

# CITY OF OCEANSIDE

## WATER UTILITIES DEPARTMENT

### WATER, SEWER, AND RECLAIMED WATER DESIGN & CONSTRUCTION MANUAL

## WATER STANDARD DRAWINGS

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**CITY OF OCEANSIDE**  
**WATER UTILITIES DEPARTMENT**

**WATER, SEWER, AND RECLAIMED WATER DESIGN & CONSTRUCTION MANUAL**

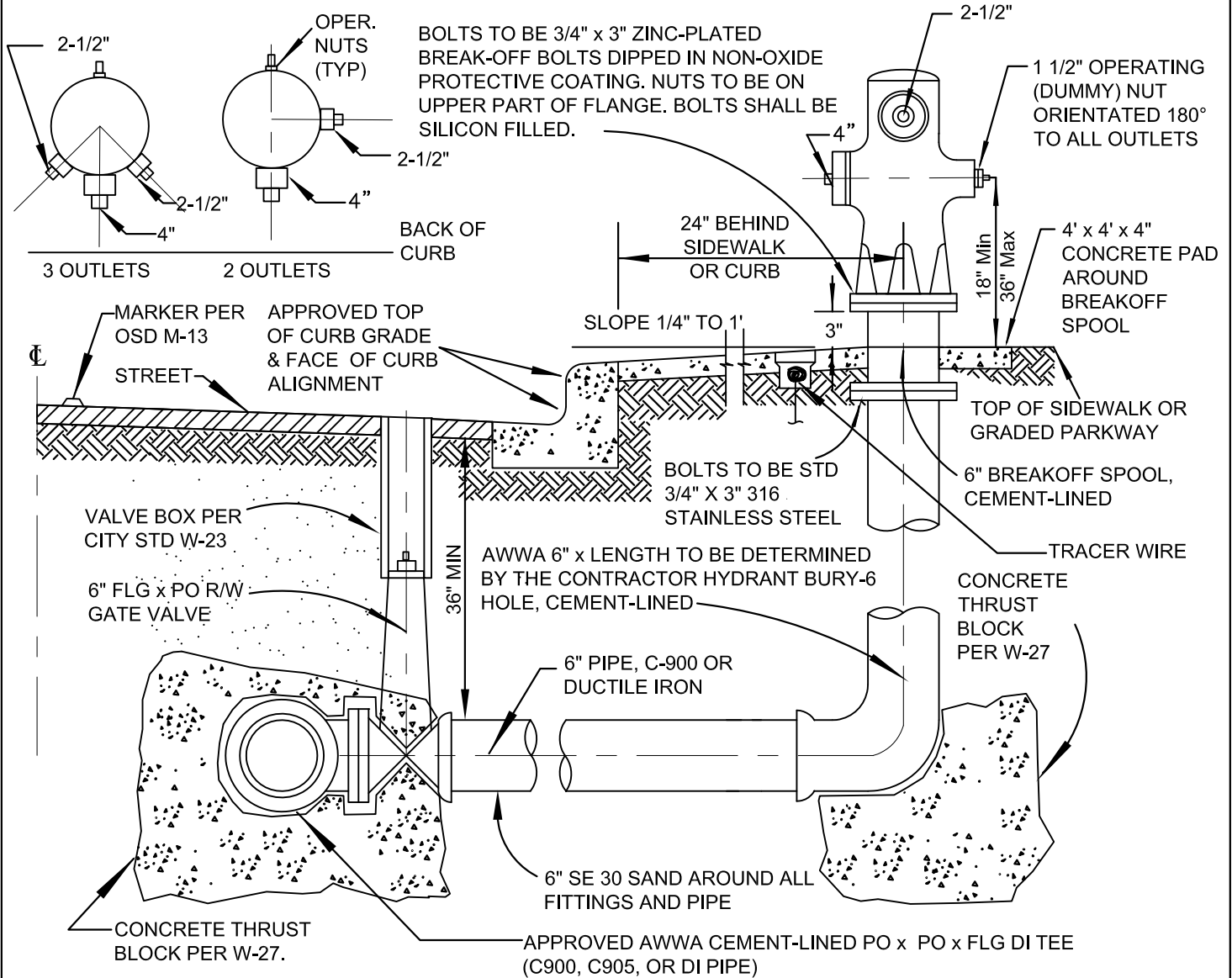
**WATER STANDARD DRAWINGS**

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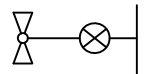
APPROVED FIRE HYDRANT MODELS

TYPE	OUTLETS	JAMES JONES	AVK
SINGLE FAMILY	1-2 1/2", 1-4"	MODEL J - 4040	AVK - 2470
MULTI FAMILY	2-2 1/2", 1-4"	MODEL J - 4060	AVK - 2490
COMMERCIAL	2-2 1/2", 1-4"	MODEL J - 4060	AVK - 2490
INDUSTRIAL	2-2 1/2", 1-4"	MODEL J - 4060	AVK - 2490



NOTES:

1. FINISH WITH APPROVED FIRE HYDRANT MARINE ENAMEL YELLOW 1000-20 PAINT, MANUFACTURED BY PRO-LINE.
2. ALL PRIVATE HYDRANTS SHALL BE FINISHED WITH MARINE ENAMEL OSHA SAFETY RED 1000-29, MANUFACTURED BY PRO-LINE.
3. ALL BURIED NUTS AND BOLTS TO BE STAINLESS STEEL.
4. PLACE DETECTOR TAPE MARKED "WATER" 1 FOOT ABOVE PIPE ALONG ENTIRE RUN.
5. ALL DUCTILE IRON PIPE AND FITTINGS SHALL BE ENCASED WITH 2 LAYERS OF 8 MIL POLYETHYLENE.
6. CHECK VALVE TYPE FIRE HYDRANTS SHALL BE REQUIRED AT DISCRETION OF WATER UTILITIES DEPT.
7. PLACE TRACER WIRE AT EVERY 600' OR EVERY OTHER FIRE HYDRANT. BOX SHALL BE COPPERHEAD SNAKEPIT TRACER BOX (CD14BLUTP).



LEGEND ON PLANS

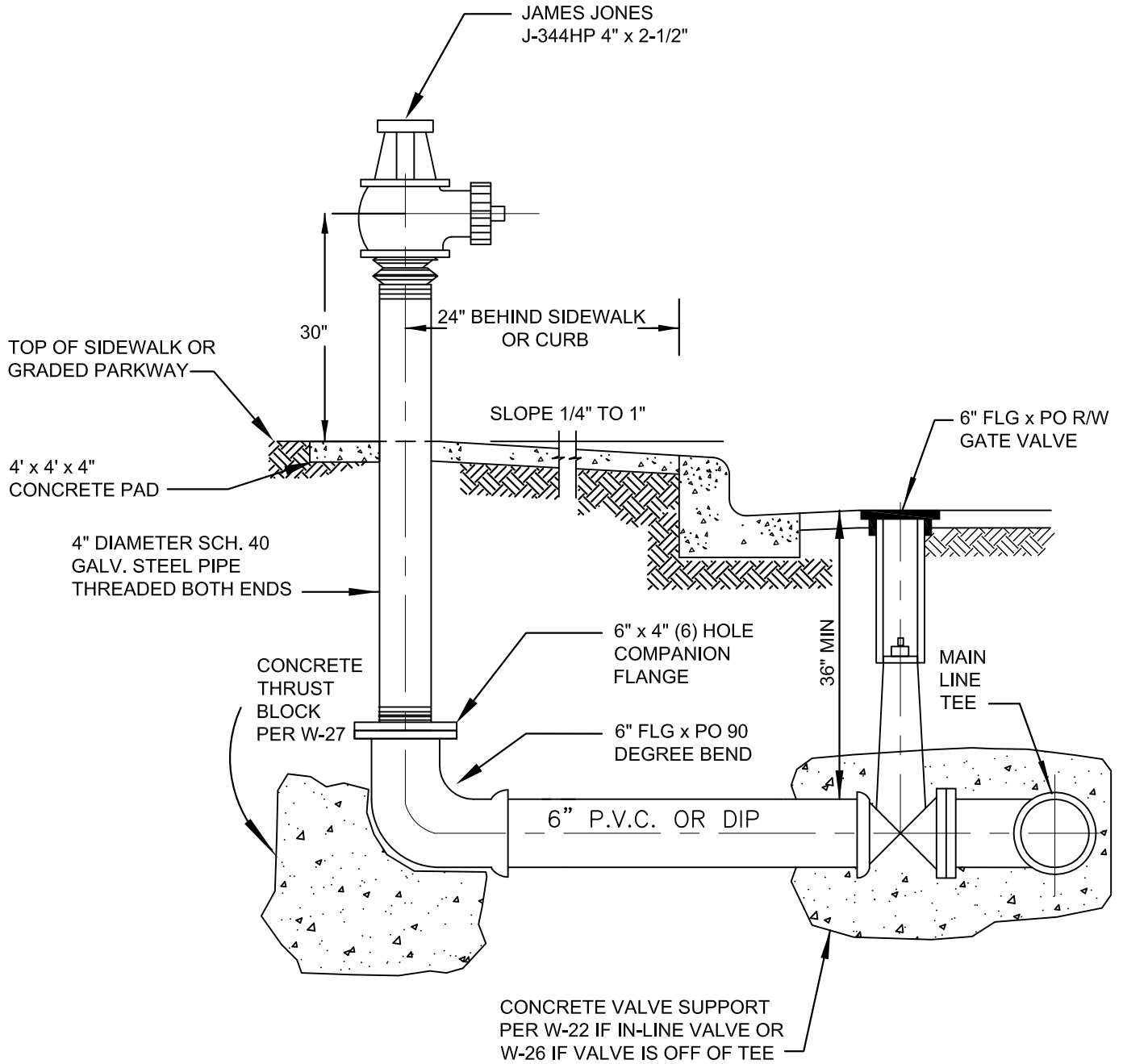
Revision	By	Approved	Date
03/15/05	AC		
06/04/07	AC		
12/01/11	DW		
04/10/12	DW		
04/25/17	MU		
07/01/17	SM		08/01/17

**CITY OF OCEANSIDE**

**FIRE HYDRANT**

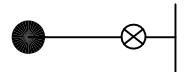
*Steven E. Strapan* 9/17/17  
 CITY ENGINEER      Date

STANDARD DRAWING NO.      **W-1**



**NOTES:**

1. FINISH WITH APPROVED FIRE HYDRANT MARINE YELLOW 1000 PAINT, MANUFACTURED BY PROLINE.
2. ALL BURIED NUTS AND BOLTS TO BE TYPE 316 STAINLESS STEEL.
3. PLACE DETECTOR TAPE MARKED "WATER" 1 FOOT ABOVE PIPE ALONG ENTIRE RUN.
4. ALL DUCTILE IRON PIPE, FITTINGS, AND GALVANIZED RISER SHALL BE ENCASED WITH 2 LAYERS OF 8 MIL POLYETHYLENE.
5. ENCASE ALL FERROUS METALS IN 6" OF SE 30 SAND AFTER WRAPPING.
6. PROVIDE TRACER WIRE PER OSD W-1 FOR PVC PIPE WHERE SERVICE IS NOT PERPENDICULAR TO MAIN.



LEGEND ON PLANS

Revision	By	Approved	Date
10/16/02	DW		
08/04/04	AC		
06/04/07	AC		
05/01/17	MU		
07/01/17	SM		08/01/17

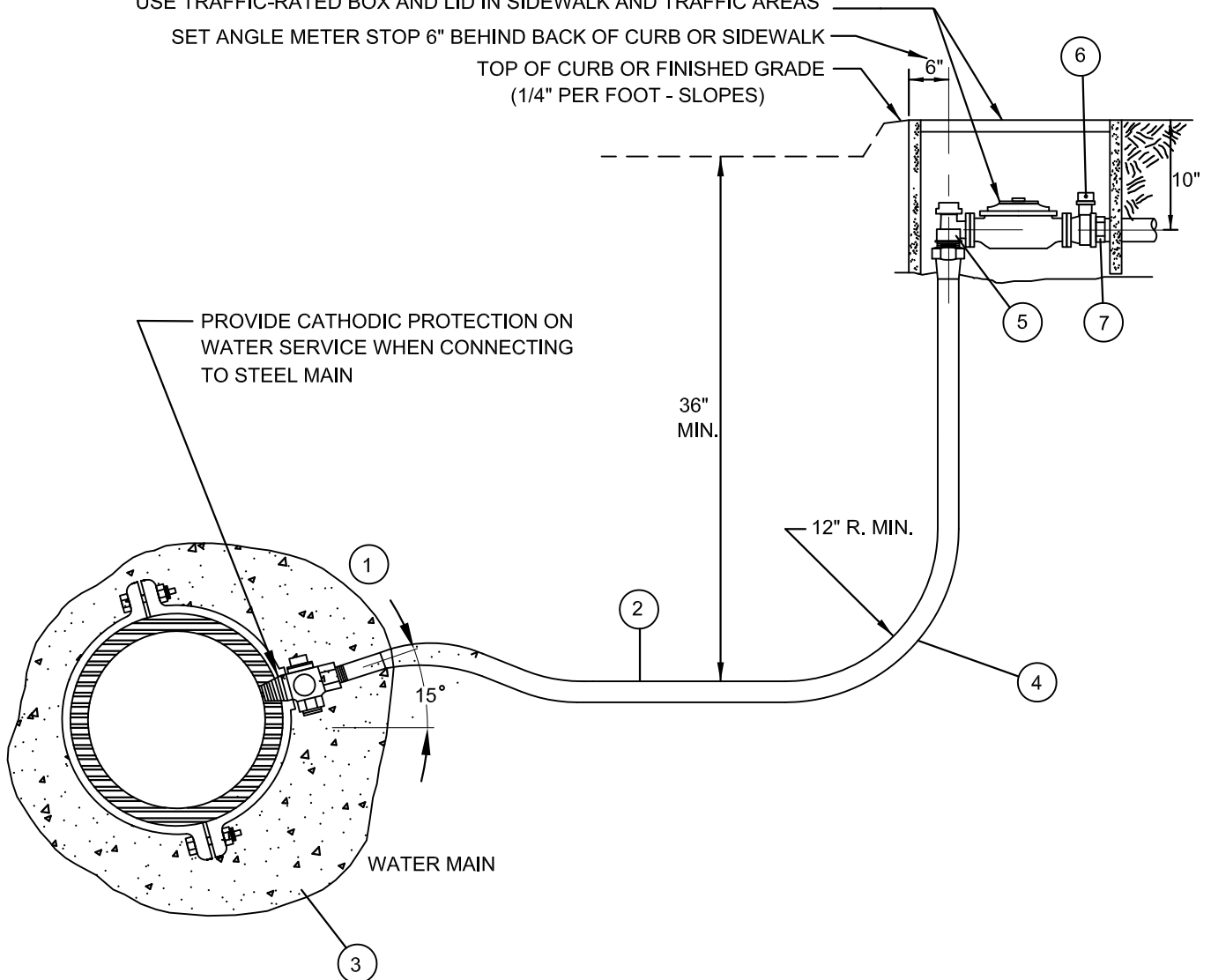
**CITY OF OCEANSIDE**

**STANDARD BLOW-OFF**

*Steven E. Strapanac* 9/17/17  
CITY ENGINEER Date  
STANDARD DRAWING NO. **W-2**



METER & METER BOX TO BE INSTALLED BY CITY FORCES  
 USE TRAFFIC-RATED BOX AND LID IN SIDEWALK AND TRAFFIC AREAS  
 SET ANGLE METER STOP 6" BEHIND BACK OF CURB OR SIDEWALK  
 TOP OF CURB OR FINISHED GRADE  
 (1/4" PER FOOT - SLOPES)

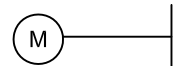


**BILL OF MATERIALS:**

1. SERVICE SADDLE AND CORPORATION STOP PER SECTION 2.12
2. COPPER TUBING SHALL BE TYPE "K" SEAMLESS SOFT. (NO JOINTS PERMITTED).
3. SERVICES TO BE ENCASED IN 6" SE 30 SAND.
4. BURIED COPPER TO BE ENCASED IN 6 MIL POLY WRAP SLEEVE PER SECTION 2.12.
5. ANGLE STOP (1" x 3/4" OR 1" x 1") MUST BE SIZED PER PROPOSED METER SIZE AND MATERIAL PER SECTION 2.12.  
 A 1" x 3/4" ANGLE STOP SHALL BE USED FOR 5/8" METER SIZE.
6. BALL VALVE FURNISHED AND INSTALLED BY CITY FORCES.
7. M.I.P. X FEMALE SLIP PVC ADAPTER FURNISHED AND INSTALLED BY CITY FORCES.

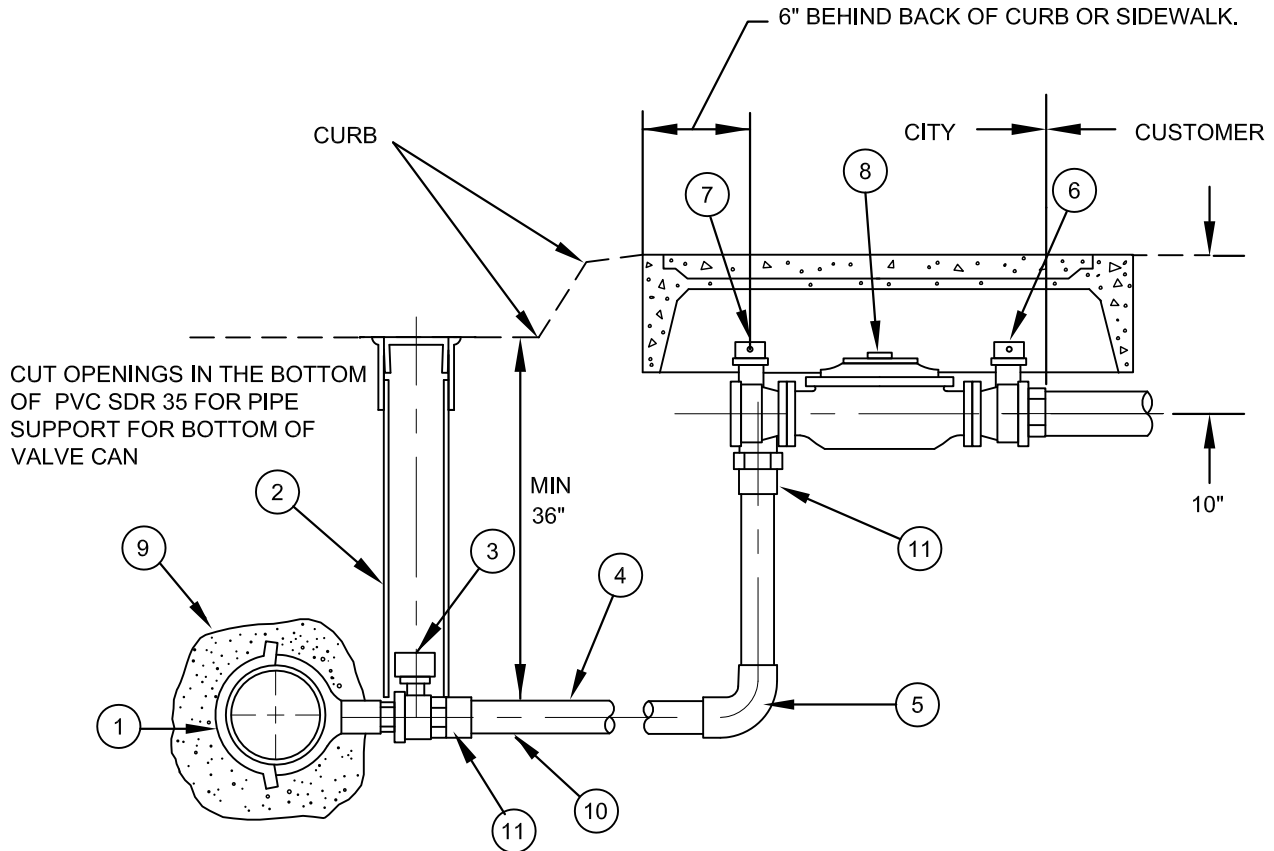
**NOTES:**

1. TAPS INTO TOP OF WATER MAIN ARE NOT PERMITTED.
2. HOT TAPS BY CITY APPROVED CONTRACTORS ONLY.
3. WATER PORT HOLE CENTERS TO BE INSTALLED 10" BELOW TOP OF METER BOX.
4. THE USE OF BUSHINGS, COUPLINGS, AND REDUCERS ON WATER SERVICE LINE BETWEEN CONNECTION TO MAIN AND WATER METER IS STRICTLY PROHIBITED.



LEGEND ON PLANS

Revision	By	Approved	Date	<b>CITY OF OCEANSIDE</b>	<i>Steven E. Strapac</i> 9/17/17 CITY ENGINEER Date
09/16/02	DW				
07/08/04	AC				
03/05/08	DW				
01/04/16	MU				
07/01/17	SM		08/01/17		



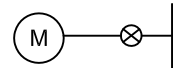
**BILL OF MATERIALS:**

1. BRONZE SERVICE SADDLE
2. VALVE BOX & COVER PER W-23 WITH BOTTOM SUPPORT
3. 1 1/2" OR 2" M.I.P. X F.I.P. BALL VALVE W/2" G.V. OPERATING NUT ADAPTER
4. 1 1/2" OR 2" TYPE "K" COPPER TUBING (RIGID)
5. 1 1/2" OR 2" COPPER TO COPPER 90° ELBOW
6. 1 1/2" OR 2" F.I.P. X METER FLANGE BALL VALVE FURNISHED AND INSTALLED BY CITY FORCES
7. 1 1/2" OR 2" ANGLED BALL FLANGED METER VALVE T O MATCH METER SIZE
8. 1 1/2" OR 2" WATER METER FURNISHED AND INSTALLED BY CITY FORCES
9. BURIED COPPER TO BE ENCASED IN 6" SE 30 SAND
10. BURIED COPPER TO BE WRAPPED IN 6 MIL POLYWRAP SLEEVE
11. M.I.P. X COPPER ADAPTER

**NOTES:**

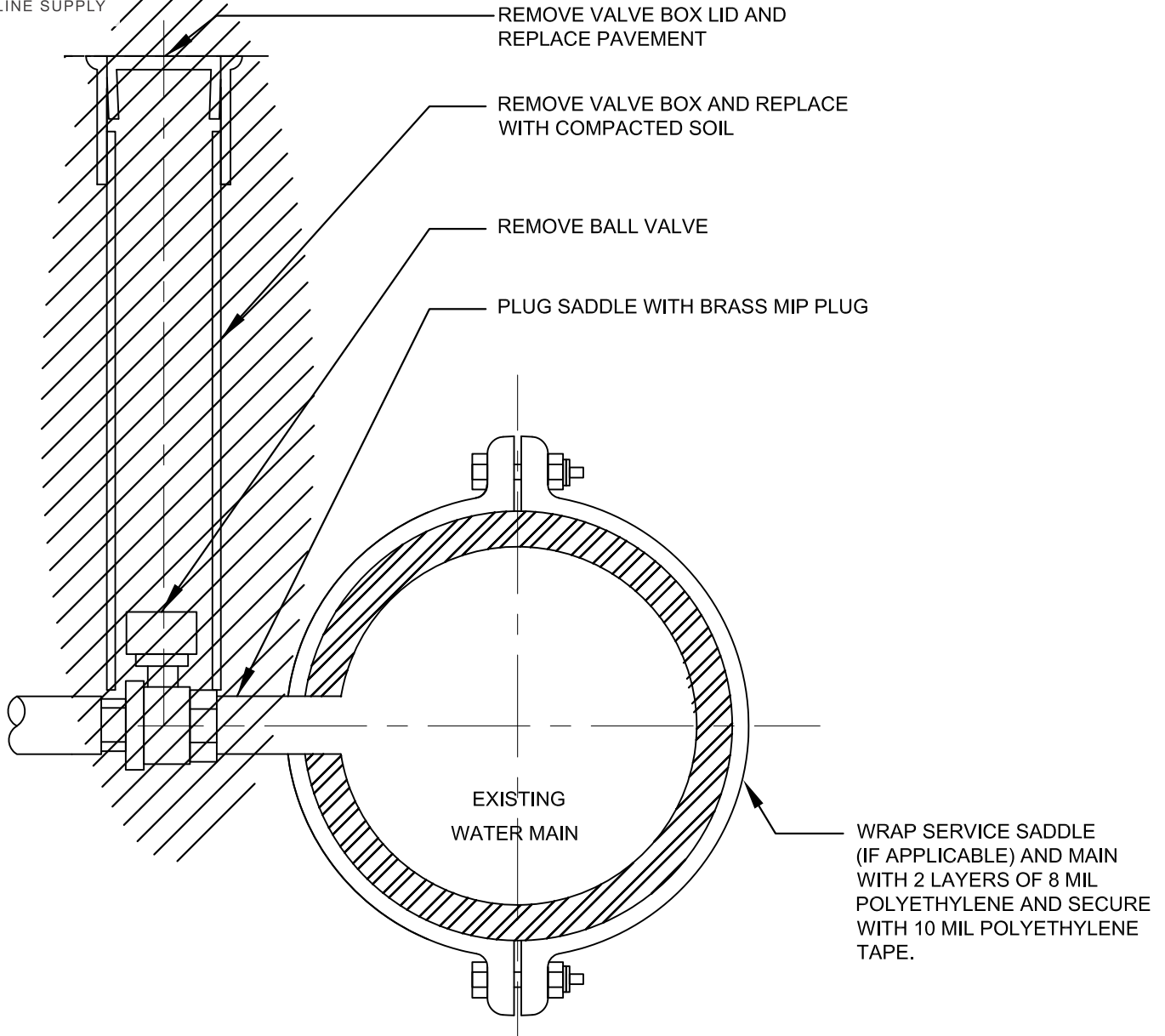
1. ALL MATERIALS SHALL BE PER SECTION 2.12.
2. METER BOX & METERS INSTALLED BY CITY FORCES. USE TRAFFIC-RATED TYPES IN SIDEWALK AND TRAFFIC AREAS.

WHEN REDUCING PIPE SIZE, NO BUSHINGS OR REDUCERS WITH THREAD ALLOWED.  
 COPPER REDUCERS WITH SILVER SOLDER ACCEPTABLE. ALL JOINTS TO BE SILVER SOLDERED.  
 WATER PORT HOLE CENTERS TO BE INSTALLED 10" BELOW TOP OF METER BOX.



LEGEND ON PLANS

Revision	By	Approved	Date	<b>CITY OF OCEANSIDE</b>	<i>Steven E. Strapac</i> 9/17/17
09/16/02	DW				CITY ENGINEER Date
07/08/04	AC				
06/04/07	AC				
12/01/11	DW				
01/04/16	MU				
07/01/17	SM		08/01/17	<b>STANDARD 1 1/2" &amp; 2" METER SERVICE</b>	STANDARD DRAWING NO. <b>W-5</b>



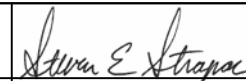
NOTES :

1. WATER METER BOX TO BE REMOVED:
  - A. PARKWAY - FILL & COMPACT HOLE WITH CLEAN DIRT AND GRADE LEVEL.
  - B. SIDEWALK - REMOVE AND REPLACE CONCRETE INCLUDING CURB AND GUTTER FROM SCORE TO SCORE.
2. CONTACT WATER UTILITIES DEPARTMENT TO COORDINATE WATER MAIN SHUTDOWN FOR 1 1/2" OR 2" BALL VALVE REMOVAL.
3. ABANDONMENT OF SERVICE MUST BE INSPECTED BY REPRESENTATIVE OF THE WATER UTILITIES DEPARTMENT FOR INTEGRITY.
4. CITY FORCES TO REMOVE EXISTING WATER METER.
5. PLUG ENDS OF ABANDONED COPPER SERVICE. ABANDON-IN PLACE, UNLESS NOTED OTHERWISE.

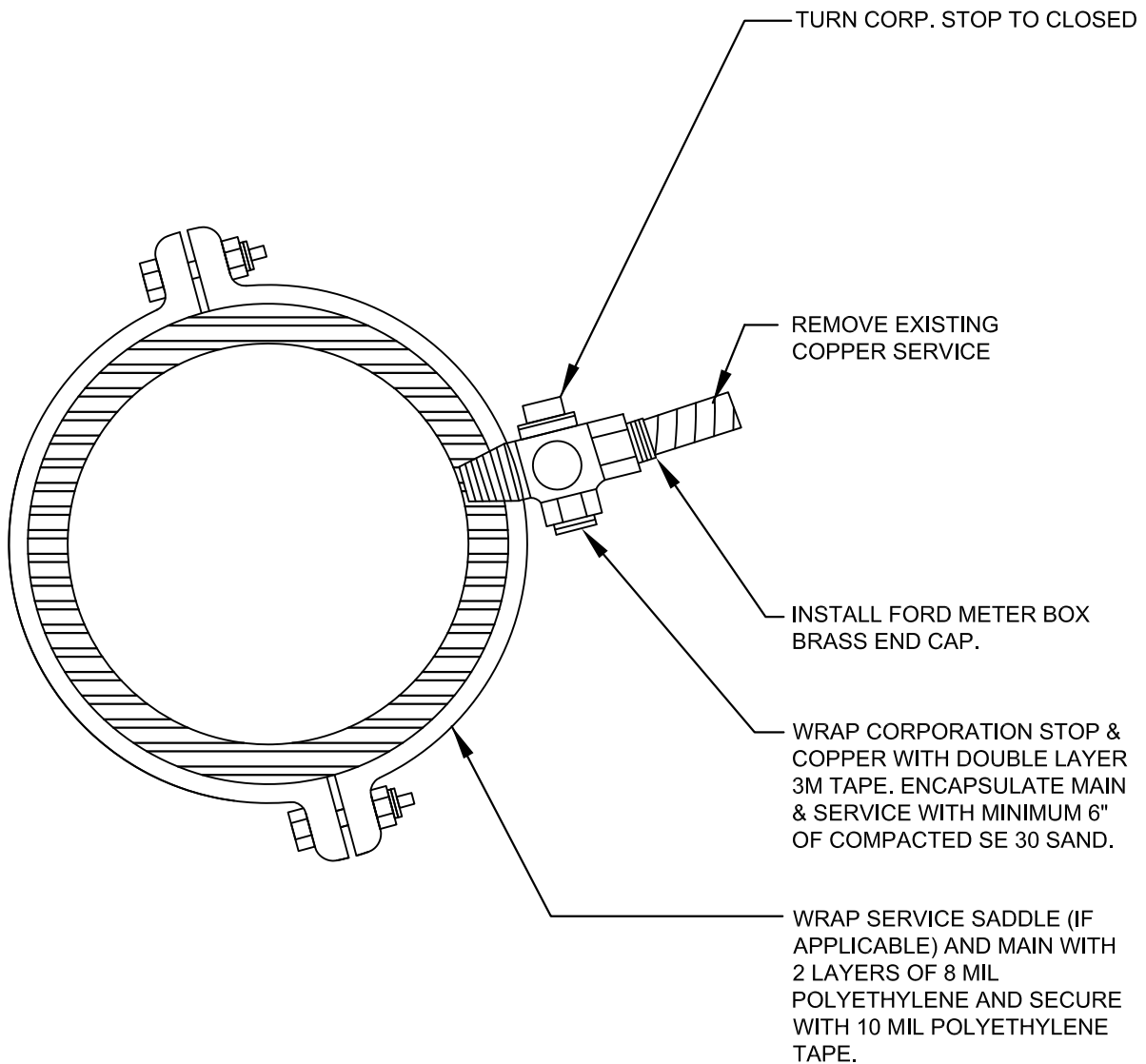
Revision	By	Approved	Date
11/07/00	kal		
06/14/01	DW		
09/16/02	DW		
06/04/07	AC		
03/21/17	MU		

## CITY OF OCEANSIDE

### 1 1/2" OR 2" WATER METER SERVICE ABANDONMENT

 9/17/17  
 CITY ENGINEER Date  
 STANDARD DRAWING NO. **W-6b**

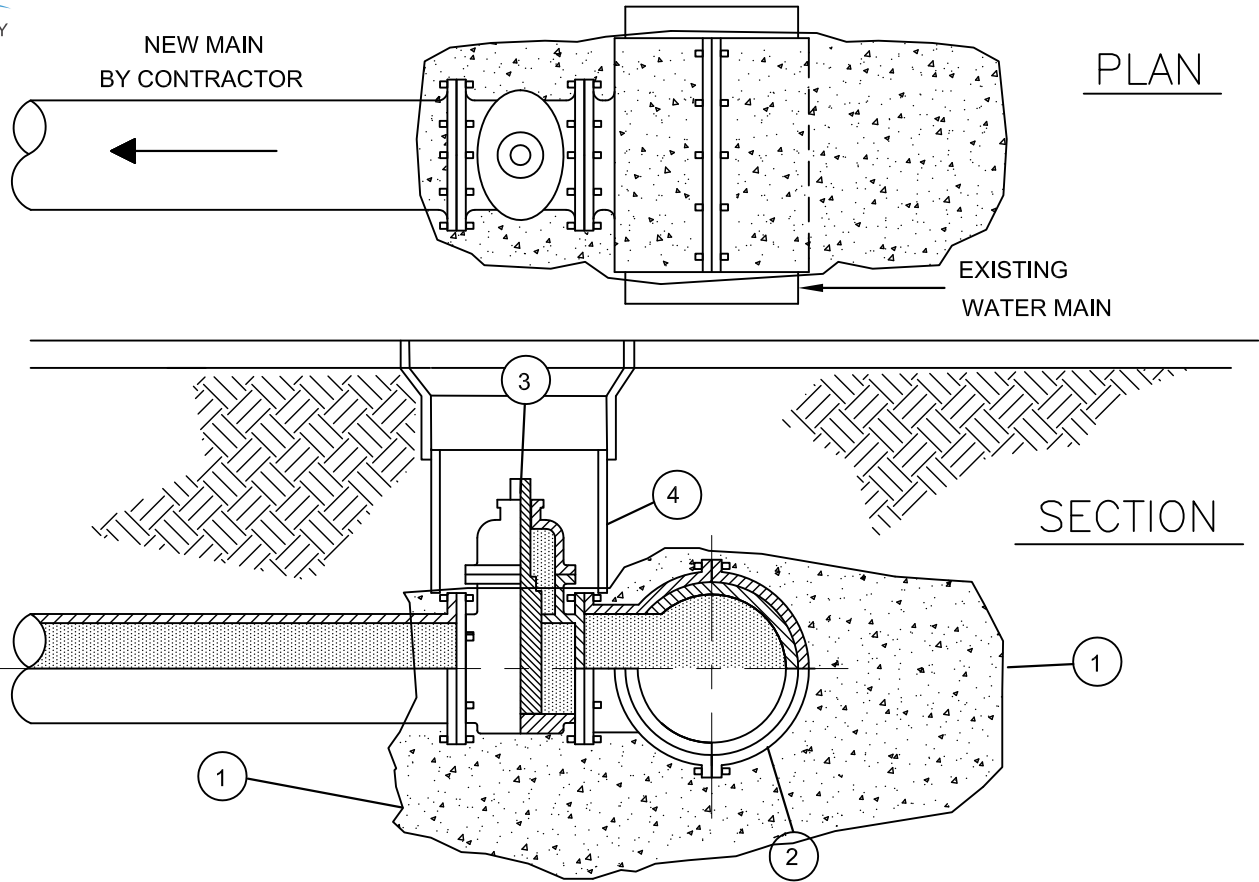




NOTES :

1. WATER METER BOX TO BE REMOVED:
  - A. PARKWAY - FILL & COMPACT HOLE WITH CLEAN DIRT AND GRADE LEVEL.
  - B. SIDEWALK - REMOVE AND REPLACE CONCRETE INCLUDING CURB AND GUTTER FROM SCORE TO SCORE.
2. PLUG FOR CORPORATION STOP MUST BE INSPECTED BY REPRESENTATIVE OF THE WATER UTILITIES DEPARTMENT FOR INTEGRITY.
3. CITY FORCES TO REMOVE EXISTING WATER METER.
4. PLUG ENDS OF ABANDONED COPPER SERVICE, ABANDON-IN PLACE, UNLESS NOTED OTHERWISE.
5. FORD METER BOX BRASS END CAP. 1" MODEL CAP-2-4-NL. 3/4" MODEL CAP-24-3-NL

Revision	By	Approved	Date	<p style="text-align: center;"><b>CITY OF OCEANSIDE</b></p>					
06/14/01	DW					<p><b>3/4" OR 1" WATER METER SERVICE ABANDONMENT</b></p>			
09/16/02	DW			<p><i>Steven E. Strapac</i> 9/17/17 CITY ENGINEER Date</p>					
06/04/07	AC							<p>STANDARD DRAWING NO. <b>W-6a</b></p>	
01/04/16	MU								
07/01/17	SM		08/01/17						



**BILL OF MATERIALS:**

1. THRUST BLOCK PER W-27.
2. TAPPING SLEEVE (SEE NOTES BELOW).
3. GATE VALVE SHALL BE FLANGE BY FLANGE. IF FL x RT USE TAPPING VALVE WITH THRUST BLOCK.
4. VALVE BOX PER W-23.

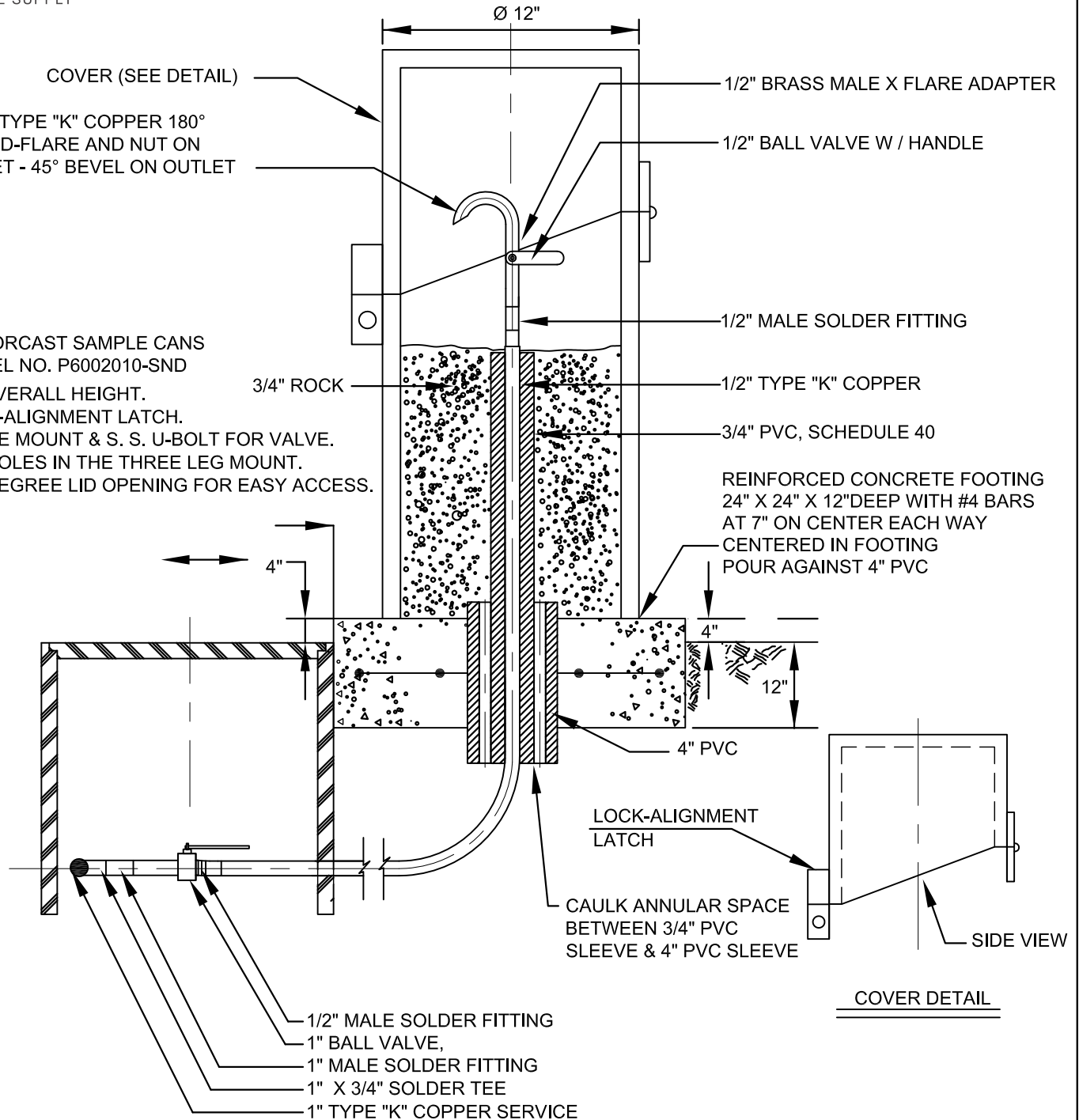
**TYPE OF TAPPING SLEEVES TO BE USED**

AC PIPE: 4"-12" H-619 MUELLER MJ.  
 ALL PIPE MATERIAL EXCEPT COATED STEEL PIPE: 12"-30" SMITH-BLAIR 622 CARBON STEEL TAPPING SLEEVE.  
 CAST IRON PIPE: 4"-24" H-615 MUELLER MJ.  
 DUCTILE IRON PIPE: 4"-24" H-615 MUELLER MJ.  
 PVC C900 PIPE: 4"-12" H-615 MUELLER MJ.  
 ALL CEMENT-COATED STEEL CYLINDER PIPE: KOPPL PIPELINE SERVICES FABRICATED TAPPING SLEEVE ONLY.  
 INSTALLED AND TAPPED BY KOPPL PIPELINE SERVICES OR INTERNATIONAL FLOW TECHNOLOGIES.

**NOTES:**

1. PIPE, FITTINGS, VALVES, AND NUTS & BOLTS WILL BE COATED AND WRAPPED PER SECTION 2.12.
2. NO SIZE-ON-SIZE HOT TAPS WILL BE PERMITTED.
3. FOR 3" HOT TAPS, USE A 4" TAPPING SLEEVE AND REDUCER.
4. HOT TAPS ON PIPES OVER 30" SHALL BE SUBMITTED FOR REVIEW AND APPROVAL.
5. NO WELD-ON NOZZLES WILL BE PERMITTED.

Revision	By	Approved	Date	<b>CITY OF OCEANSIDE</b>	<i>Steven E. Strapac</i> 9/17/17
11/07/00	kal			<b>STANDARD HOT-TAP CONNECTION, 3" &amp; LARGER</b>	CITY ENGINEER Date
08/06/04	AC				STANDARD DRAWING NO. <b>W-7</b>
06/04/07	AC				
01/04/16	MU				
07/01/17	SM		08/01/17		



**NOTES:**

1. WATER SAMPLING LINE TEE TO BE INSTALLED PRIOR TO METER.
2. ALL COPPER JOINTS TO BE SILVER SOLDERED.
3. ALL COPPER TO BE ENCASED IN 6 MIL POLYWRAP AND 6" OF SE 30 SAND PER SECTION 2.12.
4. ALL CONCRETE TO BE 560-C-3250 PER GREEN BOOK .

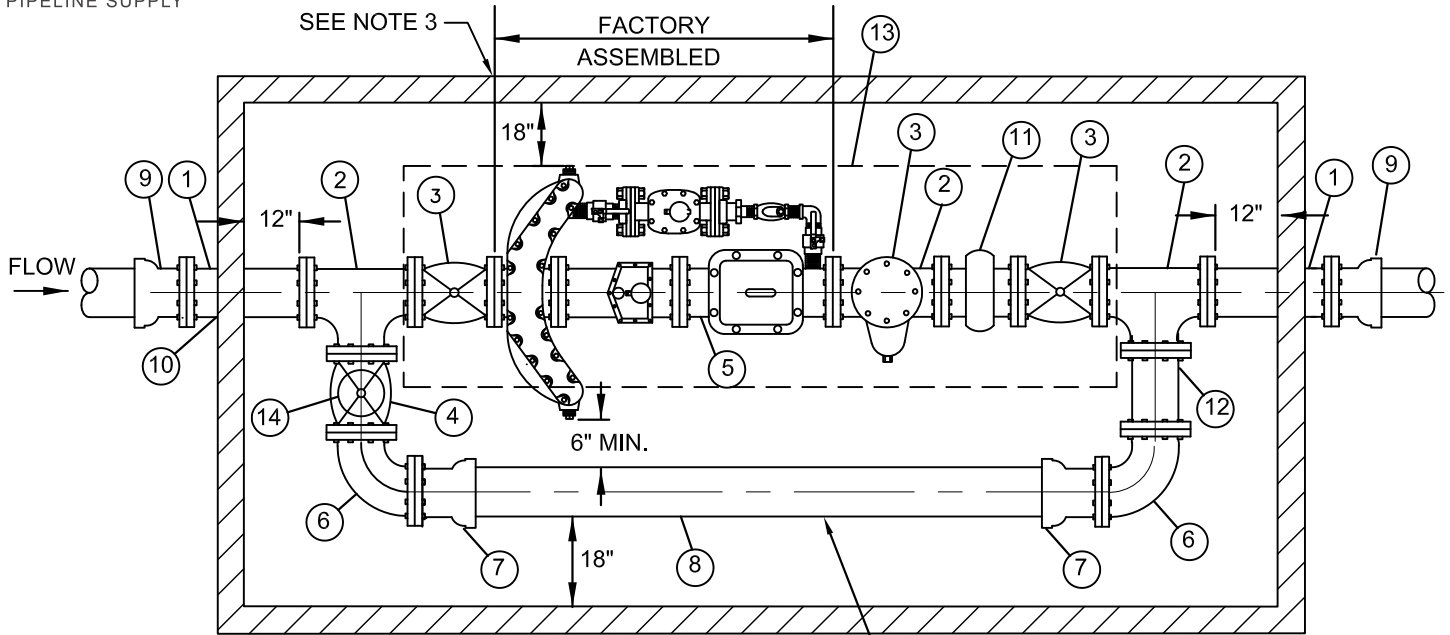
Revision	By	Approved	Date
08/29/04	AC		
06/04/07	AC		
09/22/10	DW		
12/01/11	DW		
01/04/16	MU		
07/01/17	SM		08/01/17

**CITY OF OCEANSIDE**

**WATER SAMPLING STATION  
FROM AN EXISTING WATER SERVICE**

*Steven E. Strapan* 9/17/17  
CITY ENGINEER Date

STANDARD DRAWING NO. **W-8**



**BILL OF MATERIALS:**

1. 18" LONG FLANGED DUCTILE IRON SPOOL.
2. FLANGED DUCTILE IRON TEE WITH OUTLET.
3. FLANGED RESILIENT WEDGE (RW) GATE VALVE, WITH FACTORY FUSION-BONDED EPOXY INSIDE WEDGE TO BE RUBBER ENCAPSULATED DUCTILE IRON WITH 2" SQUARE OPERATING NUT.
4. RW GATE VALVE. EPOXY & WEDGE SAME AS #3. (CLOSED VALVE)
5. FACTORY ASSEMBLED COMPACT FIRE FLOW METER MANUFACTURED BY SENSUS.
6. 90° FLANGED DUCTILE IRON ELBOW.
7. FLANGED DUCTILE IRON SPOOL (L=VARIES)
8. PVC PIPE C900 CLASS 200
9. FLANGE X PUSH ON ADAPTER.
10. APPROVED SEALANT AROUND PIPE OPENINGS. NON-SHRINK GROUT IF ABOVE WATER TABLE AND LINK SEAL IF BELOW.
11. VICTAULIC COUPLING W/ 2 EACH 6" FLG X VIC GROOVE SPOOLS.
12. FLANGED SPOOL
13. BILCO 2 PIECE OR USF 2 PIECE ALUMINUM DIAMOND PLATE HATCH. THE HATCH MUST COVER THE LIMITS OF EITHER SIDE OF THE RW GATE VALVE ON THE MAIN LINE. RATING OF HATCH WILL BE MADE ON A CASE BY CASE BASIS, APPROVED BY THE WATER UTILITIES DEPARTMENT.
14. PIPELINE PRODUCTS GVL-200 LOCKING GATE VALVE CAP.
15. SUPPORT METER WITH VALVE SUPPORTS PER STANDARD DWG W-18

BYPASS PIPE AND VALVES SHALL BE SAME SIZE AS METER. BYPASS VALVE #4 TO BE CLOSED AFTER INSTALLATION & LOCKING CAP INSTALLED, SEE #14.

**NOTES:**

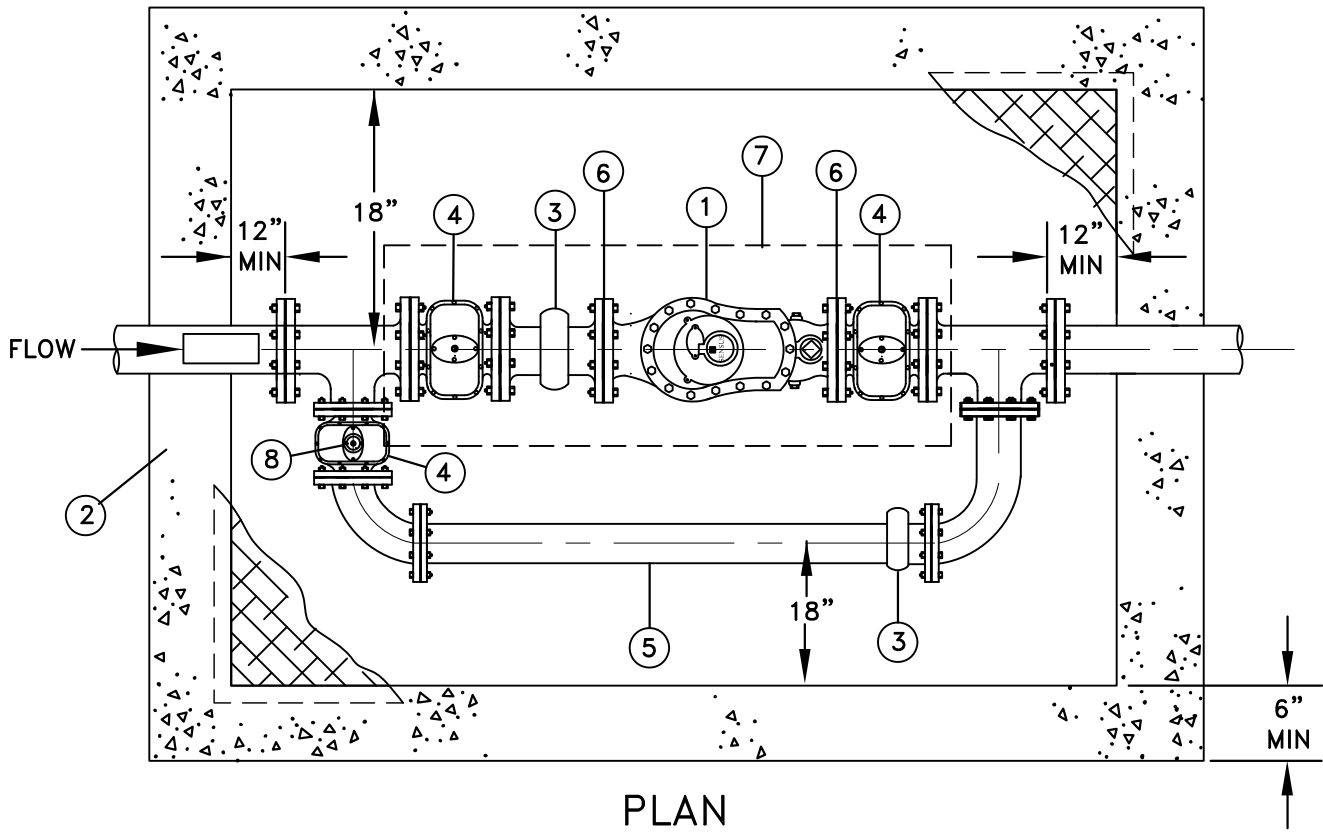
1. VAULT DEPTH NOT TO EXCEED 5'-0" FROM TOP OF VAULT TO FLOOR.
2. SERVICES 6" AND LARGER REQUIRE SPECIAL DESIGN.
3. VAULT FRAME AND COVER PER W-19 AND W-20.

Revision	By	Approved	Date
04/13/05	DW		
06/04/07	AC		
09/22/10	DW		
12/13/11	DW		
01/04/16	MU		
07/01/17	SM		08/01/17

**CITY OF OCEANSIDE**

**STANDARD  
FIRE FLOW MASTER METER**

*Steven E. Strapac* 9/17/17  
CITY ENGINEER Date  
STANDARD DRAWING NO. **W-9**



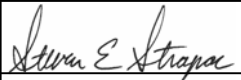
**PLAN**

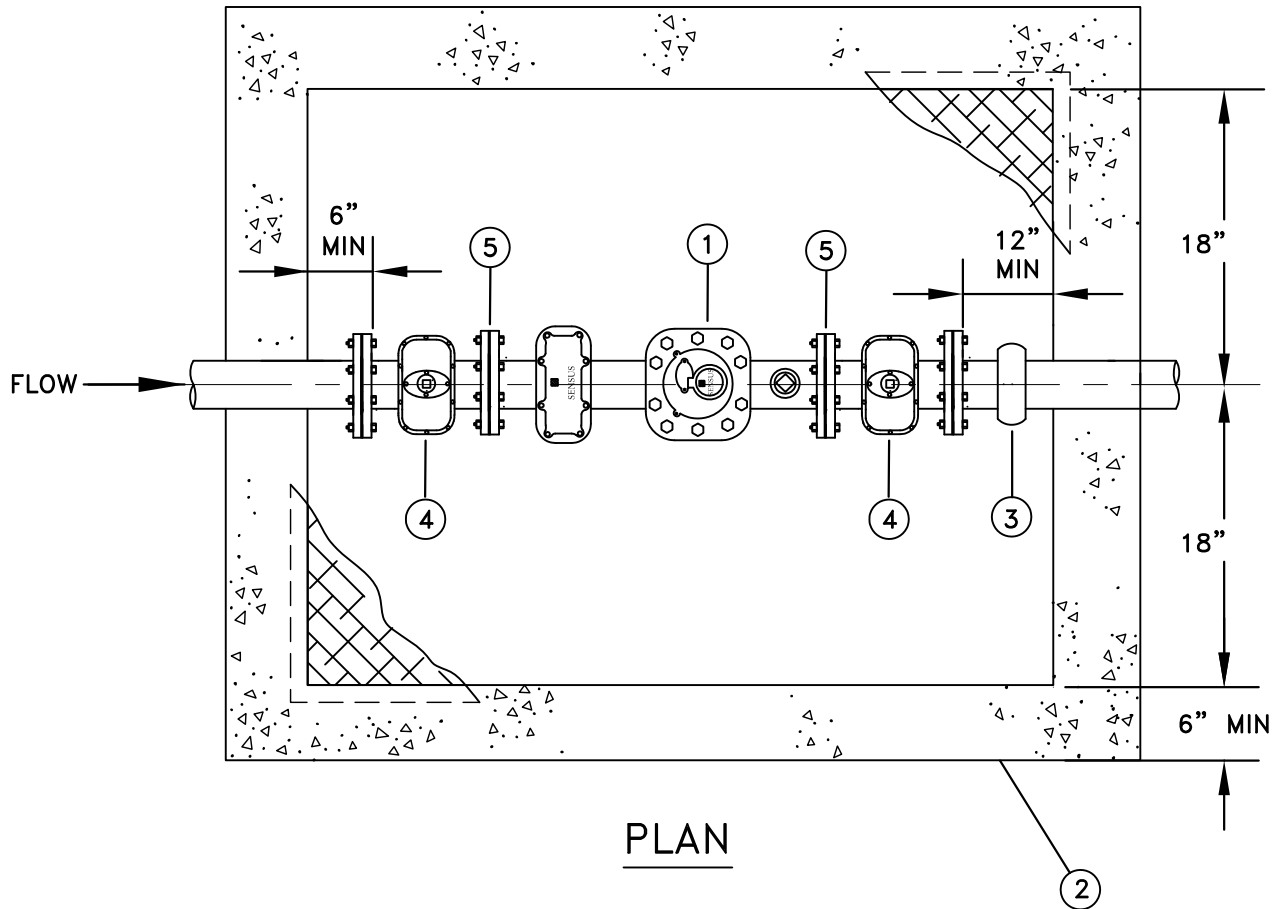
**BILL OF MATERIALS:**

1. MASTER METER SRH COMPOUND METER WITH BUILT IN TEST OUTLET (APPROXIMATELY 20" LONG).
2. VAULT FRAME AND COVER PER STANDARD DWG W-19 AND W-20
3. VICTAULIC COUPLING.
4. RESILIENT WEDGE GATE VALVE, FLANGE X FLANGE WITH 2" OPERATING NUT (CLOSED VALVE).
5. MAINLINE BY-PASS (MAIN LINE SIZE).
6. SUPPORT METER WITH VALVE SUPPORTS PER STANDARD DWG W-18.
7. BILCO 2 PIECE OR USF 2 PIECE ALUMINUM DIAMOND PLATE HATCH. THE HATCH MUST COVER THE LIMITS OF EITHER SIDE OF THE RWGV ON THE MAIN LINE. RATING OF THE HATCH WILL BE MADE ON A CASE-BY-CASE BASIS, APPROVED BY THE WATER UTILITIES DEPARTMENT.
8. PIPELINE PRODUCTS GVL-200 LOCKING GATE VALVE CAP.

**NOTES:**

1. VAULT DEPTH NOT TO EXCEED 5'-0" FROM TOP OF VAULT TO FLOOR.
2. SERVICES 6" AND LARGER REQUIRE SPECIAL DESIGN.

Revision	By	Approved	Date	<b>CITY OF OCEANSIDE</b>  <b>3" &amp; 4" WATER METER FOR COMMERCIAL/INDUSTRIAL/ MULTI-FAMILY SERVICE</b>	 9/17/17
10/16/02	DW				CITY ENGINEER      Date
06/04/07	AC			STANDARD DRAWING NO. <b>W-10</b>	
09/22/10	DW				
12/01/11	DW				
01/04/116	MU				
07/01/17	SM		08/01/17		



**BILL OF MATERIALS:**

1. SENSUS SERIES "W" COMPOUND METER WITH BUILT IN STRAINER & TEST OUTLET APPROXIMATELY 23" LONG.
2. VAULT FRAME AND COVER PER STANDARD DWG W-19 AND W-20.
3. VICTAULIC COUPLING.
4. RESILIENT WEDGE GATE VALVE, FLANGE X FLANGE WITH 2" OPERATING NUT.
5. SUPPORT METER WITH VALVE SUPPORTS PER STANDARD DWG W-18.

**NOTES:**

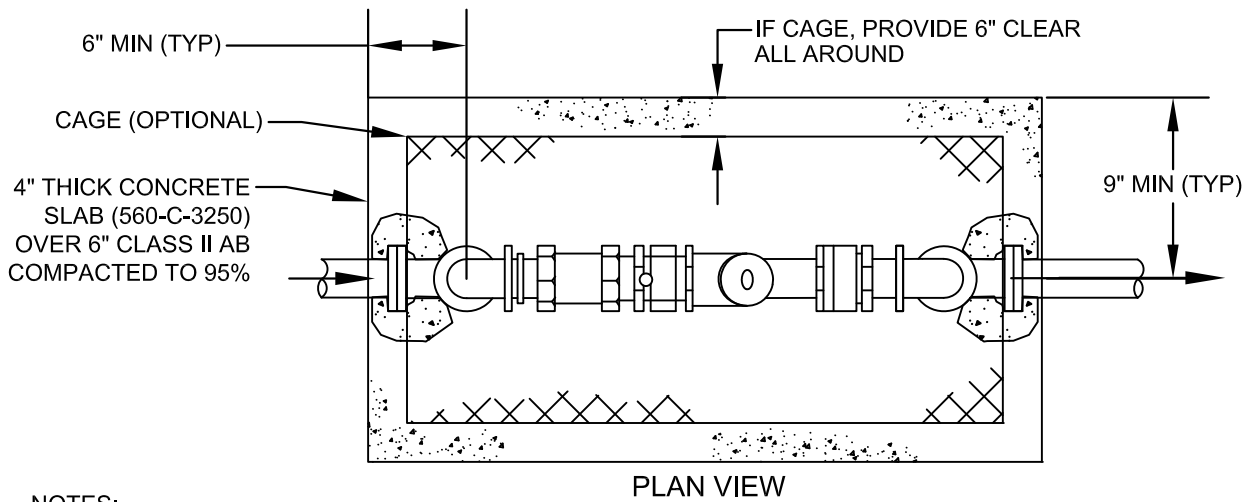
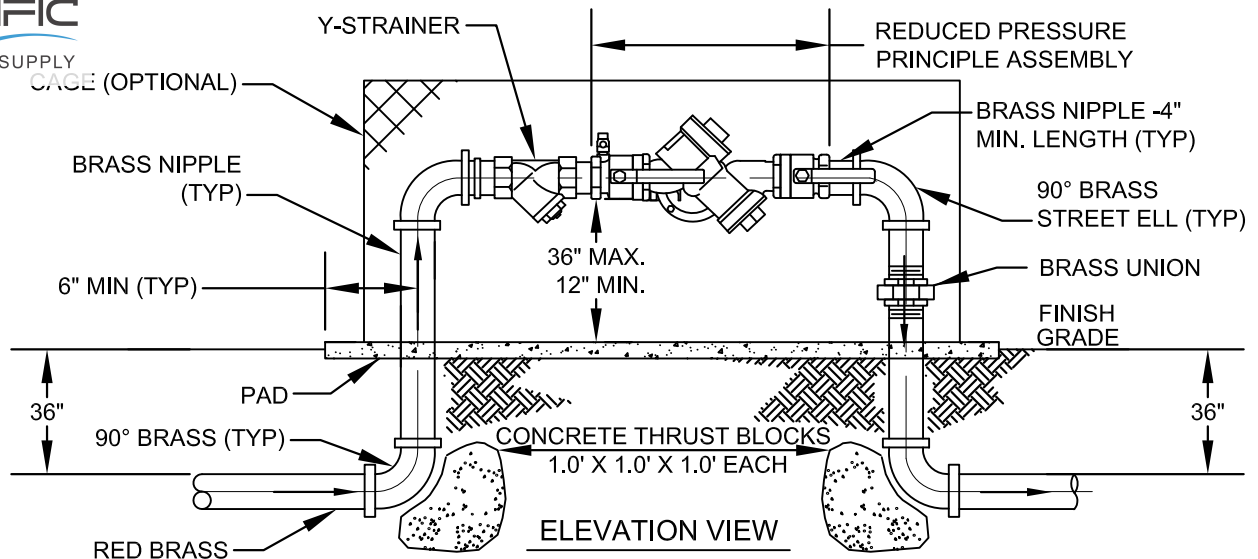
1. VAULT DEPTH NOT TO EXCEED 5'-0" FROM TOP OF VAULT TO FLOOR.
2. SERVICES 6" AND LARGER REQUIRE SPECIAL DESIGN.

Revision	By	Approved	Date
04/26/01	kal		
06/07/01	DW		
10/16/02	DW		
01/04/16	MU		
07/01/17	SM		08/01/17

**CITY OF OCEANSIDE**

**3" & 4" WATER METER  
FOR IRRIGATION SERVICE**

*Steven E. Strapan* 9/17/17  
CITY ENGINEER Date  
STANDARD DRAWING NO. **W-11**



**NOTES:**

1. ASSEMBLY TO BE APPROVED BY THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD OFFICE OF DRINKING WATER AND CITY OF OCEANSIDE WATER UTILITIES DEPARTMENT.
2. ASSEMBLY SHALL BE ON STATE OF CALIFORNIA LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES FOUND ON UNIVERSITY OF SOUTHERN CALIFORNIA'S FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH.
3. ASSEMBLY SHALL BE INSTALLED IMMEDIATELY DOWNSTREAM OF THE METER WITHIN 18".
4. NO CONNECTIONS BETWEEN THE METER AND ASSEMBLY ARE PERMITTED.
5. RED BRASS FROM METER THROUGH RP ASSEMBLY.
6. ALL BURIED BRASS TO BE WRAPPED IN 6 MIL POLYETHYLENE WRAP PER SECTION 2.12.
7. WHEN DISTANCE BETWEEN THE METER BOX AND THE RISER TO THE ASSEMBLY EXCEEDS 18", PROVIDE PVC SLEEVE 2 TIMES THE DIAMETER OF THE WORKING PIPE OR INSTALL A CASING ENCASED IN CONCRETE. INSPECTION IS REQUIRED PRIOR TO BACKFILL.

THIS ASSEMBLY SHALL BE INSPECTED BY THE WATER UTILITIES DEPARTMENT. AFTER WATER UTILITIES DEPARTMENT'S APPROVAL, ASSEMBLY SHALL BE TESTED BY A TESTER ON THE CITY'S APPROVED TESTER LIST. THE DEVELOPER/OWNER IS RESPONSIBLE FOR THE COST OF TESTING THE ASSEMBLY. THEREAFTER, THE ASSEMBLY SHALL BE TESTED ANNUALLY AT THE OWNER'S EXPENSE. THE TEST REPORT IS TO BE SUBMITTED TO THE CITY WATER UTILITIES DEPARTMENT, CROSS CONNECTION CONTROL AT PHONE # 760-435-5800.

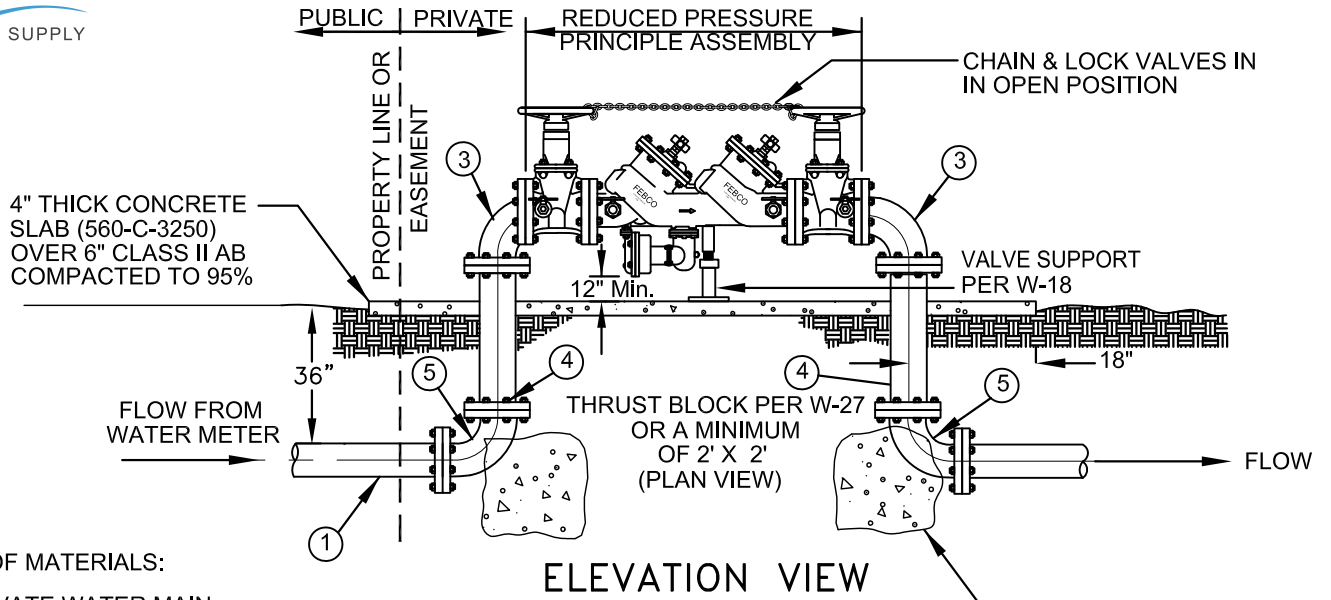
Revision	By	Approved	Date
06/07/01	DW		
08/28/04	AC		
06/04/07	AC		
09/23/10	DW		
12/01/11	DW		
07/01/17	SM		08/01/17

**CITY OF OCEANSIDE**

**REDUCED PRESSURE PRINCIPLE ASSEMBLY (2" & SMALLER)**

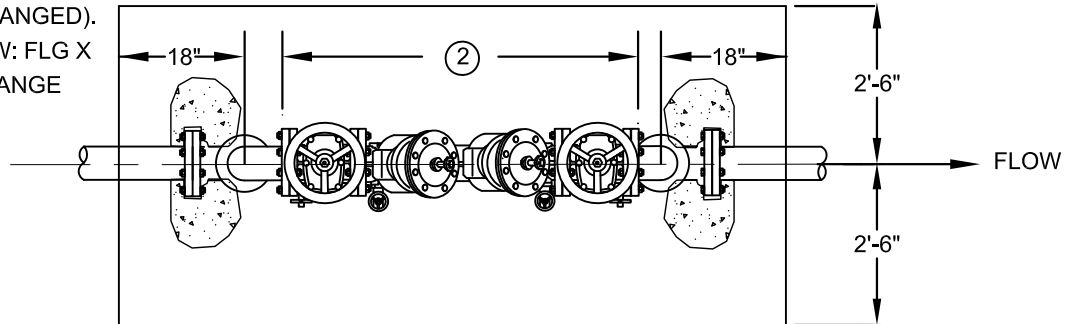
*Steven E. Strapan* 9/17/17  
CITY ENGINEER Date

STANDARD  
DRAWING NO. **W-12**



**BILL OF MATERIALS:**

1. PRIVATE WATER MAIN.
2. FACTORY ASSEMBLED.
3. 90° FLANGED DUCTILE IRON ELBOW.
4. FLANGED DUCTILE IRON SPOOL.  
(BOTH ENDS SHALL BE FLANGED).
5. 90°, DUCTILE IRON ELBOW: FLG X FLG OR FLG X P.O. UNI-FLANGE SHALL NOT BE USED.



**PLAN VIEW**

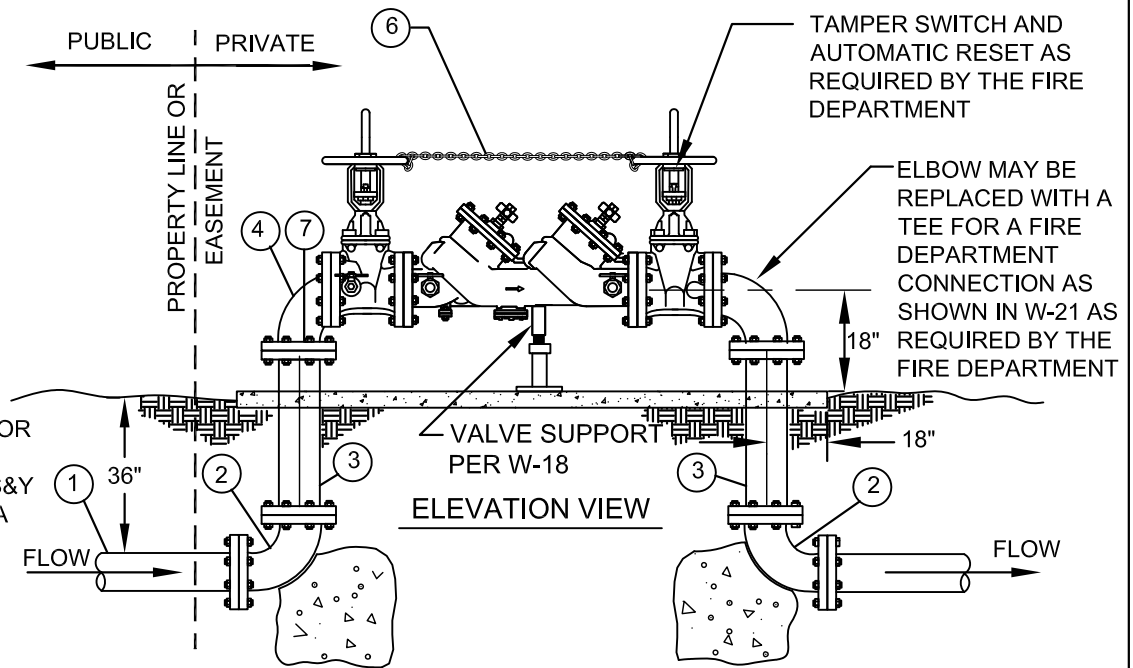
**NOTES:**

1. ASSEMBLY TO BE APPROVED BY THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD OFFICE OF DRINKING WATER AND CITY OF OCEANSIDE WATER UTILITIES DEPARTMENT.
2. ASSEMBLY SHALL BE ON STATE OF CALIFORNIA LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES FOUND ON UNIVERSITY OF SOUTHERN CALIFORNIA'S FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH.
3. ASSEMBLY SHALL BE INSTALLED DOWNSTREAM OF THE METER WITHIN 18".
4. NO CONNECTIONS BETWEEN THE METER AND THE ASSEMBLY ARE PERMITTED.
5. NUTS, BOLTS, AND WASHERS SHALL BE TYPE 316 STAINLESS STEEL.
6. WHEN THE DISTANCE BETWEEN THE METER BOX AND THE RISER TO THE ASSEMBLY EXCEEDS 18", PROVIDE PVC SLEEVE 2 TIMES THE DIAMETER OF THE WORKING PIPE OR INSTALL A CASING ENCASED IN CONCRETE. INSPECTION IS REQUIRED PRIOR TO BACKFILL.

THIS ASSEMBLY SHALL BE INSPECTED BY THE WATER UTILITIES DEPARTMENT. AFTER WATER UTILITIES DEPARTMENT'S APPROVAL, ASSEMBLY SHALL BE TESTED BY A TESTER ON THE CITY'S APPROVED TESTER LIST. THE DEVELOPER/OWNER IS RESPONSIBLE FOR THE COST OF TESTING THE ASSEMBLY. THEREAFTER, THE ASSEMBLY SHALL BE TESTED ANNUALLY AT THE OWNER'S EXPENSE. THE TEST REPORT IS TO BE SUBMITTED TO THE CITY WATER UTILITIES DEPARTMENT, CROSS CONNECTION CONTROL AT PHONE NUMBER 760-435-5800

Revision	By	Approved	Date	<b>CITY OF OCEANSIDE</b>	<i>Stevan E. Strapan</i> 9/17/17
06/08/01	DW				CITY ENGINEER Date
09/17/02	DW				
07/08/04	AC				
06/04/07	AC				
01/04/16	MU				
07/01/17	SM		08/01/17	<b>REDUCED PRESSURE PRINCIPLE ASSEMBLY (3" &amp; LARGER)</b>	STANDARD DRAWING NO. <b>W-13</b>

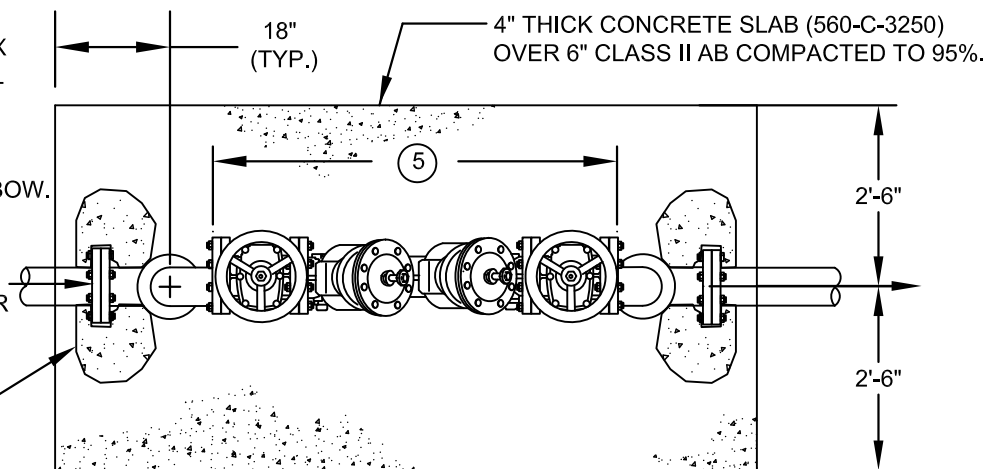




**BILL OF MATERIALS:**

1. PUBLIC WATER MAIN.
2. 90°, DUCTILE IRON ELBOW: FLG X FLG; FLG X PO; (UNI-FLANGE SHALL NOT BE USED).
3. FLANGED DUCTILE IRON SPOOL (BOTH ENDS SHALL BE FLANGED).
4. 90°, FLANGED DUCTILE IRON ELBOW.
5. FACTORY ASSEMBLED.
6. CHAIN & LOCK VALVES IN OPEN POSITION
7. NUTS, BOLTS AND WASHERS PER TYPE 316 SS

THRUST BLOCK PER CITY STANDARD DRAWING W-27 OR A MINIMUM OF 2' X 2' (PLAN VIEW)

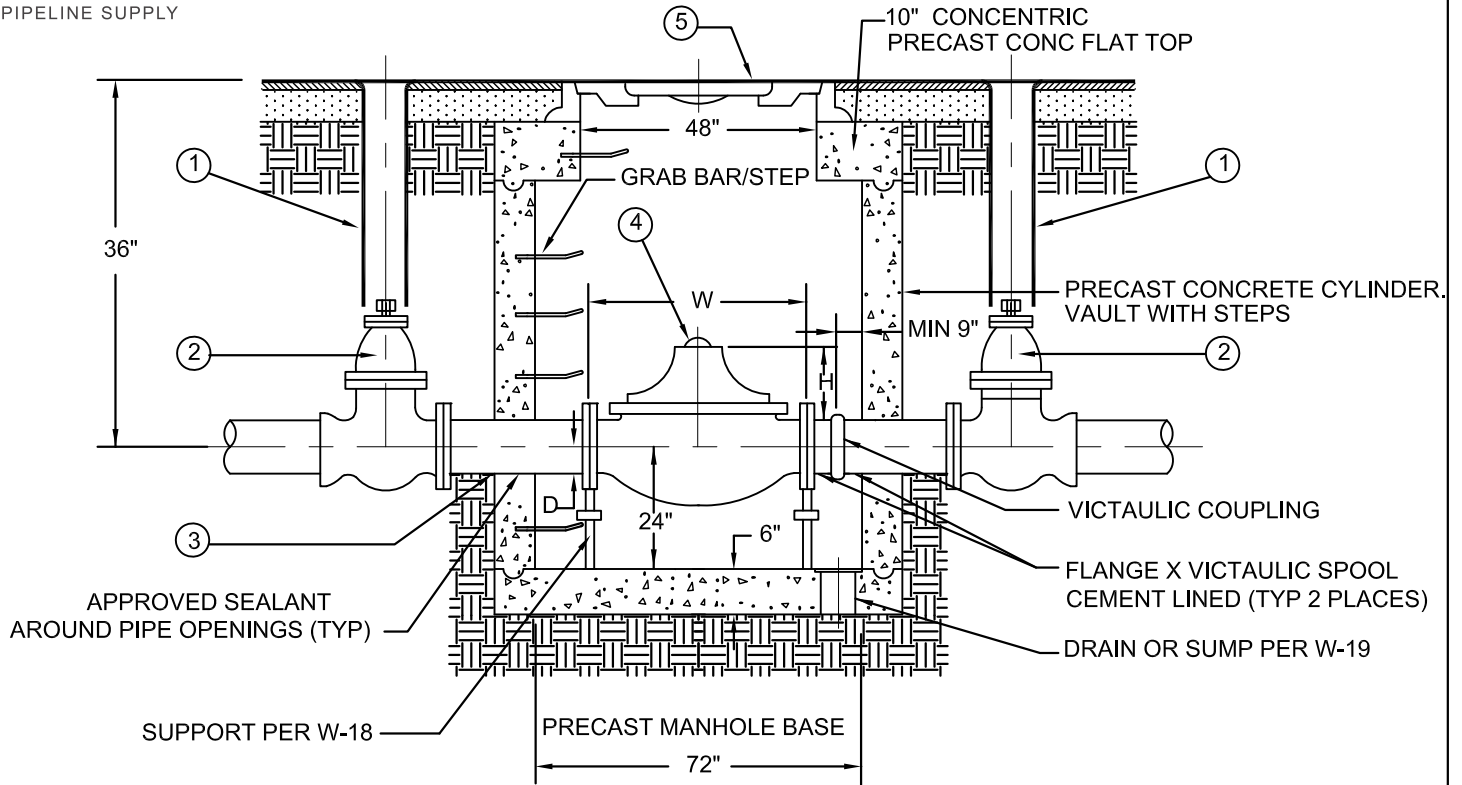


**NOTES:**

1. ASSEMBLY TO BE APPROVED BY THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD OFFICE OF DRINKING WATER AND CITY OF OCEANSIDE WATER UTILITIES DEPARTMENT.
2. ASSEMBLY SHALL BE ON STATE OF CALIFORNIA LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES FOUND ON UNIVERSITY OF SOUTHERN CALIFORNIA'S FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH.
3. ASSEMBLY SHALL BE INSTALLED IMMEDIATELY DOWNSTREAM OF THE METER WITHIN 18".
4. NO CONNECTIONS BETWEEN THE METER AND THE ASSEMBLY ARE PERMITTED.
5. NUTS, BOLTS, AND WASHERS SHALL BE TYPE 316 STAINLESS STEEL.
6. WHEN DISTANCE BETWEEN THE METER BOX AND THE RISER TO THE ASSEMBLY EXCEEDS 18", PROVIDE PVC SLEEVE 2 TIMES THE DIAMETER OF THE WORKING PIPE OR INSTALL A CASING ENCASED IN CONCRETE. INSPECTION IS REQUIRED PRIOR TO BACKFILL.

THIS ASSEMBLY SHALL BE INSPECTED BY THE WATER UTILITIES DEPARTMENT. AFTER WATER UTILITIES DEPARTMENT'S APPROVAL, ASSEMBLY SHALL BE TESTED BY A TESTER ON THE CITY'S APPROVED TESTER LIST. THE DEVELOPER/OWNER IS RESPONSIBLE FOR THE COST OF TESTING THE ASSEMBLY. AFTER THERE, THE ASSEMBLY SHALL BE TESTED ANNUALLY AT THE OWNER'S EXPENSE. THE TEST REPORT IS TO BE SUBMITTED TO THE CITY WATER UTILITIES DEPARTMENT, CROSS CONNECTION CONTROL AT PHONE NUMBER 760-435-5800.

Revision	By	Approved	Date	<b>CITY OF OCEANSIDE</b>	<i>Steven E. Strapac</i> 9/17/17
06/08/01	DW			<b>DOUBLE CHECK - DETECTOR CHECK</b>	CITY ENGINEER Date
10/16/02	DW			<b>ASSEMBLY</b>	STANDARD DRAWING NO. <b>W-14</b>
07/08/04	AC				
05/01/17	MU				
07/01/17	SM		08/01/17		



NO.	QTY	FITTINGS
①	2	STD. 6" VALVE CAN AND COVER PER STANDARD DRAWING W-23
②	2	STD. RESILIENT WEDGE GATE VALVE FLG X PO
③	1	FLANGED D.I.P. CEMENT LINED SPOOL
④	1	NON-SLAM CHECK VALVE CLA-VAL 81G-02 GLOBE**
⑤	1	TWO CONCENTRIC MANHOLE COVERS WITH 48" AND 22" OPENINGS

\*\*FACTORY FUSION - BONDED EPOXY COATING INSIDE AND OUT W/STAINLESS STEEL TRIM

VALVE SIZE	W	H	D
6"	21"	13 5/8"	6"
8"	26 3/8"	15 1/4"	7 5/8"
10"	31 1/8"	17"	9 1/4"
12"	35 1/2"	21"	10 3/4"

NOTES:

1. PAINT VALVES & PIPE PER STANDARD DWG W-17.
2. COAT INTERIOR WITH SANCON 100 OR ZEBRON.
3. WATERPROOF EXTERIOR AS REQUIRED.
4. VALVE SUPPORTS (PER W-18) TO BE INSTALLED AT BOTH ENDS OF THE CHECK VALVE.
5. CHECK VALVE TO BE CENTERED HORIZONTALLY UNDER CONCENTRIC MANHOLE COVERS.

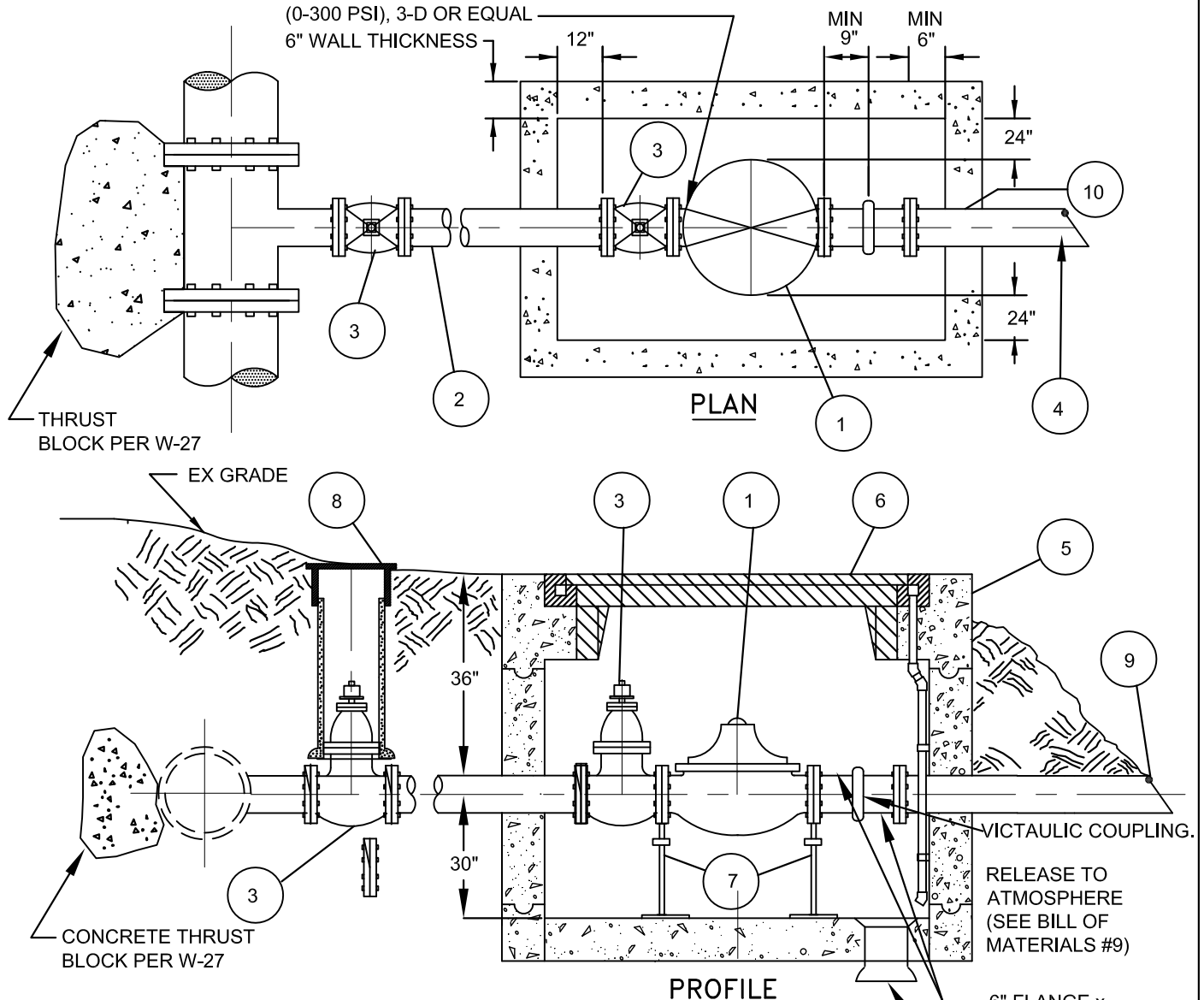
Revision	By	Approved	Date
06/08/01	DW		
10/16/02	DW		
07/08/04	AC		
01/04/16	MU		
07/01/17	SM		08/01/17

**CITY OF OCEANSIDE**

**CHECK VALVE**

*Steven E. Strapac* 9/17/17  
CITY ENGINEER Date  
STANDARD DRAWING NO. **W-15**

VALVE & 3" OIL-FILLED GAUGE  
(0-300 PSI), 3-D OR EQUAL  
6" WALL THICKNESS



**BILL OF MATERIALS:**

1. PRESSURE RELIEF VALVE CLA-VAL 50G-01 WITH FACTORY FUSION-BONDED EPOXY COATING INSIDE AND OUT WITH STAINLESS STEEL TRIM.
2. DUCTILE IRON FLANGED SPOOL, LENGTH AS REQUIRED.
3. FLANGED RESILIENT WEDGE GATE VALVE) W/FACTORY FUSION-BONDED EPOXY COATING INSIDE. WEDGE TO BE URETHANE RUBBER ENCAPSULATED DUCTILE IRON.
4. DIP CL 150 OR PVC C900 CL 150, LENGTH 10'-15' TO DAYLIGHT OR DISCHARGE TO BE DESIGNED FOR A SPECIFIC SITE CONDITION. DIP TO BE WRAPPED PER SECTION 2.12.
5. PRE-CAST VAULT PER STANDARD DWG W-19.
6. COVER PER STANDARD DWG W-20.
7. VALVE SUPPORT PER STANDARD DWG NO. W-18.
8. VALVE BOX PER STANDARD DWG NO. W-23.
9. FLAP GATE VALVE. IF DISCHARGE PIPE IS RELEASED TO STORM DRAIN, IT MUST BE AIR-GAPPED AND DIFFUSED.
10. APPROVED SEALANT AROUND PIPE OPENINGS.

**NOTES:**

1. SCADA DESIGN MUST BE SUBMITTED TO THE WATER UTILITIES DEPARTMENT FOR APPROVAL.
2. PAINT VALVES & PIPE PER W-17.

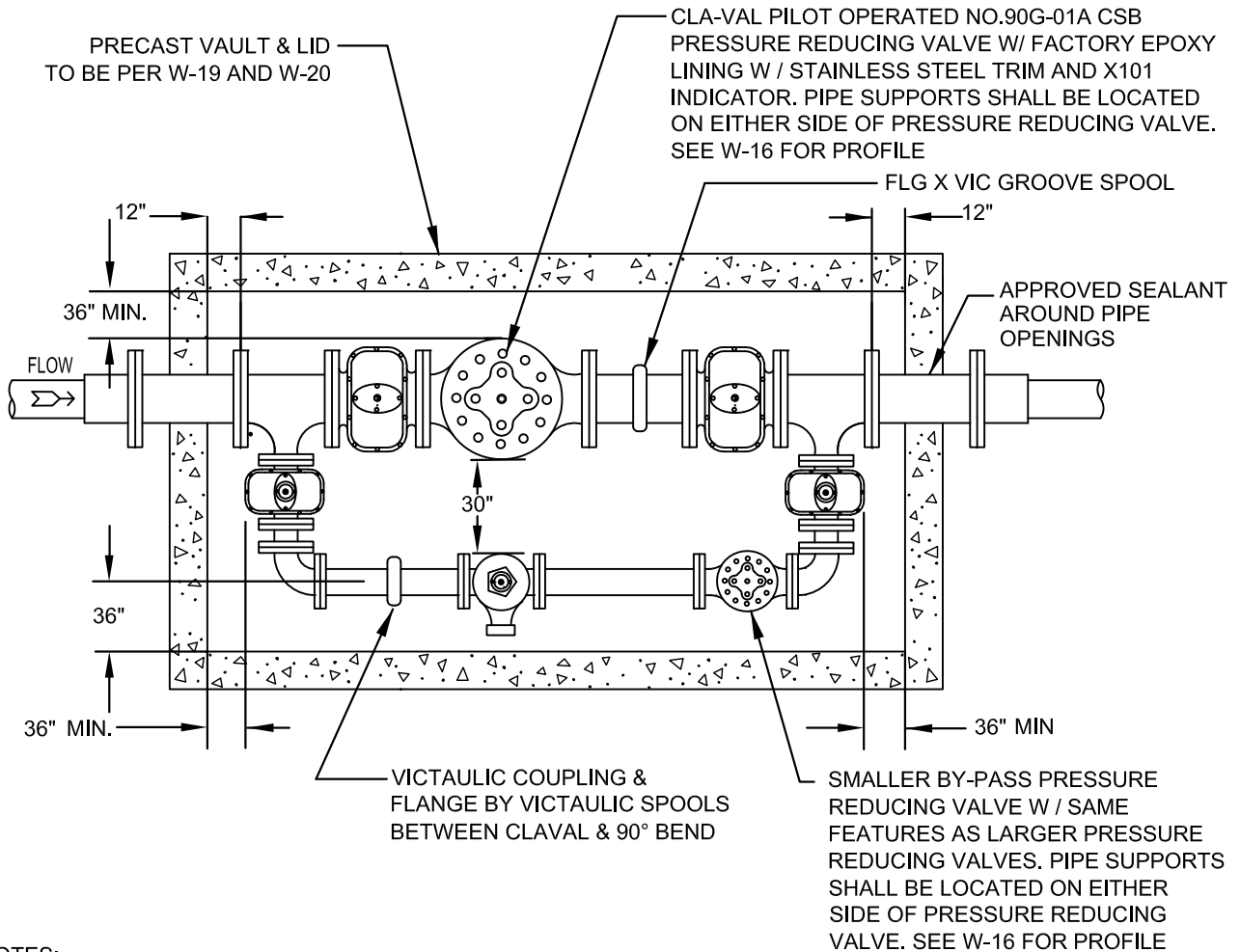
Revision	By	Approved	Date
06/11/01	DW		
10/18/02	DW		
07/08/04	AC		
01/04/16	MU		
07/01/17	SM		08/01/17

**CITY OF OCEANSIDE**

**RELIEF VALVE**

*Steven E. Strapan* 9/17/17  
CITY ENGINEER Date  
STANDARD DRAWING NO. **W-16**

### BASIC LAYOUT FOR A STANDARD PRESSURE REGULATOR OR PRESSURE REGULATING VALVE & VAULT



**NOTES:**

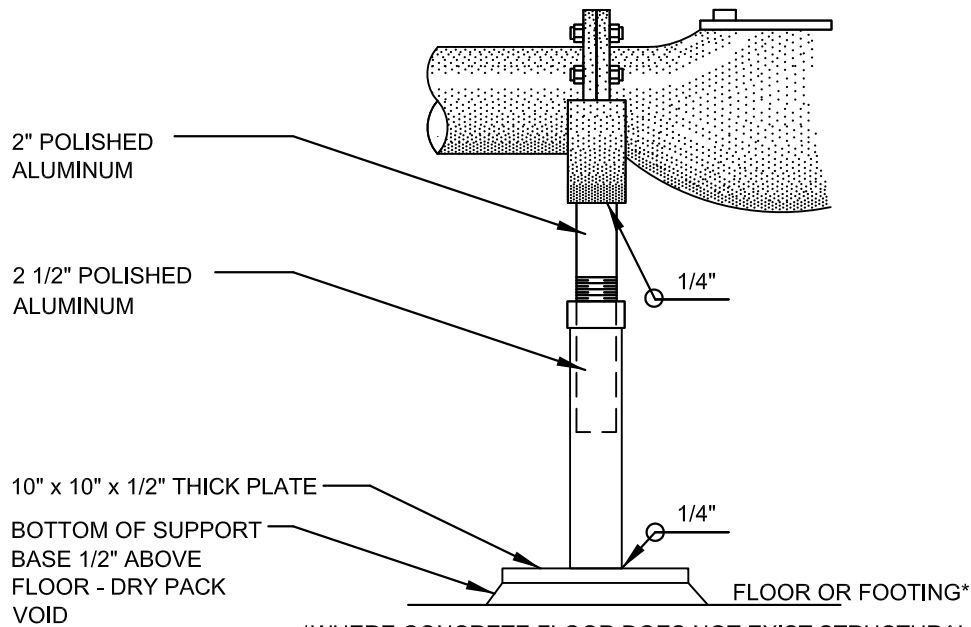
1. EACH PRESSURE REGULATOR STATION SHALL BE DESIGNED AND SUBMITTED FOR APPROVAL BY THE WATER UTILITIES DEPARTMENT ON A CASE-BY-CASE BASIS.
2. REGULATOR MUST BE PROVIDED WITH AN EJECTOR WITH TEST COCKS ON ALL VALVES AND 3" OIL-FILLED GAUGE (0-300 PSI), 3-D OR EQUAL.
3. REGULATOR AND ALL PIPING WITHIN THE VAULT SHALL BE PAINTED WITH ALUMINUM INDUSTRIAL PAINT. EXTERIOR SURFACES SHALL BE CLEANED AND PRIMED WHERE NECESSARY WITH SHERWIN WILLIAM PAINT. "DAPPER TAN SW 6144" COLOR, BASE COAT-SW MACROPOXY HS 646 APPLIED @ 5.0 TO 6.0 MILS; INTERMEDIATE COAT-SW MACROPOXY HS 646 APPLIED @ 5.0 TO 6.0 MILS.
4. COAT INTERIOR OF VAULT WITH SANCON 100 OR ZEBRON.
5. WATERPROOF EXTERIOR AS REQUIRED.
6. VALVE SUPPORTS PER W-18 TO BE INSTALLED AT BOTH ENDS OF PRESSURE REGULATORS.
7. SCADA AND ELECTRICAL DESIGN MUST BE SUBMITTED TO THE WATER UTILITIES DEPARTMENT. FOR REVIEW AND APPROVAL.

Revision	By	Approved	Date
07/16/04	AC		
09/22/10	DW		
12/01/11	DW		
04/19/12	DW		
01/04/16	MU		
07/01/17	SM		08/01/17

**CITY OF OCEANSIDE**

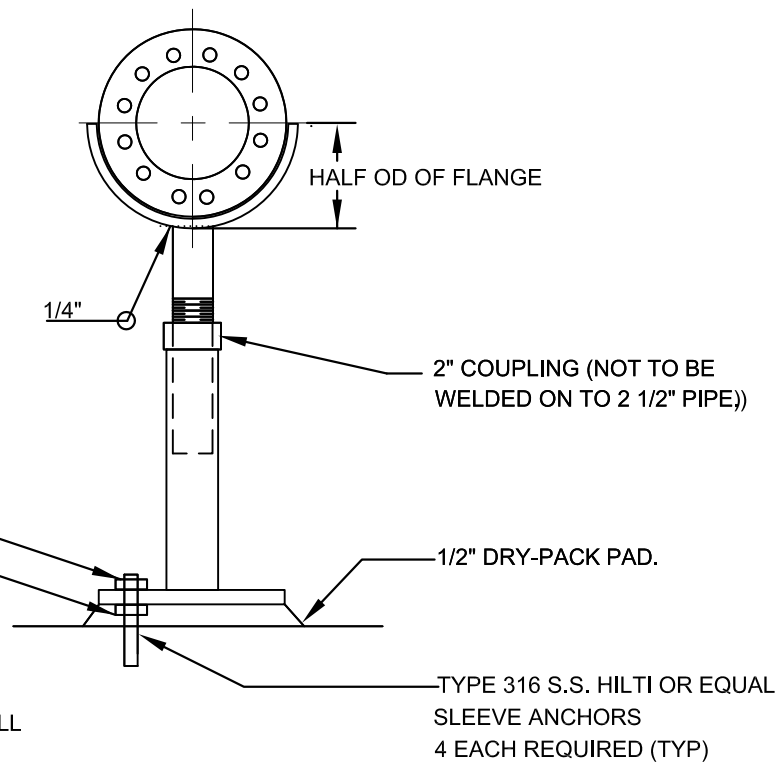
**STANDARD PRESSURE REDUCING VALVE CONNECTION**

*Steven E. Strapac* 9/17/17  
 CITY ENGINEER Date  
 STANDARD  
 DRAWING NO. **W-17**



\*WHERE CONCRETE FLOOR DOES NOT EXIST STRUCTURAL DESIGN FOR FOOTING MUST BE SUBMITTED TO THE WATER UTILITIES DEPARTMENT FOR REVIEW AND APPROVAL.

CRADLE SUPPORT THE WIDTH OF BOTH FLANGES. 1/8" X 2" NEOPRENE PAD PLACED BETWEEN THE PIPE AND THE CRADLE SUPPORT. NO METAL TO METAL CONTACT SHALL BE MADE



NOTES:

1. PAINT PER W-17.
2. ADJUSTABLE PIPE SUPPORT SHALL BE MANUFACTURED BY GRINNEL, TOLCO, OR APPROVED EQUAL.

**VALVE SUPPORT DETAIL**

NOT TO SCALE

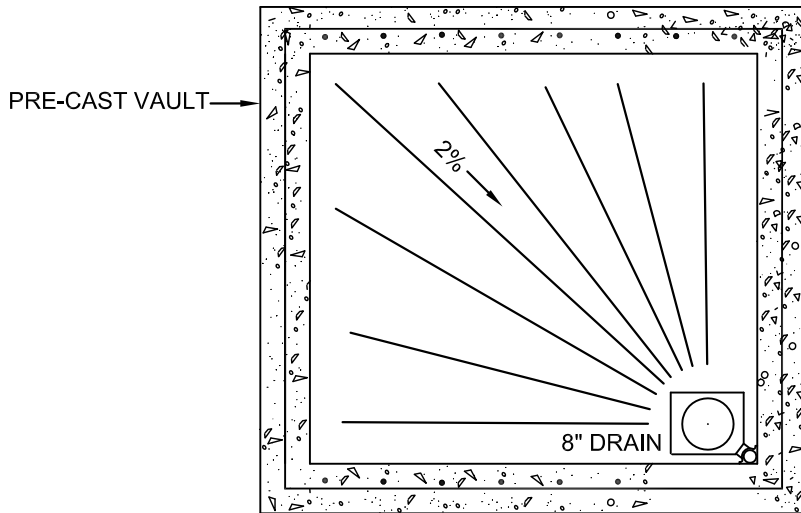
Revision	By	Approved	Date
10/16/02	DW		
07/12/04	AC		
09/22/10	DW		
01/04/16	MU		
07/01/17	SM		08/01/17

**CITY OF OCEANSIDE**

**VALVE SUPPORT**

*Steven E. Strapan* 9/17/17  
CITY ENGINEER Date  
STANDARD DRAWING NO. **W-18**

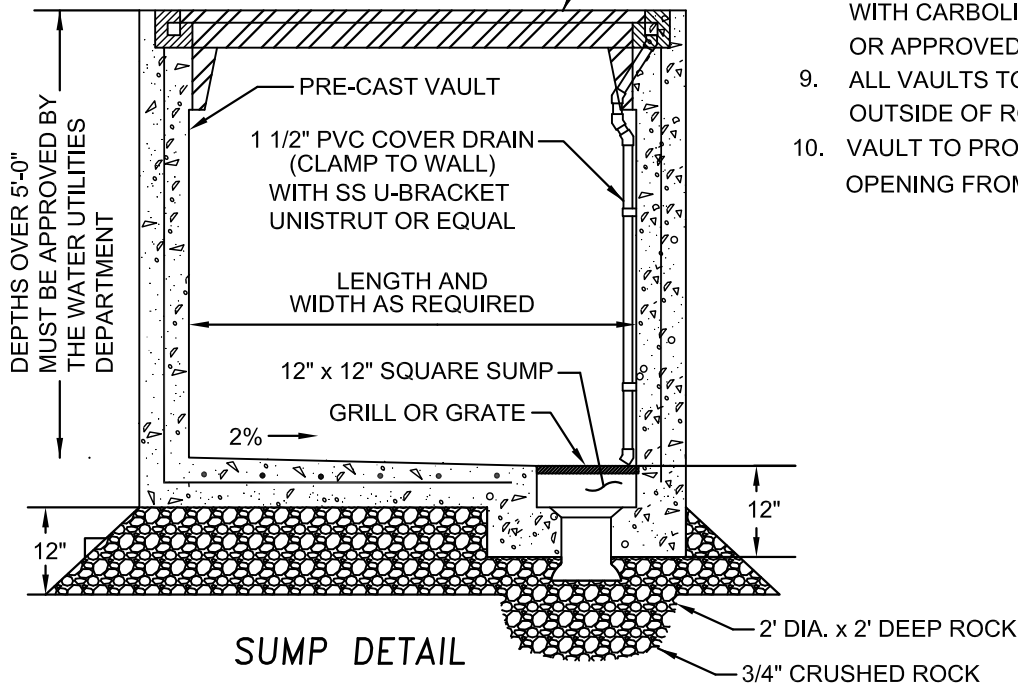
**TOP VIEW**



**GENERAL NOTES**

1. CONSTRUCT DRAIN FOR VAULTS IN WET LOCATIONS. SUMP FOR DRY AREAS.
2. USE STANDARD CAST FLOOR DRAIN W/GRILL COVER PLATE.
3. PLACE SUMP OR DRAIN IN LOWEST CORNER.
4. FINISH FLOOR SHALL HAVE A NEGATIVE SLOPE TOWARD SUMP OR DRAIN (2%).
5. GUARD POSTS PER W-3 AS REQUIRED.
6. FILL "PICKHOLES" WITH NON-SHRINK EPOXY GROUT.
7. COAT INTERIOR OF VAULT WITH SANCON 100 OR ZEBRON.
8. WATERPROOF EXTERIOR WITH CARBOLINE BITUMASTIC OR APPROVED EQUAL.
9. ALL VAULTS TO BE LOCATED OUTSIDE OF ROADWAY.
10. VAULT TO PROVIDE CLEAR OPENING FROM WALL TO WALL.

FULL OPENING BILCO OR USF LID SIZE AS REQUIRED COVER W/FRAME DETAIL (PER W-20)



**SUMP DETAIL  
SIDE VIEW**

1. ALL VAULTS, MANHOLES, PITS, ETC. SHALL BE DESIGNED PER ALL CURRENT APPLICABLE CODES AND REGULATIONS: TITLE 8, CALIFORNIA CODE OF REGULATIONS, CAL/OSHA, ANSI, ETC. FOR "CONFINED SPACE" AND "FALL PROTECTION".
2. ALL VAULTS, MANHOLES, PITS, ETC. SHALL BE CERTIFIED AT THE TIME OF CONSTRUCTION THAT THEY MEET ALL CURRENT APPLICABLE CODES AND REGULATIONS FOR "CONFINED SPACE" AND "FALL PROTECTION".
3. EACH VAULT SHALL BE DESIGNED AND SUBMITTED FOR APPROVAL BY THE WATER UTILITIES DEPARTMENT ON A CASE-BY-CASE BASIS.

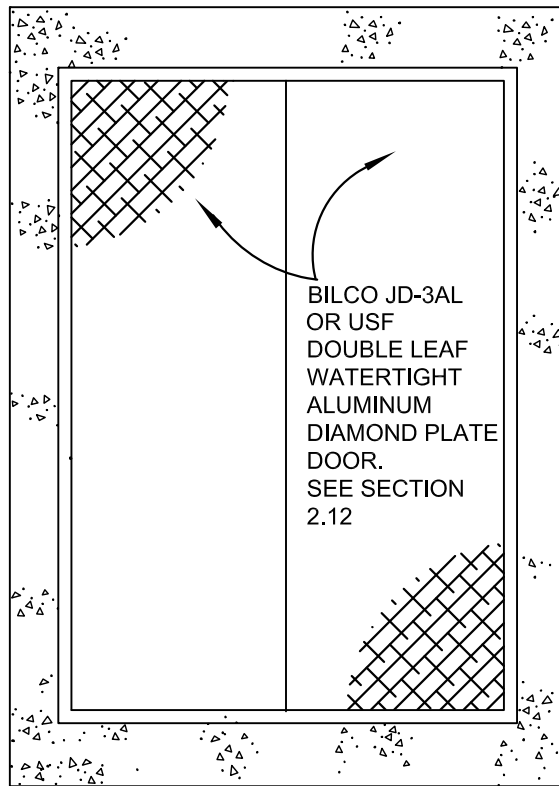
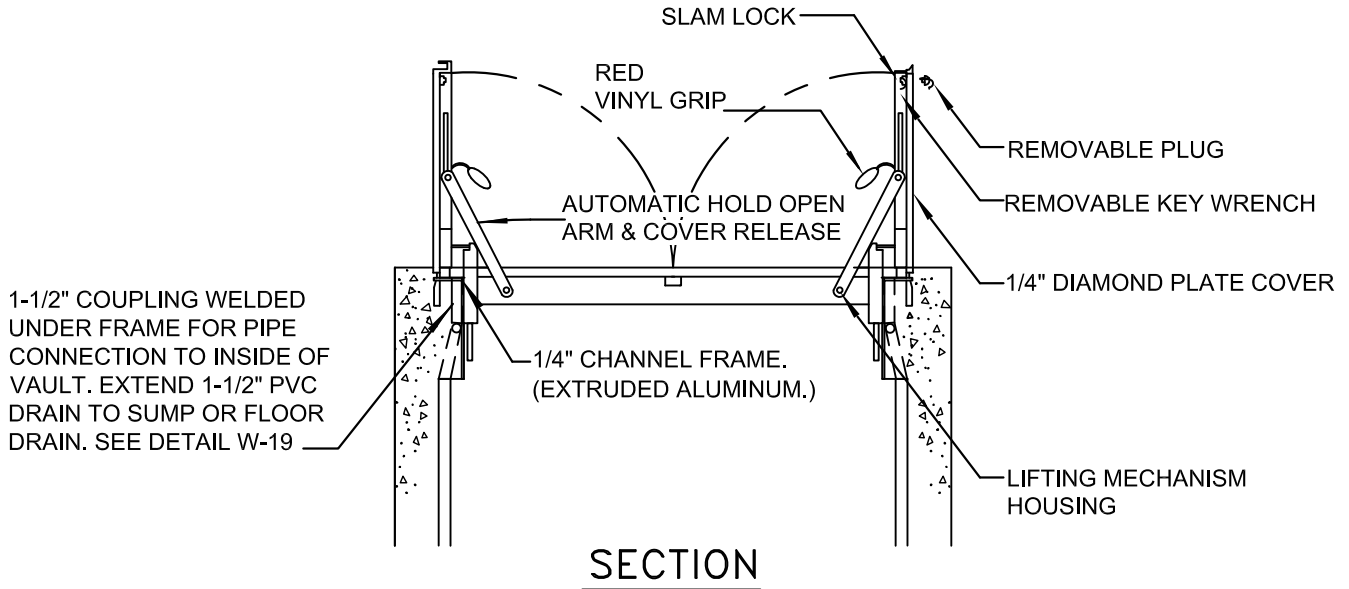
Revision	By	Approved	Date
10/16/02	DW		
07/14/04	AC		
06/04/07	AC		
01/04/16	MU		
07/01/17	SM		08/01/17

**CITY OF OCEANSIDE**

**STANDARD VAULT**

*Steven E. Strapac* 9/17/17  
CITY ENGINEER Date

STANDARD DRAWING NO. **W-19**



NOTES:

1. HATCH COVER DRAIN SHALL BE PLUMBED TO SUMP.
2. FOR VAULTS IN TRAFFIC AREAS, SUBMIT TRAFFIC RATED COVERS FOR REVIEW AND APPROVAL TO WATER UTILITIES DEPARTMENT.
3. TRAFFIC RATED TO BE REQUIRED FOR CERTAIN APPLICATIONS.

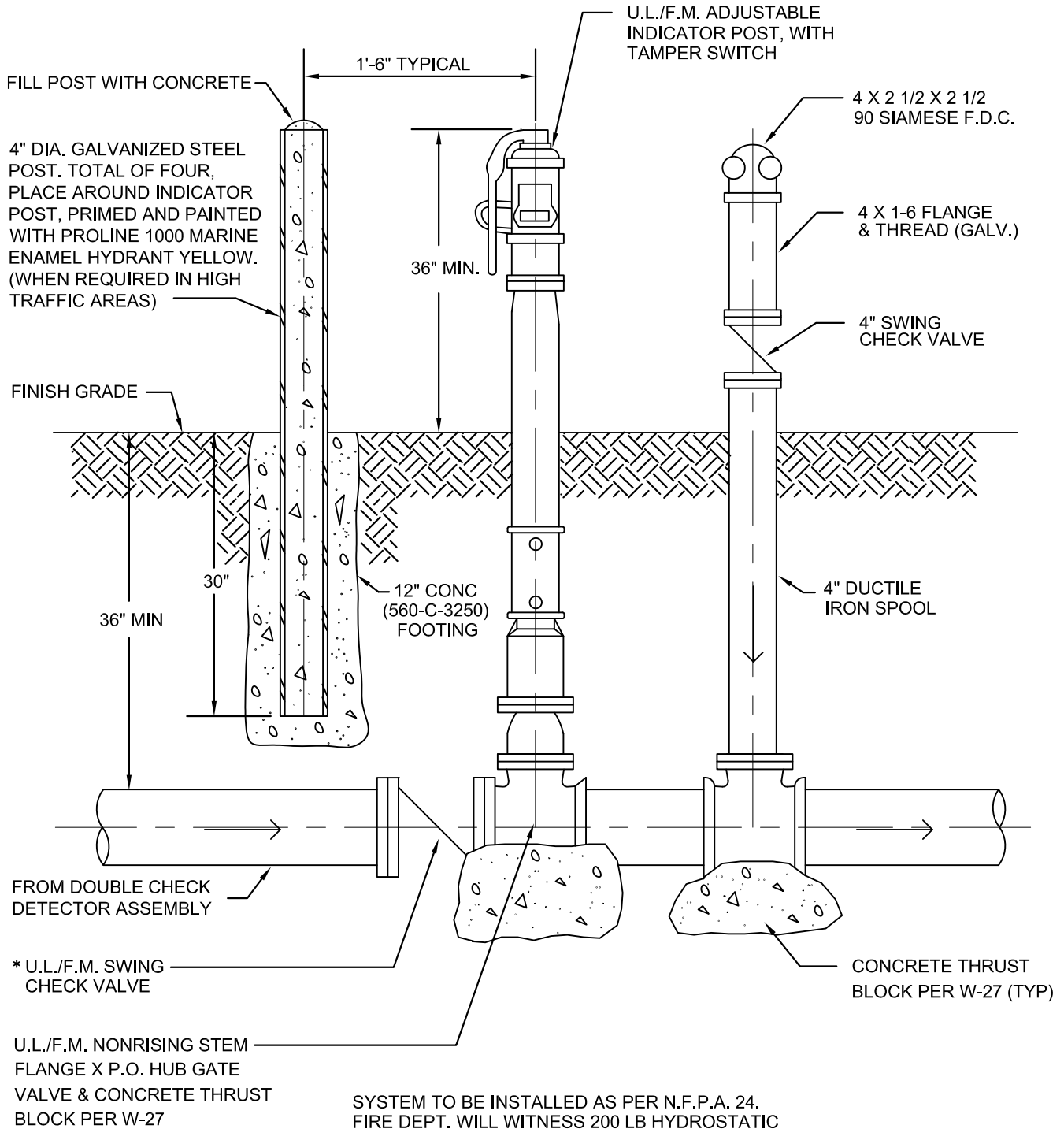
Revision	By	Approved	Date
10/16/02	DW		
07/13/04	AC		
06/04/07	AC		
01/04/16	MU		
07/01/17	SM		08/01/17

**CITY OF OCEANSIDE**

**VAULT FRAME AND COVER**

*Steven E. Strapan* 9/17/17  
CITY ENGINEER Date  
STANDARD DRAWING NO. **W-20**





SYSTEM TO BE INSTALLED AS PER N.F.P.A. 24. FIRE DEPT. WILL WITNESS 200 LB HYDROSTATIC PRESSURE TEST FROM BASE OF RISER TO SWING CHECK VALVE PRIOR TO CITY MAIN CONNECTION.

\* REQUIRED WITH ON-SITE HYDRANT(S) ONLY

Revision	By	Approved	Date
06/11/01	DW		
09/18/02	DW		
08/29/04	AC		
09/22/10	DW		
01/04/16	MU		
07/01/17	SM		08/01/17

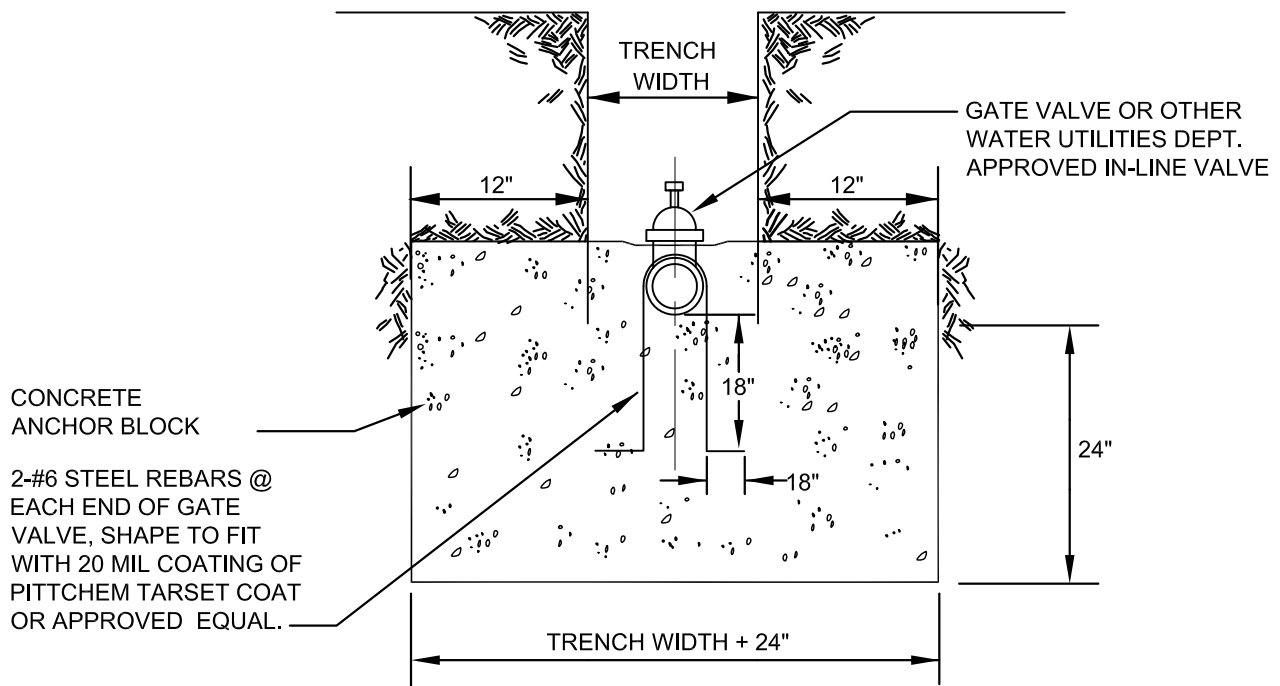
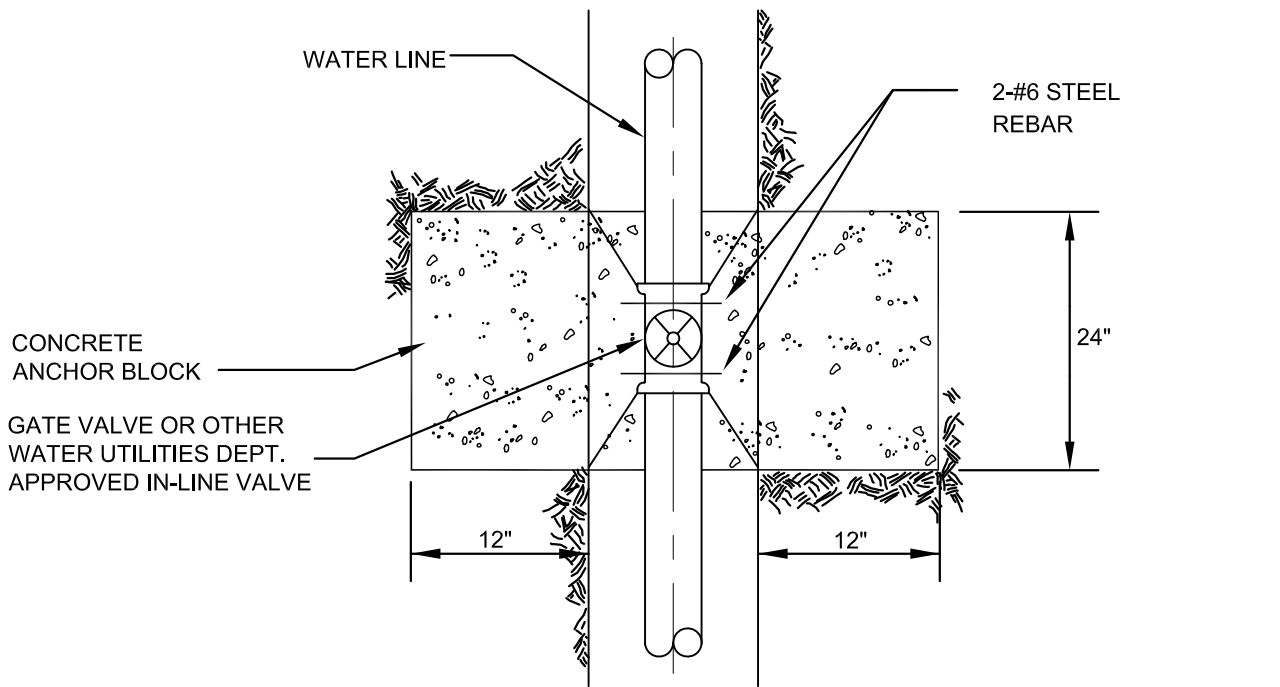
**CITY OF OCEANSIDE**

**STANDARD POST INDICATOR VALVE  
INSTALLATION WITH  
FIRE DEPARTMENT CONNECTION**

*Steven E. Strapac* 9/17/17  
CITY ENGINEER Date

STANDARD DRAWING NO. **W-21**





**NOTES:**

1. ALL NUTS & BOLTS TO BE TYPE 316 STAINLESS STEEL.
2. APPLY ANTI-SEIZE TO ALL S.S. BOLT THREADS.
3. ALL VALVES AND FITTINGS TO BE WRAPPED WITH 2 LAYERS OF 8 MIL POLYETHYLENE.
4. ALL FLANGE TO BE BE PRIMED AND WRAPPED WITH WAX-TAPE.
5. ALL CONCRETE TO BE 560-C-3250 (6- SACK CONCRETE MIX).

Revision	By	Approved	Date
11/08/00	kal		
09/18/02	DW		
08/29/04	AC		
01/04/16	MU		
07/01/17	SM		08/01/17

**CITY OF OCEANSIDE**

**LINE VALVE  
INSTALLATION**

*Steven E. Strapan* 9/17/17  
CITY ENGINEER Date  
STANDARD DRAWING NO. **W-22**

1/8" CLEARANCE BETWEEN  
FRAME AND COVER

6" ABOVE GRADE  
OR FINISHED  
STREET SURFACE.  
ON EACH CORNER OUTSIDE  
OF CONCRETE PAD. YELLOW POST  
WHEN OFF PAVEMENT  
3' HIGH x 2" DIA. POST

CAST IRON  
VALVE BOX

6" SE 30 SAND

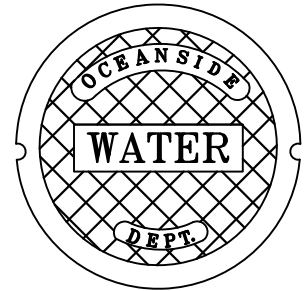
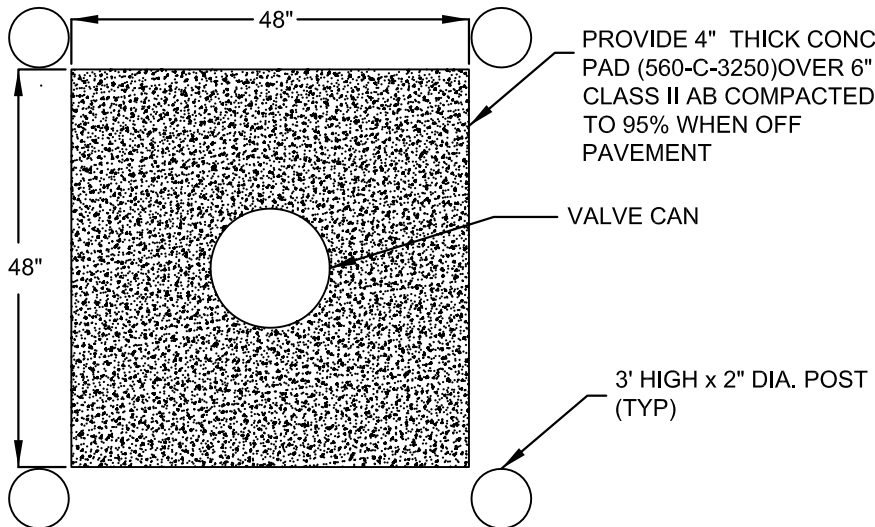
13"  
7 1/2"  
MIN.

NO CONCRETE FOR VALVE CANS IN PAVEMENT  
A.C. PAVEMENT

6" - SDR 35 PVC (EQUAL OR BETTER TO  
ACCEPTABLE) ONE PIECE OPERATING  
NUT CENTERED AND PVC SET PLUMB. SET  
BOTTOM OF SDR 35 ON THE G.V. BONNET  
OR BFV OPERATOR. CUT OPENINGS IN BOTTOM  
OF SDR 35 FOR 1 1/2" & 2" SERVICES &  
AIR RELEASES AND SUPPORT BOTTOM OF  
SDR-35 WITH 2" X 2" X 12" REDWOOD  
OR CONC PAD

WATER MAIN

**TYPICAL CROSS SECTION**

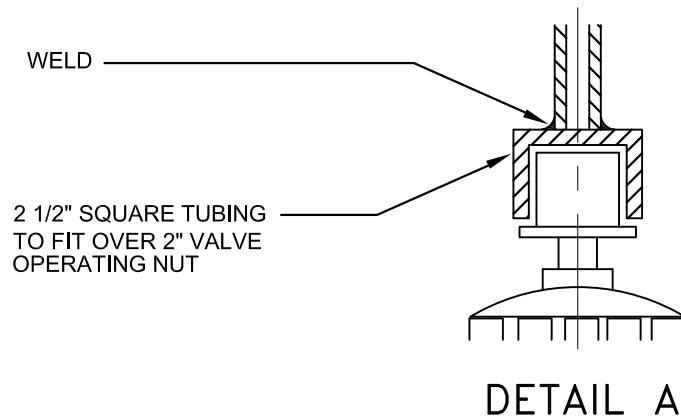
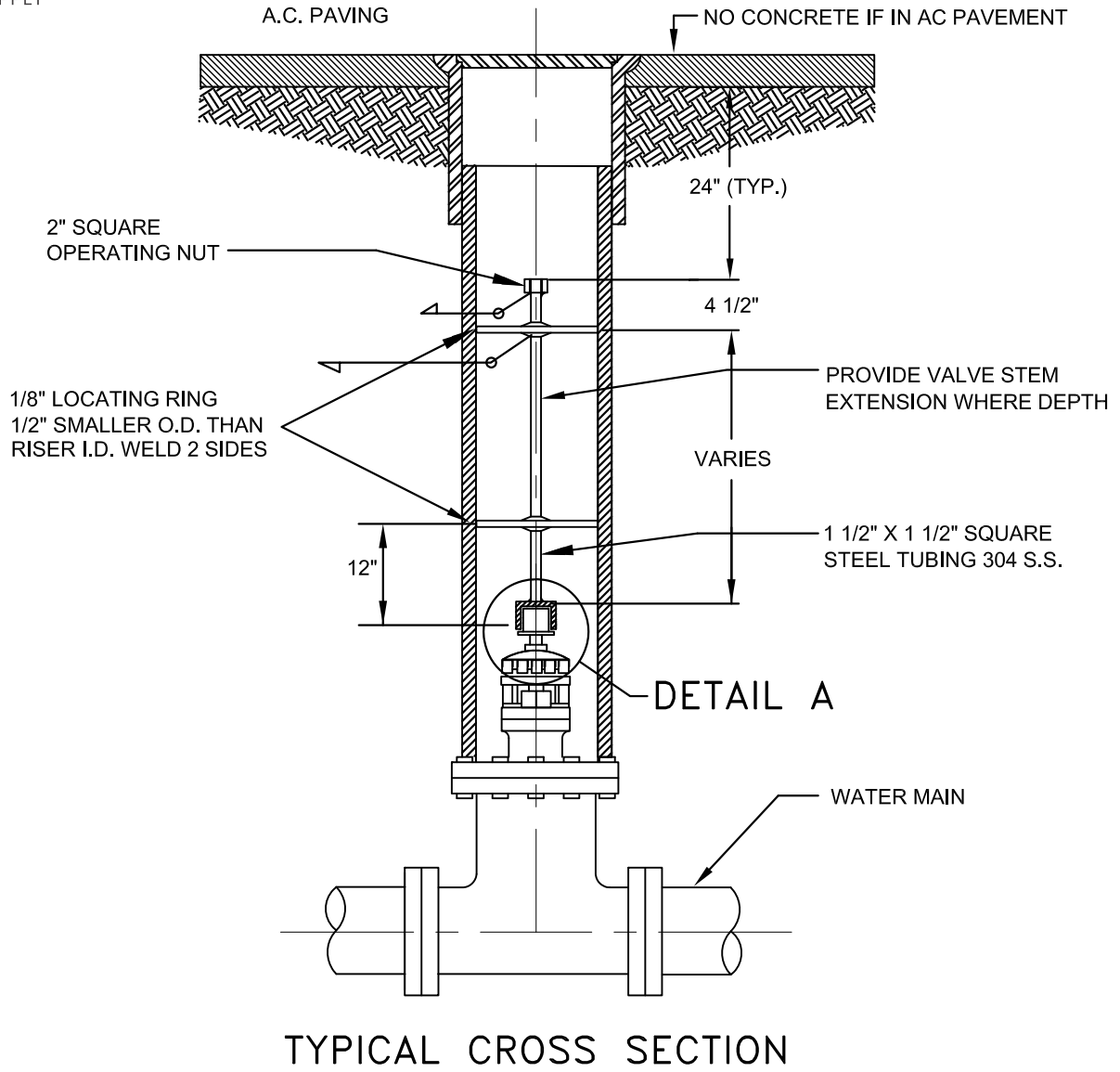


**PLAN**

**NOTES:**

1. ON STREETS WITH A SPEED LIMIT OVER 35 MPH USE SBF 1208N
2. WHERE DEPTH TO OPERATOR NUT EXCEEDS 9' PROVIDE VALVE STEM EXTENSION PER W-24
3. COVER WITH CITY OF OCEANSIDE WATER DEPARTMENT CASTED ON TOP BY SOUTH BAY FOUNDRY  
FRAME AND COVER SBF 1208 FOR SPEEDS 35 MPH OR LESS.
4. COVER FOR PRIVATE WATER VALVES SHALL BE LABELED " PRIVATE WATER " CASTED ON TOP.

Revision	By	Approved	Date	CITY OF OCEANSIDE	<i>Steven E. Strapan</i> 9/17/17 CITY ENGINEER Date
10/22/02	DW				
06/04/07	AC				
03/05/08	DW				
09/22/10	DW				
05/01/17	MU				
07/01/17	SM		08/01/17		



Revision	By	Approved	Date
06/14/01	DW		
10/18/02	DW		
07/19/04	AC		
03/05/08	DW		
01/04/16	MU		
07/01/17	SM		08/01/17

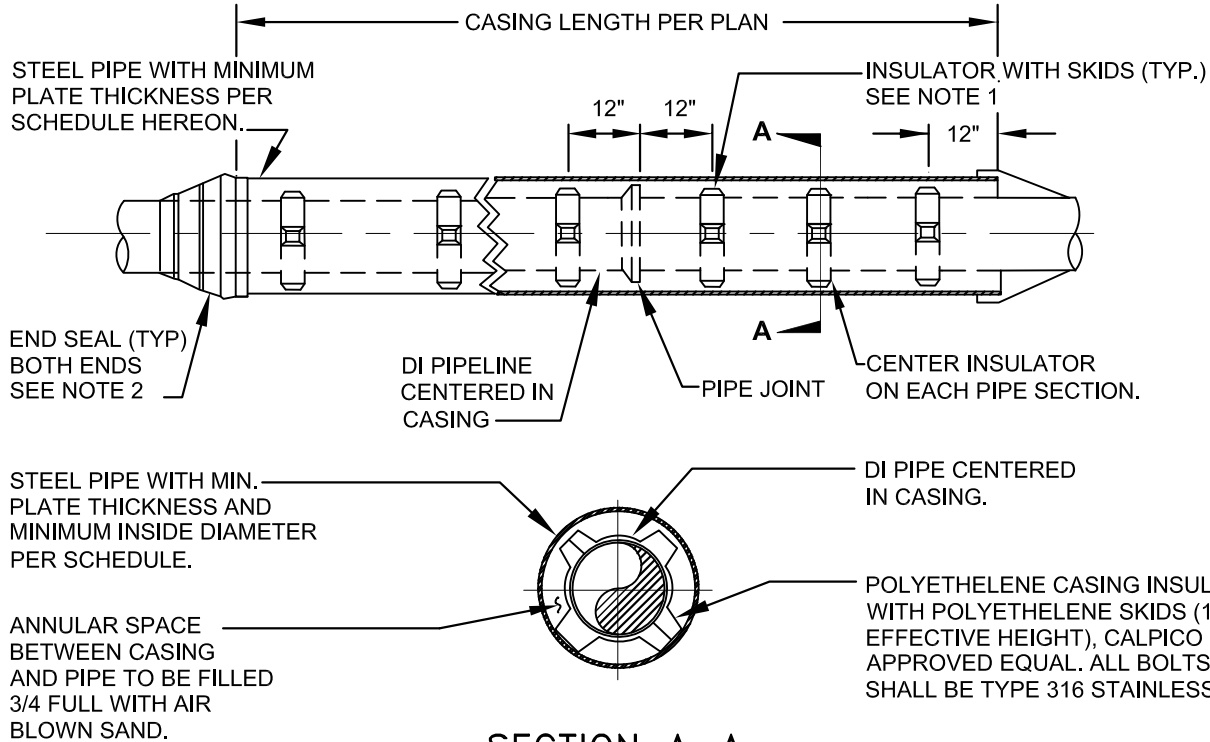
**CITY OF OCEANSIDE**

**VALVE STEM EXTENSION**

*Steven E. Strapac* 9/17/17  
CITY ENGINEER Date

STANDARD  
DRAWING NO.

**W-24**



**SECTION A-A**

**NOTES:**

1. SPACING BETWEEN THE CASING INSULATORS SHALL BE PER THE MANUFACTURERS RECOMMENDATIONS EXCEPT THAT THERE SHALL BE AT LEAST 3 CASING INSULATORS PER PIPE SECTION, ONE 12" FROM EACH JOINT AND ONE CENTERED. ADDITIONALLY, ONE INSULATOR SHALL BE INSTALLED 12" FROM EACH END OF THE CASING.
2. BOTH ENDS OF THE CASING BETWEEN THE CASING AND CARRIER PIPE MUST BE SEALED WATERTIGHT USING CONCRETE OR A HEAT SHRINK WRAP AROUND SEAL SUCH AS MANUFACTURED BY PIPELINE SEAL AND INSULATOR LTD. OR APPROVED EQUAL. BANDS SHALL BE TYPE 316 STAINLESS STEEL.
3. ALL STEEL CASING PIPE JOINTS SHALL BE WELDED FULL CIRCUMFERENCE.
4. SIZE AND THICKNESS OF CASING SHALL BE AS SHOWN IN SCHEDULE.
5. CASING INSTALLATION METHOD SHALL BE APPROVED BY THE CITY ENGINEER AND THE WATER UTILITIES DEPARTMENT IF CARRIER PIPE MATERIAL IS DIFFERENT THIS MUST BE SUBMITTED AND APPROVED BY WATER UTILITIES DEPT.
6. THE STEEL CASING SHALL BE LINED AND COATED WITH HOT APPLIED COAL TAR ENAMEL PER AWWA C203. ENAMEL SHALL BE AWWA TYPE II.

SCHEDULE STEEL CASING FOR PIPELINES		
CARRIER PIPE NOMINAL SIZE (INCHES)	CASING WALL THICKNESS (INCH)	MINIMUM CASING O.D. (INCHES)
8	3/8	20
10	3/8	22
12	3/8	24
14	7/16	26
15	7/16	26
16	1/2	30
18	1/2	32
20	1/2	34
21	1/2	34
24	1/2	42
27	5/8	42
30	5/8	48

Revision	By	Approved	Date
10/18/02	DW		
08/30/04	AC		
04/04/07	AC		
09/22/10	DW		
01/04/16	MU		
07/01/17	SM		08/01/17

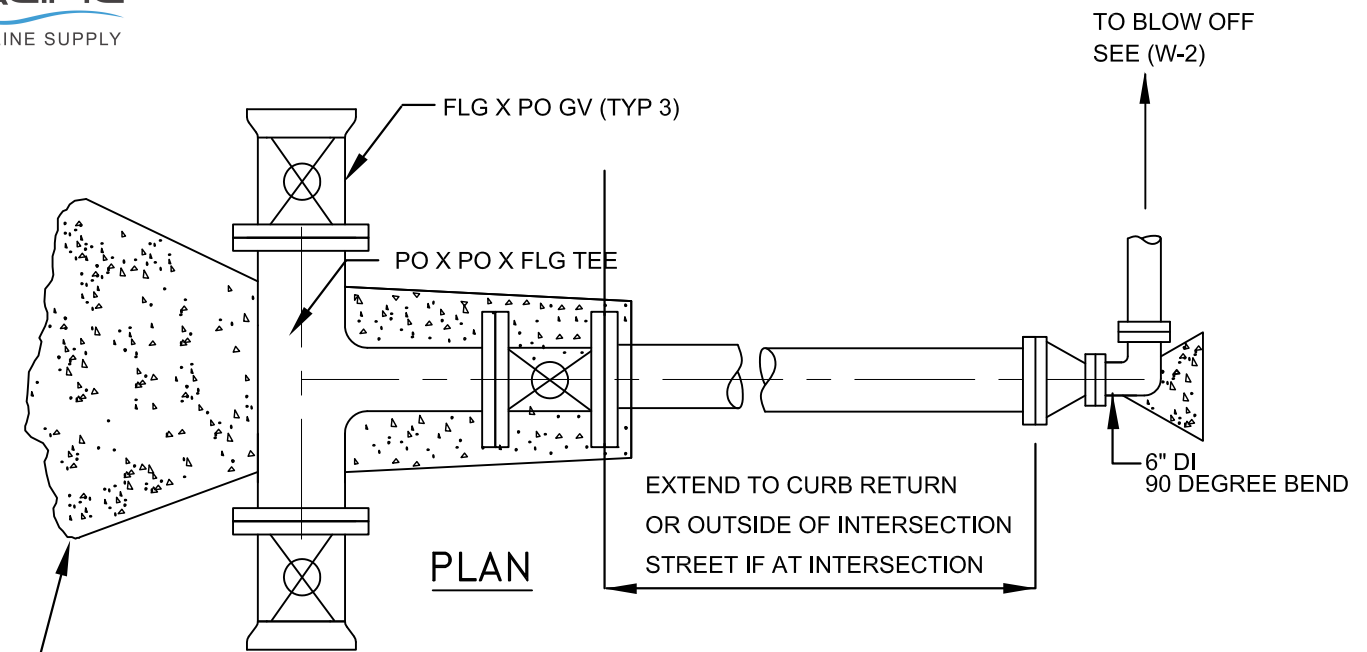
**CITY OF OCEANSIDE**

**STEEL CASING DETAIL**

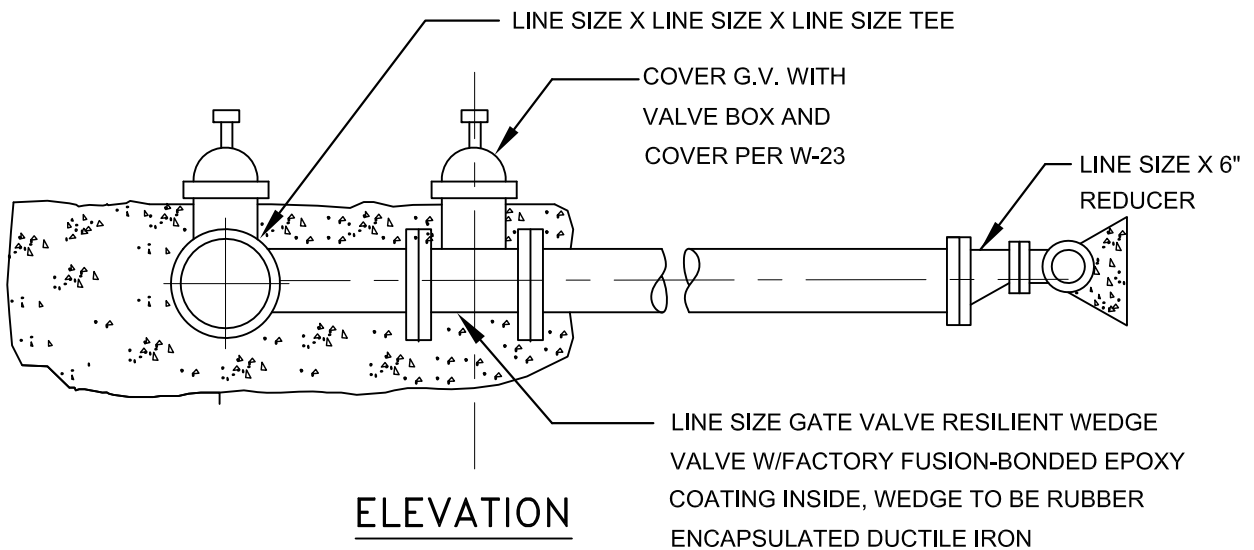
*Anna E. Strapac* 9/17/17  
CITY ENGINEER Date

STANDARD  
DRAWING NO.

**W-25**

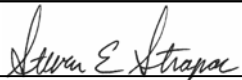


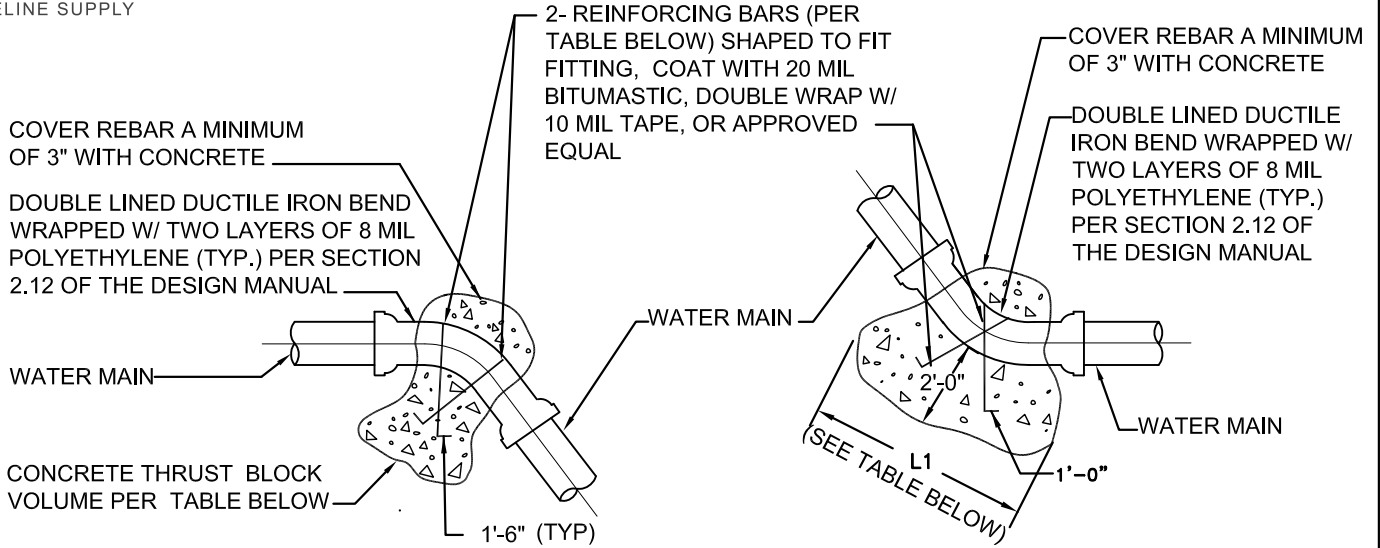
THRUST BLOCK TO BE POURED  
AGAINST UNDISTURBED SOIL PER W-27 (TYP.)



**NOTES:**

1. ALL NUTS & BOLTS TO BE TYPE 316 STAINLESS STEEL.
2. APPLY ANTI-SEIZE TO ALL S.S. BOLT THREADS.
3. ALL VALVES AND FITTINGS TO BE WRAPPED WITH 2 LAYERS OF 8 MIL POLYETHYLENE.
4. ALL FLANGES TO BE PRIMED AND WRAPPED WITH WAX-TAPE.
5. FOR CROSS CONNECTIONS, PROVIDE A GV ON EACH BRANCH FOR TOTAL OF 4 VALVES.

Revision	By	Approved	Date	CITY OF OCEANSIDE		
06/14/01	DW					<b>GATED OUTLET ON WATER MAIN FOR FUTURE USE</b>
09/18/02	DW			 CITY ENGINEER      9/17/17 Date		
07/19/04	AC			STANDARD DRAWING NO. <b>W-26</b>		
01/04/16	MU					
07/01/17	SM		08/01/17			

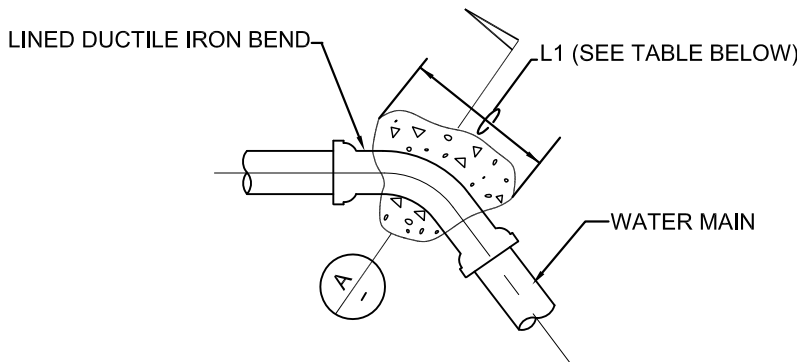


**PROFILE**

TYPICAL VERTICAL RESTRAINT

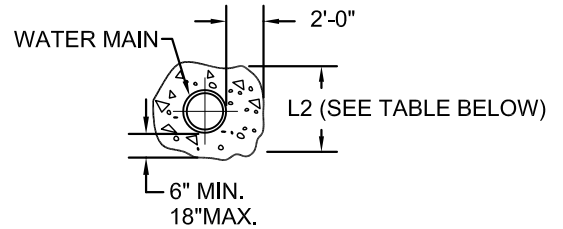
**PROFILE**

TYPICAL VERTICAL THRUST BLOCK



**PLAN**

TYPICAL THRUST BLOCK HORIZONTAL



**SECTION A**

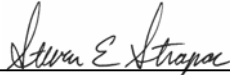
TYPICAL THRUST BLOCK HORIZONTAL

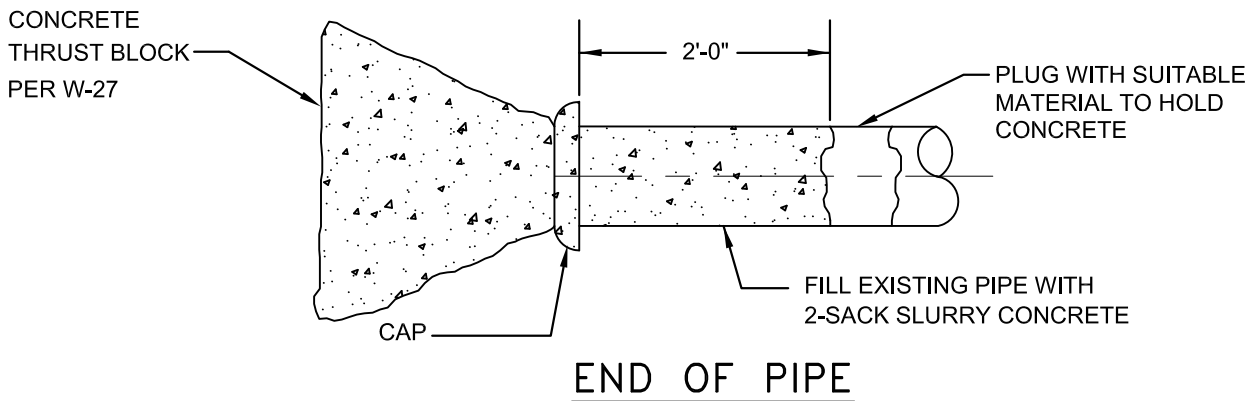
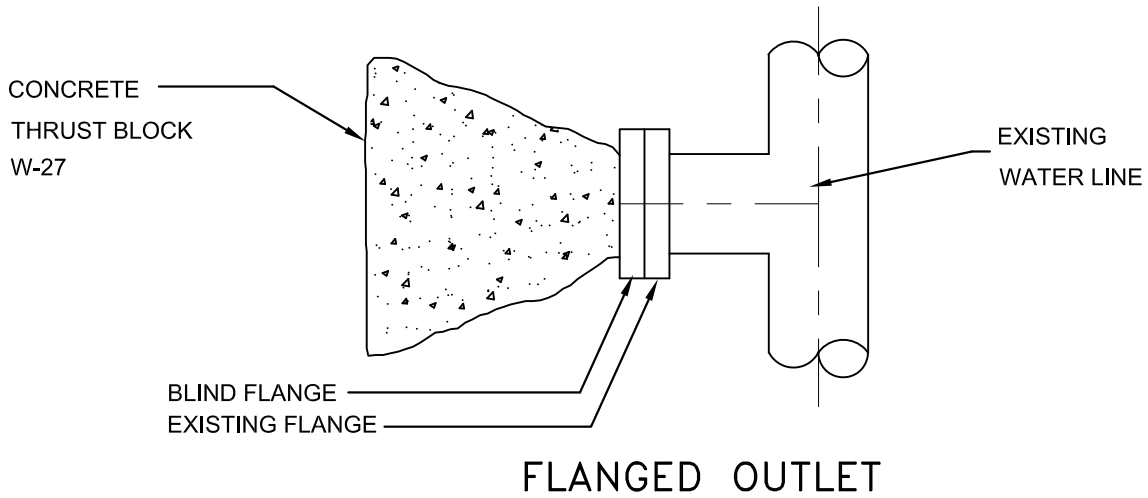
**NOTES:**

1. BEARING SURFACE OF ALL THRUST BLOCKS TO BE POURED AGAINST FIRM UNDISTURBED EARTH (FULL BEARING STRENGTH).
2. ALL CONCRETE TO BE 560-C-3250 (6-SACK CONCRETE MIX)
3. SPECIAL DESIGN REQUIRED FOR PRESSURES EXCEEDING 200 PSI, SOIL PRESSURES LESS THAN 2000 PSF, AND FOR FITTINGS LARGER THAN 12" DIAMETER.

THRUST BLOCK DIMENSIONS																
PIPE SIZE.	0 ° TO 11 1/4°			11 1/4° TO 22 1/2°			22 1/2° TO 45°			45° TO 90°			DEAD ENDS & TEES		PIPE SIZE.	
	HORIZ. L1 L2	VERT. VOL. CY	VERT. REBAR	HORIZ. L1 L2	VERT. VOL. CY	VERT. REBAR	HORIZ. L1 L2	VERT. VOL. CY	VERT. REBAR	HORIZ. L1 L2	VERT. VOL. CY	VERT. REBAR	HORIZ. L1 L2	VERT. VOL. CY		
6"	1.0 x 1.0	0.4	#6	1.0 x 1.5	0.8	#6	1.5 x 2.0	1.5	#6	2.0 x 3.0	2.7	#6	2.0 x 2.0	1.9	6"	
8"	1.0 x 1.5	0.6	#6	1.5 x 2.0	1.3	#6	2.0 x 3.0	2.5	#6	3.0 x 3.5	4.7	#6	2.5 x 3.0	3.3	8"	
10"	1.0 x 2.0	1.1	#6	2.0 x 2.0	2.1	#6	3.0 x 3.0	4.1	#6	4.0 x 4.0	7.6	#8	3.0 x 4.0	5.4	10"	
12"	1.5 x 2.0	1.5	#6	2.0 x 2.0	3.0	#6	3.0 x 4.0	5.9	#6	4.5 x 5.0	10.8	#8	4.0 x 4.0	7.6	12"	
14"	2.0 x 2.0	2.0	#6	3.0 x 3.0	4.0	#6	4.0 x 4.0	8.0	#8	6.0 x 5.5	14.7	#8	4.5 x 5.0	10.4	14"	
16"	2.0 x 3.0	2.6	#6	3.0 x 3.5	5.2	#6	4.5 x 5.0	10.3	#8	7.0 x 5.5	19.0	#10	5.0 x 5.5	13.4	16"	

TABLE BASED ON 200 PSI PRESSURE AND 2000 PSF ALLOWABLE SOIL BEARING PRESSURE.

Revision	By	Approved	Date	<p><b>CITY OF OCEANSIDE</b></p> <p><b>TYPICAL THRUST BLOCK</b></p>	 CITY ENGINEER Date
07/19/04	AC				
03/16/05	AC				
04/14/05	DW				
06/04/07	AC				
01/04/16	MU				
07/01/17	SM		08/01/17	<p>STANDARD</p> <p>DRAWING NO. <b>W-27</b></p>	



**NOTES:**

ALL WATERLINES BETWEEN 3" THROUGH 12" SERVICE CONNECTIONS MUST BE ABANDONED BY THE PROCEDURES SET BELOW.

1. THE GATE VALVE IS TO BE REMOVED AND A PLUG, BLIND FLANGE, OR CAP INSTALLED. COORDINATE WITH WATER UTILITIES DEPARTMENT FOR WATER MAIN SHUTDOWN.
2. THE SADDLE PLUG, BLIND FLANGE, OR CAP MUST BE INSPECTED FOR INTEGRITY BY A REPRESENTATIVE OF THE WATER UTILITIES DEPARTMENT.
3. WRAP SERVICE SADDLE (IF APPLICABLE) WITH 2 LAYERS OF 8 MIL POLYETHYLENE AND SECURE WITH 10 MIL POLYETHYLENE TAPE.
4. CONTACT WATER UTILITIES DEPARTMENT TO INSPECT ABANDONMENT PRIOR TO BACKFILL.
5. PIPELINES LARGER THAN 12" TO BE SLURRY OR CELLCRETE FILLED OR REMOVED.

Revision	By	Approved	Date
11/07/00	kal		
06/14/01	DW		
09/16/04	AC		
01/04/16	MU		
07/01/17	SM		08/01/17

**CITY OF OCEANSIDE**

**WATER LINE**

**ABANDONMENTS 3" THROUGH 12"**

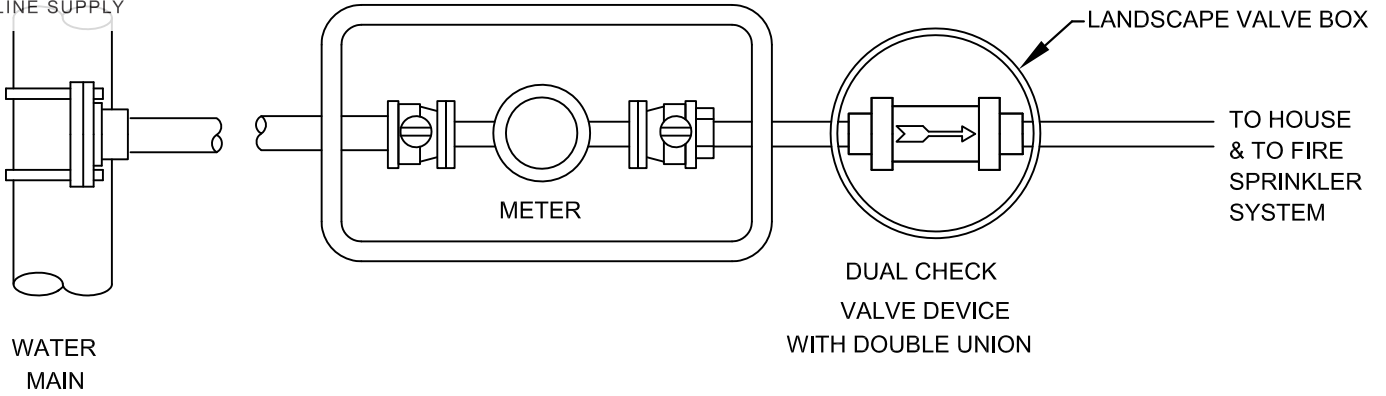
*Steven E. Strapac* 9/17/17  
CITY ENGINEER Date

STANDARD DRAWING NO. **W-28**

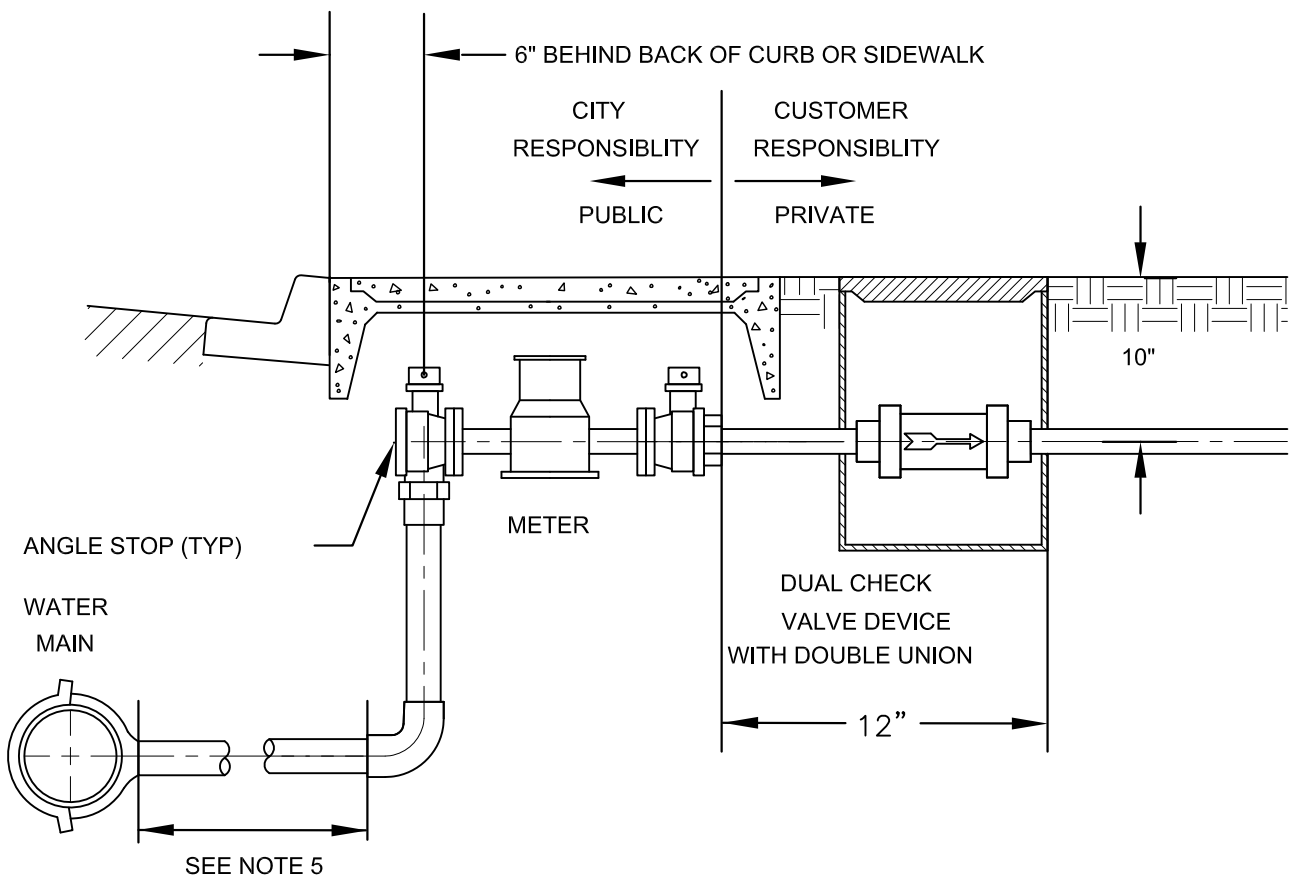








METER BOX & METERS INSTALLED BY CITY FORCES AT CONTRACTORS EXPENSE.



**NOTES:**

1. DEVICE SHALL BE INSTALLED IMMEDIATELY DOWNSTREAM OF THE METER WITHIN 12".
2. NO CONNECTION BETWEEN THE METER AND ASSEMBLY IS PERMITTED.
3. BRASS FROM METER THROUGH DUAL CHECK VALVE ASSEMBLY.
4. BURIED COPPER TYPE "K" TO BE WRAPPED IN 6 MIL POLYETHYLENE PER SECTION 2.12.
5. NO COUPLINGS ALLOWED FOR WATER SERVICES LESS THAN 1-1/2".

Revision	By	Approved	Date
03/27/12	DW		
01/04/16	MU		
07/01/17	SM		08/01/17

**CITY OF OCEANSIDE**

**RESIDENTIAL FIRE SPRINKLER  
DUAL CHECK VALVE DEVICE**

*Steven E. Strapac* 9/17/17  
CITY ENGINEER Date  
STANDARD DRAWING NO. **W-30**