2015 SAN DIEGO

REGIONAL STANDARD DRAWINGS



STANDARD DRAWINGS FOR AGENCIES IN THE SAN DIEGO REGION

Recommended by the Regional Standards Committee
Maintained and Published by the County of San Diego
Department of Public Works
December 2015
www.regional-stds.com

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

FOREWORD

These 2015 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.

The Regional Standard Drawings are published every three years, however updates are posted on the Web Site http://www.regional-stds.com as changes are adopted. 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.

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, 3rd Floor, STE 0320
San Diego, CA 92123-1295
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
Greg Tscherch	Retaining Walls & ADA Chair	City of Chula Vista
Tim Regello	Drainage Systems Chair	Clark Land Resources
Dennis Gerschoffer	Dry Utilities, Traffic, and Misc. Chair	SDG&E
Christy Villa	General Surface Facilities Committee Co-Chair	City of Encinitas
Melody Rocco	General Surface Facilities Committee Co-Chair	City of Poway
Reza Taleghani	Landscape and Irrigation Committee Chair	City of San Diego
Dennis Gerschoffer	Traffic/Lighting/Electrical Committee Chair	SDG&E
Blair Knoll	Water / Sewer Committee Chair	San Dieguito Water District

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 was established under San Diego County Board of Supervisors Policy I-50 in 1973 and the RSC Chair is selected by the RSC members and serves a three-year term.

The 2015 Regional Standard Drawings continue to use English only units. The 2012 Edition discontinued the use of dual units and adopted English imperial units only.



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

PROPOSED REVISION TO THE REGIONAL STANDARDS

Draft No.

☐ Specification ☐ Drawing

Date

REASON FOR REVISION:

SUBMITTED BY:

NAME:_____ PHONE:_____

AGENCY:_____ ADDRESS:_____

Subcommittee:_____

Date: _____

☐ RECOMMENDED ☐ AS MODIFIED ☐ REJECTED

Regional Standards Committee

Date:_____

☐ RECOMMENDED ☐ AS MODIFIED ☐ REJECTED

TABLE OF CONTENTS

SECTION C - CONCRETE STRUCTURES

C-01 Masonry Retaining Wall Type 1 Level Backfill With 2-in Heel

C-02 Masonry Retaining Wall Type 2 (Live Load Surcharge or Sloping Backfill)

C-03 Masonry Retaining Wall Type 3 (Level Backfill)

C-04 Masonry Retaining Wall Type 4 (Live Load Surcharge or Sloping Backfill)

C-05 Masonry Retaining Wall Type 5 (Level Backfill)

C-06 Masonry Retaining Wall Type 6 (Live Load Surcharge or Sloping Backfill)

C-07 General Notes for Masonry Retaining Walls

C-08 Details for Masonry Retaining Wall

C-09 Gravity Retaining Walls

C-10 General Notes and Details for Gravity Retaining Walls

C-11A Reinforced Concrete Retaining Wall Type 1 Elevation

C-11B Reinforced Concrete Retaining Wall Type 1 Spread Footing

C-11C Reinforced Concrete Retaining Wall Type 1 Pile Footing

C-11D Reinforced Concrete Retaining Wall Type 1 Dimensions and Steel Table

C-12A Reinforced Concrete Retaining Wall Type 1A

C-12B Reinforced Concrete Retaining Wall Type 1A

C-13A Reinforced Concrete Retaining Wall Details No. 1

C-13B Reinforced Concrete Retaining Wall Details No. 1

C-13C Reinforced Concrete Retaining Wall Details No. 1

C-13D Reinforced Concrete Retaining Wall Details No. 1

C-14 Reinforced Concrete Retaining Wall Details No. 2

C-15 Reinforced Concrete Retaining Wall Details No. 3

DRAINAGE SYSTEMS

D-01 Curb Inlet - Type A

D-02 Curb Inlet - Type B

D-03A Curb Inlet - Type C

D-03B Concrete Apron for Type C Curb Inlet

D-07 Catch Basin - Type F

D-08 Catch Basin - Type G

D-09 Storm Drain Cleanout - Type A

D-10 Storm Drain Cleanout - Type B

D-11A Inlets and Cleanouts - Notes and Details

D-11B Inlets and Cleanouts - Notes and Details

D-12 Curb Inlet Opening

D-13 Welded Steel Grate Frame

D-15 Drainage Structure Grate

D-16 Corrugated Steel Pipe Inlets Types A & B

D-17A Corrugated Steel Pipe Inlets, Details

D-17B Corrugated Steel Pipe Inlets, Details

D-18 Slotted Corrugated Steel Pipe Drains 12" through 24"

D-19 Slotted Drain Connections to Standard Inlets

D-22 Asphalt Concrete Spillway

TABLE OF CONTENTS

D-23 Tapered Inlet and Downdrain Flume

D-25 Curb Outlet - Type A

D-27 Sidewalk Underdrain Pipe

D-29 Catch Basin - Type 1

D-30 Straight Headwall - Type A (Circular Pipe)

D-31 Straight Headwall - Type A (C.S.P. - Arch)

D-32 Straight Headwall - Type B (Circular Pipe)

D-33 Straight Headwall - Type B (C.S.P. - Arch)

D-34 Wing and U Type Headwalls for 18" to 36" Pipes

D-35A Wing and U Type Headwalls for 42" to 84" Pipes

D-35B Wing and U Type Headwalls for 42" to 84" Pipes

D-36 L Type Headwalls - Circular Pipes

D-37 L Type Headwalls - CSP Arch Pipes

D-38 Curtain Wall

D-39 Inlet Apron for Culverts Up to 42" Diameter

D-40 Rip Rap Energy Dissipater

D-41A Concrete Energy Dissipater

D-41B Concrete Energy Dissipater

D-42 Concrete Energy Dissipater (Reinforcement) 18" to 30" Diameter Pipe

D-43A Concrete Energy Dissipater (Reinforcement) 36" to 72" Diameter Pipe

D-43B Concrete Energy Dissipator (Reinforcement) 36" to 72" Diameter Pipe

D-43C Concrete Energy Dissipater (Reinforcement) 36" to 72" Diameter Pipe

D-44A Pipe Culvert - Headwalls, Endwalls and Warped Wingwalls

D-44B Pipe Culvert - Headwalls, Endwalls and Warped Wingwalls

D-44C Pipe Culvert - Headwalls, Endwalls and Warped Wingwalls

D-44D Pipe Culvert - Headwalls, Endwalls and Warped Wingwalls

D-45 Median Curb Inlet – Type J

D-60 Pipe Bedding and Trench Backfill for Storm Drains

D-61 Rounded Pipe Ends in Drainage Structures

D-62 Pipe Collar

D-63 Concrete Lug

D-70 Minor Drainage Channel

D-71 Major Drainage Channel

D-72 Cutoff Wall for Drainage Channel

D-73 Pipe to Channel Connection

D-74 Graded Earth Channel

D-75 Drainage Ditches

D-76A Single Box Culvert, Details No. 1

D-76B Single Box Culvert, Details No. 1

D-76C Single Box Culvert, Details No. 1

D-76D Single Box Culvert, Details No. 1

D-76E Single Box Culvert, Details No. 1

D-76F Single Box Culvert, Details No. 1

D-76G Single Box Culvert, Details No. 2

D-77A Double Box Culvert, Details No. 1

TABLE OF CONTENTS

D-77B Double Box Culvert, Details No. 1

D-77C Double Box Culvert, Details No. 1

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)

TABLE OF CONTENTS

G-14D Concrete Driveway (for Confined Right-of-Way)

G-14E Concrete Driveway (Alley Type)

G-14F Concrete Driveway Type B (Contiguous Sidewalk)

G-14G Asphalt Concrete Driveway

G-15 Driveway Location – Adjacent to Curb Returns and Street Lines

G-16 Driveway Location and Width Requirements

G-17 Alley Apron

G-18 Concrete Pavement, Width 40' or Less

G-19 Concrete Pavement, Width 42' to 62'

G-20 Concrete Pavement, Alley Section, Width 52' to 72'

G-21 Concrete Pavement, Alley Section, Width 40' or Less

G-22 Cutoff Wall at End of Pavement

G-23 Cutoff Wall at End of Alley Pavement

G-24A Trench Resurfacing Asphalt Concrete Streets

G-24B Trench Resurfacing Notes and Details

G-25 Trench Resurfacing PCC Surfaced Streets

G-26 Concrete Driveway Commercial Alternate

G-27 Curb Ramp - Types A and B (New Construction)

G-28 Curb Ramp - Types A-1 and B-1 (For Existing Sidewalk)

G-29 Curb Ramp - Type C (For Existing Sidewalk)

G-30 Truncated Domes

G-31 Curb Ramp - Type D

G-32A General Notes for Curb Ramps

G-32B Notes for Curb Ramps

G-33 **Narrow Trenches Trenching & Backfilling**

G-36 Slurry Backfill

G-37 Temporary Turnaround at Dead End Street

G-38 Parking Bay

SECTION I - SPRINKLER IRRIGATION SYSTEMS

I-01 Shrub Spray Head, on Fixed Riser

I-02 Rotor or Impact Head on Fixed Riser

I-03 Rotor, Spray or Bubbler Pop-Up Head

I-04 Deep Root Tree Bubbler

I-05 Quick Coupling Valve

I-09 Flow Sensor

I-10 Irrigation Master Valve

I-11 Isolation Ball Valve - 2” and Smaller

I-12 Isolation Blobe/Gate Valve – 2 ½” and Larger

I-13 Isolation Globe Valve (2” and Smaller)

I-14 Remote Control Valve

I-15 Electrical Pull Box for Direct Burial Control Wires and Splicing Notes

I-16 Control Wire Installation

I-17 Automatic Irrigation Controller Pedestal Mounted

I-18 Automatic Irrigation Controller Indoor Wall Mounted

I-19 Solar Irrigation Controller

I-20 On-Grade Pipe Stabilization – Temporary Installation

TABLE OF CONTENTS

I-23 Swing Joint and Pipe Installation on Slopes Above Ground

I-24 Double Swing Joint- Above Ground Pipe Installations

I-25 Irrigation Trench PVC or Copper Pipe

I-26 Irrigation Trench Detail 4" and Larger P.V.C. Mainline

I-32 Remote Control Valve Manifold Assembly with PVC Pipe (Temporary Systems)

I-33 Remote Control Valve Manifold Assembly with Brass Pipe

I-35 Remote Control Valve Drip Irrigation

I-36 Air/Vacuum Relief Valve

I-37 Drip Irrigation Flush Valve (Automatic)

SECTION L - LANDSCAPING

L-01 Tree Planting & Staking

L-02 Shrub Planting

L-03 Concrete Mowing Strip

L-04 Tree Grate

L-05 Light Pole Pad in Turf Areas

L-06 Root Control Barrier

L-07 Palm Tree Planting

SECTION M - MISCELLANEOUS

M-01 24" Manhole Frame and Cover, Heavy Duty

M-02 24" Manhole Frame and Cover, Light Duty

M-03A 36" Manhole Frame and Two Concentric Covers, Heavy Duty

M-03B 36" Manhole Frame Light Weight-Heavy Duty

M-04 Manhole Cover Locking Device

M-05 Chain Link Gate

M-06 Chain Link Fence

M-07 Narrow Trenches - Trenching & Backfilling

M-07A Narrow Trenches - Trenching & Backfilling

M-08 Narrow Trenches - Trenching & Backfilling - Shallow Conduit Depth

M-09 Guard Post and Barricade

M-10A Street Survey Monument

M-10B Street Survey Monument – Overlay Adjustment

M-10C Street Survey Monument - Notes

M-11 Bench Mark - Brass Plug

M-12 Datums

M-13 Survey Monuments

M-14 Metric Equivalents

M-15 Joint Trench Location

M-16 Demountable Post

M-17 Tennis Court Fence Chain Link

M-18 Drinking Fountain

M-19 Fire Hydrant Markers

M-20 Chain Link Fence, Details

M-21 Underground Typical Location, Conversion/Replacement/Upgrade

M-22 Utility Locations, Local and Major Streets

M-23 Utility Locations Prime Arterials and Expressways

M-24 Pedestrian Protective Railing, Details No. 1

M-25 Pedestrian Protective Railing, Details No. 2

M-26 Concrete Steps

TABLE OF CONTENTS

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

M-29 Pavement Symbol, Disabled Parking

M-30 Guard Rail Reference Note

M-45 Break-Away Sign Post

SECTION S - SEWERAGE SYSTEMS

SC-01 Sewer Cleanout

SM-01 48" Diameter Precast Manhole Installation

SM-02 60" Diameter Precast Manhole I nstallation

SM-03 Sewer Manhole Base

SM-04 Manhole Pipe Connectors

SM-05 Manhole Miscellaneous Details

SM-07 Manhole Coating and Lining System

SM-08 Existing Manhole Abandonment

SP-01 Warning/Identification Tape Installation

SP-02 Pipe Bedding and Trench Backfill for Sewer Facilities

SP-03 Concrete Protection for Sewer Pipe

SP-05 Slope Protection Installations

SP-07 Cut-Off Wall Installation in Traveled Areas

SP-09 Pipe Support for Undercut Sewer Mains or Sewer Laterals

SS-01 4" and 6" Sewer Lateral Installation

SS-02 4" and 6" Deep-Cut Sewer Lateral Installation

SS-03 Sewer Lateral Notes and Detail

SS-04 4" and 6" Sewer Cut-In Wye Connections

SECTION W - WATER SYSTEMS

WA-01 2" Manual Air Valve

WA-02 2" Automatic Combination Air Release and Air/Vacuum Valve Installations

WA-04 4" and 6" Automatic Combination Air Release and Air/Vacuum Valve Installations

WA-06 Air and Vacuum Valve Enclosure Locations

WB-01 2" Blow-Off Installation

WB-02 4" and 6" Blow-Off Installation – Type A

WB-03 4" and 6" Blow-Off Assemblies in Street – Type B

WB-04 Blow-Off Installation from end of Mains and from Steel Mains

WB-05 Temporary 2" Blow-Off Installation

WF-01 6" Fire Hydrant Installation

WF-02 6" Fire Hydrant Installation with Break-Off Check Valve

WF-04 Fire Hydrant Locations and Port Orientation

WF-05 4" and Larger Fire Service Installation

WM-04 Protection Post Installation

WP-01 Warning/Identification Tape and Tracer Wire Installations

WP-02 Pipe Bedding and Trench Backfill for Potable and Recycled Water Mains

WP-03 Cutting and Plugging Abandoned Water, Recycled Water and Sewer Mains

WP-05 Slope Protection Installations

TABLE OF CONTENTS

WP-07 Cut-Off Wall Installation in Traveled Areas

WP-09 Pipe Support for Undercut Sewer Mains or Sewer Laterals

WR-01 Reduced Pressure Backflow Prevention Device (¾" Thru 2")

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

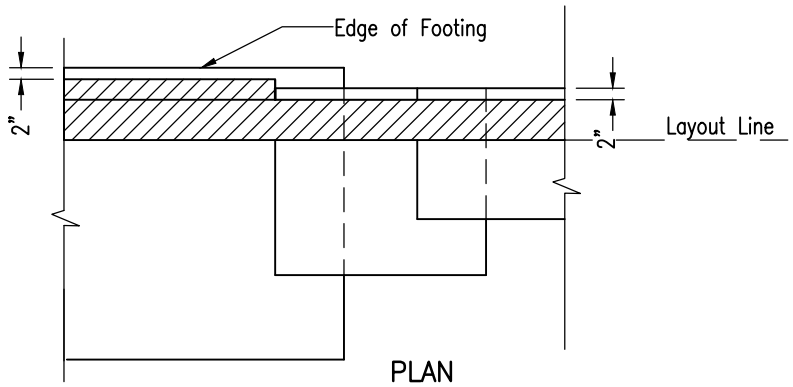
WV-04 Steel Valve Stem Extension for Valves 4" and Larger

WV-05 Steel Valve Stem Extension for Valves 2" and Smaller

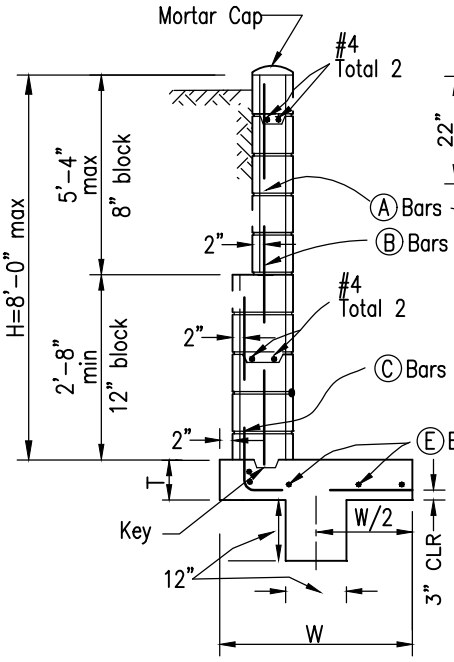
APPENDIX A

Traffic Control Plans

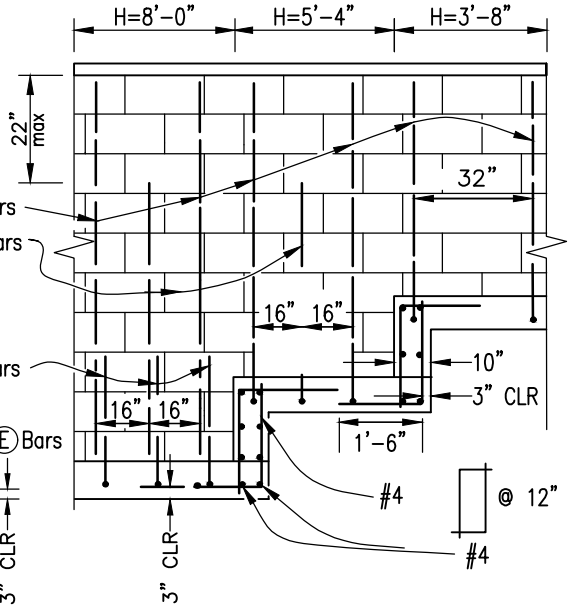
CONCRETE STRUCTURES



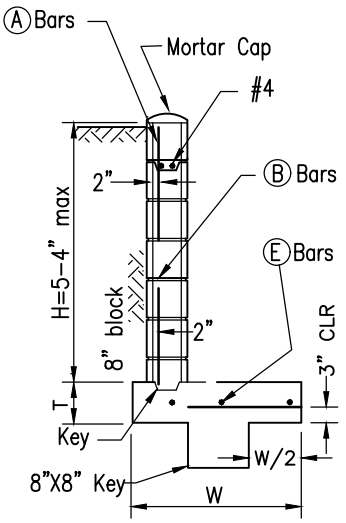
PLAN



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"	0'-10"	1'-0"
W (MIN)	2'-4"	3'-6"	5'-4"
Ⓐ BARS	#4@32"	#4@32"	#4@32"
Ⓑ BARS	———	#4@32"	#4@32"
Ⓒ BARS	———	———	#6@16"
Ⓔ BARS	#4 TOTAL 4	#4 TOTAL 5	#4 TOTAL 6
MAX SOIL PRESSURE	500PSF	600PSF	800PSF

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

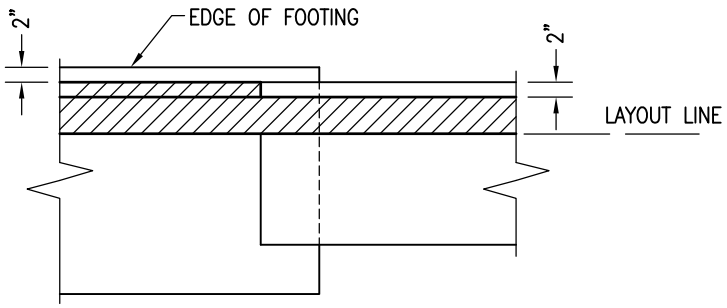
SAN DIEGO REGIONAL STANDARD DRAWING

MASONRY RETAINING WALL TYPE 1
LEVEL BACKFILL WITH 2-IN HEEL

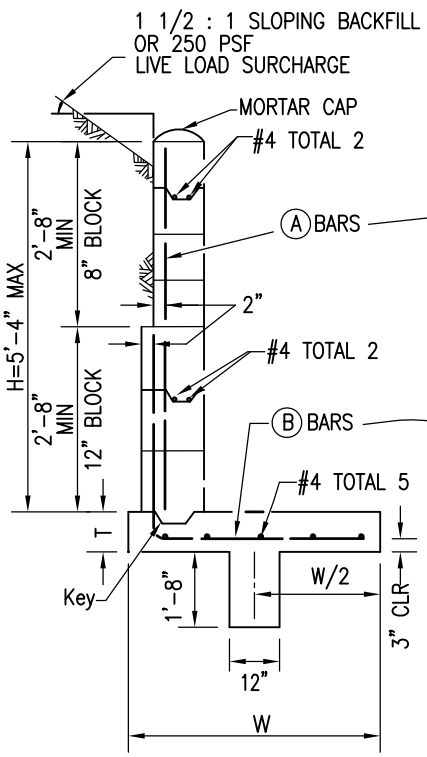
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

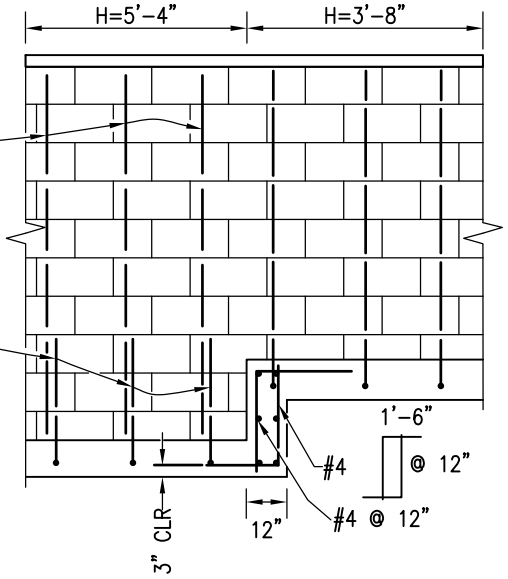
DRAWING NUMBER **C-01**



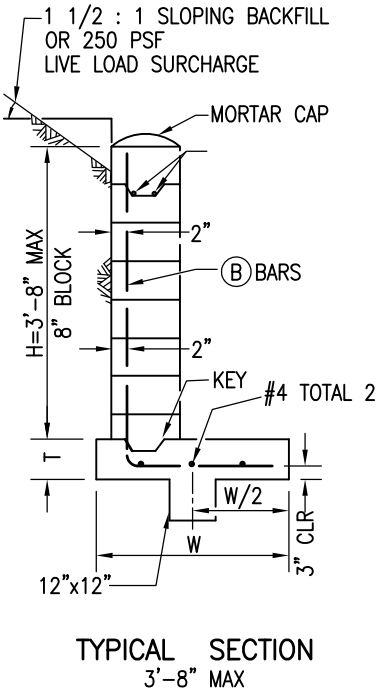
PLAN



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)	0'-10"	0'-10"
W (MIN)	5'-0"	3'-9"
Ⓐ BARS	#4@16"	———
Ⓑ BARS	#6@16"	#4@16"
MAX SOIL PRESSURE	700PSF	550PSF

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

SAN DIEGO REGIONAL STANDARD DRAWING

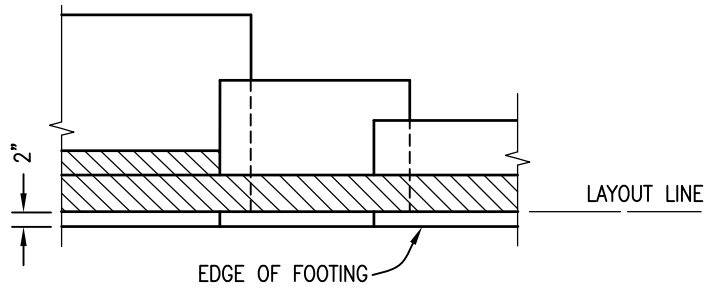
MASONRY RETAINING WALL TYPE 2

(LIVE LOAD SURCHARGE OR SLOPING BACKFILL)

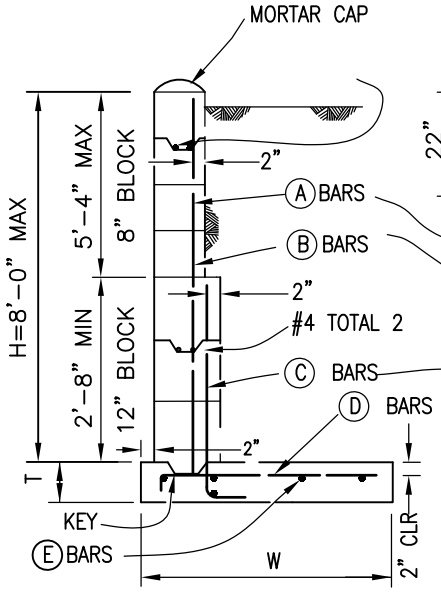
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

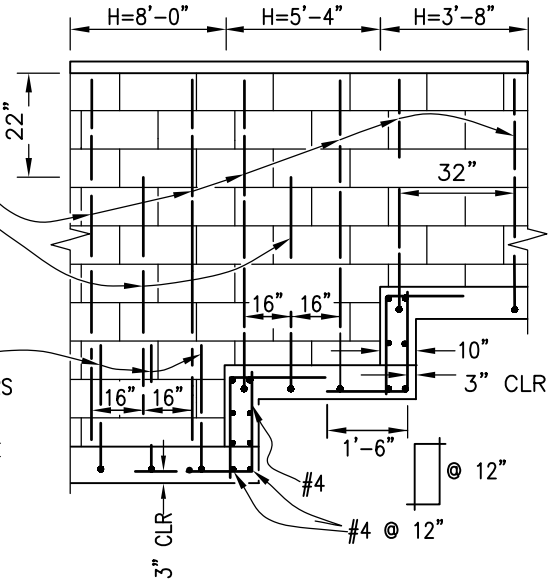
DRAWING NUMBER C-02



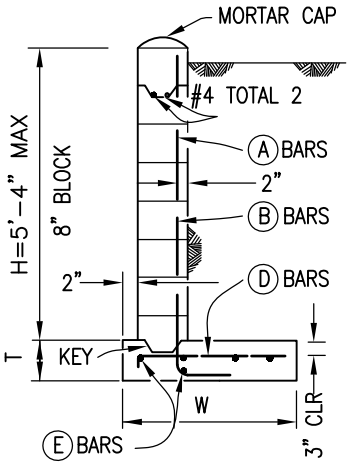
PLAN



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"	0'-10"	1'-0"
W (MIN)	2'-4"	3'-2"	4'-9"
Ⓐ BARS	#4@32"	#4@32"	#4@32"
Ⓑ BARS	———	#4@32"	#4@32"
Ⓒ BARS	———	———	#6@16"
Ⓓ BARS	#4@32"	#4@16"	#6@16"
Ⓔ BARS	#4 TOTAL 4	#4 TOTAL 5	#4 TOTAL 6
MAX SOIL PRESSURE	1100 PSI	1600 PSI	2200 PSI

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

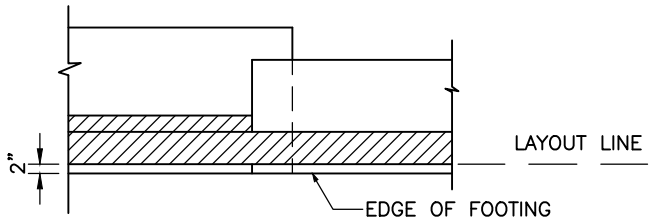
SAN DIEGO REGIONAL STANDARD DRAWING

MASONRY RETAINING WALL TYPE 3 (LEVEL BACKFILL)

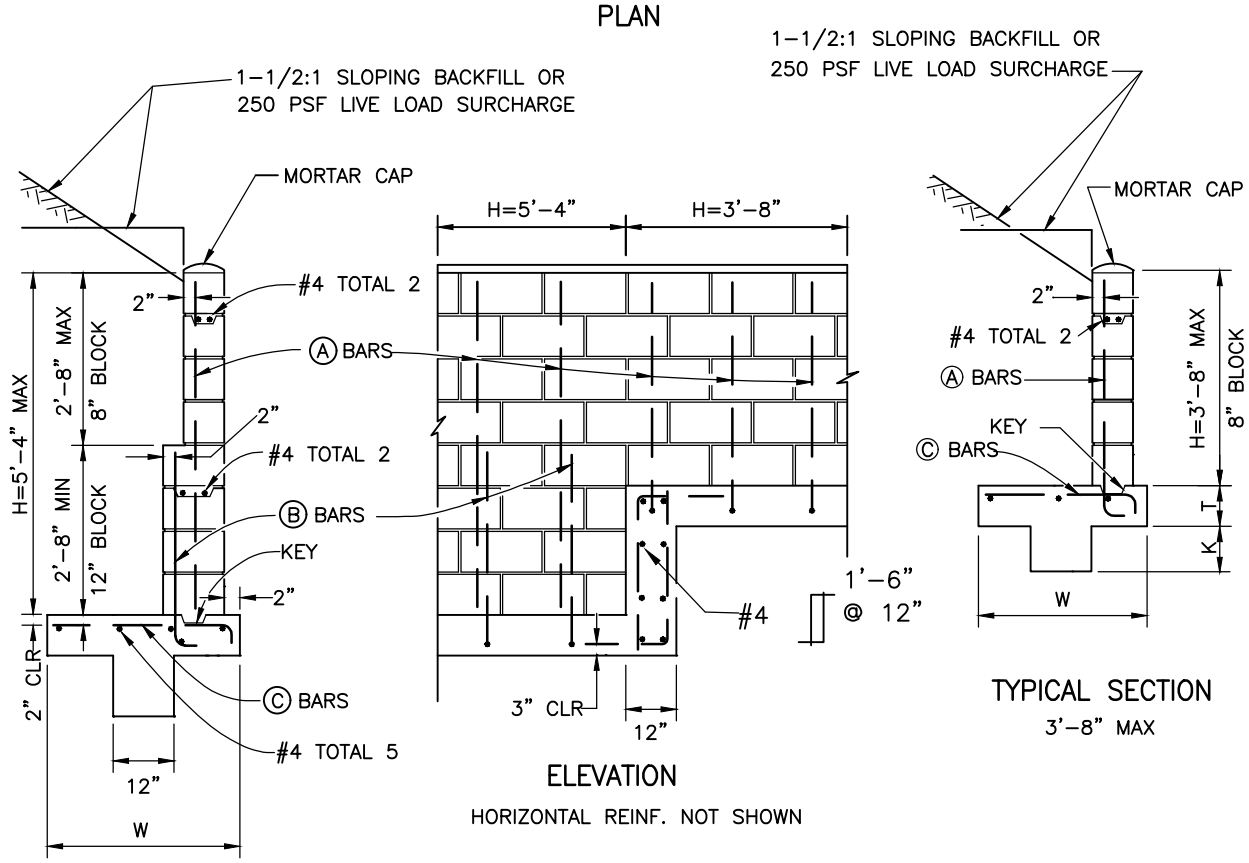
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER C-03



PLAN



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

NOTES:

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

Revision	By	Approved	Date
ORIGINAL		Parkinson	02/95
Add Metric		T. Stanton	03/03
Reformatted		T. Stanton	04/06
Delete Metric	S.S.	T. Shell	03/11
Reviewed	TS	T. Stanton	11/15

SAN DIEGO REGIONAL STANDARD DRAWING

MASONRY RETAINING WALL TYPE 4

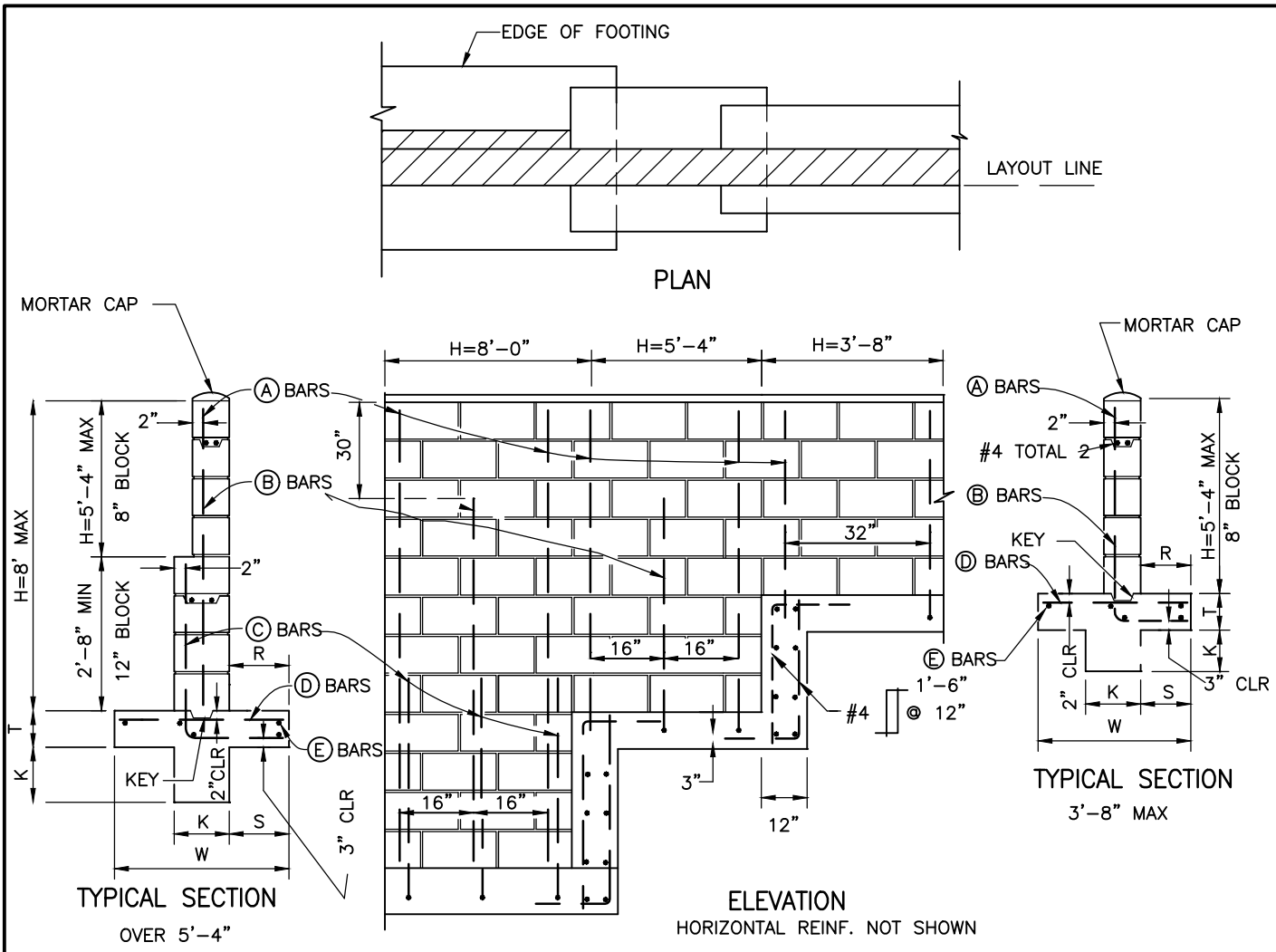
(LIVE LOAD SURCHARGE OR SLOPING BACKFILL)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

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'-1/2"	1'-7 1/2"
K	0'-8"	0'-8"	1'-0"
Ⓐ BARS	#4@32"	#4@32"	#4@32"
Ⓑ BARS	———	#4@32"	#4@32"
Ⓒ BARS	———	———	#7@16"
Ⓓ BARS	#4@32"	#4@16"	#4@16"
Ⓔ 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
ORIGINAL		Parkinson	2/95
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

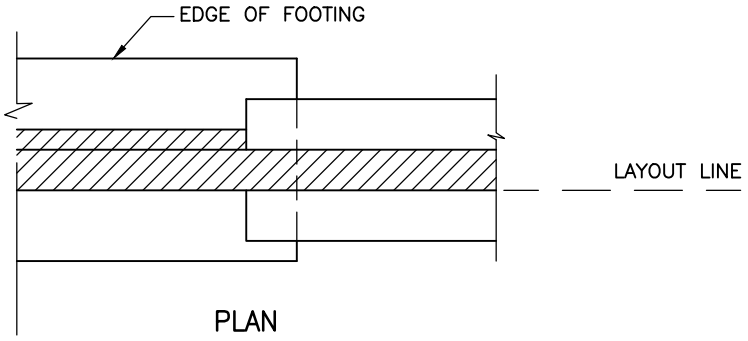
MASONRY RETAINING WALL TYPE 5 (LEVEL BACKFILL)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

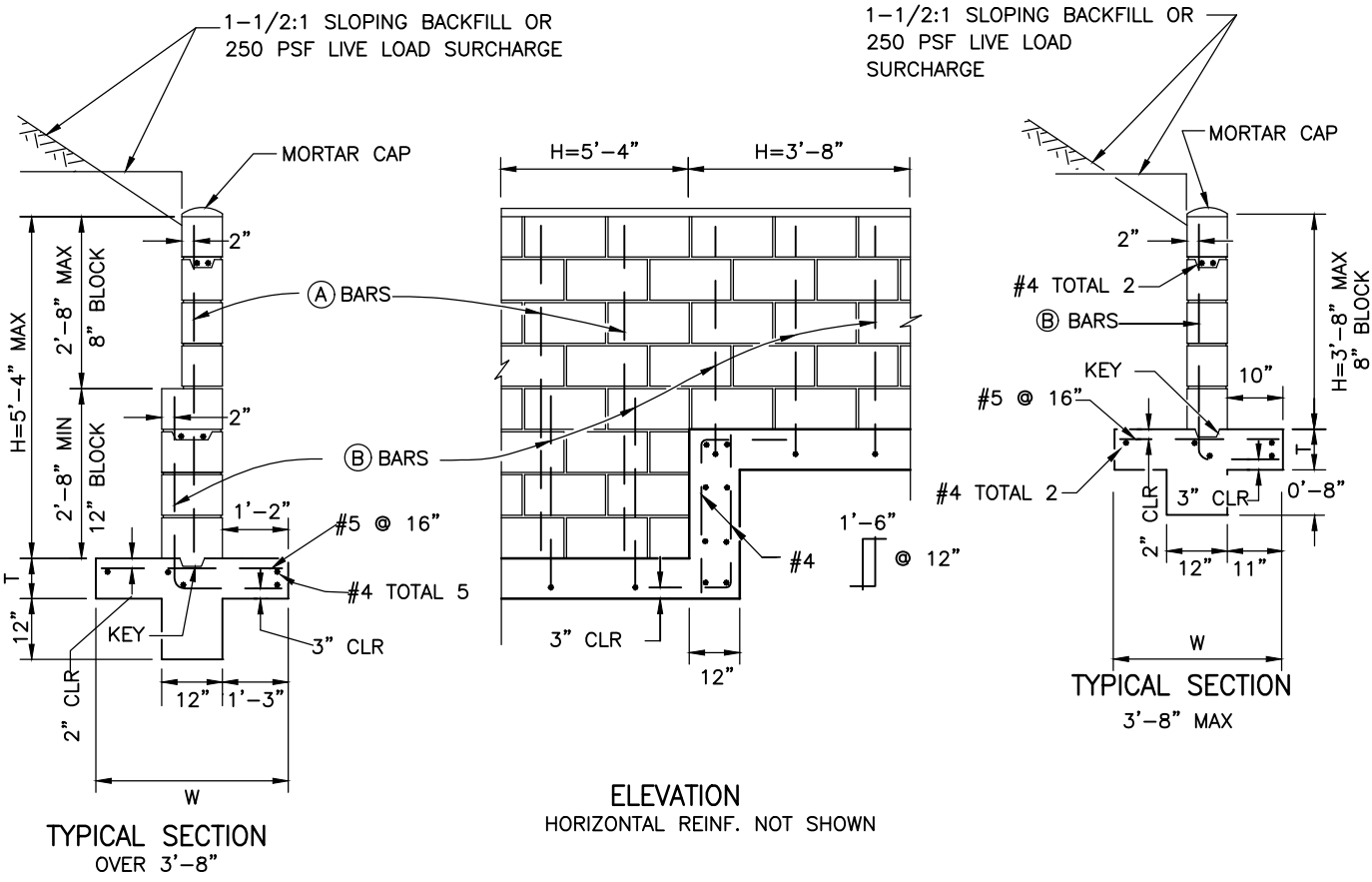
T. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER C-05



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)	0'–10"	0'–8"
W (MIN)	3'–10"	2'–9"
Ⓐ BARS	#4@16"	———
Ⓑ 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
ORIGINAL		Parkinson	2/95
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

MASONRY RETAINING WALL TYPE 6

(LIVE LOAD SURCHARGE OR SLOPING BACKFILL)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

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
ORIGINAL		A. Kercheval	12/75
Add Metric		T. Stanton	03/03
Delete Metric	S.S.	T. Shell	03/11
Reviewed	TS	T. Stanton	11/15

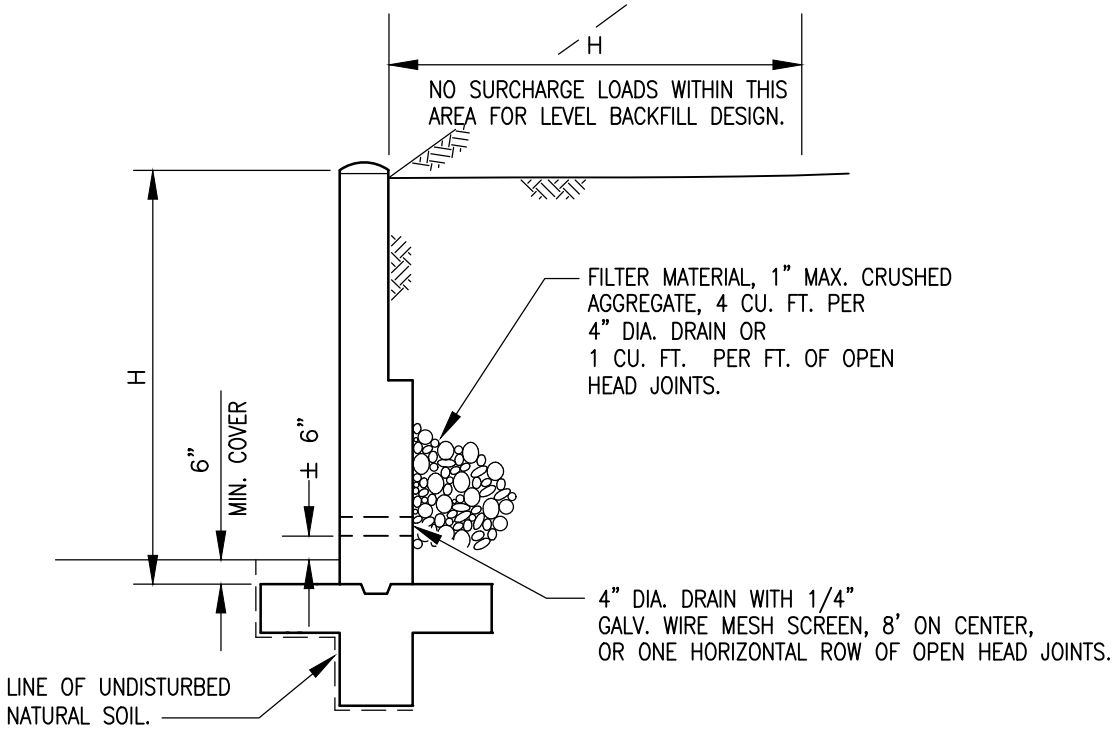
SAN DIEGO REGIONAL STANDARD DRAWING

GENERAL NOTES FOR MASONRY RETAINING WALLS

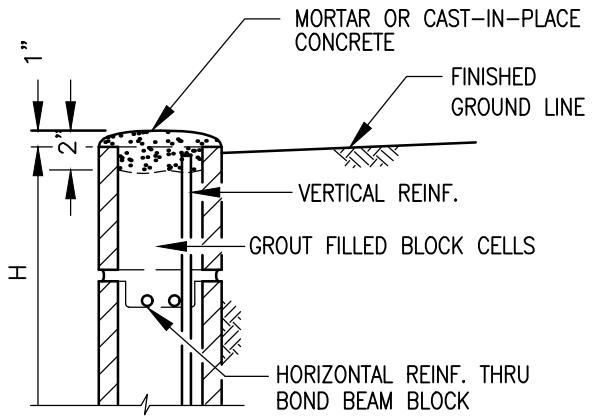
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

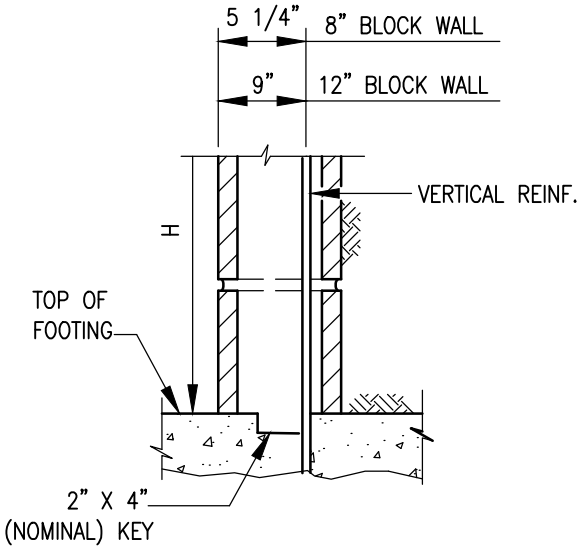
DRAWING NUMBER **C-07**



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

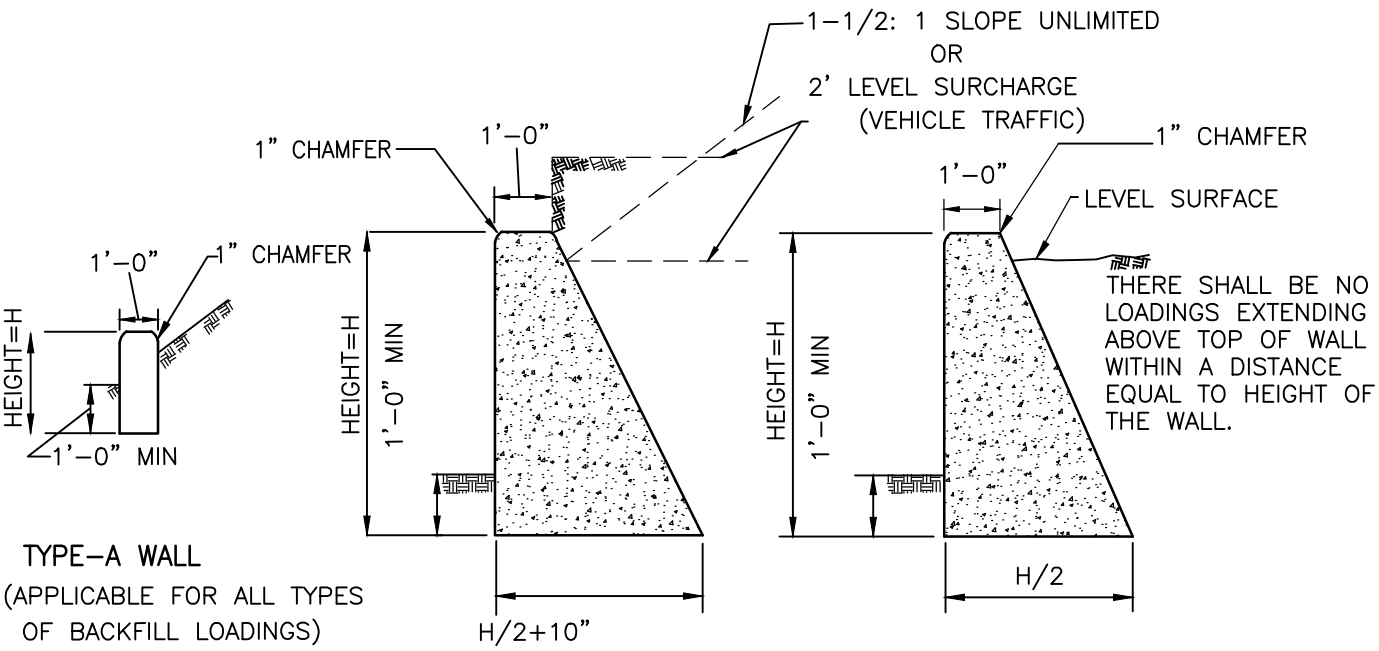
DETAILS FOR MASONRY RETAINING WALL

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

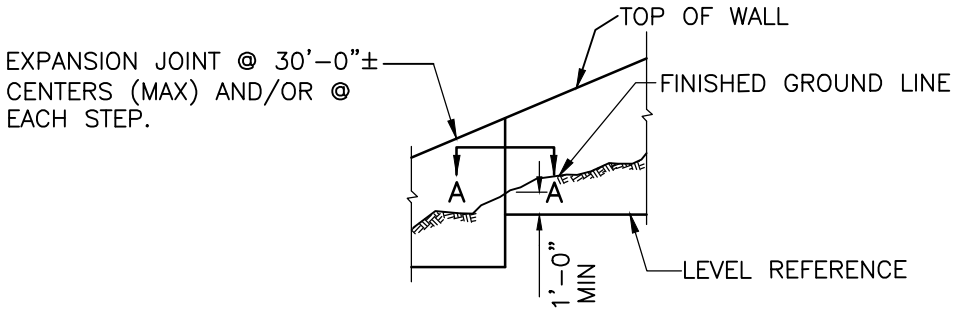
DRAWING NUMBER **C-08**



TYPE–A WALL
(APPLICABLE FOR ALL TYPES OF BACKFILL LOADINGS)

TYPE–B WALL

TYPE–C WALL



ELEVATION

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
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

GRAVITY RETAINING WALLS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER C-09

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 XCEEDED 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 SUCHARGE ARE DESIGNED IN ACCORDANCE WITH RANKINE'S FORMULA FOR UNLIMITED SLOPING SURCHARGE WITH ø = 42'.

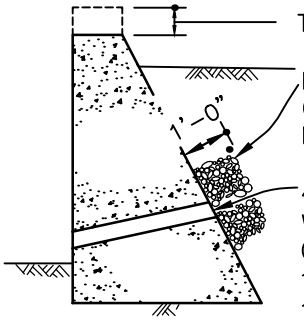
NOTE: MAXIMUM TOE PRESSURE UNDER WALL FOOTING = 1–1/2 TONS/SQ. FT. SPECIAL DESIGN REQUIRED WHERE FOOTING MATERIAL IS INCAPABLE OF SUPPORTING THIS PRESSURE.

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.

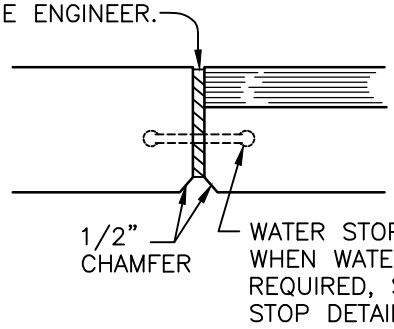
NO BACKFILL MATERIAL SHALL BE DEPOSITED AGAINST CONCRETE RETAINING WALLS UNTIL THE CONCRETE HAS DEVELOPED A STRENGTH OF 2,500 PSI IN COMPRESSION AS DETERMINED BY TEST CYLINDERS, OR UNTIL 28 DAYS AFTER WALL HAS BEEN PLACED.



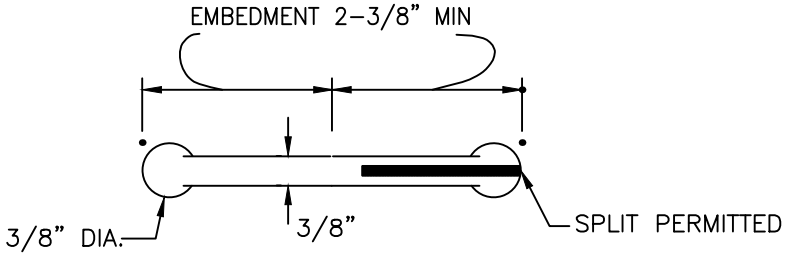
TYPICAL DRAINAGE

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

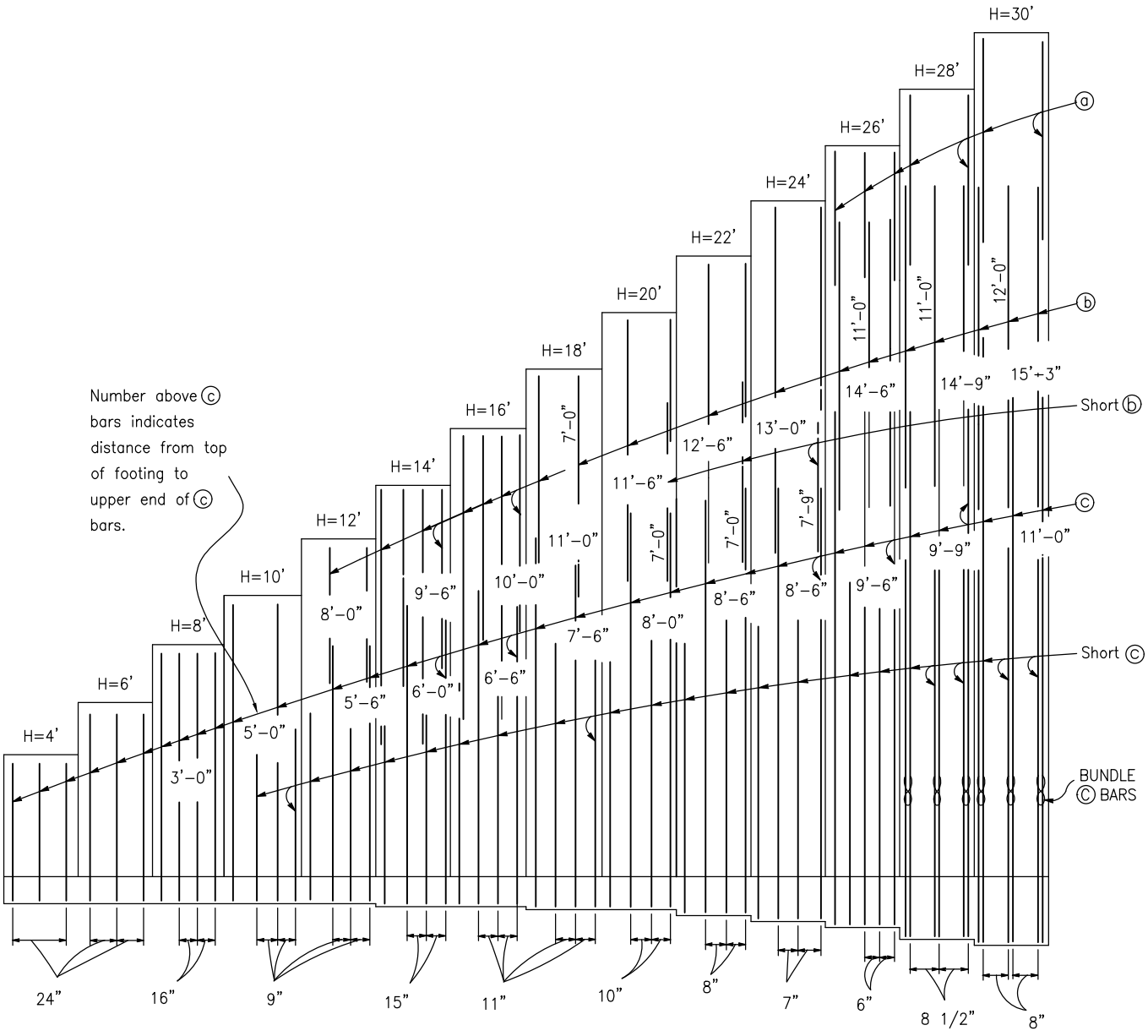
SAN DIEGO REGIONAL STANDARD DRAWING

GENERAL NOTES AND DETAILS FOR GRAVITY RETAINING WALLS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

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

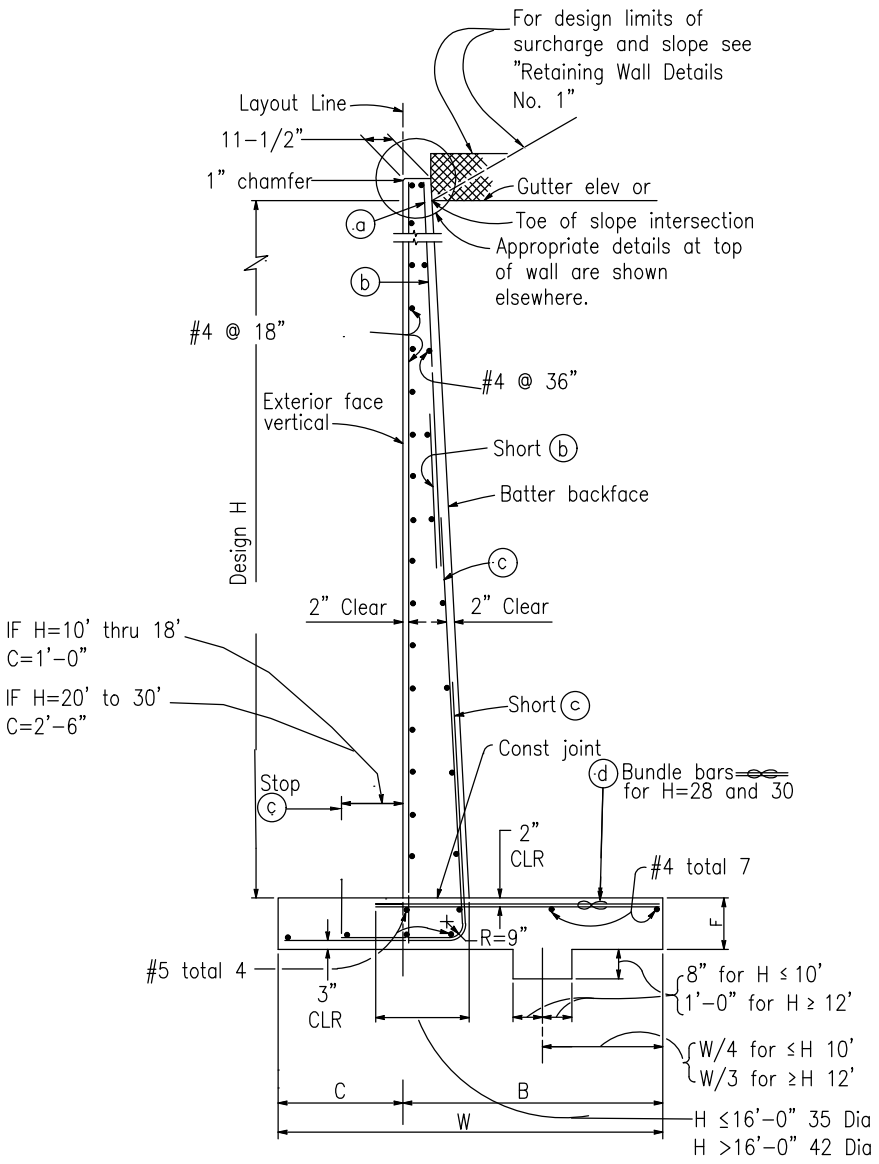
REINFORCED CONCRETE RETAINING WALL TYPE 1 - ELEVATION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **C-11A**



SPREAD FOOTING SECTION

NOTES:

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

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

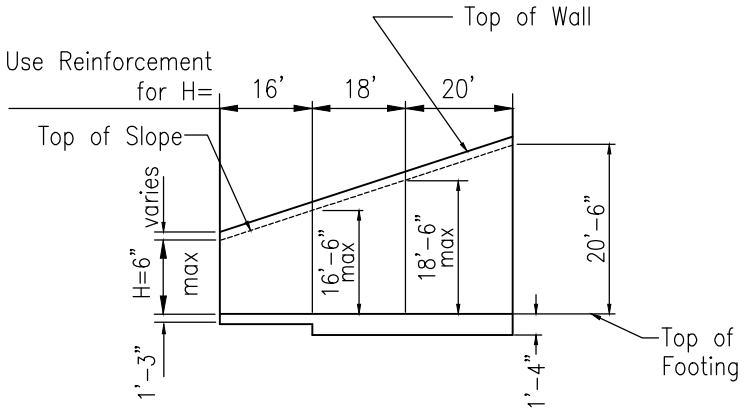
REINFORCED CONCRETE RETAINING WALL TYPE 1 - SPREAD FOOTING

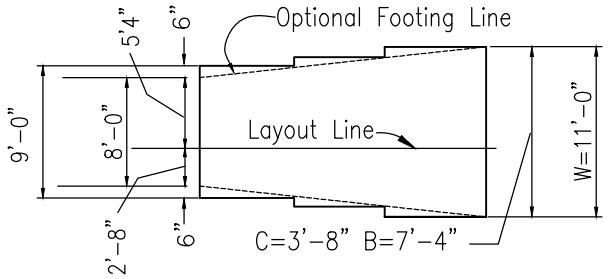
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

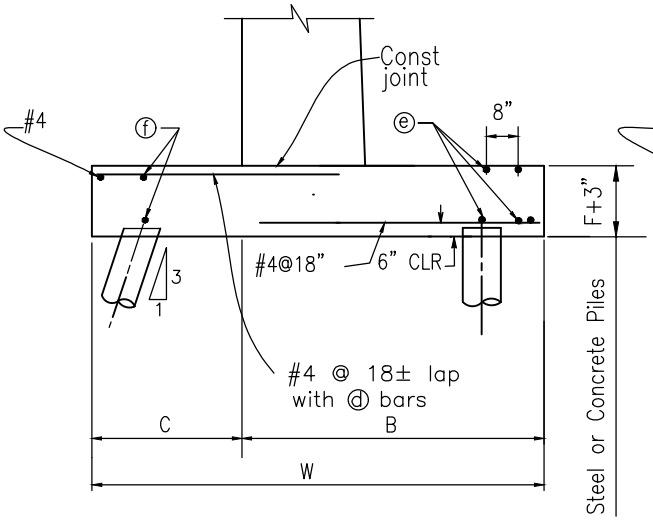
DRAWING NUMBER **C-11B**





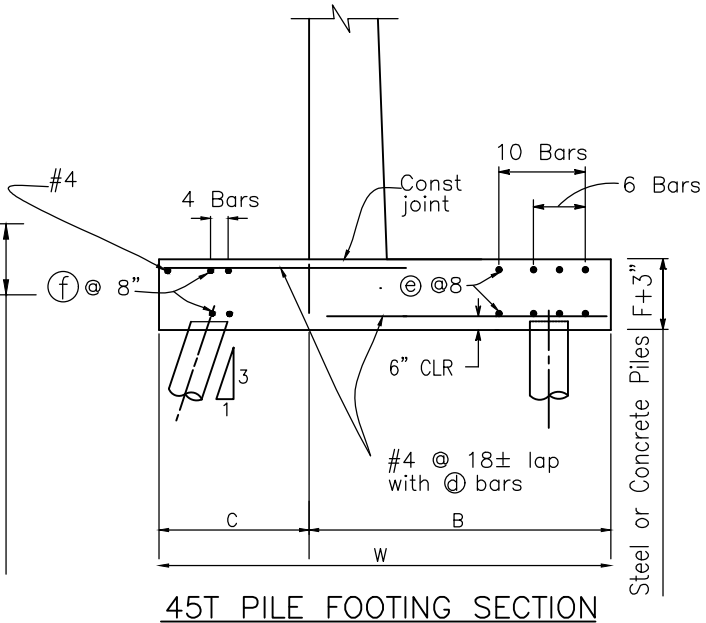
TYPICAL LAYOUT EXAMPLE

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



45T PILE FOOTING SECTION

H=24' THRU H=30'



45T PILE FOOTING SECTION

H=4' THRU H=22'

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

12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **C-11C**

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

Chairperson R.C.E. 19246 Date 12/17/2015

DRAWING NUMBER **C-11D**

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@8-1/2ϑ	#10@8ϑ
ⓓ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@8-1/2ϑ	#9@8ϑ
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	Toe Pressure k/sf	1.6	1.9	2.2	2.3	2.8	3.3	3.5	4.0	4.3	4.6	4.9	5.3	5.7	6.2
2:1 unlimited slope	Toe Pressure k/sf	1.1	1.5	2.0	2.5	2.7	3.3	3.6	4.2	4.7	5.5	5.9	6.5	7.1	7.5
1-1/2:1 limited slope	Toe Pressure k/sf	1.3	1.7	2.1	2.5	2.9	3.4	3.8	4.3	4.8	5.4	5.8	6.5	7.2	7.5
Spread Footing	Steel lbs/ft.	17	20	28	37	51	80	105	147	187	246	303	407	449	507
	Conc cf/ft	8.9	12.5	16.3	20.2	25.4	30.1	34.6	40.1	45.0	52.1	63.3	77.0	88.1	104.8
Pile ftg.	Steel lbs/ft.	29	32	41	70	84	113	140	172	212	270	322	427	469	528
	Conc cf/ft	10.2	12.7	16.7	20.8	25.2	30.1	34.8	40.6	45.7	53.1	64.7	78.6	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'

ϑ 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

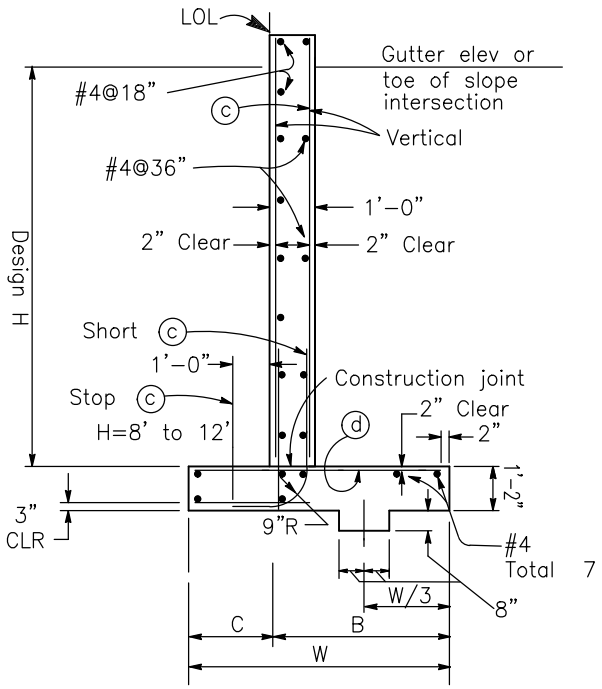
REINFORCED CONCRETE RETAINING WALL
TYPE 1A

SAN DIEGO REGIONAL STANDARD DRAWING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 — Date 12/17/2015

DRAWING NUMBER **C-12A**



SPREAD FOOTING SECTION

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

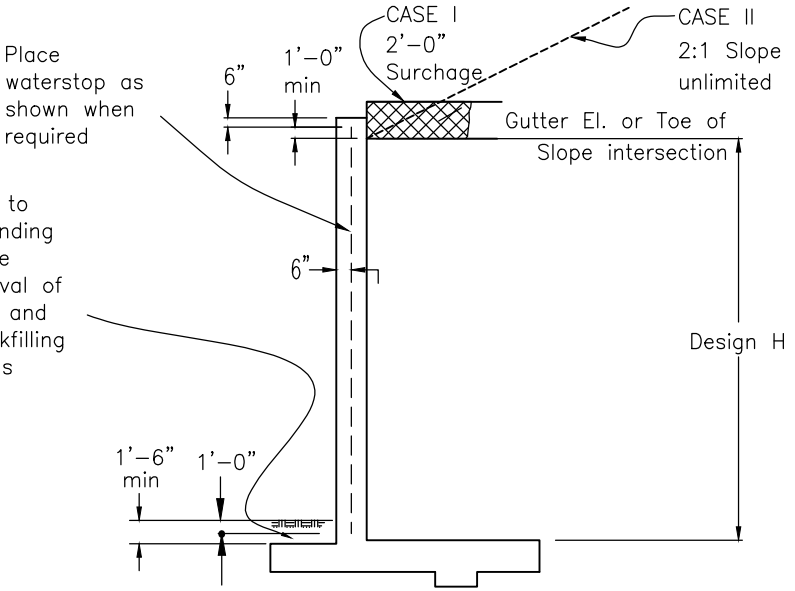
NOTES:
Design H may be exceeded by 6" before going to the next size. Footing key is required except when found unnecessary by Engineer.
Special footing design is required where foundation material is incapable of supporting toe pressure loads listed in table.

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

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

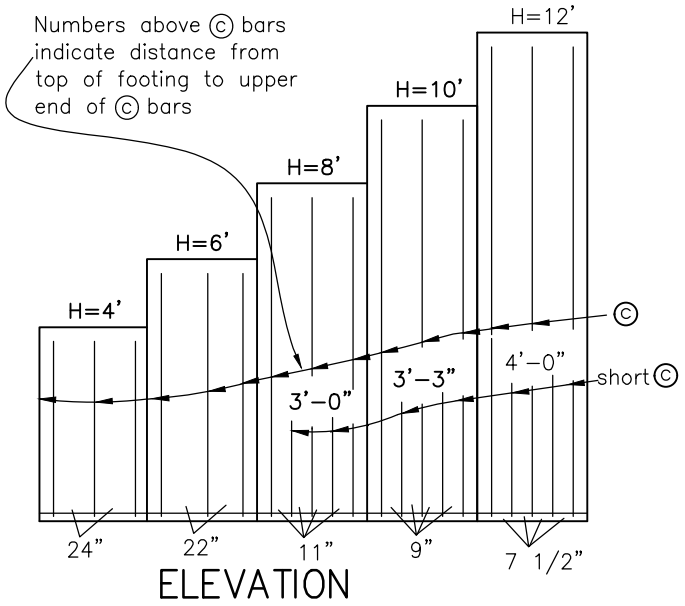
Case II – Earth pressure determined from Rankine's formula with 0 = 33°–42'.

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



DESIGN

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



ELEVATION

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

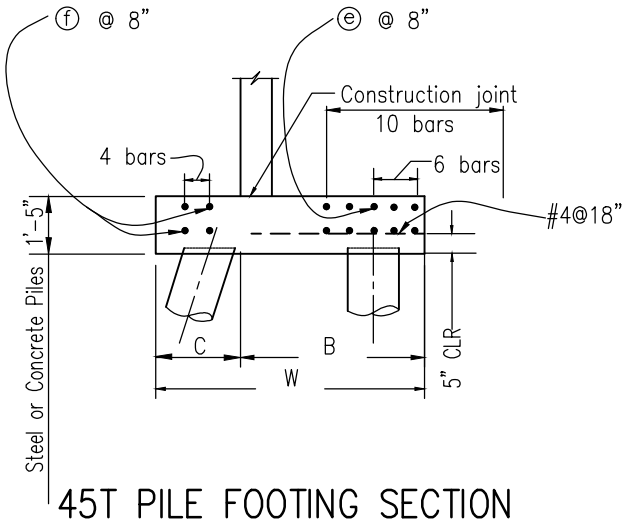
REINFORCED CONCRETE RETAINING WALL

TYPE 1A

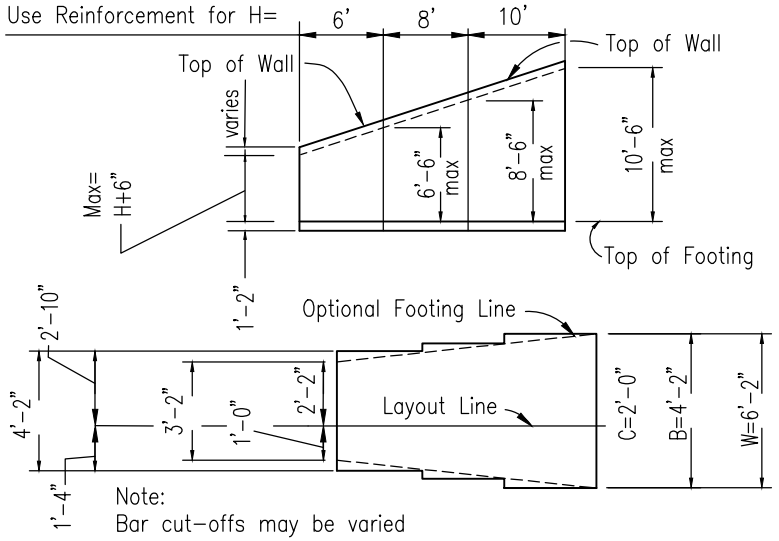
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

DRAWING NUMBER **C-12B**



45T PILE FOOTING SECTION



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

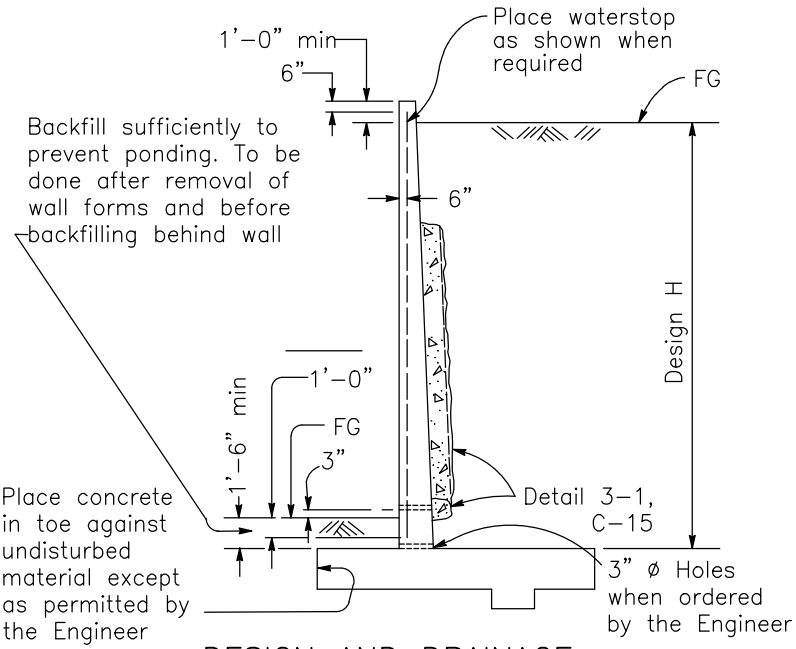
TYPICAL LAYOUT EXAMPLE

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

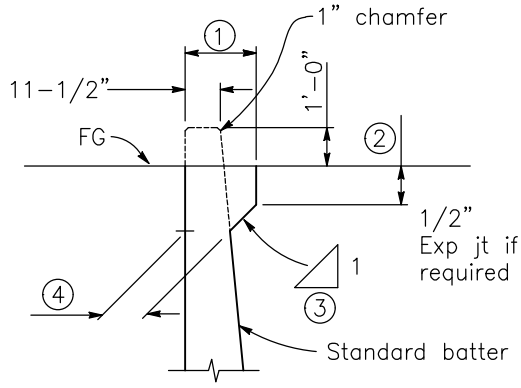
TABLE OF REINFORCING STEEL DIMENSIONS AND DATA

Design H		* 4'	6'	8'	10'	12'
W		3'-2"	4'-2"	5'-2"	6'-2"	7'-2"
C		1'-0"	1'-4"	1'-8"	2'-0"	2'-4"
B		2'-2"	2'-10"	3'-6"	4'-2"	4'-10"
ⓒ bars		#5@24"	#5@22"	#5@11"	#6@9"	#7@7-1/2"
ⓓ bars		#5@24"	#5@22"	#5@22"	#7@18"	#8@15
Total ⓔ bars		6-#6	6-#6	6-#6	10-#7	10-#7
Total ⓕ bars					4-#7	4-#7
Case I - Toe Press.		1590psf	1930psf	2240psf	2550psf	2840psf
Case II - Toe Press.		1060psf	1460psf	1860psf	2280psf	2700psf
Spread Footing	Steel lbs/ft	15lb	21lb	27lb	46lb	70lb
	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'.



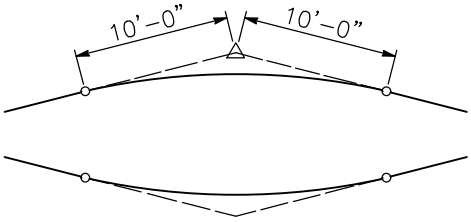
DESIGN AND DRAINAGE



Dimensions ①, ② and ③ to be as shown elsewhere in the project plans

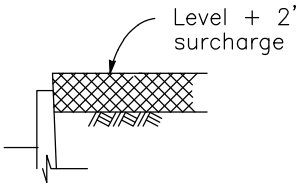
④ Stem width at base of haunch to be determined as shown

STEM WIDTH AT BASE OF HAUNCH

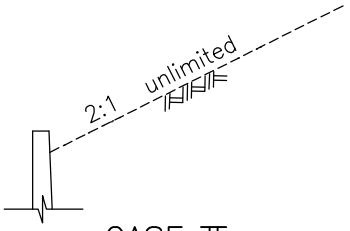


20' VC AT TOP OF WALL SLOPE CHANGE

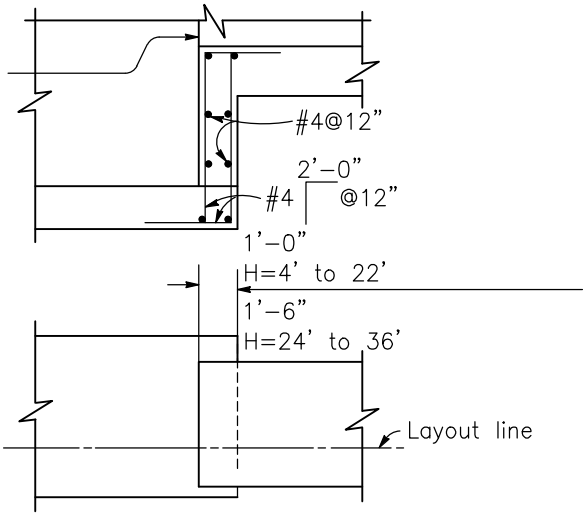
Where shown on the plans



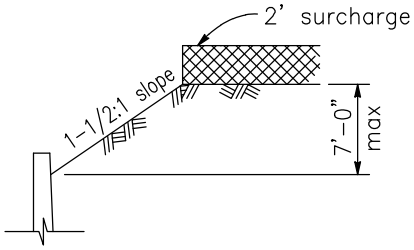
CASE I



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

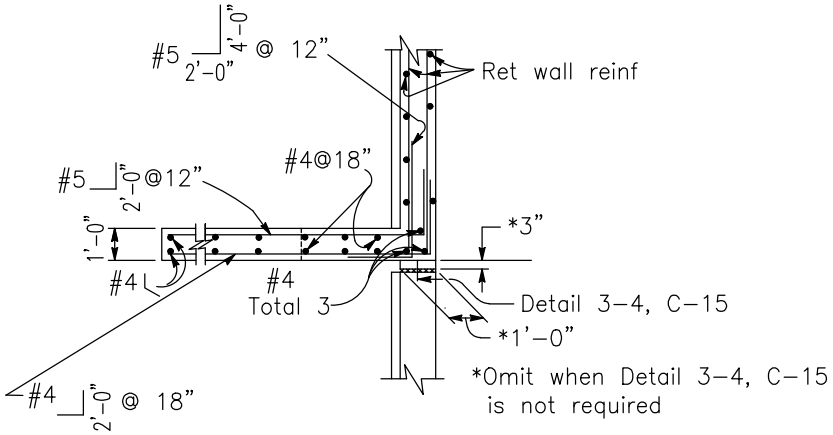
REINFORCED CONCRETE RETAINING WALL DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

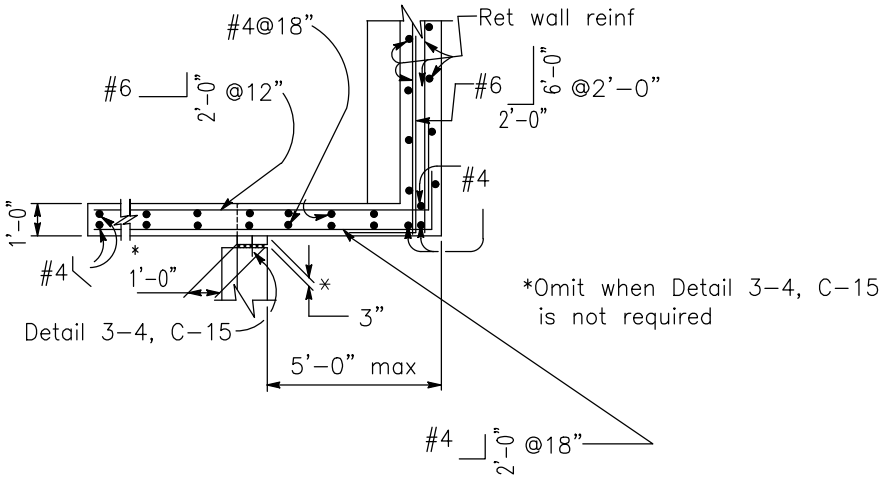
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **C-13A**



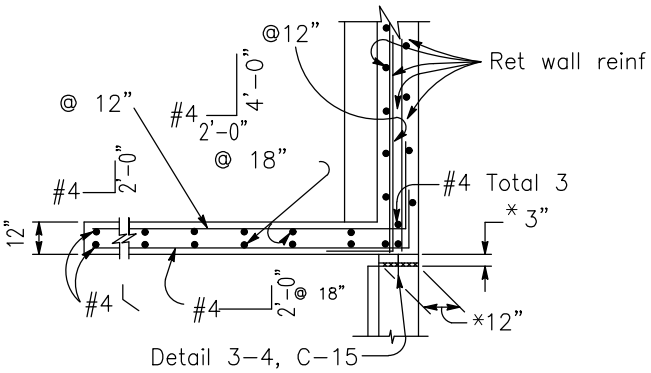
PLAN

(For return wall type ''A'')



PLAN

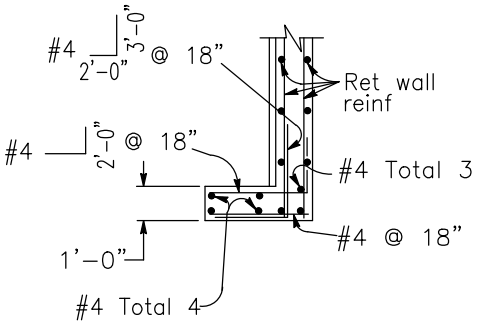
(For return wall type ''B'')



* 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

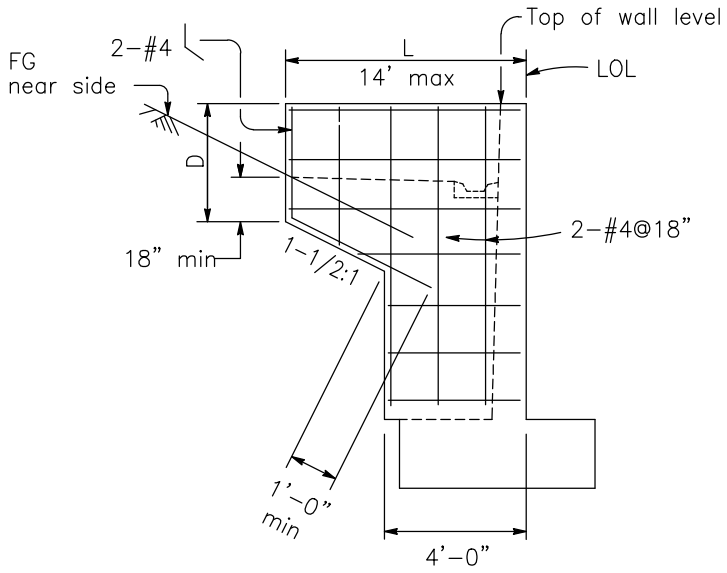
REINFORCED CONCRETE RETAINING WALL DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

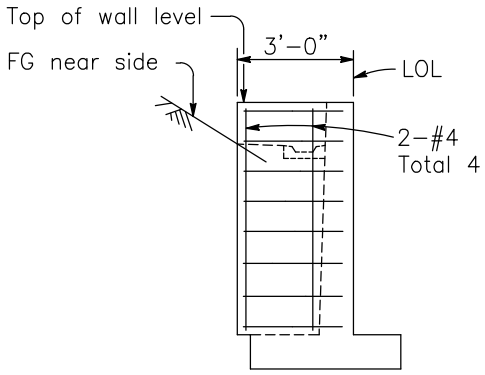
DRAWING NUMBER **C-13B**



ELEVATION

RETURN WALL TYPE A

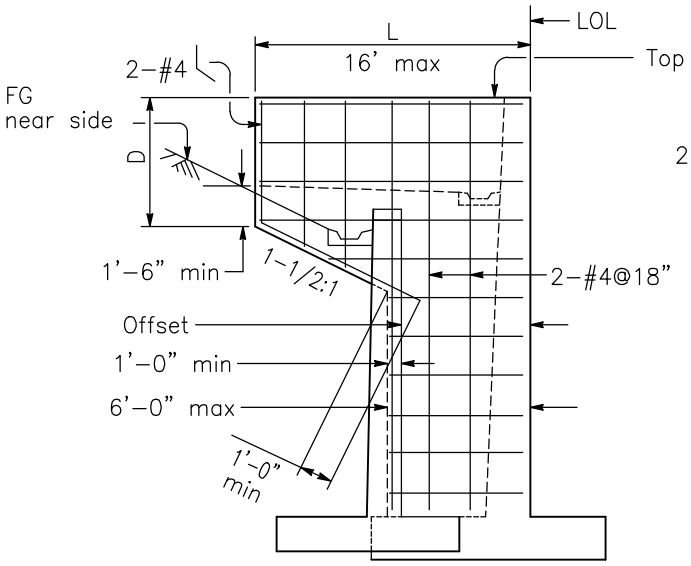
Use where H=8' or less



ELEVATION

RETURN WALL TYPE D

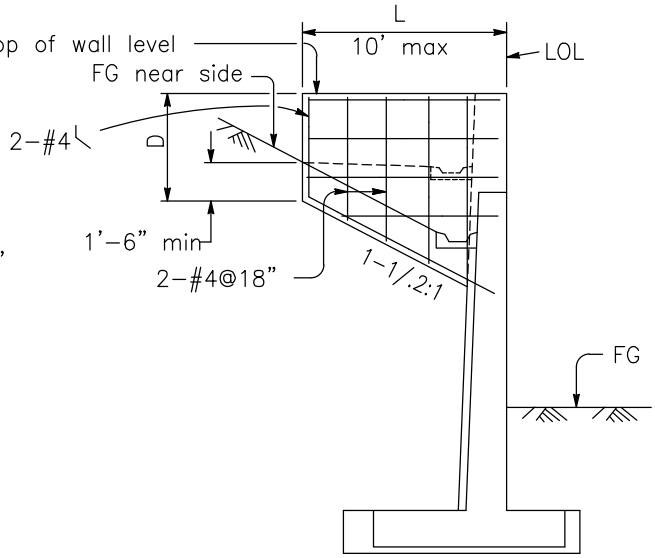
Use where H=6' or less



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

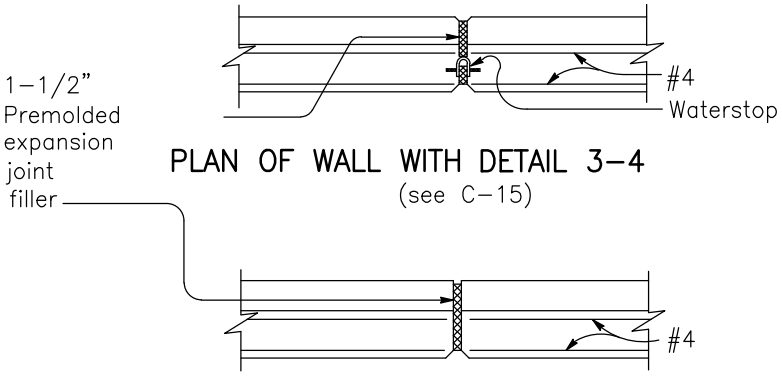
REINFORCED CONCRETE RETAINING WALL DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M Stanton 12/17/2015

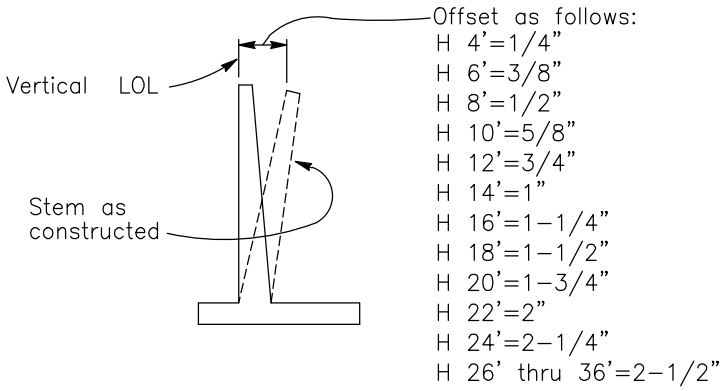
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **C-13C**



PLAN OF WALL WITH DETAIL 3–4
(see C–15)

PLAN OF WALL WITH EXPANSION JOINT ONLY



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:

fc = 1300 psi f'c = 3250 psi fs = 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 ø=33°–42'.

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

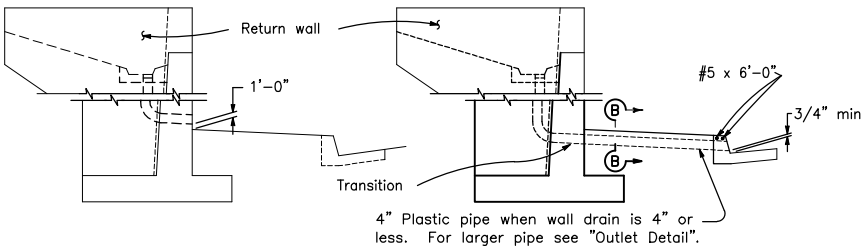
SAN DIEGO REGIONAL STANDARD DRAWING

REINFORCED CONCRETE RETAINING WALL DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

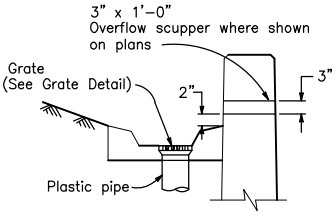
M Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **C-13D**

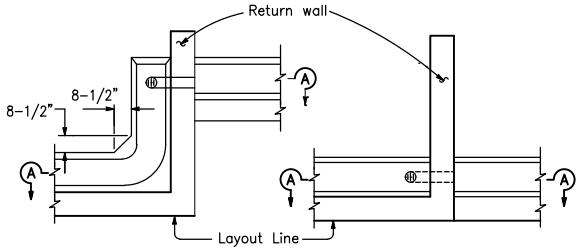


RETAINING WALL, FACE OF WALL OUTLET

RETAINING WALL, GUTTER OUTLET



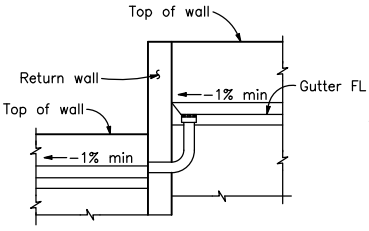
WALL DRAIN DETAIL



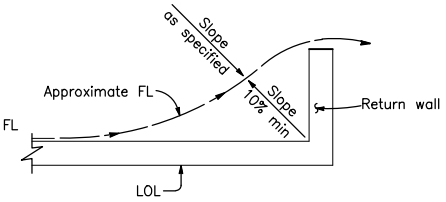
PLAN–OFFSET WALL

PLAN–CONTINUOUS WALL

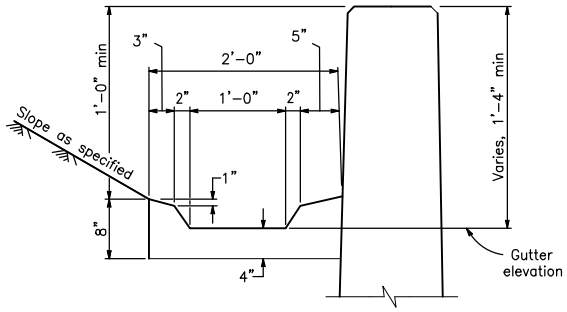
DRAIN THROUGH RETURN WALL



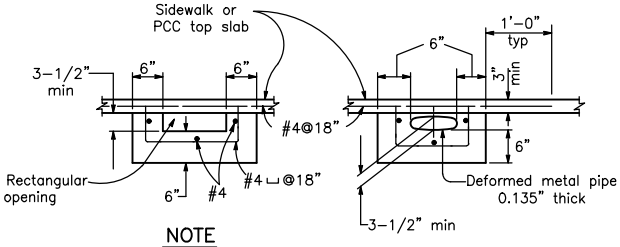
SECTION A–A



WALL DRAINAGE WHERE GUTTER NOT REQUIRED



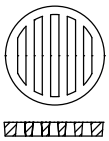
TYPICAL GUTTER DETAIL



NOTE

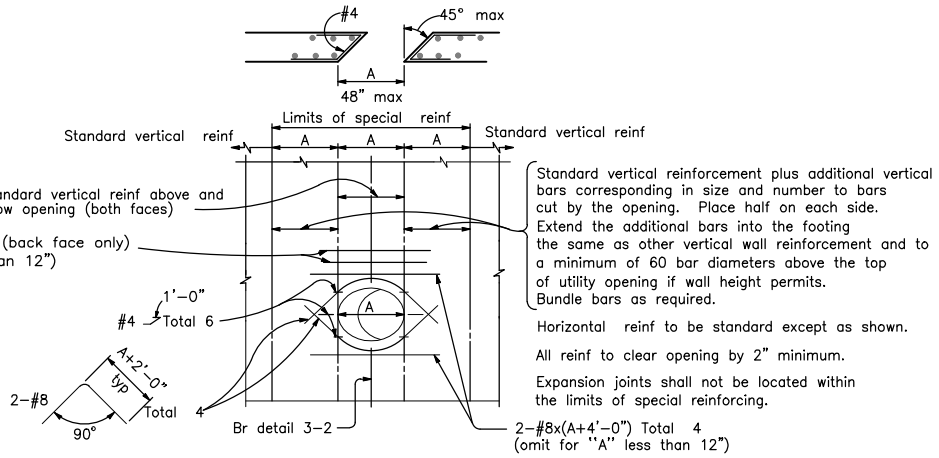
Area of opening to be not less than that of pipe from wall gutter. Make opening transition in wall. Edge opening in curb face to 3/4" minimum radius.

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

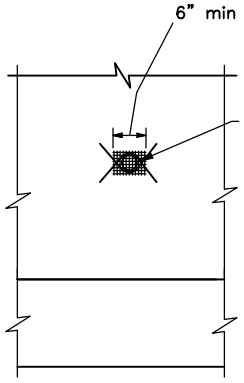
REINFORCED CONCRETE RETAINING WALL DETAILS No. 2

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

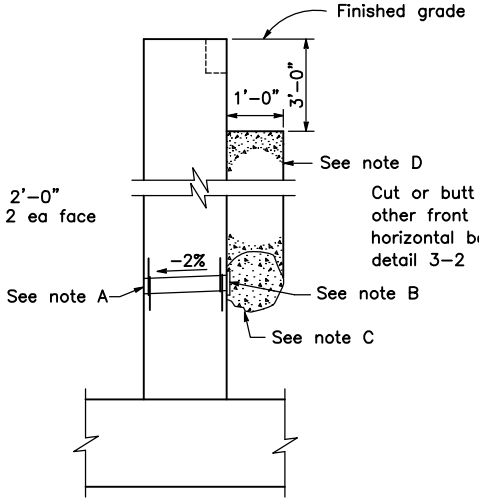
M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **C-14**

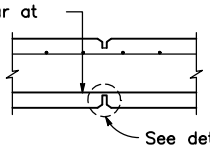


ELEVATION



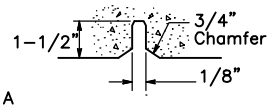
SECTION

WEEP HOLE AND PERVIOUS BACKFILL
DETAIL 3-1



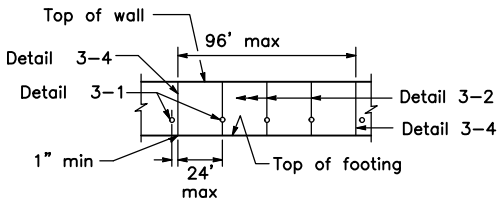
SECTION

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



DETAIL A

WEAKENED PLANES
DETAIL 3-2



WALL EXPANSION JOINTS
AND WEAKENED PLANES
DETAIL 3-3

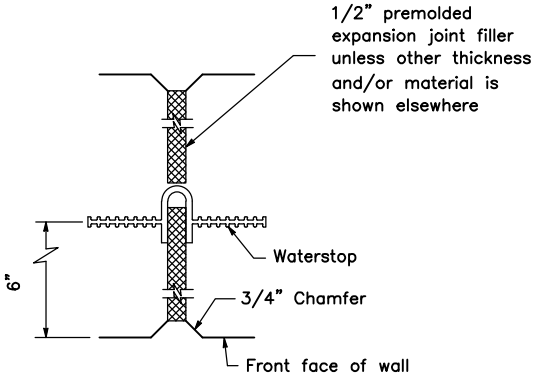
NOTES

A. 4" diameter drain @ 25' max center to center (9' c-c for Type 3 and 9'-3" c-c for Type 4 Retaining Walls). For walls adjacent to sidewalks or curbs, provide 4" cast iron or asbestos cement pipe under the sidewalk to discharge thru curb face. Exposed wall drains shall be located 3" ± above finished grade.

B. 6" square aluminum or galvanized steel wire 4 mesh hardware cloth. (Min wire diameter 0.03") Anchor firmly to backface.

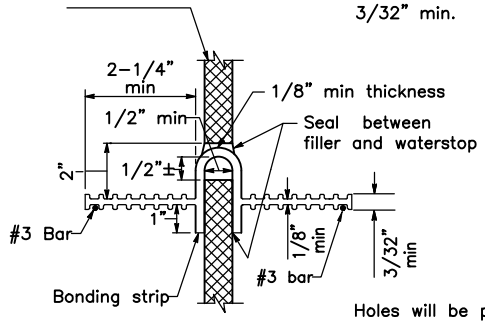
C. One cubic foot pervious backfill material in a burlap sack, securely tied.

D. Pervious backfill material continuous behind retaining wall.



WALL EXPANSION JOINT
DETAIL 3-4

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



WATERSTOP
DETAIL 3-6

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

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
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

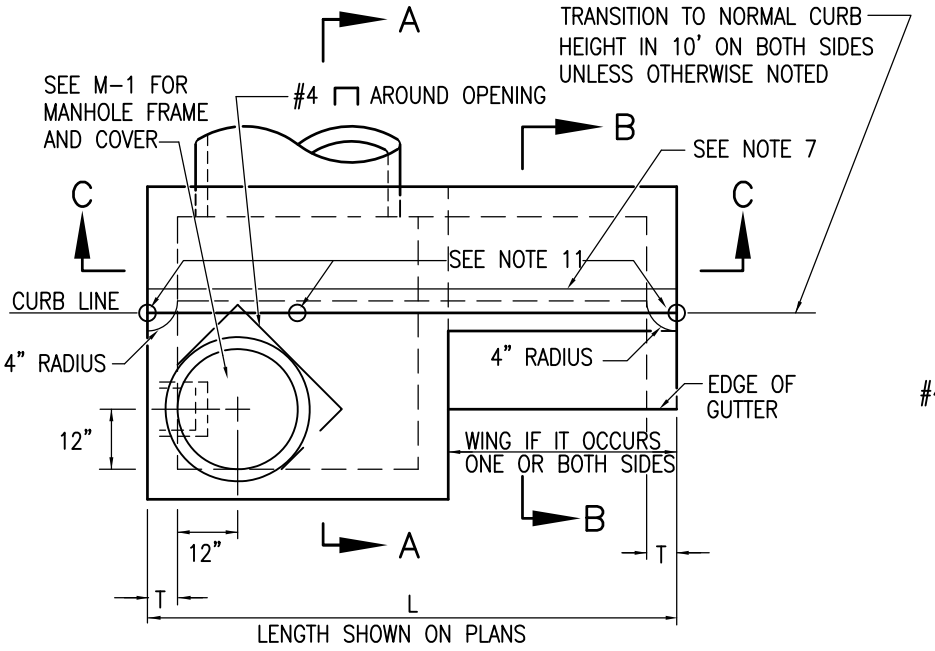
REINFORCED CONCRETE RETAINING WALL DETAILS No. 3

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

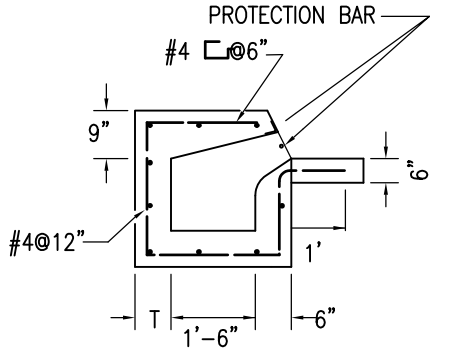
12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **C-15**

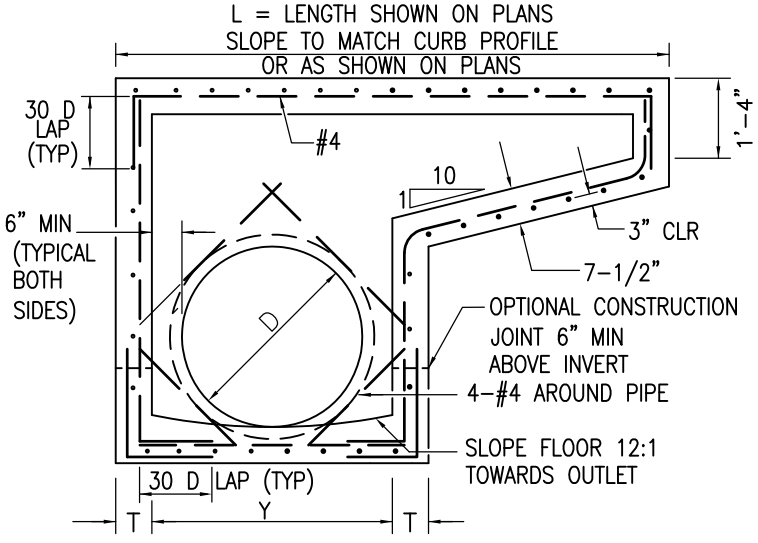
DRAINAGE SYSTEMS



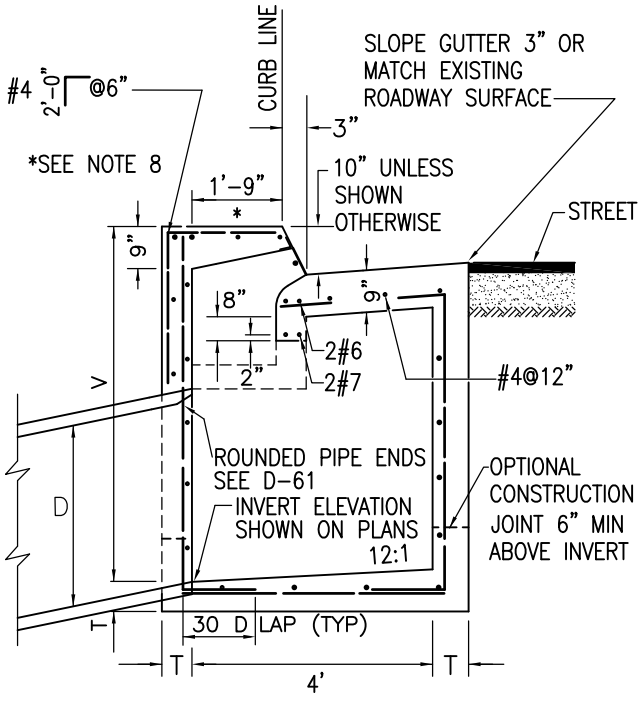
PLAN



SECTION B-B



SECTION C-C

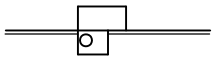


SECTION A-A

NOTES

1. SEE D-11A, D-11B, & D-12 FOR ADDITIONAL NOTES AND DETAILS.
2. TYPES ARE 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 "○" SYMBOL.

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

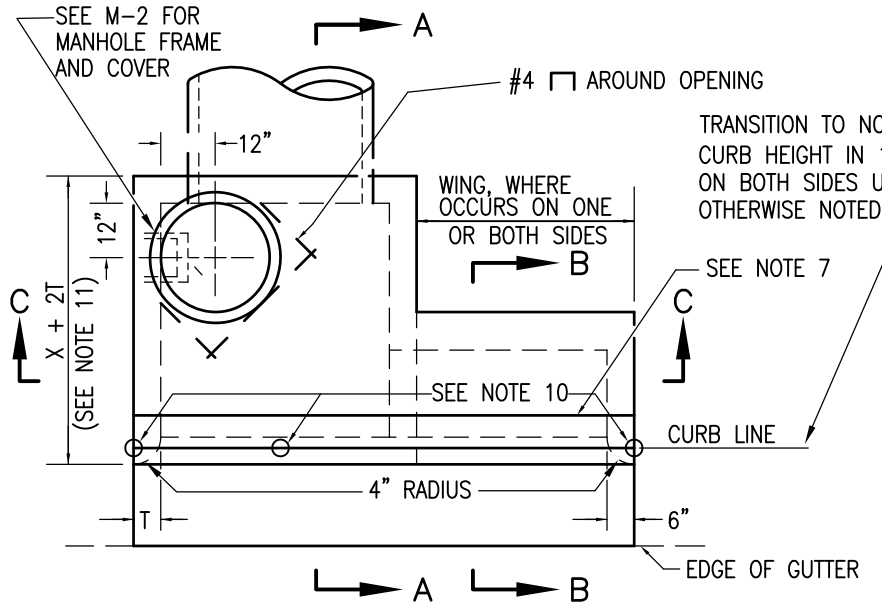
SAN DIEGO REGIONAL STANDARD DRAWING

CURB INLET - TYPE A

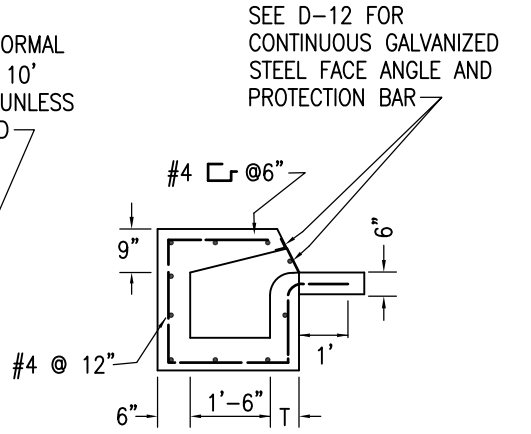
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

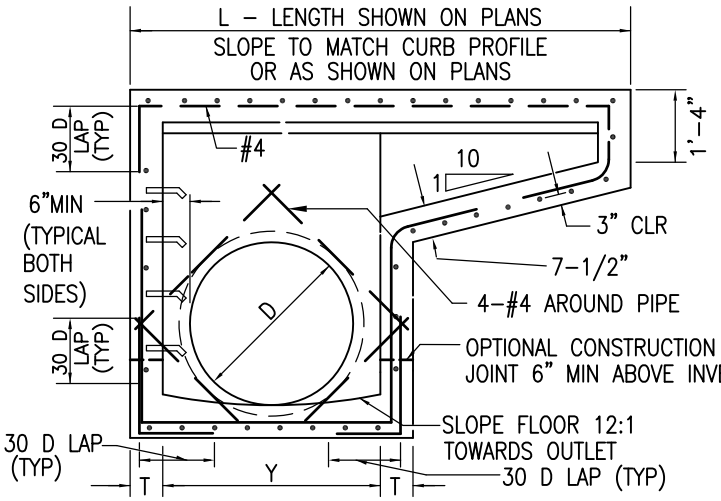
DRAWING NUMBER **D-01**



PLAN

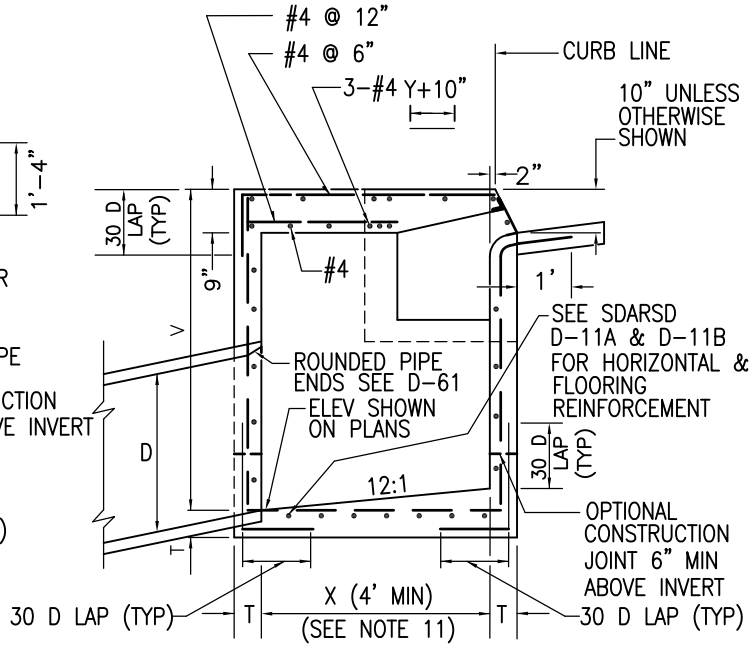


SECTION B-B



Y IS DETERMINED BY PIPE SIZE - 4' MIN, 8' MAX

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 "○" SYMBOL.
11. IF REQUIRED BY LOCAL AGENCY, ENLARGE CURB INLET TOP TO WIDTH OF ADJACENT SIDEWALK (X + T 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
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

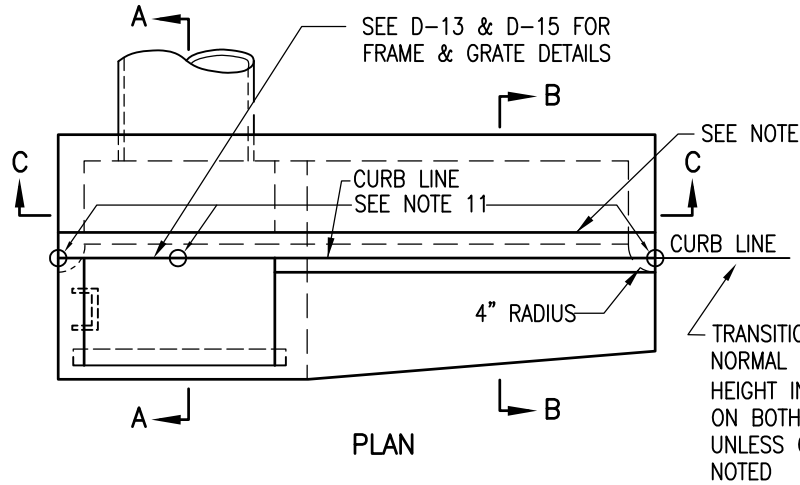
CURB INLET - TYPE B

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

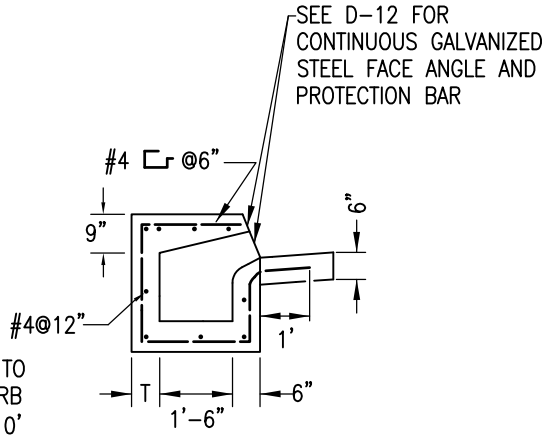
T. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

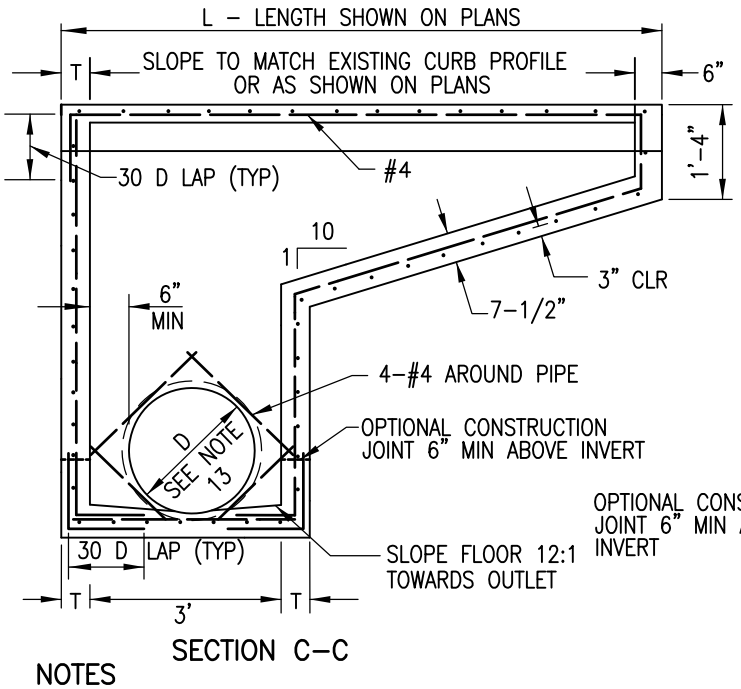
DRAWING NUMBER **D-02**



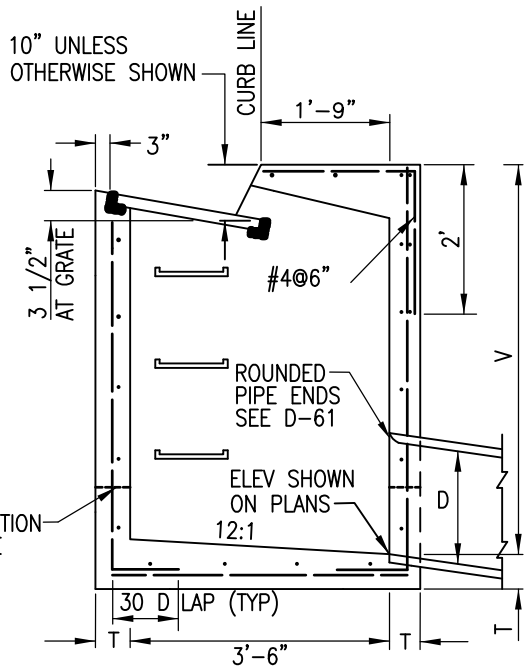
PLAN



SECTION B-B



SECTION C-C

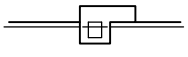


SECTION A-A

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. PROVICE 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 REINFORCINGAND 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 "○" SYMBOL.
13. DIAMETER "D" SHALL BE 24" MAXIMUM; FOR LARGER DIAMETER PIPES THIS DRAWING MUST BE MODIFIED.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Reformatted		T. Stanton	04/06
Replaced D-3		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

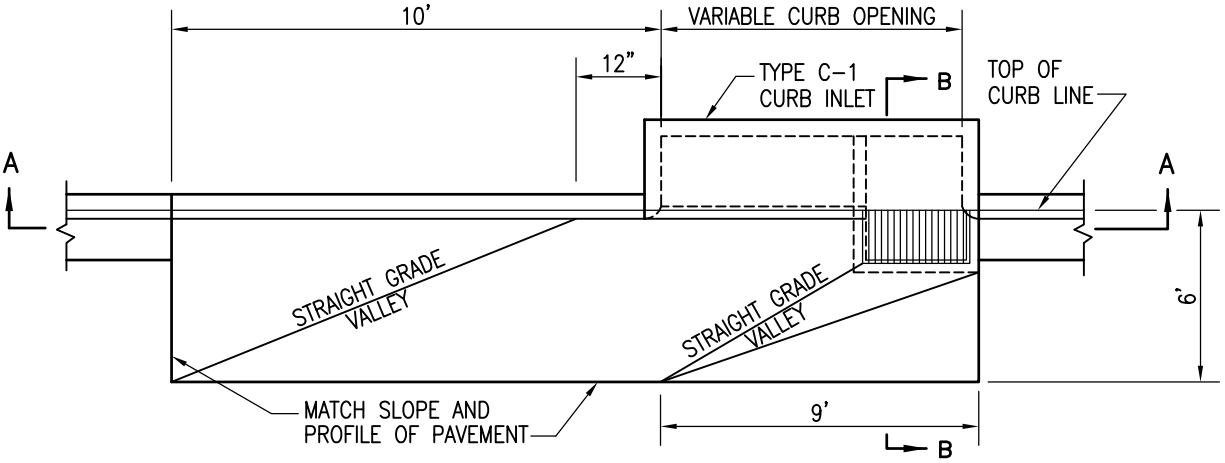
SAN DIEGO REGIONAL STANDARD DRAWING

CURB INLET - TYPE C

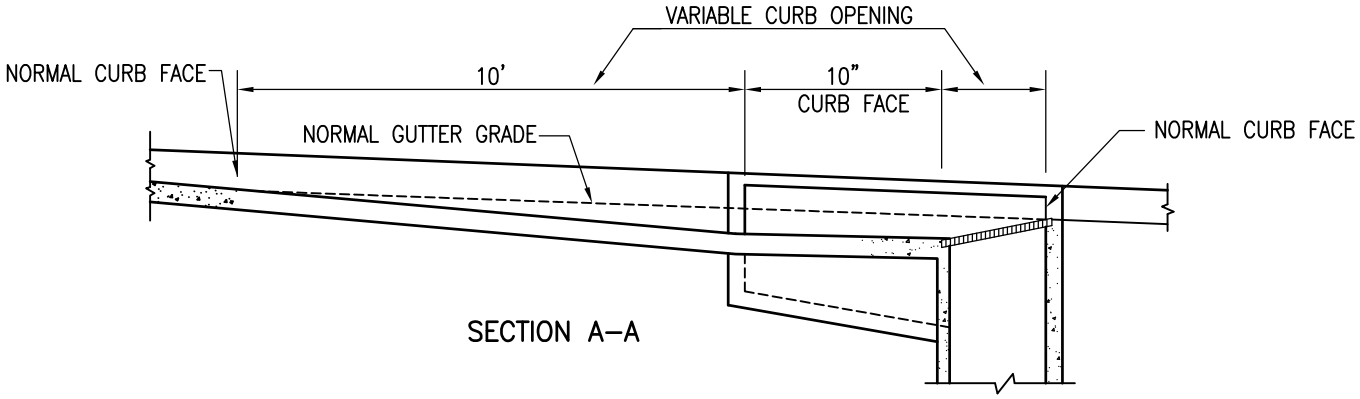
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/11/2015
Chairperson R.C.E. 19246 Date

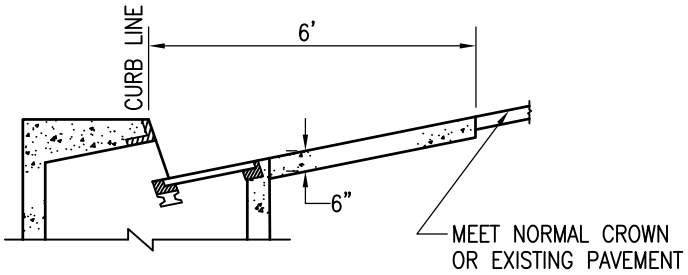
DRAWING NUMBER **D-03A**



PLAN



SECTION A–A

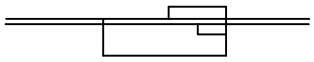


SECTION B–B

NOTES

1. CURB AND APRON TO BE MONOLITTHIC 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
Reformatted		T. Stanton	04/06
Replaced D–20		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

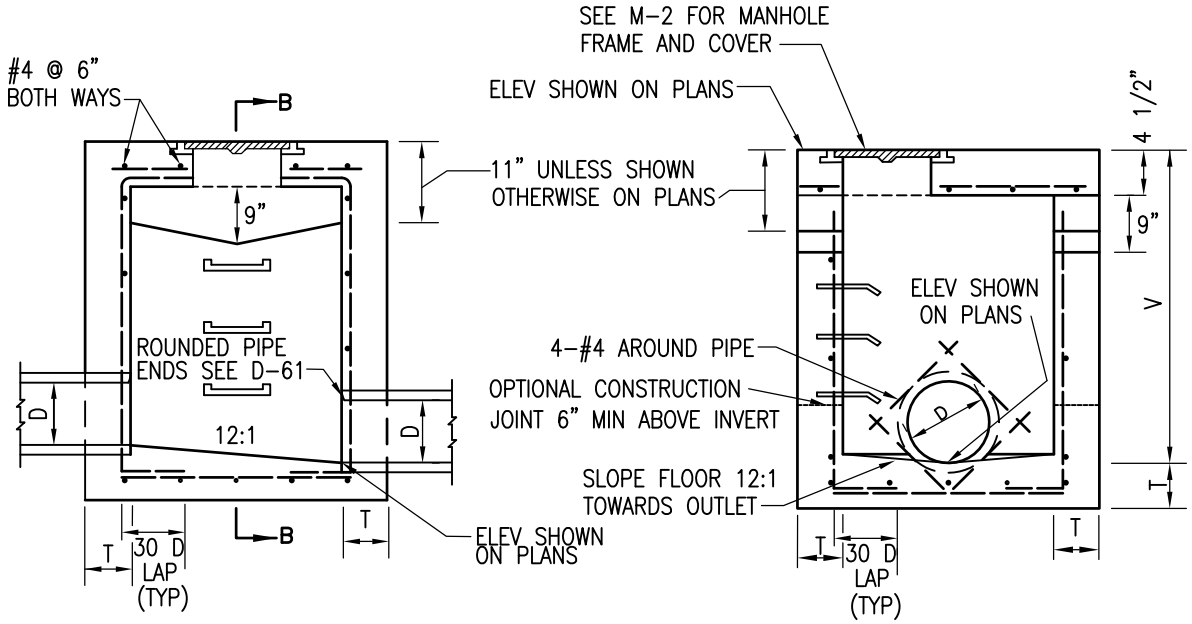
CONCRETE APRON FOR TYPE C CURB INLET

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

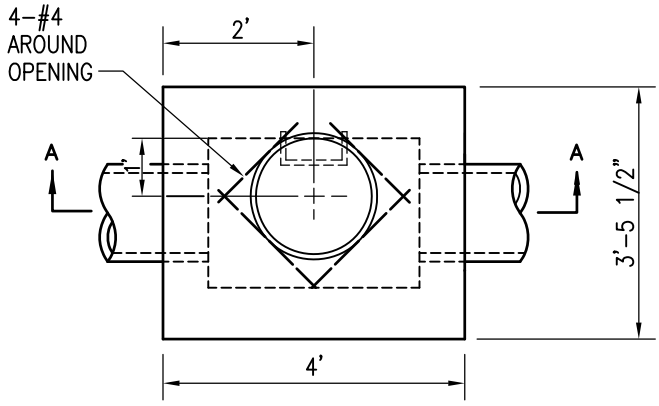
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-03B**



SECTION A–A

SECTION B–B

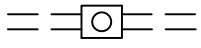


PLAN

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
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

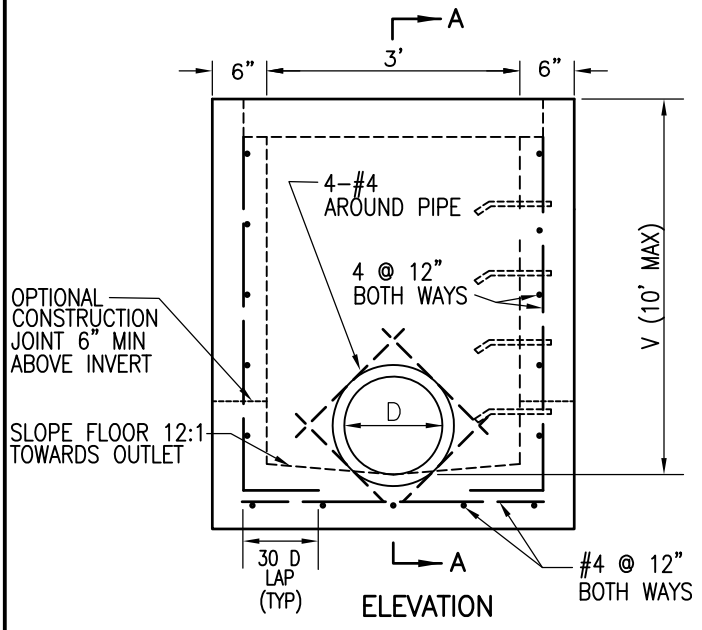
CATCH BASIN - TYPE F

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

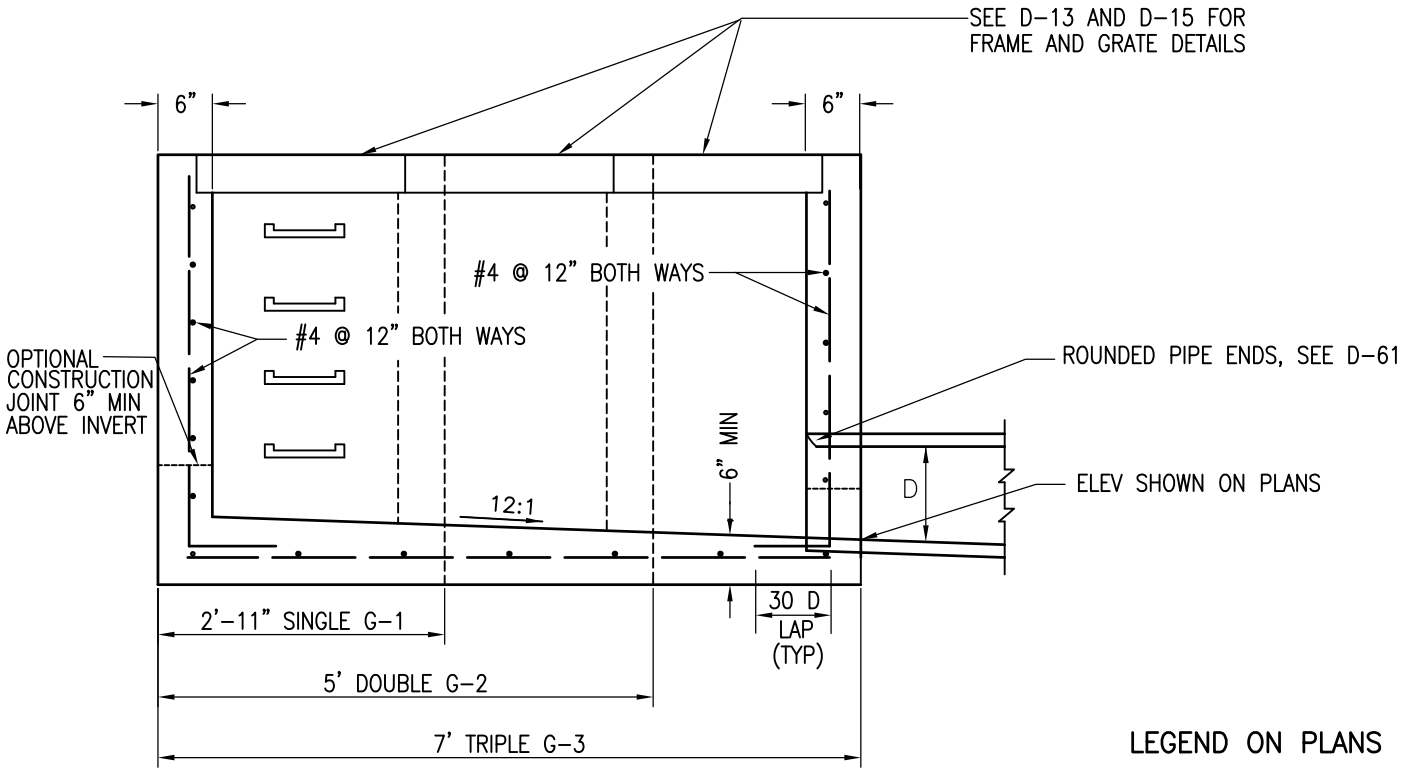
DRAWING NUMBER **D-07**



ELEVATION

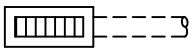
NOTES

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. ESPOSED 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.



SECTION A–A

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

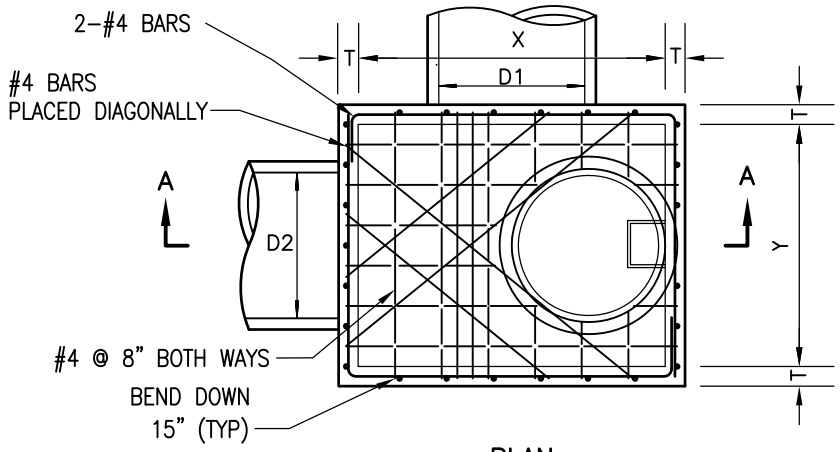
CATCH BASIN - TYPE G

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

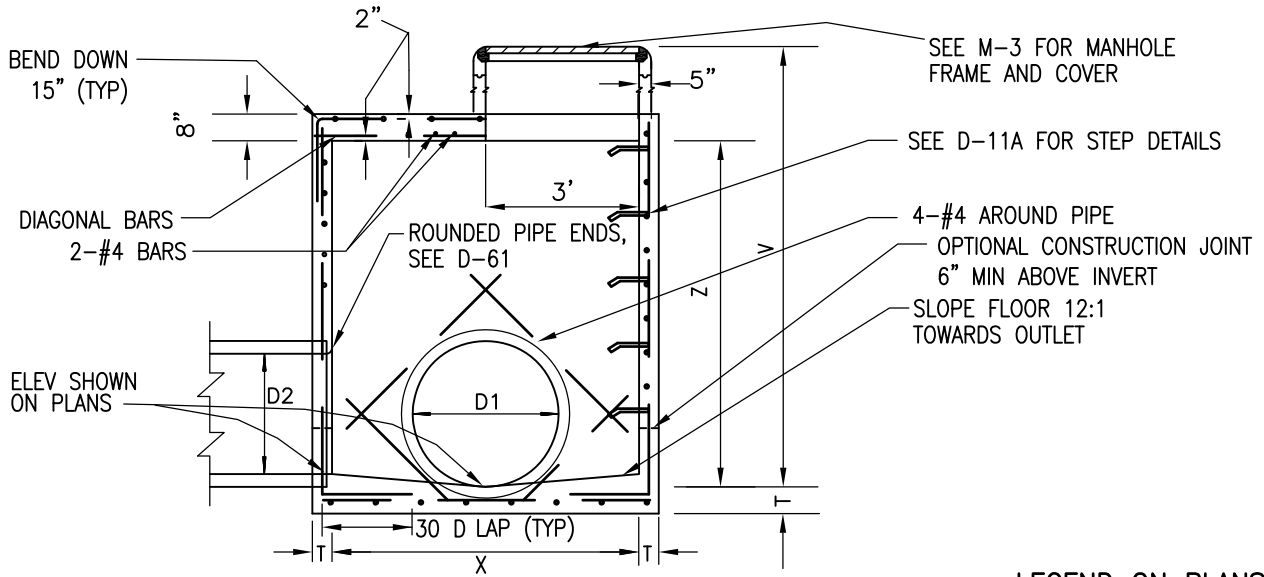
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-08**



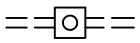
PLAN

TYPE	PIPE DIAMETER (D1)	X	Y (SEE NOTE 8)	Z
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
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

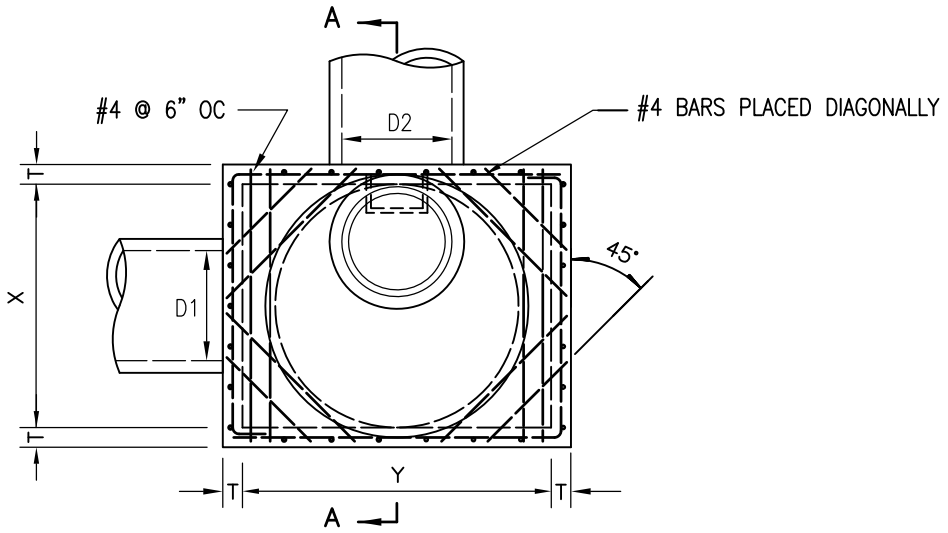
STORM DRAIN CLEANOUT - TYPE A

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015

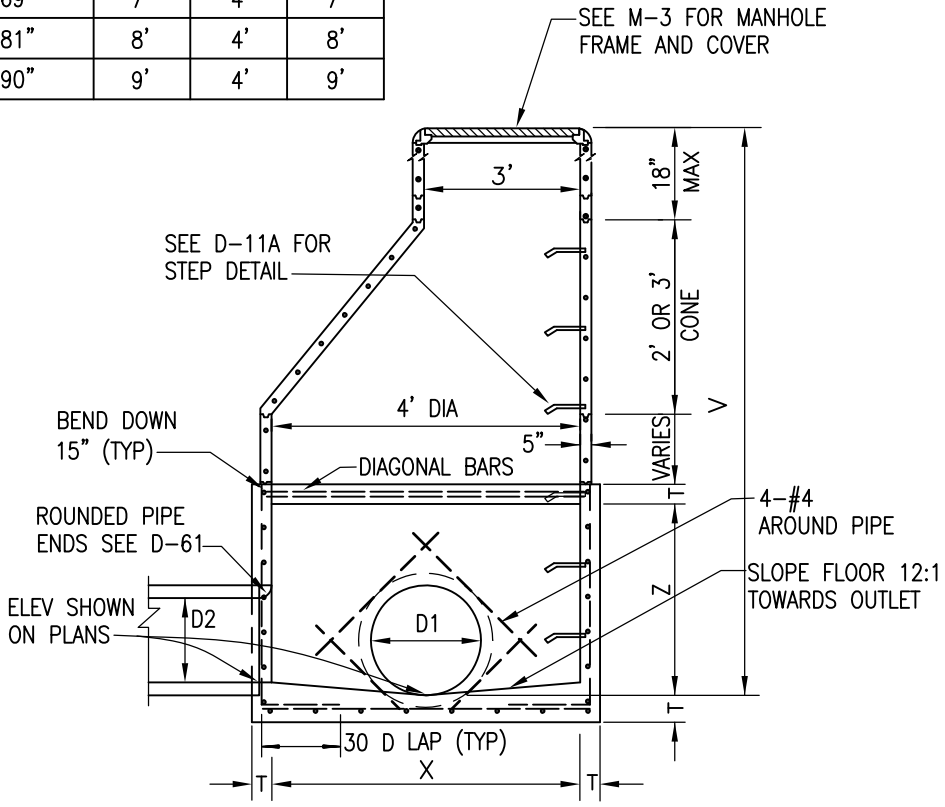
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-09**



PLAN

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'



SECTION A-A

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
Add Metric		T. Stanton	03/03
Reformatted		T. Stanton	04/06
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11

SAN DIEGO REGIONAL STANDARD DRAWING

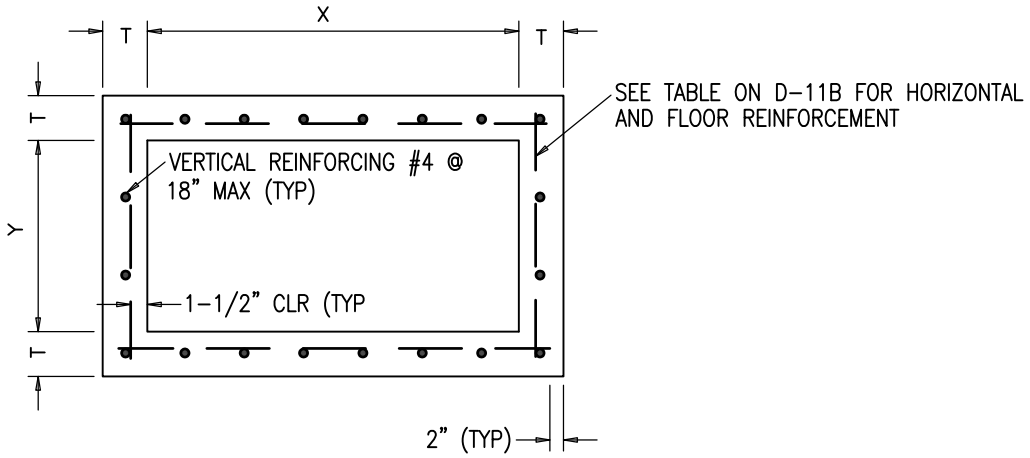
STORM DRAIN CLEANOUT - TYPE B

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

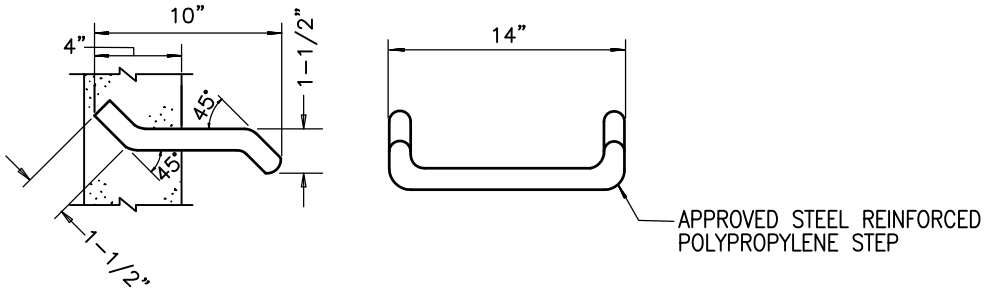
12/17/2015

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
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

INLETS AND CLEANOUTS NOTES AND DETAILS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

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"	#5 @ 8"

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

SAN DIEGO REGIONAL STANDARD DRAWING

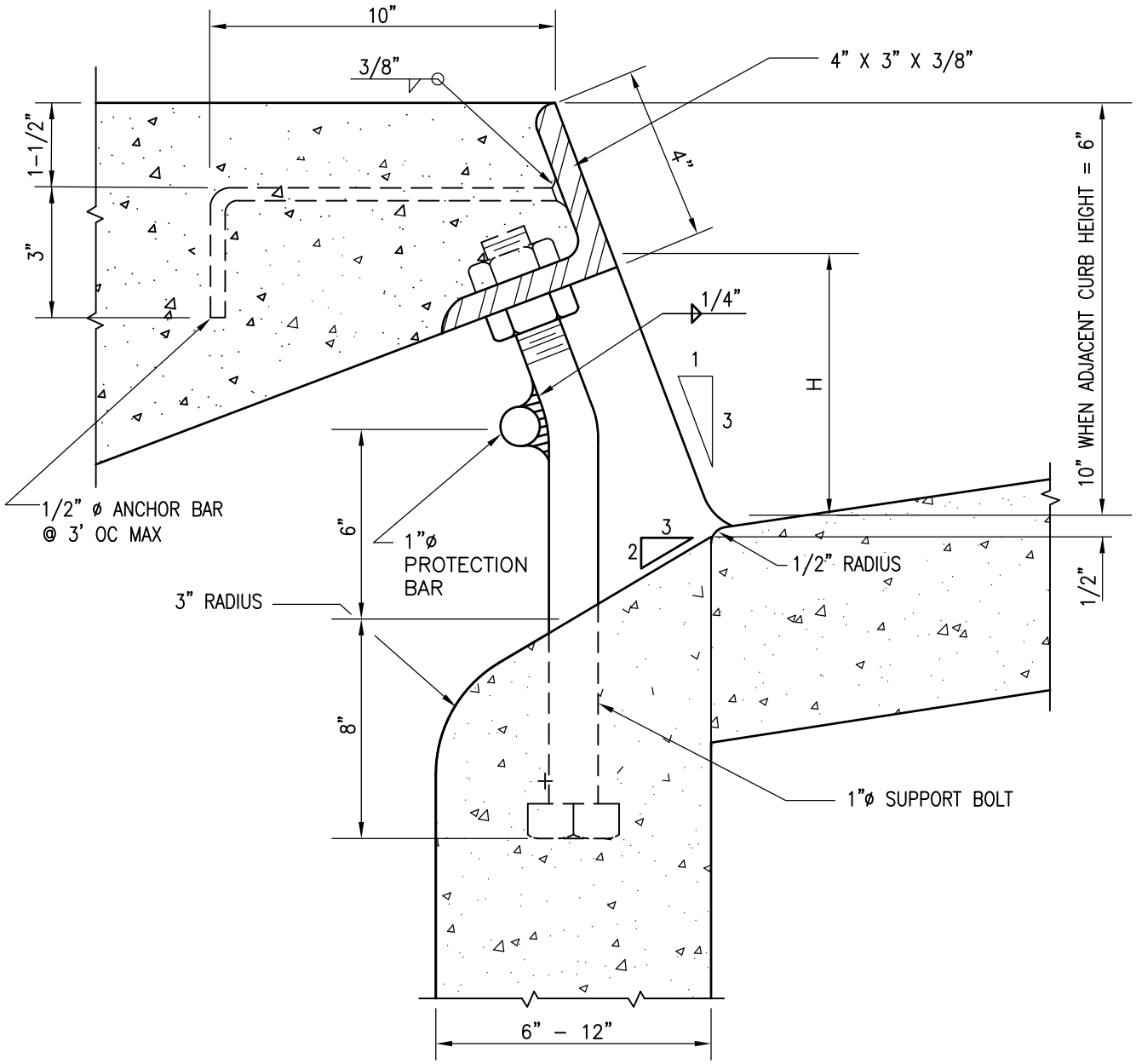
INLETS AND CLEANOUTS NOTES AND DETAILS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-11B**



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
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

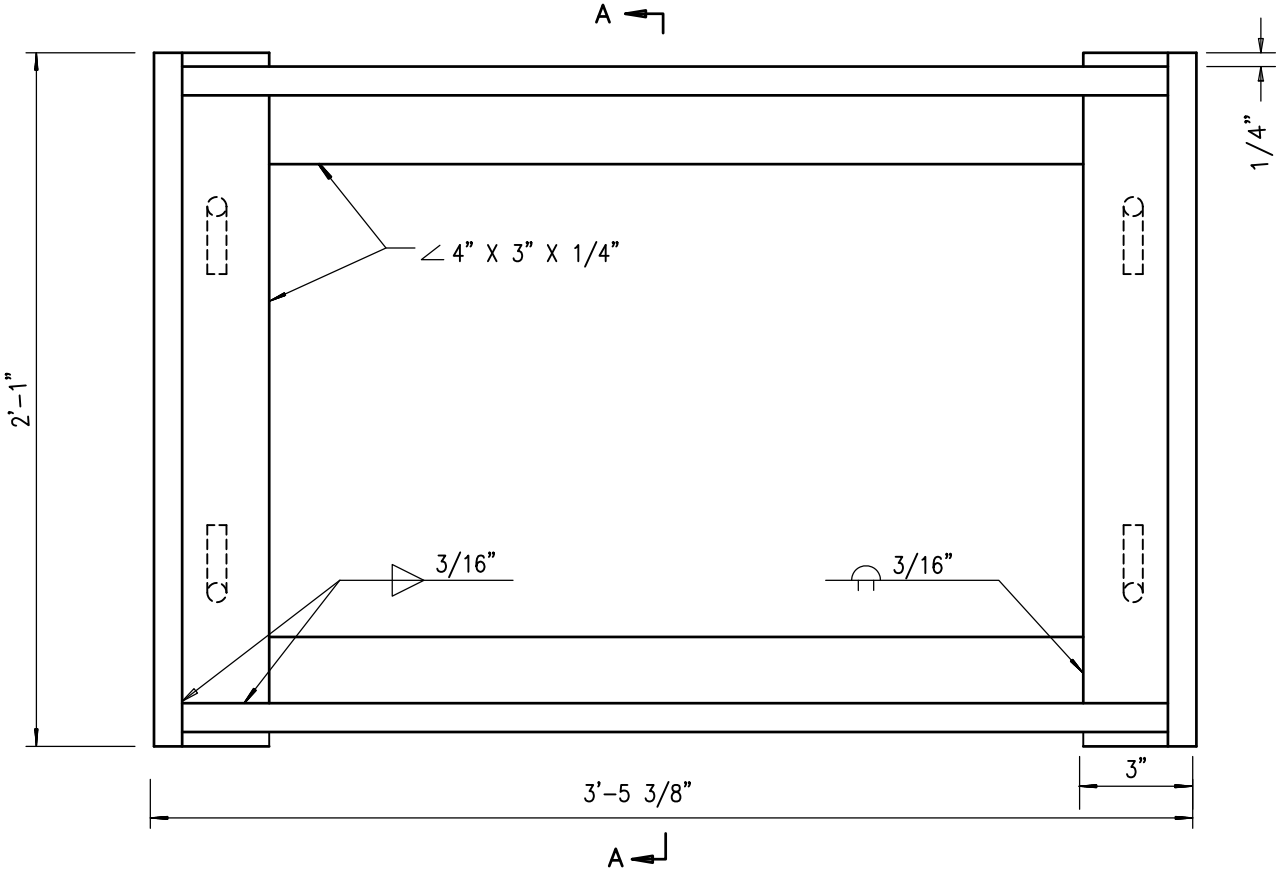
CURB INLET OPENING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

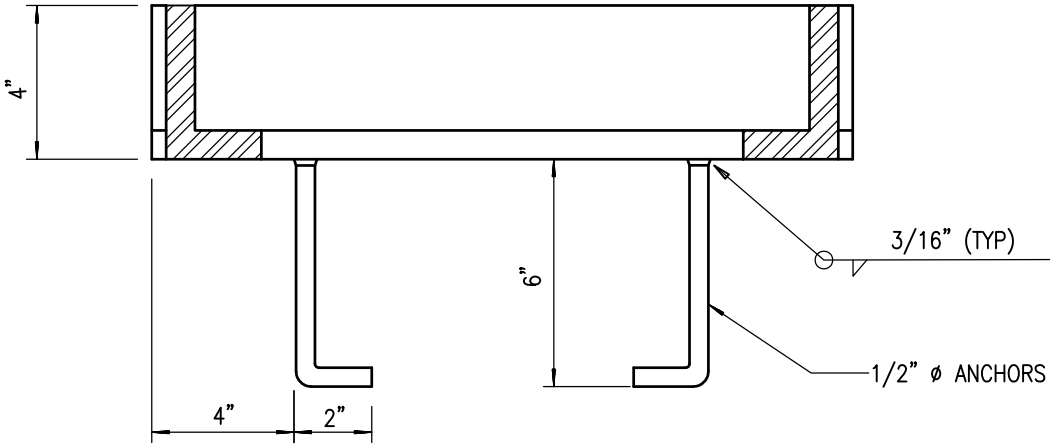
J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-12**



PLAN



SECTION A–A

NOTE
HOT–DIP GALVANIZE ALL PARTS AFTER FABRICATION.

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

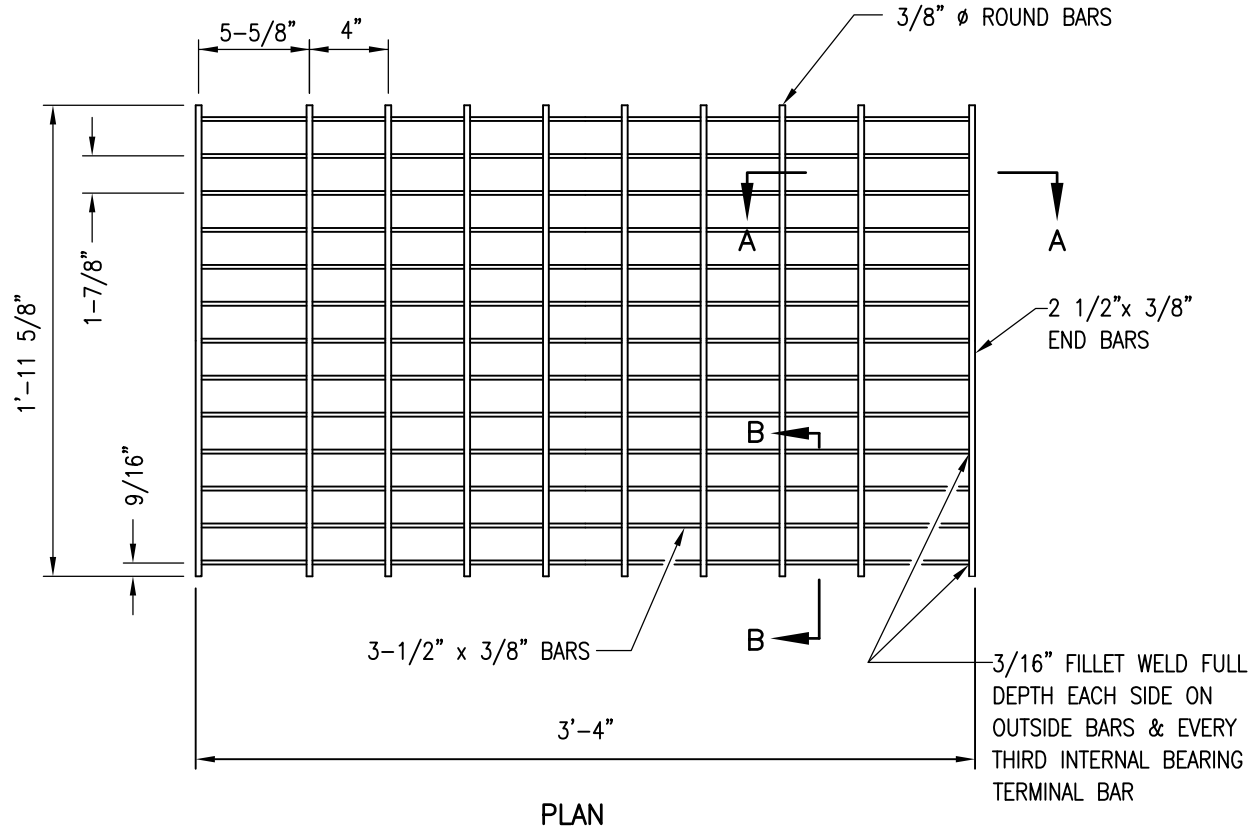
SAN DIEGO REGIONAL STANDARD DRAWING

WELDED STEEL GRATE FRAME

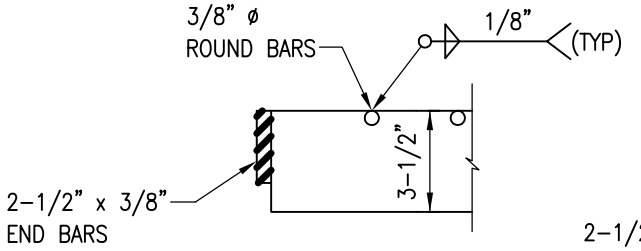
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

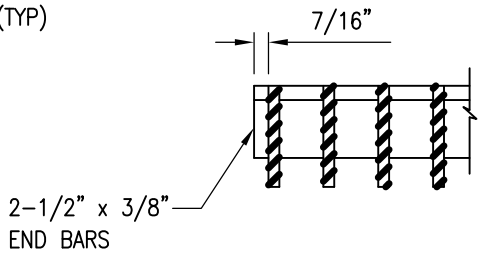
DRAWING NUMBER **D-13**



PLAN



SECTION A–A



SECTION B–B

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
Reformatted		T. Stanton	04/06
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

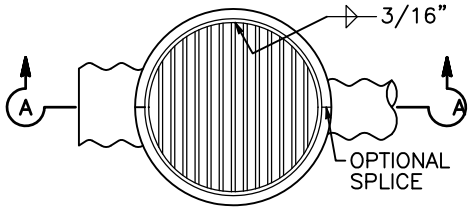
SAN DIEGO REGIONAL STANDARD DRAWING

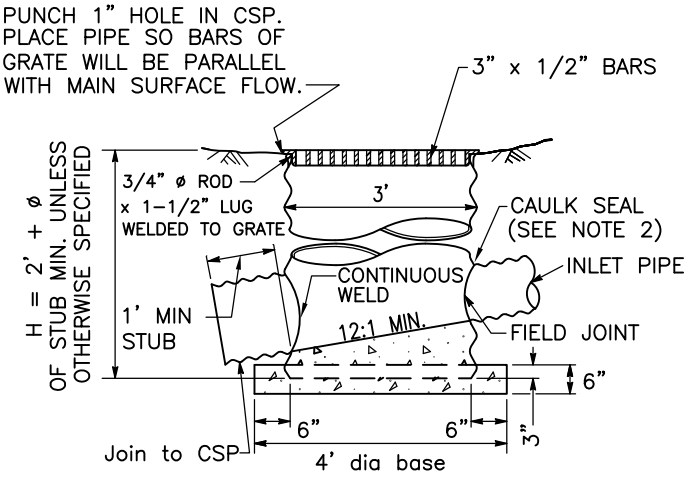
DRAINAGE STRUCTURE GRATE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

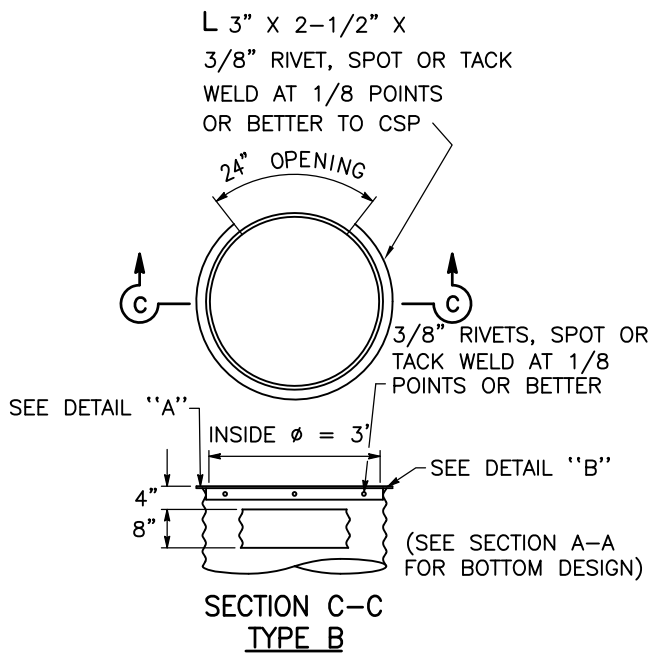
J.M. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-15**

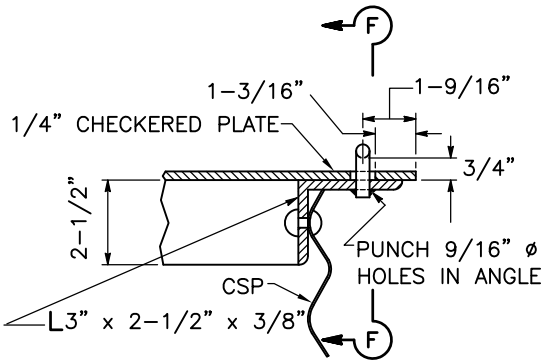




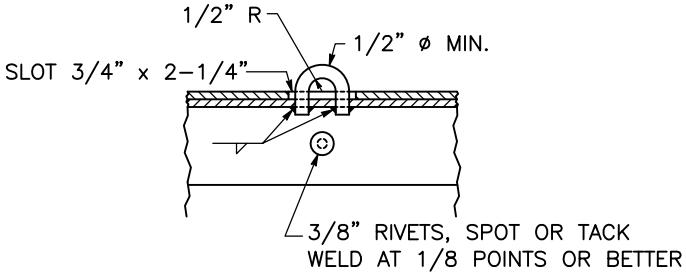
SECTION A–A
TYPE A



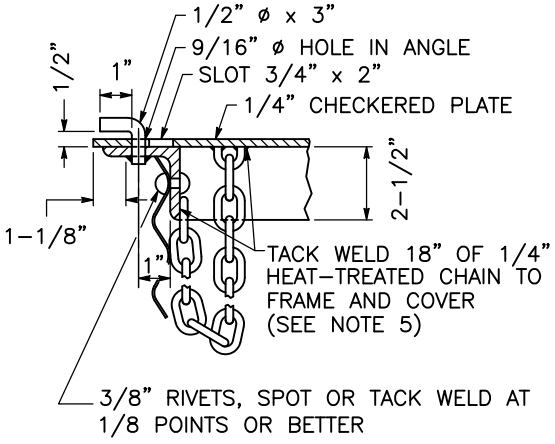
SECTION C–C
TYPE B



DETAIL "B"



SECTION F–F



DETAIL "A"

NOTES

1. ALL COMPONENTS SHALL BE GALVANIZED.
2. INLET AND OUTLET PIPES SHALL BE SET AT FACTORY AND POSITIONED AS SHOWN ON PLANS.
3. SEE D–17B FOR LADDER AND STEP DETAILS.
4. SEE D–17A FOR ADDITIONAL GRATE DETAILS.
5. GRATE TO BE PROVIDED WHEN SPECIFIED.
6. GRATE DETAIL SHALL BE AS SHOWN ON D–17A UNLESS OTHERWISE APPROVED BY AGENCY.

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

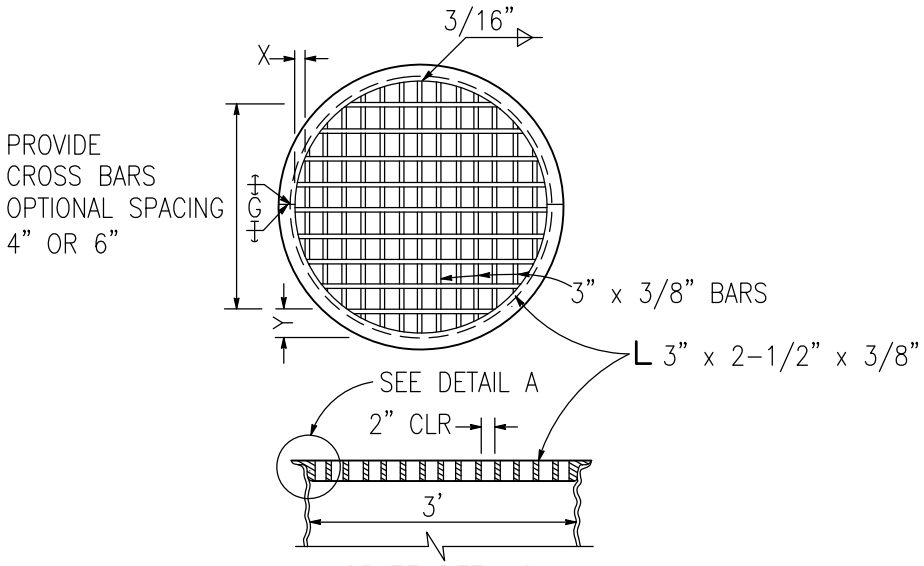
SAN DIEGO REGIONAL STANDARD DRAWING

CORRUGATED STEEL PIPE INLETS TYPES A AND B

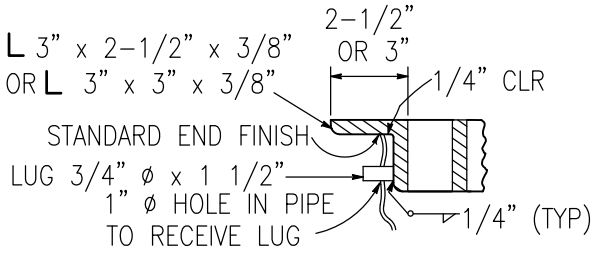
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

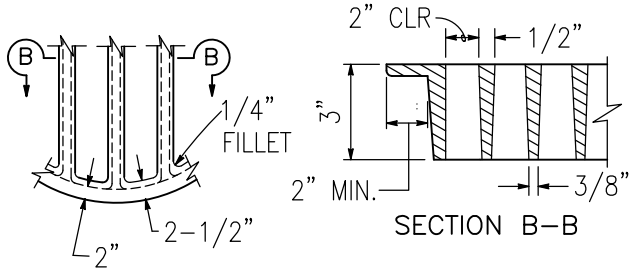
DRAWING NUMBER **D-16**



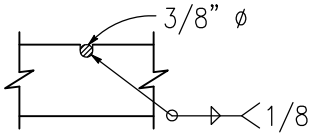
GRATE DETAILS



DETAIL A

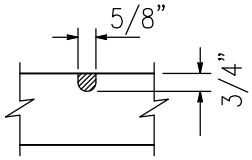


ALTERNATIVE CAST NODULAR IRON GRATE
OR CAST STEEL GRATE



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

CROSS BAR DETAIL TYPE
WELDED STEEL GRATE



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

GRATE BAR SPACING TABLE

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

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

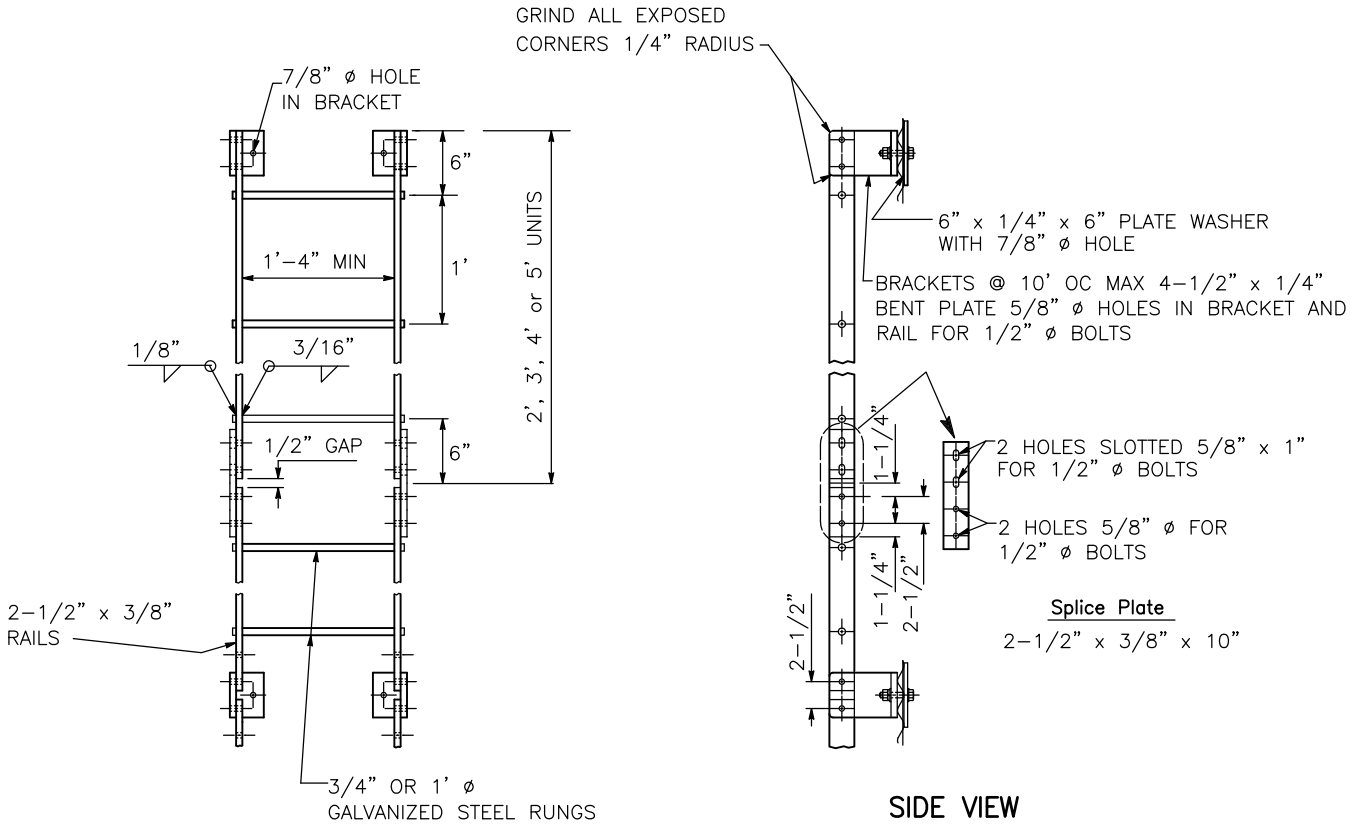
SAN DIEGO REGIONAL STANDARD DRAWING

CORRUGATED STEEL PIPE INLETS, DETAILS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

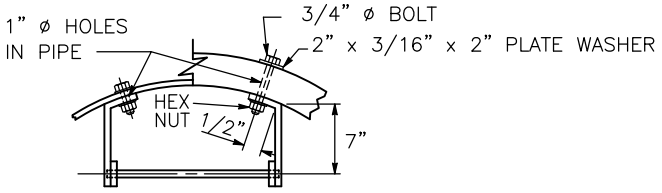
T. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-17A**

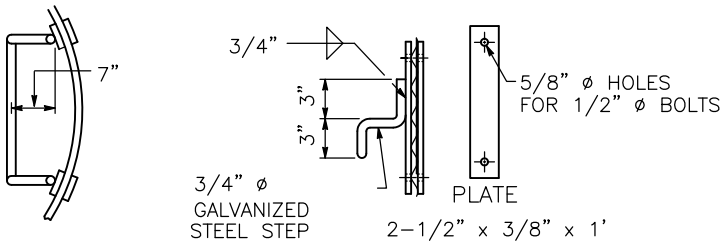


FRONT VIEW

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
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

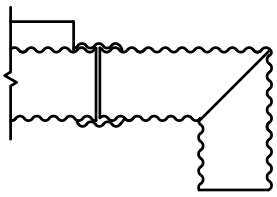
CORRUGATED STEEL PIPE INLETS, DETAILS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

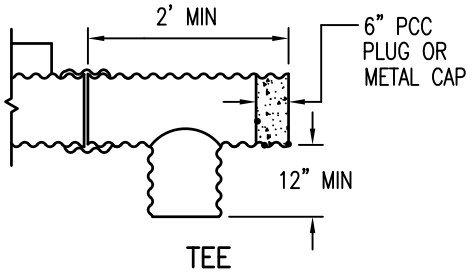
J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

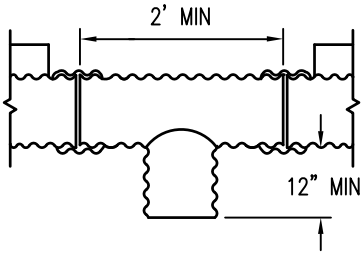
DRAWING NUMBER **D-17B**



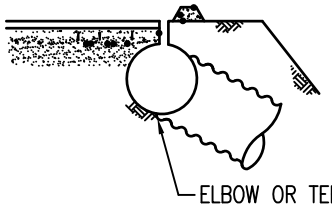
ELBOW



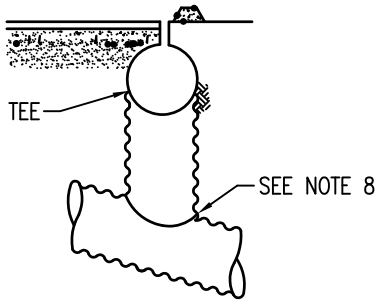
TEE



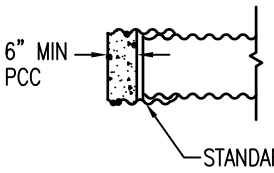
TEE–SAG CONDITION



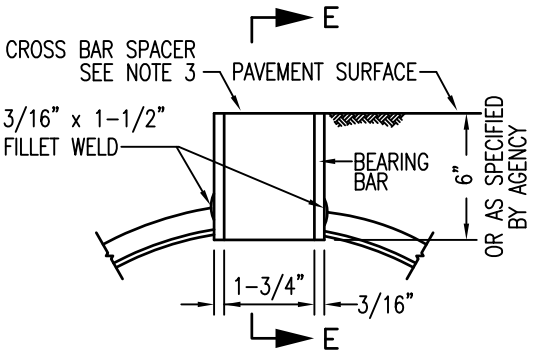
OVERSIDE DRAIN



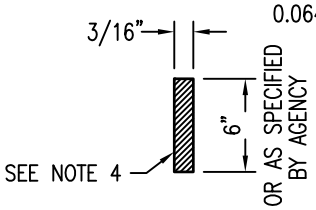
RISER



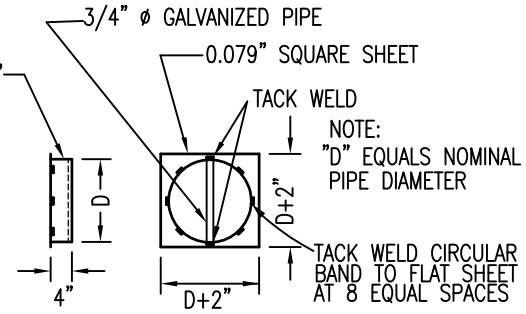
BAND PLUG



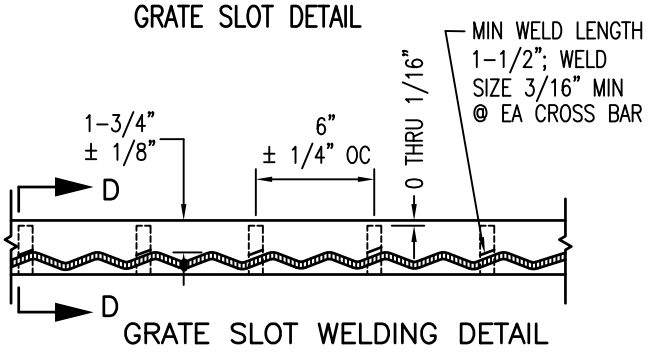
SECTION D–D
GRATE SLOT DETAIL



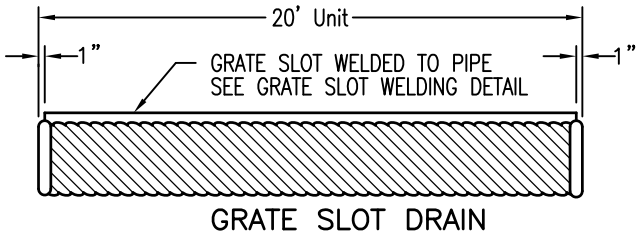
SECTION E–E



METAL CAP DETAIL



GRATE SLOT WELDING DETAIL



GRATE SLOT DRAIN

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.

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

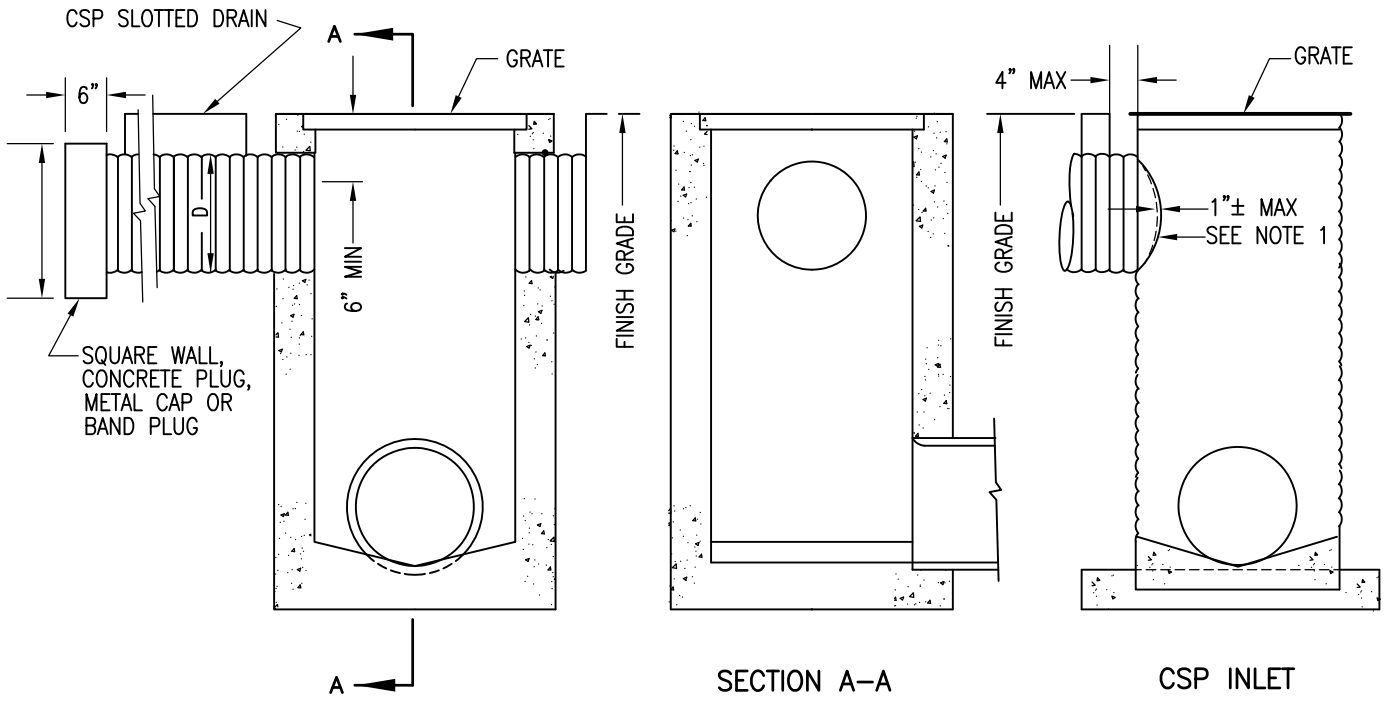
SLOTTED CORRUGATED STEEL PIPE DRAINS 12" THROUGH 24"

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

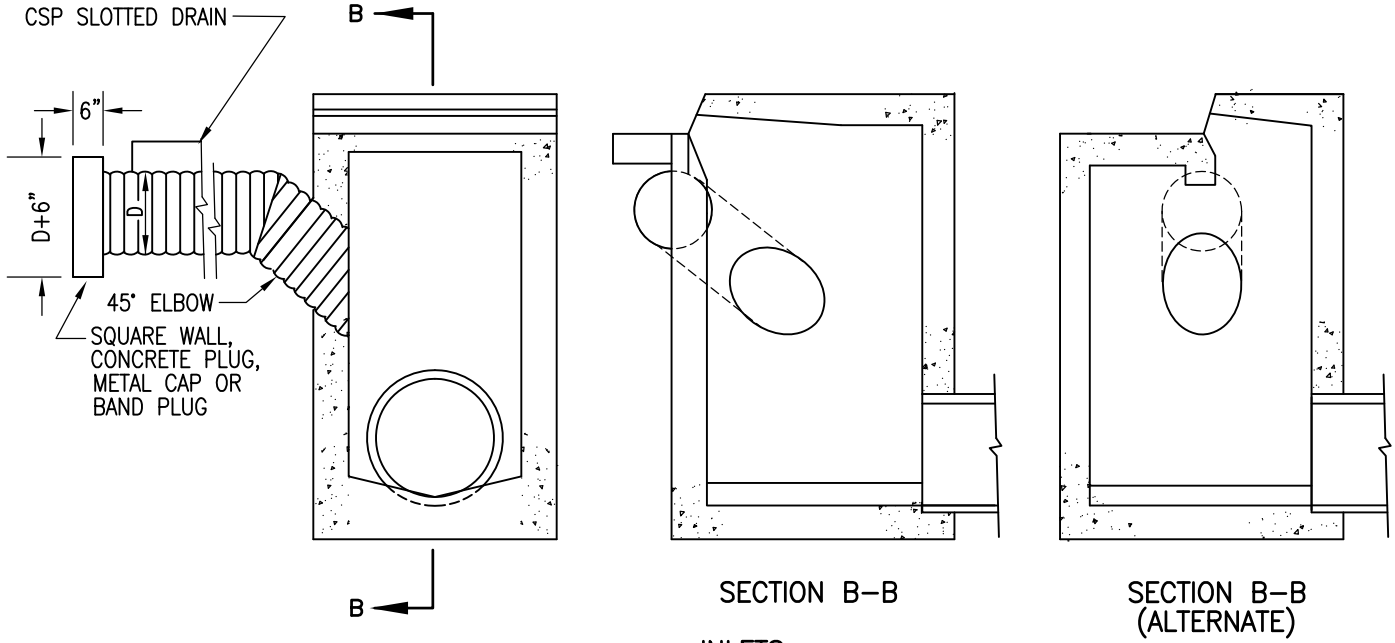
DRAWING NUMBER **D-18**



SECTION A–A

CSP INLET

CATCH BASINS



SECTION B–B

SECTION B–B (ALTERNATE)

INLETS

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
Reformatted		T. Stanton	04/06
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

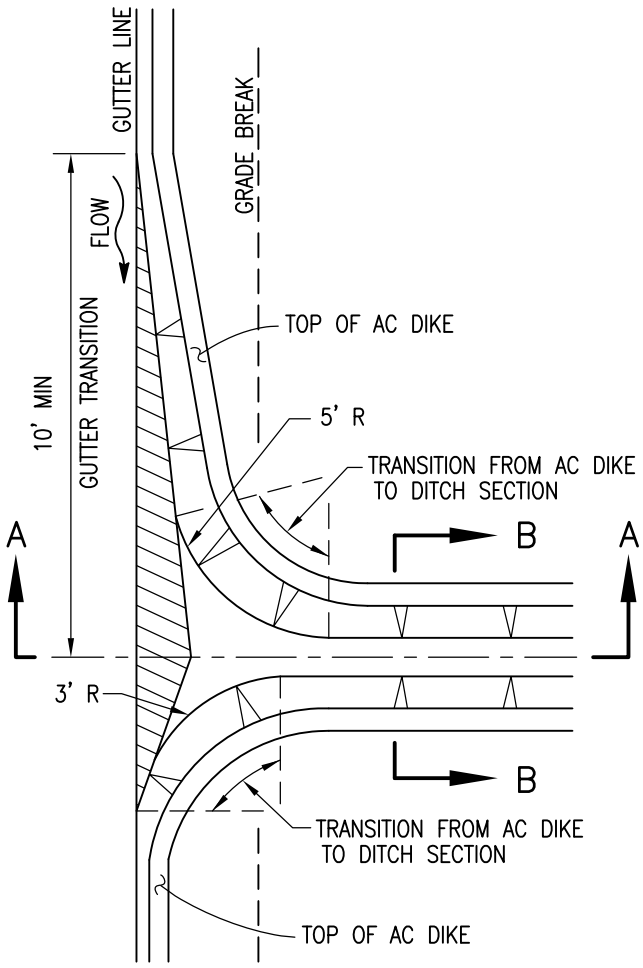
SAN DIEGO REGIONAL STANDARD DRAWING

SLOTTED DRAIN CONNECTIONS TO STANDARD INLETS

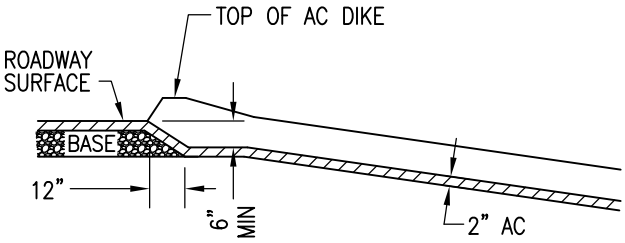
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

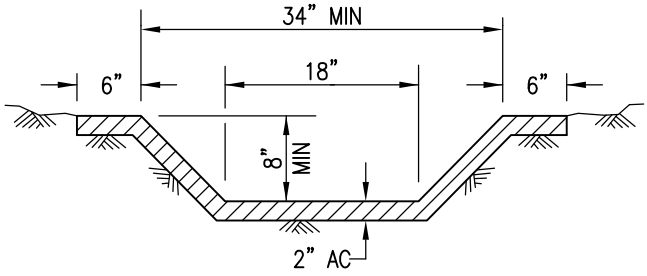
DRAWING NUMBER **D-19**



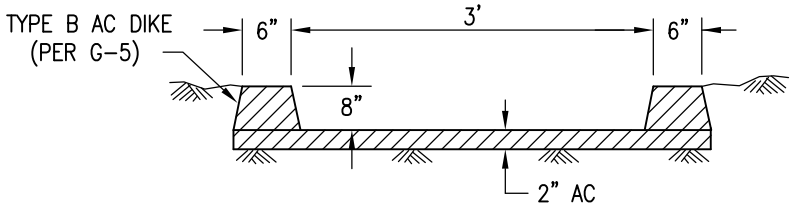
PLAN



SECTION A–A



SECTION B–B

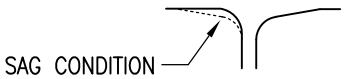


ALTERNATE SECTION B–B

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
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

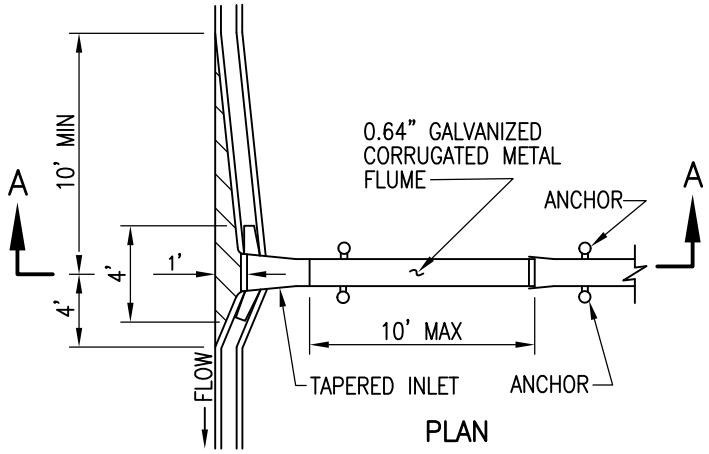
ASPHALT CONCRETE SPILLWAY

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

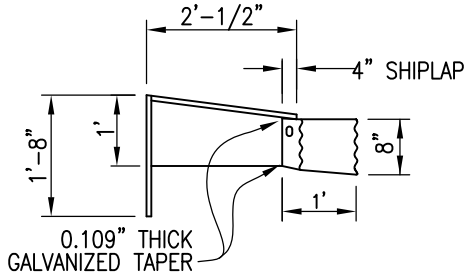
12/17/2015

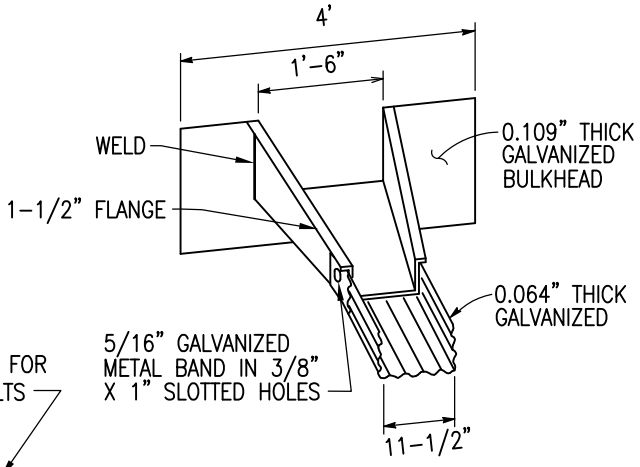
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-22**

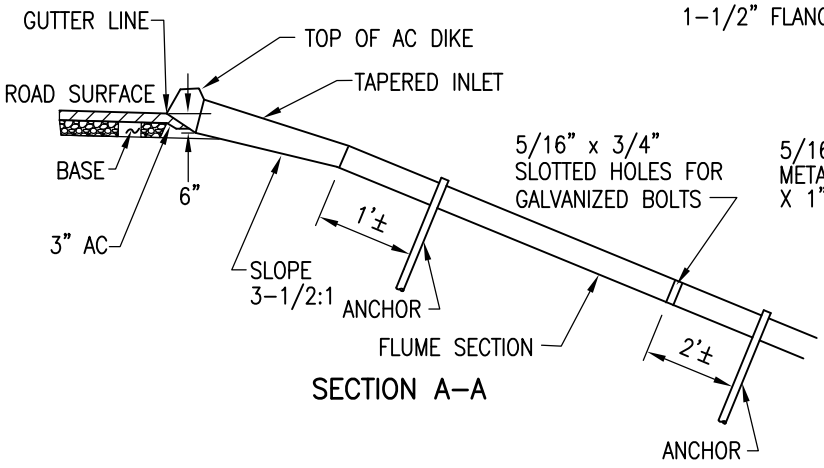


PLAN

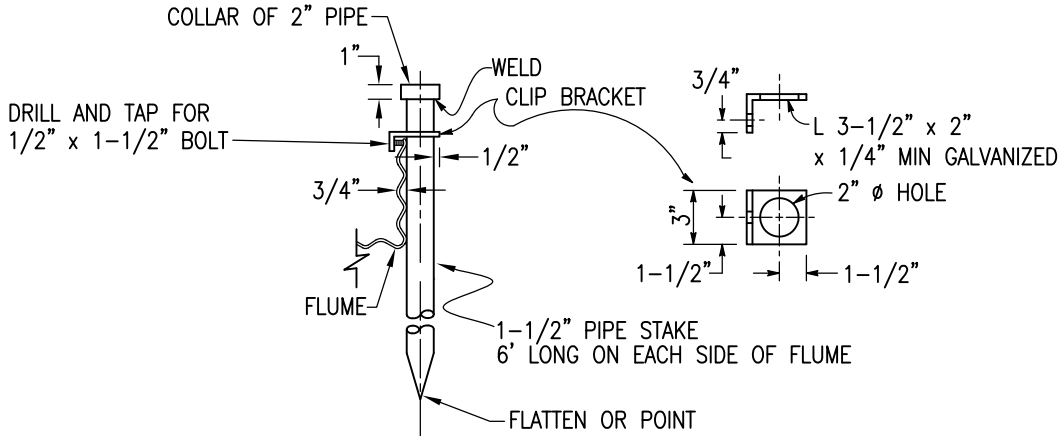




TAPERED INLET



SECTION A–A

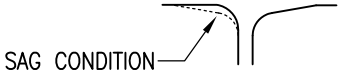


ANCHOR–DETAIL

NOTES

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

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
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

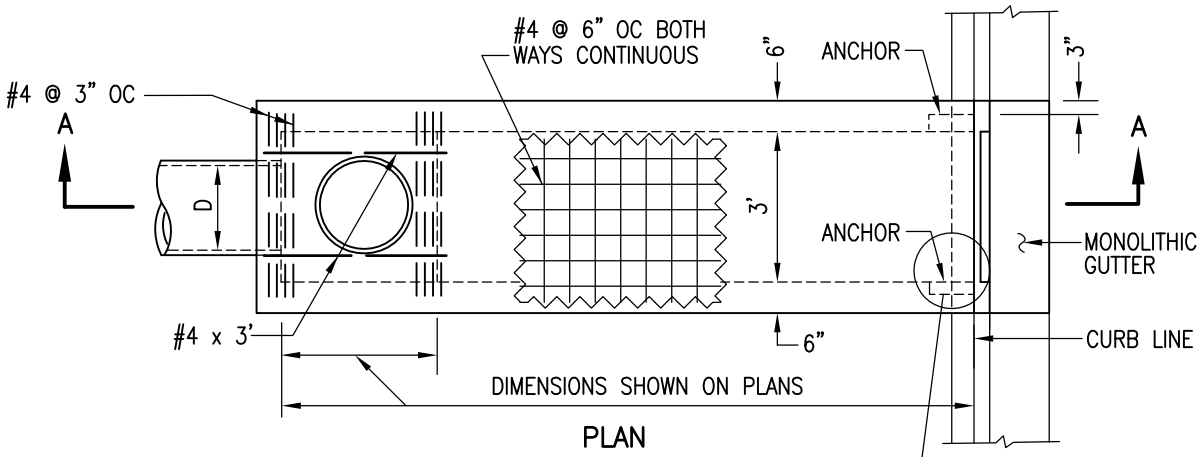
TAPERED INLET AND DOWNDRAIN FLUME

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

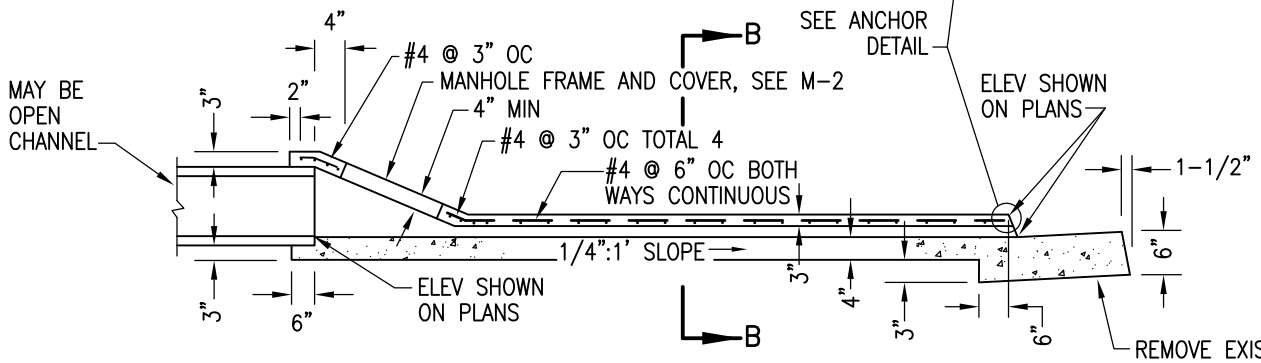
J M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-23**

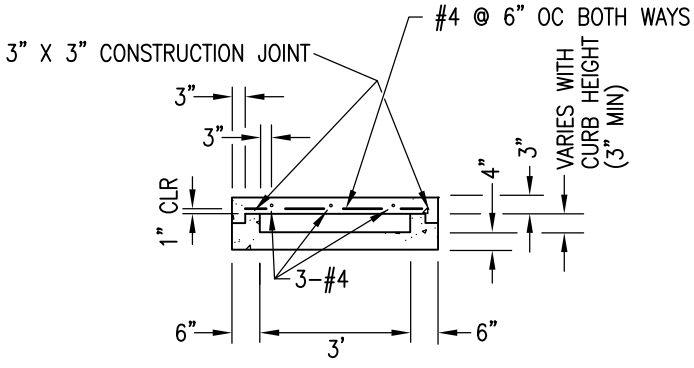


PLAN

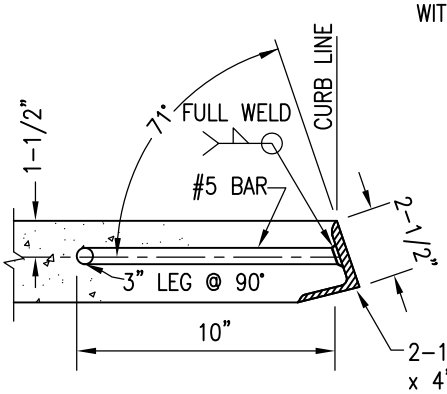


SECTION A–A

REMOVE EXISTING CURB AND GUTTER AND CONSTRUCT GUTTER MONOLITHIC WITH CURB OUTLET



SECTION B–B

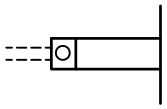


ANCHOR DETAIL

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
Reformatted		T.Stanton	04/06
Revised		T.Stanton	11/08
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

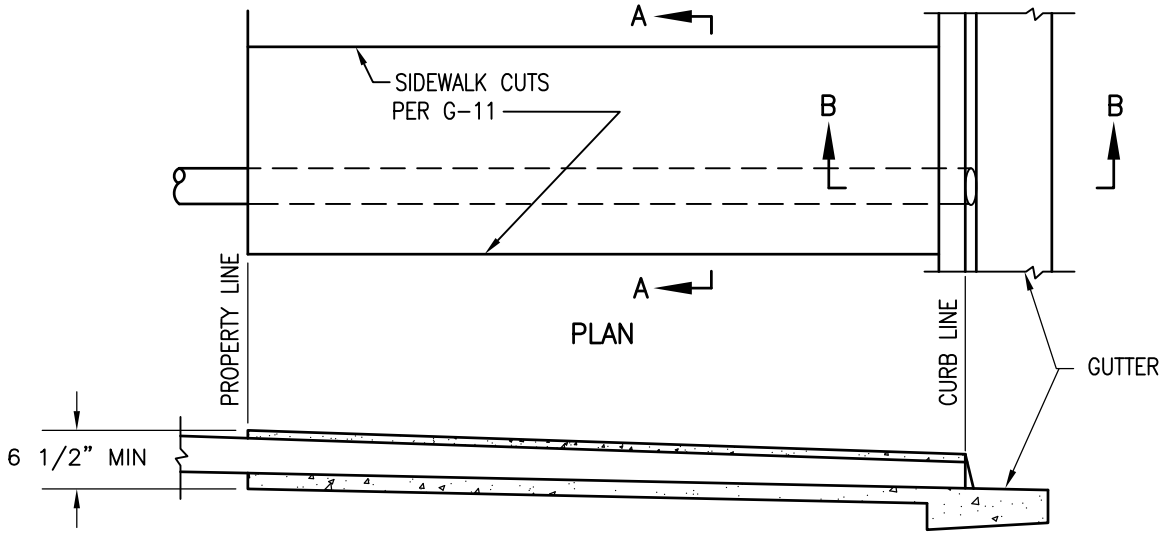
CURB OUTLET - TYPE A

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

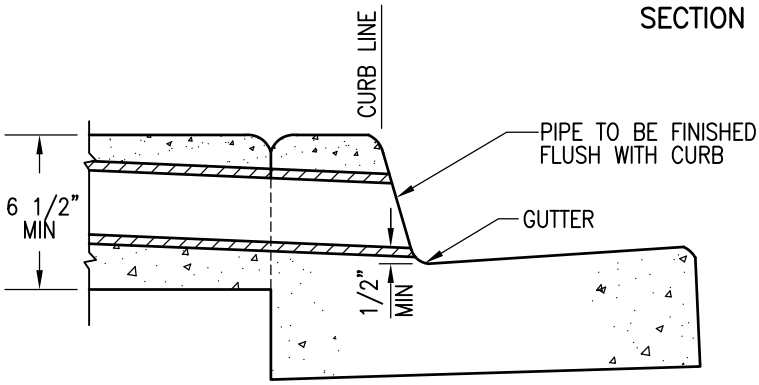
12/17/2015

Chairperson R.C.E. 19246 Date

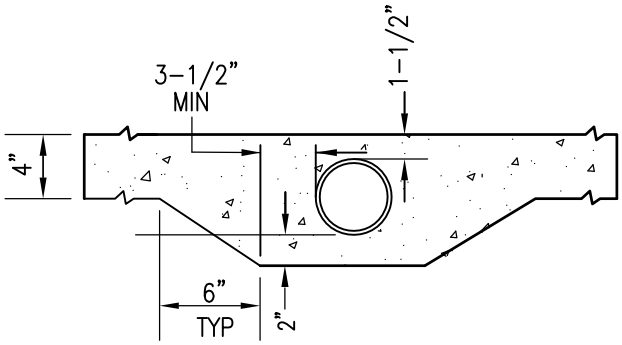
DRAWING NUMBER **D-25**



SECTION

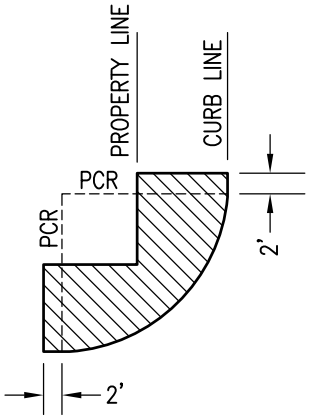


SECTION B–B



SECTION A–A

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



DRAIN SHALL NOT BE CONSTRUCTED
WITHIN THE HATCHED AREA

BLOCK CORNER

NOTES

1. PIPE SHALL BE ONE CONTINUOUS LENGTH FROM PROPERTY LINE TO CURB LINE.
2. MULTIPLE PIPES TO BE SET A MINIMUM DISTANCE OF D/2 APART (3 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.

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

SAN DIEGO REGIONAL STANDARD DRAWING

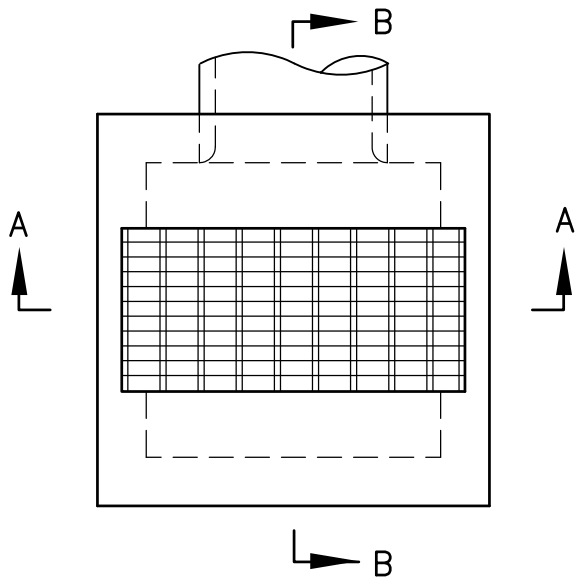
SIDEWALK UNDERDRAIN PIPE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

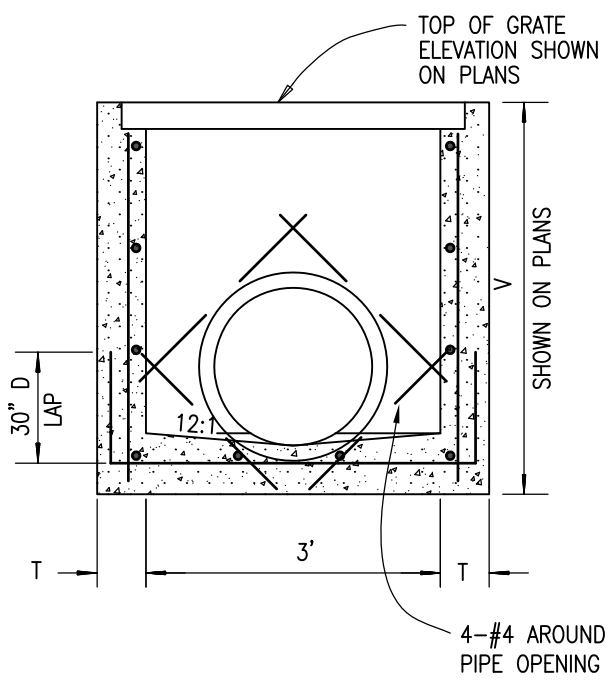
12/17/2015

Chairperson R.C.E. 19246 Date

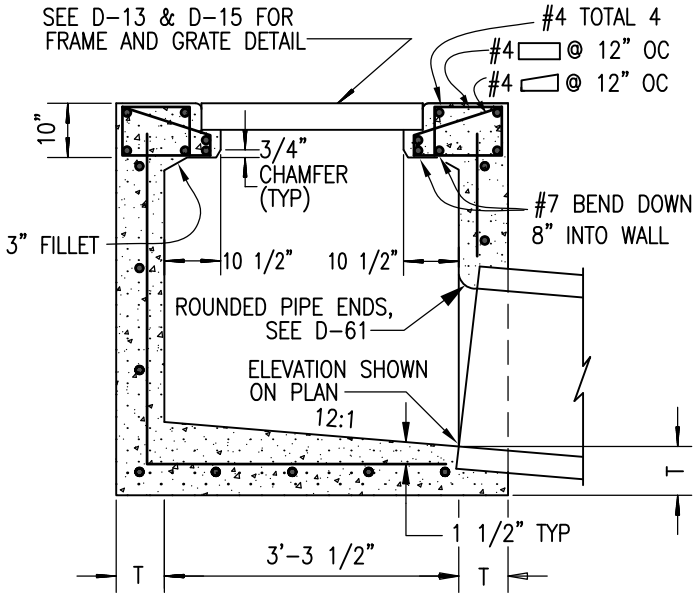
DRAWING NUMBER **D-27**



PLAN



SECTION A–A

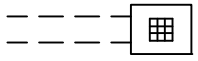


SECTION B–B

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

SAN DIEGO REGIONAL STANDARD DRAWING

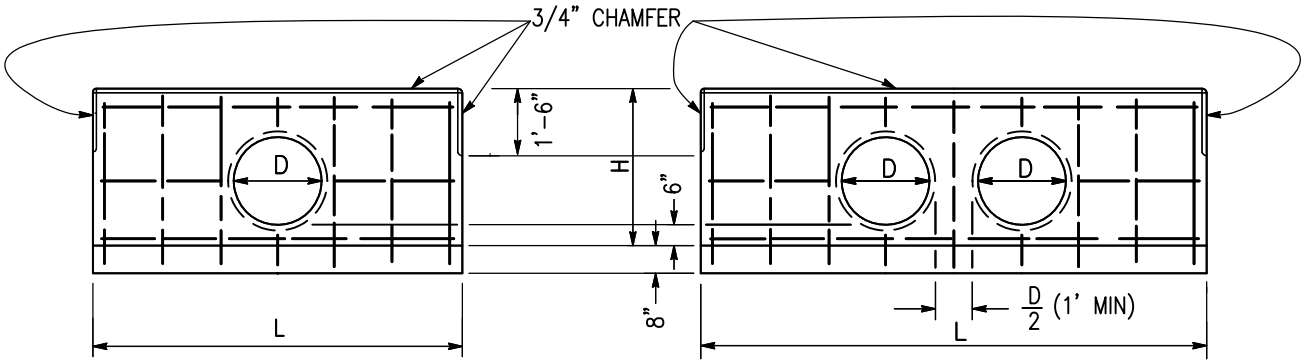
CATCH BASIN - TYPE I

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015

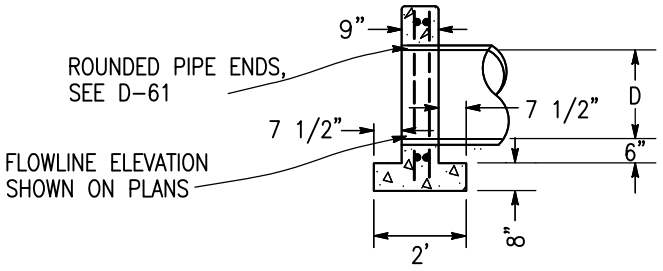
Chairperson R.C.E. 19246 Date

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
Reformatted		T. Stanton	04/06
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

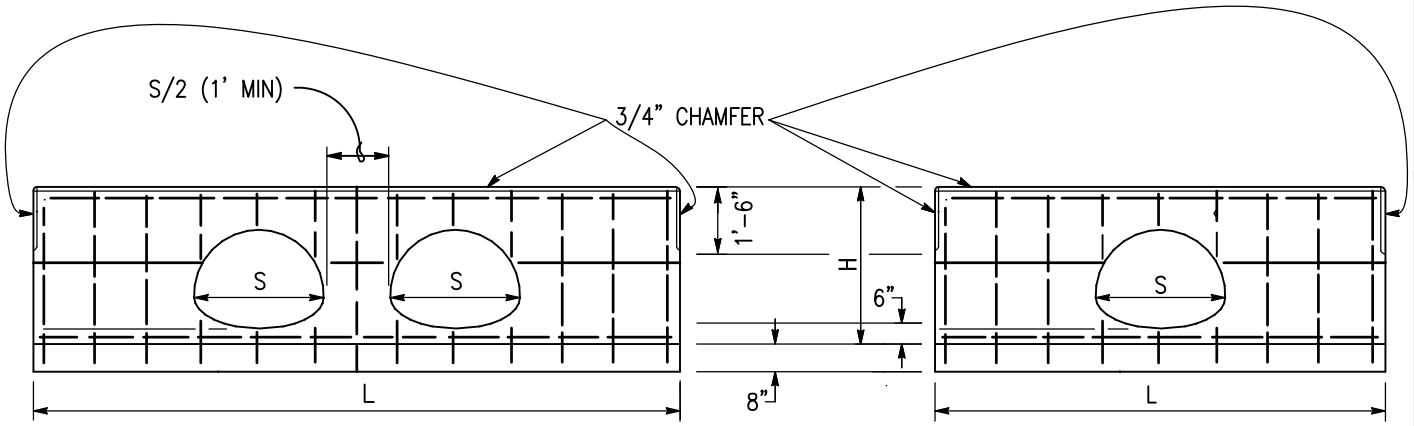
SAN DIEGO REGIONAL STANDARD DRAWING

STRAIGHT HEADWALL - TYPE A (CIRCULAR PIPE)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

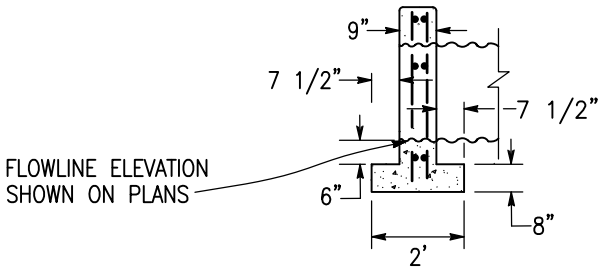
12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER D-30



ELEVATION – DOUBLE HEADWALL

ELEVATION – SINGLE HEADWALL



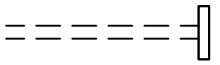
SECTION, SINGLE &
DOUBLE HEADWALLS

C.S.P. ARCH SIZE (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
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

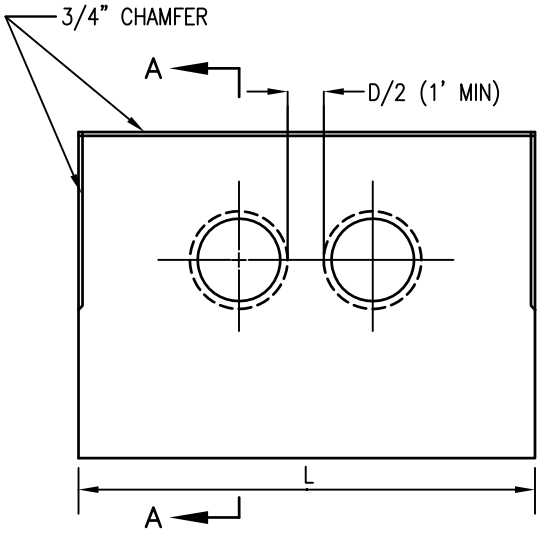
STRAIGHT HEADWALL - TYPE A (CORRUGATED STEEL PIPE - ARCH)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

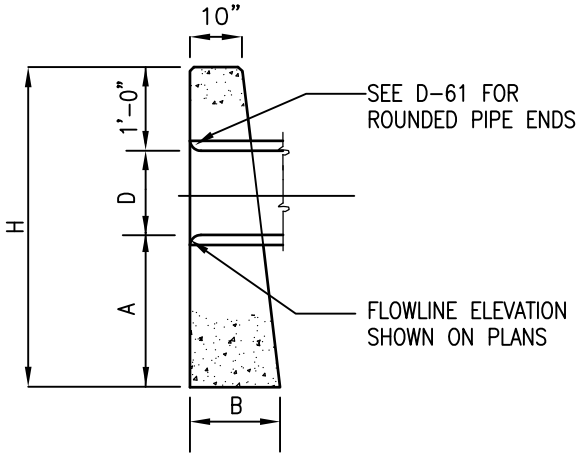
J M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

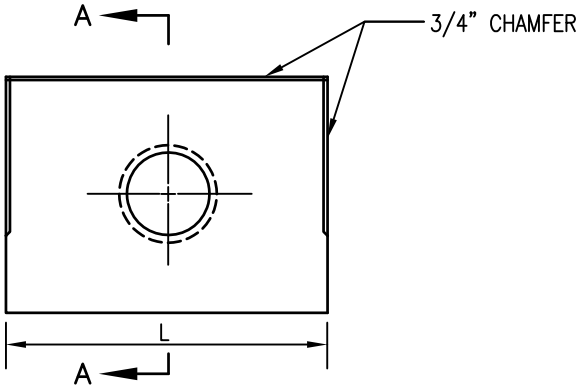
DRAWING NUMBER **D-31**



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

LEGEND ON PLANS

NOTES

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

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

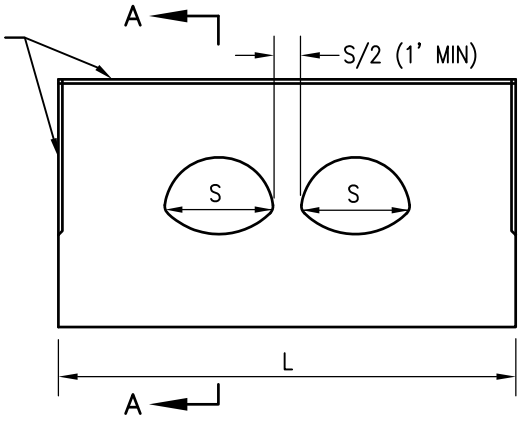
SAN DIEGO REGIONAL STANDARD DRAWING

STRAIGHT HEADWALL - TYPE B (CIRCULAR PIPE)

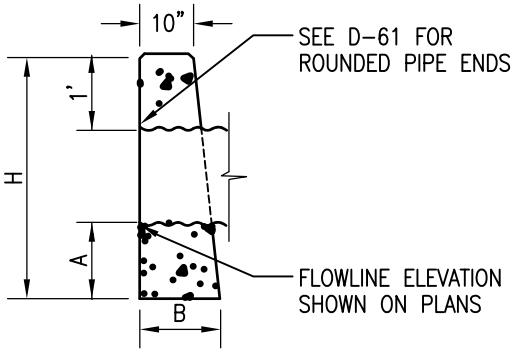
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

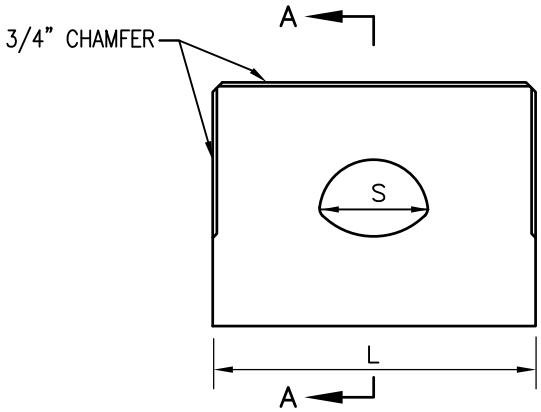
DRAWING NUMBER **D-32**



DOUBLE PIPE ELEVATION



SECTION A–A



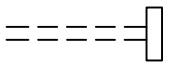
SINGLE PIPE ELEVATION

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
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

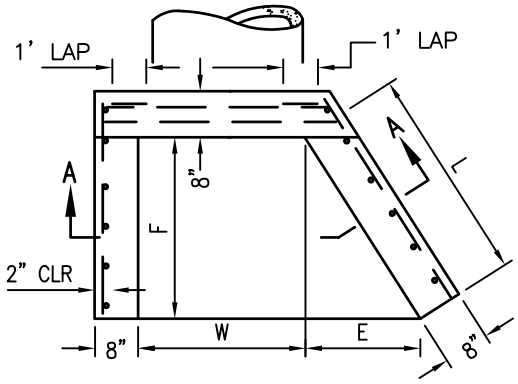
STRAIGHT HEADWALL - TYPE B (CORRUGATED STEEL PIPE - ARCH)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

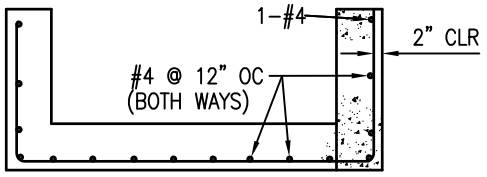
12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-33**



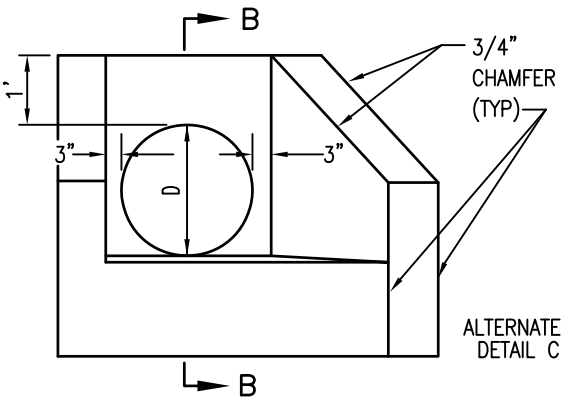
U TYPE



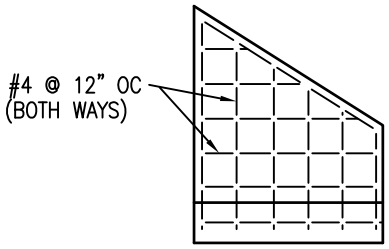
SECTION A-A

WING TYPE

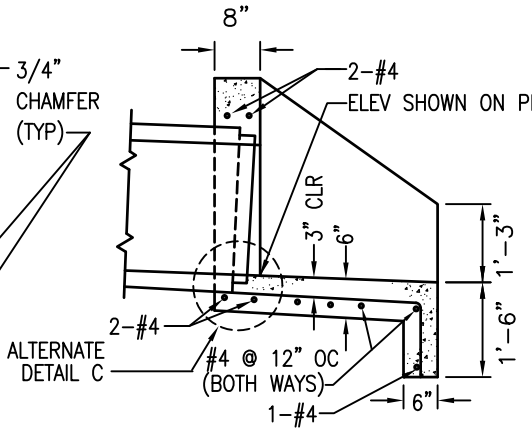
PLAN



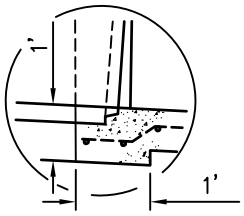
ELEVATION



WING WALL
REINFORCING



SECTION B-B



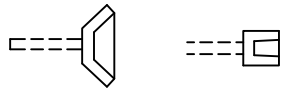
ALT DETAIL C

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

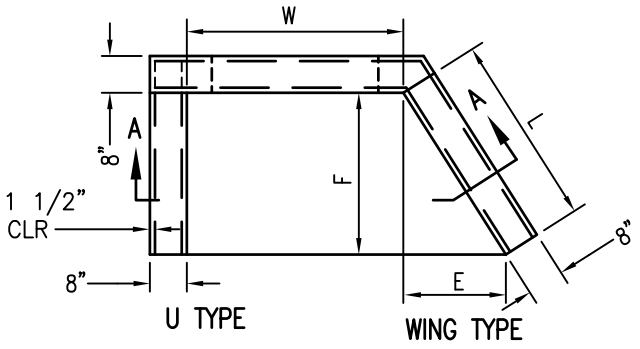
SAN DIEGO REGIONAL STANDARD DRAWING

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

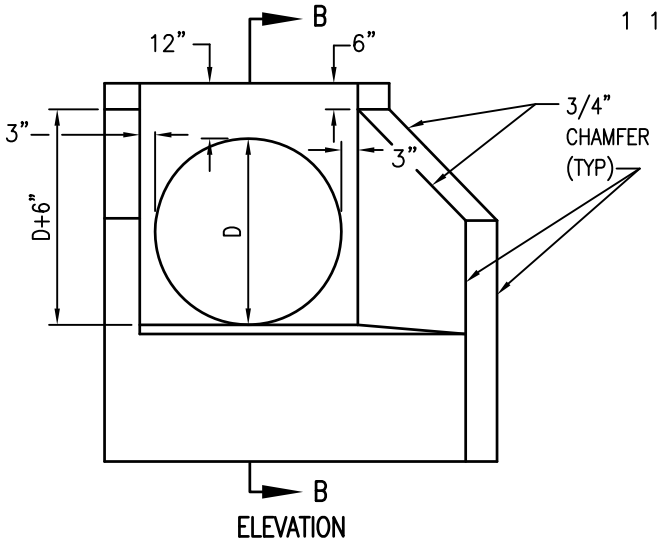
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

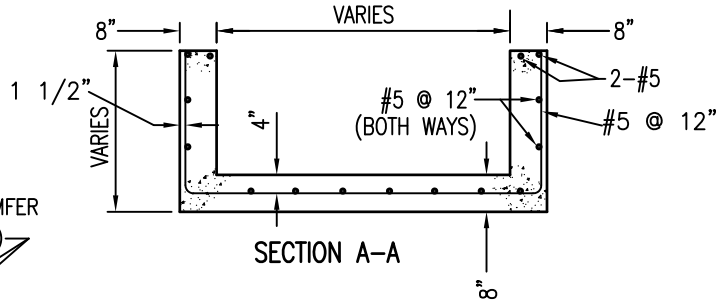
DRAWING NUMBER **D-34**



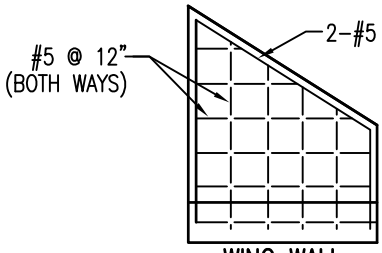
PLAN



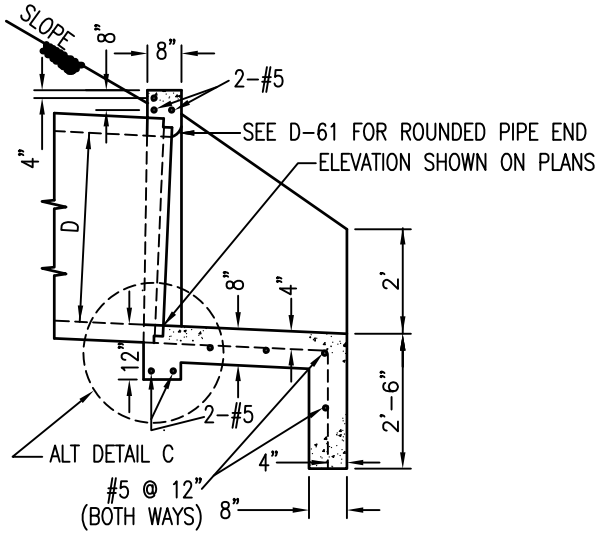
ELEVATION



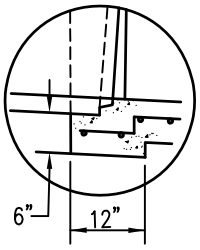
SECTION A-A



WING WALL
REINFORCING

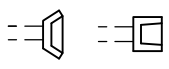


SECTION B-B



ALT DETAIL C

LEGEND ON PLANS



NOTE

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

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
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 42" TO 84" PIPE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-35A**

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

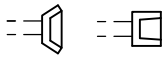
NOTE: DIMENSIONS E AND L APPLY TO WING TYPE ONLY.

ø OF PIPE	DIMENSIONS			SINGLE PIPE					DOUBLE PIPE				
					U TYPE		WING TYPE			U TYPE		WING TYPE	
	L	E	F	W	CONC. (CY)	STEEL (LBS)	CONC. (CY)	STEEL (LBS)	W	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 SKEWOF 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
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

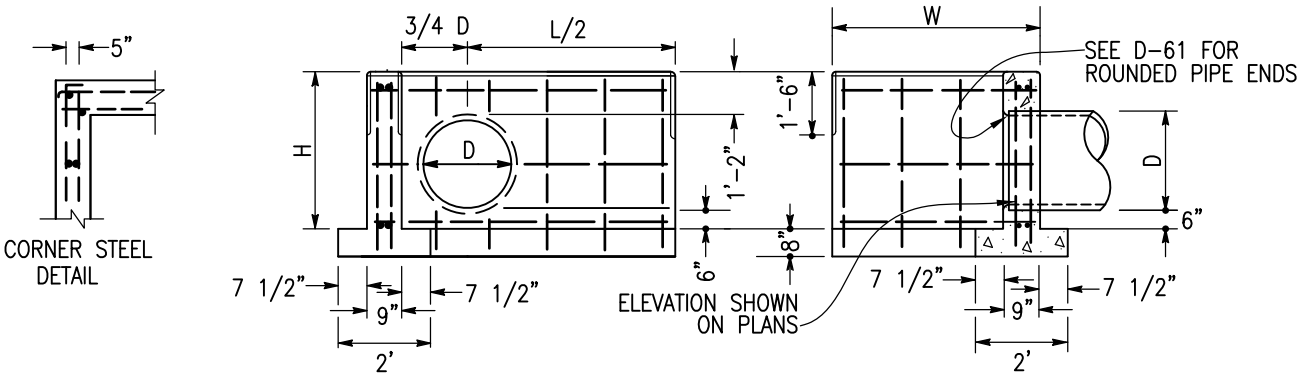
WING AND U TYPE HEADWALLS FOR 42" TO 84" PIPE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-35B**

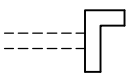


D	H	L/2	W									
			3'–4"		4'–10"		6'–4"		7'–10"		9'–4"	
			STEEL (LBS)	CONCRETE (C.Y.)	STEEL (LBS)	CONCRETE (C.Y.)	STEEL (LBS)	CONCRETE (C.Y.)	STEEL (LBS)	CONCRETE (C.Y.)	STEEL (LBS)	CONCRETE (C.Y.)
12"	2'–8"	2'–6"	50	0.79	60	0.98	—	—	—	—	—	—
15"	2'–11"	3'	55	0.91	65	1.11	—	—	—	—	—	—
18"	3'–2"	3'–6"	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 REINFORCEING 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 PIPETO THE END OF THE HEADWALL AS SHOWN.
4. EXPOSED CORNERS SHALL BE 3/4" CHAMFERED.

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

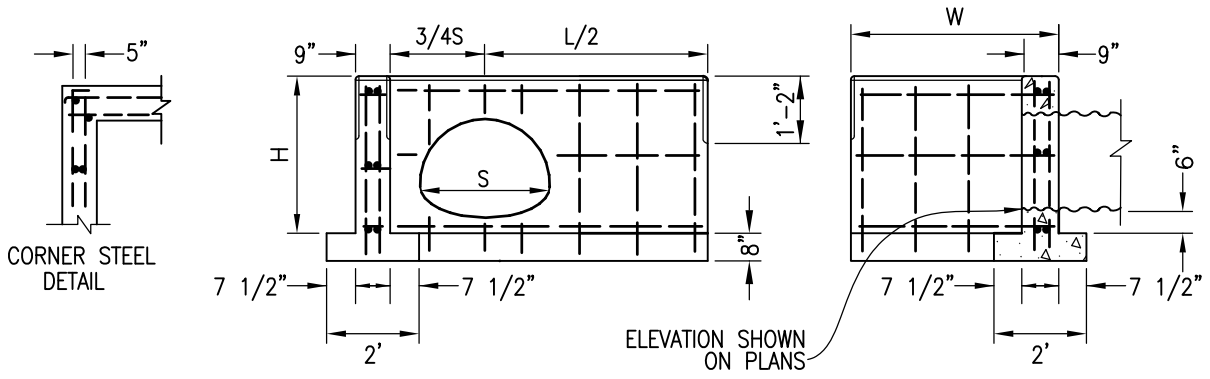
L TYPE HEADWALLS (CIRCULAR PIPES)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-36**



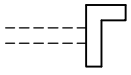
ELEVATION SECTION

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
ORIGINAL		Kercheval	12/75
Reformatted		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

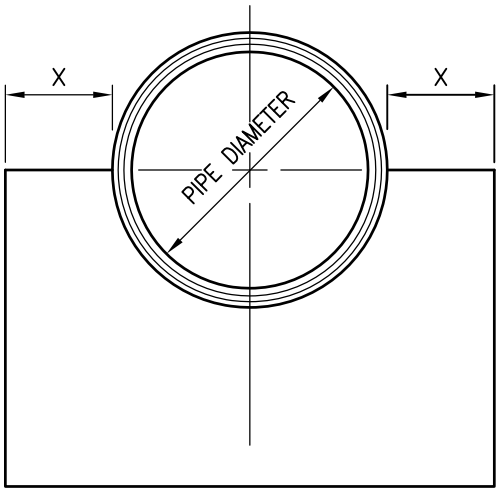
L TYPE HEADWALLS (CORRUGATED STEEL PIPE - ARCH)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

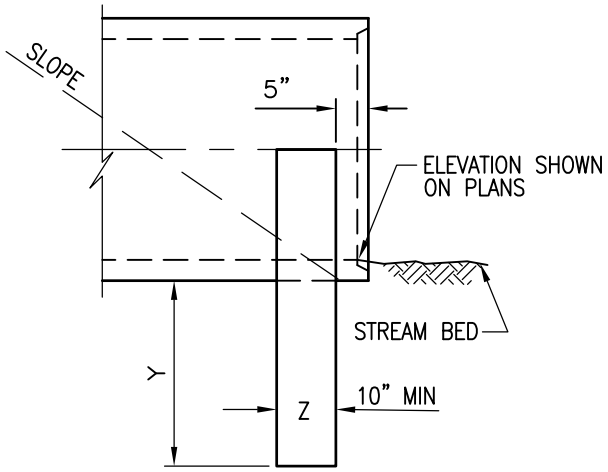
J M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-37**



FACE ELEVATION



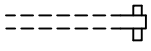
SIDE ELEVATION

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
ORIGINAL		Kercheval	12/75
Reformatted		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

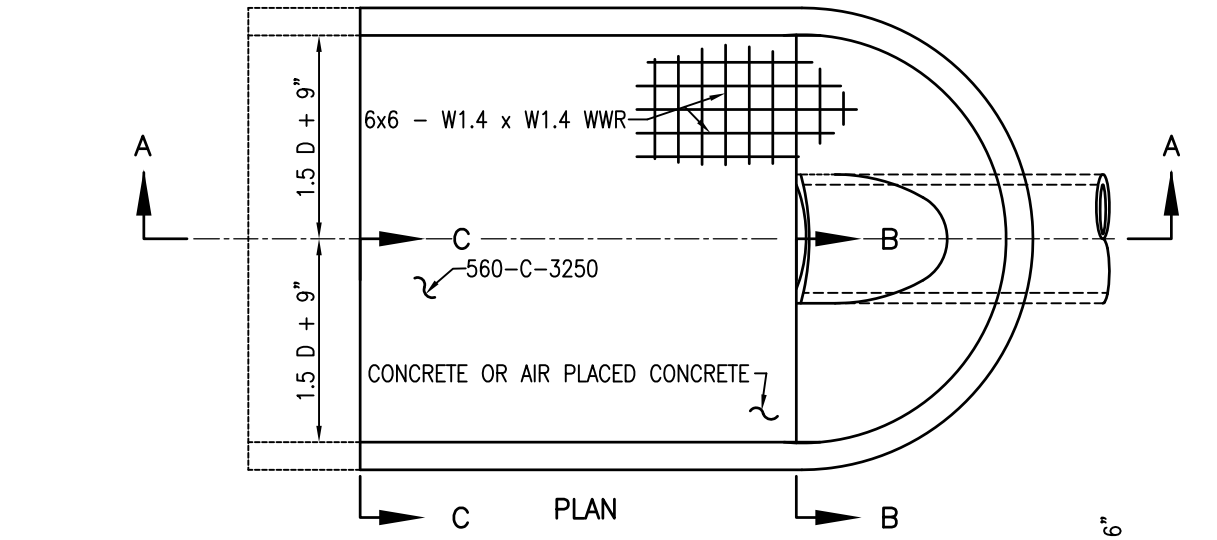
CURTAIN WALL

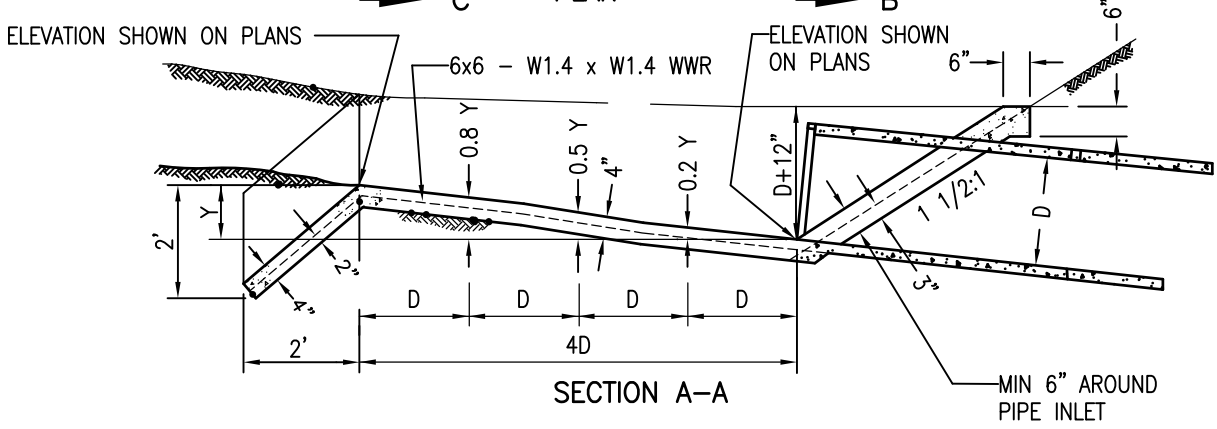
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

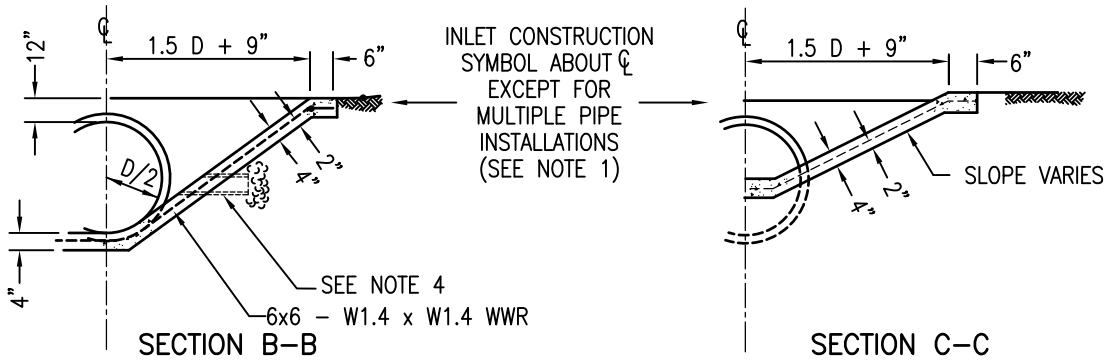
J M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-38**







NOTES

1. WHEN MORE THAN ONE PIPE IS USED THE PROFILE VIEW SHOWN SHALLHOLD 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

SAN DIEGO REGIONAL STANDARD DRAWING

INLET APRON FOR CULVERTS UP TO 42" DIAMETER

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

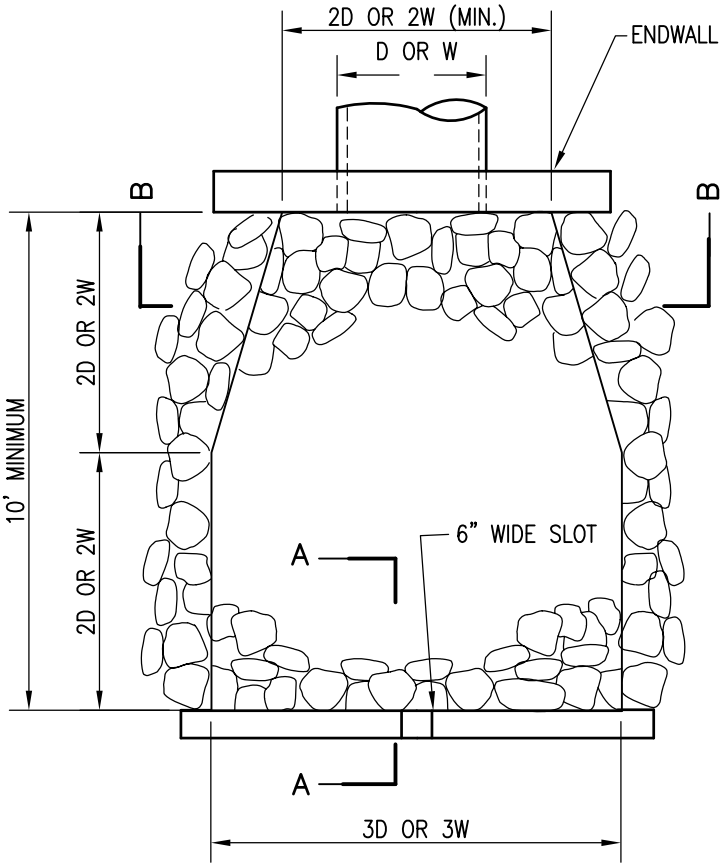
DRAWING NUMBER **D-39**

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

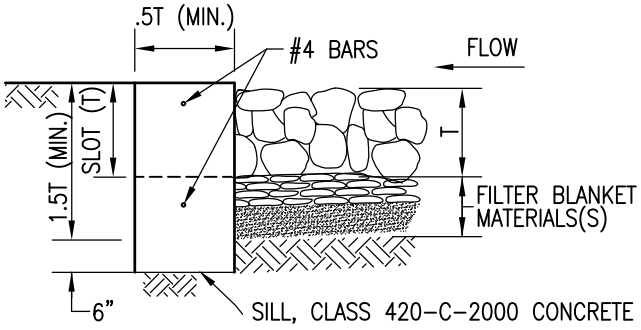
DESIGN VELOCITY (FT/SEC) *	ROCK CLASS	RIP-RAP THICKNESS "T" (MIN)
6-10	NO. 2 BACKING	1.1 FT
10-12	1/4 TON	2.7 FT
12-14	1/2 TON	3.5 FT
14-16	1 TON	4.4 FT
16-18	2 TON	5.4 FT

* OVER 20 FT/SEC REQUIRES SPECIAL DESIGN

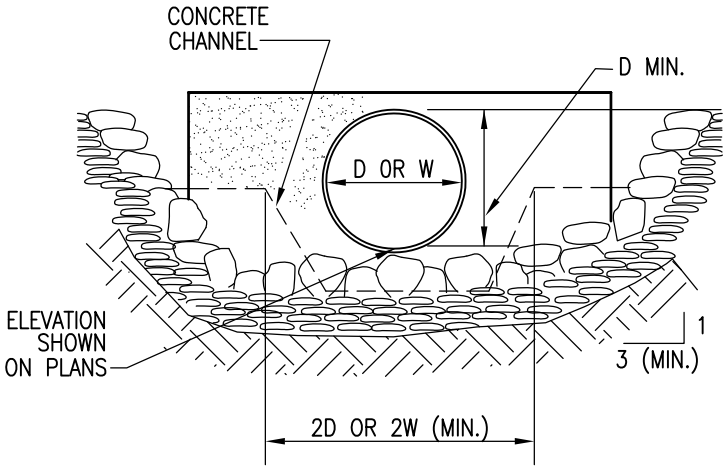
D = PIPE DIAMETER ø
W = BOTTOM WIDTH OF CHANNEL



PLAN



SECTION A-A



SECTION B-B

NOTES

1. 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.
2. RIP-RAP SHALL BE EITHER QUARRY STONE OR BROKEN CONCRETE (IF SHOWN ON PLANS). COBBLES ARE NOT ACCEPTABLE.
3. 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.
4. SEE TABLE 200-1.7 IN THE SAN DIEGO REGIONAL SUPPLEMENT TO GREENBOOK FOR SELECTION OF FILTER BLANKET.
5. RIP-RAP ENERGY DISSIPATERS 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		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

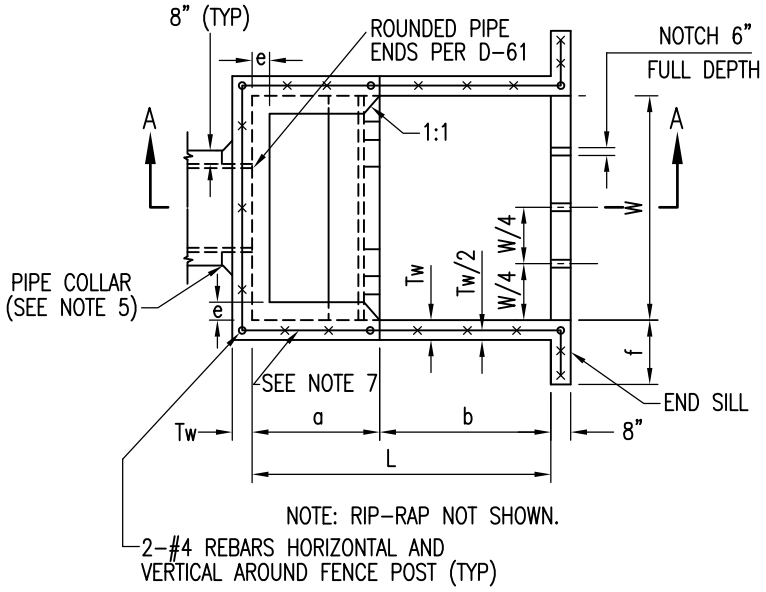
SAN DIEGO REGIONAL STANDARD DRAWING

RIP RAP ENERGY DISSIPATER

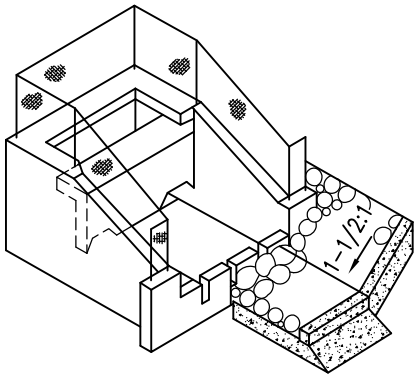
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T M Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

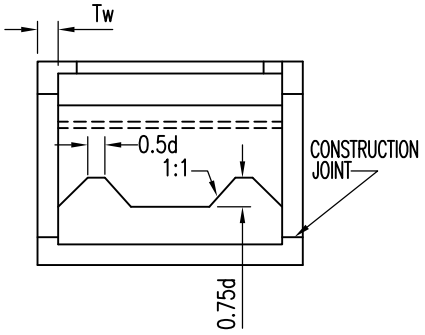
DRAWING NUMBER **D-40**



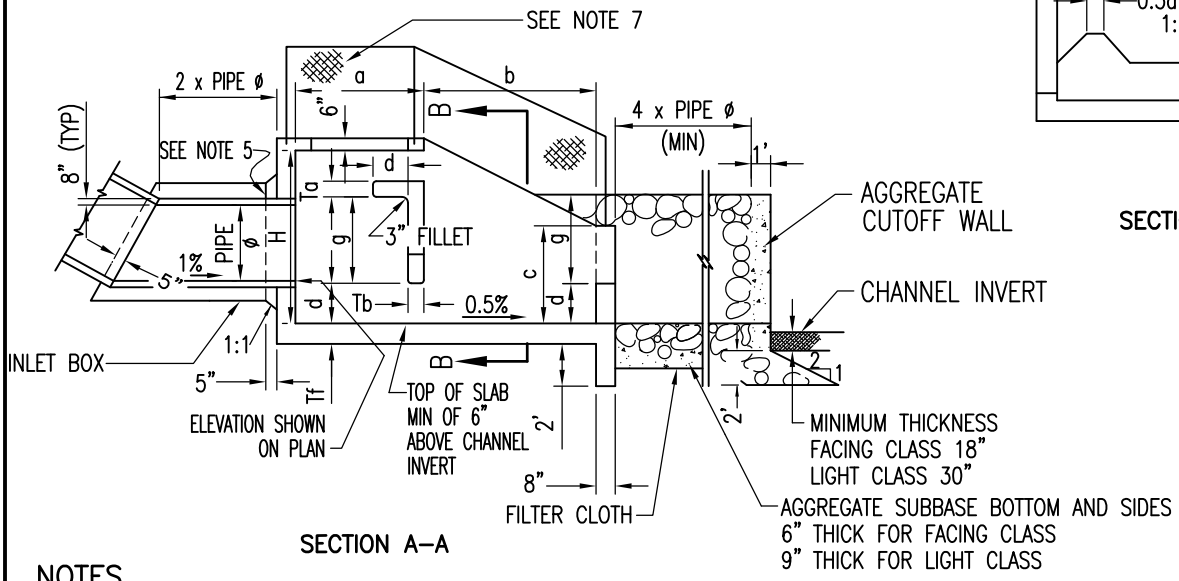
PLAN



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
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

CONCRETE ENERGY DISSIPATER

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/2015
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
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

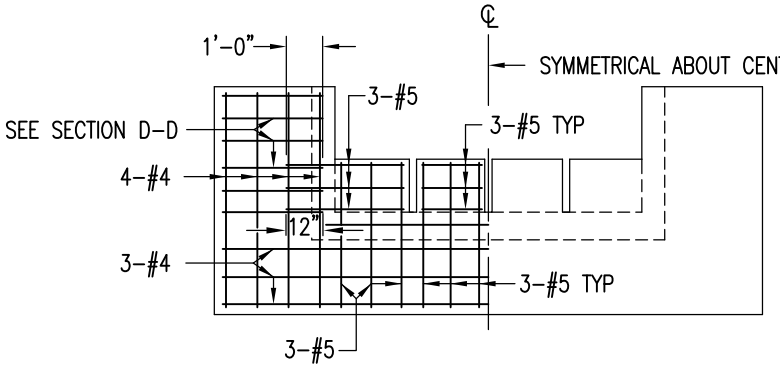
CONCRETE ENERGY DISSIPATER

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

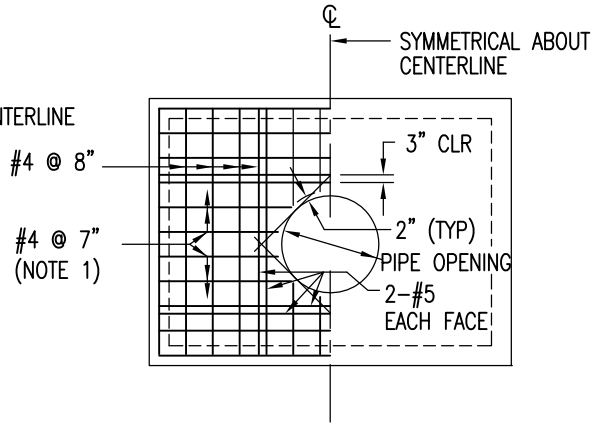
J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

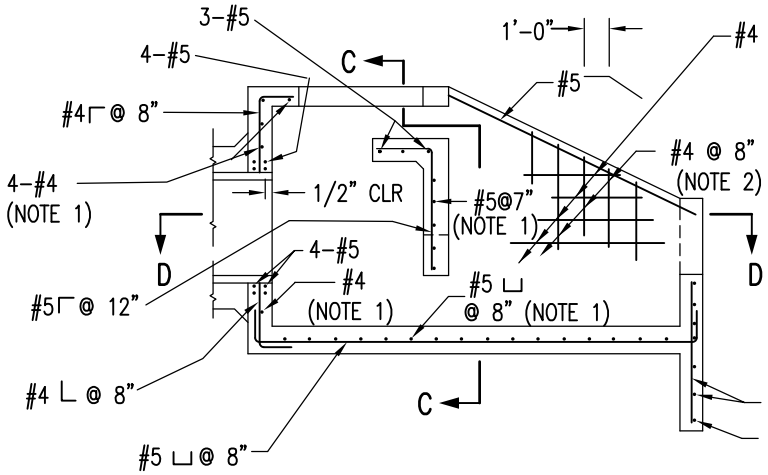
DRAWING NUMBER **D-41B**



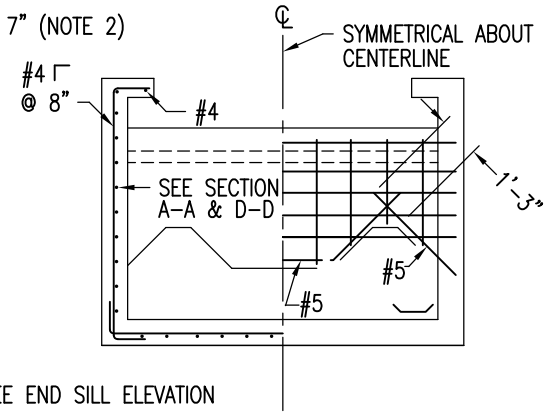
END SILL ELEVATION



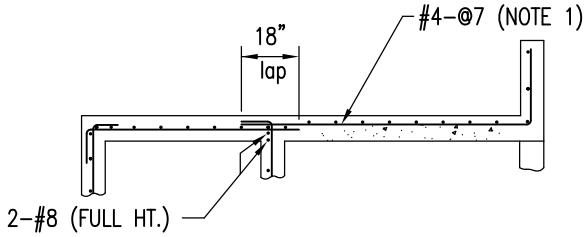
HEADWALL ELEVATION



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
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

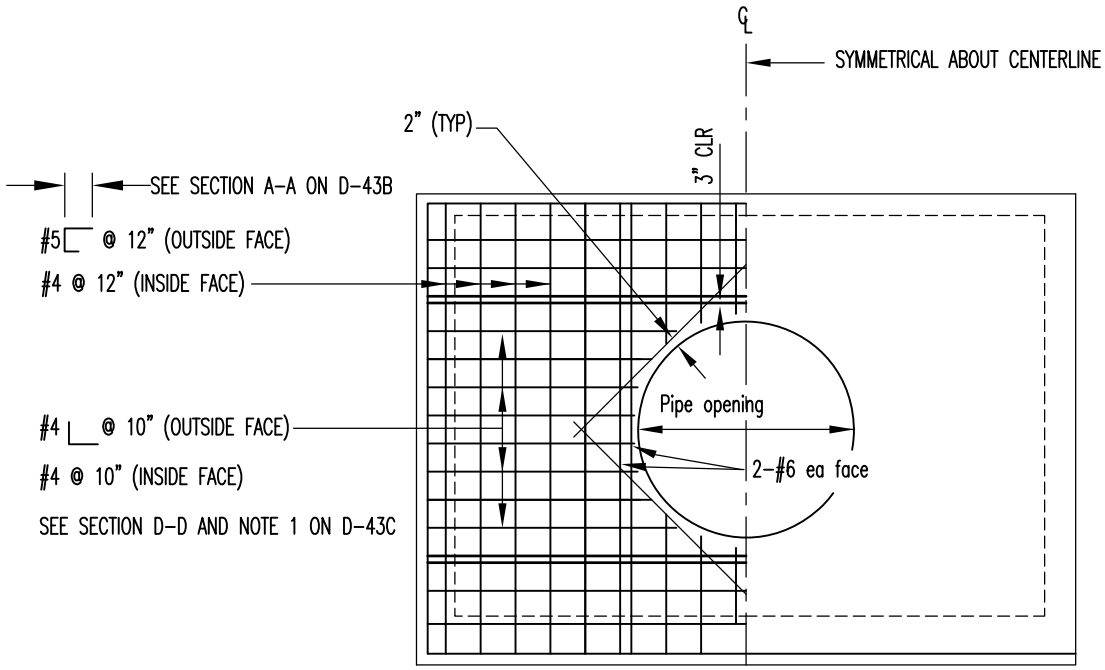
CONCRETE ENERGY DISSIPATER (REINFORCEMENT) 18" TO 30" DIAMETER PIPE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

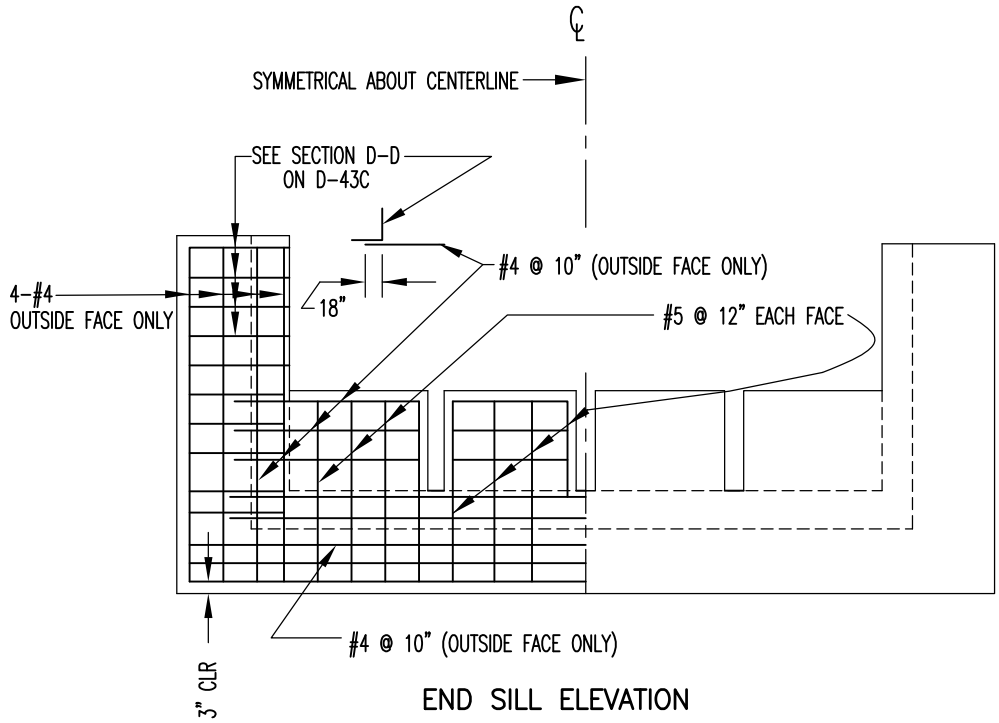
12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-42**



HEADWALL ELEVATION



END SILL ELEVATION

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

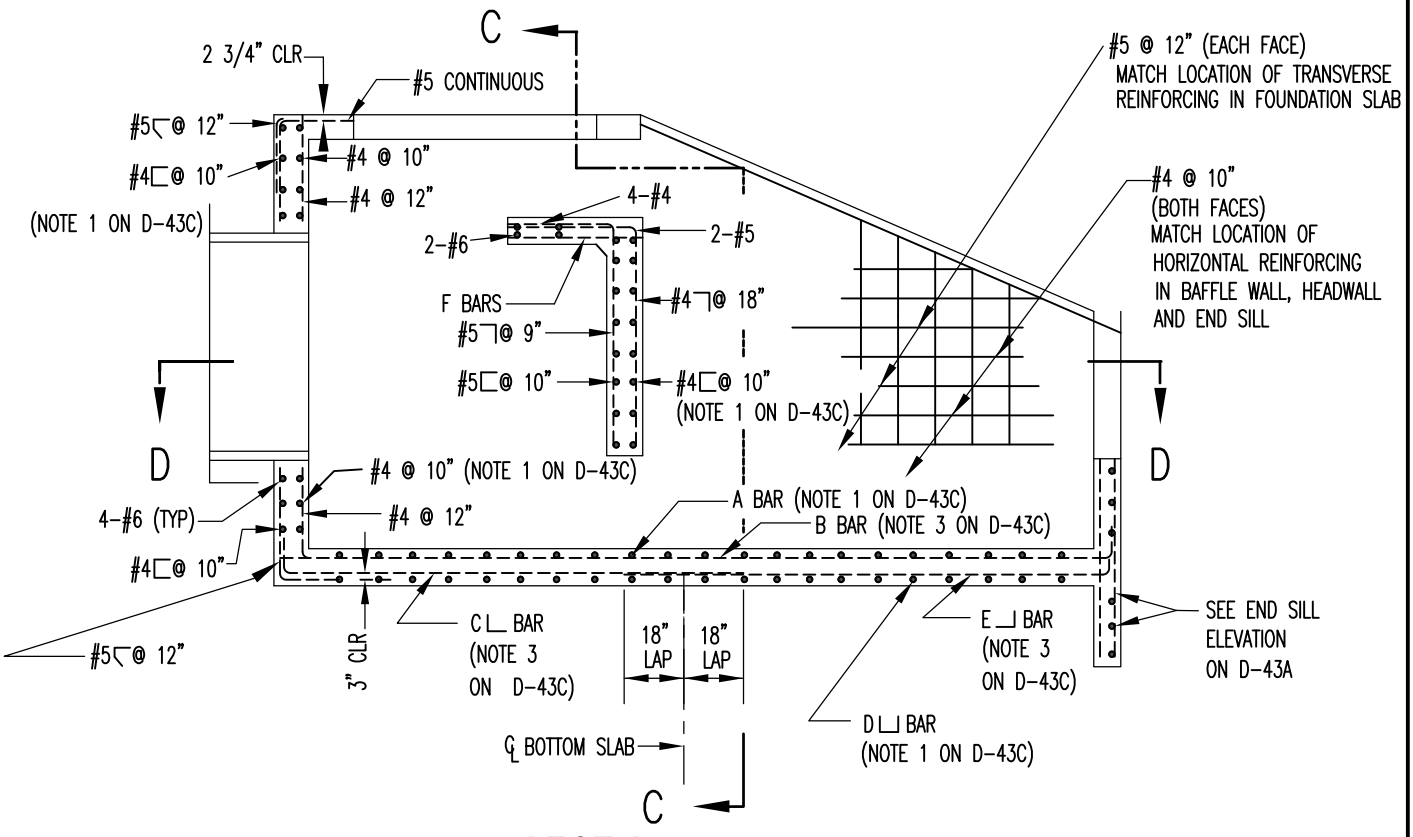
CONCRETE ENERGY DISSIPATER (REINFORCEMENT) 36" TO 72" DIAMETER PIPE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

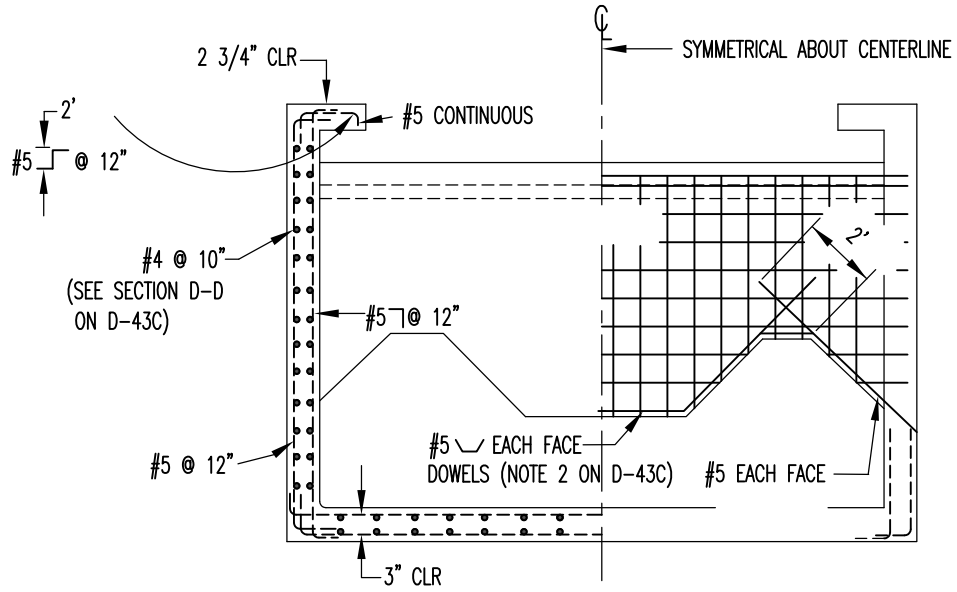
J M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-43A**



SECTION A–A



SECTION C–C

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

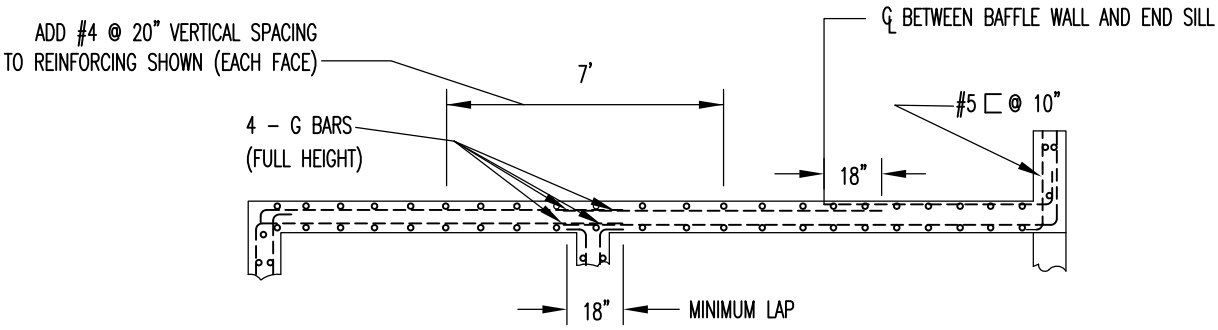
CONCRETE ENERGY DISSIPATER (REINFORCEMENT) 36" TO 72" DIAMETER PIPE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-43B**



SECTION D–D

PIPE ø (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
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

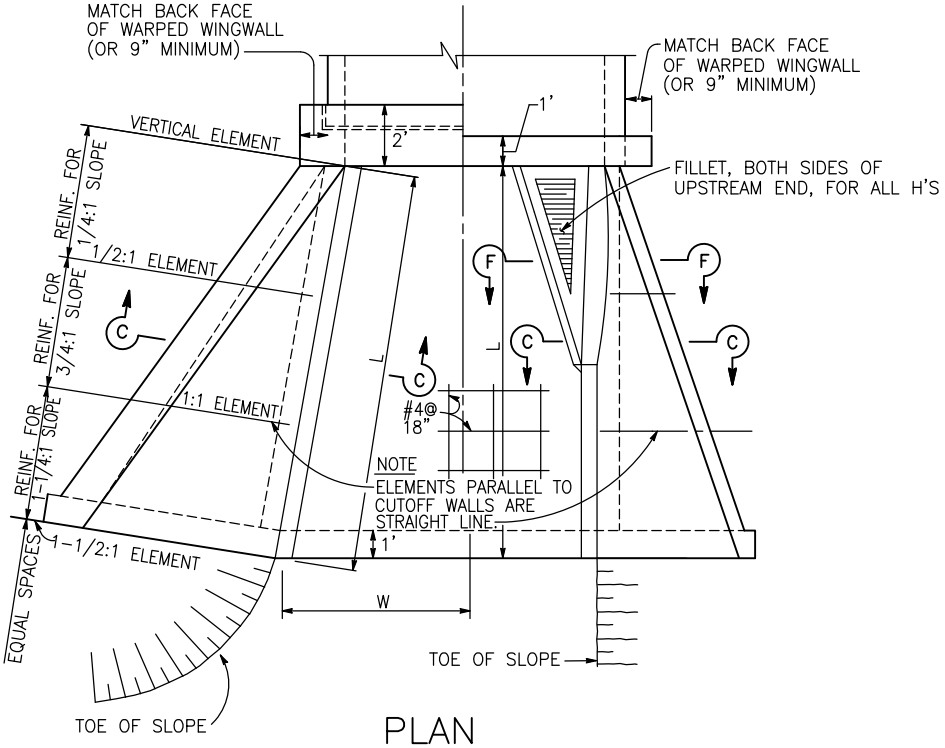
CONCRETE ENERGY DISSIPATER (REINFORCEMENT) 36" TO 72" DIAMETER PIPE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

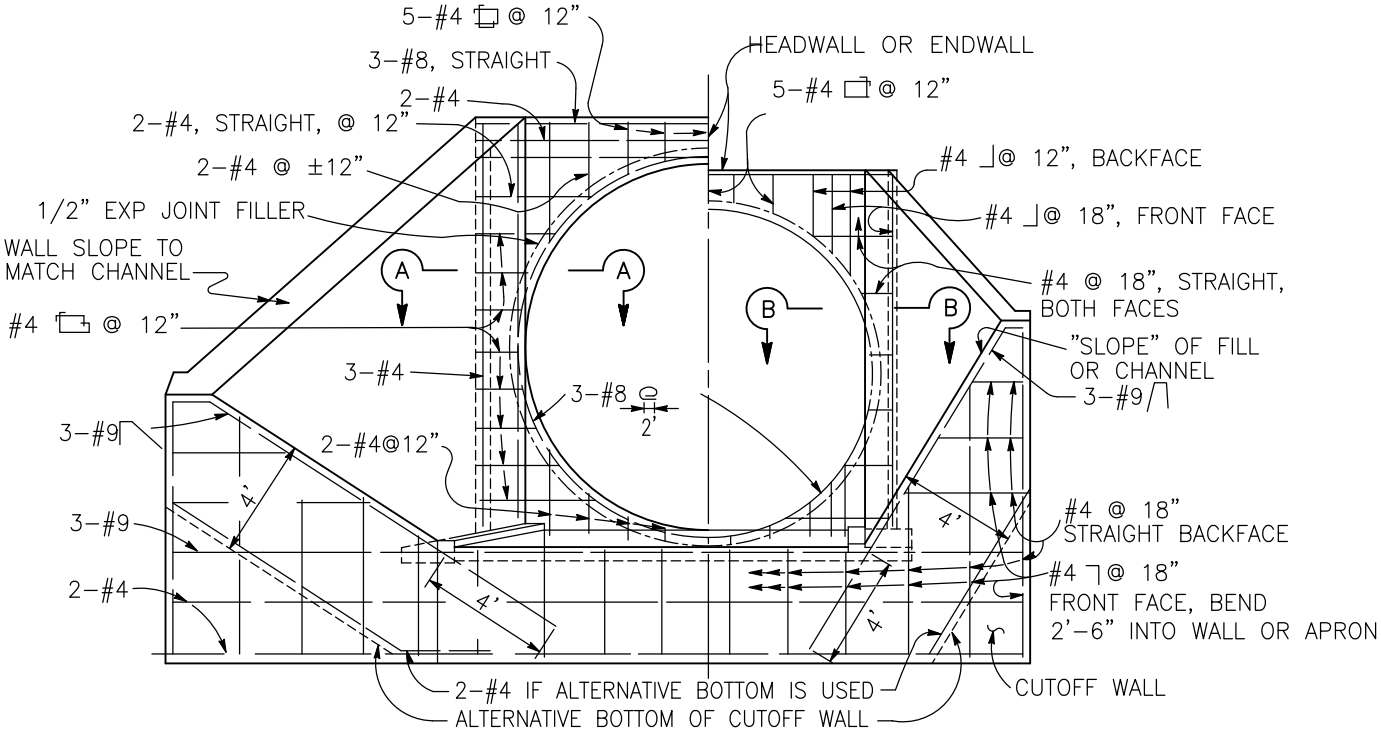
T Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-43C**



PLAN



TYPICAL FOR MAXIMUM H > 10'

TYPICAL FOR MAXIMUM H ≤ 10'

END ELEVATION

IF AT UPSTREAM END, FILLET IS NOT SHOWN

NOTE
SEE NOTES ON D-44D.

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

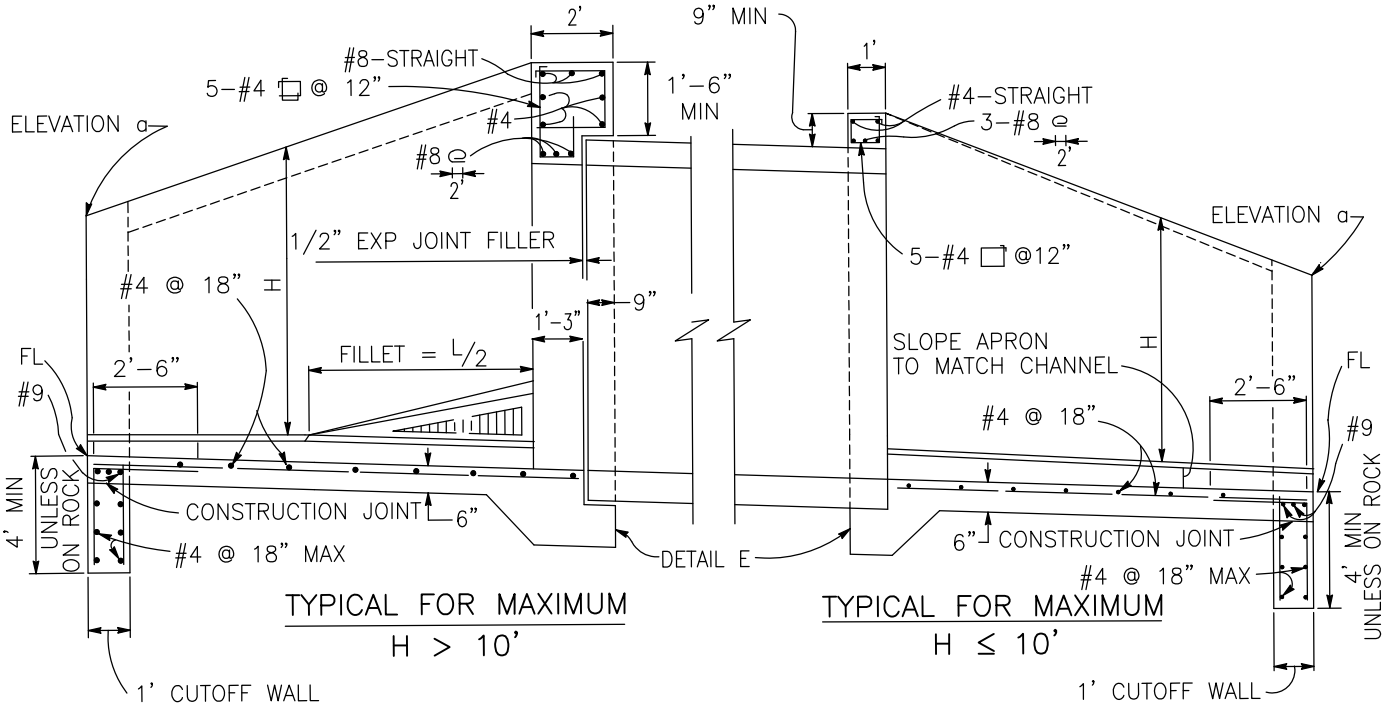
SAN DIEGO REGIONAL STANDARD DRAWING

PIPE CULVERT - HEADWALLS, ENDWALLS & WARPED WINGWALLS

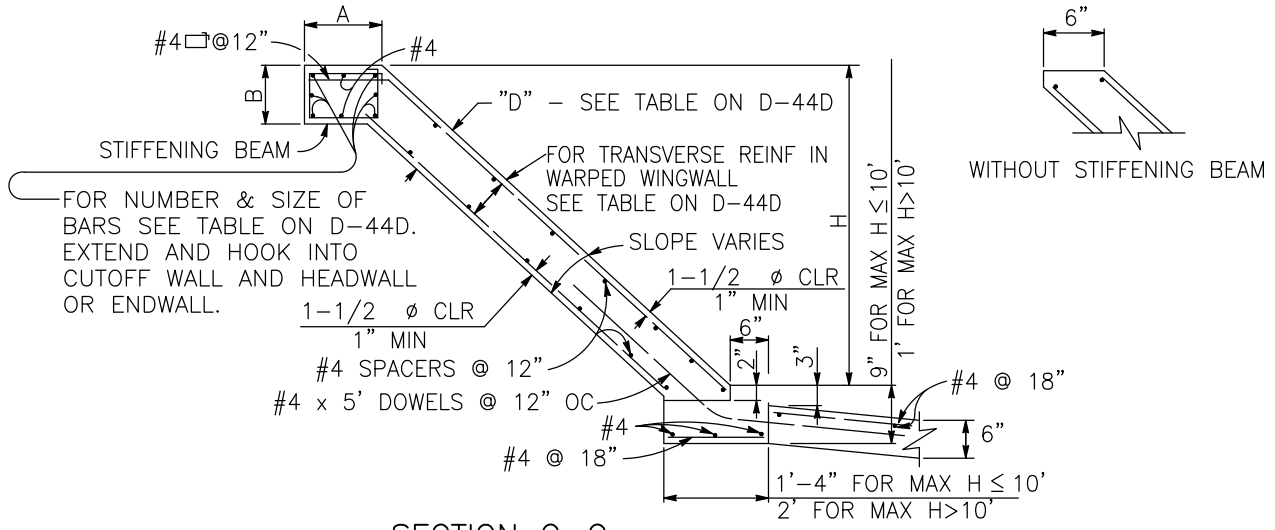
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
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
ORIGINAL		Kercheval	12/75
Reformatted		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

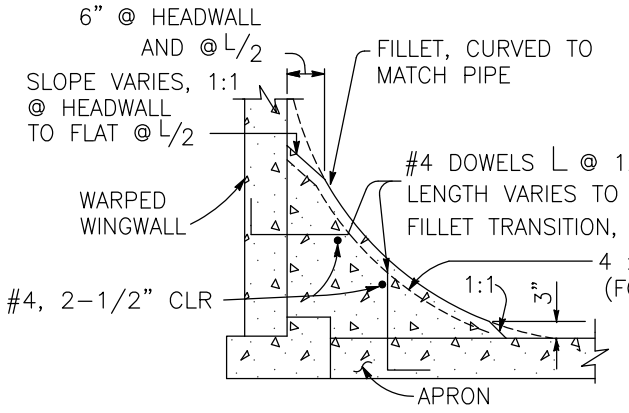
PIPE CULVERT - HEADWALLS, ENDWALLS & WARPED WINGWALLS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

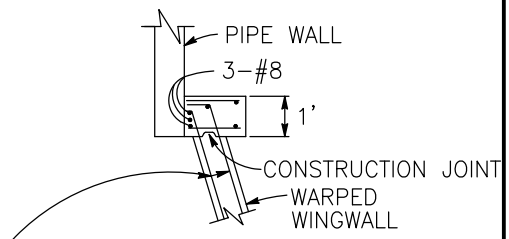
12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-44B**



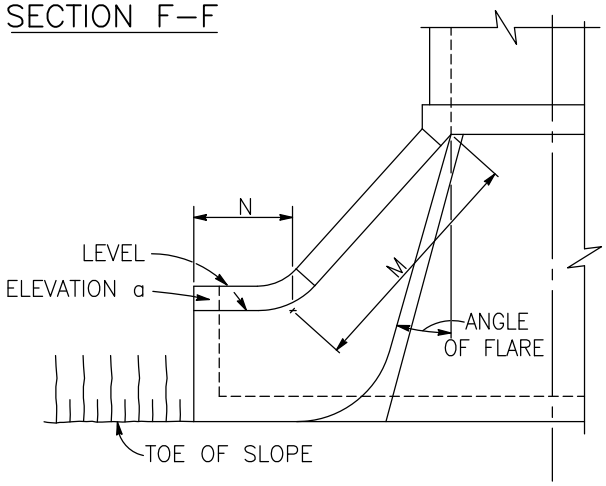
SECTION F–F



EXTEND WALL SPACERS 2'± INTO HEADWALL OR ENDWALL. ROTATE IF NECESSARY.

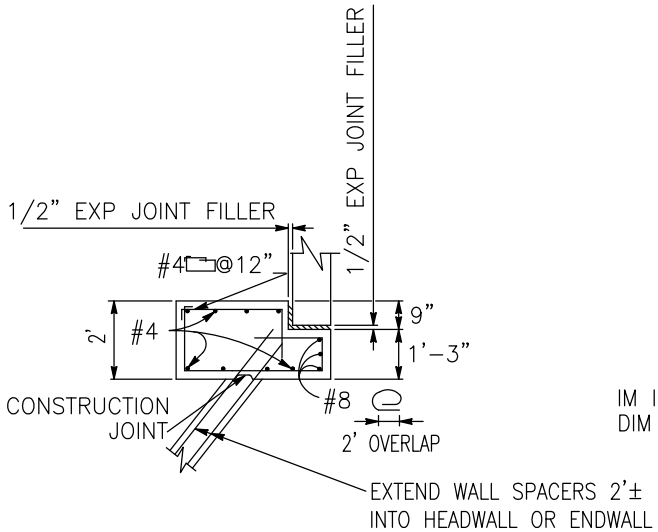
(NEAR SPRING LINE, ELIMINATE FACE EXTENSION AND JOOK REAR EXTENSION OUTWARD, IF POSSIBLE.)

SECTION B–B

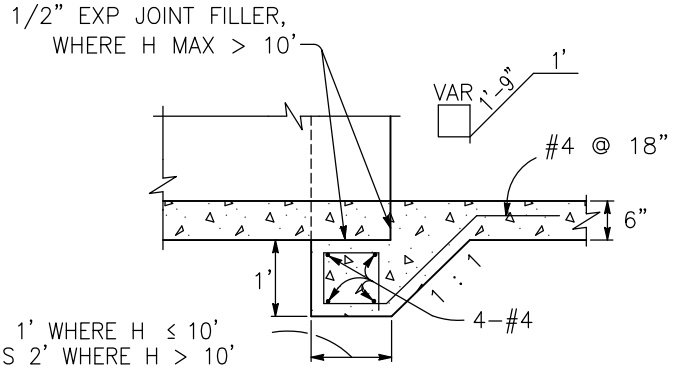


ALTERNATIVE WARPED WINGWALL

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

SAN DIEGO REGIONAL STANDARD DRAWING

PIPE CULVERT - HEADWALLS, ENDWALLS & WARPED WINGWALLS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-44C**

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

PIPE CULVERT - HEADWALLS, ENDWALLS & WARPED WINGWALLS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

DRAWING NUMBER **D-44D**

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

WALL DIMENSIONS AND REINFORCING

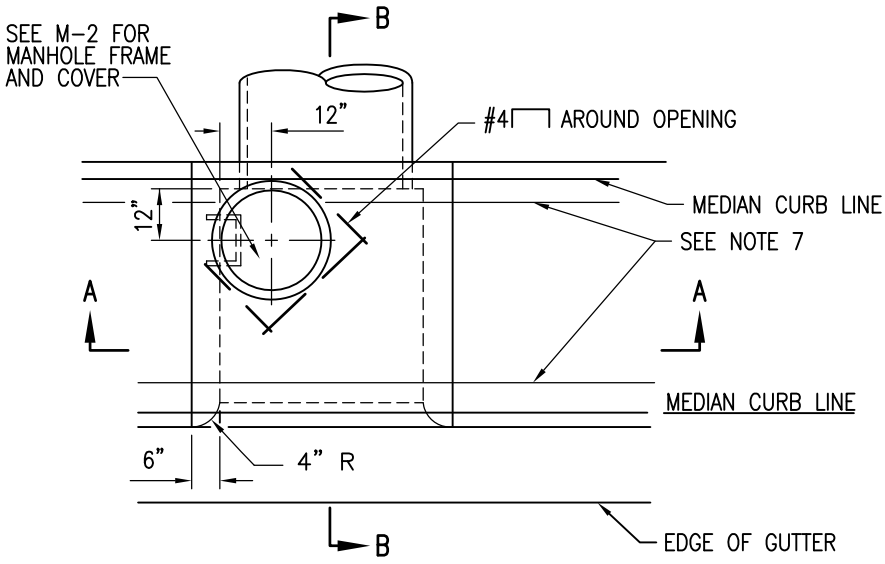
ELEMENT SLOPE	H	8'OR LESS	10'	12'	14'	16'	18'	20'
1/4:1	FRONT FACE REINF	#4@12	#4@ 7	#5@ 7	#5@ 5	#6@ 6	#7@ 7	#7@ 6
	REAR FACE REINF	#4@12	#4@12	#4@12	#4@12	#4@12	#4@12	#4@12
3/4:1	FRONT FACE REINF	#4@12	#4@12	#4@12	#4@12	#4@10	#4@ 8	#4@ 6
	REAR FACE REINF	#4@12	#4@12	#4@12	#4@10	#4@ 7	#4@ 6	#5@ 8
1–1/4:1	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

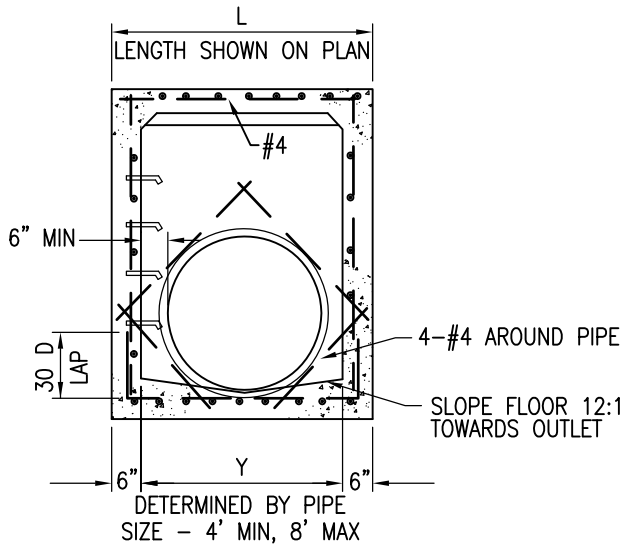
H MAX \ L	12'	14'	16'	18'	20'	25'	30'	35'	40' OR MORE
6'	NO BEAM. PLACE 2–#6 IN EACH FACE ALONG TOP OF WALL.								
8'		A= 1'							
10'		B= 9"				A= 1'–6"			
12'	TOTAL 6–#6		B= 1'					A= 1'–10"	
14'				TOTAL 6–#7		B=1'			A=2'
16'						TOTAL 6–#8		B= 1'–6"	
18'							TOTAL 8–#9		
20'									

NOTES

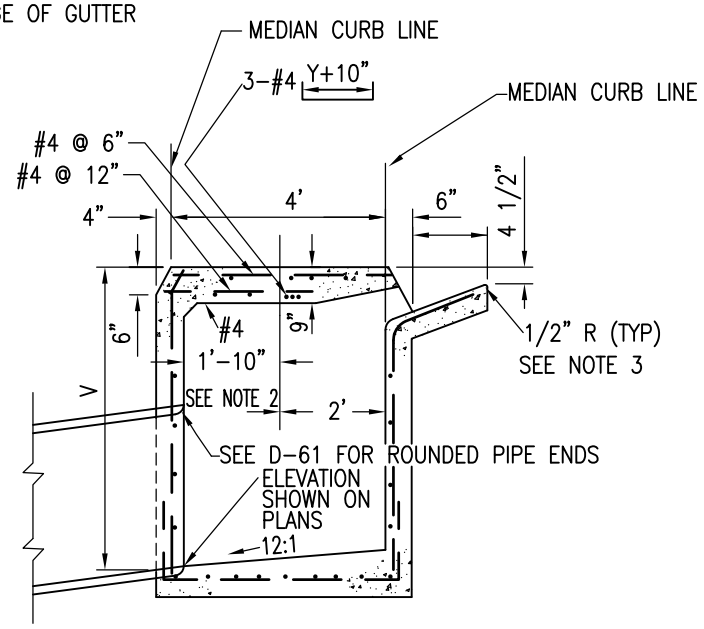
1. WALLS DESIGNED FOR 2' SURCHARGE; EARTH DENSITY = 120 # / CF; EQUIVALENT FLUID PRESSURE = 36 #/CF
2. VARY "D" AT WARPED WALL UNIFORMLY FROM THAT AT CUTOFF WALL TO THAT AT CULVERT, FOR MAXIMUM H > 12'.
3. DIMENSIONS "L", "W", "H", "M", "N", "ELEVATION a", "ANGLE OF FLARE", AND END "SLOPE" (AS APPLY)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



PLAN



SECTION A-A

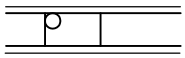


SECTION B-B

NOTES

1. SEE D-11A, D-11B & D-12 FOR ADDITIONAL NOTES AND DETAILS.
2. DIMENSION SHOWN BECOMES 2' WHEN OPENING ON BOTH SIDES. ADJUST MANHOLE AS REQUIRED.
3. EXPOSED EDGES OF CONCRETE SHALL BE ROUNDED WITH A RADIUS OF 1/2".
4. WHEN V EXCEEDS 4' STEPS SHALL BE INSTALLED. SEE D-11A FOR DETAILS.
5. CONCRETE GUTTER TO MATCH SLOPE AND FINISH OF ADJACENT GUTTERS.
6. AN EXPANSION JOINT SHALL BE PLACED AT THE ENDS OF THE INLET WHERE THE MEDIAN CURB IS TO ADJOIN (UNLESS SPECIFIED OTHERWISE).
7. PROVIDE 1/4" TOOLED GROOVE IN TOP SLAB IN LINE WITH BACK OF ADJACENT MEDIAN CURB.
8. MAINTAIN 1 1/2" CLEAR SPACING BETWEN REINFORCING AND SURFACE UNLESS OTHERWISE NOTED.

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		H. Hecht	10/82
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

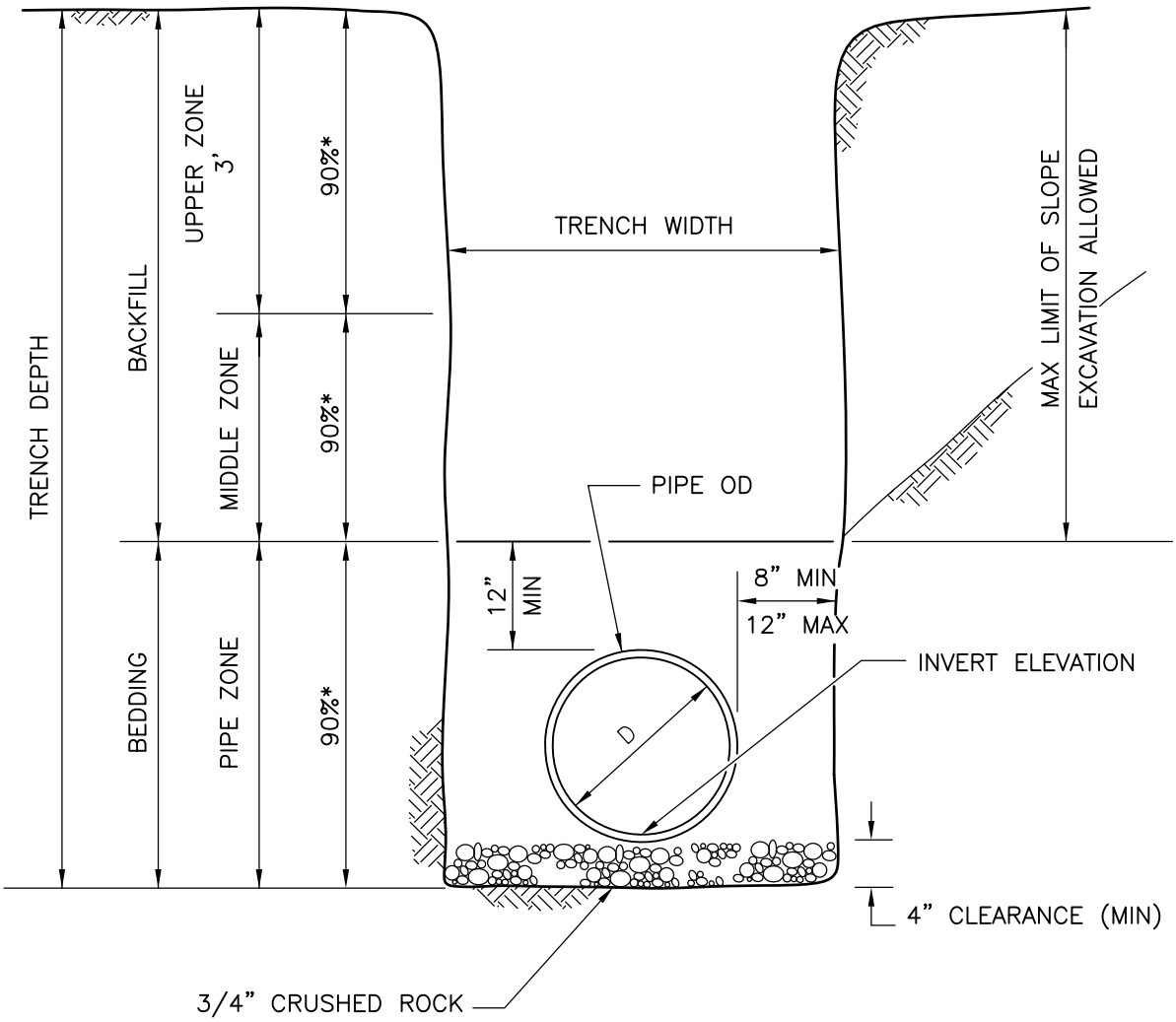
MEDIAN CURB INLET - TYPE J

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-45**



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
ORIGINAL		Kercheval	12/75
Reformatted		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

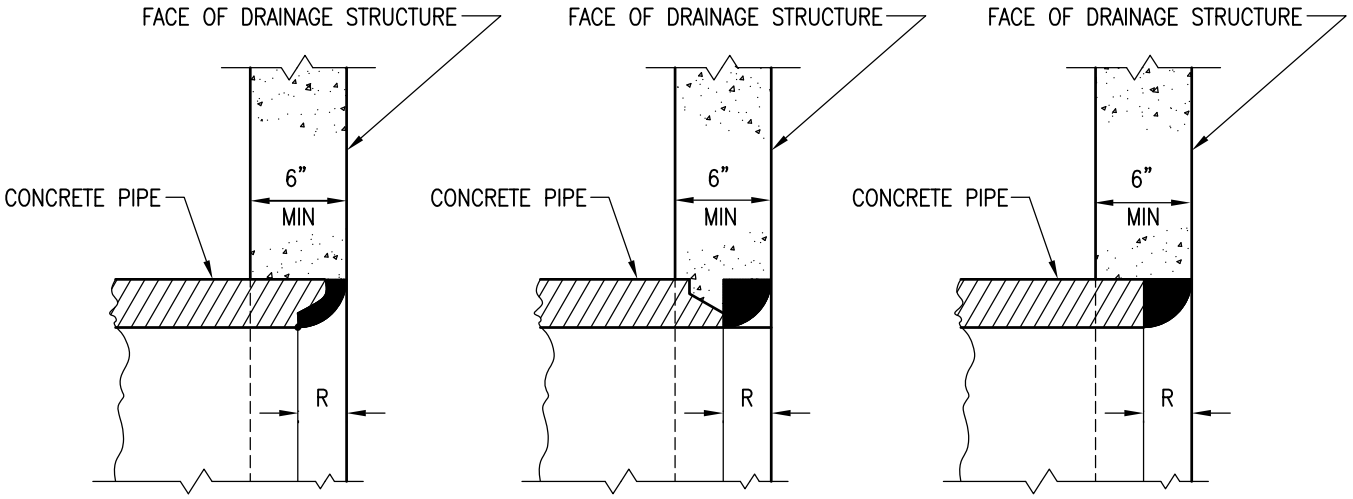
PIPE BEDDING AND TRENCH BACKFILL FOR STORM DRAINS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015

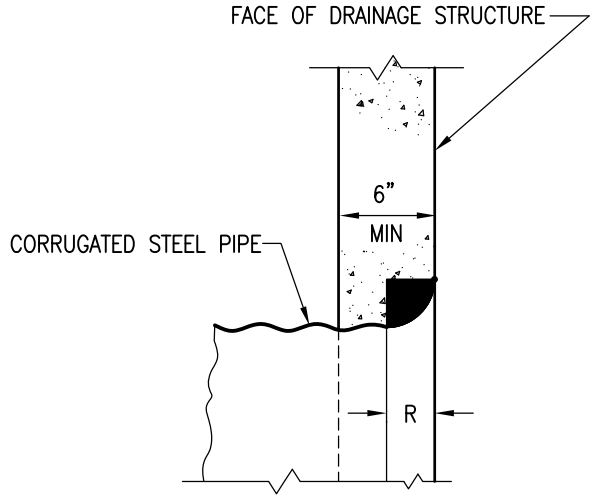
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-60**



BELL END SPIGOT END CUT END

R = THICKNESS OF PIPE



CUT END

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

NOTE

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

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

SAN DIEGO REGIONAL STANDARD DRAWING

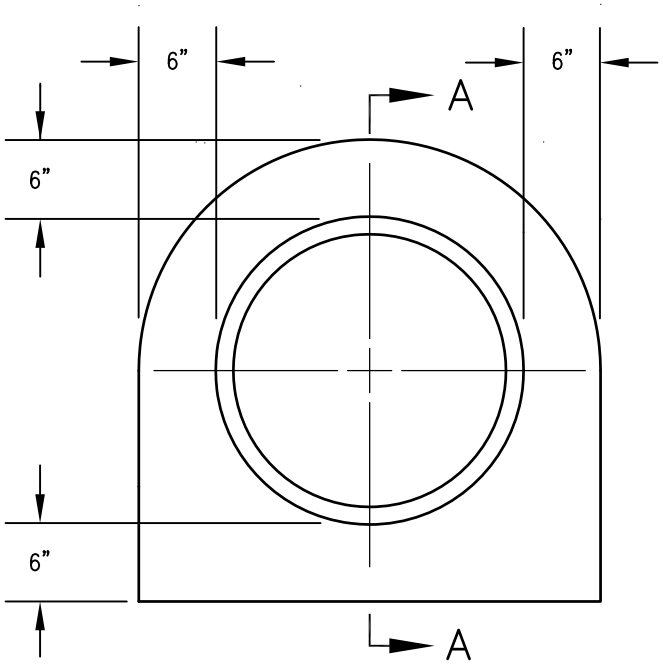
ROUNDED PIPE ENDS IN DRAINAGE STRUCTURES

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

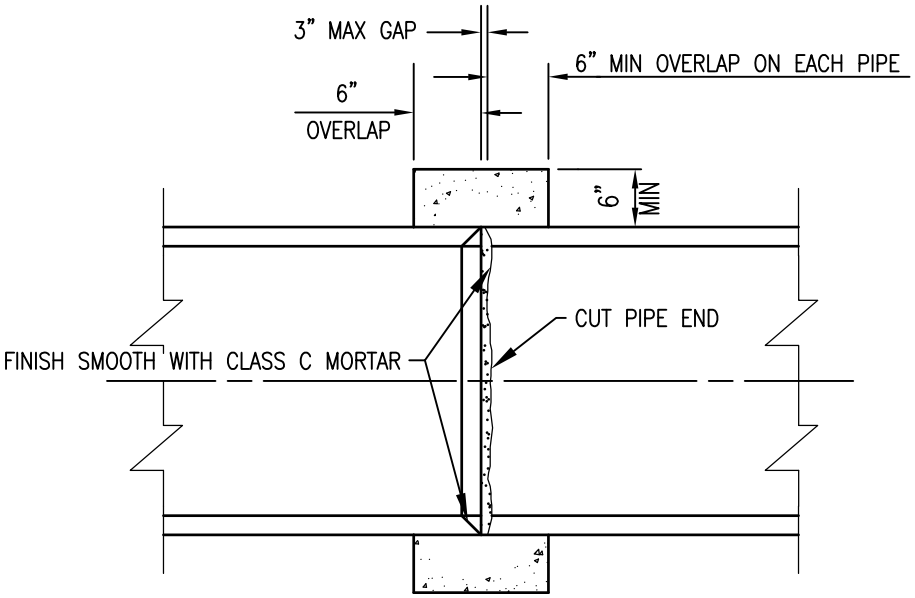
J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-61**



ELEVATION

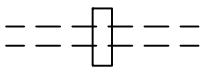


SECTION A–A

NOTES

1. PIPE COLLAR DOES NOT HAVE TO BE FINISHED IF COVERED.
2. CONCRETE SHALL BE 560-C-3250.
3. 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

SAN DIEGO REGIONAL STANDARD DRAWING

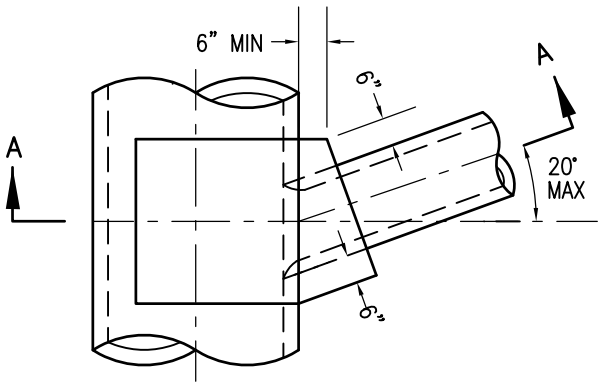
PIPE COLLAR

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

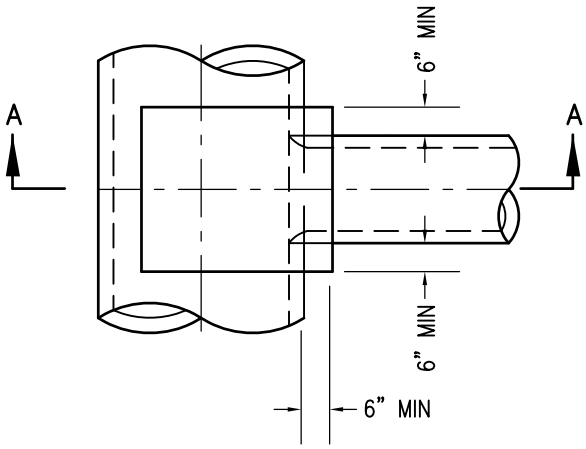
J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

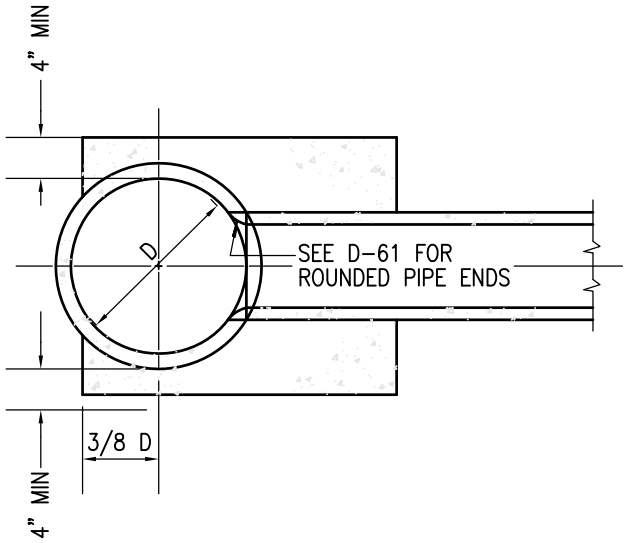
DRAWING NUMBER **D-62**



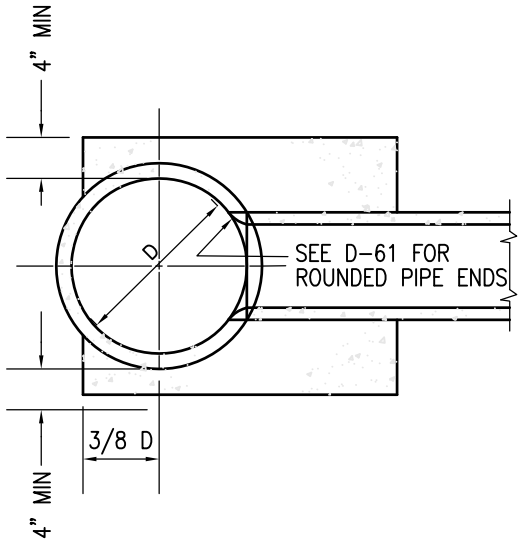
PLAN
SKEWED CONNECTION



PLAN



SECTION A–A

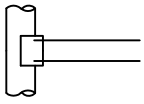


SECTION B–B

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

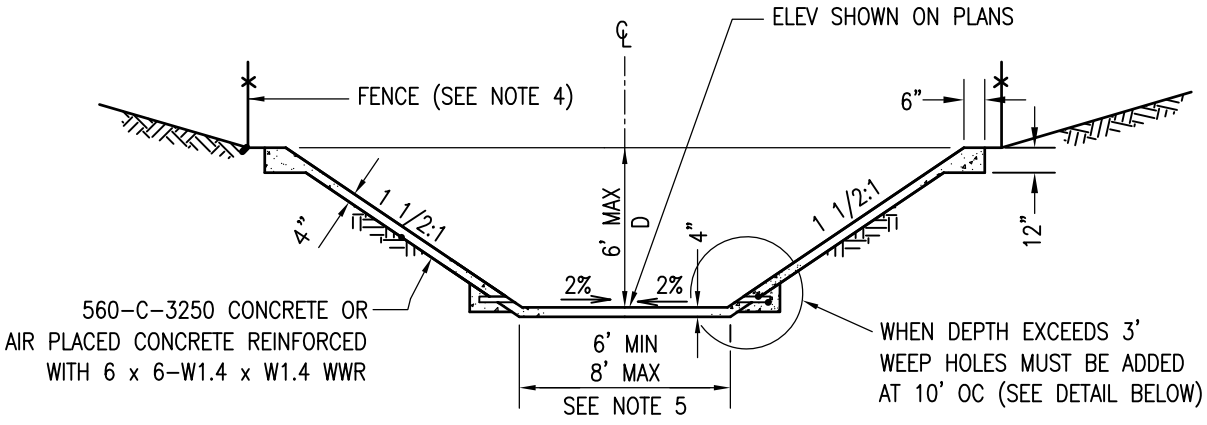
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE LUG

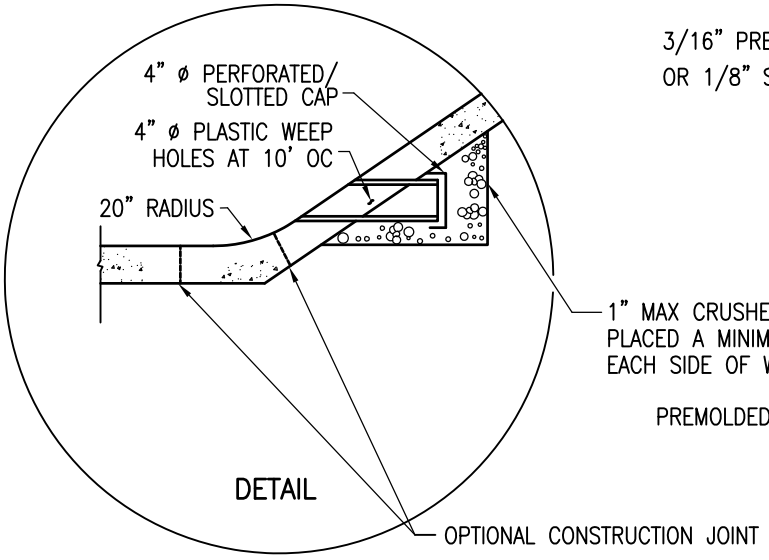
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

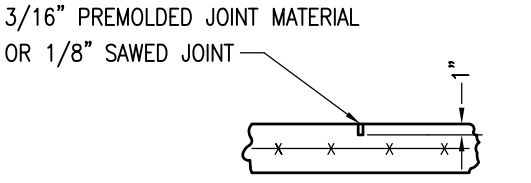
DRAWING NUMBER **D-63**



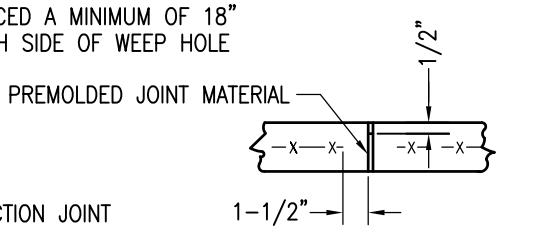
TYPICAL SECTION



DETAIL



WEAKENED PLANE JOINT

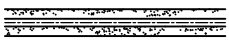


EXPANSION JOINT

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

SAN DIEGO REGIONAL STANDARD DRAWING

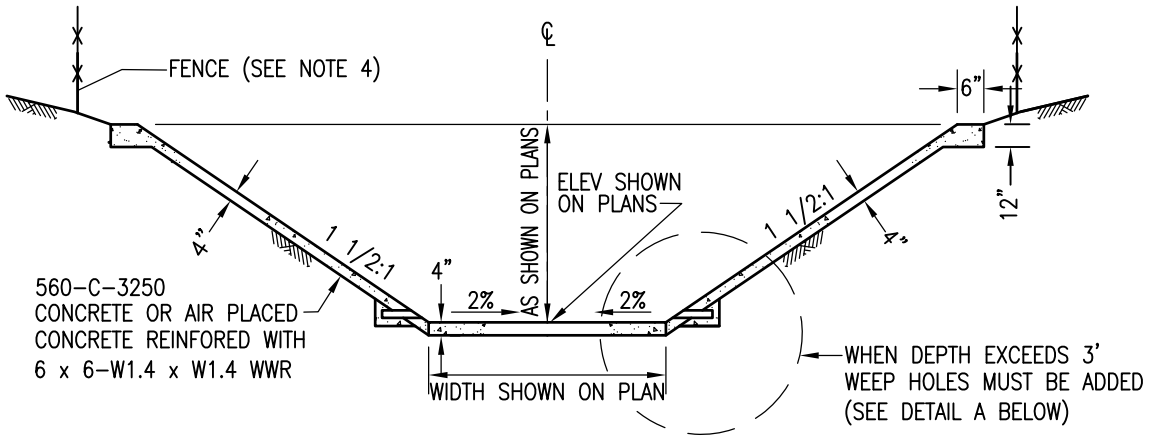
MINOR DRAINAGE CHANNEL

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

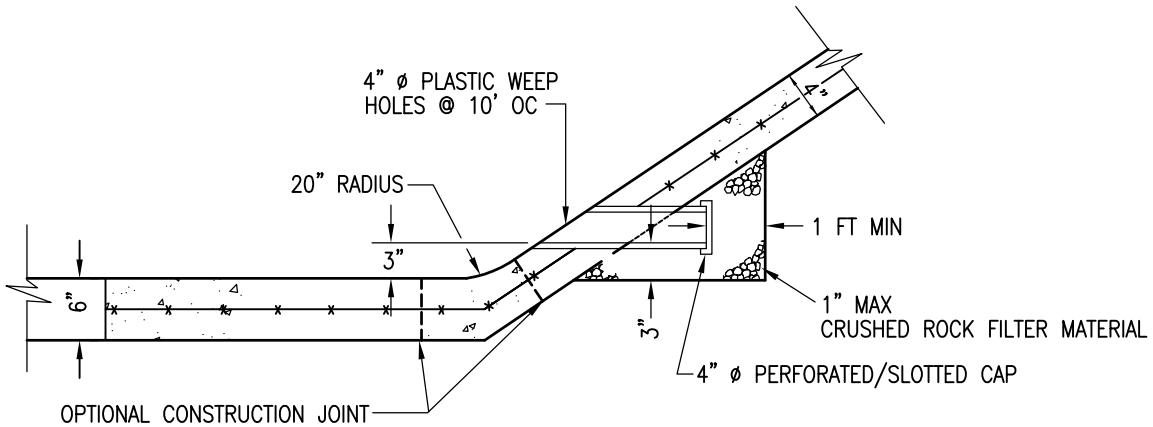
J M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

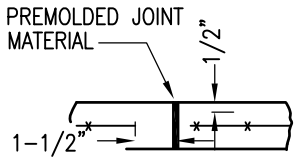
DRAWING NUMBER **D-70**



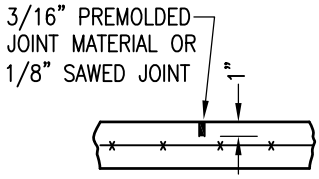
TYPICAL SECTION



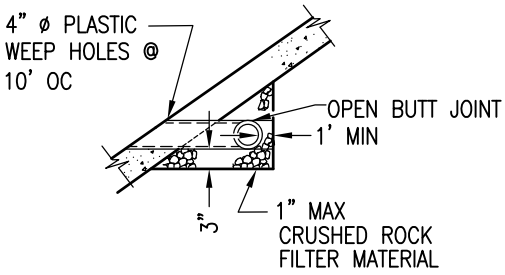
DETAIL A



EXPANSION JOINT



WEAKENED PLANE JOINT

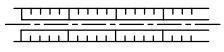


ALTERNATE
CONTINUOUS DRAIN

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

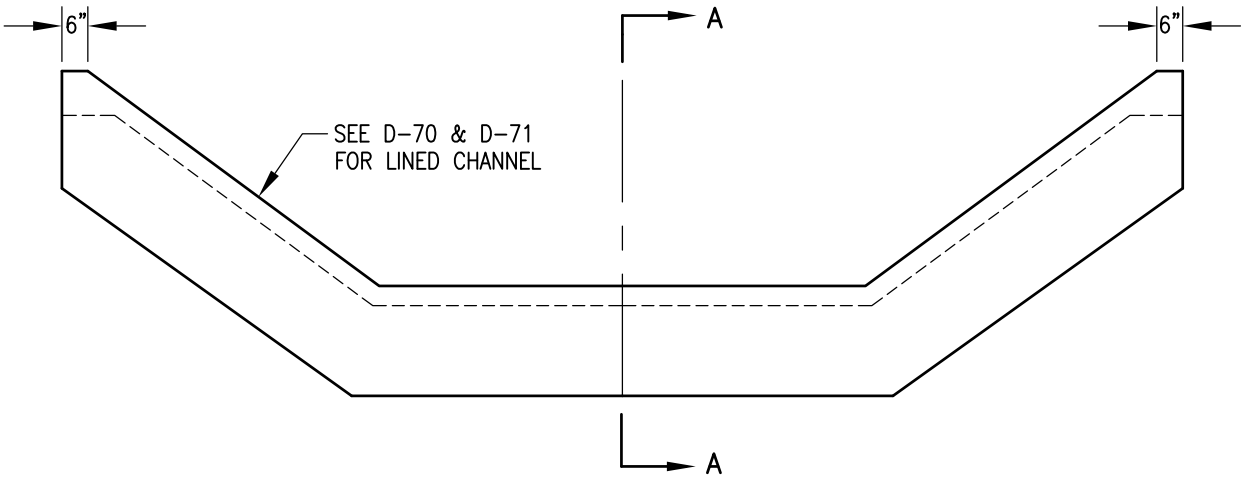
SAN DIEGO REGIONAL STANDARD DRAWING

MAJOR DRAINAGE CHANNEL

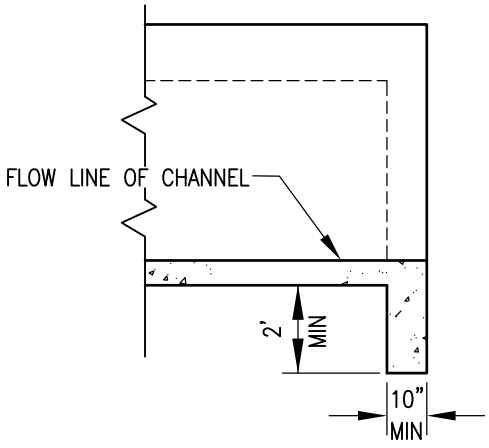
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-71**

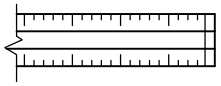


ELEVATION



SECTION A–A

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
ORIGINAL		Kercheval	12/75
Reviewed		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

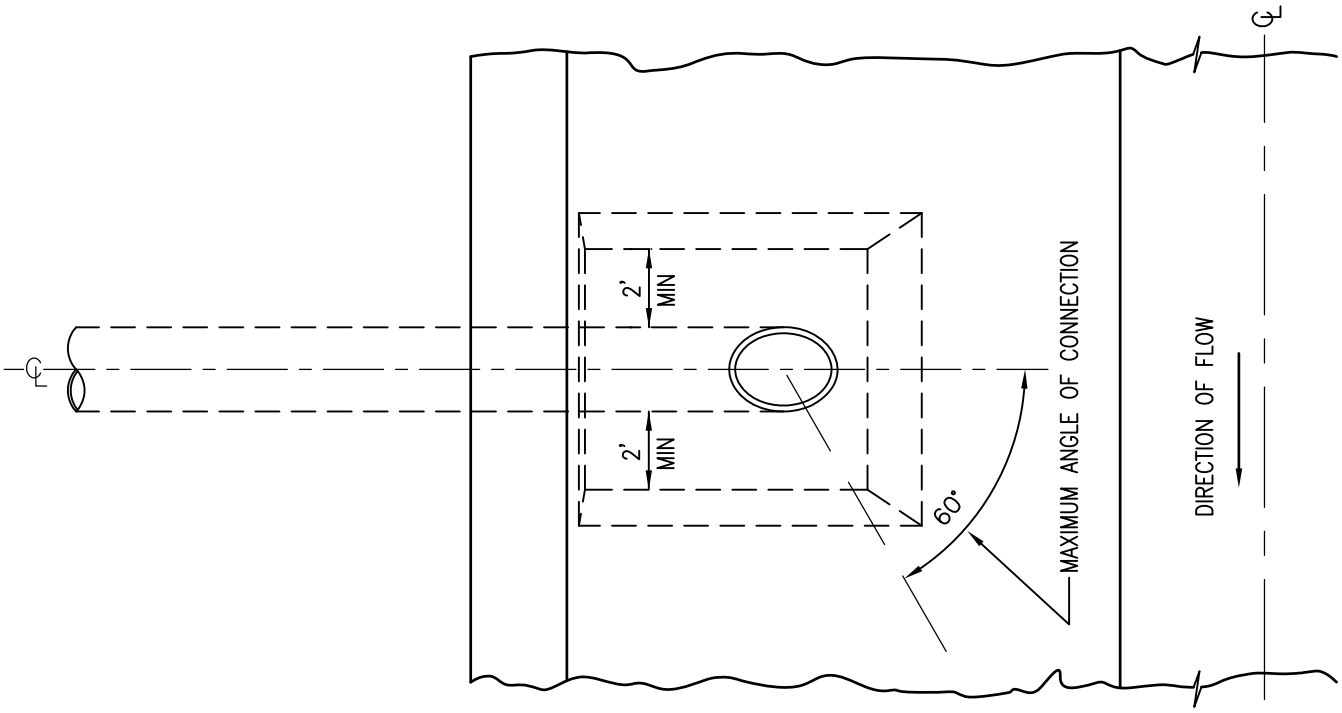
CUTOFF WALL FOR DRAINAGE CHANNEL

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

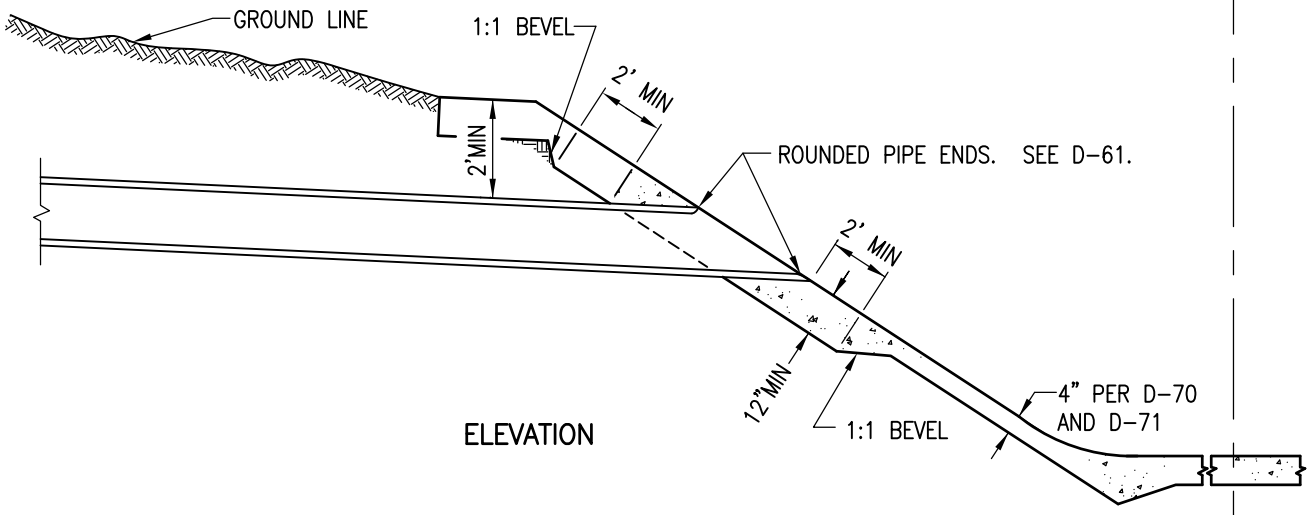
J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-72**



PLAN

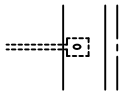


ELEVATION

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

SAN DIEGO REGIONAL STANDARD DRAWING

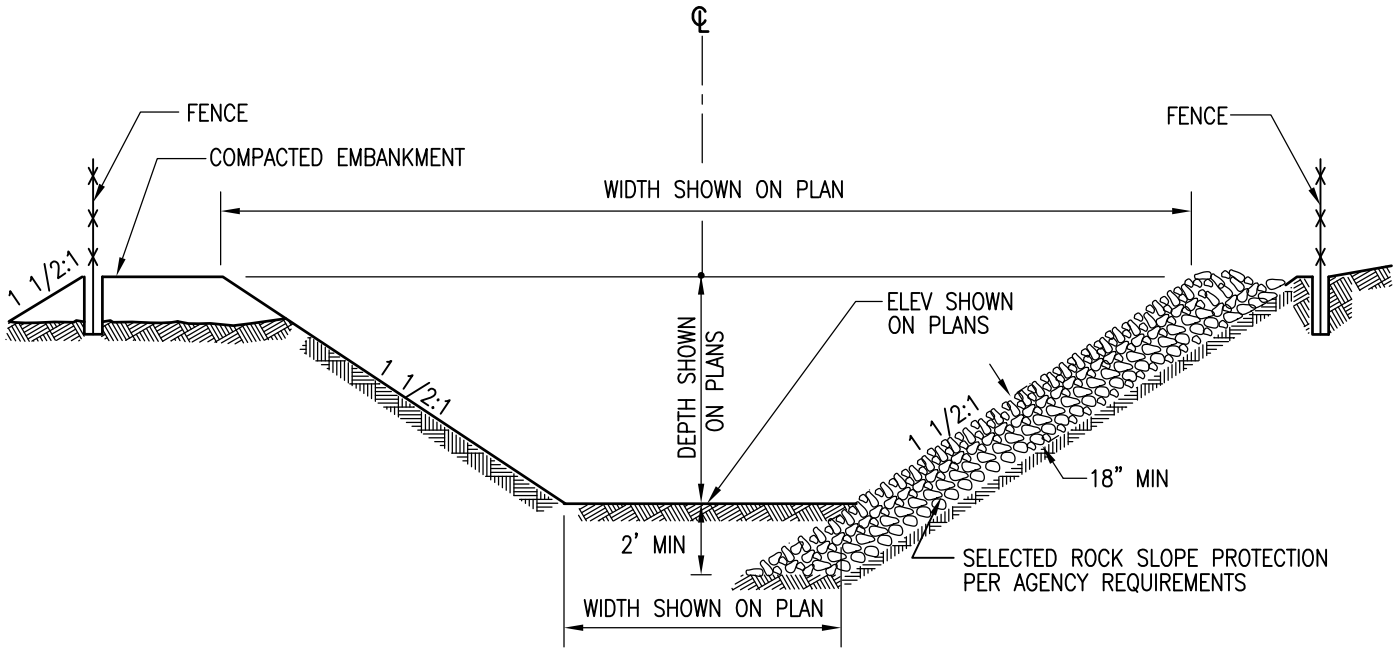
PIPE TO CHANNEL CONNECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-73**



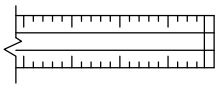
SECTION

NOTE

THE FOLLWING 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

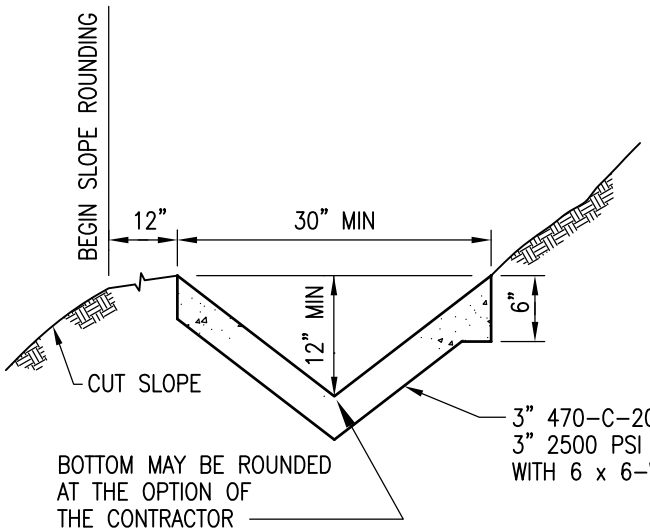
SAN DIEGO REGIONAL STANDARD DRAWING

GRADED EARTH CHANNEL

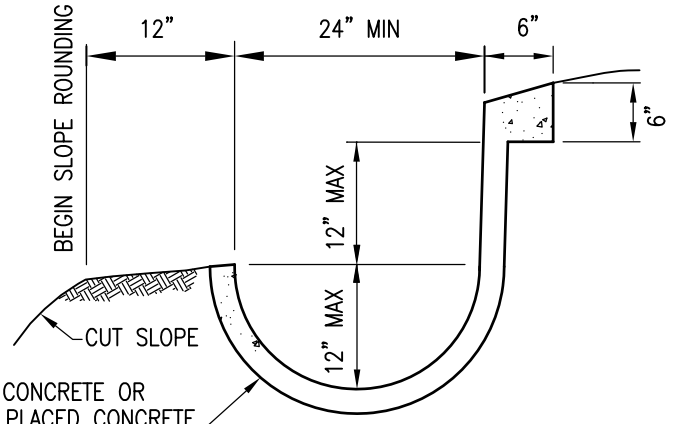
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-74**

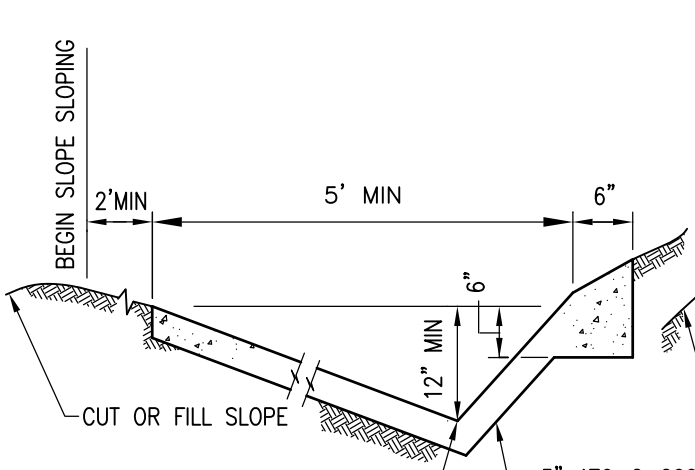


TYPE A

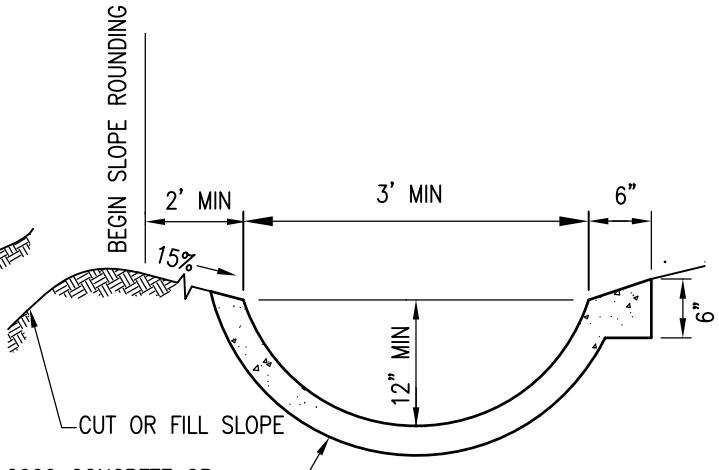


TYPE B

BROW DITCH



TYPE C



TYPE D

TERRACE DITCH

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
ORIGINAL		Kercheval	12/75
Reviewed		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

DRAINAGE DITCHES

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-75**

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

SAN DIEGO REGIONAL STANDARD DRAWING

SINGLE BOX CULVERT

DETAILS No.1

SPANS UP TO 5' (ALL MEASUREMENTS IN FEET AND/OR INCHES UNLESS NOTED OTHERWISE)

SPAN			2'		3'			4'						5'											
HEIGHT			1'-6"	2'	2'	3'		2'	3'		4'			2'		3'		4'				5'			
STRENGTH CLASSIFICATION			A	A	A	A	B	A	A	B	A	B	C	A	B	A	B	A	B	C	D	A	B	C	D
MAX FILL OVER TOP			66		38	38	66	28	28	37	28	37	50	12	27	12	27	11	26	35	46	11	25	35	46
CONC.	TOP SLAB	T_1	6	6	6 1/4	6 1/4	8	7	7	8	7	8	9	7 1/2	8	7 1/2	8	7 1/2	8	9 1/2	10 1/2	7 1/2	8	9 1/2	10 1/2
	BOTTOM SLAB	T_2	6	6	6 1/4	6 1/4	8	7	7	8	7	8	9	6	8	6	8	6	8	10	10 3/4	6	8	10	10 3/4
	SIDEWALLS	T_3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
REINFORCING STEEL	"a"	SIZE BAR #	4	4	4	4	5	5	5	5	5	5	6	5	5	5	5	5	5	6	6	5	5	6	6
		SPACING	3 1/2	3 1/2	3 1/2	3 1/2	4	5	5	4 1/2	5	4 1/2	5	4	4	4	4	4	4	5	4 1/2	4	4	5	4 1/2
		LENGTH	3-2	3-2	4-2	4-2	4-3	5-3	5-3	5-3	5-3	5-3	5-2	6-3	6-3	6-3	6-3	6-3	6-3	6-2	6-2	6-3	6-3	6-2	6-2
	"d" DIST. BARS	TOP SLAB-NO. OF	2	2	3	3	2	3	5	3	3	3	3	7	3	7	3	7	3		3	7	3		3
		BOTTOM SLAB-NO. OF	2	2	2	2	2	3	3		3		3	3		3		3			3	3	3		3
	"e" BARS	SPACING	18	18	18	18	12 1/4	18	18	18	17	13	9 1/2	18	18	18	18	18	17	13	11	18	12	8 1/2	6 1/2
	SPACERS	NUMBER	12	12	12	12		12	12		14			14		14		14				16			
QUAN.	CONCRETE: C.Y. PER LIN. FT.		17	18	23	27	31	29	33	36	36	40	43	32	37	36	41	40	44	51	54	43	48	55	57
	REINFORCING 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

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.

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

DRAWING NUMBER **D-76A**

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

SPAN		6'																									
HEIGHT		2'		3'		4'			5'			6'				7'										
STRENGTH CLASSIFICATION		A	B	A	B	A	B	C	A	B	C	D	A	B	C	D	E	A	B	C	D	E				
MAX FILL OVER TOP		10	18	10	18	10	18	25	9	18	25	36	9	17	25	36	45	9	17	25	36	45				
CONC.	TOP SLAB T_1	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	8 1/4	9 1/4	8 1/4	8 1/4	9 1/4	11	8 1/4	8 1/4	9 1/4	11	12	8 1/4	8 1/4	9 1/4	11	12				
	BOTTOM SLAB T_2	6 3/4	8	6 3/4	8	6 3/4	8	9 3/4	7 1/4	8 1/4	10	11 1/4	7 1/4	8 1/4	10 1/2	11 1/4	12 1/4	7 1/4	8 1/4	10 1/2	11 1/4	12 1/4				
	SIDEWALLS T_3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6 1/4	7	6	6	6 1/4	7	7 3/4				
REINFORCEING STEEL	"d" SIZE BAR #	5	5	5	5	5	5	6	5	5	6	6	5	5	6	7	7	5	5	6	7	7				
	"d" SPACING	4	4	4	4	4	4	5	4	4	5	4 1/2	4	4	5	5 1/2	5	4	4	5	5 1/2	5				
	LENGTH	7-3	7-3	7-3	7-3	7-3	7-3	7-2	7-3	7-3	7-2	7-2	7-3	7-3	7-2	7-3	7-5	7-3	7-3	7-2	7-5	7-6				
"d" DIST. BARS	TOP SLAB-NO. OF	7	4	7	4	7	4		7	4		4	7	4		4	4	7	4		4	4				
	BTOOM SLAB-NO. OF	4		4		4			4			4	4			4	4	4			4	4				
"e" BARS	SPACING	18	18	18	18	18	18	17	18	15 1/2	11 1/2	8 1/2	17	10 1/2	7 1/2	6	5	12	7 1/2	7	5	4 1/2				
REINFORCEING STEEL	SPACERS NUMBER	12		12		14			16				16					18								
QUAN.	CONCRETE: C.Y. PER LIN. FT.	40	42	43	46	47	50	58	52	54	60	66	56	58	65	71	78	59	61	70	78	88				
	REINFORCING LBS. PER LIN. FT.	64	63	66	65	69	67	74	70	70	80	91	73	78	92	112	127	81	90	99	126	139				

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
Reviewed		T. Stanton	04/06
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

SINGLE BOX CULVERT
DETAILS No.1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-76B**

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

SPAN			7'																	
HEIGHT			3'			4'			5'			6'			7'					
STRENGTH CLASSIFICATION			A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
MAX FILL OVER TOP			16	26	35	16	26	35	16	26	35	16	26	35	16	26	35	16	26	35
CONC.	TOP SLAB	T_1	7 1/4	8 1/4	9 3/4	7 1/4	8 1/4	9 3/4	7 1/4	8 1/4	9 3/4	7 1/4	8 1/4	9 3/4	7 1/4	8 1/4	9 3/4	7 1/4	8 1/4	9 3/4
	BOTTOM SLAB	T_2	7 1/2	8 3/4	10 1/2	7 1/2	8 3/4	10 1/2	7 1/2	8 3/4	10 1/2	7 1/2	8 3/4	10 1/2	7 1/2	8 3/4	10 1/2	7 1/2	8 3/4	10 1/2
	SIDEWALLS	T_3	6	7	8 1/2	6	7	8 1/2	6	7	8 1/2	6	7	8 1/2	6	7	8 1/2	6	7	8 1/2
REINFORCING STEEL	"a"	SIZE BAR #	5	5	6	5	5	6	5	5	6	5	5	6	5	5	6	5	5	6
		SPACING	9	7	9	9	7	9	9	7	9	9	7	9	9	7	9	9	7	9
		LENGTH	6-8	6-9	6-10	6-8	6-9	6-10	6-8	6-9	6-10	6-8	6-9	6-10	6-8	6-9	6-10	6-8	6-9	6-10
	"b"	SIZE BAR #	5	5	6	5	5	6	5	5	6	5	5	6	5	5	6	5	5	6
		SPACING	9	7	9	9	7	9	9	7	9	9	7	9	9	7	9	9	7	9
		DIMENSION "X"	1-3	1-4	1-8	1-3	1-4	1-8	1-3	1-4	1-8	1-3	1-4	1-8	1-3	1-4	1-8	1-3	1-4	1-8
		LENGTH	3-1	3-2	3-10	3-1	3-2	3-10	3-1	3-2	3-10	3-1	3-2	3-10	3-1	3-2	3-10	3-1	3-2	3-10
	"c"	SIZE BAR #	5	5	6	5	5	6	5	5	6	5	5	6	5	5	6	5	5	6
		SPACING	9	7	9	9	7	9	9	7	9	9	7	9	9	7	9	9	7	9
		DIMENSION "Y"	1-10	1-11	1-10	1-10	1-11	1-10	1-10	1-11	2-3	1-10	1-11	2-3	1-10	2-3	1-10	1-10	1-11	2-3
		LENGTH	5-2	5-4	6-2	6-2	6-4	7-2	7-2	7-4	7-10	8-2	8-4	8-10	9-2	9-4	9-10	9-2	9-4	9-10
	"c_1"	SIZE BAR #	5	5	6	5	5	6	5	5	6	5	5	6	5	5	6	5	5	6
		SPACING	9	7	9	9	7	9	9	7	9	9	7	9	9	7	9	9	7	9
		DIMENSION "Y"	1-10	1-11	1-10	1-10	1-11	1-10	1-10	1-11	2-3	1-10	1-11	2-3	1-10	2-3	1-10	1-10	1-11	2-3
		LENGTH	3-8	3-10	3-8	3-8	3-10	3-8	3-10	3-10	4-6	3-8	3-10	4-6	3-8	4-6	3-8	3-8	3-10	4-6
	"d" BARS	TOP SLAB-NO. OF	7	4	4	7	4	4	7	4	4	7	4	4	7	4	4	7	4	4
		BOTTOM SLAB-NO. OF	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			32			36					
QUAN.	CONCRETE: C.Y. PER LIN. FT.		47	56		51	60		55	64	78	58	68	84	62	73	89			
	REINFORCING LBS. PER LIN. FT.		107	130		114	138		118	143	168	125	150	176	132	158	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
ORIGINAL		A.Kercheval	12/75
Reviewed		T. Stanton	04/06
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

SINGLE BOX CULVERT
DETAILS No.1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-76C**

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

SAN DIEGO REGIONAL STANDARD DRAWING

SINGLE BOX CULVERT
DETAILS No.1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

DRAWING NUMBER **D-76D**

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

SPAN			8'															
HEIGHT			3'		4'		5'		6'			7'			8'			
STRENGTH CLASSIFICATION			A	B	A	B	A	B	A	B	C	A	B	C	A	B	C	
MAX FILL OVER TOP			13	21	13	21	13	21	13	21	31	13	21	31	13	21	31	
CONC.	TOP SLAB	T_1	7 1/4	8 1/2	7 1/4	8 1/2	7 1/4	8 1/2	7 1/4	8 1/2	10 1/4	7 1/4	8 1/2	10 1/4	7 1/4	8 1/2	10 1/4	
	BOTTOM SLAB	T_2	7 1/4	9 1/2	7 1/4	9 1/2	7 1/4	9 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	
	SIDEWALLS	T_3	6 1/2	7 1/2	6 1/2	7 1/2	6 1/2	7 1/2	6 1/2	7 1/2	9 3/4	6 1/2	7 1/2	9 3/4	6 1/2	7 1/2	9 3/4	
REINFORCING STEEL	"a"	SIZE BAR #	5	5	5	5	5	5	5	5	6	5	5	6	5	5	6	
		SPACING	9	7	9	7	9	7	9	7	8	9	7	8	9	7	8	
		LENGTH	7–7	7–8	7–7	7–8	7–7	7–8	7–7	7–8	7–10	7–7	7–8	7–10	7–7	7–8	7–10	
	"b"	SIZE BAR #	5	5	5	5	5	5	5	5	6	5	5	6	5	5	6	
		SPACING	9	7	9	7	9	7	9	7	8	9	7	8	9	7	8	
		DIMENSION "X"	1–6	1–7	1–6	1–7	1–6	1–7	1–6	1–7	1–8	1–6	1–7	1–8	1–6	1–7	1–8	
		LENGTH	3–4	3–5	3–4	3–5	3–4	3–5	3–4	3–5	3–10	3–4	3–5	3–10	3–4	3–5	3–10	
	"c"	SIZE BAR #	5	5	5	5	5	5	5	5	6	5	5	6	5	5	6	
		SPACING	9	7	9	7	9	7	9	7	8	9	7	8	9	7	8	
		DIMENSION "Y"	2	2–5	2	2–5	2	2–5	2	2–5	2–8	2	2–5	2–8	2	2–5	2–8	
		LENGTH	5–4	5–10	6–4	6–10	7–4	7–10	8–4	8–10	9–3	9–4	9–10	10–3	10–4	10–10	11–3	
	"c_1"	SIZE BAR #	5	5	5	5	5	5	5	5	6	5	5	6	5	5	6	
		SPACING	9	7	9	7	9	7	9	7	8	9	7	8	9	7	8	
		DIMENSION "Y"	2	2–5	2	2–5	2	2–5	2	2–5	2–8	2	2–3	2–8	2	2–5	2–8	
		LENGTH	3–9	4–5	3–9	4–5	3–9	4–5	3–9	4–5	5	3–9	4–5	5	3–9	4–5	5	
	"d" BARS	TOP SLAB–NO. OF	7	5	7	5	7	5	7	5	5	7	5	5	7	5	5	
		BOTTOM SLAB–NO. OF	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
	"e" BARS	SPACING	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	
	SPACERS	TOTAL NUMBER	28		32		32		36			40			40			
QUAN.	CONCRETE: C.Y. PER LIN. FT.		52	65	56	70	60	74	65	79	100	69	83	106	73	88	112	
	REINFORCING LBS. PER LIN. FT.		118	146	125	154	129	139	136	167	211	143	174	220	147	179	225	

NOTE

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

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

	SPAN	10'																					
	HEIGHT	4'		5'		6'		7'		8'		9'		10'									
	STRENGTH CLASSIFICATION	A	B	A	B	A	B	A	B	A	B	A	B	A	B	C	A	B	C	A	B	C
	MAX FILL OVER TOP	9	18	9	18	9	18	9	18	8	18	8	18	8	18	28	8	18	28	8	18	28
CONC.	TOP SLAB T_1	8	9 1/2	8 1/4	9 3/4	8 1/4	9 3/4	8 1/4	9 3/4	8 1/2	9 3/4	9 1/4	11	9 1/2	11 1/2	12 1/4	8 1/2	9 3/4	12 1/4	8 1/2	9 3/4	12 1/4	8 1/2	9 3/4	12 1/4
	Bottom Slab T_2	8 3/4	10 1/2	9	10 3/4	9	10 3/4	9	10 3/4	9 1/4	11	9 1/4	11	9 1/4	13 1/4	13 1/4	9 1/4	11	13 1/4	9 1/4	11	13 1/4	9 1/4	11	13 1/4
	Sidewalls T_3	7 1/4	9 1/2	7 1/4	9 1/2	7 1/4	9 1/2	7 1/4	9 1/2	7 1/4	9 1/2	7 1/4	9 1/2	7 1/4	9 1/2	11 1/2	8	9 1/2	11 1/2	9	9 1/2	11 1/2	9	9 1/2	11 1/2
REINFORCING STEEL	"a" SIZE BAR #	6	6	6	6	6	6	6	6	6	6	6	7	6	6	7	6	6	7	6	6	7	6	6	7
	"a" SPACING	11	8	11	8	11	8	11	8	11	8	9	9	11	8	9	11	8	9	11	8	9	11	8	9
	"a" LENGTH	9-5	9-8	9-5	9-8	9-5	9-8	9-5	9-8	9-5	9-8	9-6	9-9	9-6	9-9	9-9	9-6	9-9	9-9	9-5	9-8	9-9	9-5	9-8	9-9
	"b" SIZE BAR #	5	6	5	6	5	6	5	6	5	6	6	6	5	6	6	5	6	6	5	6	6	5	6	6
	"b" SPACING	11	8	11	8	11	8	11	8	11	8	9	9	11	8	9	11	8	9	11	8	9	11	8	9
	"b" DIMENSION "X"	2	2	2	2	2	2	2	2	2	2	2-6	2-6	2	2	2-6	2	2	2-6	2	2	2-6	2	2	2-6
	"b" LENGTH	3-10	4-2	3-10	4-2	3-10	4-2	3-10	4-2	3-10	4-2	4-8	4-8	3-10	4-2	4-8	3-10	4-2	4-8	3-10	4-2	4-8	3-10	4-2	4-8
	"c" SIZE BAR #	5	6	5	6	5	6	5	6	5	6	6	6	5	6	6	5	6	6	5	6	6	5	6	6
	"c" SPACING	11	8	11	8	11	8	11	8	11	8	9	9	11	8	9	11	8	9	11	8	9	11	8	9
	"c" DIMENSION "Y"	2-8	3-4	2-8	3-4	2-8	3-4	2-8	3-4	2-8	3-4	3-6	3-6	2-8	3-4	3-6	2-8	3-4	3-6	2-8	3-4	3-6	2-8	3-4	3-6
	"c" LENGTH	6-11	7-10	8-1	8-10	9-1	9-10	10-1	10-10	11-1	11-10	12-3	12-3	12-1	12-10	13-3	12-1	12-10	13-3	13-1	13-10	14-3	13-1	13-10	14-3
	"c_1" SIZE BAR #	5	6	5	6	5	6	5	6	5	6	6	6	5	6	6	5	6	6	5	6	6	5	6	6
	"c_1" SPACING	11	8	11	8	11	8	11	8	11	8	9	9	11	8	9	11	8	9	11	8	9	11	8	9
	"c_1" DIMENSION "Y"	2-8	3-4	2-8	3-4	2-8	3-4	2-8	3-4	2-8	3-4	3-6	3-6	2-8	3-4	3-6	2-8	3-4	3-6	2-8	3-4	3-6	2-8	3-4	3-6
	"c_1" LENGTH	4-7	5-8	4-7	5-8	4-7	5-8	4-7	5-8	4-7	5-8	6	6	4-7	5-8	6	4-7	5-8	6	4-7	5-8	6-2	4-7	5-8	6-2
	"d" BARS TOP SLAB-NO. OF	9	5	9	5	9	5	9	5	9	5	5	5	9	5	5	9	5	5	9	5	5	9	5	5
	"d" BARS BOTTOM SLAB-NO. OF	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	"e" 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
	SPACERS TOTAL NUMBER	32		34		36		40		40		44		48											
QUAN.	CONCRETE: C.Y. PER LIN. FT.	75	94	82	108	86	108	92	115	97	121	106	126	118	132	157	118	132	165	132	165	196	132	165	196
	REINFORCING LBS. PER LIN. FT.	143	221	148	228	154	235	160	244	164	250	170	259	178	267	273	178	267	281	267	281	296	267	281	296

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
Reviewed		T. Stanton	04/06
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

SINGLE BOX CULVERT
DETAILS No.1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-76E**

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

	SPAN		12'																			
	HEIGHT		6'		7'		8'		9'			10'			12'							
	STRENGTH CLASSIFICATION		A	B	A	B	A	B	A	B	C	A	B	C	A	B	C
	MAX FILL OVER TOP		5	16	5	16	5	16	5	16	24	5	16	24	5	16	24
CONC.	TOP SLAB	T_1	8 3/4	11 1/4	8 3/4	11 1/4	8 3/4	11 1/4	9	11 1/4	13 1/4	9	11 1/4	13 1/4	9	11 1/4	13 1/4
	BOTTOM SLAB	T_2	8 3/4	12 1/4	8 3/4	12 1/4	8 3/4	12 1/4	9	12 1/4	14 3/4	9	12 1/4	14 3/4	9	12 1/4	14 3/4
	SIDEWALKS	T_3	7 1/2	10 1/2	7 1/2	10 1/2	7 1/2	10 1/2	8	10 1/2	12 1/2	9	10 1/2	12 1/2	9	10 1/2	12 1/2
REINFORCING STEEL	"a"	SIZE BAR #	6	7	6	7	6	7	6	7	7	6	7	7	6	7	7
		SPACING	11	10	11	10	11	10	11	10	8	11	10	8	11	10	8
		LENGTH	11–3	11–6	11–3	11–6	11–3	11–6	11–4	11–6	11–8	11–5	11–6	11–8	11–5	11–6	11–8
	"b"	SIZE BAR #	6	7	6	7	6	7	6	7	7	6	7	7	6	7	7
		SPACING	11	10	11	10	11	10	11	10	8	11	10	8	11	10	8
		DIMENSION "X"	2–8	3	2–8	3	2–8	3	2–8	3	3	2–8	3	3	2–8	3	3
		LENGTH	4–10	5–7	4–10	5–7	4–10	5–7	4–10	5–7	5–7	4–10	5–7	5–7	4–10	5–7	5–7
	"c"	SIZE BAR #	6	7	6	7	6	7	6	7	7	6	7	7	6	7	7
		SPACING	11	10	11	10	11	10	11	10	8	11	10	8	11	10	8
		DIMENSION "Y"	3–9	3–9	3–9	3–9	3–9	3–9	3–9	3–9	3–9	3–9	3–9	3–9	3–9	3–9	3–9
		LENGTH	10–2	10–4	11–2	11–4	12–2	12–4	13–2	13–4	13–6	14–2	14–4	14–6	16–2	16–4	16–6
	"c_1"	SIZE BAR #	6	7	6	7	6	7	6	7	7	6	7	7	6	7	7
		SPACING	11	10	11	10	11	10	11	10	8	11	10	8	11	10	8
		DIMENSION "Y"	3–9	3–9	3–9	3–9	3–9	3–9	3–9	3–9	3–9	3–9	3–9	3–9	3–9	3–9	3–9
		LENGTH	5–11	6–5	5–11	6–5	5–11	6–6	5–11	6–6	6–8	5–11	6–6	6–8	5–11	6–6	6–8
	"d" BARS	TOP SLAB–NO. OF	10	6	10	6	10	6	10	6	6	10	6	6	10	6	6
		BOTTOM SLAB–NO. OF	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	"e" BARS	SPACING	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	SPACERS	TOTAL NUMBER	36		44		44		44			48			52		
QUAN.	CONCRETE: C.Y. PER LIN. FT.		99	138	103	144	108	152	118	158	190	130	165	198	141	178	213
	REINFORCING LBS. PER LIN. FT.		203	293	213	304	218	311	223	317	387	231	326	397	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
Reviewed		T. Stanton	04/06
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

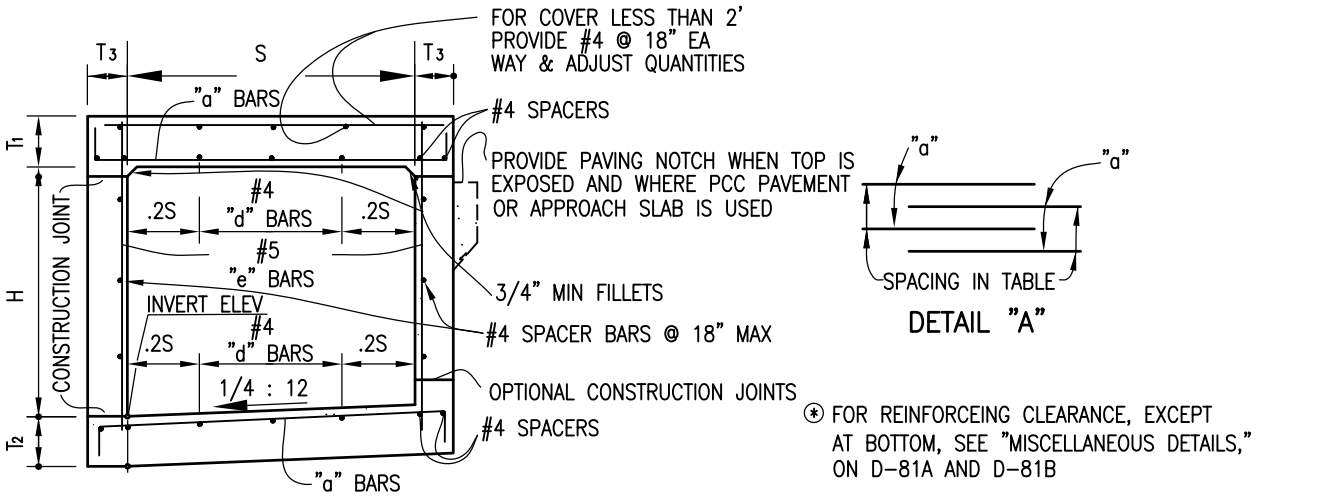
SAN DIEGO REGIONAL STANDARD DRAWING

SINGLE BOX CULVERT
DETAILS No.1

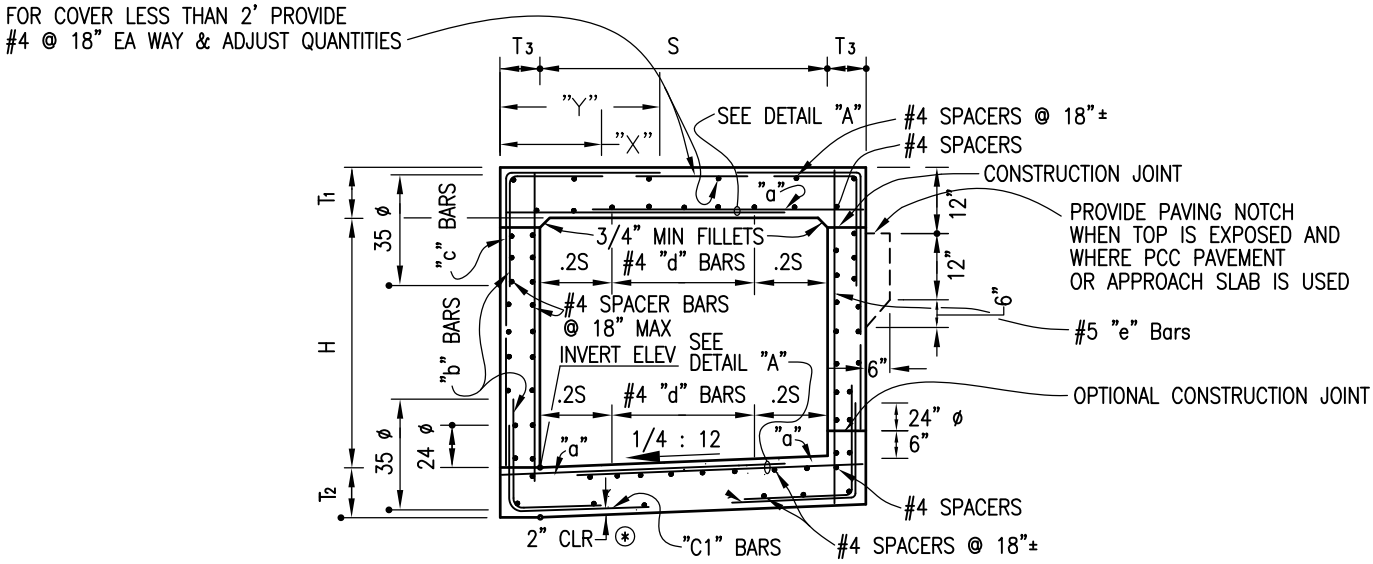
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

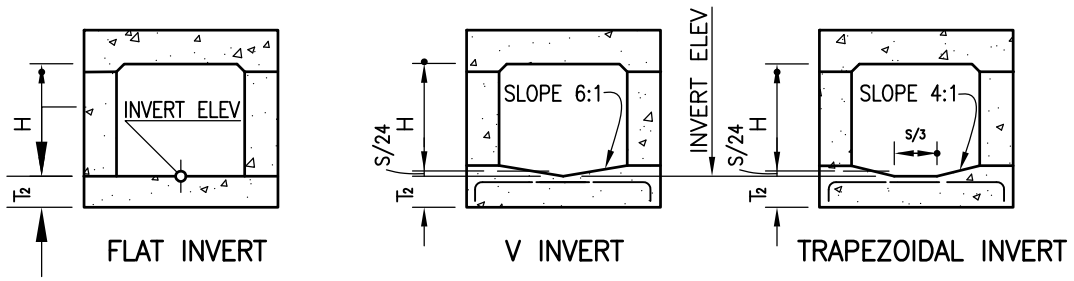
DRAWING NUMBER **D-76F**



TYPICAL SECTIONS 2' THRU 6' SPANS



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

SAN DIEGO REGIONAL STANDARD DRAWING

SINGLE BOX CULVERT DETAILS NO.2

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J M Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-76G**

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

SAN DIEGO REGIONAL STANDARD DRAWING

DOUBLE BOX CULVERT

DETAILS No. 1

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

SPAN			4'										
HEIGHT			2'			3'				4'			
STRENGTH CLASSIFICATION			A	B	C	A	B	C	D	A	B	C	D
MAX FILL OVER TOP			11	21	32	11	23	34	46	11	23	34	46
CONC.	TOP SLAB	T_1	6 1/2	6 1/2	7 1/4	6 1/2	6 1/2	7 1/2	8 1/2	6 1/2	6 1/2	7 1/2	8 1/2
CONC.	BOTTOM SLAB	T_2	6	7 1/4	8 1/2	6	7 1/2	8 1/2	9 1/2	6	7 1/2	8 1/2	9 1/2
CONC.	SIDEWALLS	T_3	6	6	6	6	6	6	6	6	6	6	6
REINFORCING STEEL	"a"	SIZE BAR #	5	4	4	5	4	4	4	5	4	4	4
REINFORCING STEEL	"a"	SPACING	11	11	9	11	10 1/2	8 1/2	7 1/2	11	10 1/2	8 1/2	7 1/2
REINFORCING STEEL	"a"	LENGTH	10-3	10-2	10-2	10-3	10-2	10-2	10-2	10-3	10-2	10-2	10-2
REINFORCING STEEL	"b" or "b_1"	SIZE BAR #	5	5	5	5	5	5	5	5	5	5	5
REINFORCING STEEL	"b" or "b_1"	SPACING	11	11	9	11	10 1/2	8 1/2	7 1/2	11	10 1/2	8 1/2	7 1/2
REINFORCING STEEL	"b" or "b_1"	LENGTH "b"	9-4	9-4	9-6	9-4	9-4	9-6	9-7	9-4	9-4	9-6	9-7
REINFORCING STEEL	"b" or "b_1"	LENGTH "b_1"	9-4	9-5	9-6	9-4	9-4	9-6	9-7	9-4	9-4	9-6	9-7
REINFORCING STEEL	"c"	SIZE BAR #	4	5	5	4	5	5	5	4	5	5	5
REINFORCING STEEL	"c"	SPACING	11	11	9	11	10 1/2	8 1/2	7 1/2	11	10 1/2	8 1/2	7 1/2
REINFORCING STEEL	"c"	LENGTH	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6
REINFORCING STEEL	"d" DIST BARS	TOP SLAB-TOT. NO.	10	6	6	10	6	6	6	10	6	6	6
REINFORCING STEEL	"d" DIST BARS	BOTTOM SLAB-TOT. NO.	6	6	6	6	6	6	6	6	6	6	6
REINFORCING STEEL	"e" BARS	SIZE BAR #	4	4	4	4	4	4	4	4	4	4	5
REINFORCING STEEL	"e" BARS	SPACING	18	18	18	18	18	16	12	18	12	9	10
REINFORCING STEEL	SPACERS	NUMBER	23			26				29			
QUAN.	CONCRETE: C.Y. PER LIN. FT.		0.47	0.51	0.57	0.53	0.57	0.63	0.69	0.59	0.63	0.69	0.75
QUAN.	REINFORCING LBS. PER LIN. FT.		81	74	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.

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-77A**

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

SAN DIEGO REGIONAL STANDARD DRAWING

DOUBLE BOX CULVERT
DETAILS No. 1

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

SPAN			5'												
HEIGHT			2'			3'			4'				5'			
STRENGTH CLASSIFICATION			A	B	C	A	B	C	A	B	C	D	A	B	C	D
MAX FILL OVER TOP			6	36	36	6	24	36	6	23	34	46	6	23	34	46
CONC.	TOP SDAB	T_1	6 3/4	7 3/4	9 1/4	6 3/4	7 3/4	9 1/4	6 3/4	7 3/4	9 1/4	10 1/4	6 3/4	7 3/4	9 1/4	10 1/4
CONC.	BOTTOM SLAB	T_2	6 1/2	8 3/4	10 1/4	6 1/2	8 3/4	10 1/4	6 1/2	8 3/4	10 1/4	11 1/4	6 1/2	8 3/4	10 1/4	11 1/4
CONC.	SIDEWALLS	T_3	6	6	6	6	6	6	6	6	6	6	6	6	6	6
REINFORCING STEEL	"a"	SIZE BAR #	5	4	4	5	4	4	5	4	4	4	5	4	4	4
		SPACING	10	8 1/2	10	10	8 1/2	10	10	8 1/2	10	9	10	8 1/2	10 1/2	9
		LENGTH	12-3	12-2	12-2	12-3	12-2	12-2	12-3	12-2	12-2	12-2	12-3	12-2	12-2	12-2
	"b" or "b_1"	SIZE BAR #	5	5	6	5	5	6	5	5	6	6	5	5	6	6
		SPACING	10	8 1/2	10	10	8 1/2	10	10	8 1/2	10	9	10	8 1/2	10 1/2	9
		LENGTH "b"	11-5	11-6	11-7	11-5	11-6	11-7	11-5	11-6	11-7	11-8	11-5	11-6	11-7	11-8
		LENGTH "b_1"	11-4	11-6	11-7	11-4	11-6	11-7	11-4	11-6	11-7	11-8	11-4	11-6	11-7	11-8
	"c"	SIZE BAR #	4	5	6	4	5	6	4	5	6	6	4	5	6	6
		SPACING	10	8 1/2	10	10	8 1/2	10	10	8 1/2	10	9	10	8 1/2	10 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
	"d" DIST BARS	TOP SLAB-TOT. NO.	12	6	6	12	6	6	12	6	6	6	12	6	6	6
		BOTTOM SLAB-TOT. NO.	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	"e" BARS	SIZE BAR #	4	4	4	4	4	4	4	4	4	5	4	4	5	6
		SPACING	18	18	18	18	18	16	18	12	10	10 1/2	18	8 1/2	9	9
	SPACERS	NUMBER	23			26			29				32			
QUAN.	CONCRETE: C.Y. PER LIN. FT.		0.58	0.69	0.80	0.63	0.75	0.86	0.69	0.80	0.89	0.98	0.74	0.86	0.97	1.04
QUAN.	REINFORCING LBS. PER LIN. FT.		99	100	109	103	104	112	106	109	119	133	109	116	126	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.

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-77B**

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

SAN DIEGO REGIONAL STANDARD DRAWING

DOUBLE BOX CULVERT
DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

DRAWING NUMBER **D-77C**

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

SPAN			6'													
HEIGHT			3'			4'			5'				6'			
STRENGTH CLASSIFICATION			A	B	C	A	B	C	A	B	C	D	A	B	C	D
MAX FILL OVER TOP			4	20	34	4	20	34	4	19	33	43	4	19	33	43
CONC.	Top Slab	T_1	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	7 1/4	8 1/4	10 1/2	12
	Bottom Slab	T_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	7 1/4	9 1/2	11 1/2	12 3/4
	Sidewalls	T_3	6	6	6	6	6	6	6	6	6	6	6	6	6	7 1/2
REINFORCING STEEL	"a"	SIZE BAR #	5	4	4	5	4	4	5	4	4	4	5	4	4	4
		SPACING	9 1/2	11	8 1/2	9 1/2	11	8 1/2	9 1/2	11	8 1/2	10 1/2	9 1/2	11	8 1/2	10 1/2
		LENGTH	14-3	14-2	14-2	14-3	14-2	14-2	14-3	14-2	14-2	14-2	14-3	14-2	14-2	14-8
	"b" or "b_1"	SIZE BAR #	5	6	6	5	6	6	5	6	6	7	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	10 1/2	9 1/2	11	8 1/2	10 1/2
		LENGTH "b"	13-6	13-6	13-8	13-6	13-6	13-8	13-6	13-6	13-8	13-9	13-6	13-6	13-8	14-2
		LENGTH "b_1"	13-5	13-7	13-8	13-5	13-7	13-8	13-5	13-6	13-8	13-9	13-6	13-6	13-8	14-2
	"c"	SIZE BAR #	4	6	6	4	6	6	4	6	6	7	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	10 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	6-8
	"d" DIST BARS	TOP SLAB-TOT. NO.	12	6	6	12	6	6	12	6	6	6	12	6	6	6
		BOTTOM SLAB-TOT. NO.	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	"e" BARS	SIZE BAR #	4	4	4	4	4	4	4	4	5	5	4	5	6	6
		SPACING	18	18	16	18	14	8 1/2	18	10	9 1/2	7	18	11	9	6
	SPACERS	NUMBER	30			33			36				36			
QUAN.	CONCRETE: C.Y. PER LIN. FT.		0.77	0.90	1.08	0.82	0.96	1.13	0.88	1.01	1.19	1.30	0.93	1.07	1.25	1.47
	REINFORCING LBS. PER LIN. FT.		121	119	147	125	124	155	128	131	164	175	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
Reviewed		T. Stanton	04/06
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

DOUBLE BOX CULVERT

DETAILS No. 1

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

SPAN			8'																	
HEIGHT			4'			5'			6'			7'				8'			
STRENGTH CLASSIFICATION			A	B	C	A	B	C	A	B	C	A	B	C	D	A	B	C	D
MAX FILL OVER TOP			3	14	25	3	14	25	3	14	25	3	14	25	37	3	14	25	37
CONC.	TOP SLAB	T_1	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	14 1/4	8 1/2	9 1/2	12 1/4	14 1/4
	BOTTOM SLAB	T_2	7 1/2	10 1/2	12 3/4	7 1/2	10 1/2	12 3/4	7 1/2	10 1/2	12 3/4	7 1/2	10 3/4	13	15	7 1/2	10 3/4	13	15
	SIDEWALLS	T_3	6	6	6	6	6	6	6	6	6	7	7	7	8	7	7	8	8 1/2
REINFORCING STEEL	"a"	SIZE BAR #	6	4	4	6	4	4	6	4	4	6	4	4	4	6	4	4	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	8 1/2	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	18-7	18-5	18-5	18-8	18-7	18-5	18-8	18-10
	"b" or "b_1"	SIZE BAR #	6	6	7	6	6	7	6	6	7	6	6	7	7	6	6	7	7
		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	8 1/2	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	17-10	17-10	18	18-5	17-10	17-10	18-3	18-6
		LENGTH "b_1"	17-5	17-8	17-9	17-5	17-8	17-9	17-5	17-8	17-9	17-10	17-10	18	18-5	17-8	17-11	18	18-7
	"c"	SIZE BAR #	4	6	7	4	6	7	4	6	7	4	6	7	7	4	6	7	7
		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	8 1/2	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	8-7	8-7	8-7	8-8	8-7	8-7	8-8	8-9
	"d" DIST BARS	TOP SLAB-TOT. NO.	16	8	8	16	8	8	16	8	8	16	8	8	8	16	8	8	8
		BOTTOM SLAB-TOT. NO.	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	"e" BARS	SIZE BAR #	4	4	5	4	4	5	4	5	6	4	5	6	7	4	5	7	7
		SPACING	18	18	10 1/2	18	12	10	18	11 1/2	10	14	9 1/2	7 1/2	8 1/2	11 1/2	8 1/2	7 1/2	9
	SPACERS	NUMBER	41			44			44			47			56	50		60	
QUAN.	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	2.14	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	299	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.

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-77D**

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

SAN DIEGO REGIONAL STANDARD DRAWING

DOUBLE BOX CULVERT

DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

DRAWING NUMBER **D-77E**

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

SPAN			10'															
HEIGHT			5'			6'			7'			8'				10'			
STRENGTH CLASSIFICATION			A	B	C	A	B	C	A	B	C	A	B	C	D	A	B	C	D
MAX FILL OVER TOP			2	17	30	2	17	30	2	17	30	2	16	29	36	2	16	29	36
CONC.	TOP SLAB	T_1	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 1/4	8 3/4	12 3/4	16	17 1/2
CONC.	BOTTOM SLAB	T_2	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 3/4	13 1/2	16 1/2	18 1/4	8 3/4	13 1/2	16 1/2	18 1/2
CONC.	SIDEWALLS	T_3	6	6	6	6	6	6	6	6 1/2	7	7	7	7 1/2	7 1/2	8	8	9	10
REINFORCING STEEL	"a"	SIZE BAR #	6	4	4	6	4	4	6	4	4	6	4	4	4	6	4	4	4
REINFORCING STEEL	"a"	SPACING	11	10	10	11	9 1/2	10	11	9 1/2	10	11	10	10	9	11	10	10	9
REINFORCING STEEL	"a"	LENGTH	22-4	22-2	22-2	22-4	22-2	22-2	22-4	22-4	22-5	22-7	22-5	22-7	22-10	22-10	22-8	22-11	23-2
REINFORCING STEEL	"b" or "b_1"	SIZE BAR #	6	7	8	6	7	8	6	7	8	6	7	8	8	6	7	8	8
REINFORCING STEEL	"b" or "b_1"	SPACING	11	10	10	11	9 1/2	10	11	9 1/2	10	11	10	10	9	11	10	10	9
REINFORCING STEEL	"b" or "b_1"	LENGTH "b"	21-7	21-10	22	21-7	21-10	22	21-7	21-11	22-3	21-10	22-1	22-4	22-9	22-1	22-4	22-9	23-1
REINFORCING STEEL	"b" or "b_1"	LENGTH "b_1"	21-5	21-10	22	21-5	21-10	22	21-5	21-11	22-3	21-9	22	22-4	22-9	22	22-3	22-8	23-2
REINFORCING STEEL	"c"	SIZE BAR #	6	7	8	6	7	8	6	7	8	6	7	8	8	6	7	8	8
REINFORCING STEEL	"c"	SPACING	11	10	10	11	9 1/2	10	11	9 1/2	10	11	10	10	9	11	10	10	9
REINFORCING STEEL	"c"	LENGTH	10-6	10-6	10-6	10-6	10-6	10-6	10-6	10-7	10-7	10-7	10-7	10-8	10-9	10-8	10-8	10-9	10-10
REINFORCING STEEL	"d" DIST BARS	TOP SLAB-TOT. NO.	18	10	10	18	10	10	18	10	10	18	10	10	10	18	10	10	10
REINFORCING STEEL	"d" DIST BARS	BOTTOM SLAB-TOT. NO.	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
REINFORCING STEEL	"e" BARS	SIZE BAR #	4	4	5	4	4	5	4	4	6	4	5	6	7	4	6	6	7
REINFORCING STEEL	"e" BARS	SPACING	18	10	10	18	6	6 1/2	14	6	8	11	8 1/2	6	6	7 1/2	7	5 1/2	5
REINFORCING STEEL	SPACERS	NUMBER	48			48			51			54			64	68			
QUAN.	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	3.04	1.92	2.51	3.05	3.41
QUAN.	REINFORCING LBS. PER LIN. FT.		236	254	310	238	274	324	243	280	339	252	278	355	430	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
Reviewed		T. Stanton	04/06
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

DOUBLE BOX CULVERT

DETAILS No. 1

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

SPAN			12'																					
HEIGHT			6'			7'			8'			9'				10'				12'			
STRENGTH CLASSIFICATION			A	B	C	A	B	C	A	B	C	A	B	C	D	A	B	C	D	A	B	C	D
MAX FILL OVER TOP			2	14	26	2	14	26	2	14	26	2	14	26	36	2	14	26	36	2	14	26	36
CONC.	TOP SLAB	T_1	10	14	17 1/2	10	14 1/.4	17 1/2	10 1/4	14 1/4	17 3/4	10 1/4	14 1/2	17 3/4	20 3/4	10 1/4	14 1/2	17 3/4	20 3/4	10 1/4	14 1/2	18 1/4	21 1/4
	BOTTOM SLAB	T_2	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	21 1/4	10 1/4	15 1/4	18 3/4	21 1/2	10 1/2	15 1/4	19 1/4	22
	SIDEWALLS	T_3	6	6	6 1/2	7	7	7	8	8	8 1/2	9	9	9	10	9	9	9 1/2	11	9	10	11	12
REINFORCING STEEL	"a"	SIZE BAR #	6	4	4	6	4	4	6	4	4	6	4	4	4	6	4	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	9	11	8 1/2	9	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	27-1	26-11	27-3	27-5	27-1	27-2	27-5	27-8
	"b" or "b_1"	SIZE BAR #	6	8	8	6	8	8	6	8	8	6	8	8	9	6	8	8	9	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	9	11	8 1/2	9	9	11	8 1/2	9
		LENGTH "b"	25-8	25-10	26-3	25-11	26-1	26-4	26-2	26-4	26-9	26-5	26-8	26-10	27-4	26-5	26-8	27-2	27-6	26-5	26-11	27-5	27-10
		LENGTH "b_1"	25-6	25-10	26-3	25-9	26-2	26-4	26-1	26-5	26-9	26-4	26-8	26-11	27-4	26-4	26-8	27-2	27-7	26-4	26-11	27-5	27-11
	"c"	SIZE BAR #	5	8	8	5	8	8	5	8	8	5	8	8	9	5	8	8	9	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	9	11	8 1/2	9	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	12-10	12-9	12-9	12-10	12-11	12-9	12-10	12-11	13
	"d" DIST BARS	TOP SLAB-TOT. NO.	24	10	10	24	10	10	24	10	10	24	10	10	10	24	10	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	10	10
	"e" BARS	SIZE BAR #	4	4	5	4	4	5	4	4	5	4	5	7	8	4	7	8	8	6	7	8	9
		SPACING	18	8	8	15	6	6 1/2	12	5 1/2	6	9	7 1/2	8 1/2	8	8 1/2	11	8 1/2	9	12	8	7	7
	SPACERS	NUMBER	52			55			68			68				72				76			
QUAN.	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	2.67	3.53	4.30	4.92
	REINFORCING LBS. PER LIN. FT.		309	317	401	316	330	415	336	363	460	345	374	485	578	351	394	519	582	371	427	567	673

NOTE

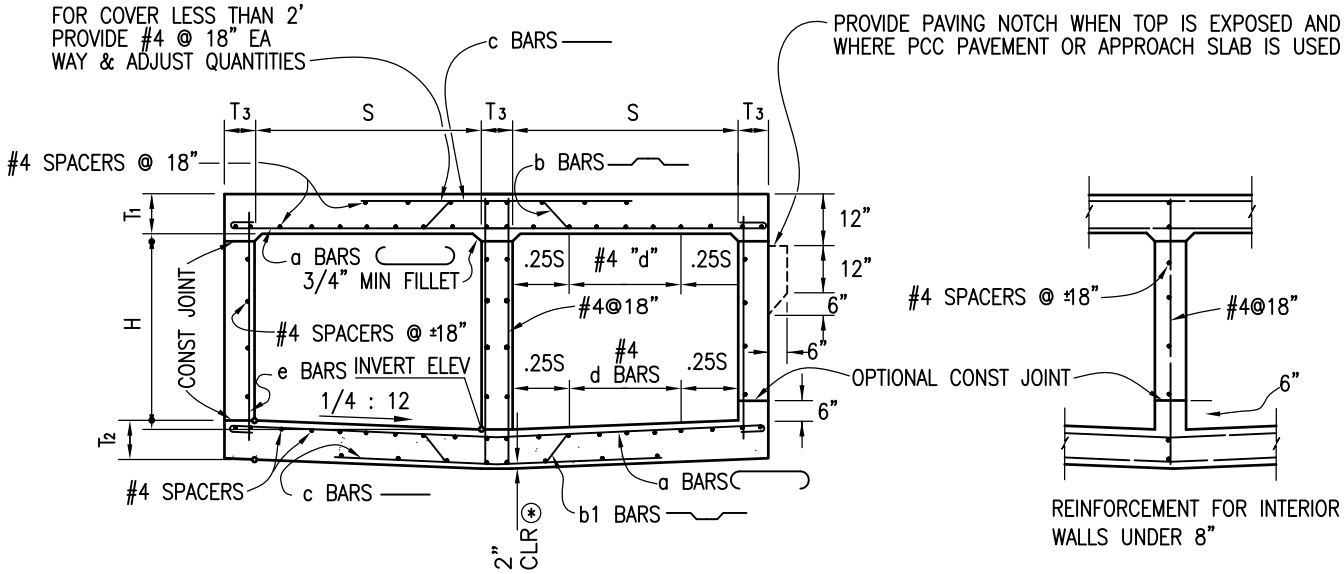
FOR BOXES OF HEIGHT LESS THAN THAT SHOWN IN TABLE, USE NEXT GREATER TABLE HEIGHT SLABS, WALL DIMENSIONS AND REINFORCING STEEL. MAKE CHANGES TO BAR LENGTHS AND NUMBER OF SPACERS AND QUANTITIES AS NECESSARY. NUMBER OF "d" BARS IN TABLE IS SLAB TOTAL FOR BOTH CELLS.

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

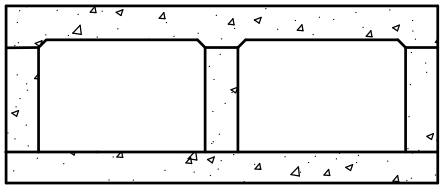
DRAWING NUMBER **D-77F**



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

SAN DIEGO REGIONAL STANDARD DRAWING

DOUBLE BOX CULVERT DETAILS NO. 2

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-77G**

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

SPAN			4'									
HEIGHT			2'			3'			4'		
STRENGTH CLASSIFICATION			A	B	C	A	B	C	A	B	C
MAX FILL OVER TOP			10	24	38	10	24	38	10	24	38
CONC.	TOP SLAB	T_1	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
	BOTTOM SLAB	T_2	6	7	8 1/4	6	7	8 1/4	6	7	8 1/4
	SIDEWALLS	T_3	6	6	6	6	6	6	6	6	6
REINFORCING STEEL	"a"	SIZE BAR #	5	4	5	5	4	5	5	4	5
		SPACING	11	11 1/2	13	11	11 1/2	13	11	11 1/2	13
		LENGTH	14-9	14-8	14-9	14-9	14-8	14-9	14-9	14-8	14-9
	"b" or "b1"	SIZE BAR #	5	5	6	5	5	6	5	5	6
		SPACING	11	11 1/2	13	11	11 1/2	13	11	11 1/2	13
		LENGTH "b"	14-2	14-2	14-3	14-2	14-2	14-3	14-2	14-2	14-3
		LENGTH "b1"	14	14-2	14-3	14	14-2	14-3	14	14-2	14-3
	"c"	SIZE BAR #	4	5	6	4	5	6	4	5	6
		SPACING	11	11 1/2	13	11	11 1/2	13	11	11 1/2	13
		LENGTH	9	9	9	9	9	9	9	9	9
	"d" DIST BARS	TOP SLAB-TOT. #	15	9	9	15	9	9	15	9	9
		BOTTOM SLAB-TOT. #	9	9	9	9	9	9	9	9	9
	"e" BARS	SIZE BAR #	4	4	4	4	4	4	4	4	5
		SPACING	18	18	18	18	18	13	18	11 1/2	13
	SPACERS	NUMBER	34			38			42		
QUAN.	CONCRETE: C.Y. PER LIN. FT.		0.67	0.71	0.81	0.75	0.79	0.89	0.82	0.86	0.96
	REINFORCING LBS PER LIN. FT.		122	110	133	127	115	138	131	122	147

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
Reviewed		T. Stanton	04/06
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

TRIPLE BOX CULVERT
DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-78A**

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

SAN DIEGO REGIONAL STANDARD DRAWING

TRIPLE BOX CULVERT

DETAILS No. 1

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

SPAN			5'													
HEIGHT			2'			3'			4'				5'			
STRENGTH CLASSIFICATION			A	B	C	A	B	C	A	B	C	D	A	B	C	D
MAX FILL OVER TOP			8	17	26	8	17	26	8	17	26	35	8	17	26	35
CONC.	TOP SLAB	T_1	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	8 1/2	6 3/4	6 3/4	7 1/2	8 1/2
	BOTTOM SLAB	T_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	9 1/2	6 1/4	7 1/2	8 1/2	9 1/2
	SIDEWALLS	T_3	6	6	6	6	6	6	6	6	6	6	6	6	6	6
REINFORCING STEEL	"a"	SIZE BAR #	5	4	5	5	4	5	5	4	5	5	5	4	5	5
		SPACING	10	11 1/2	13	10	11 1/2	13	10	11	13	11 1/2	10	11	13	11 1/2
		LENGTH	17-9	17-8	17-9	17-9	17-8	17-9	17-9	17-8	17-9	17-9	17-9	17-8	17-9	17-9
	"b" or "b_1"	SIZE BAR #	5	5	6	5	5	6	5	5	6	6	5	5	6	6
		SPACING	10	11 1/2	13	10	11 1/2	13	10	11	13	11 1/2	10	11	13	11 1/2
		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	17-5
		LENGTH "b_1"	17	17-2	17-4	17	17-2	17-4	17	17-2	17-4	17-5	17	17-2	17-4	17-5
	"c"	SIZE BAR #	4	5	6	4	5	6	4	5	6	6	4	5	6	6
		SPACING	10	11 1/2	13	10	11 1/2	13	10	11	13	11 1/2	10	11	13	11 1/2
		LENGTH	11	11	11	11	11	11	11	11	11	11	11	11	11	11
	"d" DIST BARS	TOP SLAB-TOT. #	18	9	9	18	9	9	18	9	9	9	18	9	9	9
		BOTTOM SLAB-TOT. #	9	9	9	9	9	9	9	9	9	9	9	9	9	9
	"e" BARS	SIZE BAR #	4	4	4	4	4	4	4	4	4	5	4	4	4	6
		SPACING	18	18	18	18	18	18	18	17	11 1/2	11 1/2	18	11	4	11 1/2
	SPACERS	NUMBER	34			38			38				42			
QUAN.	CONCRETE: C.Y. PER LIN. FT.		0.82	0.87	0.98	0.90	0.95	1.05	0.97	1.02	1.13	1.23	1.04	1.11	1.20	1.31
	REINFORCING LBS. PER LIN. FT.		150	126	153	155	130	157	157	136	161	181	161	143	171	192

NOTE

FOR BOXES OF HEIGHT LESS THAN THAT SHOWN IN TABLE, USE NEXT GREATER TABLE HEIGHT SLABS, WALL DIMENSIONS AND REINFORDING 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.

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

DRAWING NUMBER **D-78B**

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

SAN DIEGO REGIONAL STANDARD DRAWING

TRIPLE BOX CULVERT

DETAILS No. 1

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

SPAN			6'													
HEIGHT			3'			4'			5'				6'			
STRENGTH CLASSIFICATION			A	B	C	A	B	C	A	B	C	D	A	B	C	D
MAX FILL OVER TOP			3	13	23	3	13	23	3	13	23	30	3	13	23	30
CONC.	TOP SLAB	T_1	7 1/2	7 1/2	8 1/4	7 1/2	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	T_2	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
	SIDEWALLS	T_3	6	6	6	6	6	6	6	6	6	6	6	6	6	6
REINFORCING STEEL	"a"	SIZE BAR #	6	5	5	6	5	5	6	5	5	5	6	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
	"b" or "b_1"	SIZE BAR #	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"	20-3	20-3	20-5	20-3	20-3	20-5	20-3	20-3	20-5	20-6	20-3	20-3	20-5	20-6
		LENGTH "b_1"	20	20-2	20-5	20	20-2	20-5	20	20-2	20-5	20-6	20	20	20-5	20-7
	"c"	SIZE BAR #	4	6	6	4	6	6	4	6	6	6	4	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	13	13	13	13	13	13	13	13	13	13	13	13	13	13
	"d" DIST BARS	TOP SLAB-TOT. #	18	9	9	18	9	9	18	9	9	9	18	9	9	9
		BOTTOM SLAB-TOT. #	9	9	9	9	9	9	9	9	9	9	9	9	9	9
	"e" BARS	SIZE BAR #	4	4	4	4	4	4	4	4	5	5	4	4	6	6
		SPACING	18	18	18	18	18	11 1/2	18	11 1/2	12	10	18	8	12	10
	SPACERS	NUMBER	40			40			52				48			
QUAN.	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.

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-78C**

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

SAN DIEGO REGIONAL STANDARD DRAWING

TRIPLE BOX CULVERT
DETAILS No. 1

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

SPAN			8'																
HEIGHT			4'			5'			6'			7'				8'			
STRENGTH CLASSIFICATION			A	B	C	A	B	C	A	B	C	A	B	C	D	A	B	C	D
MAX FILL OVER TOP			2	11	20	2	11	20	2	11	20	2	11	20	28	2	11	20	28
CONC.	TOP SLAB	T_1	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	11 1/2	8 1/4	8 1/4	10 1/4	11 1/2
	BOTTOM SLAB	T_2	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	12 1/4	6 3/4	9 1/4	11	12 1/4
	SIDEWALLS	T_3	6	6	6	6	6	6	6	6	6	6	6	6 1/2	6 1/2	7	7	7 1/2	8 1/2
REINFORCING STEEL	"a"	SIZE BAR #	6	5	5	6	5	5	6	5	5	6	5	5	6	6	5	5	6
		SPACING	11 1/2	12	12	11 1/2	12	12	11 1/2	12	12	11 1/2	12	12	10 1/2	11 1/2	11 1/2	12	10 1/2
		LENGTH	26-10	26-9	26-9	26-10	26-9	26-9	26-10	26-9	26-9	26-10	26-9	26-11	27-4	27-2	27-1	27-3	27-8
	"b" or "b_1"	SIZE BAR #	6	6	7	6	6	7	6	6	7	6	6	7	7	6	6	7	7
		SPACING	11 1/2	12	12	11 1/2	12	12	11 1/2	12	12	11 1/2	12	12	10 1/2	11 1/2	11 1/2	12	10 1/2
		LENGTH "b"	26-5	26-5	26-7	26-5	26-5	26-7	26-5	26-5	26-7	26-5	26-5	26-9	27-3	26-9	26-9	27-1	27-7
		LENGTH "b_1"	26	26-4	26-7	26	26-5	26-7	26	26-5	26-7	26-1	26-5	26-9	27-3	26-5	26-9	27-1	27-7
	"c"	SIZE BAR #	4	6	7	4	6	7	4	6	7	4	6	7	7	4	6	7	7
		SPACING	11 1/2	12	12	11 1/2	12	12	11 1/2	12	12	11 1/2	12	12	10 1/2	11 1/2	11 1/2	12	10 1/2
		LENGTH	17	17	17	17	17	17	17	17	17	17	17	17-1	17-3	17-2	17-2	17-3	17-5
	"d" DIST BARS	TOP SLAB-TOT. #	24	12	12	24	12	12	24	12	12	24	12	12	12	24	12	12	12
		BOTTOM SLAB-TOT. #	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	"e" BARS	SIZE BAR #	4	4	4	4	4	5	4	5	6	4	6	7	7	4	6	7	7
		SPACING	18	18	12	18	12	12	18	12	12	11 1/2	12	12	10 1/2	11 1/2	11 1/2	12	10 1/2
	SPACERS	NUMBER	58			62			62			66				70			88
QUAN.	CONCRETE: C.Y. PER LIN. FT.		1.47	1.67	1.99	1.54	1.76	2.06	1.62	1.84	2.14	1.71	1.91	2.26	2.57	1.90	2.10	2.46	2.79
	REINFORCING LBS. PER LIN. FT.		261	250	301	266	257	310	267	264	320	276	277	336	409	283	295	347	441

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.

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-78D**

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

SAN DIEGO REGIONAL STANDARD DRAWING

TRIPLE BOX CULVERT
DETAILS No. 1

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

SPAN			10'															
HEIGHT			5'			6'			7'			8'				10'			
STRENGTH CLASSIFICATION			A	B	C	A	B	C	A	B	C	A	B	C	D	A	B	C	D
MAX FILL OVER TOP			2	11	20	2	11	20	2	11	20	2	11	20	28	2	11	20	28
CONC.	TOP SLAB	T_1	9	10	12	9	10	12	9	10	12	9	10	12	14 1/4	9	10 1/4	12 1/2	14 1/2
CONC.	BOTTOM SLAB	T_2	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	8	11	13 1/2	15
CONC.	SIDEWALLS	T_3	6	6	6	6	6	6	6	6	6 1/2	7	7	7 1/2	8 1/2	8	8 1/2	9	10
REINFORCING STEEL	"a"	SIZE BAR #	6	6	6	6	6	6	6	6	6	6	6	6	7	6	6	6	7
REINFORCING STEEL	"a"	SPACING	10 1/2	13	10	10 1/2	13	10	10 1/2	13	10	10 1/2	13	10	11	10 1/2	13	10	11
REINFORCING STEEL	"a"	LENGTH	32-10	32-10	32-10	32-10	32-10	32-10	32-10	32-10	32-10	33-2	33-2	33-4	33-8	33-6	33-8	33-10	34-2
REINFORCING STEEL	"b"	SIZE BAR #	6	7	7	6	7	7	6	7	7	6	7	7	8	6	7	7	8
REINFORCING STEEL	"b"	SPACING	10 1/2	13	10	10 1/2	13	10	10 1/2	13	10	10 1/2	13	10	11	10 1/2	13	10	11
REINFORCING STEEL	or "b_1"	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	33-11	32-2	33-5	33-11	34-5
REINFORCING STEEL	or "b_1"	LENGTH "b_1"	32-2	32-7	32-11	32-2	32-7	32-11	32-2	32-7	33-1	32-6	32-11	33-5	33-11	32-11	33-5	33-11	34-5
REINFORCING STEEL	"c"	SIZE BAR #	5	7	7	5	7	7	5	7	7	5	7	7	8	5	7	7	8
REINFORCING STEEL	"c"	SPACING	10 1/2	13	10	10 1/2	13	10	10 1/2	13	10	10 1/2	13	10	11	10 1/2	13	10	11
REINFORCING STEEL	"c"	LENGTH	21	21	21	21	21	21	21	21	21-1	21-2	21-2	21-3	21-5	21-4	21-5	21-6	21-8
REINFORCING STEEL	"d" DIST BARS	TOP SLAB-TOT. #	27	15	15	27	15	15	27	15	15	27	15	15	15	27	15	15	15
REINFORCING STEEL	"d" DIST BARS	BOTTOM SLAB-TOT. #	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
REINFORCING STEEL	"e" BARS	SIZE BAR #	4	4	5	4	5	6	4	6	7	4	6	7	8	5	6	8	8
REINFORCING STEEL	"e" BARS	SPACING	18	13	10	18	13	10	13	13	10	10 1/2	12	10	11	10 1/2	9	10	9
REINFORCING STEEL	SPACERS	NUMBER	68			68			72			76			94	102			
QUAN.	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	3.78	2.68	3.18	3.73	4.22
QUAN.	REINFORCING LBS. PER LIN. FT.		358	372	470	359	379	482	367	391	502	377	402	514	590	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.

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-78E**

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

SAN DIEGO REGIONAL STANDARD DRAWING

TRIPLE BOX CULVERT

DETAILS No. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

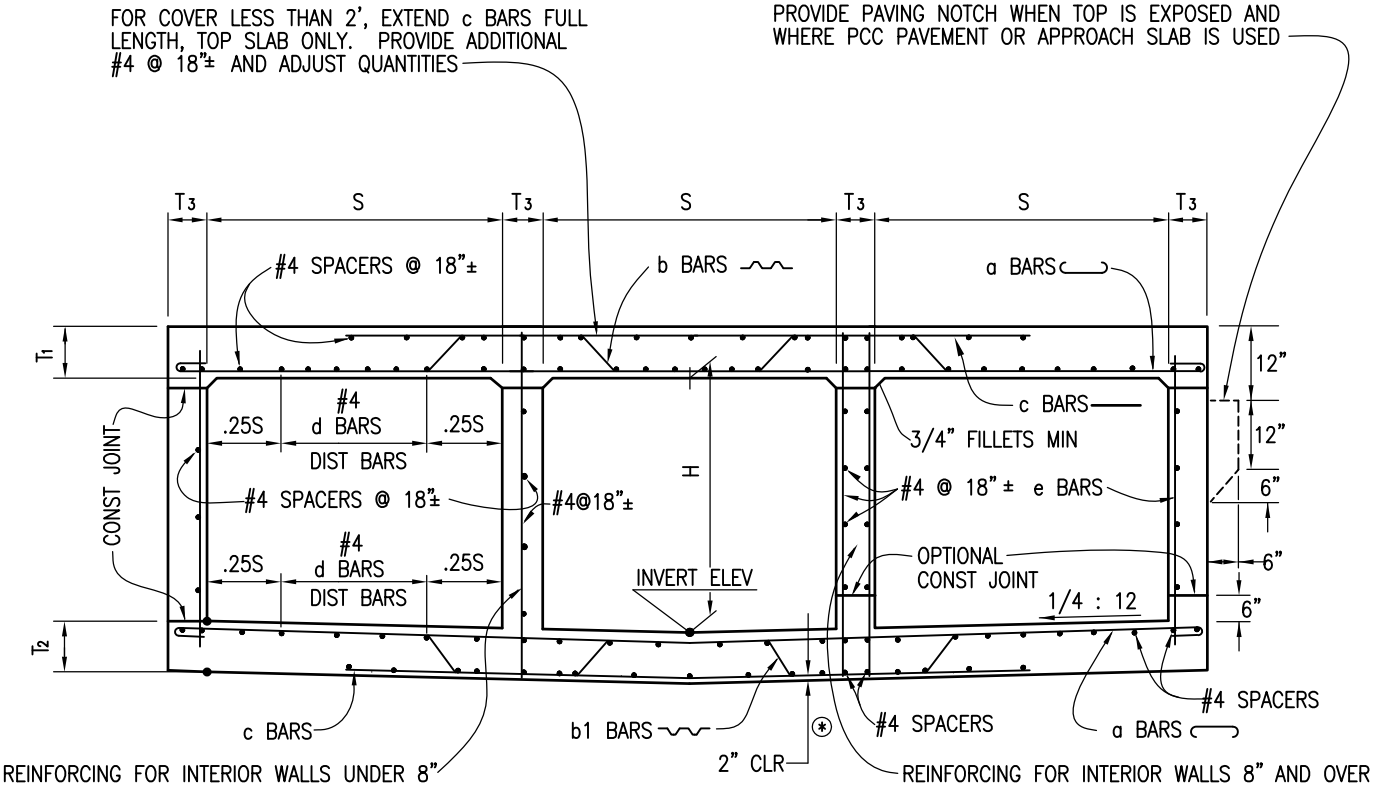
DRAWING NUMBER **D-78F**

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

SPAN			12'																					
HEIGHT			6'			7'			8'			9'				10'				12'			
STRENGTH CLASSIFICATION			A	B	C	A	B	C	A	B	C	A	B	C	D	A	B	C	D	A	B	C	D
MAX FILL OVER TOP			2	10	18	2	10	18	2	10	18	2	11	20	30	2	11	20	30	2	11	20	30
CONC.	TOP SLAB	T_1	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	10 1/4	12	14 3/4	17 3/4
	BOTTOM SLAB	T_2	8 1/4	12	14 1/2	8 1/2	12	14 3/4	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	T_3	6	6	6 1/2	6	6	7	7	7	7 1/2	8	8	9	10	8	8	9	10 1/2	9	9	10 1/2	12
REINFORCING STEEL	"a"	SIZE BAR #	7	6	7	7	6	7	7	6	7	7	6	7	8	7	6	7	8	7	6	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	12	10 1/2	11	11 1/2	12	10 1/2	11	11 1/2
		LENGTH	39-1	38-10	39-3	39-1	38-10	39-5	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
	"b" or "b_1"	SIZE BAR #	7	7	8	7	7	8	7	7	8	7	7	8	9	7	7	8	9	7	7	8	9
		SPACING	12	11	11 1/2	12	11	11 1/2	12	11	11 1/2	12	10 1/2	11	11 1/2	12	10 1/2	11	11 1/2	12	10 1/2	11	11 1/2
		LENGTH "b"	38-7	38-9	39-3	38-7	38-9	39-5	38-11	39-1	39-7	39-3	39-6	40-2	40-10	39-3	39-6	40-2	41	39-7	39-10	40-8	41-6
		LENGTH "b_1"	38-3	38-7	39-2	38-3	38-9	39-5	38-7	39-1	39-7	39	39-6	40-2	40-10	39	39-6	40-2	41	39-4	39-10	40-9	41-6
	"c"	SIZE BAR #	6	7	8	6	7	8	6	7	8	6	7	8	9	6	7	8	9	6	7	8	9
		SPACING	12	11	11 1/2	12	11	11 1/2	12	11	11 1/2	12	10 1/2	11	11 1/2	12	10 1/2	11	11 1/2	12	10 1/2	11	11 1/2
		LENGTH	25	25	25-1	25	25	25-2	25-2	25-2	25-3	25-4	25-4	25-6	25-8	25-4	25-4	25-6	25-9	25-6	25-6	25-9	26
	"d" DIST BARS	TOP SLAB-TOT. #	36	15	15	36	15	15	36	15	15	36	15	15	15	36	15	15	15	36	15	15	15
		BOTTOM SLAB-TOT. #	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
	"e" BARS	SIZE BAR #	4	4	6	4	4	6	4	4	6	4	6	7	8	5	7	8	8	6	7	9	9
		SPACING	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	12	10 1/2	11	6 1/2	12	9	11	9
	SPACERS	NUMBER	76			80			84			104				110				116			
QUAN.	CONCRETE: C.Y. PER LIN. FT.		2.60	3.18	3.82	2.70	3.26	3.98	2.88	3.45	4.13	3.13	3.79	4.61	5.45	3.23	3.89	4.72	5.65	3.62	4.28	5.24	6.18
	REINFORCING LBS. PER LIN. FT.		489	505	628	497	516	637	505	527	654	536	582	719	872	548	606	745	939	575	636	793	963

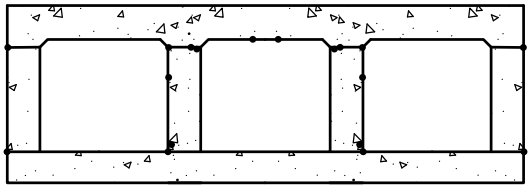
NOTE

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.



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
ORIGINAL		Kercheval	12/75
Reviewed		T. Stanton	04/06
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

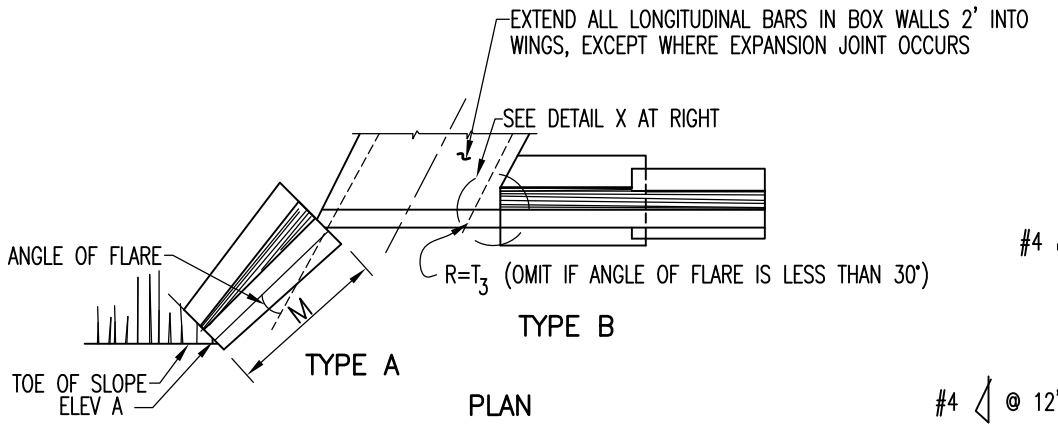
TRIPLE BOX CULVERT DETAILS NO.2

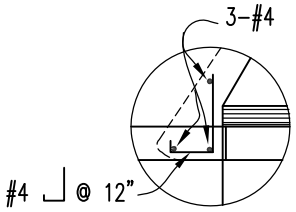
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015

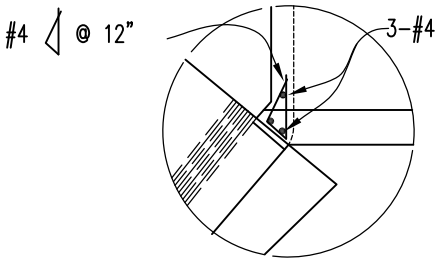
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-78G**

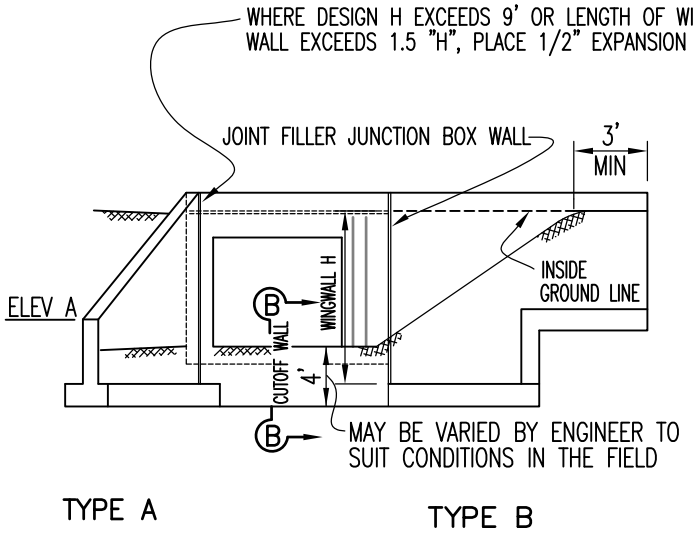


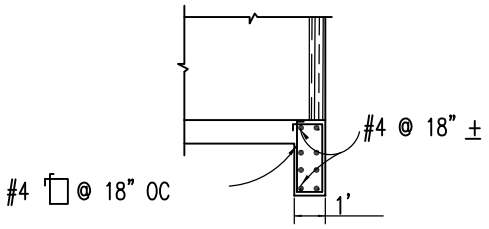


DETAIL X

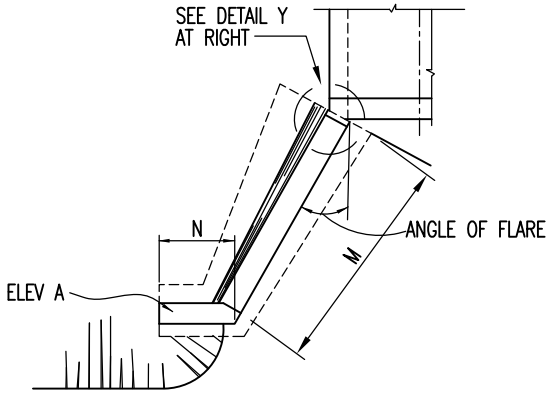


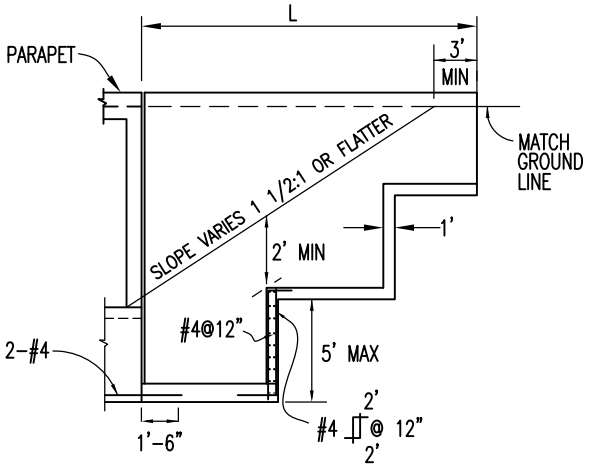
DETAIL Y





SECTION B–B





NOTE

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

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

SAN DIEGO REGIONAL STANDARD DRAWING

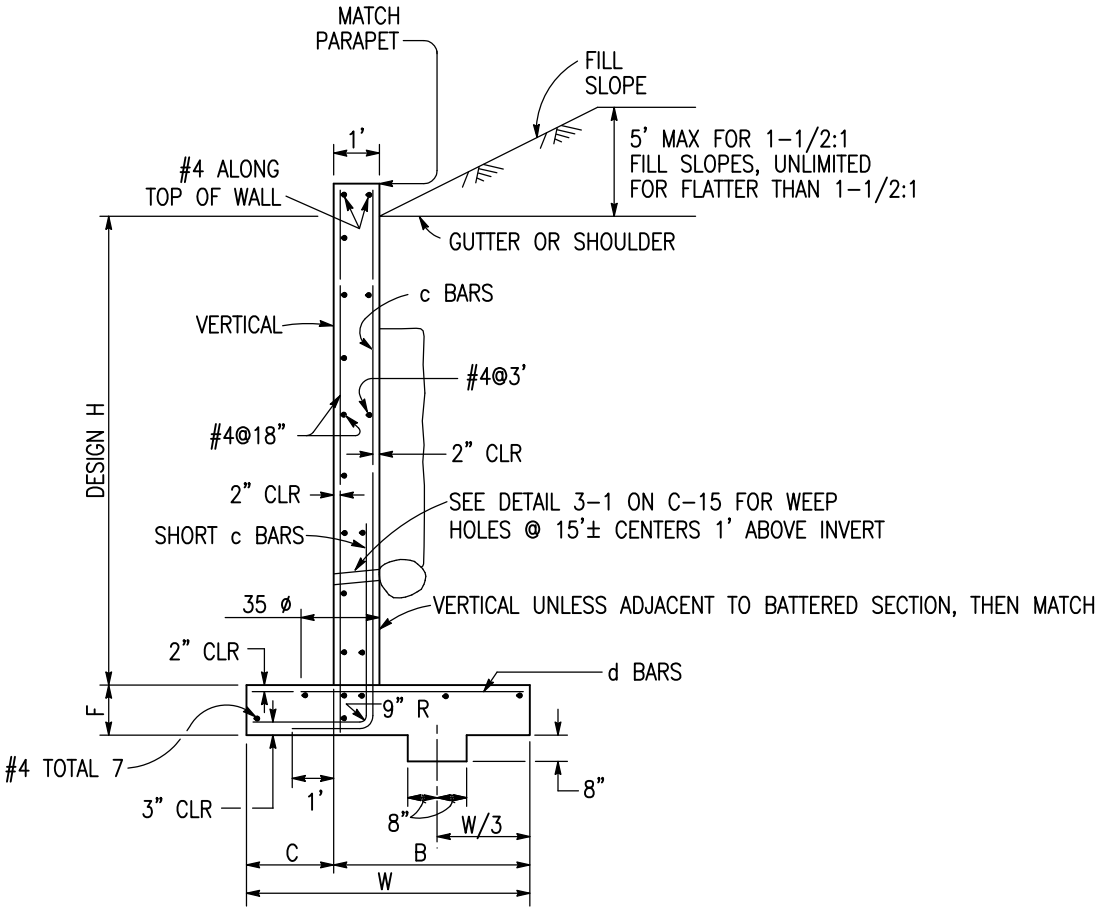
BOX CULVERT WINGWALL TYPES A, B & C DETAILS NO. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-79A**



TYPICAL SECTION

H=4' THROUGH 12'

NOTE

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

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

SAN DIEGO REGIONAL STANDARD DRAWING

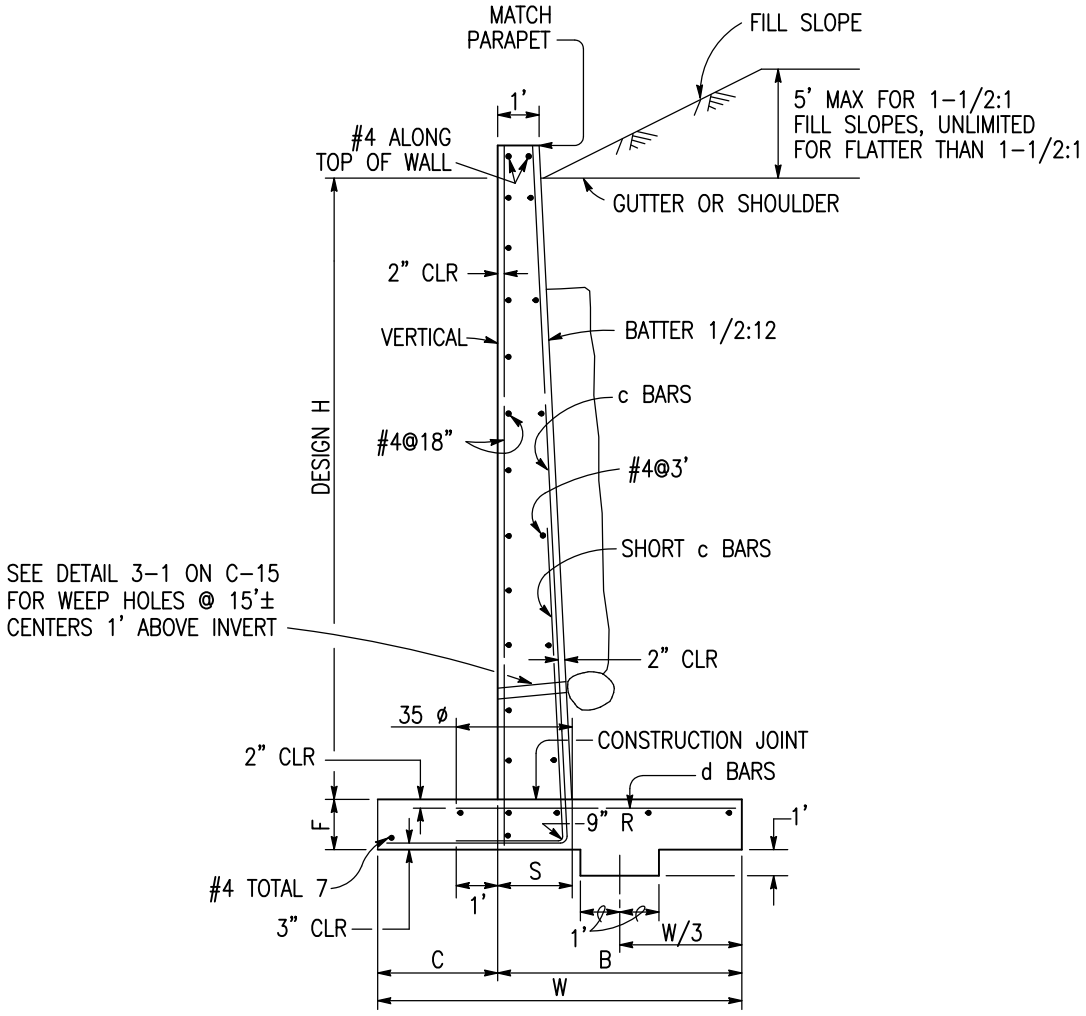
BOX CULVERT WINGWALL TYPES A, B & C DETAILS NO. 2

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-79B**



TYPICAL SECTION
H=13' THROUGH 16'

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

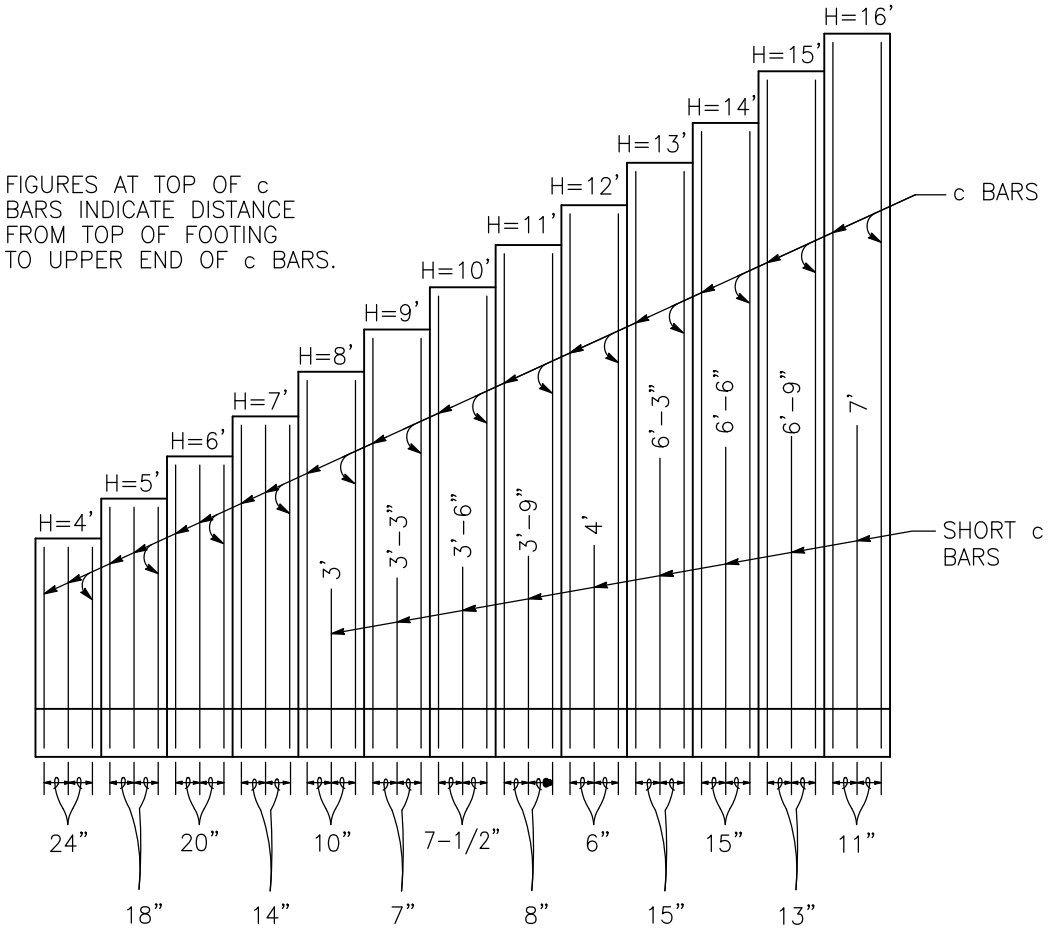
SAN DIEGO REGIONAL STANDARD DRAWING

BOX CULVERT WINGWALL
TYPES A, B & C
DETAILS NO. 3

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-79C**



TYPICAL LAYOUT EXAMPLE 1

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

SAN DIEGO REGIONAL STANDARD DRAWING

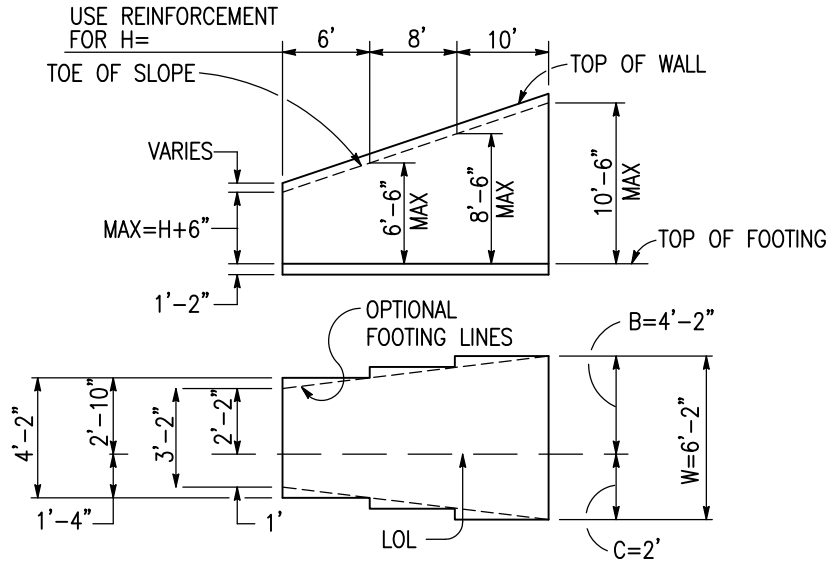
BOX CULVERT WINGWALL TYPES A, B & C DETAILS NO. 4

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

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
ORIGINAL		Kercheval	12/75
Reviewed		T. Stanton	04/06
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

BOX CULVERT WINGWALL TYPES A, B & C DETAILS NO. 5

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-79E**

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 ½”	1’–7”	1’–7 ½”	1’–8”
c BARS	#4@24	#4@18	#5@20	#5@14	#5@10	#5@7	#6@7½	#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
ORIGINAL		Kercheval	12/75
Reviewed		T. Stanton	04/06
Edited		T. Regello	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15

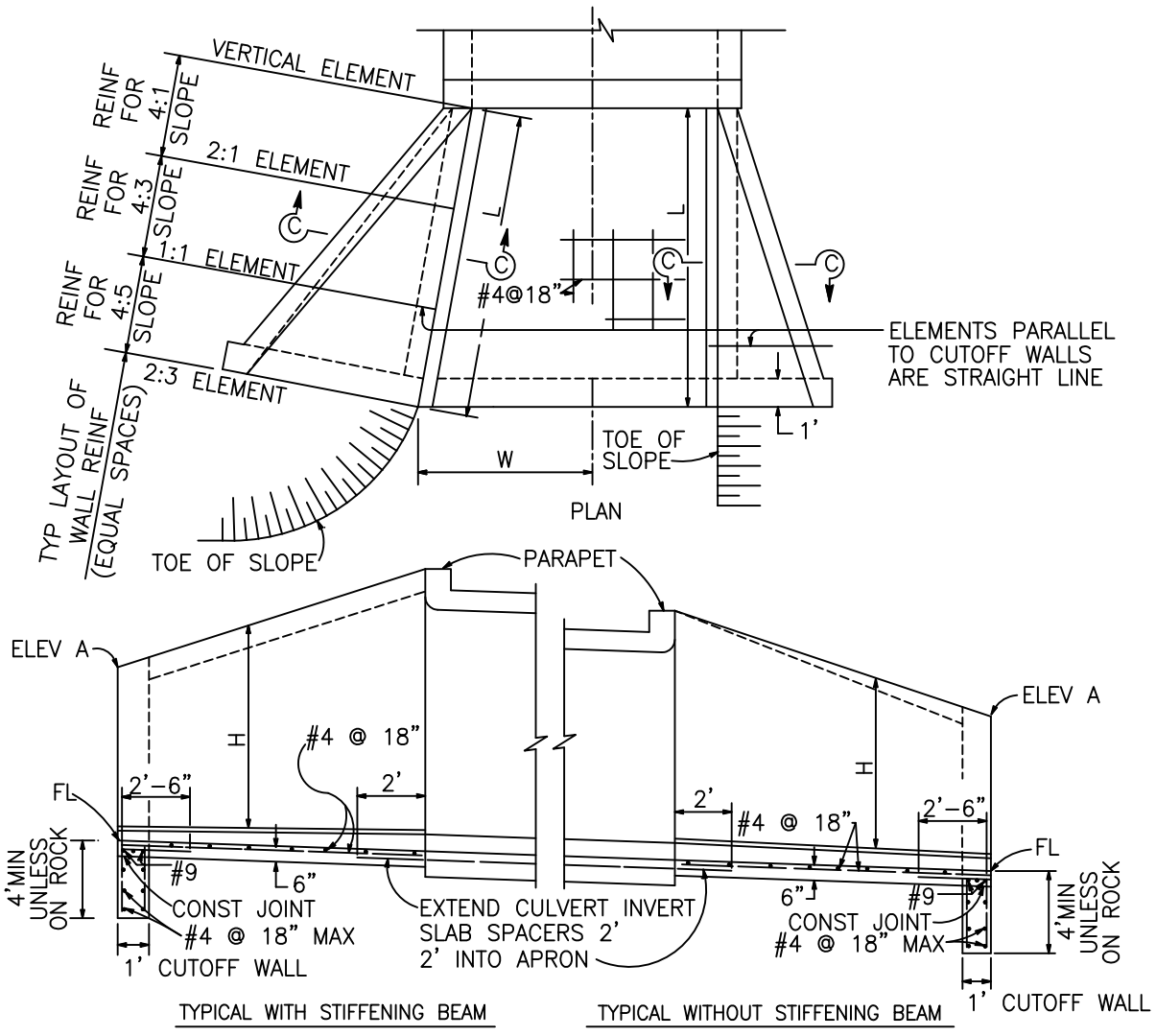
SAN DIEGO REGIONAL STANDARD DRAWING

BOX CULVERT WINGWALL TYPES A, B & C DETAILS NO. 6

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-79F**



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

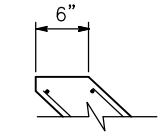
SAN DIEGO REGIONAL STANDARD DRAWING

BOX CULVERT WARPED WINGWALL DETAILS NO. 1

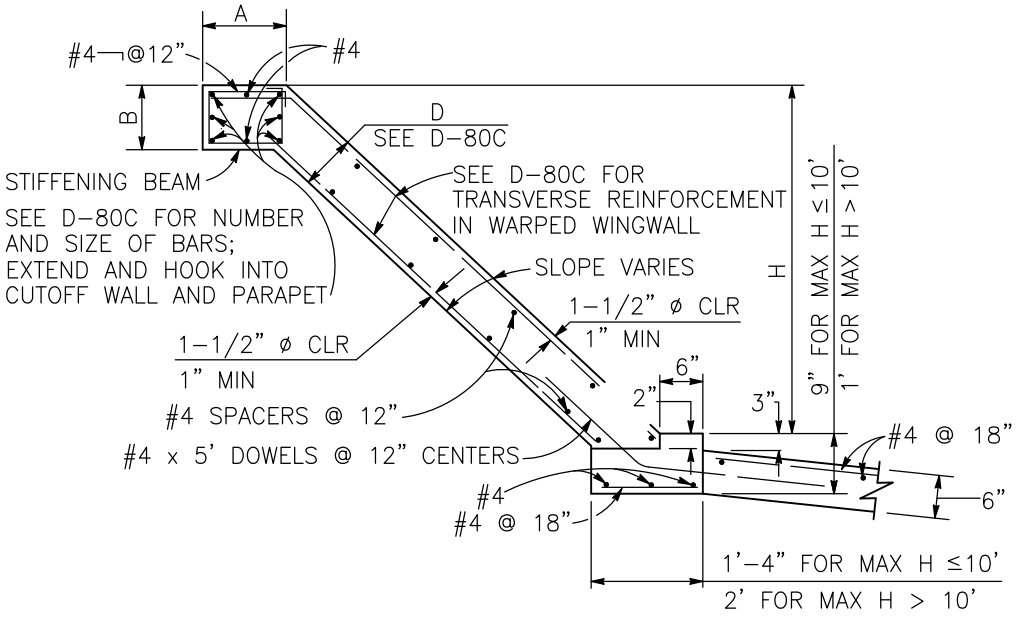
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 9/24/2015

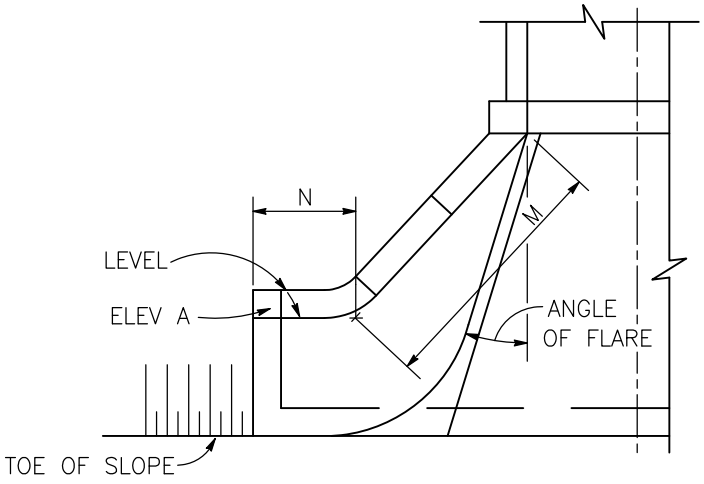
DRAWING NUMBER D-80A



WITHOUT STIFFENING BEAM

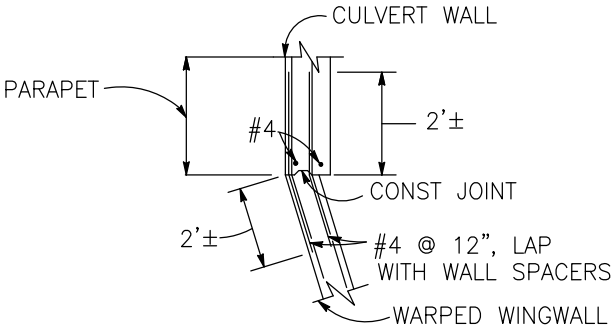


SECTION C-C



ALTERNATIVE WARPED WINGWALL

USE WHERE ADDITIONAL PROTECTION TO TOE OF EMBANKMENT IS REQUIRED



SECTION B-B

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 INIFORMLY 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

SAN DIEGO REGIONAL STANDARD DRAWING

BOX CULVERT WARPED WINGWALL DETAILS No. 2

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015

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 REAR FACE REINF	#4@12 #4@12	#4@ 7 #4@12	#5@ 7 #4@12	#5@ 5 #4@12	#6@ 6 #4@12	#7@ 7 #4@12	#7@ 6 #4@12
3/4:1	FRONT FACE REINF REAR FACE REINF	#4@12 #4@12	#4@12 #4@12	#4@12 #4@12	#4@12 #4@10	#4@10 #4@ 7	#4@ 8 #4@ 6	#4@ 6 #5@ 8
1-1/4:1	FRONT FACE REINF REAR FACE REINF	#4@12 #4@ 8	#4@12 #4@ 8	#4@12 #4@ 5	#4@12 #5@ 6	#4@12 #6@ 7	#4@12 #6@ 6	#4@12 #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 FACE ALONG TOP OF WALL.								
8'									
10'						A=1' B=9"			
12'							A=1'-6" B=1'		
14'	TOTAL 6-#6							A=1'-10" B=1'	
16'				TOTAL 6-#7					A=2' B=1'-6"
18'						TOTAL 6-#8			
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

SAN DIEGO REGIONAL STANDARD DRAWING

BOX CULVERT WARPED WINGWALL DETAILS No. 3

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015

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.

DESIGN NOTES

SPECIFICATIONS
DESIGN: AASHTO's publication titled A Policy on Geomeric 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: Fs = 20,000 psi, N = 10
Fc = 1,200 psi

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

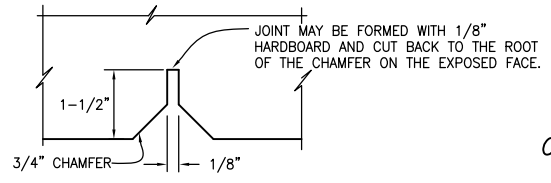
Distribution "d" bars expressed as a percent of main positive reinforcement.

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

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

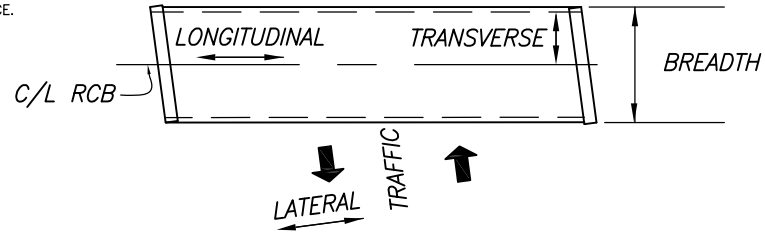
USE OF STANDARD DRAWING

"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.



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

LIVE LOAD & R.C.B. DIRECTIONAL TERMINOLOGY



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

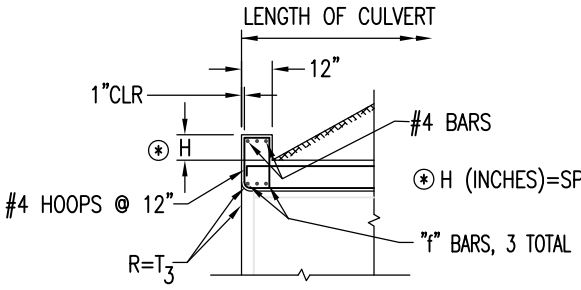
SAN DIEGO REGIONAL STANDARD DRAWING

BOX CULVERT
MISCELLANEOUS DETAILS No. 1

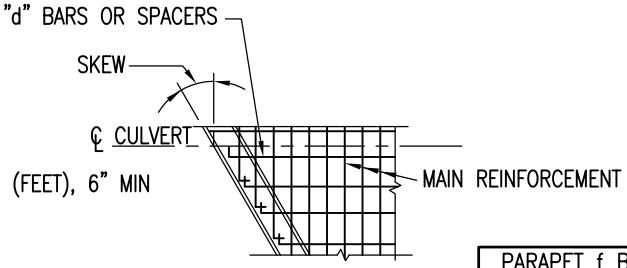
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J M Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-81A**



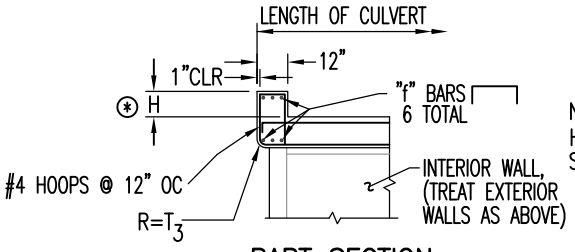
PART SECTION



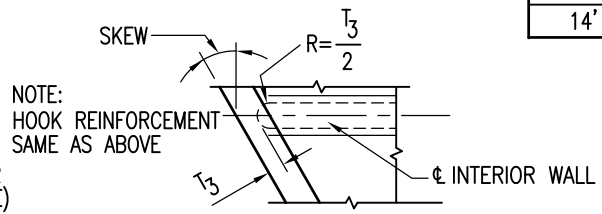
PART PLAN–SKEWED

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

PARAPET DETAILS FOR SINGLE SPAN CULVERTS

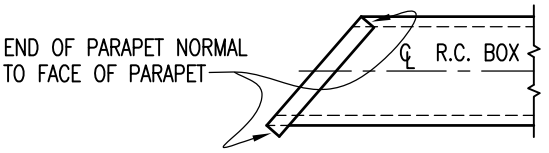


PART SECTION

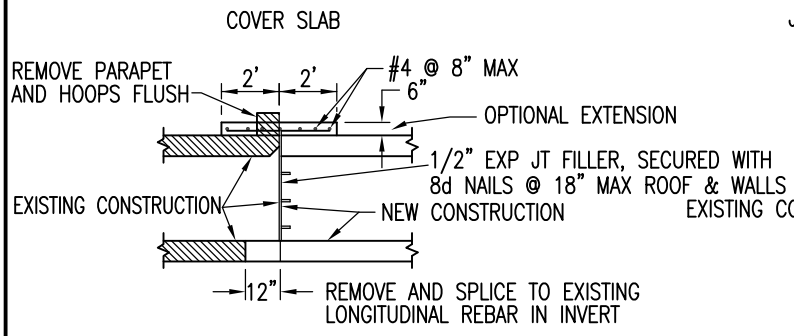


PART PLAN–SKEWED

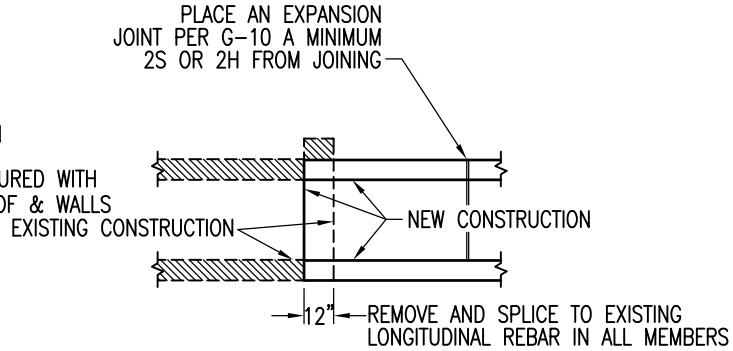
PARAPET DETAILS FOR MULTIPLE SPAN CULVERTS



PARAPET DETAIL FOR SKEWED CULVERTS W/O WINGWALLS



COVER: 1' AND GREATER



COVER: EXPOSED TOP AND LESS THAN 1'

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

SAN DIEGO REGIONAL STANDARD DRAWING

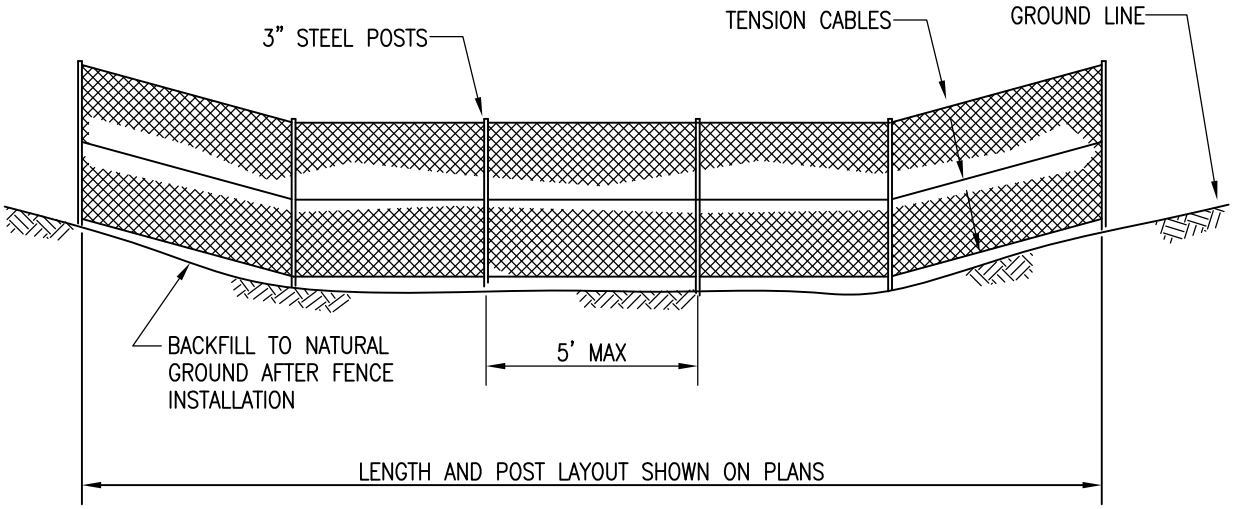
BOX CULVERT
MISCELLANEOUS DETAILS NO. 2

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

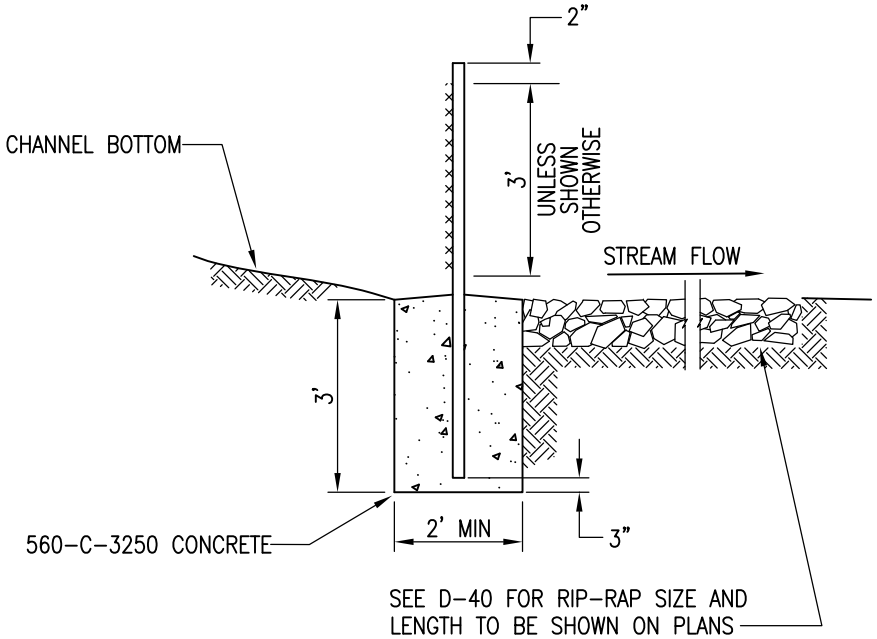
12/17/2015

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" ø 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

SAN DIEGO REGIONAL STANDARD DRAWING

DEBRIS FENCE

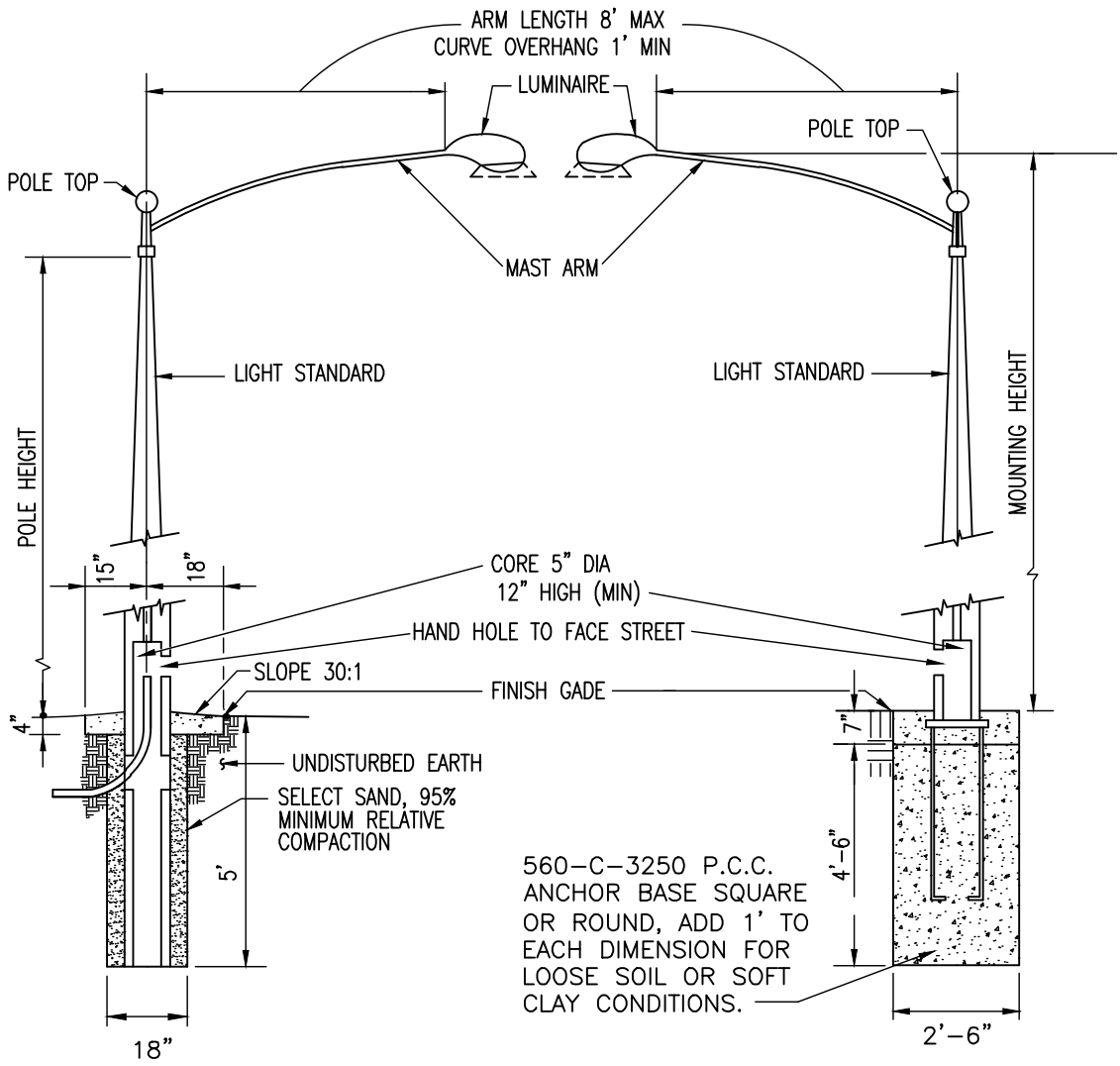
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **D-82**

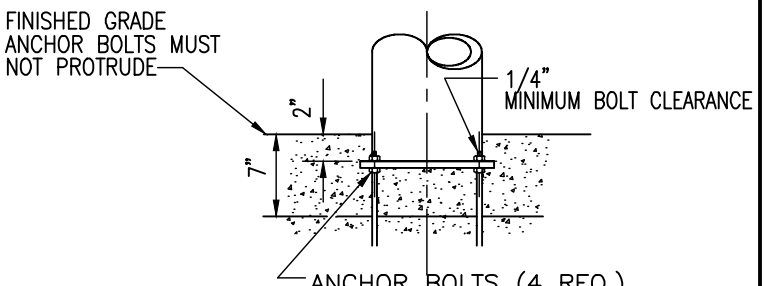
ELECTRICAL SYSTEMS



DIRECT BURIAL FOUNDATION

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

ANCHOR BASE FOUNDATION



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

SAN DIEGO REGIONAL STANDARD DRAWING

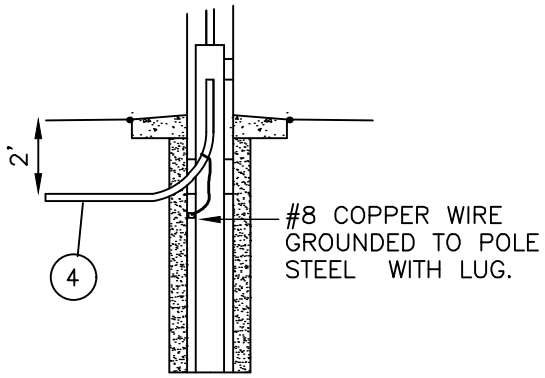
STREET LIGHTING STANDARD

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

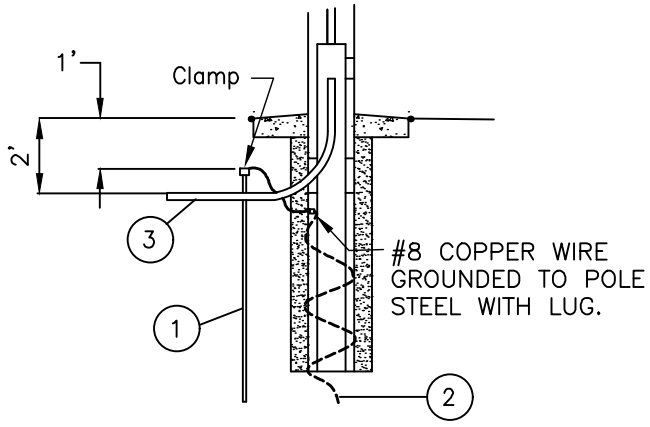
12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **E-01**

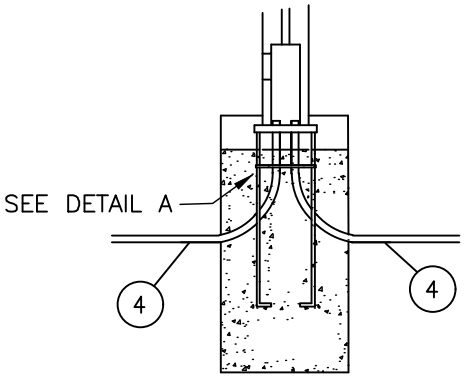


STEEL CONDUIT

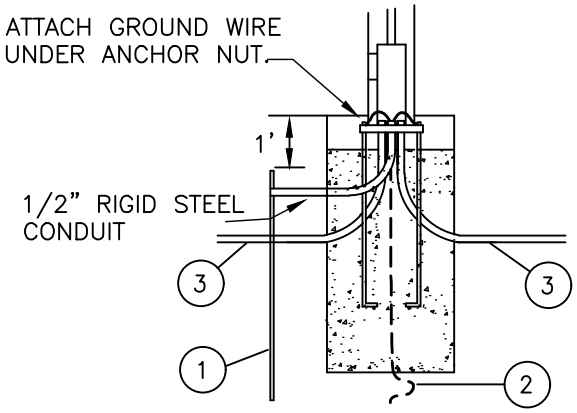


NON–METALLIC CONDUIT

DIRECT BURIAL FOUNDATION



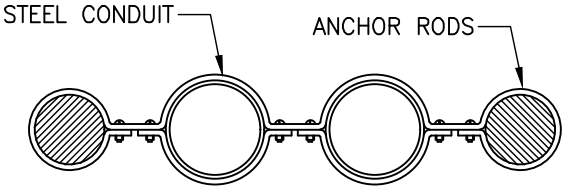
STEEL CONDUIT



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

SAN DIEGO REGIONAL STANDARD DRAWING

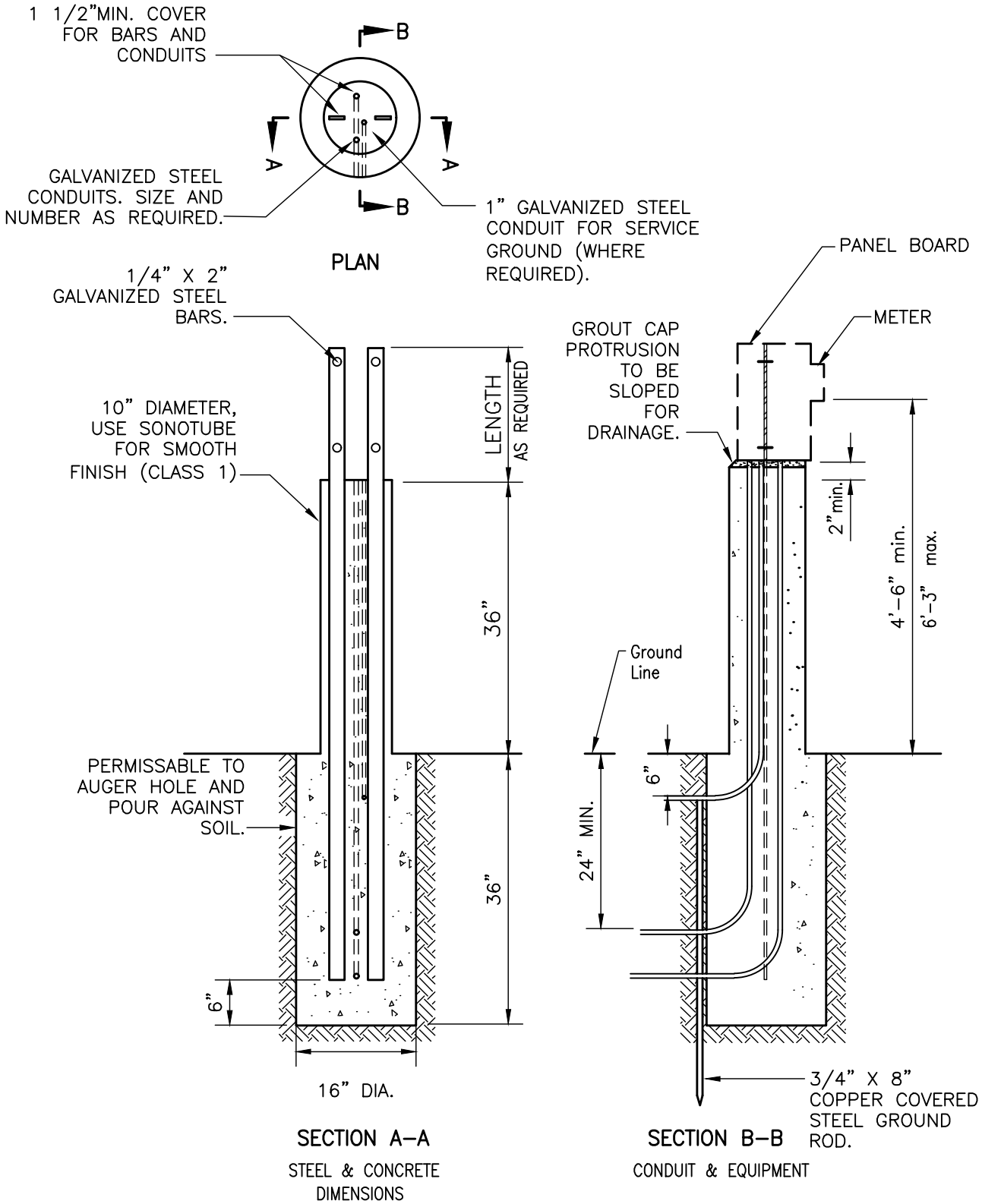
GROUNDING OF CONCRETE LIGHTING STANDARDS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **E-02**



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

SAN DIEGO REGIONAL STANDARD DRAWING

PEDESTAL FOR ELECTRICAL EQUIPMENT

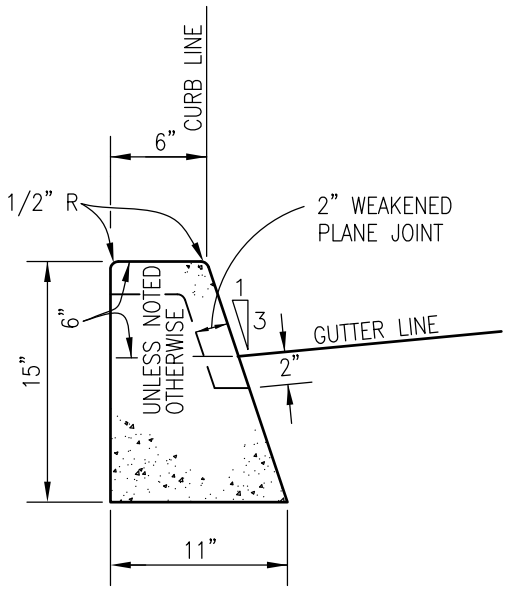
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

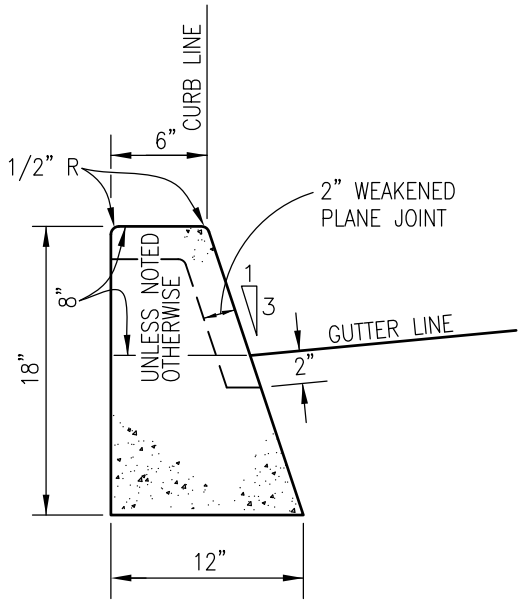
DRAWING NUMBER **E-03**

GENERAL SURFACE IMPROVEMENTS



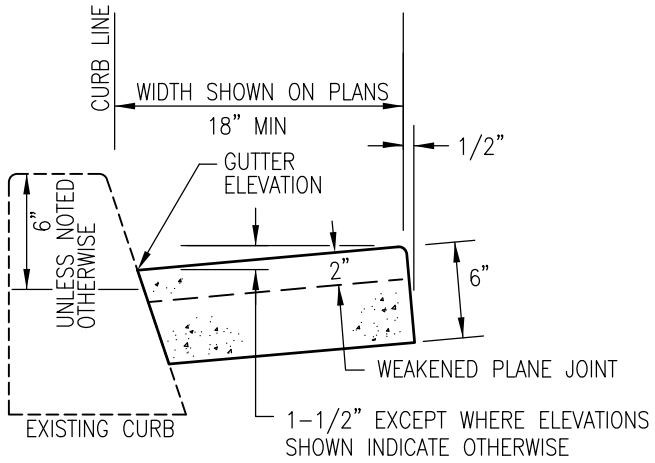
6" CURB

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

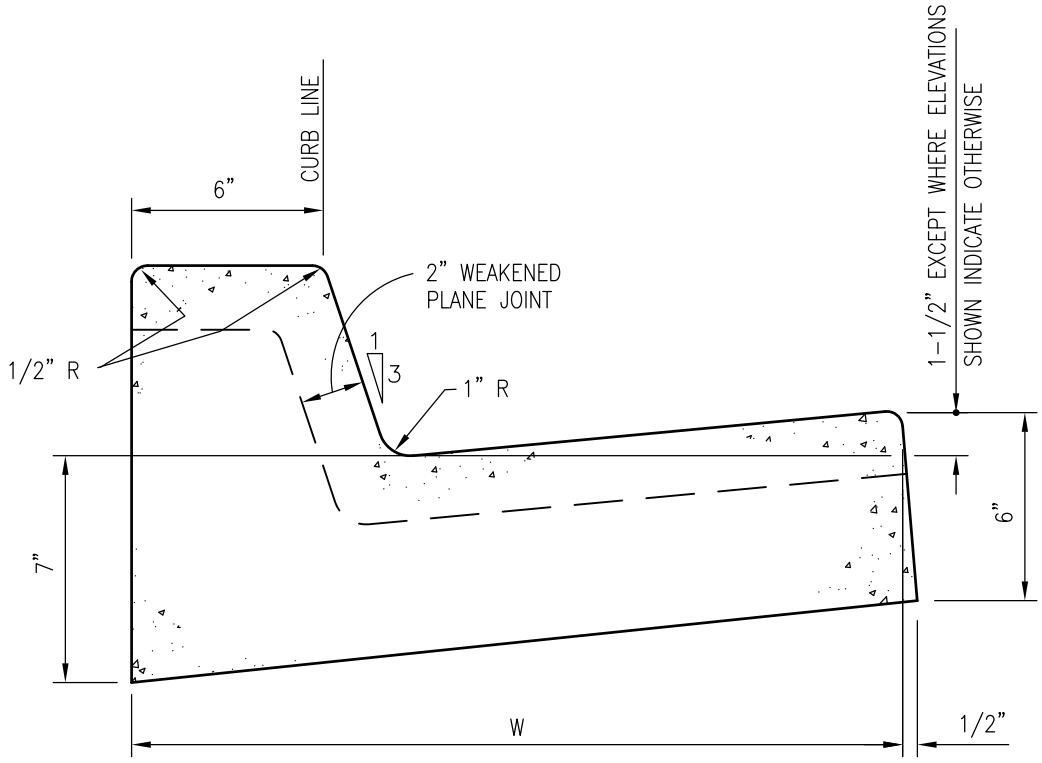
CURBS AND GUTTER - SEPARATE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015

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
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

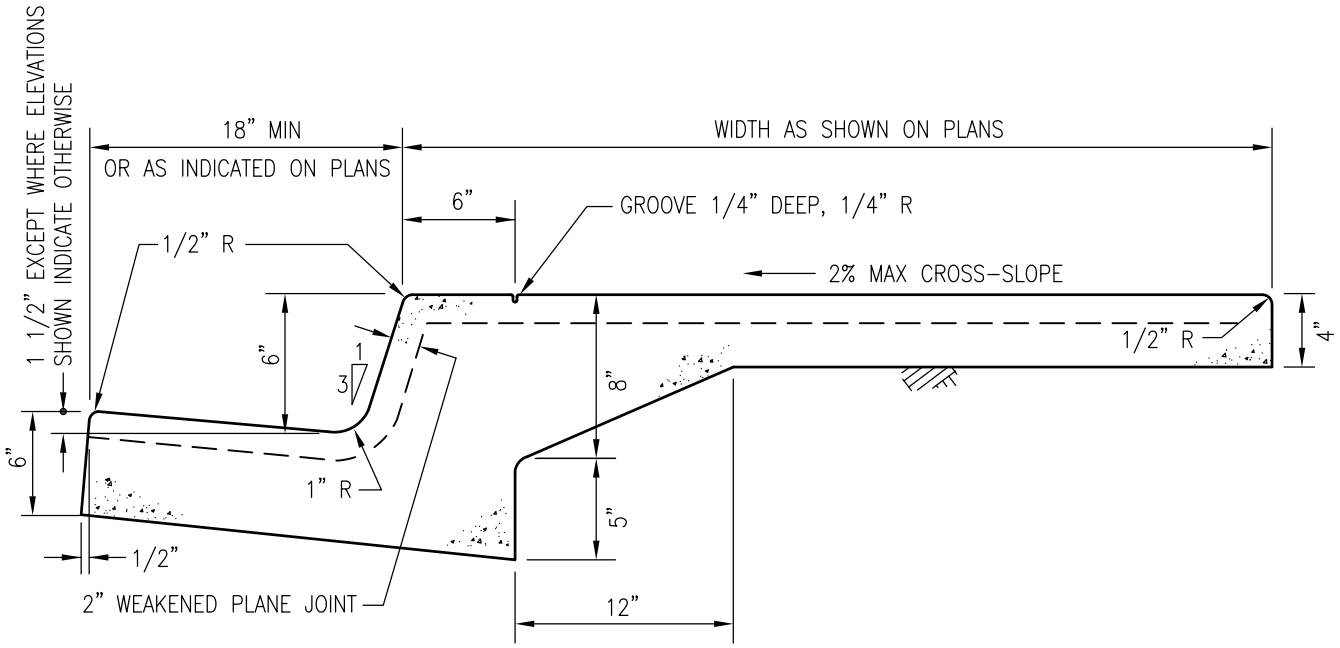
CURB AND GUTTER - COMBINED

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-02**



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
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

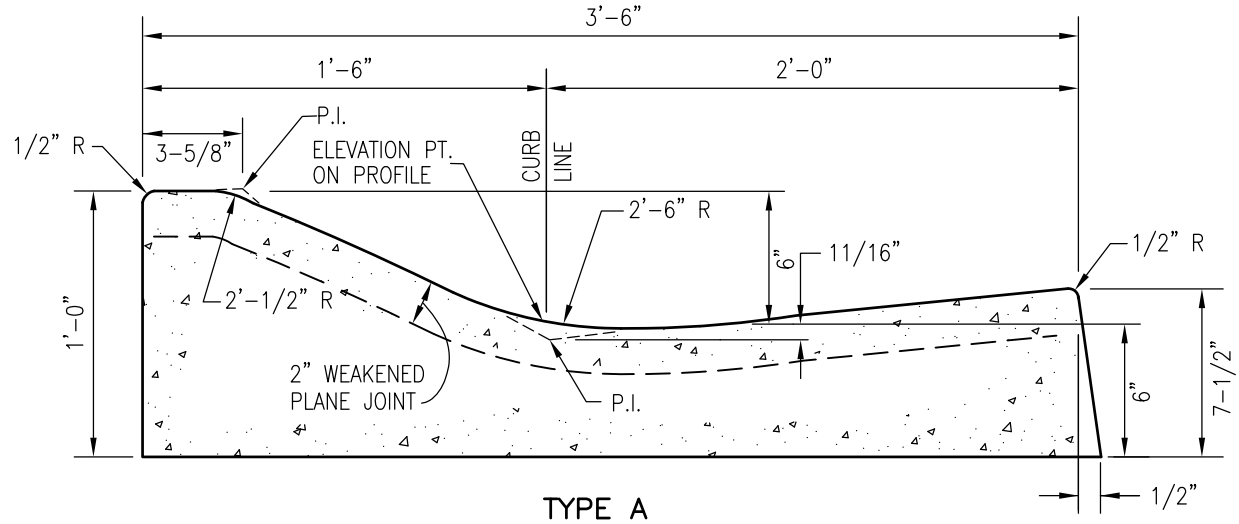
MONOLITHIC CURB, GUTTER AND SIDEWALK

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

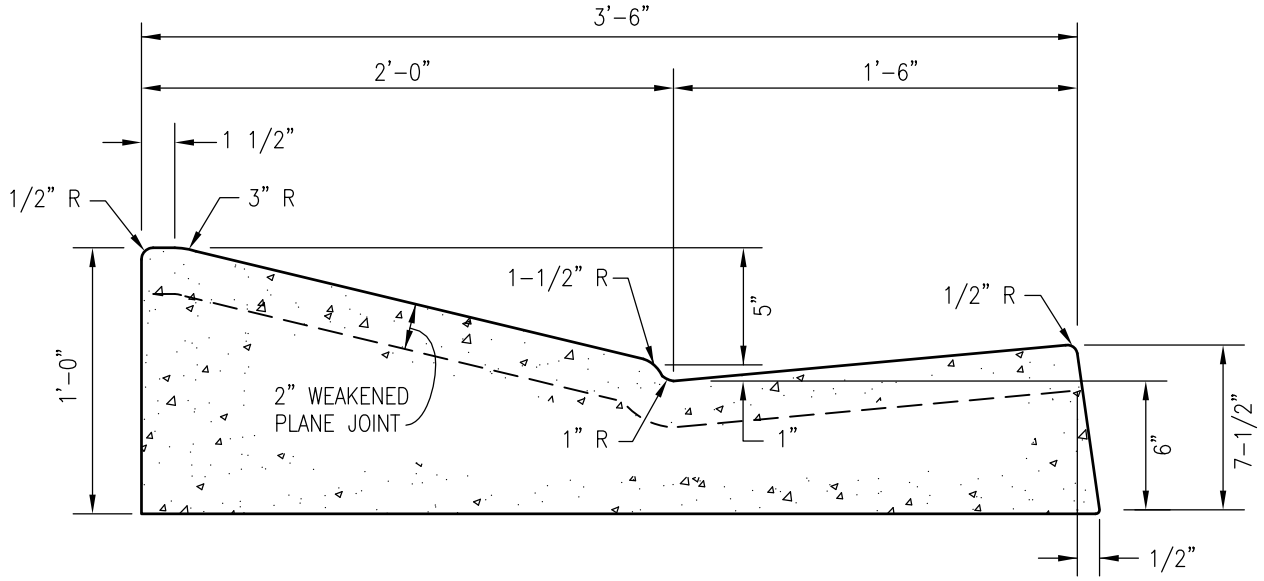
J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-03**



TYPE A
CURB AREA
(2.29 SQ. FT.)



TYPE B
CURB AREA
(2.44 SQ. FT.)

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

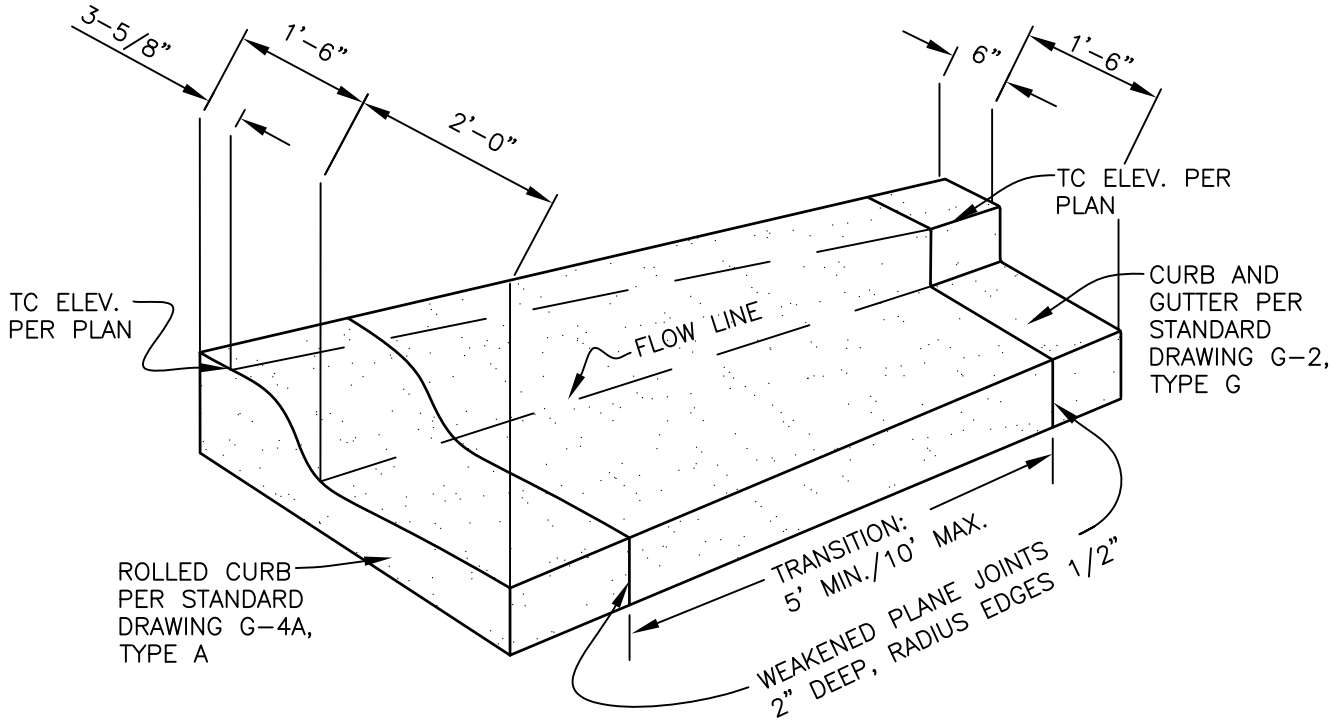
SAN DIEGO REGIONAL STANDARD DRAWING

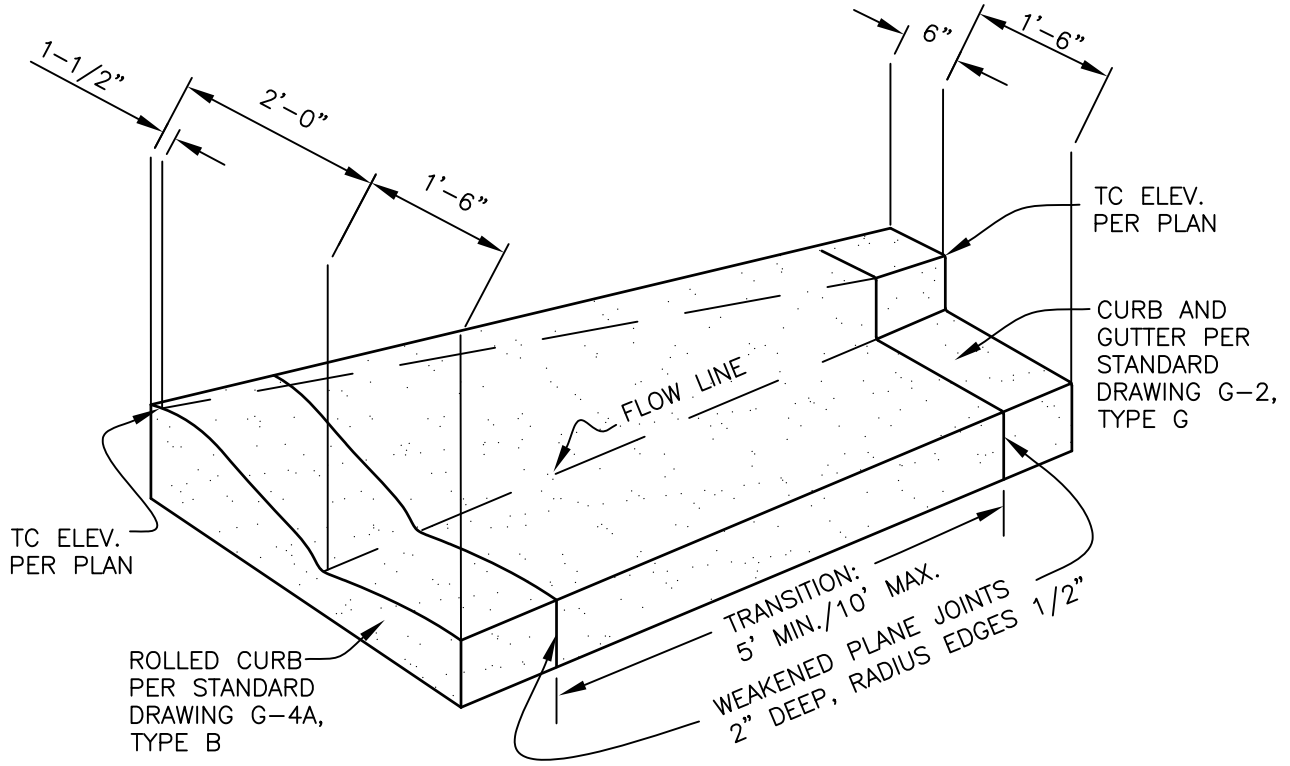
CURB AND GUTTER - ROLLED

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J M Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-04A**





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
NEW	DM	MR/CV	11/11
UPDATED	CV	CV	12/15

SAN DIEGO REGIONAL STANDARD DRAWING

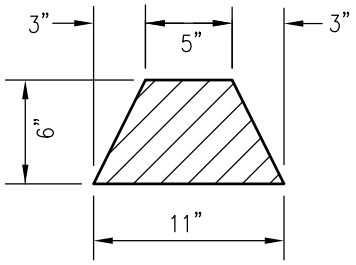
CURB AND GUTTER TO ROLLED CURB TRANSITION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

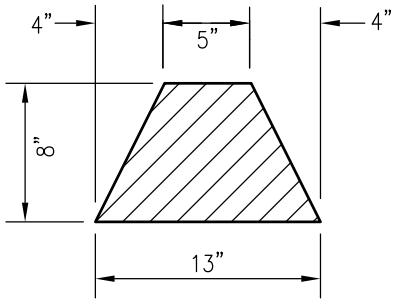
12/17/2015

Chairperson R.C.E. 19246 Date

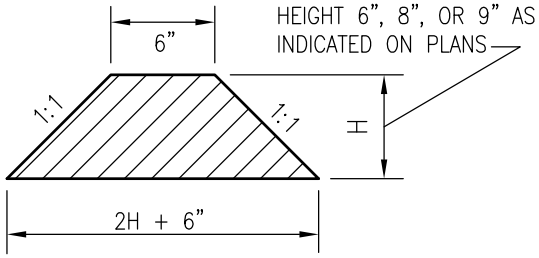
DRAWING NUMBER **G-04B**



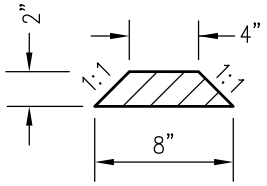
TYPE A



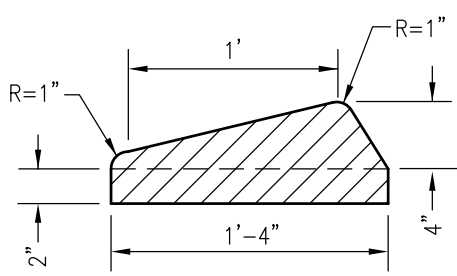
TYPE B



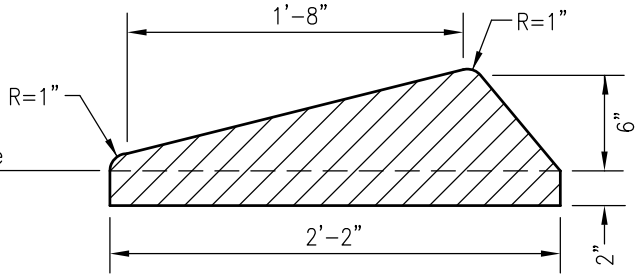
TYPE C



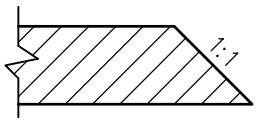
TYPE D



TYPE E
(MOUNTABLE DIKE)



TYPE F
(MOUNTABLE DIKE)



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

ALL TYPES – SIDE VIEW

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

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.

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

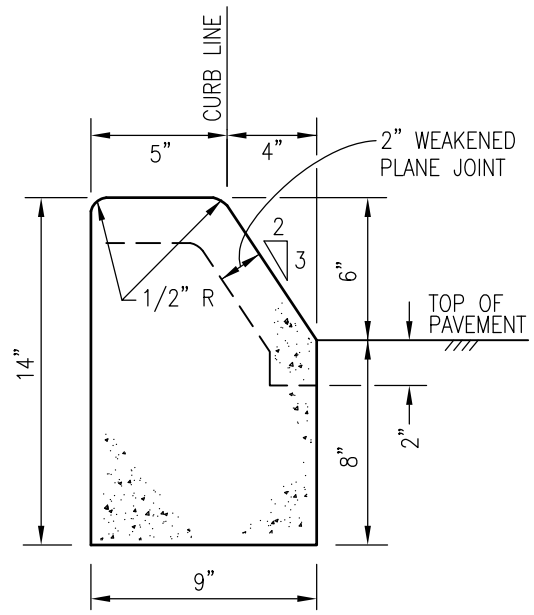
DIKES - ASPHALT CONCRETE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

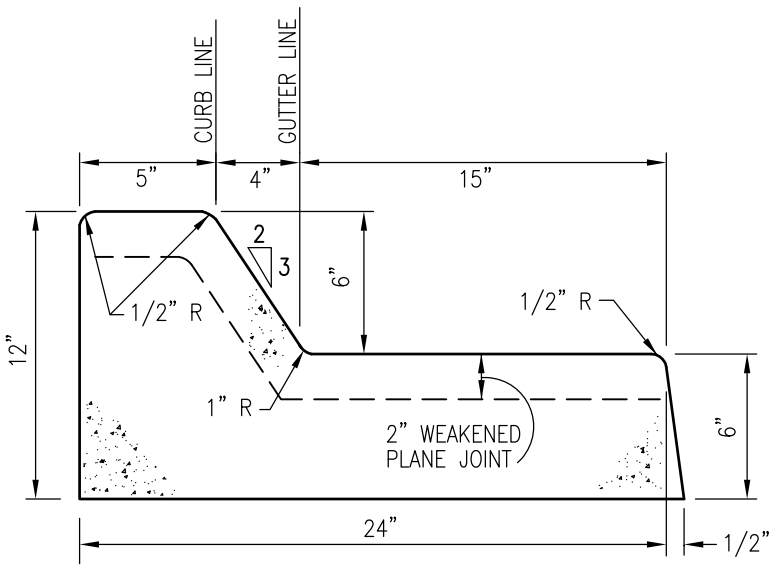
J M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

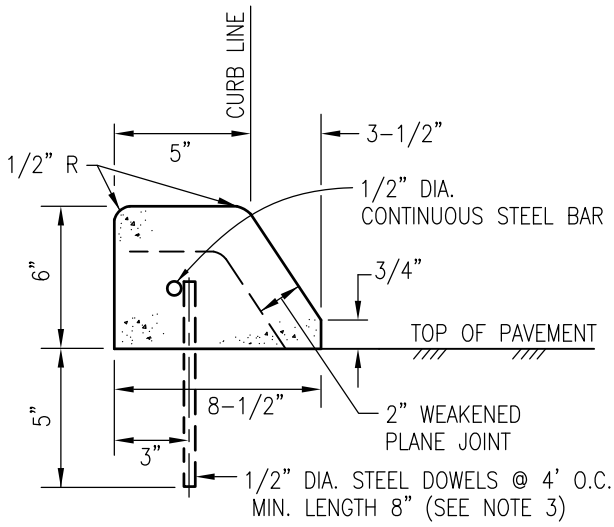
DRAWING NUMBER **G-05**



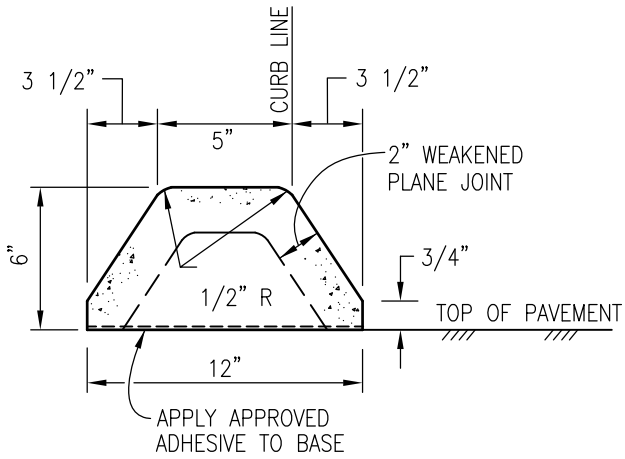
B–1
AREA=0.79 SQ. FT.



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

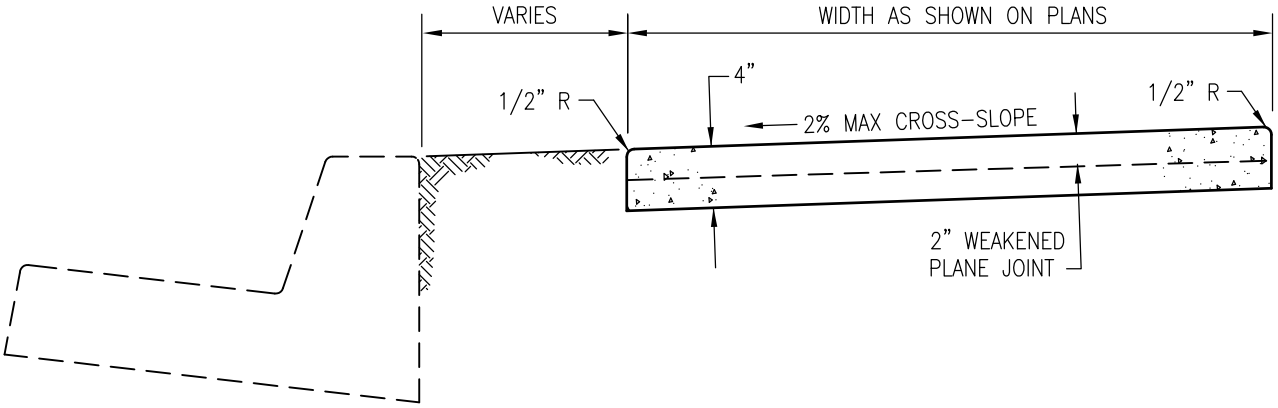
SAN DIEGO REGIONAL STANDARD DRAWING

CURBS AND GUTTER - MEDIANS

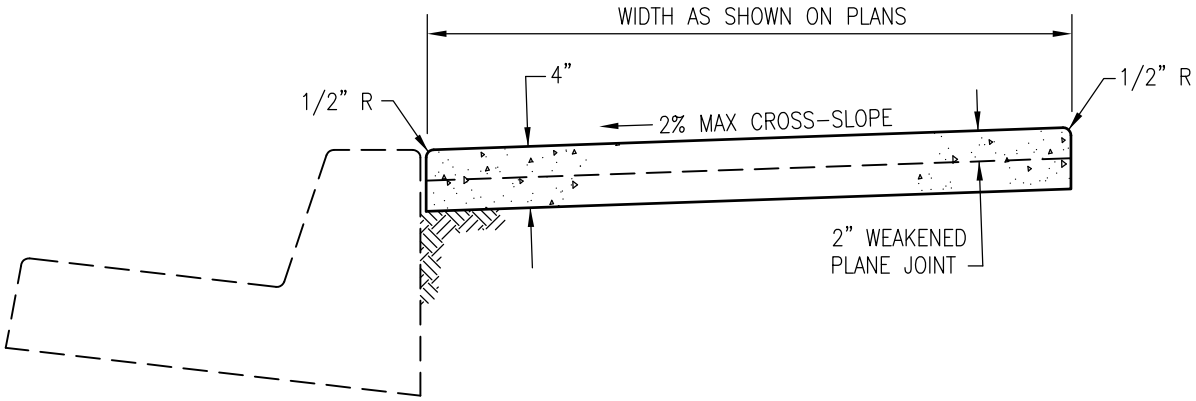
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-06**



NON–CONTIGUOUS

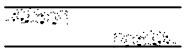


CONTIGUOUS

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

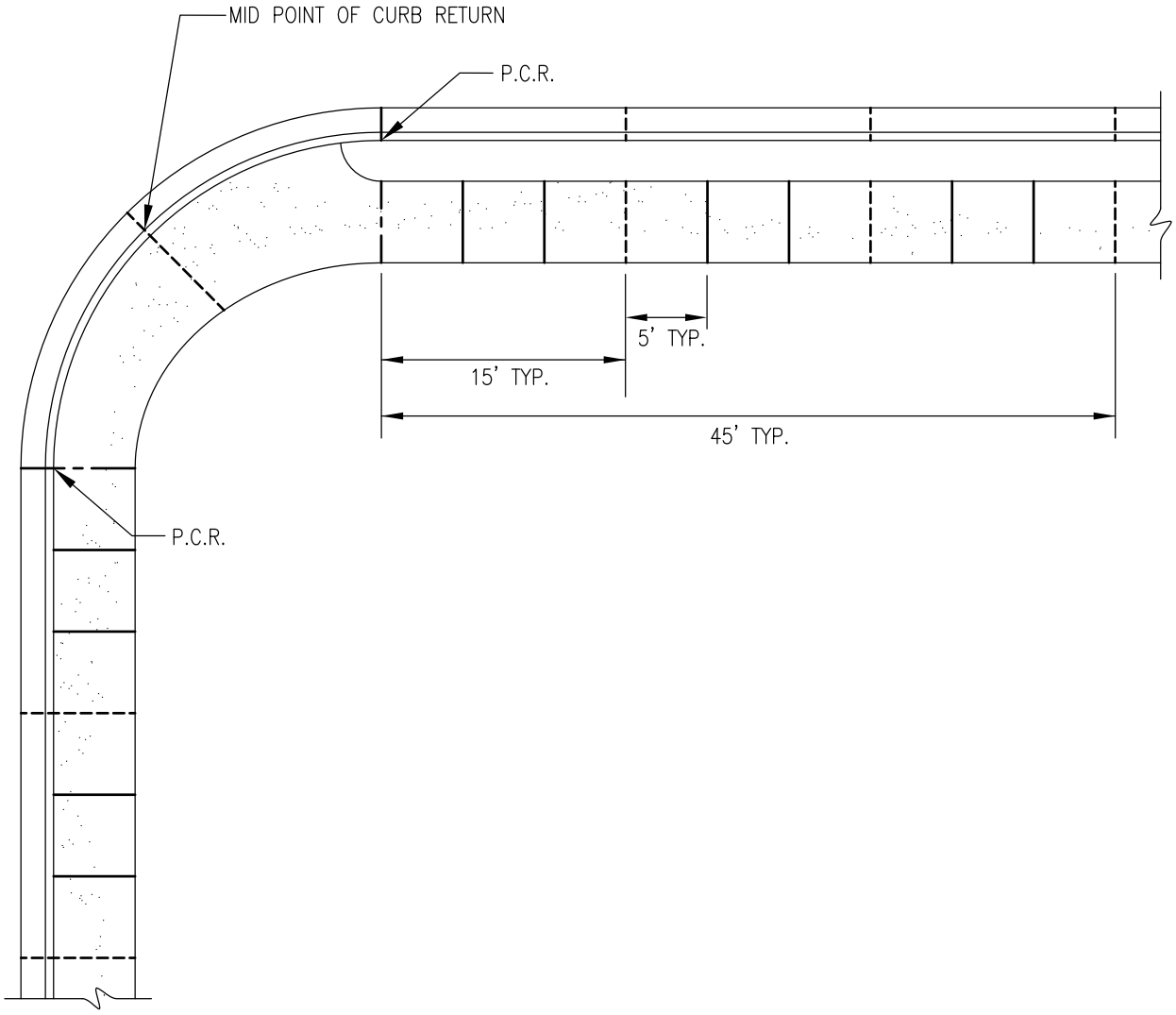
SIDEWALK - TYPICAL SECTIONS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

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 REQUIED, 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

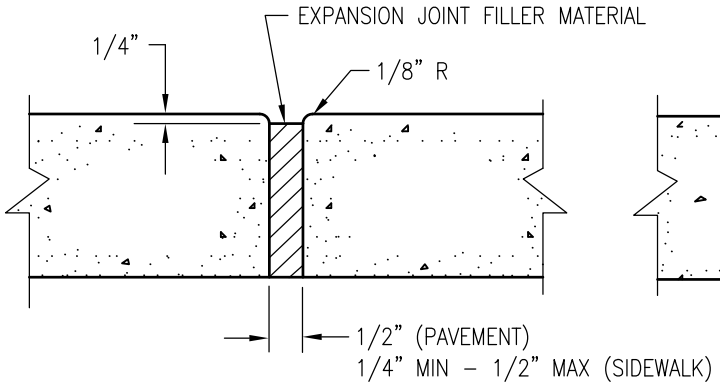
SIDEWALK JOINT LOCATIONS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

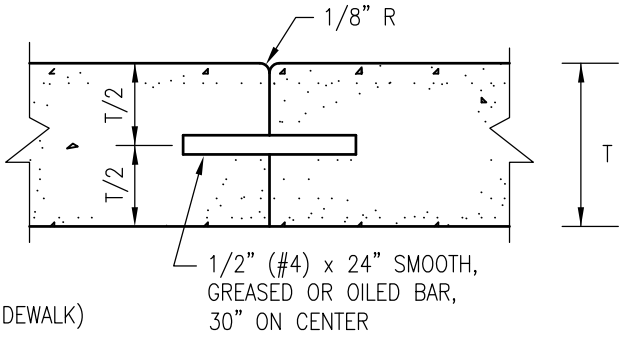
T. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

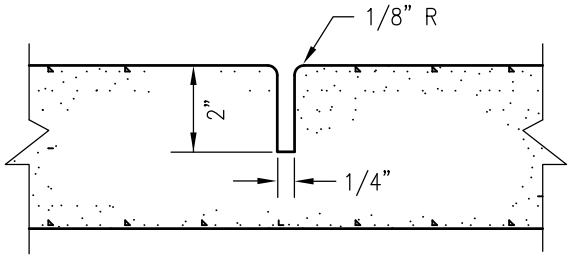
DRAWING NUMBER **G-09**



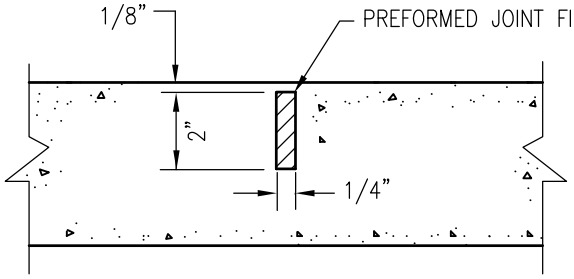
EXPANSION JOINT



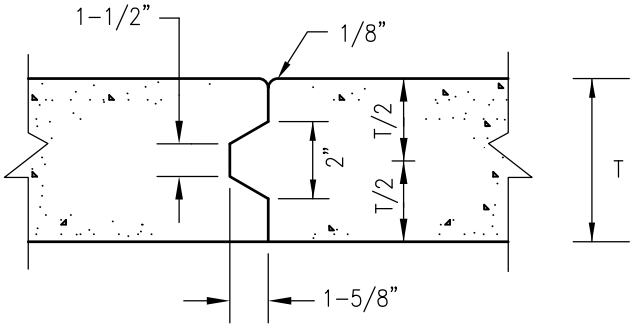
CONTACT JOINT



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

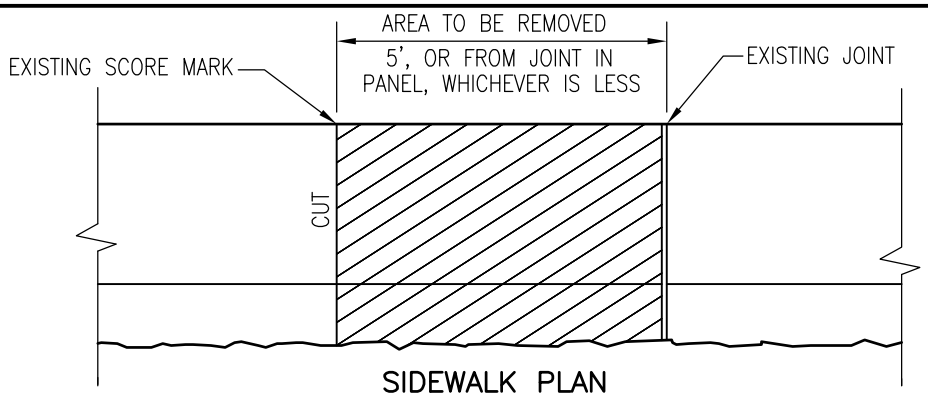
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE JOINT DETAILS

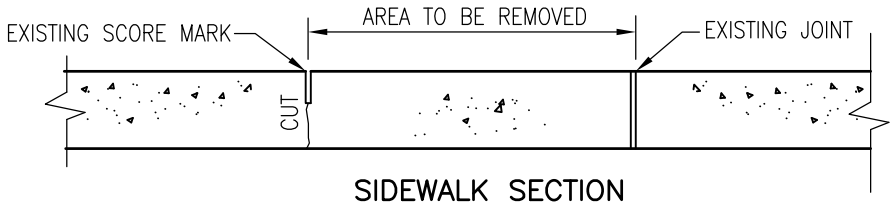
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

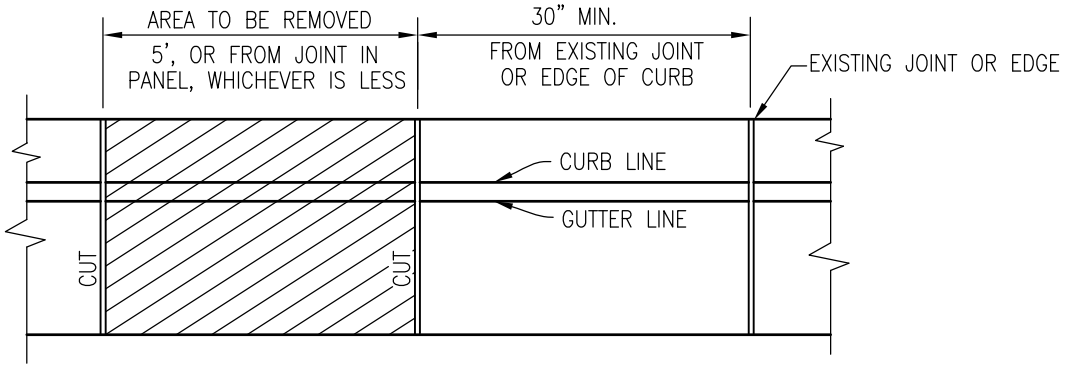
DRAWING NUMBER **G-10**



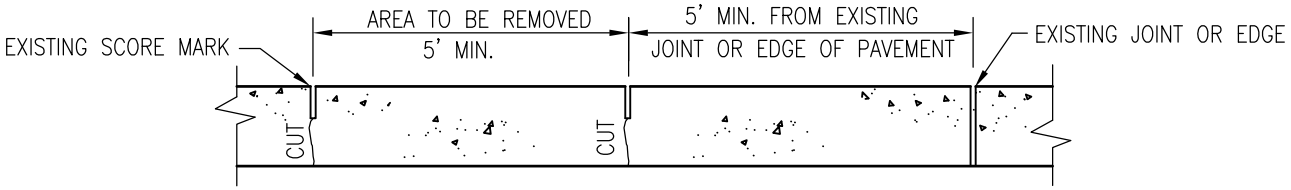
SIDEWALK PLAN



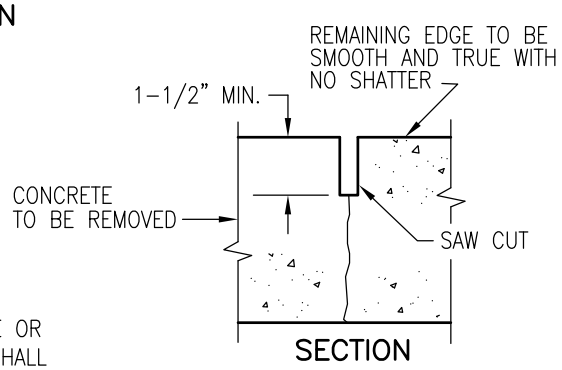
SIDEWALK SECTION



CURB PLAN



PAVEMENT SECTION



SECTION
SHOWING CUT

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

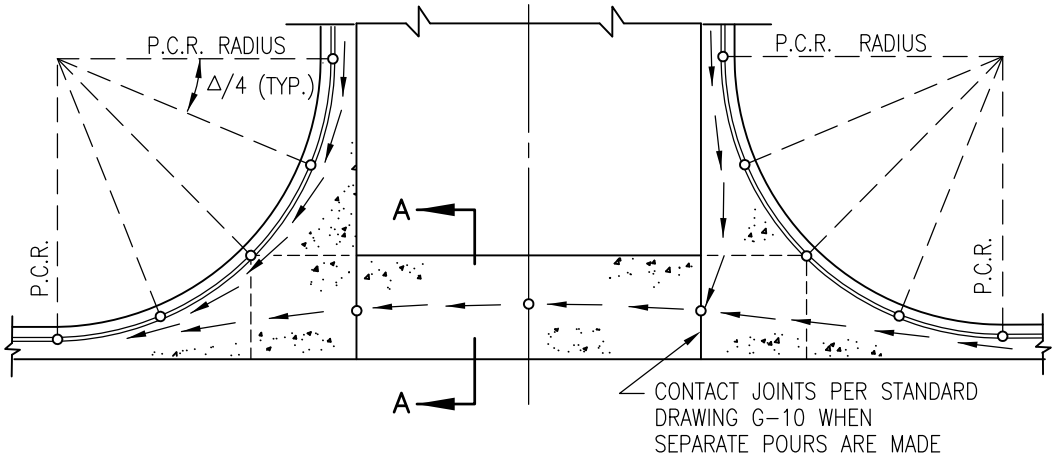
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE CURB, GUTTER, SIDEWALK AND PAVEMENT REMOVAL AND REPLACEMENT

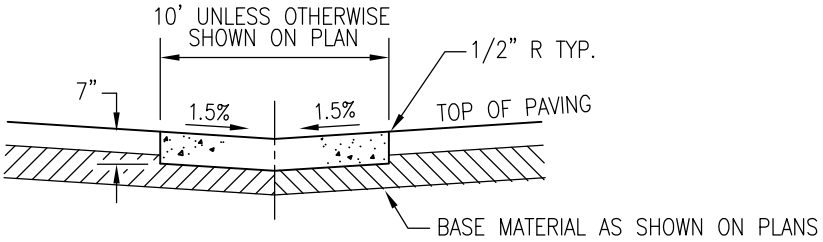
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/2015
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. o = ELEVATIONS TO BE SHOWN ON PLANS.
5. RETURN SEGMENTS TO BE 7" THICK.
6. CURB BETWEEN P.C.R.S SHALL BE CONSIDERED AS PART OF 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

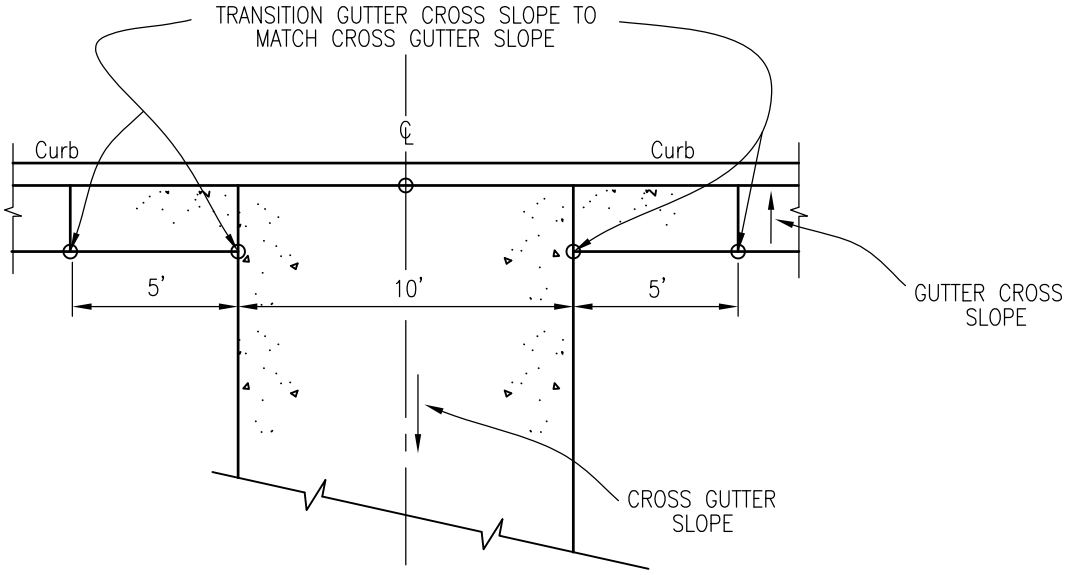
CROSS GUTTER

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

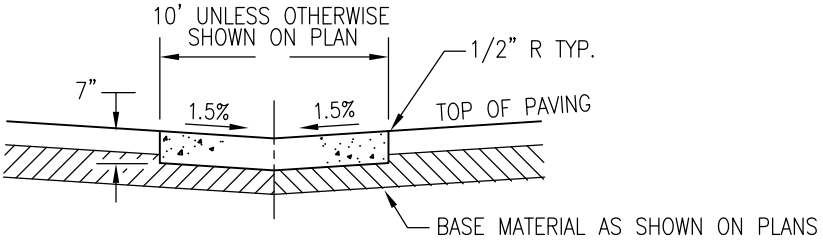
J M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-12**



PLAN

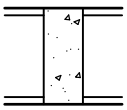


SECTION

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. O = 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

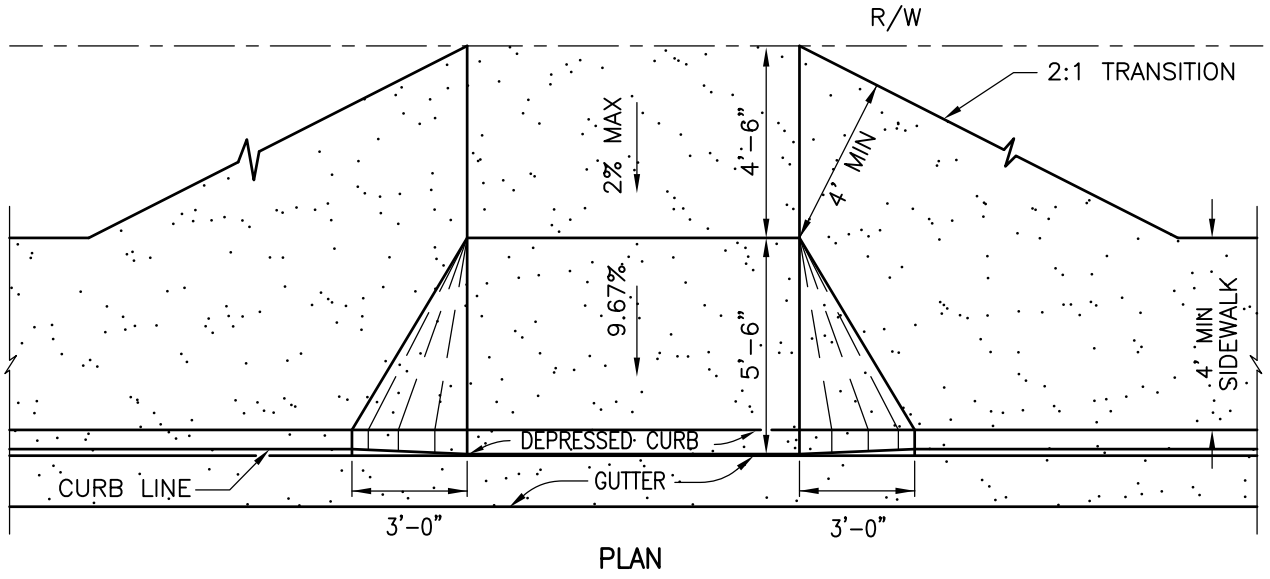
SAN DIEGO REGIONAL STANDARD DRAWING

MID-BLOCK CROSS GUTTER

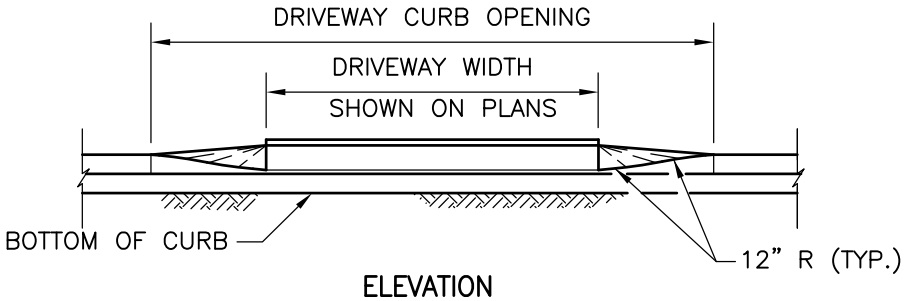
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

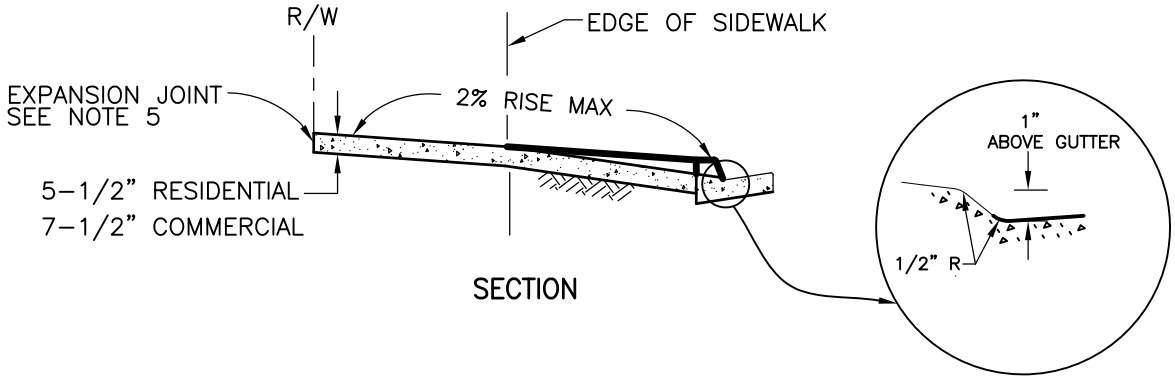
DRAWING NUMBER **G-13**



PLAN



ELEVATION



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. 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

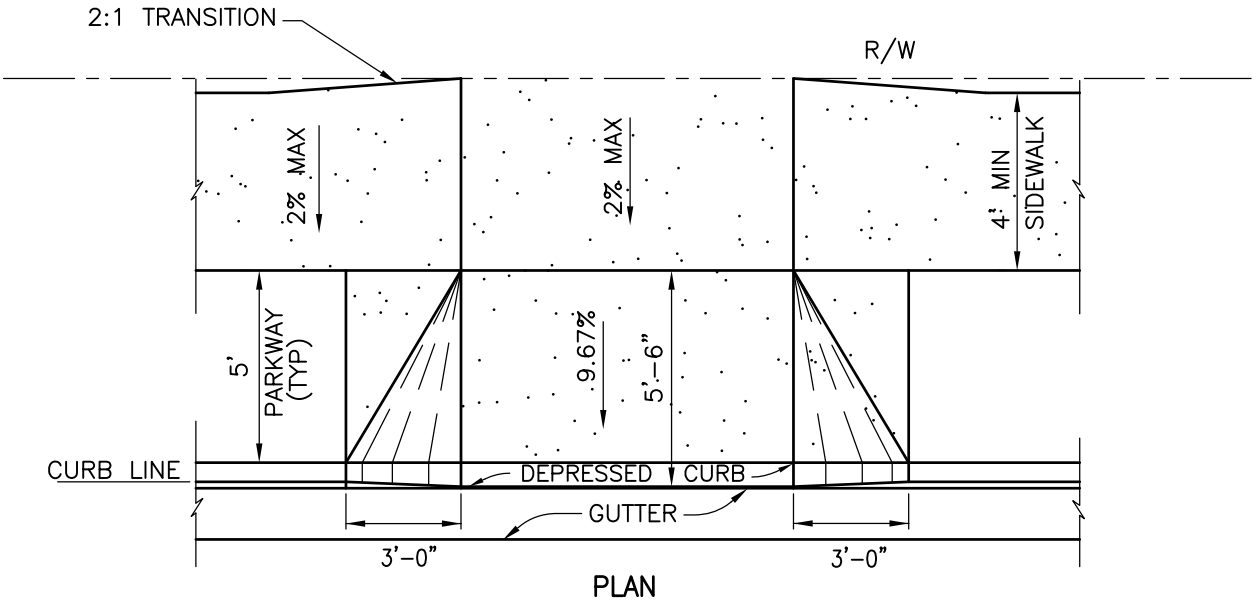
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE DRIVEWAY - TYPE A (CONTIGUOUS SIDEWALK)

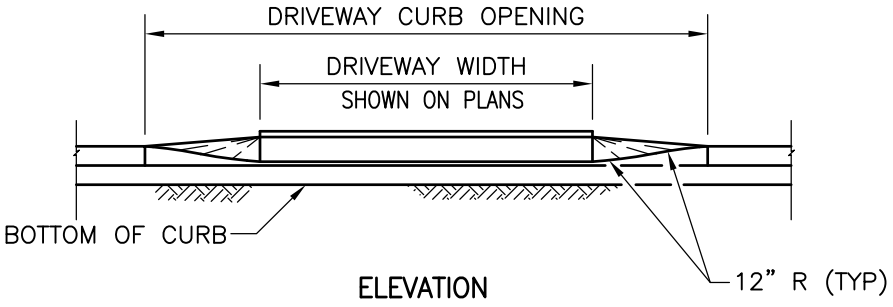
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

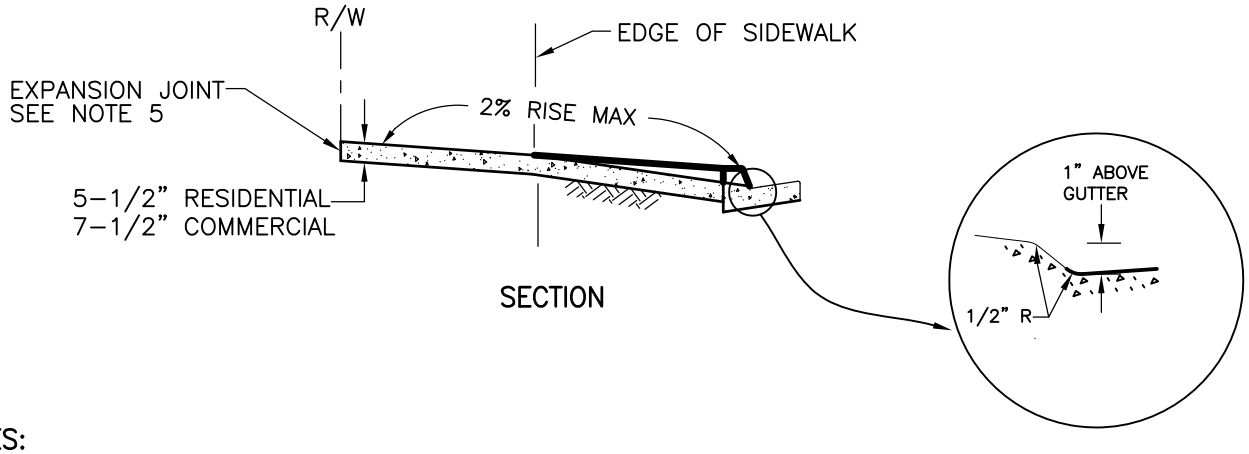
DRAWING NUMBER **G-14A**



PLAN



ELEVATION



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. 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
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

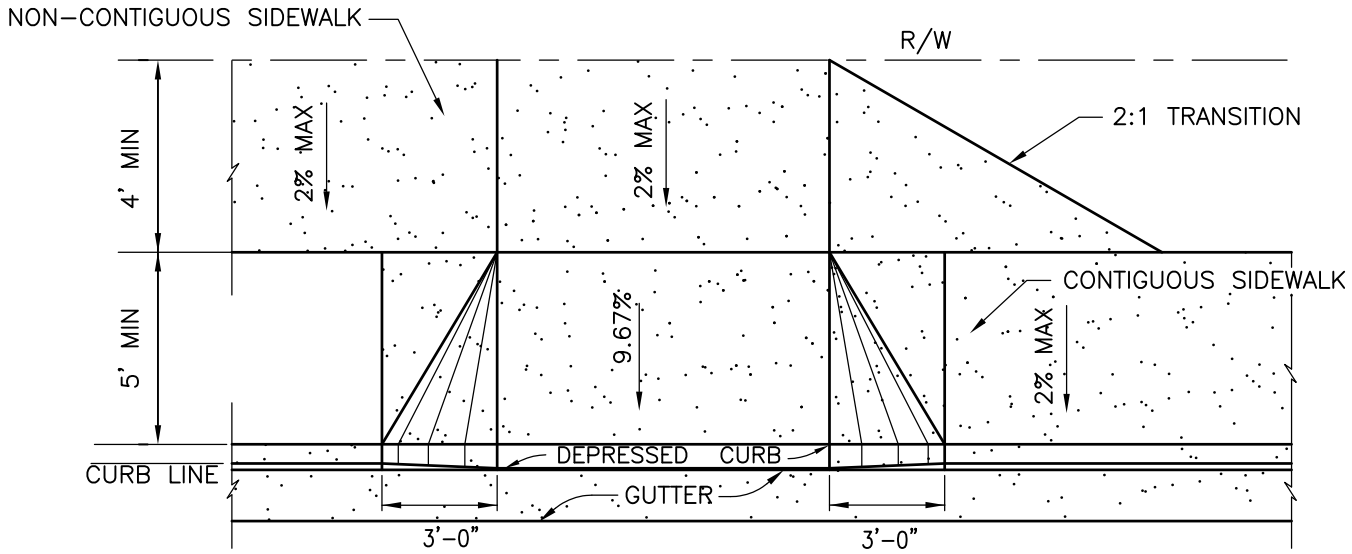
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE DRIVEWAY (NON-CONTIGUOUS SIDEWALK)

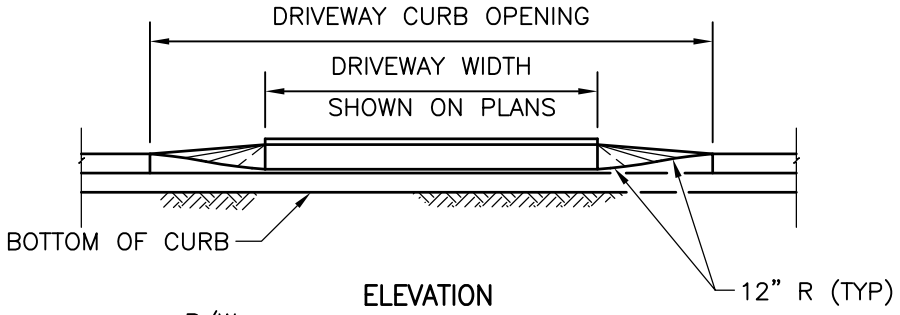
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

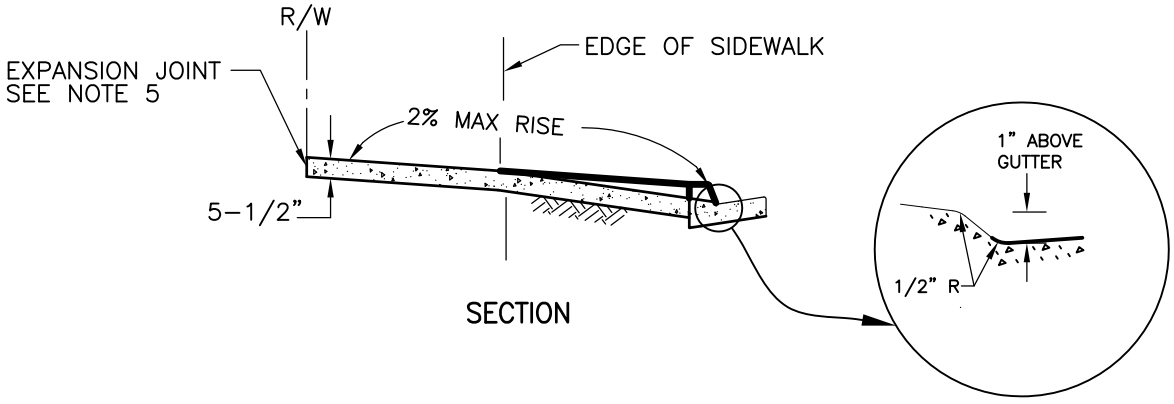
DRAWING NUMBER **G-14B**



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

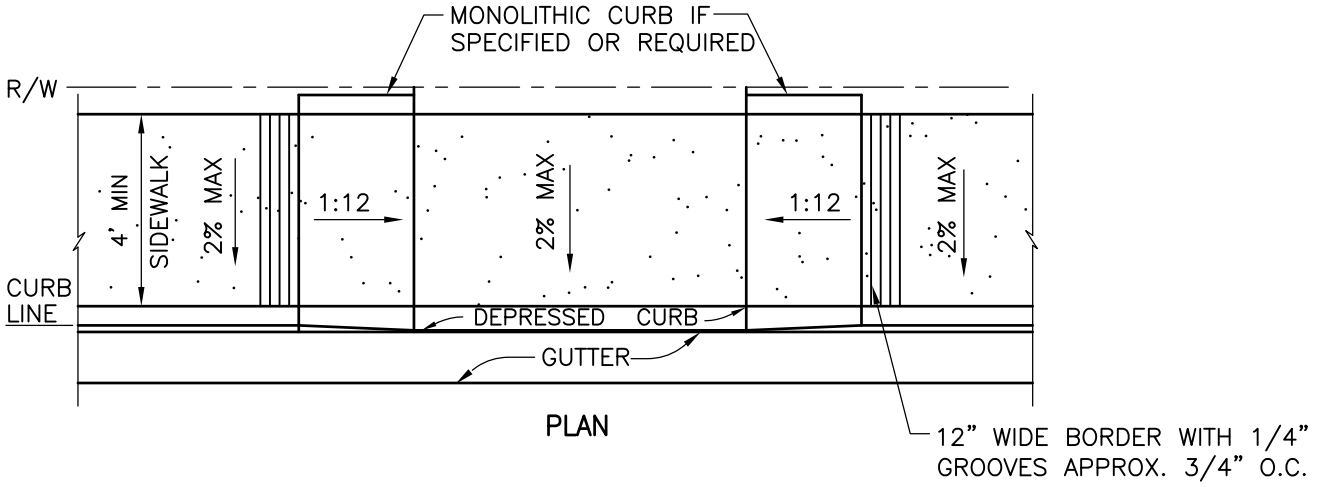
RESIDENTIAL CONCRETE DRIVEWAY (PARKWAY LESS THAN 10' IN DEPTH)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

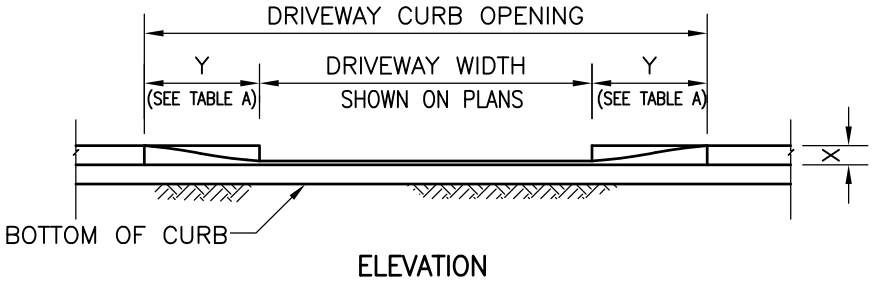
12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-14C**

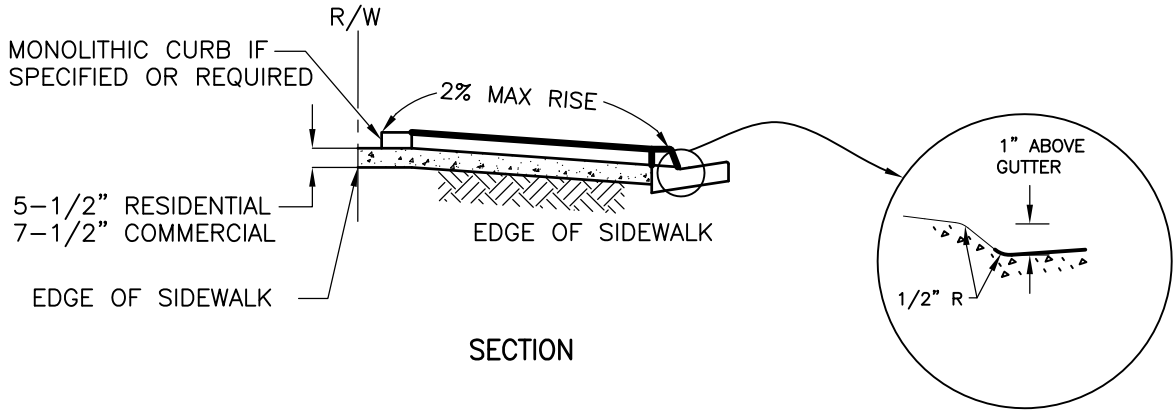


PLAN



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

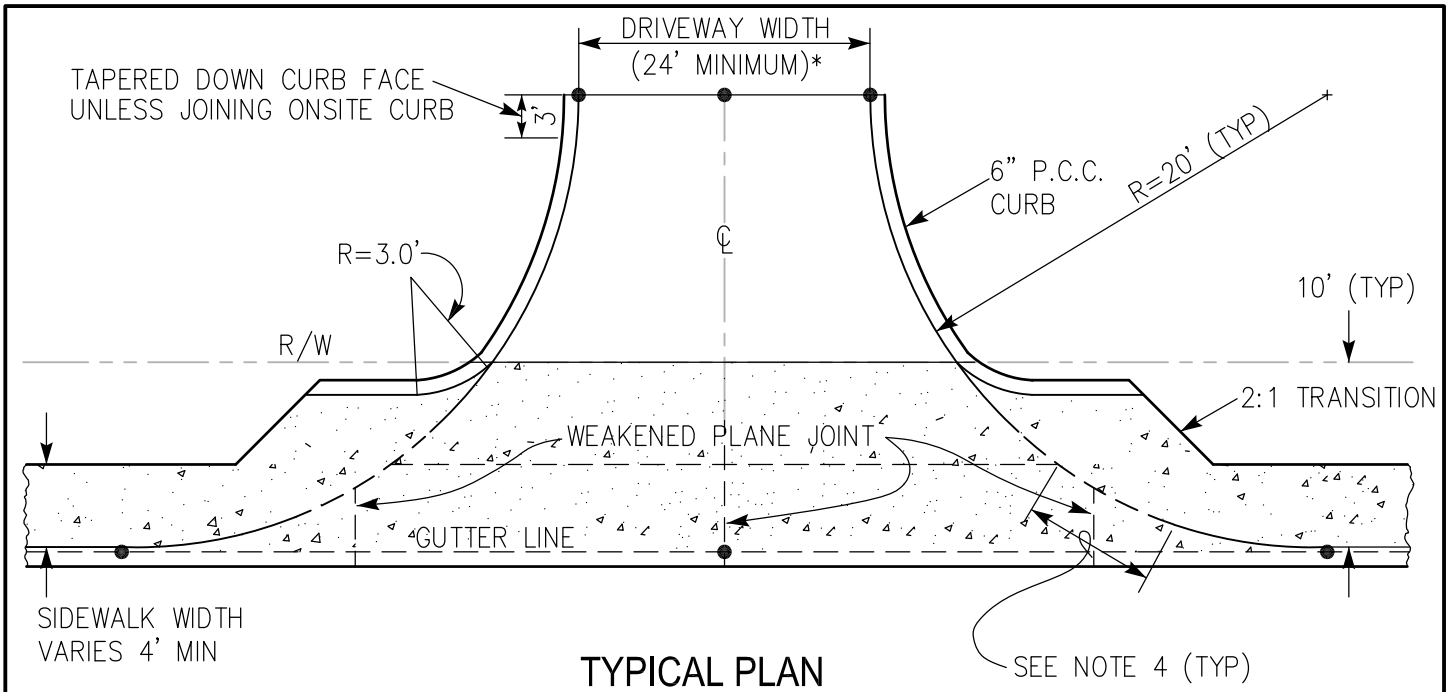
CONCRETE DRIVEWAY (FOR CONFINED RIGHT-OF-WAY)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

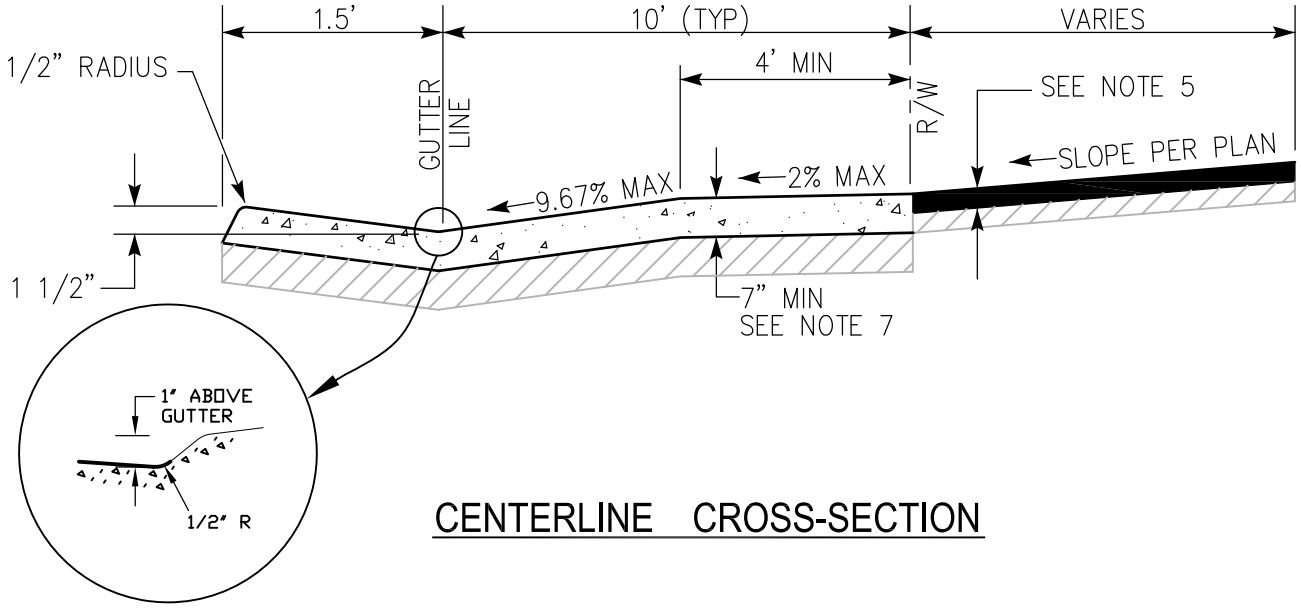
J.M. Stanton 12/17/2015

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
NEW	MR	MR/CV	09/11
UPDATED	CV	CV	12/15

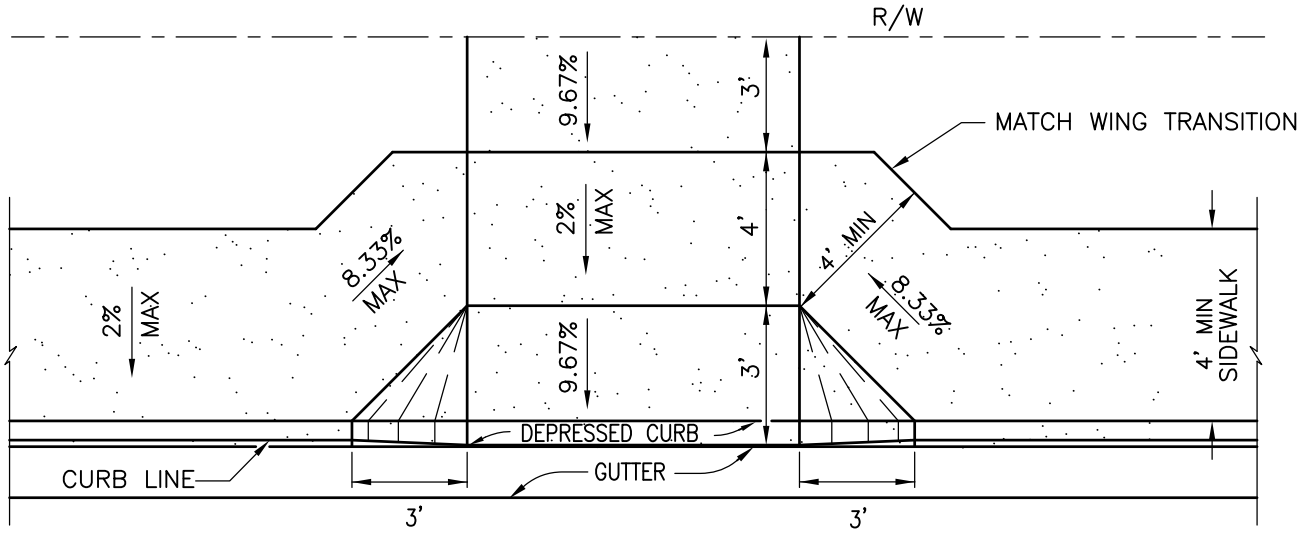
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE DRIVEWAY (ALLEY TYPE)

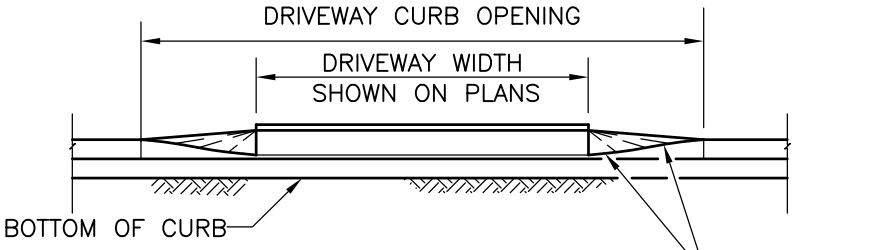
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

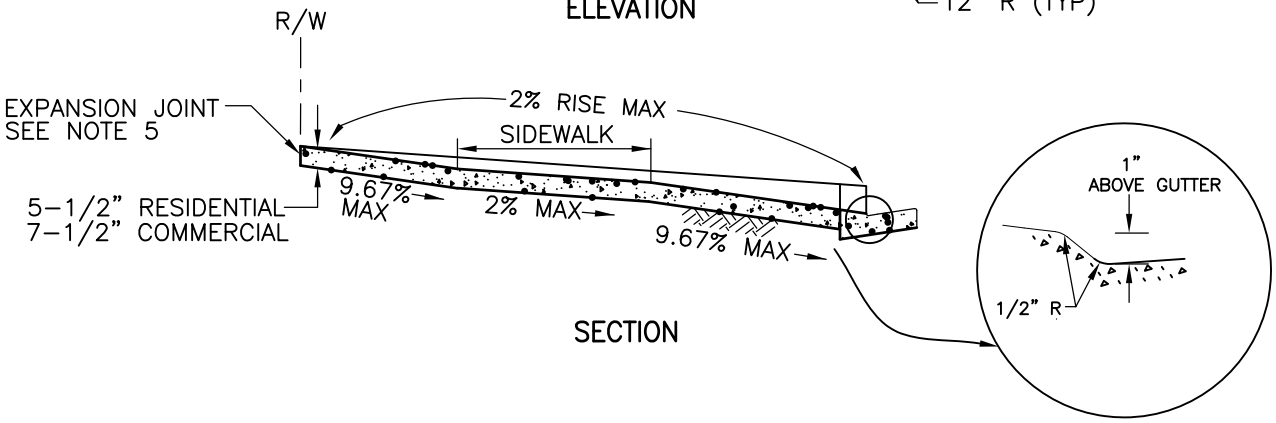
DRAWING NUMBER **G-14E**



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

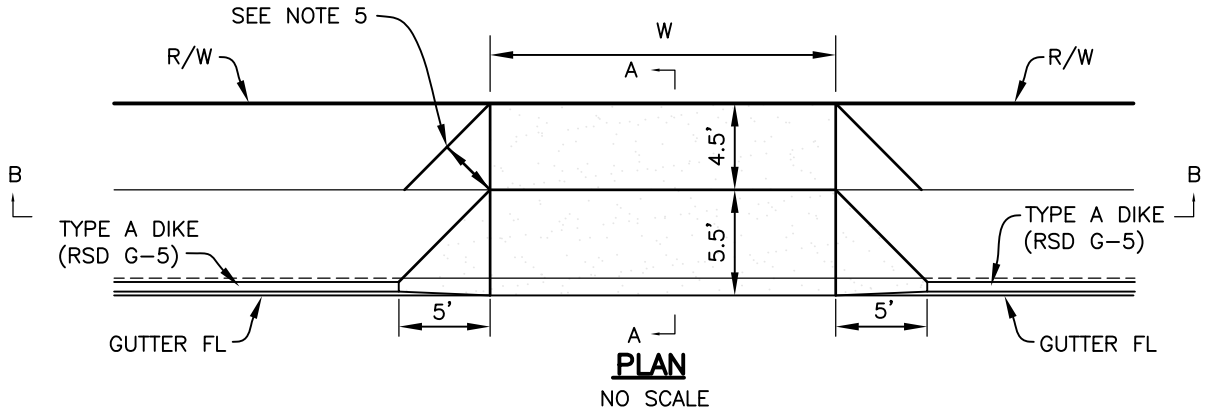
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE DRIVEWAY - TYPE B (CONTIGUOUS SIDEWALK)

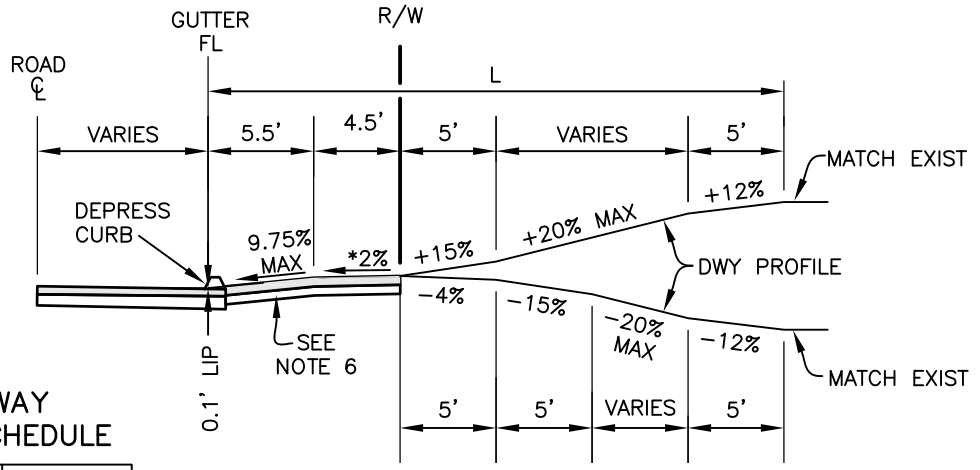
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

DRAWING NUMBER **G-14F**



PLAN
NO SCALE

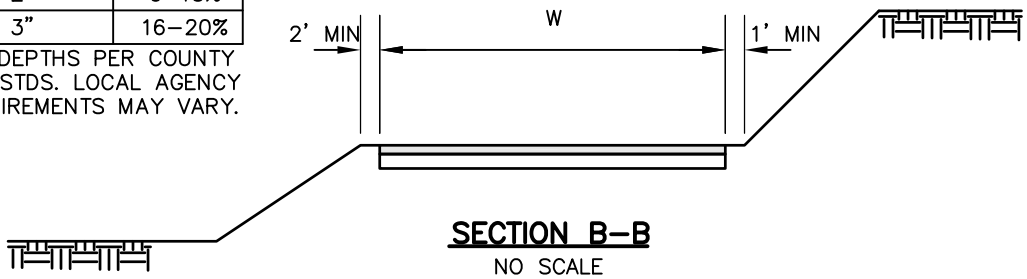


SECTION A–A
NO SCALE

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.



SECTION B–B
NO SCALE

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
NEW	MR	MR/CV	09/11
UPDATED	CV	CV	12/15

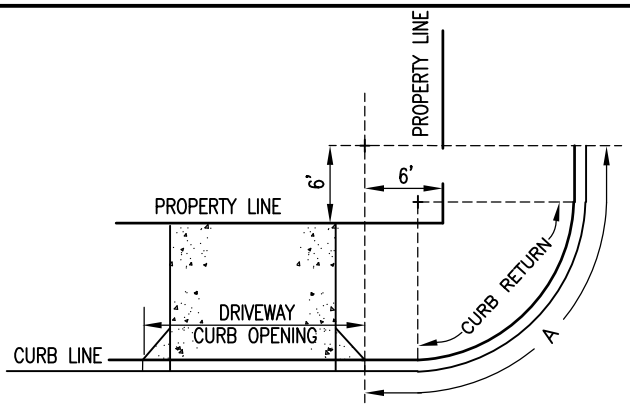
SAN DIEGO REGIONAL STANDARD DRAWING

ASPHALT CONCRETE DRIVEWAY

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

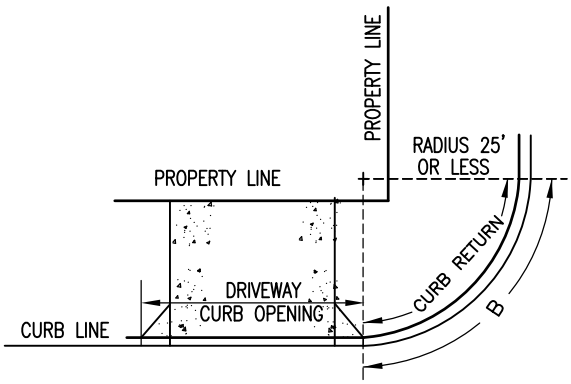
12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-14G**



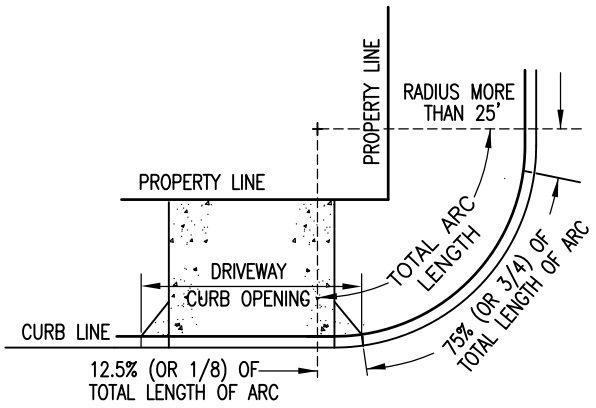
REQUIREMENT 1

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.



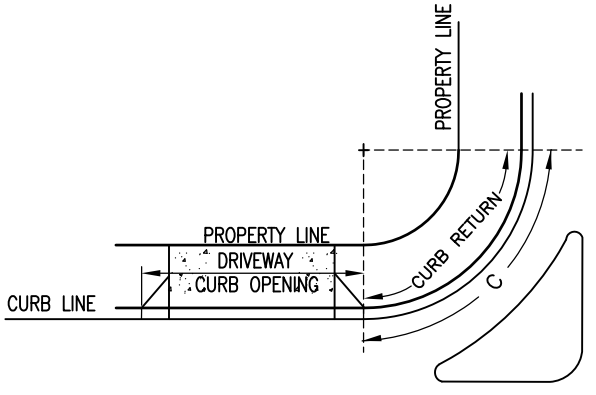
REQUIREMENT 2

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 ENCROACH 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 ENCROACHMENT, PROVIDED REQUIREMENT 1 IS MET.



REQUIREMENT 4

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

Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
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

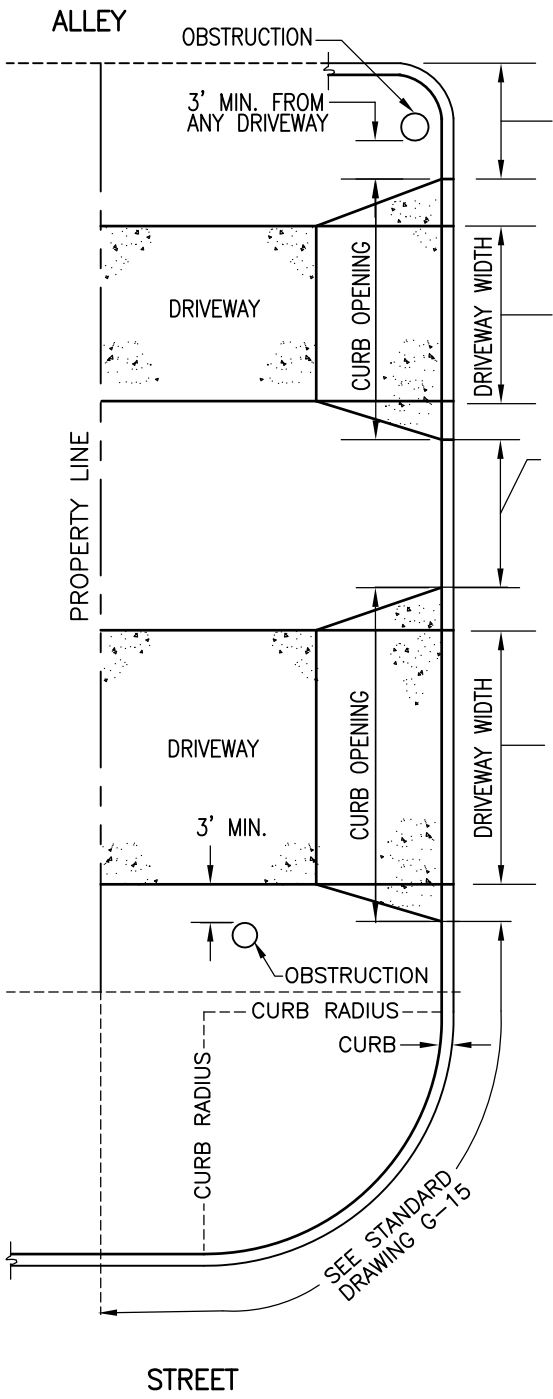
DRIVEWAY LOCATION - ADJACENT TO CURB RETURNS AND STREET LINES

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015

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

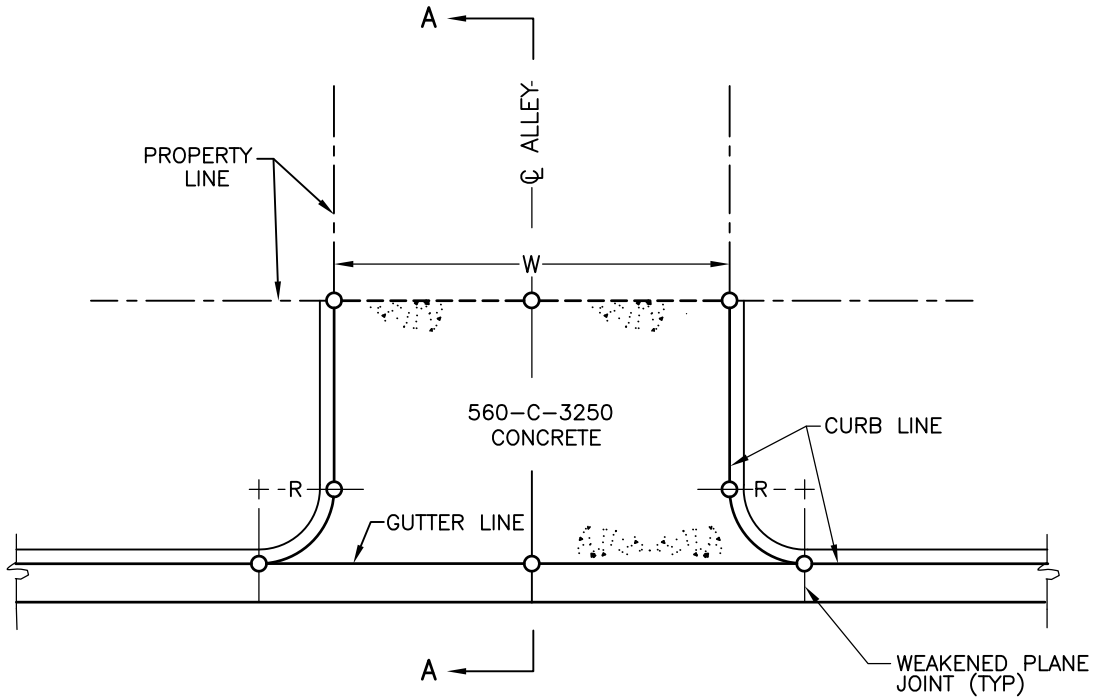
SAN DIEGO REGIONAL STANDARD DRAWING

DRIVEWAY LOCATION AND WIDTH REQUIREMENTS

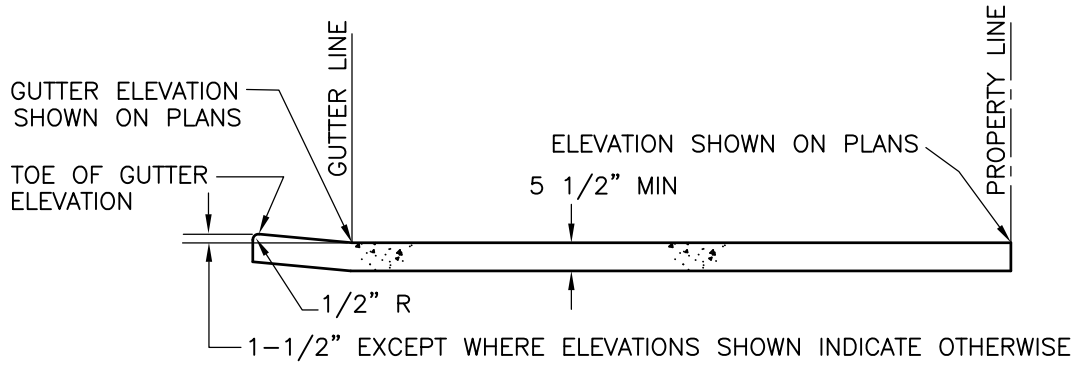
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

DRAWING NUMBER **G-16**



PLAN

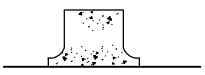


SECTION A–A

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. O = 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

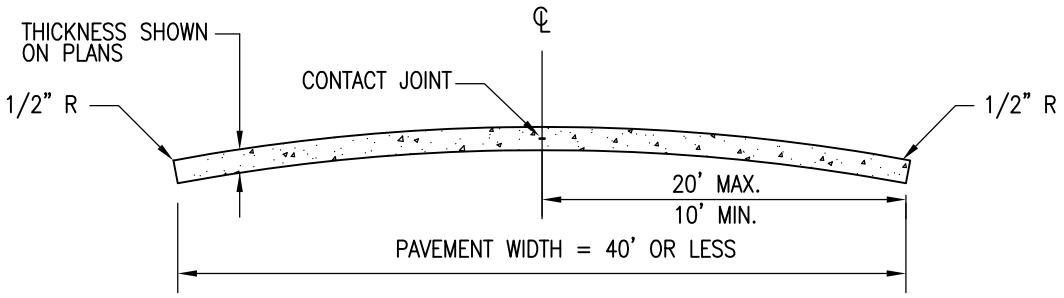
ALLEY APRON

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

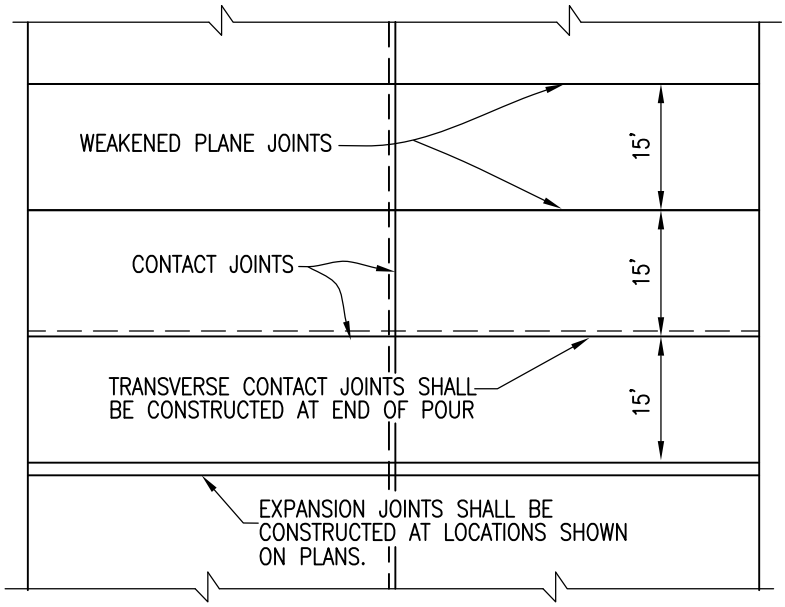
J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-17**



SECTION



PLAN

NOTES:

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

Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
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

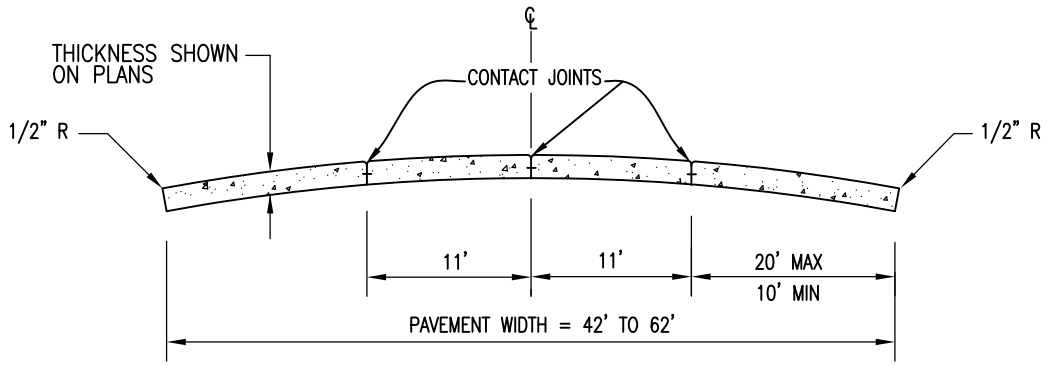
CONCRETE PAVEMENT WIDTH 40' OR LESS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

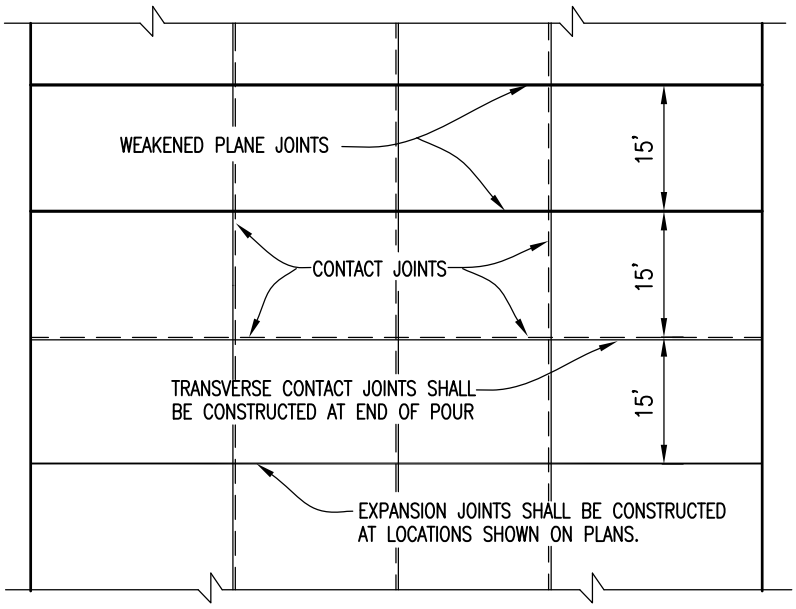
J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-18**



SECTION



PLAN

NOTES:

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

Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
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

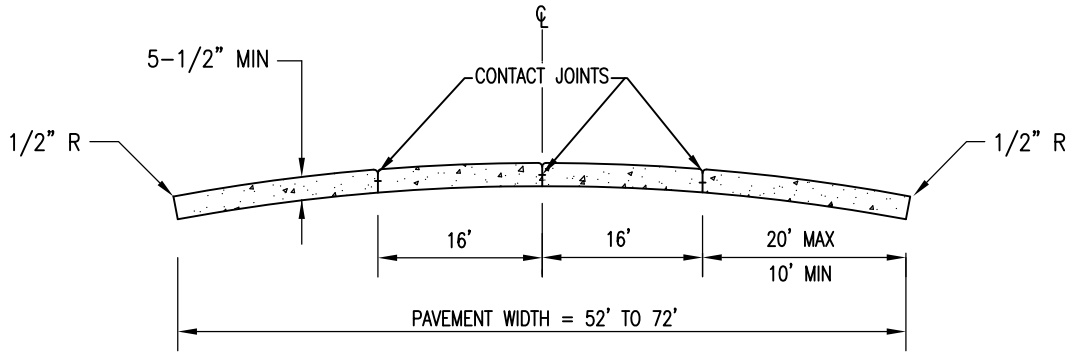
CONCRETE PAVEMENT WIDTH 42' TO 62'

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

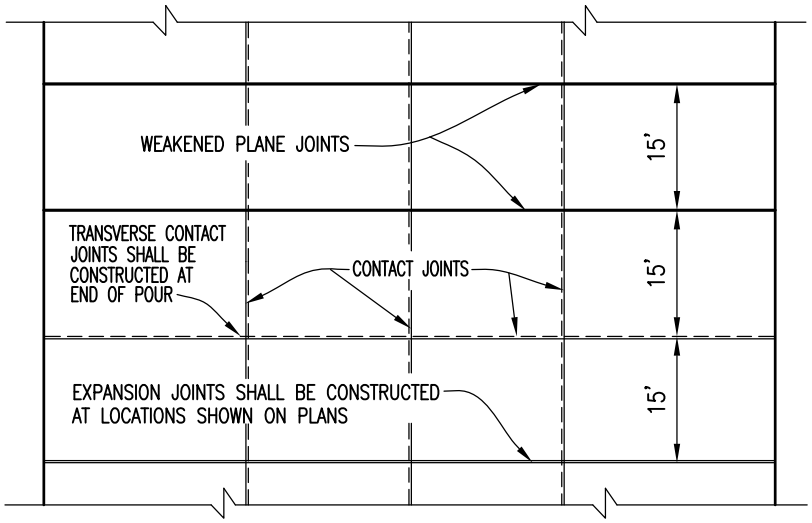
J M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-19**



SECTION



PLAN

NOTES:

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

Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
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

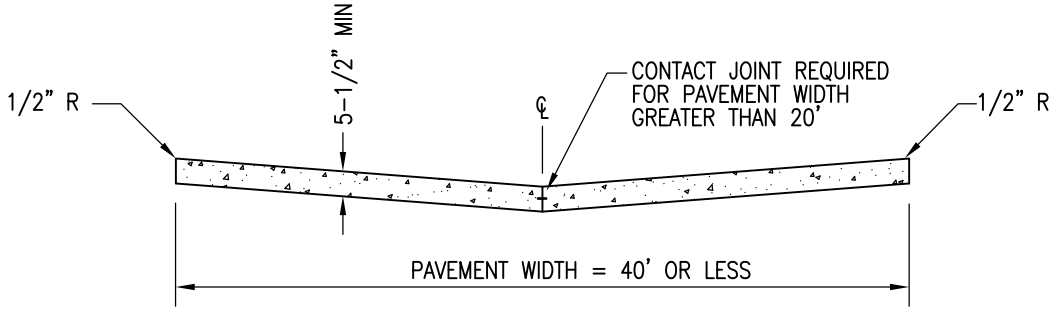
CONCRETE PAVEMENT, ALLEY SECTION WIDTH 52' TO 72'

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

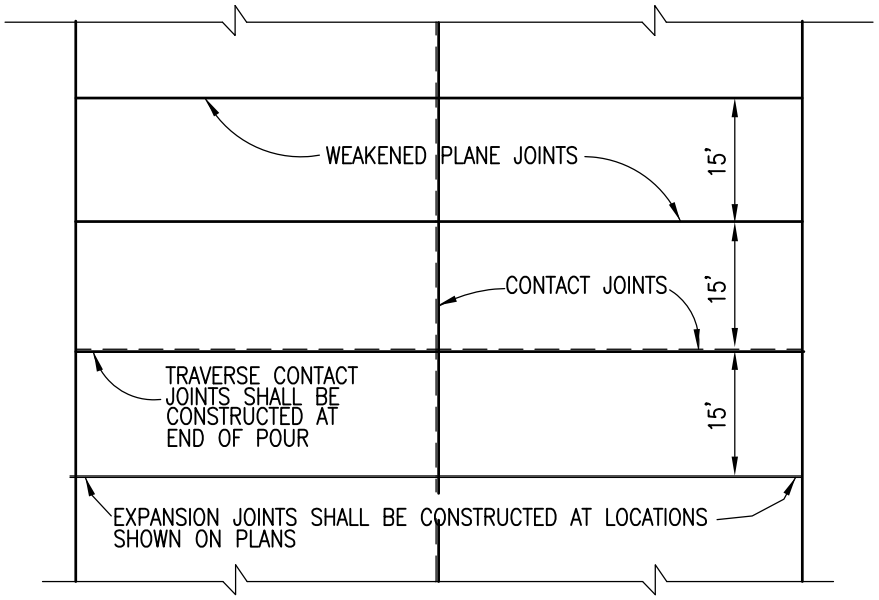
J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER G-20



SECTION



PLAN

NOTES:

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

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

SAN DIEGO REGIONAL STANDARD DRAWING

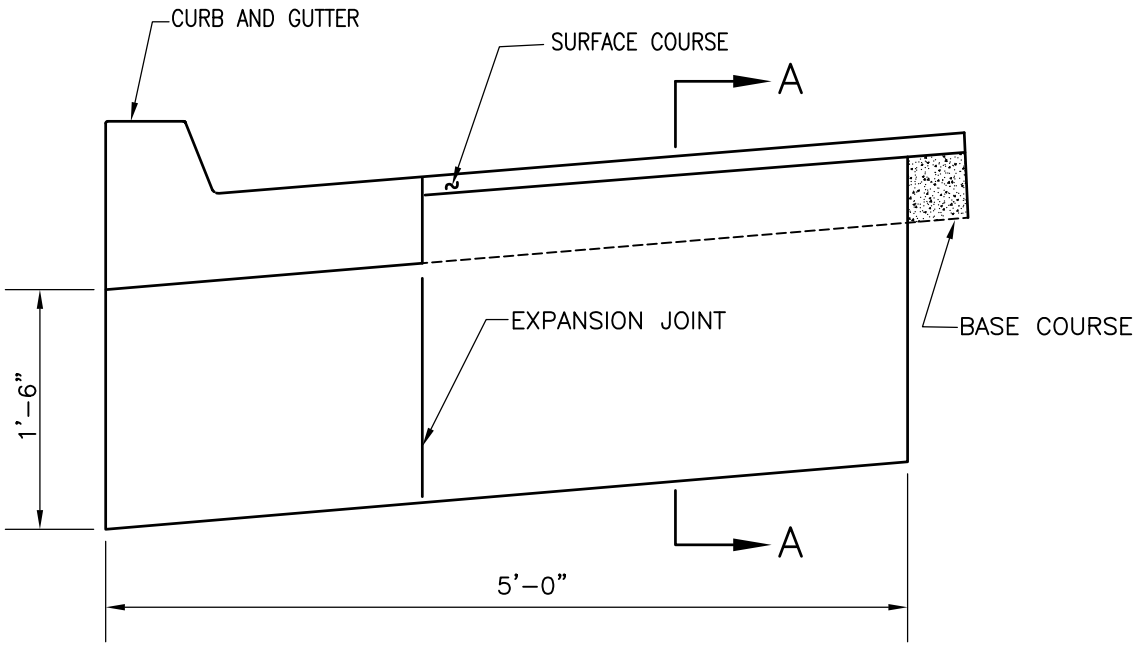
CONCRETE PAVEMENT ALLEY SECTION, WIDTH 40' OR LESS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

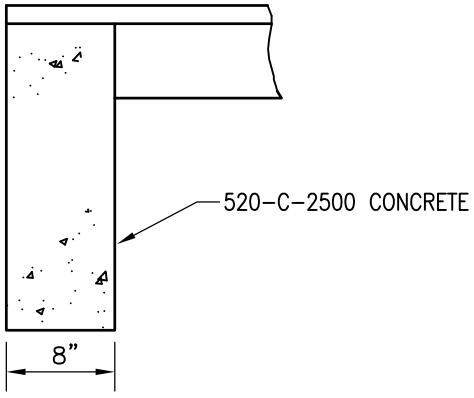
12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER G-21



ELEVATION



SECTION A–A

LEGEND ON PLANS

Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
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

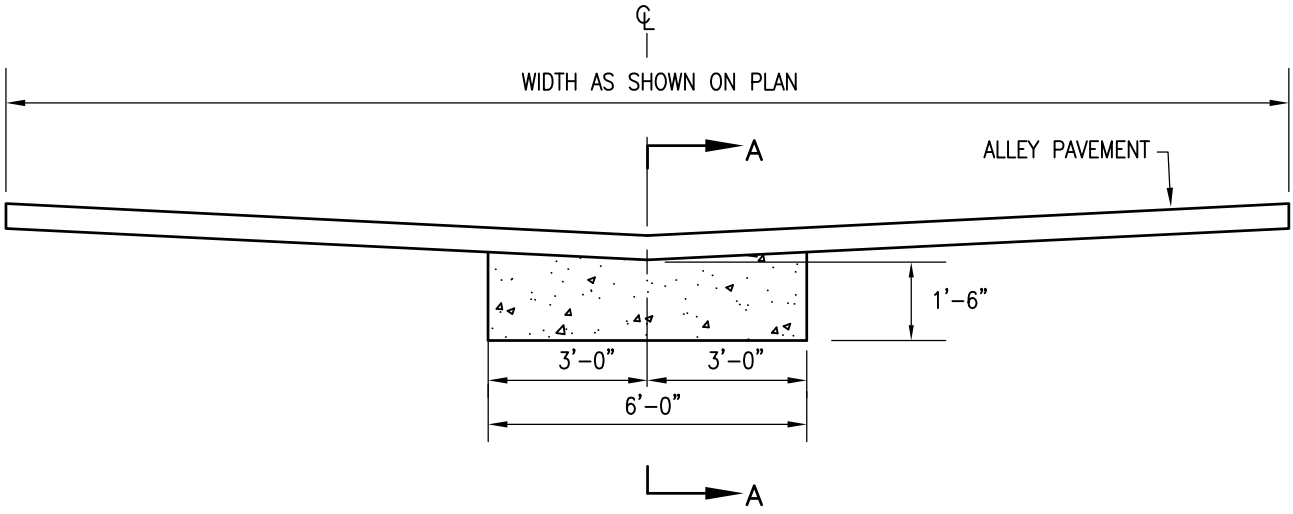
CUTOFF WALL AT END OF PAVEMENT

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

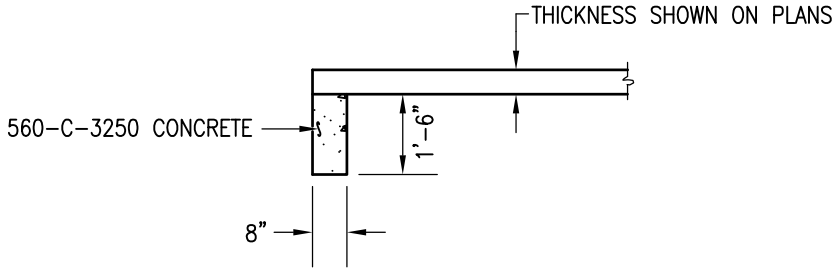
12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER G-22



ELEVATION



SECTION A–A

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		KERCHEVAL	12/75
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

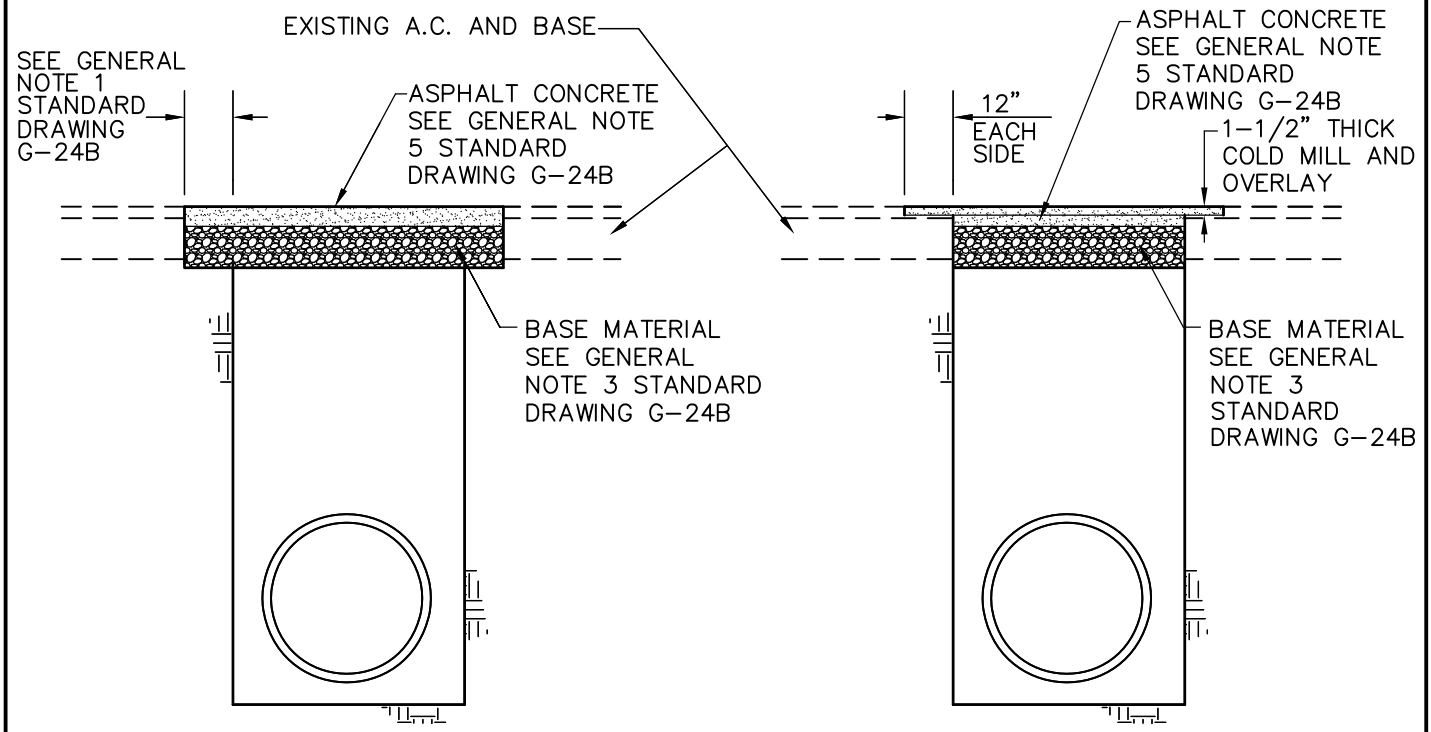
CUTOFF WALL AT END OF ALLEY PAVEMENT

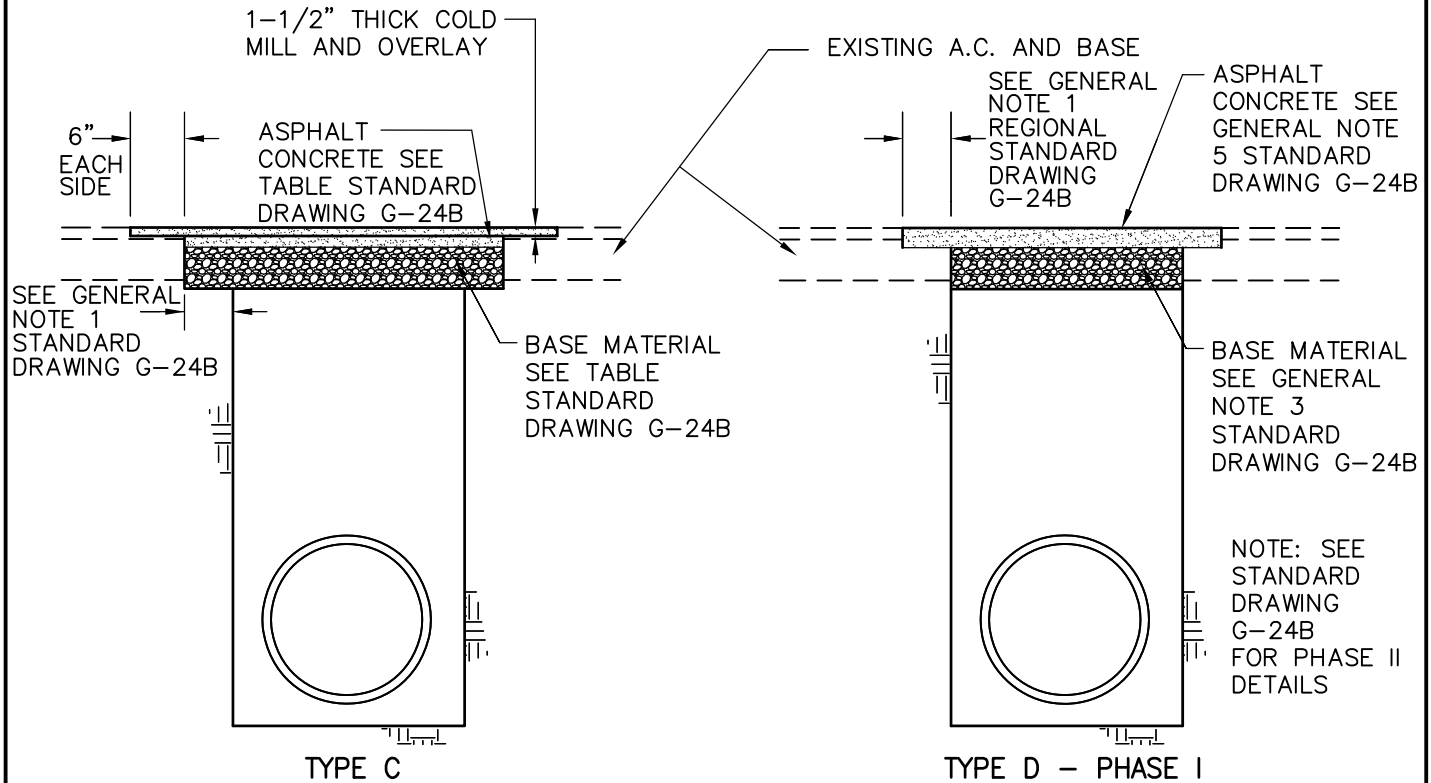
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

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

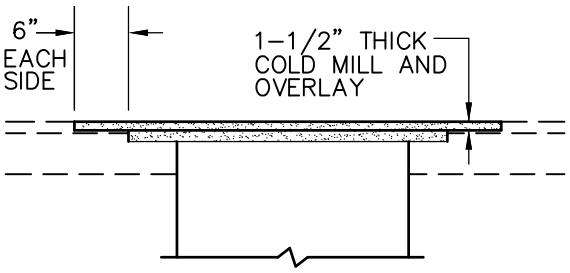
SAN DIEGO REGIONAL STANDARD DRAWING

TRENCH RESURFACING
ASPHALT CONCRETE STREETS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
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:

1. 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.
2. 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.
3. 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.
4. 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.
5. ASPHALT CONCRETE RESURFACING:
   A. MINIMUM TOTAL THICKNESS SHALL BE ONE INCH GREATER THAN EXISTING A.C. OR AS SHOWN ON PLAN.
   B. A.C. SHALL BE HOT PLANT MIX.
   C. TYPE C – SEE TABLE.
6. ALL A.C. RESURFACING SHALL BE SEAL COATED WITH AN EMULSIFIED ASPHALT AND COVERED WITH SAND. CHIP SEALING SHALL BE APPLIED AS REQUIRED BY AGENCY.
7. PAVEMENT FABRIC SHALL BE INSTALLED WHEN REQUIRED BY AGENCY.

TYPE B & C NOTES:

1. 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.
2. 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.
3. 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:

1. 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.
2. 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
ORIGINAL	MR	MR/CV	03/12
REVIEWED	CV	CV	12/15

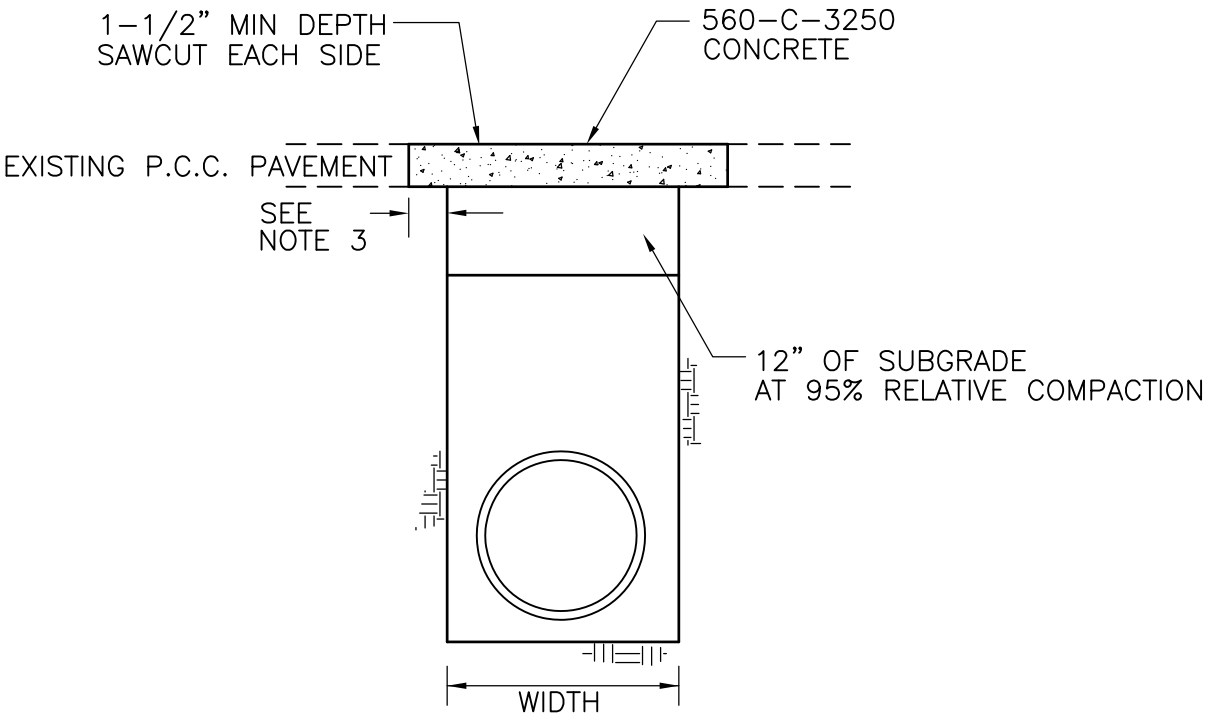
SAN DIEGO REGIONAL STANDARD DRAWING

TRENCH RESURFACING NOTES AND DETAILS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
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
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

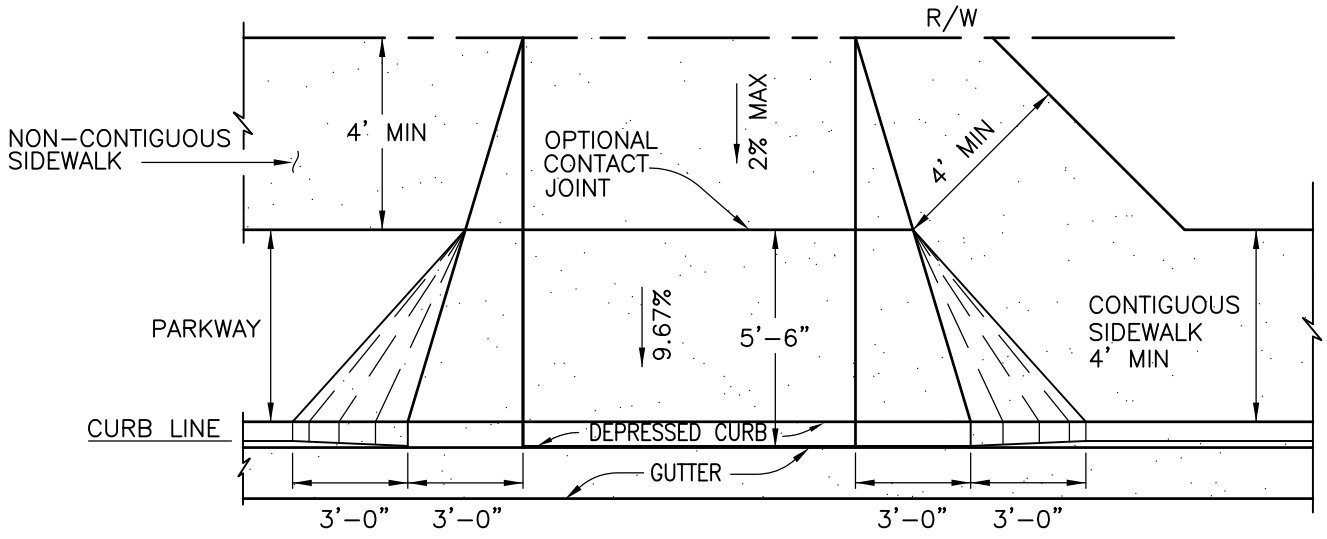
SAN DIEGO REGIONAL STANDARD DRAWING

TRENCH RESURFACING
PCC SURFACED STREETS

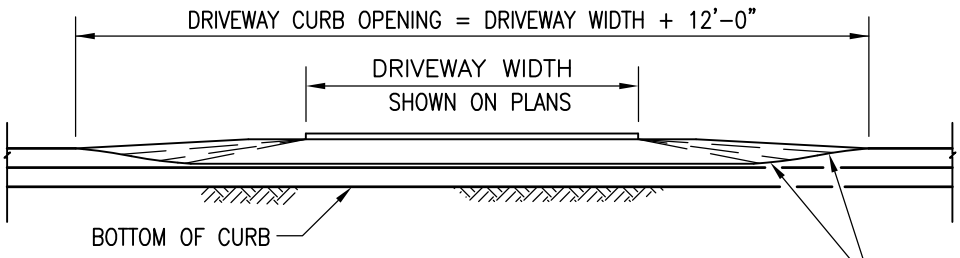
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

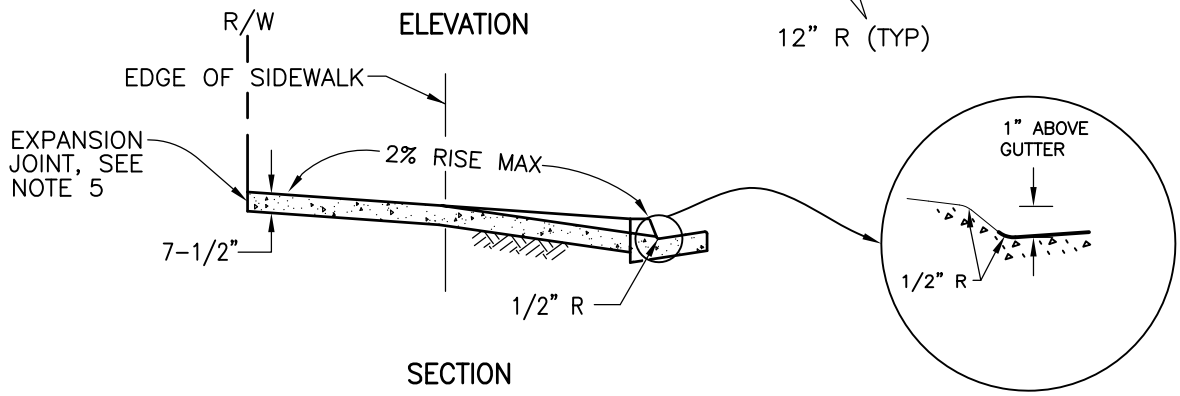
DRAWING NUMBER **G-25**



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

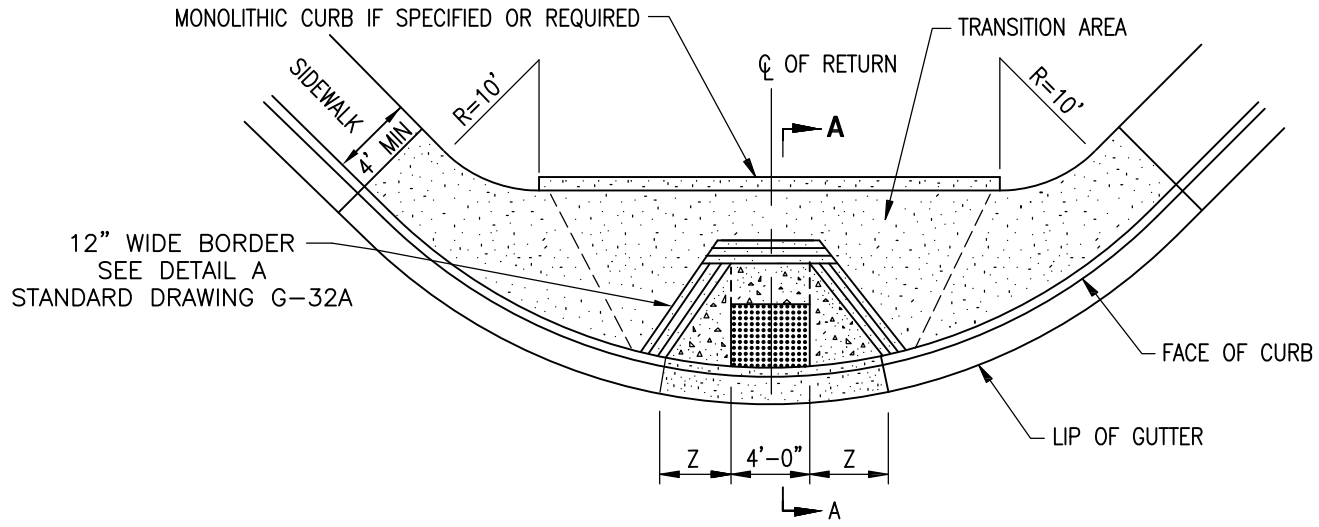
CONCRETE DRIVEWAY COMMERCIAL ALTERNATE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

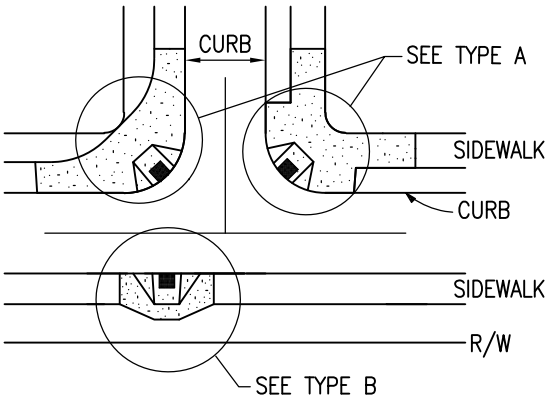
J M Stanton 12/17/2015

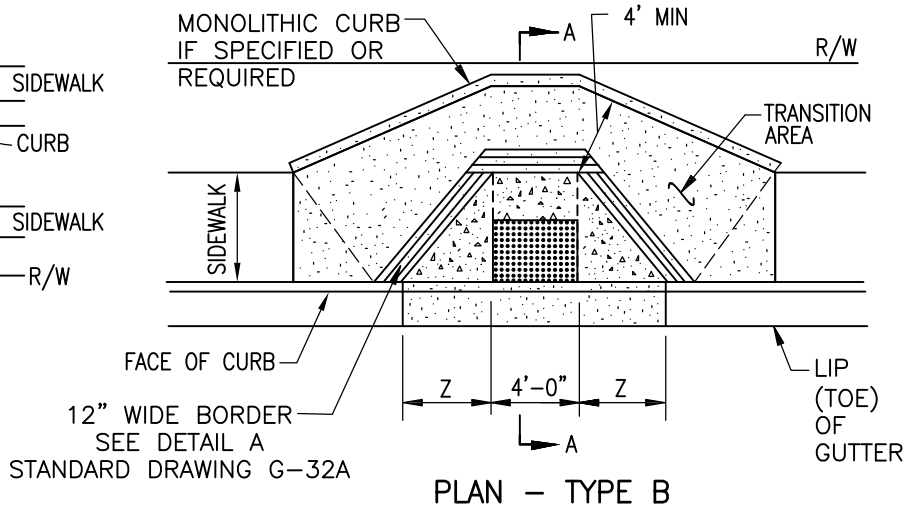
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-26**

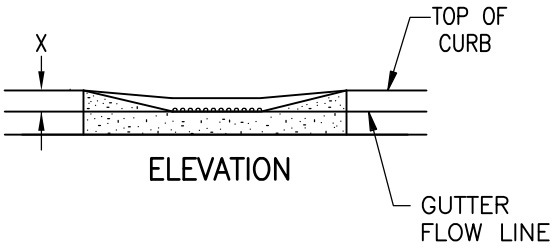


PLAN – TYPE A

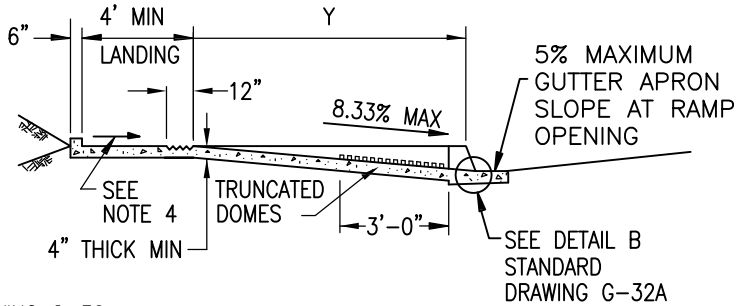




PLAN – TYPE B



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
UPDATE		D. DAVIES	12/04
REVISED		T. STANTON	04/06
UPDATED	MR	MR/CV	03/12
REVIEWED	CV	CV	12/15

SAN DIEGO REGIONAL STANDARD DRAWING

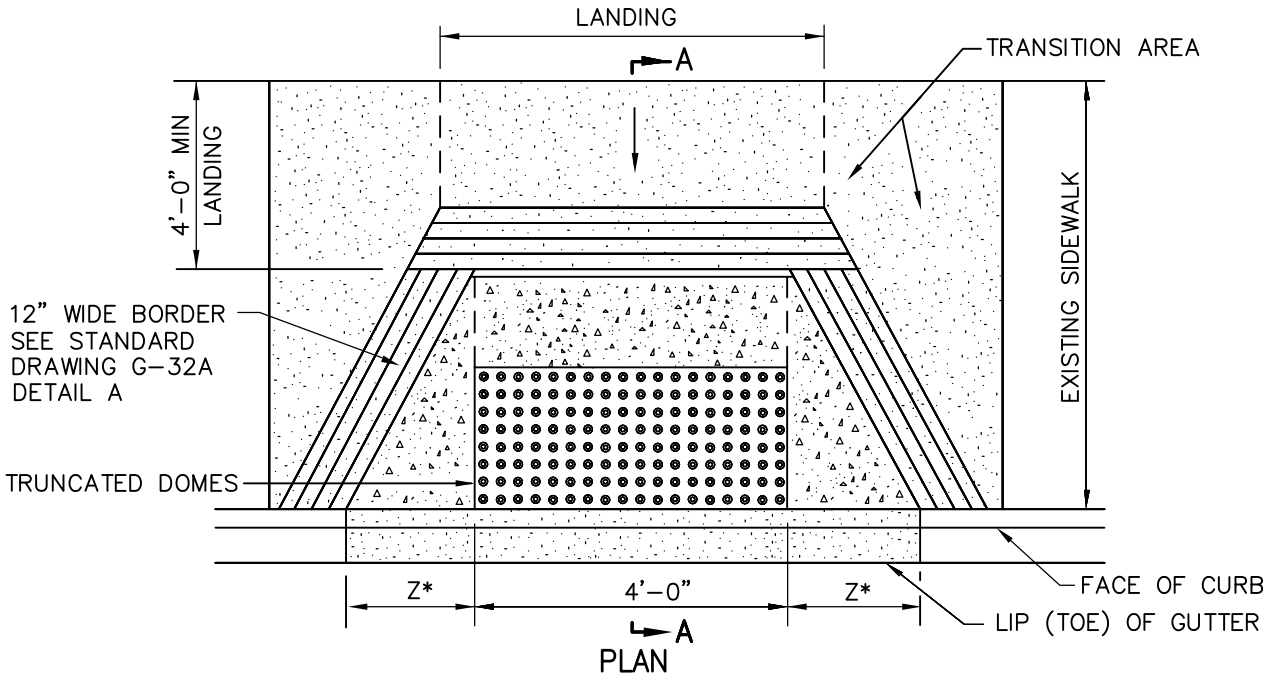
CURB RAMP - TYPES A AND B (NEW CONSTRUCTION)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

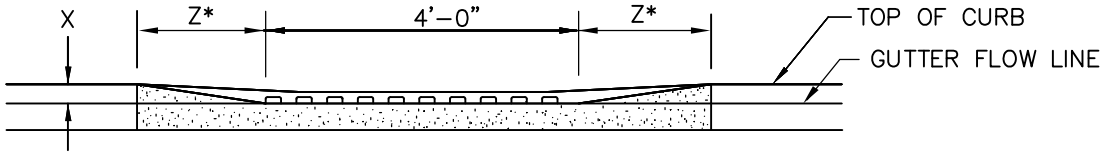
M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

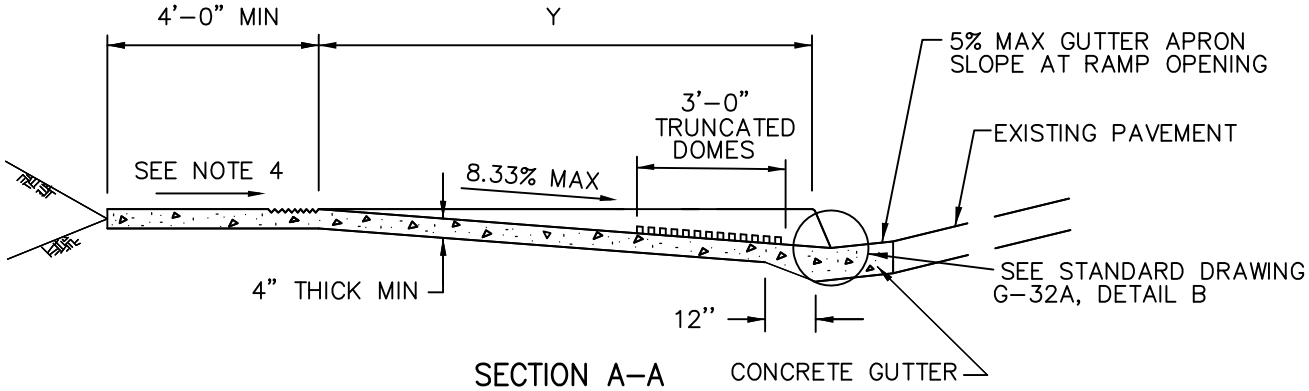
DRAWING NUMBER **G-27**



PLAN



ELEVATION



SECTION A–A

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
UPDATE		D. DAVIES	12/04
REVISED		T. STANTON	04/06
UPDATED	MR	MR/CV	03/12
UPDATED	CV	CV	12/15

SAN DIEGO REGIONAL STANDARD DRAWING

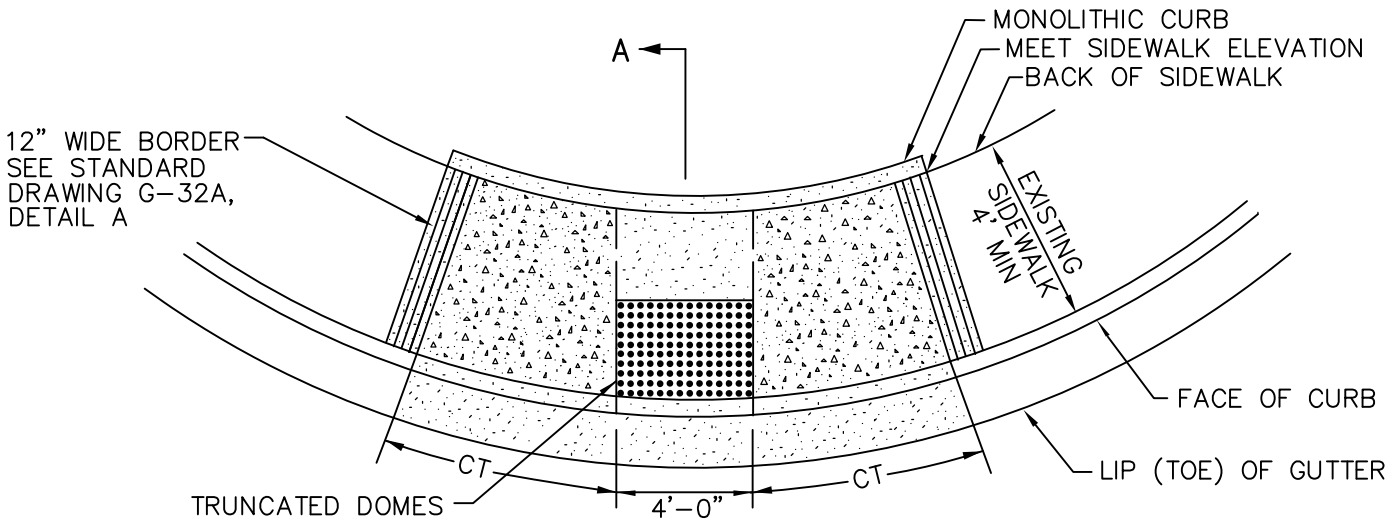
CURB RAMP - TYPES A-1 AND B-1 (FOR EXISTING SIDEWALK)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

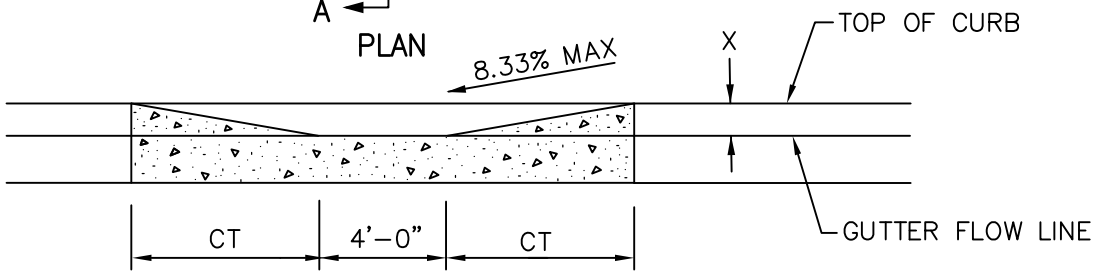
M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

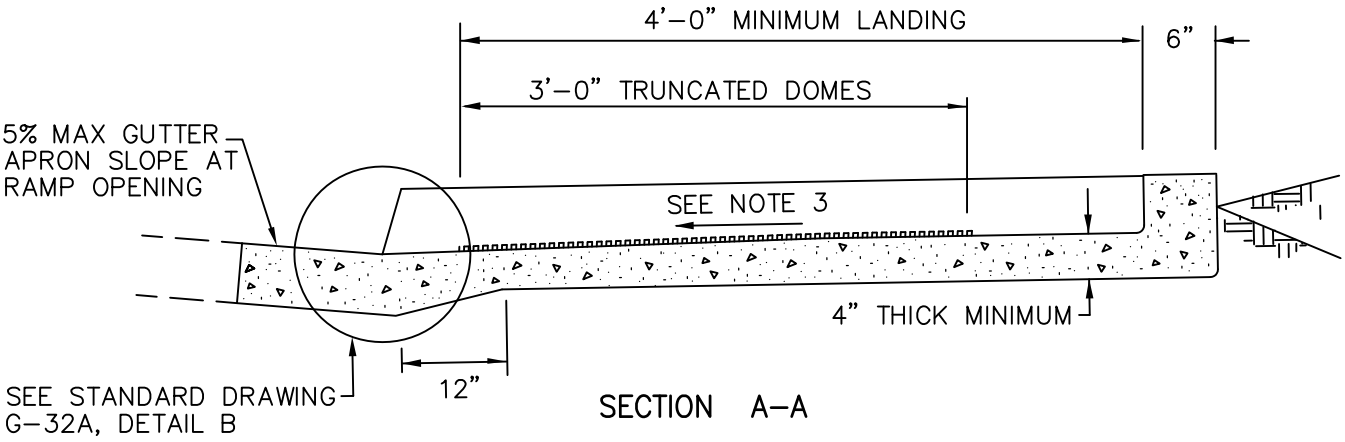
DRAWING NUMBER **G-28**



PLAN



ELEVATION



SECTION A-A

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
ADD METRIC		T. STANTON	03/03
UPDATE		D. DAVIES	12/04
REVISED		T. STANTON	04/06
UPDATED	MR	MR/CV	03/12

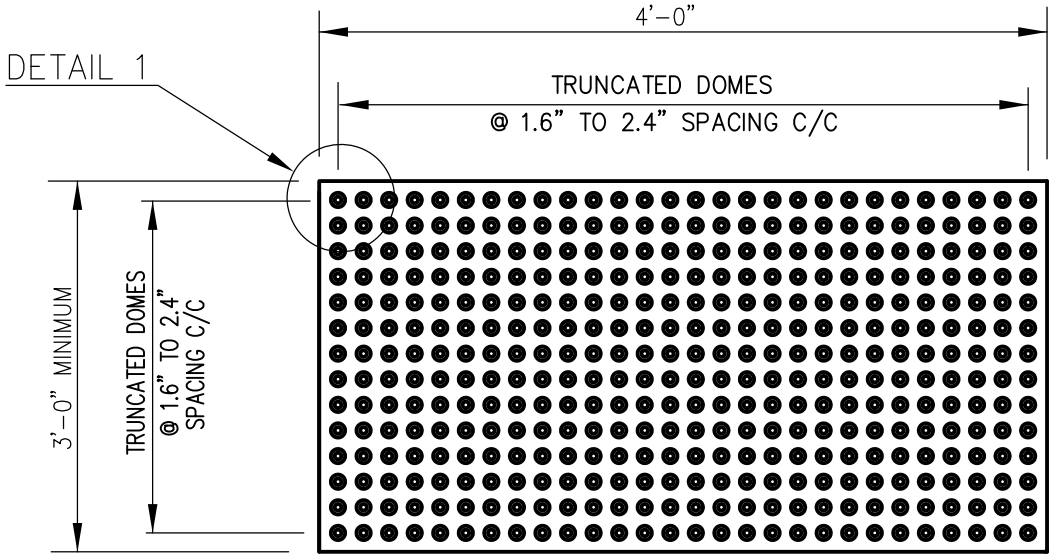
SAN DIEGO REGIONAL STANDARD DRAWING

CURB RAMP - TYPE C
(FOR EXISTING SIDEWALK)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-29**

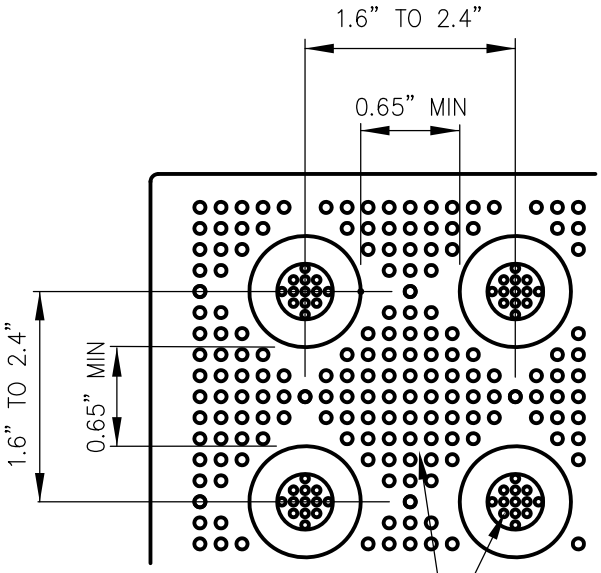


PLAN – TILE

NOT TO SCALE

NOTES

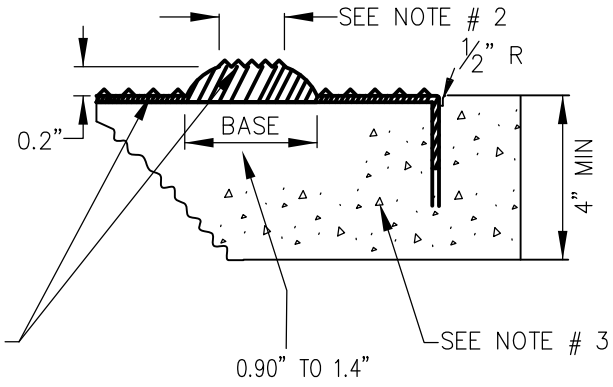
1. DETECTABLE WARNING SURFACE COLOR SHALL BE YELLOW CONFORMING TO FEDERAL STANDARDS 595B TABLE IV, COLOR NO. 33538, OR AS SPECIFIED BY THE AGENCY. COLOR SHALL BE HOMOGENEOUS THROUGHOUT THE TILE.
2. TRUNCATED DOME TOP DIAMETER OF 50% OF THE BASE DIAMETER MINIMUM TO 65% OF THE BASE DIAMETER MAXIMUM.



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

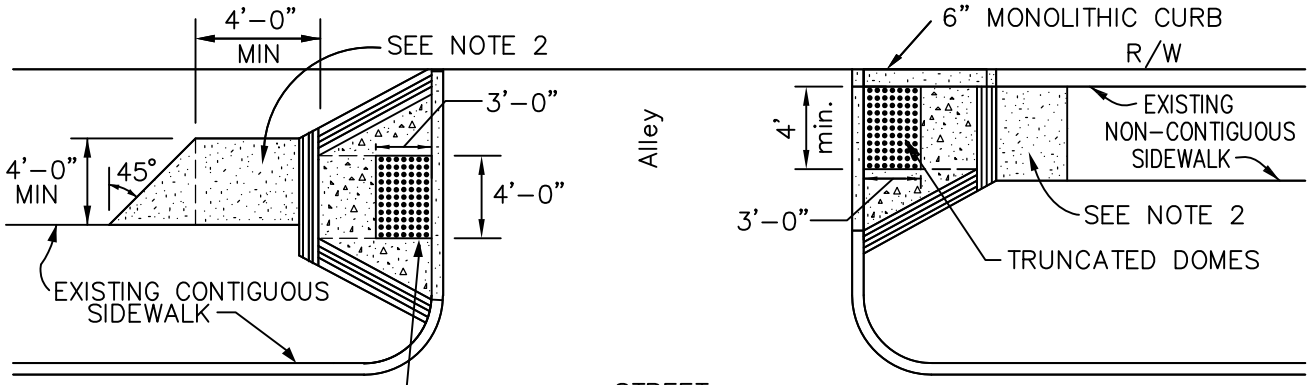
TRUNCATED DOMES

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

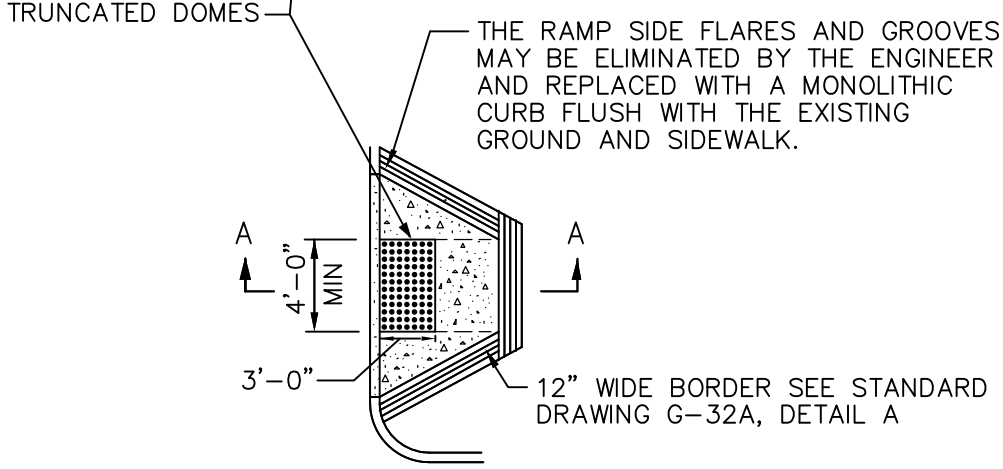
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-30**

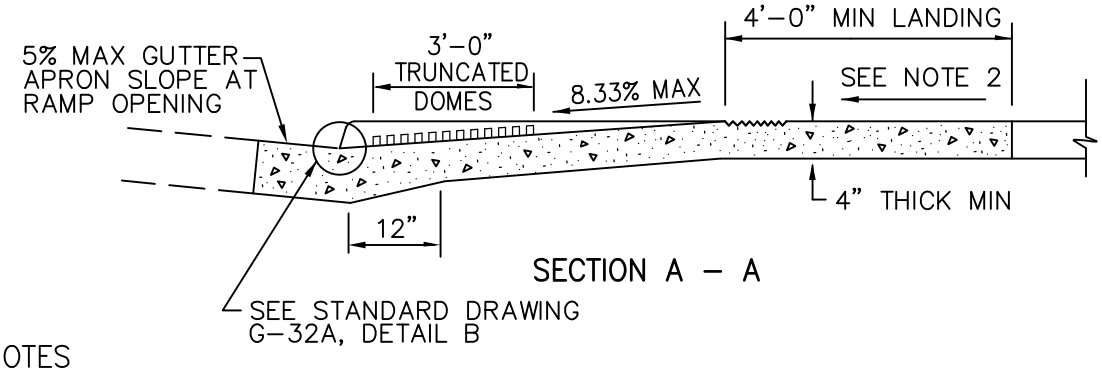


STREET

TYPICAL PLAN



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
ORIGINAL		PARKINSON	02/95
UPDATE		D. DAVIES	12/04
REVISED		T. STANTON	04/06
UPDATED	MR	MR/CV	03/12
UPDATED	CV	CV	12/15

SAN DIEGO REGIONAL STANDARD DRAWING

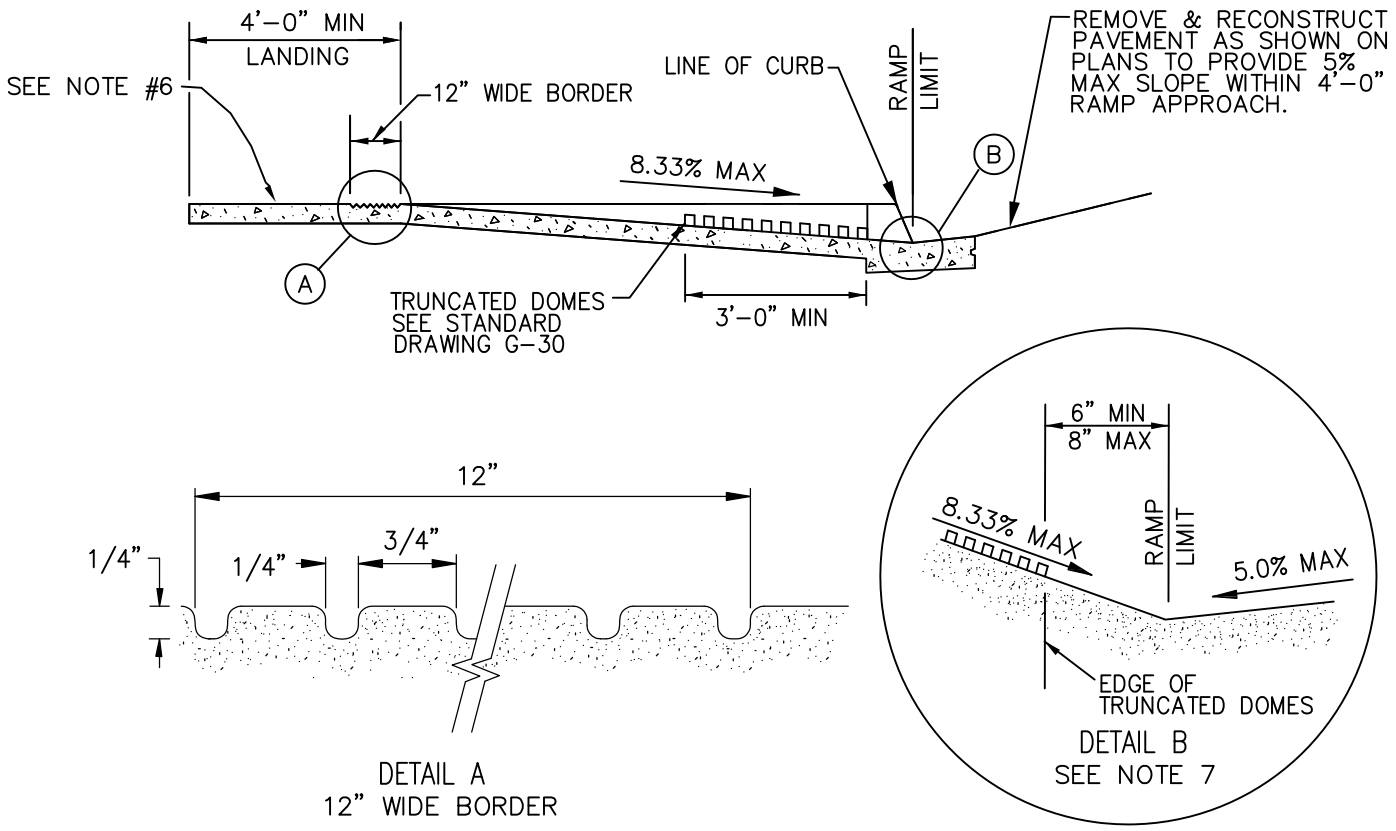
CURB RAMP - TYPE D

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-31**



NOTES

1. THE REMOVAL OF EXISTING CONCRETE CURB, GUTTER, SIDEWALK, AND PAVEMENT FOR PEDESTRIAN RAMP INSTALLATION SHALL COMPLY WITH STANDARD DRAWING G–11. 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
ORIGINAL		PARKINSON	02/95
UPDATE		D. DAVIES	12/04
REVISED		T. STANTON	04/06
UPDATED	MR	MR/CV	03/12
REVIEWED	CV	CV	12/15

SAN DIEGO REGIONAL STANDARD DRAWING

GENERAL NOTES FOR CURB RAMPS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **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
ORIGINAL	MR	MR/CV	03/12
UPDATED	CV	CV	12/15

SAN DIEGO REGIONAL STANDARD DRAWING

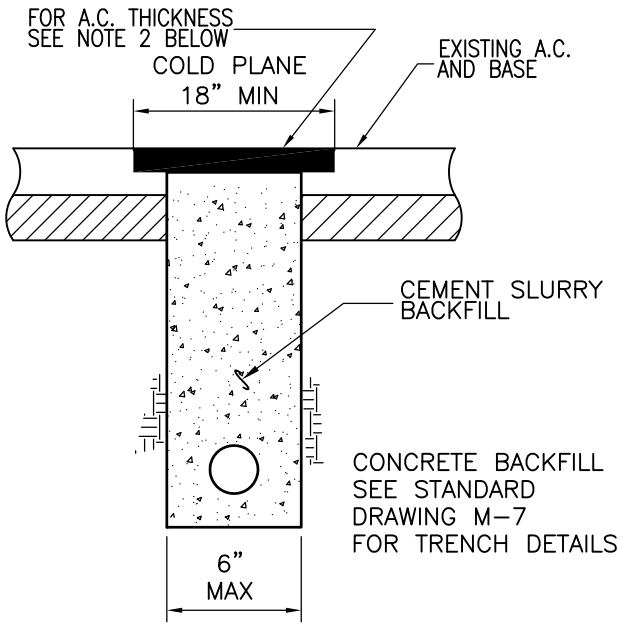
NOTES FOR CURB RAMPS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

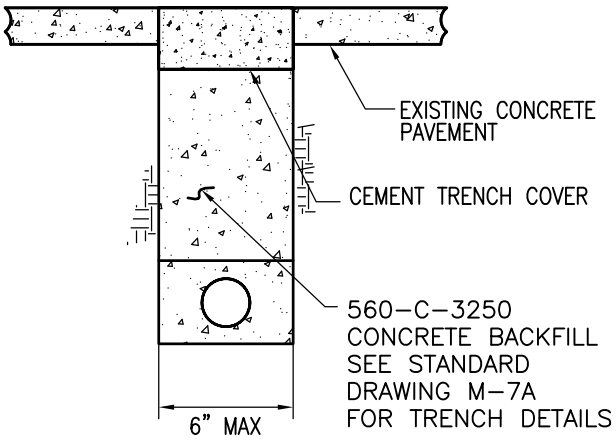
DRAWING NUMBER **G-32B**



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

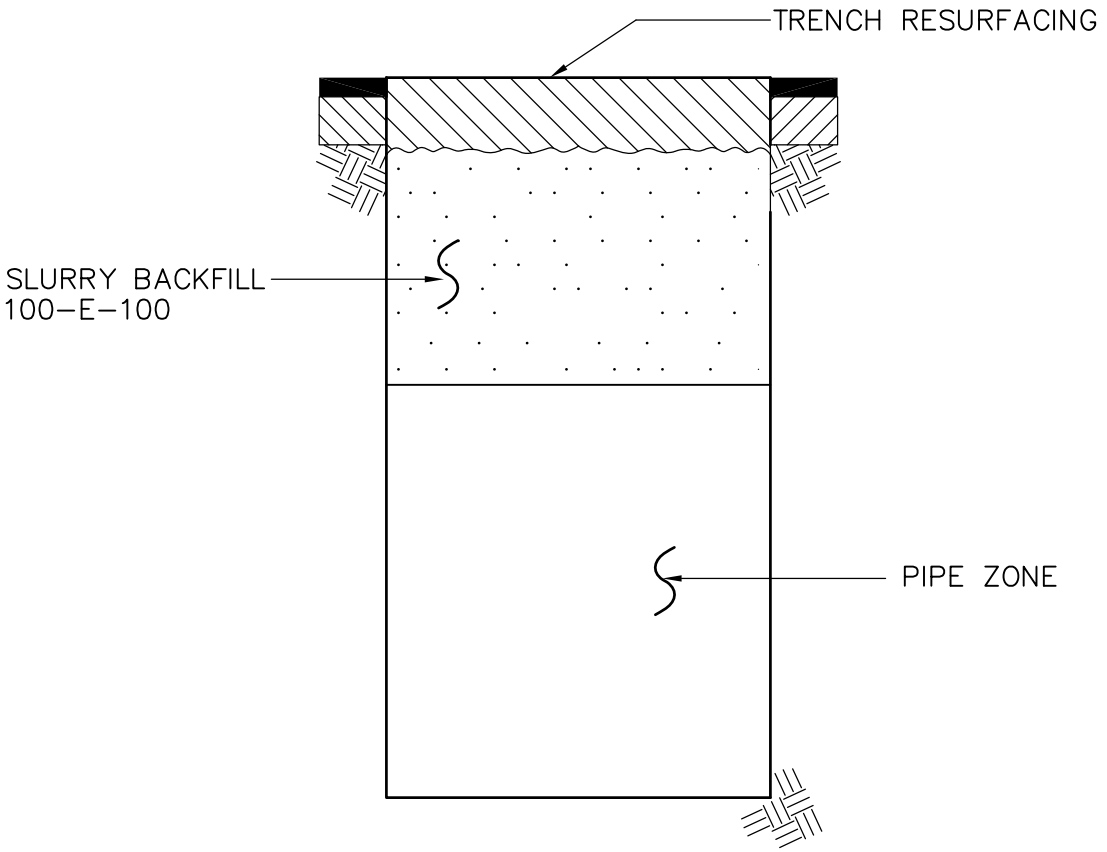
SAN DIEGO REGIONAL STANDARD DRAWING

NARROW TRENCHES
TRENCHING & BACKFILLING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015
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
ORIGINAL		PARKINSON	09/88
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

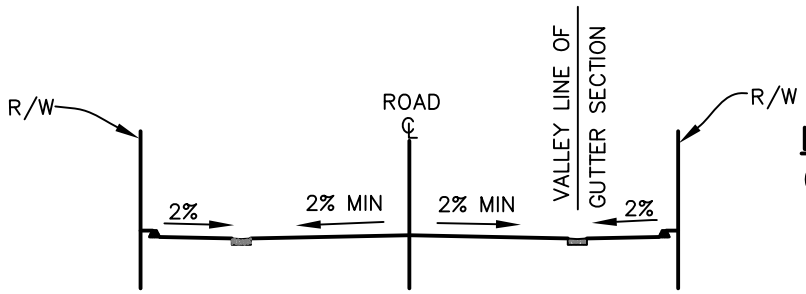
SLURRY BACKFILL

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **G-36**



SECTION A–A
NO SCALE

LEGEND

(A) PROVIDE DIKE OPENING FOR DRAINAGE WHEN REQUIRED.

(B) PERMANENT STREET SURFACING.

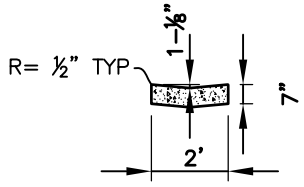
(C) CONCRETE GUTTER (SEE DETAIL).

(D) TYPE G C&G (RSD G–2).

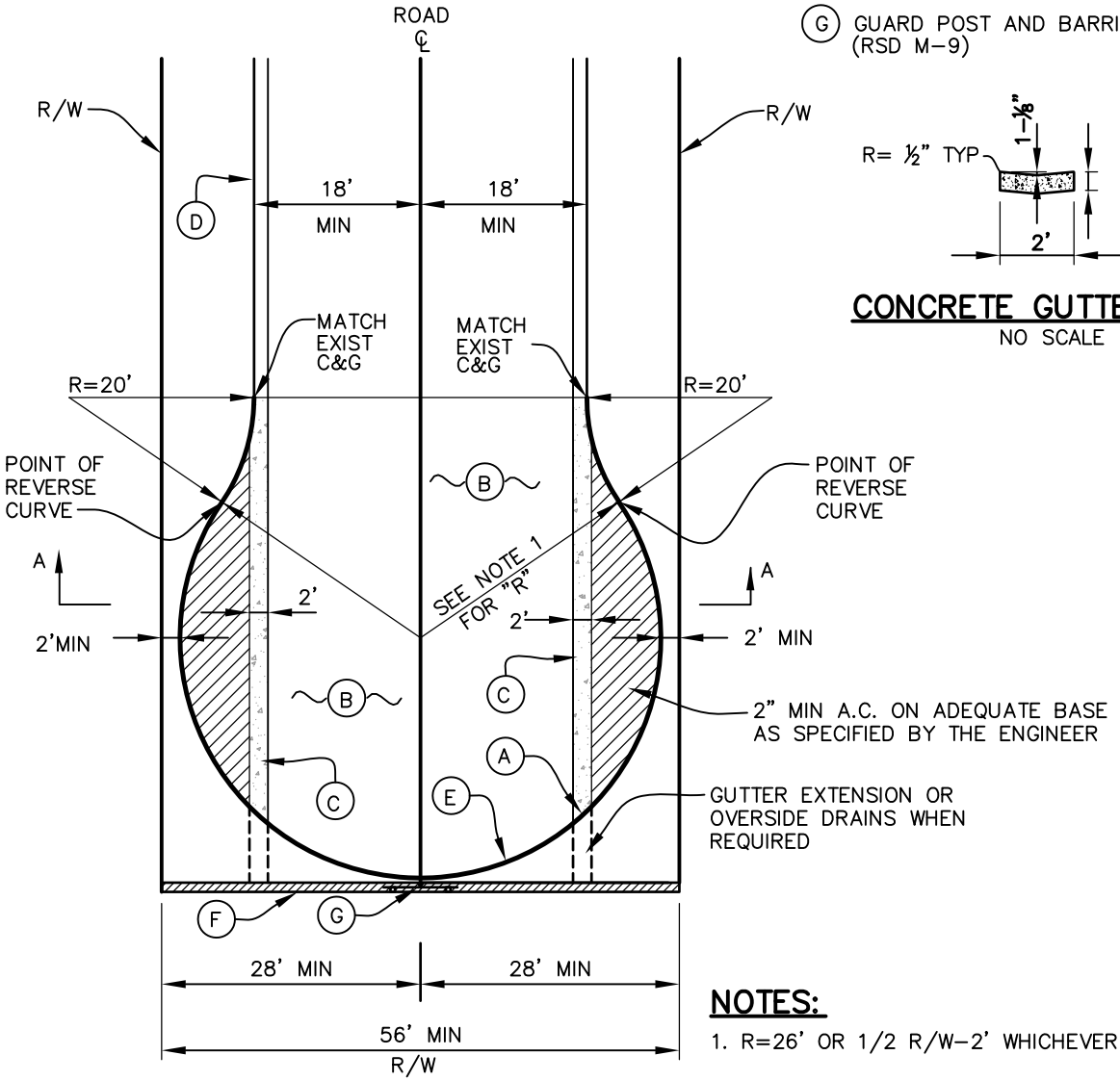
(E) TYPE B DIKE (RSD G–5).

(F) END OF TEMPORARY IMPROVEMENTS.

(G) GUARD POST AND BARRICADE (RSD M–9)



CONCRETE GUTTER DETAIL
NO SCALE



TEMPORARY TURNAROUND
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

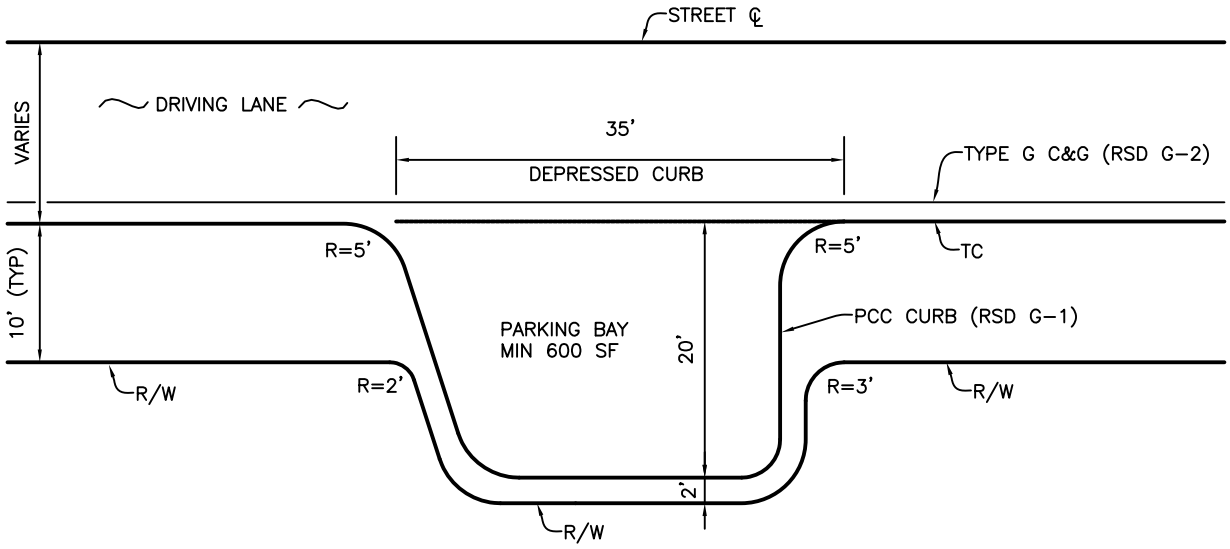
TEMPORARY TURNAROUND AT DEAD END STREET

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

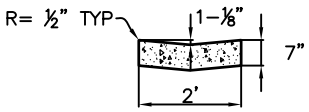
12/17/2015

Chairperson R.C.E. 19246 Date

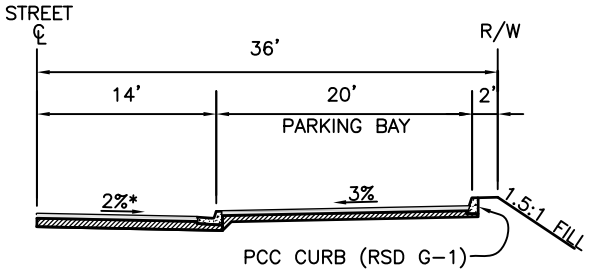
DRAWING NUMBER **G-37**



PLAN
NO SCALE



CONCRETE GUTTER DETAIL
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
NEW	AT	MR/CV	09/11
REVIEWED	CV	CV	12/15

SAN DIEGO REGIONAL STANDARD DRAWING

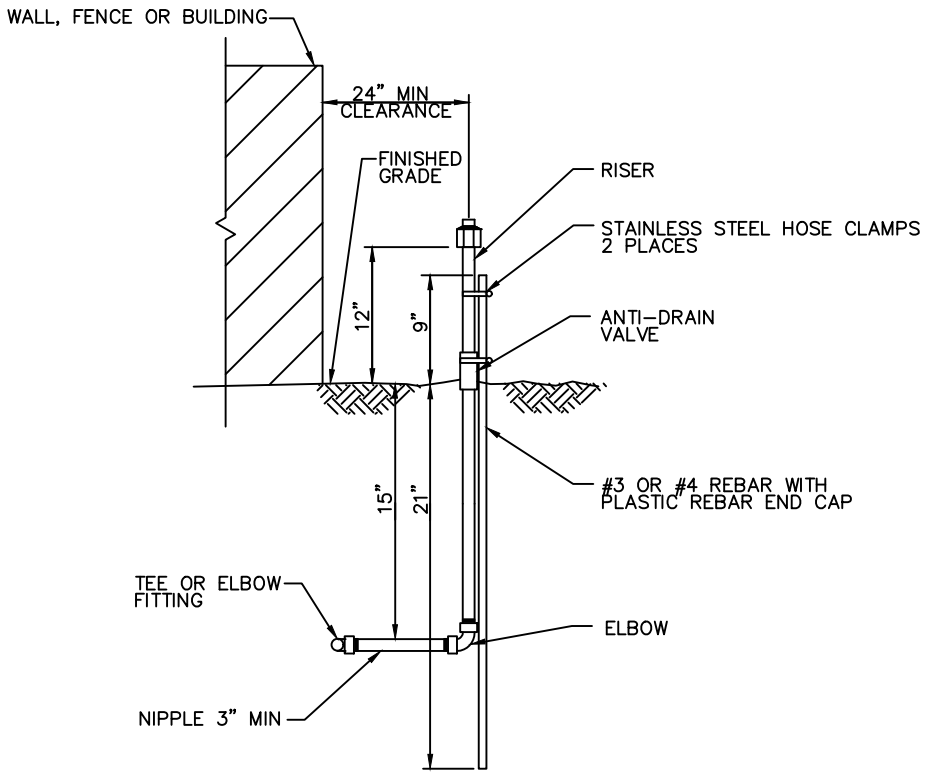
PARKING BAY

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

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
Add Metric		T. Stanton	03/03
Update		M. Caro	03/04
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

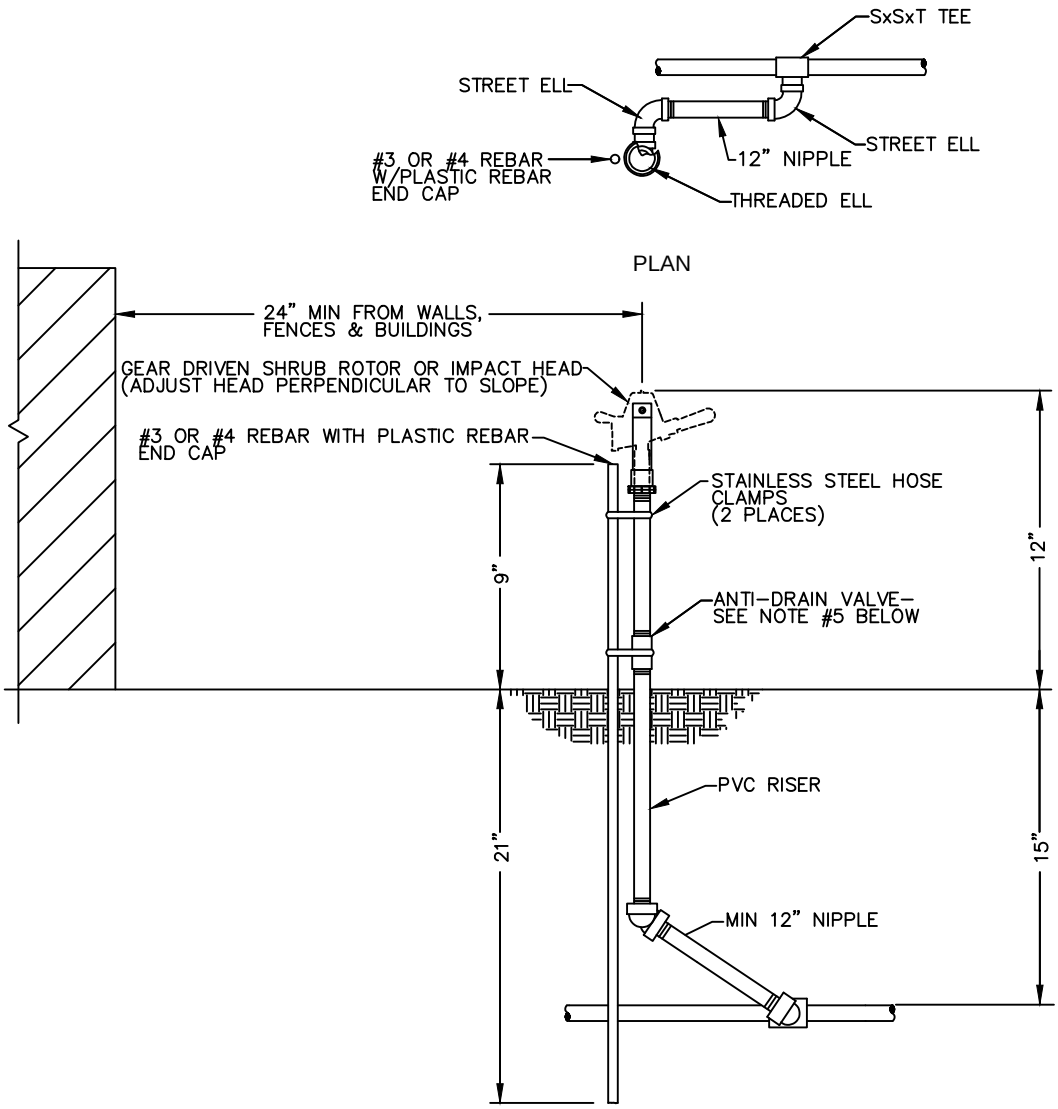
SHRUB SPRAY HEAD ON FIXED RISER

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER I-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

SHOW A NUMBER TO INDICATE HEAD TYPE

Revision	By	Approved	Date
ORIGINAL		Parkinson	05/92
Add Metric		T. Stanton	03/03
Update		M. Caro	06/04
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

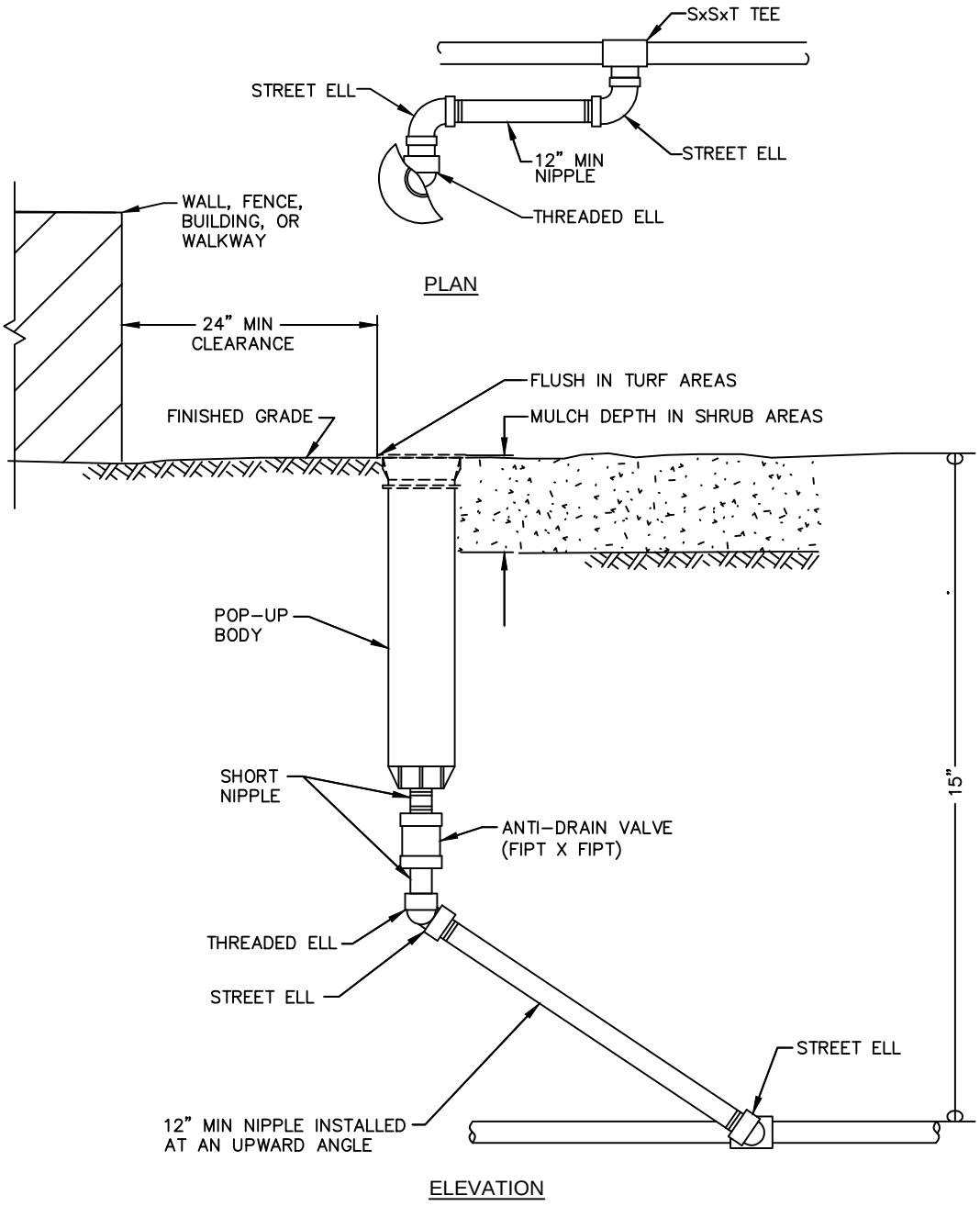
ROTOR OR IMPACT HEAD ON FIXED RISER

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-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
Add Metric		T. Stanton	03/03
Update		M. Caro	06/04
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15

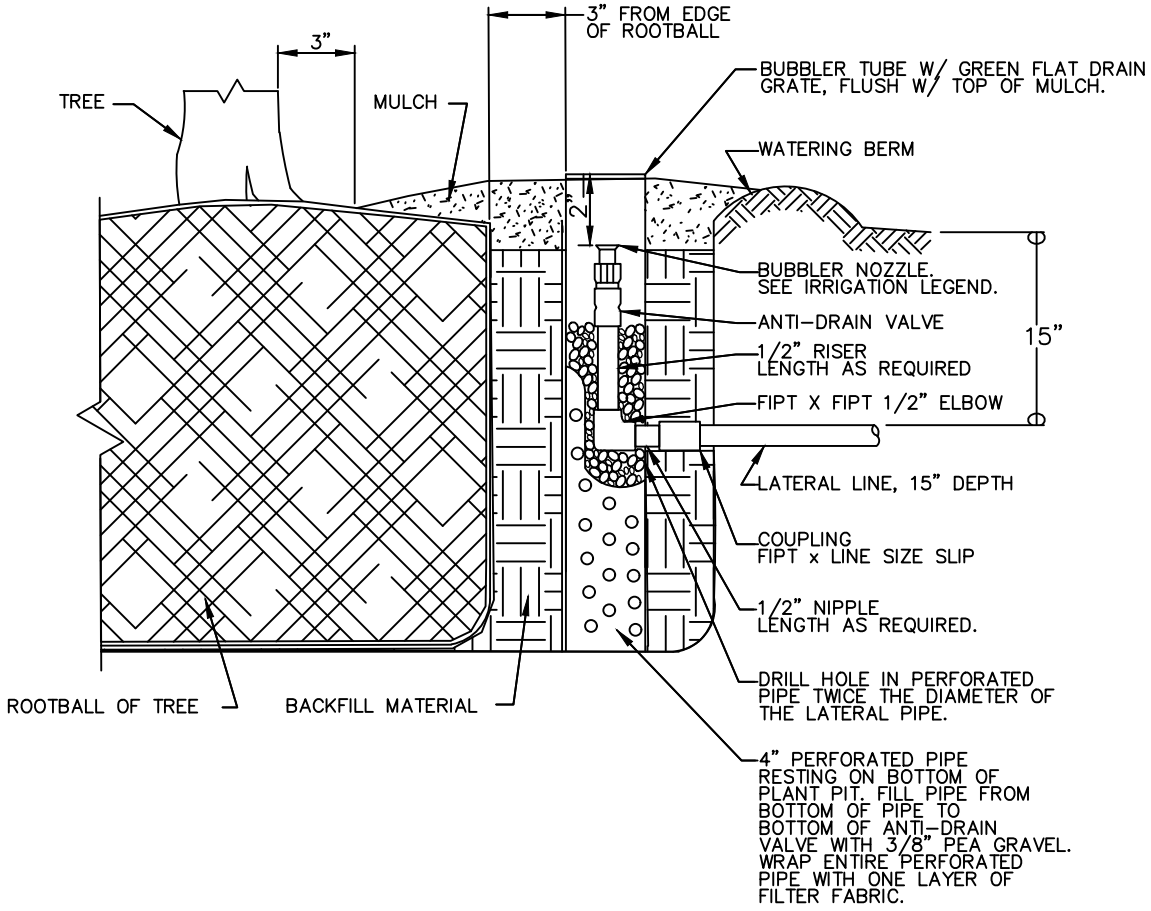
SAN DIEGO REGIONAL STANDARD DRAWING

ROTOR, SPRAY, OR BUBBLER POP-UP HEAD

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

DRAWING NUMBER I-03



NOTES:

1. FOR BUBBLER LOCATION, REFER TO TREE PLANTING AND STAKING DRAWING.
2. EACH TREE SHALL HAVE A 2" POP-UP HEAD WITH BUBBLER NOZZLE PER I-3 AND A FIXED BUBBLER NOZZLE IN A PERFORATED PIPE.
3. NIPPLES AND RISERS SHALL BE PVC SCH 80.
4. FITTINGS SHALL BE PVC SCH 40.
5. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS.
6. CLOSE NIPPLES SHALL NOT BE USED.
7. ANTI-DRAIN VALVES SHALL BE INSTALLED UNDER ALL HEADS.

Revision	By	Approved	Date
ORIGINAL		M. CARO	02/05
Update	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15

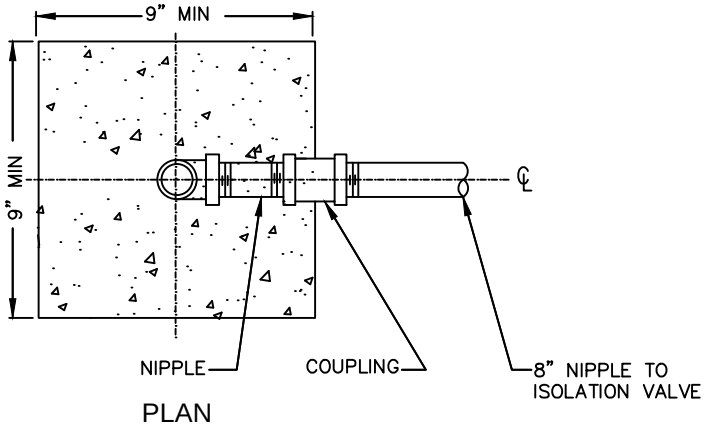
SAN DIEGO REGIONAL STANDARD DRAWING

DEEP ROOT TREE BUBBLER

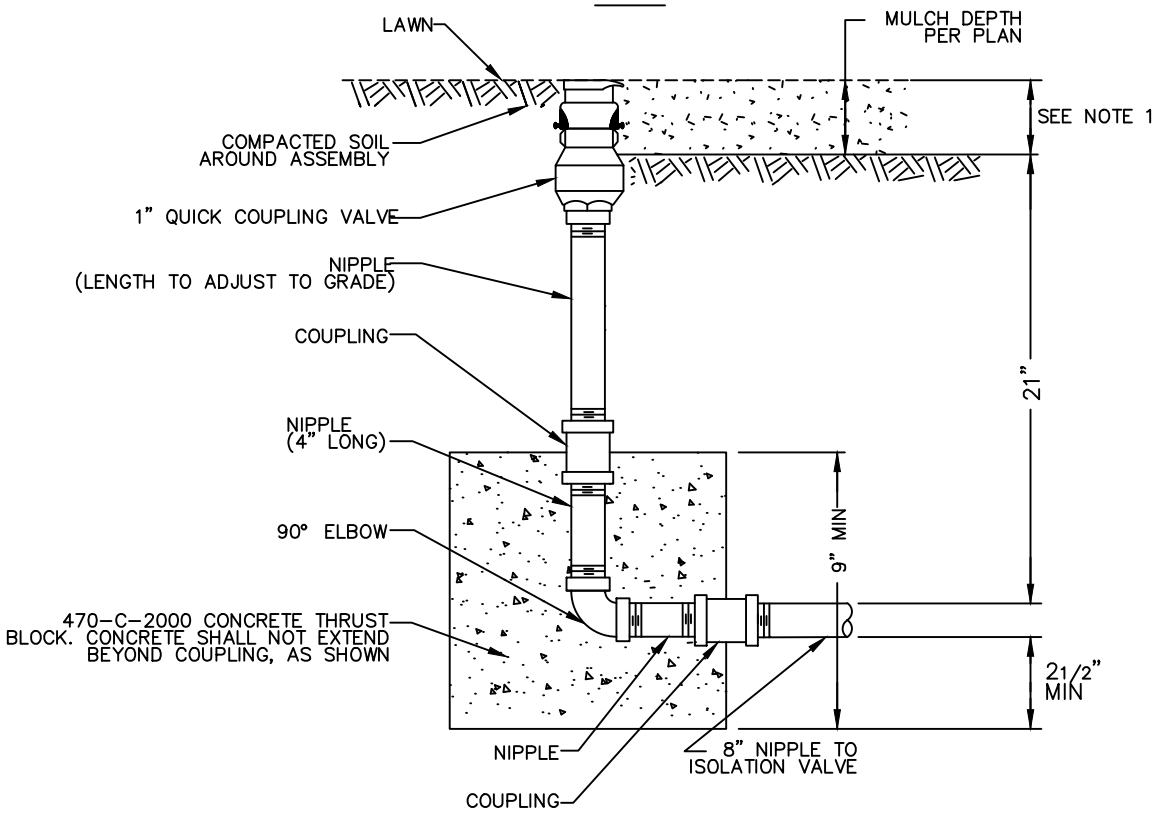
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-04**



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
Add Metric		T. Stanton	03/03
Update		M. Caro	05/04
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

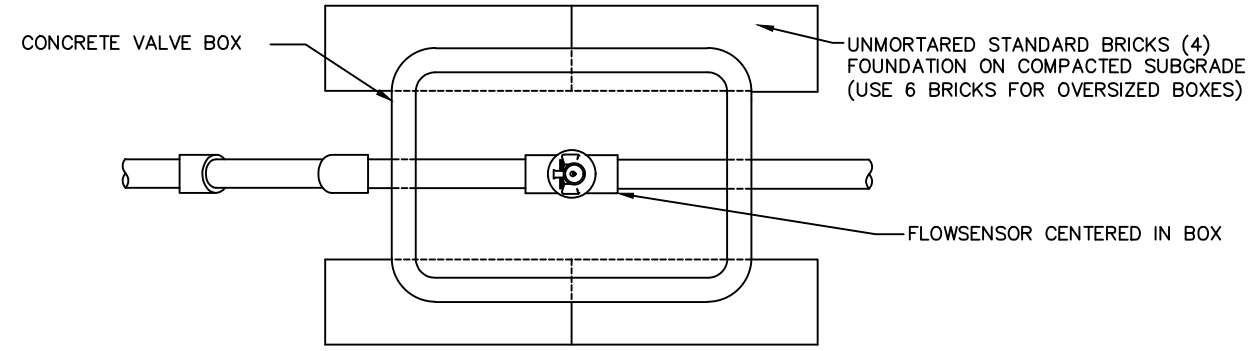
QUICK COUPLING VALVE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

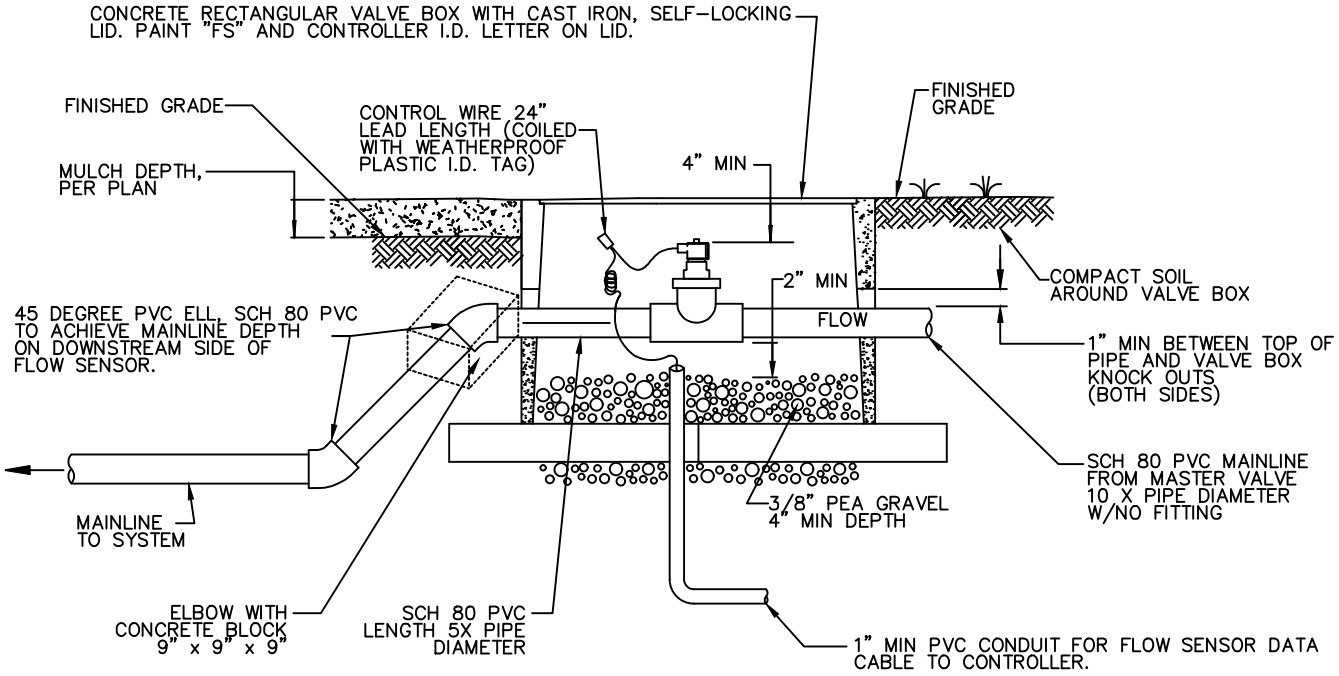
12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-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
ORIGINAL	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15

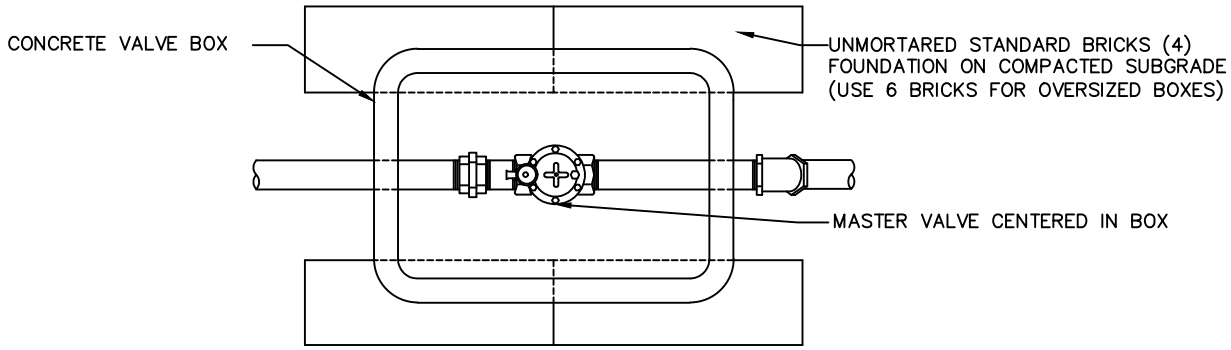
SAN DIEGO REGIONAL STANDARD DRAWING

FLOW SENSOR

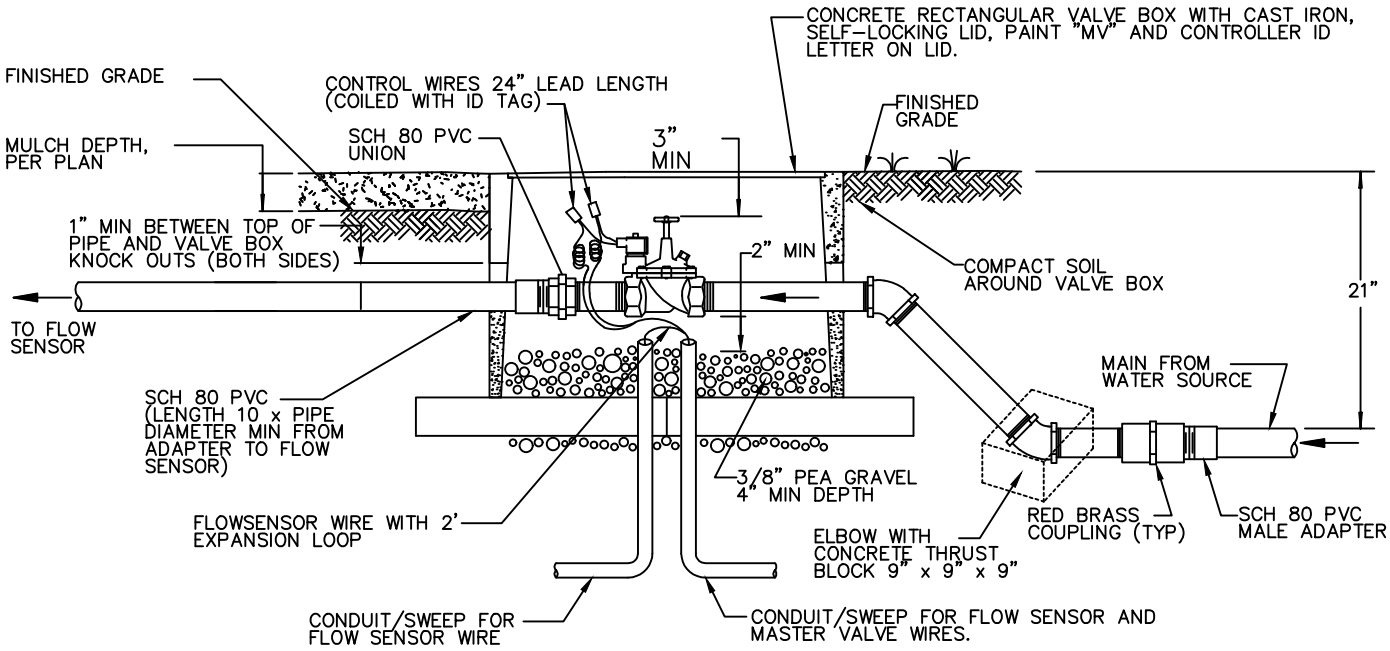
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

DRAWING NUMBER **I-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 / GROUNDCOVER 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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Update		M. Caro	04/05
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

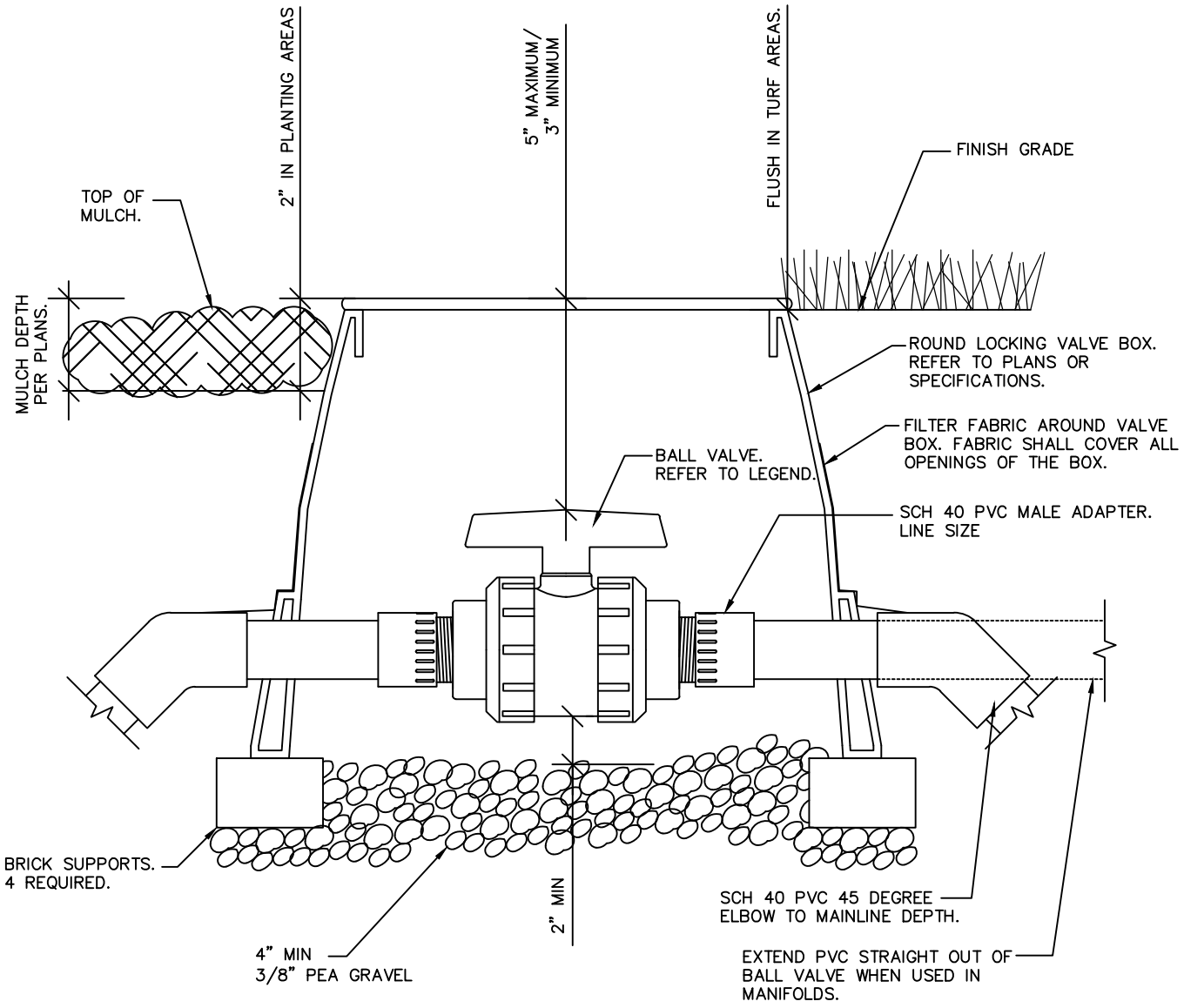
IRRIGATION MASTER VALVE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Update		M. Caro	02/05
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

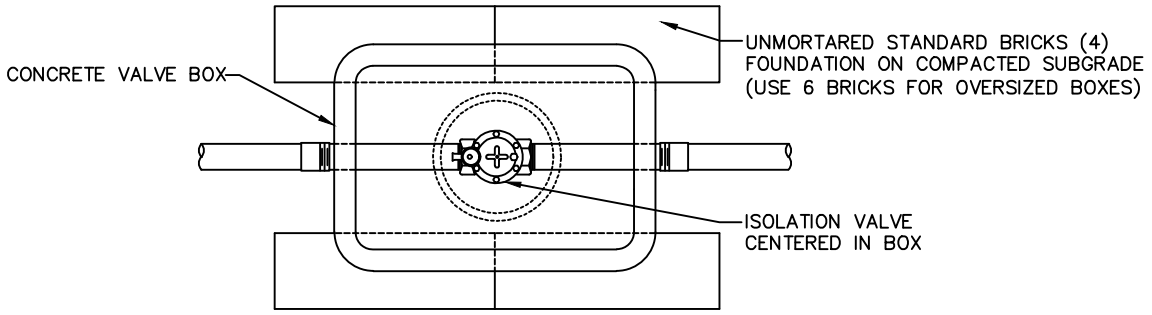
ISOLATION BALL VALVE
2" AND SMALLER

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

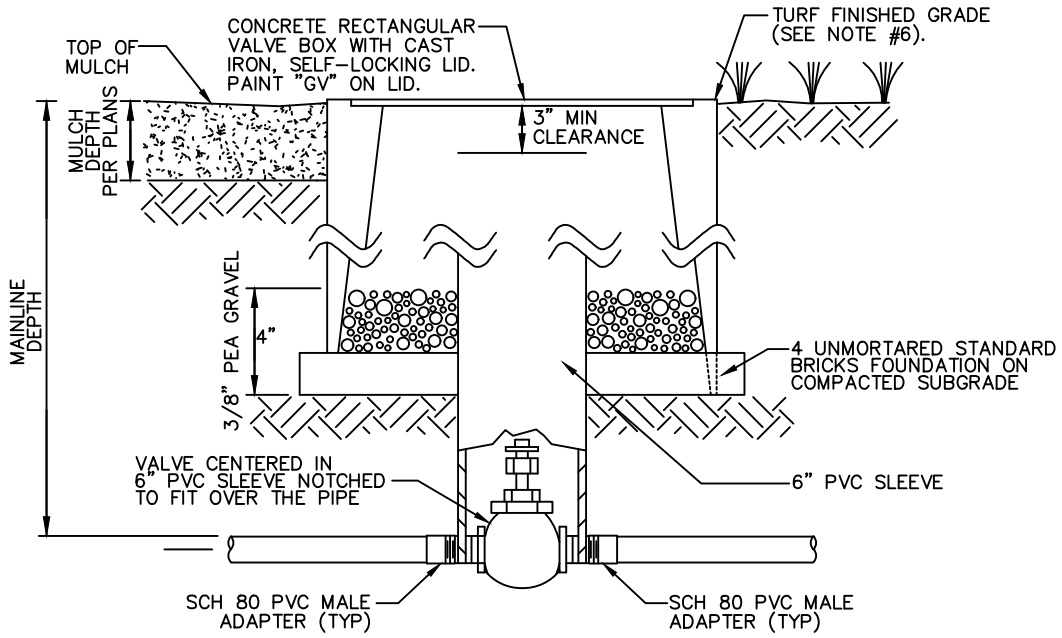
J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER I-11



PLAN



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



Revision	By	Approved	Date
ORIGINAL	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

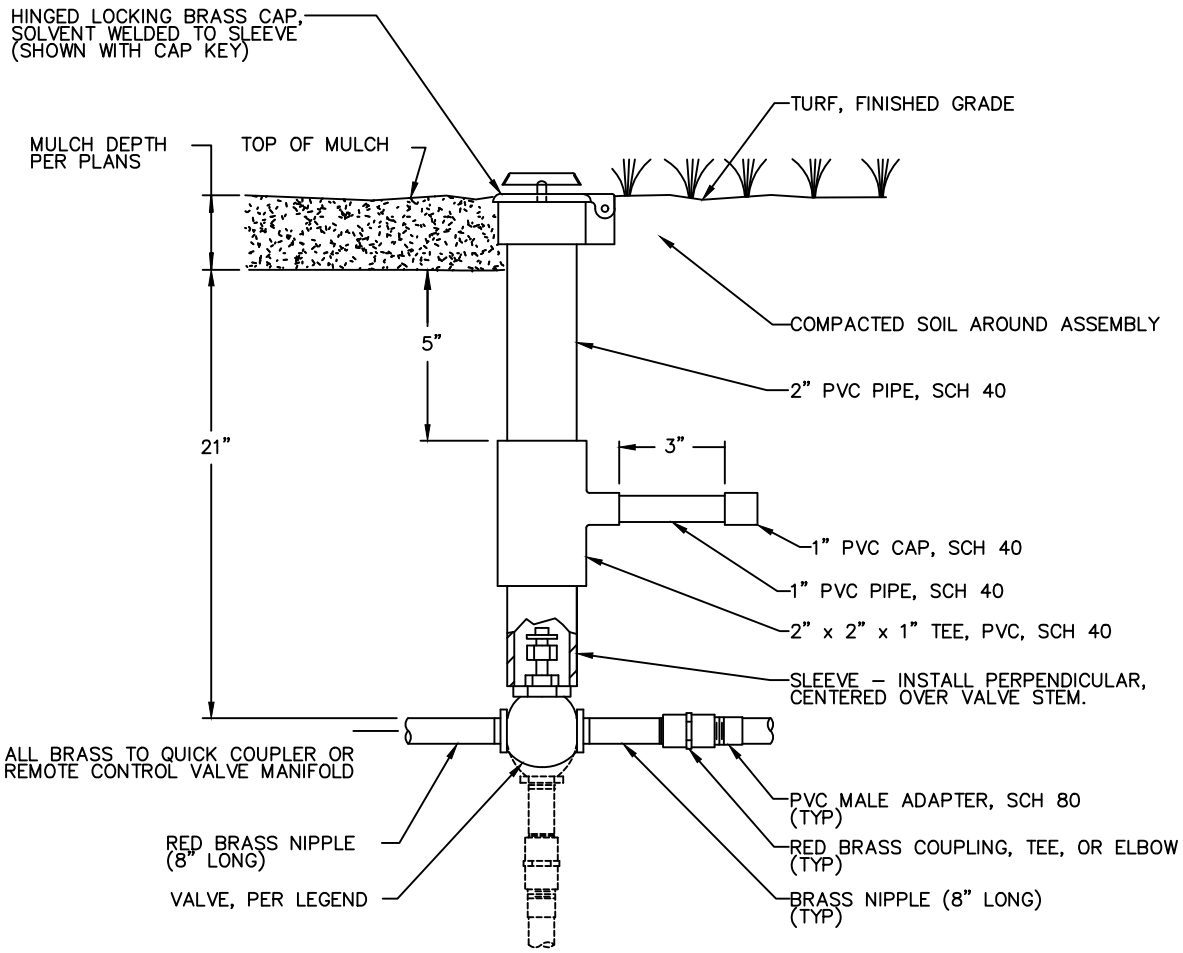
ISOLATION GLOBE/GATE VALVE 2½" AND LARGER

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-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

GV

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Update		M. Caro	02/05
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15

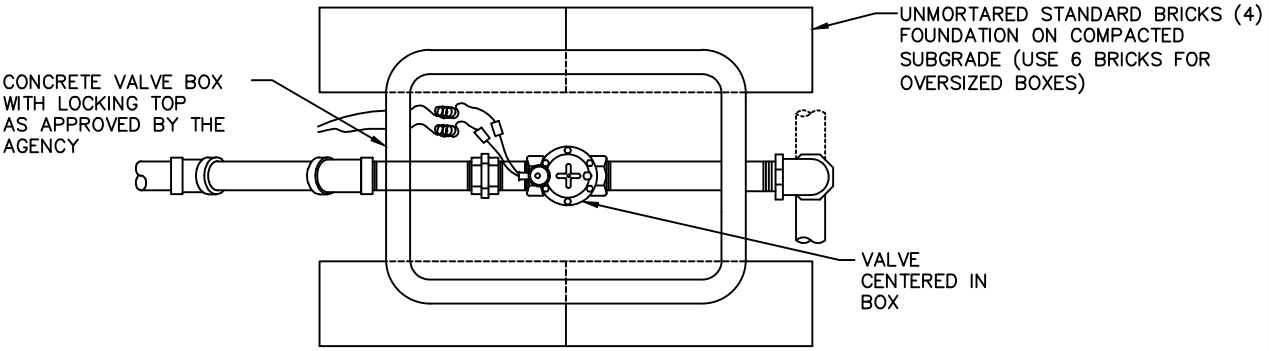
SAN DIEGO REGIONAL STANDARD DRAWING

ISOLATION BALL VALVE 2" AND SMALLER

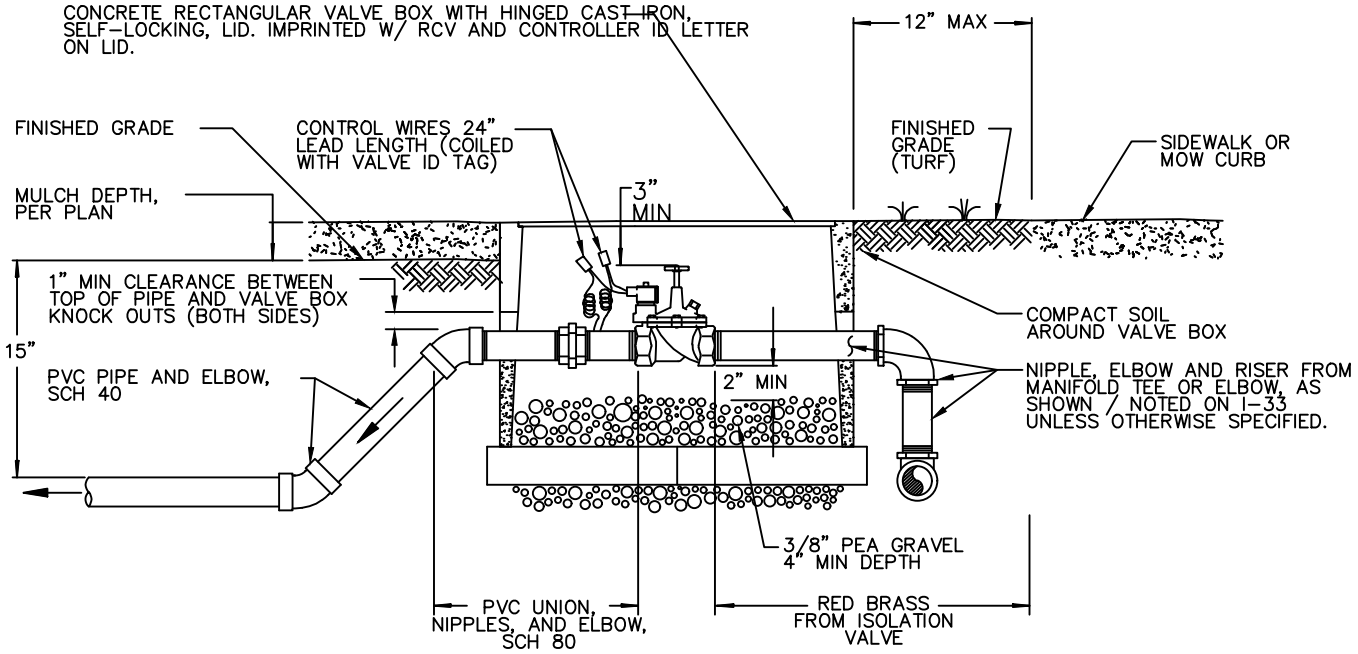
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER I-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

Revision	By	Approved	Date
ORIGINAL		R. Munoz	03/97
Add Metric		T. Stanton	03/03
Update		M. Caro	04/05
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15

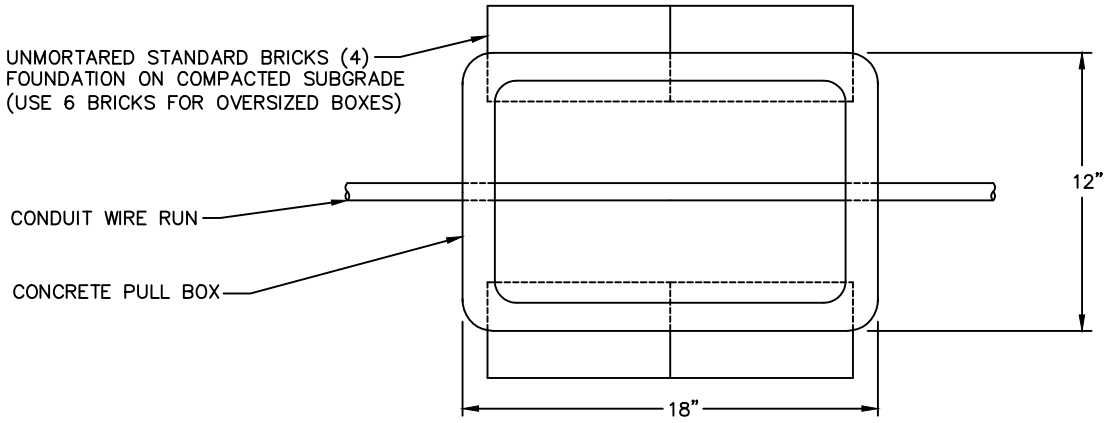
SAN DIEGO REGIONAL STANDARD DRAWING

REMOTE CONTROL VALVE

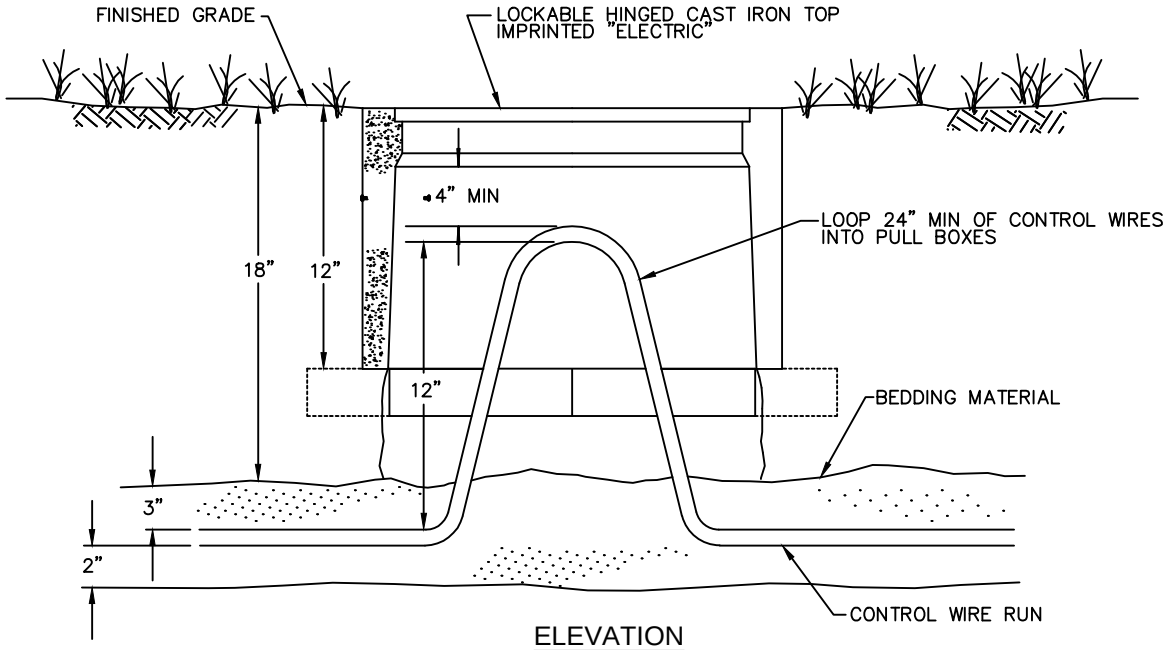
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

DRAWING NUMBER **I-14**



PLAN VIEW

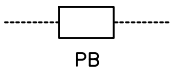


ELEVATION

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 HARNESSED 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
Add Metric		T. Stanton	03/03
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

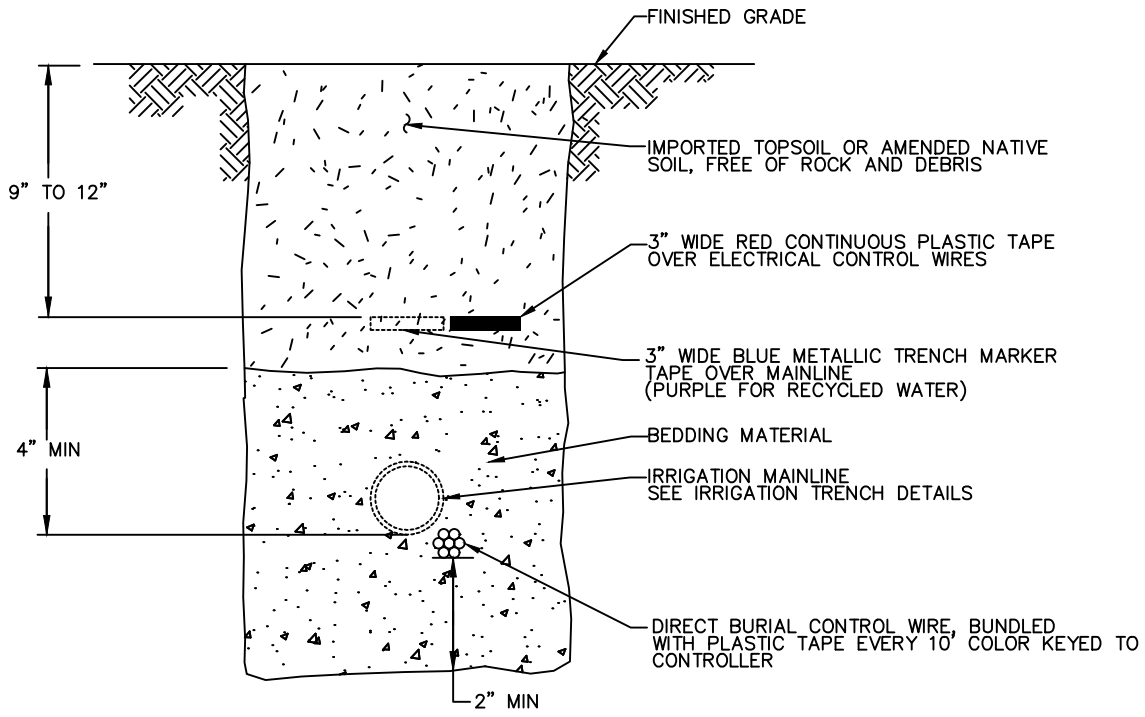
ELECTRICAL PULL BOX FOR DIRECT BURIAL CONTROL WIRES AND SPLICING NOTES

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Update		M. Caro	02/05
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15

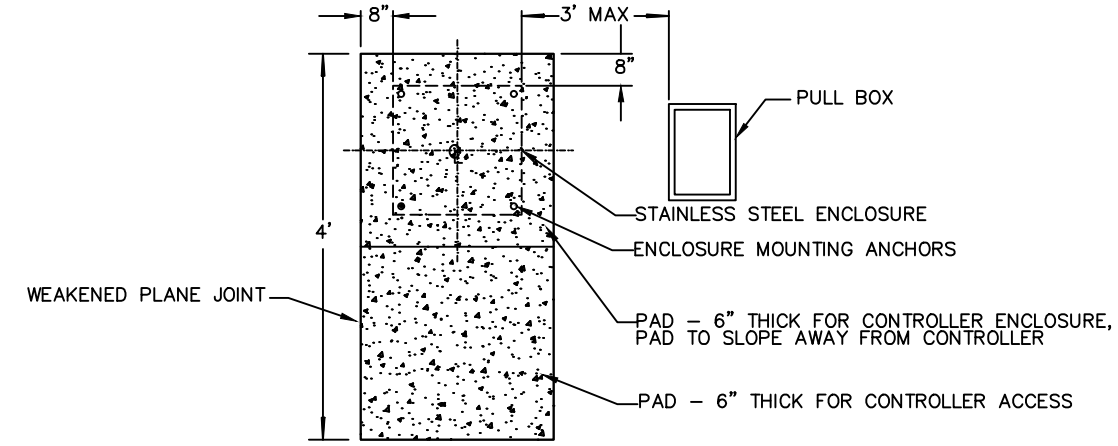
SAN DIEGO REGIONAL STANDARD DRAWING

CONTROL WIRE INSTALLATION

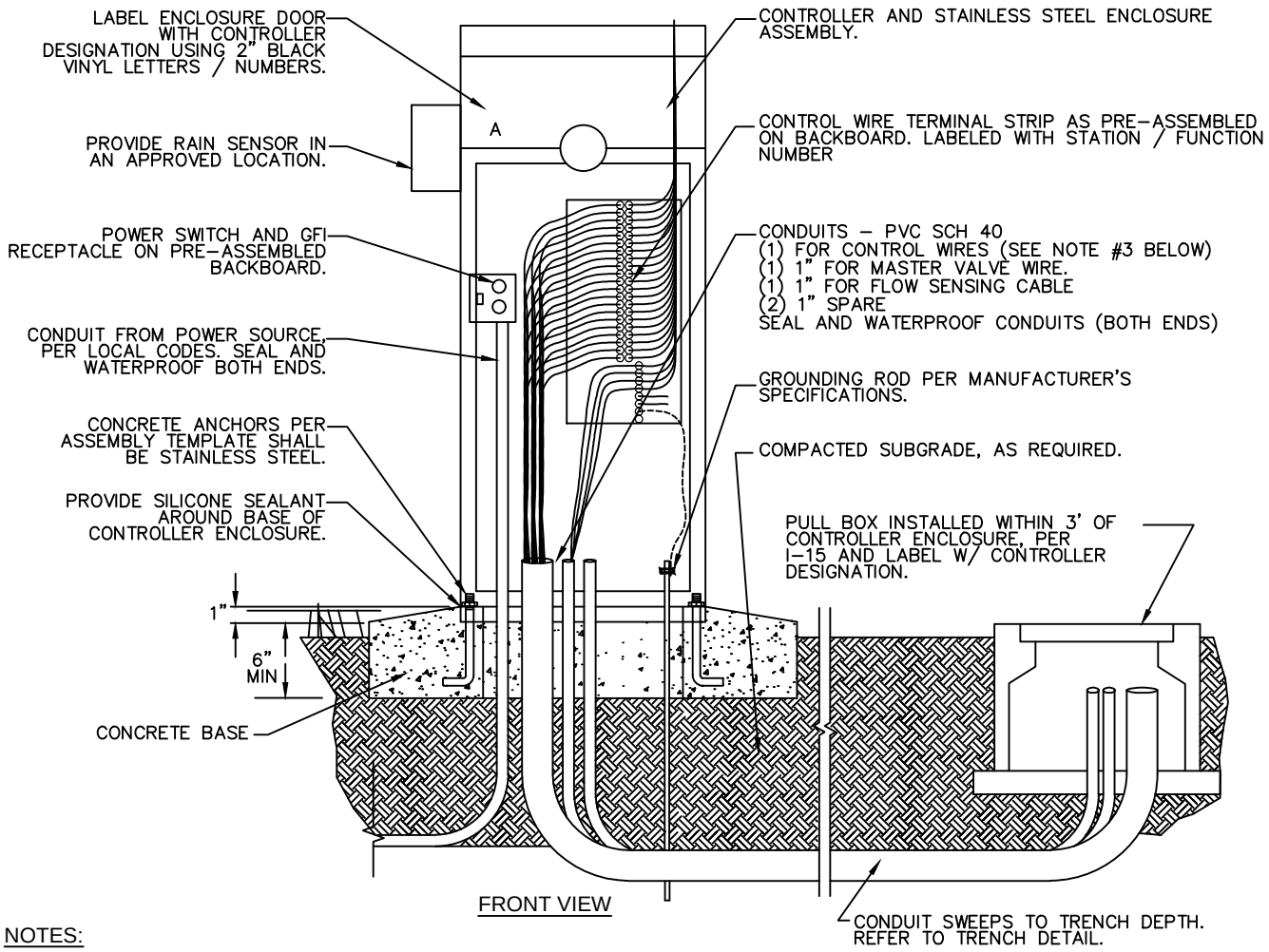
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-16**



PLAN VIEW (FOR CONCRETE PAD)



FRONT VIEW

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 CONTOL 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
Add Metric		T. Stanton	03/03
Update		M. Caro	05/04
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15

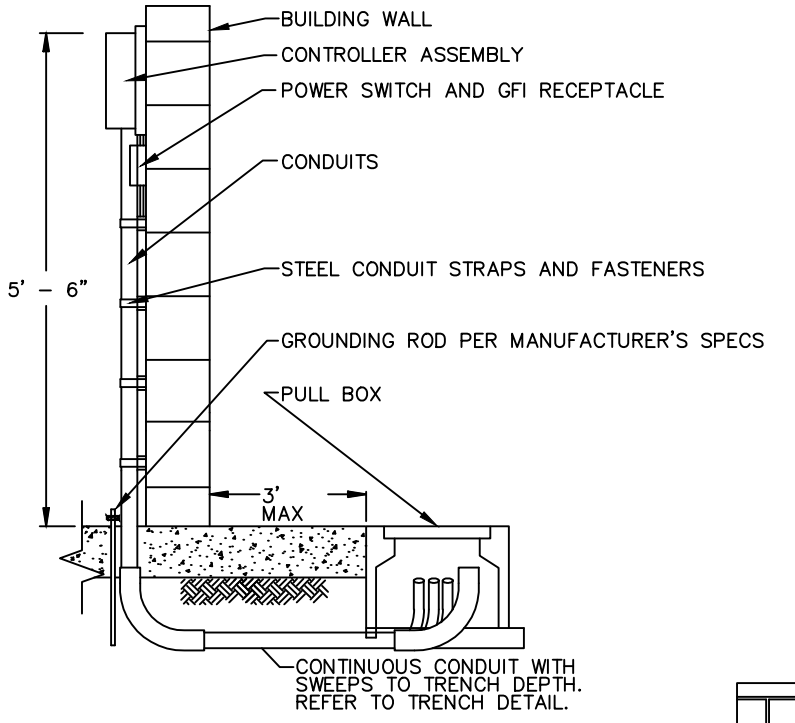
SAN DIEGO REGIONAL STANDARD DRAWING

AUTOMATIC IRRIGATION CONTROLLER PEDESTAL MOUNTED

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

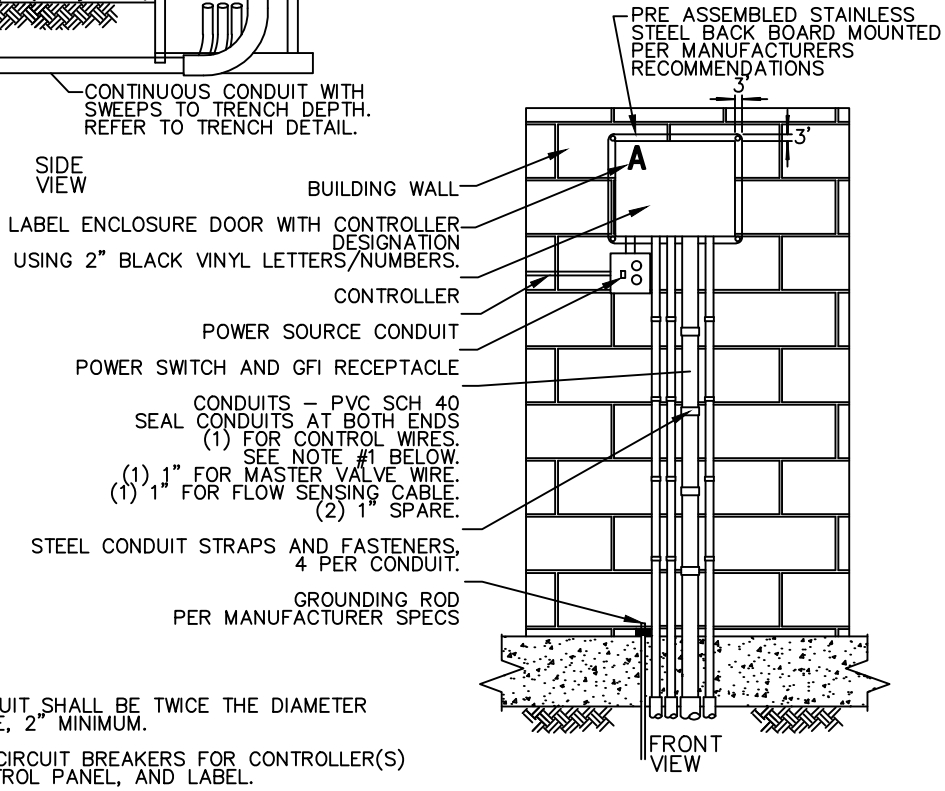
Chairperson R.C.E. 19246 Date 12/17/2015

DRAWING NUMBER I-17



SIDE VIEW

LEGEND ON PLANS



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
Add Metric		T. Stanton	03/03
Update		M. Caro	06/04
Delete Metric	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

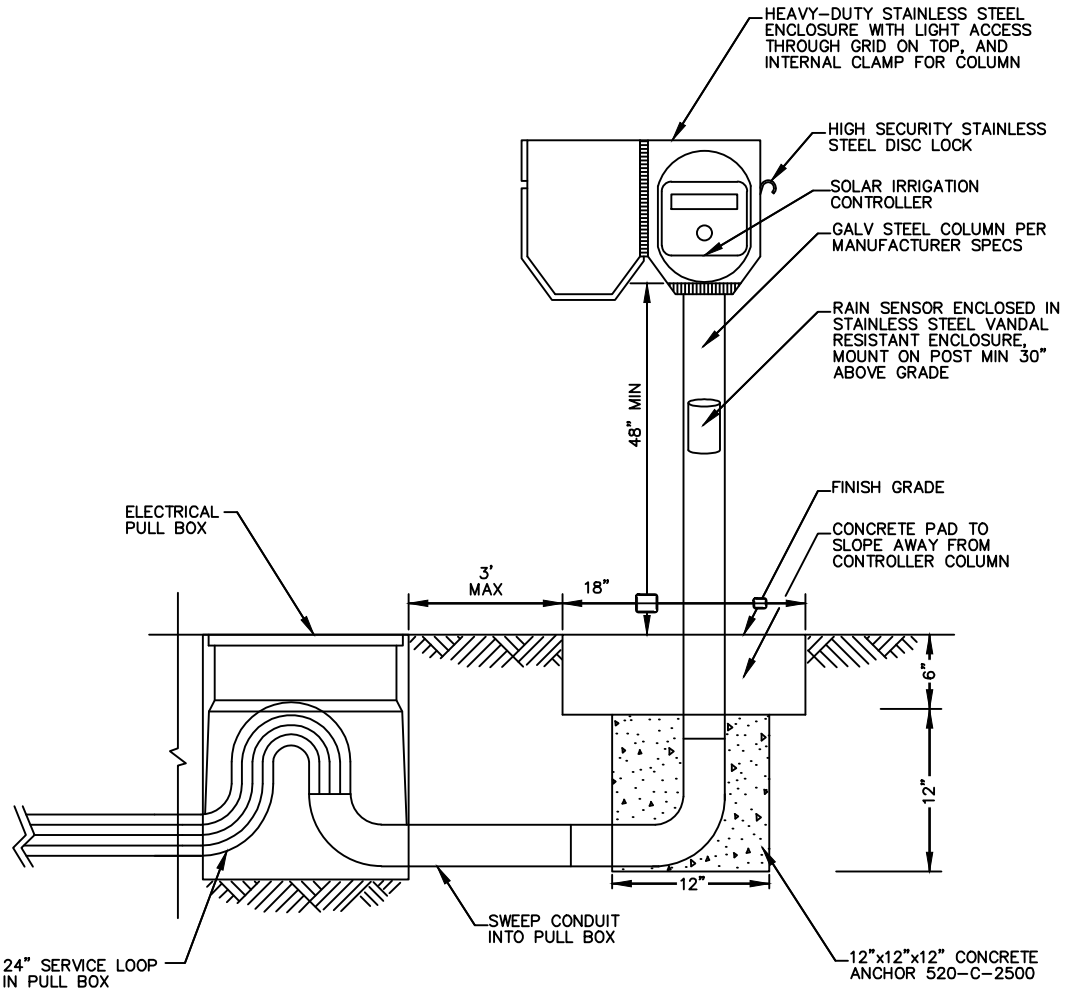
AUTOMATIC IRRIGATION CONTROLLER INDOOR WALL MOUNTED

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015

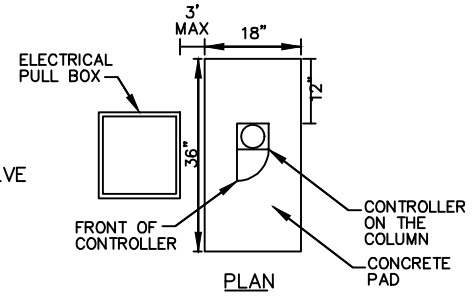
Chairperson R.C.E. 19246 Date

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
Update	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

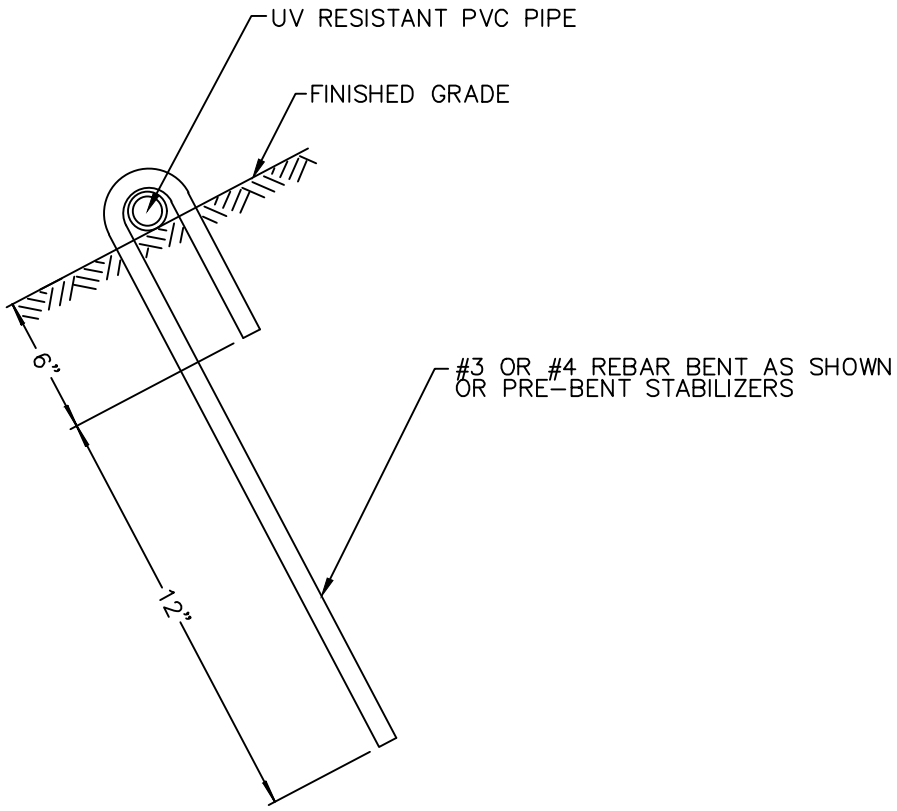
SOLAR IRRIGATION CONTROLLER

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-19**



SIDE VIEW

NOTE:

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

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
UPDATE		M. Caro	06/04
UPDATE	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15

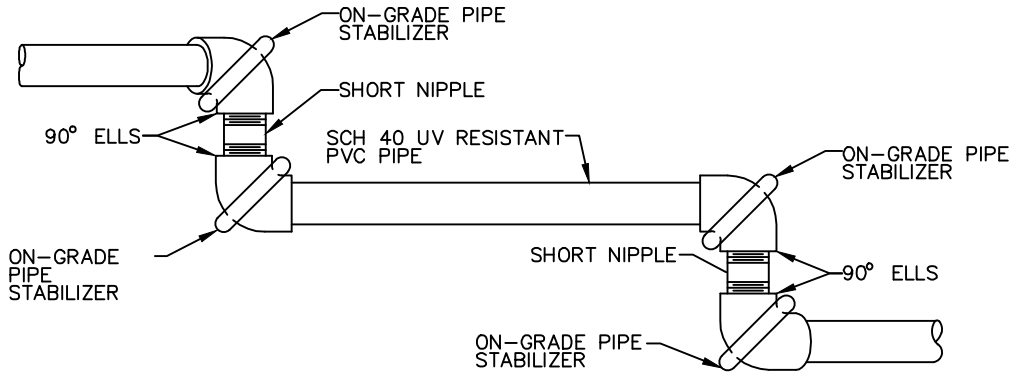
SAN DIEGO REGIONAL STANDARD DRAWING

ON-GRADE PIPE STABILIZATION TEMPORARY INSTALLATION

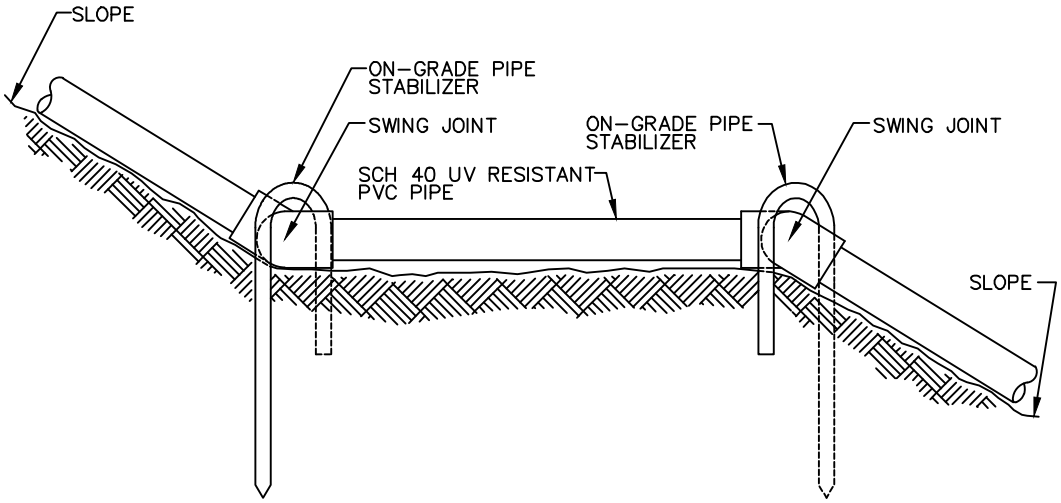
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-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
Add Metric		T. Stanton	03/03
Reviewed		T. Stanton	06/04
UPDATED	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

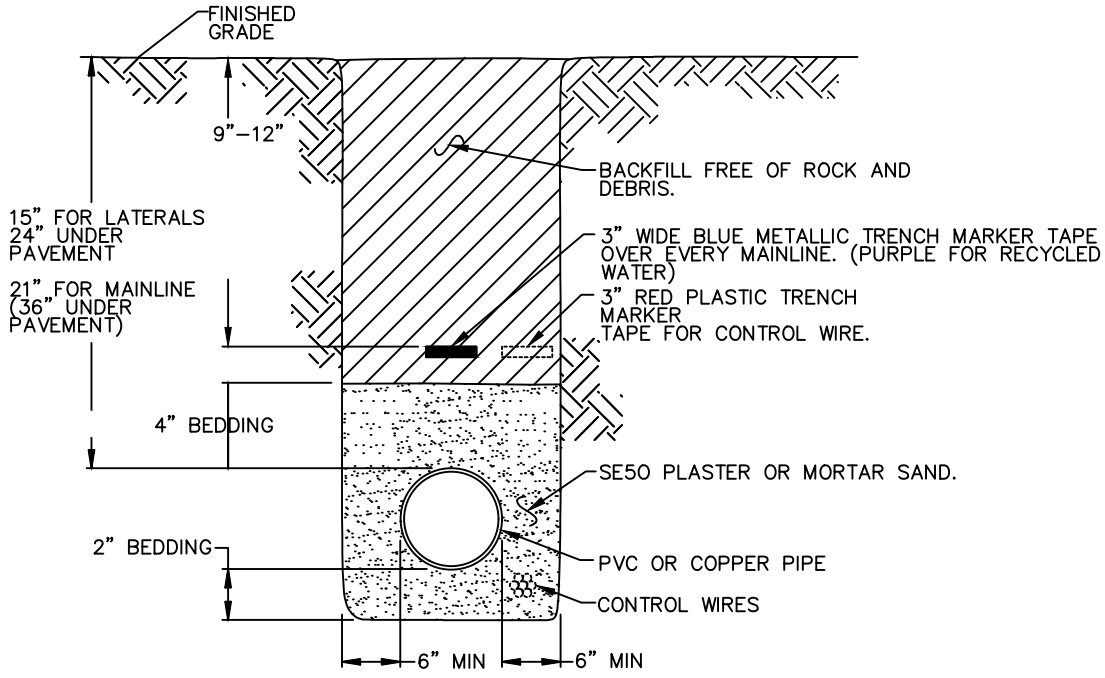
SWING JOINT AND PIPE INSTALLATION ON SLOPES ABOVE GROUND

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

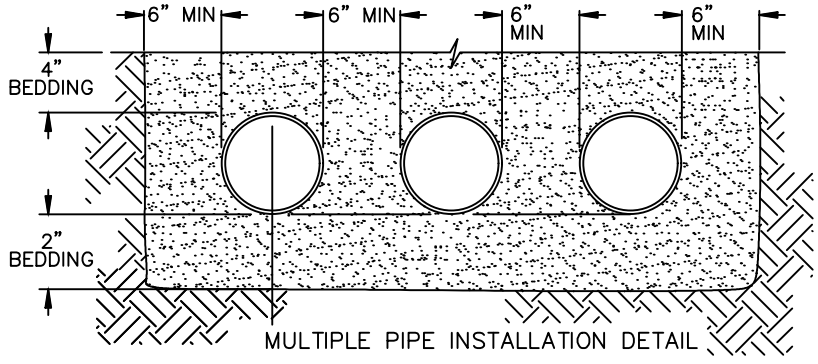
12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-23**



MAINLINE TRENCH



MULTIPLE PIPE INSTALLATION DETAIL

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Update		M. Caro	06/04
Update	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

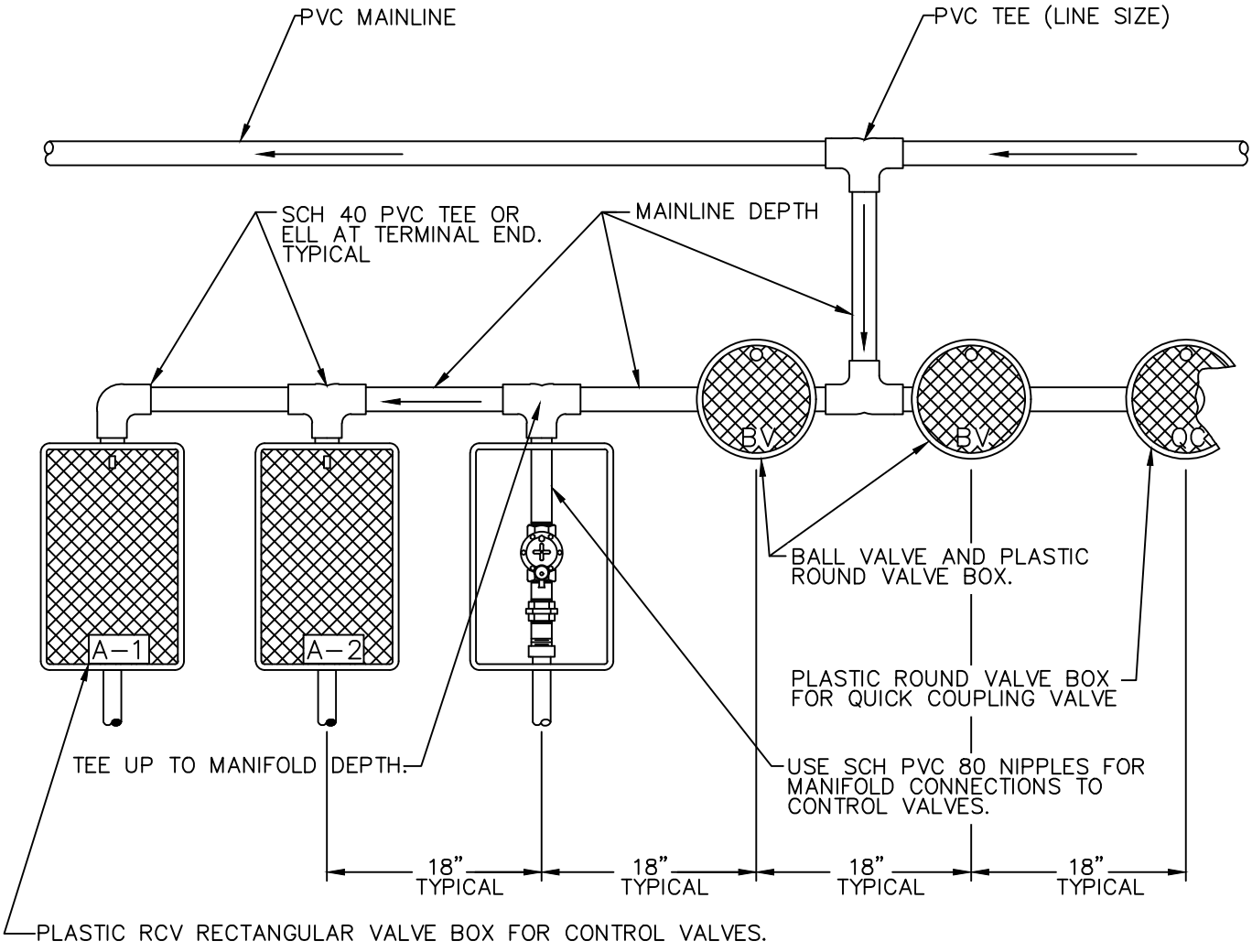
IRRIGATION TRENCH PVC OR COPPER PIPE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-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
Add Metric		T. Stanton	03/03
Update		M. Caro	06/04
Update	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15

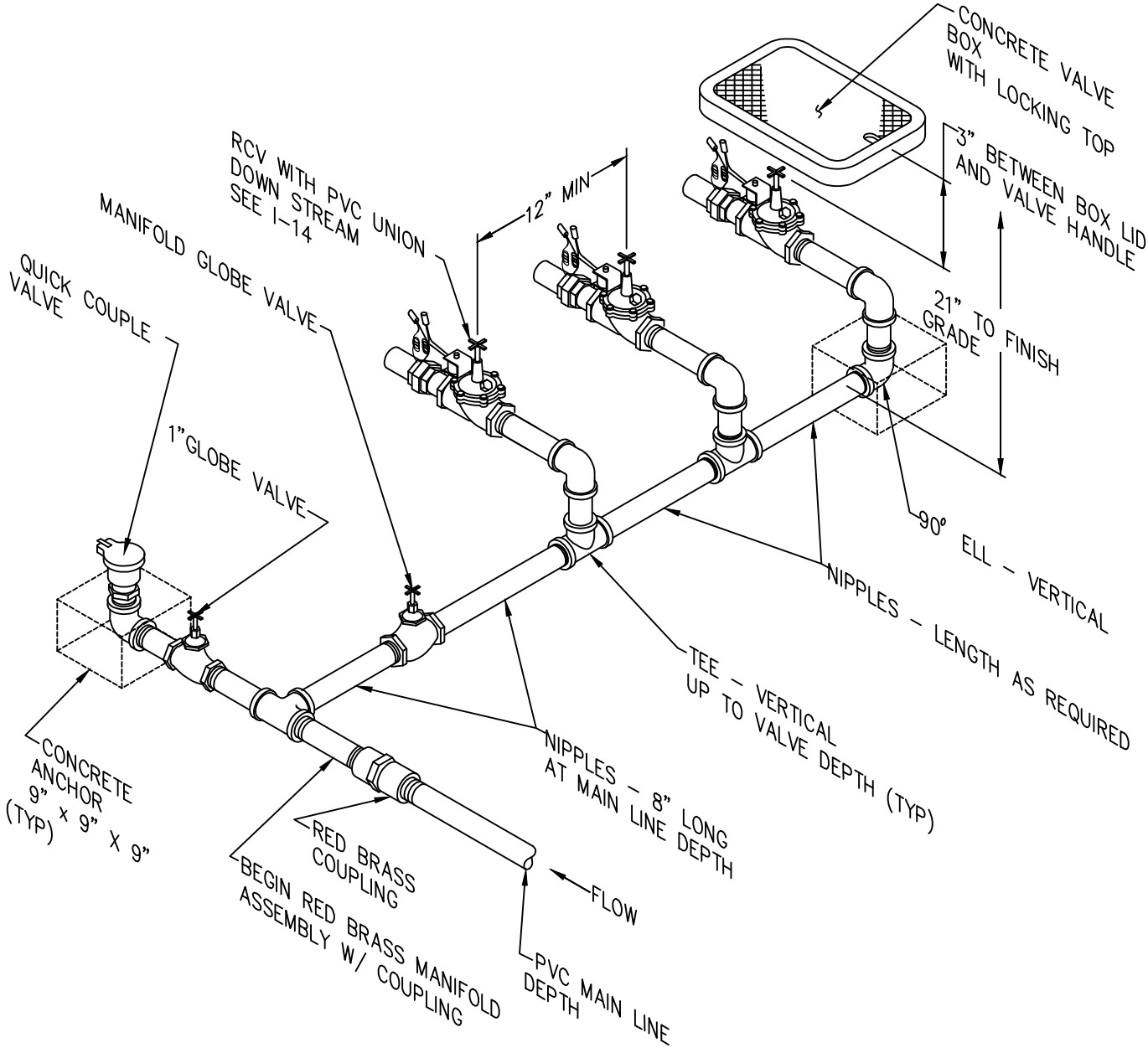
SAN DIEGO REGIONAL STANDARD DRAWING

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

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

DRAWING NUMBER **I-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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
UPDATE		M. Caro	4/05
UPDATE	KA	N. Batta	11/11
Reviewed	KA	N. Batta	10/15

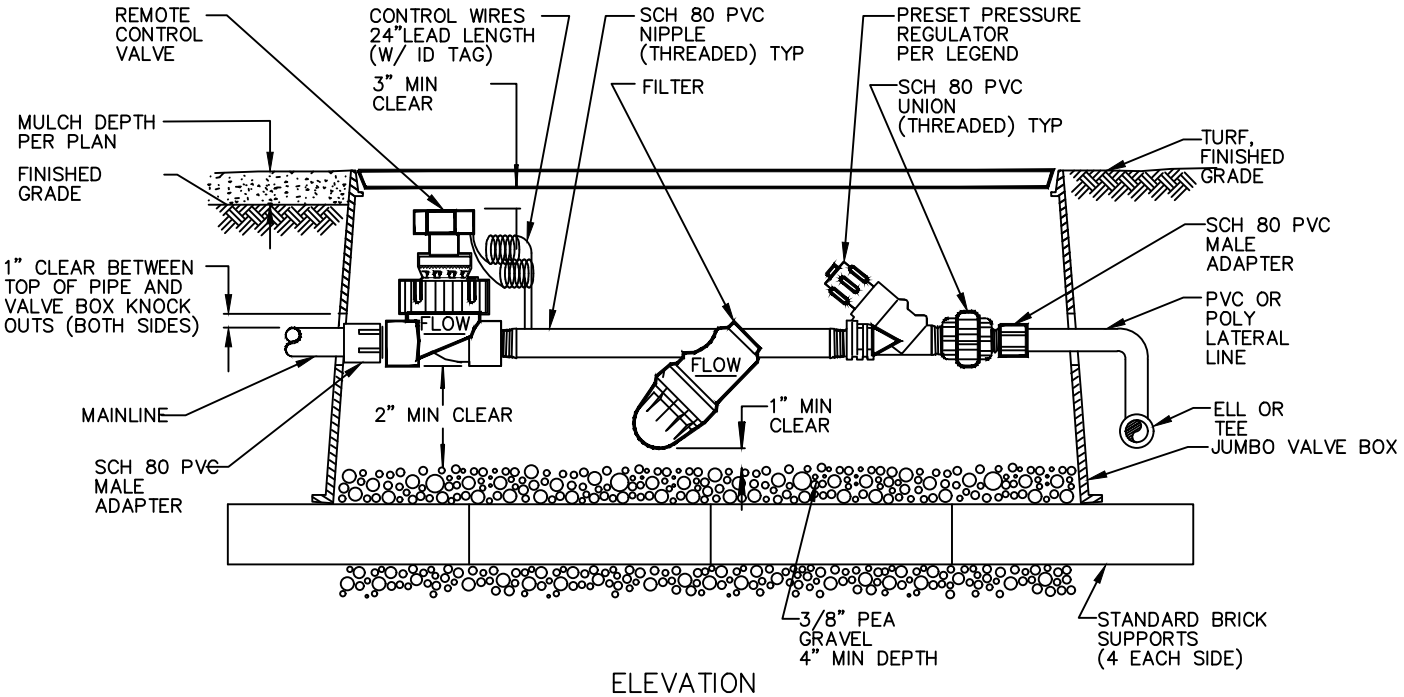
SAN DIEGO REGIONAL STANDARD DRAWING

REMOTE CONTROL VALVE MANIFOLD ASSEMBLY WITH BRASS PIPE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-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
ORIGINAL		M. Caro	12/75
Update	KA	N. Batta	11/11
Edited	RT	Taleghani	6/14

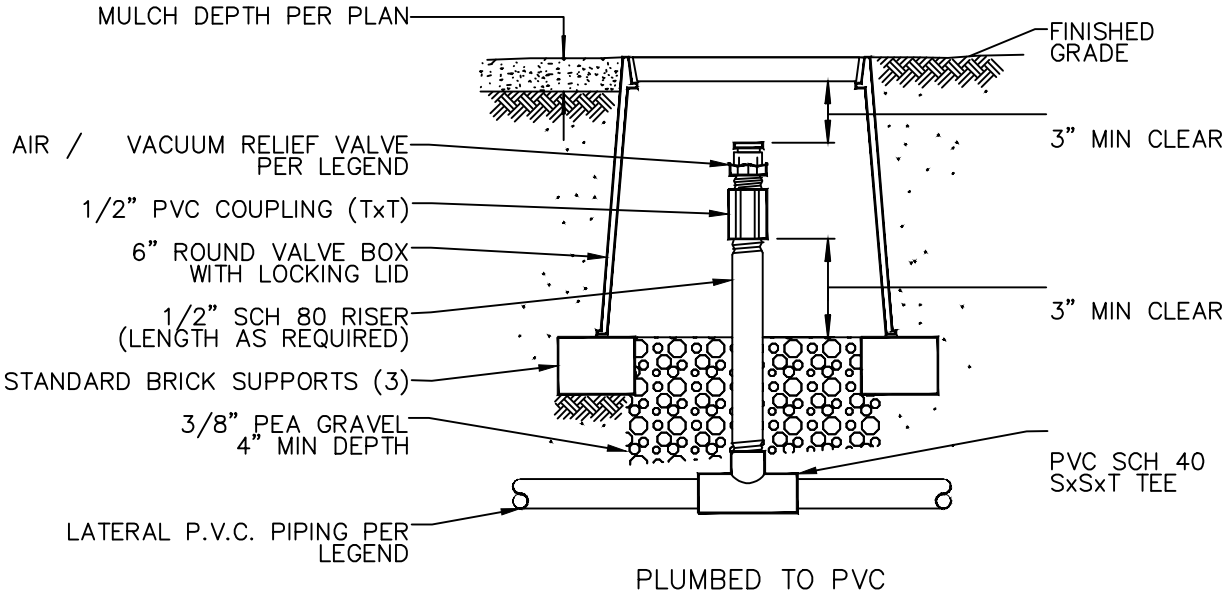
SAN DIEGO REGIONAL STANDARD DRAWING

REMOTE CONTROL VALVE DRIP IRRIGATION

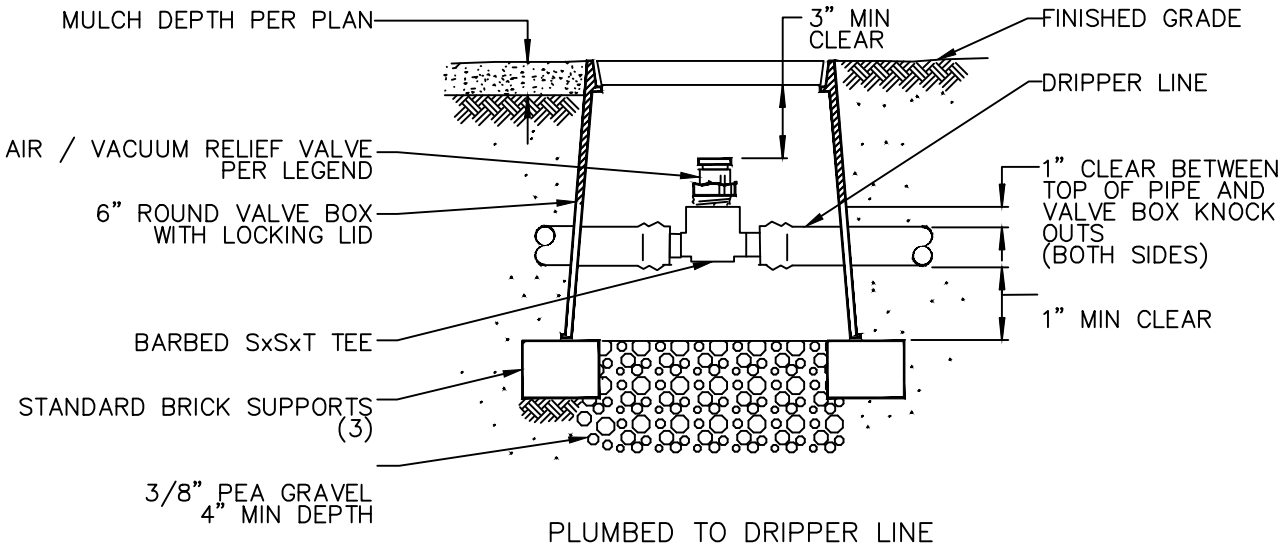
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

DRAWING NUMBER **I-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

SAN DIEGO REGIONAL STANDARD DRAWING

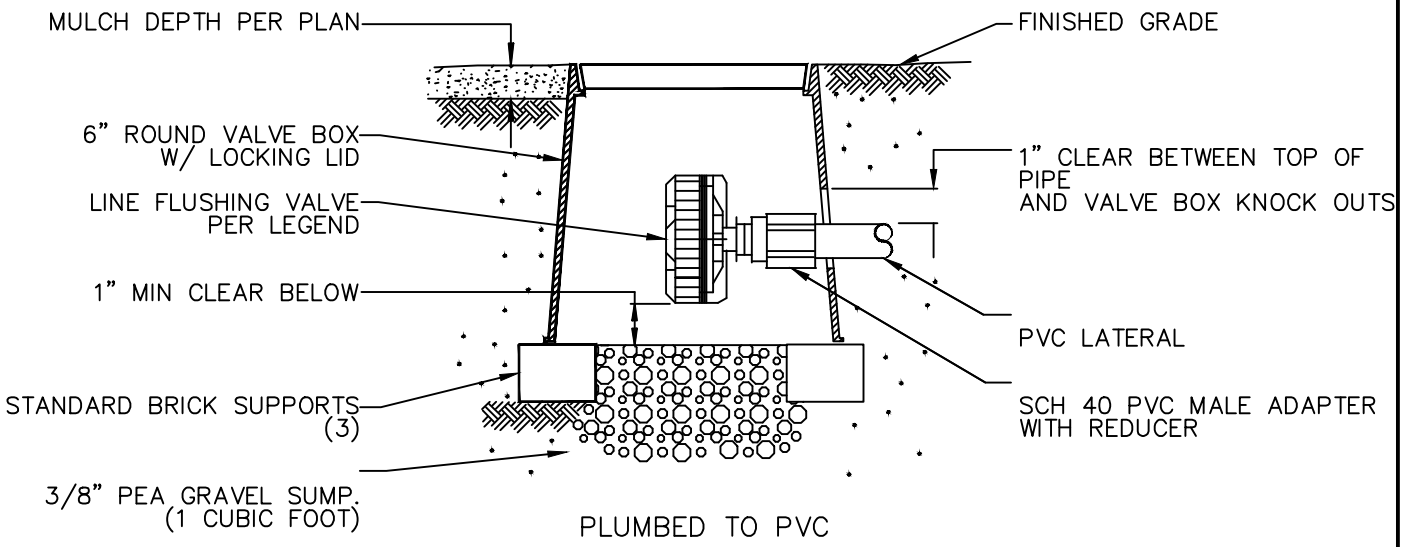
AIR / VACUUM RELIEF VALVE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

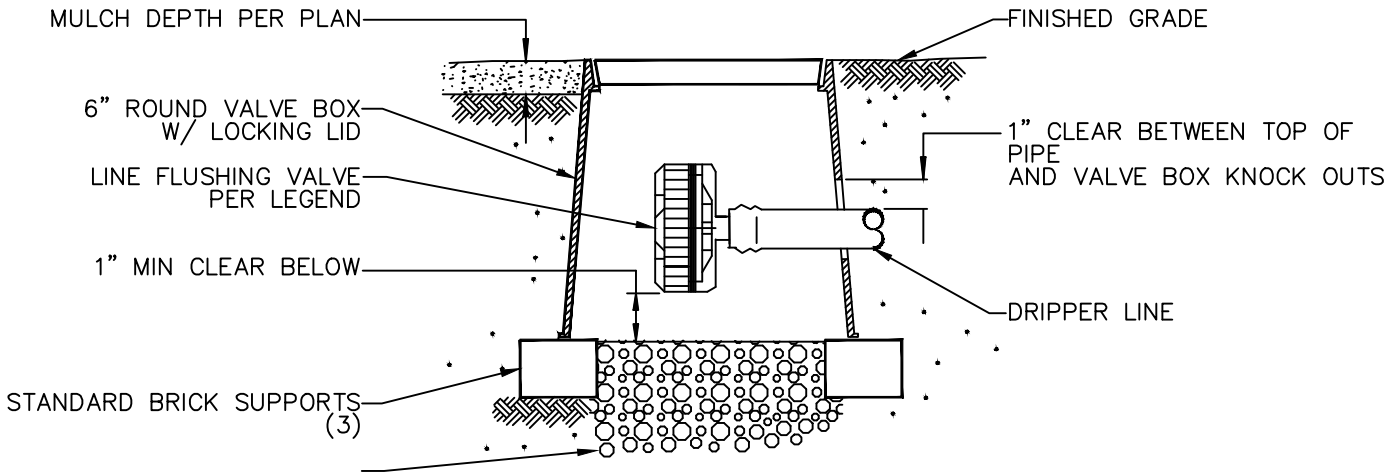
12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-36**



PLUMBED TO PVC



PLUMBED TO DRIPPER LINE

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

(FV)

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

SAN DIEGO REGIONAL STANDARD DRAWING

DRIP IRRIGATION
FLUSH VALVE (AUTOMATIC)

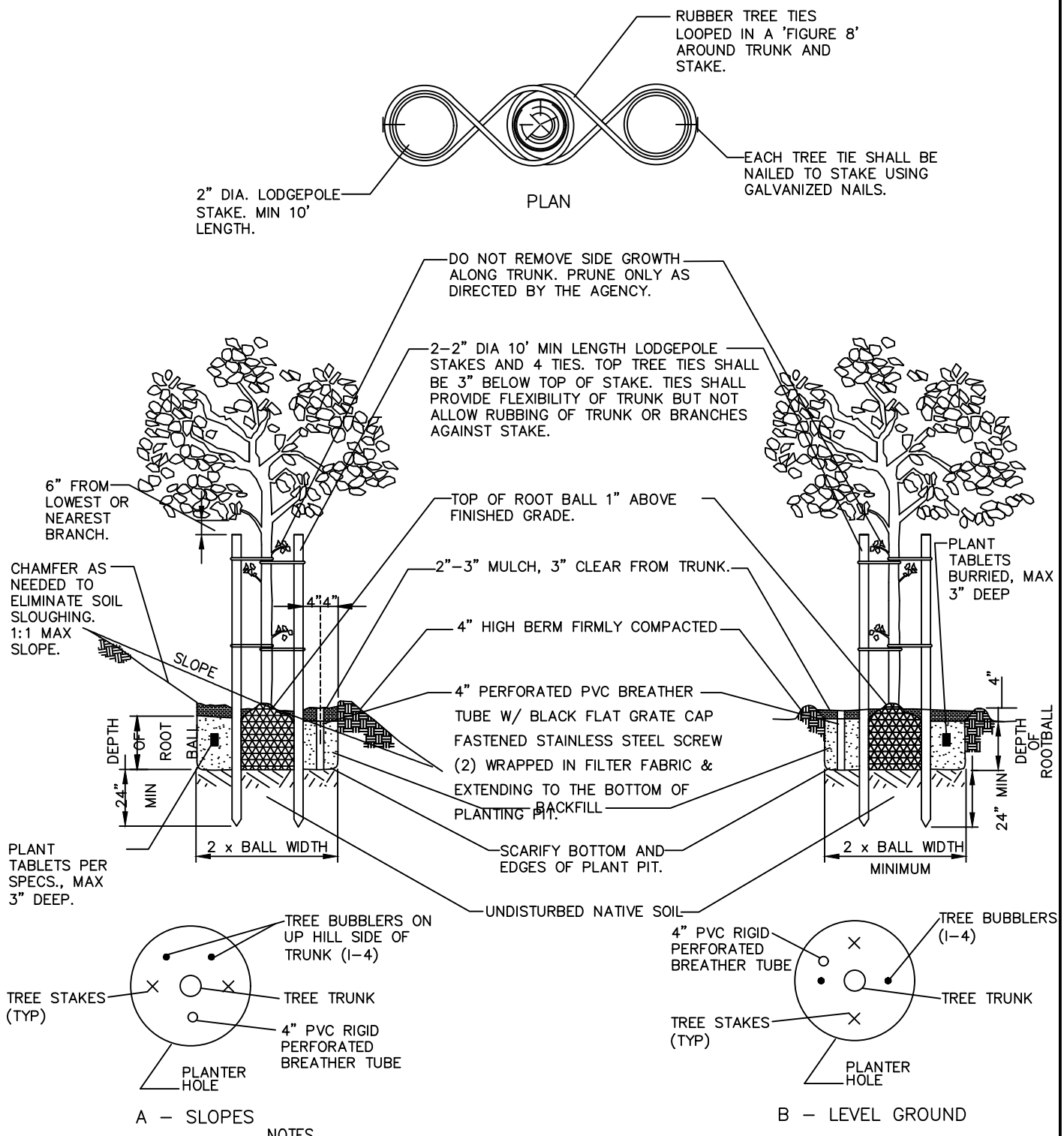
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **I-37**

LANDSCAPING



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
Add Metric		T. Stanton	03/03
Update		M. Caro	02/05
Delete Metric	SJG	N. Batta	06/11
Reviewed	HM	T. Stanton	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

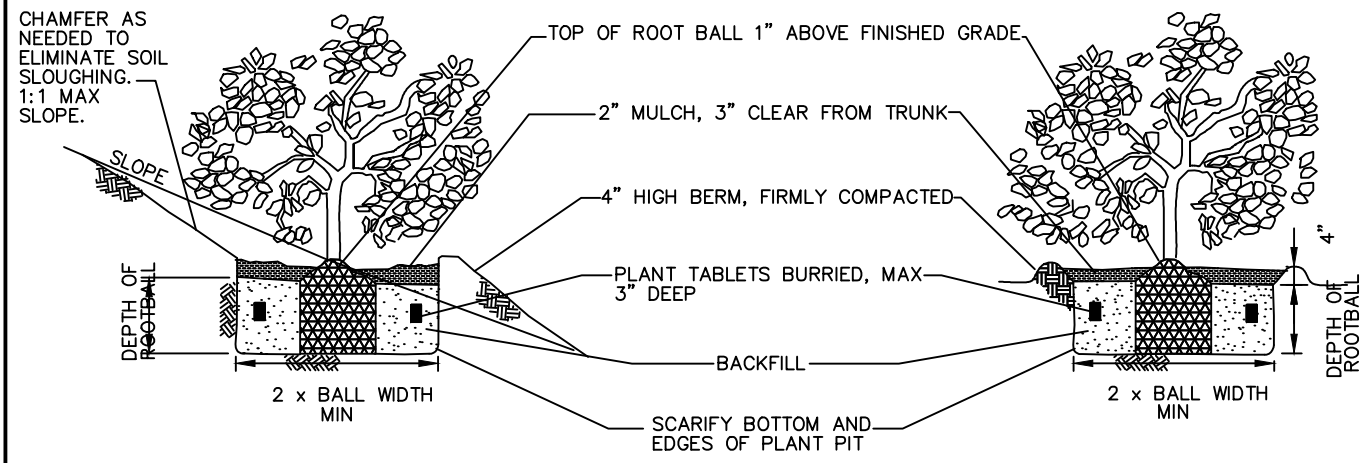
TREE PLANTING AND STAKING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/2015

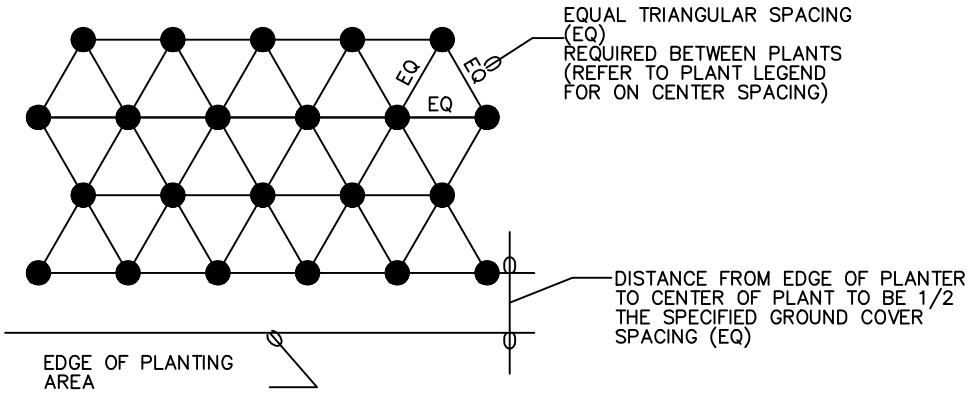
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **L-01**



SHRUB PLANTING – SLOPES

SHRUB PLANTING – LEVEL GROUND



GROUND COVER SPACING

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Update		M. Caro	02/05
Delete Metric	KA	N. Batta	06/11
Reviewed	HM	T. Stanton	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

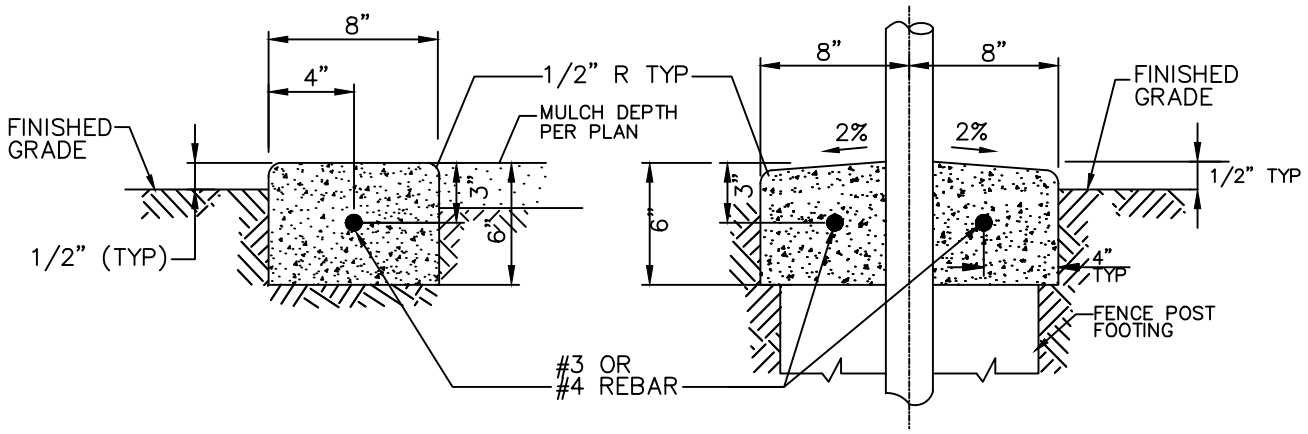
SHRUB PLANTING/GROUND COVER SPACING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/2015

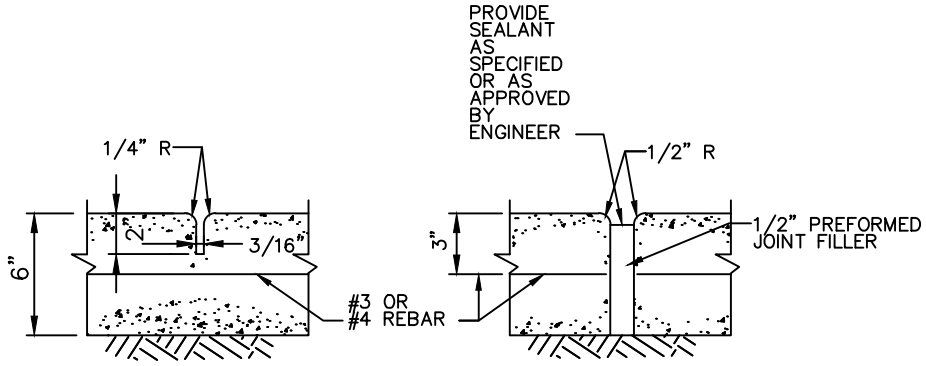
Chairperson R.C.E. 19246 Date

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Update		M. Caro	02/05
Delete Metric	KA	N. Batta	06/11
Reviewed	HM	T. Stanton	10/15

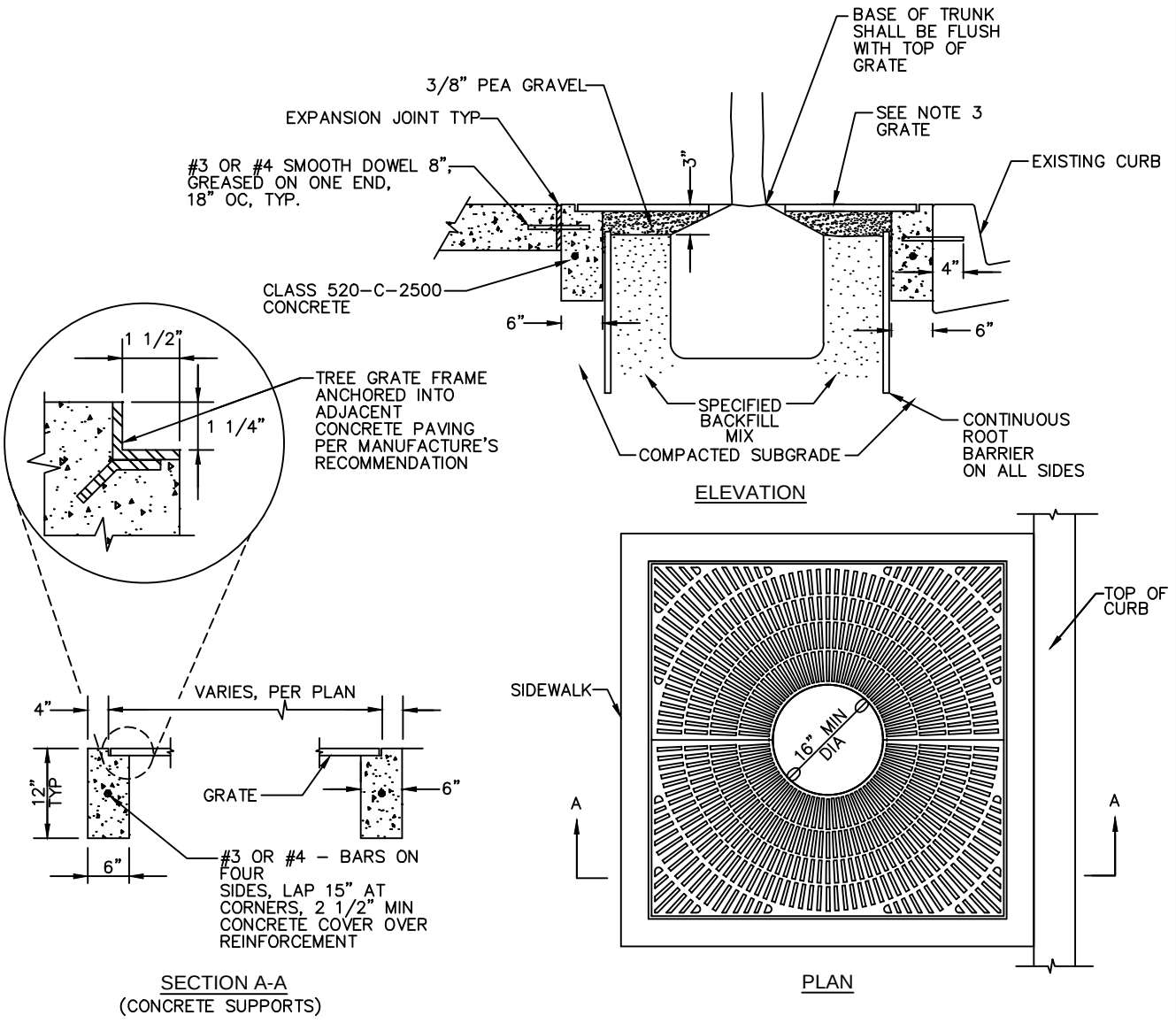
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE MOWING STRIP

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

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
Add Metric		T. Stanton	03/03
Update		M. Caro	01/06
Delete Metric	KA	N. Batta	06/11
Reviewed	HM	T. Stanton	10/15

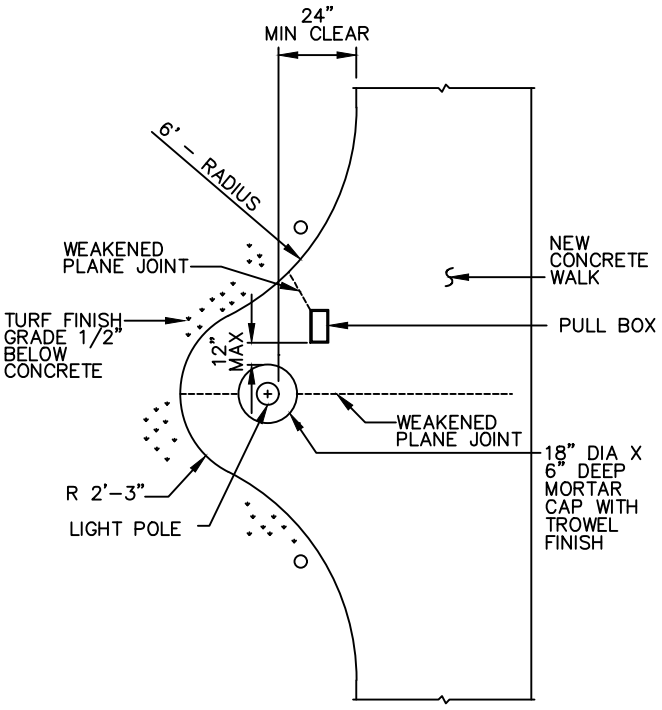
SAN DIEGO REGIONAL STANDARD DRAWING

TREE GRATE

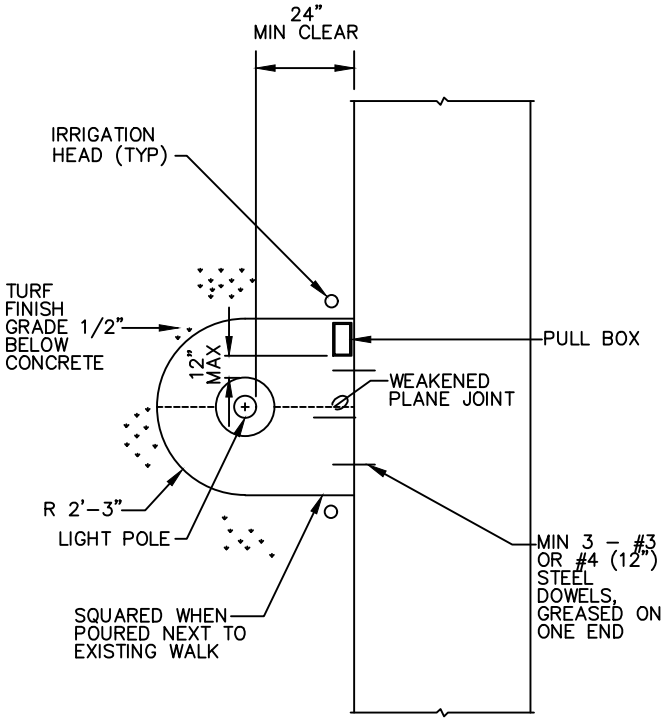
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

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
Add Metric		T. Stanton	03/03
Update		M. Caro	08/05
Delete Metric	KA	N. Batta	06/11
Revised	HM	T. Stanton	10/15

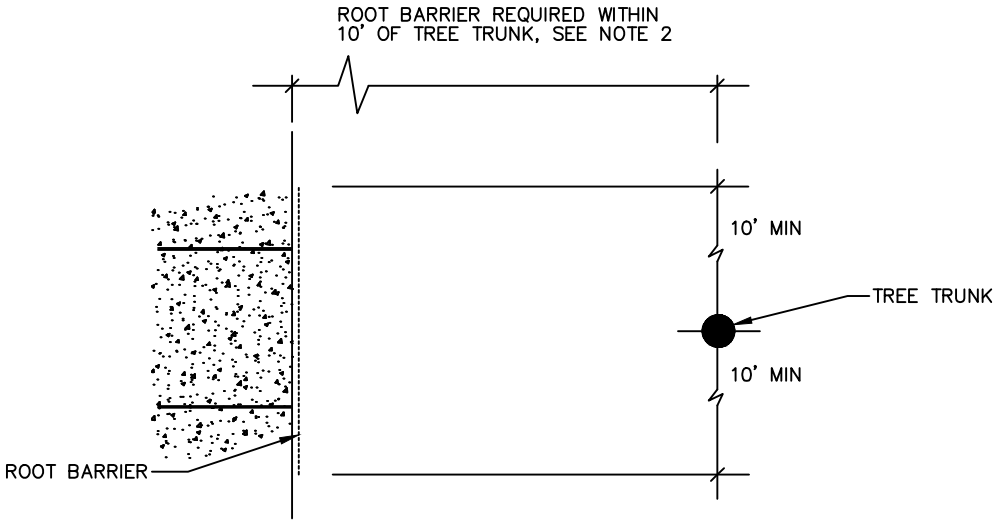
SAN DIEGO REGIONAL STANDARD DRAWING

LIGHT POLE PAD IN TURF AREAS

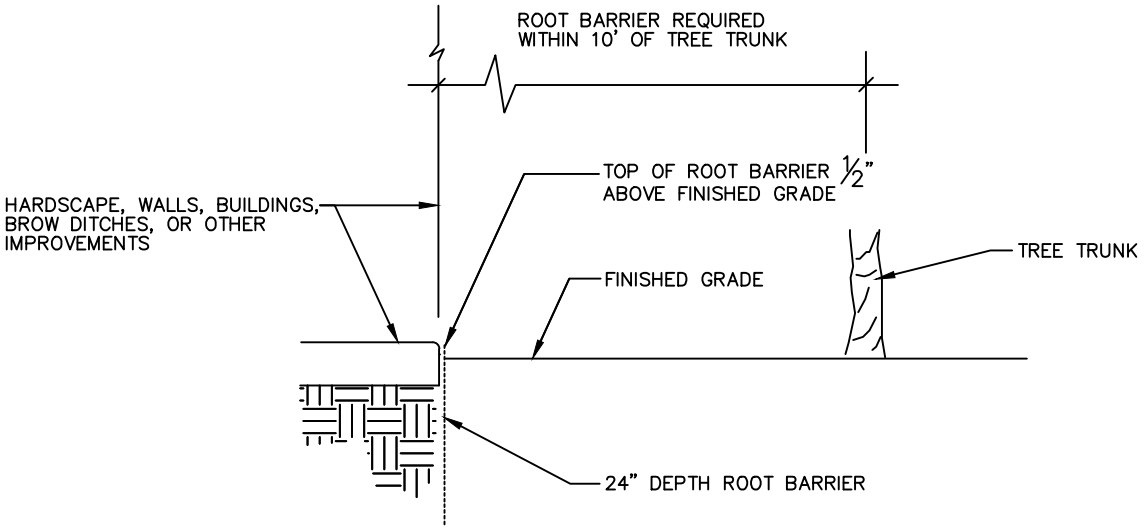
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **L-05**



PLAN VIEW



SECTION

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
ORIGINAL		M. Caro	02/06
Add Metric		T. Stanton	03/03
Delete Metric	KA	N. Batta	06/11
Reviewed	HM	T. Stanton	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

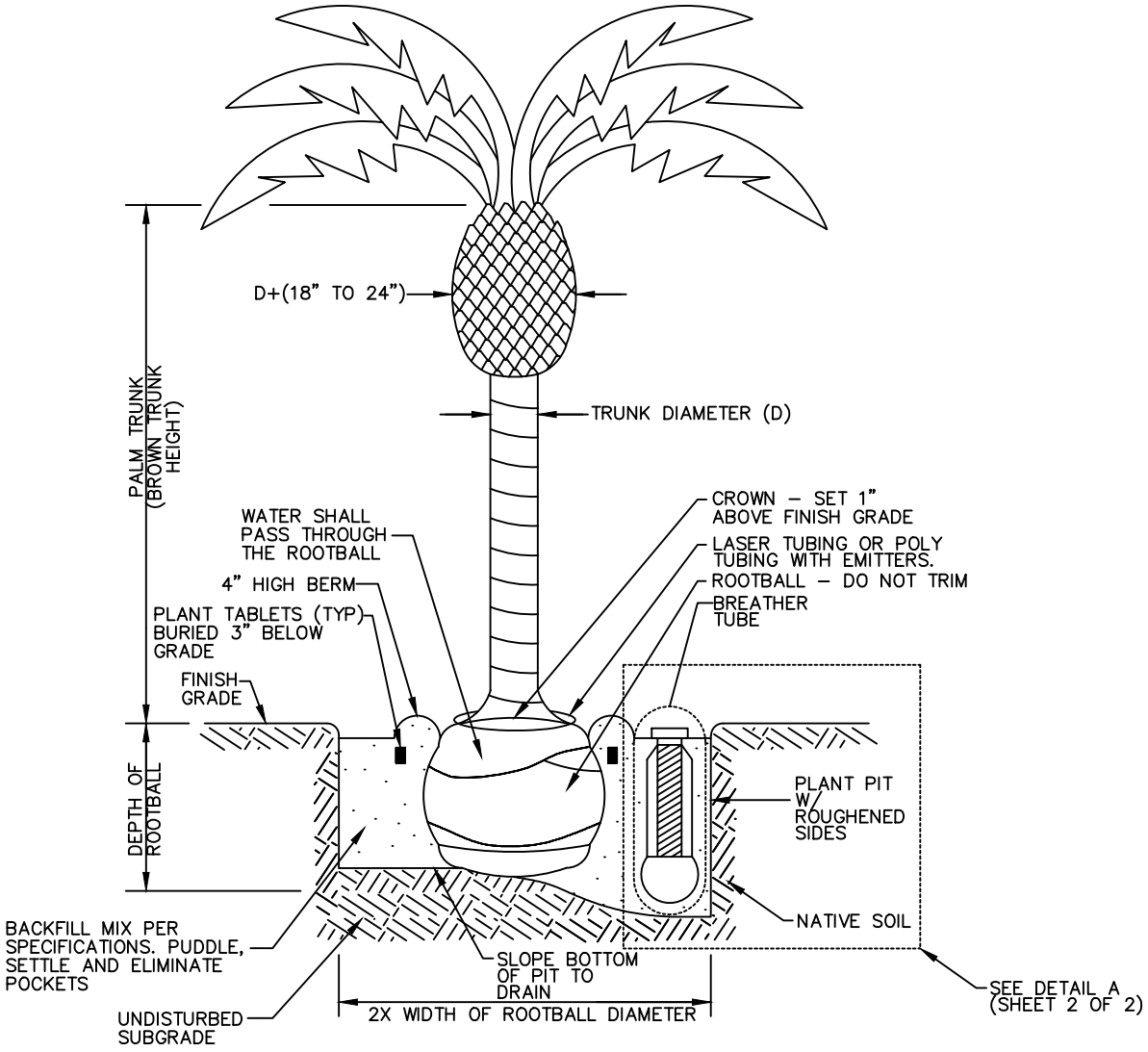
ROOT CONTROL BARRIER

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **L-06**



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.

Revision	By	Approved	Date
ORIGINAL	KA	N. Batta	06/11
Reviewed	HM	T.Stanton	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

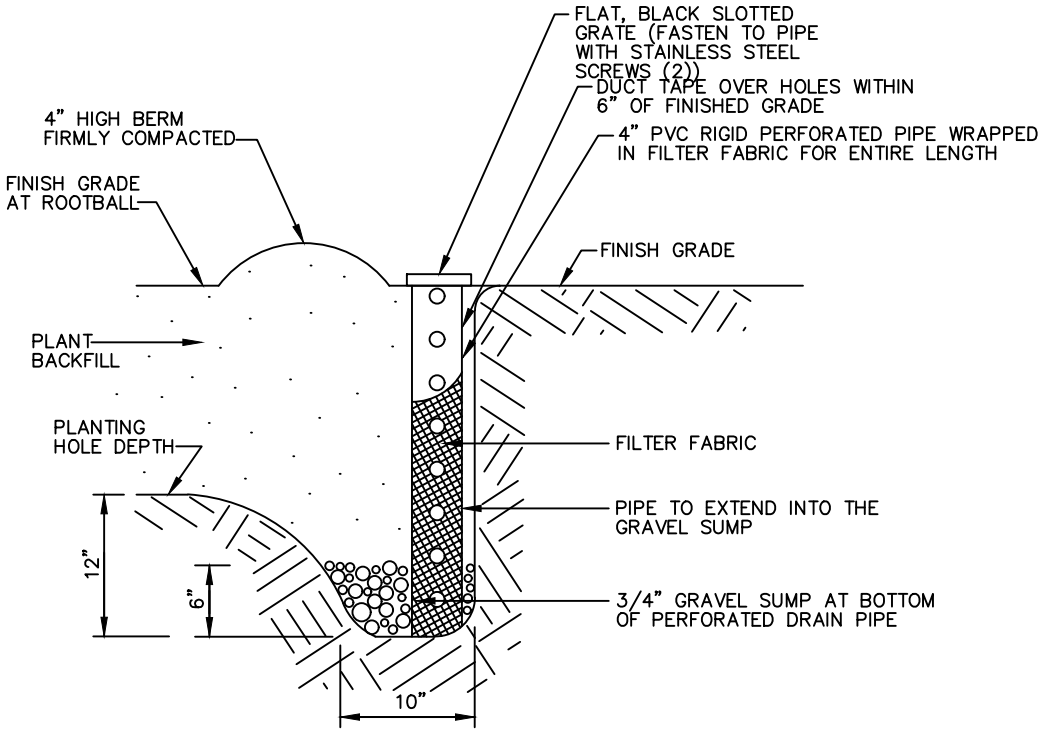
PALM TREE PLANTING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **L-07**



DETAIL – A
BREATHER TUBE

Revision	By	Approved	Date
ORIGINAL	KA	N. Batta	06/11
Reviewed	HM	T.Stanton	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

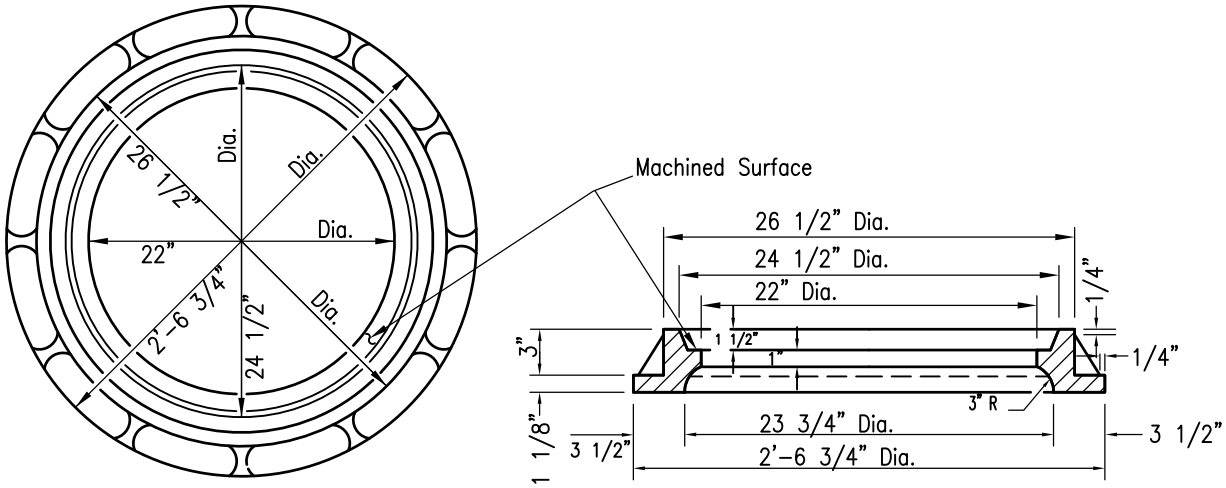
PALM TREE PLANTING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

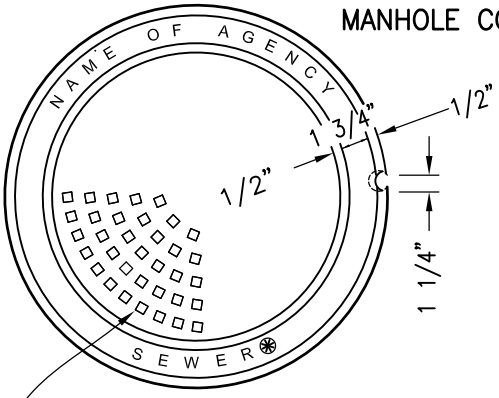
T.M. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

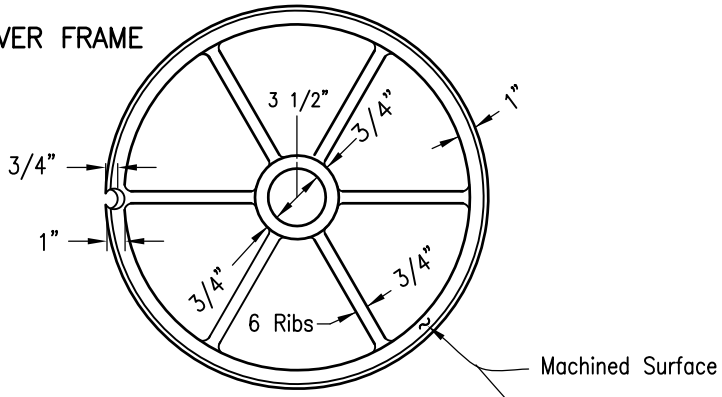
DRAWING NUMBER **L-07**

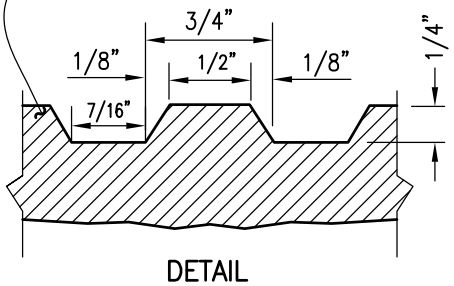
MISCELLANEOUS



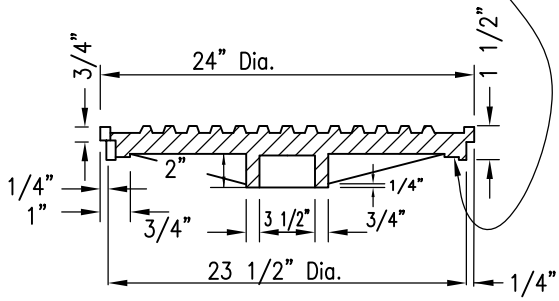
MANHOLE COVER FRAME







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

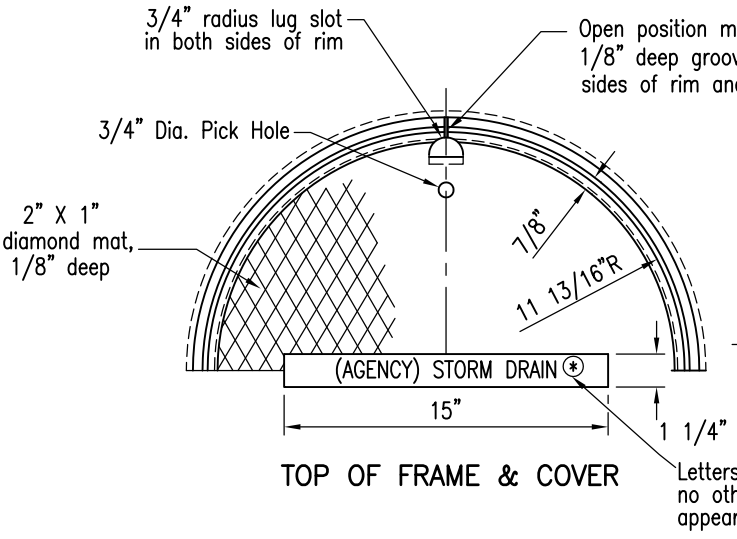
SAN DIEGO REGIONAL STANDARD DRAWING

24" MANHOLE FRAME AND COVER HEAVY DUTY

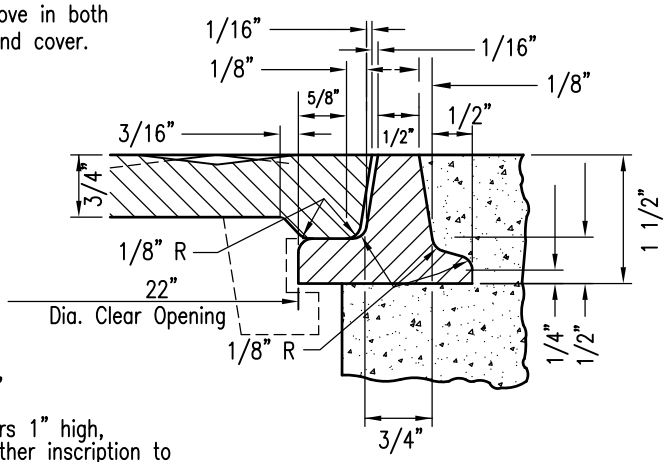
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

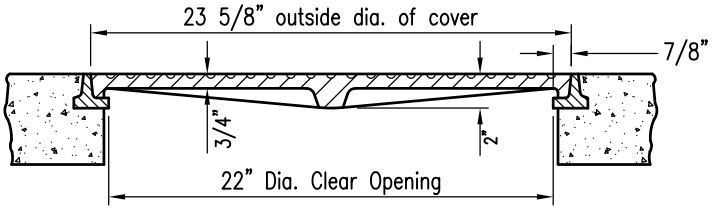
DRAWING NUMBER **M-01**



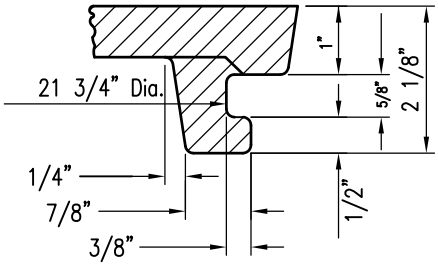
TOP OF FRAME & COVER



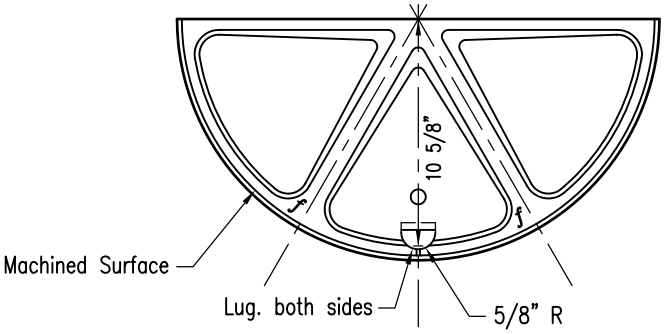
SECTION THROUGH RIM



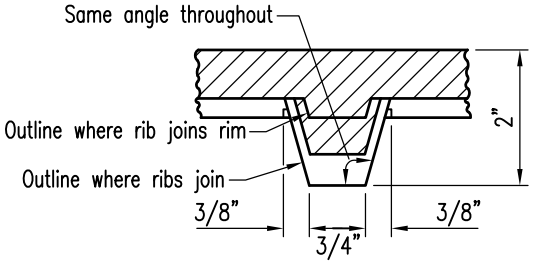
SECTION THROUGH FRAME & COVER



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

SAN DIEGO REGIONAL STANDARD DRAWING

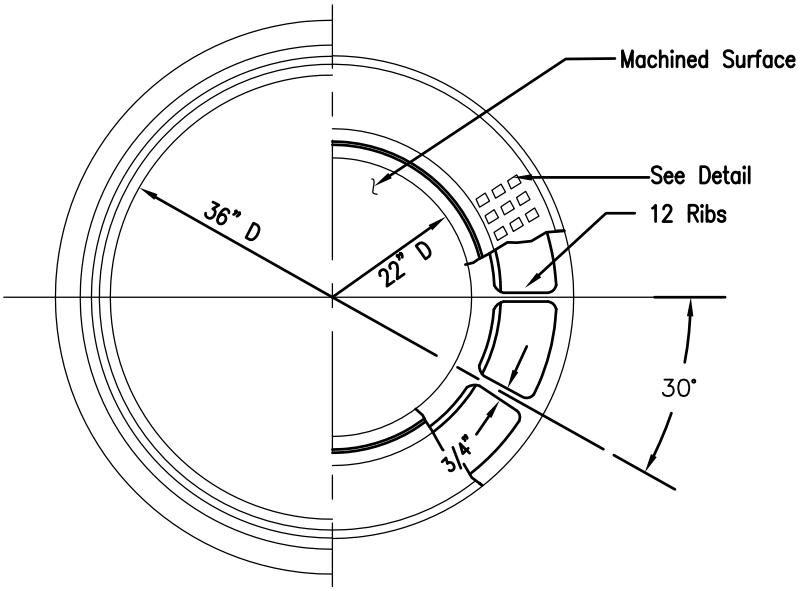
24" MANHOLE FRAME AND COVER LIGHT DUTY

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

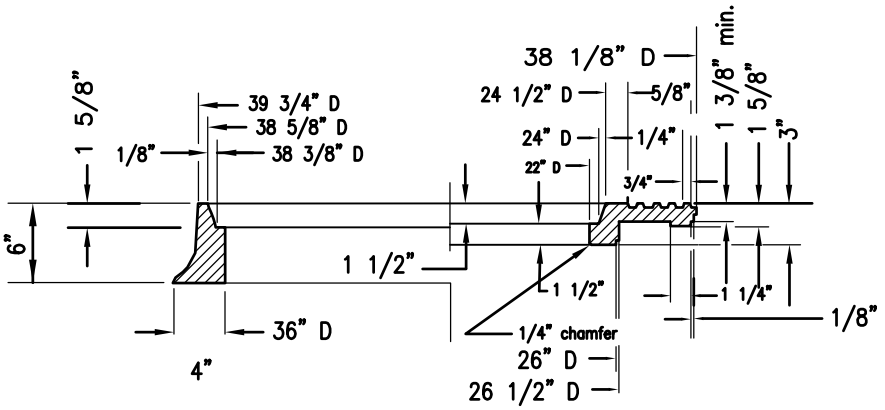
12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-02**



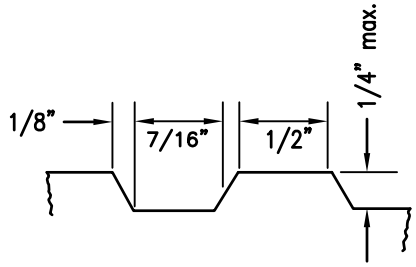
HALF PLAN FRAME & COVER



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		D. Gerschoffer	15-Dec

SAN DIEGO REGIONAL STANDARD DRAWING

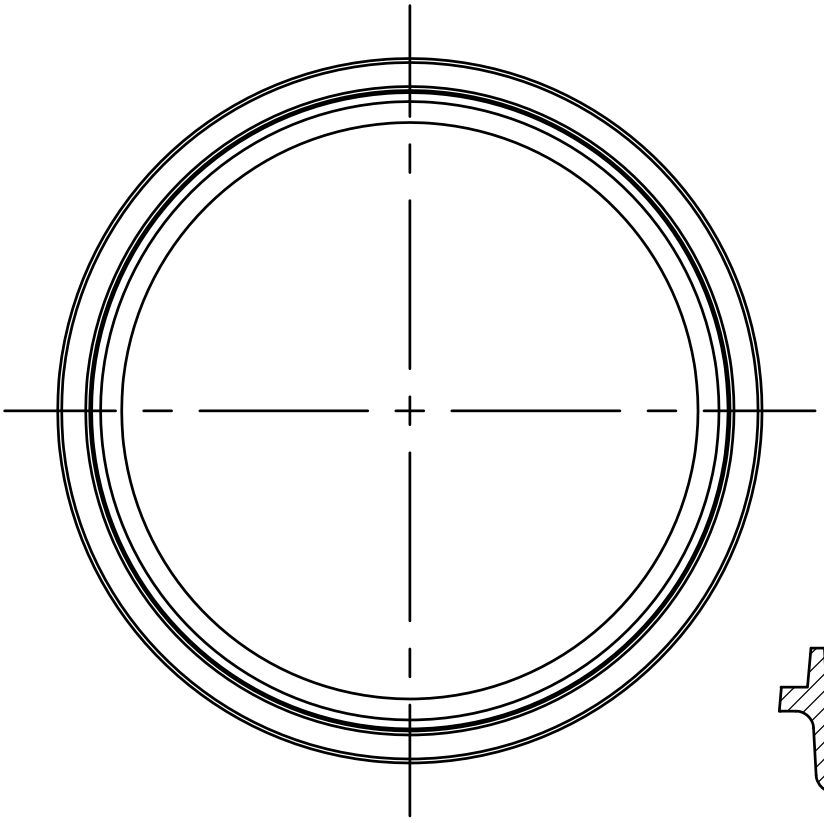
36" MANHOLE FRAME AND TWO CONCENTRIC COVERS HEAVY DUTY

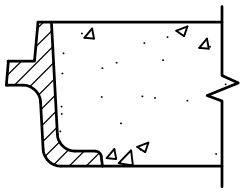
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

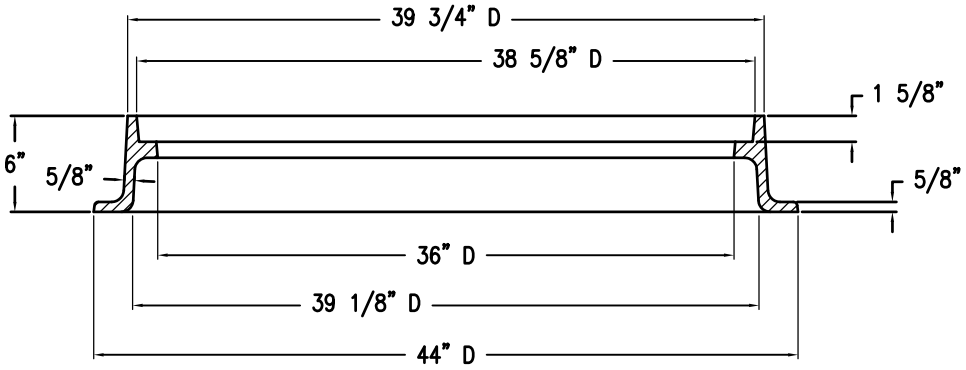
Chairperson R.C.E. 19246 Date

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
Updated		D. Gerschoffer	15-Dec

SAN DIEGO REGIONAL STANDARD DRAWING

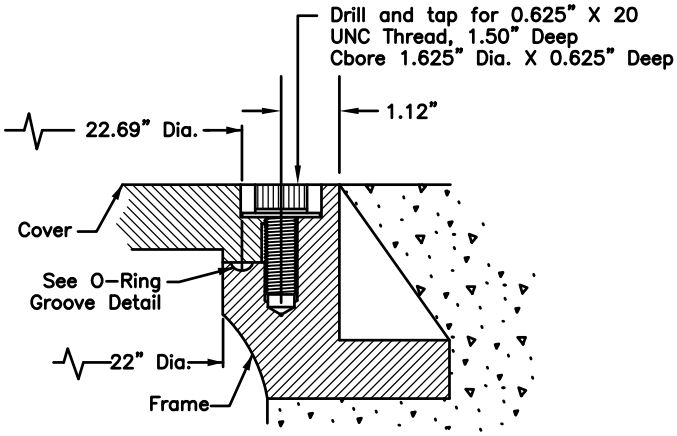
36" MANHOLE FRAME LIGHTWEIGHT - HEAVY DUTY

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

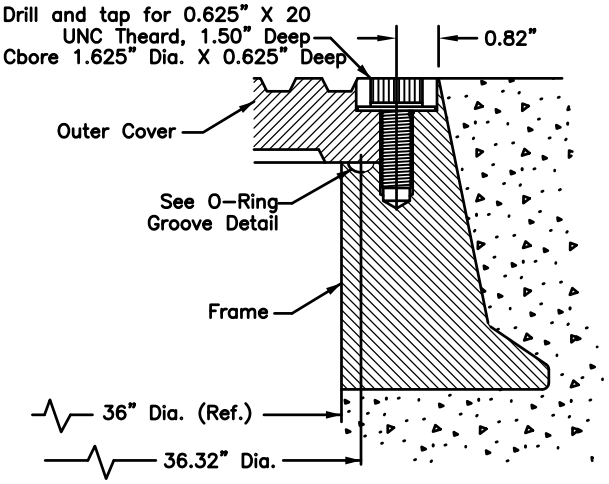
12/17/2015

Chairperson R.C.E. 19246 Date

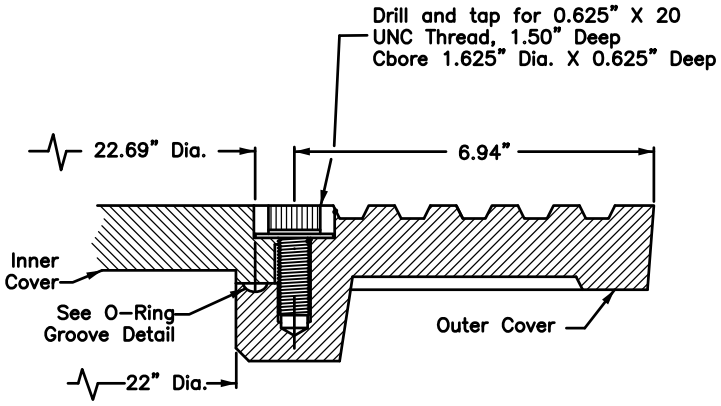
DRAWING NUMBER **M-03B**



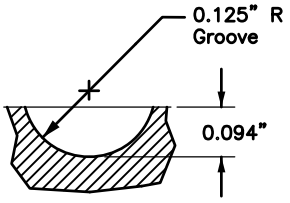
M-01 Detail:
COVER TO FRAME



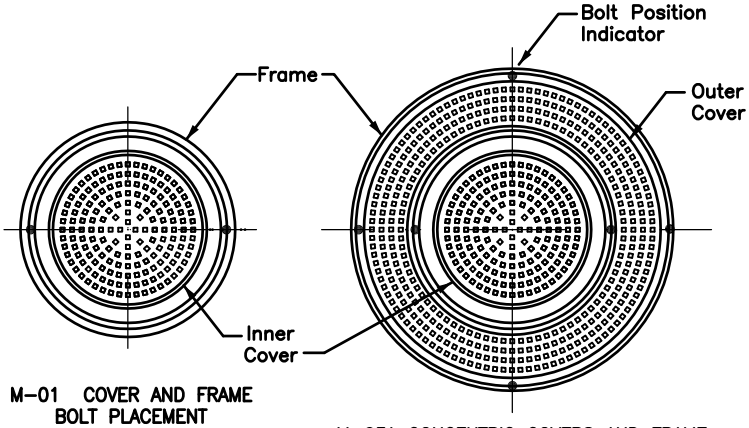
M-03A Detail:
OUTER COVER TO FRAME



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

SAN DIEGO REGIONAL STANDARD DRAWING

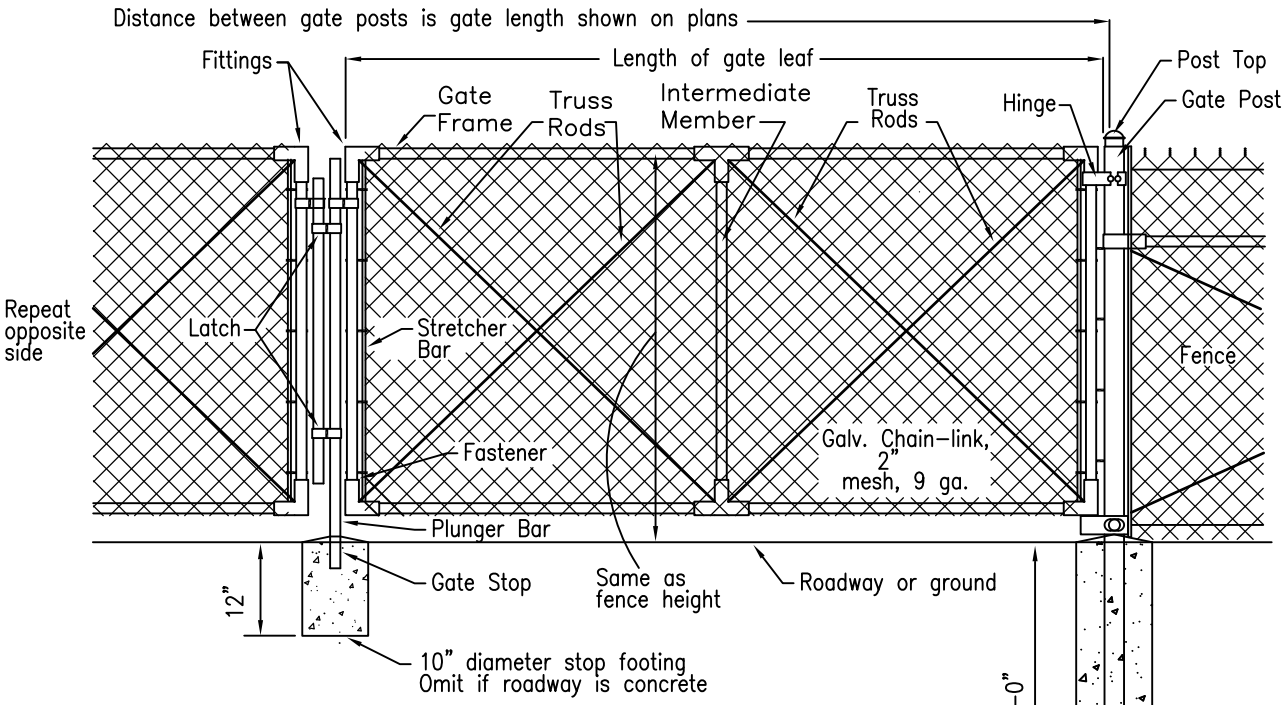
MANHOLE COVER - LOCKING DEVICE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-04**

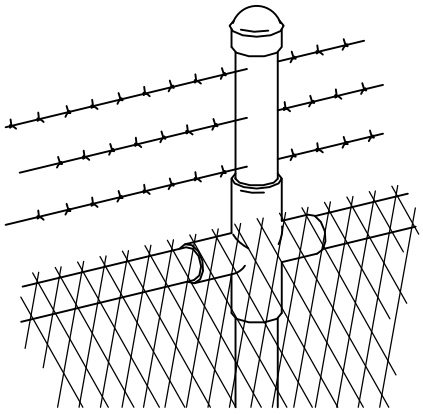


HALF ELEVATION DOUBLE SWING GATE

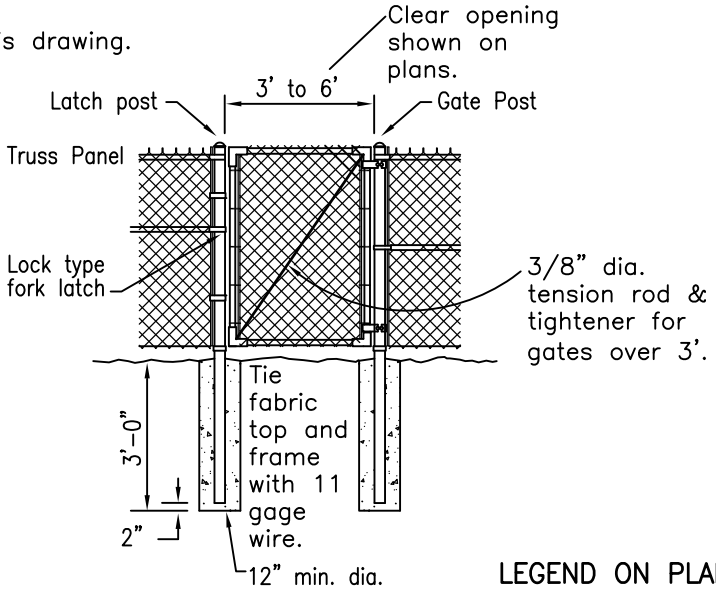
Diameter of footing = 4 times outside diameter of post.

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.



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

SAN DIEGO REGIONAL STANDARD DRAWING

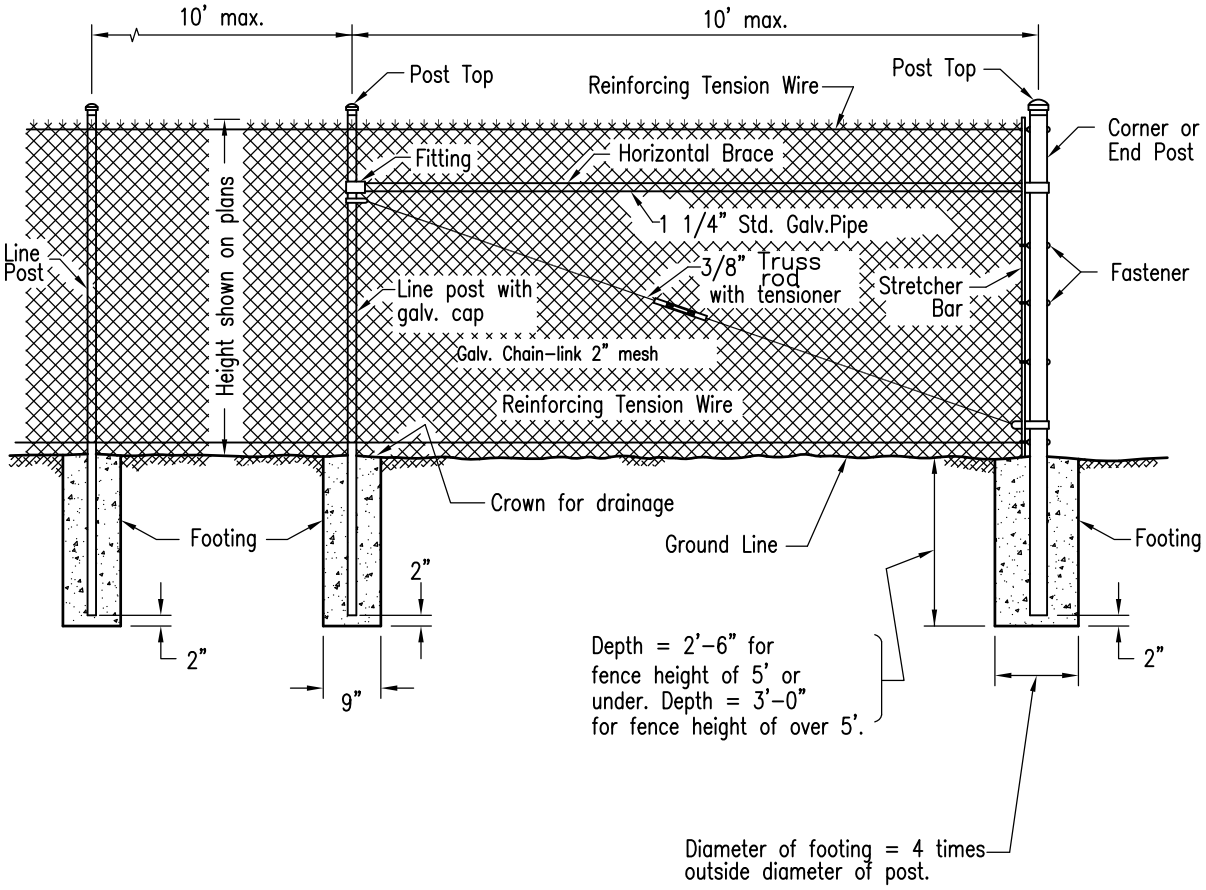
CHAIN LINK GATE

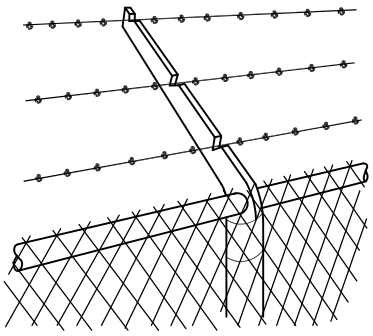
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-05**



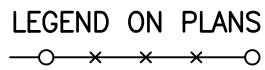


EXTENSION ARM AND BARBED WIRE

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

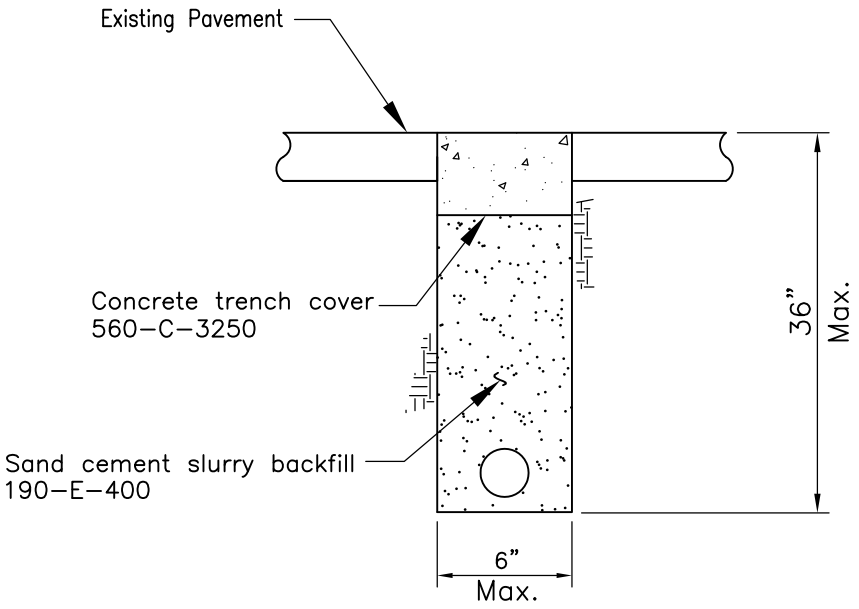
SAN DIEGO REGIONAL STANDARD DRAWING

CHAIN LINK FENCE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

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
TEXT	BUSS		2/11
REVISED		D. Gerschoffer	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

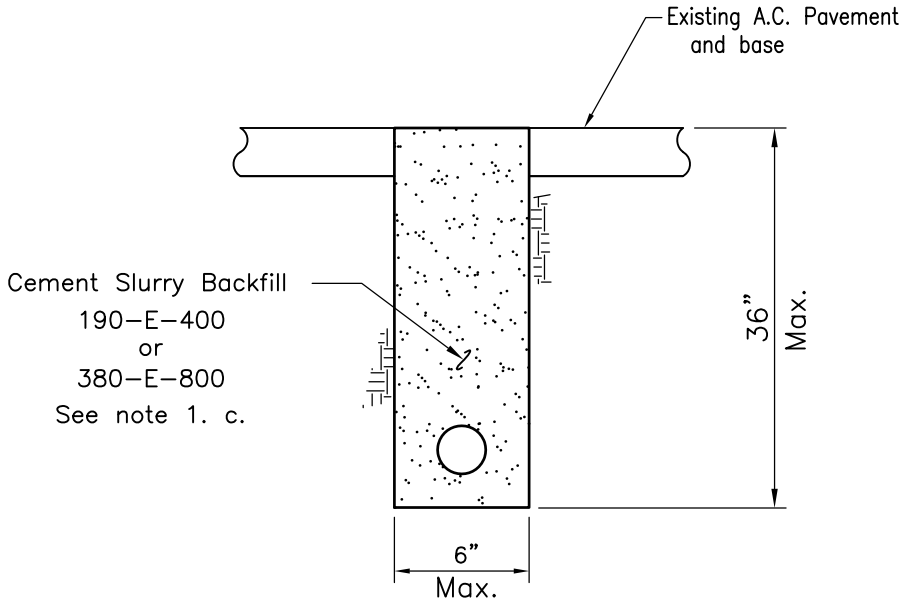
NARROW TRENCHES
TRENCHING & BACKFILLING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

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
TEXT	BUSS		2/11
REVISED		D. Gerschoffer	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

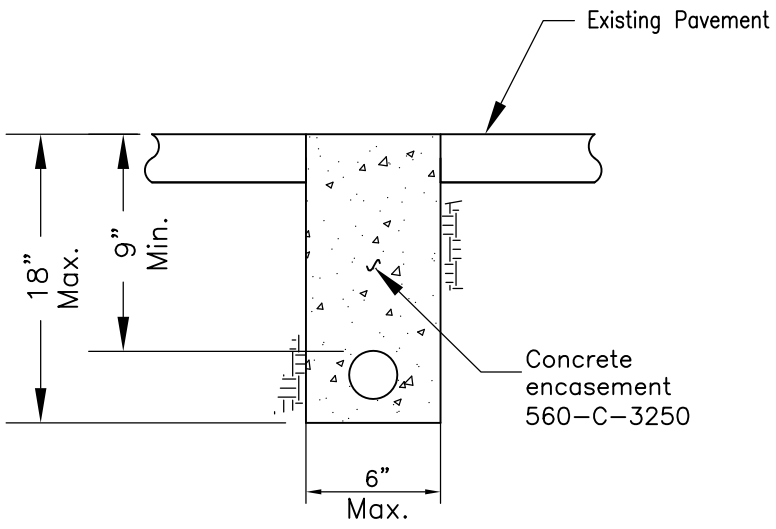
NARROW TRENCHES
TRENCHING & BACKFILLING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

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 trech 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 recommeded 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
TEXT	BUSS		2/11
REVISED		D. Gerschoffer	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

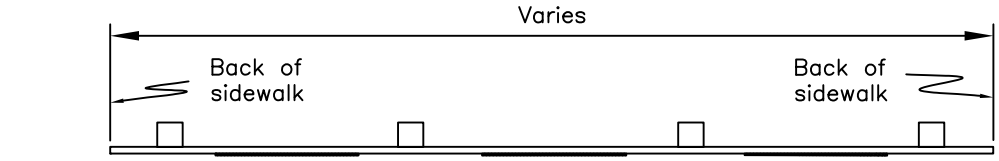
NARROW TRENCHES TRENCHING & BACKFILLING SHALLOW CONDUIT DEPTH

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

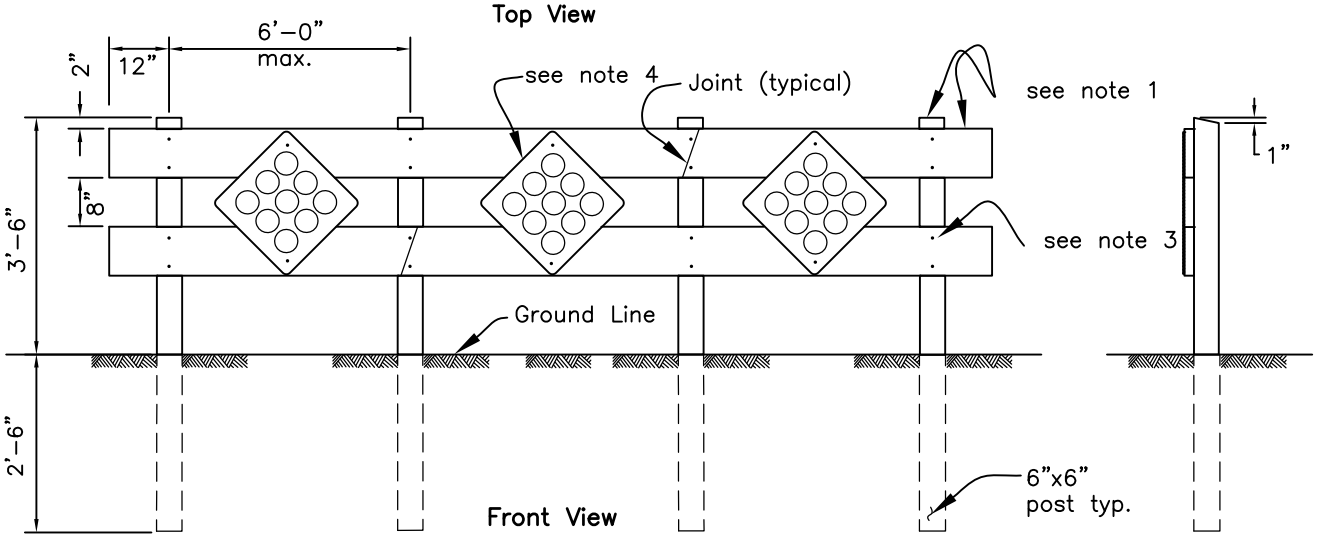
12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-08**

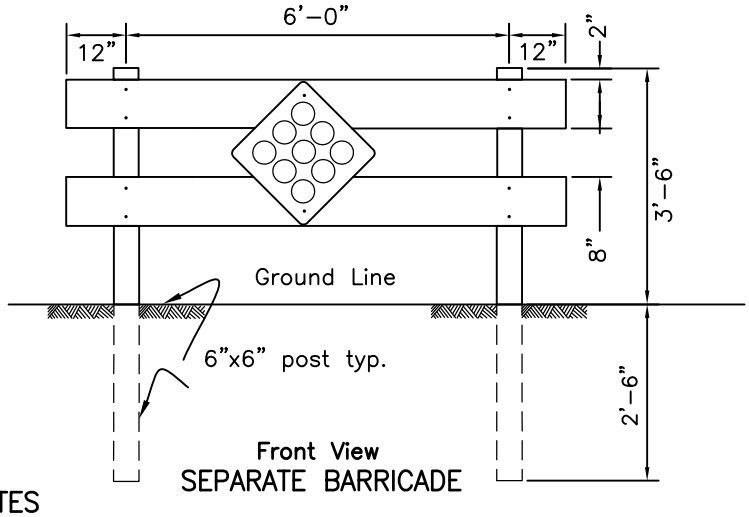


Top View



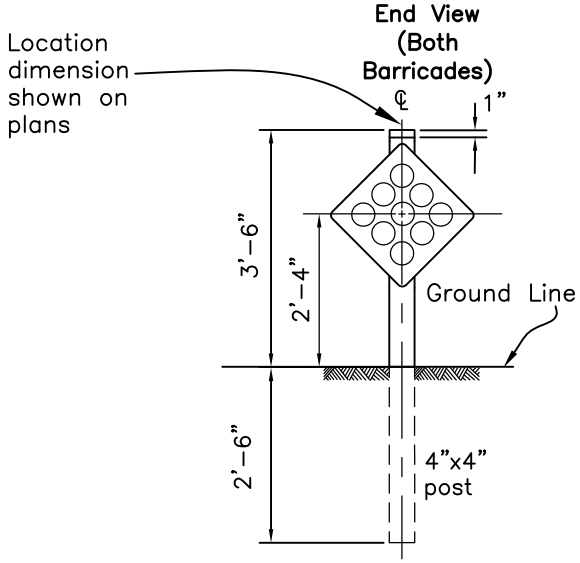
Front View

CONTINUOUS BARRICADE



Front View

SEPARATE BARRICADE



Front View

GUARD POST

NOTES

1. Posts to be structural grade redwood or pressure treated (with wood preservative) Douglas Fir, surfaced four sides; cross pieces to be 2"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. Reflector sign fastners to be 3/8" x 1 1/2" galvanized lag screws.
5. Reflector signs – California Type N. Size 18" x 18" – Yellow with nine (9) 3 1/4" reflectors (center mount).
   a. Reflectors shall be red for use on dead end streets, in all other cases they shall be yellow. Reflector material shall be plastic or other approved reflectorized material.
   b. Sign material shall be aluminum alloy 6061–T6 or 5052–H38, aluminum thickness 0.063".
6. 6' long hat section metal post per Caltrans Std. Plan A74–A optional for guard post.

LEGEND ON PLANS

Barricade

Guard Post

Revision	By	Approved	Date
TEXT	BUSS		2/11
REVISED		D. Gerschoffer	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

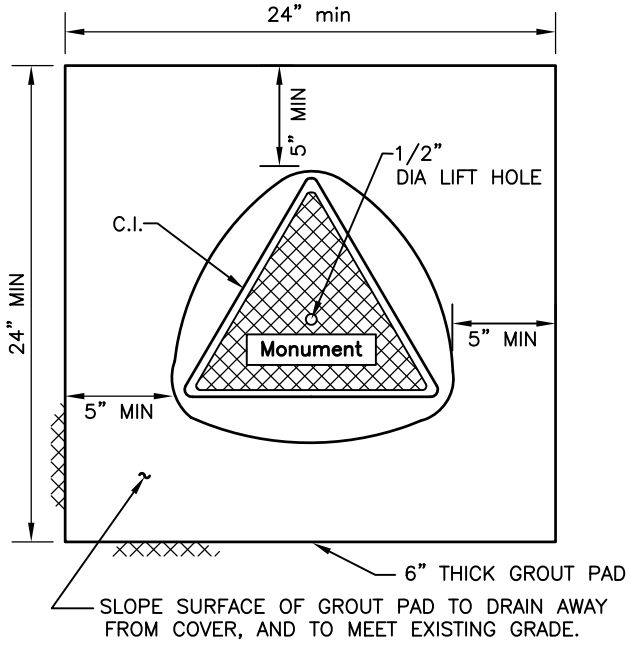
GUARD POST AND BARRICADE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

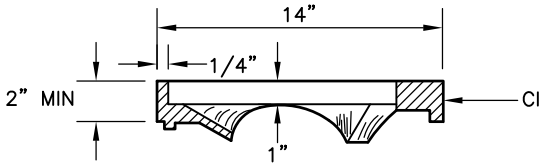
12/17/2015

Chairperson R.C.E. 19246 Date

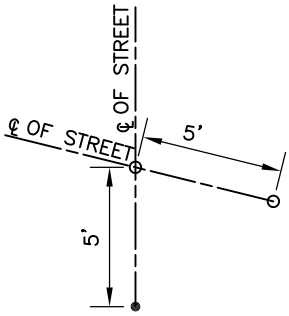
DRAWING NUMBER **M-09**



PLAN–IN UNPAVED AREA

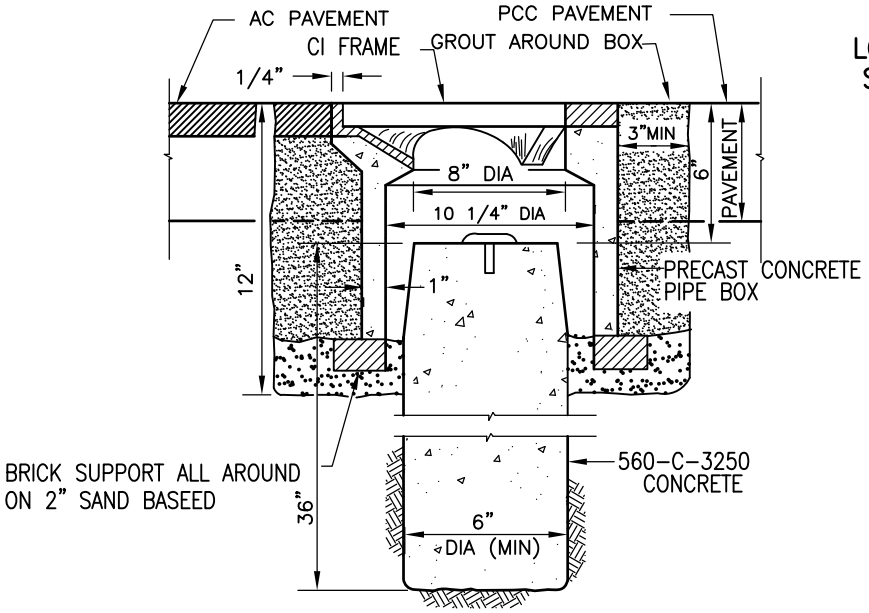


RISER RING



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



TYPICAL MONUMENT
SECTION IN PAVED AREA

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

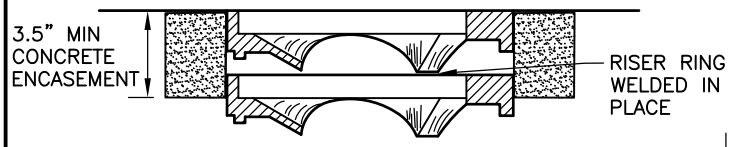
SAN DIEGO REGIONAL STANDARD DRAWING

STREET SURVEY MONUMENT

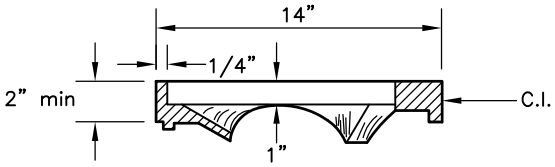
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

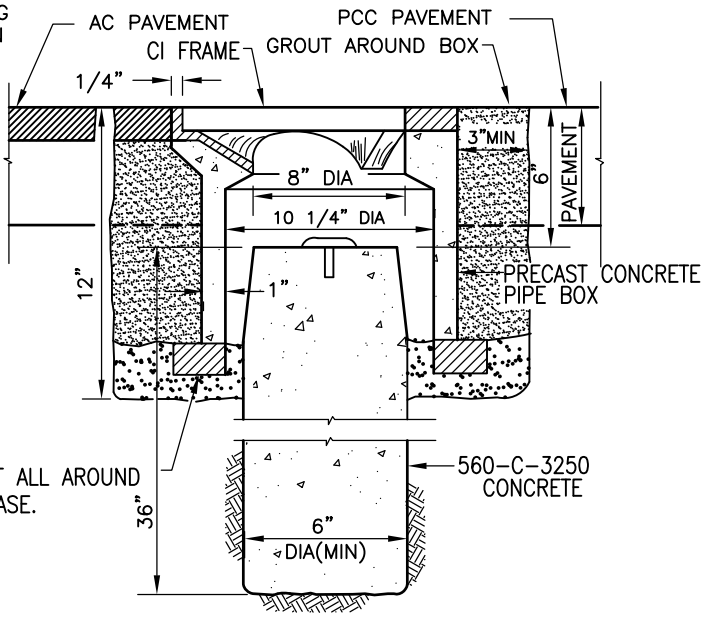
DRAWING NUMBER **M-10A**



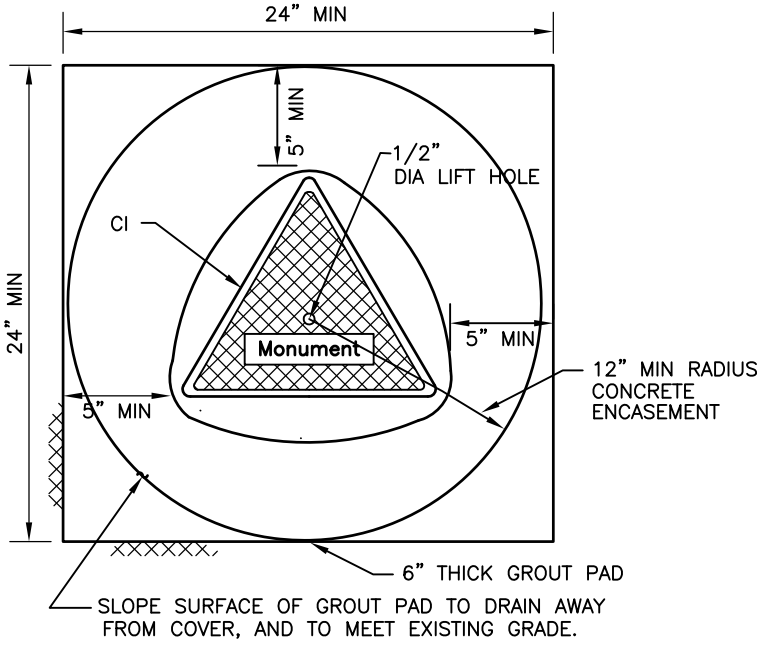
RISER RING WELDED TO EXISTING RING



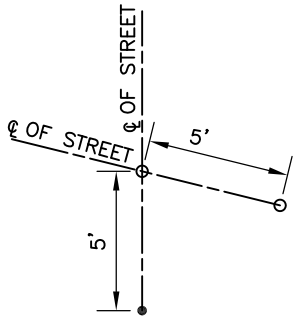
RISER RING



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

SAN DIEGO REGIONAL STANDARD DRAWING

STREET SURVEY MONUMENT OVERLAY ADJUSTMENT

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
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 SAN 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. ENCASE RISER RING IN FAST SETTING CONCRETE WITH A MINIMUM OF 3.5" THICHNESS. CONCRETE MUST OBTAIN 1600 PSI BEFORE TRAFFIC USE, AND HAVE A MINIMUM STRENGTH OF 3250 PSI.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Delete Metric		D. Gerschoffer	05/12
Note 4 Rev		D. Gerschoffer	02/14
Reviewed		T. Stanton	09/15

SAN DIEGO REGIONAL STANDARD DRAWING

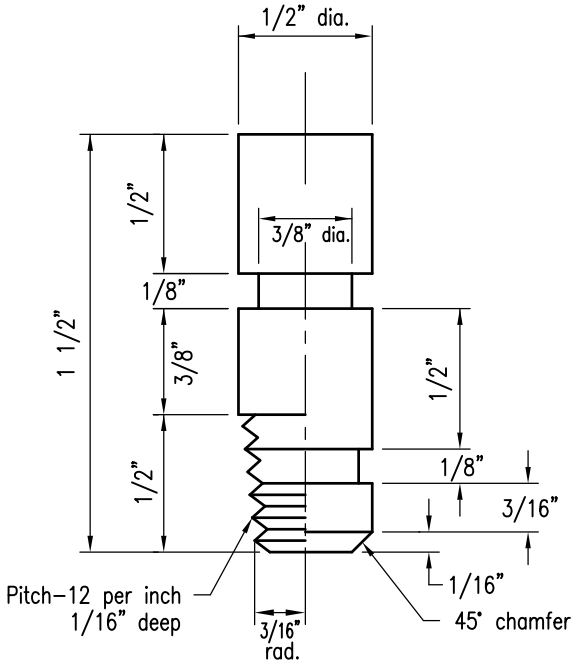
STREET SURVEY MONUMENT NOTES

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/2015

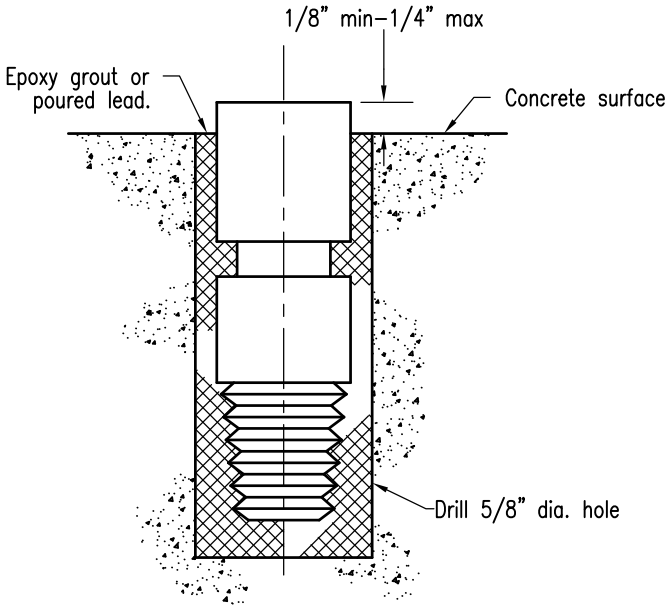
Chairperson R.C.E. 19246 Date

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 ±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
TEXT	BUSS		2/11
REVISED		D. Gerschoffer	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

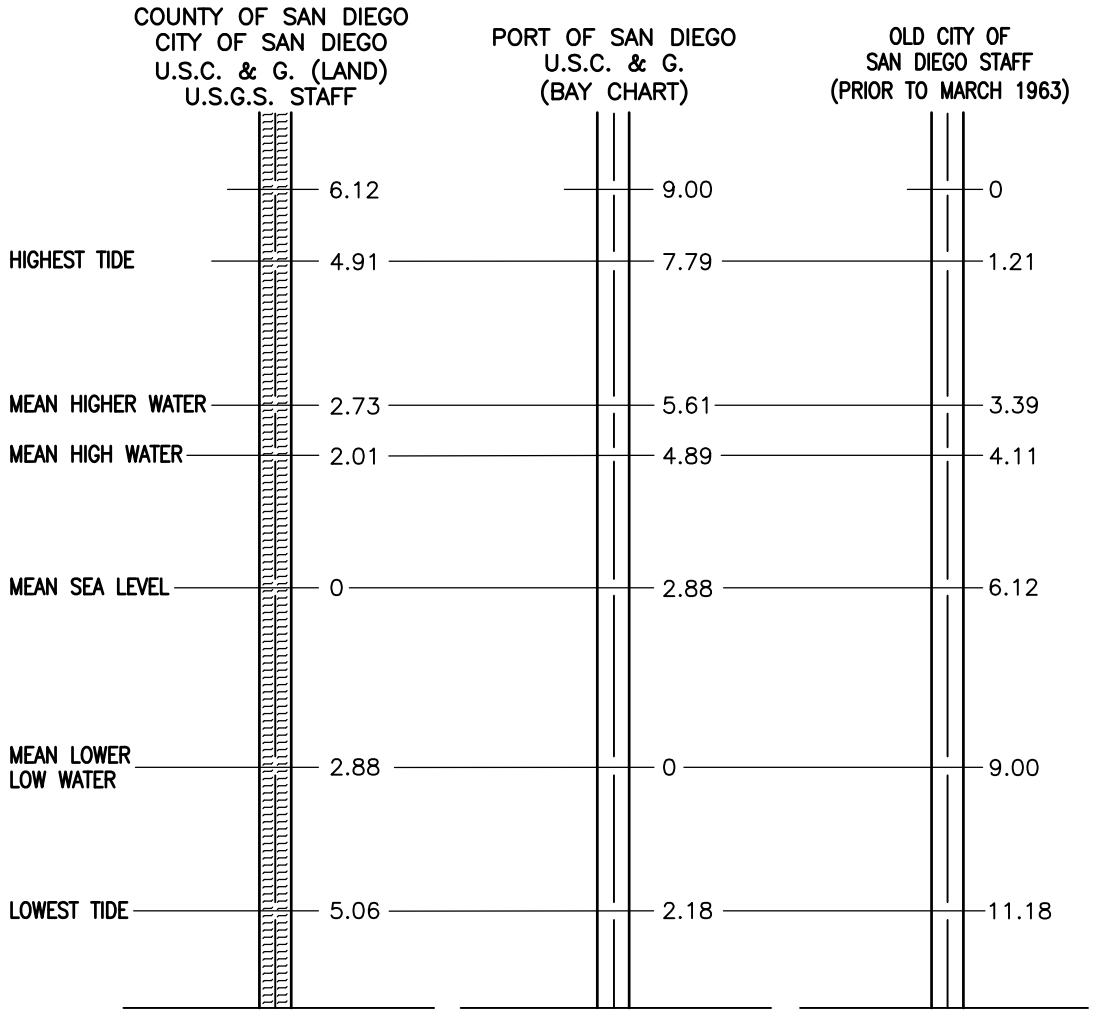
BENCH MARK - BRASS PLUG

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-11**



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
TEXT	BUSS		2/11
REVISED		D. Gerschoffer	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

DATUMS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-12**

FOUND MONUMENTS

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

SET MONUMENTS – Criteria for Locating and Character

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

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

a. An iron pipe of minimum two inch diameter not less than 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.

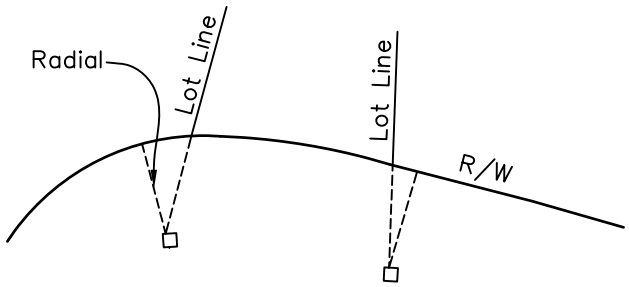
The following notes should be used in the legend where applicable.

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
TEXT	BUSS		2/11
REVISED		D. Gerschoffer	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

SURVEY MONUMENTS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-13**

WEIGHT

1	Gram	= 15.4324	grains	1	Grain	= 0.0648	g.
1	Gram	= 0.0353	oz.	1	Ounce	= 28.3495	g.
1	Kg.	= 2.2046	lb.	1	Pound	= 0.4536	kg.
1	Kg.	= 0.0011	ton	1	Ton	= 907.1848	kg.
1	Ton (met)	= 1.1023	ton	1	Ton	= 0.9072	ton (met)

AREA

1	Sq. cm.	= 0.1550	sq. in.	1	Sq. in.	= 6.4516	sq. cm.
1	Sq. m.	= 10.7639	sq. ft.	1	Sq. ft.	= 0.0929	sq. m.
1	Sq. m.	= 1.1960	sq. yd.	1	Sq. yd.	= 0.8361	sq. m.
1	Hectare	= 2.4710	acres	1	Acre	= 0.4047	hectare
1	Sq. km.	= 0.3861	sq. mile	1	Sq. mile	= 2.5900	sq. km.
1	Sq. km.	= 247.10	acres	1	Acre	= 0.0040	sq. km.

VOLUME

1	Cu. cm.	= 0.0610	cu. in.	1	Cu. in.	= 16.3872	cu. cm.
1	Cu. m.	= 35.3134	cu. ft.	1	Cu. ft.	= 0.0283	cu. m.
1	Cu. m.	= 1.3079	cu. yd.	1	Cu. yd.	= 0.7646	cu. m.

CAPACITY

1	Liter	= 61.0250	cu. in.	1	Cu. in.	= 0.0164	liter
1	Liter	= 0.0353	cu. ft.	1	Cu. ft.	= 28.3162	liters
1	Liter	= 0.2642	gal. (U.S)	1	Gal.	= 3.7853	liters
1	Liter	= 0.0284	Bu.	1	Bu.	= 35.2383	liters

LENGTH

1	MM.	= 0.0394	in.	1	In.	= 25.4000	mm.
1	CM.	= 0.3937	in.	1	In.	= 2.5400	cm.
1	Meter	= 3.2808	ft.	1	Ft.	= 0.3048	m.
1	Meter	= 1.0936	yd.	1	Yd.	= 0.9144	m.
1	Km.	= 0.6214	mile	1	Mile	= 1.6093	km.

METRIC PREFIX

MULTIPLE	PREFIX	MULTIPLE	PREFIX
1000000	mega	1/10	deci
1000	kilo	1/100	centi
100	hecto	1/1000	milli
10	deka	1/1000000	micro

TEMPERATURE

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

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

Revision	By	Approved	Date
TEXT	BUSS		2/11
REVISED		D. Gerschoffer	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

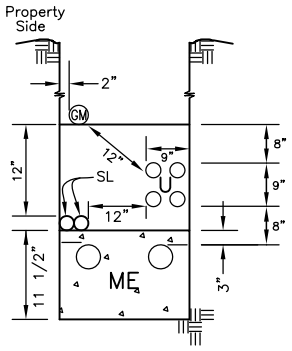
METRIC EQUIVALENTS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

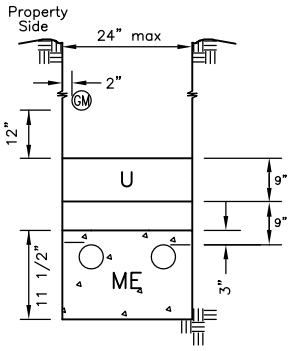
12/17/2015

Chairperson R.C.E. 19246 Date

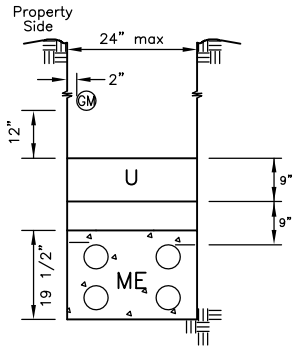
DRAWING NUMBER **M-14**



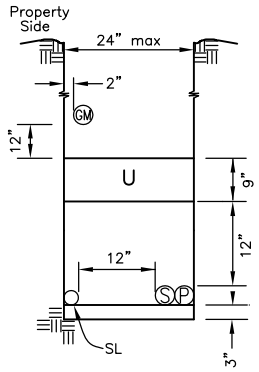
TYPE A



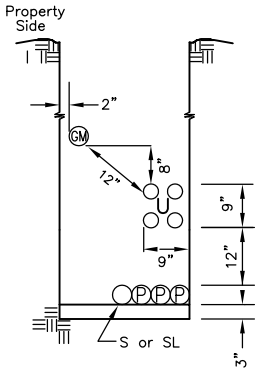
TYPE B



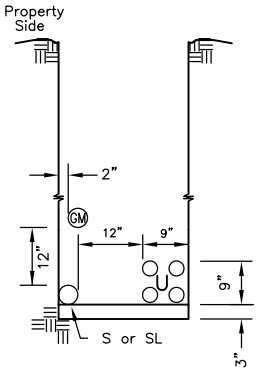
TYPE C



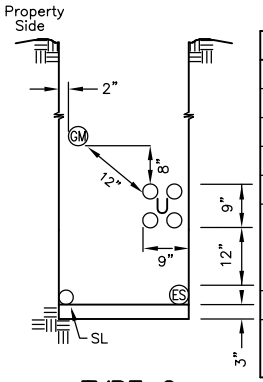
TYPE D



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	24"
	TELCO	24"

NOTES

1. All dimensions are typical unless otherwise noted.
2. Generally utilities are to be installed under the applicable specifications for the particular utility and the specifications of the owner Agency.
3. The location of utilities as shown by the Standard Drawing shall in no way violate existing codes or regulations applicable to individual utilities.
4. Installation of sewer and/or water utilities are not permitted in the joint 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
TEXT	BUSS		2/11
REVISED		D. Gerschoffer	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

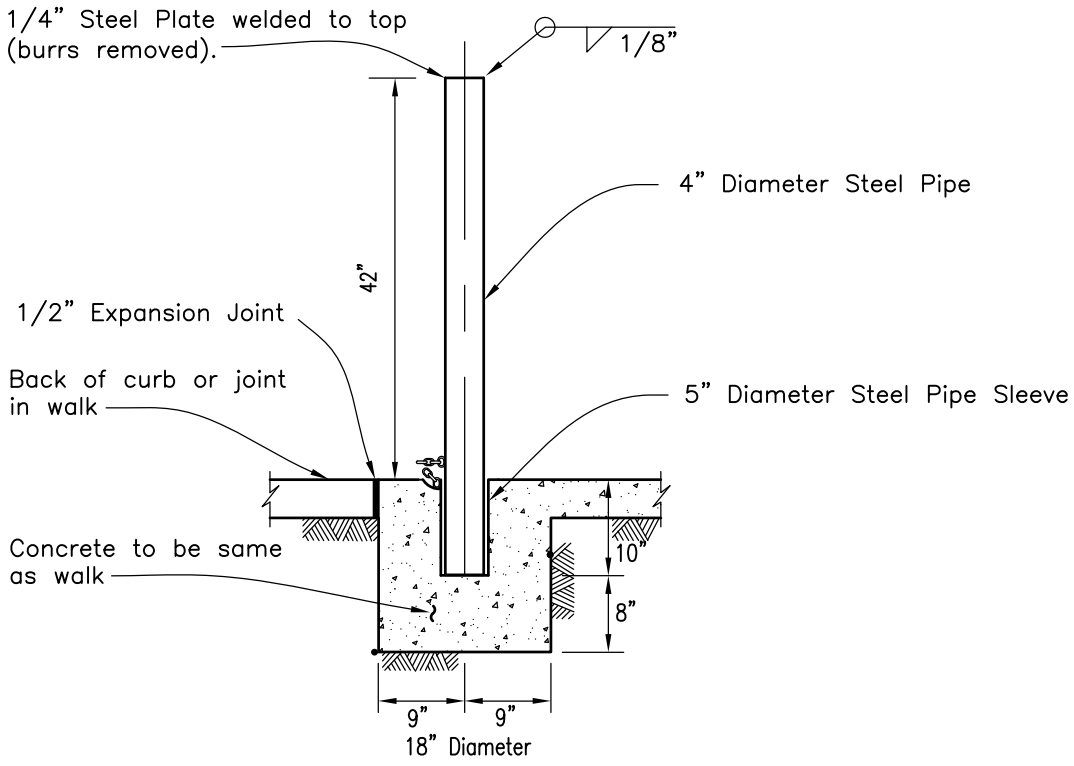
JOINT TRENCH LOCATIONS

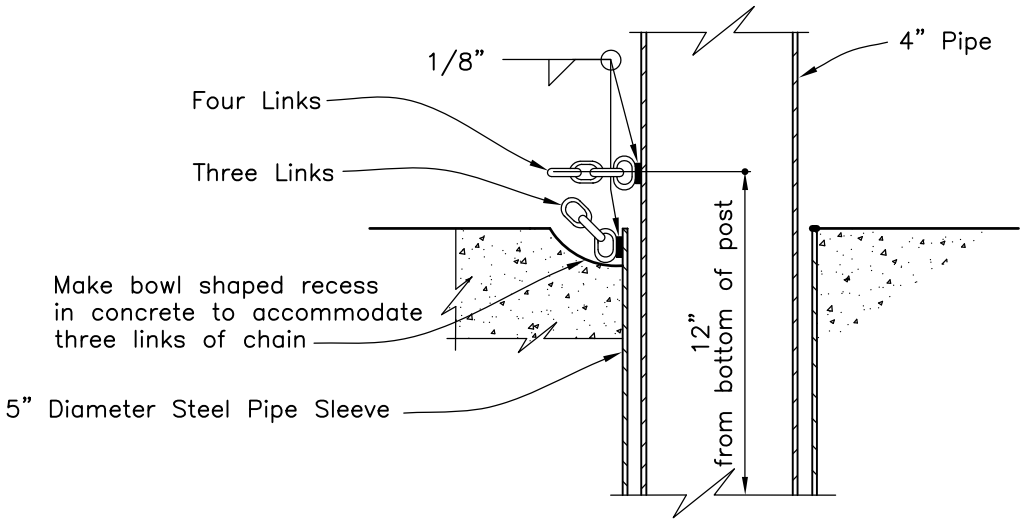
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

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 hat–dip galvanized after fabrication.

LEGEND ON PLANS

○

Revision	By	Approved	Date
TEXT	BUSS		2/11
REVISED		D. Gerschoffer	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

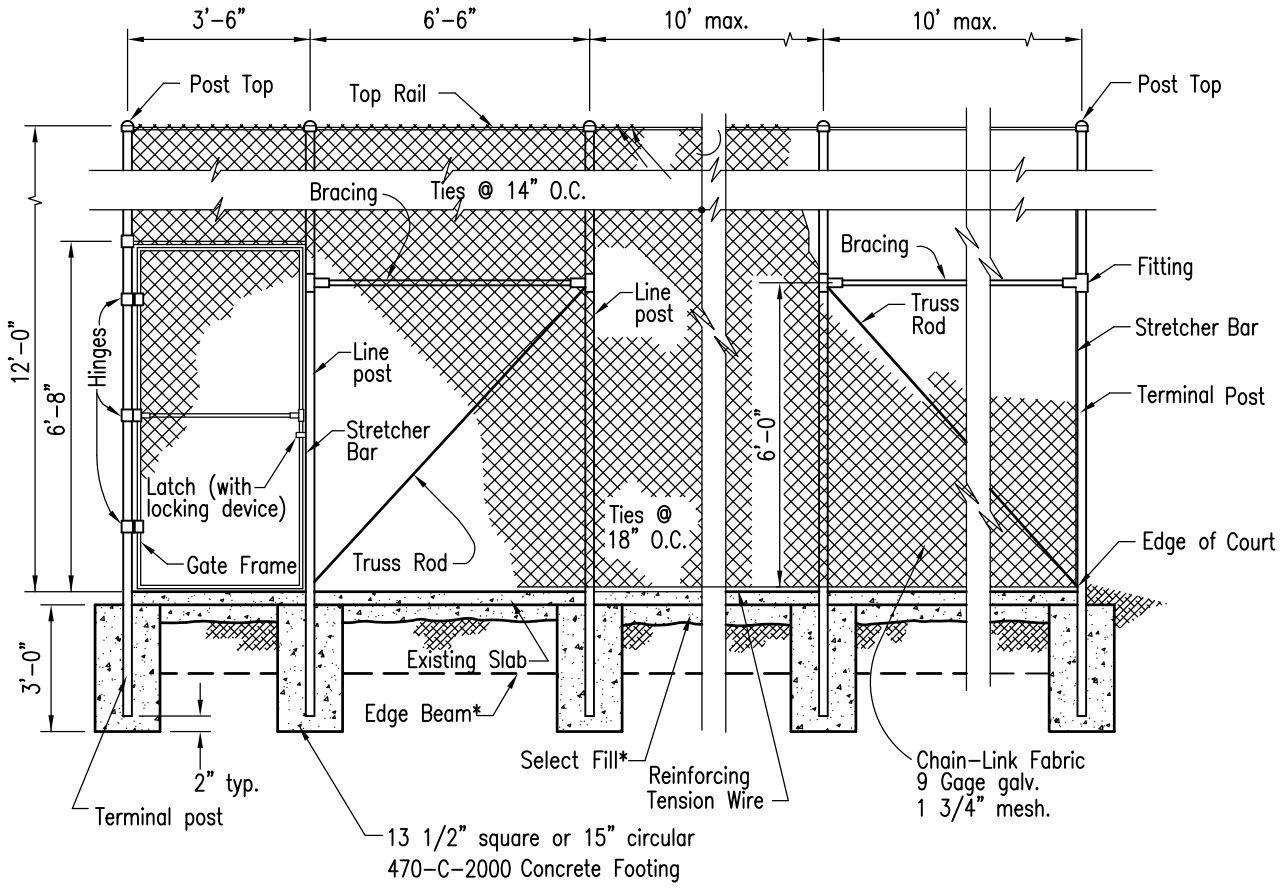
DEMOUNTABLE POST

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

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
TEXT	BUSS		2/11
REVISED		D. Gerschoffer	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

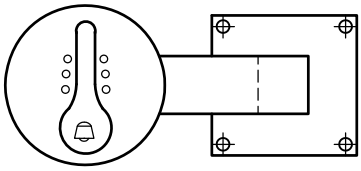
TENNIS COURT FENCE
CHAIN LINK

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

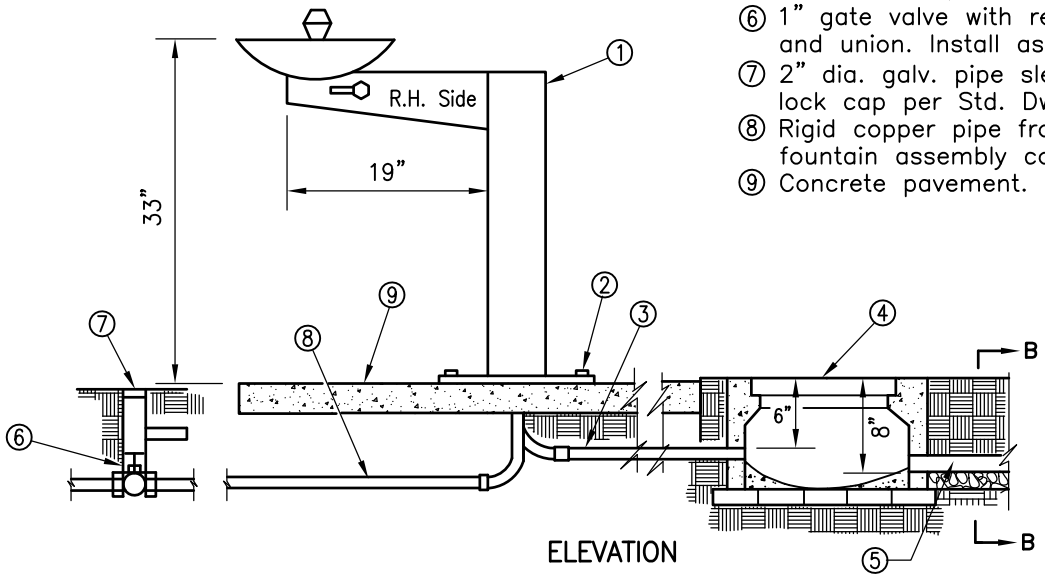
12/17/2015

Chairperson R.C.E. 19246 Date

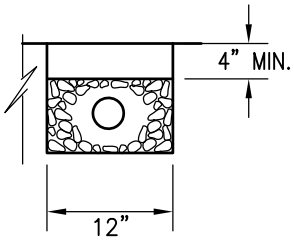
DRAWING NUMBER **M-17**



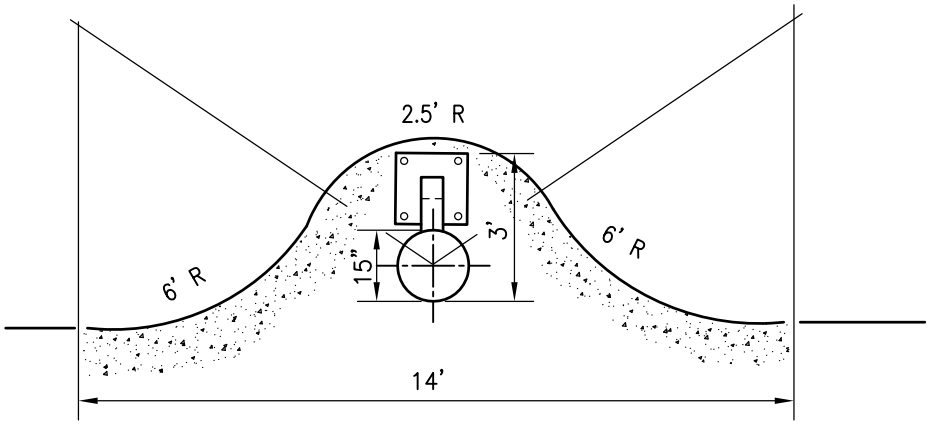
① Drinking Fountain – Haws model 3376 or approved equal.
② 3/8" dia. Expansion anchors with flat (recessed heads) screws 4 places.
③ 1 ¼" P.V.C. pipe with sweep 90° ell connection to fountain drain.
④ 9 ½" x 16" concrete yard box with hinged locking top (Brooks No. 3HL or equal) set on red brick foundation.
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.



ELEVATION



SECTION B–B



PLAN

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
REVIEWED		D. Gerschoffer	12/15

SAN DIEGO REGIONAL STANDARD DRAWING

DRINKING FOUNTAIN

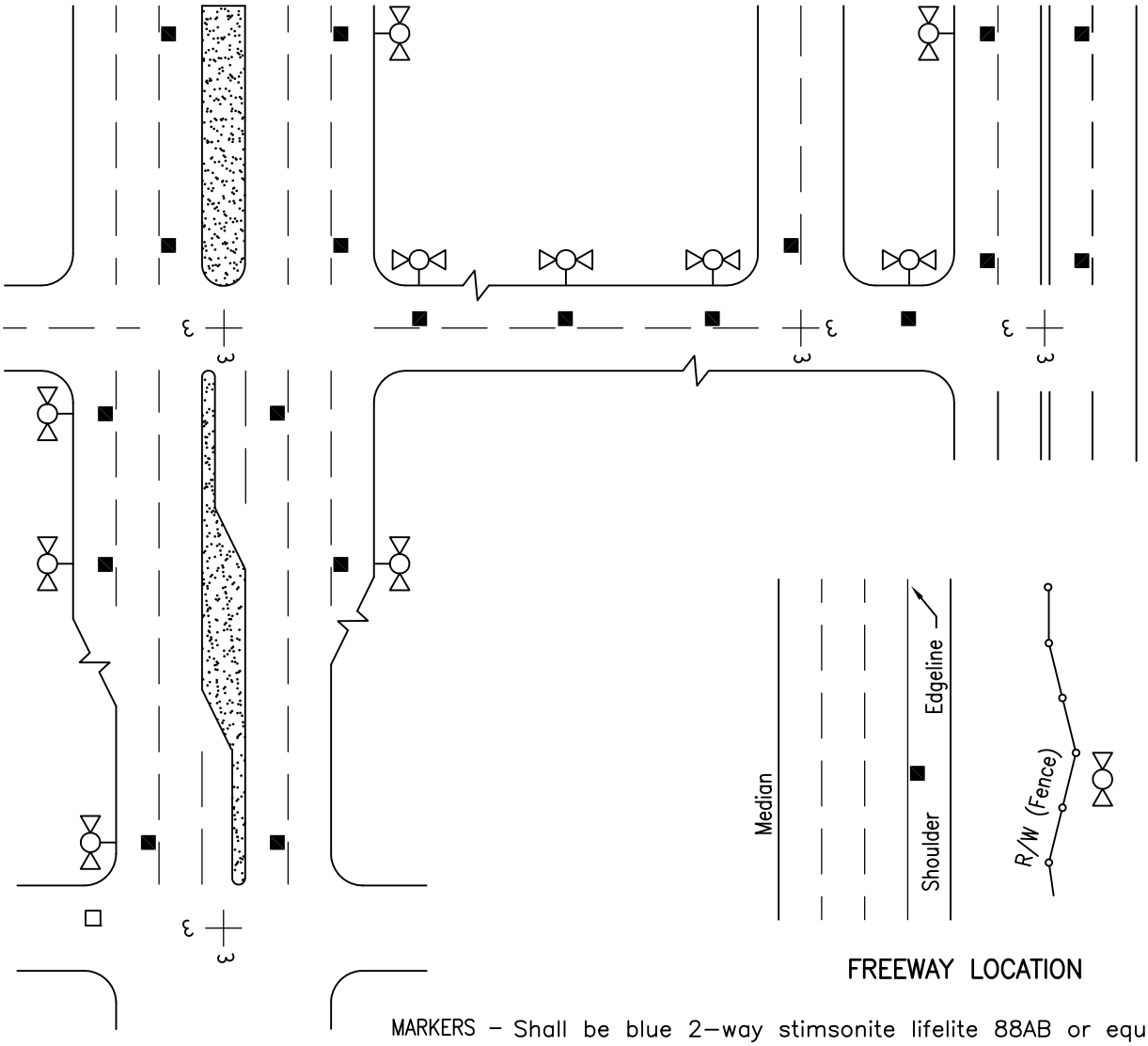
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

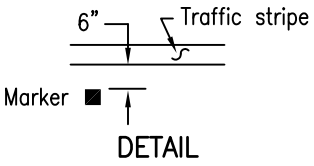
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-18**

STREET LOCATIONS



FREEWAY LOCATION



DETAIL

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
Updated		D. Gerschoffer	15–Dec

SAN DIEGO REGIONAL STANDARD DRAWING

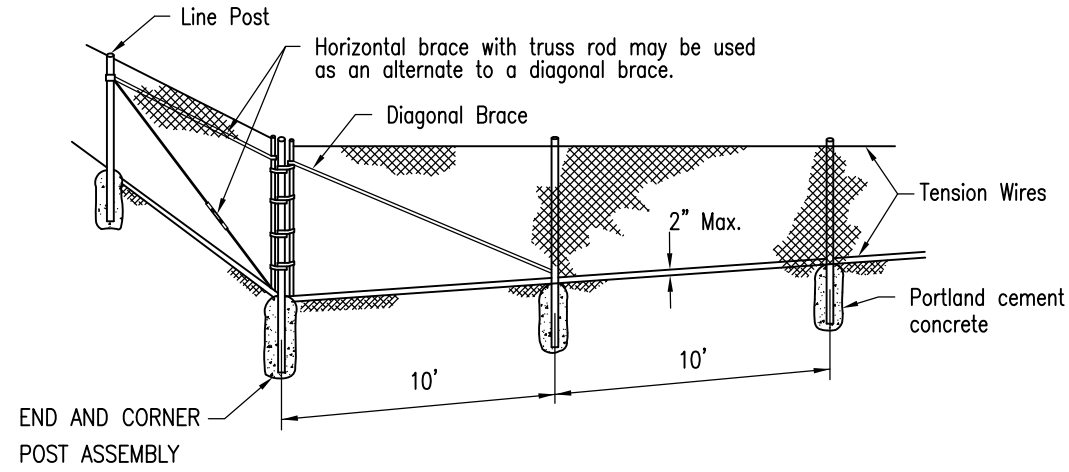
FIRE HYDRANT MARKERS

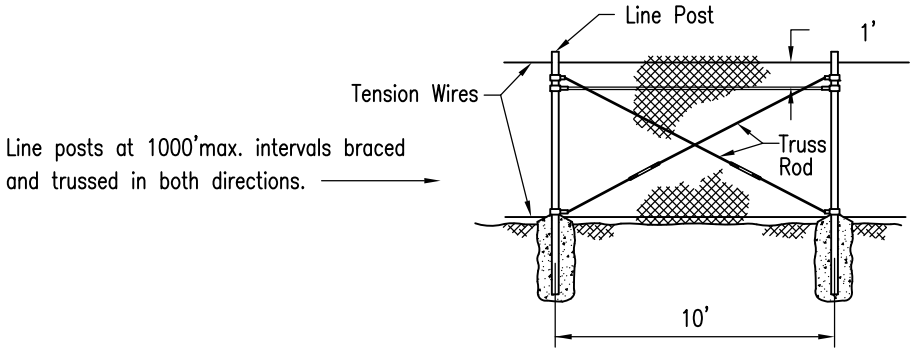
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

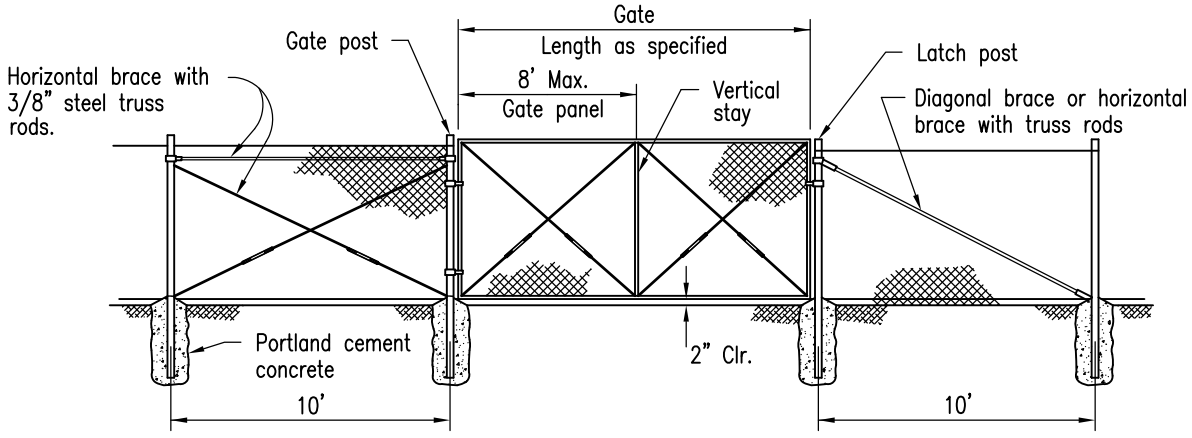
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-19**





LINE POST BRACING



GATE ASSEMBLY

Revision	By	Approved	Date
Updated		D. Gerschoffer	15-Dec

SAN DIEGO REGIONAL STANDARD DRAWING

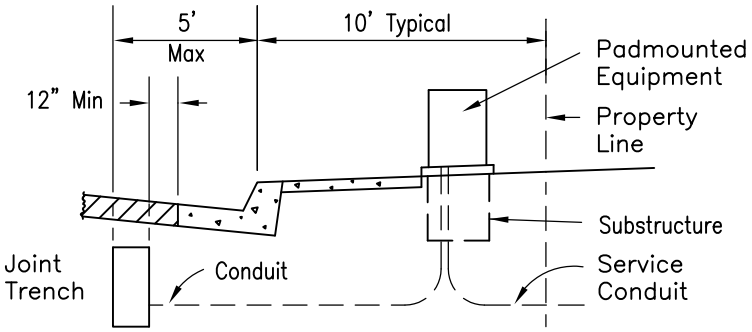
CHAIN LINK FENCE DETAILS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

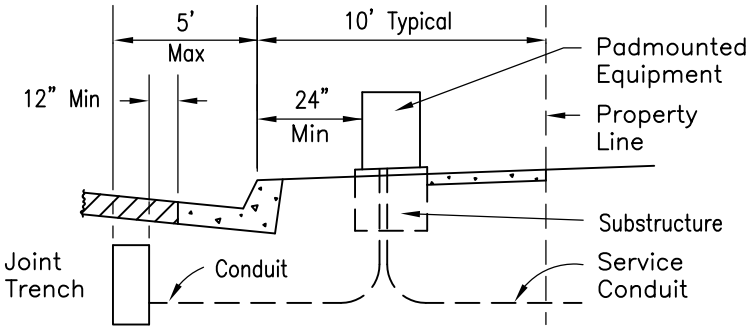
12/17/2015

Chairperson R.C.E. 19246 Date

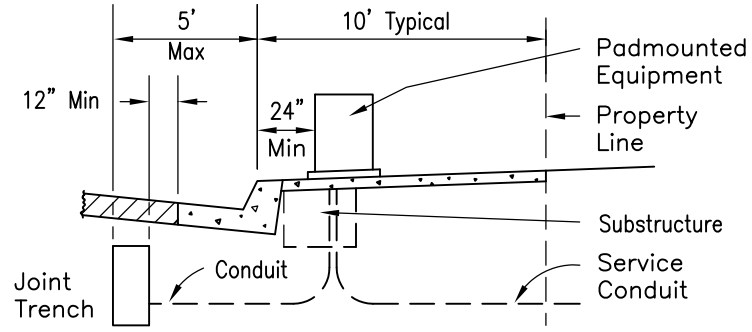
DRAWING NUMBER **M-20**



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
Updated		D. Gerschoffer	15–Dec

SAN DIEGO REGIONAL STANDARD DRAWING

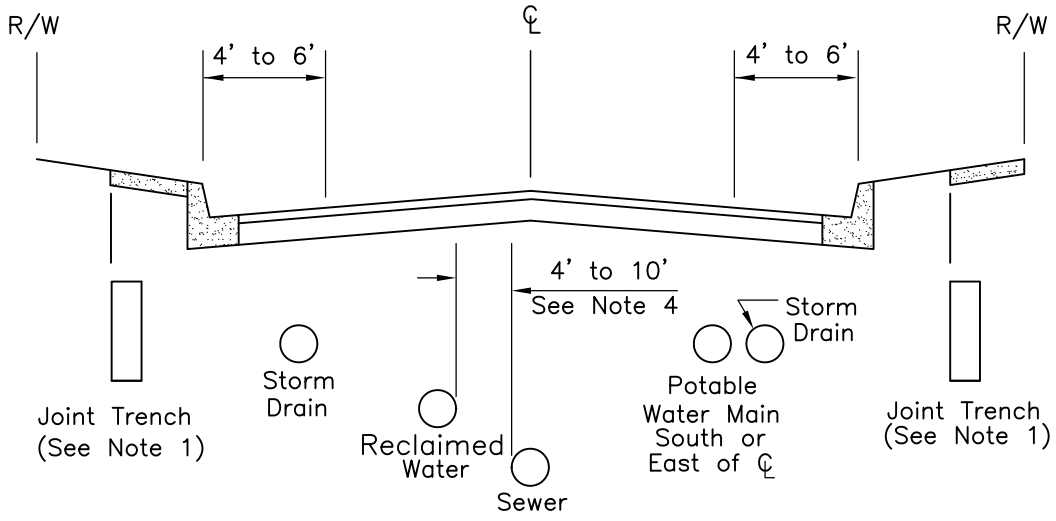
UNDERGROUND TYPICAL LOCATION CONVERSION/REPLACEMENT/ UPGRADE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

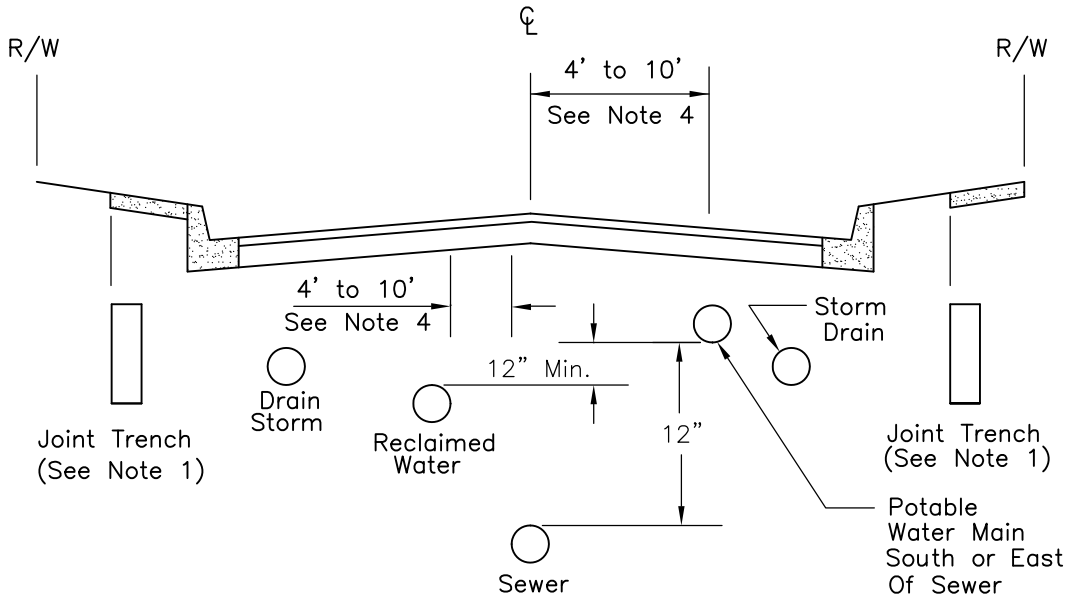
12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-21**



MAJOR STREET



TYPICAL STREET
NEW CONSTRUCTION

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
Updated		D. Gerschoffer	15–Dec

SAN DIEGO REGIONAL STANDARD DRAWING

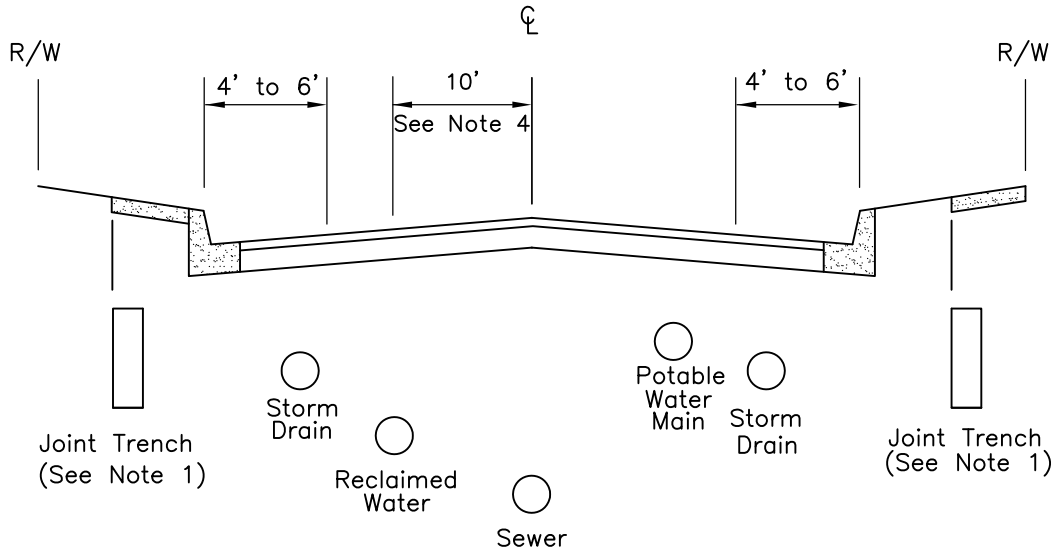
UTILITY LOCATIONS
LOCAL AND MAJOR STREETS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

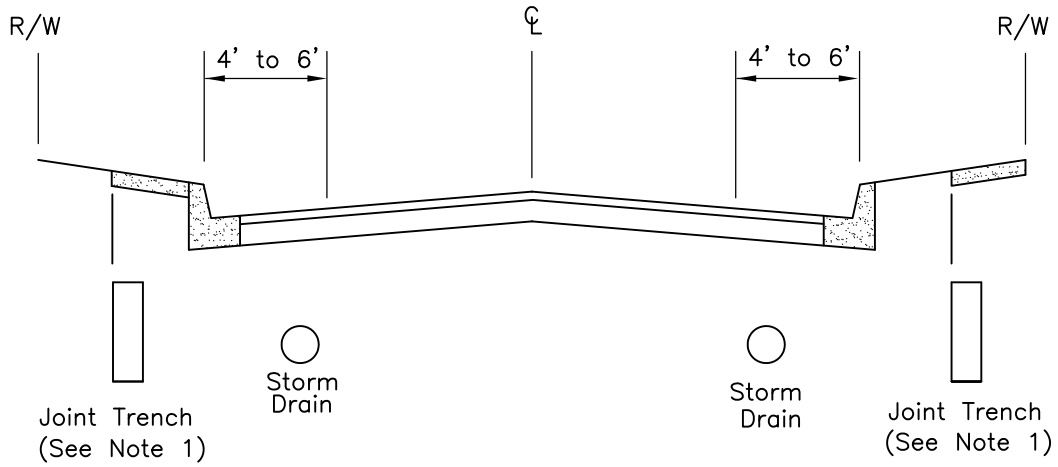
12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-22**



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
Updated		D. Gerschoffer	15–Dec

SAN DIEGO REGIONAL STANDARD DRAWING

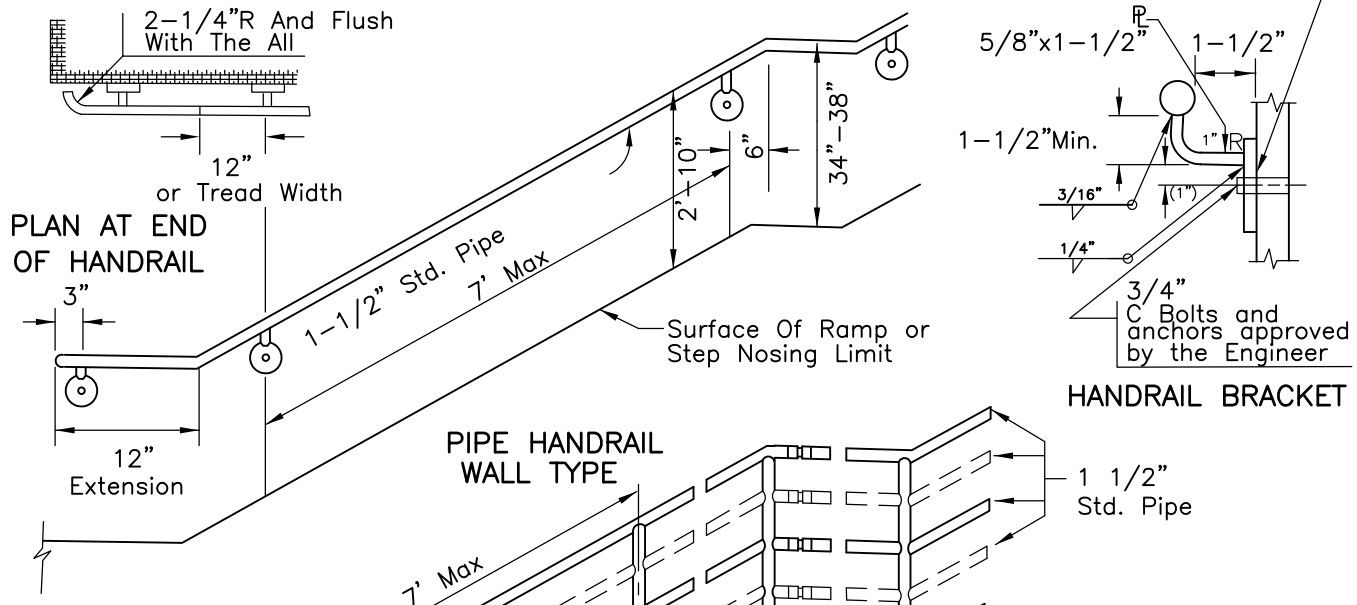
UTILITY LOCATIONS PRIME ARTERIALS AND EXPRESSWAYS

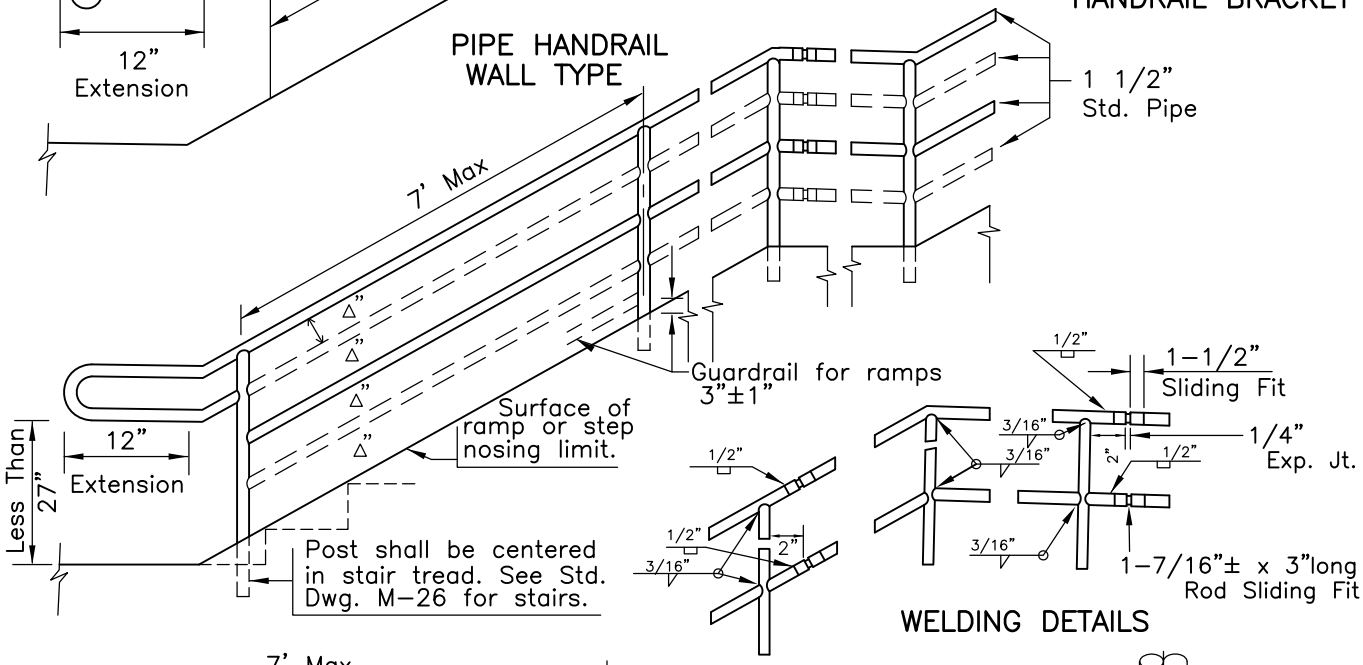
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

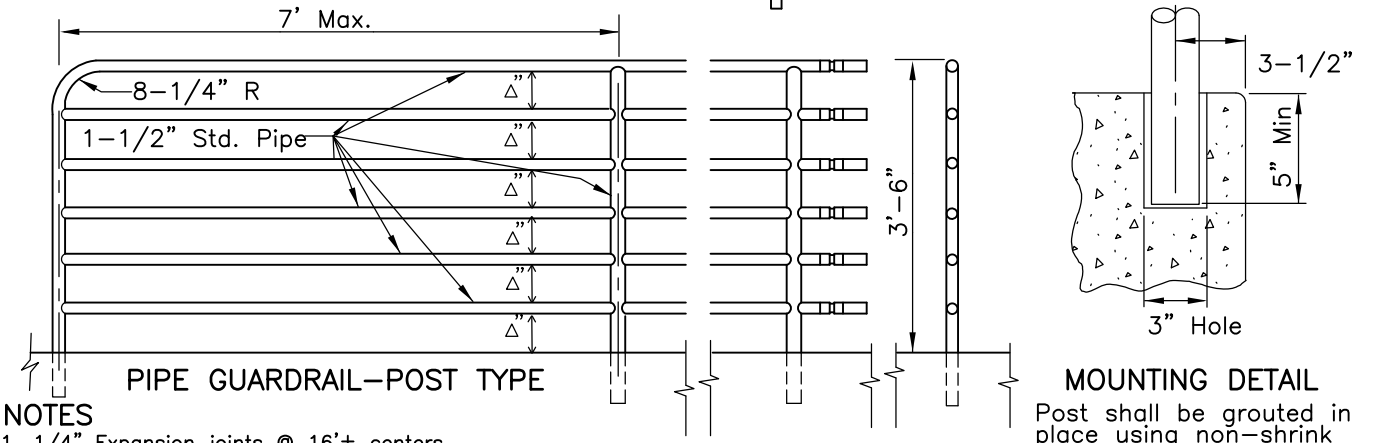
12/17/2015

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△ = 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
Updated		D. Gerschoffer	15–Dec

SAN DIEGO REGIONAL STANDARD DRAWING

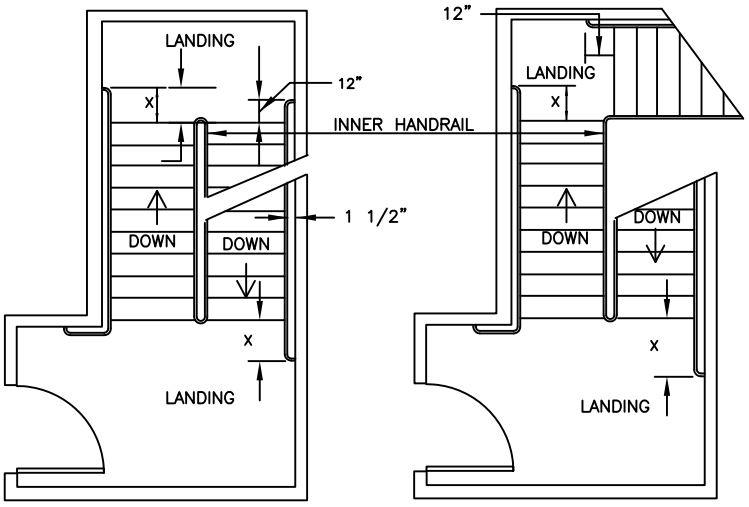
PEDESTRIAN PROTECTIVE RAILING DETAILS NO. 1

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

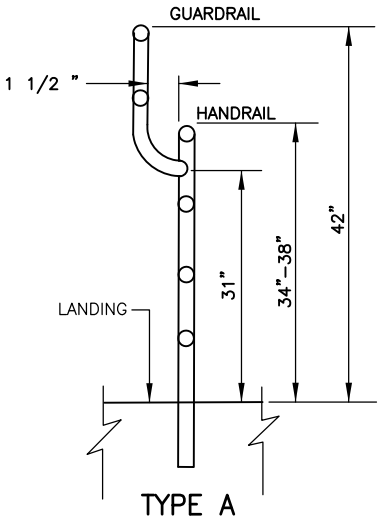
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-24**

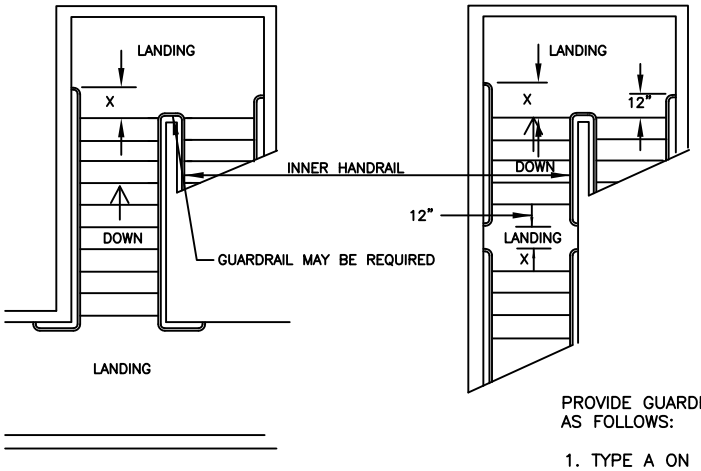


X IS THE MINIMUM HANDRAIL EXTENSION OF 12 INCHES PLUS THE WIDTH OF ONE TREAD AT EACH BOTTOM RISER.

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.



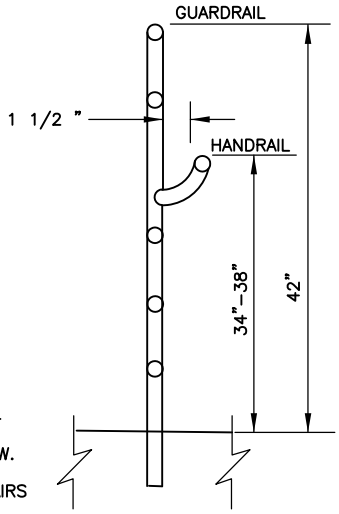
TYPE A
GUARDRAIL EXTENSION



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
Updated		D. Gerschoffer	15–Dec

SAN DIEGO REGIONAL STANDARD DRAWING

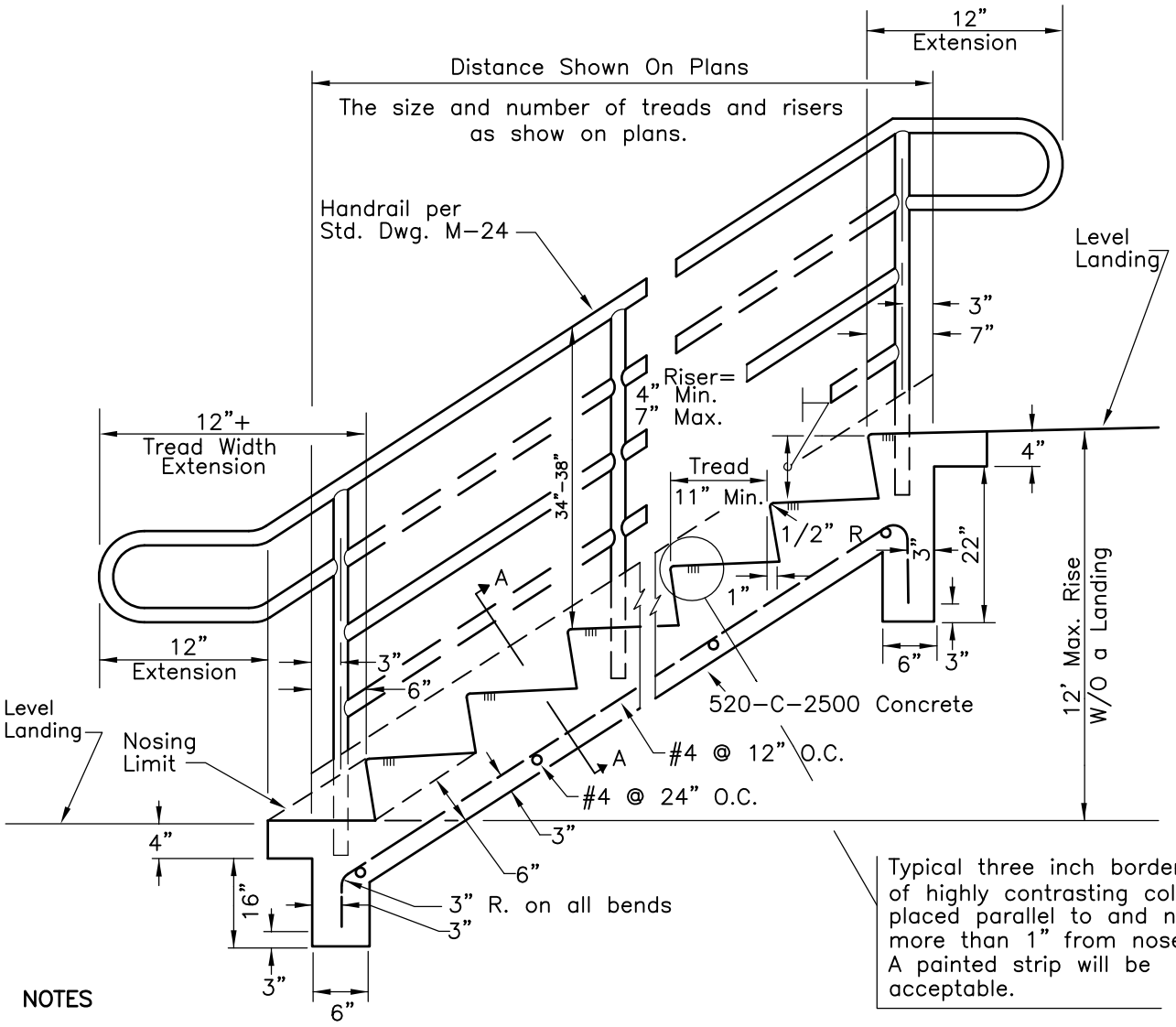
PEDESTRIAN PROTECTIVE RAILING DETAILS NO. 2

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

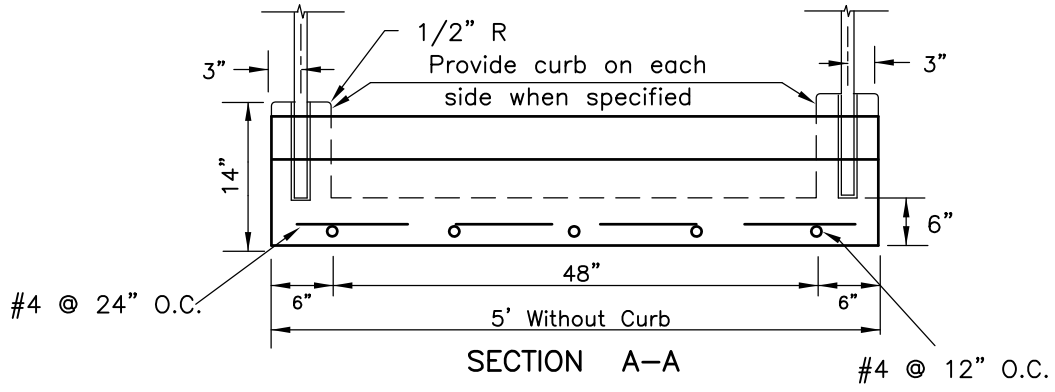
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-25**



NOTES

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



Revision	By	Approved	Date
Updated		D. Gerschoffer	15-Dec

SAN DIEGO REGIONAL STANDARD DRAWING

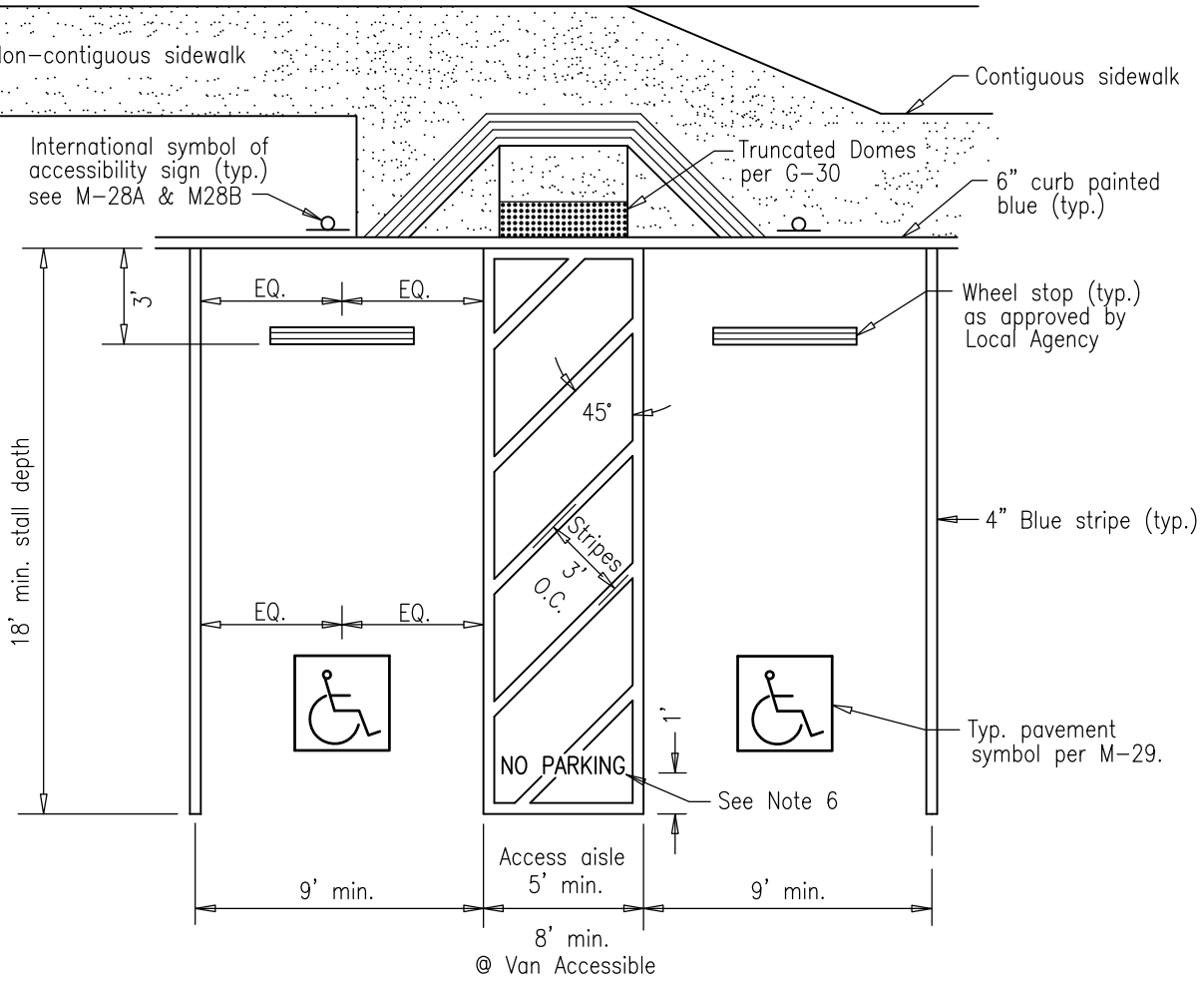
CONCRETE STEPS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

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
Updated		D. Gerschoffer	15–Dec

SAN DIEGO REGIONAL STANDARD DRAWING

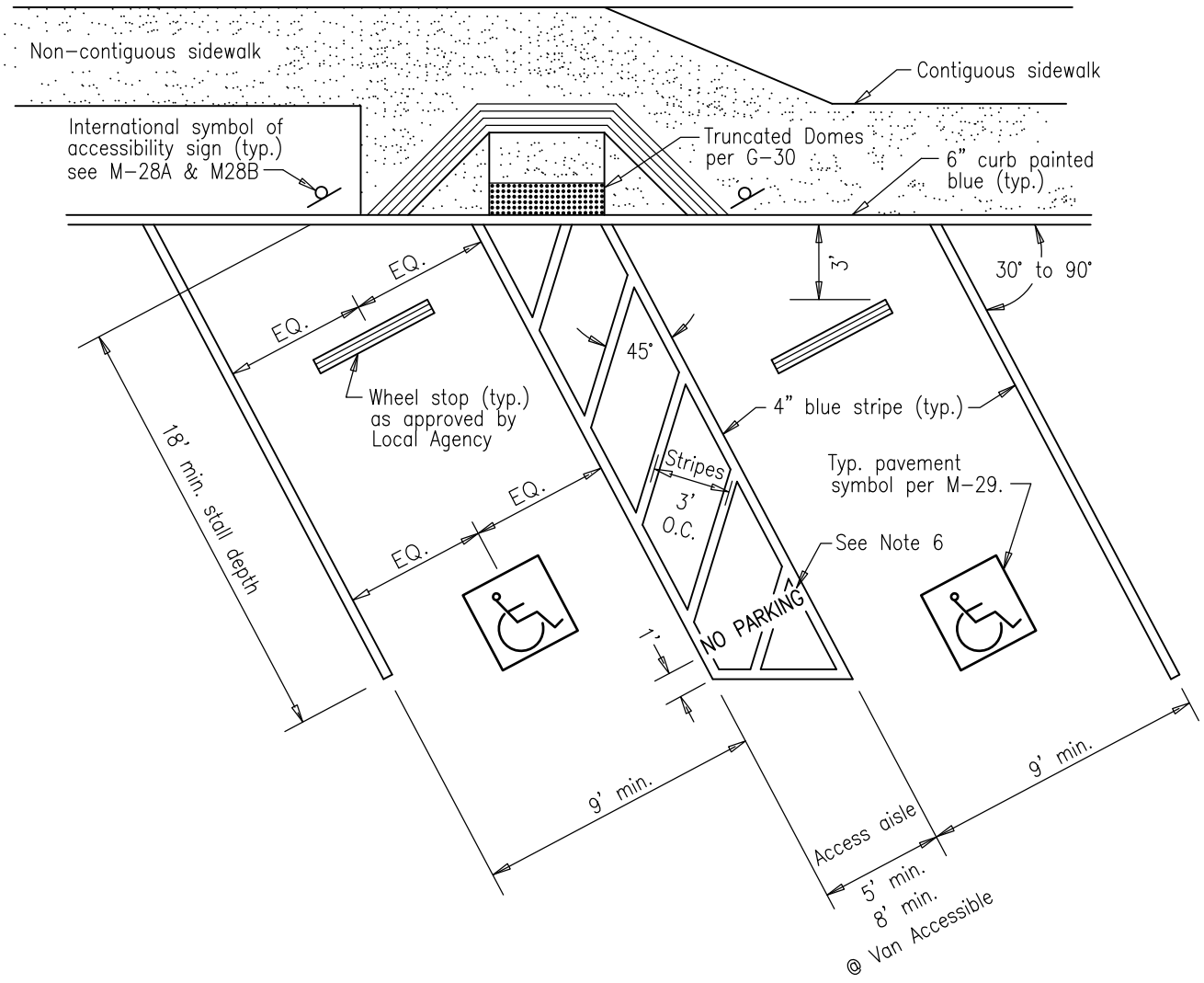
DISABLED PARKING STALL(S)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

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
Updated		D. Gerschoffer	15-Dec

SAN DIEGO REGIONAL STANDARD DRAWING

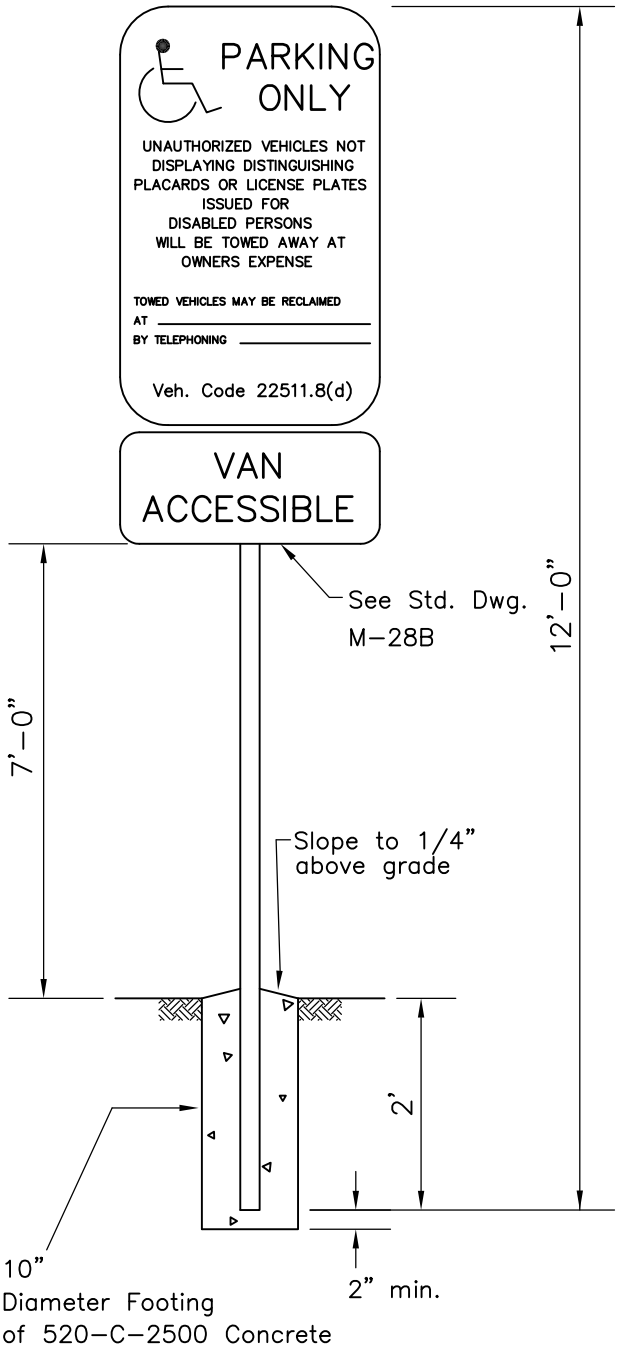
DIAGONAL DISABLED PARKING STALL(S)

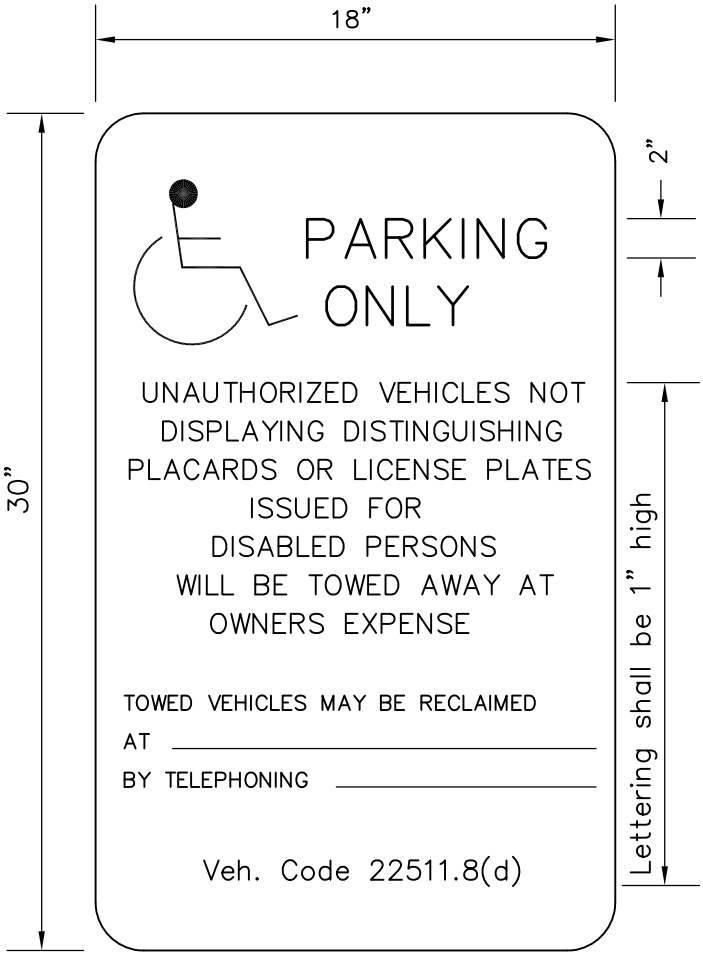
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-27B**





SIGN DETAIL

NOTES:

1. Sign shall be constructed of a minimum 0.062" thick aluminum.
2. Lettering, symbol and border shall be reflectorized white, on a blue background.
3. Lettering shall be 1" 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
Updated		D. Gerschoffer	15-Dec

SAN DIEGO REGIONAL STANDARD DRAWING

DISABLED PARKING SIGN

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-28A**



NOTES

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

Revision	By	Approved	Date
Updated		D. Gerschoffer	15–Dec

SAN DIEGO REGIONAL STANDARD DRAWING

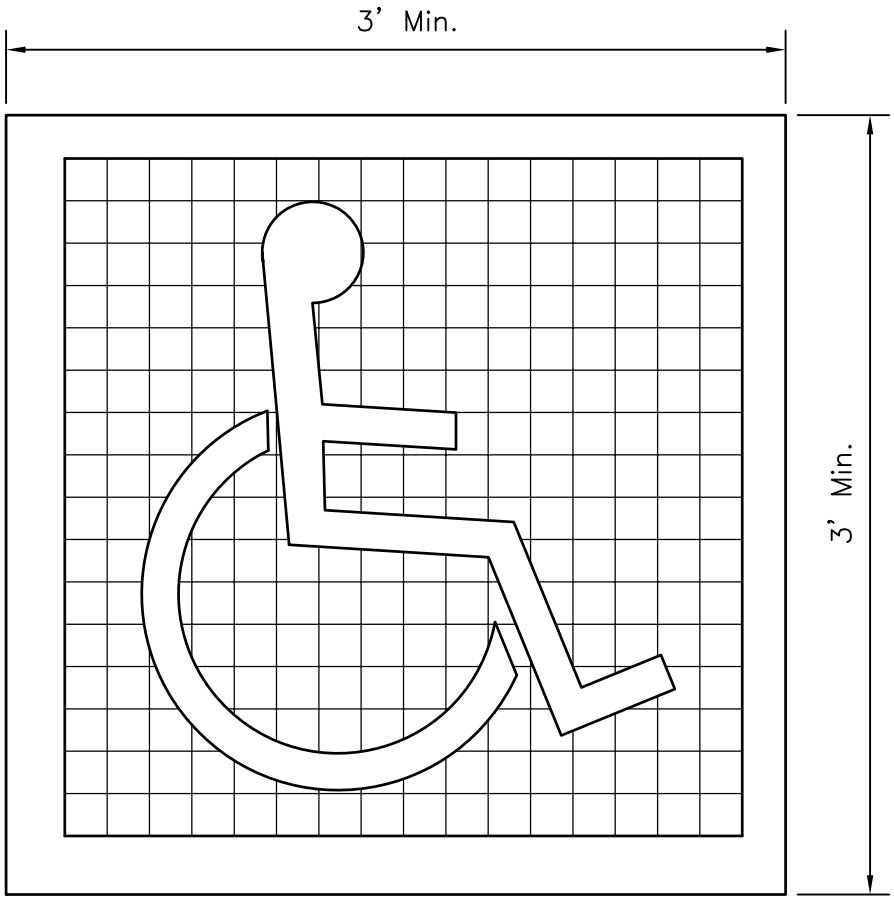
VAN ACCESSIBLE SIGN FOR DISABLE PARKING SPACE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

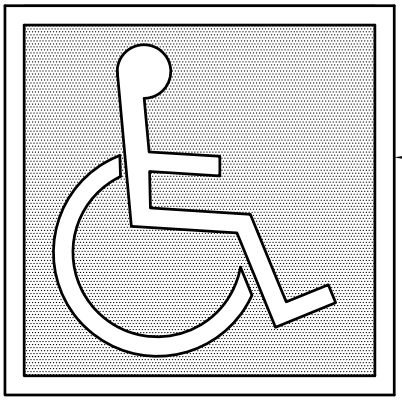
12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **M-28B**



(a) SYMBOL PROPORTIONS



(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
Updated		D. Gerschoffer	15-Dec

SAN DIEGO REGIONAL STANDARD DRAWING

PAVEMENT SYMBOL-
DISABLED PARKING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

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
Updated		D. Gerschoffer	15-Dec

SAN DIEGO REGIONAL STANDARD DRAWING

GUARD RAIL REFERENCE NOTE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

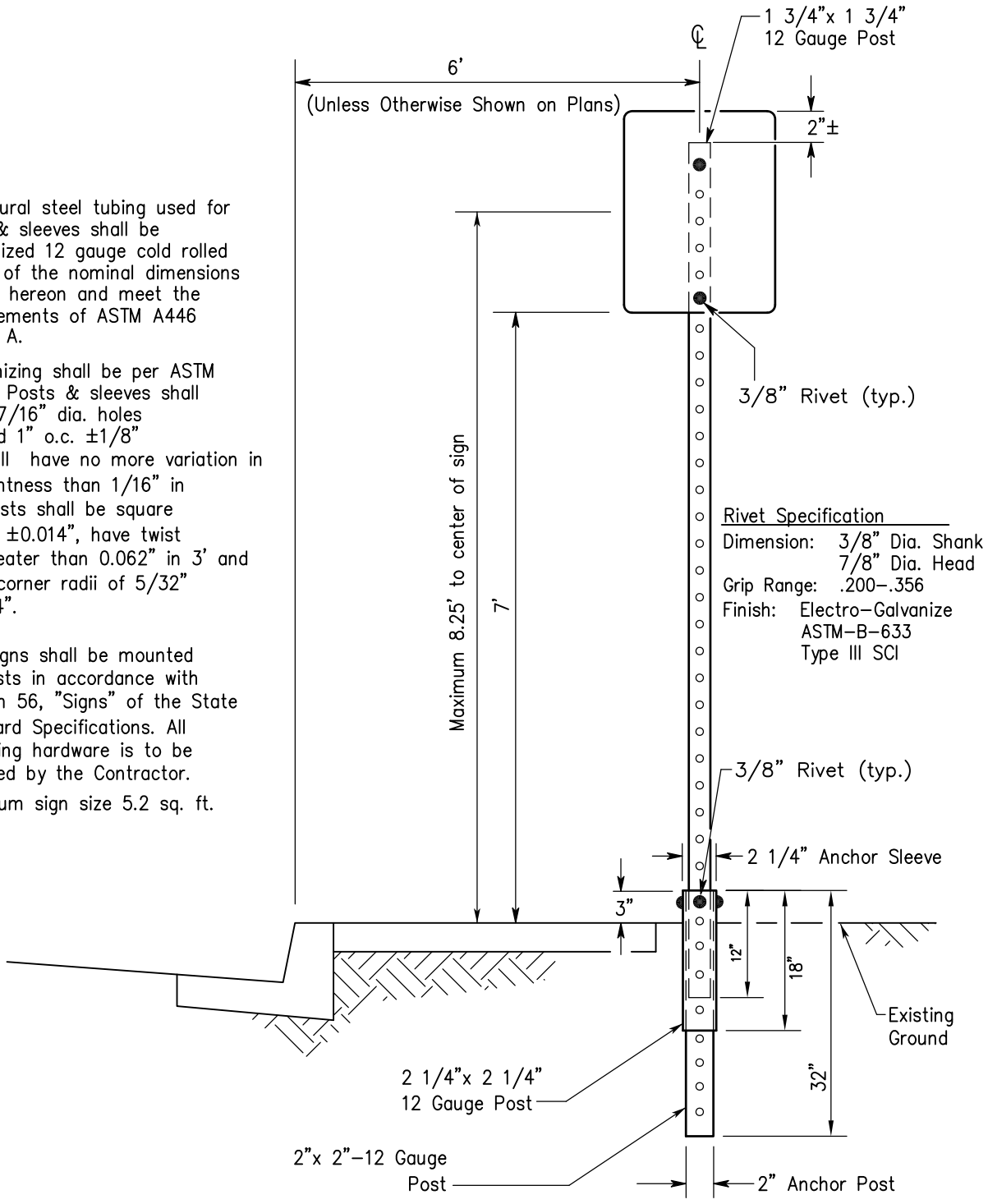
12/17/2015

Chairperson R.C.E. 19246 Date

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.



Revision	By	Approved	Date
Updated		D. Gerschoffer	15–Dec

SAN DIEGO REGIONAL STANDARD DRAWING

BREAK-AWAY SIGN POST

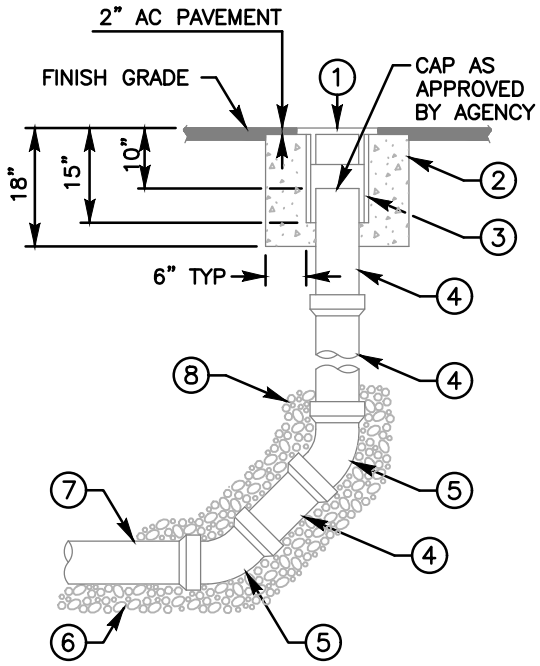
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

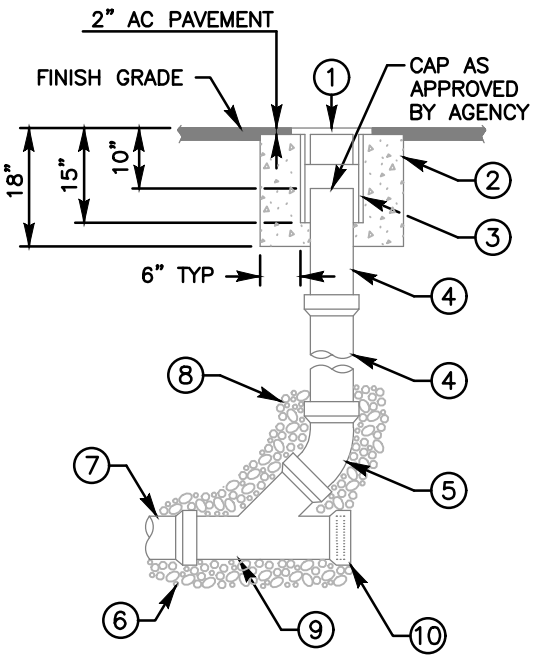
Chairperson R.C.E. 19246 Date

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced S-03		J. Tomasulo	03/05
Delete Metric	MR	B. KNOLL	03/11
Reviewed	BK	B. KNOLL	04/15

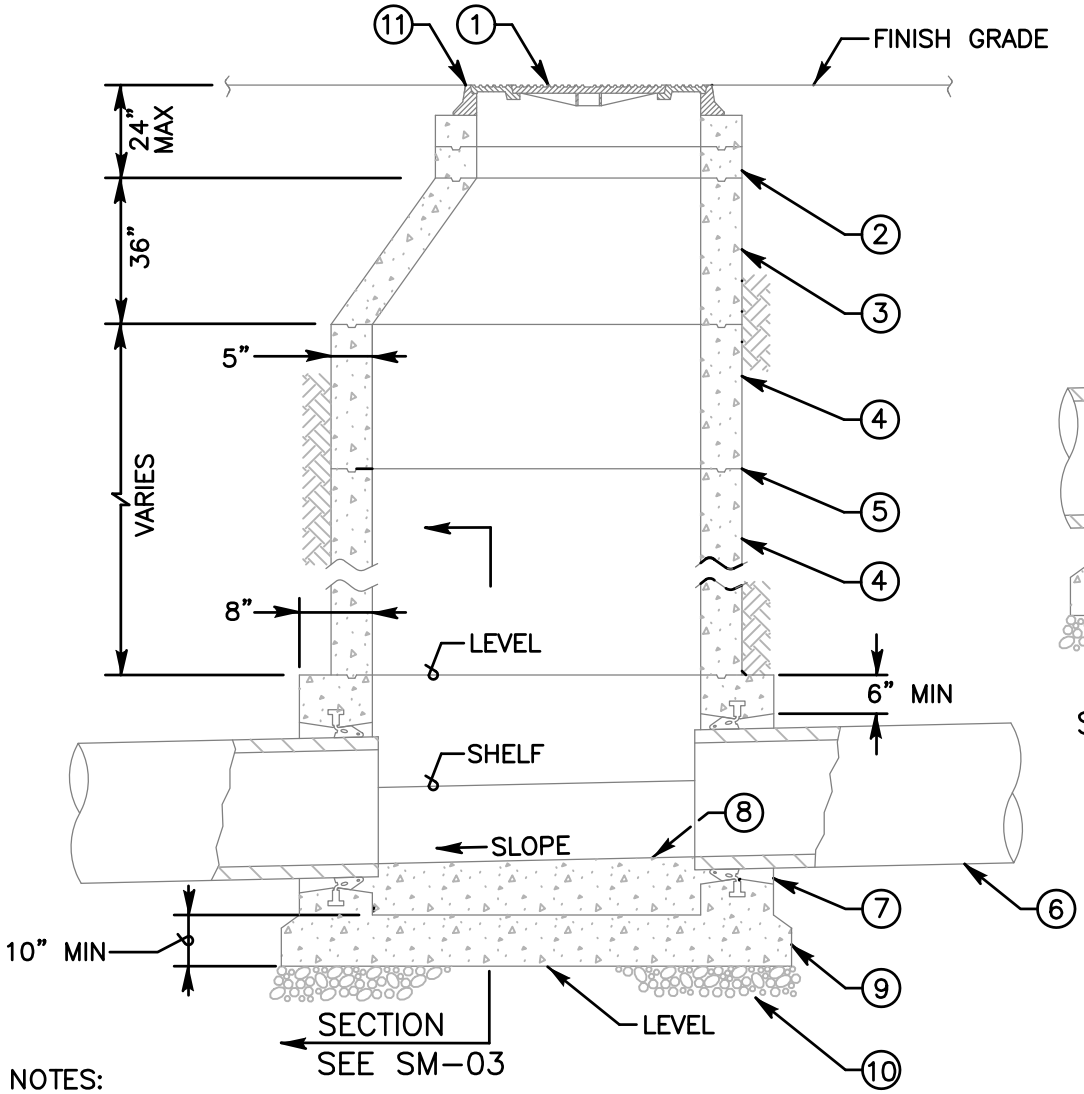
SAN DIEGO REGIONAL STANDARD DRAWING

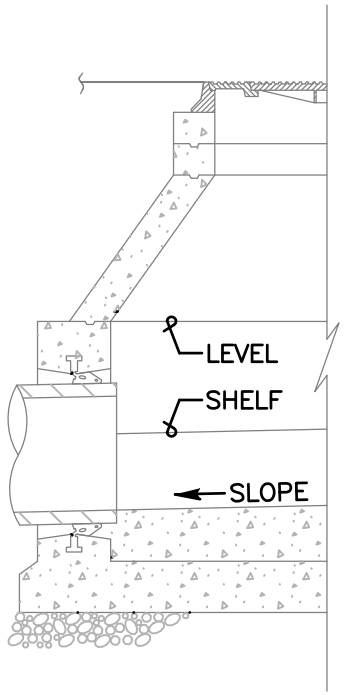
SEWER CLEANOUT

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **SC-01**





SHALLOW MANHOLE SECTION

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

48"

LEGEND ON PLANS

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced S-02		J. Tomasulo	03/05
Delete Metric	MR	B. KNOLL	03/11
Reviewed	BK	B. KNOLL	14/15

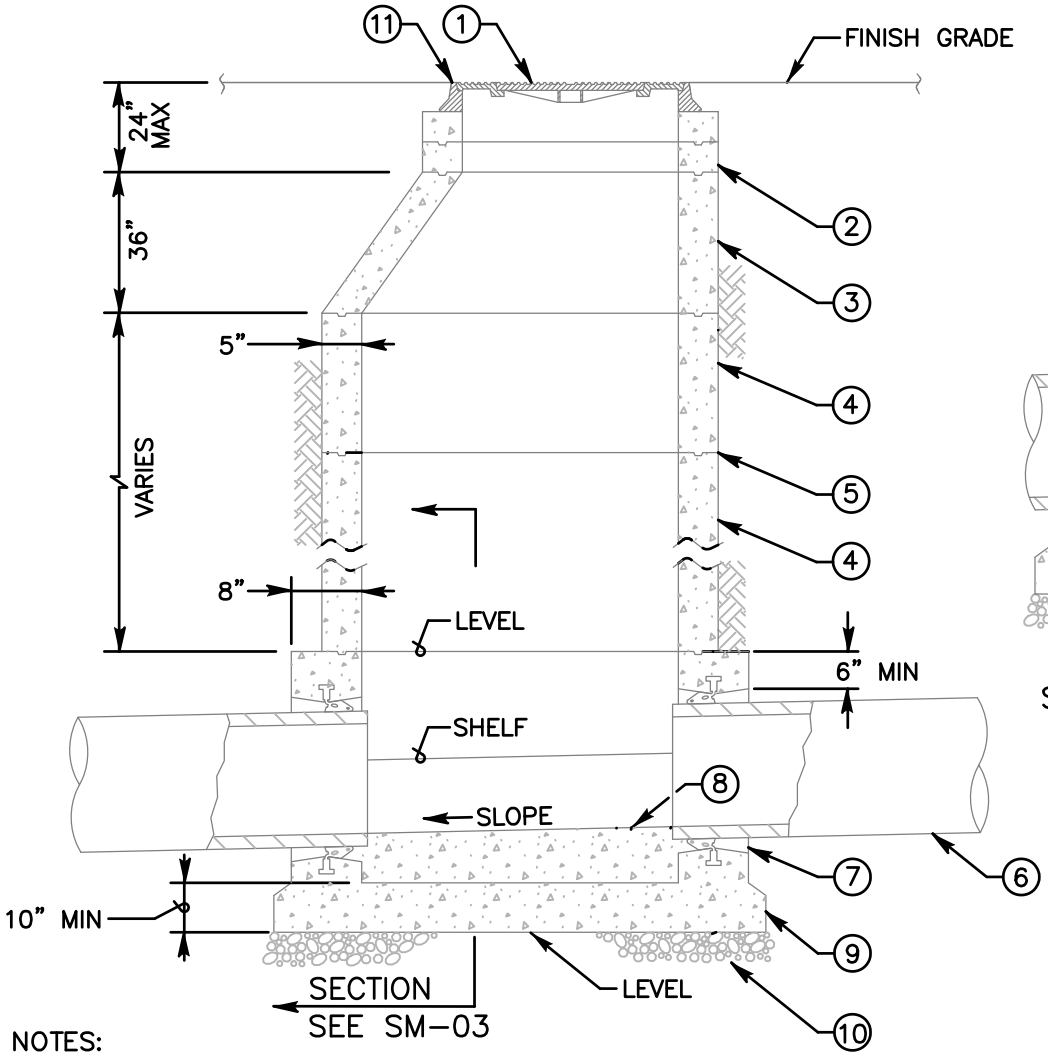
SAN DIEGO REGIONAL STANDARD DRAWING

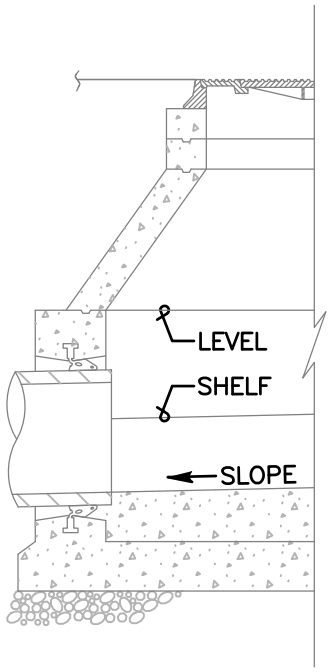
48" DIAMETER PRECAST MANHOLE INSTALLATION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

DRAWING NUMBER **SM-01**





SHALLOW MANHOLE SECTION

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

60"

LEGEND ON PLANS

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced S-02		J. Tomasulo	03/05
Delete Metric	MR	B. KNOLL	03/11
Reviewed	BK	B. KNOLL	04/15

SAN DIEGO REGIONAL STANDARD DRAWING

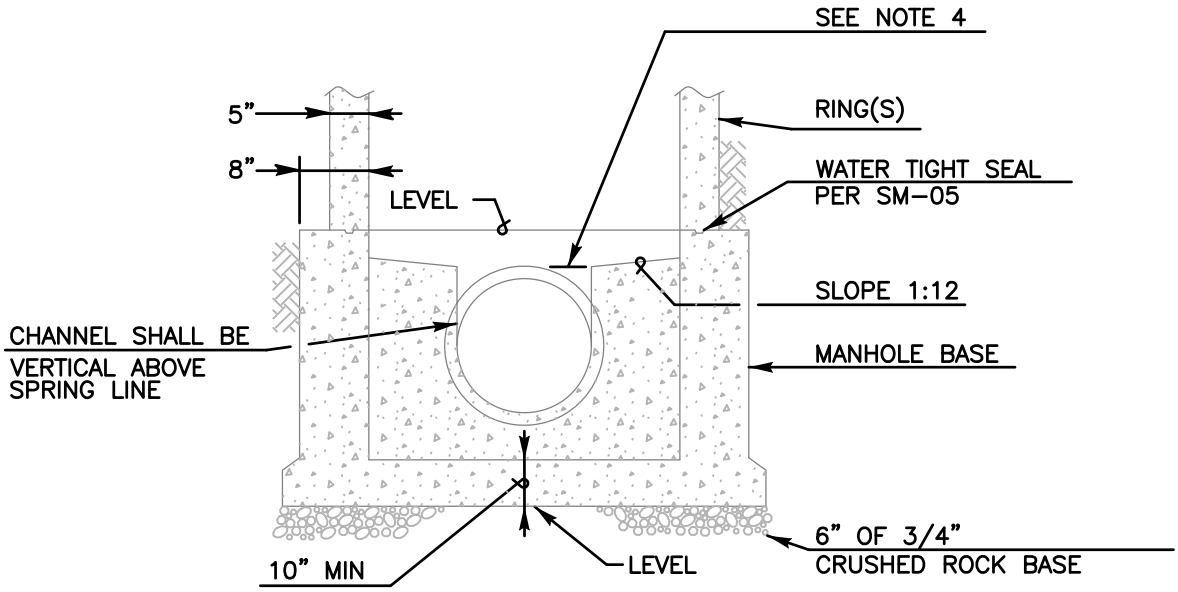
60" DIAMETER PRECAST MANHOLE INSTALLATION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **SM-02**



SECTION

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced S-02		J. Tomasulo	03/05
Delete Metric	MR	B. KNOLL	03/11
Reviewed	BK	B. KNOLL	04/15

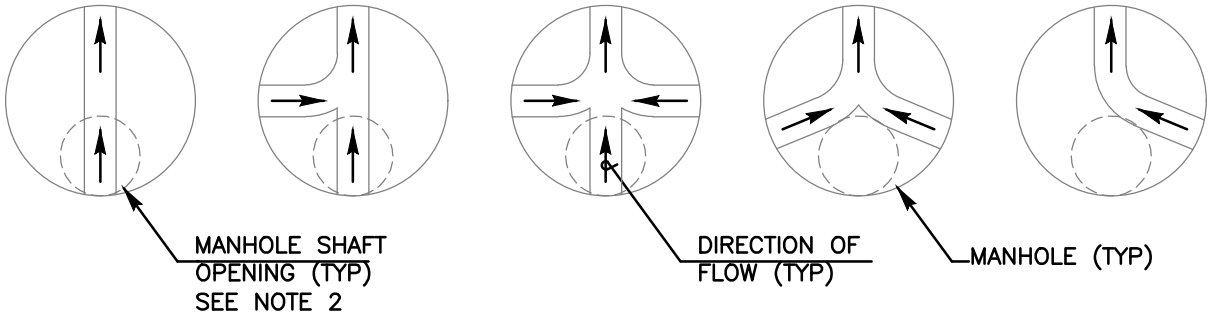
SAN DIEGO REGIONAL STANDARD DRAWING

SEWER MANHOLE BASE

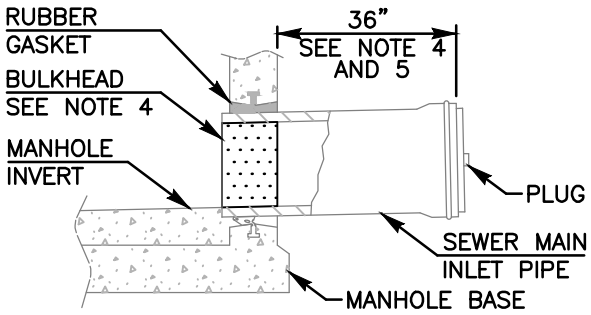
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

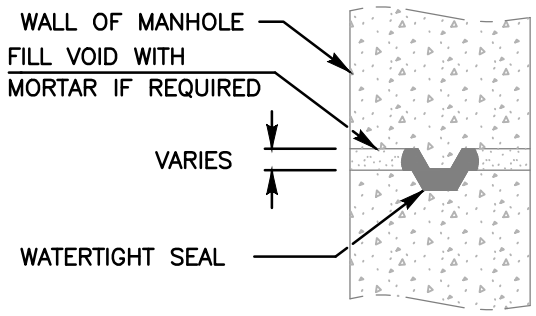
DRAWING NUMBER **SM-03**



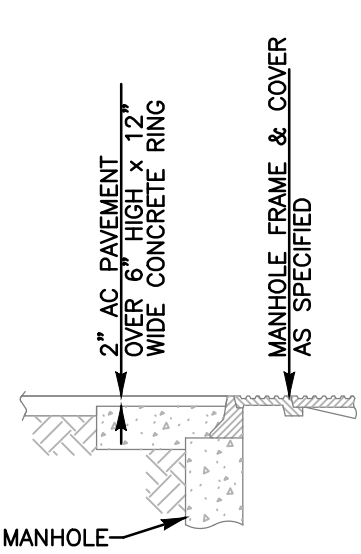
MANHOLE ACCESS LOCATION PLAN VIEW



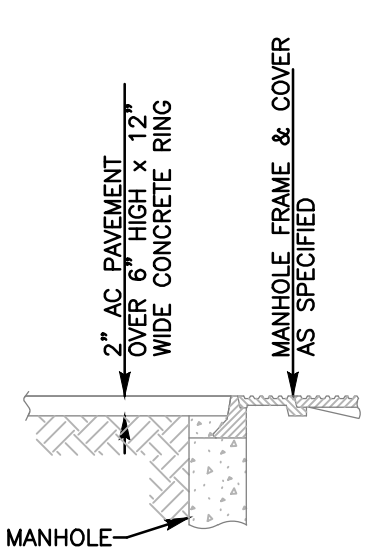
MANHOLE STUB OUT FOR FUTURE CONNECTION



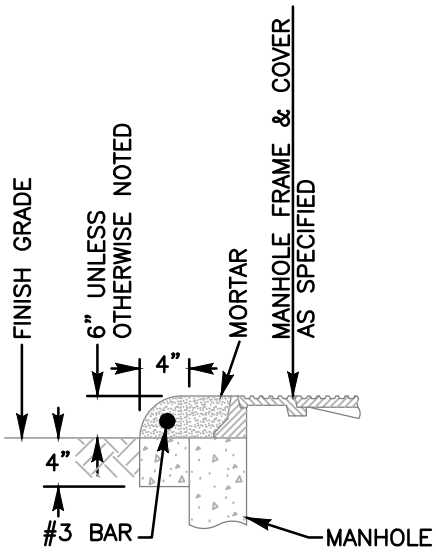
WATERTIGHT MANHOLE JOINT



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
Replaced S–02		J. Tomasulo	03/05
Edited		T. Stanton	05/08
Delete Metric	MR	B. KNOLL	03/11
Reviewed	BK	B. KNOLL	04/15

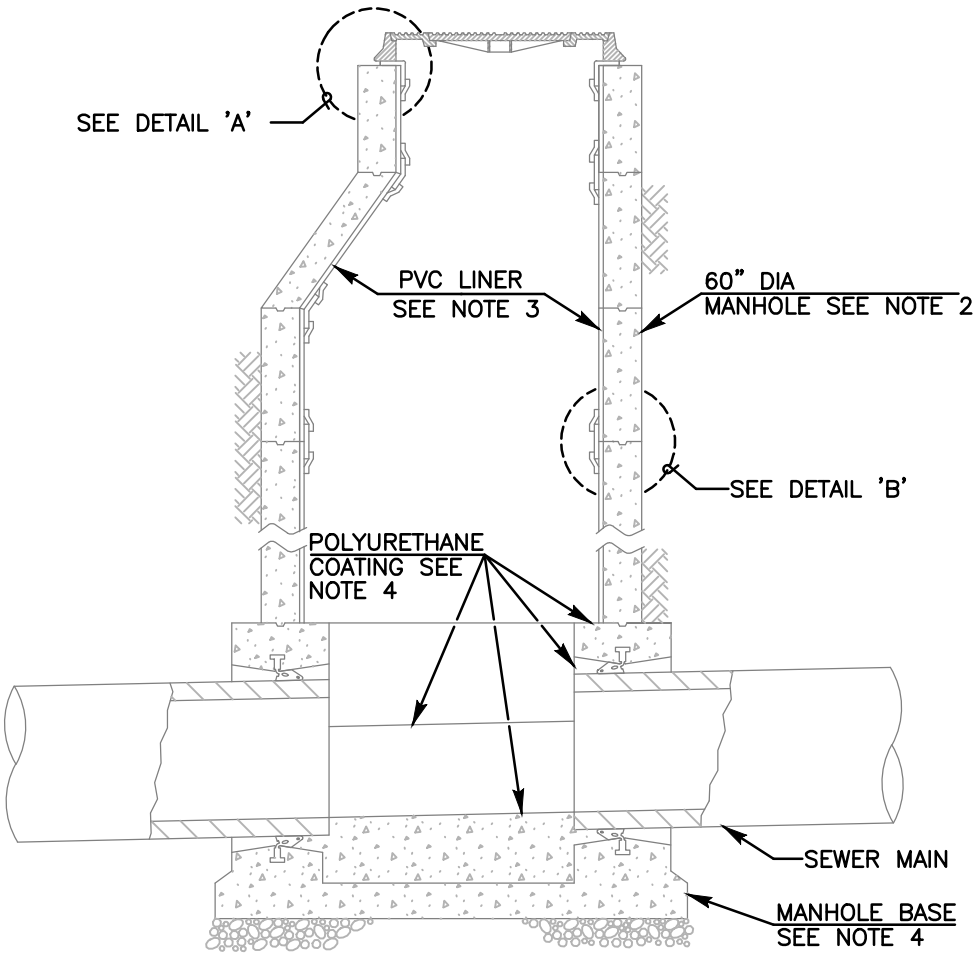
SAN DIEGO REGIONAL STANDARD DRAWING

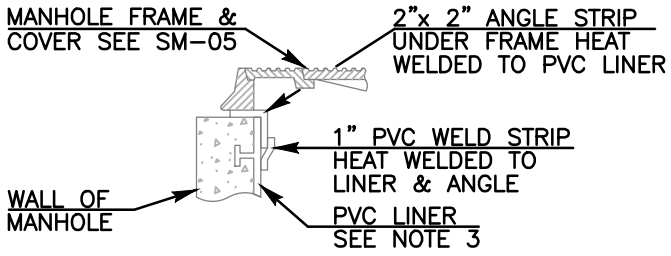
MANHOLE MISCELLANEOUS DETAILS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

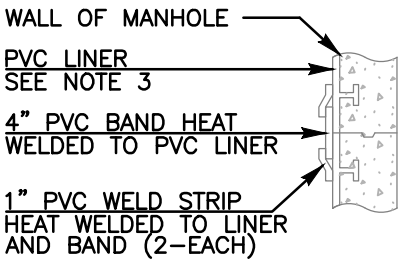
Chairperson R.C.E. 19246 Date 12/17/2015

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced S-02		J. Tomasulo	03/05
Delete Metric	MR	B. KNOLL	03/11
Note 3	BK	B. KNOLL	04/15

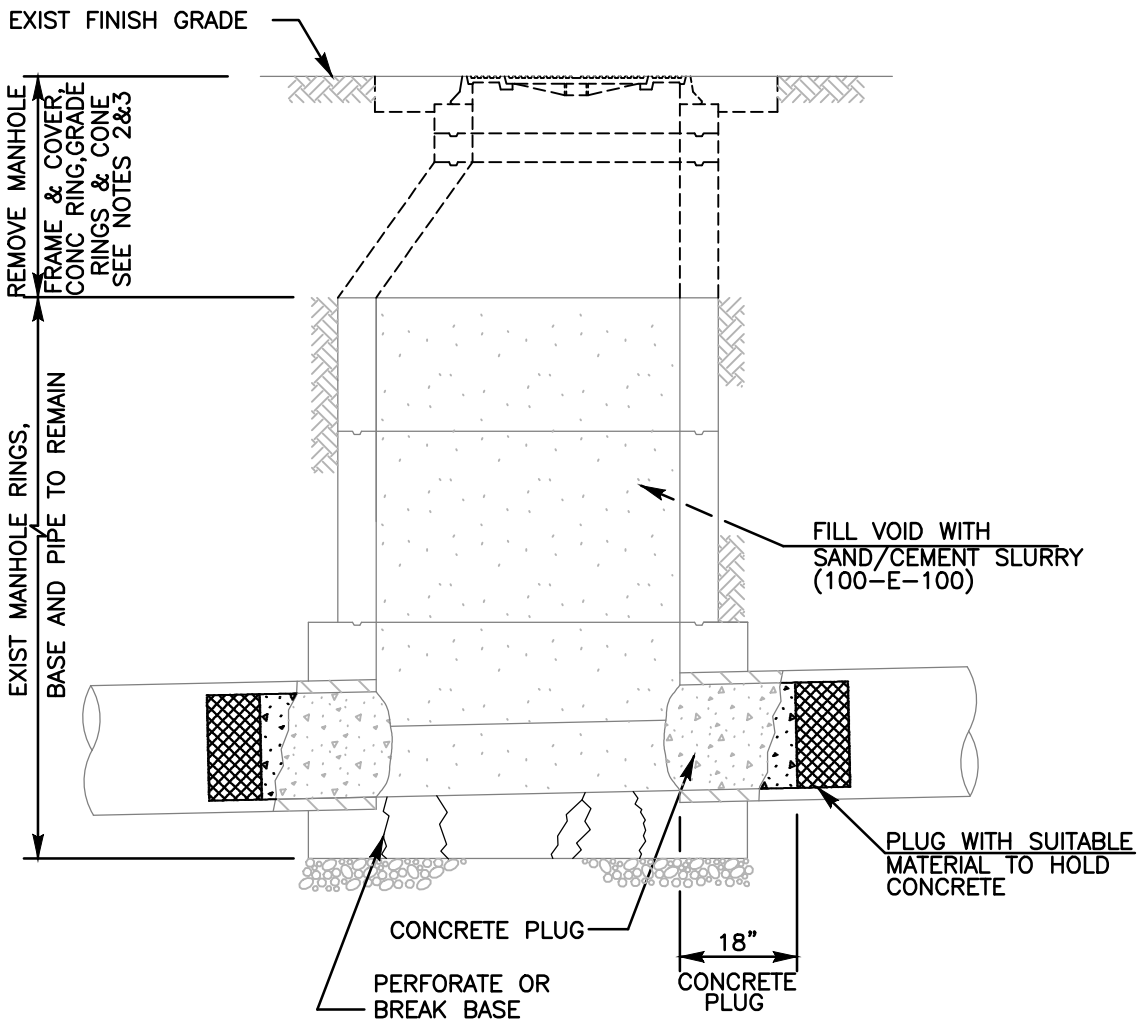
SAN DIEGO REGIONAL STANDARD DRAWING

MANHOLE COATING AND LINING SYSTEM

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **SM-07**



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
Add Metric		T. Stanton	03/03
Replaced S-02		J. Tomasulo	03/05
Delete Metric	MR	B. KNOLL	03/11
Add Call-out	BK	B. KNOLL	04/15

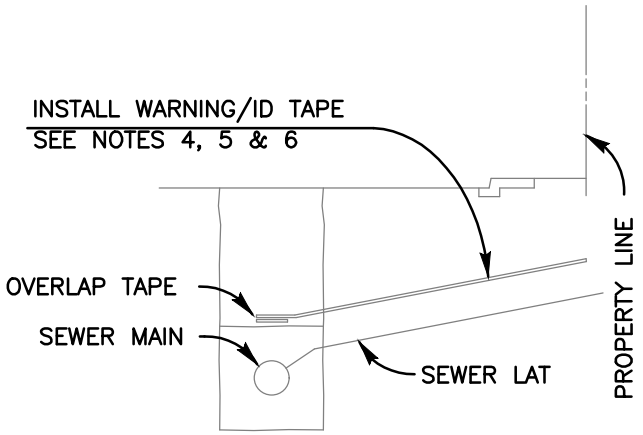
SAN DIEGO REGIONAL STANDARD DRAWING

EXISTING MANHOLE ABANDONMENT

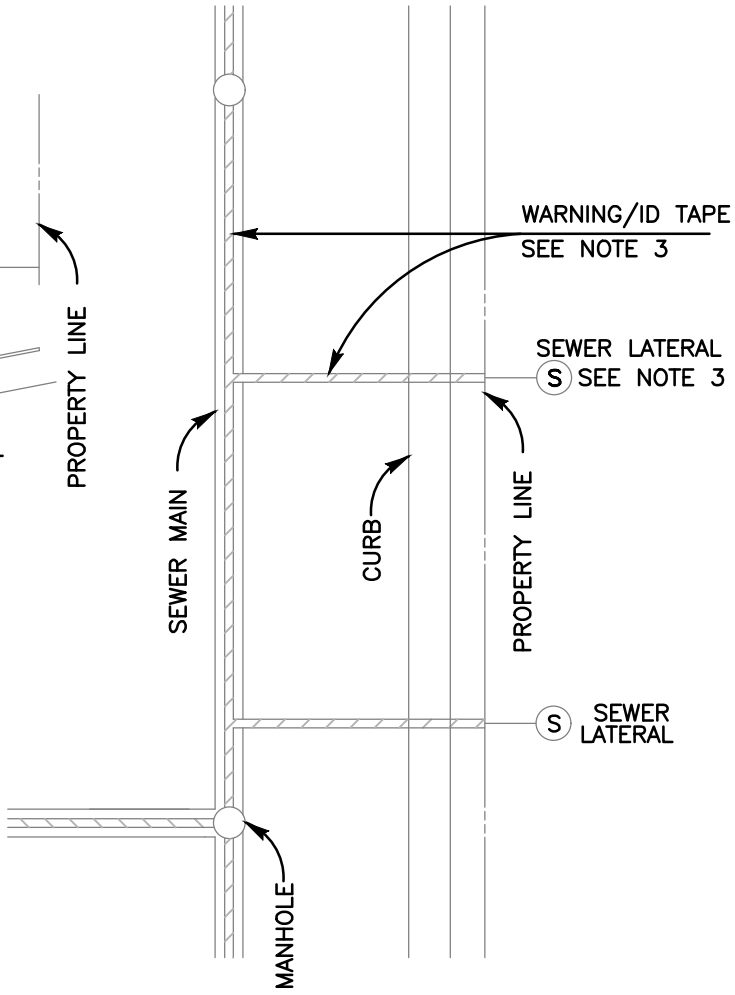
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **SM-08**



SECTION AT SEWER LATERALS



PLAN

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced S-19		J. Tomasulo	03/05
Delete Metric	MR	B. KNOLL	03/11
Reviewed	BK	B. KNOLL	04/15

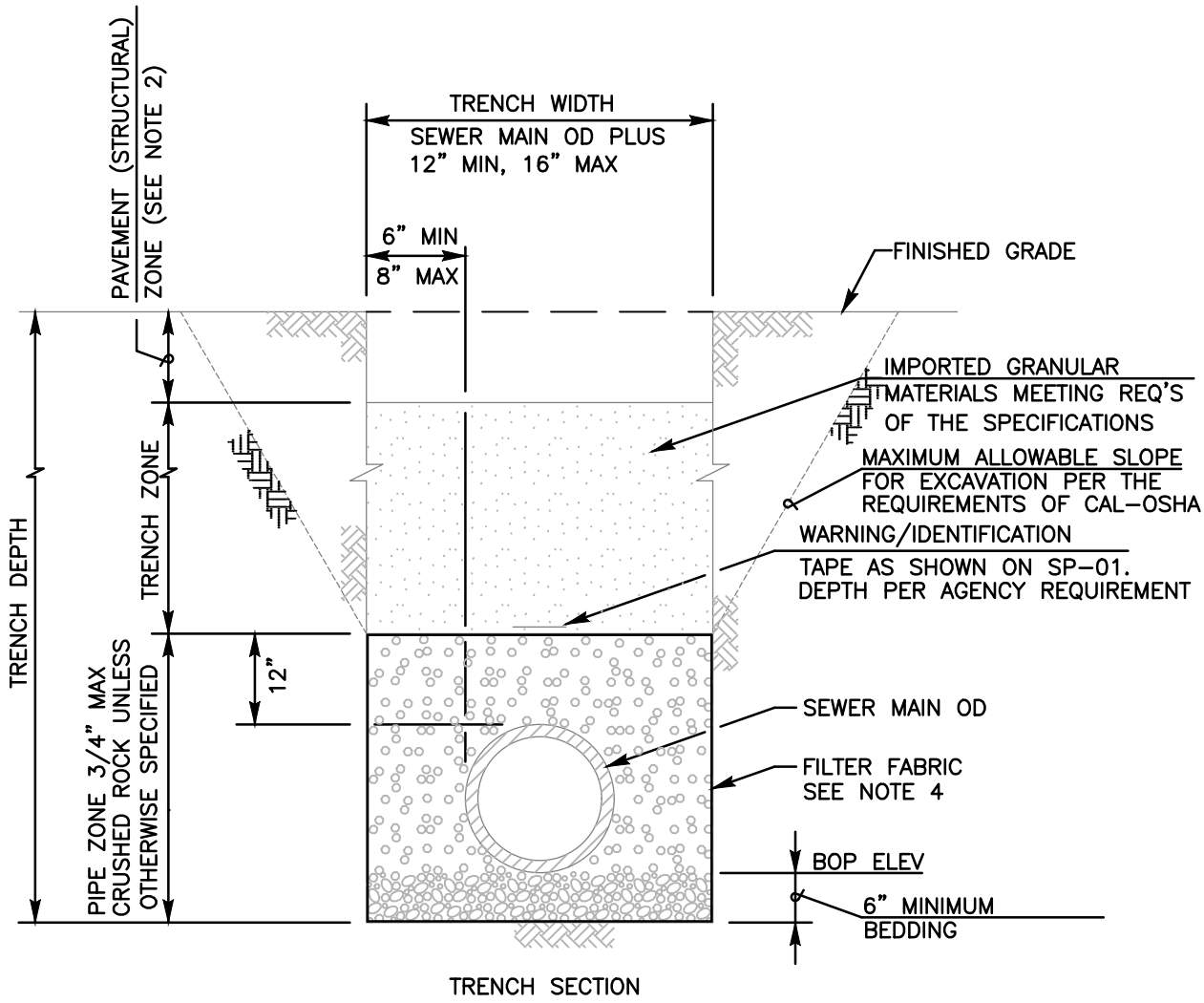
SAN DIEGO REGIONAL STANDARD DRAWING

WARNING/IDENTIFICATION TAPE INSTALLATION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **SP-01**



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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced S-04		J. Tomasulo	03/05
Delete Metric	MR	B. KNOLL	03/11
Reviewed	BK	B. KNOLL	04/15

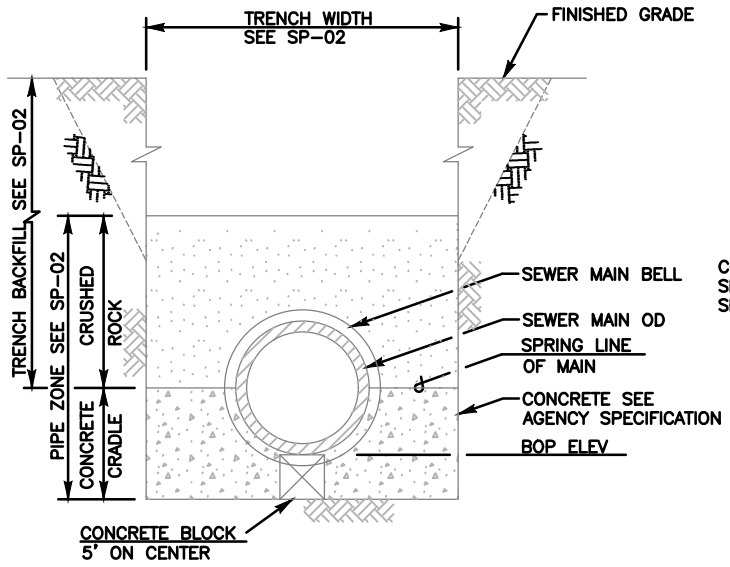
SAN DIEGO REGIONAL STANDARD DRAWING

PIPE BEDDING AND TRENCH BACKFILL FOR SEWER FACILITIES

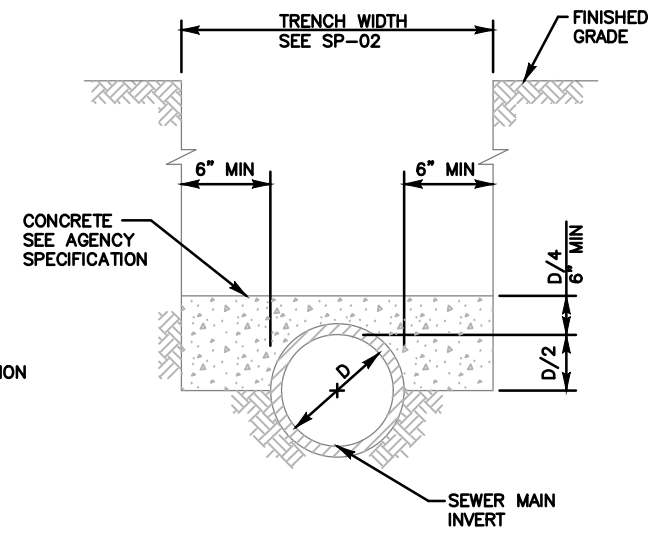
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

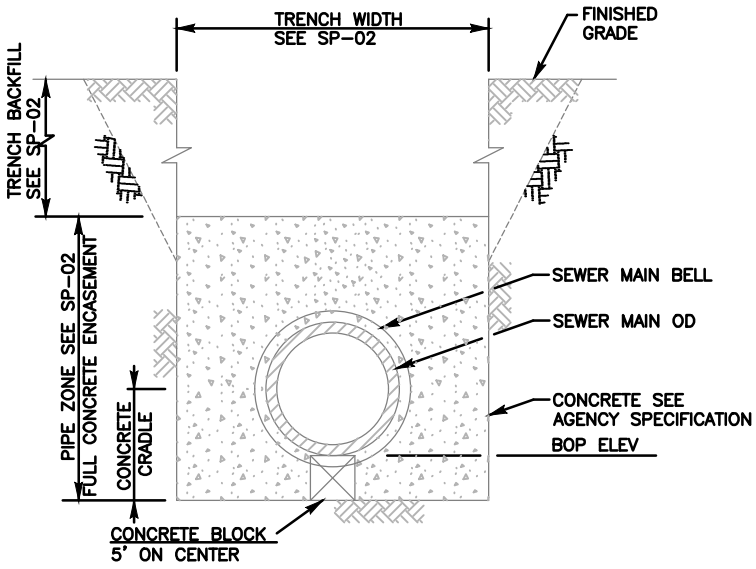
DRAWING NUMBER **SP-02**



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
Add Metric		T. Stanton	03/03
Replaced S-06		J. Tomasulo	03/05
Delete Metric	MR	B. KNOLL	03/11
Reviewed	BK	B. KNOLL	04/15

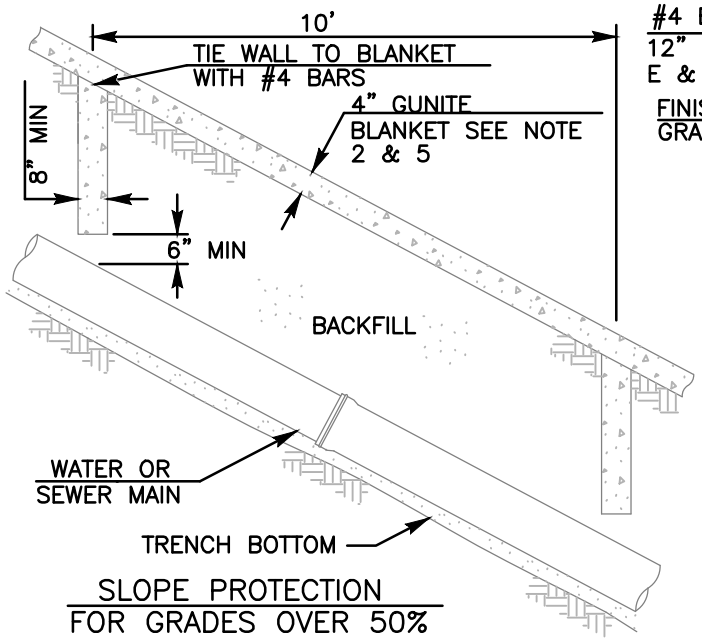
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE PROTECTION FOR SEWER PIPE

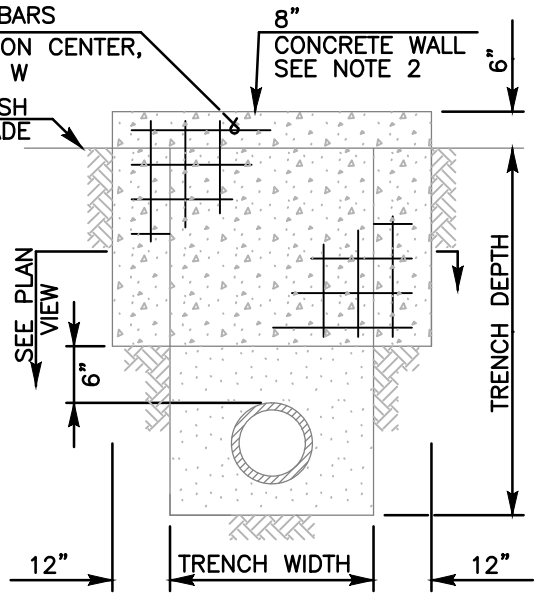
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J M Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

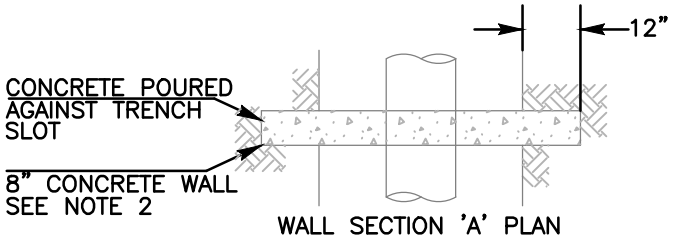
DRAWING NUMBER **SP-03**



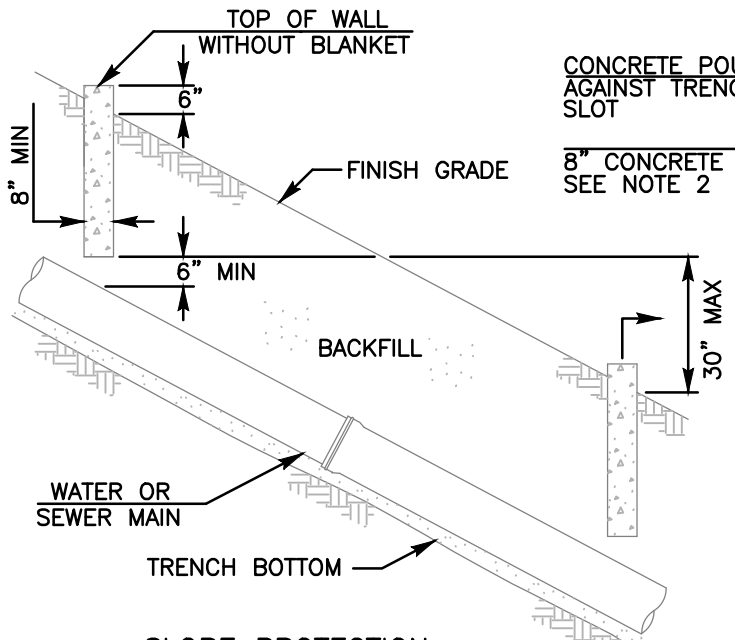
SLOPE PROTECTION
FOR GRADES OVER 50%



WALL SECTION 'A' ELEVATION



WALL SECTION 'A' PLAN



SLOPE PROTECTION
FOR GRADES 20% TO 50%

SEE WALL SECTION 'A'

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

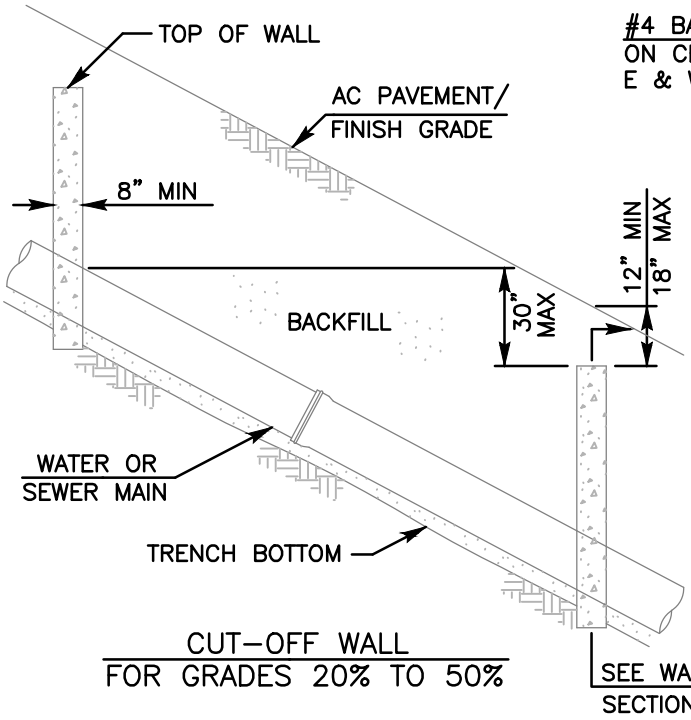
SAN DIEGO REGIONAL STANDARD DRAWING

SLOPE PROTECTION INSTALLATIONS

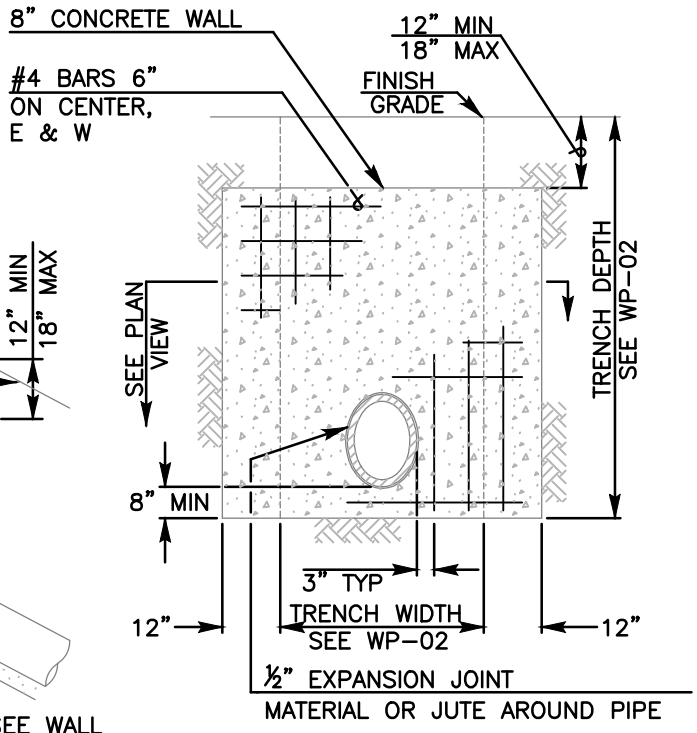
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

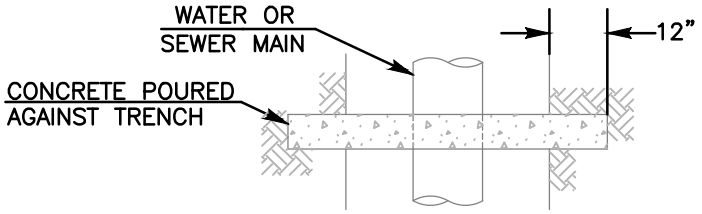
DRAWING NUMBER **SP-05**



CUT–OFF WALL
FOR GRADES 20% TO 50%



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
ORIGINAL		J. Tomasulo	03/05
Delete Metric	MR	B. KNOLL	04/11
Note 4	BK	B. KNOLL	04/15

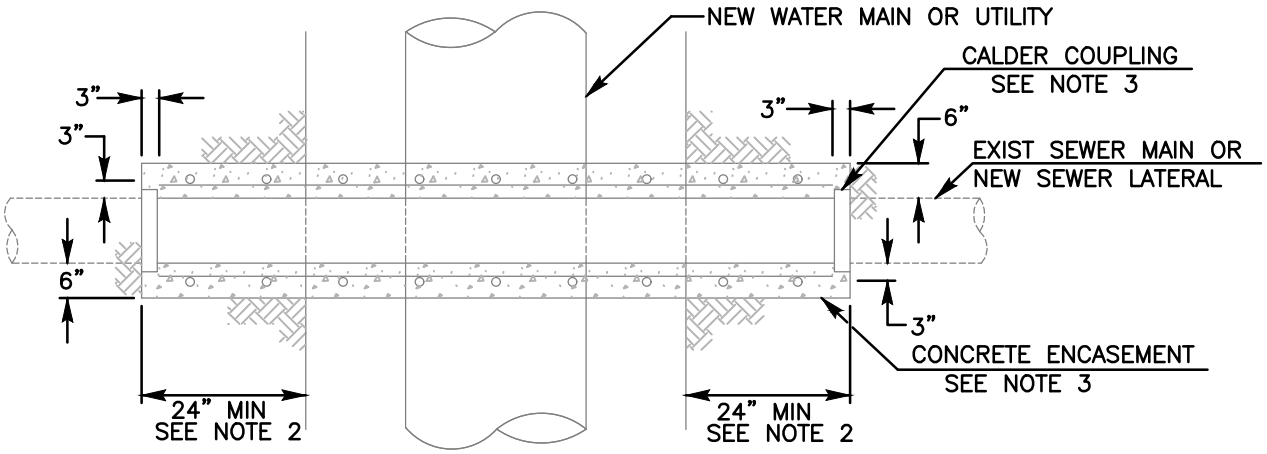
SAN DIEGO REGIONAL STANDARD DRAWING

CUT-OFF WALL INSTALLATION IN TRAVELED AREAS

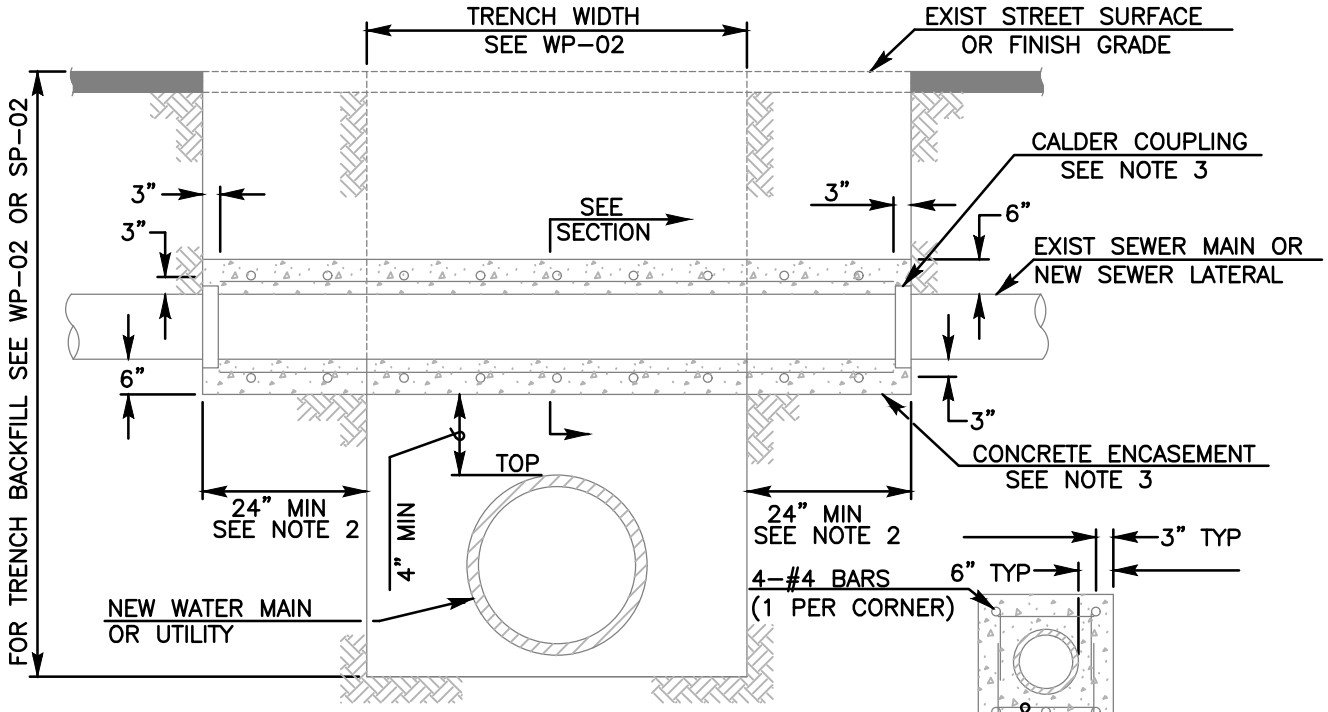
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

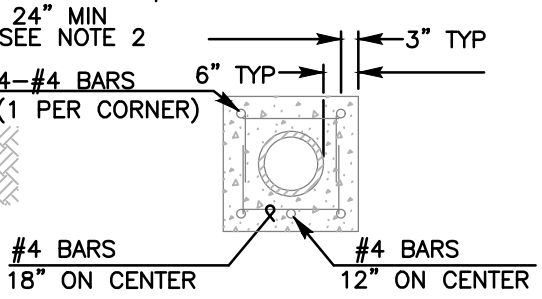
DRAWING NUMBER **SP-07**



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	

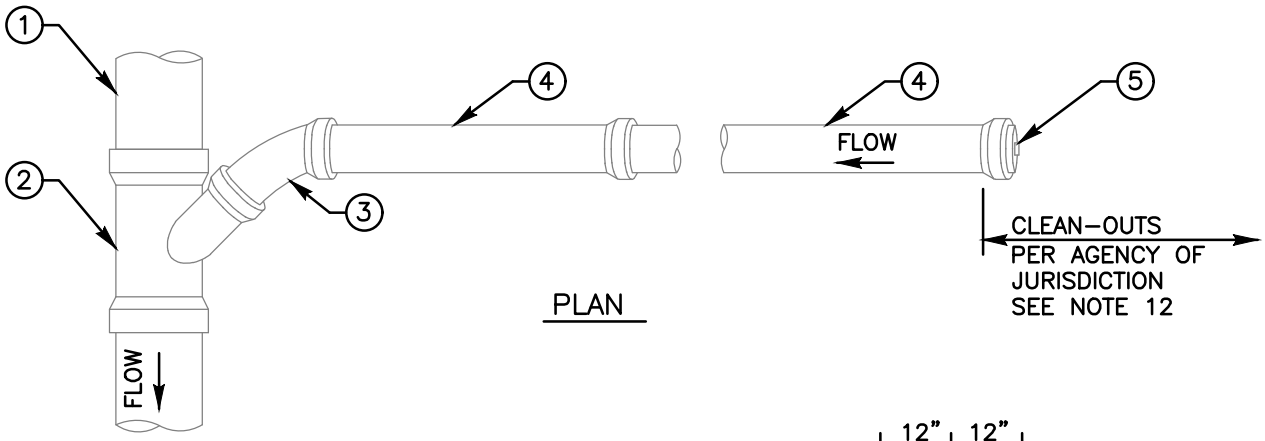
SAN DIEGO REGIONAL STANDARD DRAWING

PIPE SUPPORT FOR UNDERCUT SEWER MAINS OR SEWER LATERALS

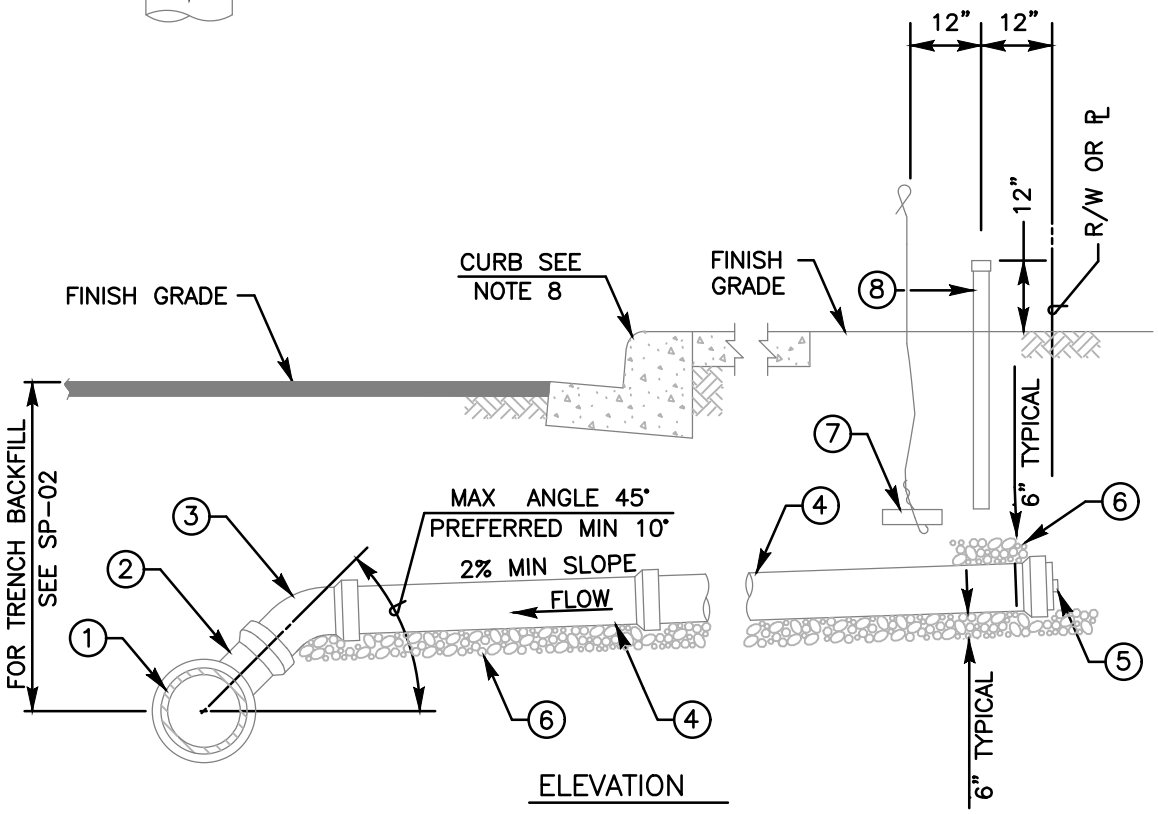
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **SP-09**



PLAN



ELEVATION

(INDICATE SIZE)

S

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
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	04/15

SAN DIEGO REGIONAL STANDARD DRAWING

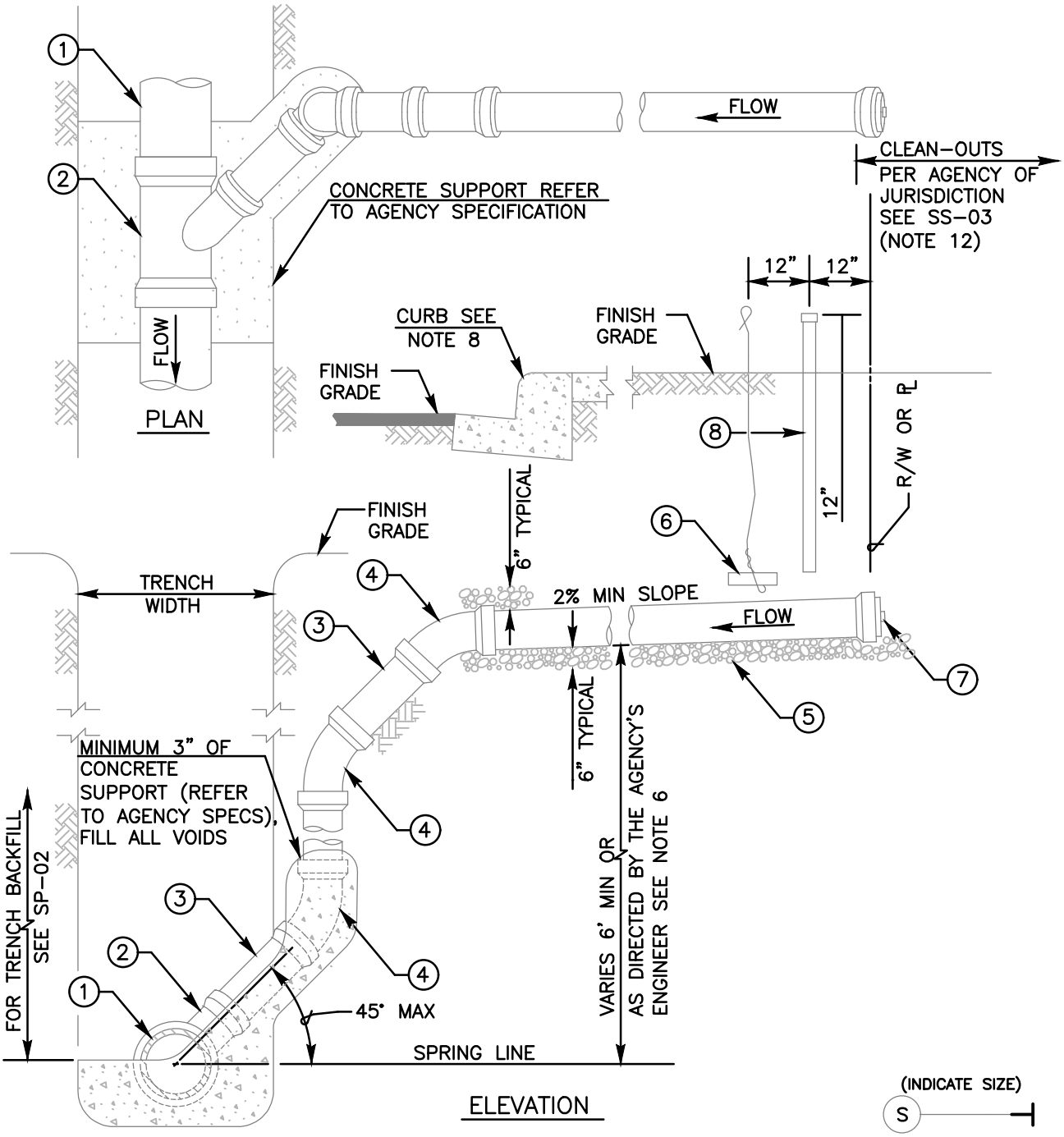
4" AND 6" SEWER LATERAL INSTALLATION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **SS-01**



FOR SEWER LATERAL NOTES SEE DETAIL SS–03

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced S–14		J. Tomasulo	03/05
Delete Metric	MR	B. KNOLL	03/11

SAN DIEGO REGIONAL STANDARD DRAWING

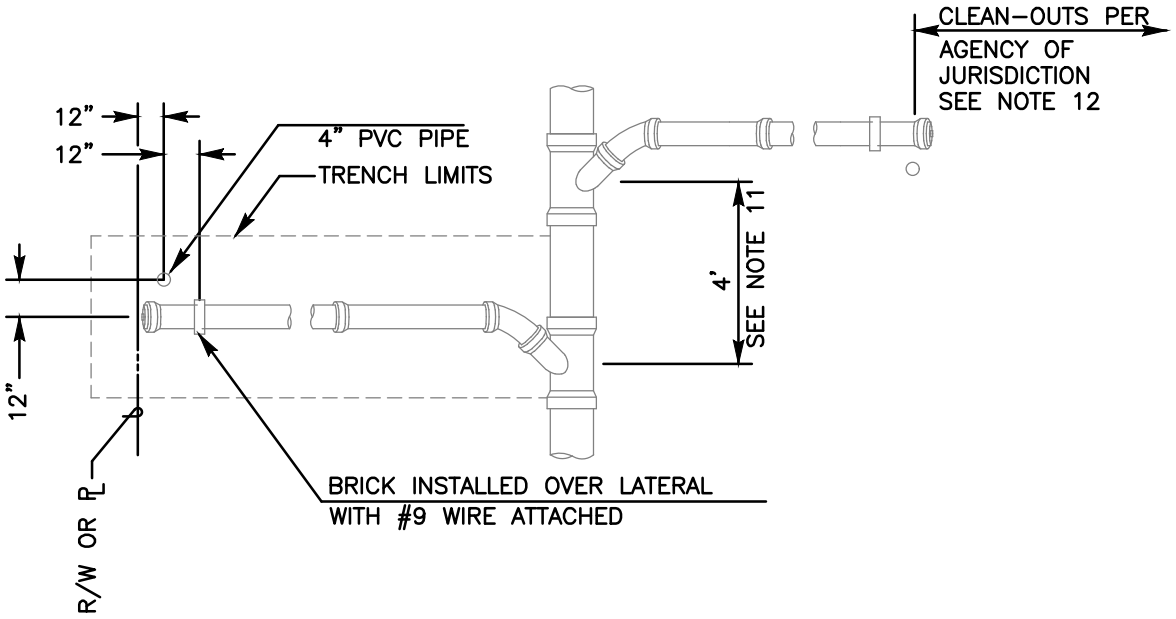
4" AND 6" DEEP-CUT SEWER LATERAL INSTALLATION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

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)
S
LEGEND ON PLANS

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced S–13		J. Tomasulo	03/05
Delete Metric	MR	B. KNOLL	03/11

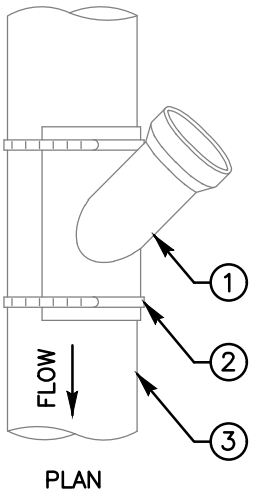
SAN DIEGO REGIONAL STANDARD DRAWING

SEWER LATERAL NOTES AND DETAIL

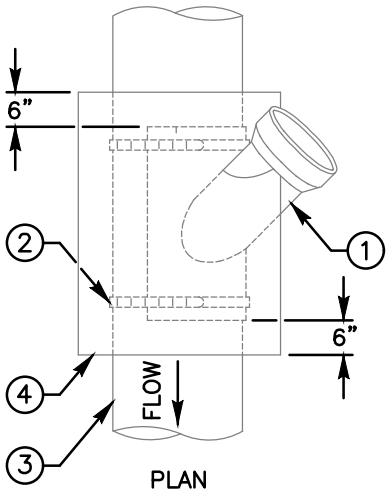
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

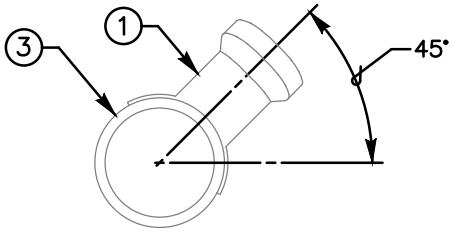
DRAWING NUMBER **SS-03**



PLAN

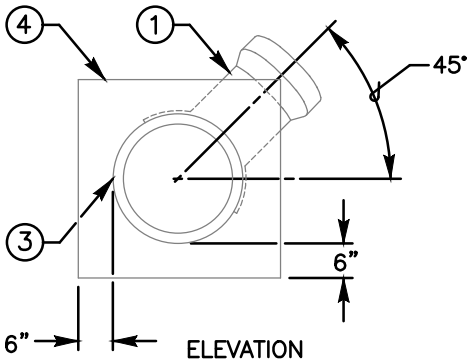


PLAN



ELEVATION

CUT IN WYE CONNECTION
TYPE A



ELEVATION

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

(INDICATE SIZE)
S
LEGEND ON PLANS

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 ENCASEMENT

Revision	By	Approved	Date
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	04/15

SAN DIEGO REGIONAL STANDARD DRAWING

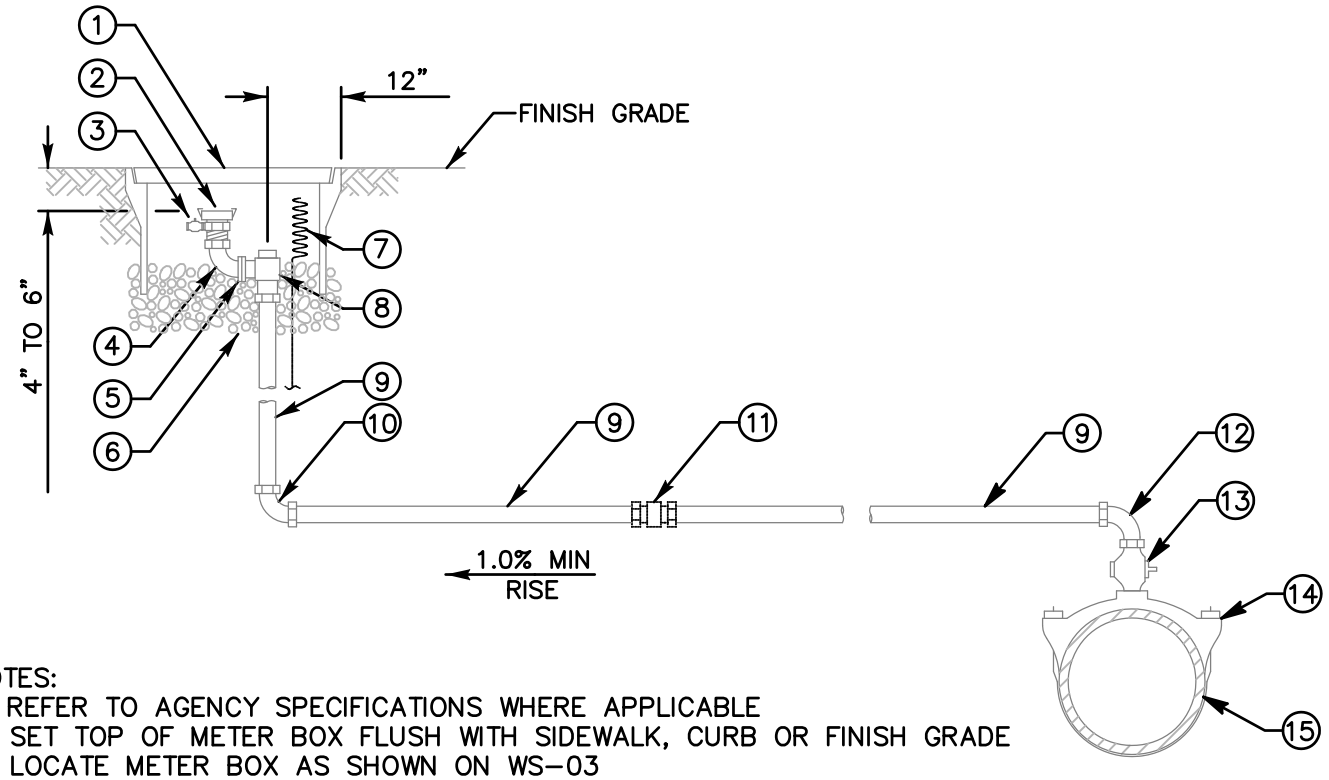
4" AND 6" SEWER CUT-IN WYE CONNECTIONS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

DRAWING NUMBER **SS-04**

WATER SYSTEMS



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

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
		⑩	2" 90° BRONZE COMPRESSION ELL
③	1/4" PRESSURE PET COCK		
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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W–03		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

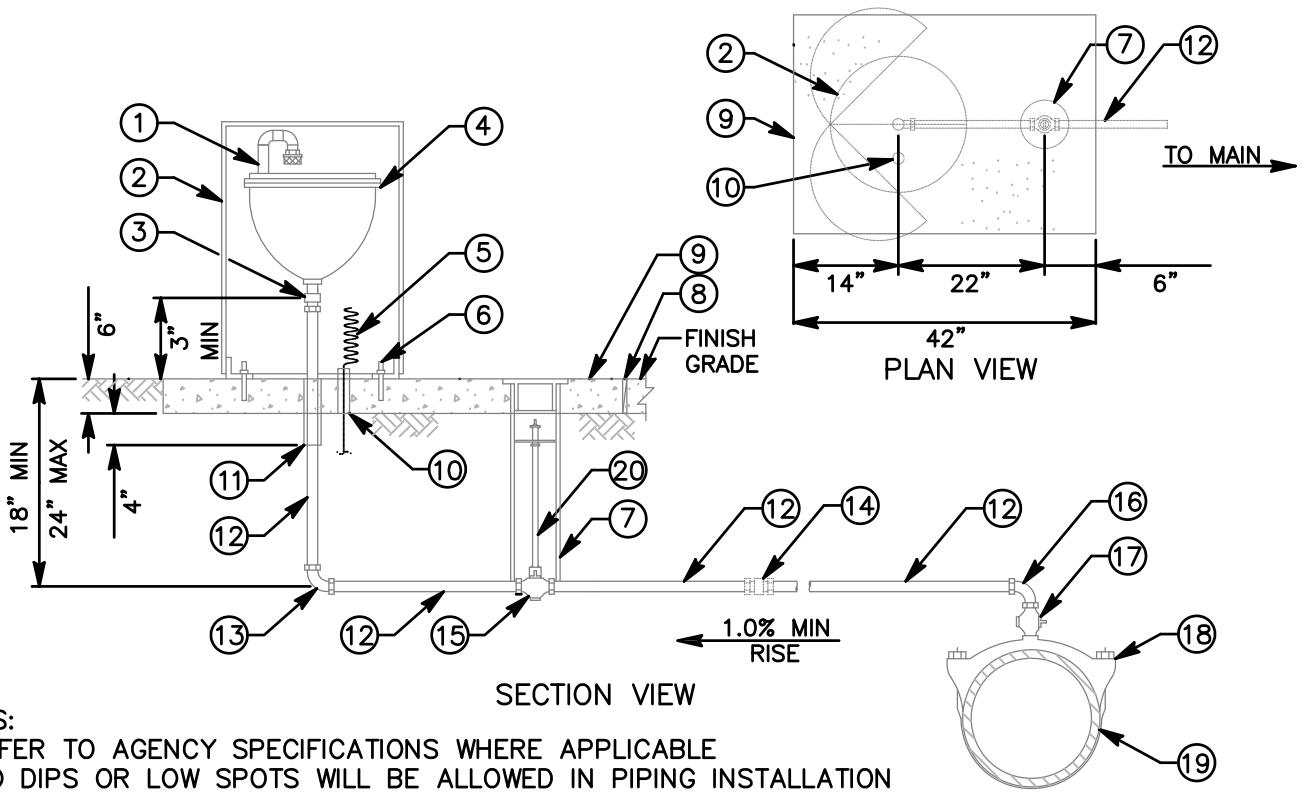
2" MANUAL AIR VALVE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

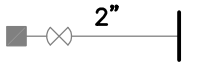
J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

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



LEGEND ON PLANS

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W-04		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

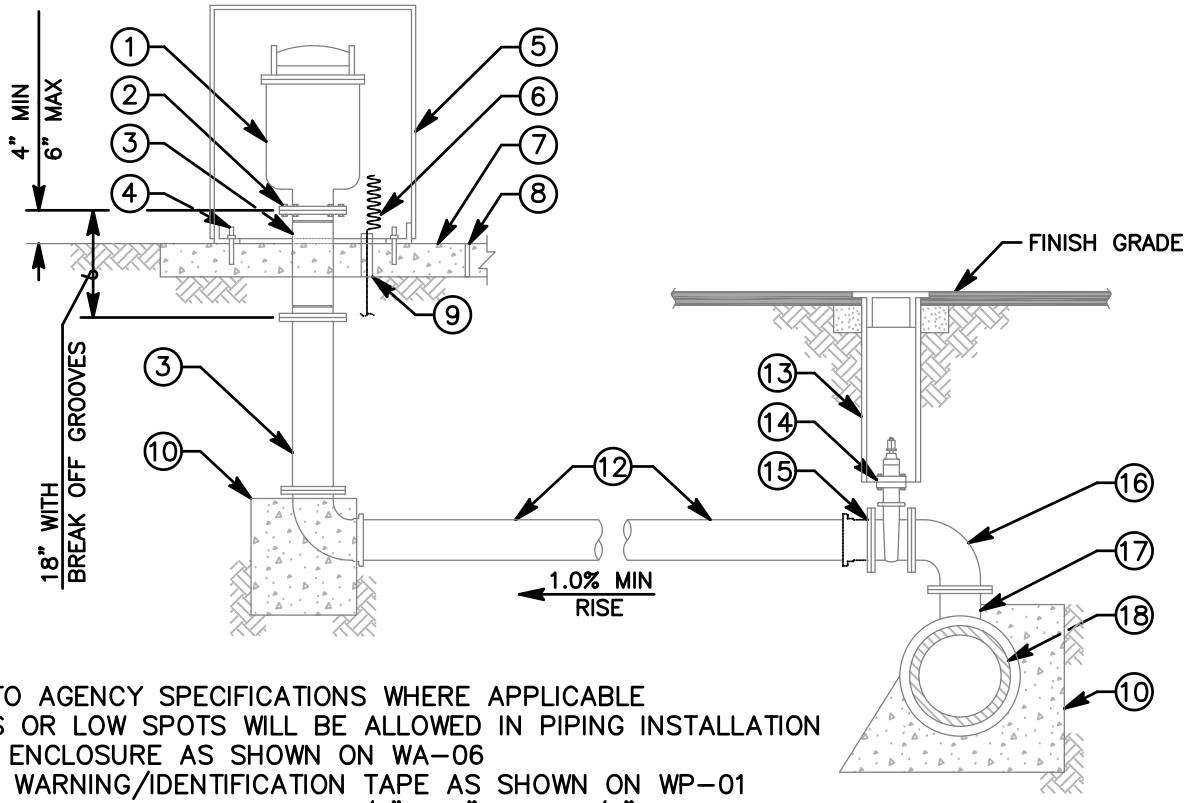
SAN DIEGO REGIONAL STANDARD DRAWING

2" AUTOMATIC COMBINATION AIR RELEASE & AIR/VACUUM VALVE INSTALLATIONS

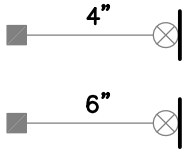
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

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



LEGEND ON PLANS

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W–05		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

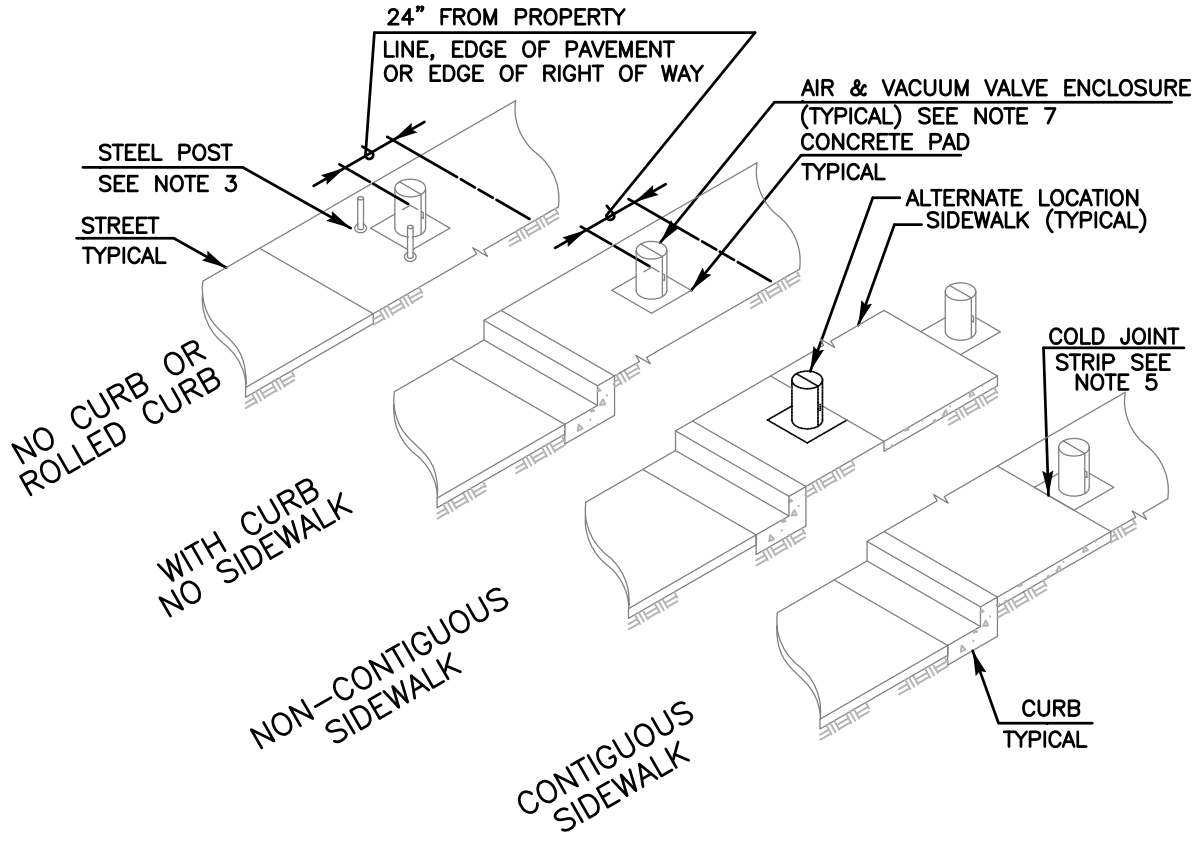
SAN DIEGO REGIONAL STANDARD DRAWING

4" & 6" AUTOMATIC COMBINATION AIR RELEASE & AIR/VACUUM VALVE INSTALLATIONS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W-14		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

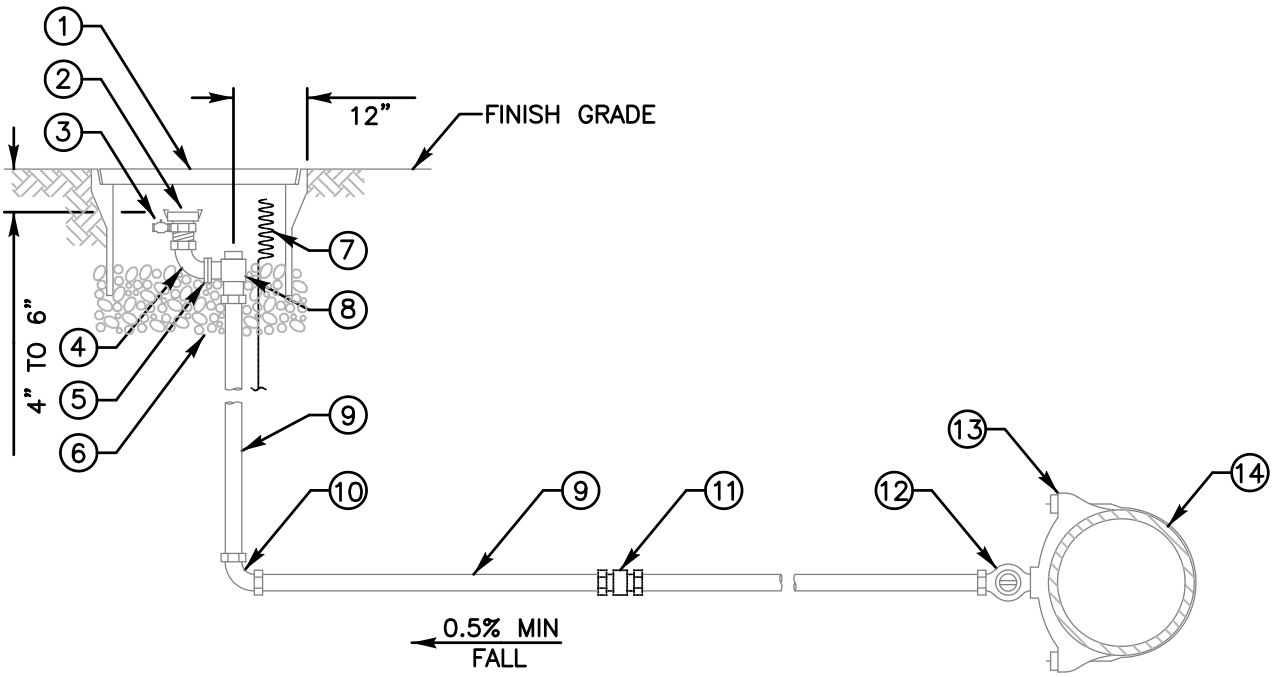
SAN DIEGO REGIONAL STANDARD DRAWING

AIR & VACUUM VALVE ENCLOSURE LOCATIONS

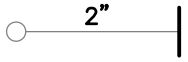
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **WA-06**



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



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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W–06		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

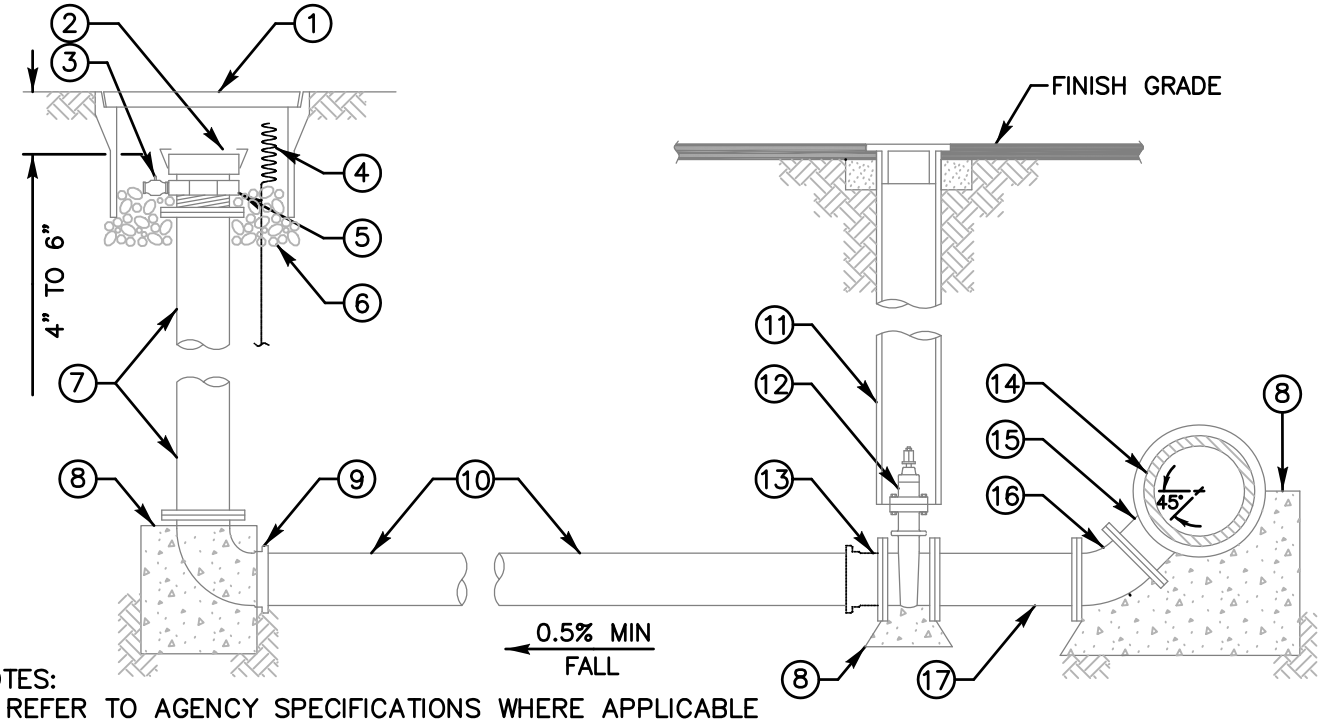
SAN DIEGO REGIONAL STANDARD DRAWING

2" BLOW-OFF INSTALLATION

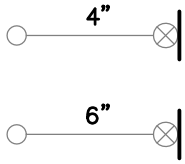
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **WB-01**



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



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	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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W–08		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

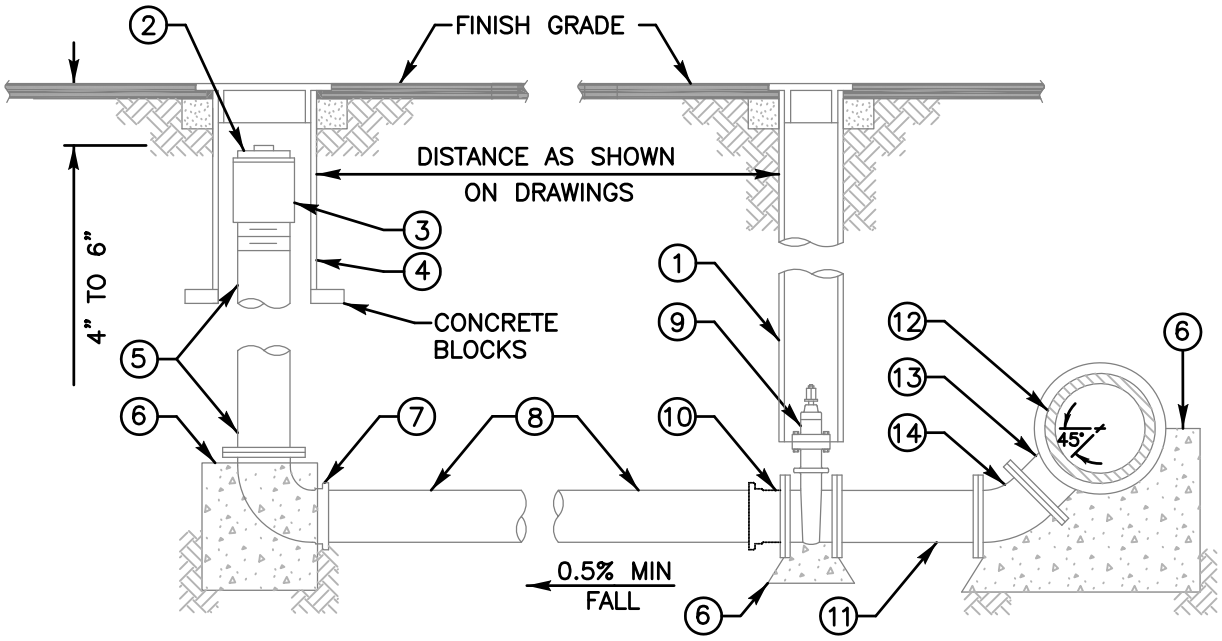
SAN DIEGO REGIONAL STANDARD DRAWING

4" & 6" BLOW-OFF INSTALLATION TYPE A

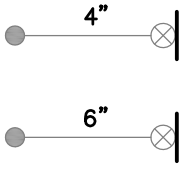
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

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



LEGEND ON PLANS

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W-09		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

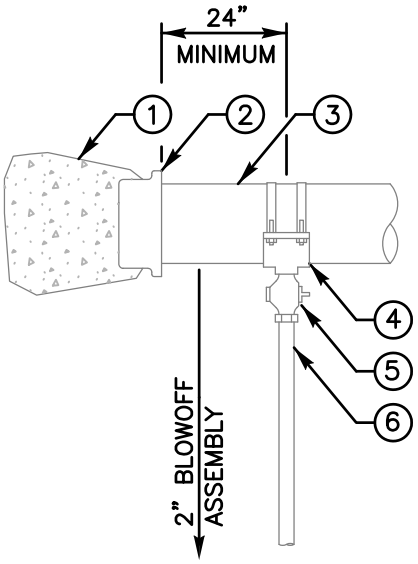
SAN DIEGO REGIONAL STANDARD DRAWING

4" & 6" BLOW-OFF ASSEMBLIES IN STREET TYPE B

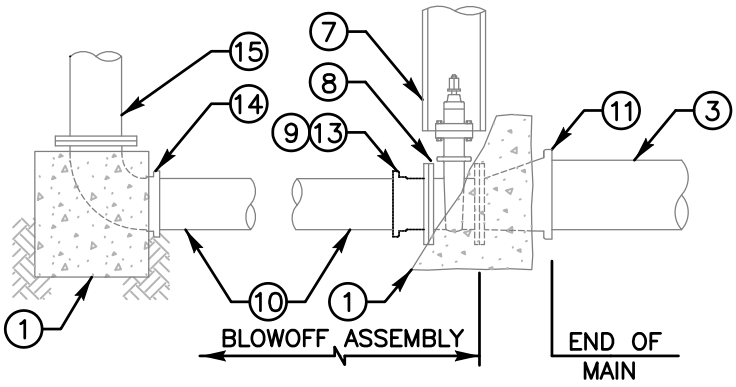
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

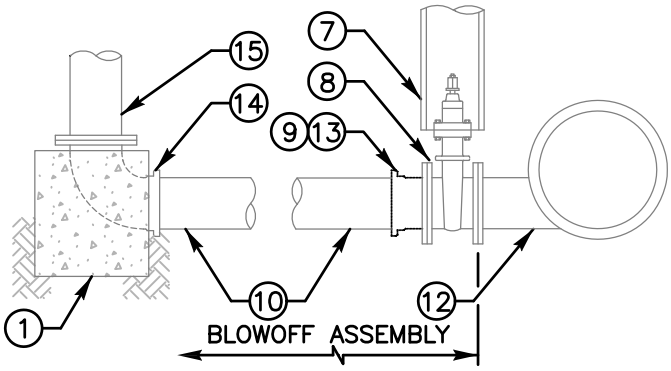
DRAWING NUMBER **WB-03**



2" BLOWOFF
FROM END OF MAIN
(PLAN VIEW)



4" & 6" BLOWOFF
FROM END OF MAIN
(PROFILE VIEW)



4" & 6" BLOWOFF
FROM STEEL MAIN
(PROFILE VIEW)

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

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W-07		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

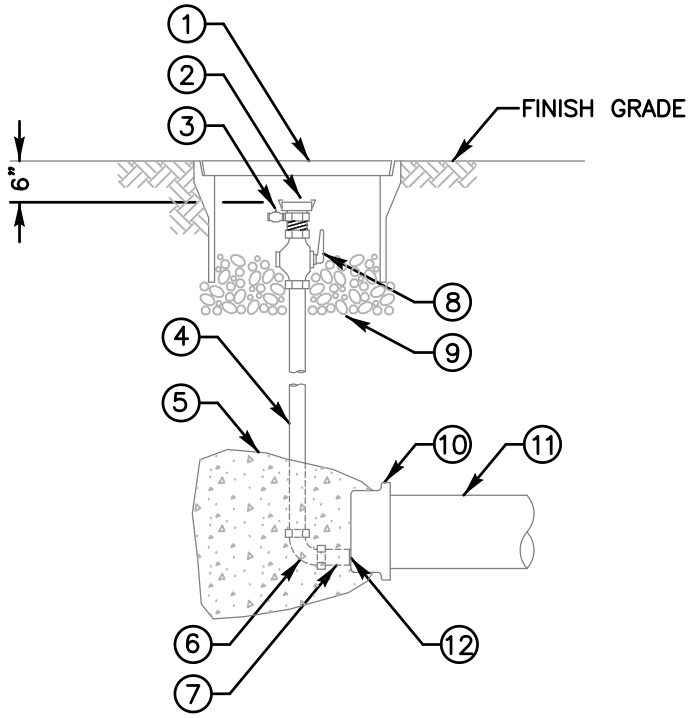
SAN DIEGO REGIONAL STANDARD DRAWING

BLOW-OFF INSTALLATION FROM END OF MAINS AND FROM STEEL MAINS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

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

TEMP 2"

LEGEND ON PLANS

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
		8	2" COMPRESSION x FIPT BALL VALVE WITH HANDLE
3	1/4" PRESSURE PET COCK	9	3/8" ROCK 6" DEEP
4	2" x REQUIRED LENGTH COPPER PIPE TYPE "K" RIGID OR SOFT	10	DI END CAP WITH 2.5" FIPT OUTLET
5	CONCRETE THRUST BLOCK SEE WT–01	11	WATER MAIN
		12	NYLON DIELECTRIC BUSHING (2.5" x 2")

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W–07		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

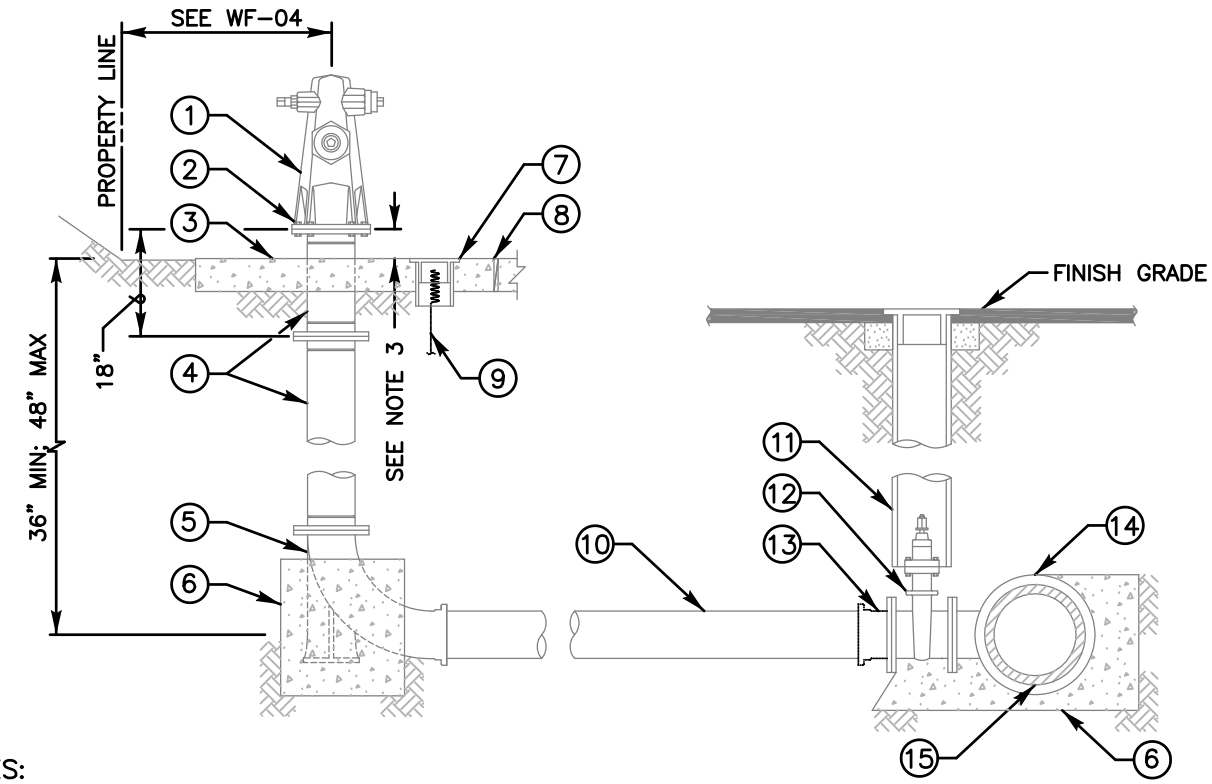
TEMPORARY 2" BLOW-OFF INSTALLATION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

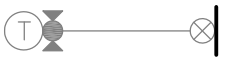
12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **WB-05**



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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W-10		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

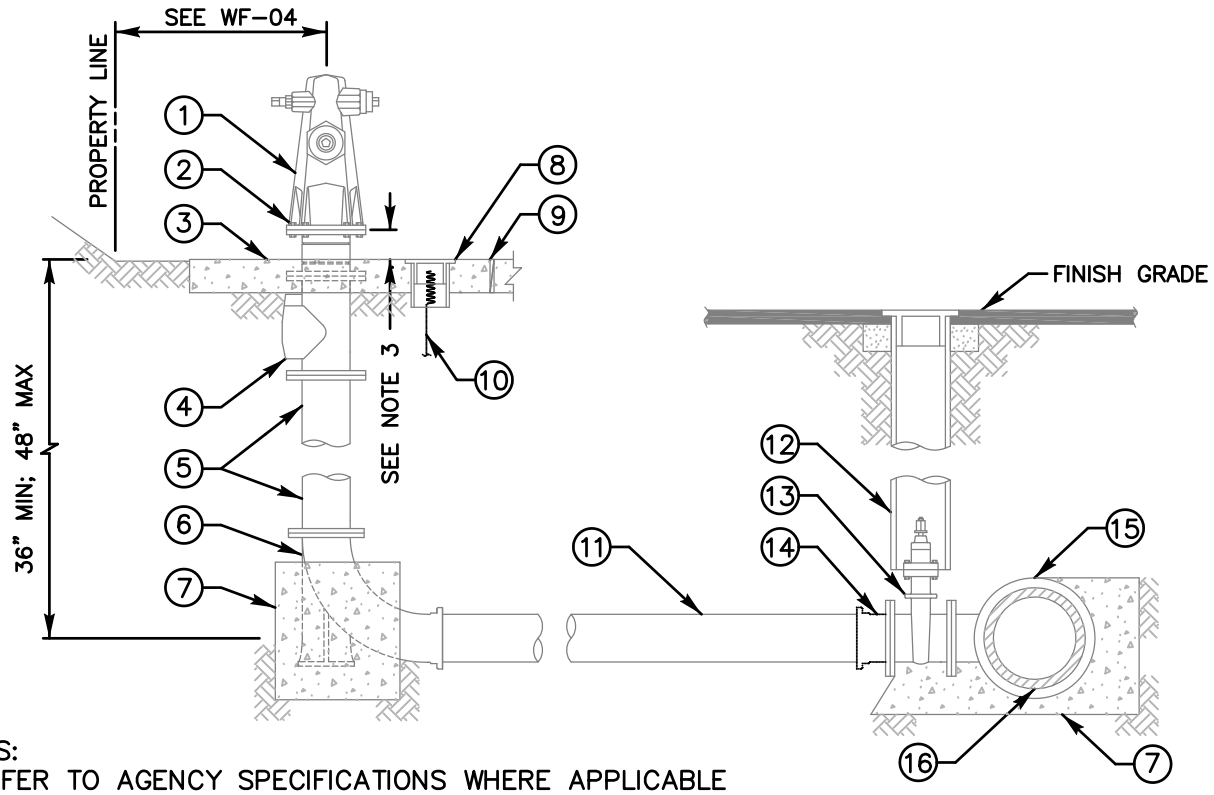
SAN DIEGO REGIONAL STANDARD DRAWING

6" FIRE HYDRANT INSTALLATION

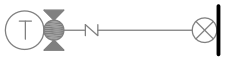
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

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



LEGEND ON PLANS

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
Reviewed	MR	B. KNOLL	10/15

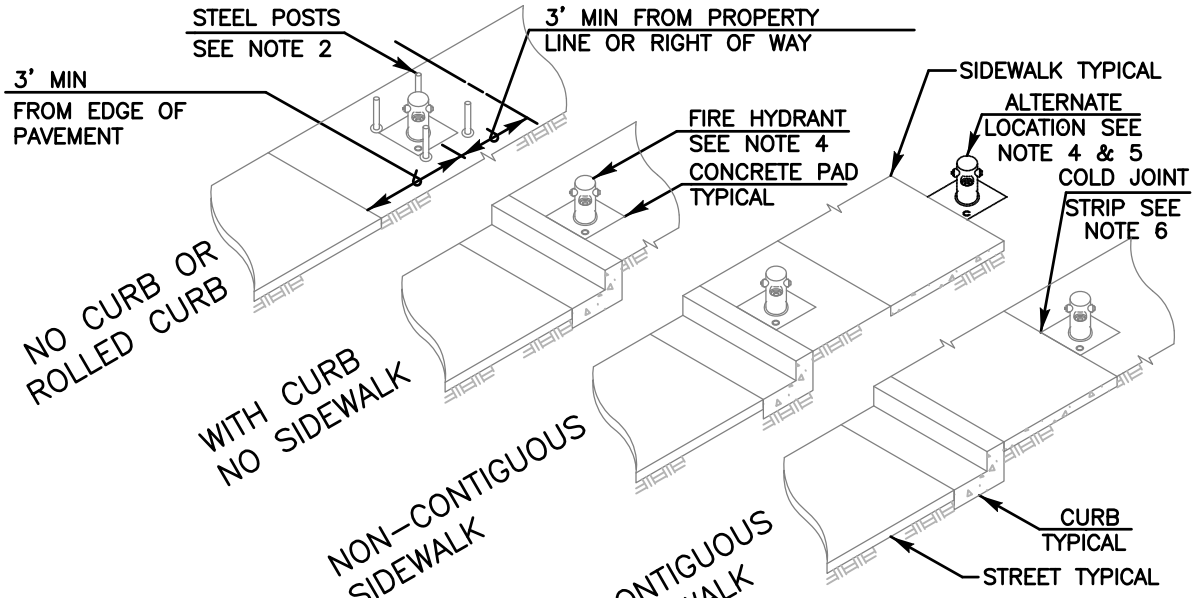
SAN DIEGO REGIONAL STANDARD DRAWING

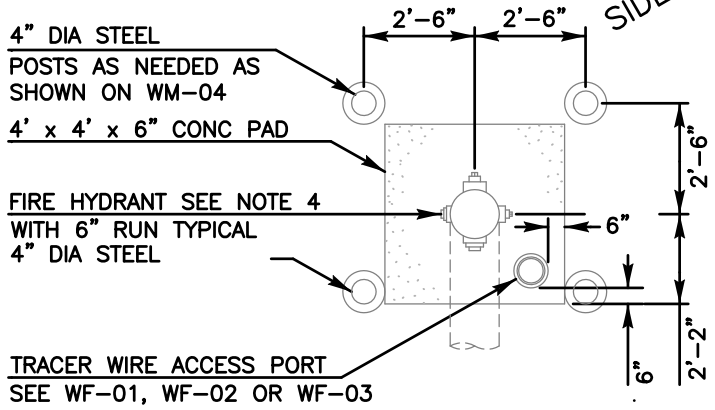
6" FIRE HYDRANT INSTALLATION WITH BREAK-OFF CHECK VALVE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

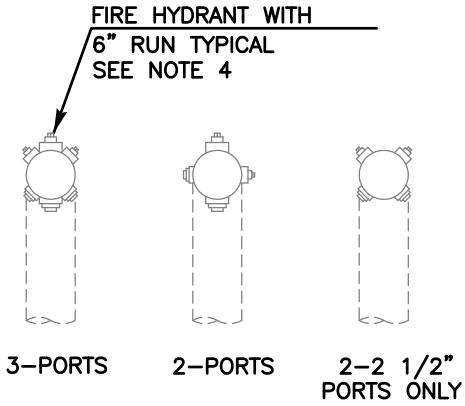
12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **WF-02**



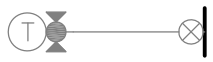


PROTECTION POST LOCATIONS



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



LEGEND ON PLANS

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
Reviewed	MR	B. KNOLL	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

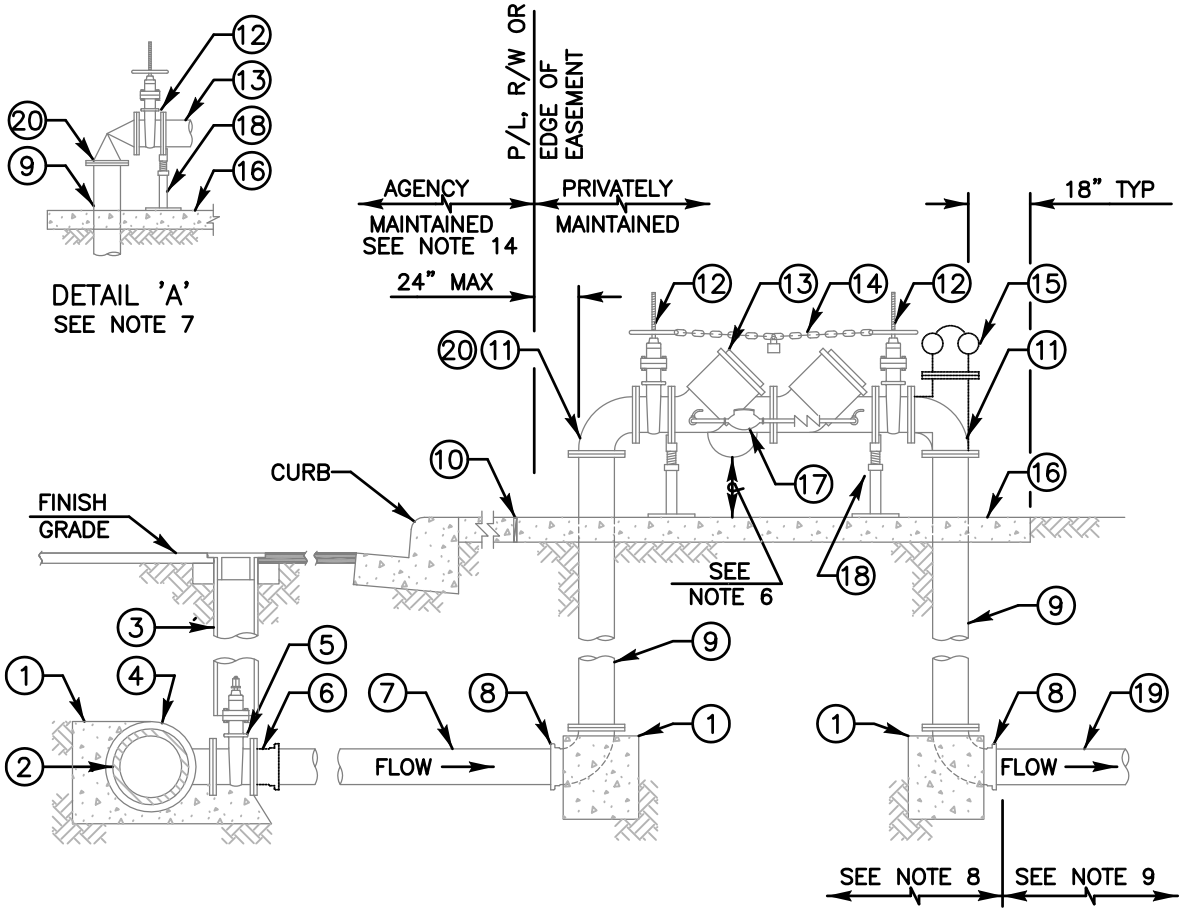
FIRE HYDRANT LOCATIONS AND PORT ORIENTATION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

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

RP FS

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)		
(7)	C-900 PVC PIPE	(17)	3/4" BYPASS, METER & RP DEVICE
(8)	MJ/PO x FLG 90° BEND	(18)	ADJUSTABLE VALVE SUPPORT
(9)	FLANGED DUCTILE IRON PIPE	(19)	PVC OR DI PIPE SEE NOTE 9
(10)	COLD JOINT STRIP	(20)	FLANGED ANGLE PRESSURE REDUCING VALVE SEE NOTE 7
(11)	FLANGED 90° BEND, SEE NOTE 7		
(12)	FLANGED OS&Y RWGV WITH HAND WHEEL		

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W-26		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

4" AND LARGER FIRE SERVICE INSTALLATION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015

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 APPURTENENCES 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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W-26		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

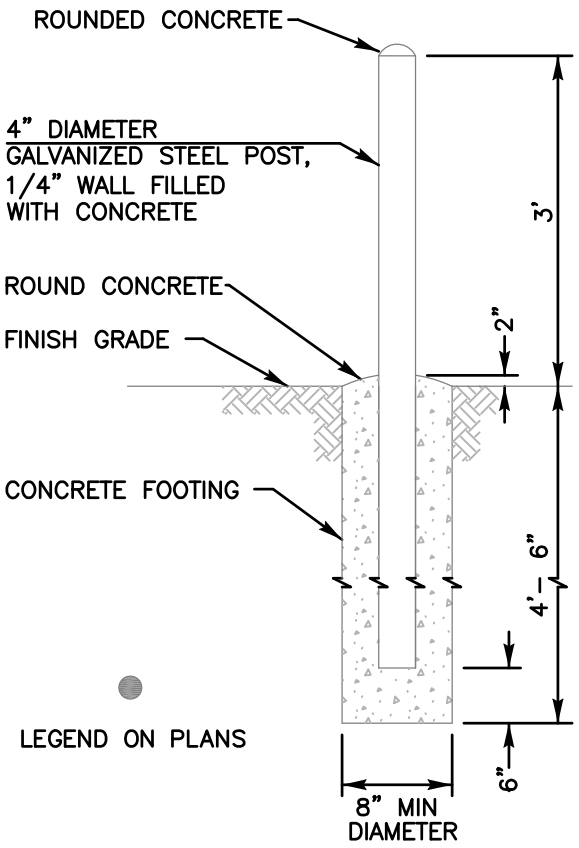
4" AND LARGER FIRE SERVICE INSTALLATION NOTES

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

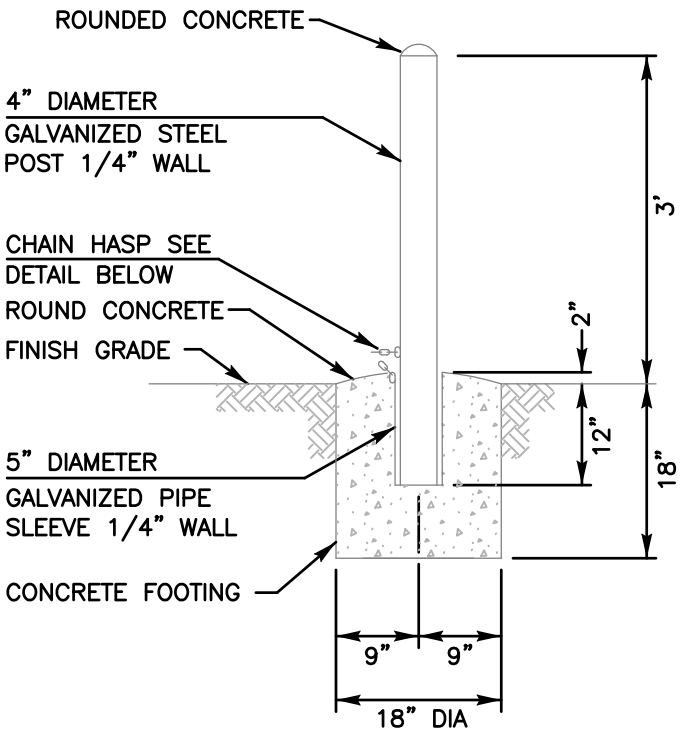
J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **WF-05** (2 OF 2)

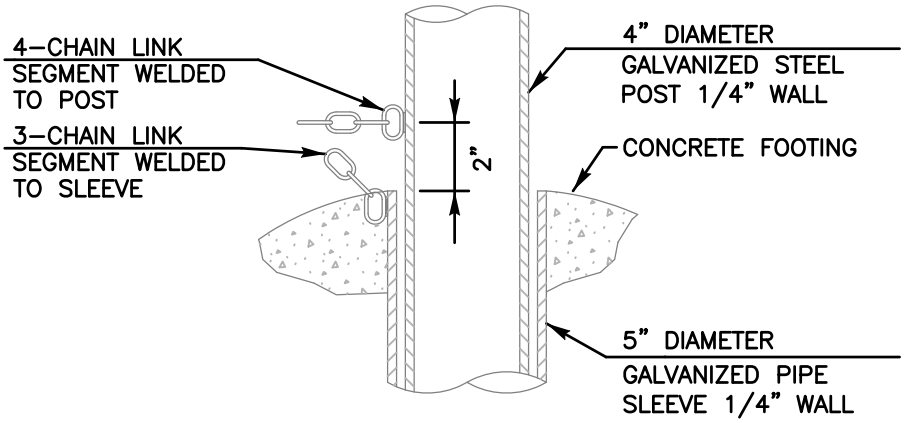


PROTECTION POST
TYPE "A"



DEMOUNTABLE PROTECTION POST
TYPE "B"

LEGEND ON PLANS



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
Reviewed	MR	B. KNOLL	10/15

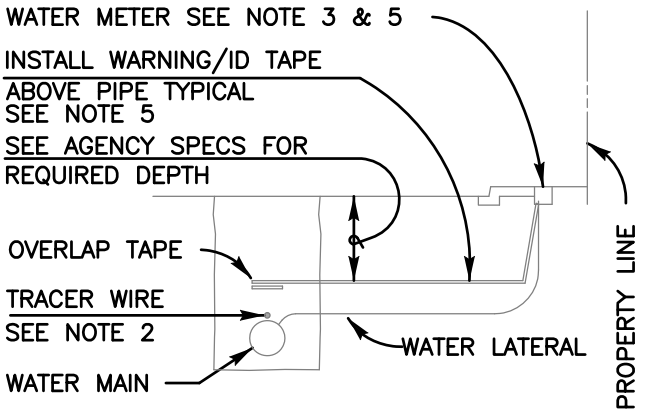
SAN DIEGO REGIONAL STANDARD DRAWING

PROTECTION POST INSTALLATION

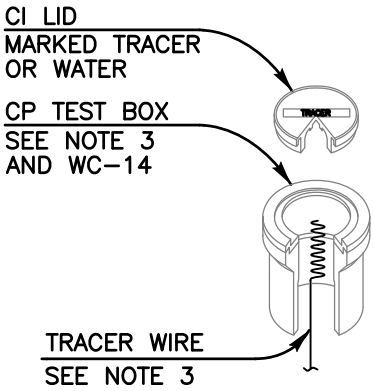
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

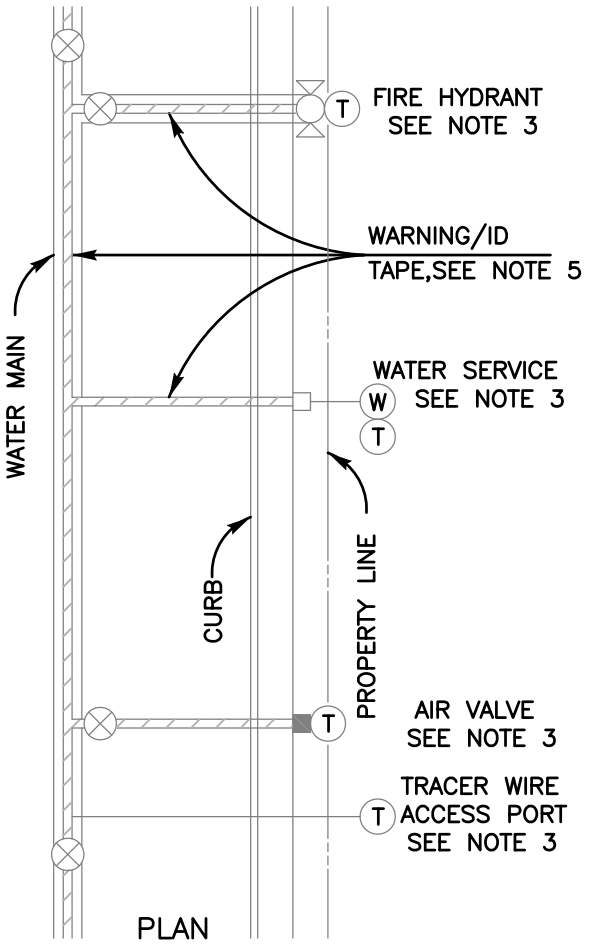
DRAWING NUMBER **WM-04**



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



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W-25		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

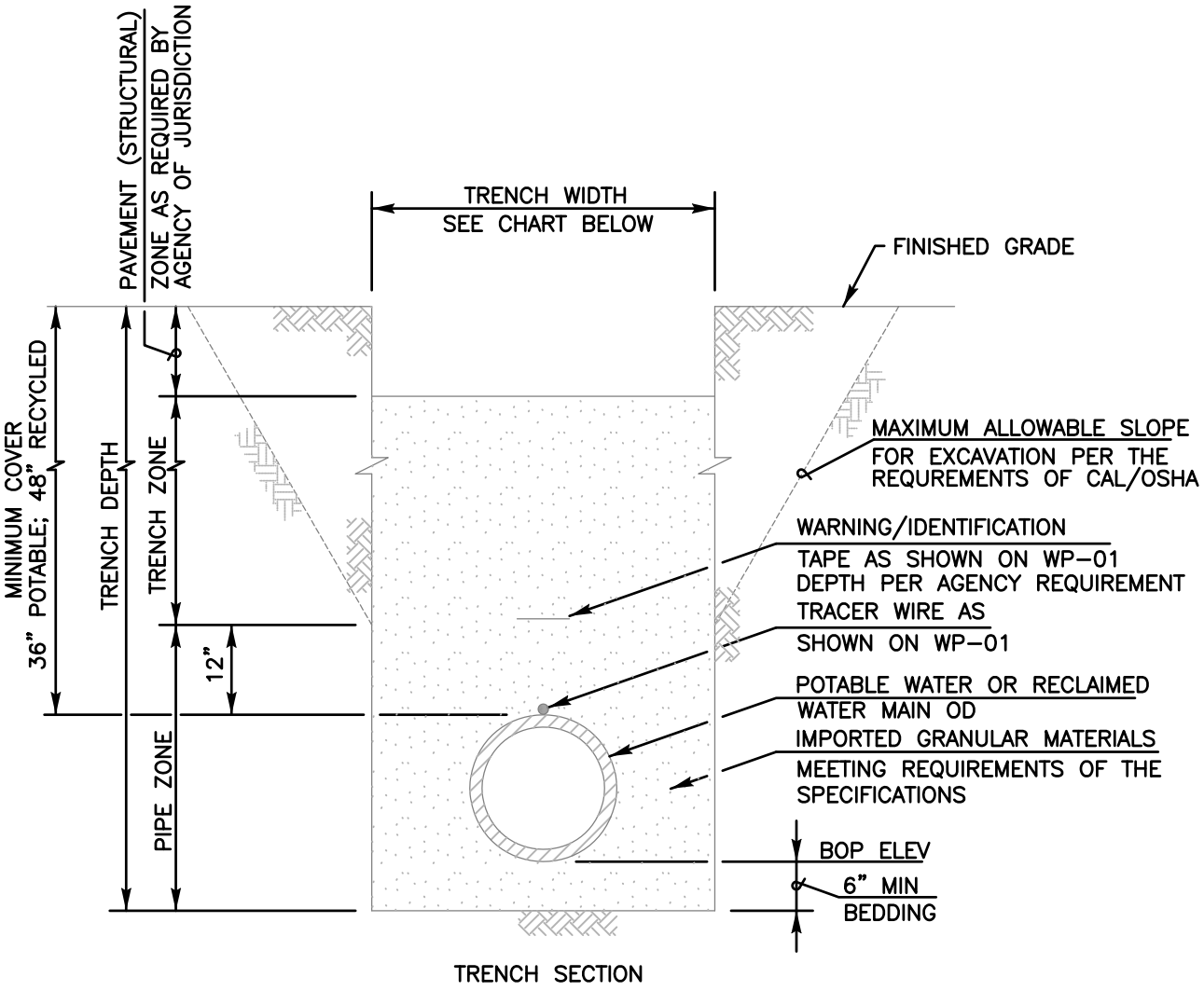
SAN DIEGO REGIONAL STANDARD DRAWING

WARNING/IDENTIFICATION TAPE AND TRACER WIRE INSTALLATIONS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **WP-01**



TRENCH SECTION

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W-21		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

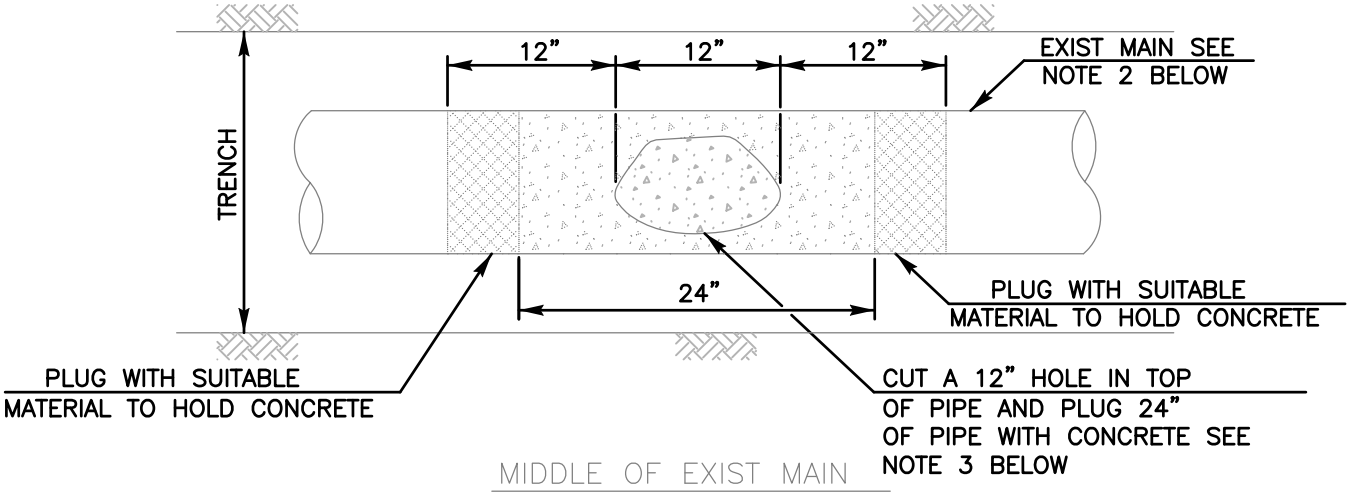
SAN DIEGO REGIONAL STANDARD DRAWING

PIPE BEDDING AND TRENCH BACKFILL FOR POTABLE AND RECYCLED WATER MAINS

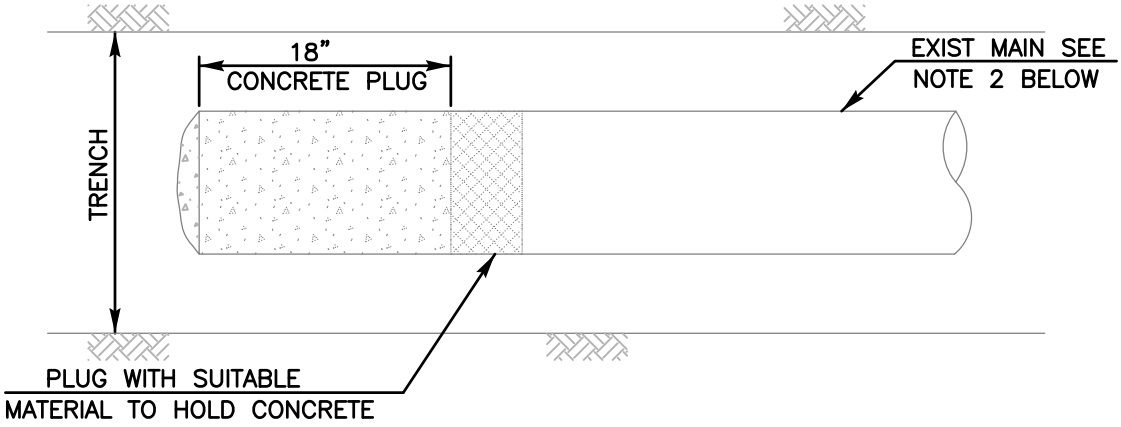
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **WP-02**



MIDDLE OF EXIST MAIN



END OF EXIST MAIN

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
ORIGINAL		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

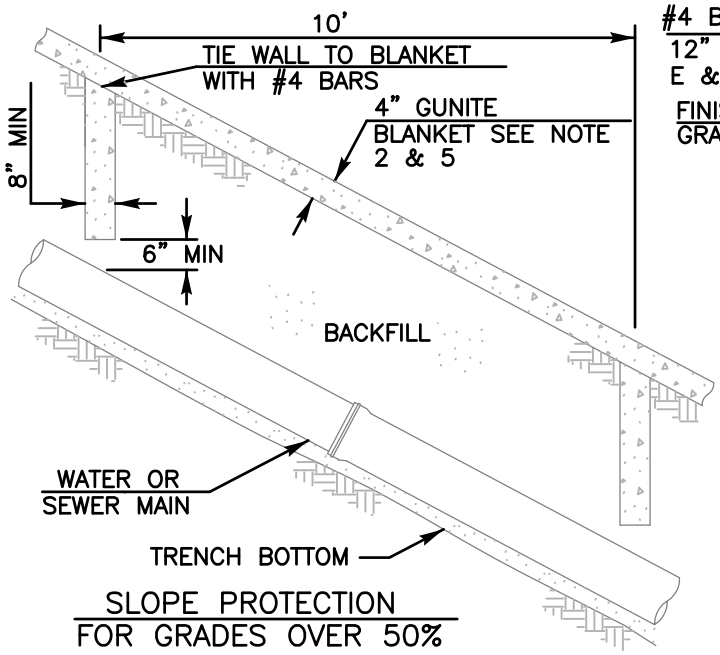
SAN DIEGO REGIONAL STANDARD DRAWING

CUTTING AND PLUGGING ABANDONED WATER, RECYCLED WATER AND SEWER MAINS

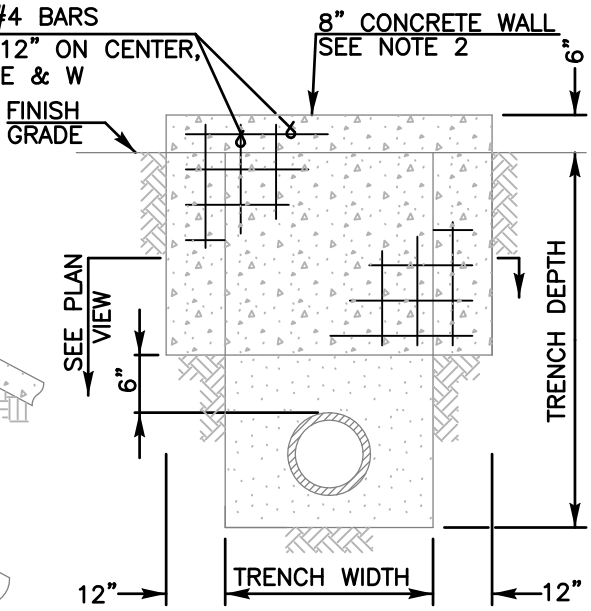
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

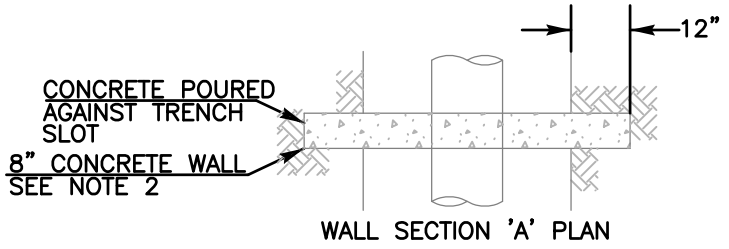
DRAWING NUMBER **WP-03**



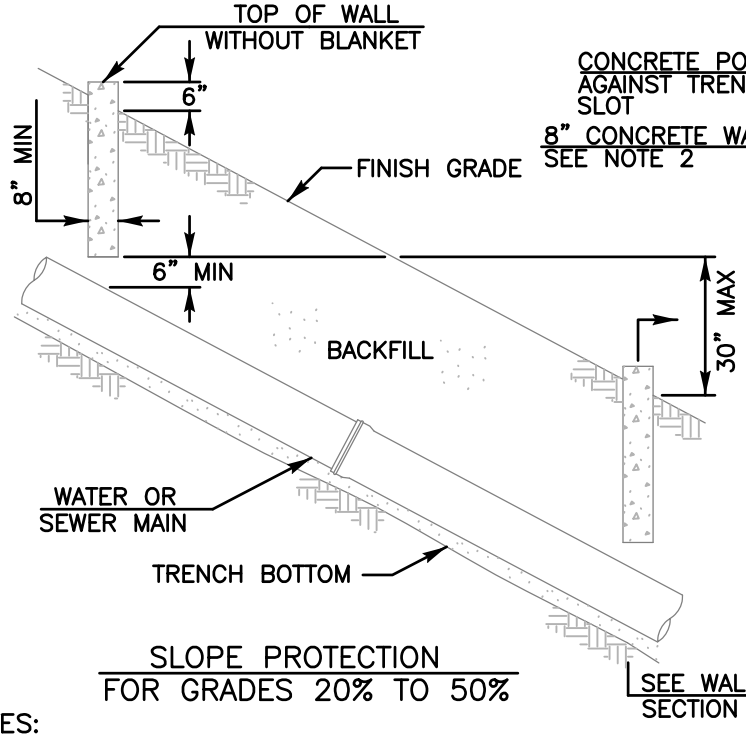
SLOPE PROTECTION
FOR GRADES OVER 50%



WALL SECTION 'A' ELEVATION



WALL SECTION 'A' PLAN



SLOPE PROTECTION
FOR GRADES 20% TO 50%

SEE WALL SECTION 'A'

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
Reviewed	MR	B. KNOLL	10/15

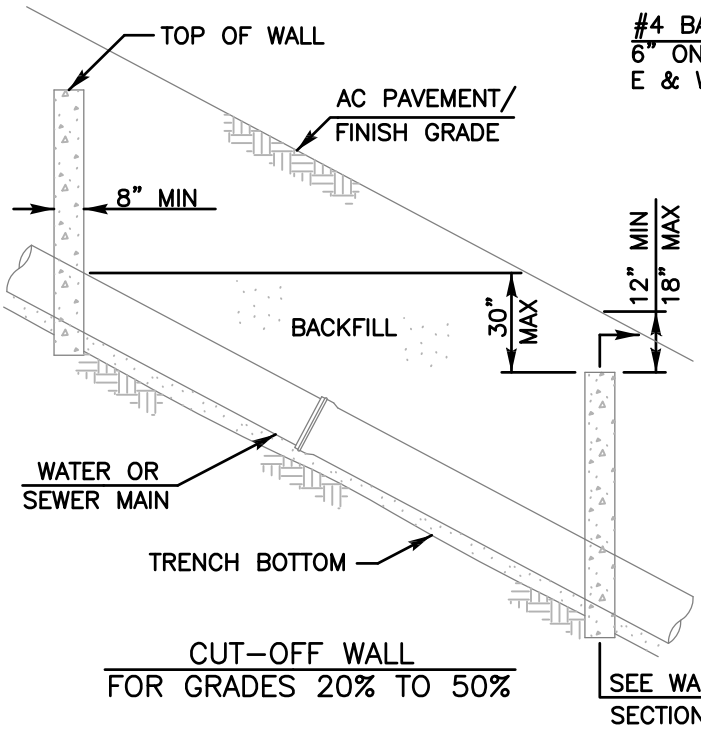
SAN DIEGO REGIONAL STANDARD DRAWING

SLOPE PROTECTION INSTALLATIONS

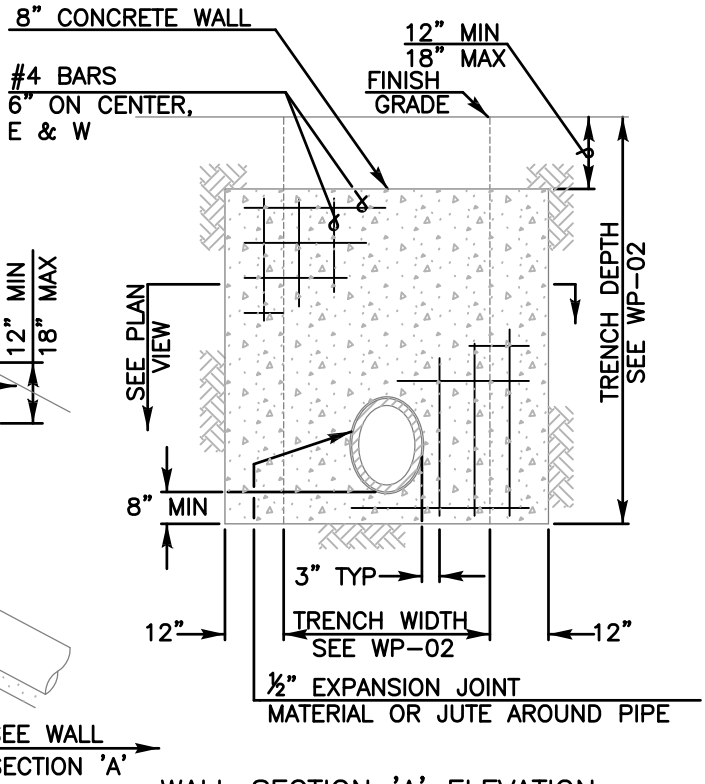
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

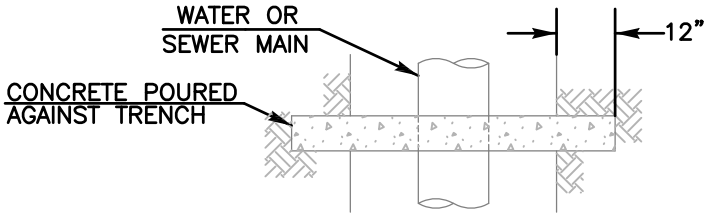
DRAWING NUMBER **WP-05**



CUT–OFF WALL
FOR GRADES 20% TO 50%



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
ORIGINAL		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

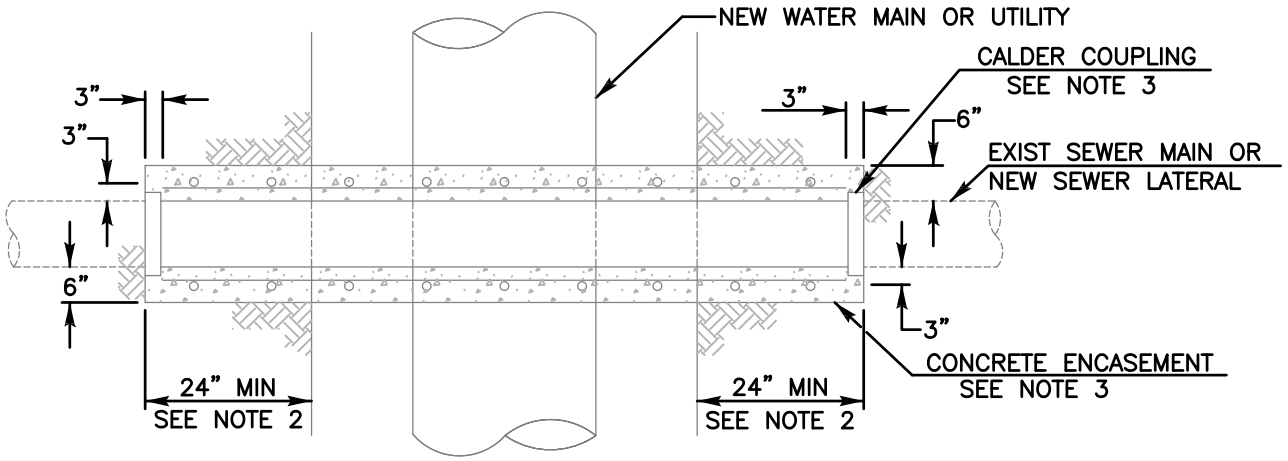
SAN DIEGO REGIONAL STANDARD DRAWING

CUT-OFF WALL INSTALLATION IN TRAVELED AREAS

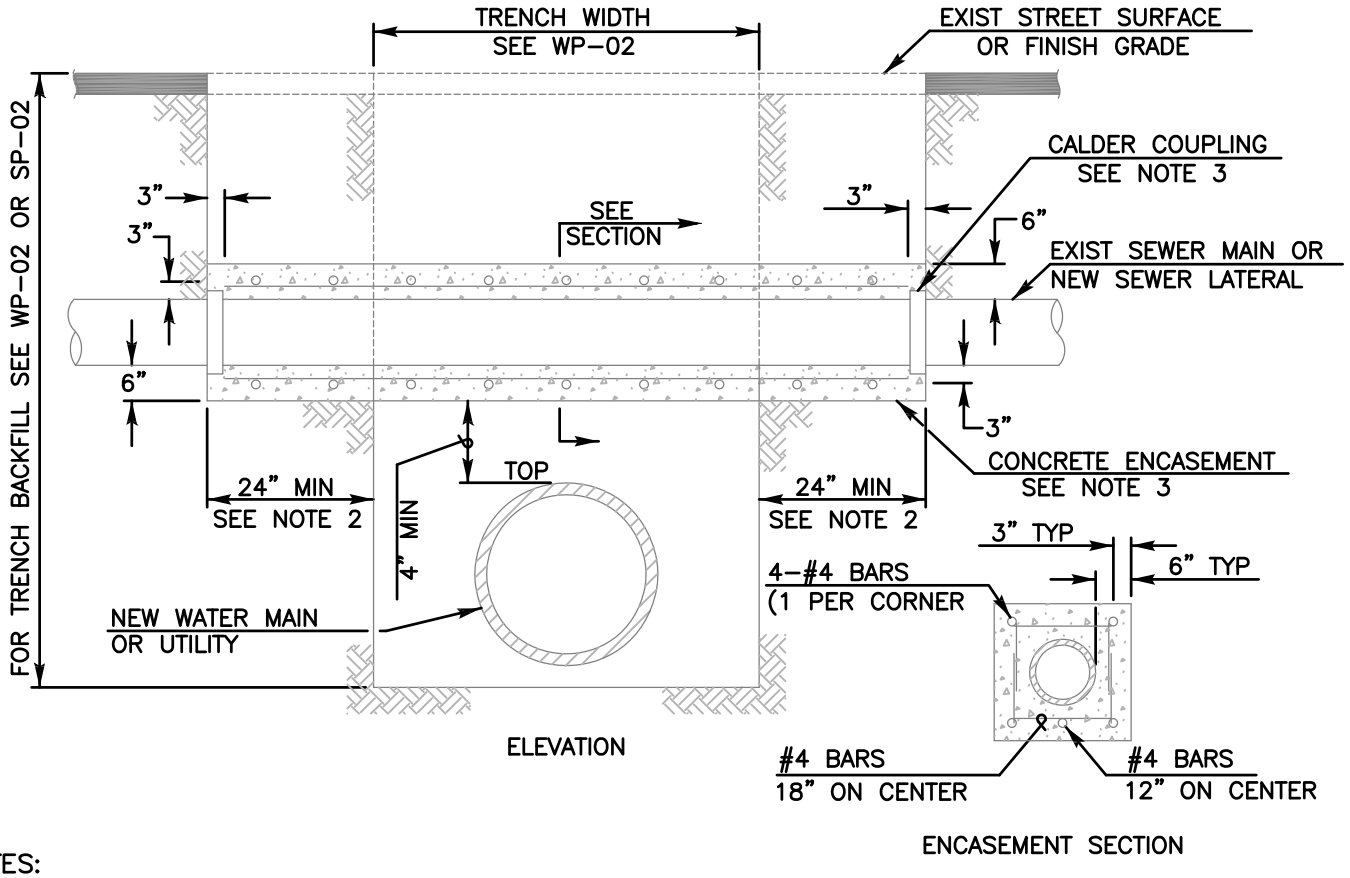
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

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
ORIGINAL		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

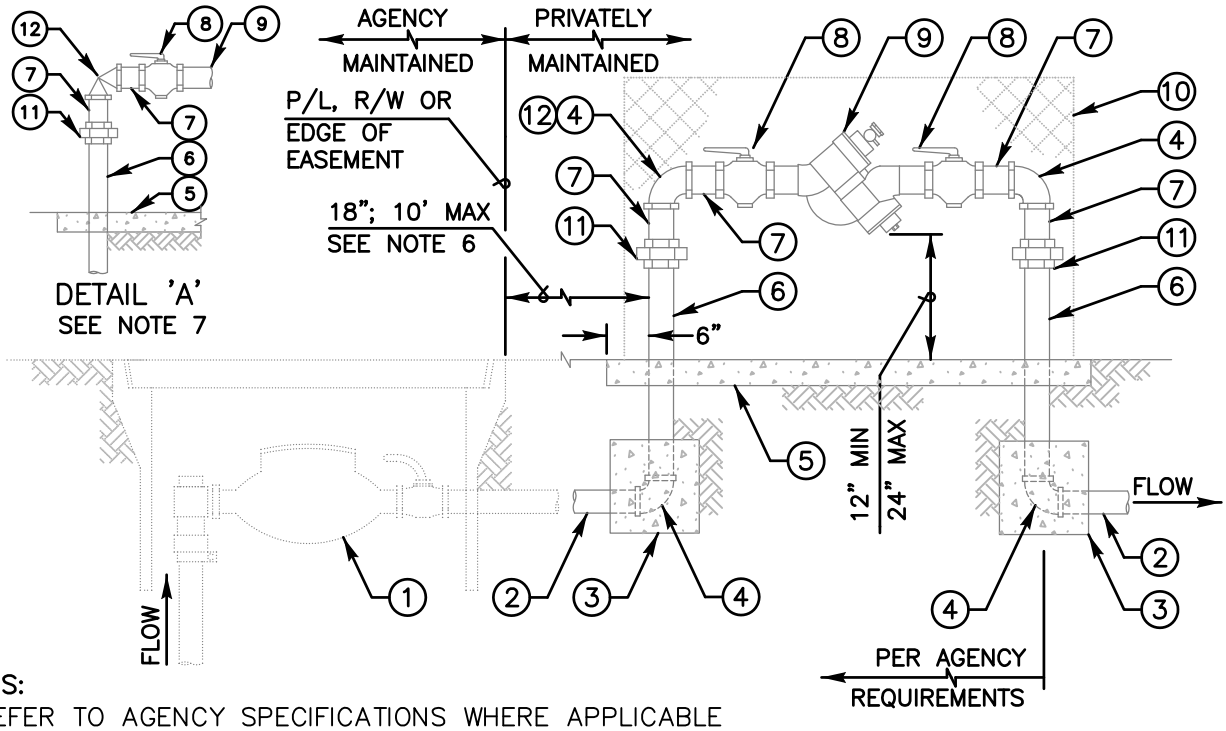
PIPE SUPPORT FOR UNDERCUT SEWER MAINS OR SEWER LATERALS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

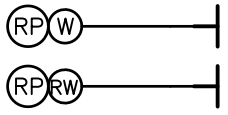
Chairperson R.C.E. 19246 Date

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



LEGEND ON PLANS

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W-27		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Add Note 11	BK	B. KNOLL	4/15

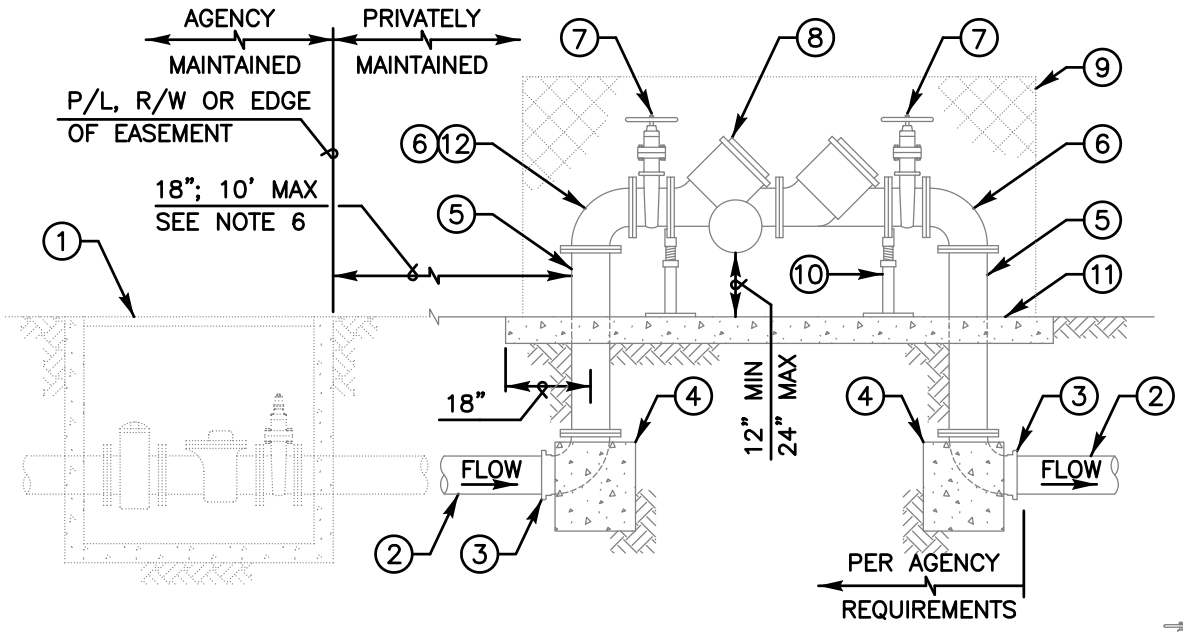
SAN DIEGO REGIONAL STANDARD DRAWING

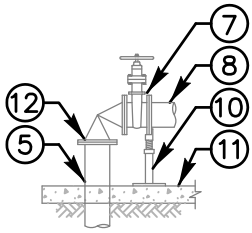
3/4" THRU 2" REDUCED PRESSURE BACKFLOW PREVENTION DEVICE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **WR-01**

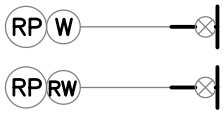




DETAIL 'A'
SEE NOTE 7

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W-28		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

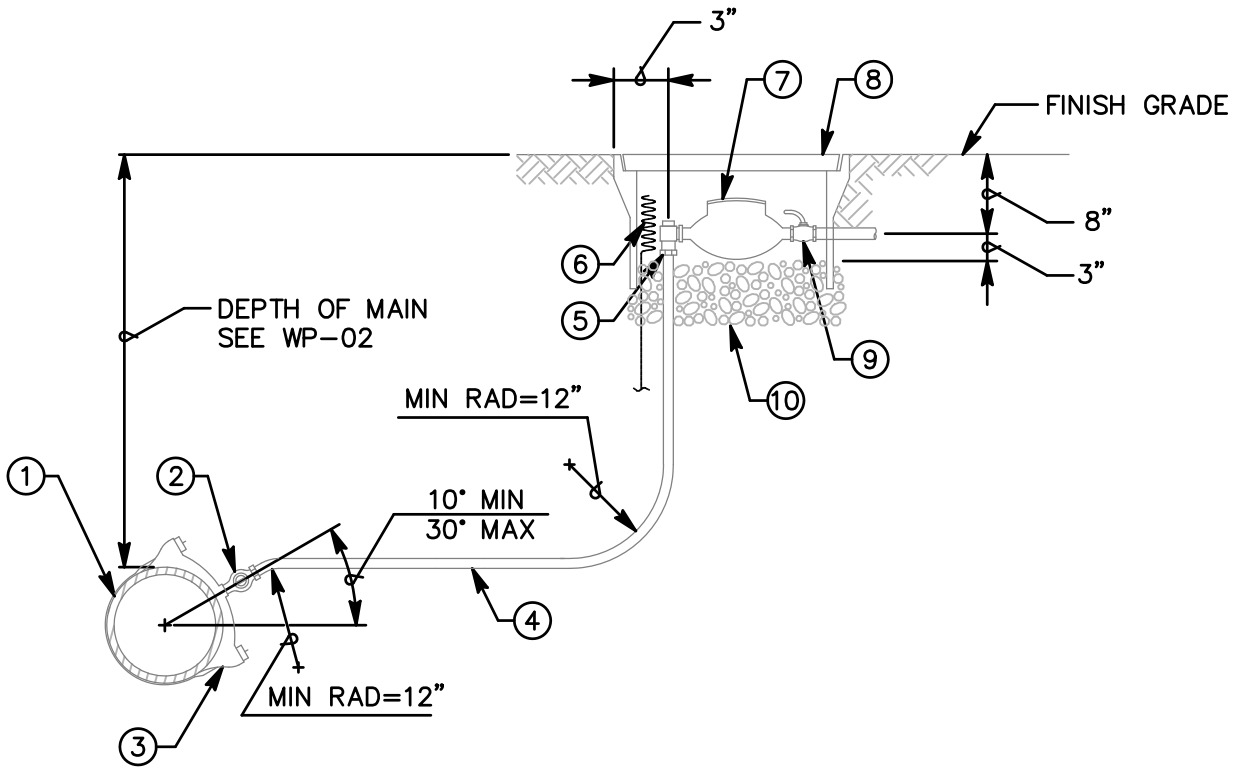
SAN DIEGO REGIONAL STANDARD DRAWING

3" AND LARGER REDUCED PRESSURE BACKFLOW PREVENTION DEVICE

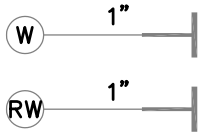
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W-01		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

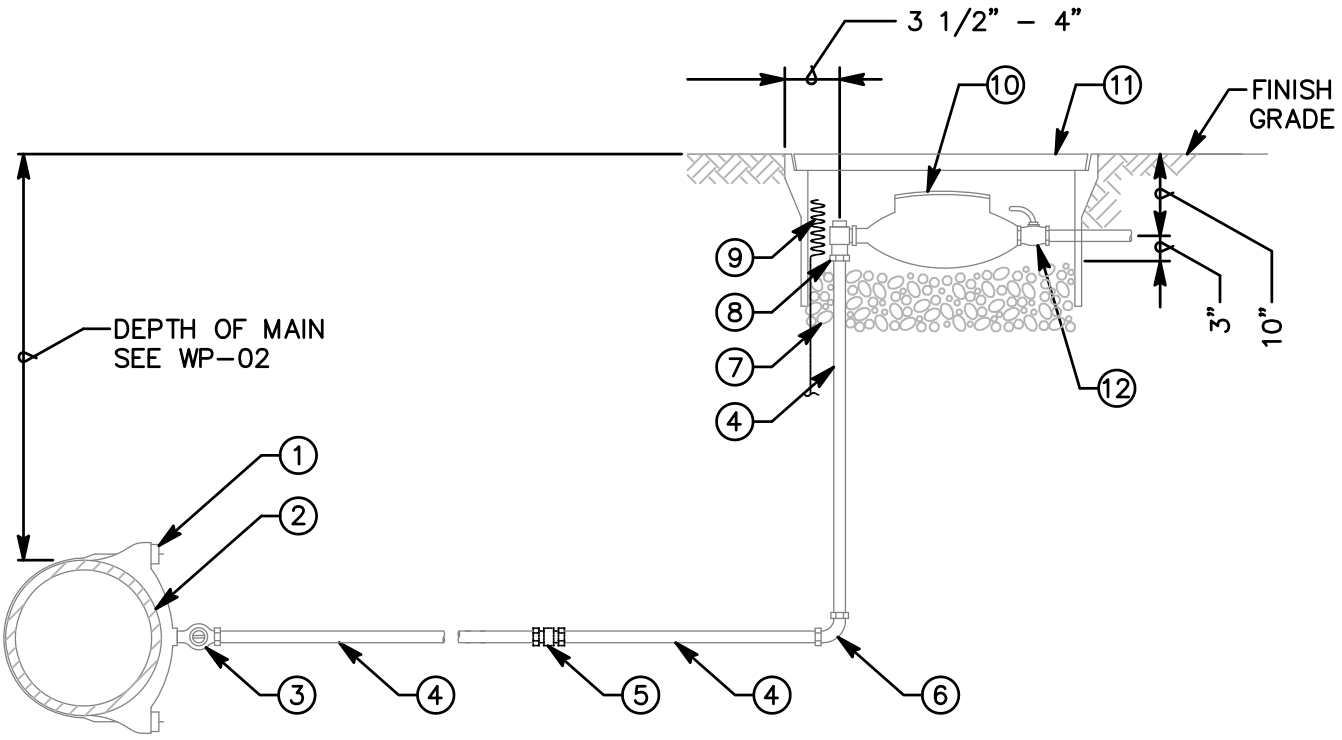
SAN DIEGO REGIONAL STANDARD DRAWING

1" WATER SERVICE INSTALLATION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

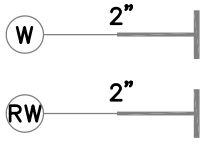
12/17/2015
Chairperson R.C.E. 19246 Date

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		
3	2" BRONZE CORPORATION STOP	8	2" BRONZE ANGLE METER STOP WITH LOCKWING
4	2" x REQUIRED LENGTH COPPER PIPE TYPE "K" SOFT/RIGID OR UNLESS OTHERWISE SPECIFIED BY AGENCY OF JURISDICTION	9	TRACER WIRE (AS REQUIRED), SEE WP–01
		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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W–02		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

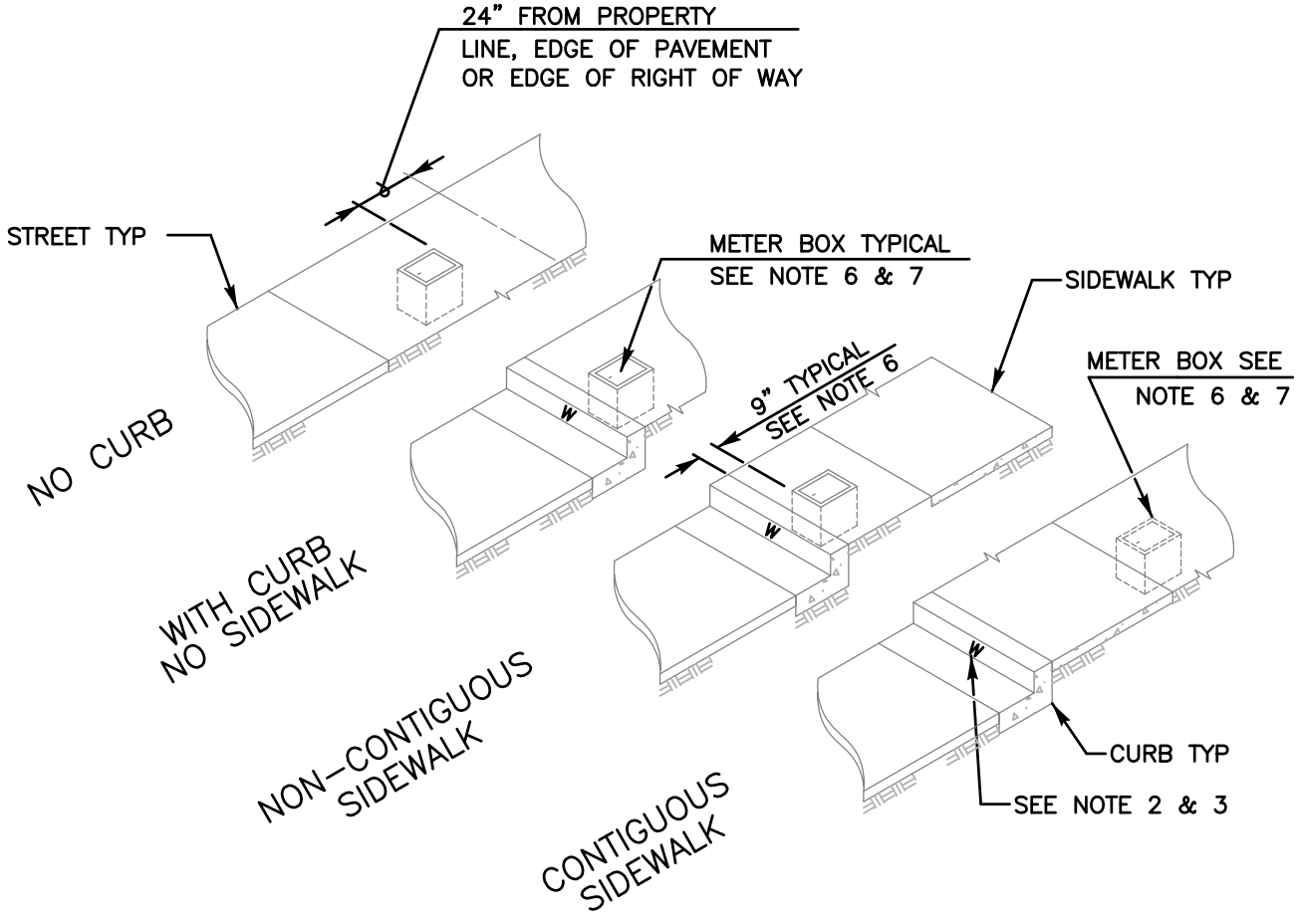
2" WATER SERVICE INSTALLATION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W-15		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

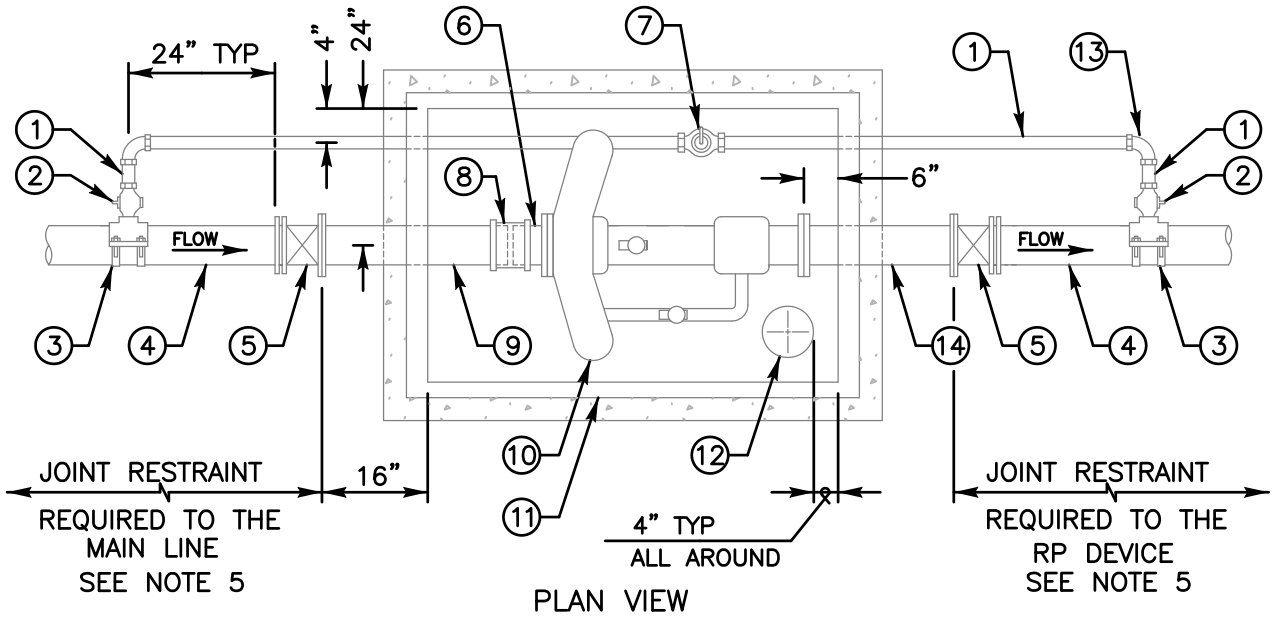
METER BOX LOCATIONS FOR WATER AND RECYCLED WATER APPURTENANCES

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

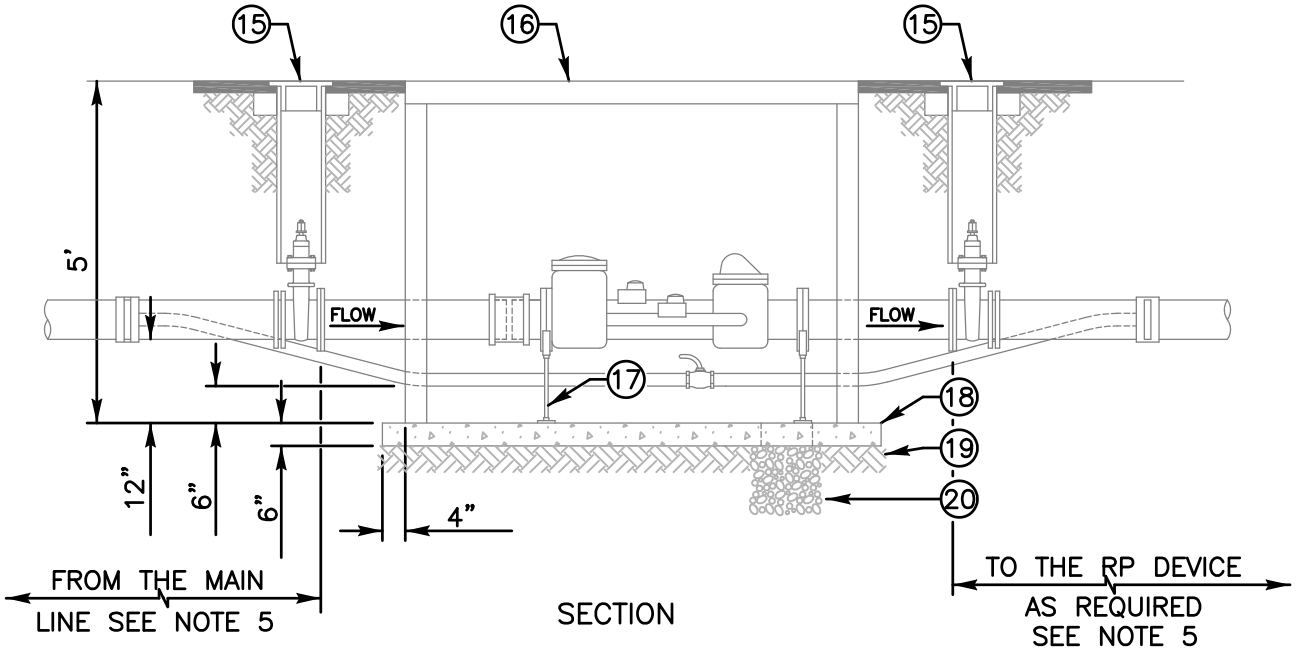
J M Stanton 12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **WS-03**



PLAN VIEW



SECTION

(INDICATE SIZE)

W

LEGEND ON PLANS

FOR MATERIAL DESCRIPTIONS AND NOTES SEE WS-04 (2 OF 2)

Revision	By	Approved	Date
ORIGINAL		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

4" OR 6" FIRELINE/MASTER METER INSTALLATION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

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
ORIGINAL		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

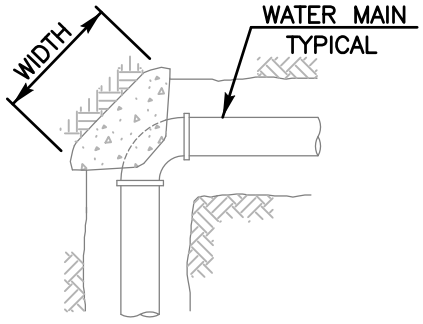
SAN DIEGO REGIONAL STANDARD DRAWING

4" OR 6" FIRELINE/MASTER METER INSTALLATION

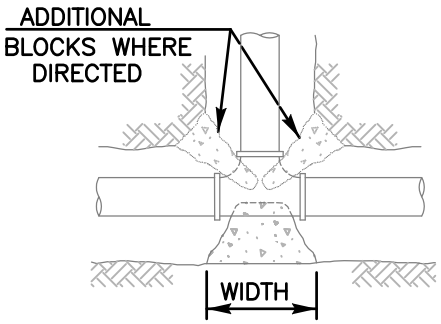
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

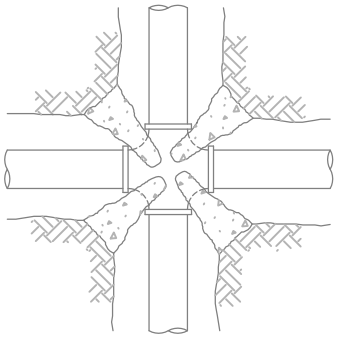
DRAWING NUMBER **WS-04** (2 OF 2)



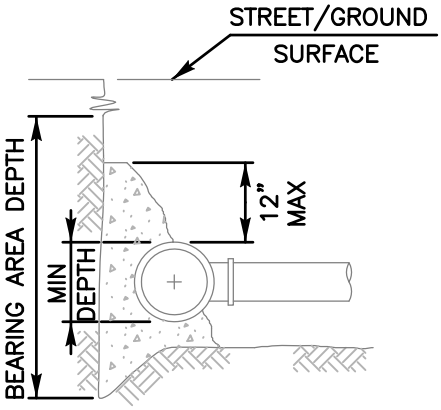
BEND



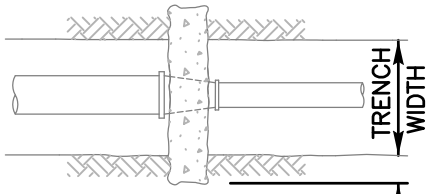
TEE PLAN



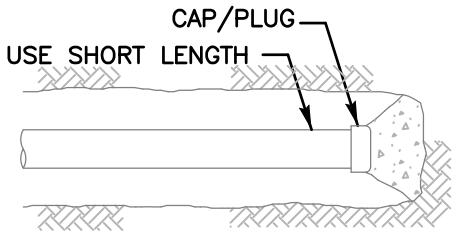
CROSS



TEE ELEVATION

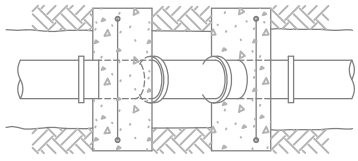


REDUCER

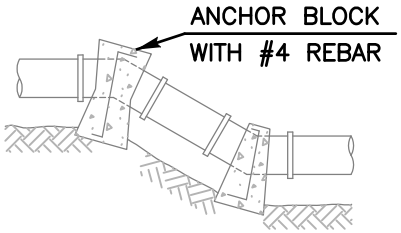


END CAP

SEE NOTE 2 BELOW



VERT BENDS PLAN



VERT BENDS ELEVATION

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Repl. W-17 through W-22		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE THRUST AND ANCHOR BLOCK INSTALLATIONS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

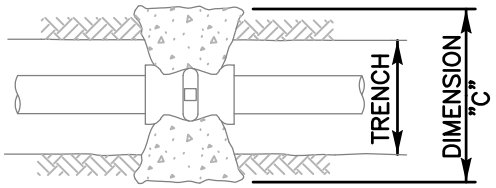
DRAWING NUMBER **WT-01** (1 OF 3)

VALVE SUPPORT BLOCK

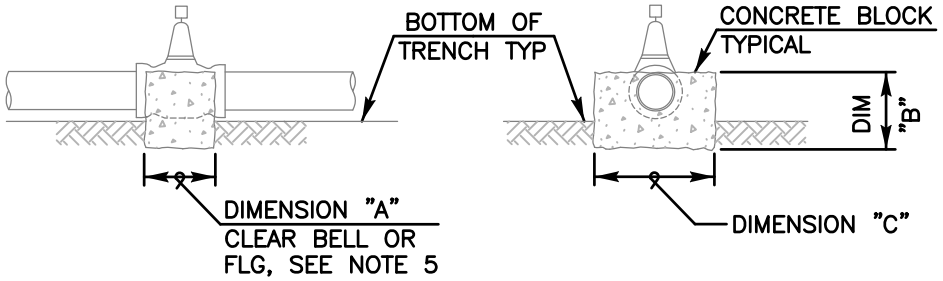
VALVE SIZE	DIMENSION "A"	DIMENSION "B"
4"	12"	12"
6"	12"	12"
8"	13"	14"
10"	14"	16"
12"	15"	18"
DIMENSION "C" = TRENCH WIDTH PLUS TWO TIMES THE PIPE DIAMETER		

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Repl. W-17 through W-22		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

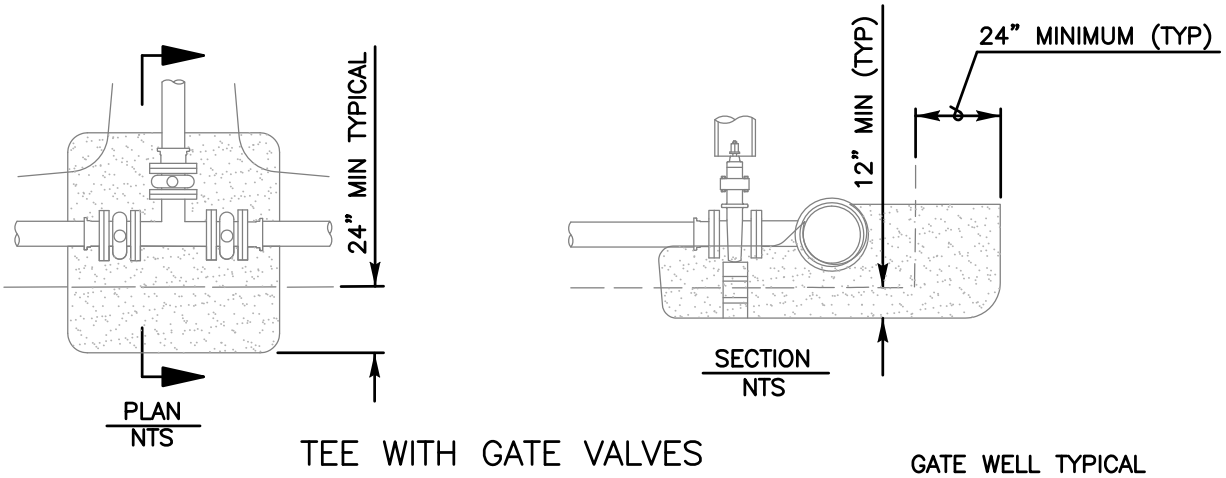
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE THRUST AND ANCHOR BLOCK INSTALLATIONS

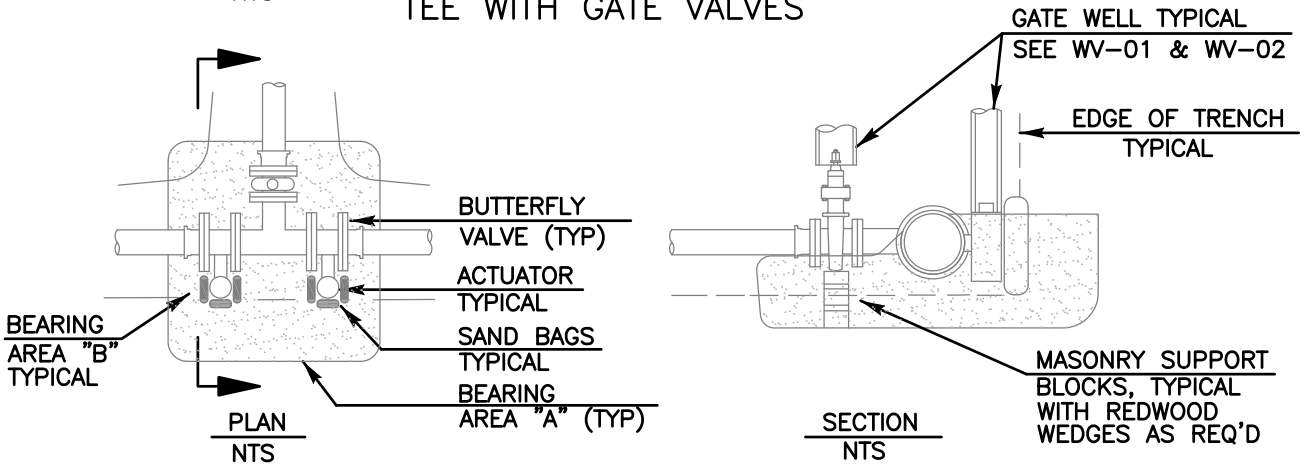
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

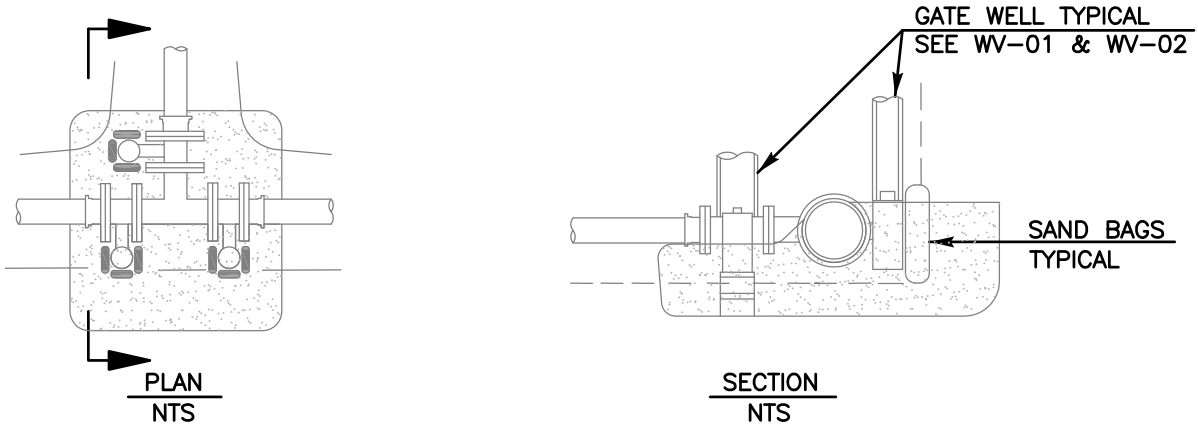
DRAWING NUMBER **WT-01** (2 OF 3)



TEE WITH GATE VALVES



TEE WITH BUTTERFLY VALVES ON MAIN



TEE WITH BUTTERFLY VALVES

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Repl. W-17 through W-22		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

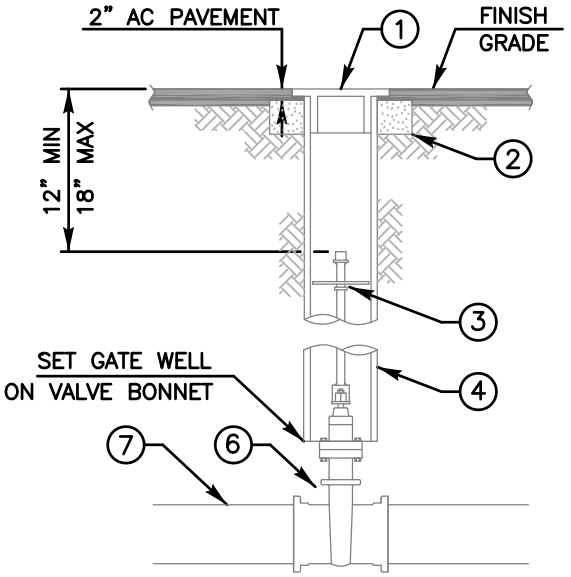
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE THRUST AND ANCHOR BLOCK INSTALLATIONS

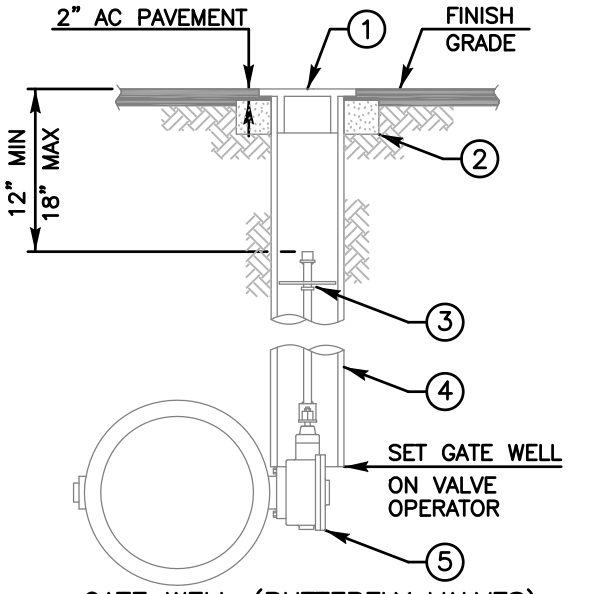
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

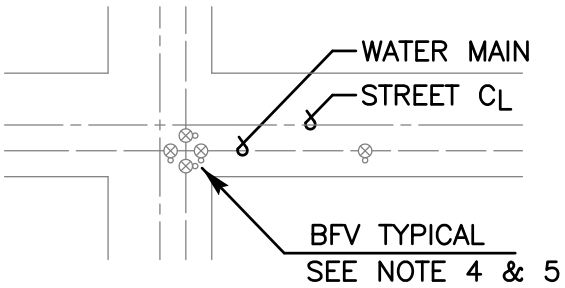
DRAWING NUMBER **WT-01** (3 OF 3)



GATE WELL (GATE VALVES)

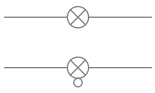


GATE WELL (BUTTERFLY VALVES)



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) 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	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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Repl. W-12A and W-12B		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

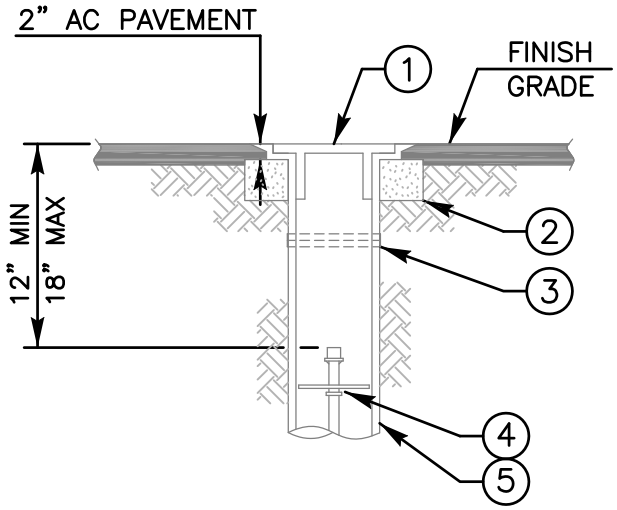
SAN DIEGO REGIONAL STANDARD DRAWING

GATE WELL CAP INSTALLATION, FOR VALVES 4" AND LARGER

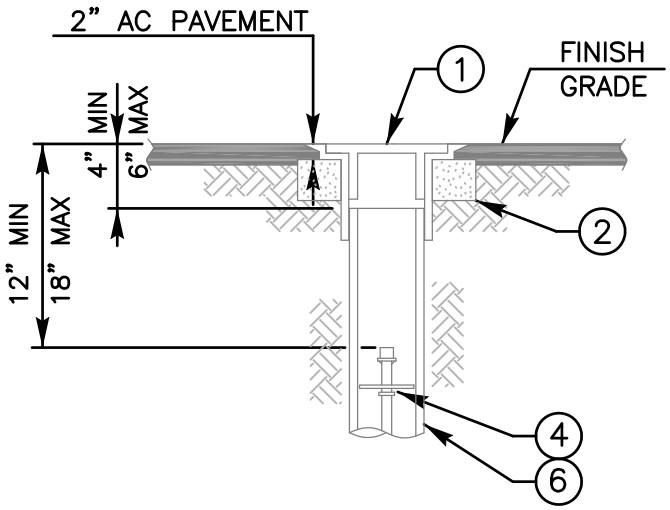
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

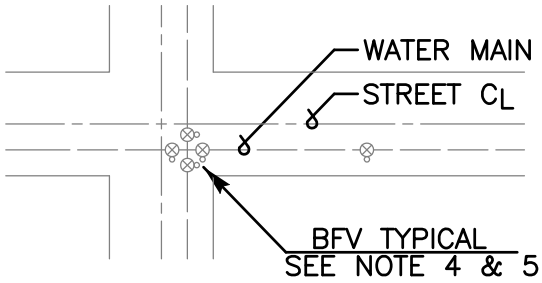
DRAWING NUMBER **WV-01**



8" GATE WELL TYPE A

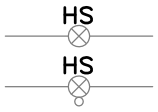


6" GATE WELL TYPE B



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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Repl. W-12A and W-12B		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

GATE WELL CAP & CAN INSTALLATION, FOR VALVES 4" AND LARGER

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

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
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Repl. W-12A and W-12B		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

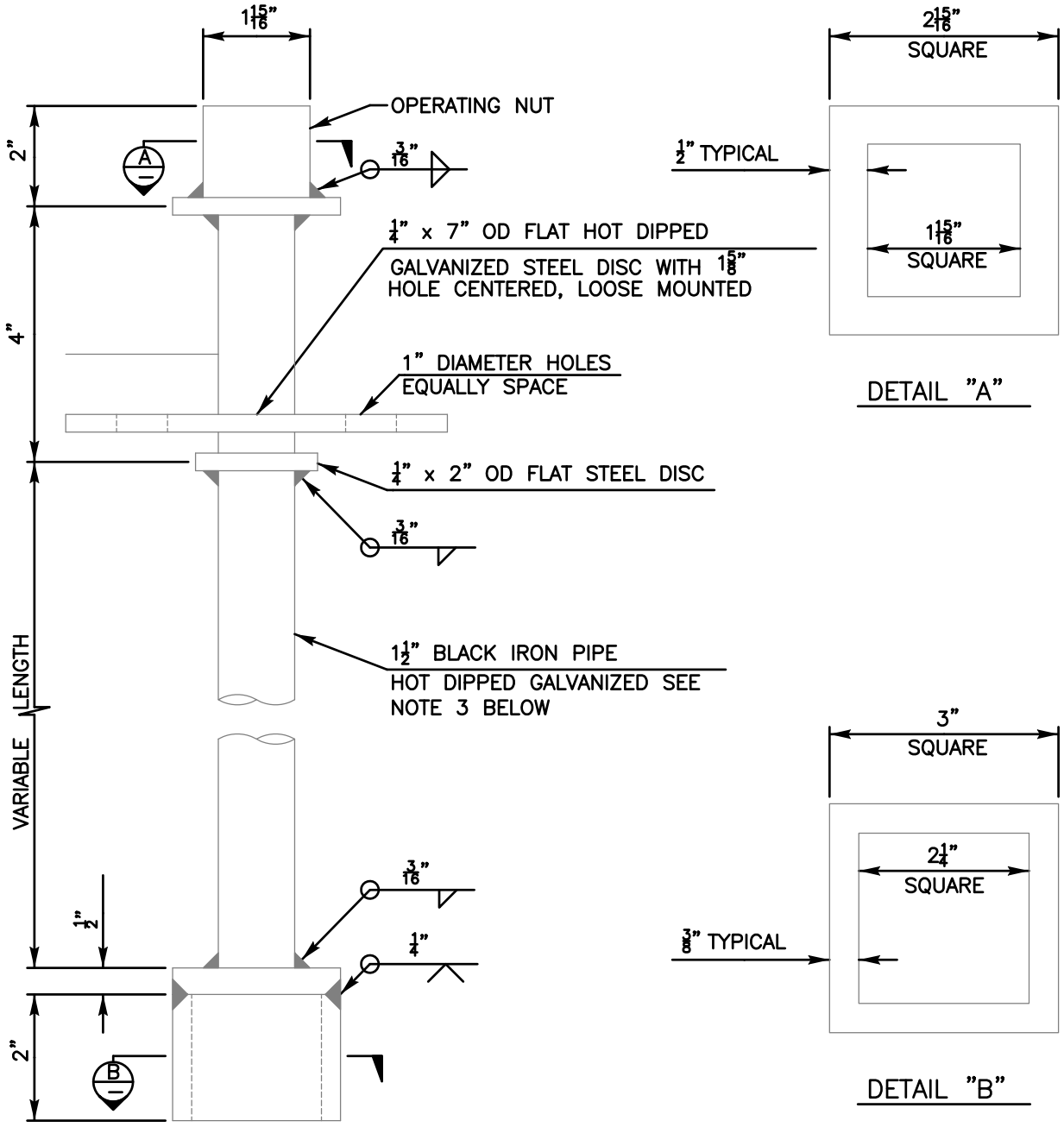
GATE WELL IDENTIFICATION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

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
ORIGINAL		G.Parkinson	5/92
Add Metric		T. Stanton	03/03
Replaced W–13		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

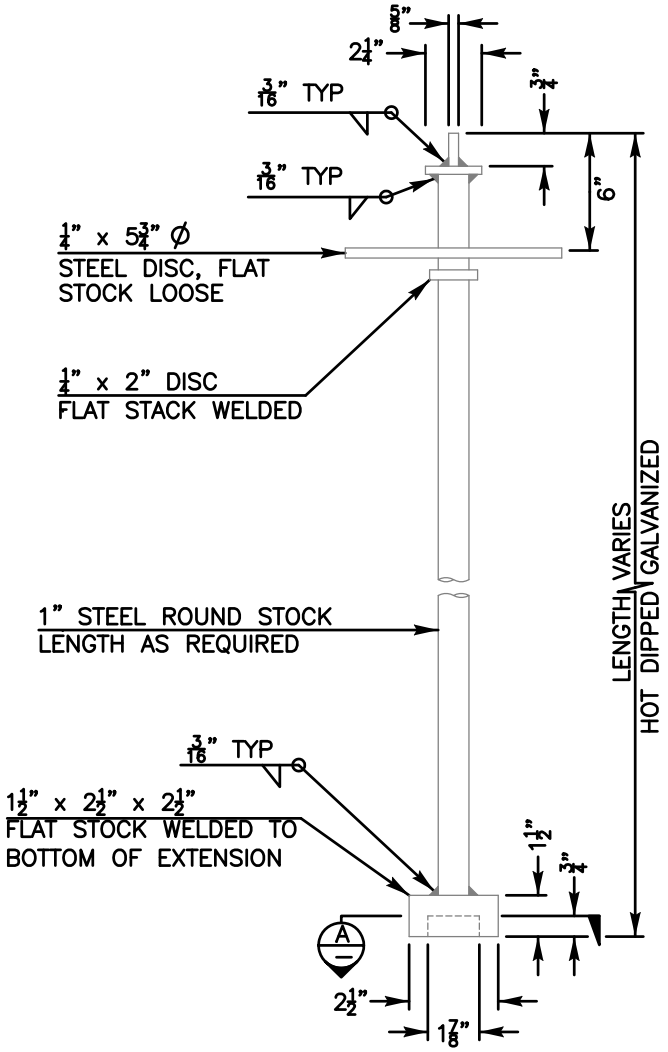
STEEL VALVE STEM EXTENSION FOR VALVES 4" AND LARGER

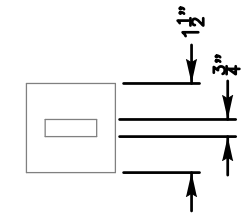
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015

Chairperson R.C.E. 19246 Date

DRAWING NUMBER **WV-04**





DETAIL "A"

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
ORIGINAL		G.Parkinson	5/92
Add Metric		T. Stanton	03/03
Replaced W-13		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

SAN DIEGO REGIONAL STANDARD DRAWING

STEEL VALVE STEM EXTENSION FOR VALVES 2" AND SMALLER

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **WV-05**

APPENDIX "A"

TRAFFIC CONTROL PLANS

TRAFFIC CONTROL PLANS

APPENDIX "A"

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 EFFECTIVETEMPORARY 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
TEXT	BUSS		2/11
Reviewed	DG	T.Stanton	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

TRAFFIC CONTROL PLANS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T.Stanton 12/17/15

Chairperson R.C.E. 19246

DRAWING NUMBER **TCP-01**

TRAFFIC CONTROL PLANS
TABLE OF CONTENTS

TCP-1	GENERAL INFORMATION
TCP-2A	TABLE OF CONTENTS
TCP-2B	TABLE OF CONTENTS (CONTINUED)
TCP-3	TYPICAL CONSTRUCTION SIGNS
TCP-4	DEVICE SPACING TABLES
TCP-5A	TRAFFIC CONTROL PLAN COVER SHEET
TCP-5B	TRAFFIC CONTROL PLAN COVER SHEET (CONTINUED)
TCP-5C	AGENCY ENGINEER'S COMMENTS/GENERAL NOTES SHEET
TCP-6	SIDE OF THE ROAD - ROAD W/O CENTERLINE
TCP-7A	SIDE OF THE ROAD - TWO LANE W/CENTERLINE
TCP-7B	MULTI-LANE EDGE OF GUTTER CLOSURE
TCP-7C	SIDE OF ROAD - SHOULDER CLOSED
TCP-8	CENTER OF ROAD - TWO LANE W/O CENTERLINE
TCP-9	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

J.M. Stanton 12/17/15

Chairperson R.C.E. 19246

DRAWING NUMBER **TCP-02A**

SAN DIEGO REGIONAL STANDARD DRAWING

TRAFFIC CONTROL PLANS

Revision	By	Approved	Date
TEXT	BUSS		2/11
REVISED	DG	T.Stanton	9/15

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
TEXT	BUSS		2/11
REVISED	DG	T.Stanton	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

TRAFFIC CONTROL PLANS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T.P. Stanton 12/17/15

Chairperson R.C.E. 19246

DRAWING NUMBER **TCP-02B**



R1–1


R3–1R
R3–2L



R3–5R



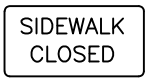
R3–7R
R3–7L


R4–7

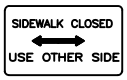


R4–7A


R9–3A



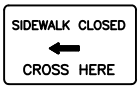
R9–9



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)



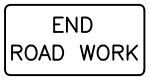
M4–8



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

12/17/15
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

TABLE 1

RECOMMENDED SIGN SPACING FOR ADVANCE WARNING SIGN SERIES AND MINIMUM TAPER LENGTH

A	B	C		
APPROACH SPEED (S) (MPH)	MINIMUM DISTANCE (FEET) BETWEEN SIGNS AND FROM LAST SIGN TO TAPER	MINIMUM TAPER LENGTHS (L) (FEET) FOR 12-FOOT LANE L	1/2L	1/3L
25	100	125	63	42
30	100	180	90	60
35	350	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	B	C		
APPROACH SPEED (S) (MPH)	BUFFER LENGTH (FEET)	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

(*) FACING OPPOSING TRAFFIC, ADJACENT TO WORK AREA OR CONFLICTING WITH EXISTING STRIPING

NOTES:

Taper Formula

L = S X 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)

Revision	By	Approved	Date
Revised	BUSS		2/11
Reviewed	DG	T.Stanton	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

DEVICE SPACING TABLES

SIGN SPACING TABLE

TAPER LENGTH AND CONE SPACING TABLE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T.Stanton 12/17/15

Chairperson R.C.E. 19246

DRAWING NUMBER **TCP-04**

TRAFFIC CONTROL PLAN/PERMIT & PERMIT EXTENSION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246

12/17/15

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

Public Utility or Company: _____ Project Contact: _____
Address: _____
City: _____ State: _____ Zip Code: _____

24 Hour Local
Phone: _____
Cellular: _____
Pager: _____
Fax: _____

Contractor/ Subcontractor: _____ Project Contact: _____
Address: _____
City: _____ State: _____ Zip Code: _____

24 Hour Local
Phone: _____
Cellular: _____
Pager: _____
Fax: _____

JOB LOCATION	BEGIN CROSS STREET	END CROSS STREET	PERMIT NO.

WORK HOURS	SPEED LIMIT	WORK TO BE DONE	THOMAS BROS. PAGE:
continuous FROM A.M. P.M. TO A.M. P.M.			COORD.:

START DATE	END DATE	1st WORK DATE EXTENSION FROM	TO NEW END DATE	2nd WORK DATE EXTENSION FROM	TO NEW END DATE

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

REQUIREMENTS:

1. The contractor is responsible for promptly restoring the road back to satisfactory condition which includes, but is not limited to, paving, striping, markings, signing, and loop detection.

2. The Agency reserves the right to observe these traffic control plans in operation and to make changes as field conditions warrant.

3. 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.

3. (cont.) All dirt, dust, and debris shall be removed from the street at the end of each day and at the end of the job with All USA markouts. The street shall be kept in a driveable condition at all times.

4. Any work that creates an undue safety risk or that creates severe congestion may be shut down by the agency.

5. A copy of all traffic requirements and traffic control plans issued by the Agency must be kept on the job site.

6. Approval of this plan does not constitute an official Permit. Contact the Agency for information on obtaining a permit.

7. All travel lanes will typically be a minimum of 12 feet wide, 14 feet if adjacent to closed bike lanes, unless otherwise specifically approved by the Agency.

8. Flashing arrow boards as required by the Agency.

9. Warning (W) series signs used in work zones shall be Black on an Orange background.

10. Cones and pylons shall have white reflectorized sleeves when placed along the centerline or along the outside shoulder.

11. If parking is allowed in the advance warning area, advance warning signs shall be mounted on high level devices.

12. All conflicting signs shall be covered

13. The contractor shall post tow-away/no parking signs at least fourty eight (48) hours in advance, with the day of week, date and work hours noted, and shall bag parking meters (where applicable). *

SUBJECT TO LOCAL AGENCY REQUIREMENTS

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 _____

THIS TRAFFIC CONTROL PLAN IS NOT VALID UNLESS AN APPLICABLE AGENCY PERMIT OR APPROVAL IS ATTACHED/AFFIXED.

(CITY STAMP HERE)

PERMIT APPROVED

By: _____
DATE: _____

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

TRAFFIC CONTROL PLAN/PERMIT & PERMIT EXTENSION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 — 12/17/15

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

Public Utility or Company: _____ Project Contact: _____
Address: _____
City: _____ State: _____ Zip Code: _____

24 Hour Local Phone: _____
Cellular: _____
Pager: _____
Fax: _____

Contractor/ Subcontractor: _____ Project Contact: _____
Address: _____
City: _____ State: _____ Zip Code: _____

24 Hour Local Phone: _____
Cellular: _____
Pager: _____
Fax: _____

JOB LOCATION	BEGIN CROSS STREET	END CROSS STREET	PERMIT NO.

WORK HOURS	SPEED LIMIT	WORK TO BE DONE	THOMAS BROS. PAGE: / COORD.:
continuous FROM A.M. P.M. TO A.M. P.M.			

START DATE	END DATE	1st WORK DATE EXTENSION FROM	TO NEW END DATE	2nd WORK DATE EXTENSION FROM	TO NEW END DATE

PERMIT WORK EXTENSIONS MUST BE OBTAINED 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, minimum mounting heights, 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, convered, 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.

THIS TRAFFIC CONTROL PLAN IS NOT VALID UNLESS AN APPLICABLE AGENCY PERMIT OR APPROVAL IS ATTACHED/AFFIXED.

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

AGENCY ENGINEER'S COMMENTS

AGENCY USE

APPLICANT USE

SUBMITTED BY:
NAME_____
COMPANY_____
ADDRESS_____
PHONE_____

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

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 12/17/15

Chairperson R.C.E. 19246

DRAWING NUMBER **TCP-05C**

SAN DIEGO REGIONAL STANDARD DRAWING

AGENCY ENGINEER'S COMMENTS
GENERAL NOTES COVER SHEET

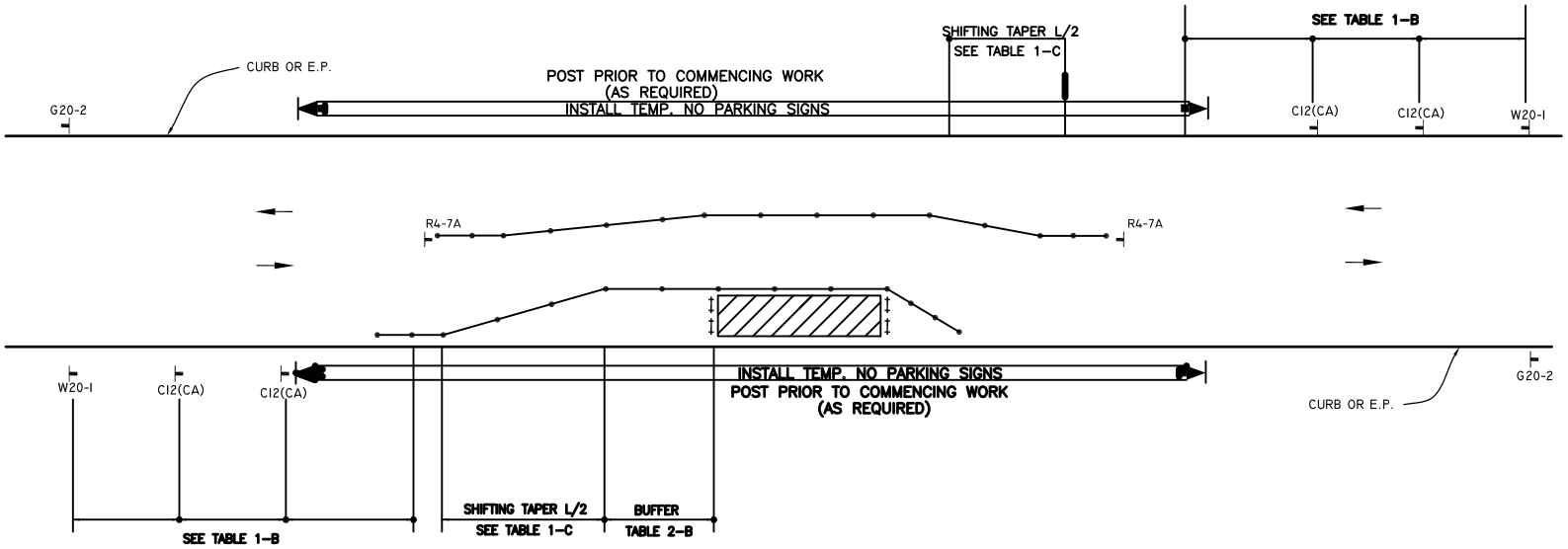
Revision	By	Approval	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15

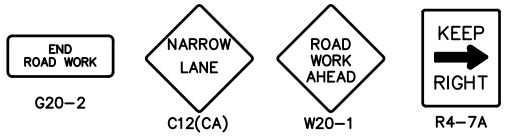
Revision	By	Approved	Date
Revised	BUSS		2/11
Reviewed	DG	T.Stanton	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA

TWO LANE TRAFFIC CONTROL WITHOUT CENTERLINE





LEGEND

● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

AGENCY USE

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

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 JURSIDICTION 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. CRITERA 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.

APPLICANT USE

SUBMITTED BY:
NAME
COMPANY
ADDRESS
PHONE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246

12/17/15

DRAWING NUMBER **TCP-06**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

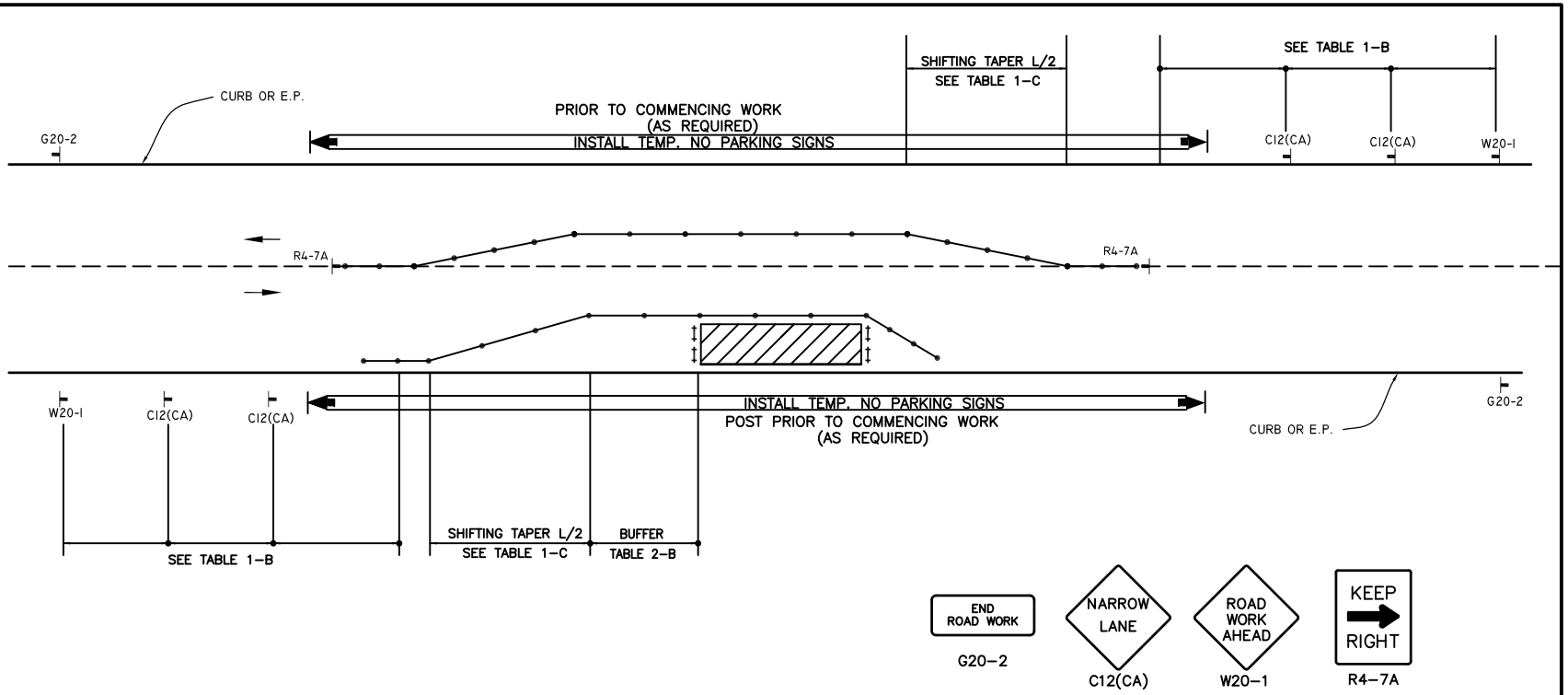
Chairperson R.C.E. 19246 — 12/17/15

DRAWING NUMBER **TCP-07A**

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA

TWO LANE TRAFFIC CONTROL
WITH CENTERLINE



LEGEND

● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

SUBMITTED BY:
NAME
COMPANY
ADDRESS
PHONE

APPLICANT USE | AGENCY USE

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 JURSIDICTION 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. CRITERA 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.

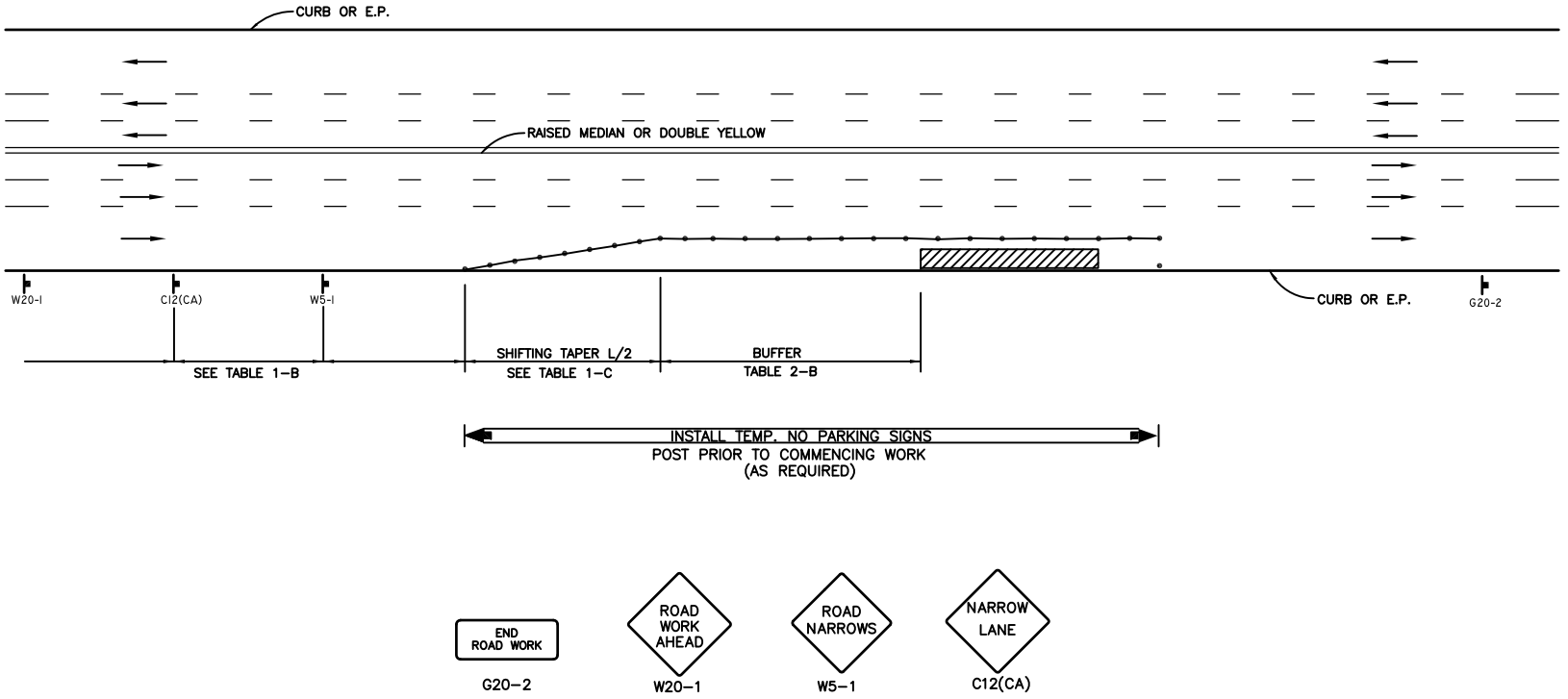
Revision	By	Approved	Date
Reviewed	DG	T.Stanton	9/15
Revised	Buss		2/11

Revision	By	Approved	Date
Reviewed	DG	T.Stanton	9/15
Revised	BUSS		2/11

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF WORK AREA

MULTI-EDGE OF GUTTER CLOSURE



LEGEND

● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

ChairPerson R.C.E. 19246 12/17/15

DRAWING NUMBER **TCP-07B**

AGENCY ENGINEER'S COMMENTS

APPLICANT USE AGENCY USE

SUBMITTED BY:
NAME
COMPANY
ADDRESS
PHONE

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 JURSIDICTION 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. CRITERA 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

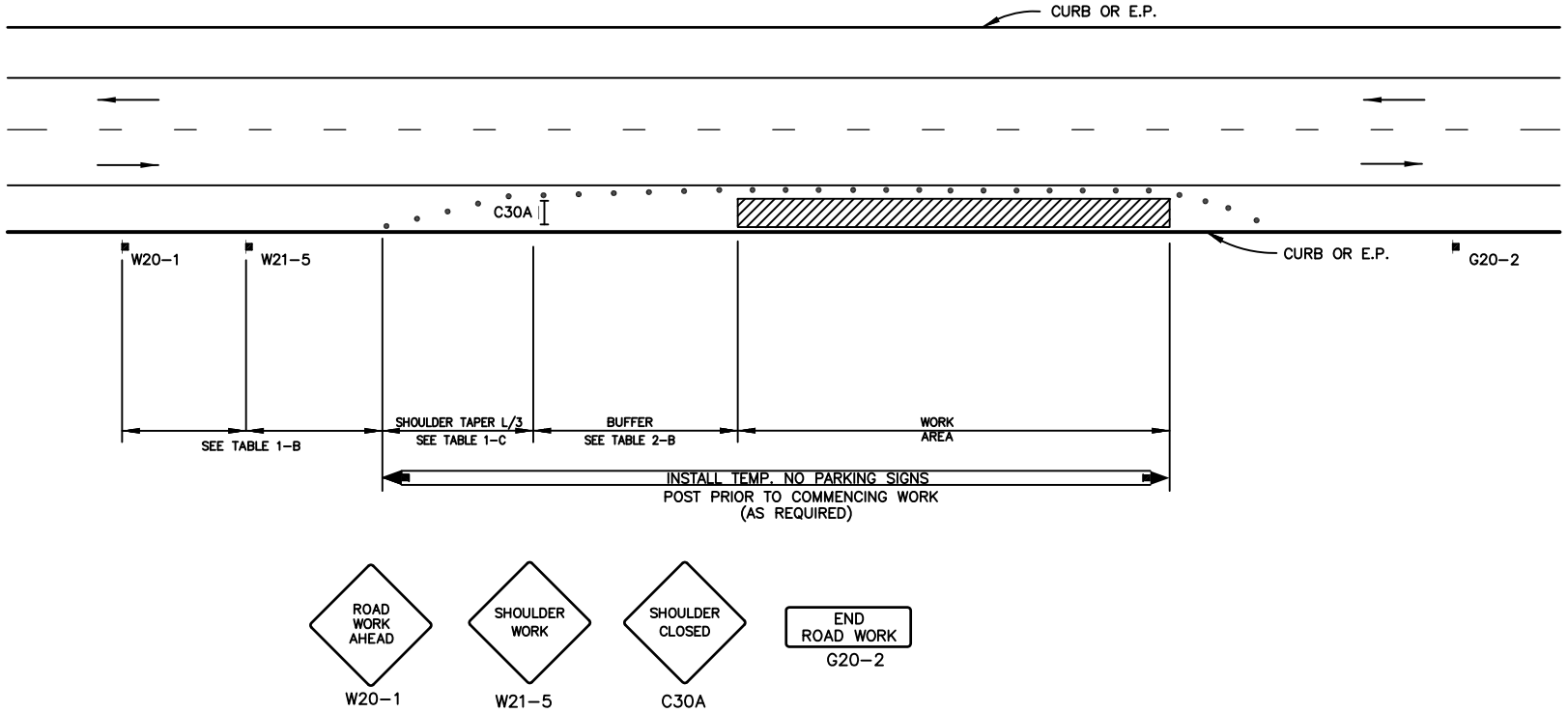
Chairperson R.C.E. 19246 — 12/17/15

DRAWING NUMBER **TCP-07C**

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA

SHOULDER CLOSURE



LEGEND

● CONE | ⊢⊣ BARRICADE | FLAGGER | SIGN | FLASHING ARROW SIGN | WORK AREA | TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

AGENCY USE

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

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 JURSIDICTION 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. CRITERA 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.

APPLICANT USE

SUBMITTED BY:

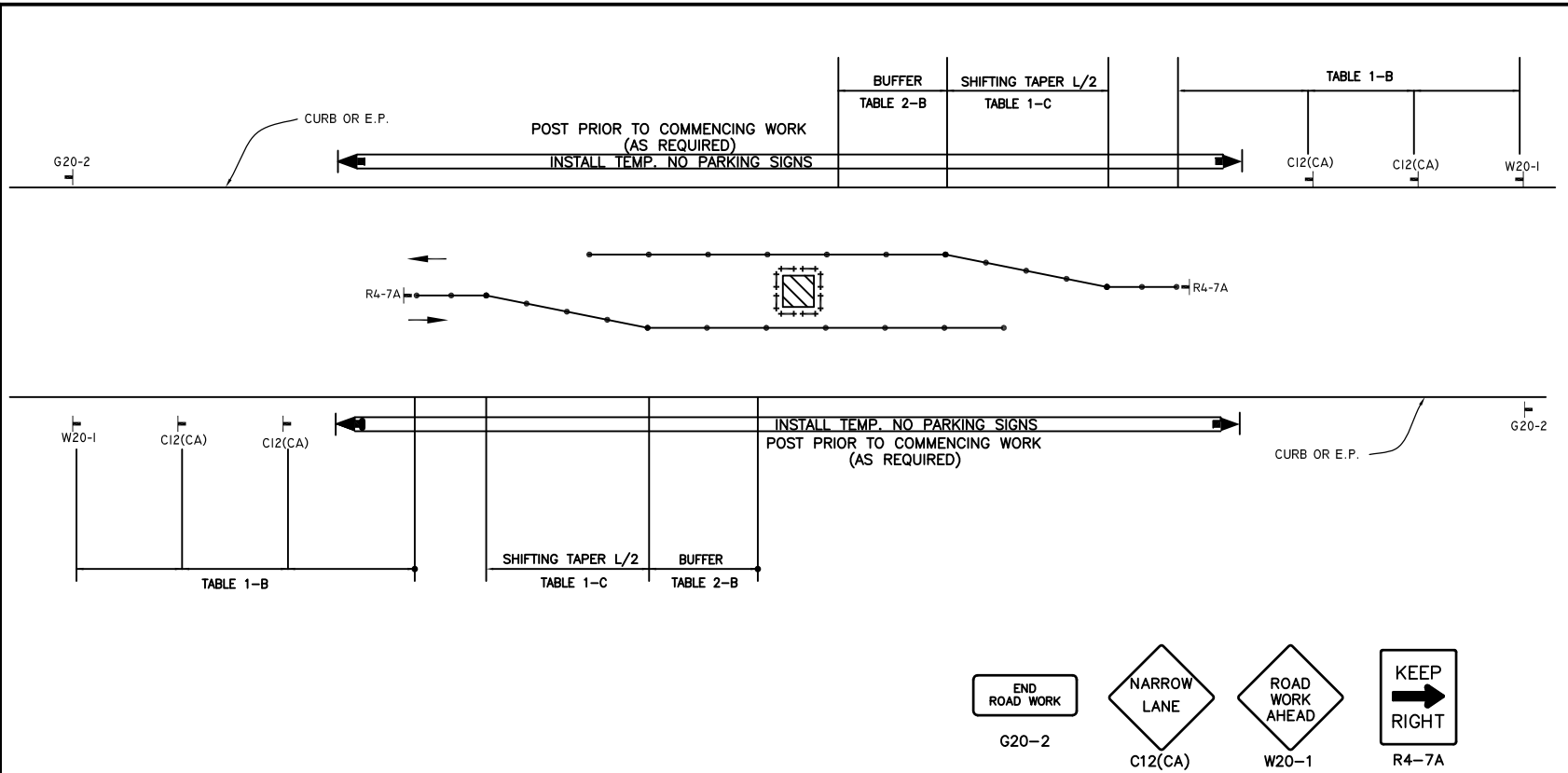
NAME_____

COMPANY_____

ADDRESS_____

PHONE_____

Revision	By	Approval	Date
Reviewed	DG	T.Stanton	9/15
Revised	BUSS		2/11



LEGEND

● CONE | BARRICADE | FLAGGER | SIGN | FLASHING ARROW SIGN | WORK AREA | TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

AGENCY USE

SUBMITTED BY:
NAME
COMPANY
ADDRESS
PHONE

APPLICANT USE

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 JURSIDICTION 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. CRITERA 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.

Revision	By	Approved	Date
Revised	BUSS		2/11
Reviewed	DG	T.Stanton	9/15

CENTER OF ROAD WORK AREA
TWO LANE TRAFFIC CONTROL
W/O CENTERLINE

SAN DIEGO REGIONAL STANDARD DRAWING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 12/17/15

DRAWING NUMBER **TCP-08**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

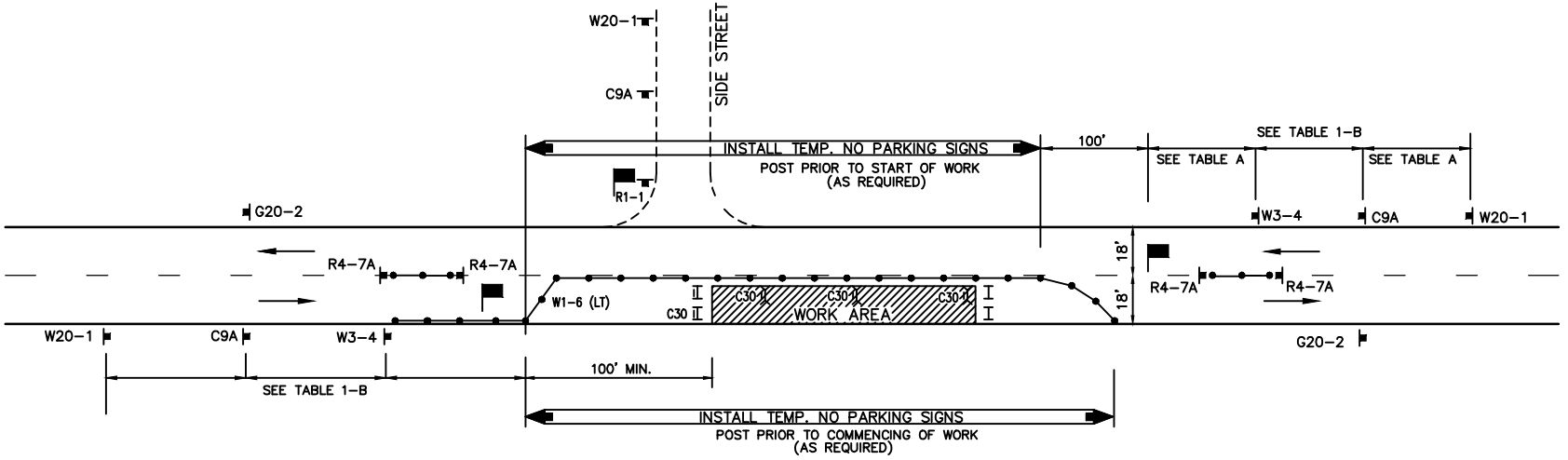
Chairperson R.C.E. 19246 — 12/17/15

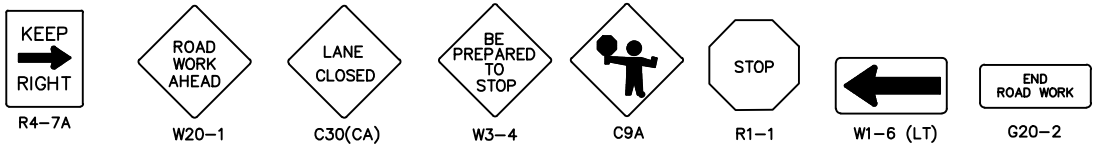
DRAWING NUMBER **TCP-09**

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA

TWO LANE TRAFFIC CONTROL WITH FLAGGERS





LEGEND

● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

AGENCY ENGINEER'S COMMENTS

AGENCY USE

APPLICANT USE

SUBMITTED BY:

NAME_____

COMPANY_____

ADDRESS_____

PHONE_____

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

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 JURSIDICTION 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. CRITERA 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.

Revision	By	Approved	Date
Reviewed			
Revised	BUSS		2/11
	DG	T.Stanton	9/15

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15

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

Chairperson R.C.E. 19246

12/17/15

DRAWING NUMBER **TCP-10A**

LEGEND

Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 — 12/17/15

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

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

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

Chairperson R.C.E. 19246

12/17/15

DRAWING NUMBER **TCP-10C**

LEGEND

Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 — 12/17/15

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

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

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

Chairperson R.C.E. 19246 — 12/17/15

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

Chairperson R.C.E. 19246

12/17/15

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

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

SAN DIEGO REGIONAL STANDARD DRAWING

CENTER OF ROAD WORK AREA

MULTILANE TRAFFIC CONTROL WITH CENTERLINE

LEFT TRAFFIC LANE CLOSURE - ONE LANE

LEGEND

Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246

12/17/15

DRAWING NUMBER **TCP-13A**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246

12/17/15

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

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

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA

MULTILANE TRAFFIC CONTROL WITH TWO WAY TURN
RIGHT LANE TRAFFIC CLOSURE - ONE LANE

LEGEND

Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 12/17/15

DRAWING NUMBER **TCP-14**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/15

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

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

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA

SINGLE LEFT LANE CLOSURE FOR ONE WAY STREET

LEGEND

Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246

12/17/15

DRAWING NUMBER **TCP-16A**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 — 12/17/15

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

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

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA

SINGLE RIGHT LANE CLOSURE FOR ONE WAY ST

LEGEND

Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246

12/17/15

DRAWING NUMBER **TCP-16C**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/15

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

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

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

Chairperson R.C.E. 19246

12/17/15

DRAWING NUMBER **TCP-17**

LEGEND

TRAFFIC SIGNAL · CONE · BARRICADE · FLAGGER · SIGN · FLASHING ARROW SIGN · WORK AREA · TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246

12/17/15

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

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

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

Chairperson R.C.E. 19246

12/17/15

DRAWING NUMBER **TCP-19**

LEGEND

Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246

12/17/15

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

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

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA

MULTILANE ROADWAY WITH RAISED MEDIAN

DOUBLE RIGHT LANE CLOSURE

LEGEND

Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T.Stanton 12/17/15

Chairperson R.C.E. 19246

DRAWING NUMBER **TCP-21**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

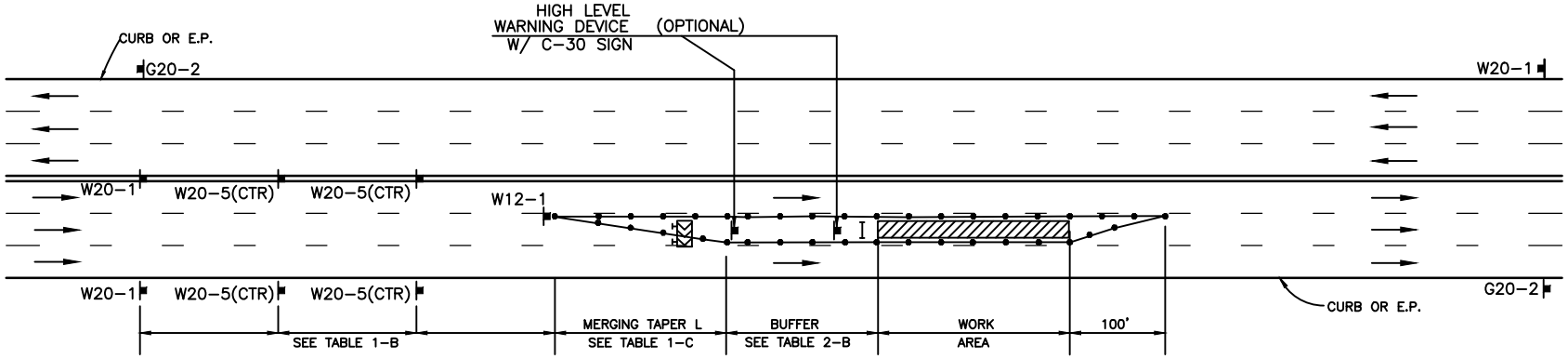
Chairperson R.C.E. 19246 — 12/17/15

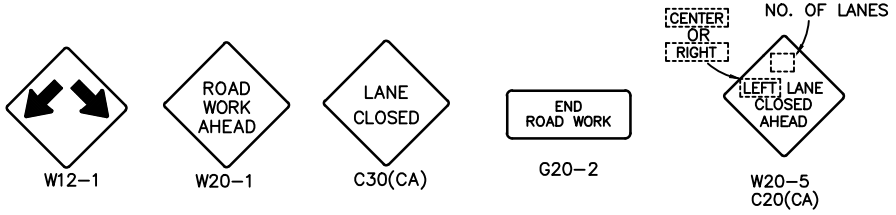
DRAWING NUMBER **TCP-22**

SAN DIEGO REGIONAL STANDARD DRAWING

CENTER OF ROAD WORK AREA

MIDDLE LANE CLOSURE





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

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA

WORK BEYOND INTERSECTION RIGHT LANE CLOSURE

LEGEND

Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246

12/17/15

DRAWING NUMBER **TCP-23**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

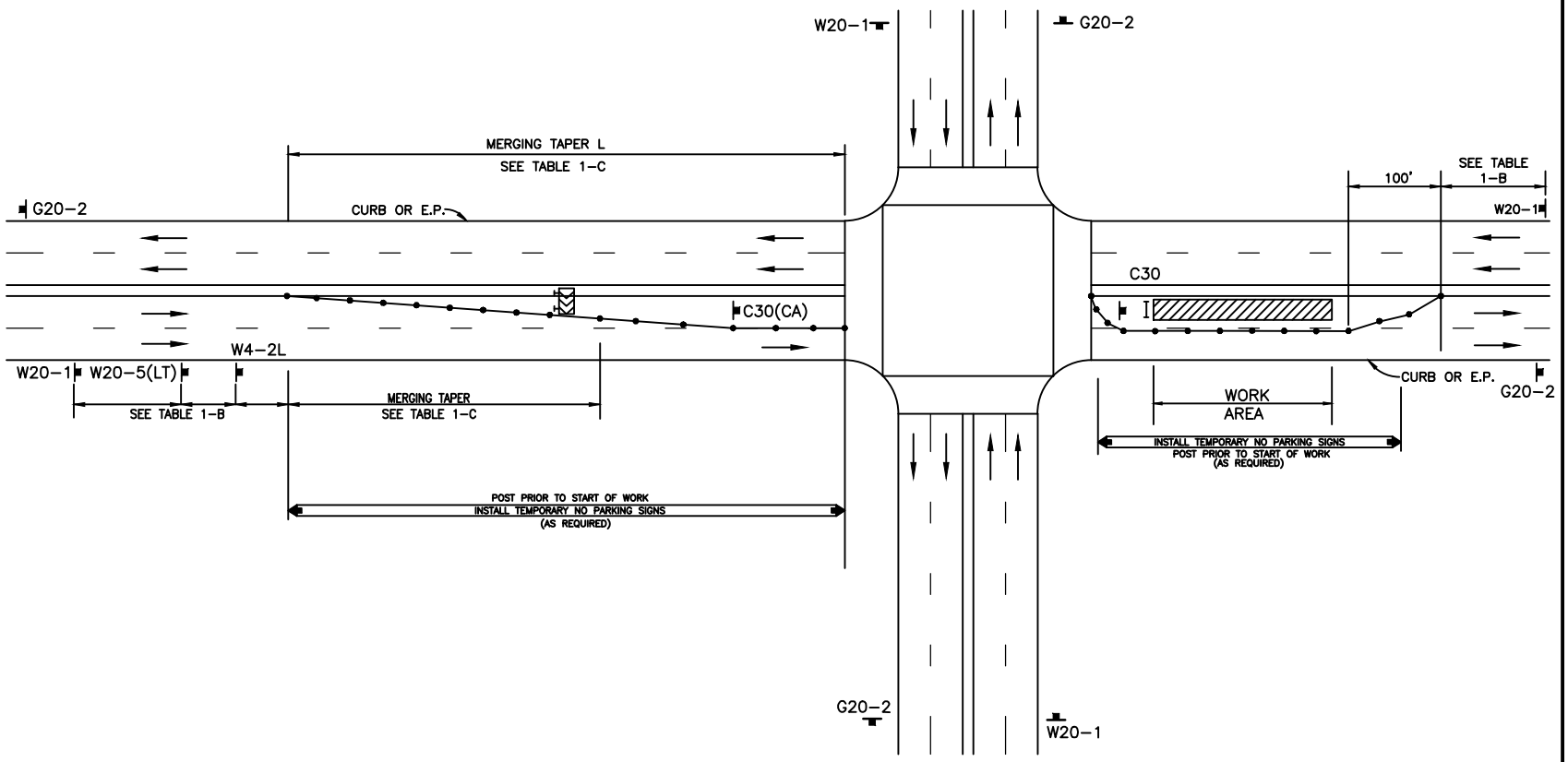
Chairperson R.C.E. 19246 — 12/17/15

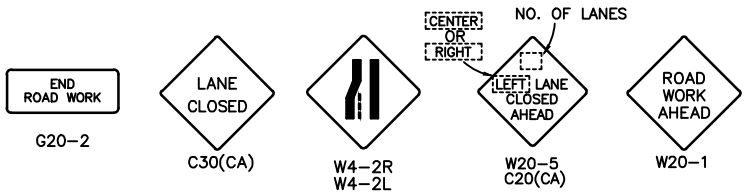
DRAWING NUMBER **TCP-24**

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA

WORK BEYOND INTERSECTION LEFT LANE CLOSURE





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

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15

INTERSECTION OF ROAD WORK AREA

INTERSECTION TRAFFIC CONTROL

RIGHT LANE CLOSED

SAN DIEGO REGIONAL STANDARD DRAWING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246

12/17/15

DRAWING NUMBER **TCP-25**

LEGEND

Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 — 12/17/15

DRAWING NUMBER **TCP-26**

SAN DIEGO REGIONAL STANDARD DRAWING

INTERSECTION OF ROAD WORK AREA

INTERSECTION TRAFFIC CONTROL

LEFT LANE CLOSED

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

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15

INTERSECTION OF ROAD WORK AREA

INTERSECTION TRAFFIC CONTROL

SAN DIEGO REGIONAL STANDARD DRAWING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246

12/17/15

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

Chairperson R.C.E. 19246

12/17/15

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

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

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA

WORK BEYOND INTERSECTION TRAFFIC CONTROL

PARKING AREA CLOSED

LEGEND

Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE ▀ FLAGGER ▬ SIGN ▨ FLASHING ARROW SIGN ▨ WORK AREA ⟶ TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 12/17/15

DRAWING NUMBER **TCP-28**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 — 12/17/15

DRAWING NUMBER **TCP-29**

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA

WORK BEYOND INTERSECTION PARKING AREA

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

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15

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

12/17/15

Chairperson R.C.E. 19246

DRAWING NUMBER **TCP-30**

LEGEND

Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE ▛ FLAGGER ▬ SIGN ▨ FLASHING ARROW SIGN ▨ WORK AREA ⟵ TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/15

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

LEGEND

Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE ▀ FLAGGER ▬ SIGN ▨ FLASHING ARROW SIGN ▨ WORK AREA ⟵ TRAFFIC DIRECTION

Revision	By	Approval	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

CENTER OF ROAD WORK AREA

LEFT TURN INTERSECTION TRAFFIC CONTROL

LEFT LANE CLOSED

LEGEND

Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246

12/17/15

DRAWING NUMBER **TCP-32**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/15

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

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

CENTER OF ROAD WORK AREA

LEFT TURN INTERSECTION TRAFFIC CONTROL

LEFT TURN LANE AND LEFT LANE CLOSED

SAN DIEGO REGIONAL STANDARD DRAWING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/15

Chairperson R.C.E. 19246

DRAWING NUMBER **TCP-34**

LEGEND

Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/15

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

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

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA

RIGHT TURN INTERSECTION TRAFFIC CONTROL

RIGHT TURN AND RIGHT LANE CLOSED

LEGEND

Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246

12/17/15

DRAWING NUMBER **TCP-36**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 12/17/15

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

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

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

Chairperson R.C.E. 19246

12/17/15

DRAWING NUMBER **TCP-38**

LEGEND

TRAFFIC SIGNAL · CONE · BARRICADE · FLAGGER · SIGN · FLASHING ARROW SIGN · WORK AREA · TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246

12/17/15

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

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

SAN DIEGO REGIONAL STANDARD DRAWING

INTERSECTION OF ROAD WORK AREA

MULTI-LANE INTERSECTION LANE REDUCTIONS

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

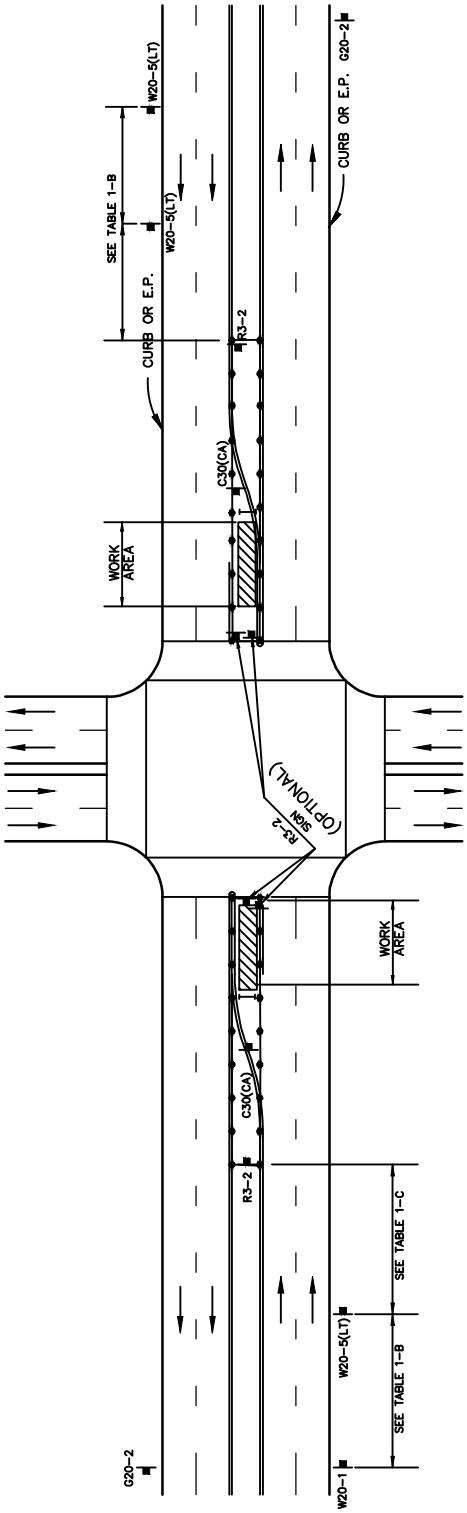
Chairperson R.C.E. 19246

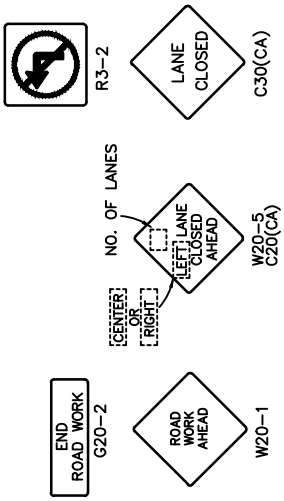
12/17/15

DRAWING NUMBER **TCP-40**

LEGEND

Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION





LEGEND

TRAFFIC DIRECTION
WORK AREA
FLASHING ARROW SIGN
SIGN
FLAGGER
BARRICADE
CONE
TRAFFIC SIGNAL

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/15

Chairperson R.C.E. 19246

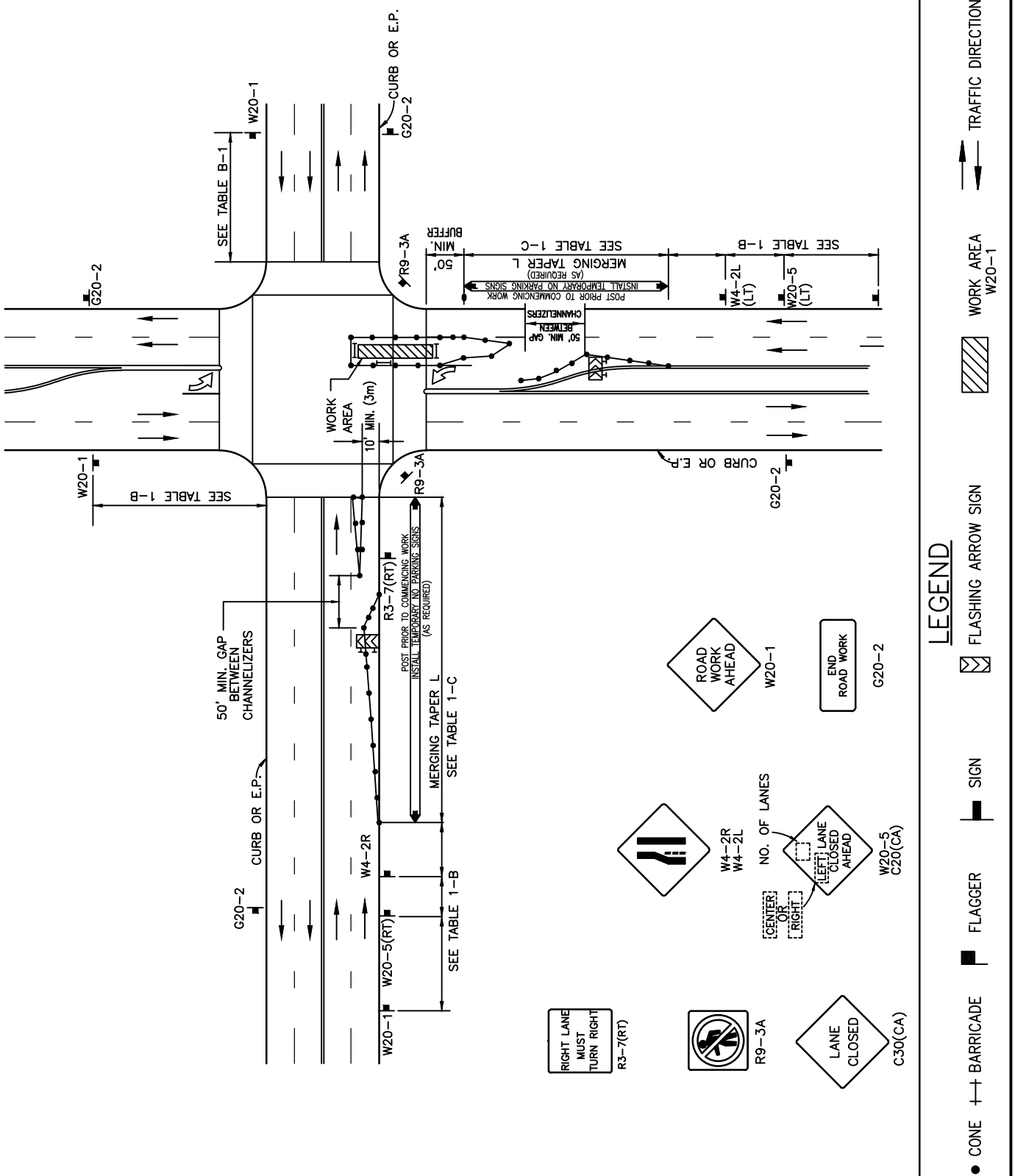
DRAWING NUMBER **TCP-41**

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



Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

CENTER OF ROAD WORK AREA

WORK WITHIN INTERSECTION

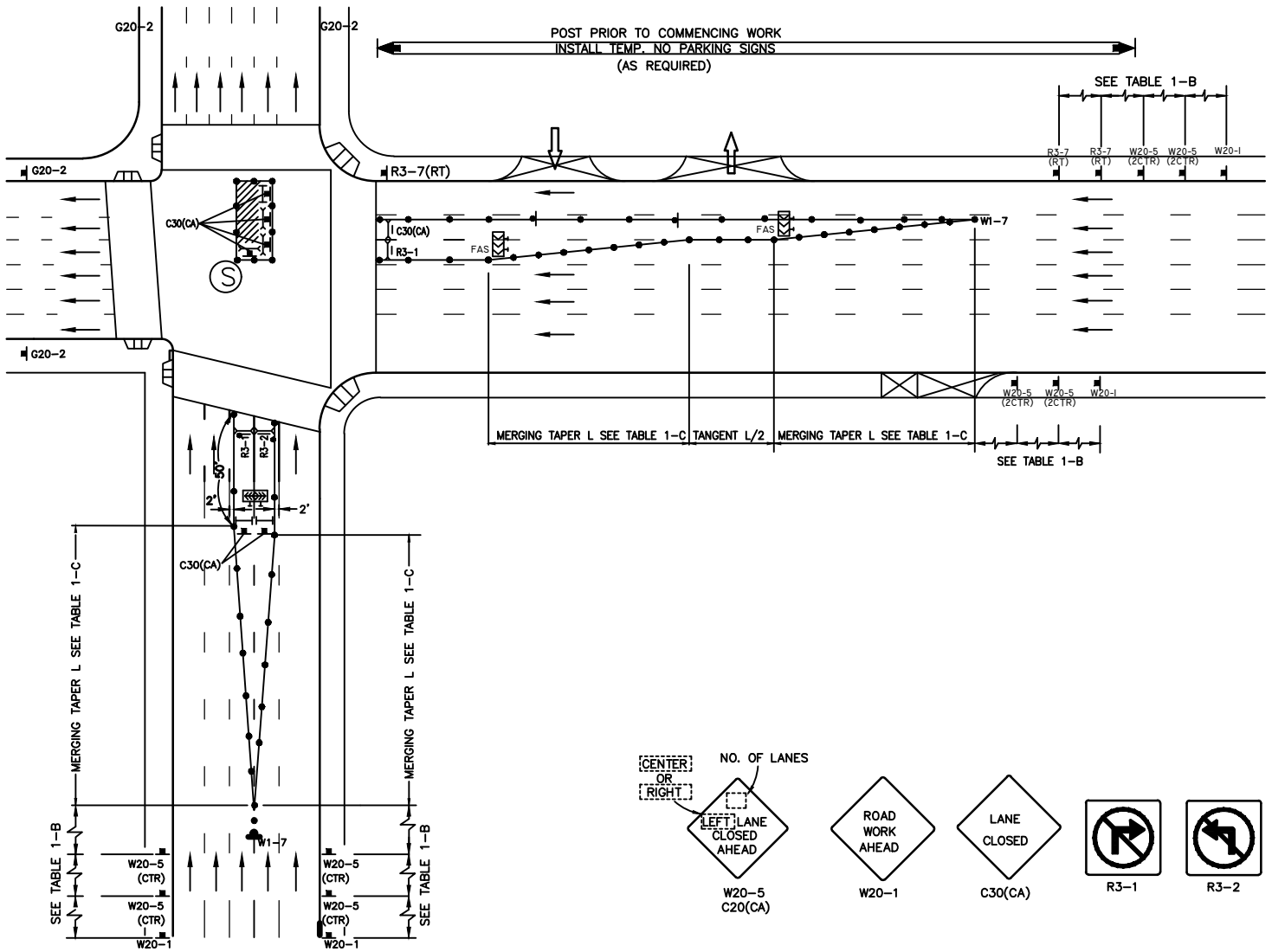
RIGHT LANE /LEFT LANE CLOSURE

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T.Stanton 12/17/15

Chairperson R.C.E. 19246

DRAWING NUMBER **TCP-42**



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 — 12/17/15

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

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

CENTER OF ROAD WORK AREA

LEFT AND CENTER LANE CLOSURES

LEGEND

Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246

12/17/15

DRAWING NUMBER **TCP-44**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 — 12/17/15

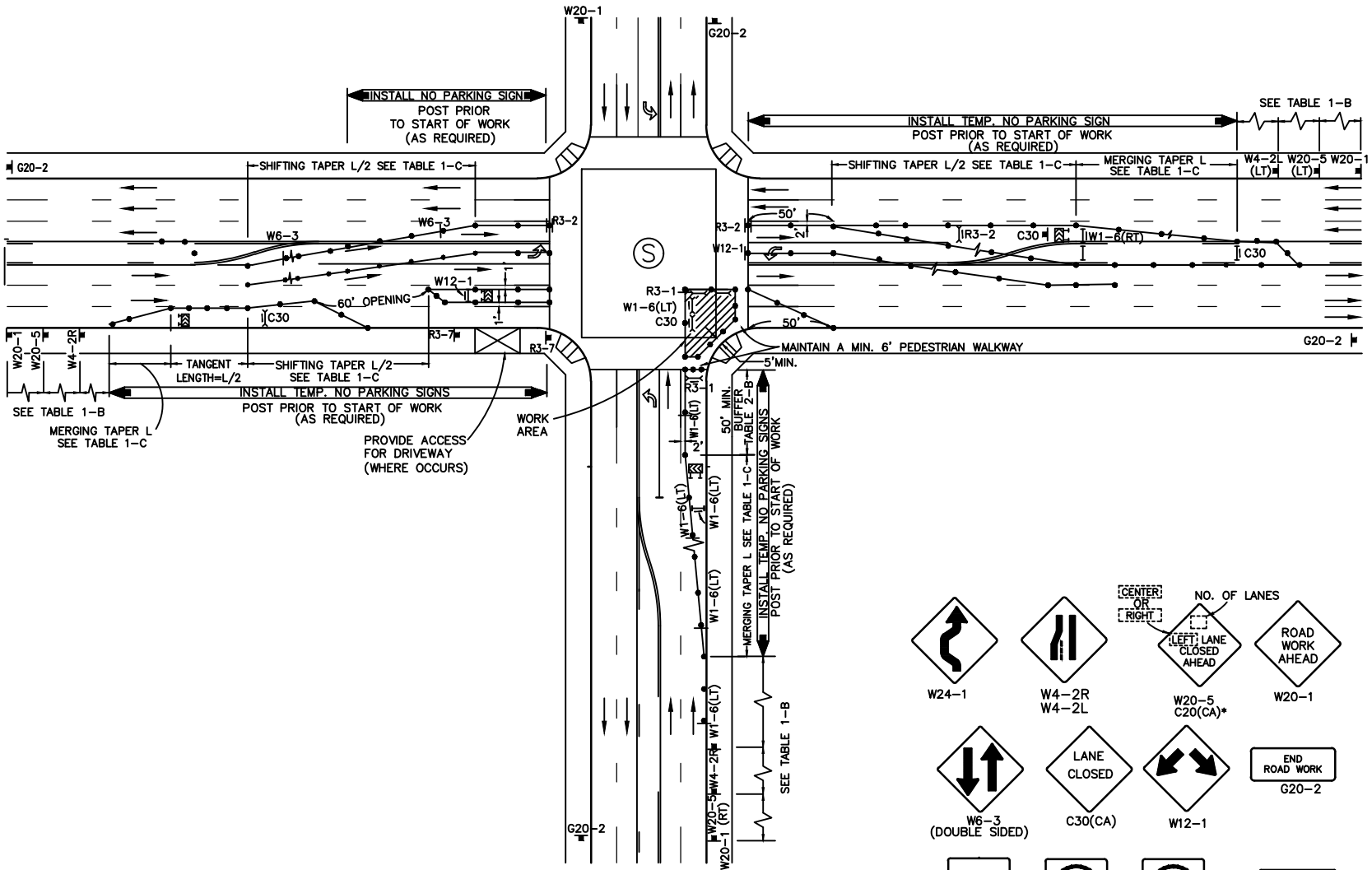
DRAWING NUMBER **TCP-45**

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA

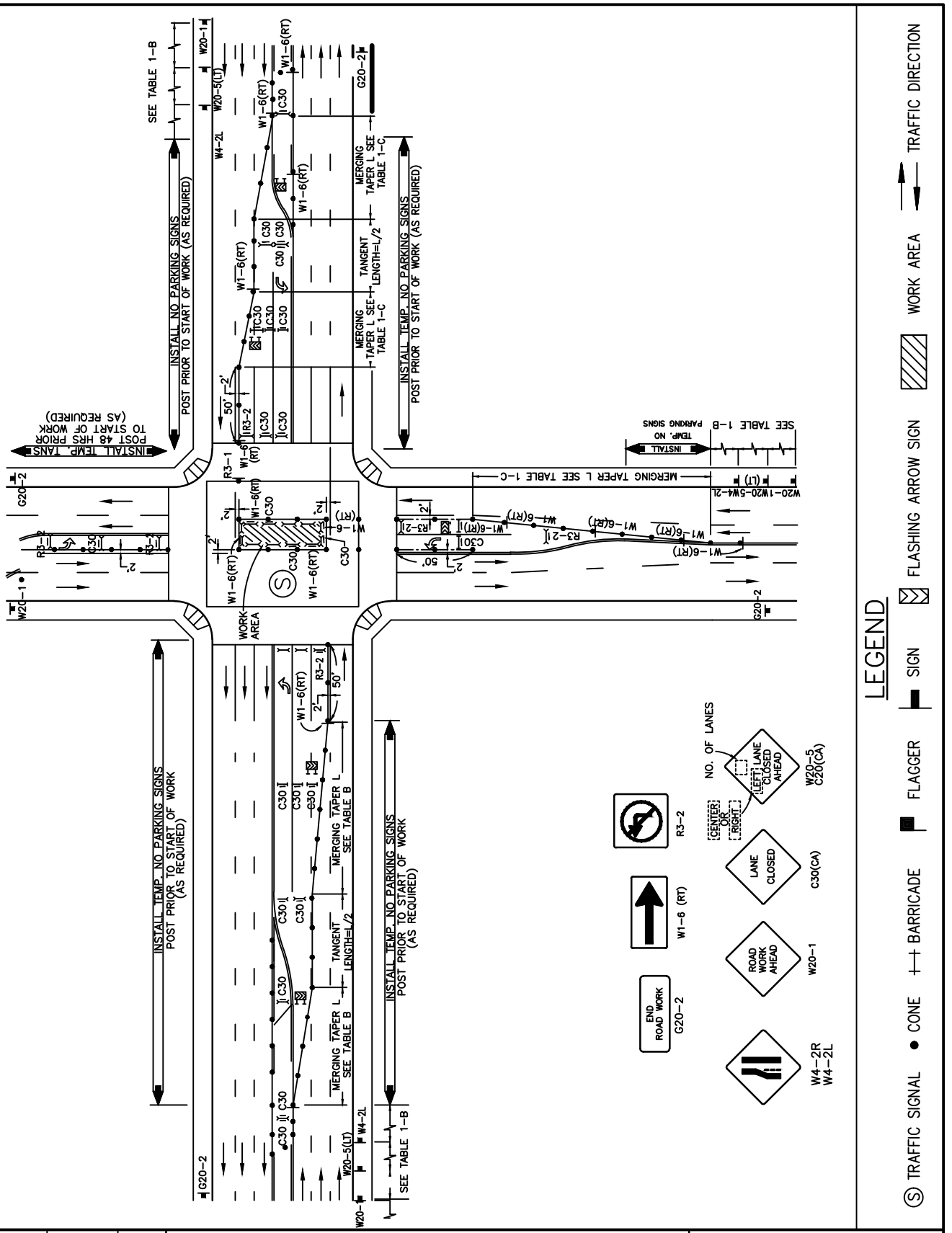
RIGHT LANE CLOSURES

Revision	By	Approval	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15



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

SAN DIEGO REGIONAL STANDARD DRAWING

CENTER OF ROAD WORK AREA

RIGHT & LEFT LANES CLOSED

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/15

Chairperson R.C.E. 19246

DRAWING NUMBER **TCP-46**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 — 12/17/15

DRAWING NUMBER **TCP-47**

SAN DIEGO REGIONAL STANDARD DRAWING

INTERSECTION OF ROAD WORK AREA

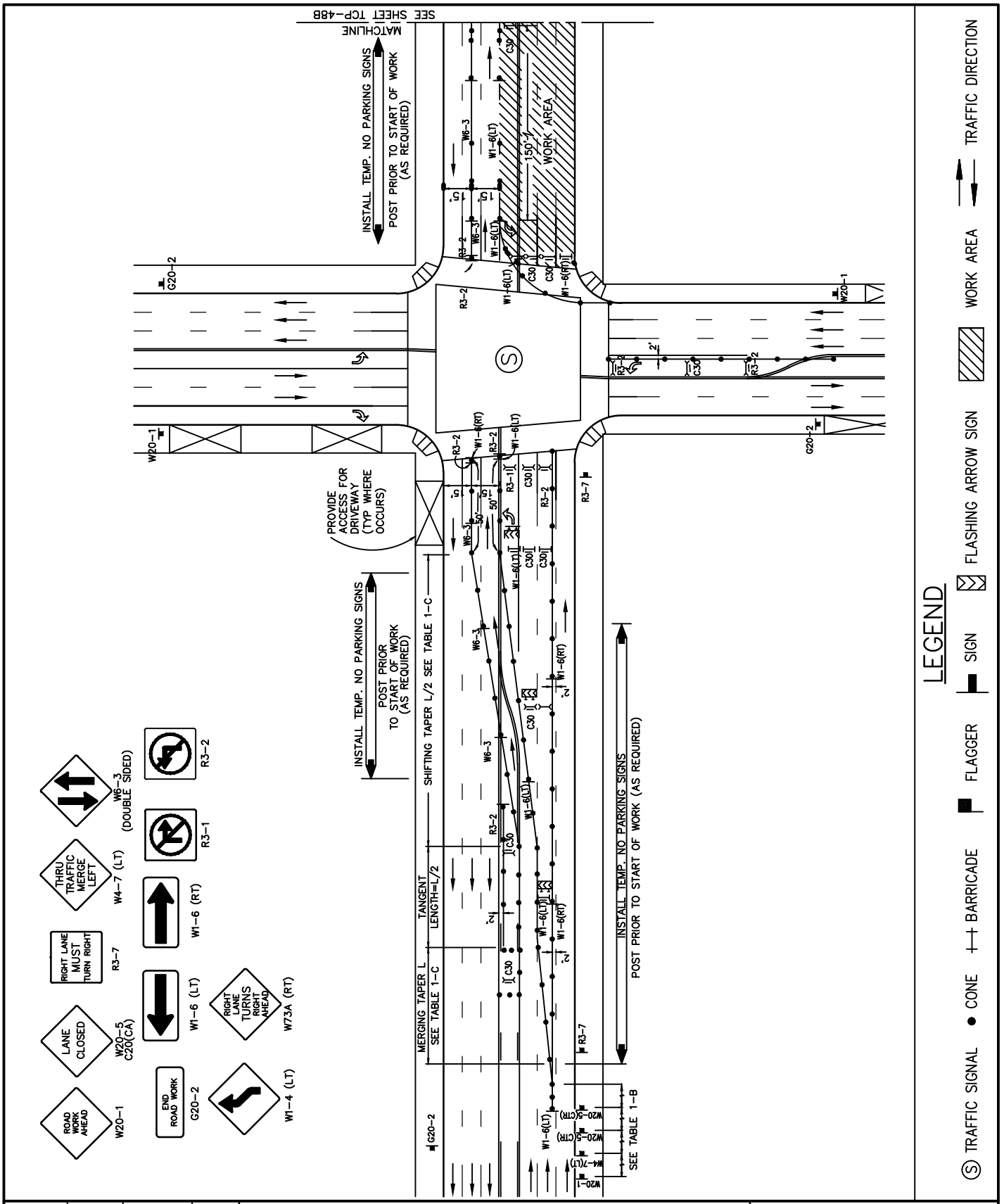
INTERSECTION TRAFFIC CONTROL

LEFT LANES CLOSED

Revision	By	Approval	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15

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

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA

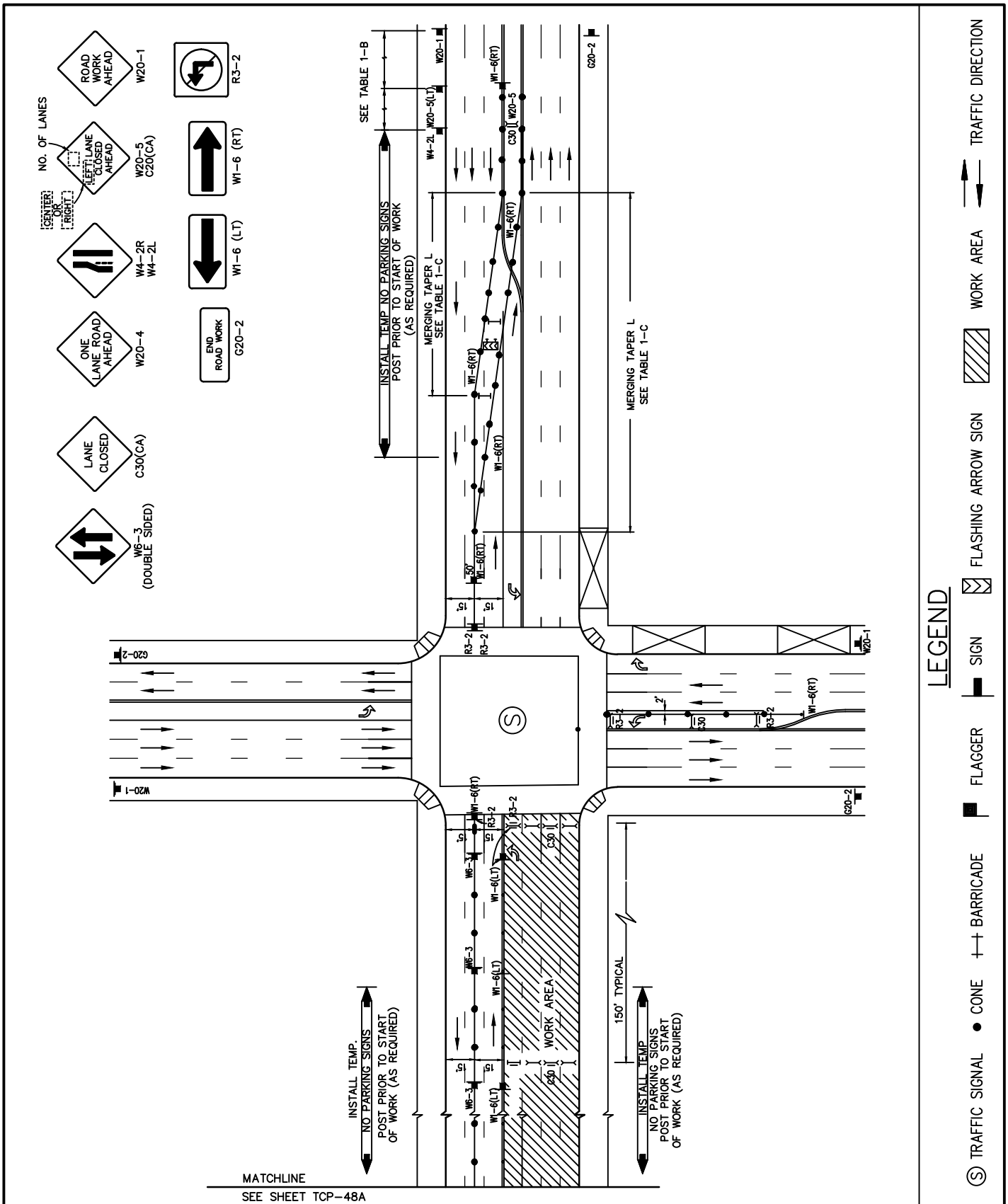
HALF STREET CLOSED (1 OF 2)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T.Stanton 12/17/15

Chairperson R.C.E. 19246

DRAWING NUMBER **TCP-48A**



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/15

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	DG	T.Stanton	9/15

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

STREET CLOSURE WORK AREA

2-WAY FULL STREET CLOSURE

LEGEND

Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

12/17/15

Chairperson R.C.E. 19246

DRAWING NUMBER **TCP-49**

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246

12/17/15

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

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

SAN DIEGO REGIONAL STANDARD DRAWING

SIDEWALK WORK AREA

TYPICAL PEDESTRIAN CONTROL SIGNS

SIDEWALK CLOSED

LEGEND

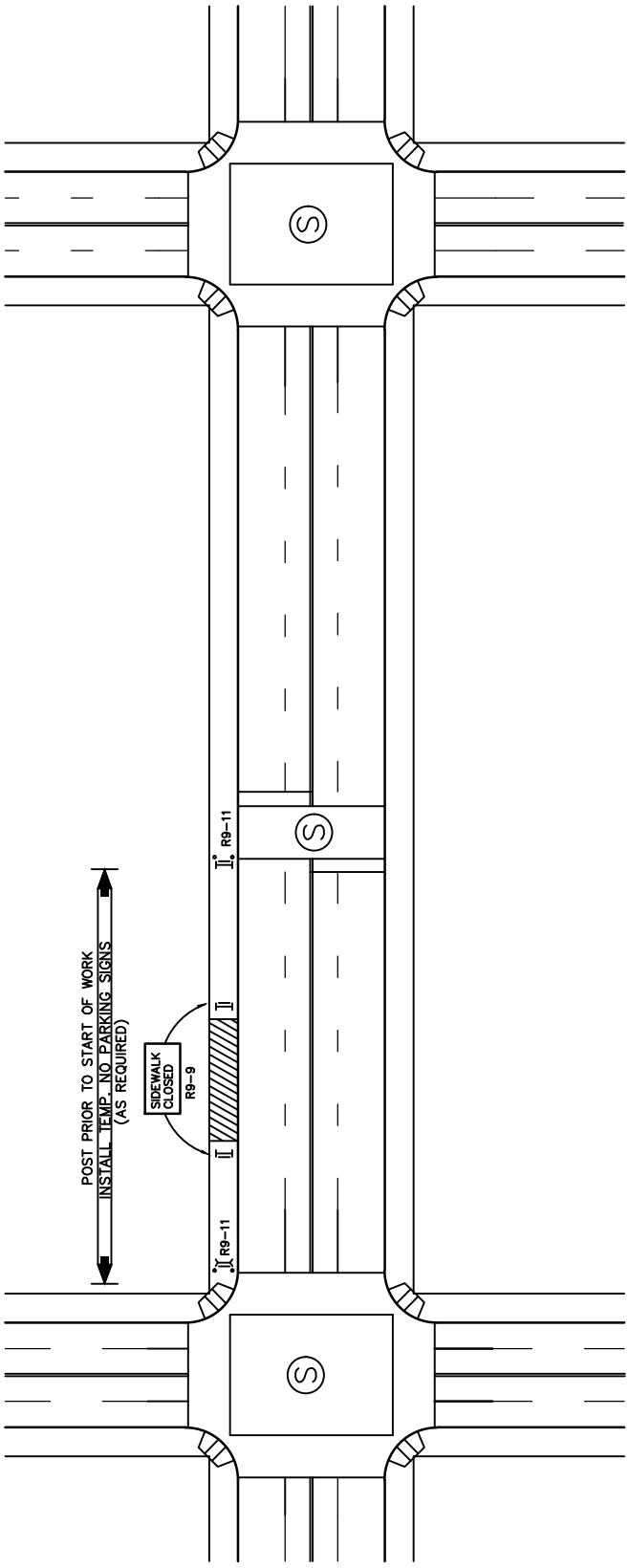
Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246

12/17/15

DRAWING NUMBER **TCP-51**



RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J.M. Stanton 12/17/15

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

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15

SAN DIEGO REGIONAL STANDARD DRAWING

SIDEWALK WORK AREA

TYPICAL PEDESTRIAN CONTOL SIGNS

SIDEWALK CLOSED & SHIFT TO PARKING AREA

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 12/17/15

DRAWING NUMBER **TCP-53**

LEGEND

Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/15

DRAWING NUMBER **TCP-54**

SAN DIEGO REGIONAL STANDARD DRAWING

SIDE OF ROAD WORK AREA

BIKE LANE CLOSURE

LEGEND

● CONE ⊢⊣ BARRICADE ▀ FLAGGER ▬ SIGN ⩔ FLASHING ARROW SIGN ▨ WORK AREA ⟶⟵ TRAFFIC DIRECTION

Revision	By	Approved	Date
DRAWING	CRH		4/06
ORIGINAL		4/27/06	
REVISED	DG	T.Stanton	9/15

Revision	By	Approved	Date
Revised	BUSS		2/11
Revised	DG	T.Stanton	9/15

BIKE AND TRAVEL LANE CLOSURE

SAN DIEGO REGIONAL STANDARD DRAWING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 — 12/17/15

DRAWING NUMBER **TCP-55**

LEGEND

Ⓢ TRAFFIC SIGNAL ● CONE ⊢⊣ BARRICADE FLAGGER SIGN FLASHING ARROW SIGN WORK AREA TRAFFIC DIRECTION

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, Concete 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

Side Opening Only D-01, D-02
Side Opening w/Gate D-03A

CURB OUTLET
Concrete, Type A..... D-25
Pipe..... D-27

CURB RAMP
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

CURTAIN WALL D-38

CUTOFF WALL
Alley Pavement..... G-23
Channel..... D-72
Street Pavement..... G-22
Trench..... SP-05, SP-07

-D-

DATUMS M-12

DEBRIS FENCE..... D-82

DIKE, A.C. G-05

DISSIPATOR, ENERGY
Concrete D-41, D-42, D-43
Rip Rap..... D-40

DITCH,
Brow, Type A and B..... D-75
Terrace, Type C and D D-75

DOWNDRAIN
Asphalt Concrete D-22
Flume..... D-23

DRINKING FOUNTAIN M-18

DRIVEWAY
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

-E-

ENCASEMENT
Sewer Pipe SP-03
Sewer Pipe, Undercut SP-09

-F-

FENCE
Chain Link M-06
Debris Fence D-82
Details..... M-20
Tennis Court..... M-17

FIRE HYDRANT
6” Hydrant..... WF-01, WF-02
Locations WF-04
Markers..... M-19

FRAME
Grate..... D-13
Manhole... M-01, M-02, M-03A, M-03B, M-04

-G-

GRATE
Drainage D-15
Frame D-13
Tree L-04

GUARD RAIL, METAL BEAM

Guard Rail Reference Note M-30

GUTTER
Cross G-12
Cross, Mid-Block G-13
Separate from Curb..... G-01

-H-

HEADWALL
Gravity Type D-32, D-33
L Type..... D-36, D-37
Straight, Type A,..... D-30, D-31

Warped..... D-44
Wing and U Type..... D-34, D-35

-I-

INLET APRON D-39

INLET, DRAIN
Corrugated Steel Pipe,
Type A & B …… D-16, D-17
Slotted, Corrugated
Steel Pipe…… D-18, D-19

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 Details....G-10
Joint Locations....G-09

Monolithic Curb....G-03
Pipe Underdrain....D-27
Removal and Replacement....G-11
Typical Section....G-03, G-07

STAKING
Tree....L-01

STEPS
Concrete....M-26

STREET LIGHT
Standard....E-01
Grounding....E-02
Foundation....E-02

-T-

TAPE LOCATOR, METALLIC
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
Joint Trench....M-15
Local Streets....M-22
Major Streets....M-23
Prime Arterials....M-23

-V-

VALVE, IRRIGATION
Air/Vacuum Relief....I-36
Flush, Drip....I-37
Isolation, Ball....I-11
Isolation, Globe....I-13
Manifold Assembly, Brass Pipe....I-33
Manifold Assembly, PVC Pipe....I-32
Master....I-10
Quick Coupling....I-05
Remote Control....I-14
Remote Control, Drip....I-35

-W-

WATER SERVICE
1”....WS-01
2”....WS-02

WIRE
Irrigation Control Wire/Cable....I-16
Electrical Pull Box, Irrigation....I-15

