

WATER SYSTEMS

WATER SYSTEMS

W

SUPPLEMENT TO REGIONAL STANDARD DRAWINGS ("W" SERIES)

NOTES All materials used must be on the City of San Diego Water Utilities Department's "Approved Materials List."

DRAWING W-1

NOTES Add: 3. "Bronze pipe saddles are required for all taps into polyvinyl chloride (PVC) pipe. Top taps are not permitted. Silver solder joints shall not be used."

- CALLOUT**
- (1) Delete and substitute: Use copper tubing stop (install with key on side and open tap) and adaptor. On steel mains use weld on couplings. Insulating bushings are required."
 - (2) Delete and substitute: Use copper tubing type (K) soft for 1 inch services only. No intermediate joints permitted within the first 60 feet from the main. For lengths longer than 60 feet use flare joint union or lok-pac fitting with locking clamp and stainless steel bolt only. No sweat joints are allowed.
 - (3) Delete and substitute: "Bronze angle service stop with locking device and meter coupling attached. "Furnish and install bronze property valve. Use spacer for meter."

DRAWING W-2

NOTES: 1. Delete and substitute: "Top taps not permitted. Silver solder shall not be used. Any glue joint shall be beveled prior to assembly."

- CALLOUT**
- (1) Delete and substitute: "Bronze service clamp (double strap). On steel mains use weld on couplings. Insulating bushings are required."
 - (2) Delete and substitute: "Bronze corporation stop and adaptor (installed with key on side and open tap). For PVC pipe the adaptor must be bronze with a pack joint to accept PVC. Pack-joint shall have locking clamp with stainless steel bolts."
 - (3) Delete and substitute: "Copper Tubing or PVC pipe."
 - (4) Delete and substitute: "PVC weld on coupling /brass coupling used when service is 20 feet or longer."

Add: For PVC pipe the adaptor must be bronze with a pack-joint to accept PVC pipe. No PVC adaptors are permitted. All glue joints shall be beveled (min. 1/8 inch on 45° angle) prior to assembly.

SHT. 1 OF 5

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	CITY OF SAN DIEGO STANDARDS COMMITTEE <i>Henry J. Cochran</i> COORDINATOR	12-23-94 DATE
ORIGINAL		M. Rollinger	5-20-92			
NOTES	A.O.			SUPPLEMENT TO REGIONAL STANDARD DRAWING ("W" SERIES)	DRAWING NUMBER	SDW-100

DRAWING W-3

CALLOUT

- (1) Delete and substitute: "Bronze service clamp (double strap). On steel mains use weld on couplings. Insulating bushings are required."

DRAWING W-4

CALLOUT

- (1) Delete and substitute: "Bronze service clamp (double strap). On steel mains use weld on couplings. Insulating bushings are required."
- (4) Delete and substitute: "90° ELL. (No sweat joints allowed.)"
- (5) Delete and substitute: "Copper Tubing or PE 200 for 1 inch, PVC (iron pipe size) for 2 inches."

DRAWING W-5

CALLOUT

- (4) Delete and substitute: "Valve Well Frame and Cover (see Standard Drawings W-12A & W-12B)."

DRAWING W-6

NOTES

Add: Delete End of Main Detail and use SDW-106 for End of Main Blow-off.

CALLOUT

- (1) Delete and substitute: "Bronze service clamp (double strap). On steel mains use weld on couplings. Insulating bushings are required."
- (2) Delete and substitute: "Bronze corporation stop (install with key on side and open tap)."
- (4) Delete and substitute: "90° ELL. (No sweat joints allowed.)"

DRAWING W-7

CALLOUT

- (1) Delete and substitute: "Bronze service clamp (double strap). On steel mains use weld on couplings. Insulating bushings are required."

NOTES

2: Delete and substitute: "See Standard Drawing SDW-106 for end of main detail."

SHT. 2 OF 5

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	CITY OF SAN DIEGO STANDARDS COMMITTEE COORDINATOR	12-23-94 DATE
ORIGINAL		M. Rollinger	5-20-92			
NOTES	A.O.					
				SUPPLEMENT TO REGIONAL STANDARD DRAWING ("W" SERIES)	DRAWING NUMBER	SDW-100

DRAWING W-8

- CALLOUT**
- (5) Delete and substitute: "Use steel pipe only."
 - (6) Delete and substitute: "Valve Well Frame and cover."
(See Standard Drawings W-12A & w-12B)

DRAWING W-9

- CALLOUT**
- (2) Delete and substitute: "Flanged Valve."
 - (3) Delete and substitute: "Cast iron pipe"; Ductile iron, or C-900 PVC
 - (4) Delete and substitute: "Flange x Flange 90° Bend."
 - (6) Delete and substitute: "Valve Well Frame and Cover per W-12A & W-12B."
 - (9) Delete in its entirety. Included in callout (6) and (10)
 - (10) Delete and substitute: "Valve Well Frame and cover per W-12A & W-12B."

DRAWING W-10

- CALLOUT**
- (2) Delete and substitute: "6-inches long Cast iron extension spool connected to base of fire hydrant with shear bolt (ASTM A307) . Shear bolts shall be 3/4 inch NC thread, 3-1/4 inch minimum length (3/16 inch diameter hole 2 inches deep in bolt, galvanized after boring. The hole shall be filled with grease before installation). Bolts shall face up.
 - (3) Add: Cast iron extension spool unless break-off check valve is required during plan review and noted on plans.
 - (4) Delete and substitute: "Cast iron extension spool."
 - (5) Delete the word "Typical".
 - (8) Revise to read "Gate Valve with Concrete Support Std. Dwg. W-19 (Type A)"

SHT. 3 OF 5

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		M. Rollinger	5-20-92		
NOTES	A.O.			SUPPLEMENT TO REGIONAL STANDARD DRAWING ("W" SERIES)	DRAWING NUMBER SDW-100

DRAWING W-11

NOTES

- 1: Delete entire note and replace with: "Concrete apron shall be required where the fire hydrant is installed in an unpaved location. The apron shall be 4 inch thick (520-C-2500) concrete.
- 2: Delete entire note and replace with: "When distance from hydrant to the top or toe of slope or wall is less than 2 feet, special hydrant installation detail shall be shown on the plans."
- Add: 5. For Type A Fire Hydrants the distance from the face of the curb to the center line of the Fire Hydrant shall be 6 feet.

DRAWING W-17

NOTES

- Add: 3. "A minimum of 6 inches of concrete shall be poured on virgin or compacted soil beneath each installation."
- Add: 4. "Tee shall be concrete blocked a minimum of 6 inches on all three sides."
- Add: 5. Use 12 inches – 18 inches length of pipe between the end cap and the last joint as a bond breaker on dead end blocking.

DRAWING W-21

NOTES

- 1: Delete and substitute: "For trenching on improved streets see Standard Drawings SDG-107 and SDG-108 for resurfacing details."

DRAWING W-23

CALLOUT

- (2) Delete and substitute: "1-inch Ball Valve."
- (3) Delete and substitute: "Main connection x brass multiple branch connection."

DRAWING W-25

Revise as follows: "Electrically bond service tape and main tape together. Use only 6 inch tape at 4 inches below pavement section. Tape shall extend within meter box itself to allow markout by continuity tester."

SHT. 4 OF 5

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	CITY OF SAN DIEGO STANDARDS COMMITTEE <i>George J. ...</i> 12-23-94 COORDINATOR DATE
ORIGINAL		M. Rollinger	5-20-92		
NOTES	A.O.			SUPPLEMENT TO REGIONAL STANDARD DRAWING ("W" SERIES)	DRAWING NUMBER SDW-100

DRAWING W-27

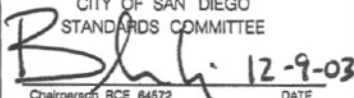
Dimension from slab to bottom of backflow device to be "18" minimum to 36" maximum".

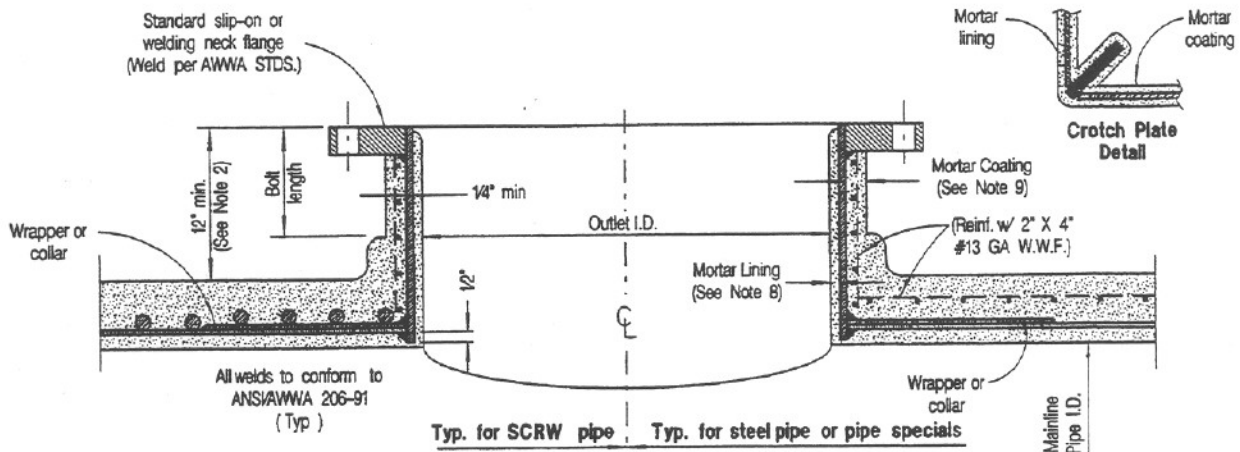
NOTES

Amend Note 8 to read: "Location must be approved by Water Department, Operations Distribution Division, Meter/Backflow Group and shown on plans."

- 9. All risers, elbows and underground piping shall be copper. Brass unions are acceptable.

SHT. 5 OF 5


REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		M. Rollinger	5-20-92		
NOTES	A.O.			SUPPLEMENT TO REGIONAL STANDARD DRAWING ("W" SERIES)	 <small>Chairperson RCE 84572</small> <small>DATE</small>
NOTES	J2C	Oskoui	12/03		
				DRAWING NUMBER	SDW-100



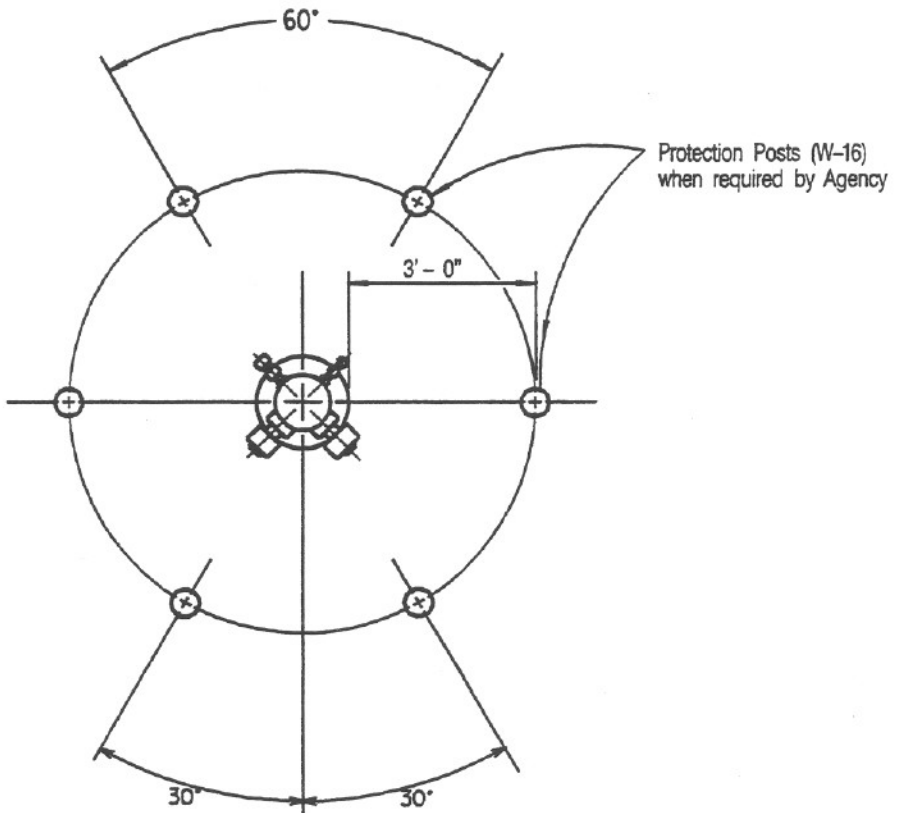
OUTLET REINFORCING

Ratio of Outlet I.D. to pipe I.D.	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 O.D. 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-inches 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 design drawings or submitted for approval.
 - Nozzle fabrication details are typical for all sizes of outlets.
 - Repeat Note 1 from 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-inch for 8-inch I.D. and less
 1/2-inch for 10-inch I.D. through 16-inch I.D.
 3/4-inch for 18-inch I.D. and greater
 - Coating thickness for outlets shall be:
 3/4-inch for 16-inch I.D. and less
 1 1/4-inch for 18-inch I.D. 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, collar, wrapper and crotch plate design shall conform to M-11, Steel Pipe-Guide for Design and Installation 1989 Edition.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	CITY OF SAN DIEGO STANDARDS COMMITTEE  COORDINATOR R.C.E. 25902 DATE 12-23-94
ORIGINAL		H. Horn	5-6-80		
		J.P. Casey	6-3-83		
		J.P. Casey	8-23-86		
				TYPICAL OUTLET FOR SCRW PIPE STEEL PIPE AND PIPE SPECIALS	DRAWING NUMBER SDW-101

REVISED 9/30/94



NOTE:

Number of posts to be determined by Engineer.

REVISION	BY	APPROVED	DATE
ORIGINAL		W.J. Tomas	5-18-75
		J.P. Casey	6-3-83

CITY OF SAN DIEGO - STANDARD DRAWING

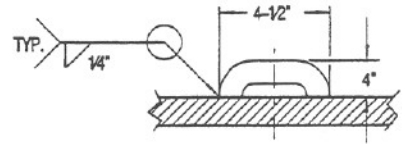
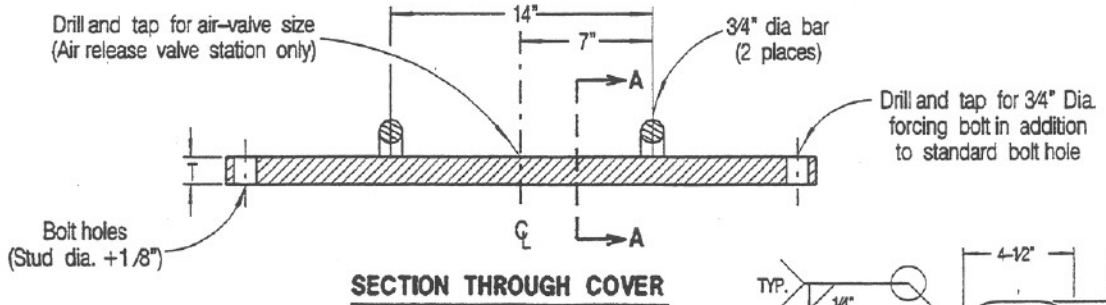
**FIRE HYDRANT
PROTECTION POSTS**

CITY OF SAN DIEGO
STANDARDS COMMITTEE

Henry F. ... 12-23-84
COORDINATOR R.C.E. 25802 DATE

DRAWING NUMBER **SDW-102**

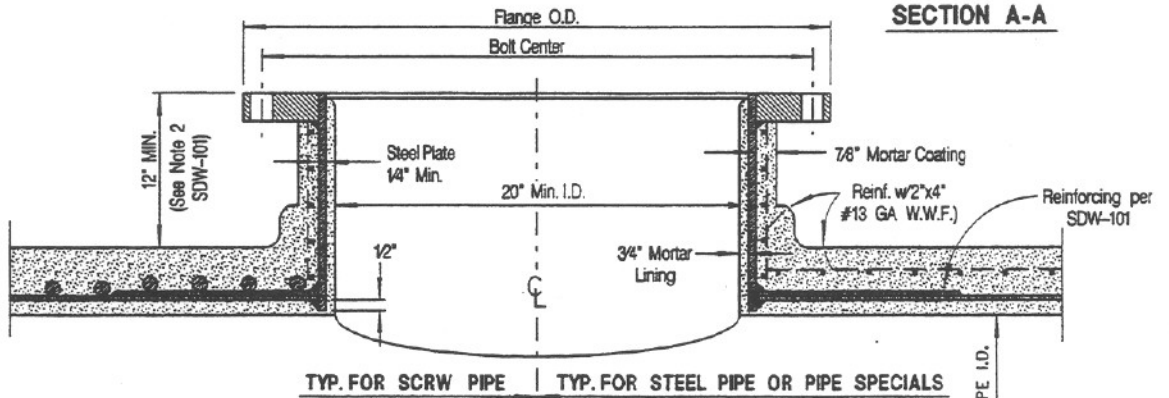
REVISED 9/30/84



HANDLE DETAIL

(Typical 2 Places)

SECTION A-A



SECTION ON PIPE AXIS

TYPE	PRESSURE RANGE (P.S.I.)	FLANGE		BOLT CENTER	NO. OF BOLTS	STUD DIA. & LENGTH	THICKNESS (T)
		I.D.	O.D.				
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"	1-1/16"
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 D.C.

- 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 manufacturer's standards.
 2. Details of manholes on pipelines less than 24 inches in 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
ORIGINAL		H. Horn	5-8-80
		J.P. Casey	6-8-83
		J.P. Casey	8-22-86

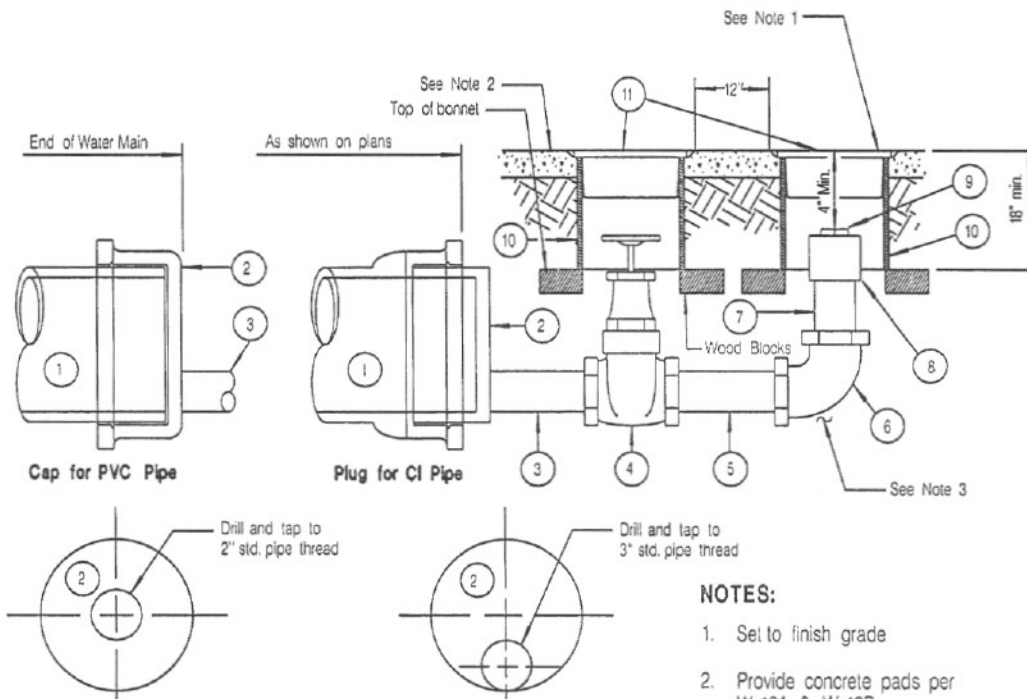
CITY OF SAN DIEGO - STANDARD DRAWING

ACCESS MANHOLE

CITY OF SAN DIEGO
STANDARDS COMMITTEE
John J. Rubin 12-23-94
COORDINATOR R.C.E. 25902 DATE

DRAWING NUMBER **SDW-103**

REVISED 9/30/94



Concentric plug drilled for 2" Blow-off for 3"-8" Mains

Eccentric plug drilled for 3" Blow-off for 10"-20" Mains

NOTES:

1. Set to finish grade
2. Provide concrete pads per W-12A & W-12B
3. For Thrust Blocks, see W-17 & W-18

SCHEDULE			
ITEM	STD. DWG. NUMBER	SIZE AND DESCRIPTION	
1	Water Main	W-21	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	W-17, 18	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	W-12B	8" x Variable to Grade minus 3/4" 8" x Variable to Grade minus 3/4"
11	Cast Iron valve well cover for gate valve and riser	W-12A	8" 8"

Revision	By	Approved	Date
ORIGINAL		J.P.Mueller	3-3-83
		J.P.Casey	6-3-83
		J.P.Casey	8-26-86
NOTES	A.O.	F. Belock	4-96
NOTES	SM	Oskoui	12/03

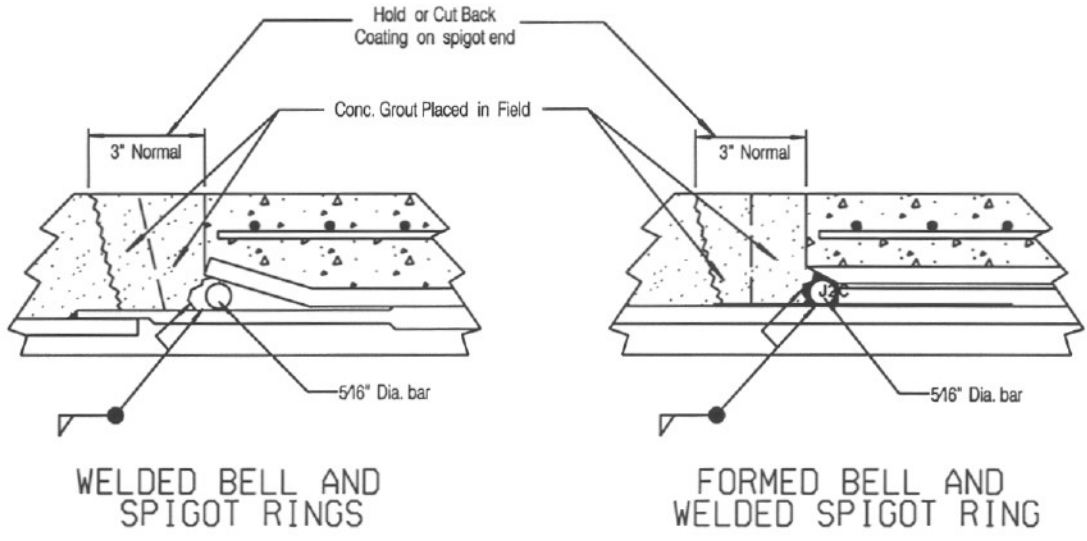
CITY OF SAN DIEGO STANDARD DRAWING

BLOW-OFF ASSEMBLIES
AT THE END OF
PVC AND CAST IRON MAINS

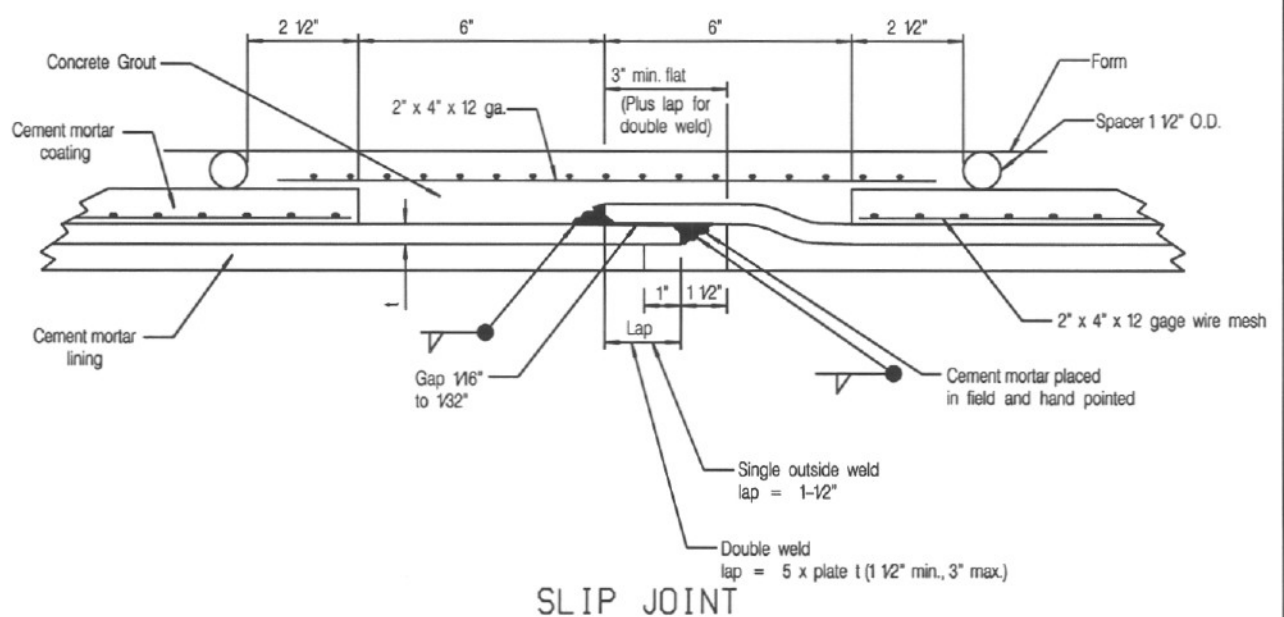
CITY OF SAN DIEGO
STANDARDS COMMITTEE

B. Belock 12-9-03
Chairperson RCE 64572 Date

DRAWING NUMBER SDW-106



NOTE:
See Std. Dwg. SDW-111 for full details of above joints.



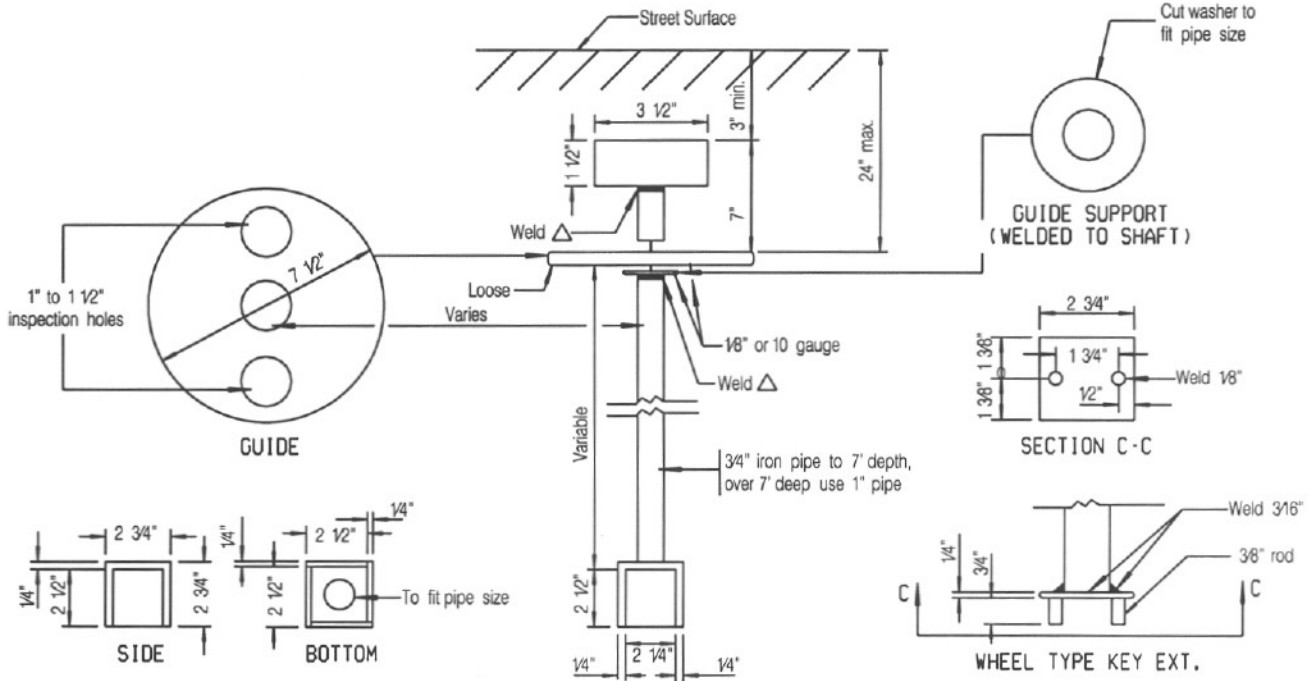
NOTES:
1. All welds to conform to ANSI/AWWA C206 - 91

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		H. Horn	5-6-80		
		J.P. Casey	6-3-83		

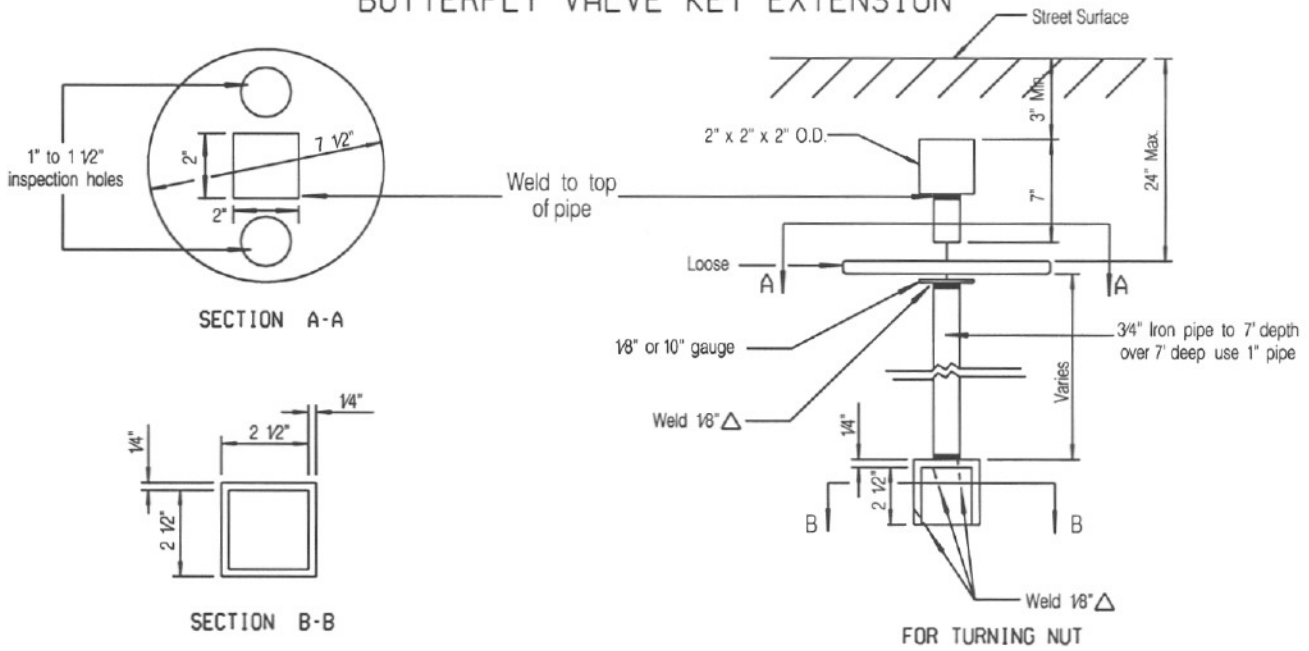
FIELD WELDED JOINTS

COORDINATOR R.C.E. 25902 DATE 12-23-94

DRAWING NUMBER SDW - 108



BUTTERFLY VALVE KEY EXTENSION



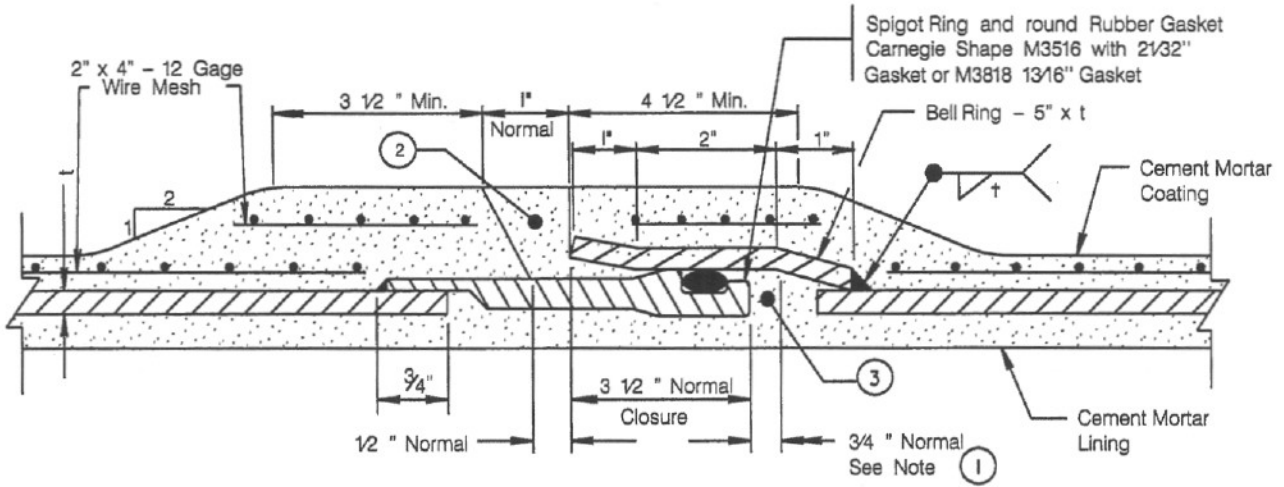
GATE VALVE KEY EXTENSION

- NOTES: 1. Valve key extensions shall be installed: a) For all butterfly valves, and b) For all gate valves when top of gate valve nut is twenty-five inches (25") or more below ground or pavement surface.
2. Paint all finished surfaces with asphalt varnish.
3. Materials and Workmanship shall be as required by Sections 206 and 304 of Std. Specs.
4. For valve box and cover, see W-12A & W-12B
5. All welds to conform to ANSI/AWWA C206 - 91

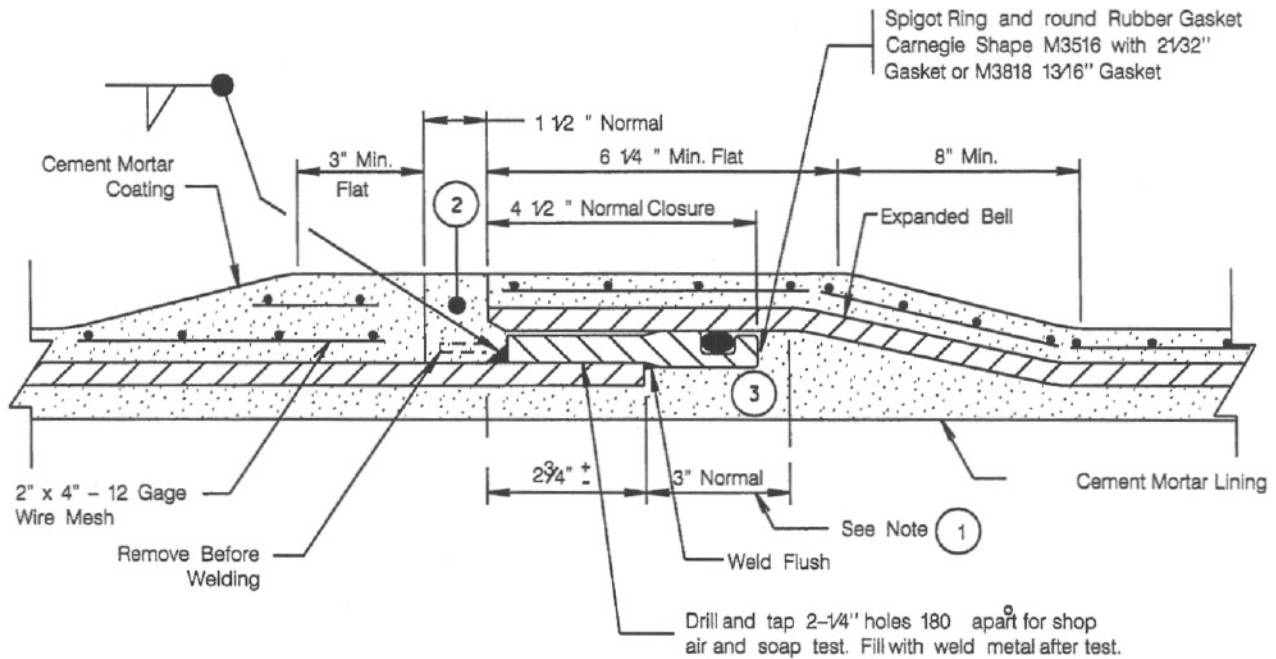
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	CITY OF SAN DIEGO STANDARDS COMMITTEE <i>George J. Rubin</i> COORDINATOR R.C.E. 25902 DATE 12-23-94
ORIGINAL		H. Horn	5-6-90		
		J.P. Casey	6-3-83		
		J.P. Casey	8-22-86		
NOTES	A.O.				

VALVE KEY EXTENSIONS

DRAWING NUMBER SDW - 109




WELDED BELL AND SPIGOT RINGS

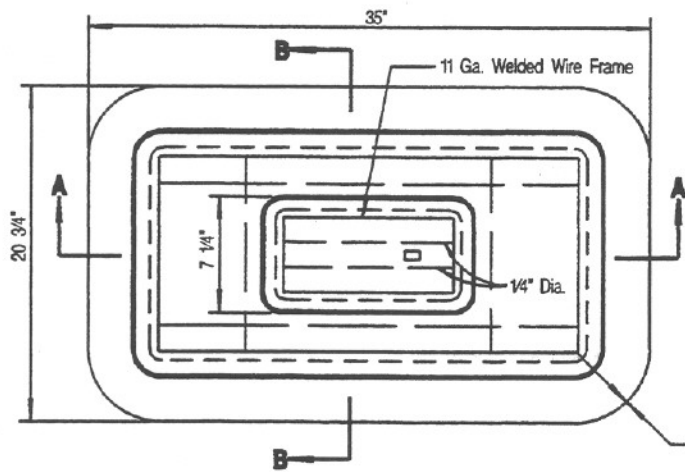


FORMED BELL END AND WELDED SPIGOT RING

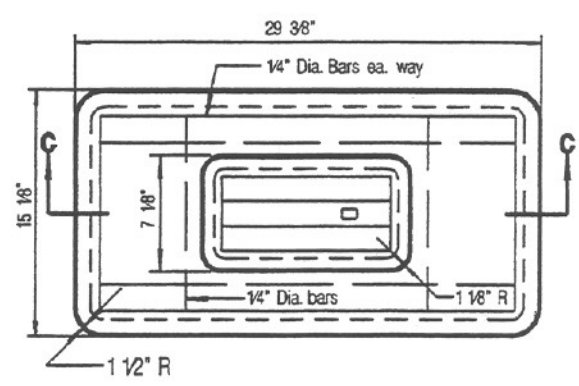
NOTES:

- ① Maximum field deflection in a joint is 3/8 inch pull and 3/8 inch 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 I.D. and Spigot O.D to be 1/32 inch to 1/16 inch on the diameter.
- 5 All welds to conform to ANSIAWWA C206 - 91.

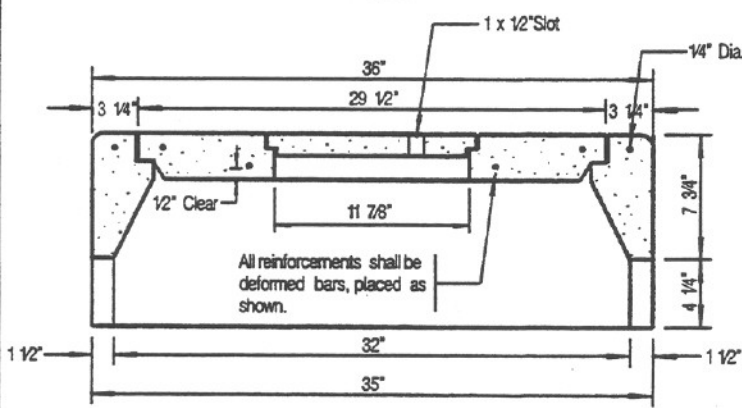
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		H. Horn	5-8-80		
		J.P. Casey	6-3-83		
NOTES	SM	Oskoui	12/03	SPIGOT RING & GASKET JOINT FOR WELDED STEEL PIPE	 Chairperson RCE 84572 DATE 12-9-03
					DRAWING NUMBER SDW-111



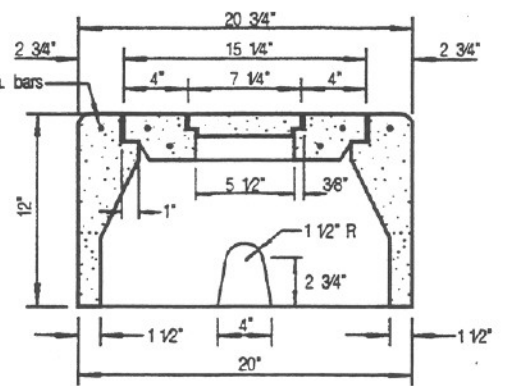
PLAN



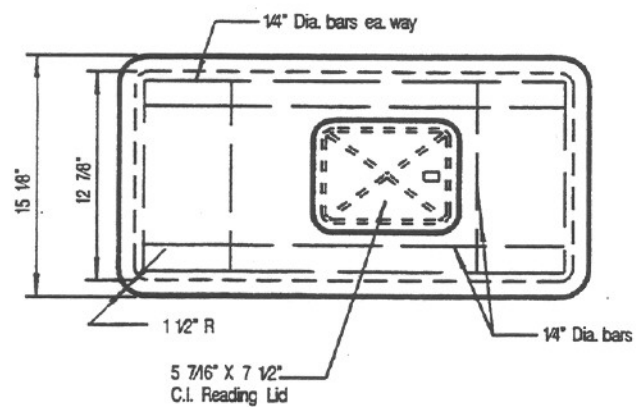
COVER W/ CONG. READING LID



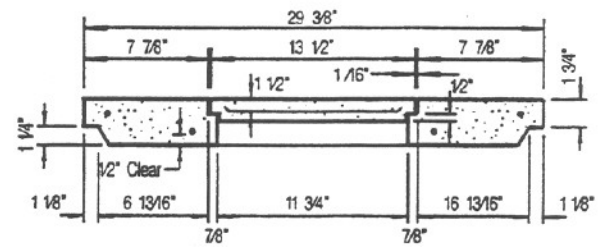
SECTION A-A



SECTION B-B



COVER W/ C.I. READING LID



SECTION C-C

NOTE: Unless otherwise indicated on the detail plans and/or specified in special conditions Covers with Concrete reading lid shall be used.

REVISION	BY	APPROVED	DATE
ORIGINAL		H. Horn	5-6-90
		J.P. Casey	6-3-83

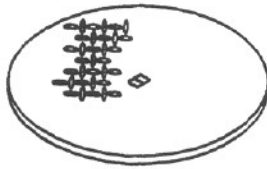
CITY OF SAN DIEGO - STANDARD DRAWING

**CONCRETE WATER METER BOX
FOR 1 1/2" OR 2" WATER METER**

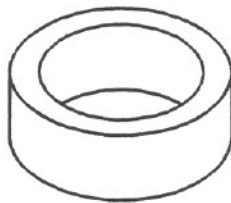
CITY OF SAN DIEGO
STANDARDS COMMITTEE
James J. [Signature] 12-23-94
COORDINATOR R.C.E. 25902 DATE

DRAWING NUMBER **SDW-113**

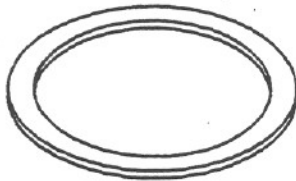
REVISED 9/30/94



Weld top of cap to pipe

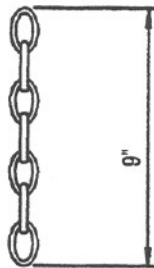


Weld plate ring to underside of cover

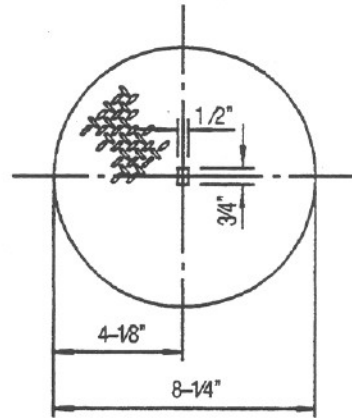


Weld chain to inside of cap's pipe and to underside of cover

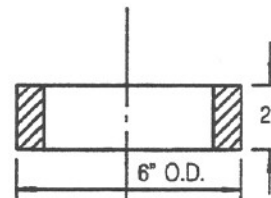
Hot dipped galvanized steel chain



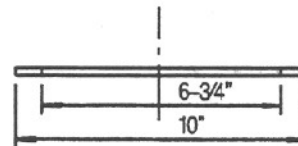
1/4" x 9" Chain



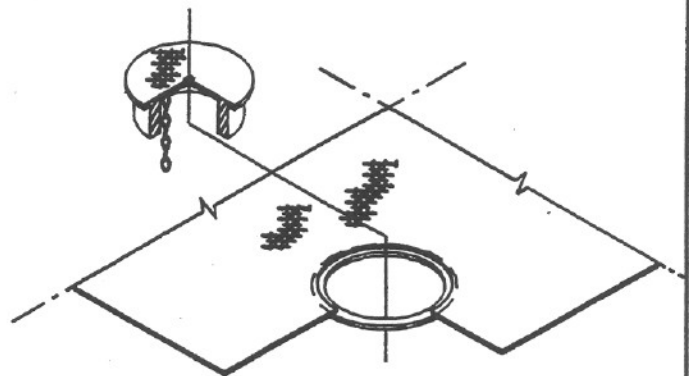
1/4" Floor Plate



3/16" Steel pipe



1/8" Steel Plate Ring



COVER (Typ.)

NOTES:

1. 8-1/4 inches 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.

NO SCALE

REVISION	BY	APPROVED	DATE
ORIGINAL		T. Mueller	2-4-86
		J.P. Casey	8-22-86

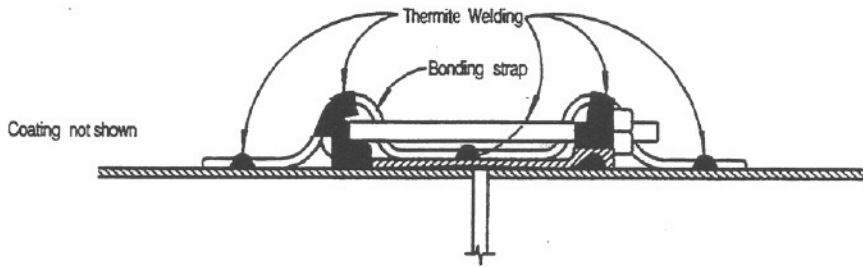
CITY OF SAN DIEGO - STANDARD DRAWING

**READ HOLE
CAP & CHAIN DETAIL**
For Metal Meter Vault Covers

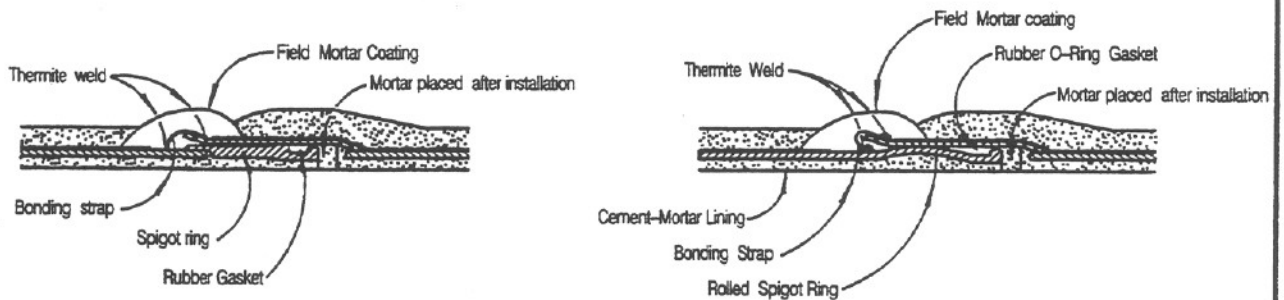
CITY OF SAN DIEGO
STANDARDS COMMITTEE
James J. ... 12-23-84
COORDINATOR R.C.E. 25902 DATE

DRAWING NUMBER **SDW-115**

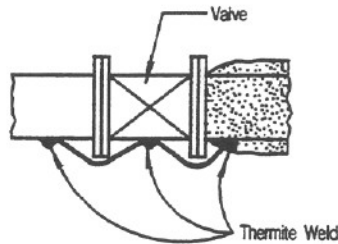
REVISED 9/30/94



Bonding Strap Installed on Sleeve-Type Coupling



Bonding Strap for Bell and Spigot Rubber-Gasketed Joint



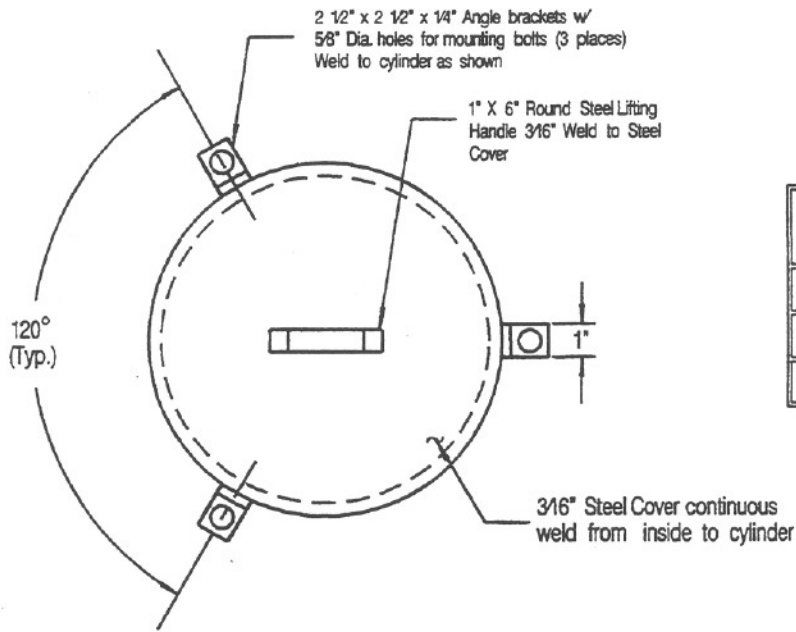
Bonding Strap Installed on Valve

NOTES:

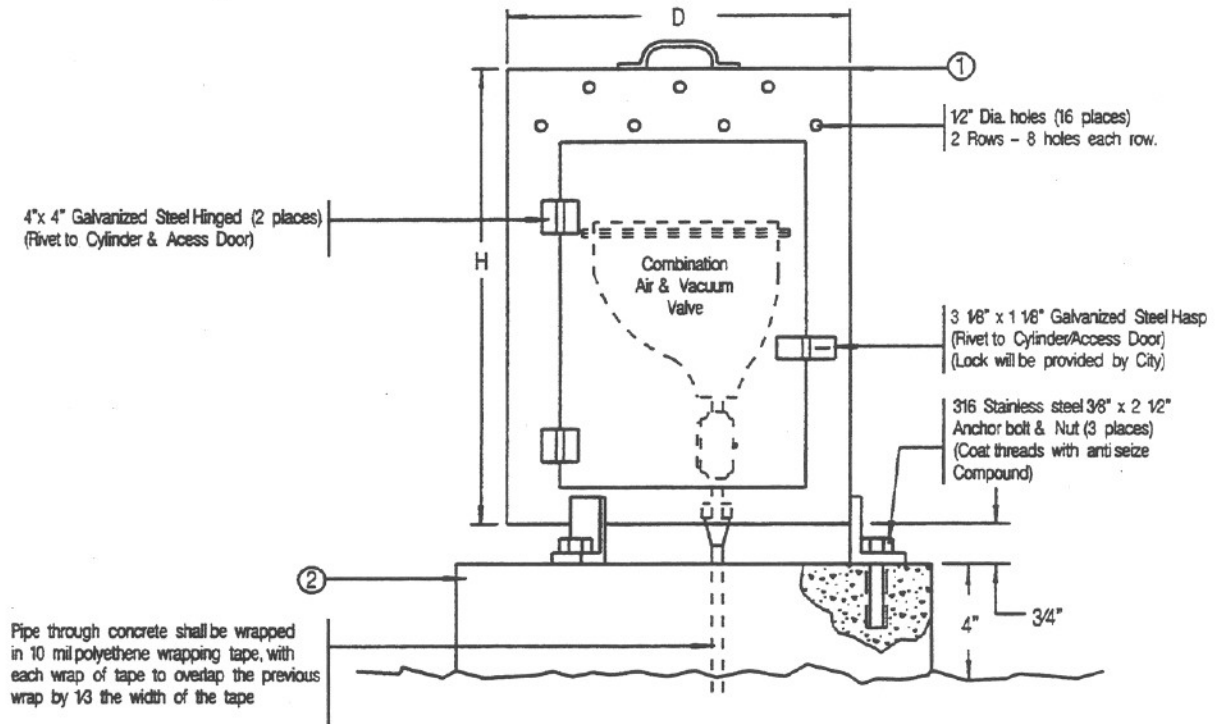
1. Remove coating and clean approx. 2 inch area to a bright metal surface for welding.
2. The exact type, size and number of bonding wire /strap shall be determined by pipe size and type.
3. Where not protected by cement mortar coating, thermite weld shall be covered with cold applied coal tar solution.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	CITY OF SAN DIEGO STANDARDS COMMITTEE <i>James F. [Signature]</i> 12-23-94 COORDINATOR R.C.E. 25902 DATE
ORIGINAL		T. Mueller	2-2-85		
		J.P. Casey	8-22-85	BONDING STRAP FOR STEEL AND SCRW PIPE	DRAWING NUMBER SDW-116

REVISED 9/30/94



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



- ① 3/16 inch 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 3'x 3'x 4" Concrete pad (520-C-2500 Concrete)

REVISION	BY	APPROVED	DATE
ORIGINAL		M. Rollinger	5-20-92

CITY OF SAN DIEGO - STANDARD DRAWING

AIR AND VACUUM VALVE ENCLOSURE

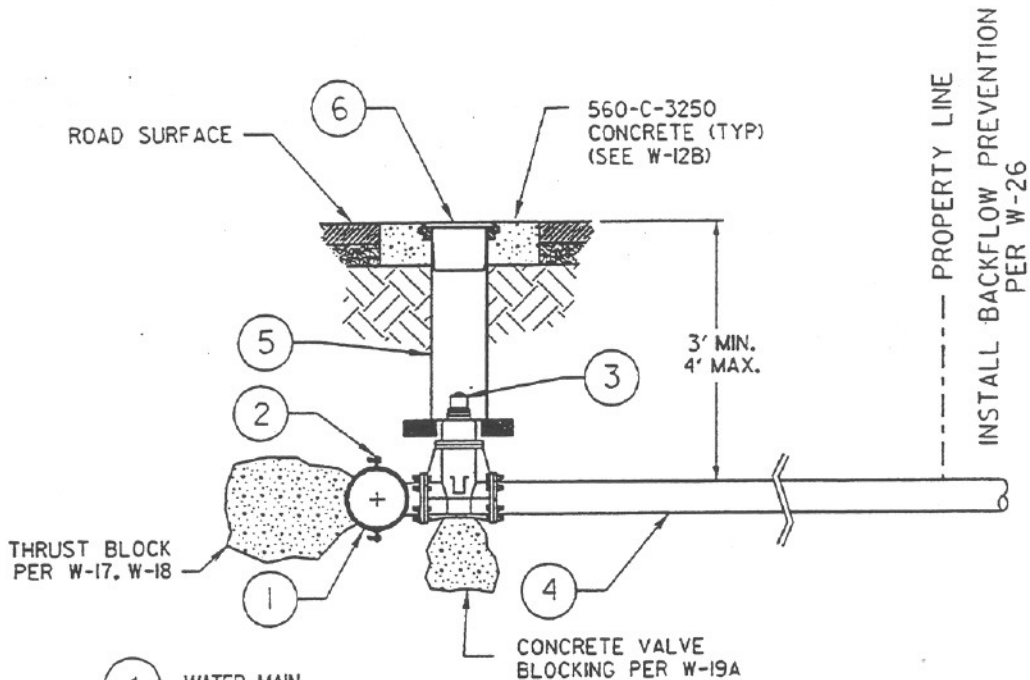
CITY OF SAN DIEGO
STANDARDS COMMITTEE

Steve J. Bell 12-23-04
COORDINATOR R.C.E. 25902 DATE

DRAWING
NUMBER

SDW-117

REVISED 9/30/94



- ① WATER MAIN
- ② FLANGED TAPPING SLEEVE OR TEE (NO SIZE-ON-SIZE TAPS ALLOWED (4 X 4, 6 X 6, ETC.). NO EXTENSIONS ALLOWED.
- ③ FULL RESILIENT SEAT GATE VALVE . SIZE OF VALVE SHALL MATCH SIZE OF FIRE SERVICE (4-INCH MINIMUM DIAMETER). SEE NOTE #1.
- ④ 4-INCH OR LARGER DIAMETER OF PIPE (DUCTILE IRON OR PVC PER APPROVED MATERIALS LIST).
- ⑤ VALVE WELL PER W-12B.
- ⑥ VALVE WELL COVER PER W-12A.

- NOTES:
1. FOR SMALLER FIRE SERVICE REQUIREMENTS, USE REDUCER AT PROPERTY LINE.
 2. CONSTRUCT WATER MAIN & FIRE SERVICE PER SDW-100, SDW-109 & W-12A, W-12B, W-17, W-18, & W-21 (ALSO USE W-22 & W-25 WHEN REQUIRED).
 3. FOR CORROSION CONTROL REQUIREMENTS, SEE WATER UTILITIES DESIGN GUIDE.

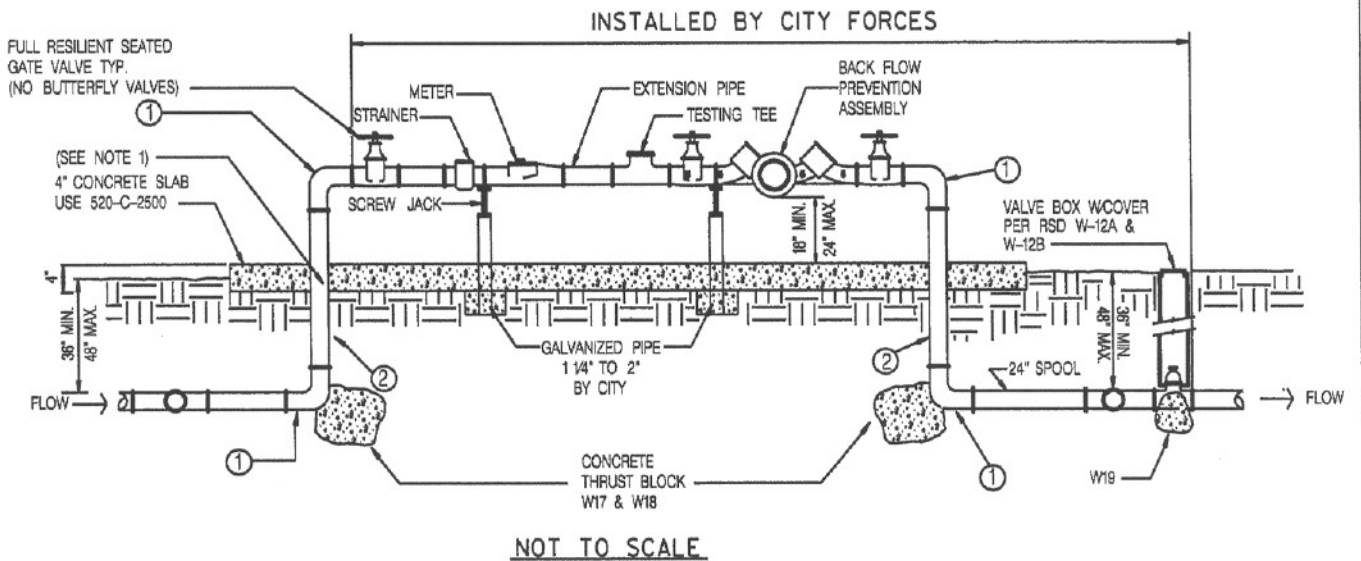
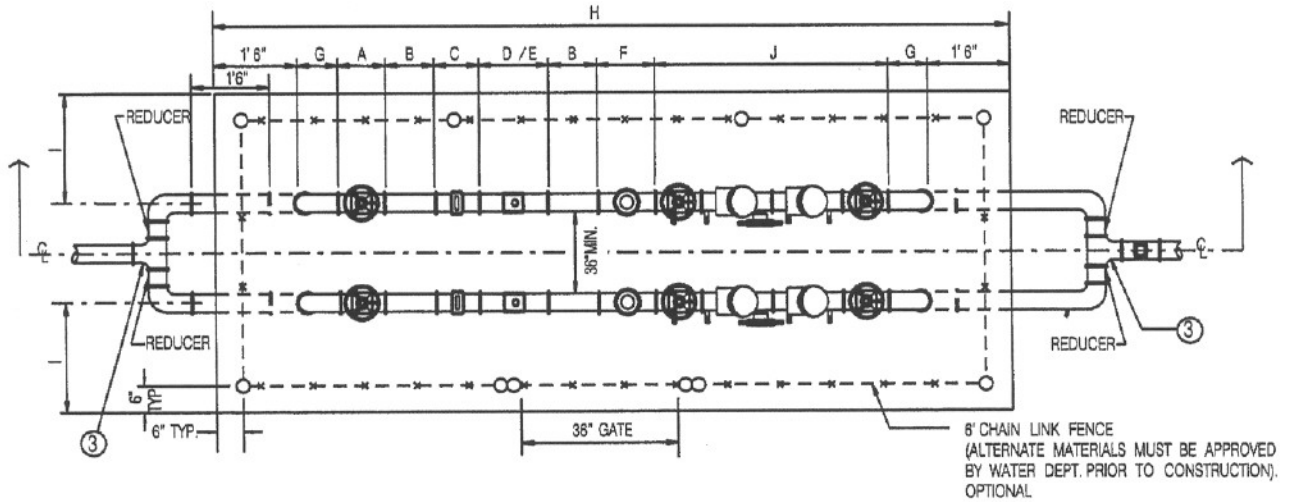
REVISION	BY	APPROVED	DATE
ORIGINAL			
NOTES	A.O.	<i>Michael</i>	4-98

CITY OF SAN DIEGO - STANDARD DRAWING

FIRE SERVICE CONNECTION

CITY OF SAN DIEGO
STANDARDS COMMITTEE
Steve J. Paul 12-23-94
COORDINATOR R.C.E. 28902 DATE

DRAWING NUMBER **SDW-118**



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 MIN. 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 MUST HAVE WATER DEPARTMENT APPROVAL.
3. PIPING TO BE SYMMETRICAL TO SLAB CENTERLINE.
4. SUPPLY PIPE IS ONE COMMERCIAL SIZE LARGER THAN PROPOSED METER.
5. CONCRETE SLAB AND FENCE WILL BE INSTALLED BY CONTRACTOR.

- 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 IS EQUAL TO THE DIAMETER OF THE SUPPLY PIPE.

SHEET 1 OF 2

REVISION	BY	APPROVED	DATE
ORIGINAL	J2C		
REVISION	SM	Oskoui	12/03

CITY OF SAN DIEGO - STANDARD DRAWING

DUAL ABOVE GROUND METER AND BACKFLOW PREVENTION ASSEMBLIES

CITY OF SAN DIEGO
STANDARDS COMMITTEE

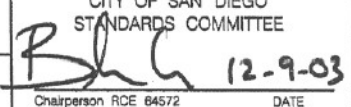
R. H. G. 12-9-03
Chairperson RCE 64572 DATE

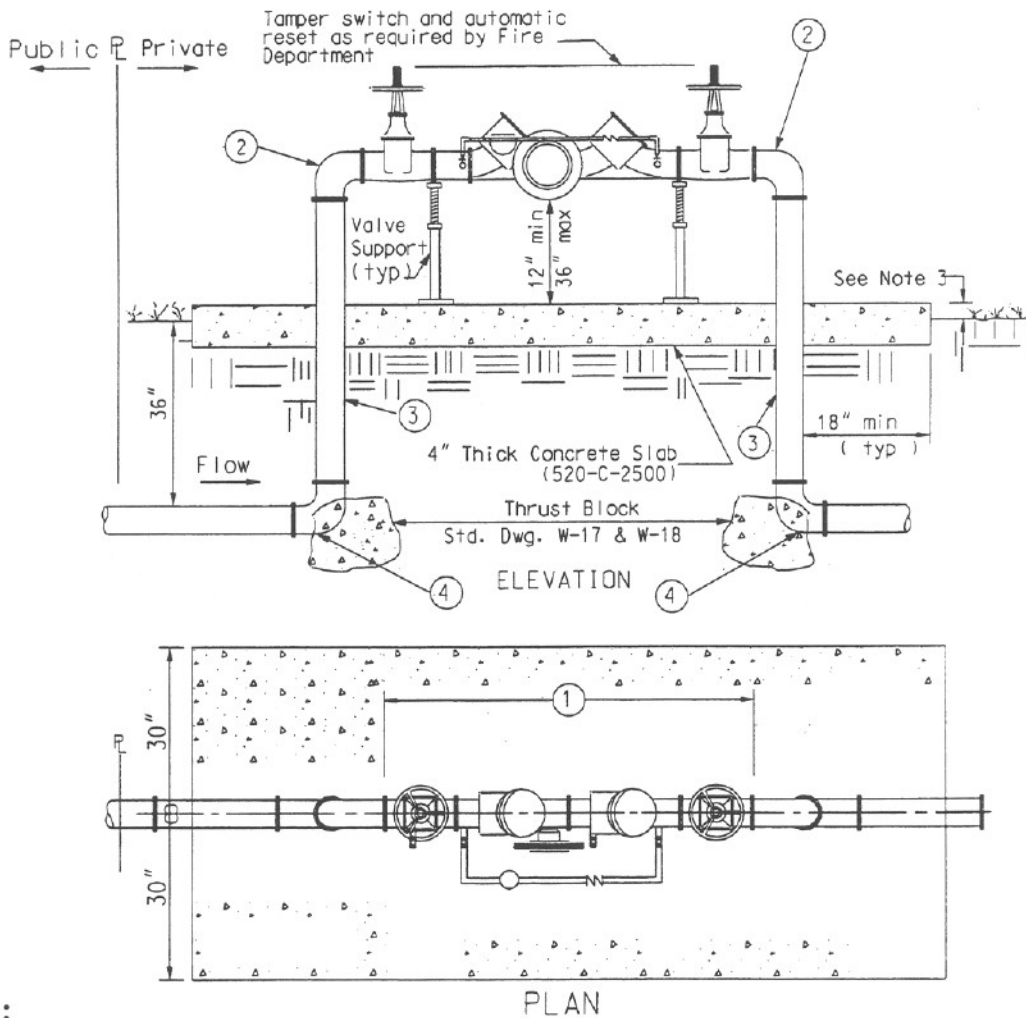
DRAWING NUMBER **SDW-119**

LTR. CODE	PART DESCRIPTION	METER SIZE				
		3"	4"	6"	8"	10"
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 *	11' - 10"	12' - 11"	14' - 9"	16' - 3"	18' - 10"
I	SLAB TO CL 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"

* NOTES: INDIVIDUAL DIMENSIONS MAY VARY PER MANUFACTURER
OVERALL DIMENSIONS INCREASE WITH USE OF THESE COMPONENTS

SHEET 2 OF 2

REVISION	By	Approved	Date	CITY OF SAN DIEGO - STANDARD DRAWING	CITY OF SAN DIEGO STANDARDS COMMITTEE
	J2C				
REVISION	SM	Oskoui	12/03	DUAL ABOVE GROUND METER AND BACKFLOW PREVENTION ASSEMBLIES	 Chairperson RCE 64572 DATE 12-9-03
				DRAWING NUMBER	SDW-119



NOTES:

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

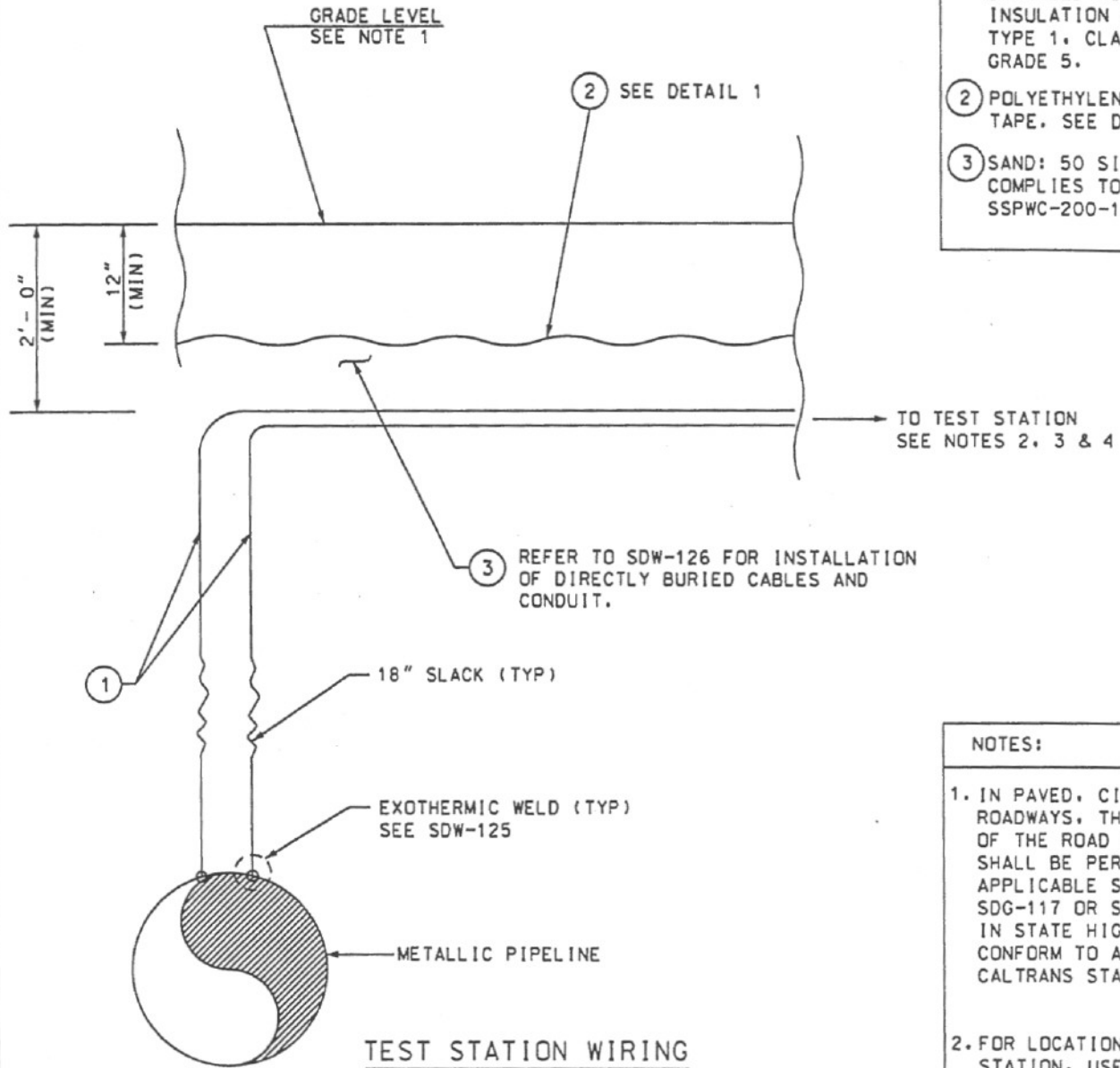
LEGEND ON PLANS



REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL	LEC	J. NAVARRO	6/00			
				BACKFLOW PREVENTER REDUCED PRESSURE PRINCIPLE DETECTOR ASSEMBLY FOR FIRE SERVICE-3" AND LARGER	<i>Harish Rishi</i> 8/9/00 DATE @35390	
					DRAWING NUMBER	SDW-120

MATERIALS:

- 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 TO
SSPWC-200-1.5



TO TEST STATION
SEE NOTES 2, 3 & 4

③ REFER TO SDW-126 FOR INSTALLATION
OF DIRECTLY BURIED CABLES AND
CONDUIT.


18" SLACK (TYP)

EXOTHERMIC WELD (TYP)
SEE SDW-125

METALLIC PIPELINE

TEST STATION WIRING

APWA BLUE 6" WIDE TAPE
WITH WHITE LETTERING
CONTINUOUSLY IMPRINTED



CAUTION CAUTION
BURIED CATHODIC PROTECTION LINE BELOW
CALL 619-515-3525

DETAIL 1
BURIED TAPE
NTS

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 W-15. 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.

Revision	By	Approved	Date
Original	1	Oskoui	12/03

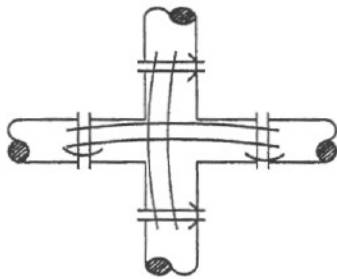
CITY OF SAN DIEGO - STANDARD DRAWING

**AT-GRADE CATHODIC PROTECTION
TEST STATION
INSTALLATION FOR ROADWAYS**

CITY OF SAN DIEGO
STANDARDS COMMITTEE

[Signature] 12-9-03
Chairperson RCE 6457e Date

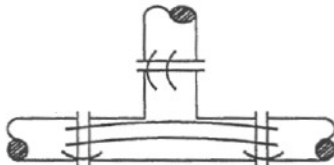
DRAWING NUMBER SDW-121



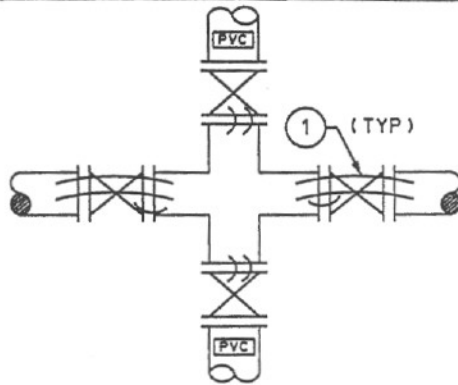
CROSS



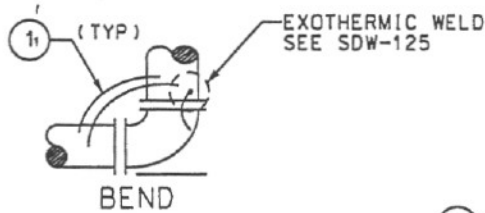
SPOOL



TEE



VALVE CROSSING



BEND

- MATERIALS:**
- 1 BOND CABLE: AWG #6 COPPER ASTM B3 STRANDED ASTM B8 INSULATED ASTM D1248 TYPE 1, CLASS C GRADE 5.
 - 2 STEEL PLATE: 1/8" THICK, WELD TO THE PIPE.

EXOTHERMIC WELD SEE DWG SDW-125

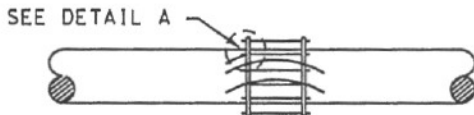
BELL AND SPIGOT PIPE JOINT



FLANGED VALVE



FLANGED OR MECHANICAL PIPE JOINT

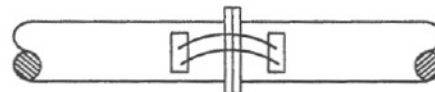


FLEXIBLE COUPLING PIPE JOINT

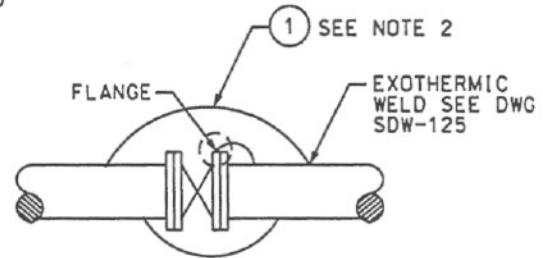
EXOTHERMIC WELD SEE DWG. SDW-125



NON-MORTAR LINED



NON-MORTAR LINED



BOND ACROSS FLANGES

BOND WIRE W/ LUG COATED WITH BITUMASTIC



DETAIL A

WIRE CONNECTION TO FLANGE BOLT SEE NOTE 5

- 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.
 5. ONLY AT THE APPROVAL OF CITY'S CORROSION ENGINEER.
 6. REFER TO SDW-116, FOR SCRW PIPE BOND DETAIL

Revision	By	Approved	Date
Original		Oskoui	12/03

CITY OF SAN DIEGO - STANDARD DRAWING

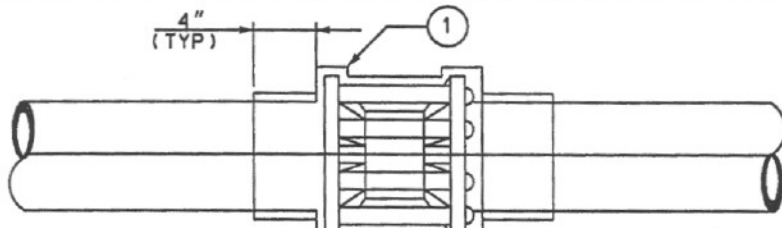
JOINT BONDING OF NON-WELDED PIPE JOINTS & FITTINGS

CITY OF SAN DIEGO STANDARDS COMMITTEE

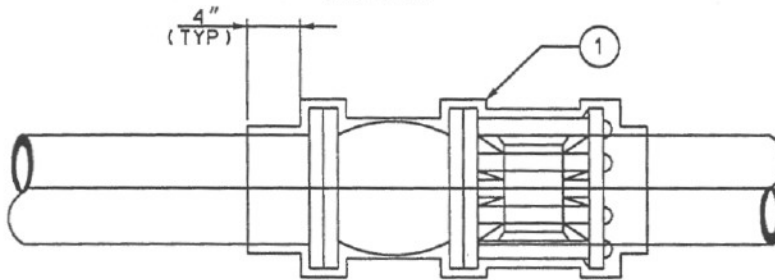
[Signature] 12-9-03

Chairperson RCE 64522 Date

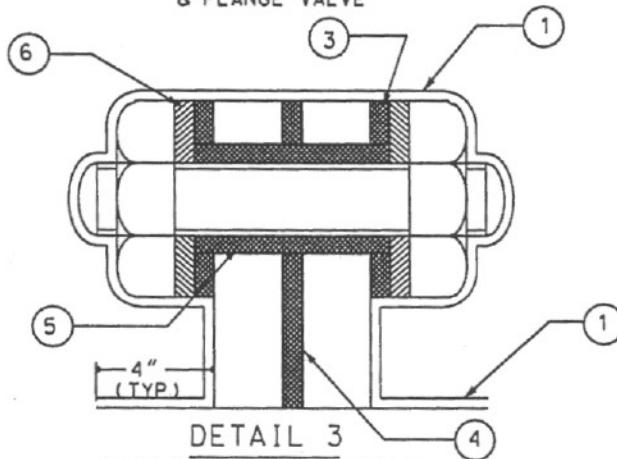
DRAWING NUMBER SDW-122



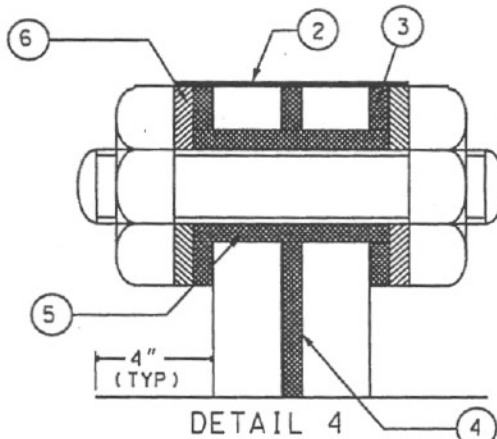
DETAIL 1
MECHANICAL
COUPLING



DETAIL 2
MECHANICAL COUPLING
& FLANGE VALVE



DETAIL 3
INSULATING FLANGE JOINTS,
UNDERGROUND INSTALLATION



DETAIL 4
INSULATING FLANGE JOINTS,
ABOVE-GROUND INSTALLATION

MATERIALS:

- 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.

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 PETRO-
LATUM 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.

Revision	By	Approved	Date
Original	Oskoui		12/03

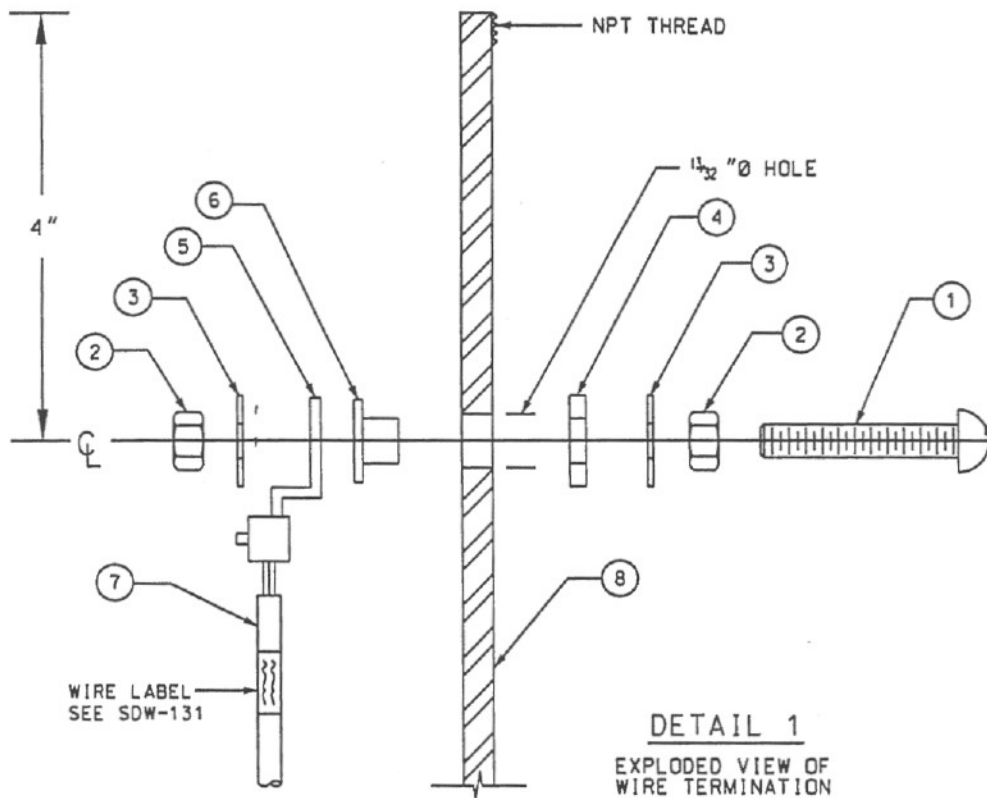
CITY OF SAN DIEGO - STANDARD DRAWING

INSULATING FLANGE AND MECHANICAL
JOINTS EXTERNAL PROTECTION

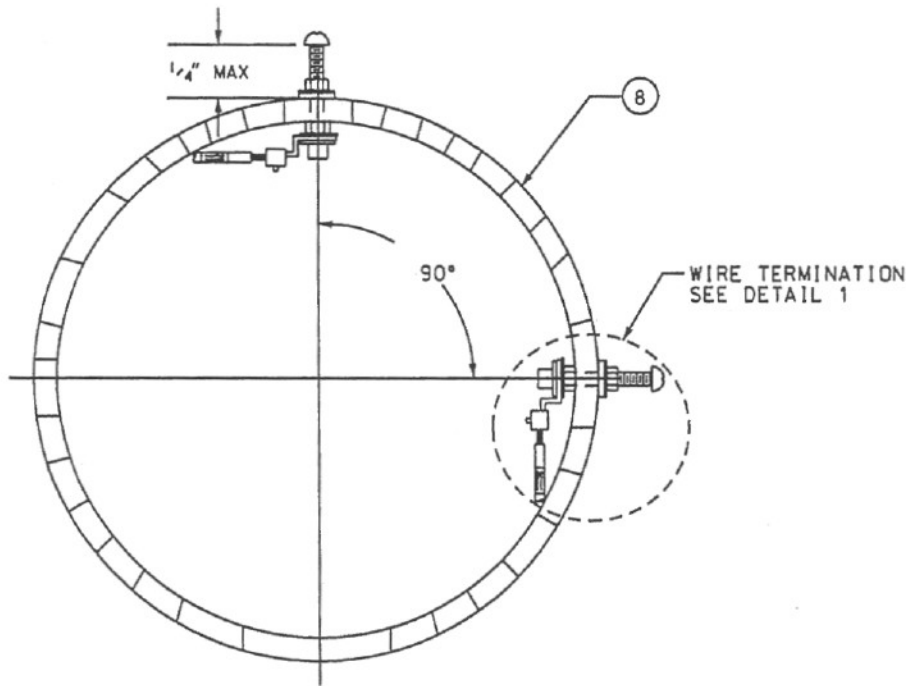
CITY OF SAN DIEGO
STANDARDS COMMITTEE

Bh 12-9-03
Chairperson RCE #1572 Date

DRAWING
NUMBER SDW-123

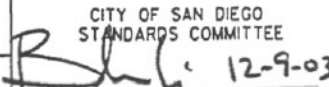


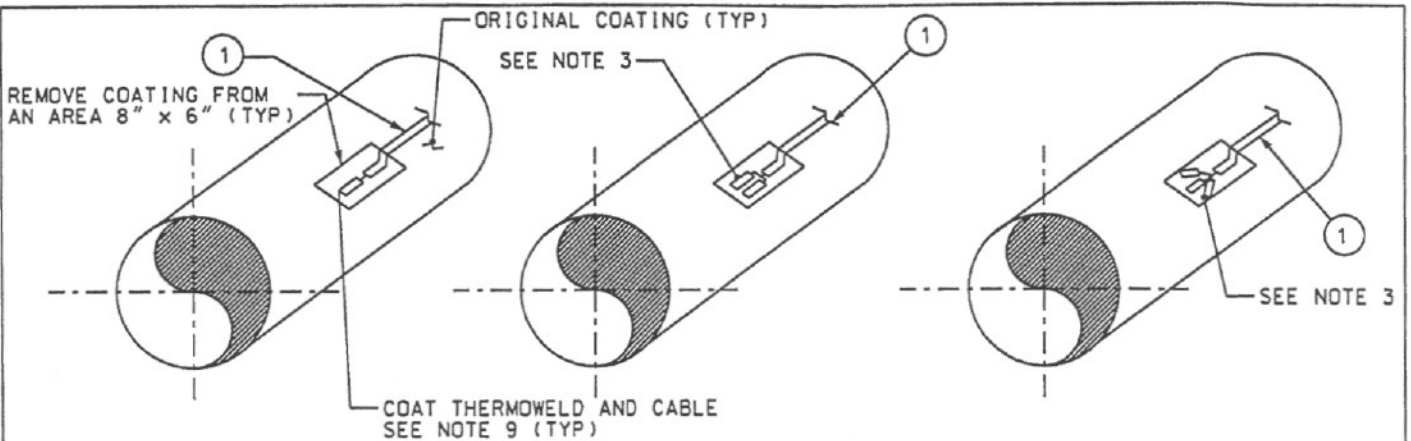
- MATERIALS:**
- ① SCREW: MACHINE BRASS, ROUND HEAD SLOTTED, 1/4" - 20T 1 1/2" LONG
 - ② NUT: BRASS 1/4" 20 THREADS.
 - ③ WASHER, BRASS 1/4"
 - ④ WASHER, INSULATION NYLON, 0.719" OD, 0.281" ID, 0.062" THICK NATURAL.
 - ⑤ LUG: OFFSET TONGUE SOLDERNESS, COPPER.
 - ⑥ WASHER: INSULATING, SHOULDER, NYLON, 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.



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 SEE SDW-131

Revision	By	Approved	Date	CITY OF SAN DIEGO - STANDARD DRAWING	CITY OF SAN DIEGO STANDARDS COMMITTEE
Original		Oskoui	12/03		
				POST-MOUNTED TEST STATION WIRE TERMINATION DETAIL	 Chairperson RCE 4572 Date 12-9-03
				DRAWING NUMBER	SDW-124



DETAIL 1

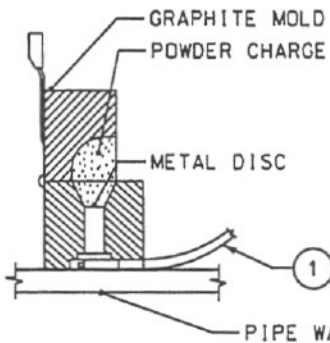
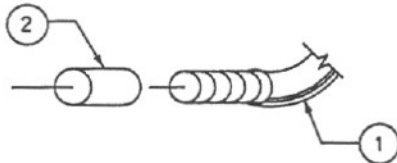
TYPICAL CONNECTIONS OF NO.6 AWG CABLE AND SMALLER CABLES

DETAIL 2

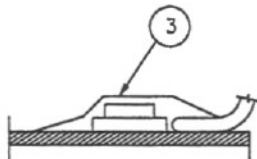
TYPICAL CONNECTIONS OF NO.4 AWG CABLE

DETAIL 3

TYPICAL CONNECTIONS OF NO.2 AWG CABLE AND LARGER CABLES



EXOTHERMIC CONNECTION DETAIL



EXOTHERMIC CONNECTION SECTION

MATERIALS:

- 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

NOTES:

1. CLEAN AREA OF STEEL SURFACE APPROXIMATELY 2" x 2" FOR EACH THERMOWELD CONNECTION. WIRE BRUSH FILE AND SCRAPER 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.

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
Original	Oskoui		12/03

CITY OF SAN DIEGO - STANDARD DRAWING

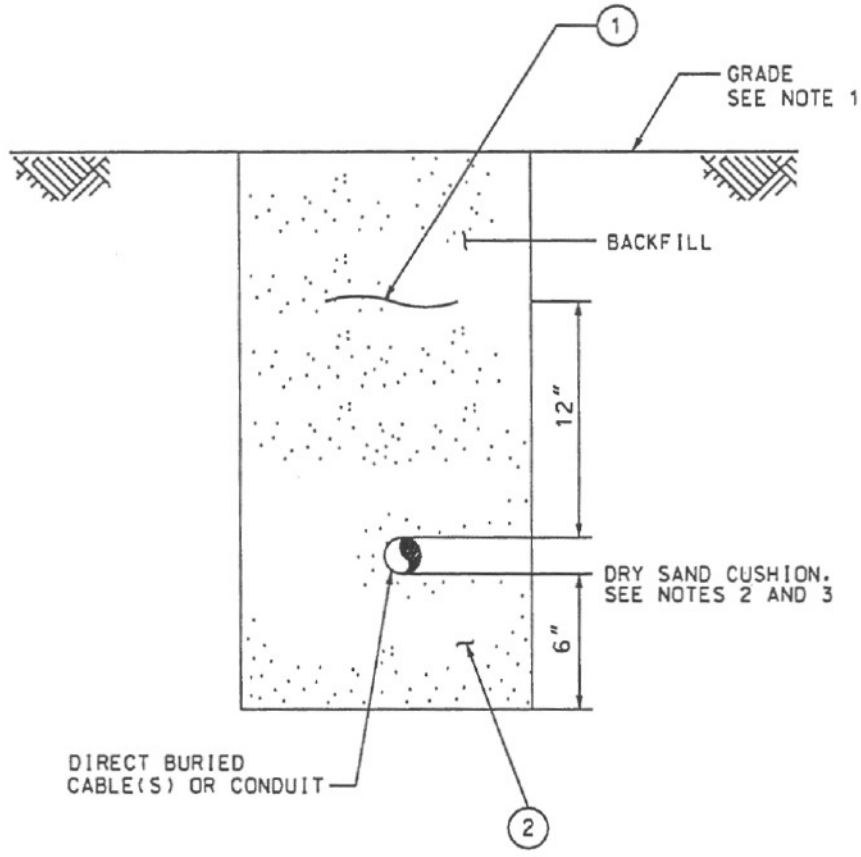
EXOTHERMIC WELDING OF CABLES
AND COATING OF WELDING

CITY OF SAN DIEGO
STANDARDS COMMITTEE

R. Kelly 12-9-03
Chairperson RCE 64572 Date

DRAWING NUMBER SDW-125

- MATERIALS:**
- ① POLYETHYLENE WARNING TAPE, REFER TO DETAIL 1 ON SDW-121.
 - ② SAND: 50 SIEVE COMPLIES TO SSPWC 200-1.5



CABLE(S) AND CONDUIT TRENCH SECTION

- 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. CLEAN SHARP STONES AND RUBBLE FROM THE BOTTOM OF DITCH.

Revision	By	Approved	Date
Original	Oskoui		12/03

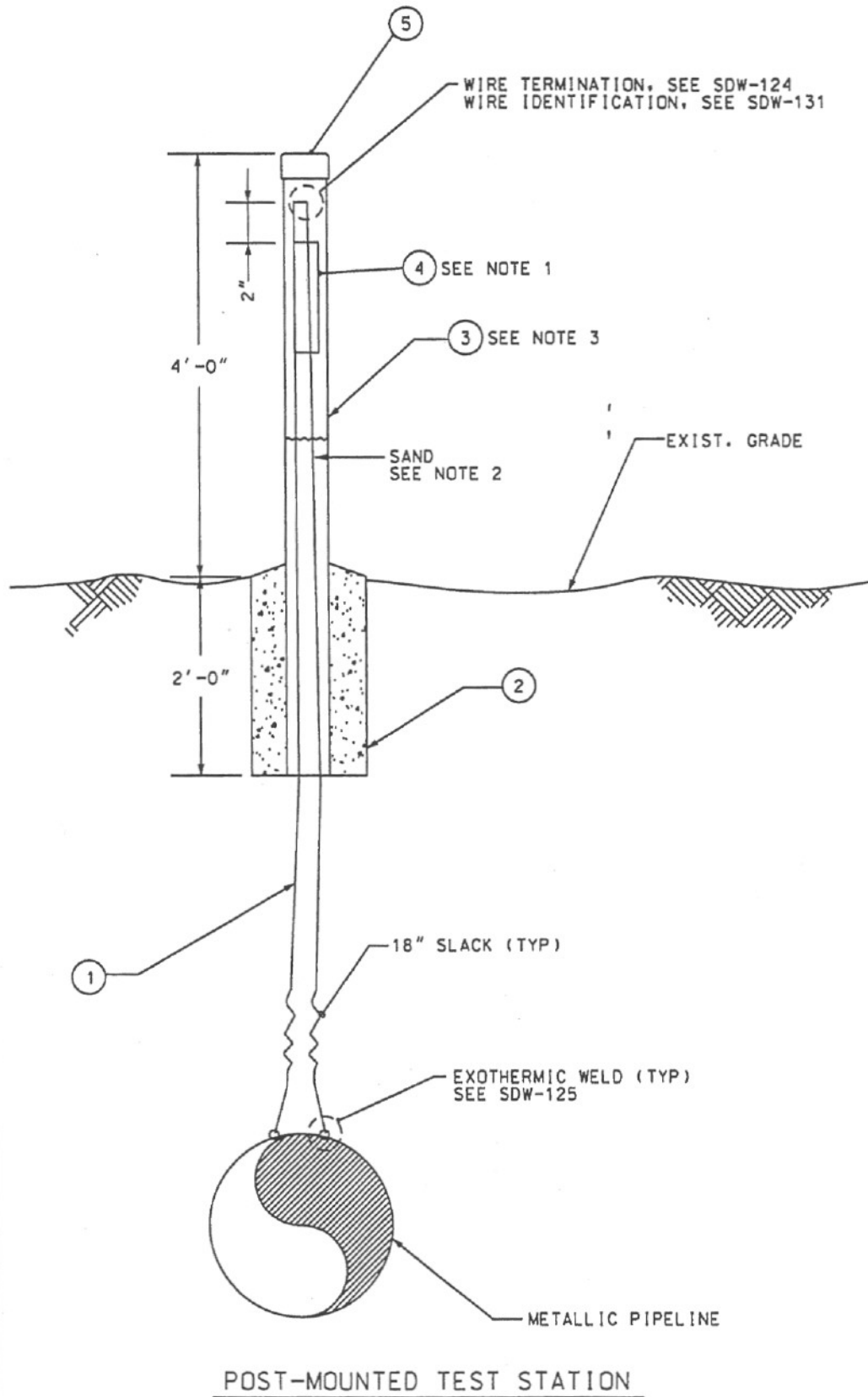
CITY OF SAN DIEGO - STANDARD DRAWING

INSTALLATION OF DIRECTLY BURIED CABLES AND CONDUIT

CITY OF SAN DIEGO
STANDARDS COMMITTEE

R. [Signature] 12-9-03
Chairperson RCE 6472 Date

DRAWING NUMBER SDW-126



- MATERIALS:**
- 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.

- 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 TRAFFIC.

Revision	By	Approved	Date
Original		Oskoui	12/03

CITY OF SAN DIEGO - STANDARD DRAWING

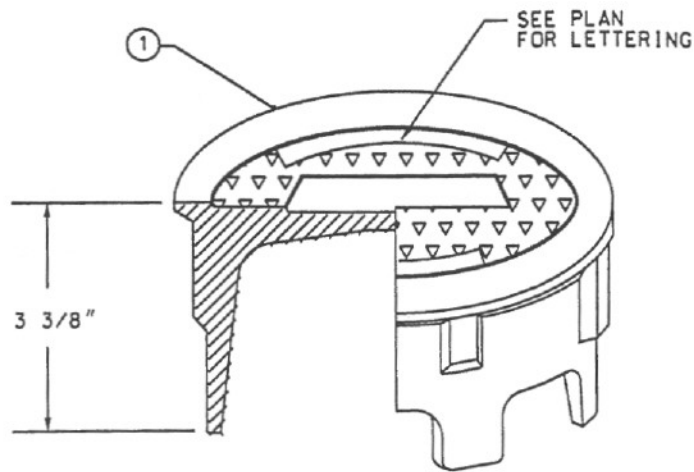
ABOVE GRADE CATHODIC PROTECTION TEST STATION INSTALLATION FOR UNDEVELOPED AREAS

CITY OF SAN DIEGO STANDARDS COMMITTEE

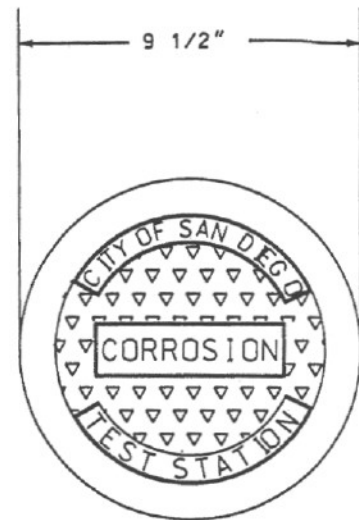
Blah 12-9-03

Chairperson RCE 64572 Date

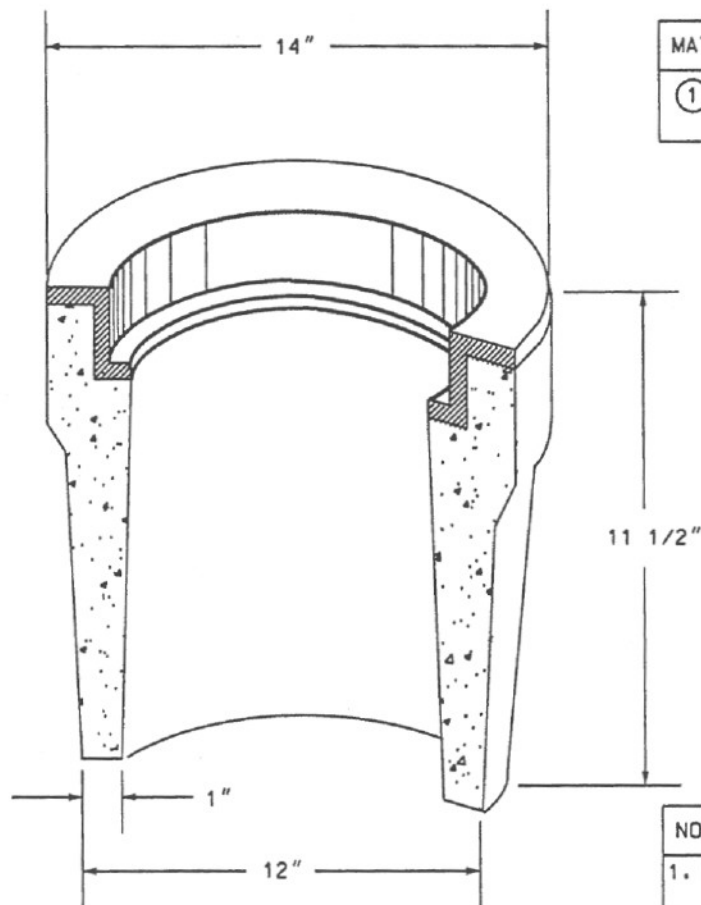
DRAWING NUMBER SDW-127



TEST BOX COVER ISOMETRIC



TEST BOX COVER PLAN



TEST BOX ISOMETRIC SECTION

MATERIALS:

- ① COVER: ASTM A 48 CLASS 30.

NOTES:

1. COVER WEIGHT: 12 LB.
2. BODY WEIGHT: 58 LB.
3. THE COVER SHALL HAVE CASTED MARKING IN 1/2" HIGH RAISED LETTERS.

Revision	By	Approved	Date
Original	Oskoui		12/03

CITY OF SAN DIEGO - STANDARD DRAWING

AT-GRADE
CONCRETE TEST BOX

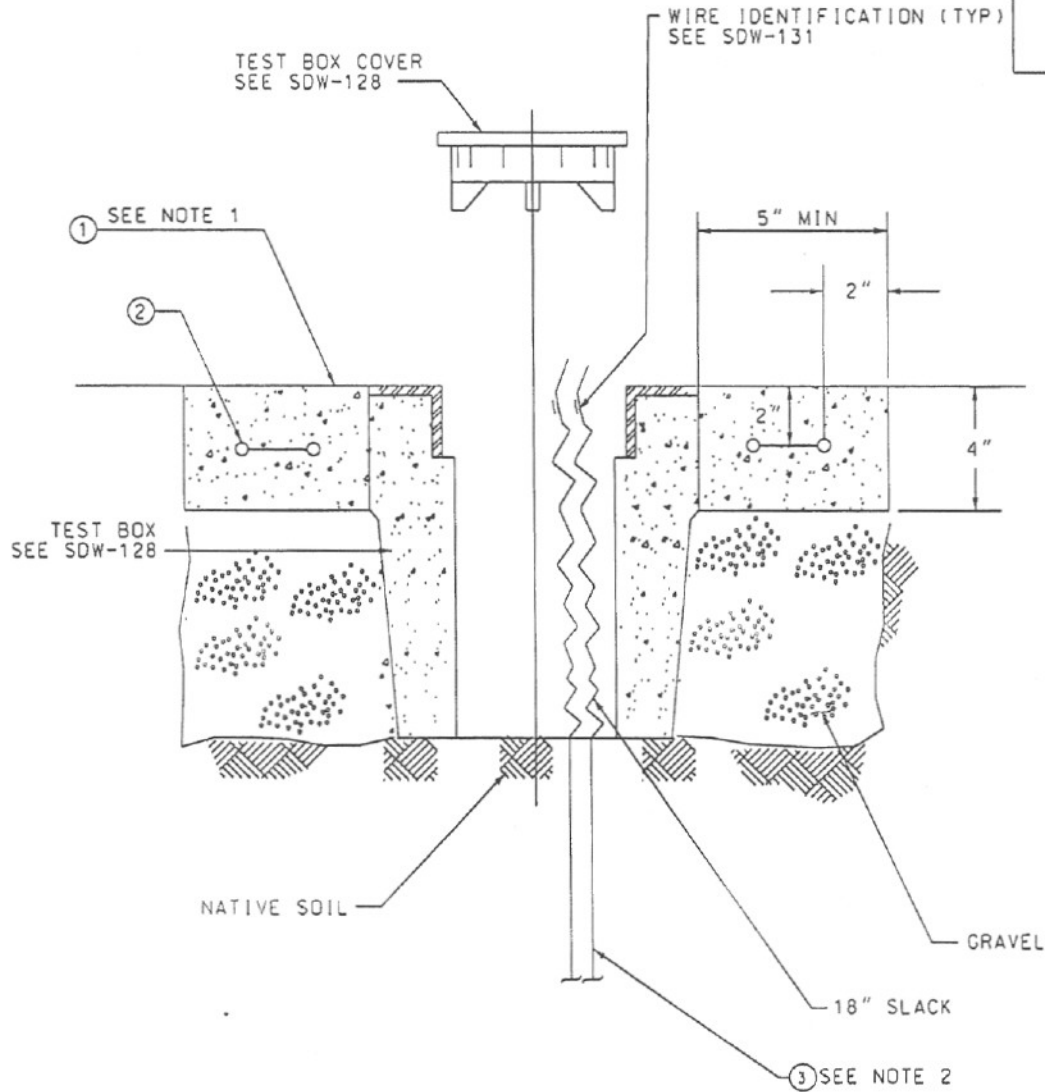
CITY OF SAN DIEGO
STANDARDS COMMITTEE

R. L. H. 12-9-03
Chairperson RCE 6492 Date

DRAWING NUMBER SDW-128

MATERIALS:

- 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

NOTES:

- 1. SLOPE CONCRETE PAD AWAY FROM COVER.
- 2. FOR CONTINUATION OF CABLES, REFER TO SDW-127 OR SDW-130, AS APPLICABLE.

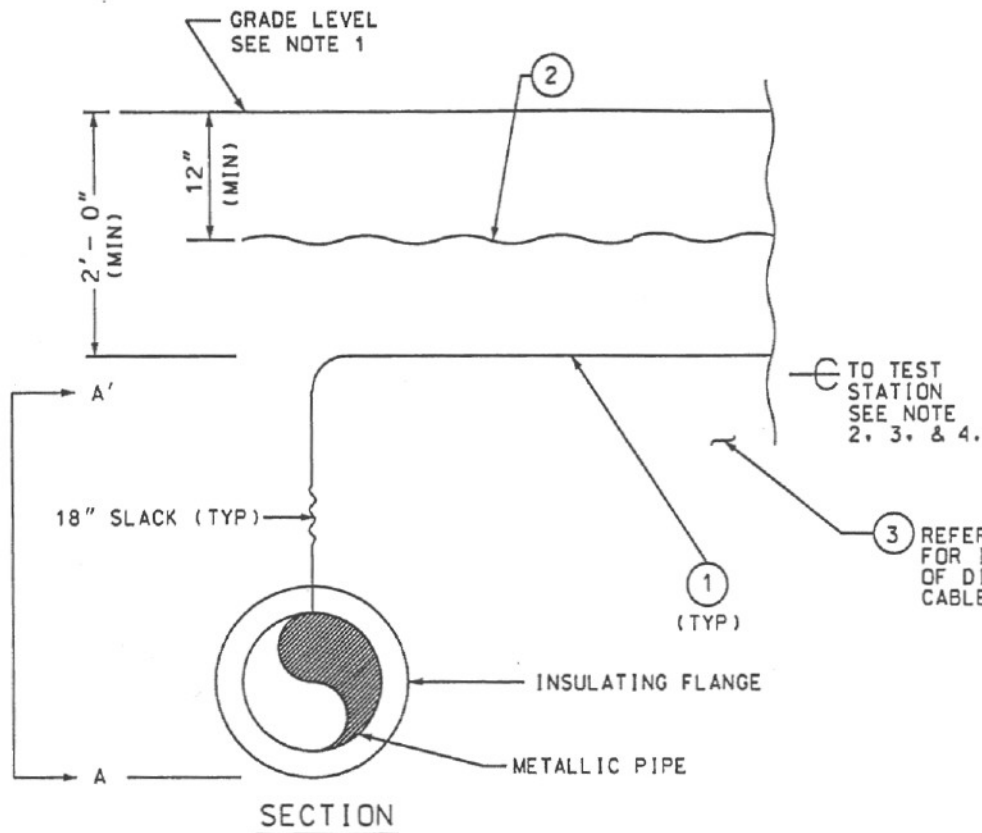
Revision	By	Approved	Date
Original		Oskoui	12/03

CITY OF SAN DIEGO - STANDARD DRAWING

AT-GRADE CATHODIC PROTECTION TEST STATION WIRING DIAGRAM FOR ROADWAYS

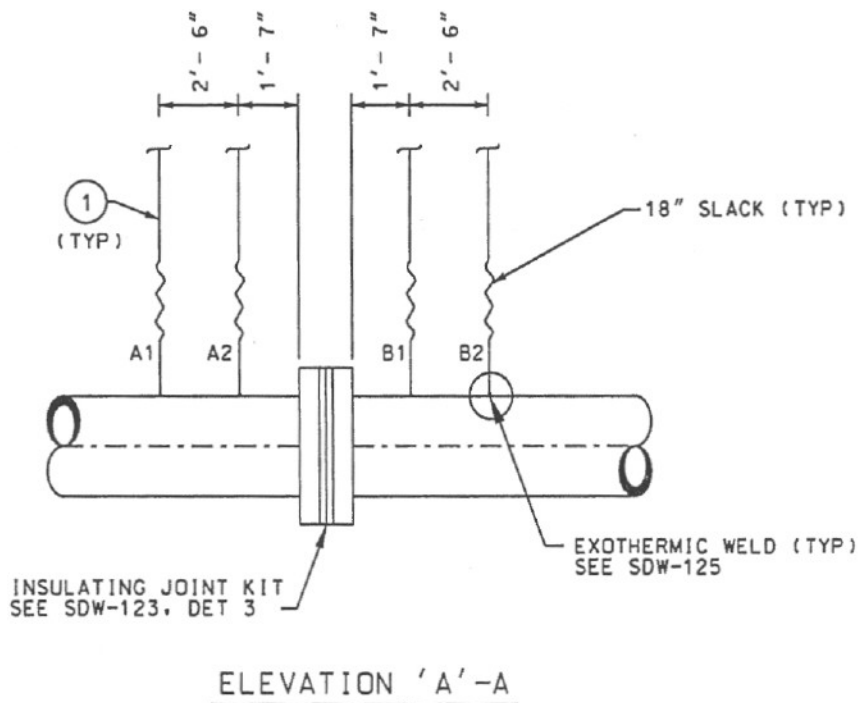
CITY OF SAN DIEGO STANDARDS COMMITTEE
R. L. G. 12-9-03
 Chairperson RCE 84912 Date

DRAWING NUMBER SDW-129



- MATERIALS:**
- ① CABLE: AWG #2 COPPER ASTM B3, STRANDED ASTM B8, INSULATED PER ASTM D1248, TYPE 1 CLASS C, GRADE 5.
 - ② POLYETHYLENE WARNING TAPE, SEE DETAIL 1 SDW-121.
 - ③ SAND: 50 SIEVE COMPLIES TO SSPWC 200-1.5.

③ REFER TO SDW-126 FOR INSTALLATION OF DIRECTLY BURIED CABLES AND CONDUITS.



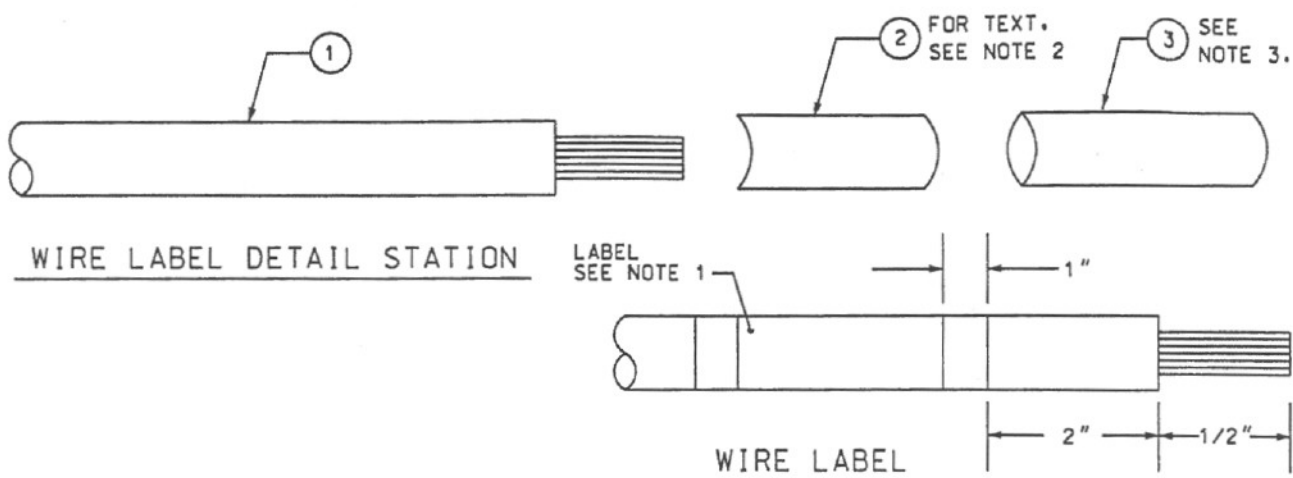
- NOTES:**
1. IN PAVED, CITY OWNED ROADWAYS, THE REPAIR OF THE ROAD SURFACE SHALL BE PER APPLICABLE TO SDRSD SDG-117 OR SDG-118. IN STATE HIGHWAYS, CONFORM TO APPLICABLE CALTRANS STANDARD.
 2. FOR LOCATION OF TEST STATION, USE REGIONAL STD DWG W15. EXACT LOCATION SHALL BE APPROVED BY CORROSION ENGR.
 3. AT ROADWAYS, USE SDW-129 & AT UNDEVELOPED AREAS USE SDW-127.
 4. FOR INSTALLATION OF DIRECTLY BURIED CABLES & CONDUIT SEE SDW-126.

Revision	By	Approved	Date
Original		Oskoui	12/03

CITY OF SAN DIEGO - STANDARD DRAWING

INSULATING FLANGE FOUR-WIRE TEST STATION INSTALLATION

CITY OF SAN DIEGO STANDARDS COMMITTEE
R. G. 12-9-03
 Chairperson RCE 64572 Date
 DRAWING NUMBER SDW-130



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

CPTS# (CATHODIC PROTECTION TEST STATION NUMBERING)

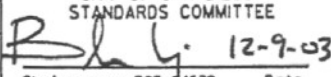
CPTS#1, 2, 3,N

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

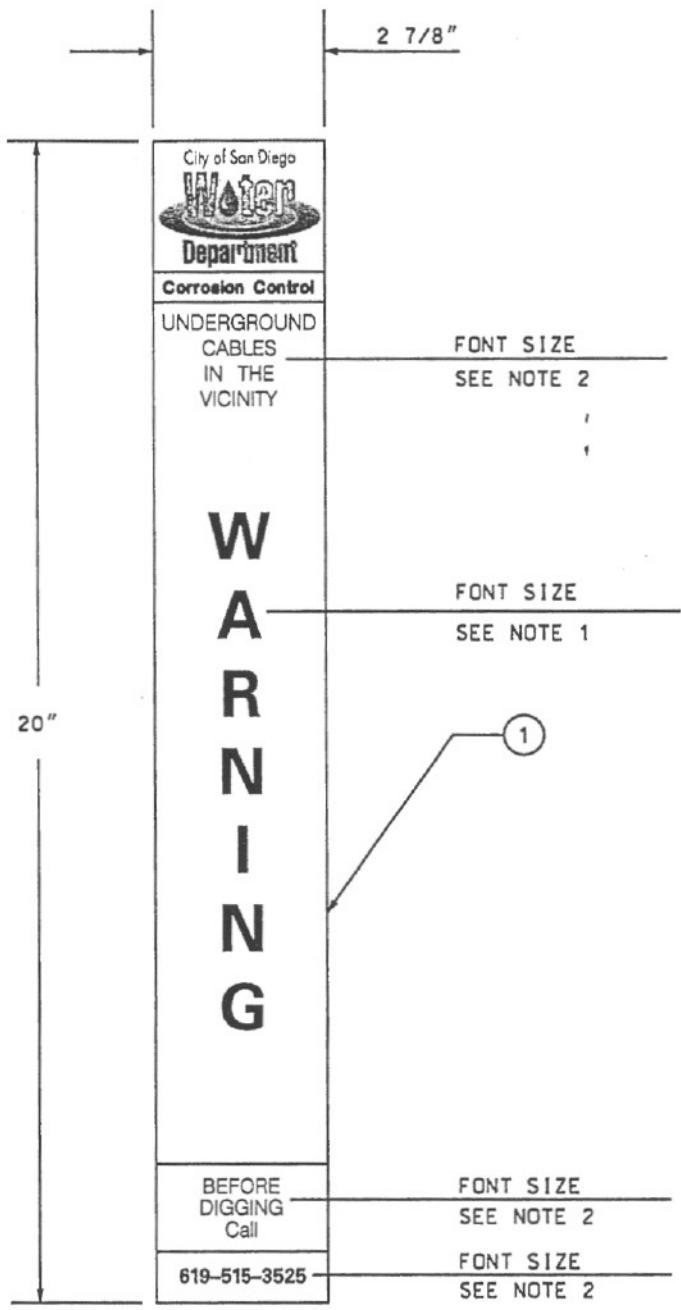
- MATERIALS:**
- 1 CABLE: AWG ASTM B8 & B3.
 - 2 LABEL: FILE FOLDER, SELF ADHESIVE WHITE 2/3" X 3 1/16".
 - 3 SLEEVE: HEAT SHRINK, ADHESIVE LINED POLYOLEFIN, CLEAR THIN WALL TUBING.

- NOTES:**
1. CABLES SHALL BE TAGGED USING TIMES ROMAN 10 POINT FONT.
 2. TEXT SHALL BE PRESENTED IN THE FOLLOWING ORDER:
 - . CPTS #
 - . TYPE OF INSTALLATION
 - . STATIONING
 - . PIPE DIAMETER
 - . FACILITY NAME
 - . PIPE MATERIAL
 - . WIRE DIRECTIONAL ORIENTATION
 - . NORTH
 - . SOUTH
 - . EAST
 - . WEST
 3. PLACE SLEEVE AFTER ATTACHMENT OF LABEL TO CABLE.

Revision	By	Approved	Date	CITY OF SAN DIEGO - STANDARD DRAWING	CITY OF SAN DIEGO STANDARDS COMMITTEE
Original		Oskoui	12/03		
				WIRE IDENTIFICATION	 Chairperson RCE 64572 Date 12-9-03

MATERIALS:

① DECAL: APWA BLUE, WITH WHITE REFLECTIVE LETTERS. DECAL MATERIAL SHALL BE UV RESISTANT PREMIUM GRADE CAST VINYL SHEETING WITH AGGRESSIVE ADHESIVE AND UNDER PROTECTIVE LAMINATE.



DECAL ELEVATION

NOTES:

1. 1" TEXT BOLD
 2. 1/4" TEXT BOLD

Revision	By	Approved	Date
Original	Oskoui		12/03

CITY OF SAN DIEGO - STANDARD DRAWING

POST-MOUNTED CATHODIC PROTECTION WARNING DECAL

CITY OF SAN DIEGO STANDARDS COMMITTEE

B. L. H. 12-9-03
 Chairperson RCE 64572 Date

DRAWING NUMBER SDW-132

ANODES

AV Vertical AH Horizontal
Where X:

- | | |
|-------------------------------|-------------------------------|
| AV1 - Al (Aluminum) | AH1 - Al (Aluminum) |
| AV2 - Pm (Polymeric) | AH2 - Pm (Polymeric) |
| AV3 - Pt (Platinum) | AH3 - Pt (Platinum) |
| AV4 - Fe (Scrap Iron) | AH4 - Fe (Scrap Iron) |
| AV5 - Gr (Graphite) | AH5 - Gr (Graphite) |
| AV6 - Ci (HS C Iron) | AH6 - Ci (HS C Iron) |
| AV7 - Zn (Zinc) | AH7 - Zn (Zinc) |
| AV8 - Mg (Magnesium) | AH8 - Mg (Magnesium) |
| AV9 - MMO (Mixed Metal Oxide) | AH9 - MMO (Mixed Metal Oxide) |

CABLES (CB)

- | | | |
|-----|--|---------------------|
| CB1 | | Positive |
| CB2 | | Positive in Conduit |
| CB3 | | Negative |
| CB4 | | Negative in Conduit |

CABLE CONNECTION (CC)

- | | | |
|-----|--|-----------------|
| CC1 | | Exothermic Weld |
| CC2 | | Splice Tee |
| CC3 | | Straight Splice |

CASING (CS)

- | | | |
|-----|--|--------------------|
| CS1 | | Unprotected Casing |
| CS2 | | Protected Casing |

ANODE GROUNDBEDS (AG)

- | | | |
|-----|--|---------------------------|
| AG1 | | Deep Anode Well |
| AG2 | | Polymeric or Platinum |
| AG3 | | Conventional - Vertical |
| AG4 | | Conventional - Horizontal |

JUNCTION BOX (JB)

JB Where X:

- JBN - Negative Cables
- JBP - Positive Cables
- JBR - Resistor
- JBD - Diode
- JBA - Galvanic Anode Shunts
- JBI - Impressed Anode Shunts
- JBS - Cable Splice

INSULATING JOINTS (IJ)

- | | | |
|------|--|---|
| IJ1 | | Dielectrically Insulated Flange Joint |
| IJ2 | | Non-Dielectrically Insulated Flange Joint |
| IJ3 | | Flanged insulating Protective Device |
| IJ4 | | Bonded Insulated Flange Joint |
| IJ5 | | Insulated Flange w/Adjustable Resistance |
| IJ6 | | Gate Valve Insulated Flange Joint |
| IJ7 | | Butterfly Valve Insulated Flange Joint |
| IJ8 | | MOV Insulated Flange Joints |
| IJ9 | | Monolithic Insulating Joint |
| IJ10 | | Bonded Mechanical Coupling |
| IJ11 | | Dielectrically Insulated Union |
| IJ12 | | Bonded Dielectric Union |
| IJ13 | | Dielectrically Insulated Coupling |

RECTIFIERS (RE)

- | | | |
|-----|--|------------------|
| RE1 | | Pedestal Mounted |
| RE2 | | Post Mounted |

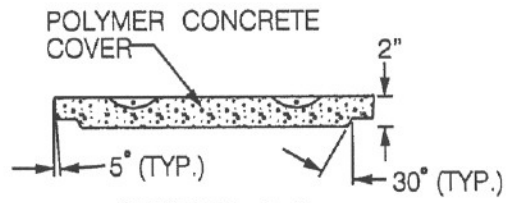
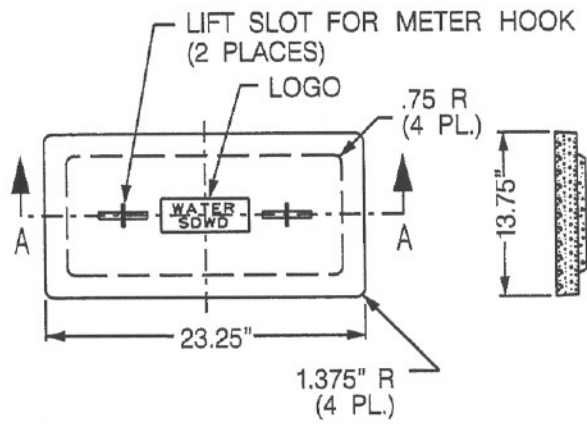
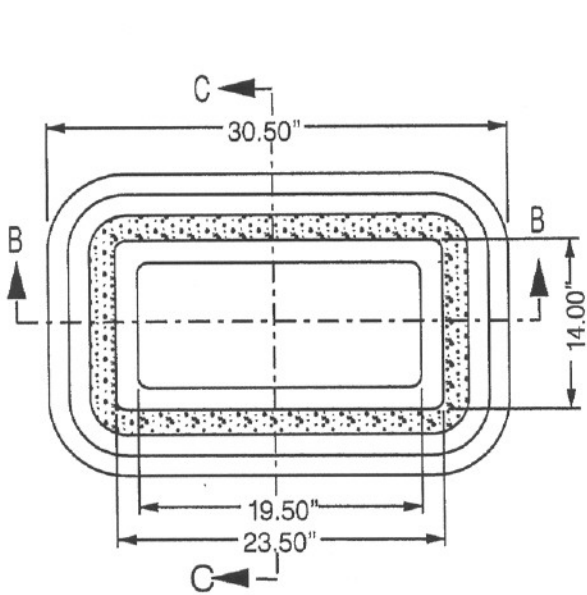
REFERENCE CELL (RC)

- | | | |
|-----|--|-----------------------------|
| RC1 | | Copper-Copper Sulfate Cell |
| RC2 | | 99.9% High Purity Zinc Cell |
| RC3 | | Silver-Silver Chloride Cell |

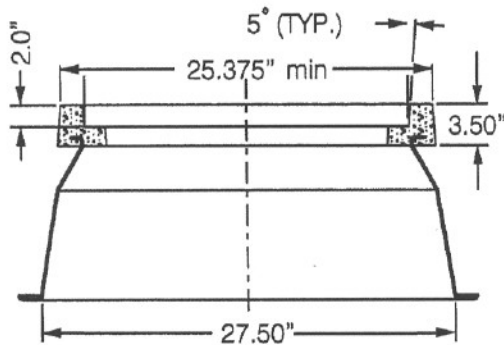
TEST STATION (TS)

- Above Grade At Grade Where X:
- TS1 - IR-Free Coupon
 - TS2 - 2-Wires Station
 - TS3 - Foreign Crossing Station
 - TS4 - 4-Wires Station
 - TS5 - Calibrating Station
 - TS6 - 6-Wires Station
 - TS7 - Interference Current
 - TS8 - 8-Wires Station
 - TS9 - Electrical Resistance Probe

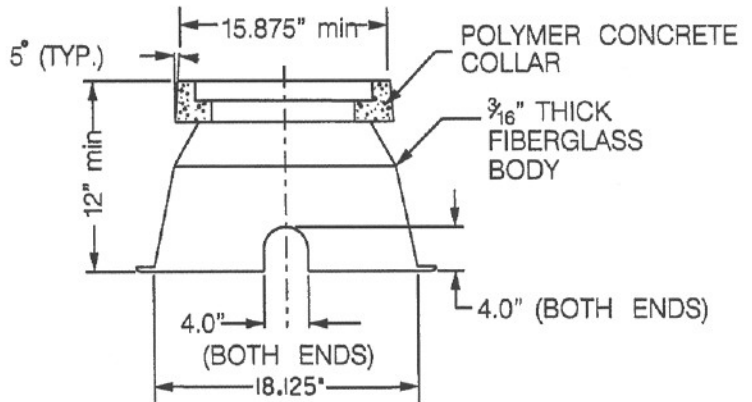
Revision	By	Approved	Date	CITY OF SAN DIEGO - STANDARD DRAWING	CITY OF SAN DIEGO STANDARDS COMMITTEE
Original		Oskoui	12/03		12-9-03 Chairperson RCE 64572 Date
				SYMBOLS CATHODIC PROTECTION	DRAWING NUMBER SDW-133



SECTION A-A



SECTION B-B



SECTION C-C

NOT TO SCALE

NOTE:

1. METER BOX COLLAR AND COVER SHALL BE OF POLYMER CONCRETE REINFORCED WITH CONTINUOUS LAYERS OF WOVEN FIBERGLASS.
2. BOX AND COVER SHALL WITHSTAND A-16 LOADINGS (ASTM C857-95)
3. LOGO = SDWD WATER
4. FOR COVER DETAIL WITH READER LID, SEE SDW-136
5. SEE SDW-137 FOR INSTALLATION PROCEDURE.

Revision	By	Approved	Date
Orgnl	SMS	Oskoui	12/03

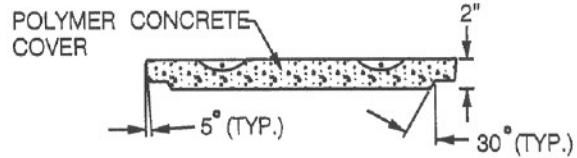
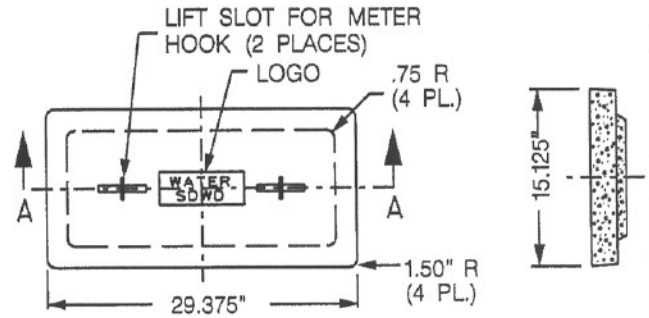
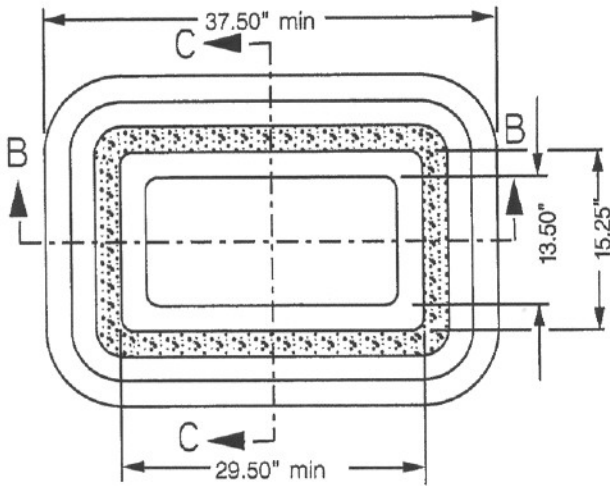
CITY OF SAN DIEGO - STANDARD DRAWING

POLYMER CONCRETE WITH LAYER OF WOVEN FIBERGLASS WATER METER BOX FOR 1" WATER SERVICE

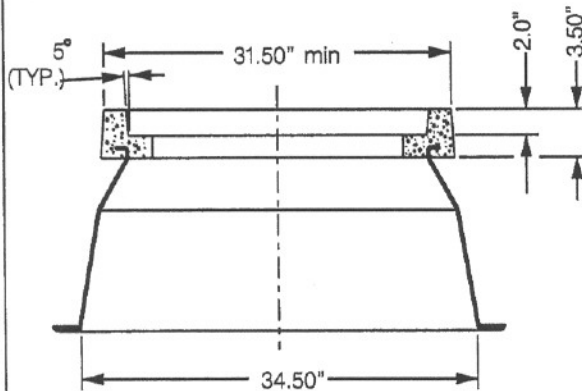
CITY OF SAN DIEGO
STANDARDS COMMITTEE

R. H. ... 12-9-03
Chairperson RCE 64572 Date

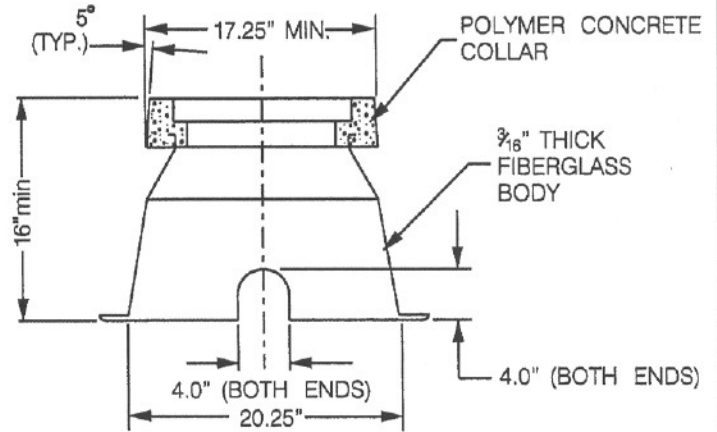
DRAWING NUMBER **SDW-134**



SECTION A-A



SECTION B-B



SECTION C-C

NOT TO SCALE

NOTE:

1. METER BOX COLLAR AND COVER SHALL BE OF POLYMER CONCRETE REINFORCED WITH CONTINUOUS LAYERS OF WOVEN FIBERGLASS.
2. BOX AND COVER SHALL WITHSTAND A-16 LOADINGS (ASTM C857-95)
3. LOGO = SDWD WATER
4. FOR COVER DETAIL WITH READER LID, SEE SDW-136
5. SEE SDW-137 FOR INSTALLATION PROCEDURE.

Revision	By	Approved	Date
Orgnl	SMS	Oskoui	12/03

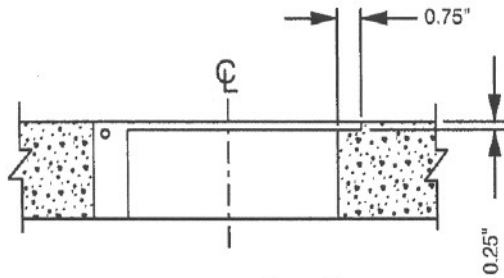
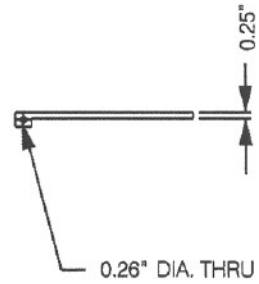
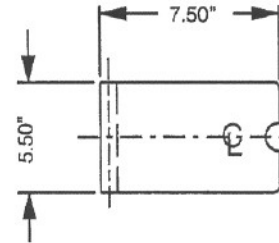
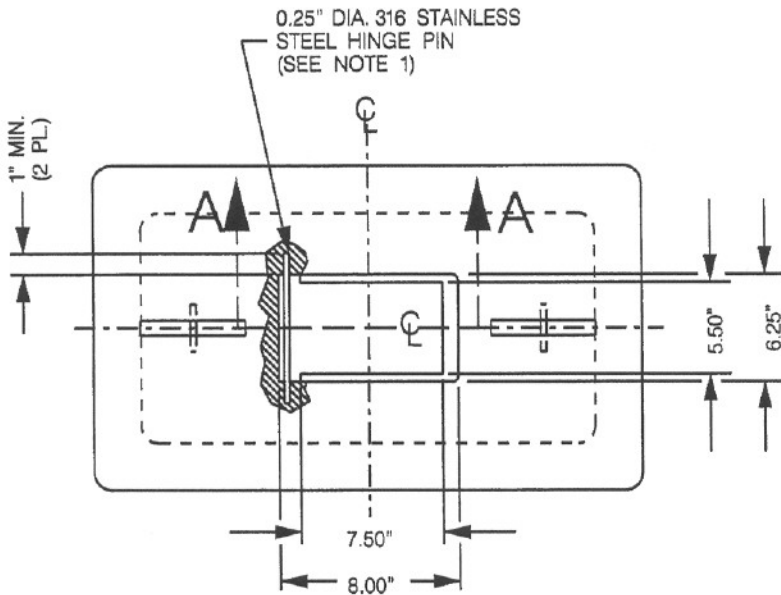
CITY OF SAN DIEGO - STANDARD DRAWING

POLYMER CONCRETE WITH LAYER OF WOVEN FIBERGLASS WATER METER BOX FOR 2" WATER SERVICE

CITY OF SAN DIEGO
STANDARDS COMMITTEE

R. Kelly 12-9-03
Chairperson RCE 64512 Date

DRAWING NUMBER **SDW-135**



SECTION A-A

S.S LID

1" METER BOX COVER
(38 LBS)

2" METER BOX COVER
(43 LBS)

NOT TO SCALE

NOTE:

1. CAST IRON LID & 316 STAINLESS STEEL HINGE PIN TO OPEN LESS THAN 90 DEGREES SHALL BE ASSEMBLED AND MOLDED INTO METER BOX COVER DURING MANUFACTURE.
2. SEE SDW-134 OR SDW-135 FOR DIMENSIONS OF METER BOX COVER.
3. LID SHALL WITHSTAND A-10 LOADINGS (ASTM C857-95)

Revision	By	Approved	Date
Orgnl	sms	Oskoui	12/03

CITY OF SAN DIEGO - STANDARD DRAWING

METER BOX COVER WITH READER LID

CITY OF SAN DIEGO
STANDARDS COMMITTEE

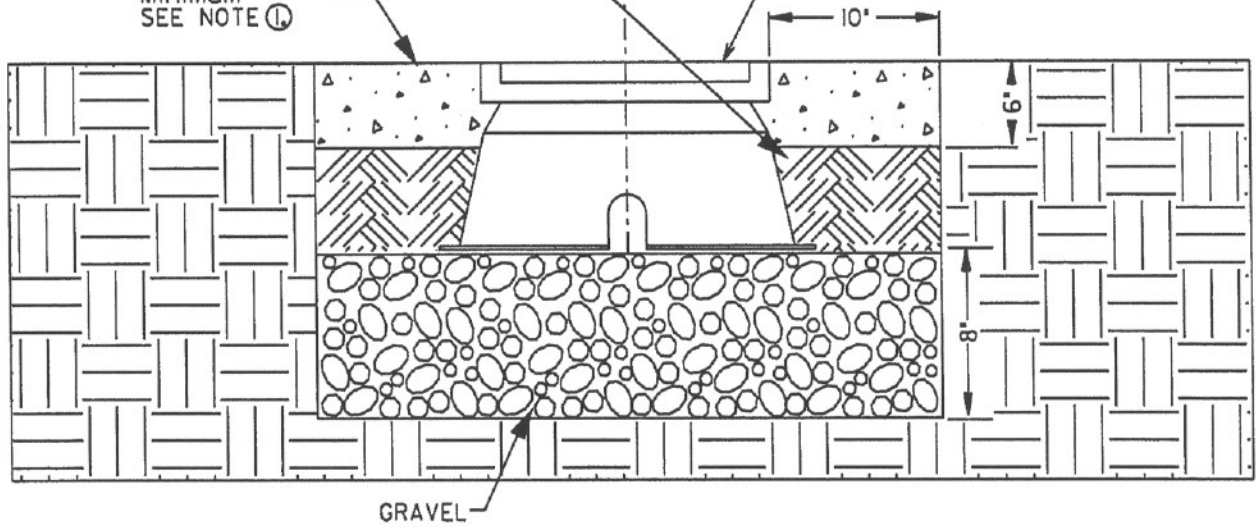
Blh 12-9-03
Chairperson RCE 64572 Date

DRAWING NUMBER **SDW-136**

Fill @ 95% RELATIVE
Compaction

Concrete 3250 PSI
Minimum
SEE NOTE ①

SEE SDW-135
METER BOX



NOT TO SCALE

INSTALLATION PROCEDURE FOR METER BOXES IN AREAS WHICH ARE SUBJECT TO HEAVY TRAFFIC INCLUDING DRIVEWAYS, PARKING LOTS AND ALLEYS

STEP 1. PREPARE THE EXCAVATION APPROXIMATELY 8 INCHES DEEPER THAN THE DEPTH OF THE BOX, THEN ADD 8 INCHES OF GRAVEL.

STEP 2. PLACE BOX IN HOLE WITH TOP AT GRADE LEVEL.

STEP 3. BACKFILL AND COMPACT TO 95% RELATIVE COMPACTION MINIMUM.

NOTE

① CONCRETE IS REQUIRED TO BE 3250 psi MINIMUM STRENGTH AND PLACED AT STREET GRADE.

Revision	By	Approved	Date
Orgnl	SMS	Oskoui	12/03

CITY OF SAN DIEGO - STANDARD DRAWING

INSTALLATION PROCEDURE FOR HEAVY
TRAFFIC METER BOX

CITY OF SAN DIEGO
STANDARDS COMMITTEE

R. L. 12-9-03
Chairperson RCE 64572 Date

DRAWING
NUMBER **SDW-137**