

ITEM NO.	DESCRIPTION
①	IF COVER TO NEW PIPE IS LESS THAN 36", CITY ENGINEER WILL SPECIFY SPECIAL BEDDING AND BACKFILL REQUIREMENTS
②	6" SAND BEDDING PER SSPWC 306-1.2.1 UNLESS OTHERWISE APPROVED BY THE CITY
③	SAND BACKFILL COMPACTED TO 90% RELATIVE COMPACTION PER SSPWC 306-1.2.1 UNLESS OTHERWISE APPROVED BY THE CITY. JETTING IS NOT ALLOWED.
④	ALL BACKFILL SHALL BE MINIMUM 1-SACK SAND-CEMENT SLURRY, CRUSHED MISCELLANEOUS BASE (CMB), DECOMPOSED GRANITE (DG). MECHANICALLY DENSIFIED TO 90% RELATIVE COMPACTION FROM BOTTOM OF TRENCH TO 8" BELOW PAVEMENT. THE TOP 8" SUBGRADE SHALL BE COMPACTED TO 95% RELATIVE COMPACTION. CONTRACTOR TO PROVIDE TEST REPORTS AS EVIDENCE OF PROPER COMPACTION.
⑤	PAVE 6" (OR EXISTING PAVEMENT THICKNESS PLUS 1", WHICHEVER IS GREATER) WITH D2-PG-6410, C2-PG-6410 A.C., B-PG-6410 REFER TO APWA STD PLAN 132-3 AND 133-3
⑥	TRACER WIRE SECURED TO PIPE, PER SMW-15
⑦	WARNING/IDENTIFICATION TAPE
⑧	PLACE 8" P.C.C. CLASS 520-A-2500 (OR EXISTING PAVEMENT THICKNESS PLUS 1", WHICHEVER IS GREATER) TO NEAREST SCORE LINE REFER TO APWA STD PLAN 132-3
⑨	#4 DOWEL AT 24" O.C. TO EXISTING PAVEMENT, CONTACT CITY ENGINEER'S OFFICE FOR DOWELING SPECIFICATIONS.

NOTE: IF PAVEMENT CRACKS ARE EVIDENT NEAR TRENCH, CONTRACTOR IS REQUIRED TO OVERCUT THESE CRACKS IN FULL PAVEMENT THICKNESS.




City of Santa Monica
Department of Public Works

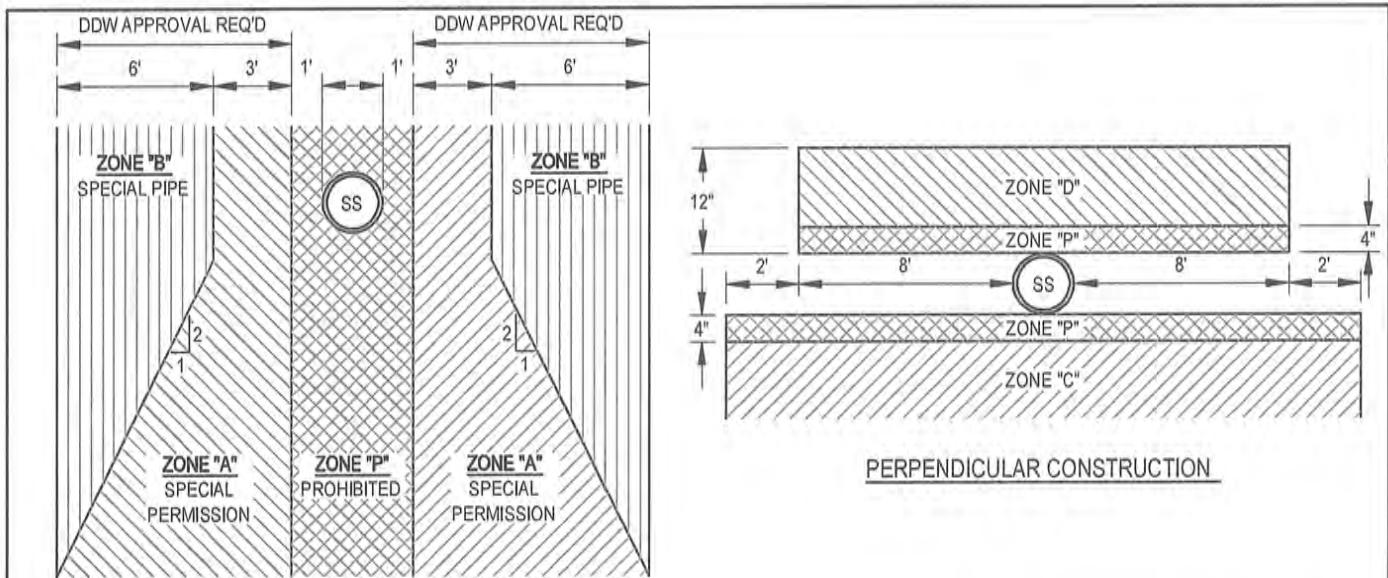
WATER MAIN TRENCH DETAIL

DES: AJS	SCALE: NONE	SHEET NO. 1 OF 1
D: SEM	DATE: 12-24-2014	SMW-1
T: C	APP:	

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12-24-2014	-	ORIGINAL DRAWING ISSUED	AJS

APPROVED BY: 
Water Resources Engineer

DATE: 12/20/15



PARALLEL CONSTRUCTION

NOTES:

1. IF THE HORIZONTAL DISTANCE BETWEEN PRESSURE WATER MAINS AND SEWER LINES CANNOT BE LOCATED 10 OR MORE FEET, AND MUST BE LOCATED WITHIN ANY OF THE ABOVE INDICATED ZONES, DIVISION OF DRINKING WATER (DDW) APPROVAL, AND SPECIAL CONSTRUCTION WILL BE REQUIRED.
2. IF THE VERTICAL DISTANCE BETWEEN PRESSURE WATER MAINS ABOVE SEWER LINES WHERE THEY CROSS CANNOT BE 1 OR MORE FEET, AND MUST BE LOCATED WITHIN ANY OF THE ABOVE INDICATED ZONES, DDW APPROVAL, AND SPECIAL CONSTRUCTION WILL BE REQUIRED.
3. WATER MAINS AND SEWER LINES MUST NOT BE INSTALLED IN THE SAME TRENCH.
4. SEPARATION DISTANCES SPECIFIED SHALL BE MEASURED FROM THE NEAREST OUTSIDE EDGE OF ALL FACILITIES.
5. SPECIAL PERMISSION IS REQUIRED WITHIN 10 FEET AND 4 FEET HORIZONTALLY OF SEWER AND STORM DRAIN RESPECTIVELY AND 1 FOOT VERTICALLY. CONTRACTOR SHALL REQUIRE CITY TO CONSULT/COORDINATE WITH DDW ON THEIR BEHALF.
6. WATER MAINS SHALL NOT CROSS SEWERS LINES AT LESS THAN 45-DEGREES.

ZONE	WATER MAIN CONSTRUCTION REQUIREMENTS PER DDW
A	NO WATER MAINS PARALLEL TO SEWERS SHALL BE CONSTRUCTED WITHOUT APPROVAL FROM DDW
B	USE THE FOLLOWING TYPES OF PIPE: 1. DUCTILE IRON PIPE, CML WITH HOT DIP BITUMINOUS COATING, OR 2. MINIMUM 1/4" WALL WELDED STEEL PIPE, CML & CMC, OR 3. POLYVINYL CHLORIDE (PVC) PRESSURE PIPE (DR14 PER AWWA C-900 AND C-905)
C	NO JOINTS WITHIN 10 FEET FROM EITHER SIDE OF THE SEWER. USE THE FOLLOWING TYPES OF PIPE: 1. DUCTILE IRON PIPE, CML WITH HOT DIP BITUMINOUS COATING, OR 2. MINIMUM 1/4" WALL WELDED STEEL PIPE, CML & CMC, OR 3. POLYVINYL CHLORIDE (PVC) PRESSURE PIPE (DR14 PER AWWA C-900 AND C-905)
D	NO JOINTS WITHIN 8 FEET FROM EITHER SIDE OF THE SEWER. USE THE FOLLOWING TYPES OF PIPE: 1. DUCTILE IRON PIPE, CML WITH HOT DIP BITUMINOUS COATING, OR 2. MINIMUM 1/4" WALL WELDED STEEL PIPE, CML & CMC, OR 3. POLYVINYL CHLORIDE (PVC) PRESSURE PIPE (DR14 PER AWWA C-900 AND C-905)
P	PROHIBITED ZONE - NO WATER MAINS ARE ALLOWED TO BE INSTALLED WITHIN THIS ZONE.

REFER TO THE "CALIFORNIA WATERWORKS STANDARDS" SECTION 64572, TITLE 22, CALIFORNIA ADMINISTRATION AS WELL AS "GUIDANCE MEMO NO.2003-02" FROM DEPARTMENT OF HEALTH SERVICES "FOR THE MINIMUM SEPARATION REQUIREMENTS FOR THE WATER MAINS AND SEWER LINES.



**DESIGN REQUIREMENTS
WATER MAINS IN THE VICINITY OF
SANITARY SEWERS**

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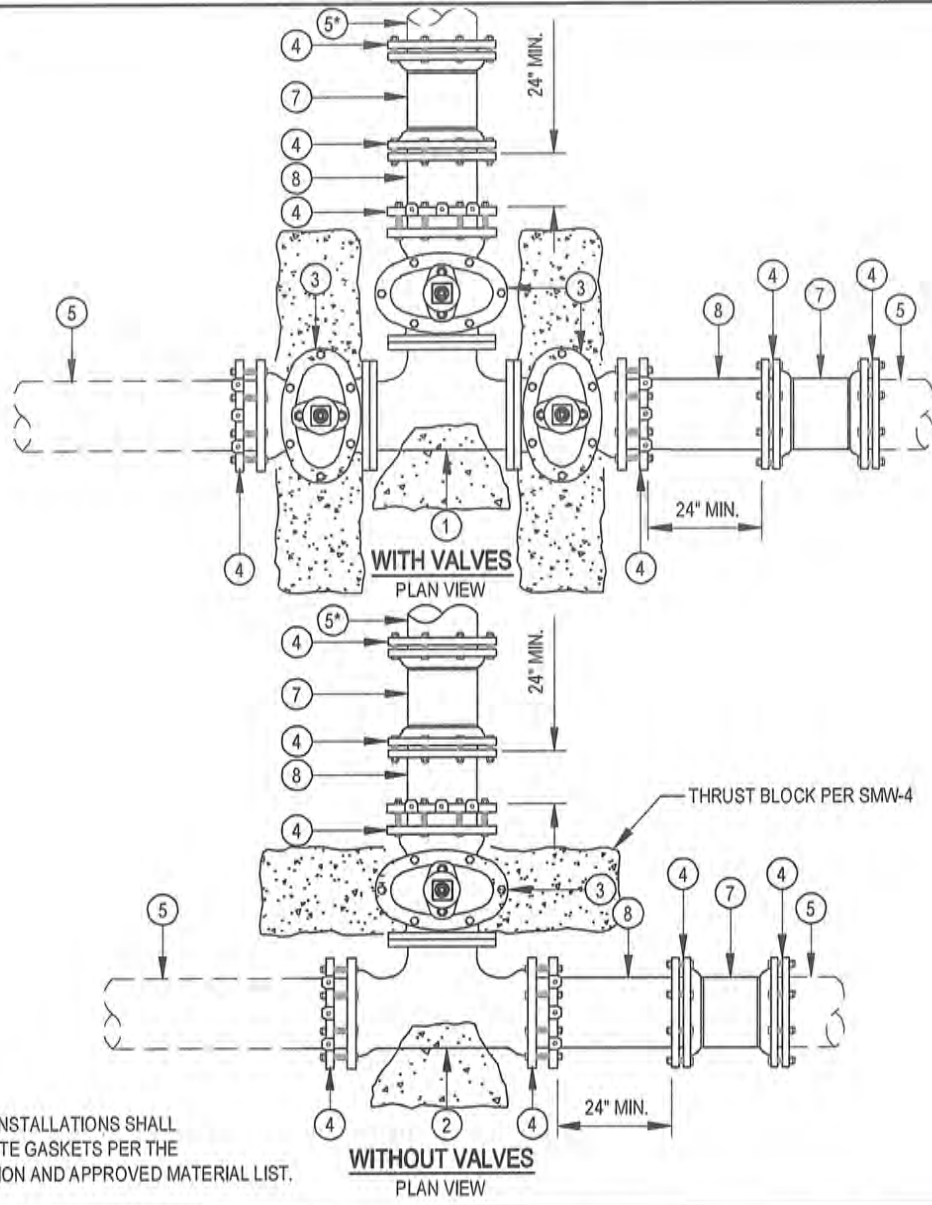
APPROVED BY: *Jessica Arden*
Water Resources Engineer

DATE: 2/20/15

DES: AJS
D: SEM
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SCALE: NONE
SHEET NO. 1 OF 1


DATE: 12-24-2014
APP:
SMW-2



NOTE: ALL VALVE INSTALLATIONS SHALL INCORPORATE GASKETS PER THE SPECIFICATION AND APPROVED MATERIAL LIST.


ITEM	MATERIAL
1	TEE (FLANGED), SIZED PER PLANS WITH THRUST BLOCK, PER SMW-6, DESIGNED FOR 100% OF THRUST FORCE
2	TEE (MJ x FLG) SIZED PER PLANS WITH THRUST BLOCK, PER SMW-6, DESIGNED FOR 100% OF THRUST FORCE
3	MECHANICAL JOINT FLANGED RESILIENT WEDGE GATE VALVE (FL x MJ) WITH THRUST BLOCK PER SMW-4
4	MECHANICAL JOINT RESTRAINER GLAND (MEGALUGS)
5	EXISTING PIPE (PVC, CAST IRON, OR DIP)
6	NEW PIPE, MATERIAL AND SIZE PER PLANS
7	DUCTILE IRON RESTRAINED LONG SOLID SLEEVE, (MJ x MJ)
8	DUCTILE IRON PIPE SPOOL MIN. LENGTH 24" (PE x PE)

ALL METALLIC COMPONENTS TO BE WRAPPED WITH 8 MIL. POLYETHYLENE ENCASEMENT.
 *WHEN CONNECTING TO NEW PIPE, (7) AND (8) ARE NOT REQUIRED USE (6) IN PLACE OF (8)

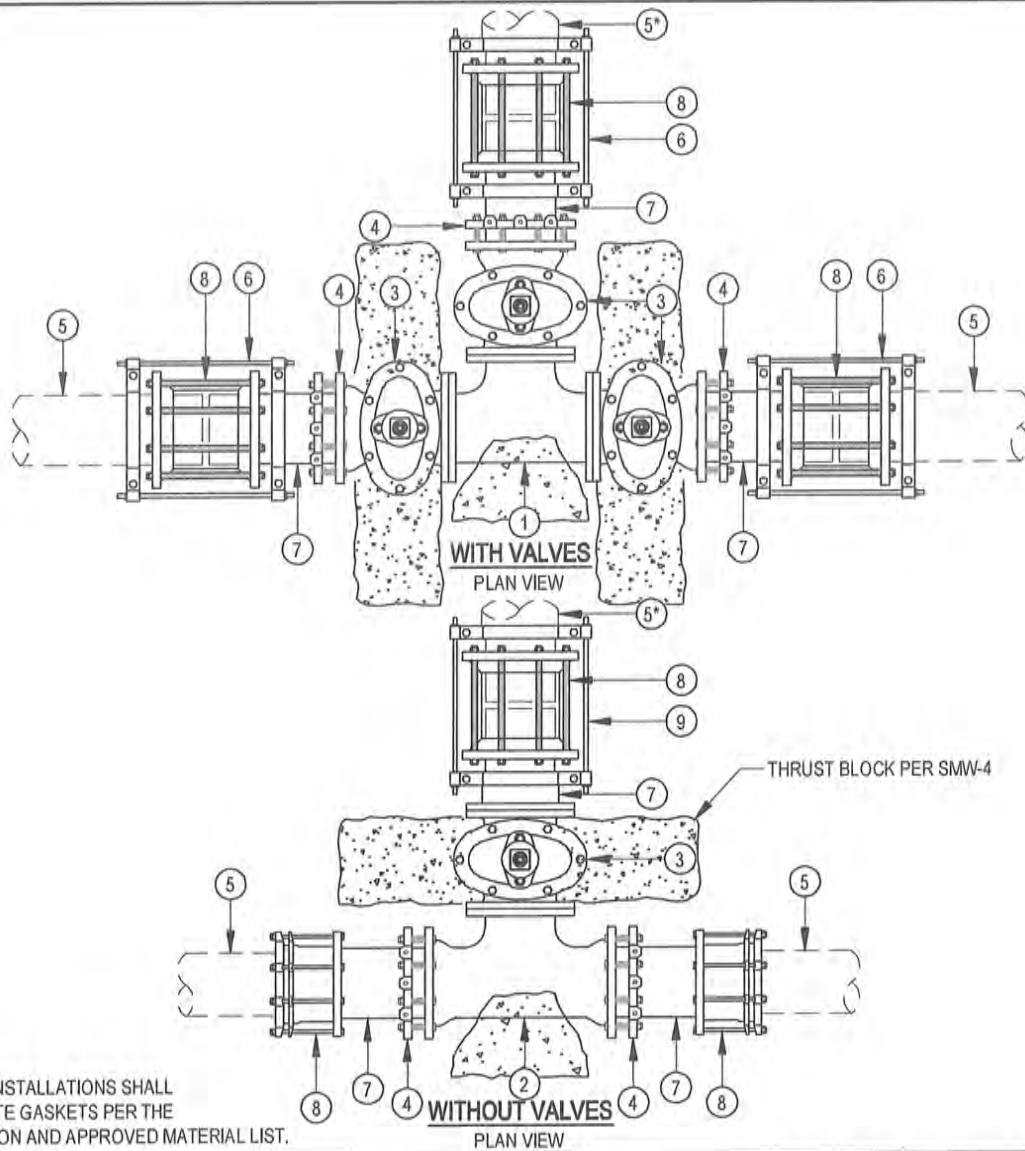


City of Santa Monica
 Department of Public Works

CUT-IN TEE (MECHANICAL JOINT)
 FOR PVC, CAST IRON PIPE (CIP),
 AND DUCTILE IRON PIPE (DIP)

APPROVED BY:	DATE: 2/2015	SHEET NO. 1 OF 2
 Water Resources Engineer	DES: AJS D: SEM T: C:	SCALE: NONE DATE: 12-24-2014 APP:

DATE	NO.	REVISION / NOTE	BY
12-24-2014	-	ORIGINAL DRAWING ISSUED	AJS




NOTE: ALL VALVE INSTALLATIONS SHALL INCORPORATE GASKETS PER THE SPECIFICATION AND APPROVED MATERIAL LIST.

ITEM	MATERIAL
(1)	TEE (FLANGED), SIZED PER PLANS WITH THRUST BLOCK, PER SMW-6, DESIGNED FOR 100% OF THRUST FORCE
(2)	TEE (FLG X MJ), SIZED PER PLANS WITH THRUST BLOCK, PER SMW-6, DESIGNED FOR 100% OF THRUST FORCE
(3)	FLANGED RESILIENT GATE VALVE (MJ x FLG) WITH THRUST BLOCK PER SMW-4
(4)	MECHANICAL JOINT RESTRAINER GLAND (MEGALUG)
(5)	EXISTING PIPE (ACP)
(6)	RESTRAINING HARNESS WITH ASBESTOS AND DUCTILE IRON PIPE RESTRAINER ASSEMBLY
(7)	DUCTILE IRON PIPE SPOOL, MIN. LENGTH 24", (PE x PE)
(8)	FLEX TRANSITION COUPLING (ACP ROUGH BARREL BY C-900 PVC, CIP, OR DIP)

ALL METALLIC COMPONENTS TO BE WRAPPED WITH 8 MIL. POLYETHYLENE ENCASEMENT.


*WHEN CONNECTING TO NEW PIPE, (7) AND (8) ARE NOT REQUIRED. USE (6) INSTEAD OF (7).

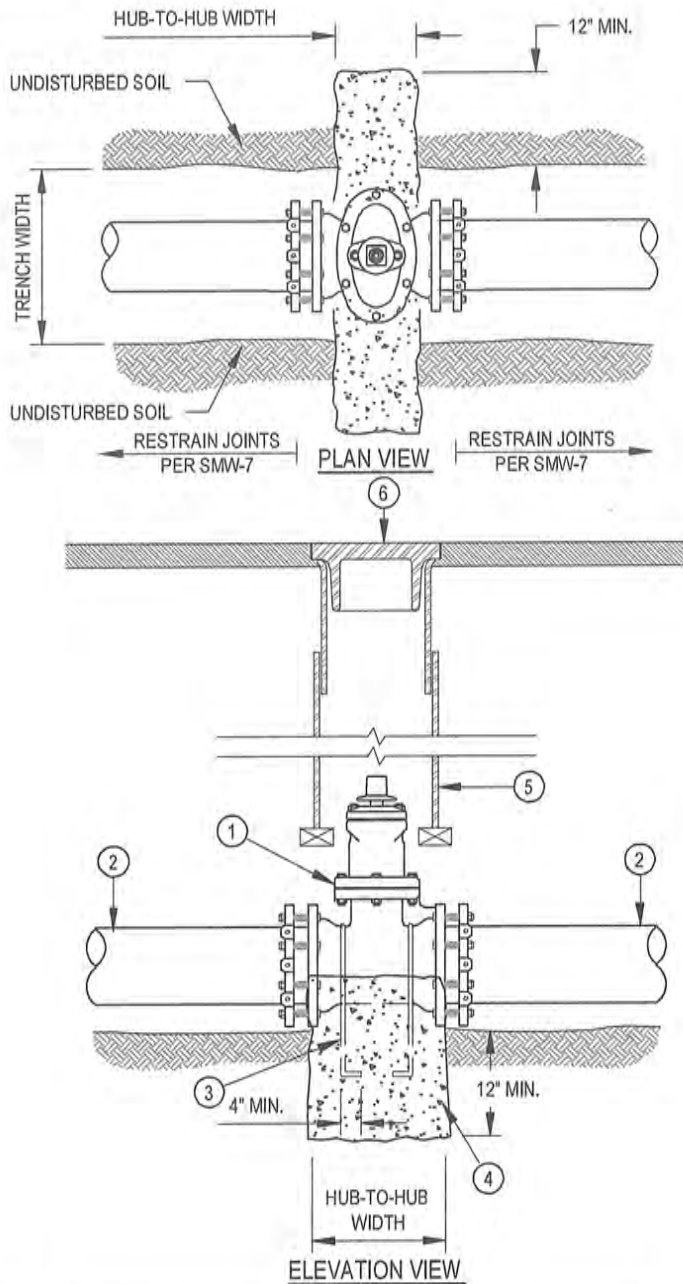
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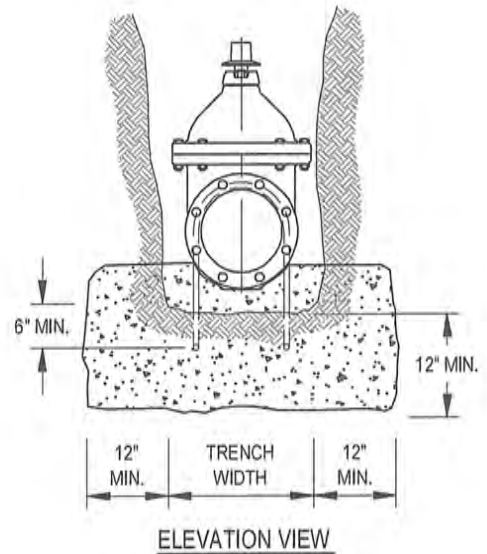
CUT-IN TEE
FOR
ASBESTOS CEMENT PIPE (ACP)

DES: AJS	SCALE: NONE	SHEET NO. 2 OF 2
D: SEM	DATE: 12-24-2014	SMW-3
T:	APP: 	
C:		



NOTES:

1. VALVE STEM EXTENSION NOT SHOWN.
2. VALVE ANCHOR REQUIRED ON ALL VALVES OVER 6" AND ALL VALVES AT DEAD ENDS.
3. ANCHOR STRAPS SHALL BE EMBEDDED DIRECTLY INTO THE CONCRETE THRUST BLOCK.
4. CONCRETE THRUST BLOCKS SHALL CONFORM TO STATE STANDARD 90-1.01, 470 LBS/CY CEMENTITIOUS MATERIAL (5-SACK) AND BE POURED AGAINST UNDISTURBED NATIVE SOIL.
5. ALL VALVES SHALL CONFORM TO SPECIFICATIONS FOR GATE VALVES FOR WATER WORKS SERVICE PER AWWA STANDARD 509-80.
6. 10" VALVE WELL RISER AND CAP SHALL BE USED FOR ALL GATE VALVES.
7. REFER TO SMW-3 FOR CUT IN VALVES USING SLEEVE.



ITEM	MATERIAL
①	DUCTILE IRON RESILIENT WEDGE GATE VALVE (MJ x MJ)
②	NEW WATER MAIN, SEE NOTE 7
③	ANCHOR STRAPS
④	CONCRETE THRUST BLOCK
⑤	VALVE RISER PER SMW-8
⑥	VALVE AND CAP PER SMW-8

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Justia Arden
Water Resources Engineer

DATE: 2/15

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SCALE: NONE

DATE: 12-24-2014
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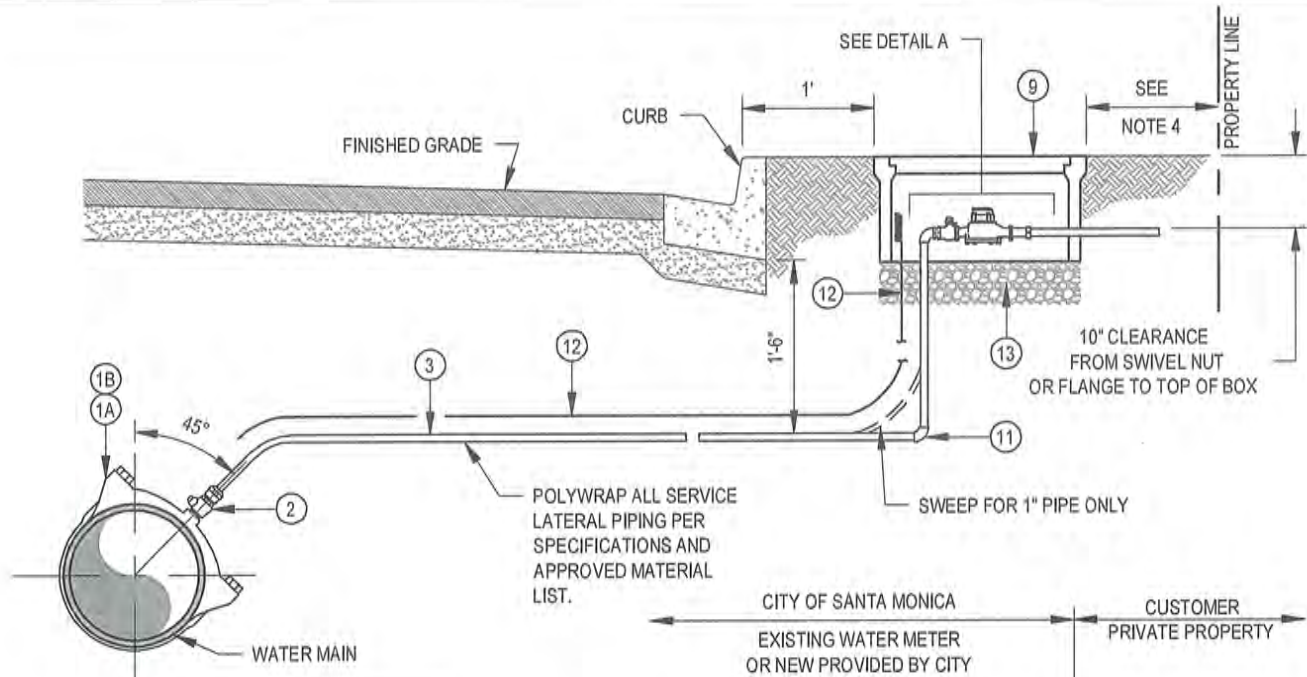
SHEET NO. 1 OF 1

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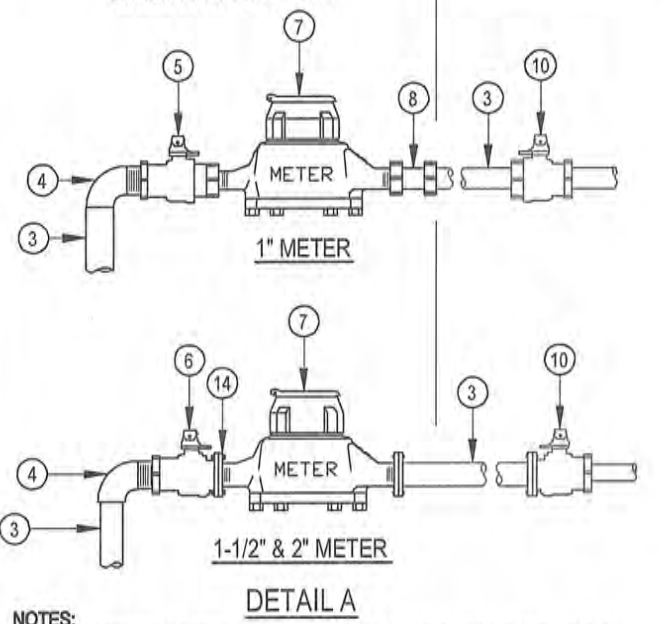
NEW GATE VALVE INSTALLATION



METER SIZE	METER BOX SIZE
1"	21" x 14" x 12"
1-1/2"	27" x 17" x 12"
2"	30" x 19" x 14"

ITEM	MATERIAL
(1A)	BRONZE DOUBLE STRAP SERVICE SADDLE, 1", 1-1/2", OR 2" F.I.P.T. OUTLET (FOR DUCTILE IRON PIPE)
(1B)	STAINLESS STEEL DOUBLE STRAP WITH BRASS TOP SERVICE SADDLE 1", OR 2" F.I.P.T. OUTLET (FOR PVC PIPE)
(2)	CAST BRONZE BALL CORPORATION STOP, M.I.P.T. x COMPRESSION (CTS)
(3)	1", 1-1/2", OR 2" COPPER PIPE, SOFT/ ANNEALED TYPE K IN 20' LENGTHS, ENCASED IN POLY WRAP C
(4)	90° CAST BRONZE ELBOW, C x M.I.P.T.
(5)	CAST BRONZE STRAIGHT METER BALL VALVE WITH LOCKWING, F.I.P.T. x SWIVEL NUT
(6)	CAST BRONZE STRAIGHT METER BALL VALVE WITH LOCKWING, F.I.P.T. x METER FLANGE
(7)	METER*
(8)	STRAIGHT METER COUPLING, SWIVEL NUT x M.I.P.T. - 1 1/2" LONG
(9)	METER BOX PER SMW-10
(10)	CUSTOMER SHUTOFF VALVE
(11)	90° CAST BRONZE ELBOW, C x C SOLDER JOINTS
(12)	TRACER WIRE, PER SMW-15, WHEN NOT PERPENDICULAR TO MAIN
(13)	6" THICK BASE OF 3/4" CRUSHED ROCK.
(14)	BOLTS, NUTS & WASHERS

*EXISTING WATER METER OR NEW PROVIDED BY CITY



- NOTES:**
- ALL SERVICE LATERAL ASSEMBLIES SHALL BE NSF 61, ANNEX G AND CALIFORNIA AB1953 COMPLIANT.
 - ALL SERVICE LATERALS SHALL BE WRAPPED WITH POLYETHYLENE ENCASEMENT (NORTH TOWN POLY WRAP - C, OR APPROVED EQUAL).
 - ALL PIPING SHALL BE RATED FOR 300 PSI.
 - PLACE METER BOX ASSEMBLY 1-FT FROM PROPERTY LINE IF INSTALLED WITHIN ALLEY. METER AND BOX ROTATION REQUIRES CITY APPROVAL.
 - DOUBLE STRAP TO BE STAINLESS STEEL FOR ALL PVC PIPE.



1", 1-1/2", & 2" COPPER BRANCH SERVICE

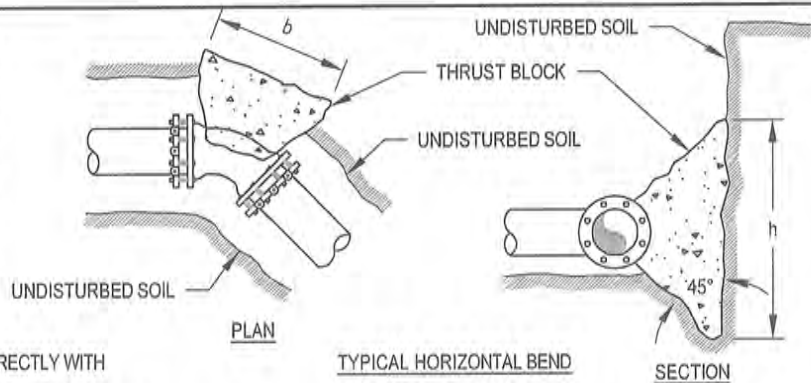
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APPROVED BY: *Jessica Holden*
Water Resources Engineer

DATE: 2/20/15
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SCALE: NONE
DATE: 12-24-2014
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SHEET NO. 1 OF 1
SMW-5

TABLE 1.1 - CALCULATION ASSUMPTIONS

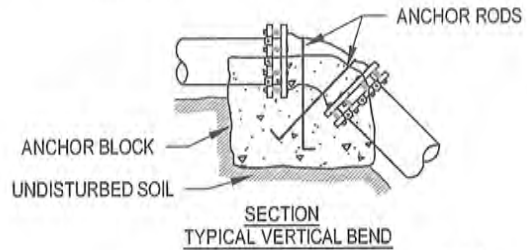
CONDITION	VALUE
LAYING CONDITION	TYPE 4
SOIL CLASSIFICATION	GOOD SAND (GW)
DEPTH OF COVER	3 FEET
DESIGN/TEST PRESSURE	200 PSI ¹
OPERATING PRESSURE	VARIABLES PER PLAN
ALLOWABLE SOIL BEARING, S _b	1000 PSF ²
MATERIAL DENSITY, W _m	150 PCF
SAFETY FACTOR	1.0 ³



- 1 BEARING AREAS AND ANCHOR VOLUMES INCREASE DIRECTLY WITH INCREASED PRESSURE.
- 2 FOR SOIL BEARING VALUE OF 2000 PSF USE: 1/2 x BEARING AREA SHOWN; FOR SOIL BEARING VALUE OF 500 USE: 2 x BEARING AREA SHOWN.
- 3 CALCULATIONS BASED ON SAFETY FACTOR = 1.0. IF A DIFFERENT SAFETY FACTOR IS TO BE USED, MULTIPLY VALUES BY THAT SAFETY FACTOR.

NOTES:

1. ALL THRUST BLOCKS SHALL BE PORTLAND CEMENT CONCRETE MIX 560-C-3250, ATTAIN 2,000 PSI STRENGTH, AND BE PLACED AGAINST UNDISTURBED SOIL.
2. THRUST BLOCKS ON REDUCERS SHALL BE KEYED INTO THE TRENCH BOTTOM AS SHOWN.
3. CONCRETE SHALL NOT EXTEND ONTO FLANGE OR ADJOINING PIPE.
4. DO NOT COVER FITTING BOLTS WITH CONCRETE.
5. AVOID PLACING CONCRETE ON ANY PART OF THE VALVE BONNET OR VALVE OPERATOR WHEN VALVES ARE FLANGED TO FITTINGS.
6. THE RATIO OF WIDTH (b) TO HEIGHT (h) OF THRUST BLOCK AREA SHALL NOT EXCEED 1 1/2 TO 1.
7. ALL ANCHOR RODS SHALL BE:
FOR PIPE SIZES < 12": #4 BARS
16": #5 BARS
18": #6 BARS
8. COAT REBAR WITH 80 MILS OF COLD-APPLIED BITUMASTIC WATER-PROOFING COMPOUND. WRAP EXTERIOR OF VALVE, ACTUATOR AND REBAR WITH 8 MIL POLYETHYLENE SHEETING AND TAPE PER IRWD SPECIFICATION.
9. MINIMUM CONCRETE COVER OVER REBAR SHALL BE 3".
10. NO CONCRETE SHALL BE POURED ON VALVE OR PIPE JOINT.
11. YIELD STRENGTH OF STEEL BARS IS ASSUMED TO BE 36 KSI.
12. ANCHOR BLOCKS SHALL BE USED AT VERTICAL BENDS WHEN PIPE IS ABOVE OR BELOW GROUND AS SHOWN ON THE PLANS.
13. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THE SOIL BEARING CONFIRMED PRIOR TO CONSTRUCTION.
14. WHEN RESTRAINED JOINTS ARE PROVIDED FOR THE REQUIRED PIPE LENGTH, PER SMW-7, THE THRUST BLOCK SIZE CAN BE REDUCED TO 25% OF ITS SIZE.



$$BEARING AREA (SF) = \frac{S_f \times T}{S_b}$$

$$THRUST (LBS), T = 2 P A \sin \frac{\theta}{2}$$

$$ANCHOR VOLUME (CY) = \left(\frac{1}{27}\right) \times \frac{S_f \times T}{W_m}$$

TABLE 1.3 - VERTICAL ANCHOR BLOCK VOLUMES

PIPE SIZE (IN)	22.5 BEND		45 BEND	
	THRUST (LBS)	VOLUME (CY)	THRUST (LBS)	VOLUME (CY)
4	981	0.2	1,924	0.5
6	2,206	0.5	4,328	1.1
8	3,923	1.0	7,694	1.9
10	6,129	1.5	12,022	3.0
12	8,826	2.2	17,312	4.3
16	15,690	3.9	30,777	7.6
18	19,858	4.9	38,952	9.6

TABLE 1.2 - HORIZONTAL THRUST BLOCK BEARING AREAS

PIPE SIZE (IN)	11.25 BEND		22.5 BEND		45 BEND		90 BEND		DEADEND / TEE	
	THRUST (LBS)	BEARING AREA (SF)	THRUST (LBS)	BEARING AREA (SF)	THRUST (LBS)	BEARING AREA (SF)	THRUST (LBS)	BEARING AREA (SF)	THRUST (LBS)	BEARING AREA (SF)
4	493	0.5	981	1.0	1,924	1.9	3,554	3.6	2,513	2.5
6	1,109	1.1	2,206	2.2	4,328	4.3	7,997	8.0	5,655	5.7
8	1,971	2.0	3,923	3.9	7,694	7.7	14,217	14.2	10,053	10.1
10	3,079	3.1	6,129	6.1	12,022	12.0	22,214	22.2	15,708	15.7
12	4,434	4.4	8,826	8.8	17,312	17.3	31,989	32.0	22,619	22.6
16	7,883	7.9	15,690	15.7	30,777	30.8	56,869	56.9	40,212	40.2
18	9,977	10.0	19,858	19.9	38,952	39.0	71,975	72.0	50,894	50.9

NOTE: IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE INFORMATION SHOWN HEREON PRIOR TO ITS USE.



City of **Santa Monica**
Department of Public Works

THRUST AND ANCHOR BLOCK TABLES

DATE	NO.	REVISION / NOTE	BY
12-24-2014	-	ORIGINAL DRAWING ISSUED	AJS

APPROVED BY: *Jessica Arden*
Water Resources Engineer

DATE: 2/20/15

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SCALE: NONE

DATE: 12-24-2014

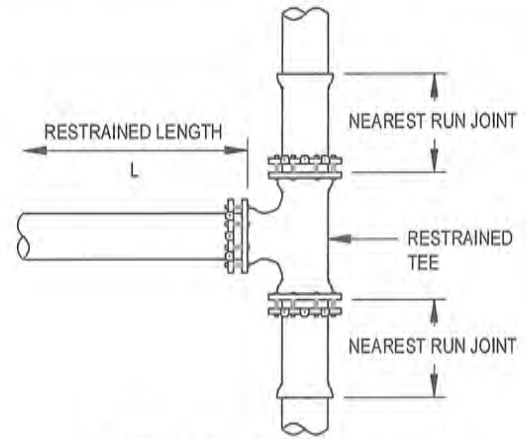
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SHEET NO. 1 OF 1

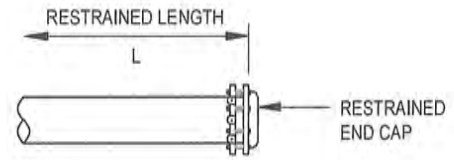
SMW-6

TABLE 2.1 - DEAD END, TEE, AND HORIZONTAL BENDS

CONNECTION CONDITION	RESTRAINED LENGTH, L (FT)		
	PVC	DUCTILE IRON	POLY WARRPPED DUCTILE
6 INCH DIAMETER			
DEAD END / TEE	40	25	73
90° HORIZONTAL BEND	15	12	17
45° HORIZONTAL BEND	6	5	7
22.5° HORIZONTAL BEND	3	3	4
11.25° HORIZONTAL BEND	2	2	2
8 INCH DIAMETER			
DEAD END / TEE	53	33	95
90° HORIZONTAL BEND	19	16	22
45° HORIZONTAL BEND	8	7	10
22.5° HORIZONTAL BEND	4	4	5
11.25° HORIZONTAL BEND	2	2	3
12 INCH DIAMETER			
DEAD END / TEE	74	46	134
90° HORIZONTAL BEND	26	22	31
45° HORIZONTAL BEND	11	9	13
22.5° HORIZONTAL BEND	6	5	6
11.25° HORIZONTAL BEND	3	3	3



TYPICAL TEE CONNECTION



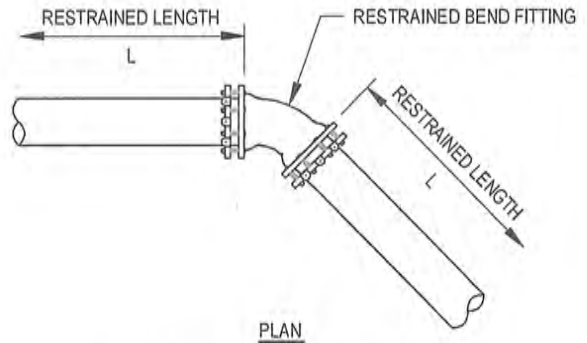
TYPICAL DEAD END CONNECTION

TABLE 2.2 - CALCULATION ASSUMPTIONS

CONDITION	VALUE
LAYING CONDITION	TYPE 4
SOIL CLASSIFICATION	GOOD SAND (GW)
DEPTH OF COVER	3 FEET
DESIGN/TEST PRESSURE	200 PSI ¹
OPERATING PRESSURE	VARIES PER PLAN
NEAREST RUN JOINT FOR TEE	1 FOOT
SAFETY FACTOR	1.0 ²

- ¹ RESTRAINED LENGTHS FOR TEES CALCULATED USING EQUAL RUN AND BRANCH DIAMETERS.
- ² RESTRAINED LENGTHS CALCULATED USING SAFETY FACTOR = 1.0. WHEN A DIFFERENT SAFETY FACTOR IS TO BE USED, MULTIPLY RESTRAINED LENGTHS BY THAT SAFETY FACTOR.

NOTE: IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE INFORMATION SHOWN HEREON PRIOR TO ITS USE.



TYPICAL HORIZONTAL BEND CONNECTION

DATE	NO.	REVISION / NOTE	BY
12-24-2014	-	ORIGINAL DRAWING ISSUED	AJS

APPROVED BY:

Jessica Aiden
Water Resources Engineer

DATE: 2/2015



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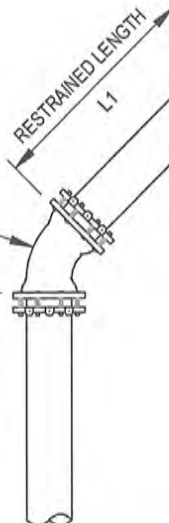
RESTRAINED LENGTH TABLES
HORIZONTAL

DES: AJS D: SEM T: C:	SCALE: NONE DATE: 12-24-2014 APP:	SHEET NO. 1 OF 2 SMW-7
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TABLE 3.1 - VERTICAL OFFSET

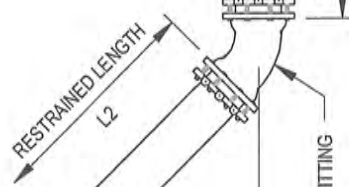
DEFLECTION ANGLE	VERTICAL OFFSET, H (FT)	RESTRAINED LENGTH, L1 (FT)			RESTRAINED LENGTH, L2 (FT)				
		PIPE MATERIAL*	A	B	C	PIPE MATERIAL*	A	B	C
6 INCH DIAMETER									
45° VERTICAL BEND	1		17	11	30	5	4	6	
	2					4	3	5	
	3					4	3	4	
22.5° VERTICAL BEND	1					3	2	3	
	2		8	5	15	2	2	3	
	3					2	2	2	
11.25° VERTICAL BEND	1					2	1	2	
	2		4	3	8	1	1	2	
	3					1	1	1	

RESTRAINED LENGTH
L1



FOR ALL VERTICAL OFFSET CALCULATIONS, L1 WILL ALWAYS BE THE RESTRAINED LENGTH FOR THE HIGHER OF THE TWO ELEVATIONS, WITH L2 BEING THE LOWER OF THE TWO.

VERTICAL OFFSET



TYPICAL VERTICAL OFFSET CONNECTION

DATE	NO.	REVISION / NOTE	BY
04-01-14	-	ORIGINAL DRAWING ISSUED	AJS

TABLE 3.1 - VERTICAL OFFSET (CONTINUED)

DEFLECTION ANGLE	VERTICAL OFFSET, H (FT)	RESTRAINED LENGTH, L1 (FT)			RESTRAINED LENGTH, L2 (FT)				
		PIPE MATERIAL*	A	B	C	PIPE MATERIAL*	A	B	C
8 INCH DIAMETER									
45° VERTICAL BEND	1					6	5	7	
	2		22	14	40	5	4	6	
	3					4	4	5	
22.5° VERTICAL BEND	1					3	3	4	
	2		11	7	19	3	2	3	
	3					2	2	3	
11.25° VERTICAL BEND	1					2	2	2	
	2		6	4	10	2	1	2	
	3					1	1	2	
12 INCH DIAMETER									
45° VERTICAL BEND	1					9	7	10	
	2		31	19	56	7	6	8	
	3					6	5	7	
22.5° VERTICAL BEND	1					4	4	5	
	2		15	10	27	4	3	4	
	3					3	3	4	
11.25° VERTICAL BEND	1					2	2	3	
	2		8	5	14	2	2	2	
	3					2	2	2	

RESTRAINED LENGTHS CALCULATED USING ASSUMPTIONS FROM TABLE 2.2 ON SHEET 1 OF SMW-7.

*PIPE MATERIAL :
A: PVC
B: DUCTILE IRON
C: POLY WRAPPED DUCTILE

NOTE: IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE INFORMATION SHOWN HEREON PRIOR TO ITS USE.



RESTRAINED LENGTH TABLES
VERTICAL

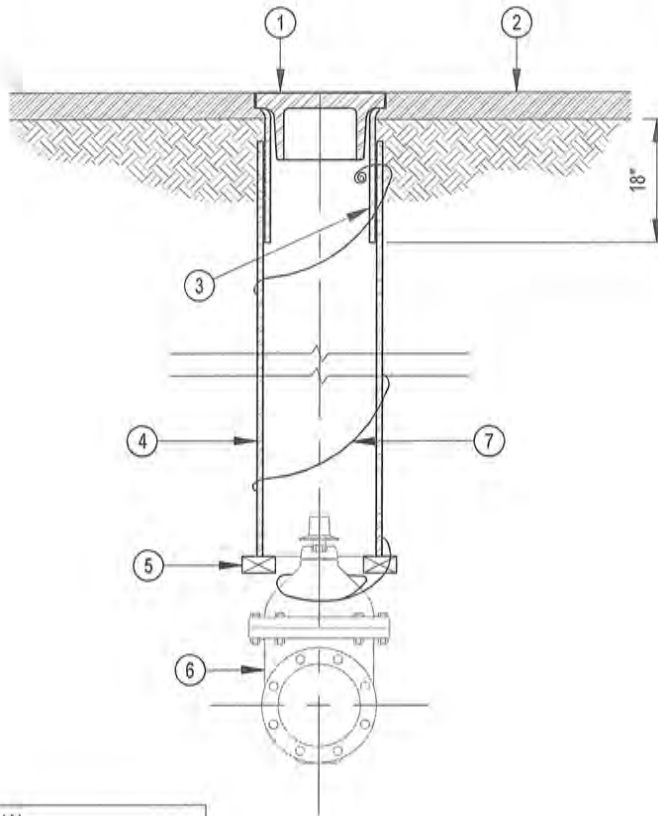
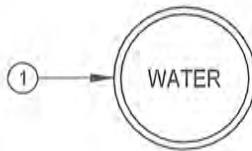
DES: AJS
D: SEM
T:
C:

SCALE: NONE

DATE: 04-01-14
APP:

SHEET NO. 2 OF 2

SMW-7



ITEM	MATERIAL
①	TRAFFIC RATED CAST IRON LID (SIGMA VB 4884, OR APPROVED EQUAL), CAST WITH THE WORD "WATER", AND PAINTED PER PAINT SCHEDULE,
②	PARKWAY GRADE OR A.C. PAVED SURFACE.*
③	ADJUSTABLE GALVANIZED VALVE CAN
④	8" DIP EXTENSION VALVE RISER***
⑤	2" x 4" x 12" REDWOOD BLOCK.**
⑥	GATE VALVE PER SMW-4
⑦	TRACER WIRE OUTSIDE VALVE CAN PER SMW-15

PAINT SCHEDULE

CONDITION	COLOR
MAIN LINE VALVE CAPS	SAIL BLUE (RUST-OLEUM #7724)
FLUSHOUT, AIR RELIEF DETECTOR, CHECK, AND LARGE METER VALVE CAPS	
NORMALLY CLOSED VALVE CAPS	RED (RUST-OLEUM #964)
ZONE VALVE CAPS	YELLOW (RUST-OLEUM #944)
FIRE HYDRANT VALVE CAPS	
URBAN TREATED RUNOFF	PURPLE (RUST-OLEUM #)

PERMANENT PAINT No. PENDING

- * WHEN VALVE BOX IS TO BE PLACED IN A NON-PAVED AREA, CONTRACTOR SHALL CONSTRUCT A 2' x 2' x 4" A.C. PAD AROUND THE VALVE CAN.
- ** RISER OR BLOCKS SHALL NOT BEAR ON VALVE.
- *** DIP EXTENSION SHALL EXTEND UP TO 3" BELOW FINISHED SURFACE.

DATE	NO.	REVISION / NOTE	BY
12-24-2014	-	ORIGINAL DRAWING ISSUED	AJS



**ADJUSTABLE VALVE BOX WITH CAP
IN AC PAVEMENT**

APPROVED BY:

Jessica Arden
Water Resources Engineer

DATE: 2/2015

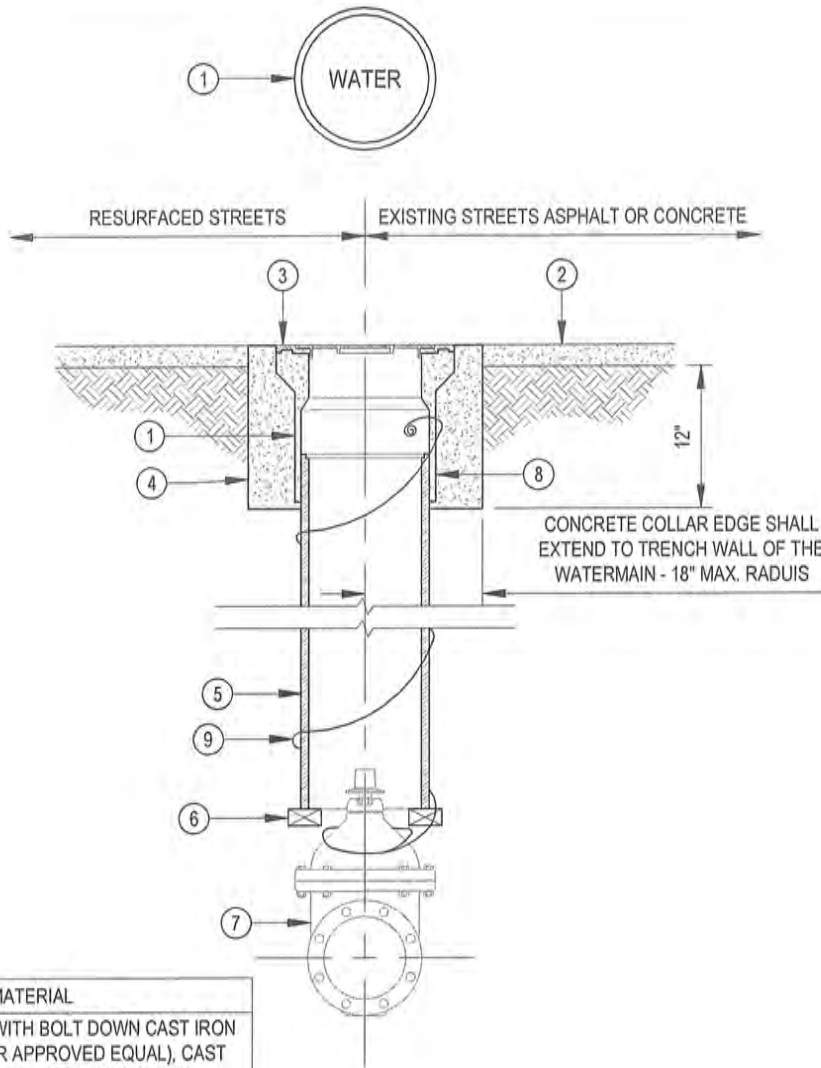
DES: AJS
D: SEM
T:
C:

SCALE: NONE

DATE: 12-24-2014
APP:

SHEET NO. 1 OF 2

SMW-8



ITEM	MATERIAL
①	TRAFFIC VALVE BOX WITH BOLT DOWN CAST IRON LID (CHRISTY G05T, OR APPROVED EQUAL), CAST WITH THE WORD "WATER", AND PAINTED PER PAINT SCHEDULE
②	PARKWAY GRADE OR P.C.C. PAVED SURFACE.*
③	LOCKING GRADE RINGS (1", 1-1/2", 2")
④	CONCRETE COLLAR
⑤	8" DIP EXTENSION***
⑥	2" x 4" x 12" REDWOOD BLOCK.**
⑦	GATE VALVE PER SMW-4
⑧	PROVIDE FELT EXPANSION JOINT BETWEEN VALVE BOX AND CONCRETE COLLAR
⑨	TRACER WIRE OUTSIDE VALVE CAN PER SMW-15

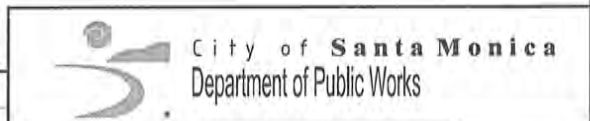
PAINT SCHEDULE

CONDITION	COLOR
MAIN LINE VALVE CAPS	SAIL BLUE (RUST-OLEUM #7724)
FLUSHOUT, AIR RELIEF DETECTOR, CHECK, AND LARGE METER VALVE CAPS	
NORMALLY CLOSED VALVE CAPS	
ZONE VALVE CAPS	RED (RUST-OLEUM #964)
FIRE HYDRANT VALVE CAPS	YELLOW (RUST-OLEUM #944)
URBAN TREATED RUNOFF	PURPLE (RUST-OLEUM #)

PERMANANT PAINT No. PENDING

* WHEN VALVE BOX IS TO BE PLACED IN A NON-PAVED AREA, CONTRACTOR SHALL CONSTRUCT A 2' x 2' x 4" A.C. PAD AROUND THE VALVE CAN.
 ** RISER OR BLOCKS SHALL NOT BEAR ON VALVE.
 *** DIP EXTENSION SHALL EXTEND UP TO 3" BELOW FINISHED SURFACE.

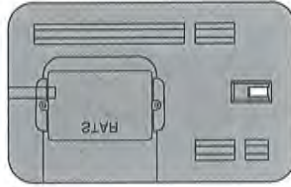
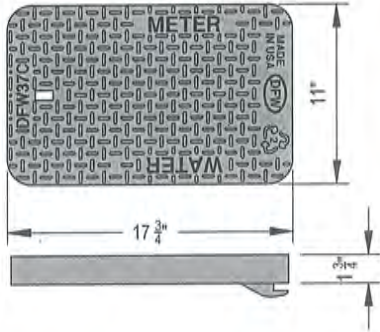
DATE	NO.	REVISION / NOTE	BY
12-24-2014	-	ORIGINAL DRAWING ISSUED	AJS



**ADJUSTABLE VALVE BOX WITH CAP
IN P.C.C. PAVEMENT**

APPROVED BY:	DATE: 2/20/15	DES: AJS D: SEM T: C:	SCALE: NONE DATE: 12-24-2014 APP:	SHEET NO. 2 OF 2 SMW-8
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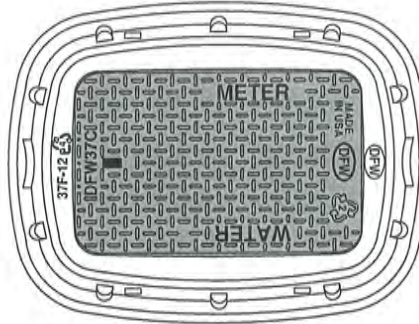
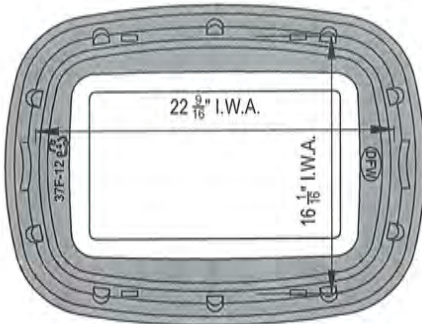
Jessica Arden
Water Resources Engineer



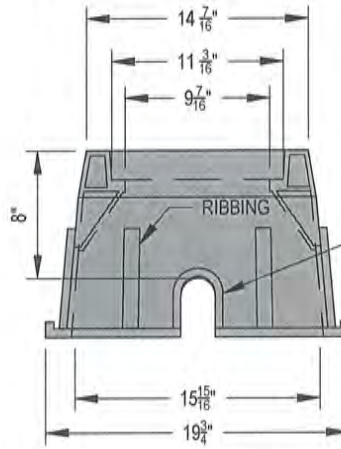
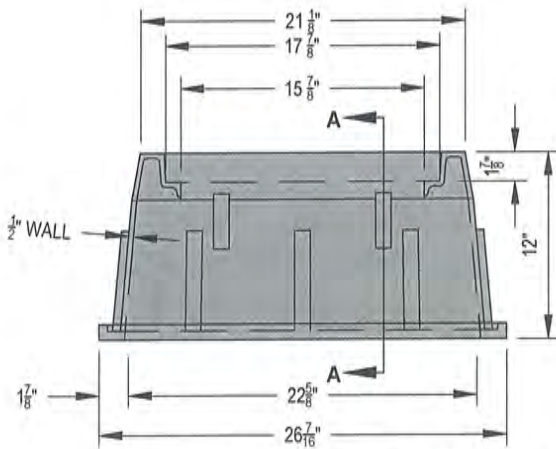
DFW37C-4A STAR-LID

BODY KEY	
F	FLARED SERIES
H	HEAVY WALL -- 1/2"
4	GRAY COLOR -- PMS 414C
SMON	SANTA MONICA PIPE SLOTS

LID KEY	
4	GRAY COLOR -- PMS 414C
A	AMR SLIDE MOUNT
STAR	ACLARA STAR ENDPOINT



DFW37FH4 SMON-12-4A STAR



DFW37FH4 SMON-12-BODY

WALL TO LID LIP
KISS OFF FOR
EXTRA STRENGTH
TYP. (4) PLCS.

VERT. RIBBING
1/2" WALL TYP.
(10) PLCS.

SECTION A-A

NOTES

- 1) DIM'S ± 1/8 U.N.O.
- 2) LID MATERIAL: H.D.P.E.
- 3) BODY MATERIAL: L.L.P.E.
- 4) WALL THICKNESS: 1/2" ± 5%
- 5) I.W.A. = INSIDE WORK AREA

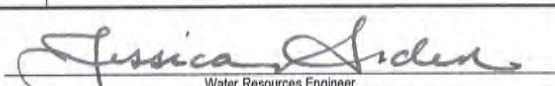
CONFIRM METER BOX AND LID WITH
WATER RESOURCES METER SHOP AT
(310) 458-8531 PRIOR TO PURCHASE.

DFW PLASTICS, INC. ENGAGES IN ONGOING RESEARCH AND DEVELOPMENT TO IMPROVE AND ENHANCE ITS PRODUCTS. THEREFORE, DFW PLASTICS, INC. RESERVES THE RIGHT TO CHANGE PRODUCT OR SYSTEM SPECIFICATIONS WITHOUT NOTICE.



City of Santa Monica
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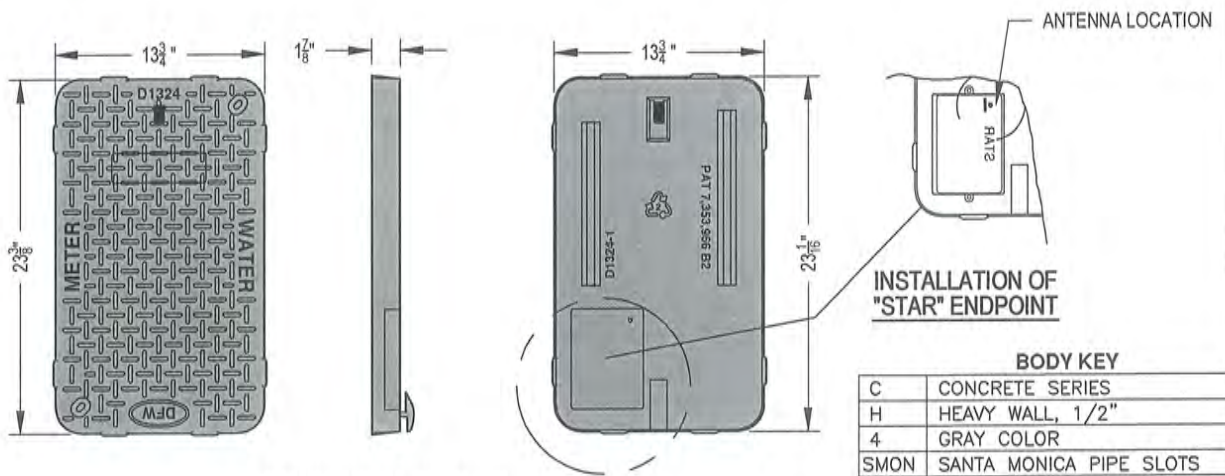
METER BOX DETAIL
FOR 1" METER

DATE	NO.	REVISION / NOTE	BY
12-24-2014	-	ORIGINAL DRAWING ISSUED	AJS
APPROVED BY:		DATE: 2/20/15	
 Water Resources Engineer		DES: AJS D: SEM T: C:	

SCALE: NONE
DATE: 12-24-2014
APP:

SHEET NO. 1 OF 4

SMW-9

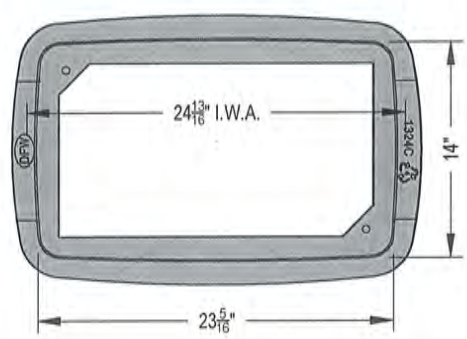


BODY KEY

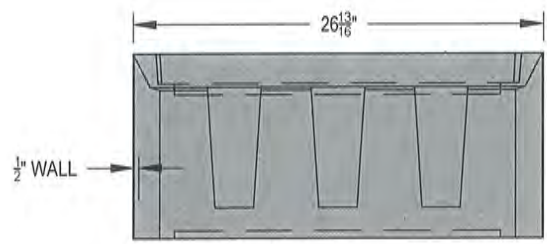
C	CONCRETE SERIES
H	HEAVY WALL, 1/2"
4	GRAY COLOR
SMON	SANTA MONICA PIPE SLOTS

LID KEY

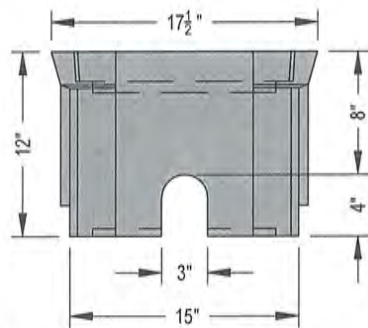
4	GRAY COLOR
A	AMR SLIDE MOUNT
STAR	STAR/ACLARA ENDPOINT



DFW1324CH4 SMON-12-4A STAR



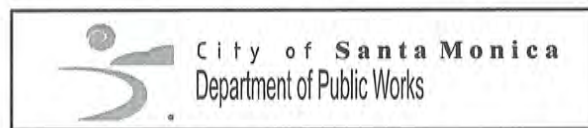
DFW1324CH4 SMON-12-BODY



- NOTES**
- 1) DIM'S ± 1/8 U.N.O.
 - 2) LID MATERIAL: HDPE
 - 3) BODY MATERIAL: LLDPE
 - 4) WALL THICKNESS: 1/2" ± 5%
 - 5) I.W.A. = INSIDE WORK AREA

CONFIRM METER BOX AND LID WITH WATER RESOURCES METER SHOP AT (310) 458-8531 PRIOR TO PURCHASE.

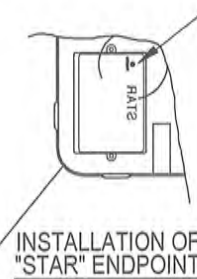
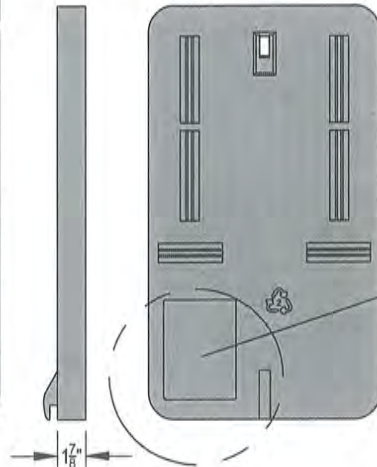
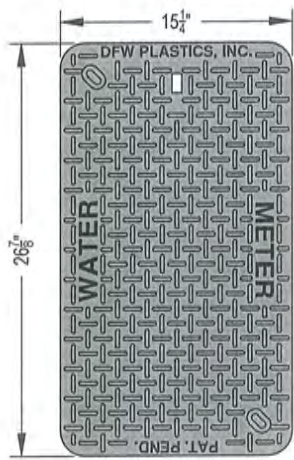
DFW PLASTICS, INC. ENGAGES IN ONGOING RESEARCH AND DEVELOPMENT TO IMPROVE AND ENHANCE ITS PRODUCTS. THEREFORE, DFW PLASTICS, INC. RESERVES THE RIGHT TO CHANGE PRODUCT OR SYSTEM SPECIFICATIONS WITHOUT NOTICE.



DATE	NO.	REVISION / NOTE	BY
12-24-2014	-	ORIGINAL DRAWING ISSUED	AJS

**METER BOX DETAIL
FOR 1-1/2" METER**

DES: AJS D: SEM T: C:	SCALE: NONE DATE: 12-24-2014 APP:	SHEET NO. 2 OF 4 SMW-9
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ANTENNA LOCATION

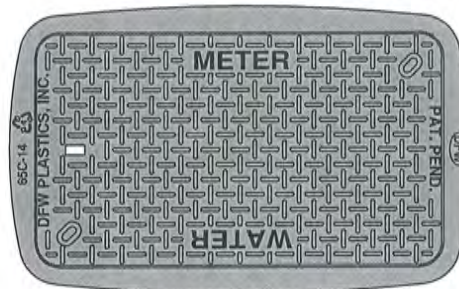
BODY KEY

C	CONCRETE SERIES
H	HEAVY WALL, 1/2"
4	GRAY COLOR
SMON	SANTA MONICA PIPE SLOTS

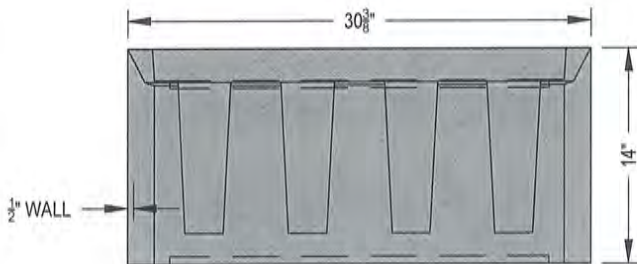
LID KEY

4	GRAY COLOR
A	AMR SLIDE MOUNT
STAR	STAR/ACLARA ENDPOINT

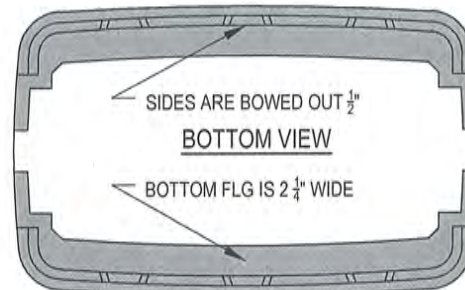
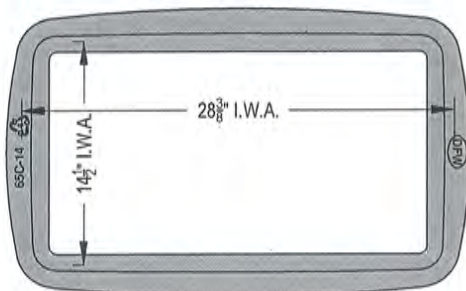
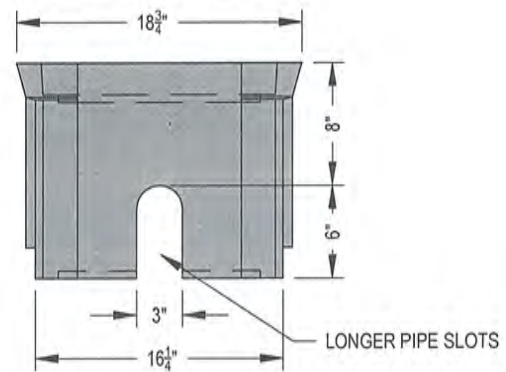
DFW65C-4A STAR-LID



DFW65CH4 SMON-14-4A STAR



DFW65CH4 SMON-14-BODY



- NOTES**
- 1) DIM'S ± 1/8 U.N.O.
 - 2) LID MATERIAL: HDPE
 - 3) BODY MATERIAL: LLDPE
 - 4) WALL THICKNESS: 1/2" ± 5%
 - 5) I.W.A. = INSIDE WORK AREA

CONFIRM METER BOX AND LID WITH WATER RESOURCES METER SHOP AT (310) 458-8531 PRIOR TO PURCHASE.

DFW PLASTICS, INC. ENGAGES IN ONGOING RESEARCH AND DEVELOPMENT TO IMPROVE AND ENHANCE ITS PRODUCTS. THEREFORE, DFW PLASTICS, INC. RESERVES THE RIGHT TO CHANGE PRODUCT OR SYSTEM SPECIFICATIONS WITHOUT NOTICE.



City of **Santa Monica**
Department of Public Works

**METER BOX DETAIL
FOR 2" METER**

DATE	NO.	REVISION / NOTE	BY
12-24-2014	-	ORIGINAL DRAWING ISSUED	AJS

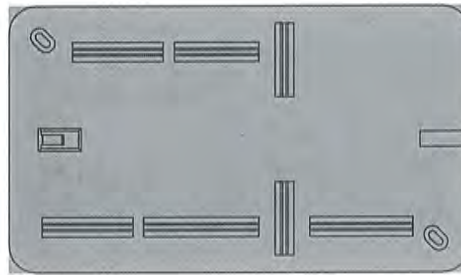
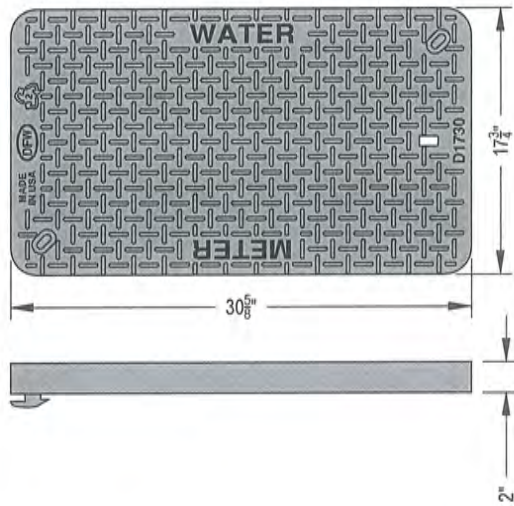
DES: AJS
D: SEM
T:
C:

SCALE: NONE

DATE: 12-24-2014
APP: *[Signature]*

SHEET NO. 3 OF 4

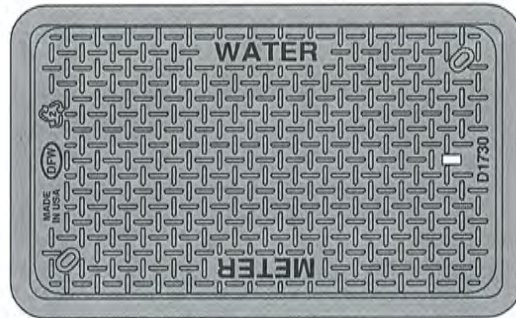
SMW-9



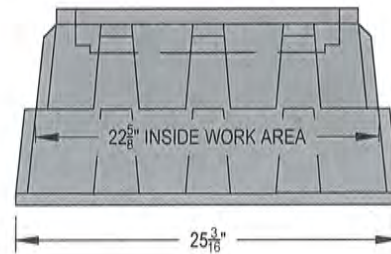
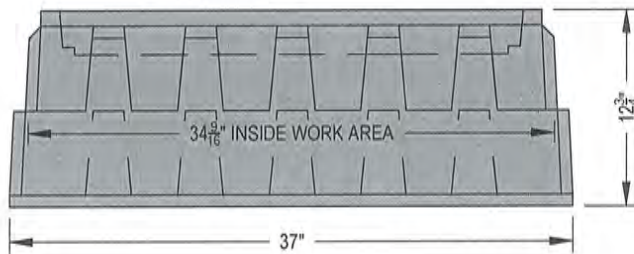
DFW1730C-4-LID

LID KEY

4	GRAY COLOR
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DFW1730FH4-12-4



DFW1730FH4-12-BODY

NOTES

- 1) DIM'S ± 1/8" U.N.O.
- 2) LID MATERIAL: HDPE
- 3) BODY MATERIAL: LLDPE
- 4) WALL THICKNESS: 1/2" ± 5%
- 5) I.W.A. = INSIDE WORK AREA

CONFIRM METER BOX AND LID WITH
WATER RESOURCES METER SHOP AT
(310) 458-8531 PRIOR TO PURCHASE.

DFW PLASTICS, INC. ENGAGES IN ONGOING RESEARCH AND DEVELOPMENT TO IMPROVE AND ENHANCE ITS PRODUCTS. THEREFORE, DFW PLASTICS, INC. RESERVES THE RIGHT TO CHANGE PRODUCT OR SYSTEM SPECIFICATIONS WITHOUT NOTICE.

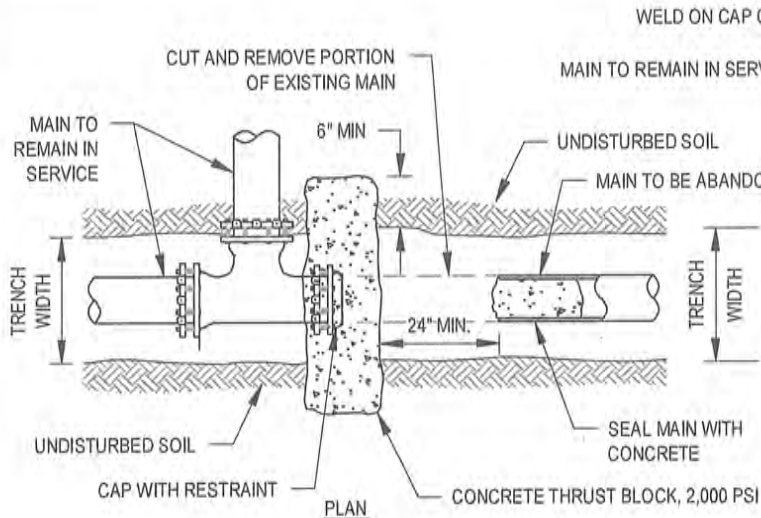


City of **Santa Monica**
Department of Public Works

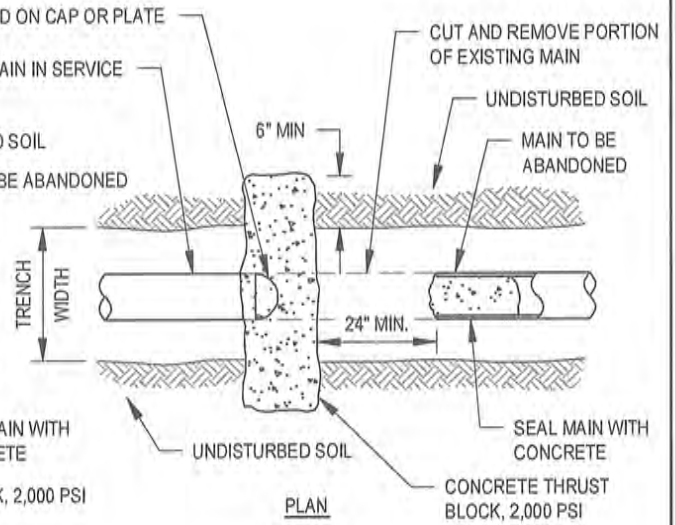
METER BOX DETAIL
FOR MANIFOLD ASSEMBLY

DATE	NO.	REVISION / NOTE	BY
12-24-2014	-	ORIGINAL DRAWING ISSUED	AJS

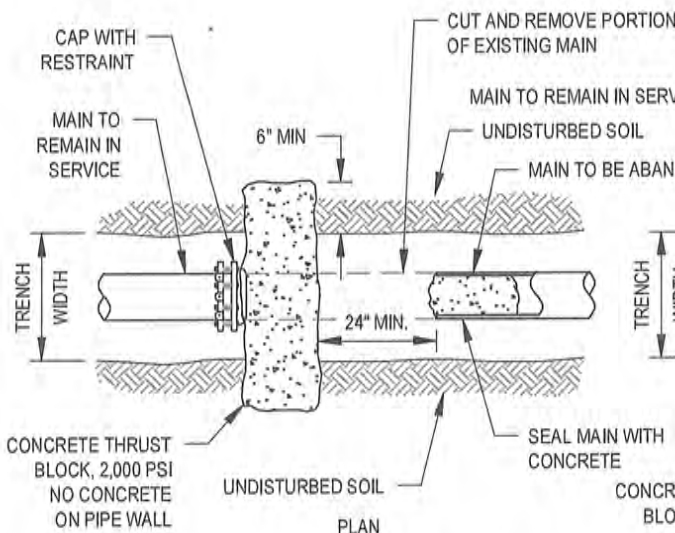
DES: AJS D: SEM T: C:	SCALE: NONE DATE: 12-24-2014 APP: <i>[Signature]</i>	SHEET NO. 4 OF 4 SMW-9
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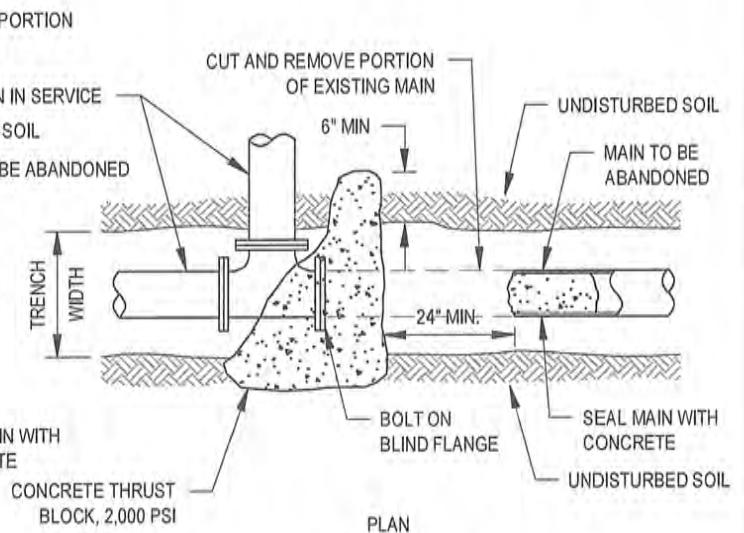
CASE I
EXISTING CAP END FITTING OR VALVE



CASE II
EXISTING STEEL MAIN



CASE III
EXISTING ASBESTOS-CEMENT OR CAST-IRON MAIN



CASE IV
EXISTING FLANGED FITTING OR VALVE

NOTES:

1. INTERFERING PORTIONS OF PIPE SHALL BE REMOVED.
2. ABANDONED VALVES SHALL BE LEFT IN THE CLOSED POSITION.
3. ABANDONED VALVE BOXES, SLEEVES AND COVERS, FIRE HYDRANT HEADS AND EXTENSIONS SHALL BE REMOVED TO 8-INCH BELOW GRADE.
4. PROVIDE BLOWOFF AT CAP PER SMW-21 AS DIRECTED CITY.

DATE	NO.	REVISION / NOTE	BY
12-24-2014	-	ORIGINAL DRAWING ISSUED	AJS



CUTTING AND PLUGGING WATER MAINS

APPROVED BY:

Jessica Anderson
Water Resources Engineer

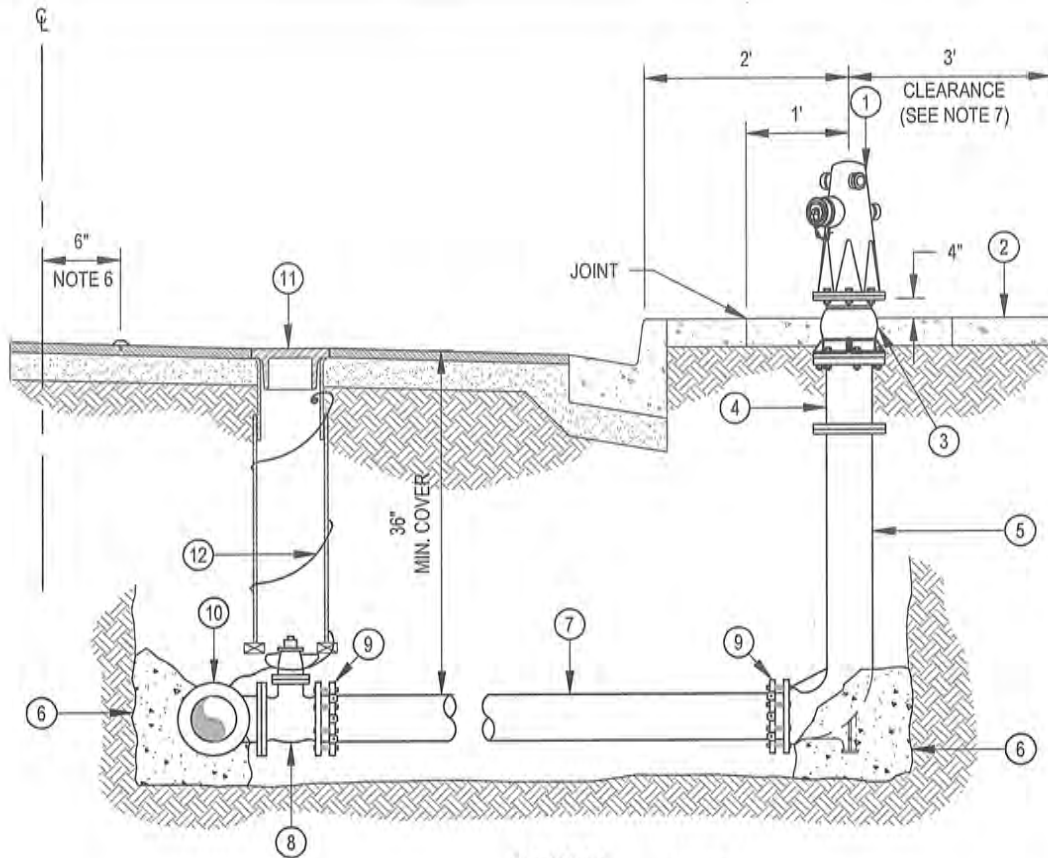
DATE: 2/20/15

DES: AJS
D: SEM
T:
C:

SCALE: NONE
DATE: 12-24-2014
APP:

SHEET NO. 1 OF 1

SMW-10



ELEVATION

NOTES:

1. TOP FLANGE OF BREAK-OFF CHECK VALVE SHALL BE SET WITHIN THE CONCRETE PAD. BREAK OFF GROOVE, MINIMUM OF ONE, SHALL BE PLACED ABOVE THE PAD.
2. FIRE HYDRANT FLANGE BOLTS SHALL BE A307 ZINC-PLATED BOLTS INSTALLED WITH NUTS ON TOP OF THE FLANGE. BREAK AWAY BOLTS SHALL BE USED.
3. FIRE HYDRANT AND RISER CAP TO BE PAINTED WITH SINCLAIR POLE YELLOW, E-6-23D GLOSS ENAMLE.
4. INSTALL BURY SPOOL WHEN NECESSARY TO MEET REQUIRED GRADE.
5. ALL FIRE HYDRANTS THAT ARE REMOVED MUST BE DELIVERED TO THE WATER DIVISION AT 2500 MICHIGAN AVE. UNDAMAGED.
6. INSTALL BLUE REFLECTOR 6-INCH OFF STREET CENTERLINE ON HYDRANT SIDE.
7. PER CALIFORNIA FIRE CODE, CLEARANCE AROUND FIRE HYDRANT SHALL BE A 3-FT RADIUS.

ITEM	MATERIAL
1	6" FIRE HYDRANT WITH 2.5" x 4" OUTLETS
2	4' x 4' x 8" CONCRETE SPLASH PAD
3	6" BREAK-OFF CHECK VALVE
4	6" DUCTILE IRON TYTON PIPE SPOOL (SIZE TO BE DETERMINED IN THE FIELD)
5	WET BARREL HYDRANT BURYS (MJ x FLG) SIZE TO FIT
6	CONCRETE THRUST BLOCK PER SMW-6
7	6" DUCTILE IRON PIPE CL 350
8	6" RESILIENT WEDGE GATE VALVE (FLG x MJ)
9	RESTRAINED MECHANICAL JOINT
10	SIZE x 6" DUCTILE IRON TEE WITH 6" FLANGED BRANCH
11	VALVE BOX AND CAP PER SMW-8
12	TRACER WIRE PER SMW-15

DATE	NO.	REVISION / NOTE	BY
12-24-2014	-	ORIGINAL DRAWING ISSUED	AJS



FIRE HYDRANT ASSEMBLY

APPROVED BY: *Jessica Arden*
Water Resources Engineer

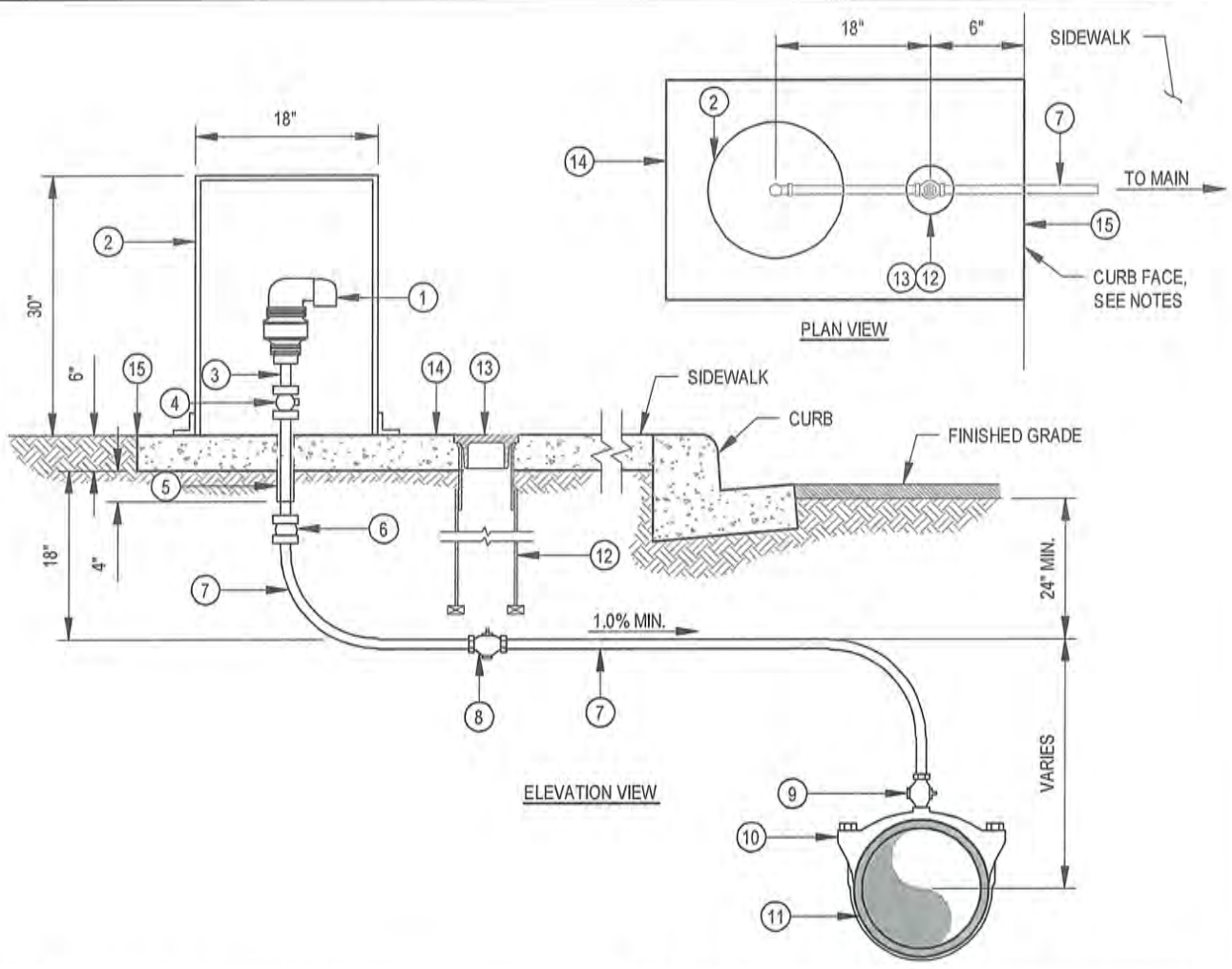
DATE: 2/20/15

DES: AJS
D: SEM
T:
C:

SCALE: NONE
DATE: 12-24-2014
APP:

SHEET NO. 1 OF 1

SMW-11



ITEM	MATERIAL
①	AIR RELEASE AND VACUUM VALVE (A.R.I.)
②	POLYETHYLENE AIR RELEASE VALVE ENCLOSURE, NOTE 1
③	2" x 1-1/2" BRASS NIPPLE
④	2" BALL VALVE F.I.P.T. x F.I.P.T.
⑤	2" x 12" BRASS NIPPLE WITHIN 2" x 1/2" BLACK FOAM SLEEVE
⑥	2" BRASS COUPLING, F.I.P.T. x COMPRESSION
⑦	2" COPPER PIPE TYPE "K", SOFT, ENCASED IN POLY WRAP C
⑧	2" BALL VALVE WITH TEE HEAD, C x C SOLDER JOINTS

ITEM	MATERIAL
⑨	2" BRONZE CORPORATION STOP, M.I.P.T. x COMP.
⑩	(SIZE) x 2" F.I.P.T SERVICE SADDLE
⑪	WATER MAIN
⑫	8" DUCTILE IRON PIPE EXTENSION
⑬	VALVE BOX PER SMW-8
⑭	42" x 30" x 6" THICK CONCRETE SLAB
⑮	COLD JOINT STRIP

NOTES:

- INSTALL ENCLOSURE PER MANUFACTURER RECOMMENDATIONS
- WHERE SIDEWALK EXISTS, AIR AND VACUUM VALVE ENCLOSURE TO BE PLACED AT BACK OF CURB FACE.
- IF NO SIDEWALK, AIR AND VACUUM VALVE ENCLOSURE TO BE PLACED AT 24" FROM ADJACENT PROPERTY LINE.
- ALL SERVICE LATERALS SHALL BE WRAPPED WITH POLYETHYLENE ENCASEMENT (NORTH TOWN POLY WRAP - C, OR APPROVED EQUAL).

DATE	NO.	REVISION / NOTE	BY
12-24-2014	-	ORIGINAL DRAWING ISSUED	AJS



1" OR 2" AIR AND VACUUM RELEASE

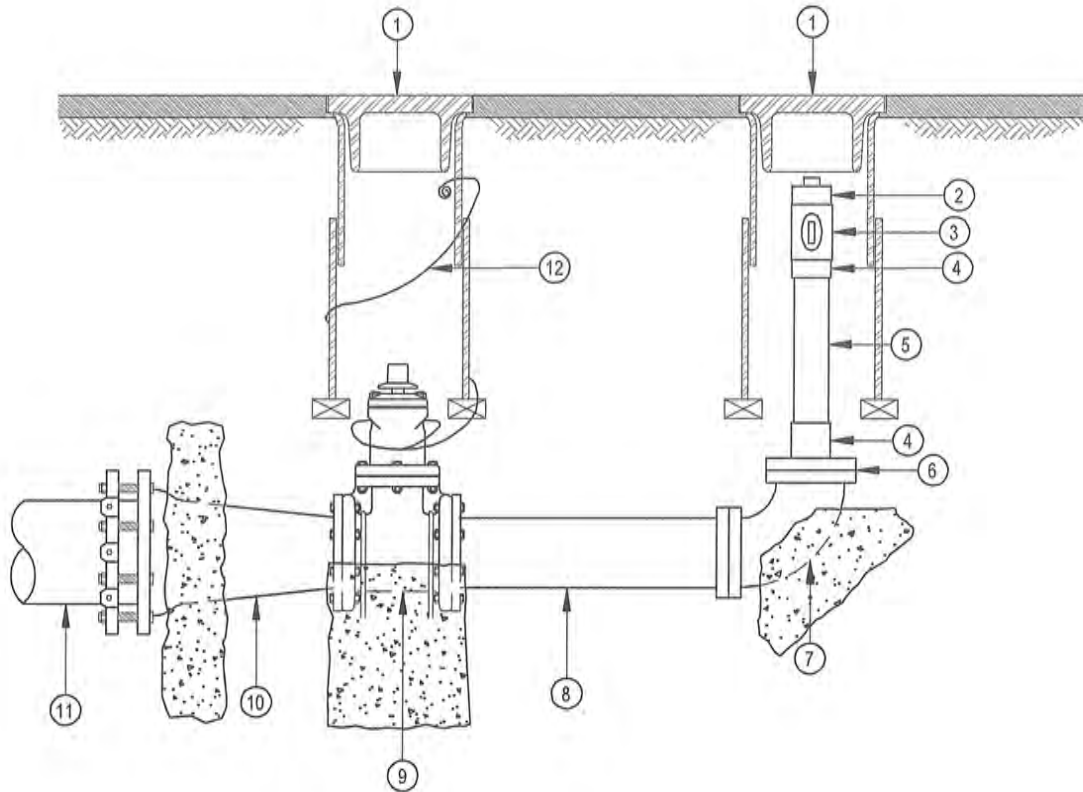
APPROVED BY: *Jessica Arden*
Water Resources Engineer

DATE: 2/20/15

DES: AJS
D: SEM
T:
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SCALE: NONE
DATE: 12-24-2014
APP:

SHEET NO. 1 OF 1

SMW-12



ITEM	MATERIAL
①	VALVE BOX WITH CAP PER SMW-8
②	2" BRASS. PLUG
③	2" CURB STOP F.I.P.T. x F.I.P.T.
④	2" COPPER x M.I.P.T.
⑤	2" COPPER PIPE TYPE K HARD
⑥	4" FLANGE x 2" F.I.P.T OUTLET

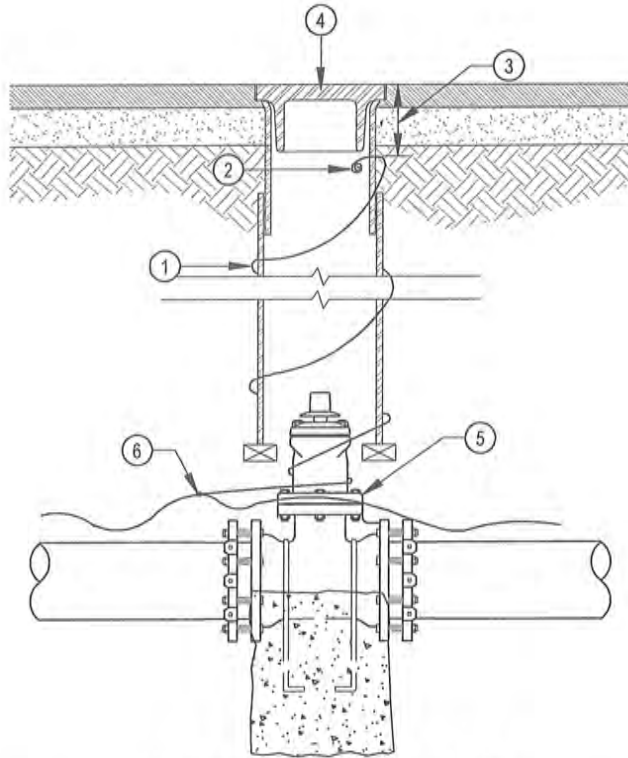
ITEM	MATERIAL
⑦	4" 90° ELBOW (FLG x FLG) WITH THRUST BLOCK PER SMW-6
⑧	4" x 36" DUCTILE IRON PIPE SPOOL (FLG x FLG),
⑨	4" RESILIENT WEDGE GATE VALVE (FLG x FLG) PER SMW-4
⑩	SIZE" x 4" REDUCER (MJ x FLG) WITH RESTRAINTS
⑪	NEW WATER MAIN, SIZE PER PLAN
⑫	TRACER WIRE PER SMW-15

DATE	NO.	REVISION / NOTE	BY
12-24-2014	-	ORIGINAL DRAWING ISSUED	AJS



BLOW-OFF ASSEMBLY

APPROVED BY:	DATE: 2/20/15	DES: AJS D: SEM T: C:	SCALE: NONE DATE: 12-24-2014 APP:	SHEET NO. 1 OF 1
				SMW-13



TRACER WIRE ACCESS PORT (CP BOX) DETAIL

NOTES:

1. TRACER WIRE TO RUN CONTINUOUSLY ALONG THE ENTIRE LENGTH OF WATER MAINS. WIRE SHALL BE SECURED TO THE PIPE AND MAINTAINED ON PIPE CENTERLINE DURING TRENCH BACKFILL. SEE SMW-1.
2. TRACER WIRE MAY TERMINATE WITHIN METER BOX, BLOWOFF BOX VALVE BOX, OR AIR VALVE. TRACER WIRE MAY TERMINATE IN A CP TEST BOX ONLY IF NO OTHER APPURTENANCE EXISTS WITHIN THE REQUIRED 1000-FT INTERVAL. ALL BURIED WIRES THAT REQUIRE TRENCHING TO A TEST BOX LOCATION SHALL BE INSTALLED, WITHOUT SPLICE, IN A CONDUIT IN THE TRENCH AT A MINIMUM DEPTH OF 24-INCHES.
3. WIRE SPLICE CONNECTORS SHALL BE SILICONE FILLED TYPE.
4. FOR PIPE BEDDING AND TRENCH BACKFILL SEE SMW-1.

ITEM	MATERIAL/DESCRIPTION
①	SPIRAL TRACE WIRE UP ON THE OUTSIDE OF THE VALVE BOX
②	COIL ENOUGH WIRE TO EXTEND 12" ABOVE GROUND
③	DRILL A $\frac{1}{8}$ " HOLE 4-1/2" FROM THE TOP OF THE CC VALVE BOX
④	VALVE BOX WITH CAP PER SMW-8
⑤	GATE VALVE PER SMW-4
⑥	CONNECT WITH DIRECT BURY LUG

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TRACER WIRE FOR PVC AND
TRACER WIRE ACCESS AT VALVE BOX

APPROVED BY:

Jessica Holden
Water Resources Engineer

DATE: 3/2015

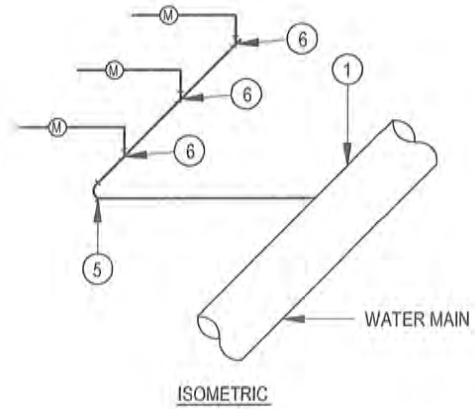
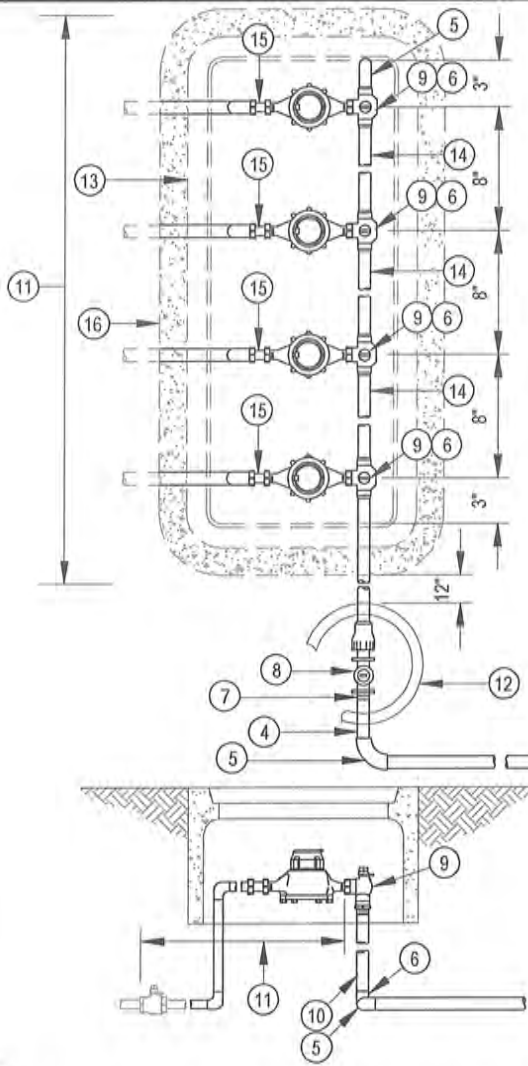
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SCALE: NONE

DATE: 12-24-2014
APP:

SHEET NO. 1 OF 1

SMW-14



PLAN VIEW

ELEVATION VIEW

NOTES:

1. ALL METER BOXES MUST BE SET TRUE, SQUARE, AND LEVEL WITH CURB AND SIDEWALK.
2. FOR 2" COPPER BRANCH SERVICE, PROVIDE 4 - 1" STUBS PER METER BOX.

ITEM	MATERIAL
①	BRONZE DOUBLE STRAP SERVICE SADDLE, 2" F.I.P.T. OUTLET (FOR D.I.P. PIPE)
②	STAINLESS STEEL DOUBLE STRAP WITH BRASS TOP SERVICE SADDLE, 2" F. I.P.T. OUTLET (FOR PVC PIPE)
③	2" CORPORATION STOP, M.I.P.T x COMPRESSION (CTS)
④	2" COPPER PIPE, TYPE K, SOFT/ANNEALED, ENCASED IN POLYWARP C
⑤	2" 90° COPPER ELBOW, C x C SOLDER JOINTS
⑥	2" x 2" x 1" TEE, C x C x C SOLDER JOINTS. SEE NOTE 2
⑦	C x M.I.P.T. ADAPTOR

ITEM	MATERIAL
⑧	2" BRONZE CURB STOP, F.I.P.T. x COMPRESSION (CTS)
⑨	1" BALL ANGLE METER VALVE, F.I.P.T. x METER SWIVEL NUT
⑩	1" COPPER NIPPLE, C X M.I.P.T.
⑪	REFER TO SMW-5 FOR METER PIPING AND VALVES
⑫	VALVE BOX PER SMW-8
⑬	METER VAULT PER SMW-9
⑭	1" COPPER PIPE, TYPE K, SOFT/ANNEALED, ENCASED IN POLYWARP C
⑮	STRAIGHT METER COUPLING, SWIVEL NUT x M.I.P.T. -1 1/2" LONG
⑯	3" CONCRETE COLLAR AROUND METER BOX

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2" MANIFOLD ASSEMBLY

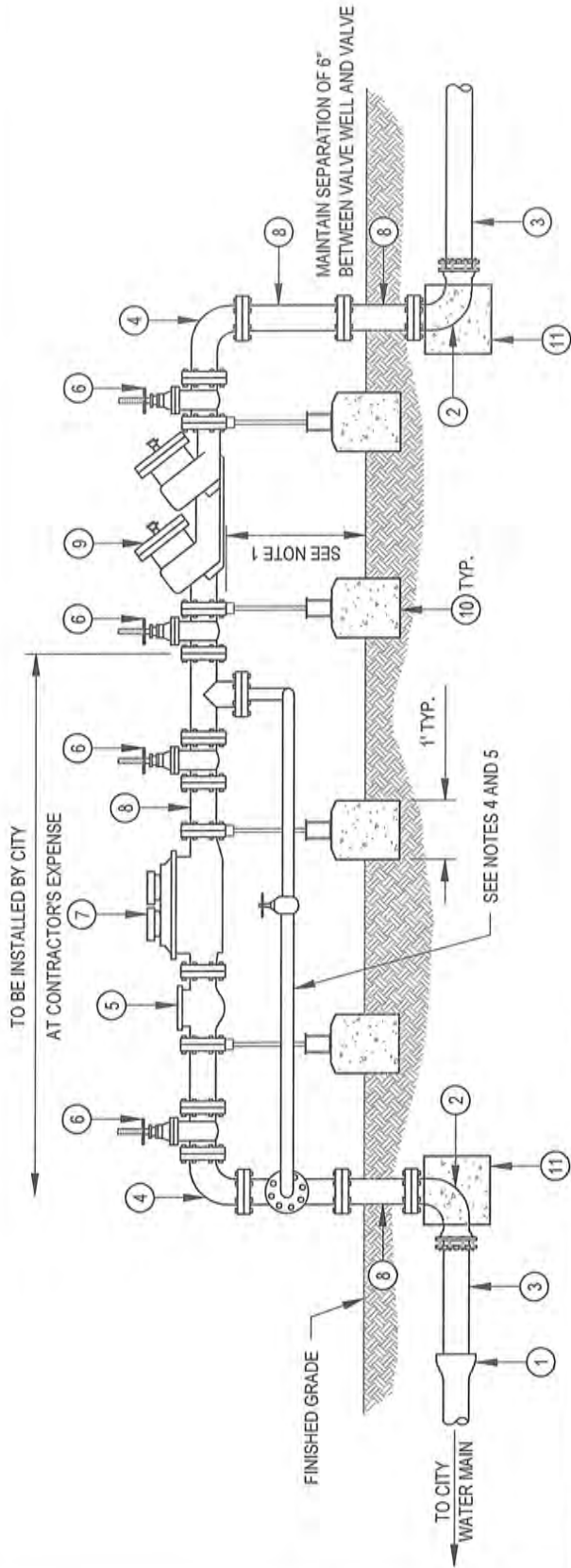
APPROVED BY: *Jessica Aiden*
 Water Resources Engineer

DATE: 3/20/15

DES: AJS
 D: SEM
 T:
 C:

SCALE: NONE
 DATE: 12-24-2014
 APP:

SHEET NO. 1 OF 1
SMW-15



ELEVATION VIEW

NOTES:

1. WATER SERVICE SHALL BE INSTALLED WITH 12" MINIMUM TO 30" MAXIMUM CLEARANCE ABOVE NATURAL FINISHED GRADE AND SHALL BE READILY ACCESSIBLE FOR INLINE SERVICE AND TEST (REF. TO CDHS, SAFE PLUMBING PRACTICES).
2. THE APPROVED BACKFLOW PREVENTION ASSEMBLY SHALL BE FURNISHED BY THE MANUFACTURE AS A COMPLETE ASSEMBLY, METER TO BE FURNISHED BY THE CITY.
3. BY-PASS LINE VARIES IN SIZE (1-1/2" TO 4")
4. BY PASS LINE MAY REQUIRE 45° BENDS OUT TO SIDE TO AVOID SUPPORTS

ITEM	MATERIAL
1	BELL/SPIGOT, TYPICAL
2	90° BEND (MJ x FLG) WITH RESTRAINED MECH. JOINT
3	DUCTILE IRON, CL 350
4	90° BEND (FLG x FLG)
5	STRAINER
6	OS&Y GATE VALVE
7	WATER METER
8	DUCTILE IRON SPOOL (FLG x FLG)
9	BACKFLOW PREVENTION ASSEMBLY - DOUBLE CHECK VALVE
10	VALVE SUPPORT
11	THRUST BLOCK PER SMW-6

* A REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY WILL BE REQUIRED WHEN THE PROPERTY TO BE SERVED HAS AN AUXILIARY WATER SUPPLY AND/OR THE PROPERTY HAS A 40-FOOT VERTICAL PIPE OR 4 STORY OR HIGHER BUILDING. CONTACT THE WATER RESOURCE DIVISION CROSS CONNECTION PERSONNEL TO CONSULT AND CONFIRM THE REQUIRED BACKFLOW PREVENTION ASSEMBLY REQUIRED.

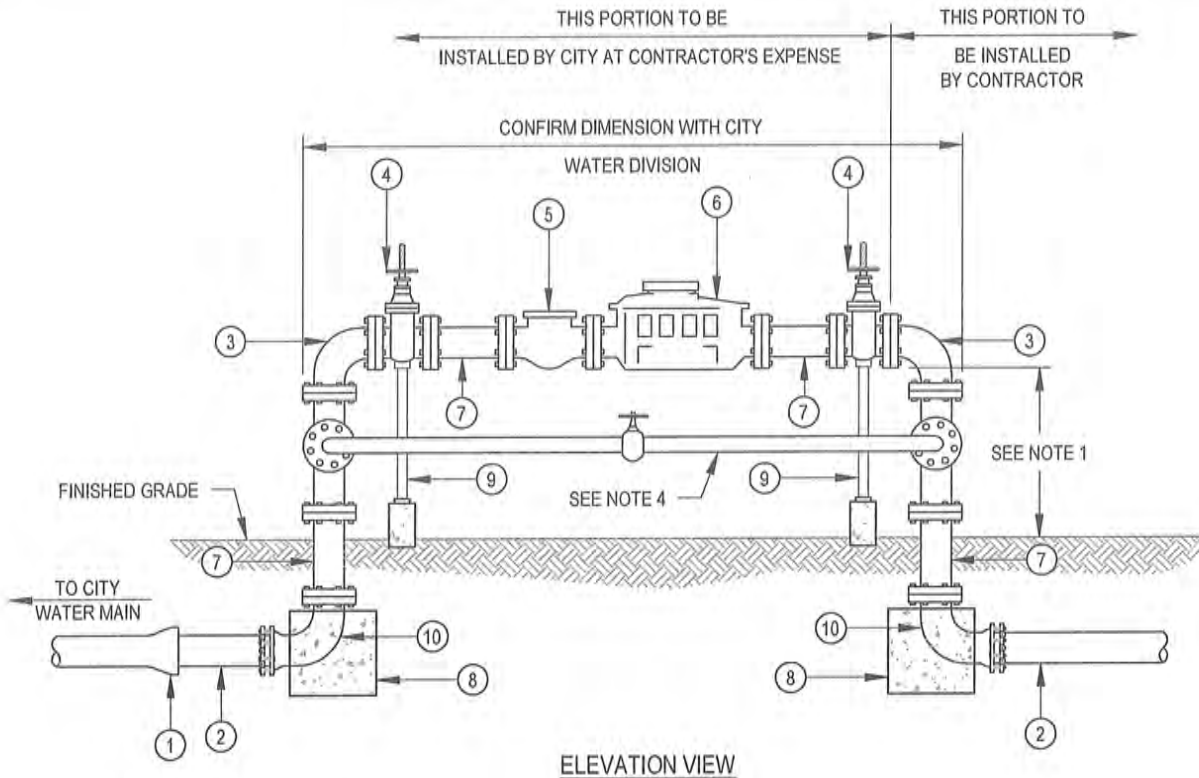


NEW 3" - 8"
WATER SERVICE INSTALLATION WITH BACKFLOW PREVENTER

SCALE: NONE
 DATE: 12-24-2014
 APP:
 SHEET NO. 1 OF 1
SMW-16

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APPROVED BY: *Jessica A. Holden*
 Water Resources Engineer



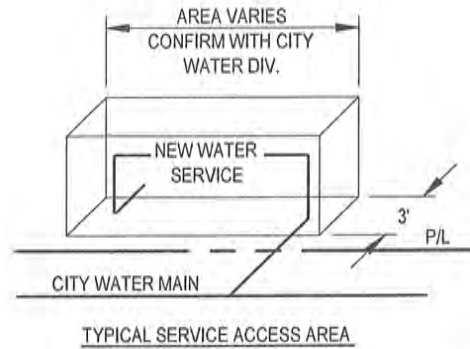
ELEVATION VIEW

NOTES:

1. WATER SERVICE SHALL BE INSTALLED WITH 12" MINIMUM TO 30" MAXIMUM CLEARANCE ABOVE NATURAL FINISHED GRADE AND SHALL BE READILY ACCESSIBLE FOR INLINE SERVICE AND TEST.
2. INSTALLATION SHOULD CONFORM TO L.A. COUNTY DHS, SAFE PLUMBING PRACTICES
3. WATER METER TO BE FURNISHED BY THE CITY.
4. BY-PASS LINE VARIES IN SIZE (1-1/2" TO 4")*

* THE PROPERTY TO BE SERVED MAY REQUIRE A BACKFLOW PREVENTER. CONTACT THE WATER RESOURCE DIVISION CROSS CONNECTION PERSONNEL TO CONSULT AND CONFIRM THE REQUIRED BACKFLOW PREVENTION ASSEMBLY REQUIRED.

ITEM	MATERIAL
①	BELL/SPIGOT, TYPICAL
②	DUCTILE IRON, TYPICAL, CL 350
③	90° BEND (FLG x FLG)
④	OS & Y GATE VALVE (FLG x FLG)
⑤	STRAINER
⑥	WATER METER
⑦	DUCTILE IRON SPOOL (FLG x FLG)
⑧	THRUST BLOCK PER SMW-6
⑨	PIPE SUPPORT
⑩	90° BEND (MJ x FLG)



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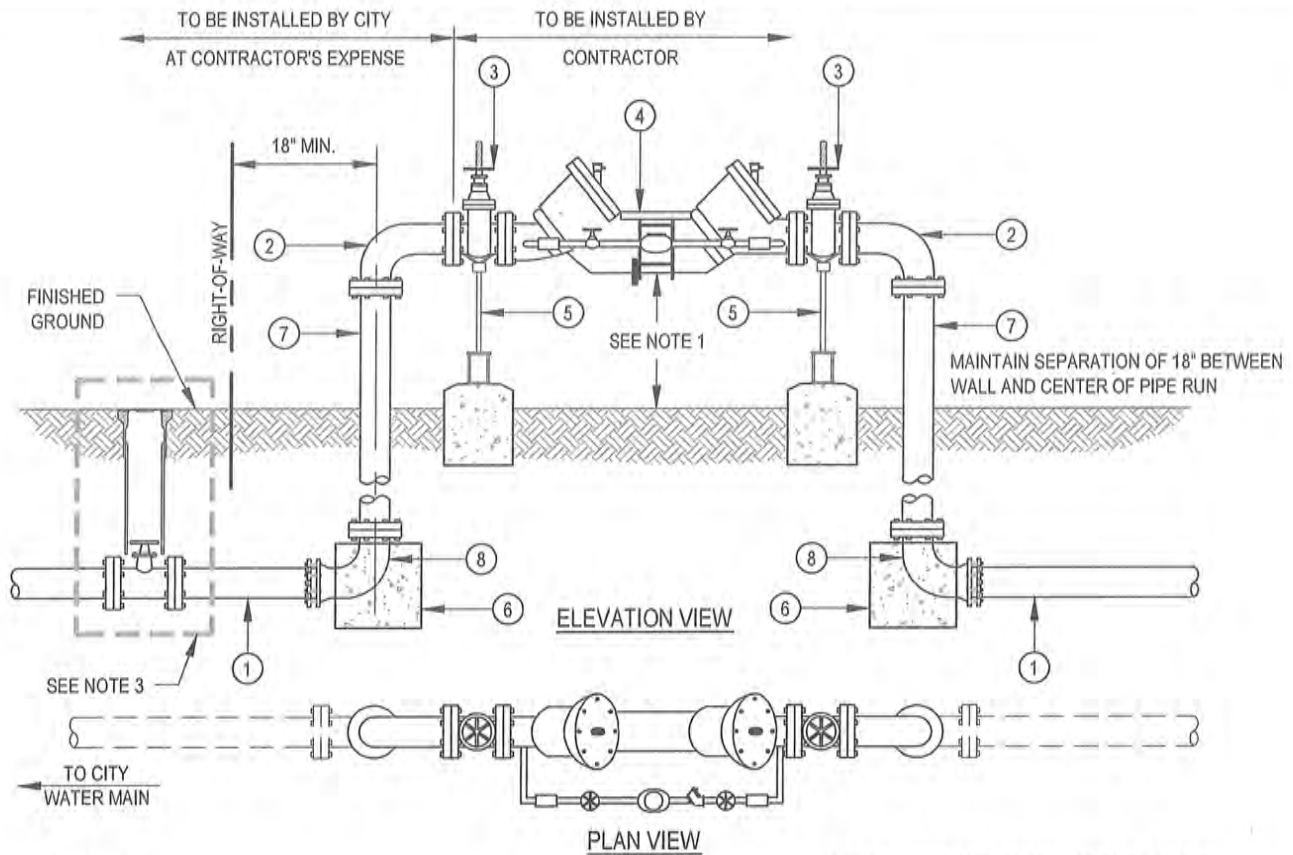
APPROVED BY: *Jessica Arden* DATE: 3/20/15
Water Resource Engineer



City of Santa Monica
Department of Public Works

3" AND ABOVE WATER SERVICE INSTALLATION

DES: AJS D: SEM T: C:	SCALE: NONE DATE: 12-24-2014 APP:	SHEET NO. 1 OF 1 SMW-17
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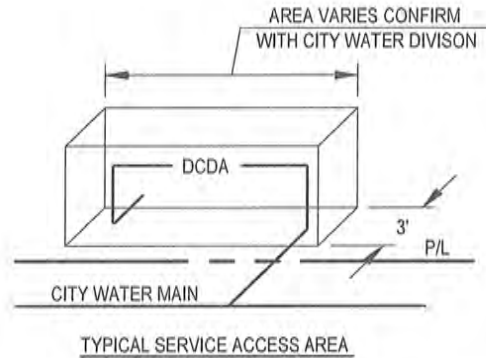


NOTES:

1. WATER SERVICE SHALL BE INSTALLED WITH 12" MINIMUM TO 30" MAXIMUM CLEARANCE ABOVE NATURAL FINISHED GRADE AND SHALL BE READILY ACCESSIBLE FOR INLINE SERVICE AND TEST (REF. TO L.A. COUNTY DHS, SAFE PLUMBING PRACTICES).
2. THE APPROVED BACKFLOW PREVENTION ASSEMBLY SHALL BE FURNISHED BY THE MANUFACTURE AS A COMPLETE ASSEMBLY, METER TO BE FURNISHED BY THE CITY.
3. FOR 2 INCH SERVICE INSTALLATIONS, INSTALL 2-INCH BALL VALVE AND VALVE BOX.
4. DCDA MUST INSTALLED AS CLOSE AS PRACTICAL TO THE PROPERTY LINE AND COMPLETELY WITHIN PRIVATE PROPERTY.

* PROPERTIES WITH ONSITE AUXILIARY WATER SUPPLIES OR CHEMICAL INJECTION FIRE SYSTEMS MAY REQUIRE A REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY. CONTACT THE WATER RESOURCE DIVISION CROSS CONNECTION PERSONNEL TO CONSULT AND CONFIRM THE REQUIRED BACKFLOW PREVENTION ASSEMBLY REQUIRED.

ITEM	MATERIAL
①	FERROUS METAL PIPE, TYPICAL
②	90° BEND (FLG x FLG)
③	OS & Y GATE VALVE (FLG x FLG)
④	APPROVED BACKFLOW PREVENTION ASSEMBLY - DOUBLE CHECK DETECTOR ASSEMBLY*
⑤	PIPE SUPPORT
⑥	THRUST BLOCK PER SMW-6
⑦	DUCTILE IRON SPOOL (FLG X FLG)
⑧	90° DUCTILE IRON BEND (MJ x FLG).



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APPROVED BY: *Justicia Solen*
Water Resources Engineer

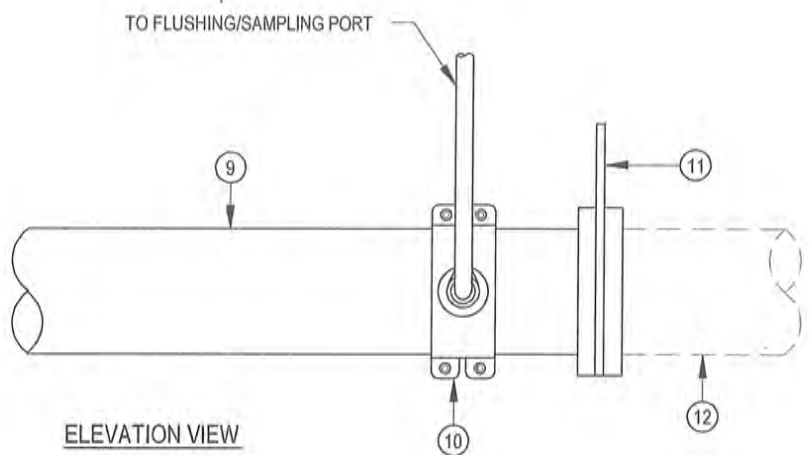
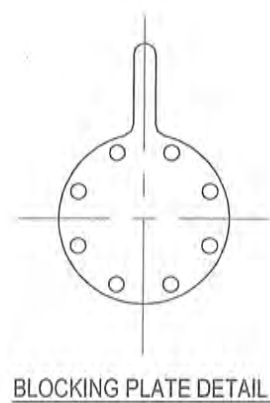
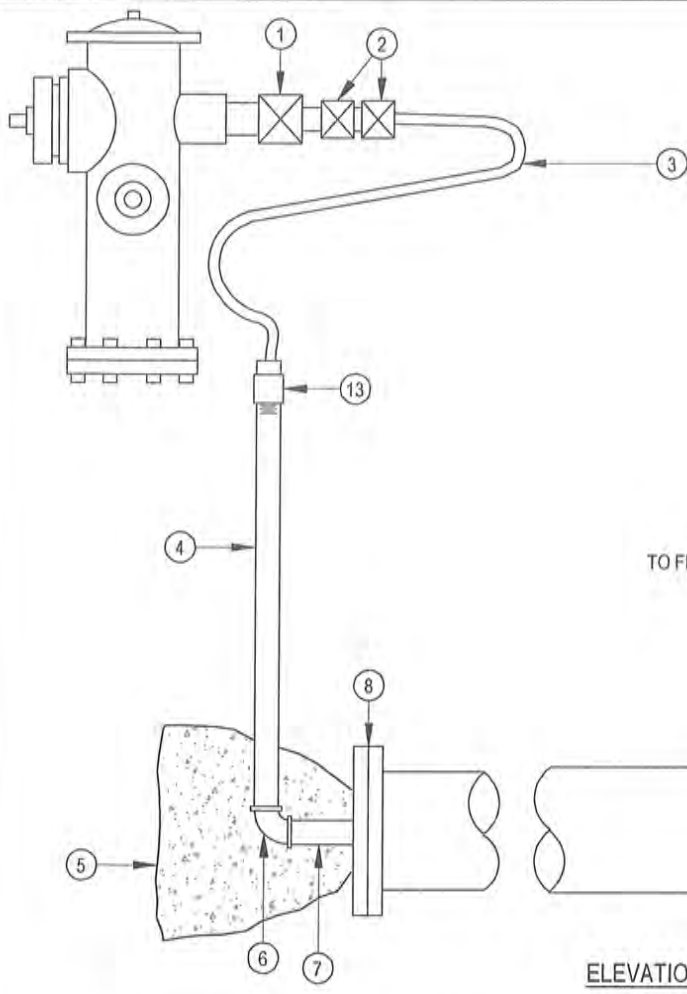

City of Santa Monica
 Department of Public Works

NEW FIRE SERVICE INSTALLATION

DES: AJS
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SCALE: NONE
 DATE: 12-24-2014
 APP:

SHEET NO. 1 OF 1
SMW-18

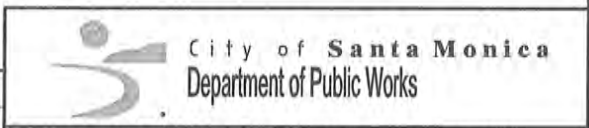


ITEM	MATERIAL
①	CONTROL VALVE/ AND CONSTRUCTION METER
②	CROSS CONNECTION CONTROL DEVICE IN ACCORDANCE WITH ENVIRONMENTAL HEALTH REQUIREMENTS
③	SUPPLY HOSE
④	THREADED RISER PIPE
⑤	TEMPORARY THRUST BLOCK
⑥	THREADED ELBOW
⑦	THREADED NIPPLE
⑧	TEMPORARY FLANGE OR PLUG WITH THREADED OUTLET (F.I.P.T)
⑨	NEW WATER MAIN
⑩	TAPPING SADDLE AND CORPORATION STOP, ORIENTED HORIZONTALLY
⑪	TEMPORARY BLOCKING PLATE, SEE NOTE 2
⑫	EXISTING WATER MAIN (ACTIVE MAIN)
⑬	THREADED HOSE COUPLING

NOTES:

1. DIRECT CONNECTION TO THE EXISTING WATER SYSTEM SHALL NOT BE PERMITTED UNTIL THE NEW INSTALLATION HAS PASSED BACTERIA TESTING. MAINTAIN AIR GAP PER AWWA STD. C651.
2. TEMPORARY BLOCKING PLATE SHALL BE CONSTRUCTED OF 1/8" THICK STEEL PLATE AND SHALL BE INSTALLED BETWEEN THE TWO FLANGES WITH A GASKET ON EACH SIDE.
3. WHEN TEMPORARY BLOCKING PLATE IS REMOVED, THE CONTRACTOR SHALL ADJUST FITTING TO ELIMINATE THE 1/8" GAP WITHOUT FORCING THE JOINT TOGETHER.

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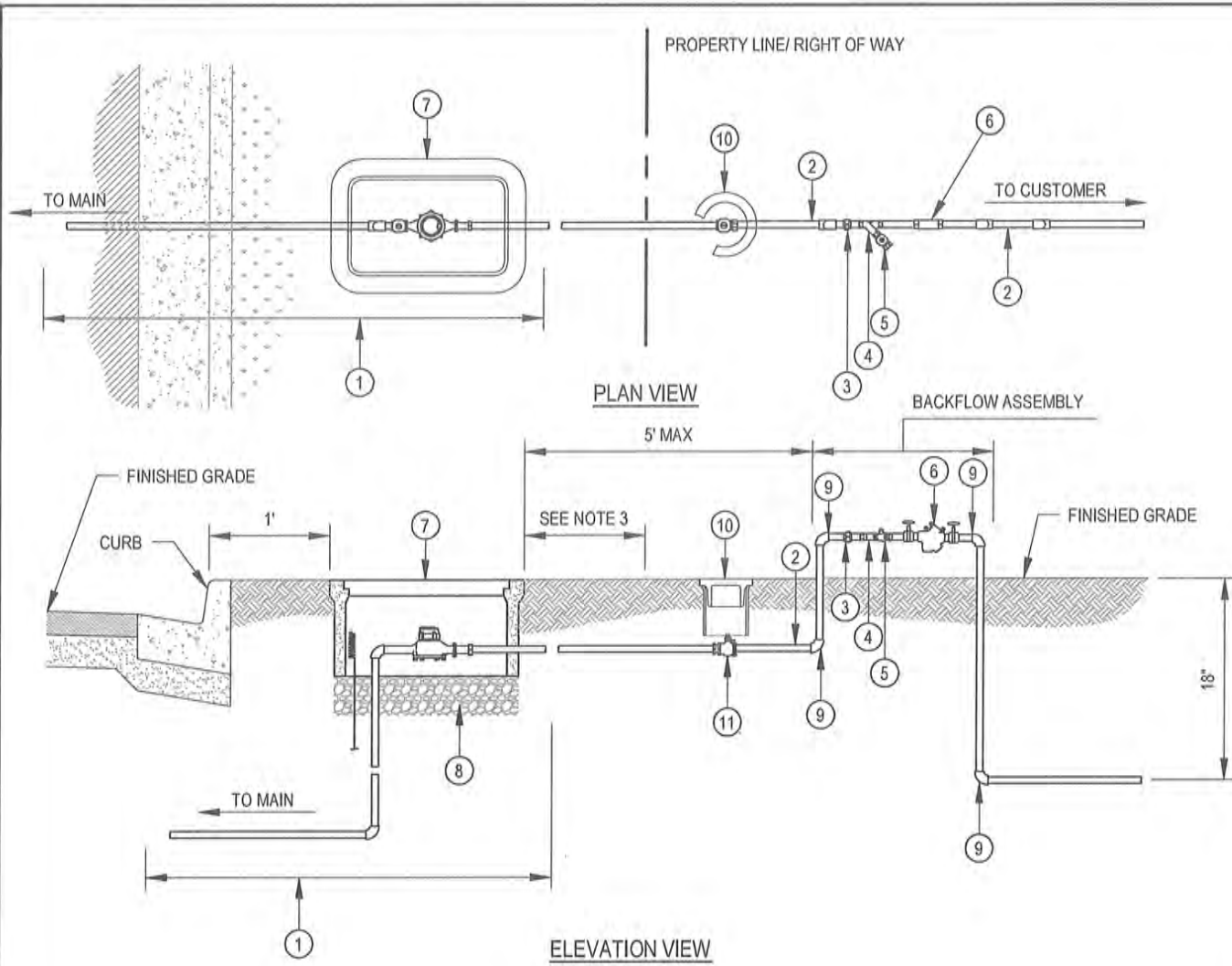
TEMPORARY CONNECTIONS FOR THE INITIAL FILLING OF NEW WATER MAINS

APPROVED BY: *Jessica Anderson*
 Water Resources Engineer
 DATE: 3/2015

DES: AJS
 D: SEM
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SCALE: NONE
 DATE: 12-24-2014
 APP:

SHEET NO. 1 OF 1
SMW-20



ITEM	MATERIAL
1	WATER SERVICE, PER SMW-5
2	BRASS OR COPPER PIPE
3	SCREWED BRASS UNION
4	WYE STRAINER, INSTALLED HORIZONTALLY
5	BRASS BALL VALVE AND CAP
6	REDUCED PRESSURED PRINCIPLE BACK FLOW DEVICE
7	METER BOX AND LID, PER SMW-9
8	6" THICK BASE OF 3/4" CRUSHED ROCK
9	2" 90° COPPER ELBOW, C x C SOLDER JOINTS
10	VALVE CAN PER SMW-8
11	BALL VALVE C X C SOLDER JOINTS

NOTES:

1. SET TOP OF METER BOX FLUSH WITH SIDEWALK, CURB OR FINISHED GRADE.
2. PROPERLY LABELING ALL NON-POTABLE WATER IRRIGATION SPRINKLER CONTROL VALVES AND ISOLATION VALVES, QUICK-COUPERS WITH APPROVED IDENTIFICATION TAGS STATING: "NON-POTABLE WATER-DO NOT DRINK". (YELLOW WITH BLACK LETTERING).
3. PLACE METER BOX ASSEMBLY 1-FT FROM PROPERTY LINE IF INSTALLED WITHIN ALLEY.
4. CALL WATER RESOURCES DEPARTMENT FOR INSPECTION AND APPROVAL.



METER & BACKFLOW DEVICE-LANDSCAPE ONLY

DATE	NO.	REVISION / NOTE	BY
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APPROVED BY: *Jessica Anderson*
 Water Resources Engineer

DATE: 3/20/15

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SCALE: NONE
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SMW-21