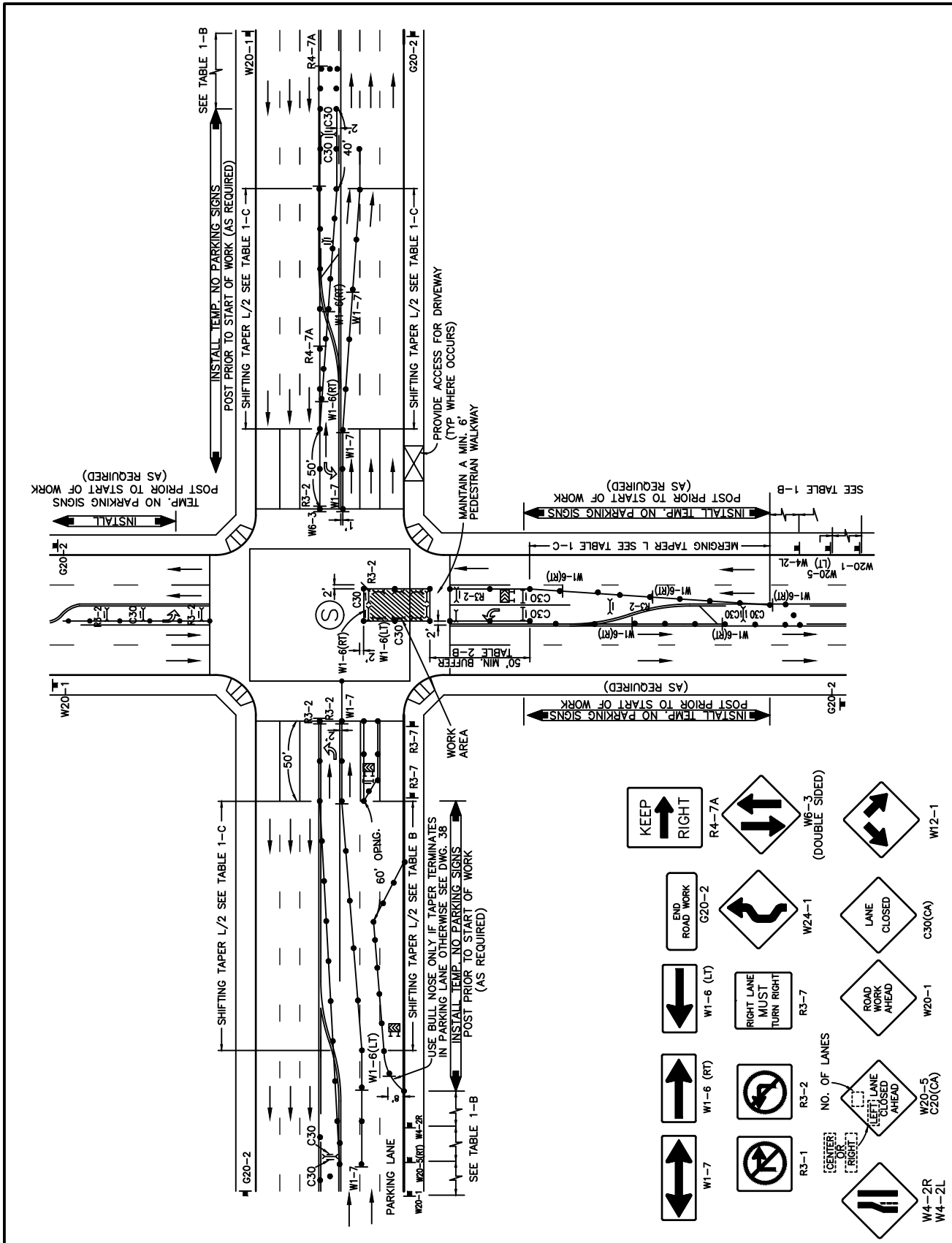
RIGHT & LEFT LANES CLOSED

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*R.C.E. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-46



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-47

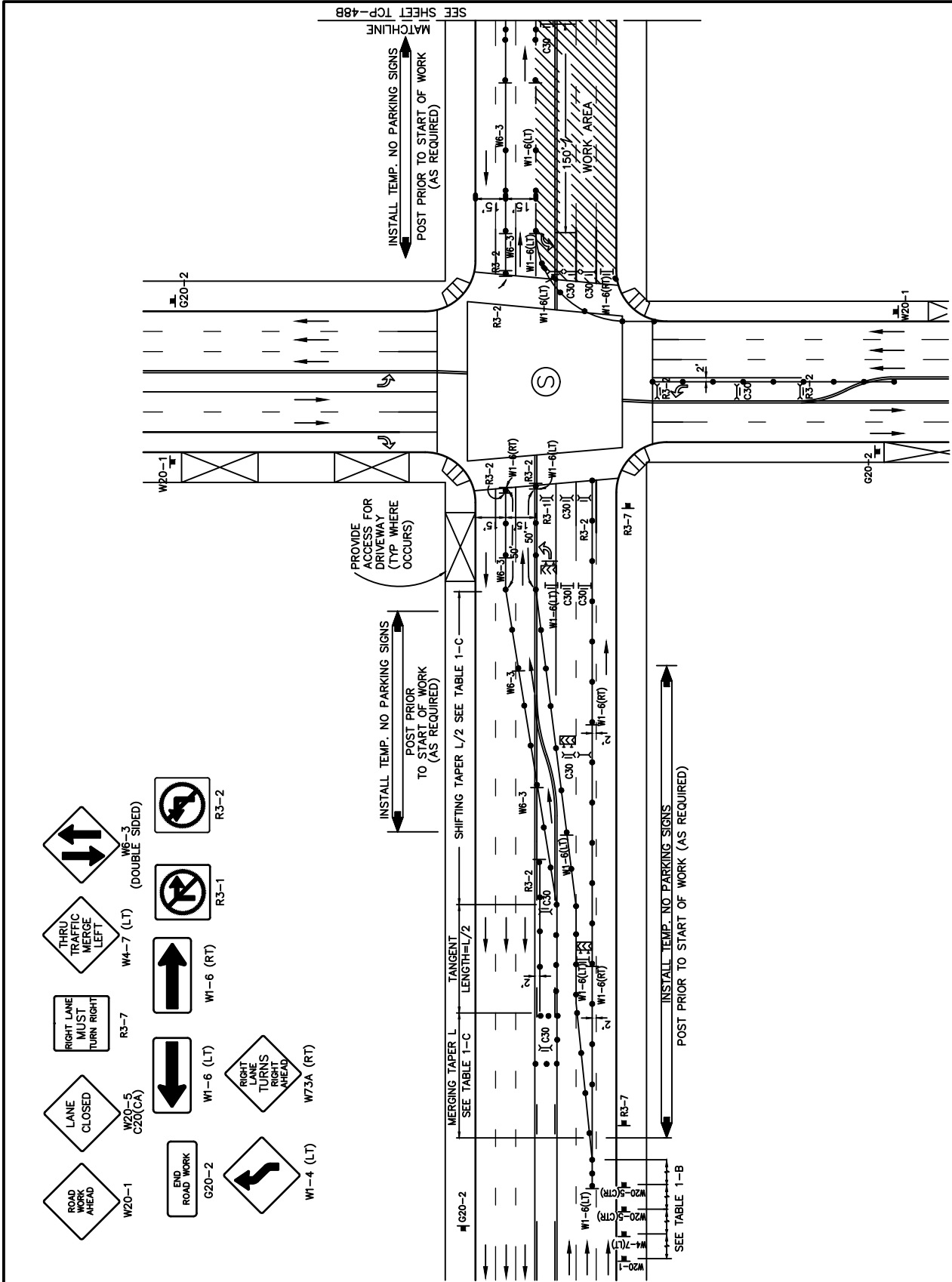
SAN DIEGO REGIONAL STANDARD DRAWING

INTERSECTION OF ROAD WORK AREA

INTERSECTION TRAFFIC CONTROL

LEFT LANES CLOSED

Revision	By	Approval	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



**LEGEND**

- CONE
- ⚑ BARRICADE
- ♠ FLAGGER
- 🚸 FLASHING ARROW SIGN
- 🚫 SIGN
- ▨ WORK AREA
- TRAFFIC DIRECTION

Revision	By	Approved	Date
Revised	BUSS	T.Stanton	2/11
Revised	DG	T.Cotter	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

**SIDE OF ROAD WORK AREA**

HALF STREET CLOSED (1 OF 2)

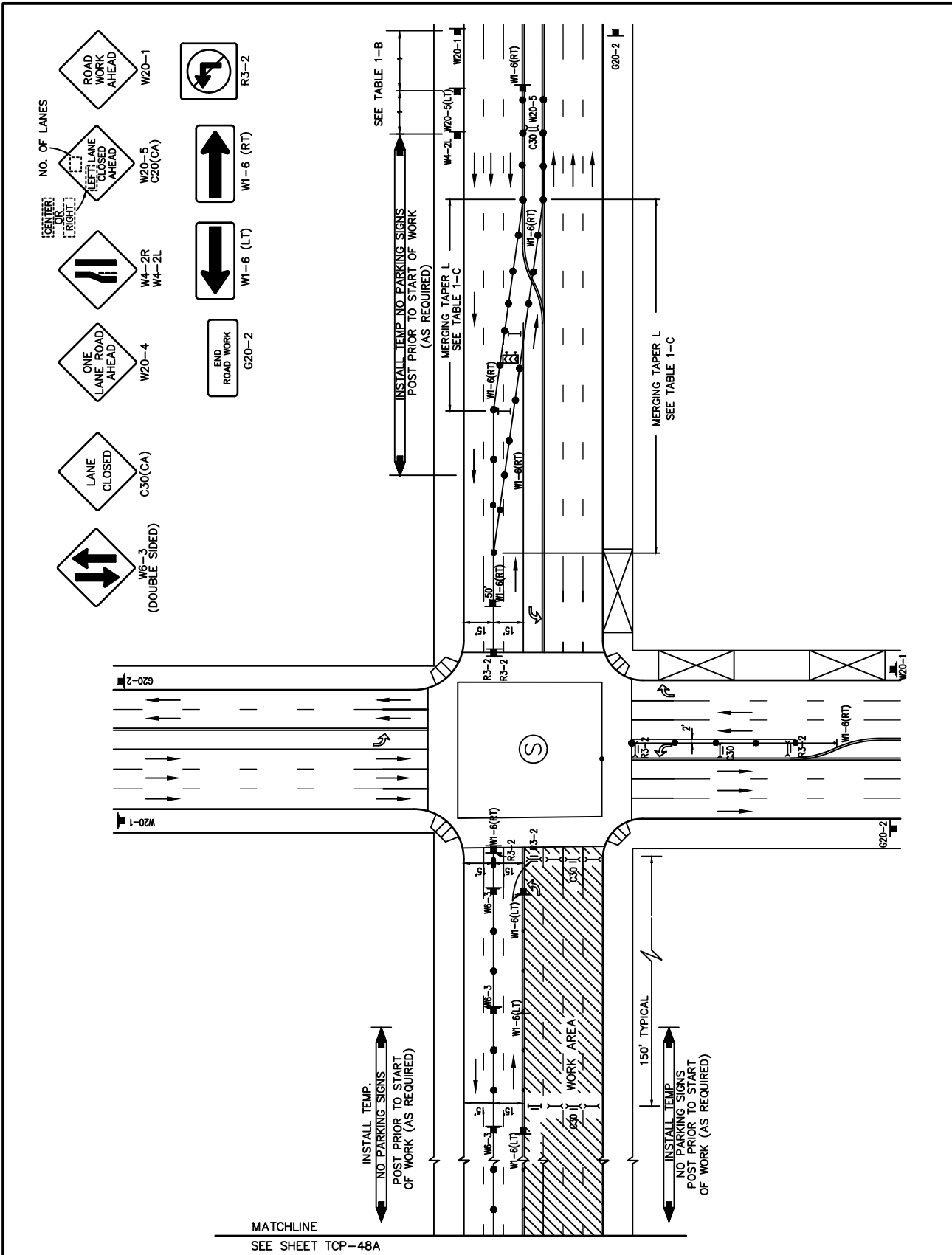
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

DRAWING NUMBER TCP-48A





**LEGEND**

- ⊙ TRAFFIC SIGNAL
- CONE
- ++ BARRICADE
- FLAGGER
- ▬ FLASHING ARROW SIGN
- ▨ WORK AREA
- ↔ WORK AREA
- ↔ TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

Chairperson R.C.E. 19246

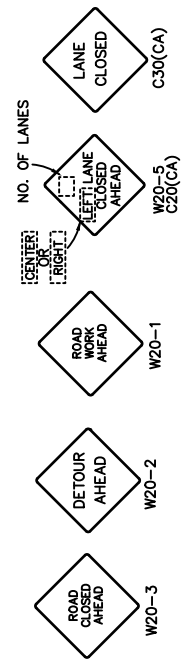
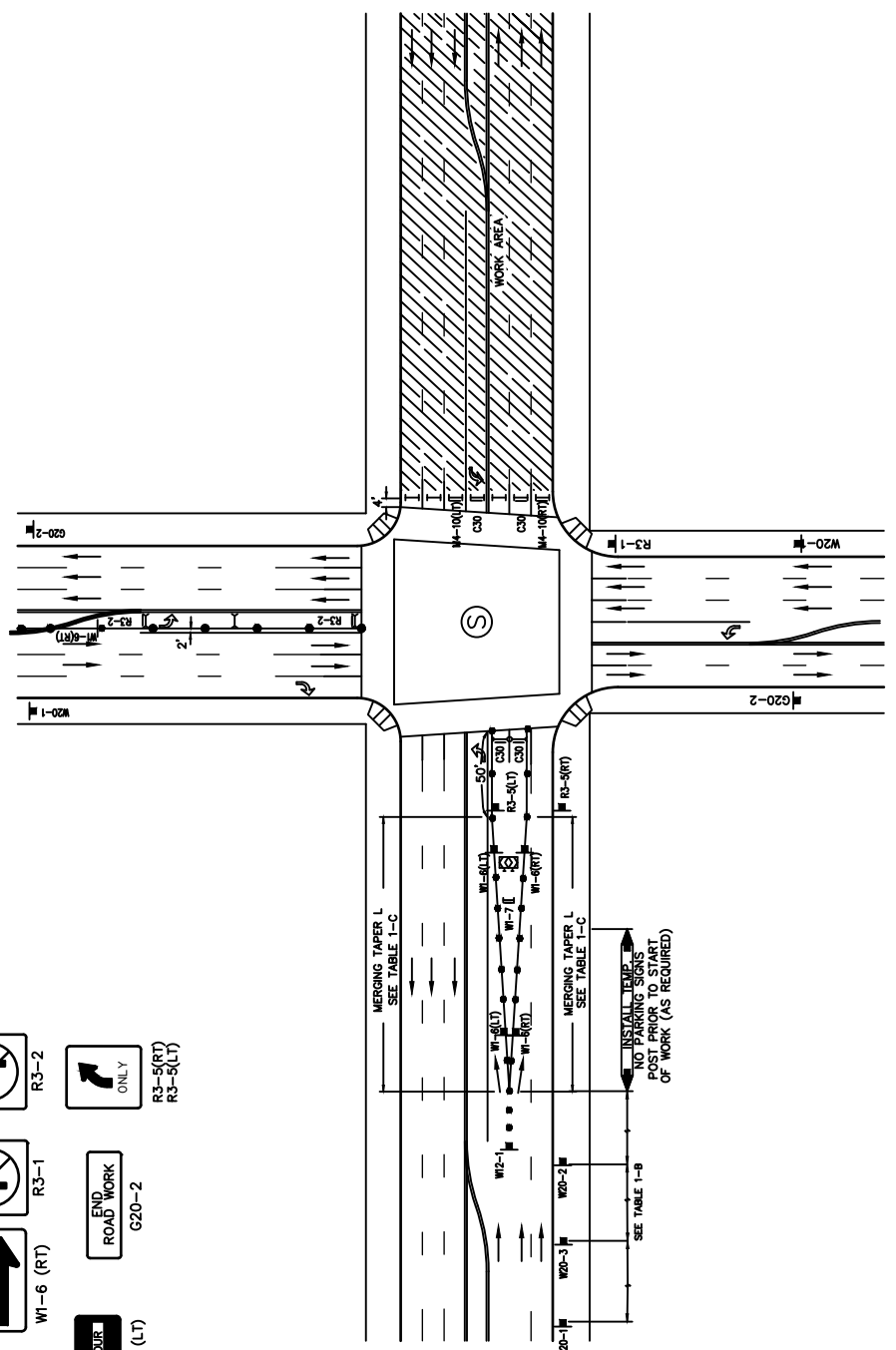
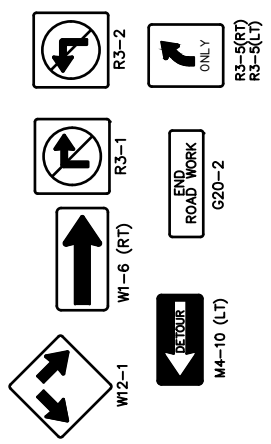
DRAWING NUMBER TCP-48B

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA

HALF STREET CLOSURE (2 OF 2)

Revision	By	Approval	Date
Revised	BUSS		2/11
Revised	DC	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



- LEGEND**
- Ⓢ TRAFFIC SIGNAL
  - CONE
  - ⊕ BARRICADE
  - ⬮ FLAGGER
  - ⬮ SIGN
  - ⊠ FLASHING ARROW SIGN
  - ▨ WORK AREA
  - ⬮ TRAFFIC DIRECTION

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

**STREET CLOSURE WORK AREA**

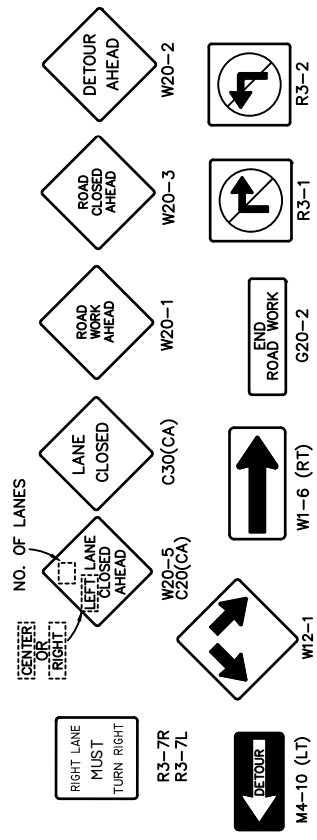
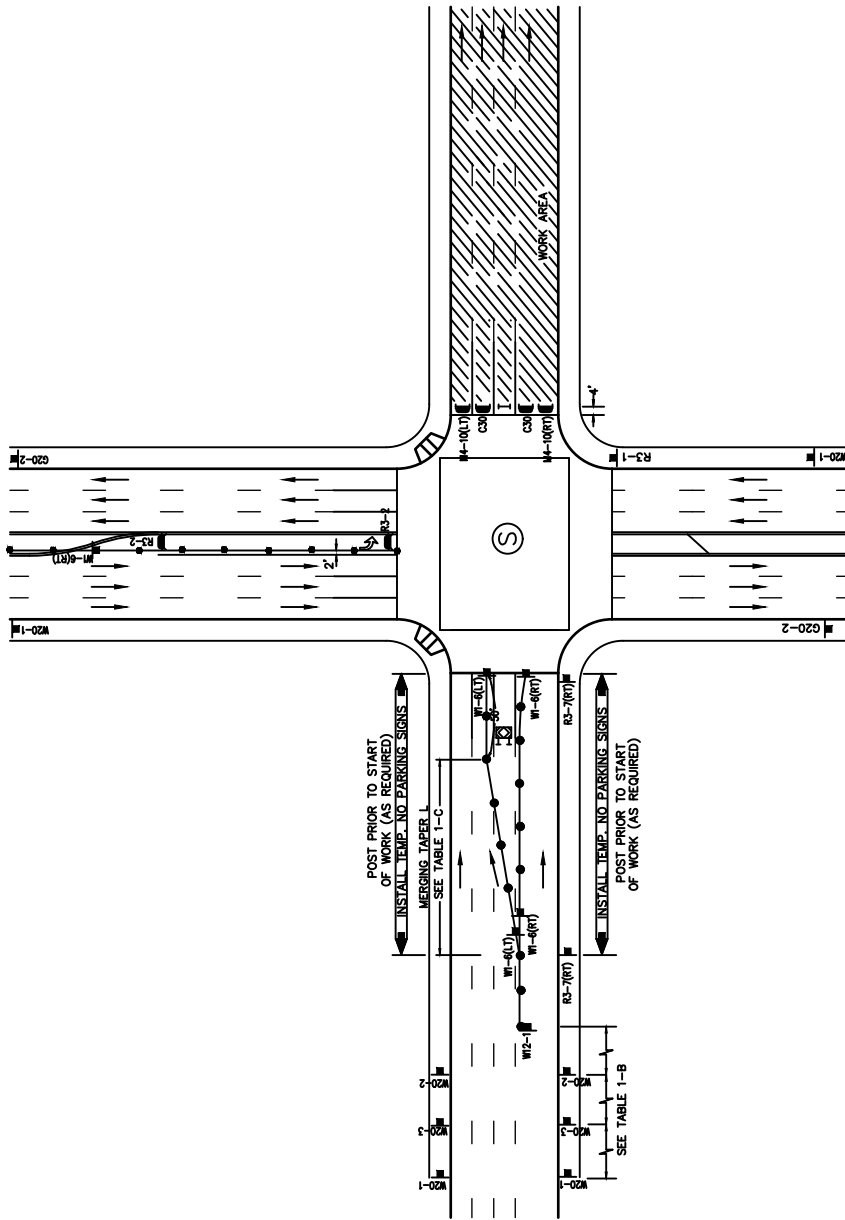
2-WAY FULL STREET CLOSURE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*M. Stanton* 10/25/19

Chairperson R.C.E. 19246

DRAWING NUMBER **TCP-49**



**LEGEND**

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

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE  
*J. Stanton* 10/25/19  
 Chairperson R.C.E. 19246  
 DRAWING NUMBER TCP-50

SAN DIEGO REGIONAL STANDARD DRAWING  
 STREET CLOSURE ROAD WORK AREA  
 ONE WAY - FULL STREET CLOSURE

Revision	By	Approval	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

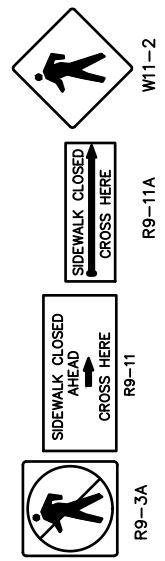
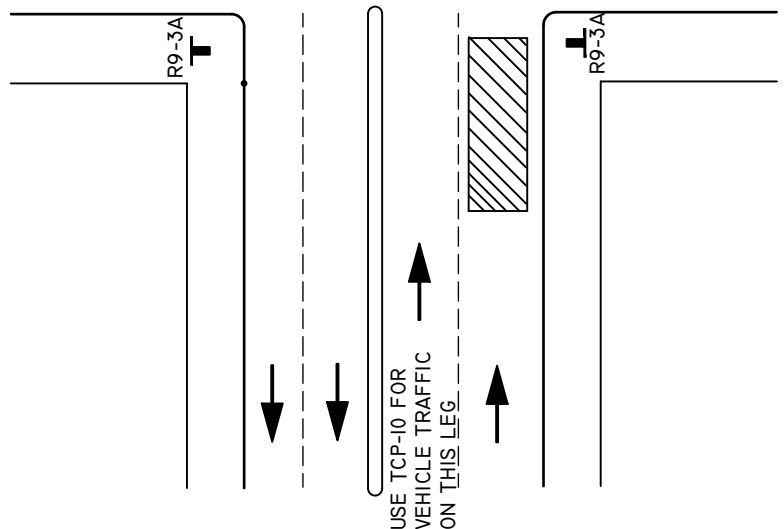
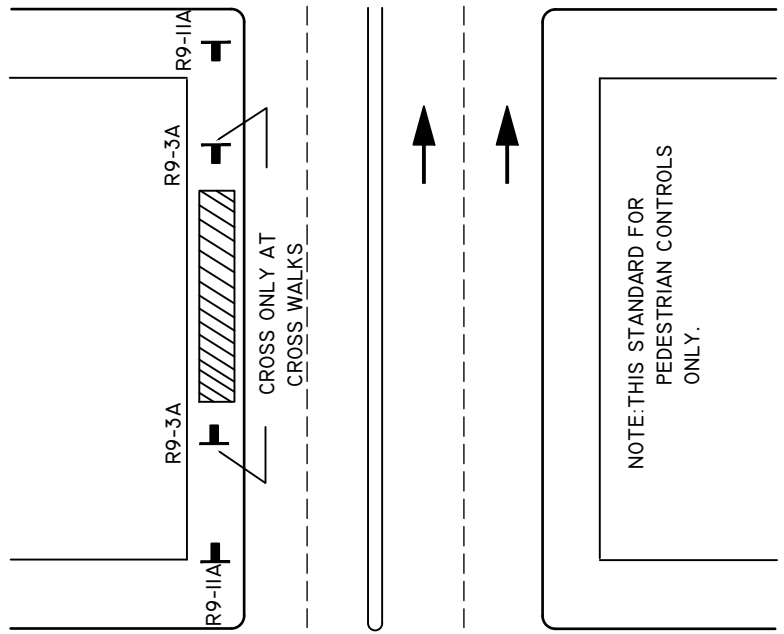
SAN DIEGO REGIONAL STANDARD DRAWING

**SIDEWALK WORK AREA**  
TYPICAL PEDESTRIAN CONTROL SIGNS  
SIDEWALK CLOSED

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

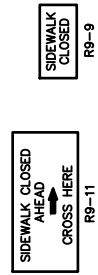
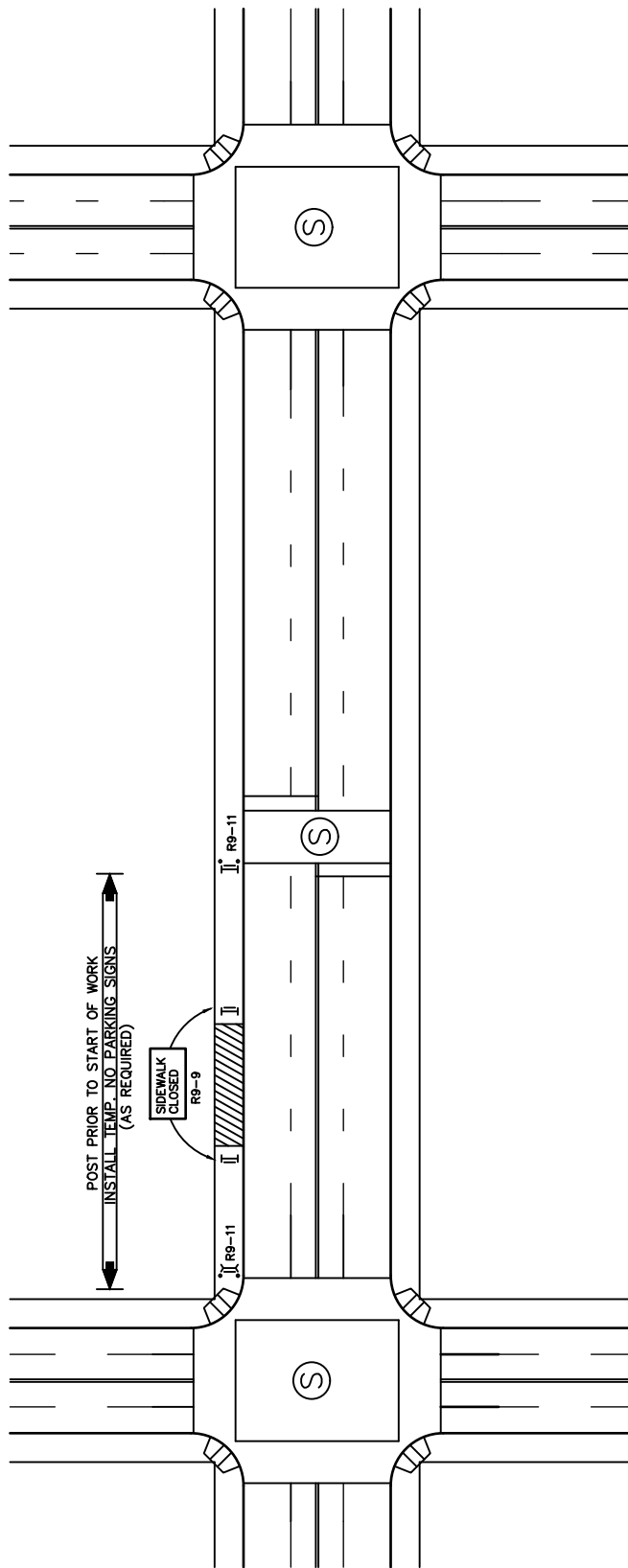
*T. Stanton* 10/25/19  
Chairperson R.C.E. 19246

**DRAWING NUMBER TCP-51**



**LEGEND**

- Ⓢ TRAFFIC SIGNAL
- CONE
- ⊕ BARRICADE
- ▬ FLAGGER
- ▬ SIGN
- ⊠ FLASHING ARROW SIGN
- ▨ WORK AREA
- ↔ TRAFFIC DIRECTION



- LEGEND**
- ⊙ TRAFFIC SIGNAL
  - CONE
  - ⊕ BARRICADE
  - ▬ FLAGGER
  - ▬ SIGN
  - ☒ FLASHING ARROW SIGN
  - ▨ WORK AREA
  - ↔ TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18

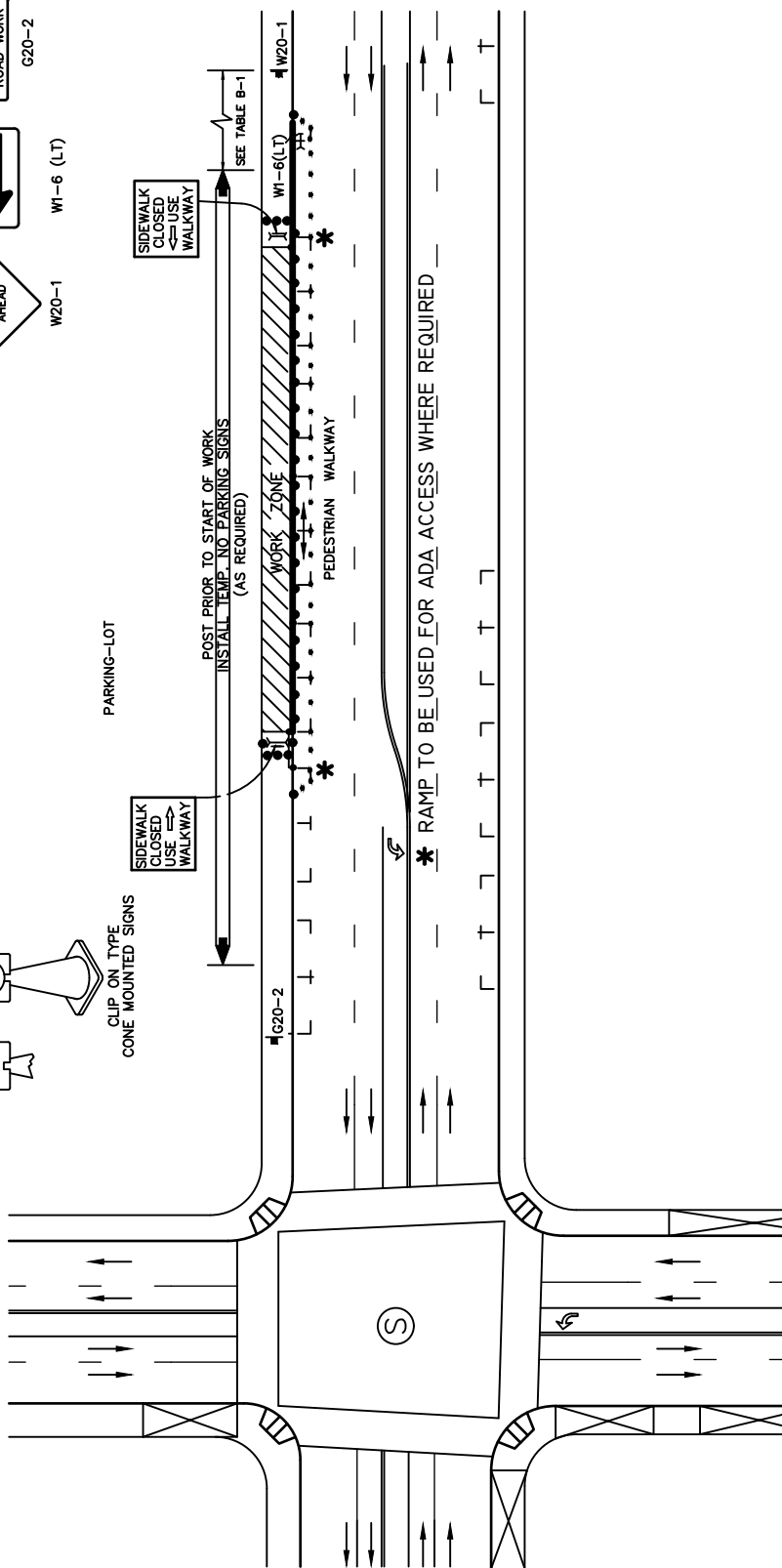
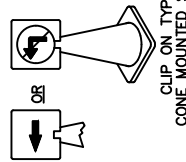
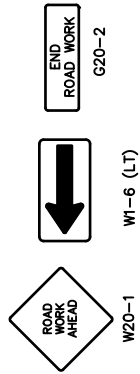
Chairperson R.C.E. 19246

DRAWING NUMBER TCP-52

SAN DIEGO REGIONAL STANDARD DRAWING

SIDEWALK WORK AREA  
TYPICAL PEDESTRIAN CONTROL SIGNS  
SIDEWALK CLOSED 1/2 BLOCK

Revision	By	Approval	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18



**LEGEND**

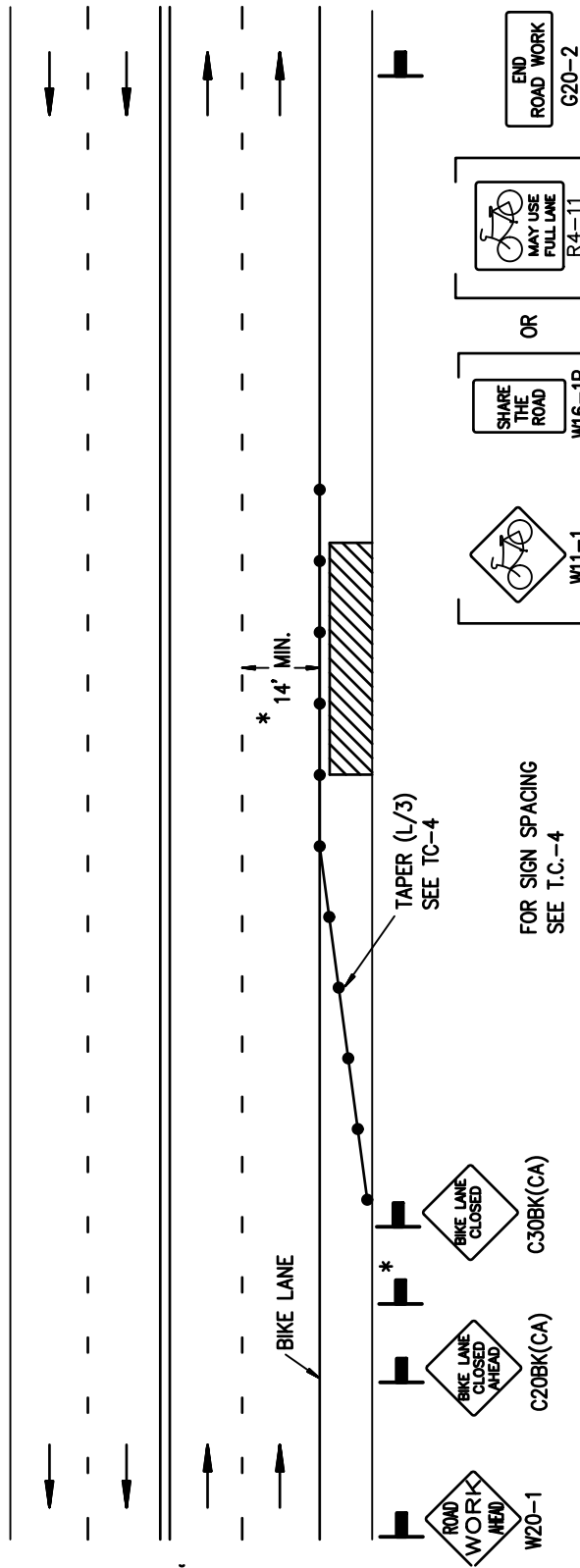
- ⊙ TRAFFIC SIGNAL
- CONE
- ++ BARRICADE
- ▬ FLAGGER
- ▬ SIGN
- ⊠ FLASHING ARROW SIGN
- ▨ WORK AREA
- ↔ WORK AREA
- ↔ TRAFFIC DIRECTION

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

**SIDEWALK WORK AREA**  
 TYPICAL PEDESTRIAN CONTROL SIGNS  
 SIDEWALK CLOSED & SHIFT TO PARKING AREA

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE  
*T. Stanton* 10/25/18  
 Chairperson R.C.E. 19246  
 DRAWING NUMBER TCP-53



\*When the adjacent through lane is at least 14' wide these signs are omitted. Otherwise, they are mandatory.

TAPER (L/3)  
SEE TC-4

FOR SIGN SPACING  
SEE T.C.-4

**LEGEND**

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

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18  
Chairperson R.C.E. 19246 Date

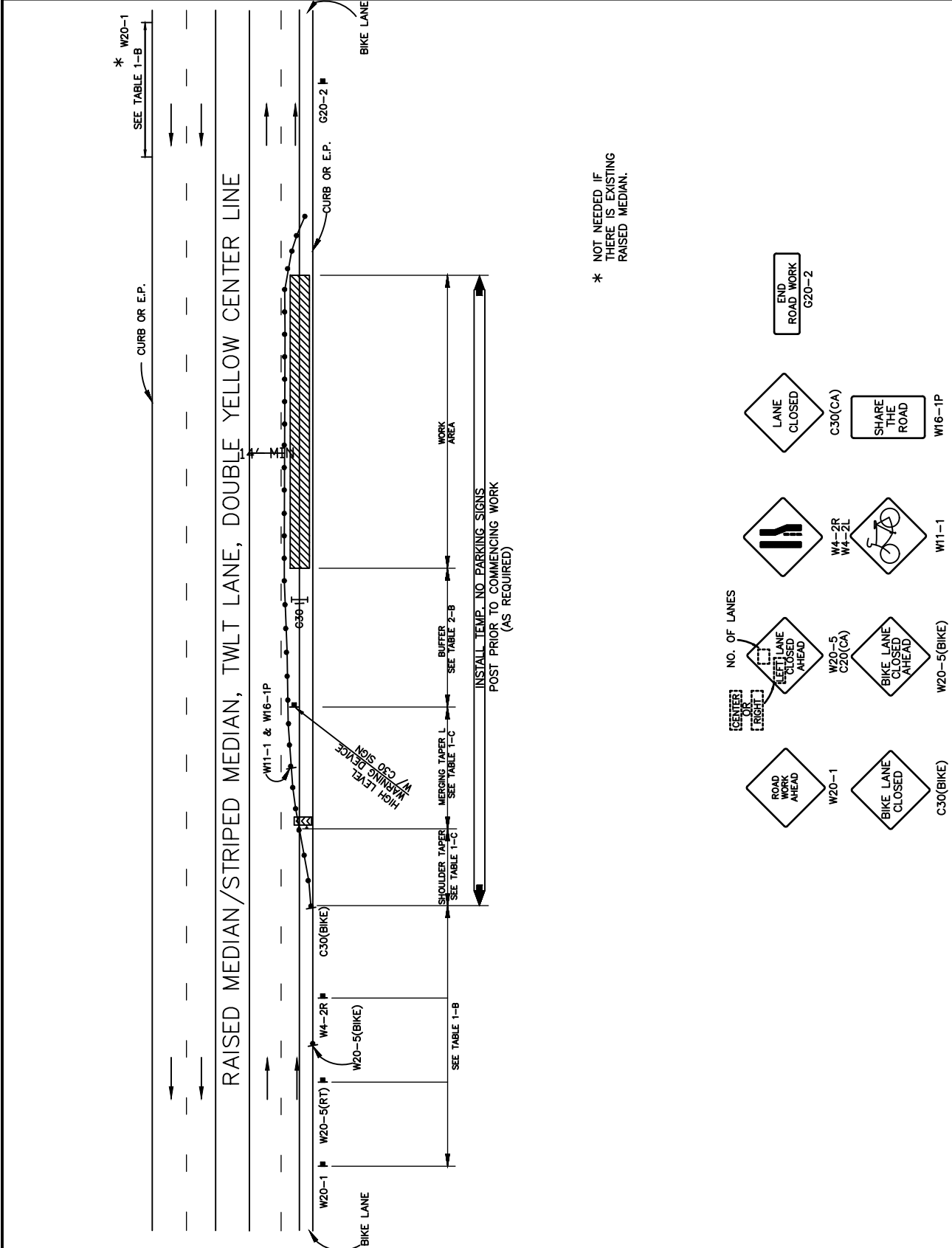
DRAWING NUMBER TCP-54

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA

BIKE LANE CLOSURE

Revision	By	Approved	Date
DRAWING	CRH		4/06
ORIGINAL		<i>T. Stanton</i>	4/27/06
REVISED	DG	T. Stanton	9/15
REVISED	TC	T. Cotter	10/18



**LEGEND**

- Ⓢ TRAFFIC SIGNAL
- CONE
- ++ BARRICADE
- ▬ FLAGGER
- ▬ FLASHING ARROW SIGN
- ▨ SIGN
- ▨ WORK AREA
- TRAFFIC DIRECTION

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15
Revised	TC	T.Stanton	1/18
Revised	TC	T.Cotter	10/18

SAN DIEGO REGIONAL STANDARD DRAWING

BIKE AND TRAVEL LANE CLOSURE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*T. Stanton* 10/25/18  
Chairperson R.C.E. 19246

DRAWING NUMBER TCP-55



# INDEX

INDEX

# INDEX

-A-	
AIR AND VACUUM VALVE	
2" .....	WA-02
4" and 6" .....	WA-04
Enclosure .....	WA-06
Drip Irrigation .....	I-36
AIR RELEASE VALVE	
Manual .....	WA-01
ALLEY	
Apron .....	G-17
Concrete .....	G-21
ANCHOR, PIPE	
Concrete .....	SP-5, SP-7
Thrust .....	WT-01
Valve .....	WT-01
Vertical Bend .....	WT-01
On-Grade Pipe Stabilization .....	I-20
-B-	
BACKFILL, TRENCH	
Irrigation .....	I-25
Sewer .....	SP-02
Storm Drain .....	D-60
Water Main .....	WP-02
NARROW TRENCHES .....	M-07, M-07A
BACKFLOW PREVENTER	
Reduced Pressure ...	WF-05, WR-01, WR-02
BARRICADE	
Continuous .....	M-09
BARRIER	
Root Control .....	L-06
BENCH MARK	
Brass Plug .....	M-11
BERM	
Asphalt Concrete .....	G-05
BLOCK, CONCRETE	
Anchor .....	WT-01
Thrust .....	WT-01
Valve .....	WT-01
BLOW-OFF WATER	
2" .....	WB-01, WB-04, WB-05
4" and 6" .....	WB-02, WB-03

BROW DITCH .....	D-75
-C-	
CATCH BASIN	
Corrugated Steel Pipe Types A & B .....	D-16
Grate Top, Type G .....	D-08
Type I .....	D-29
Type F .....	D-07
CHANNEL, DRAINAGE	
Cutoff Wall .....	D-72
Debris Fence .....	D-82
Graded Earth Channel .....	D-74
Major Channel .....	D-71
Minor Channel .....	D-70
Pipe to Channel Connection .....	D-73
CONCRETE	
Backfill, Sewer .....	SP-03
Collar, Pipe .....	D-62
Cradle, Sewer .....	SP-03
Encasement, Sewer .....	SP-03, SP-09
Protection, Sewer .....	SP-03
Lug, Concrete .....	D-63
Mowing Strip .....	L-03
Removal and Replacement .....	G-11
Steps .....	M-26
Light Pole Pad .....	L-05
CORRUGATED STEEL PIPE	
Inlets, Type A, B .....	D-16, D-17
Slotted Drain .....	D-18, D-19
CULVERT, BOX	
Double .....	D-77A, D-77B
Miscellaneous Details .....	D-81A, D-81B
Single .....	D-76A, D-76B
Triple .....	D-78A, D-78B
Wingwalls, Type A, B, C .....	D-79A, D-79B
Wingwalls, Warped .....	D-80A, D-80B
CURB AND GUTTER	
Combined .....	G-02
Median .....	G-06
Monolithic .....	G-03
Removal and Replacement .....	G-11
Rolled .....	G-04
Separate .....	G-01
CURB INLET	
Grate .....	D-15
Median, Type J .....	D-45
Notes and Details .....	D-11
Opening .....	D-12

## INDEX

<p>Side Opening Only ..... D-01, D-02  Side Opening w/Gate ..... D-03A</p> <p><b>CURB OUTLET</b>  Concrete, Type A ..... D-25  Pipe ..... D-27</p> <p><b>CURB RAMP</b>  Types A and B ..... G-27  Types A-1 and B-1 ..... G-28  Type C ..... G-29  Truncated Domes ..... G-30  Type D ..... G-31  General Notes ..... G-32</p> <p><b>CURTAIN WALL</b> ..... D-38</p> <p><b>CUTOFF WALL</b>  Alley Pavement ..... G-23  Channel ..... D-72  Street Pavement ..... G-22  Trench ..... SP-05, SP-07</p> <p style="text-align: center;">-D-</p> <p><b>DATUMS</b> ..... M-12</p> <p><b>DEBRIS FENCE</b> ..... D-82</p> <p><b>DIKE, A.C.</b> ..... G-05</p> <p><b>DISSIPATOR, ENERGY</b>  Concrete ..... D-41, D-42, D-43  Rip Rap ..... D-40</p> <p><b>DITCH,</b>  Brow, Type A and B ..... D-75  Terrace, Type C and D ..... D-75</p> <p><b>DOWNDRAIN</b>  Asphalt Concrete ..... D-22  Flume ..... D-23</p> <p><b>DRINKING FOUNTAIN</b> ..... M-18</p> <p><b>DRIVEWAY</b>  Asphalt ..... G-14G  Commercial ..... G-26  Concrete ..... G-14A, G-14B, G-14C, G-14D  ..... G-14E, G-14F  Location ..... G-15, G-16  Width ..... G-16</p> <p style="text-align: center;">-E-</p> <p><b>ENCASEMENT</b></p>	<p>Sewer Pipe ..... SP-03  Sewer Pipe, Undercut ..... SP-09</p> <p style="text-align: center;">-F-</p> <p><b>FENCE</b>  Chain Link ..... M-06  Debris Fence ..... D-82  Details ..... M-20  Tennis Court ..... M-17</p> <p><b>FIRE HYDRANT</b>  6" Hydrant ..... WF-01, WF-02  Locations ..... WF-04  Markers ..... M-19</p> <p><b>FRAME</b>  Grate ..... D-13  Manhole... M-01, M-02, M-03A, M-03B, M-04</p> <p style="text-align: center;">-G-</p> <p><b>GRATE</b>  Drainage ..... D-15  Frame ..... D-13  Tree ..... L-04</p> <p><b>GUARD RAIL, METAL BEAM</b>  Guard Rail Reference Note ..... M-30</p> <p><b>GUTTER</b>  Cross ..... G-12  Cross, Mid-Block ..... G-13  Separate from Curb ..... G-01</p> <p style="text-align: center;">-H-</p> <p><b>HEADWALL</b>  Gravity Type ..... D-32, D-33  L Type ..... D-36, D-37  Straight, Type A, ..... D-30, D-31</p> <p>Warped ..... D-44  Wing and U Type ..... D-34, D-35</p> <p style="text-align: center;">-I-</p> <p><b>INLET APRON</b> ..... D-39</p> <p><b>INLET, DRAIN</b>  Corrugated Steel Pipe,  Type A &amp; B ..... D-16, D-17  Slotted, Corrugated  Steel Pipe ..... D-18, D-19</p>
--	---

# INDEX

## IRRIGATION

Above Ground Installation ..... I-20, I-23, I-24  
Controller ..... I-17, I-18  
Head, Deep Root Tree Bubbler ..... I-04  
Head, Fixed Riser ..... I-01, I-02  
Head, Pop Up ..... I-03  
Pull Box, Electrical ..... I-15  
Trench Detail ..... I-25

-J-

JOINT TRENCH ..... M-15

-L-

## LATERAL

Sewer ..... SS-01, SS-03, SS-04  
Sewer, Deep Cut ..... SS-02  
Sewer, Repair ..... SM-07

## LIGHTING

Grounding ..... E-02  
Light Pole Pad ..... L-05  
Standard ..... E-01

LUG, CONCRETE ..... D-63

-M-

## MANHOLE, FRAME AND COVER

24" Heavy Duty ..... M-01  
24" Light Duty ..... M-02  
36" Concentric Covers ..... M-03  
Locking Device ..... M-04

## MANHOLE, SEWER

4' x 3' Diameter ..... SM-01, SM-03, SM-04,  
..... SM-05  
5' x 3' Diameter ..... SM-02, SM-03, SM-04,  
..... SM-05  
Coating & Lining ..... SM-07  
Abandonment ..... SM-08

## MEDIAN

Curb Inlet ..... D-45  
Curbs and Gutter ..... G-06

METER BOX LOCATION ..... WS-03

METRIC EQUIVALENTS ..... M-14

## MONUMENT

Bench Mark ..... M-11  
Street Survey ..... M-10A, M-10B  
Survey ..... M-13

## MOWING STRIP

Concrete ..... L-03

-P-

## PARKING, DISABLED

Striping & Marking ..... M-27A & B, M-29  
Sign ..... M-28A, M-28B

## PAVEMENT, CONCRETE

Alley Section ..... G-21  
Joints ..... G-10  
Width 40' or Less ..... G-18  
Width 40' to 62' ..... G-19  
Width 53' to 69' ..... G-20

## PEDESTAL

Electrical ..... E-03  
Irrigation Controller ..... I-17, I-18

## PIPE

Collar ..... D-62  
Lug ..... D-63  
Rounded Ends ..... D-61  
Slotted ..... D-18, D-19

## PLANTING

Root Control Barrier ..... L-06  
Shrub ..... L-02  
Tree ..... L-01

## POST

Demountable ..... M-16  
Guard ..... M-09  
Protection ..... WM-04

-R-

## RAILING

Pedestrian ..... M-24, M-25

## RETAINING WALL

Concrete ..... C-11, C-12  
Details, Concrete ..... C-13, C-14  
Details, Gravity ..... C-10  
Details, Masonry ..... C-08  
Gravity ..... C-09  
Masonry C-01, C-02, C-03, C-04, C-05, C-06  
Masonry General Notes ..... C-07

-S-

SEWER CLEANOUT ..... SC-01

SEWER LATERAL. SS-01, SS-02, SS-03, SS-04

SIDEWALK

# INDEX

Drain Outlet.....	D-25	Joint Trench.....	M-15
Joint Details .....	G-10	Local Streets .....	M-22
Joint Locations.....	G-09	Major Streets .....	M-23
		Prime Arterials.....	M-23
			-V-
		VALVE, IRRIGATION	
Monolithic Curb.....	G-03	Air/Vacuum Relief.....	I-36
Pipe Underdrain.....	D-27	Flush, Drip .....	I-37
Removal and Replacement .....	G-11	Isolation, Ball .....	I-11
Typical Section .....	G-03, G-07	Isolation, Globe .....	I-13
		Manifold Assembly, Brass Pipe.....	I-33
STAKING		Manifold Assembly, PVC Pipe .....	I-32
Tree .....	L-01	Master.....	I-10
		Quick Coupling .....	I-05
STEPS		Remote Control .....	I-14
Concrete .....	M-26	Remote Control, Drip.....	I-35
			-W-
STREET LIGHT		WATER SERVICE	
Standard .....	E-01	1" .....	WS-01
Grounding .....	E-02	2" .....	WS-02
Foundation.....	E-02		
		WIRE	
	-T-	Irrigation Control Wire/Cable.....	I-16
TAPE LOCATOR, METALLIC		Electrical Pull Box, Irrigation.....	I-15
Sewer Pipe .....	SP-01		
Water Pipe .....	WP-01		
TENNIS COURT FENCE .....	M-17		
THRUST ANCHORS			
Bearing Area.....	WT-01		
Concrete .....	WT-01		
TRENCH DETAILS			
Irrigation .....	I-25		
Joint Trench Location .....	M-15		
Narrow, Resurfacing .....	G-33		
Resurfacing.....	G-24, G-25		
Sewer.....	SP-02		
Slurry Backfill .....	G-36		
Storm Drain.....	D-60		
Water Main .....	WP-02		
	-U-		
UNDERDRAIN, SIDEWALK			
Pipe.....	D-27		
Concrete, Reinforced.....	D-25		
UNDERGROUND TYPICAL LOCATION			
Location .....	M-21		
Replacement.....	M-21		
Upgrade .....	M-21		
UTILITY LOCATIONS			
Collector Streets .....	M-22		
Expressways.....	M-23		