

STANDARD DRAWINGS



For Public Works Construction
2018 Edition

City of San Diego
Standard Drawings
For
Public Works Construction
2018 Edition

Prepared by
Public Works Department
Project Implementation Division
Standards and Contract Documents Section

INTRODUCTION

These "**Standard Drawings for Public Works Construction 2018 Edition**" (Standard Drawings) have been prepared and adopted by the City of San Diego. They are for use in concert with the "**2018 WHITEBOOK – City of San Diego Standard Specifications for Public Works Construction**" and the **2018 Edition of the "GREENBOOK - Standard Specifications for Public Works Construction"**. The Standard Drawings include some San Diego Regional Standard Drawings that have been adopted by the City of San Diego.

The electronic copy of the Standard Drawings is available for download from the City's website: <http://www.sandiego.gov/publicworks/edocref/standarddraw/>

Updates to the Standard Drawings will be posted to this website as they are adopted by the City of San Diego:
<http://www.sandiego.gov/publicworks/edocref/standarddraw/updates.shtml>

Users of the Standard Drawings are encouraged to submit corrections and proposed changes and additions to the Standards Drawings to Public Works Department, Standards and Contract Documents Section at engineering@sandiego.gov.

The Standard Drawings has discontinued the use of dual units and adopted U.S. Standard Measures, also referred to as Customary System Units or English Units. The 2018 Greenbook continues to have U.S. Customary System Units followed by International System of Units also referred to SI or metric units in parenthesis.

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ABBREVIATIONS AND SYMBOLS

AASHTO	American Association of State Highway and Transportation Officials	CBC	California Building Code
ABS	Acrylonitrile – butadiene – styrene	CF	Cubic Foot
AC	Asphalt Concrete	CFS	Cubic Foot per second
ACI	American Concrete Institute	CI	Cast Iron
ACP	Asbestos Cement Pipe	CL	Center Line
ADA	Americans with Disabilities Act	CLR	Clear
ADAS	Americans with Disabilities Act Standards	CLSM	Controlled low strength material
AGG	Aggregates	CONC	Concrete
AML	Approved Material List	CONST	Construct, Construction
ANSI	American National Standards Institute	CPC	California Plumbing Code
ASCE	American Society of Civil Engineers	CSP	Corrugated steel pipe
ASTM	American Society for Testing and Materials	CTB	Cement treated base
AWG	American Wire Gauge	CV	Check valve
AWWA	American Water Work Association	CY	Cubic Yard
BLDG	Building	D	Diameter or Load of Pipe
BFV	Butterfly Valve	DI	Ductile Iron
CAL/OSHA	California Occupational Safety and Health Administration	DIA	Diameter
CalTrans	California Department of Transportation	DWG	Drawing
CATV	Cable/TV	EA.	Each
CC	Calcium Chloride	ELEV	Elevation
C/C	Center to Center	ENG	Engineer
		EQ	Equal
		EX	Existing
		EXP	Expansion
		F	Fahrenheit or Flange
		FG	Finished grade
		FL	Flow line
		FLG	Flanged
		FT	Feet
		GA	Gauge

ABBREVIATIONS AND SYMBOLS

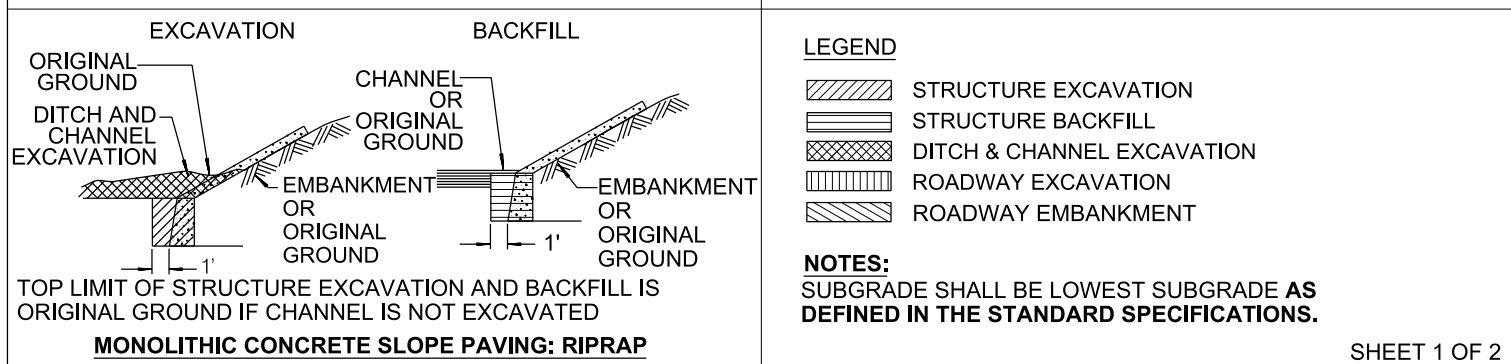
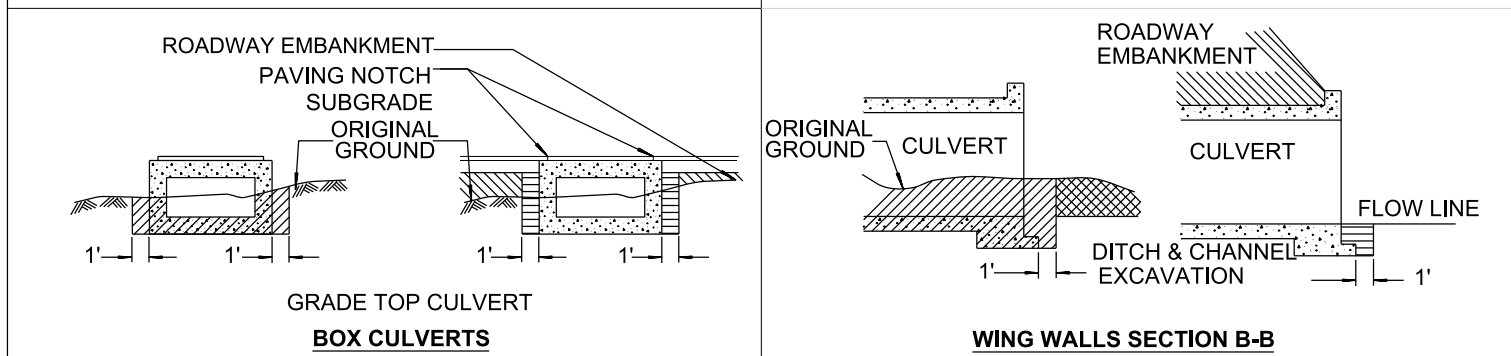
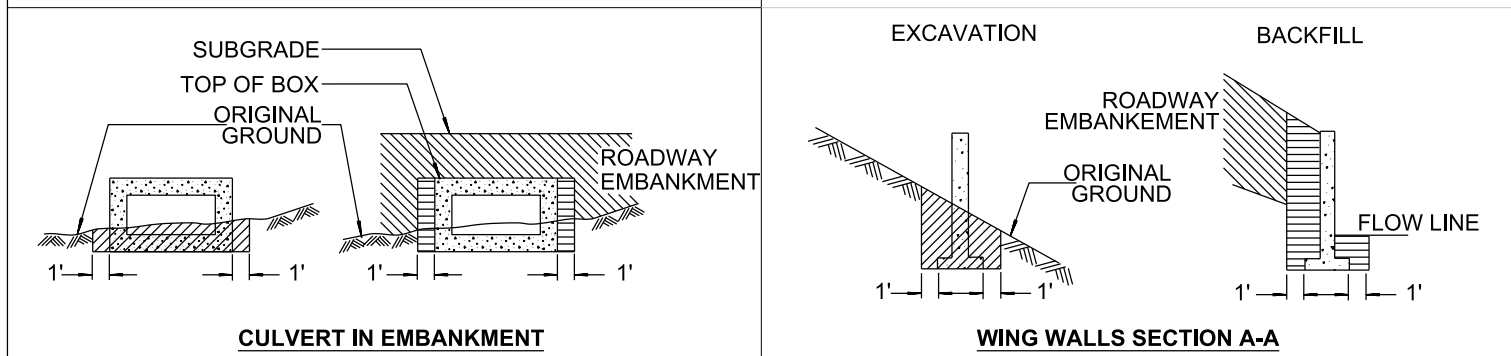
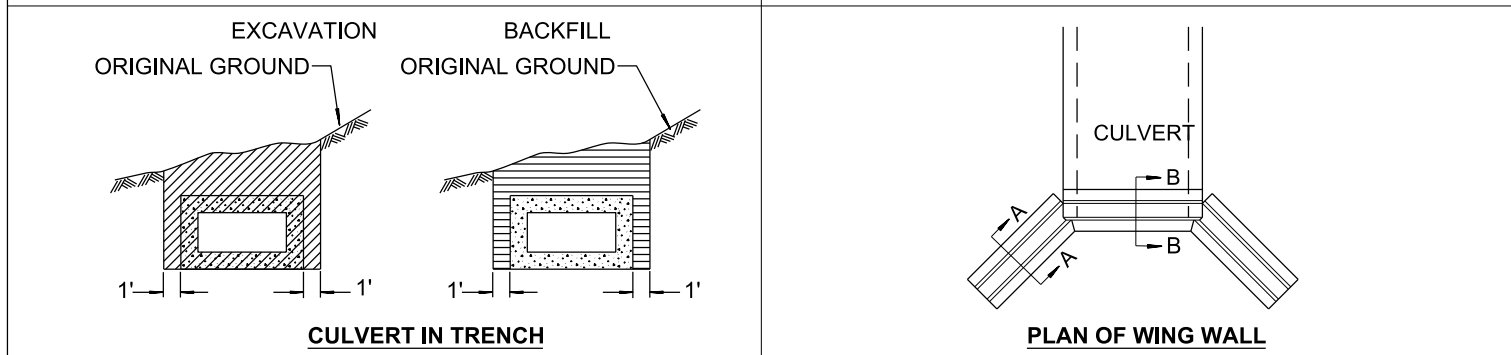
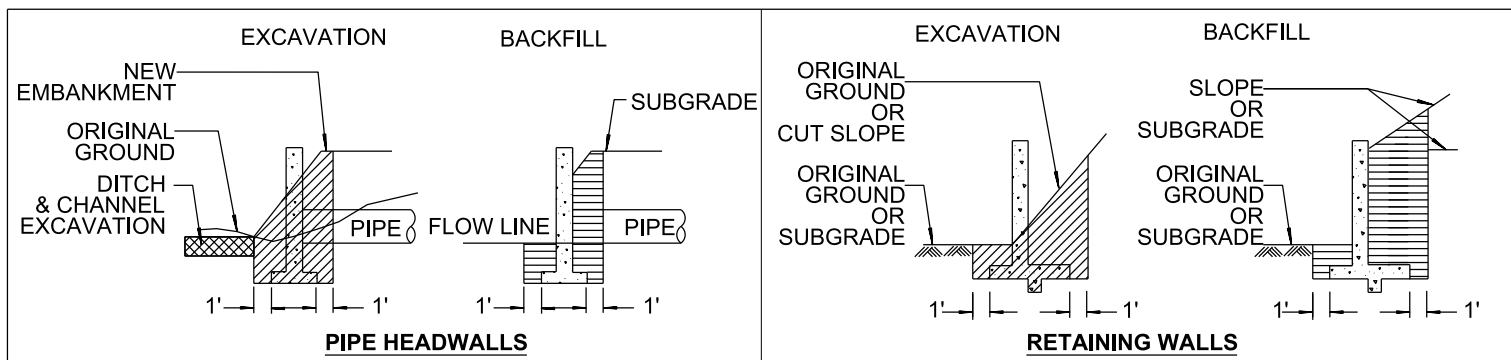
GAL	Gallon	PO	Push on
GALV	Galvanized	PPB	Pedestrian Push Button
GFI	Ground Fault Interrupter	PSF	Pound per square foot
GR	Grade	PSI	pound per square inch
H	High or height	PUD	Public Utilities Department
HEX	Hexagonal	PVC	Polyvinyl Chloride
HORIZ	Horizontal	R	Radius
HPS	High pressure sodium (Light)	RCV	Remote Control Valve
HT	Height	R/W	Right-of-way, Recycled water
INCL	Included	REINF	Reinforced or reinforcement
ID	Inside diameter or Identification Joint	ROW	Right of Way
JT	Joint	RPDA	Reduced pressure detector assembly
LAP	Overlap	RWGV	Resilient wedge gate valve
LBS	Pounds	RW	Recycled water
LED	Light Emitting Diode	S	Slope or second
LOL	Layout line	SH	Schedule
MAX	Maximum	SCRW	Steel cylinder rod wrapped
MJ	Mechanical Joint	SD	Storm drain
MIN	Minimum	SE	Sand Equivalent
MTC	Micro-Trench Conduit	SI	International System of Units (Metric)
MVL	Mercury vapor light	SQFT	Square foot
OC	On center	SSPWC	Standard Specification for Public Works Construction
OD	Outside diameter	STD	Standard
OS&Y	Outside Screw and Yolk Gate Valve	STR	Straight
PC	Point of curvature	TOT	Total
PCC	Point of compound curvature	TYP	Typical
PCF	Pounds per cubic foot	VERT	Vertical
PCR	Point of curb return	W	Water, Wider or width
PL	Property line or Place	W/	With

ABBREVIATIONS AND SYMBOLS

WWF	Welded wire fabric
@	At
%	Percent
,	Feet or minutes
,,	Inches or seconds
¹	Number
/	Per or (between words)
°	Degree
∅	Diameter
ℙ	Property line
℄	Centerline
--->	Direction of Travel

CHAPTER 1

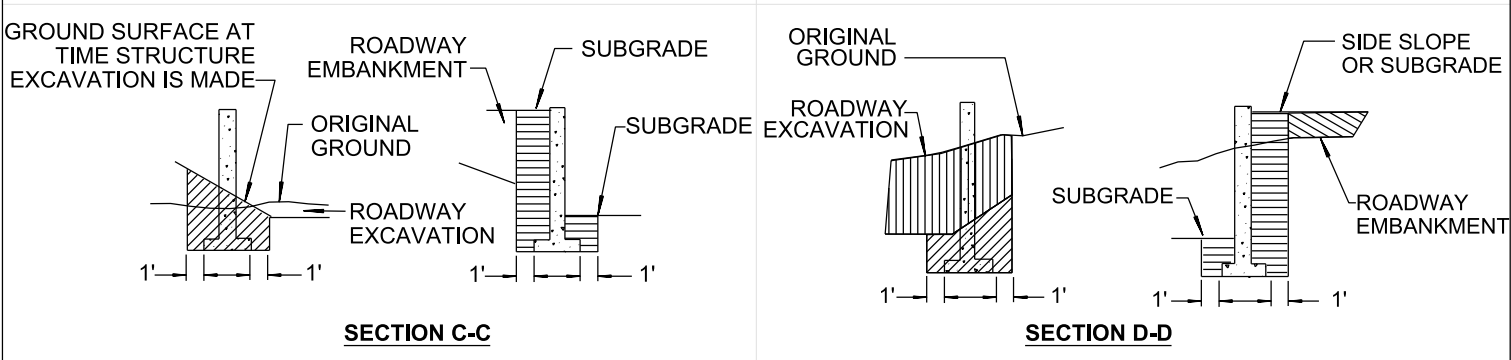
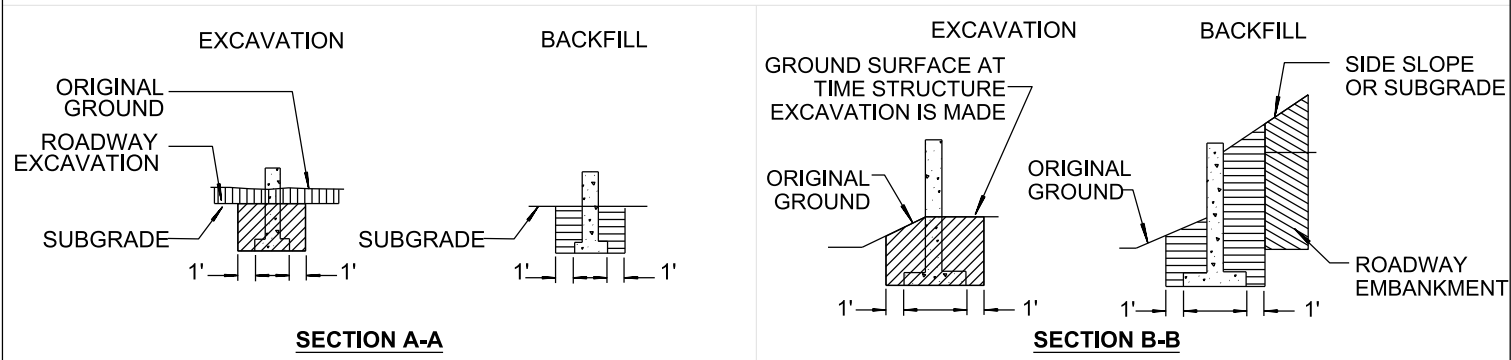
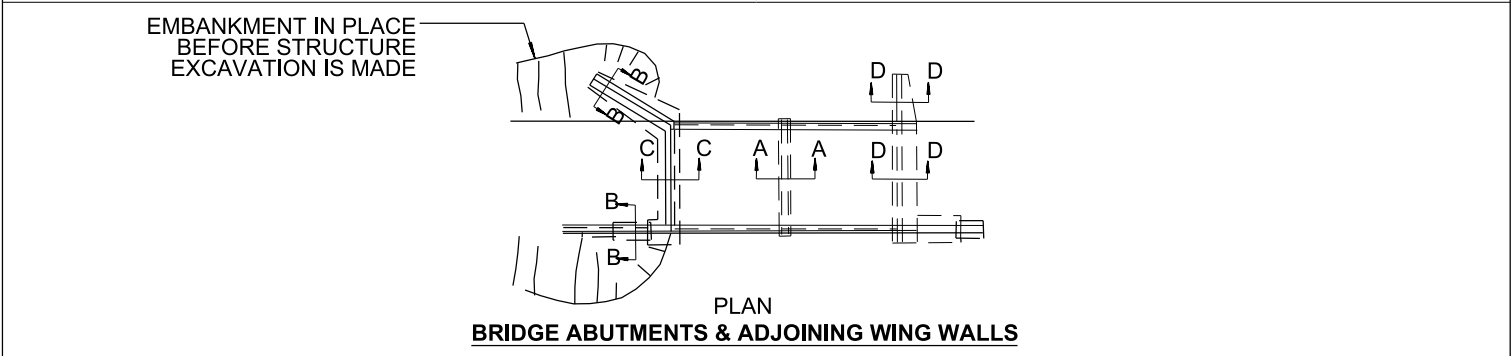
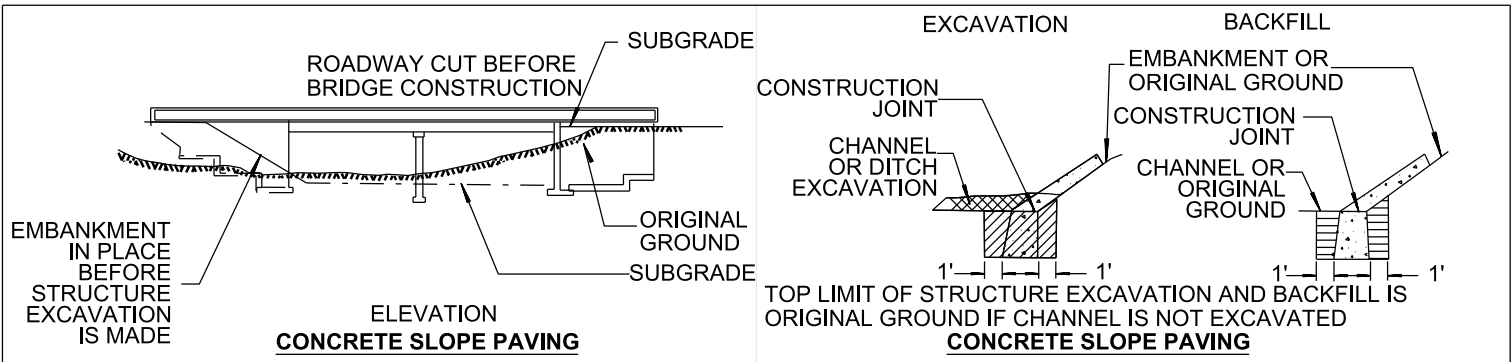
*CONCRETE
STRUCTURES*



SHEET 1 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	STRUCTURE EXCAVATION & BACKFILL	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE COORDINATOR R.C.E. 56523 9/4/18 DATE
ORIGINAL		J. CASEY	6-3-83			
UPDATED	KA	J. NAGELVOORT	01/12			
REDRAFTED	CD	J. NAGELVOORT	0918			

DRAWING NUMBER **SDC-103**



LEGEND

- STRUCTURE EXCAVATION
- STRUCTURE BACKFILL
- DITCH & CHANNEL EXCAVATION
- ROADWAY EXCAVATION
- ROADWAY EMBANKMENT

NOTE:

SUBGRADE SHALL BE LOWEST SUBGRADE AS DEFINED IN THE STANDARD SPECIFICATIONS.

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		J. CASEY	6-3-83		
UPDATED	KA	J. NAGELVOORT	01/12	STRUCTURE EXCAVATION & BACKFILL	9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER
					SDC-103

FOR RETAINING WALL (6' MAXIMUM HEIGHT) / LEVEL BACKFILL

REFER TO DEVELOPMENT SERVICES DEPARTMENT INFORMATION
BULLETIN NO. 221. (WWW.SANDIEGO.GOV / DEVELOPMENT-SERVICES)

FOR RETAINING WALL (5' MAXIMUM HEIGHT) / SLOPING BACKFILL


REFER TO DEVELOPMENT SERVICES DEPARTMENT INFORMATION
BULLETIN NO. 222. (WWW.SANDIEGO.GOV / DEVELOPMENT-SERVICES)

FOR MASONRY FENCES (6' MAXIMUM HEIGHT)

REFER TO DEVELOPMENT SERVICES DEPARTMENT INFORMATION
BULLETIN NO. 223. (WWW.SANDIEGO.GOV / DEVELOPMENT-SERVICES)

REFERENCES:

THIS DRAWING IS TO BE USED IN CONJUNCTION WITH SAN DIEGO
REGIONAL STANDARD DRAWINGS C-1 THROUGH C-6 AND C-9 THROUGH
C-15, AND CITY OF SAN DIEGO STANDARD DRAWING SDC-108.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	MASONRY WALL	 9/4/18
					COORDINATOR R.C.E. 56523 DATE
					DRAWING
					NUMBER SDC-105

REFERENCES:

THIS DRAWING IS TO BE USED **IN CONJUNCTION WITH SAN DIEGO REGIONAL STANDARD DRAWINGS C-1 THROUGH C-6 AND C-9 THROUGH C-15, AND CITY OF SAN DIEGO STANDARD DRAWING SDC-108.**

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 CONDITIONS:**REINFORCED CONCRETE:**

$F_c=1,200$ psi $F'_c=3,000$ psi
 $F_s=20,000$ psi $n=10$

REINFORCED MASONRY:

$F'_m=600$ psi $F_m=200$ psi
 $F_s=20,000$ psi $n=50$

EARTH=120 pcf AND EQUIVALENT FLUID PRESSURE=36 psf PER FOOT OF HEIGHT.
 WALLS SHOWN FOR 1 1/2:1 UNLIMITED SLOPING SURCHARGE ARE DESIGNED IN ACCORDANCE WITH RANKINE'S FORMULA FOR UNLIMITED SLOPING SURCHARGE WITH A $\phi=42^\circ$.

REINFORCEMENT:

INTERMEDIATE GRADE, HARD GRADE, OR RAIL STEEL DEFORMATION SHALL CONFORM TO **ASTM A615, A6161, A617**. BARS SHALL LAP 40 DIAMETERS, WHERE SPLICED, UNLESS OTHERWISE SHOWN ON THE PLANS. BENDS SHALL CONFORM TO THE MANUAL OF STANDARD PRACTICE, A.C.I. BACKING FOR HOOKS IS FOUR DIAMETERS. ALL BAR EMBEDMENTS ARE CLEAR DISTANCES TO OUTSIDE OF BAR. SPACING FOR PARALLEL BARS IS CENTER TO CENTER BARS.

MASONRY:

ALL REINFORCED MASONRY RETAINING WALLS SHALL BE CONSTRUCTED OF REGULAR OR LIGHT WEIGHT STANDARD UNITS CONFORMING TO THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION."

JOINTS:

VERTICAL CONTROL JOINTS SHALL BE PLACED AT 32' 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 WALL GREATER THAN 4' HIGH WHEN AREA BEHIND THE WALL IS ACCESSIBLE TO THE PUBLIC OR MAINTENANCE CREWS.

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.
 - (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.
- C. 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.
- D. AFTER GROUTING IS COMPLETE AND AFTER ROCK OR RUBBLE WALL DRAINS ARE IN PLACE BUT BEFORE EARTH BACKFILL IS PLACED.
- E. 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 ENSURE 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 ENSURE 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 SDC-108.**

DRAINAGE DITCHES:


BROW DITCHES WILL BE REQUIRED ON SLOPED BACKFILLS. **PER SDD-106** TYPE A WITH THE MASONRY WALL HEIGHTS ABOVE DITCH TO BE AT A MINIMUM OF 1'. THE BROW DITCH WILL LEAD TO A WALL DRAIN DETAIL **AS SHOWN ON C-14.**

SOIL:

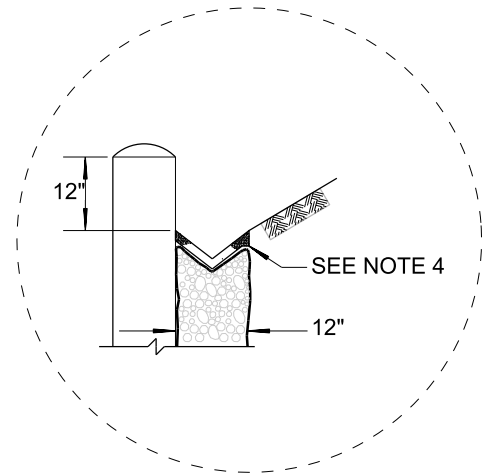
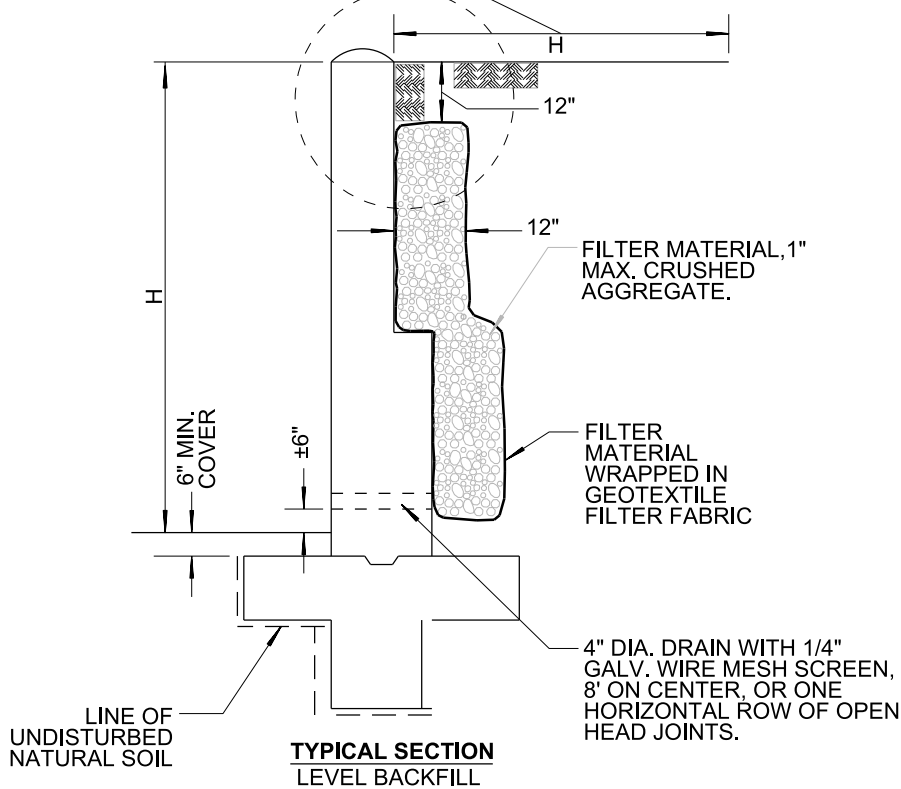
ALL FOOTINGS SHALL EXTEND AT LEAST 12" INTO UNDISTURBED NATURAL SOIL OR APPROVED COMPACTED FILL. SOIL SHOULD BE DAMPENED PRIOR TO PLACING CONCRETE IN FOOTINGS.

CABLE RAILING:

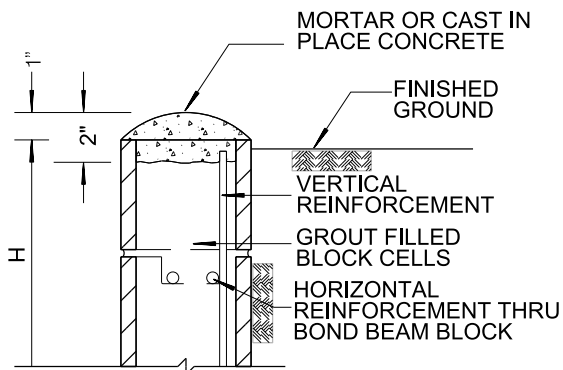
USE CALTRANS STANDARD PLAN B11-47.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL	AR	J. NAGELVOORT	02/16		<div>RETAINING WALL NOTES</div>	<div><div></div><div>COORDINATOR R.C.E. 56523</div></div> <div>9/4/18 DATE</div>
REDRAFTED	CD	J. NAGELVOORT	09/18			
					DRAWING NUMBER SDC-107	

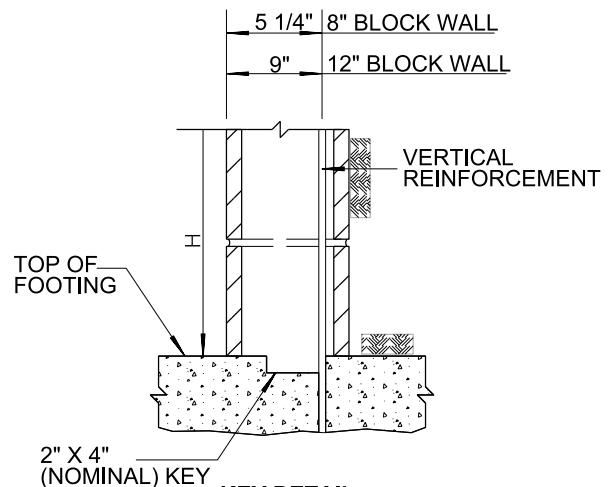
NO SURCHARGE LOADS
WITHIN THIS AREA FOR
LEVEL BACKFILL DESIGN



**TYPICAL SECTION
SLOPED BACKFILL**




CAP DETAIL



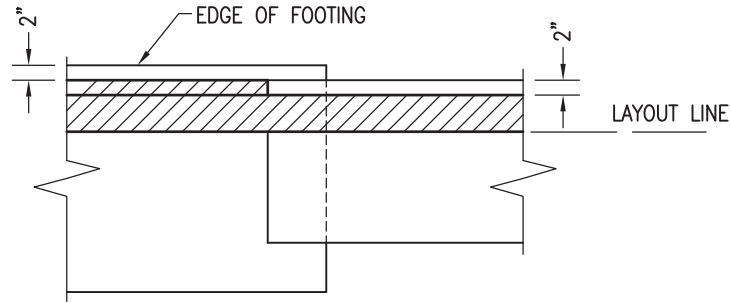
KEY DETAIL

NOTES:

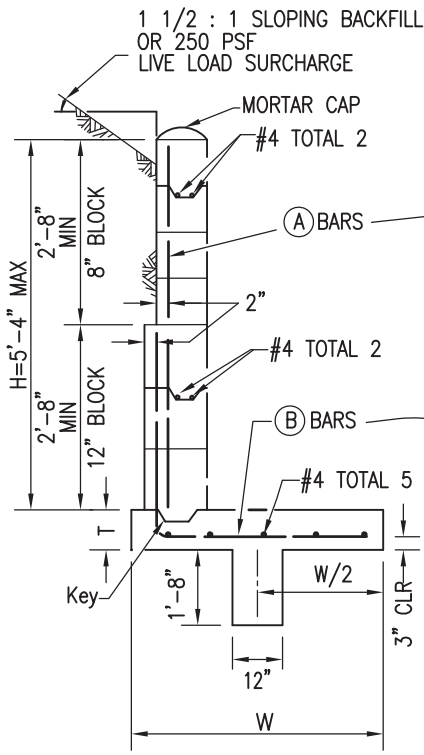
1. ALL MASONRY RETAINING WALLS SHALL BE CONSTRUCTED WITH CAP, KEY AND DRAINAGE DETAILS AS SHOWN.
2. 4" DIAMETER DRAIN MAY BE FORMED BY PLACING A BLOCK ON ITS SIDE.
3. ALL MASONRY WALLS SHALL BE WATERPROOFED WITH COAL TAR EMULSION SYSTEM **AS APPROVED BY THE CITY.**
4. FOR MORE INFORMATION **SEE SDC-107.**
5. IF H IS GREATER THAN 6 FT, THE RETAINING WALL WILL NEED TO BE ENGINEERED AND DESIGNED.
6. H=HEIGHT. **SEE PLANS** FOR HEIGHT AND FOOTING DETAILS.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	AR	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18	RETAINING WALL DETAILS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDC-108

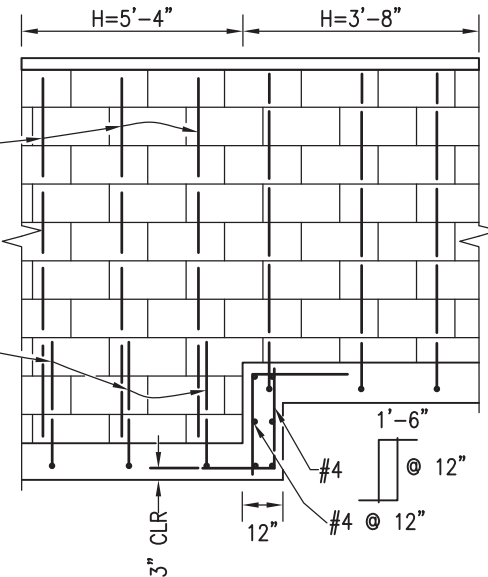
SEE SDC-107 AND SDC-108 FOR DRAWINGS C-7 AND C-8



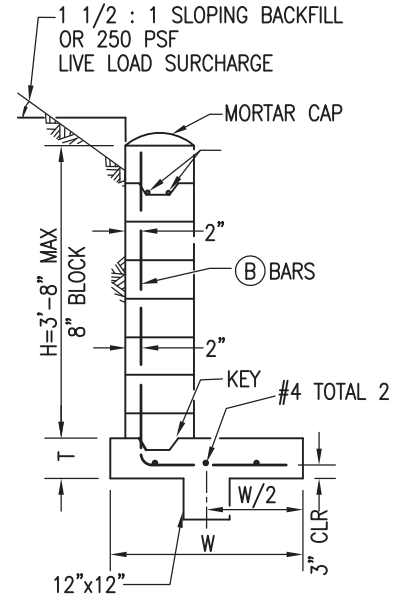
PLAN



TYPICAL SECTION
OVER 3'-8"



ELEVATION
HORIZONTAL REINF. NOT SHOWN




TYPICAL SECTION
3'-8" MAX

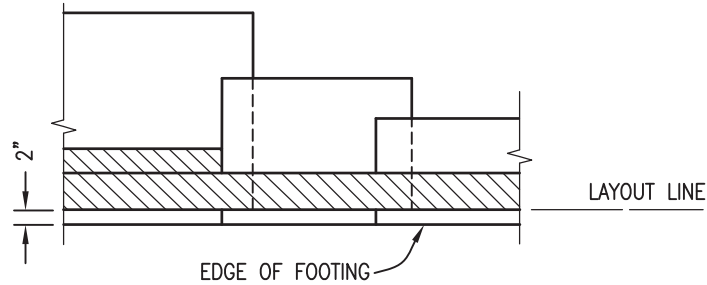
DIMENSIONS AND REINFORCING STEEL		
H (MAX)	5'-4"	3'-8"
T (MIN)	0'-10"	0'-10"
W (MIN)	5'-0"	3'-9"
(A) BARS	#4@16"	—
(B) BARS	#6@16"	#4@16"
MAX SOIL PRESSURE	700PSF	550PSF

NOTES:

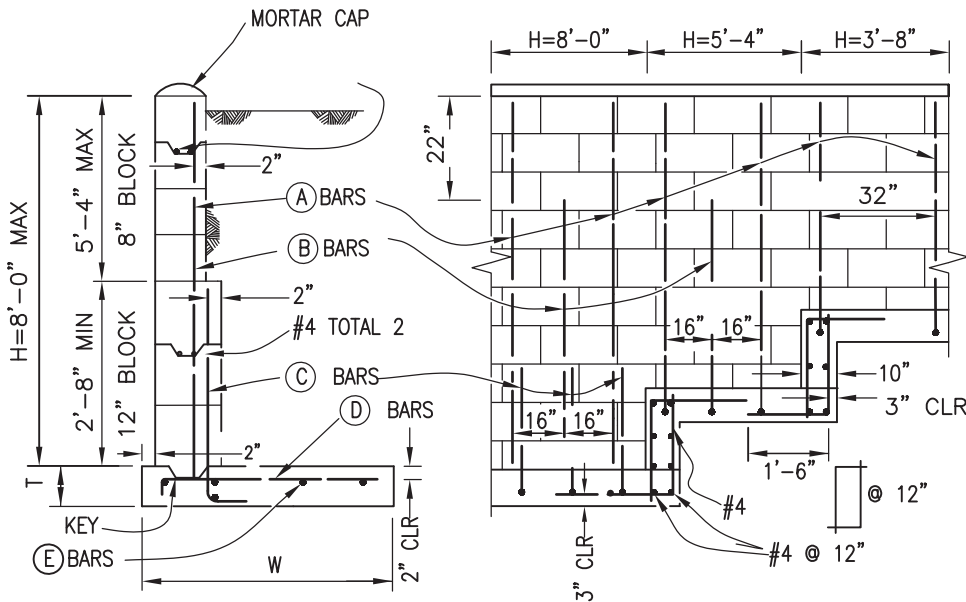
1. SEE C-7 AND C-8 FOR ADDITIONAL NOTES AND DETAILS.
2. FILL ALL BLOCK CELLS WITH GROUT.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75	MASONRY RETAINING WALL TYPE 2 (LIVE LOAD SURCHARGE OR SLOPING BACKFILL)		 12/17/2015 Chairperson R.C.E. 19246 Date	
Add Metric		T. Stanton	03/03				
Delete Metric	S.S.	T. Shell	03/11				
Reviewed	TS	T. Stanton	11/15				
						DRAWING NUMBER	C-02

SEE SDC-107 AND SDC-108 FOR DRAWINGS C-7 AND C-8

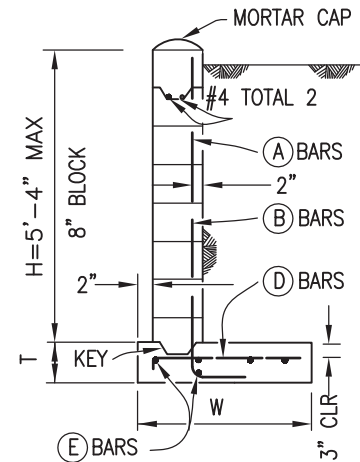


PLAN



TYPICAL SECTION
OVER 5'-4"


ELEVATION
HORIZONTAL REINF. NOT SHOWN



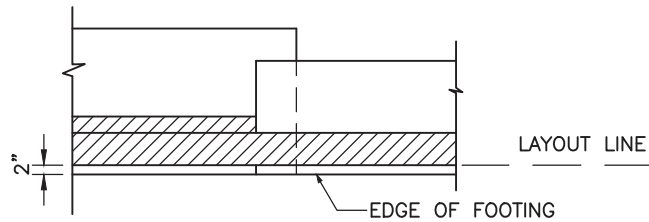
TYPICAL SECTION
5'-4" MAX

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"
(A) BARS	#4@32"	#4@32"	#4@32"
(B) BARS	—	#4@32"	#4@32"
(C) BARS	—	—	#6@16"
(D) BARS	#4@32"	#4@16"	#6@16"
(E) BARS	#4 TOTAL 4	#4 TOTAL 5	#4 TOTAL 6
MAX SOIL 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.

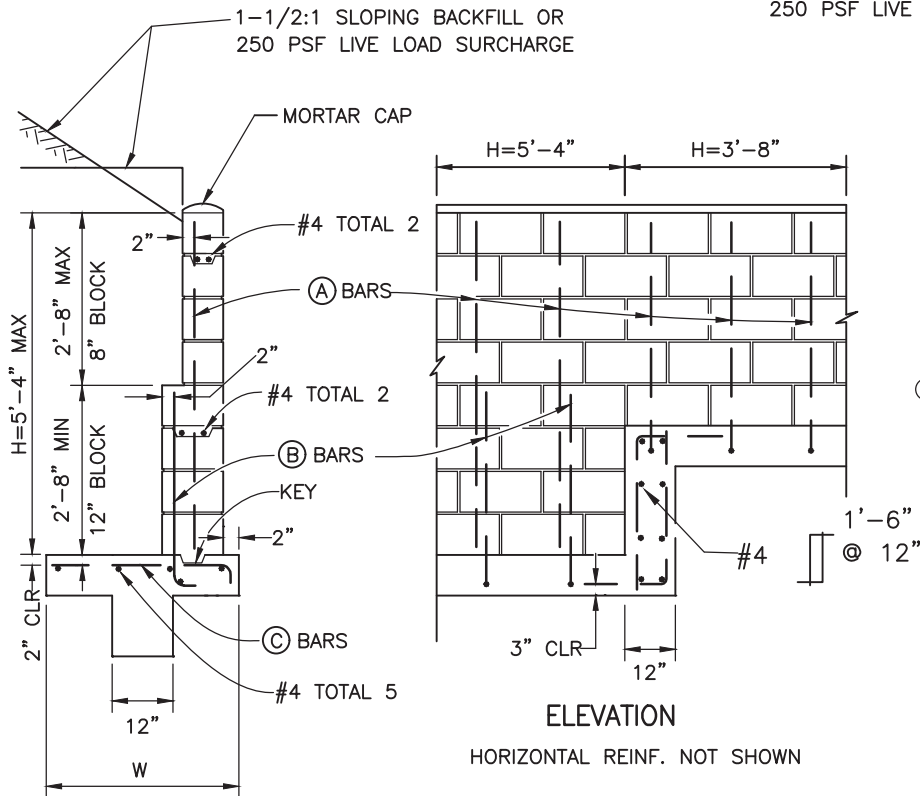
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75				
Add Metric		T. Stanton	03/03	MASONRY RETAINING WALL TYPE 3 (LEVEL BACKFILL)		 Chairperson R.C.E. 19246 Date	
Delete Metric	S.S.	T. Shell	03/11				
Reviewed	TS	T. Stanton	11/15				
						DRAWING NUMBER C-03	

SEE SDC-107 AND SDC-108 FOR DRAWINGS C-7 AND C-8



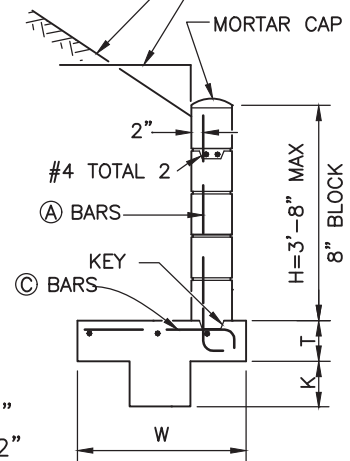
PLAN

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



ELEVATION

HORIZONTAL REINF. NOT SHOWN



TYPICAL SECTION

3'-8" MAX

TYPICAL SECTION


OVER 3'-8"

DIMENSIONS AND REINFORCING STEEL

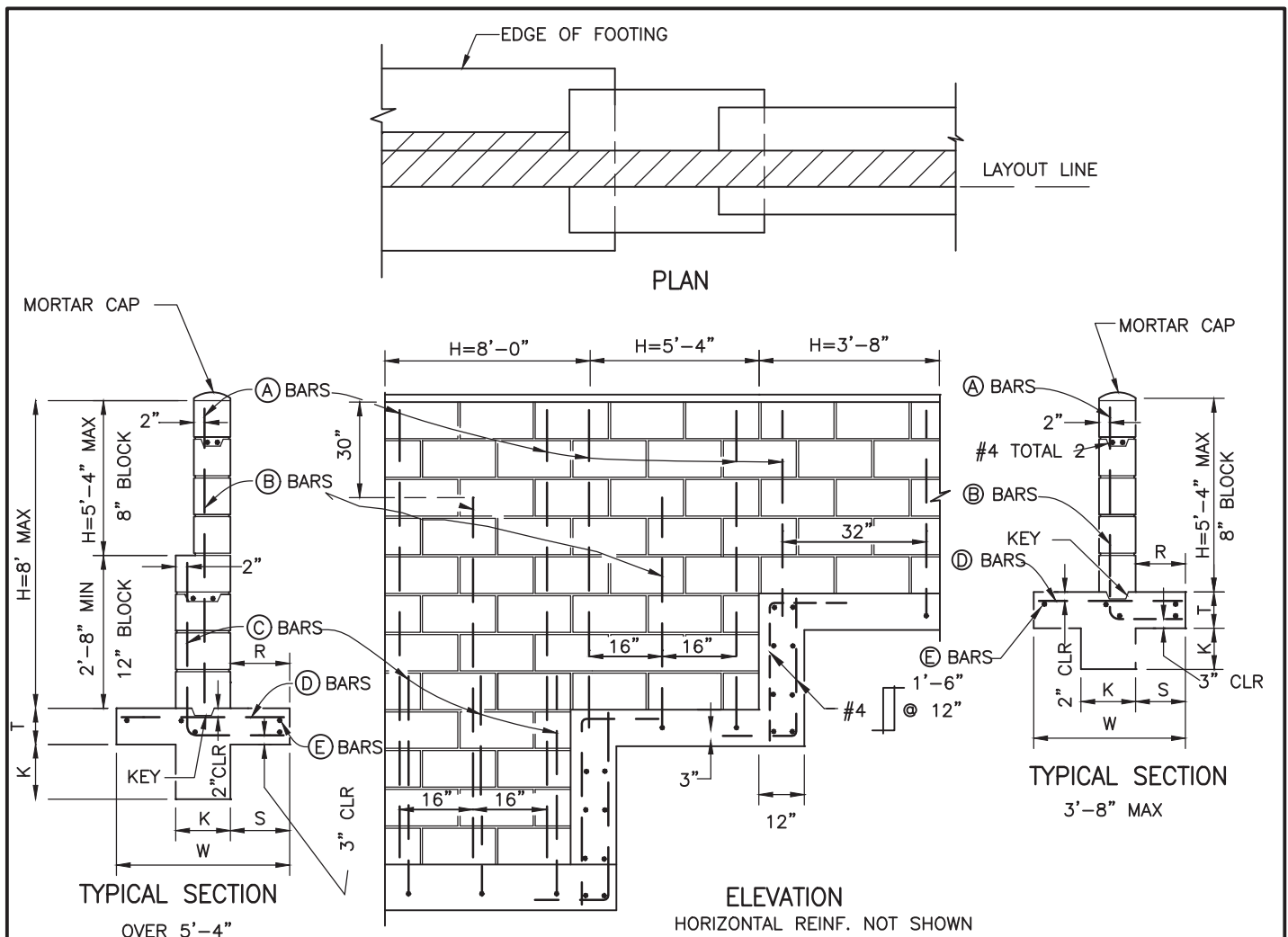
H (MAX)	5'-4"	3'-8"
T (MIN)	0'-10"	0'-8"
W (MIN)	4'-0"	3'-0"
(A) BARS	#4@16"	#4@16"
(B) BARS	#6@16"	
SURCHARGE	sloping	live load
(C) BARS	#6@8"	#6@16"
K (MIN)	1'-0"	0'-8"
TOE PRESS.	2700 PSF	1900 PSF
		1700 PSF
		1430 PSF

NOTES:

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

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Parkinson	02/95		
Add Metric		T. Stanton	03/03	MASONRY RETAINING WALL TYPE 4 (LIVE LOAD SURCHARGE OR SLOPING BACKFILL)	<div> 12/17/2015</div> <div>Chairperson R.C.E. 19246 Date</div>
Reformatted		T. Stanton	04/06		
Delete Metric	S.S.	T. Shell	03/11		
Reviewed	TS	T. Stanton	11/15		
				DRAWING NUMBER	C-04

SEE SDC-107 AND SDC-108 FOR DRAWINGS C-7 AND C-8



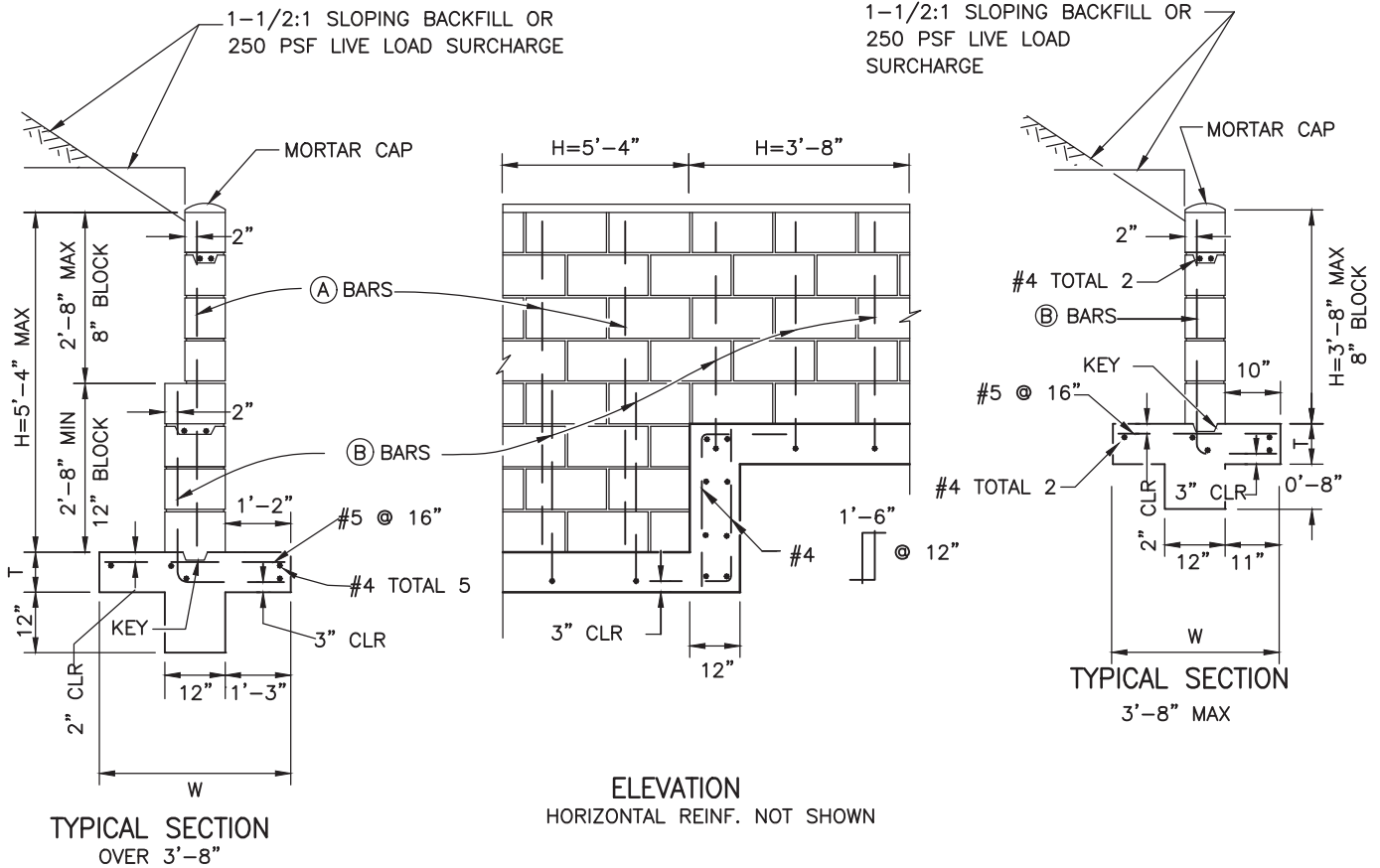
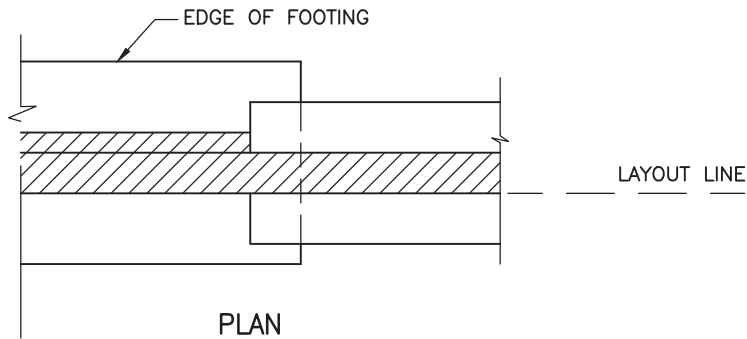
DIMENSIONS AND REINFORCING STEEL			
H (MAX)	3'-8"	5'-4"	8'-0"
T (MIN)	0'-8"	0'-10"	1'-0"
W (MIN)	2'-1"	3'-1"	4'-3"
R	0'-9"	1'-2"	1'-5"
S	0'-8 1/2"	1'-1 1/2"	1'-7 1/2"
K	0'-8"	0'-8"	1'-0"
Ⓐ BARS	#4@32"	#4@32"	#4@32"
Ⓑ BARS	—	#4@32"	#4@32"
Ⓒ BARS	—	—	#7@16"
Ⓓ BARS	#4@32"	#4@16"	#4@16"
Ⓔ BARS	#4 total 5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

NOTES:

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

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Parkinson	2/95	MASONRY RETAINING WALL TYPE 5 (LEVEL BACKFILL)		<i>T. Stanton</i> 12/17/2015 Chairperson R.C.E. 19246 Date	DRAWING NUMBER C-05
Add Metric		T. Stanton	03/03				
Delete Metric	S.S.	T. Shell	03/11				
Reviewed	TS	T. Stanton	11/15				


SEE SDC-107 AND SDC-108 FOR DRAWINGS C-7 AND C-8



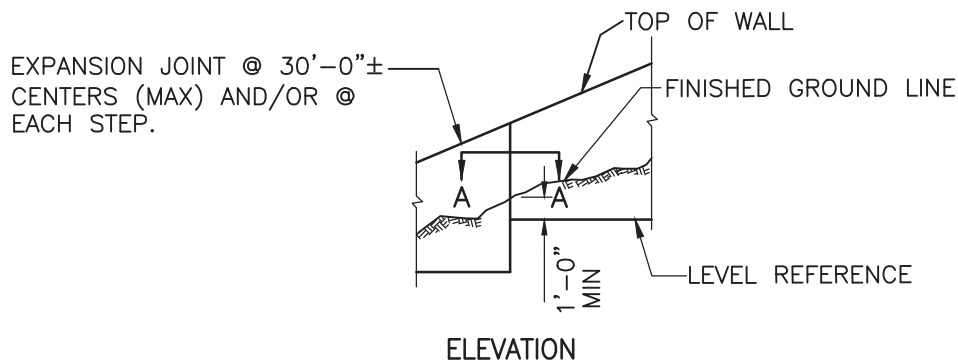
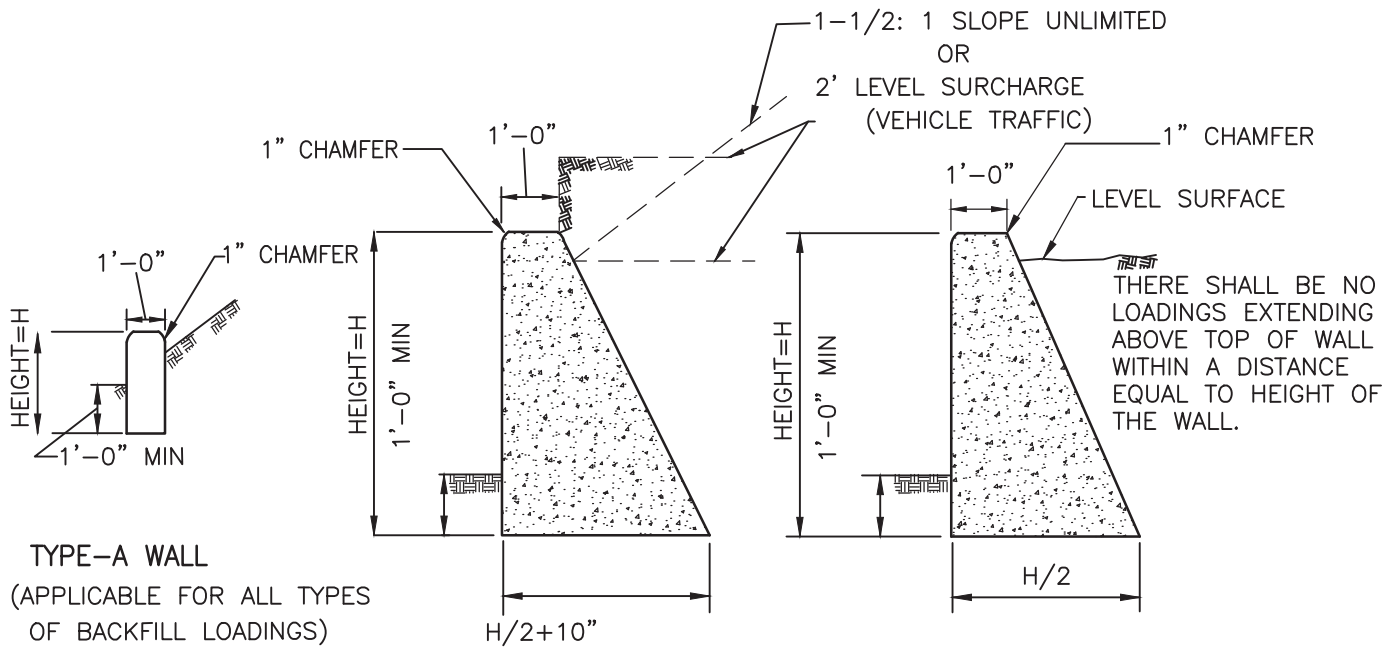
DIMENSIONS AND REINFORCING STEEL		
H (MAX)	5'-4"	3'-8"
T (MIN)	0'-10"	0'-8"
W (MIN)	3'-10"	2'-9"
(A) BARS	#4@16"	—
(B) BARS	#6@16"	#4@16"
MAX TOE PRESSURE	2,000 PSF	1,400 PSF

NOTES:

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


Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Parkinson	2/95	MASONRY RETAINING WALL TYPE 6 (LIVE LOAD SURCHARGE OR SLOPING BACKFILL)		 12/17/2015 Chairperson R.C.E. 19246 Date	
Add Metric		T. Stanton	03/03				
Delete Metric	S.S.	T. Shell	03/11				
Reviewed	TS	T. Stanton	11/15				
						DRAWING NUMBER C-06	

SEE SDC-107 AND SDC-108 FOR DRAWINGS C-7 AND C-8



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

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

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75	GRAVITY RETAINING WALLS		 12/17/2015	Chairperson R.C.E. 19246 Date
Add Metric		T. Stanton	03/03				
Delete Metric	S.S.	T. Shell	03/11				
Reviewed	TS	T. Stanton	11/15				
						DRAWING NUMBER	C-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 EXCEEDED BY SIX INCHES BEFORE GOING TO NEXT SIZE.

DESIGN DATA

FC = 1200 PSI

F'C = 3000 PSI

EARTH = 120 PCF

AND EQUIVALENT FLUID PRESSURE=36 PSF
PER FOOT OF HEIGHT

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

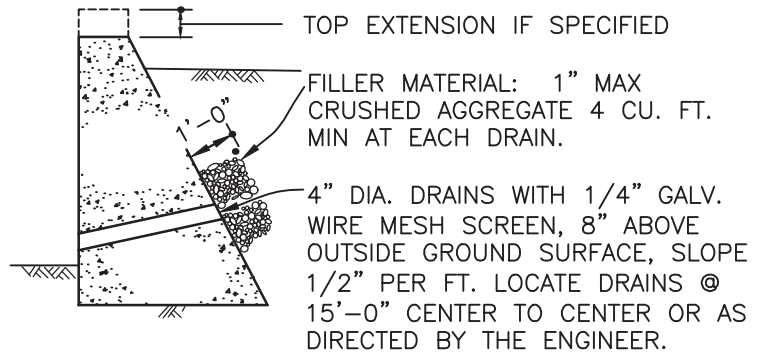
NOTE: MAXIMUM TOE PRESSURE UNDER WALL FOOTING = 1-1/2 TONS/SQ. FT. SPECIAL DESIGN REQUIRED WHERE FOOTING MATERIAL IS INCAPABLE OF SUPPORTING THIS PRESSURE.

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.

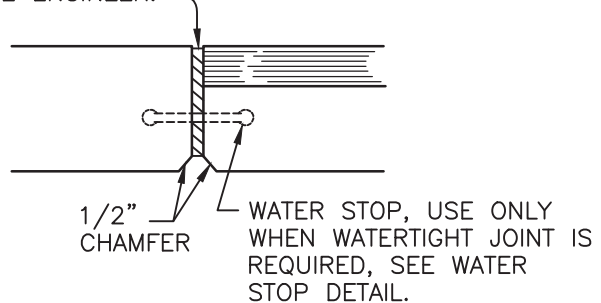
NO BACKFILL MATERIAL SHALL BE DEPOSITED AGAINST CONCRETE RETAINING WALLS UNTIL THE CONCRETE HAS DEVELOPED A STRENGTH OF 2,500 PSI IN COMPRESSION AS DETERMINED BY TEST CYLINDERS, OR UNTIL 28 DAYS AFTER WALL HAS BEEN PLACED.



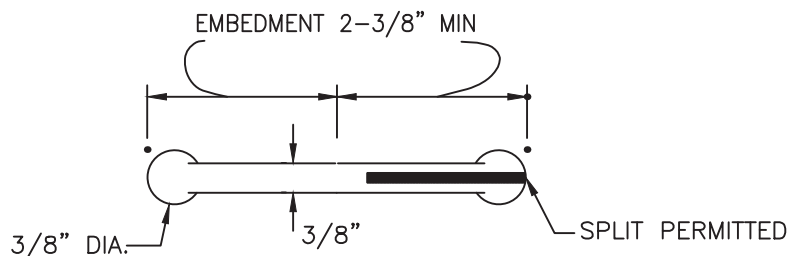
TYPICAL DRAINAGE

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.




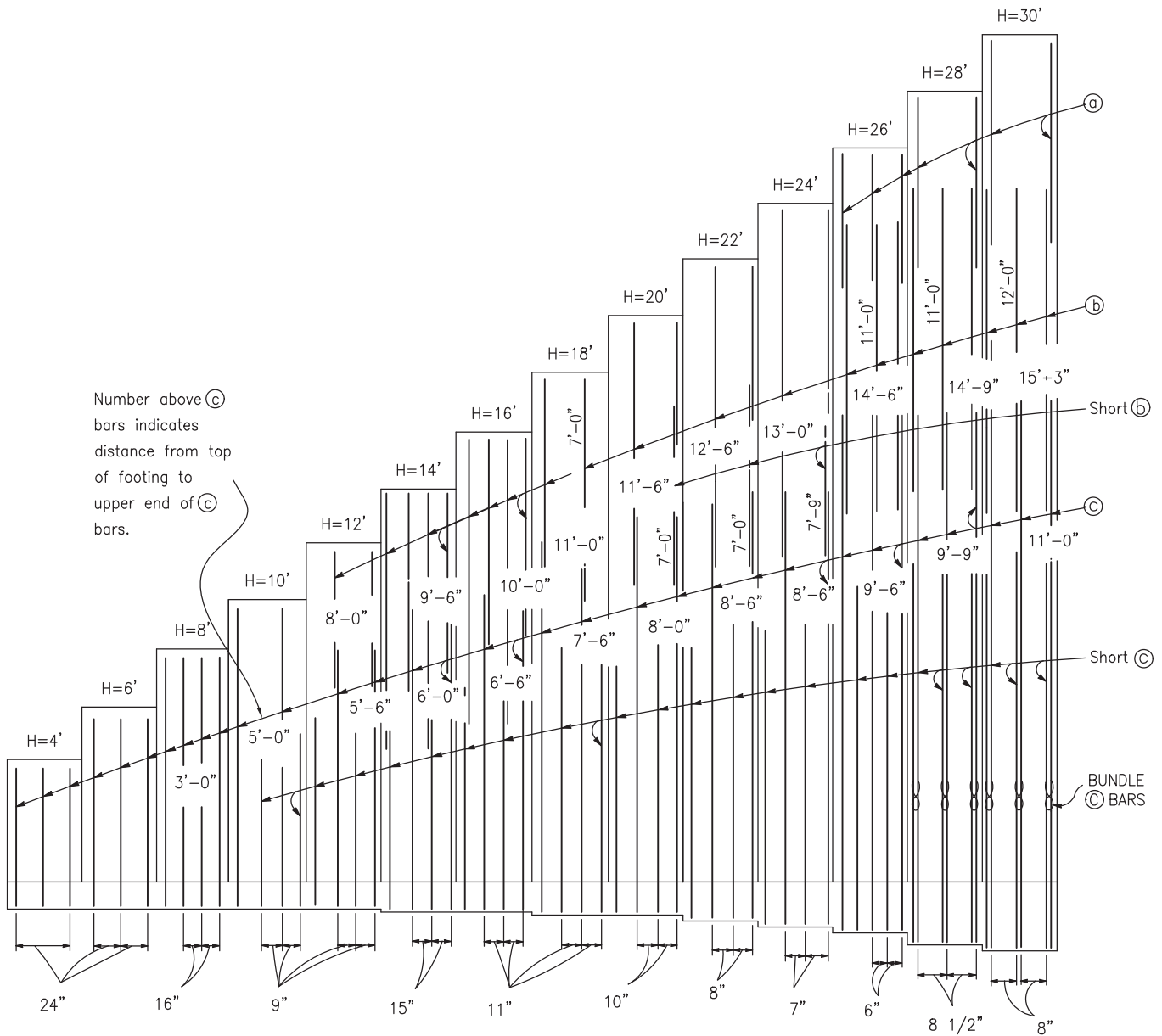
SECTION A-A



RUBBER WATERSTOP

USE ONLY WHEN WATERTIGHT
JOINT IS REQUIRED.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75	GENERAL NOTES AND DETAILS FOR GRAVITY RETAINING WALLS		 12/17/2015 Chairperson R.C.E. 19246 Date	
Add Metric		T. Stanton	03/03				
Delete Metric	S.S.	T. Shell	03/11				
Reviewed	TS	T. Stanton	11/15				
						DRAWING NUMBER	C-10

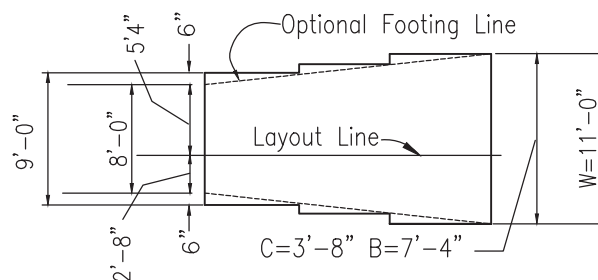


ELEVATION

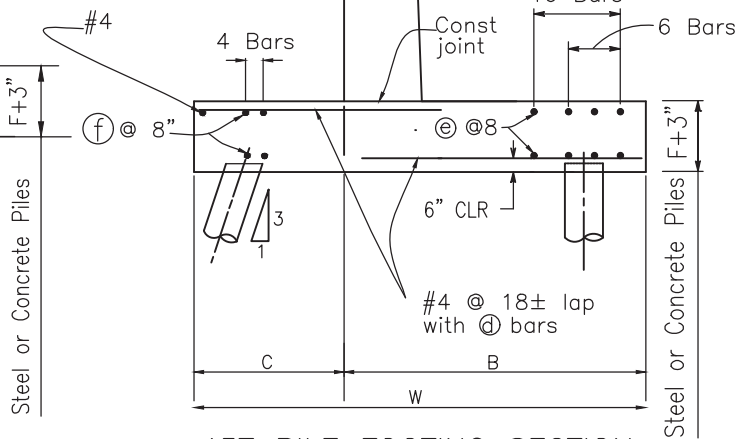
NOTES:

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	SAN DIEGO REGIONAL STANDARD DRAWING	
ORIGINAL		Kercheval	12/75	REINFORCED CONCRETE RETAINING WALL TYPE 1 - ELEVATION	
Add Metric		T. Stanton	03/03		
Delete Metric	S.S.	T. Shell	03/11		
Reviewed	TS	T. Stanton	11/15		
				RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE  12/17/2015 Chairperson R.C.E. 19246 Date	
				DRAWING NUMBER C-11A	



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



Revision	By	Approved	Date	<div style="text-align: center;"> SAN DIEGO REGIONAL STANDARD DRAWING REINFORCED CONCRETE RETAINING WALL TYPE 1 - PILE FOOTING </div>	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Add Metric		T. Stanton	03/03		
Delete Metric	S.S.	T. Shell	03/11		 12/17/2015 Chairperson R.C.E. 19246 Date
Reviewed	TS	T. Stanton	11/15		
					DRAWING NUMBER <div style="float: right; font-size: 24pt; font-weight: bold;">C-11C</div>

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


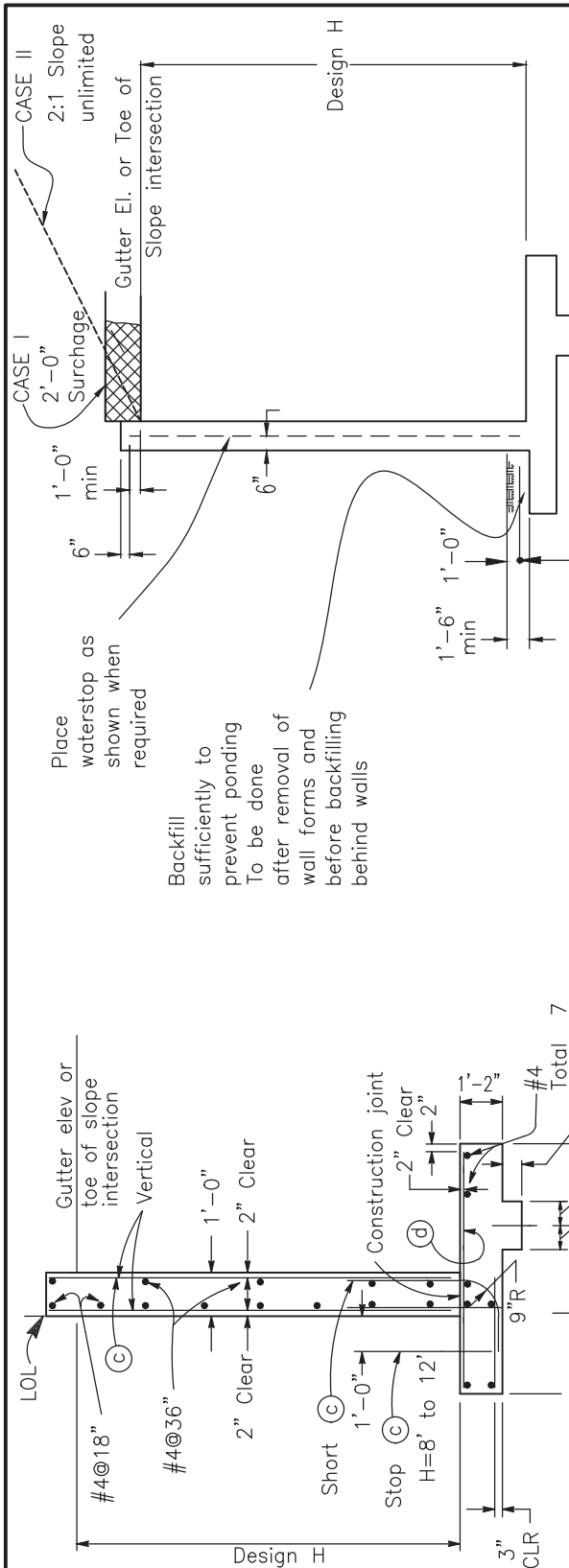
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
	12/17/2015
Chairperson R.C.E. 19246	Date
DRAWING NUMBER	C-11D

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@8-1/2	#10@8	
Ⓓbars	#5@24	#5@24	#4@16	#4@9	#5@9	#8@15	#8@11	#10@11	#10@11	#10@8	#10@7	#10@6	#9@8-1/2	#9@8	
Total Ⓔ bars	6-#6	6-#6	10-#7	10-#7	10-#7	10-#7	6-#7	6-#7	6-#7	6-#7	4-#7	4-#7	4-#7	4-#7	
Total Ⓕ bars				4-#7	4-#7	4-#7	4-#7	4-#7	4-#7	4-#7	2-#7	2-#7	2-#7	2-#7	
2' Level surcharge	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'

ⓧ Denotes a bundle of 2 bars



DESIGN

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

SPREAD FOOTING SECTION

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

NOTES:

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

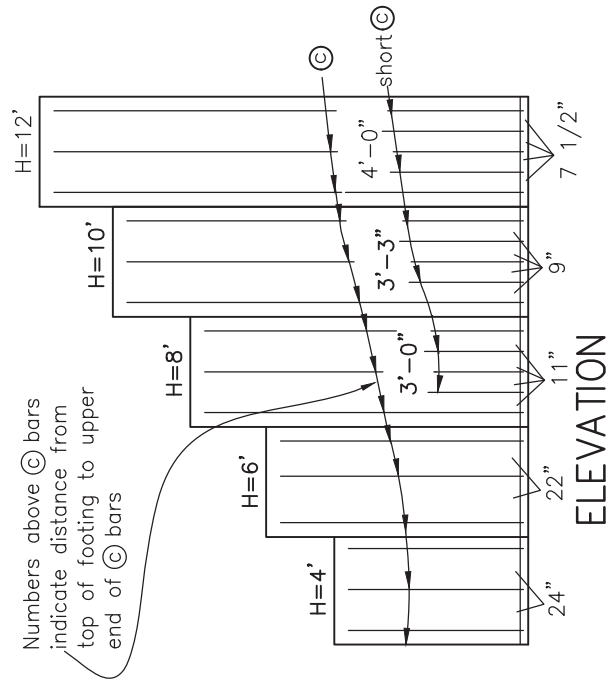
Design Data: $f'_c = 1300$ psi $f'_c = 3250$ psi $f_s = 24,000$ psi $n = 10$ earth 120 pcf

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

Case II - Earth pressure determined from Rankine's formula with $0 = 33^\circ - 42^\circ$.

NOTE:

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



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

SAN DIEGO REGIONAL STANDARD DRAWING

REINFORCED CONCRETE RETAINING WALL

TYPE 1A

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

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

DRAWING NUMBER **C-12A**

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

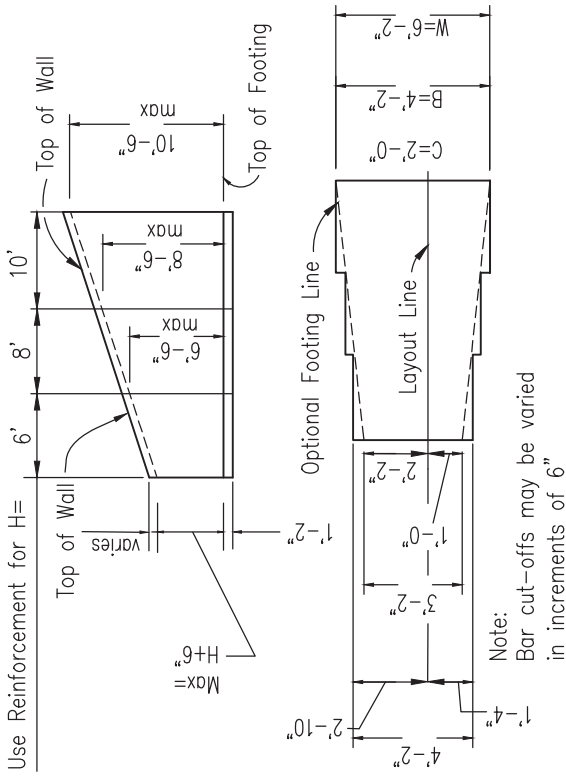
SAN DIEGO REGIONAL STANDARD DRAWING

REINFORCED CONCRETE RETAINING WALL TYPE 1A

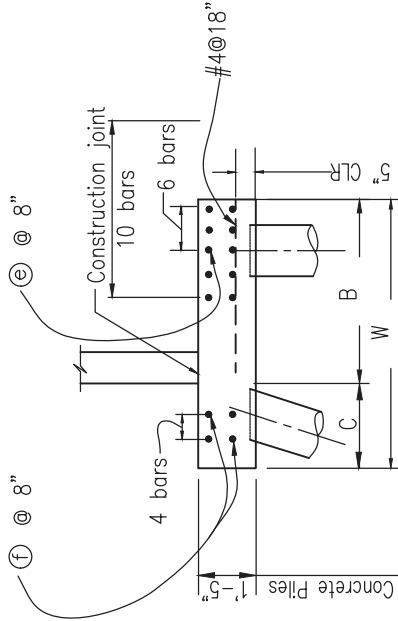
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

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

DRAWING
NUMBER **C-12B**



45T PILE FOOTING SECTION



TYPICAL LAYOUT EXAMPLE

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

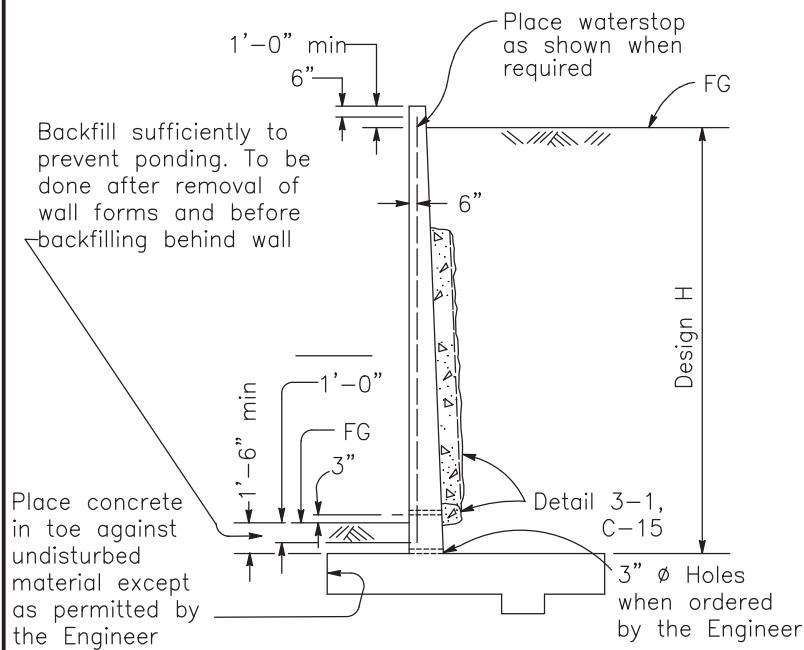
TABLE OF REINFORCING STEEL DIMENSIONS AND DATA

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

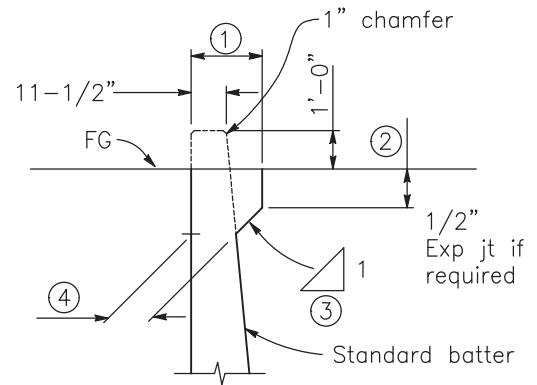
Note:

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'.



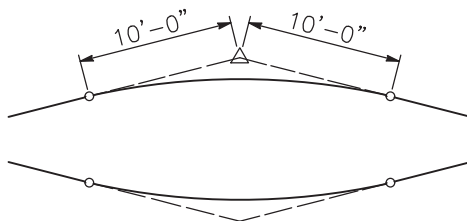
DESIGN AND DRAINAGE



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

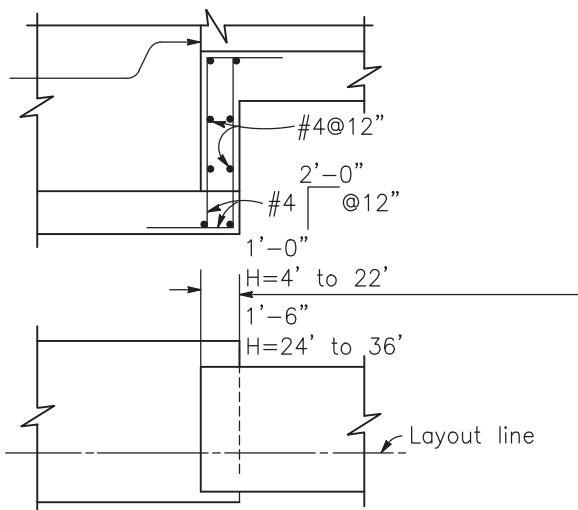
④ Stem width at base of haunch to be determined as shown

STEM WIDTH AT BASE OF HAUNCH

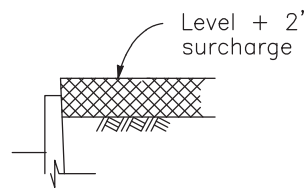


20' VC AT TOP OF WALL SLOPE CHANGE

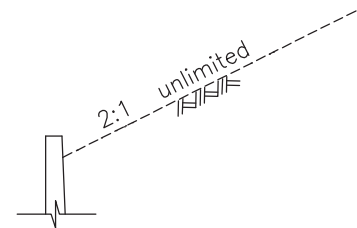
Where shown on the plans



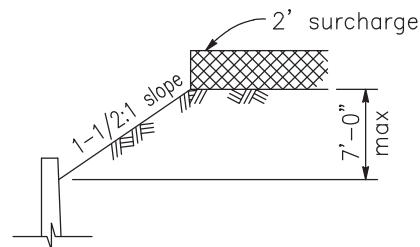
FOOTING STEP



CASE I



CASE II



CASE III

DETAIL OF DESIGN LOADING CASES

CASE I Level + 2' surcharge

CASE II 2:1 unlimited slope

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

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

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

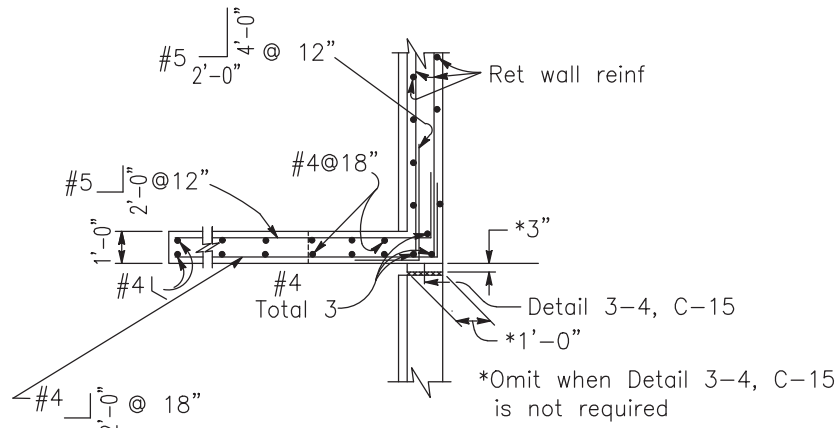
SAN DIEGO REGIONAL STANDARD DRAWING

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

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

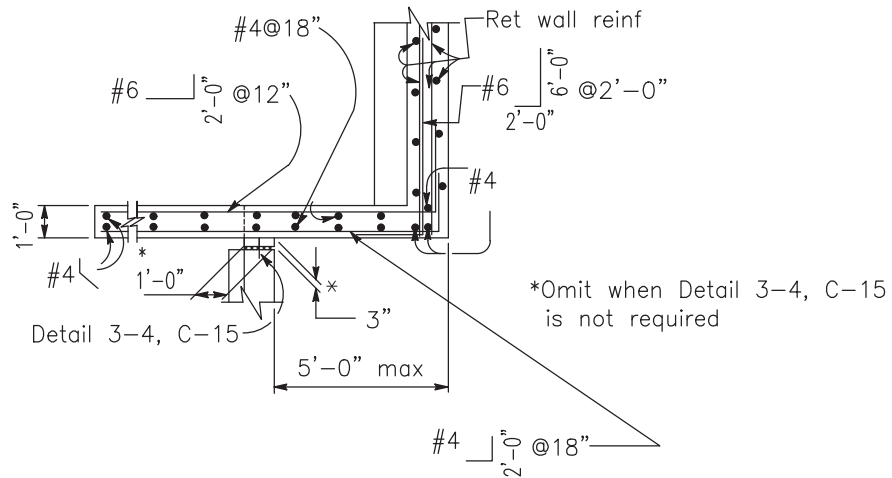
M. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **C-13A**



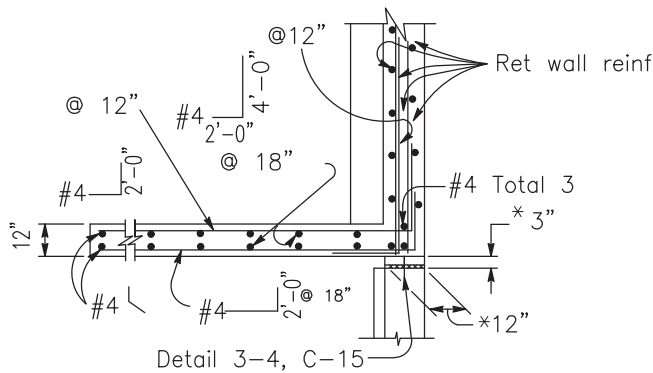
PLAN

(For return wall type "A")



PLAN

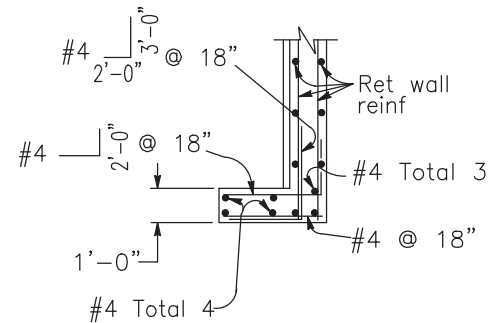
(For return wall type "B")



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

PLAN

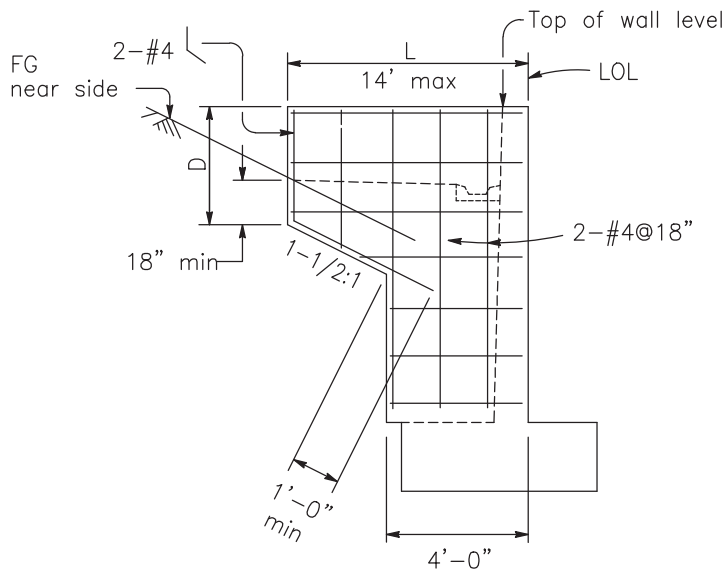
(For return wall type "C")



PLAN

(For return wall type "D")

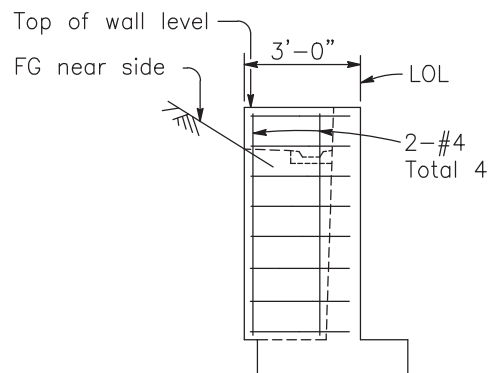
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75				
Add Metric		T. Stanton	03/03	REINFORCED CONCRETE RETAINING WALL DETAILS No. 1		Chairperson R.C.E. 19246 Date	
Delete Metric	S.S.	T. Shell	03/11				
Reviewed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



ELEVATION

RETURN WALL TYPE A

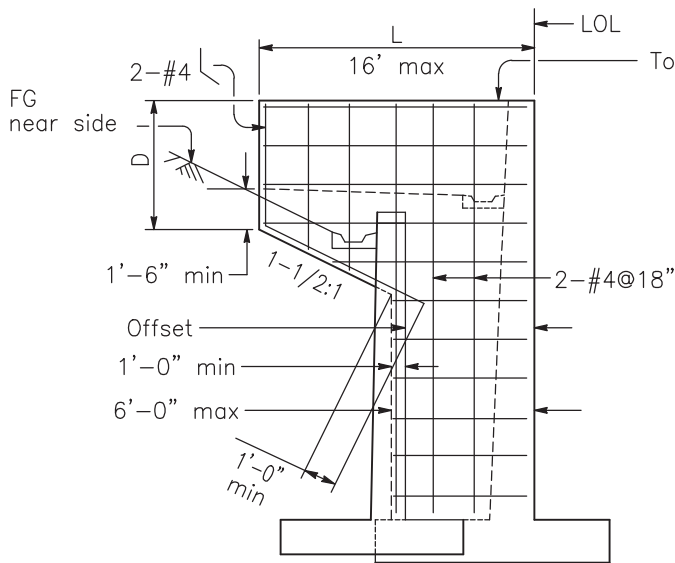
Use where H=8' or less



ELEVATION

RETURN WALL TYPE D

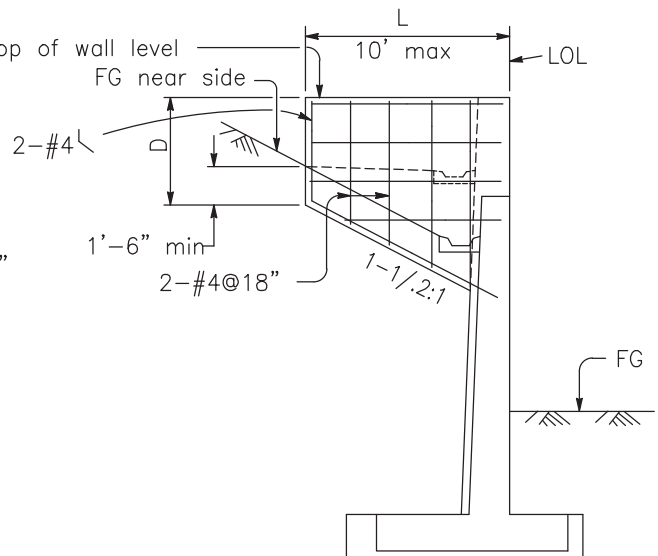
Use where H=6' or less



ELEVATION

RETURN WALL TYPE B

Use where H=10' or more on offset walls



ELEVATION

RETURN WALL TYPE C

Use where H=10' or more on straight walls

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

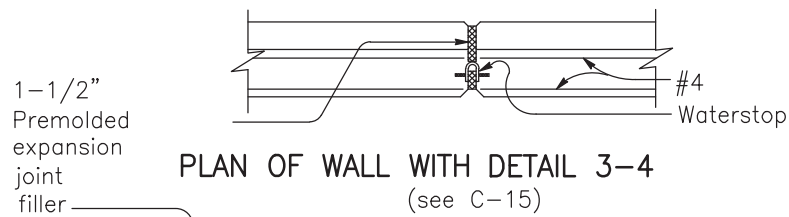
SAN DIEGO REGIONAL STANDARD DRAWING

REINFORCED CONCRETE RETAINING WALL DETAILS No. 1

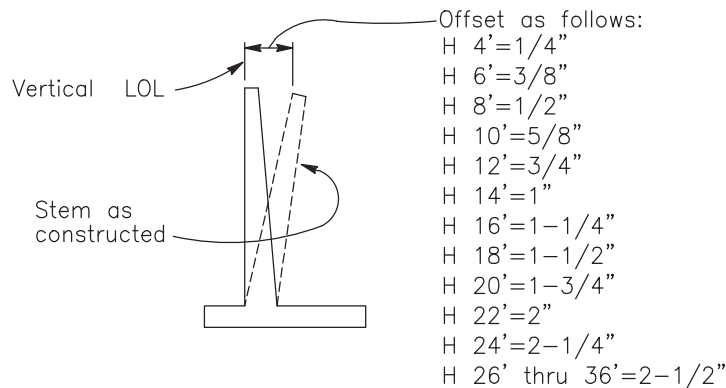
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

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

DRAWING
NUMBER **C-13C**



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:


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

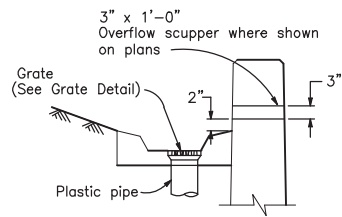
Equivalent fluid pressure =

36 pcf maximum for determination of toe pressure.

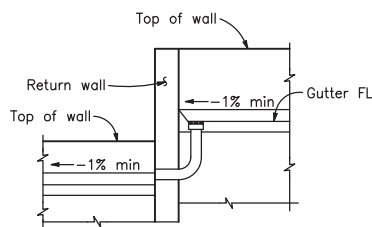
27 pcf minimum for determination of heel pressure.

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

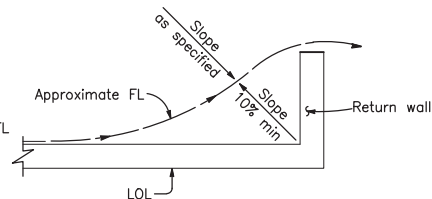
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75	REINFORCED CONCRETE RETAINING WALL DETAILS No. 1		 12/17/2015 Chairperson R.C.E. 19246 Date	
Add Metric		T. Stanton	03/03				
Delete Metric	S.S.	T. Shell	03/11				
Reviewed	TS	T. Stanton	11/15				
						DRAWING NUMBER	C-13D



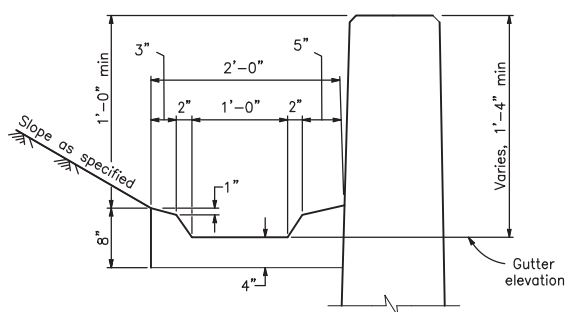
WALL DRAIN DETAIL



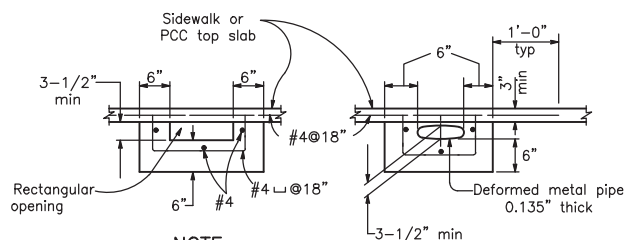
SECTION A-A



WALL DRAINAGE
WHERE GUTTER NOT REQUIRED



TYPICAL GUTTER DETAIL



NOTE

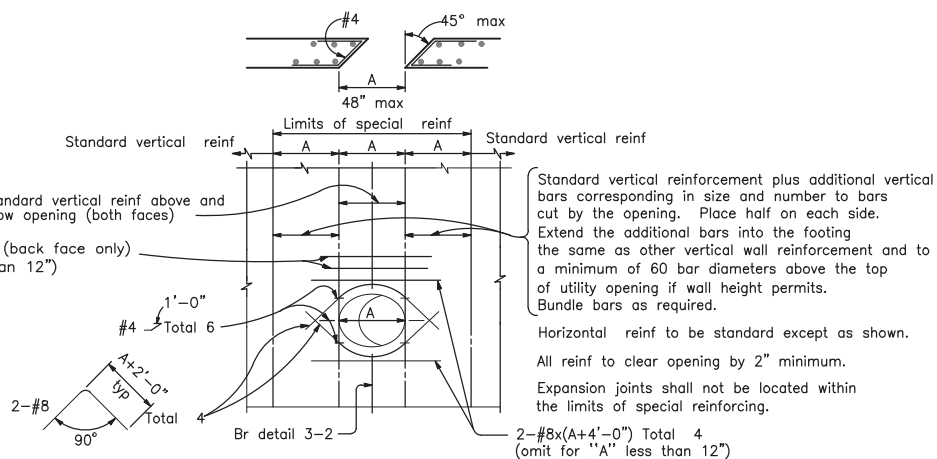
Area of opening to be not less than that of pipe from wall gutter. Make opening transition in wall. Edge opening in curb face to 3/4" minimum radius.

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

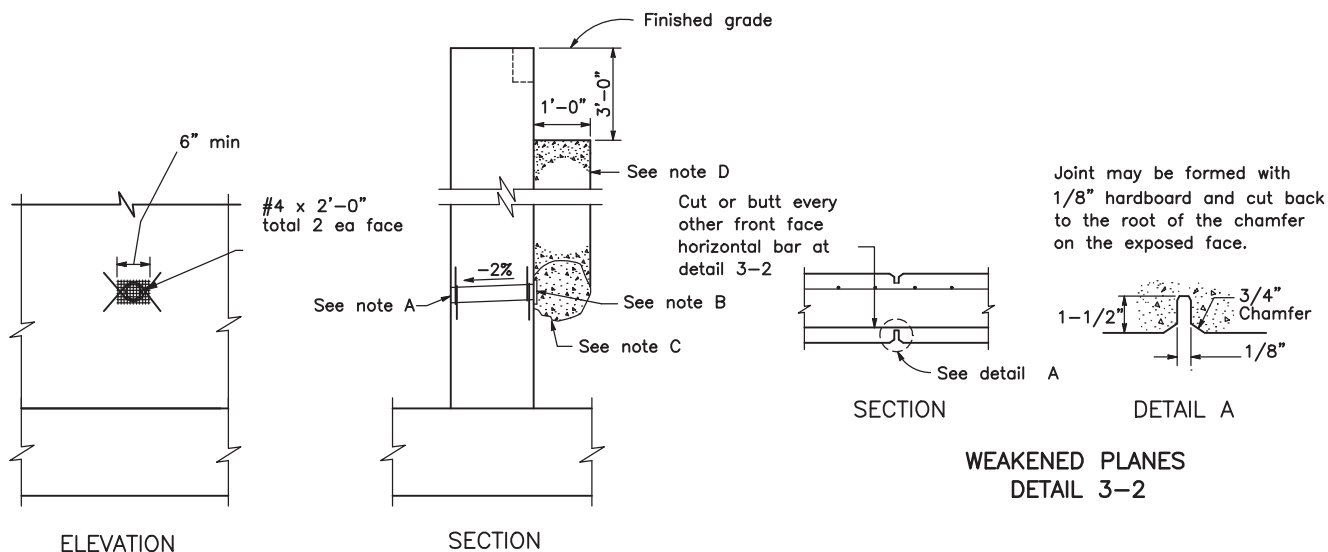
Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Delete Metric	S.S.	T. Shell	03/11
Reviewed	TS	T. Stanton	11/15

REINFORCED CONCRETE RETAINING WALL DETAILS No. 2

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

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

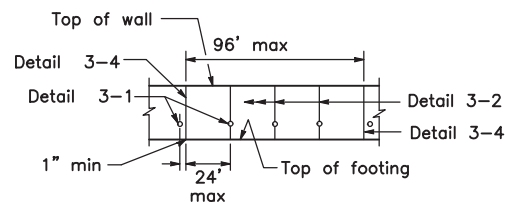
DRAWING NUMBER **C-14**



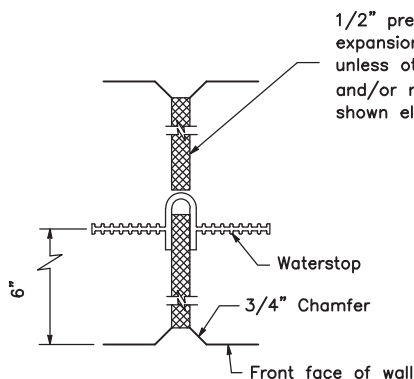
WEEP HOLE AND PERVIOUS BACKFILL
DETAIL 3-1

NOTES

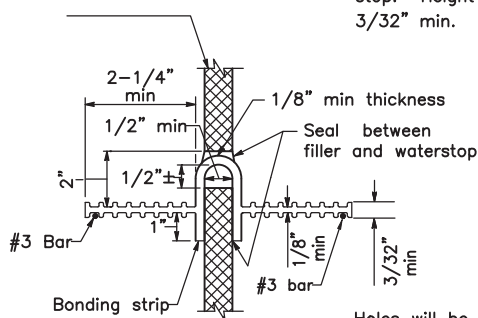
- A. 4" diameter drain @ 25' max center to center (9' c-c for Type 3 and 9'-3" c-c for Type 4 Retaining Walls). For walls adjacent to sidewalks or curbs, provide 4" cast iron or asbestos cement pipe under the sidewalk to discharge thru curb face. Exposed wall drains shall be located 3" ± above finished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



WALL EXPANSION JOINTS
AND WEAKENED PLANES
DETAIL 3-3



WALL EXPANSION JOINT
DETAIL 3-4



WATERSTOP
DETAIL 3-6

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

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

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

SAN DIEGO REGIONAL STANDARD DRAWING

REINFORCED CONCRETE RETAINING WALL DETAILS No. 3

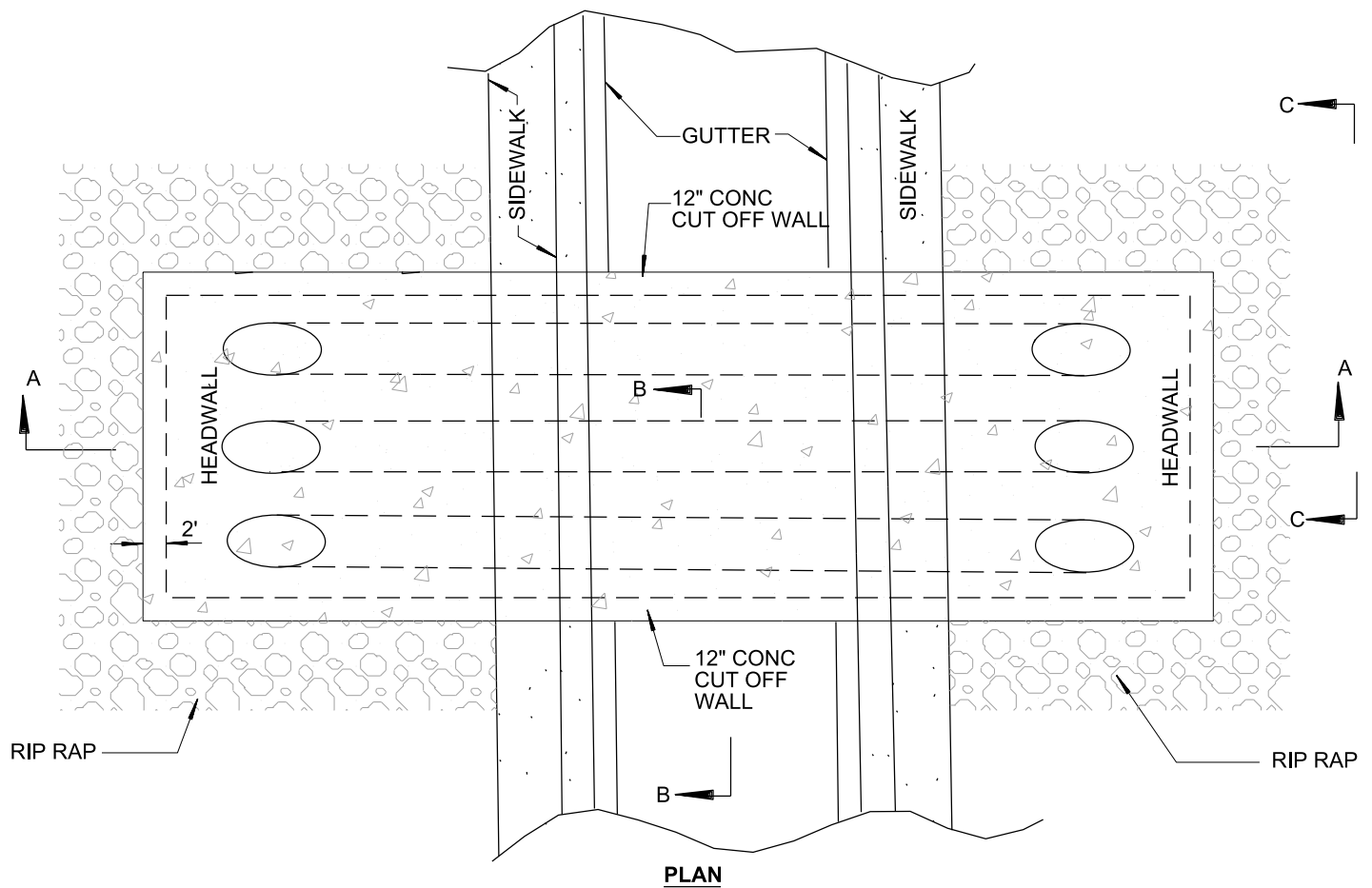
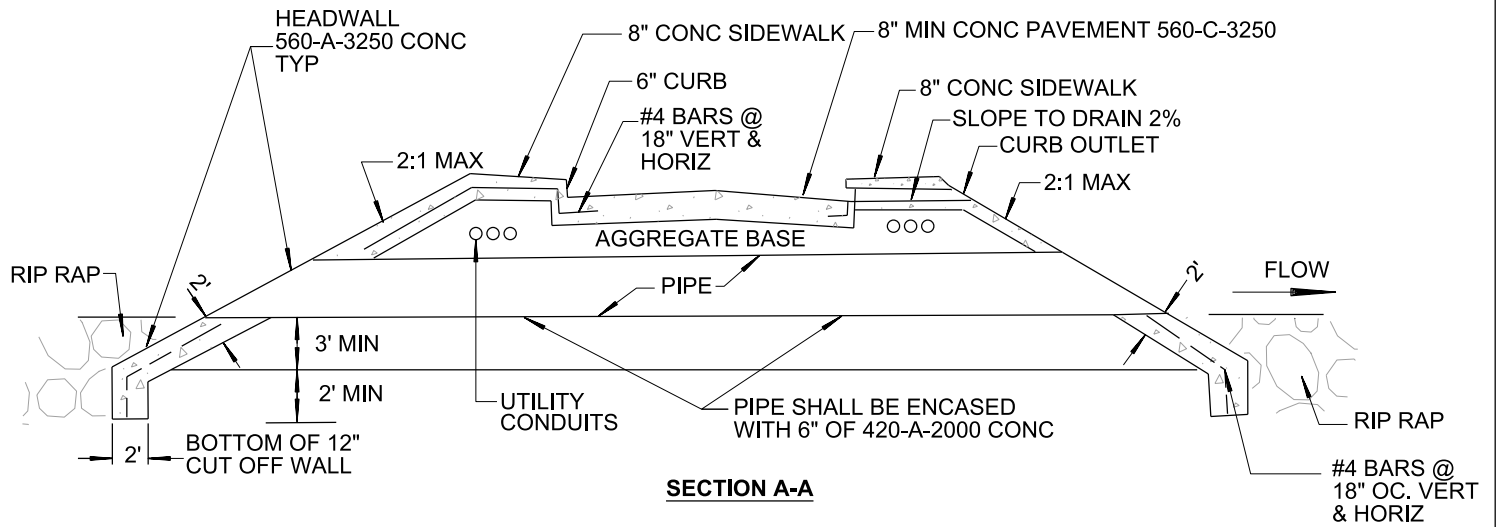
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

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

DRAWING
NUMBER **C-15**

CHAPTER 2


*DRAINAGE
SYSTEM*



NOTES

1. RIP RAP PER SDD-104 & STANDARD SPECIAL PROVISIONS
2. METAL BEAM GUARD RAIL SHALL HAVE W/6 x 9 STEEL POST
3. SIDEWALK, CURB, PAVEMENT AND HEADWALL'S SHALL BE TIED WITH #4 BARS 18" OC HORIZONTAL AND VERTICAL
4. CONCRETE JOINTS PER SDG-109 AND G-10

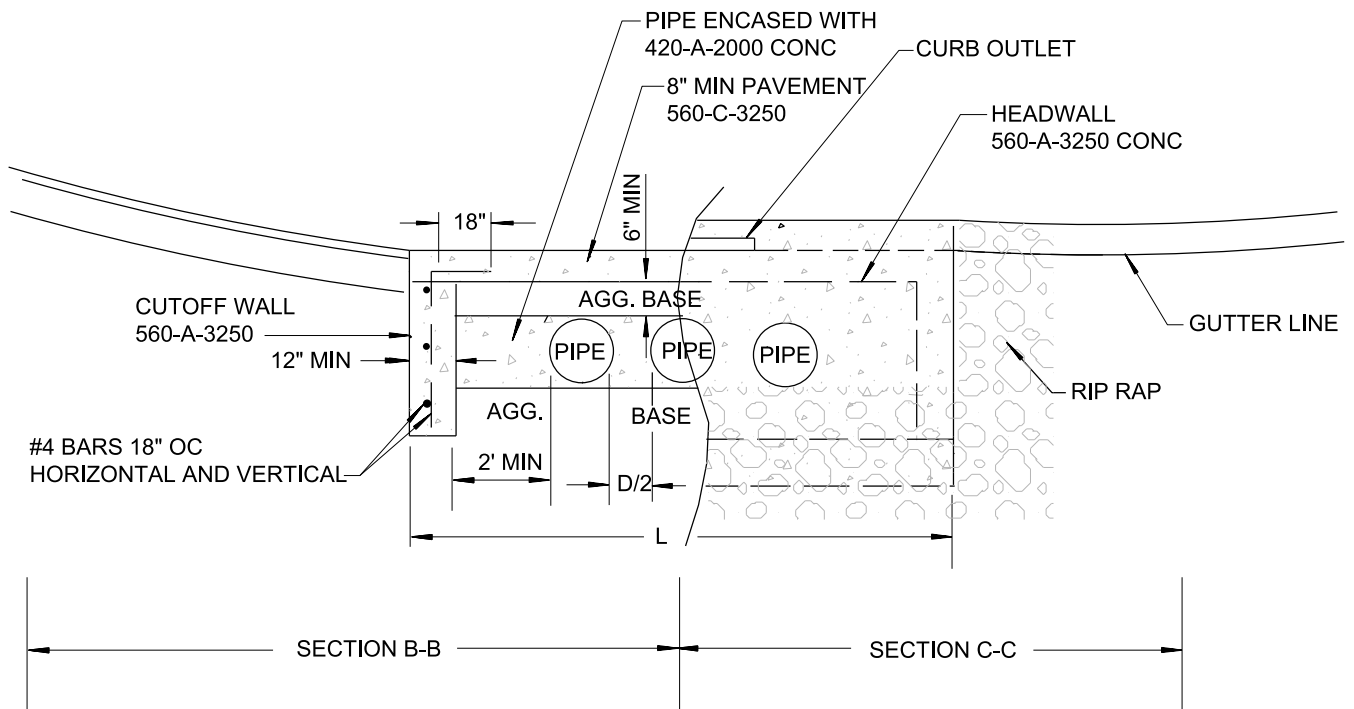
SHEET 1 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		J. CASEY	06/83		
UPDATED	KA	J. NAGELVOORT	01/12	TYPICAL FORD	 COORDINATOR R.C.E. 56523
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDD-101

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

 9/10/18
COORDINATOR R.C.E. 56523 DATE


DRAWING NUMBER **SDD-101**

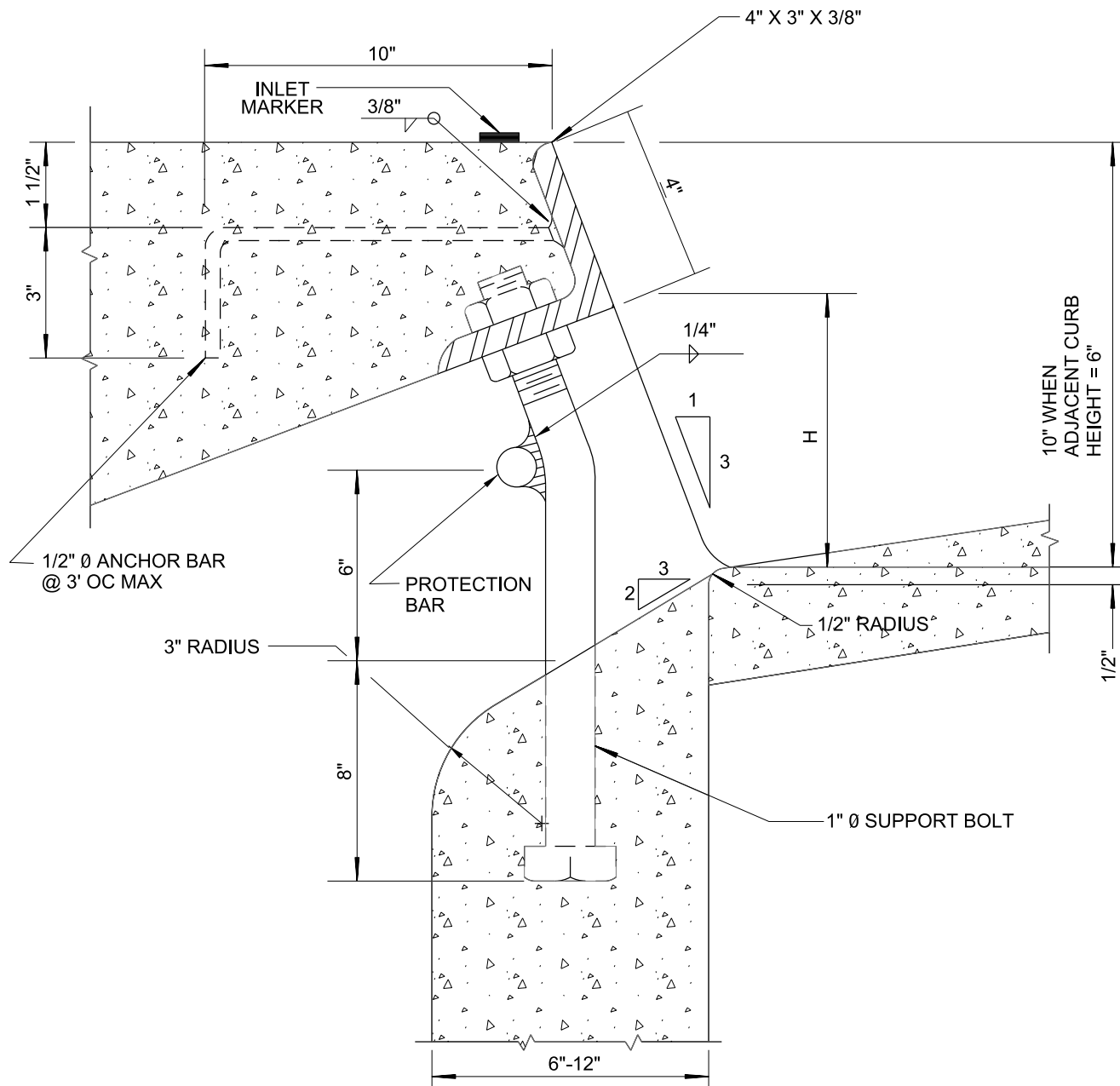


NOTES

1. HEADWALL LENGTH (L) **PER D-30, D-31**

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		J. CASEY	06/83		<div><div>9/10/18</div><div>COORDINATOR R.C.E. 56523 DATE</div></div>
UPDATED	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDD-101



NOTES:

1. FACE ANGLE SHALL BE CAST INTO STRUCTURE CONTINUOUS FOR THE FULL LENGHT "L".
2. EXPOSED METAL PARTS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
3. WHEN CURB INLET OPENING HEIGHT (H) EXCEEDS 8" INSTALL 1" Ø STEEL PROTECTION BAR.
4. INSTALL ADDITIONAL BARS AT 3 1/2" CLEAR SPACING ABOVE FIRST BAR WHEN OPENING EXCEEDS 16".
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*	KA	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18

CITY OF SAN DIEGO – STANDARD DRAWING

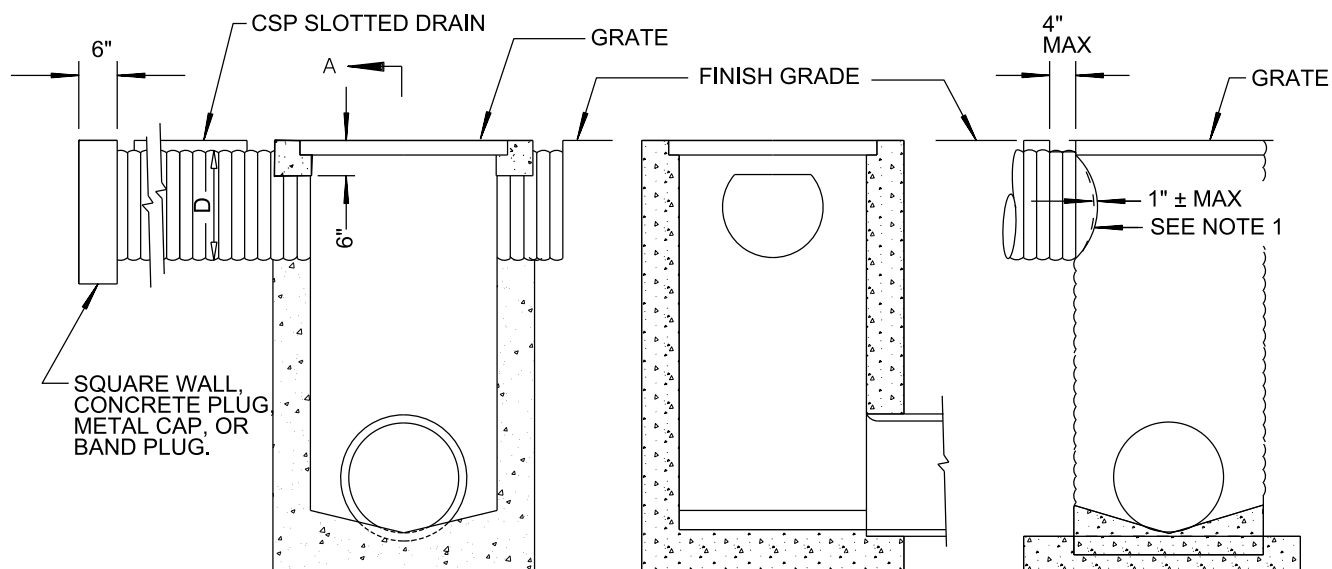
CURB INLET OPENING

RECOMMENDED BY THE CITY
OF SAN DIEGO STANDARDS COMMITTEE

Chung 9/10/18
COORDINATOR R.C.E. 56523 DATE

DRAWING
NUMBER

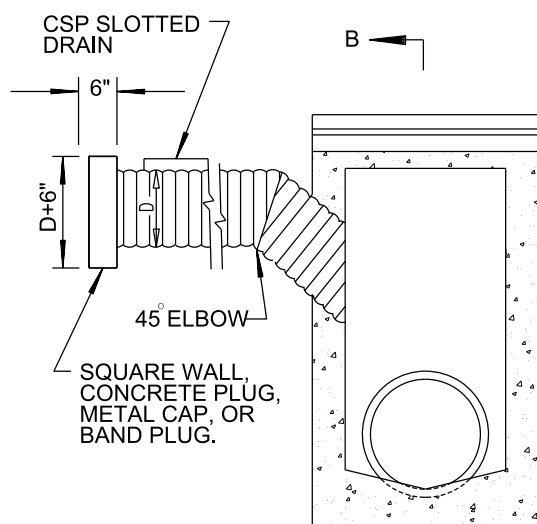
SDD-102



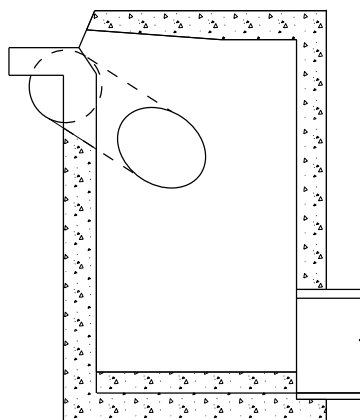
A

SECTION A-A
CATCH BASIN

CSP INLET

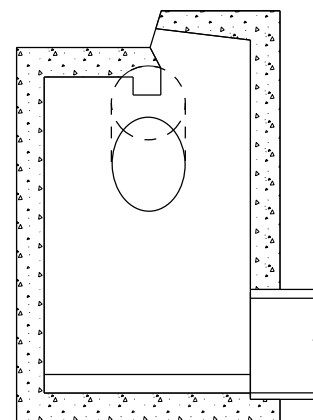


B



SECTION B-B


INLETS

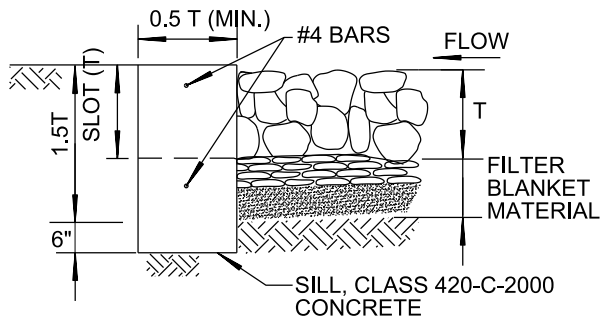
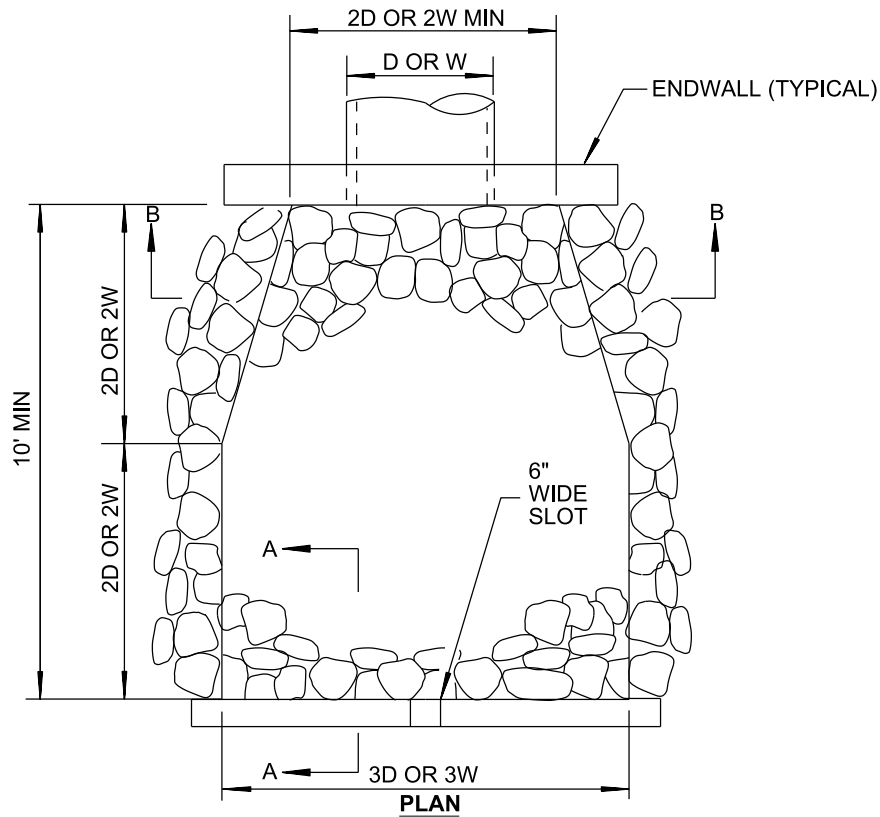


ALTERNATE
SECTION B-B

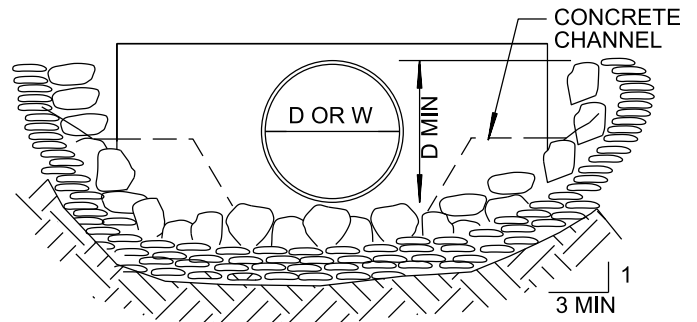
NOTES

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

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	HM	J. NAGELVOORT	02/16	SLOTTED DRAIN CONNECTIONS TO STANDARD INLETS	 9/10/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDD-103



SECTION A-A



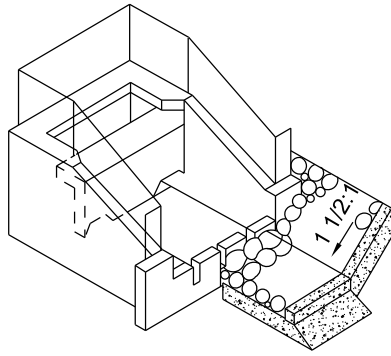
SECTION B-B

NOTES

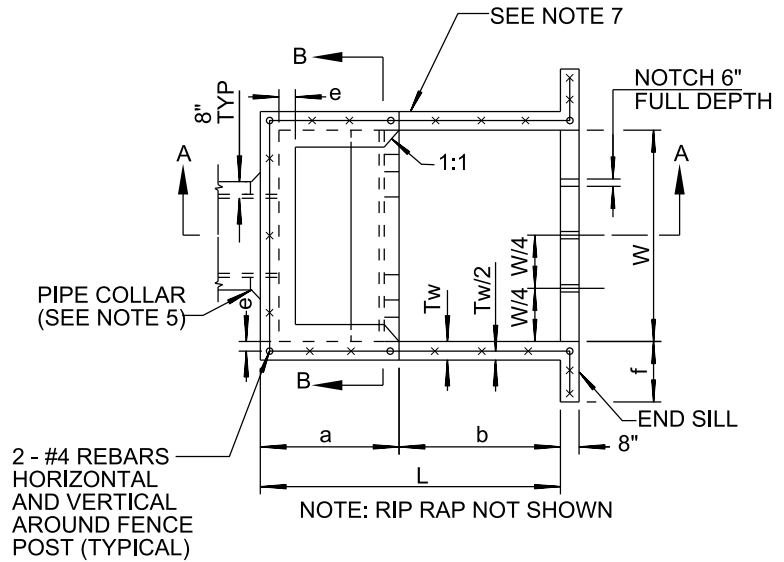
- PLANS SHALL SPECIFY:
A) ROCK CLASS AND THICKNESS (T).
B) FILTER BLANKET MATERIAL, NUMBER OF LAYERS AND THICKNESS
- RIP RAP SHALL BE EITHER QUARRY STONE OR BROKEN CONCRETE (IF **SHOWN ON THE PLANS**). COBBLES ARE NOT ACCEPTABLE.
- RIP RAP SHALL BE PLACED OVER A GEOTEXTILE FILTER FABRIC. FILTER BLANKET MATERIAL SHALL BE PLACED UNDER THE FABRIC WHEN SPECIFIED.
- SEE WHITE BOOK** FOR SELECTION OF FILTER MATERIAL.
- RIP RAP ENERGY DISSIPATORS SHALL BE DESIGNATED AS EITHER TYPE 1 OR TYPE 2. TYPE 1 SHALL BE WITH CONCRETE SILL; TYPE 2 SHALL BE WITHOUT SILL.
- FOR STRUCTURAL DETAILS, **SEE D-42** FOR PIPELINE SIZES FROM 18" TO 30" AND **SEE D-43** FOR PIPELINE SIZES FROM 36" TO 72".
- FOR RIP RAP SELECTION **SEE TABLE 200-1.7 OF THE WHITEBOOK**.

D = PIPE DIAMETER
W = BOTTOM WIDTH OF CHANNEL

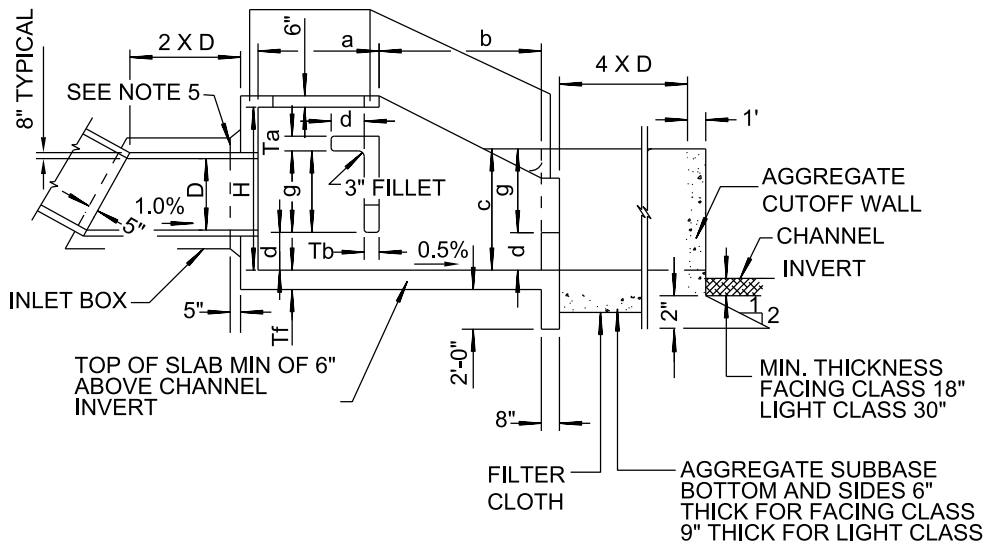
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	AB	J. NAGELVOORT	02/16	RIP RAP ENERGY DISSIPATOR	 9/10/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDD-104



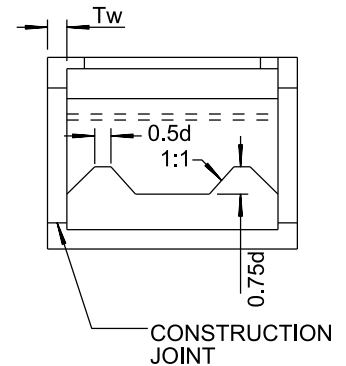
PICTORIAL VIEW



PLAN



SECTION A-A



SECTION B-B

NOTES

SEE TABLE ON SHEET 2 FOR DIMENSIONS, SEE NOTES ON SHEET 2.

SHEET 1 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	BD	J. NAGELVOORT	08/15	CONCRETE ENERGY DISSIPATOR	 COORDINATOR R.C.E. 56523
UPDATED	AB	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDD-105

9/10/18
DATE

CONCRETE ENERGY DISSIPATOR DIMENSIONS

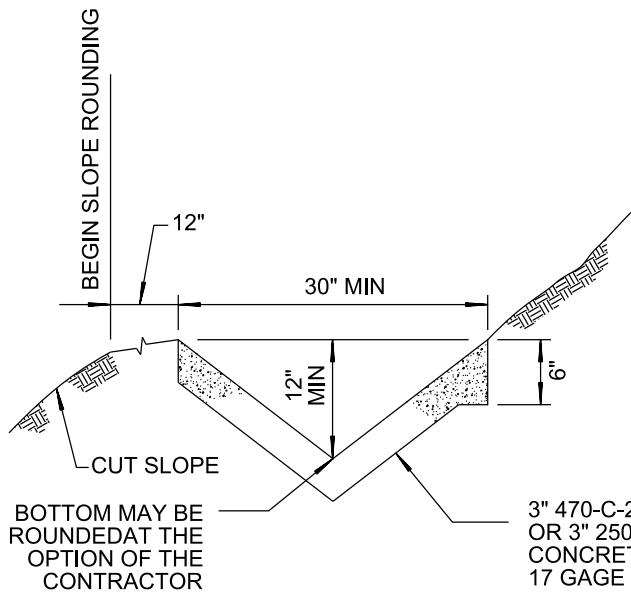
Pipe Dia, Inch (D)	18	24	30	36	42	48	54	60	72
Area (sq ft)	1.77	3.14	4.91	7.07	9.62	12.57	15.90	19.63	28.27
Max Q (cfs)	21	38	59	85	115	151	191	236	339
W	5'-6"	6'-9"	8'-0"	9'-3"	10'-6"	11'-9"	13'-0"	14'-3"	16'-6"
H	4'-3"	5'-3"	6'-3"	7'-3"	8'-0"	9'-0"	9'-9"	10'-9"	12'-3"
L	7'-4"	9'-0"	10'-8"	12'-4"	14'-0"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

NOTES

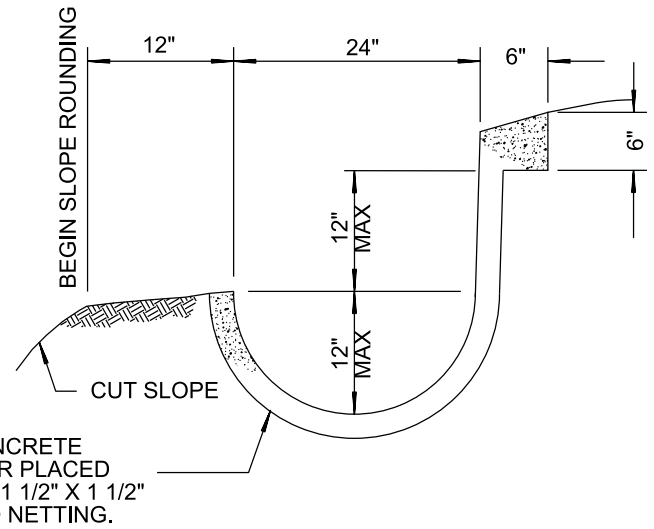
- DESIGN EQUIVALENT FLUID PRESSURE (EARTH LOADING) = 60 pcf MAXIMUM OUTLET VELOCITY = 35 ft / s
- CONCRETE SHALL BE 560-C-3250
- REINFORCING SHALL CONFORM TO ASTM DESIGNATION A615 AND MAY BE GRADE 40 OR 60. REINFORCING SHALL BE PLACED WITH 2" CLEAR CONCRETE COVER UNLESS NOTED OTHERWISE. SPLICES SHALL NOT BE PERMITTED EXCEPT AS INDICATED ON THE PLANS.
- FOR PIPE GRADES NOT EXCEEDING 20%, INLET BOX MAY BE OMITTED.
- IF INLET BOX IS OMITTED, CONSTRUCT PIPE COLLAR AS SHOWN.
- UNLESS NOTED OTHERWISE, ALL REINFORCING BAR BENDS SHALL BE FABRICATED WITH STANDARD HOOKS. FOR STRUCTURAL DETAILS, **SEE D-42** FOR PIPELINE SIZES FROM 18" TO 30" AND **SEE D-43** FOR PIPELINE SIZES FROM 36" TO 72".
- 5' HIGH CHAIN LINK FENCING, EMBED POST 18" DEEP IN WALLS AND ENCASE WITH CLASS B MORTAR.
- IN SANDY AND SILTY SOIL:
 - RIP RAP AND AGGREGATE BASE CUTOFF WALL REQUIRED AT THE END OF ROCK APRON.
 - FILTER CLOTH (POLYFILTER X OR EQUIVALENT) SHALL BE INSTALLED ON NATIVE SOIL BASE, MINIMUM OF 1' OVERLAPS AT JOINTS
- RIP RAP AND SUBBASE CLASSIFICATION SHALL BE **AS SHOWN ON PLANS**.
- FOR RIP RAP SELECTION SEE TABLE 200-1.7 OF THE WHITEBOOK.

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	BD	J. NAGELVOORT	08/15	CONCRETE ENERGY DISSIPATOR	 <div>9/10/18</div> <div>COORDINATOR R.C.E. 56523 DATE</div>
UPDATED	AB	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDD-105

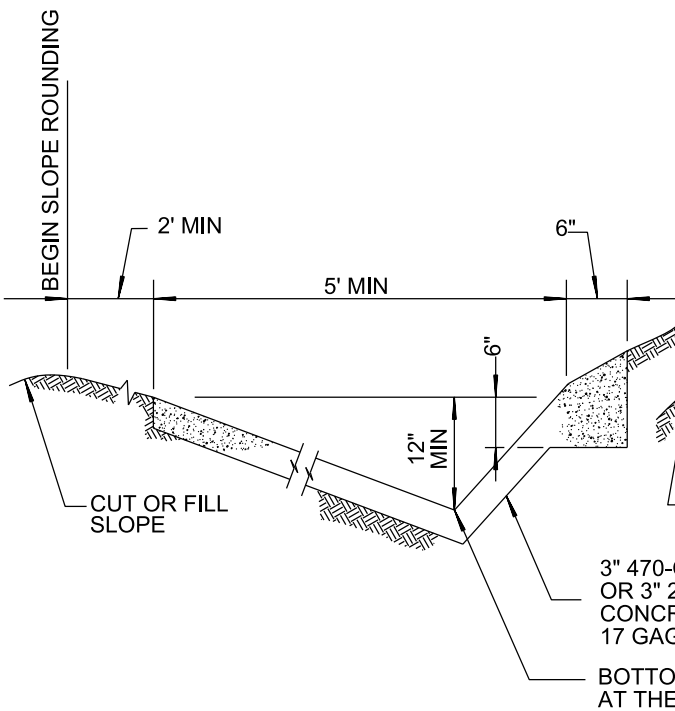


TYPE A

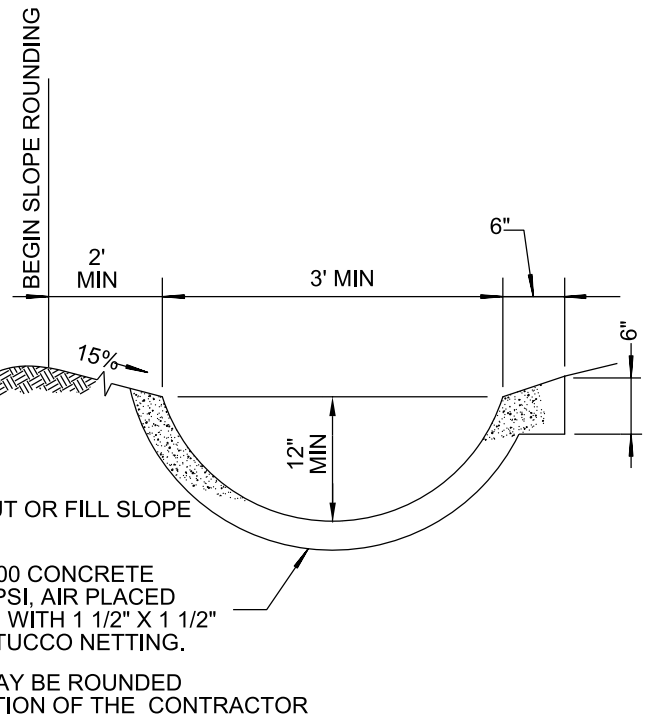


TYPE B

BROW DITCH



TYPE C



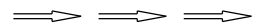
TYPE D

TERRACE DITCH

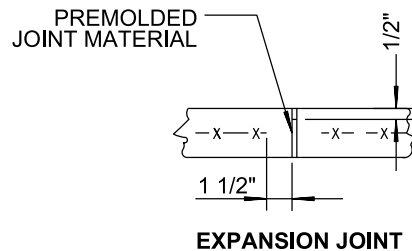
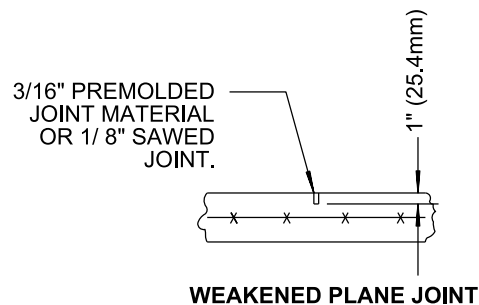
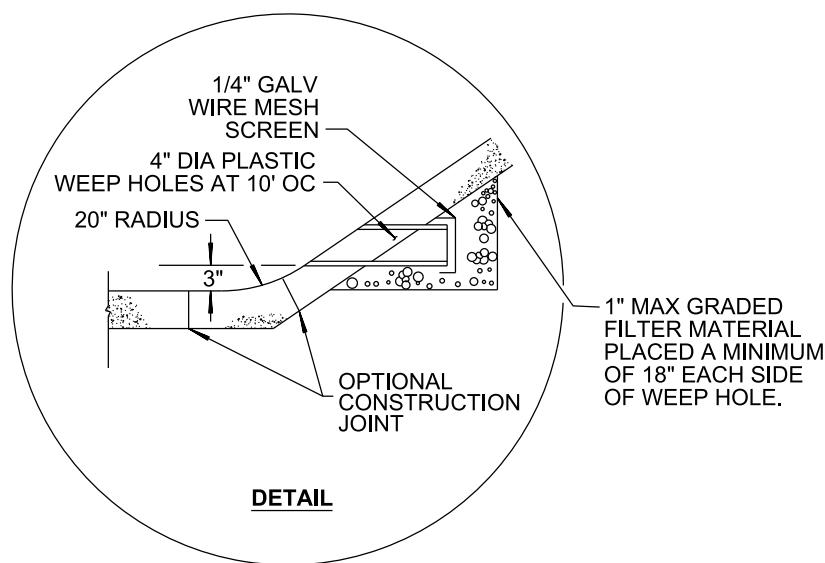
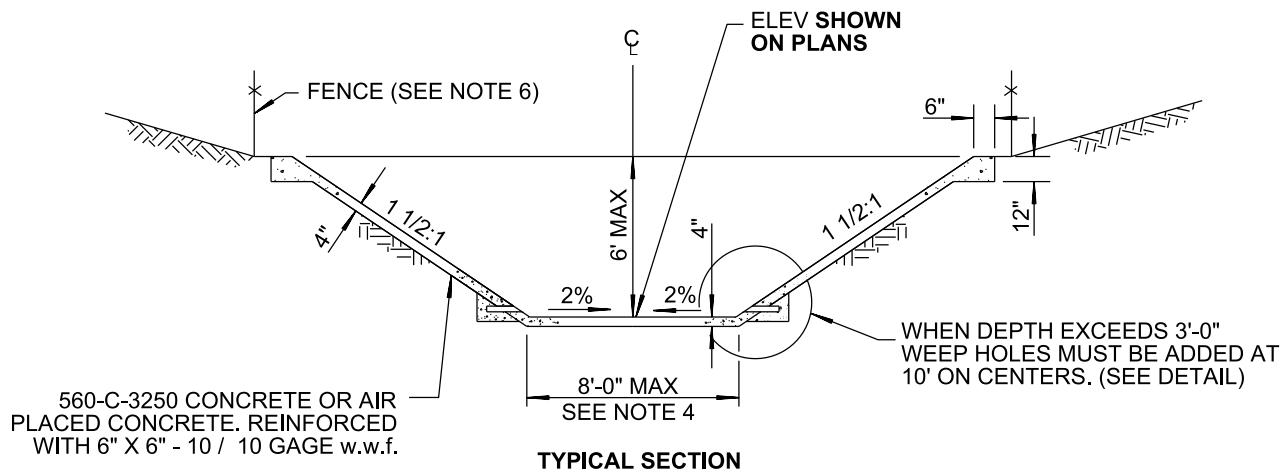
NOTES:

1. LONGITUDINAL SLOPE OF LINED DITCH SHALL BE 2% MINIMUM.
2. OVER SLOPE DOWN DITCHES SHALL EMPLOY 6" THICKENED EDGE SECTION AT BOTH SIDES OF DITCH.
3. STUCCO NETTING SHALL BE GALVANIZED AND SHALL HAVE 1 1/2" COVER.

LEGEND ON PLANS



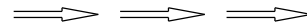
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	0918	DRAINAGE DITCHES	 9/10/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDD-106




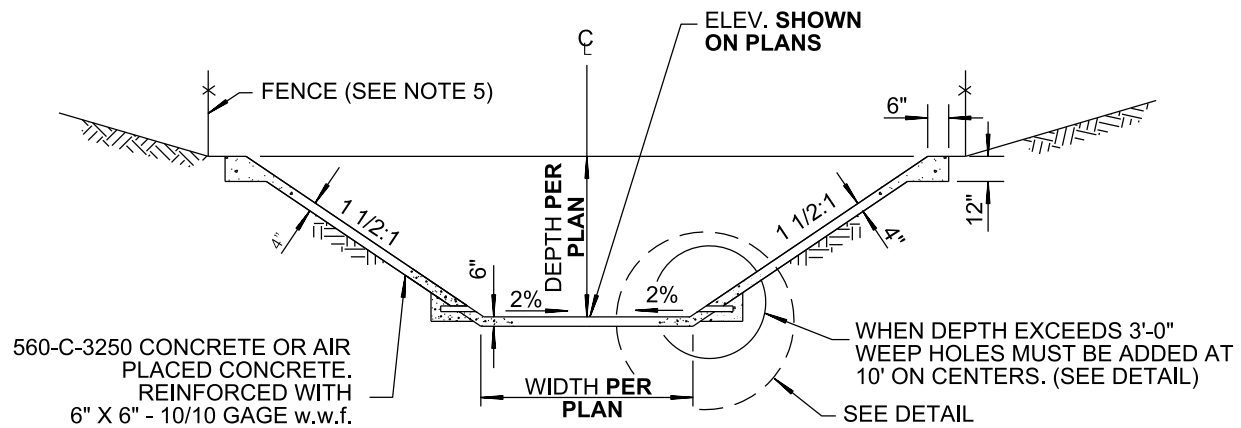
NOTES:

1. CLAY PIPE MAY BE SUBSTITUTED FOR PLASTIC PIPE AT WEEP HOLES.
2. WEAKENED PLANE JOINTS SHALL BE PLACED EVERY 12' TO 15'. EXPANSION 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. FOR BOTTOM WIDTHS GREATER THAN 8' SEE **SDD-108.**
5. REINFORCEMENT SHOWN IS MINIMUM.
6. CHANNEL FENCING IS REQUIRED. UNLESS OTHERWISE SHOWN ON THE PLANS A CHAIN LINK FENCE (**PER SDM-112 AND SDM-114**) 6' IN HEIGHT, WITH A TOP RAIL SET AT 6" INSIDE EASEMENT BOUNDARY LINES SHALL BE CONSTRUCTED ON BOTH SIDES, INCLUDING BOX CULVERTS OR ANY OTHER STRUCTURE AT THE END OF THE CHANNEL. ACCESS POINTS SHALL BE PROVIDED ON BOTH SIDES AT 500' MAXIMUM INTERVALS. TWO 10' GATES OR ONE 20' GATE FOR VEHICULAR ACCESS ARE REQUIRED AT A MAXIMUM OF 1000' INTERVALS AND MAY BE PLACED ON EITHER SIDE. THE REMAINING ACCESS POINTS SHALL BE 4' GATES.

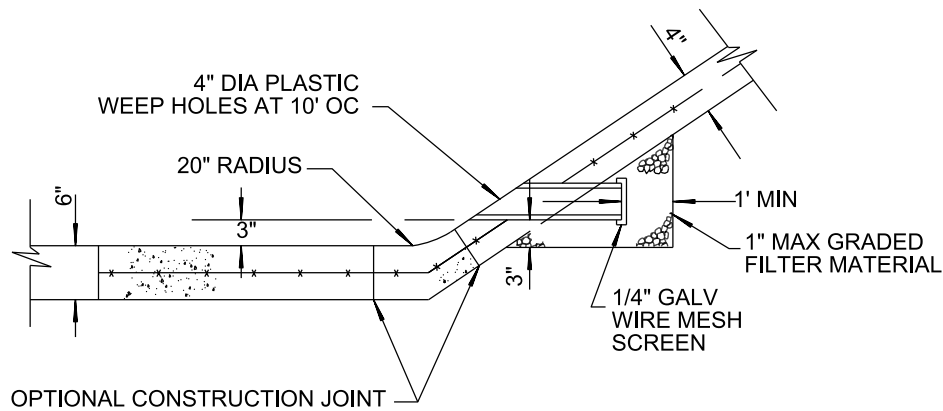
LEGEND ON PLANS



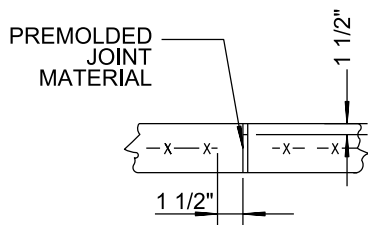
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	RB	J. NAGELVOORT	02/16	MINOR DRAINAGE CHANNEL	 9/10/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDD-107



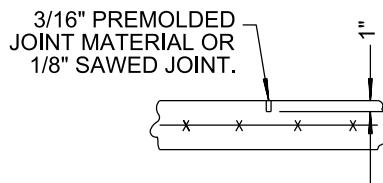
TYPICAL SECTION



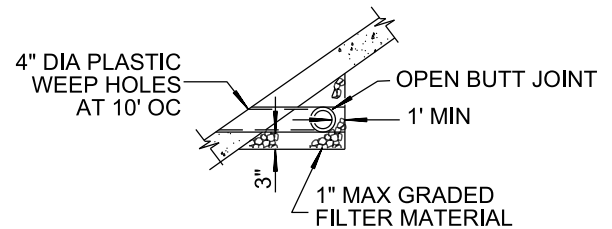
DETAIL



EXPANSION JOINT



WEAKENED PLANE JOINT

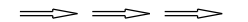



**ALTERNATE
CONTINUOUS DRAIN**

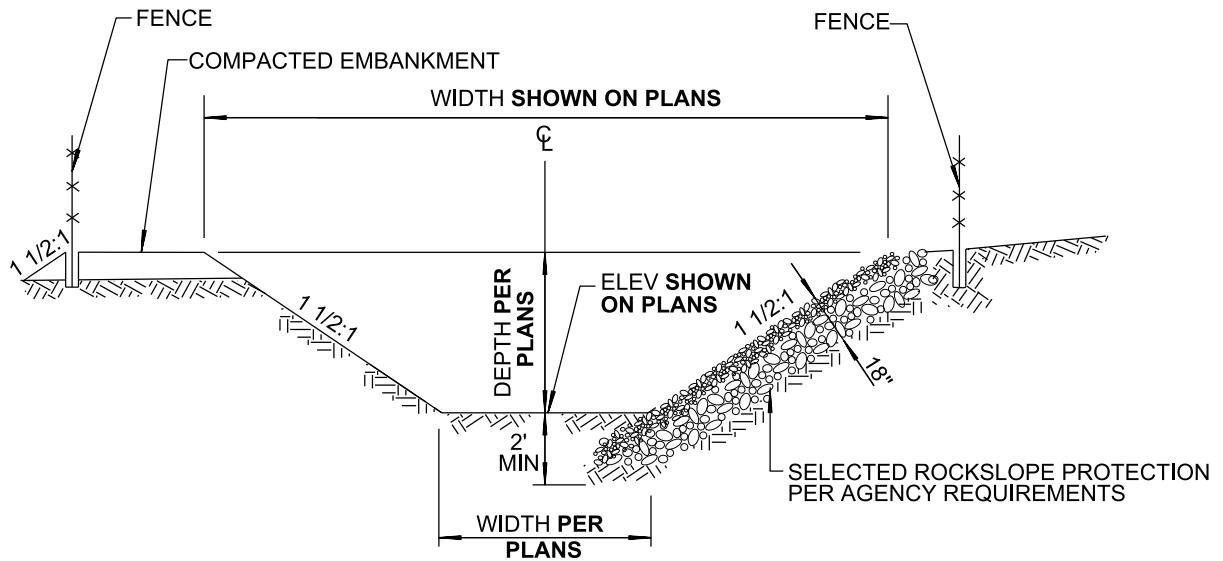
NOTES

1. CLAY PIPE MAY BE SUBSTITUTED FOR PLASTIC PIPE AT WEEP HOLES.
2. WEAKENED PLANE JOINTS SHALL BE PLACED EVERY 12' TO 15'. EXPANSION 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. REINFORCEMENT SHOWN IS MINIMUM.
5. CHANNEL FENCING IS REQUIRED **PER SDM-112 OR SDM-114.** UNLESS OTHERWISE **SHOWN ON THE PLANS**, A CHAIN LINK FENCE 6' IN HEIGHT, WITH A TOP RAIL SET AT 6" INSIDE EASEMENT BOUNDARY LINES SHALL BE CONSTRUCTED ON BOTH SIDES, INCLUDING BOX CULVERTS OR ANY OTHER STRUCTURE AT THE END OF THE CHANNEL. ACCESS POINTS SHALL BE PROVIDED ON BOTH SIDES AT 500' MAXIMUM INTERVALS. TWO 10' GATES OR ONE 20' GATE FOR VEHICULAR ACCESS ARE REQUIRED AT A MAXIMUM OF 1000' INTERVALS AND MAY BE PLACED ON EITHER SIDE. THE REMAINING ACCESS POINTS SHALL BE 4' GATES.

LEGEND ON PLANS



REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		<div><div>9/10/18</div><div>COORDINATOR R.C.E. 56523DATE</div></div>
UPDATED	RB	J. NAGELVOORT	10/15		
UPDATED	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDD-108

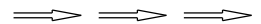


SECTION

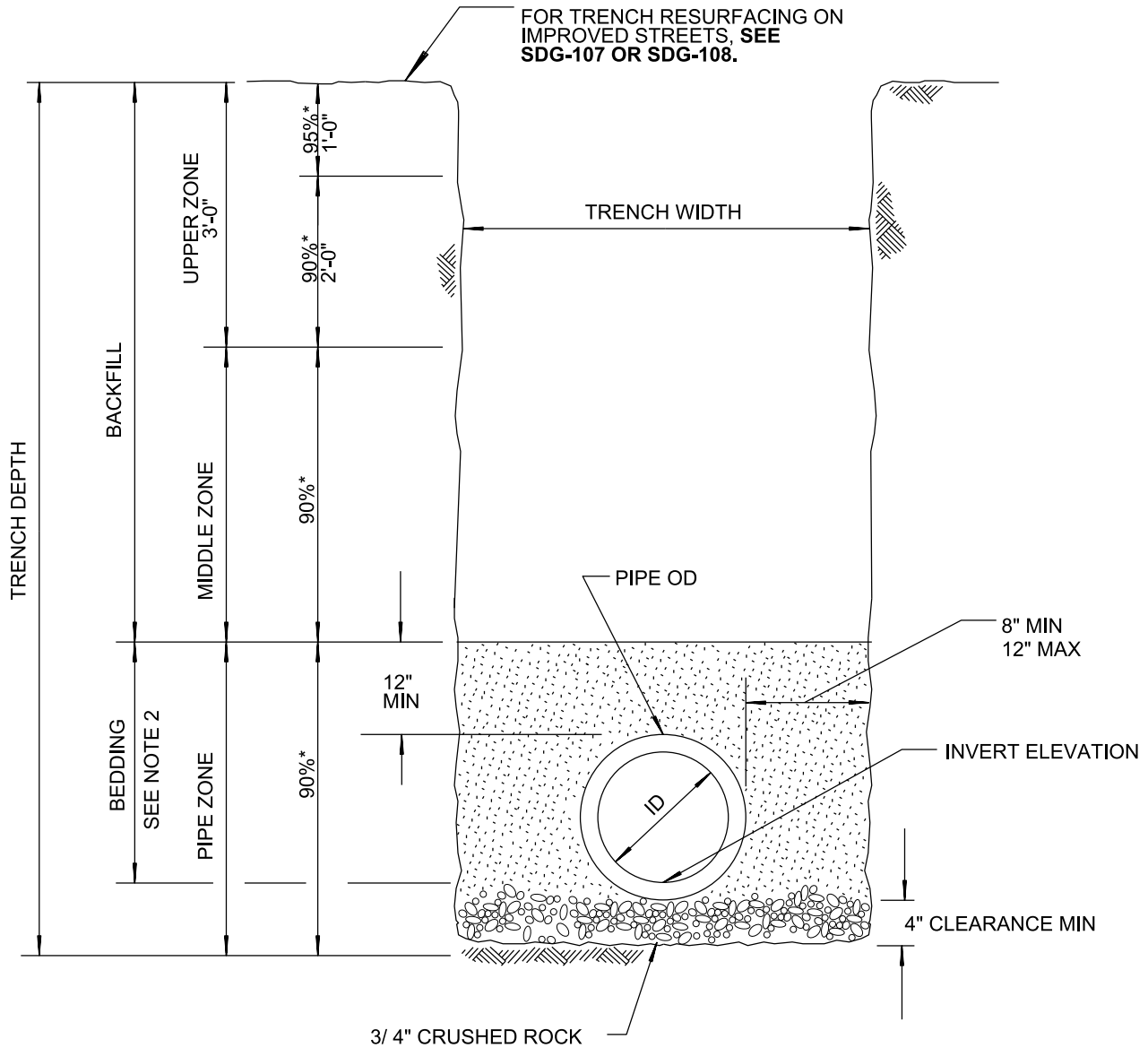
NOTES:

1. THE FOLLOWING SHALL BE REQUIRED:
 - A. LOW FLOW CHANNEL
 - B. FILTER BLANKET
 - C. CUTOFF WALL
 - D. FENCE
2. CHANNEL FENCING IS REQUIRED **PER DRAWING SDM-112 OR SDM-114**. UNLESS OTHERWISE **SHOWN ON THE PLANS**, A CHAIN LINK FENCE 6' HEIGHT, WITH A TOP RAIL SET AT 6" INSIDE EASEMENT BOUNDARY LINES SHALL BE CONSTRUCTED ON BOTH SIDES, INCLUDING BOX CULVERTS OR ANY OTHER STRUCTURE AT THE END OF THE CHANNEL. ACCESS POINTS SHALL BE PROVIDED ON BOTH SIDES AT 500' MAXIMUM INTERVALS. TWO 10' GATES OR ONE 20' GATE FOR VEHICULAR ACCESS ARE REQUIRED AT A MAXIMUM OF 1000' INTERVALS AND MAY BE PLACED ON EITHER SIDE. THE REMAINING ACCESS POINTS SHALL BE 4' GATES.

LEGEND ON PLANS




REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		<div>GRADED EARTH CHANNEL</div>
UPDATED	RB	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDD-109

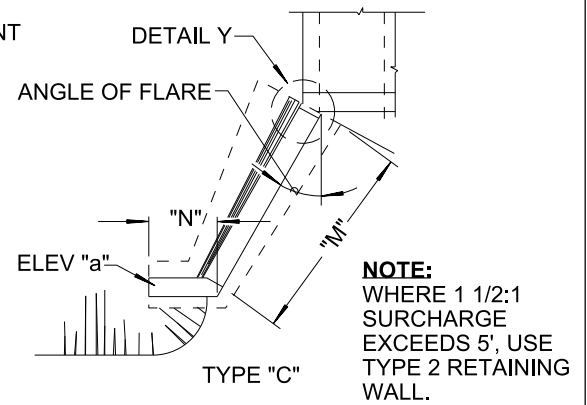
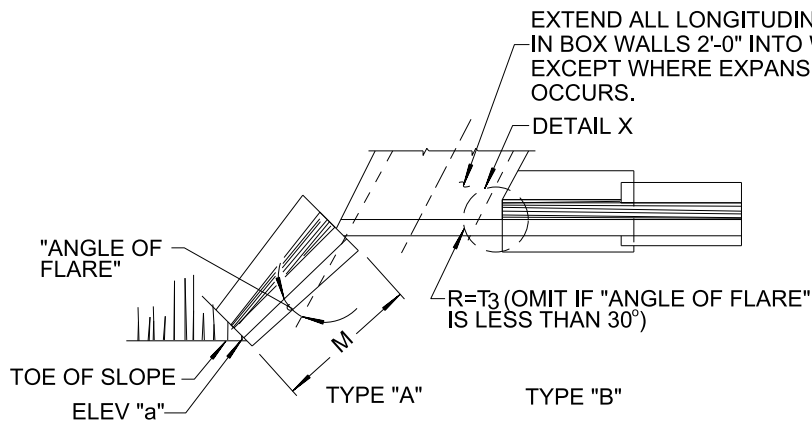


SECTION

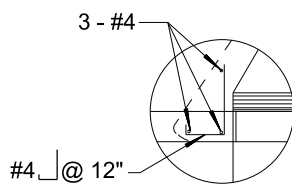
NOTES

1. (*) INDICATES MINIMUM RELATIVE COMPACTION.
2. BEDDING MATERIAL SHALL BE SAND, CRUSHED AGGREGATE, OR NATIVE FREE-DRAINING GRANULAR MATERIAL. 100% SHALL PASS NO. 4 SIEVE AND HAVE A SAND EQUIVALENT OF NOT LESS THAN 30.

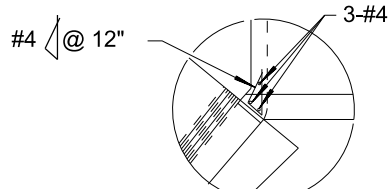
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	PIPE BEDDING AND TRENCH BACKFILL FOR STORM DRAINS	 9/10/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDD-110



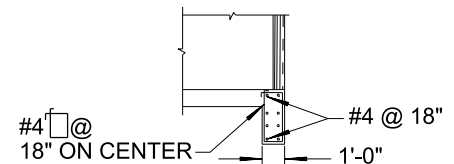
PLAN



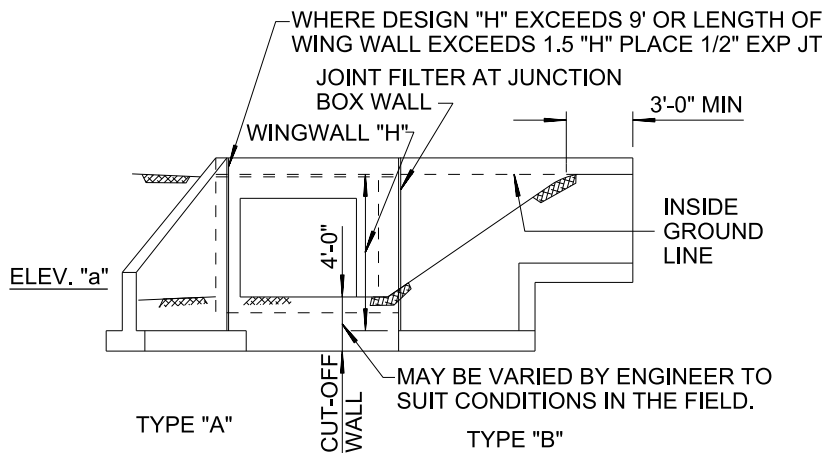
DETAIL X



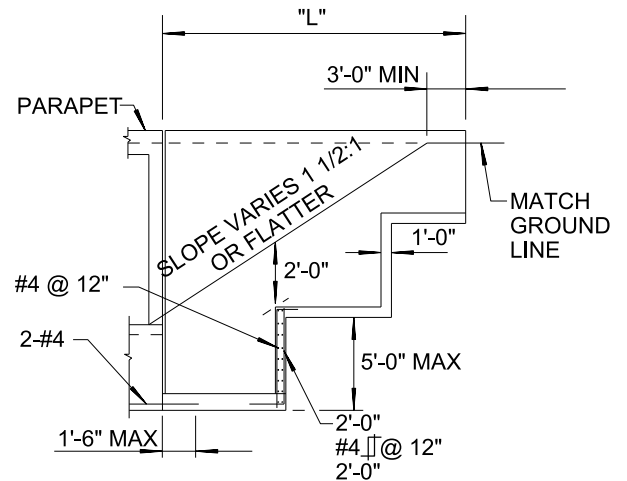
DETAIL Y



SEC B-B



END ELEVATION




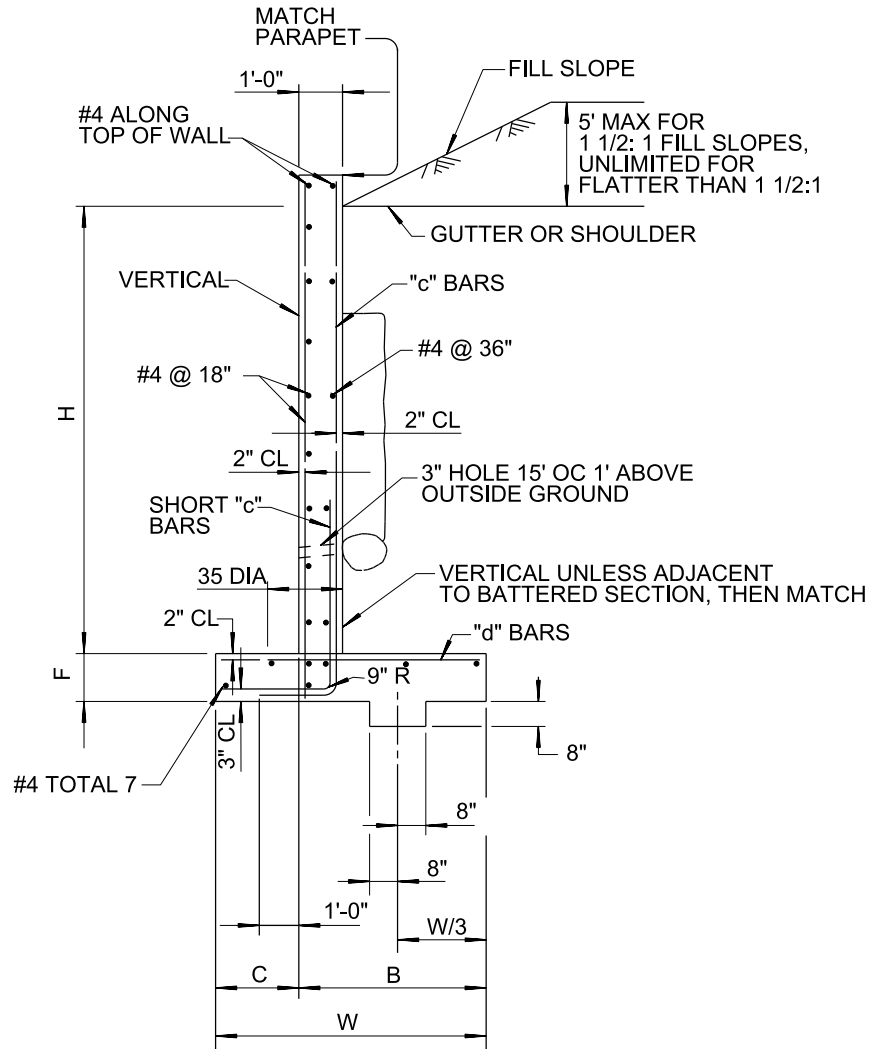
ELEVATION

NOTES

CHANNEL FENCING IS REQUIRED **PER SDM-112 OR SDM-114**. UNLESS OTHERWISE **SHOWN ON THE PLANS**, A CHAIN LINK FENCE 6' IN HEIGHT, WITH A TOP RAIL SET AT 6" INSIDE EASEMENT BOUNDARY LINES SHALL BE CONSTRUCTED ON BOTH SIDES, INCLUDING BOX CULVERTS OR ANY OTHER STRUCTURE AT THE END OF THE CHANNEL. ACCESS POINTS SHALL BE PROVIDED ON BOTH SIDES AT 500' MAXIMUM INTERVALS. TWO 10' GATES OR ONE 20' GATE FOR VEHICULAR ACCESS ARE REQUIRED AT A MAXIMUM OF 1000' INTERVALS AND SHALL BE PLACED ON EITHER SIDE. THE REMAINING ACCESS POINTS SHALL BE 4' GATES.

SHEET 1 OF 6

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	RB	J. NAGELVOORT	02/16	BOX CULVERT WINGWALL	 COORDINATOR R.C.E. 56523
REDRAFTED	CD	J. NAGELVOORT	09/18		
					9/10/18 DATE
					DRAWING NUMBER
					SDD-111



TYPICAL SECTION
H=4'-0" THRU 12'-0"

SHEET 2 OF 6

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	AR	J. NAGELVOORT	02/16	BOX CULVERT WINGWALL	 9/10/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		

DRAWING NUMBER **SDD-111**

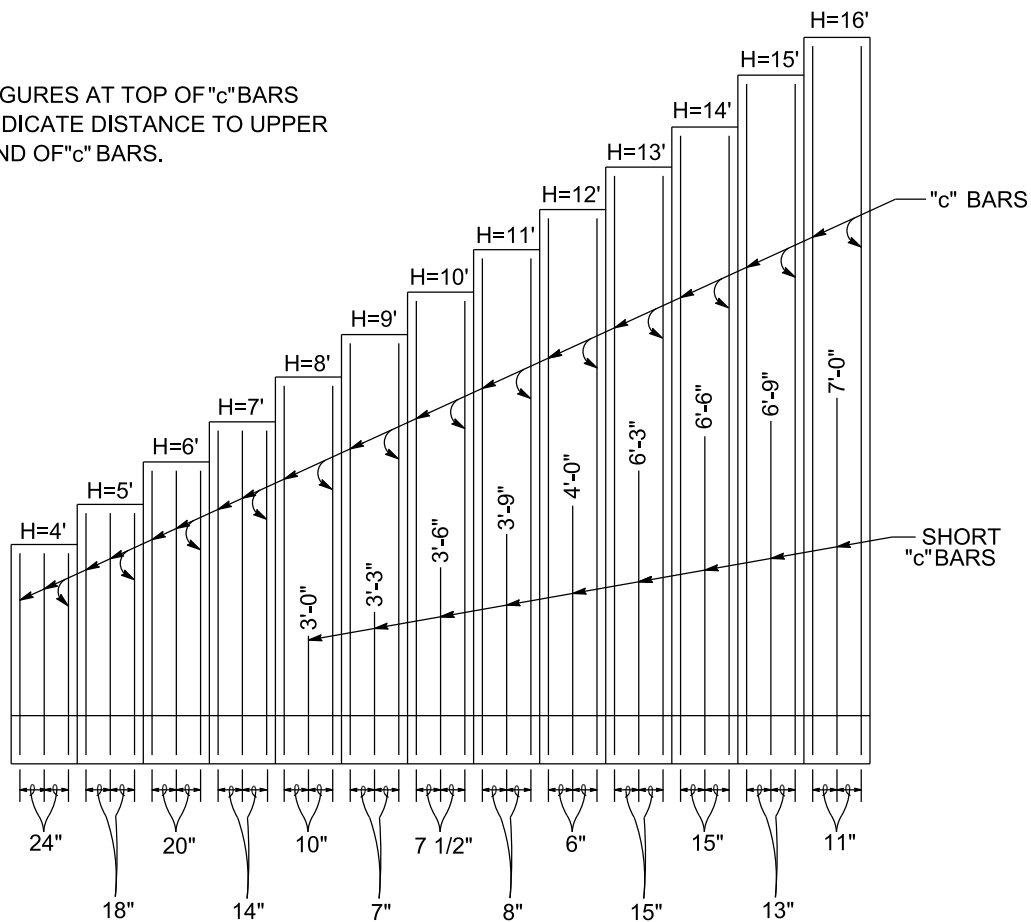


DRAWING
NUMBER

SDD-111


REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12
UPDATED	AR	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

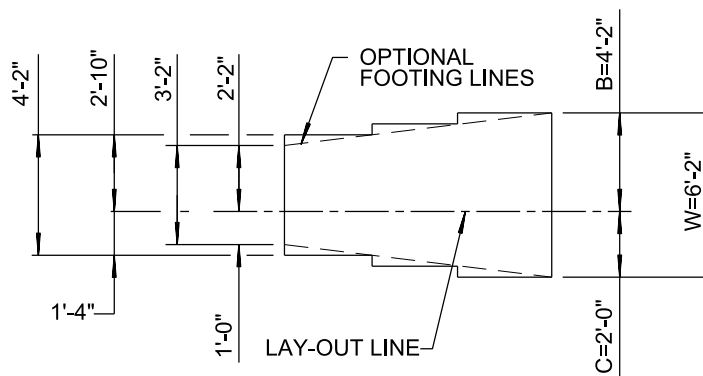
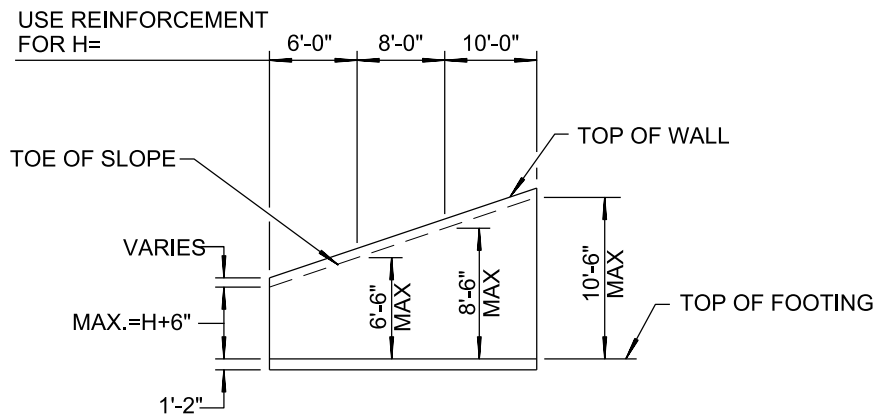
FIGURES AT TOP OF "c" BARS
INDICATE DISTANCE TO UPPER
END OF "c" BARS.



TYPICAL LAYOUT EXAMPLE 1

SHEET 4 OF 6

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	AR	J. NAGELVOORT	02/16	BOX CULVERT WINGWALL	 9/10/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDD-111




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'-0" LIVE LOAD SURCHARGE, 1 1/2:1 SLOPING SURCHARGE NOT TO EXCEED 5'-0" IN ELEVATION PLUS 2'-0" 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.

SHEET 5 OF 6

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	AR	J. NAGELVOORT	02/16	BOX CULVERT WINGWALL	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDD-111

REINFORCED CONCRETE WINGWALLS - US

"H"	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
W	3'-2"	3'-8"	4'-2"	4'-8"	5'-2"	5'-8"	6'-2"	6'-8"	7'-2"	7'-8"	8'-2"	8'-8"	9'-2"
C	1'-0"	1'-2"	1'-4"	1'-6"	1'-8"	1'-10"	2'-0"	2'-2"	2'-4"	2'-6"	2'-8"	2'-10"	3'-0"
B	2'-2"	2'-6"	2'-10"	3'-2"	3'-6"	3'-10"	4'-2"	4'-6"	4'-10"	5'-2"	5'-6"	5'-10"	6'-2"
F	1'-2"												
Batter	None												
S	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-6 1/2"	1'-7"	1'-7 1/2"	1'-8"
"c" Bars	#4@24	#4@18	#5@20	#5@20	#5@14	#5@10	#6@7 1/2"	#7@8	#7@6	#9@15	#10@15	#10@13	#10@11
"d" Bars	#4@24	#4@18	#5@20	#5@20	#5@14	#5@10	#7@15	#8@16	#7@12	#8@15	#9@15	#10@13	
Conc c/y/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*	KA	J. NAGELVOORT	01/12
UPDATED	AR	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

CITY OF SAN DIEGO – STANDARD DRAWING

BOX CULVERT WINGWALL

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

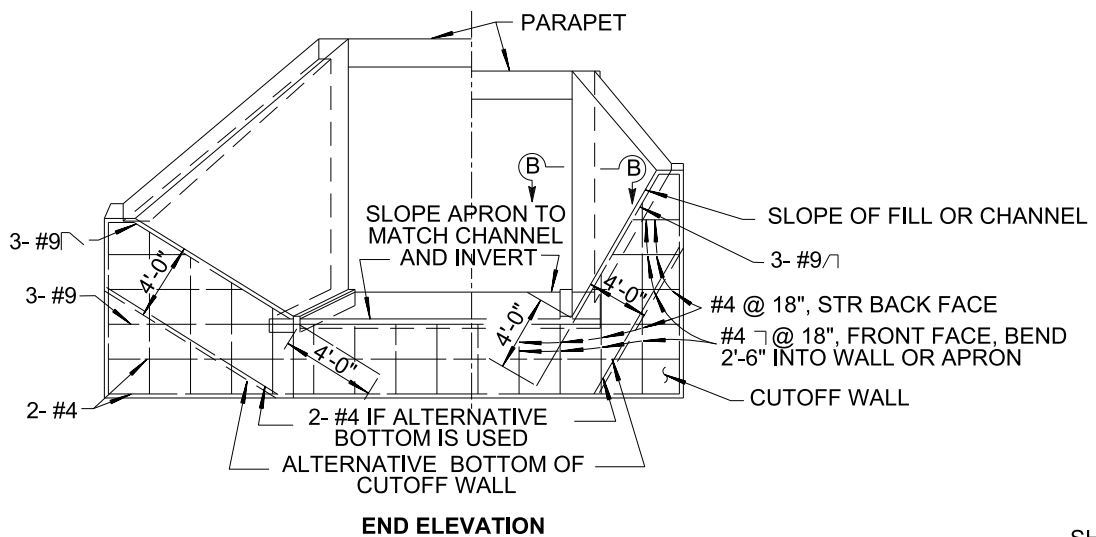
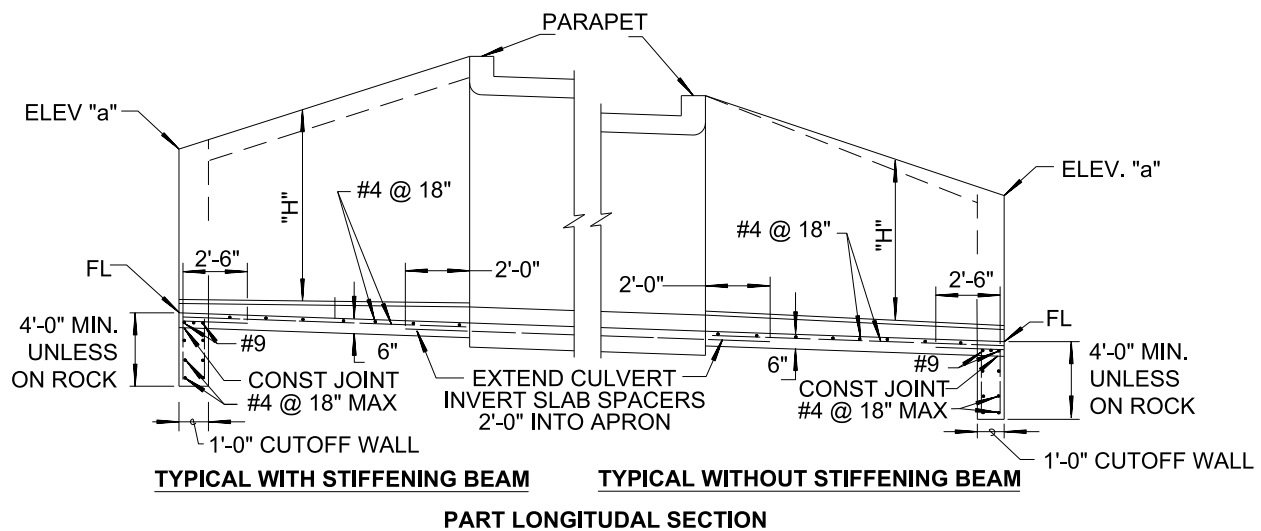
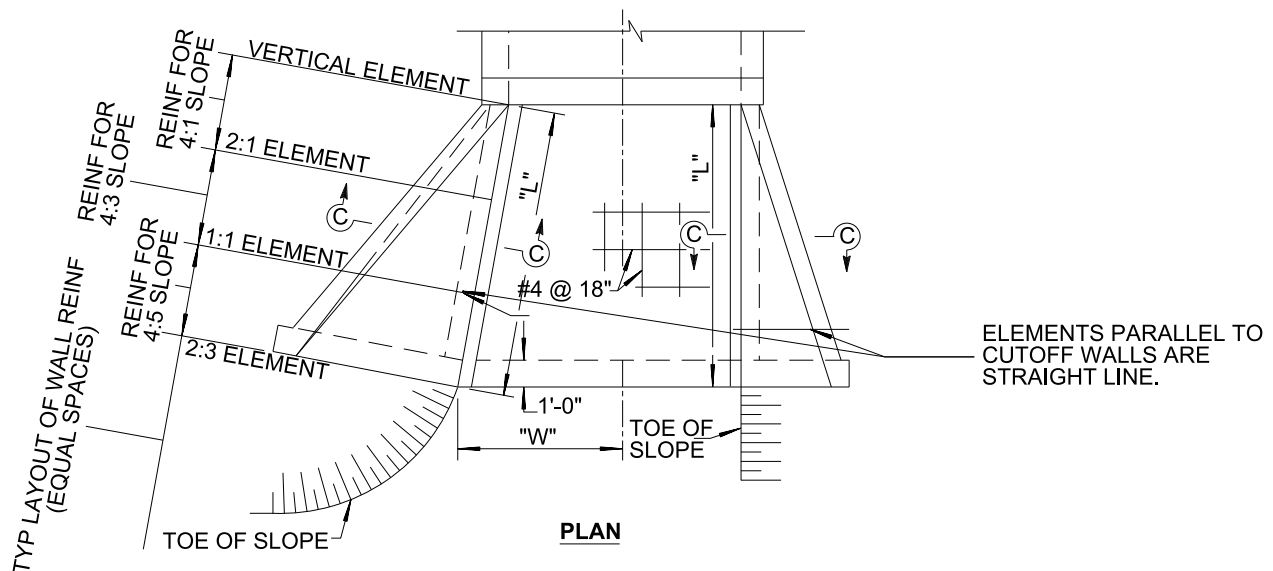


9/10/18

COORDINATOR R.C.E. 56523 DATE

DRAWING NUMBER

SDD-111



SHEET 1 OF 3

REVISION	BY	APPROVED	DATE
ORIGINAL	KA	J. NAGELVOORT	01/12
UPDATED	RB	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

CITY OF SAN DIEGO - STANDARD DRAWING

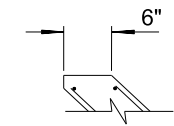
BOX CULVERT WARPED WINGWALL

RECOMMENDED BY THE CITY
OF SAN DIEGO STANDARDS COMMITTEE

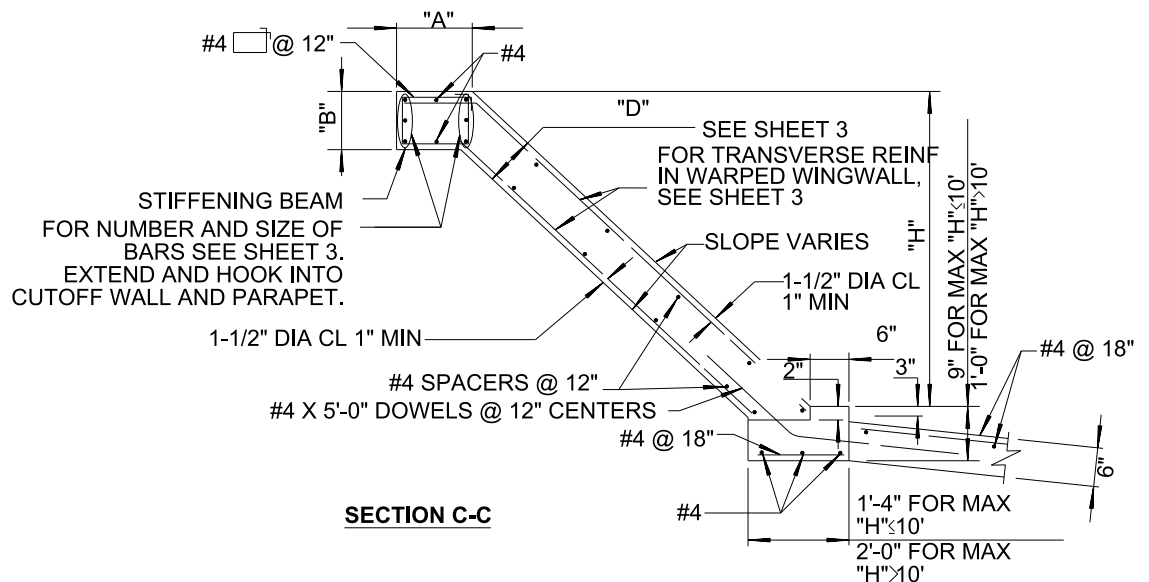
Chung 9/10/18
COORDINATOR R.C.E. 56523 DATE

DRAWING
NUMBER

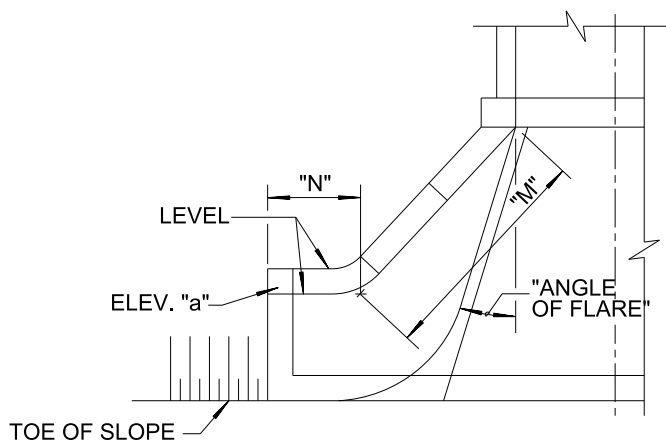
SDD-112



**WITHOUT
STIFFENING BEAM**

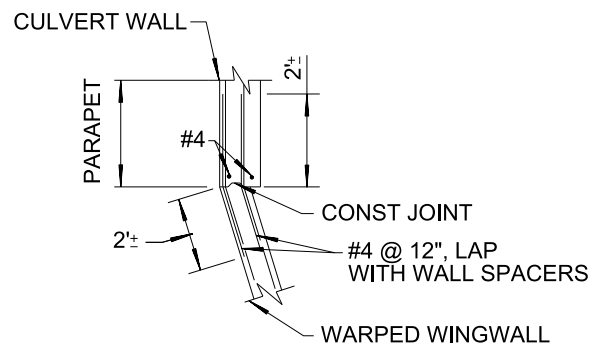


SECTION C-C



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 PCF;EQUIVALENT FLUID PRESSURE = 36 PCF
2. VARY "D" OF WARPED WALL UNIFORMLY FROM THAT CUTOFF WALL TO THAT AT CULVERT, FOR MAXIMUM "H" >12' (3.66)
3. WHERE ABRASION IS ANTICIPATED INCREASE APRON THICKNESS TO 7" MINIMUM TO PROVIDE 2" MINIMUM REINFORCEMENT COVERAGE.
4. DIMENSIONS "L", "W", "H", "N", ELEVATION "a", "ANGLE OF FLARE", AND END "SLOPE (AS APPLY) ARE SHOWN ON THE PLANS.
5. CONCRETE SHALL BE 560-C-3250.
6. CHANNEL FENCING IS REQUIRED **PER SDM-112 OR SDM-114**. UNLESS OTHERWISE **SHOWN ON THE PLANS**, A CHAIN LINK FENCE 6' IN HEIGHT, WITH A TOP RAIL SET AT 6" INSIDE EASEMENT BOUNDARY LINES SHALL BE CONSTRUCTED ON BOTH SIDES, INCLUDING BOX CULVERTS OR ANY OTHER STRUCTURE AT THE END OF THE CHANNEL. ACCESS POINTS SHALL BE PROVIDED ON BOTH SIDES AT 500' MAXIMUM INTERVALS. TWO 10' GATES OR ON 20' GATE FOR VEHICULAR ACCES ARE REQUIRED AT A MAXIMUM OF 1000' INTERVALS AND BE PLACED ON EITHER SIDE. THE REMAINING ACCESS POINTS SHALL BE 4' GATES.

SHEET 2 OF 3


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	RB	J. NAGELVOORT	02/16		
REDRAFTED	RB	J. NAGELVOORT	09/18		
				BOX CULVERT WARPED WINGWALL	 9/10/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDD-112

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

REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12
UPDATED	RB	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

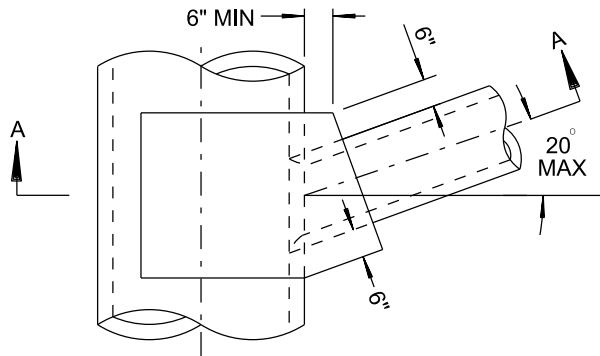
BOX CULVERT WARPED WINGWALL

RECOMMENDED BY THE CITY
OF SAN DIEGO STANDARDS COMMITTEE

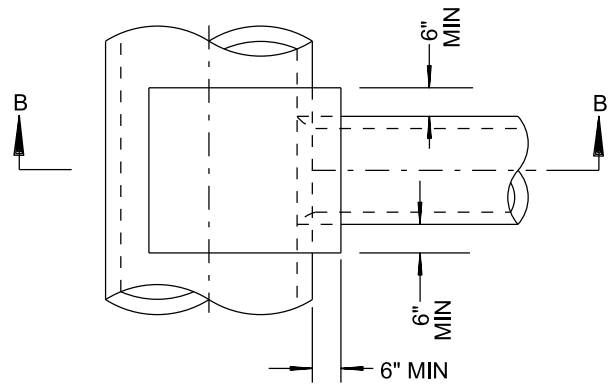
 9/10/18

COORDINATOR R.C.E. 56523 DATE

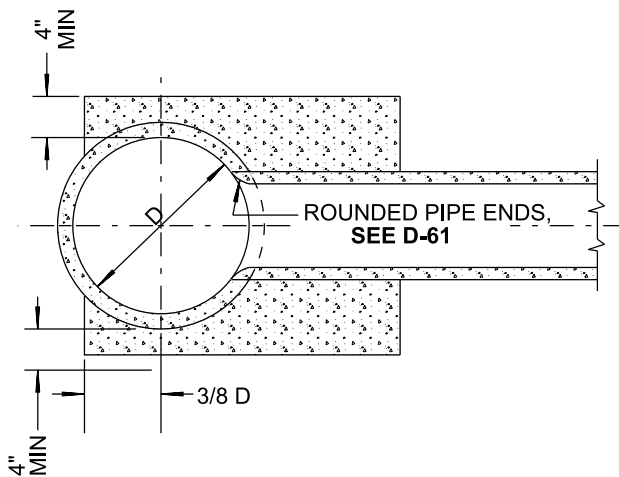
DRAWING NUMBER **SDD-112**



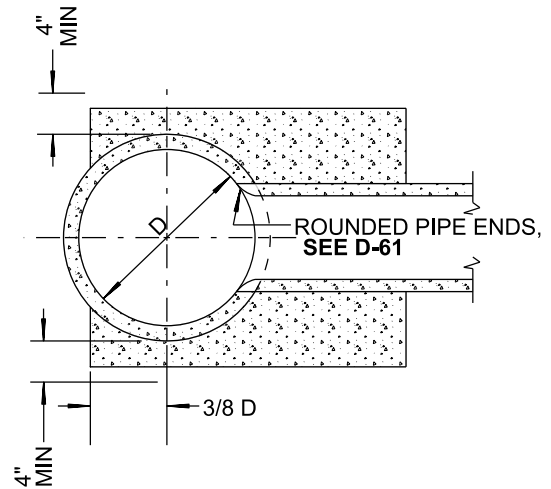
PLAN
SKEWED CONNECTION



PLAN
PERPENDICULAR CONNECTION



SECTION A-A

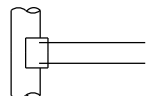



SECTION B-B

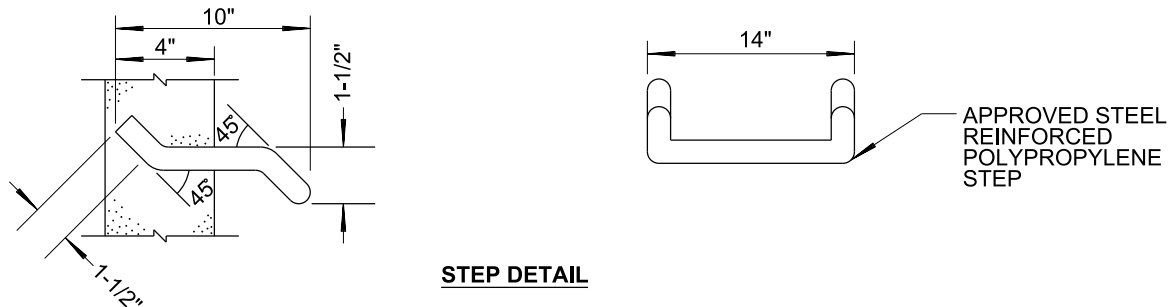
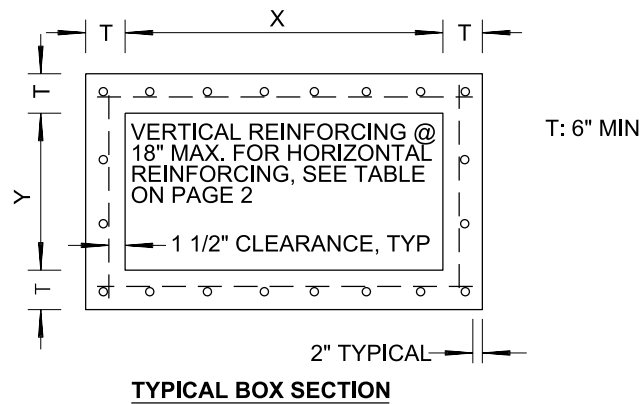
NOTES

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

LEGEND ON PLANS




REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
UPDATED*	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	CONCRETE LUG	 9/10/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDD-113



NOTES:


1. CONCRETE SHALL BE 560-C-3250 UNLESS OTHERWISE NOTED.
2. REINFORCING STEEL SHALL COMPLY WITH THIS DRAWING 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 LOCATED ON SHEET 2.
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. 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 ENGINEER, AS DEFINED BY SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, THE USE OF PRECAST STORM STRUCTURES IS ACCEPTABLE AS AN ALTERNATE TO CAST-IN-PLACE. PRECAST UNITS SHALL CONFORM TO ASTM STANDARDS AND BE MANUFACTURED IN A PERMANENT FACILITY DESIGNED FOR THAT PURPOSE.
13. TYPICAL REINFORCEMENT LAP SHALL BE 30 TIMES THE BAR DIAMETER MINIMUM. DIMENSION T SHALL BE 6" MINIMUM.
14. MARK EVERY STORM DRAIN INLET WITHIN THE PROJECT BOUNDARIES WITH ADHESIVE DECAL-DISCS ON EXISTING INLETS OR AN IMBEDDED CONCRETE STAMP ON NEW INLETS.
15. ON CURB INLETS, PLACE MARKER ON TOP OF THE INLET ROOF. ON CATCH BASIN, IMPRINT STAMP NEXT TO INLET GRATE.
16. NO RECYCLED WATER SHALL ENTER INTO STORM DRAIN.

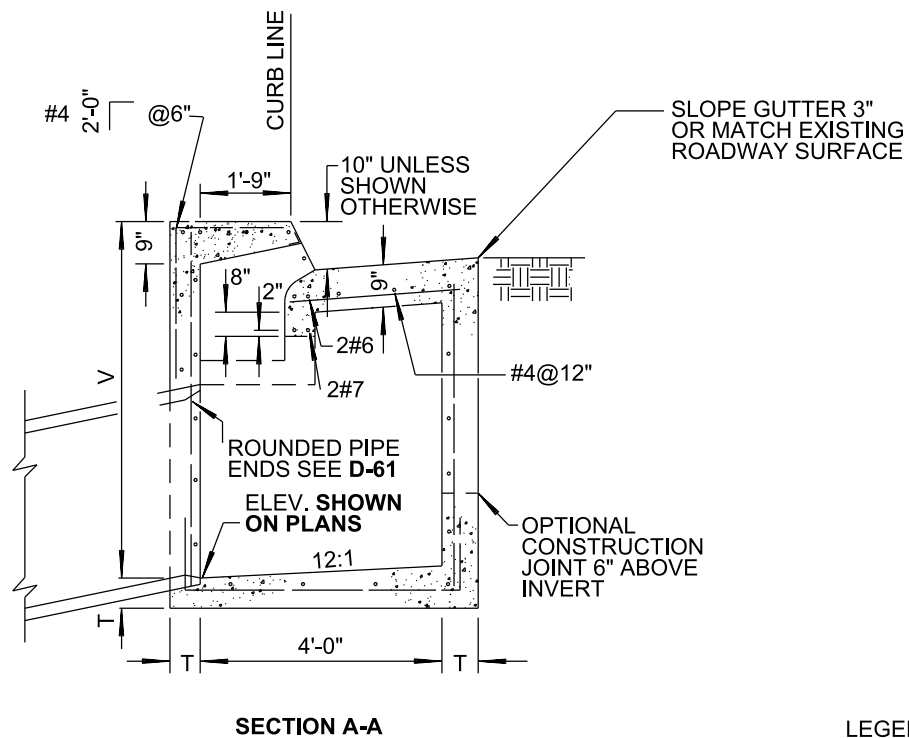
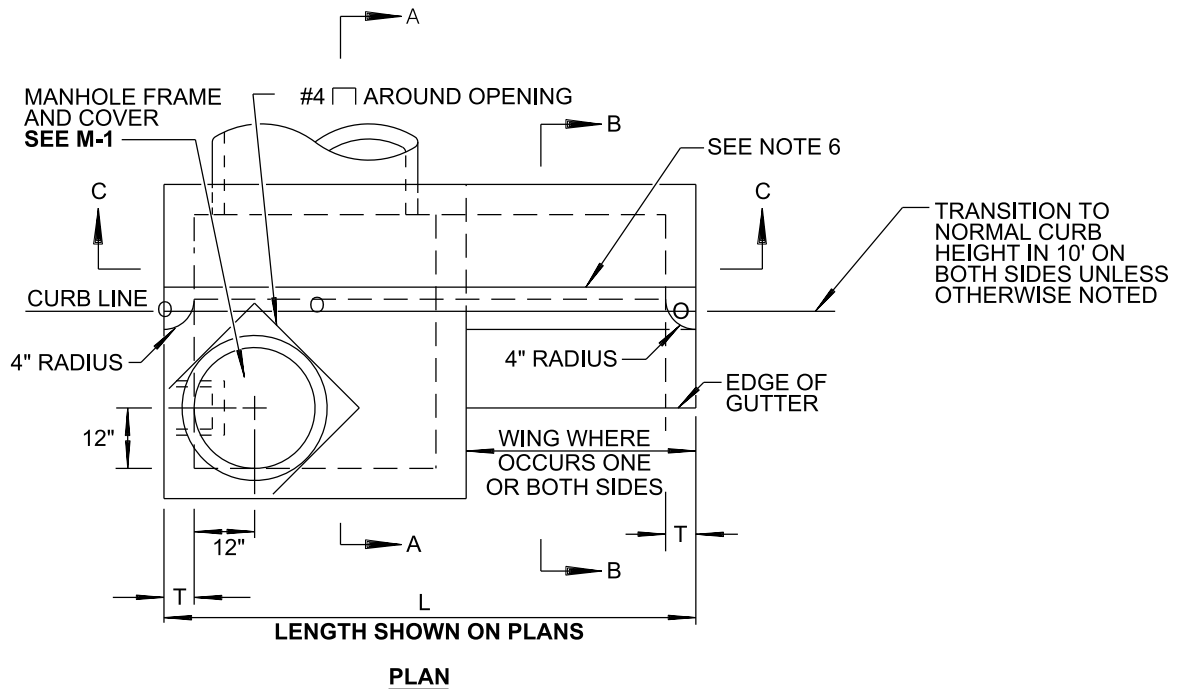
SHEET 1 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	FR	J. NAGELVOORT	07/15	INLETS AND CLEANOUTS NOTES AND DETAILS	 9/10/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDD-114

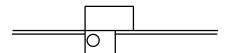
BOX SECTION HORIZONTAL REINFORCEMENT				
MAXIMUM SPAN X OR Y	DEPTH V	THICKNESS T	HOR. & FLR. REINF.	
3'-0" TO 4'-0"	4'-0"	6"	#4	18"
4'-1" TO 7'-0"		6"	#4	12"
7'-0" TO 8'-0"		6"	#4	8"
3'-0" TO 4'-0"	4'-1" TO 8'-0"	6"	#4	18"
4'-1" TO 5'-0"		6"	#4	12"
5'-1" TO 6'-0"		6"	#4	8"
6'-1" TO 8'-0"		6"	#4	6"
3'-0" TO 4'-0"	8'-1" TO 12'-0"	6"	#4	15"
4'-1" TO 5'-0"		8"	#4	12"
5'-1" TO 6'-0"		8"	#4	8"
6'-1" TO 8'-0"		8"	#4	6"
3'-0" TO 4'-0"	12'-1" TO 16'-0"	8"	#4	12"
4'-1" TO 5'-0"		8"	#4	12"
5'-1" TO 6'-0"		8"	#4	8"
6'-1" TO 7'-0"		8"	#4	6"
7'-1" TO 8'-0"		8"	#5	8"
3'-0" TO 4'-0"	16'-1" TO 20'-0"	8"	#4	12"
4'-1" TO 5'-0"		10"	#4	12"
5'-1" TO 6'-0"		10"	#4	8"
6'-1" TO 7'-0"		10"	#4	6"
7'-1" TO 8'-0"		10"	#5	8"
3'-0" TO 4'-0"	20'-1" TO 24'-0"	8"	#4	12"
4'-1" TO 5'-0"		10"	#4	12"
5'-1" TO 6'-0"		10"	#4	8"
6'-1" TO 7'-0"		10"	#4	6"
7'-1" TO 8'-0"		12"	#5	8"

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  9/10/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	FR	J. NAGELVOORT	07/15	INLETS AND CLEANOUTS NOTES AND DETAILS	DRAWING NUMBER SDD-114
REDRAFTED	CD	J. NAGELVOORT	09/18		



LEGEND ON PLANS



SHEET 1 OF 2

REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12
UPDATED	RB	J. NAGELVOORT	10/15
UPDATED	HN	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

CITY OF SAN DIEGO - STANDARD DRAWING


CURB INLET - TYPE A

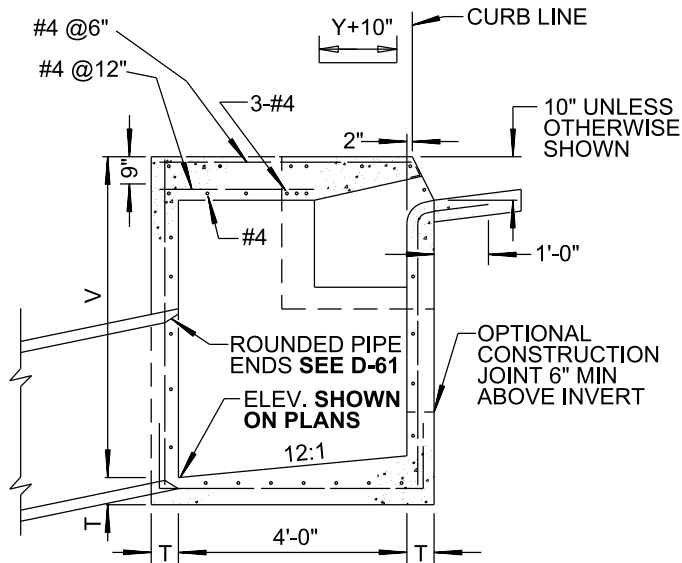
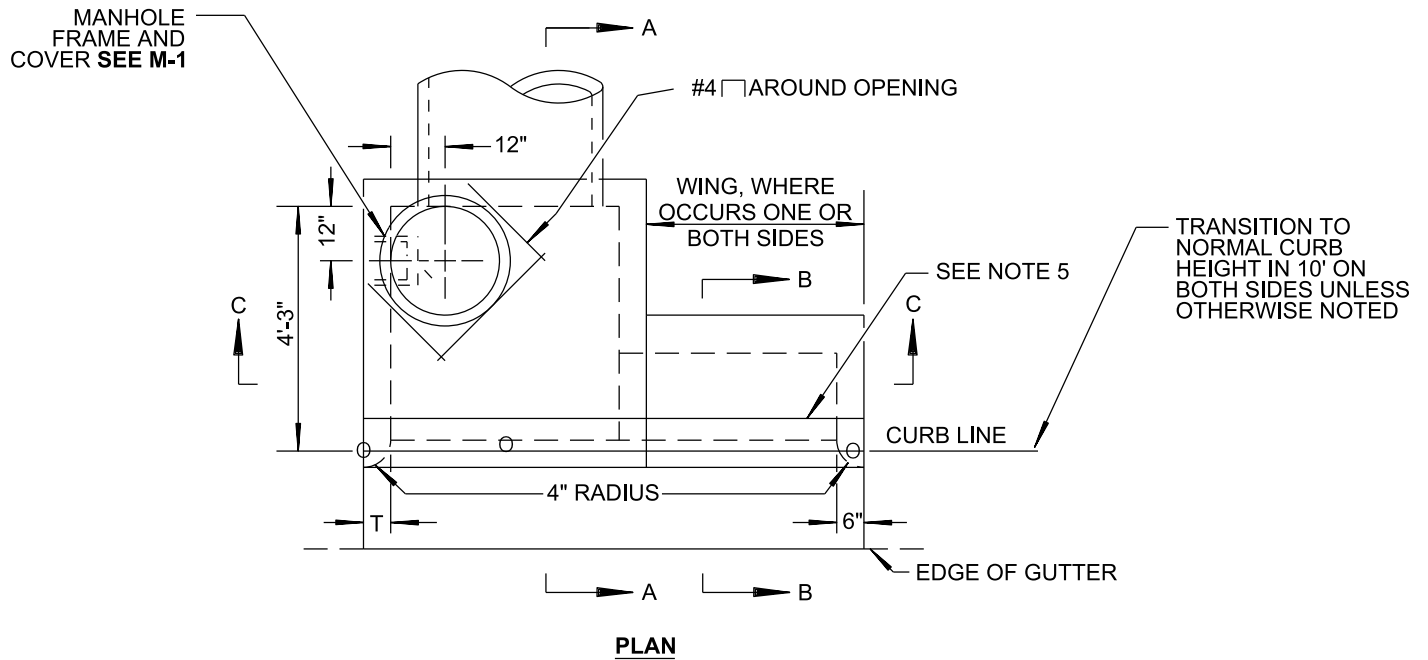
RECOMMENDED BY THE CITY
OF SAN DIEGO STANDARDS COMMITTEE

Chung 9/10/18
COORDINATOR R.C.E. 56523 DATE

DRAWING
NUMBER

SDD-115

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL*	KA	J. NAGELVOORT	01/12		<div>CURB INLET - TYPE A</div>	<div><div></div><div>COORDINATOR R.C.E. 56523</div></div> <div>9/10/18</div> <div>DATE</div>
UPDATED	RB	J. NAGELVOORT	10/15			
UPDATED	HN	J. NAGELVOORT	02/16			
REDRAFTED	CD	J. NAGELVOORT	09/18			
				DRAWING NUMBER	SDD-115	

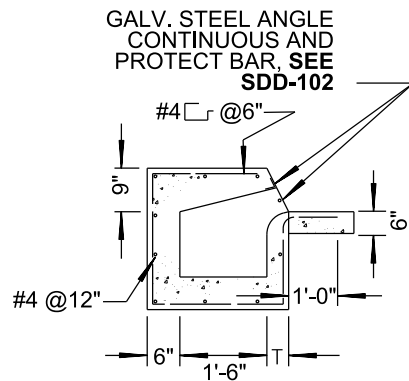


LEGEND ON PLANS

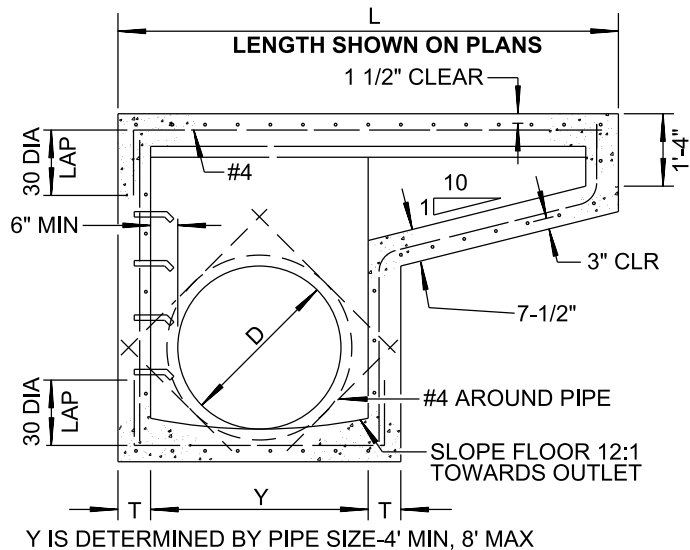


SHEET 1 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		<div>CURB INLET - TYPE B</div>
UPDATED	RB	J. NAGELVOORT	10/15		
UPDATED	HN	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	



SECTION B-B



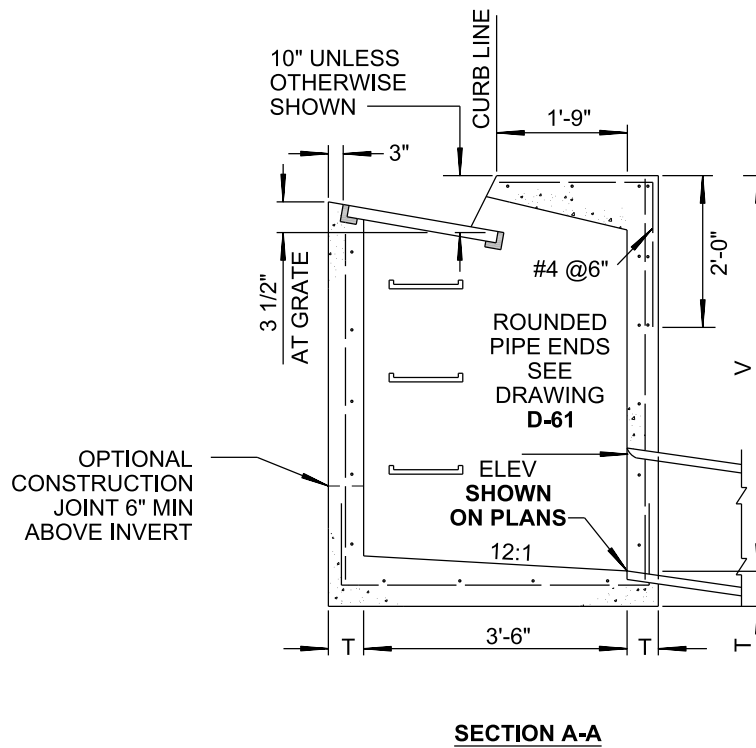
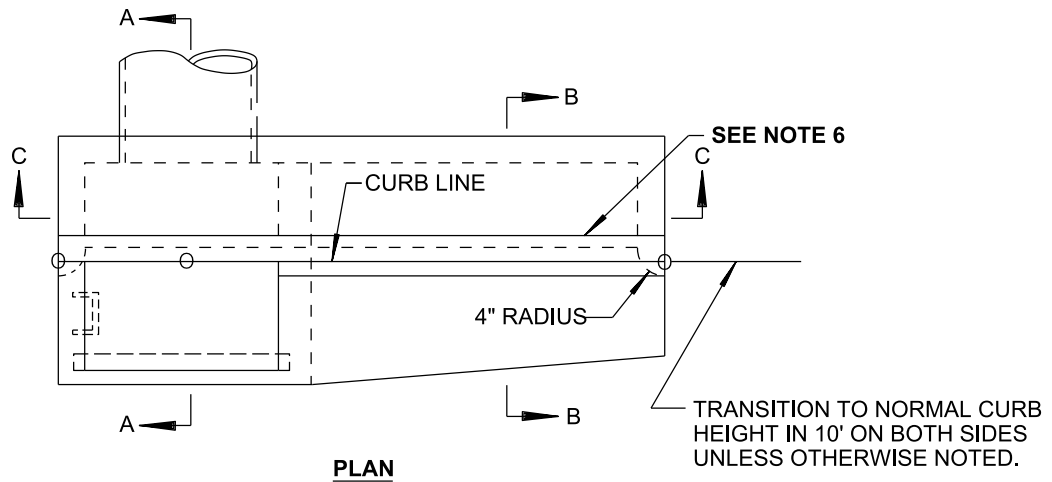
SECTION C-C

NOTES

1. TYPES ARE DESIGNATED AS FOLLOWS: (NO WING)A, (ONE WING)A-1, (TWO WINGS)A-2.
2. EXPOSED EDGES OF CONCRETE SHALL BE ROUNDED WITH A RADIUS OF 1/2".
3. WHEN V EXCEEDS 4', STEPS SHALL BE INSTALLED.
4. CONCRETE GUTTER TO MATCH ADJACENT GUTTERS.
5. AN EXPANSION JOINT SHALL BE PLACED AT THE ENDS OF THE INLET WHERE THE CURB IS TO ADJOIN **PER G-10**.
6. PROVIDE 1/4" TOOLED GROOVE IN TOP SLAB IN LINE WITH BACK OF ADJACENT CURB.
7. SURFACE OF TOP SLAB SHALL BE SIDEWALK FINISHED TO DRAIN TOWARD STREET AT A SLOPE OF 1/4" PER FOOT.
8. ELEVATION **SHALL BE SHOWN ON THE PLANS** WHERE INDICATED "O" SYMBOL.
9. **SEE SDD-102 AND SDD-114** FOR ADDITIONAL NOTES AND DETAILS.

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		<div>CURB INLET - TYPE B</div>
UPDATED	RB	J. NAGELVOORT	10/15		
UPDATED	HN	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	




LEGEND ON PLANS

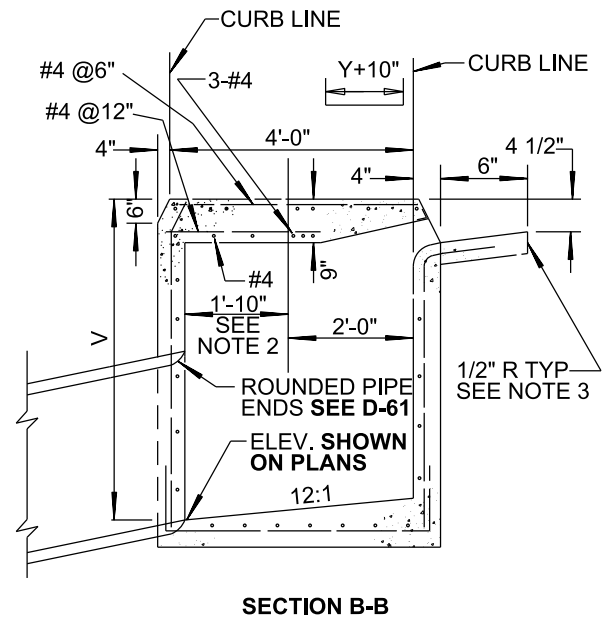
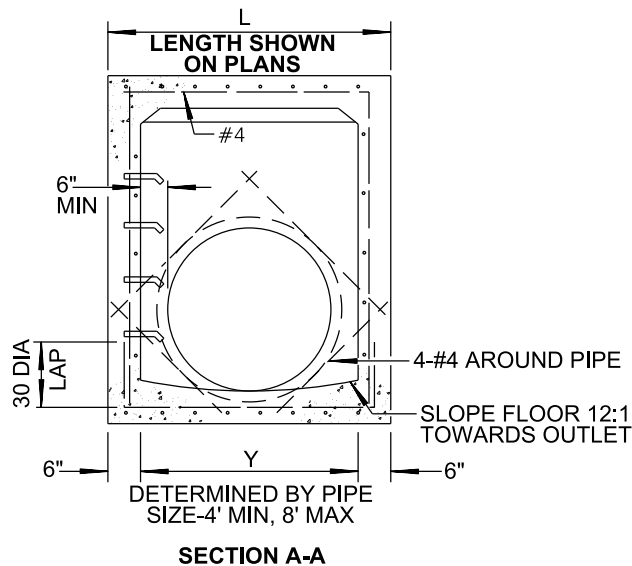
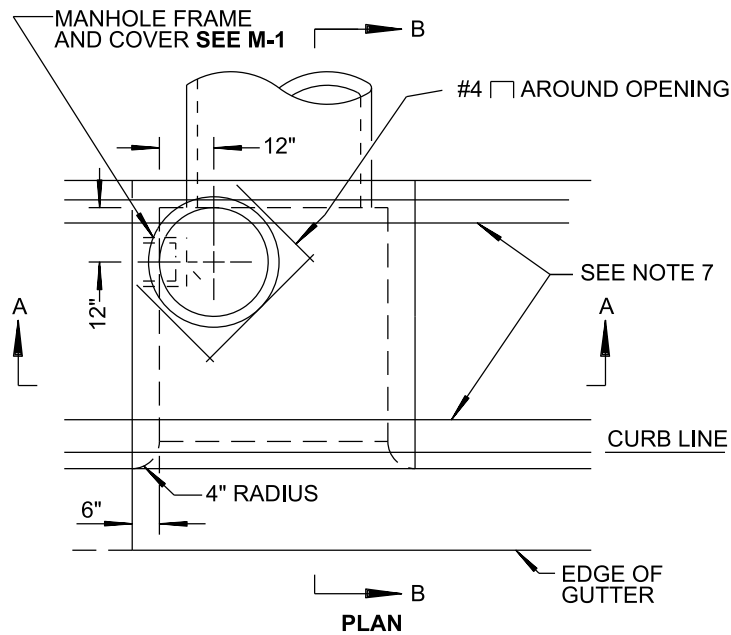


SHEET 1 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		CURB INLET - TYPE C
UPDATED	RB	J. NAGELVOORT	10/15		
UPDATED	HN	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	



REVISION	BY	APPROVED	DATE	<p>CITY OF SAN DIEGO – STANDARD DRAWING</p> <p>CURB INLET - TYPE C</p>	<p>RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE</p> <p> 9/10/18</p> <p>COORDINATOR R.C.E. 56523 DATE</p>
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	RB	J. NAGELVOORT	10/15		
UPDATED	HN	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					<p>DRAWING NUMBER</p> <p>SDD-117</p>



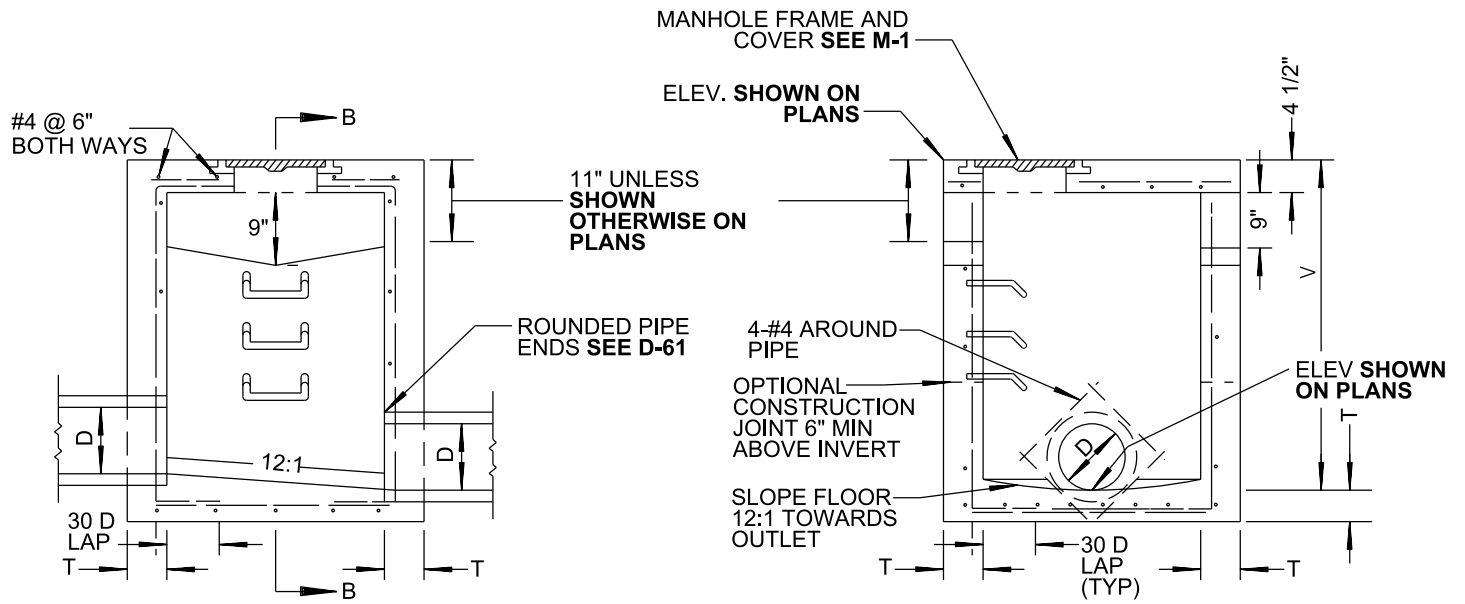
NOTES

1. DIMENSION SHOWN BECOMES 2'-0" WHEN OPENING ON BOTH SIDES. ADJUST MANHOLE AS REQUIRED.
2. EXPOSED EDGES OF CONCRETE SHALL BE ROUNDED WITH A RADIUS OF 1/2"
3. WHEN V EXCEEDS 4', STEPS SHALL BE INSTALLED.
4. CONCRETE GUTTER TO MATCH ADJACENT GUTTERS.
5. AN EXPANSION JOINT SHALL BE PLACED AT THE ENDS OF THE INLET WHERE THE CURB IS TO ADJOIN PER G-10.
6. PROVIDE 1/4" TOOLED GROOVE IN TOP SLAB IN LINE WITH BACK OF ADJACENT CURB.
7. MAINTAIN 1 1/2" CLEAR SPACING BETWEEN REINFORCING AND SURFACE UNLESS OTHERWISE NOTED.
8. SEE SDD-114 FOR ADDITIONAL NOTES AND DETAILS.

LEGEND ON PLANS

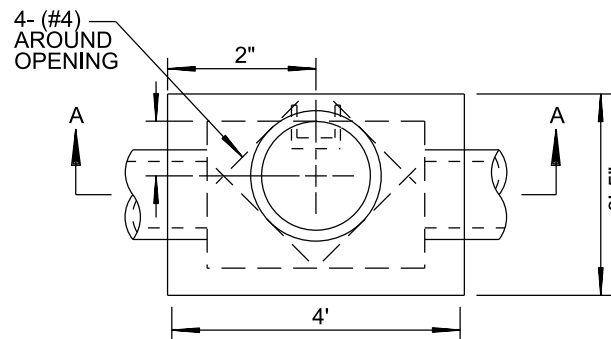
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REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	BB	J. NAGELVOORT	01/12		
UPDATED	RB	J. NAGELVOORT	10/15	MEDIAN CURB INLET - TYPE J	 9/10/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	HN	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDD-118



SECTION A-A

SECTION B-B




PLAN

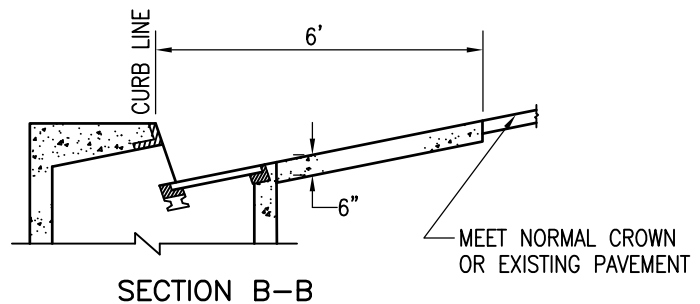
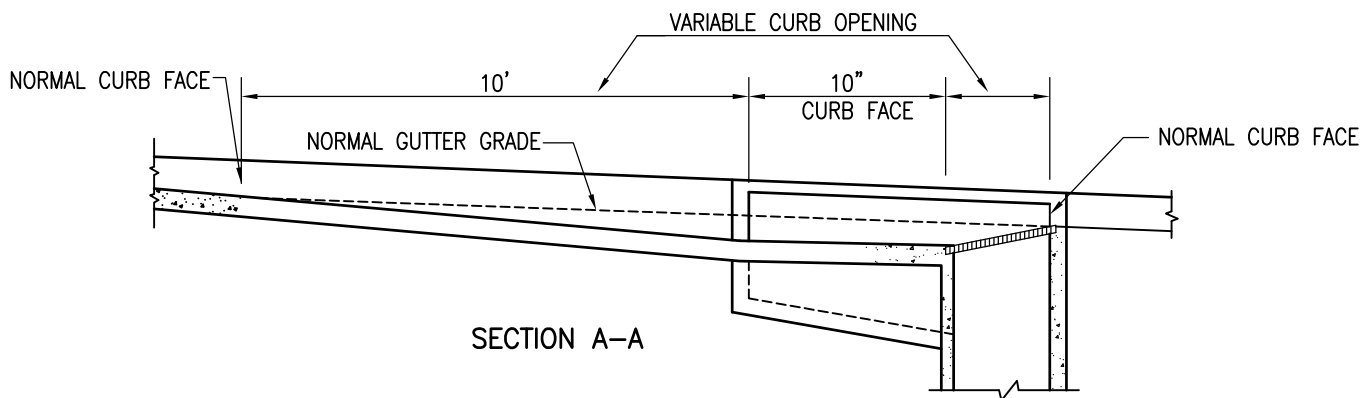
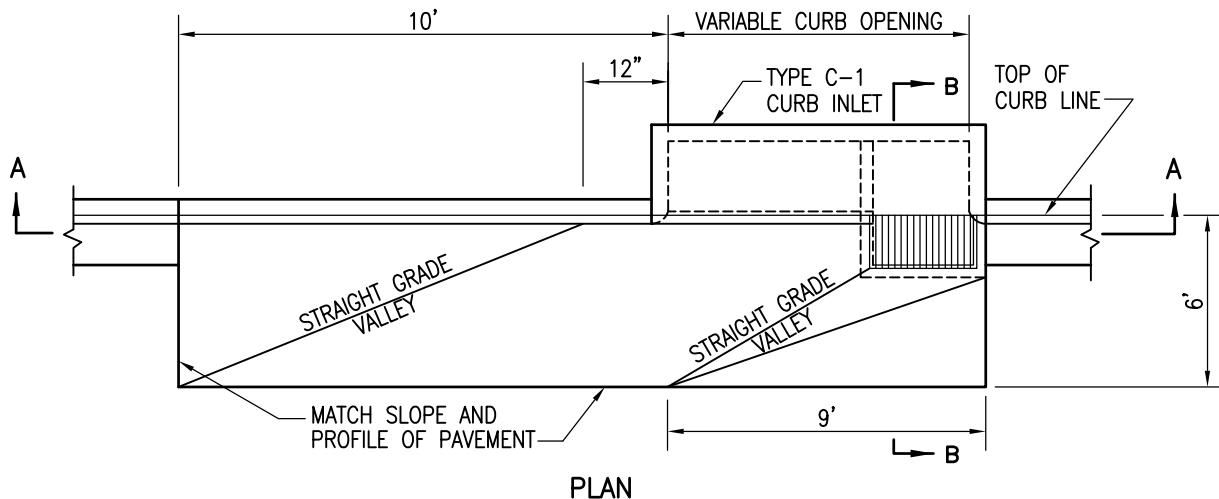
NOTES

1. WHEN V EXCEEDS 4', STEPS SHALL BE INSTALLED.
2. EXPOSED EDGES OF CONCRETE SHALL BE ROUNDED WITH A RADIUS OF 1/2".
3. CONSTRUCT OPENINGS ON BOTH SIDES UNLESS OTHERWISE **SHOWN ON PLANS**.
4. MAINTAIN 1-1/2" CLEAR SPACING BETWEEN REINFORCING AND SURFACE.
5. INSTALL 1" STEEL PROTECTION BAR.
6. DIAMETER "D" SHALL BE 18" MAX, FOR LARGER DIAMETER PIPES THIS DRAWING MUST BE MODIFIED.
7. **SEE SDD-114** FOR ADDITIONAL NOTES AND DETAILS.

LEGEND ON PLANS



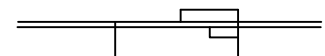
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	RB	J. NAGELVOORT	10/15	CATCH BASIN - TYPE F	 9/10/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	HN	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDD-119



NOTES

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

LEGEND ON PLANS



Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
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

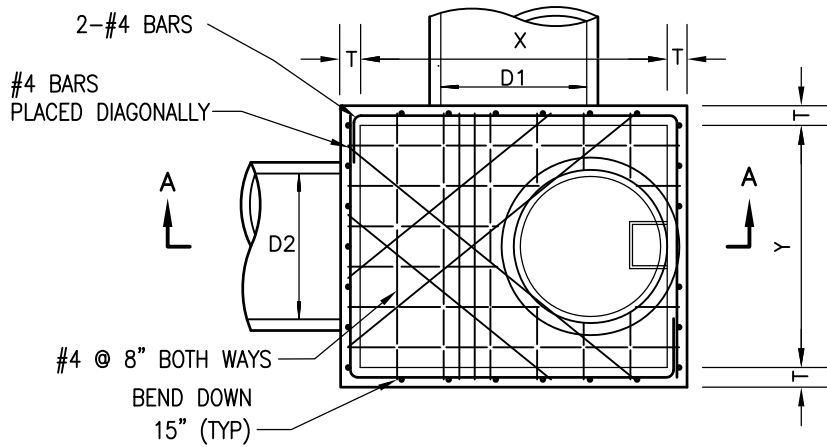
CONCRETE APRON FOR TYPE C CURB INLET

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

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

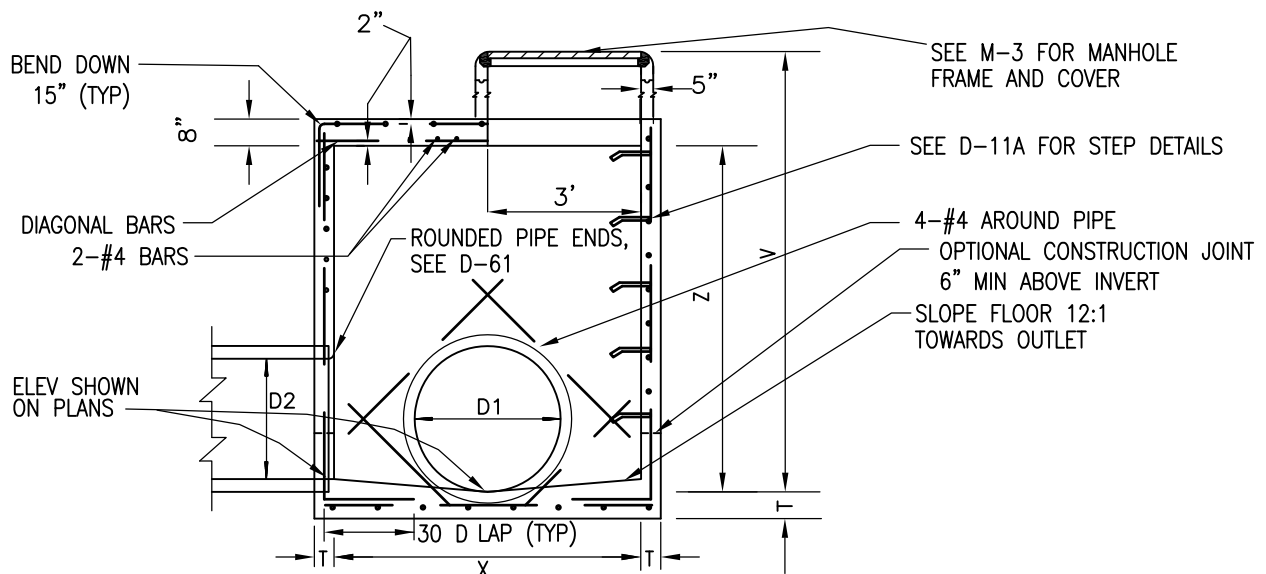
DRAWING
NUMBER **D-03B**

FOR DRAWING D-3A SEE DRAWING SDD-117



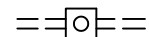
PLAN

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

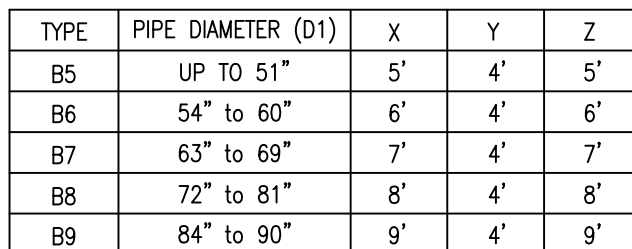
LEGEND ON PLANS



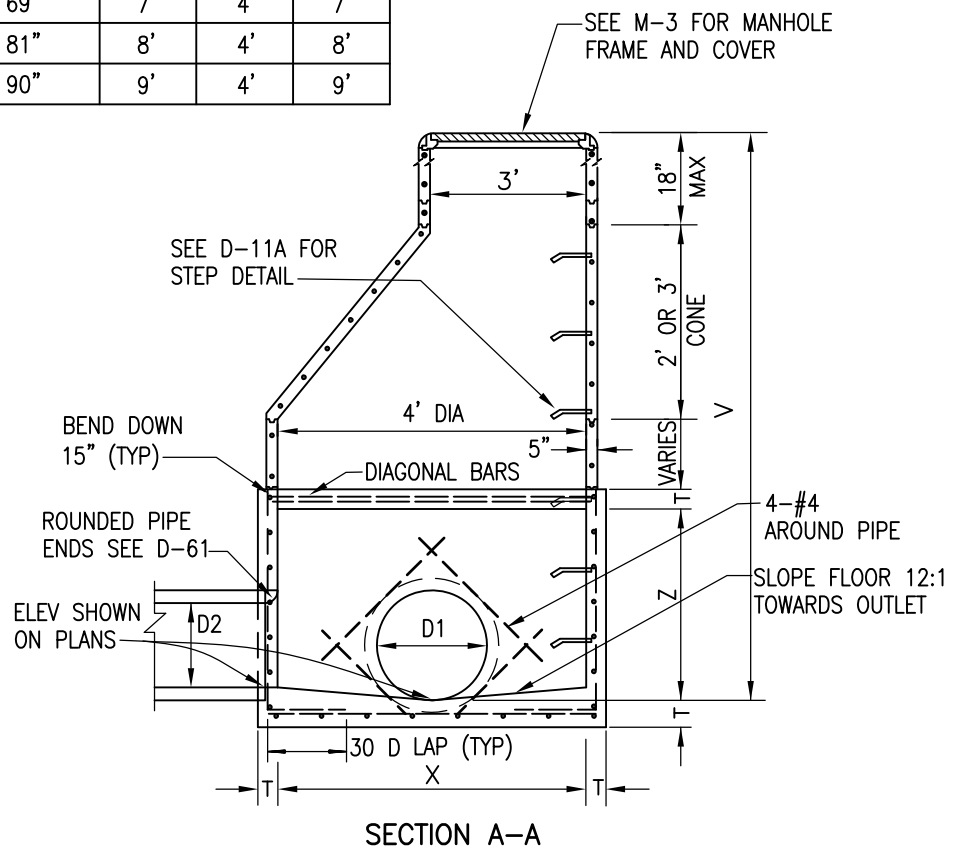
NOTES


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

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75	STORM DRAIN CLEANOUT - TYPE A			
Reformatted		T. Stanton	04/06				
Edited		T. Stanton	02/09				
Edited	S.S.	T. Regello	03/11				
Edited	T.R.	T. Regello	10/15				
						 12/17/2015	
						Chairperson R.C.E. 19246 Date	
						DRAWING NUMBER D-09	

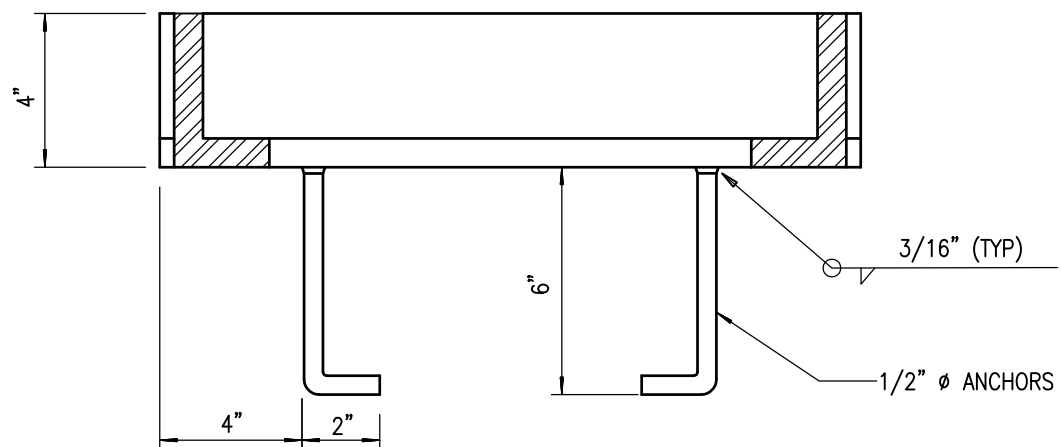
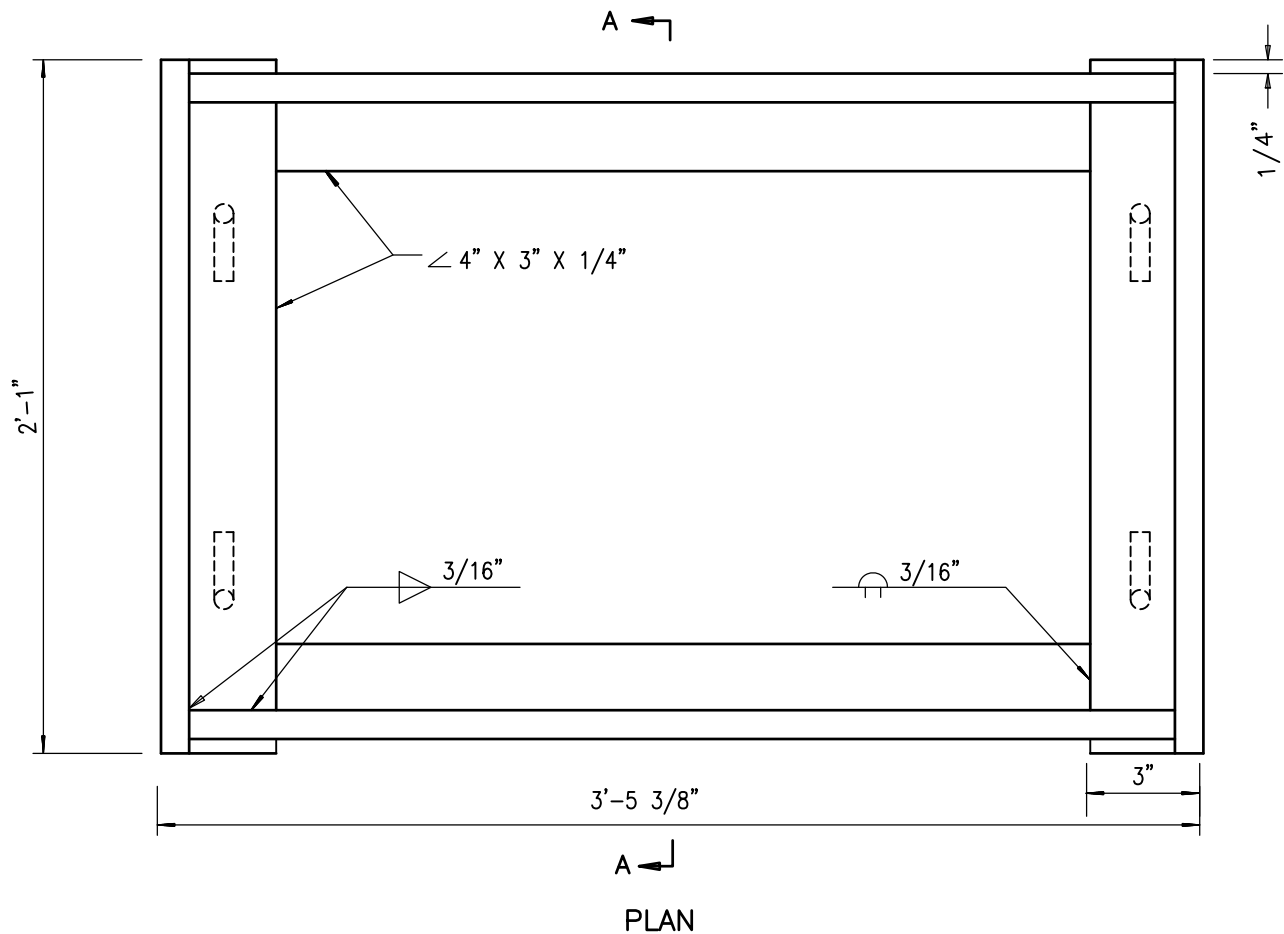


1. SEE D-11A & D-11B FOR ADDITIONAL NOTES AND DETAILS.
2. ALL JOINTS SHALL BE SET IN CLASS C MORTAR.
3. ALL PRECAST COMPONENTS SHALL BE REINFORCED WITH 1/4" DIAMETER STEEL WOUND SPIRALLY ON 4" CENTERS.
4. MAINTAIN 1-1/2" CLEAR SPACING BETWEEN REINFORCING AND CONCRETE SURFACE.
5. CONCRETE BASE SHALL BE 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.


$$= \text{---} \boxed{\text{O}} \text{---} =$$

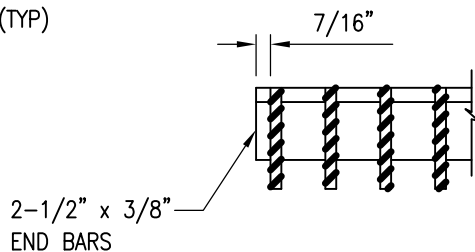
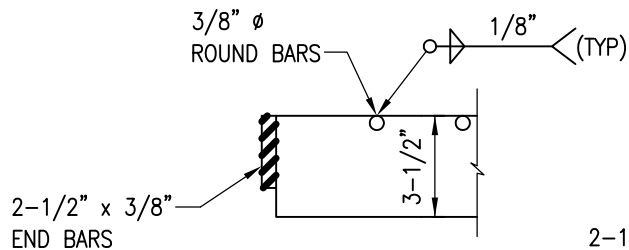
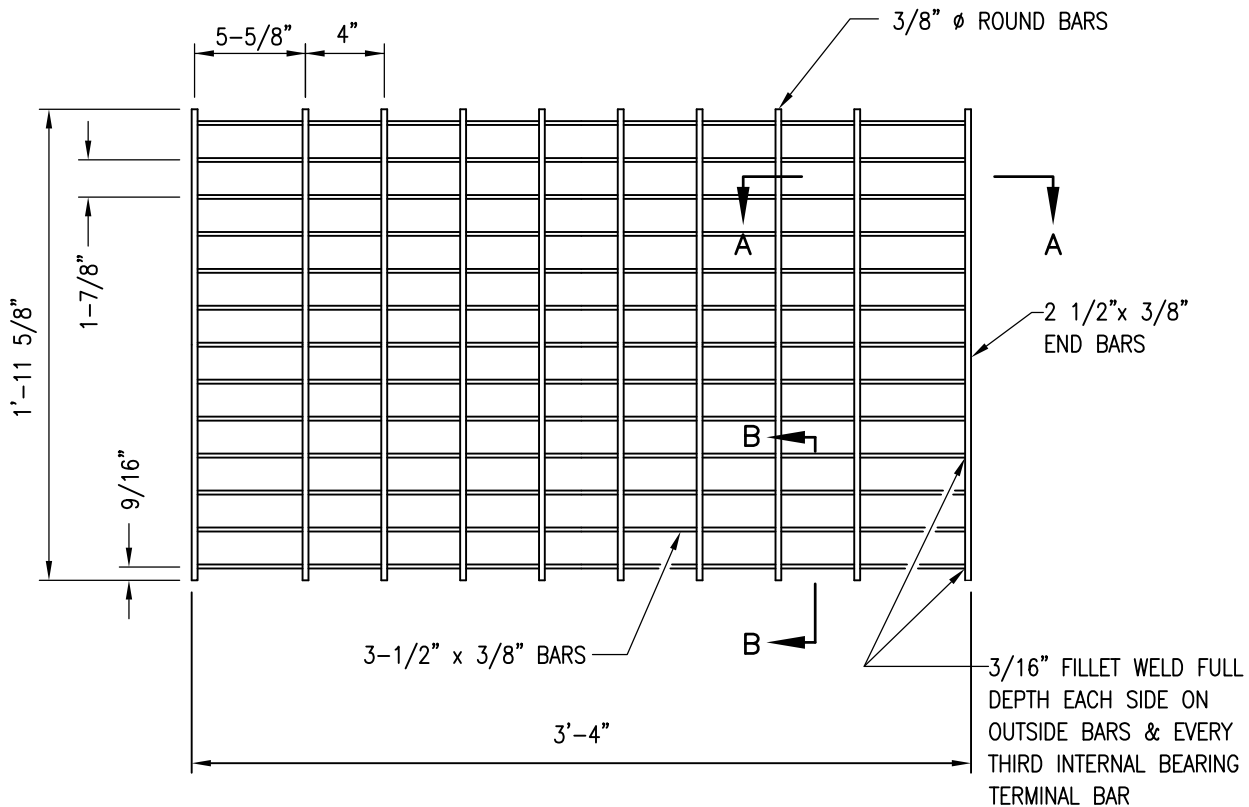
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		 12/17/2015 Chairperson R.C.E. 19246 Date
Add Metric		T. Stanton	03/03	STORM DRAIN CLEANOUT - TYPE B	DRAWING NUMBER D-10
Reformatted		T. Stanton	04/06		
Edited		T. Stanton	02/09		
Edited	S.S.	T. Regallo	03/11		

FOR DRAWINGS D-11A AND D-11B, SEE DRAWING SDD-114



NOTE
HOT-DIP GALVANIZE ALL PARTS AFTER FABRICATION.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75	WELDED STEEL GRATE FRAME		 12/17/2015 Chairperson R.C.E. 19246 Date	
Reformatted		T. Stanton	04/06				
Edited		T. Stanton	02/09				
Edited	S.S.	T. Regello	03/11				
Edited	T.R.	T. Regello	10/15				
						DRAWING NUMBER	D-13



NOTES

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

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

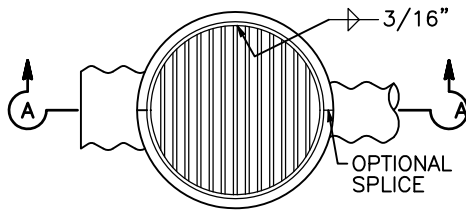
SAN DIEGO REGIONAL STANDARD DRAWING

DRAINAGE STRUCTURE GRATE

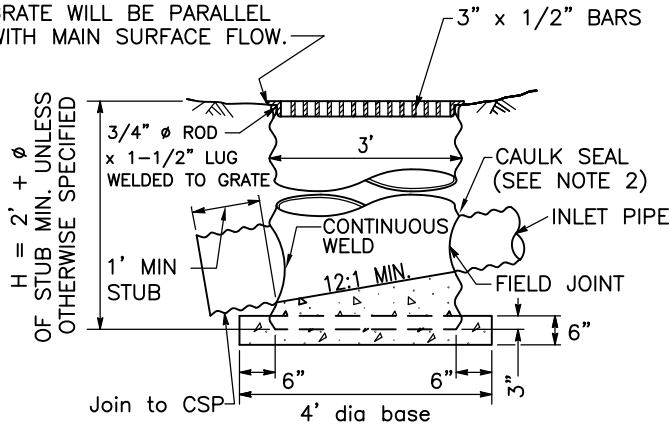
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

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

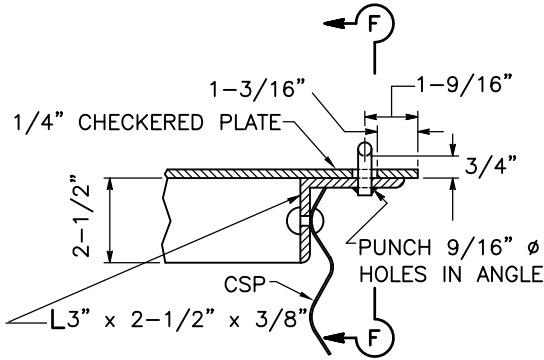
DRAWING NUMBER **D-15**



PUNCH 1" HOLE IN CSP.
PLACE PIPE SO BARS OF
GRATE WILL BE PARALLEL
WITH MAIN SURFACE FLOW.



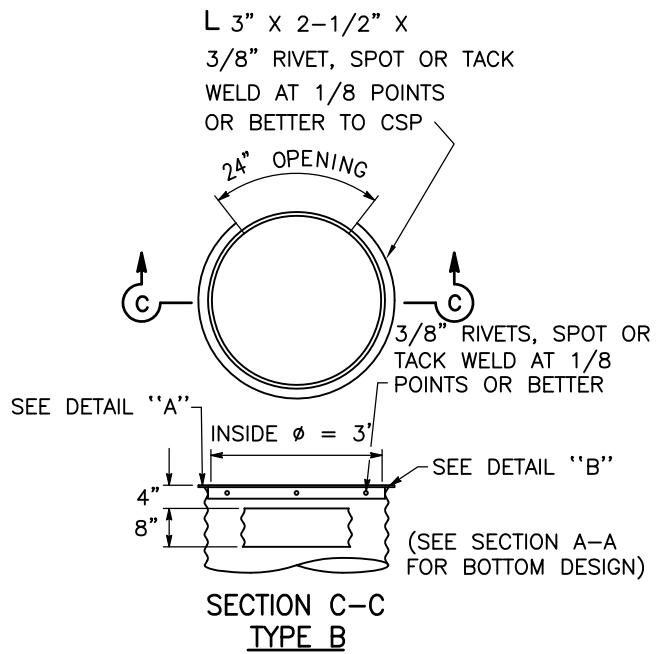
SECTION A-A
TYPE A



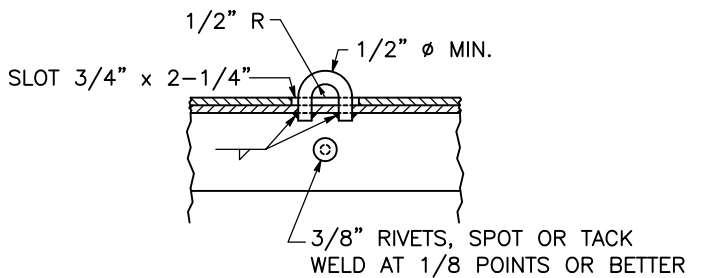
DETAIL "B"

NOTES

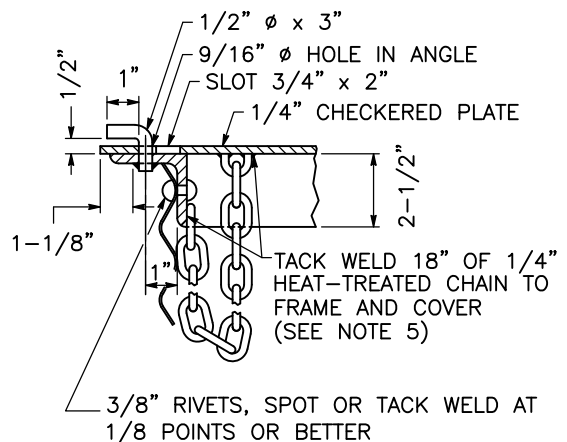
1. ALL COMPONENTS SHALL BE GALVANIZED.
2. INLET AND OUTLET PIPES SHALL BE SET AT FACTORY AND POSITIONED AS SHOWN ON PLANS.
3. SEE D-17B FOR LADDER AND STEP DETAILS.
4. SEE D-17A FOR ADDITIONAL GRATE DETAILS.
5. GRATE TO BE PROVIDED WHEN SPECIFIED.
6. GRATE DETAIL SHALL BE AS SHOWN ON D-17A UNLESS OTHERWISE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




SECTION C-C
TYPE B

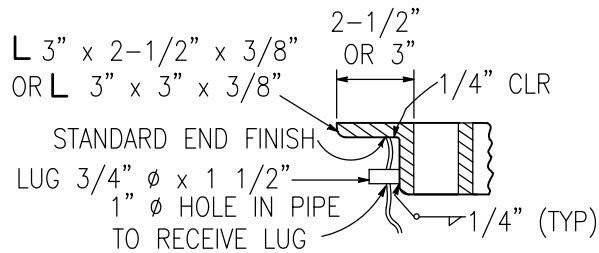
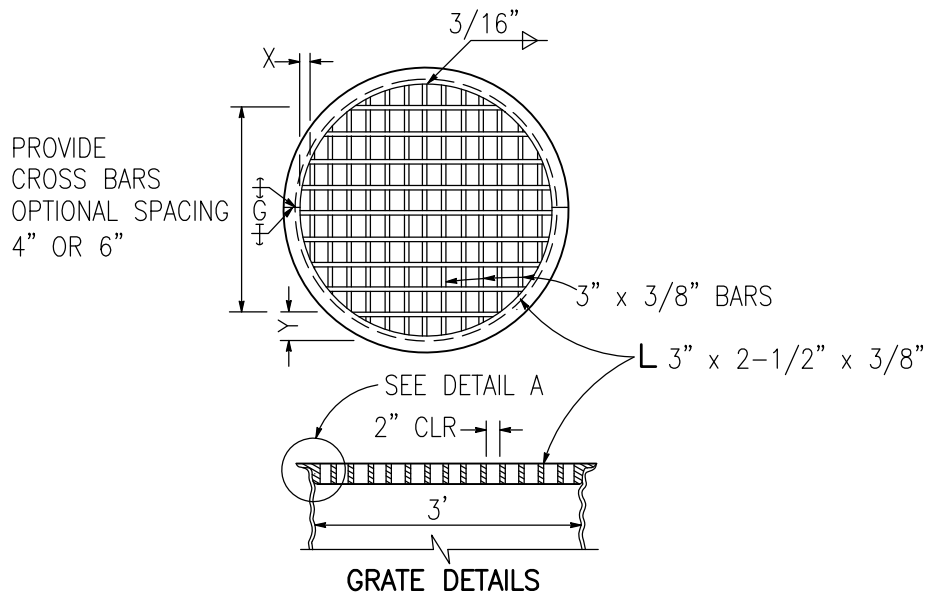


SECTION F-F

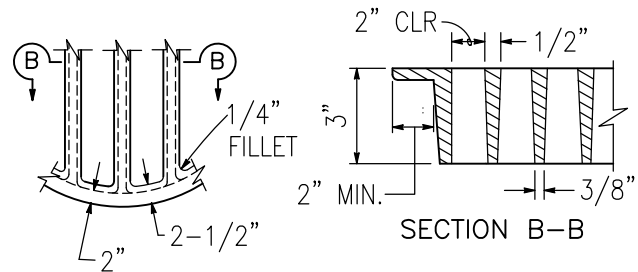


DETAIL "A"

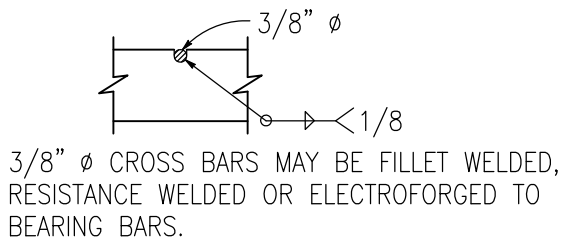
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	
ORIGINAL		Kercheval	12/75	CORRUGATED STEEL PIPE INLETS TYPES A AND B	
Reformatted		T. Stanton	04/06		
Edited		T. Stanton	02/09		
Edited	S.S.	T. Regello	03/11		
Edited	T.R.	T. Regello	10/15		
				RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE  12/17/2015 Chairperson R.C.E. 19246 Date	
				DRAWING NUMBER D-16	



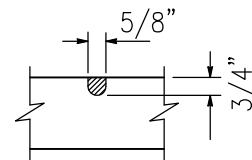
DETAIL A



ALTERNATIVE CAST NODULAR IRON GRATE
OR CAST STEEL GRATE



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

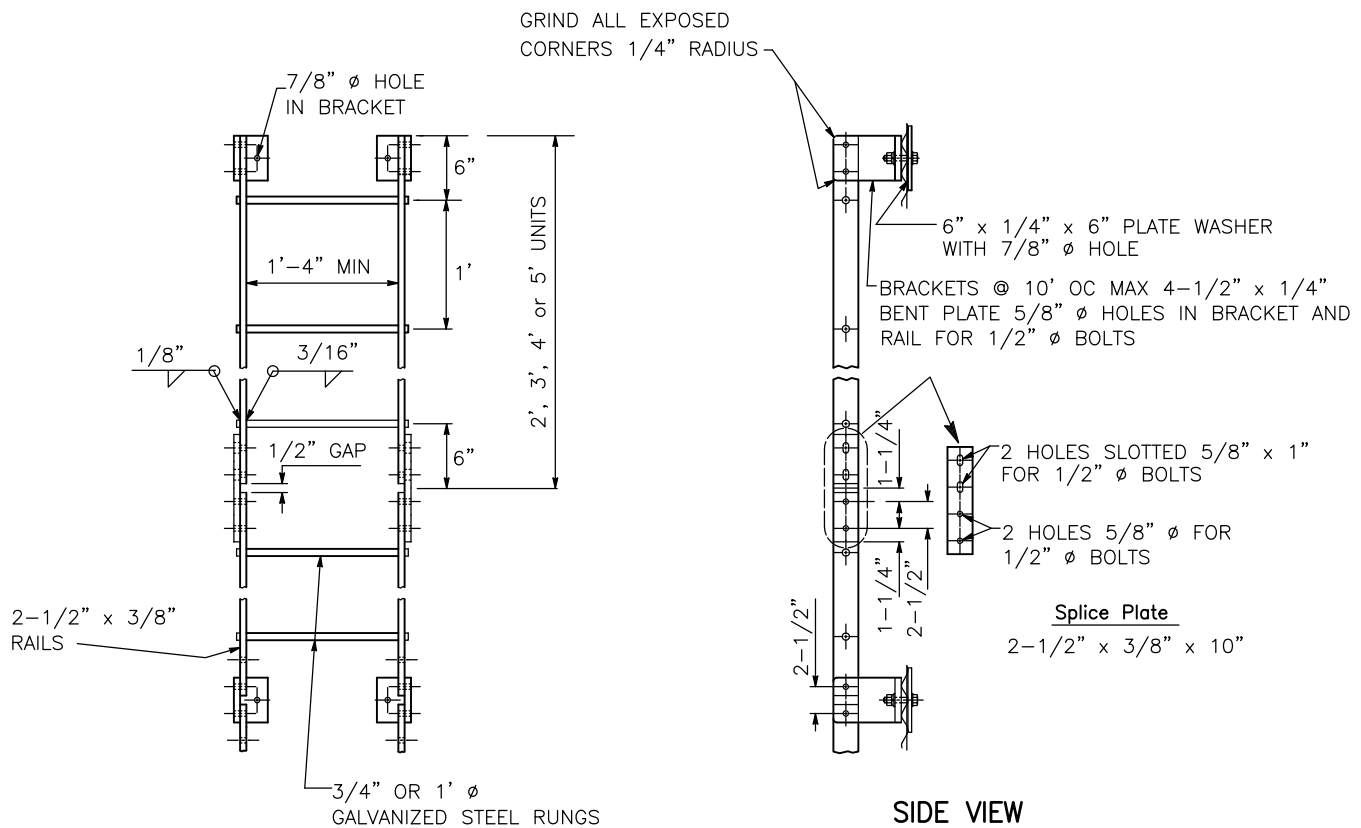
SAN DIEGO REGIONAL STANDARD DRAWING

CORRUGATED STEEL PIPE INLETS,
DETAILS

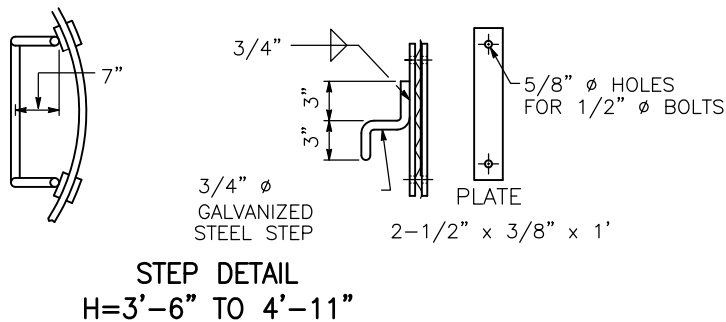
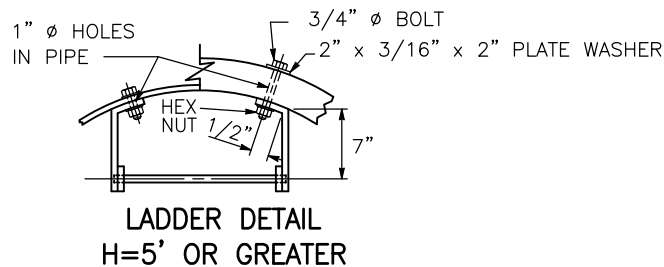
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

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

DRAWING
NUMBER **D-17A**



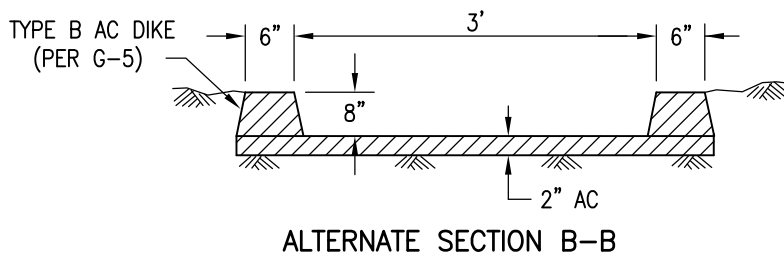
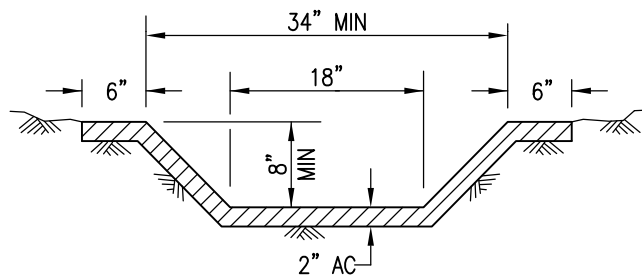
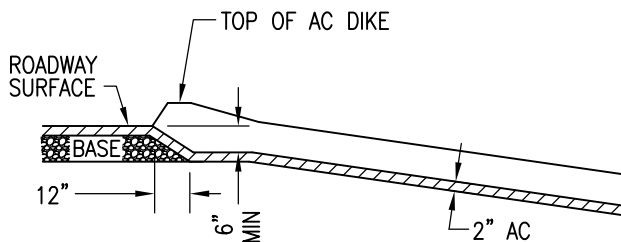
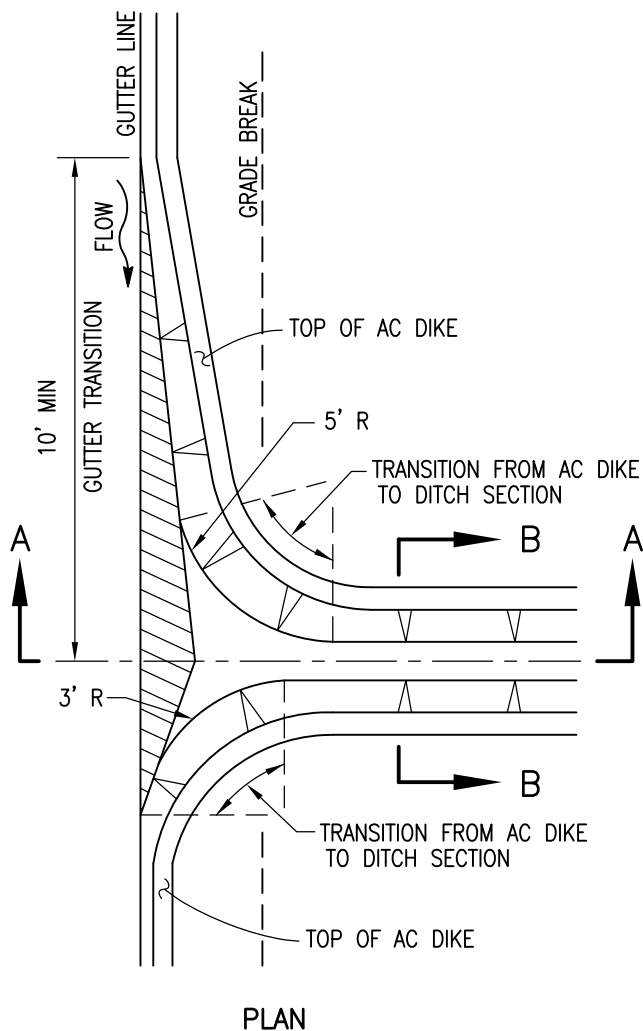
FRONT VIEW



NOTE

SEE NOTE 3 ON D-16 FOR LADDER REQUIREMENTS.

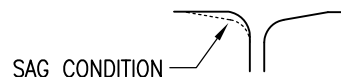
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75	CORRUGATED STEEL PIPE INLETS, DETAILS		<div> 12/17/2015</div> <div>Chairperson R.C.E. 19246 Date</div> <div>DRAWING NUMBER D-17B</div>
Reformatted		T. Stanton	04/06			
Edited		T. Stanton	02/09			
Edited	S.S.	T. Regello	03/11			
Edited	T.R.	T. Regello	10/15			




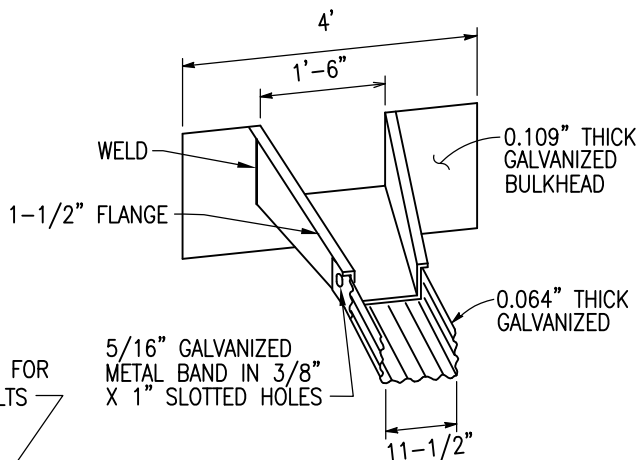
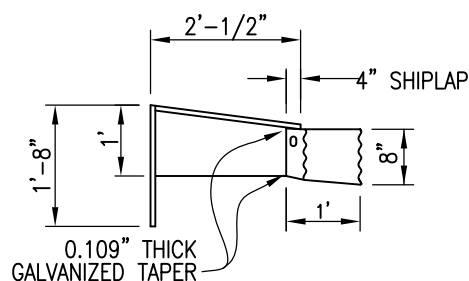
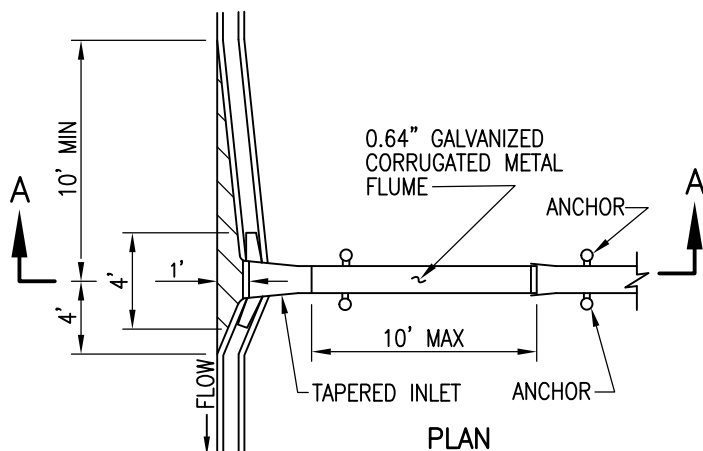
NOTES

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.

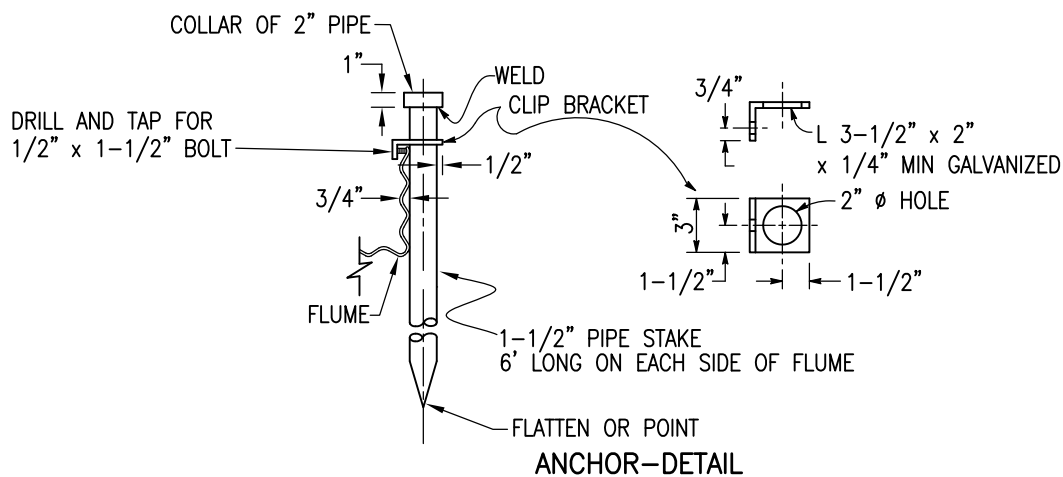
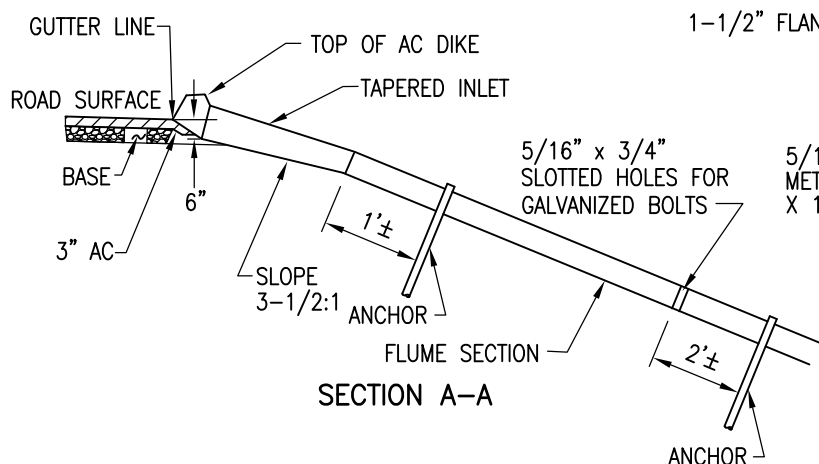
LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Reformatted		T. Stanton	04/06	ASPHALT CONCRETE SPILLWAY	<div> 12/17/2015</div> <div>Chairperson R.C.E. 19246 Date</div>
Edited		T. Stanton	02/09		
Edited	S.S.	T. Regello	03/11		
Edited	T.R.	T. Regello	10/15		
				DRAWING NUMBER D-22	



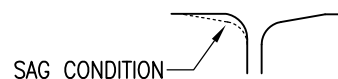
TAPERED INLET



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

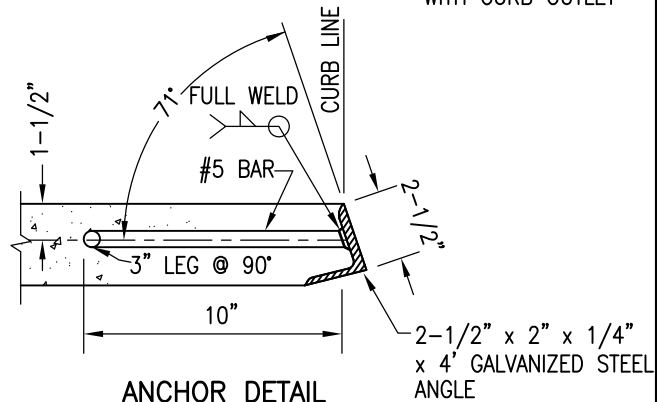
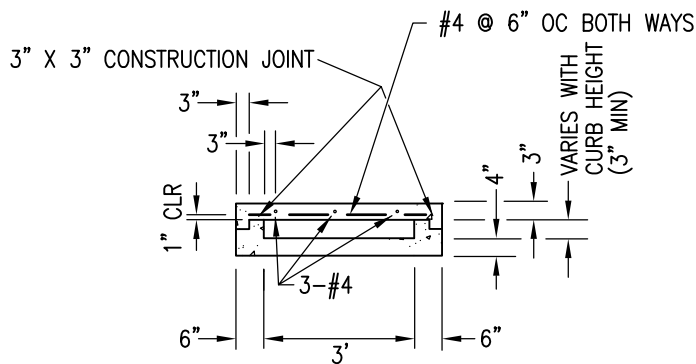
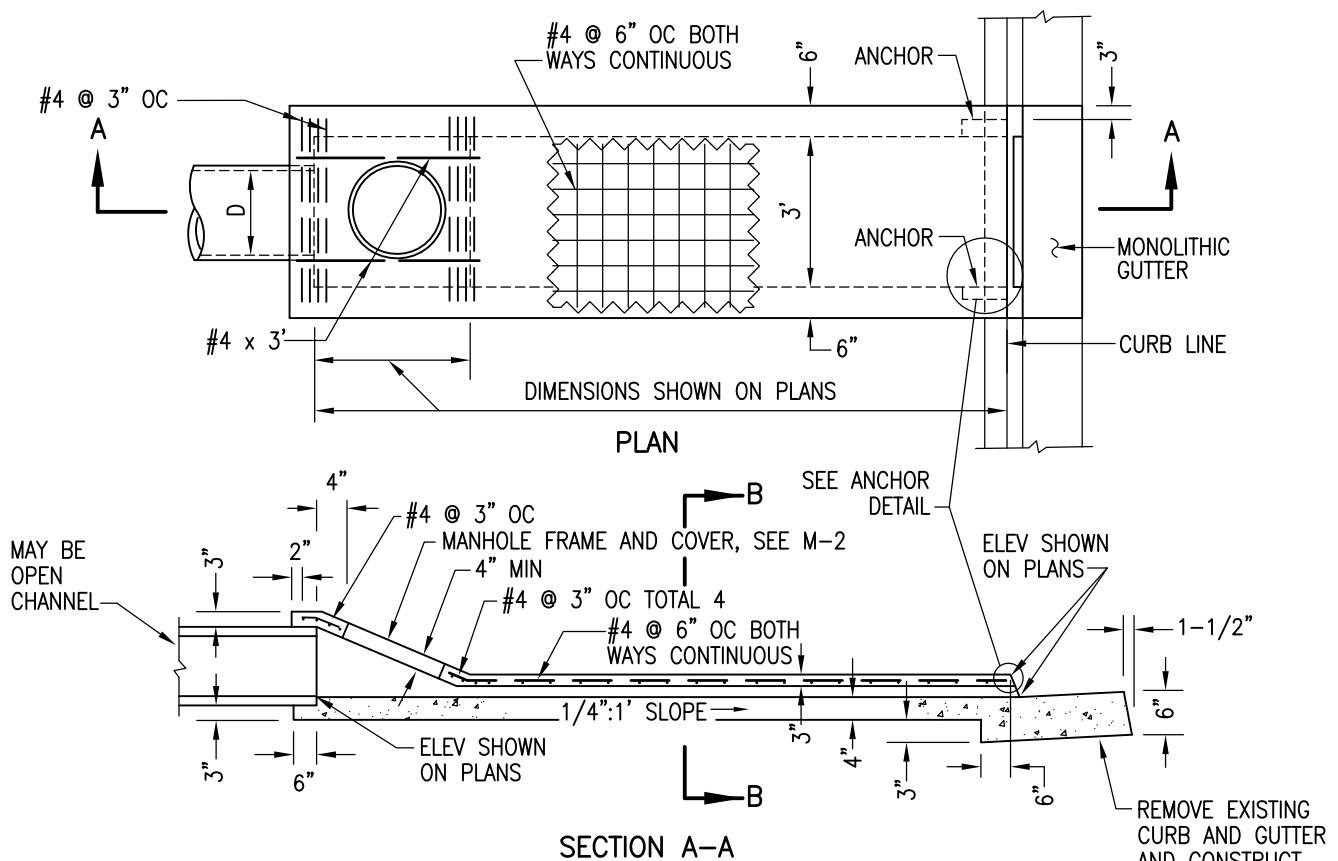
SAN DIEGO REGIONAL STANDARD DRAWING

TAPERED INLET AND DOWNDRAIN FLUME

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

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

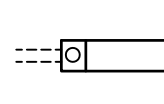
DRAWING
NUMBER **D-23**



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

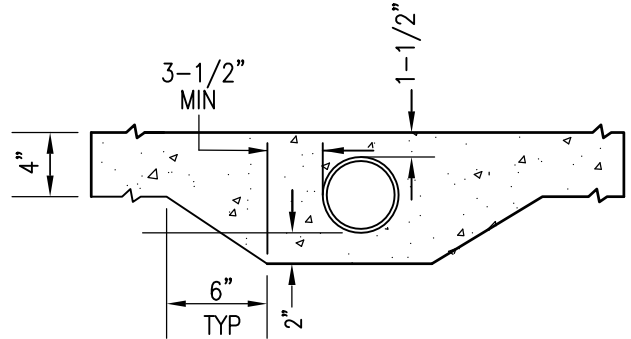
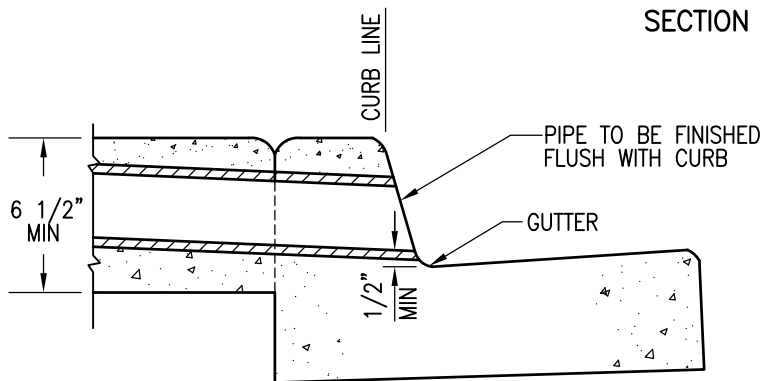
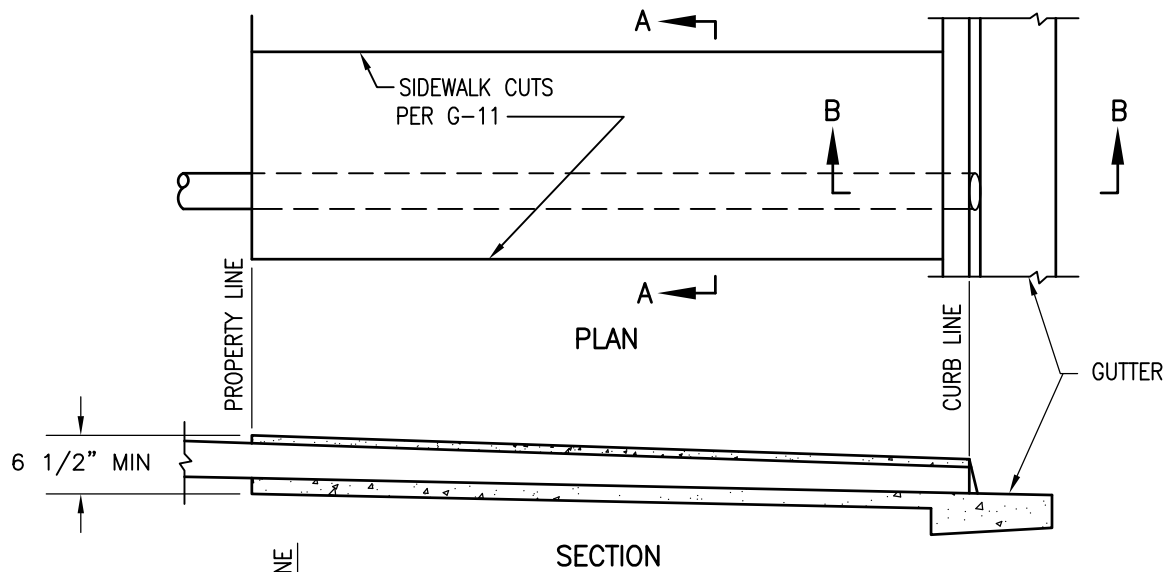
SAN DIEGO REGIONAL STANDARD DRAWING

CURB OUTLET - TYPE A

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

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

DRAWING NUMBER **D-25**



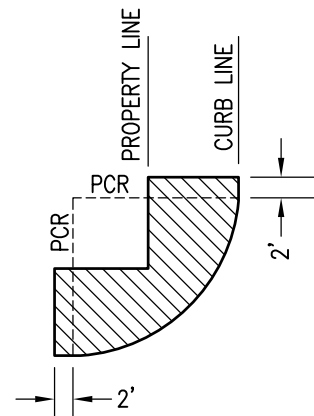
SECTION B-B

SECTION A-A

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

NOTES

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



DRAIN SHALL NOT BE CONSTRUCTED
WITHIN THE HATCHED AREA
BLOCK CORNER

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
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

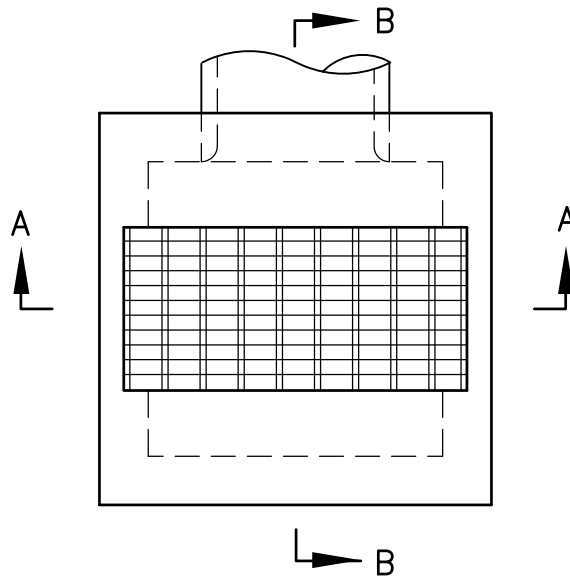
SAN DIEGO REGIONAL STANDARD DRAWING

SIDEWALK UNDERDRAIN PIPE

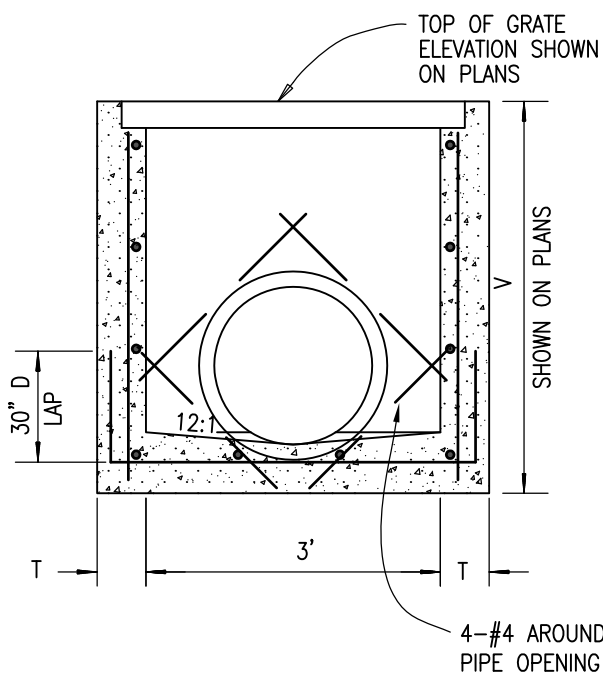
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

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

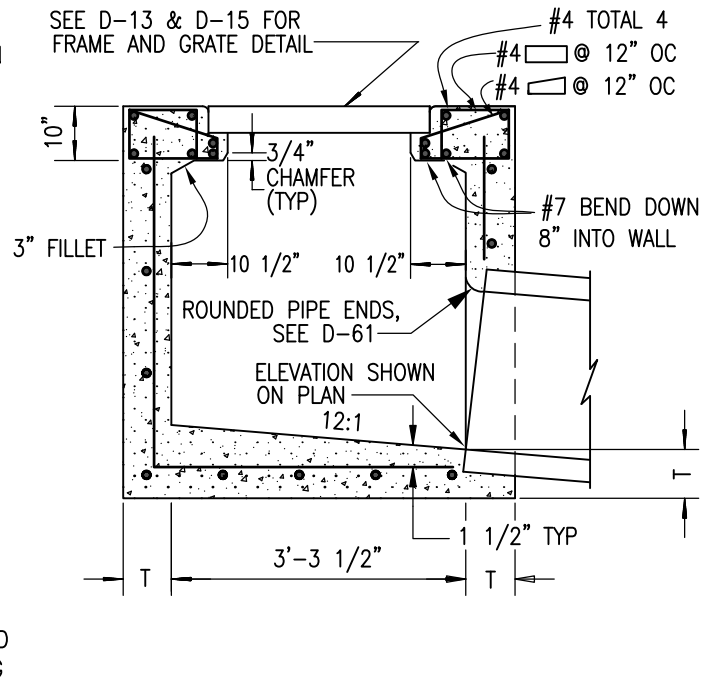
DRAWING
NUMBER **D-27**



PLAN



SECTION A-A

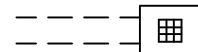



SECTION B-B

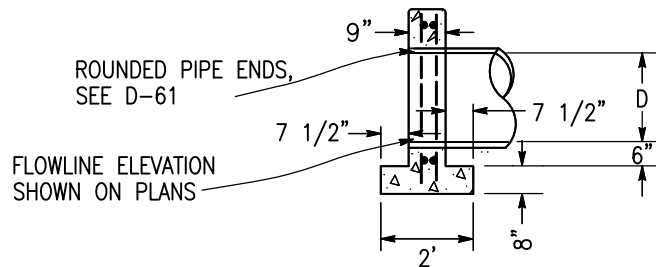
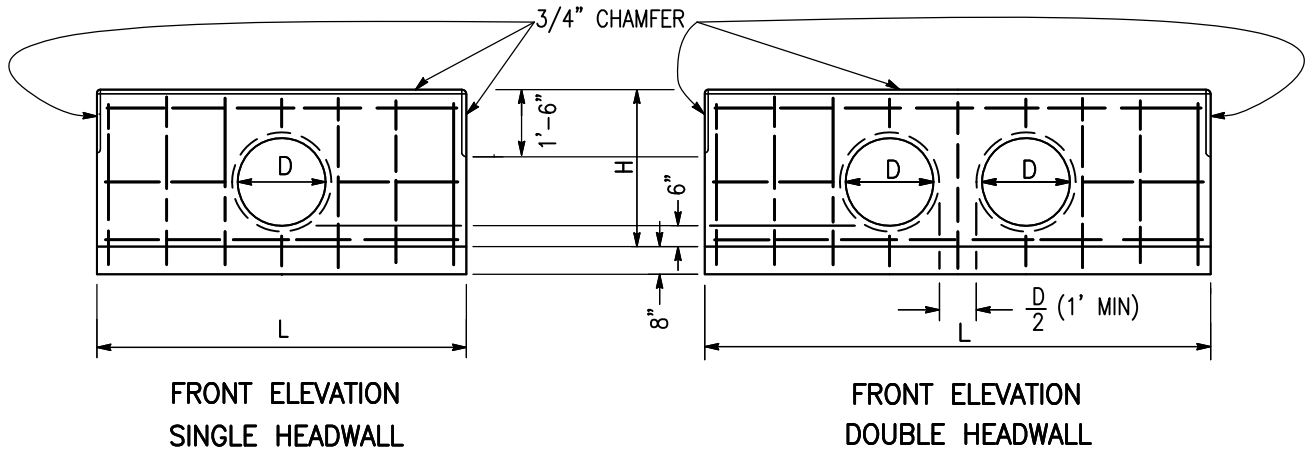
NOTES

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	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Solomon	7/79	CATCH BASIN - TYPE I		 12/17/2015 Chairperson R.C.E. 19246 Date	
Reformatted		T. Stanton	04/06				
Edited	S.S.	T. Regello	03/11				
Edited	T.R.	T. Regello	10/15				
						DRAWING NUMBER	D-29

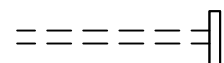



D	H	SINGLE			DOUBLE		
		L	STEEL (POUNDS)	CONCRETE (C.Y.)	L	STEEL (POUNDS)	CONCRETE (C.Y.)
12"	2'-8"	5'	35	0.60	8'	50	0.94
15"	2'-11"	6'	40	0.75	9'-6"	60	1.17
18"	3'-2"	7'	50	0.91	10'-6"	75	1.35
21"	3'-5"	7'-6"	60	1.02	11'-6"	90	1.52
24"	3'-8"	8'-6"	75	1.20	12'-6"	100	1.72
27"	3'-11"	9'-6"	85	1.39	14'	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

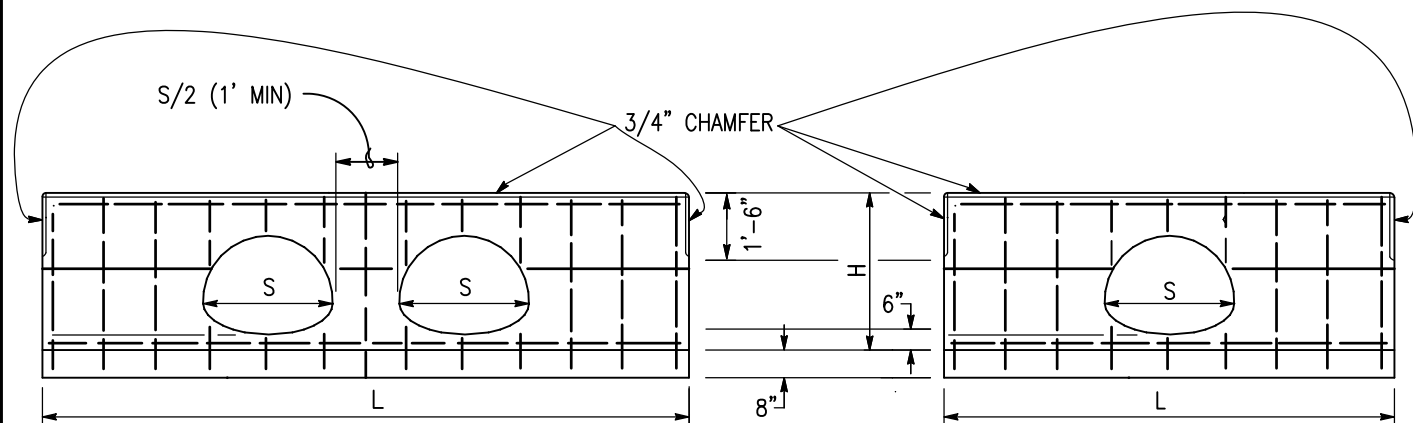
NOTES

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

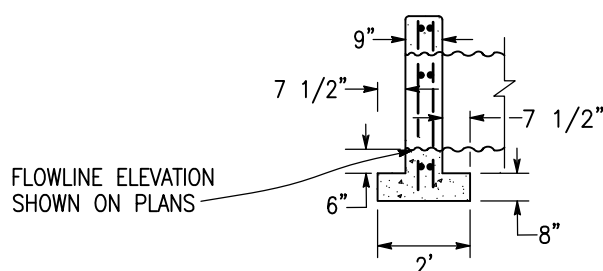


Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75	STRAIGHT HEADWALL - TYPE A (CIRCULAR PIPE)		 12/17/2015 Chairperson R.C.E. 19246 Date	
Reformatted		T. Stanton	04/06				
Edited		T. Stanton	02/09				
Edited	S.S.	T. Regello	03/11				
Edited	T.R.	T. Regello	10/15				
						DRAWING NUMBER	D-30



ELEVATION - DOUBLE HEADWALL

ELEVATION - SINGLE HEADWALL



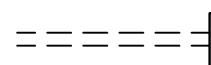
SECTION, SINGLE &
DOUBLE HEADWALLS

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

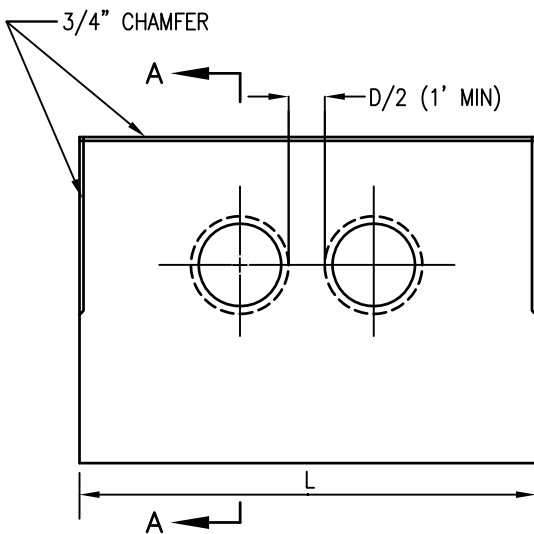
SAN DIEGO REGIONAL STANDARD DRAWING

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

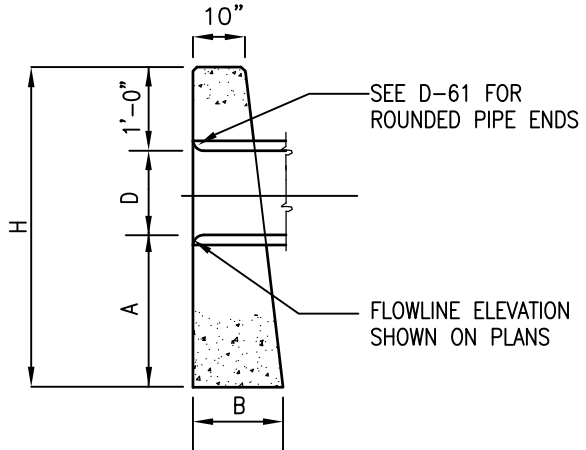
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

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

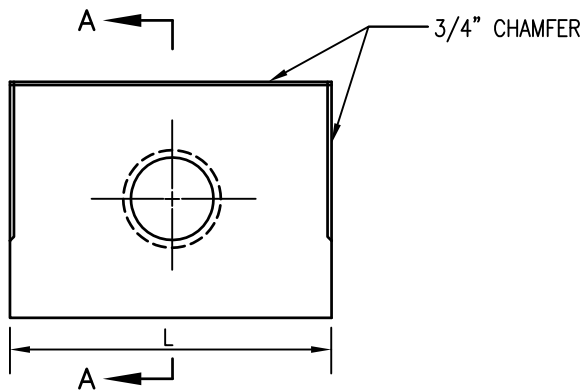
DRAWING
NUMBER **D-31**



DOUBLE PIPE
ELEVATION



SECTION A-A



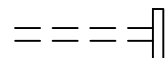
SINGLE PIPE
ELEVATION


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

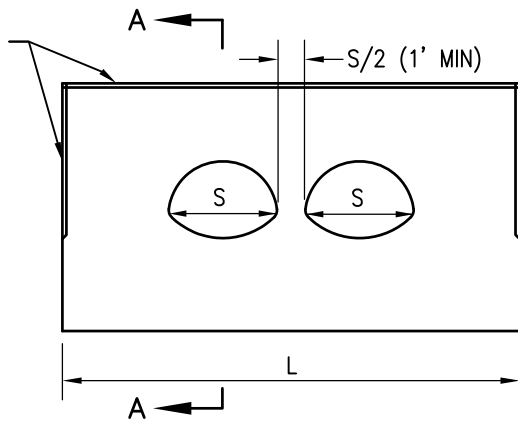
NOTES

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

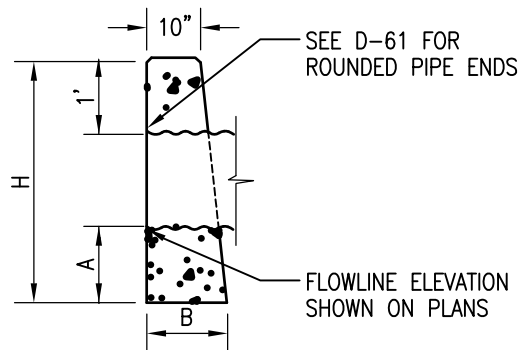
LEGEND ON PLANS



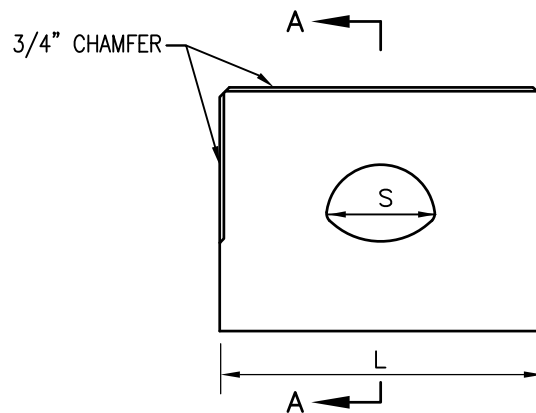
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75	STRAIGHT HEADWALL - TYPE B (CIRCULAR PIPE)		 12/17/2015 Chairperson R.C.E. 19246 Date	
Reformatted		T. Stanton	04/06				
Edited		T. Stanton	02/09				
Edited	S.S.	T. Regello	03/11				
Edited	T.R.	T. Regello	10/15				
						DRAWING NUMBER D-32	



DOUBLE PIPE
ELEVATION



SECTION A-A



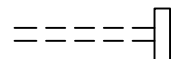
SINGLE PIPE
ELEVATION


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

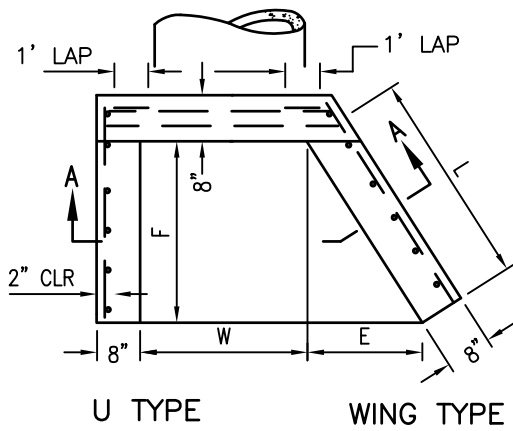
NOTES

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

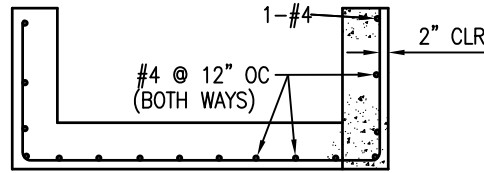
LEGEND ON PLANS



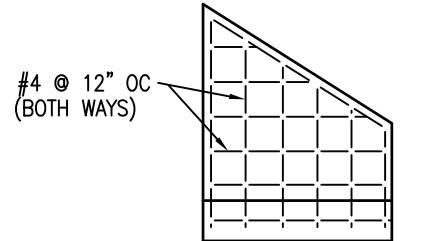
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75				
Reformatted		T. Stanton	04/06	STRAIGHT HEADWALL - TYPE B [CORRUGATED STEEL PIPE - ARCH]		 12/17/2015 Chairperson R.C.E. 19246 Date	
Edited		T. Stanton	02/09				
Edited	S.S.	T. Regello	03/11				
Edited	T.R.	T. Regello	10/15			DRAWING NUMBER D-33	



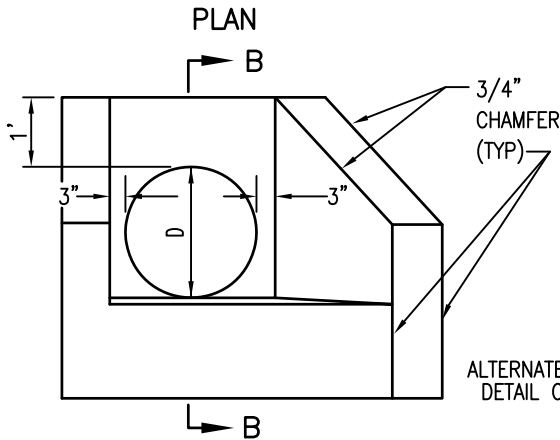
U TYPE WING TYPE



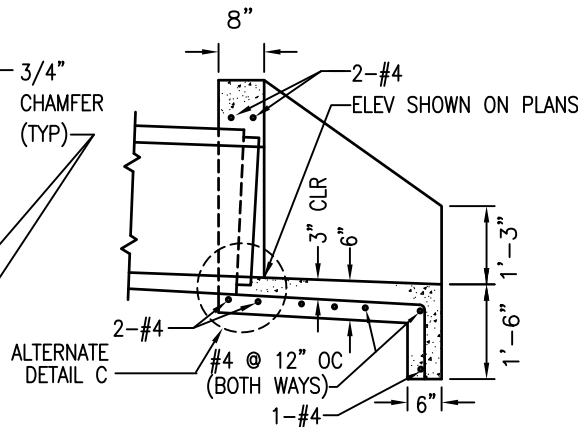
SECTION A-A



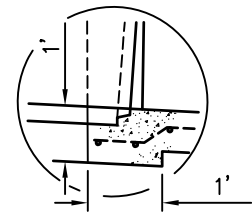
WING WALL REINFORCING



ELEVATION



SECTION B-B



ALT DETAIL C

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

NOTES

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

LEGEND ON PLANS



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

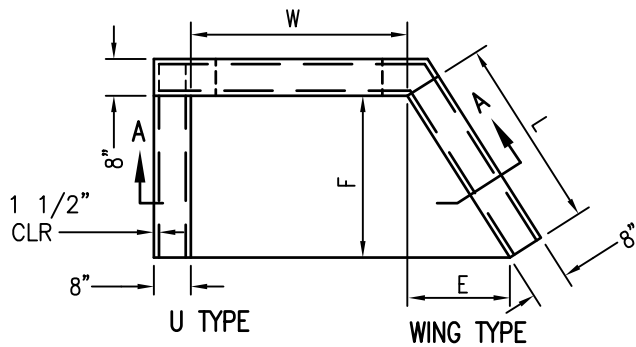
SAN DIEGO REGIONAL STANDARD DRAWING

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

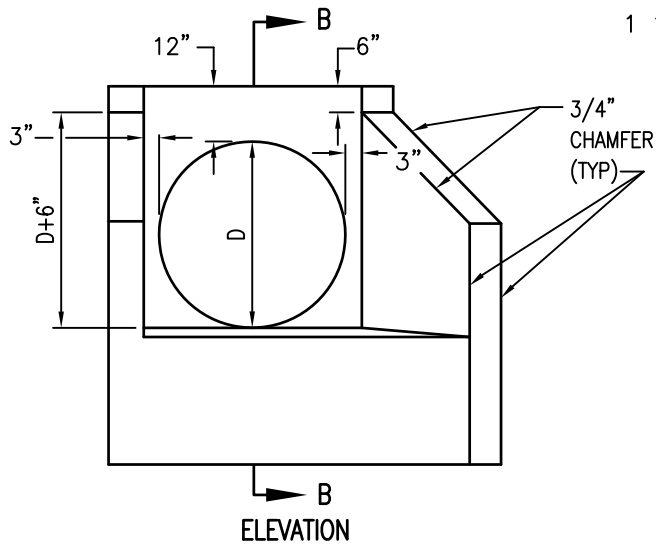
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

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

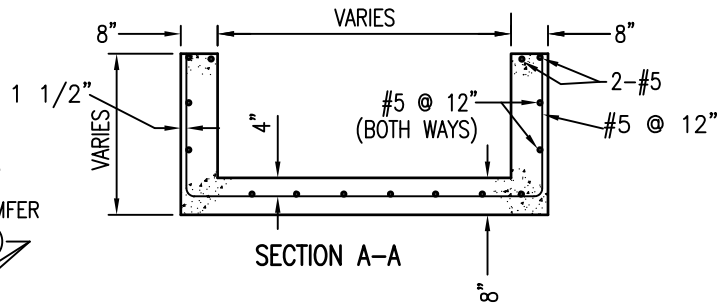
DRAWING
NUMBER **D-34**



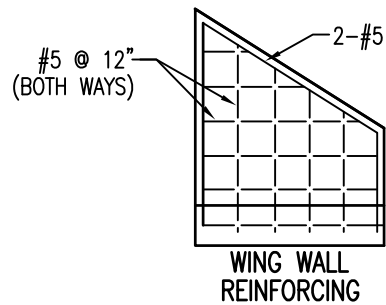
PLAN



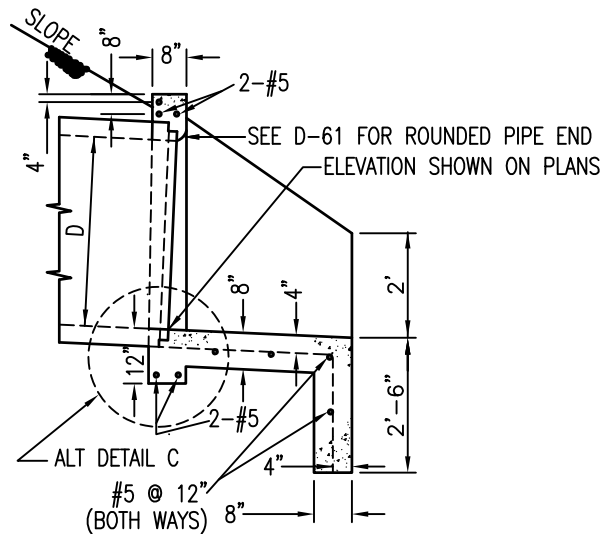
ELEVATION



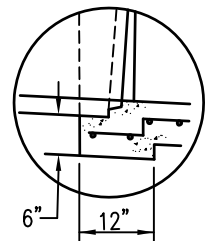
SECTION A-A



WING WALL
REINFORCING

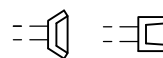


SECTION B-B



ALT DETAIL C

LEGEND ON PLANS



NOTE

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

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75	WING AND U TYPE HEADWALLS FOR 42" TO 84" PIPE		 Chairperson R.C.E. 19246 Date	
Reformatted		T. Stanton	04/06				
Edited		T. Stanton	02/09				
Edited	S.S.	T. Regello	03/11				
Edited	T.R.	T. Regello	10/15				
						DRAWING NUMBER	D-35A

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

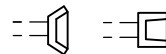
NOTE: DIMENSIONS E AND L APPLY TO WING TYPE ONLY.


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

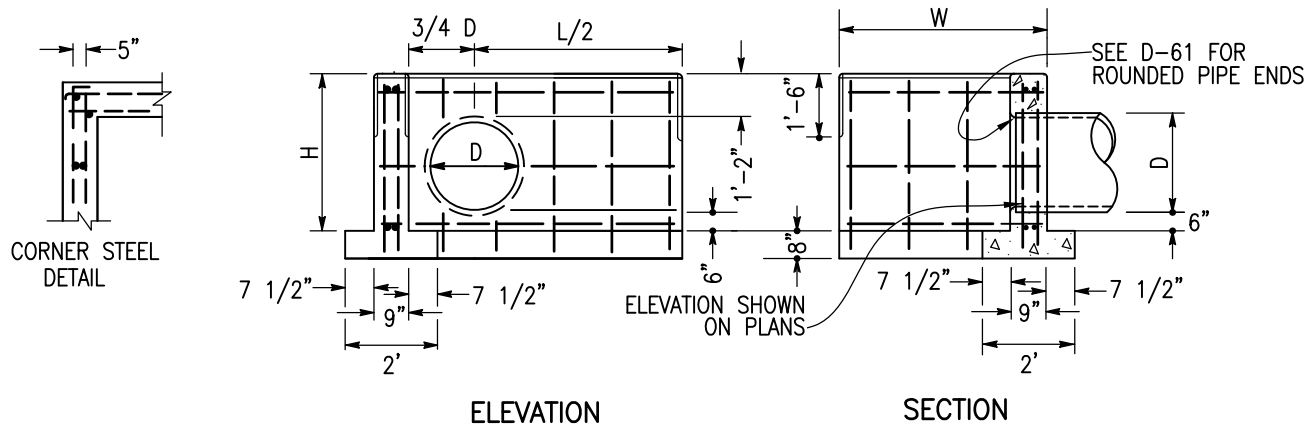
NOTES

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

LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75				
Reformatted		T. Stanton	04/06	WING AND U TYPE HEADWALLS FOR 42" TO 84" PIPE		 12/17/2015 Chairperson R.C.E. 19246 Date	
Edited		T. Stanton	02/09				
Edited	S.S.	T. Regello	03/11				
Edited	T.R.	T. Regello	10/15			DRAWING NUMBER D-35B	

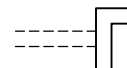


D	H	L/2	W									
			3'-4"		4'-10"		6'-4"		7'-10"		9'-4"	
			STEEL (LBS)	CONCRETE (C.Y.)	STEEL (LBS)	CONCRETE (C.Y.)	STEEL (LBS)	CONCRETE (C.Y.)	STEEL (LBS)	CONCRETE (C.Y.)	STEEL (LBS)	CONCRETE (C.Y.)
12"	2'-8"	2'-6"	50	0.79	60	0.98	—	—	—	—	—	—
15"	2'-11"	3'	55	0.91	65	1.11	—	—	—	—	—	—
18"	3'-2"	3'-6"	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

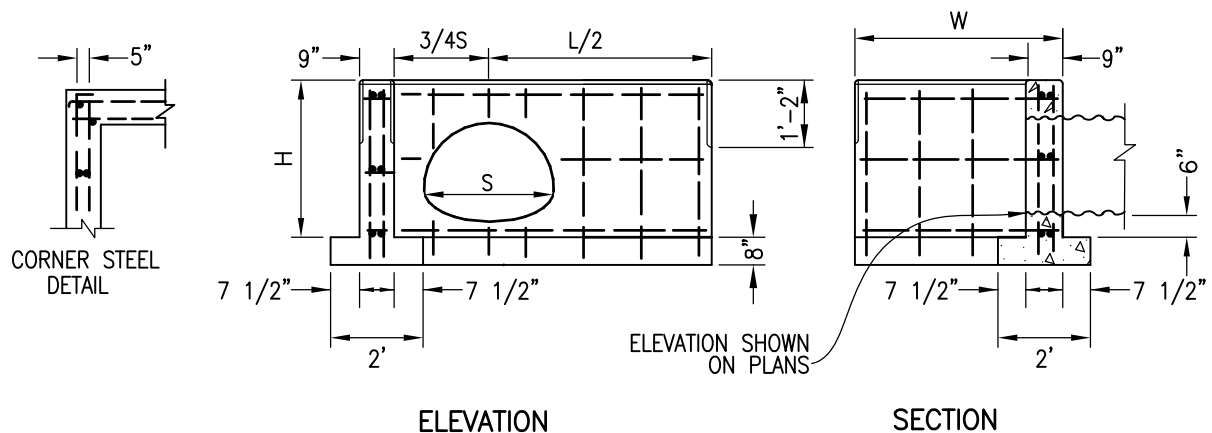
NOTES

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

LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75			<div>L TYPE HEADWALLS (CIRCULAR PIPES)</div>	
Reformatted		T. Stanton	04/06				
Edited		T. Stanton	02/09				
Edited	S.S.	T. Regello	03/11				
Edited	T.R.	T. Regello	10/15				
						DRAWING NUMBER	D-36

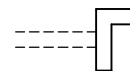



CSP ARCH SIZE	H	L/2	LENGTH OF W									
			3'-4"		4'-10"		6'-4"		7'-10"		9'-4"	
			STEEL (LBS)	CONCRETE (C.Y.)	STEEL (LBS)	CONCRETE (C.Y.)	STEEL (LBS)	CONCRETE (C.Y.)	STEEL (LBS)	CONCRETE (C.Y.)	STEEL (LBS)	CONCRETE (C.Y.)
18"x11"	2'-7"	2'-9"	50	0.84	60	1.03	70	1.21	80	1.39	90	1.57
21"x15"	2'-11"	3'-3"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

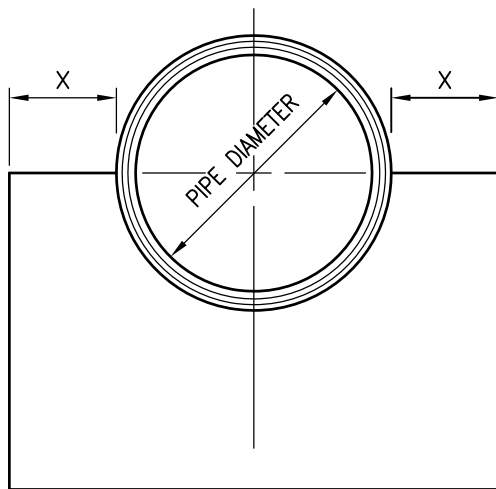
NOTES

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

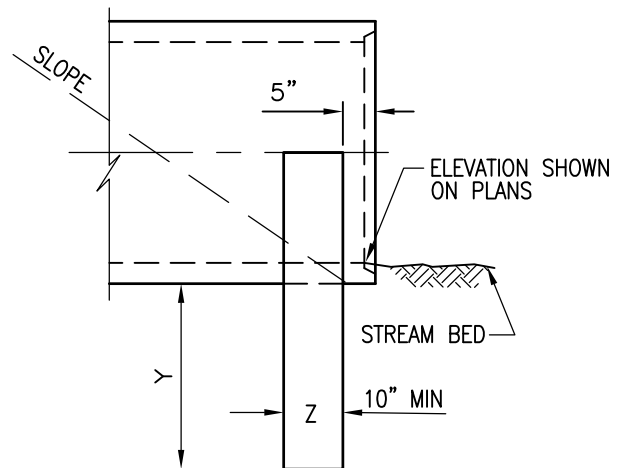
LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75				
Reformatted		T. Stanton	04/06	L TYPE HEADWALLS [CORRUGATED STEEL PIPE - ARCH]		 12/17/2015 Chairperson R.C.E. 19246 Date	
Edited	S.S.	T. Regello	03/11			DRAWING NUMBER D-37	
Edited	T.R.	T. Regello	10/15				



FACE ELEVATION



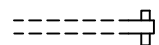
SIDE ELEVATION


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

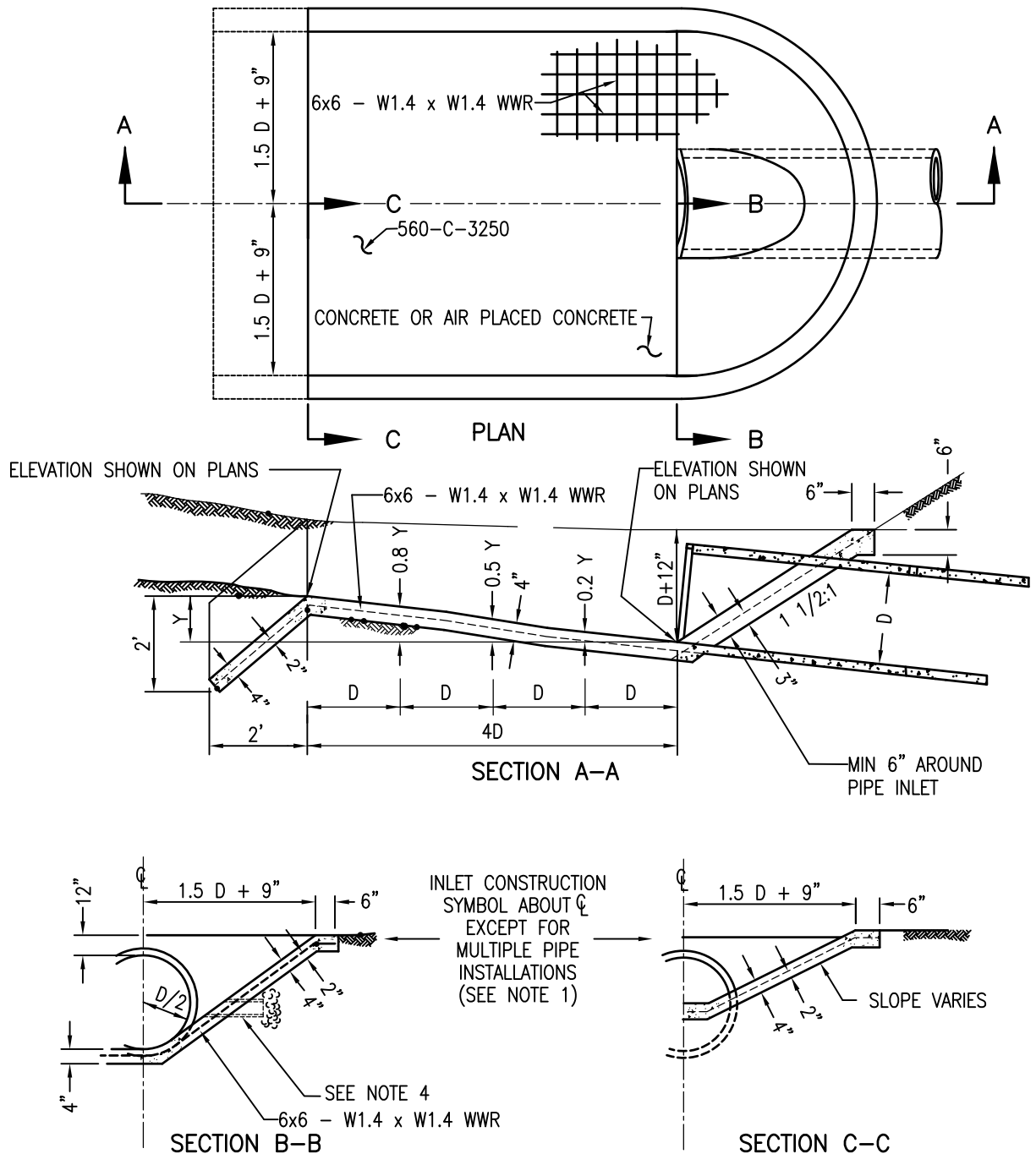
NOTES

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

LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75				
Reformatted		T. Stanton	04/06	CURTAIN WALL		 12/17/2015 Chairperson R.C.E. 19246 Date	
Edited	S.S.	T. Regello	03/11				
Edited	T.R.	T. Regello	10/15				
						DRAWING NUMBER D-38	



NOTES

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

LEGEND ON PLANS



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

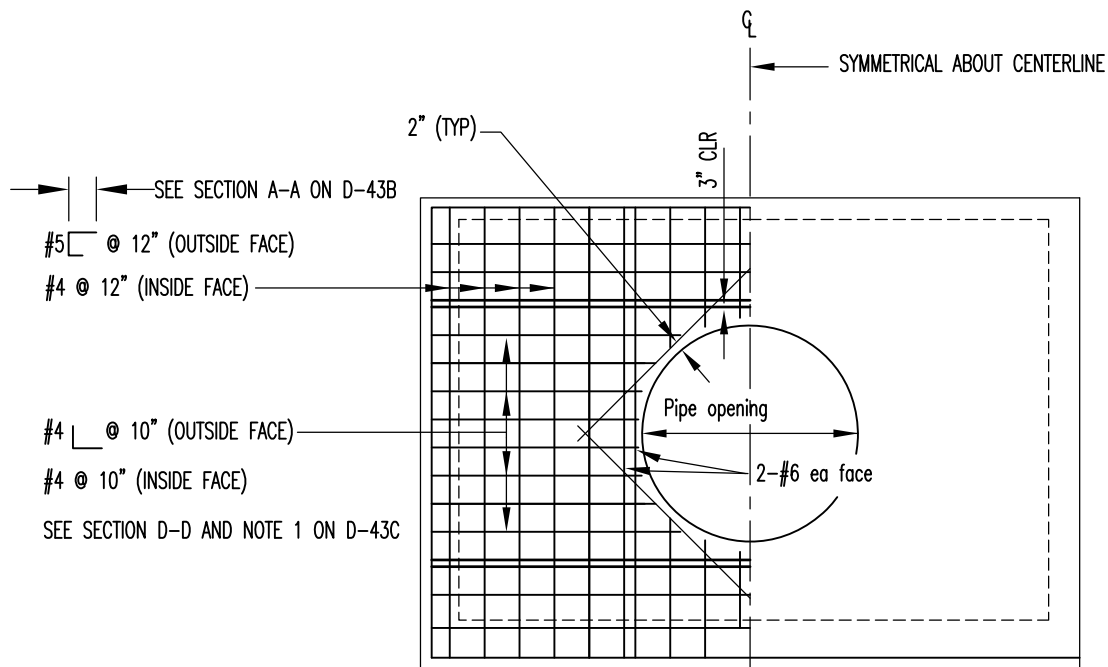
SAN DIEGO REGIONAL STANDARD DRAWING

INLET APRON FOR CULVERTS UP TO 42" DIAMETER

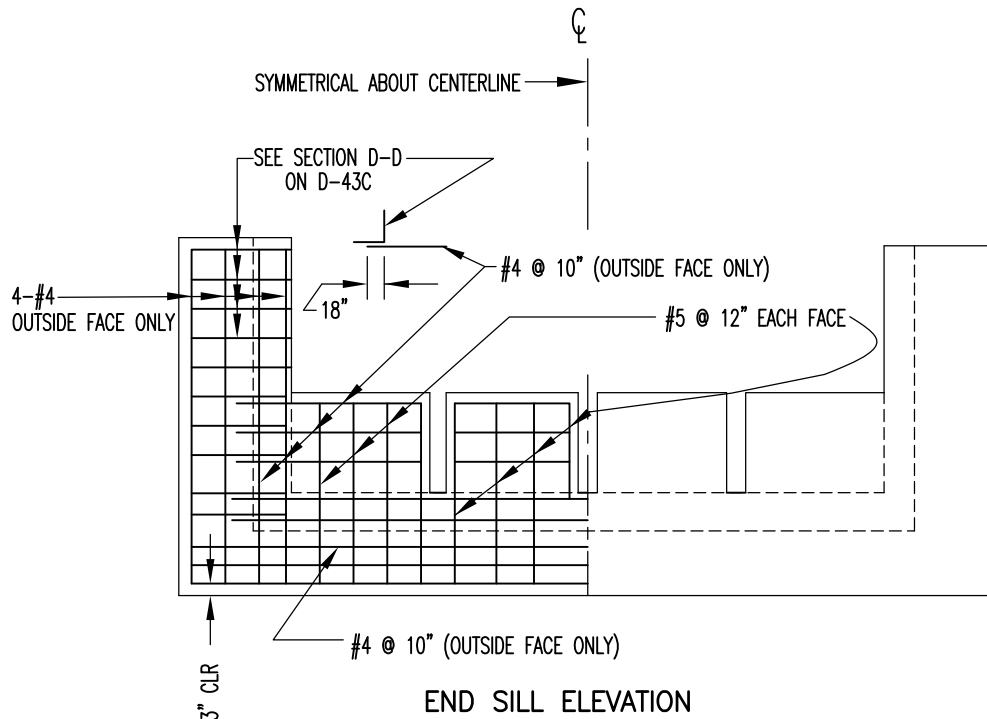
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

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


DRAWING
NUMBER **D-39**

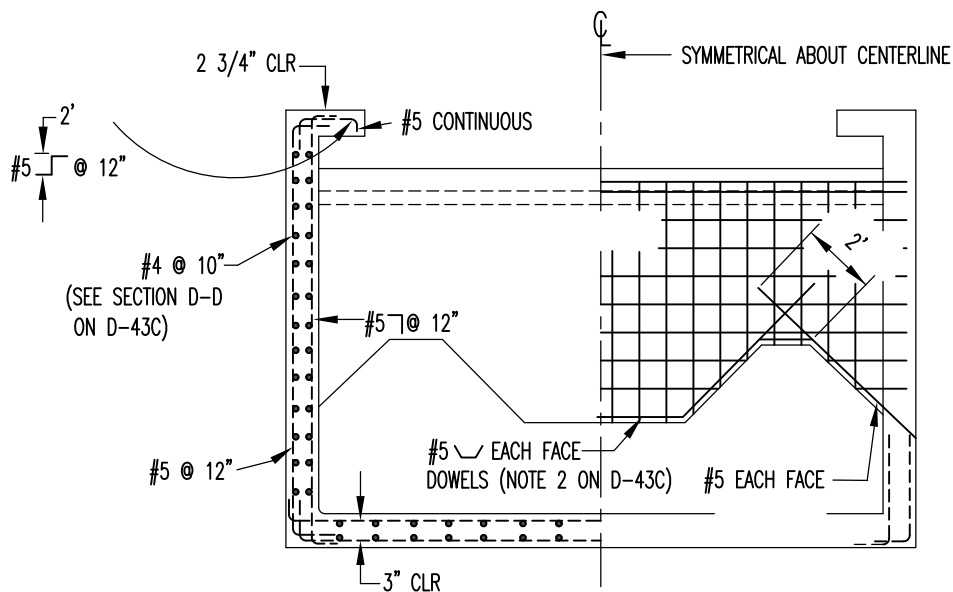
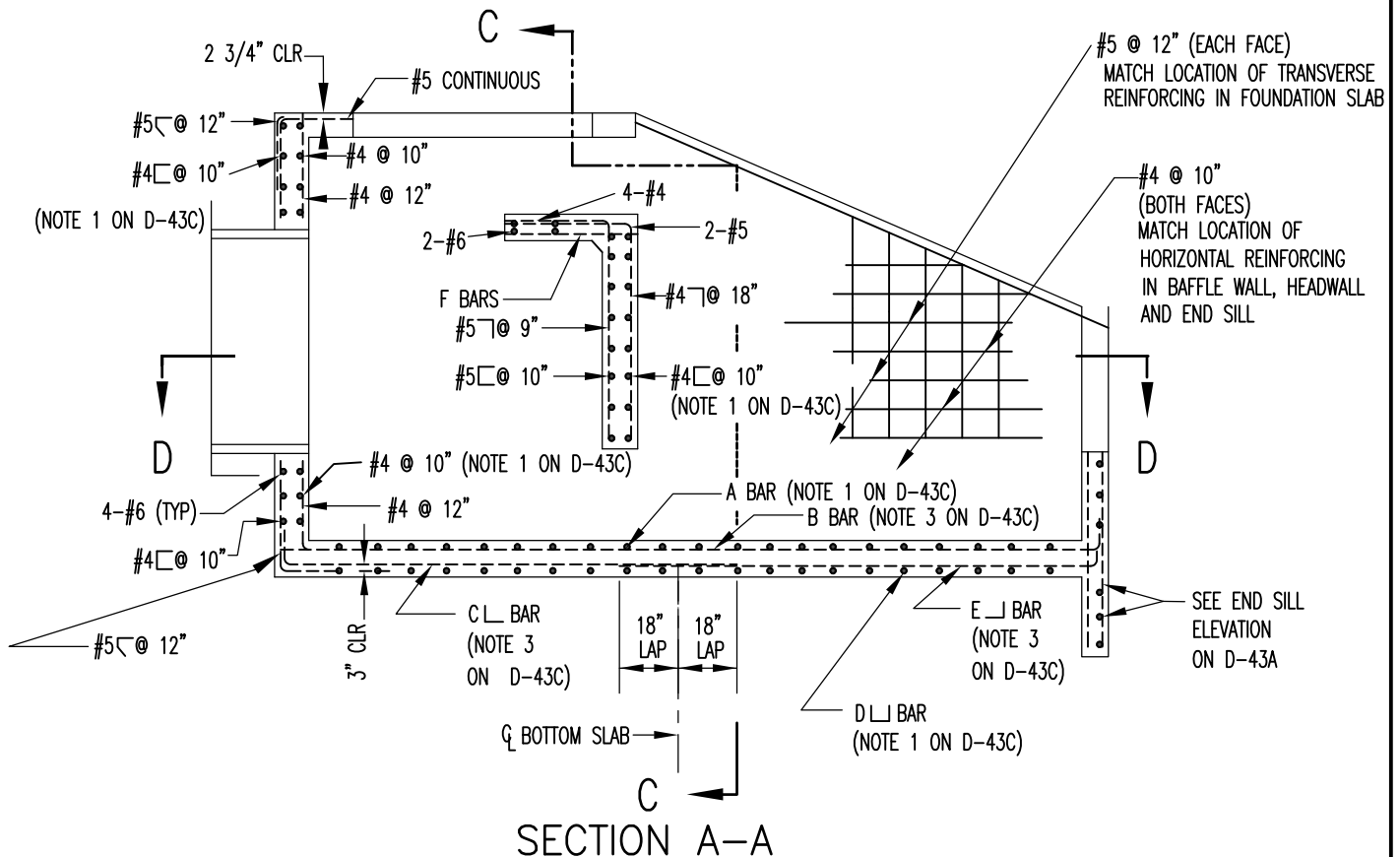


HEADWALL ELEVATION



END SILL ELEVATION

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75	CONCRETE ENERGY DISSIPATER (REINFORCEMENT) 36" TO 72" DIAMETER PIPE		 12/17/2015 Chairperson R.C.E. 19246 Date	
Reformatted		T. Stanton	04/06				
Edited		T. Stanton	02/09				
Edited	S.S.	T. Regello	03/11				
Edited	T.R.	T. Regello	10/15				
						DRAWING NUMBER	D-43A



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

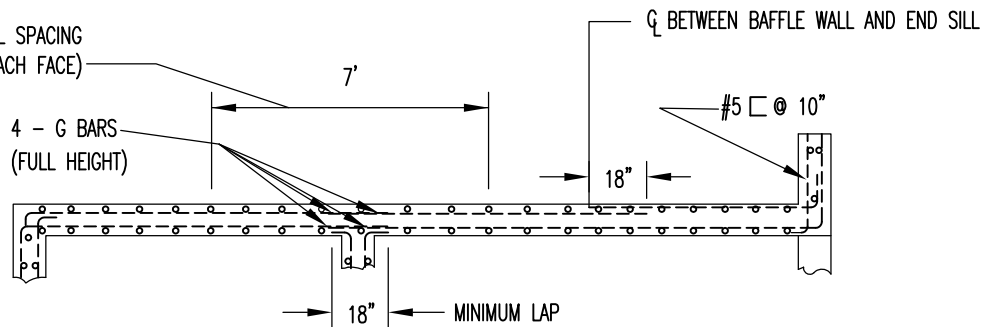
CONCRETE ENERGY DISSIPATER (REINFORCEMENT) 36" TO 72" DIAMETER PIPE

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

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

DRAWING
NUMBER **D-43B**

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




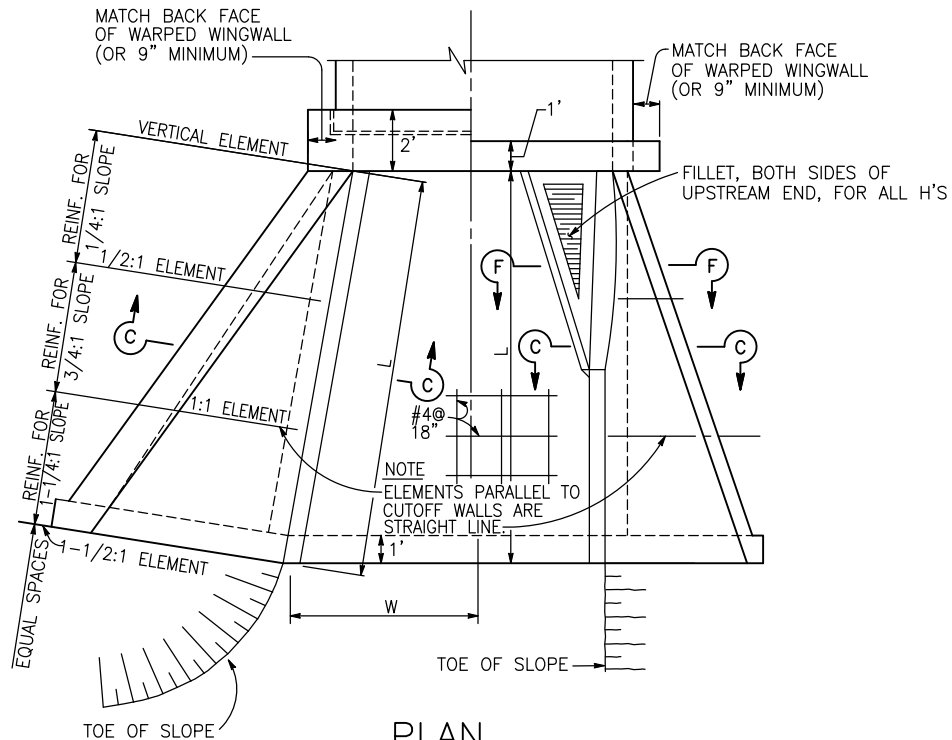
SECTION D-D

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		

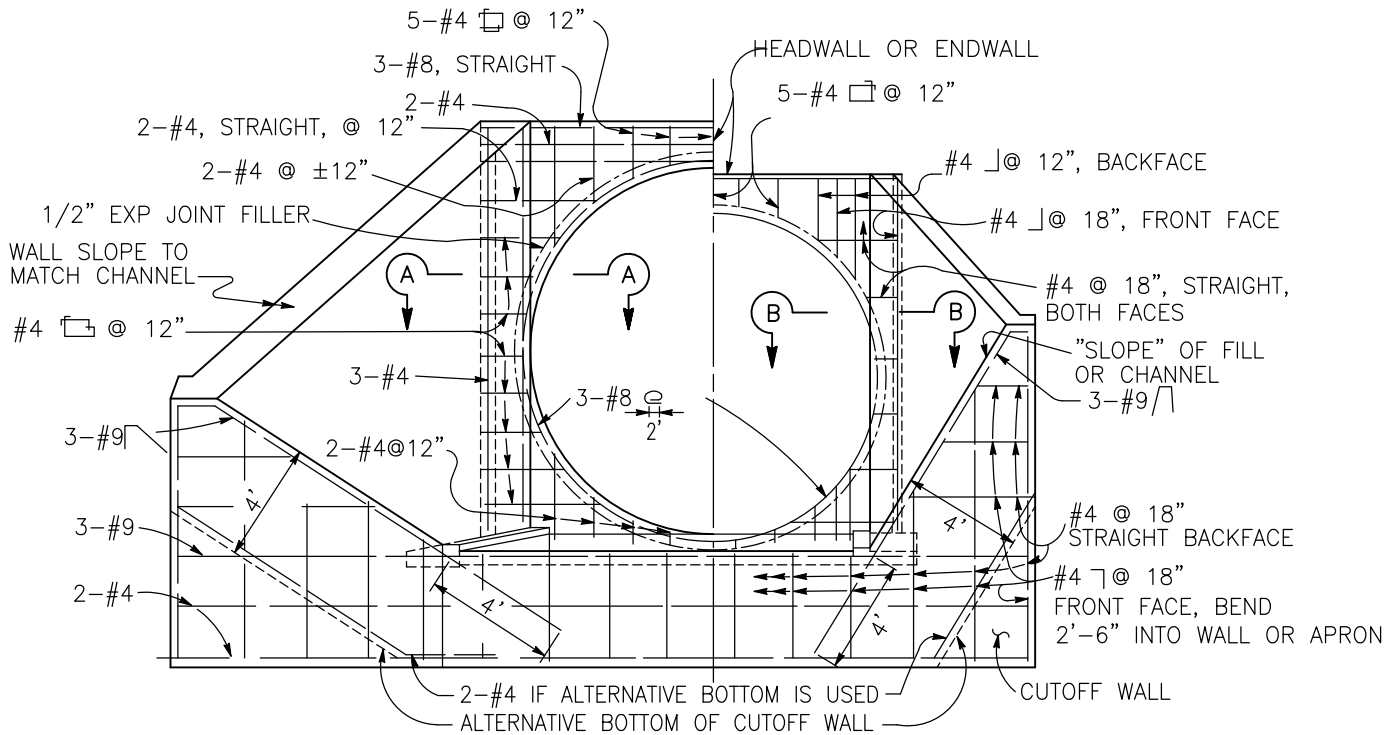
NOTES

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	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75	CONCRETE ENERGY DISSIPATER (REINFORCEMENT) 36" TO 72" DIAMETER PIPE		 12/17/2015 Chairperson R.C.E. 19246 Date	
Reformatted		T. Stanton	04/06				
Edited		T. Stanton	02/09				
Edited	S.S.	T. Regello	03/11				
Edited	T.R.	T. Regello	10/15				
						DRAWING NUMBER	D-43C



PLAN



TYPICAL FOR MAXIMUM H > 10'

TYPICAL FOR MAXIMUM H ≤ 10'

END ELEVATION

NOTE

SEE NOTES ON D-44D.

IF AT UPSTREAM END, FILLET IS NOT SHOWN

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

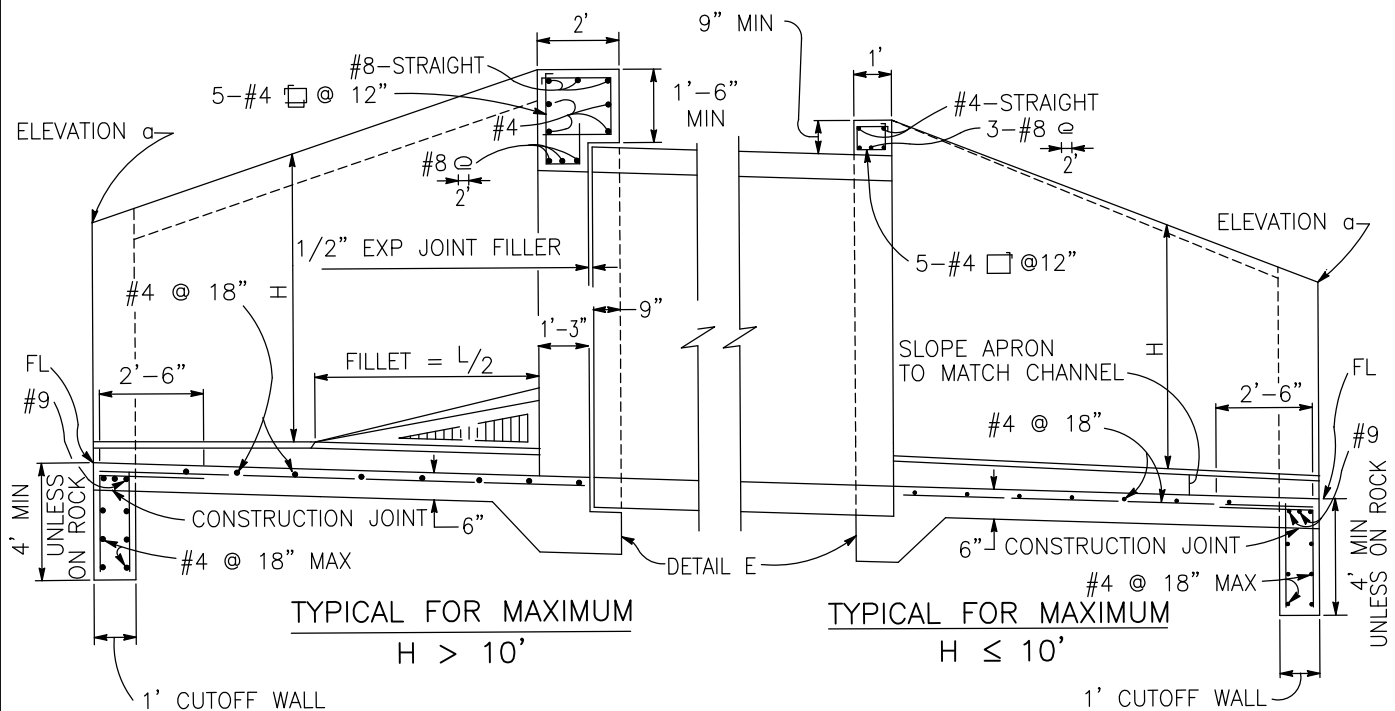
SAN DIEGO REGIONAL STANDARD DRAWING

PIPE CULVERT - HEADWALLS,
ENDWALLS & WARPED WINGWALLS

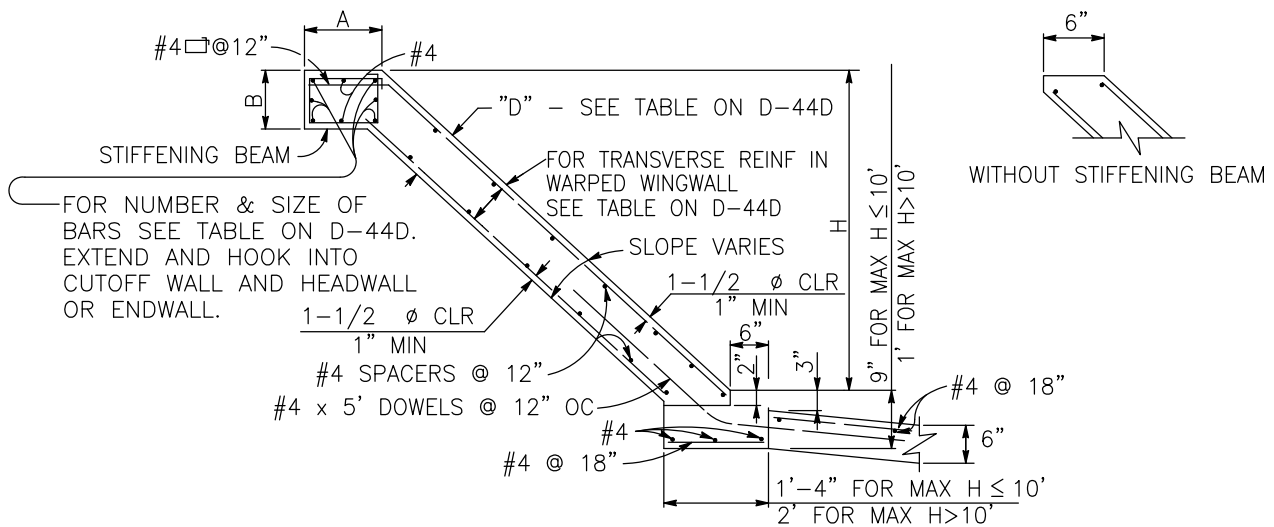
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

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

DRAWING
NUMBER **D-44A**



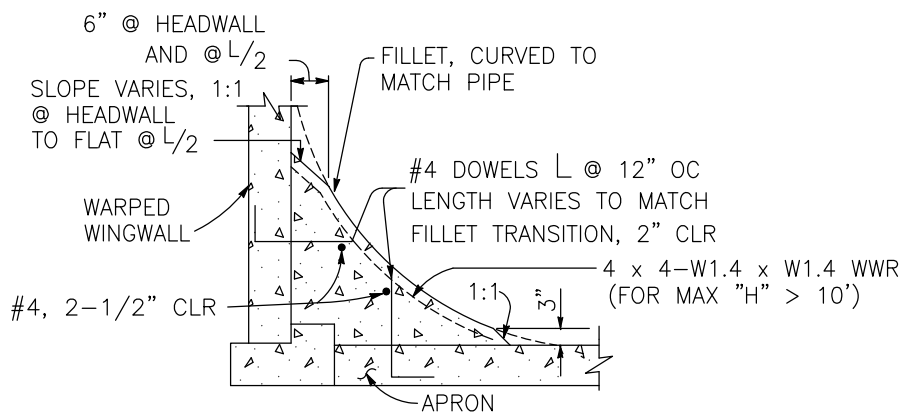
PART LONGITUDINAL SECTION



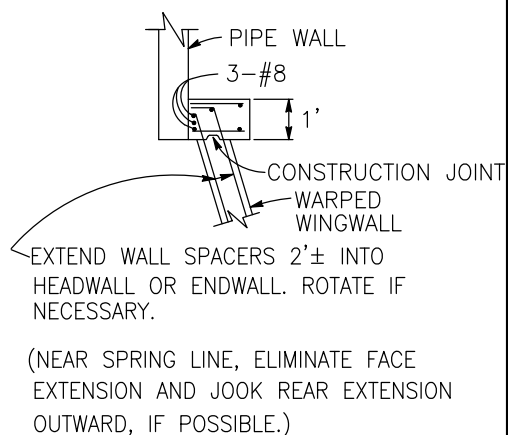
NOTES

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

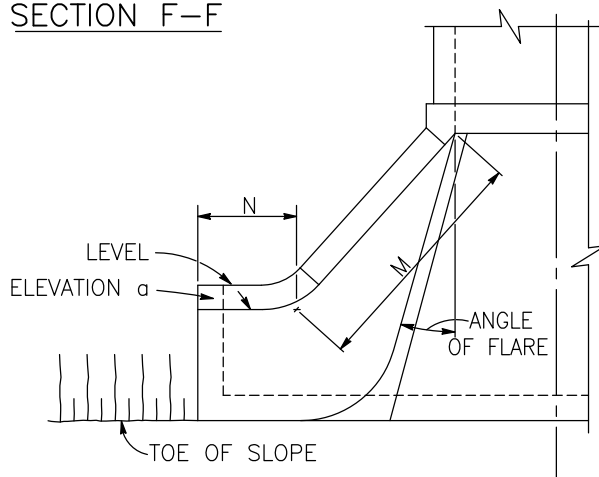
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75			<div>12/17/2015</div> <div>Chairperson R.C.E. 19246 Date</div> <div>DRAWING NUMBER D-44B</div>	
Reformatted		T. Stanton	04/06				
Edited	S.S.	T. Regello	03/11				
Edited	T.R.	T. Regello	10/15				
				PIPE CULVERT - HEADWALLS, ENDWALLS & WARPED WINGWALLS			



SECTION F-F

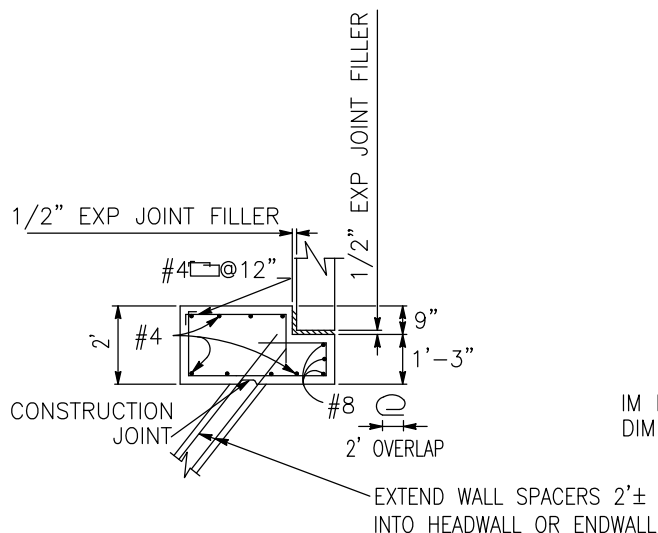


SECTION B-B

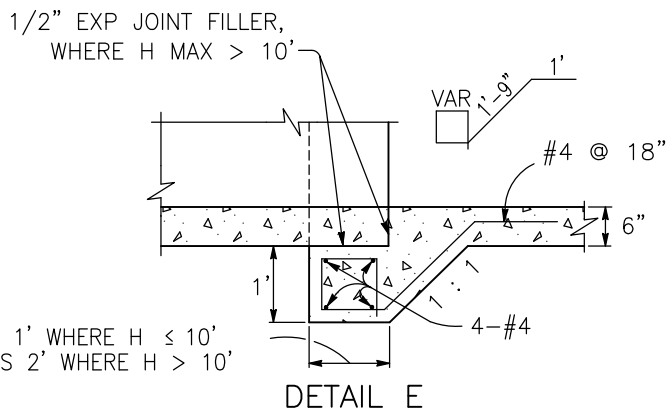


ALTERNATIVE WARPED WINGWALL

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



SECTION A-A



DETAIL E

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

SAN DIEGO REGIONAL STANDARD DRAWING

PIPE CULVERT - HEADWALLS, ENDWALLS & WARPED WINGWALLS

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

M. Stanton 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

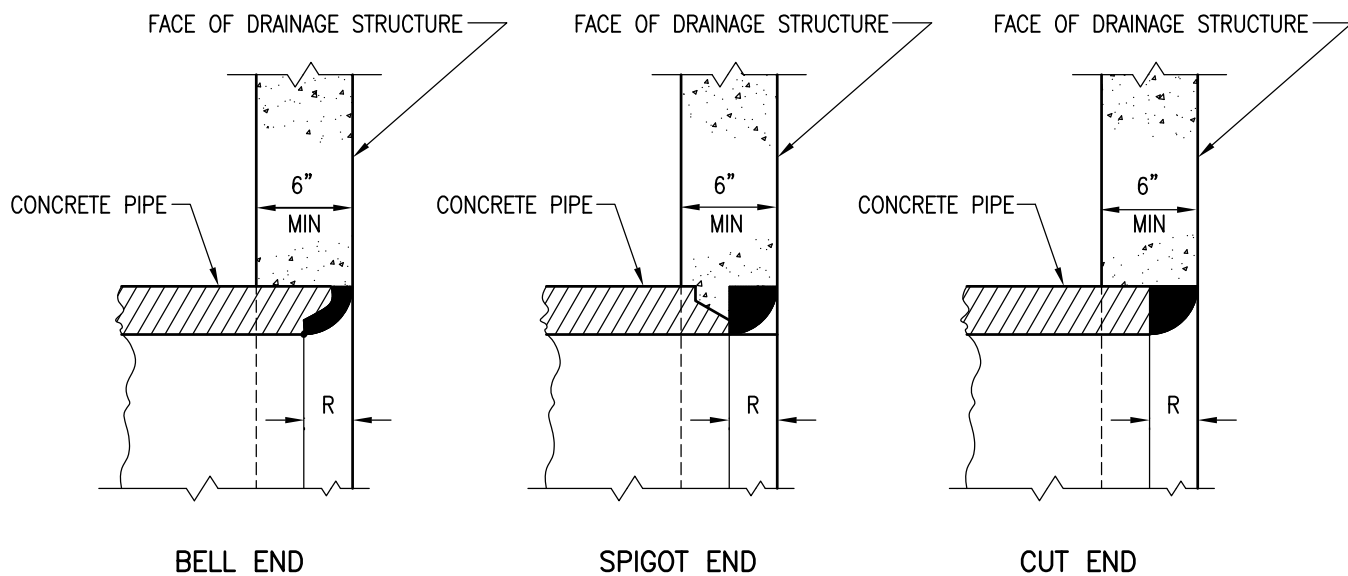
PIPE CULVERT - HEADWALLS, ENDWALLS & WARPED WINGWALLS

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

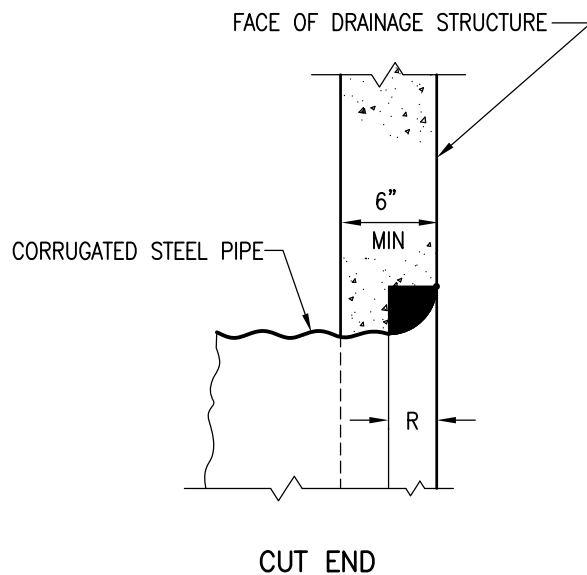
 12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING
NUMBER **D-44D**

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




R = THICKNESS OF PIPE

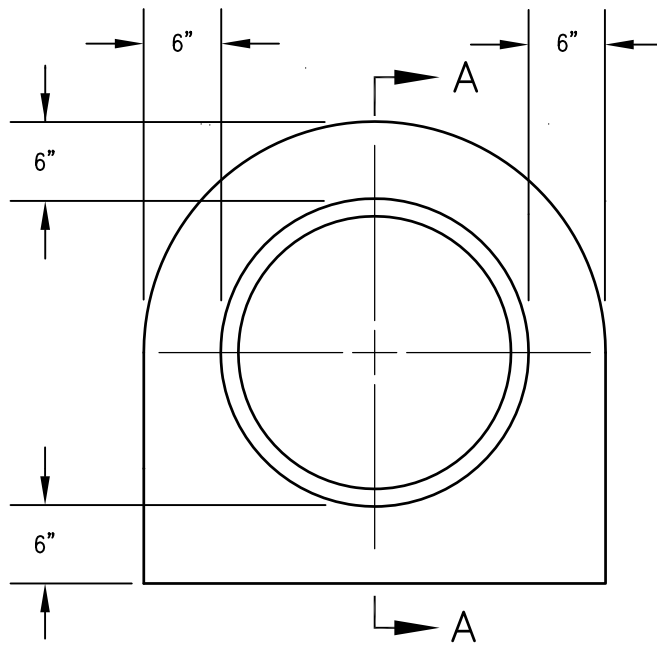


R = $\frac{\text{INSIDE DIAMETER OF PIPE}}{10}$

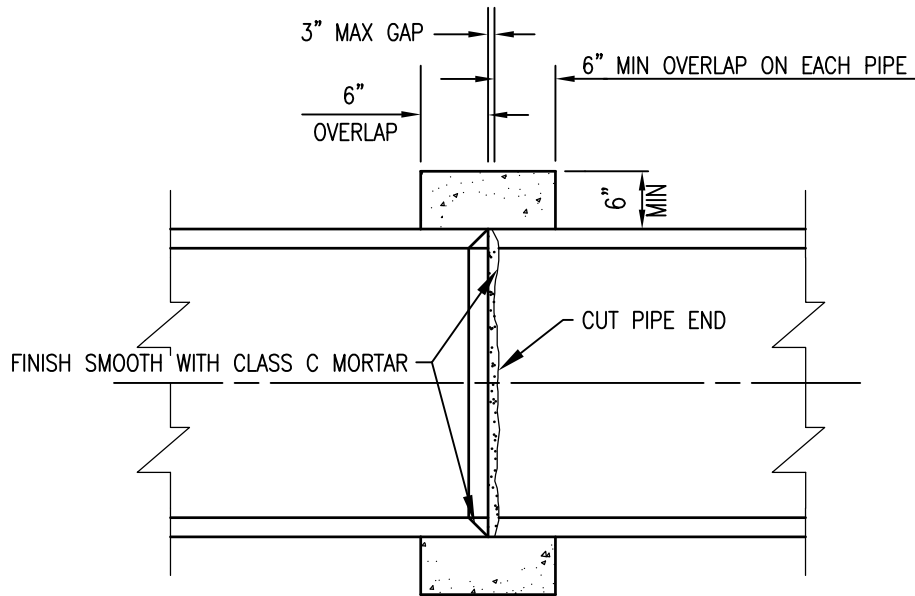
NOTE

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

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75				
Reviewed		T. Stanton	04/06	ROUNDED PIPE ENDS IN DRAINAGE STRUCTURES		 12/17/2015 Chairperson R.C.E. 19246 Date	
Edited	S.S.	T. Regello	03/11				
Edited	T.R.	T. Regello	10/15				
						DRAWING NUMBER D-61	



ELEVATION

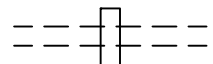



SECTION A-A

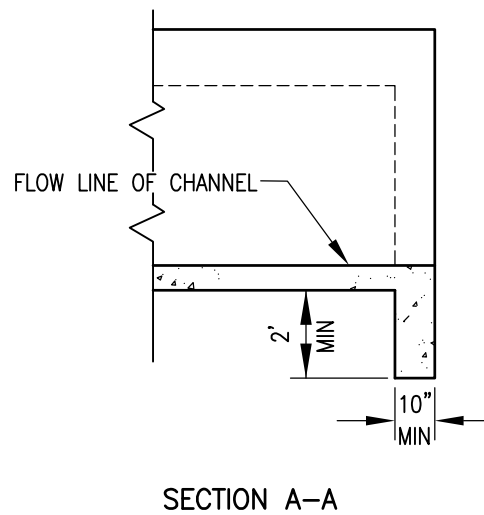
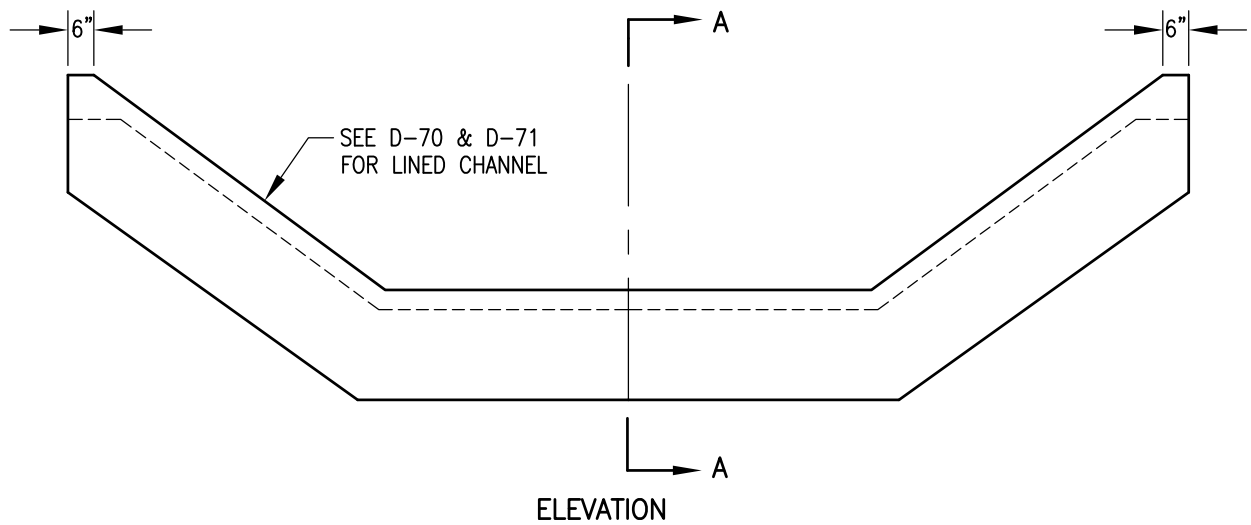
NOTES

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



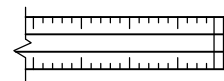
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Reviewed		T. Stanton	04/06	PIPE COLLAR	 12/17/2015 Chairperson R.C.E. 19246 Date
Edited	S.S.	T. Regello	03/11		
Edited	T.R.	T. Regello	10/15		
					DRAWING NUMBER D-62



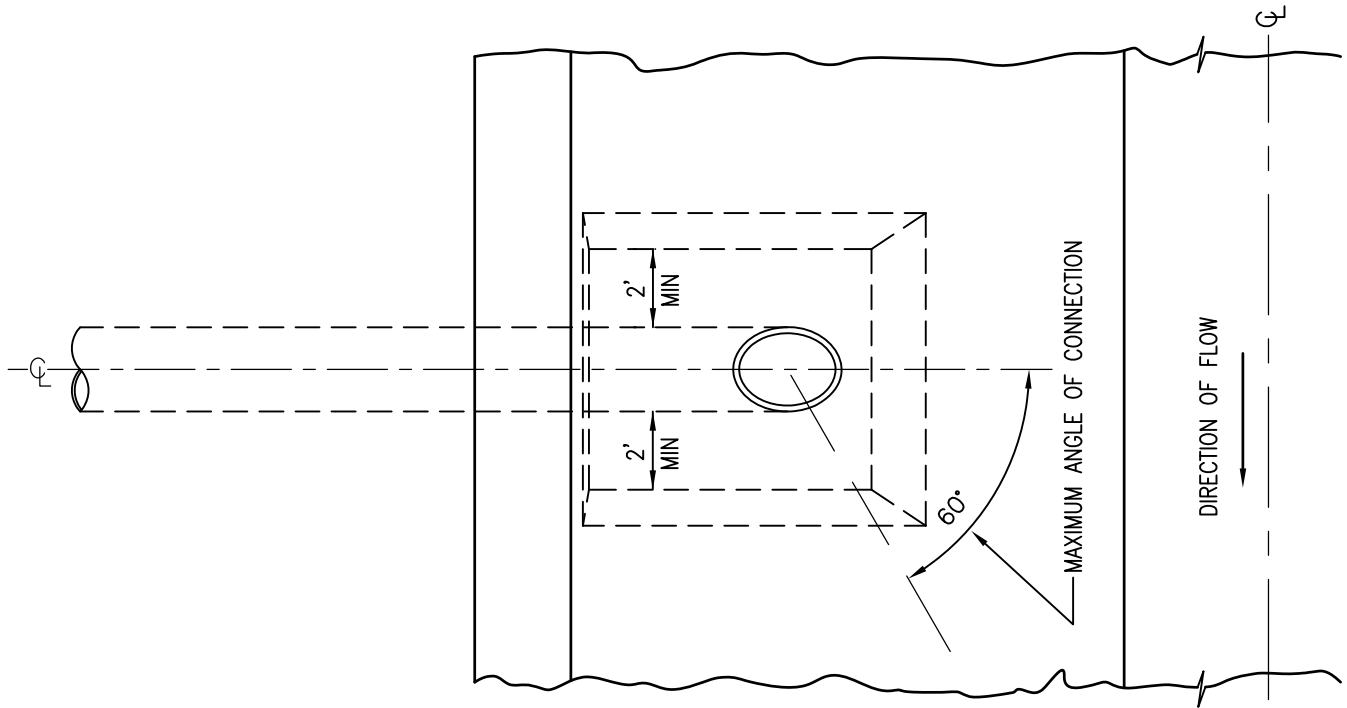
NOTES

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

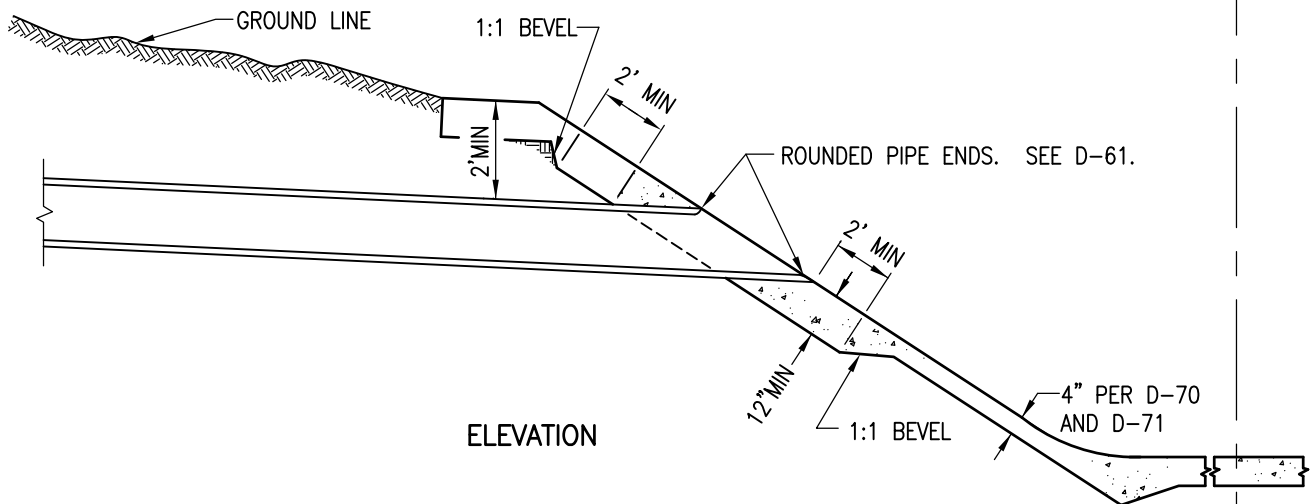
LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	
ORIGINAL		Kercheval	12/75	CUTOFF WALL FOR DRAINAGE CHANNEL	
Reviewed		T. Stanton	04/06		
Edited	S.S.	T. Regello	03/11		
Edited	T.R.	T. Regello	10/15		
				RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
				 12/17/2015 Chairperson R.C.E. 19246 Date	
				DRAWING NUMBER D-72	



PLAN

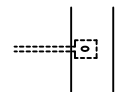


ELEVATION

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

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

DRAWING
NUMBER **D-73**

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

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

DRAWING
NUMBER **D-76A**

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

SPAN	2'		3'		4'		5'	
	1'-6"	2'	2'	3'	2'	3'	4'	5'
HEIGHT	A	A	A	A	A	A	A	A
STRENGTH CLASSIFICATION								
MAX FILL OVER TOP	66	38	38	66	28	37	50	12
TOP SLAB	T ₁	6	6	6	6	6	6	6
BOTTOM SLAB	T ₂	6	6	6	6	6	6	6
SIDEWALLS	T ₃	6	6	6	6	6	6	6
SIZE BAR #	4	4	4	4	4	4	4	4
SPACING	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2
LENGTH	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2
"d" DIST. TOP SLAB-NO. OF BARS	2	2	2	2	2	2	2	2
"e" BARS BOTTOM SLAB-NO. OF BARS	18	18	18	18	18	18	18	18
SPACING	12	12	12	12	12	12	12	12
CONCRETE: C.Y. PER LIN. FT.	17	18	23	27	31	33	40	43
REINFORCING LBS. PER LIN. FT.	27	29	34	36	44	45	52	64
QUAN.								

NOTE


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

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**

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		A	B		A	B		A	B	
MAX. FILL OVER TOP		10	18		10	18		10	18		10	18		9	17		9	17	
TOP SLAB	T ₁	8	1/4	8	1/4	8	1/4	8	1/4	8	1/4	8	1/4	8	1/4	8	1/4	8	1/4
BOTTOM SLAB	T ₂	6	3/4	8	6	3/4	8	6	3/4	8	6	3/4	8	6	3/4	8	6	3/4	8
SIDEWALLS	T ₃	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
SIZE BAR #		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
SPACING		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
LENGTH		7-3	7-3	7-3	7-3	7-3	7-3	7-3	7-3	7-3	7-3	7-3	7-3	7-3	7-3	7-3	7-3	7-3	7-3
"d" DIST. TOP SLAB-NO. OF		7	4	7	4	7	4	7	4	7	4	7	4	7	4	7	4	7	4
BARS	BTOM SLAB-NO. OF	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	NUMBER	12		12		12		12		12		12		12		12		12	
CONCRETE: C.Y. PER LIN. FT.		40	42	43	46	47	50	58	52	54	60	66	66	56	58	65	71	78	88
REINFORCING LBS. PER LIN. FT.		64	63	66	65	69	67	74	70	70	80	91	91	73	78	92	112	127	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-76C**

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

SPAN		7'											
HEIGHT		3'			4'			5'			6'		
STRENGTH CLASSIFICATION		A	B	C	A	B	C	A	B	C	A	B	C
		16	26	35	16	26	35	16	26	35	16	26	35
MAX FILL OVER TOP		16	26	35	16	26	35	16	26	35	16	26	35
TOP SLAB	T ₁	7 1/4	8 1/4	7 1/4	8 1/4	7 1/4	8 1/4	7 1/4	8 1/4	7 1/4	8 1/4	7 1/4	8 1/4
BOTTOM SLAB	T ₂	7 1/2	8 3/4	7 1/2	8 3/4	7 1/2	8 3/4	7 1/2	8 3/4	7 1/2	8 3/4	7 1/2	8 3/4
SIDEWALLS	T ₃	6	7	8 1/2	6	7	8 1/2	6	7	8 1/2	6	7	8 1/2
SIZE BAR #	"a"	5	5	5	5	5	5	5	5	5	5	5	5
SPACING		9	7	9	9	7	9	9	7	9	9	7	9
LENGTH		6-8	6-9	6-8	6-8	6-9	6-8	6-9	6-8	6-9	6-8	6-9	6-8
SIZE BAR #	"b"	5	5	5	5	5	5	5	5	5	5	5	5
SPACING		9	7	9	9	7	9	9	7	9	9	7	9
DIMENSION "X"		1-3	1-4	1-3	1-4	1-3	1-4	1-3	1-4	1-3	1-4	1-3	1-4
LENGTH		3-1	3-2	3-1	3-2	3-1	3-2	3-1	3-2	3-1	3-2	3-1	3-2
SIZE BAR #	"c"	5	5	5	5	5	5	5	5	5	5	5	5
SPACING		9	7	9	9	7	9	9	7	9	9	7	9
DIMENSION "Y"		1-10	1-11	1-10	1-11	1-10	1-11	1-10	1-11	1-10	1-11	1-10	1-11
LENGTH		5-2	5-4	6-2	6-4	7-2	7-4	7-10	8-2	8-4	8-10	9-2	9-4
SIZE BAR #	"c ₁ "	5	5	5	5	5	5	5	5	5	5	5	5
SPACING		9	7	9	9	7	9	9	7	9	9	7	9
DIMENSION "Y"		1-10	1-11	1-10	1-11	1-10	1-11	1-10	1-11	1-10	1-11	1-10	1-11
LENGTH		3-8	3-10	3-8	3-10	3-8	3-10	3-8	3-10	3-8	3-10	3-8	3-10
TOP SLAB-NO. OF BARS	"d"	7	4	7	4	7	4	7	4	7	4	7	4
BOTTOM SLAB-NO. OF BARS	"e"	4	4	4	4	4	4	4	4	4	4	4	4
SPACING		18	18	18	18	18	18	18	18	18	18	18	18
SPACERS TOTAL NUMBER		24	28	28	28	28	28	28	28	28	28	28	28
CONCRETE: C.Y. PER LIN. FT.		47	56	51	60	55	64	78	58	68	84	62	73
REINFORCING LBS. PER LIN. FT.		107	130	114	138	118	143	168	125	150	176	132	158
QUAN													

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

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-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		A	B		A	B	
MAX FILL OVER TOP		13	21		13	21		13	21		13	21		13	21		13	21	
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	7 1/4	8 1/2	7 1/4	8 1/2	7 1/4	8 1/2	7 1/4	8 1/2	7 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	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
	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	6 1/2	7 1/2	6 1/2	7 1/2	6 1/2	7 1/2	6 1/2	7 1/2	6 1/2
	SIZE BAR #		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	SPACING		9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9
REINFORCING STEEL	LENGTH		7-7	7-8	7-7	7-8	7-7	7-8	7-7	7-8	7-7	7-8	7-7	7-8	7-7	7-8	7-7	7-8	7-7
	SIZE BAR #		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	SPACING		9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9
	DIMENSION "X"		1-6	1-7	1-6	1-7	1-6	1-7	1-6	1-7	1-6	1-7	1-6	1-7	1-6	1-7	1-6	1-7	1-6
	LENGTH		3-4	3-5	3-4	3-5	3-4	3-5	3-4	3-5	3-4	3-5	3-4	3-5	3-4	3-5	3-4	3-5	3-4
	SIZE BAR #		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	SPACING		9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9
	DIMENSION "Y"		2	2-5	2	2-5	2	2-5	2	2-5	2	2-5	2	2-5	2	2-5	2	2-5	2
	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	5	6
	SIZE BAR #		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	SPACING		9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9
	DIMENSION "Y"		2	2-5	2	2-5	2	2-5	2	2-5	2	2-5	2	2-5	2	2-5	2	2-5	2
	LENGTH		3-9	4-5	3-9	4-5	3-9	4-5	3-9	4-5	3-9	4-5	3-9	4-5	3-9	4-5	3-9	4-5	5
	TOP SLAB-NO. OF BARS	"d"	7	5	7	5	7	5	7	5	7	5	7	5	7	5	7	5	5
	BOTTOM SLAB-NO. OF BARS		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	"e" BARS		18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	SPACING																		
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.

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-76E**

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
MAX FILL OVER TOP		9	18	9	18	9	18	9	18	8	18	8	18	8	18
CONC.	TOP SLAB	T ₁	8	9 1/2	8 1/4	9 3/4	8 1/4	9 3/4	8 1/2	9 3/4	8 1/2	9 3/4	8 1/2	9 3/4	8 1/2
	Bottom Slab	T ₂	8 3/4	10 1/2	9	10 3/4	9	10 3/4	9 1/4	11	9 1/4	11	13 1/4	9 1/4	11
	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
REINFORCING STEEL	SIZE BAR #	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	SPACING	11	8	11	8	11	8	11	8	11	8	11	8	11	8
	LENGTH	9-5	9-8	9-5	9-8	9-5	9-8	9-5	9-8	9-5	9-8	9-5	9-8	9-5	9-8
	SIZE BAR #	5	6	5	6	5	6	5	6	5	6	5	6	5	6
	SPACING	11	8	11	8	11	8	11	8	11	8	11	8	11	8
	DIMENSION "X"	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	LENGTH	3-10	4-2	3-10	4-2	3-10	4-2	3-10	4-2	3-10	4-2	3-10	4-2	3-10	4-2
	SIZE BAR #	5	6	5	6	5	6	5	6	5	6	5	6	5	6
	SPACING	11	8	11	8	11	8	11	8	11	8	11	8	11	8
	DIMENSION "Y"	2-8	3-4	2-8	3-4	2-8	3-4	2-8	3-4	2-8	3-4	2-8	3-4	2-8	3-4
	LENGTH	6-11	7-10	8-1	8-10	9-1	9-10	10-1	10-10	11-1	11-10	12-3	12-1	12-10	13-3
	SIZE BAR #	5	6	5	6	5	6	5	6	5	6	5	6	5	6
REINFORCING STEEL	SPACING	11	8	11	8	11	8	11	8	11	8	11	8	11	8
	DIMENSION "Y"	2-8	3-4	2-8	3-4	2-8	3-4	2-8	3-4	2-8	3-4	2-8	3-4	2-8	3-4
	LENGTH	4-7	5-8	4-7	5-8	4-7	5-8	4-7	5-8	4-7	5-8	4-7	5-8	4-7	5-8
	TOP SLAB-NO. OF BARS	9	5	9	5	9	5	9	5	9	5	9	5	9	5
	BOTTOM SLAB-NO. OF BARS	5	5	5	5	5	5	5	5	5	5	5	5	5	5
QUAN.	"e" BARS	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	SPACING	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	TOTAL NUMBER	32	34	36	40	40	40	40	40	40	44	44	48	48	48
CONCRETE: C.Y. PER LIN. FT.		75	94	82	108	86	108	92	115	97	121	150	106	126	157
REINFORCING LBS. PER LIN. FT.		143	221	148	228	154	235	160	244	164	250	265	170	259	273

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

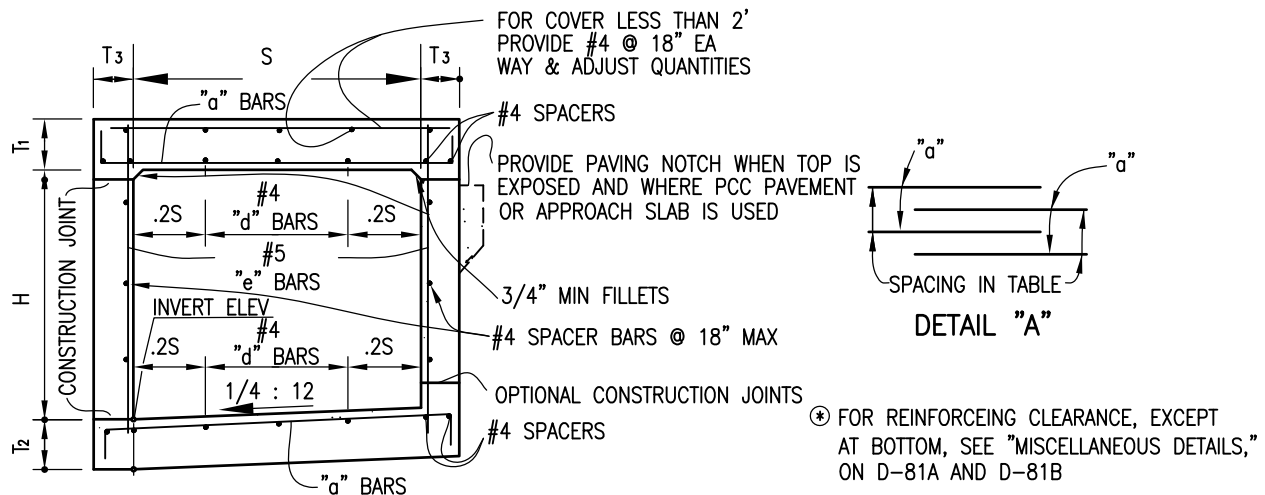
M. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING
NUMBER **D-76F**

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

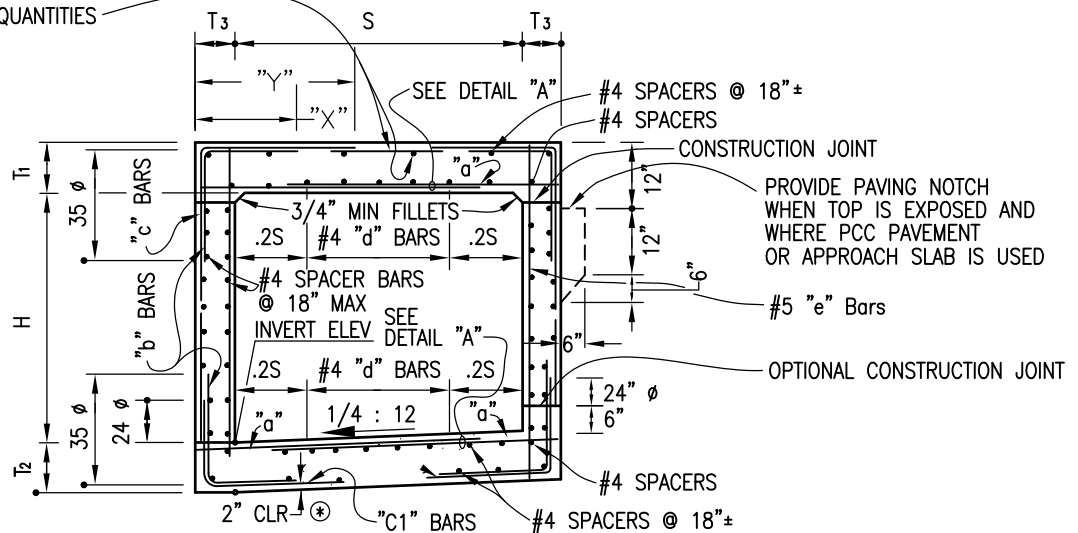
SPAN		12'																		
HEIGHT		6'			7'			8'			9'			10'			12'			
STRENGTH CLASSIFICATION		A	B		A	B		A	B		A	B		A	B		A	B		C
MAX FILL OVER TOP		5	16		5	16		5	16		5	16		5	16		5	16		24
CONC.	TOP SLAB	T ₁	8 3/4	11 1/4	8 3/4	11 1/4	8 3/4	11 1/4	8 3/4	11 1/4	9	11 1/4	13 1/4	9	11 1/4	13 1/4	9	11 1/4	13 1/4	14
	BOTTOM SLAB	T ₂	8 3/4	12 1/4	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	14
	SIDEWALKS	T ₃	7 1/2	10 1/2	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	12
REINFORCING STEEL	SIZE BAR #	6	7		6	7		6	7		6	7		6	7		6	7		7
	SPACING	11	10		11	10		11	10		11	10		11	10		11	10		8
	LENGTH	11-3	11-6	11-3	11-6	11-3	11-6	11-3	11-6	11-4	11-8	11-5	11-8	11-5	11-8	11-5	11-8	11-5	11-8	11-8
	SIZE BAR #	6	7		6	7		6	7		6	7		6	7		6	7		7
	SPACING	11	10		11	10		11	10		11	10		11	10		11	10		8
	DIMENSION "X"	2-8	3		2-8	3		2-8	3		2-8	3		2-8	3		2-8	3		3
	LENGTH	4-10	5-7	4-10	5-7	4-10	5-7	4-10	5-7	4-10	5-7	4-10	5-7	4-10	5-7	4-10	5-7	4-10	5-7	5-7
	SIZE BAR #	6	7		6	7		6	7		6	7		6	7		6	7		7
	SPACING	11	10		11	10		11	10		11	10		11	10		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
REINFORCING STEEL	LENGTH	10-2	10-4	11-2	11-4	12-2	12-4	13-2	13-4	13-6	14-2	14-4	14-6	16-2	16-4	16-6	16-2	16-4	16-6	16-6
	SIZE BAR #	6	7		6	7		6	7		6	7		6	7		6	7		7
	SPACING	11	10		11	10		11	10		11	10		11	10		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
	LENGTH	5-11	6-5	5-11	6-5	5-11	6-5	5-11	6-5	5-11	6-6	6-8	5-11	6-6	6-8	5-11	6-6	6-8	5-11	6-6
	TOP SLAB-NO. OF BARS	10	6		10	6		10	6		10	6		10	6		10	6		6
	BOTTOM SLAB-NO. OF BARS	6	6		6	6		6	6		6	6		6	6		6	6		6
	SPACING	18	18		18	18		18	18		18	18		18	18		18	18		18
	SPACERS	36			44			44			44			48			52			
	TOTAL NUMBER	99	138	103	144	108	152	118	158	190	130	165	198	141	178	213	141	178	213	213
CONCRETE: C.Y. PER LIN. FT.	203	293	213	304	218	311	223	317	387	231	326	397	243	341	415	243	341	415	415	
REINFORCING LBS. PER LIN. FT.																				

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

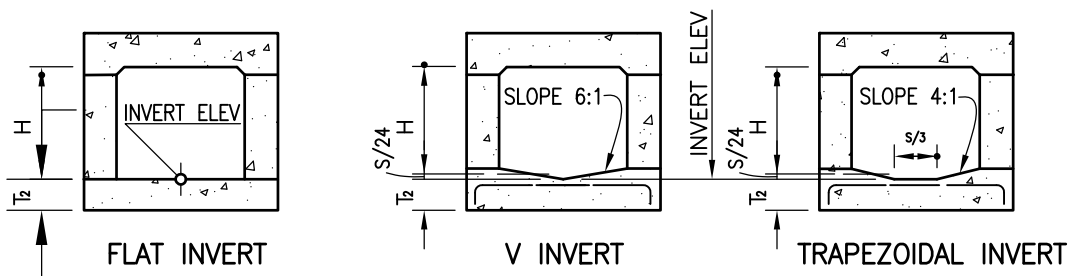


TYPICAL SECTIONS 2' THRU 6' SPANS

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



TYPICAL SECTIONS 7' THRU 12' SPANS



ALTERNATIVE INVERTS (WHEN SPECIFIED ON PLANS)

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

SAN DIEGO REGIONAL STANDARD DRAWING

SINGLE BOX CULVERT DETAILS NO.2

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

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

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

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

DRAWING
NUMBER **D-77A**

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
TOP SLAB	T1	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
BOTTOM SLAB	T2	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
SIDEWALLS	T3	6	6	6		6	6	6	6	6	6	6	6
SIZE BAR #		5	4	4		5	4	4	4	5	4	4	4
SPACING		11	11	9		11	10 1/2	8 1/2	7 1/2	11	10 1/2	8 1/2	7 1/2
LENGTH		10-3	10-2	10-2		10-3	10-2	10-2	10-2	10-3	10-2	10-2	10-2
SIZE BAR #		5	5	5		5	5	5	5	5	5	5	5
SPACING		11	11	9		11	10 1/2	8 1/2	7 1/2	11	10 1/2	8 1/2	7 1/2
LENGTH "b"		9-4	9-4	9-6		9-4	9-4	9-6	9-7	9-4	9-4	9-6	9-7
LENGTH "b1"		9-4	9-5	9-6		9-4	9-4	9-6	9-7	9-4	9-4	9-6	9-7
SIZE BAR #		4	5	5		4	5	5	5	4	5	5	5
SPACING		11	11	9		11	10 1/2	8 1/2	7 1/2	11	10 1/2	8 1/2	7 1/2
LENGTH		4-6	4-6	4-6		4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6
TOP SLAB-TOT. NO.		10	6	6		10	6	6	6	10	6	6	6
BOTTOM SLAB-TOT. NO.		6	6	6		6	6	6	6	6	6	6	6
SIZE BAR #		4	4	4		4	4	4	4	4	4	4	5
SPACING		18	18	18		18	18	16	12	18	12	9	10
SPACERS NUMBER		23				26				29			
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
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.

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

SPAN		5'											
HEIGHT		2'				3'				4'			
		A	B	C		A	B	C		A	B	C	D
STRENGTH CLASSIFICATION		6	36	36		6	24	36		6	23	34	46
MAX FILL OVER TOP		6	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
TOP SDAB		T1	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
BOTTOM SLAB		T2	6	6	6	6	6	6		6	6	6	6
SIDEWALLS		T3	5	4	4	5	4	4		5	4	4	4
SIZE BAR #		10	8 1/2	10		10	8 1/2	10		10	8 1/2	10 1/2	9
SPACING		12-3	12-2	12-2		12-3	12-2	12-2		12-3	12-2	12-2	12-2
LENGTH		5	5	6		5	5	6		5	5	6	6
SIZE BAR #		10	8 1/2	10		10	8 1/2	10		10	8 1/2	10 1/2	9
SPACING		11-5	11-6	11-7		11-5	11-6	11-7		11-5	11-6	11-7	11-8
LENGTH "b"		11-4	11-6	11-7		11-4	11-6	11-7		11-4	11-6	11-7	11-8
LENGTH "b ₁ "		4	5	6		4	5	6		4	5	6	6
SIZE BAR #		10	8 1/2	10		10	8 1/2	10		10	8 1/2	10 1/2	9
SPACING		5-6	5-6	5-6		5-6	5-6	5-6		5-6	5-6	5-6	5-6
LENGTH		12	6	6		12	6	6		12	6	6	6
TOP SLAB-TOT. NO.		6	6	6		6	6	6		6	6	6	6
BOTTOM SLAB-TOT. NO.		4	4	4		4	4	4		4	4	4	4
SIZE BAR #		18	18	18		18	18	16		18	12	10 1/2	9
SPACING		23	23	23		26	26	26		29	29	32	32
SPACERS NUMBER		0.58	0.69	0.80		0.63	0.75	0.86		0.69	0.80	0.89	0.98
CONCRETE: C.Y. PER LIN. FT.		99	100	109		103	104	112		106	109	119	133
REINFORCING LBS. PER LIN. FT.													
QUAN.													

NOTE

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

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

T. Stanton 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

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

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
REINFORCING STEEL	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	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	14-2	14-3	14-3	14-2	14-2	14-2	14-2	14-3	14-2	14-2	14-8
	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	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	13-6	13-8	13-6	13-6	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	13-7	13-8	13-5	13-5	13-6	13-6	13-8	13-9	13-6	13-6	13-8	14-2
	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	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	6-6	6-6	6-6	6-8
REINFORCING STEEL	TOP SLAB-TOT. NO. DIST	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
	SIZE BAR #	4	4	4		4	4	4		4	4	4	5		4	5	6	6
	BARs	18	18	16		18	14	8 1/2		18	10	9 1/2	7		18	11	9	6
SPACERS		30				33				36				36				
CONCRETE: C.Y. PER LIN. FT.		0.77	0.90	1.08		0.82	0.96	1.13		0.88	1.01	1.19	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

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

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

DRAWING
NUMBER **D-77D**

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	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	D		
MAX FILL OVER TOP		3	14	25	3	14	25	3	14	25	3	14	25	3	14	25	3	14	25	3	14	25	3	14	25	3	14	25	37		
CONC.	TOP SLAB	T1	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	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	14 1/4	14 1/4			
	BOTTOM SLAB	T2	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 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	T3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6			
REINFORCING STEEL	SIZE BAR #	6	4	4	6	4	4	6	4	4	6	4	4	6	4	4	6	4	4	6	4	4	6	4	4	6	4	4			
	SPACING	12	9 1/2	10 1/2	12	9 1/2	10 1/2	12	9 1/2	10 1/2	12	9 1/2	10 1/2	12	9 1/2	10 1/2	12	9 1/2	10 1/2	12	9 1/2	10 1/2	12	9 1/2	10 1/2	12	9 1/2	10 1/2			
	LENGTH	18-4	18-2	18-2	18-4	18-2	18-4	18-2	18-4	18-2	18-4	18-2	18-4	18-2	18-4	18-2	18-4	18-2	18-4	18-2	18-4	18-2	18-4	18-2	18-4	18-2	18-4	18-10			
	SIZE BAR #	6	6	7	6	6	7	6	6	7	6	6	7	6	6	7	6	6	7	6	6	7	6	6	7	6	6	7			
	SPACING	12	9 1/2	10 1/2	12	9 1/2	10 1/2	12	9 1/2	10 1/2	12	9 1/2	10 1/2	12	9 1/2	10 1/2	12	9 1/2	10 1/2	12	9 1/2	10 1/2	12	9 1/2	10 1/2	12	9 1/2	10 1/2			
	LENGTH "b" or "b1"	17-7	17-8	17-9	17-7	17-8	17-9	17-7	17-8	17-9	17-7	17-8	17-9	17-7	17-8	17-9	17-7	17-8	17-9	17-7	17-8	17-9	17-7	17-8	17-9	17-7	17-8	17-10	18-6		
REINFORCING STEEL	LENGTH "b1"	17-5	17-8	17-9	17-5	17-8	17-9	17-5	17-8	17-9	17-5	17-8	17-9	17-5	17-8	17-9	17-5	17-8	17-9	17-5	17-8	17-9	17-5	17-8	17-9	17-5	17-8	17-11	18-7		
	SIZE BAR #	4	6	7	4	6	7	4	6	7	4	6	7	4	6	7	4	6	7	4	6	7	4	6	7	4	6	7			
	SPACING	12	9 1/2	10 1/2	12	9 1/2	10 1/2	12	9 1/2	10 1/2	12	9 1/2	10 1/2	12	9 1/2	10 1/2	12	9 1/2	10 1/2	12	9 1/2	10 1/2	12	9 1/2	10 1/2	12	9 1/2	10 1/2			
	LENGTH	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-6	8-9			
	TOP SLAB-TOT. NO.	16	8	8	16	8	8	16	8	8	16	8	8	16	8	8	16	8	8	16	8	8	16	8	8	16	8	8			
	BOTTOM SLAB-TOT. NO.	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8			
REINFORCING STEEL	SIZE BAR #	4	4	5	4	4	5	4	4	5	4	4	5	4	4	5	4	4	5	4	4	5	4	4	5	4	4	5	7		
	BARS	18	18	10 1/2	18	12	10	18	11 1/2	10	18	11 1/2	10	18	11 1/2	10	18	11 1/2	10	18	11 1/2	10	18	11 1/2	10	18	11 1/2	9			
	SPACERS NUMBER	41	41	41	41	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	60			
REINFORCING STEEL	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	2.54	2.81	3.08	3.35	3.62	3.89	4.16	4.43	4.70	4.97	5.24		
	REINFORCING LBS. PER LIN. FT.	169	175	200	172	181	218	173	188	229	185	199	248	299	191	207	284	314	344	374	404	434	464	494	524	554	584	614	644		

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. 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

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

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 MAX FILL OVER TOP TOP SLAB BOTTOM SLAB SIDEWALLS SIZE BAR # SPACING LENGTH SIZE BAR # SPACING LENGTH SIZE BAR # SPACING LENGTH TOP SLAB-TOT. NO. BARS BOTTOM SLAB-TOT. NO. BARS SIZE BAR # SPACING BARS SPACERS	CONC.	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	D		
		2	17	30	2	17	30	2	17	30	2	16	29	36	2	16	29	36	
		T1	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
		T2	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
		T3	6	6	6	6	6	6	6	6 1/2	7	7	7 1/2	7 1/2	8	8	9	10	
		"a"	6	4	4	6	4	4	6	4	4	6	4	4	6	4	4	4	4
		"b"	11	10	10	11	9 1/2	10	11	9 1/2	10	11	10	10	9	11	10	10	9
		"b"	22-4	22-2	22-2	22-4	22-2	22-2	22-4	22-4	22-4	22-5	22-7	22-5	22-7	22-10	22-8	22-11	23-2
		"b"	6	7	8	6	7	8	6	7	8	6	7	8	6	7	8	8	8
		"b"	11	10	10	11	9 1/2	10	11	9 1/2	10	11	10	10	9	11	10	10	9
REINFORCING STEEL		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	
		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	
		6	7	8	6	7	8	6	7	8	6	7	8	6	7	8	8	8	
		11	10	10	11	9 1/2	10	11	9 1/2	10	11	10	10	9	11	10	10	9	
		10-6	10-6	10-6	10-6	10-6	10-6	10-6	10-7	10-7	10-7	10-7	10-7	10-8	10-8	10-8	10-9	10-10	
		18	10	10	18	10	10	18	10	10	10	18	10	10	18	10	10	10	
		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
		4	4	5	4	4	5	4	4	6	4	4	5	6	4	6	6	7	
		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	
		SPACERS NUMBER		48			48			51			54			64			68
CONCRETE: C.Y. PER LIN. FT.		1.40			2.05			1.45			2.18			2.64			3.04		
REINFORCING LBS. PER LIN. FT.		236			254			238			274			324			278		
QUANTITY		236			254			238			274			324			278		

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

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

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

DRAWING
NUMBER **D-77F**

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

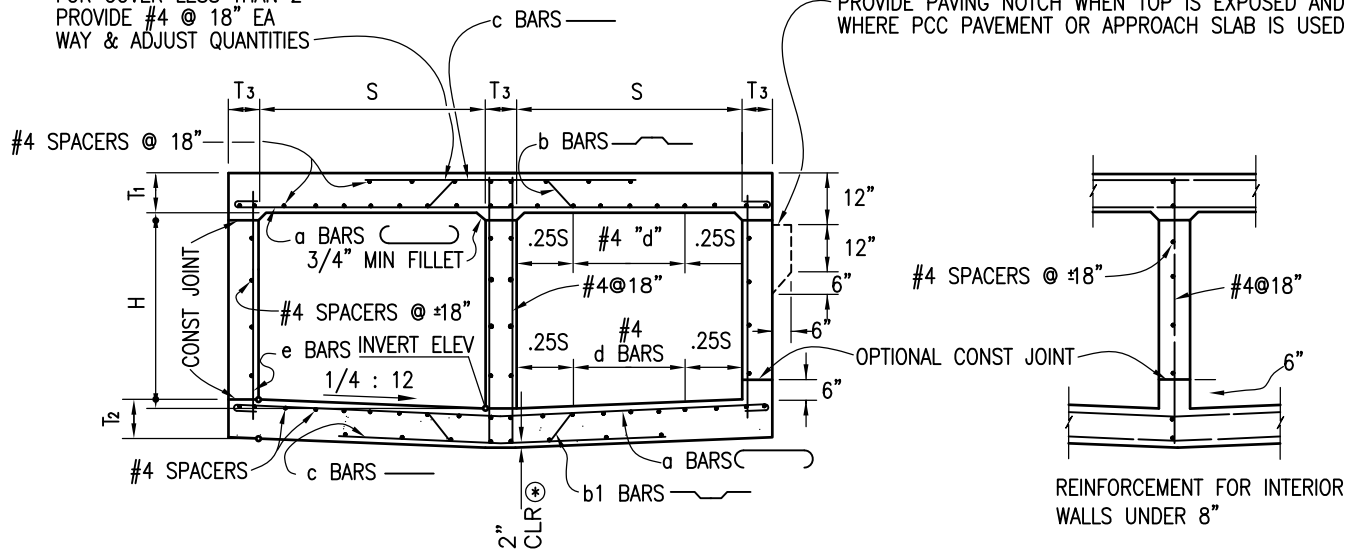
		12'											
SPAN		6'				7'				8'			
HEIGHT		9'				10'				11'			
STRENGTH CLASSIFICATION		A	B	C	D	A	B	C	D	A	B	C	D
MAX. FILL OVER TOP		2	14	26	36	2	14	26	36	2	14	26	36
TOP SLAB		T ₁	10	14	17 1/2	10	14 1/4	17 1/2	20 3/4	10 1/4	14 1/2	17 1/2	20 3/4
BOTTOM SLAB		T ₂	9 1/4	14 3/4	18	9 1/4	15	18 1/4	21 1/4	10 1/4	15 1/4	18 3/4	21 1/2
SIDEWALLS		T ₃	6	6	6 1/2	7	7	7	7	8	8 1/2	9	9 1/2
SIZE BAR #		6	4	4	4	6	4	4	4	6	4	4	4
SPACING		9	11 1/2	9	9	11 1/2	9	11	8 1/2	9	11	8 1/2	9
LENGTH		26-4	26-2	26-4	26-5	26-7	26-5	26-5	26-5	26-10	27-1	27-1	27-5
SIZE BAR #		6	8	8	8	6	8	8	8	6	8	8	9
SPACING		9	11 1/2	9	9	9	11 1/2	9	9	9	11	8 1/2	9
LENGTH		25-8	25-10	26-3	26-4	26-2	26-4	26-4	26-9	26-5	26-5	26-8	27-2
SIZE BAR #		5	8	8	8	5	8	8	8	5	8	8	9
SPACING		9	11 1/2	9	9	9	11 1/2	9	9	9	11	8 1/2	9
LENGTH		12-6	12-6	12-7	12-7	12-7	12-7	12-8	12-9	12-9	12-9	12-10	12-11
TOP SLAB-TOT. NO. BARS		24	10	10	10	24	10	10	10	24	10	10	10
BOTTOM SLAB-TOT. NO. BARS		10	10	10	10	10	10	10	10	10	10	10	10
SIZE BAR #		4	4	5	4	4	4	4	5	4	4	7	8
SPACING		18	8	8	8	15	6	6 1/2	12	5 1/2	6	7 1/2	8 1/2
NUMBER		52	52	55	55	55	55	55	55	55	55	55	55
CONCRETE: C.Y. PER LIN. FT.		1.84	2.59	3.16	3.28	3.28	3.28	3.28	3.28	3.59	3.59	3.59	3.59
REINFORCING: LBS. PER LIN. FT.		309	317	401	415	316	330	336	363	460	345	374	485
		76	76	76	76	76	76	76	76	76	76	76	76
		2.67	3.53	4.49	4.92	2.67	3.53	4.49	4.92	2.67	3.53	4.49	4.92
		371	427	582	673	371	427	582	673	371	427	582	673

NOTE

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

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

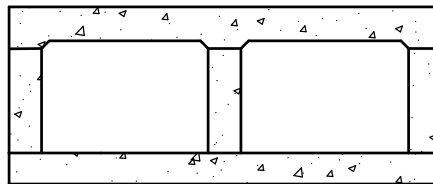
PROVIDE PAVING NOTCH WHEN TOP IS EXPOSED AND
WHERE PCC PAVEMENT OR APPROACH SLAB IS USED




TYPICAL SECTION

(SHOWING REINFORCEMENT FOR INTERIOR WALLS 8" AND OVER)

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



"FLAT INVERT" ALTERNATIVE
(WHEN SPECIFIED)


Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75				
Reviewed		T. Stanton	04/06	DOUBLE BOX CULVERT DETAILS NO. 2		 12/17/2015 Chairperson R.C.E. 19246 Date	
Edited	S.S.	T. Regello	03/11				
Edited	T.R.	T. Regello	10/15				
						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	
TOP SLAB	T1	6 1/4	6 1/4	7 1/4	7 1/4	6 1/4	6 1/4	7 1/4	7 1/4	6 1/4	6 1/4	7 1/4	7 1/4
BOTTOM SLAB	T2	6	7	8 1/4	8 1/4	6	7	8 1/4	8 1/4	6	7	8 1/4	8 1/4
SIDEWALLS	T3	6	6	6	6	6	6	6	6	6	6	6	6
SIZE BAR #		5	4	5	5	5	4	5	5	5	4	5	5
"a" SPACING		11	11 1/2	13	13	11	11 1/2	13	13	11	11 1/2	13	13
LENGTH		14-9	14-8	14-9	14-9	14-9	14-8	14-9	14-9	14-9	14-8	14-9	14-9
SIZE BAR #		5	5	6	6	5	5	6	6	5	5	6	6
"b" SPACING		11	11 1/2	13	13	11	11 1/2	13	13	11	11 1/2	13	13
LENGTH		14-2	14-2	14-3	14-3	14-2	14-2	14-3	14-3	14-2	14-2	14-3	14-3
"b1" SPACING		14	14-2	14-3	14-3	14	14-2	14-3	14-3	14	14-2	14-3	14-3
LENGTH		4	5	6	6	4	5	6	6	4	5	6	6
SIZE BAR #		11	11 1/2	13	13	11	11 1/2	13	13	11	11 1/2	13	13
"c" SPACING		9	9	9	9	9	9	9	9	9	9	9	9
LENGTH		15	9	9	9	15	9	9	9	15	9	9	9
"d" DIST BARS	TOP SLAB-TOT. #	9	9	9	9	9	9	9	9	9	9	9	9
"e" DIST BARS	BOTTOM SLAB-TOT. #	4	4	4	4	4	4	4	4	4	4	4	4
SIZE BAR #		18	18	18	18	18	18	18	18	18	18	18	18
SPACING		34	34	34	34	34	34	34	34	34	34	34	34
SPACERS NUMBER		0.67	0.71	0.81	0.81	0.75	0.79	0.89	0.89	0.82	0.86	0.96	0.96
CONCRETE: C.Y. PER LIN. FT.		122	110	133	133	127	115	138	138	131	122	147	147
REINFORCING LBS PER LIN. FT.													

NOTE

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

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING				RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75	<div>TRIPLE BOX CULVERT</div> <div>DETAILS No. 1</div>				 12/17/2015	
Reviewed		T. Stanton	04/06					Chairperson R.C.E. 19246 Date	
Edited		T. Regello	02/09					DRAWING	
Edited	S.S.	T. Regello	03/11					NUMBER	
Edited	T.R.	T. Regello	10/15					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

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

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

DRAWING
NUMBER **D-78B**

SPAN 5' (ALL MEASUREMENTS 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	T1	6 3/4	7 1/2	7 1/2	6 3/4	6 3/4	7 1/2	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	T2	6 1/4	7 1/4	8 1/2	6 1/4	7 1/4	8 1/2	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	T3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
REINFORCING STEEL	SIZE BAR #	5	4	5	5	5	4	5	5	5	4	5	5	5	4	5	5
	SPACING	10	11 1/2	13	13	10	11 1/2	13	13	10	11 1/2	13	11 1/2	10	11	13	11 1/2
	LENGTH	17-9	17-8	17-9	17-9	17-9	17-8	17-9	17-9	17-9	17-8	17-9	17-9	17-9	17-8	17-9	17-9
	SIZE BAR #	5	5	6	6	5	5	6	6	5	5	6	6	5	5	6	6
	SPACING	10	11 1/2	13	13	10	11 1/2	13	13	10	11 1/2	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	17-3	17-3	17-5
	LENGTH "b1"	17	17-2	17-4	17-4	17	17-2	17-4	17-4	17	17-2	17-4	17-5	17	17-2	17-4	17-5
	SIZE BAR #	4	5	6	6	4	5	6	6	4	5	6	6	4	5	6	6
	SPACING	10	11 1/2	13	13	10	11 1/2	13	13	10	11 1/2	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	11	11
QUAN.	"d" DIST BARS	18	9	9	9	18	9	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	9	9
	SIZE BAR #	4	4	4	4	4	4	4	4	4	4	4	5	4	4	4	6
BARS		18	18	18	18	18	18	18	18	18	17	11 1/2	11 1/2	18	11	4	11 1/2
SPACING		34				38				38				42			
SPACERS NUMBER																	
CONCRETE: C.Y. PER LIN. FT.		0.82	0.87	0.98	0.98	0.90	0.95	1.05	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	153	155	130	157	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 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

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

DRAWING
NUMBER **D-78C**

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

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

NOTE

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

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
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

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

DRAWING
NUMBER **D-78D**

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	A	B	C
MAX FILL OVER TOP		2	11	20	2	11	20	2	11	20	2	11	20	2	11	20
TOP SLAB	T1	8 1/4	8 1/4	10 1/4	8 1/4	8 1/4	10 1/4	8 1/4	8 1/4	10 1/4	8 1/4	8 1/4	10 1/4	8 1/4	8 1/4	10 1/4
BOTTOM SLAB	T2	6 1/2	9	11	6 1/2	9 1/4	11	6 1/2	9 1/4	11	6 3/4	9 1/4	11	6 3/4	9 1/4	11
SIDEWALLS	T3	6	6	6	6	6	6	6	6	6	6	6	6 1/2	7	7	7 1/2
SIZE BAR #		6	5	5	6	5	5	6	5	5	6	5	5	6	5	5
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	12
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	27-1	27-3
SIZE BAR #		6	6	7	6	6	7	6	6	7	6	6	7	6	6	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	12
LENGTH "b" or "b1"		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	27-1
LENGTH "b1"		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	27-1
SIZE BAR #		4	6	7	4	6	7	4	6	7	44	6	7	4	6	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	12
LENGTH		17	17	17	17	17	17	17	17	17	17	17	17-1	17-3	17-2	17-3
"d" DIST TOP SLAB-TOT. #		24	12	12	24	12	12	24	12	12	24	12	12	24	12	12
BARS BOTTOM SLAB-TOT. #		12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
SIZE BAR #		4	4	4	4	4	5	4	4	5	4	6	7	4	6	7
BARS		18	18	12	18	12	12	18	12	12	11 1/2	12	12	10 1/2	11 1/2	12
SPACING																
SPACERS NUMBER		58			62			62			66			70		
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	1.90	2.10	2.46
REINFORCING LBS. PER LIN. FT.		261	250	301	266	257	310	267	264	320	276	277	336	283	295	347
QUAN.																

NOTE

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

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
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

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

DRAWING
NUMBER **D-78E**

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

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

NOTE

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

SAN DIEGO REGIONAL STANDARD DRAWING
TRIPLE BOX CULVERT DETAILS No. 1

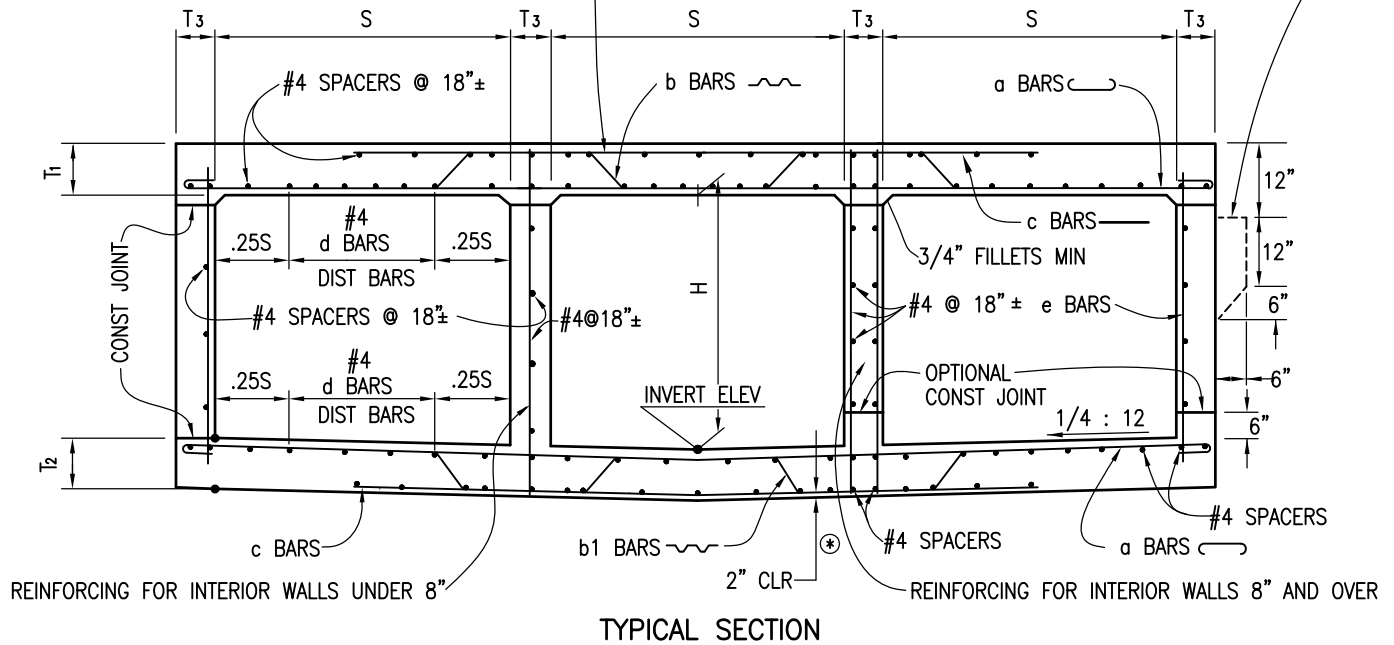
SPAN 12' (ALL MEASUREMENTS IN FEET AND/OR INCHES UNLESS NOTED OTHERWISE)

NOTE

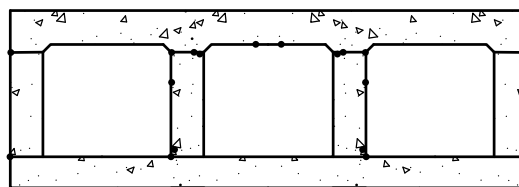
FOR BOXES OF HEIGHT LESS THAN THAT SHOWN IN TABLE, USE NEXT GREATER TABLE HEIGHT SLABS, WALL DIMENSIONS AND REINFORCING STEEL. MAKE CHANGES TO BAR LENGTHS AND NUMBER OF SPACERS AND QUANTITIES AS NECESSARY. NUMBER OF "d" BARS IN TABLE IS SLAB TOTAL FOR ALL CELLS.

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

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




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



FLAT INVERT ALTERNATIVE
(WHEN SPECIFIED)

NOTES

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

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75	TRIPLE BOX CULVERT DETAILS NO.2		
Reviewed		T. Stanton	04/06			
Edited	S.S.	T. Regello	03/11			
Edited	T.R.	T. Regello	10/15			
						 12/17/2015 Chairperson R.C.E. 19246 Date
						DRAWING NUMBER D-78G

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

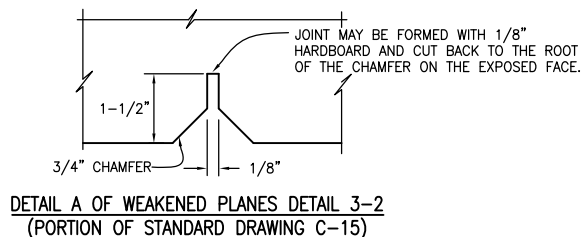
CONCRETE: Bottom slab & walls shall be Class 560-B-3250. Top slab shall be Class 560-C-3250.

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 Geometric Design of Highways, dated 1984, with revisions as supplemented by State of California Bridge Planning and Design Manual.

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

LOADING

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

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

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

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

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

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

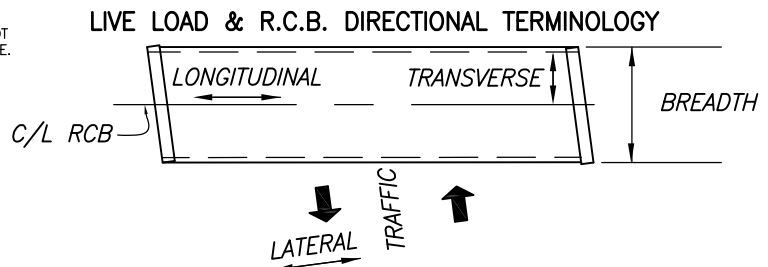
Distribution "d" bars expressed as a percent of main positive reinforcement.

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

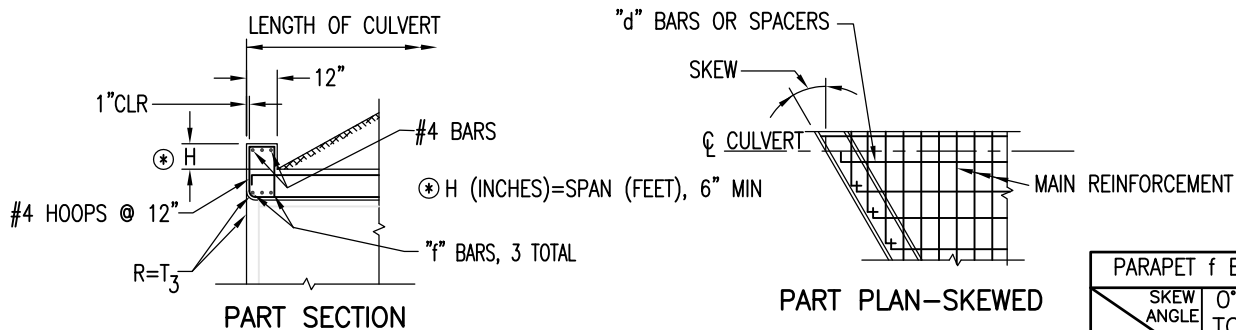
Classification "B" to "E": Top and bottom slabs #4 @ 18" max.

USE OF STANDARD DRAWING

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

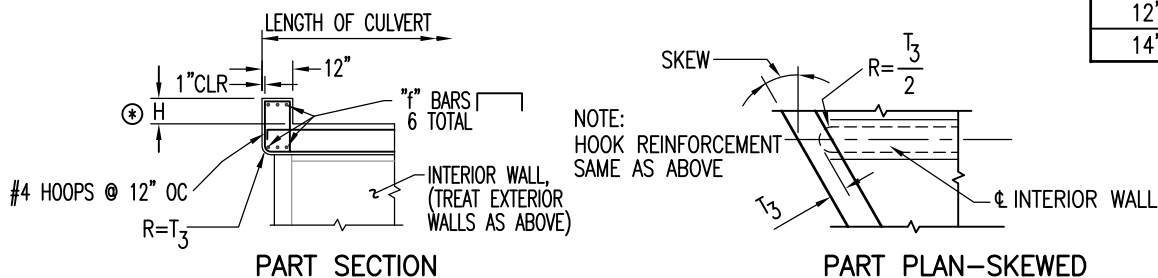


Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75				
Reviewed		T. Stanton	04/06	BOX CULVERT MISCELLANEOUS DETAILS No. 1		Chairperson R.C.E. 19246 Date	
Edited	S.S.	T. Regello	03/11				
Edited	T.R.	T. Regello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

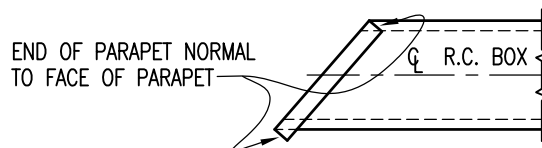


PARAPET DETAILS FOR SINGLE SPAN CULVERTS

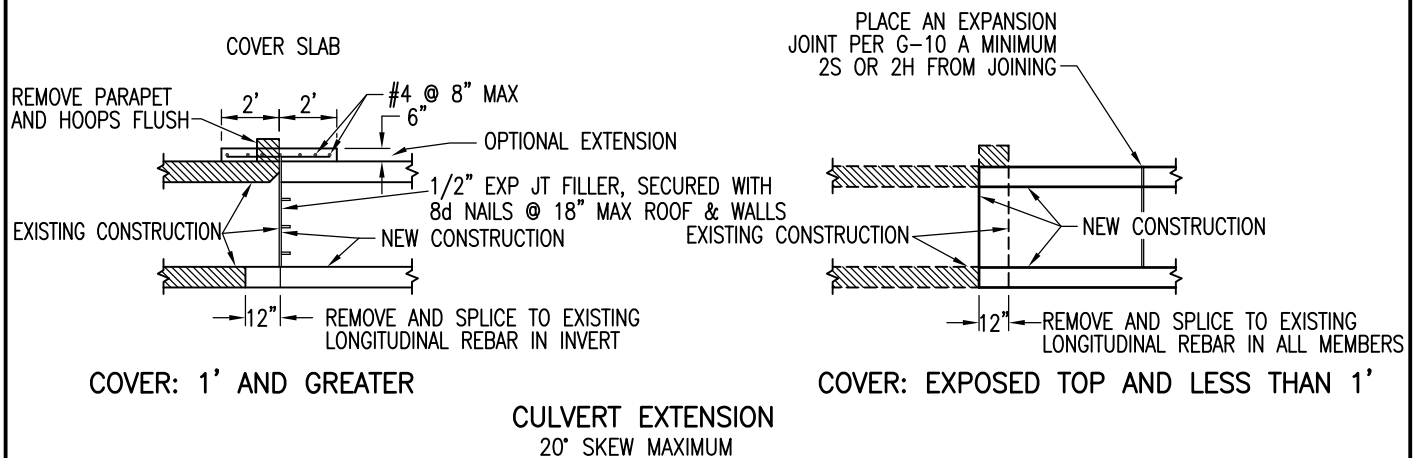
PARAPET f BAR SIZE				
SPAN (S)	SKEW ANGLE	0° TO 15°	16° TO 30°	31° TO 45°
4'		#4	#4	#4
6'		#4	#4	#5
8'		#4	#5	#6
10'		#5	#6	#7
12'		#6	#7	#8
14'		#7	#8	#9




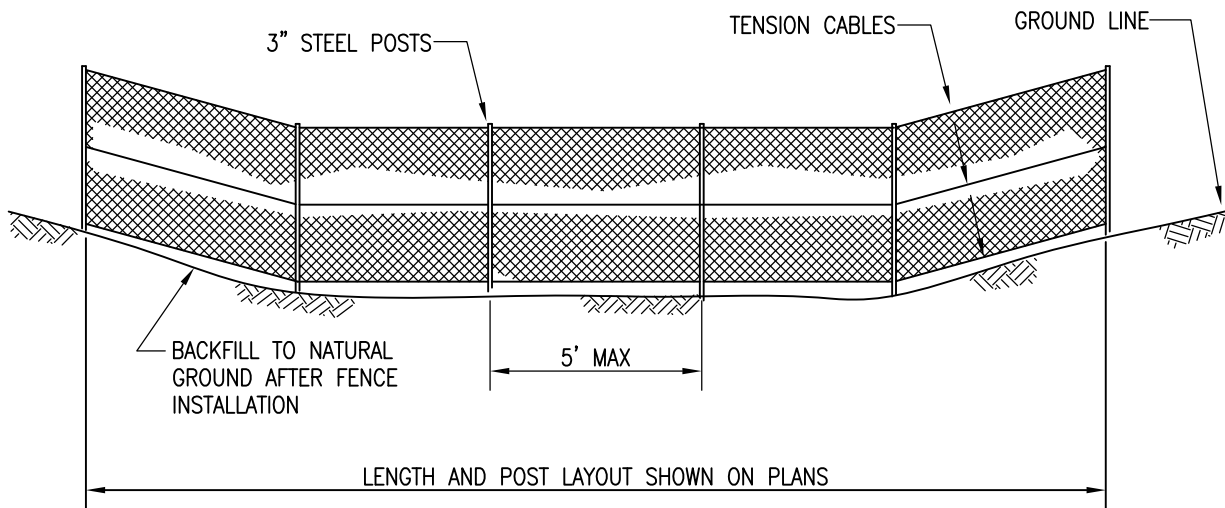
PARAPET DETAILS FOR MULTIPLE SPAN CULVERTS



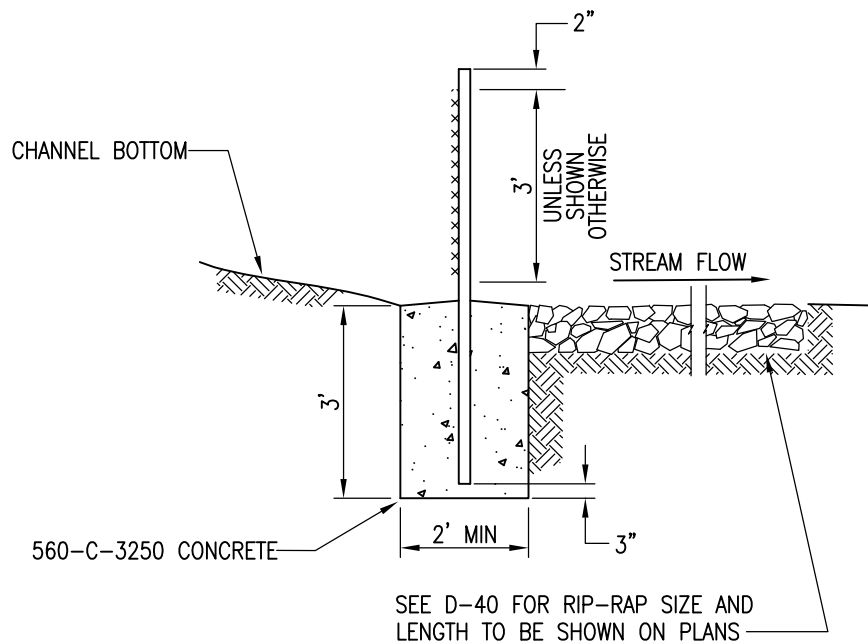
PARAPET DETAIL FOR SKEWED CULVERTS W/O WINGWALLS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Reviewed		T. Stanton	04/06	BOX CULVERT MISCELLANEOUS DETAILS NO. 2	 12/17/2015 Chairperson R.C.E. 19246 Date
Edited	S.S.	T. Regello	03/11		
Edited	T.R.	T. Regello	10/15		
					DRAWING NUMBER D-81B



ELEVATION

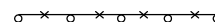


SECTION

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" ϕ 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

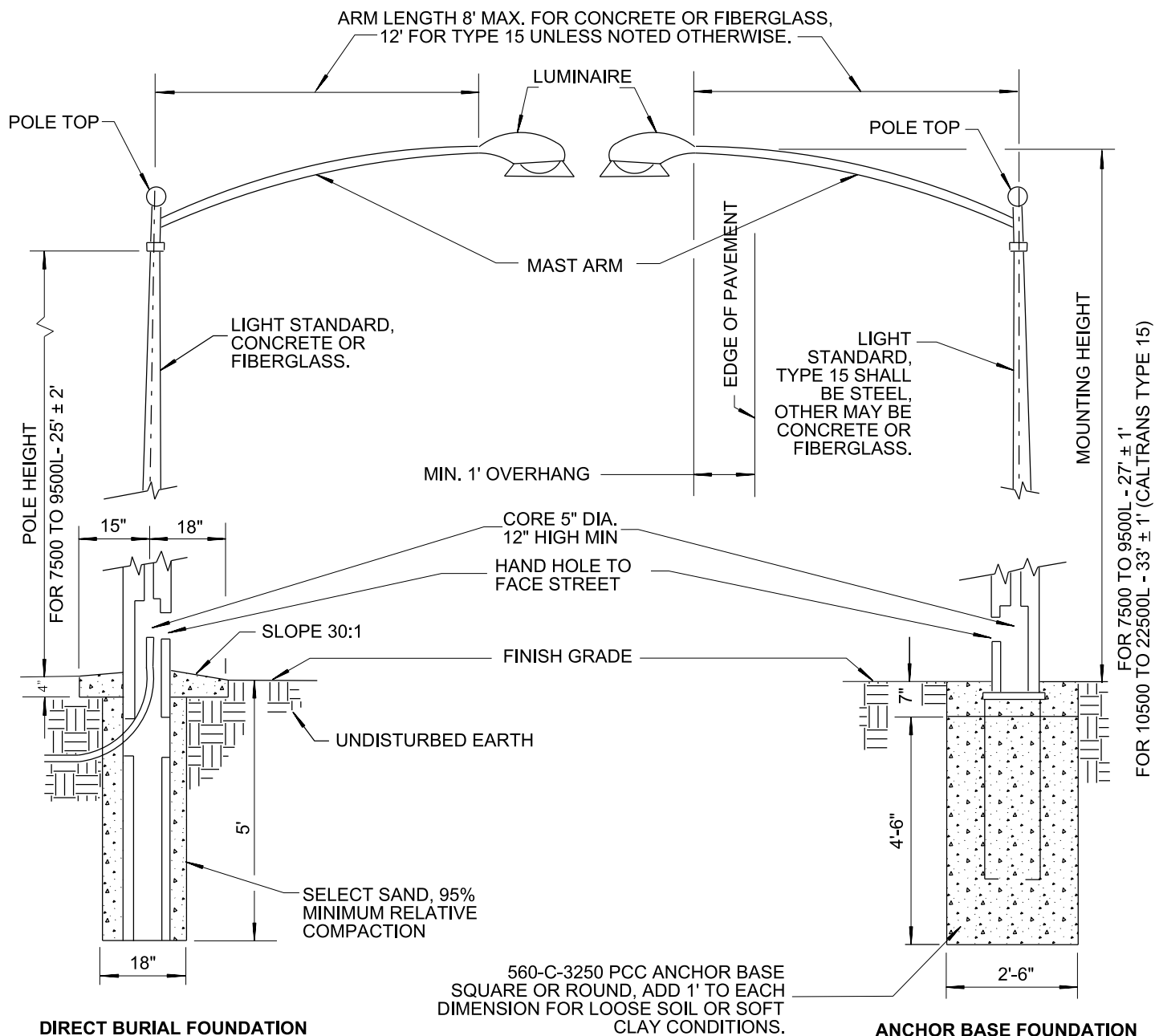
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

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

DRAWING NUMBER **D-82**

CHAPTER 3

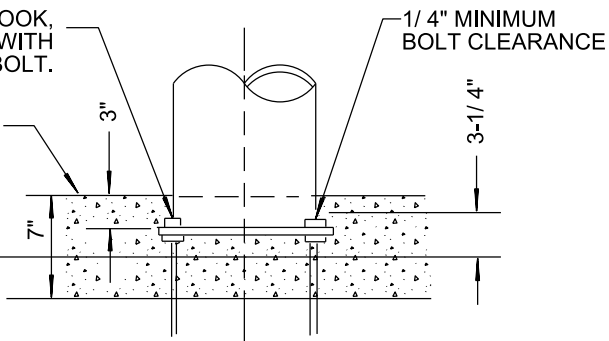
*ELECTRICAL
SYSTEM*




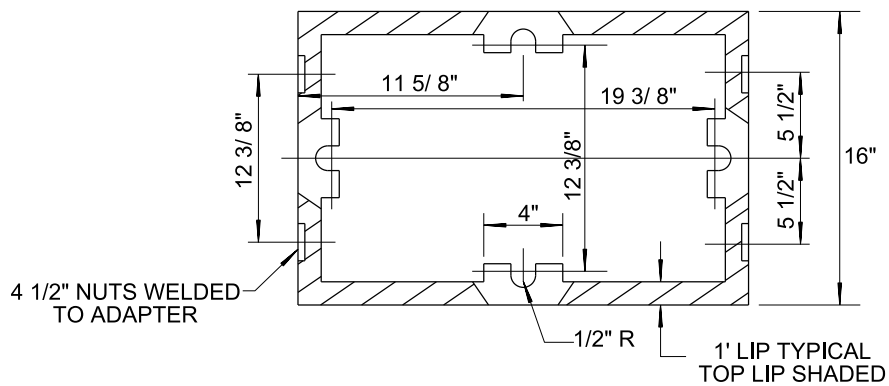
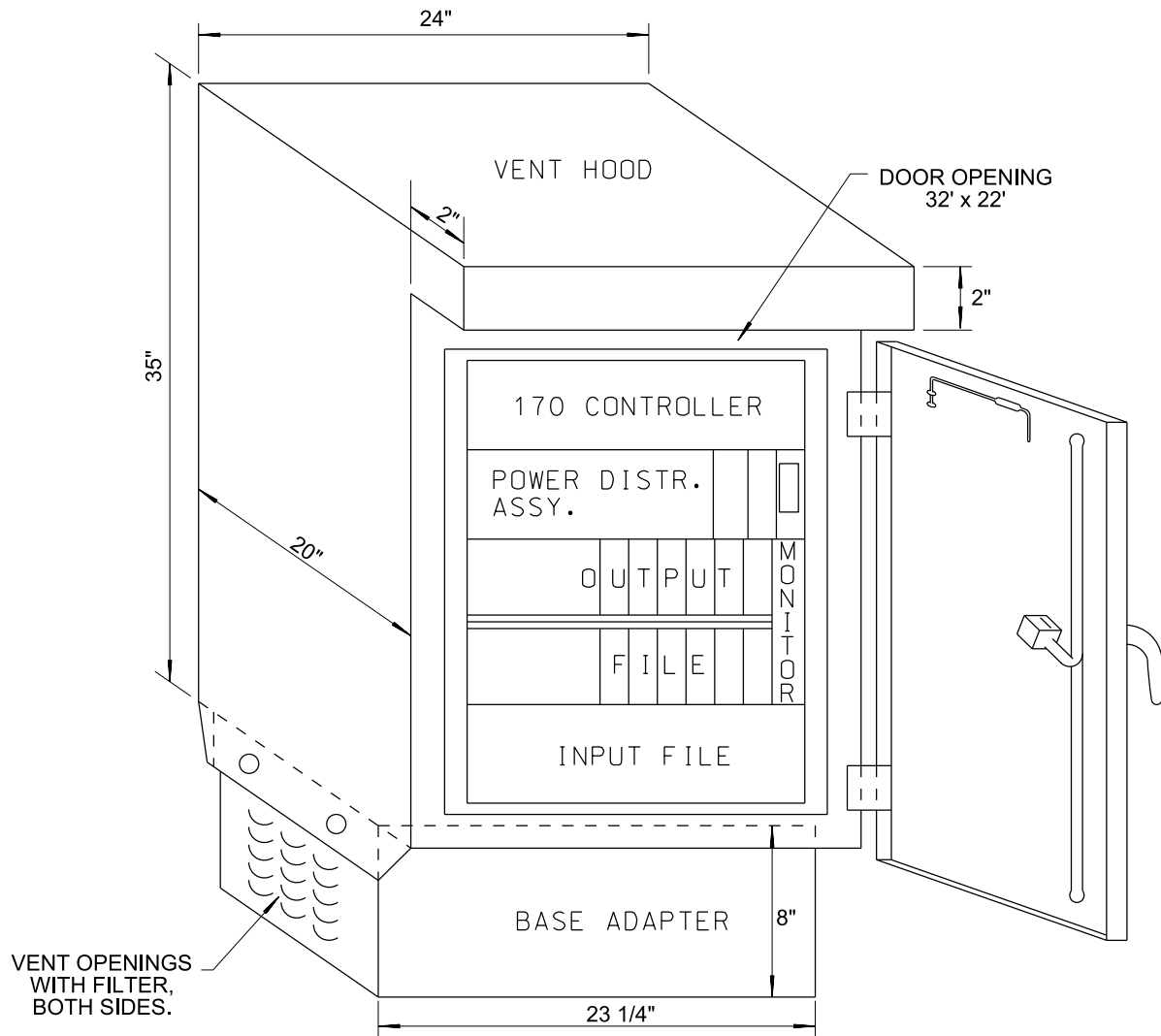
ANCHOR BOLTS (4 REQ.) 1"x 36"x 4" HOOK, GALV. USE TWO LEVELING NUTS WITH WASHERS (ALL GALV.) ON EACH BOLT.

FINISHED GRADE FOR CONCRETE POLE

FINISHED GRADE FOR STEEL AND FIBERGLASS STANDARDS. PROVIDE ANCHOR BOLT NUT COVERS.

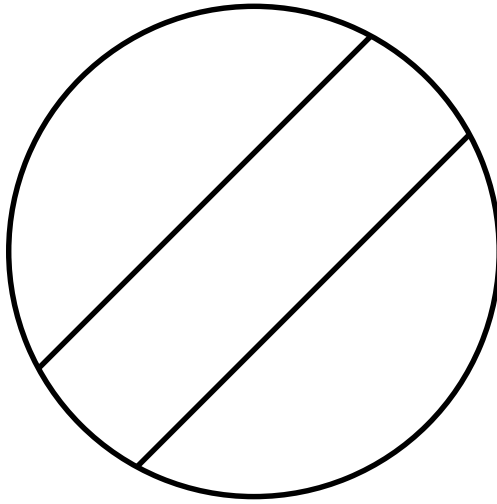


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		J. CASEY	0683		
UPDATED	KA	J. NAGELVOORT	01/12	STREET LIGHTING STANDARD	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	KA	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDE-101

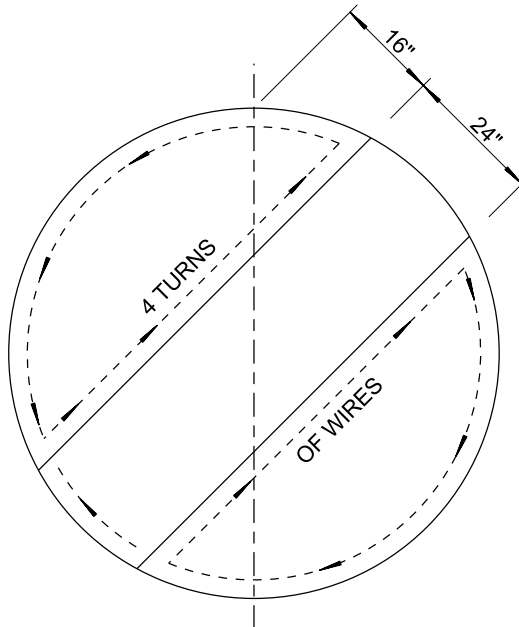


BASE ADAPTOR PLAN VIEW

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE <i>Chung</i> 9/4/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	MODEL 336 CABINET	DRAWING NUMBER SDE-102



PLAN DRAWING SYMBOL



SAWCUT & WINDING DETAIL

↑
DIRECTION
OF TRAVEL

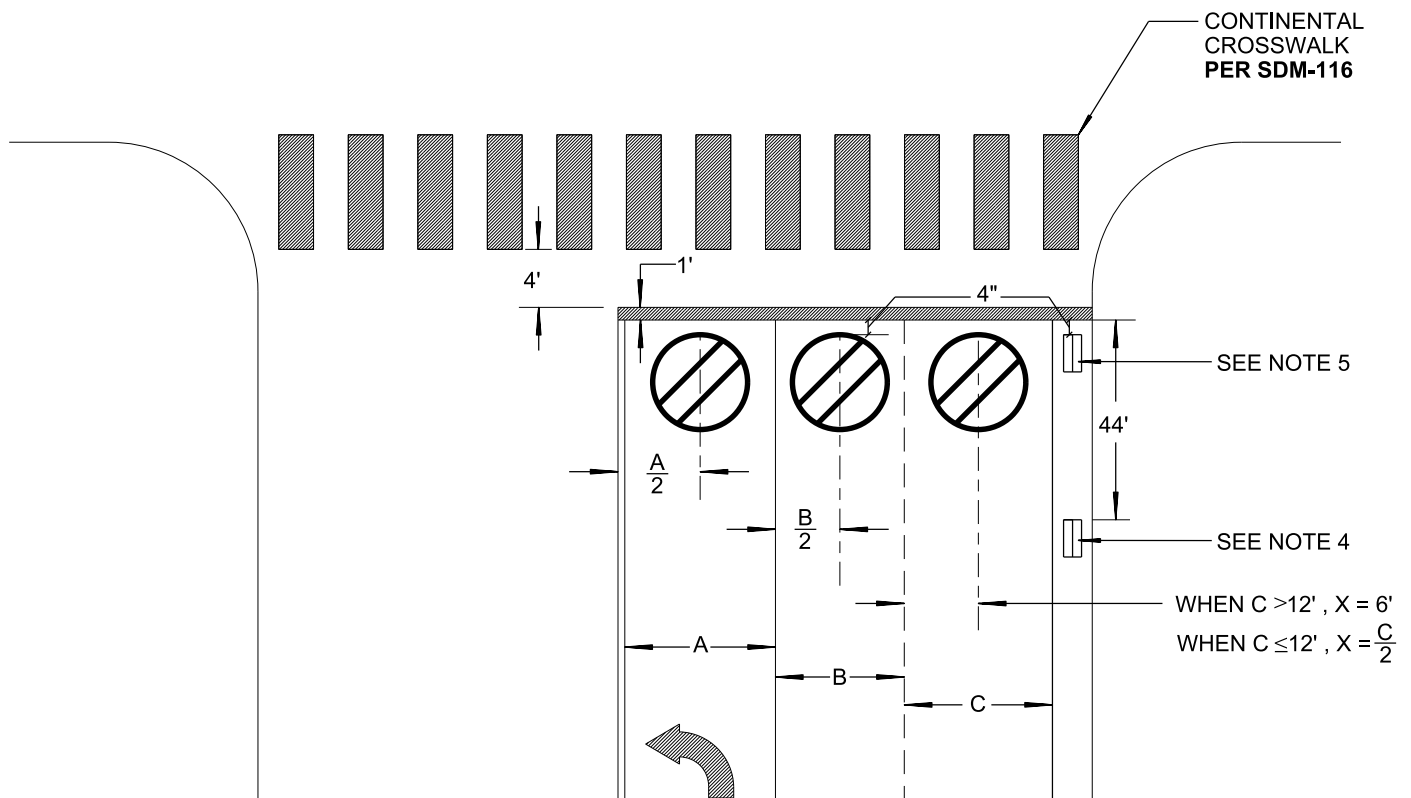
NOTES:

1. LOOP DIAMETER = 6' TYP
2. DEPTH OF CUT = 3 1/8" MIN
3. NO LOOPS SHALL BE CUT INTO BRIDGE DECKS

MODIFIED TYPE E LIMIT LINE / CROSSWALK DETECTOR

SHEET 1 OF 2


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J.NAGELVOORT	01/12		<div> 8/23/18</div> <div>COORDINATOR R.C.E. 56523 DATE</div> <div>DRAWING NUMBER SDE-104</div>
UPDATE	KA	J.NAGELVOORT	02/16		
UPDATE	NR	J.NAGELVOORT	08/18		

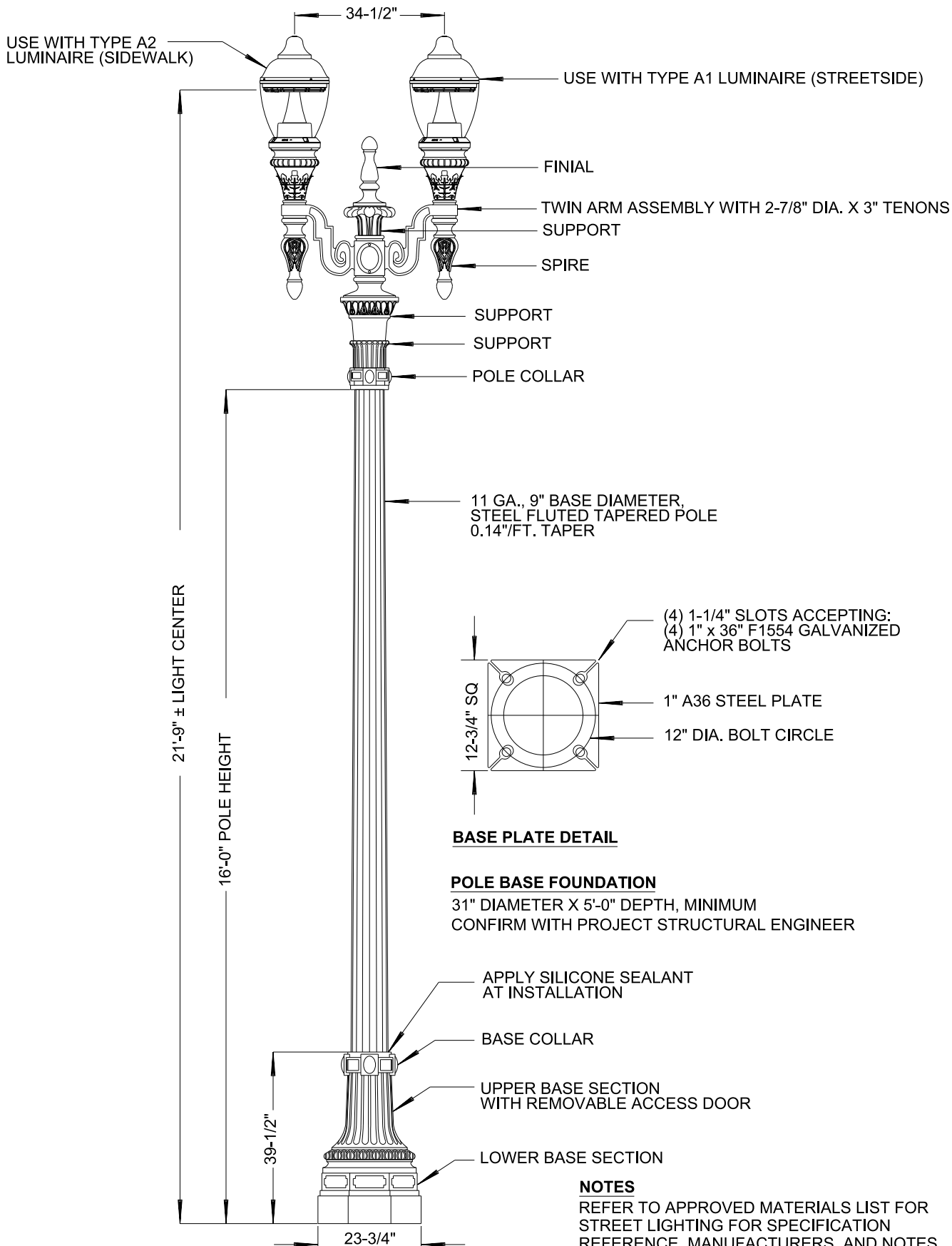



NOTES:

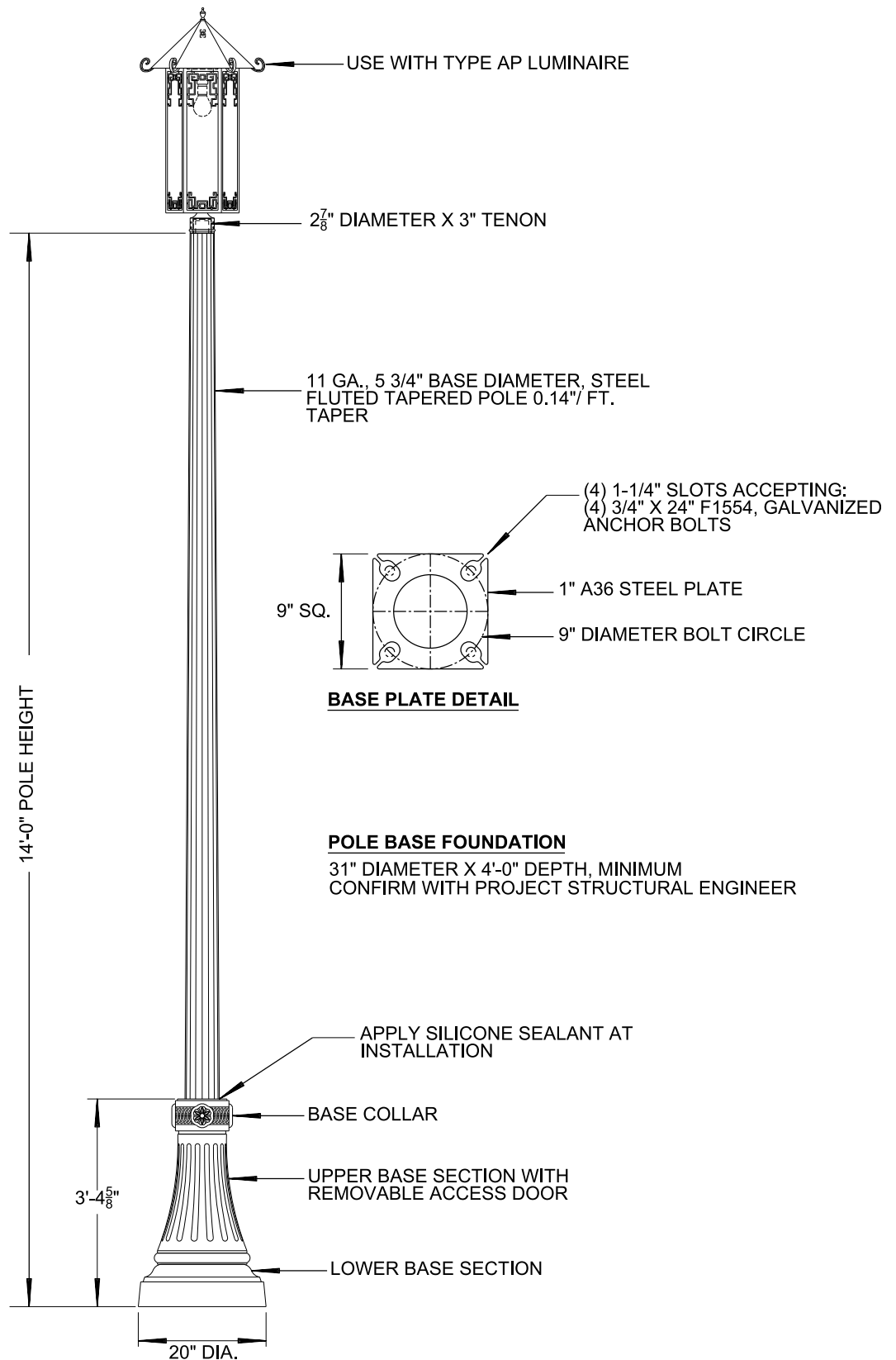
1. FRONT-LINE LOOPS SHALL BE INSTALLED AT THE LIMIT LINE OR CROSSWALK ACTING AS LIMIT LINE.
2. ALL FRONT-LINE LOOPS SHALL BE TYPE E MODIFIED LOOPS PER SHEET 1.
3. LOOPS INSTALLED IN LANE NEAREST EDGE OF ROADWAY SHALL BE INSTALLED IN CENTER OF LANE IF $C \leq 12'$, OR 6' FROM THE LANE STRIPE IF $C > 12'$.
4. BICYCLE LOOPS INSTALLED ON THE MAJOR LEGS (RECALL PHASE) OF AN INTERSECTION SHALL BE LOCATED 44' FROM THE LIMIT LINE OR CROSSWALK ACTING AS LIMIT LINE.
5. BICYCLE LOOPS INSTALLED ON THE MINOR LEGS (NON-RECALL PHASE) OF AN INTERSECTION SHALL BE LOCATED AT THE LIMIT LINE OR CROSSWALK ACTING AS THE LIMIT LINE.
6. CONTRACTOR SHALL LAY OUT LOCATION OF ALL LOOPS AND HOMERUN LINES AND RECEIVE APPROVAL OF THE CITY OF SAN DIEGO INSPECTOR PRIOR TO INSTALLATION.
7. LOOP STUB-OUT SHALL BE LOCATED AND MARKED ON CURB FACE PRIOR TO STREET OVERLAY.
8. EDGE OF STUB-OUT LOCATION SHALL BE SAWCUT WITH HAND SAW PRIOR TO JACKHAMMERING.
9. DIMENSIONS OF STUB-OUT SAWCUT NOT TO EXCEED 10" ALONG CURB (CENTERED ON STUB-OUT) AND 10" FROM EDGE OF GUTTER.

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
UPDATE	KA	J. NAGELVOORT	02/16	TYPE E MODIFIED LOOP	 COORDINATOR R.C.E. 56523 8/23/18 DATE
UPDATE	NR	J. NAGELVOORT	08/18		
					DRAWING NUMBER
					SDE-104



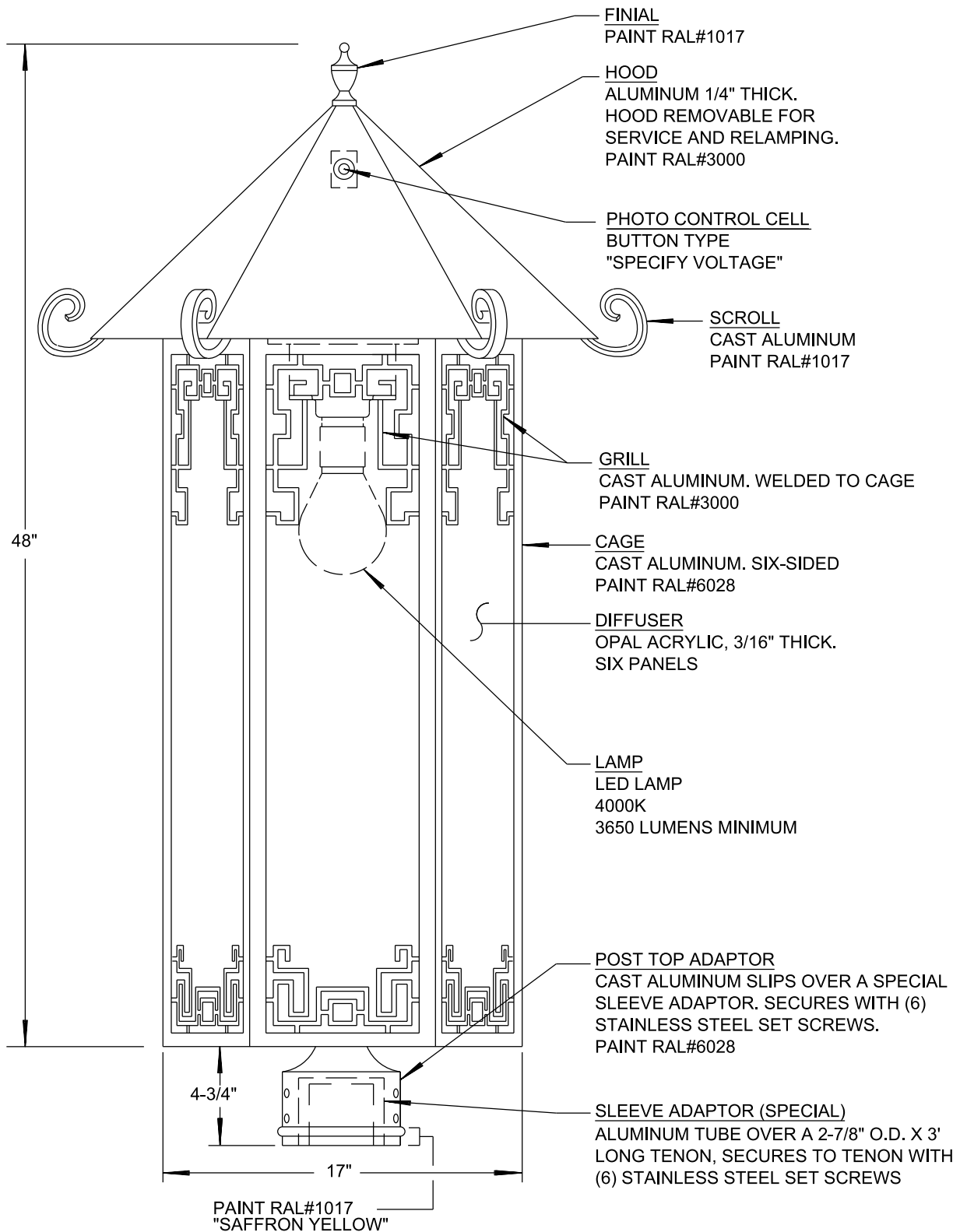
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	LCA	M. GIBSON	12/16		
REDRAFTED	CD	J. NAGELVOORT	09/18	STREETSCAPE POLE TYPE P-A	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDE-105



NOTES

REFER TO APPROVED MATERIALS LIST FOR STREET LIGHTING FOR SPECIFICATION REFERENCE, MANUFACTURERS, AND NOTES.

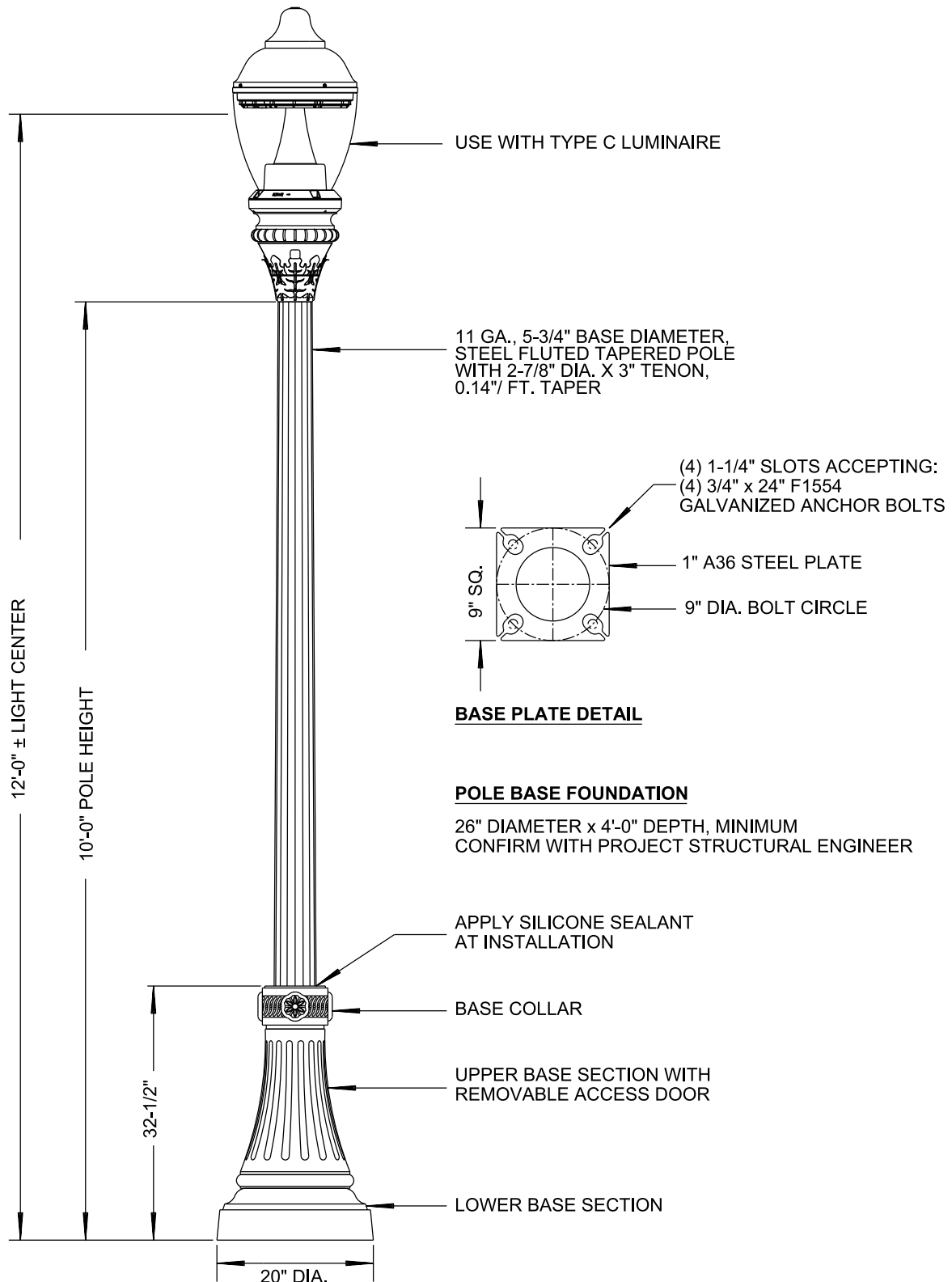
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	LCA	M. GIBSON	12/16		
REDRAFTED	CD	J. NAGELVOORT	09/18	STREETSCAPE POLE TYPE P-AP	<i>Chung</i> 9/4/18
					COORDINATOR R.C.E. 56523 DATE
					DRAWING
					NUMBER SDE-106



NOTES


1. REFER TO APPROVED MATERIALS LIST FOR STREET LIGHTING FOR SPECIFICATION REFERENCE, MANUFACTURERS, AND NOTES.
2. PAINT DUNNEDWARDS FOR COLOR MATCH SUBMIT SAMPLES

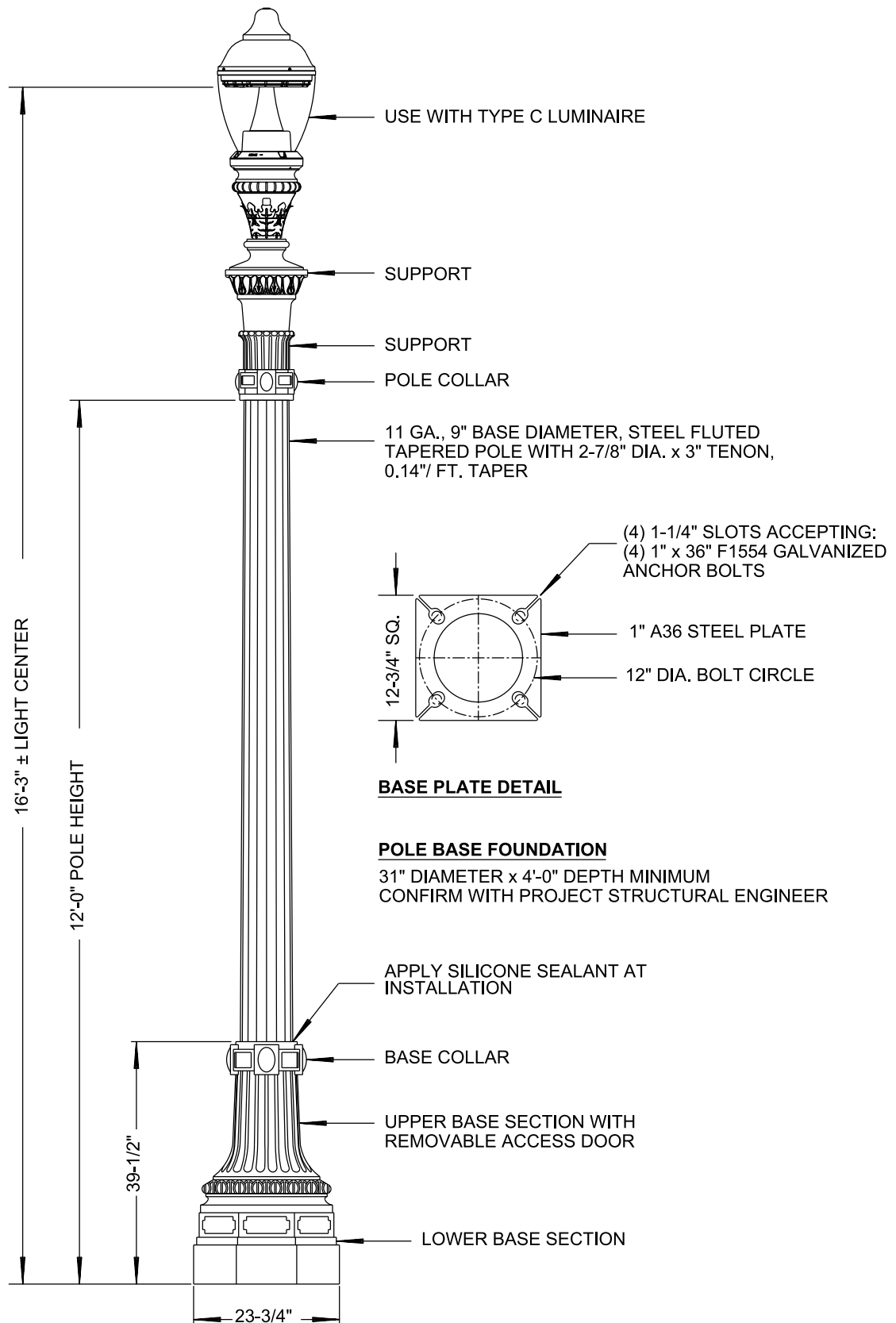
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ORIGINAL	LCA	M. GIBSON	12/16		
REDRAFTED	CD	J. NAGELVOORT	09/18	STREETSCAPE LUMINAIRE TYPE AP	<i>Chung</i> 9/4/18 COORDINATOR R.C.E. 56523 DATE
DRAWING NUMBER				SDE-107	



NOTES

REFER TO APPROVED MATERIALS LIST FOR STREET LIGHTING FOR SPECIFICATION REFERENCE, MANUFACTURERS, AND NOTES.

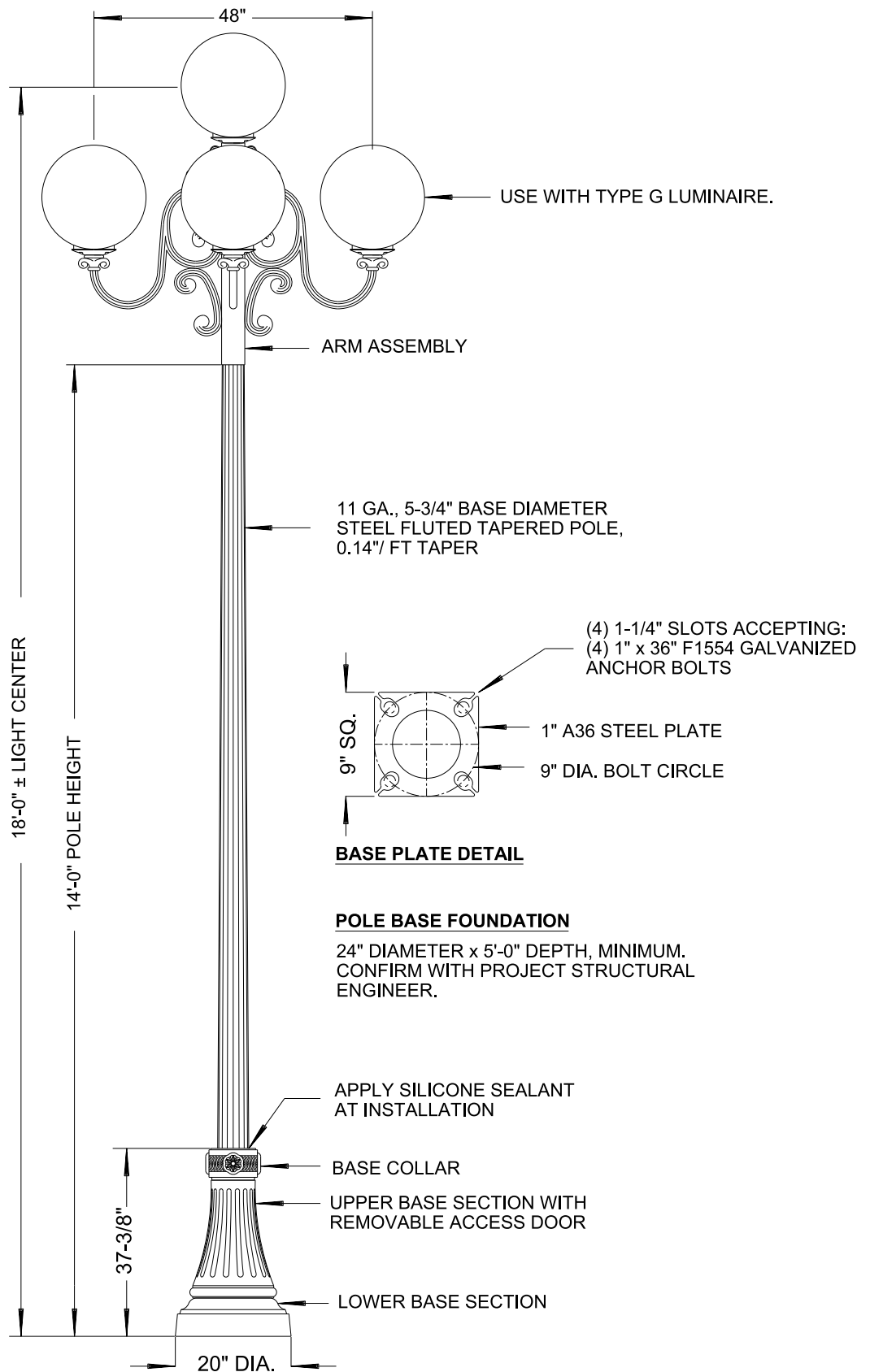
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	LCA	M. GIBSON	12/16		
REDRAFTED	CD	J. NAGELVOORT	09/18	STREETSCAPE POLE TYPE P-C	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDE-108



NOTES

REFER TO APPROVED MATERIALS LIST FOR STREET LIGHTING FOR SPECIFICATION REFERENCE, MANUFACTURERS, AND NOTES.

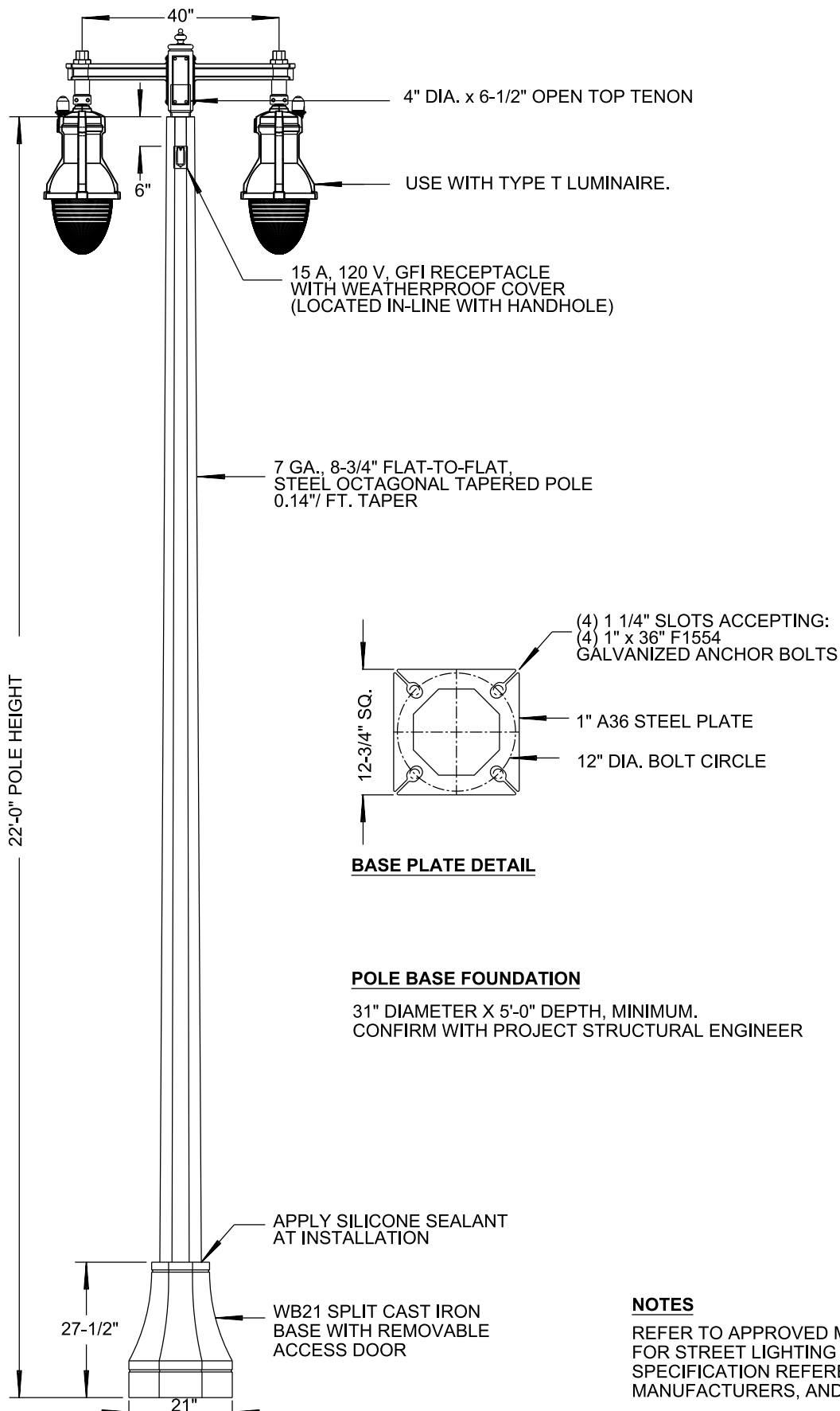
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	LCA	M. GIBSON	12/16		
REDRAFTED	CD	J. NAGELVOORT	09/18	STREETSCAPE POLE TYPE P-CE/CL	 9/4/18 COORDINATOR R.C.E. 56523 DATE
					DRAWING NUMBER SDE-109



NOTES

REFER TO APPROVED MATERIALS LIST FOR STREET LIGHTING FOR SPECIFICATION REFERENCE, MANUFACTURERS, AND NOTES.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	LCA	M. GIBSON	12/16		
REDRAFTED	CD	J. NAGELVOORT	09/18	STREETSCAPE POLE TYPE P-G	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDE-110



REVISION	BY	APPROVED	DATE
ORIGINAL	LCA	M. GIBSON	12/16
REDRAFTED	CD	J. NAGELVOORT	09/18

CITY OF SAN DIEGO – STANDARD DRAWING

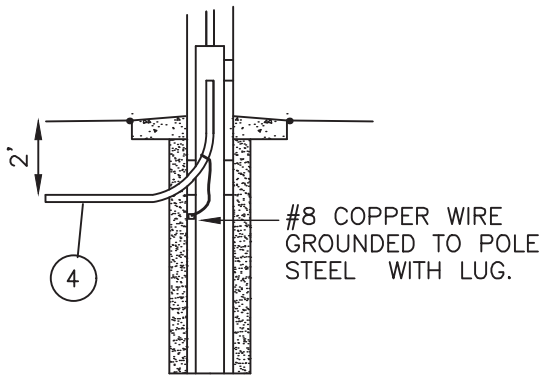
STREETSCAPE POLE TYPE P-T

RECOMMENDED BY THE CITY
OF SAN DIEGO STANDARDS COMMITTEE

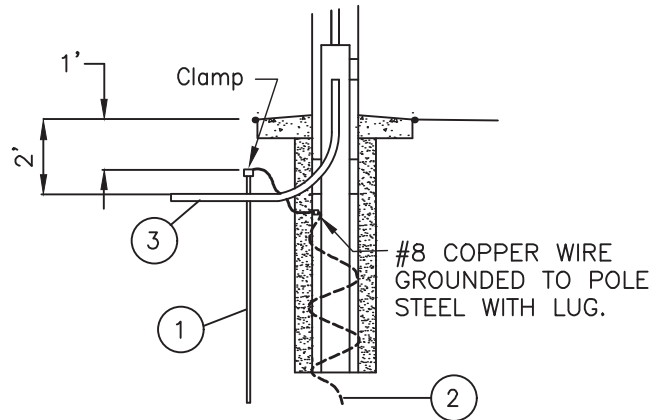
Chung 9/4/18
COORDINATOR R.C.E. 56523 DATE

DRAWING
NUMBER

SDE-111

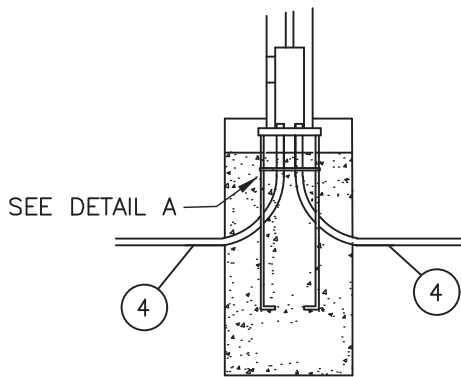


STEEL CONDUIT

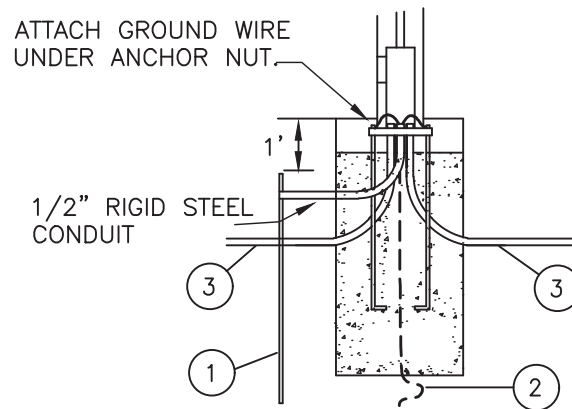


NON-METALLIC CONDUIT

DIRECT BURIAL FOUNDATION



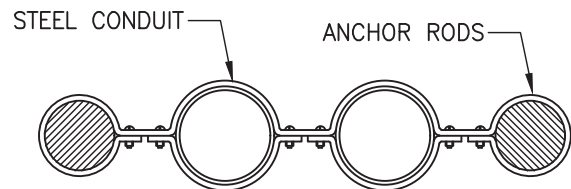
STEEL CONDUIT



NON-METALLIC CONDUIT

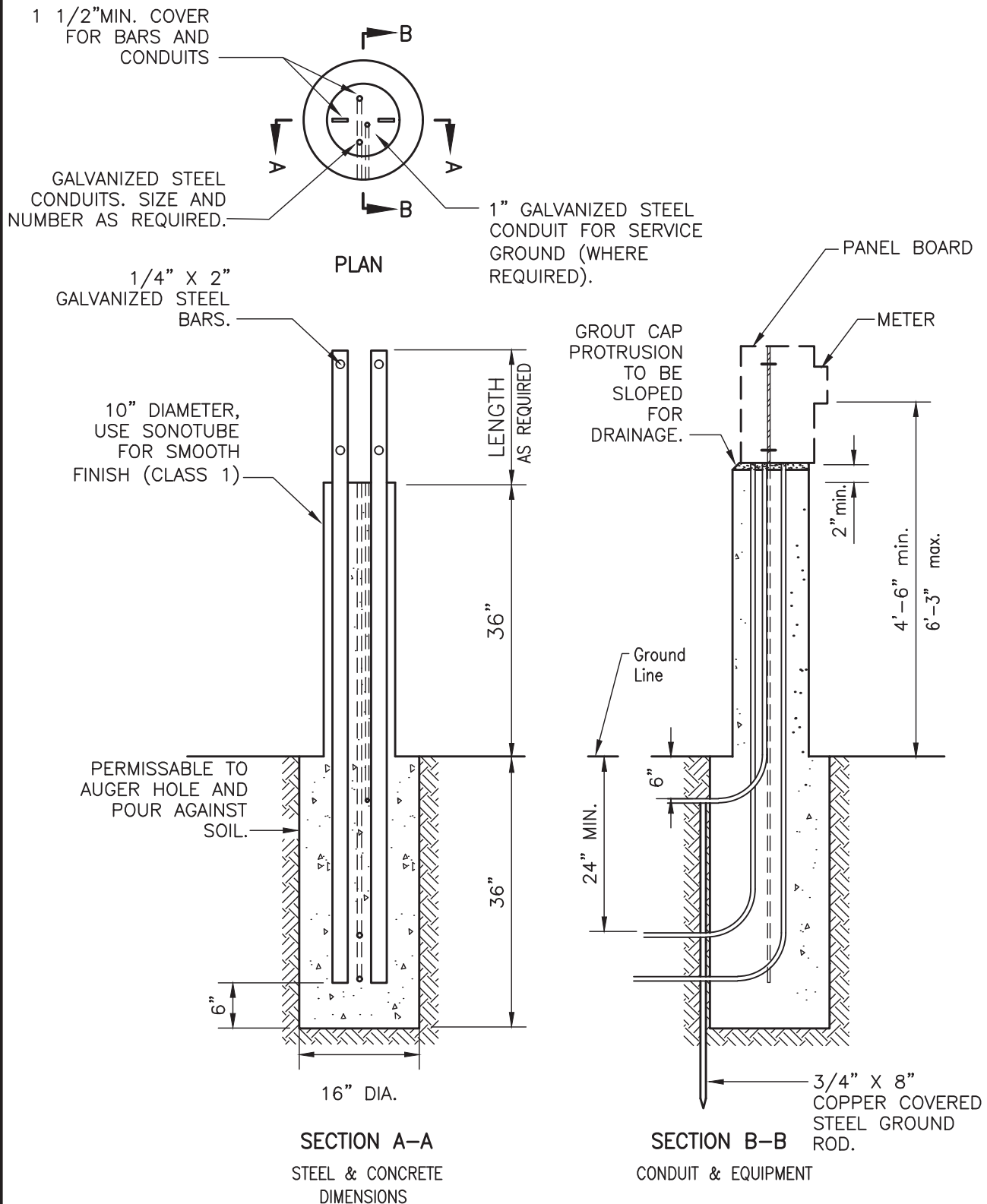
ANCHOR BASE FOUNDATION

- 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	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		Kercheval	12/75				
Delete Metric		D. Gerschoffer	06/12	GROUNDING OF CONCRETE LIGHTING STANDARDS		 12/17/2015 Chairperson R.C.E. 19246 Date	
Reviewed		D. Gerschoffer	12/15			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

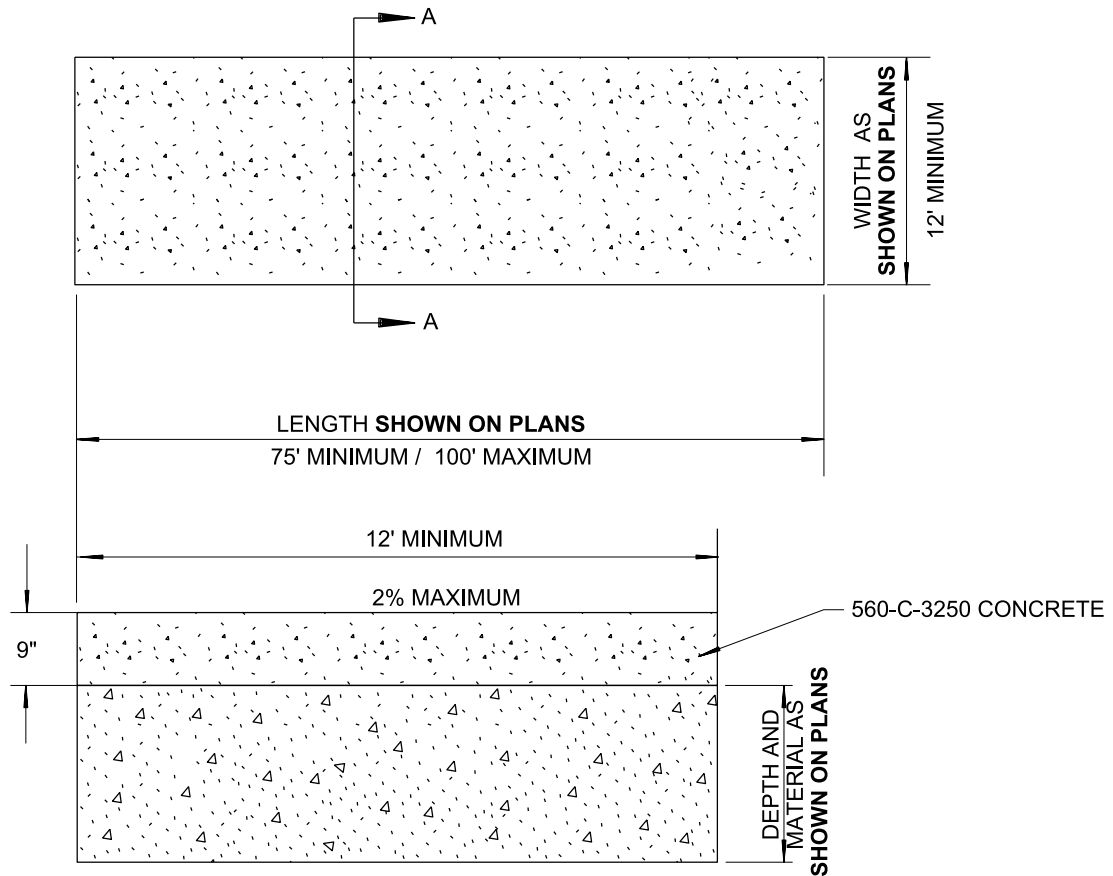
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

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

DRAWING
NUMBER **E-03**

CHAPTER 4

GENERAL SURFACE IMPROVEMENTS

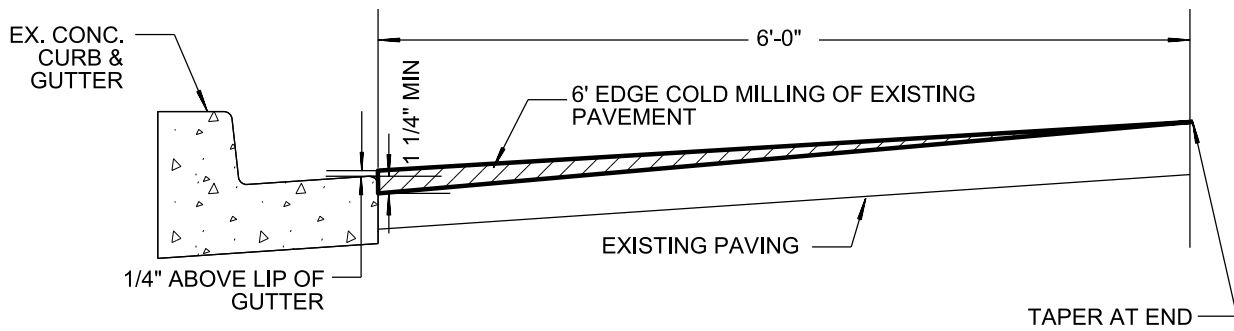
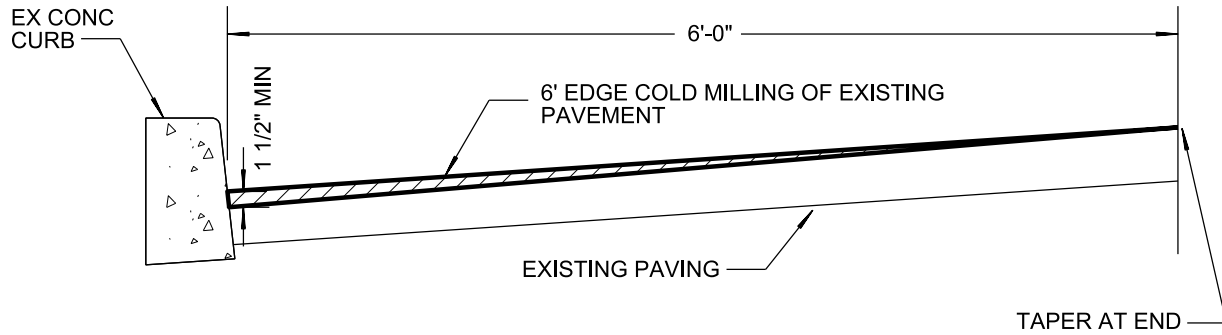
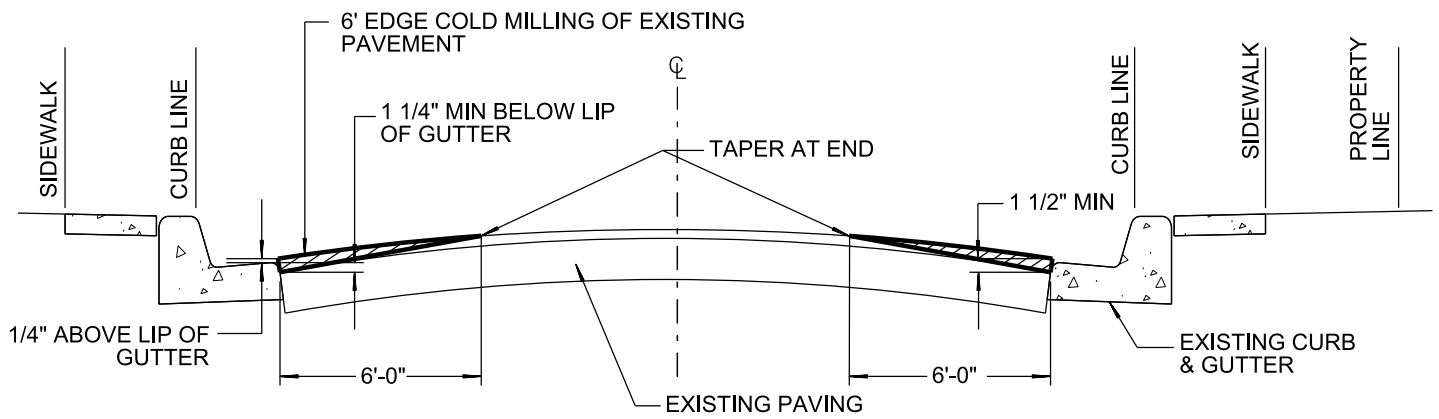


SECTION A-A

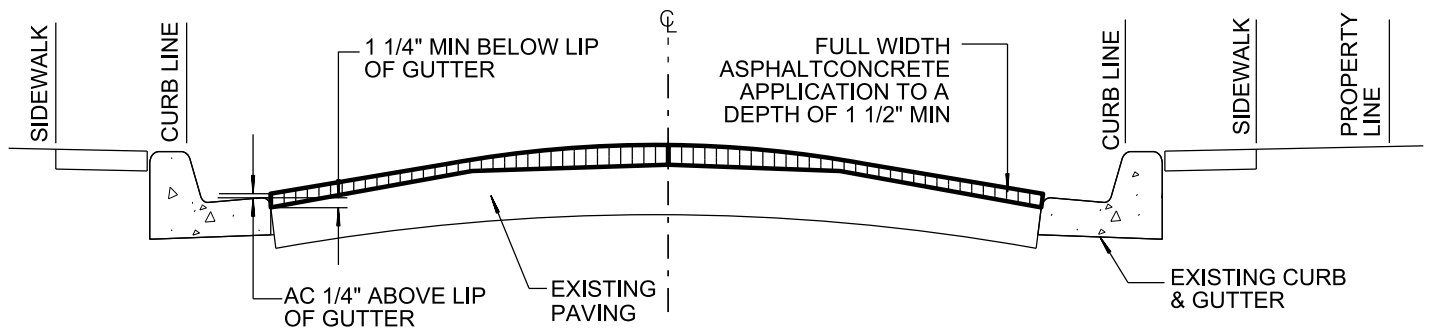
NOTE

1. BROOM FINISH PARALLEL WITH TRAFFIC.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		G. PARKINSON	0580		
REVISION		J. CASEY	0683	BUS STOP SLAB	 9/4/18 COORDINATOR R.C.E. 56523 DATE
DRAWING	LC	A. OSKOUJ	0694		
MAX	GP	F. BELOCK	496		
UPDATED	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	0918		
				DRAWING NUMBER	SDG-102



TYPICAL 6' EDGE COLD MILLING DETAIL



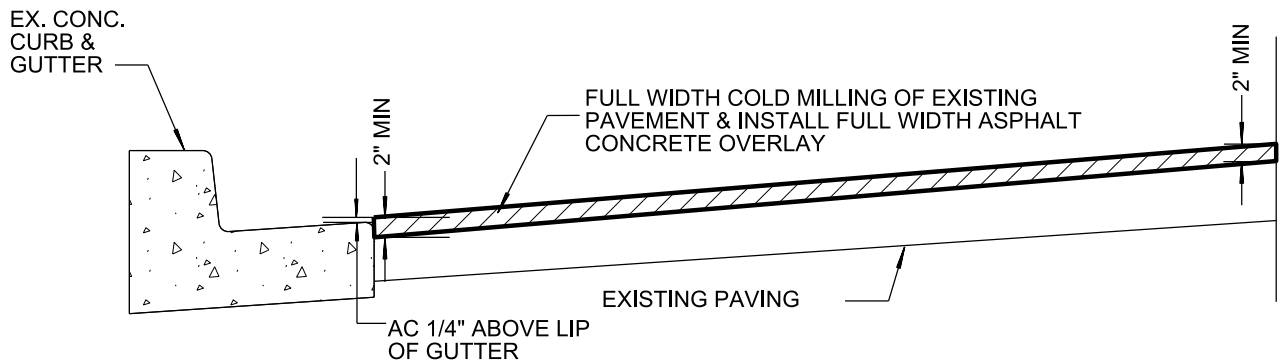
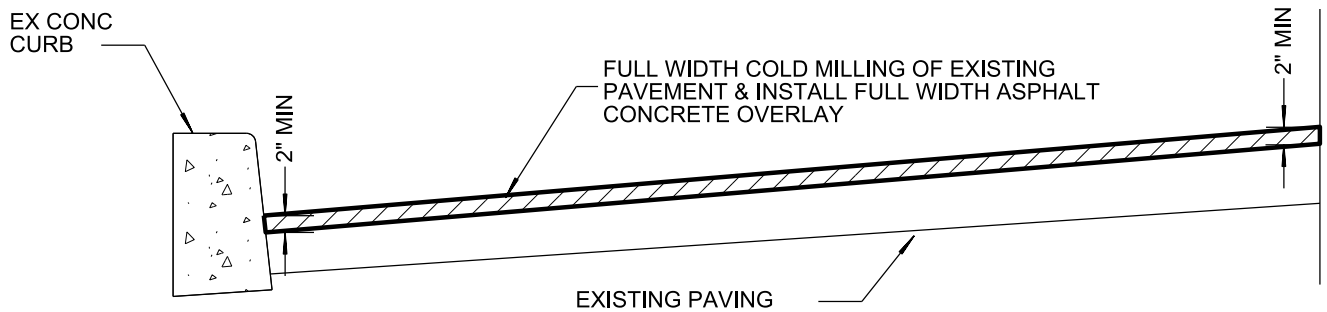
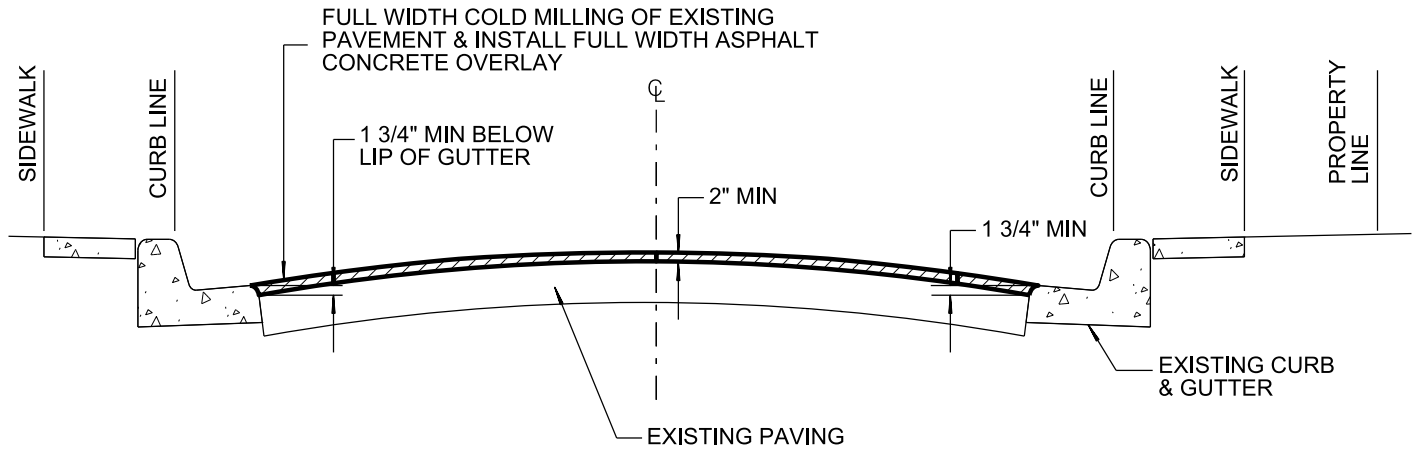
TYPICAL ASPHALT CONCRETE OVERLAY PAVEMENT DETAIL

NOTE:

SEE SHEET 2 FOR FULL WIDTH COLD MILLING & ASPHALT CONCRETE OVERLAY - TYPE B

SHEET 1 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
UPDATED	JL	J. NAGELVOORT	05/18	COLD MILLING & ASPHALT CONCRETE OVERLAY - TYPE A (6' EDGE COLD MILL)	 5/23/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDG-106



TYPICAL FULL WIDTH COLD MILLING & ASPHALT CONCRETE OVERLAY PAVEMENT DETAIL

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE
ORIGINAL	KA	J. NAGELVOORT	01/12
UPDATED	JL	J. NAGELVOORT	05/18

CITY OF SAN DIEGO – STANDARD DRAWING

**COLD MILLING & ASPHALT
CONCRETE OVERLAY - TYPE B
(FULL WIDTH COLD MILL)**

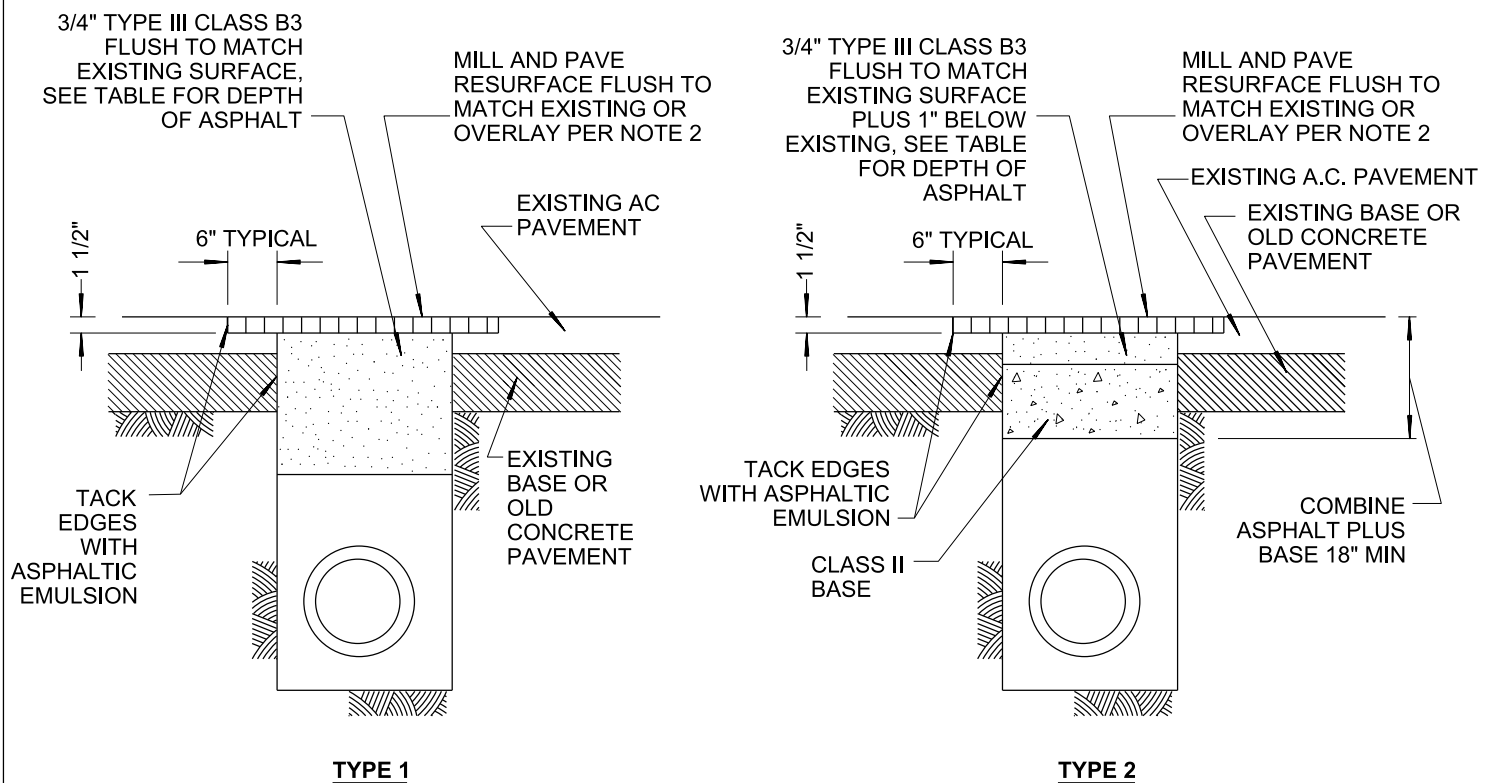
RECOMMENDED BY THE CITY
OF SAN DIEGO STANDARDS COMMITTEE

CA Brunga
COORDINATOR R.C.E. 56523

5/23/18
DATE

DRAWING
NUMBER


SDG-106

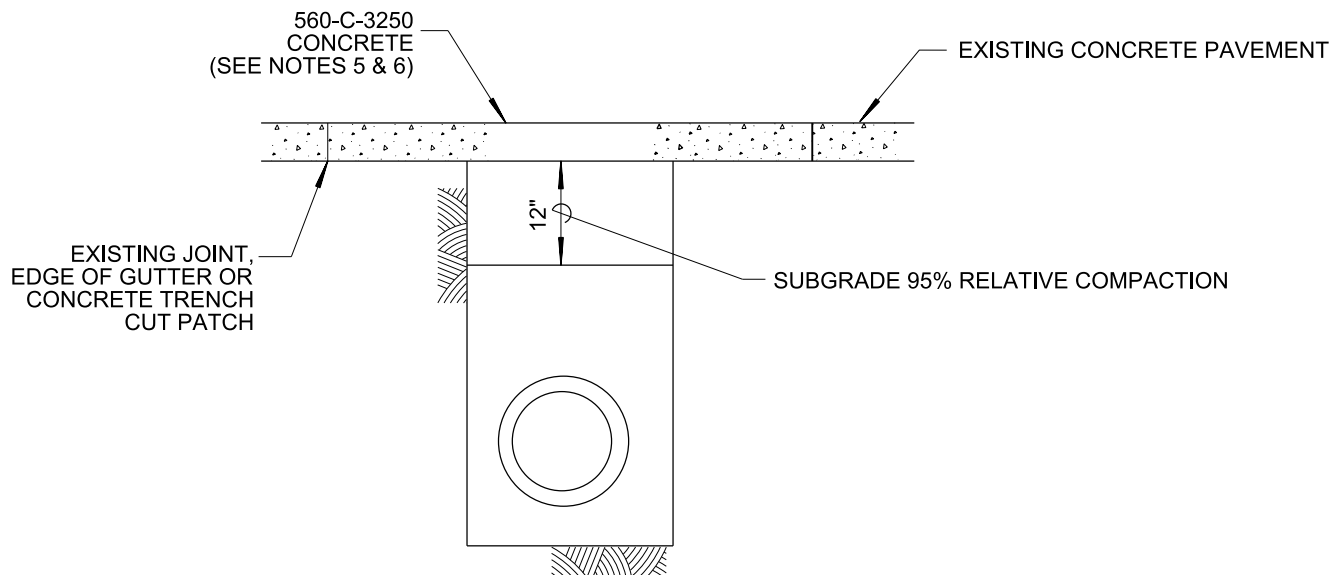


	TYPE 1	TYPE 2
	ASPHALT	ASPHALT PLUS BASE
MIX DESIGN	3/4" TYPE III CLASS B3	3/4" TYPE III CLASS B3 PLUS CLASS II BASE
ALLEYS	8.0"	ASPHALT THICKNESS TO EQUAL
LOCAL THROUGH 4 LANE COLLECTORS	10.0"	EXISTING PLUS 1", MIN 4" TO MAX. 9".
MAJOR	12.0"	COMBINED ASPHALT PLUS BASE 18" MIN.

NOTES:

1. ANY STREET TRENCH 7 FEET IN WIDTH OR GREATER AND LONGER THAN 100 FEET IN OVERALL LENGTH SHALL BE RECONSTRUCTED WITH THE PAVEMENT SECTION FOR THE STREET CLASSIFICATION **PER SCHEDULE "J" (SDG-113)**.
2. ASPHALT TRENCH CAPS IN STREETS NOT RECEIVING A FULL WIDTH OVERLAY PRIOR TO ACCEPTANCE SHALL BE MILLED AS SHOWN AND RESURFACED WITH 1/2" TYPE III CLASS C2 ASPHALT NO LESS THAN 30 CALENDAR DAYS AFTER INITIAL ASPHALT PLACEMENT.
3. IF THE STREET IS NOT PLANNING TO DO CURB TO CURB SLURRY SEAL OR RESURFACING, IT MUST COMPLETE FINAL STREET RESTORATION WITHIN 60 DAYS AFTER THE INITIAL EXCAVATION.
4. **WHEN DIRECTED BY CITY ENGINEER OR SHOWN ON THE PLANS**, CONCRETE **PER SDG-108**(NOTE #5) MAY BE PLACED; A 1/8" - 1/4" WEARING SURFACING OF TYPE III CLASS F ASPHALT CONCRETE WILL BE REQUIRED.


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL		J.P. CASEY	12/4/89		<div> COORDINATOR R.C.E. 56523</div> <div>9/4/18 DATE</div>	
UPDATED	KA	J. NAGELVOORT	4/13			
UPDATED	BB	J. NAGELVOORT	1/14			
UPDATED	LS	J. NAGELVOORT	02/16			
UPDATED	JN	J. NAGELVOORT	11/17			
REDRAFTED	CD	J. NAGELVOORT	09/18	TRENCH RESURFACING FOR ASPHALT CONCRETE SURFACED STREETS	DRAWING NUMBER	SDG-107

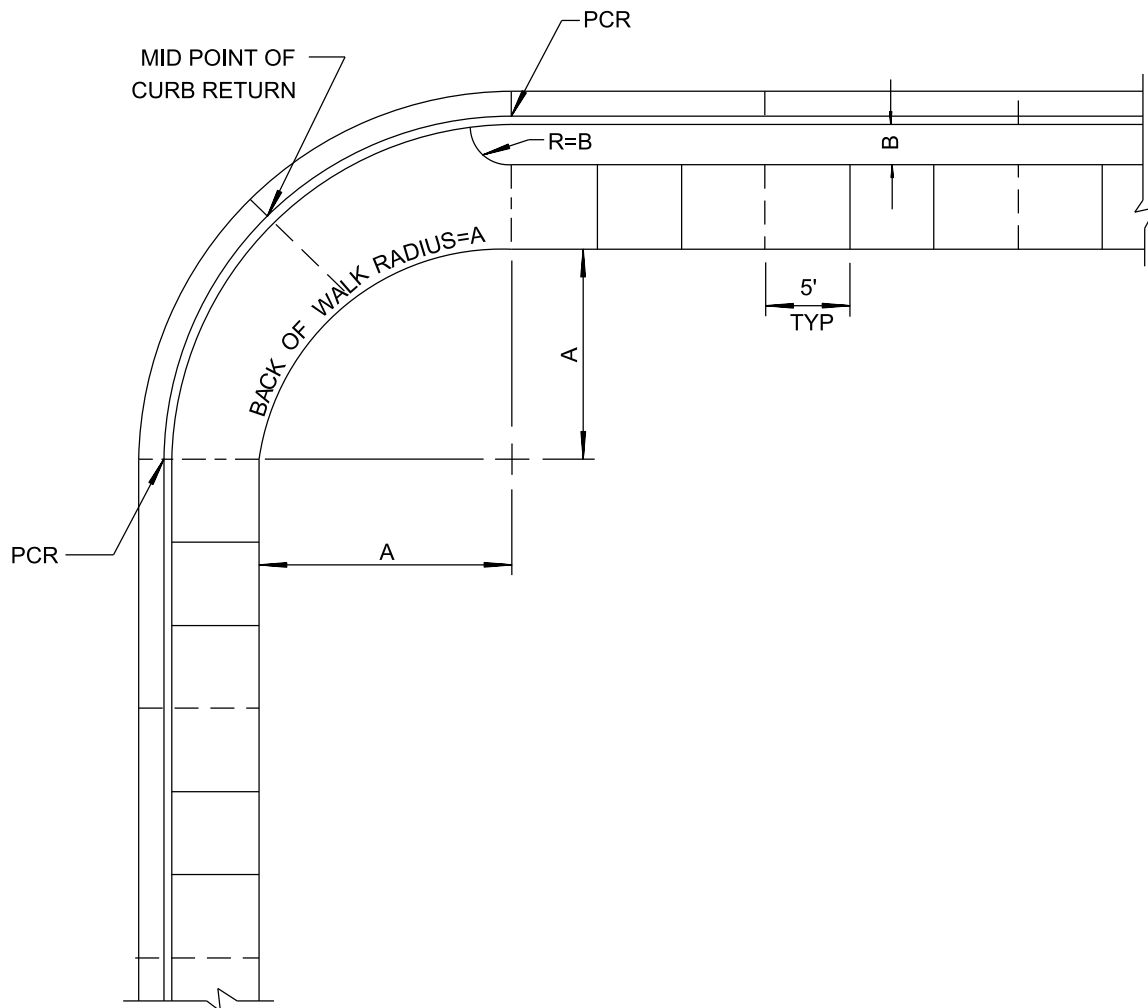


NOTES:

1. CONCRETE PAVEMENT RESTORATION SHALL EXTEND BEYOND THE EDGE OF THE TRENCH CUT TO THE NEAREST JOINT (FULL WIDTH OF CONCRETE PANEL, JOINT TO JOINT AROUND THE PERIMETER OF THE EXCAVATION).

FOR CONCRETE PAVEMENT WITH EXISTING TRENCH CUT PATCHES, CONCRETE PAVEMENT RESTORATION SHALL INCLUDE THE EXISTING TRENCH CUT PATCHES, IF THOSE PATCHES ARE WITHIN 4 FEET OF THE PROPOSED CONCRETE PANEL.
2. PRIOR TO PLACING CONCRETE, PAVEMENT EDGES SHALL BE TRIMMED TO NEAT HORIZONTAL AND VERTICAL LINES.
3. 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.
4. ANY STREET TRENCH 7'-0" IN WIDTH OR GREATER AND LONGER THAN 100'-0" IN LENGTH SHALL BE RECONSTRUCTED WITH THE PAVEMENT SECTION FOR THE STREET CLASSIFICATION **PER SCHEDULE "J" (SDG-113)**. STREET TRENCH SECTIONS 7'-0" IN WIDTH OR GREATER BUT LESS THAN 100'-0" IN OVERALL LENGTH SHALL BE RESURFACED TO A THICKNESS OF 1" GREATER THAN REQUIRED BY NOTE 3 ABOVE.
5. 560-C-3250 CONCRETE TREATED WITH A MINIMUM 2% CALCIUM CHLORIDE SOLUTION IN ACCORDANCE WITH 201-1 OR 650-CW-4000 (W/O CC) CONCRETE MAY BE OPENED TO TRAFFIC 3 DAYS AFTER IT IS PLACED. 650-CW-4000 CONCRETE TREATED IN SAME MANNER (W/CC) MAY BE OPENED TO TRAFFIC 24 HOURS AFTER IT IS PLACED. CONCRETE SPECIFIED BY ALTERNATE CLASS OR OTHERWISE CONTAINING FLY ASH IS NOT ALLOWED.
6. IN FOUR-LANE MAJOR OR GREATER STREETS, AN APPROVED SET ACCELERATING ADMIXTURE SUCH AS CALCIUM CHLORIDE, SHALL BE USED IN THE CONCRETE.

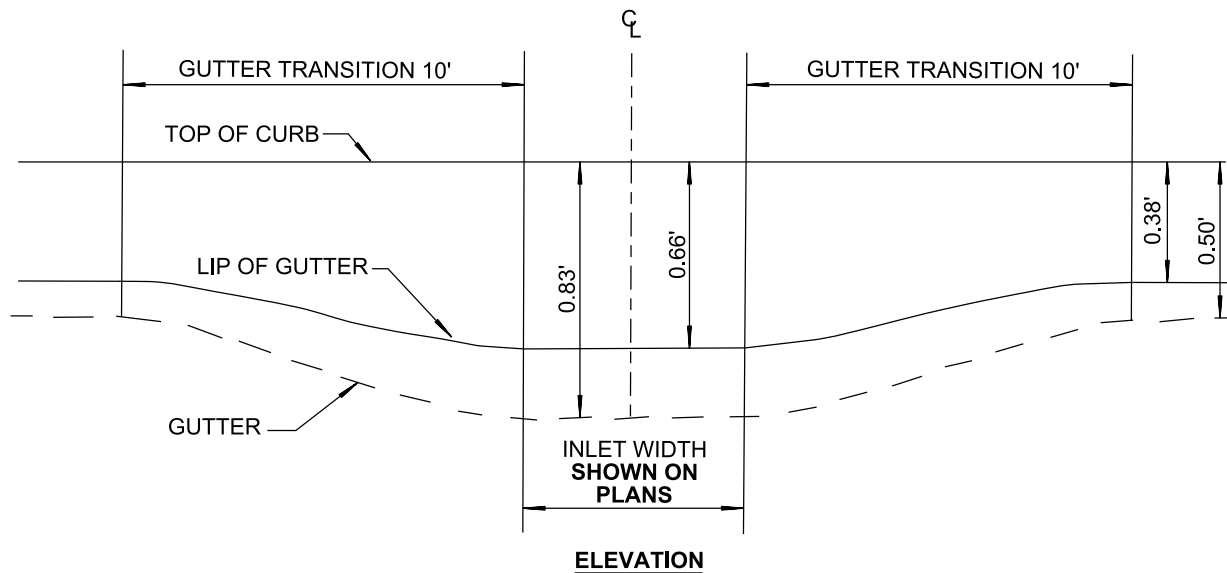
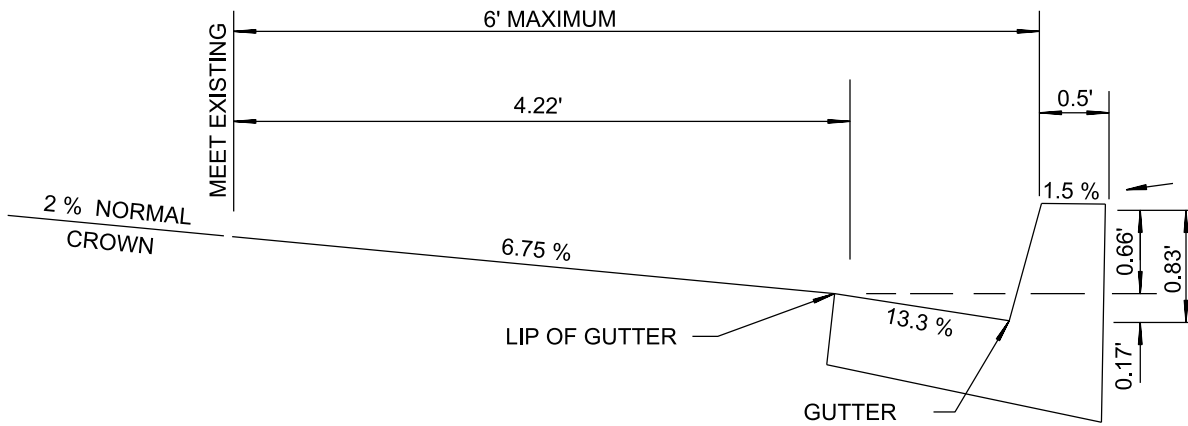
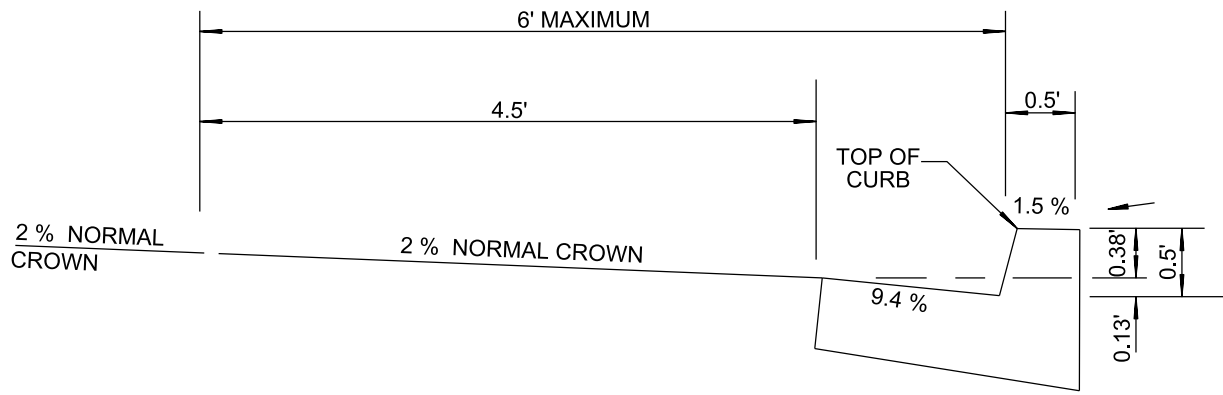
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		J. CASEY	01/89		
UPDATED	KA	J. NAGELVOORT	01/12	TRENCH RESURFACING FOR CONCRETE SURFACED STREETS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	BB	J. NAGELVOORT	01/14		
UPDATED	BB	J. NAGELVOORT	03/15		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDG-108



NOTES

1. EXPANSION JOINTS PER G-10- —AT CURB RETURNS, ADJACENT TO STRUCTURES AND AT 45' INTERVALS, **SEE G-10.**
2. WEAKENDED PLANE JOINTS — —AT MID POINT OF CURB RETURN, WHEN REQUIRED, AND AT 15' INTERVALS FROM PCR'S ABSENT A CURB RAMP, **SEE G-10.**
3. TOOLED JOINTS ———1/4" GROOVES WITH 1/4" RADIUS EDGES AT 5' INTERVALS.
4. FOR DESIGNATED URBANIZED COMMUNITIES, SIDEWALK SCORING (GROOVES) PATTERN SHALL BE IN CONFORMANCE WITH HISTORIC DESIGN ON ADJACENT PROPERTIES.

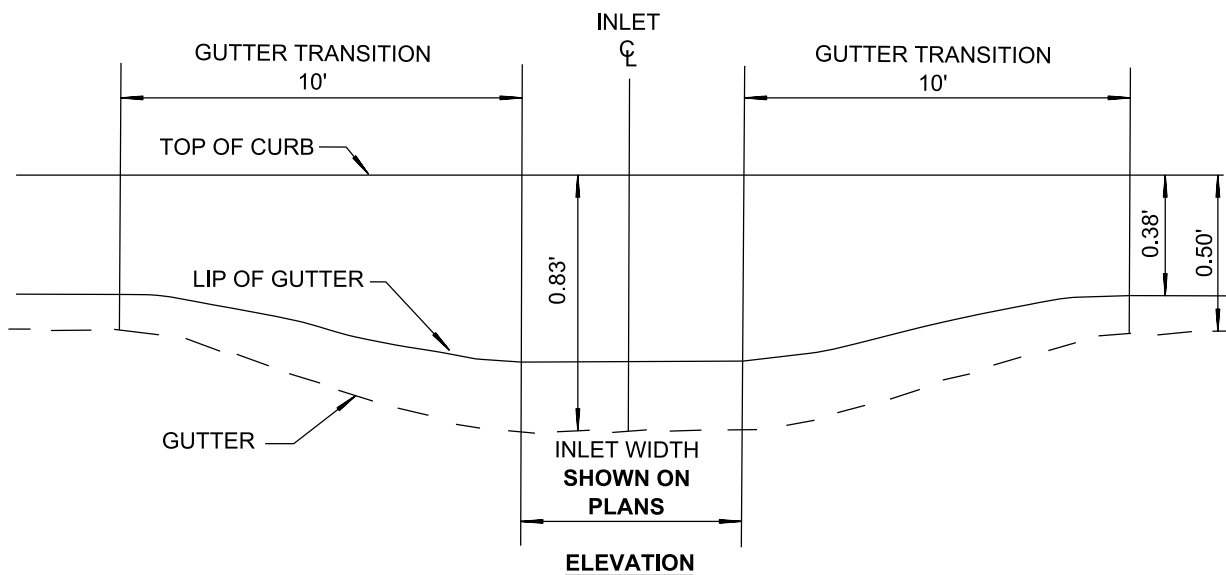
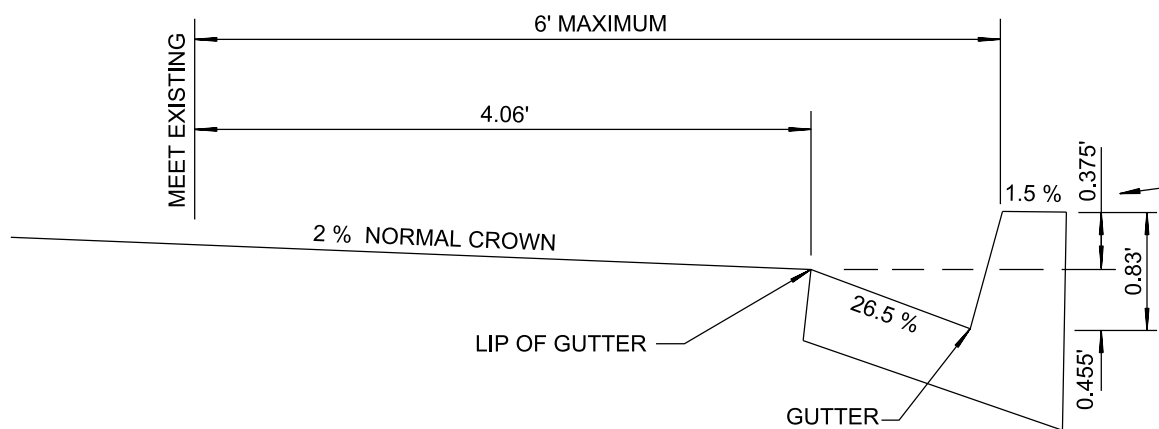
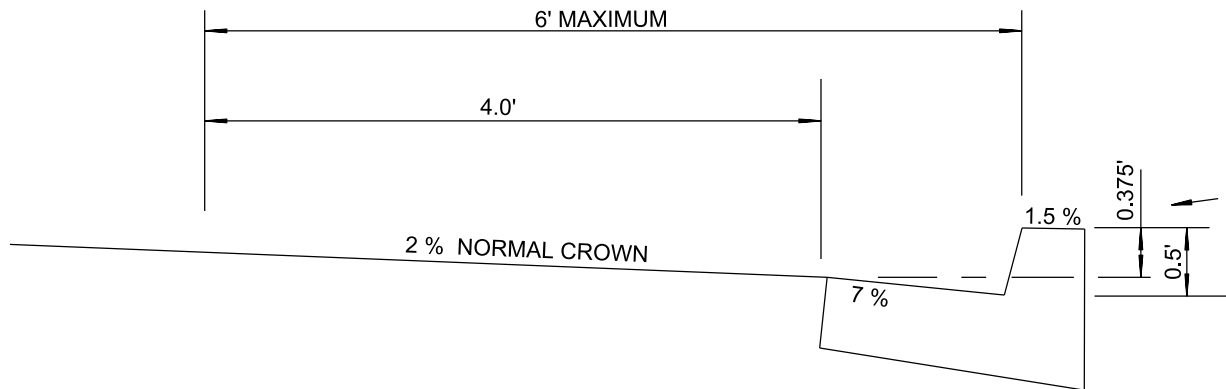
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	RB	J. NAGELVOORT	10/15	SIDEWALK JOINT LOCATIONS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDG-109



G CURB PROFILE - INLET TRANSITION


SHEET 1 OF 2

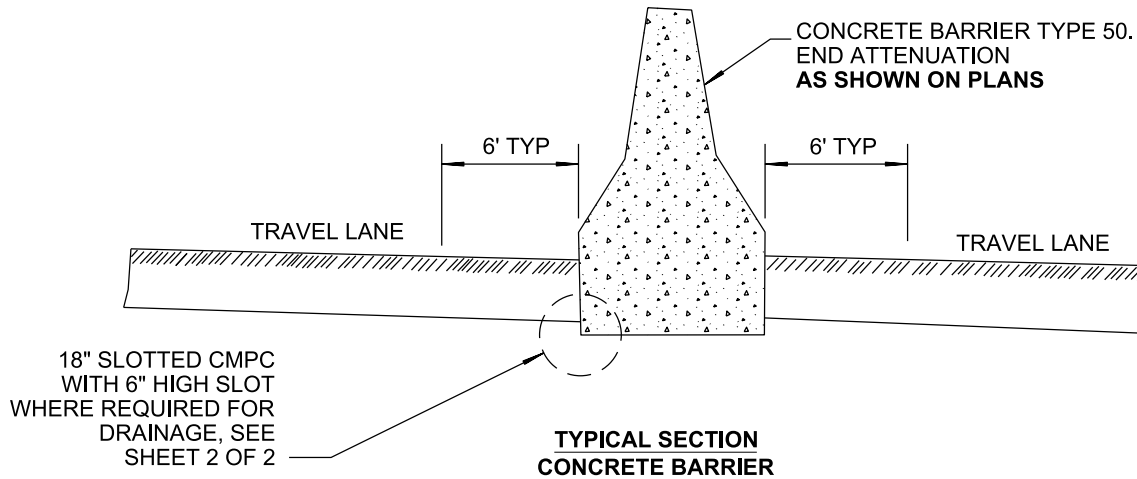
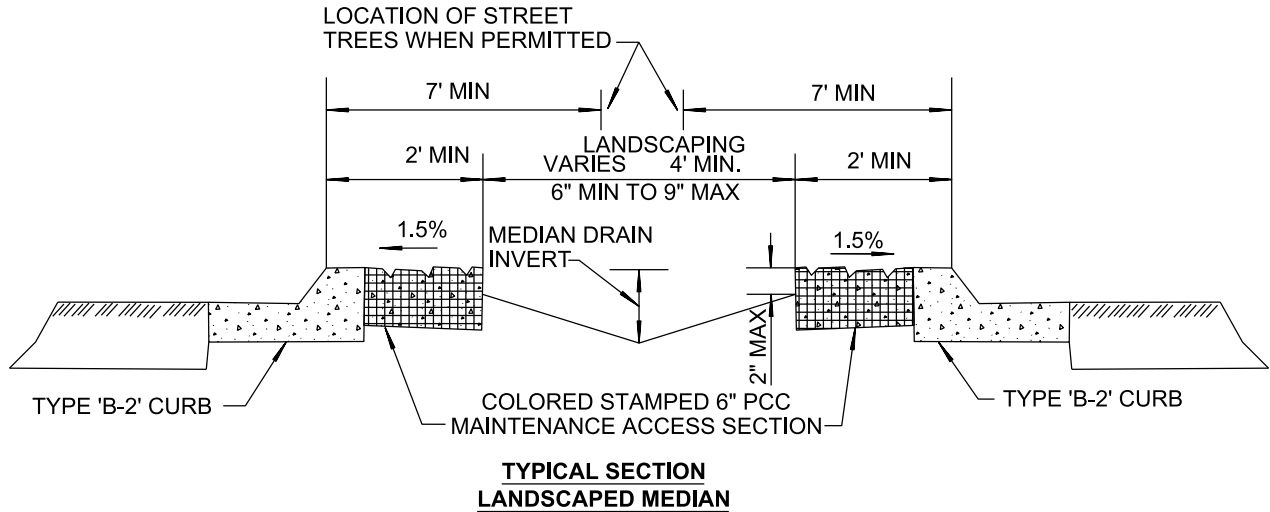
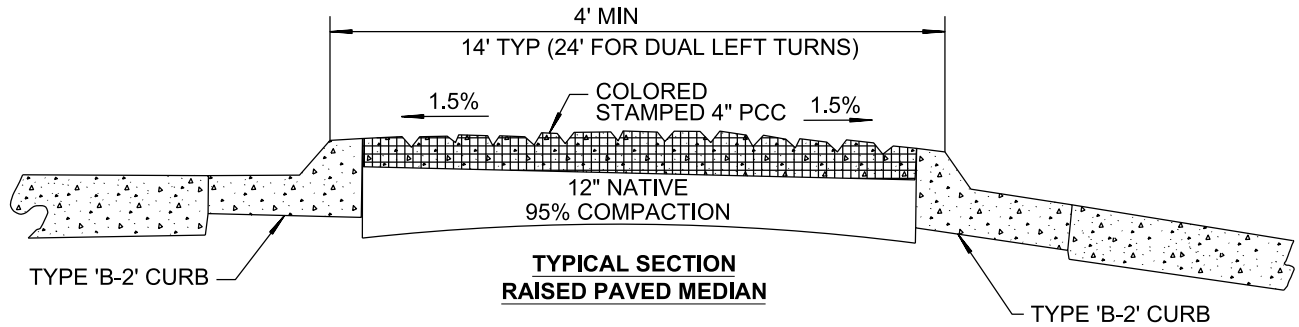
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		J. CASEY	11/88		
UPDATED	KA	J. NAGELVOORT	01/12	INLET TRANSITION PROFILE	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDG-110



H CURB PROFILE - INLET TRANSITION

SHEET 2 OF 2


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		J. CASEY	11/88		
UPDATED	KA	J. NAGELVOORT	01/12	INLET TRANSITION PROFILE	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	KA	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDG-110

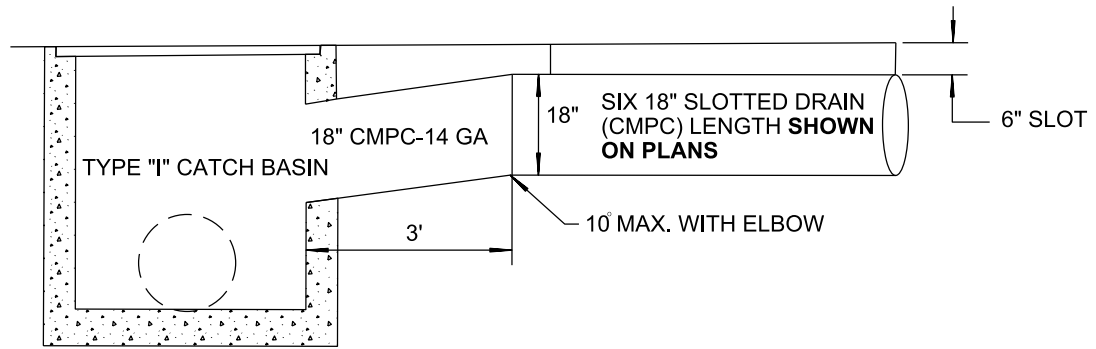


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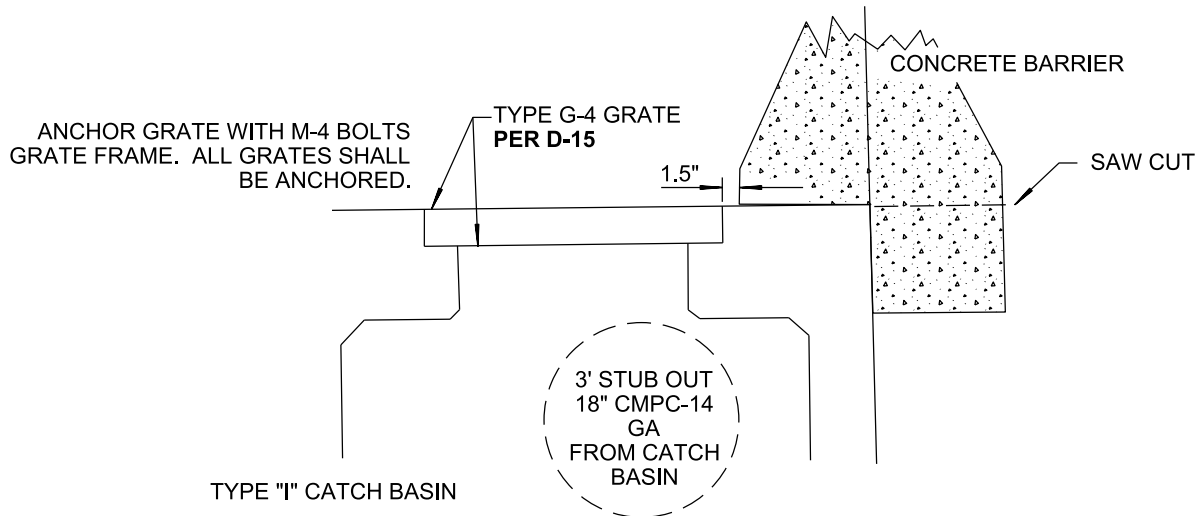
1. CONCRETE SHALL BE 520-C-2500.
2. COLOR & PATTERN OF COLORED STAMPED CONCRETE **SHALL BE SHOWN ON PLANS.**
3. CONCRETE COLOR SHALL BE INTEGRATED THROUGHOUT.
4. **SEE SDG-109 AND G-10 FOR JOINT DETAILS.**

SHEET 1 OF 2

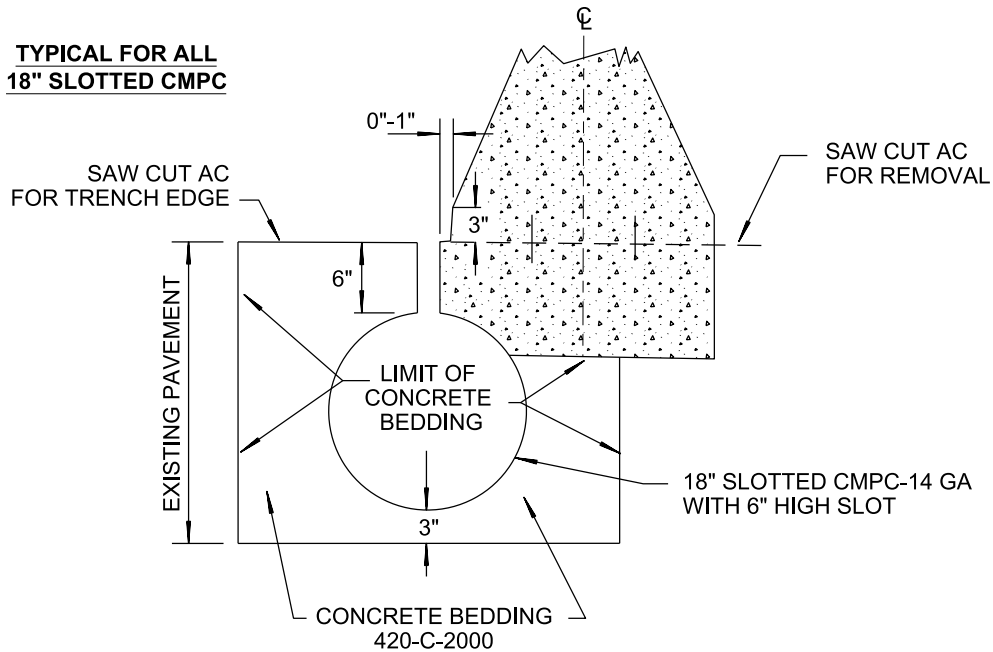
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		J. CASEY	11/88		
UPDATED	KA	J. NAGELVOORT	01/12	RAISED CENTER MEDIAN	 COORDINATOR R.C.E. 56523 9/4/18 DATE
UPDATED	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER
					SDG-112




**DETAILED LOCATION OF TYPE "I" CATCH
BASIN WITH GRATE PER D-29**



**TYPICAL FOR ALL
18" SLOTTED CMPC**



SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		J. CASEY	11/88		
UPDATED	KA	J. NAGELVOORT	01/12	RAISED CENTER MEDIAN	 COORDINATOR R.C.E. 56523
UPDATED	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDG-112

SCHEDULE "J" PAVEMENT

THE FOLLOWING TABLES ARE TO BE USED TO DETERMINE THE SCHEDULE "J" PAVEMENT DESIGN SECTIONS FOR STREETS, ALLEYS, PARKING LOTS FOR PUBLIC FACILITIES, DRIVEWAYS, AND EASEMENTS, INCLUDING PUBLIC ACCESS EASEMENTS. THESE DESIGNS SHALL BE USED IN THE PUBLIC RIGHT-OF-WAY, OR PRIVATE PROPERTY IN THE AREAS WHERE PUBLIC EASEMENTS ARE GRANTED.

1. RESISTANCE VALUES (R-VALUES) WILL BE DETERMINED FROM SAMPLES TAKEN FROM THE 12" MATERIAL LOCATED IMMEDIATELY BELOW THE FIRST LAYER OF SUBBASE, BASE OR PAVEMENT. THIS 12" SECTION SHALL REPRESENT THE TOP 36 INCHES OF UNIFORM SOILS BELOW THE SUBBASE, OR PAVEMENT. IF A LOWER BEARING SOIL IS ENCOUNTERED IN THIS 36" SECTION, THE R-VALUE WILL BE DETERMINED FROM THE LOWEST BEARING SOIL. DETERMINATION OF THE R-VALUE SHALL BE IN ACCORDANCE WITH CALTRANS TEST METHODS 301-F AND 301-G.
2. AVERAGE DAILY TRAFFIC (ADT) IS THE MAXIMUM AVERAGE ANNUAL ADT EXPECTED AT BUILDOUT. FUNCTION SHALL ALSO BE CONSIDERED WHEN DETERMINING THE MINIMUM SCHEDULE "J" PAVEMENT SECTION PER THE ENGINEER.
3. RIGID PAVEMENTS: THE DESIGN THICKNESS SHOWN IN THE TABLES ARE BASED ON A MODIFIED PORTLAND CEMENT ASSOCIATION (PCA) DESIGN. PROJECTS REQUIRING CALTRANS REVIEW SHOULD UTILIZE THE DESIGN METHODS PRESCRIBED IN THE CALTRANS HIGHWAY DESIGN MANUAL.
4. CONCRETE PAVEMENT SHALL BE CONSTRUCTED IN STREETS ON GRADES GREATER THAN 12.0 PERCENT AND IN ALLEYS AND IN ALLEY INTERSECTIONS. THE PAVEMENT SHALL BE CLASS 560-B-3250 CONCRETE WITH A MINIMUM MODULES OF RUPTURE (MOR) OF 600.
5. NEW PAVEMENT, LESS THAN 6' IN WIDTH, SHALL BE PAVED WITH PORTLAND CEMENT CONCRETE PAVEMENT SECTION NOTED IN SCHEDULE "J" FOR THE STREET CLASSIFICATION PLUS A 1/8" TO 1/4" CLASS F ASPHALT CONCRETE CAP. AN EQUIVALENT SECTION OF LEAN CONCRETE SHALL BE SUBSTITUTED FOR ANY REQUIRED CTB SUBBASE.
6. PERSONNEL FROM THE CITY'S ENGINEERING LABORATORY WILL DESIGNATE WHERE A PRIVATE LABORATORY SHALL SAMPLE FOR R-VALUES.

SHEET 1 OF 4

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING PAVEMENT DESIGN STANDARDS SCHEDULE "J"	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  9/4/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL		M.ROLLINGER	05/92		
NOTES		G. PARKINSON	02/95		
UPDATED	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDG-113

STREET CLASSIFICATION	MAX ADT	MAX TRAFFIC INDEX	"R" VALUE	STANDARD SECTIONS		CONCRETE M.O.R. 600 MIN		FULL DEPTH
				A.C. (IN)	CTB (IN)	CONC (IN)	CTB (IN)	
CUL-DE-SAC	200	5.0	50.0 OR GREATER	3.0	5.0	6.0	—	4.5
LOCAL (L.V.R.)	700	5.5		3.0	5.0	6.5	—	5.0
LOCAL (RES.)	1200	6.0		3.0	5.0	6.5	—	5.5
LOCAL (RES.)	2200	6.5		3.0	5.0	6.5	—	6.0
LOCAL (IND.)	2000	8.5		3.0	7.5	7.5	—	8.5
COLLECTOR (RES.)	3500	7.0		3.0	5.0	7.0	—	6.5
COLLECTOR (RES.)	5000	7.5		3.0	5.5	7.0	—	7.5
COLLECTOR (COMM.\IND.)	5000	9.5		3.0	8.5	7.5	—	9.0
COLLECTOR (NO FRT)	7500	8.0		3.0	6.5	7.0	—	8.0
COLLECTOR	15000	9.0		3.0	7.5	7.5	—	8.5
MAJOR (4-LANE)	30000	10.5		3.0	10.0	8.0	—	10.5
MAJOR (6-LANE)	40000	11.0		3.5	10.5	8.0	—	11.0
PRIMARY ARTERIAL	50000	11.5		3.5	11.5	8.0	—	11.5
EXPRESSWAY	60000	12.0		3.5	11.5	8.5	—	12.0
EXPRESSWAY	80000	12.5		4.0	12.0	8.5	—	12.5
EXPRESSWAY	100000	13.0		4.0	12.5	9.0	—	13.0

STREET CLASSIFICATION	MAX ADT	MAX TRAFFIC INDEX	"R" VALUE	STANDARD SECTIONS		CONCRETE M.O.R. 600 MIN		FULL DEPTH
				A.C. (IN)	CTB (IN)	CONC (IN)	CTB (IN)	
CUL-DE-SAC	200	5.0	40.0 TO 49.9	3.0	5.0	6.5	—	5.0
LOCAL (L.V.R.)	700	5.5		3.0	5.0	6.5	—	6.0
LOCAL (RES.)	1200	6.0		3.0	5.5	7.0	—	6.5
LOCAL (RES.)	2200	6.5		3.0	6.0	7.0	—	7.0
LOCAL (IND.)	2000	8.5		3.0	9.5	7.5	—	9.5
COLLECTOR (RES.)	3500	7.0		3.0	6.5	7.0	—	8.0
COLLECTOR (RES.)	5000	7.5		3.0	7.5	7.5	—	8.5
COLLECTOR (COMM.\IND.)	5000	9.5		3.0	11.0	8.0	—	11.0
COLLECTOR (NO FRT)	7500	8.0		3.0	8.5	7.5	—	9.0
COLLECTOR	15000	9.0		3.0	10.5	8.0	—	10.0
MAJOR (4-LANE)	30000	10.5		3.5	12.5	8.5	—	12.0
MAJOR (6-LANE)	40000	11.0		4.0	12.5	8.5	—	12.5
PRIMARY ARTERIAL	50000	11.5		4.0	13.5	9.0	—	13.0
EXPRESSWAY	60000	12.0		4.5	13.5	9.0	—	13.5
EXPRESSWAY	80000	12.5		4.5	14.5	9.5	—	14.0
EXPRESSWAY	100000	13.0		5.0	15.0	10.0	—	15.0

SHEET 2 OF 4

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		M.ROLLINGER	05/92		
NOTES		G. PARKINSON	02/95	PAVEMENT DESIGN STANDARDS SCHEDULE "J"	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDG-113

STREET CLASSIFICATION	MAX ADT	MAX TRAFFIC INDEX	"R" VALUE	STANDARD SECTIONS		CONCRETE M.O.R. 600 MIN		FULL DEPTH
				A.C. (IN)	CTB (IN)	CONC (IN)	CTB (IN)	
CUL-DE-SAC	200	5.0	30.0 TO 39.9	3.0	5.0	6.5	--	6.0
LOCAL (L.V.R.)	700	5.5		3.0	5.5	7.0	--	6.5
LOCAL (RES.)	1200	6.0		3.0	6.5	7.0	--	7.0
LOCAL (RES.)	2200	6.5		3.0	7.5	7.0	--	8.0
LOCAL (IND.)	2000	8.5		3.0	11.5	8.0	--	10.5
COLLECTOR (RES.)	3500	7.0		3.0	8.5	7.5	--	8.5
COLLECTOR (RES.)	5000	7.5		3.0	9.5	7.5	--	9.0
COLLECTOR (COMM.IND.)	5000	9.5		3.5	13.0	8.5	--	12.0
COLLECTOR (NO FRT)	7500	8.0		3.0	10.5	7.5	--	10.0
COLLECTOR	15000	9.0		3.5	12.0	8.0	--	11.0
MAJOR (4-LANE)	30000	10.5		4.0	14.5	8.5	--	13.5
MAJOR (6-LANE)	40000	11.0		4.5	15.0	9.0	--	14.0
PRIMARY ARTERIAL	50000	11.5		5.0	15.5	9.0	--	14.5
EXPRESSWAY	60000	12.0		5.0	16.5	9.5	--	15.0
EXPRESSWAY	80000	12.5		5.5	17.0	9.5	--	16.0
EXPRESSWAY	100000	13.0		6.0	17.0	10.0	--	17.0

STREET CLASSIFICATION	MAX ADT	MAX TRAFFIC INDEX	"R" VALUE	STANDARD SECTIONS		CONCRETE M.O.R. 600 MIN		FULL DEPTH
				A.C. (IN)	CTB (IN)	CONC (IN)	CTB (IN)	
CUL-DE-SAC	200	5.0	20.0 TO 29.9	3.0	5.5	7.0	--	6.5
LOCAL (L.V.R.)	700	5.5		3.0	7.0	7.0	--	7.5
LOCAL (RES.)	1200	6.0		3.0	8.0	7.0	--	8.0
LOCAL (RES.)	2200	6.5		3.0	9.0	7.5	--	8.5
LOCAL (IND.)	2000	8.5		3.5	13.0	8.0	--	11.5
COLLECTOR (RES.)	3500	7.0		3.0	10.0	7.5	--	9.0
COLLECTOR (RES.)	5000	7.5		3.0	11.5	7.5	--	10.0
COLLECTOR (COMM.IND.)	5000	9.5		4.0	15.0	8.5	--	13.0
COLLECTOR (NO FRT)	7500	8.0		3.5	12.0	8.0	--	11.0
COLLECTOR	15000	9.0		4.0	13.5	8.5	--	12.0
MAJOR (4-LANE)	30000	10.5		5.0	16.0	8.5	5.0	14.5
MAJOR (6-LANE)	40000	11.0		5.0	17.0	8.5	5.0	15.5
PRIMARY ARTERIAL	50000	11.5		5.5	17.5	9.0	5.0	16.0
EXPRESSWAY	60000	12.0		6.0	18.0	9.0	5.0	17.0
EXPRESSWAY	80000	12.5		6.0	19.5	8.5	5.0	17.5
EXPRESSWAY	100000	13.0		6.5	20.0	10.0	5.0	18.5


SHEET 3 OF 4

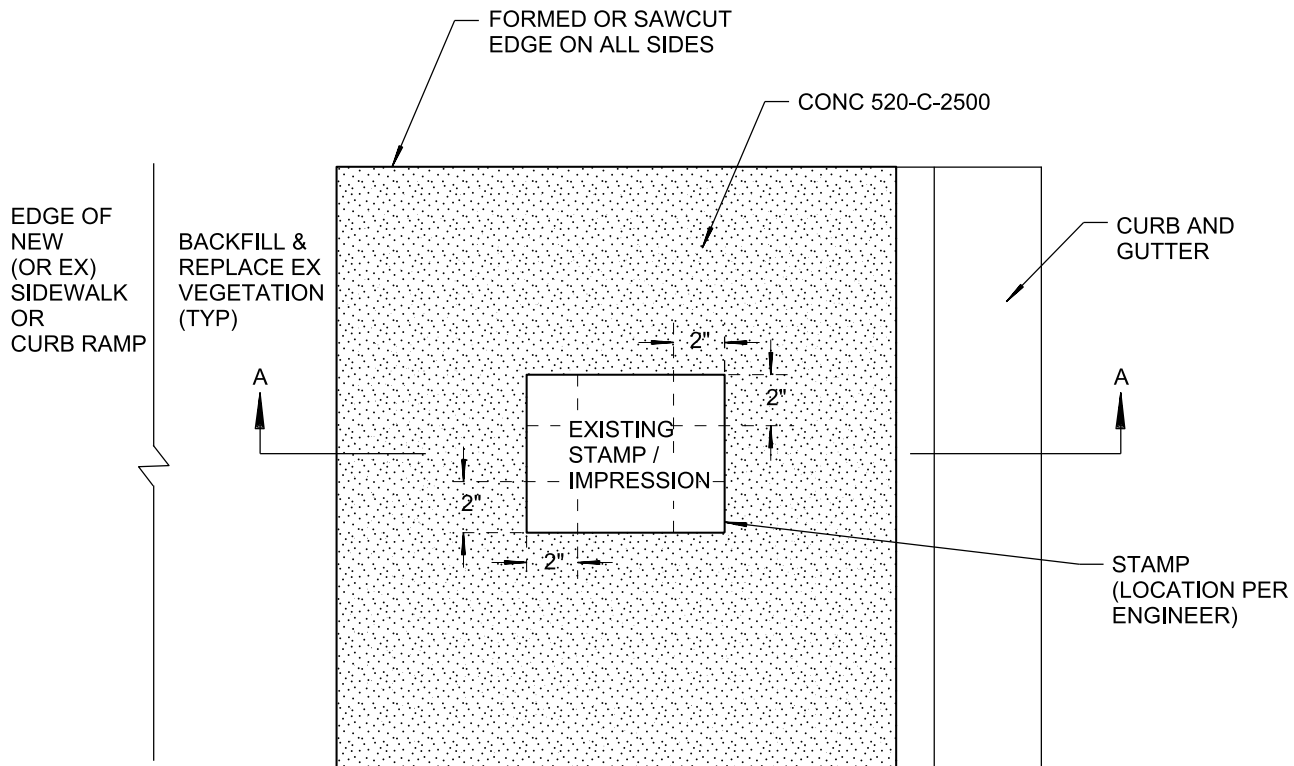
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		M.ROLLINGER	05/92		
NOTES		G. PARKINSON	02/95		
UPDATED	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				PAVEMENT DESIGN STANDARDS SCHEDULE "J"	 9/4/18 COORDINATOR R.C.E. 56523 DATE
					DRAWING NUMBER SDG-113

STREET CLASSIFICATION	MAX ADT	MAX TRAFFIC INDEX	"R" VALUE	STANDARD SECTIONS		CONCRETE M.O.R. 600 MIN		FULL DEPTH
				A.C. (IN)	CTB (IN)	CONC (IN)	CTB (IN)	
CUL-DE-SAC	200	5.0	10.0 TO 19.9	3.0	7.0	7.0	--	7.5
LOCAL (L.V.R.)	700	5.5		3.0	8.0	7.0	--	8.0
LOCAL (RES.)	1200	6.0		3.0	9.0	7.5	--	8.5
LOCAL (RES.)	2200	6.5		3.0	10.5	7.5	--	9.0
LOCAL (IND.)	2000	8.5		4.0	14.5	8.0	5.0	12.5
COLLECTOR (RES.)	3500	7.0		3.0	12.0	7.5	--	10.0
COLLECTOR (RES.)	5000	7.5		3.5	12.5	8.0	--	11.0
COLLECTOR (COMM.IND.)	5000	9.5		4.5	16.5	8.5	5.0	14.0
COLLECTOR (NO FRT)	7500	8.0		3.5	14.0	8.0	--	11.5
COLLECTOR	15000	9.0		4.5	15.0	8.0	5.0	13.0
MAJOR (4-LANE)	30000	10.5		5.5	18.0	8.5	6.0	15.5
MAJOR (6-LANE)	40000	11.0		6.0	18.5	9.0	6.0	16.5
PRIMARY ARTERIAL	50000	11.5		6.0	20.0	9.0	6.0	17.5
EXPRESSWAY	60000	12.0		6.5	20.5	9.0	6.0	18.5
EXPRESSWAY	80000	12.5		7.0	21.5	9.5	6.0	19.0
EXPRESSWAY	100000	13.0		7.5	22.5	10.0	6.0	20.0

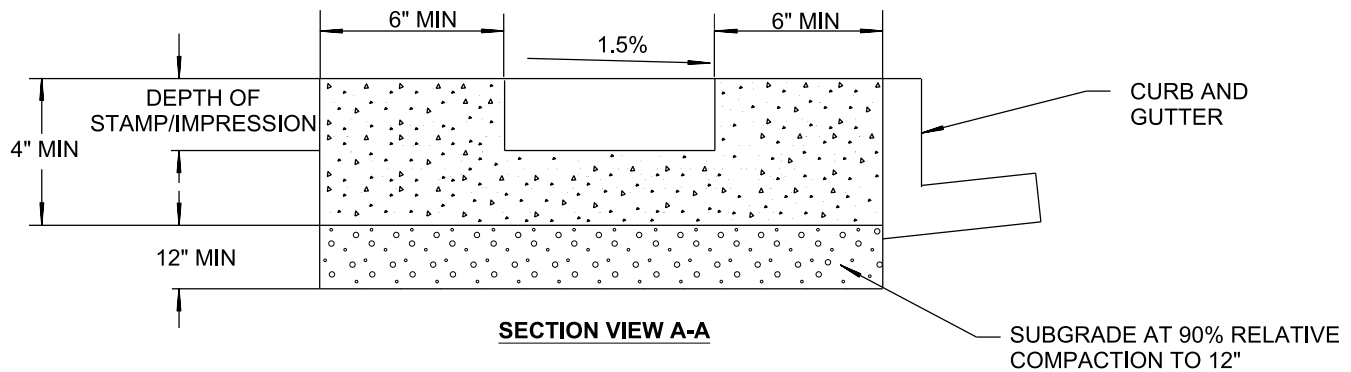
STREET CLASSIFICATION	MAX ADT	MAX TRAFFIC INDEX	"R" VALUE	STANDARD SECTIONS		CONCRETE M.O.R. 600 MIN		FULL DEPTH
				A.C. (IN)	CTB (IN)	CONC (IN)	CTB (IN)	
CUL-DE-SAC	200	5.0	0.0 TO 9.9	3.0	8.0	7.0	--	8.5
LOCAL (L.V.R.)	700	5.5		3.0	9.5	7.5	--	9.0
LOCAL (RES.)	1200	6.0		3.0	10.5	7.5	--	9.5
LOCAL (RES.)	2200	6.5		3.0	12.5	7.5	--	10.5
LOCAL (IND.)	2000	8.5		4.5	16.0	8.0	5.0	14.0
COLLECTOR (RES.)	3500	7.0		3.5	13.0	7.5	--	11.5
COLLECTOR (RES.)	5000	7.5		3.5	14.5	8.0	--	12.5
COLLECTOR (COMM.IND.)	5000	9.5		5.0	18.5	8.5	6.0	15.5
COLLECTOR (NO FRT)	7500	8.0		4.0	15.5	8.0	5.0	13.0
COLLECTOR	15000	9.0		5.0	17.0	8.5	5.0	14.5
MAJOR (4-LANE)	30000	10.5		6.0	20.0	9.0	6.0	17.5
MAJOR (6-LANE)	40000	11.0		6.5	21.0	9.0	6.0	18.5
PRIMARY ARTERIAL	50000	11.5		7.0	22.0	9.0	6.0	19.5
EXPRESSWAY	60000	12.0		7.0	23.0	9.5	6.0	20.5
EXPRESSWAY	80000	12.5		7.5	24.0	10.0	6.0	21.5
EXPRESSWAY	100000	13.0		8.0	25.0	10.5	6.0	22.0

SHEET 4 OF 4

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		M.ROLLINGER	05/92		
NOTES		G. PARKINSON	02/95	PAVEMENT DESIGN STANDARDS SCHEDULE "J"	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDG-113



PLAN VIEW

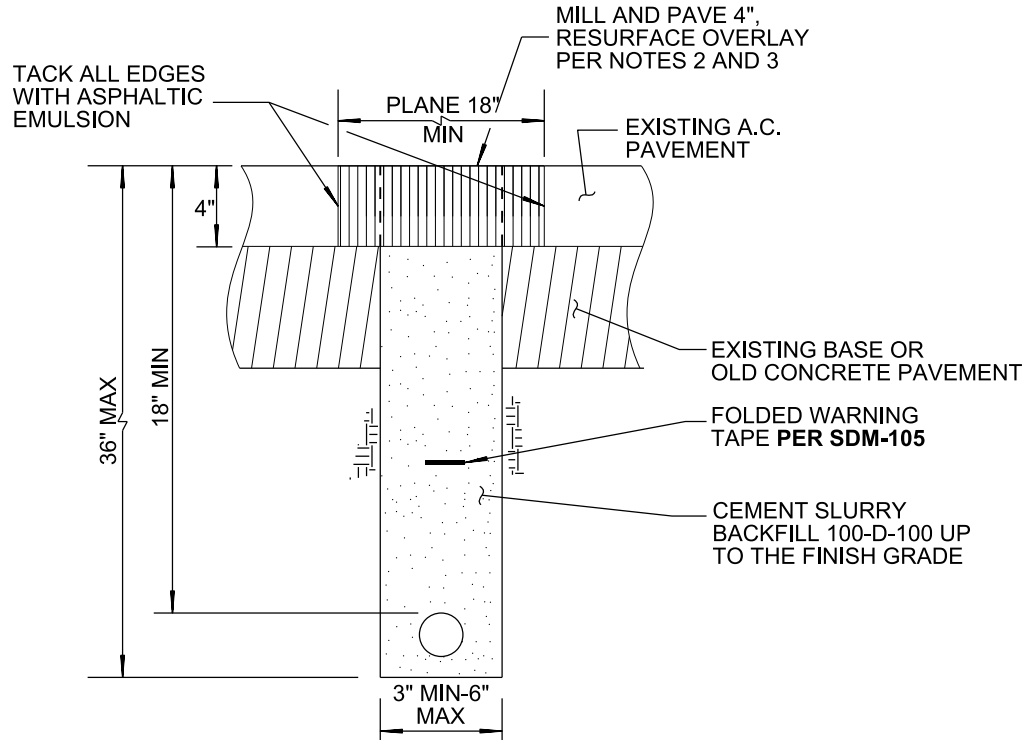


SECTION VIEW A-A

NOTES:

1. ALL STAMP / IMPRESSION (STREET NAME, CONTRACTOR, NAME AND / OR DATE) LOCATIONS AND ORIENTATIONS SHALL BE PRE-APPROVED BY THE ENGINEER.
2. SINGLE STAMP / IMPRESSION SHALL BE PLACED AS CLOSE TO ITS ORIGINAL LOCATION AS CONSTRUCTION ALLOWS.
3. MULTIPLE STAMPS / IMPRESSIONS (EXISTING AND / OR NEW) SHALL BE EVENLY SPACED ALONG THE NEWLY CONSTRUCTED SIDEWALK.
4. EXISTING STAMP / IMPRESSION SHALL BE SAWCUT TO NO LESS THAN 2" FROM STAMP LETTERING OR SYMBOL.

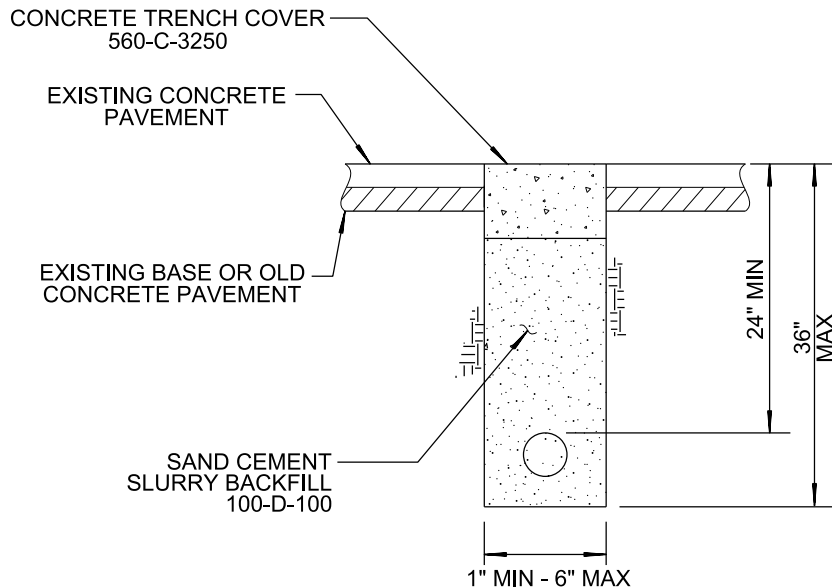
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	NZ	J. SHOAF	800		
DETAIL	SM	A. OSKOU	1203	EXISTING HISTORICAL STAMP OR IMPRESSION PLACEMENT	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDG-115



NOTES:


1. CEMENT SLURRY BACKFILL SHALL BE THOROUGHLY CONSOLIDATED, HAVE A MAXIMUM SLUMP OF 4 INCHES. FLY ASH MEETING THE REQUIREMENTS OF 201-1.2.5.3 MAY BE ADDED (NOT AS A SUBSTITUTE) TO THE MINIMUM CEMENT REQUIREMENTS. SLURRY COMBINED GRADING SHALL MEET REQUIREMENTS OF 201-1.3.2 (A) GRADING D.
2. BALL DROP TEST PER ASTM D6024 SHALL BE PERFORMED ON SLURRY AND ACHIEVE A MAXIMUM INDENTATION DIAMETER OF 3" PRIOR TO PLACEMENT OF ASPHALT CONCRETE. SLURRY PLACED IN NARROW TRENCHES WHERE BALL DROP TEST CANNOT BE PERFORMED SHALL BE CURED A MINIMUM OF 48 HOURS PRIOR TO PLACEMENT OF ASPHALT CONCRETE. PERMANENT RESURFACING SHALL BE COMPLETED IN NO MORE THAN 7 DAYS AFTER PLACEMENT OF CEMENT SLURRY.
3. DURING PLACEMENT, CONCAVE SLURRY SURFACE WITH A SHOVEL TO 1/2"- 1" DEPTH.
4. CUTS SHALL BE STRAIGHT. EXISTING A.C. PAVEMENT WILL NOT REQUIRE SAWCUTTING WHEN USING ROCKWHEEL FOR EXCAVATION PROVIDED THAT A SMOOTH SURFACE IS PRODUCED.
5. TRENCH SHALL BE MILLED TO A DEPTH OF 4" AND A MINIMUM OF 18" WIDE OR 12" WIDER THAN TRENCH WIDTH, WHICHEVER IS GREATER, AND RESURFACED WITH 1/2" TYPE III CLASS C2 ASPHALT.
6. WHEN PCC TRENCH RESURFACING IS DIRECTED BY CITY ENGINEER, SHOWN ON THE PLANS, OR REQUIRED FOR A PCC SURFACED STREET, FOR ASPHALT STREETS **SEE SDG-107** (NOTE #3) AND FOR CONCRETE SURFACED STREETS **SEE SDG-108**.
7. FOR DRY UTILITIES (ELECTRICAL, COMMUNICATION, GAS, ETC.) **SEE SDG-119**.
8. TRENCH LOCATION SHALL BE 36 INCHES MINIMUM AND 72 INCHES MAXIMUM FROM LIP OF GUTTER, AND AT LEAST 36 INCHES CLEAR FROM ANY CITY UNDERGROUND FACILITIES. NO NARROW TRENCH IN BIKE LANES.

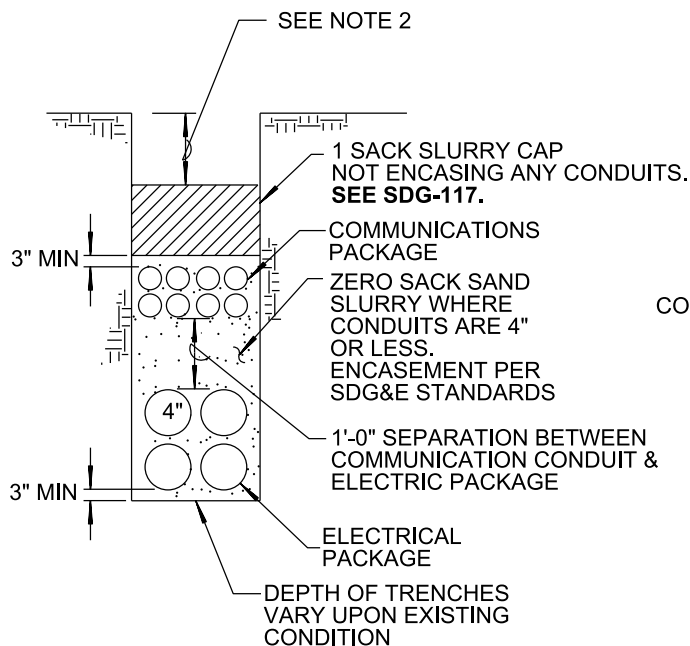
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  9/4/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL		BAHMANIAN	04/86		
UPDATED	KA	J. NAGELVOORT	04/13	NARROW TRENCH RESURFACING FOR ASPHALT CONCRETE SURFACE STREETS	DRAWING NUMBER SDG-117
UPDATED	KA	J. NAGELVOORT	01/14		
UPDATED	AA	J. NAGELVOORT	02/16		
UPDATED	LS	M. GIBSON	05/17		
REDRAFTED	CD	J. NAGELVOORT	09/18		



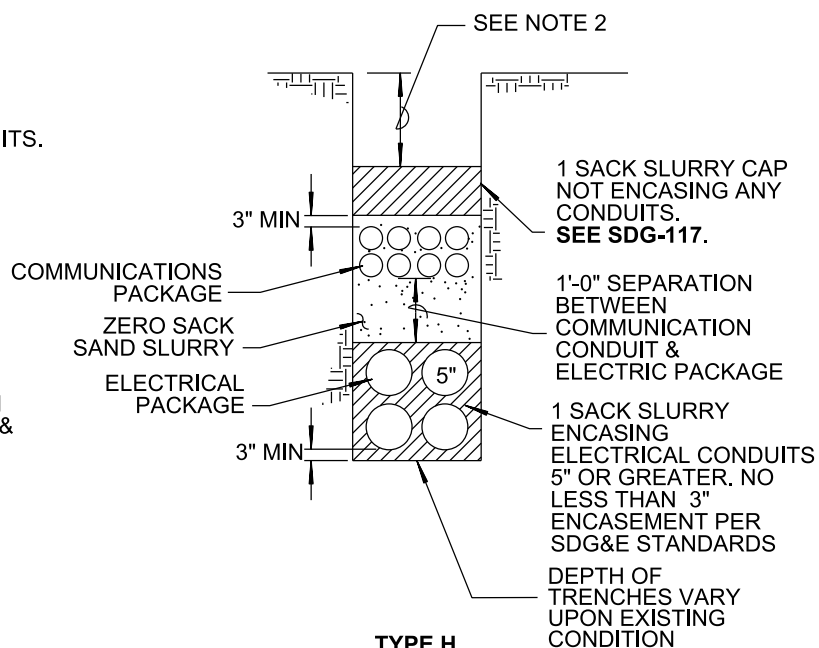
NOTES:

1. CEMENT SLURRY BACKFILL SHALL BE THOROUGHLY CONSOLIDATED, HAVE A MAXIMUM SLUMP OF 4 INCHES, AND MAY CONTAIN 30% MAXIMUM 3/8" ROCK.
2. CONCRETE SHALL BE PLACED AND FINISHED IN ACCORDANCE WITH 306-6. CONCRETE MAY BE PLACED IMMEDIATELY FOLLOWING SLURRY BACKFILL
3. CONCRETE TRENCH COVER SHALL BE A MINIMUM OF 5 1/2" THICK IN ALLEY OR LOCAL RESIDENTIAL STREETS AND 7" THICK IN ALL OTHER STREETS. **SEE NOTE #5 IN SDG-108** FOR CONCRETE CLASS OPTIONS AND CURING REQUIREMENTS.
4. EXISTING CONCRETE PAVEMENT WILL REQUIRE SAWCUTTING.
5. FOR ELECTRICAL SUPPLY CABLES, SEE CALIFORNIA PUBLIC UTILITY COMMISSION GENERAL ORDER NO. 128, RULE 33.4 CLEARANCES AND DEPTHS.
6. FOR DRY UTILITIES (ELECTRICAL, COMMUNICATION, GAS, ETC.) **SEE SDG-119.**

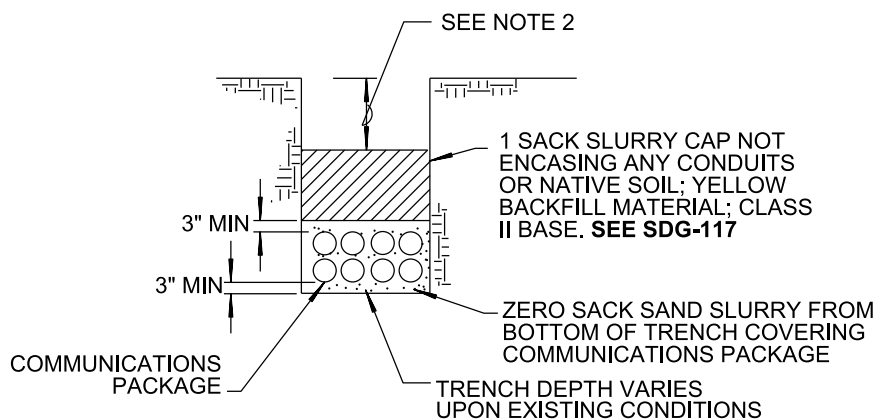
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		BAHMANIAN	04/86		
TITLE BLOCK		A. OSKOUI	12/06	NARROW TRENCH RESURFACING FOR CONCRETE SURFACED STREETS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	KA	J. NAGELVOORT	01/12		
UPDATED	KA	J. NAGELVOORT	08/13		
UPDATED	AB	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDG-118



TYPE G




TYPE H

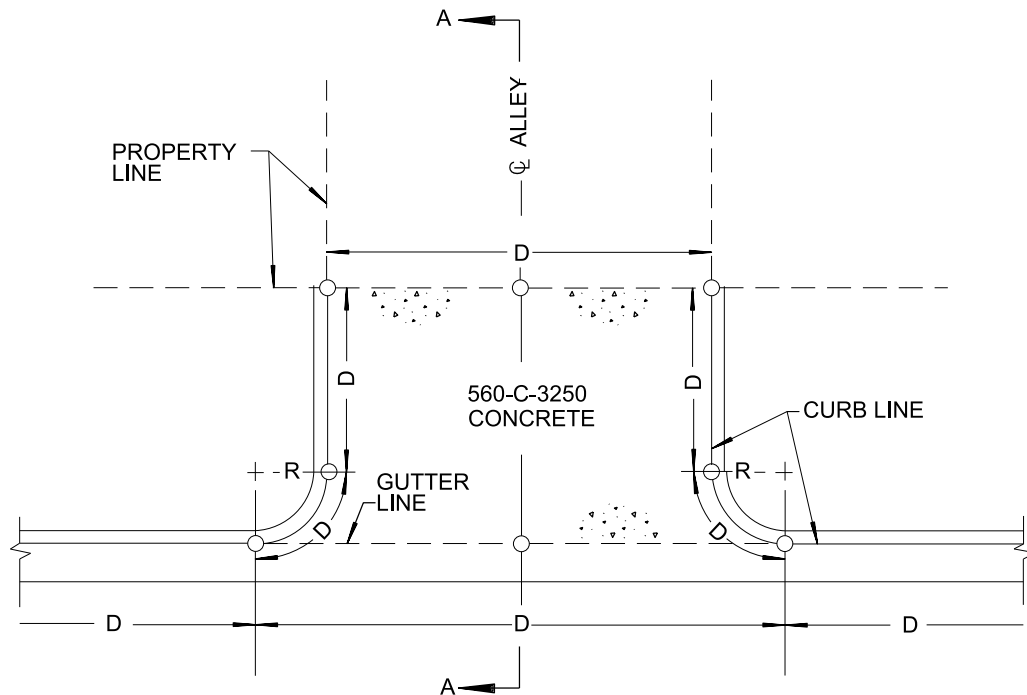


TYPE I

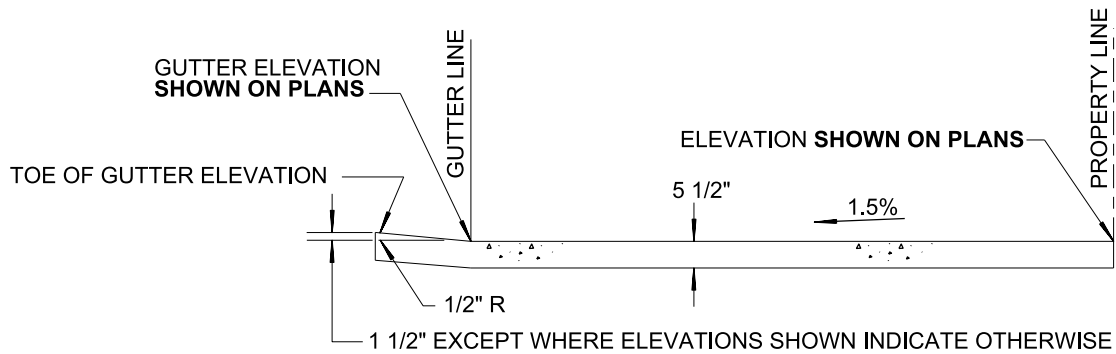
NOTES:

1. FOR TRENCHES GREATER THAN 6", AND LESS THAN 7'-0" IN WIDTH
2. RESURFACING **PER SDG-107 TYPE 1 & SDG-108**
3. ANY CITY UTILITY CROSSING THE TRENCH LINE SHOULD NOT BE ENCASED IN SLURRY, IF ENCOUNTERED IT SHOULD BE SLEEVED WITH PVC.
4. WARNING TAPE SHALL BE INSTALLED ABOVE THE CONDUITS **PER SDM-105**.
5. CEMENT SLURRY BACKFILL SHALL BE THOROUGHLY CONSOLIDATED, HAVE A MAXIMUM SLUMP OF 4 INCHES. FLY ASH MEETING THE REQUIREMENTS OF 201-1.2.5.3 MAY BE ADDED (NOT AS A SUBSTITUTE) TO THE MINIMUM CEMENT REQUIREMENTS. SLURRY COMBINED GRADING SHALL MEET REQUIREMENTS OF 201-1.3.2 GRADING D.
6. BALL DROP TEST PER ASTM D 6024 SHALL BE PERFORMED ON SLURRY AND ACHIEVE A MAXIMUM INDENTATION DIAMETER OF 3 INCHES PRIOR TO PLACEMENT OF ASPHALT CONCRETE. SLURRY PLACED IN NARROW TRENCHES WHERE BALL DROP TEST CANNOT BE PERFORMED SHALL BE CURED A MINIMUM OF 48 HOURS PRIOR TO PLACEMENT OF ASPHALT CONCRETE.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	BB	J. NAGELVOORT	07/15		
UPDATED	LA	J. NAGELVOORT	07/15	TRENCH TYPES G, H & I BACKFILL FOR DRY UTILITY	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	JN	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDG-119



PLAN




SECTION A-A

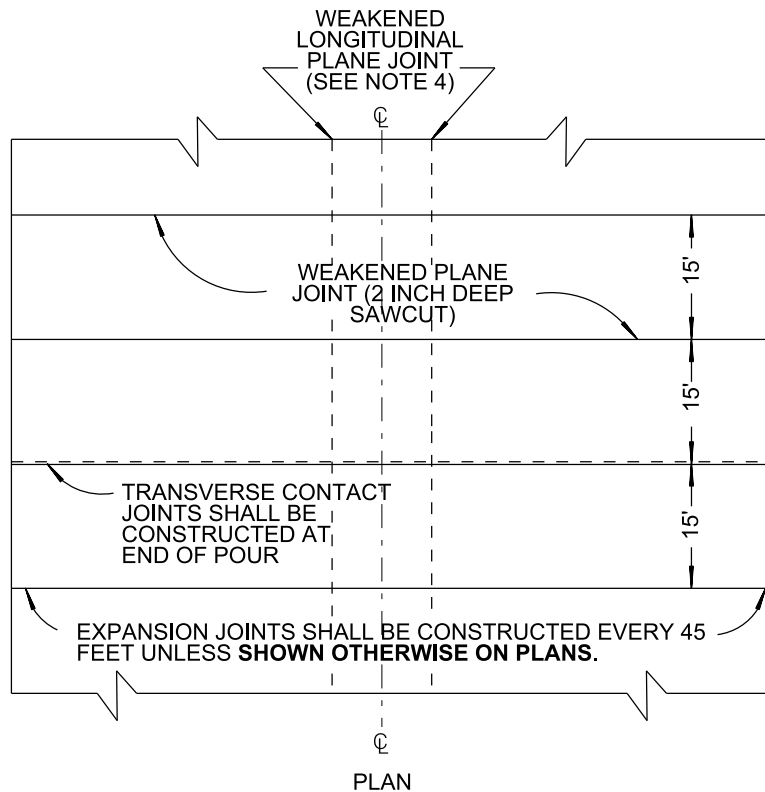
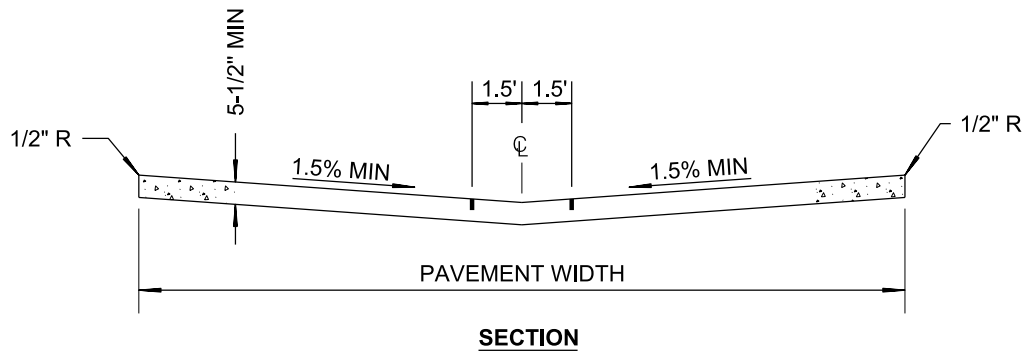
NOTES

1. CURB RAMPS SHALL BE INSTALLED **AS SHOWN ON THE PLANS**.
2. D= DISTANCE **SHOWN ON PLANS**.
3. R= RADIUS SHOWN ON PLANS 3' MINIMUM.
4. O= ELEVATIONS **SHOWN ON PLANS** (TOP OF CURB AND GUTTER ELEV.).
5. — — — = 1/2" EXPANSION JOINTS.
6. CONSTRUCTION OF ALLEY APRON INCLUDES THE ADJACENT 6" CURB.
7. REFER TO CURB RAMP DETAIL, **SDG-137**.

LEGEND ON PLANS




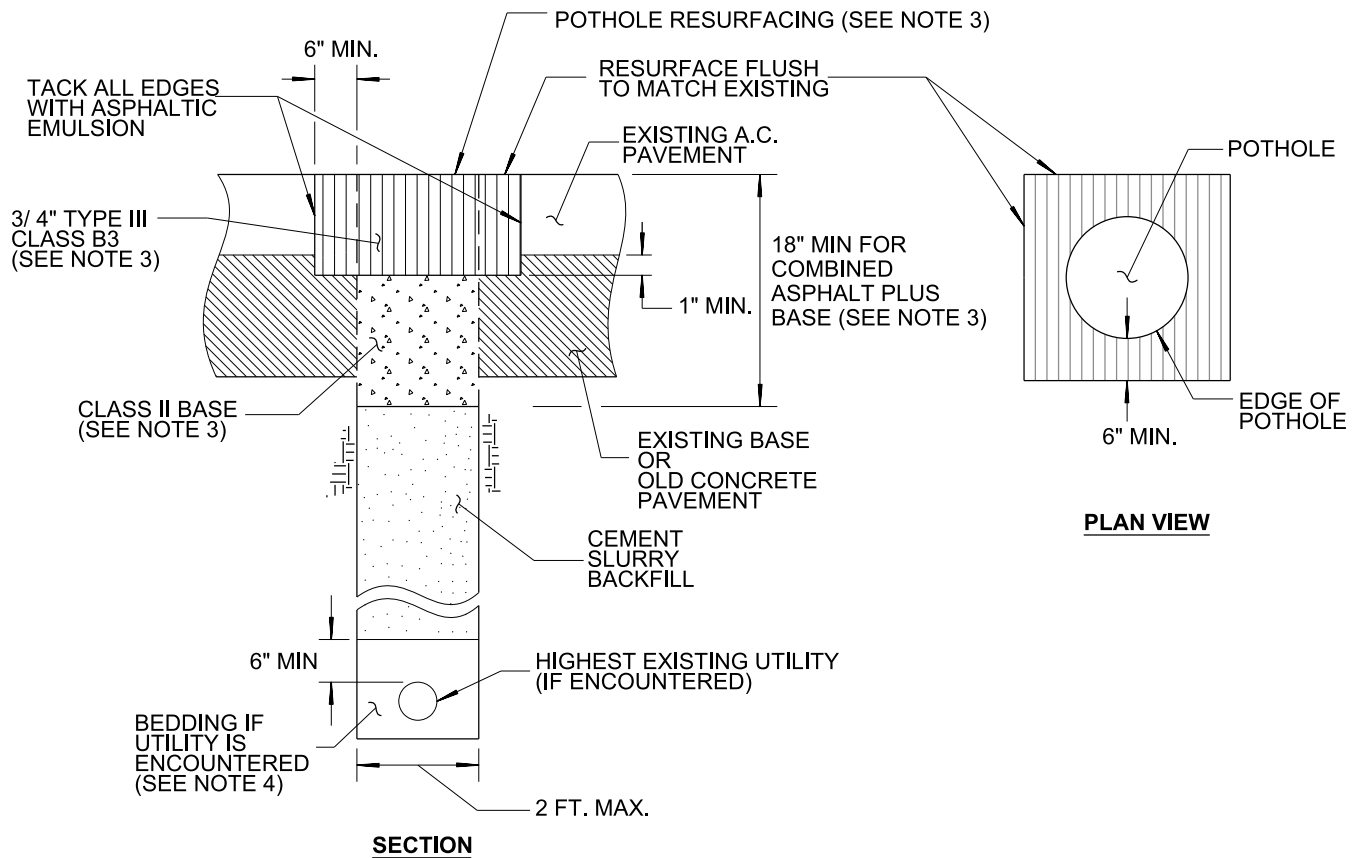
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	RB	J. NAGELVOORT	10/15	ALLEY APRON	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	FC	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDG-120



NOTES:

1. CONCRETE SHALL BE 560-C-3250, OR ITS EQUIVALENT ALTERNATE CLASS.
2. ADJUST TRANSVERSE JOINT INTERVAL TO MATCH JOINTS IN ADJACENT EXISTING IMPROVEMENTS. IN NO CASE SHALL SPACING BE GREATER THAN 15'.
3. **SEE STANDARD DRAWING G-10** FOR JOINT DETAILS.
4. WEAKENED LONGITUDINAL JOINTS SHALL BE SAWCUT 2 INCHES DEEP WITHIN 24 HOURS, OR AS DIRECTED BY THE ENGINEER.
5. JOINTS SHALL NOT BE CONSTRUCTED ALONG THE CENTER OF THE ALLEY.


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	NB	J. NAGELVOORT	10/16		
REDRAFTED	CD	J. NAGELVOORT	09/18	CONCRETE ALLEY PAVEMENT SECTION	 COORDINATOR R.C.E. 56523
				DRAWING NUMBER	SDG-121 9/4/18 DATE

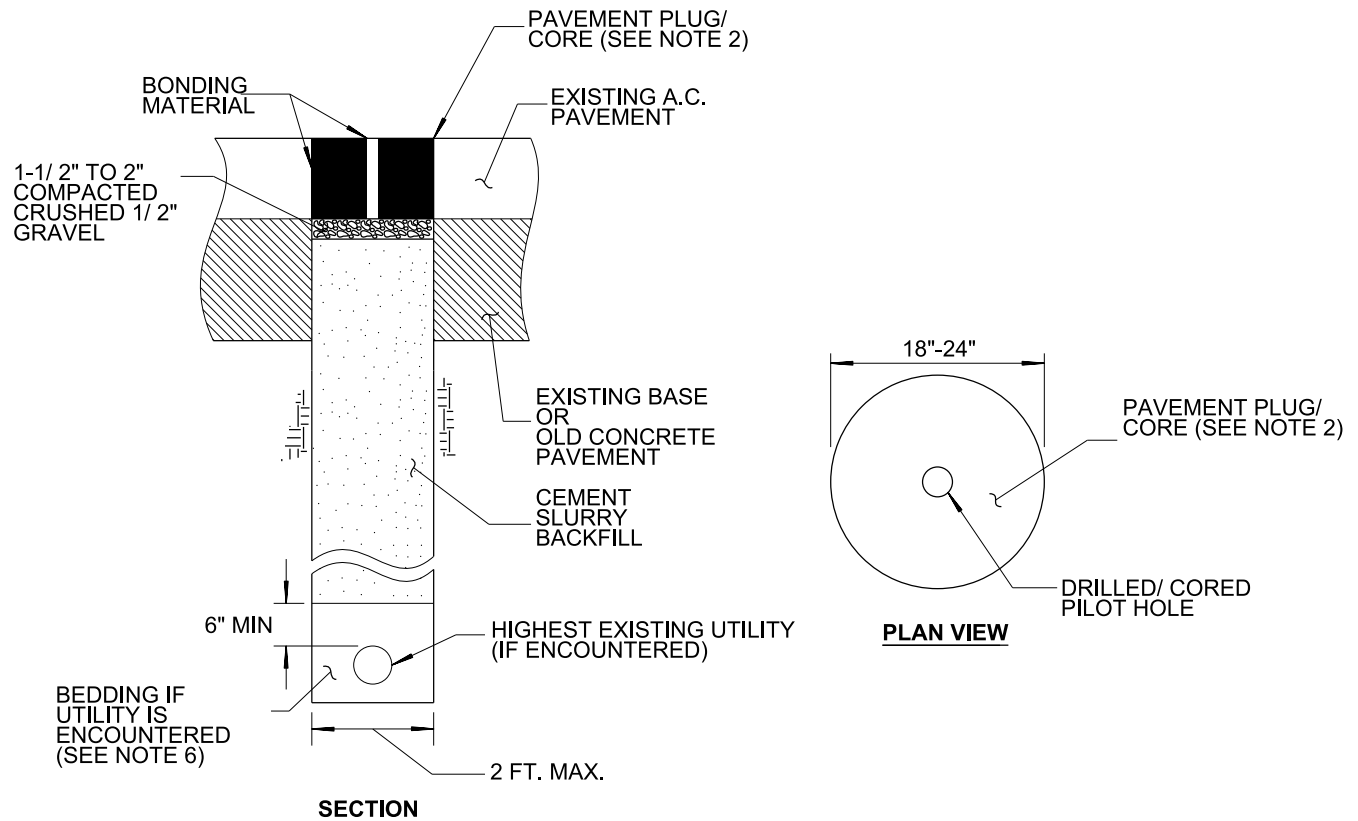


NOTES:

1. CEMENT SLURRY BACKFILL SHALL BE THOROUGHLY CONSOLIDATED, AND HAVE A MAXIMUM SLUMP OF 4 INCHES. FLY ASH MEETING THE REQUIREMENTS OF 201-1.2.5.3 MAY BE ADDED (NOT AS A SUBSTITUTE) TO THE MINIMUM CEMENT REQUIREMENTS. SLURRY COMBINED GRADING SHALL MEET REQUIREMENTS OF 201-1.3.2 GRADING D. CEMENT SLURRY BACKFILL SHALL BE 100-D-100.
2. SLURRY SHALL BE CURED A MINIMUM OF 48 HOURS PRIOR TO PLACEMENT OF CLASS II BASE AND ASPHALT CONCRETE. RESURFACING SHALL BE COMPLETED IN NO MORE THAN 7 DAYS AFTER PLACEMENT OF CEMENT SLURRY.
3. ALL ASPHALT STREET RESURFACING SHALL EXTEND A MINIMUM OF 6 INCHES BEYOND EDGE OF POTHOLE, AS SHOWN. ASPHALT THICKNESS TO EQUAL EXISTING AC PAVEMENT PLUS 1 INCH (4 INCHES MINIMUM TO 9 INCHES MAXIMUM). COMBINED ASPHALT PLUS BASE SHALL BE 18 INCHES MINIMUM.
4. IF UTILITY IS ENCOUNTERED, AS LISTED BELOW, PLACE BEDDING A MINIMUM OF 6 INCHES ABOVE UTILITY.
 - A. WATER UTILITY: SE 50 SAND
 - B. SEWER UTILITY: 3/ 8" MAXIMUM AGGREGATE
 - C. DRY UTILITY: SE 50 SAND
5. FOR PCC SURFACED STREETS, **SEE SDG-108** FOR RESURFACING.
6. POTHOLING IN BIKE LANES SHALL BE APPROVED BY THE CITY. IF APPROVED, THE ENTIRE WIDTH OF THE BIKE LANE SHALL BE RESURFACED, AT A MINIMUM LENGTH OF 6 FEET.
7. TEMPORARY RESURFACING IS ALLOWED IF CONSTRUCTION WILL BE PERFORMED WITHIN 60 DAYS AFTER POTHOLING WORK, IF POTHOLE IS WITHIN THE NEW UTILITY TRENCH LIMITS, AND **IF APPROVED BY THE CITY**. MATERIAL FOR TEMPORARY RESURFACING **SHALL BE APPROVED BY THE CITY**. SEE NOTE 3 FOR LIMITS AND DEPTH.
8. PAVEMENT CORES SHALL NOT BE GREATER THAN 24 INCHES IN DIAMETER, AND SHALL NOT BE SPACED CLOSER THAN 3 FEET BETWEEN CORES, EDGE TO EDGE.
9. SEE SHEET 2 FOR TYPE B - KEYHOLE METHOD.

SHEET 1 OF 2


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	CD	J. NAGELVOORT	11/17		
UPDATED	CD	J. NAGELVOORT	09/18	24" AND SMALLER UTILITY POTHOLE - TYPE A PAVEMENT REPAIR	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDG-123

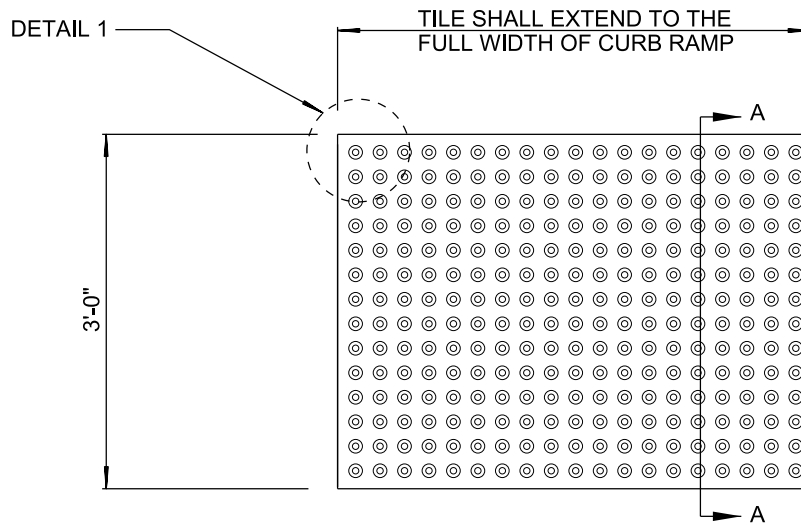


NOTES:

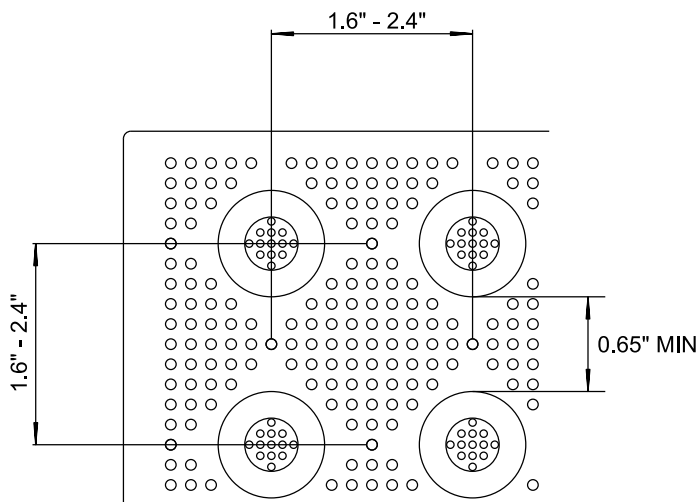
1. PAVEMENT CORE TO BE REINSTATED SHALL BE A MINIMUM OF 4 INCHES THICK AND SHALL NOT CONTAIN JOINTS OR CRACKS WHICH MAY CAUSE IT TO BREAK AND SPALL. OTHERWISE, TYPE "A" PER SHEET 1 SHALL BE USED **AS DIRECTED BY CITY ENGINEER.**
2. CUT, REMOVE, AND REINSTATE PAVEMENT CORE, FLUSH WITH EXISTING PAVEMENT. THE REMOVED PAVEMENT CORE/ PLUG WITH ASPHALT AND CONCRETE BASE SHALL BE UTILIZED AND REINSTALLED IN GOOD CONDITION.
3. BONDING MATERIAL SHALL BE AS SPECIFIED **PER CITY APPROVED MATERIALS LIST.**
4. CEMENT SLURRY BACKFILL SHALL BE THOROUGHLY CONSOLIDATED, AND HAVE A MAXIMUM SLUMP OF 4 INCHES. FLY ASH MEETING THE REQUIREMENTS OF 201-1.2.5.3 MAY BE ADDED (NOT AS A SUBSTITUTE) TO THE MINIMUM CEMENT REQUIREMENTS. SLURRY COMBINED GRADING SHALL MEET REQUIREMENTS OF 201-1.3.2 GRADING D. CEMENT SLURRY BACKFILL SHALL BE 100-D-100.
5. SLURRY SHALL BE CURED A MINIMUM OF 48 HOURS PRIOR TO PLACEMENT OF CLASS II BASE AND ASPHALT CONCRETE. RESURFACING SHALL BE COMPLETED IN NO MORE THAN 7 DAYS AFTER PLACEMENT OF CEMENT SLURRY.
6. IF UTILITY IS ENCOUNTERED, AS LISTED BELOW, PLACE BEDDING A MINIMUM OF 6 INCHES ABOVE UTILITY.
 - A. WATER UTILITY: SE 50 SAND
 - B. SEWER UTILITY: 3/ 8" MAXIMUM AGGREGATE
 - C. DRY UTILITY: SE 50 SAND
7. FOR CONCRETE SURFACED STREETS, **SEE SDG-108** FOR RESURFACING.
8. POTHOLING IN BIKE LANES **SHALL BE APPROVED BY THE CITY.**
9. PAVEMENT CORES SHALL NOT BE GREATER THAN 24 INCHES IN DIAMETER, AND SHALL NOT BE SPACED CLOSER THAN 3 FEET BETWEEN CORES, EDGE TO EDGE.

SHEET 2 OF 2

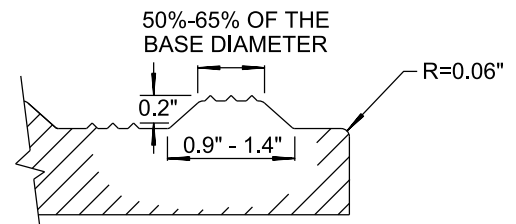
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	CD	J. NAGELVOORT	11/17		
UPDATED	CD	J. NAGELVOORT	09/18	24" AND SMALLER UTILITY POTHOLE - TYPE B KEYHOLE METHOD	 9/4/18 COORDINATOR R.C.E. 56523 DATE
					DRAWING NUMBER SDG-123



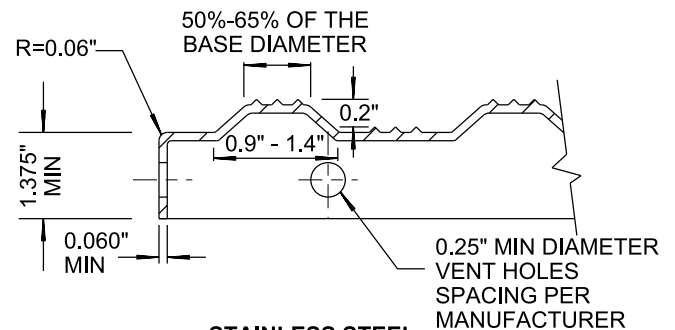
PLAN - TILE



DETAIL 1



**COMPOSITE
SECTION A-A**




**STAINLESS STEEL
SECTION A-A**

NOTES:

1. THE DETECTABLE WARNING TILE SHALL BE SLIP RESISTANT AND SHALL CONSIST OF AN INLINE PATTERN OF RAISED TRUNCATED DOMES. THE TILE SHALL BE PLACED WHERE THE DOMES ARE IN LINE WITH THE DIRECTION OF TRAVEL.
2. COLOR: THE DETECTABLE WARNING TILE SHALL BE YELLOW CONFORMING TO FEDERAL STANDARDS 595C TABLE IV, COLOR NO. 33538.
3. MATERIAL: CAST-IN-PLACE STAINLESS STEEL IS THE REQUIRED MATERIAL FOR THE DETECTABLE WARNING TILE, UNLESS OTHERWISE **SHOWN ON PLANS**.

EXCEPTION: CAST-IN-PLACE DETECTABLE WARNING TILE OF COMPOSITE MATERIAL MAY BE USED ON RESIDENTIAL AREAS ONLY. WHEN RESIDENTIAL AREAS ARE WITHIN THE BOUNDARY OF A MIX-USE OR OTHER NON-RESIDENTIAL ZONES, STAINLESS STEEL IS REQUIRED AT CURB RAMPS.
4. DETECTABLE WARNING TILE PRODUCTS SHALL BE **PER THE CITY'S APPROVED MATERIALS LIST**.
5. NO VOIDS SHALL BE ALLOWED BELOW THE DETECTABLE WARNING TILES.
6. PROVIDE A ¼" DEEP TOOLED JOINT WITH ¼" RADIUS EDGES AROUND THE PERIMETER OF THE DETECTABLE WARNING TILES.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	FC	A. OSKOUI	12/03		
UPDATE	FC	A. OSKOUI	12/08	DETECTABLE WARNING TILES	 06/05/2018 COORDINATOR R.C.E. 56523 DATE
UPDATE	FC	J. NAGELVOORT	02/16		
UPDATE	FC	M. GIBSON	12/16		
UPDATE	FC	J. NAGELVOORT	09/17		
UPDATE	HN	J. NAGELVOORT	06/18		
				DRAWING NUMBER	SDG-130

NOTES:

1. TWO CURB RAMPS ARE REQUIRED AT EACH SIDEWALK CORNER FOR NEW CONSTRUCTION OF ENTIRE INTERSECTION, EACH CURB RAMP SHALL CONNECT THE PEDESTRIAN ACCESS ROUTE AT EACH PEDESTRIAN STREET CROSSING. IN ALTERATIONS WHERE EXISTING PHYSICAL CONSTRAINTS PREVENT TWO CURB RAMPS FROM BEING INSTALLED AT A STREET CORNER, A SINGLE PEDESTRIAN CURB RAMP IS PERMITTED. **SEE DETAIL A AND B ON SDG-132.**
2. IN AN IDEAL CONDITION WHERE THE CURB RETURN AND INTERSECTION ARE LEVEL AND THE CURB HEIGHT IS 6":
 - A. IF THE RIGHT-OF-WAY (ROW) LIMITS ARE 10'-0" OR MORE (MEASURED FACE OF CURB TO PROPERTY LINE), A TYPE A OR TYPE B CURB RAMP SHALL BE USED.
 - B. IF THE ROW LIMITS ARE LESS THAN 10'-0" BUT NOT LESS THAN 8'-0", A TYPE C2 CURB RAMP SHALL BE USED.
 - C. IF THE ROW LIMITS ARE LESS THAN 8'-0", A TYPE C1 CURB RAMP SHALL BE USED.
 - D. A TYPE D CURB RAMP SHALL BE USED AT ALLEY CORNERS.
 - E. CASE A AND CASE B CURB RAMPS SHALL BE USED AT SIDEWALKS WITH PARKWAYS BETWEEN THE SIDEWALK AND THE CURB.
 - F. A CASE C CURB RAMP SHALL BE USED AT RESTRICTED ROW LIMITS (LESS THAN 8'-0") TO ACCOMMODATE MULTI-DIRECTIONAL ACCESS IF IT IS TECHNICALLY INFEASIBLE TO USE A STANDARD CURB RAMP OR TWO DIRECTIONAL CURB RAMPS.
3. OPPOSING CURB RAMPS AT A SINGLE CROSSING SHALL LINE UP. ALIGN THE CURB RAMP WITH THE CROSSWALK SO THERE IS A STRAIGHT PATH OF TRAVEL FROM THE TOP OF THE RAMP TO THE CURB RAMP ON THE OTHER SIDE, TO THE MAXIMUM EXTENT FEASIBLE.
4. PULL BOXES, MANHOLES, VAULTS, AND OTHER UTILITIES SHALL BE RELOCATED OR INCORPORATED ONTO THE CURB RAMP AREA PROVIDED THAT THE ACCESS COVER IS STABLE, FIRM, SLIP RESISTANT, AND FLUSH OR ADJUSTED TO GRADE. COORDINATE THE WORK WITH THE ENGINEER
5. UTILITY POLES MAY BE INCORPORATED INTO THE FLARES OF THE CURB RAMP PROVIDED THAT THE REQUIRED ACCESSIBLE ROUTE WIDTH IS COMPLIANT.
6. THE RUNNING SLOPE OF THE CURB RAMP SHALL NOT EXCEED 8.33%. IF THE CONDITION OF THE STREET AND SIDEWALK IS SUCH THAT THE EXISTING SLOPES DO NOT ALLOW THE INSTALLATION OF THE REQUIRED RUNNING SLOPE, THEN THE RAMP LENGTH CAN BE EXTENDED UP TO 15 LINEAR FEET EVEN IF THE REQUIRED SLOPE IS NOT ACHIEVED.

THIS REQUIREMENT DOES NOT APPLY TO CURB RAMP FLARES. THE SLOPE OF THE FLARES WITHIN THE PEDESTRIAN CIRCULATION ROUTE SHALL BE DESIGNED TO MEET THE 10% MAXIMUM SLOPE REQUIREMENT TO THE BEST EXTENT FEASIBLE WITHOUT EXCEEDING 10 LINEAR FEET.
7. GRADE BREAKS AT THE TOP AND BOTTOM OF THE RAMPS AND CURB RAMPS SHALL BE PERPENDICULAR TO THE DIRECTION OF THE RAMP RUN. GRADE BREAKS SHALL NOT BE PERMITTED ON THE SURFACE OF RAMP RUNS AND TURNING SPACES. SURFACE SLOPES THAT MEET AT GRADE BREAKS SHALL BE FLUSH.
8. PROVIDE A 1/4" DEEP TOOLED JOINT WITH 1/4" RADIUS EDGES AS SHOWN ON DRAWINGS.
9. INSTALL A 1/4" EXPANSION JOINT FILLER BETWEEN THE NEW CURB RAMP GUTTER AND THE EXISTING SIDEWALK.
10. PONDING IS NOT ALLOWED WITHIN THE CURB RAMP LIMITS, AND THE DRAINAGE PATTERN SHALL NOT BE ALTERED.
11. THE ADJUSTMENT OF THE CROSS SLOPE AT THE RAMP OPENING SHALL NOT CAUSE GUTTER TRICKLE FLOW TO SPILL ONTO TRAVELLED LANES OR PONDING ANYWHERE.
12. TRANSITIONS FROM RAMPS TO WALKS AND SIDEWALK GUTTER OR STREET SURFACE SHALL BE FLUSH AND FREE OF ABRUPT CHANGES. PAVEMENT AT THE STREET SURFACE SHALL BE MILLED TO ACHIEVE FLUSH CONDITION.
13. THE REMOVAL OF EXISTING PAVEMENT, CONCRETE CURB, GUTTER, SIDEWALK, AND EXISTING CURB RAMP FOR THE INSTALLATION OF A NEW CURB RAMP **SHALL COMPLY WITH SDG-156.**

SHEET 1 OF 2

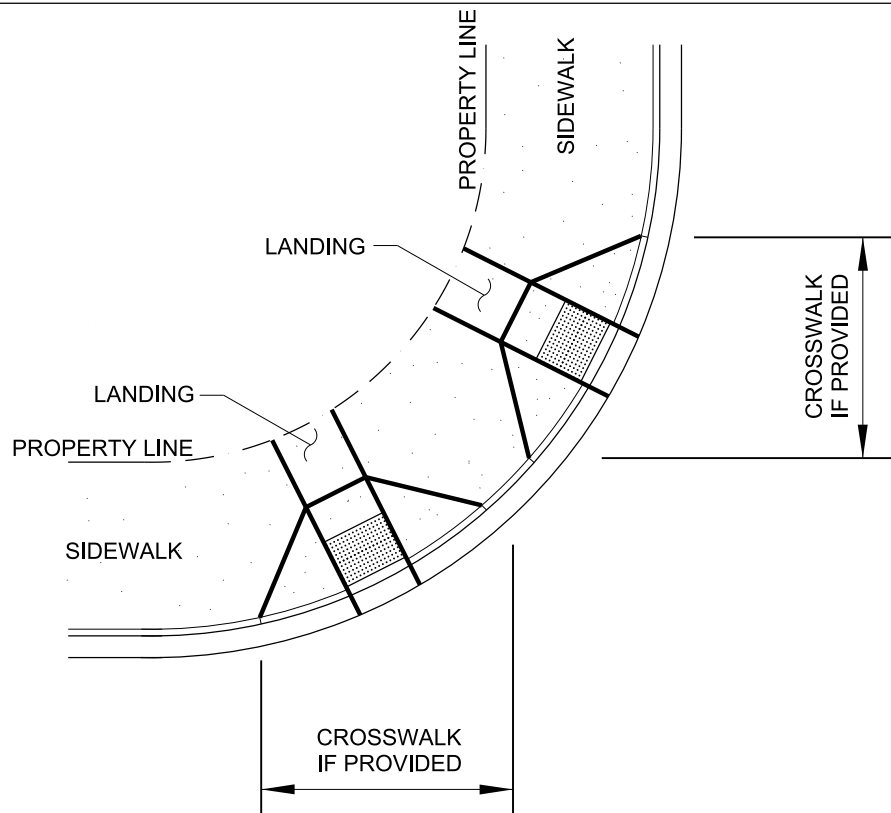
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING GENERAL CURB RAMP NOTES	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	SS	A. OSKOUI	12/03		 9/11/18
UPDATE	KA	J.NAGELVOORT	01/12		COORDINATOR R.C.E. 56523 DATE
UPDATE	FC	J.NAGELVOORT	02/16		
UPDATE	MM	J.NAGELVOORT	03/18		
UPDATE	FC	J.NAGELVOORT	06/18		
UPDATE	FC	J.NAGELVOORT	09/18		

NOTES:

14. DIAGONAL OR CORNER TYPE CURB RAMPS WITH RETURNED CURBS OR OTHER WELL-DEFINED EDGES SHALL HAVE THE EDGES PARALLEL TO THE DIRECTION OF PEDESTRIAN FLOW. DIAGONAL CURB RAMPS WITH FLARED SIDES SHALL HAVE A SEGMENT OF CURB 24" LONG MINIMUM LOCATED ON EACH SIDE OF THE CURB RAMP AND WITHIN THE MARKED CROSSING.
15. DIAGONAL CURB RAMPS SHALL HAVE A CLEAR 4' X 4' MINIMUM TURNING SPACE BEYOND THE BOTTOM GRADE BREAK WITHIN THE WIDTH OF THE PEDESTRIAN STREET CROSSING AND WHOLLY OUTSIDE THE ACTIVE TRAFFIC LANES OF THE ROADWAY (VEHICULAR AND BIKE LANES).
16. CURB RAMP AND FORM WORK SLOPES SHALL BE CHECKED WITH A DIGITAL LEVEL OF AN APPROPRIATE LENGTH. NO PORTION OF A RAMP RUN SHALL EXCEED THE MAXIMUM SLOPE REQUIREMENT.
17. THE COUNTER SLOPE WITHIN 48" OF THE CURB RAMP SHALL BE 5% MAXIMUM. IN ALTERATIONS IF THE COUNTER SLOPE OF 5% MAXIMUM CANNOT BE ACHIEVED, THEN ADJUST THE SLOPE OR ELEVATION OF THE RAMP SO THE COMBINED COUNTER SLOPE AND RAMP SLOPE DOES NOT EXCEEDS 13.3%.
18. THE SLOPE OF THE RAMP SHALL BE UNIFORM ALONG EACH RAMP RUN.
19. THE CROSS SLOPE OF THE RAMP SHALL BE MEASURED PERPENDICULARLY TO THE PATH OR DIRECTION OF TRAVEL.
20. ANY DEVIATION FROM THESE PROVISIONS REQUIRES PRIOR APPROVAL FROM THE ENGINEER.
21. FOR RESIDENTIAL USE, CONCRETE SHALL BE 520-C-2500. FOR COMMERCIAL USE, CONCRETE SHALL BE 560-C-3250.

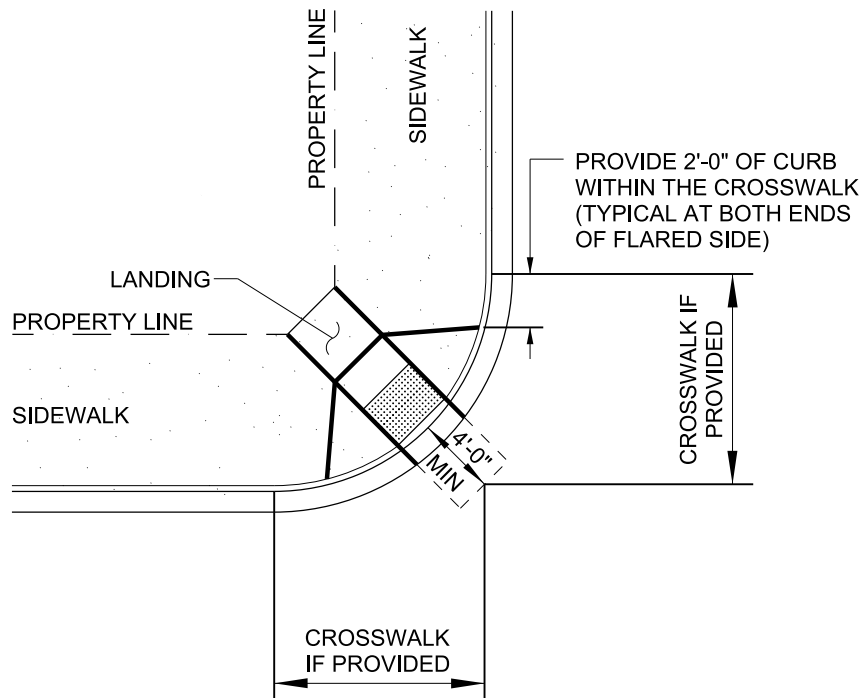
SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE			
ORIGINAL	SS	A. OSKOUI	12/03		 COORDINATOR	9/11/18 DATE		
UPDATE	KA	J.NAGELVOORT	01/12	GENERAL CURB RAMP NOTES				
UPDATE	FC	J.NAGELVOORT	02/16					
UPDATE	MM	J.NAGELVOORT	03/18					
UPDATE	FC	J.NAGELVOORT	06/18					
UPDATE	FC	J.NAGELVOORT	09/18					
					DRAWING NUMBER	SDG-131		



DETAIL A

TWO CURB RAMP CORNER INSTALLATION



DETAIL B

ONE CURB RAMP CORNER INSTALLATION

LEGEND:

TOOLED JOINT

REVISION	BY	APPROVED	DATE
ORIGINAL	FC	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

CITY OF SAN DIEGO – STANDARD DRAWING

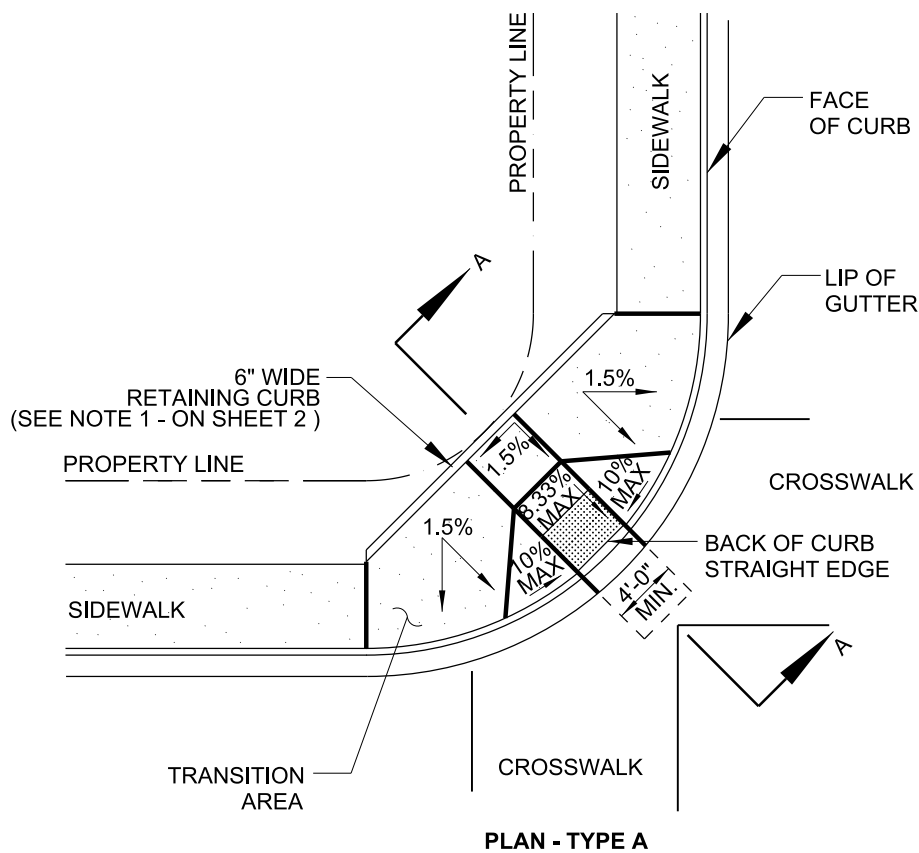
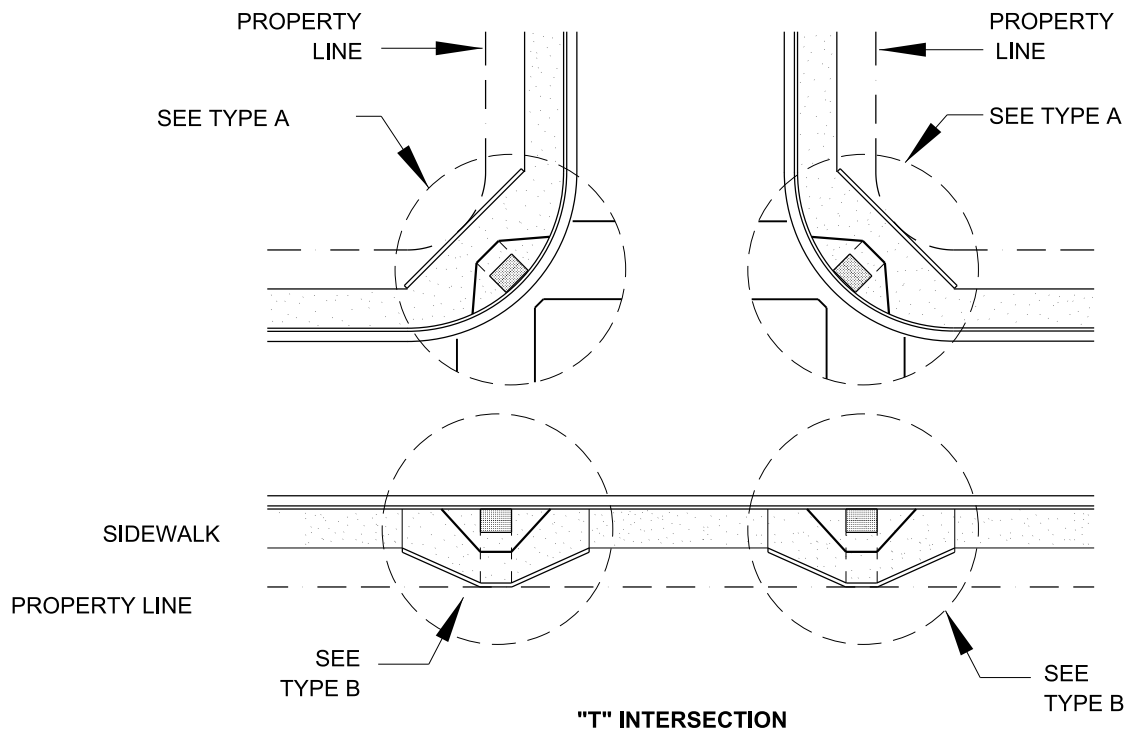
**GENERAL CURB RAMP NOTES
& SUPPLEMENTAL DETAILS**

RECOMMENDED BY THE CITY
OF SAN DIEGO STANDARDS COMMITTEE

Chung 9/4/18
COORDINATOR R.C.E. 56523 DATE

DRAWING
NUMBER


SDG-132

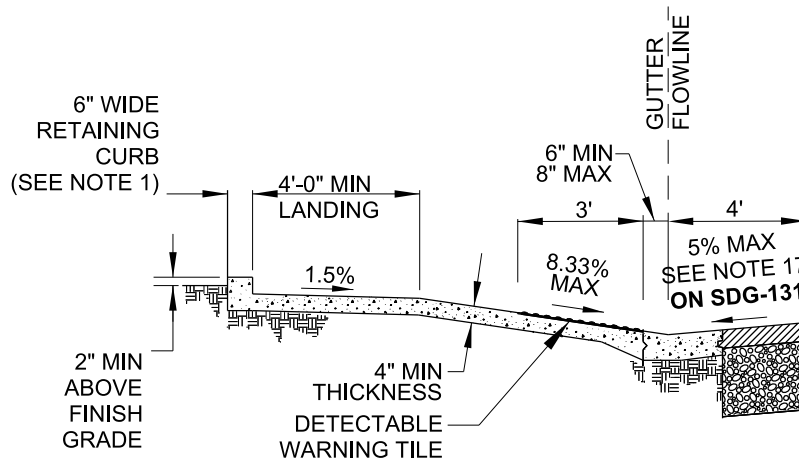
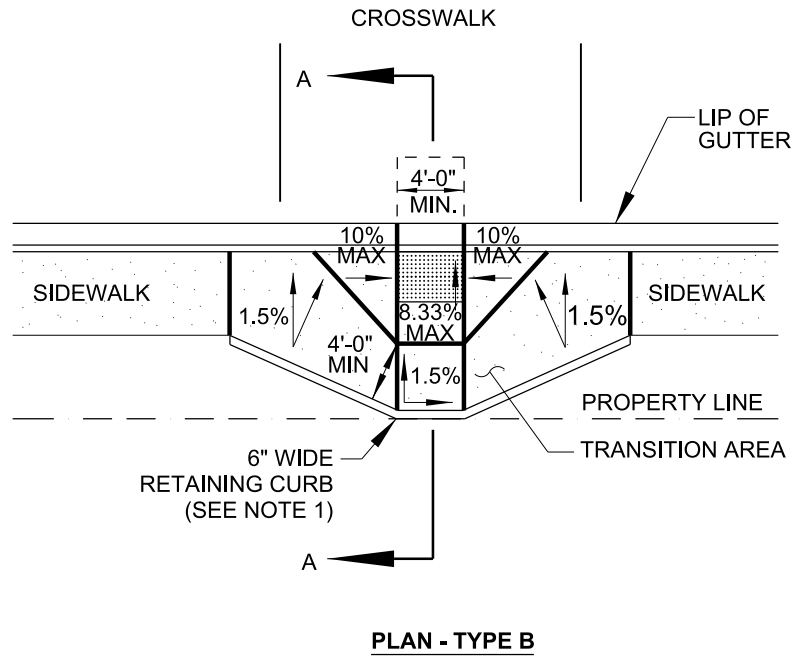


LEGEND:
 TOOLED JOINT

SEE SHEET 2 FOR: PLAN - TYPE B, SECTION A-A AND NOTES.

SHEET 1 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	FC	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18	CURB RAMPS - TYPE A AND B	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDG-133



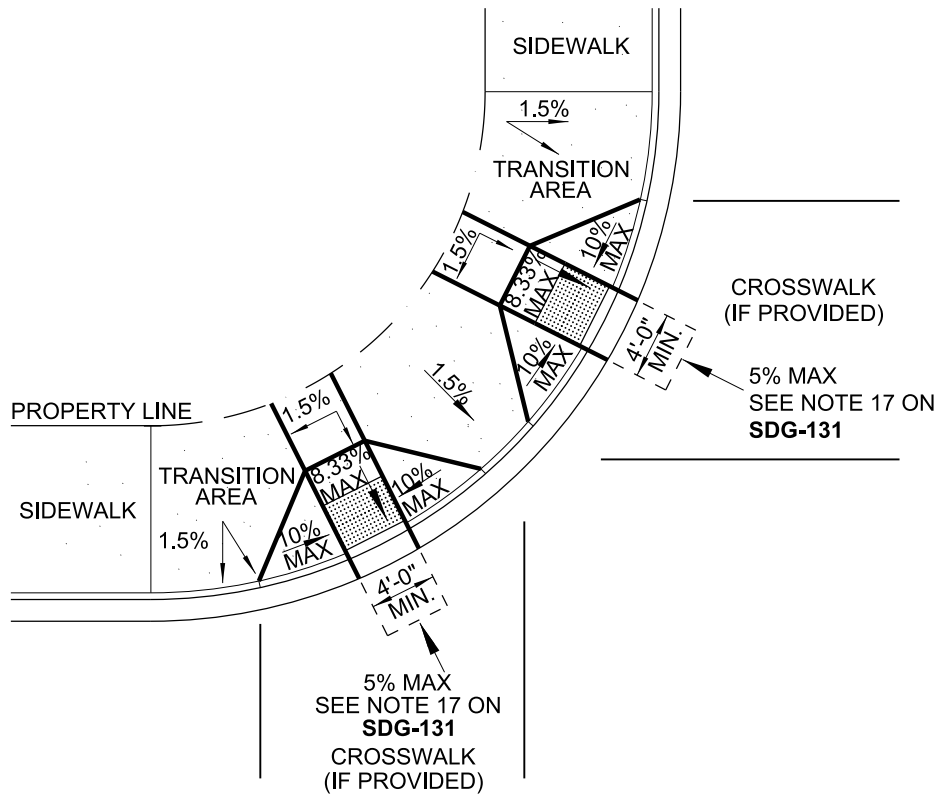
NOTES:

1. 6" WIDE RETAINING CURB MAY BE OMITTED IF THE GROUND SURFACE WILL BE AT THE SAME ELEVATION AS THE CURB RAMP SURFACE.
2. PEDESTRIAN BARRICADE **PER SDE-103** SHALL BE REQUIRED AT AREAS WHERE PEDESTRIAN CROSSING CANNOT BE FEASIBLY PROVIDED.

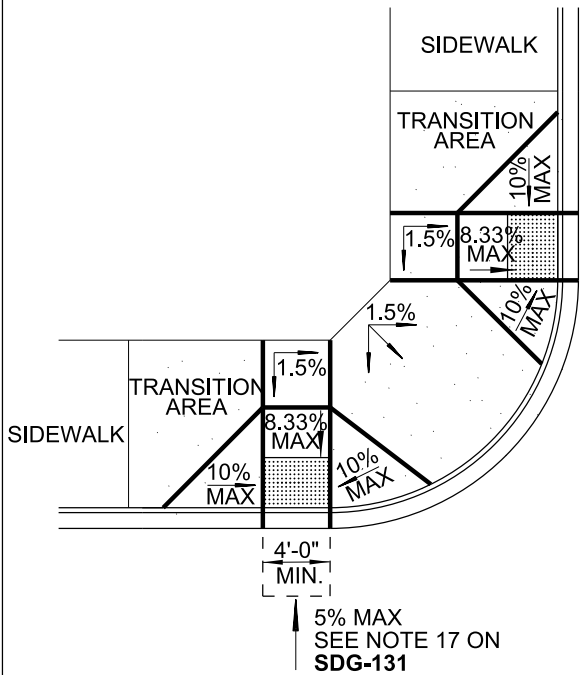
LEGEND:
TOOLED JOINT

SHEET 2 OF 2

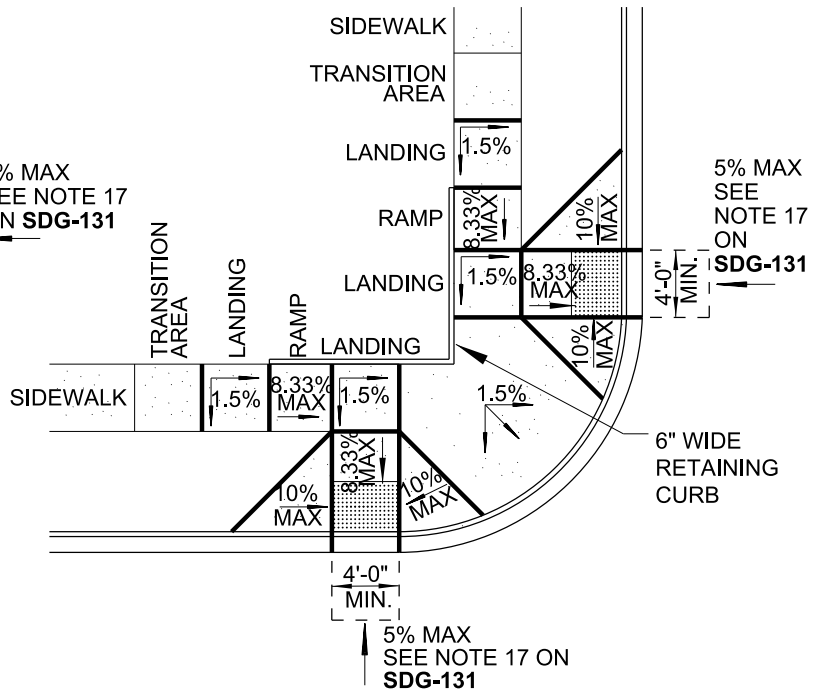
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	FC	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18	CURB RAMPS - TYPE A AND B	 COORDINATOR R.C.E. 56523 9/4/18 DATE
				DRAWING NUMBER	SDG-133



TWO CURB RAMPS CORNER



TWO CURB RAMPS CORNER



CURB RAMPS ADJACENT TO NON-CONTIGUOUS SIDEWALK <10' ROW

LEGEND:
TOOLED JOINT

REVISION	BY	APPROVED	DATE
ORIGINAL	FC	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

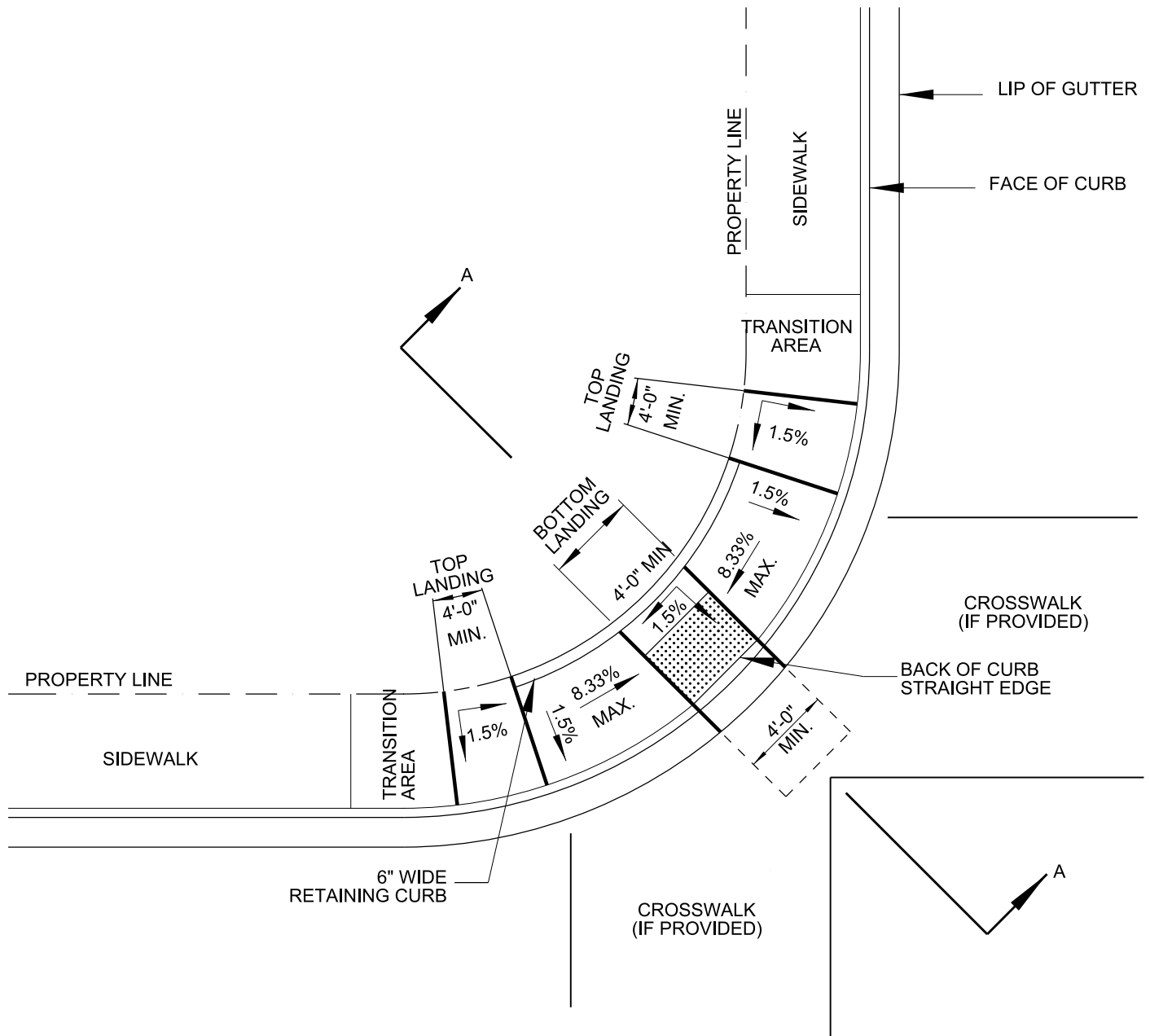
CITY OF SAN DIEGO – STANDARD DRAWING

DUAL CURB RAMPS

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

Chung 9/4/18
COORDINATOR R.C.E. 56523 DATE

DRAWING NUMBER **SDG-134**




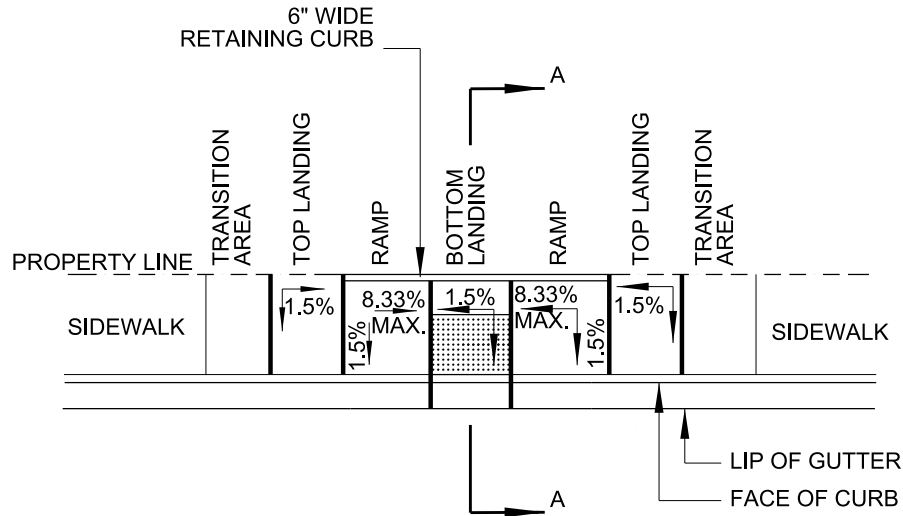
PLAN - TYPE C1

LEGEND:
TOOLED JOINT

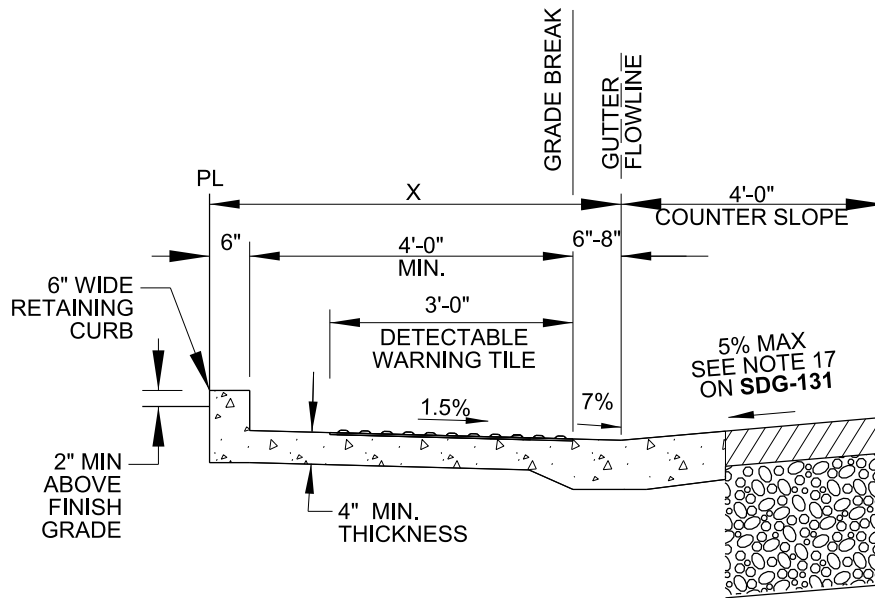
SEE SHEETS 2 TO 4 FOR: TYPE C1, SECTION A-A, TYPE C-2, SECTION B-B AND NOTES.

SHEET 1 OF 4

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	FC	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18	CURB RAMPS - TYPE C1 AND C2	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDG-135




PLAN - TYPE C1

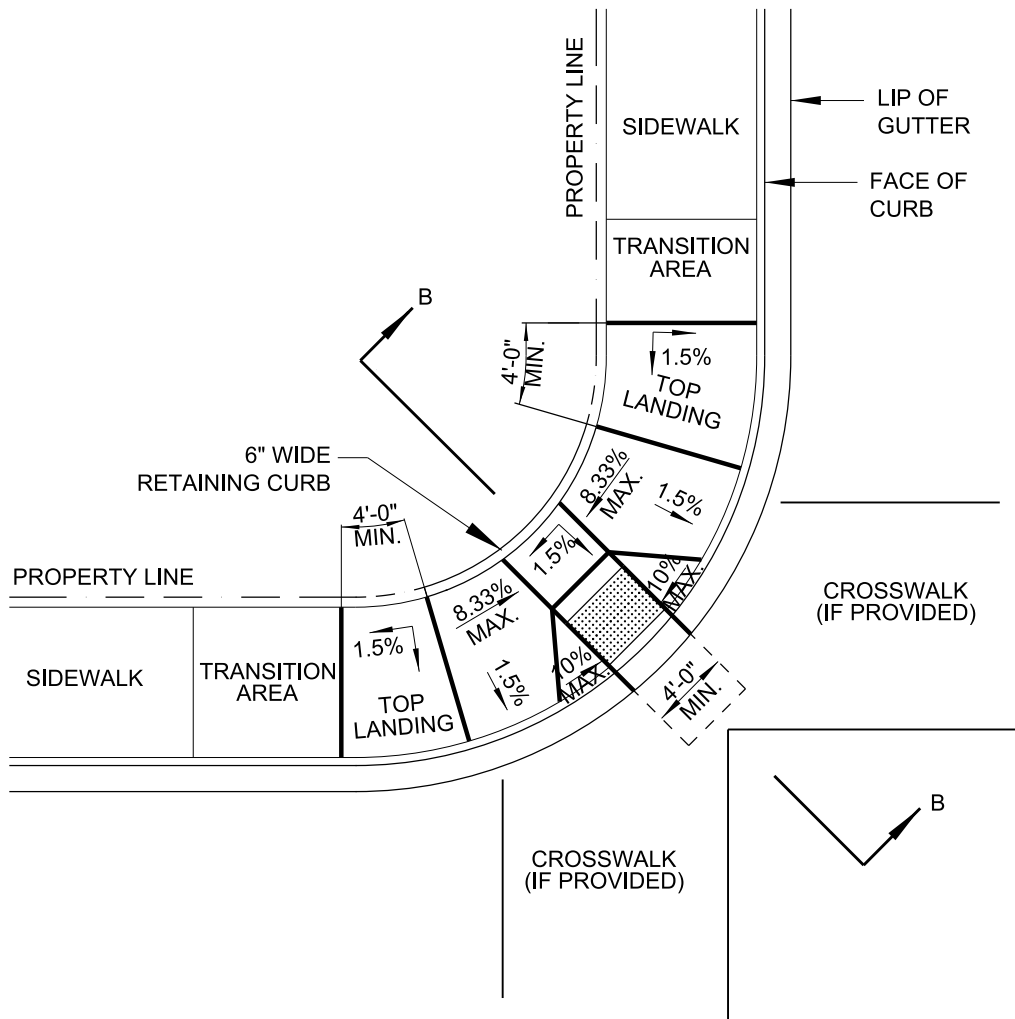


SECTION A-A

LEGEND:
 TOOLED JOINT
 SHEET 2 OF 4

SEE SHEET 4 FOR NOTES.


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	FC	J. NAGELVOORT	02/16		<div><div>9/4/18</div><div>COORDINATOR R.C.E. 56523 DATE</div></div> <div>DRAWING NUMBERSDG-135</div>
REDRAFTED	CD	J. NAGELVOORT	09/18		

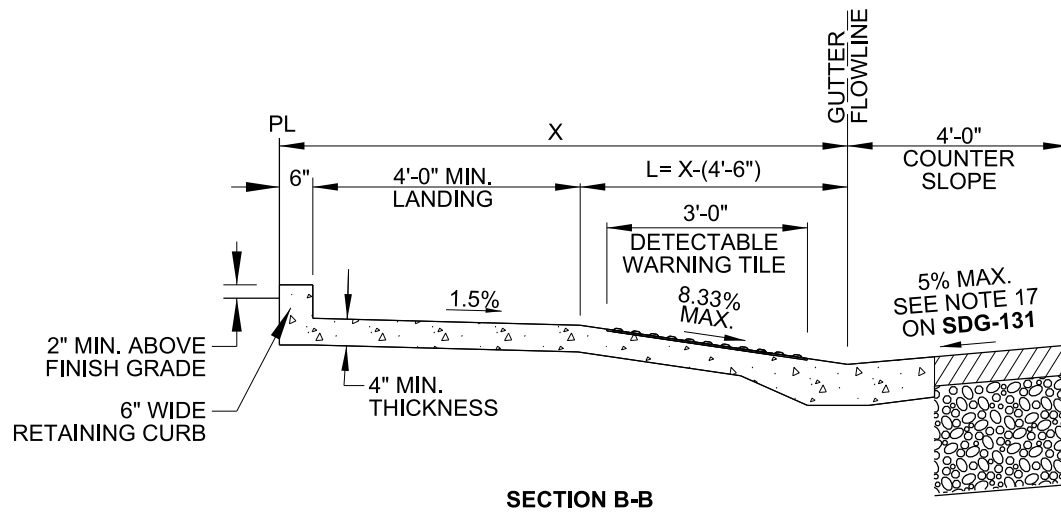


PLAN - TYPE C2

LEGEND:
TOOLED JOINT
SHEET 3 OF 4

SEE SHEET 4 FOR: SECTION B-B AND NOTES.


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  9/4/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL	FC	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18	CURB RAMPS - TYPE C1 AND C2	DRAWING NUMBER SDG-135

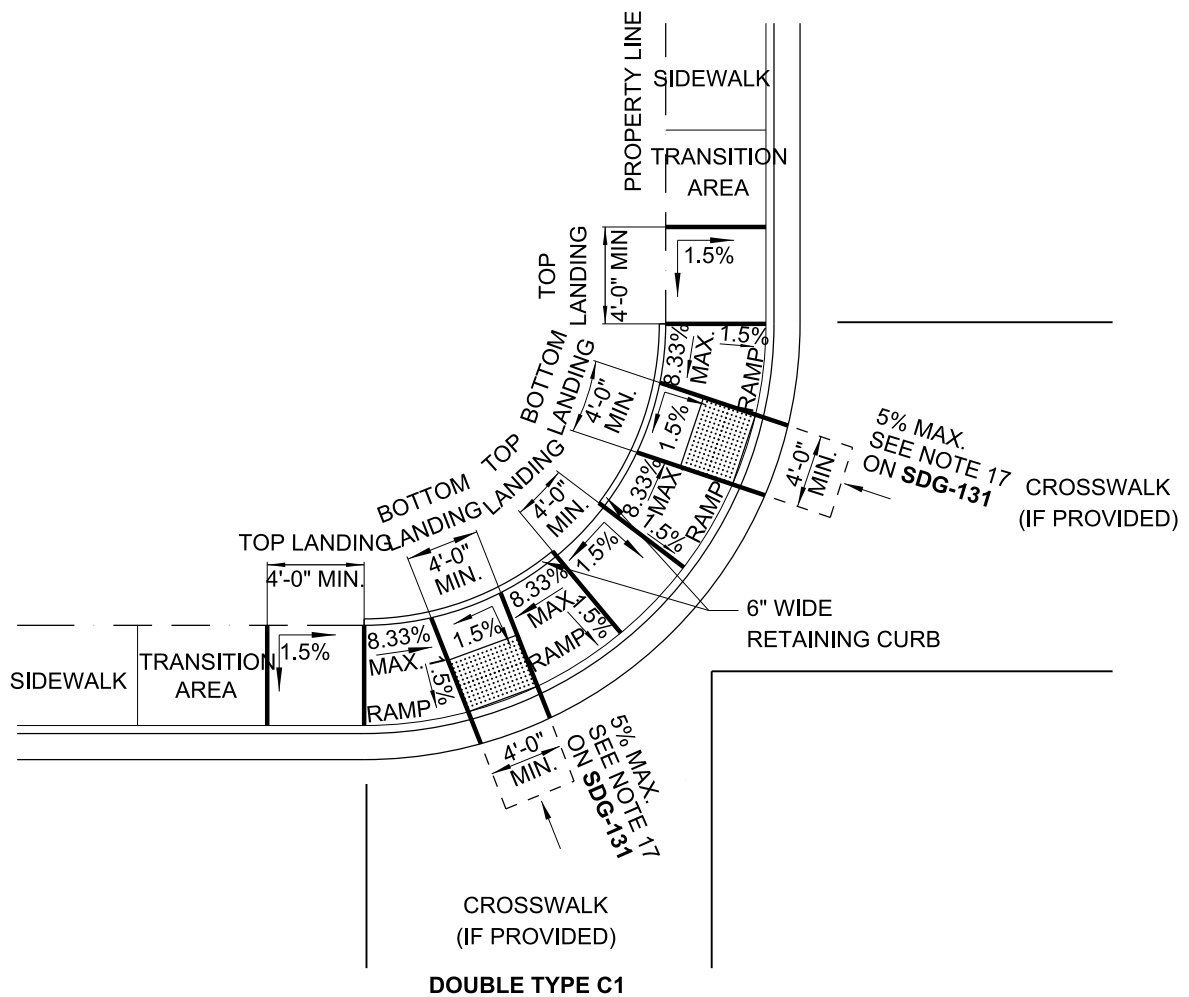


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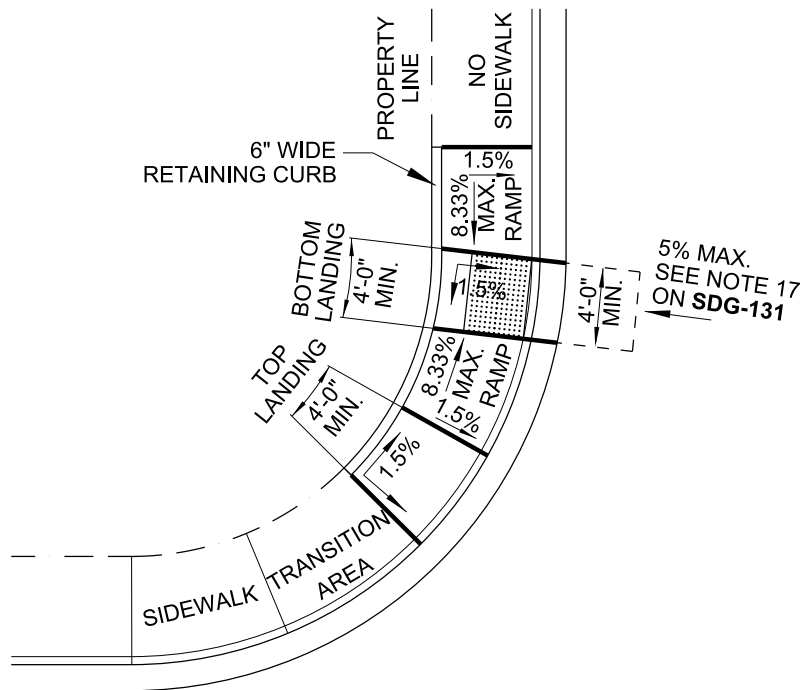
1. TYPE C1 CURB RAMP SHALL ONLY BE USED WHERE INADEQUATE RIGHT OF WAY EXISTS. TYPE C1 SHALL BE USED WHEN $X < 8'$ AND ONLY WITH PRIOR APPROVAL FROM THE ENGINEER. X = DISTANCE FROM FACE OF CURB TO PROPERTY LINE.
2. GRADE BREAK AT THE TOP AND BOTTOM OF RAMP RUNS SHALL BE PERPENDICULAR TO THE DIRECTION OF THE RAMP RUN.

SHEET 4 OF 4

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	FC	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18	CURB RAMPS - TYPE C1 AND C2	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDG-135



DOUBLE TYPE C1



PLAN - TYPE C1 (MODIFIED)

LEGEND:
 TOOLED JOINT

SHEET 1 OF 2

REVISION	BY	APPROVED	DATE
ORIGINAL	FC	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

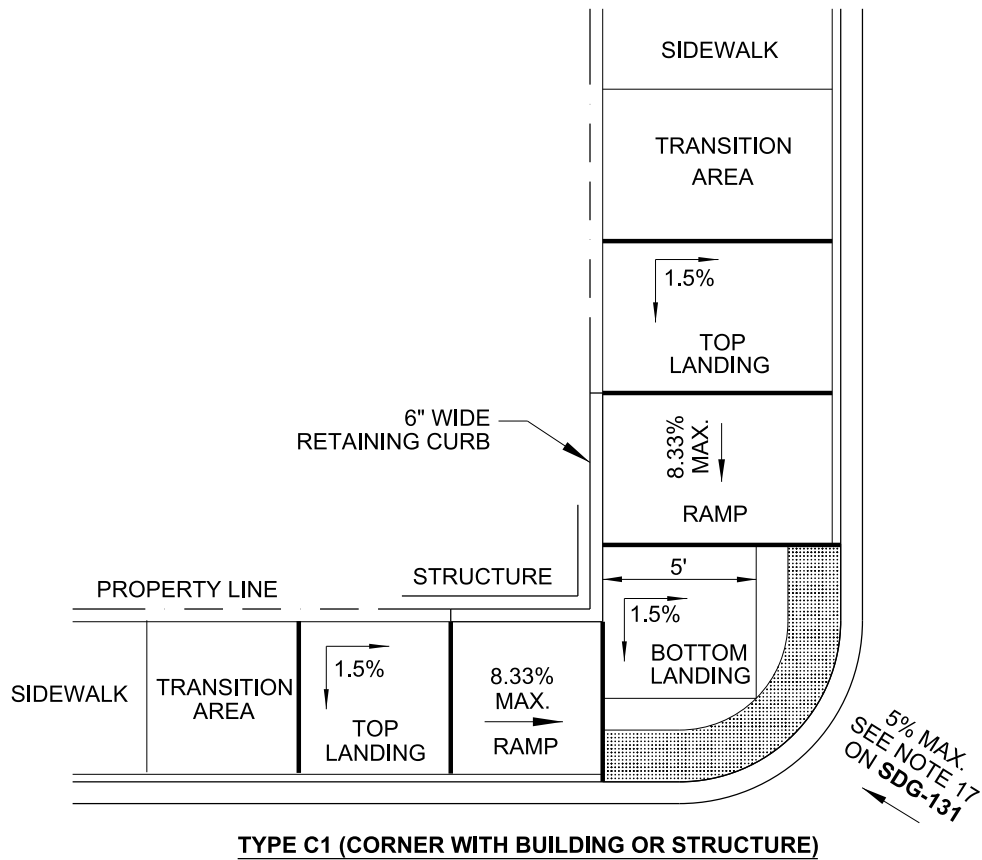
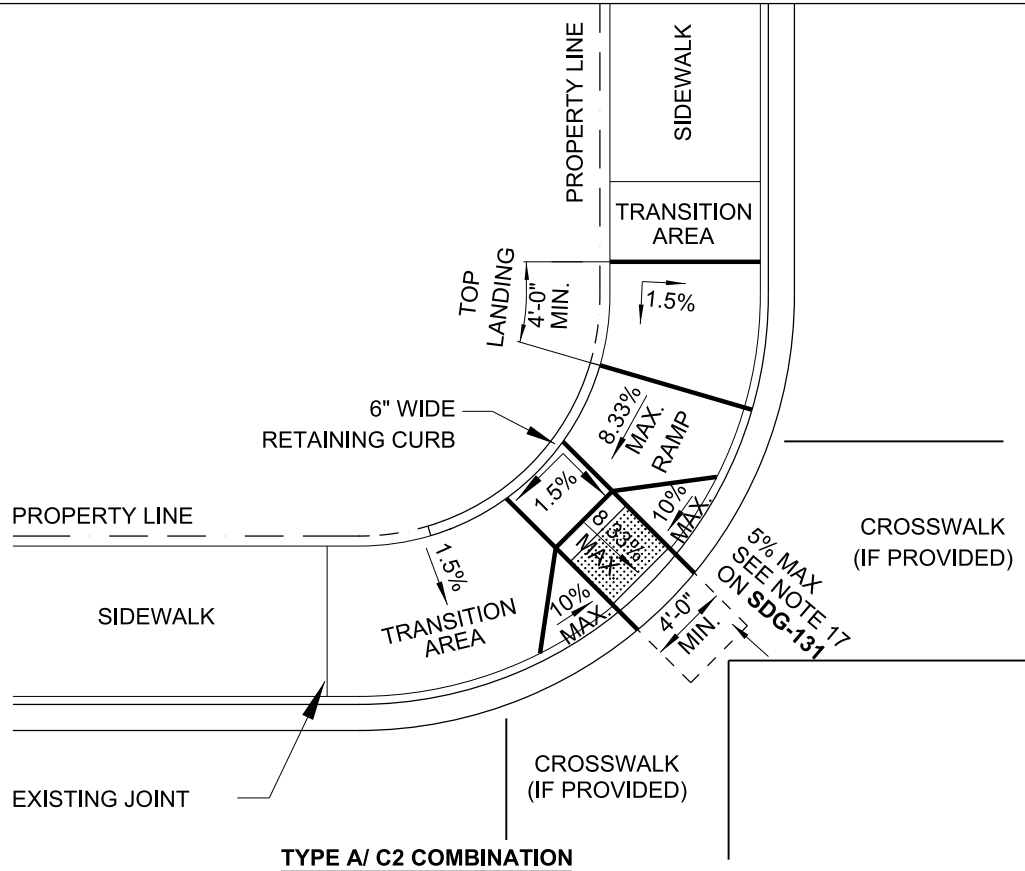
CITY OF SAN DIEGO - STANDARD DRAWING

CURB RAMPS - TYPE C1 AND C2 MORE DETAILS

RECOMMENDED BY THE CITY
OF SAN DIEGO STANDARDS COMMITTEE

9/4/18
COORDINATOR R.C.E. 56523 DATE


DRAWING
NUMBER **SDG-136**

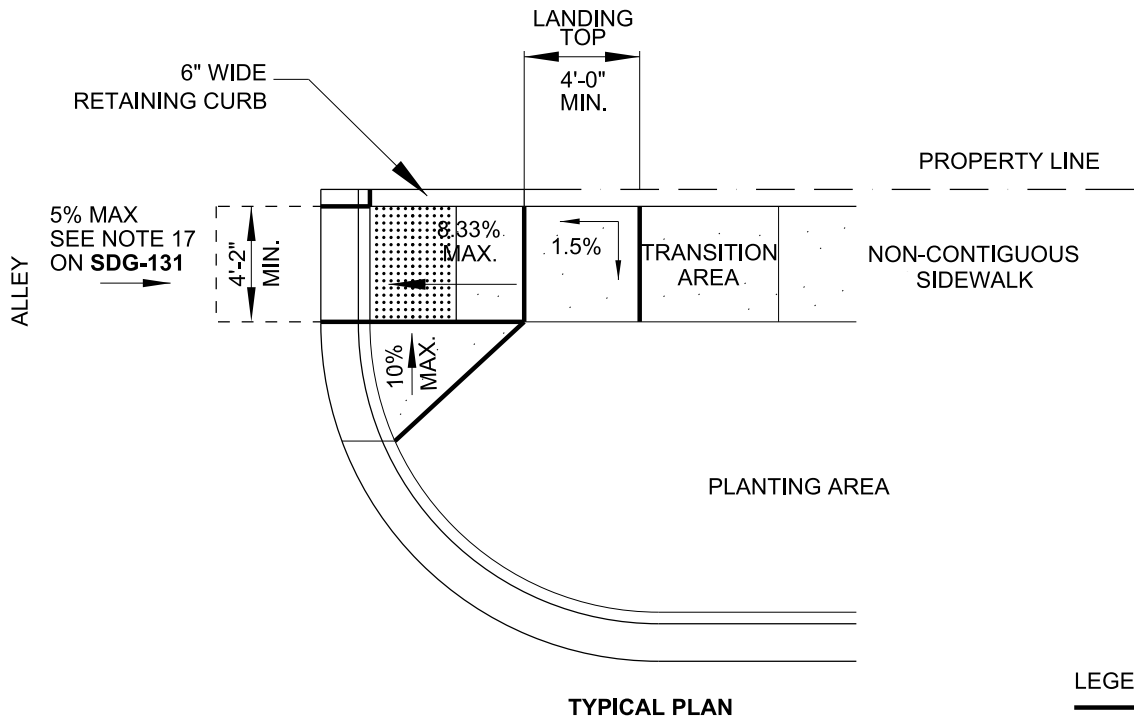
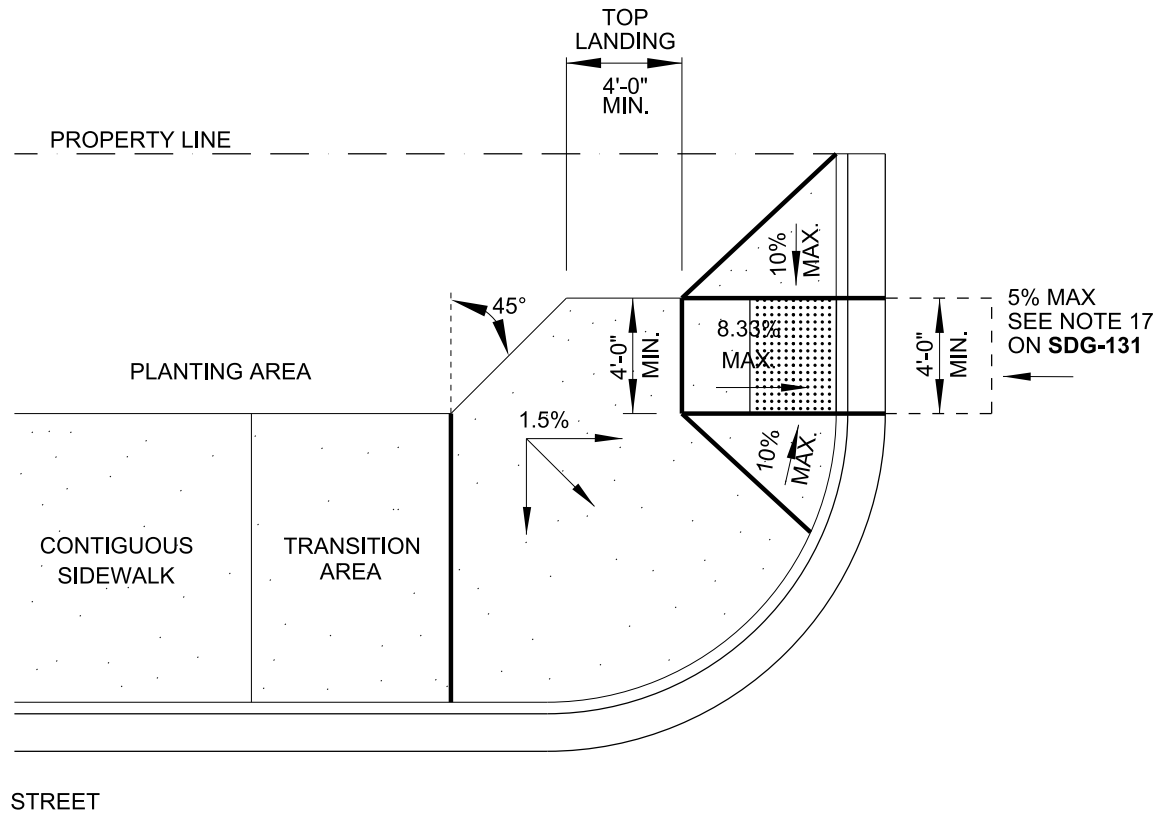



LEGEND: TOOLED JOINT

TYPE C1 (CORNER WITH BUILDING OR STRUCTURE)


SHEET 2 OF 2

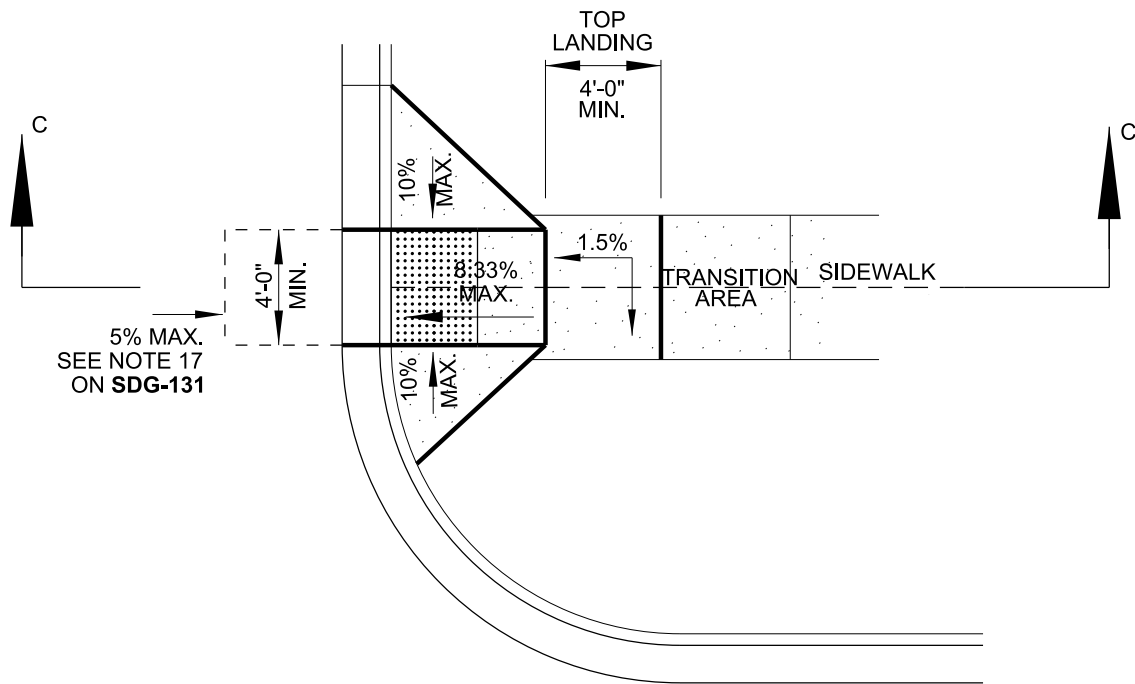
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	FC	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18	CURB RAMPS - TYPE C1 AND C2 MORE DETAILS	 9/4/18
					COORDINATOR R.C.E. 56523 DATE
					DRAWING
					NUMBER SDG-136



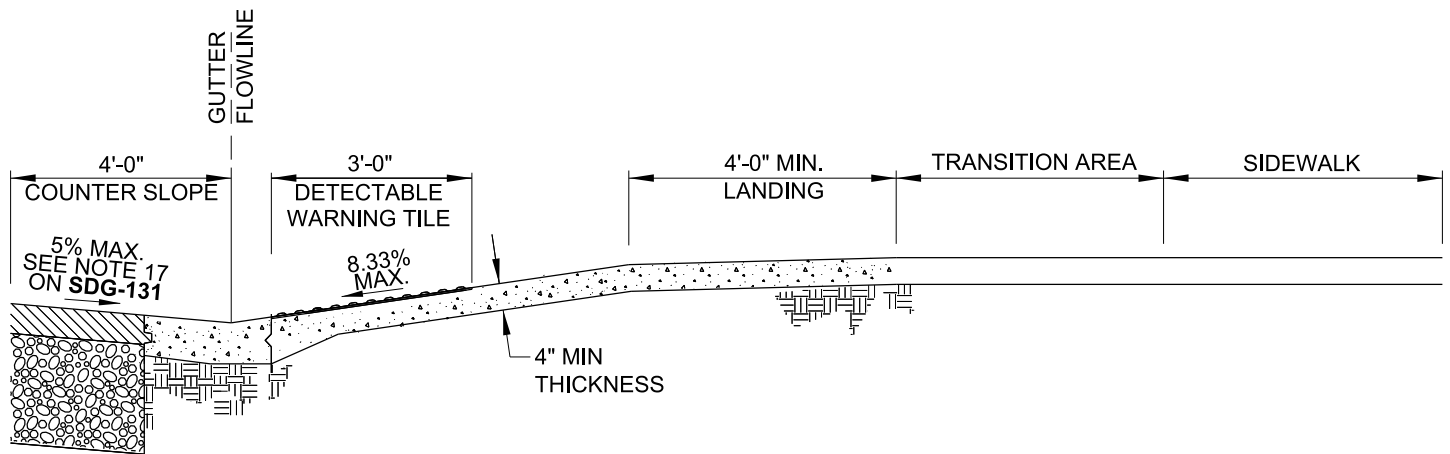
LEGEND:  TOOLED JOINT

SHEET 1 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	FC	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18	CURB RAMP - TYPE D	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDG-137




PLAN VIEW

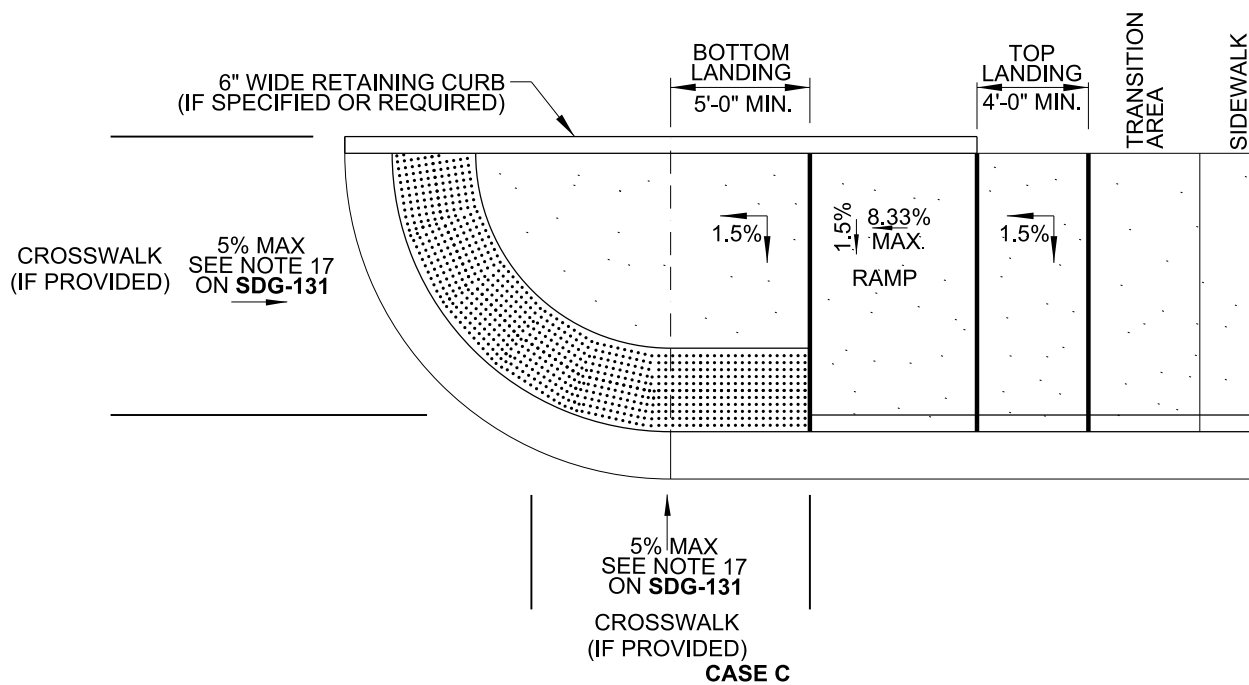
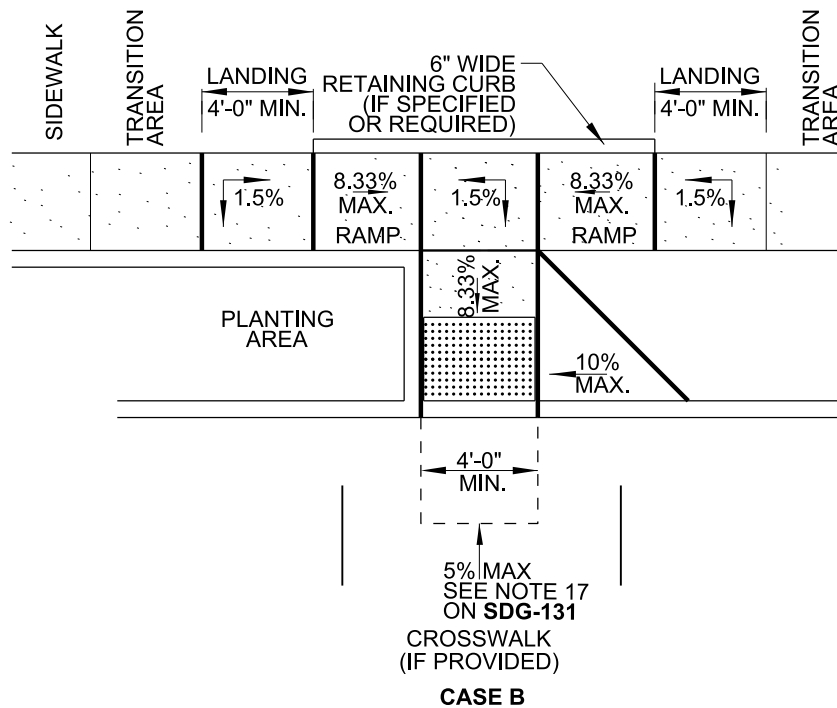
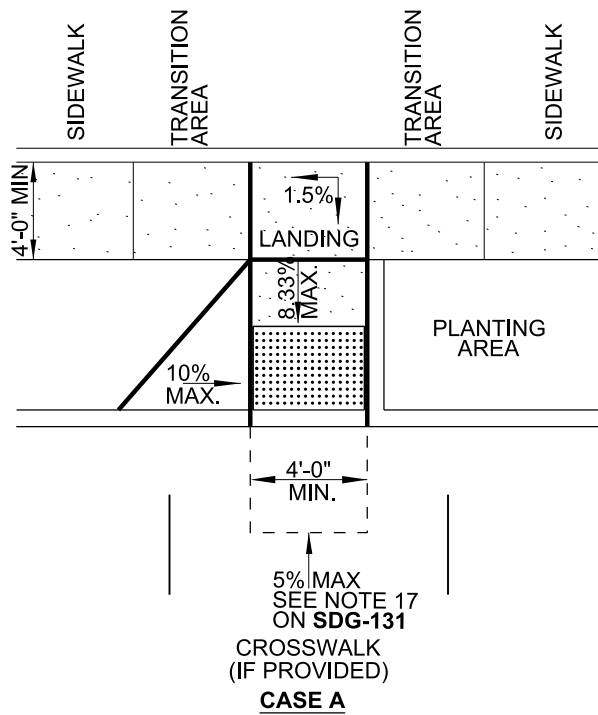


SECTION C-C

LEGEND:
 TOOLED JOINT

SHEET 2 OF 2


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  9/4/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL	FC	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18	CURB RAMP - TYPE D	DRAWING NUMBER SDG-137

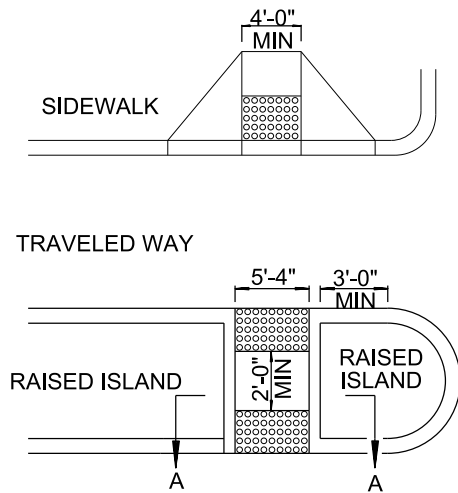


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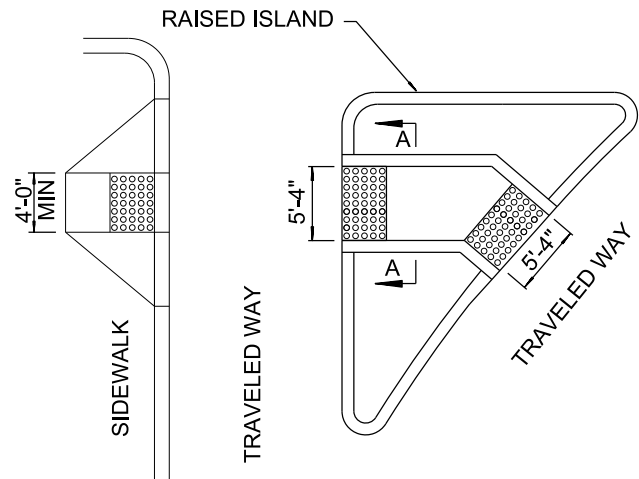
1. CASE A THROUGH C MAY BE USED ONLY WITH APPROVAL OF THE ENGINEER.
2. TRANSITION AREA REQUIRED IF EXISTING SIDEWALK HAS A CROSS SLOPE THAT EXCEEDS 2%.
3. IF FLARE CANNOT BE PROVIDED DUE TO SITE CONSTRAINTS, WIDEN CURB RAMP WIDTH TO 4'-2" AND PROVIDE A 6" WIDE RETAINING CURB. RAMP WIDTH TO BE 4' MIN IF RAMP HAS FLARES ON BOTH SIDES.

LEGEND: TOOLED JOINT

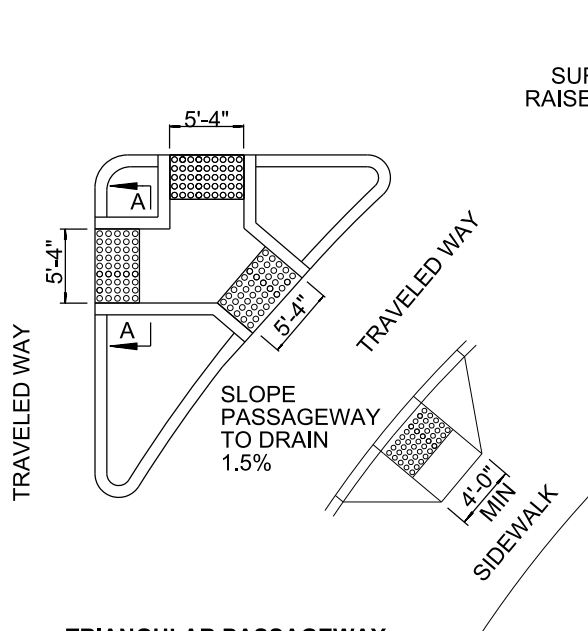
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	FC	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18	GENERAL CURB RAMPS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDG-138



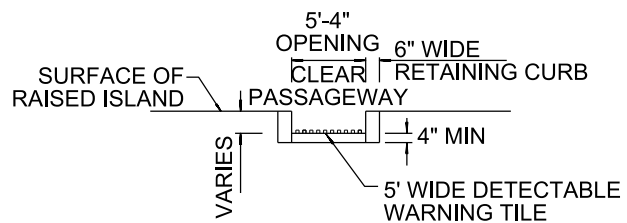
STRAIGHT PASSAGEWAY



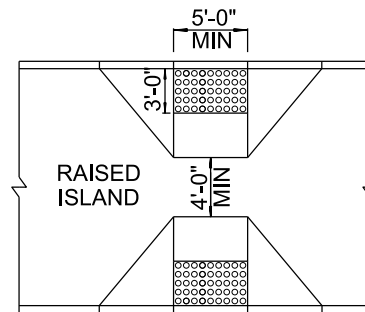
ANGULAR PASSAGEWAY



TRIANGULAR PASSAGEWAY




SECTION A - A

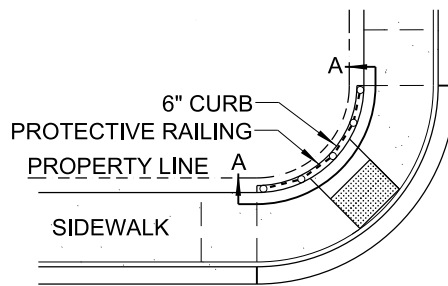


**CURB RAMP AT ISLAND
PER SDG-133**

NOTES:

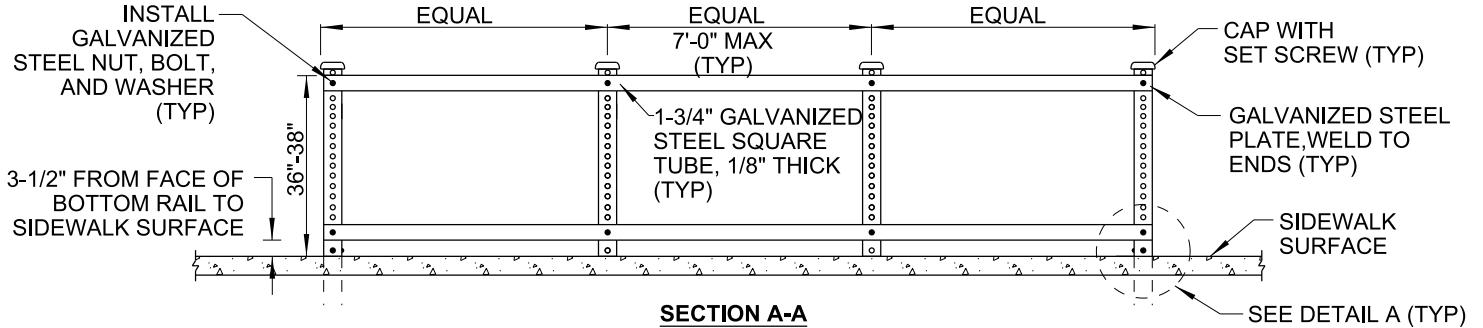
1. WHERE THE ISLAND OR CUT-THROUGH LENGTH IS 8 FT OR MORE, THE DETECTABLE WARNINGS SHALL BE 36 INCHES IN DEPTH EXTENDING THE FULL WIDTH OF THE PEDESTRIAN PATH OR CUT-THROUGH, LESS 2 INCHES MAXIMUM ON EACH SIDE.
2. WHERE THE ISLAND OR CUT-THROUGH LENGTH IS LESS THAN 8 FT, THE DETECTABLE WARNINGS SHALL BE 24 INCHES. IF THE ISLAND IS LESS THAN 6 FT, DETECTABLE WARNINGS ARE NOT REQUIRED.
3. DETECTABLE WARNINGS SHALL BE PLACED AT THE EDGES OF THE PEDESTRIAN ISLAND OR CUT-THROUGH MEDIAN, EXCEPT FOR RAISED ISLANDS WHERE THE PLACEMENT SHALL COMPLY WITH THE REQUIREMENTS OF THE CURB RAMPS.
4. THE MINIMUM PASSAGEWAY WIDTH SHALL BE 5'-4". THE MINIMUM ISLAND CURB RAMP WIDTH SHALL BE 5'-0".
5. PASSAGEWAY GRADE SHALL SLOPE AT 1.5% TO DRAIN.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	FC	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18	ISLAND AND PASSAGEWAY DETAILS	 COORDINATOR R.C.E. 56523 DATE 9/4/18
				DRAWING NUMBER	SDG-139



NOTE:
PROVIDE PROTECTIVE RAILING TYPE A
TO PREVENT PEDESTRIAN ACCESS AT
THE BACK OF CURB RAMP.

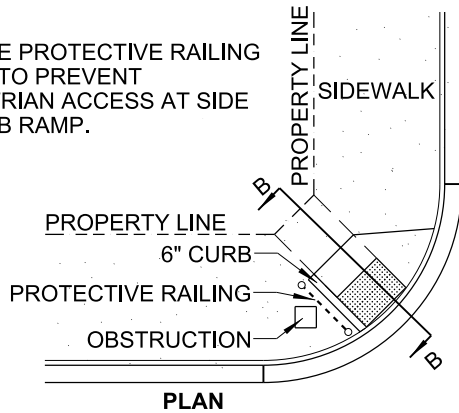
PLAN



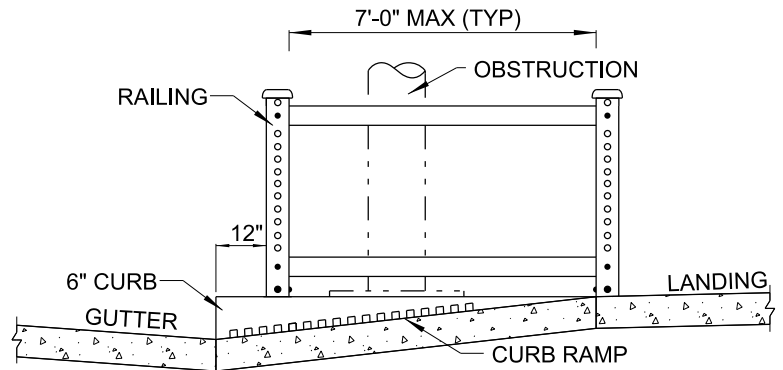
SECTION A-A

PROTECTIVE RAILING - TYPE A

NOTE:
PROVIDE PROTECTIVE RAILING
TYPE B TO PREVENT
PEDESTRIAN ACCESS AT SIDE
OF CURB RAMP.



PLAN

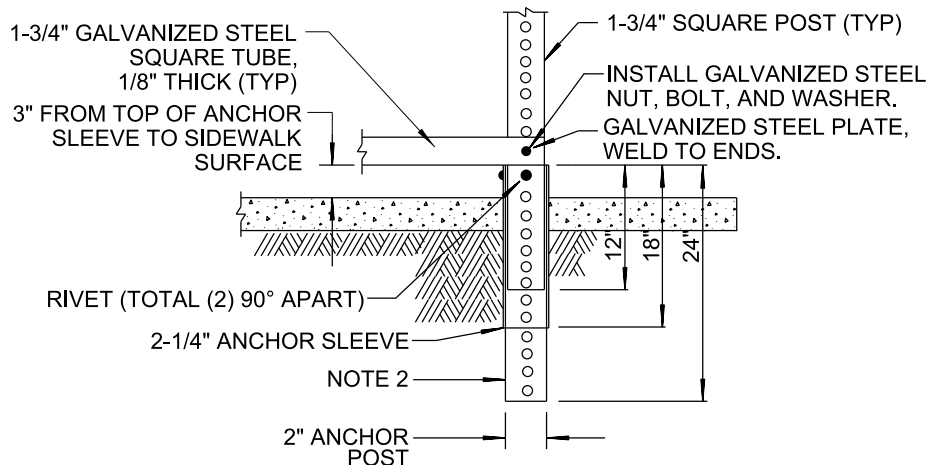


SECTION B-B

PROTECTIVE RAILING - TYPE B

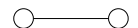
NOTES:

1. POSTS TO BE SET 12" BEHIND THE FACE OF CURB.
2. IN EXISTING SIDEWALK AREA SET POSTS INTO 4" CORE BORING.
3. POSTS SHALL BE WRAPPED IN 6 MIL VISQUEEN PLASTIC PRIOR TO POURING CONCRETE OR GROUTING.
4. HORIZONTAL 1-3/4" GALVANIZED STEEL SQUARE POST TO BE MOUNTED ON THE SIDE OF THE BREAK-AWAY POSTS, OPPOSITE TO THE RAMP.



DETAIL A

LEGEND ON PLANS



REVISION	BY	APPROVED	DATE
ORIGINAL	FC	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

CITY OF SAN DIEGO - STANDARD DRAWING

PROTECTIVE RAILING AT CURB RAMPS

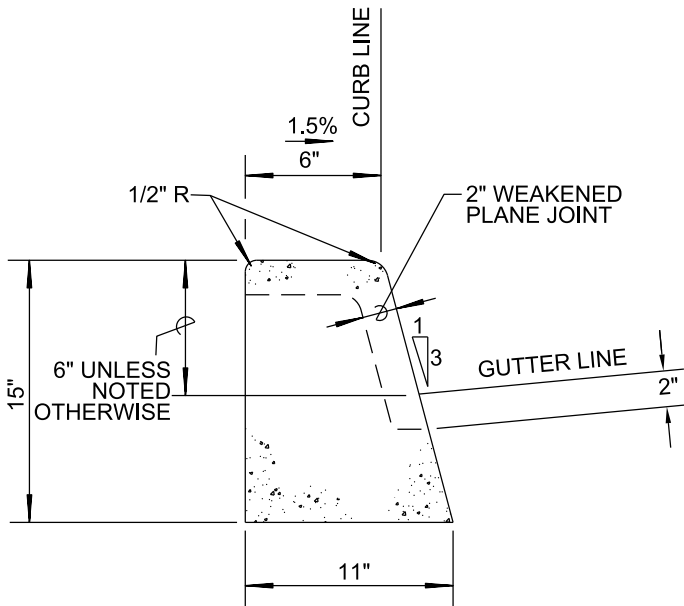
RECOMMENDED BY THE CITY
OF SAN DIEGO STANDARDS COMMITTEE

Chung 9/11/18
COORDINATOR R.C.E. 56523 DATE

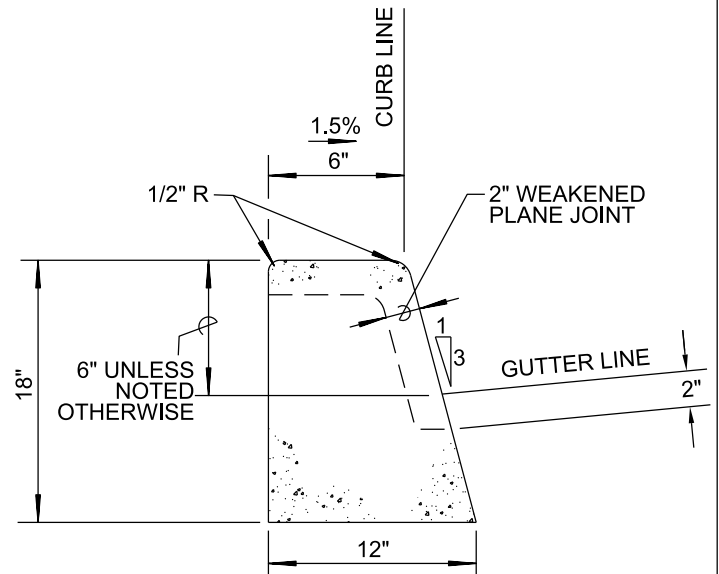
DRAWING
NUMBER

SDG-140

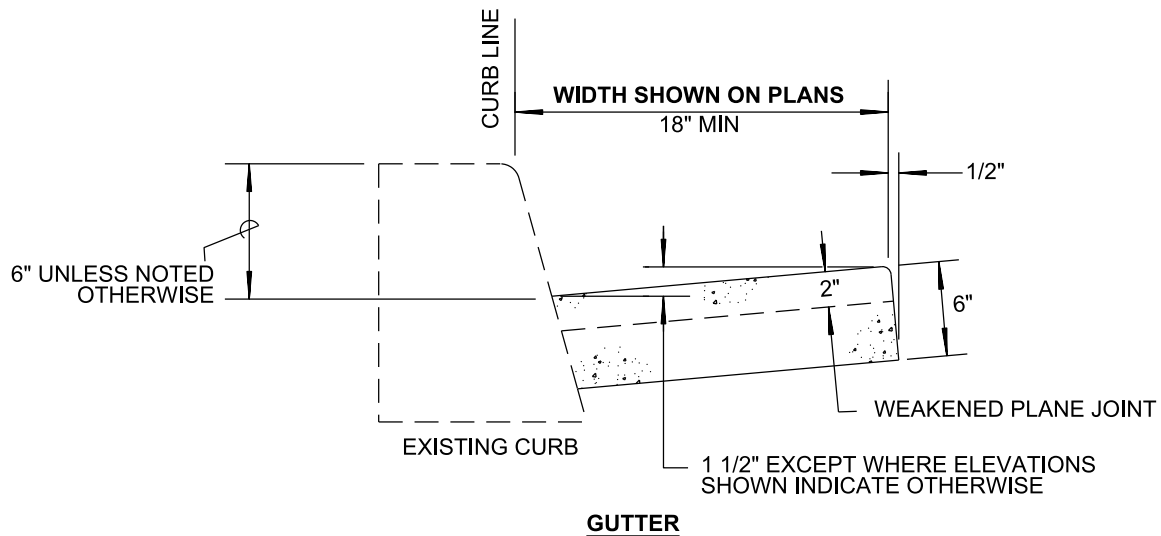
SDG-141



6" CURB
AREA=0.89 SQ FT




8" CURB
AREA=1.09 SQ FT

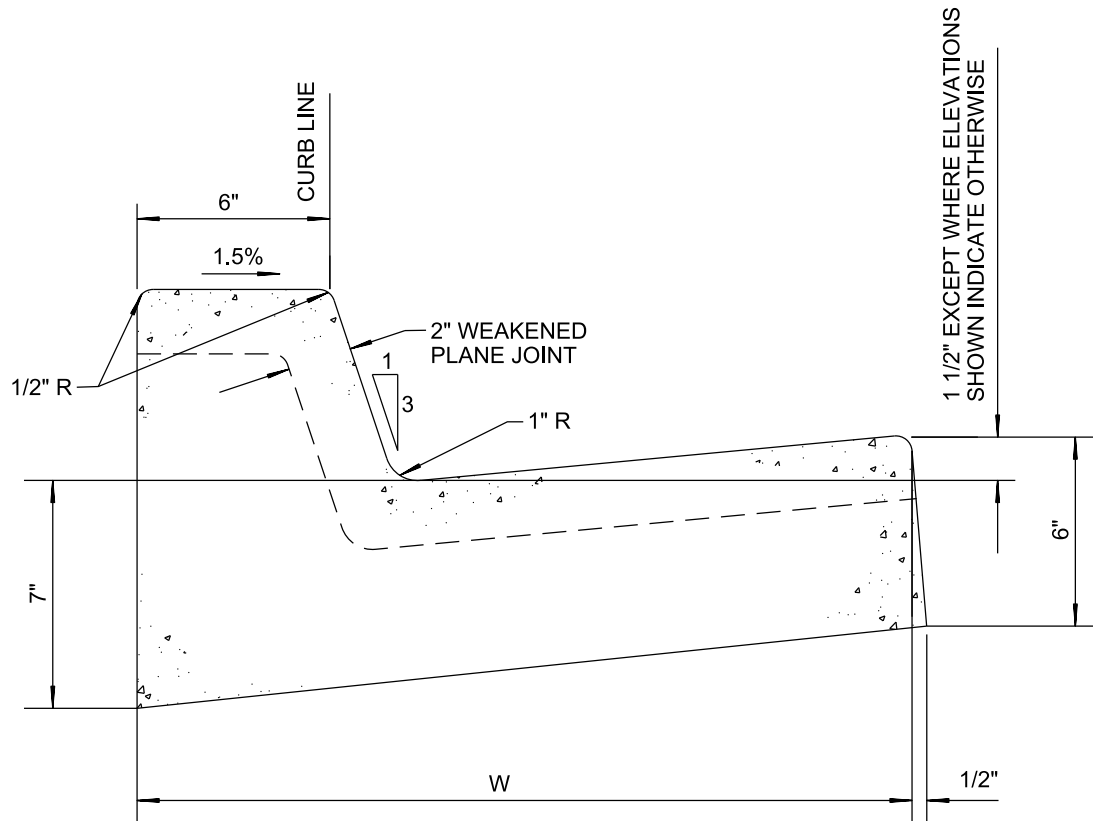


NOTES:

1. CONCRETE SHALL BE 520-C-2500.
2. SEE **SDG-109** AND **G-10** FOR JOINT DETAILS.
3. ALL HISTORICAL STAMPS / IMPRESSIONS (STREET NAME, CONTRACTOR NAME, AND / OR DATE) SHALL BE PRESERVED **PER SDG-115**.

LEGEND ON PLANS
6" CURB

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	RB	J. NAGELVOORT	10/15	CURB AND GUTTER - SEPARATE	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDG-150




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

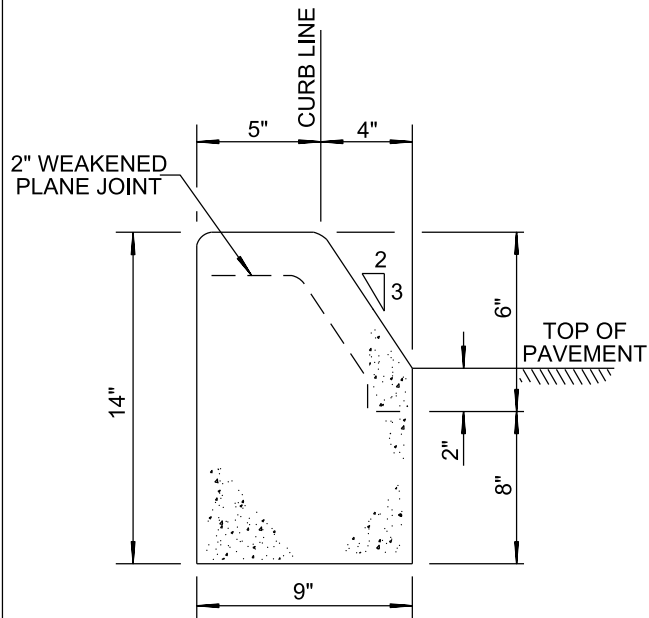
* WITH 6" CURB FACE

NOTES:

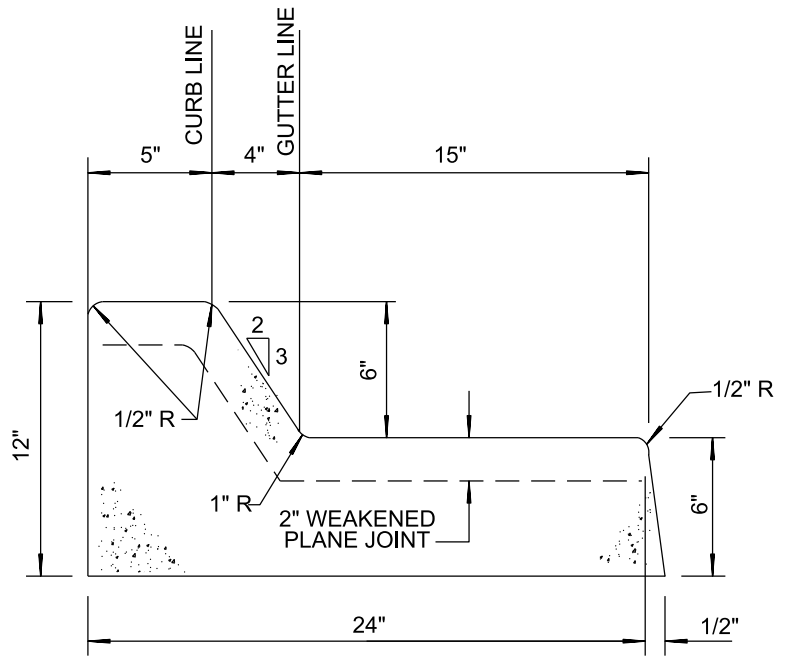
1. CONCRETE SHALL BE 520-C-2500.
2. SEE JOINT DETAIL DRAWING **SDG-109 AND G-10**.
3. ON THE SIDE OF OF SUPER ELEVATED CURVES THE GUTTER SHALL BE SLOPED TO MATCH CROSS SECTION GRADE OF THE ROADWAY.
4. PLACE EXPANSION JOINTS AT CURB RETURNS ADJACENT TO STRUCTURES AND AT NO GREATER THAN 45' INTERVALS.
5. PLACE WEAKENED PLANE JOINTS AT DRIVEWAYS AND AT 15' INTERVALS FROM POINT OF CURB RETURN.
6. ALL HISTORICAL STAMPS / IMPRESSIONS SHALL BE PRESERVED **PER SDG-115**.

LEGEND ON PLANS

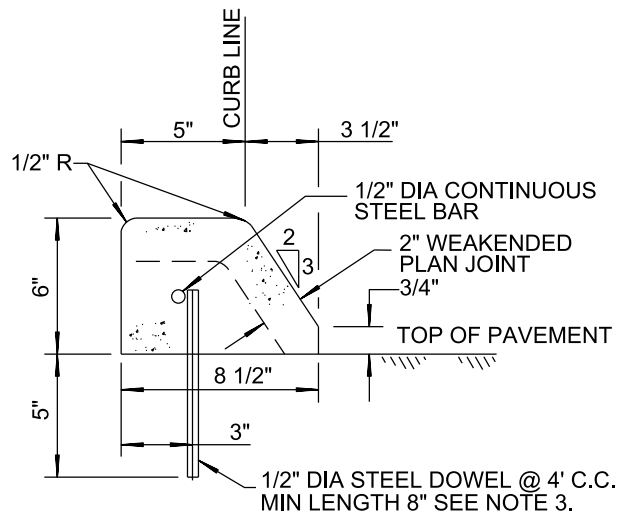
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	RB	J. NAGELVOORT	10/15	CURB AND GUTTER - COMBINED	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDG-151



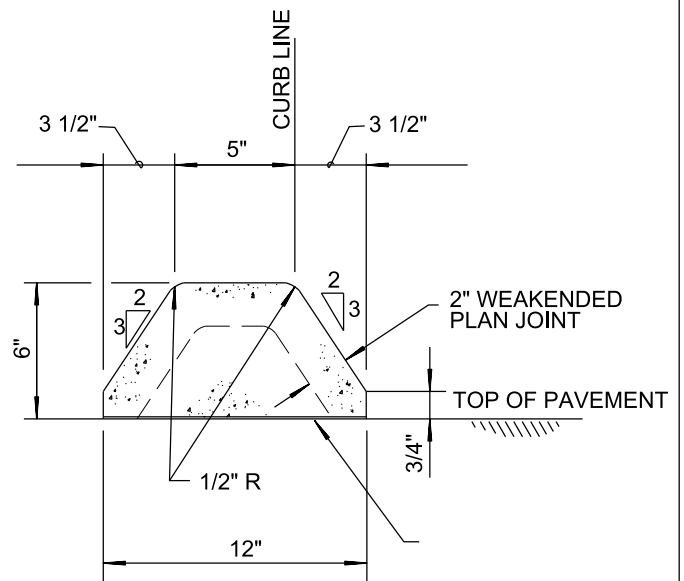
B-1
AREA=0.79 SQ FT



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 JOINT DETAIL DRAWINGS **SDG-109** AND **G-10**.
3. EXTRUDED TYPE B-3 CURB SHALL BE ANCHORED TO EXISTING PAVEMENT.
4. ALL HISTORICAL STAMPS / IMPRESSIONS (STREET NAME, CONTRACTOR NAME, AND / OR DATE) SHALL BE PRESERVED **PER SDG-115**.

LEGEND ON PLANS

TYPE B-2 CURB AND GUTTER

TYPE B-1, B-3, B-4 CURB

REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12
UPDATED	RB	J. NAGELVOORT	10/15
UPDATED	HM	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

CITY OF SAN DIEGO – STANDARD DRAWING

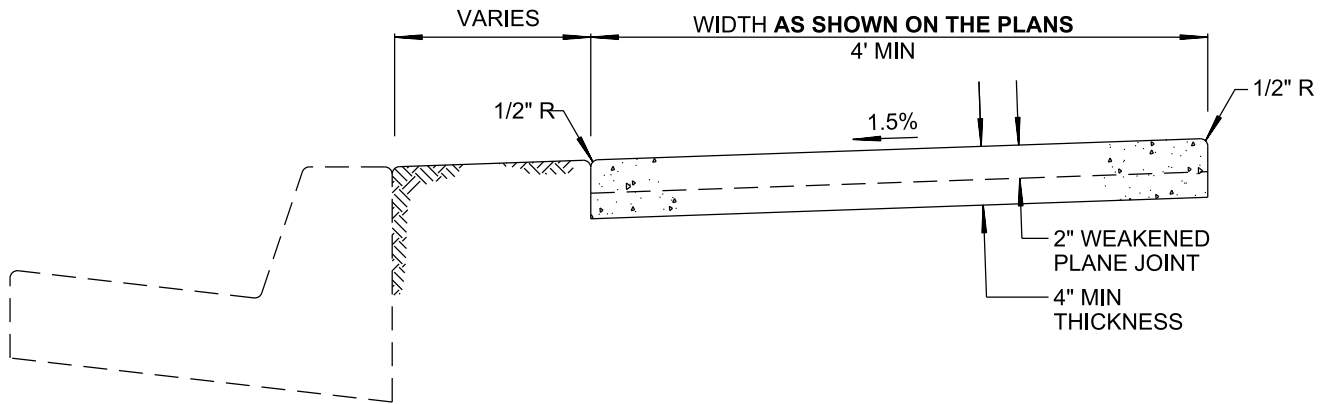
CURB AND GUTTER - MEDIANS

RECOMMENDED BY THE CITY
OF SAN DIEGO STANDARDS COMMITTEE

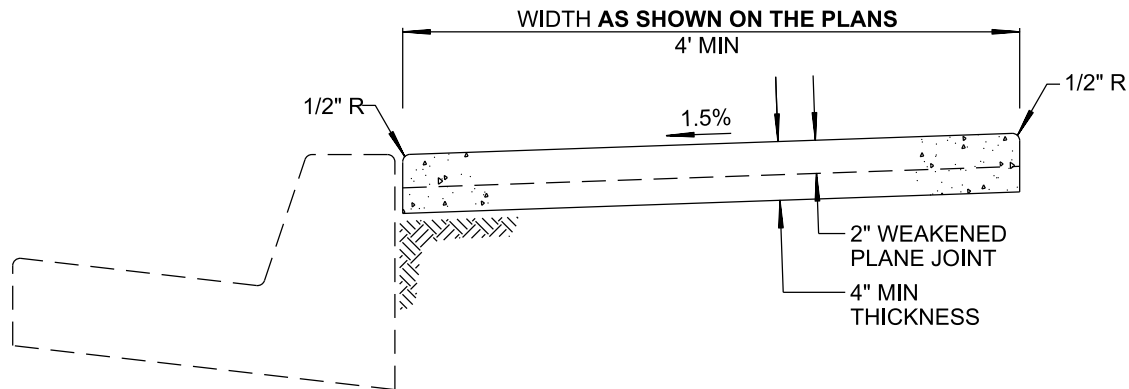
Chung 9/4/18
COORDINATOR R.C.E. 56523 DATE

DRAWING
NUMBER

SDG-154



NON-CONTIGUOUS

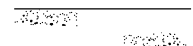


CONTIGUOUS

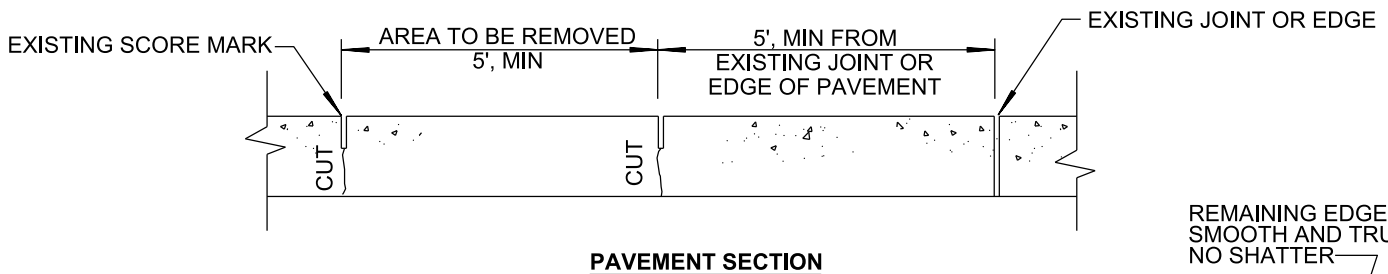
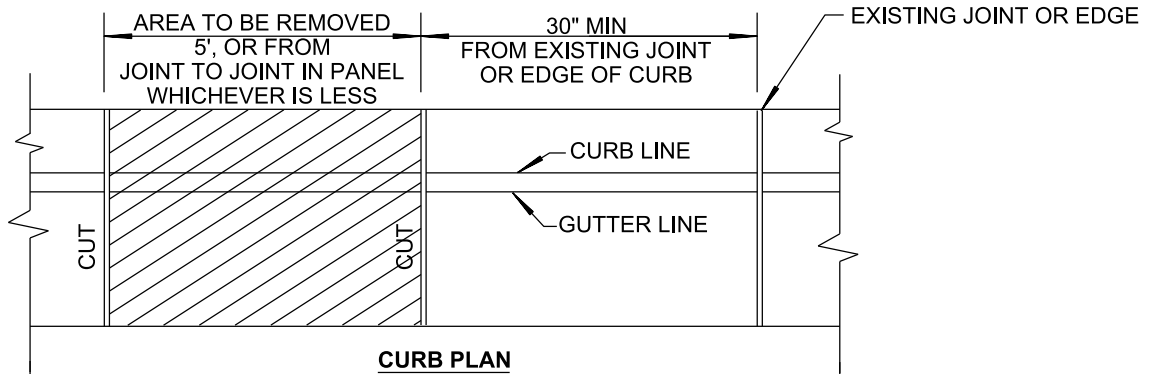
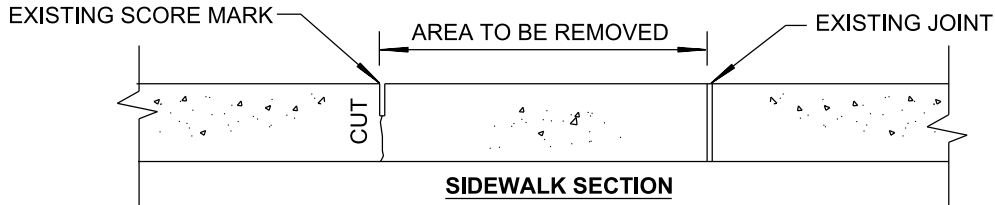
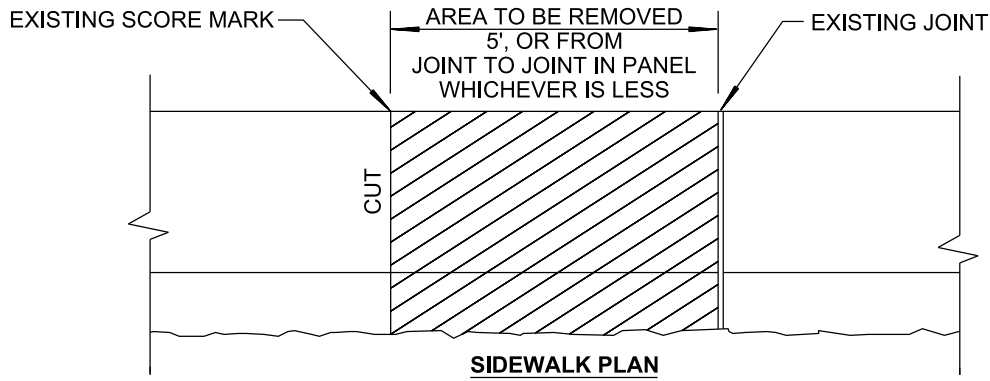
NOTES:

1. CONCRETE SHALL BE 520-C-2500.
2. SEE JOINT DETAIL DRAWINGS **SDG-109 AND G-10**.
3. SIDEWALK SHALL MAINTAIN A MINIMUM CLEAR WIDTH OF 4' OF TRAVEL FROM ANY OBSTRUCTION.
4. ALL HISTORICAL STAMPS / IMPRESSIONS (STREET NAME, CONTRACTOR NAME, AND/OR DATE) SHALL BE PRESERVED **PER SDG-115**.
5. FOR DESIGNATED URBANIZED COMMUNITIES, SIDEWALK DESIGN (SCORING PATTERN, COLOR, TEXTURE) SHALL BE IN CONFORMANCE WITH HISTORIC DESIGN ON ADJACENT PROPERTIES.

LEGEND ON PLANS

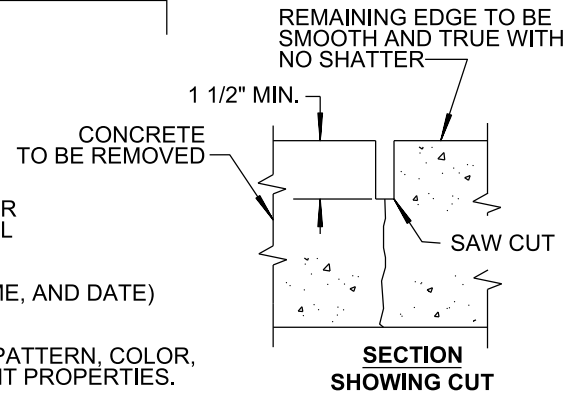


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		<div>SIDEWALK - TYPICAL SECTIONS</div>
UPDATED	RB	J. NAGELVOORT	10/15		
UPDATED	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	

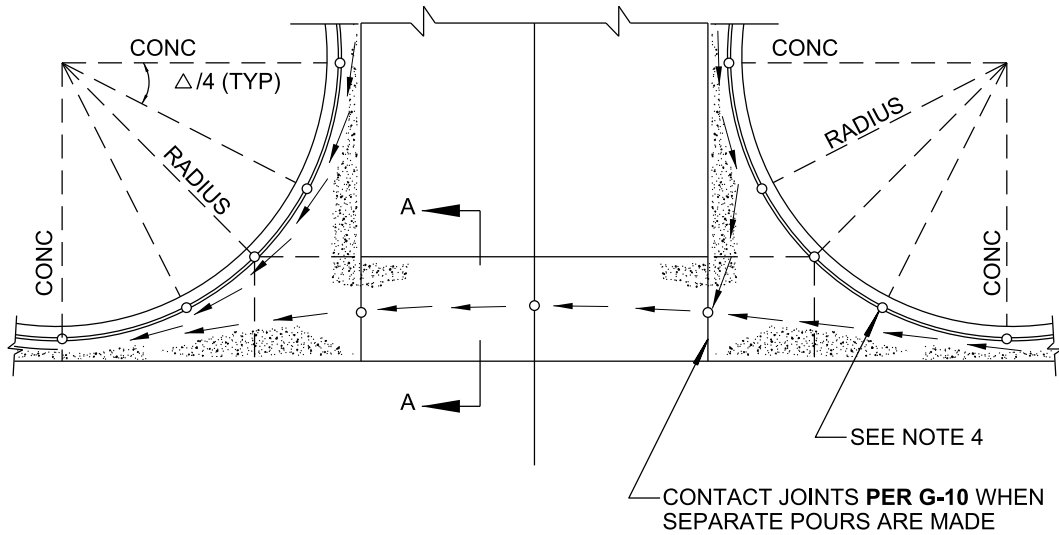


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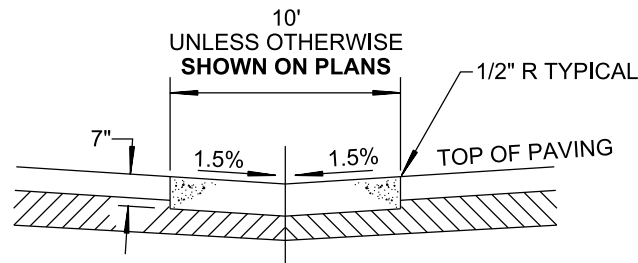
1. SIDEWALK CROSS SLOPE SHALL BE 1.5%.
2. WHEN DISTANCE FROM "AREA TO BE REMOVED" TO EXISTING JOINT, EDGE OR SCORE MARK IS LESS THAN MINIMUM SHOWN, "AREA TO BE REMOVED" SHALL BE EXTENDED TO JOINT, EDGE OR SCORE MARK.
3. ALL HISTORICAL STAMPS / IMPRESSIONS (STREET NAME, CONTRACTOR NAME, AND DATE) SHALL BE PRESERVED **PER SDG-115**.
4. FOR DESIGNATED URBANIZED COMMUNITIES, SIDEWALK DESIGN (SCORING PATTERN, COLOR, TEXTURE) SHALL BE IN CONFORMANCE WITH HISTORIC DESIGN ON ADJACENT PROPERTIES.



REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		<div>CONCRETE CURB, GUTTER, SIDEWALK AND PAVEMENT REMOVAL AND REPLACEMENT</div>
UPDATED	RB	J. NAGELVOORT	10/15		
UPDATED	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	



PLAN

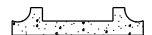



SECTION A-A

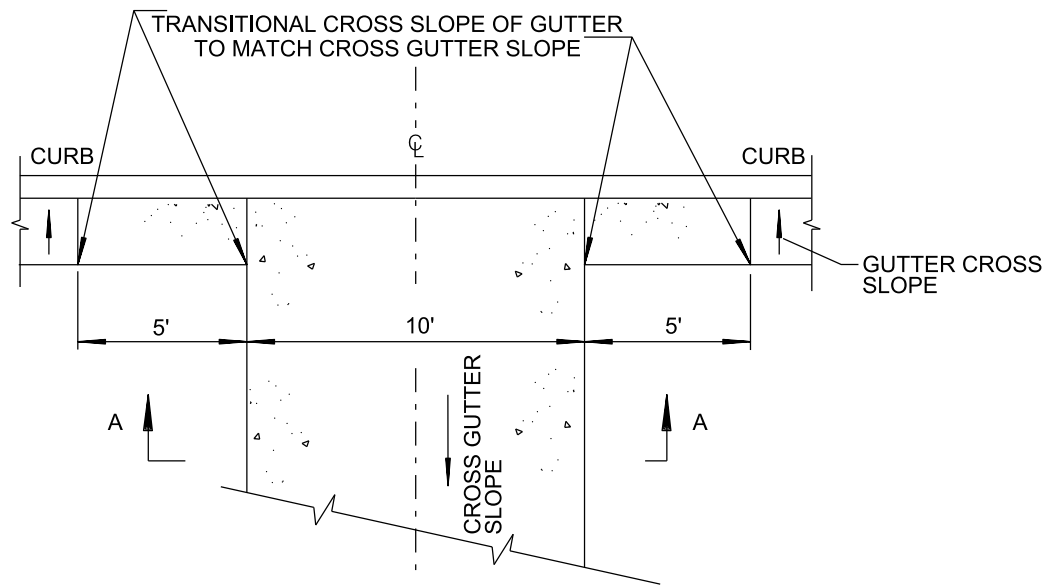
NOTES:

1. CONCRETE SHALL BE 560-C-3250.
2. — — — WEAKENED PLANE JOINTS.
3. ← ← ← TYPICAL FLOWLINES.
4. ○ = ELEVATIONS **TO BE SHOWN ON PLANS**.
5. RETURN SEGMENTS TO BE 7" THICK.
6. CURB BETWEEN POINT OF CURB RETURNS (CONC) SHALL BE A MONOLITHIC POUR WITH THE CROSS GUTTER.
7. IN ALL CASES SUBGRADE SHALL BE COMPACTED TO 95% MIN RELATIVE COMPACTION TO A DEPTH OF 12"
8. ALL HISTORICAL STAMPS / IMPRESSIONS (STREET NAME, CONTRACTOR NAME, AND DATE) SHALL BE PRESERVED **PER SDG-115**.

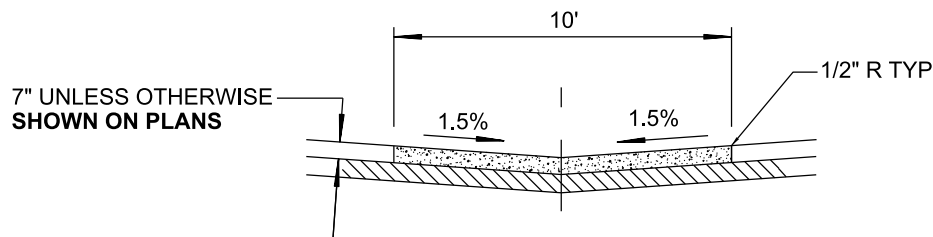
LEGEND ON PLANS



REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	AR	J. NAGELVOORT	10/15	CROSS GUTTER	 COORDINATOR R.C.E. 56523
UPDATED	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					9/4/18 DATE
					DRAWING NUMBER
					SDG-157



PLAN




SECTION A-A

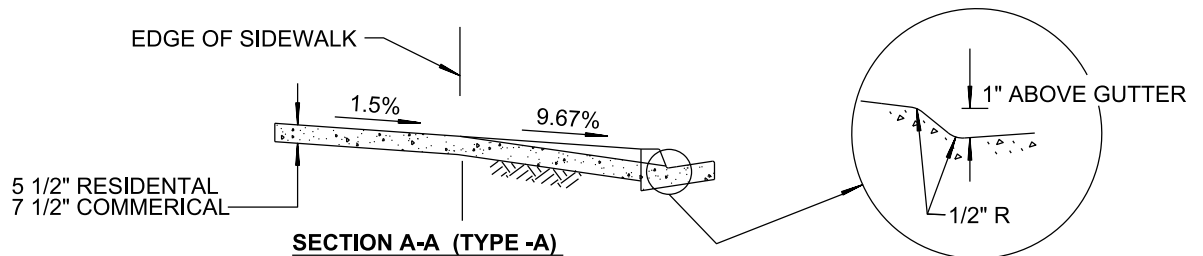
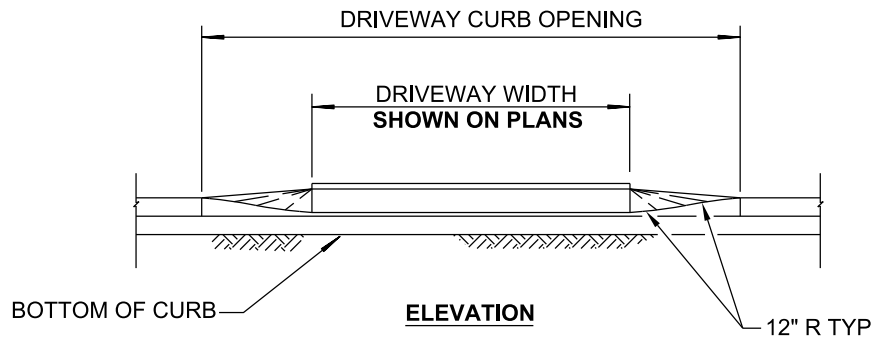
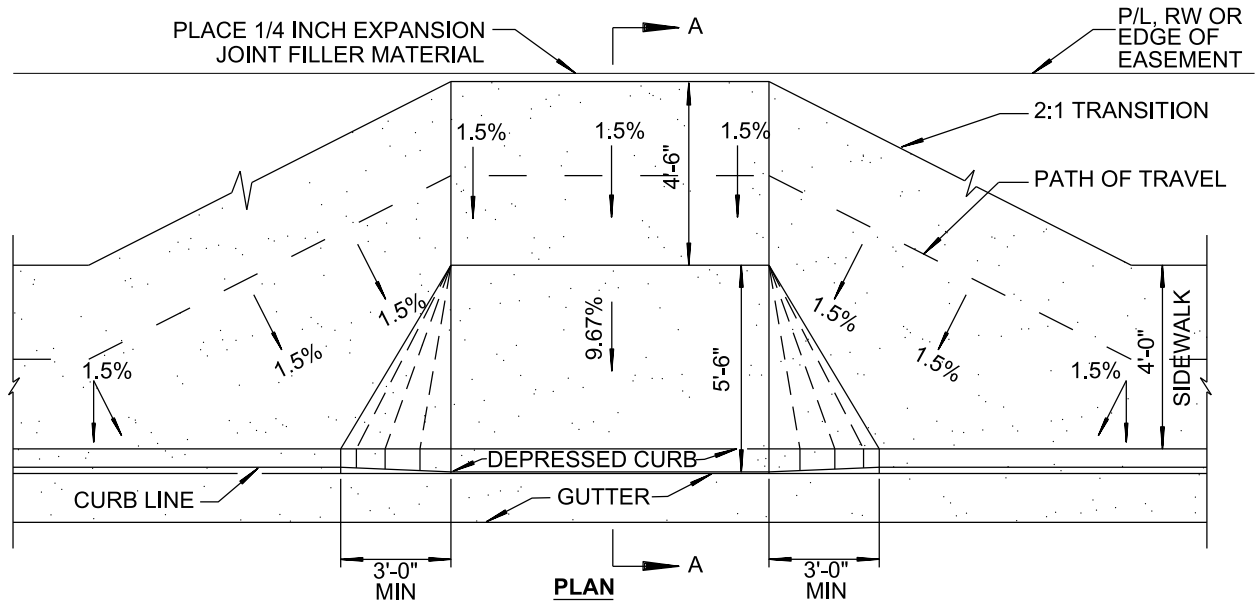
NOTES:

1. CROSS GUTTER TO BE CONSTRUCTED WHERE THE DRAINAGE IS CARRIED ACROSS 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% MIN RELATIVE COMPACTION TO A DEPTH OF 12".
5. ALL HISTORICAL STAMPS / IMPRESSIONS (STREET NAME, CONTRACTOR NAME, AND DATE) SHALL BE PRESERVED **PER SDG-115.**

LEGEND ON PLANS



REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		<div><div>9/4/18</div></div> <div>COORDINATOR R.C.E. 56523DATE</div>
UPDATED	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				MID-BLOCK CROSS GUTTER	DRAWING NUMBER
					SDG-158



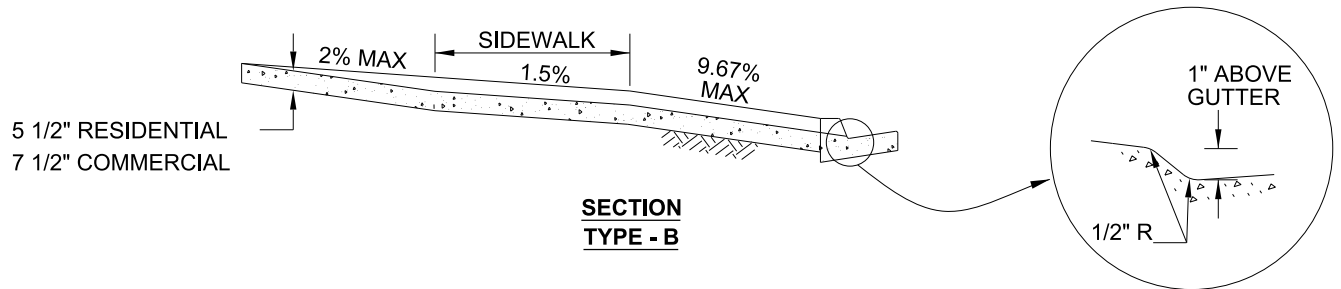
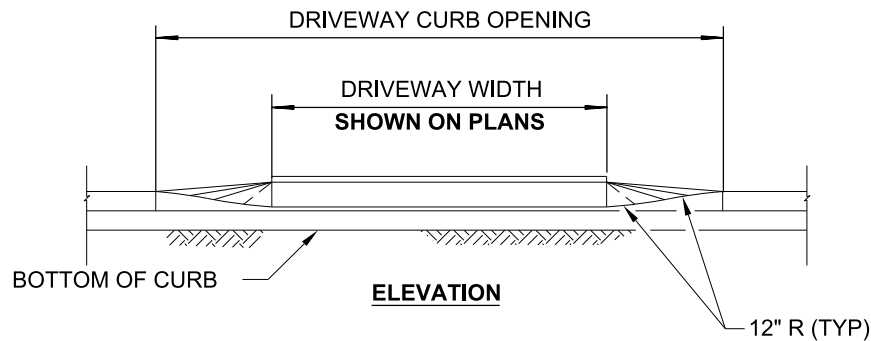
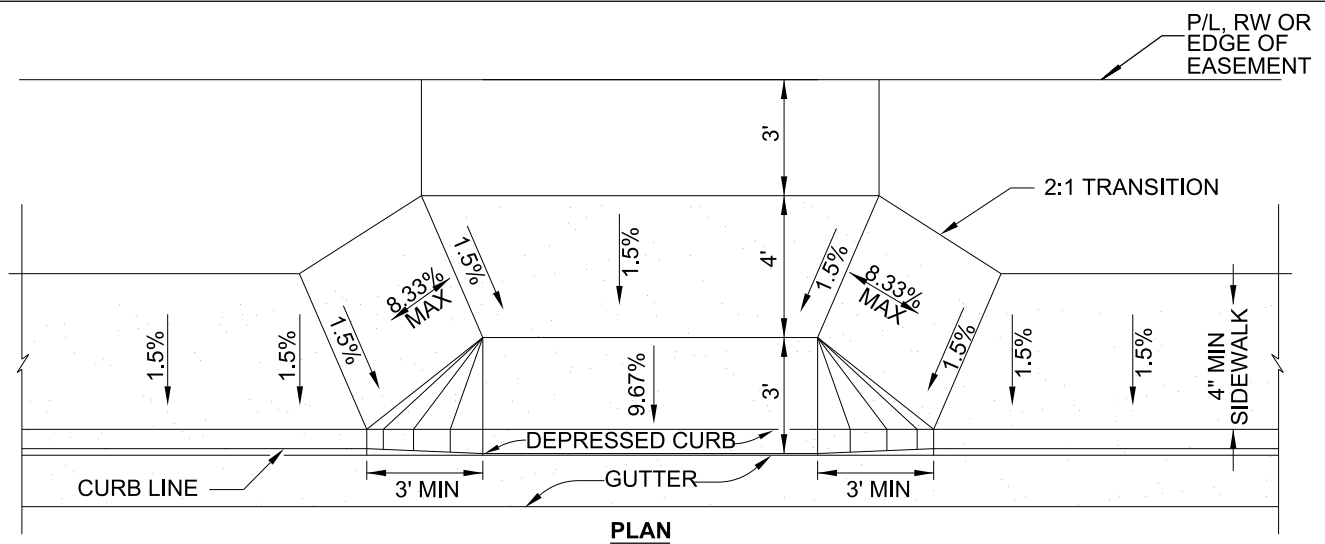
NOTES:

1. NO CONCRETE SHALL BE PLACED UNTIL FORMS AND SUBGRADE ARE INSPECTED.
2. CONCRETE SHALL BE 520-C-2500 FOR RESIDENTIAL USE; 560-C-3250 FOR COMMERCIAL USE.
3. **SEE STANDARD DRAWINGS SDG-164 AND G-15** FOR WIDTH AND LOCATION REQUIREMENTS.
4. **SEE SDG-151 AND G-10** FOR CURB AND JOINT DETAILS.
5. DRIVEWAY SHALL BE CONTINUOUS POUR FROM BACK OF CURB TO PROPERTY LINE.
6. METER BOXES SHALL NOT BE LOCATED WITHIN DRIVEWAY.
7. DRIVEWAY IN EXCESS OF 150' IN LENGTH FROM CURB FACE SHALL HAVE 7 1/2" MINIMUM CONCRETE THICKNESS.
8. ALL HISTORICAL STAMPS / IMPRESSIONS (STREET NAME, CONTRACTOR NAME, AND DATE) SHALL BE PRESERVED **PER SDG-115**.
9. FOR DESIGNATED URBANIZED COMMUNITIES, SIDEWALK DESIGN (SCORING PATTERN, COLOR, TEXTURE) SHALL BE IN CONFORMANCE WITH HISTORIC DESIGN ON ADJACENT PROPERTIES.

SHEET 1 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	FC	J. NAGELVOORT	10/15	CONCRETE DRIVEWAY (CONTIGUOUS SIDEWALK)	 COORDINATOR R.C.E. 56523
UPDATED	FC	J. NAGELVOORT	2/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					9/4/18 DATE
					DRAWING NUMBER

SDG-159

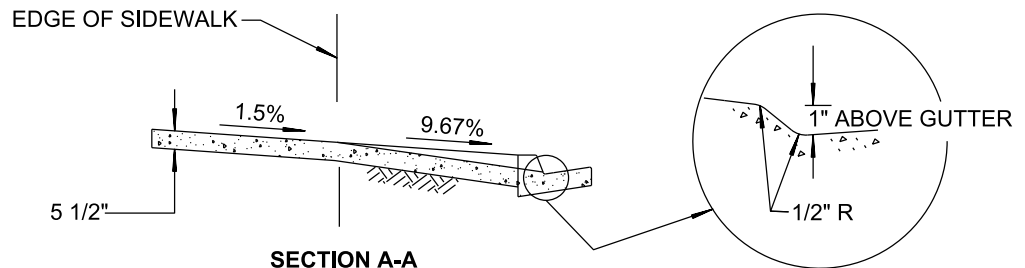
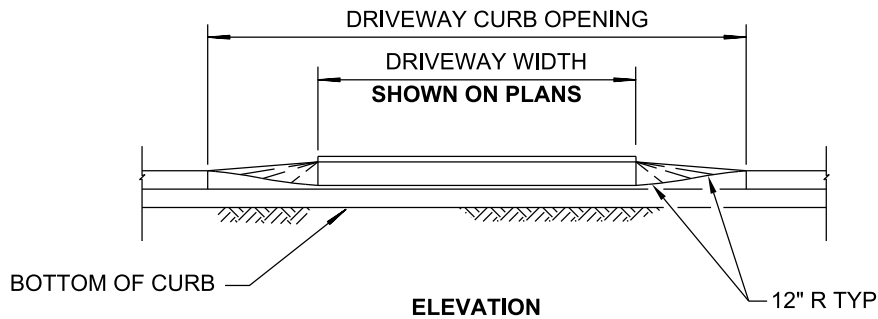
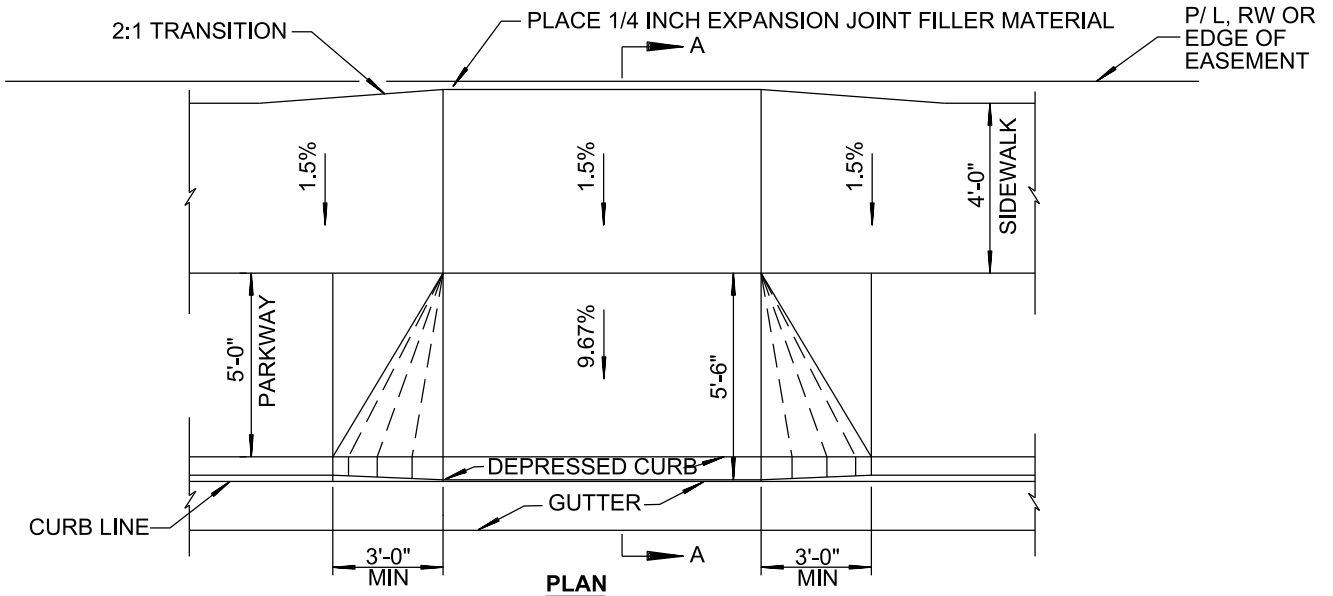


NOTES:

1. NO CONCRETE SHALL BE PLACED UNTIL FORMS AND SUBGRADE ARE INSPECTED.
2. FOR RESIDENTIAL USE, CONCRETE SHALL BE 520-C-2500; FOR COMMERCIAL USE, CONCRETE SHALL BE 560-C-3250.
3. **SEE STANDARD DRAWINGS SDG-164 AND G-15** FOR WIDTH AND LOCATION REQUIREMENTS.
4. DRIVEWAY RAMP TO EXTEND TO 10' FROM CURB FACE OR TO RIGHT-OF-WAY, WHICHEVER IS LESS.(FOR COMMERCIAL USE ONLY).
5. PLACE EXPANSION JOINT AT RIGHT-OF-WAY OR 10', WHICHEVER IS LESS.
6. **SEE SDG-151 AND G-10** FOR CURB AND JOINT DETAILS.
7. DIMENSIONS SHOWN REFLECT A 6" CURB HEIGHT.
8. METER BOXES SHALL NOT BE LOCATED WITHIN DRIVEWAY.
9. DRIVEWAY IN EXCESS OF 150' IN LENGTH FROM CURB FACE SHALL HAVE 7 1/2" MINIMUM CONCRETE THICKNESS.
10. ALL HISTORICAL STAMPS /IMPRESSIONS (STREET NAME, CONTRACTOR NAME, AND DATE) SHALL BE PRESERVED **PER SDG-115**.
11. FOR DESIGNATED URBANIZED COMMUNITIES, SIDEWALK DESIGN (SCORING PATTERN, COLOR, TEXTURE) SHALL BE IN CONFORMANCE WITH HISTORIC DESIGN ON ADJACENT PROPERTIES.

SHEET 2 OF 2

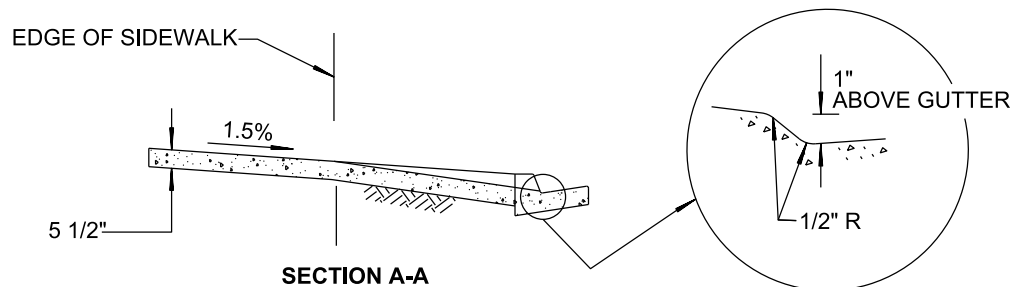
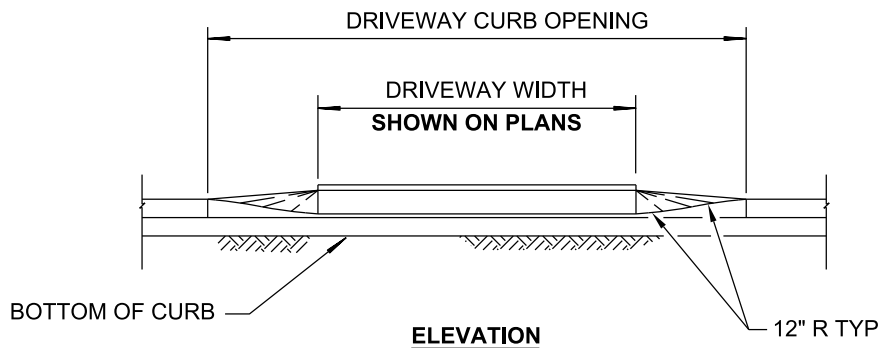
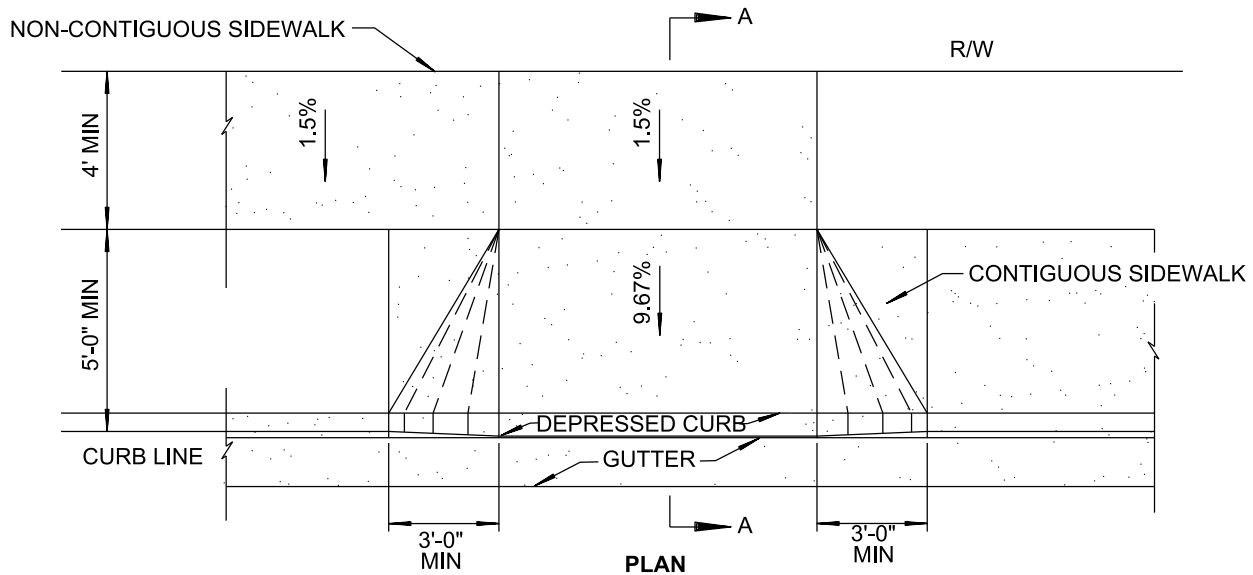
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/ 12		
UPDATED	FC	J. NAGELVOORT	10/ 15	CONCRETE DRIVEWAY (CONTIGUOUS SIDEWALK)	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	FC	J. NAGELVOORT	2/ 16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDG-159



NOTES:

1. NO CONCRETE SHALL BE PLACED UNTIL FORMS AND SUBGRADE ARE INSPECTED.
2. CONCRETE SHALL BE 520-C-2500.
3. **SEE STANDARD DRAWINGS SDG-164 AND G-15** FOR WIDTH AND LOCATION REQUIREMENTS.
4. **SEE SDG-151 AND G-10** FOR CURB AND JOINT DETAILS.
5. DRIVEWAY SHALL BE CONTINUOUS POUR FROM BACK OF CURB TO PROPERTY LINE.
6. METER BOXES SHALL NOT BE LOCATED WITHIN DRIVEWAY.
7. DRIVEWAY IN EXCESS OF 150' IN LENGTH FROM CURB FACE SHALL HAVE 7" MINIMUM CONCRETE THICKNESS.
8. ALL HISTORICAL STAMPS / IMPRESSIONS (STREET NAME, CONTRACTOR NAME, DATE) SHALL BE PRESERVED **PER SDG-115**.
9. FOR DESIGNATED URBANIZED COMMUNITIES, SIDEWALK DESIGN (SCORING PATTERN, COLOR, TEXTURE) SHALL BE IN CONFORMANCE WITH HISTORIC DESIGN ON ADJACENT PROPERTIES.

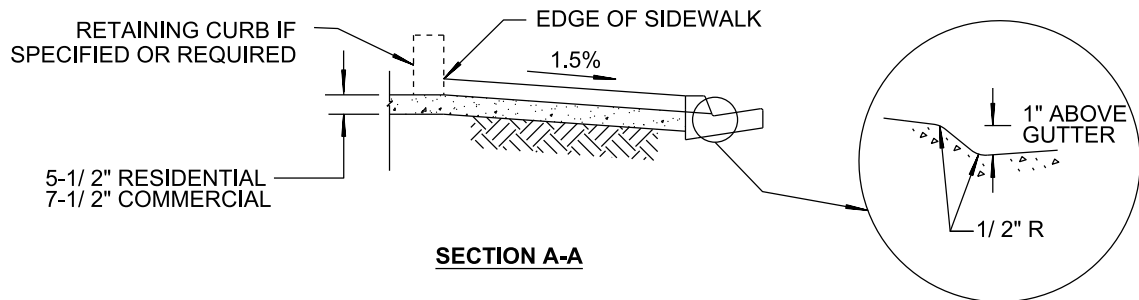
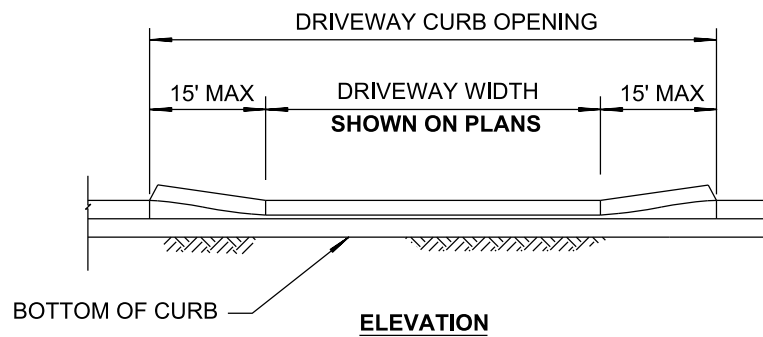
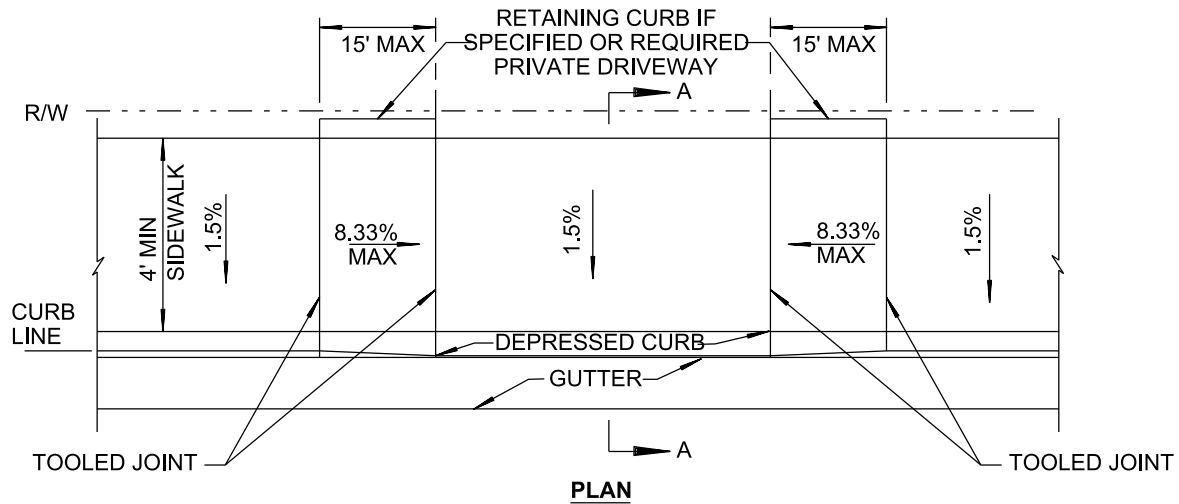
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	BD	J. NAGELVOORT	10/15	CONCRETE DRIVEWAY (NON-CONTIGUOUS SIDEWALK)	 COORDINATOR R.C.E. 56523
UPDATED	FC	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					9/4/18 DATE
					DRAWING NUMBER SDG-160



NOTES:


1. NO CONCRETE SHALL BE PLACED UNTIL FORMS AND SUBGRADE ARE INSPECTED.
2. CONCRETE SHALL BE 520-C-2500.
3. **SEE STANDARD DRAWING SDG-164** 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. **SEE SDG-151 AND G-10** FOR CURB AND JOINT DETAILS.
6. METER BOXES SHALL NOT BE LOCATED WITHIN DRIVEWAY.
7. ALL HISTORICAL STAMPS / IMPRESSIONS (STREET NAME, CONTRACTOR NAME, AND DATE) SHALL BE PRESERVED **PER SDG-115**.
8. FOR DESIGNATED URBANIZED COMMUNITIES, SIDEWALK DESIGN (SCORING PATTERN, COLOR, TEXTURE) SHALL BE IN CONFORMANCE WITH HISTORIC DESIGN ADJACENT PROPERTIES.

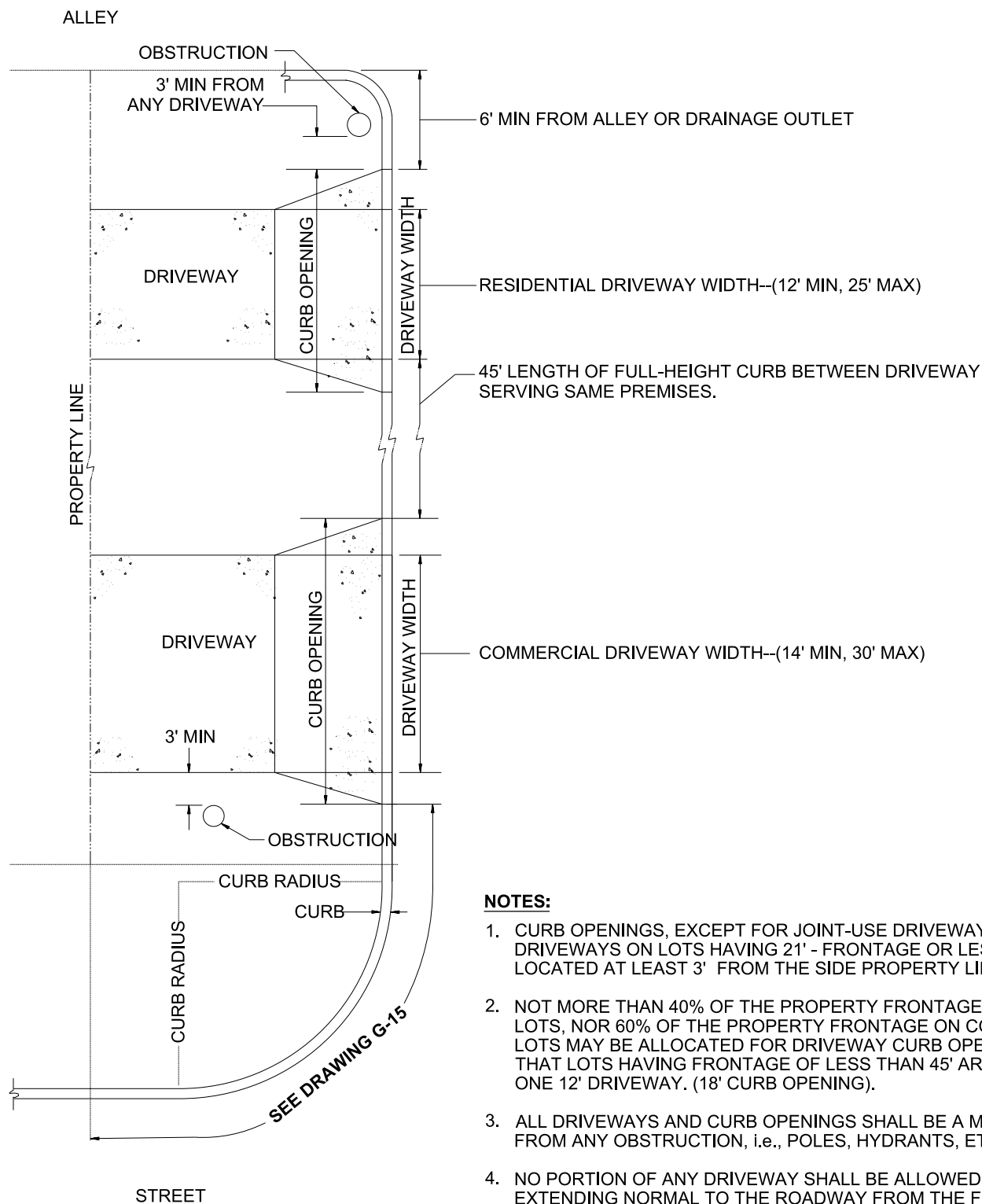
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	RB	J. NAGELVOORT	10/15	RESIDENTIAL CONCRETE DRIVEWAY (PARKWAY LESS THAN 10' IN DEPTH)	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDG-161



NOTES:


1. NO CONCRETE SHALL BE PLACED UNTIL FORMS AND SUBGRADE ARE INSPECTED.
2. CONCRETE SHALL BE 520-C-2500 FOR RESIDENTIAL USE; 560-C-3250 FOR COMMERCIAL USE.
3. **SEE STANDARD DRAWING SDG-164** FOR WIDTH AND LOCATION REQUIREMENTS.
4. **SEE SDG-151 AND G-10** FOR CURB AND JOINT DETAILS.
5. ALL HISTORICAL STAMPS / IMPRESSIONS (STREET NAME, CONTRACTOR NAME, AND DATE) SHALL BE PRESERVED **PER SDG-115**.
6. FOR DESIGNATED URBANIZED COMMUNITIES, SIDEWALK DESIGN (SCORING PATTERN, COLOR, TEXTURE) SHALL BE IN CONFORMANCE WITH HISTORIC DESIGN ON ADJACENT PROPERTIES.

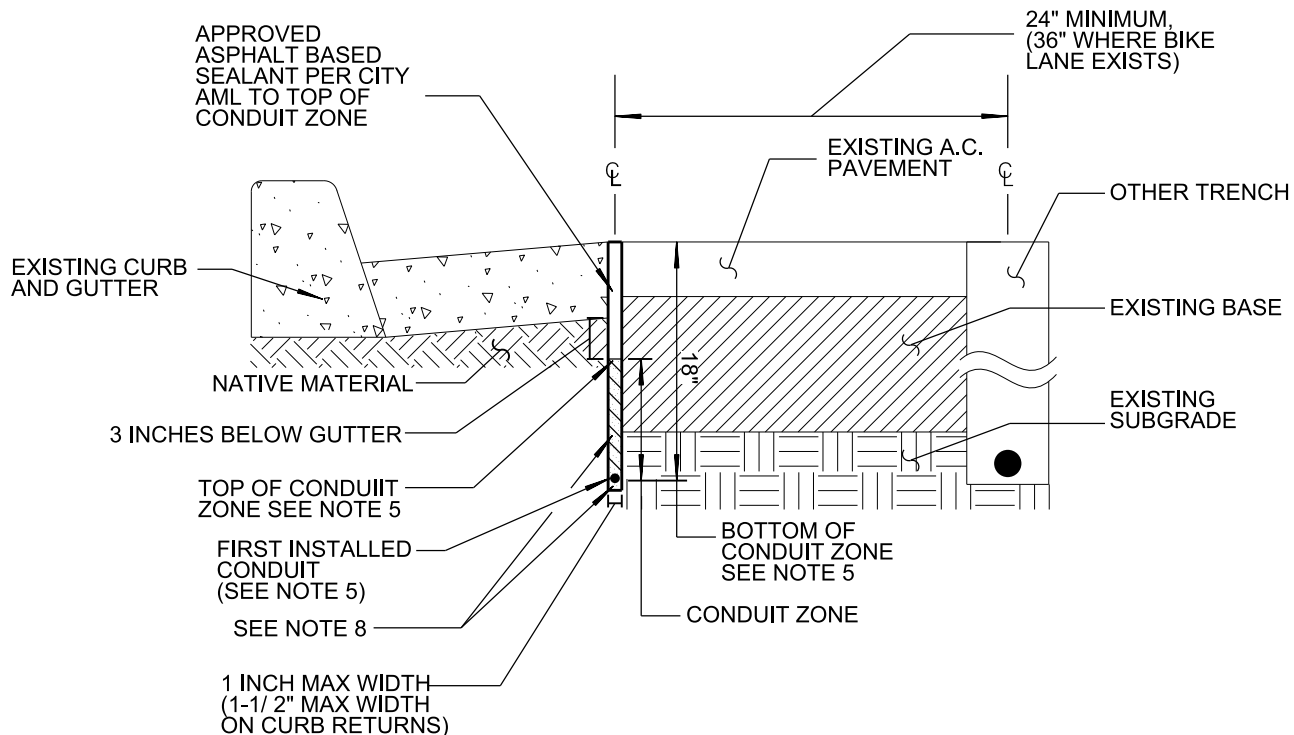
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	RB	J. NAGELVOORT	10/15	CONCRETE DRIVEWAY (FOR CONFINED RIGHT-OF-WAY)	 COORDINATOR R.C.E. 56523 DATE 9/4/18
UPDATED	FC	J. NAGELVOORT	02/16		
UPDATED	FC	J. NAGELVOORT	11/17		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDG-162



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 ROADWAY FROM THE FRONT OF THE PROPERTY, 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 CITY.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
*ORIGINAL	KA	J. NAGELVOORT	01/12		
UPDATED	AB	J. NAGELVOORT	02/16	DRIVEWAY LOCATION AND WIDTH REQUIREMENTS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDG-164




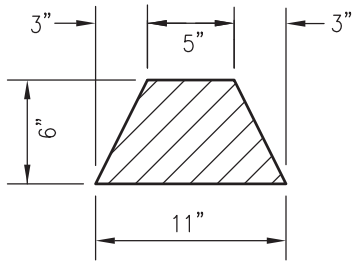
LEGEND ON PLANS:

— MTC — MICRO-TRENCH CONDUIT (MTC)

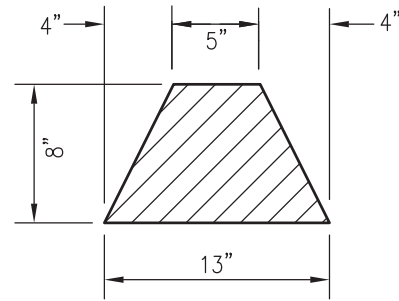
NOTES:

1. PAVEMENT CUTS SHALL BE STRAIGHT AND CLEAN. SPALLS AND POTHOLES WITHIN 12 INCHES OF THE MICRO-TRENCH SHALL BE REPAIRED PRIOR TO TRENCHING TO FACILITATE STRAIGHT PAVEMENT CUTS.
2. INSTALL 1 INCH WIDE (FOLDED) WARNING/ IDENTIFICATION TAPE **PER SDM-105**.
3. TRENCH LOCATION SHALL BE AT EDGE OF CURB AND GUTTER. NO MICRO-TRENCHES ALONG MEDIAN CURBS SHALL BE ALLOWED. THE LOCATION OF MICRO-TRENCH IN RELATION TO THE CURB SHALL NOT DEVIATE ALONG ITS ALIGNMENT UNLESS OTHERWISE **APPROVED BY THE CITY**.
4. WHERE THERE IS NO EXPOSED OR VISIBLE CONCRETE GUTTER, THE NEW CONDUIT SHALL BE INSTALLED IN A NARROW TRENCH **PER SDG-117**.
5. FIRST INSTALLED CONDUIT SHALL BE PLACED AT A DEPTH OF 18 INCHES WITHIN THE CONDUIT ZONE. THE CONDUIT ZONE SHALL BE 3 INCHES FROM BOTTOM OF GUTTER THROUGH 18 INCHES FROM LIP OF GUTTER. ADDITIONAL CONDUIT(S) SHALL BE INSTALLED WITHIN CONDUIT ZONE, UNLESS OTHERWISE **APPROVED BY THE CITY**.
6. ONLY ONE MICRO-TRENCH PER SIDE OF THE STREET IS ALLOWED. IF A MICRO-TRENCH EXISTS AND NO ADDITIONAL CONDUIT CAN BE INSTALLED IN THE SAME TRENCH, THE NEW CONDUIT SHALL BE INSTALLED IN NARROW TRENCH **PER SDG-117**.
7. AT STREET INTERSECTIONS, CONDUIT SHALL BE INSTALLED IN NARROW TRENCH **PER SDG-117** WITH PAVEMENT RESURFACING AND ANY OTHER REQUIREMENTS **PER CITY REGULATIONS**, OR USE TUNNELING **PER CITY STANDARDS**.
8. BACKFILL/ BEDDING BELOW ASPHALT BASED SEALANT SHALL BE DRY SAND (SE 50 OR BETTER). ONCE PLACED, SAND SHALL BE THOROUGHLY CONSOLIDATED BY FLOODING.

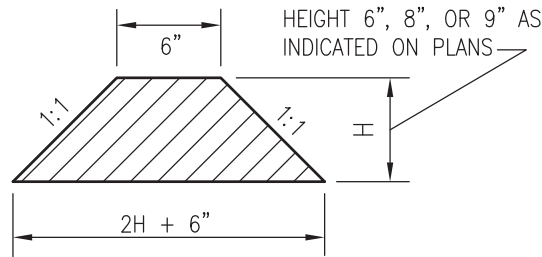
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	HY	M. GIBSON	05/17		
REDRAFTED	CD	J. NAGELVOORT	09/18	MICRO-TRENCH BACKFILL FOR DRY UTILITIES	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING	SDG-165
				NUMBER	



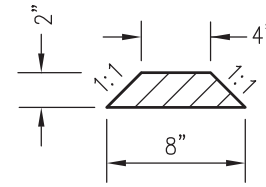
TYPE A



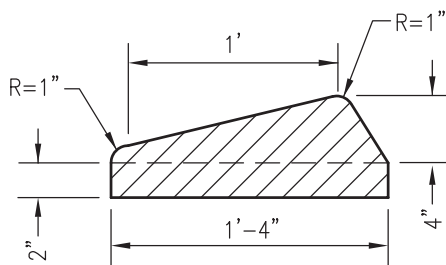
TYPE B



TYPE C

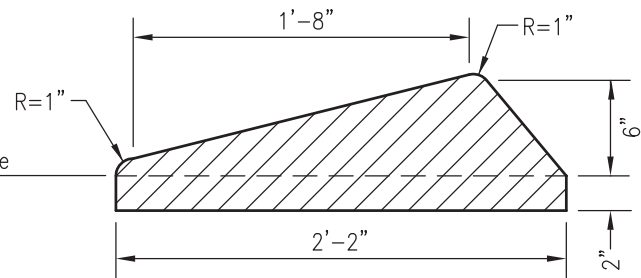


TYPE D

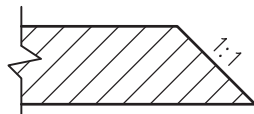


TYPE E
(MOUNTABLE DIKE)

Level Line



TYPE F
(MOUNTABLE DIKE)



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

ALL TYPES - SIDE VIEW

NOTES:

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

APPROX. DIKE QUANTITIES

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

LEGEND ON PLANS

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

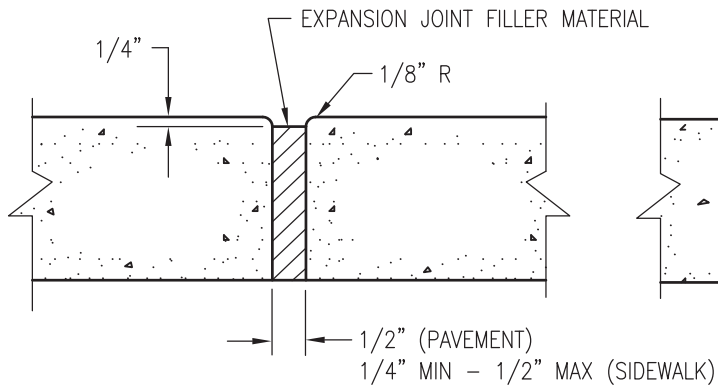
SAN DIEGO REGIONAL STANDARD DRAWING

DIKES - ASPHALT CONCRETE

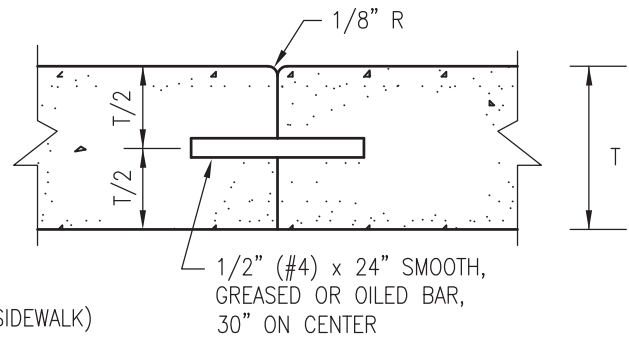
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

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

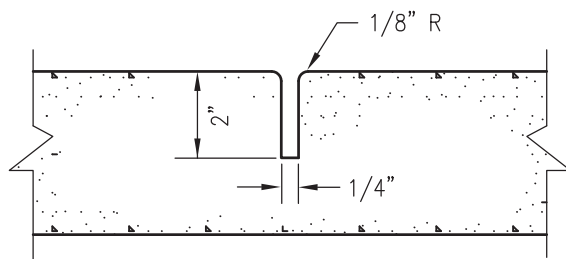
DRAWING
NUMBER **G-05**



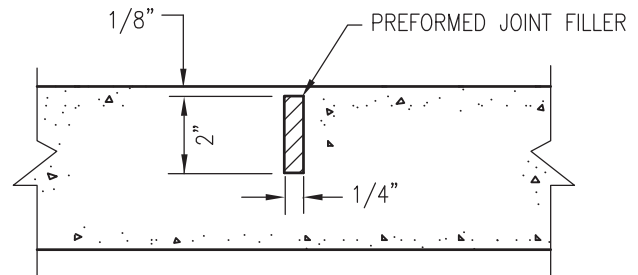
EXPANSION JOINT



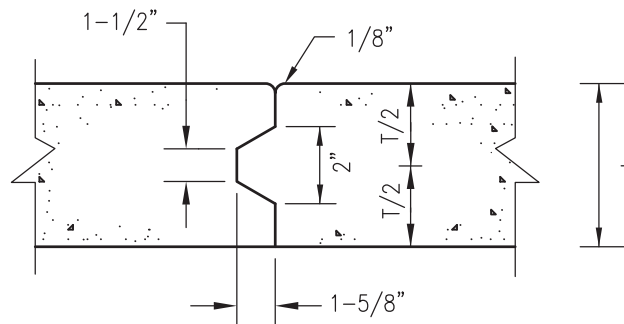
CONTACT JOINT



WEAKENED PLANE JOINT
CURB AND SIDEWALK

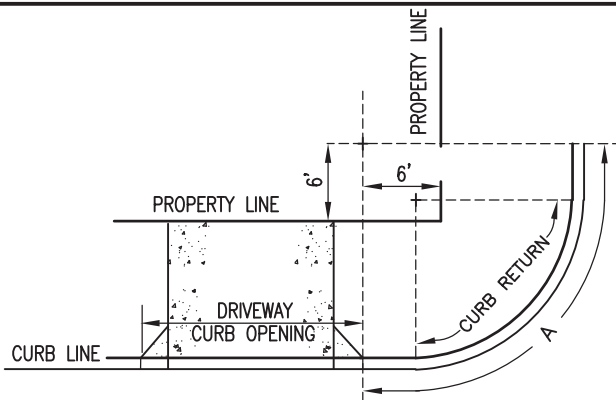


WEAKENED PLANE JOINT
GUTTER AND CONCRETE PAVEMENT



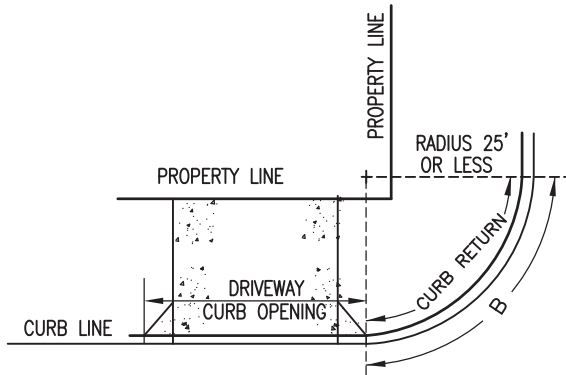
KEYED JOINT

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		PARKINSON	02/95	CONCRETE JOINT DETAILS		
ADD METRIC		T. STANTON	03/03			
REFORMATTED		T. STANTON	04/06			
UPDATED	CV	MR/CV	11/11			
REVIEWED	CV	CV	12/15			
						 12/17/2015 Chairperson R.C.E. 19246 Date
						DRAWING NUMBER G-10



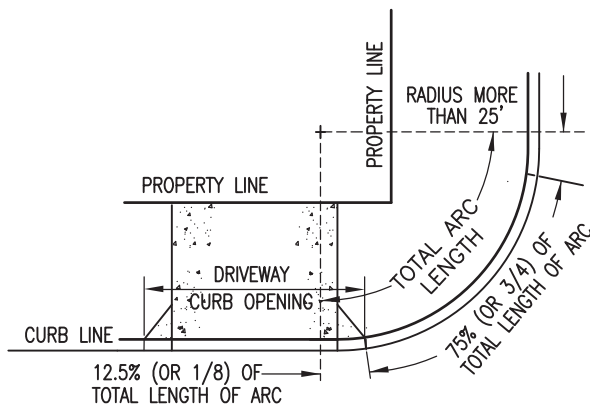
REQUIREMENT 1

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.



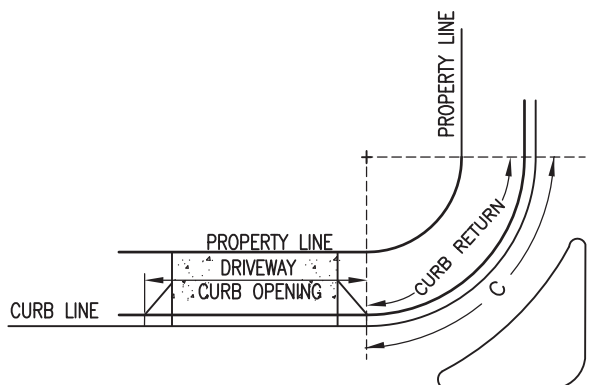
REQUIREMENT 2

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

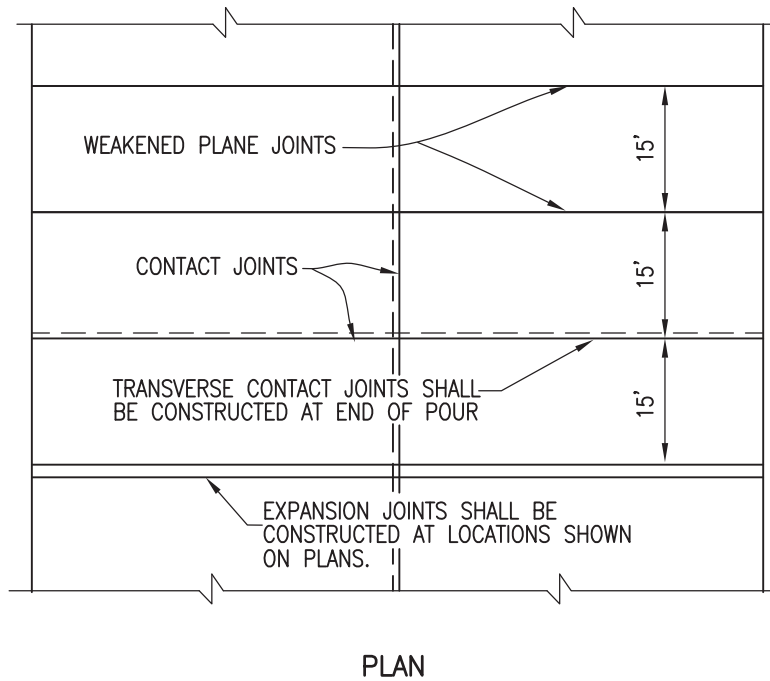
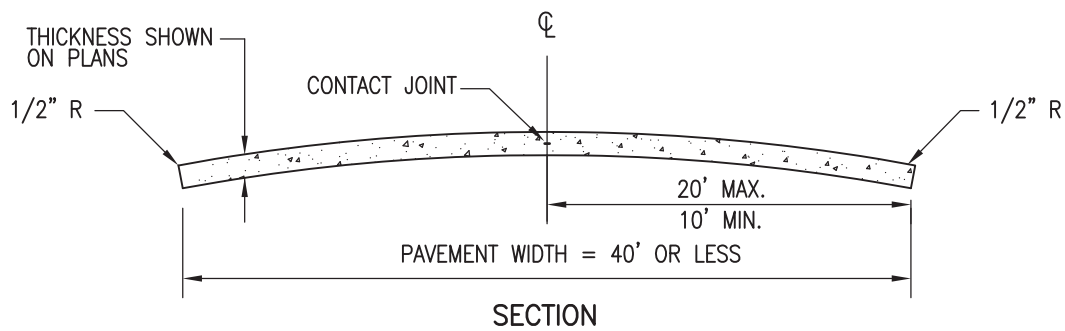
ON ALL CURB RETURNS WHERE THE RADIUS IS MORE THAN 25', CURB OPENINGS MAY ENCROACH UPON EACH END OF THE RETURN A DISTANCE EQUAL TO 12.5% (OR 1/8) OF THE TOTAL LENGTH OF THE ARC ON THE CURB RETURN, THUS LEAVING AT LEAST 75% (OR 3/4) OF THE LENGTH OF ARC ON THE RETURN FACE FREE FROM DRIVEWAY ENCROACHMENT,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

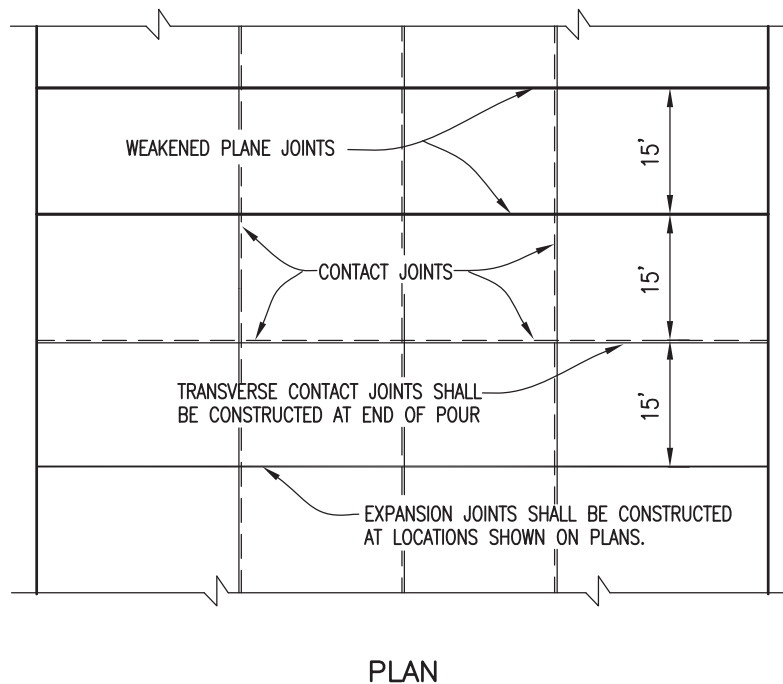
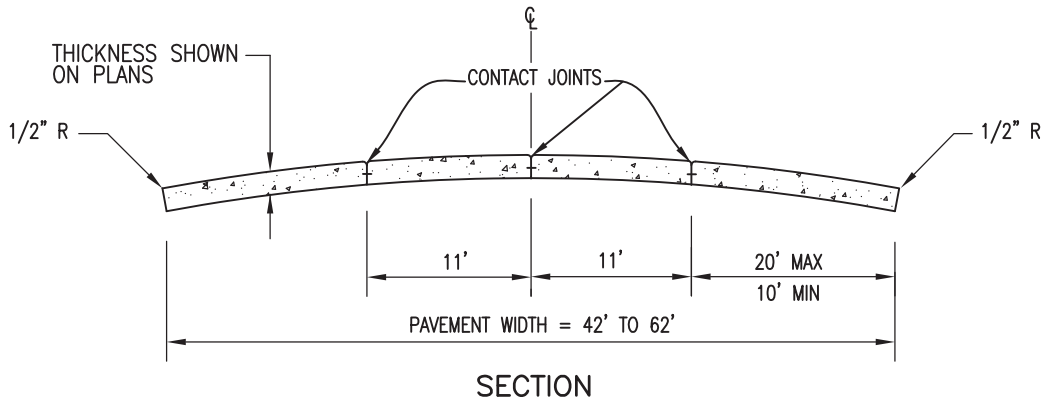
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		KERCHEVAL	12/75				
ADD METRIC		T. STANTON	03/03	DRIVEWAY LOCATION - ADJACENT TO CURB RETURNS AND STREET LINES		<i>M. Stanton</i> 12/17/2015	
REVIEWED		T. STANTON	04/06			Chairperson R.C.E. 19246 Date	
UPDATED	MR	MR/CV	02/12			DRAWING	
UPDATED	CV	CV	12/15			NUMBER G-15	



NOTES:

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

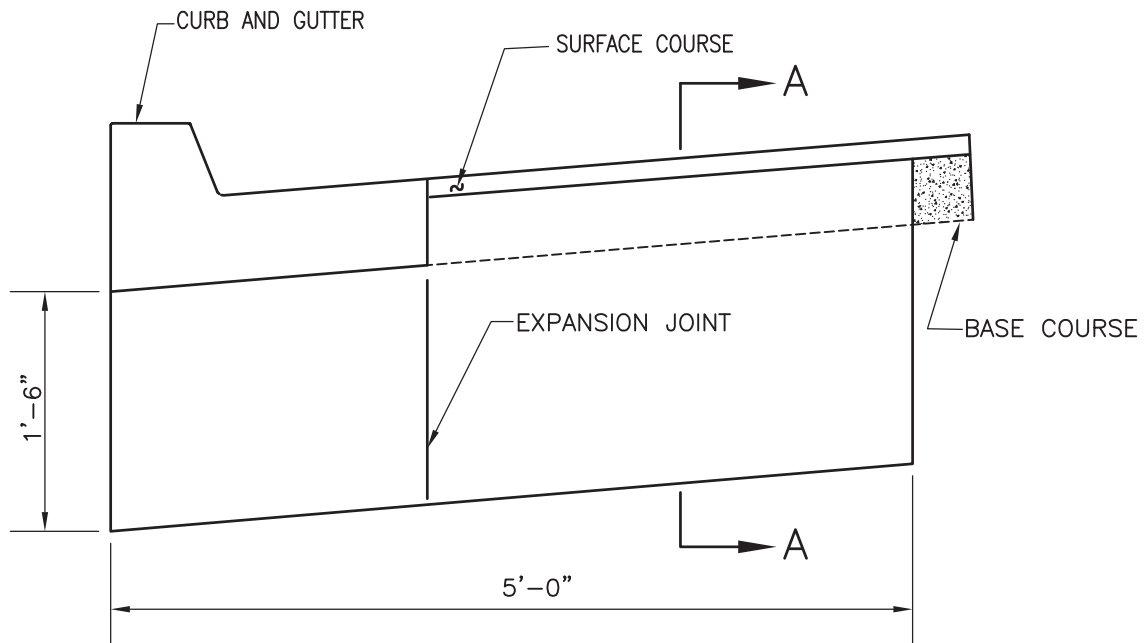
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		KERCHEVAL	12/75	CONCRETE PAVEMENT WIDTH 40' OR LESS		<i>M. Stanton</i> 12/17/2015 Chairperson R.C.E. 19246 Date	DRAWING NUMBER G-18
ADD METRIC		T. STANTON	03/03				
REVIEWED		T. STANTON	04/06				
UPDATED	MR	MR/CV	03/12				
UPDATED	CV	CV	12/15				



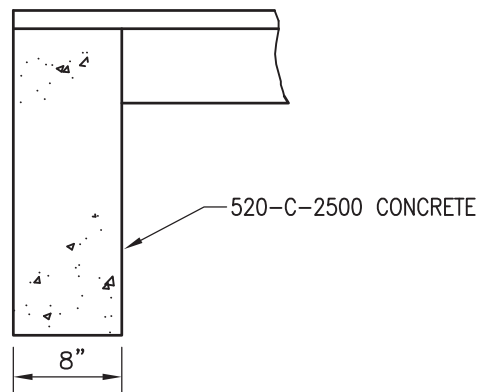
NOTES:

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

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		KERCHEVAL	12/75	CONCRETE PAVEMENT WIDTH 42' TO 62'		 12/17/2015 Chairperson R.C.E. 19246 Date	
ADD METRIC		T. STANTON	03/03				
REVIEWED		T. STANTON	04/06				
UPDATED	MR	MR/CV	03/12				
UPDATED	CV	CV	12/15				
						DRAWING NUMBER	G-19




ELEVATION

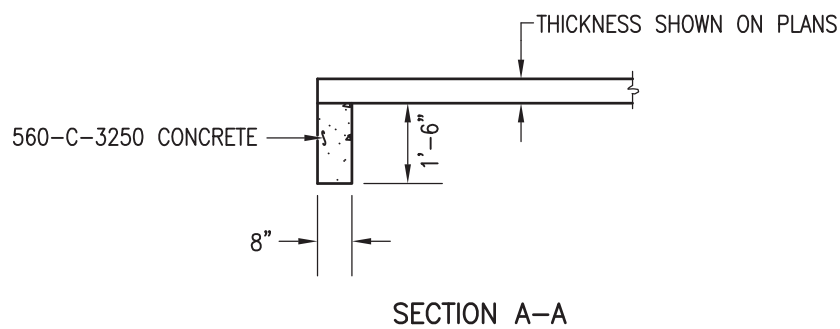
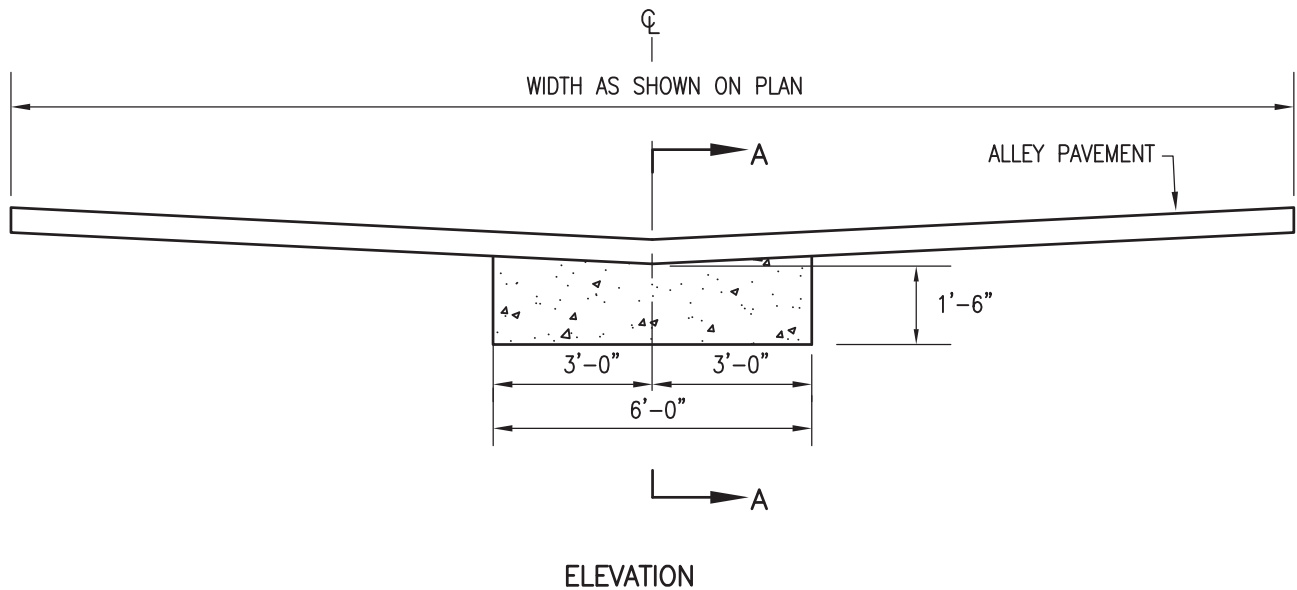


SECTION A-A

LEGEND ON PLANS



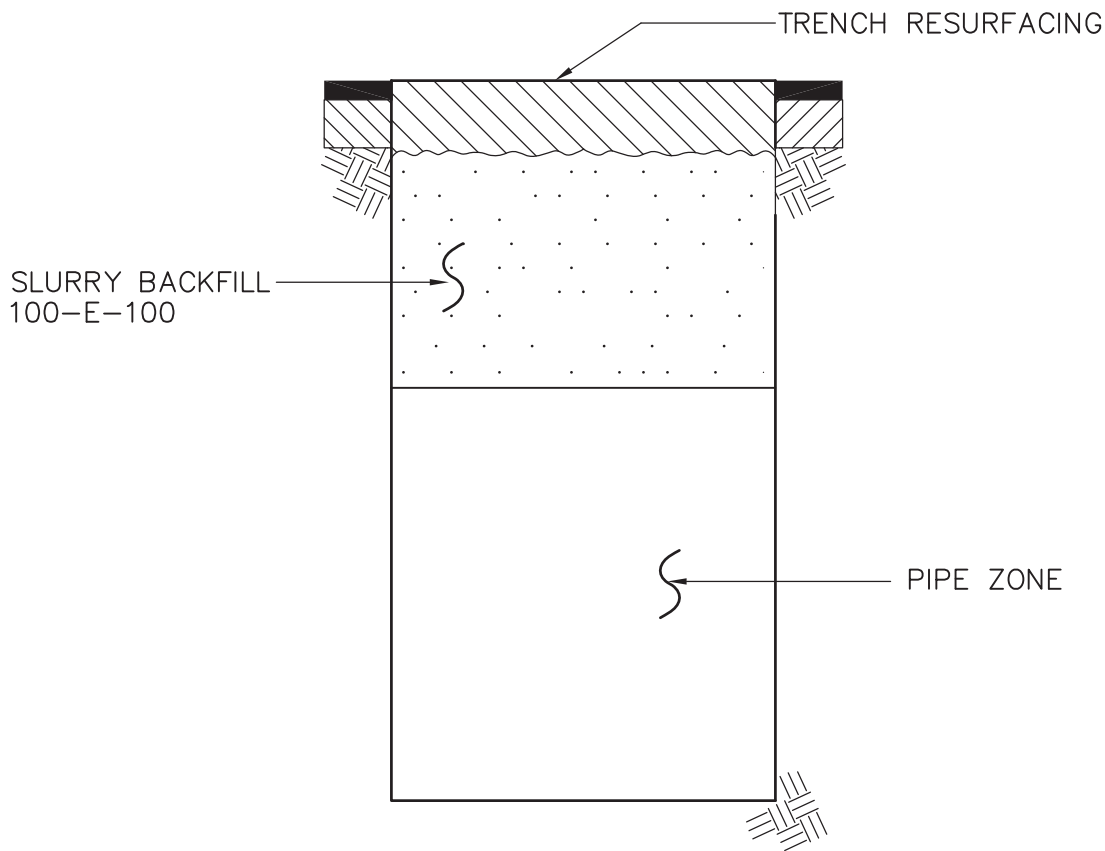
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		KERCHEVAL	12/75	CUTOFF WALL AT END OF PAVEMENT		 12/17/2015 Chairperson R.C.E. 19246 Date	
ADD METRIC		T. STANTON	03/03				
REVIEWED		T. STANTON	04/06				
UPDATED	MR	MR/CV	03/12				
UPDATED	CV	CV	12/15				
						DRAWING NUMBER	G-22



LEGEND ON PLANS




Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		KERCHEVAL	12/75	CUTOFF WALL AT END OF ALLEY PAVEMENT		<i>T. Stanton</i> 12/17/2015 Chairperson R.C.E. 19246 Date	DRAWING NUMBER G-23
ADD METRIC		T. STANTON	03/03				
REVIEWED		T. STANTON	04/06				
UPDATED	MR	MR/CV	03/12				
UPDATED	CV	CV	12/15				

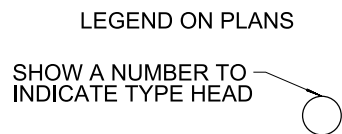


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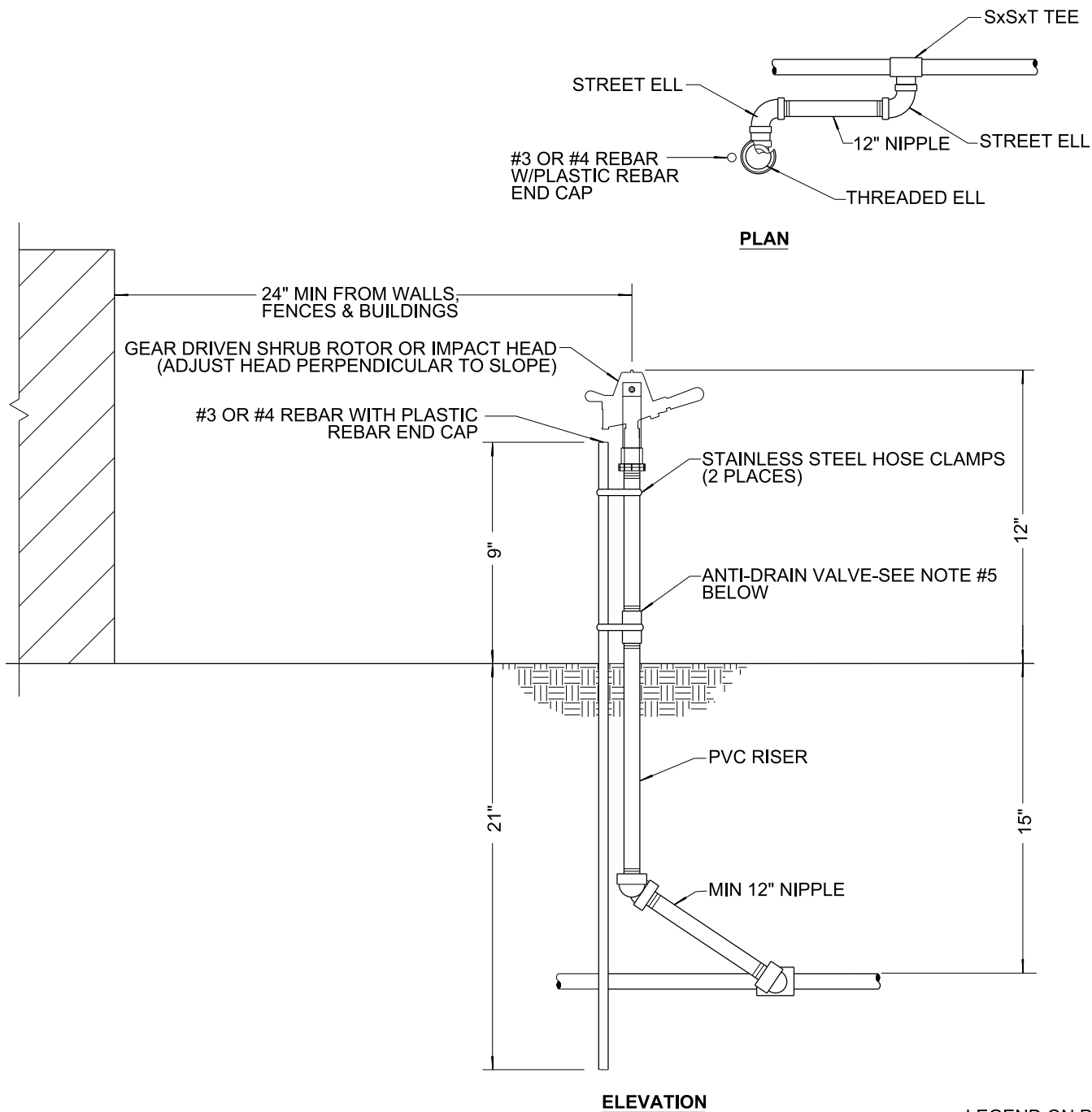
1. TRENCH RESURFACING SHALL BE DONE ACCORDING TO AGENCY'S REQUIREMENTS.
2. THE SAND USED FOR THE SLURRY BACKFILL SHALL MEET THE REQUIREMENTS (SUBSECTION 400-3.2) LISTED IN THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. SLURRY SHALL CURE FOR SEVEN DAYS PRIOR TO TRENCH RESURFACING.
3. SLURRY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

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	
ORIGINAL		PARKINSON	09/88	SLURRY BACKFILL	
ADD METRIC		T. STANTON	03/03		
REVIEWED		T. STANTON	04/06		
UPDATED	MR	MR/CV	03/12		
UPDATED	CV	CV	12/15		
				RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE  12/17/2015 Chairperson R.C.E. 19246 Date	
				DRAWING NUMBER G-36	

CHAPTER 5
SPRINKLER
IRRIGATION
SYSTEMS



REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	RH	J. NAGELVOORT	01/12		<div>SHRUB SPRAY HEAD</div> <div>ON FIXED RISER</div>
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDI-101




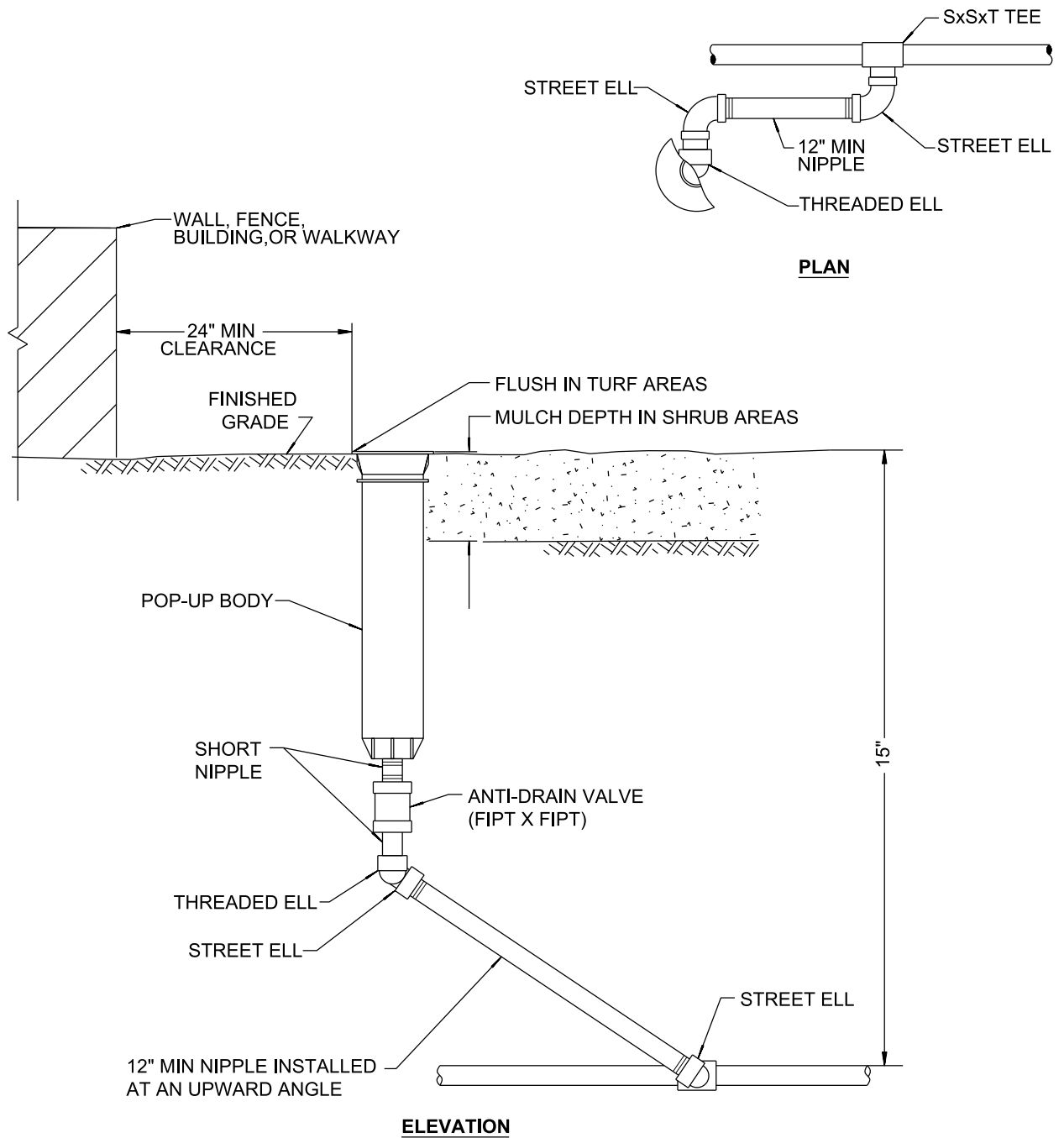
LEGEND ON PLANS

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.

SHOW A NUMBER TO INDICATE HEAD TYPE

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	RH	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	ROTOR OR IMPACT HEAD ON FIXED RISER	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDI-102



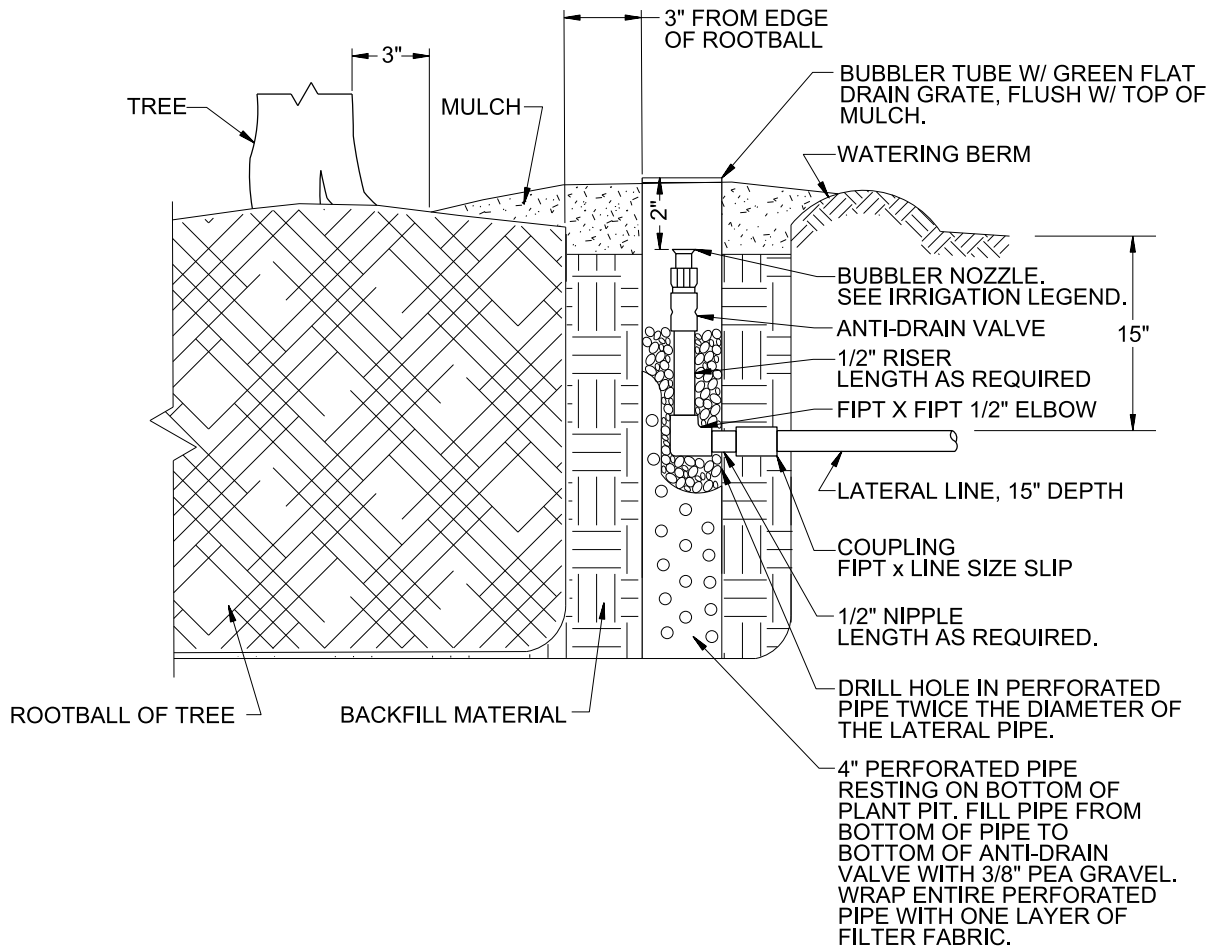
NOTES:

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

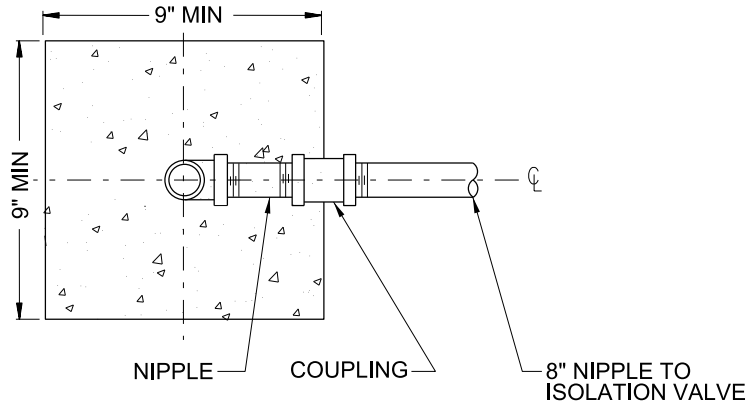
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	RH	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	ROTOR, SPRAY, OR BUBBLER POP-UP HEAD	 9/4/18 COORDINATOR R.C.E. 56523 DATE
					DRAWING NUMBER SDI-103



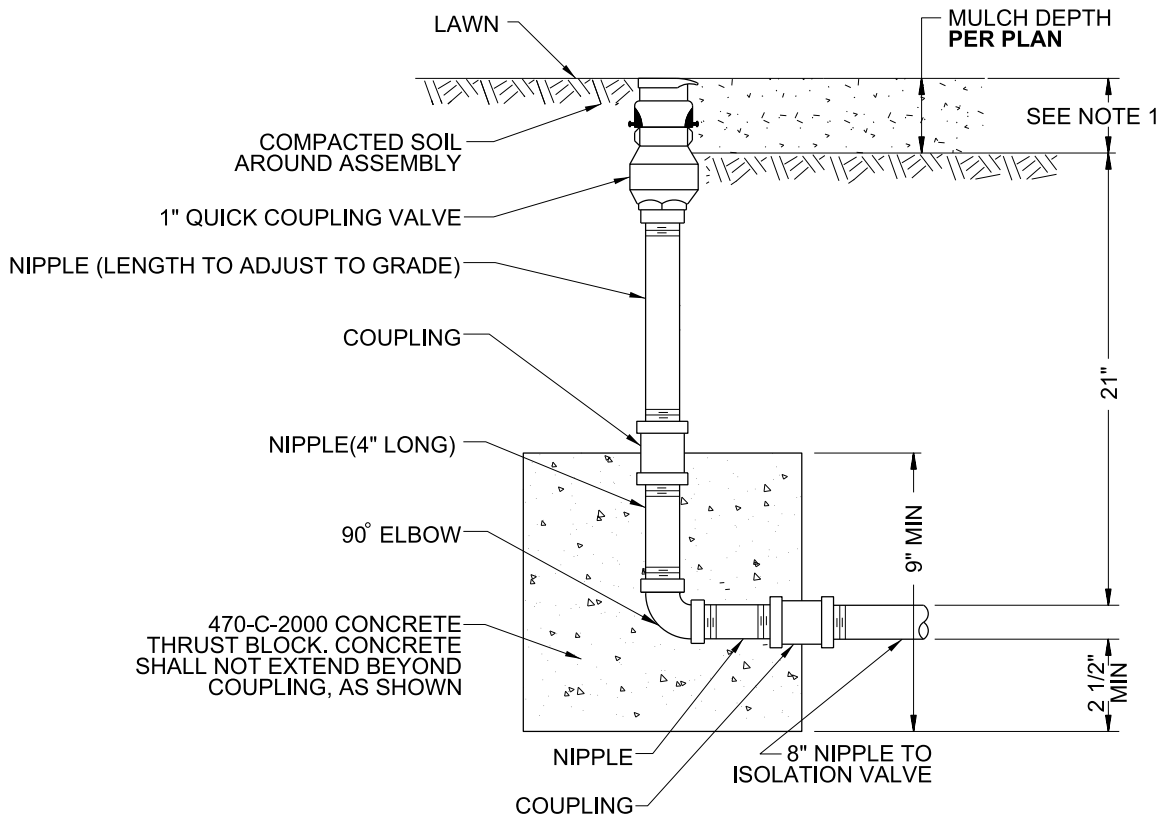
NOTES:

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 SDI-103**, 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	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	RH	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	TREE BUBBLER TUBE	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDI-104



PLAN



LEGEND ON PLANS

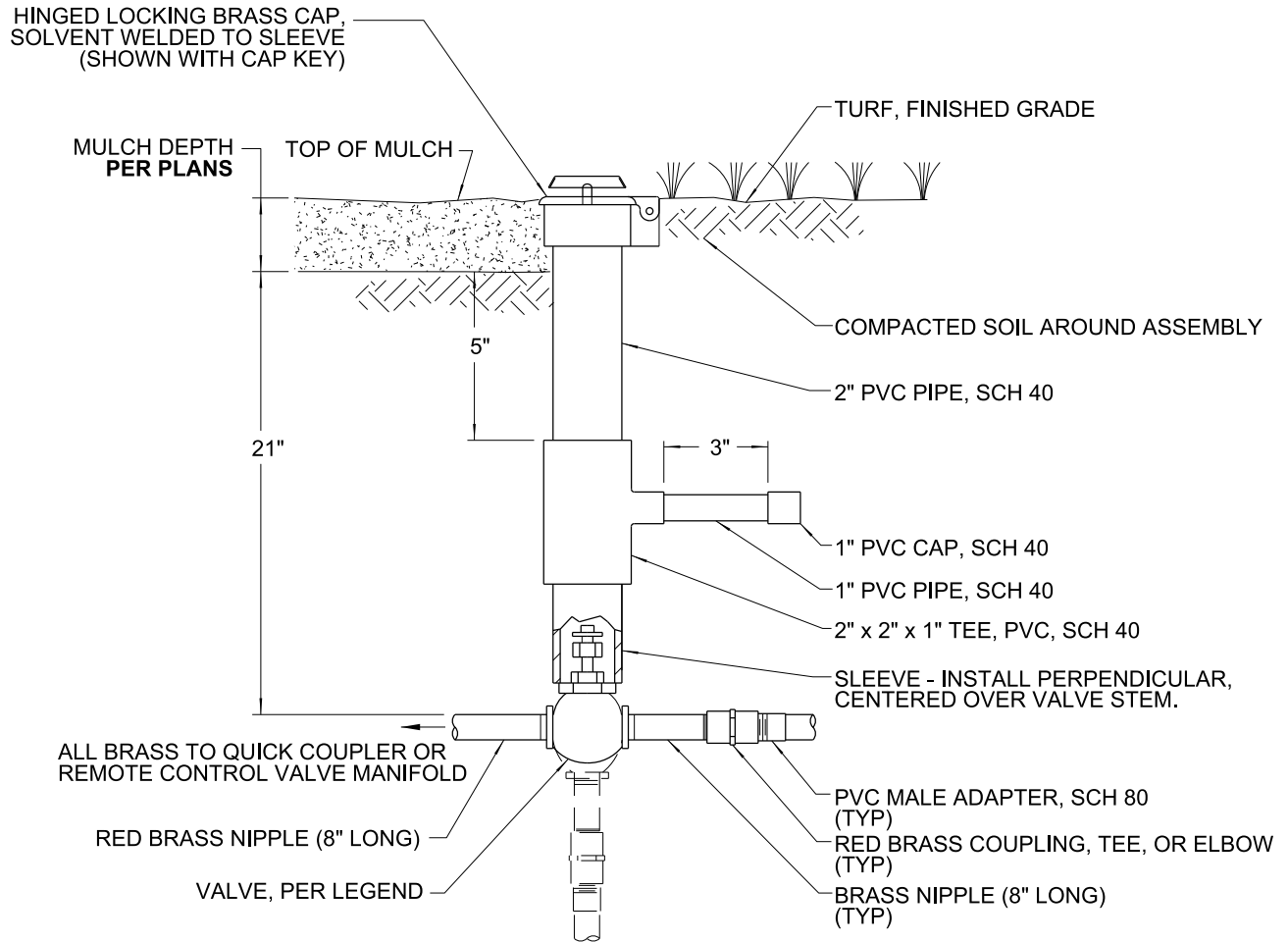
QCV



NOTES:

1. QUICK COUPLING VALVES SHALL BE SET FLUSH IN LAWN AND PER MULCH DEPTH ABOVE FINISH GRADE IN SHRUB / GROUND COVER 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 COUPLER VALVE KEY WITH 1" BRASS BALL VALVE AND SWIVEL ADAPTER INCLUDED IN THE ASSEMBLY.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	RH	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	QUICK COUPLING VALVE	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDI-105




LEGEND

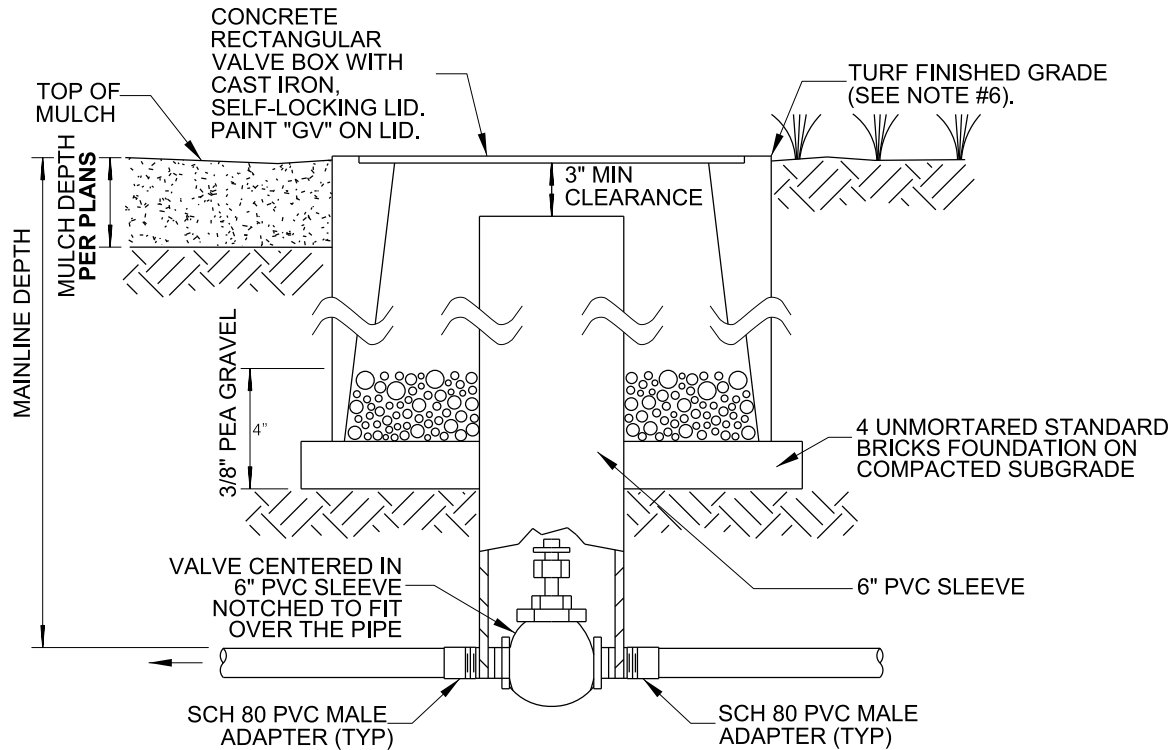
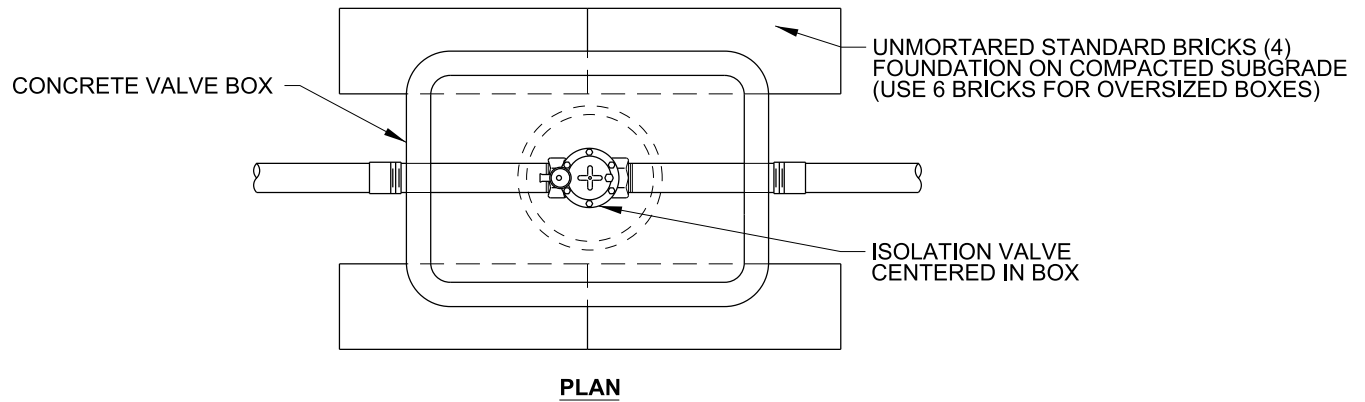


GV

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.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	RH	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	ISOLATION GLOBE VALVE 2" AND SMALLER	 <div> <div>COORDINATOR</div> <div>R.C.E. 56523</div> </div>
					<div>9/4/18</div> <div>DATE</div>
					<div>DRAWING</div> <div>NUMBER</div>
					<div>SDI-106</div>




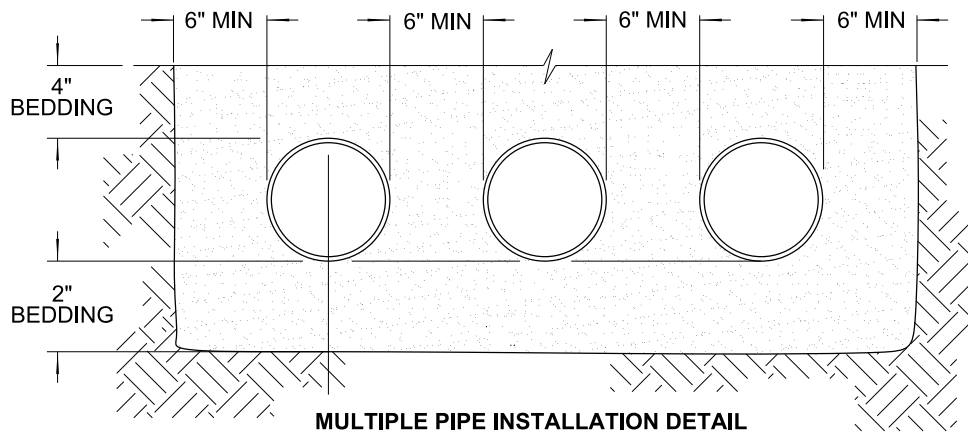
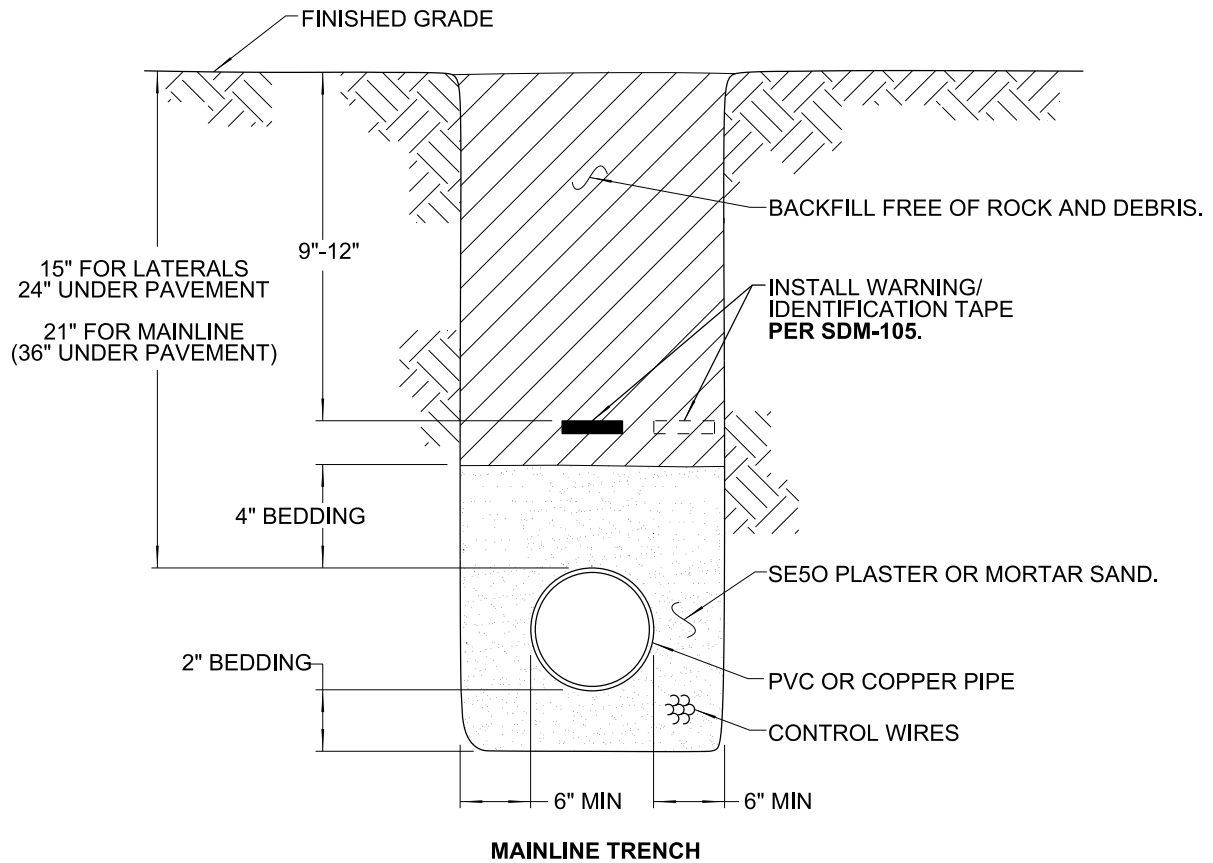
NOTES

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




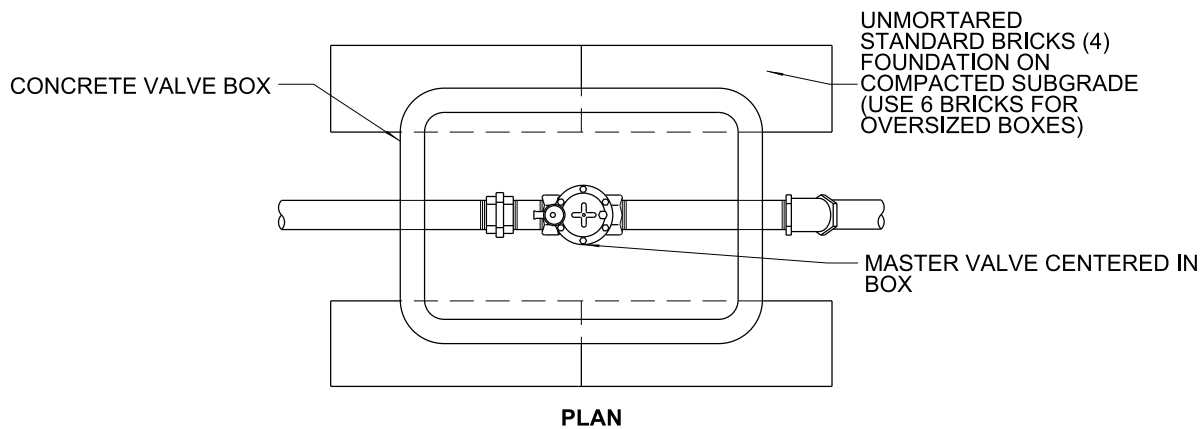
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL*	KA	J. NAGELVOORT	01/12		<div>ISOLATION GLOBE/GATE VALVE 2 1/2" AND LARGER</div>	<div> 9/4/18</div> <div>COORDINATOR R.C.E. 56523 DATE</div>
REDRAFTED	CD	J. NAGELVOORT	09/18	DRAWING NUMBER		SDI-107



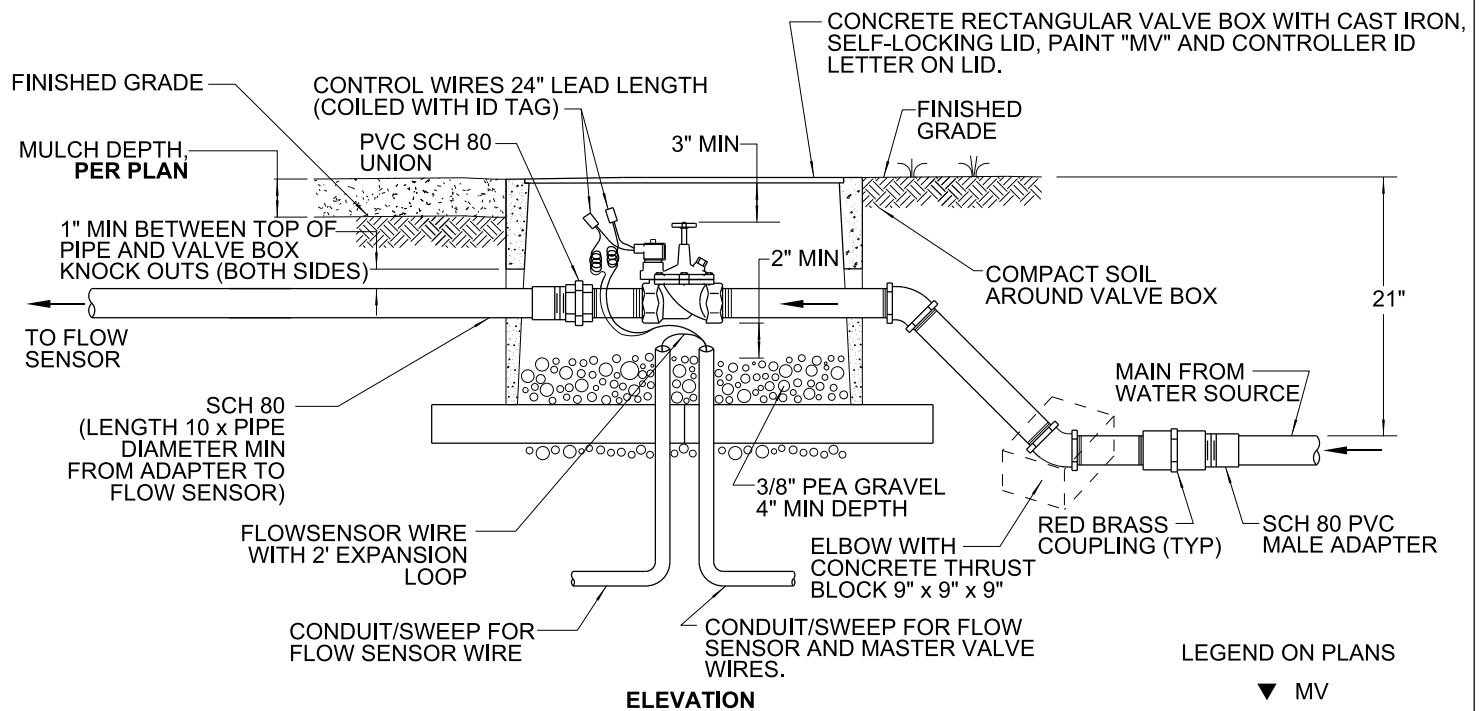
NOTES:

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	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  9/4/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL*	RH	J. NAGELVOORT	01/12		
UPDATED	AR	J. NAGELVOORT	02/16	IRRIGATION TRENCH PVC OR COPPER PIPE	DRAWING NUMBER SDI-110
REDRAFTED	CD	J. NAGELVOORT	09/18		



PLAN

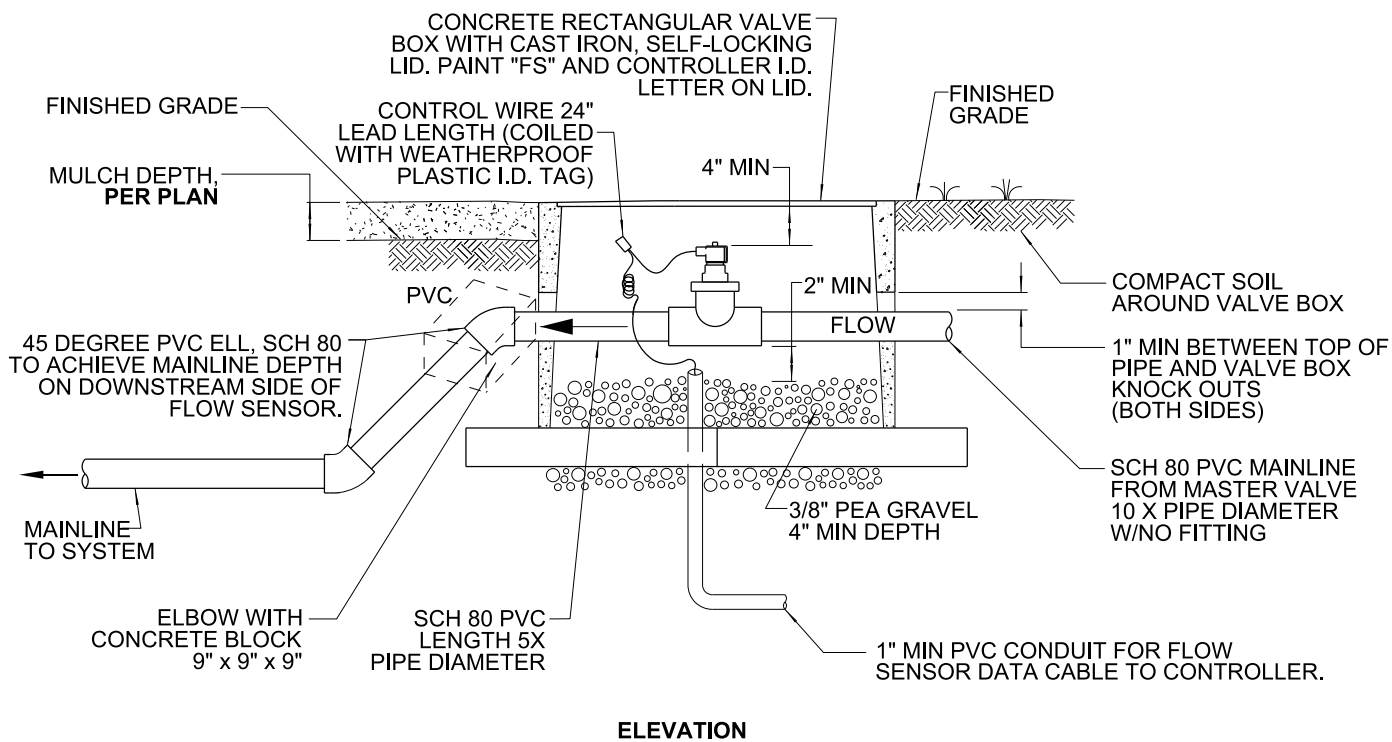
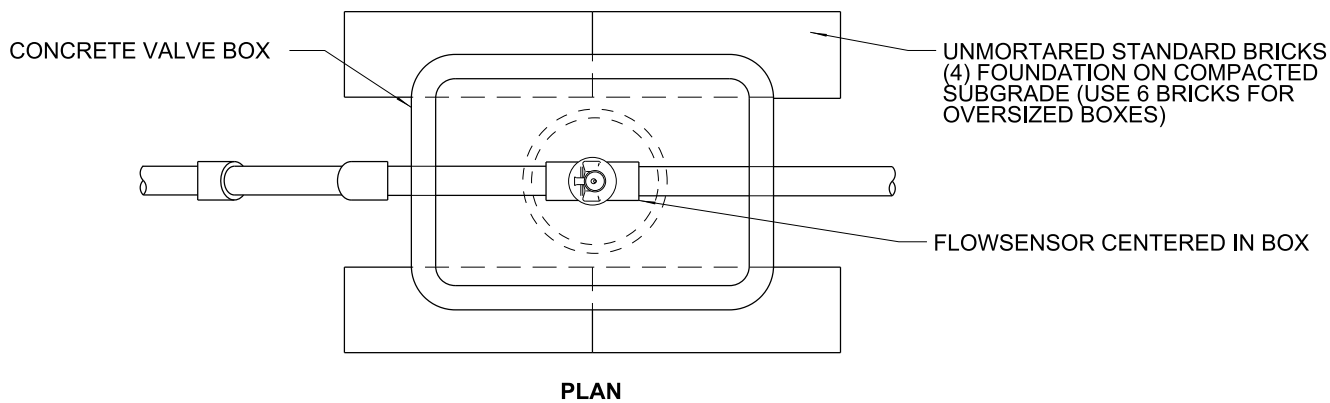


ELEVATION

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 ENGINEER**.
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.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	RH	J. NAGELVOORT	01/12		<div>MASTER VALVE</div>
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDI-111



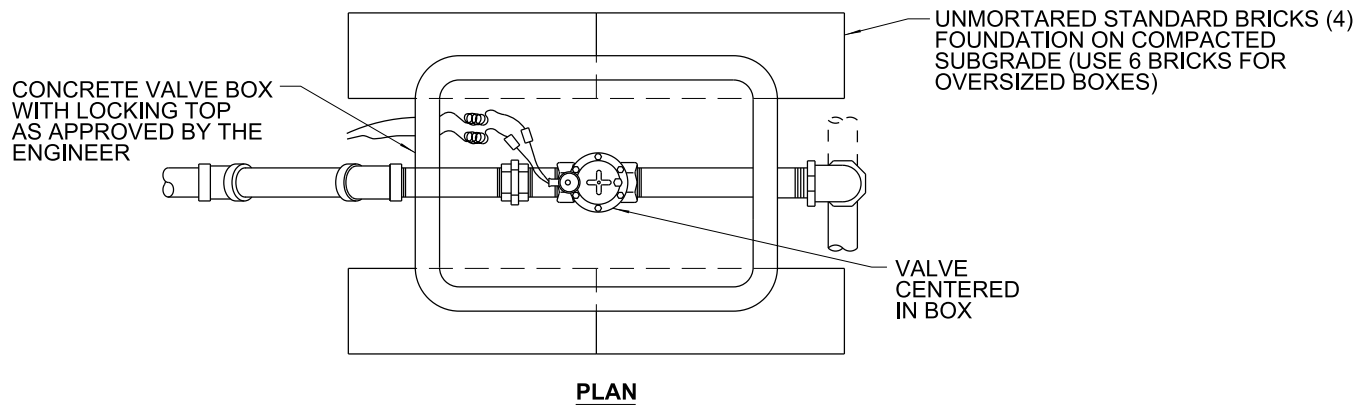
LEGEND ON PLANS

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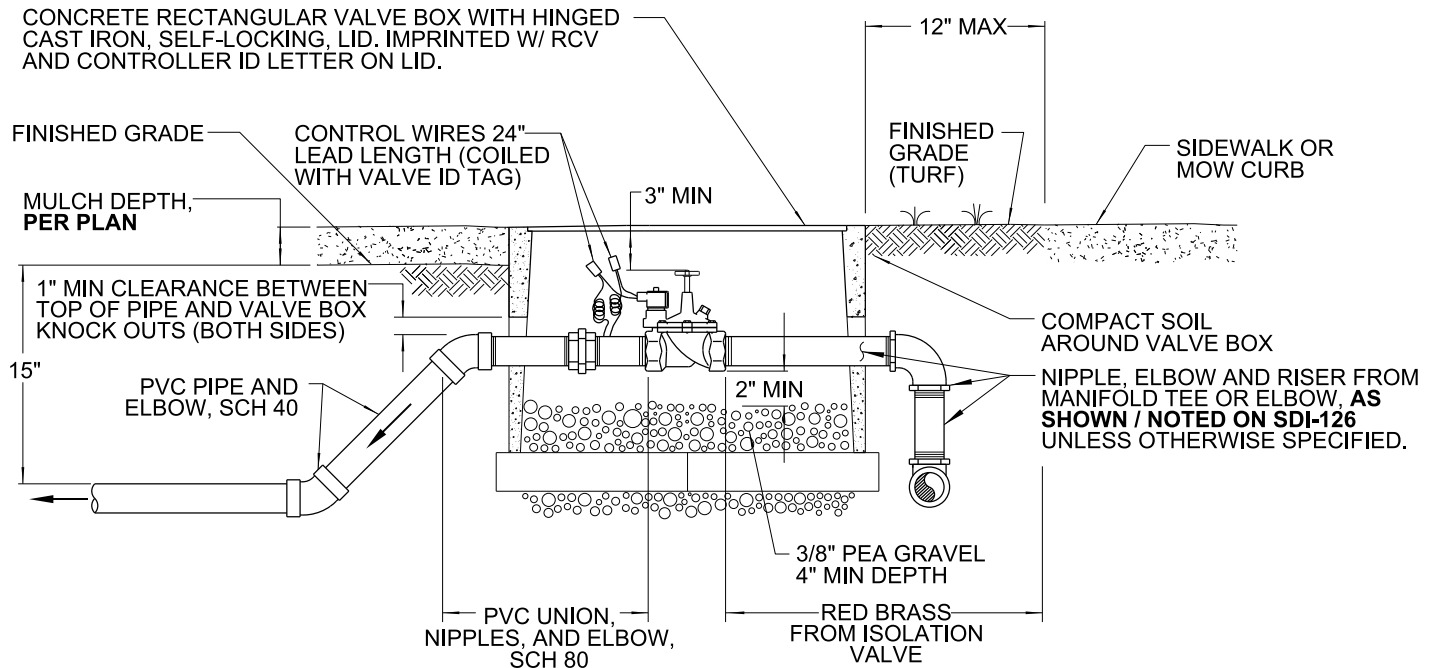
NOTES:

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 / GROUND COVER AREAS. IF NECESSARY TO BE SET IN TURF, VALVE BOXES SHALL BE SET FLUSH WITH FINISHED GRADE.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	RH	J. NAGELVOORT	01/12		FLOW SENSOR
REDRAFTED	CD	J. NAGELVOORT	09/18	COORDINATOR R.C.E. 56523 DATE	
				DRAWING NUMBER	SDI-112



PLAN



ELEVATION

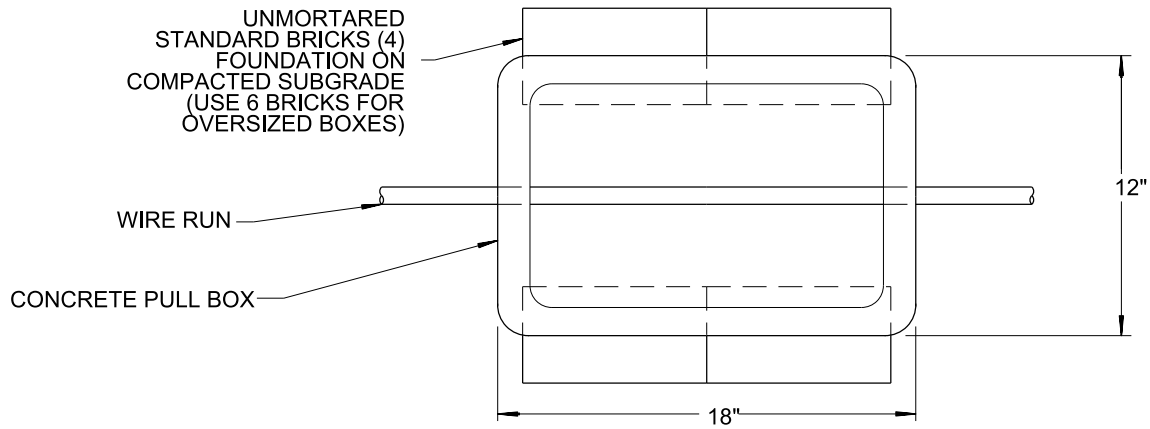
LEGEND ON PLANS

▼ RCV

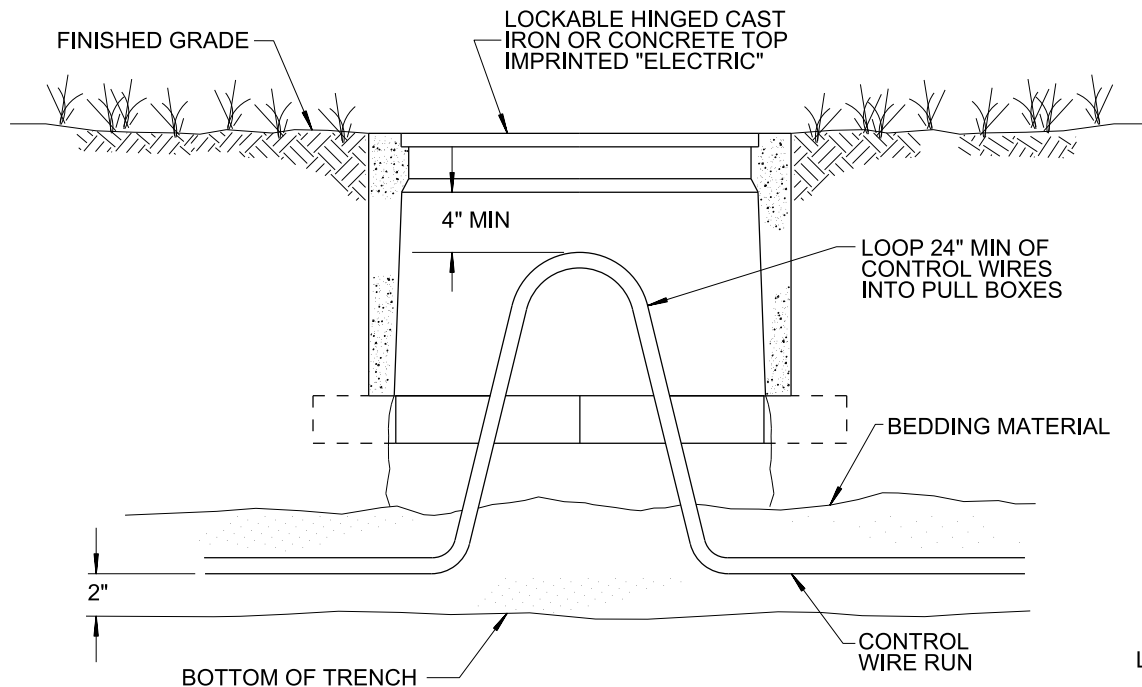
NOTES:

1. SPLICING SHALL BE MADE IN VALVE BOXES AND PULL BOXES ONLY. **SEE 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. 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 / GROUND COVER 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

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	RH	J. NAGELVOORT	01/12		
UPDATED	AR	J. NAGELVOORT	02/16	REMOTE CONTROL VALVE	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDI-114

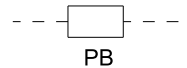


PLAN VIEW



ELEVATION

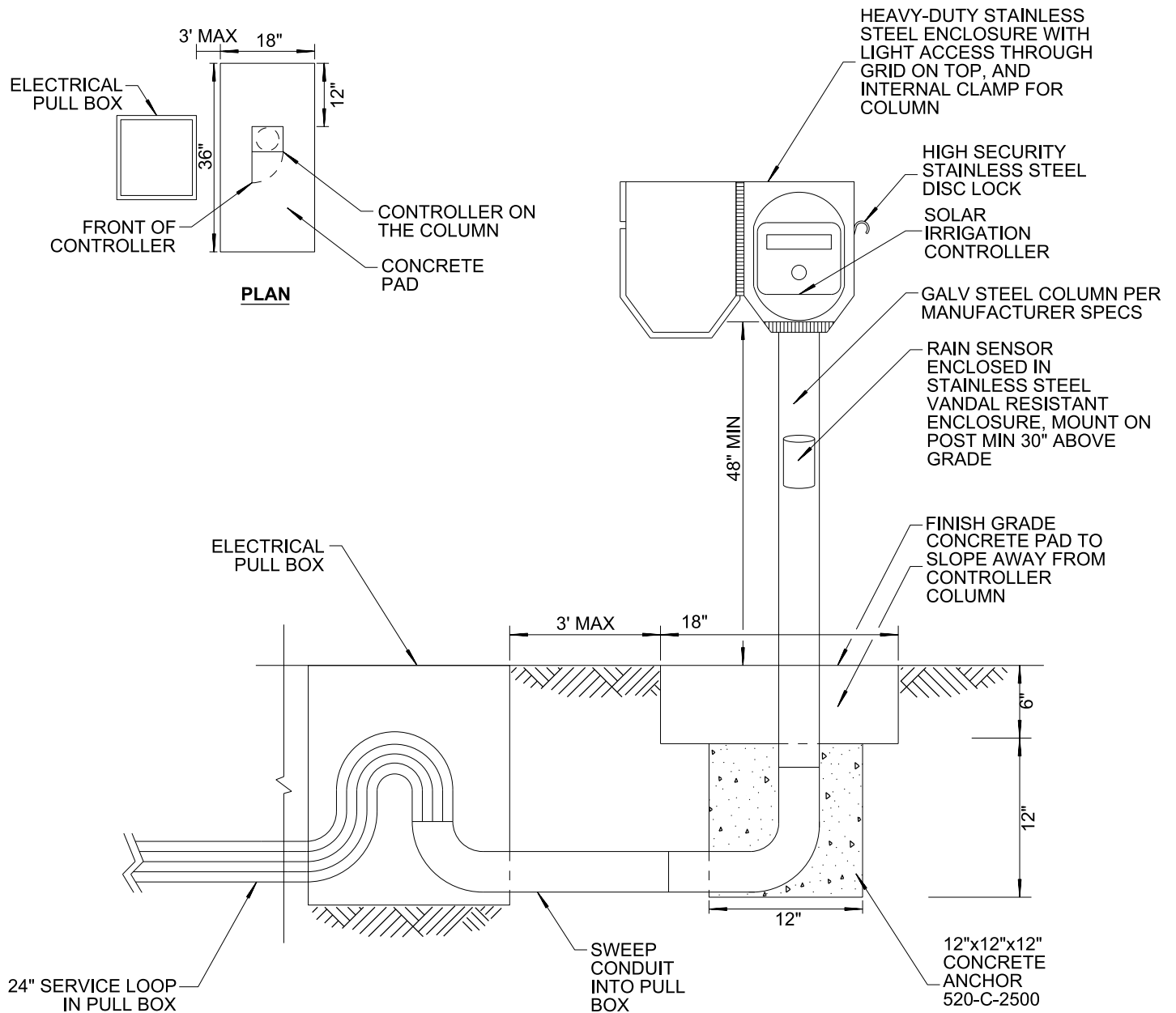
LEGEND ON PLANS



NOTES:


1. INSTALL PULL BOXES **AS SHOWN ON PLANS** AND AT EACH END OF PIPE SLEEVES RUNNING UNDER PAVEMENT.
2. PULL BOX COVER SHALL BE PERMANENTLY MARKED "ELECTRIC".
3. CONDUCTORS FOR EACH CONTROLLER CLOCK SHALL BE HARNESSSED SEPARATELY AND AT SUFFICIENT INTERVALS TO MAINTAIN A DEFINITE BUNDLE.
4. SPLICES SHALL ONLY BE MADE IN PULL BOXES, WITH A PROPERLY SET MECHANICAL SPLICE CONNECTOR, SOLDERED WITH METALLIC ALLOY, ENTIRELY ENCLOSED IN SELF-CURING RESIN AND SHALL BE COMPLETELY WATER-PROOF.
5. SPARE WIRE ENDS SHALL BE INSULATED IN THE SAME MANNER AS WIRE SPLICES.
6. MINIMUM SIZE PULL BOX SHALL BE AS SHOWN ABOVE. LARGER BOXES MAY BE NECESSARY TO MEET 4" CLEARANCE REQUIRED.
7. NO SPLICES SHALL BE PERMITTED ON WIRE RUNS OF LESS THAN 300'.
8. THE LETTER "E" SHALL BE STAMPED OR CHISELED ON THE IMPROVEMENT (CURB-SIDEWALK) DIRECTLY ABOVE THE CONTROL WIRE.
9. BEDDING MATERIAL SHALL BE SE 50 PLASTER OR MORTAR SAND.

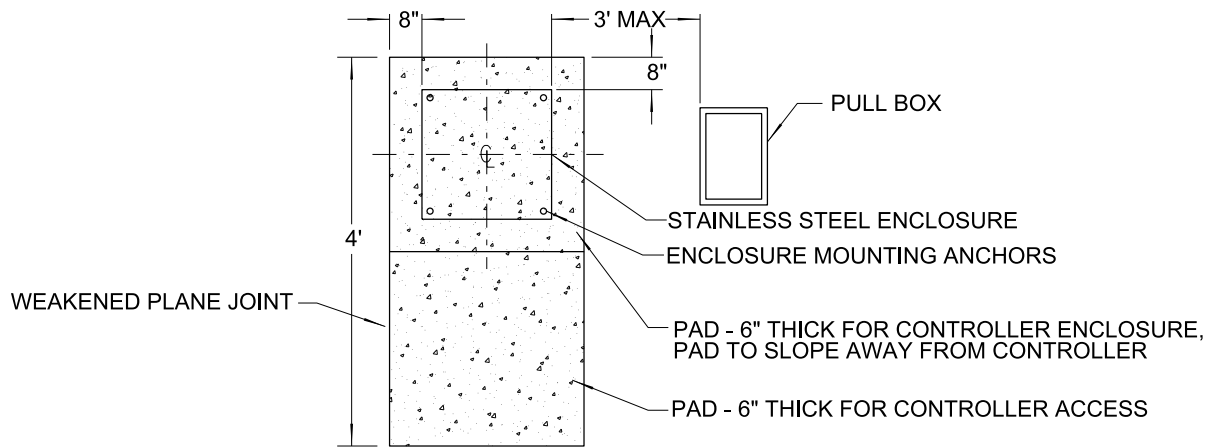
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL*	RH	J. NAGELVOORT	01/12		 9/4/18	
UPDATED	JW	J. NAGELVOORT	02/16			
REDRAFTED	CD	J. NAGELVOORT	09/18			
				ELECTRICAL PULL BOX FOR DIRECT BURIAL CONTROL WIRES AND SPLICING NOTES	COORDINATOR R.C.E. 56523	DATE
					DRAWING	SDI-115
					NUMBER	



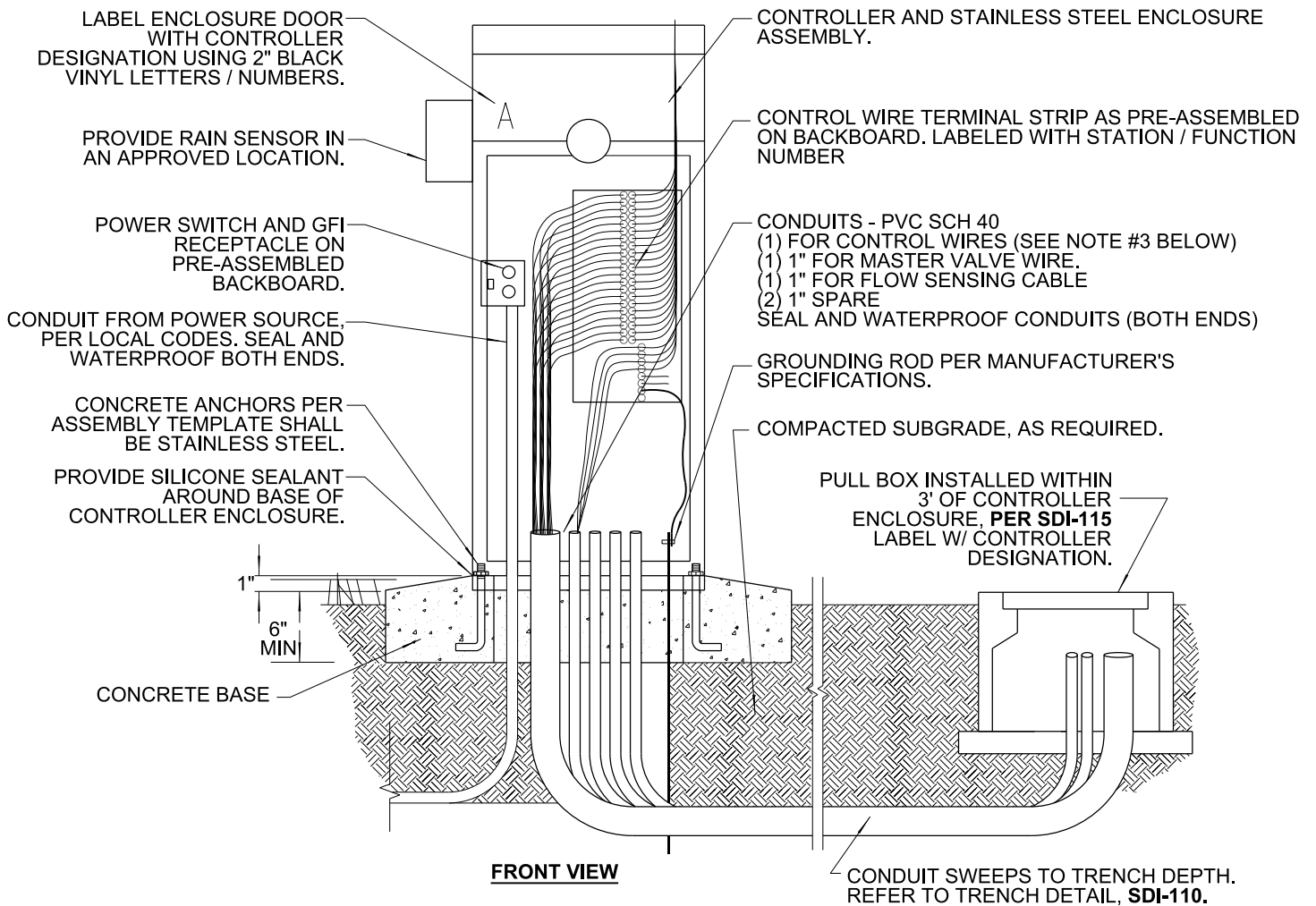
NOTES:

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	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	SOLAR IRRIGATION CONTROLLER	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDI-116



PLAN VIEW (FOR CONCRETE PAD)



NOTES:

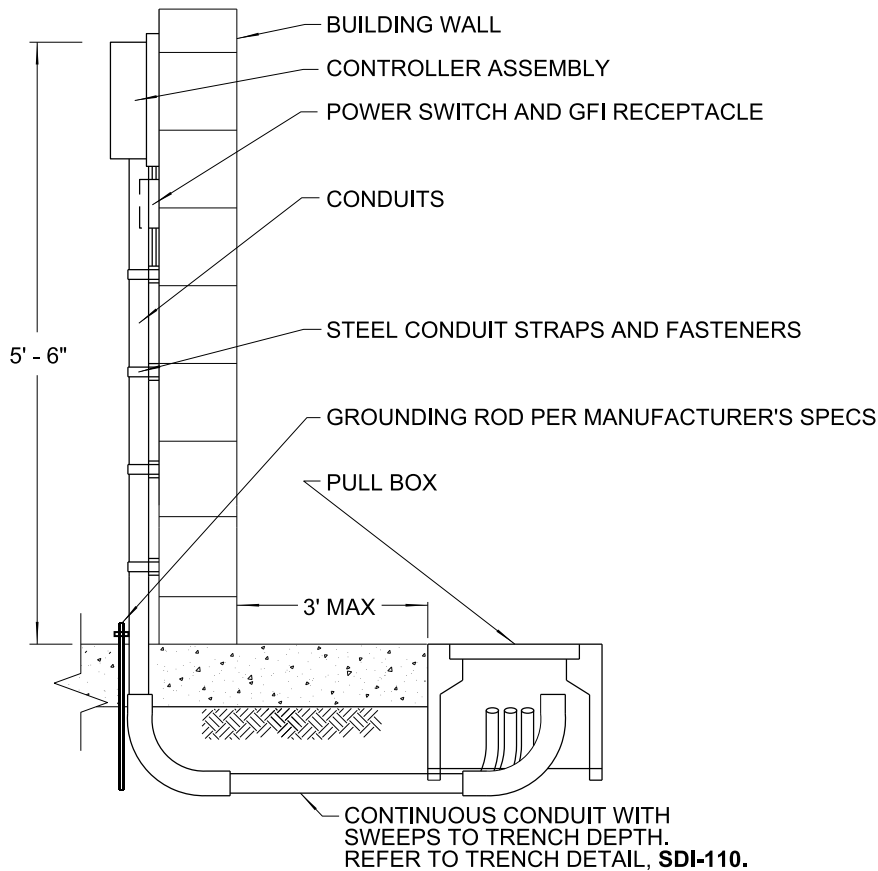
1. ALL CONTROLLER ASSEMBLIES AND OPTIONS SHALL BE COMPLETELY PRE-ASSEMBLED IN A STAINLESS STEEL ENCLOSURE.
2. CONTROL WIRE CONDUIT SHALL BE TWICE THE DIAMETER OF THE WIRE BUNDLE, 2" MINIMUM.
3. PROVIDE SEPARATE CIRCUIT BREAKER FOR CONTROLLER(S) AT ELECTRICAL CONTROL PANEL AND LABEL.
4. SEAL CONDUIT OPENINGS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

LEGEND ON PLANS

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	RH	J. NAGELVOORT	01/12		
UPDATED	AR	J. NAGELVOORT	02/16	AUTOMATIC IRRIGATION CONTROLLER PEDESTAL MOUNTED	 COORDINATOR R.C.E. 56523
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDI-117

9/4/18

DATE



SIDE VIEW

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

BUILDING WALL

CONTROLLER

POWER SOURCE CONDUIT

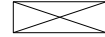
POWER SWITCH AND GFI RECEPTACLE

CONDUITS - PVC SCH 40
SEAL CONDUITS AT BOTH ENDS
(1) FOR CONTROL WIRES.
SEE NOTE #1 BELOW.
(1) 1" FOR MASTER VALVE WIRE.
(1) 1" FOR FLOW SENSING CABLE.
(2) 1" SPARE.

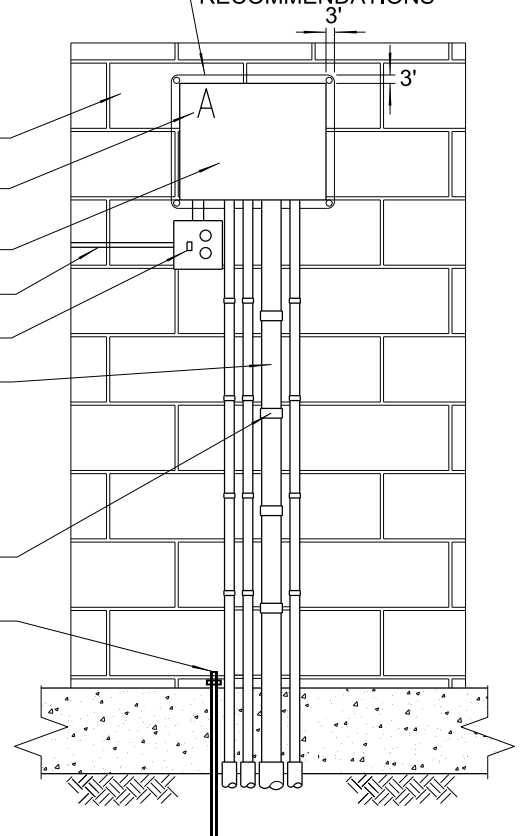
STEEL CONDUIT STRAPS AND FASTENERS,
4 PER CONDUIT.

GROUNDING ROD
PER MANUFACTURER SPECS

LEGEND ON PLANS



PRE ASSEMBLED STAINLESS
STEEL BACK BOARD MOUNTED
PER MANUFACTURERS
RECOMMENDATIONS

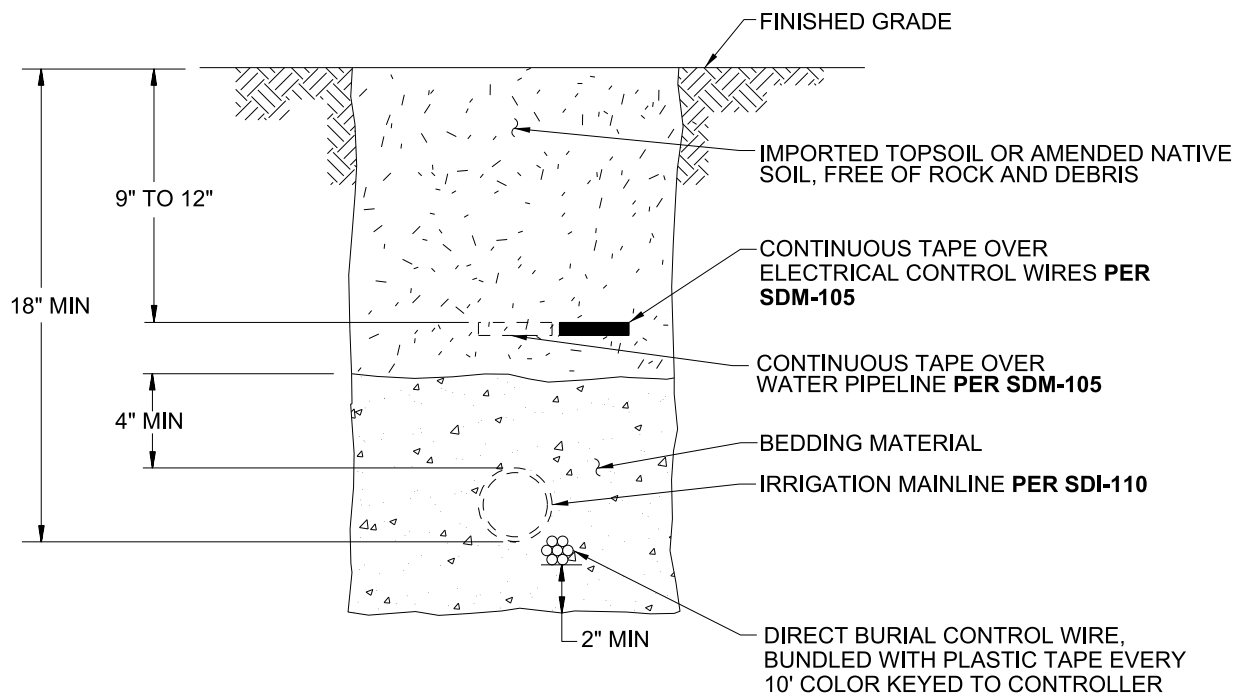


FRONT VIEW

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.

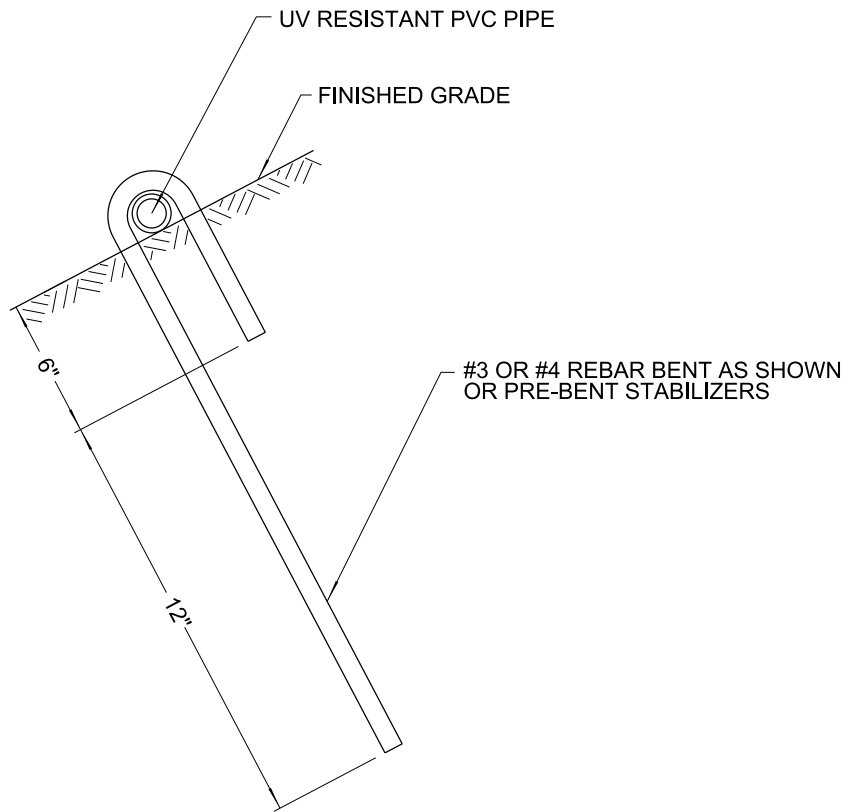
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	RH	J. NAGELVOORT	01/12		
UPDATED	AR	J. NAGELVOORT	02/16	AUTOMATIC IRRIGATION CONTROLLER INDOOR WALL MOUNTED	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDI-118



NOTES:

1. BEDDING MATERIAL SHALL BE SE 50 PLASTER OR MORTAR SAND.
2. WIRES WHICH RUN UNDER PAVED AREAS SHALL BE INSTALLED IN PVC PIPE SLEEVES TWICE THE DIAMETER OF THE WIRE BUNDLE (2" MINIMUM SIZE), EXTENDING 12" MINIMUM BEYOND EDGE OF PAVEMENT. INSTALL ELECTRICAL PULL BOX AT EACH END OF PIPE SLEEVES **PER SDI-115**.
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	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	RH	J. NAGELVOORT	01/12		
UPDATED	JW	J. NAGELVOORT	08/15	CONTROL WIRE INSTALLATION	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	AR	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDI-119

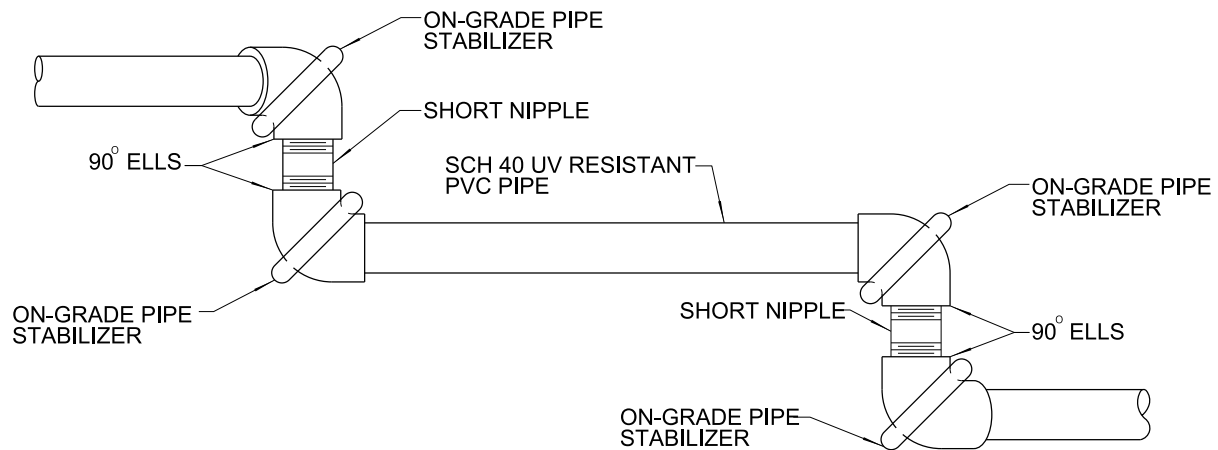


SIDE VIEW

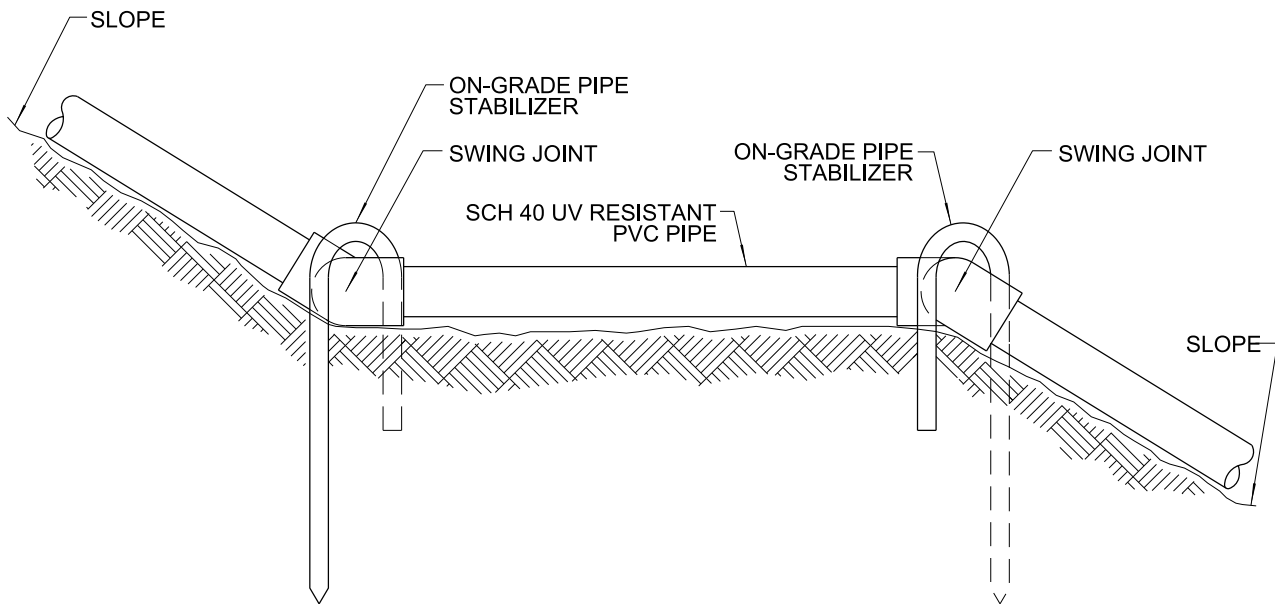
NOTE:

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

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	RH	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	ON-GRADE PIPE STABILIZATION TEMPORARY INSTALLATION	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDI-120

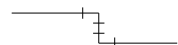


PLAN




ELEVATION

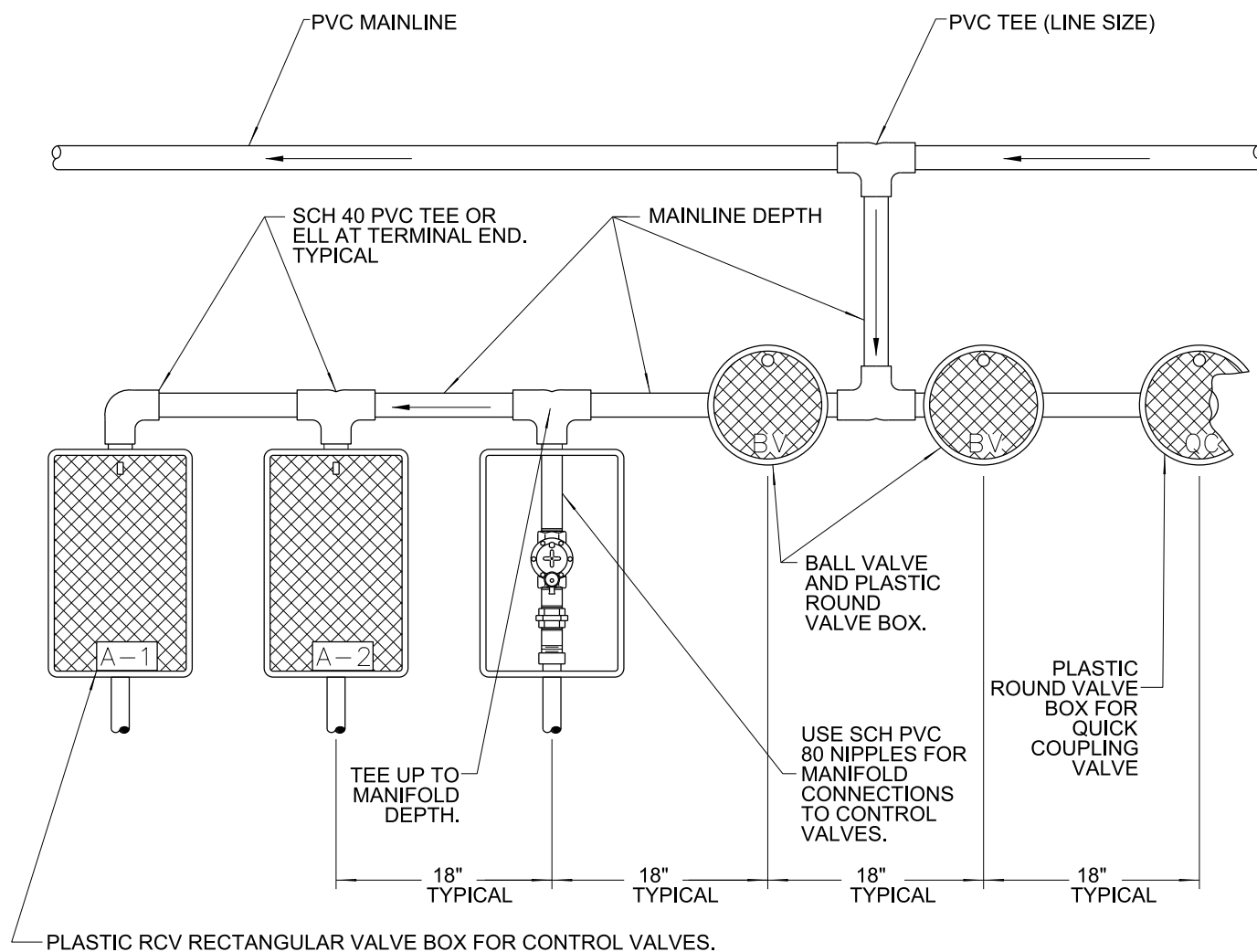
LEGEND ON PLANS



NOTE:

SWING JOINTS SHALL BE USED AT EACH CHANGE OF GRADE.

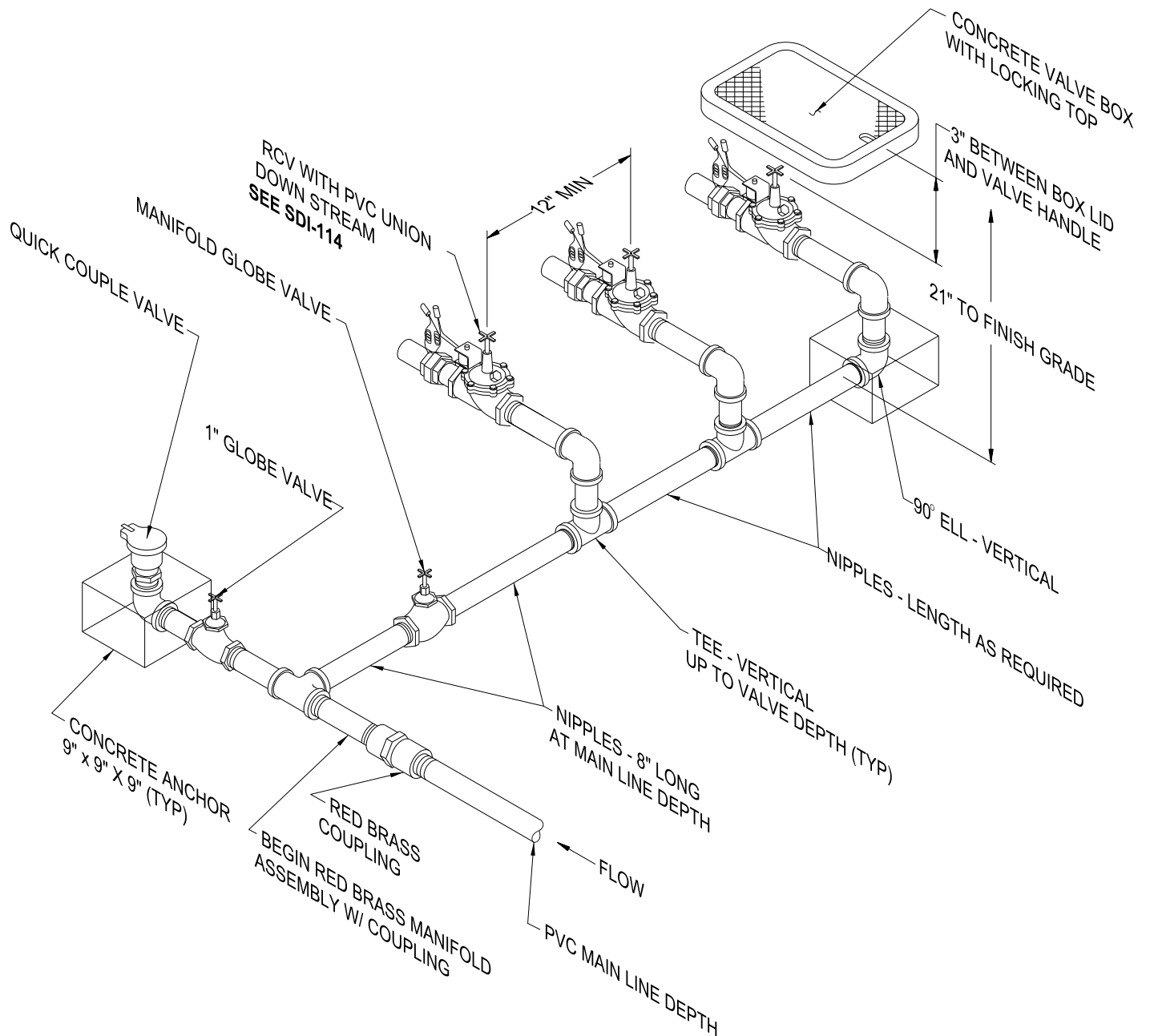
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	RH	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	SWING JOINT AND PIPE INSTALLATION ON SLOPES ABOVE GROUND PIPE INSTALLATIONS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDI-123



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.

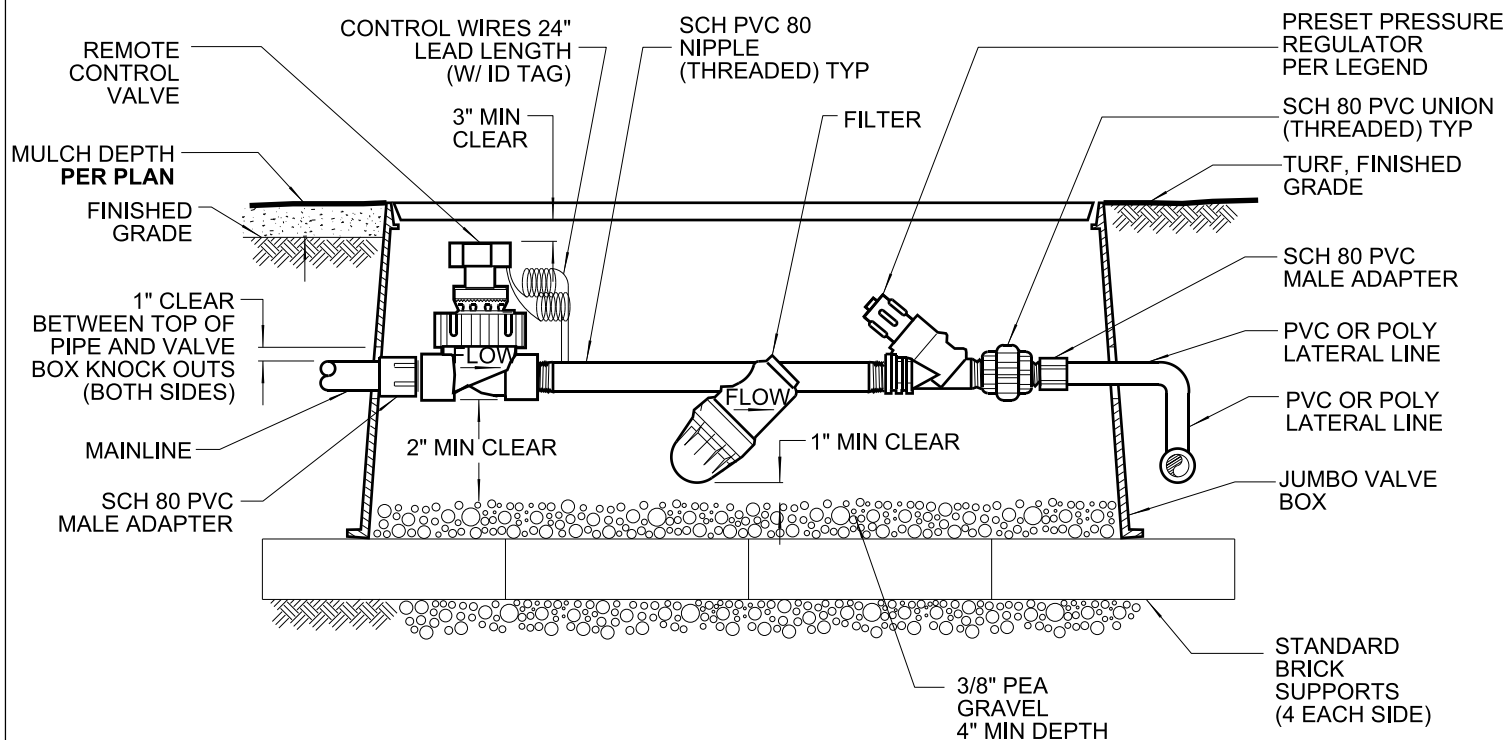
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	RH	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	REMOTE CONTROL VALVE MANIFOLD ASSEMBLY WITH PVC PIPE (TEMPORARY SYSTEMS)	<div><div></div><div>COORDINATOR R.C.E. 56523</div></div> <div>9/4/18 DATE</div>
				DRAWING NUMBER	SDI-125



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	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	RH	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	REMOTE CONTROL VALVE MANIFOLD ASSEMBLY WITH BRASS PIPE	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDI-126



ELEVATION

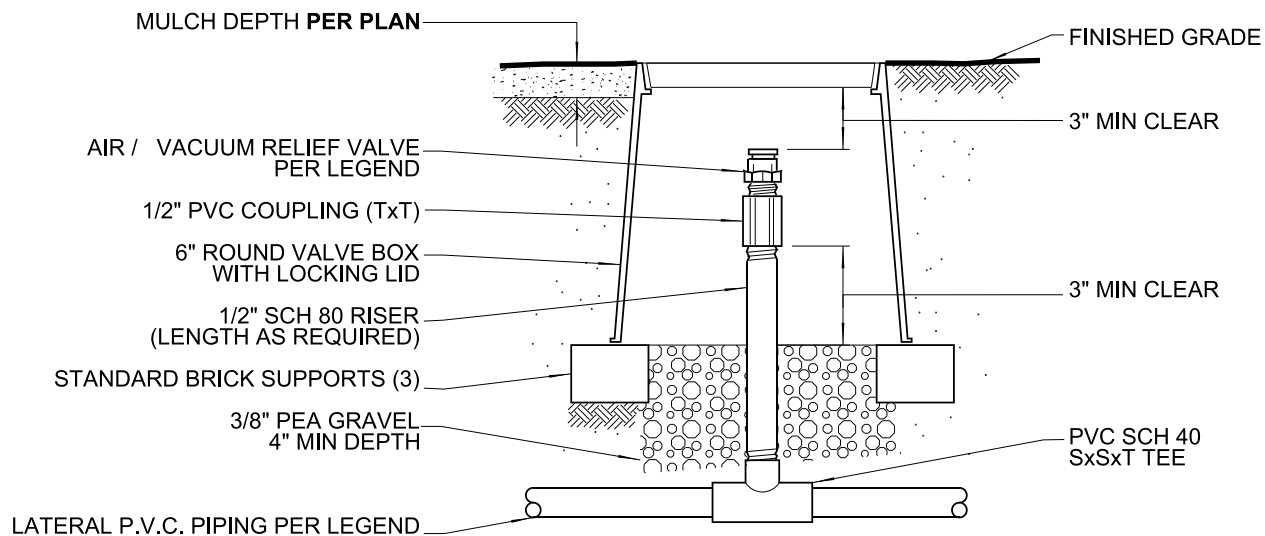
LEGEND ON PLANS



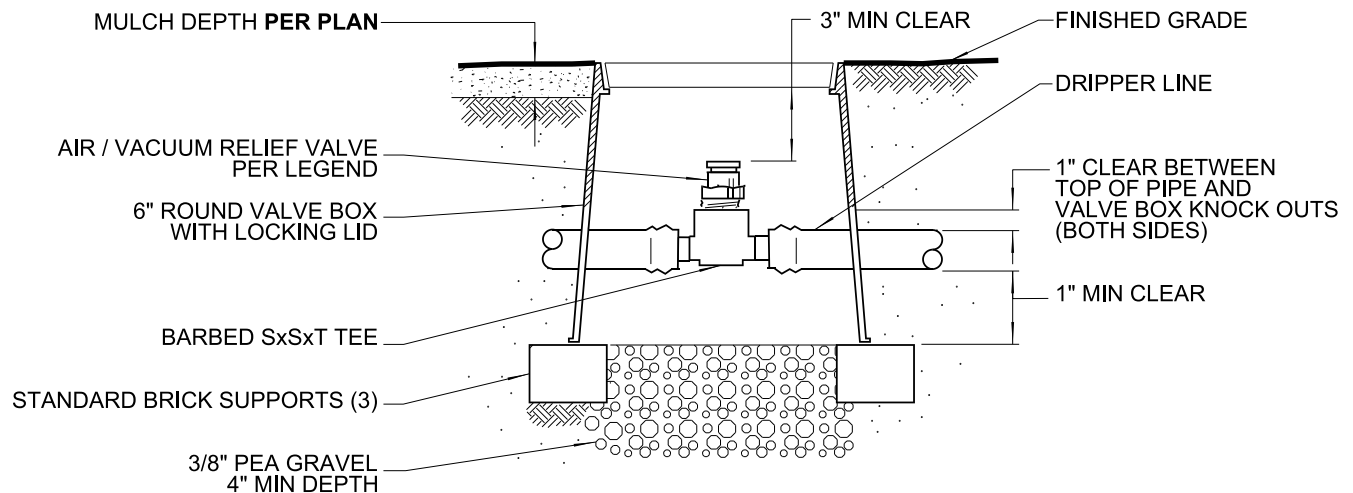
NOTES:

1. WIRE SPLICING SHALL BE MADE IN VALVE BOXES AND PULL BOXES ONLY. **SEE SDI-115** 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, **SDI-125** AND **SDI-126**.
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 ENGINEER**.
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 / GROUND COVER 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.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	RH	J. NAGELVOORT	01/12		
UPDATED	RB	J. NAGELVOORT	02/16	REMOTE CONTROL VALVE DRIP IRRIGATION	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDI-127



PLUMBED TO PVC



LEGEND ON PLANS

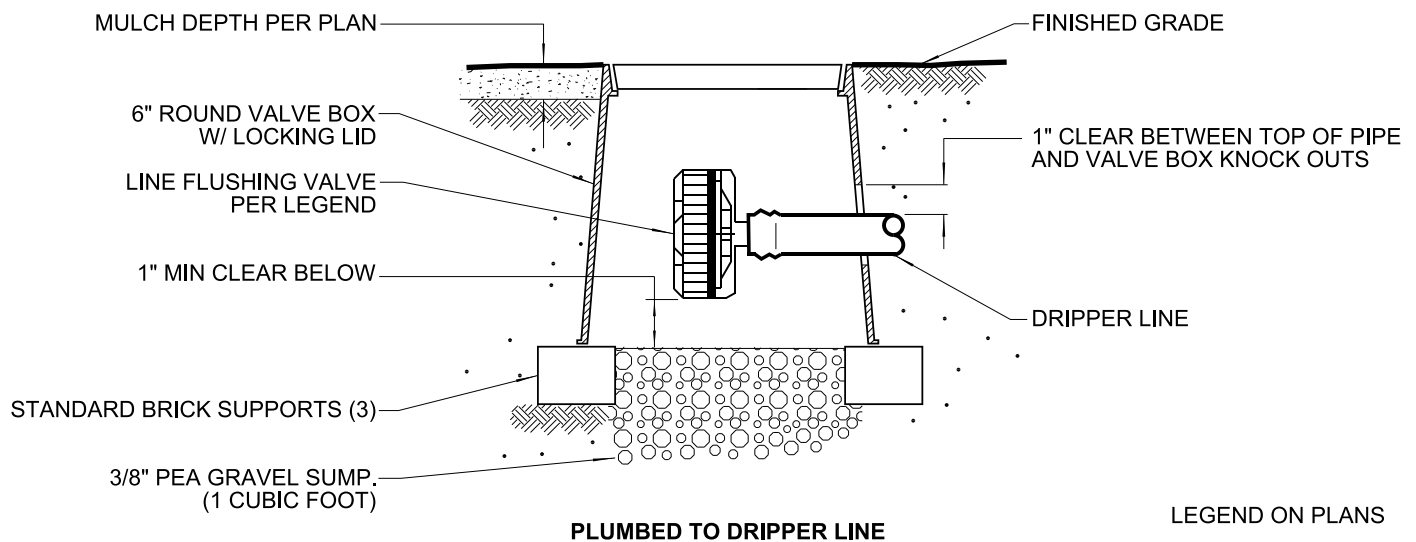
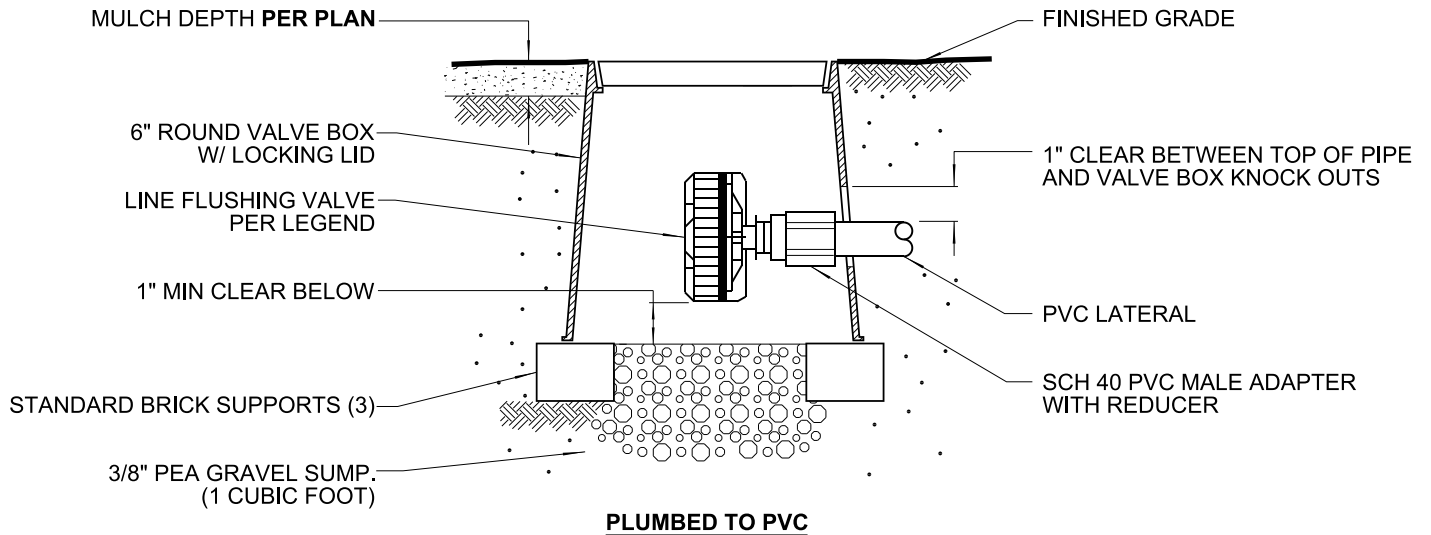
PLUMBED TO DRIPPER LINE

A

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.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	RH	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	AIR / VACUUM RELIEF VALVE	<i>Chung</i> 9/4/18 COORDINATOR R.C.E. 56523 DATE
					DRAWING
					NUMBER
					SDI-128



(FV)

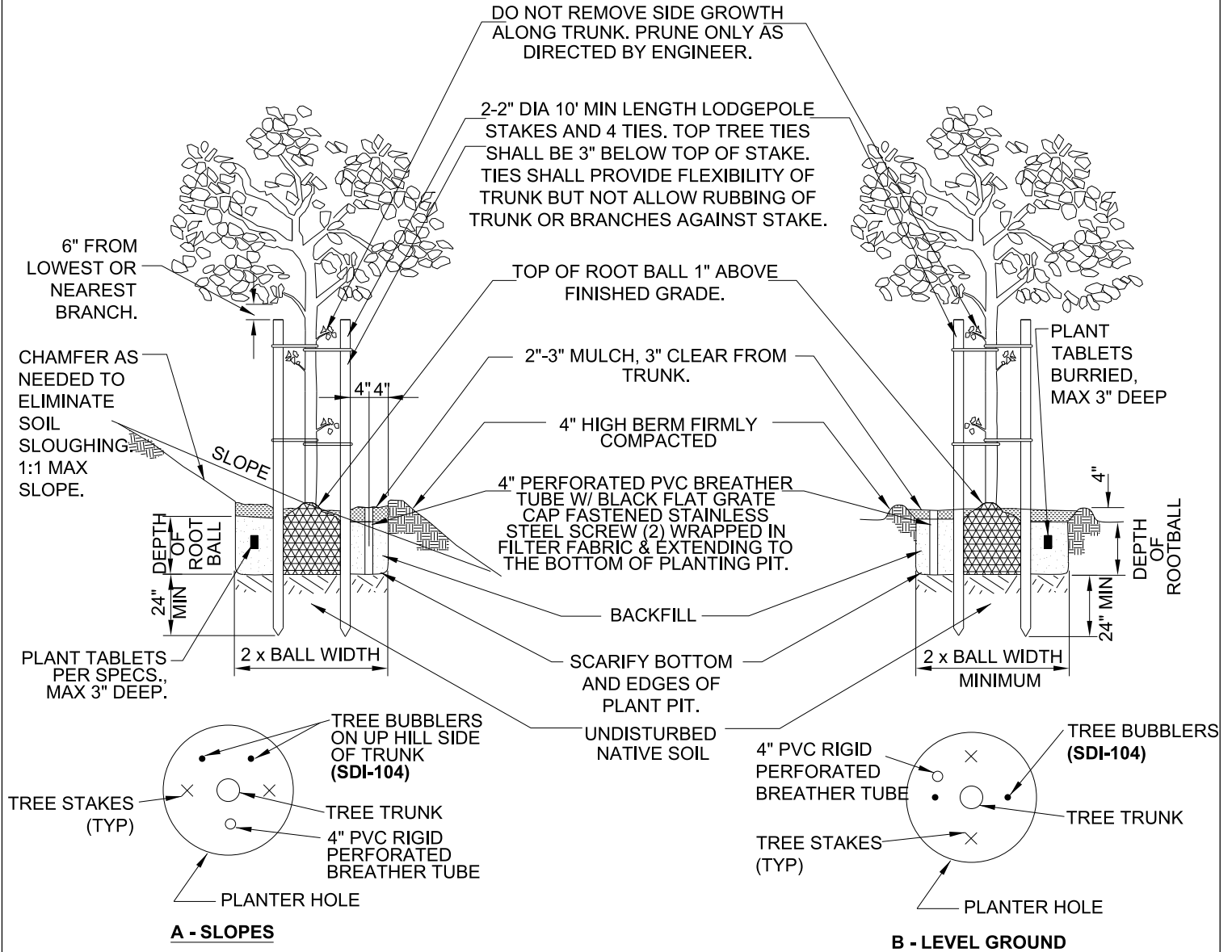
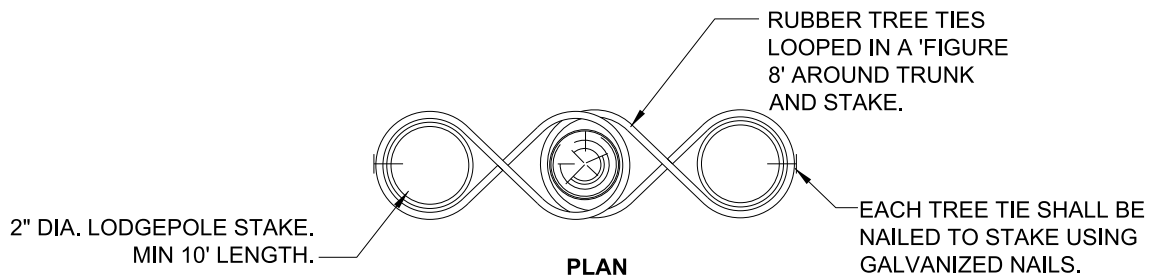
NOTES:

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.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	RH	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	DRIP IRRIGATION FLUSH VALVE (AUTOMATIC)	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDI-129


CHAPTER 6

LANDSCAPING

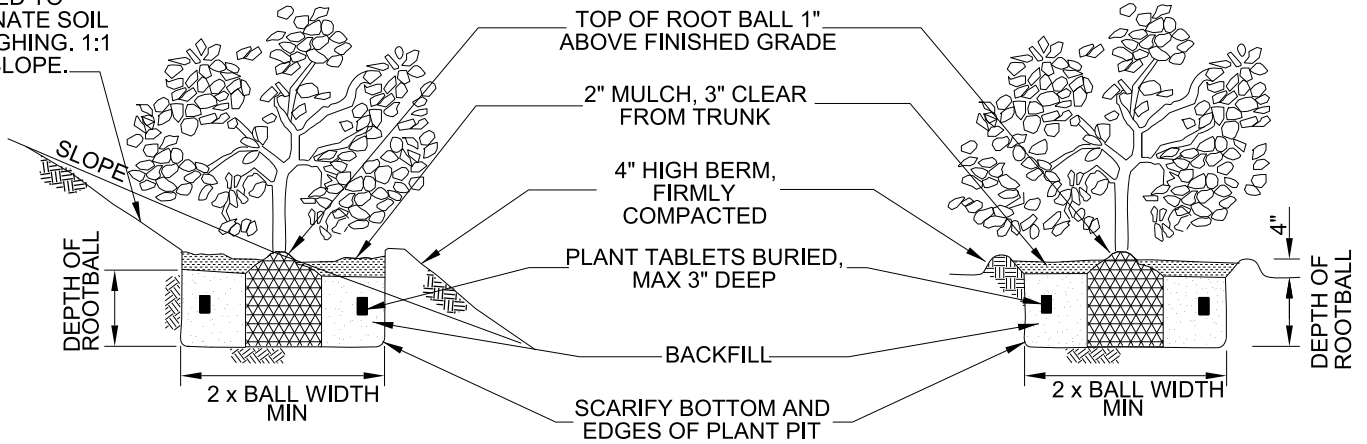


NOTES

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.

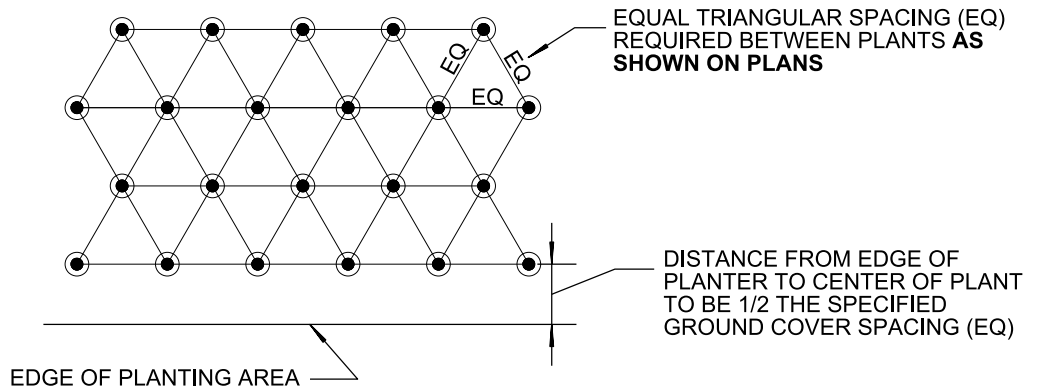
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	SG	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	TREE PLANTING AND STAKING	 COORDINATOR R.C.E. 56523 DATE 9/4/18
				DRAWING NUMBER	SDL-101

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



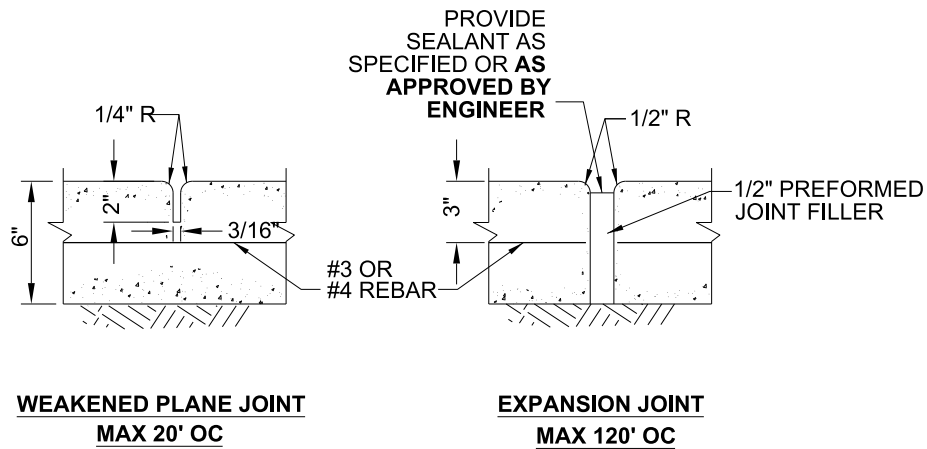
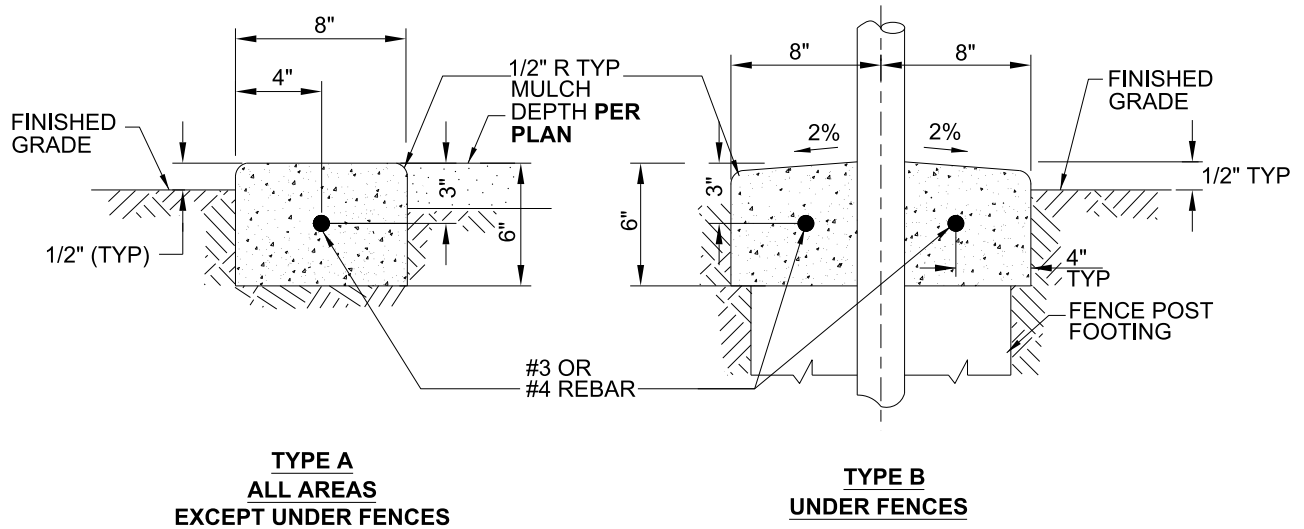
SHRUB PLANTING - SLOPES

SHRUB PLANTING - LEVEL GROUND




GROUND COVER SPACING

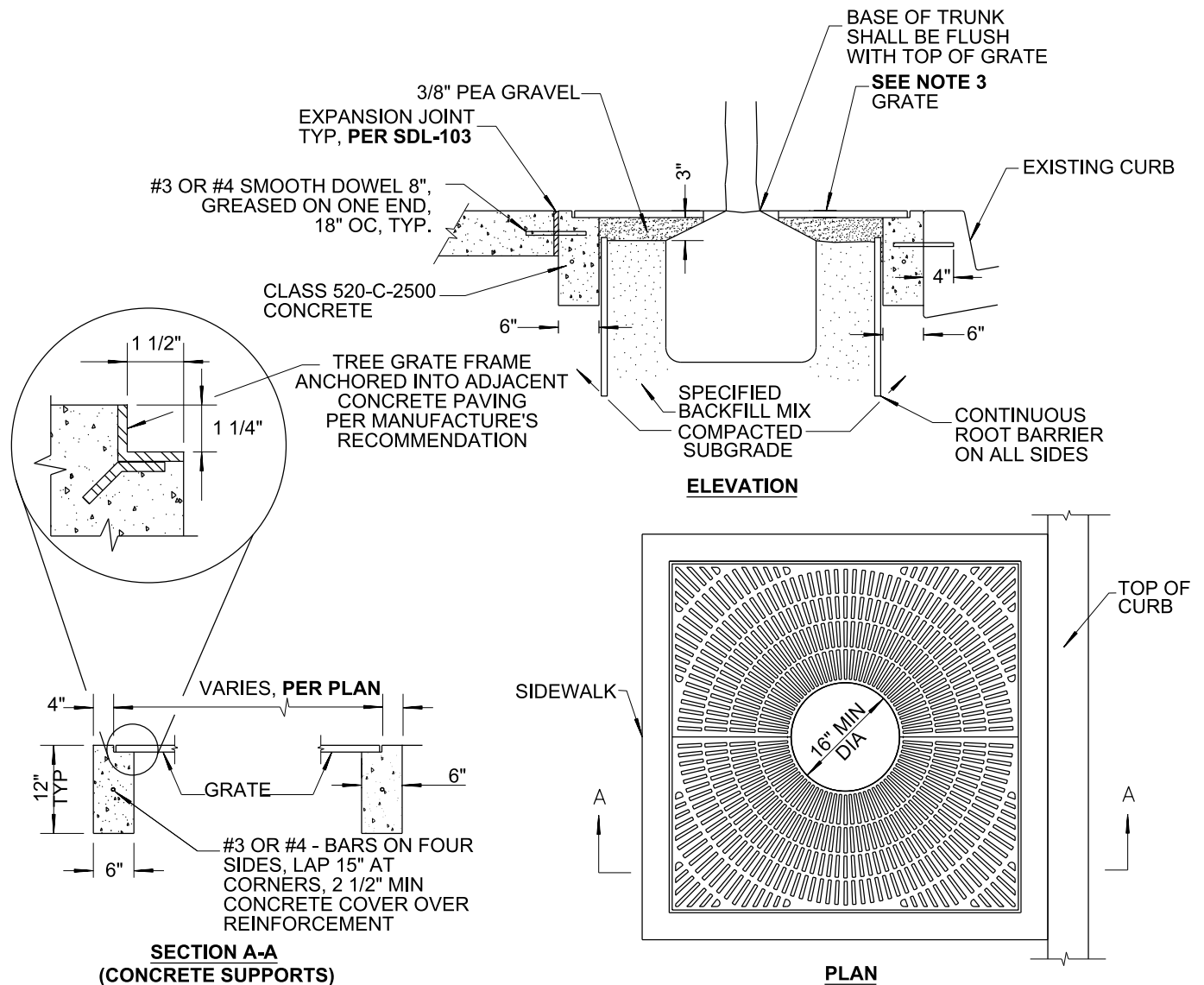
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	AR	J. NAGELVOORT	02/16	SHRUB PLANTING/GROUND COVER SPACING	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDL-102



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 ENGINEER.

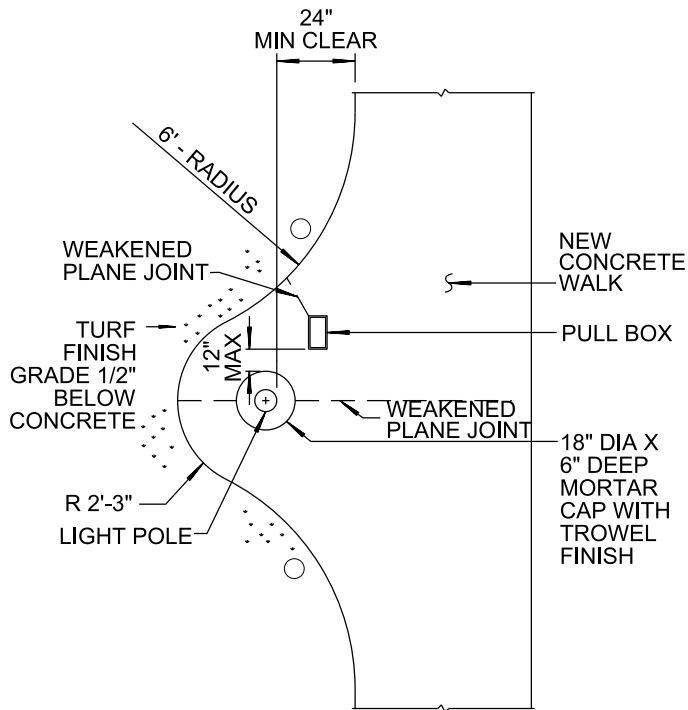
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	CONCRETE MOWING STRIP	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDL-103



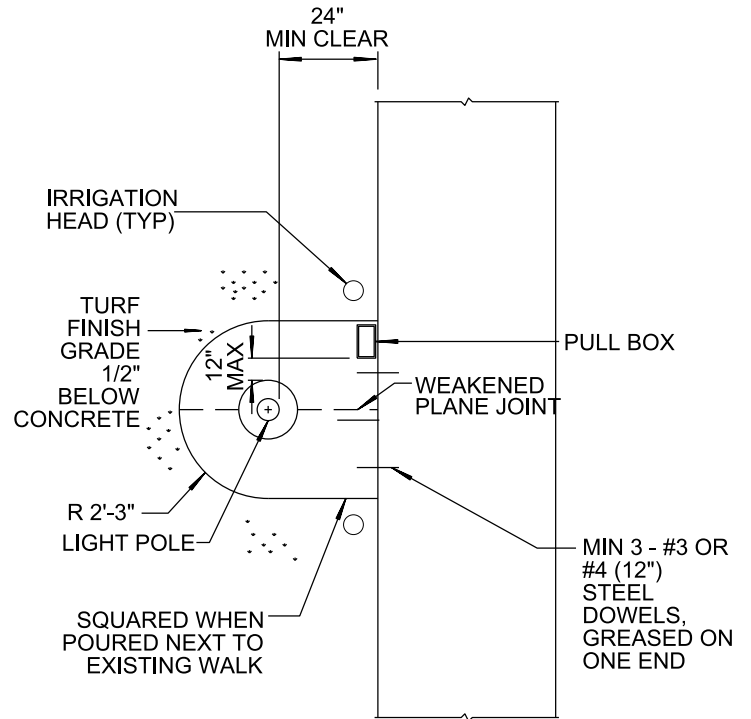
NOTES:

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	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	TREE GRATE	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDL-104




**A - MONOLITHIC CONCRETE
PLACEMENT**

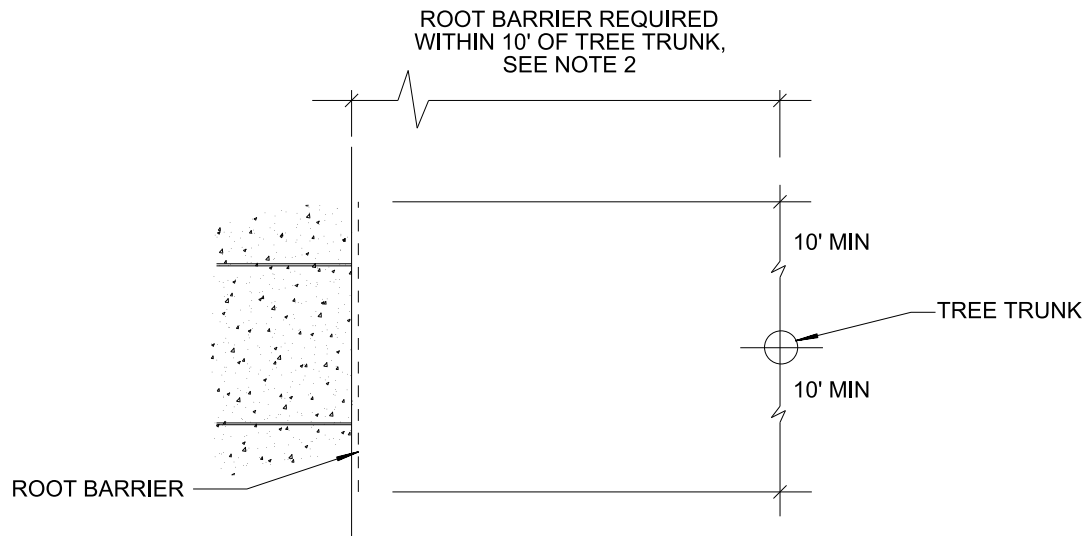


**B - PAD WHEN ADJACENT TO
EXISTING CONCRETE**

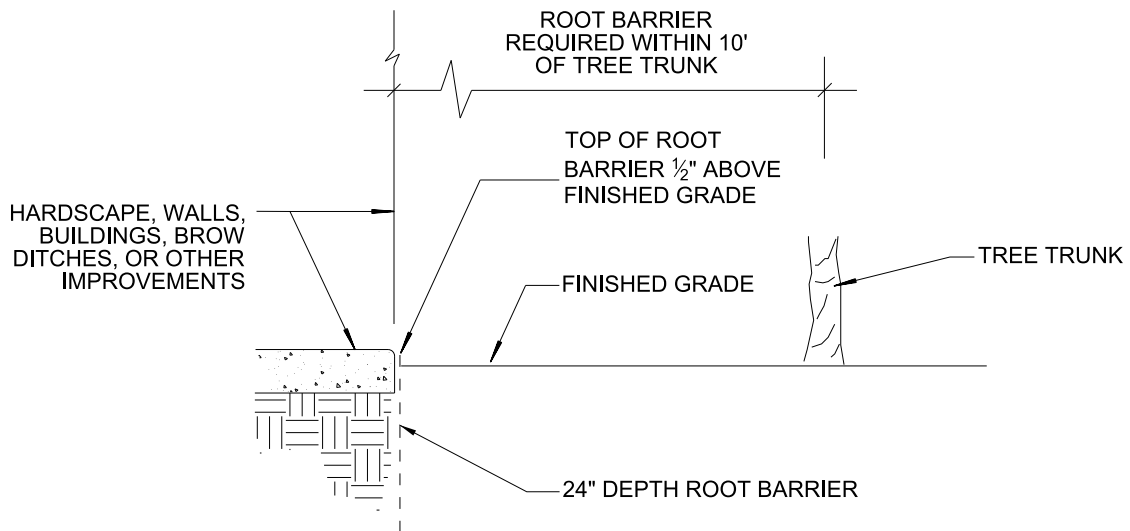
NOTES:

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 CLEAR OF CONCRETE WALK OR PAD PER SECTION 801-5.5.2 OF THE WHITEBOOK.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	KC	J. NAGELVOORT	02/16	LIGHT POLE PAD IN TURF AREAS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDL-105




PLAN VIEW

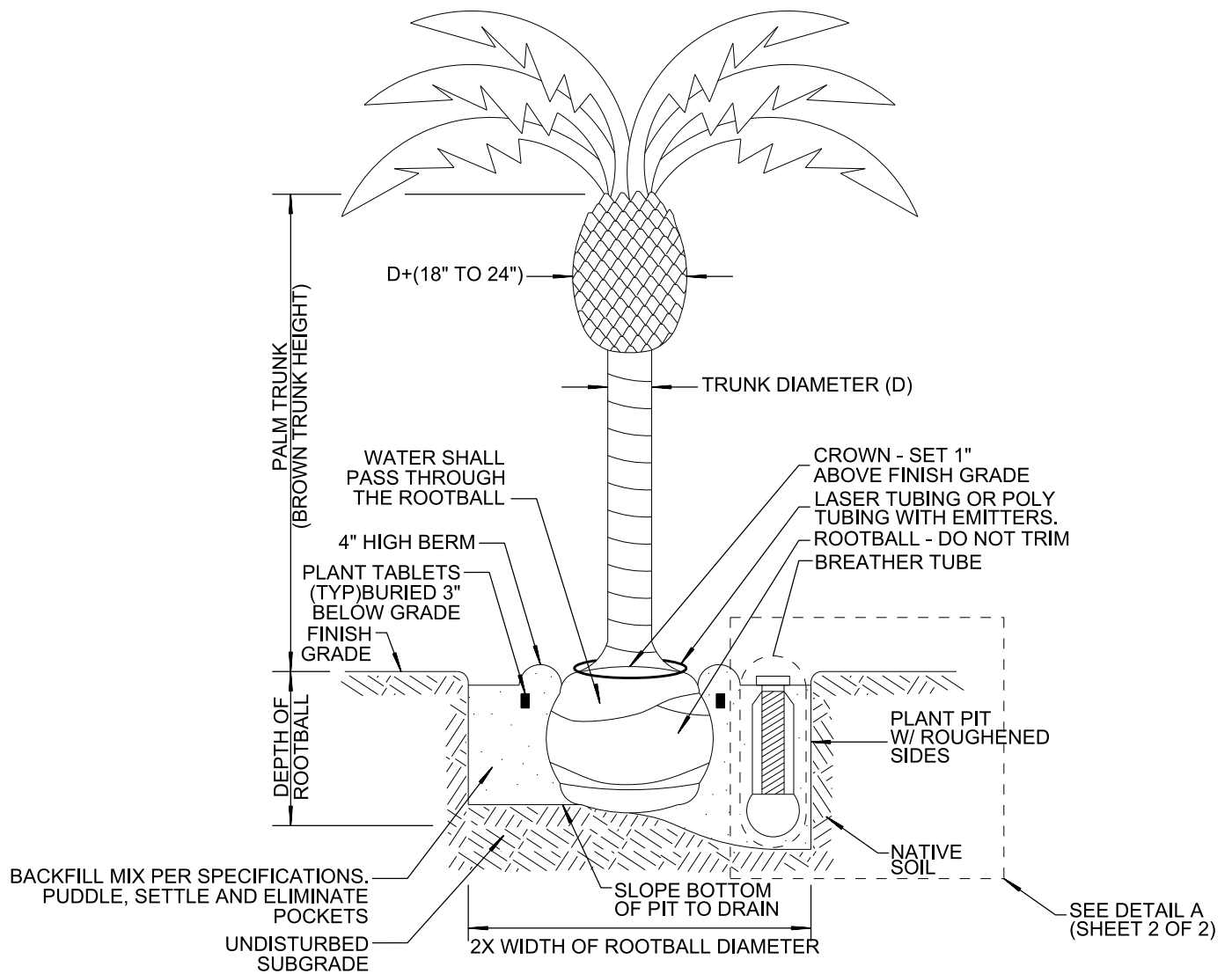


SECTION

NOTE:

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 SDL-104.**


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	ROOT CONTROL BARRIER	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDL-106

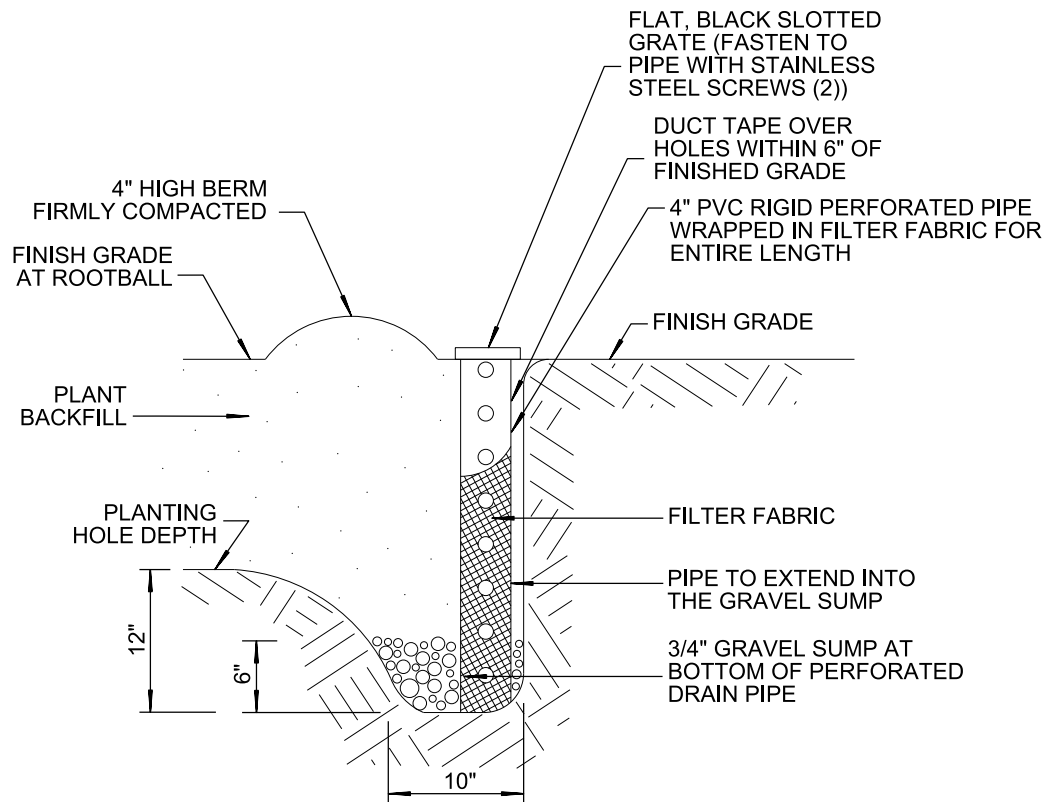


NOTES:

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


SHEET 1 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	PALM TREE PLANTING	 COORDINATOR R.C.E. 56523 DATE 9/4/18
				DRAWING NUMBER	SDL-107



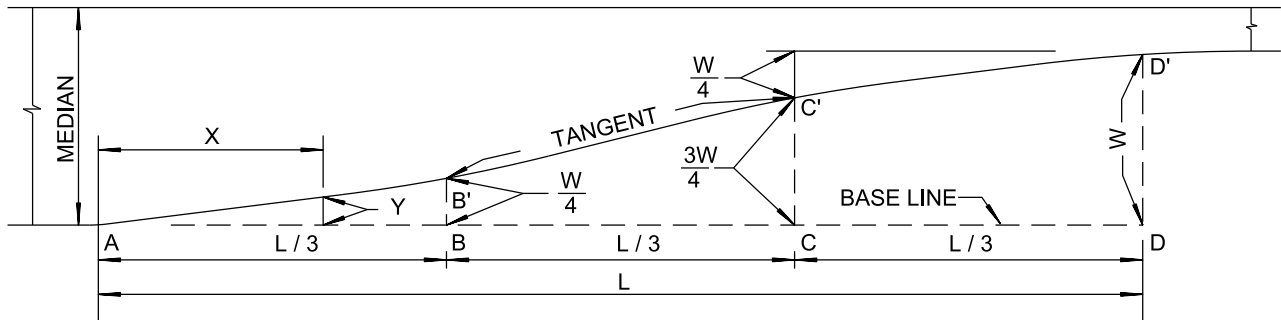
**DETAIL - A
BREATHER TUBE**

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	PALM TREE PLANTING	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDL-107

CHAPTER 7

MISCELLANEOUS




$$Y = 2.25 W \left(\frac{X}{L} \right)^2$$

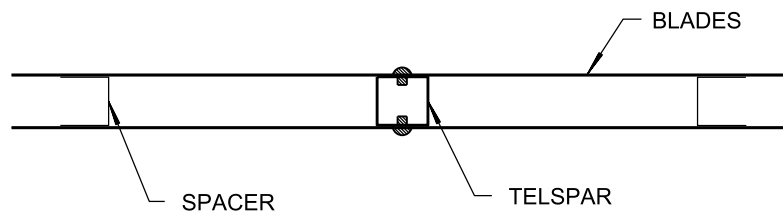
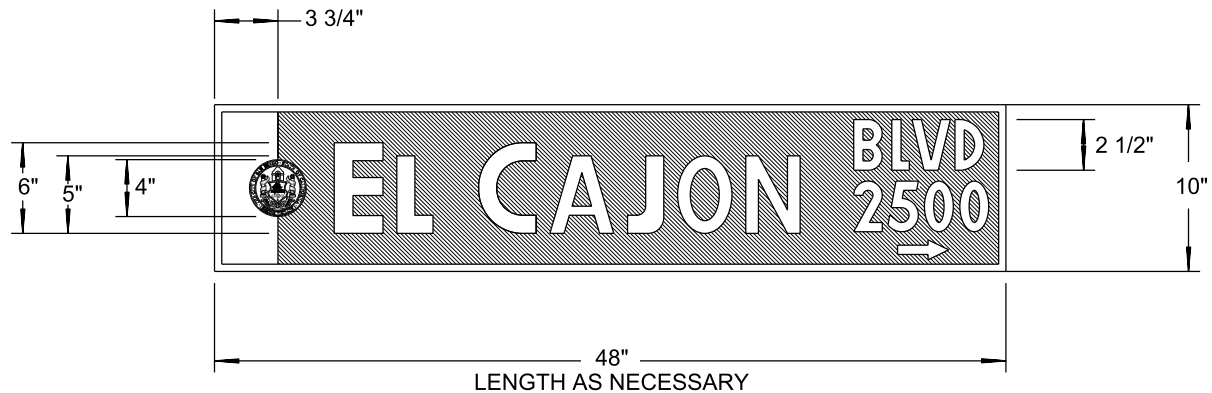
L = LENGTH OF TRANSITION
W = MAXIMUM OFFSET DISTANCE
X = DISTANCE ALONG BASELINE
Y = OFFSET FROM BASELINE

L	DISTANCE X											
60'	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'	55'	60'
90'	7.5'	15'	22.5'	30'	37.5'	45'	52.5'	60'	67.5'	75'	82.5'	90'
120'	10'	20'	30'	40'	50'	60'	70'	80'	90'	100'	110'	120'
W	OFFSET Y											
10'	0.16'	0.62'	1.41'	2.50'	3.75'	5.00'	6.25'	7.50'	8.59'	9.38'	9.84'	10.00'
11'	0.17'	0.69'	1.55'	2.75'	4.13'	5.50'	6.88'	8.25'	9.45'	10.31'	10.83'	11.00'
20'	0.31'	1.25'	2.81'	5.00'	7.50'	10.00'	12.50'	15.00'	17.19'	18.75'	19.69'	20.00'
22'	0.34'	1.38'	3.09'	5.50'	8.25'	11.00'	13.75'	16.50'	18.91'	20.62'	21.66'	22.00'

NOTE:

TO DETERMINE OFFSET DISTANCE FOR ANY LENGTH OF TRANSITION USE THE FORMULA $Y = 2.25W \left(\frac{X}{L} \right)^2$ FOR THE PORTIONS AB' AND C' D' WHICH ARE PARABOLIC CURVES. THE PORTION B' C' IS A TANGENT. WHEN THE BASELINE IS CURVED, THE OFFSETS ARE APPLIED TO THE CURVED BASELINE, AND B' C' IS NO LONGER A TANGENT.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING		RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL	JQ	G. PARKINSON	2/95				
UPDATED	KA	J. NAGELVOORT	02/16	LEFT TURN MEDIAN TRANSITION		 9/4/18 COORDINATOR R.C.E. 56523 DATE	
REDRAFTED	CD	J. NAGELVOORT	09/18				
						DRAWING NUMBER SDM-101	



NOTES

1. LETTER STYLE: FUTURA BOLD CONDENSED
2. LETTER SIZE: 6" 5" 2 1/2"
3. CITY SEAL: 4"
4. BACKGROUND: TYPE IV PRISMATIC SHEETING
5. ELECTRO CUT BLUE OVER WHITE
6. .065 ALUMINUM
7. MOUNTED TO TELSPAR WITH 3/8" DRIVE RIVETS
8. 4" TALL BY 1 1/4" SQ. CHANNEL SPACER HELD WITH VHB 4950 TAPE
9. CONTACT CITY OF SAN DIEGO SIGN SHOP, (619) 527-7528 FOR A LIST OF APPROVED VENDORS FOR CITY SEAL.

SHEET 1 OF 4

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		J. CASEY	11/8/88		 9/4/18
UPDATED	KA	J. NAGELVOORT	01/12	STREET NAME SIGN	COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDM-102

PERMANENT STREET NAME SIGNS

GENERAL:

STREET NAME SIGN ASSEMBLY FOR POST TOP MOUNTING SHALL CONSIST OF NAME BLADE UNITS, 24" LONG 1 1/2" SQUARE TELES PAR EXTENSION AND DRIVE RIVETS. ALL AS INDICATED ON THE STANDARD DRAWINGS AND/ OR SPECIFIED IN THESE NOTES. ASSEMBLIES SHALL BE MOUNTED TO 1 3/4" SQUARE TELES PAR POSTS.

NAME BLADE UNITS:

NAME BLADE UNITS SHALL BE SINGLE FACED AND MADE FROM 10" WIDE (TOP TO BOTTOM) ALUMINUM SHEET STOCK, MILL FLAT, 6061-T6 OR 5052 ALLOY, .063 THICK. ENDS OF BLADE SHALL BE PERPENDICULAR TO TOP BOTTOM EDGES. EDGES SHALL BE FREE OF SHARP BURRS. EACH BLADE SHALL BE DRILLED WITH TWO 7/16" HOLES, ONE AT TOP AND AT BOTTOM EDGE OF SIGN. HOLES TO BE CENTERED ON BLADE AND 1/2" FROM EDGE. BLADE SHALL BE COVERED WITH TYPE IV PRISMATIC WHITE REFLECTIVE SHEETING.


LETTERING:

STREET NAME SHALL BE CUT FROM BLUE E.C. FILM MATERIAL AND APPLIED OVER THE WHITE BACKGROUND, CREATING A SIGN WITH A BLUE BACKGROUND AND WHITE LETTERING. TYPE FONT SHALL BE FUTURA BOLD CONDENSED. LETTERING HEIGHT OF STREET NAME SHALL BE 6" FOR FIRST LETTER AND 5" FOR THE REST OF THE NAME. STREET AND BLOCK NUMBER SUFFIX SHALL BE 2 1/2" FUTURA BOLD CONDENSED. LAYOUT TO BE AS SHOWN ON SHEET 1 OF 4 ON THE STANDARD DRAWING.

MOUNTING OF SIGN:

EACH NAME BLADE SHALL BE MOUNTED TO THE 1 1/2" TELES PAR EXTENSION WITH A 3/8" DRIVE RIVET. EACH STREET NAME SHALL BE MOUNTED BACK TO BACK WITH THE TELES PAR SANDWICHED IN BETWEEN AND THE ENDS FASTENED TOGETHER WITH VHB DOUBLE STICK TAPE. A SQUARE CHANNEL SPACER IS REQUIRED ON BLADES SHORTER THAN 36". THE EXTENSION IS TO BE PLACED INSIDE THE 1 3/4" TELES PAR POST AND FASTENED WITH A DRIVE RIVET.

SHEET 2 OF 4

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  9/4/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL		J. CASEY	11/88		
UPDATED	KA	J. NAGELVOORT	01/12	STREET NAME SIGN	DRAWING NUMBER SDM-102
REDRAFTED	CD	J. NAGELVOORT	0918		

STREET NAME SIGN STANDARDS

SUFFIX AND PREFIX ABBREVIATIONS:


AVENUE	AVE
STREET	ST
COURT	CT
DRIVE	DR
ROAD	RD
BOULDEVARD	BLVD
TERRACE	TER
MOUNTAIN	MTN
MOUNT	MT
POINT	PT
CAMINITO	CMTO
CAMINO	CAM
RANCHO	RCHO

SPELL OUT "FIRST AVE THROUGH TWELFTH AVE"
THEN: 13TH ST - 14TH ST ETC.

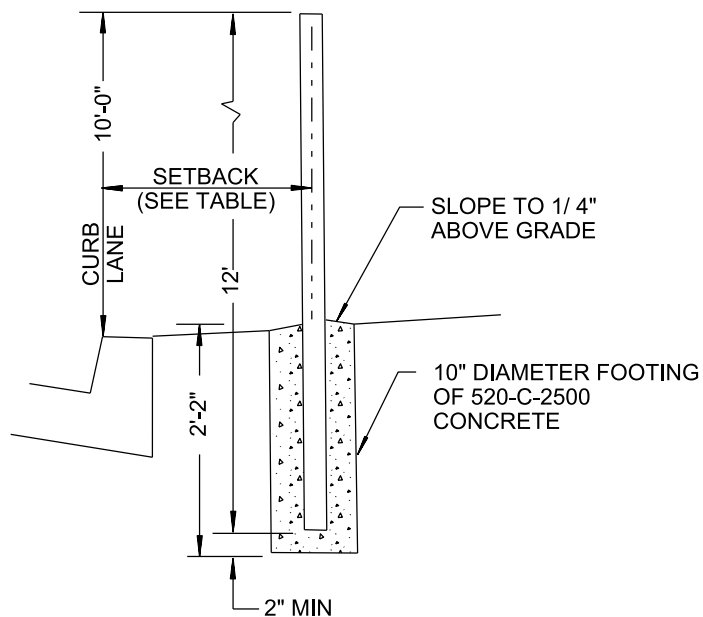
NOTE:

FOR A COMPLETE LIST OF SUFFIX AND PREFIX ABBREVIATIONS REFER TO THE OFFICIAL USPS ABBREVIATION.

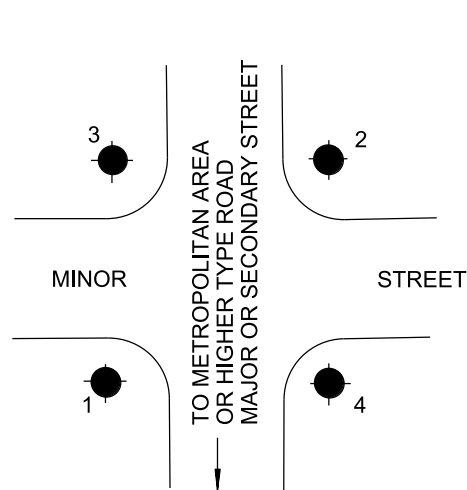
SHEET 3 OF 4

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	XX	J.P. CASEY	11/88		
REV. – 1	TH		7/00	STREET NAME SIGN	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	KA	J.NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDM-102

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



LEGEND ON PLAN



STREET NAME SIGN LOCATION

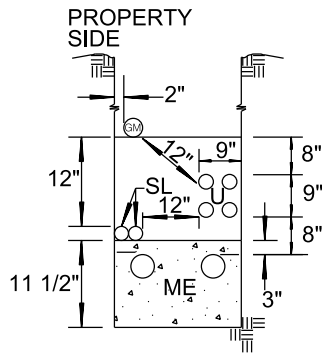
(NUMBERS INDICATE PRIORITY OF LOCATION SELECTION WHEN THERE IS A CONFLICT WITH OTHER IMPROVEMENTS)

LOCATION NOTES

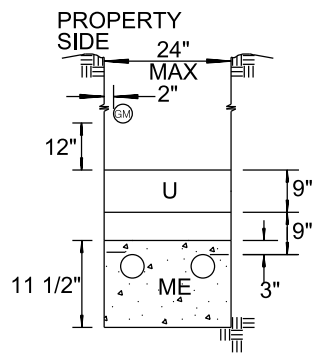
1. ALONG MAJOR OR PRIMARY STREETS THERE SHALL BE 2 SIGN INSTALLATIONS PER INTERSECTION PLACED ON OPPOSITE CORNERS
2. ALONG A COLLECTOR OR LOCAL STREETS THERE SHALL BE ONE SIGN INSTALLATION PER INTERSECTION

SHEET 4 OF 4

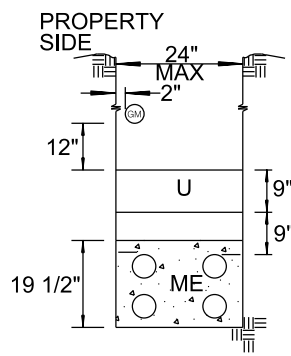
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		J.P. CASEY	11/88		
REV. – 1	TH		7/00	STREET NAME SIGN	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDM-102



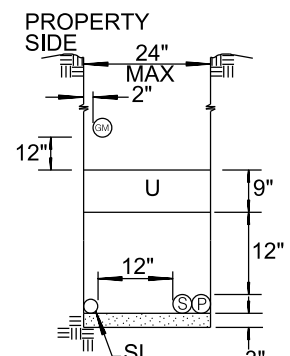
TYPE A



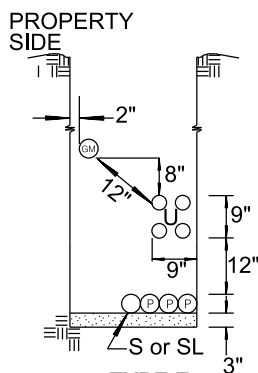
TYPE B



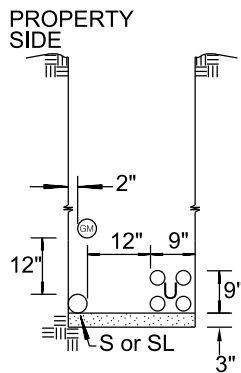
TYPE C



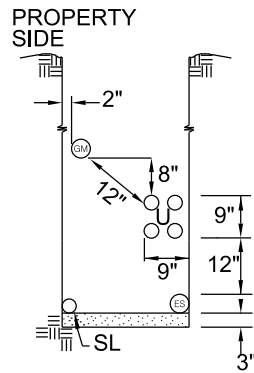
TYPE D



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"

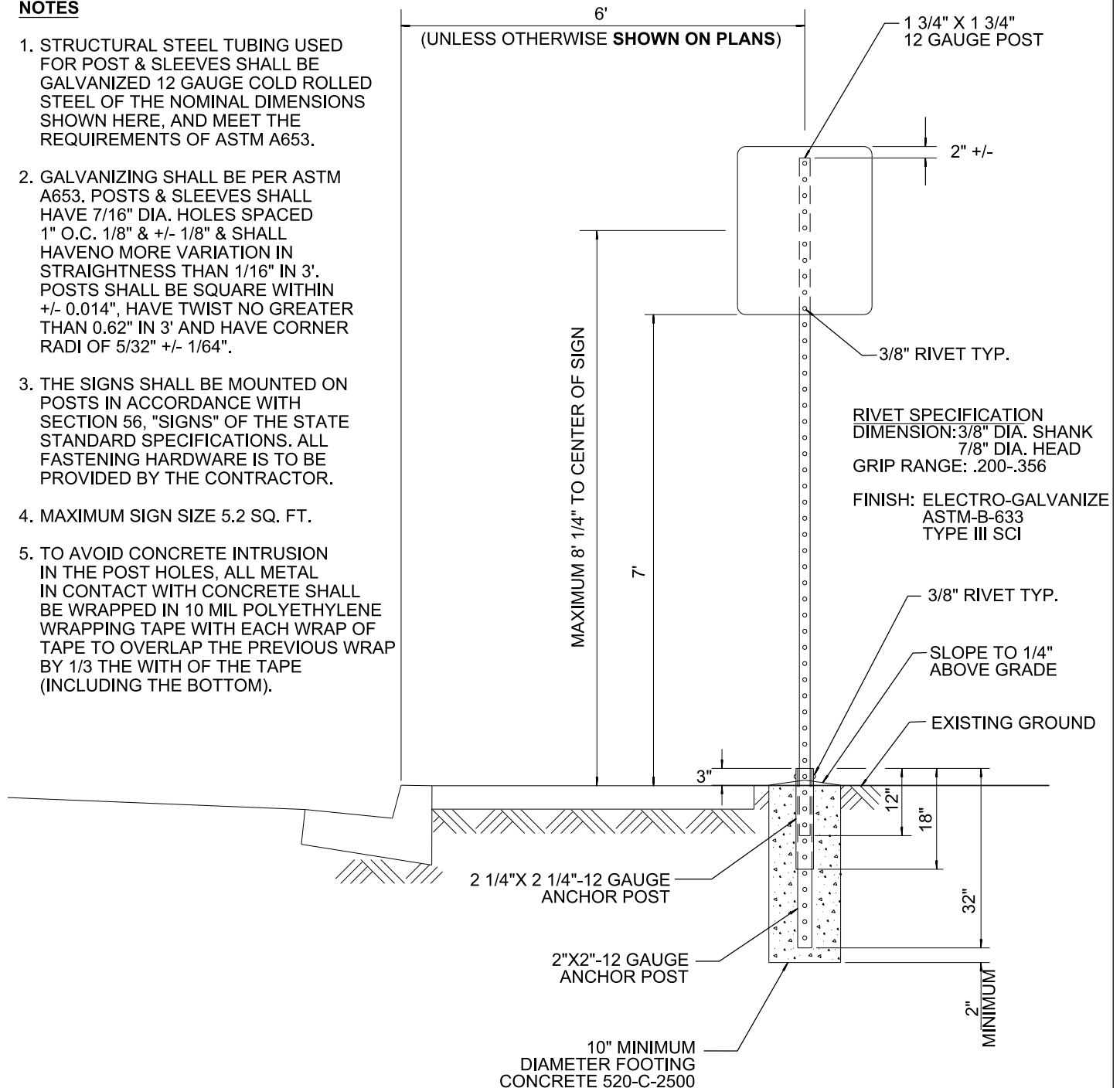
NOTES

- ALL DIMENSIONS ARE TYPICAL UNLESS OTHERWISE NOTED.
- THE LOCATION OF UTILITIES **AS SHOWN BY THE STANDARD DRAWING** SHALL IN NO WAY VIOLATE EXISTING CODES OR REGULATIONS APPLICABLE TO INDIVIDUAL UTILITIES.
- INSTALLATION OF SEWER OR WATER UTILITIES ARE NOT PERMITTED IN THE JOINT TRENCHES SHOWN ABOVE.
- MINIMUM DEPTH OF GAS PIPE MAY, SUBJECT TO GAS COMPANY INSPECTORS APPROVAL, BE REDUCED TO 24" WHERE NECESSARY TO CLEAR STRUCTURE CROSSINGS.
- DEPTH AND WIDTH OF TRENCH VARIES.
- CATV MAIN OR TRUNK LINE CONDUIT REQUIRED ALONG ALL STREETS, EXCEPT CUL-DE-SAC STREETS LESS THAN 1000' IN LENGTH WHICH MAY BE SERVED BY FEEDER LINES ONLY.
- CATV 1 1/2" FEEDER CONDUIT SHALL RUN ACROSS STREETS WITH EACH POWER SERVICE LINE AND CAPPED AT EDGE OF SIDEWALK.
- ALL CATV TERMINALS AND CONDUITS SHALL BE TERMINATED AT GENERALLY ACCEPTED LOCATIONS AND MARKED. A MAP SHALL BE FILED WITH THE CITY SHOWING THE LOCATIONS OF THE CATV SYSTEM.
- IN NO CASE SHALL CATV CONDUITS BE PLACED WITHIN 12" OF GAS LINES, ALSO CONDUITS SHALL NOT BE PLACED DIRECTLY OVER GAS LINES.
- CATV CONDUIT MAY BE PLACED WITH THE TELCO CONDUIT PROVIDED THE TELCO MINIMUM DEPTH IS HELD.
- TRAFFIC SIGNAL CONDUIT SHALL BE PLACED WHERE STREET LIGHT CONDUIT IS SHOWN.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	BY	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	JOINT TRENCH LOCATIONS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDM-103

NOTES

1. STRUCTURAL STEEL TUBING USED FOR POST & SLEEVES SHALL BE GALVANIZED 12 GAUGE COLD ROLLED STEEL OF THE NOMINAL DIMENSIONS SHOWN HERE, AND MEET THE REQUIREMENTS OF ASTM A653.
2. GALVANIZING SHALL BE PER ASTM A653. POSTS & SLEEVES SHALL HAVE 7/16" DIA. HOLES SPACED 1" O.C. 1/8" & +/- 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 0.62" IN 3' AND HAVE CORNER RADI 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.
5. TO AVOID CONCRETE INTRUSION IN THE POST HOLES, ALL METAL IN CONTACT WITH CONCRETE SHALL BE WRAPPED IN 10 MIL POLYETHYLENE WRAPPING TAPE WITH EACH WRAP OF TAPE TO OVERLAP THE PREVIOUS WRAP BY 1/3 THE WITH OF THE TAPE (INCLUDING THE BOTTOM).



REVISION	BY	APPROVED	DATE
ORIGINAL	BB	J. NAGELVOORT	05/15
UPDATED	MM	J. NAGELVOORT	08/15
UPDATED	AR	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

CITY OF SAN DIEGO – STANDARD DRAWING

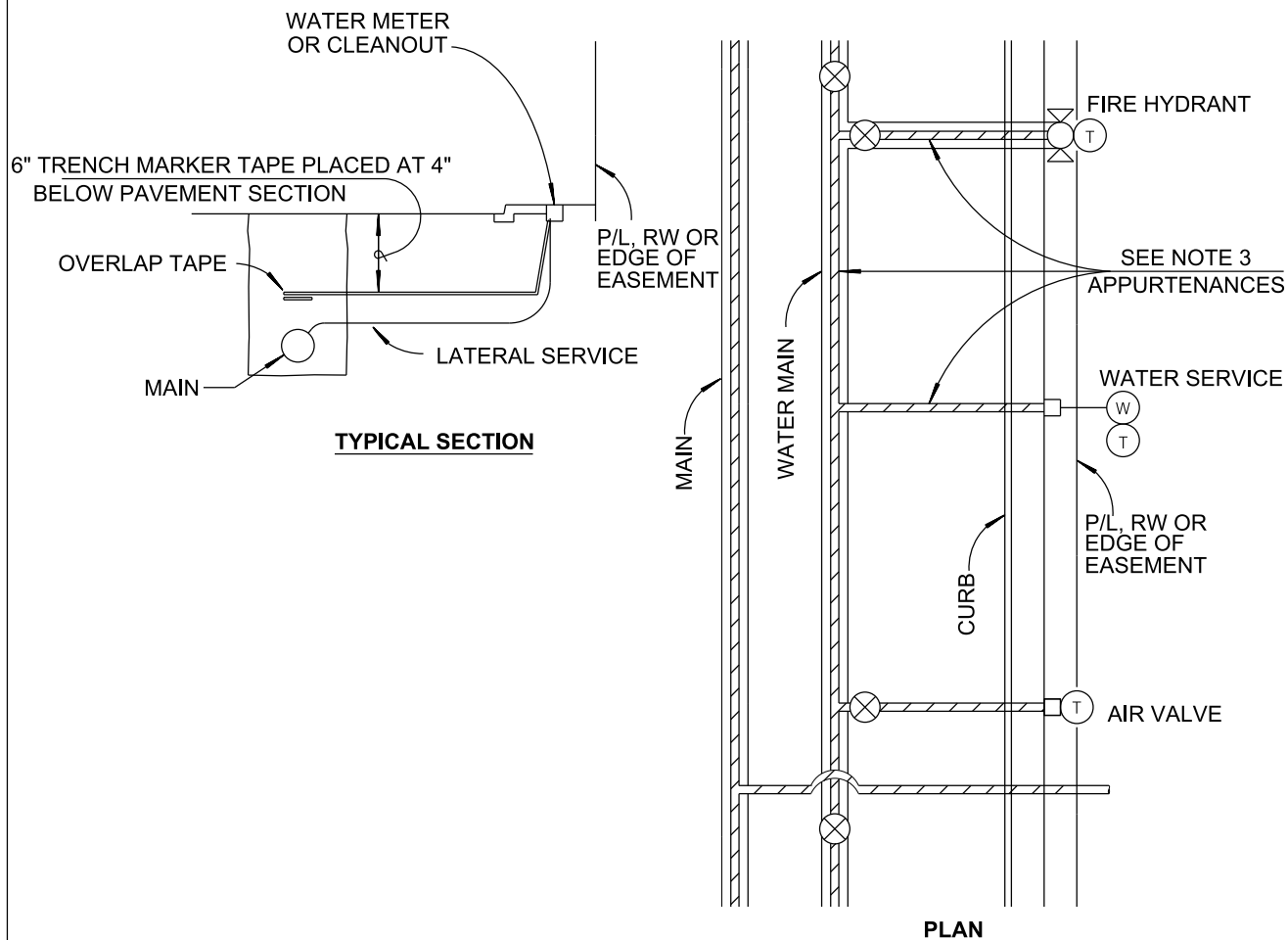
BREAK-AWAY SIGN POST

RECOMMENDED BY THE CITY
OF SAN DIEGO STANDARDS COMMITTEE

Chung 9/4/18
COORDINATOR R.C.E. 56523 DATE


DRAWING
NUMBER

SDM-104



NOTES:

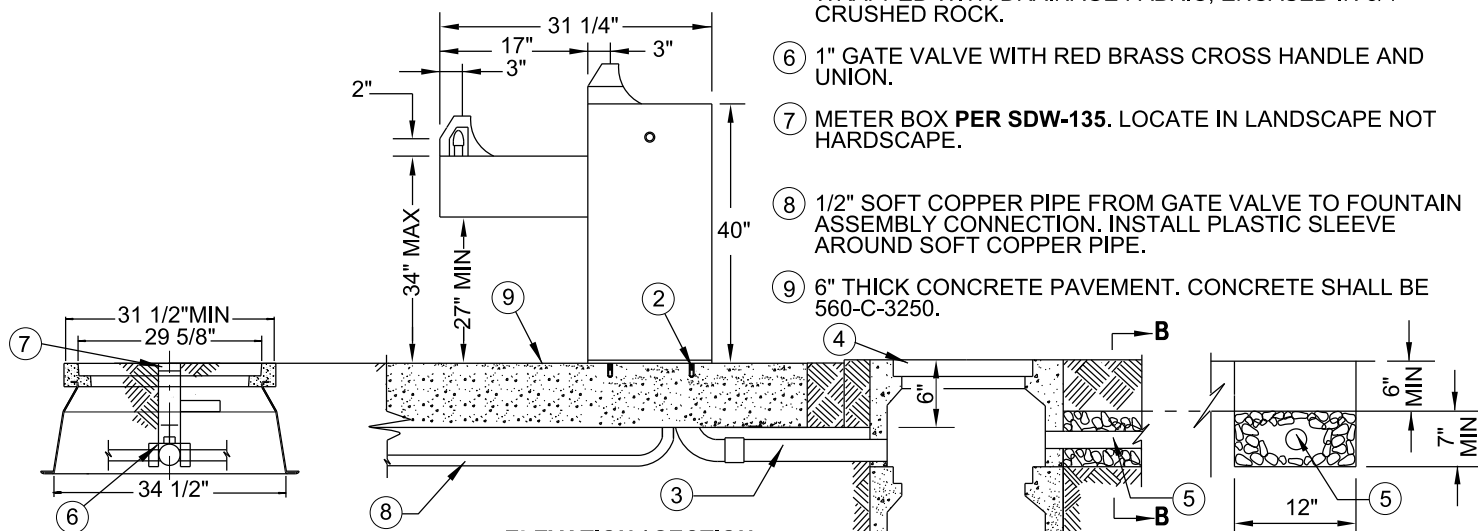
1. TRENCH MARKER TAPE SHALL BE 6" WIDE AND CONSIST OF A MINIMUM 5.0 MIL, FIVE-PLY 100% VIRGIN POLYETHYLENE WHICH IS ACID, ALKALINE, AND CORROSION RESISTANT. ELONGATION PROPERTIES AND TENSILE STRENGTH OF NOT LESS THAN 7,800 PSI SHALL BE IN ACCORDANCE WITH ASTM D882-80A. THE TRENCH MARKER TAPE FOR WATER LINES SHALL HAVE A MINIMUM 20 GAUGE SOLID ALUMINUM FOIL CORE, ADHERED TO A 2.55 MIL POLYETHYLENE BACKING.
2. TAPE SHALL BE INSTALLED ABOVE THE PIPE AS SPECIFIED AND RUN CONTINUOUSLY ALONG THE LENGTH OF THE PIPE AND ALL RELATED APPURTENANCES.
 - A. BLUE WITH "CAUTION POTABLE WATER LINE BURIED BELOW" FOR WATER MAINLINES AND OVER PIPE SLEEVES.
 - B. PURPLE WITH "CAUTION RECYCLED/RECLAIMED WATER LINE BURIED BELOW" FOR RECYCLED WATER AND IRRIGATION MAINLINES.
 - C. RED WITH "CAUTION ELECTRIC LINE BURIED BELOW" FOR ELECTRICAL LINES, INCLUDING, BUT NOT LIMITED TO, 110/220V POWER TO IRRIGATION CONTROLLERS AND PUMPS, TRAFFIC SIGNALS AND STREETLIGHTS, COMMUNICATION CABLES AND IRRIGATION DIRECT BURIAL CONTROL WIRES TO REMOTE CONTROL VALVES.
 - D. GREEN WITH "CAUTION SEWER LINE BURIED BELOW" FOR SEWER MAINLINES AND OVER PIPE SLEEVES.
 - E. GREEN WITH "CAUTION STORM DRAIN LINE BURIED BELOW" FOR STORM DRAIN MAINLINES AND OVER PIPE SLEEVES.
3. ELECTRICALLY BOND WATER SERVICE TAPE AND WATER MAIN TAPE TOGETHER. TAPE SHALL EXTEND WITHIN METER BOX ITSELF TO ALLOW MARKOUT BY CONTINUITY TESTER.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
UPDATED	BB	J. NAGELVOORT	06/15	WARNING / IDENTIFICATION TAPE INSTALLATION	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	BD	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDM-105

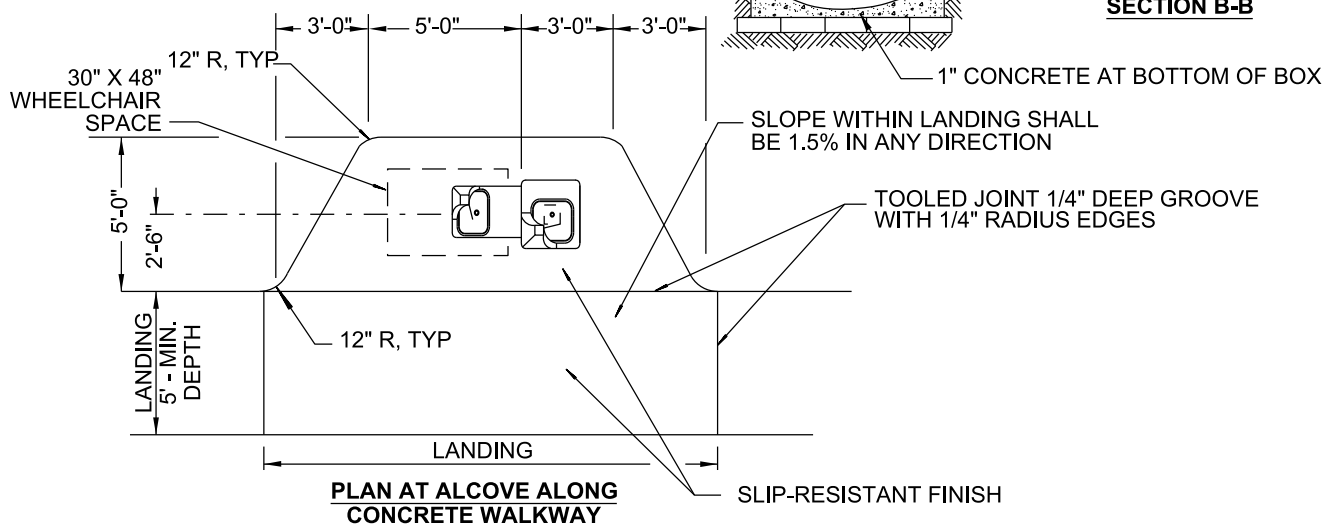
① DUAL - HEIGHT DRINKING FOUNTAIN AS APPROVED BY THE CITY ENGINEER.

-

PLAN



ELEVATION / SECTION

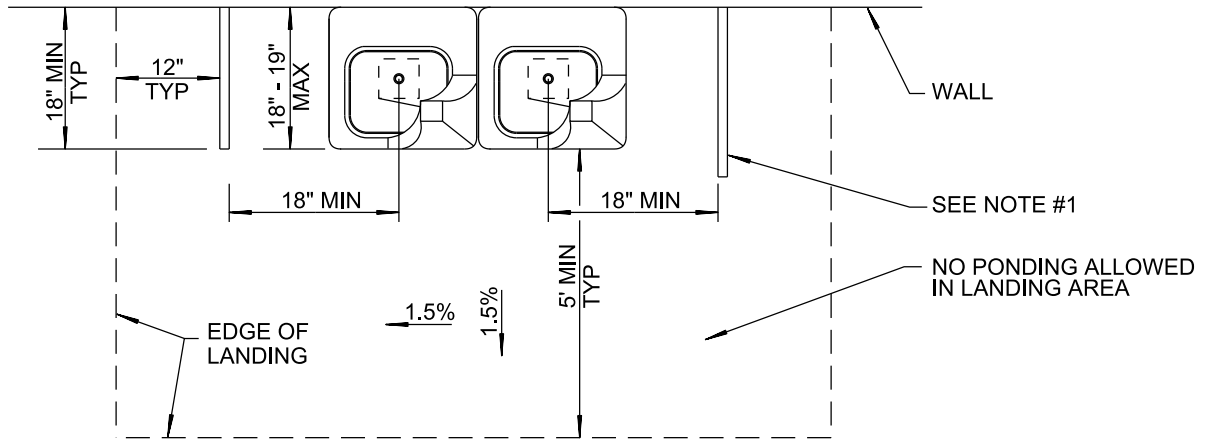


1. INSTALL DRINKING FOUNTAINS SO THAT RIGHT HAND SIDE FACES PREVAILING WIND.
2. HAND FORM A CONCRETE BOWL AT BOTTOM OF YARD BOX TO FACILITATE SAND CLEAN OUT.
3. PERFORATED DRAIN PIPE AND TRENCH SHALL DRAIN AWAY FROM FOUNTAIN.
4. USE RED BRASS BUSHING REDUCERS TO ADAPT TO FEED PIPE.
5. LOCATE DRINKING FOUNTAINS IN AN ALCOVE OR AT AREAS OUTSIDE THE PATH-OF-TRAVEL OTHERWISE PROVIDE PROTECTIVE RAILING **PER SDM-108**.
6. NO WATER PONDING IS ALLOWED IN LANDING AND ALCOVE AREAS.

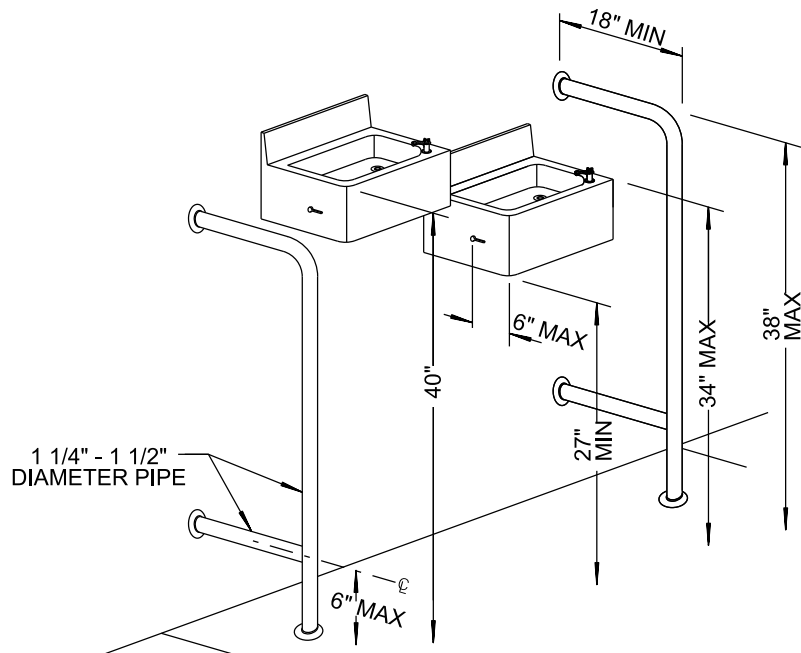
LEGEND ON PLANS



REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL	SM	A. OSKOUI	1203			
UPDATE	FC	A. OSKOUI	1206		 COORDINATOR R.C.E. 56523	7/3/18
UPDATE	FC	A. OSKOUI	1208			DATE
UPDATE	KA	J. NAGELVOORT	01/12			
UPDATE	RK	J. NAGELVOORT	07/18			
DUAL HEIGHT DRINKING FOUNTAIN (NEW CONSTRUCTION)				DRAWING NUMBER	SDM-107	



PLAN



ISOMETRIC VIEW

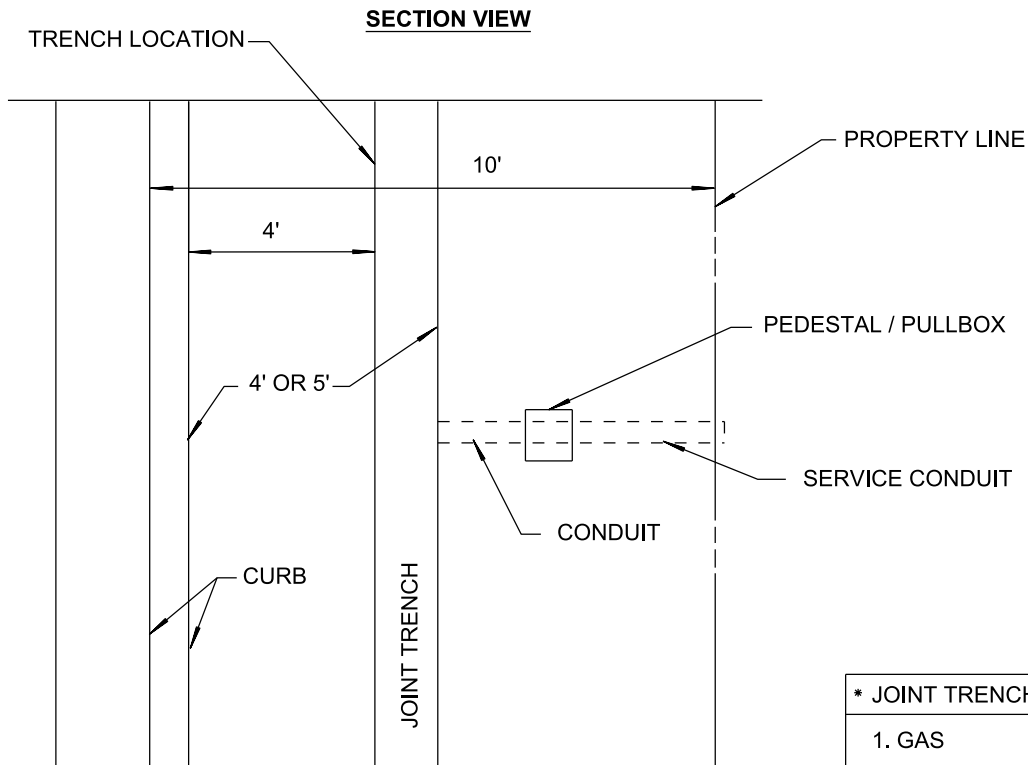
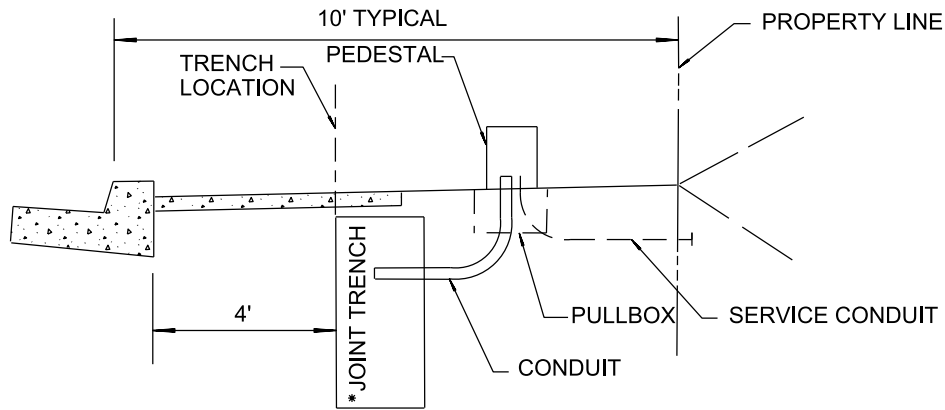
NOTES:

- UNLESS LOCATED IN AN ALCOVE, WING WALLS OR PROTECTIVE RAILINGS ARE REQUIRED ON BOTH SIDES OF DRINKING FOUNTAINS THAT PROJECT INTO THE PATH OF TRAVEL.
- HANDRAILS AND GUARDRAILS MATERIAL & FINISH:
 - PIPE RAILINGS SHALL BE HOT DIPPED GALVANIZED OR AUSTENITIC (NON-CORROSIVE) STAINLESS STEEL.
 - PIPE RAILINGS SHALL BE SEAMLESS STEEL, ASTM A53 GRADE B.
- THE LANDING SHALL BE PAVED WITH A SOLID AND STABLE MATERIAL WITH A SLIP-RESISTANT FINISH.

LEGEND ON PLANS



REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	SS	A. OSKOU	12/03		
UPDATE	FC	A. OSKOU	12/06	DUAL HEIGHT DRINKING FOUNTAIN NON-ALCOVE (FOR EXISTING STRUCTURES)	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATE	FC	A. OSKOU	12/08		
UPDATE	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDM-108




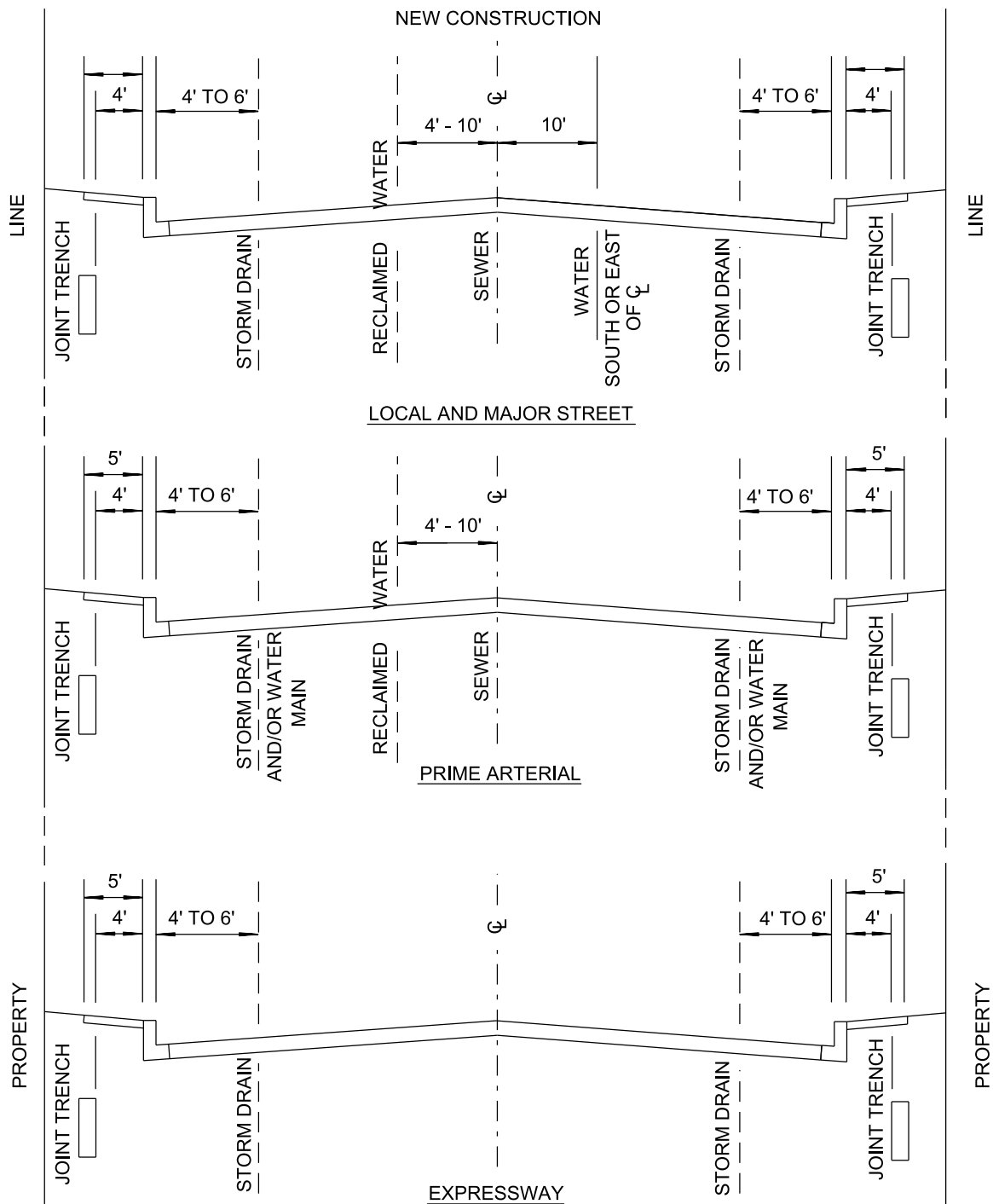
PLAN VIEW

* JOINT TRENCH
1. GAS
2. STREET LIGHTS
3. UNDERGROUND ELECTRIC
4. TELEPHONE
5. CATV

NOTES:


SIDEWALK SHALL HAVE A MINIMUM OF FOUR (4) FOOT CLEAR (PATH) PASSING PEDESTALS, PULLBOXES AND OTHER STRUCTURES.

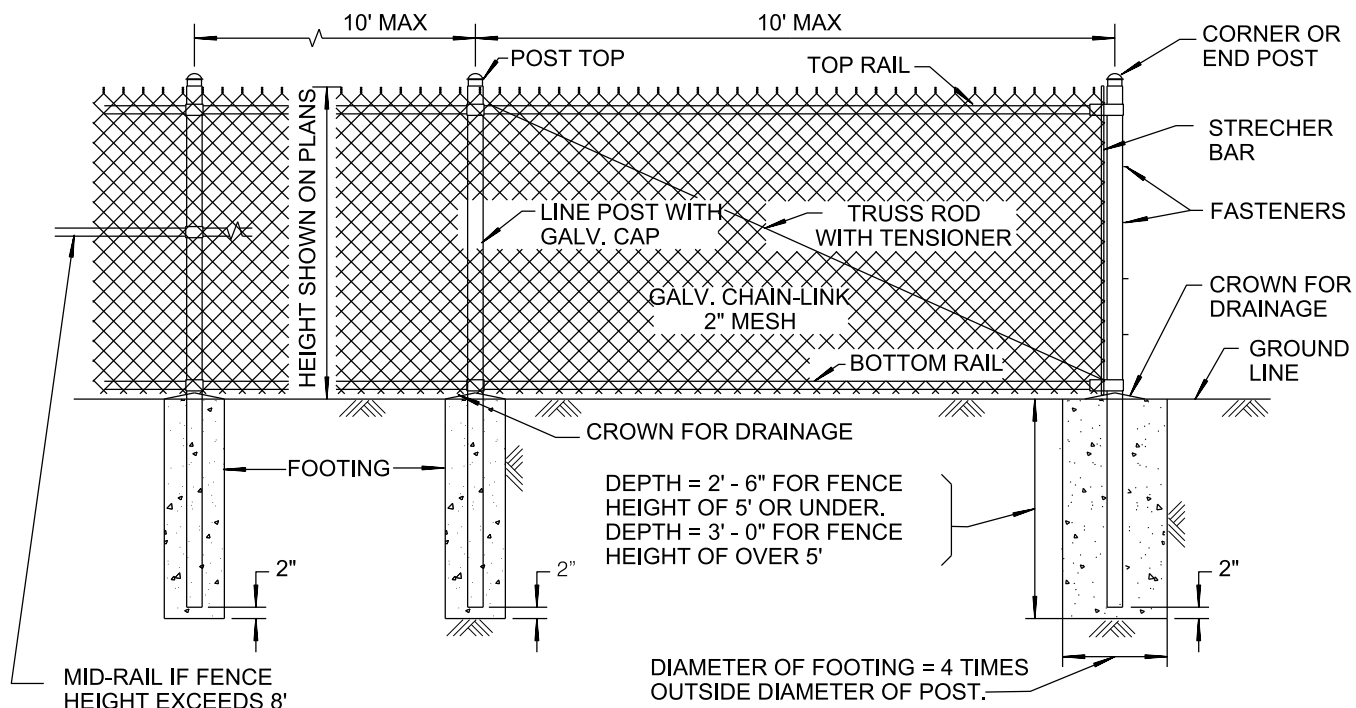
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		J.P. CASEY	8/86		
UPDATED	KA	J. NAGELVOORT	01/12	UNDERGROUND TYPICAL LOCATION (NEW CONSTRUCTION)	 COORDINATOR R.C.E. 56523
UPDATED	AR	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					9/4/18 DATE
					DRAWING NUMBER
					SDM-109



NOTES:

1. AT CATCH BASIN LOCATIONS, JOINT TRENCH SHALL BE 7' MINIMUM FROM BACK OF CURB TO INSIDE WALL OF TRENCH.
2. SEWER AND RECLAIMED WATER MAINS AND LATERALS SHALL BE DESIGNED TO CROSS UNDER POTABLE WATER MAINS WITH A MINIMUM VERTICAL SEPARATION OF 12".
3. SEWER AND RECLAIMED WATER MAINS SHALL MAINTAIN A 10' MINIMUM HORIZONTAL SEPARATION FROM ANY POTABLE WATER.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		J. CASEY	09/86		
UPDATE	KA	J. NAGELVOORT	01/12	UTILITY LOCATIONS IN LOCAL AND MAJOR STREETS, PRIME ARTERIALS AND EXPRESSWAYS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDM-111



NOTES:

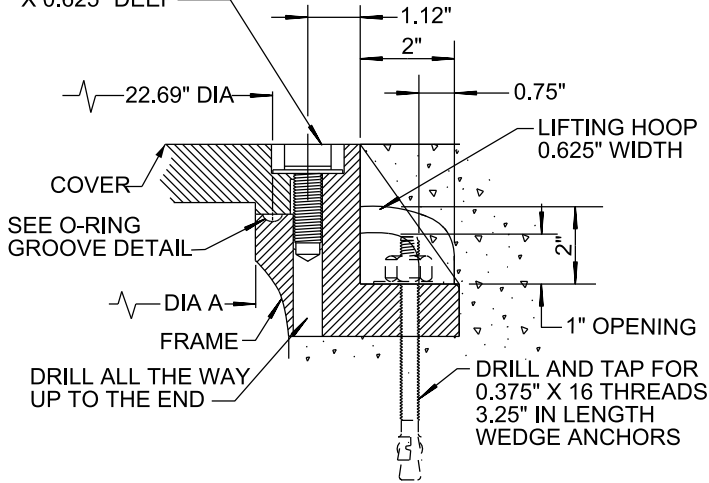
1. ALL FOOTINGS SHALL BE 520-C-2500 CONCRETE.
2. THE FOLLOWING ITEMS SHALL BE FURNISHED AND INSTALLED ONLY WHEN **SHOWN ON THE PLANS** OR CALLED FOR IN THE SPECIAL PROVISIONS:
 - A. BARBED WIRE
 - B. EXTENSION ARM
3. CHAIN LINK FENCE SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION UNLESS SPECIFICALLY NOTED ON THIS DRAWING.
4. CHAIN LINK FENCE AND ALL FITTINGS SHALL BE 22 MIL PRESSURE-BONDED, OR 7 MIL THERMALLY-FUSED VINYL COATED, OVER 9 GAUGE ALUMINIZED STEEL CORE FABRIC, PRIOR TO COATING. POSTS AND RAILS SHALL BE GALVANIZED STEEL PVC VINYL BONDED, 10-14 MIL (COLOR SHALL MATCH FABRIC).
5. CHAIN LINK FABRIC SHALL HAVE KNUCKLED FINISH ON TOP EDGE.
6. THE FOLLOWING SHALL BE NOTED ON PLANS OR SPECIFICATIONS:
 - A. COLOR OF FENCE AND FITTINGS
 - B. MATERIAL AND FITTING STEEL CLASS: 1 OR 1A
 - C. WIRE CLASS: 1 OR 1A
7. **SEE M-20** FOR ADDITIONAL DETAILS.

LEGEND ON PLANS

—X—O—X—X—X—O—X

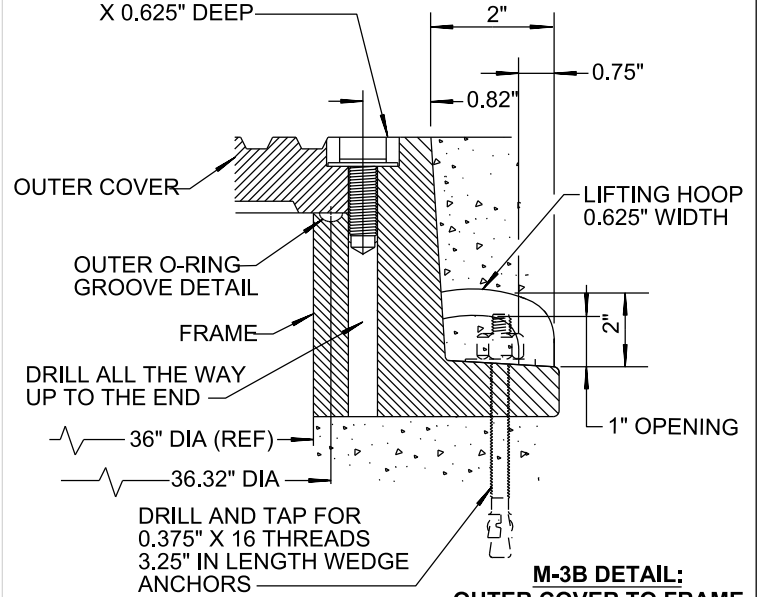
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE <i>Chung</i> 9/4/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL		J.P. CASEY	0692		
UPDATE	KA	J. NAGELVOORT	01/12	VINYL COATED CHAIN LINK FENCE	DRAWING NUMBER SDM-112
UPDATE	HM	J. NAGELVOORT	02/16		
UPDATE	HM	J. NAGELVOORT	11/17		
REDRAFTED	CD	J. NAGELVOORT	0918		

DRILL AND TAP FOR 0.625" X 20
PENTA BOLT S/S UNC THREAD,
1.50" DEEP C BORE 1.625" DIA
X 0.625" DEEP

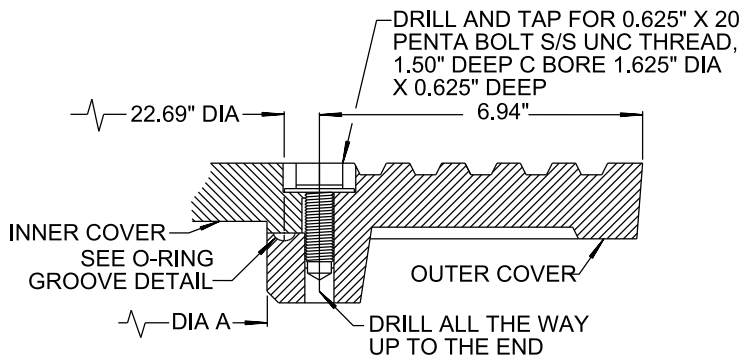


**M-1 DETAIL
COVER TO FRAME**

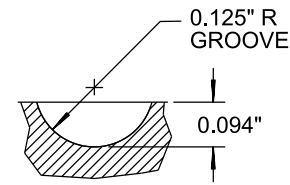
DRILL AND TAP FOR 0.625" X 20
PENTA BOLT S/S UNC THREAD,
1.50" DEEP C BORE 1.625" DIA
X 0.625" DEEP



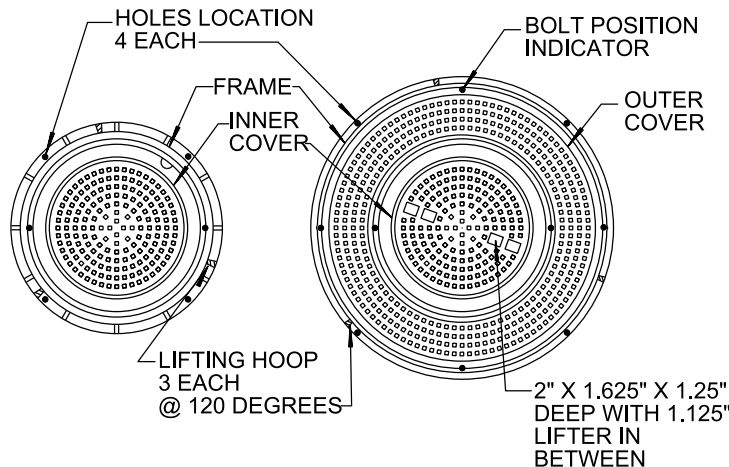
**M-3B DETAIL:
OUTER COVER TO FRAME**



**M-3A DETAIL:
INNER COVER TO OUTER COVER**



**NEOPRENE O-RING
GROOVE DETAIL**



**M-1 COVER AND FRAME
BOLT PLACEMENT
(SEE NOTE 3)**

**M-3 CONCENTRIC COVERS
AND FRAME BOLT PLACEMENT
(SEE NOTE 3)**

NOTES:

- 0.625" X 20 PENTA BOLT S/S UNC THREAD, 316 STAINLESS STEEL SOCKET HEAD CAP SCREW AND 1.50" OD x 0.687" ID x 0.078 THICK 316 STAINLESS STEEL WASHER.
 - 0.25" NEOPRENE O-RING GASKET SHALL BE GLUED INTO MACHINED GROOVE. GLUE SHALL MEET THE REQUIREMENTS OF MIL-M-81288 (AMEND. 1)
 - BOLTDOWN PATTERNS:
 - M-1 DETAIL (24" COVER & FRAME):
INSTALL TWO (2) BOLTS AT 180 DEGREES.
 - M-3A DETAIL (CONCENTRIC COVERS):
BETWEEN INNER AND OUTER COVERS INSTALL TWO (2) BOLTS AT 180 DEGREES.
 - M-3B DETAIL (OUTER COVER & FRAME):
BETWEEN OUTER COVER & FRAME INSTALL FOUR (4) BOLTS AT 90 DEGREES.
- FOR M-1 AND M-3 OUTER COVER FRAME DRILL 4 HOLES FOR 0.375"x16 STAINLESS STEEL WEDGE ANCHORS 3.75" IN LENGTH AT 90 DEGREES.

REVISION	BY	APPROVED	DATE
ORIGINAL		A. OSKOU	12/03
UPDATE	KA	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18

CITY OF SAN DIEGO - STANDARD DRAWING

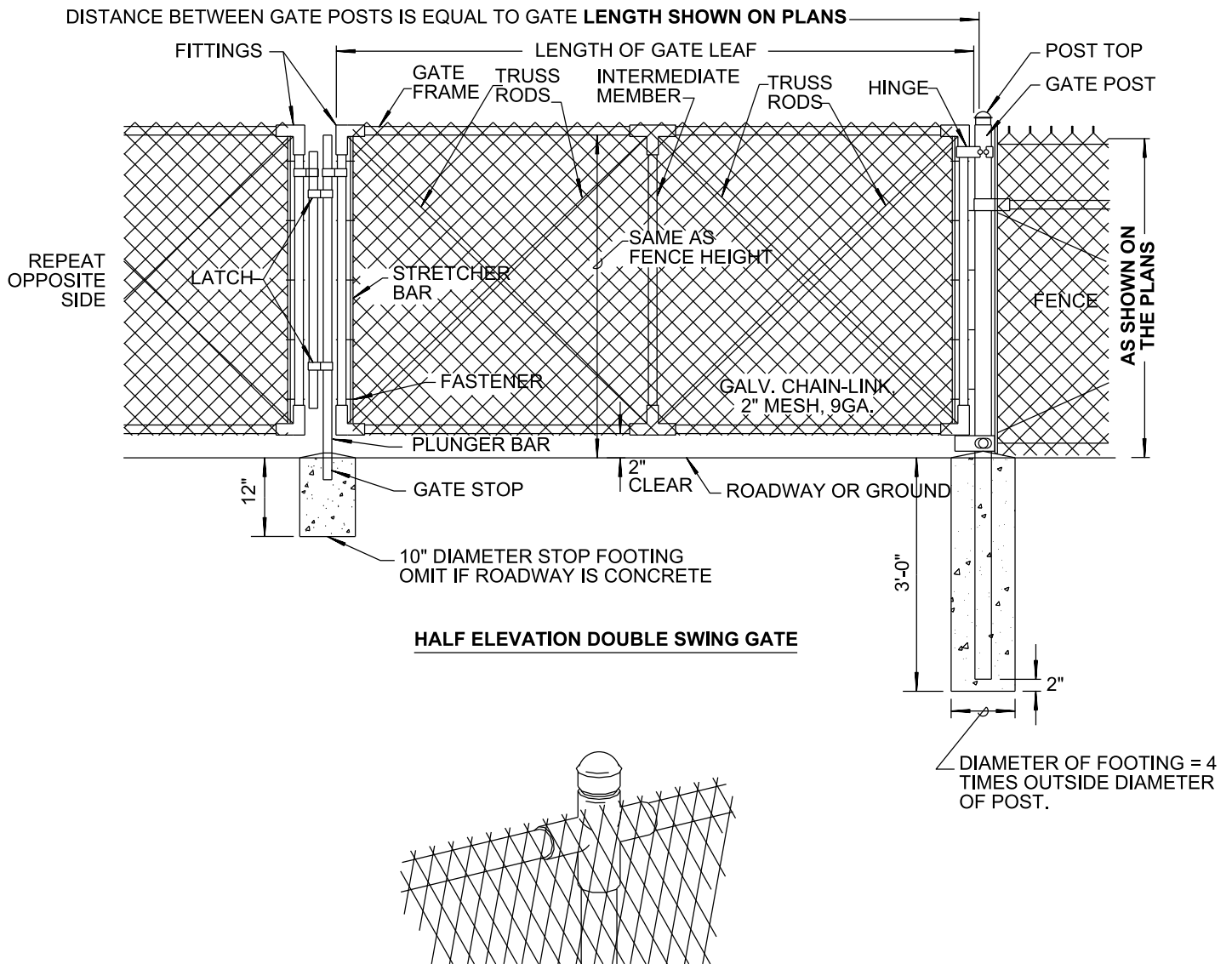
MANHOLE COVER - LOCKING DEVICE

RECOMMENDED BY THE CITY
OF SAN DIEGO STANDARDS COMMITTEE

Chung 9/4/18
COORDINATOR R.C.E. 56523 DATE

DRAWING
NUMBER

SDM-113

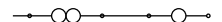


CHAIN LINK VEHICULAR GATE


NOTES:

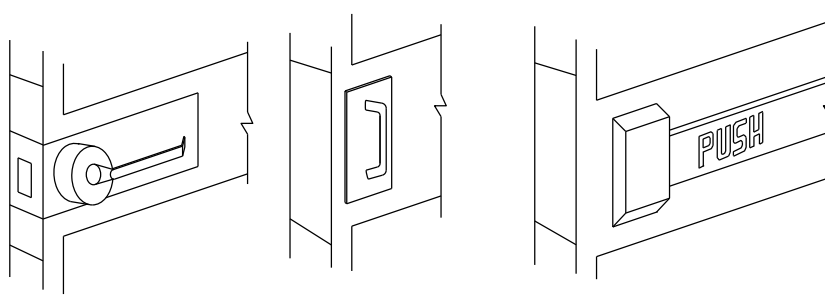
1. ALL FOOTINGS SHALL BE 520-C-2500 CONCRETE.
2. EXTENSION POST SHALL BE FURNISHED AND INSTALLED ONLY WHEN **SHOWN ON THE PLANS** OR CALLED FOR IN THE SPECIAL PROVISIONS:
3. CHAIN LINK FENCE SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION UNLESS SPECIFICALLY NOTED ON THE DRAWING.
4. CHAIN LINK FABRIC SHALL HAVE KNUCKLED FINISH ON TOP EDGE.

LEGEND ON PLANS



SHEET 1 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	SM	A. OSKOU	12/03		
UPDATE	KA	J. NAGELVOORT	01/12	CHAIN LINK GATE	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDM-114

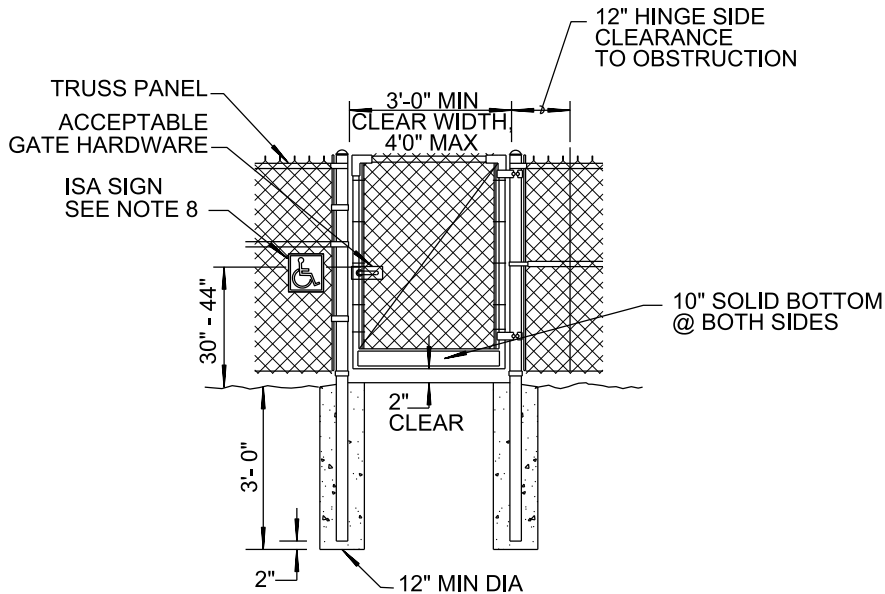


LEVER

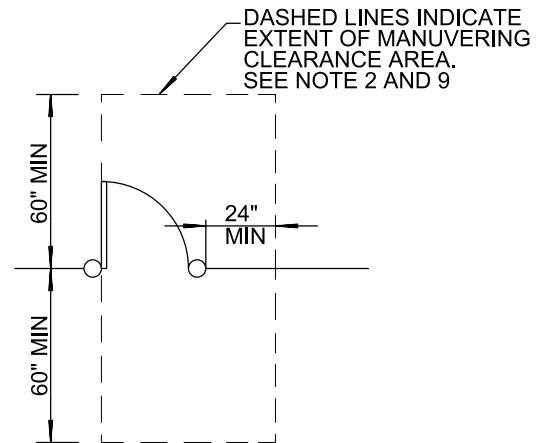
PUSH / PULL

PANIC BAR

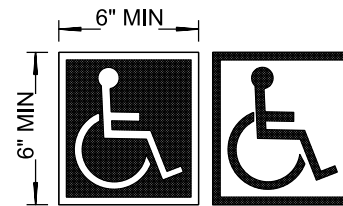
ACCEPTABLE GATE HARDWARE



MOUNTING DETAIL



LEVEL MANEUVERING CLEARANCE



INTERNATIONAL SYMBOL OF ACCESSIBILITY SIGN (ISA)

NOTES

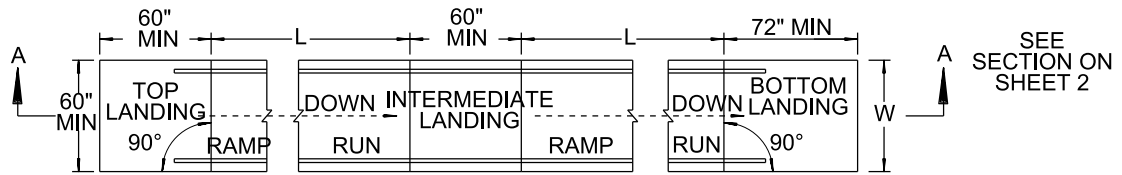
CHAIN LINK PEDESTRIAN GATE

1. GATES THAT ARE ACCESSIBLE TO AND USABLE BY PERSONS WITH DISABILITIES SHALL BE PROVIDED WITH AT LEAST ONE INTERNATIONAL SYMBOL OF ACCESSIBILITY SIGN AS SHOWN ABOVE.
2. THE RUNNING AND CROSS SLOPE WITHIN THE LEVEL MANEUVERING CLEARANCE AREA SHALL BE 1.5% AND DESIGNED TO PREVENT WATER FROM ACCUMULATING WITHIN THE ENTIRE SURFACE.
3. IF THE GATE IS NOT SELF - CLOSING, PROVIDE ACCEPTABLE GATE HARDWARE ON BOTH SIDES.
4. PROVIDE 3/8" DIAMETER TENSION ROD AND TIGHTENER FOR GATES THAT ARE OVER 3' IN WIDTH.
5. IF PROVIDED, TIE FABRIC TOP AND FRAME WITH 11 GAUGE WIRE.
6. LATCHING AND LOCKING GATES THAT ARE HAND OPERATED SHALL BE OPERABLE WITH A SINGLE EFFORT NOT TO EXCEED 5-POUND PRESSURE.
7. THE SYMBOL CONTRAST ON SIGN SHALL BE LIGHT ON DARK OR DARK ON LIGHT.
8. MOUNTING HEIGHT - THE SIGN SHALL BE INSTALLED ON THE FENCE / WALL ADJACENT TO THE LATCH OUTSIDE OF THE DOOR. IT SHALL BE MOUNTED TO THE CENTERLINE OF THE ACCEPTED GATE HARDWARE. MOUNTING LOCATION SHALL BE DETERMINED SO THAT A PERSON MAY APPROACH WITHIN 3" OF SIGNAGE WITHOUT ENCOUNTERING PROTRUDING OBJECTS OR STANDING WITHIN THE SWING DOOR.
9. LANDING & APPROACH SPACE SHALL COMPLY WITH CURRENT CBC TITLE 24 AND ADA / ADAS.

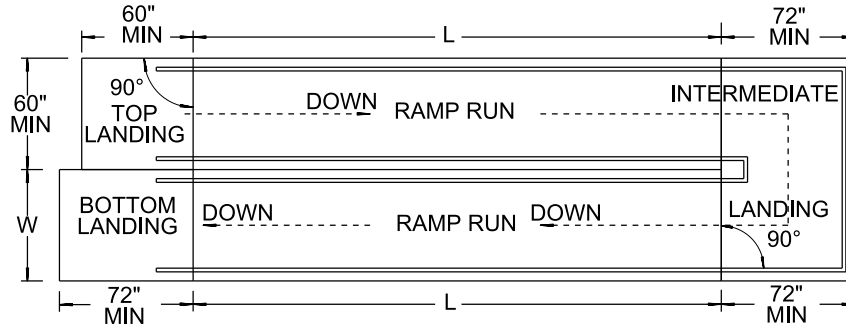
LEGEND ON PLANS

SHEET 2 OF 2

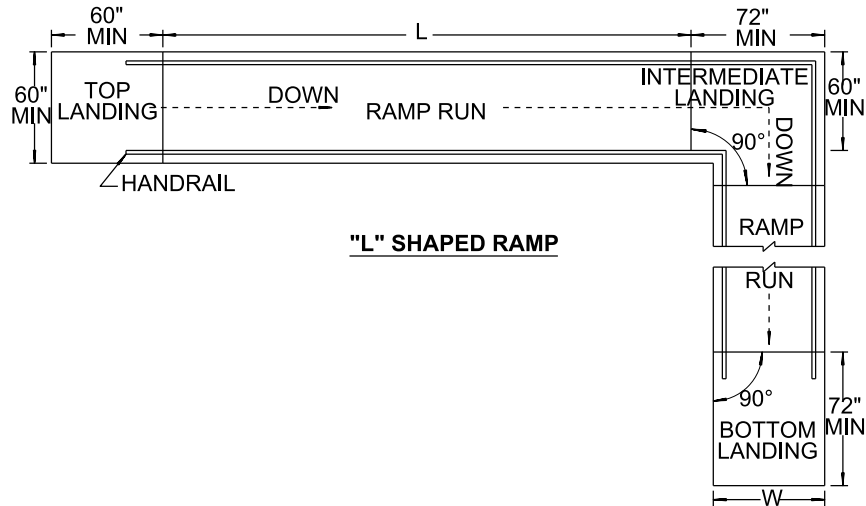
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	SM	A. OSKOU	12/03		
ORIGINAL	FC	A. OSKOU	12/06	CHAIN LINK GATE	 COORDINATOR R.C.E. 56523 DATE 9/4/18
UPDATE	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDM-114



STRAIGHT RUN RAMP



"U" SHAPED RAMP



"L" SHAPED RAMP

LENGTH OF EACH SEGMENT OF RAMP RUN

MAX SLOPE	MAXIMUM LENGTH OF EACH RAMP SEGMENT (L)	MAXIMUM RISE BETWEEN LANDINGS
1:13 (7.69%)	32.5'	30"
1:14 (7.14%)	35'	30"
1:15 (6.67%)	37.5'	30"
1:16 (6.25%)	40'	30"
1:17 (5.88%)	42.5'	30"
1:18 (5.55%)	45'	30"
1:19 (5.26%)	47.5'	30"

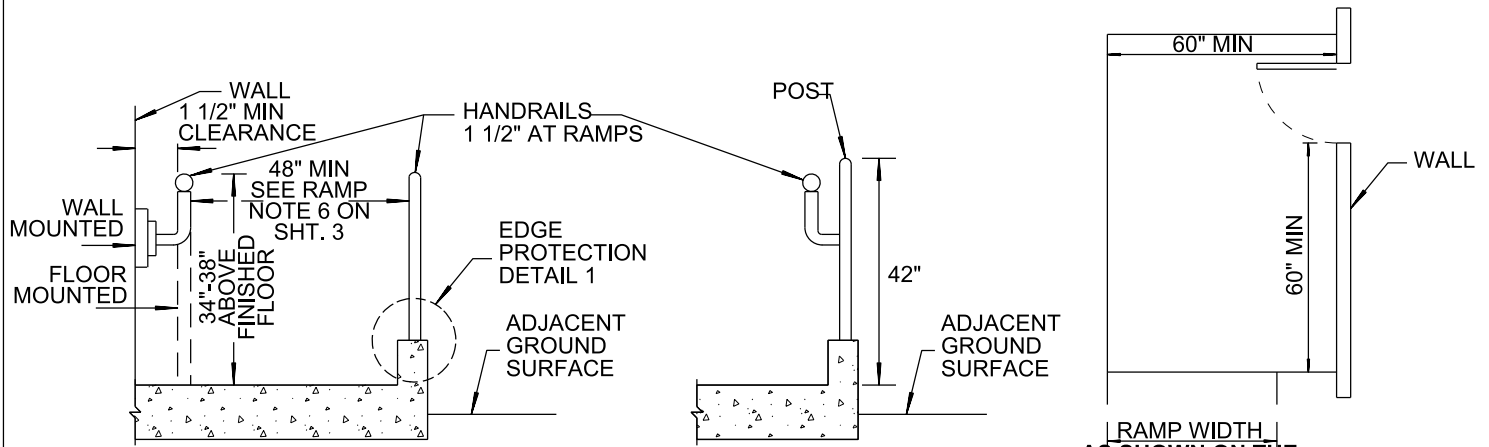
NOTES:

1. (W) THE WIDTH OF THE RAMPS THAT ARE PART OF THE MEAN OF EGRESS WILL ALSO HAVE TO MEET THE ADDITIONAL CODE REQUIREMENTS.
2. THE WIDTH AT THE BOTTOM LANDING SHALL BE AS WIDE AS THE RAMP.
3. SPECIFY THE LEAST POSSIBLE SLOPE BELOW THE MAXIMUM TO PROVIDE A CONSTRUCTION TOLERANCE AND TO OFFER BETTER USABILITY.

SEE ADDITIONAL NOTES ON SHEET 3

SHEET 1 OF 3

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	SM	A. OSKOU	12/03		
UPDATE	FC	A. OSKOU	12/06	PEDESTRIAN RAMP AND PROTECTIVE RAILING	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATE	KA	J. NAGELVOORT	01/12		
UPDATE	FC	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDM-115

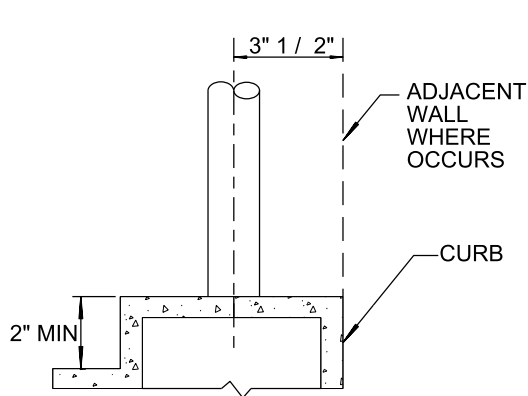


SECTION B-B

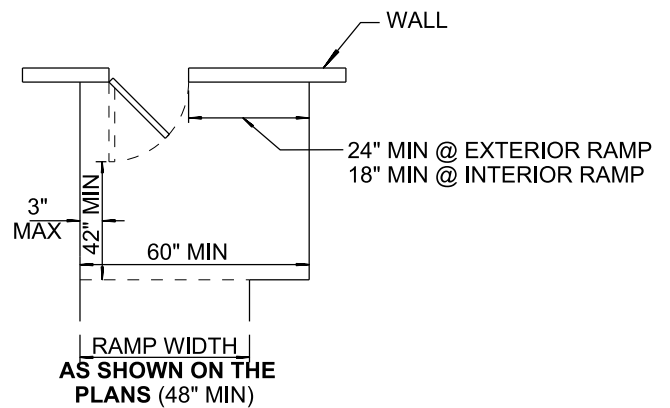
**DETAIL IN LIEU OF
SKATE STOPPERS**

**RAMP WIDTH
AS SHOWN ON THE
PLANS (48" MIN)
SIDE APPROACH LANDING**

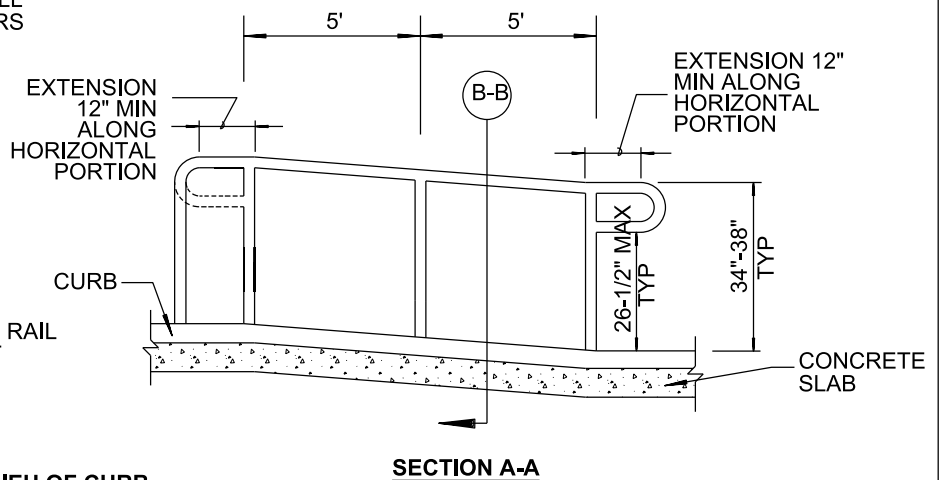
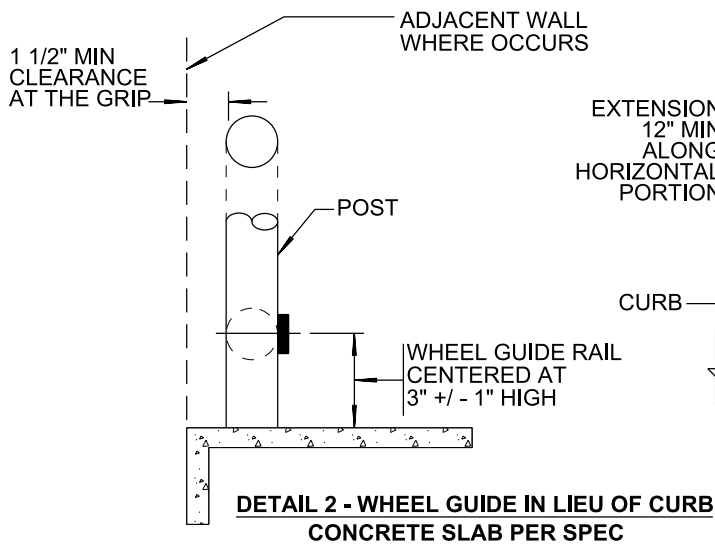
NOTE:
THE HEIGHT OF THE HANDRAIL SHALL BE
CONSISTENT AT EACH RAMP RUN.



DETAIL 1




FRONT APPROACH LANDING



SECTION A-A

SHEET 2 OF 3

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	SM	A. OSKOU	12/03		
UPDATE	FC	A. OSKOU	12/06	PEDESTRIAN RAMP AND PROTECTIVE RAILING	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATE	KA	J. NAGELVOORT	01/12		
UPDATE	FC	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDM-115


RAMP:

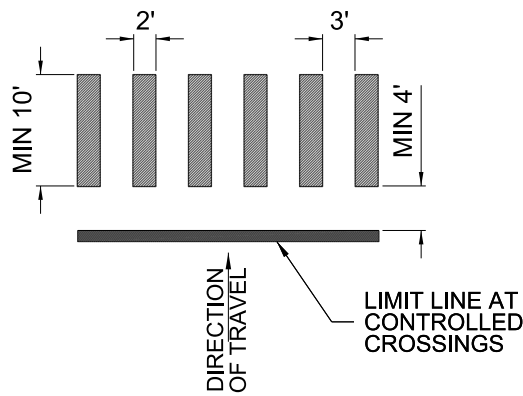
1. ANY WALKING SURFACE THAT IS PART OF AN ACCESSIBLE ROUTE WITH THE SLOPE GREATER THAN 5% SHALL BE CONSIDERED A PEDESTRIAN RAMP AND MUST COMPLY WITH THE PEDESTRIAN RAMP STANDARDS.
2. THE LEAST POSSIBLE SLOPE SHALL BE USED WITHOUT EXCEEDING 7.7%, PER CITY OF SAN DIEGO ACCESS MEMO.
3. THE RUNNING SLOPE SHALL BE UNIFORM ALONG EACH RAMP SEGMENT.
4. CROSS SLOPE SHALL NOT EXCEED 1.5%.
5. LANDINGS SHALL HAVE A 1.5% SLOPE IN BOTH DIRECTIONS.
6. WALKING SURFACE MUST BE STABLE, FIRM, AND SLIP RESISTANT. CONCRETE SHALL HAVE A MEDIUM BROOM TRANSVERSE FINISH.
7. LANDINGS MUST BE DESIGNED TO PREVENT PONDING.
8. WHERE THE CHANGE OF SLOPE OCCURS, GRADE BREAKS MUST BE PERPENDICULAR TO THE DIRECTION OF THE RAMP RUNS TO PREVENT CROSS SLOPE ISSUES.

HANDRAIL:

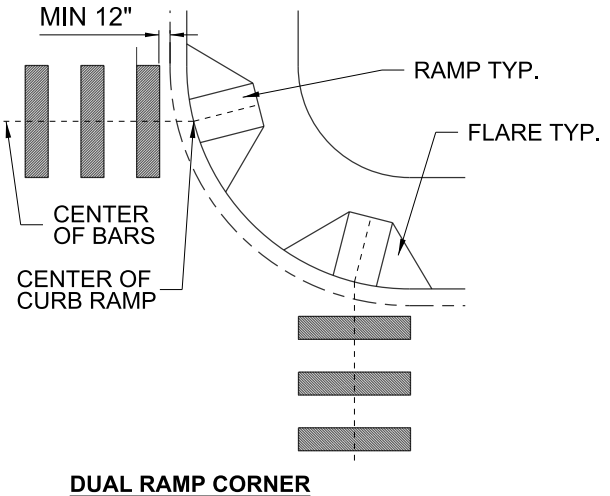
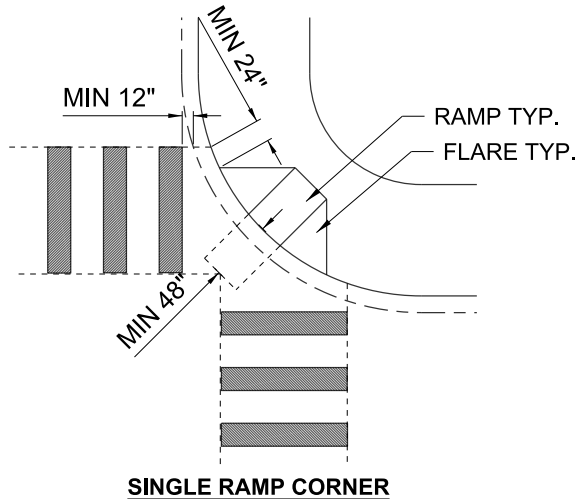
1. HANDRAILS ARE REQUIRED ON BOTH SIDES OF A PEDESTRIAN RAMP.
EXCEPTIONS:
a. RAMPS AT EXTERIOR DOOR LANDINGS THAT RISE LESS THAN 6 INCHES OR HAVE LESS THAN 72 INCHES LENGTH. HOWEVER, LEVEL LANDINGS SHALL BE PROVIDED AT THE TOP AND BOTTOM.
b. RAMPS IMMEDIATELY ADJACENT TO SEATING IN ASSEMBLY AREAS.
2. HANDRAILS SHALL BE CONTINUOUS FOR THE FULL LENGTH OF THE RAMP RUN PLUS THE EXTENSION.
3. INSIDE HANDRAILS AT "U" SHAPED AND "L" SHAPED RAMPS SHALL BE CONTINUOUS.
4. HANDRAILS SHALL EXTEND 12 INCHES MINIMUM BEYOND THE TOP, INTERMEDIATE AND BOTTOM OF EACH RAMP SEGMENT IN THE DIRECTION OF THE RAMP RUN, THE HANDRAIL EXTENSION SHALL BE PARALLEL TO THE LANDING SURFACE.
5. HANDRAIL EXTENSION SHALL NOT EXTEND INTO THE REQUIRED WIDTH OF AN ADJACENT ROUTE OF TRAVEL. IN EXISTING FACILITIES WHERE THE ENCROACHMENT OF THE EXTENSION IN THE DIRECTION OF THE RAMP CREATES A HAZARD, THE EXTENSION SHALL BE BENT 90 DEGREES TO THE RUN OF THE RAMP.
6. END OF HANDRAIL EXTENSION SHALL BE TURNED TO THE WALL, FLOOR OR POST.
7. END OF HANDRAIL EXTENSION SHALL BE TURNED TO THE FLOOR WHEN EXTENSION IS PROTRUDING PERPENDICULAR INTO PATH OF TRAVEL.
8. TOP GRIPPING SURFACE OF THE HANDRAIL SHALL BE UNIFORM IN HEIGHT. THE GRIPPING SURFACE SHALL BE CONTINUOUS AND SMOOTH (NO SHARP CORNERS).
9. THE GRIPPING PORTION SHALL BE 4 INCHES MIN TO 6-1/4 INCHES MAX PERIMETER DIMENSION, 1-1/4 INCHES TO 2-1/4 INCHES IN CROSS SECTIONAL NOMINAL DIMENSION OR SHAPED WITH EQUIVALENT GRIPPING SURFACE.
10. DESIGN AND SHOP DRAWINGS SHALL BE **APPROVED BY THE CITY ENGINEER** AND ACCESS COMPLIANCE OFFICER PRIOR TO FABRICATION.
11. ADJACENT WALL OR OTHER SURFACES SHALL BE FREE OF ANY SHARP OR ABRASIVE ELEMENT (SMOOTH FINISH).
12. A GUARDRAIL 42 INCHES ABOVE FINISHED FLOOR SHALL BE INSTALLED ALONG OPEN EDGES OF THE RAMP AND LANDINGS THAT ARE 30 INCHES OR MORE IN HEIGHT FROM THE ADJACENT GROUND SURFACE AND THE RAMP IS NOT BOUNDED BY A WALL OR FENCE. **SEE SDM-118.**
13. PROVIDE A CONTINUOUS GUIDE CURB OR GUIDE RAIL IF POSTS ARE INSTALLED ON THE RAMP SURFACE OR IF THE FINISH SURFACE IS GREATER THAN 4 INCHES HIGHER THAN THE ADJACENT GROUND SURFACE.
14. FOR HANDRAIL AND GUARDRAIL MATERIAL, FINISHES AND ADDITIONAL DETAILS, SEE RELATED DETAIL DRAWINGS.

SHEET 3 OF 3

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	SM	A. OSKQUI	12/03		
UPDATE	FC	A. OSKQUI	12/06	PEDESTRIAN RAMP AND PROTECTIVE RAILING	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATE	KA	J. NAGELVOORT	01/12		
UPDATE	FC	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDM-115



TYPICAL CONTINENTAL CROSSWALK MARKINGS



LEGEND

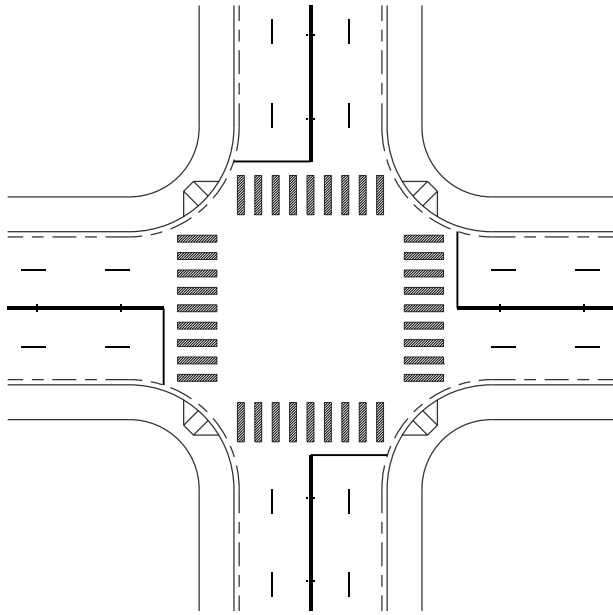
- CONSTRUCTION LINE
- - CURB & GUTTER
- CROSSWALK BAR (24" WIDE)

GENERAL NOTES:

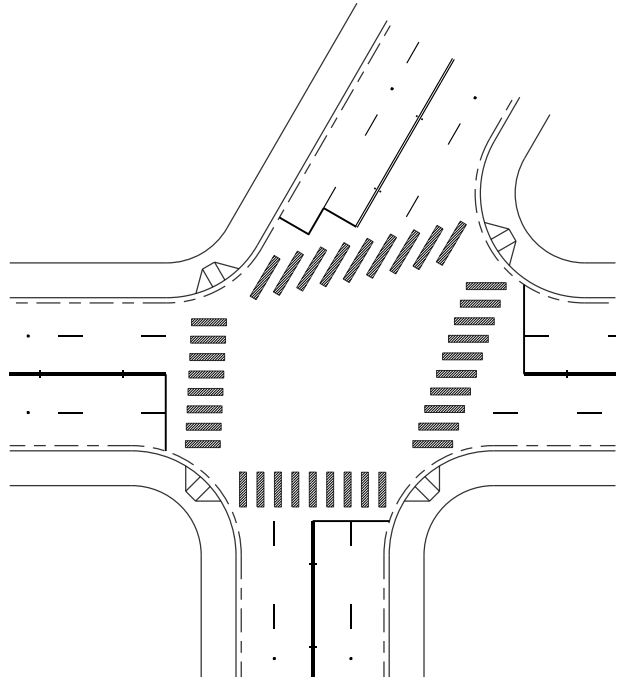
1. ALL MARKED CROSSWALKS SHALL HAVE CONTINENTAL MARKINGS UNLESS APPROVED OTHERWISE.
2. MARKED CROSSWALK LOCATIONS CONSISTING OF BRICK PAVERS OR OTHER DECORATIVE PAVING SHALL BE PROVIDED WITH A LIMIT LINE ONLY.
3. SIGNALIZED INTERSECTIONS SHALL BE PROVIDED WITH A MARKED CROSSWALK ACROSS EACH LEG WHERE PEDESTRIANS ARE PERMITTED TO CROSS.
4. CONTINENTAL CROSSWALK MARKINGS SHALL BE ALIGNED PARALLEL TO THE DIRECTION OF VEHICULAR TRAVEL.
5. LIMIT LINES SHALL BE INSTALLED A MINIMUM OF 4 FEET IN ADVANCE OF MARKED CROSSWALKS FOR THE APPROACH LANES AT ALL CONTROLLED CROSSINGS.
6. MARKED CROSSWALKS SHOULD BE A MINIMUM OF 10 FEET IN WIDTH. PLACEMENT OF CONTINENTAL CROSSWALKS SHALL COMPLY WITH ACCESSIBILITY REGULATIONS PER THE MOST RECENT VERSION OF AMERICANS WITH DISABILITIES ACT (ADA) STANDARDS.
7. THE CROSSWALK BETWEEN A DUAL RAMP CORNER AND A SINGLE RAMP CORNER SHALL BE AT LEAST 10 FEET WIDE AND SATISFY THE MINIMUM OF 2 FEET BEYOND THE FLARE REQUIREMENT FOR THE SINGLE RAMP.
8. CONTINENTAL CROSSWALK BARS SHALL BE UNIFORM WITHIN THE SAME CROSSING. NO PARTIAL BARS SHALL BE INSTALLED.
9. A CROSSWALK BAR SHALL BE CENTERED IN THE CENTER OF THE CROSSING.
10. CROSSWALK MARKINGS SHALL BE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (CA-MUTCD) RETROREFLECTIVITY COMPLIANT AND SKID RESISTANT.

SHEET 1 OF 3

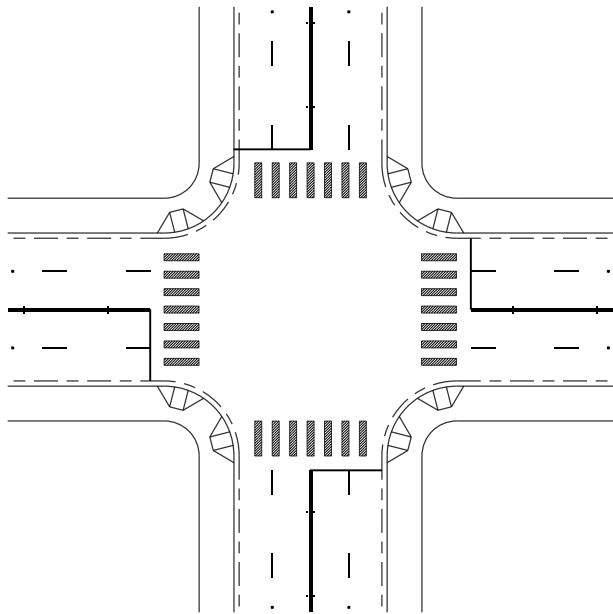
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	JF	J.NAGELVOORT	0215		
REDRAFTED	CD	J.NAGELVOORT	0918	CONTINENTAL CROSSWALK MARKINGS LAYOUT AND NOTES	 9/4/18 COORDINATOR R.C.E. 56523 DATE
DRAWING NUMBER				SDM-116	



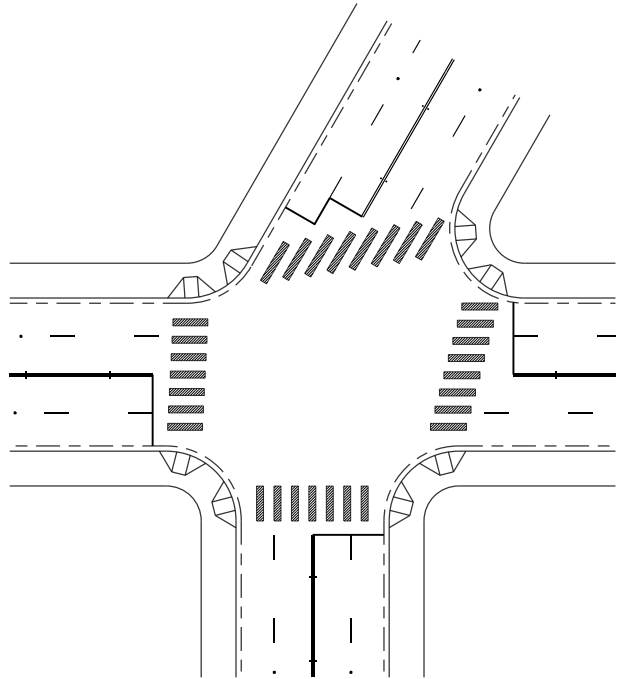
CASE 1 - SINGLE RAMP ORTHOGONAL



CASE 2 - SINGLE RAMP SKEWED



CASE 3 - DUAL RAMP ORTHOGONAL



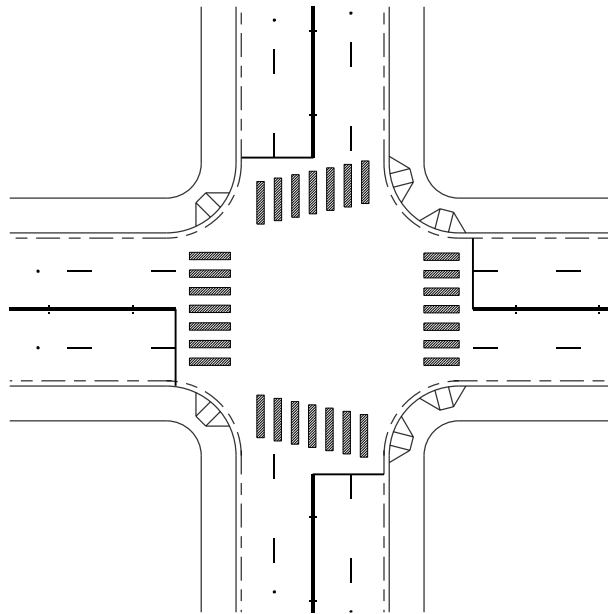
CASE 4 - DUAL RAMP SKEWED

LEGEND

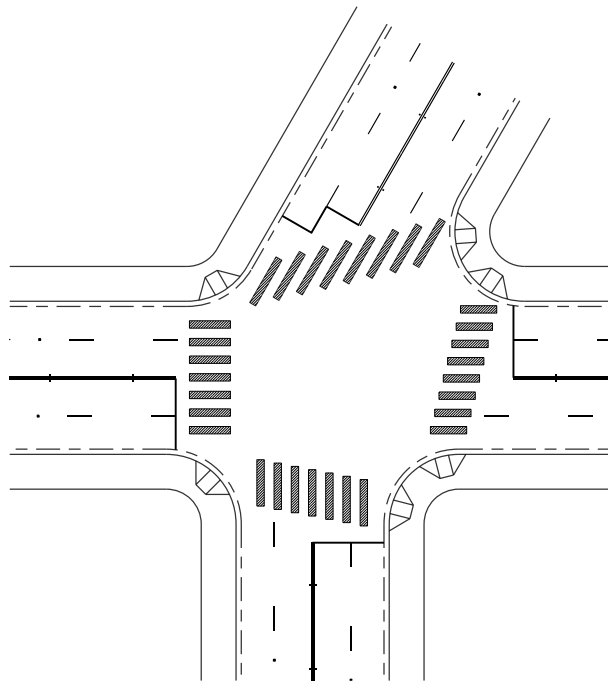
- CONSTRUCTION LINE
- CURB & GUTTER
- █ CROSSWALK BAR (24" WIDE)

SHEET 2 OF 3

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  9/4/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL	JF	J.NAGELVOORT	0215		
REDRAFTED	CD	J.NAGELVOORT	0918	CONTINENTAL CROSSWALK MARKINGS LAYOUT AND NOTES	DRAWING NUMBER SDM-116



CASE 5 - DUAL AND SINGLE RAMP ORTHOGONAL



CASE 6 - DUAL AND SINGLE RAMP SKEWED

LEGEND

- CONSTRUCTION LINE
- - CURB & GUTTER
- CROSSWALK BAR (24" WIDE)

SHEET 3 OF 3

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  9/4/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL	JF	J.NAGELVOORT	0215		
REDRAFTED	CD	J.NAGELVOORT	0918	CONTINENTAL CROSSWALK MARKINGS LAYOUT AND NOTES	DRAWING NUMBER SDM-116

ON-STREET PARKING REQUIREMENTS:

1. WHERE ON-STREET PARKING IS PROVIDED ON THE BLOCK PERIMETER AND THE PARKING IS MARKED OR METERED, ACCESSIBLE PARKING SPACES SHALL BE PROVIDED IN ACCORDANCE WITH TABLE BELOW. WHERE PARKING PAY STATIONS ARE PROVIDED AND THE PARKING IS NOT MARKED, EACH 20'-0" FEET OF BLOCK PERIMETER WHERE PARKING IS PERMITTED SHALL BE COUNTED AS ONE PARKING SPACE.
2. MINIMUM REQUIRED PARKING RATIO FOR ACCESSIBLE PARKING SPACES.

TOTAL NUMBER OF MARKED OR METERED PARKING SPACES ON THE BLOCK PERIMETER	MINIMUM REQUIRED NUMBER OF ACCESSIBLE PARKING SPACES
1-25	1
26-50	2
51-75	3
76-100	4
101-150	5
151-200	6
201 AND OVER	4% OF TOTAL

NOTES:

1. METERED PARKING INCLUDES PARKING METERED BY PAY STATIONS. WHERE PARKING ON PART OF THE BLOCK PERIMETER IS ALTERED, THE MINIMUM NUMBER OF ACCESSIBLE PARKING SPACES REQUIRED IS BASED ON THE TOTAL NUMBER OF MARKED OR METERED PARKING SPACES ON THE BLOCK PERIMETER.
2. VAN PARKING SPACE IS NOT REQUIRED ON-STREET.

3. REVERSE ANGLED PARKING SHALL FOLLOW THE SAME REQUIREMENTS AS STANDARD ANGLED PARKING.

OFF-STREET PARKING REQUIREMENTS:

1. WHERE PARKING IS PROVIDED ON EACH FACILITY (LOT OR STRUCTURE), ACCESSIBLE PARKING SPACES SHALL BE PROVIDED.
2. PARKING SPACES USED EXCLUSIVELY FOR BUSES, TRUCKS, OTHER DELIVERY VEHICLES, OR VEHICULAR IMPOUND SHALL NOT BE REQUIRED TO COMPLY WITH THE ACCESSIBLE PARKING RATIO IF THE LOTS ACCESSED BY THE PUBLIC ARE PROVIDED WITH A PASSENGER DROP-OFF AND LOADING ZONE COMPLYING WITH PASSENGER LOADING ZONE STANDARDS. **SEE SDM-117 SHEET 9.**

A. MINIMUM REQUIRED PARKING RATIO FOR ACCESSIBLE PARKING SPACES

TOTAL NUMBER OF PARKING SPACES PROVIDED IN PARKING FACILITY	MINIMUM NUMBER OF REQUIRED ACCESSIBLE PARKING SPACES
1-25	1
26-50	2
51-75	3
76-100	4
101-150	5
151-200	6
201-300	7
301-400	8
401-500	9
501-1,000	2% OF TOTAL
1,001 AND OVER	20, PLUS 1 FOR EACH 100, OR FRACTION THEREOF, OVER 1000

EXCEPTIONS:

1. 10% OF THE TOTAL NUMBER OF PARKING SPACES AT OUTPATIENT UNITS AND FACILITIES SHALL BE ACCESSIBLE.
2. 20% OF THE TOTAL NUMBER OF PARKING SPACES AT UNITS AND FACILITIES SPECIALIZING IN TREATMENT OR SERVICES FOR PERSONS WITH MOBILITY IMPAIRMENTS SHALL BE ACCESSIBLE.

- B. THE REQUIRED PARKING RATIO FOR ACCESSIBLE PARKING STALLS IS PROVIDED FOR EACH PARKING LOT ON THE SITE.
 - C. AT LEAST ONE VAN PARKING SPACE IS REQUIRED FOR EVERY SIX OR FRACTION OF SIX PARKING SPACES.
 - D. IN BUILDINGS OR FACILITIES WITH MULTIPLE ACCESSIBLE ENTRANCES WITH ADJACENT PARKING SPACES SHALL BE DISPERSED AND LOCATED CLOSEST TO THE ACCESSIBLE ENTRANCES. A VAN ACCESSIBLE SPACE SHALL BE PROVIDED AT EACH LOCATION.
3. VERTICAL CLEARANCE - PARKING SPACES FOR VANS AND THEIR ADJACENT ACCESS AISLE AND VEHICULAR ROUTES SERVING THEM SHALL PROVIDE A VERTICAL CLEARANCE OF 8'-2" MINIMUM.

SHEET 1 OF 9

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	<div>RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE</div> <div> 9/17/18</div> <div>COORDINATOR R.C.E. 56523 DATE</div>
ORIGINAL	FC	A. OSKOU	12/06		
UPDATED	KA	J. NAGELVOORT	01/12		
UPDATED	FC	J. NAGELVOORT	02/16		
UPDATED	FC	J. NAGELVOORT	09/18		
				ACCESSIBLE PARKING (NOTES)	<div>DRAWING NUMBER</div> <div>SDM-117</div>

4. THE SURFACE OF THE ENTIRE AREA OF THE ACCESSIBLE PARKING SPACE(S) AND ACCESS AISLE(S) SHALL HAVE A SLOPE OF 1.5% IN ANY DIRECTION.
 - A. GUTTERS AND SWALES SHALL NOT BE INCLUDED IN THE OVERALL DIMENSIONS OF THE ACCESSIBLE PARKING SPACES AND ACCESS AISLES, UNLESS SLOPE AND CROSS SLOPE IS 1.5% MAXIMUM.
 - B. THE SURFACE SLOPE OF THE AREA IMMEDIATELY SURROUNDING THE ACCESSIBLE PARKING SPACE SHALL BE 1.5% FOR A WIDTH OF 4'-0".
 - C. ADEQUATE DRAINAGE SHALL BE PROVIDED SO THAT WATER DOES NOT ACCUMULATE WITHIN THE ACCESSIBLE PARKING SPACE AND ACCESS AISLE.
 - D. THE GUTTER SLOPE AT THE OPENING OF THE CURB RAMPS SERVING THE ACCESS AISLES SHALL BE 1.5%.
5. ACCESS AISLES (LOADING AND UNLOADING AREAS) SHALL BE PROVIDED FOR SINGLE AND DOUBLE ACCESSIBLE PARKING SPACES.
 - A. THE ACCESS AISLE SHALL BE CONNECTED TO AN ACCESSIBLE ROUTE.
 - B. FOR REGULAR ACCESSIBLE SPACE, THE ACCESS AISLE SHALL BE ON EITHER SIDE OF THE VEHICLE WHEN THE VEHICLE IS GOING FORWARD INTO THE PARKING SPACE.
 - C. FOR VAN SPACE, THE ACCESS AISLE SHALL BE PLACED ON THE SIDE OPPOSITE THE DRIVER'S SIDE WHEN THE VEHICLE IS GOING FORWARD INTO THE PARKING SPACE (i.e. PASSENGER SIDE OF THE VEHICLE).
 - D. THE CURB RAMP MAY NOT ENCROACH INTO THE REQUIRED DIMENSIONS FOR THE ACCESSIBLE PARKING SPACE AND ACCESS AISLE.
 - E. CURB RAMPS SERVING THE ACCESS AISLES SHALL COMPLY WITH THE APPLICABLE CURB RAMP STANDARDS.
6. A WHEEL STOP SHALL BE REQUIRED IF THE WIDTH OF THE SIDEWALK OR WALKWAY IS LESS THAN 6'-0". A WHEEL STOP SHALL NOT BE INSTALLED AT ON-STREET PARKING.
7. PARKING SPACES AND ACCESS AISLES SHALL BE DESIGNED SUCH THAT A PEDESTRIAN IS NOT REQUIRED TO TRAVEL BEHIND A PARKING SPACE OTHER THAN TO PASS BEHIND THE PARKING SPACE FOR THEIR PARKED VEHICLE.
8. SIGNAGE:
 - A. PAVEMENT PARKING SIGNS SUCH AS THE INTERNATIONAL SYMBOL OF ACCESSIBILITY (ISA) AND "NO PARKING" AT THE ACCESS AISLES SHALL BE PLACED SO THAT THEY ARE VISIBLE TO TRAFFIC ENFORCEMENT OFFICIALS WHEN THE VEHICLE IS PARKED PROPERLY. **SEE DETAIL ON SDM-117 SHEET 5.**
 - B. WHEN POSTED WITHIN THE CIRCULATION PATH, THE SIGN SHALL BE MOUNTED 7'-0" MINIMUM ABOVE THE FINISH FLOOR TO THE BOTTOM OF THE SIGN **PER SDM-104.**

IF INSTALLED ON A WALL, THE SIGN MAY BE CENTERED ON THE WALL AT THE INTERIOR END OF THE PARKING SPACE 5'-0" ABOVE GRADE TO THE BOTTOM OF THE SIGN.
 - C. A TOW AWAY SIGN SHALL BE INSTALLED AND VISIBLE AT EACH ENTRANCE TO THE OFF STREET PARKING FACILITY OR IMMEDIATELY ADJACENT TO THE ACCESSIBLE PARKING SPACE.
9. IF THE ACCESSIBLE ROUTE CROSSES OR ADJOINS THE VEHICULAR WAY AND THE WALKING SURFACE IS NOT SEPARATED BY CURBS, RAILINGS, OR OTHER ELEMENTS BETWEEN THE PEDESTRIAN AREAS AND VEHICULAR AREAS, THE BOUNDARY BETWEEN THE AREAS SHALL BE DEFINED BY A 3'-0" WIDE DETECTABLE WARNING TILES. DETECTABLE WARNING TILES SHALL BE **PER SDG-130.**
10. REVERSE ANGLED PARKING SHALL FOLLOW THE SAME REQUIREMENTS AS STANDARD ANGLED PARKING.

SHEET 2 OF 9

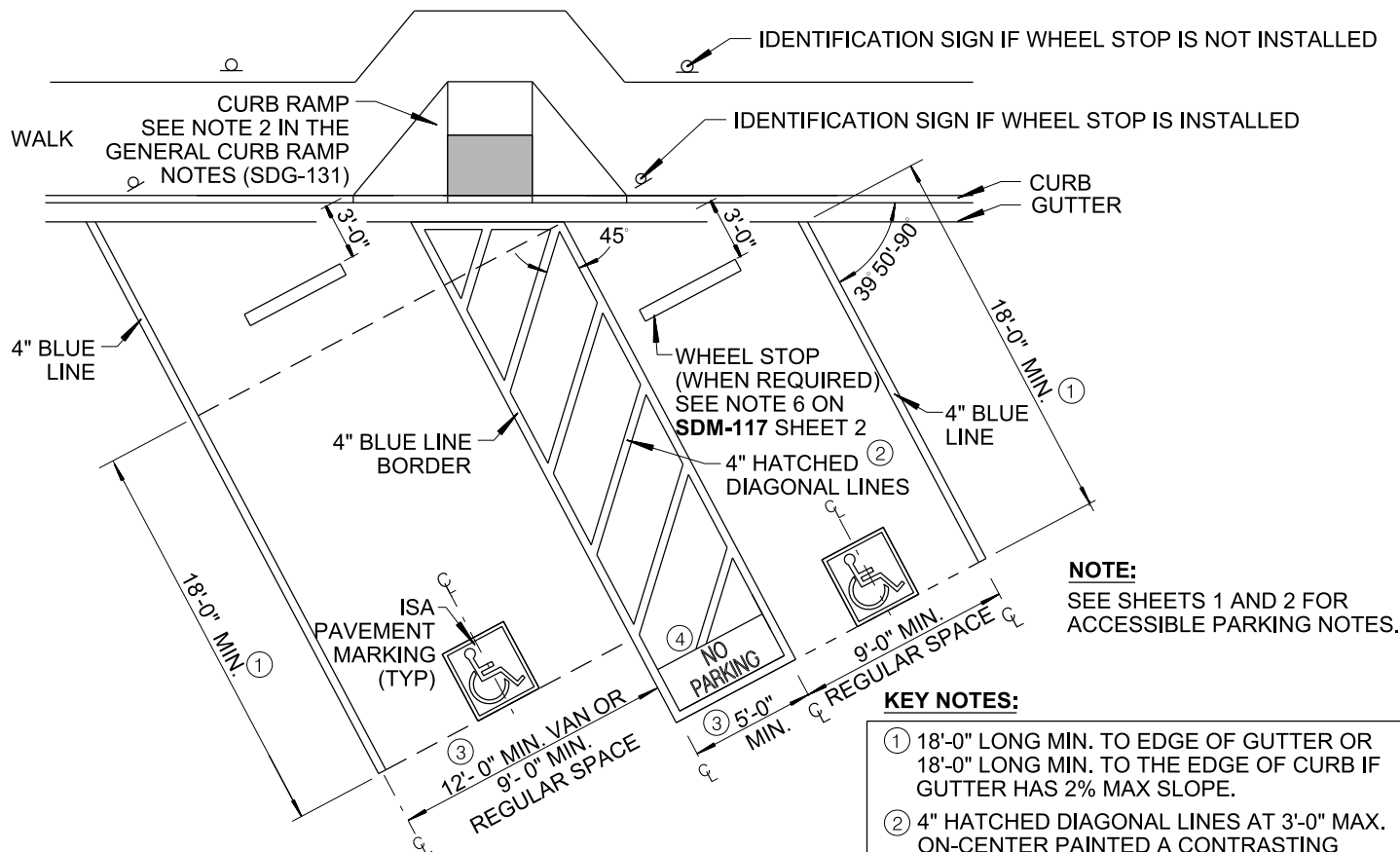
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	<div>RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE</div> <div><div> 9/17/18</div><div>COORDINATOR R.C.E. 56523 DATE</div></div>
ORIGINAL	FC	A. OSKOU	12/06		
UPDATED	KA	J. NAGELVOORT	01/12		
UPDATED	FC	J. NAGELVOORT	02/16		
UPDATED	FC	J. NAGELVOORT	09/18		
				ACCESSIBLE PARKING (NOTES)	DRAWING NUMBER
					SDM-117

PASSENGER DROP-OFF AND LOADING ZONE (ON-STREET AND OFF-STREET):

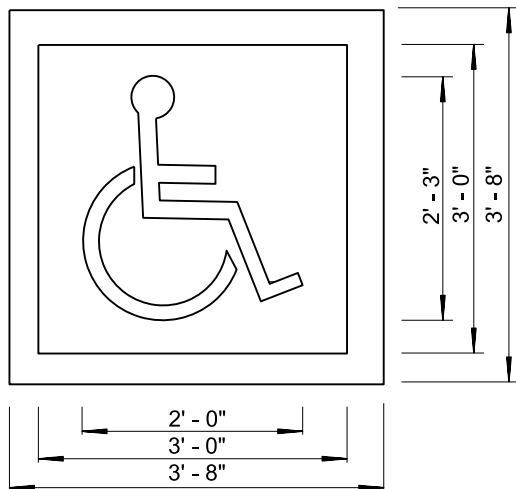
1. WHERE PROVIDED, AT LEAST ONE ACCESSIBLE PASSENGER DROP-OFF AND LOADING ZONE SHALL BE ACCESSIBLE.
2. AN ACCESSIBLE PASSENGER DROP-OFF AND LOADING ZONE SHALL BE PROVIDED IN EVERY CONTINUOUS 100 LINEAR FEET OF LOADING SPACE, OR FRACTION THEREOF.
3. VEHICLE PULL-UP SPACE - PASSENGER DROP-OFF AND LOADING ZONES SHALL PROVIDE A VEHICULAR PULL-UP SPACE 8'-0" WIDE MINIMUM AND 20'-0" LONG MINIMUM.
4. ACCESS AISLE - PASSENGER DROP-OFF AND LOADING ZONES SHALL BE PROVIDED WITH ACCESS AISLES ADJACENT AND PARALLEL TO THE VEHICLE PULL-UP SPACE.
 - A. ACCESS AISLE SHALL BE 5'-0" WIDE MINIMUM AND EXTEND THE FULL LENGTH OF THE VEHICLE PULL-UP SPACE.
 - B. ACCESS AISLES SHALL CONNECT DIRECTLY TO AN ACCESSIBLE ROUTE AND SHALL NOT OVERLAP THE VEHICULAR WAY.
 - C. ACCESS AISLES SHALL BE MARKED AS REQUIRED FOR ALL ACCESS AISLES.
 - D. VEHICLE PULL-UP SPACES AND ACCESS AISLES SERVING THEM SHALL BE AT THE SAME LEVEL AS THE VEHICLE PULL-UP SPACES THEY SERVE. ANY CHANGES IN ELEVATION SHALL BE SERVED BY A CURB RAMP(S).
 - E. VEHICLE PULL-UP SPACE AND ACCESS AISLE SLOPES SHALL BE 1.5% IN ANY DIRECTION. ADEQUATE DRAINAGE SHALL BE PROVIDED SO THAT WATER DOES NOT POND IN THE ACCESS AISLE.
 - F. OFF-STREET VEHICLE PULL-UP SPACE AND ACCESS AISLE SLOPES SHALL BE 1.5% IN ANY DIRECTION.
 - G. ON-STREET VEHICLE PULL-UP SPACE AND ACCESS AISLE RUNNING SLOPE MAY FOLLOW THE EXISTING SLOPE OF THE STREET CROSS SLOPE SHALL BE 1.5% MAXIMUM AT THE ACCESS AISLE, EXCEPT THAT AT THE PULL-UP SPACE THE 1.5% CROSS SLOPE WILL BE REQUIRED TO THE MAXIMUM EXTENT FEASIBLE.
 - H. ADEQUATE DRAINAGE SHALL BE PROVIDED SO THAT WATER DOES NOT POND IN THE ACCESS AISLE.
5. A MINIMUM OF 9'-6" VERTICAL CLEARANCE SHALL BE PROVIDED AT ACCESSIBLE PASSENGER DROP-OFF AND LOADING ZONES AND ALONG AT LEAST ONE VEHICLE ACCESS ROUTE TO SUCH AREAS FROM SITE ENTRANCE(S) AND EXIT(S).
6. PASSENGER LOADING ZONES SHALL BE IDENTIFIED BY A REFLECTORIZED SIGN POSTED IMMEDIATELY ADJACENT TO AND VISIBLE FROM THE PASSENGER DROP-OFF AND LOADING ZONE STATING "PASSENGER LOADING ZONE ONLY".
 - A. WHEN LOCATED IN A PATH OF TRAVEL, THE SIGN SHALL BE MOUNTED **PER SDM-104**.
7. PARKING FACILITIES THAT PROVIDE VALET PARKING SERVICES SHALL PROVIDE AT LEAST ONE ACCESSIBLE PASSENGER LOADING ZONE.

SHEET 3 OF 9

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL	FC	A. OSKOUJ	12/06			9/17/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	KA	J. NAGELVOORT	01/12			
UPDATED	FC	J. NAGELVOORT	02/16			
UPDATED	FC	J. NAGELVOORT	09/18			
				ACCESSIBLE PARKING (NOTES)	DRAWING	SDM-117
					NUMBER	



DIAGONAL DOUBLE PARKING SPACES



NOTES:

1. THE ISA SHALL BE PAINTED WHITE ON A BLUE BACKGROUND. THE COLOR BLUE SHALL MATCH FS 15090 IN THE FEDERAL STANDARD 595C. A BORDER MAY BE PROVIDED INSIDE OR OUTSIDE OF THE MINIMUM REQUIRED ISA DIMENSION.
2. THE LOCATION OF THE ISA SHALL BE VISIBLE TO A TRAFFIC ENFORCEMENT OFFICER WHEN THE VEHICLE IS STATIONED IN THE PARKING SPACE.

**INTERNATIONAL SYMBOL OF ACCESSIBILITY (ISA)
PAVEMENT MARKING**



NOTES:

1. THE WORDS "NO PARKING" SHALL BE LOCATED AT THE END OF THE ACCESS AISLE SO THAT IT IS VISIBLE TO TRAFFIC ENFORCEMENT OFFICIALS.
2. THE LETTERS SHALL BE NO LESS THAN 12" HIGH AND PAINTED IN WHITE LETTERS ON A BLUE BACKGROUND. THE COLOR BLUE SHALL MATCH FS15090 IN THE FEDERAL STANDARD 595C.

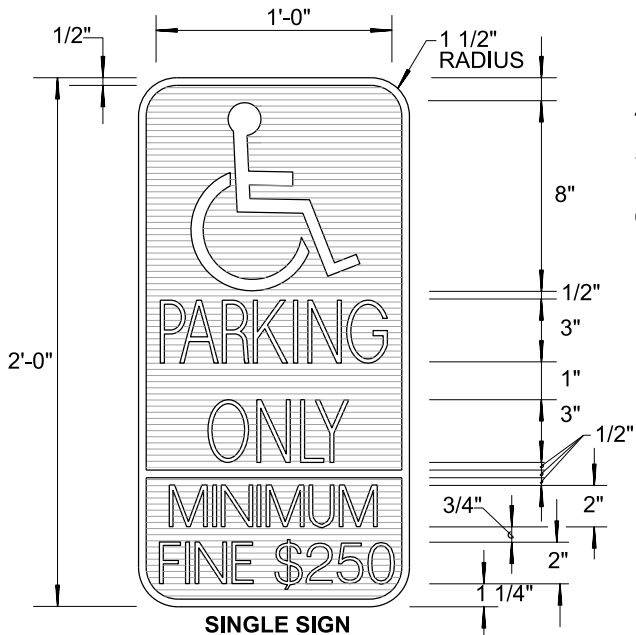
"NO PARKING" PAVEMENT MARKING

SHEET 5 OF 9

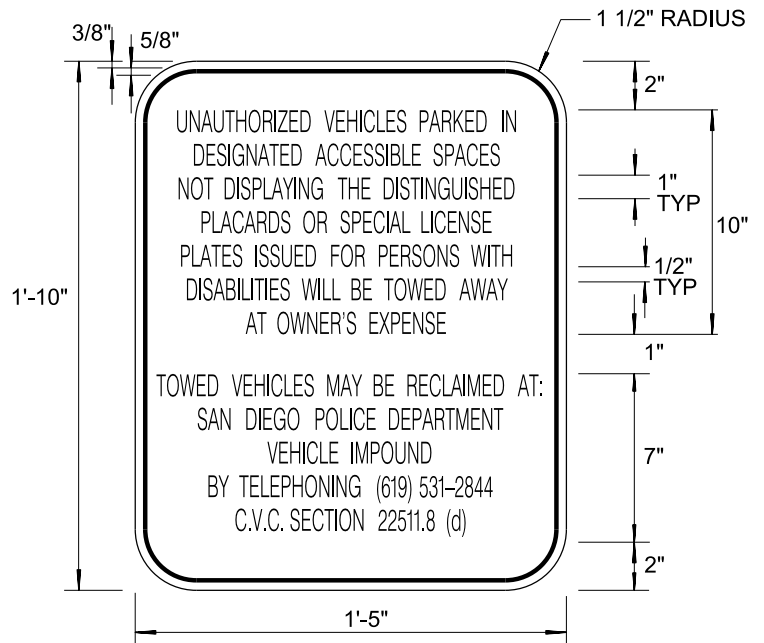
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
UPDATED	FC	J. NAGELVOORT	02/16	ACCESSIBLE PARKING (OFF-STREET)	 9/17/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	FC	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDM-117



**MULTIPLE SIGNS
OFF-STREET PARKING ONLY**



**SINGLE SIGN
OFF-STREET PARKING
ON-STREET PARKING**



**TOW-AWAY SIGN
FOR OFF-STREET PARKING ONLY**

NOTES:

1. SIGN POST: **SEE SDM-104** FOR "BREAK-AWAY SIGN POST".
2. SIGNS SHALL BE CONSTRUCTED ON MINIMUM 1/16" THICK ALUMINUM.
3. COLORS:

PARKING SIGNS:
BACKGROUND - BLUE (RETROREFLECTIVE)
BORDER, TEXT, AND SYMBOL - WHITE (RETROREFLECTIVE)

TOW AWAY SIGN:
BACKGROUND - WHITE (RETROREFLECTIVE)
BORDER AND LEGEND - BLACK

4. FONTS: SAN SERIF CLEARVIEW, 1" MIN LETTER HEIGHT
5. THE BOTTOM OF THE LOWEST SIGN SHALL BE AT LEAST 7'-0" OR HIGHER TO THE WALKING SURFACE OR 5'-0" IF INSTALLED ON A WALL.
6. SEE SHEET 2 FOR ADDITIONAL NOTES.

SHEET 6 OF 9

REVISION	BY	APPROVED	DATE
ORIGINAL	KA	J. NAGELVOORT	01/12
UPDATED	FC	J. NAGELVOORT	02/16
UPDATED	FC	J. NAGELVOORT	09/18

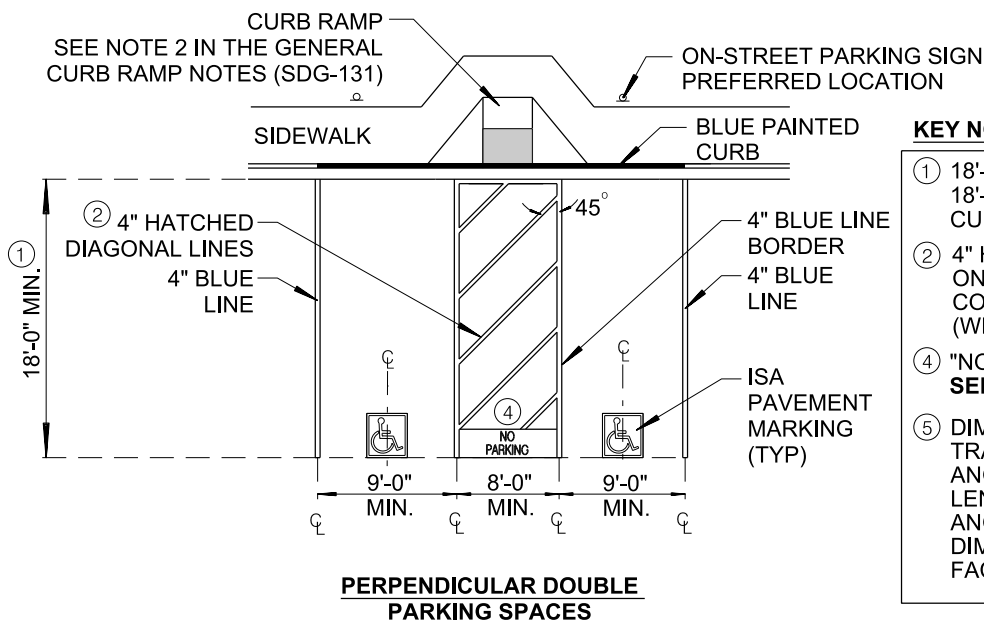
CITY OF SAN DIEGO – STANDARD DRAWING

**ACCESSIBLE PARKING
(SIGNS)**

RECOMMENDED BY THE CITY
OF SAN DIEGO STANDARDS COMMITTEE

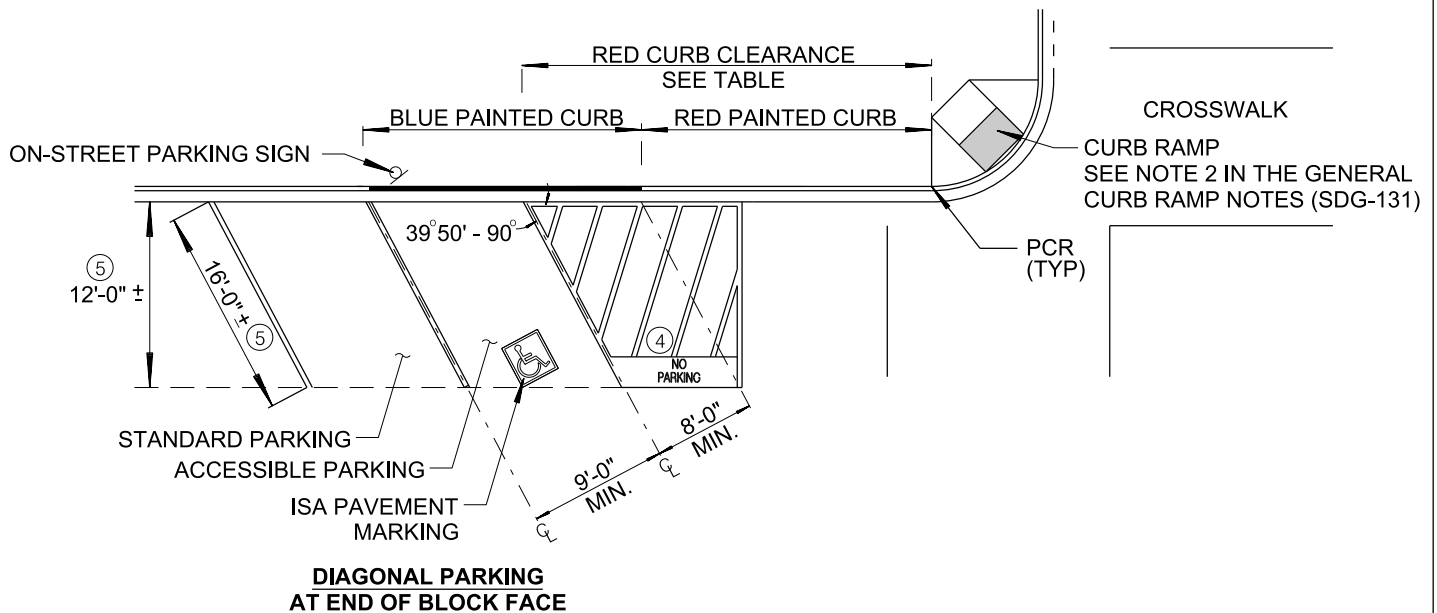
Chung 9/17/18
COORDINATOR R.C.E. 56523 DATE

DRAWING
NUMBER **SDM-117**



KEY NOTES:

- ① 18'-0" LONG MIN TO EDGE OF GUTTER OR 18'-0" LONG MIN TO THE EDGE OF CURB IF GUTTER HAS 2% MAX SLOPE.
- ② 4" HATCHED DIAGONAL LINES AT 3'-0" MAX ON-CENTER PAINTED A CONTRASTING COLOR WITH THE PARKING SURFACE (WHITE ON ASPHALT, BLUE ON CONCRETE).
- ④ "NO PARKING" SIGN
SEE DETAILS ON SDM-117 SHEET 5
- ⑤ DIMENSION IS BASED OFF THE CITY'S TRAFFIC ENGINEERING AND OPERATIONS ANGLE PARKING GUIDELINES AND THE LENGTH SHALL VARY BASED ON THE ANGLE AND TYPE OF STREET. THE DIMENSION SHALL BE TAKEN FROM FACE OF CURB, NOT EDGE OF GUTTER.



NOTES:

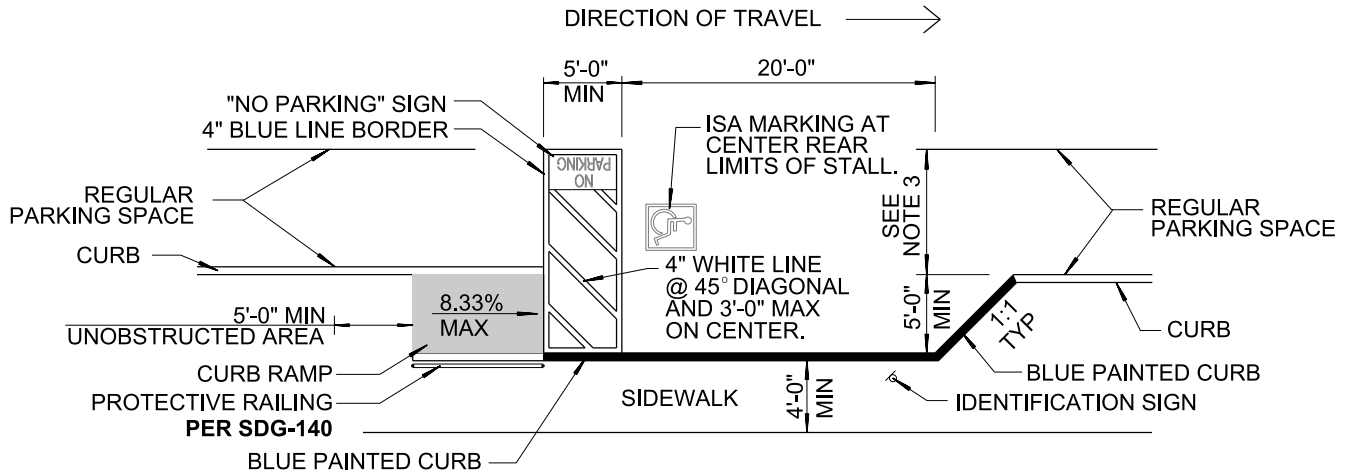
1. NO ACCESSIBLE PARKING SPACE OR ACCESS AISLE SHALL BE WITHIN 15'-0" OF A FIRE HYDRANT.
2. IN THE RED CURB CLEARANCE TABLE, THE MINIMUM RED CURB LENGTH FOR A 90° ANGLED PARKING SPACE VARIES BASED ON LOCATION, SIGHT VISIBILITY, AND OTHER FACTORS. CONTACT THE CITY'S TRAFFIC ENGINEERING AND OPERATIONS DIVISION FOR ASSISTANCE.
3. SEE SHEETS 1 AND 2 FOR ADDITIONAL NOTES.

ANGLE	MINIMUM RED CURB/ CLEARANCE FROM INTERSECTION/ DRIVEWAY
39° 50'	20'-0"
45°	18'-0"
50°	15'-0"
55°	13'-0"
60°	11'-0"
90°	6'-0" MIN. TO 10'-0" MAX.

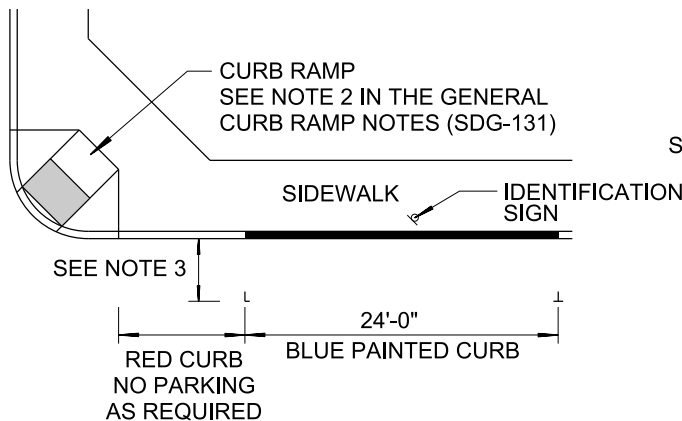
RED CURB CLEARANCE TABLE

SHEET 7 OF 9

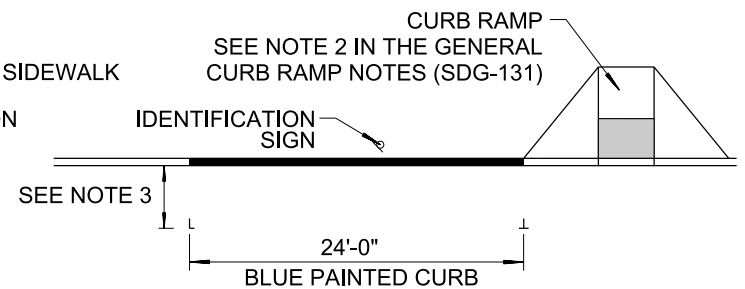
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	FC	A. OSKOUI	12/06		
UPDATED	FC	J. NAGELVOORT	02/16	ACCESSIBLE PARKING (ON-STREET)	 9/17/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	FC	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDM-117



**ON-STREET PARKING
WITH LOADING ZONE**



**PARALLEL PARKING AT END OF BLOCK FACE
ON-STREET PARALLEL PARKING**



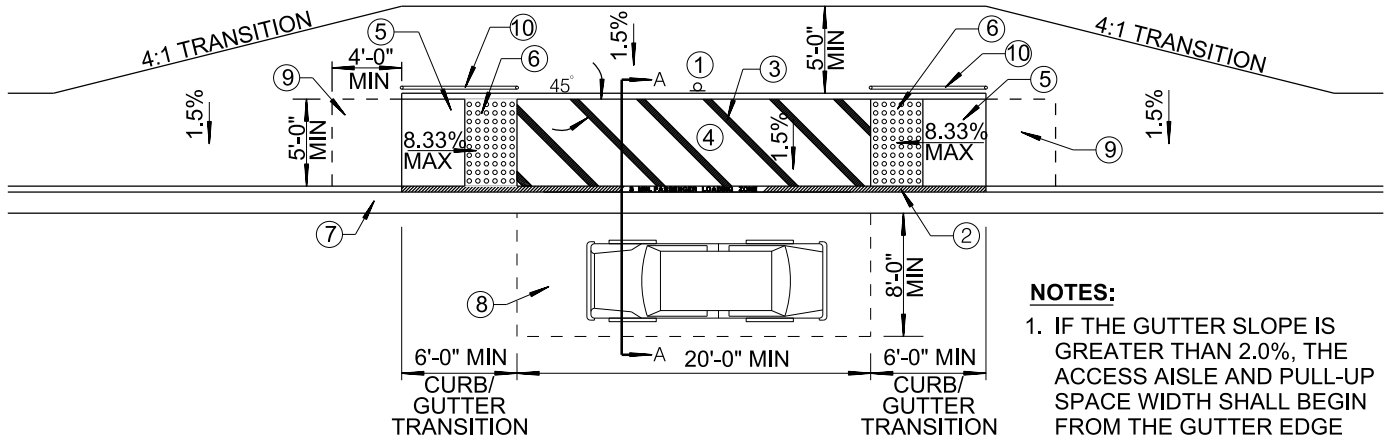
**PARALLEL PARKING AT MID-BLOCK FACE
ON-STREET PARALLEL PARKING**

NOTES:

1. SEE SHEETS 1 THROUGH 3 OF SDM-117 FOR ACCESSIBLE PARKING NOTES.
2. AN ACCESS AISLE IS NOT REQUIRED WHERE THE WIDTH OF THE ADJACENT SIDEWALK OR THE AVAILABLE ROW IS LESS THAN 10'-0". WHEN AN ACCESS AISLE IS NOT PROVIDED, PARKING SHALL BE LOCATED AT THE END OF THE BLOCK FACE.
3. THE WIDTH OF THE ACCESSIBLE SPACE SHALL BE THE SAME WIDTH AS THE ADJACENT MARKED REGULAR SPACE. IF THE WIDTH OF THE REGULAR SPACE(S) IS NOT MARKED, THEN THE WIDTH OF THE ACCESSIBLE SPACE SHALL BE 8'-0" MIN. TO 9'-0" MAX. WITHOUT REDUCING THE WIDTH OF THE TRAFFIC LANE.
4. INCLUDE THE FOLLOWING INFORMATION ON THE STRIPING PLAN OR DETAIL:
 - A. TOTAL NUMBER OF EXISTING ON-STREET PARKING SPACES
 - B. TOTAL NUMBER OF EXISTING ON-STREET ACCESSIBLE PARKING SPACES
 - C. TOTAL NUMBER OF NEW ON-STREET PARKING SPACES
 - D. TOTAL NUMBER OF REQUIRED ON-STREET ACCESSIBLE PARKING SPACES BLOCK PERIMETER
 - E. TOTAL NUMBER OF ON-STREET ACCESSIBLE PARKING SPACES PROVIDED

SHEET 8 OF 9

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	FC	A. OSKOU	12/06		
UPDATED	FC	J. NAGELVOORT	02/16	ACCESSIBLE PARKING (ON-STREET)	 9/17/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	FC	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDM-117

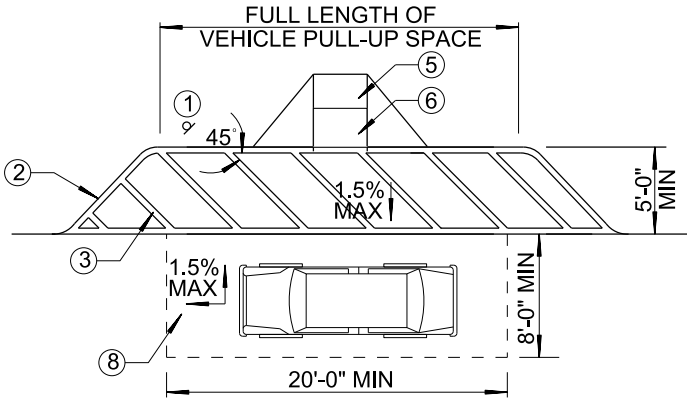


PASSENGER LOADING ZONE

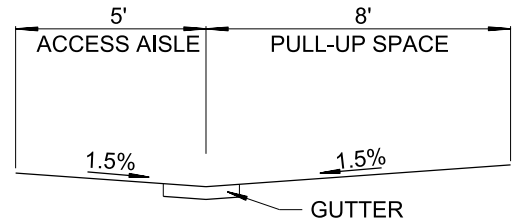
NOTES:

1. IF THE GUTTER SLOPE IS GREATER THAN 2.0%, THE ACCESS AISLE AND PULL-UP SPACE WIDTH SHALL BEGIN FROM THE GUTTER EDGE INSTEAD OF FLOWLINE.

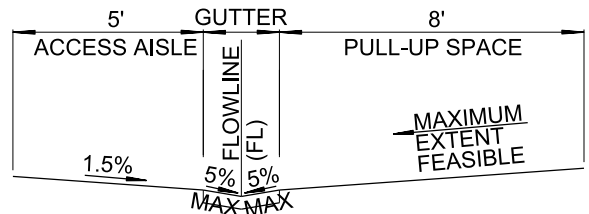
2. SEE SHEET 3 FOR ADDITIONAL NOTES.



PASSENGER LOADING ZONE



**SECTION A-A
OFF-STREET
ON-STREET NEW ROADWAY**



**SECTION A-A
ON-STREET EXISTING ROADWAY**

KEY NOTES:

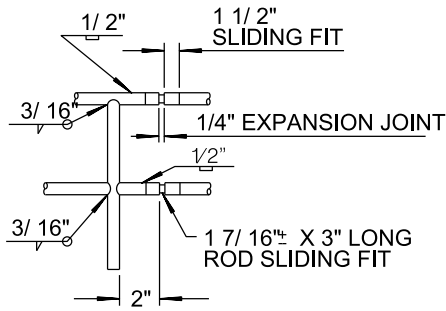
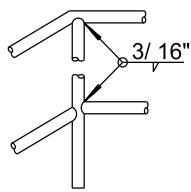
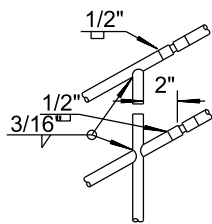
- 1 ACCESSIBLE PASSENGER DROP-OFF AND LOADING ZONE SIGN (1'-6" X 1'-6" - BLACK LETTERING ON WHITE BACKGROUND).
- 2 6" WHITE PAINTED CURB AND CURB FACE (STENCILED WITH 4" BLACK SANS SERIF CLEARVIEW, 3" MIN "PASSENGER LOADING ZONE").
- 3 4" WIDTH WHITE STRIPING AT 3'-0" O.C. AND 45° TO CURB FACE.
- 4 VEHICLE ACCESS AISLE
 - A. OFF-STREET - SLOPES SHALL NOT EXCEED 1.5% IN ANY DIRECTION.
 - B. ON-STREET - CROSS SLOPE SHALL NOT EXCEED 1.5%. THE RUNNING SLOPE MAY FOLLOW THE EXISTING SLOPE OF THE STREET.
- 5 CURB RAMP
- 6 DETECTABLE WARNING TILE **PER SDG-130**
- 7 THE SLOPE OF THE GUTTER WITHIN THE ACCESS AISLE SHALL NOT EXCEED 5%.
- 8 VEHICLE PULL-UP SPACE SHALL MEASURE 20'-0" X 8'-0".
 - A. OFF-STREET PULL-UP SPACE - SLOPES SHALL NOT EXCEED 1.5% IN ANY DIRECTION.
 - B. ON-STREET PULL-UP SPACE - CROSS SLOPE SHALL BE 1.5% IF FEASIBLE (OTHERWISE TO THE MAXIMUM EXTENT). THE RUNNING SLOPE MAY FOLLOW THE EXISTING SLOPE OF THE STREET.
- 9 4'-0" X 5'-0" LEVEL LANDING
- 10 PROTECTIVE RAILING **PER SDG-140**
- 11 ALL DEVIATION FROM THIS STANDARD MAY BE ALLOWED PROVIDED THE DESIGN AND/OR DOCUMENTATION WAS REVIEWED BY THE CITY REPRESENTATIVE.



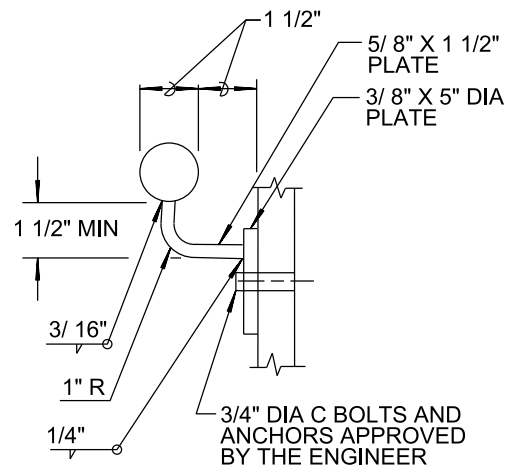
SHEET 9 OF 9

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL	KA	J. NAGELVOORT	01/12		<div>ACCESSIBLE PARKING (ON AND OFF-STREET PASSENGER DROP-OFF AND LOADING ZONE)</div>	<div> 9/17/18</div> <div>COORDINATOR R.C.E. 56523 DATE</div>
UPDATED	FC	J. NAGELVOORT	02/16			
UPDATED	FC	J. NAGELVOORT	09/18			
				DRAWING NUMBER		SDM-117

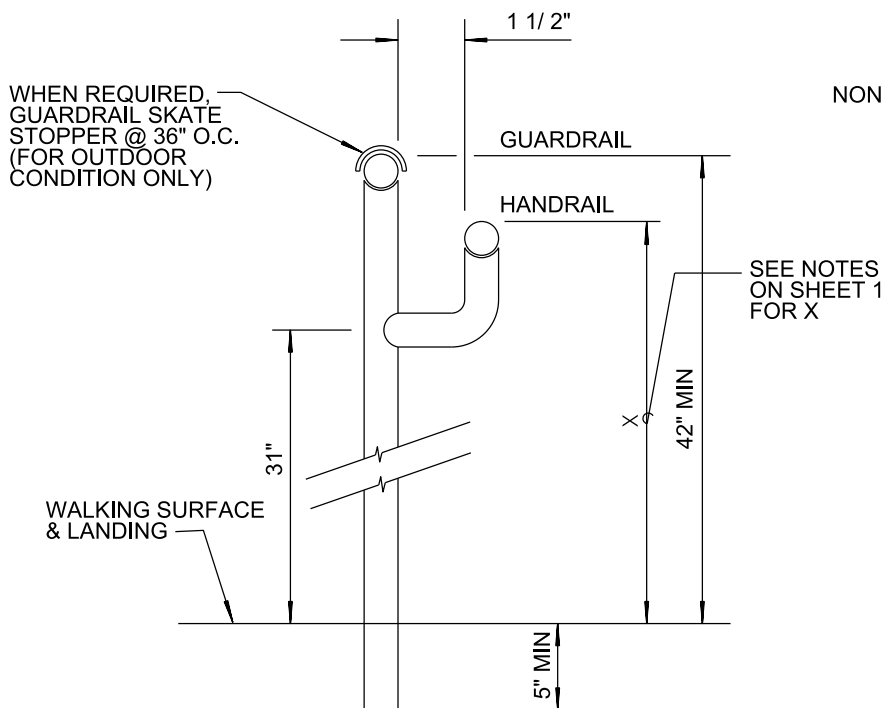
REVISION	BY	APPROVED	DATE	<p>CITY OF SAN DIEGO – STANDARD DRAWING</p> <p>PEDESTRIAN PROTECTIVE RAILING & STAIR HANDRAIL</p>	<p>RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE</p> <p> 9/4/18</p> <p>COORDINATOR R.C.E. 56523 DATE</p>
ORIGINAL*	BB	J. NAGELVOORT	01/12		<p>DRAWING NUMBER</p> <p>SDM-118</p>
UPDATED	FC	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		



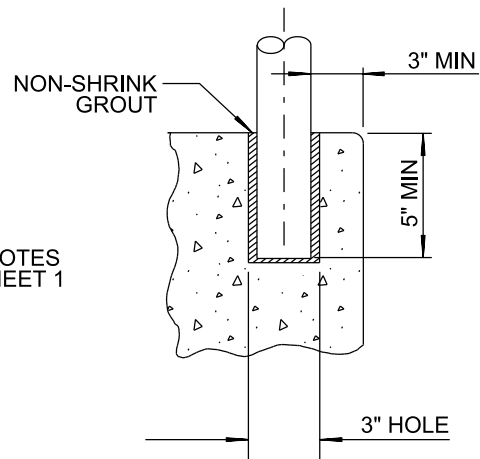
WELDING DETAILS



HANDRAIL BRACKET



PIPE GUARDRAIL

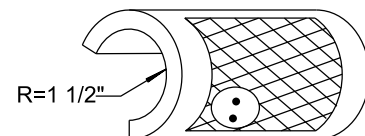


MOUNTING DETAIL*

*POST SHALL BE GROUTED IN PLACE USING NON-SHRINK GROUT.

RAILING NOTES

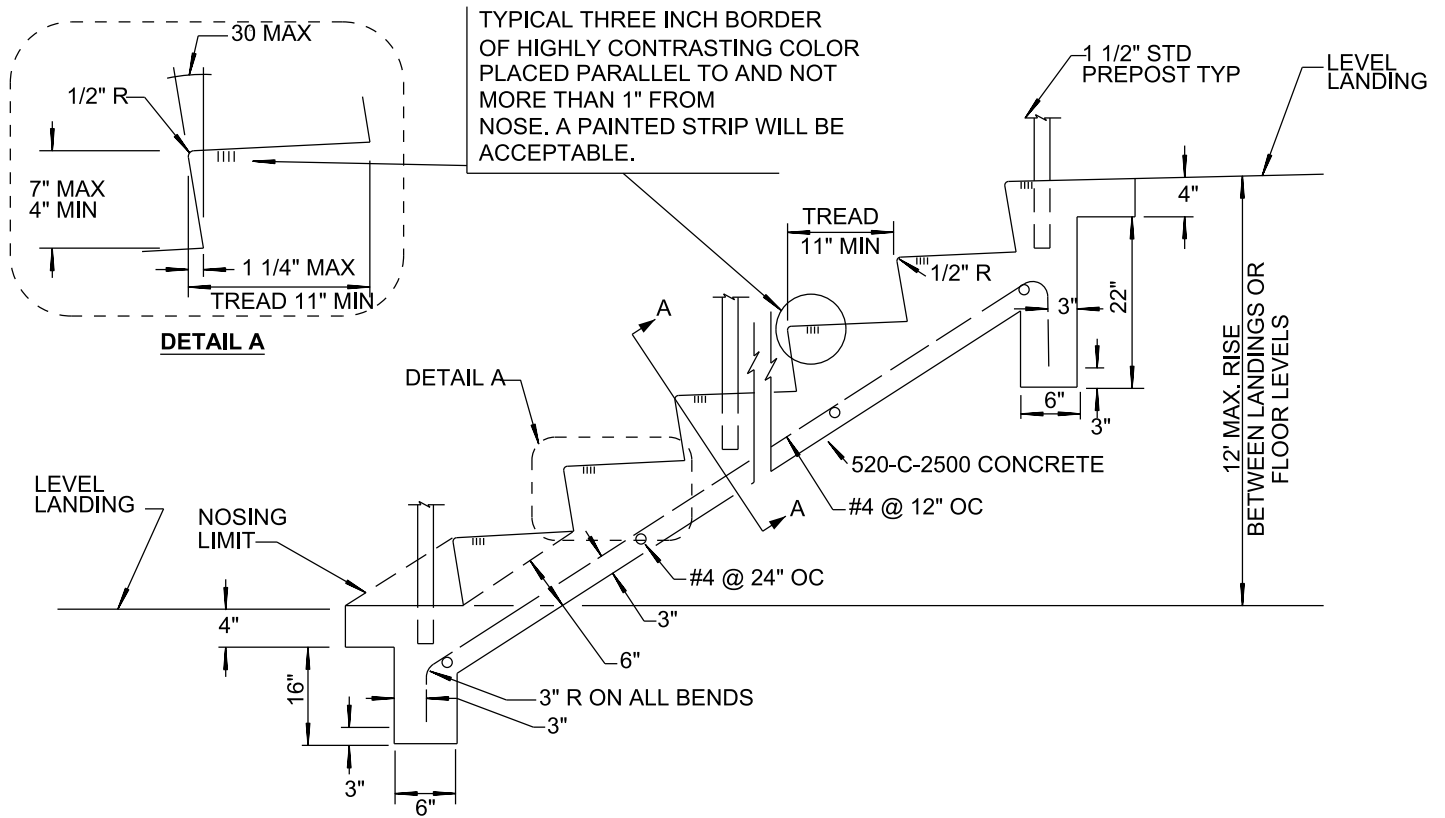
1. 1/4" EXPANSION JOINTS @ 16' ON CENTER.
2. WELD AND GRIND SMOOTH ALL CONNECTIONS.
3. ALL RAILING TO BE HOT DIP GALVANIZED AFTER FABICATION.
4. PIPE SHALL BE SEAMLESS STEEL ASTM A53 GRADE B.
5. INSTALL HANDRAILS ON BOTH SIDES.
6. STAIRS AND LANDINGS THAT ARE OPEN ON ONE OR BOTH SIDES AND MORE THAN 30" ABOVE THE ADJACENT GROUND SHALL BE PROVIDED WITH GUARDRAIL.



ALUMINUM GUARDRAIL SKATE STOPPER

SHEET 2 OF 3

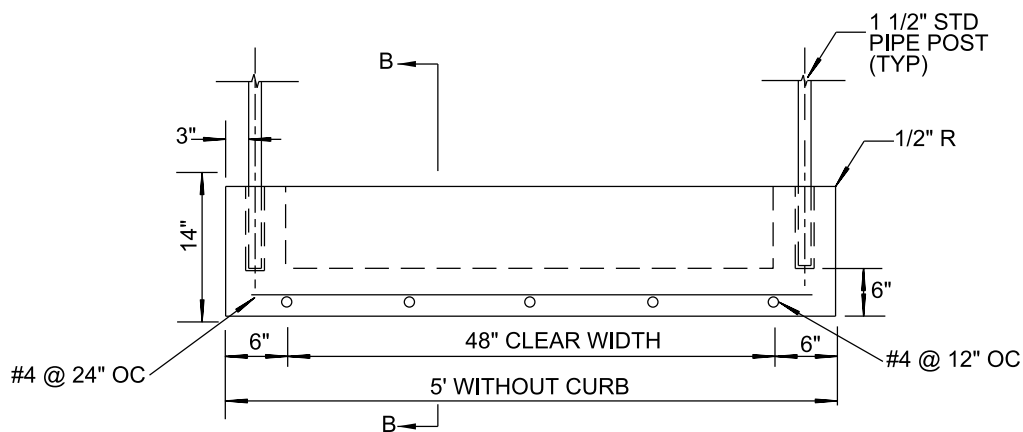
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
UPDATE	KA	J. NAGELVOORT	01/12		<div>PEDESTRIAN PROTECTIVE RAILING & STAIR HANDRAIL</div>
UPDATE	FC	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	0918		
				DRAWING NUMBER	SDM-118



SECTION B-B


NOTES

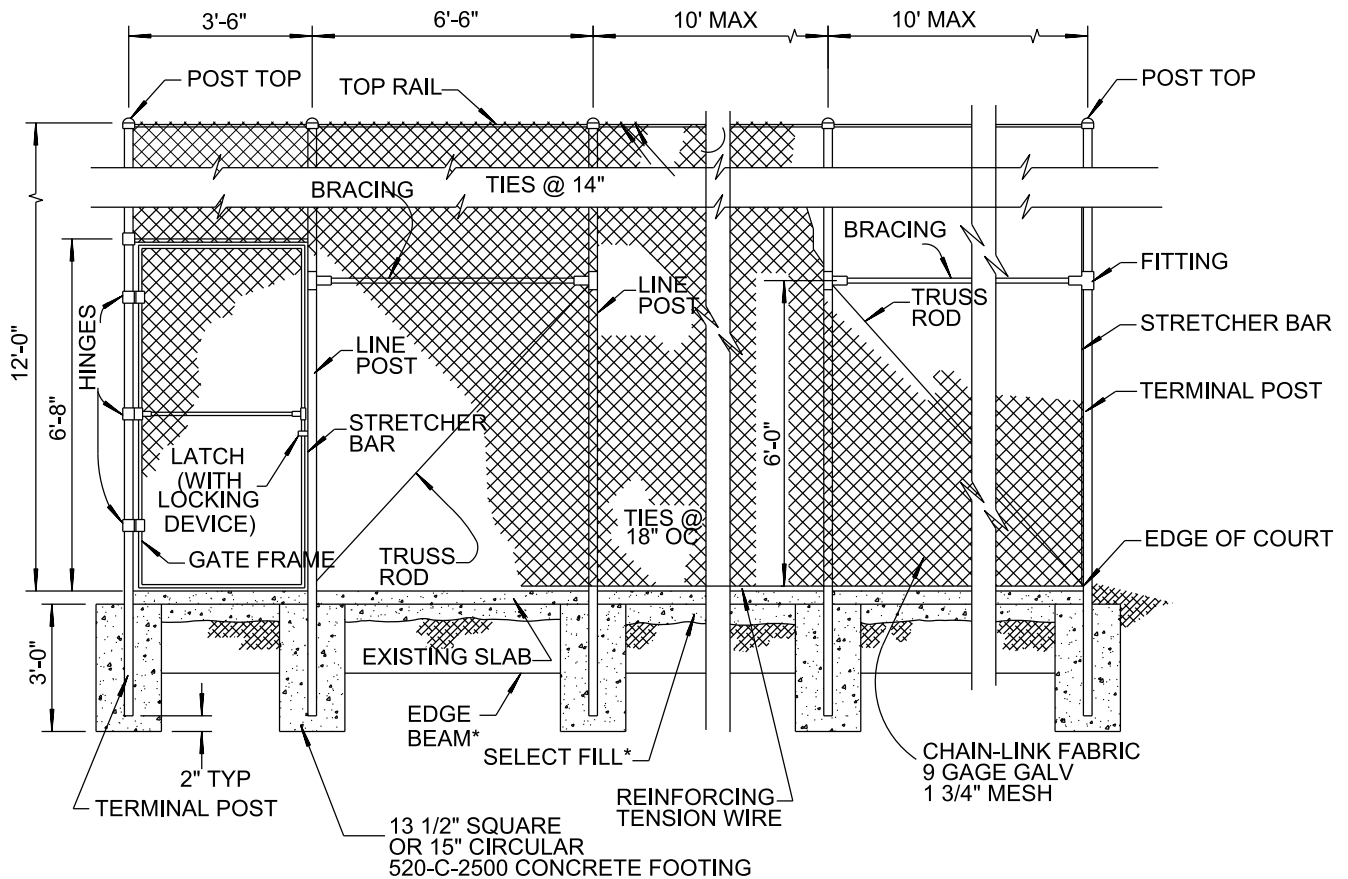
1. BROOM FINISH ON TREADS, TROWEL FINISH ON ALL OTHER EXPOSED SURFACES.
2. 1/4" PER 1' SLOPE ON TREADS FOR DRAINAGE.



**SECTION A-A
CONCRETE STEPS**

SHEET 3 OF 3

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
UPDATED	KA	J. NAGELVOORT	01/12		
UPDATED	FC	J. NAGELVOORT	02/16	PEDESTRIAN PROTECTIVE RAILING & STAIR HANDRAIL	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDM-118



* 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 IN	OD	3.65LBS
TERMINAL POST	2.875 IN	OD	5.79LBS
TOP RAIL	1.660 IN	OD	2.27LBS
BRACING	1.660 IN	OD	2.27LBS
GATE FRAME	1.660 IN	OD	2.27LBS

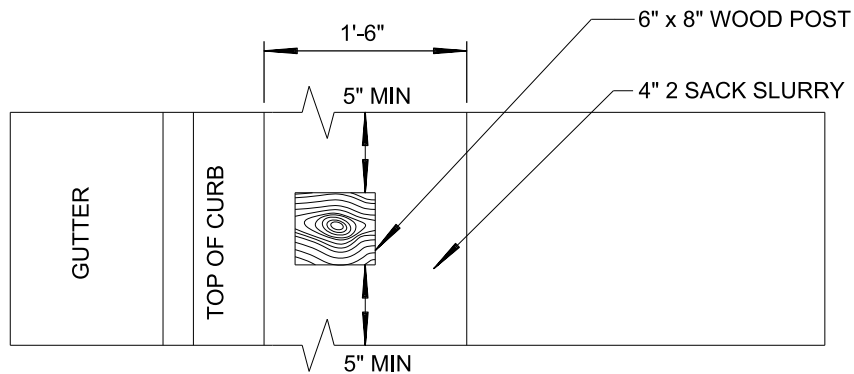
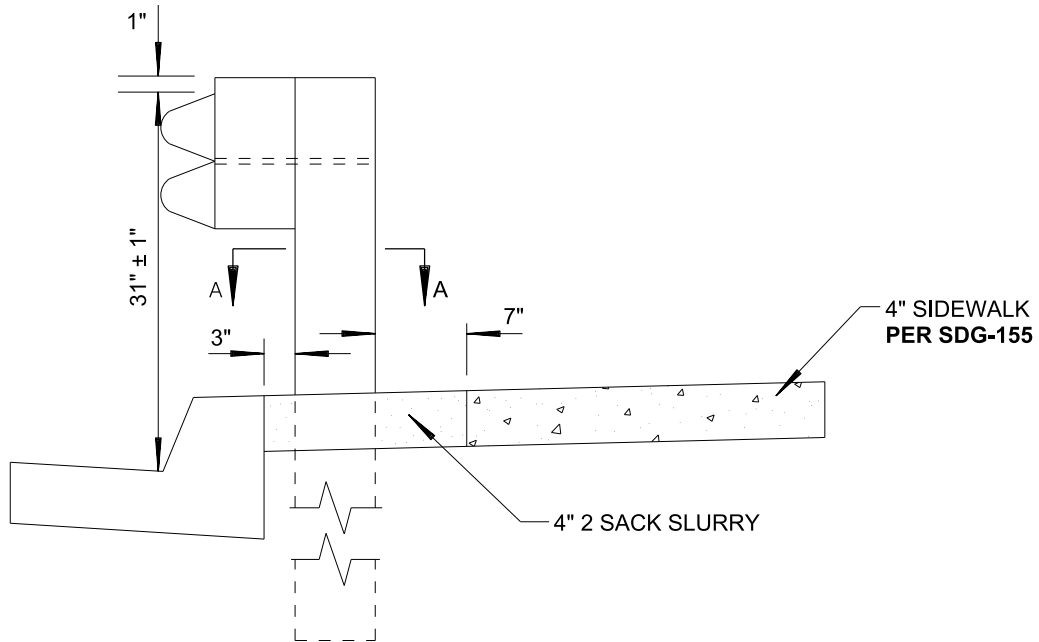
NOTE:

1. CHAIN LINK FABRIC SHALL BE ERECTED ON THE INTERIOR SIDE OF THE COURTS.
2. CHAIN LINK FABRIC SHALL HAVE KNUCKLED FINISH ON TOP EDGE.

CAUTION:

THIS STANDARD DRAWING IS NOT TO BE USED IF ANY WIND SCREEN IS TO BE APPLIED TO THE FENCE.


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	TENNIS COURT FENCE CHAIN LINK	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDM-119

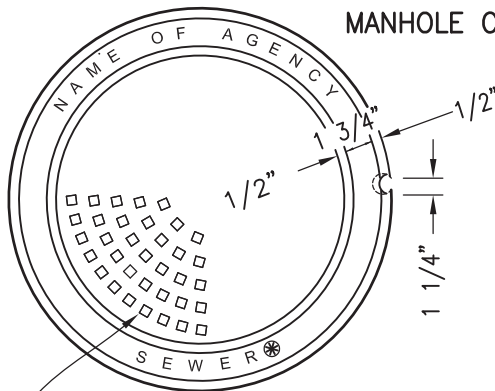
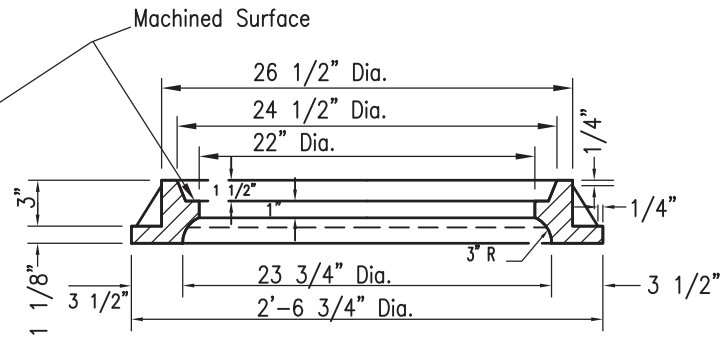
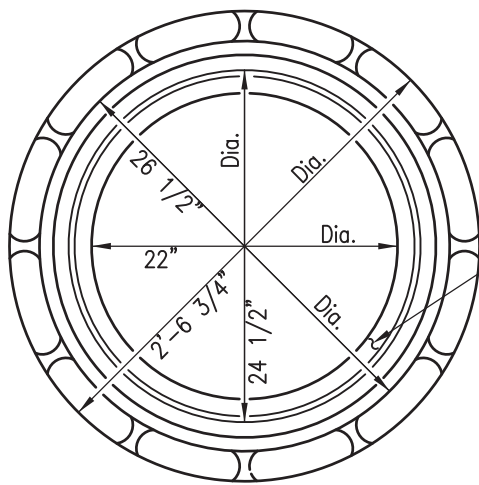


**POST KNOCKOUT PLAN DETAIL
SECTION A-A**

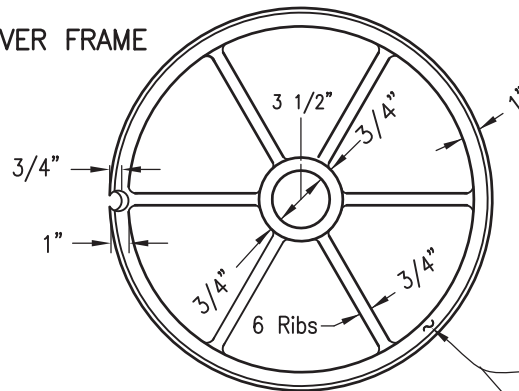
NOTES:

1. THIS STANDARD DRAWING SHALL BE USED WHEN GUARDRAIL IS INSTALLED ADJACENT TO CURB, GUTTER, AND SIDEWALK. THE POST KNOCKOUT DETAIL DOES NOT APPLY WHEN GUARDRAIL IS INSTALLED IN A PARKWAY.
2. SEE CALTRANS STANDARD PLANS FOR ADDITIONAL GUARDRAIL DETAILS.

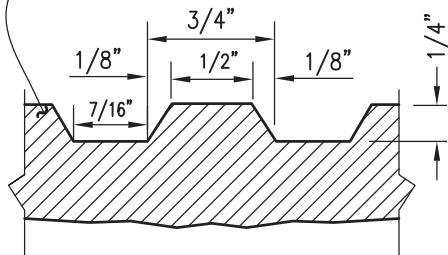
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATE	KA	J. NAGELVOORT	08/13	GUARDRAIL	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATE	AR	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDM-130



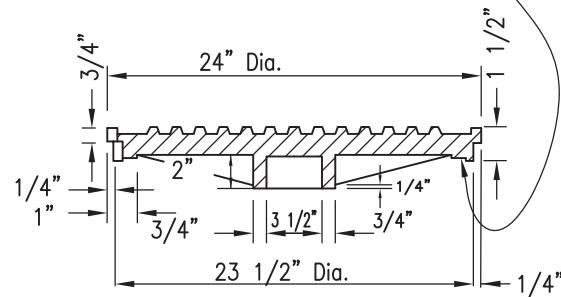
MANHOLE COVER FRAME



Machined Surface



DETAIL



NOTES

MANHOLE COVER

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

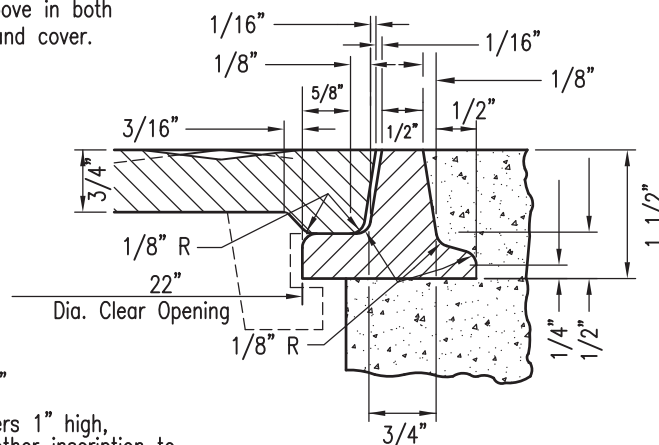
24" MANHOLE FRAME AND COVER HEAVY DUTY

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

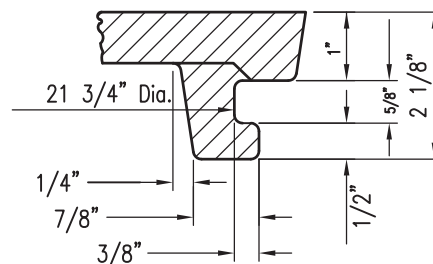
T. Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING
NUMBER

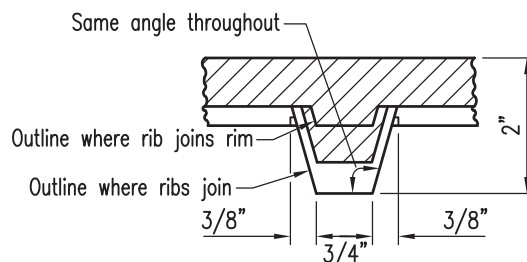
M-01



SECTION THROUGH RIM



SECTION THROUGH LUG



SECTION THROUGH
RIB AT MID RADIUS

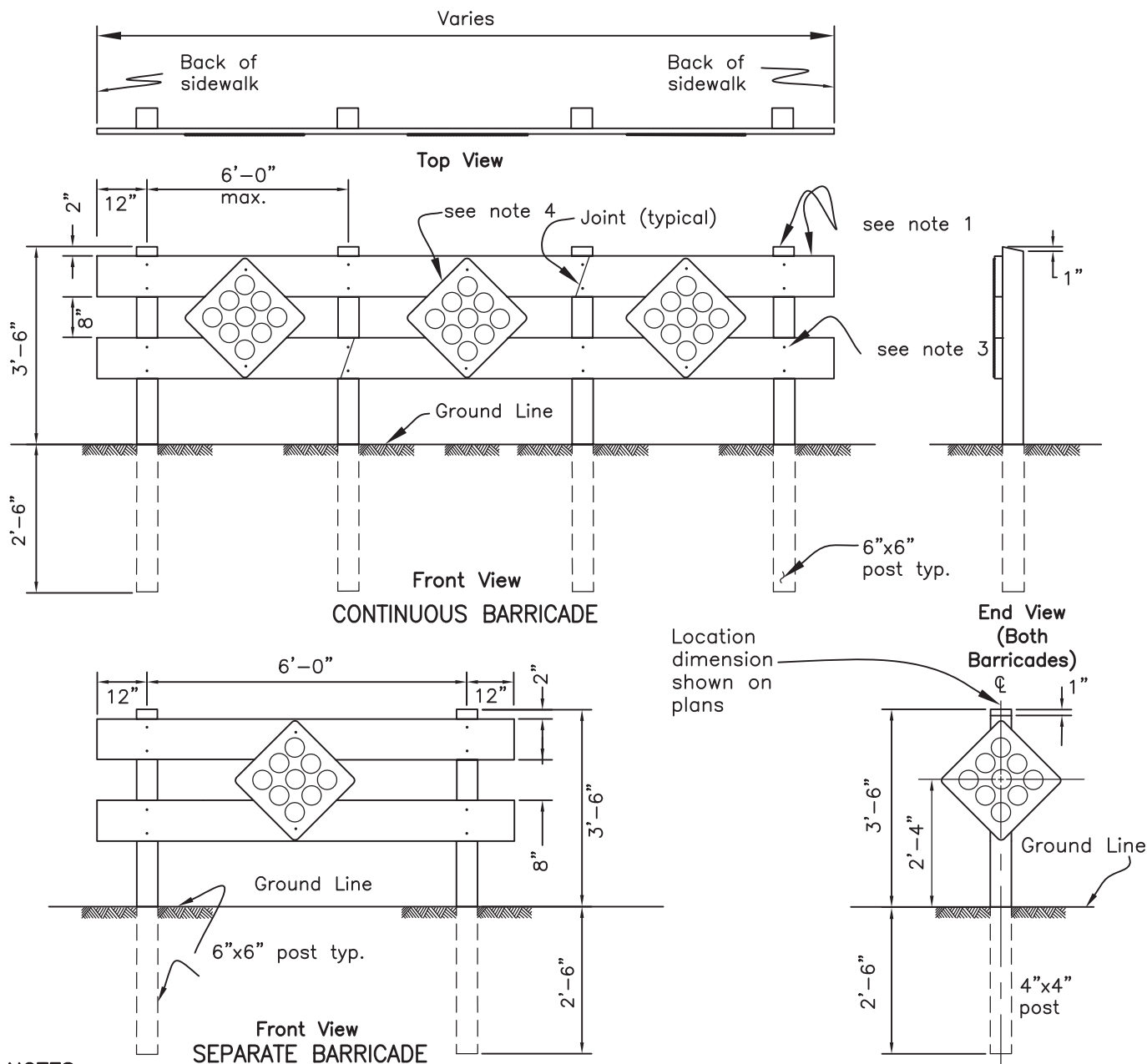
1. Frame and cover shall be cast iron. Cast iron shall conform to ASTM 48, Class 30.
2. Frame and cover for use in non-traffic area only.
3. Weights: Frame 29 lbs – 33 lbs.
Cover 95 lbs. – 110 lbs.
4. Imported frames and covers shall have the country of origin marked in compliance with federal regulations.

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

24" MANHOLE FRAME AND COVER LIGHT DUTY

Chairperson R C E 19246 Date 12/17/2015

DRAWING NUMBER **M-02**



NOTES

- 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.
- All exposed portions of barricades shall be painted with two coats of white exterior enamel over prime coat.
- Connections shall be made with 3/8" x 6" galvanized lag screws with one (1) washer each.
- Reflector sign fasteners to be 3/8" x 1 1/2" galvanized lag screws.
- Reflector signs - California Type N. Size 18" x 18" - Yellow with nine (9) 3 1/4" reflectors (center mount).
 - 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.
 - Sign material shall be aluminum alloy 6061-T6 or 5052-H38, aluminum thickness 0.063".
- 6' long hat section metal post per Caltrans Std. Plan A74-A optional for guard post.

LEGEND ON PLANS



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

SAN DIEGO REGIONAL STANDARD DRAWING

GUARD POST AND BARRICADE

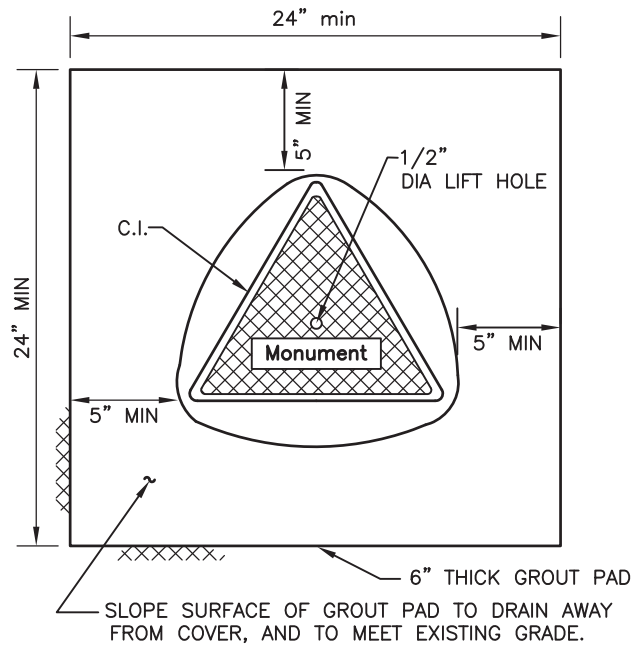
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

M. Stanton 12/17/2015

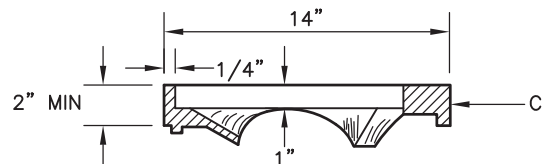
Chairperson R.C.E. 19246 Date

DRAWING
NUMBER

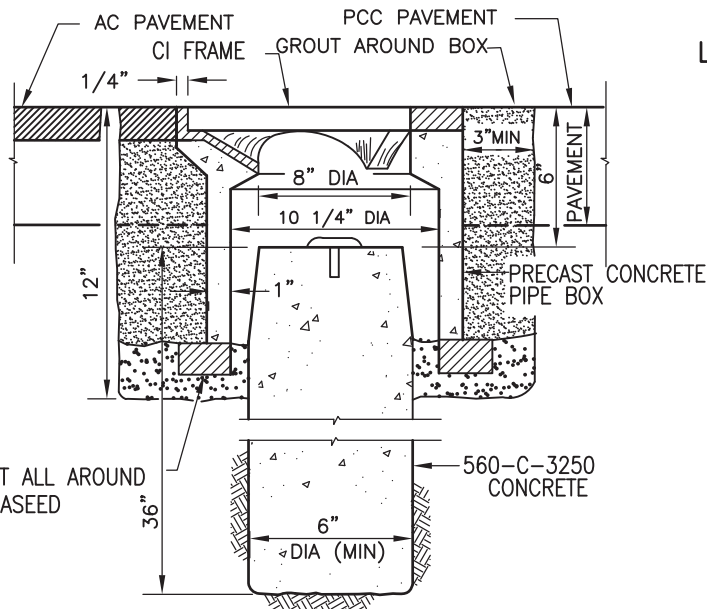
M-09



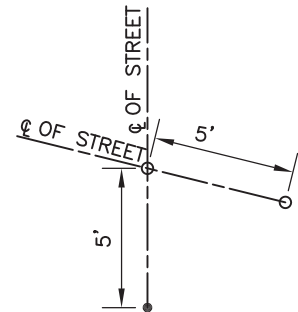
PLAN-IN UNPAVED AREA



RISER RING




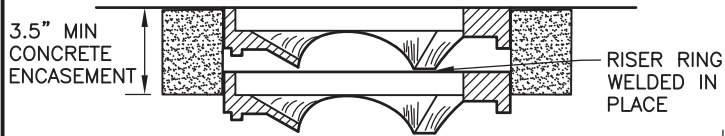
TYPICAL MONUMENT
SECTION IN PAVED AREA



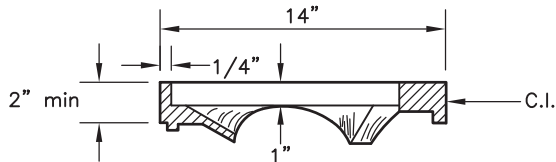
ALTERATION LOCATION OF MONUMENT.
TIE DISTANCES SHOWN ON FINAL SUB-
DIVISION MAP IF ALTERNATE LOCATION
IS USED
SEE ADDITIONAL STREET SURVEY
MONUMENT NOTES ON M-10B

LOCATION OF STREET
SURVEY MONUMENT

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	
ORIGINAL		Kercheval	12/75		
Revised		D. Gerschoffer	09/15	STREET SURVEY MONUMENT	
				RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
				 12/17/2015 Chairperson R.C.E. 19246 Date	
				DRAWING NUMBER M-10A	

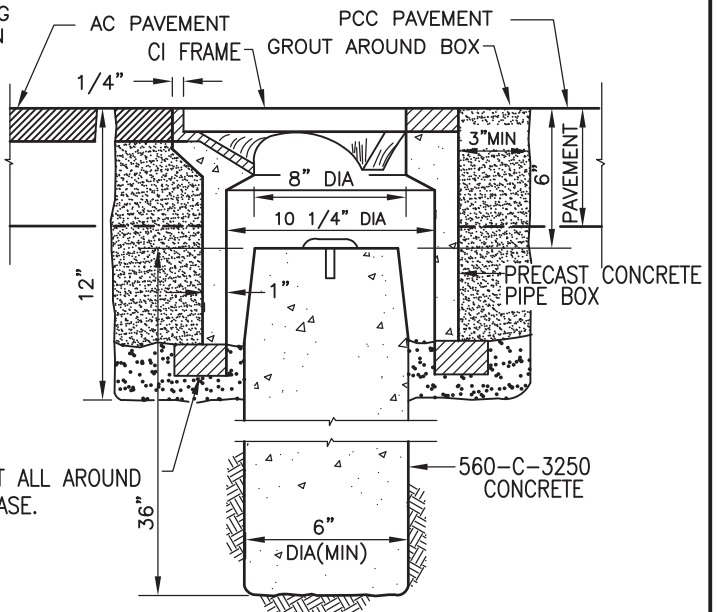


RISER RING WELDED TO EXISTING RING

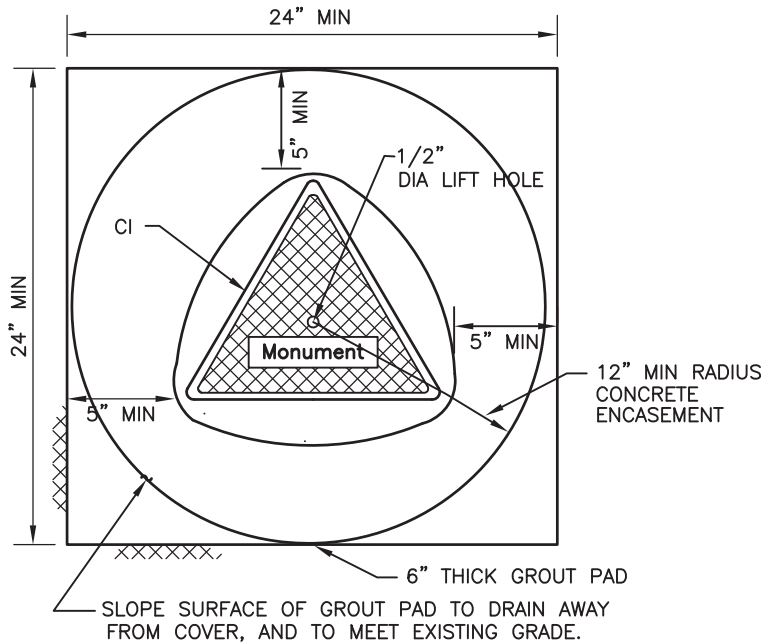


RISER RING

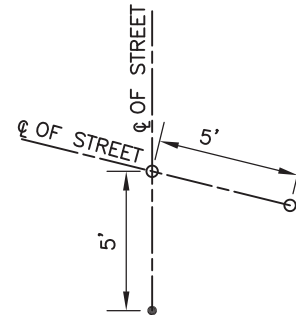
BRICK SUPPORT ALL AROUND ON 2" SAND BASE.



TYPICAL MONUMENT SECTION IN PAVED AREA




PLAN-IN UNPAVED AREA




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

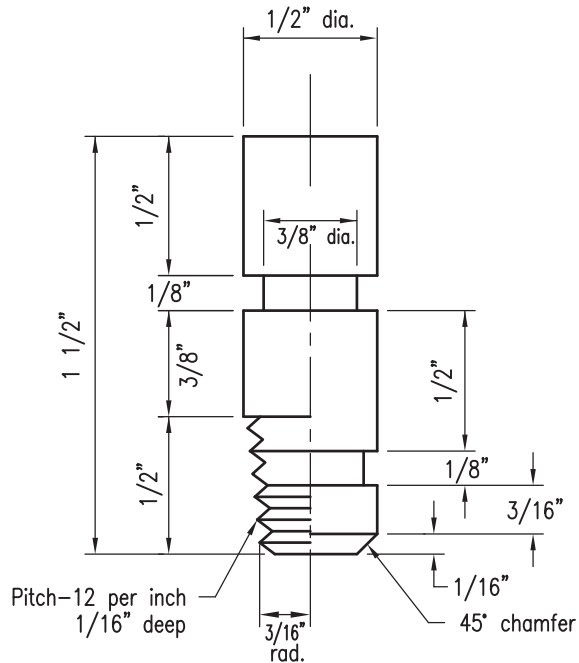
LOCATION OF STREET SURVEY MONUMENT

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
NEW		T.Stanton	10/15	STREET SURVEY MONUMENT OVERLAY ADJUSTMENT		 Chairperson R.C.E. 19246 Date 12/17/2015	
						DRAWING NUMBER	M-10B

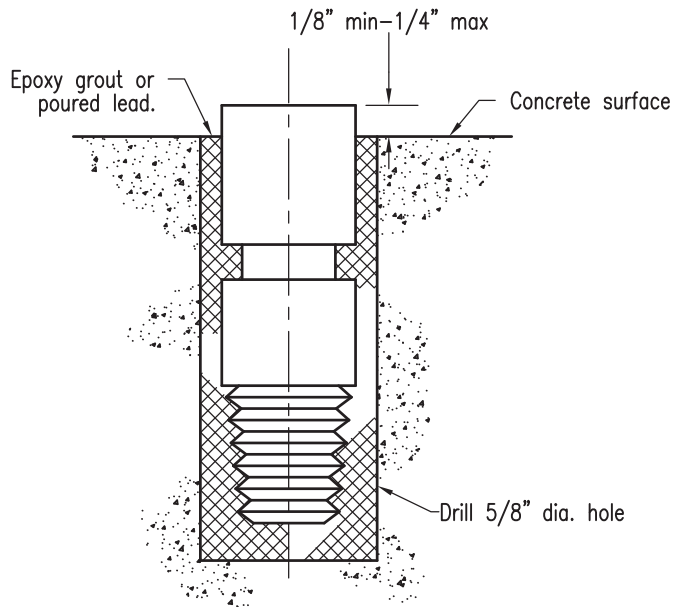
NOTES

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	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Add Metric		T. Stanton	03/03	STREET SURVEY MONUMENT NOTES	 12/17/2015 Chairperson R.C.E. 19246 Date
Delete Metric		D. Gerschoffer	05/12		
Note 4 Rev		D. Gerschoffer	02/14		
Reviewed		T. Stanton	09/15		
				DRAWING NUMBER	M-10C



TYPE-A TYPE-B
ELEVATION

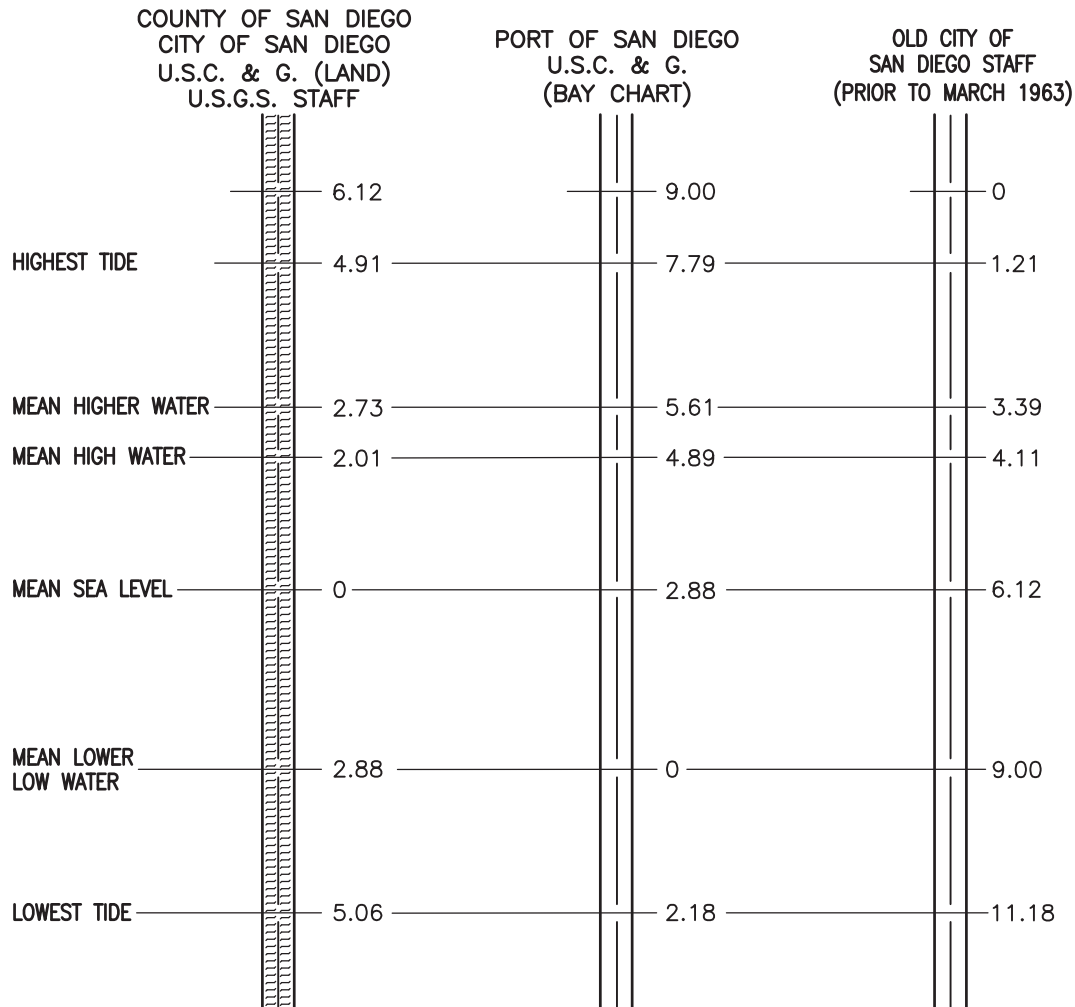


INSTALLATION IN EXISTING CONCRETE
(Typical for Type A or B)

NOTES

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

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
TEXT	BUSS		2/11		
REVISED		D. Gerschoffer	9/15	BENCH MARK - BRASS PLUG	<i>M. Stanton</i> 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	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
TEXT	BUSS		2/11		
REVISED		D. Gerschoffer	9/15	DATUMS	<i>M. Stanton</i> 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 unacceptable or will be destroyed by construction may be established by ties to permanent reference monuments shown on the final map.

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

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

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

LEGEND

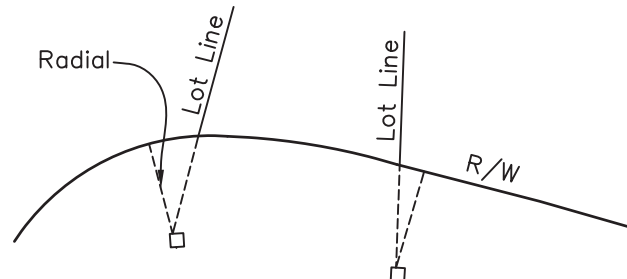
-  Fd 2" Iron Pipe Marked RCE XXXX or per Map XXX unless otherwise noted
-  Fd Street Survey Monument Stamped RCE XXXX or LS XXXX
-  Set 2" x 24" Iron Pipe Marked RCE XXXX or LS XXXX
-  Set Lead and Disc Stamped RCE XXXX or LS XXXX
-  Set 1/2" x 18" Iron Pipe Marked RCE XXXX or LS XXXX
-  Set Street 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 1/2" by 18" iron pin stamped (RCE or LS number).
2. Lot corners along the sideline of dedicated street right of way will be monumented by a disc stamped (RCE or LS number), set along an extension of the lot line at an offset of ___ in the (curb, sidewalk). The offset shall be measured radially, or at right angles, to the right of way line. (See example below.)
3. All points of curve of the sidelines of dedicated streets will be monumented by a disc stamped (RCE or LS number), set at an offset of ___ in the (curb, sidewalk). The offset shall be measured radially.



EXAMPLE OF OFFSET DISCS

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
TEXT	BUSS		2/11				
REVISED		D. Gerschoffer	9/15	SURVEY MONUMENTS		12/17/2015	
						Chairperson R.C.E. 19246 Date	
						DRAWING NUMBER	
						M-13	

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

WEIGHT

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

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

AREA

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

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

VOLUME

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

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

CAPACITY

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

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

LENGTH

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

MULTIPLE PREFIX
 1000000 mega
 1000 kilo
 100 hecto
 10 deka


METRIC PREFIX

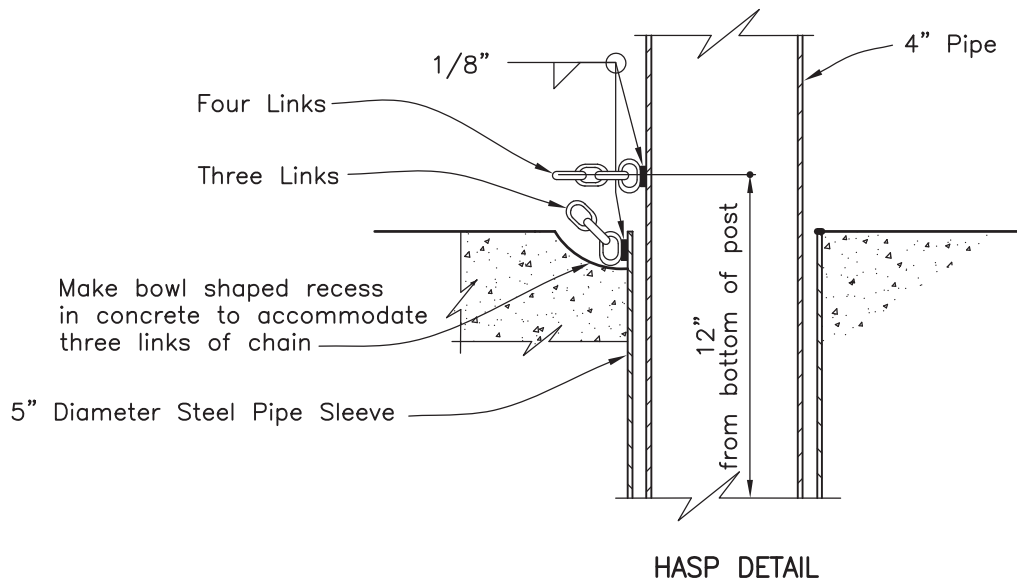
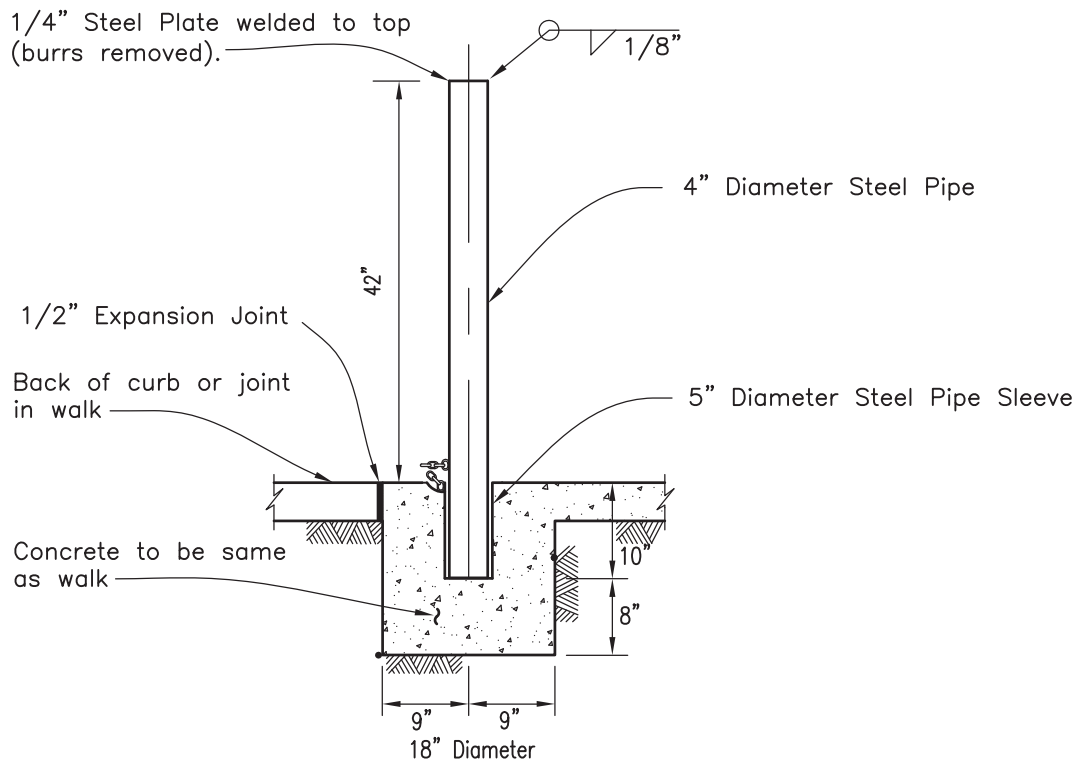
MULTIPLE PREFIX
 1/10 deci
 1/100 centi
 1/1000 milli
 1/1000000 micro

TEMPERATURE

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

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

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
TEXT	BUSS		2/11			
REVISED		D. Gerschoffer	9/15	METRIC EQUIVALENTS	 12/17/2015	
					Chairperson R.C.E. 19246 Date	
					DRAWING NUMBER	M-14



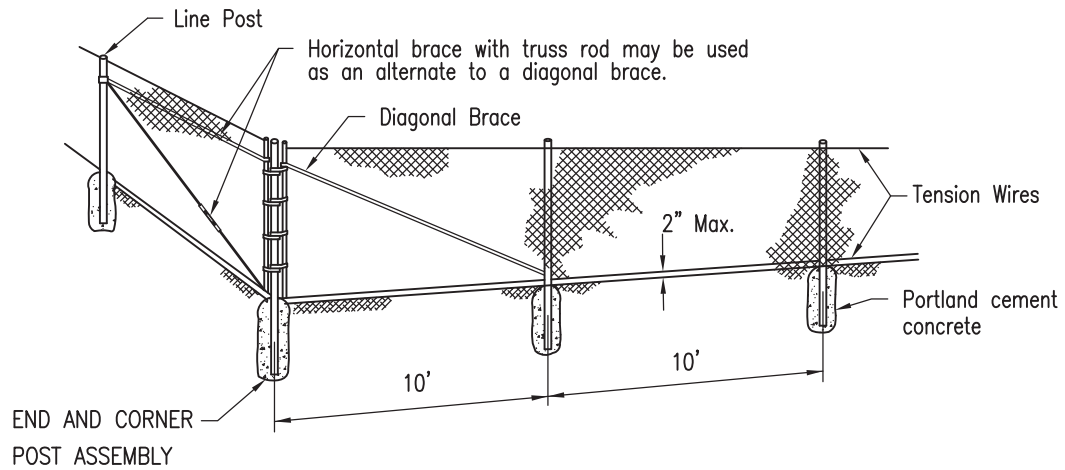
NOTES

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

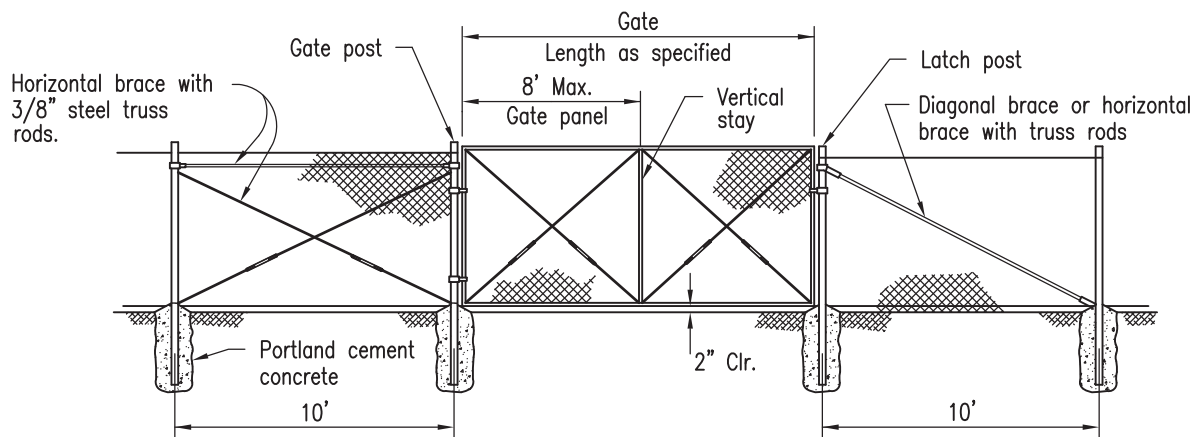
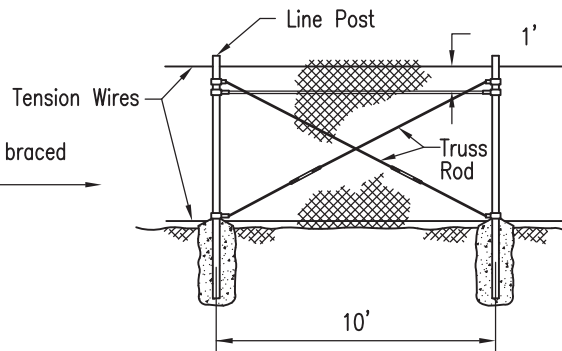
LEGEND ON PLANS



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
TEXT	BUSS		2/11		
REVISED		D. Gerschoffer	9/15	DEMOUNTABLE POST	<i>M. Stanton</i> 12/17/2015
					Chairperson R.C.E. 19246 Date
					DRAWING NUMBER
					M-16



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



Revision	By	Approved	Date
Updated		D. Gerschoffer	15-Dec

SAN DIEGO REGIONAL STANDARD DRAWING

CHAIN LINK FENCE DETAILS

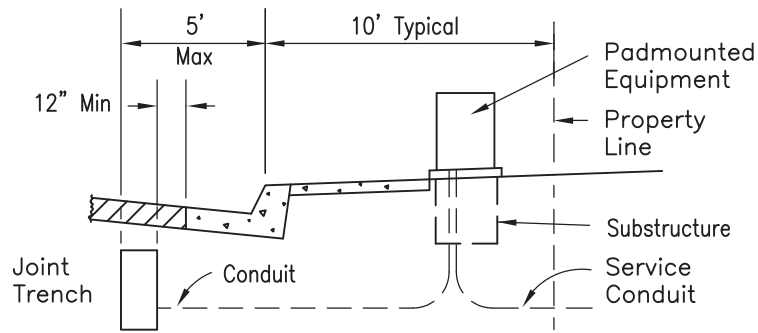
RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

M. Stanton 12/17/2015

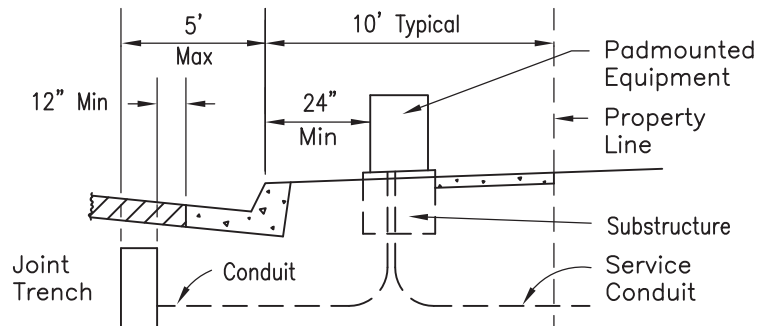
Chairperson R.C.E. 19246 Date

DRAWING
NUMBER

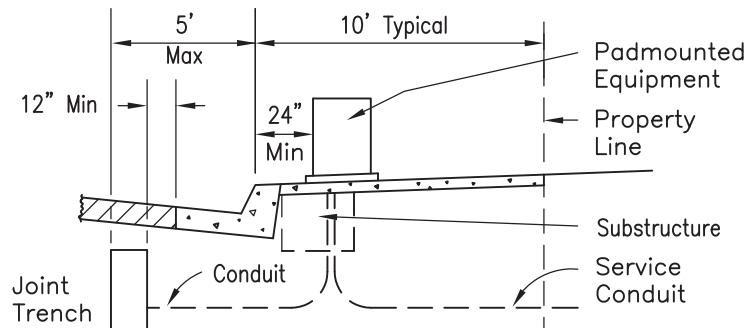
M-20



SIDEWALK NEXT TO CURB



SIDEWALK NEXT TO PROPERTY LINE



SIDEWALK NEXT TO CURB AND PROPERTY LINE

NOTES

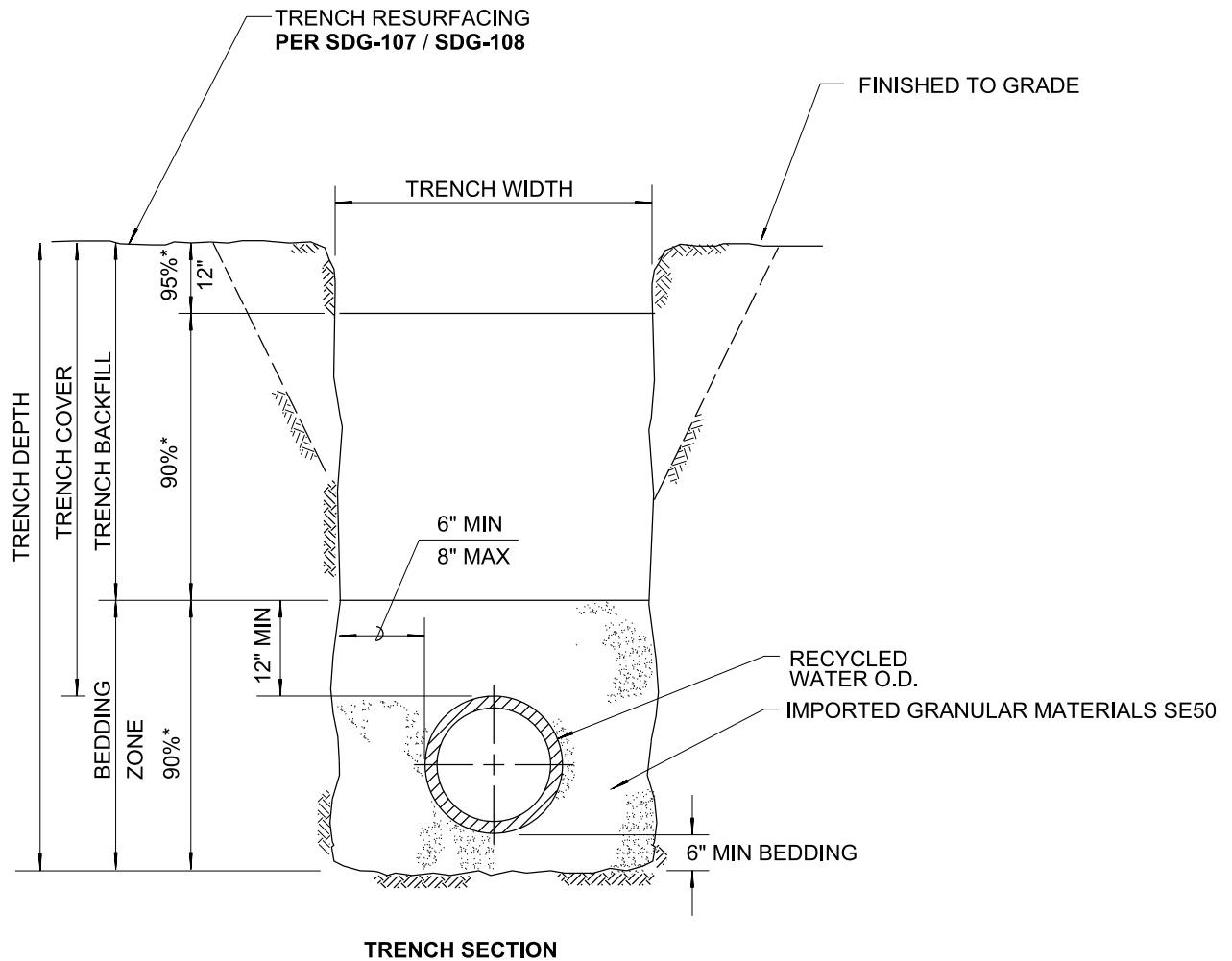
1. Sidewalk shall have a minimum of 4' clear area (path, not including curb) passing pedestals, pullboxes and other structures.
2. See Standard Drawing M-15 for joint trench.

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
Updated		D. Gerschoffer	15-Dec			<i>M. Stanton</i> 12/17/2015	
				UNDERGROUND TYPICAL LOCATION CONVERSION/REPLACEMENT/ UPGRADE		Chdirperson R.C.E. 19246 Date	
						DRAWING NUMBER M-21	

FOR DRAWING M-15 SEE DRAWING SDM-103

CHAPTER 8

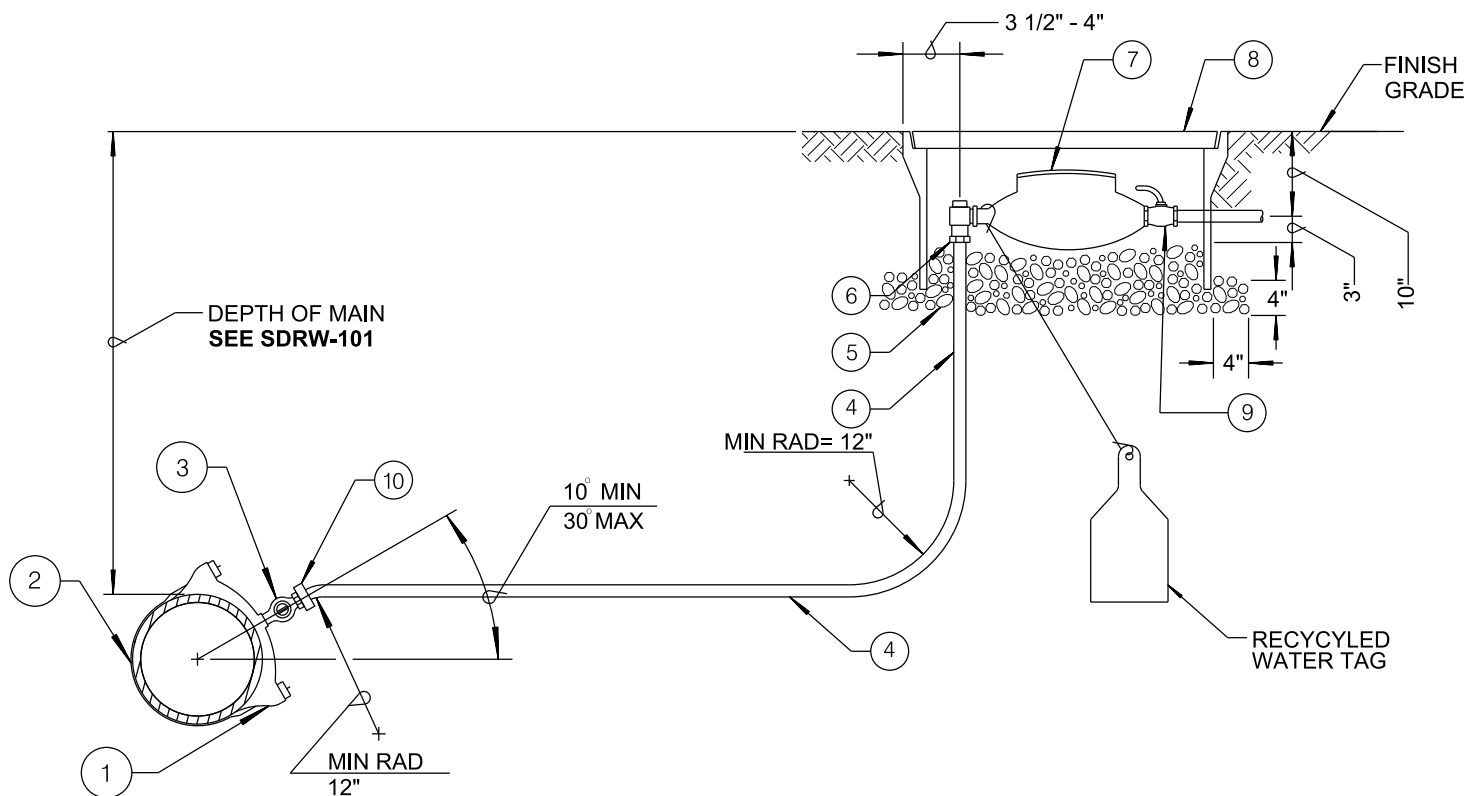
*RECYCLED
WATER
SYSTEMS*



NOTES:

1. (*) INDICATES MINIMUM RELATIVE COMPACTION. IT SHALL BE 95% MIN IN THE TOP FOOT.
2. MINIMUM COVER: 4' FOR RECYCLED WATER MAIN.
3. RECYCLE WATER PIPE SHALL BE PURPLE COLOR CODED INTEGRALLY STAMPED OR MARKED AS "CAUTION - RECYCLED WATER - DO NOT DRINK".
4. WARNING / IDENTIFICATION METAL TAPE SHALL BE PLACED AT 4' BELOW TRENCH CAP AND 12" BELOW FINISH GRADE IN UNIMPROVED STREETS.
5. THE TERM RECLAIMED WATER IS THE SAME AS THE TERM RECYCLED WATER.
6. 1' SAND CUSHION OR A 6" MINIMUM SAND CUSHION WITH 1" NEOPRENE PAD SHALL BE PLACED FOR ALL CROSSINGS UTILITIES WHEN VERTICAL CLEARANCE IS 1' OR LESS. THE NEOPRENE PAD SHALL BE PLACED ON THE MOST FRAGILE UTILITY.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	PIPE BEDDING AND TRENCH BACKFILL FOR RECYCLED WATER MAINS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDRW-101



NOTES:

1. INSTALL CORPORATION STOP WITH KEY IN THE SIDE POSITION.
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 **PER SDM-105**.
5. WATER LATERALS INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN SPECIFICATIONS.
6. SILVER SOLDER JOINTS SHALL NOT BE USED.
7. ON STEEL MAINS, USE WELD ON COUPLINGS. ON DUCTILE IRON, MAINS, USE DUCTILE IRON SERVICE SADDLES.
8. TOP TAPS ARE NOT PERMITTED, AND ANY GLUE JOINTS SHALL BE BEVELED PRIOR TO ASSEMBLY.
9. NO RECYCLED WATER SHALL ENTER INTO THE STORM DRAIN.
10. FOR STEEL AND DI MAINS, INSTALL DIELECTRIC UNION AFTER CORPORATION STOP.
11. WAX TAPE FROM MAIN TO 3" PAST DIELECTRIC UNION, INCLUDING SADDLE.

LEGEND ON PLANS

SHEET 1 OF 2

ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	SIZE x 2" BRONZE SERVICE SADDLE (DOUBLE STRAP)	⑥	2" BRONZE ANGLE METER STOP WITH LOCKWING
②	RECYCLED WATER MAIN	⑦	WATER METER FURNISHED AND INSTALLED BY THE CITY
③	2" BRONZE CORPORATION STOP	⑧	METER BOX WITH LID, 17"x 30"
④	2" x REQUIRED LENGTH COPPER PIPE TYPE "K" SOFT/RIGID OR UNLESS OTHERWISE SPECIFIED.	⑨	CUSTOMER SHUT-OFF VALVE (LOCKABLE)
⑤	3/8" ROCK, 4" TO 6" DEEP	⑩	2" COPPER DIELECTRIC UNION. REQUIRED FOR STEEL OR DI MAINS.

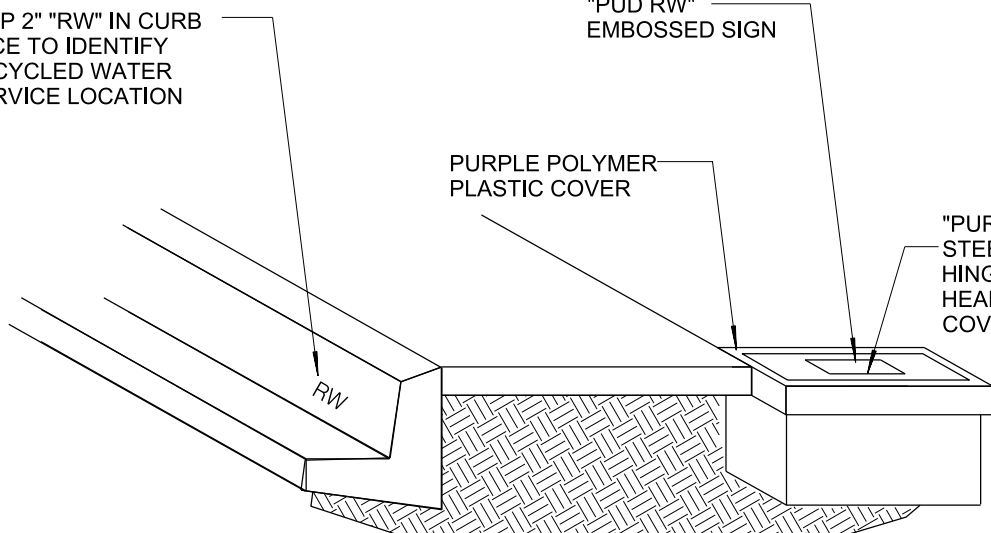
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	2" RECYCLED WATER SERVICE INSTALLATION AND MARKING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE COORDINATOR R.C.E. 56523 9/4/18 DATE
ORIGINAL	KA	J. NAGELVOORT	01/12			
UPDATED	KA	J. NAGELVOORT	08/13			
UPDATED	EF	J. NAGELVOORT	11/17			
REDRAFTED	CD	J. NAGELVOORT	09/18			
						DRAWING NUMBER SDRW-102

CHIP 2" "RW" IN CURB
FACE TO IDENTIFY
RECYCLED WATER
SERVICE LOCATION

"PUD RW"
EMBOSSSED SIGN

PURPLE POLYMER
PLASTIC COVER

"PURPLE"
STEEL
HINGE
HEAD
COVER

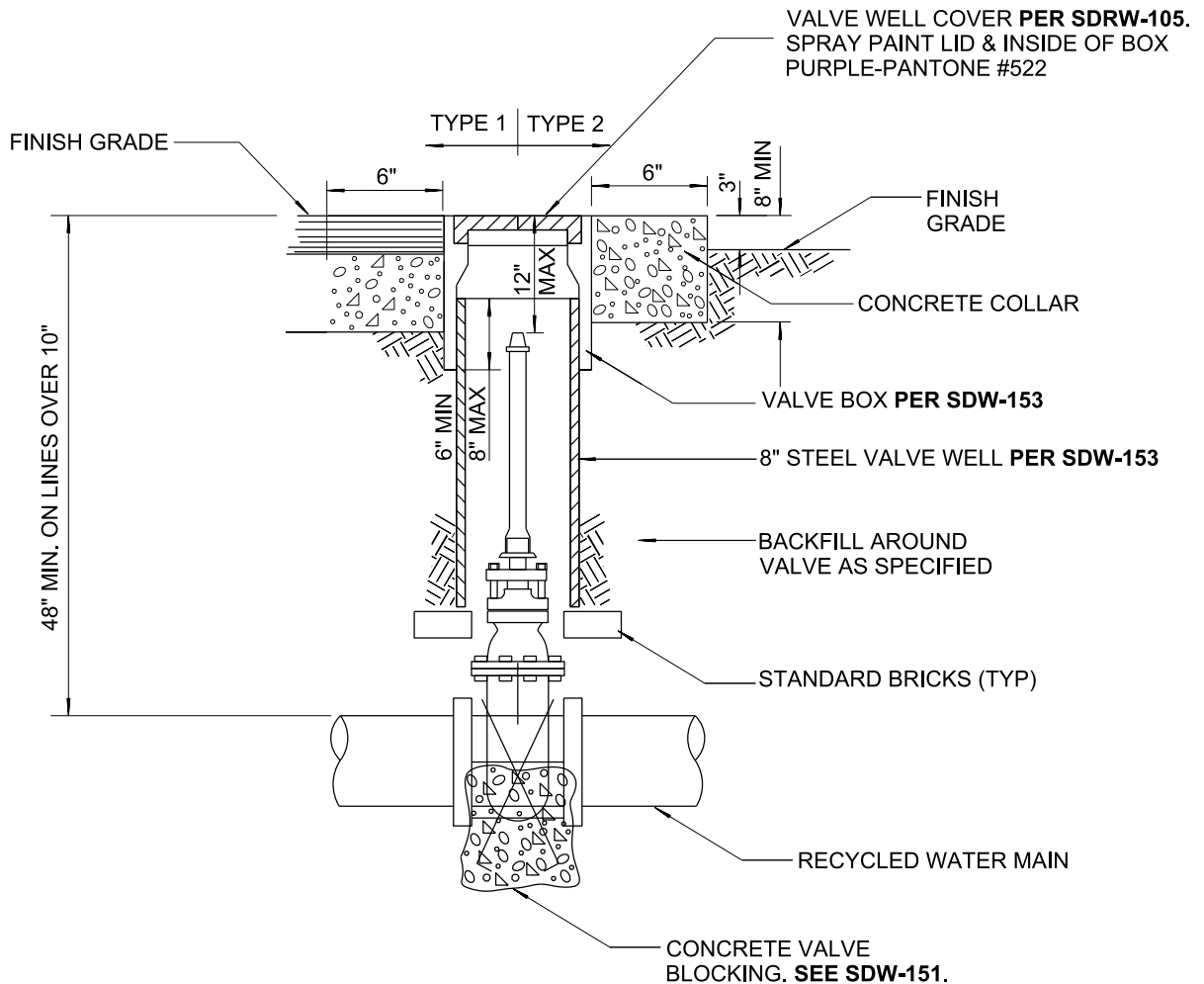


NOTES:

1. FOR ALL RECYCLED WATER SERVICE READING LID OF METER BOX SHALL BE PAINTED WITH PURPLE PANTONE #522 FOR ALL RECYCLED WATER SERVICE.
2. METER AND VALVES SHALL BE LABELED OR TAGGED TO INDICATE RECYCLED WATER.

SHEET 2 OF 2

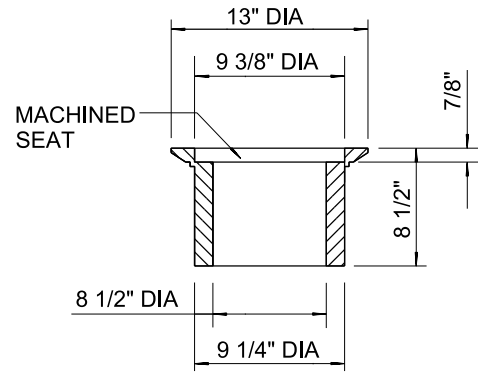
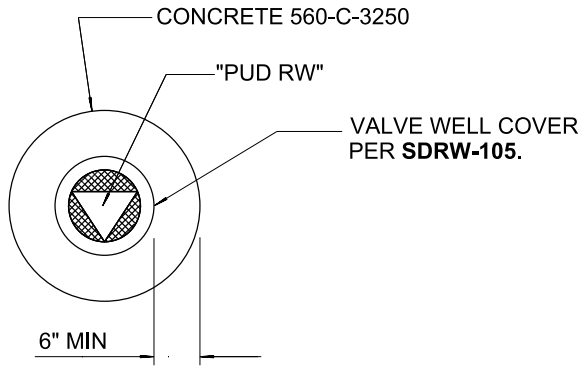
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	A. OSKOUJ	01/12		<div>2" RECYCLED WATER SERVICE INSTALLATION AND MARKING</div>
UPDATED	KA	J. NAGELVOORT	08/13		
UPDATED	EF	J. NAGELVOORT	11/17		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	



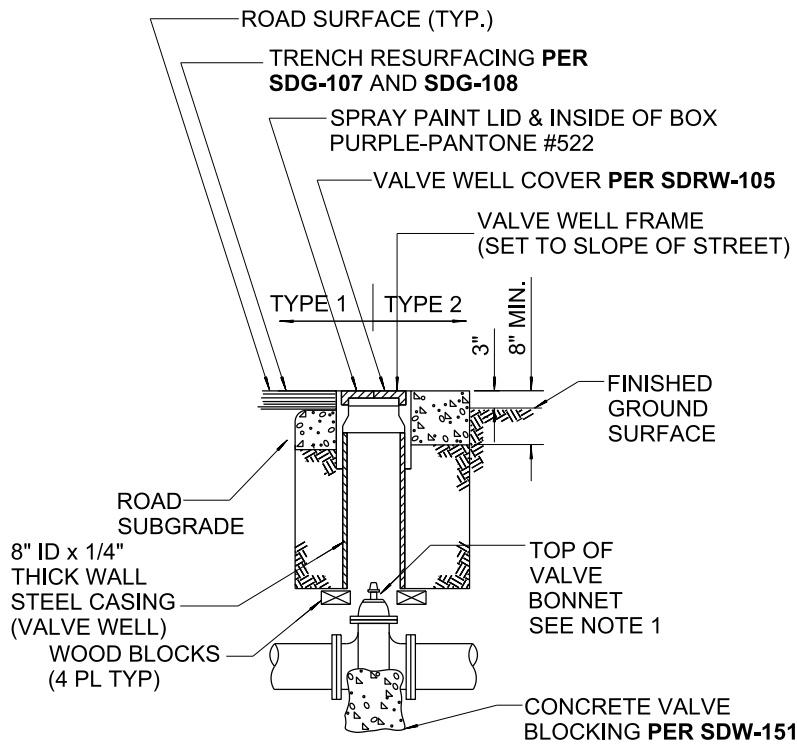
NOTES:

1. PROVIDE HEXAGON TYPE VALVE STEM EXTENSION IF DEPTH TO VALVE NUT EXCEEDS 2'. **SEE SDRW-106.**
2. USE FOR H10 LOADING OR LESS.
3. TYPE 1 INSTALLATION APPLIES TO VALVES WITHIN ROADWAYS.
TYPE 2 INSTALLATION APPLIES TO VALVES OUTSIDE ROADWAYS.

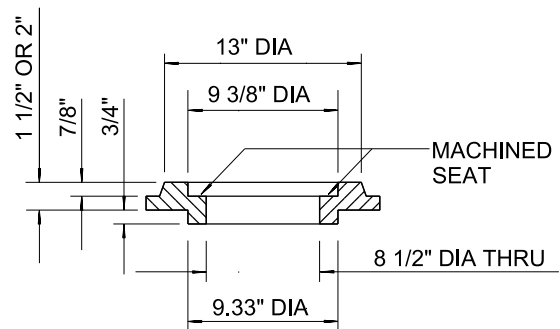
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
UPDATED	HM	J. NAGELVOORT	02/16	RECYCLED WATER VALVE AND VALVE BOX (LIGHT DUTY)	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING	SDRW-103
				NUMBER	



**CAST IRON VALVE
WELL FRAME**



**VALVE WELL & FRAME
FOR NEW INSTALLATIONS**



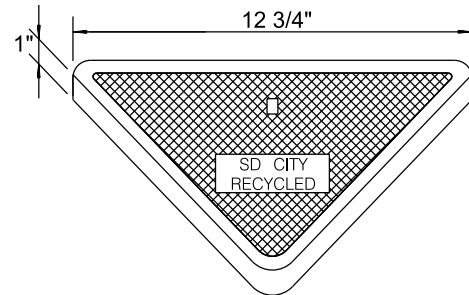
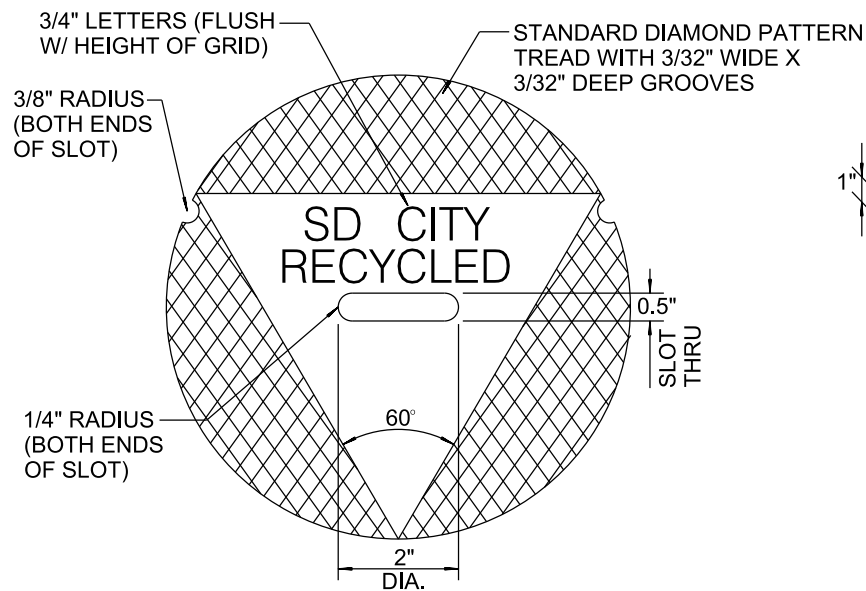
CAST IRON RISER RING

**FOR RETROFITTING AND
OVERLAY PROJECTS**

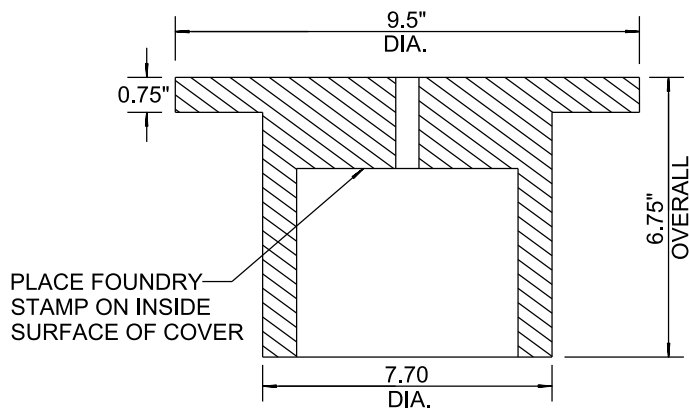
NOTES:

1. PROVIDE RECYCLED WATER VALVE KEY EXTENSION FOR ALL VALVES.
2. THE SURFACE OF THE VALVE WELL COVER SHALL MATCH THE STREET CROSS SLOPE AND PROFILE.
3. VALVE BOX AND COVER BASED ON SOUTH BAY FOUNDRY #1208N OR APPROVED EQUAL.
4. TYPE 1 INSTALLATION APPLIES TO VALVES WITHIN ROADWAYS.
TYPE 2 INSTALLATION APPLIES TO VALVES OUTSIDE ROADWAYS.
5. **SEE SDRW-106** FOR VALVE STEM EXTENSION.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		<div>RECYCLED WATER VALVE AND VALVE BOX (HEAVY DUTY)</div>
UPDATED	KA	J. NAGELVOORT	08/13		
UPDATED	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	

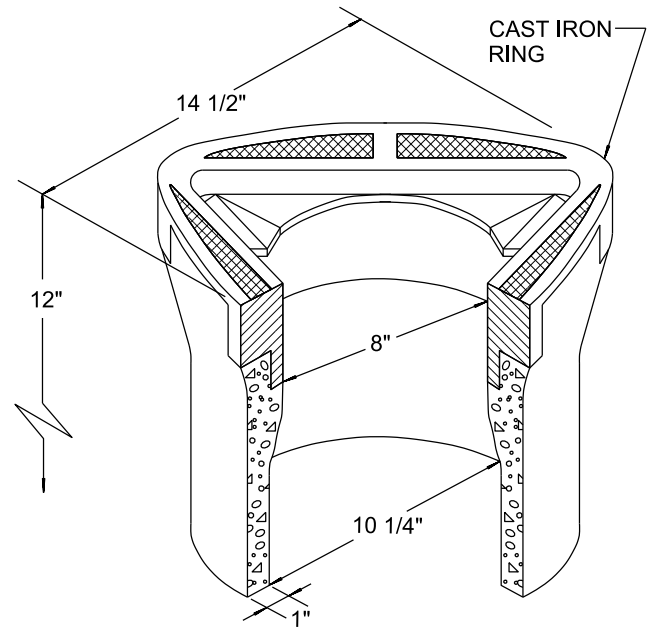


CAST IRON COVER
WEIGHT = 15 lb



CAST IRON VALVE WELL COVER
WEIGHT = 20 lb MIN

DETAIL 1



V4-T BOX
WEIGHT = 60 lb

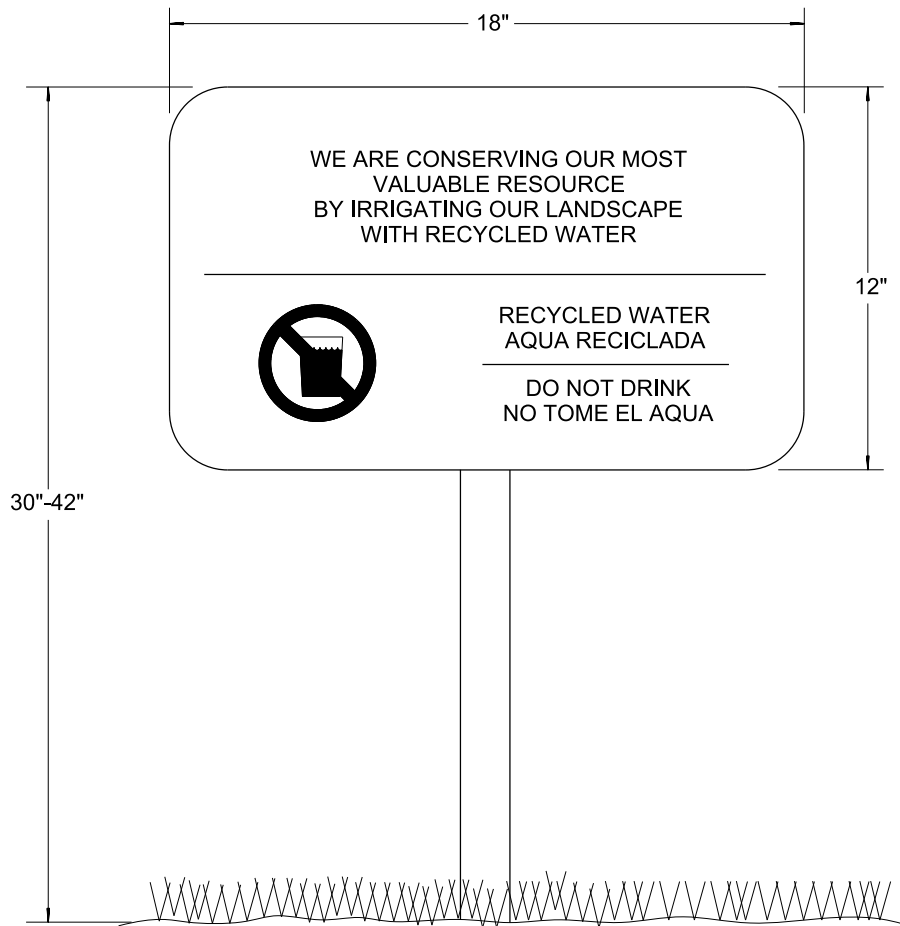
DETAIL 2

NOTE

COVER SHALL BE COLORED PURPLE W/ RED DOT

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	BB	J. NAGELVOORT	01/12		
UPDATED	BB	J. NAGELVOORT	08/13	RECYCLED WATER VALVE WELL COVER	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDRW-105





RECYCLED WATER IRRIGATION ADVISORY SIGN

SHEET 1 OF 4


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  9/4/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL	KA	J. NAGELVOORT	01/12		
UPDATED	CD	J. NAGELVOORT	09/18	RECYCLED WATER SIGNS	DRAWING NUMBER SDRW-108



SIZE: 4" HIGH x 8" WIDE
COLORS:
BACKGROUND: WHITE
LETTERS: PANTONE 522 PURPLE
CIRCLE/SLASH: DARK RED OVER WATER GLASS
WATER GLASS: PANTONE 522 PURPLE
1/4" WIDE BORDER: PANTONE 522 PURPLE
HOLES: 1/8" AT CORNERS

RECYCLED WATER PROCESS SIGN

SHEET 2 OF 4

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  COORDINATOR R.C.E. 56523	9/4/18 DATE
ORIGINAL	KA	J. NAGELVOORT	01/12			
REDRAFTED	CD	J. NAGELVOORT	09/18	RECYCLED WATER SIGNS	DRAWING NUMBER	SDRW-108



SIZE: 4" HIGH x 8" WIDE

COLORS:

BACKGROUND: WHITE

LETTERS: PANTONE 522 PURPLE

CIRCLE/SLASH: DARK RED WATER TAP


WATER TAP: PANTONE 522 PURPLE

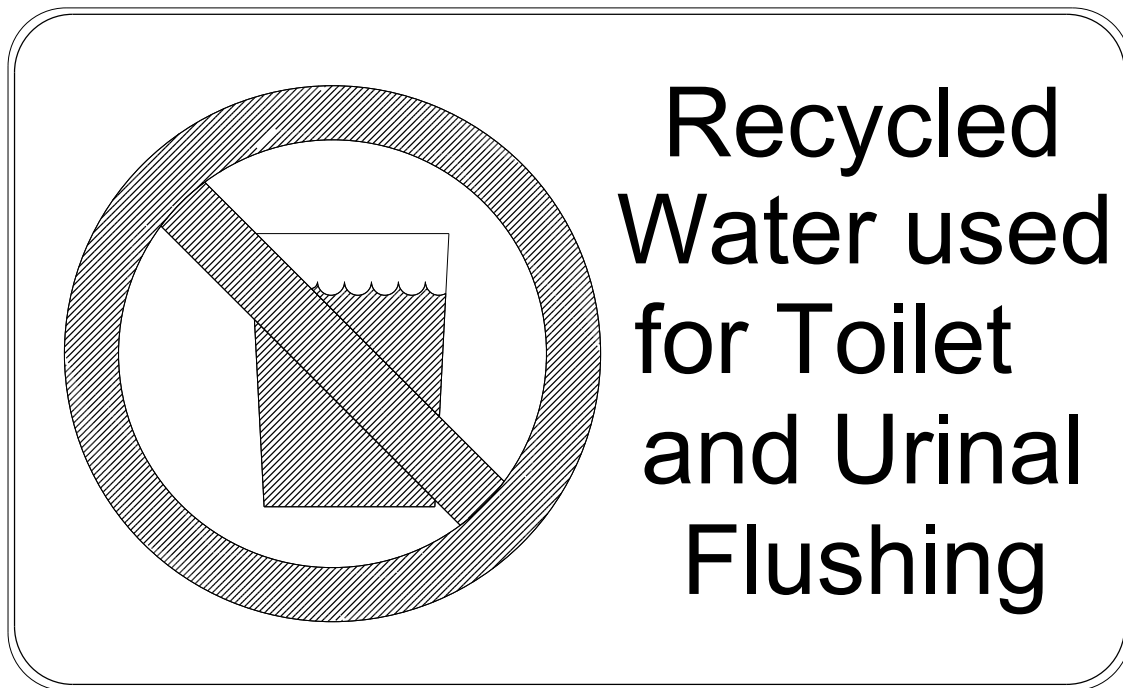
1/4" WIDE BORDER: PANTONE 522 PURPLE

HOLES: 1/8" AT CORNERS

RECYCLED WATER SIGN FOR IRRIGATION

SHEET 3 OF 4

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	RECYCLED WATER SIGNS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
DRAWING NUMBER				SDRW-108	



SIZE:

4" HIGH x 8" WIDE

COLORS:

BACKGROUND:

WHITE

LETTERS:

PANTONE 522 PURPLE

CIRCLE/SLASH:

DARK RED OVER WATER GLASS

WATER GLASS:

PANTONE 522 PURPLE

1/4" WIDE BORDER:


PANTONE 522 PURPLE

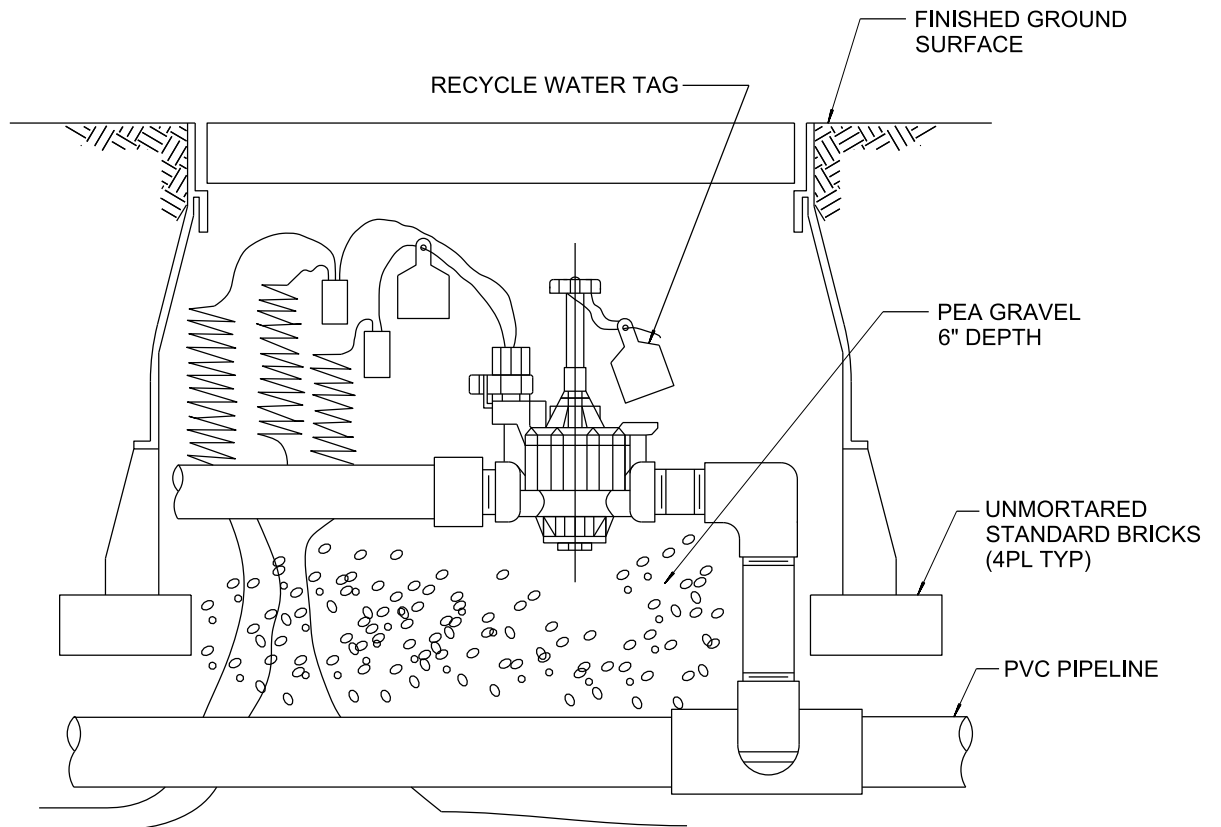
HOLES:

1/8" AT CORNERS

RECYCLED WATER SIGN FOR TOILET & URINAL FLUSHING


SHEET 4 OF 4

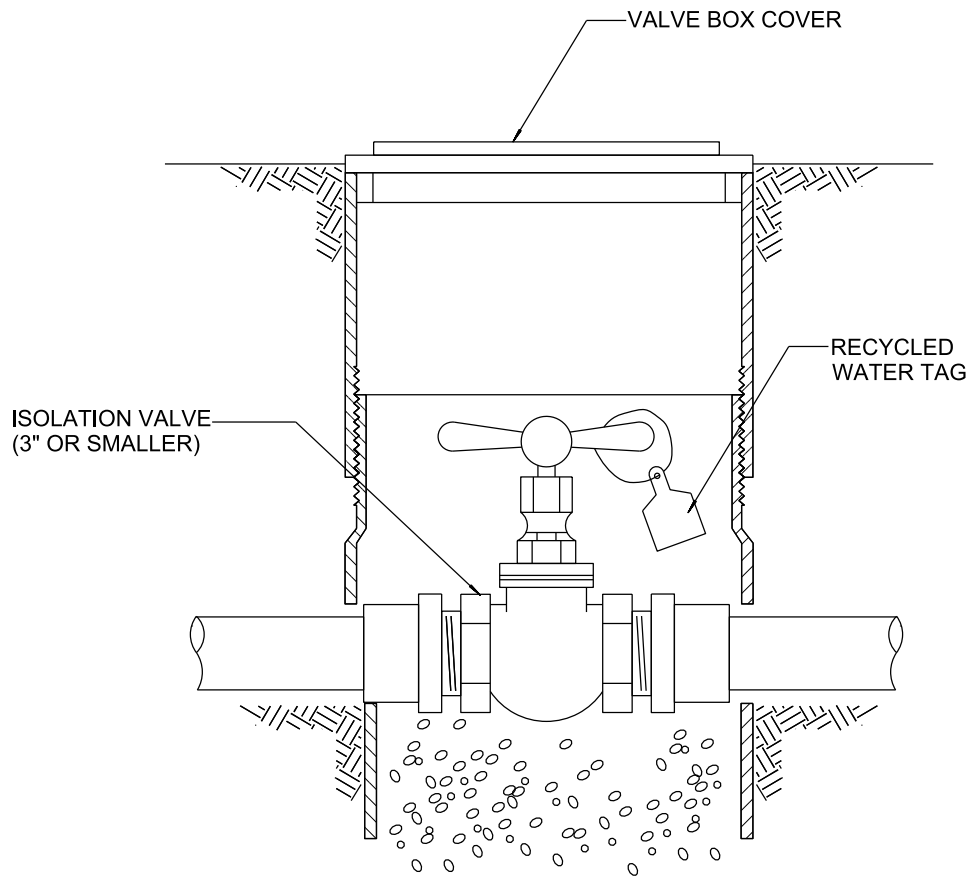
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	RECYCLED WATER SIGNS	 <div>9/4/18</div> <div>COORDINATOR R.C.E. 56523 DATE</div>
DRAWING NUMBER				SDRW-108	



NOTES:

1. RECYCLE WATER IRRIGATION VALVE BOX COVERS SHALL BE COLOR CODED PANTONE #522
2. TEFLON SHALL BE USED ON THREADED CONNECTIONS

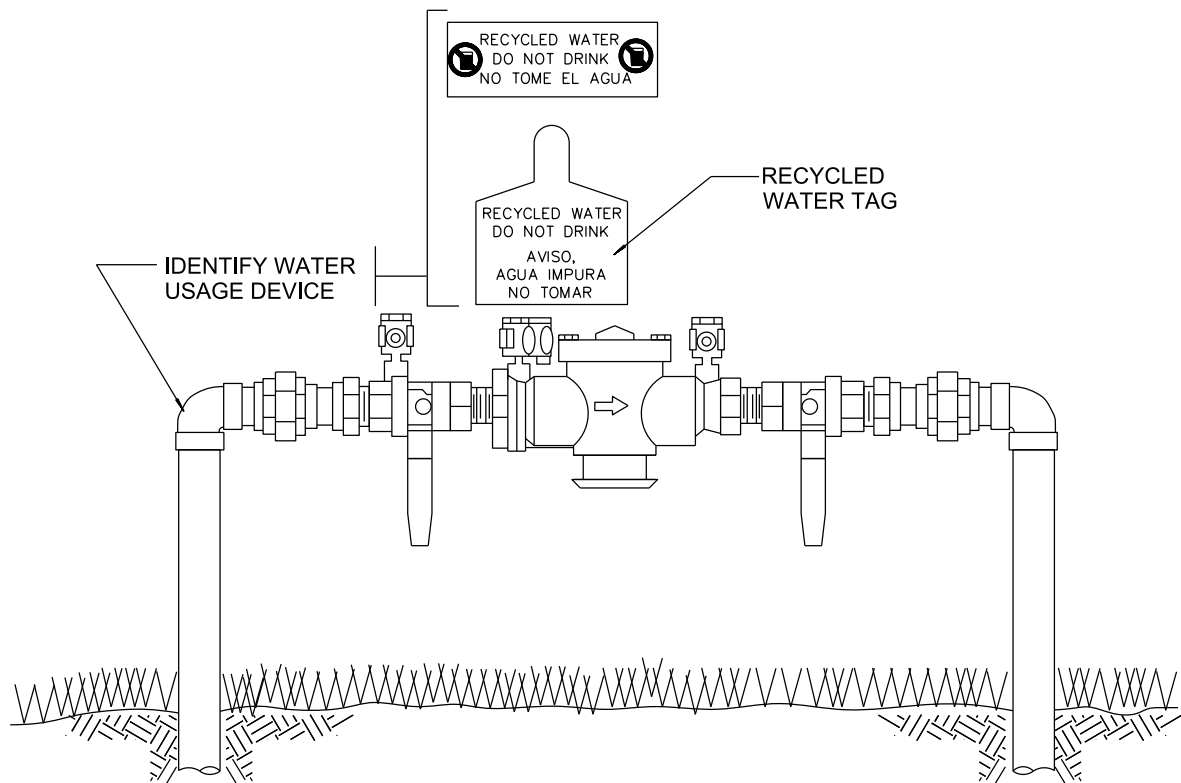
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				SIGN / TAG FOR RECYCLED WATER IRRIGATION REMOTE CONTROL VALVE	<div> 9/4/18</div> <div>COORDINATOR R.C.E. 56523 DATE</div>
DRAWING NUMBER				SDRW-109	



NOTE:

RECYCLE WATER IRRIGATION VALVE BOX COVER

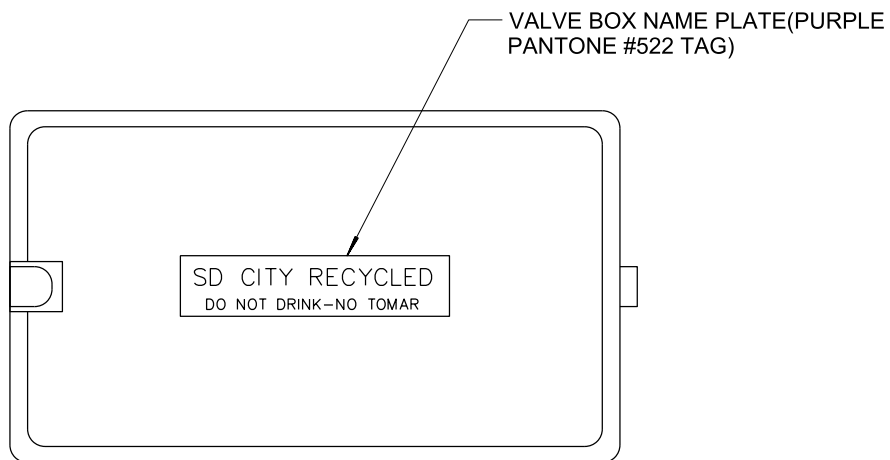
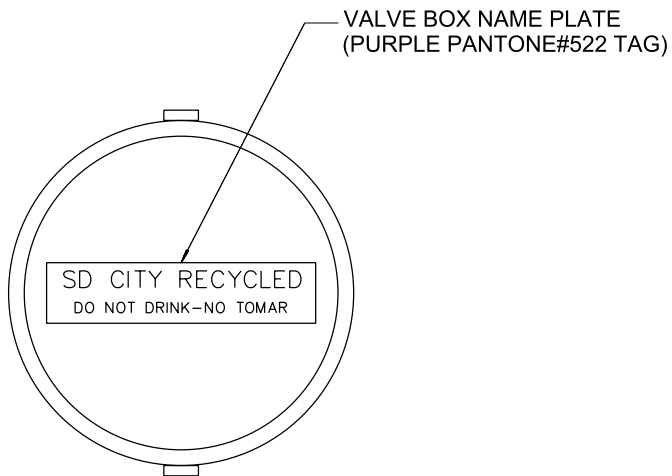
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  9/4/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	SIGN / TAG FOR RECYCLED WATER IRRIGATION VALVE	DRAWING NUMBER SDRW-110



NOTE:


ALL RECYCLED METERS, AIR/VACUUM RELIEF VALVES, VALVES, PRESSURE REDUCING VALVES, PUMPS, PUMP CONTROL VALVES, ETC., SHALL BE TAGGED OR LABELED INDICATING THAT THE DEVICES ARE ON RECYCLED WATER SYSTEM AND COLOR CODED PANTONE #522. 12" MINIMUM CLEARANCE BETWEEN GROUND AND WATER CONTROL DEVICES.

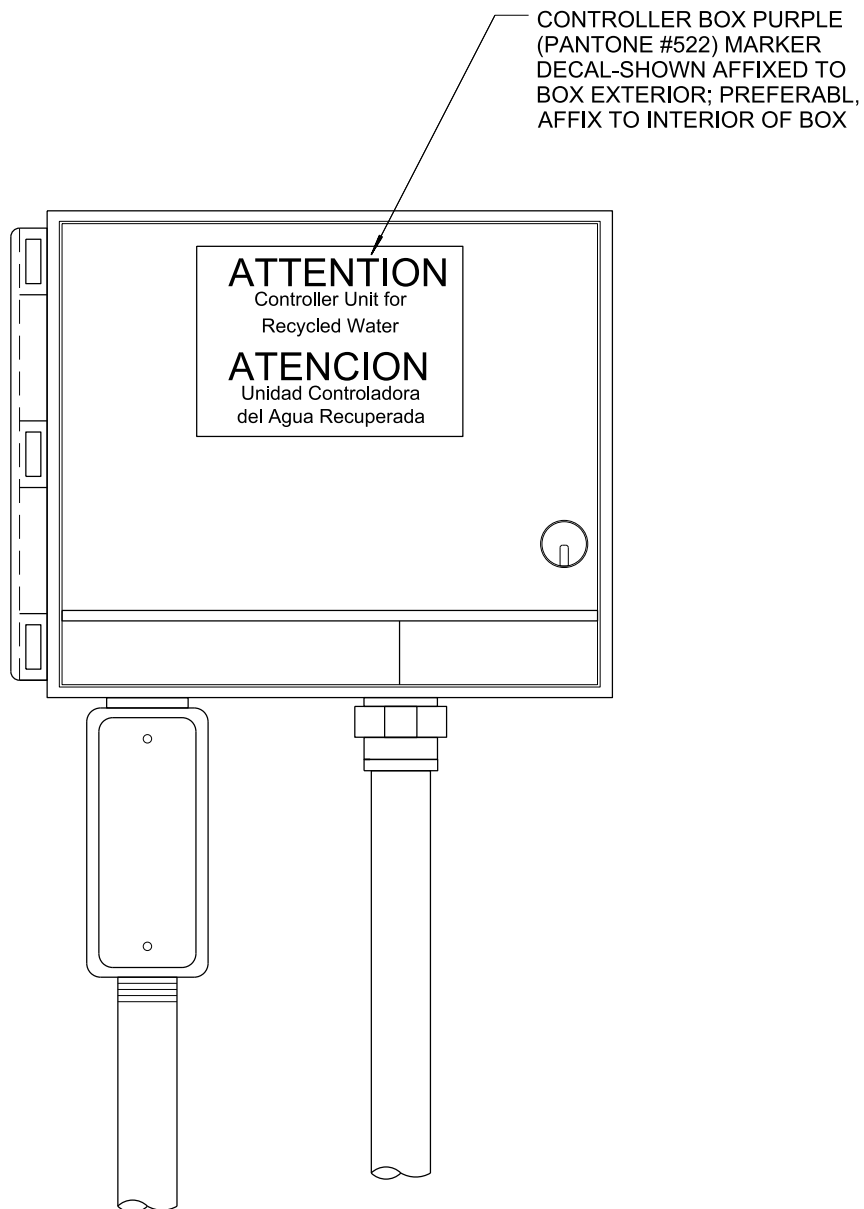
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL	KA	J. NAGELVOORT	01/12		<div>SIGN / TAG FOR IDENTIFICATION OF RECYCLED WATER CONTROL DEVICES</div>	<div><div>COORDINATOR R.C.E. 56523</div></div> <div>9/4/18 DATE</div>
REDRAFTED	CD	J. NAGELVOORT	09/18			
					DRAWING NUMBER	
					SDRW-111	



NOTE:

ALL RECYCLED WATER IRRIGATION BOX COVERS AND LIDS SHALL BE COLOR CODED PANTONE #522

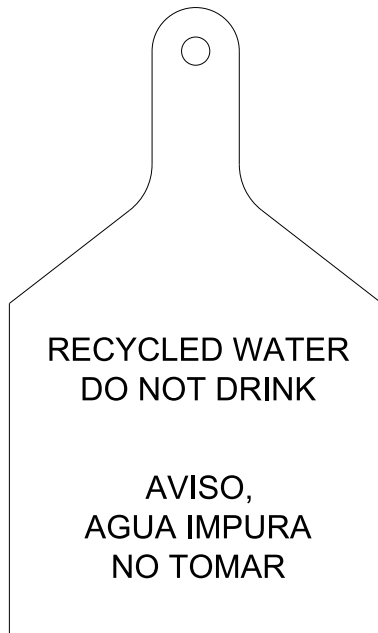
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
UPDATE	KA	J. NAGELVOORT	09/13	SIGN / TAG FOR RECYCLED WATER IRRIGATION BOX COVER / LID	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDRW-112



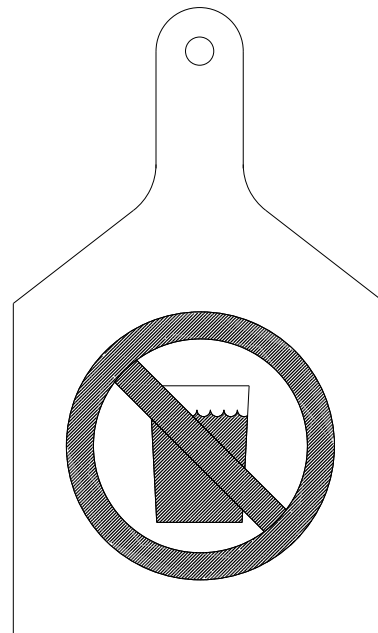
NOTES:

RECYCLED WATER IRRIGATION SYSTEM CONTROLLER BOX SHALL BE COLOR CODED PANTONE #522

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE <i>Chung</i> 9/4/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	SIGN / TAG FOR RECYCLED WATER AUTOMATIC IRRIGATION CONTROLLER	DRAWING NUMBER SDRW-113



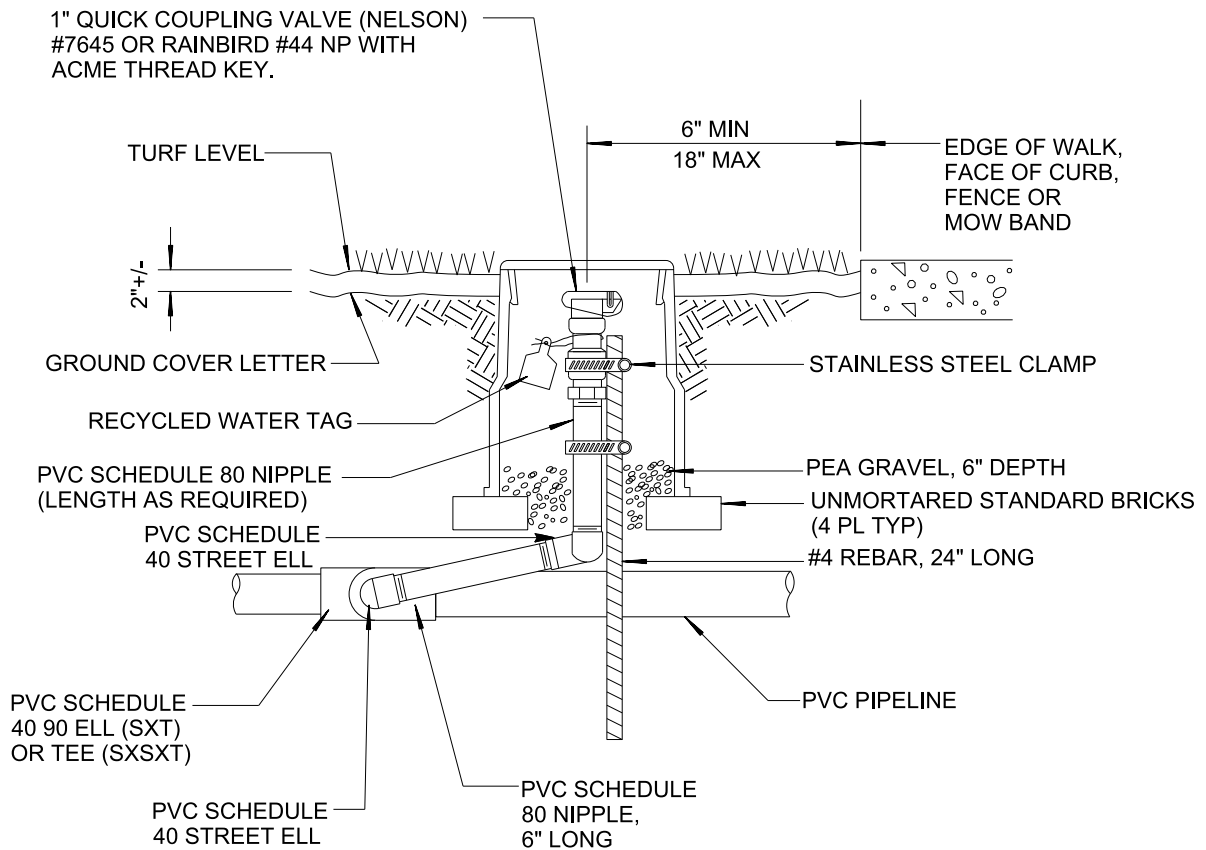
FRONT



BACK

SAMPLE WARINING TAG. BACKGROUND PURPLE (PANTONE #522)
WITH BLACK LETTERING.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE <i>Chung</i> 9/4/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	RECYCLED WATER TAG	DRAWING NUMBER SDRW-114



NOTE:

1. NEW CONSTRUCTION - ALL QUICK COUPLING VALVES SHALL HAVE NON-POTABLE LOCKING PURPLE THERMOPLASTIC RUBBER COVERS.
2. RETROFITS - REPLACE ALL EXISTING QUICK COUPLING VALVES WITH NON-POTABLE LOCKING PURPLE THERMOPLASTIC RUBBER COVERS.
3. TEFLON SHALL BE USED ON THREADED CONNECTIONS.

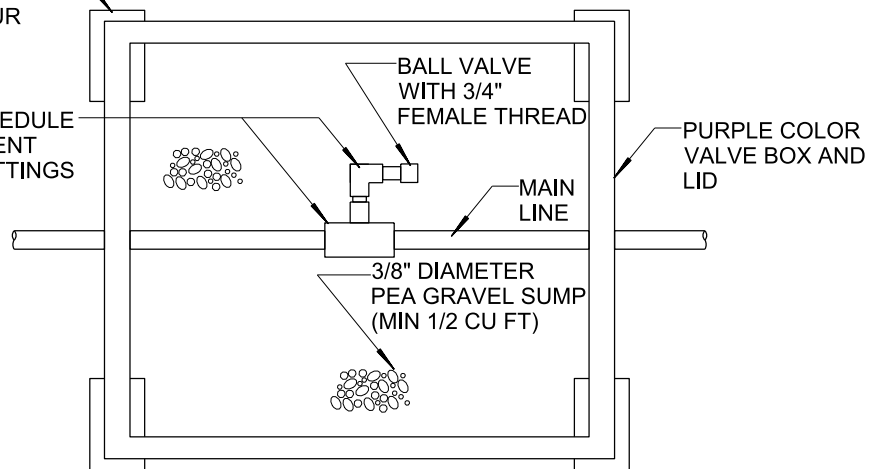
TYPE A (#4 ROD)

SHEET 1 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	RECYCLED WATER QUICK COUPLING VALVE	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDRW-115

BRICK SUPPORTS ON
COMPACTED UNDISTURBED
SUBGRADE (MIN OF FOUR
PER BOX)

PVC SCHEDULE
40 SOLVENT
WELD FITTINGS



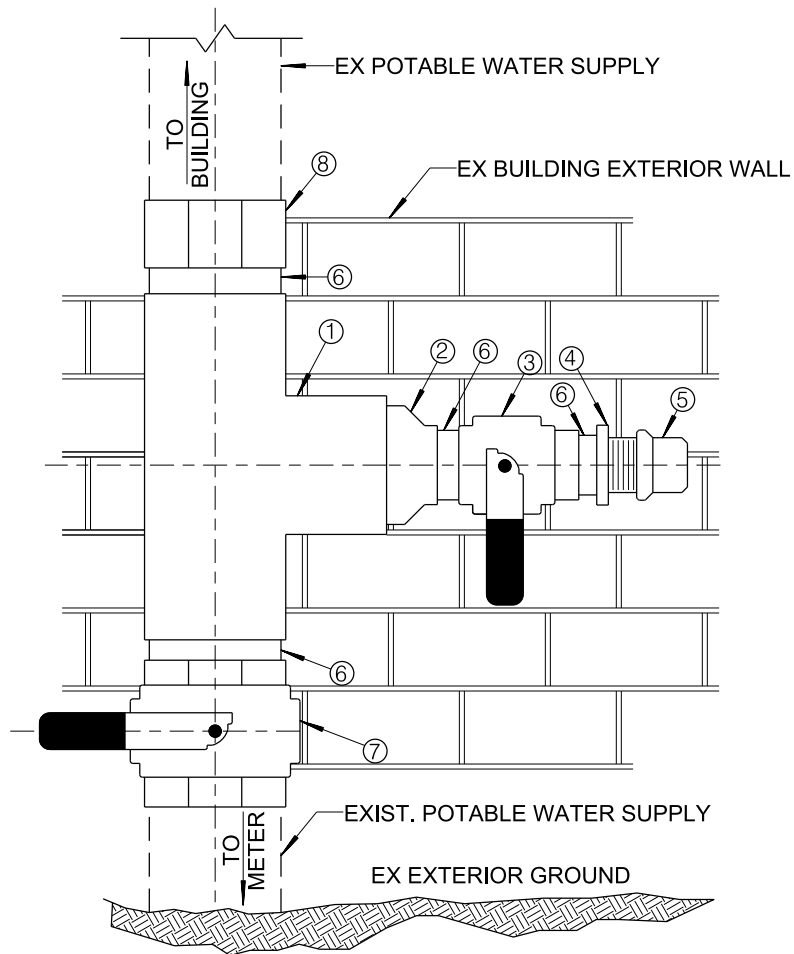
BALL VALVE
WITH 3/4"
FEMALE THREAD

PURPLE COLOR
VALVE BOX AND
LID

MAIN
LINE

3/8" DIAMETER
PEA GRAVEL SUMP
(MIN 1/2 CU FT)

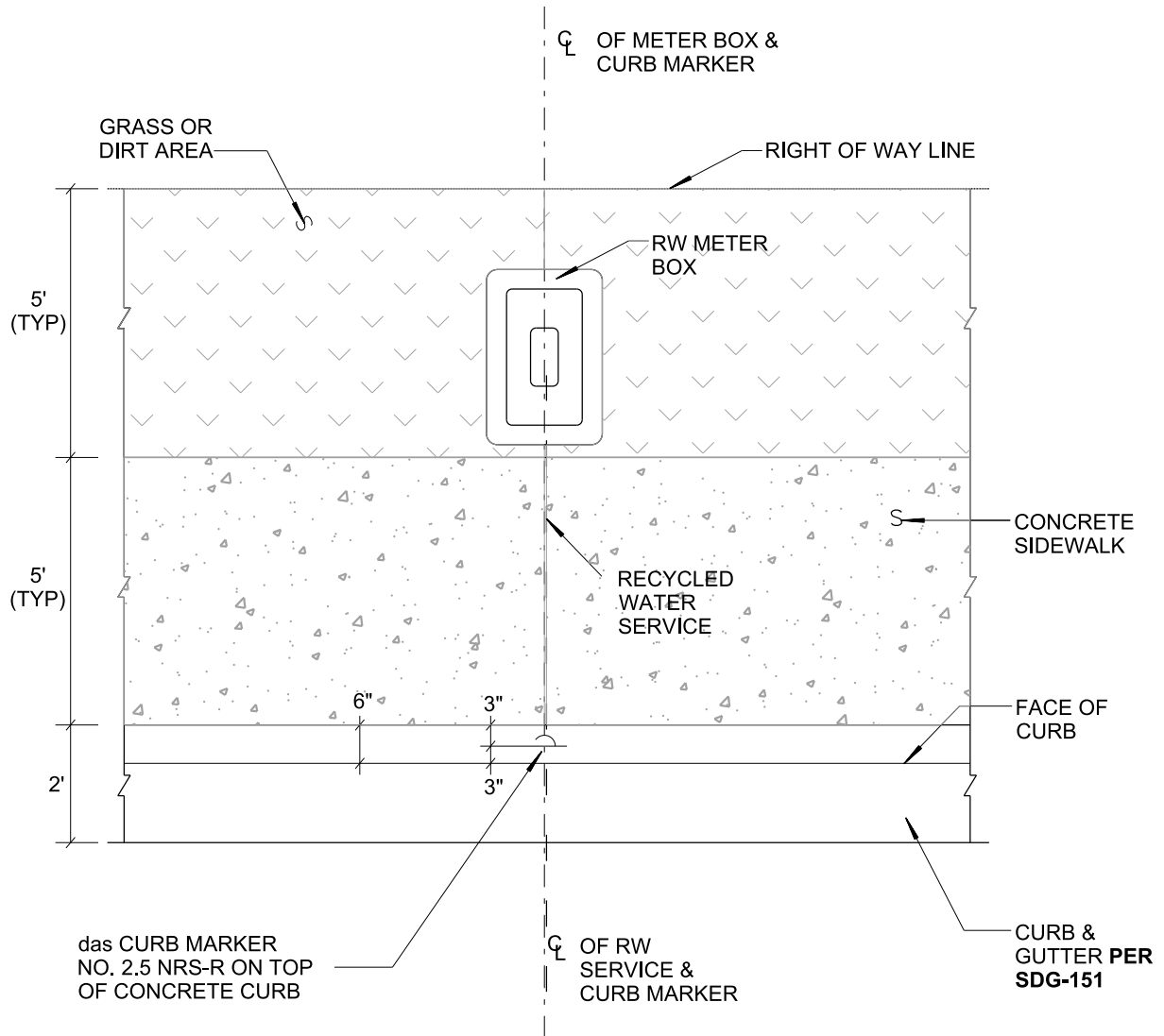
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE <i>Chung</i> 9/4/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	CROSS CONNECTION CONTROL TEST STATION	DRAWING NUMBER SDRW-116



NOTES:

- ①- TEE SIZE TO MATCH EXISTING PIPE
- ②- REDUCER TO 2" DIAMETER PIPE, IF TEE IS LARGER THAN 2" DIAMETER
INCREASER TO 2" DIAMETER PIPE, IF TEE IS SMALLER THAN 2" DIAMETER
- ③- 2" BRASS BALL VALVE
- ④- 1 1/2" FIRE HOSE CONNECTION, MIN. 4" HORIZ.
CLEARANCE 6" TO 14" ABOVE EXISTING GROUND
- ⑤- 1 1/2" CAP
- ⑥- MISCELLANEOUS NIPPLES AS REQUIRED
- ⑦- INSTALL BRASS BALL VALVE SIZE TO MATCH EXIST PIPE
- ⑧- INSTALL UNION SIZE TO MATCH EXISTING PIPE

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	A. OSKOUI	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	THRESHOLD BYPASS PIPING	<i>Chung</i> 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDRW-120

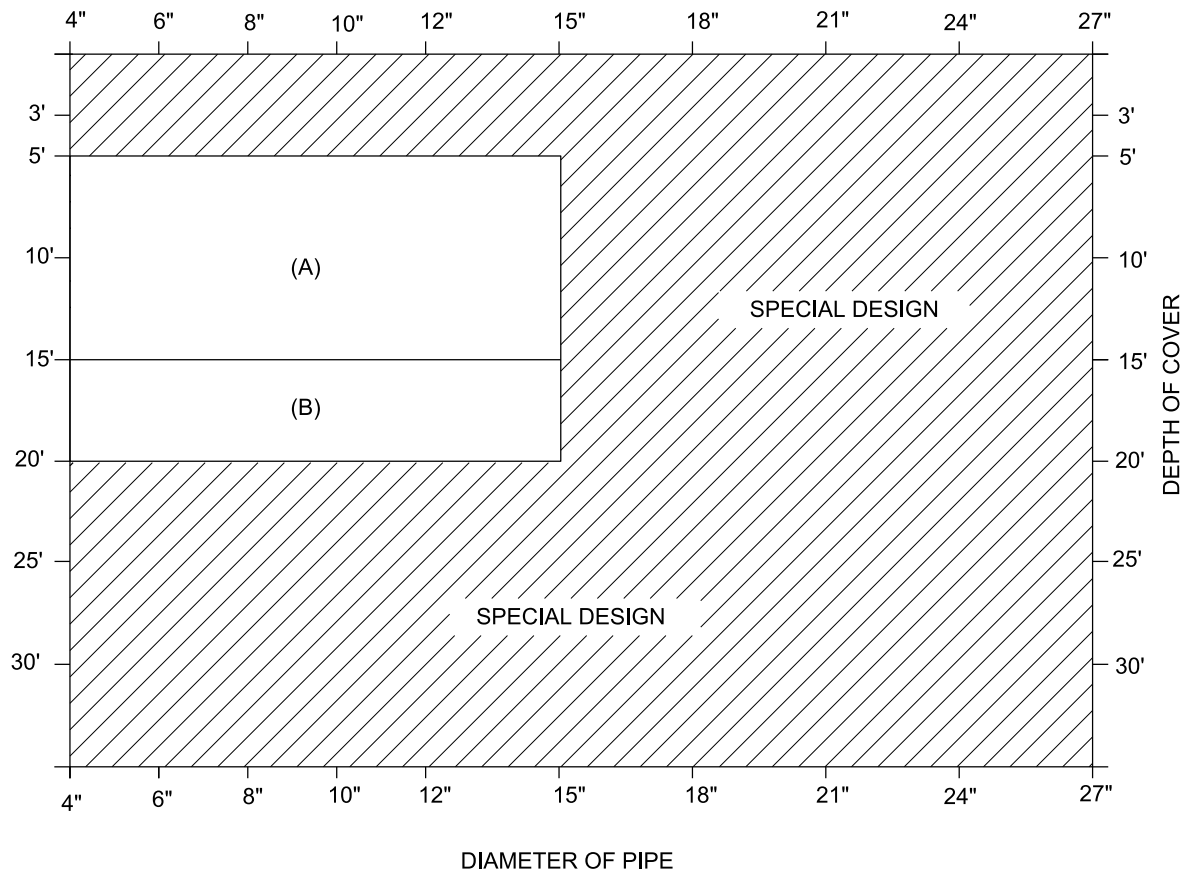


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	TYPICAL CURB MARKER INSTALLATION LOCATION	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDRW-121

CHAPTER 9

SEWER

SYSTEM




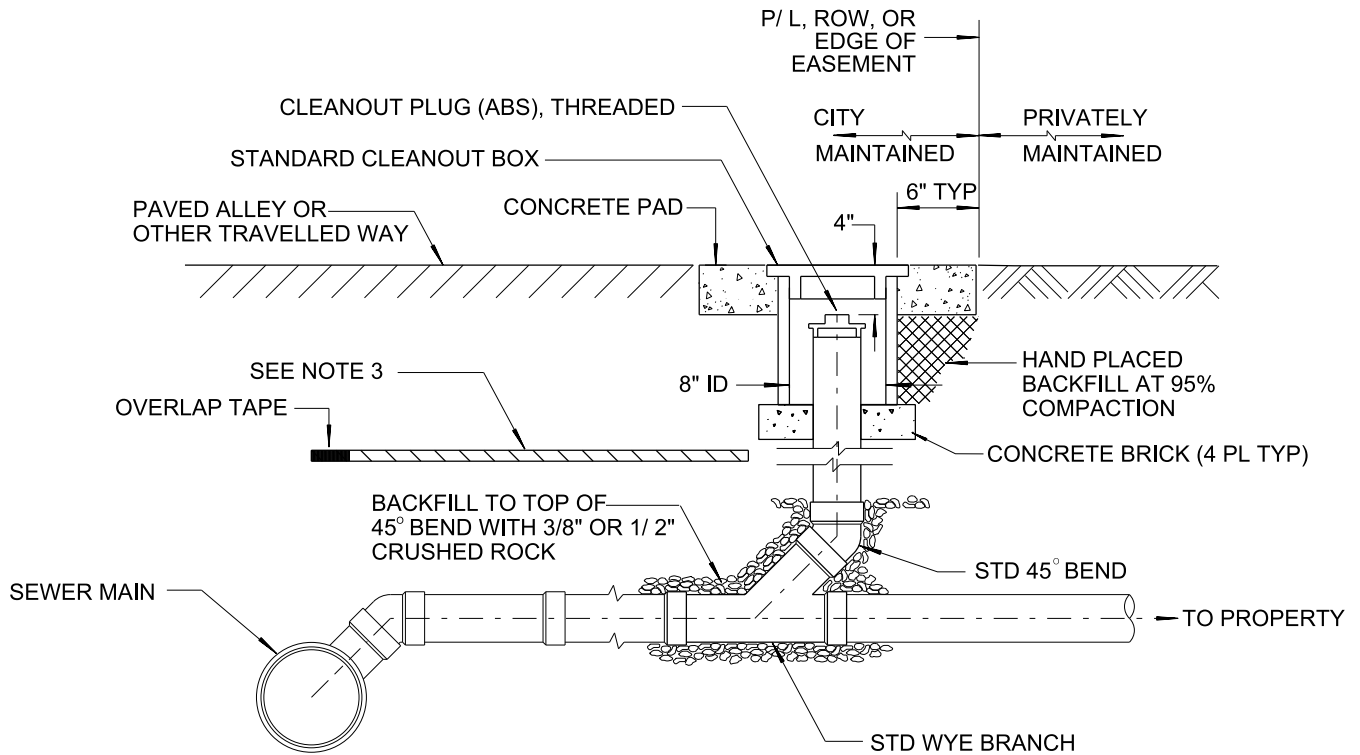
(A) SDR - 35 OR PIPE STIFFNESS OF 46 PSI PER ASTM D2412

(B) SDR - 35 IF SOIL REPORT SUBSTANTIATES THE ASSUMPTIONS IN NOTE 1, OTHERWISE USE SDR-26, IN LIEU OF THE SOIL REPORT

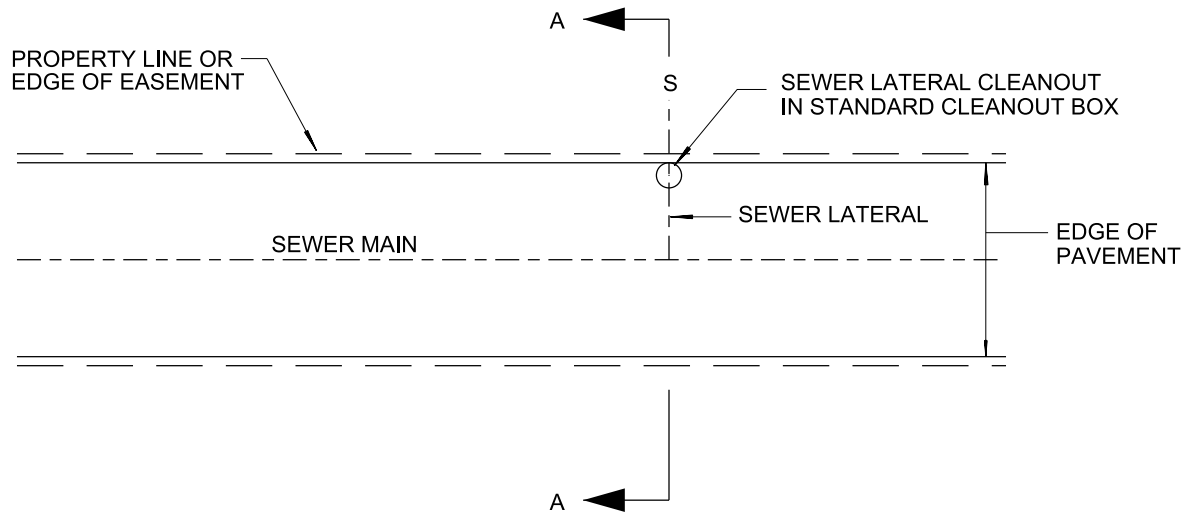
NOTE:

1. THIS STANDARD DRAWING SHALL BE USED ONLY WHERE EXISTING SOIL CONDITIONS ARE STABLE. STABLE SOIL IS DEFINED AS STANDARD PENETRATION TEST BLOW COUNT EQUAL TO OR GREATER THAN 13 BLOWS PER FOOT OR SHEAR STRENGTH GREATER THAN 750 PSF. OBTAINED FROM UNCONFINED COMPRESSION TEST.
2. STANDARD DESIGN ASSUMPTION: $K_b = .110$, $D_f = 1.0$, $E' = 750$ psi
 $W_c = \text{PRISM LOAD @ } W = 125 \text{ LB/FT}^3$
3. SEE PIPE BEDDING AND TRENCH BACKFILL DRAWING, **SDW-110 AND SDRW-101**.
4. INSTALLATIONS IN GROUND WATER SHALL REQUIRE A SPECIAL DESIGN.
5. DESIGN REF.: ASCE MANUALS AND REPORTS ON ENGINEERING PRACTICE - NO. 60 "GRAVITY SANITARY SEWER DESIGN AND CONSTRUCTION."

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		J. MUELLER	6-15-83		
UPDATED		J. CASEY	8-26-86	PERMISSIBLE DEPTH OF COVER FOR PVC PIPE	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED		J. CASEY	11-8-88		
UPDATED	KA	J. NAGELVOORT	01/12		
UPDATED	KA	J. NAGELVOORT	01/14		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDS-101



SECTION A-A

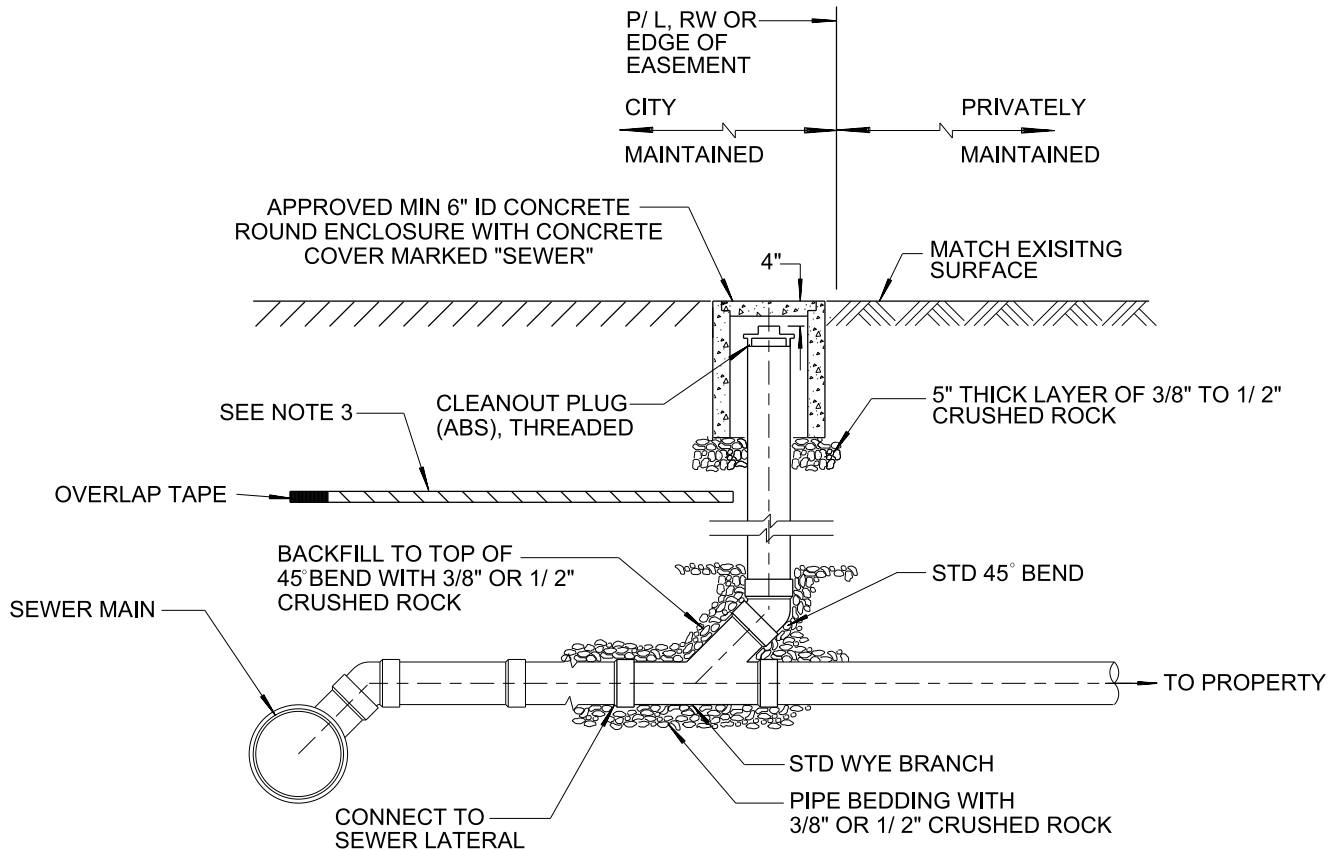


PLAN

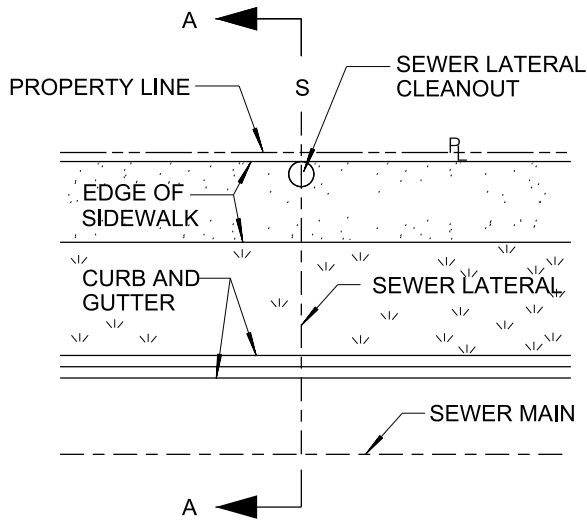
NOTES:

1. RISER AND CLEANOUT PLUG SHALL BE SAME DIAMETER AS SEWER LATERAL.
2. CLEANOUT SHALL BE PLACED INSIDE A STANDARD CLEANOUT BOX.
3. INSTALL WARNING/ IDENTIFICATION TAPE **PER SDM-105**.
4. LATERALS ARE NOT ALLOWED IN DRIVEWAYS.
5. CONCRETE PAD SHALL BE 4-INCH DEEP AND 6-INCH AROUND CLEANOUT BOX.

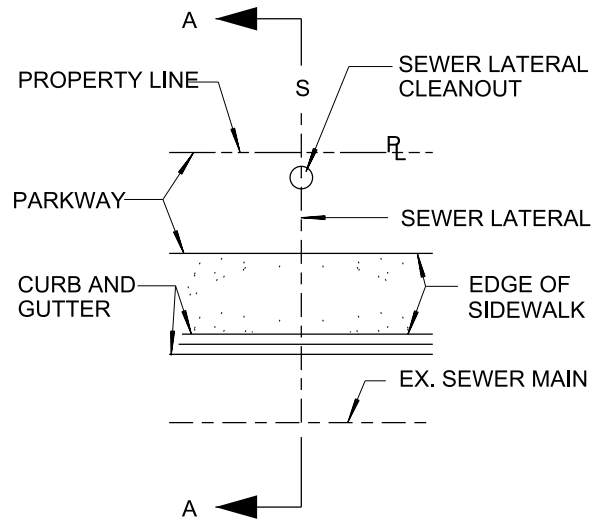
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	SS	A. OSKOU	12/03		
UPDATED	KA	J. NAGELVOORT	01/12	SEWER LATERAL CLEANOUT (IN PAVED ALLEY OR OTHER AREAS SUBJECT TO TRAFFIC)	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	JN	J. NAGELVOORT	02/18		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDS-102



SECTION A-A




PLAN SIDEWALK

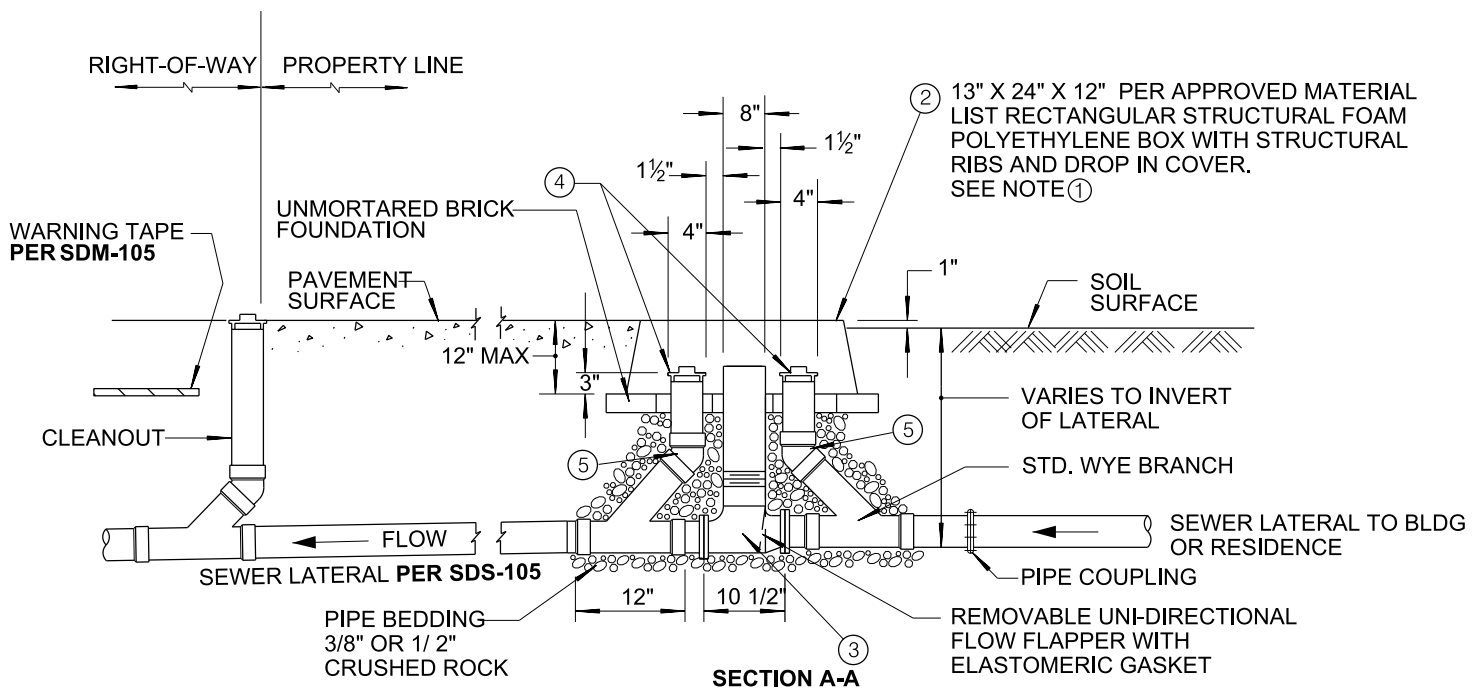
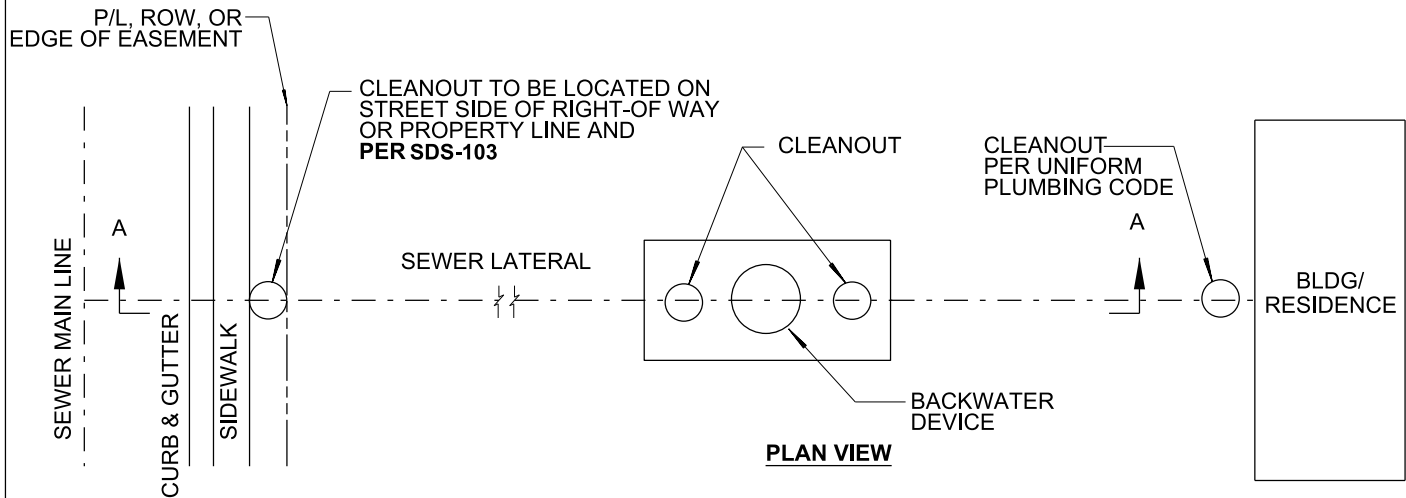


PLAN PARKWAY

NOTES:

1. RISER AND CLEANOUT PLUG SHALL BE SAME DIAMETER AS SEWER LATERAL.
2. CLEANOUT SHALL BE LOCATED WITHIN CITY RIGHT OF WAY, BEHIND THE SIDEWALK.
3. INSTALL WARNING/ IDENTIFICATION TAPE **PER SDM-105**.


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
DETAIL	SS	A. OSKQUI	12/03		
UPDATED	KA	J. NAGELVOORT	01/12	SEWER LATERAL CLEANOUT ON SIDEWALK AND PARKWAY	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	BB	J. NAGELVOORT	07/15		
UPDATED	JN	J. NAGELVOORT	11/17		
REDRAFTED	CD	J. NAGELVOORT	08/18		
					DRAWING NUMBER SDS-103



NOTES:

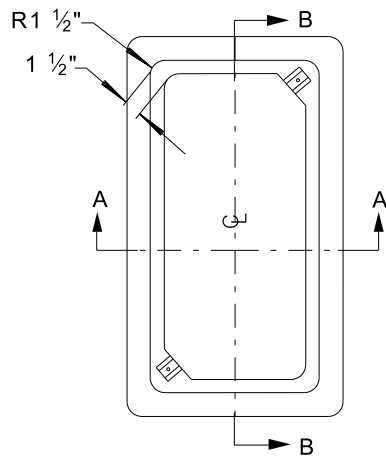
- ① WHEN BACKWATER DEVICE IS INSTALLED IN THE DRIVEWAY, SEE SHEET 2
- ② INSTALL VALVE BOX SO THAT IT IS FLUSH WITH PAVEMENT SURFACE OR 1" ABOVE FINISH GRADE (SOIL SURFACE).
- ③ PVC BACKWATER DEVICE AND ATTACHED PARTS SHALL BE PER THE CALIFORNIA PLUMBING CODE (CPC).
- ④ CLEANOUT PLUG (ABS) THREADED.
- ⑤ STANDARD 45° BEND.
- ⑥ THE BACKWATER DEVICE SHALL BE LOCATED AS CLOSE TO THE STRUCTURE AS REASONABLY POSSIBLE TO MINIMIZE THE DEPTH OF THE BACKWATER DEVICE.

SHEET 1 OF 2

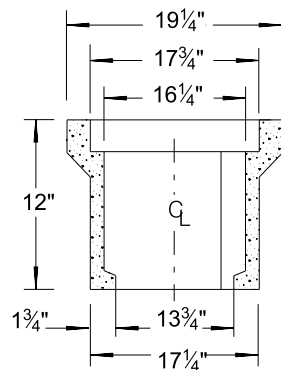
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
DETAIL	CS	A. OSKOU	12/03		
UPDATED	KA	J. NAGELVOORT	01/12	4" BACKWATER DEVICE	 COORDINATOR R.C.E. 56523
UPDATED	BB	J. NAGELVOORT	07/14		
UPDATED	HM	J. NAGELVOORT	02/16		
UPDATED	JN	J. NAGELVOORT	11/17		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDS-104

9/4/18

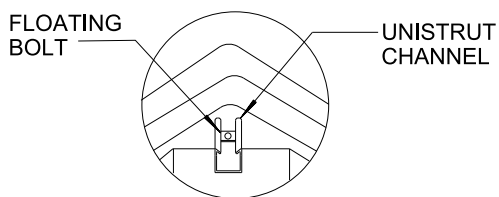
DATE



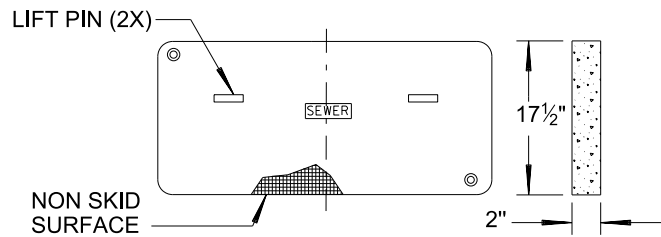
TOP VIEW



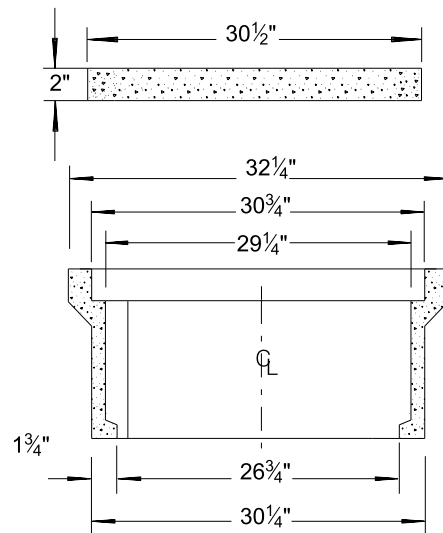
SECTION A-A



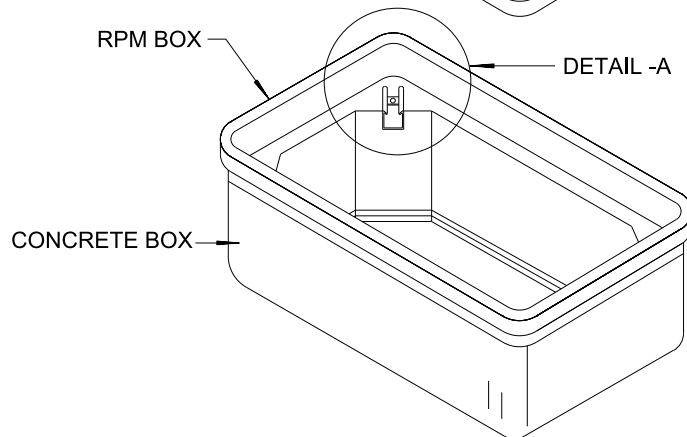
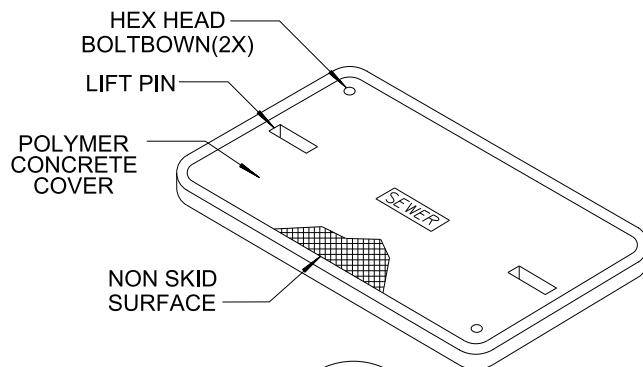
DETAIL - A



POLYMER CONCRETE COVER




SECTION B-B

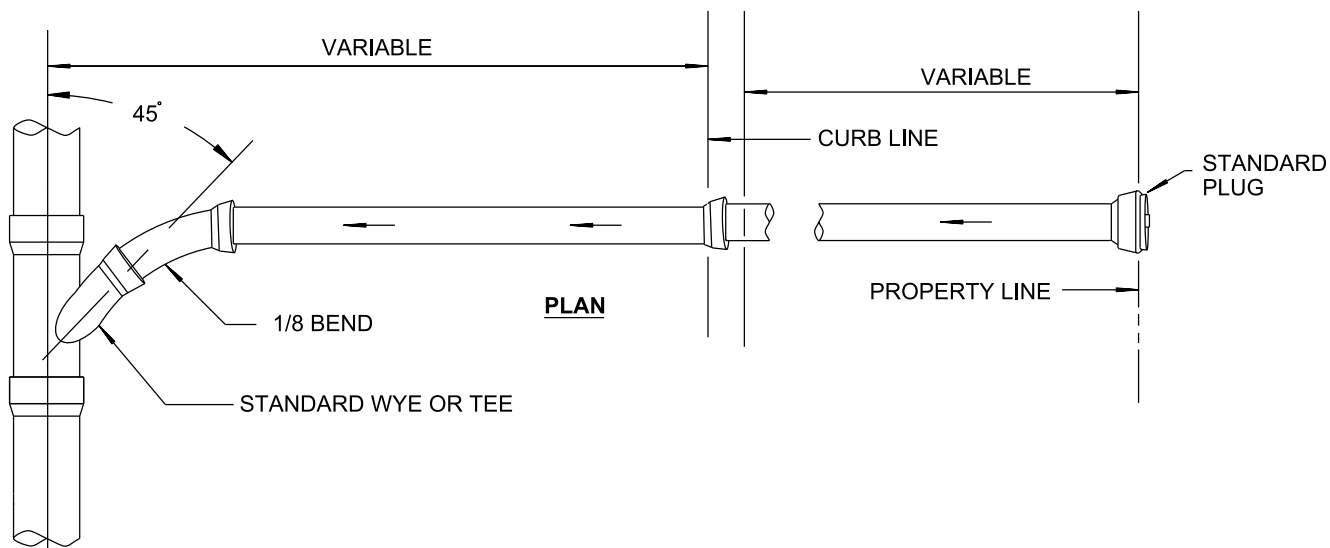


NOTE:

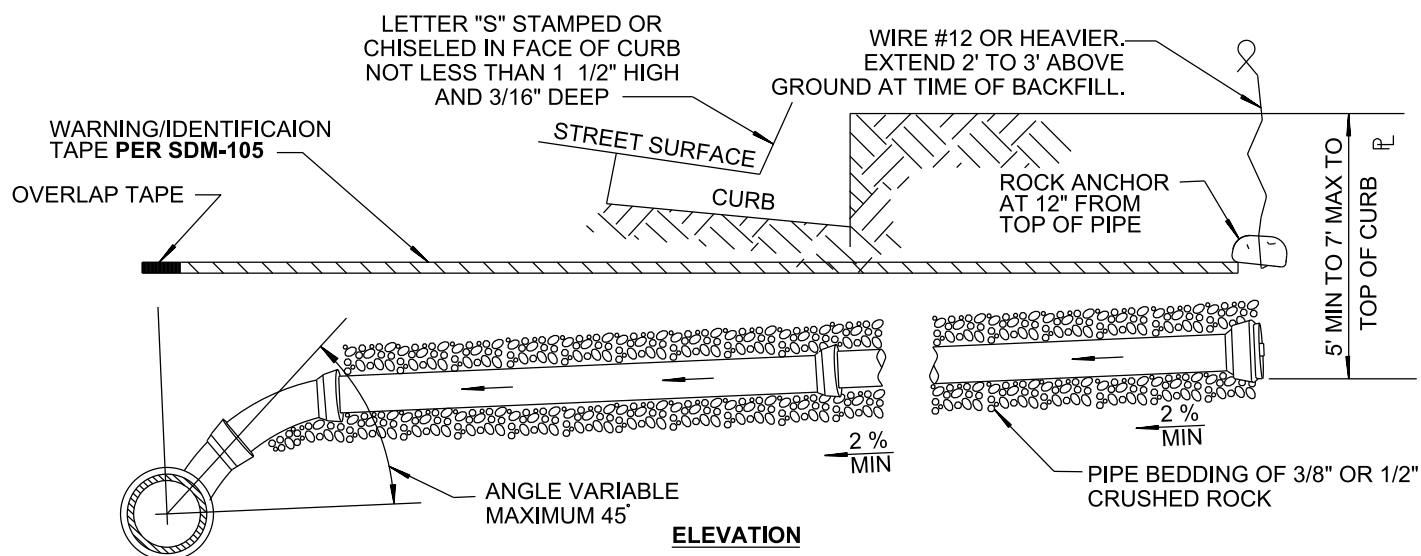
1. THE BOX & COVER IS 10K LOAD RATED.

SHEET 2 OF 2

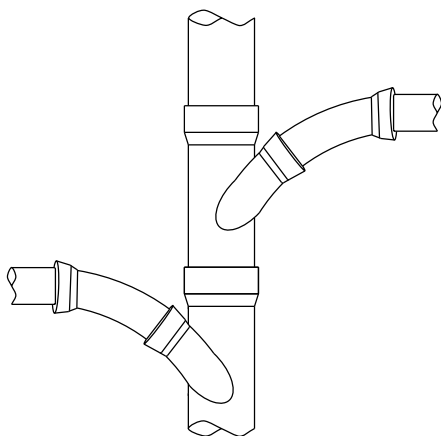
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
DETAIL	SS	A. OSKOU	12/03		
UPDATED	KA	J. NAGELVOORT	01/12	4" BACKWATER DEVICE	 COORDINATOR R.C.E. 56523 DATE
UPDATED	BB	J. NAGELVOORT	07/14		
UPDATED	HM	J. NAGELVOORT	02/16		
UPDATED	CD	J. NAGELVOORT	11/17		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDS-104



PLAN



ELEVATION

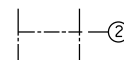


DETAIL SHOWING THE MANNER OF CONNECTING OPPOSITE LATERALS TO A SEWER MAIN. TWO CONNECTIONS SHALL NOT BE MADE IN THE SAME LENGTH OF PIPE.

NOTES

1. IN NO CASE SHALL A LATERAL CONNECT TO THE SEWER MAIN DIRECTLY ON TOP OF THE PIPE.
2. ALL JOINTS ON SEWER LATERAL PIPE SHALL BE COMPRESSION TYPE OR APPROVED SOLVENT WELD.
3. LATERAL SHALL EXTEND TO PROPERTY LINE **UNLESS SHOWN OTHERWISE ON PLANS**
4. DO NOT TAP HOLE AND INSERT LATERAL PIPE DIRECTLY INTO MAIN. ALL CONNECTIONS SHALL BE MADE USING A SADDLE OR WYE CUT IN.

LEGENDS ON PLANS



CITY OF SAN DIEGO – STANDARD DRAWING

**HOUSE CONNECTION
(SEWER LATERAL)**

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

Chung 9/4/18
COORDINATOR R.C.E. 56523 DATE

DRAWING
NUMBER

SDS-105

REVISION	BY	APPROVED	DATE
DETAIL	JP	A. OSKOU	12/03
UPDATED	KA	J. NAGELVOORT	01/12
UPDATED	JN	J. NAGELVOORT	11/17
REDRAFTED	CD	J. NAGELVOORT	09/18

TRENCH
RESURFACING PER
SDG-107 AND SDG-108

ROAD SURFACE

MANHOLE FRAME AND
COVER SEE M-3.

GRADE RING
OR RISER

SHAFT

B

LEVEL

LEVEL

10" MIN

B

SECTION A-A

3'-0"

18" MAX

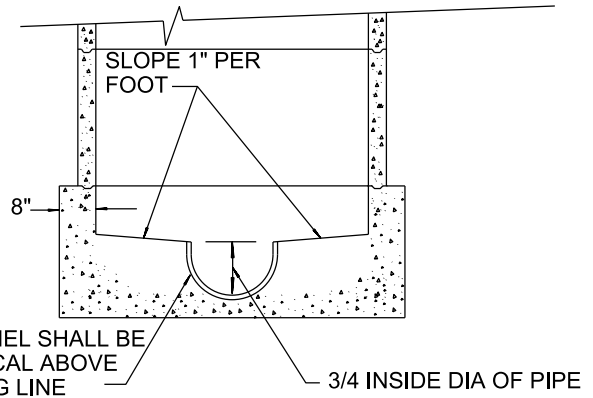
3'-0"

VARIES

5'-0"

4" MIN

"A" SEE NOTE 6



SECTION B-B

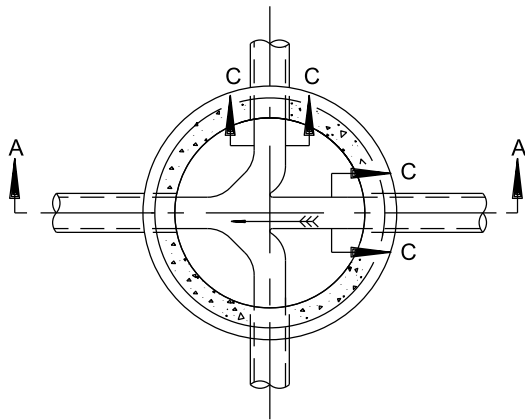
NOTES:

- MANHOLE FRAME AND ALL JOINTS SHALL BE SET IN CLASS "C" MORTAR.
- ALL PRECAST COMPONENTS SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C478.
- VERTICAL WALL OF CONE SHALL BE ON THE UPSTREAM SIDE OF THE MANHOLE.
- CONCRETE BASE SHALL BE 560-C-3250.
- APPROVED WATER STOP REQUIRED FOR PLASTIC PIPE CONNECTORS.
- PRECAST SECTIONS SHALL BE USED WITHIN DIMENSION "A" AS REQUIRED, IN ORDER OF PREFERENCE LISTED:
 - CONE (NOTCHED FOR PIPE IF DIMENSION "A" IS LESS THAN 3').
 - 6" TO 18" OF 3' DIAMETER GRADE RINGS AND/OR RISERS.
 - 5' DIAMETER SHAFT VARIABLE HEIGHT.
- FLEXIBLE PIPE JOINTS SHALL BE REQUIRED WITHIN 12" OF INSIDE FACE OF MANHOLE, EXCEPT FOR PLASTIC PIPE.
- ALL PATCHING WITHIN MANHOLE BASE SHALL BE EPOXY MORTAR.
- PRIOR APPROVAL OF PRECAST BASE IS REQUIRED BY THE ENGINEER.
- MANHOLES SERVING 18" DIAMETER PIPE AND LARGER SHALL USE PRECAST RISERS LINED WITH WHITE PVC SHEETS IMBEDDED WITH LOCKING EXTENSIONS TO THE CONCRETE WALL. THE BASE AND ALL REMAINING EXPOSED CONCRETE SHALL BE COATED WITH AN APPROVED POLYURETHANE COATING.

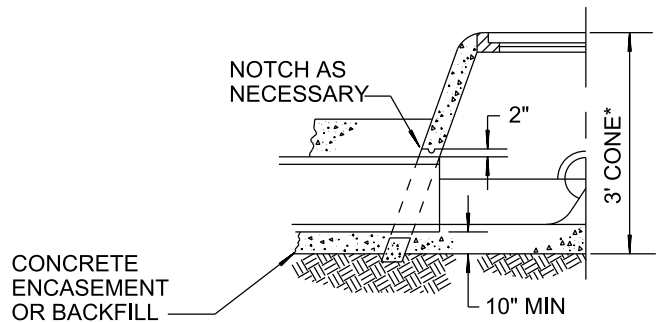
LEGEND ON PLANS



REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
DETAIL	SS	A. OSKOU	12/03		
UPDATE	KA	J. NAGELVOORT	01/12	MANHOLE 5' X 3' DIAMETER	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATE	GB	J. NAGELVOORT	07/15		
UPDATE	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	08/19		
					DRAWING NUMBER SDS-106

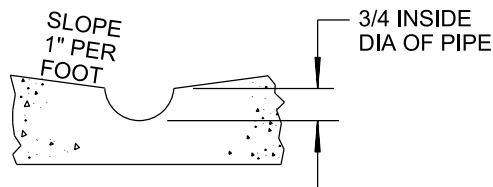


SECTION B-B



* EITHER CONCENTRIC OR ECCENTRIC CONE MAY BE USED

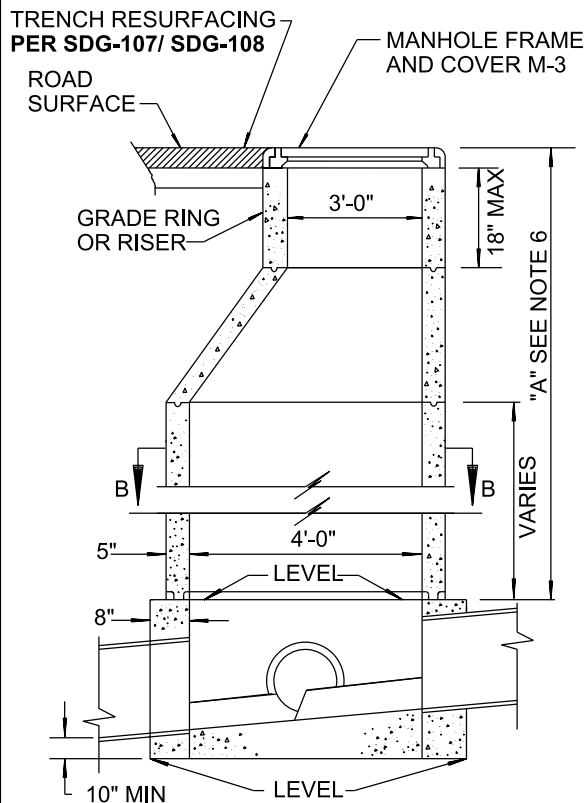
HALF SECTION SHALLOW MANHOLE



SECTION C-C

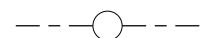
NOTES

1. ALL RISER JOINTS SHALL BE EPOXY MORTARED.
2. ALL PRECAST COMPONENTS SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C478.
3. VERTICAL WALL OF CONE SHALL BE ON THE UPSTREAM SIDE OF THE MANHOLE.
4. CONCRETE BASE SHALL BE 560-C-3250.
5. APPROVED WATER STOP REQUIRED FOR PLASTIC PIPE CONNECTIONS.
6. PRECAST SECTIONS SHALL BE USED WITHIN DIMENSION "A" AS REQUIRED, IN ORDER OF PREFERENCE LISTED:
 - A) CONE (NOTCHED FOR PIPE IF DIMENSION "A" IS LESS THAN 3').
 - B) 3" TO 18" OF 3' GRADE RINGS AND RISERS.
 - C) 4' DIAMETER SHAFT VARIABLE HEIGHT.
7. FLEXIBLE PIPE JOINTS SHALL BE REQUIRED WITHIN 12" OF INSIDE FACE OF MANHOLE, EXCEPT FOR PLASTIC PIPE.
8. ALL PATCHING WITHIN MANHOLE BASE SHALL BE EPOXY MORTAR.
9. PRIOR APPROVAL OF PRECAST BASE IS REQUIRED BY THE ENGINEER.

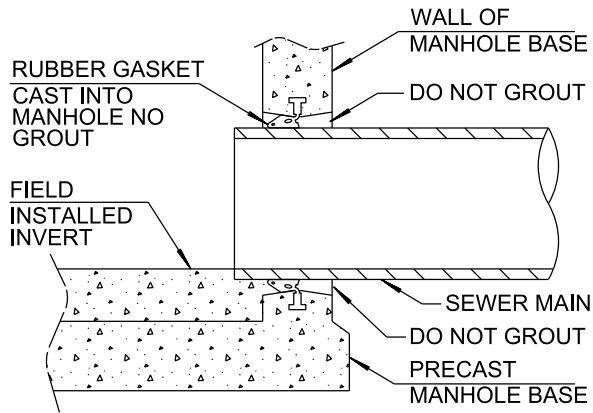


SECTION A-A

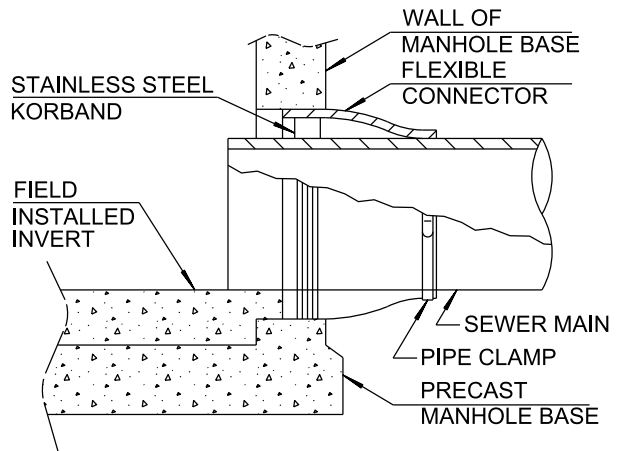
LEGEND ON PLANS



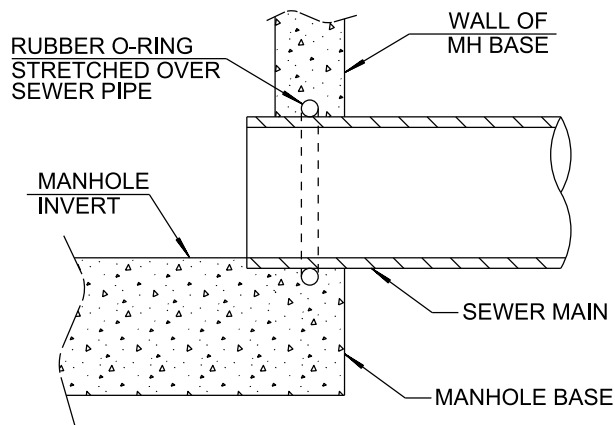
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
DETAIL	JP	A. OSKOU	1203		
UPDATED	KA	J. NAGELVOORT	01/12	MANHOLE 4' X 3' DIAMETER (FOR 15" MAXIMUM DIAMETER PIPE)	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	GB	J. NAGELVOORT	07/15		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDS-107



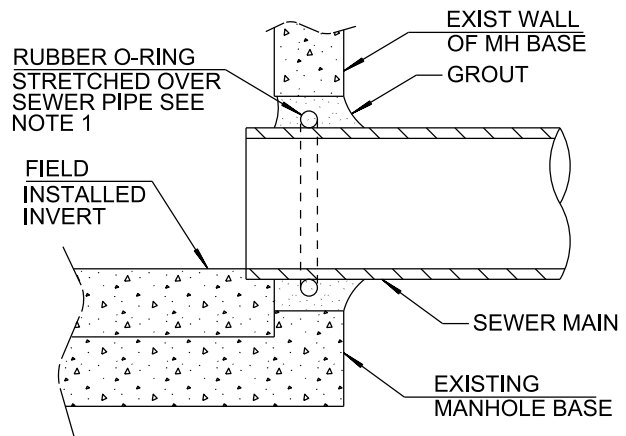
PRECAST MANHOLE BASE TYPE 'A'



PRECAST MANHOLE BASE TYPE 'B'



CAST IN PLACE MANHOLE BASE

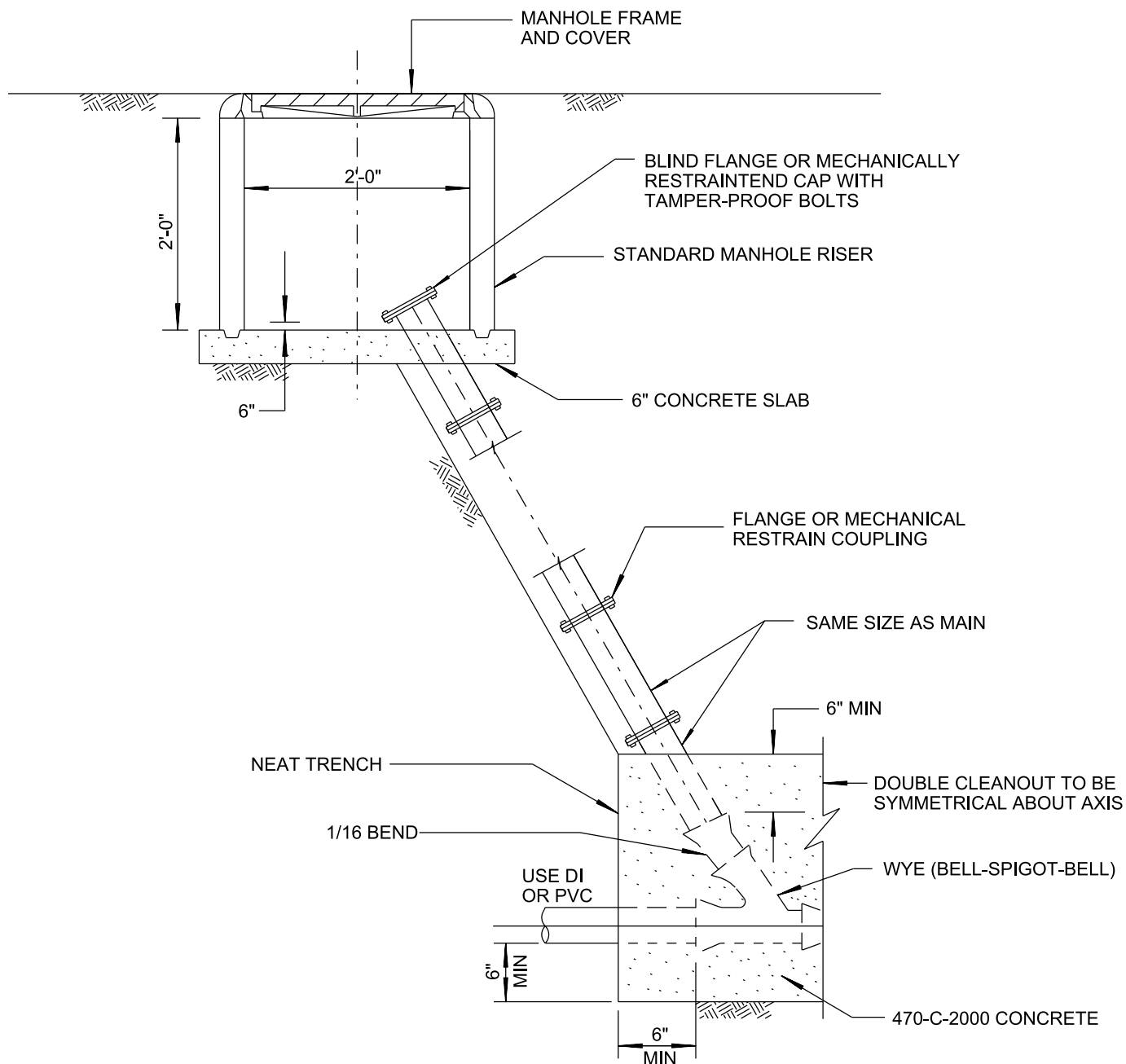


BREAKING INTO EXIST MANHOLE BASE

NOTES:

- 1) A RUBBER O-RING OR A FLEXIBLE CONNECTOR (AS SHOWN IN PRECAST MANHOLE BASE TYPE 'B') SHALL BE USED WHEN BREAKING INTO EXISTING MANHOLE
- 2) FOR MANHOLES REQUIRING COATING AND LINING, **SEE SM-07**

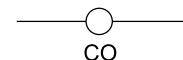
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		<div><div>9/4/18</div><div>COORDINATOR R.C.E. 56523DATE</div></div>
REDRAFTED	CD	J. NAGELVOORT	09/18		
				MANHOLE PIPE CONNECTORS	DRAWING NUMBER
					SDS-108




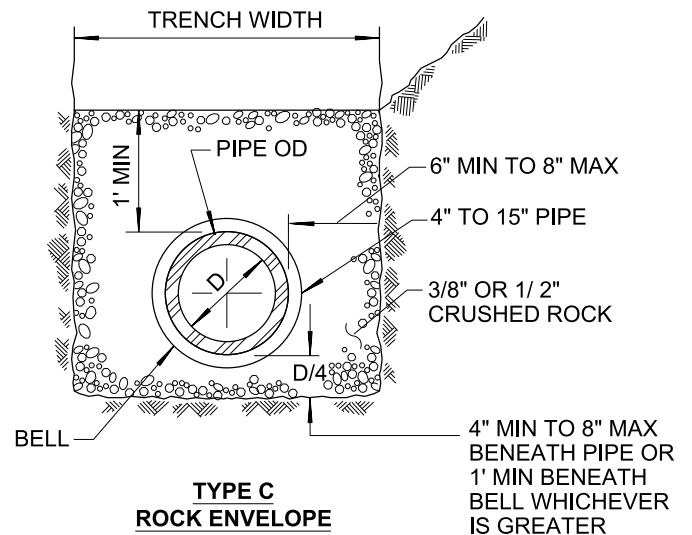
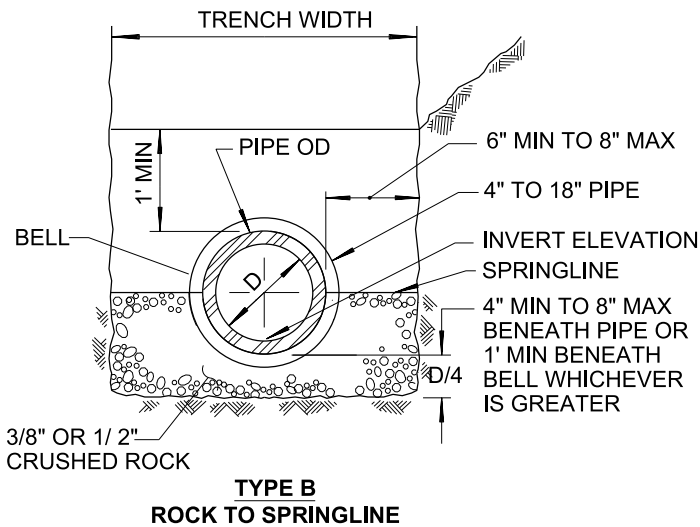
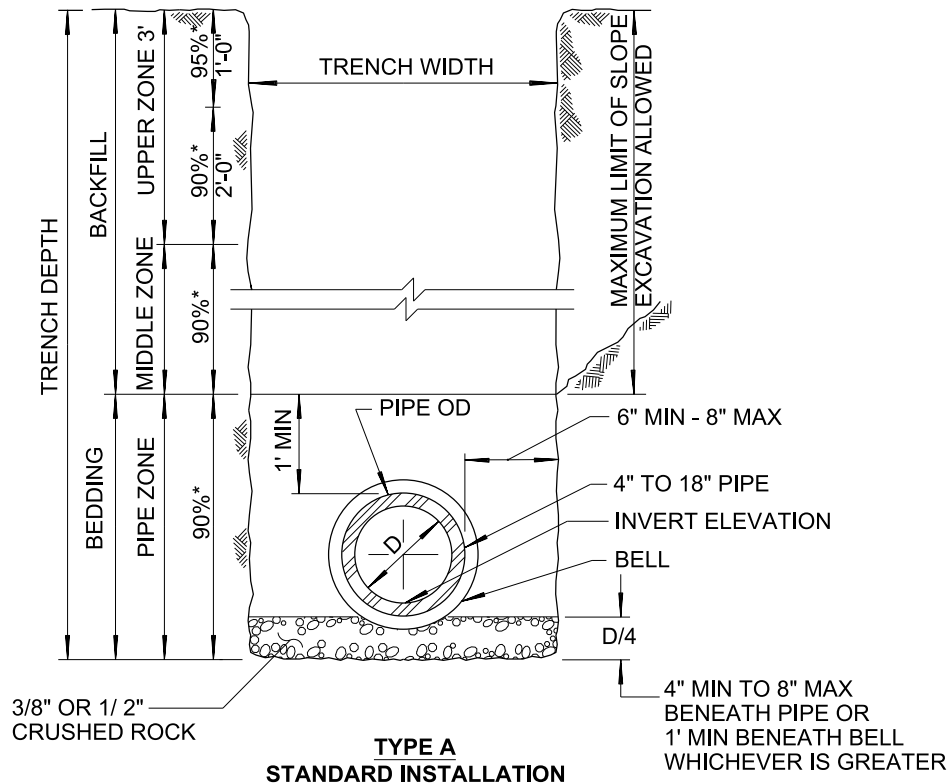
NOTES

1. SIMILAR POLYVINYL CHLORIDE COMPONENTS MAY BE USED IN ACCORDANCE WITH ASTM STANDARD SPECIFICATION D2241 AND D3139.
2. CONCRETE SLAB SHALL BE 560-C-3250.
3. USE HEAVY DUTY MANHOLE FRAME AND COVER, M-1, IN AREAS SUBJECT TO VEHICULAR TRAFFIC; USE LIGHT DUTY MANHOLE FRAME AND COVER, M-2, IN ALL OTHER LOCATIONS.
4. MINIMUM PIPE PRESSURE CLASS 200.

LEGEND ON PLANS



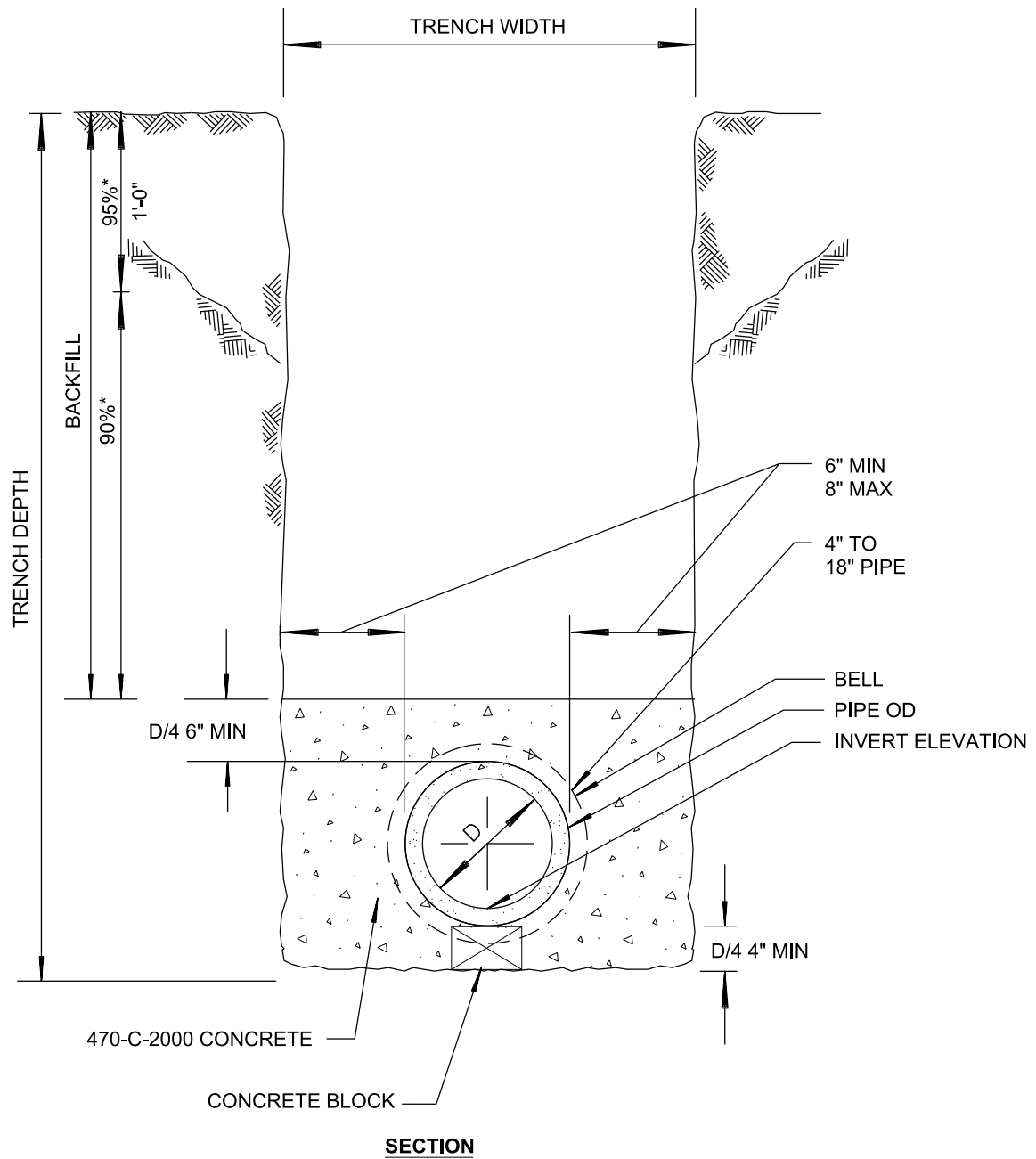
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
DETAIL	JP	A. OSKOU	12/03		
UPDATED	KA	J. NAGELVOORT	01/12	CLEANOUT - SEWER FORCE MAIN	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDS-109



NOTES

1. FOR TRENCH RESURFACING IN IMPROVED STREETS **SEE STANDARD DRAWINGS SDG-107 AND SDG-108**.
2. (*) INDICATES MINIMUM RELATIVE COMPACTION.
3. MINIMUM DEPTH OF COVER FROM THE TOP OF PIPE TO FINISH GRADE FOR PVC SDR 35 SEWER MAIN SHALL BE 5'. FOR SHALLOWER DEPTH, SPECIAL DESIGN IS REQUIRED. **SEE SDS-101**
4. SEE TYPE A INSTALLATION FOR DETAILS NOT SHOWN FOR TYPES B AND C.
5. FOR PIPE SIZE ENCASEMENT LARGER THAN 15", MAXIMUM SIDEWALL CLEARANCE SHALL BE 12" OR **AS SHOWN ON THE PLANS**.
6. INSTALL WARNING IDENTIFICATION TAPE **PER SDM-105**
7. A 1' SAND CUSSION, OR A 6" MINIMUM SAND CUSHION WITH 1" NEOPRENE PAD, SHALL BE PLACED FOR CROWING UTILITIES WHEN VERTICAL CLEARANCE IS 1' OR LESS. THE NEOPRENE PAD SHALL BE LACED ON THE MOST FRAGILE UTILITY.

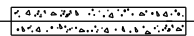
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	RA	A. OSKOUJ	12/06		
UPDATED	KA	J. NAGELVOORT	01/12	PIPE BEDDING AND TRENCH BACKFILL FOR SEWERS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	HM	J. NAGELVOORT	02/16		
UPDATED	JN	J. NAGELVOORT	11/17		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDS-110



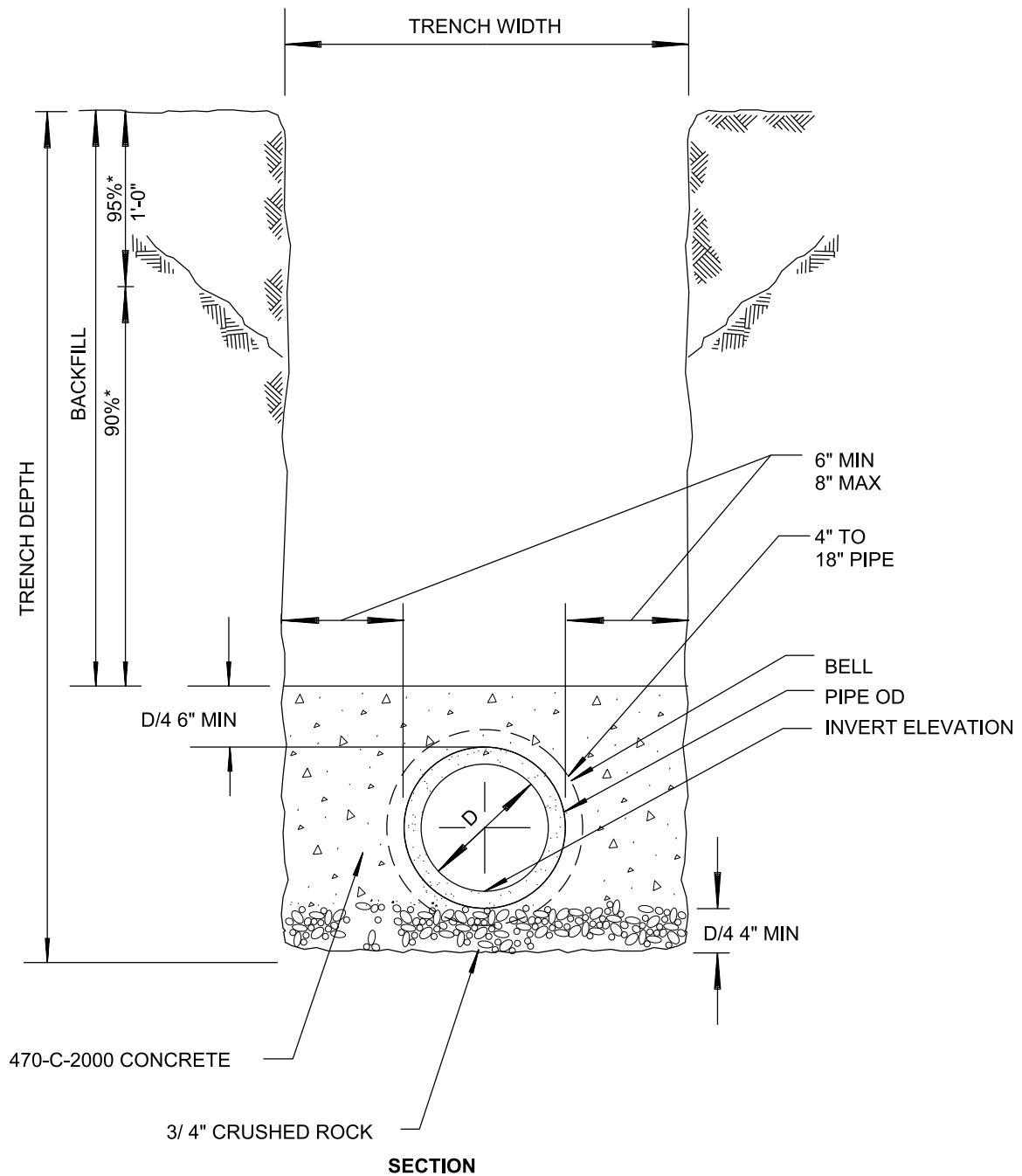
NOTES:

1. ENCASE PIPE TO THE NEAREST FLEXIBLE JOINT.
2. FOR TRENCH RESURFACING IN IMPROVED STREETS, **SEE SDG-107 AND SDG-108.**
3. CONCRETE ENCASEMENT SHALL BE USED FOR RIGID PIPE ONLY.
4. 6" METAL TAPE SHALL BE INSTALLED ABOVE PIPE 4" BELOW PAVEMENT SECTION, **PER SDM-105.**
5. (*) INDICATES MINIMUM RELATIVE COMPACTION.

LEGEND ON PLANS



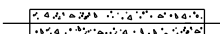
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	RA	A. OSKOU	1206		<div> 9/4/18</div> <div>COORDINATOR R.C.E. 56523 DATE</div> <div>DRAWING NUMBER SDS-112</div>
UPDATED	KA	J. NAGELVOORT	01/12		
UPDATED	CD	J. NAGELVOORT	09/17		
REDRAFTED	CD	J. NAGELVOORT	0918		




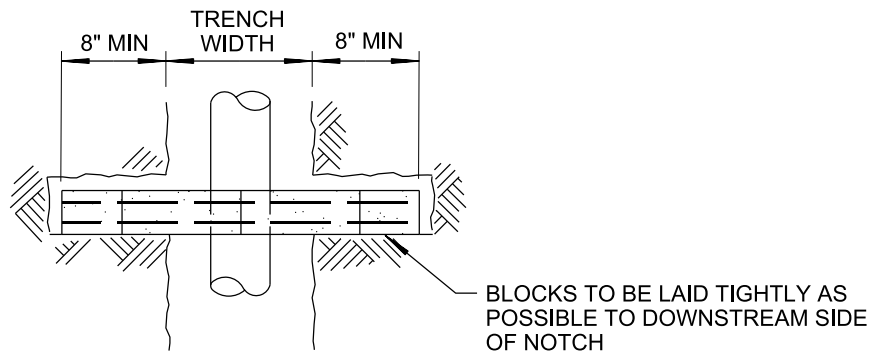
NOTE

1. FOR TRENCHING IN IMPROVED STREETS **SEE SDG-107 AND SDG-108.**
2. CONCRETE BACKFILL FOR PVC PIPE CAN BE USED ABOVE THE PIPE BEDDING ZONE.
3. 6" METAL TAPE SHALL BE INSTALLED ABOVE PIPE 4" BELOW PAVEMENT SECTION.
4. (*) INDICATES MINIMUM RELATIVE COMPACTION.

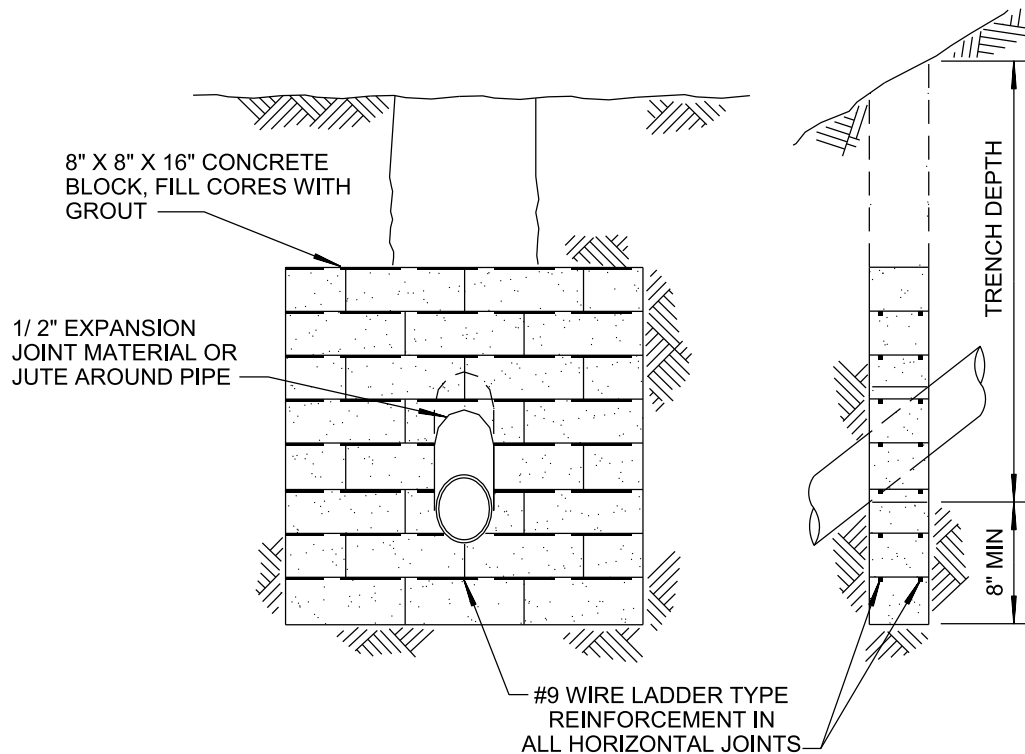
LEGEND ON PLANS



REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	RA	A. OSKOU	12/06		
UPDATED	KA	J. NAGELVOORT	01/12	CONCRETE BACKFILL	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING
					NUMBER SDS-113



PLAN



FRONT ELEVATION

SIDE ELEVATION

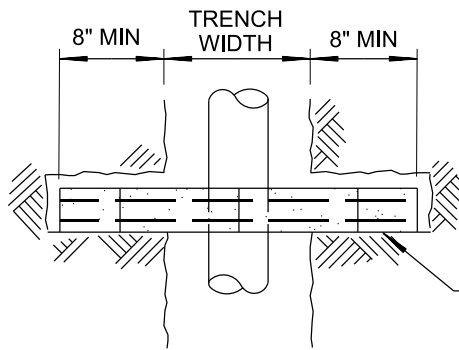
NOTE

PIPE PROTECTION CAN ONLY BE USED ABOVE THE PIPE BEDDING ZONE FOR PVC PIPE.

LEGEND ON PLANS



REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	RA	A. OSKOU	12/06		<div>CONCRETE ANCHOR</div>
UPDATED	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	<div>SDS-114</div>

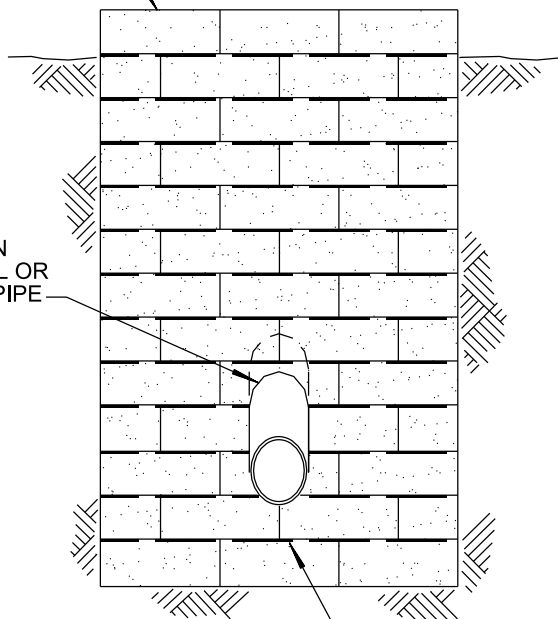


BLOCKS TO BE LAID TIGHTLY AS POSSIBLE TO DOWNSTREAM SIDE OF NOTCH

PLAN

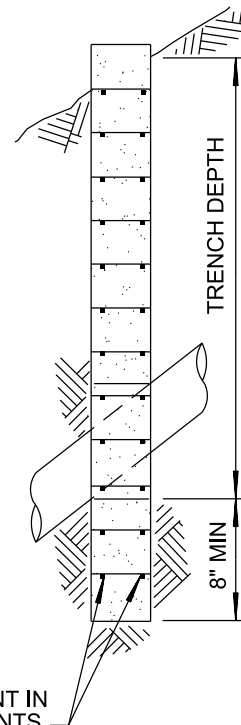
8" X 8" X 16" CONCRETE BLOCK, FILL CORES WITH GROUT

1/2" EXPANSION JOINT MATERIAL OR JUTE AROUND PIPE



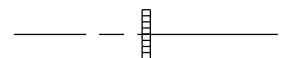
#9 WIRE LADDER TYPE REINFORCEMENT IN ALL HORIZONTAL JOINTS

FRONT ELEVATION

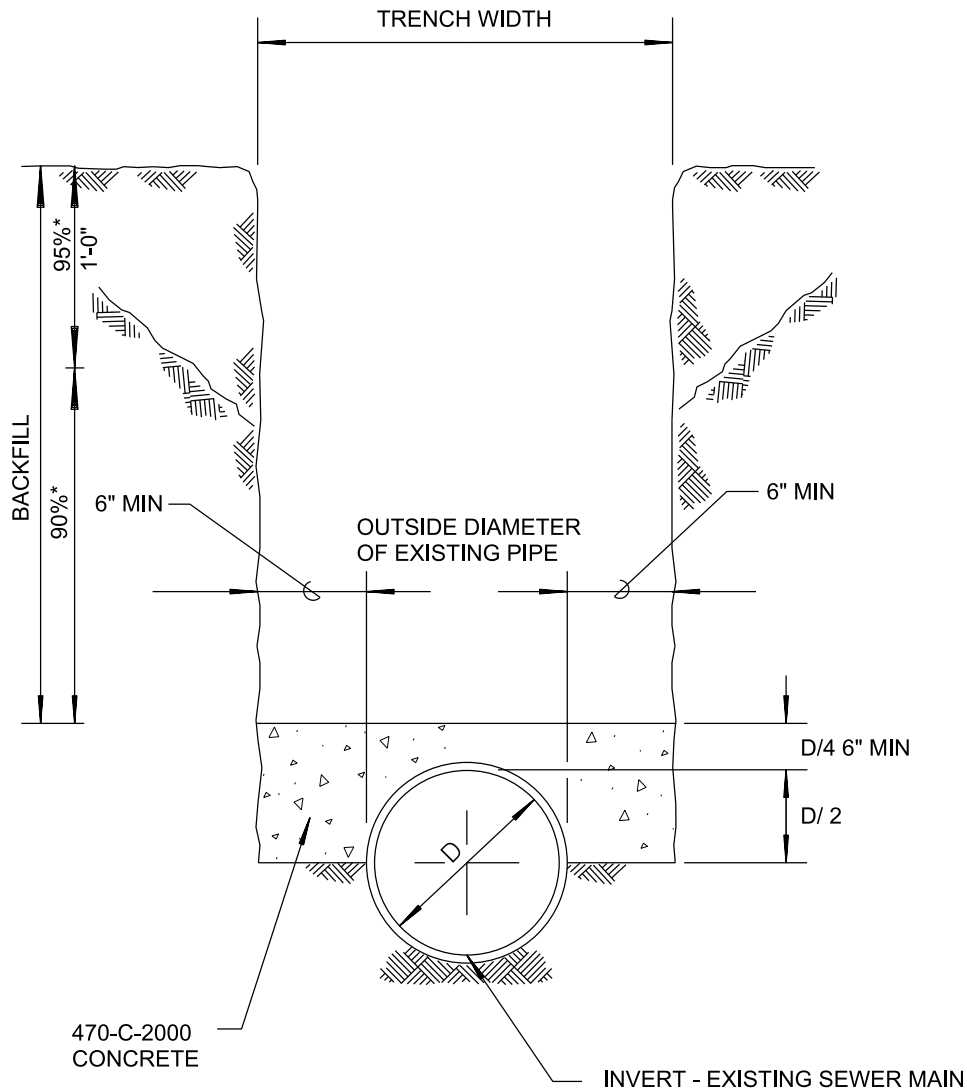


SIDE ELEVATION

LEGEND ON PLANS



REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	RA	A. OSKOU	12/06		
UPDATED	KA	J. NAGELVOORT	01/12	CUTOFF WALL	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDS-115



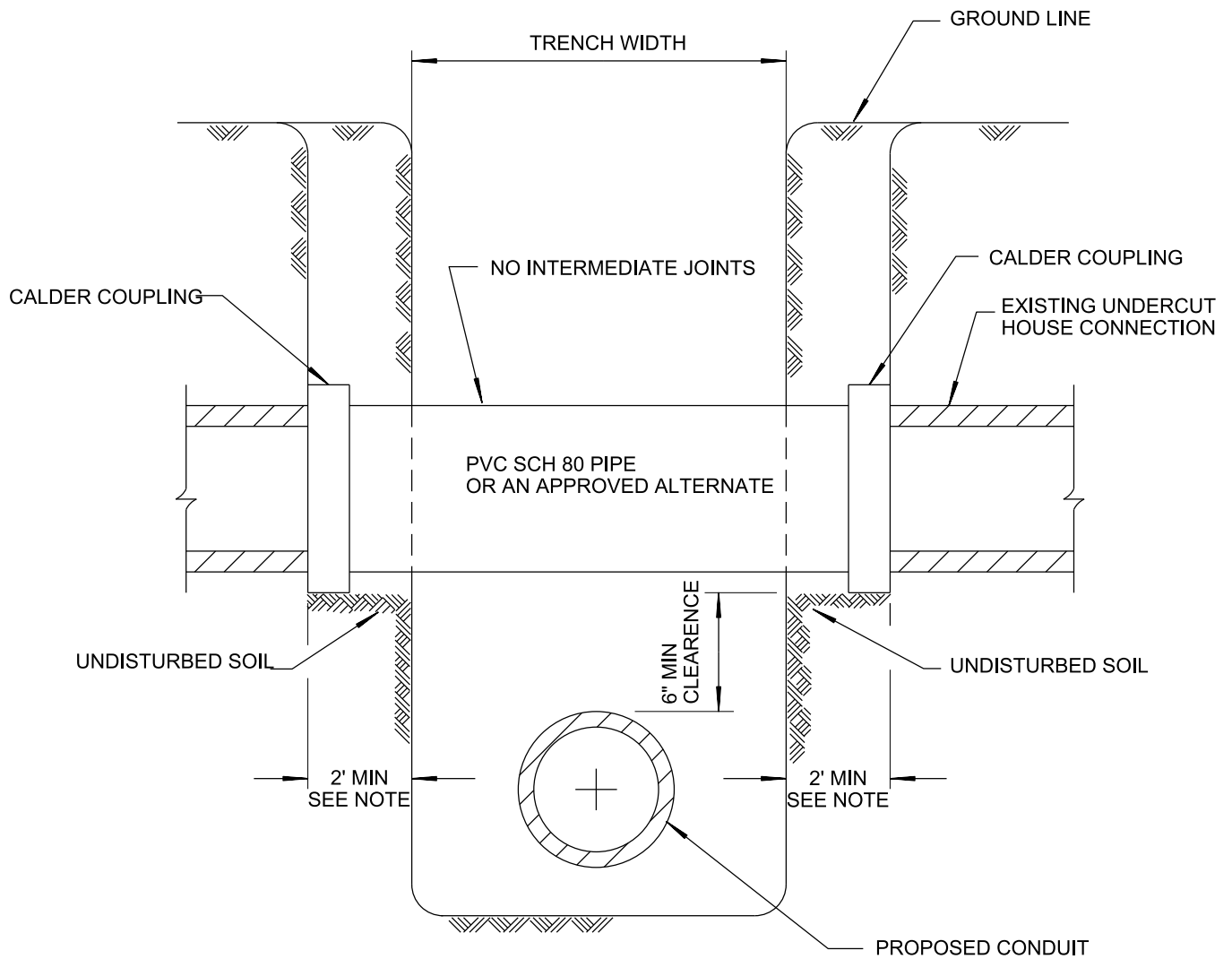
SECTION

NOTES:

1. FOR EXISTING PVC PIPE, IT SHALL BE COVERED WITH TAR PAPER, POLYURETHANE BAGGIE OR RUBBER MAT PRIOR TO POURING CONCRETE.
2. 6" METAL TAPE SHALL BE INSTALLED ABOVE PIPE 4" BELOW PAVEMENT SECTION.
3. (*) INDICATES MINIMUM RELATIVE COMPACTION.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	RA	A. OSKOU	12/06		
UPDATE	KA	J. NAGELVOORT	01/12	CONCRETE PROTECTION FOR EXISTING SEWER PIPE	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDS-116

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL	RA	A. OSKOUI	12/06		<div>CONCRETE SUPPORT FOR UNDERCUT SEWER PIPE</div>	<div> 9/4/18</div> <div>COORDINATOR R.C.E. 56523 DATE</div>
UPDATED	KA	J. NAGELVOORT	01/12			
REDRAFTED	CD	J. NAGELVOORT	09/18			
					DRAWING NUMBER SDS-117	

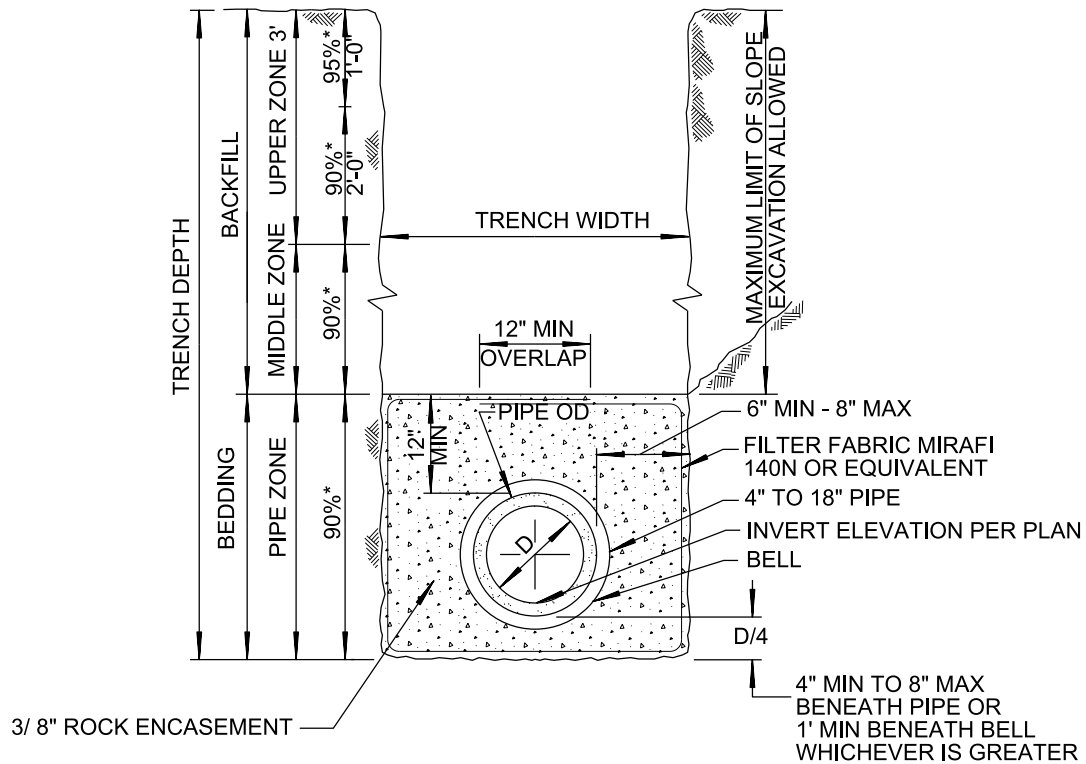


SECTION

NOTE:

FOR WATER LINE CONSTRUCTION, PIPE REPAIR SHALL EXTEND TO FIRST JOINT BEYOND 2' AT BOTH SIDES OF TRENCH OR TO A DISTANCE OF 4', WHICHEVER IS LESS.

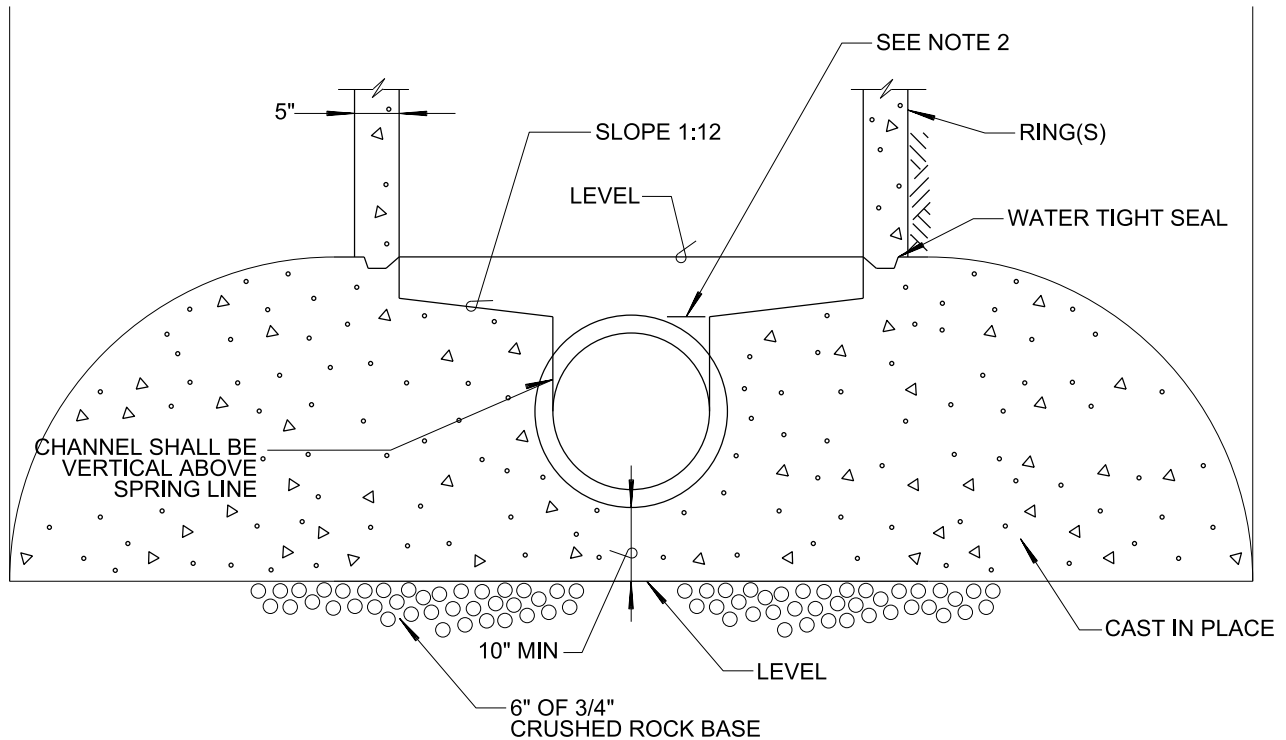
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	RA	A. OSKOUJ	12/06		
UPDATED	KA	J. NAGELVOORT	01/12	HOUSE CONNECTION SEWER REPAIR	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDS-118



NOTES:


1. FOR TRENCH RESURFACING IN IMPROVED STREETS **SEE SDG-107 AND SDG-108.**
2. (*) INDICATES MINIMUM RELATIVE COMPACTION.
3. MINIMUM DEPTH OF COVER FROM THE TOP OF PIPE TO FINISH GRADE FOR PVC SDR 35 SEWER MAIN SHALL BE 5'. FOR SHALLOWER DEPTH, SPECIAL DESIGN IS REQUIRED. **SEE SDS-101.**
4. INSTALL WARNING/ IDENTIFICATION TAPE **PER SDM-105.**
5. 1' SAND CUSHION OR A 6" MIN SAND CUSHION WITH 1" NEOPRENE PAD SHALL BE PLACED FOR ALL CROSSING UTILITIES WHEN VERTICAL CLEARANCE IS 1' OR LESS. THE NEOPRENE PAD SHALL BE PLACED ON THE MOST FRAGILE UTILITY.

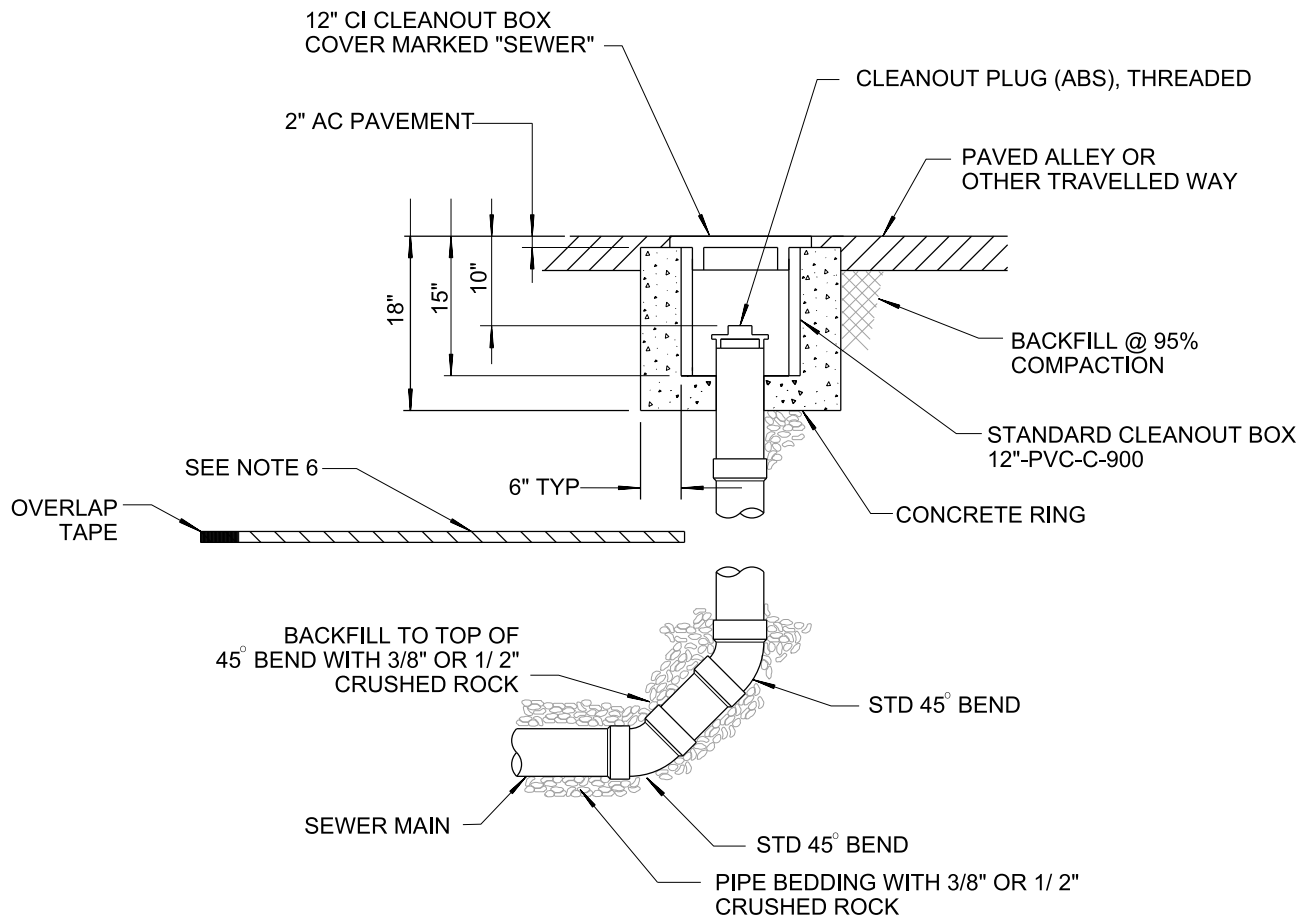
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
UPDATED	AR	J. NAGELVOORT	10/15	PIPE BEDDING AND TRENCH BACKFILL FOR SEWERS IN GROUNDWATER	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDS-119



NOTES:

1. MANHOLE BASES FOR MAINS 18" AND LARGER SHALL BE COATED **PER SM-07**.
2. LOWEST POINT ON SHELF SHALL BE EVEN WITH TOP OF PIPE.
3. CAST IN PLACE MANHOLE BASES CAST WITH 560-C-3250 SHALL BE CURED A MINIMUM OF THREE DAYS PRIOR TO STACKING MANHOLE. BASES CAST WITH 660-CW-4000 (WITHOUT CALCIUM CHLORIDE (CC)) OR WITH 560-C-3250 TREATED WITH A MINIMUM OF 2% CC SOLUTION IN ACCORDANCE WITH 201-1 SHALL BE CURED A MINIMUM OF 24 HOURS. THESE CURING REQUIREMENTS APPLY TO MANHOLES WITH A MAXIMUM HEIGHT OF 25'. SHORTER CURING TIMES, DEEPER INSTALLATIONS, AND ALTERNATE CONCRETE MIX DESIGNS REQUIRE ENGINEER'S PRIOR APPROVAL.
4. CONCRETE SPECIFIED BY ALTERNATE CLASS OR OTHERWISE CONTAINING FLY ASH IS NOT ALLOWED FOR USE IN CAST IN PLACE MANHOLES.
5. CONCRETE MIX DESIGNS CONTAINING ACCELERATING ADMIXTURES OTHER THAN CC REQUIRE A BREAK HISTORY AND ENGINEER'S APPROVAL.


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	HM	J. NAGELVOORT	02/16	SEWER MANHOLE BASE	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDS-120

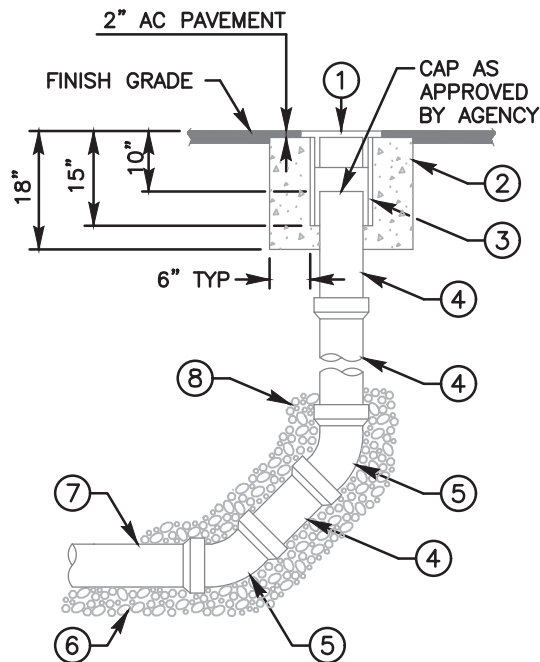


NOTES:

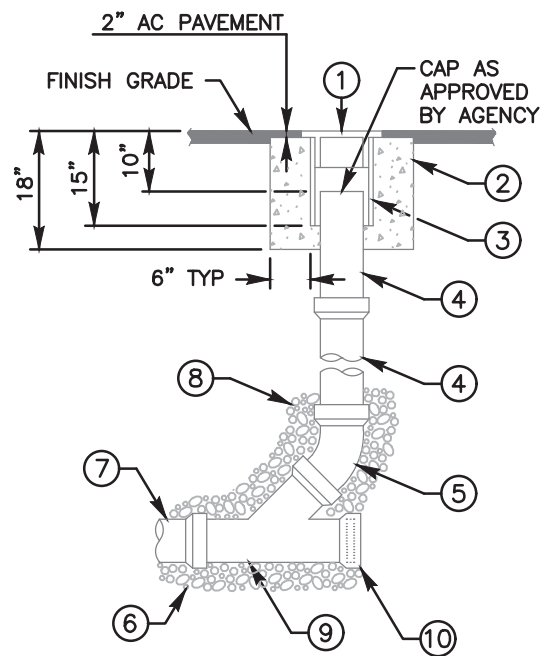
1. REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE.
2. CLEANOUTS TO BE INSTALLED AT THE END OF MAINS WHERE INDICATED ON THE PLANS.
3. CLEANOUT PIPE TO BE SAME SIZE AND MATERIAL AS SEWER (MAX DIA. 8").
4. BACKFILL TO TOP OF 45° BEND WITH 3/8" OR 1/2" CRUSHED ROCK.
5. LATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST.
6. INSTALL WARNING/ IDENTIFICATION TAPE **PER SDM-105**.

LEGEND ON PLANS

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	BB	J. NAGELVOORT	05/15		
UPDATED	BB	J. NAGELVOORT	07/15	SEWER MAIN CLEANOUT	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	JN	J. NAGELVOORT	11/17		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDS-121



TYPE A
MAINS FOR 6" AND 8"




TYPE B
SEWER LATERAL
CLEANOUT

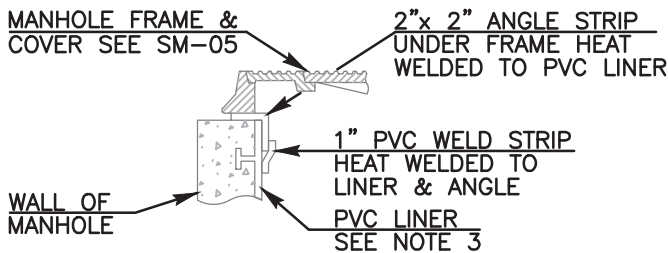
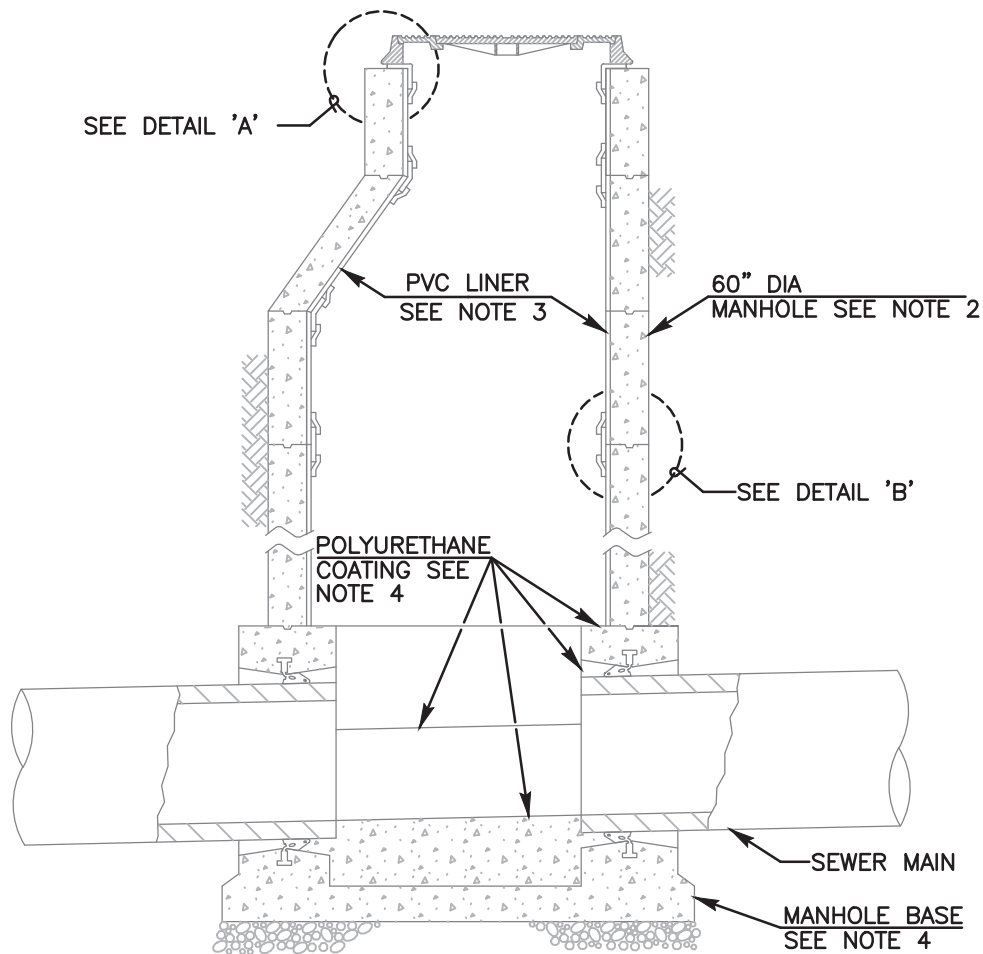
NOTES:

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) CLEANOUTS TO BE INSTALLED AT THE END OF MAINS WHERE INDICATED ON THE PLANS
- 3) CLEANOUT PIPE TO BE SAME SIZE AND MATERIAL AS SEWER MAIN UP TO 8"
- 4) BACKFILL TO TOP OF 45° BEND WITH 3/4" CRUSHED ROCK
- 5) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST

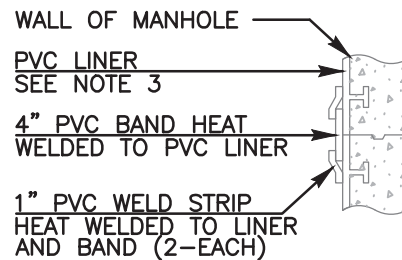
— — — — —
LEGEND ON PLANS

ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	12" CI CLEANOUT BOX COVER MARKED 'SEWER' AND AGENCY NAME AS REQUIRED	⑤	45° ELBOW
②	CONCRETE RING	⑥	3/4" CRUSHED ROCK PIPE BEDDING
③	12" PVC, C-900 x 15" LONG (CLEANOUT BOX)	⑦	SEWER MAIN
④	SIZE x REQUIRED LENGTH PVC PIPE	⑧	3/4" CRUSHED ROCK SEE NOTE 4
		⑨	STANDARD WYE BRANCH
		⑩	INSTALL PLUG AND CONCRETE LUG

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING SEWER CLEANOUT	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE  12/17/2015 Chairperson R.C.E. 19246 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		DRAWING NUMBER SC-01



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

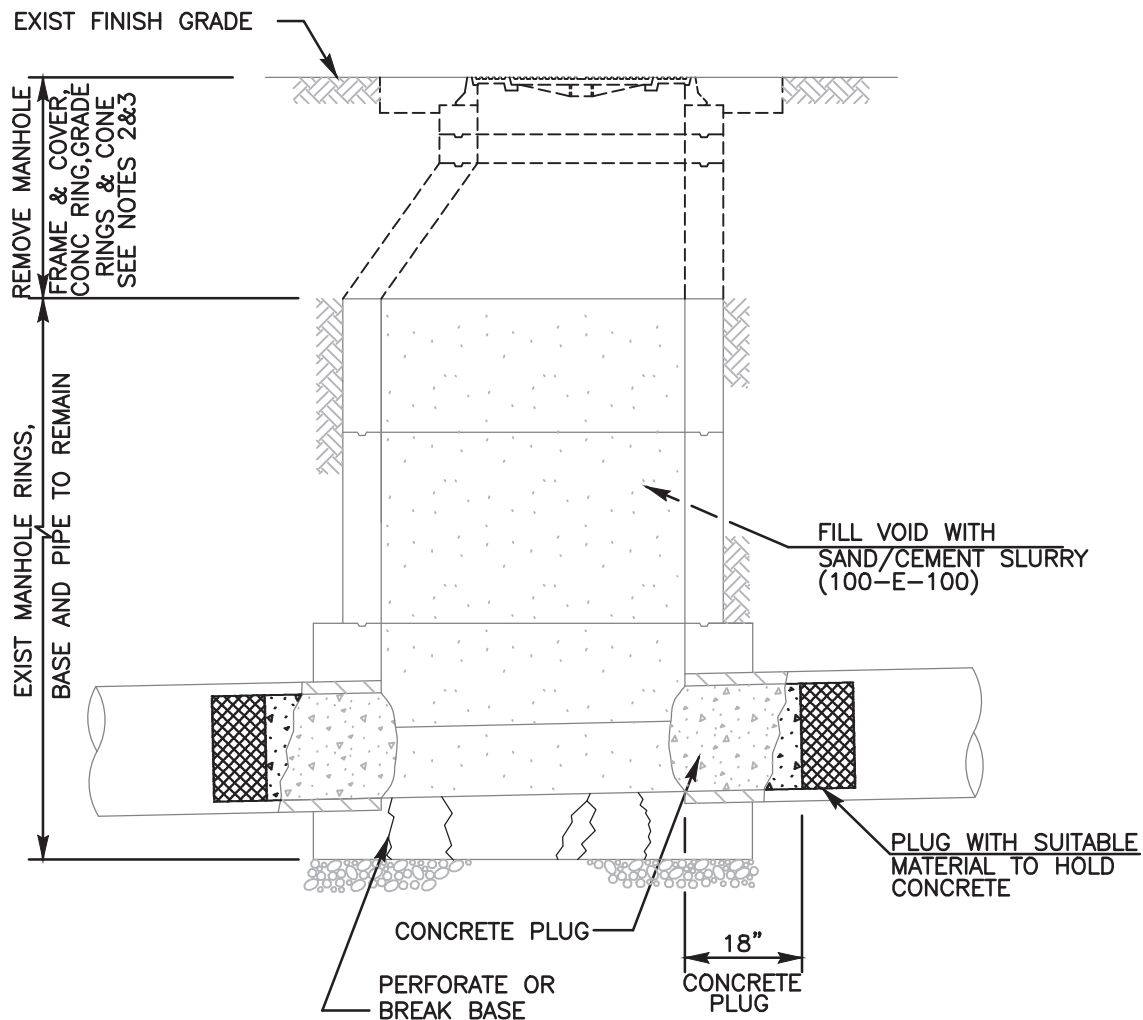
**MANHOLE COATING AND
LINING SYSTEM**

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

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

DRAWING
NUMBER **SM-07**

FOR DRAWING SM-05 SEE DRAWINGS M-1 THRU M-3



NOTES:

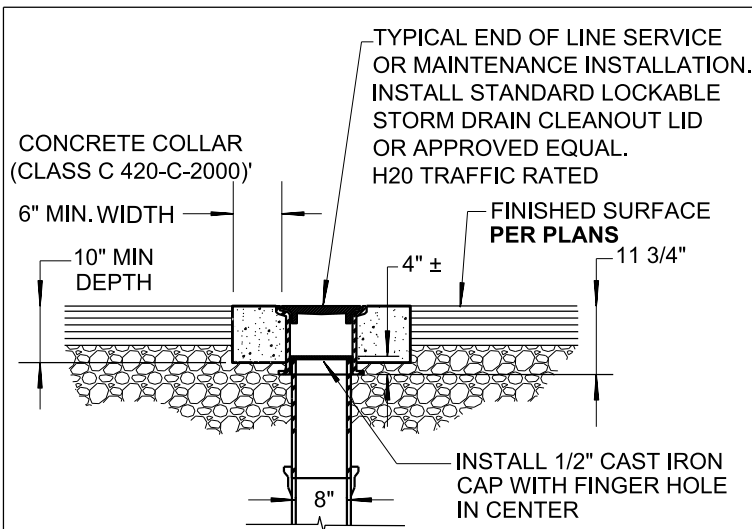
- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) ALL SALVAGED MATERIAL BECOMES PROPERTY OF AGENCY OF JURISDICTION
- 3) BACKFILL PER AGENCY'S REQUIREMENT
- 4) FOR CUTTING & PLUGGING ABANDONED SEWER MAINS SEE WP-03

LEGEND ON PLANS

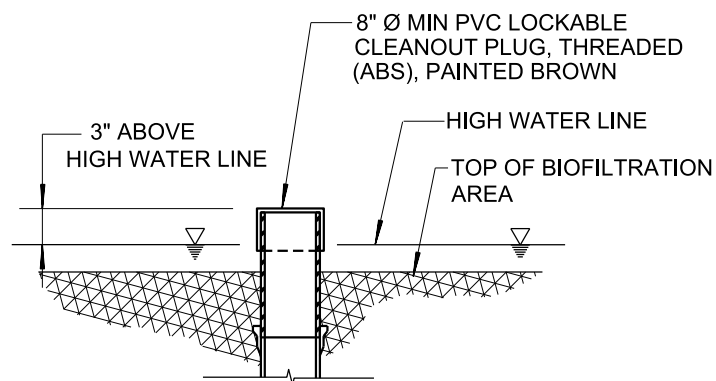
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		EXISTING MANHOLE ABANDONMENT
Add Metric		T. Stanton	03/03		
Replaced S-02		J. Tomasulo	03/05		
Delete Metric	MR	B. KNOLL	03/11		
Add Call-out	BK	B. KNOLL	04/15		

CHAPTER 10

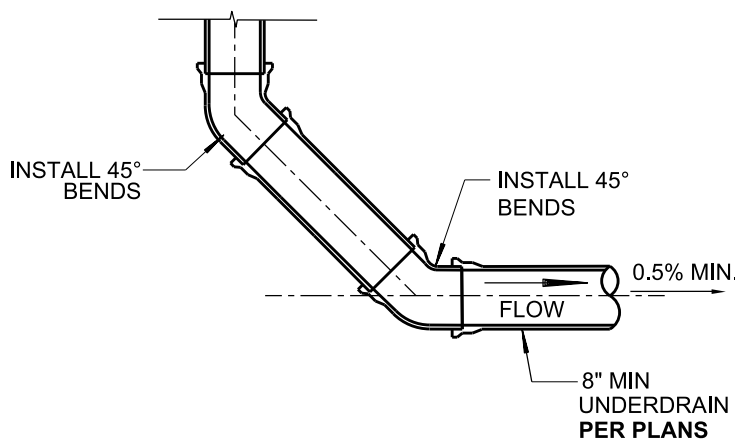
STORM WATER SYSTEMS



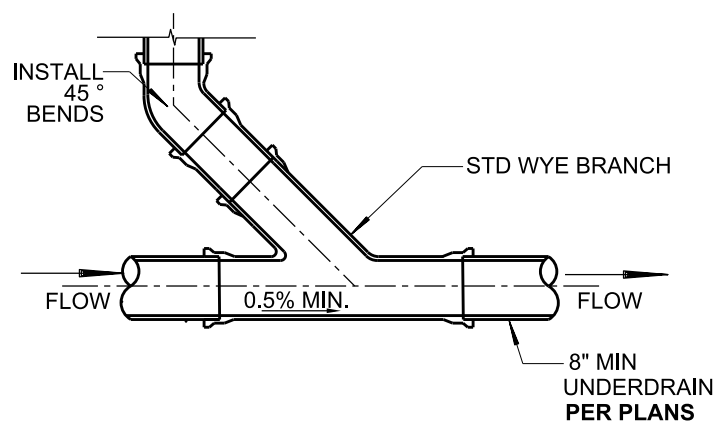
PAVEMENT AREA CLEANOUT - SURFACE



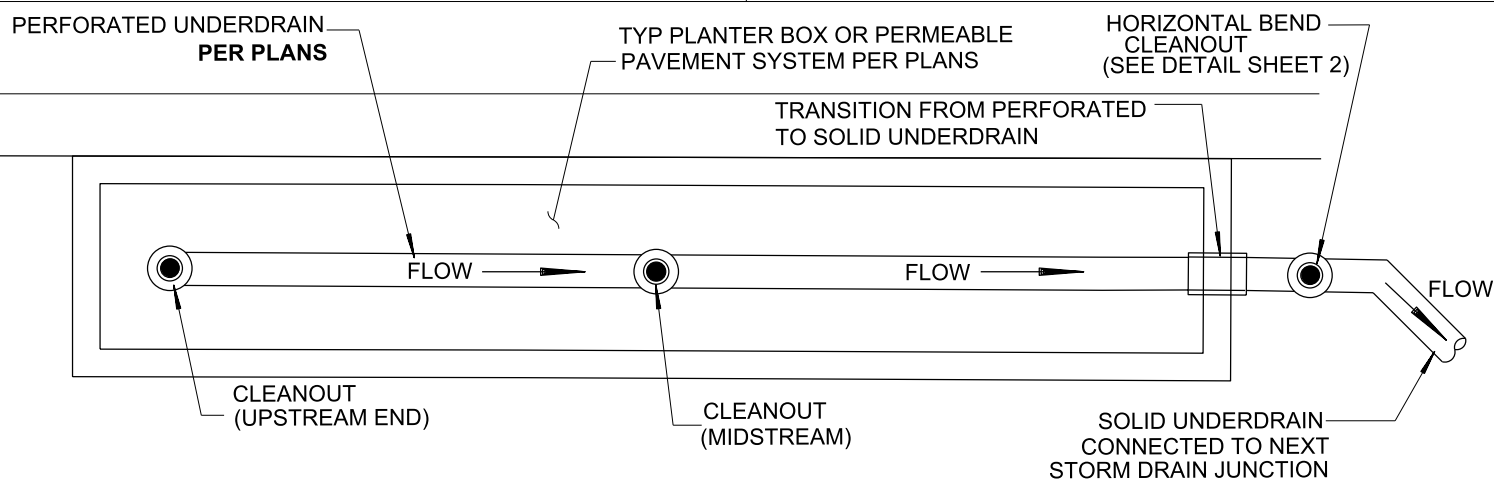
BIOFILTRATION AREA CLEANOUT - SURFACE



PLAN (CLEANOUT - UPSTREAM)



PLAN (CLEANOUT - MIDSTREAM)



PLAN VIEW - TYPICAL STORM DRAIN CLEANOUT LOCATIONS

NOTE

SEE ADDITIONAL NOTES ON SHEET 2

SHEET 1 OF 2

REVISION	BY	APPROVED	DATE
ORIGINAL	CG	J.NAGELVOORT	06 /18

CITY OF SAN DIEGO - STANDARD DRAWING

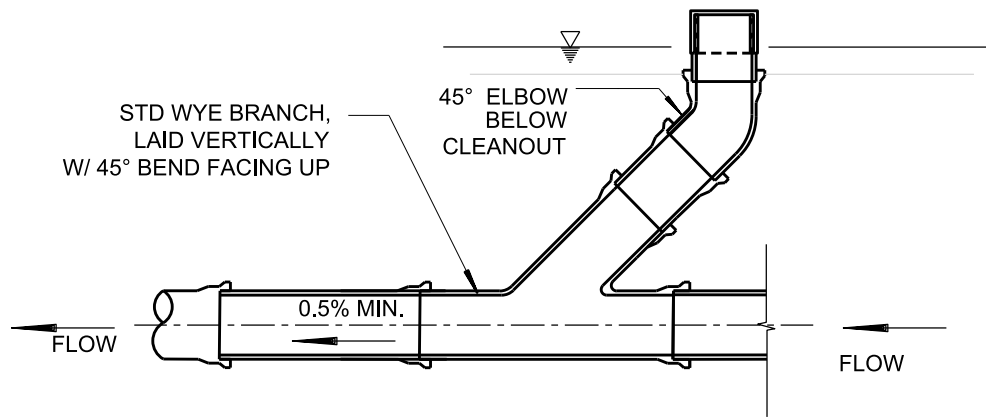
CLEANOUT FOR UNDERDRAIN

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

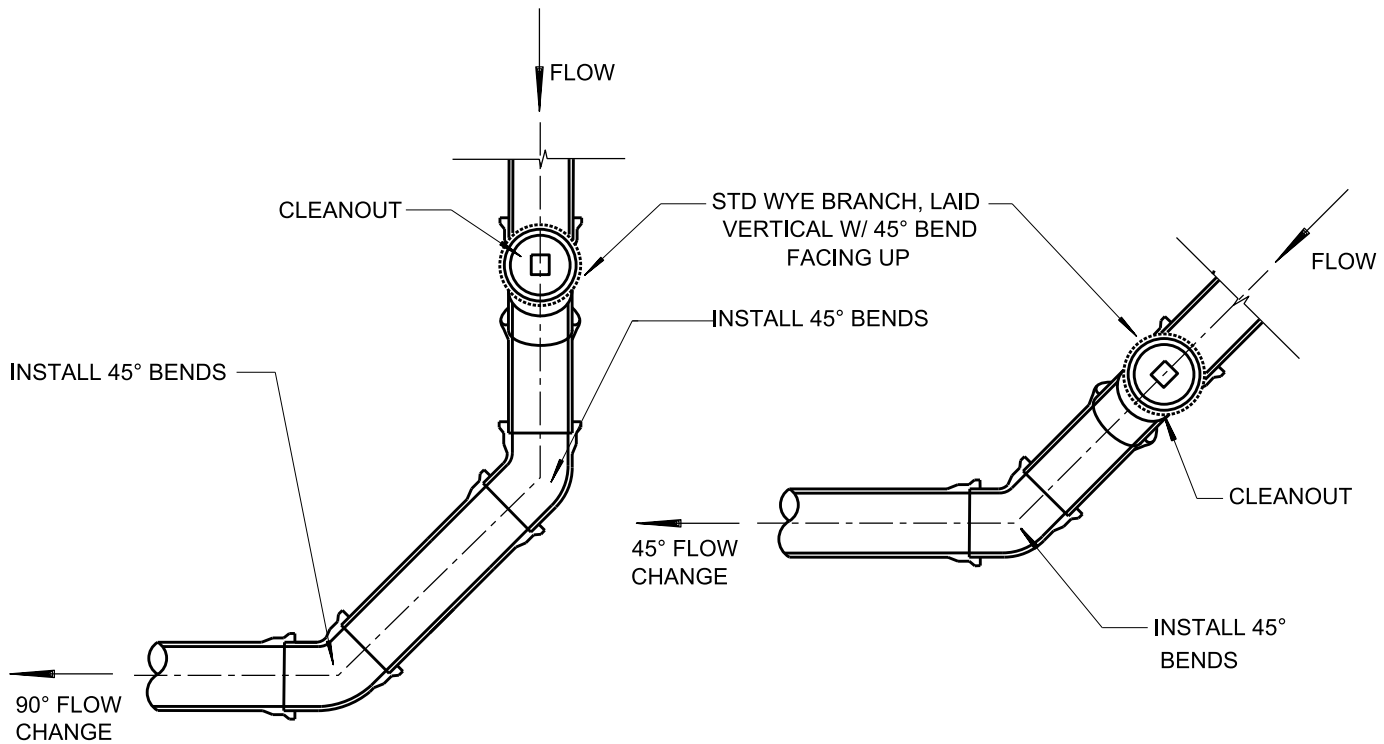
Chung 06/05/2018
COORDINATOR R.C.E. 56523 DATE

DRAWING
NUMBER

SDSW-101



PROFILE (MIDSTREAM CLEANOUT)



PLAN - 90° BEND CLEANOUT

PLAN - 45° BEND CLEANOUT

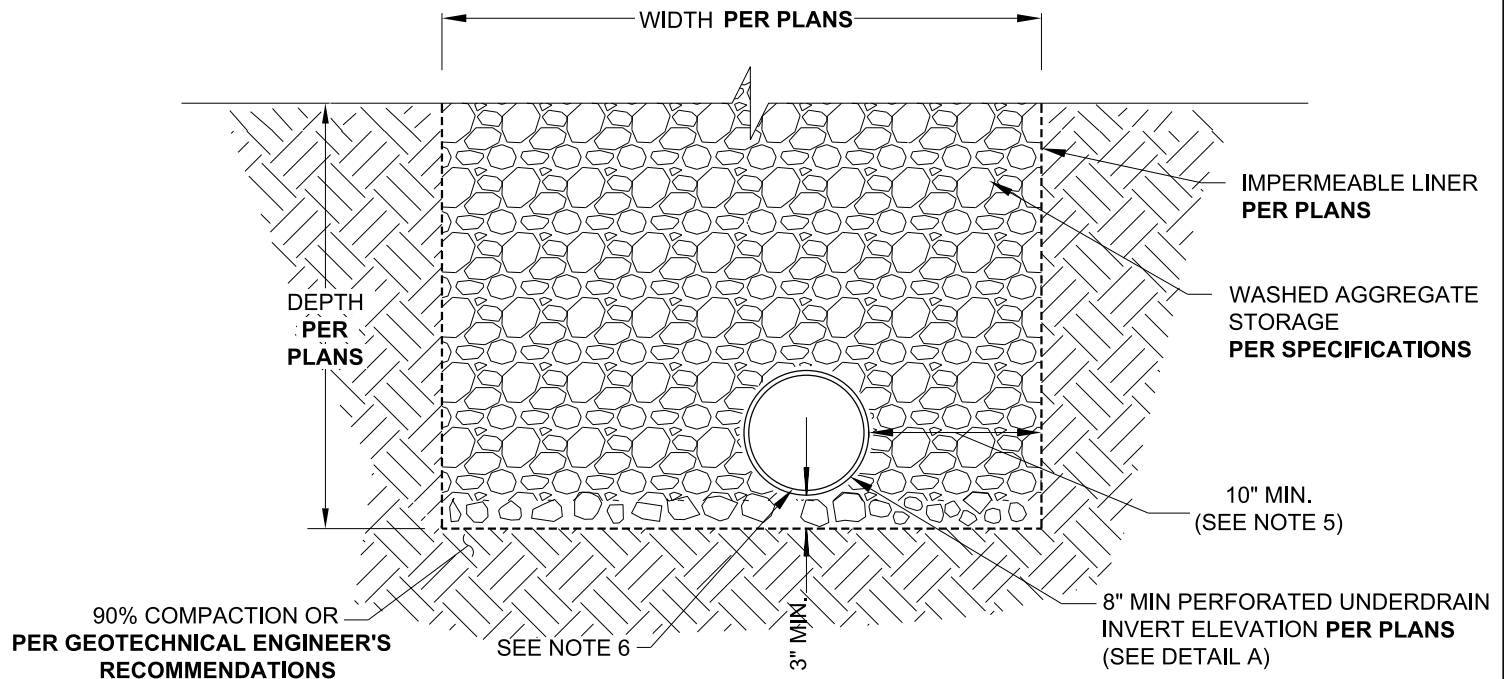
NOTES:

1. FOR PERMEABLE PAVEMENT APPLICATIONS, PIPES AND FITTINGS SHALL BE PROPERLY ALIGNED AND MAINTAINED WHILE CONCRETE IS BEING PLACED AND ALLOWED TO HARDEN. JOINTS FOR PIPES AND FITTINGS SHALL BE MADE PRIOR TO PLACING CONCRETE. CONCRETE FOR BEDDING, ENCASEMENT, AND WALL SUPPORT FOR PIPES AND FITTINGS SHALL BE PLACED UNIFORMLY AROUND THE PIPE AND FITTINGS AS SHOWN, AND SHALL BE CLASS 420-C-2000.

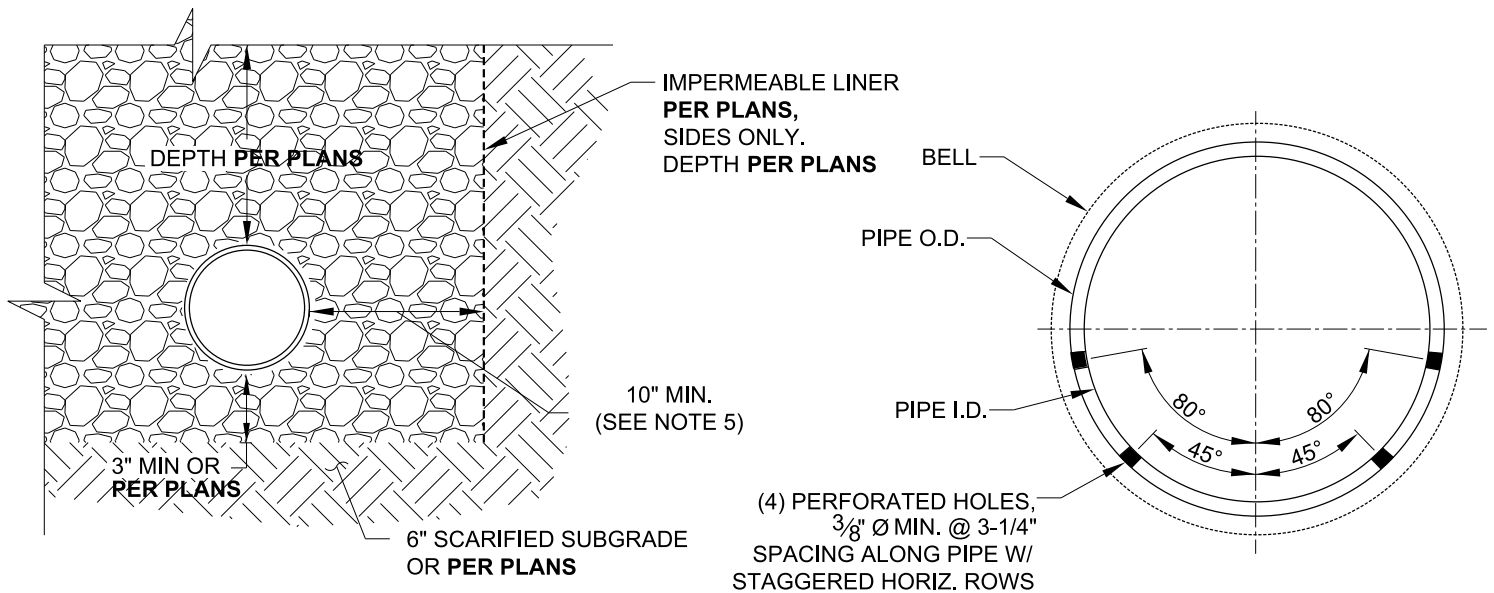
2. USE OF SMALLER DEGREE BENDS ONLY ALLOWED **PER ENGINEER'S APPROVAL**.

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	CG	J.NAGELVOORT	06 /18		
				CLEANOUT FOR UNDERDRAIN	 06/05/2018 COORDINATOR R.C.E. 56523 DATE
					DRAWING NUMBER SDSW-101



UNDERDRAIN WITH BOTTOM LINER




UNDERDRAIN WITHOUT BOTTOM LINER

**DETAIL A -
PERFORATED HOLE PLACEMENT**

NOTES:

SEE ADDITIONAL NOTES ON SHEET 2


SHEET 1 OF 2

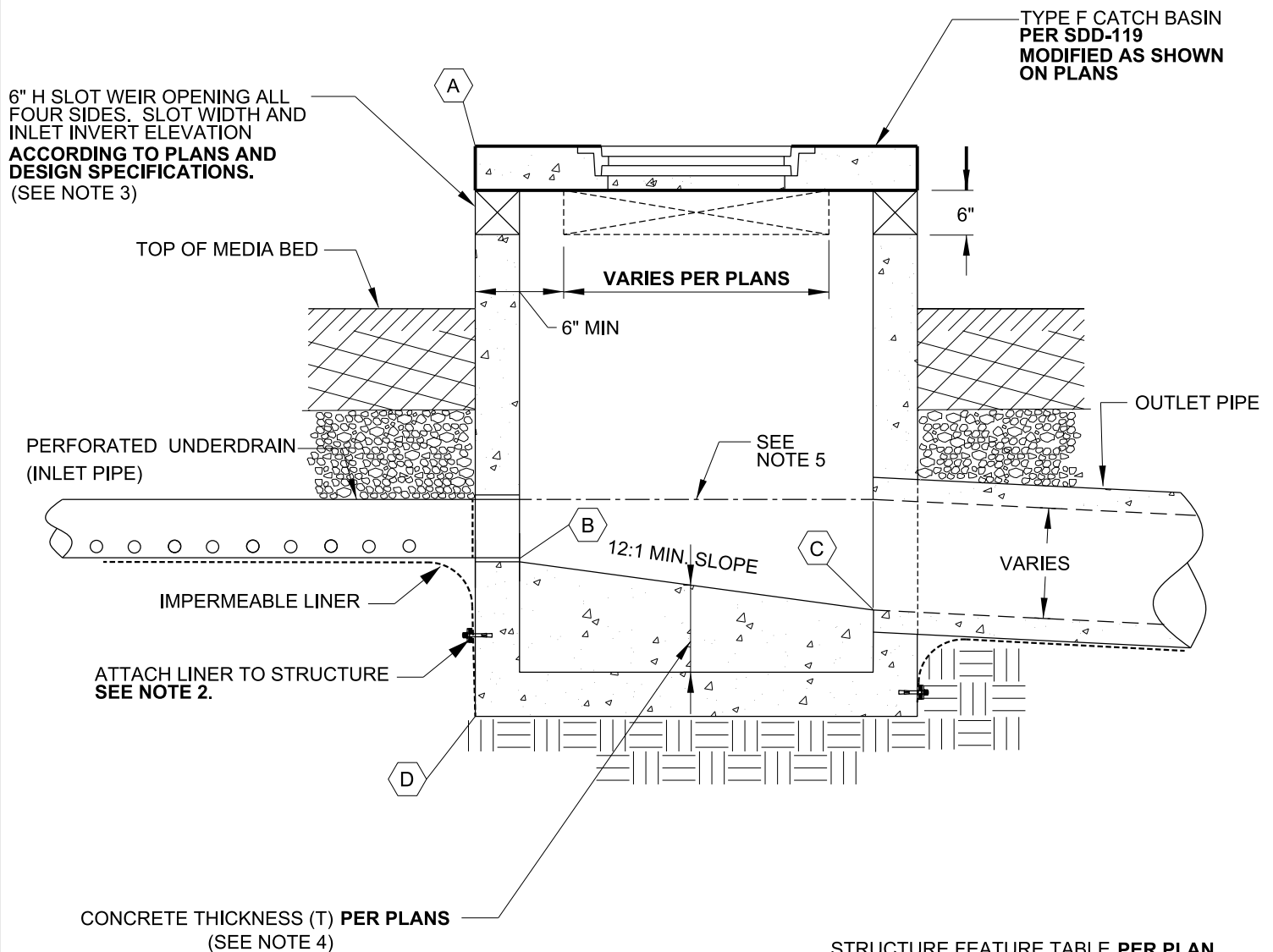
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	CG	J.NAGELVOORT	06 /18		
				PERFORATED UNDERDRAIN DETAIL	 06/05/2018 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDSW-102

NOTES:

1. PLACEMENT OF THE UNDERDRAIN SHALL BE **PER PLANS**, OR AS DIRECTED BY THE ENGINEER. HORIZONTAL LOCATION MAY VARY WITHIN PAVEMENT SECTION AS LONG AS MINIMUM OFFSET DISTANCES AND BOTTOM SLOPES ARE MAINTAINED.
2. PERFORATED PLASTIC PIPE SHALL BE SMOOTH-WALL PVC PLASTIC PIPE OR CORRUGATED PVC PLASTIC PIPE WITH A SMOOTH INTERIOR SURFACE, MADE OF PVC PLASTIC HAVING A CELL CLASSIFICATION OF 12454 OR 13364, AS DEFINED IN ASTM D1784.
3. PIPE, FITTING, AND JOINT DIMENSIONS SHALL BE COMPATIBLE AND MEASURED IN ACCORDANCE WITH ASTM D 2122. FITTING AND JOINT MATERIAL SHALL BE COMPATIBLE WITH THE PIPE MATERIAL.
4. PIPE PENETRATIONS THROUGH IMPERMEABLE BARRIER SHALL BE SEALED **ACCORDING TO PLANS**.
5. FOR PERMEABLE PAVEMENT UNDERDRAINS, MINIMUM OFFSET TO INSIDE EDGE OF TRENCH SHALL BE 10 INCHES.
6. DEPTH OF PERFORATED PVC PIPE MAY BE ADJUSTED TO TIE INTO THE ADJACENT CONNECTION POINT OF THE DOWNSTREAM DRAINAGE INFRASTRUCTURE, AS NEEDED, **PER ENGINEER'S APPROVAL**.

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  06/05/2018 COORDINATOR R.C.E. 56523 DATE
ORIGINAL	CG	J.NAGELVOORT	06 /18		
				PERFORATED UNDERDRAIN DETAIL	DRAWING NUMBER SDSW-102



NOTES:

1. UTILIZE LINER AND UNDERDRAIN ONLY IF **SPECIFIED IN PLANS.**
2. ATTACH LINER TO STRUCTURE USING BATTEN AND ANCHOR BOLT CONNECTION **PER SDSW-104.**
3. MINIMUM 6" HORIZONTAL OFFSET FROM EDGE OF STRUCTURE TO SLOT WEIR OPENING, BOTH SIDES, TO ENSURE STRUCTURAL SUPPORT OF SLAB TOP.
4. THICKNESS OF SUMP VARIES **PER PLANS** BASED ON ANTI-BUOYANCY REQUIREMENTS.
5. INSIDE CROWN (SOFFIT) ELEVATIONS OF THE INCOMING AND OUTLET STORM DRAINS ARE TO BE MATCHED.
6. BURY STRUCTURE INTO THE SUBGRADE **PER PLAN.**

STRUCTURE FEATURE TABLE **PER PLAN**

LOCATION	COMMENTS
A	TOP OF STRUCTURE
B	INVERT OF UNDERDRAIN
C	INVERT OF CULVERT - OUT
D	BOTTOM OF STRUCTURE

REVISION	BY	APPROVED	DATE
ORIGINAL	CG	J.NAGELVOORT	06 /18

CITY OF SAN DIEGO – STANDARD DRAWING

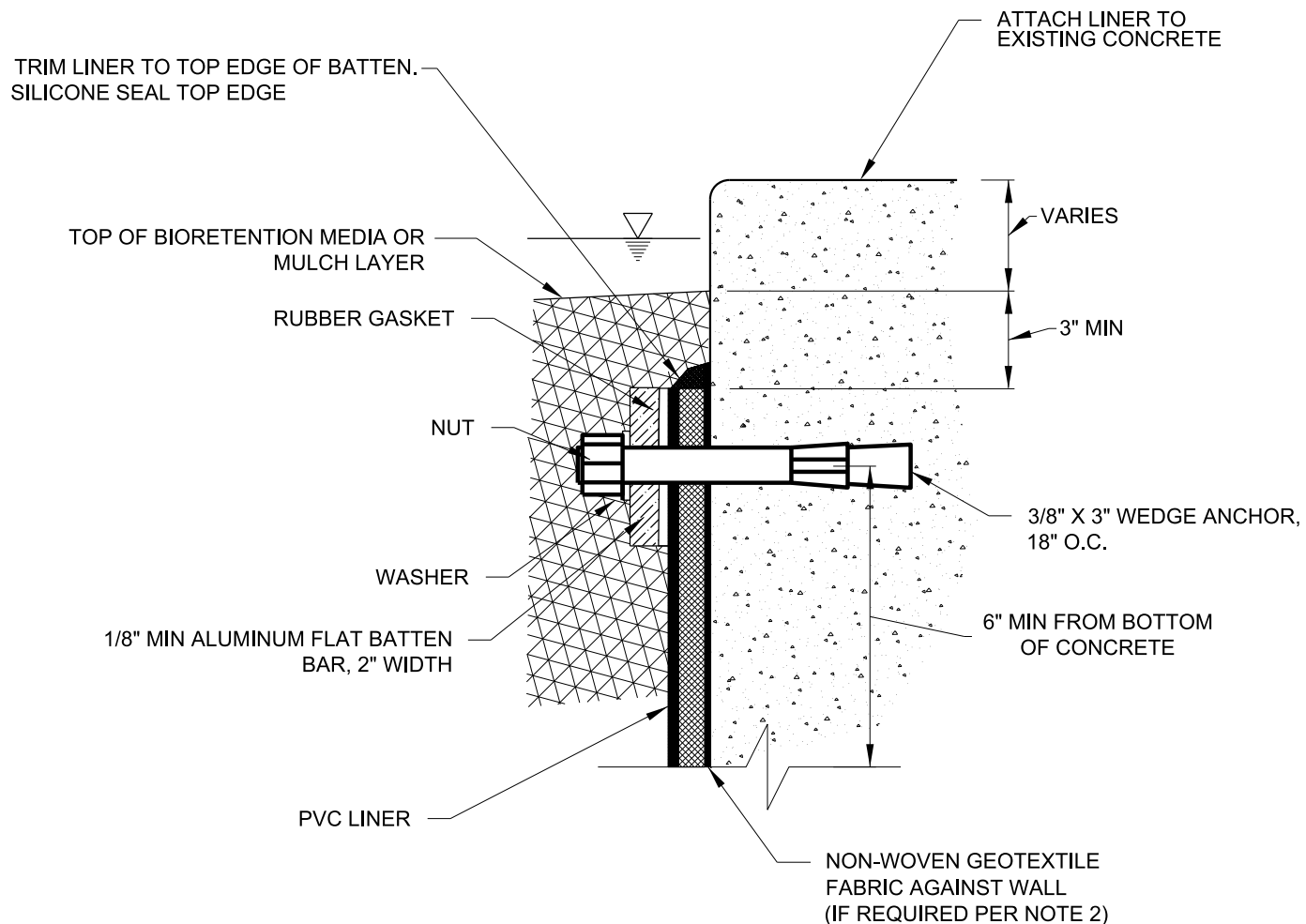
BIORETENTION OVERFLOW STRUCTURE

RECOMMENDED BY THE CITY
OF SAN DIEGO STANDARDS COMMITTEE

Chung 06/05/2018
COORDINATOR R.C.E. 56523 DATE

DRAWING
NUMBER

SDSW-103



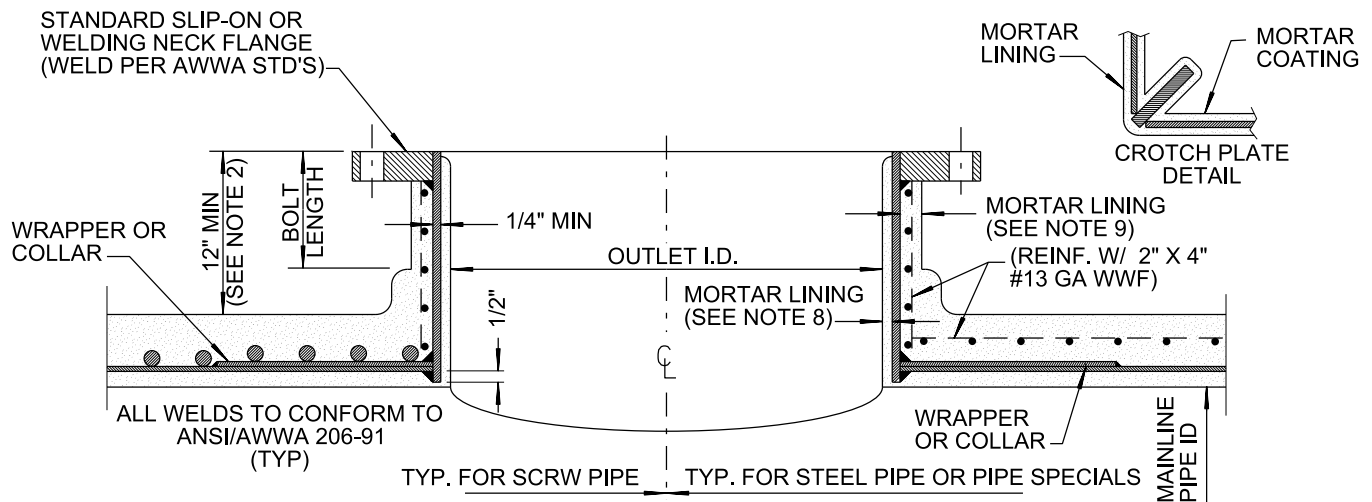
NOTES:

1. IRREGULARITIES ON THE CONCRETE SURFACE OF THE EXISTING/PROPOSED SIDEWALK OR EXTENDED CURB, TO WHICH THE GEOMEMBRANE IS TO BE ATTACHED, SHALL BE REMOVED PRIOR TO INSTALLATION.
2. IF IRREGULARITIES (I.E., SHARP PROTRUSIONS EXCEEDING 1/2 INCH FROM SURFACE FACE) CAN NOT BE REMOVED FROM AN EXISTING SAW-CUT OR FORMED STRUCTURE, A PROTECTIVE GEOTEXTILE LAYER SHOULD BE PLACED BETWEEN THE SURFACE AND THE GEOMEMBRANE WITHIN VICINITY OF PROTRUSIONS.
3. REFER TO PLANS FOR VERTICAL DIMENSIONS OF BIOFILTRATION COMPONENTS.
4. SUBMIT GEOTEXTILE MANUFACTURER'S INSTALLATION RECOMMENDATIONS TO ENGINEER FOR APPROVAL.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	CG	J.NAGELVOORT	06 /18		
				VERTICAL PVC LINER ATTACHMENT	 06/05/2018 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDSW-104

CHAPTER 11


WATER SYSTEMS

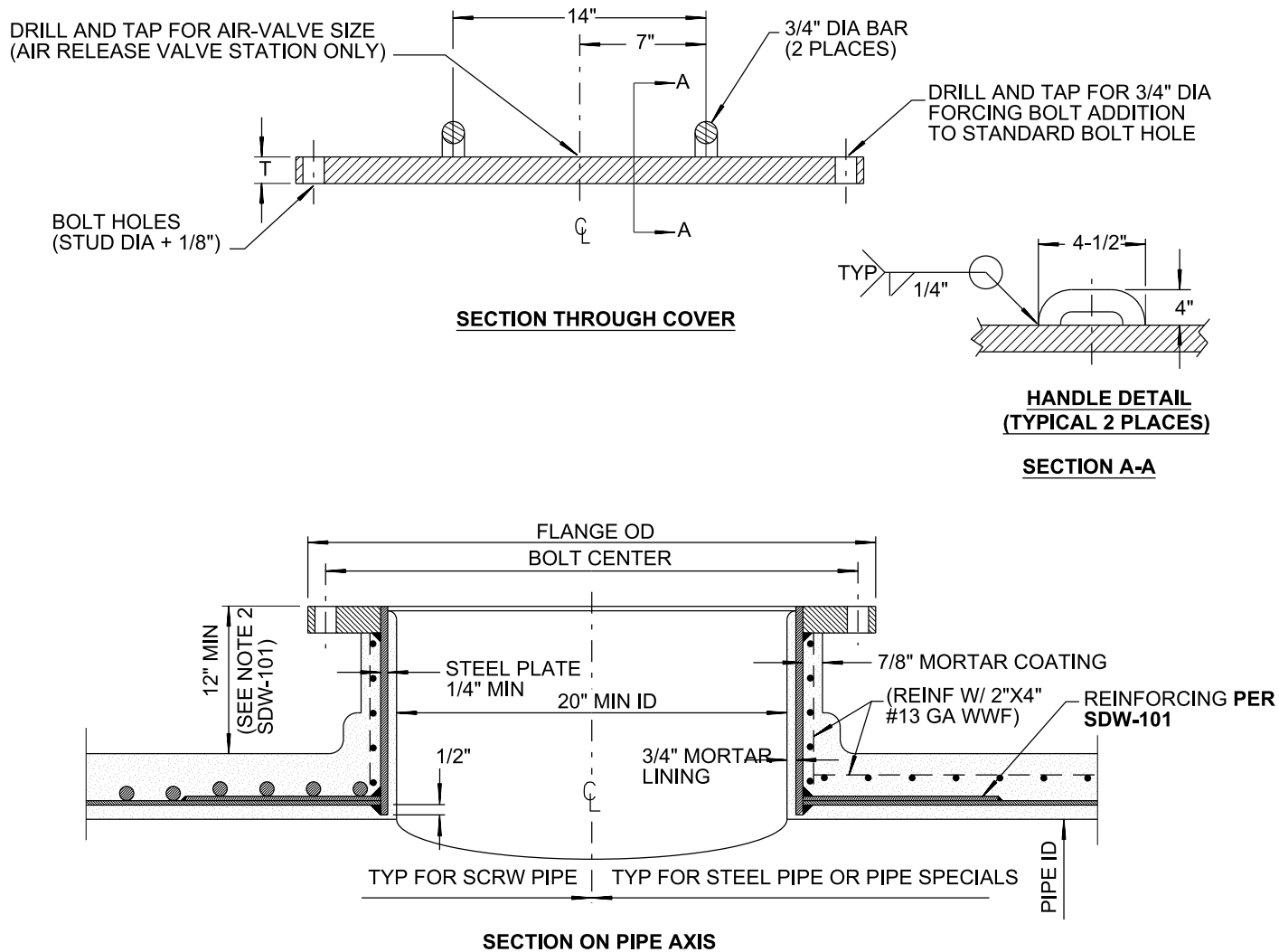


OUTLET REINFORCING			
RATIO OF OUTLET ID TO PIPE ID	PIPE CLASS	ANGLE BETWEEN OUTLET AXIS AND MAINLINE AXIS	TYPE OF REINFORCING
0.2 AND LESS	ALL ALL	0° to 75° 75° to 90°	WRAPPER COLLAR
0.2 TO 0.6	UNDER 150 UNDER 150 150 AND OVER	0° to 75° 75° to 90° 0° to 90°	WRAPPER COLLAR WRAPPER
0.6 TO 1.0	UNDER 150 150 AND OVER	0° to 90° 0° to 90°	WRAPPER 1 PL CROTCH
1.0	UNDER 150 150 AND OVER	0° to 90° 0° to 90°	WRAPPER 2 PL CROTCH

NOTES

- COLLAR OD OR WRAPPER WIDTH SHALL BE EQUAL TO TWICE THE LENGTH OF THE OPENING IN THE MAINLINE PIPE MEASURED ALONG THE PIPE AXIS. THICKNESS SHALL BE EQUAL TO THAT SPECIFIED FOR PIPE SPECIALS.
- IF A CROTCH PLATE IS REQUIRED, THE OUTLET LENGTH SHALL BE ADJUSTED TO CLEAR THE MAXIMUM LENGTH OF BOLT USED FOR FLANGE.
- OUTLETS LESS THAN 3" IN DIA. MAY BE INSTALLED WITHOUT COLLARS PROVIDING THAT ROD REINFORCING IS NOT CUT AND OUTLETS ARE WELDED TO RODS.
- REINFORCING FOR OUTLETS ON PIPE, OTHER THAN SCRW PIPE OR STEEL PIPE, SHALL BE AS SHOWN ON PLANS OR SUBMITTED FOR APPROVAL.
- NOZZLE FABRICATION DETAILS ARE TYPICAL FOR ALL SIZES OF OUTLETS.
- REPEAT NOTE 1 FOR SDW-103
- FLANGES SHALL CONFORM TO AWWA C207 AND DRILLING SHALL MATCH THE ABOVE FLANGE DRILLING.
- MINIMUM LINING THICKNESS FOR OUTLETS SHALL BE:
1/4" FOR 8" ID AND LESS
1/2" FOR 10" ID 16" ID
3/4" FOR 18" ID AND GREATER
- COATING THICKNESS FOR OUTLETS SHALL BE:
3/4" FOR 16" ID AND LESS
1 1/4" FOR 18" ID AND GREATER
SPECIFIED COATING THICKNESS SHALL BE REDUCED BY 50% FOR THE DISTANCE OF ONE BOLT LENGTH BACK FROM THE FLANGE FACE.
- REINFORCEMENT OF FITTINGS, COLLARS, WRAPPER AND CROTCH PLATE DESIGN SHALL CONFORM TO M-11, LATEST STEEL PIPE-GUIDE FOR DESIGN AND INSTALLATION EDITION.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		H. HORN	5-6-80		
		J. CASEY	6-3-83	TYPICAL OUTLET FOR SCRW PIPE STEEL PIPE AND PIPE SPECIALS	 COORDINATOR R.C.E. 56523 DATE 9/4/18
		J. CASEY	8-23-86		
UPDATED	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDW-101




TYPE	PRESSURE RANGE (PSI)	FLANGE		BOLT CENTER	NO. OF BOLTS	STUD DIA. & LENGTH	THICKNESS (T)
		ID	OD				
175	0 - 175	22"	29-1/2"	27-1/4"	20	6"x 1-1/4"	1-3/16"
250	175 - 250	22"	33"	29-1/4"	24	7"x 1-1/2"	1-11/16"
325	250 - 325	22"	33"	29-1/4"	24	7"x 1-1/2"	1-7/8"

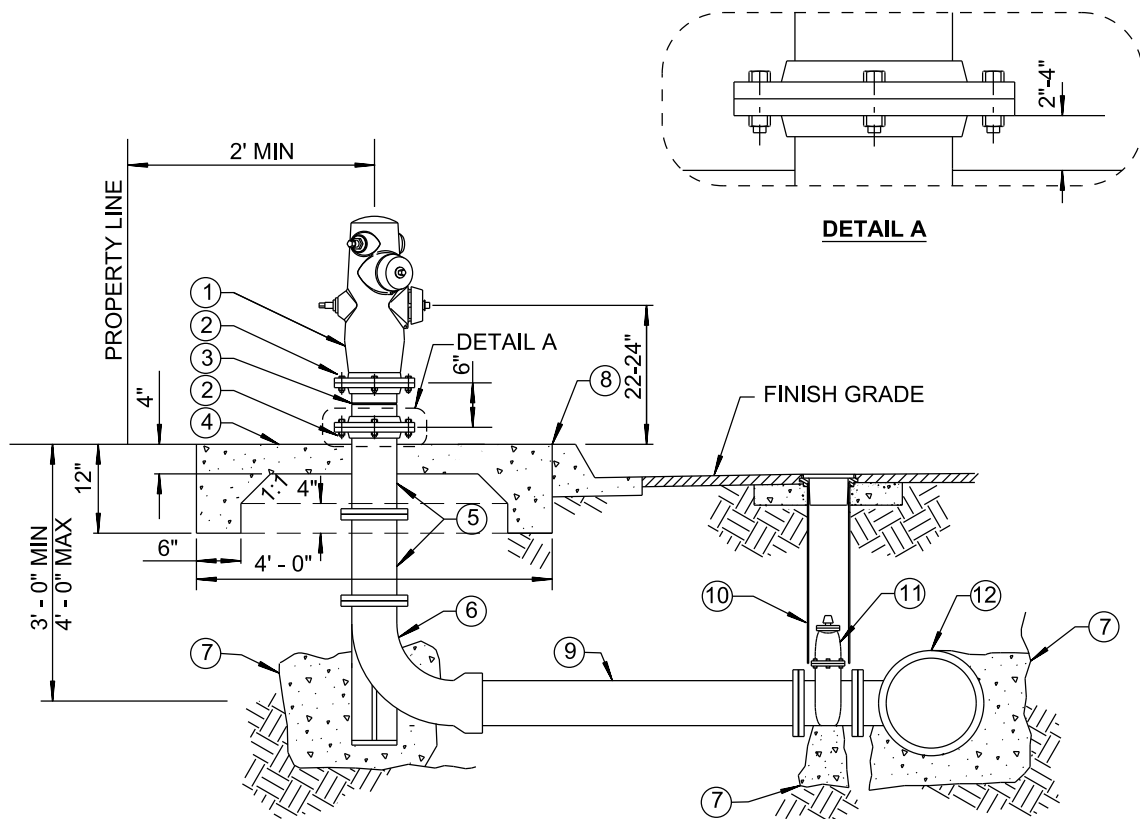
FURNISH:

REQUIRED STUD BOLTS W/ FULL LENGTH THREAD & TWO (2) HEX NUTS EACH 1/16" THICK FULL FACE GASKET AND 3/4 INCH DIA STAINLESS STEEL FORCING BOLT ON DC

NOTES:

1. APPLY TWO (2) COATS OF COAL-TAR EPOXY 16 MILS TOTAL (MIN) TO ALL EXPOSED METAL SURFACES. AMERCOAT 78 OR KOP-COAT 300 M OR EQUAL MEETING U.S. PUBLIC HEALTH STANDARDS ARE APPROVED FOR SUCH APPLICATION PER MANUFACTURE'S STANDARDS.
2. DETAILS OF MANHOLES ON PIPELINES LESS THAN 24" DIAMETER SHALL BE SHOWN ON DESIGN DRAWINGS OR SUBMITTED FOR APPROVAL.
3. MANHOLES SHALL BE BEVELED DURING FABRICATION, SO THAT THEY ARE TRUE TO VERTICAL UPON INSTALLATION.
4. ALL WELDS TO CONFORM TO ANSI / AWWA C206 - 91.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		H. HORN	5-6-80		
		J. CASEY	6-3-83	ACCESS MANHOLE	 COORDINATOR R.C.E. 56523
		J. CASEY	8-23-86		
UPDATED	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					9/4/18 DATE DRAWING NUMBER SDW-103

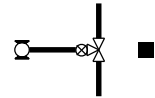


FIRE HYDRANT INSTALLATION

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
1	6" WET BARREL FIRE HYDRANT	5	6" CAST IRON EXTENSION NON-GROOVED SPOOL - AS REQUIRED (F, F)
2	.75" X 3.5" MIN HEX HEAD BREAKAWAY (SHEAR) BOLTS AND NUTS (ASTM A307) SHALL BE 3/4" NC THREAD. HEX HEAD ON TOP OF FLANGES (ALL)	6	6" LONG RADIUS DI BASE ELBOW (F, PO / MJ)
3	6" CAST IRON BREAKAWAY SPOOL WITH 0.25"-V (SINGLE OR DOUBLE) BREAK OFF GROOVE	7	CONCRETE THRUST BLOCK PER SDW-151.
4	4' X 4' X 4" THICK CONCRETE PAD WITH 6" X 12" DEEP THICKENED EDGE AROUND PERIMETER OF CONCRETE PAD	8	COLD JOINT STRIP
		9	PIPE - 6" C-900 PVC
		10	GATE WELL WITH CAP PER SDW-153.
		11	6" GATE VALVE (F/ MJ, F)
		12	TEE - SIZE X 6" (MJ, MJ, F)


NOTES:

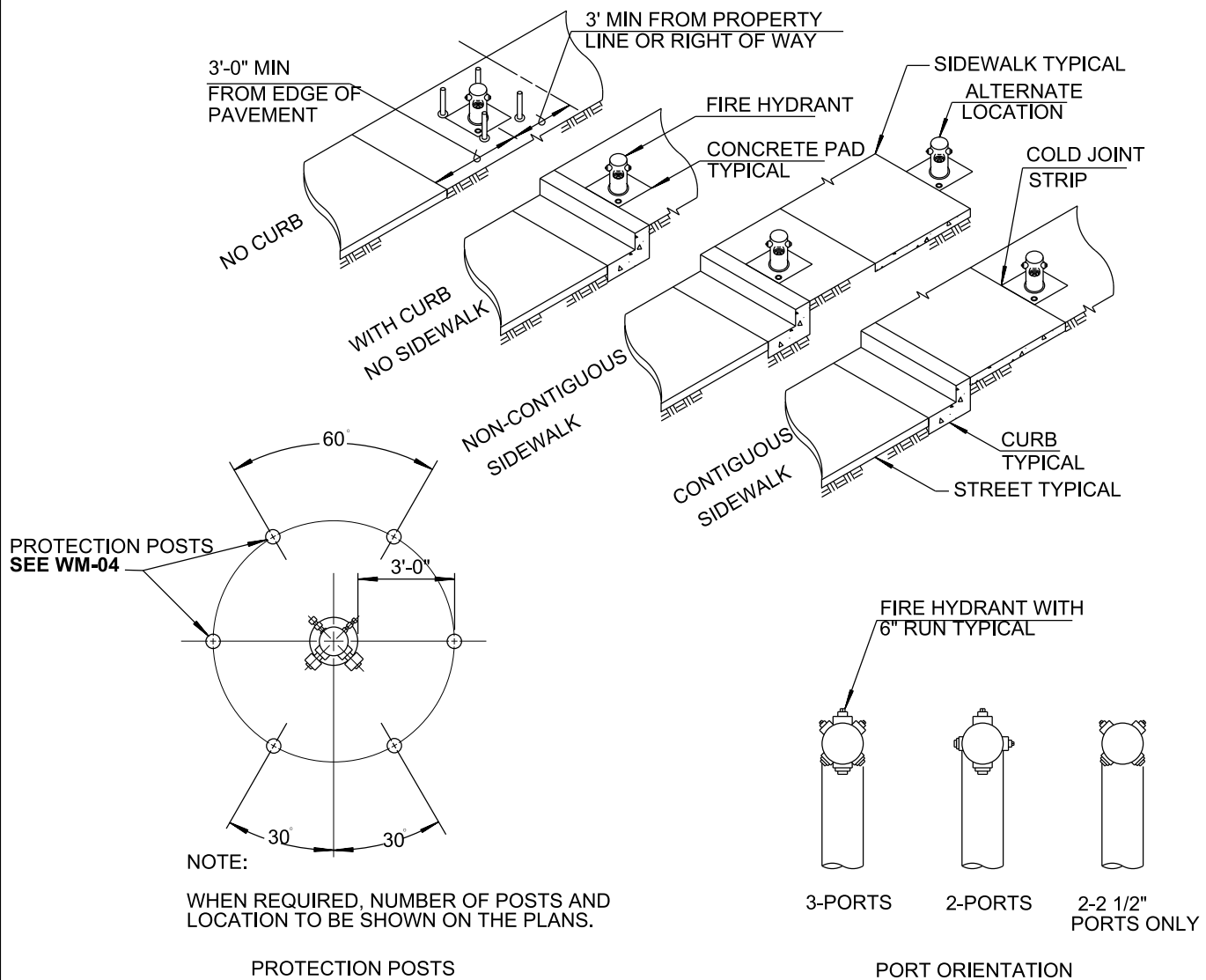
1. NUMBER OF OUTLETS SHALL BE AS SHOWN ON THE PLANS.
2. CONNECT TO BASE OF THE HYDRANT WITH SHEAR BOLTS INSTALLED WITH HEX HEAD ON TOP OF THE FLANGE. (31 / 64" DIAMETER HOLE 2" DEEP IN BOLTS, GALVANIZED AFTER BORING)



LEGEND ON PLANS

SHEET 1 OF 3

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
UPDATED	KA	J. NAGELVOORT	08/13	FIRE HYDRANT INSTALLATION	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDW-104




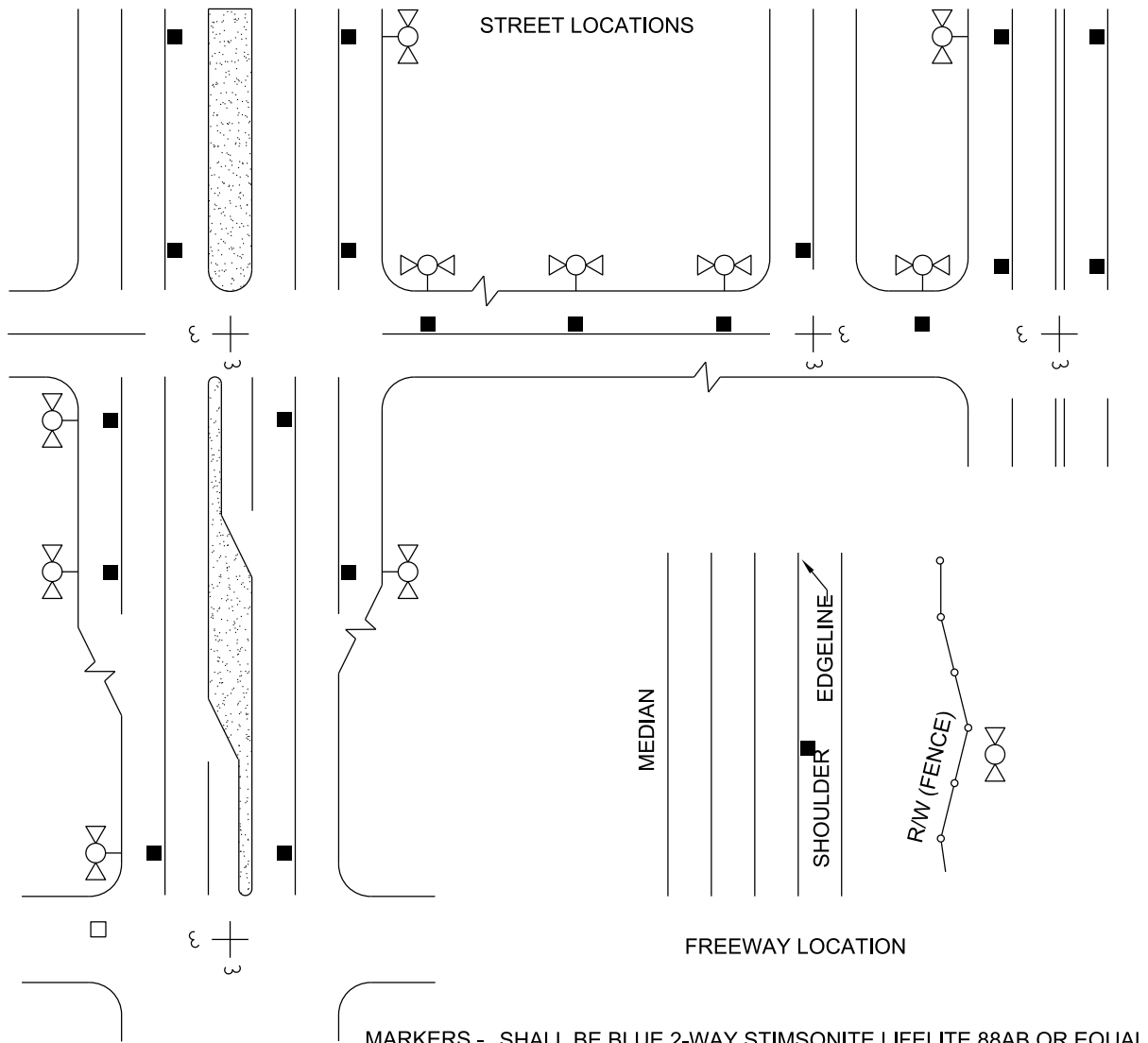
FIRE HYDRANT LOCATIONS AND PORT ORIENTATION

NOTES:

- 1) LOCATE FIRE HYDRANT AS SHOWN ABOVE OR AS DIRECTED BY THE ENGINEER.
- 2) FIRE HYDRANTS SHALL BE INSTALLED WITH THE LARGEST PORT PERPENDICULAR TO THE STREET.
- 3) IF THE CONCRETE SLAB IS TO BE INSTALLED ADJACENT TO A CONCRETE CURB OR SIDEWALK, A COLD JOINT STRIP SHALL BE INSTALLED.
- 4) CONCRETE APRON SHALL BE REQUIRED WHERE THE FIRE HYDRANT IS INSTALLED IN AN UNPAVED LOCATION. THE APRON SHALL BE 4" THICK 520-C-2500 CONCRETE.
- 5) WHEN DISTANCE FROM THE FIRE HYDRANT TO THE TOP OR TOE OF THE SLOPE OR WALLS IS LESS THAN 2', SPECIAL HYDRANT INSTALLATION DETAIL SHALL BE SHOWN ON THE PLANS.
- 6) THE DISTANCE FROM THE FACE OF THE CURB TO THE CENTERLINE OF THE FIRE HYDRANT SHALL BE 2 1/2' MINIMUM.

SHEET 2 OF 3

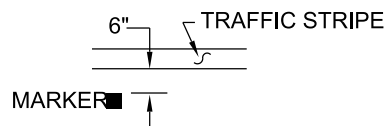
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
UPDATED	KA	J. NAGELVOORT	08/13	FIRE HYDRANT INSTALLATION	 COORDINATOR R.C.E. 56523
UPDATED	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					9/4/18 DATE
					DRAWING NUMBER SDW-104



MARKERS - SHALL BE BLUE 2-WAY STIMSONITE LIFELITE 88AB OR EQUAL.

ADHESIVE - AN AMPLE AMOUNT OF 2 (A&B) EPOXY OR EQUAL.

SURFACES - CLEAN AND DRY TO INSTALLATION PER MANUFACTURER'S RECOMMENDATIONS.
INSTALL MARKERS WITH REFLECTIVE SURFACES FACING ONCOMING VEHICLES AND OFFSET 2" FROM LANE LINES TOWARD FIRE HYDRANT.




DETAIL

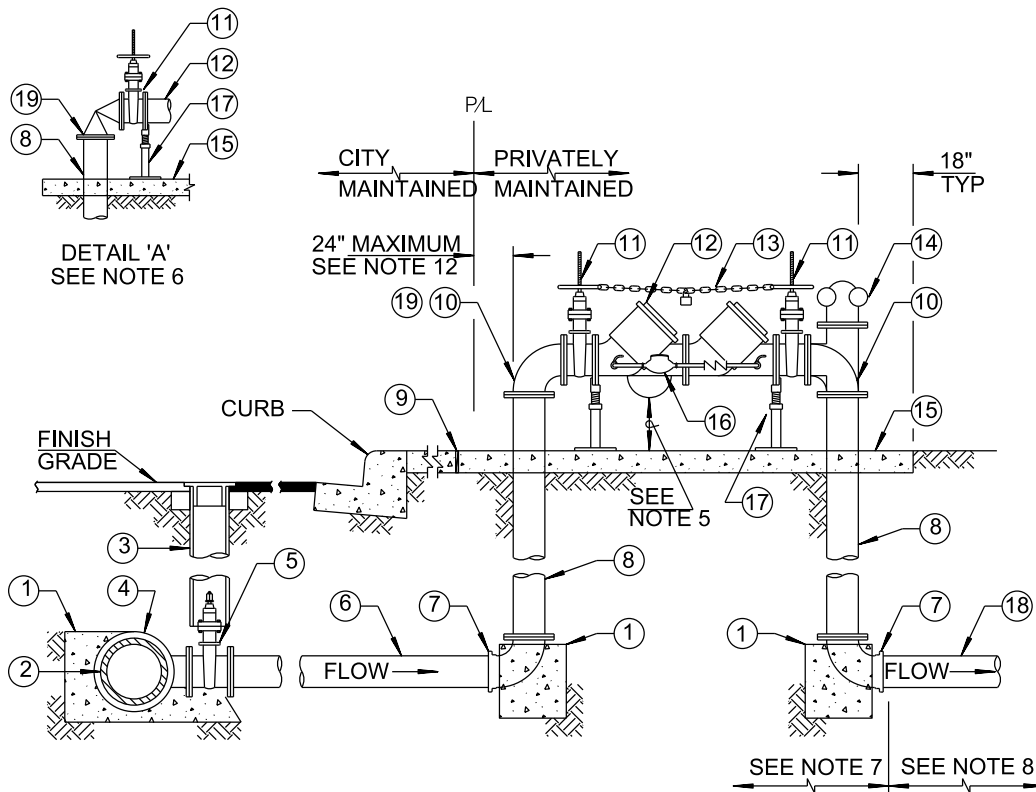
FIRE HYDRANT MARKERS

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 SHALL 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.

SHEET 3 OF 3

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
UPDATED	KA	J. NAGELVOORT	08/13	FIRE HYDRANT INSTALLATION	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDW-104



LEGEND ON PLANS

SEE NOTES ON SHEET 2

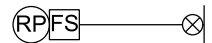
ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	CONCRETE THRUST BLOCK SEE SDW-151	⑫	APPROVED REDUCED PRESSURE DETECTOR ASSEMBLY (RPDA) SEE NOTE 3
②	WATER MAIN	⑬	CHAIN WITH KNOX LOCK SEE NOTE 3, SHEET 2 OF 2
③	GATE WELL WITH CAP SEE SDW-153	⑭	FLANGED TEE WITH "FDC" SEE NOTE 3, SHEET 2 OF 2
④	SIZE x SIZE MJ/ FLG x FLG TEE	⑮	CONCRETE SLAB MINIMUM 4" THICK x 36" WIDE x AS REQUIRED
⑤	FLG x MJ/ FLG RWGV	⑯	3/4" BYPASS, METER & RP ASSEMBLY
⑥	C-900 PVC PIPE	⑰	ADJUSTABLE VALVE SUPPORT
⑦	MJ x FLG 90° BEND	⑱	PVC OR DI PIPE SEE NOTE 8, SHEET 2 OF 2
⑧	FLANGED DUCTILE IRON PIPE		
⑨	COLD JOINT STRIP		
⑩	FLANGED 90° BEND, SEE NOTE 6, SHEET 2 OF 2		
⑪	FLANGED OS&Y RWGV WITH HAND WHEEL		

SHEET 1 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  9/4/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	KA	J. NAGELVOORT	8/13	BACKFLOW PREVENTER FOR 4" AND LARGER FIRE SERVICE	DRAWING NUMBER SDW-105
UPDATED	FG	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		

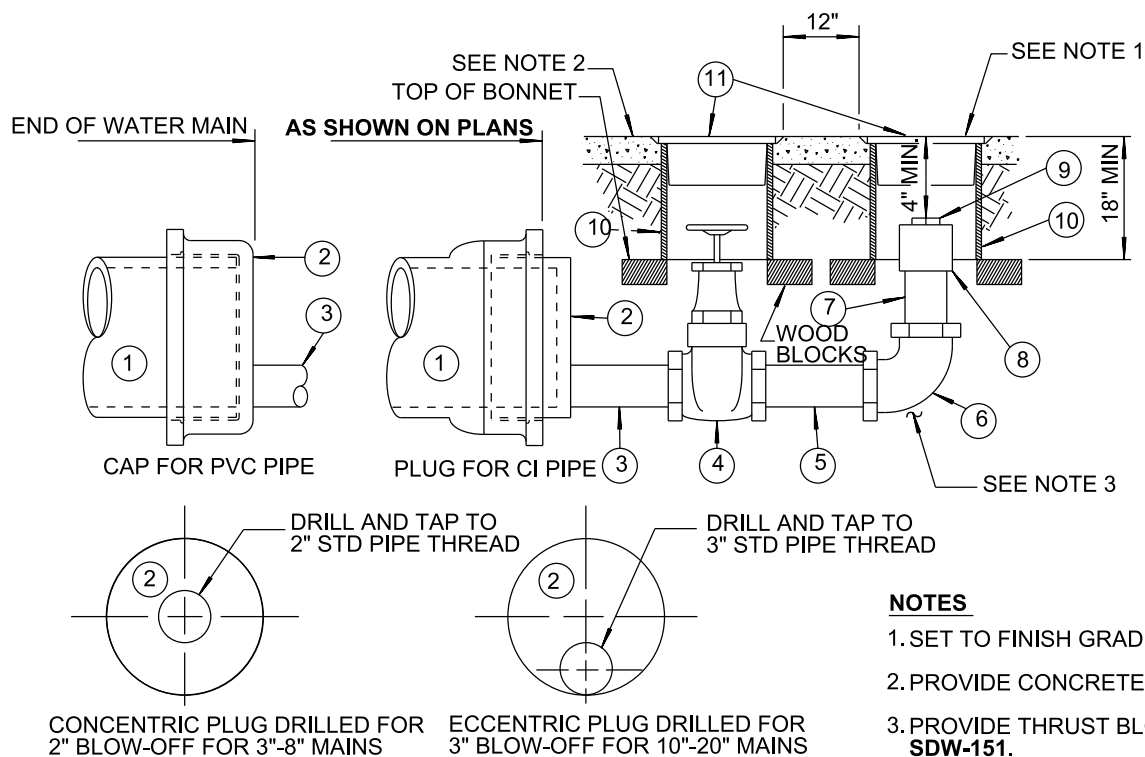
NOTES:

- 1) INSTALL WARNING / IDENTIFICATION TAPE **PER SDM-105**.
- 2) LOCATE BACKFLOW PREVENTION ASSEMBLY IN SUCH A MANNER THAT WILL ALLOW THE DEVICE TO BE READILY ACCESSIBLE FOR INSPECTION, REPAIR, AND USE.
- 3) TAMPER SWITCH, AUTOMATIC RESET, CHAIN WITH KNOX LOCK, AND FIRE DEPARTMENT CONNECTION ("FDC") SHALL BE AS REQUIRED BY THE FIRE DEPARTMENT.
- 4) BALL VALVE TEST COCKS AND DETECTOR ASSEMBLY SHALL BE PROVIDED AND LOCATED PER THE MANUFACTURES RECOMMENDATIONS AND CITY STANDARDS.
- 5) INSTALL FIRE SERVICES SO THAT THE DISTANCE BETWEEN THE BOTTOM OF THE RELIEF DIAPHRAGM AND THE CONCRETE SLAB OR FINISH GRADE IS 12" MINIMUM AND 24" MAXIMUM.
- 6) INSTALL A PRESSURE REDUCING VALVE UPSTREAM OF THE FIRST 90 BEND WHEN SYSTEM STATIC PRESSURE EXCEEDS 150 PSI OR WHEN RECOMMENDED BY THE BACKFLOW MANUFACTURER.
- 7) INSTALL PIPE AND RELATED APPURTENANCES IN THIS AREA PER THE CITY REQUIREMENTS.
- 8) INSTALL PIPE AND RELATED APPURTENANCES IN THIS AREA AS REQUIRED BY THE FIRE DEPARTMENT.
- 9) ABOVE GROUND APPURTENANCES SHALL BE PAINTED AND IDENTIFIED AS CALLED FOR BY THE FIRE DEPARTMENT.
- 10) TESTING SHALL BE CONDUCTED AS REQUIRED BY THE PUBLIC UTILITIES DEPARTMENT CROSS CONNECTION CONTROL UNIT.
- 11) CONNECTIONS TO STEEL MAINS SHALL BE IN ACCORDANCE WITH SPECIFICATIONS.
- 12) ANY OTHER LOCATION OF FIRE SERVICE BACKFLOW, AS SHOWN ON SHEET 1, MUST BE DETERMINED AND APPROVED BY PUBLIC UTILITIES DEPARTMENT, CROSS CONNECTION CONTROL UNIT.



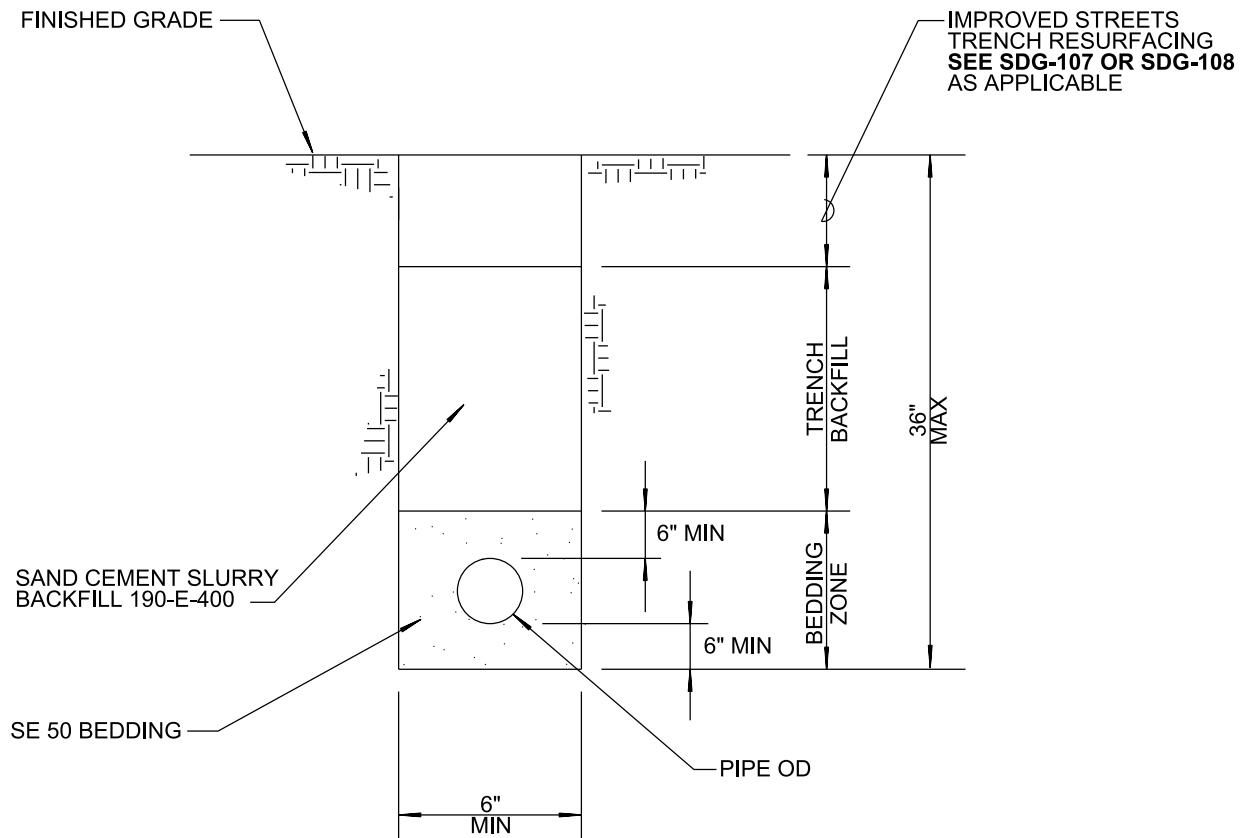
LEGEND ON PLANS
SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	KA	J. NAGELVOORT	8/13	BACKFLOW PREVENTER FOR 4" AND LARGER FIRE SERVICE	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	FG	J. NAGELVOORT	7/15		
UPDATED	AR	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDW-105



SCHEDULE			
ITEM		SIZE AND DESCRIPTION	
1	WATER MAIN	3" - 8" INCL.	10" - 20" INCL.
2	CAST IRON PLUG OR CAP	MAIN SIZE X 2"	MAIN SIZE X 3"
3	BRASS NIPPLE	2" X 8"	3" X 8"
4	BRONZE GATE VALVE WITH BRONZE WHEEL-SCREW ENDS	2"	3"
5	BRASS NIPPLE	AS NEEDED	AS NEEDED
6	BRASS 90° EL	2"	3"
7	BRASS RISER	2" X VARIABLE TO GRADE MINUS 4"	3" X VARIABLE TO GRADE MINUS 4"
8	BRASS COUPLING THREAD	2"	3"
9	BRASS PLUG	2"	3"
10	STEEL CASING FOR GATE VALVE AND RISER	8" X VARIABLE TO GRADE MINUS 3/4"	8" X VARIABLE TO GRADE MINUS 3/4"
11	GATE WELL CAP AND CAN SEE SDW-153	8"	8"


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		J. MUELLER	3-3-83		
NOTES	JS	A. OSKOU	12-06	BLOW-OFF ASSEMBLIES AT THE END OF PVC AND CAST IRON MAINS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	KA	J. NAGELVOORT	12/12		
UPDATED	RB	J. NAGELVOORT	10/15		
UPDATED	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDW-106



TRENCH SECTION

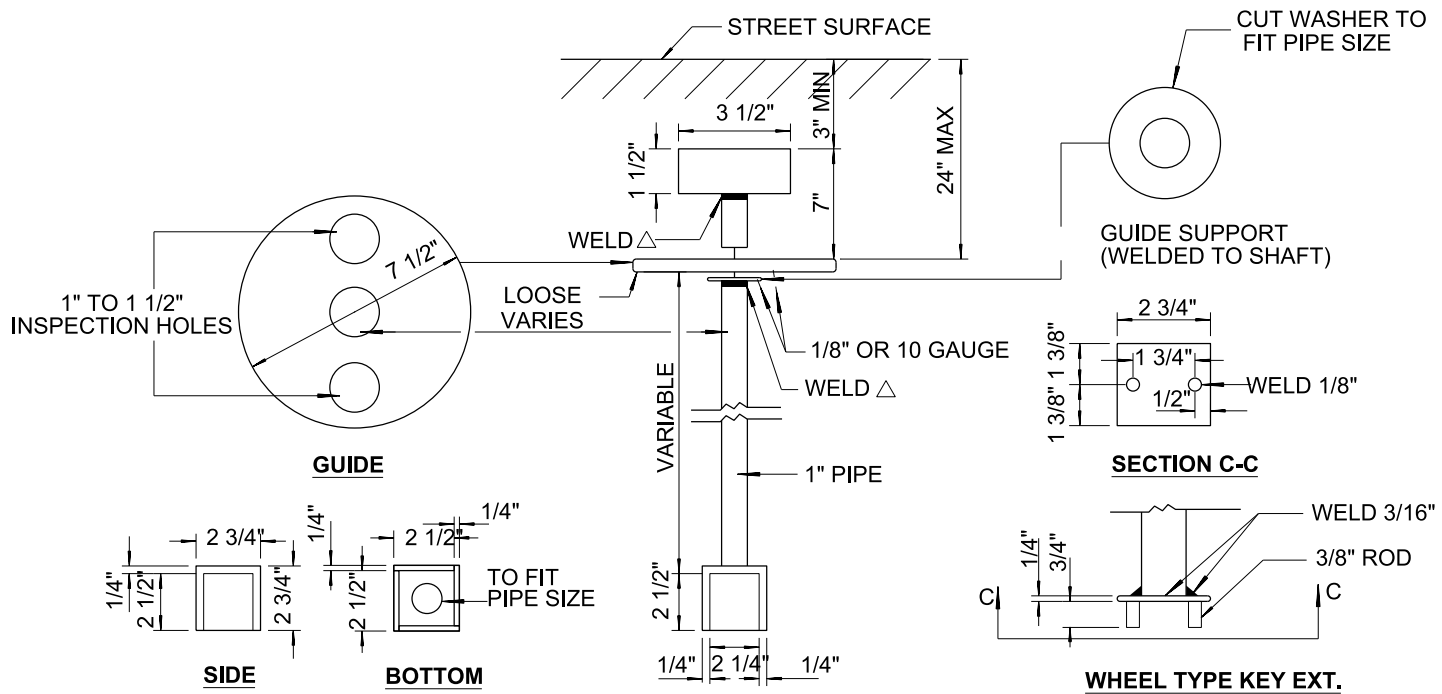
NOTES:

1. THE PROPOSED WATER SERVICE SHALL BE SECURED IN CENTER OF THE TRENCH.
2. SAND CEMENT SLURRY BACKFILL SHALL BE THOROUGHLY CONSOLIDATED TO ENCASE CONDUITS. TAMPERS OR VIBRATORS SHALL BE USED.
3. EXISTING PAVEMENT WILL NOT REQUIRE SAW CUTTING WHEN USING ROCKWHEEL FOR EXCAVATION EXCEPT WHEN THE EXISTING PAVEMENT IS CONCRETE AND TRENCH FINISH IS CONCRETE.
4. CUTS SHALL BE PARALLEL OR PERPENDICULAR TO STREET CENTERLINE, WHEN PRACTICAL.
5. IN MAJOR OR PRIME ARTERIAL STREETS, ON APPROVAL SET ACCELERATING ADMIXTURE, SUCH AS CALCIUM CHLORIDE, MAY BE USED ONLY WITH PRIOR APPROVAL OF THE ENGINEER OTHERWISE THE CONTRACTOR SHALL PROTECT THE TRENCH WITH THE APPROVAL OF THE ENGINEER.
6. 6" METAL TAPE SHALL BE INSTALLED ABOVE PIPE 4" BELOW TRENCH CAP AND 12" BELOW FINISH GRADE IN UNIMPROVED STREETS.

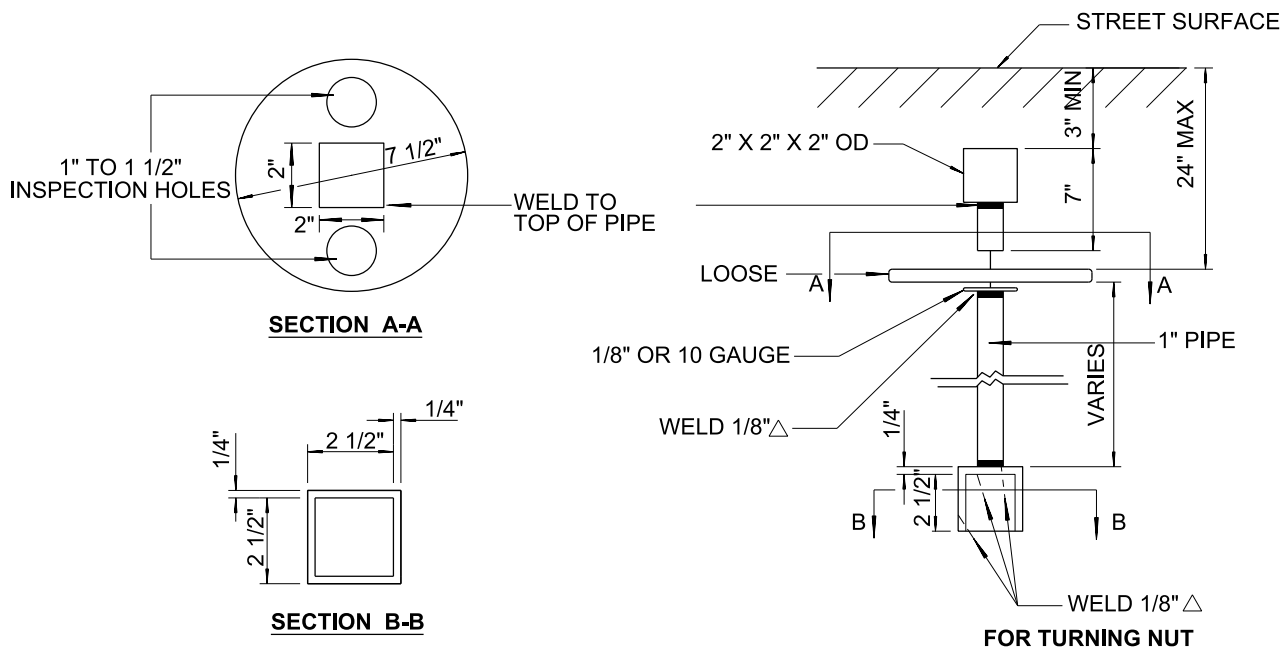
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	NARROW TRENCH FOR 1" & 2" WATER SERVICES	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDW-107



REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		H. HORN	5-6-80		
		J. CASEY	6-3-83	FIELD WELDED JOINTS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	KA	J. NAGELVOORT	01/12		
UPDATED	AR	J. NAGELVOORT	10/15		
UPDATED	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDW-108




BUTTERFLY VALVE KEY EXTENSION

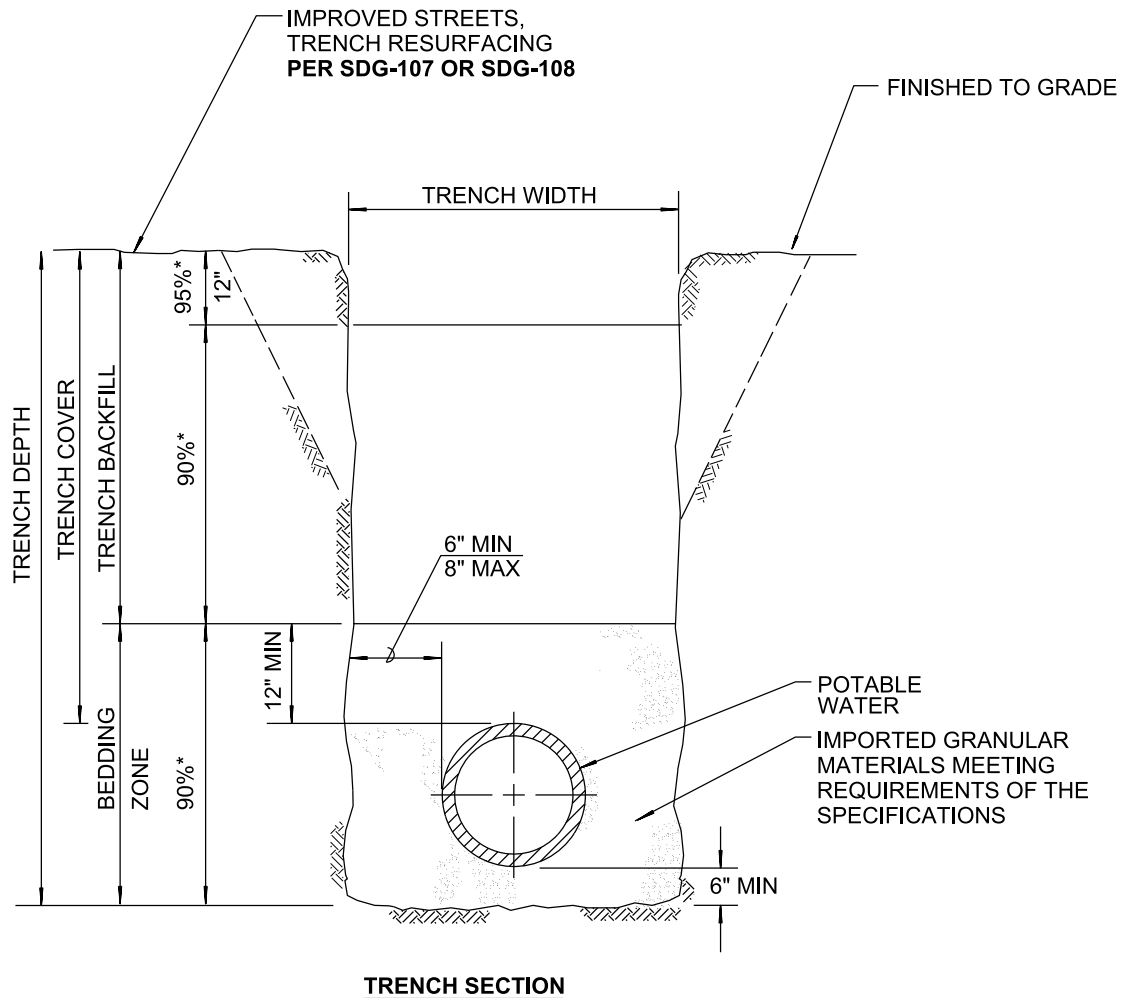


GATE VALVE KEY EXTENSION

NOTES:

1. INSTALL VALVE KEY EXTENSIONS WHEN TOP OF VALVE IS 6' OR MORE BELOW GROUND OR PAVEMENT SURFACE.
2. PAINT ALL FINISHED SURFACES WITH ASPHALT VARNISH.
3. FOR VALVE BOX AND COVER, SEE SDW-153 AND SDW-154.
4. ALL WELDS TO CONFORM TO ANSI / AWWA C206 - 91.

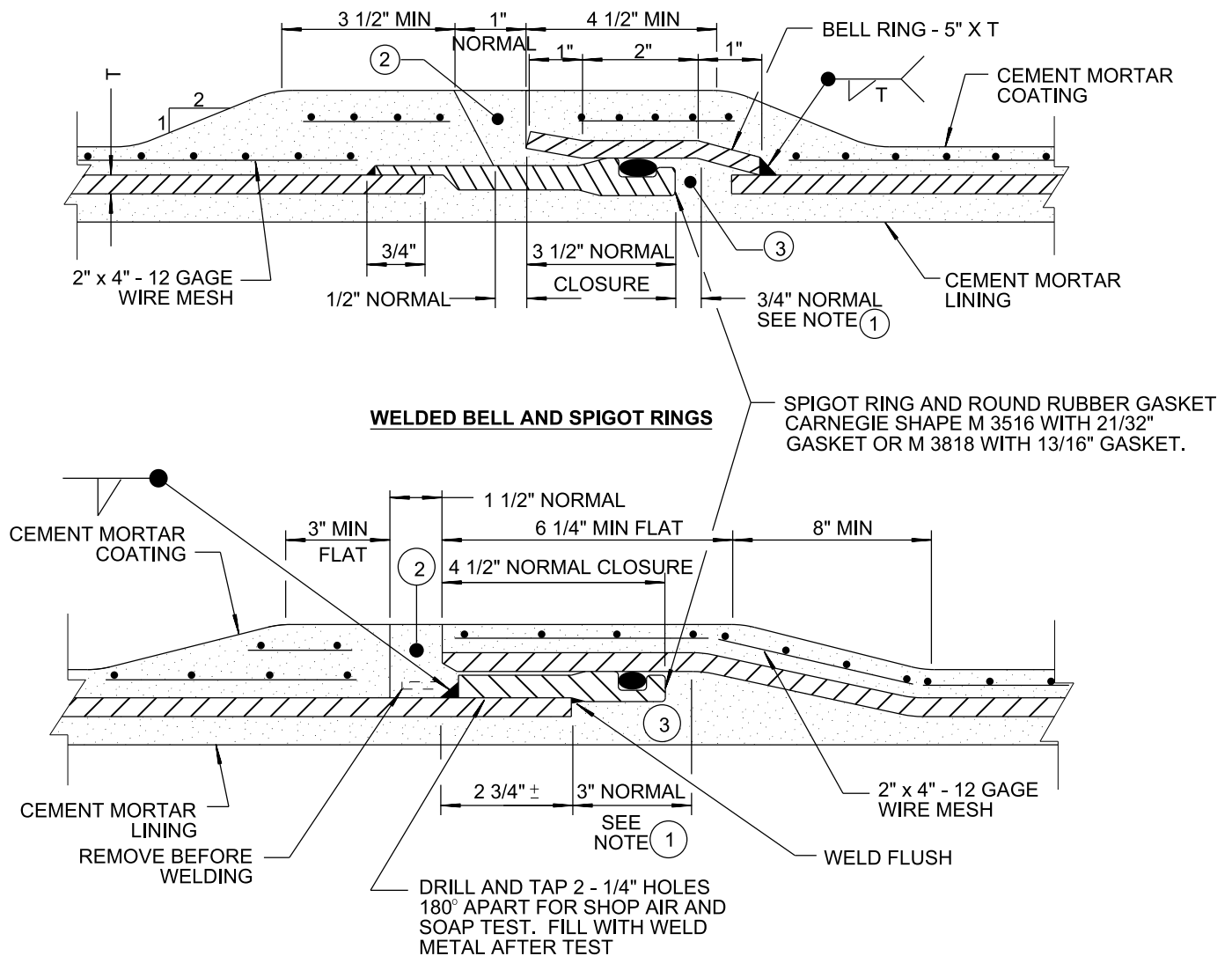
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
		J.P. CASEY	6-3-83		
NOTES	AO	A. OSKOUJ	1203	VALVE KEY EXTENSIONS	 COORDINATOR R.C.E. 56523
NOTES	JS	A. OSKOUJ	1206		
UPDATED	KA	J. NAGELVOORT	01'12		
UPDATED	AR	J. NAGELVOORT	02'16		
REDRAFTED	CD	J. NAGELVOORT	0918		
					9/4/18 DATE DRAWING NUMBER SDW-109



NOTES:

1. (*) INDICATES MINIMUM RELATIVE COMPACTION.
2. MINIMUM COVER: 3' FOR DISTRIBUTION MAINS; 5' FOR TRANSMISSION MAINS.
3. 6" METAL TAPE SHALL BE INSTALLED ABOVE PIPE: 4" BELOW TRENCH CAP AND 12" BELOW FINISH GRADE IN UNIMPROVED STREETS.
4. 1' SAND CUSHION OR A 6" MINIMUM SAND CUSHION WITH 1" NEOPRENE PAD SHALL BE PLACED FOR ALL CROSSINGS UTILITIES WHEN VERTICAL CLEARANCE IS 1' OR LESS. THE NEOPRENE PAD SHALL BE PLACED ON THE MOST FRAGILE UTILITY.
5. FOR MAINS LARGER THAN 16", TRENCH WIDTH SHALL BE **AS SHOWN ON THE PLANS**.


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	KA	J. NAGELVOORT	04/13	PIPE BEDDING AND TRENCH BACKFILL FOR POTABLE WATER MAINS	 9/7/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDW-110

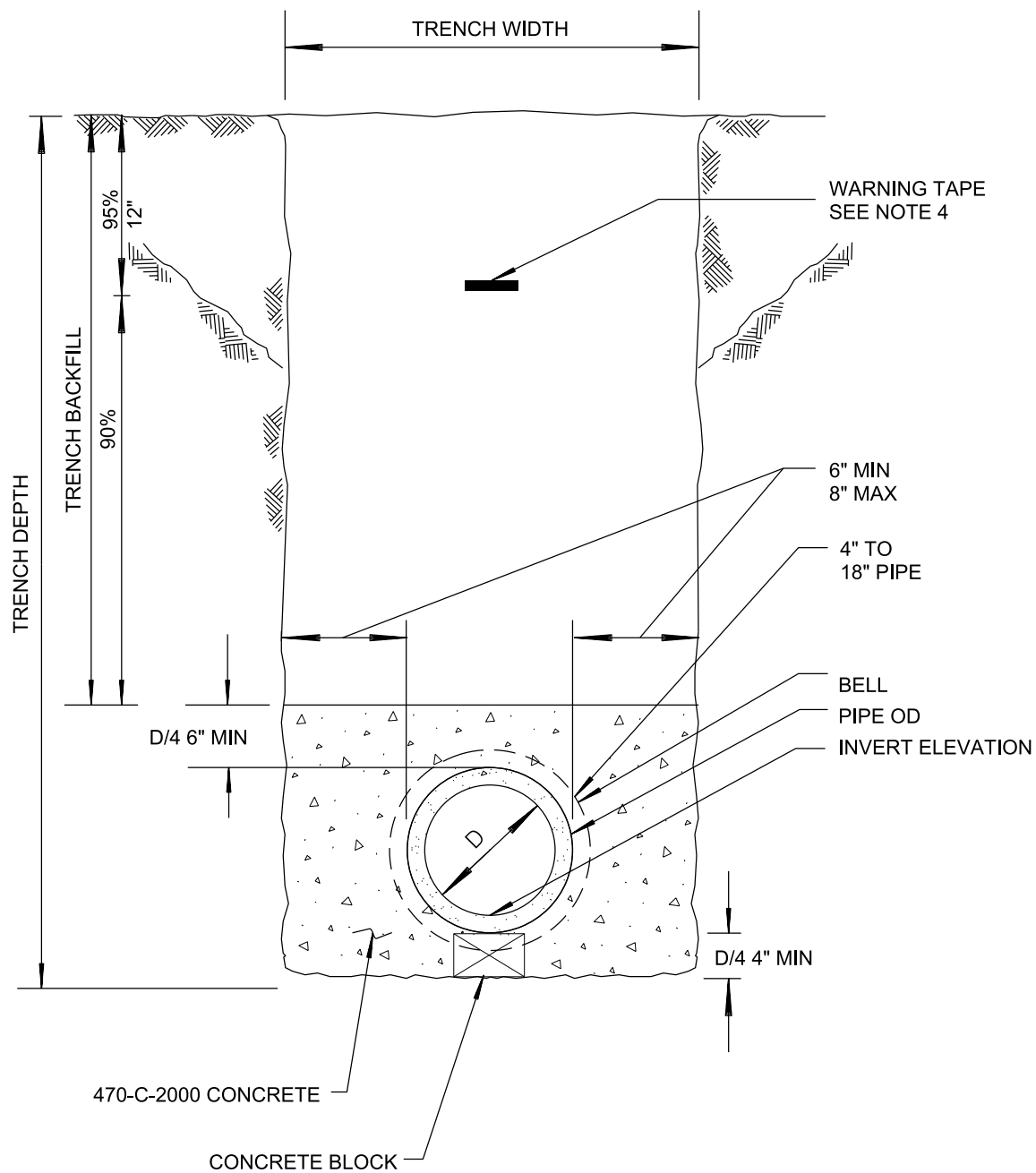


FORMED BELL END AND WELDED SPIGOT RING

ITEMS CALL OUT:

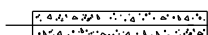
- ① MAXIMUM FIELD DEFLECTION IN A JOINT IS 3/8" PULL AND 3/8" PUSH, THE PULL TO BE UTILIZED FIRST.
- ② CONCRETE GROUT PLACED IN FIELD.
- ③ CEMENT MORTAR PLACED IN FIELD AND HAND POINTED.
- ④ TOLERANCE BETWEEN BELL ID AND SPIGOT OD TO BE 1/32" TO 1/16" ON THE DIAMETER.
- ⑤ ALL WELDS TO CONFORM TO ANSI / AWWA C206 - 91.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		H. HORN	5-6-80		
		J. CASEY	5-3-83	SPIGOT RING & GASKET JOINT FOR WELDED STEEL PIPE	 9/4/18 COORDINATOR R.C.E. 56523 DATE
NOTES	SM	A. OSKOU	12/06		
NOTES	JS	A. OSKOU	12/06		
UPDATED	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDW-111




TRENCH SECTION

LEGEND ON PLANS



SEE NOTES ON SHEET 2


SHEET 1 OF 2

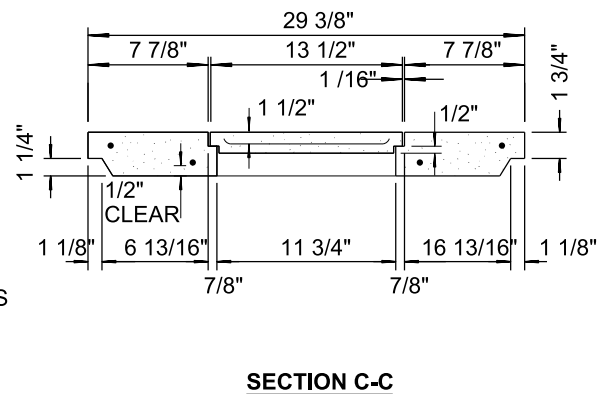
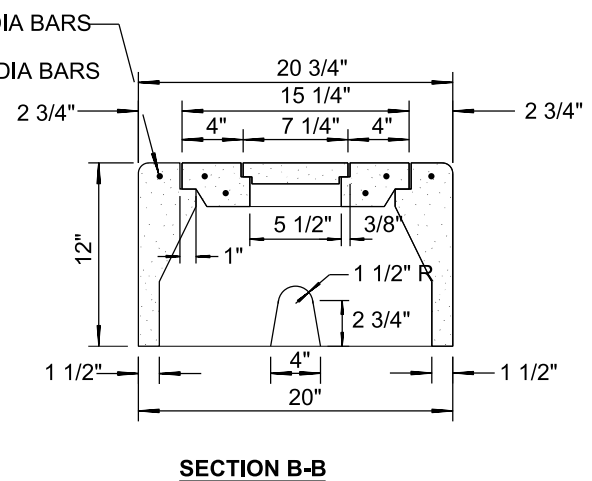
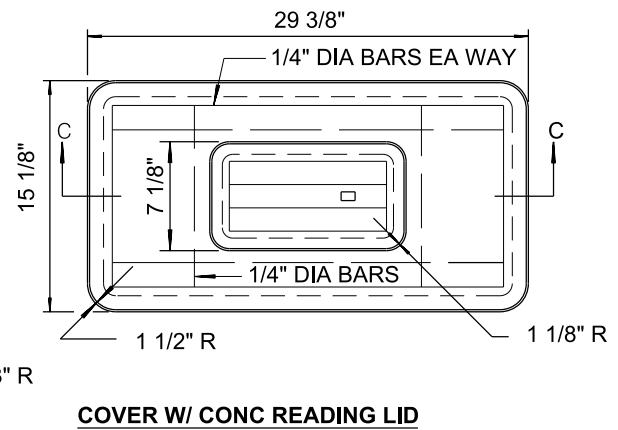
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	CD	J. NAGELVOORT	10/16		
REDRAFTED	CD	J. NAGELVOORT	09/18	CONCRETE ENCASEMENT FOR WATER MAINS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDW-112

NOTES


1. ENCASE PIPE TO THE NEAREST JOINT.
2. FOR TRENCH RESURFACING IN IMPROVED STREETS, **SEE SDG-107 AND SDG-108.**
3. CONCRETE ENCASEMENT SHALL BE USED FOR RIGID PIPE ONLY (PVC CANNOT BE CONCRETE ENCASED).
4. INSTALL WARNING/IDENTIFICATION TAPE **PER SDM-105.**
5. (*) INDICATES MINIMUM RELATIVE COMPACTION.
6. PIPE SHALL BE CENTERED IN ENCASEMENT.
7. ENCASEMENT IS FOR 8" AND LARGER PIPE.
8. FOR MAINS LARGER THAN 16", TRENCH WIDTH SHALL BE AS SHOWN ON THE PLANS.
9. CONCRETE SHALL BE POURED AGAINST A SOLID FORM-WORK OR UNDISTURBED EARTH.
10. FOR CLARIFICATION ON WHEN TO USE CONCRETE ENCASEMENT, SEE LATEST WATER DESIGN GUIDELINES AND STANDARDS.

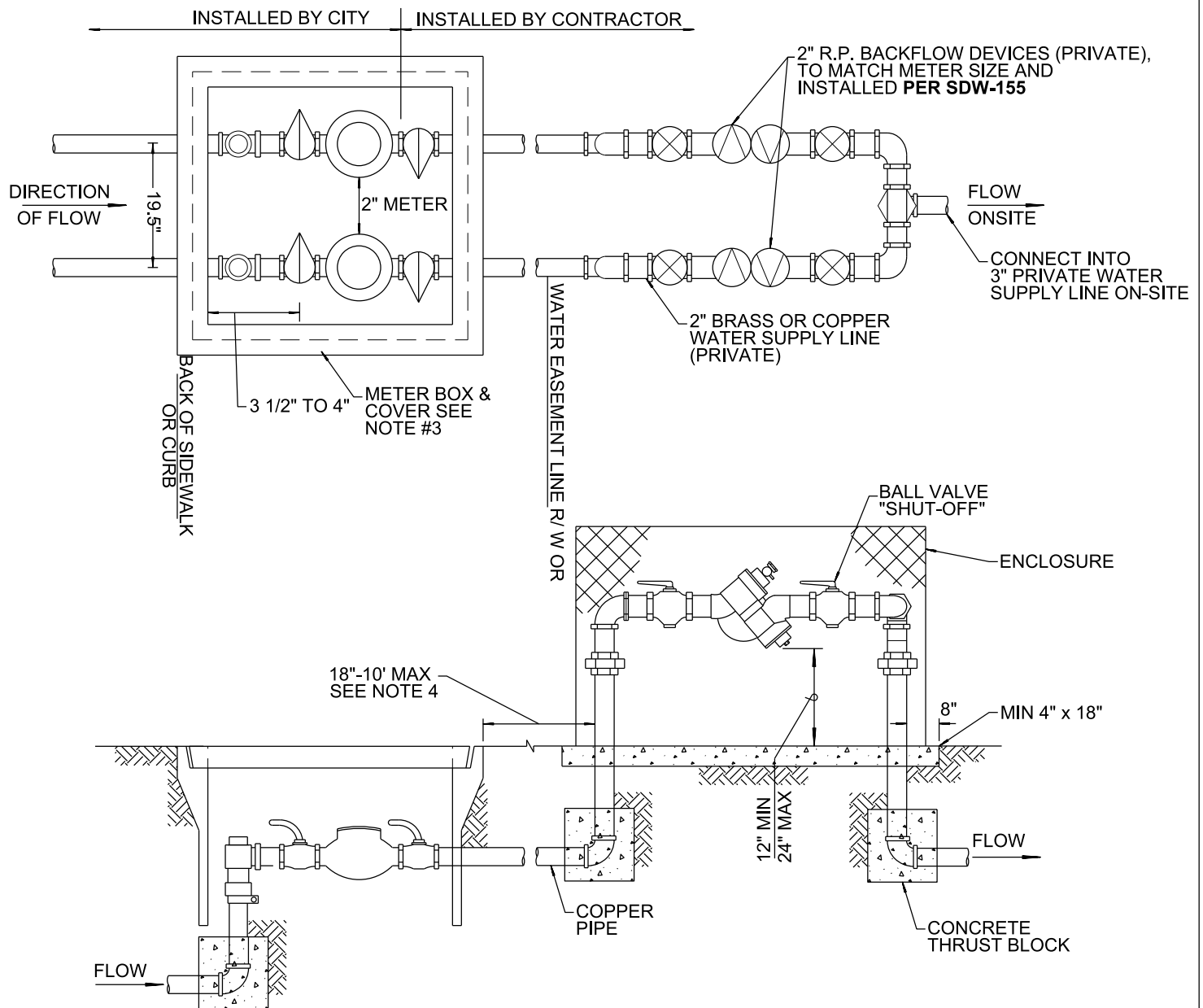
SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	CD	J. NAGELVOORT	10/16		
REDRAFTED	CD	J. NAGELVOORT	09/18	CONCRETE ENCASEMENT FOR WATER MAINS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
					DRAWING NUMBER SDW-112



UNLESS OTHERWISE INDICATED ON THE PLANS OR SPECIFIED IN SPECIAL PROVISIONS, COVERS WITH CONCRETE READING LID SHALL BE USED.

REVISION	BY	APPROVED	DATE	<p>CITY OF SAN DIEGO – STANDARD DRAWING</p> <p>CONCRETE WATER METER BOX FOR 1 1/2" OR 2" WATER METER</p>	<p>RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE</p> <p> 9/4/18</p> <p>COORDINATOR R.C.E. 56523 DATE</p>
ORIGINAL	XX	H. HOM	5-6-80		
		J. CASEY	6-3-83		
UPDATED	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	0918		
					<p>DRAWING NUMBER</p> <p>SDW-113</p>




NOTES:

1. ANY BACKFLOW PROTECTING A SERVICE USED FOR HUMAN CONSUMPTION SHALL BE LEAD FREE
2. ALL METER/BACKFLOW INSTALLATIONS SHALL BE APPROVED BY PUBLIC UTILITIES DEPARTMENT
3. SERVICE CONNECTIONS ON WATER MAIN SHALL BE 30" APART
4. INSTALL A CASING INCASED IN CONCRETE WHEN THE DISTANCE BETWEEN THE METER BOX AND THE RISER TO THE BFD EXCEEDS 18". NO CONNECTIONS OF ANY KIND PERMITTED IN THIS AREA.
5. **SEE SDW-155** FOR ADDITIONAL INFORMATION

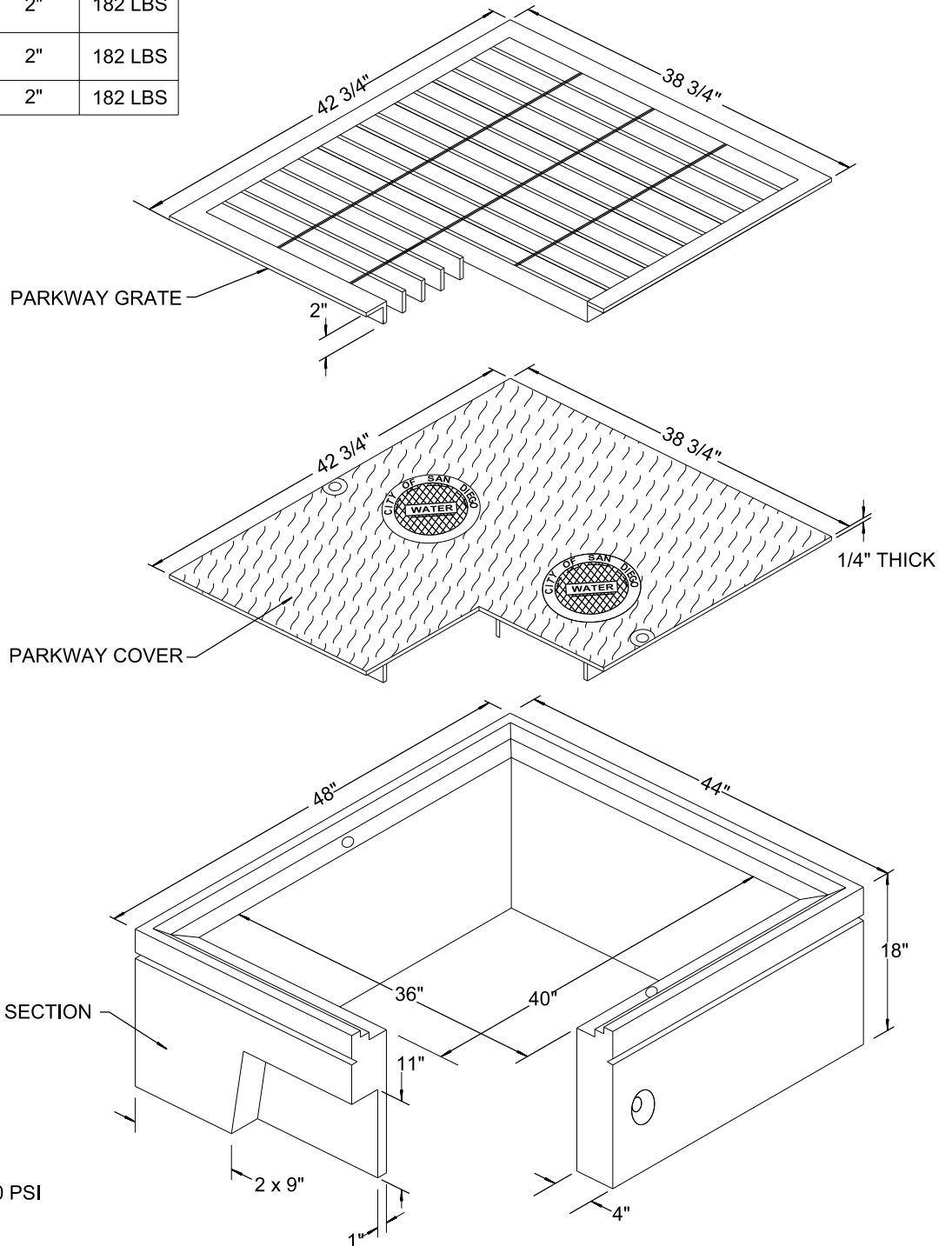
2-2" METER AND 2" BACKFLOW INSTALLATION WITH SERVICE AND COFFER BOX

SHEET 1 OF 3

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	03/13		
REDRAFTED	CD	J. NAGELVOORT	09/18	2" METER, BACKFLOW AND COFFER BOX	 COORDINATOR R.C.E. 56523
				DRAWING NUMBER	SDW-114

9/4/18
DATE

CONFIGURATION BLOCK		
DESCRIPTIONS	HEIGHT	WEIGHT
METER BOX	18"	884 LBS
PARKWAY COVER STEEL	2"	191 LBS
PARKWAY COVER STEEL GALVANIZED	2"	182 LBS
PARKWAY COVER STEEL W/ HOLES	2"	182 LBS
PARKWAY GRATE	2"	182 LBS



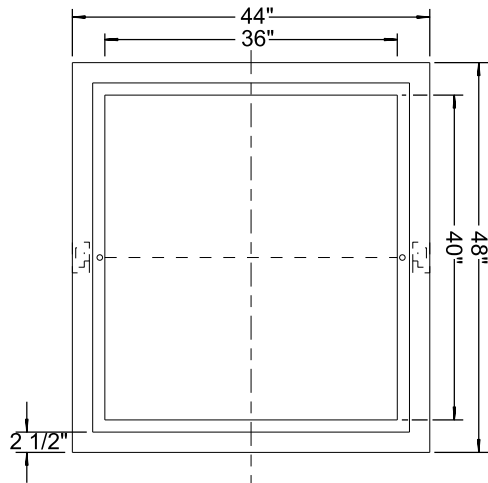
NOTE:

1. CONCRETE BASE: 5000 PSI

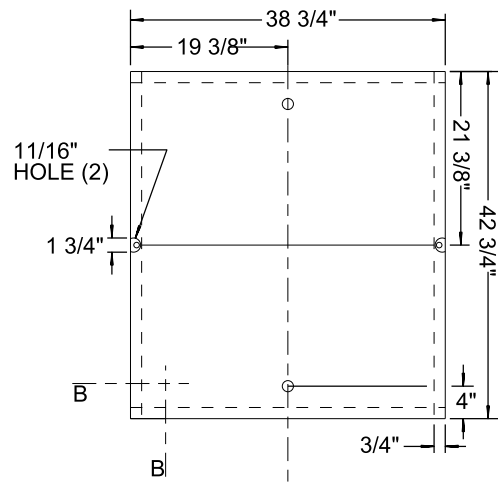
36" x 40" METER BOX PARKWAY

SHEET 2 OF 3

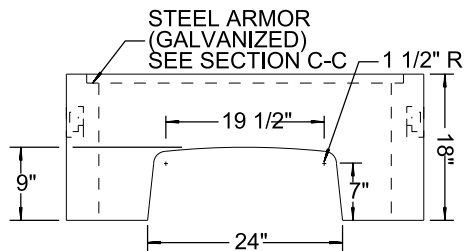
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL	KA	J. NAGELVOORT	03/13		<div>2" METER, BACKFLOW AND COFFER BOX</div>	<div> 9/4/18</div> <div>COORDINATOR R.C.E. 56523 DATE</div>
REDRAFTED	CD	J. NAGELVOORT	09/18			
					DRAWING NUMBER SDW-114	



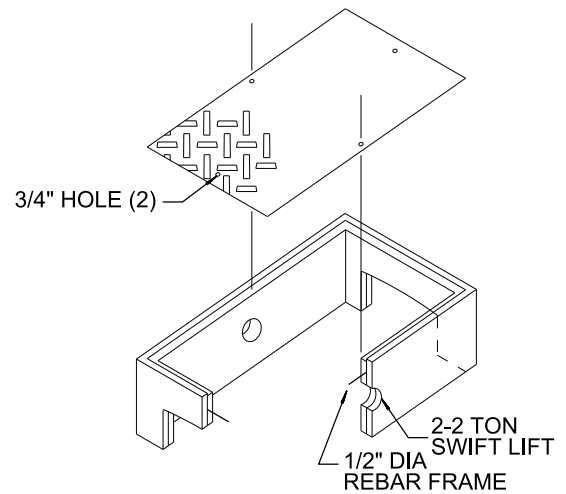
BOX - TOP VIEW



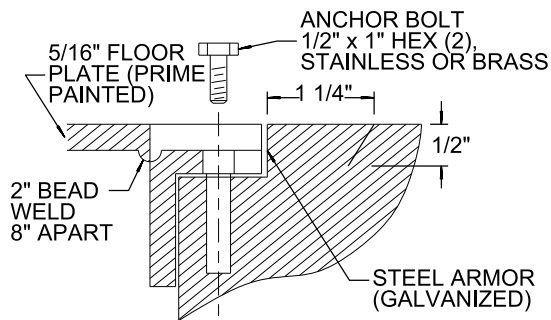
COVER - TOP VIEW



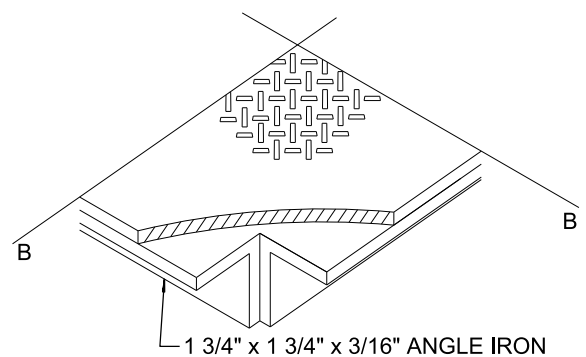
BOX - END VIEW



REBAR FRAME




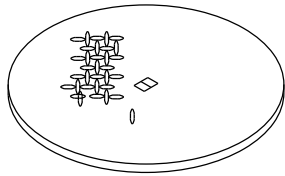
**CROSS-SECTION: COVER,
BOX & ANCHOR**



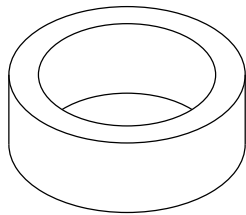
SECTION B-B OF COVER

SHEET 3 OF 3

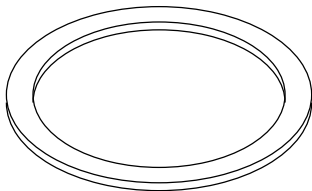
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL	KA	J. NAGELVOORT	03/13		<div>2" METER, BACKFLOW AND COFFER BOX</div>	<div> 9/4/18</div> <div>COORDINATOR R.C.E. 56523 DATE</div>
REDRAFTED	CD	J. NAGELVOORT	09/18			
					DRAWING NUMBER SDW-114	



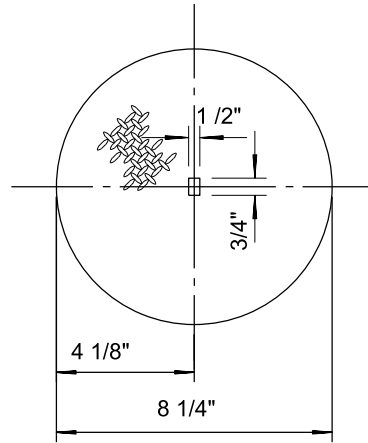
WELD TOP OF CAP TO PIPE



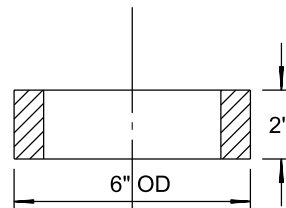
WELD PLATE RING TO UNDERSIDE OF COVER



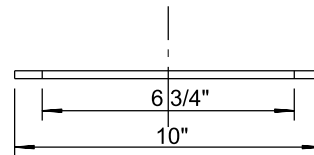
**WELD CHAIN TO INSIDE OF CAP'S PIPE AND
TO UNDERSIDE OF COVER**



1/4" FLOOR PLATE

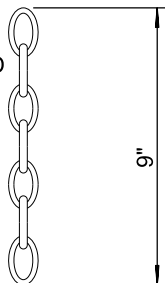


3/16" STEEL PIPE

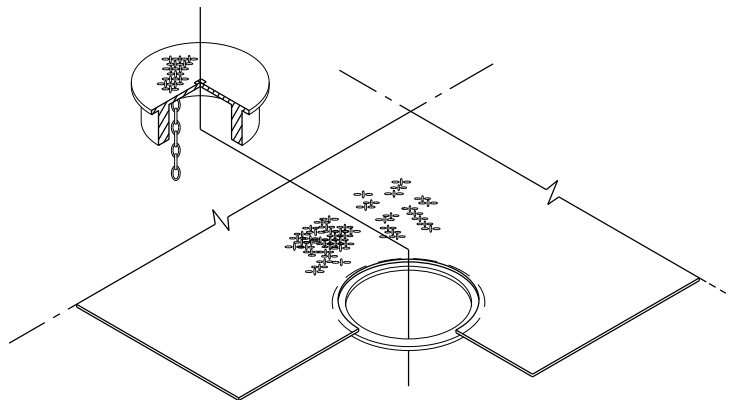


1/8" STEEL PLATE RING

HOT DIPPED GALVANIZED
STEEL CHAIN




1/4" X 9" CHAIN

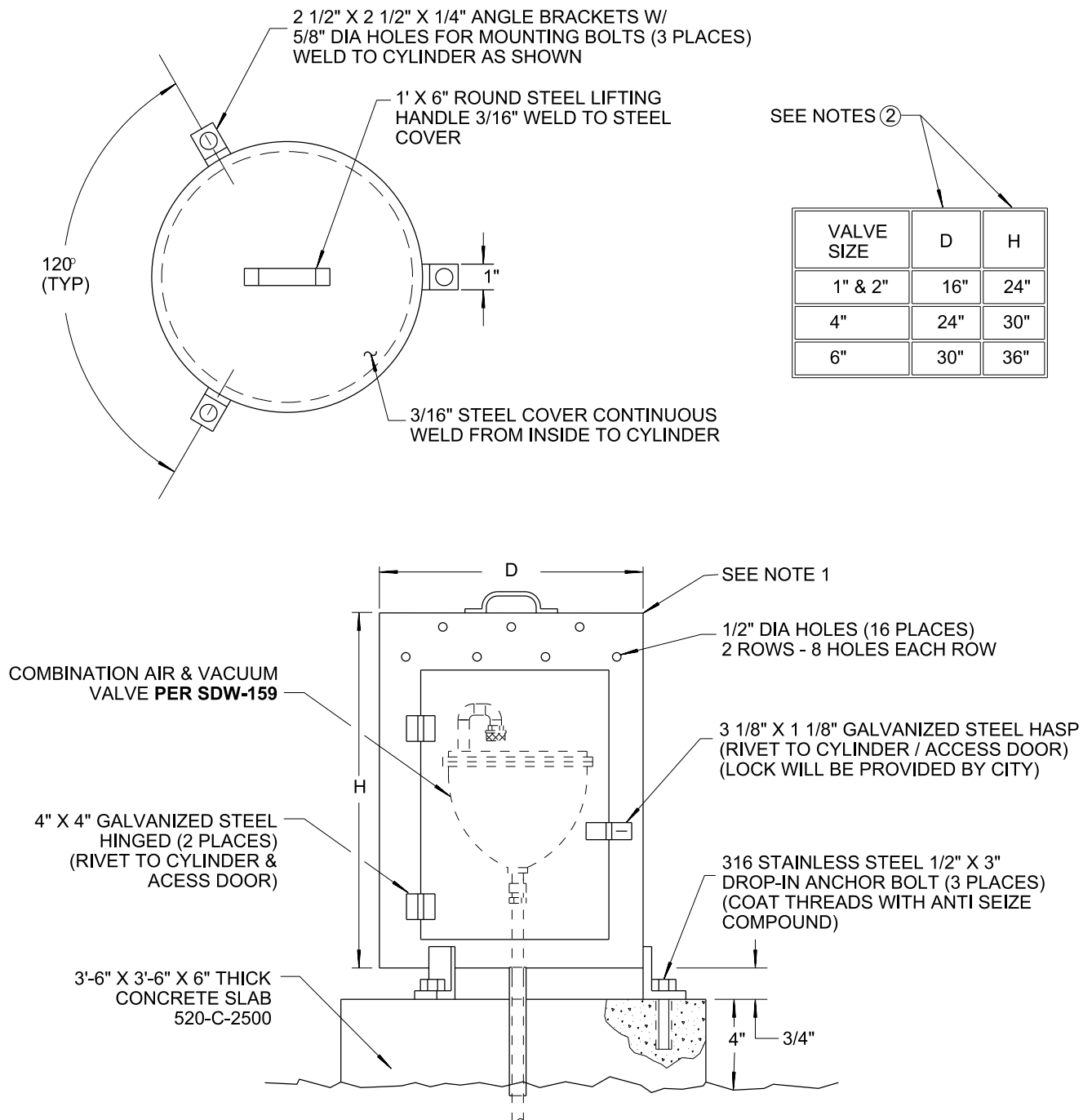


COVER (TYP)

NOTES:

1. 8 1/4" FLOOR PLATE SHALL BE CUT OUT OF THE COVER AND THE OPENING SHALL BE FINISHED FOR TIGHT FIT.
2. READ HOLE IN COVER SHALL BE CENTERED OVER EACH METER REGISTER.

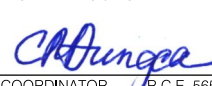
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  9/4/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL	XX	T. MUELLER	2-4-86		
		J. CASEY	8-22-86	READ HOLE CAP & CHAIN DETAIL (FOR METAL METER VAULT COVERS)	
UPDATED	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDW-115

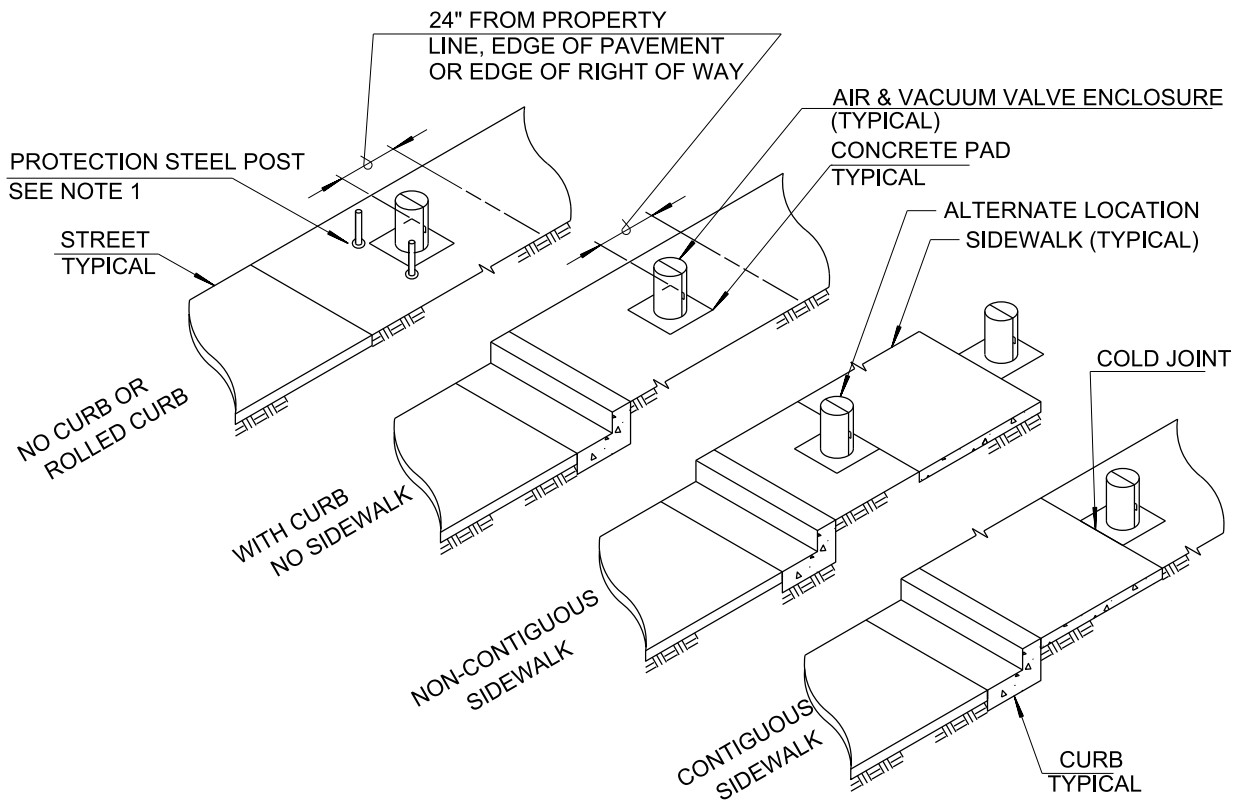


NOTES:

1. 3/16" STEEL ENCLOSURE WITH ACCESS DOOR, MISC. HARDWARE, CABINET AND HARDWARE SHOULD BE ZINC RICH EPOXY POWDER PRIMER (2-3 MIL DRY FILM THICKNESS) AND POLYESTER POWDER TOP COAT (2-3 MIL DRY FILM THICKNESS).
2. D AND H CHANGES ONLY **WITH APPROVAL OF THE CITY ENGINEER.**
3. **SEE SDW-159** FOR INSTALLATION OF COMBINATION AIR RELEASE & AIR/ VACUUM VALVE.
4. SEE LOCATION DETAILS ON SHEET 2.
5. FOR INSTALLATION IN LOCATIONS SUSCEPTIBLE TO CORROSION, USE OF POLYETHYLENE ENCLOSURES PER APPROVED MATERIALS LIST IS REQUIRED.

SHEET 1 OF 2

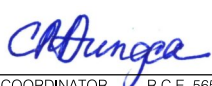
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		M. ROLLINGER	5-20-92		
NOTES	JS	A. OSKOU	12/06	AIR AND VACUUM VALVE ENCLOSURE & LOCATION	 COORDINATOR R.C.E. 56523 8/23/18 DATE
UPDATED	KA	J. NAGELVOORT	01/12		
UPDATED	TP	J. NAGELVOORT	08/18		
				DRAWING NUMBER	SDW-117





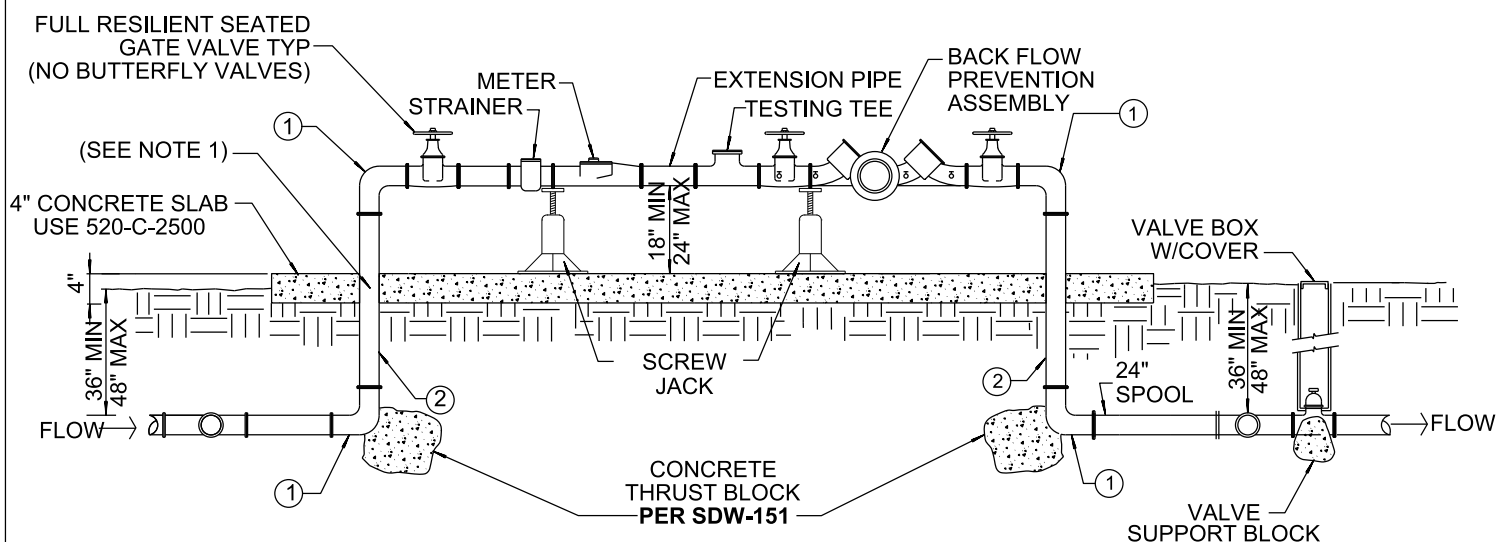
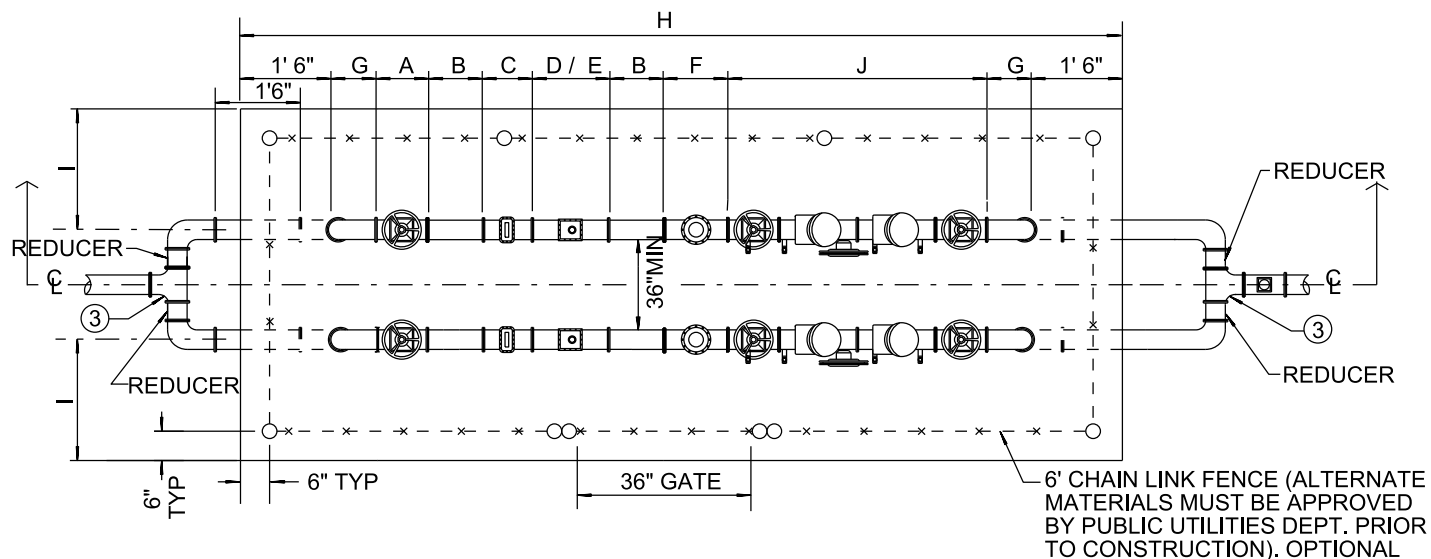
NOTES:

1. PROTECTION POSTS SHALL BE INSTALLED AS CALLED FOR ON THE PLANS OR AS DIRECTED BY THE ENGINEER **PER WM-04**.
2. AIR & VACUUM VALVES & APPURTENANCES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN THE SPECIFICATIONS.

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
UPDATED	TP	J. NAGELVOORT	08/18	AIR AND VACUUM VALVE ENCLOSURE & LOCATION	 COORDINATOR R.C.E. 56523 8/23/18 DATE
				DRAWING NUMBER	SDW-117

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE 	9/4/18 DATE
ORIGINAL	BB	OSKOUI	10/09			
NOTES	JS	A. OSKOUI	12/06	FIRE SERVICE CONNECTION & ASSEMBLY	 COORDINATOR R.C.E. 56523	DATE
UPDATED	KA	J. NAGELVOORT	01/12			
UPDATED	KA	J. NAGELVOORT	12/12			
UPDATED	HM	J. NAGELVOORT	02/16			
REDRAFTED	CD	J. NAGELVOORT	09/18			
					DRAWING NUMBER	SDW-118



NOT TO SCALE

ITEMS CALL OUT:

- ① 90° FLANGED DUCTILE IRON ELBOW (TYP).
- ② FLANGED DUCTILE IRON SPOOL, BOTH ENDS SHALL BE FLANGED (UNI-FLANGE SHALL NOT BE USED).
- ③ DIAMETER OF TEE SHALL BE EQUAL TO THE DIAMETER OF THE SUPPLY PIPE.

SEE DIMENSIONS AND NOTES ON SHEET 2

SHEET 1 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	JC				
REVISION	BM	A. OSKQUI	1203	DUAL ABOVE GROUND METER WITH CITY BACKFLOW PREVENTER	 9/4/18 COORDINATOR R.C.E. 56523 DATE
NOTES	JS	A. OSKQUI	1206		
UPDATED	KA	J. NAGELVOORT	01/12		
UPDATED	FG	J. NAGELVOORT	02/16		
UPDATED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDW-119


LETTER CODE	METER SIZE		3"	4"	6"	8"	10"
	PART DESCRIPTION						
A	GATE VALVE		8"	9"	10 1/2"	11 1/2"	1' - 1"
B	PIPE EXTENSION		1' - 0"	1' - 0"	1' - 6"	2' - 0"	2' - 6"
C	STRAINER *		7"	9"	9"	10"	1' - 0"
D	TURBINE WATER METER *		1' - 0"	1' - 2"	1' - 6"	1' - 9"	2' - 2"
E	COMPOUND METER *		1' - 5"	2' - 0"	2' - 5"	3' - 1"	4' - 7"
F	TESTING TEE		11"	1' - 1"	1' - 4"	1' - 6"	1' - 10"
G	90 DEG. ELBOW (SHORT)		5 1/2"	6 1/2"	8"	9"	11"
H	OVERALL SLAB LENGTH *		11' - 10"	12' - 11"	14' - 9"	16' - 3"	18' - 10"
I	SLAB TO C/L PIPE		3' - 0"	3' - 0"	3' - 0"	3' - 0"	3' - 6"
J	BACKFLOW *		3' - 2"	3' - 4"	4' - 1/2"	4'- 4 1/2"	4'- 7 1/2"

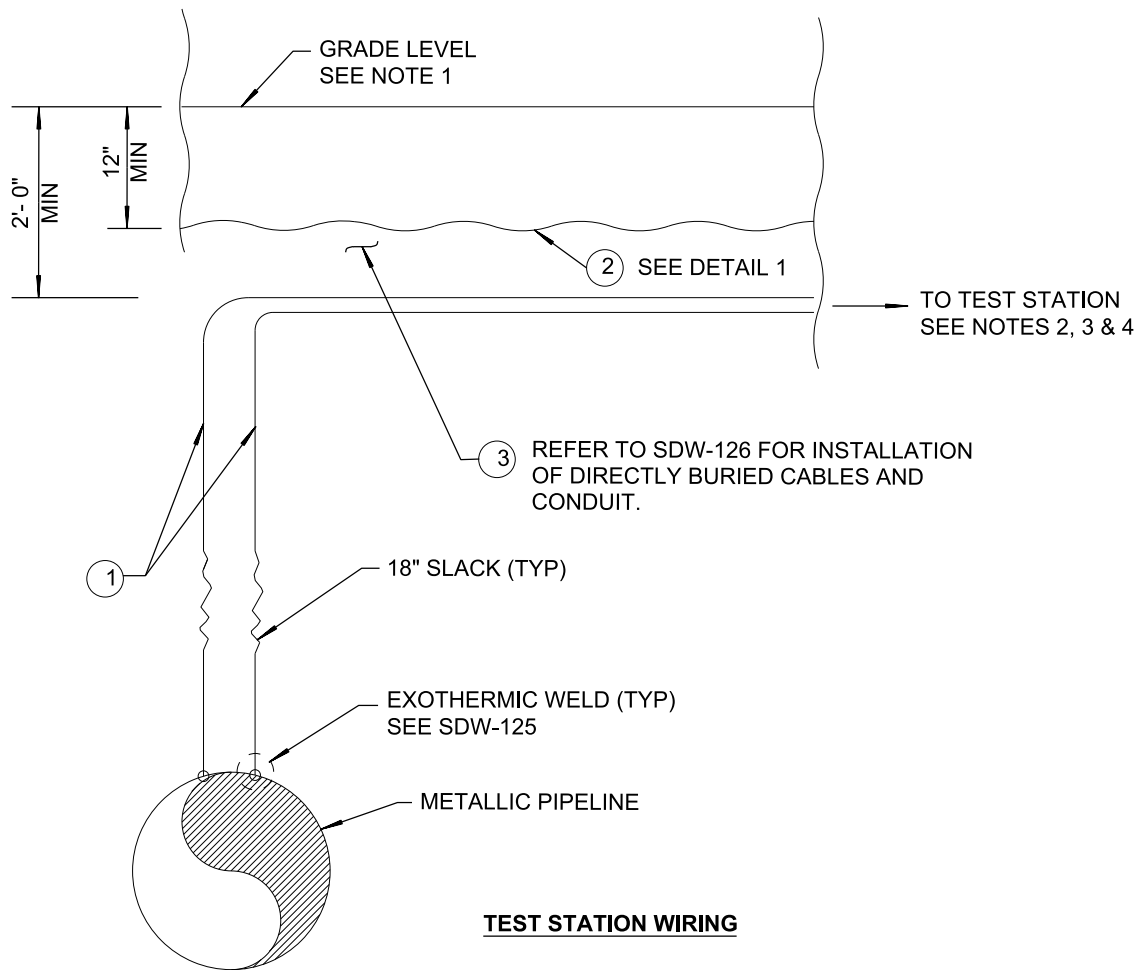
* INDIVIDUAL DIMENSIONS MAY VARY PER MANUFACTURER OVERALL DIMENSIONS INCREASE WITH USE OF THESE COMPONENTS

NOTES:

- ALL BURIED DUCTILE IRON PIPE, FITTINGS, VALVES AND APPURTENANCES SHALL BE COATED WITH A DIELECTRIC COATING. A LIQUID EPOXY COATING SYSTEM PER AWWA C-210 AT 24 MILS MINIMUM DRY FILM THICKNESS (MDFT), OR A COLD APPLIED THREE-PART SYSTEM PETROLEUM WAX TAPE PER AWWA C-217, OR A 100% POLYURETHANE COATING OF 24 MILS (MDFT) SUITABLE.
- ANY CHANGES SHALL HAVE PUBLIC UTILITIES DEPARTMENT APPROVAL.
- PIPING SHALL BE SYMMETRICAL TO SLAB CENTERLINE.
- SUPPLY PIPE IS ONE COMMERCIAL SIZE LARGER THAN PROPOSED METER.
- CONCRETE SLAB AND FENCE WILL BE INSTALLED BY CONTRACTOR.
- CONTACT CORROSION CONTROL SECTION FOR CORROSION REQUIREMENTS.
- ALL METAL IN CONTACT WITH CONCRETE SHALL BE POLYETHYLENE WRAPPED USING 2" WIDE PLASTIC BACKED ADHESIVE TAPE 8 MILS THICK WITH 1/2" OVERLAP.
- BACKFLOW SHALL BE INSTALLED IMMEDIATELY DOWNSTREAM FROM METER UNLESS APPROVED BY THE CITY CROSS-CONNECTION SPECIALIST.
- BACKFLOW PREVENTERS SHALL BE REDUCED PRESSURE PRINCIPLE (RP) ASSEMBLY. (INSTALLED ABOVE GRADE AS CLOSE TO METER AS POSSIBLE) BACKFLOW LOCATION MUST BE APPROVED BY THE CROSS-CONNECTION CONTROL SECTION OF THE PUBLIC UTILITIES DEPARTMENT.

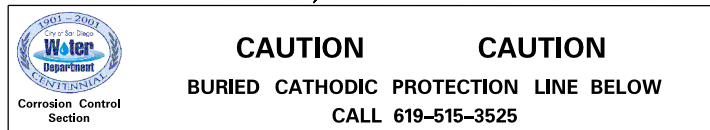
SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	JC				
REVISION	BM	A. OSKOU	12/03	DUAL ABOVE GROUND METER WITH CITY BACKFLOW PREVENTER	 9/4/18 COORDINATOR R.C.E. 56523 DATE
NOTES	JS	A. OSKOU	12/06		
UPDATED	KA	J. NAGELVOORT	01/12		
UPDATED	FG	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDW-119



TEST STATION WIRING

APWA BLUE 6" WIDE TAPE WITH WHITE
LETTERING CONTINUOUSLY IMPRINTED



DETAIL 1 BURIED TAPE

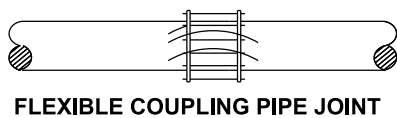
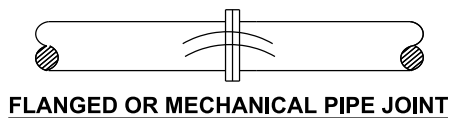
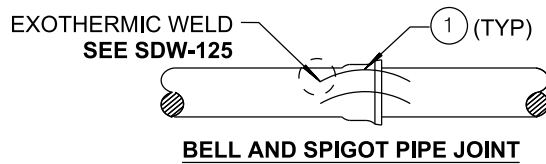
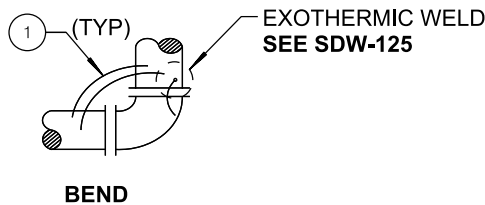
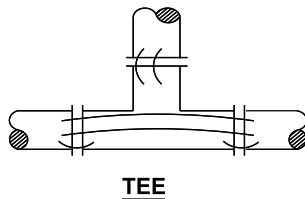
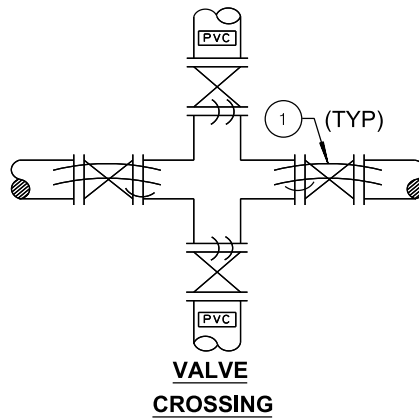
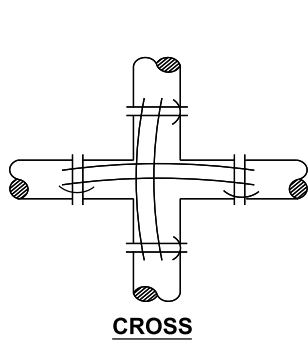
NOTES:

1. IN PAVED, CITY-OWNED ROADWAYS, THE REPAIR OF THE ROAD SURFACE SHALL BE **PER APPLICABLE SDRSD SDG-117 OR SDG-118**. IN STATE HIGHWAYS, CONFORM TO APPLICABLE CALTRANS STANDARDS.
2. FOR LOCATION OF TEST STATION, USE REGIONAL STD DWG WS-03. EXACT LOCATION SHALL BE APPROVED BY CORROSION ENGINEER.
3. AT ROADWAYS, **USE SDW-129** AND AT UNDEVELOPED AREAS **USE SDW-127**.
4. FOR INSTALLATION OF DIRECTLY BURIED CABLES & CONDUIT **SEE SDW-126**.

ITEMS CALL OUT:

- (1) CABLE AWG #8 COPPER ASTM B3 STRANDED ASTM B8 INSULATION ASTM D1248 TYPE 1, CLASS C, GRADE 5.
- (2) POLYETHYLENE WARNING TAPE. SEE DETAIL 1.
- (3) SAND: 50 SIEVE COMPLIES WITH SECTION 200-1.5.


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	BM	A. OSKOU	1203		
NOTES	BM	A. OSKOU	1206	AT-GRADE CATHODIC PROTECTION TEST STATION INSTALLATION FOR ROADWAYS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	0918		
					DRAWING NUMBER SDW-121

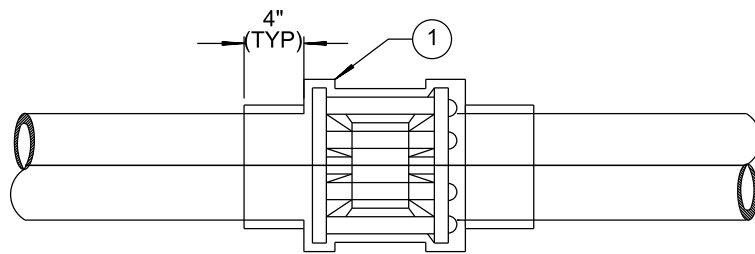


NOTES:

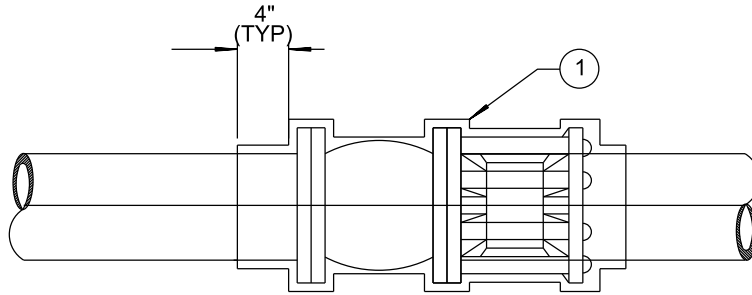
1. ALL BOND CABLE SHALL BE INSTALLED AT MINIMUM LENGTH.
2. BOND CABLES SHALL NOT BE INSTALLED ACROSS INSULATING JOINTS.
3. ONE ADDITIONAL CABLE SHALL BE REQUIRED FOR PIPE DIAMETERS FROM 36" TO 48" AND 2 MORE FOR DIAMETERS LARGER THAN 48".
4. WELD BEFORE APPLYING INTERNAL COATING.

- ① BOND CABLE: STRANDED COPPER HMWPE INSULATION. SIZING: FOR PIPE 12" DIAMETER AND LESS - USE AWG#8 (MIN). FOR PIPE DIAMETER GREATER THAN 12" - USE AWG #4 (MIN).

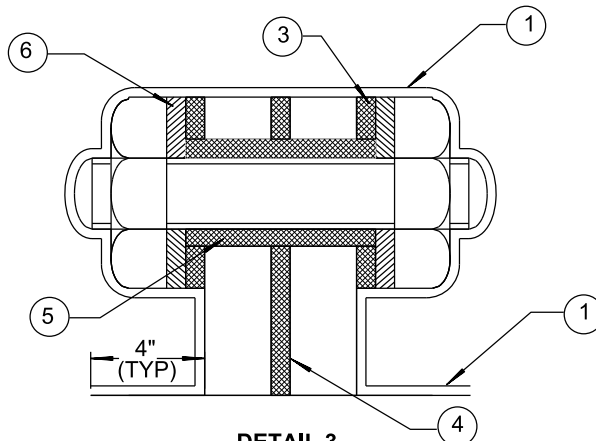
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	BM	A. OSKOUI	12/03		
NOTES	BM	A. OSKOUI	12/06	JOINT BONDING OF NON-WELDED PIPE JOINTS & FITTINGS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	KA	J. NAGELVOORT	01/12		
UPDATED	EF	J. NAGELVOORT	11/17		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDW-122



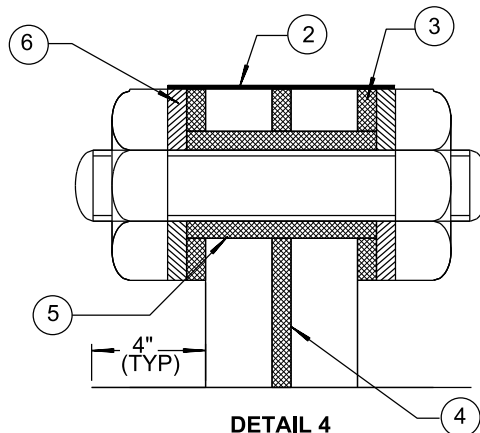
DETAIL 1
MECHANICAL COUPLING



DETAIL 2
MECHANICAL COUPLING & FLANGE VALVE



DETAIL 3
INSULATING FLANGE JOINTS, UNDERGROUND INSTALLATION



DETAIL 4
INSULATING FLANGE JOINTS, ABOVE-GROUND INSTALLATION

NOTES:

1. WHEREVER POSSIBLE, INSULATING FLANGE ASSEMBLIES SHOULD BE ASSEMBLED PRIOR TO INSTALLATION & TESTED ELECTRICALLY USING GAS ELECTRONIC TOOL OR APPROVED EQUAL TO INSURE THAT THE INSTALLATION IS EFFECTIVE.
2. WRAP FLANGE ASSEMBLY AS SHOWN WITH 3-PART PETROLATUM TAPE PER AWWA C217.
3. INSULATING FLANGE BOLT HOLE DIAMETER SHOULD BE 1/8" BIGGER THAN THE INSULATING SLEEVE OD.
4. RECOMMENDED FLANGE INSTALLATION PROCEDURE:
 - * CLEAN & INSPECT PIPE FLANGE FACES, APPLY NON-CONDUCTIVE LUBRICANT TO ALL THREADS.
 - * INSTALL THE GASKET, ALIGN FLANGES & GASKETS.
 - * USE ALIGNMENT PIN IN TWO DIAMETRICALLY OPPOSITE BOLT HOLES.
 - * INSERT INSULATING SLEEVES INTO BOLT HOLES.
 - * INSERT THE BOLT WITH BOTH INSULATING WASHERS.
 - * TIGHTEN TWO DIAMETRICALLY OPPOSITE BOLTS TO 30% TOTAL TORQUE.
 - * TIGHTEN ALL BOLTS TO 50% AFTER REPLACING TWO ALIGNMENT PINS WITH BOLTS AND TO 100% OF FINAL TORQUE VALUE.

ITEMS CALL OUT:

- ① PROTECTIVE COATING: 3-PARTS PETROLATUM AWWA C217 OR APPROVED EQUAL.
- ② TAPE: WRAPAROUND 3" WIDE, 0.050" THICK. CROSS LINKED POLYOLEFIN. HEAT SHRINKABLE, PRECOATED WITH HOT MELT-ADHESIVE.
- ③ WASHER: INSULATING EPOXY GLASS
- ④ GASKET: 1 / 8" THICK EPOXY GLASS INSULATING MATERIALS WITH NEOPRENE SEALING ELEMENT.
- ⑤ SLEEVE: INSULATING EPOXY GLASS. 1/32" THICK. ID=BOLT DIAMETER +1 / 64.
- ⑥ WASHER: STEEL, 1 / 8" THICK.

REVISION	BY	APPROVED	DATE
ORIGINAL	BM	A. OSKOU	1203
NOTES	BM	A. OSKOU	1206
UPDATED	KA	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18

CITY OF SAN DIEGO – STANDARD DRAWING

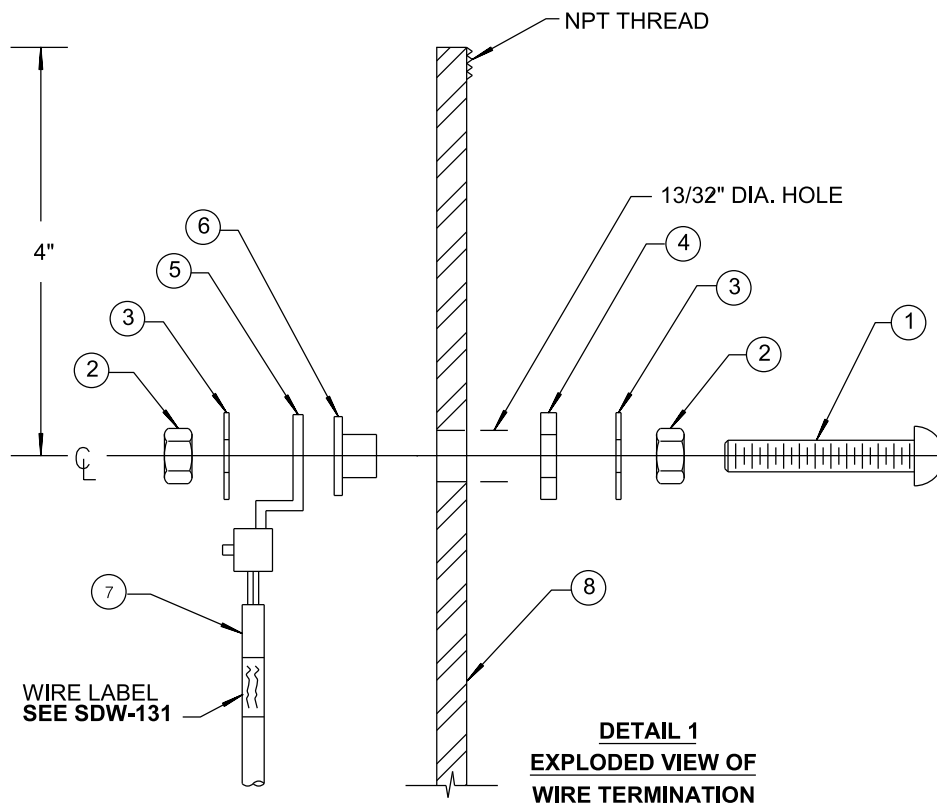
INSULATING FLANGE AND MECHANICAL JOINTS EXTERNAL PROTECTION

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

Chung 9/4/18
COORDINATOR R.C.E. 56523 DATE

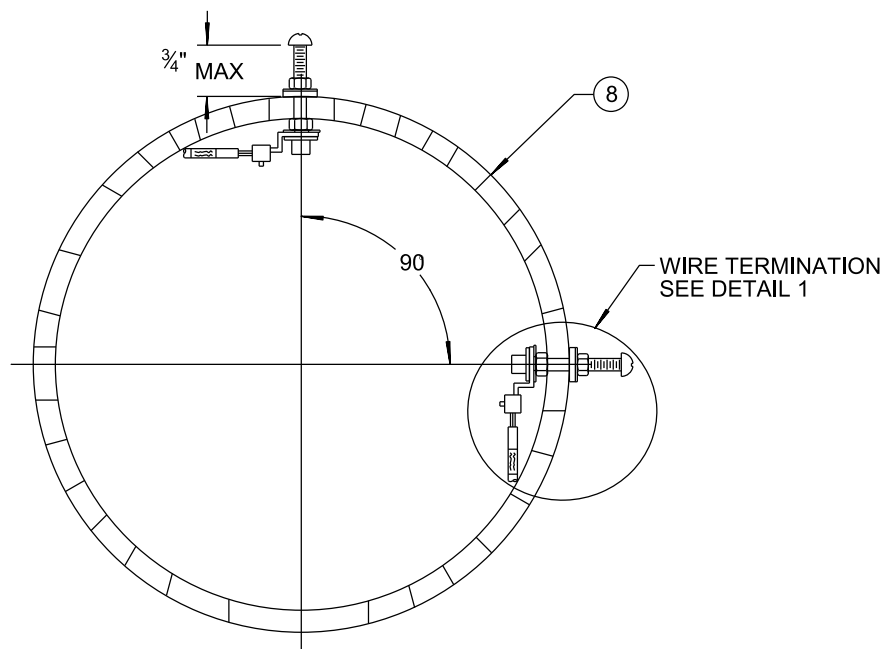
DRAWING
NUMBER

SDW-123



WIRE LABEL
SEE SDW-131

DETAIL 1
EXPLODED VIEW OF
WIRE TERMINATION



POST-MOUNTED TEST STATION
WIRE TERMINATION DETAIL

NOTES:

1. MOUNT WIRE TERMINATIONS AT 90 DEGREE ORIENTATION, FOR MORE THAN 4-WIRES, MOUNT WIRE TERMINATIONS 4" BELOW.
2. OFFSET MACHINE SCREW HEAD BY 3/4" FROM PIPE EXTERIOR WALL
3. TAG WIRE WITH LINE NAME, PIPE SIZE, MATERIALS AND STATION USING SELF-ADHESIVE LABELS. LABELS SHALL BE WRAPPED AROUND THE INSULATION AND ENCASED WITH CLEAR HEAT-SHRINK PER SDW-131.

MATERIALS:

- ① SCREW: MACHINE BRASS, ROUND HEAD SLOTTED, 1/4" - 20T 1 1/2" LONG
- ② NUT: BRASS 1/4" 20 THREADS
- ③ WASHER: BRASS 1/4"
- ④ WASHER, INSULATION NYLON, 0.719" OD, 0.281" ID, 0.062" THICK NATURAL
- ⑤ LUG: OFFSET TONGUE SOLDERNESS, COPPER.
- ⑥ WASHER: INSULATING, SHOULDER, NYLON NATURAL, 0.260" OD, 0.625" OD FLANGE, 0.342" OD SHANK, 0.065" FLANGE THK, 0.270" SHANK THK.
- ⑦ CABLE: AWG #8, COPPER ASTM B3, STRANDED ASTM B8, INSULATED ASTM D1248 TYPE 1, CLASS C. GR. 5.
- ⑧ PIPE: 4" DIAMETER SCH 40 ASTM A53, GALVANIZED

REVISION	BY	APPROVED	DATE
ORIGINAL		A. OSKOUI	12/03
UPDATED	KA	J. NAGELVOORT	01/12
UPDATED	HM	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

CITY OF SAN DIEGO - STANDARD DRAWING

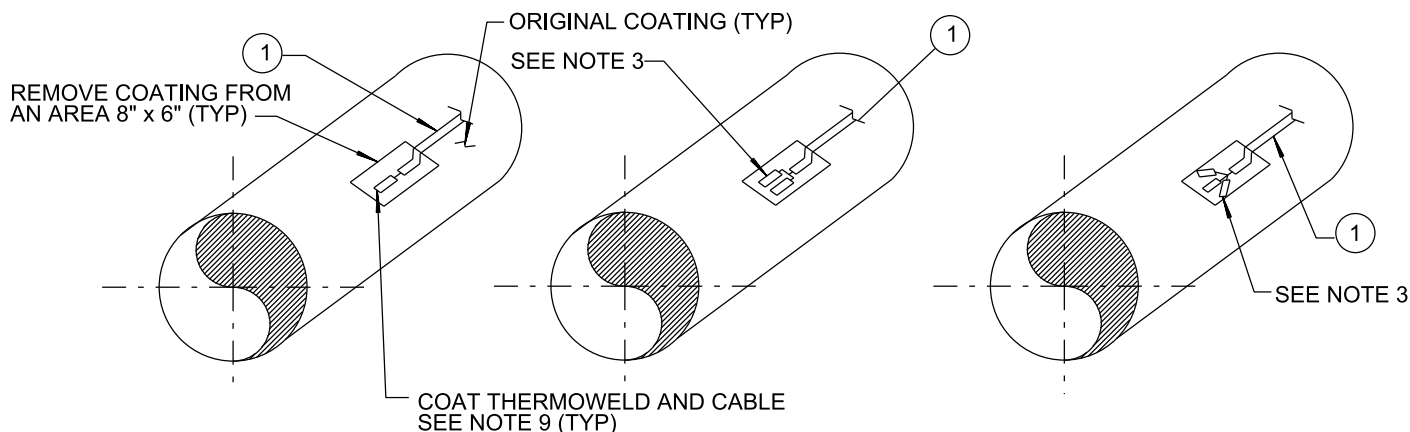
POST - MOUNTED TEST STATION
WIRE TERMINATION DETAIL

RECOMMENDED BY THE CITY
OF SAN DIEGO STANDARDS COMMITTEE

Chung 9/4/18
COORDINATOR R.C.E. 56523 DATE

DRAWING
NUMBER

SDW-124



DETAIL 1

TYPICAL CONNECTIONS OF NO.6 AWG
CABLE AND SMALLER CABLES

DETAIL 2

TYPICAL CONNECTIONS
OF NO.4 AWG CABLE

DETAIL 3

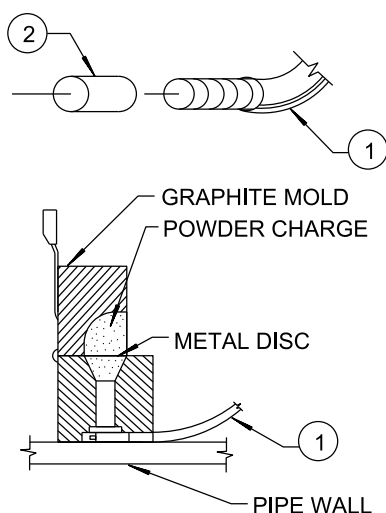
TYPICAL CONNECTIONS OF NO.2 AWG
CABLE AND LARGER CABLES

NOTES:

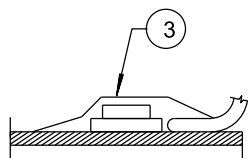
1. CLEAN AREA OF STEEL SURFACE APPROXIMATELY 2"x 2" FOR EACH THERMOWELD CONNECTION. WIRE BRUSH FILE AND SCRAPE TO OBTAIN SSPC-SP-5 WHITE METAL SURFACE FINISH.
2. SELECT PROPER MOLD BASED ON STRUCTURE GEOMETRY, ORIENTATION AND MATERIAL TYPE.
3. STRIP CABLE END AND TWIST TO FIT THERMOWELD MOLD. CABLE SIZES LARGER THAN 6 AWG SHALL BE THERMOWELDED BY TWISTING CONDUCTORS INTO GROUPS APPROXIMATELY NUMBER 6 AWG CABLE SIZE. MINIMUM SPACING BETWEEN WELDS WILL BE DETERMINED BY MOLD GEOMETRY, NOMINALLY 3".
4. HOLD MOLD FIRMLY AGAINST PIPE WITH OPENING AWAY FROM THE OPERATOR. IGNITE WITH FLINT GUN.
5. REMOVE ALL WELD SLAG, SPLATTER, SHARP EDGES AND BURRS WITH CHIP HAMMER AND METAL FILE.
6. TEST STRENGTH OF CONNECTION BY LIGHTLY TAPPING WITH 1 LB HAMMER, AND PULL WITH 5 LB FORCE ON CABLE.
7. WIPE PIPE SURFACE WITH CLEAN, OIL FREE RAGS TO REMOVE ANY LOOSE DUST.
8. PRIME CLEANED SURFACE WITH APPROVED PRIMER.
9. COAT THERMOWELD AND 6" OF CABLE TAIL WITH COMPATIBLE COATING, SUCH THAT ALL CORNERS ARE FILLED. THE COATING SHALL EXTEND FOR AT LEAST 2" AROUND THE THERMOWELD AREA.
10. THERMOWELD CARTRIDGE SIZE SHALL BE COMPATIBLE TO STEEL MATERIALS. MULTIPLE POWDER CARTRIDGE CHARGERS SHALL NOT BE USED. IF A THERMOWELD MUST BE REPEATED, A NEW PIPE SURFACE MUST BE PREPARED AT LEAST 3" FROM THE ORIGINAL WELD ATTEMPT. MORE THAN ONE WELD ATTEMPT ON THE SAME SPOT SHALL NOT BE PERMITTED.
11. IN NON-CONCRETE LINED PIPES, ALL EXOTHERMIC WELDS SHALL BE MADE IN A STEEL PAD.

ITEMS CALL OUT:

- ① CABLE: AWG SIZE, ASTM B3/B8
ASTM D-1248, TYP1 1, CLASS C, GR.5 INSULATION
- ② SLEEVE: ADAPTER
- ③ APPROVED PRIMER & WELD CAP OR MORTAR OVER WELD LOCATION



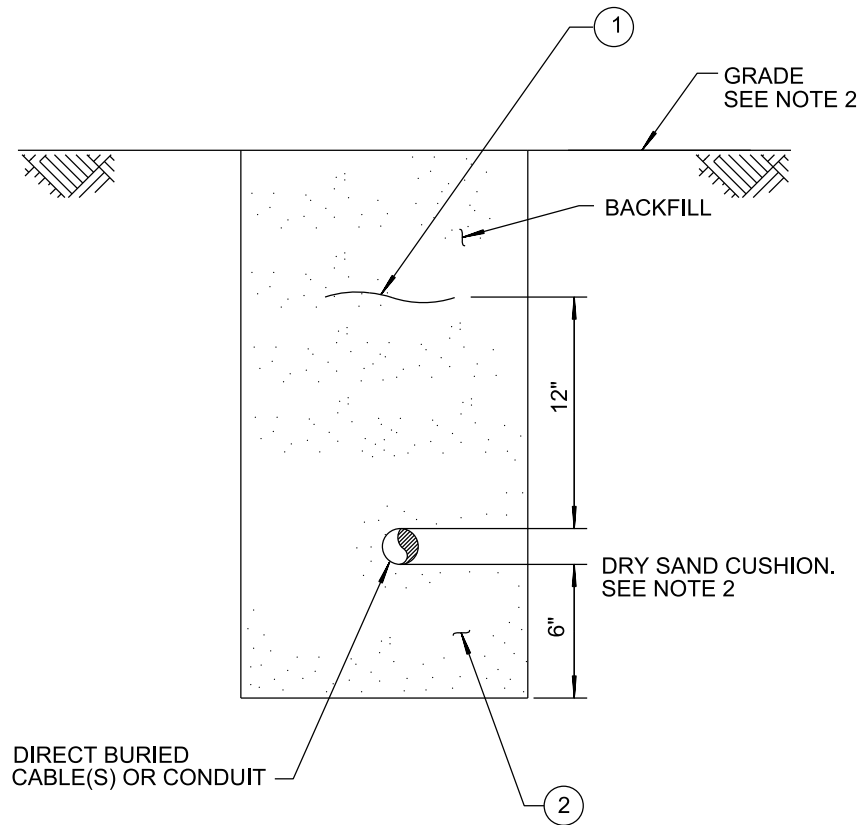
EXOTHERMIC CONNECTION DETAIL



EXOTHERMIC CONNECTION SECTION

CABLE STRAND DETAILS			
CABLE SIZE	NO. OF STRANDS	NO. OF EXOTHERMIC GROUPS PER CABLE CONNECTION	CABLE STRANDS PER GROUP
8	19	1	19
6	7	1	7
	19		19
4	7	2	3-4
	19		10-9
2	7	3	3-2-2
	19		7-6-6

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING		RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL		A. OSKOU	1203				
UPDATED	KA	J. NAGELVOORT	01/12	EXOTHERMIC WELDING OF CABLES AND COATING OF WELDING			
REDRAFTED	CD	J. NAGELVOORT	09/18			COORDINATOR R.C.E. 56523	
						DATE	
						DRAWING NUMBER	
						SDW-125	

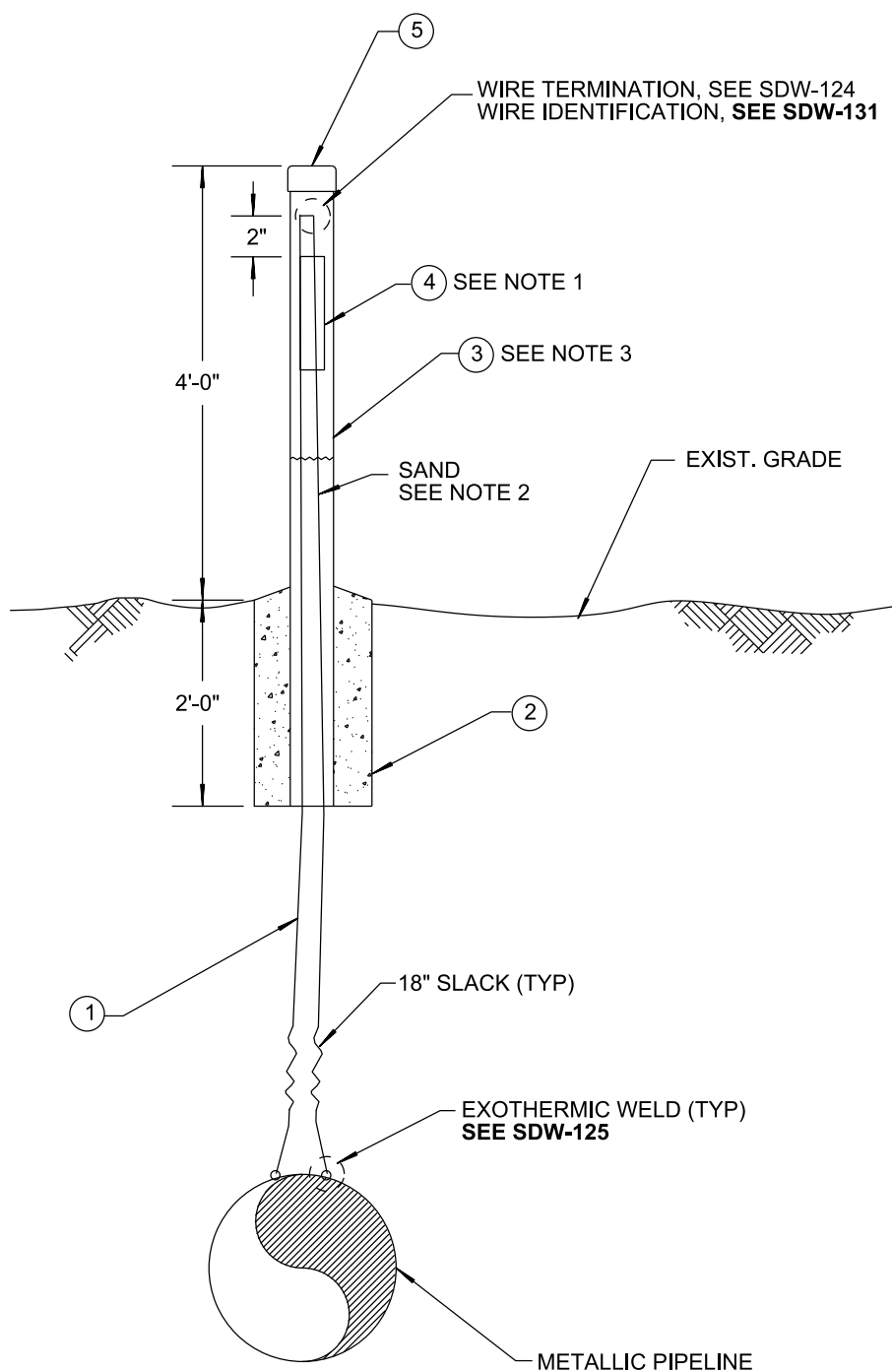


**CABLE(S) AND CONDUIT
TRENCH SECTION**

NOTES:

1. MATERIAL: ① POLYETHYLENE WARNING TAPE, REFER TO DETAIL 1 ON SDW-121.
② SAND: 50 SIEVE COMPLIES WITH 200-1.5
2. IN PAVED, CITY-OWNED ROADWAYS, THE REPAIR OF THE ROAD SURFACE SHALL BE **PER APPLICABLE SDG-117 OR SDG-118**. IN STATE HIGHWAYS, CONFORM TO APPLICABLE CALTRANS STANDARDS.
3. CLEAN SHARP STONES AND RUBBLE FROM THE BOTTOM OF DITCH.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	BM	A. OSKOU	12/03		
NOTES	BM	A. OSKOU	12/03	INSTALLATION OF DIRECTLY BURIED CABLES OR CONDUIT	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDW-126



NOTES:

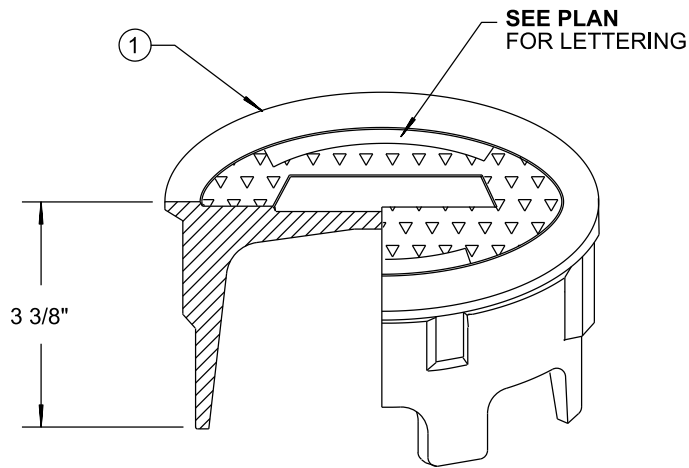
1. PLACE TWO DECALS, ONE FACING ROADWAY.
2. FILL THE PIPE WITH 50 SIEVE SAND FROM BOTTOM OF CONCRETE FOOTING TO 12" ABOVE GRADE.
3. THIS POST-MOUNTED STATION IS FOR USE ONLY IN AREAS WITH NO VEHICULAR TRFFIC.

ITEM CALL OUT:

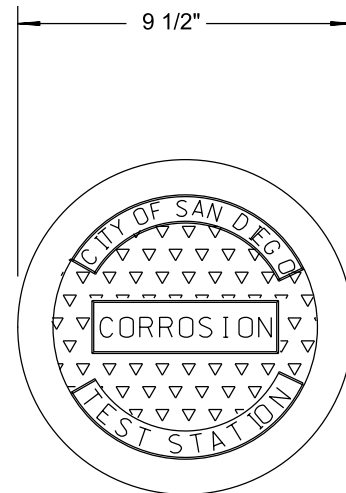
1. CABLE: AWG #8
COPPER ASTM B3
STRANDED ASTM B8
INSULATION ASTM
D 1248 TYPE 1,
CLASS C, GR. 5.
2. FOOTING: CONCRETE
12" DIA., SSPWC
295-C-17.
3. PIPE: 4" DIAMETER,
SCH 40, ASTM A 53
GALVANIZED.
4. DECAL: SEE
SDW-132.
5. CAP: THREADED
4" DIAMETER
GALVANIZED.

POST-MOUNTED TEST STATION

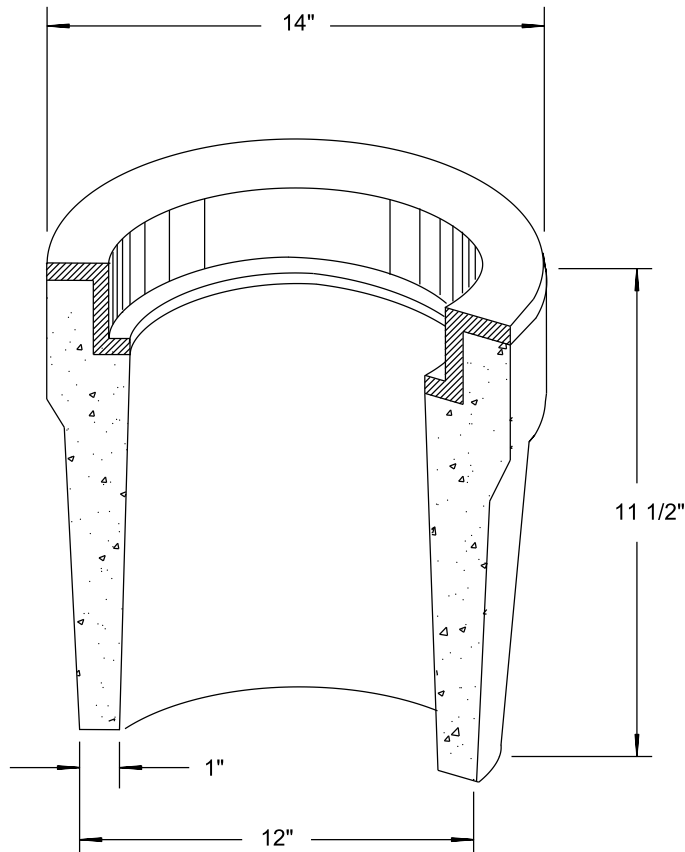
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	BM	A. OSKOUI	1203		
NOTES	BM	A. OSKOUI	1206	ABOVE GRADE CATHODIC PROTECTION TEST STATION INSTALLATION FOR UNDEVELOPED AREAS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	0918		
				DRAWING NUMBER	SDW-127



TEST BOX COVER ISOMETRIC



TEST BOX COVER PLAN



TEST BOX ISOMETRIC SECTION

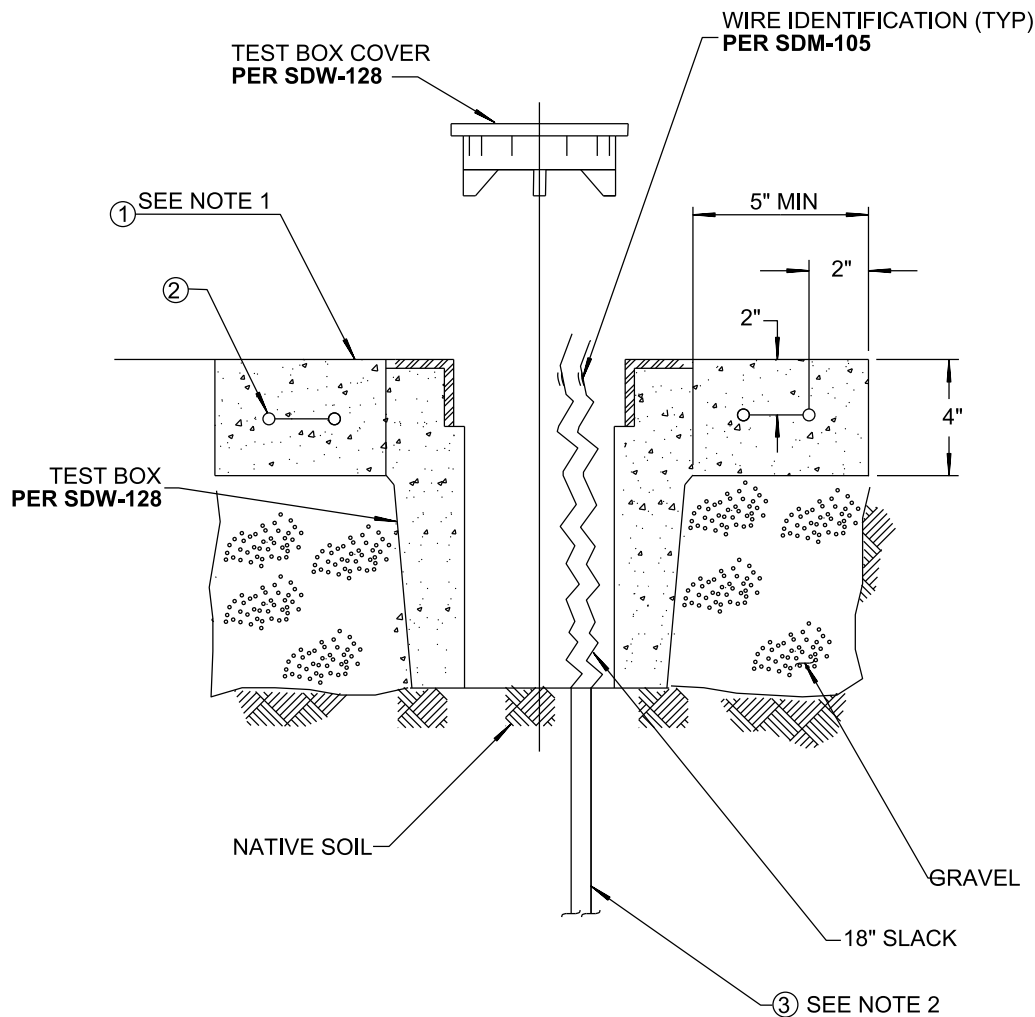
NOTES:

1. COVER WEIGHT: 12 LB.
2. BODY WEIGHT: 58 LB.
3. THE COVER SHALL HAVE CASTED MARKING IN 1/2" HIGH RAISED LETTERS.

ITEM CALL OUT:

- ① COVER: ASTM A 48 CLASS 30.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	BM	A. OSKOU	12/03		<div>AT - GRADE CONCRETE TEST BOX</div>
NOTES		A. OSKOU	12/06		
UPDATED	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	




NOTES:

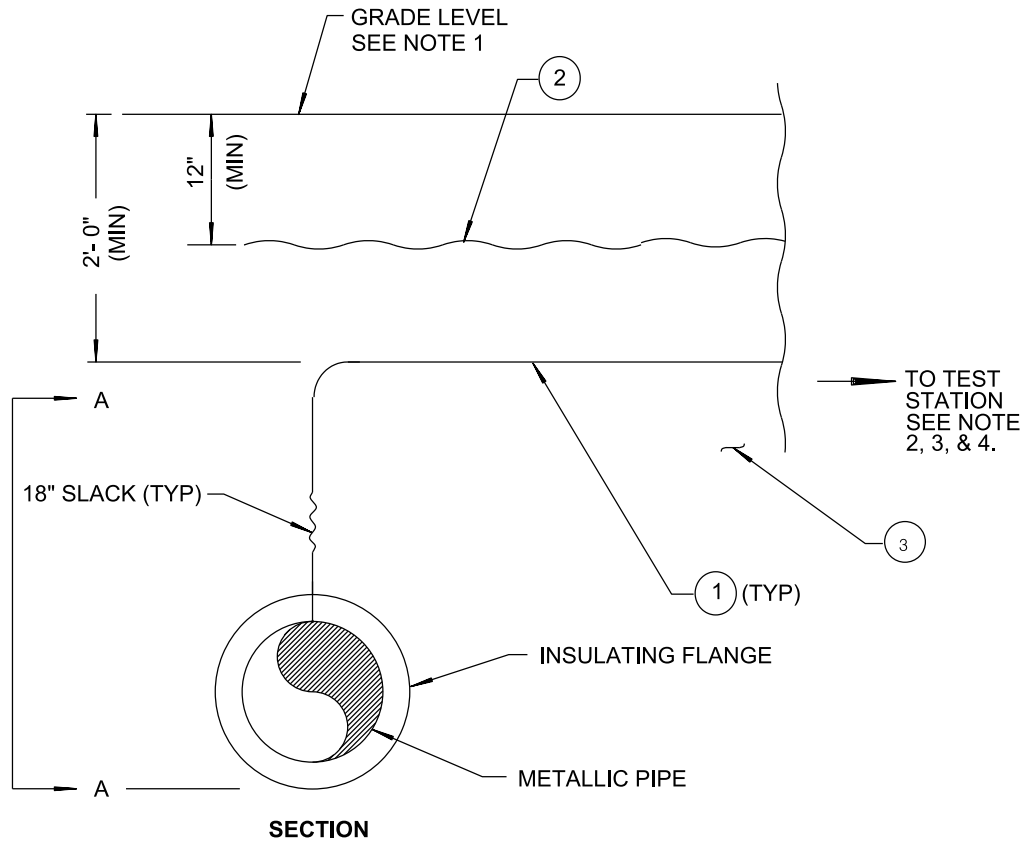
1. SLOPE CONCRETE PAD AWAY FROM COVER.
2. FOR CONTINUATION OF CABLES, REFER TO **SDW-127 OR SDW-130**, AS APPLICABLE.

ITEMS CALL OUT:

- ① CONCRETE: 2' X 2' X 4" THK. PER SSPWC 330-C-23.
- ② REINFORCING FABRIC 4" X 4" GAUGE 10 WIRE.
- ③ CABLE: REFER TO NOTE 2.

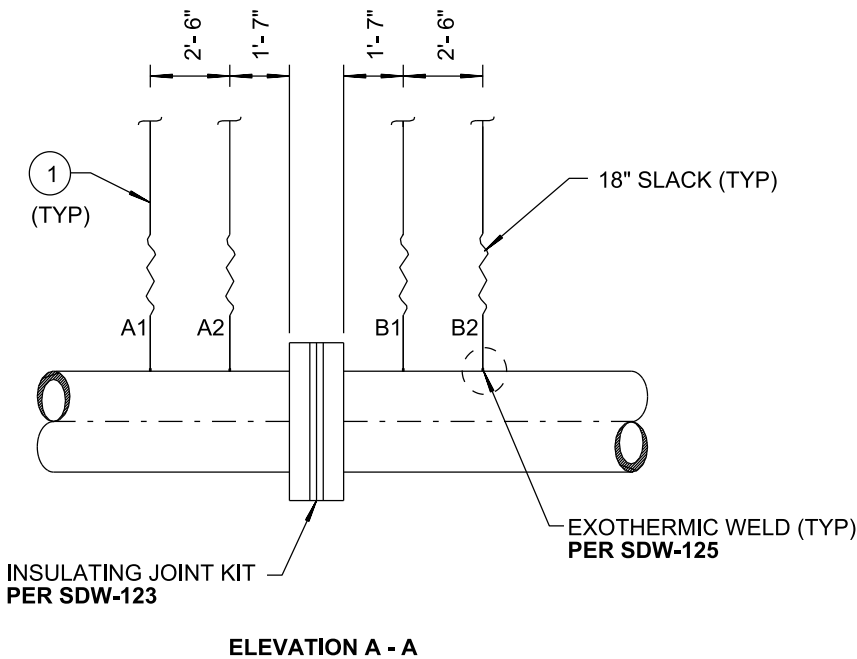
TEST STATION SECTION

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		A. OSKOU	12/03		
UPDATE	KA	J. NAGELVOORT	01/12	AT - GRADE CATHODIC PROTECTION TEST STATION WIRING DIAGRAM FOR ROADWAYS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATE	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDW-129




NOTES:

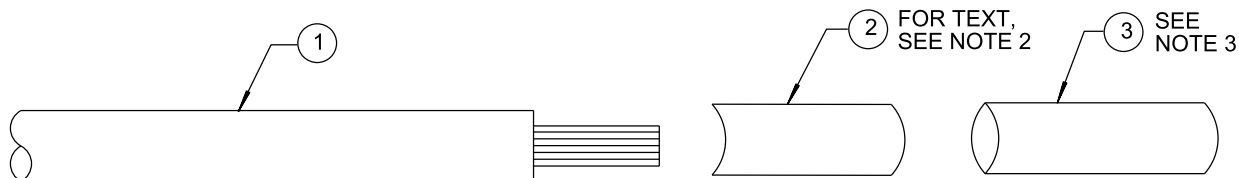
1. IN PAVED, CITY OWNED ROADWAYS, THE REPAIR OF THE ROAD SURFACE SHALL BE PER APPLICABLE STANDARD DRAWINGS. IN STATE HIGHWAYS, CONFORM TO APPLICABLE CALTRANS STANDARD.
2. FOR LOCATION, OF TEST STATION, USE REGIONAL STD DWG W15. EXACT LOCATION SHALL BE APPROVED BY CORROSION ENGR.
3. USE APPLICABLE TEST STATION DRAWING FOR UNDEVELOPED AREAS



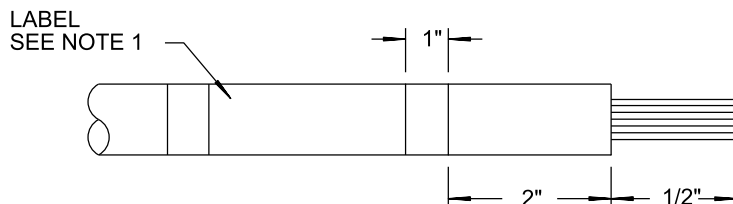
ITEM CALL OUT:

- 1 CABLE: AWG #2 COPPER ASTM B3, STRANDED ASTM B8, INSULATED PER ASTM D1248, TYPE 1 CLASS C, GRADE 5.
- 2 POLYETHYLENE WARNING TAPE PER SDW-121.
- 3 SAND: 50 SIEVE

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		A. OSKOUI	1203		
UPDATED	KA	J. NAGELVOORT	01/12	INSULATING FLANGE FOUR - WIRE TEST STATION INSTALLATION	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	HM	J. NAGELVOORT	02/15		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDW-130



WIRE LABEL DETAIL STATION



WIRE LABEL

CPTS# (CATHODIC PROTECTION TEST STATION NUMBERING)

CPTS#1, 2, 3,N

LEGEND

PIPE MATERIAL

CCI - COATED CAST IRON
 CDI - COATED DUCTILE IRON
 SCRC - STEEL CYLINDER REINFORCED CONCRETE
 PSCS - PRE-STRESSED CONCRETE-STEEL CYLINDER
 RCCP - REINFORCED CONCRETE CYLINDER PIPE (W/O STEEL)
 SCRW - STEEL CYLINDER REINFORCED ROD WRAPPED
 CMLC - CEMENT MORTAR LINED-COATED STEEL CYLINDER
 CMLCT - CEMENT MORTAR LINED-COATED-TAPED STEEL CYLINDER
 CSTL - COATED STEEL CYLINDER

TYPE OF INSTALLATION

2WTS - 2-WIRE TEST STATION
 EXAMPLE: CPTS#1, 2WTS, 180+00, 30, OTAY 2, CSTL

4WIJTS - 4-WIRE INSULATING JOINT TEST STATION
 EXAMPLE: CPTS#2, 4WIJTS, 180+00, 30, OTAY 2, CSTL, NORTH OR SOUTH OR EAST OR WEST FOR WIRE TAGS

6WTS - 6-WIRE TEST STATION
 EXAMPLE: STRUCTURE#1 - CPTS#3, 6WTS, 180+00, 30, OTAY 2, CSTL
 NORTH OR SOUTH OR EAST OR WEST FOR WIRE TAGS
 STRUCTURE#2 - CPTS#3, 6WTS, 120+60, 24, MIDCITY, SCRW
 NORTH OR SOUTH OR EAST OR WEST FOR WIRE TAGS
 STRUCTURE#3 - CPTS#3, 6WTS, 101+25, 54, TROJAN, RCCP,
 NORTH OR SOUTH OR EAST OR WEST FOR WIRE TAGS

CTS - CURRENT TEST STATION
 EXAMPLE: CPTS#10, CTS, 180+00, 200 FT., OTAY 2, CSTL,
 NORTH OR SOUTH OR EAST OR WEST FOR WIRE TAGS

CSGTS - CASING TEST STATION
 EXAMPLE: CPTS#12, CSGTS, 180+00, 30, OTAY 2, CSTL
 NORTH OR SOUTH OR EAST OR WEST FOR WIRE TAGS

ASTA - ANODE STATION
 EXAMPLE: ANODE#1, 2, 3,N FOR ANODE WIRES;
 30, OTAY 2, CSTL, 180+00, CPTS#6 FOR STRUCTURE WIRE

BSTA - BOND STATION
 EXAMPLE: CPTS#18, BSTA, 30, OTAY 2, CSTL, 180+00;
 54, OTAY 3, SCRW, 65+20


FXSTA - FOREIGN CROSSING STATION
 EXAMPLE: CPTS#4, FXSTA; 30, OTAY 2, CSTL, 180+00; 24 SDGE

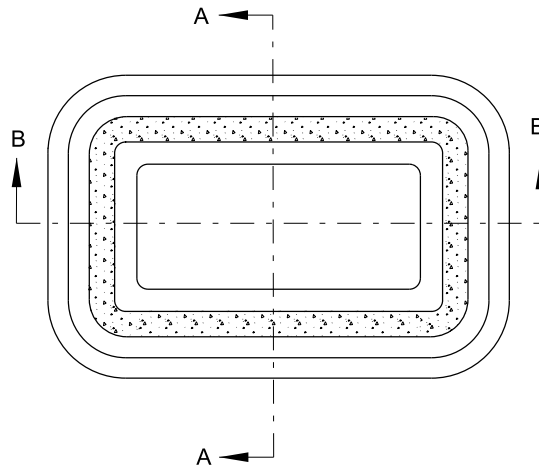
NOTES:

- CABLES SHALL BE TAGGED USING TIMES ROMAN 10 POINT FONT.
- TEXT SHALL BE PRESENTED IN THE FOLLOWING ORDER:
 - * CPTS#
 - * TYPE OF INSTALLATION
 - * STATIONING
 - * FACILITY NAME
 - * PIPE MATERIAL
 - * WIRE DIRECTIONAL ORIENTATION
 - * NORTH
 - * SOUTH
 - * EAST
 - * WEST
- PLACE SLEEVE AFTER ATTACHMENT OF LABEL TO CABLE.

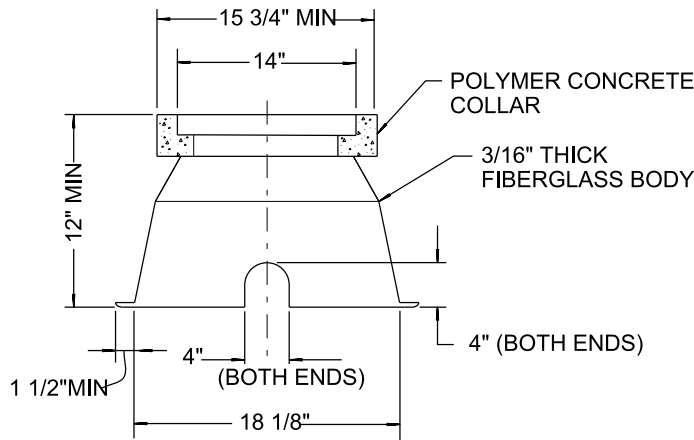
ITEM CALL OUT:

- CABLE: AWG ASTM B8 & B3
- LABEL: FILE FOLDER, SELF ADHESIVE WHITE 2/3" X 3 7/16".
- SLEEVE: HEAT SHRINK, ADHESIVE LINED POLYOLEFIN, CLEAR THIN WALL TUBING.

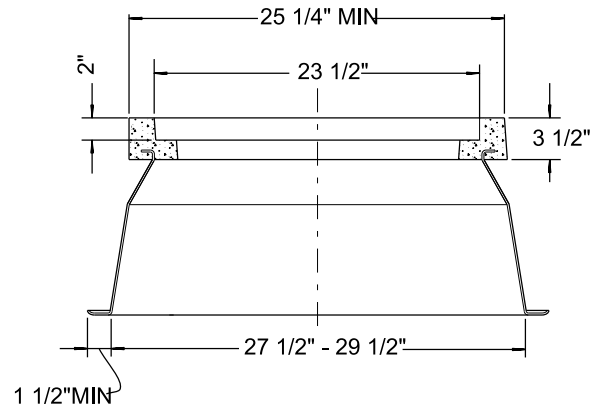
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		A. OSKOU	12/03		
NOTES	BM	A. OSKOU	12/06	<div style="text-align: center;"> WIRE IDENTIFICATION </div>	<div style="text-align: right;">  9/4/18 COORDINATOR R.C.E. 56523 DATE </div>
UPDATED	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDW-131



PLAN VIEW



SECTION A-A

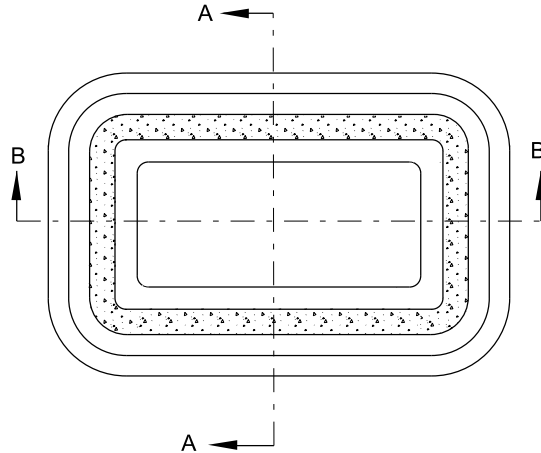


SECTION B-B

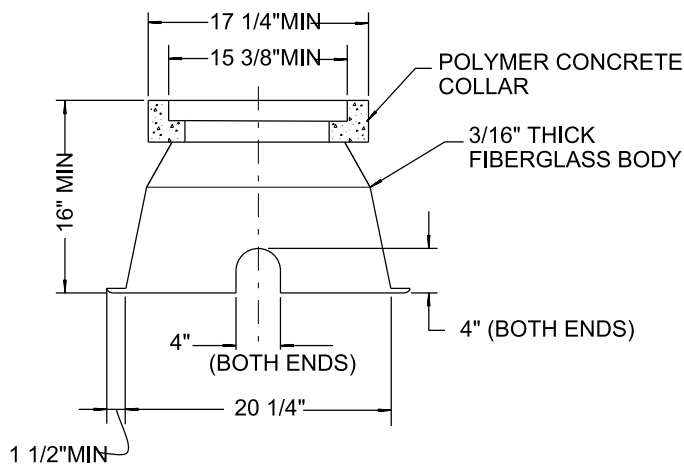
NOTES:

1. METER BOX COLLAR AND COVER SHALL BE OF POLYMER CONCRETE REINFORCED WITH CONTINUOUS LAYERS OF WOVEN FIBERGLASS.
2. BOX AND COVER SHALL WITHSTAND AASHTO H-20 (ASTM C857).
3. FOR COVER DETAIL WITH DROP IN READER LID, **SEE SDW-136**.
4. SEE SDW-137 FOR INSTALLATION PROCEDURE.

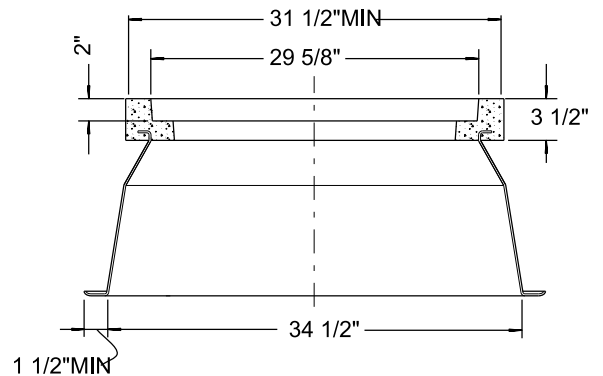
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	SS	A. OSKOUJ	12/03		
UPDATED	KA	J. NAGELVOORT	01/12	POLYMER CONCRETE WATER METER BOX FOR 1" WATER SERVICE	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDW-134



PLAN VIEW



SECTION A-A

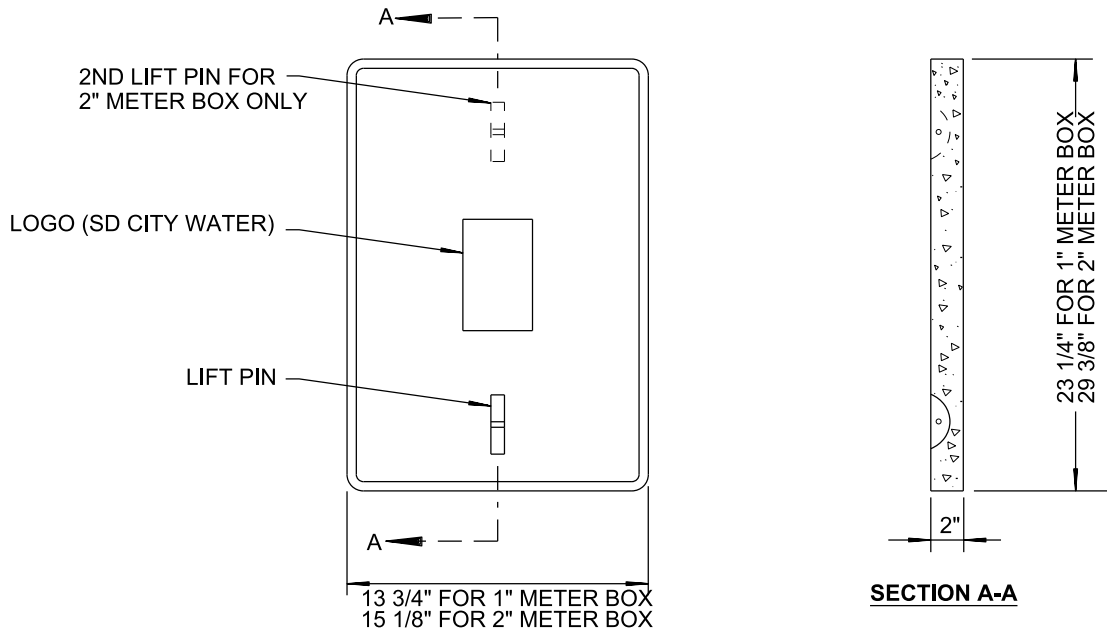


SECTION B-B

NOTES

1. METER BOX COLLAR AND COVER SHALL BE OF POLYMER CONCRETE REINFORCED WITH CONTINUOUS LAYERS OF WOVEN FIBERGLASS.
2. BOX AND COVER SHALL WITHSTAND AASHTO H-20 (ASTM C857).
3. FOR COVER DETAIL WITH READER LID, **SEE SDW-136**.
4. SEE SDW-137 FOR INSTALLATION PROCEDURE.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE <i>Chung</i> 9/4/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL	SS	A. OSKOU	12/03		
UPDATED	KA	J. NAGELVOORT	01/12	POLYMER CONCRETE WATER METER BOX FOR 2" WATER SERVICE	DRAWING NUMBER SDW-135
REDRAFTED	CD	J. NAGELVOORT	09/18		




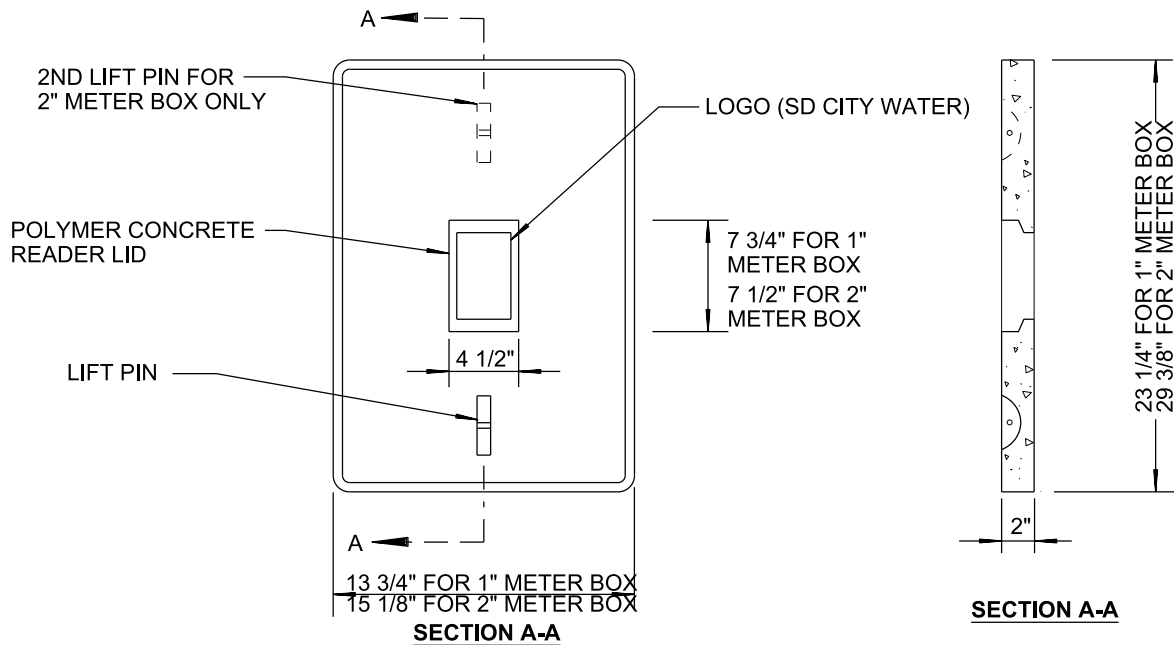
SOLID COVER FOR TRAVELED WAY

NOTES:

1. LID SHALL WITHSTAND AASHTO H-20 (ASTM 857).
2. LID SHALL HAVE NON-SKID SURFACE.

SHEET 1 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	SS	A. OSKOU	12/03		
UPDATED	KA	J. NAGELVOORT	01/12	METER BOX POLYMER CONCRETE COVER	 <div> <div>9/4/18</div> <div>COORDINATOR R.C.E. 56523 DATE</div> </div>
UPDATED	BB	J. NAGELVOORT	06/14		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER <div>SDW-136</div>




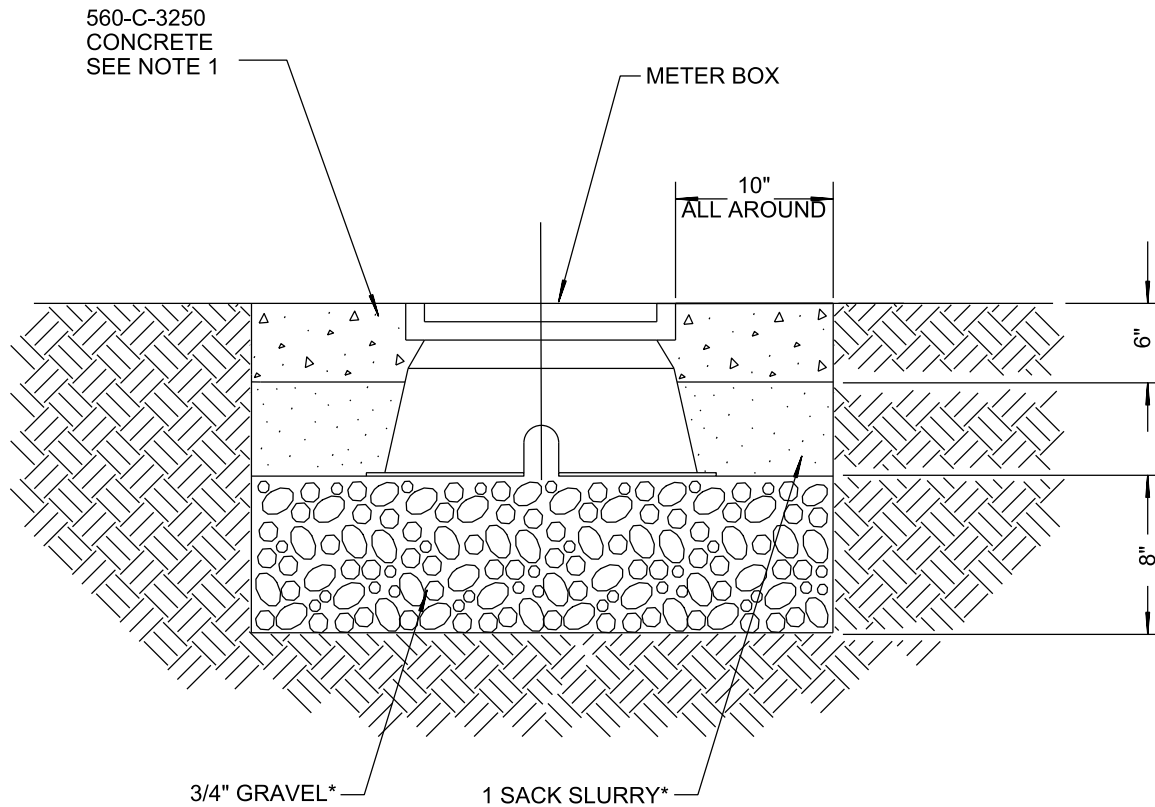
DROP IN COVER (OUTSIDE TRAVELLED WAY)

NOTES

1. LID SHALL WITHSTAND AASHTO H-10 (ASTM C857-85).
2. LID SHALL HAVE NON-SKID SURFACE.
3. IF LID IS MANUFACTURED BY CDR, READER SHALL BE 6" X 9".


SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	SS	A. OSKOUI	12/03		
UPDATED	KA	J. NAGELVOORT	01/12	METER BOX POLYMER CONCRETE COVER	 COORDINATOR R.C.E. 56523
UPDATED	BB	J. NAGELVOORT	06/14		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					9/4/18 DATE
					DRAWING NUMBER SDW-136



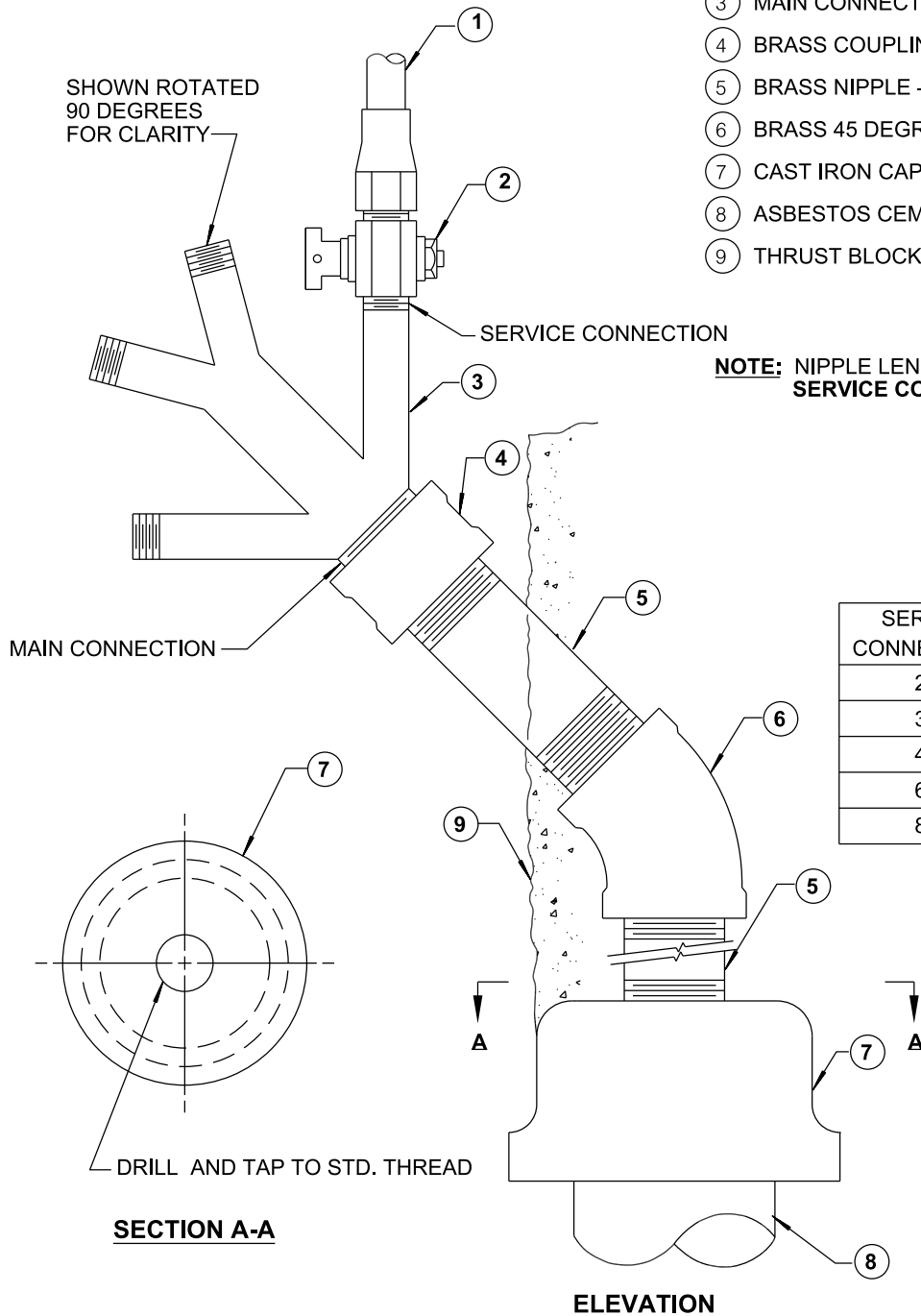
NOTES:

1. REFER TO SDG-107 NOTE 3 FOR CURING REQUIREMENTS.
2. THIS DRAWING SHALL BE USED IN AREAS SUBJECT TO HEAVY TRAFFIC INCLUDING DRIVEWAYS, PARKING LOTS AND ALLEYS.
3. (*) FOR METER BOX OUTSIDE TRAVEL WAY, USE SAND SE 30.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	SS	A. OSKOU	12/03		
UPDATED	KA	J. NAGELVOORT	01/12	TRAFFIC RATED COVER AND METER BOX INSTALLATION	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDW-137

ITEMS CALL OUT:

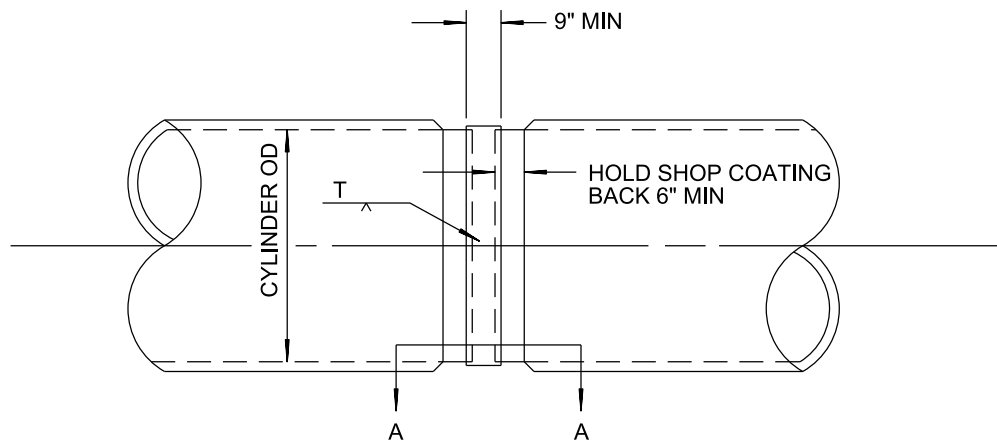
- ① 1" WATER SERVICE
- ② 1" CURB STOP
- ③ MAIN CONNECTION X MULTIPLE BRANCH CONNECTION
- ④ BRASS COUPLING OR 45 DEGREE ELBOW
- ⑤ BRASS NIPPLE - 4" MIN. LENGTH
- ⑥ BRASS 45 DEGREE ELBOW
- ⑦ CAST IRON CAP
- ⑧ ASBESTOS CEMENT PIPE
- ⑨ THRUST BLOCK PER SDW-151



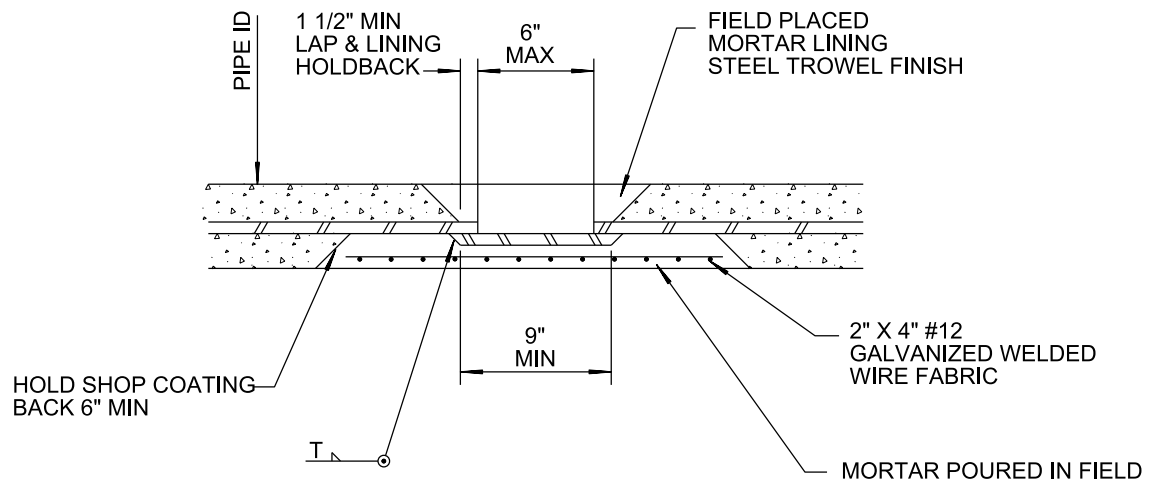
NOTE: NIPPLE LENGTHS TO BE SUFFICIENT TO ALLOW SERVICE CONNECTION TO CLEAR THRUST BLOCK.

SERVICE CONNECTION	MAIN CONNECTION ITEM 5
2	1 1/4"
3	1 1/2"
4	2"
6	2 1/2"
8	3"

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	JS	A. OSKOU	12/06		<div><div>9/4/18</div><div>COORDINATOR R.C.E. 56523DATE</div></div>
UPDATED	KA	J. NAGELVOORT	01/12		
UPDATED	HM	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDW-138



ELEVATION



SECTION A - A

NOTES:


CONTRACTOR SHALL PROVIDE HANDHOLES AS REQUIRED TO COMPLETE THE WORK

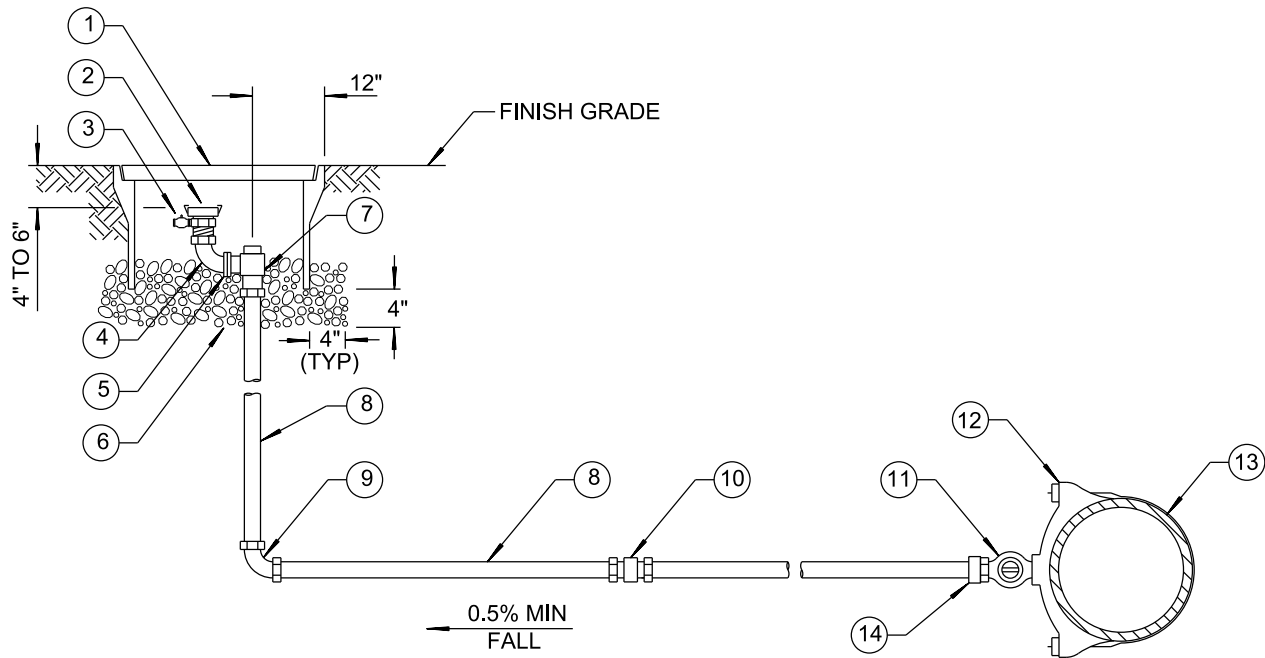
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	JS	A. OSKOU	12/06		
UPDATED	KA	J. NAGELVOORT	01/12	SPLIT BUTT STRAP	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDW-139

NOTES:

1. CITY WATER METERS INSTALLED WITHIN WET UTILITY ROOM (WUR), **REFER TO SDW-157** FOR SEPARATION OF MAINTENANCE RESPONSIBILITIES.
2. THE WUR MUST BE APPROVED BY THE PUBLIC UTILITIES & DEVELOPMENT SERVICES DEPARTMENTS.
3. THE WUR APPLIES ONLY TO BUILDINGS BUILT AT THE PROPERTY LINE WITH ZERO SETBACK.
4. IN UTILIZING THE WUR OPTION, THE BUILDING OWNER AGREES TO REQUIREMENTS OF **SDW-141**.
5. PROVIDE ACCESS INTO THE WUR BY STORING KEYS WITHIN A KNOX KEY BOX.
6. WUR's MAY CONTAIN BACKFLOW PREVENTION EQUIPMENT OR CITY WATER METERS (EASEMENT REQUIRED).
7. THE WUR MUST BE DESIGNED AT STREET LEVEL, ADJACENT TO EXTERIOR WALL OF THE BUILDING, AND ALLOW ACCESS FROM STREET LEVEL THROUGH THIS EXTERIOR WALL.
8. ACCESS DOORS OR GATES MUST PROVIDE DRAINAGE FOR FULL DISCHARGES AWAY FROM THE BUILDING.
9. A CONCRETE FLOOR PLAN WITH FLOOR DRAINS MUST PROVIDE DRAINAGE FOR INTERMEDIATE DISCHARGES.
10. MOISTURE BARRIERS SHALL BE APPLIED TO ALL EXPOSED AREAS WITHIN THE WUR TO PREVENT DAMAGE.
11. PROVIDE ADEQUATE CLEARANCE AROUND THE EQUIPMENT TO ALLOW FOR TESTING AND MAINTENANCE.
12. THE WUR MUST BE FIRE RATED FOR ONE HOUR PER THE FIRE & RESCUE DEPARTMENT.
13. IDENTIFY THE TYPE OF EQUIPMENT CONTAINED WITHIN THE WUR WITH APPROPRAITE SIGNAGE.
14. TO PURCHASE A KEY BOX CONTACT THE KNOX COMPANY (800) 552-5669 AND PROVIDE THE PUBLIC UTILITIES DEPARTMENT, SYSTEM CODE: SS-01-0503-05-14.
15. KNOX KEY BOX TO BE INSTALLED ADJACENT TO THE WUR ENTRANCE WITHIN 4 - 6 FEET.
16. ONCE THE KNOX BOX IS INSTALLED, NOTIFY THE PUBLIC UTILITIES DEPARTMENT, CROSS CONNECTION CONTROL UNIT TO LOCK THE KEY BOX.

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	BB	J. NAGELVOORT	10/14		
UPDATED	FG	J. NAGELVOORT	07/15	BACKFLOW PREVENTERS WET UTILITY ROOM INSTALLATION	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDW-141




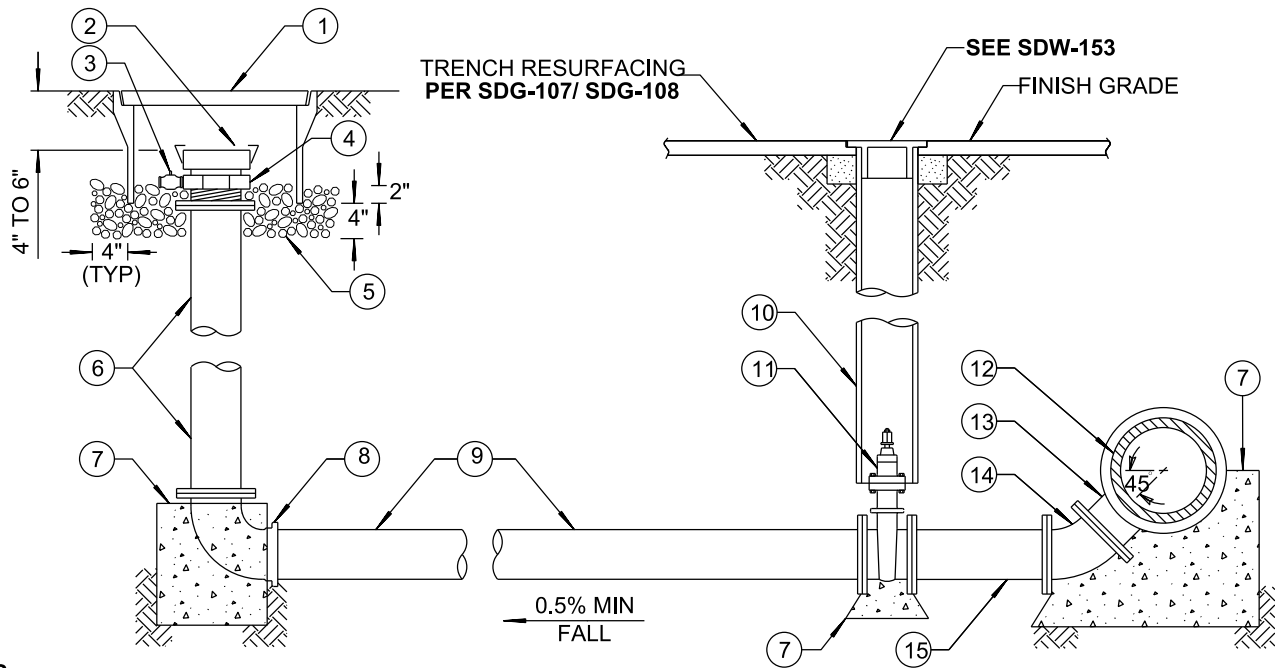
NOTES:

1. SET TOP OF METER BOX FLUSH WITH SIDEWALK, CURB OR FINISH GRADE.
2. LOCATE METER BOX **PER WS-03**.
3. INSTALL WARNING/ IDENTIFICATION TAPE **PER SDM-105**.
4. BLOW-OFF ASSEMBLIES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN SPECIFICATIONS.
5. ON STEEL MAINS USE WELD ON COUPLINGS, ON DUCTILE IRON MAINS USE DUCTILE IRON SERVICE SADDLES.
6. CAM & GROOVE ADAPTER SHALL BE DRILLED AND TAPPED AS REQUIRED FOR THE PRESSURE PET COCK.
7. FOR BLOW OFF AT END OF MAIN, **SEE SDW-106**.
8. FOR STEEL AND DI MAINS: INSTALL DIELECTRIC UNION AFTER CORPORATION STOP.
9. WAX TAPE FROM MAIN TO 3" PAST DIELECTRIC UNION, INCLUDING SADDLE.

2"
LEGEND ON PLANS

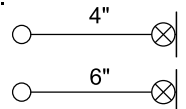
ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	POLYMER METER BOX WITH LID 17" x 30", SEE NOTE 2	⑧	2" x REQUIRED LENGTH COPPER PIPE TYPE "K" RIGID OR SOFT
②	2" CAM & GROOVE ADAPTER x MIPT WITH LOCKING DUST CAP, SEE NOTE 7	⑨	90° ELL (NO SWEAT JOINTS ALLOWED)
③	1/4" PRESSURE PET COCK	⑩	2" BRONZE COMPRESSION COUPLING COPPER TO COPPER (IF REQUIRED)
④	2" 90° BRONZE MIPT x FIPT ELL	⑪	BRONZE CORPORATION STOP (INSTALL WITH KEY ON SIDE AND OPEN TAP)
⑤	2" OVAL METER FLANGE FLG x FIPT, WITH GASKET	⑫	SIZE x 2" SERVICE SADDLE
⑥	3/8" ROCK 4" TO 6" DEEP	⑬	WATER MAIN
⑦	2" BRONZE COMP x FLG ANGLE METER STOP WITH LOCK WING	⑭	2" COPPER DIELECTRIC UNION. REQUIRED FOR STEEL OR DI MAINS.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	HM	J. NAGELVOORT	02/16	2" BLOW-OFF INSTALLATION	<div> 9/4/18</div> <div>COORDINATOR R.C.E. 56523 DATE</div>
UPDATED	EF	J. NAGELVOORT	11/17		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER SDW-143	




NOTES:

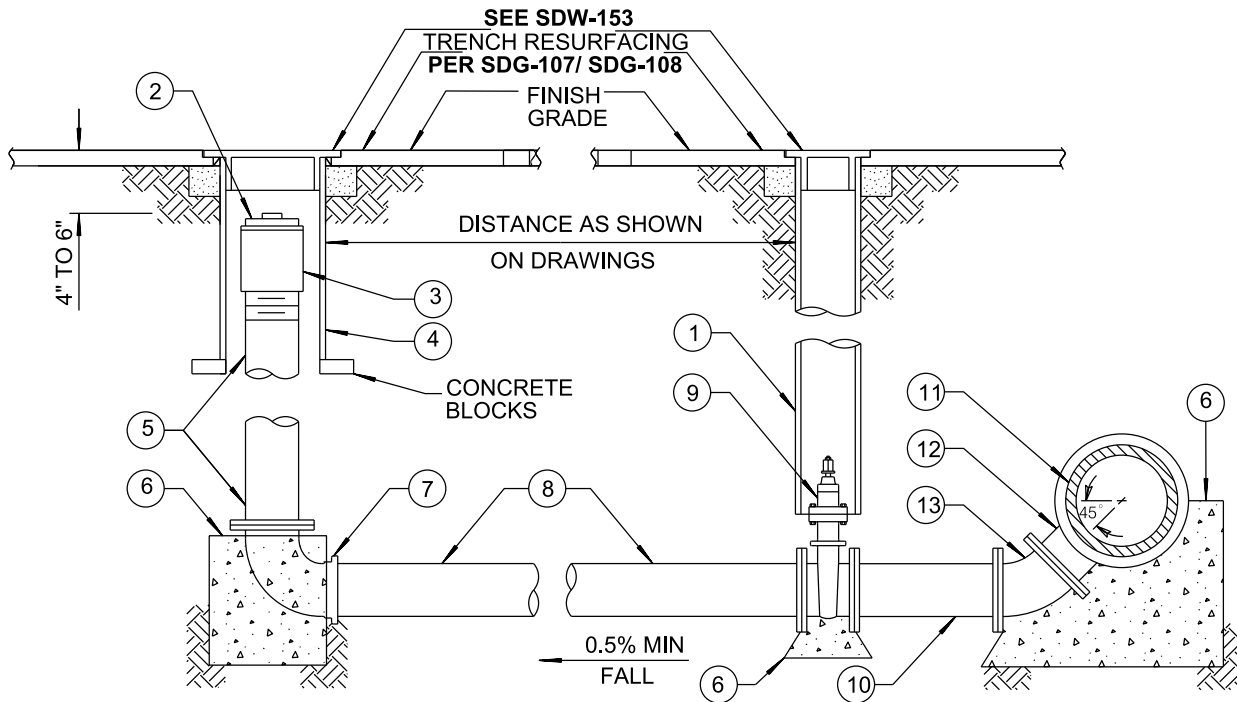
1. SET TOP OF METER BOX FLUSH WITH SIDEWALK, CURB OR FINISH GRADE.
2. LOCATE METER BOX **PER WS-03**.
3. INSTALL WARNING / IDENTIFICATION TAPE **PER SDM-105**.
4. FOR BLOW-OFF INSTALLATION AT END OF MAIN **SEE SDW-146**.
5. BLOW-OFF ASSEMBLIES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN SPECIFICATIONS.
6. 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.
7. CAM & GROOVE ADAPTER SHALL BE DRILLED AND TAPPED AS REQUIRED FOR THE PRESSURE PET COCK.
8. FOR STEEL AND DI MAINS, BLOW-OFF PIPE MATERIAL AND COATING SHALL BE THE SAME AS THE MAIN LINE.
9. BOND JOINTS **PER SDW-122**
10. TANGENTIAL OUTLETS ARE ACCEPTABLE FOR STEEL MAINS.
11. FOR PVC MAINS, DI PIPE SHALL BE COATED PER SPECIFICATIONS.



LEGEND ON PLANS

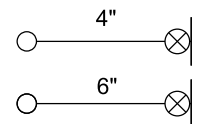
ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	POLYMER METER BOX WITH LID 17" x 30", SEE NOTE 2	⑨	USE DUCTILE IRON OR PVC C900
②	4" OR 6" CAM & GROOVE ADAPTER x MIPT WITH LOCKING DUST CAP, SEE NOTE 7	⑩	VALVE WELL FRAME AND COVER (SEE SDW-153)
③	1/4" PRESSURE PET COCK	⑪	4" OR 6" FLG x MJ/FLG RWGV
④	4" OR 6" FLANGED COMPANION x FIPT	⑫	WATER MAIN
⑤	3/8" ROCK 4" TO 6" DEEP	⑬	SIZE x 4" OR 6" MJ/FLG x FLG TEE
⑥	4" OR 6" FLG DI PIPE x REQUIRED LENGTH(MAXIMUM OF 2 SPOOLS)	⑭	4" OR 6" FLANGED 45° BEND
⑦	CONCRETE THRUST BLOCK SEE SDW-151	⑮	4" OR 6" FLANGED 45° BEND
⑧	4" OR 6" FLG x MJ/PO 90° BEND	⑯	4" OR 6" x 24" FLG DI SPOOL

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	KA	J. NAGELVOORT	12/12	4" & 6" BLOW-OFF INSTALLATION TYPE A	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	AR	J. NAGELVOORT	10/15		
UPDATED	HM	J. NAGELVOORT	02/16		
UPDATED	EF	J. NAGELVOORT	11/17		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDW-144




NOTES:

1. FOR BLOW-OFF INSTALLATION AT END OF MAIN **SEE SDW-106 AND SDW-146.**
2. BLOW-OFF ASSEMBLIES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN SPECIFICATIONS.
3. ON STEEL MAINS USE WELD ON COUPLINGS, ON DUCTILE IRON MAINS USE DUCTILE IRON SERVICE SADDLES (INSULATING BUSHINGS ARE REQUIRED).
4. 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.
5. FOR STEEL AND DI MAINS, BLOW-OFF PIPE MATERIAL AND COATINGS SHALL BE THE SAME AS THE MAIN LINE.
6. BOND JOINTS **PER SDW-122.**
7. TANGENTIAL OUTLETS ARE ACCEPTABLE FOR STEEL MAINS.
8. FOR PVC MAINS, DI PIPE SHALL BE COATED PER SPECIFICATIONS.

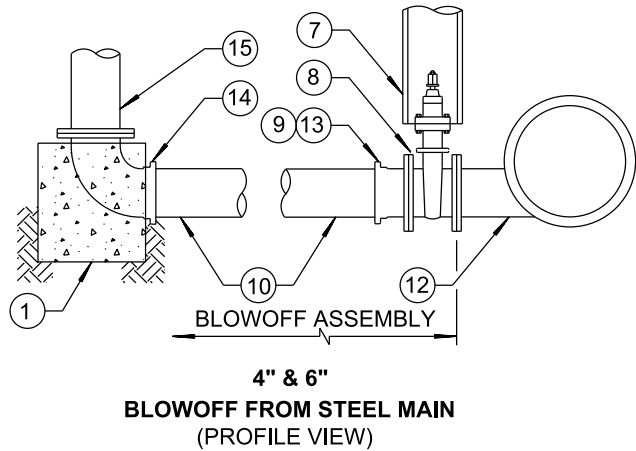
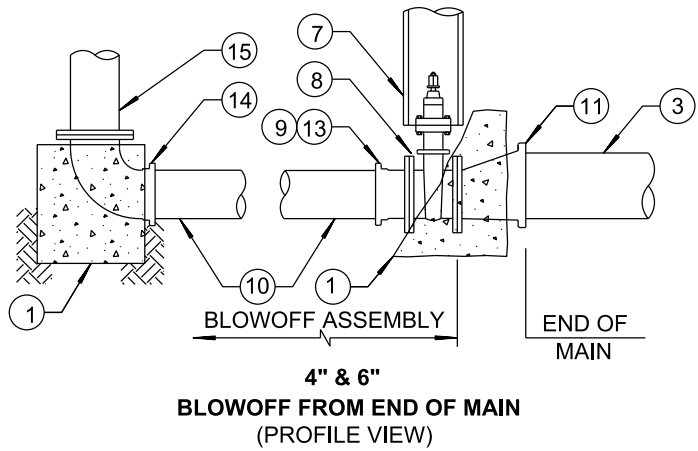
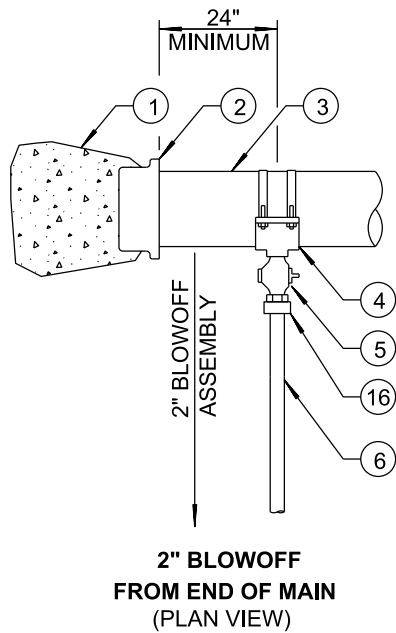


LEGEND ON PLANS

ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	GATE WELL WITH CAP SEE SDW-153	⑧	DUCTILE IRON OR C-900 PVC
②	GALVANIZED IRON PLUG	⑨	4" OR 6" FLG x MJ / FLG RWGV
③	GALVANIZED IRON COUPLING, THREADED	⑩	4" OR 6" x 24" FLG DI SPOOL
④	10" STEEL GATE WELL WITH CAP	⑪	WATER MAIN
⑤	4" OR 6" FLG DI PIPE x REQUIRED LENGTH (MAXIMUM OF 2 SPOOLS)	⑫	SIZE x 4" OR 6 MJ / FLG x FLG TEE
⑥	CONCRETE THRUST BLOCK SEE SDW-151	⑬	4" OR 6" FLANGED 45° BEND, SEE NOTE 4
⑦	FLANGE x FLANGE x 90° BEND		

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*		J. NAGELVOORT	01/12		
UPDATED	KA	J. NAGELVOORT	12/12	4" & 6" BLOW-OFF INSTALLATION IN STREET TYPE B	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	AR	J. NAGELVOORT	02/16		
UPDATED	EF	J. NAGELVOORT	11/17		
REDRAFTED	CD	J. NAGELVOORT	09/18		

DRAWING NUMBER	SDW-145
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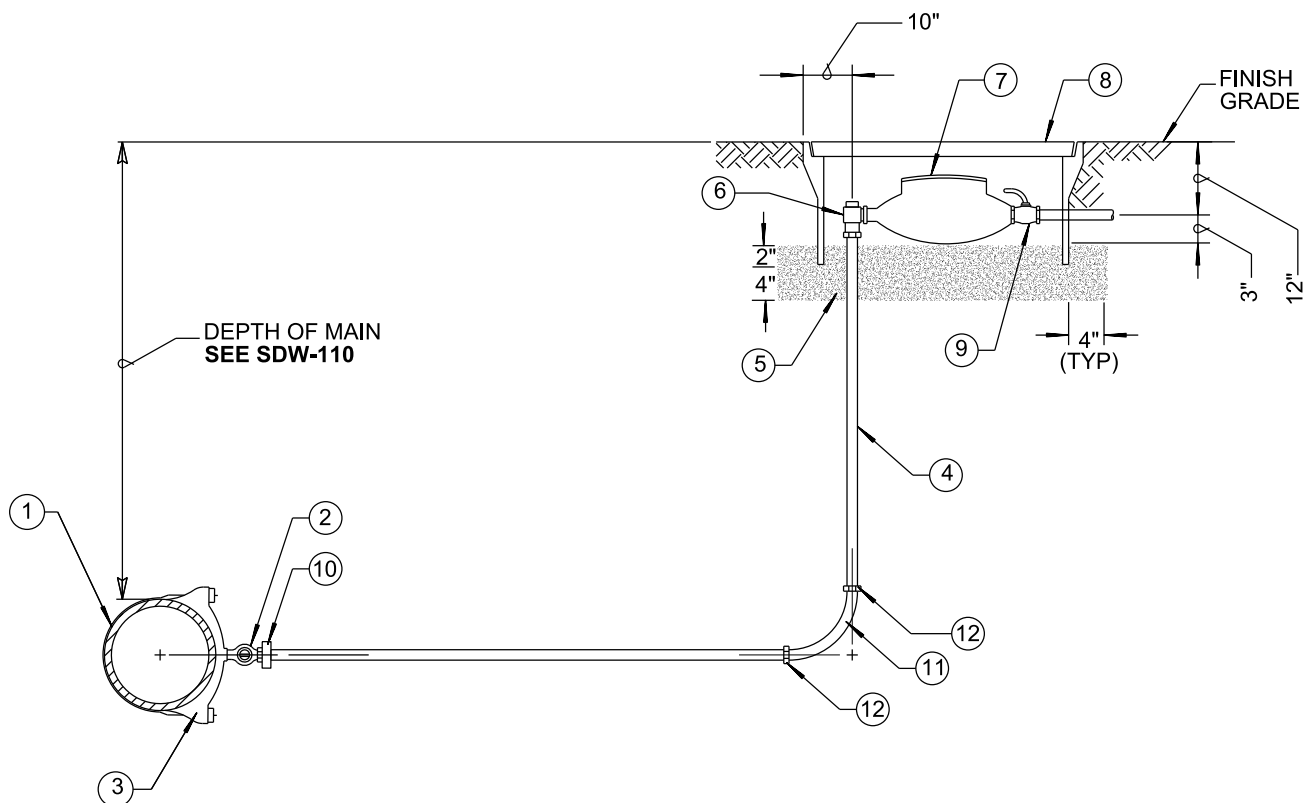


NOTES:

1. BLOW-OFF ASSEMBLIES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN SPECIFICATIONS.
2. FOR 2" BLOW-OFFS ON STEEL MAINS USE WELD ON COUPLINGS. ON DUCTILE IRON MAINS USE DUCTILE IRON.
3. SERVICE SADDLES FOR END OF MAIN DETAIL **SEE SDW-106**.
4. FOR STEEL AND DI MAINS, INSTALL DIELECTRIC UNION AFTER CORPORATION STOP.
5. WAX TAPE FROM MAIN TO 3" PAST DIELECTRIC UNION, INCLUDING SADDLE.


ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	CONCRETE THRUST BLOCKS SEE SDW-151	⑨	FLG x MJ/PO ADAPTER (IF REQUIRED)
②	DI END CAP	⑩	C-900 PVC PIPE
③	WATER MAIN	⑪	FLG x MJ/PO ECCENTRIC DI REDUCER
④	BRONZE SERVICE CLAMP (DOUBLE STRAP). SIZE x 2" SERVICE SADDLE	⑫	MAIN SIZE x BLOWOFF SIZE FLANGE MANUFACTURED STEEL TANGENTIAL OUTLET
⑤	2" BRONZE MIPT x COMP CORPORATION STOP	⑬	FLG x MJ/PO BEND (IF REQUIRED)
⑥	2" x REQ'D LENGTH COPPER PIPE TYPE "K" RIGID OR SOFT	⑭	FLG x MJ/PO 90° BEND
⑦	GATE WELL WITH CAP SEE SDW-153 & SDW-154	⑮	FLG DI PIPE x REQUIRED LENGTH (MAXIMUM OF 2 SPOOLS)
⑧	FLG x MJ/PO/FLG RWGV	⑯	2" COPPER DIELECTRIC UNION. REQUIRED FOR STEEL OR DI MAINS.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL*	KA	J. NAGELVOORT	01/12			
UPDATED	AR	J. NAGELVOORT	02/16			
UPDATED	EF	J. NAGELVOORT	11/17			
REDRAFTED	CD	J. NAGELVOORT	09/18			
				BLOW-OFF INSTALLATION FROM END OF MAIN & FROM STEEL MAIN		
				DRAWING NUMBER	SDW-146	




NOTES:

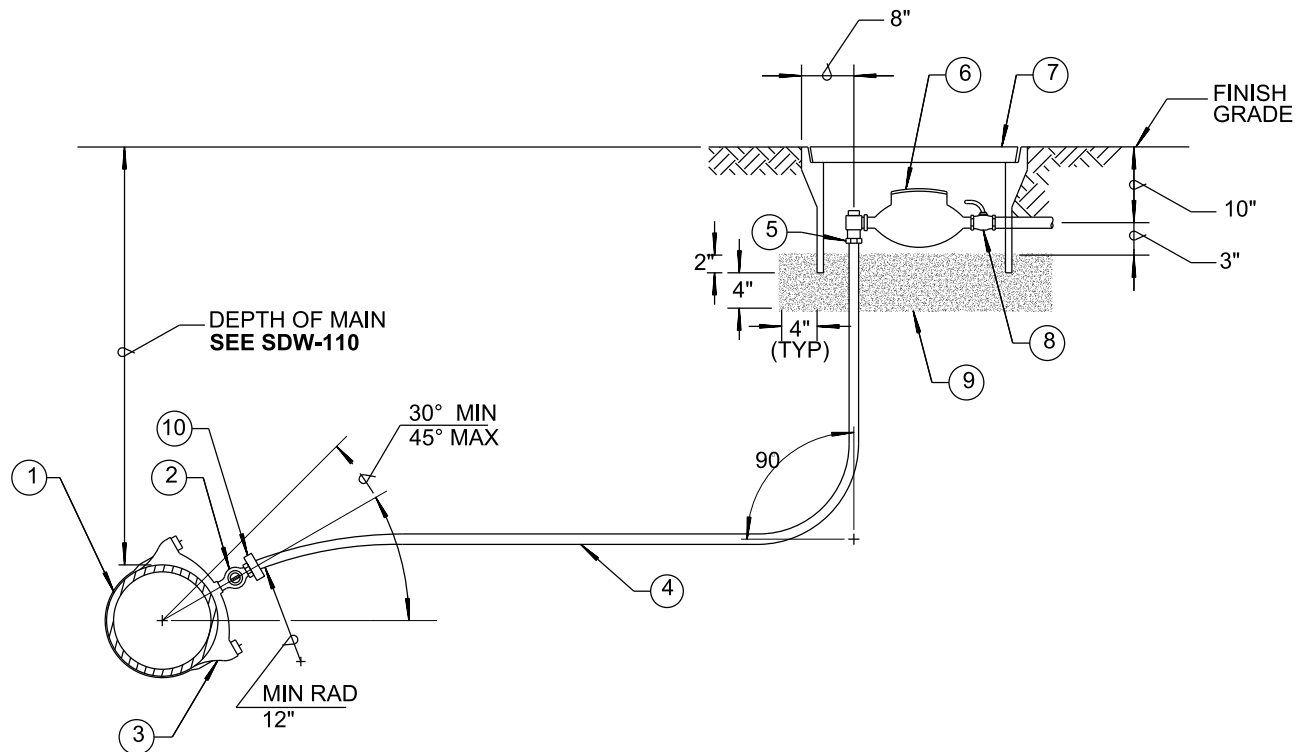
1. INSTALL CORPORATION STOP WITH KEY IN THE SIDE POSITION.
2. SET TOP OF METER BOX FLUSH WITH SIDEWALK, CURB, OR FINISH GRADE.
3. LOCATE METER BOX PER **WS-03**.
4. INSTALL WARNING / IDENTIFICATION TAPE **PER SDM-105**.
5. ONLY APPROVED BRASS MECHANICAL COUPLING DEVICES ALLOWED FOR TYPE K COPPER PIPE.
6. ON STEEL MAINS USE WELD ON COUPLINGS, ON DUCTILE IRON MAINS USE DUCTILE IRON SERVICE SADDLES.
7. TOP TAPS NOT PERMITTED.
8. FOR STEEL AND DI MAINS, INSTALL DIELECTRIC UNION AFTER CORPORATION STOP.
9. WAX TAPE FROM MAIN TO 3" PAST DIELECTRIC UNION, INCLUDING SADDLE.

 2"

 LEGEND ON PLANS

ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	WATER MAIN.	⑦	WATER METER FURNISHED AND INSTALLED BY THE CITY.
②	2" BRONZE CORPORATION STOP.	⑧	METER BOX WITH LID, #6: 35"x 21"
③	SIZE x 2" BRONZE SERVICE SADDLE DOUBLE BRONZE STRAP.	⑨	CUSTOMER SHUT-OFF VALVE (LOCKABLE) FURNISH AND INSTALLED BY THE CITY.
④	2" x REQUIRED LENGTH COPPER PIPE TYPE "L" SOFT/RIGID.	⑩	2" COPPER DIELECTRIC UNION. REQUIRED FOR STEEL OR DI MAINS.
⑤	SE 50 SAND, 4" TO 6" DEEP	⑪	BRASS 90° BEND.
⑥	2" BRONZE ANGLE METER STOP WITH LOCKWING.	⑫	MECHANICAL COUPLING.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	<div>RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE</div> <div> 9/17/18</div> <div>COORDINATOR R.C.E. 56523 DATE</div>
ORIGINAL*	KA	J. NAGELVOORT	2/13		
UPDATED	KA	J. NAGELVOORT	3/13		
UPDATED	HM	J. NAGELVOORT	02/16		
UPDATED	TP	J. NAGELVOORT	09/18		
				2" WATER SERVICE INSTALLATION	DRAWING NUMBER
					SDW-149




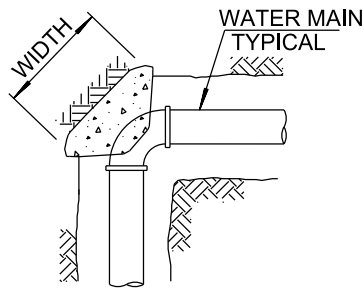
NOTES:

1. INSTALL CORPORATION STOP WITH KEY IN THE SIDE POSITION.
2. SET TOP OF METER BOX FLUSH WITH SIDEWALK, CURB, OR FINISH GRADE.
3. LOCATE METER BOX **PER WS-03**.
4. INSTALL WARNING/ IDENTIFICATION TAPE **PER SDM-105**.
5. ONLY APPROVED BRASS MECHANICAL COUPLING DEVICES ALLOWED FOR TYPE K COPPER PIPE.
6. ON STEEL MAINS USE WELD ON COUPLINGS, ON DUCTILE IRON MAINS USE DUCTILE IRON SERVICE SADDLES.
7. BRONZE PIPE SADDLES ARE REQUIRED FOR ALL TAPS INTO POLYVINYL CHLORIDE (PVC) WATER MAIN. TOP TAPS ARE NOT PERMITTED.
8. FOR STEEL AND DI MAINS, INSTALL DIELECTRIC UNION AFTER CORPORATION STOP.
9. INSTALL WAX TAPE FROM MAIN TO 3" PAST DIELECTRIC UNION, INCLUDING SADDLE.

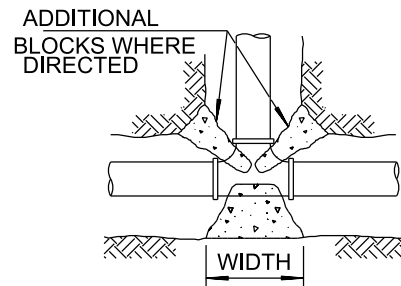
(W) ————
LEGEND ON PLANS

ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
(1)	WATER MAIN.	(6)	WATER METER FURNISHED AND INSTALLED BY THE CITY.
(2)	1" BRONZE CORPORATION STOP.	(7)	METER BOX WITH LID, #37: 28" X 18"
(3)	SIZE x 1" BRONZE SERVICE SADDLE DOUBLE BRONZE STRAP.	(8)	CUSTOMER SHUT-OFF VALVE (LOCKABLE) FURNISHED AND INSTALLED BY THE CITY.
(4)	USE COPPER TUBING TYPE (K) SOFT FOR 1" SERVICES ONLY. NO INTERMEDIATE JOINTS PERMITTED WITHIN THE FIRST 60' FROM THE MAIN. FOR LENGTHS LONGER THAN 60' USE FLARE JOINT UNION OR LOK-PAC FITTINGS WITH LOCKING CLAMP AND STAINLESS STEEL BOLT ONLY. NO SWEAT JOINTS ARE ALLOWED.	(9)	SE 50 SAND, 4" TO 6" DEEP.
(5)	BRONZE ANGLE METER STOP WITH LOCKWING DEVICE AND METER COUPLING ATTACHED. FURNISH AND INSTALL BRONZE PROPERTY VALVE. USE SPACER FOR METER.	(10)	1" COPPER DIELECTRIC UNION. REQUIRED FOR STEEL OR DI MAINS.

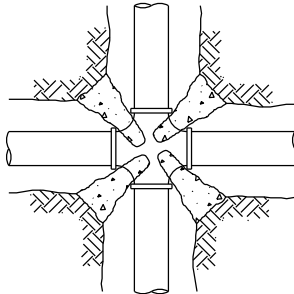
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
UPDATED	KA	J. NAGELVOORT	03/13	1" WATER SERVICE INSTALLATION	 9/17/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	HM	J. NAGELVOORT	02/16		
UPDATED	TP	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDW-150



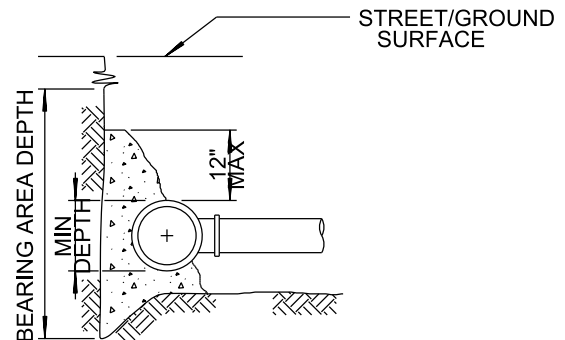
BEND



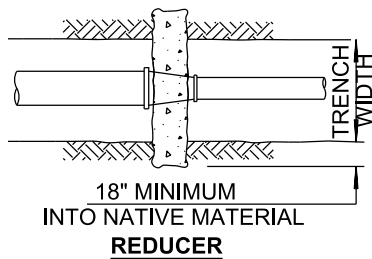
TEE PLAN



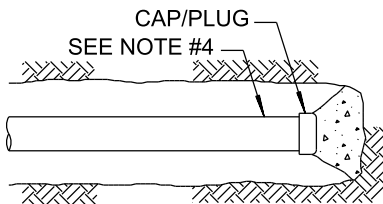
CROSS



TEE ELEVATION

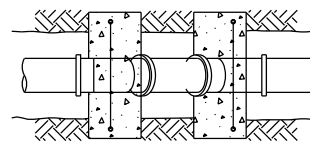


REDUCER

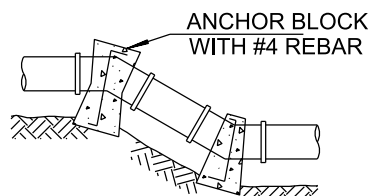


END CAP

SEE NOTE
1 BELOW



VERT BENDS PLAN




VERT BENDS ELEVATION

NOTES:

- 1) THE ANCHOR BLOCKS ON VERTICAL BENDS REQUIRE ENGINEER APPROVAL.
- 2) A MINIMUM OF 6" OF CONCRETE SHALL BE POURED ON WETTED UNDISTURBED OR COMPACTED SOIL BENEATH EACH INSTALLATION.
- 3) TEE SHALL BE CONCRETE BLOCKED A MINIMUM OF 6" ON ALL THREE SIDES.
- 4) USE 12" - 18" LENGTH OF PIPE BETWEEN THE END CAP AND THE LAST JOINT AS A BOND BREAKER ON DEAD END BLOCKING.

SHEET 1 OF 3

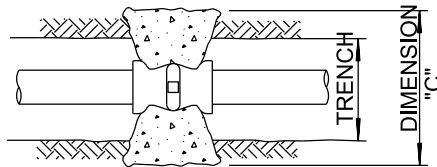
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	HM	J. NAGELVOORT	02/16	CONCRETE THRUST AND ANCHOR BLOCK INSTALLATIONS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDW-151

VALVE SUPPORT BLOCK

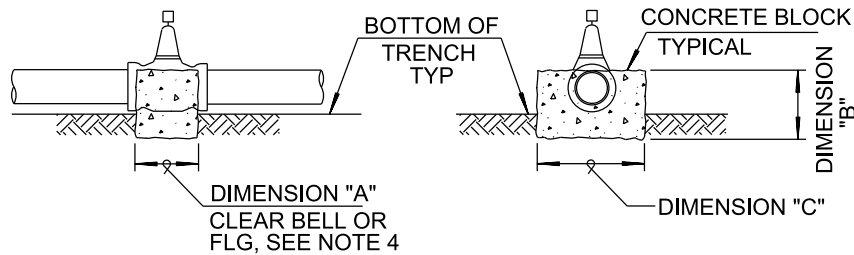
VALVE SIZE	DIMENSION "A"	DIMENSION "B"
4"	12"	12"
6"	12"	12"
8"	13"	14"
10"	14"	16"
12"	15"	18"
DIMENSION "C" = TRENCH WIDTH PLUS TWO TIMES THE PIPE DIAMETER		

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




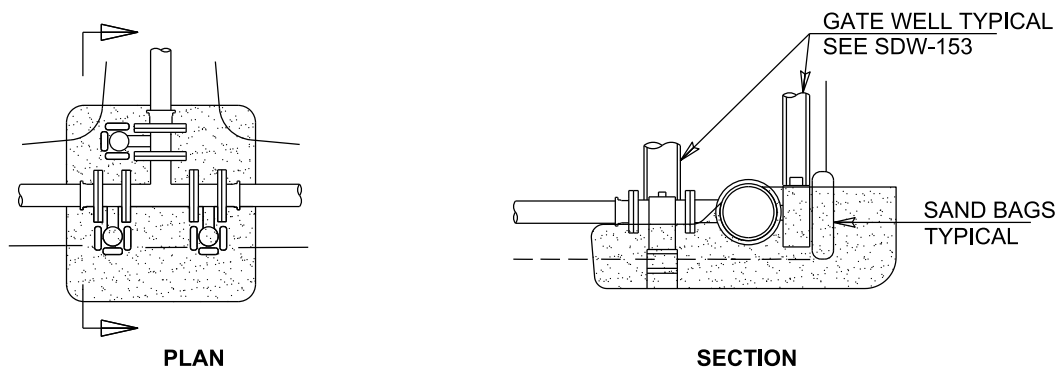
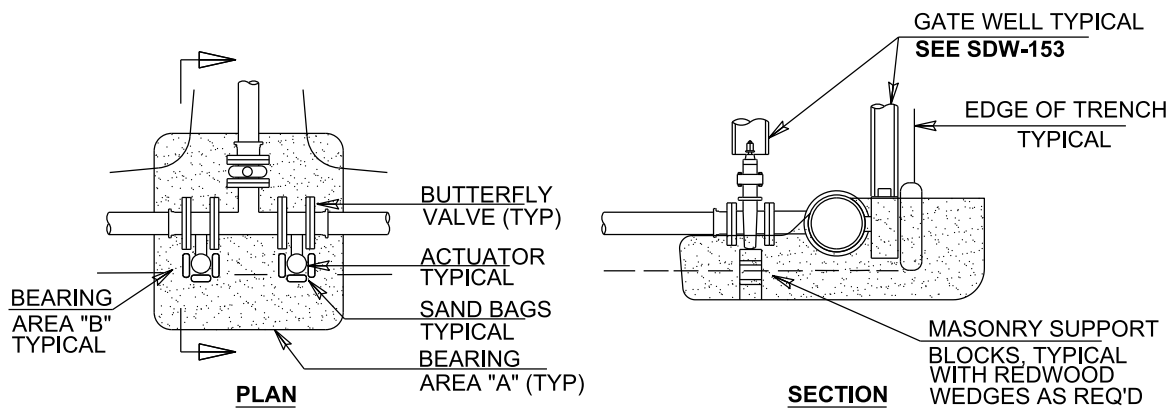
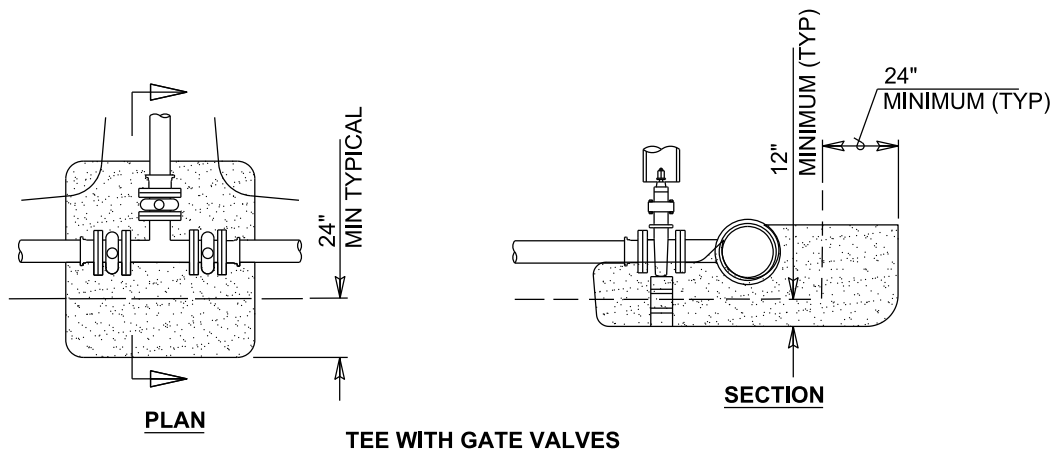
VALVE SUPPORT ELEVATION

NOTES:

- 1) 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
- 2) ENGINEER SHALL DETERMINE SIZES, REFER TO SPECIFICATIONS FOR THRUST AND ANCHOR BLOCK SIZING.
- 3) THRUST BLOCKS SHALL BE CENTERED ON THE FITTING SO THAT THE BEARING AREA IS EXACTLY OPPOSITE THE RESULTANT DIRECTION OF THRUST.
- 4) CONCRETE SHALL BE PLACED SO THAT FITTINGS AND VALVES WILL BE ACCESSABLE FOR REPAIR OR REPLACEMENT.

SHEET 2 OF 3


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	HM	J. NAGELVOORT	02/16	CONCRETE THRUST AND ANCHOR BLOCK INSTALLATIONS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDW-151



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 SPECIFICATIONS.

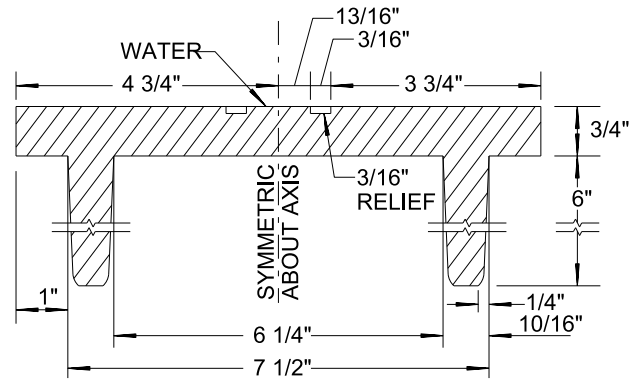
SHEET 3 OF 3

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	HM	J. NAGELVOORT	02/16	CONCRETE THRUST AND ANCHOR BLOCK INSTALLATIONS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDW-151



POTABLE
WATER

GATE WELL LID



CAST IRON VALVE WELL CAP DETAIL

INSIDE GATE WELL LID PAINTED IDENTIFICATION MARKING

COLOR	GATE WELL AND LIDS USED FOR:
RED	NORMALLY CLOSED SYSTEM VALVES (NCV)
WHITE	RESILIENT WEDGE GATE VALVES
YELLOW	BUTTERFLY VALVES

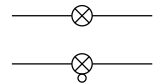
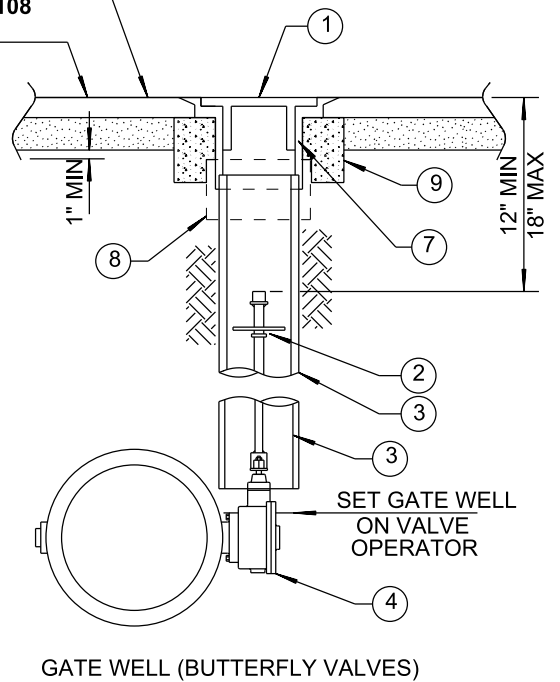
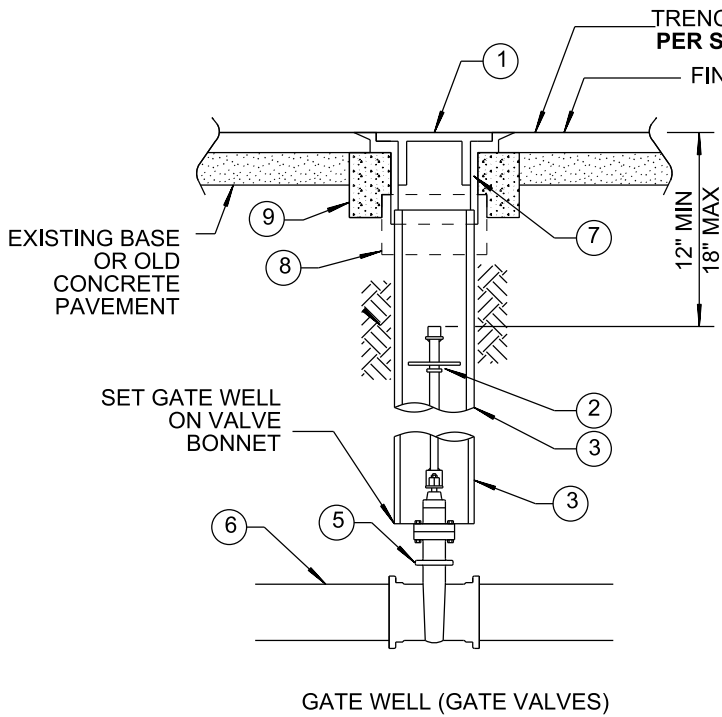
GATE WELL LID TOP COLOR & CONDITION

VALVE CONDITION	BUTTERFLY VALVE	GATE VALVE
PERMANENTLY CLOSED	RED	RED
TEMPORARILY CLOSED	YELLOW W/RED DOT	WHITE W/RED DOT
PERMANENTLY OPEN	YELLOW	WHITE

NOTES:

- 1) GATE WELL LIDS SHALL BE CAST IRON WITH "CITY OF SAN DIEGO" 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

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		GATE WELL IDENTIFICATION
UPDATED	RB	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		
					DRAWING NUMBER SDW-152




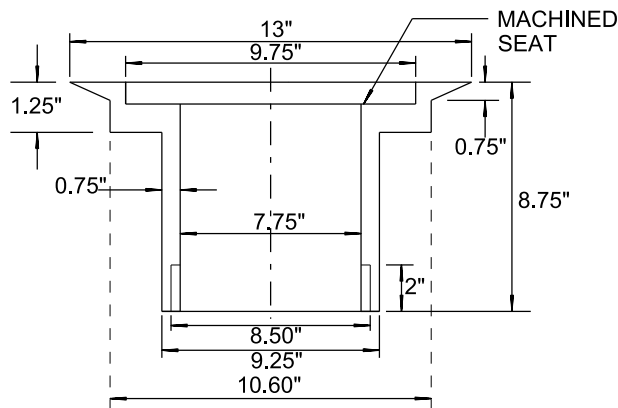
LEGEND ON PLANS

SEE ADDITIONAL NOTES ON SHEET 2

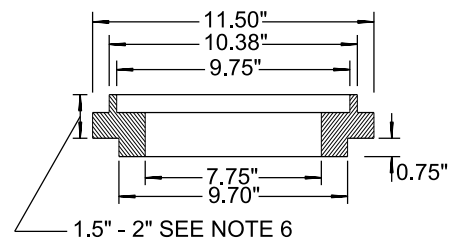
SHEET 1 OF 2

ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	GATE WELL WITH CAP PER SDW-152	⑥	WATER MAIN
②	VALVE STEM EXTENSION SEE NOTES 1 & 2	⑦	VALVE WELL FRAME SET TO SLOPE OF STREET
③	8" OD x 1/8" STEEL CASING x REQUIRED LENGTH	⑧	CALDER COUPLING (FOR PVC WELL)
④	BUTTERFLY VALVE	⑨	9" X 9" CONCRETE RING
⑤	RESILIENT WEDGE GATE VALVE		

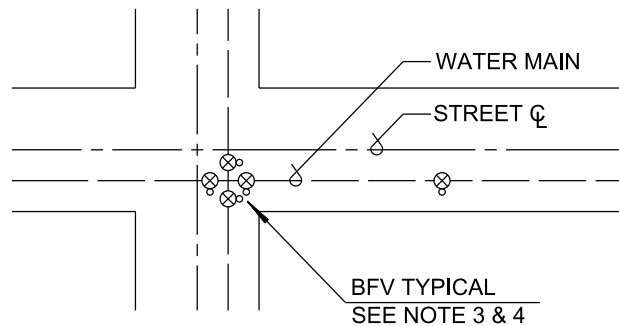
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	KA	J. NAGELVOORT	12/12	GATE WELL CAP & CAN INSTALLATION FOR VALVES 4" AND LARGER	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	KA	J. NAGELVOORT	5/13		
UPDATED	HM	J. NAGELVOORT	02/16		
UPDATED	EF	J. NAGELVOORT	11/17		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDW-153



CAST IRON VALVE WELL FRAME



CAST IRON RISER RING




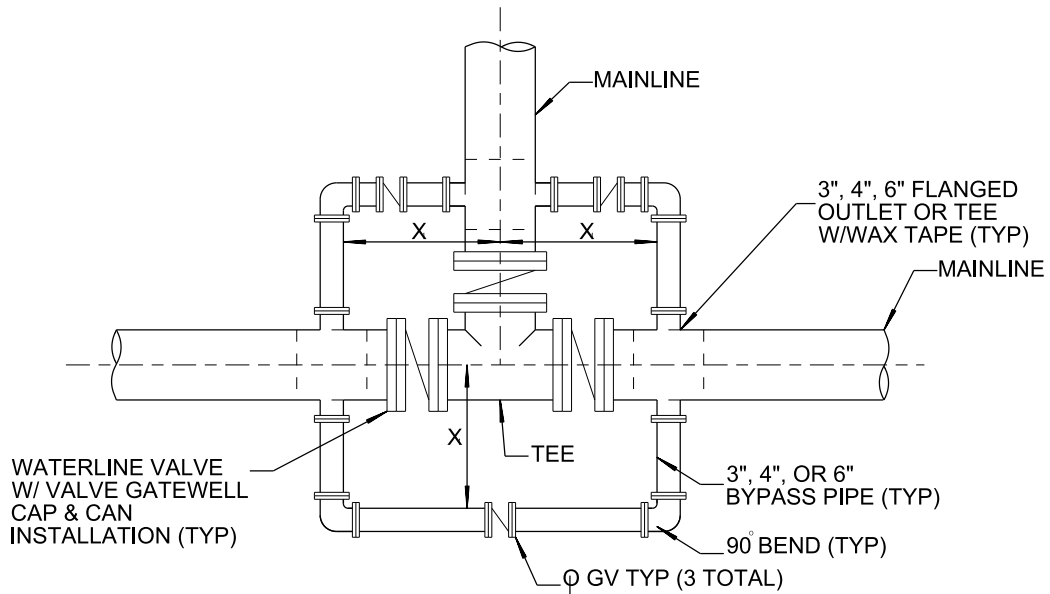
BFV OPERATOR POSITION

NOTES:

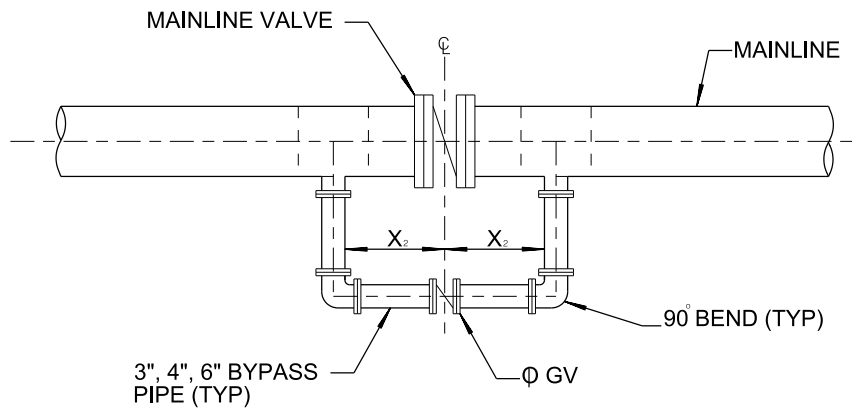
1. VALVES DEEPER THAN 6' REQUIRE A VALVE STEM EXTENSION.
2. EXTENSION STEMS SHALL NOT BE ATTACHED/ BOLTED TO OPERATING NUT.
3. GATE WELL AND CAP SHALL BE SET SO THAT NO MORE THAN TWO 1" ADJUSTMENT RINGS ARE USED.
4. BFV OPERATORS TO BE LOCATED TO THE CURBLINE SIDE OF WATER MAIN.
5. BFV'S INSTALLED AT CROSSES OR TEES REQUIRE A FLANGED DUCTILE IRON SPOOL TO BE INSTALLED BETWEEN THE FITTING AND VALVE IN ACCORDANCE WITH THE SPECIFICATIONS.
6. CAST IRON RISER RING HEIGHT TO MATCH OVERLAY THICKNESS, NO MORE THAN TWO (2) RINGS ARE USED.
7. CONCRETE RING MUST HAVE A DESIGN MIX OF 560-C-3250, AND OBTAIN 3250 PSI BEFORE TRAFFIC USE. **SEE SDG-108** NOTE 5 FOR CONCRETE OPTIONS AND CURING REQUIREMENTS.
8. WHEN USING STEEL CASING GATE WELLS, USE NON-METALLIC SPACERS TO PREVENT CONTACT BETWEEN VALVE AND GATEWELL.

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	KA	J. NAGELVOORT	12/12	GATE WELL CAP & CAN INSTALLATION FOR VALVES 4" AND LARGER	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	KA	J. NAGELVOORT	5/13		
UPDATED	HM	J. NAGELVOORT	02/16		
UPDATED	EF	J. NAGELVOORT	11/17		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDW-153



T-MAINLINE



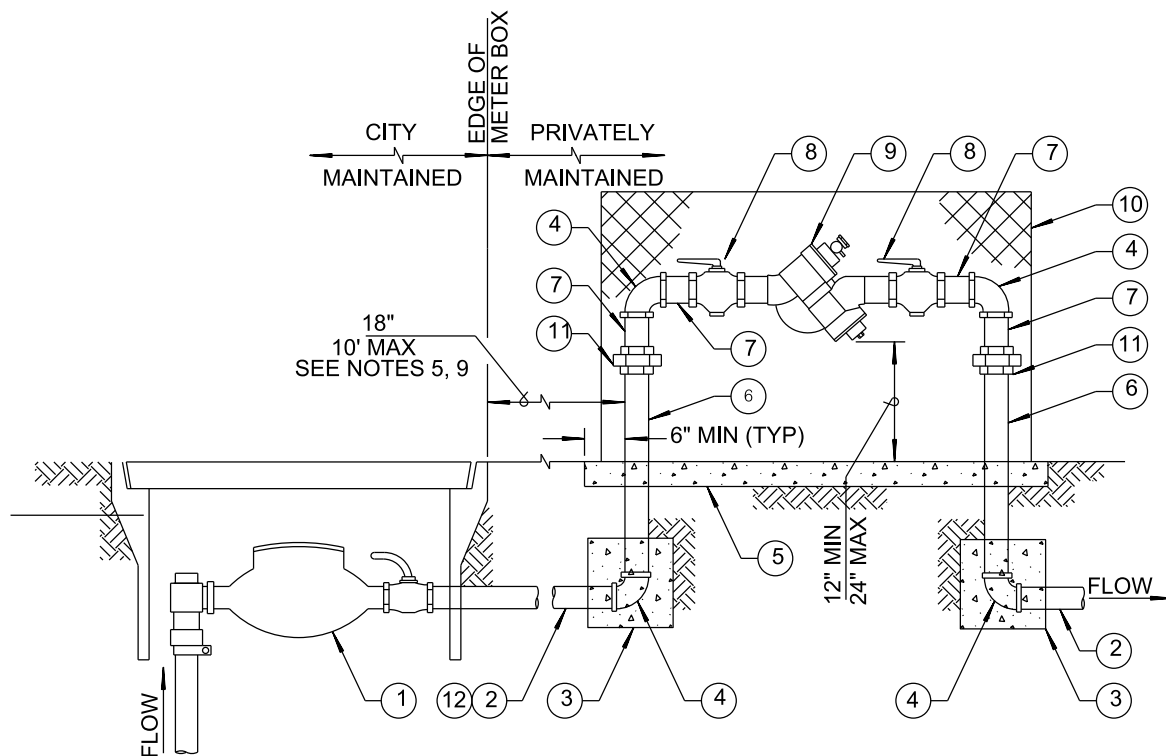
STRAIGHT MAINLINE

NOTES:

1. BYPASS SHALL BE SAME CLASS AS MAINLINE PIPE.
2. THE VALVE SHALL BE THE SAME SIZE AS THE BYPASS PIPE.
3. SEE THE APPROVED WORKING DRAWINGS FOR X AND X₂.

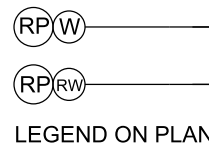
MAIN SIZE	BYPASS SIZE
16" TRANSMISSION	3"
> 16" AND ≤ 36"	4"
> 36"	6"

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		<div><div>9/4/18</div></div> <div>COORDINATOR R.C.E. 56523DATE</div>
UPDATED	KA	J. NAGELVOORT	12/12		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				WATER VALVE BYPASS DETAILS FOR MAINLINES 16" AND LARGER	DRAWING NUMBER
					SDW-154




NOTES:

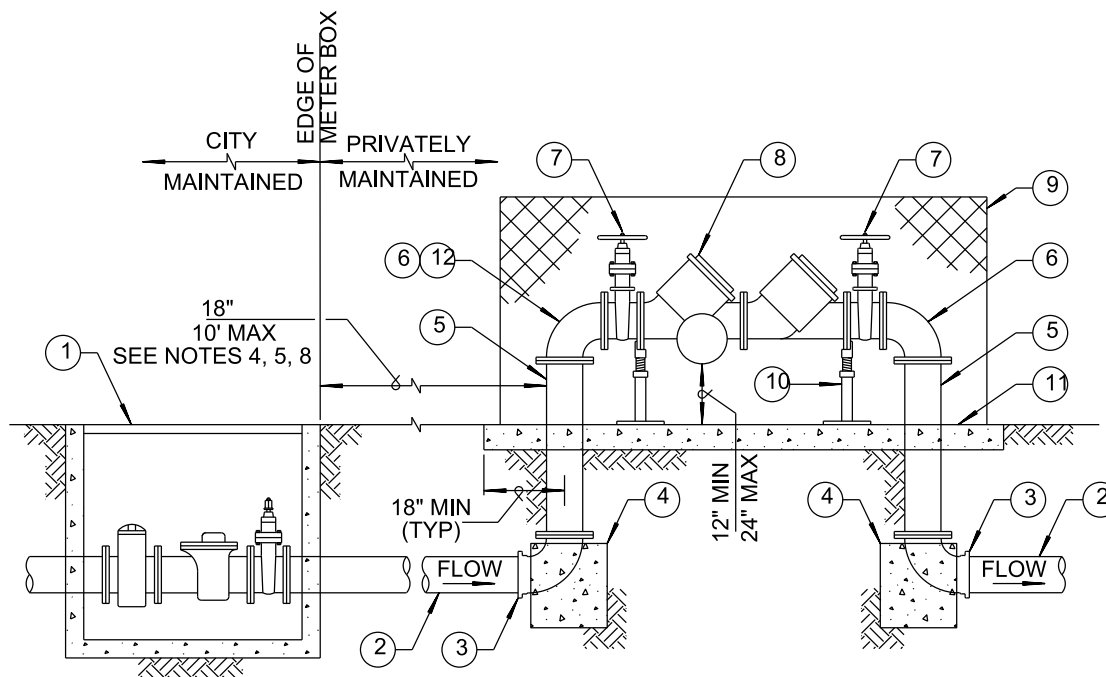
- 1) INSTALL WARNING/ IDENTIFICATION TAPE **PER SDM-105**.
- 2) LOCATE BACKFLOW PREVENTION ASSEMBLY IN SUCH A MANNER THAT WILL ALLOW THE ASSEMBLY TO BE READILY ACCESSIBLE FOR INSPECTION AND REPAIR.
- 3) STRAINERS SHALL NOT BE INSTALLED PRIOR TO THE FIRST SHUT-OFF VALVE.
- 4) ALL ABOVE GROUND PIPING, UNIONS, ELBOWS, & NIPPLES SHALL BE SOLDERED COPPER OR THREADED BRASS.
- 5) INSTALL A CASING ENCASED IN CONCRETE WHEN THE DISTANCE BETWEEN THE METER BOX AND THE RISER TO THE ASSEMBLY EXCEEDS 18", REQUIRES APPROVAL.
- 6) INSTALL A PRESSURE REDUCING VALVE UPSTREAM OF THE FIRST 90 DEGREE ELL WHEN SYSTEM PRESSURE EXCEEDS 150 PSI.
- 7) TESTING SHALL BE CONDUCTED IN ACCORDANCE WITH SPECIFICATIONS PRIOR TO ACCEPTANCE.
- 8) BACKFLOW PREVENTION ASSEMBLY & APPURTENANCES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN SPECIFICATIONS.
- 9) PUBLIC UTILITIES DEPARTMENT, CROSS CONNECTION CONTROL UNIT MUST APPROVE LOCATION. SHOW ON PLANS.
- 10) ALL RISER ELBOWS AND UNDERGROUND PIPING SHALL BE TYPE (L) OR (M) COPPER, OR RED BRASS.



ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	METER BOX & METER ASSEMBLY PER SDW-149 & SDW-150	⑧	BALL VALVE "SHUT-OFF"
②	SCHEDULE 80 PVC, RED BRASS OR COPPER PIPE	⑨	APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY SIZED TO MATCH METER
③	CONCRETE THRUST BLOCK PER SDW-151	⑩	ENCLOSURE SHALL BE INSTALLED LEVEL AND PLUMB. ENCLOSURE IS REQUIRED.
④	90 DEGREE BRASS ELL SEE NOTES 4 & 6	⑪	UNIONS SEE NOTE 4
⑤	CONCRETE SLAB, MINIMUM 4" THICK x 18" WIDE	⑫	PRESSURE REDUCING VALVE SEE NOTES 4 & 6
⑥	BRASS OR COPPER PIPE SEE NOTE 4		
⑦	3" LONG NIPPLE SEE NOTE 4		

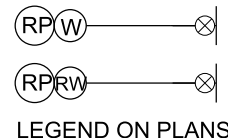
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  9/4/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	KA	J. NAGELVOORT	12/12		
UPDATED	FG	J. NAGELVOORT	08/15		
UPDATED	FG	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		

BACKFLOW PREVENTER FOR 3/4" TO 2" METERED SERVICE		DRAWING	SDW-155
		NUMBER	




NOTES:

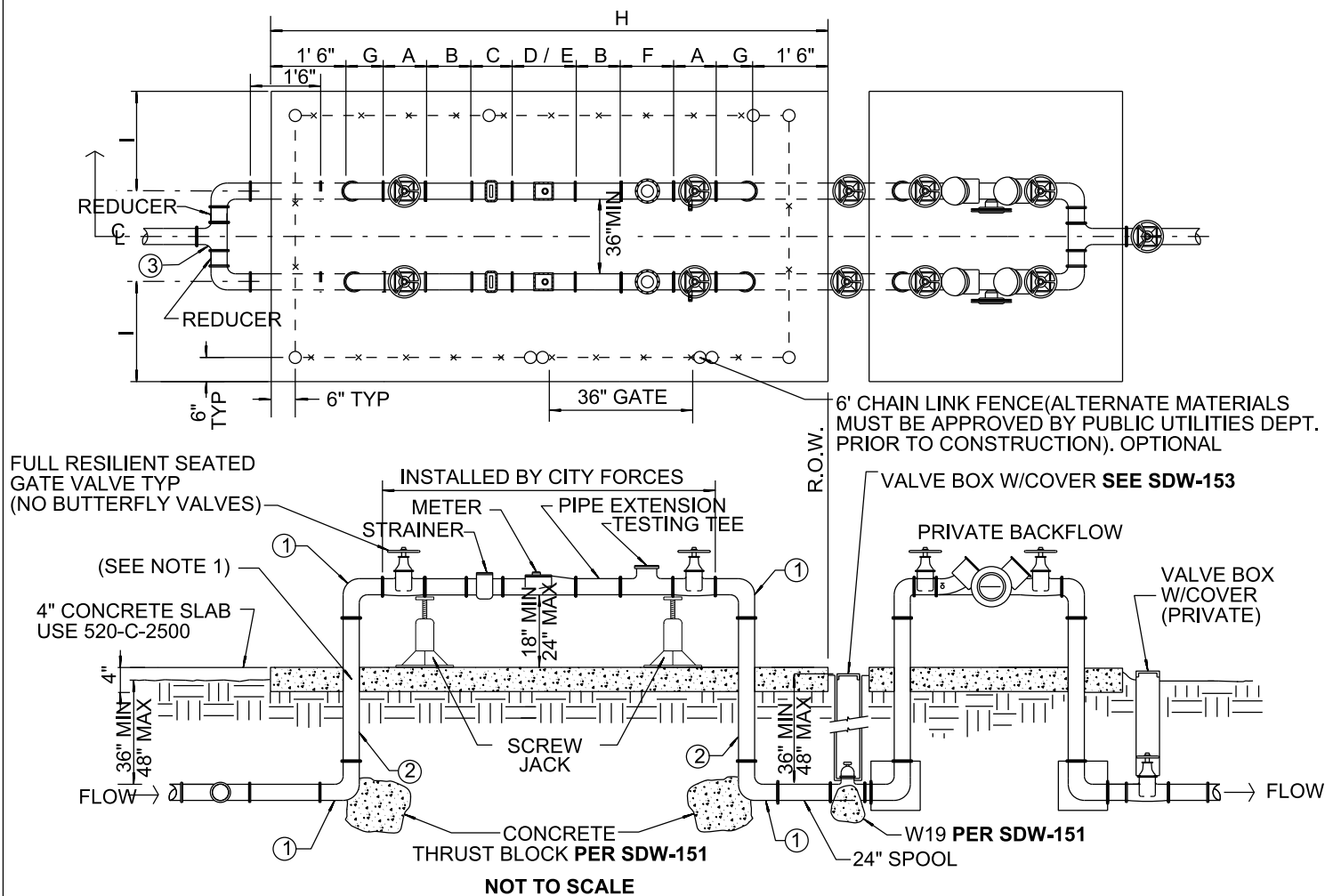
- 1) INSTALL WARNING/ IDENTIFICATION TAPE **PER SDM-105**.
- 2) LOCATE BACKFLOW PREVENTION ASSEMBLY IN SUCH A MANNER THAT WILL ALLOW THE ASSEMBLY TO BE READILY ACCESSIBLE FOR INSPECTION AND REPAIR
- 3) STRAINERS SHALL NOT BE INSTALLED PRIOR TO THE FIRST SHUT-OFF VALVE
- 4) INSTALL A CASING ENCASED IN CONCRETE WHEN THE DISTANCE BETWEEN THE METER BOX AND THE RISER TO THE ASSEMBLY EXCEEDS 18", REQUIRES APPROVAL.
- 5) INSTALL A PRESSURE REDUCING VALVE UPSTREAM OF THE BACKFLOW ASSEMBLY WHEN SYSTEM PRESSURE EXCEEDS 150 PSI.
- 6) TESTING SHALL BE CONDUCTED IN ACCORDANCE WITH SPECIFICATIONS PRIOR TO ACCEPTANCE
- 7) BACKFLOW PREVENTION ASSEMBLY & APPURTENANCES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN SPECIFICATIONS
- 8) PUBLIC UTILITIES DEPARTMENT CROSS CONNECTION CONTROL UNIT MUST APPROVE LOCATION AS SHOWN ON PLANS.



ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	METER VAULT & METER ASSEMBLY PER WS-04	⑧	APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY SIZED TO MATCH METER
②	MINIMAL SCHEDULE 80 PVC OR DUCTILE IRON PIPE	⑨	ENCLOSURE SHALL BE INSTALLED LEVEL AND PLUMB. ENCLOSURE IS REQUIRED.
③	FLG x FLG OR MJ/PO x FLG 90 DEGREE BEND	⑩	ADJUSTABLE VALVE SUPPORT
④	CONCRETE THRUST BLOCK PER SDW-151	⑪	CONCRETE SLAB, MINIMUM 4" THICK x 36" WIDE
⑤	FLANGED DUCTILE IRON PIPE	⑫	FLANGED ANGLE PRESSURE REDUCING VALVE SEE NOTE 5
⑥	FLANGED 90 DEGREE BEND, SEE NOTE 5		
⑦	FLANGED RESILIENT WEDGE GATE VALVE		

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	FG	J. NAGELVOORT	08/15	BACKFLOW PREVENTER FOR 3" AND LARGER METERED SERVICE	 9/4/18 COORDINATOR R.C.E. 56523 DATE
UPDATED	FG	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18		

DRAWING NUMBER	SDW-156
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NOTES:

1. ALL BURIED DUCTILE IRON PIPE, FITTINGS, VALVES AND APPURTENANCES SHALL BE COATED WITH A DIELECTRIC COATING. A LIQUID EPOXY COATING SYSTEM PER AWWA C-210 AT 24 MILS MINIMUM DRY FILM THICKNESS (MDFT), OR A COLD APPLIED THREE-PART SYSTEM PETROLEUM WAX TAPE PER AWWA C-217, OR A 100% POLYURETHANE COATING OF 24 MILS (MDFT) SUITABLE.
2. ANY CHANGES SHALL HAVE PUBLIC UTILITIES DEPARTMENT APPROVAL.
3. PIPING SHALL BE SYMMETRICAL TO SLAB CENTERLINE.
4. SUPPLY PIPE IS ONE COMMERCIAL SIZE LARGER THAN PROPOSED METER.
5. CONCRETE SLAB AND FENCE SHALL BE INSTALLED BY CONTRACTOR.
6. CONTACT CORROSION CONTROL SECTION FOR CORROSION REQUIREMENTS.
7. ALL METAL IN CONTACT WITH CONCRETE SHALL BE POLYETHYLENE WRAPPED USING 2" WIDE PLASTIC BACKED ADHESIVE TAPE 8 MILS THICK WITH 1/2" OVERLAP.
8. BACKFLOW SHALL BE INSTALLED IMMEDIATELY DOWNSTREAM FROM METER UNLESS APPROVED BY THE CITY CROSS-CONNECTION SPECIALIST.
9. BACKFLOW PREVENTERS SHALL BE REDUCED PRESSURE PRINCIPLE (RP) ASSEMBLY. (INSTALLED ABOVE GRADE AS CLOSE TO METER AS POSSIBLE) BACKFLOW LOCATION MUST BE APPROVED BY THE CROSS-CONNECTION CONTROL SECTION OF THE PUBLIC UTILITIES DEPT.

ITEMS CALL OUT:

- ① 90° FLANGED DUCTILE IRON ELBOW (TYP).
- ② FLANGED DUCTILE IRON SPOOL, BOTH ENDS SHALL BE FLANGED (UNI-FLANGE SHALL NOT BE USED).
- ③ DIAMETER OF TEE SHALL BE EQUAL TO THE DIAMETER OF THE SUPPLY PIPE.

SHEET 1 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	12/12		
REDRAFTED	CD	J. NAGELVOORT	0918	DUAL ABOVE GROUND METER WITH PRIVATE BACKFLOW	 9/4/18 COORDINATOR R.C.E. 56523 DATE
					DRAWING NUMBER SDW-157


LTR. CODE	METER SIZE		3"	4"	6"	8"	10"
	PART DESCRIPTION						
A	GATE VALVE		8"	9"	10 1/2"	11 1/2"	1'-1"
B	PIPE EXTENSION		1'-0"	1'-0"	1'-0"	1'-0"	1'-0"
C	STRAINER *		7"	9"	9"	10"	1'-0"
D	TURBINE WATER METER *		1-0"	1-2"	1'-6"	1'-9"	2'-2"
E	COMPOUND METER *		1'-5"	2'-0"	2'-5"	3'-1"	4'-7"
F	TESTING TEE		11"	1'-1"	1'-4"	1'-6"	1'-10"
G	90 DEG. ELBOW (SHORT)		5 1/ 2"	6 1/ 2"	8"	9"	11"
H	OVERALL SLAB LENGTH *						
I	SLAB TO C/ L PIPE		3'-0"	3'-0"	3'-0"	3'-0"	3'-0"

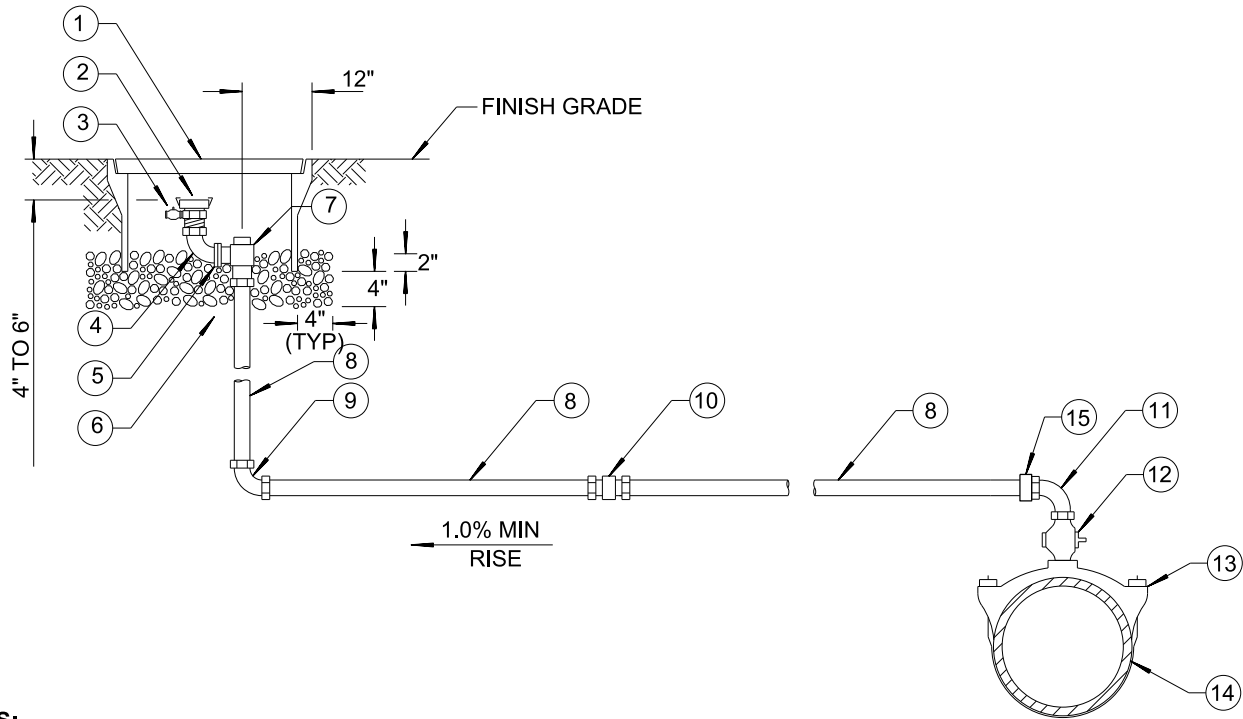
* NOTES:

INDIVIDUAL DIMENSIONS MAY VARY PER MANUFACTURER OVERALL DIMENSIONS
INCREASE WITH USE OF THESE COMPONENTS

DIMENSION CHART FOR METER ASSEMBLIES

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	12/ 12		
REDRAFTED	CD	J. NAGELVOORT	09/18	DUAL ABOVE GROUND METER WITH PRIVATE BACKFLOW	 9/4/18 COORDINATOR R.C.E. 56523 DATE
					DRAWING NUMBER SDW-157



NOTES:

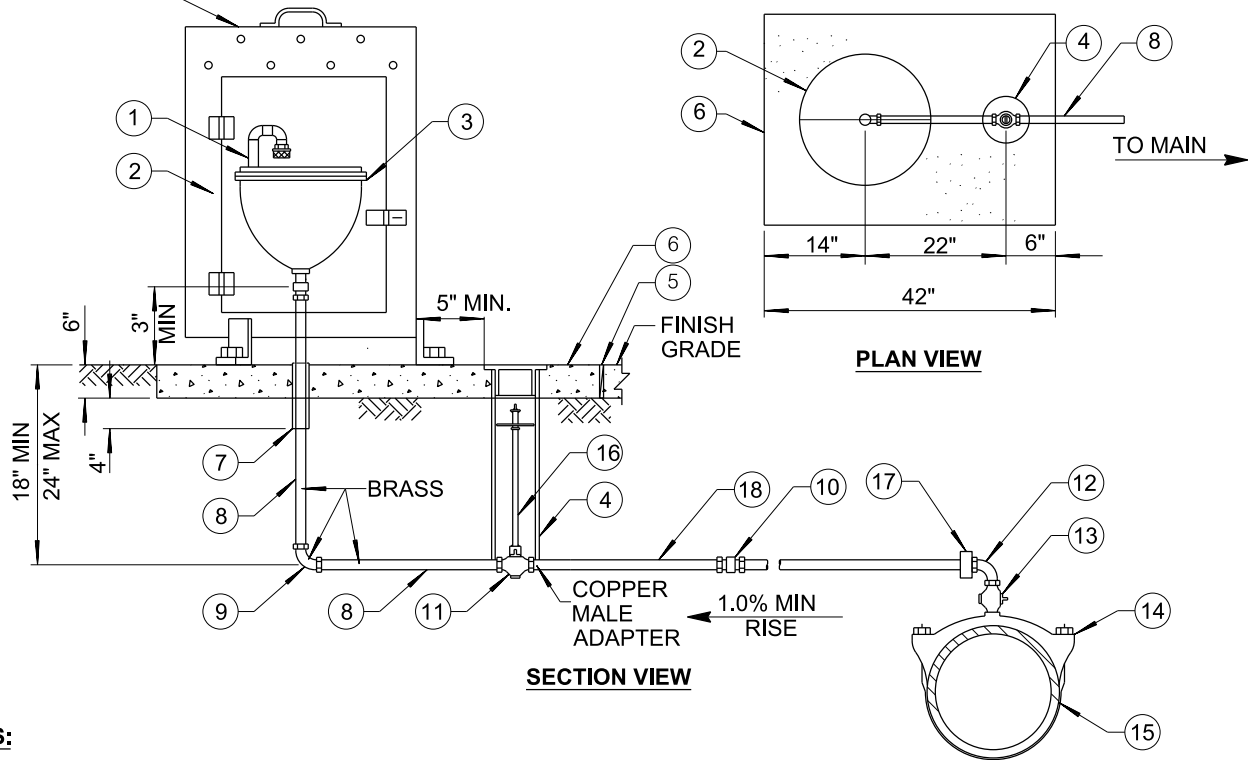
1. SET TOP OF METER BOX FLUSH WITH SIDEWALK, CURB OR FINISH GRADE.
2. LOCATE METER BOX **PER WS-03**.
3. INSTALL WARNING/IDENTIFICATION TAPE **PER SDM-105**.
4. MANUAL AIR VALVE INSTALLATION AT END OF MAIN TO BE SADDLED 24" FROM END CAP.
5. MANUAL AIR VALVE ASSEMBLIES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN SPECIFICATIONS.
6. ON STEEL MAINS USE WELD ON COUPLINGS, ON DUCTILE IRON MAINS USE DUCTILE IRON SERVICE SADDLES.
7. CAM & GROOVE ADAPTER SHALL BE DRILLED AND TAPPED AS REQUIRED FOR THE PRESSURE RELEASE PET COCK.
8. FOR STEEL AND DI MAINS, INSTALL DIELECTRIC UNION AFTER CORPORATION STOP.
9. INSTALL WAX TAPE FROM MAIN TO 3" PAST DIELECTRIC UNION, INCLUDING SADDLE.

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 2	⑨	2" 90° BRONZE COMPRESSION ELL
②	2" CAM & GROOVE ADAPTER x MIPT WITH LOCKING DUST CAP, SEE NOTE 7	⑩	2" BRONZE COMPRESSION COUPLING COPPER TO COPPER (IF REQUIRED)
③	1/4" PRESSURE PET COCK	⑪	2" 90° BRONZE FIPT x COMP ELL
④	2" 90° BRONZE MIPT x FIPT ELL	⑫	2" BRONZE MIPT x MIPT CORPORATION STOP
⑤	2" OVAL METER FLANGE FLG x FIPT, WITH GASKET	⑬	SIZE x 2" SERVICE SADDLE
⑥	3/ 8" ROCK 4" TO 6" DEEP	⑭	WATER MAIN
⑦	2" BRONZE COMP x FLG ANGLE METER STOP WITH LOCK WING	⑮	2" COPPER DIELECTRIC UNION. REQUIRED FOR STEEL AND DI MAINS.
⑧	2" x REQUIRED LENGTH COPPER PIPE TYPE "K" RIGID OR SOFT		

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE <i>Chung</i> 9/4/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	AR	J. NAGELVOORT	10/15		
UPDATED	HM	J. NAGELVOORT	02/16		
UPDATED	EF	J. NAGELVOORT	11/17		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				2" MANUAL AIR VALVE	DRAWING NUMBER SDW-158

INSTALL ENCLOSURE
TO SDW-117




NOTES:

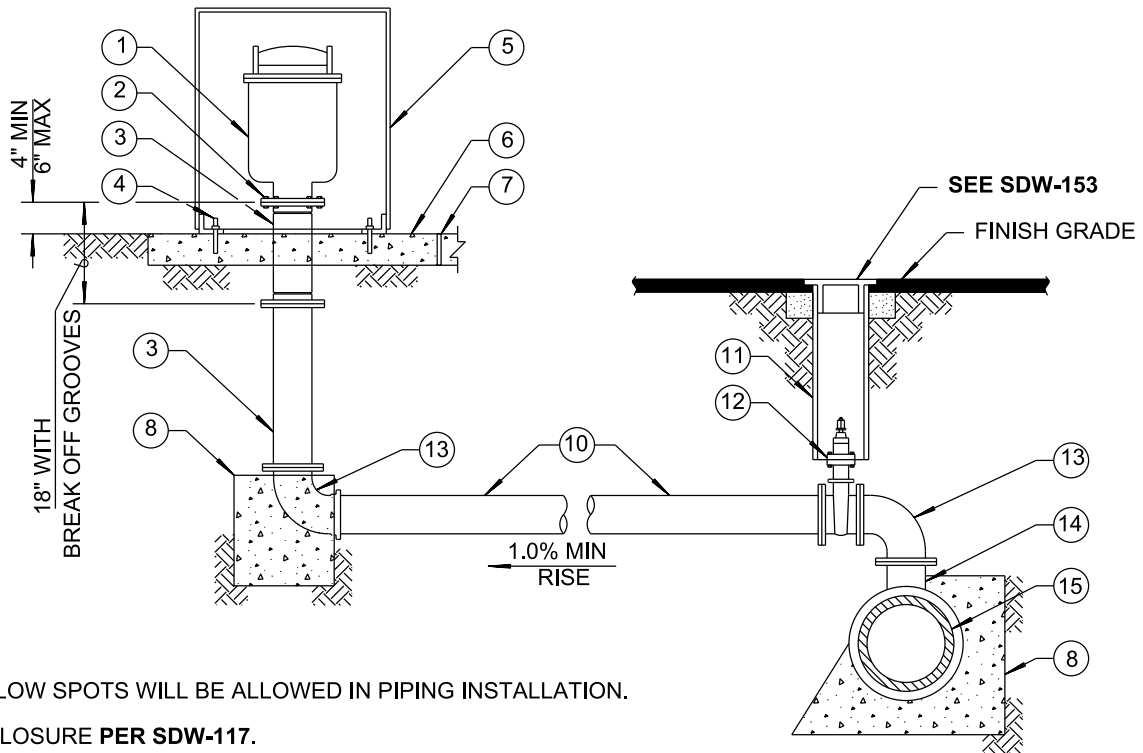
1. NO DIPS OR LOW SPOTS WILL BE ALLOWED IN INSTALLATION.
2. INSTALL ENCLOSURE PER **SDW-117**.
3. INSTALL WARNING/ IDENTIFICATION TAPE PER **SDM-105**.
4. AIR & VACUUM VALVE INSTALLED FOR THE USE OF POTABLE/ RECYCLED WATER SHALL BE SHOWN ON THE PLANS.
5. ON STEEL MAINS USE WELD ON COUPLINGS, ON DUCTILE IRON MAINS USE DUCTILE IRON SERVICE SADDLES.
6. FOR STEEL AND DI MAINS, INSTALL DIELECTRIC UNION AFTER CORPORATION STOP.
7. INSTALL WAX TAPE FROM MAIN TO 3" PAST DIELECTRIC UNION, INCLUDING SADDLE.

1" OR 2"
LEGEND ON PLANS

ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	1" OR 2" PVC SCH 80 CLOSE NIPPLE & 2-SCH 80 STREET ELLS & INSECT SCREEN.	⑩	1" OR 2" BRONZE COMPRESSION COUPLING COPPER TO COPPER (IF REQUIRED).
②	APPROVED VALVE ENCLOSURE PER SDW-117 .	⑪	1" OR 2" COMP BALL VALVE THREADED ON BOTH SIDES.
③	1" OR 2" AUTOMATIC COMBINATION AIR RELEASE & AIR/ VACUUM VALVE.	⑫	1" OR 2" 90 DEGREE BRONZE FIPT X COMP ELL.
④	8", OD STEEL GATE CASING WELL WITH CAP PER SDW-153 .	⑬	1" OR 2" BRONZE MIPT X MIPT CORPORATION STOP.
⑤	COLD JOINT STRIP.	⑭	SIZE X 1" OR 2" SERVICE SADDLE.
⑥	3'-6" X 3'-6" X 6" THICK CONCRETE SLAB. CONCRETE SHALL BE 520-C-2500.	⑮	WATER MAIN.
⑦	1" OR 2" X 1/2" BLACK FOAM SLEEVE.	⑯	VALVE STEM EXTENSION.
⑧	BRASS TUBING.	⑰	1" OR 2" COPPER DIELECTRIC UNION. REQUIRED FOR STEEL OR DI MAINS.
⑨	90 DEGREE BRASS ELL (NO SWEAT, NO GLUED JOINTS ALLOWED).	⑱	COPPER TUBING.

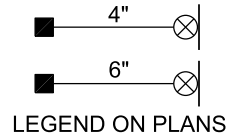
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  8/23/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL	KA	J. NAGELVOORT	01/12		
UPDATED	BB	J. NAGELVOORT	09/14		
UPDATED	AR	J. NAGELVOORT	11/15		
UPDATED	HM	J. NAGELVOORT	02/16		
UPDATED	TP	J. NAGELVOORT	08/18		

1" OR 2" AUTOMATIC COMBINATION AIR RELEASE & AIR/ VACUUM VALVE INSTALLATIONS				DRAWING NUMBER SDW-159
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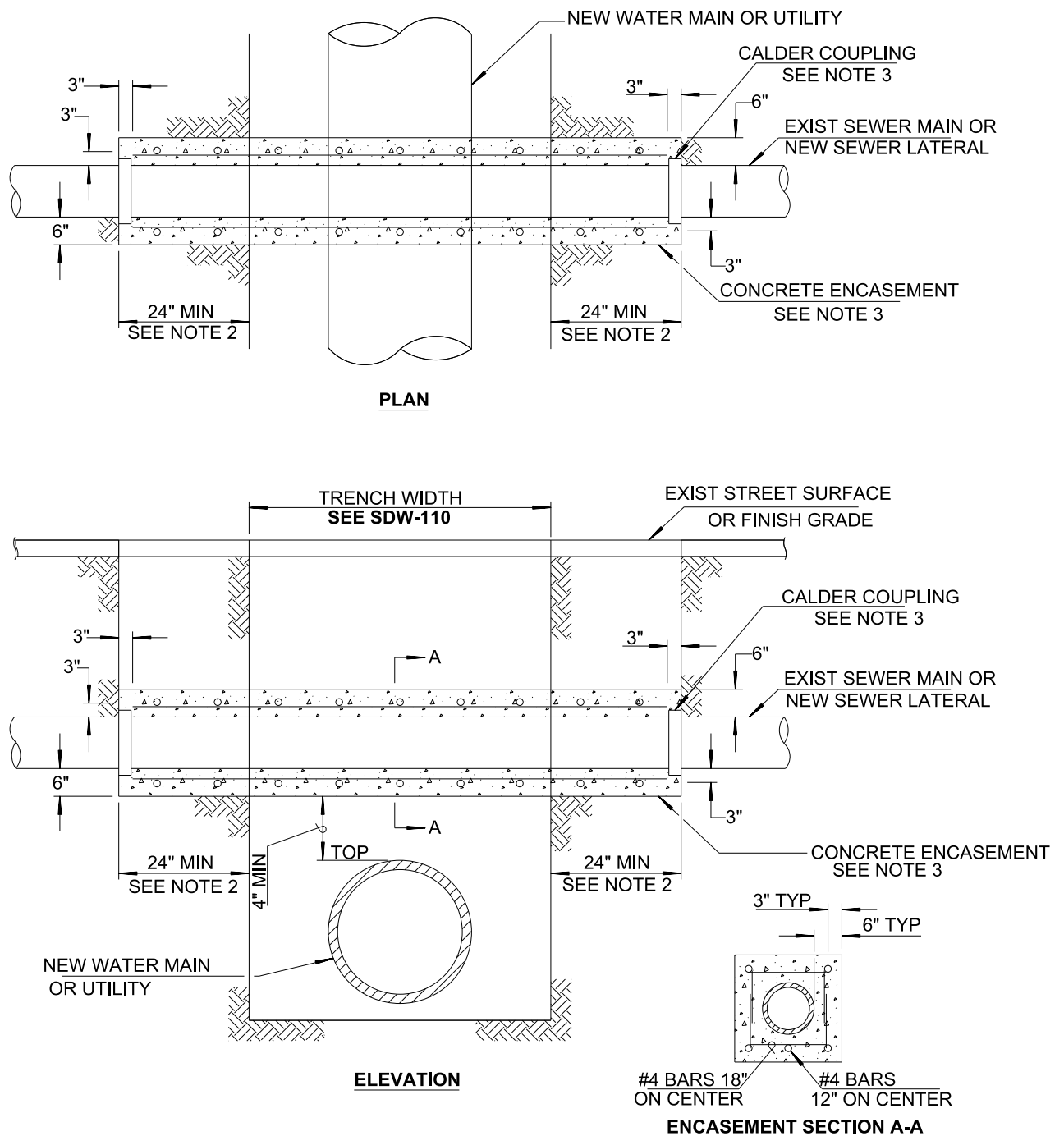
NOTES:

1. NO DIPS OR LOW SPOTS WILL BE ALLOWED IN PIPING INSTALLATION.
2. LOCATE ENCLOSURE **PER SDW-117**.
3. INSTALL WARNING/IDENTIFICATION TAPE **PER SDM-105**.
4. BREAK-AWAY BOLTS SHALL BE 5/8" x 3" WITH 3/8" HOLE DRILLED IN THE SHAFT OF THE BOLT. INSTALL WITH HEX HEAD ON TOP OF THE FLANGE.
5. AIR & VACUUM VALVES INSTALLED FOR THE USE OF POTABLE/ RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN PLANS.
6. FOR STEEL AND DI MAINS, AIR RELEASE PIPE MATERIAL AND COATINGS SHALL BE OF THE SAME MATERIAL AS THE MAIN LINE.
7. BOND JOINTS **PER SDW-122**.
8. FOR PVC MAINS, DI PIPE SHALL BE COATED PER SPECIFICATIONS.



ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	4" OR 6" AUTOMATIC COMBINATION AIR RELEASE & AIR/VACUUM VALVE ASSEMBLY	⑨	4" OR 6" FLG x MJ/PO 90 BEND
②	BREAK-AWAY BOLTS, SEE NOTE 4	⑩	4" OR 6" C-900 PVC PIPE
③	4" OR 6" FLANGED 8-BOLT DUCTILE IRON PIPE x REQ'D LENGTH (MAX OF 2 SPOOLS)	⑪	GATE WELL WITH CAP PER SDW-153
④	5/8" x 3" STAINLESS STEEL DROP-IN ANCHORS (3 EA @ 120 APART)	⑫	4" OR 6" FLG x MJ / FLG RWGV
⑤	VALVE ENCLOSURE	⑬	4" OR 6" FLANGE 90 BEND
⑥	42" x 42" x 6" THICK CONCRETE SLAB	⑭	SIZE x 4" OR 6" MJ / FLG x FLG TEE
⑦	COLD JOINT STRIP	⑮	WATER MAIN
⑧	CONCRETE THRUST/ANCHOR BLOCK		

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	KA	J. NAGELVOORT	12/12	4" & 6" AUTOMATIC COMBINATION AIR RELEASE & AIR/VACUUM VALVE INSTALLATIONS	 COORDINATOR R.C.E. 56523 9/4/18 DATE
UPDATED	AR	J. NAGELVOORT	11/15		
UPDATED	HM	J. NAGELVOORT	02/16		
UPDATED	EF	J. NAGELVOORT	11/17		
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDW-160

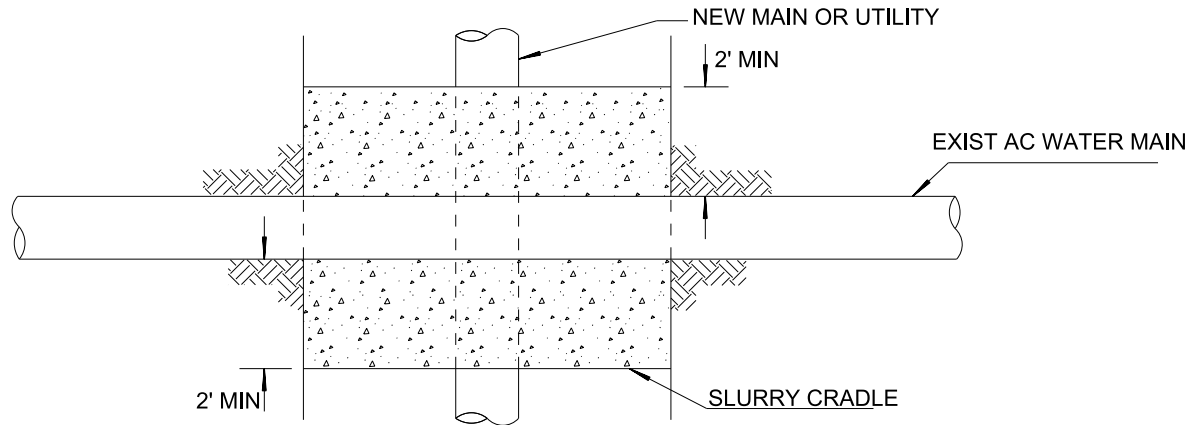


NOTES:

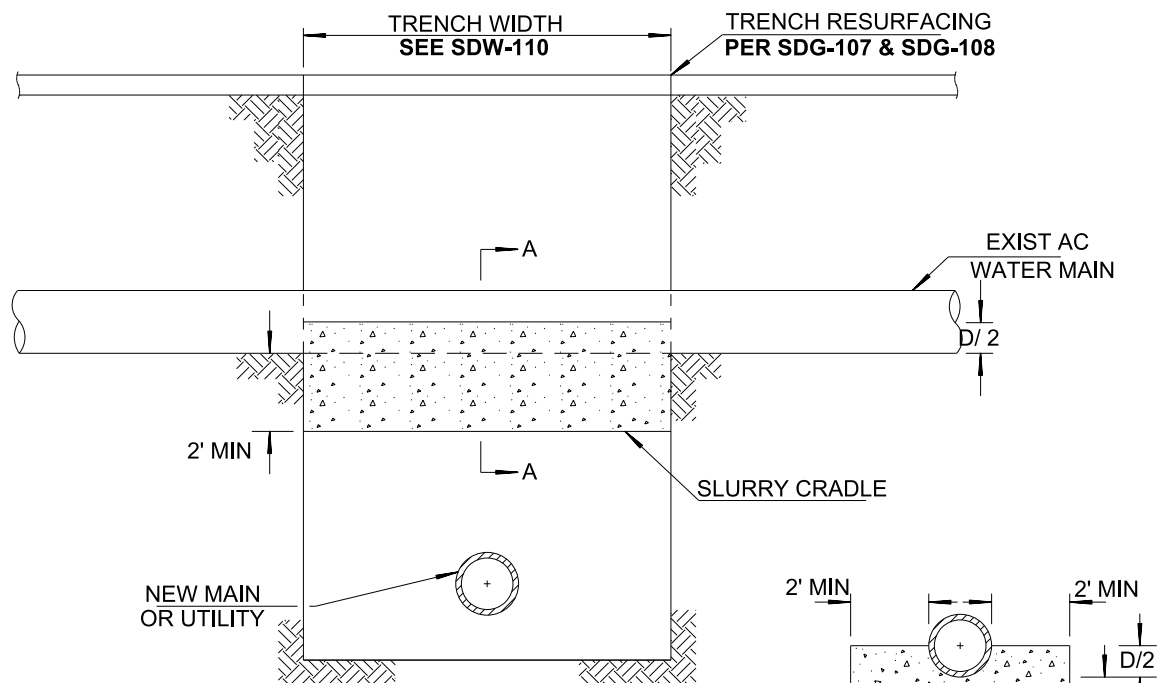
- 1) REFER TO SPECIFICATIONS FOR PROTECTION OF EXISTING FACILITIES
- 2) ENCASEMENT SHALL EXTEND TO FIRST JOINT BEYOND BOTH SIDES OF TRENCH [24" MIN 48" MAX OF SUITABLE NATIVE SUPPORT BEYOND EDGE OF TRENCH].
- 3) CONCRETE ENCASEMENT REQUIRED FOR SEWER MAINS ONLY. CALDER COUPLINGS REQUIRED FOR SEWER LATERALS ONLY. SEWER LATERALS TO BE REPLACED WITH SCH. 80 PVC WITH NO INTERMEDIATE JOINTS.
- 4) FOR PIPE BEDDING AND TRENCH BACKFILL, SEE OTHER STANDARD DRAWINGS.

LEGEND ON PLANS

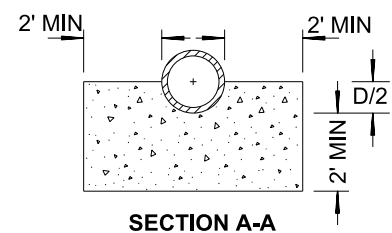
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	AR	J. NAGELVOORT	02/16	PIPE SUPPORT FOR UNDERCUT SEWER MAINS OR SEWER LATERALS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		
				DRAWING NUMBER	SDW-161



PLAN



ELEVATION

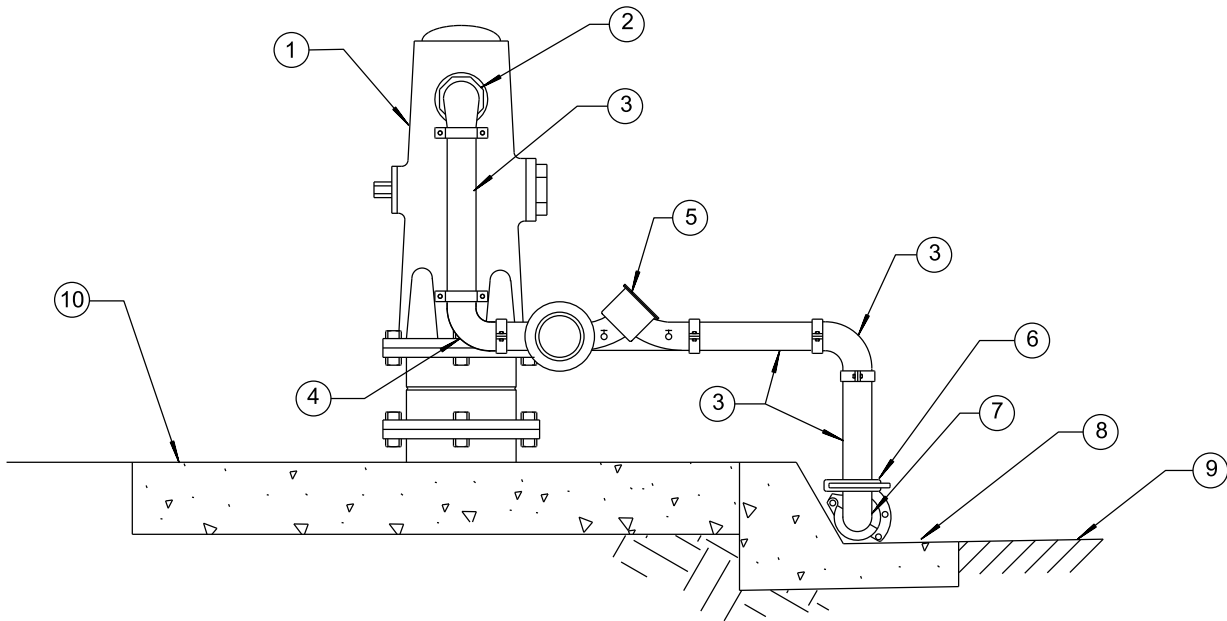


SECTION A-A


NOTES:

- 1) SLURRY SHALL BE CONTROLLED LOW STRENGTH MATERIAL CLSM (100-E-100)
- 2) SLURRY SHALL BE PLACED ON FIRMLY COMPACTED BACKFILL

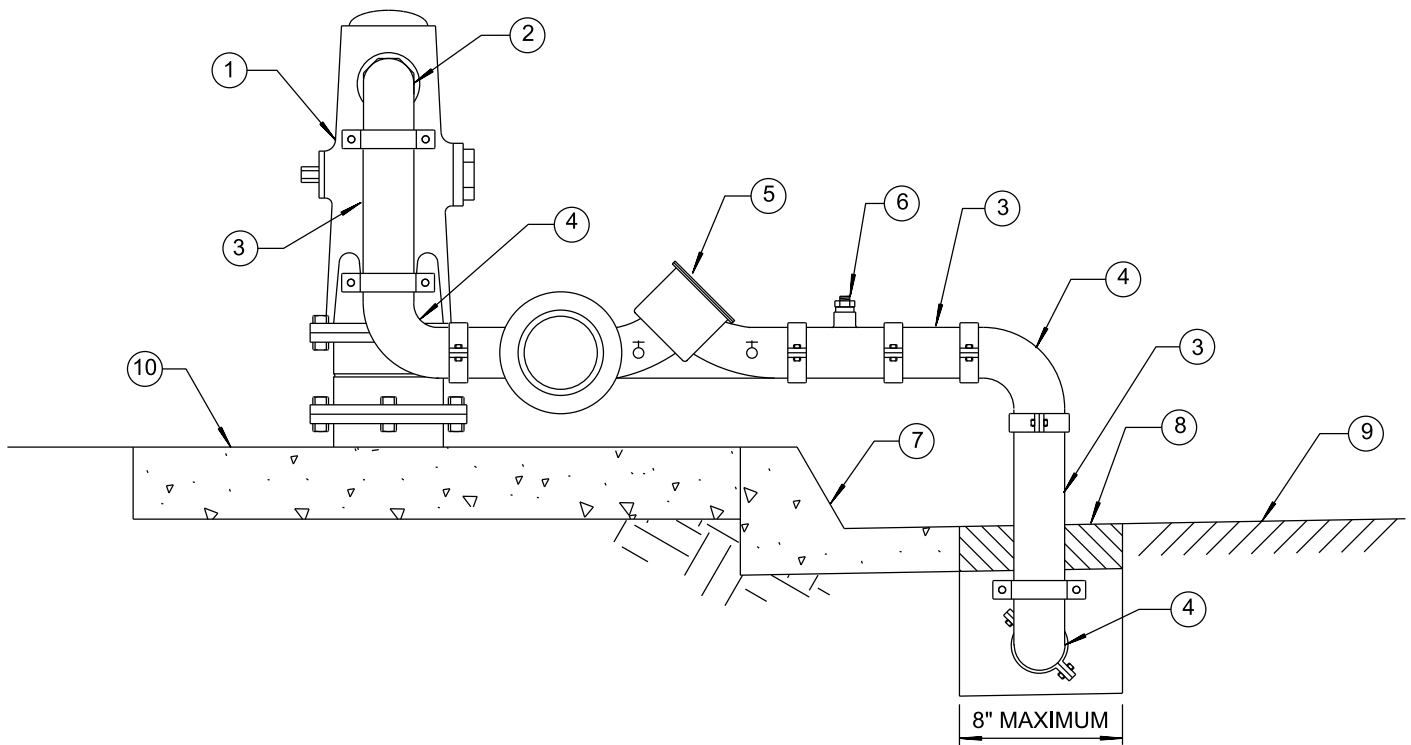
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	PIPE SUPPORT FOR UNDERCUT AC WATER MAIN	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDW-162




ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	EXISTING 2-PORT FIRE HYDRANT	⑦	2" TEE/90° ELBOW W/ SNAP-JOINT COUPLING(S) (2-GROOVE) W/ DIRECTIONAL SHUT OFF VALVE(S) (NOT SHOWN)
②	2 1/2" PORT TO 2" ADAPTER ELBOW W/ THREADED FITTING	⑧	EXISTING CURB & GUTTER
③	2" PIPE (GROOVED)	⑨	EXISTING ROADWAY
④	2" 90° ELBOW W/ THREADED JOINT FITTINGS	⑩	EXISTING CONCRETE PAD/SIDEWALK
⑤	2" BACKFLOW PREVENTER (ONE WAY CHECK VALVE) W/ THREADED JOINT FITTINGS		
⑥	SNAP-JOINT COUPLING (2-GROOVE)		

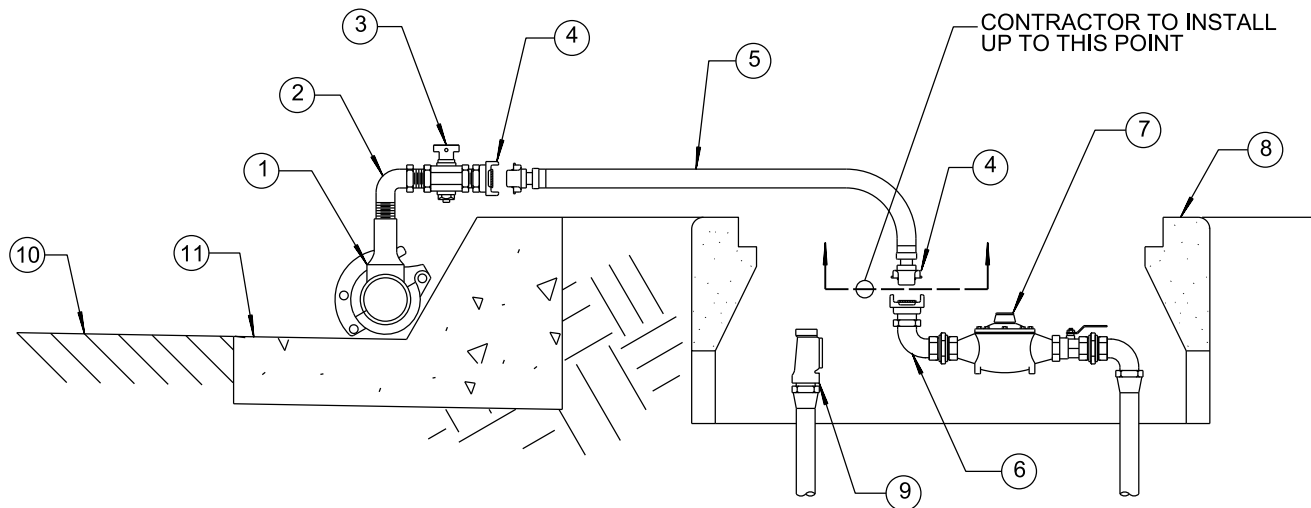
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
UPDATED	KA	J. NAGELVOORT	12/12	2" FIRE HYDRANT HIGHLINING CONNECTION	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		

DRAWING NUMBER	SDW-170
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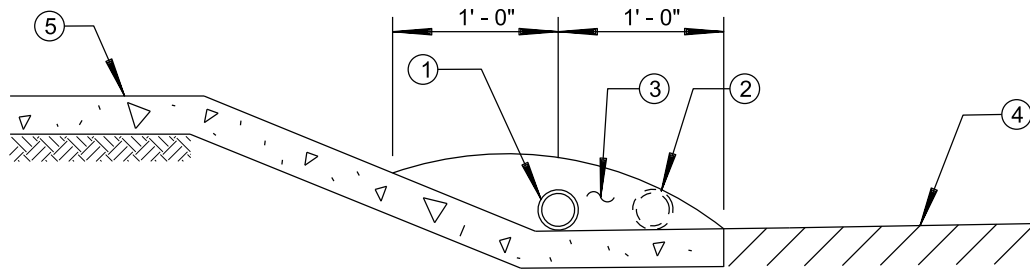
ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	EXISTING 3-PORT FIRE HYDRANT	⑥	4" SHUTOFF VALVE W/ THREADED JOINT FITTINGS
②	PORT ADAPTER ELBOW W/ THREADED JOINT FITTING	⑦	EXISTING CURB & GUTTER
③	PIPE (GROOVED)	⑧	SAW CUT ROADWAY, TRENCH, BACKFILL AND TEMPORARY ASPHALT SURFACE
④	90° ELBOW W/ THREADED JOINT FITTINGS	⑨	EXISTING ROADWAY
⑤	4" BACKFLOW PREVENTER W/ THREADED JOINT FITTINGS	⑩	EXISTING CONCRETE PAD/SIDEWALK

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	4" FIRE HYDRANT HIGHLINING CONNECTION	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDW-171

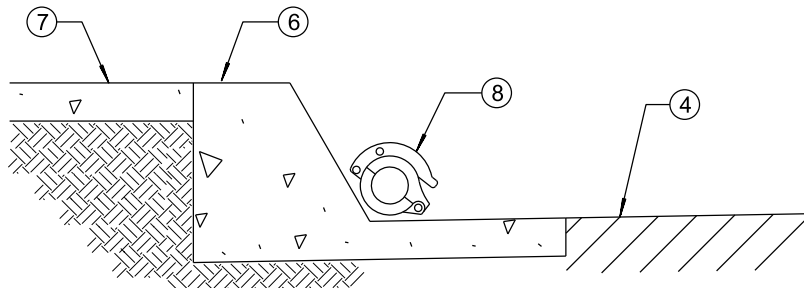


ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	GROOVED 2"x2"x1" TEE W/ SNAP-JOINT COUPLING (2-GROOVE)	⑥	1" 90° ELBOW TO METER THREADS (ADAPTERS MAY BE REQUIRED)
②	1" 90° ELBOW W/ THREADED JOINT FITTINGS	⑦	EXISTING WATER METER
③	1" SHUTOFF VALVE W/ THREADED JOINT FITTINGS	⑧	EXISTING WATER METER BOX
④	1" PIPE TO HOSE ADAPTER	⑨	EXISTING SERVICE CONNECTION FROM WATER MAIN
⑤	1" CONNECTION HOSE	⑩	EXISTING ROADWAY
		⑪	EXISTING CURB & GUTTER

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
REDRAFTED	CD	J. NAGELVOORT	09/18	RESIDENTIAL USER HIGHLINING CONNECTION	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDW-172



DRIVEWAY HIGHLINING CROSSING




CURB AND GUTTER HIGHLINING RUN

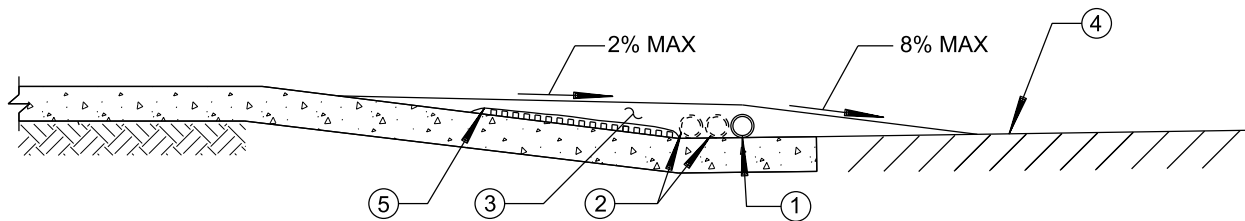
NOTES:

1. THE SLOPE OF THE TEMPORARY ASPHALT OVER DRIVEWAYS SHALL BE FIRM, STABLE, SMOOTH AND SLOPED TO HAVE A GRADUAL TRANSITION TO THE STREET. THE RUNNING SLOPE SHALL NOT EXCEED 8.33%. THE CROSS SLOPE SHALL MATCH THE EXISTING GUTTER SLOPE.
2. THE MINIMUM ASPHALT COVER ON HIGHLINE PIPE SHALL BE 1 INCH.
3. SIDEWALK CROSSING MAY BE ROUTED ABOVE GROUND AND COVERED WITH ADA COMPLIANT CABLE COVER AND RAMP.

ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	HIGHLINE PIPING	⑤	EXISTING DRIVEWAY
②	DRAIN PIPING	⑥	EXISTING CURB & GUTTER
③	TEMPORARY ASPHALT (COLD MIX)	⑦	EXISTING SIDEWALK
④	EXISTING ROADWAY	⑧	HIGHLINE PIPING AND SNAP COUPLING (2 GROOVE)

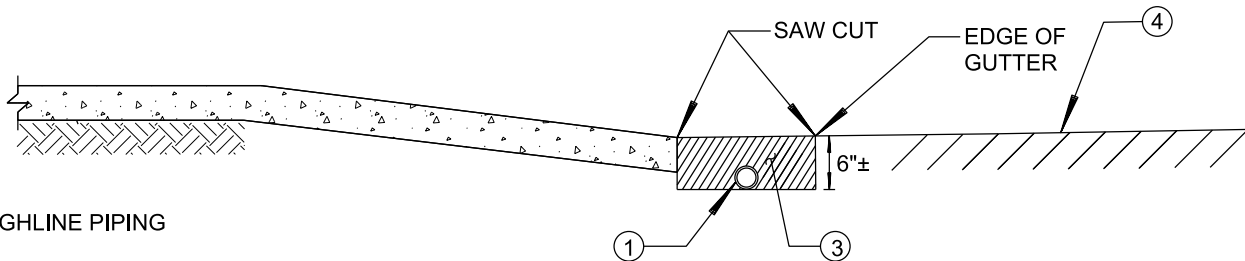
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	KA	J. NAGELVOORT	01/12		
UPDATED	JB	J. NAGELVOORT	02/16	HIGHLINING CROSSING & RUN AT DRIVEWAYS AND CURBS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
REDRAFTED	CD	J. NAGELVOORT	09/18		

DRAWING NUMBER	SDW-173
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**CURB RAMP HIGHLINING CROSSING
EXISTING RAMP TO REMAIN**

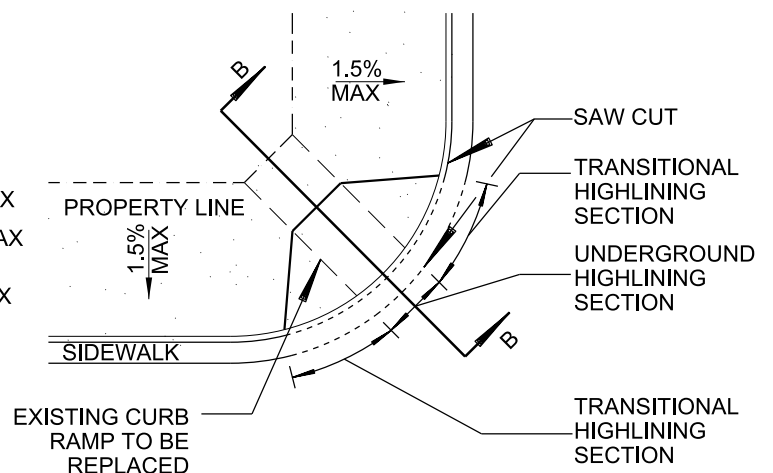
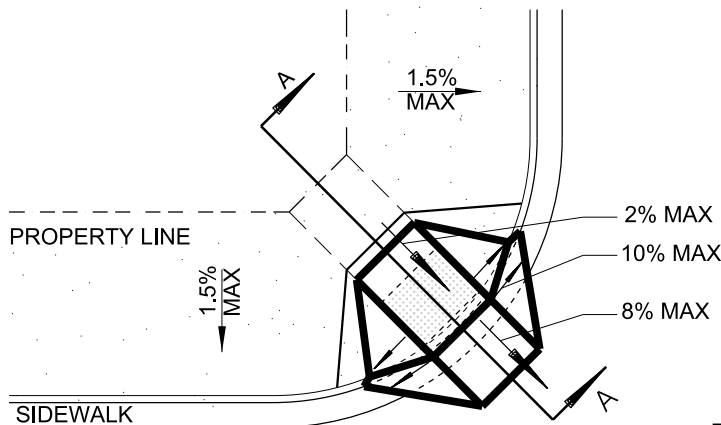
SECTION A-A



**CURB RAMP UNDERGROUND HIGHLINING CROSSING
EXISTING RAMP TO BE REPLACED**

SECTION B-B

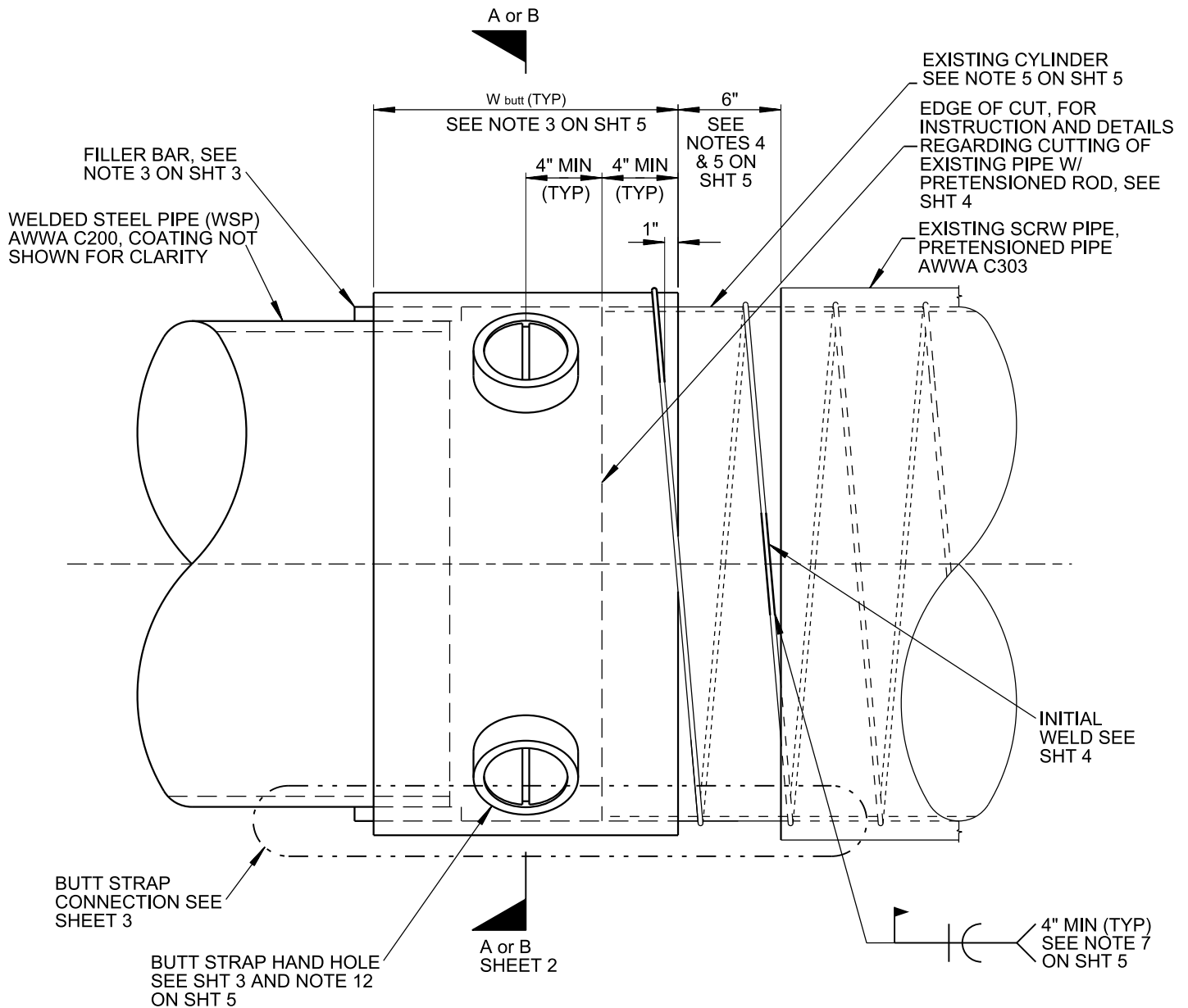
- ① HIGHLINE PIPING
- ② 2 - 2" DRAIN PIPES
- ③ TEMPORARY ASPHALT (COLD MIX)
- ④ EXISTING ROADWAY
- ⑤ PROTECTIVE PLASTIC COVER (OPTIONAL)



NOTES:

1. THE SLOPE OF THE TEMPORARY ASPHALT OVER CURB RAMPS AND OTHER ACCESSIBLE ROUTES (SIDEWALKS, WALKWAYS, ETC.) SHALL BE FIRM, STABLE, SMOOTH AND SLOPED TO HAVE A GRADUAL TRANSITION TO THE STREET. THE FINISH CONNECTION AT THE CURB RAMPS, OTHER ACCESSIBLE ROUTES AND ROAD SURFACES SHALL BE FLUSH. THE RUNNING SLOPE SHALL BE AS SHOWN ON THE DRAWING ABOVE AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%, WITH NO EXCEPTIONS.
2. THE MINIMUM ASPHALT COVER ON HIGHLINE PIPE SHALL BE 2 INCHES.
3. CURB RAMP UNDERGROUND HIGHLINING CROSSING TO BE USED ONLY WHEN EXISTING CURB RAMP IS BEING REPLACED.
4. COUPLINGS SHALL NOT BE LOCATED IN FRONT OF THE CURB RAMP.
5. HIGHLINE CROSSING THE SIDEWALK ABOVE GROUND SHALL BE COVERED WITH ADA COMPLIANT CABLE COVER AND RAMP.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	JB	J. NAGELVOORT	02/16		
REDRAFTED	CD	J. NAGELVOORT	09/18	HIGHLINING CROSSING & RUN AT CURB RAMPS	 9/4/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDW-174



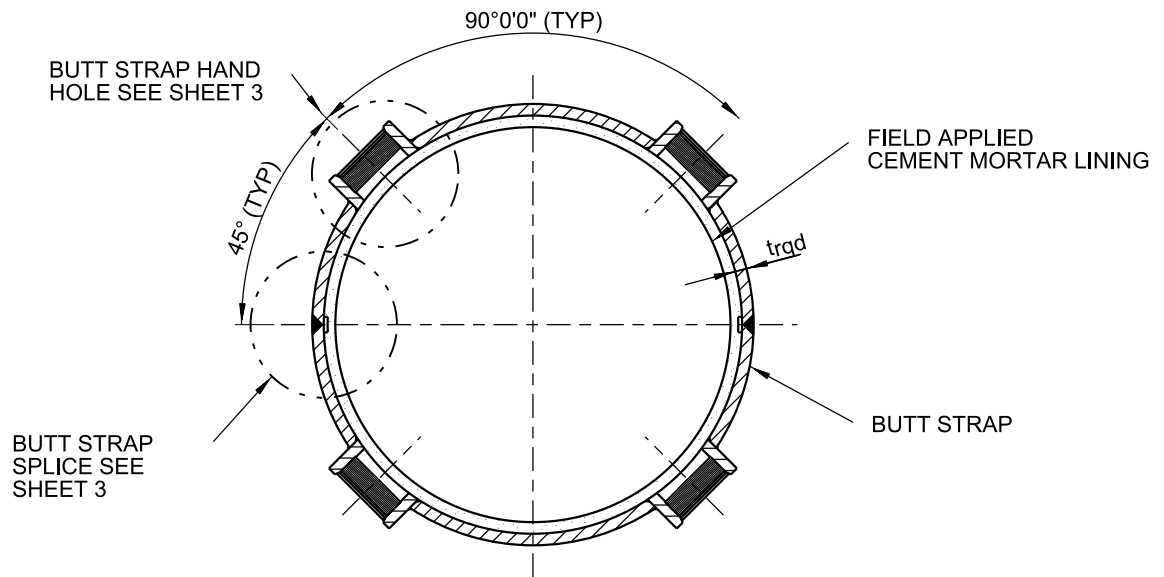
PLAN VIEW

NOTES:

1. FOR INSTALLATION INSTRUCTIONS AND NOTES, SEE SHEET 5.
2. FOR BUTT STRAP THICKNESS AND WIDTH, SEE TABLE 1, SHEETS 6 & 7.
3. FOR FINAL BUTT STRAP CONNECTION AND MORTAR COATING DETAILS, SEE DETAILS ON SHEET 3.
4. FOR PREPARING SCRW PIPE (C303) FOR BUTT STRAP INSTALLATION, SEE SHEET 4.

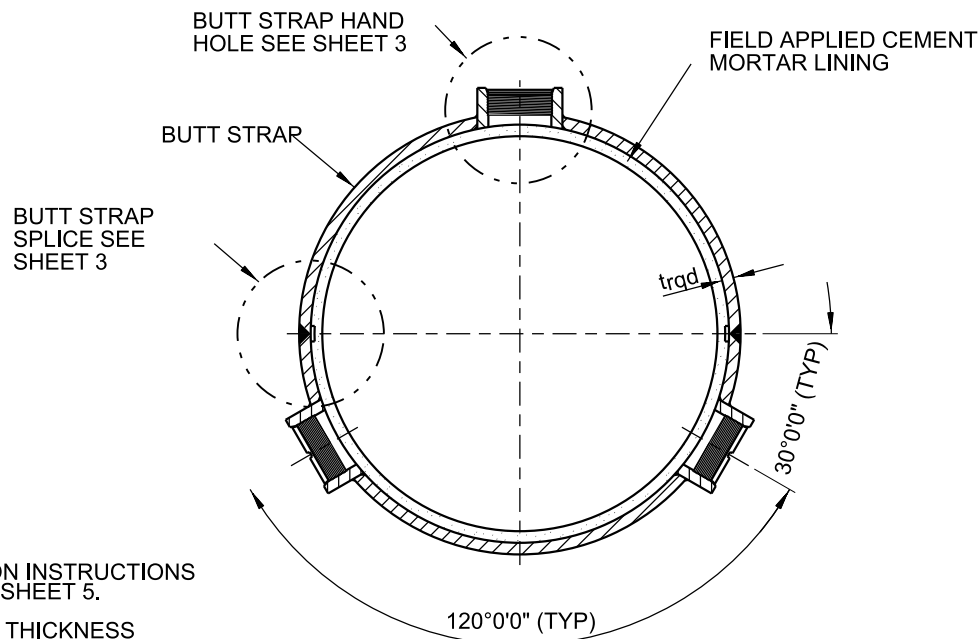
SHEET 1 OF 7

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	EH	J. NAGELVOORT	09/18		
				BUTT STRAP CONNECTION BETWEEN SCRW AND WSP 20" TO 54" DIAMETER PIPE	 COORDINATOR R.C.E. 56523
					9/7/18 DATE
					DRAWING NUMBER SDW-175



SECTION A-A

36" TO 54" DIAMETER PIPE
SEE NOTE 12 ON SHEET 5



SECTION B-B

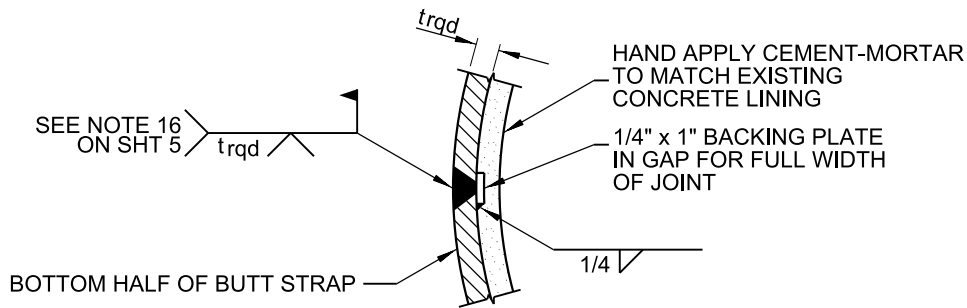
20" TO 33" DIAMETER PIPE
SEE NOTE 4
SEE NOTE 12 ON SHEET 5

NOTES:

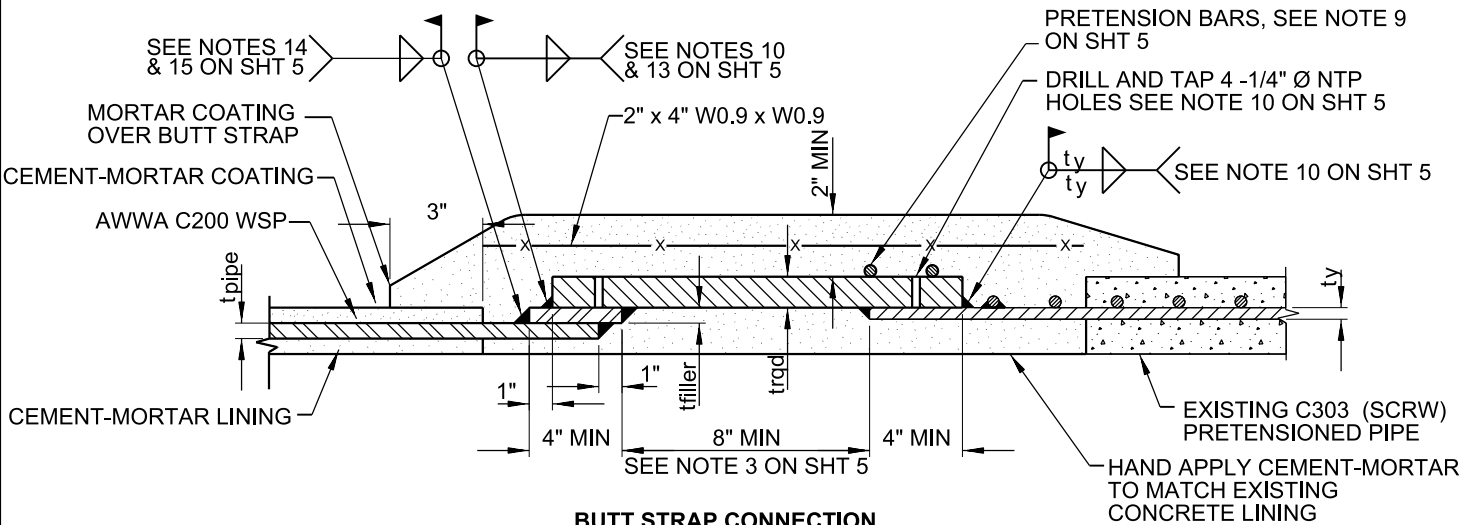
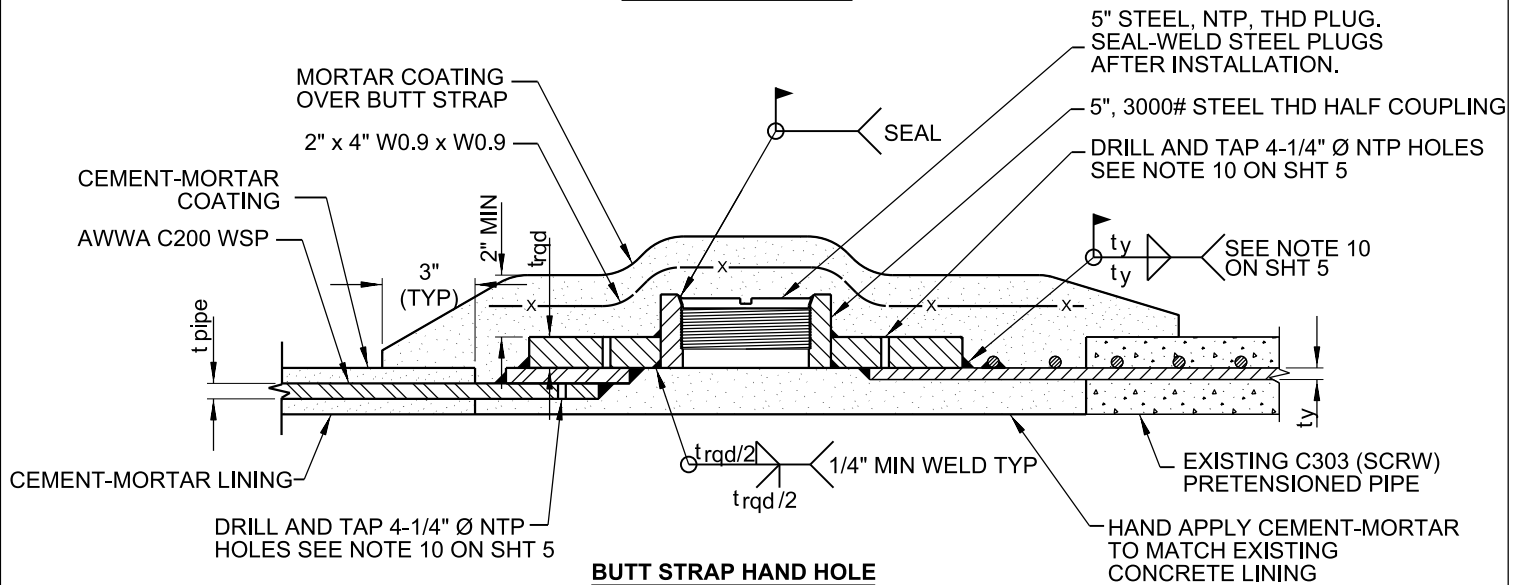
1. FOR INSTALLATION INSTRUCTIONS AND NOTES, SEE SHEET 5.
2. FOR BUTT STRAP THICKNESS AND WIDTH, SEE TABLE 1.
3. FOR FINAL MORTAR COATING DETAILS, SEE SHEET 3.
4. CONTRACTOR MAY ALSO USE TWO HAND HOLES ON TOP HALF OF PIPE, PER SECTION A, FOR PIPE DIAMETERS 24 INCHES AND LESS.

SHEET 2 OF 7

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	EH	J. NAGELVOORT	09/18		
				BUTT STRAP CONNECTION BETWEEN SCRW AND WSP 20" TO 54" DIAMETER PIPE	 9/7/18 COORDINATOR R.C.E. 56523 DATE
					DRAWING NUMBER SDW-175



BUTT STRAP SPLICE

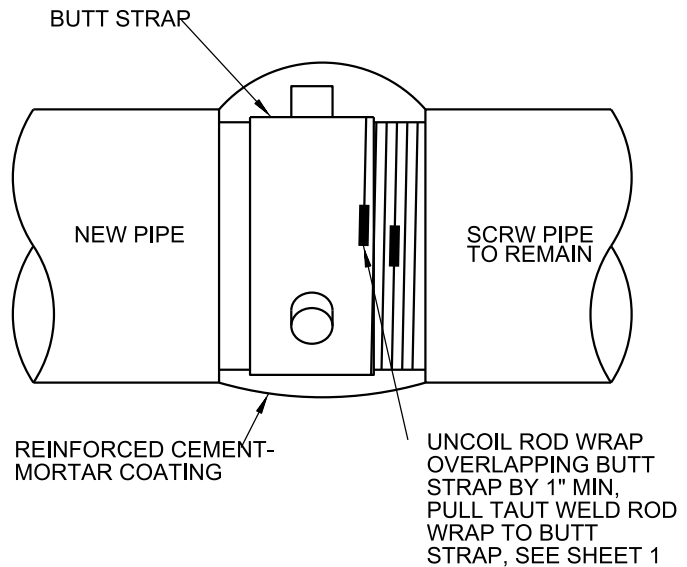
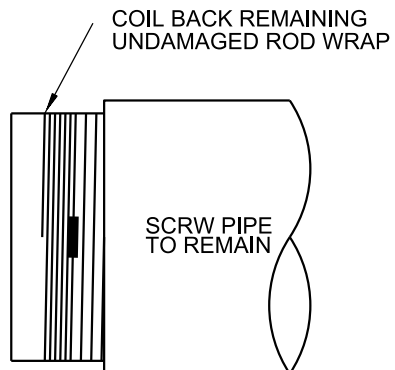
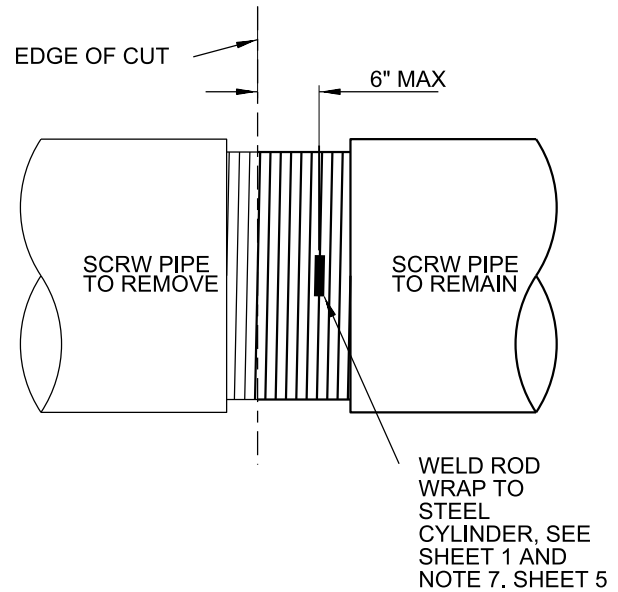
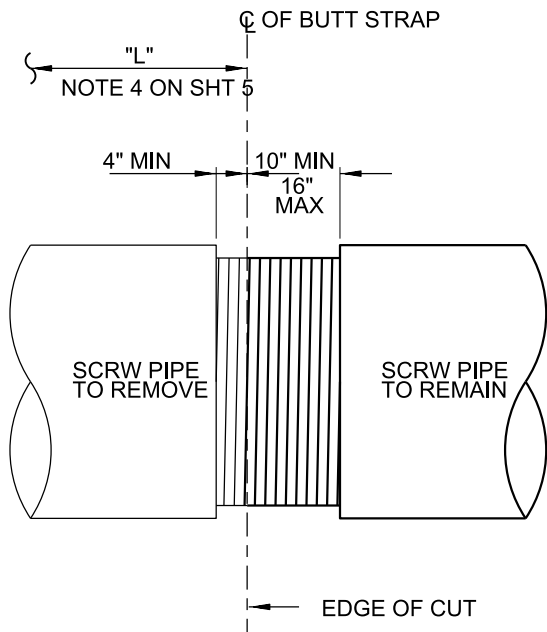


NOTES:

1. FOR INSTALLATION INSTRUCTIONS AND NOTES SEE, SHEET 5.
2. FOR BUTT STRAP THICKNESS AND WIDTH, SEE TABLE 1, SHEETS 6 & 7.
3. OUTSIDE DIAMETER OF STEEL CYLINDER (C200) WITH FILLER BAR SHALL BE OUTSIDE DIAMETER OF SCRW PIPE STEEL CYLINDER (C303) +0\"/>

SHEET 3 OF 7

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	EH	J. NAGELVOORT	09/18		<div> 9/7/18</div> <div>COORDINATOR R.C.E. 56523 DATE</div>
				BUTT STRAP CONNECTION BETWEEN SCRW AND WSP 20" TO 54" DIAMETER PIPE	DRAWING
					NUMBER
					SDW-175



CUT PROCEDURE

NOTES

1. SEE SHEET 5 FOR DETAILED INSTALLATION INSTRUCTIONS.
2. SEE SHEETS 1, 2 & 3 FOR BUTT STRAP INSTALLATION.
3. SEE SHEETS 6 & 7 FOR BUTT STRAP DIMENSIONS.

SHEET 4 OF 7

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	EH	J. NAGELVOORT	09/18		
				BUTT STRAP CONNECTION BETWEEN SCRW AND WSP 20" TO 54" DIAMETER PIPE	 9/7/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDW-175

NOTES:

1. DETERMINE THE PIPE DIAMETER, CYLINDER THICKNESS AND PRESSURE RATING OF THE EXISTING PIPELINE. IF THE CYLINDER THICKNESS IS LESS THAN 10 GAGE (0.135"), DO NOT USE THIS DETAIL. THE ENTIRE PIPE SECTION (TO THE NEAREST JOINT) SHOULD BE REMOVED AND REPLACED.
2. DO NOT WELD REINFORCING TO CYLINDER OR CUT REINFORCING WHILE PIPE HAS INTERNAL PRESSURE.
3. FABRICATE THE BUTT STRAP USING THE DIMENSIONS SHOWN ON TABLE 1, SHEETS 6 AND 7. THE BUTT STRAP WIDTH SHOWN ON TABLE 1 IS THE MINIMUM WIDTH. THE WIDTH MAY BE INCREASED TO MEET FIELD CONDITIONS.
4. DETERMINE LENGTH "L" OF PIPE TO BE REMOVED AND MARK ON PIPE.
5. CAUTIOUSLY CHIP OFF 10" TO 16" OF THE MORTAR COATING FROM THE CENTERLINE OF THE CUT MARK FOR THE PIPE THAT WILL REMAIN. THEN CHIP OFF THE MORTAR COATING 4" FROM THE CENTERLINE OF THE CUT MARK FOR THE PIPE THAT WILL BE REMOVED.
6. MARK THE CUT LOCATION ON THE EXPOSED ROD WRAPPED CYLINDER.
7. MAKE A 4" LONG WELD ON ONE CIRCUMFERENTIAL ROD WRAP TO THE STEEL CYLINDER OF THE PIPE TO REMAIN; 6" MAX FROM THE CUT MARK. NOTE THE ROD WRAP HAS TENSION AND CANNOT BE CUT UNTIL IT IS PROPERLY WELDED TO THE STEEL CYLINDER. ALL WELDING SHALL BE PERFORMED USING E60XX WELDING RODS AND THE WELDERS SHALL BE CERTIFIED WELDERS PER ASME BPVC, SECTION IX.
8. AFTER WELDING THE ROD WRAP TO THE STEEL CYLINDER, CUT THE CYLINDER AND ROD WRAP ALONG CUT MARK AND REMOVE PIPE AND ANY ROD NOT STILL CONNECTED TO THE REMAINING PIPE. COIL BACK PORTION OF UNTENSIONED ROD WRAP SO THE BUTT STRAP CAN BE INSTALLED (DO NOT BEND THE RODS).
9. WELD THE BUTT STRAP TO THE CYLINDER, AS SHOWN. PULL TAUT THE REMAINING ROD WRAP AND OVERLAP THE BUTT STRAP BY 1" AND WELD ROD AS SHOWN ON SHEET 1.
10. DRILL AND TAP HOLES FOR AIR TESTING PRIOR TO WELDING, CONTRACTOR SHALL PLUG WELD TAPPED HOLES ON COMPLETION OF SOAP AND AIR TEST. IF INSIDE WELD CANNOT BE PERFORMED DUE TO THE LACK OF ACCESS, AIR TEST HOLES CAN BE OMITTED AND FILLET WELDS SHALL BE TESTED USING PENETRANT TEST.
11. AFTER WELDING AND TESTING OF BUTT STRAP IS COMPLETE, APPLY PORTLAND CEMENT MORTAR LINING USING HAND HOLES. THEN INSTALL HAND HOLE PLUG AND SEAL WELD. APPLY PORTLAND CEMENT MORTAR COATING TO EXTERIOR OF PIPE IN ACCORDANCE WITH AWWA C205/C303 REINFORCED WITH WELDED WIRE FABRIC HELD 3/8" FROM THE STEEL.
12. HAND-HOLES CAN BE OMITTED IF INTERIOR OF PIPE IS ACCESSIBLE THROUGH NEARBY ACCESS MANWAY OR SIMILAR ACCESS POINT.
13. IF t_{filler} IS LESS THAN t_{rqd} , THEN WELD SIZE SHALL BE t_{filler} , ELSE WELD SIZE SHALL BE t_{rqd} .
14. IF t_{filler} IS LESS THAN t_y THEN WELD SIZE SHALL BE t_{filler} , ELSE WELD SIZE SHALL BE t_{rqd} .
15. t_{filler} SHALL NOT BE LESS THAN t_y .
16. PENETRANT TESTING SHALL BE PERFORMED ON THE GROOVE WELD ROOT PASS.

SHEET 5 OF 7

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  9/4/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL	EH	J. NAGELVOORT	09/18		
				BUTT STRAP CONNECTION BETWEEN SCRW AND WSP 20" TO 54" DIAMETER PIPE	DRAWING NUMBER SDW-175

Buttstrap Table 1

Nom Pipe Dia Inches D	Max Pressure Class P	C303 (SCRW) Cylinder thickness inches (guage) t_y	Min Buttstrap Thickness Required inches t_{reqd}	Min Buttstrap Total Width inches W_{butt}	Note
20	125	0.06 (16)	not permitted		Connect at nearest joint.
20	175	0.075 (14)	not permitted		Connect at nearest joint.
20	250	0.105 (12)	not permitted		Connect at nearest joint.
20	325	0.134 (10)	0.3125 (5/16)	16	See Note 3 on sh. 5
20	400	0.164 (8)	0.4375 (7/16)	16	See Note 3 on sh. 5
21	125	0.06 (16)	not permitted		Connect at nearest joint.
21	175	0.075 (14)	not permitted		Connect at nearest joint.
21	250	0.105 (12)	not permitted		Connect at nearest joint.
21	325	0.134 (10)	0.375 (3/8)	16	See Note 3 on sh. 5
21	400	0.164 (8)	0.4375 (7/16)	16	See Note 3 on sh. 5
24	150	0.075 (14)	not permitted		Connect at nearest joint.
24	225	0.105 (12)	not permitted		Connect at nearest joint.
24	275	0.134 (10)	0.3125 (5/16)	16	See Note 3 on sh. 5
24	350	0.164 (8)	0.4375 (7/16)	16	See Note 3 on sh. 5
24	400	0.188	0.5 (1/2)	16	See Note 3 on sh. 5
27	125	0.075 (14)	not permitted		Connect at nearest joint.
27	200	0.105 (12)	not permitted		Connect at nearest joint.
27	250	0.134 (10)	0.375 (3/8)	16	See Note 3 on sh. 5
27	300	0.164 (8)	0.4375 (7/16)	16	See Note 3 on sh. 5
27	350	0.188	0.5 (1/2)	16	See Note 3 on sh. 5
27	400	0.25	0.5 (1/2)	16	See Note 3 on sh. 5
30	125	0.075 (14)	not permitted		Connect at nearest joint.
30	175	0.105 (12)	not permitted		Connect at nearest joint.
30	225	0.134 (10)	0.3125 (5/16)	16	See Note 3 on sh. 5
30	275	0.164 (8)	0.4375 (7/16)	16	See Note 3 on sh. 5
30	325	0.188	0.5 (1/2)	16	See Note 3 on sh. 5
30	400	0.25	0.625 (5/8)	16	See Note 3 on sh. 5
33	100	0.075 (14)	not permitted		Connect at nearest joint.
33	150	0.105 (12)	not permitted		Connect at nearest joint.
33	200	0.134 (10)	0.3125 (5/16)	16	See Note 3 on sh. 5
33	250	0.164 (8)	0.4375 (7/16)	16	See Note 3 on sh. 5
33	300	0.188	0.5 (1/2)	16	See Note 3 on sh. 5
33	400	0.25	0.75 (3/4)	16	See Note 3 on sh. 5
36	100	0.09 (13)	not permitted		Connect at nearest joint.
36	150	0.105 (12)	not permitted		Connect at nearest joint.
36	175	0.134 (10)	0.3125 (5/16)	16	See Note 3 on sh. 5
36	225	0.164 (8)	0.375 (3/8)	16	See Note 3 on sh. 5
36	275	0.188	0.5 (1/2)	16	See Note 3 on sh. 5
36	350	0.25	0.625 (5/8)	16	See Note 3 on sh. 5
36	400	0.312	0.75 (3/4)	16	See Note 3 on sh. 5

SHEET 6 OF 7

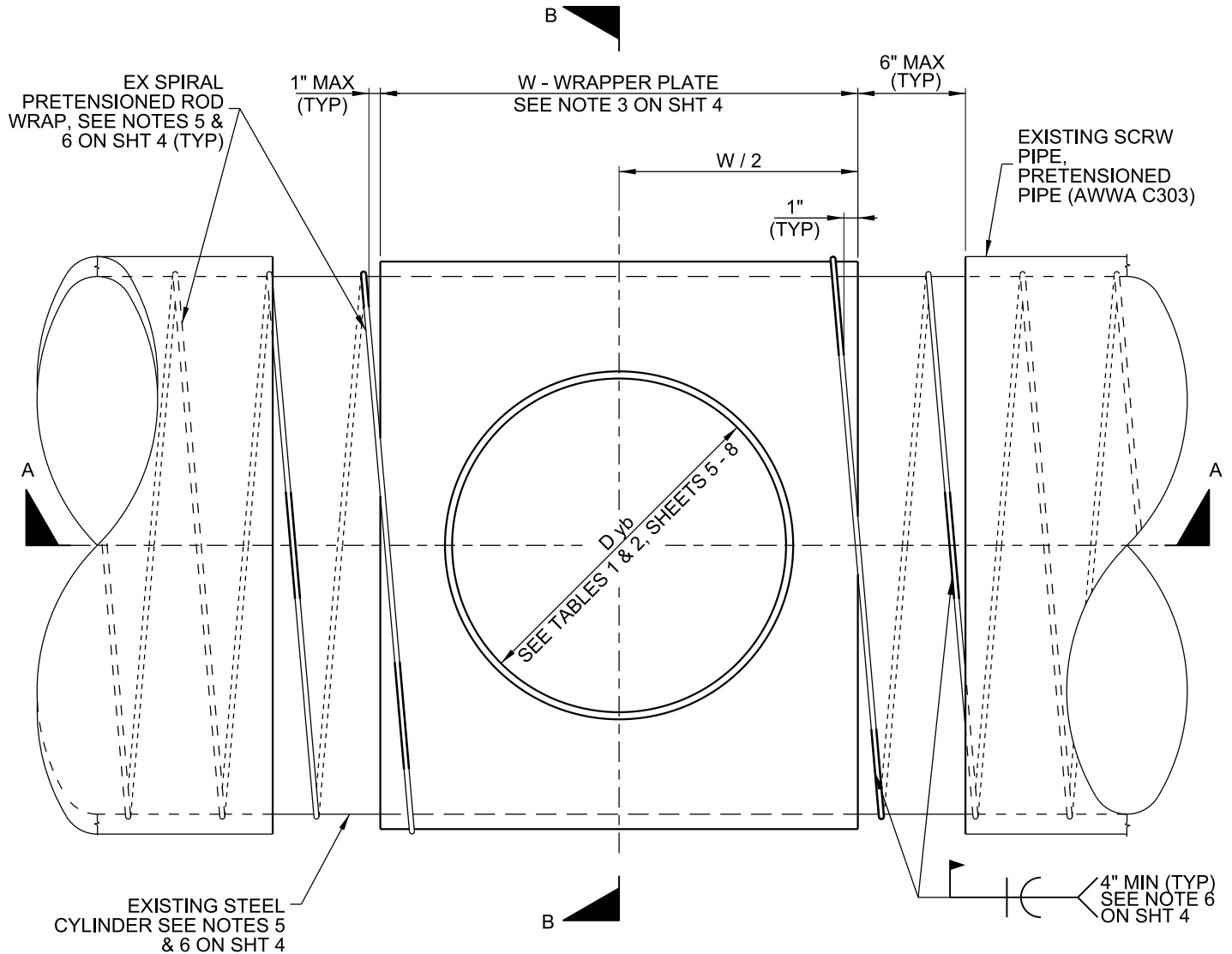
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  9/7/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL	EH	J. NAGELVOORT	09/18		
				BUTT STRAP CONNECTION BETWEEN SCRW AND WSP 20" TO 54" DIAMETER PIPE	DRAWING NUMBER SDW-175

Buttstrap Table 1 (continued)

Nom Pipe Dia Inches D	Max Pressure Class P	C303 (SCRW) Cylinder thickness inches (gauge) t_y	Min Buttstrap Thickness Required inches t_{rqd}	Min Buttstrap Total Width inches W_{butt}	Note
39	100	0.09 (13)	not permitted		Connect at nearest joint.
39	125	0.105 (12)	not permitted		Connect at nearest joint.
39	175	0.134 (10)	0.3125 (5/16)	16	See Note 3 on sh. 5
39	200	0.164 (8)	0.375 (3/8)	16	See Note 3 on sh. 5
39	250	0.188	0.5 (1/2)	16	See Note 3 on sh. 5
39	325	0.25	0.625 (5/8)	16	See Note 3 on sh. 5
39	375	0.312	0.75 (3/4)	16	See Note 3 on sh. 5
39	400	0.375	0.75 (3/4)	16	See Note 3 on sh. 5
42	125	0.105 (12)	not permitted		Connect at nearest joint.
42	150	0.134 (10)	0.3125 (5/16)	16	See Note 3 on sh. 5
42	200	0.164 (8)	0.4375 (7/16)	16	See Note 3 on sh. 5
42	225	0.188	0.4375 (7/16)	16	See Note 3 on sh. 5
42	300	0.25	0.625 (5/8)	16	See Note 3 on sh. 5
42	350	0.312	0.75 (3/4)	16	See Note 3 on sh. 5
42	400	0.375	0.875 (7/8)	16	See Note 3 on sh. 5
45	100	0.105 (12)	not permitted		Connect at nearest joint.
45	150	0.134 (10)	0.3125 (5/16)	16	See Note 3 on sh. 5
45	175	0.164 (8)	0.375 (3/8)	16	See Note 3 on sh. 5
45	200	0.188	0.4375 (7/16)	16	See Note 3 on sh. 5
45	275	0.25	0.625 (5/8)	16	See Note 3 on sh. 5
45	325	0.312	0.75 (3/4)	16	See Note 3 on sh. 5
45	400	0.375	0.875 (7/8)	16	See Note 3 on sh. 5
48	100	0.105 (12)	not permitted		Connect at nearest joint.
48	125	0.134 (10)	0.25 (1/4)	16	See Note 3 on sh. 5
48	175	0.164 (8)	0.4375 (7/16)	16	See Note 3 on sh. 5
48	200	0.188	0.5 (1/2)	16	See Note 3 on sh. 5
48	250	0.25	0.625 (5/8)	16	See Note 3 on sh. 5
48	300	0.312	0.75 (3/4)	16	See Note 3 on sh. 5
48	375	0.375	0.875 (7/8)	16	See Note 3 on sh. 5
51	125	0.134 (10)	0.3125 (5/16)	16	See Note 3 on sh. 5
51	150	0.164 (8)	0.375 (3/8)	16	See Note 3 on sh. 5
51	175	0.188	0.4375 (7/16)	16	See Note 3 on sh. 5
51	250	0.25	0.625 (5/8)	16	See Note 3 on sh. 5
51	300	0.312	0.75 (3/4)	16	See Note 3 on sh. 5
51	350	0.375	0.875 (7/8)	16	See Note 3 on sh. 5
54	125	0.134 (10)	0.3125 (5/16)	16	See Note 3 on sh. 5
54	150	0.164 (8)	0.375 (3/8)	16	See Note 3 on sh. 5
54	175	0.188	0.4375 (7/16)	16	See Note 3 on sh. 5
54	225	0.25	0.625 (5/8)	16	See Note 3 on sh. 5
54	275	0.312	0.75 (3/4)	16	See Note 3 on sh. 5
54	350	0.375	1	16	See Note 3 on sh. 5

SHEET 7 OF 7

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  9/7/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL	EH	J. NAGELVOORT	09/18		
				BUTT STRAP CONNECTION BETWEEN SCRW AND WSP 20" TO 54" DIAMETER PIPE	DRAWING NUMBER SDW-175



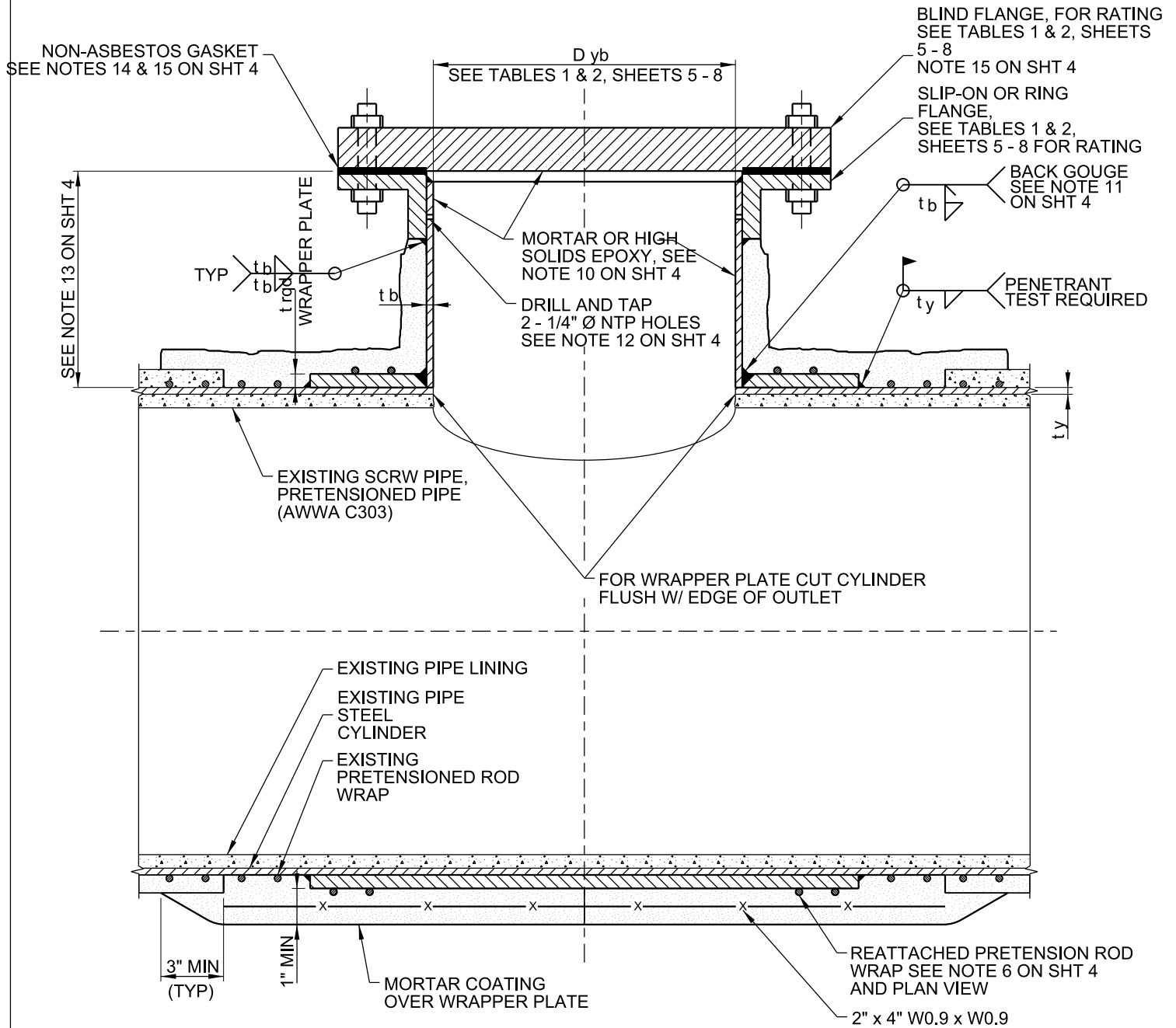
PLAN VIEW

NOTES:

1. FOR INSTALLATION INSTRUCTIONS AND NOTES, SEE SHEET 4.
2. FOR WRAPPER PLATE THICKNESS, FLANGE RATINGS, AND OUTLET Ø, SEE TABLES 1 & 2, SHEETS 5 - 8.
3. FOR FINAL MORTAR COATING DETAILS, SEE SECTION A - A.
4. BLIND FLANGE NOT SHOWN FOR CLARITY.

SHEET 1 OF 8

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	EH	J. NAGELVOORT	0918		
				WRAPPER PLATE & LINE STOP OUTLET FOR 20" TO 54" DIAMETER SCRW PIPE	 9/7/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDW-176




SECTION A - A

NOTES:

1. FOR INSTALLATION INSTRUCTIONS AND NOTES, SEE SHEET 4.
2. FOR WRAPPER PLATE THICKNESS, FLANGE RATINGS, AND OUTLET \varnothing , SEE TABLES 1 & 2, SHEETS 5 - 8.
3. WRAP BLIND FLANGE WITH WAX-TAPE PER AWWA C217.

SHEET 2 OF 8


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	EH	J. NAGELVOORT	0918		
				WRAPPER PLATE & LINE STOP OUTLET FOR 20" TO 54" DIAMETER SCRWP PIPE	 9/7/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDW-176

NOTES:

1. DETERMINE THE PIPE DIAMETER, CYLINDER THICKNESS AND PRESSURE RATING OF THE EXISTING PIPELINE. IF THE CYLINDER THICKNESS IS LESS THAN 10 GAUGE (0.134"), SPECIAL WELDING PROCEDURES SHALL BE SUBMITTED, OR THE ENTIRE PIPE SECTION SHALL BE REMOVED AND REPLACED.
2. FOR LINE STOPS THE CONTRACTOR SHALL SUBMIT CALCULATIONS SHOWING PIPE IS ADEQUATELY ANCHORED FOR THRUST.
3. FABRICATE THE WRAPPER PLATE USING THE DIMENSIONS SHOWN ON TABLES 1 OR 2. FOR THE WRAPPER PLATE DIMENSIONS SHOWN ON TABLES 1 AND 2, A CORRESPONDING ALLOWED MAXIMUM OUTLET Ø IS GIVEN. THE CITY SHALL PROVIDE THE Ø OF OUTLET OR THE OUTLET Ø SHALL BE DETERMINED BY PROJECT REQUIREMENTS.
4. REDUCE THE LIVE PRESSURE INSIDE THE PIPE TO LESS THAN OR EQUAL TO THE MAXIMUM ALLOWABLE INSTALLATION PRESSURE SHOWN ON TABLES 1 AND 2. THE INSTALLATION PRESSURE SHOWN IN TABLES 1 AND 2 IS THE MAXIMUM ALLOWABLE PRESSURE THE PIPE CAN WITHSTAND WHILE THE WRAPPER PLATE IS BEING INSTALLED (NOTE THAT THE MAXIMUM PRESSURE SHOWN IS OPERATING PRESSURE WITHOUT SURGE).
5. REMOVE THE MORTAR COATING AND MARK THE INSTALLATION LOCATION OF THE WRAPPER PLATE. THE OUTER EDGE OF THE WRAPPER PLATE SHALL BE LOCATED AND MARKED ON THE STEEL CYLINDER OF THE PIPELINE. DO NOT CUT THE EXISTING PRETENSIONED REINFORCING ROD WRAP AT THIS TIME.
6. WELD THE EXISTING ROD WRAP TO THE STEEL CYLINDER WITHIN 6 INCHES OF THE WRAPPER PLATE INSTALLATION LOCATION AS SHOWN. NOTE THE ROD WRAP IS IN TENSION AND CANNOT BE CUT UNTIL IT IS PROPERLY WELDED TO THE STEEL CYLINDER. AFTER WELDING THE ROD WRAP TO THE STEEL CYLINDER, CUT THE ROD WRAP AT THE CENTER OF THE WRAPPER PLATE INSTALLATION LOCATION, MOVING ASIDE THE LOOSE COILS SO THE WRAPPER PLATE CAN BE INSTALLED (DO NOT BEND THE REINFORCING ROD). ONCE THE WRAPPER PLATE IS WELDED IN PLACE (SEE NOTE 7), REPOSITION THE LOOSELY COILED ROD WRAP BACK OVER THE STEEL CYLINDER AND WRAPPER PLATE AS SHOWN KEEPING THE ROD WRAP'S ORIGINAL ON-CENTER SPACING. PULL TAUT AND WELD TO THE WRAPPER PLATE AS SHOWN. CUT OFF EXCESS LOOSE ROD WRAPPING COILS. THE LENGTH OF THE WELDS ALONG ALL REINFORCING ROD SHALL BE A MINIMUM OF 4 INCHES. ALL WELDING SHALL BE PERFORMED USING E60XX WELDING RODS AND THE WELDERS SHALL BE CERTIFIED WELDERS PER ASME BPVC, SECTION IX.
7. WELD ON THE WRAPPER PLATE WITH OUTLET TO THE STEEL CYLINDER. THE LONGITUDINAL AND CIRCUMFERENTIAL WELDS MUST BE COMPLETED PRIOR TO CUTTING THE OUTLET HOLE IN THE CYLINDER.
8. INSTALL THE LINE STOP VALVE, GATE VALVE, OR BFV PER PROJECT REQUIREMENTS.
9. AFTER LINE STOP VALVE IS REMOVED, INSTALL THE BLIND FLANGE AND APPLY WAX-TAPE COATING PER AWWA C217.
10. FOR LINE STOP OUTLETS, A HIGH SOLIDS EPOXY (16 MILS) SHALL BE SHOP APPLIED TO SURFACES NOT COVERED BY THE NON-ASBESTOS GASKET. EPOXY SHALL BE CURED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION PRIOR TO SUBJECTING IT TO IMMERSION. EPOXY SHALL BE NSF 61 APPROVED.

FOR NON LINE STOP APPLICATIONS, THE OUTLET NOZZLE SHALL BE LINED WITH CEMENT-MORTAR AND THE DAMAGED MAINLINE LINING SHALL BE REPAIRED PER AWWA C205.
11. PENETRANT TESTING SHALL BE PERFORMED ON THE GROOVE WELD ROOT PASS AND WHERE NOTED.
12. FOR SLIP ON FLANGES DRILL AND TAP HOLES PRIOR TO WELDING, CONTRACTOR SHALL PLUG WELD TAPPED HOLES ON COMPLETION OF SOAP AND AIR TEST.
13. LENGTH OF OUTLET SHALL BE PER LINE STOP VENDOR RECOMMENDATION FOR WRAPPER PLATE OUTLETS. ALL OTHER OUTLET LENGTHS SHALL BE 8" MIN AND 12" MAX OR AS NECESSARY TO ACCOMMODATE THE BFV.
14. ALL GASKETS SHALL BE FULL FACED.
15. CLASS D FLANGES MAY USE RUBBER, COMPRESSED FIBER OR POLYTETRAFLUORETHYLENE GASKETS. CLASS E & F FLANGES MUST USE COMPRESSED FIBER OR POLYTETRAFLUORETHYLENE GASKETS. CLASS F FLANGES HAVE A MAXIMUM ALLOWABLE PRESSURE OF 300 PSI. IF PRESSURE IS HIGHER THAN 300 PSI CONTRACTOR SHALL SUBMIT ALTERNATIVE FLANGE.


SHEET 4 OF 8

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	EH	J. NAGELVOORT	0918		
				WRAPPER PLATE & LINE STOP OUTLET FOR 20" TO 54" DIAMETER SCRW PIPE	 COORDINATOR R.C.E. 56523 9/7/18 DATE
					DRAWING NUMBER SDW-176

Line Stop Valve Outlet and Wrapper Plate - Table 1

Pipe Diameter Inches D	Pressure Class psi P	C303 Steel Cylinder thickness inches (gauge) ty	Maximum Outlet Diameter For Line Stop inches D _{yb}	Minimum Line Stop Outlet thickness inches t _b	Branch Angle degrees D	Maximum Allowable installation Pressure psi P _{max cyl}	AWWA C207 Flange Class	Minimum Wrapper Plate Thickness inches t _{rd}	Minimum Wrapper Plate Width inches W
20	125	0.06 (16)				See note 1 on sheet 4			
20	175	0.075 (14)				See note 1 on sheet 4			
20	250	0.105 (12)				See note 1 on sheet 4			
20	325	0.134 (10)	14	0.375	90	187	F	0.3125 (5/16)	28
21	125	0.06 (16)				See note 1 on sheet 4			
21	175	0.075 (14)				See note 1 on sheet 4			
21	250	0.105 (12)				See note 1 on sheet 4			
21	325	0.134 (10)	14	0.375	90	179	F	0.375 (3/8)	28
24	150	0.075 (14)				See note 1 on sheet 4			
24	225	0.105 (12)				See note 1 on sheet 4			
24	275	0.134 (10)	16	0.375	90	158	E	0.3125 (5/16)	32
24	350	0.164 (8)	16	0.375	90	194	F	0.4375 (7/16)	32
27	125	0.075 (14)				See note 1 on sheet 4			
27	200	0.105 (12)				See note 1 on sheet 4			
27	250	0.134 (10)	16	0.375	90	141	E	0.375 (3/8)	32
27	300	0.164 (8)	16	0.375	90	173	F	0.4375 (7/16)	32
30	125	0.075 (14)				See note 1 on sheet 4			
30	175	0.105 (12)				See note 1 on sheet 4			
30	225	0.134 (10)	24	0.375	90	127	E	0.375 (3/8)	48
30	275	0.164 (8)	24	0.375	90	156	E	0.5 (1/2)	48
30	325	0.188	24	0.375	90	179	F	0.75 (3/4)	48
33	100	0.075 (14)				See note 1 on sheet 4			
33	150	0.105 (12)				See note 1 on sheet 4			
33	200	0.134 (10)	24	0.375	90	116	E	0.3125 (5/16)	48
33	250	0.164 (8)	24	0.375	90	142	E	0.4375 (7/16)	48
33	300	0.188	24	0.375	90	163	F	0.625 (5/8)	48
36	100	0.09 (13)				See note 1 on sheet 4			
36	150	0.105 (12)				See note 1 on sheet 4			
36	175	0.134 (10)	24	0.375	90	107	D	0.3125 (5/16)	48
36	225	0.164 (8)	24	0.375	90	131	E	0.4375 (7/16)	48
36	275	0.188	24	0.375	90	150	E	0.625 (5/8)	48
36	350	0.25	24	0.375	90	201	F	0.875 (7/8)	48


SHEET 5 OF 8

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	EH	J. NAGELVOORT	0918		
				WRAPPER PLATE & LINE STOP OUTLET FOR 20" TO 54" DIAMETER SCRW PIPE	 <div>9/7/18</div> <div>COORDINATOR R.C.E. 56523 DATE</div>
					DRAWING NUMBER
					SDW-176

Line Stop Valve Outlet and Wrapper Plate - Table 1 (continued)

Pipe Diameter Inches D	Pressure Class psi P	C303 Steel Cylinder thickness inches (gauge) ty	Maximum Outlet Diameter For Line Stop inches D _{yb}	Minimum Line Stop Outlet thickness inches t _b	Branch Angle degrees D	Maximum Allowable installation Pressure psi P _{max cyl}	AWWA C207 Flange Class	Minimum Wrapper Plate Thickness inches t _{reqd}	Minimum Wrapper Plate Width inches W
39	100	0.09 (13)	See note 1 on sheet 4						
39	125	0.105 (12)	See note 1 on sheet 4						
39	175	0.134 (10)	24	0.375	90	99	D	0.375 (3/8)	48
39	200	0.164 (8)	24	0.375	90	121	E	0.375 (3/8)	48
39	250	0.188	24	0.375	90	139	E	0.5 (1/2)	48
39	325	0.25	24	0.375	90	186	F	0.75 (3/4)	48
42	125	0.105 (12)	See note 1 on sheet 4						
42	150	0.134 (10)	24	0.375	90	92	D	0.3125 (5/16)	48
42	200	0.164 (8)	24	0.375	90	113	E	0.4375 (7/16)	48
42	225	0.188	24	0.375	90	130	E	0.5 (1/2)	48
42	300	0.25	24	0.375	90	173	F	0.625 (5/8)	48
45	100	0.105 (12)	See note 1 on sheet 4						
45	150	0.134 (10)	30	0.375	90	86	D	0.375 (3/8)	60
45	175	0.164 (8)	30	0.375	90	106	D	0.375 (3/8)	60
45	200	0.188	30	0.375	90	121	E	0.4375 (7/16)	60
45	275	0.25	30	0.375	90	162	E	0.75 (3/4)	60
45	300	0.312	30	0.375	90	202	F	0.875 (7/8)	60
48	100	0.105 (12)	See note 1 on sheet 4						
48	125	0.134 (10)	36	0.375	90	81	D	0.3125 (5/16)	72
48	175	0.164 (8)	36	0.375	90	99	D	0.5 (1/2)	72
48	200	0.188	36	0.375	90	114	E	0.625 (5/8)	72
48	225	0.25	36	0.375	90	152	E	0.75 (3/4)	72
48	250	0.25	not permitted						
48	300	0.312	not permitted						
51	125	0.134 (10)	36	0.375	90	76	D	0.3125 (5/16)	72
51	150	0.164 (8)	36	0.375	90	94	D	0.375 (3/8)	72
51	175	0.188	36	0.375	90	107	D	0.5 (1/2)	72
51	225	0.25	36	0.375	90	143	E	0.625 (5/8)	72
51	250	0.25	not permitted						
51	300	0.312	not permitted						
54	125	0.134 (10)	36	0.375	90	72	D	0.375 (3/8)	72
54	150	0.164 (8)	36	0.375	90	89	D	0.4375 (7/16)	72
54	175	0.188	36	0.375	90	102	D	0.5 (1/2)	72
54	225	0.25	36	0.375	90	135	E	0.75 (3/4)	72
54	250	0.312	36	0.375	90	169	E	0.875 (7/8)	72
54	275	0.312	not permitted						
54	350	0.375	not permitted						


SHEET 6 OF 8

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	<div>RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE</div> <div> 9/7/18</div> <div>COORDINATOR R.C.E. 56523 DATE</div>
ORIGINAL	EH	J. NAGELVOORT	09/18		
WRAPPER PLATE & LINE STOP OUTLET FOR 20" TO 54" DIAMETER SCRW PIPE					DRAWING NUMBER SDW-176

Standard Outlet and Wrapper Plate Detail - Table 2

Pipe Diameter Inches D	Pressure Class psi P	C303 Steel Cylinder thickness inches (gauge) ty	Maximum Outlet Diameter For Line Stop inches D _{yb}	Minimum Line Stop Outlet thickness inches t _b	Branch Angle degrees D	Maximum Allowable installation Pressure psi P _{max cyl}	AWWA C207 Flange Class	Minimum Wrapper Plate Thickness inches t _{rqd}	Minimum Wrapper Plate Width inches W
20	125	0.06 (16)	See note 1 on sheet 4						
20	175	0.075 (14)	See note 1 on sheet 4						
20	250	0.105 (12)	See note 1 on sheet 4						
20	325	0.134 (10)	12	0.375	90	187	F	0.3125 (5/16)	24
21	125	0.06 (16)	See note 1 on sheet 4						
21	175	0.075 (14)	See note 1 on sheet 4						
21	250	0.105 (12)	See note 1 on sheet 4						
21	325	0.134 (10)	12	0.375	90	179	F	0.375 (3/8)	24
24	150	0.075 (14)	See note 1 on sheet 4						
24	225	0.105 (12)	See note 1 on sheet 4						
24	275	0.134 (10)	12	0.375	90	158	E	0.3125 (5/16)	24
24	350	0.164 (8)	12	0.375	90	194	F	0.4375 (7/16)	24
27	125	0.075 (14)	See note 1 on sheet 4						
27	200	0.105 (12)	See note 1 on sheet 4						
27	250	0.134 (10)	12	0.375	90	141	E	0.3125 (5/16)	24
27	300	0.164 (8)	12	0.375	90	173	F	0.375 (3/8)	24
27	350	0.188	12	0.375	90	199	F	0.5 (1/2)	24
30	125	0.075 (14)	See note 1 on sheet 4						
30	175	0.105 (12)	See note 1 on sheet 4						
30	225	0.134 (10)	12	0.375	90	127	E	0.3125 (5/16)	24
30	275	0.164 (8)	12	0.375	90	156	E	0.375 (3/8)	24
30	325	0.188	12	0.375	90	179	F	0.5 (1/2)	24
33	100	0.075 (14)	See note 1 on sheet 4						
33	150	0.105 (12)	See note 1 on sheet 4						
33	200	0.134 (10)	12	0.375	90	116	E	0.3125 (5/16)	24
33	250	0.164 (8)	12	0.375	90	142	E	0.375 (3/8)	24
33	300	0.188	12	0.375	90	163	F	0.5 (1/2)	24
36	100	0.09 (13)	See note 1 on sheet 4						
36	150	0.105 (12)	See note 1 on sheet 4						
36	175	0.134 (10)	12	0.375	90	107	D	0.3125 (5/16)	24
36	225	0.164 (8)	12	0.375	90	131	E	0.375 (3/8)	24
36	275	0.188	12	0.375	90	150	E	0.5 (1/2)	24
36	350	0.25	12	0.375	90	201	F	0.625 (5/8)	24


SHEET 7 OF 8

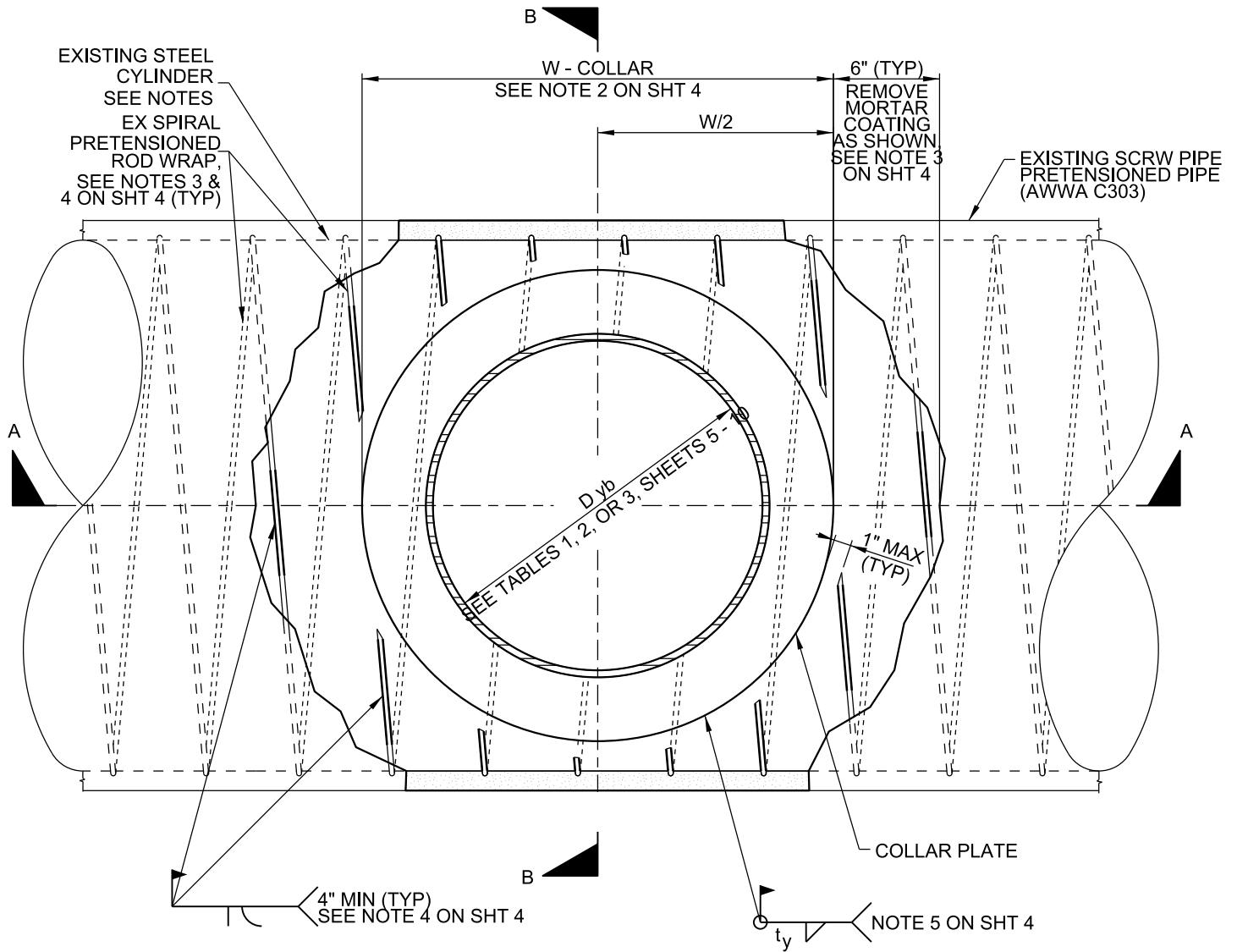
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	EH	J. NAGELVOORT	09/18		
				WRAPPER PLATE & LINE STOP OUTLET FOR 20" TO 54" DIAMETER SCRW PIPE	<div><div>COORDINATOR R.C.E. 56523</div><div>9/7/18</div><div>DATE</div></div>
DRAWING NUMBER				SDW-176	

Standard Outlet and Wrapper Plate Detail - Table 2 (continued)

Pipe Diameter Inches D	Pressure Class psi P	C303 Steel Cylinder thickness inches (gauge) ty	Maximum Outlet Diameter For Line Stop inches Dyb	Minimum Line Stop Outlet thickness inches tb	Branch Angle degrees D	Maximum Allowable installation Pressure psi Pmax cyl	AWWA C207 Flange Class	Minimum Wrapper Plate Thickness inches trqd	Minimum Wrapper Plate Width inches W
39	100	0.09 (13)	See note 1 on sheet 4						
39	125	0.105 (12)	See note 1 on sheet 4						
39	175	0.134 (10)	12	0.375	90	99	D	0.3125 (5/16)	24
39	200	0.164 (8)	12	0.375	90	121	E	0.375 (3/8)	24
39	250	0.188	12	0.375	90	139	E	0.5 (1/2)	24
39	325	0.25	12	0.375	90	186	F	0.625 (5/8)	24
42	125	0.105 (12)	See note 1 on sheet 4						
42	150	0.134 (10)	12	0.375	90	92	D	0.3125 (5/16)	24
42	200	0.164 (8)	12	0.375	90	113	E	0.375 (3/8)	24
42	225	0.188	12	0.375	90	130	E	0.4375 (7/16)	24
42	300	0.25	12	0.375	90	173	F	0.625 (5/8)	24
45	100	0.105 (12)	See note 1 on sheet 4						
45	150	0.134 (10)	12	0.375	90	86	D	0.3125 (5/16)	24
45	175	0.164 (8)	12	0.375	90	106	D	0.375 (3/8)	24
45	200	0.188	12	0.375	90	121	E	0.4375 (7/16)	24
45	275	0.25	12	0.375	90	162	E	0.625 (5/8)	24
45	300	0.312	12	0.375	90	202	F	0.625 (5/8)	24
48	100	0.105 (12)	See note 1 on sheet 4						
48	125	0.134 (10)	12	0.375	90	81	D	0.25 (1/4)	24
48	175	0.164 (8)	12	0.375	90	99	D	0.375 (3/8)	24
48	200	0.188	12	0.375	90	114	E	0.4375 (7/16)	24
48	225	0.25	12	0.375	90	152	E	0.5 (1/2)	24
48	250	0.25	12	0.375	90	152	E	0.625 (5/8)	24
48	300	0.312	12	0.375	90	190	F	0.75 (3/4)	24
51	125	0.134 (10)	12	0.375	90	76	D	0.3125 (5/16)	24
51	150	0.164 (8)	12	0.375	90	94	D	0.3125 (5/16)	24
51	175	0.188	12	0.375	90	107	D	0.4375 (7/16)	24
51	225	0.25	12	0.375	90	143	E	0.5 (1/2)	24
51	250	0.25	12	0.375	90	143	E	0.625 (5/8)	24
51	300	0.312	12	0.375	90	179	F	0.75 (3/4)	24
54	125	0.134 (10)	12	0.375	90	72	D	0.3125 (5/16)	24
54	150	0.164 (8)	12	0.375	90	89	D	0.375 (3/8)	24
54	175	0.188	12	0.375	90	102	D	0.4375 (7/16)	24
54	225	0.25	12	0.375	90	135	E	0.625 (5/8)	24
54	250	0.312	12	0.375	90	169	E	0.625 (5/8)	24
54	275	0.312	12	0.375	90	169	E	0.75 (3/4)	24
54	350	0.375	12	0.375	90	204	F	0.875 (7/8)	24

SHEET 8 OF 8

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	EH	J. NAGELVOORT	09/18		
WRAPPER PLATE & LINE STOP OUTLET FOR 20" TO 54" DIAMETER SCRW PIPE					<div> 9/7/18</div> <div>COORDINATOR R.C.E. 56523 DATE</div>
					DRAWING NUMBER SDW-176



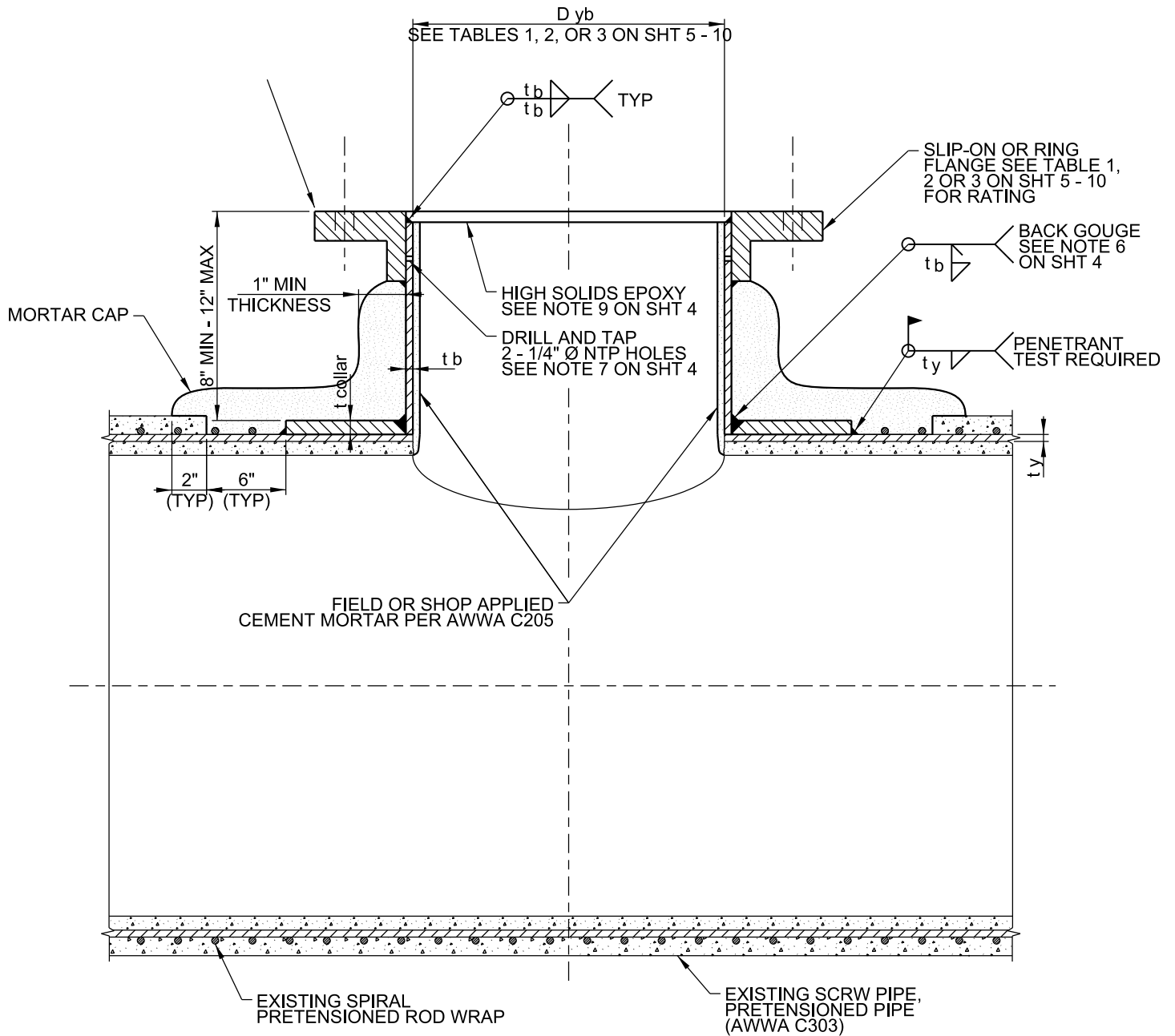
PLAN VIEW

NOTES:

1. DETAILS SHOWN ARE FOR COLLAR PLATES FOR 4", 8" AND 12" DIAMETER OUTLETS. FOR CYLINDER THICKNESS, COLLAR PLATE THICKNESS, FLANGE RATINGS, AND OUTLET Ø, SEE TABLES 1, 2 OR 3, RESPECTIVELY, SHEETS 5 - 10.
2. FOR INSTALLATION INSTRUCTIONS AND NOTES, SEE SHEET 4.
3. OUTLET FLANGE NOT SHOWN FOR CLARITY.

SHEET 1 OF 10

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	EH	J. NAGELVOORT	0918		
				OUTLET AND COLLAR PLATE DETAIL FOR SCRWP PIPE 20" TO 54" DIAMETER	 9/7/18 COORDINATOR R.C.E. 56523 DATE
					DRAWING NUMBER SDW-177



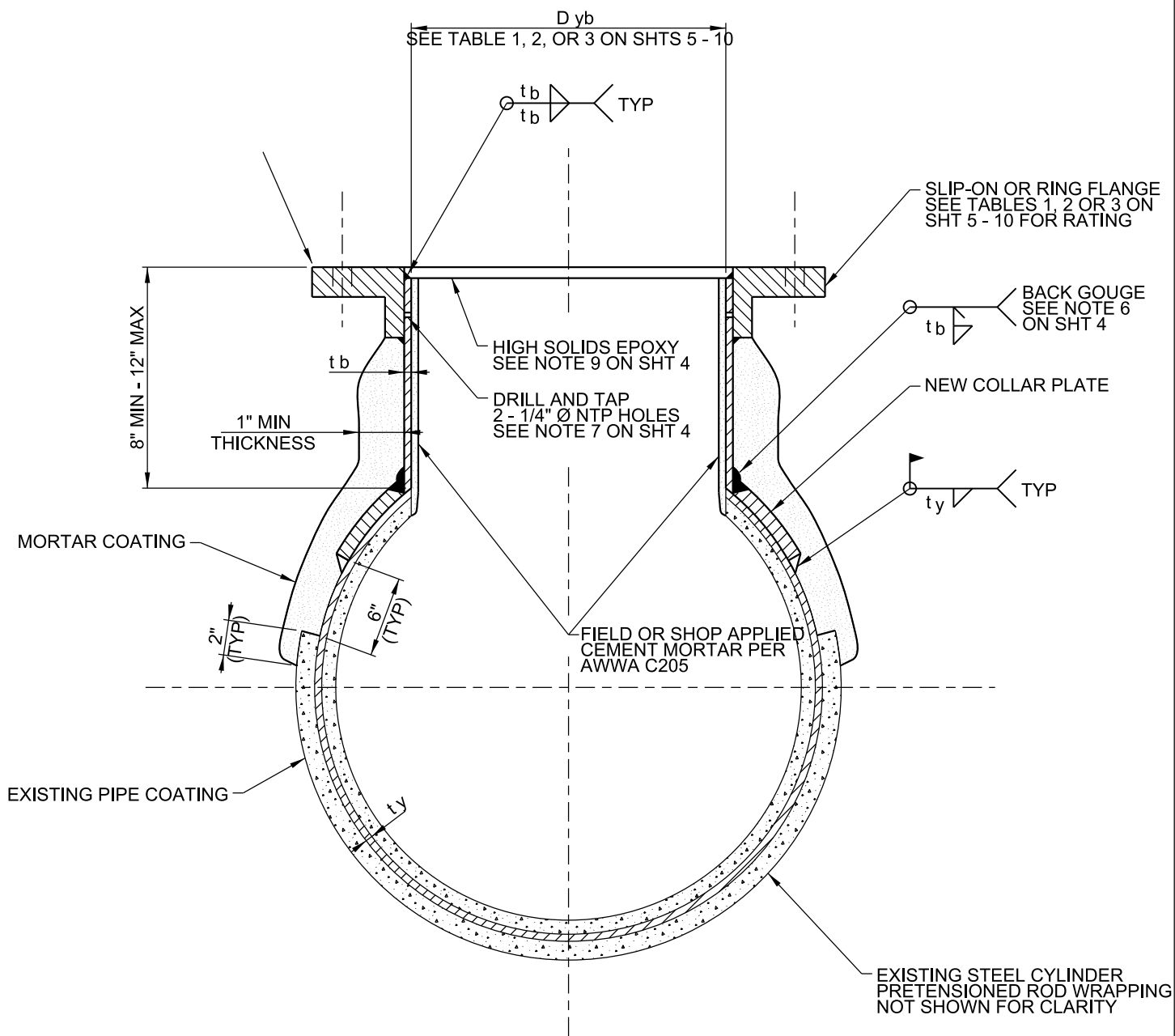
SECTION A - A

NOTES:

1. DETAILS SHOWN ARE FOR COLLAR PLATES FOR 4", 8" AND 12" DIAMETER OUTLETS. FOR CYLINDER THICKNESS, COLLAR PLATE THICKNESS, FLANGE RATINGS, AND OUTLET Ø, SEE TABLES 1, 2 OR 3, RESPECTIVELY, ON SHEETS 5 - 10.
2. FOR INSTALLATION INSTRUCTIONS AND NOTES, SEE SHEET 4.

SHEET 2 OF 10

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	EH	J. NAGELVOORT	0918		
				OUTLET AND COLLAR PLATE DETAIL FOR SCRW PIPE 20" TO 54" DIAMETER	 9/7/18 COORDINATOR R.C.E. 56523 DATE
					DRAWING NUMBER SDW-177



SECTION B - B

NOTES:

1. DETAILS SHOWN ARE FOR COLLAR PLATES FOR 4" 8" AND 12" DIAMETER OUTLETS. FOR CYLINDER THICKNESS, COLLAR PLATE THICKNESS, FLANGE RATINGS, AND OUTLET Ø, SEE TABLES 1, 2 OR 3, RESPECTIVELY, ON SHEETS 5 - 10.
2. FOR INSTALLATION INSTRUCTIONS AND NOTES, SEE SHEET 4.

SHEET 3 OF 10

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	EH	J. NAGELVOORT	0918		
				OUTLET AND COLLAR PLATE DETAIL FOR SCRW PIPE 20" TO 54" DIAMETER	 9/7/18 COORDINATOR R.C.E. 56523 DATE
					DRAWING NUMBER SDW-177

NOTES:

1. DETERMINE THE PIPE DIAMETER, CYLINDER THICKNESS AND PRESSURE RATING OF THE EXISTING PIPELINE. IF THE CYLINDER THICKNESS IS LESS THAN 10 GAUGE (0.134"), SPECIAL WELDING PROCEDURES SHALL BE SUBMITTED, OR THE ENTIRE PIPE SECTION SHALL BE REMOVED AND REPLACED
2. FABRICATE THE COLLAR PLATE USING THE DIMENSIONS SHOWN ON TABLES 1, 2 OR 3, SHEETS 5 - 10.
3. REMOVE THE MORTAR COATING AND MARK THE INSTALLATION LOCATION OF THE COLLAR PLATE. THE OUTER EDGE OF THE COLLAR PLATE SHALL BE LOCATED AND MARKED ON THE STEEL CYLINDER OF THE PIPELINE. DO NOT CUT THE EXISTING PRETENSIONED REINFORCING ROD WRAP AT THIS TIME.
4. WELD THE EXISTING ROD WRAP TO THE STEEL CYLINDER WITHIN 1 INCH OF THE COLLAR PLATE INSTALLATION LOCATION AS SHOWN. WELD ONE ADDITIONAL ROD WRAP ON EITHER SIDE OF THE COLLAR PLATE THAT WILL NOT BE CUT. THE LENGTH OF THE WELDS ALONG ALL REINFORCING RODS SHALL BE A MINIMUM OF 4 INCHES. ALL WELDING SHALL BE PERFORMED USING E60XX WELDING RODS AND THE WELDERS SHALL BE CERTIFIED WELDERS PER ASME BPVC, SECTION IX. NOTE THE ROD WRAP IS IN TENSION AND CANNOT BE CUT UNTIL IT IS PROPERLY WELDED TO THE STEEL CYLINDER. AFTER WELDING THE ROD WRAP TO THE CYLINDER, CUT THE ROD WITHIN 1 INCH OF THE EDGE OF THE COLLAR PLATE INSTALLATION LOCATION.
5. WELD THE COLLAR PLATE / OUTLET ASSEMBLY TO THE STEEL CYLINDER.
6. PENETRANT TESTING SHALL BE PERFORMED ON THE GROOVE WELD ROOT PASS AND WHERE NOTED.
7. FOR SLIP-ON FLANGES, DRILL AND TAP HOLES PRIOR TO WELDING. CONTRACTOR SHALL PLUG WELD TAPPED HOLES ON COMPLETION OF SOAP AND AIR TEST.
8. OUTLET SHALL HAVE A SHOP OR FIELD APPLIED PORTLAND CEMENT MORTAR PER AWWA C205.
9. HIGH SOLIDS EPOXY (16 MILS) SHALL BE SHOP APPLIED TO SURFACES NOT COVERED BY CEMENT-MORTAR. EPOXY SHALL BE CURED IN ACCORDANCE W/ MANUFACTURES RECOMMENDATION PRIOR TO SUBJECTING IT TO IMMERSION. EPOXY SHALL BE NSF 61 APPROVED.
10. ALL GASKETS SHALL BE FULL FACED.
11. CLASS D FLANGES MAY USE RUBBER, COMPRESSED FIBER OR POLYTETRAFLUORETHYLENE GASKETS. CLASS E & F FLANGES MUST USE COMPRESSED FIBER OR POLYTETRAFLUORETHYLENE GASKETS. CLASS F FLANGES HAVE A MAXIMUM ALLOWABLE PRESSURE OF 300 PSI. IF PRESSURE IS HIGHER THAN 300 PSI CONTRACTOR SHALL SUBMIT ALTERNATIVE FLANGE.

SHEET 4 OF 10

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	EH	J. NAGELVOORT	0918		
				OUTLET AND COLLAR PLATE DETAIL FOR SCRW PIPE 20" TO 54" DIAMETER	 9/7/18
					COORDINATOR R.C.E. 56523 DATE
					DRAWING
					NUMBER
					SDW-177

Collar and Outlet Dimensions - Table 1

Nominal Pipe Diameter Inches D	Pressure Class psi P	C303 Steel Cylinder thickness inches (gauge) ty	Steel Cylinder OD inches Dy+2ty	AWWA C207 Flange Class	4" outlet with collar			
					Outlet Diameter inches Dyb	Min Outlet Thickness inches tb	Min Collar Width inches Wcollar	Min Collar Thickness inches tcollar
20	125	0.06 (16)	21.78	D	See note 1 on Sheet 4			
20	175	0.075 (14)	21.78	D	See note 1 on Sheet 4			
20	250	0.105 (12)	21.78	E	See note 1 on Sheet 4			
20	325	0.134 (10)	21.78	F	4	0.237	8	0.3125 (5/16)
21	125	0.06 (16)	22.78	D	See note 1 on Sheet 4			
21	175	0.075 (14)	22.78	D	See note 1 on Sheet 4			
21	250	0.105 (12)	22.78	E	See note 1 on Sheet 4			
21	325	0.134 (10)	22.78	F	4	0.237	8	0.3125 (5/16)
24	150	0.075 (14)	25.75	D	See note 1 on Sheet 4			
24	225	0.105 (12)	25.75	E	See note 1 on Sheet 4			
24	275	0.134 (10)	25.75	E	4	0.237	8	0.3125 (5/16)
24	350	0.164 (8)	25.75	F	4	0.237	8	0.375 (3/8)
27	125	0.075 (14)	28.78	D	See note 1 on Sheet 4			
27	200	0.105 (12)	28.78	E	See note 1 on Sheet 4			
27	250	0.134 (10)	28.78	E	4	0.237	8	0.3125 (5/16)
27	300	0.164 (8)	28.78	F	4	0.237	8	0.375 (3/8)
30	125	0.075 (14)	31.88	D	See note 1 on Sheet 4			
30	175	0.105 (12)	31.88	D	See note 1 on Sheet 4			
30	225	0.134 (10)	31.88	E	4	0.237	8	0.3125 (5/16)
30	275	0.164 (8)	31.88	E	4	0.237	8	0.375 (3/8)
30	325	0.188	31.88	F	4	0.237	8	0.4375 (7/16)
33	100	0.075 (14)	34.87	D	See note 1 on Sheet 4			
33	150	0.105 (12)	34.88	D	See note 1 on Sheet 4			
33	200	0.134 (10)	34.88	E	4	0.237	8	0.3125 (5/16)
33	250	0.164 (8)	34.88	E	4	0.237	8	0.375 (3/8)
33	300	0.188	34.88	F	4	0.237	8	0.5 (1/2)
36	100	0.090 (13)	37.87	D	See note 1 on Sheet 4			
36	150	0.105 (12)	37.88	D	See note 1 on Sheet 4			
36	175	0.134 (10)	37.88	D	4	0.237	8	0.25 (1/4)
36	225	0.164 (8)	37.88	E	4	0.237	8	0.375 (3/8)
36	275	0.188	37.88	E	4	0.237	8	0.5 (1/2)
36	350	0.25	37.88	F	4	0.237	8	0.625 (5/8)

NOTE:

- SEE NOTE 11 ON SHT 4.

SHEET 5 OF 10

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  9/7/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL	EH	J. NAGELVOORT	0918		
				OUTLET AND COLLAR PLATE DETAIL FOR SCRW PIPE 20" TO 54" DIAMETER	DRAWING NUMBER SDW-177

Collar and Outlet Dimensions - Table 1 (continued)

Nominal Pipe Diameter Inches D	Pressure Class psi P	C303 Steel Cylinder thickness inches (gauge) ty	Steel Cylinder OD inches Dy+2ty	AWWA C207 Flange Class	4" outlet with collar			
					Outlet Diameter inches Dyb	Min Outlet Thickness inches tb	Min Collar Width inches Wcollar	Min Collar Thickness inches tcollar
39	100	0.090 (13)	40.87	D	See note 1 on Sheet 4			
39	125	0.105 (12)	40.88	D	See note 1 on Sheet 4			
39	175	0.134 (10)	40.88	D	4	0.237	8	0.3125 (5/16)
39	200	0.164 (8)	40.88	E	4	0.237	8	0.375 (3/8)
39	250	0.188	40.88	E	4	0.237	8	0.4375 (7/16)
39	325	0.25	40.88	F	4	0.237	8	0.625 (5/8)
					See note 1 on Sheet 4			
42	125	0.105 (12)	43.88	D	4	0.237	8	0.25 (1/4)
42	150	0.134 (10)	43.88	D	4	0.237	8	0.375 (3/8)
42	200	0.164 (8)	43.88	E	4	0.237	8	0.4375 (7/16)
42	225	0.188	43.88	E	4	0.237	8	0.5625 (9/16)
42	300	0.25	43.88	F	4	0.237	8	0.625 (5/8)
					See note 1 on Sheet 4			
45	100	0.105 (12)	46.88	D	4	0.237	8	0.3125 (5/16)
45	150	0.134 (10)	46.88	D	4	0.237	8	0.375 (3/8)
45	175	0.164 (8)	46.88	D	4	0.237	8	0.375 (3/8)
45	200	0.188	46.88	E	4	0.237	8	0.5625 (9/16)
45	275	0.25	46.88	E	4	0.237	8	0.5625 (9/16)
45	300	0.312	46.87	F	4	0.237	8	0.5625 (9/16)
					See note 1 on Sheet 4			
48	100	0.105 (12)	49.88	D	4	0.237	8	0.25 (1/4)
48	125	0.134 (10)	49.88	D	4	0.237	8	0.375 (3/8)
48	175	0.164 (8)	49.88	D	4	0.237	8	0.4375 (7/16)
48	200	0.188	49.88	E	4	0.237	8	0.4375 (7/16)
48	225	0.25	49.88	E	4	0.237	8	0.5625 (9/16)
48	250	0.25	49.88	E	4	0.237	8	0.5625 (9/16)
48	300	0.312	49.87	F	4	0.237	8	0.625 (5/8)
					See note 1 on Sheet 4			
51	125	0.134 (10)	52.88	D	4	0.237	8	0.25 (1/4)
51	150	0.164 (8)	52.88	D	4	0.237	8	0.3125 (5/16)
51	175	0.188	52.88	D	4	0.237	8	0.375 (3/8)
51	225	0.25	52.88	E	4	0.237	8	0.5 (1/2)
51	250	0.25	52.88	E	4	0.237	8	0.625 (5/8)
51	300	0.312	52.87	F	4	0.237	8	0.75 (3/4)
					See note 1 on Sheet 4			
54	125	0.134 (10)	55.88	D	4	0.237	8	0.3125 (5/16)
54	150	0.164 (8)	55.88	D	4	0.237	8	0.375 (3/8)
54	175	0.188	55.88	D	4	0.237	8	0.4375 (7/16)
54	225	0.25	55.88	E	4	0.237	8	0.5625 (9/16)
54	250	0.312	55.87	E	4	0.237	8	0.5625 (9/16)
54	275	0.312	55.87	E	4	0.237	8	0.75 (3/4)
54	350	0.375	55.88	F	4	0.237	8	0.875 (7/8)

NOTE:

- SEE NOTE 11 ON SHT 4.

SHEET 6 OF 10

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	EH	J. NAGELVOORT	0918		
				OUTLET AND COLLAR PLATE DETAIL FOR SCRW PIPE 20" TO 54" DIAMETER	 9/7/18 COORDINATOR R.C.E. 56523 DATE
					DRAWING NUMBER SDW-177

Collar and Outlet Dimensions - Table 2

Nominal Pipe Diameter Inches D	Pressure Class psi P	C303 Steel Cylinder thickness inches (gauge) ty	Steel Cylinder OD inches Dy+2ty	AWWA C207 Flange Class	8" outlet with collar			
					Outlet Diameter inches D _{yb}	Min Outlet Thickness inches t _b	Min Collar Width inches W _{collar}	Min Collar Thickness inches t _{collar}
20	125	0.06 (16)	21.78	D	See note 1 on Sheet 4			
20	175	0.075 (14)	21.78	D	See note 1 on Sheet 4			
20	250	0.105 (12)	21.78	E	See note 1 on Sheet 4			
20	325	0.134 (10)	21.78	F	8	0.322	14	0.4375 (7/16)
21	125	0.06 (16)	22.78	D	See note 1 on Sheet 4			
21	175	0.075 (14)	22.78	D	See note 1 on Sheet 4			
21	250	0.105 (12)	22.78	E	See note 1 on Sheet 4			
21	325	0.134 (10)	22.78	F	8	0.322	14	0.5 (1/2)
24	150	0.075 (14)	25.75	D	See note 1 on Sheet 4			
24	225	0.105 (12)	25.75	E	See note 1 on Sheet 4			
24	275	0.134 (10)	25.75	E	8	0.322	16	0.3125 (5/16)
24	350	0.164 (8)	25.75	F	8	0.322	16	0.4375 (7/16)
27	125	0.075 (14)	28.78	D	See note 1 on Sheet 4			
27	200	0.105 (12)	28.78	E	See note 1 on Sheet 4			
27	250	0.134 (10)	28.78	E	8	0.322	16	0.3125 (5/16)
27	300	0.164 (8)	28.78	F	8	0.322	16	0.375 (3/8)
30	125	0.075 (14)	31.88	D	See note 1 on Sheet 4			
30	175	0.105 (12)	31.88	D	See note 1 on Sheet 4			
30	225	0.134 (10)	31.88	E	8	0.322	16	0.3125 (5/16)
30	275	0.164 (8)	31.88	E	8	0.322	16	0.375 (3/8)
30	325	0.188	31.88	F	8	0.322	16	0.5 (1/2)
33	100	0.075 (14)	34.87	D	See note 1 on Sheet 4			
33	150	0.105 (12)	34.88	D	See note 1 on Sheet 4			
33	200	0.134 (10)	34.88	E	8	0.322	16	0.3125 (5/16)
33	250	0.164 (8)	34.88	E	8	0.322	16	0.375 (3/8)
33	300	0.188	34.88	F	8	0.322	16	0.5 (1/2)
36	100	0.090 (13)	37.87	D	See note 1 on Sheet 4			
36	150	0.105 (12)	37.88	D	See note 1 on Sheet 4			
36	175	0.134 (10)	37.88	D	8	0.322	16	0.25 (1/4)
36	225	0.164 (8)	37.88	E	8	0.322	16	0.375 (3/8)
36	275	0.188	37.88	E	8	0.322	16	0.5 (1/2)
36	350	0.25	37.88	F	8	0.322	16	0.625 (5/8)

NOTE:

- SEE NOTE 11 ON SHT 4.

SHEET 7 OF 10

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  9/7/18 COORDINATOR R.C.E. 56523 DATE
ORIGINAL	EH	J. NAGELVOORT	0918		
				OUTLET AND COLLAR PLATE DETAIL FOR SCRW PIPE 20" TO 54" DIAMETER	DRAWING NUMBER SDW-177

Collar and Outlet Dimensions - Table 2 (continued)

Nominal Pipe Diameter Inches D	Pressure Class psi P	C303 Steel Cylinder thickness inches (gauge) ty	Steel Cylinder OD inches Dy+2ty	AWWA C207 Flange Class	8" outlet with collar			
					Outlet Diameter inches Dyb	Min Outlet Thickness inches tb	Min Collar Width inches Wcollar	Min Collar Thickness inches tcollar
39	100	0.090 (13)	40.87	D	See note 1 on Sheet 4			
39	125	0.105 (12)	40.88	D	See note 1 on Sheet 4			
39	175	0.134 (10)	40.88	D	8	0.322	16	0.3125 (5/16)
39	200	0.164 (8)	40.88	E	8	0.322	16	0.375 (3/8)
39	250	0.188	40.88	E	8	0.322	16	0.4375 (7/16)
39	325	0.25	40.88	F	8	0.322	16	0.625 (5/8)
					See note 1 on Sheet 4			
42	125	0.105 (12)	43.88	D	8	0.322	16	0.25 (1/4)
42	150	0.134 (10)	43.88	D	8	0.322	16	0.375 (3/8)
42	200	0.164 (8)	43.88	E	8	0.322	16	0.4375 (7/16)
42	225	0.188	43.88	E	8	0.322	16	0.625 (5/8)
42	300	0.25	43.88	F	See note 1 on Sheet 4			
45	100	0.105 (12)	46.88	D	8	0.322	16	0.3125 (5/16)
45	150	0.134 (10)	46.88	D	8	0.322	16	0.375 (3/8)
45	175	0.164 (8)	46.88	D	8	0.322	16	0.4375 (7/16)
45	200	0.188	46.88	E	8	0.322	16	0.5625 (9/16)
45	275	0.25	46.88	E	8	0.322	16	0.625 (5/8)
45	300	0.312	46.87	F	See note 1 on Sheet 4			
48	100	0.105 (12)	49.88	D	8	0.322	16	0.25 (1/4)
48	125	0.134 (10)	49.88	D	8	0.322	16	0.375 (3/8)
48	175	0.164 (8)	49.88	D	8	0.322	16	0.4375 (7/16)
48	200	0.188	49.88	E	8	0.322	16	0.5 (1/2)
48	225	0.25	49.88	E	8	0.322	16	0.5625 (9/16)
48	250	0.25	49.88	E	8	0.322	16	0.625 (5/8)
48	300	0.312	49.87	F	See note 1 on Sheet 4			
51	125	0.134 (10)	52.88	D	8	0.322	16	0.25 (1/4)
51	150	0.164 (8)	52.88	D	8	0.322	16	0.3125 (5/16)
51	175	0.188	52.88	D	8	0.322	16	0.375 (3/8)
51	225	0.25	52.88	E	8	0.322	16	0.5 (1/2)
51	250	0.25	52.88	E	8	0.322	16	0.625 (5/8)
51	300	0.312	52.87	F	8	0.322	16	0.75 (3/4)
54	125	0.134 (10)	55.88	D	8	0.322	16	0.3125 (5/16)
54	150	0.164 (8)	55.88	D	8	0.322	16	0.375 (3/8)
54	175	0.188	55.88	D	8	0.322	16	0.4375 (7/16)
54	225	0.25	55.88	E	8	0.322	16	0.5625 (9/16)
54	250	0.312	55.87	E	8	0.322	16	0.5625 (9/16)
54	275	0.312	55.87	E	8	0.322	16	0.75 (3/4)
54	350	0.375	55.88	F	8	0.322	16	0.875 (7/8)

NOTE:

- SEE NOTE 11 ON SHT 4.

SHEET 8 OF 10

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	EH	J. NAGELVOORT	0918		
				OUTLET AND COLLAR PLATE DETAIL FOR SCRW PIPE 20" TO 54" DIAMETER	 9/7/18 COORDINATOR R.C.E. 56523 DATE
					DRAWING NUMBER SDW-177

Collar and Outlet Dimensions - Table 3

Nominal Pipe Diameter Inches D	Pressure Class psi P	C303 Steel Cylinder thickness inches (gauge) ty	Steel Cylinder OD inches Dy+2ty	AWWA C207 Flange Class	12" outlet with collar			
					Outlet Diameter inches D _{yb}	Min Outlet Thickness inches t _b	Min Collar Width inches W _{collar}	Min Collar Thickness inches t _{collar}
20	125	0.06 (16)	21.78	D	See note 1 on Sheet 4			
20	175	0.075 (14)	21.78	D	See note 1 on Sheet 4			
20	250	0.105 (12)	21.78	E	See note 1 on Sheet 4			
20	325	0.134 (10)	21.78	F	use wrapper plate			
21	125	0.06 (16)	22.78	D	See note 1 on Sheet 4			
21	175	0.075 (14)	22.78	D	See note 1 on Sheet 4			
21	250	0.105 (12)	22.78	E	See note 1 on Sheet 4			
21	325	0.134 (10)	22.78	F	use wrapper plate			
24	150	0.075 (14)	25.75	D	See note 1 on Sheet 4			
24	225	0.105 (12)	25.75	E	See note 1 on Sheet 4			
24	275	0.134 (10)	25.75	E	use wrapper plate			
24	350	0.164 (8)	25.75	F	use wrapper plate			
27	125	0.075 (14)	28.78	D	See note 1 on Sheet 4			
27	200	0.105 (12)	28.78	E	See note 1 on Sheet 4			
27	250	0.134 (10)	28.78	E	use wrapper plate			
27	300	0.164 (8)	28.78	F	use wrapper plate			
30	125	0.075 (14)	31.88	D	See note 1 on Sheet 4			
30	175	0.105 (12)	31.88	D	See note 1 on Sheet 4			
30	225	0.134 (10)	31.88	E	12	0.375	20	0.5 (1/2)
30	275	0.164 (8)	31.88	E	12	0.375	20	0.5625 (9/16)
30	325	0.188	31.88	F	12	0.375	20	0.75 (3/4)
33	100	0.075 (14)	34.87	D	See note 1 on Sheet 4			
33	150	0.105 (12)	34.88	D	See note 1 on Sheet 4			
33	200	0.134 (10)	34.88	E	12	0.375	24	0.3125 (5/16)
33	250	0.164 (8)	34.88	E	12	0.375	24	0.375 (3/8)
33	300	0.188	34.88	F	12	0.375	24	0.5 (1/2)
36	100	0.090 (13)	37.87	D	See note 1 on Sheet 4			
36	150	0.105 (12)	37.88	D	See note 1 on Sheet 4			
36	175	0.134 (10)	37.88	D	12	0.375	24	0.3125 (5/16)
36	225	0.164 (8)	37.88	E	12	0.375	24	0.375 (3/8)
36	275	0.188	37.88	E	12	0.375	24	0.5 (1/2)
36	350	0.25	37.88	F	12	0.375	24	0.625 (5/8)

NOTE:

- SEE NOTE 11 ON SHT 4.

SHEET 9 OF 10

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	EH	J. NAGELVOORT	0918		
				OUTLET AND COLLAR PLATE DETAIL FOR SCRW PIPE 20" TO 54" DIAMETER	 9/7/18 COORDINATOR R.C.E. 56523 DATE
				DRAWING NUMBER	SDW-177

Collar and Outlet Dimensions - Table 3 (continued)

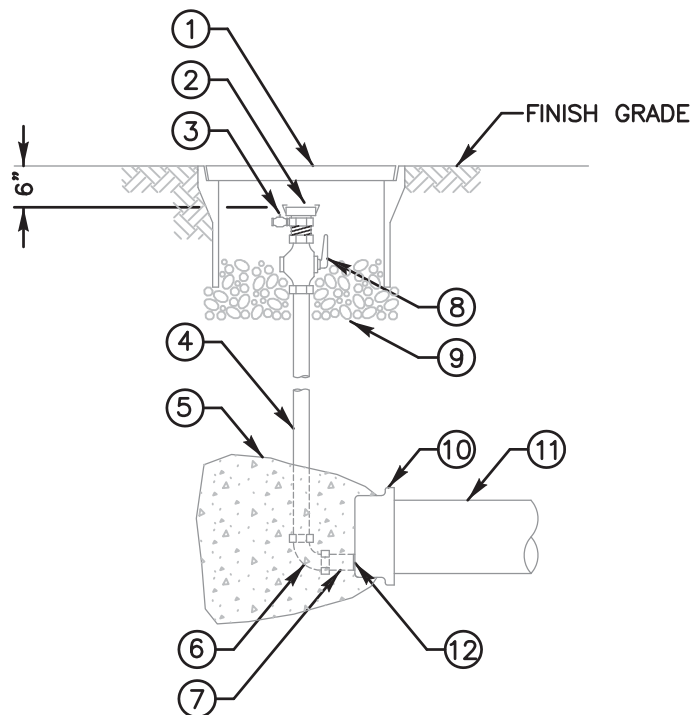
Nominal Pipe Diameter Inches D	Pressure Class psi P	C303 Steel Cylinder thickness inches (gauge) ty	Steel Cylinder OD inches Dy+2ty	AWWA C207 Flange Class	12" outlet with collar			
					Outlet Diameter inches Dyb	Min Outlet Thickness inches tb	Min Collar Width inches Wcollar	Min Collar Thickness inches tcollar
39	100	0.090 (13)	40.87	D	See note 1 on Sheet 4			
39	125	0.105	40.88	D	See note 1 on Sheet 4			
39	175	0.134	40.88	D	12	0.375	24	0.3125 (5/16)
39	200	0.164	40.88	E	12	0.375	24	0.375 (3/8)
39	250	0.188	40.88	E	12	0.375	24	0.5 (1/2)
39	325	0.25	40.88	F	12	0.375	24	0.625 (5/8)
42	125	0.105	43.88	D	See note 1 on Sheet 4			
42	150	0.134	43.88	D	12	0.375	24	0.3125 (5/16)
42	200	0.164	43.88	E	12	0.375	24	0.375 (3/8)
42	225	0.188	43.88	E	12	0.375	24	0.4375 (7/16)
42	300	0.25	43.88	F	12	0.375	24	0.625 (5/8)
45	100	0.105	46.88	D	See note 1 on Sheet 4			
45	150	0.134	46.88	D	12	0.375	24	0.3125 (5/16)
45	175	0.164	46.88	D	12	0.375	24	0.375 (3/8)
45	200	0.188	46.88	E	12	0.375	24	0.4375 (7/16)
45	275	0.25	46.88	E	12	0.375	24	0.5625 (9/16)
45	300	0.312	46.87	F	12	0.375	24	0.625 (5/8)
48	100	0.105	49.88	D	See note 1 on Sheet 4			
48	125	0.134	49.88	D	12	0.375	24	0.25 (1/4)
48	175	0.164	49.88	D	12	0.375	24	0.375 (3/8)
48	200	0.188	49.88	E	12	0.375	24	0.4375 (7/16)
48	225	0.25	49.88	E	12	0.375	24	0.5 (1/2)
48	250	0.25	49.88	E	12	0.375	24	0.5625 (9/16)
48	300	0.312	49.87	F	12	0.375	24	0.75 (3/4)
51	125	0.134	52.88	D	12	0.375	24	0.3125 (5/16)
51	150	0.164	52.88	D	12	0.375	24	0.3125 (5/16)
51	175	0.188	52.88	D	12	0.375	24	0.4375 (7/16)
51	225	0.25	52.88	E	12	0.375	24	0.5 (1/2)
51	250	0.25	52.88	E	12	0.375	24	0.625 (5/8)
51	300	0.312	52.87	F	12	0.375	24	0.75 (3/4)
54	125	0.134	55.88	D	12	0.375	24	0.3125 (5/16)
54	150	0.164	55.88	D	12	0.375	24	0.375 (3/8)
54	175	0.188	55.88	D	12	0.375	24	0.4375 (7/16)
54	225	0.25	55.88	E	12	0.375	24	0.5625 (9/16)
54	250	0.312	55.87	E	12	0.375	24	0.625 (5/8)
54	275	0.312	55.87	E	12	0.375	24	0.75 (3/4)
54	350	0.375	55.88	F	12	0.375	24	0.875 (7/8)

NOTE:

- SEE NOTES 11 AND 12 ON SHT 4.

SHEET 10 OF 10

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL	EH	J. NAGELVOORT	0918		
				OUTLET AND COLLAR PLATE DETAIL FOR SCRW PIPE 20" TO 54" DIAMETER	 9/7/18 COORDINATOR R.C.E. 56523 DATE
					DRAWING NUMBER SDW-177




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

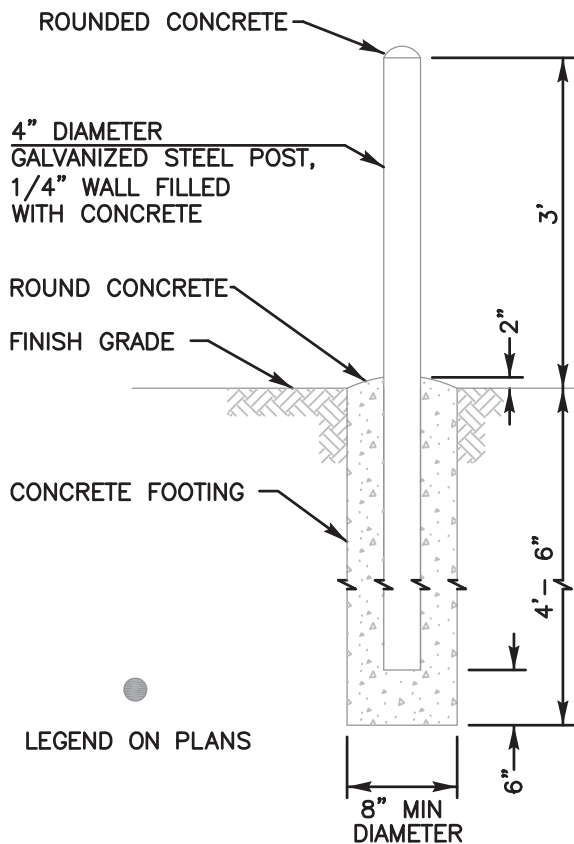
TEMP 2"

 LEGEND ON PLANS

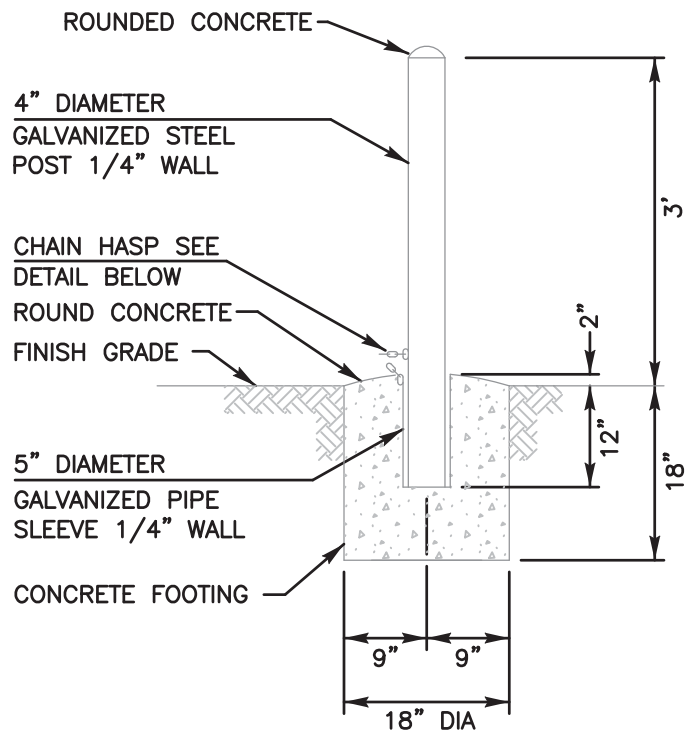
ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	POLYMER METER BOX WITH LID 17" x 30"	⑥	2" 90° BRONZE IRON PIPE THREAD BY COMPRESSION ELL
②	2" CAM & GROOVE ADAPTER x MIPT WITH LOCKING DUST CAP, SEE NOTE 5	⑦	2" CLOSE NIPPLE IPT
③	1/4" PRESSURE PET COCK	⑧	2" COMPRESSION x FIPT BALL VALVE WITH HANDLE
④	2" x REQUIRED LENGTH COPPER PIPE TYPE "K" RIGID OR SOFT	⑨	3/8" ROCK 6" DEEP
⑤	CONCRETE THRUST BLOCK SEE WT-01	⑩	DI END CAP WITH 2.5" FIPT OUTLET
		⑪	WATER MAIN
		⑫	NYLON DIELECTRIC BUSHING (2.5" x 2")

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING	RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kercheval	12/75		
Add Metric		T. Stanton	03/03	TEMPORARY 2" BLOW-OFF INSTALLATION	 12/17/2015 Chairperson R.C.E. 19246 Date
Replaced W-07		J. Tomasulo	10/04		
Delete Metric	MR	B. KNOLL	03/11		
Reviewed	MR	B. KNOLL	10/15		
				DRAWING NUMBER WB-05	

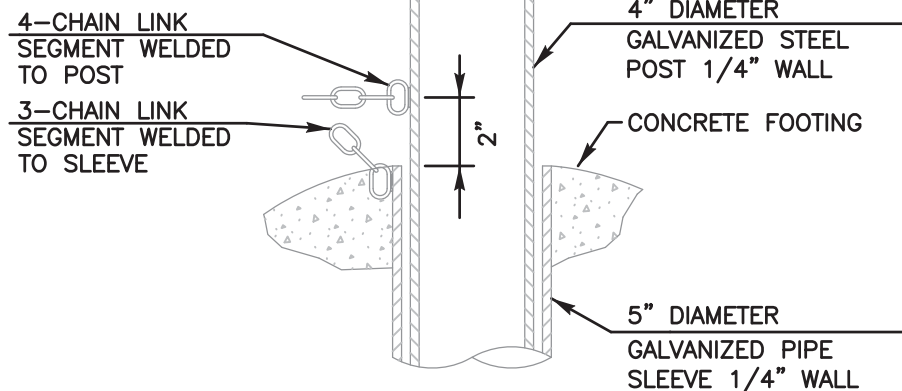
FOR DRAWING WT-01 SEE DRAWING SDW-151



PROTECTION POST
TYPE "A"



DEMOUNTABLE PROTECTION POST
TYPE "B"



CHAIN HASP DETAIL

NOTES:

- 1) TYPE "A" AND TYPE "B" PROTECTION POSTS SHALL BE INSTALLED WHERE INDICATED ON THE APPROVED PLANS OR AS DIRECTED BY THE ENGINEER. SDG&E REQUIREMENTS DICTATE IN AREAS OF SDG&E EQUIPMENT
- 2) CHAIN TO BE 1/4" PROOF COIL CHAIN GALVANIZED STEEL. WELD 4-LINK SEGMENT TO POST AND 3-LINK SEGMENT TO SLEEVE
- 3) TYPE "A" AND TYPE "B" PROTECTION POSTS SHALL BE COATED USING SAFETY YELLOW IN ACCORDANCE WITH AGENCY'S STANDARDS

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Replaced W-16		J. Tomasulo	10/04
Delete Metric	MR	B. KNOLL	03/11
Reviewed	MR	B. KNOLL	10/15

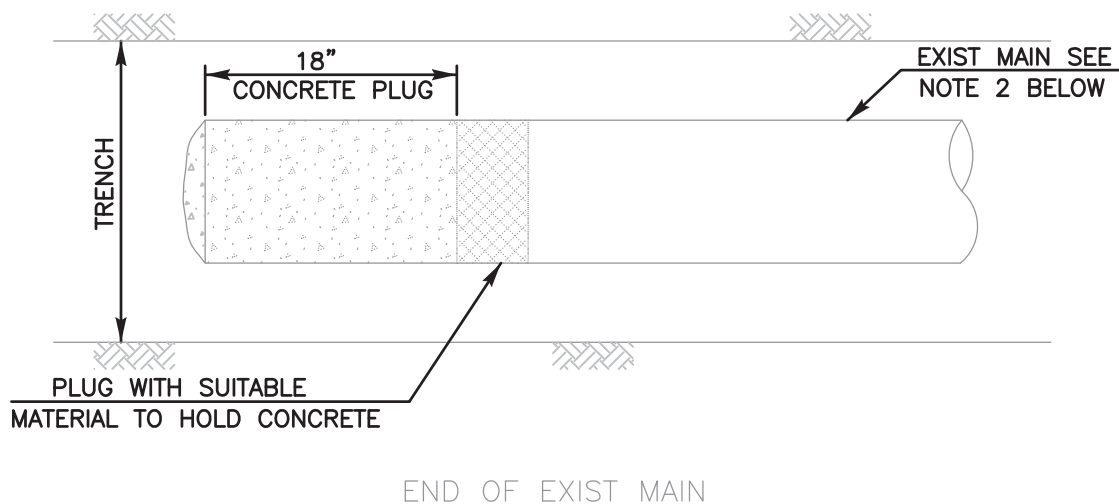
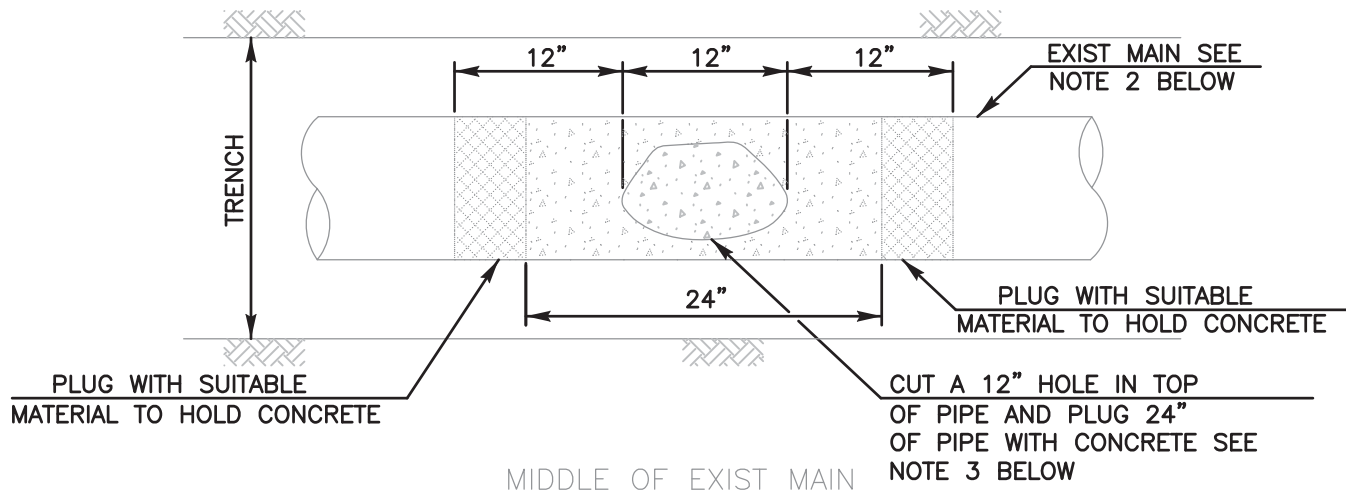
SAN DIEGO REGIONAL STANDARD DRAWING

PROTECTION POST INSTALLATION

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE


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

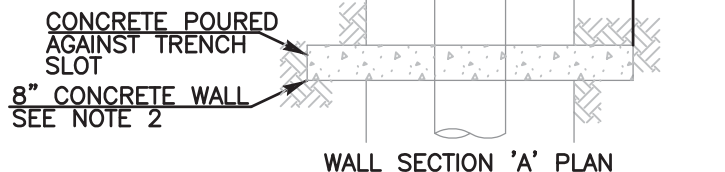
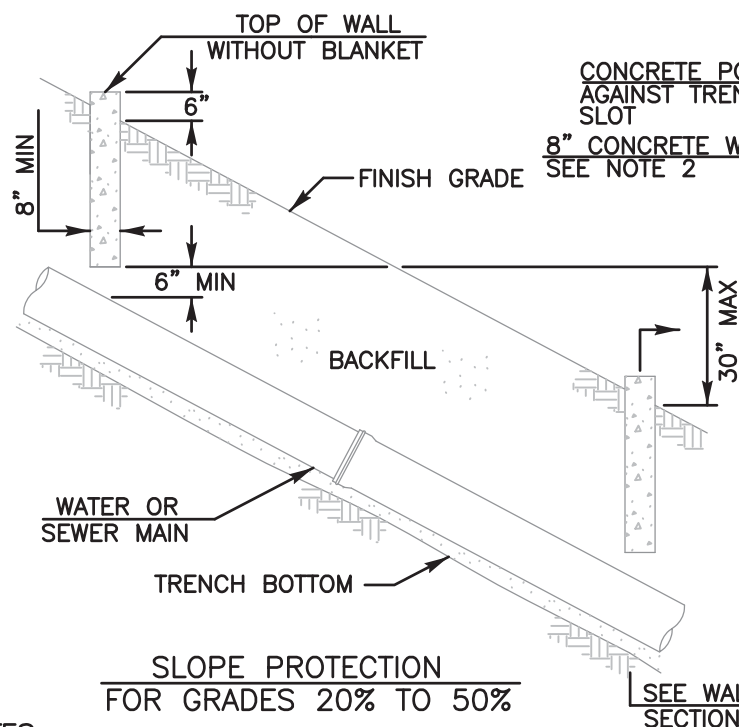
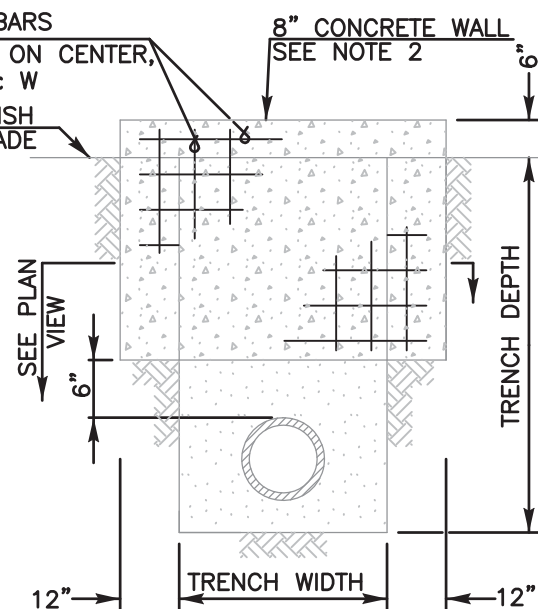
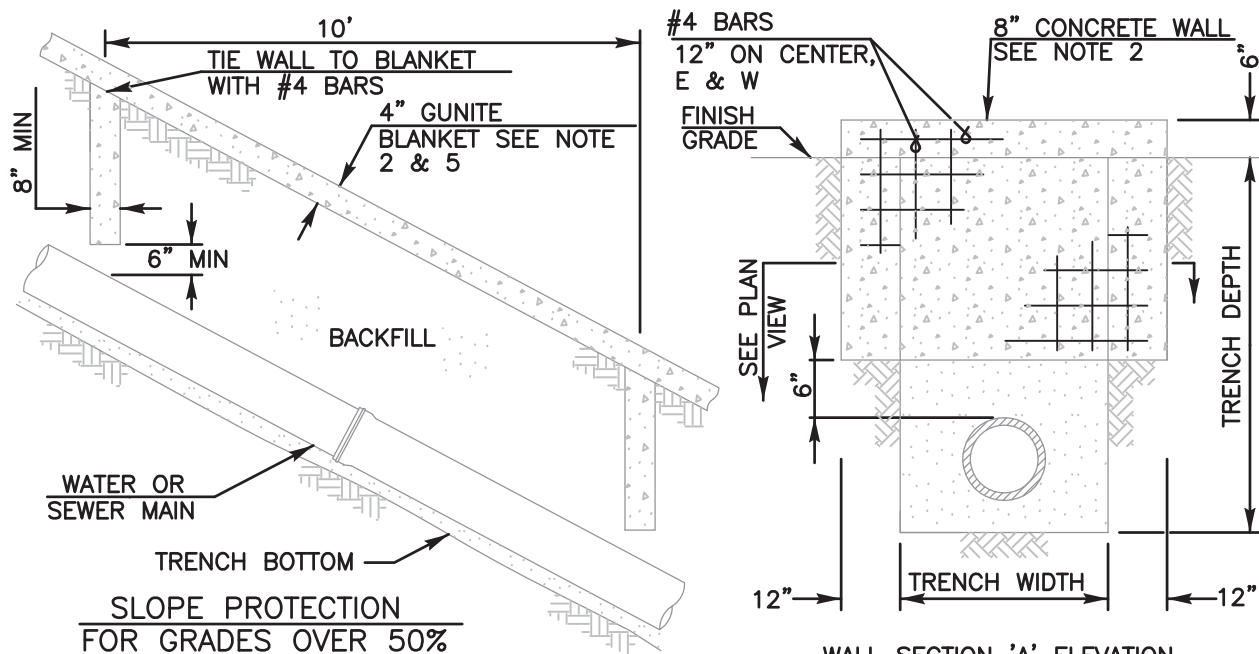
DRAWING
NUMBER **WM-04**



NOTES:

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) WATER AND RECYCLED WATER MAINS AND SEWER LATERALS 4" DIAMETER AND SMALLER SHALL HAVE A SHORT SECTION OF PIPE REMOVED AND PIPE ENDS ENCASED IN CONCRETE
- 3) EXISTING MAIN TO BE PLUGGED WITH CONCRETE OR PRESSURE GROUTED AT INTERVALS OF ABOUT 200' OR AS DIRECTED BY THE ENGINEER
- 4) EXISTING MAINS 16" AND LARGER REQUIRE THE ENTIRE LENGTH OF THE PIPE TO BE FILLED BY PRESSURE GROUTING OR BY BLOWN SAND
- 5) EXISTING VALVES SHALL BE TURNED TO THE CLOSED POSITION. REMOVE GATE WELL AND REPLACE WITH COMPACTED BACKFILL
- 6) FOR ABANDONMENT OF MANHOLES SEE SM-08
- 7) PRIOR AGENCY APPROVAL REQUIRED FOR CUTTING AND PLUGGING


Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		J. Tomasulo	10/04				
Delete Metric	MR	B. KNOLL	03/11	CUTTING AND PLUGGING ABANDONED WATER, RECYCLED WATER AND SEWER MAINS		 12/17/2015	
Reviewed	MR	B. KNOLL	10/15			Chairperson R.C.E. 19246 Date	
						DRAWING NUMBER WP-03	

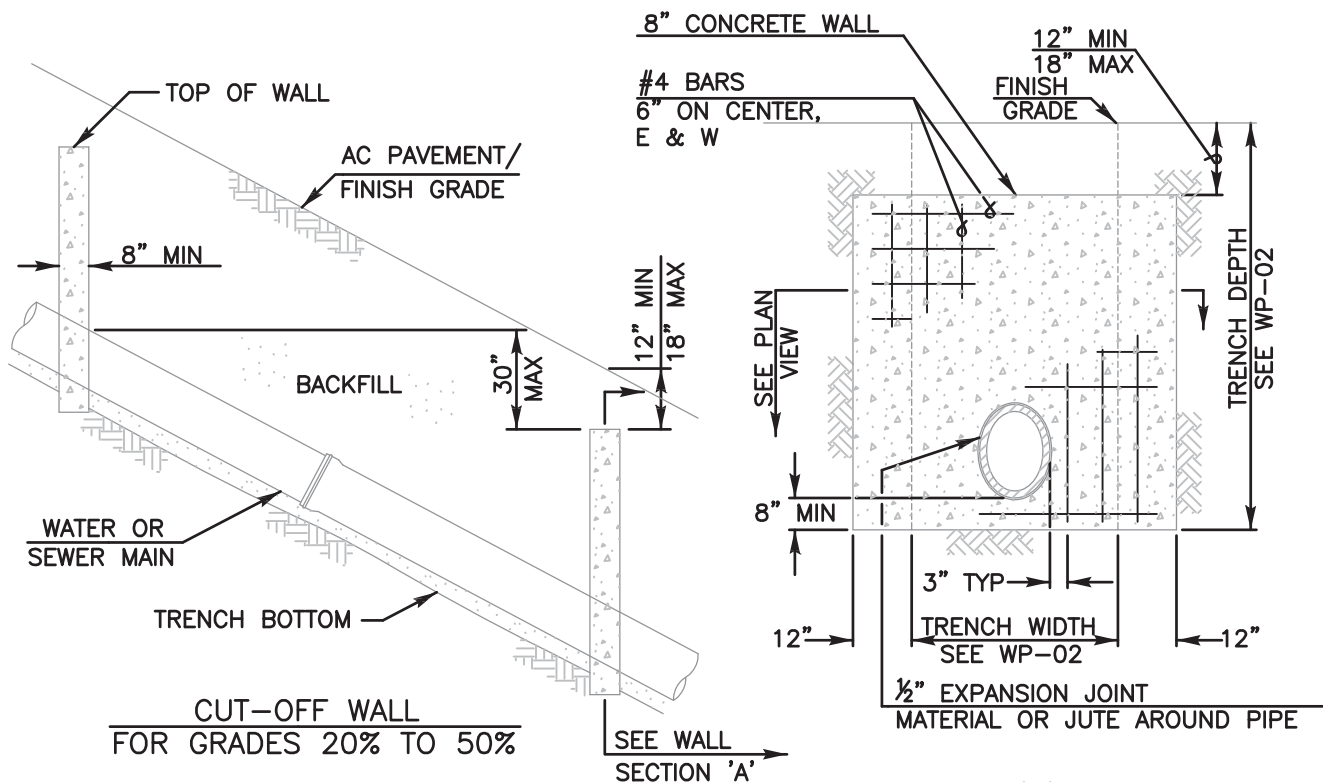


NOTES:

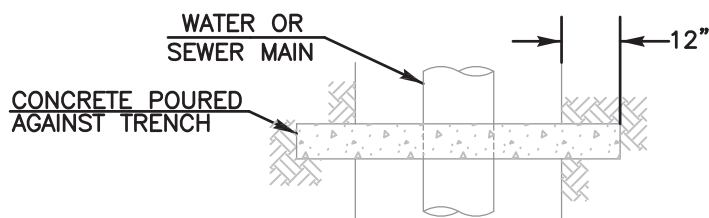
- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) THE DETAILS SHOWN REPRESENT THE MINIMUM REQUIRED. THE ENGINEER OF WORK IS REQUIRED TO PROVIDE A SUBMITTAL TO THE AGENCY OF JURISDICTION FOR REVIEW AND APPROVAL BY THE AGENCY'S ENGINEER PRIOR TO INSTALLATION
- 3) WALLS SHALL BE REINFORCED CONCRETE OR 8" x 8" x 16" CONCRETE BLOCK, REINFORCED AND ALL CORES FILLED WITH GROUT SEE SPECIFICATIONS
- 4) FOR GRADES OVER 50%, SLOPE PROTECTION SHALL ALSO INCLUDE AC PAVING, CONCRETE SLAB OR GUNITE BLANKET PLACED OVER THE PIPELINE ALIGNMENT
- 5) 4" GUNITE BLANKET WITH 6" SQUARE x 10 GAGE WIRE FABRIC AT THE ENGINEERS DISCRETION

LEGEND ON PLANS

Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING		RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE	
ORIGINAL		J. Tomasulo	10/04				
Delete Metric	MR	B. KNOLL	03/11	SLOPE PROTECTION INSTALLATIONS		 12/17/2015 Chairperson R.C.E. 19246 Date	
Reviewed	MR	B. KNOLL	10/15				
						DRAWING NUMBER WP-05	



WALL SECTION 'A' ELEVATION



WALL SECTION 'A' PLAN

NOTES:

- 1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
- 2) FOR USE AS TRENCH BACKFILL STABILIZATION IN TRAVELED AREAS
- 3) THE DETAILS SHOWN REPRESENT THE MINIMUM REQUIRED. THE ENGINEER OF WORK IS REQUIRED TO PROVIDE A SUBMITTAL TO THE AGENCY OF JURISDICTION FOR REVIEW AND APPROVAL BY THE AGENCY'S ENGINEER PRIOR TO INSTALLATION
- 4) WALLS SHALL BE REINFORCED CONCRETE OR 8" x 8" x 16" CONCRETE BLOCK, REINFORCED AND ALL CORES FILLED WITH GROUT SEE SPECIFICATIONS
- 5) FOR GRADES OVER 50% SEE WP-05/SP-05

LEGEND ON PLANS

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

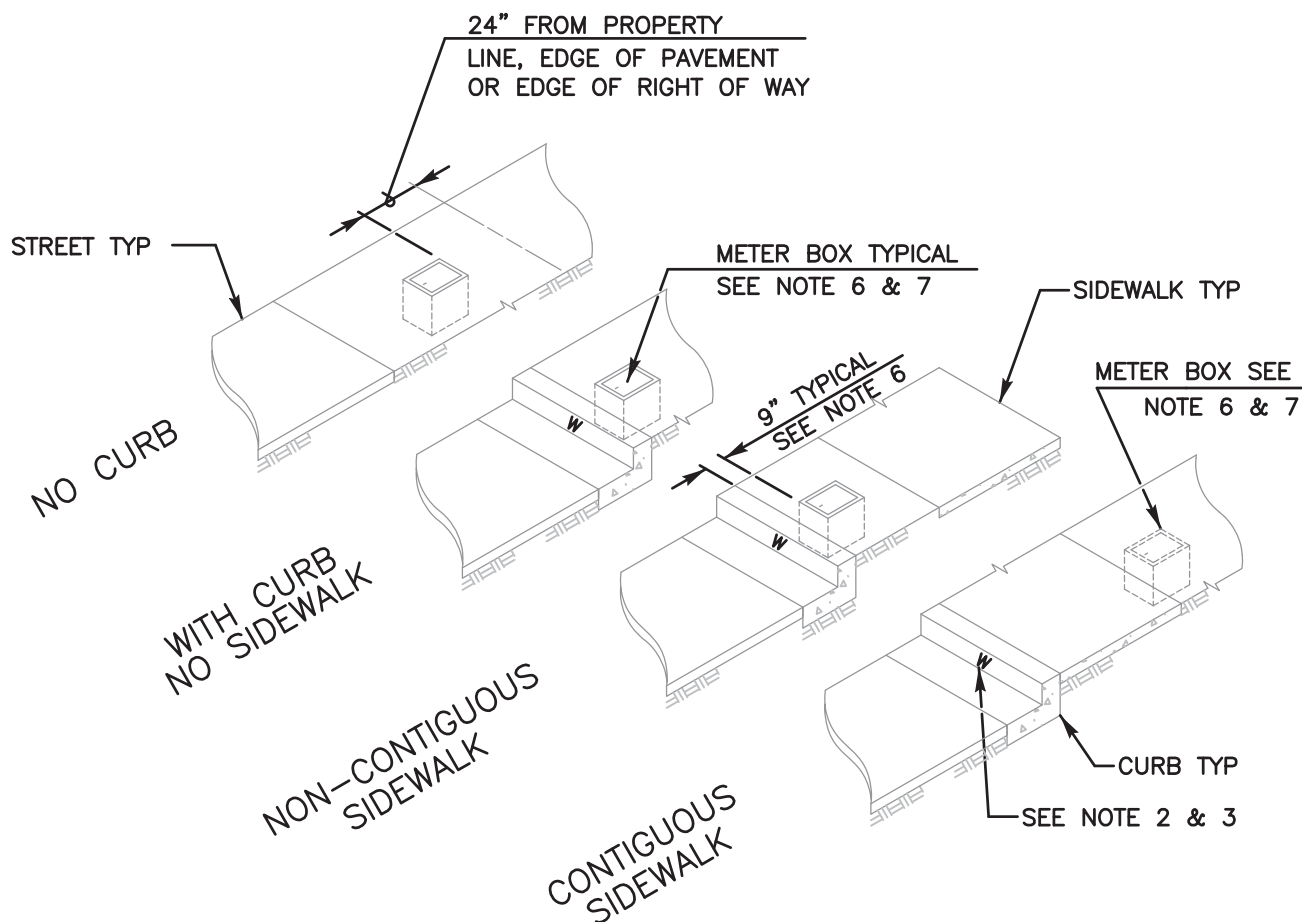
SAN DIEGO REGIONAL STANDARD DRAWING

CUT-OFF WALL INSTALLATION IN
TRAVELED AREAS

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE

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

DRAWING
NUMBER **WP-07**



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

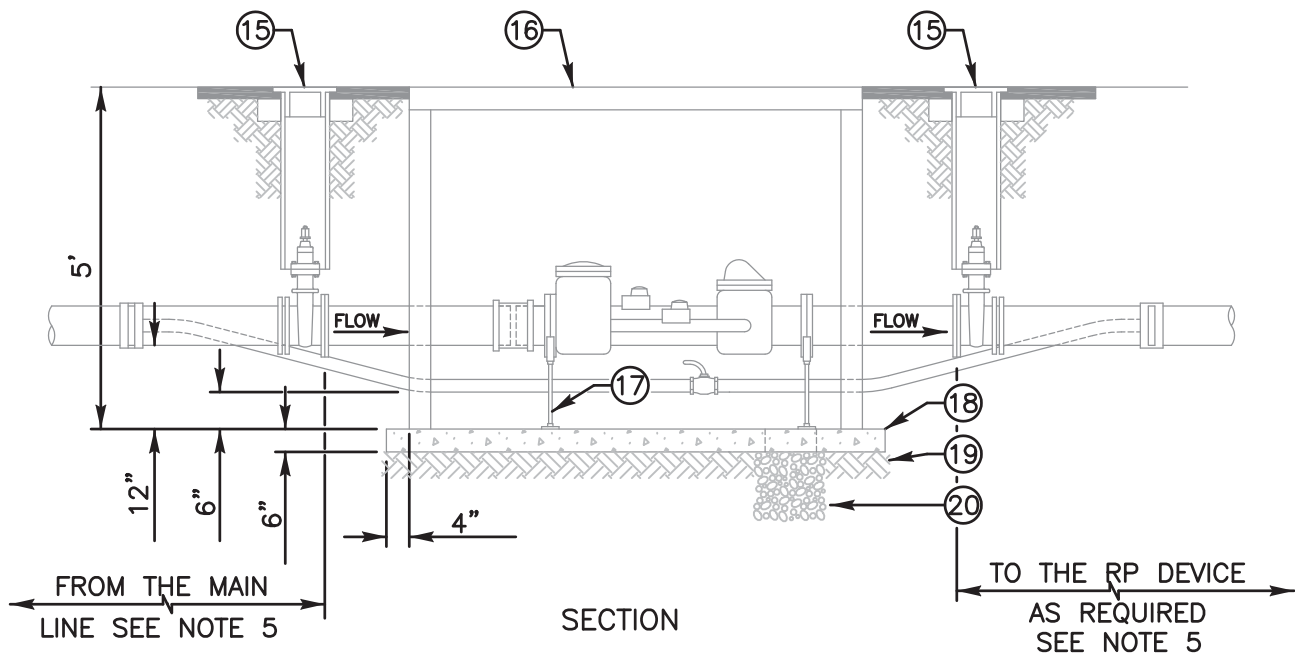
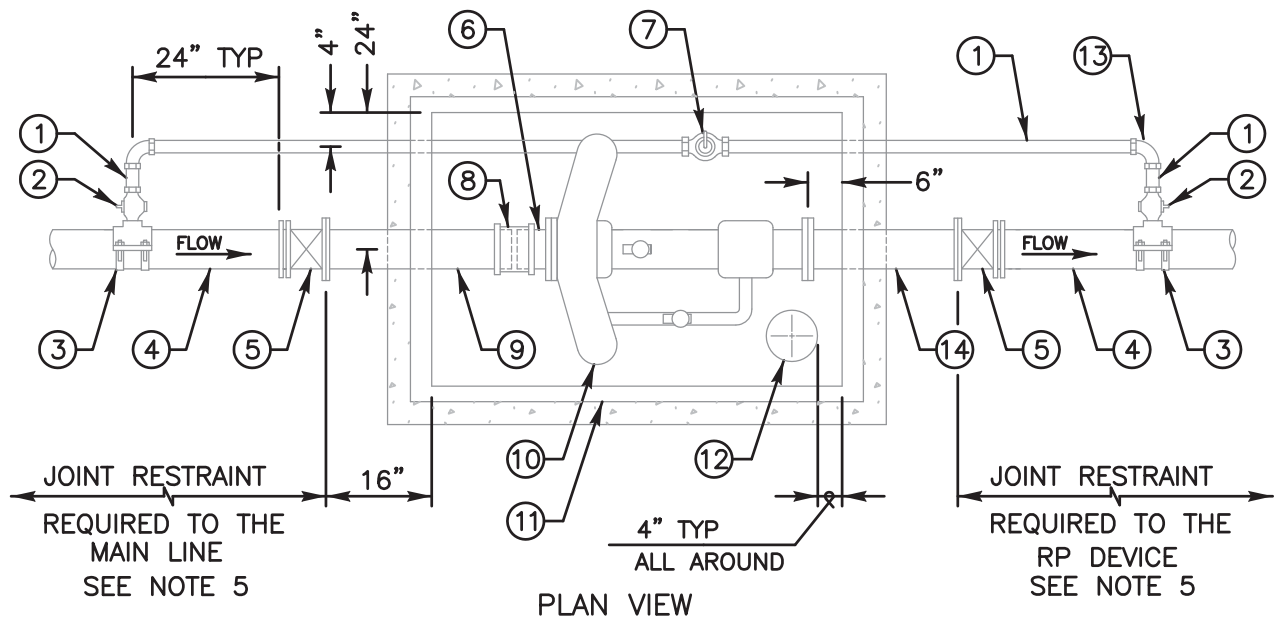
METER BOX LOCATIONS FOR WATER AND RECYCLED WATER APPURTENANCES

RECOMMENDED BY THE SAN DIEGO
REGIONAL STANDARDS COMMITTEE



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

DRAWING
NUMBER

WS-03



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

(INDICATE SIZE)
 — 
 LEGEND ON PLANS

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

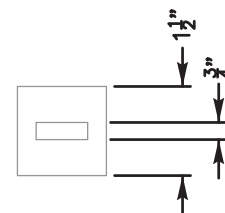
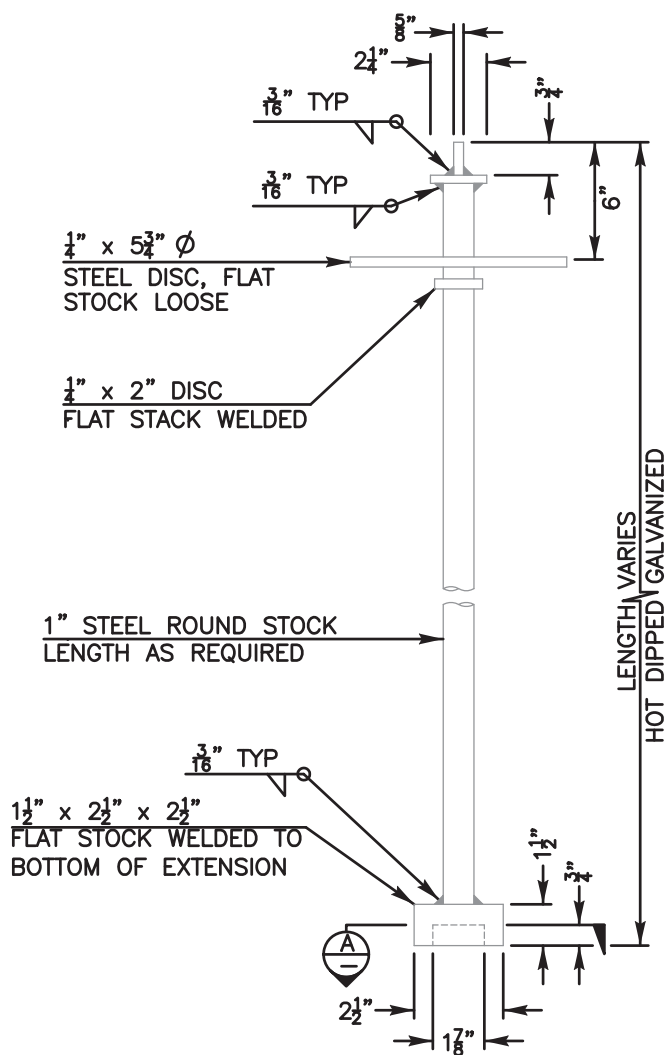
FOR DRAWING OF THE METER INSTALLATION SEE WS-04 (SHEET 1 OF 2)

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, $\frac{3}{4}$ " GRAVEL SUMP, SEE NOTE 8


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



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	SAN DIEGO REGIONAL STANDARD DRAWING	
ORIGINAL		G. Parkinson	5/92	STEEL VALVE STEM EXTENSION FOR VALVES 2" AND SMALLER	
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		
				RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE  12/17/2015 Chairperson R.C.E. 19246 Date	
				DRAWING NUMBER WV-05	



Public Works Department

**PROJECT IMPLEMENTATION DIVISION
STANDARDS & CONTRACT
DOCUMENTS SECTION**

525 B STREET STE. 750
SAN DIEGO, CA 92101

DOCUMENT NUMBER: PWPI010119-03