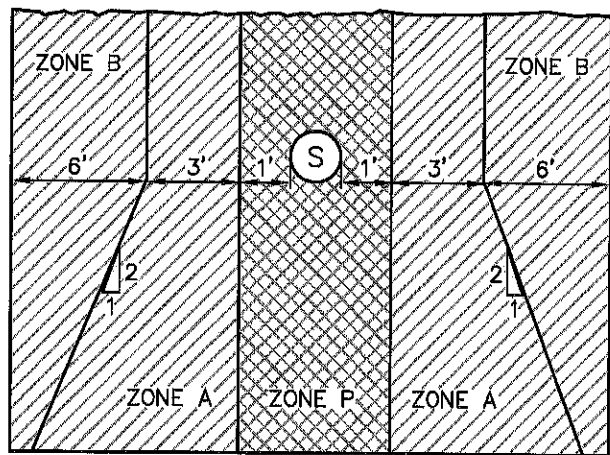


**CROSSING**  
NEW WATER MAIN AND  
EXISTING SANITARY SEWER



**PARALLEL**  
NEW WATER MAIN AND  
EXISTING SANITARY SEWER

A	WATER MAINS WILL NOT BE PERMITTED IN THIS ZONE WITHOUT SPECIAL PERMISSION FROM THE DEPARTMENT OF HEALTH SERVICES, STATE OF CALIFORNIA.
B	THE WATER MAIN SHALL BE CONSTRUCTED OF: DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING; DIPPED AND WRAPPED 1/4" THICK WELDED STEEL PIPE; REINFORCED CONCRETE PIPE, STEEL CYLINDER TYPE (PER AWWA C300-74, C301-79 OR C303-70).
C	THE WATER MAIN SHALL HAVE NO JOINTS IN ZONE C AND BE CONSTRUCTED OF: DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING; DIPPED AND WRAPPED 1/4" THICK WELDED STEEL PIPE; REINFORCED CONCRETE PRESSURE PIPE, STEEL CYLINDER TYPE (PER AWWA C300-74, C301-79 OR C303-70).
D	THE WATER MAIN SHALL HAVE NO JOINTS WITHIN FOUR FEET FROM EITHER SIDE OF THE SEWER AND SHALL BE CONSTRUCTED OF: DUCTILE IRON PIPE WITH HOT BITUMINOUS COATING; DIPPED AND WRAPPED 1/4" THICK WELDED STEEL PIPE; REINFORCED CONCRETE PIPE, STEEL CYLINDER TYPE (PER AWWA C300-74, C301-79 OR C303-70)
P	ZONE P IS A PROHIBITED ZONE, SECTION 64630 (e) (2) CALIFORNIA ADMINISTRATION CODE, TITLE 22.

**NOTES:**

1. (S) INDICATES SANITARY SEWER MAIN. DIMENSIONS ARE FROM OUTSIDE OF WATER PIPE TO OUTSIDE OF SEWER PIPE.
2. SEWER LINES SHALL BE INSTALLED AS FAR FROM WATER MAIN AS POSSIBLE. IF THE HORIZONTAL SEPARATION BETWEEN SEWER AND WATER MAIN MUST BE LESS THAN 10 FEET AND THE SEWER IS NOT MORE THAN 1 FEET BELOW THE WATER MAIN, SPECIAL CONSTRUCTION AS SHOWN ABOVE IS REQUIRED.
3. IN CASES WHERE THE SEWER LINE CROSSES A WATER MAIN, A FULL JOINT OF WATER PIPE SHALL BE CENTERED ON THE SEWER MAIN.
4. BUILDING LATERALS SHALL BE INSTALLED 4" OR MORE ABOVE SEWER MAIN. IF THIS CONDITION CANNOT BE MET, SPECIAL CONSTRUCTION WILL BE REQUIRED AS SHOWN ABOVE.
5. A LOW HEAD (5 PSI OR LESS) WATER MAIN SHALL NOT BE INSTALLED WITHIN 25 FEET OF SEWER MAINS WITHOUT PRIOR APPROVAL OF THE DEPARTMENT OF HEALTH SERVICES, STATE OF CALIFORNIA.
6. A NEW WATER MAIN CROSSING OVER AN EXISTING SEWER FORCE MAIN SHALL BE CONSTRUCTED OF MATERIALS WITH A MINIMUM RATING OF 200 PSI

SHEET 2 OF 2



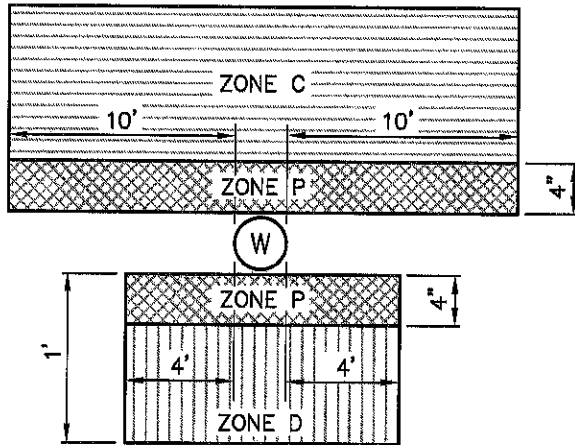
**SEPARATION CRITERIA FOR NEW WATER MAINS AND EXISTING SANITARY SEWERS**

APPROVED BY GENERAL MANAGER

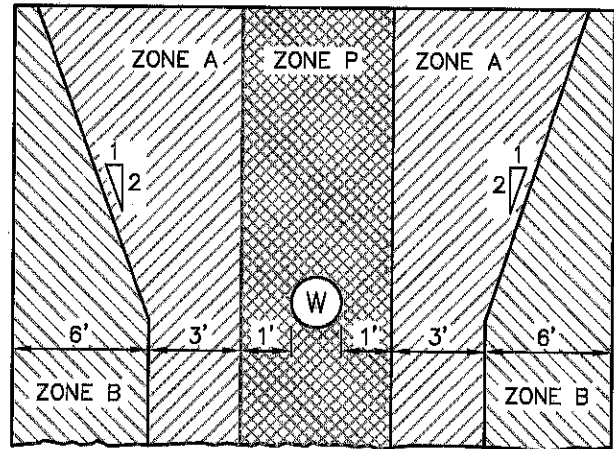
*Charles Moorrees*  
CHARLES MOORREES

STANDARD DRAWING No.  
**SAWCO-1 (2 of 2)**

DATE: JUNE 2013



**CROSSING**  
NEW SANITARY SEWER AND  
EXISTING WATER MAIN



**PARALLEL**  
NEW SANITARY SEWER AND  
EXISTING WATER MAIN

A	SEWER LINES WILL NOT BE PERMITTED IN THIS ZONE WITHOUT SPECIAL PERMISSION FROM THE DEPARTMENT OF HEALTH SERVICES, STATE OF CALIFORNIA.
B	EXTRA STRENGTH VITRIFIED CLAY PIPE WITH COMPRESSION JOINTS; OR PLASTIC SEWER PIPE WITH RUBBER RING JOINTS (PER ASTM D3034) OR EQUIVALENT; OR CAST OR DUCTILE IRON PIPE WITH COMPRESSION JOINTS; OR REINFORCED CONCRETE PRESSURE PIPE WITH COMPRESSION JOINTS (PER AWWA C302-74).
C	DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING AND MECHANICAL JOINTS; OR A CONTINUOUS SECTION OF CLASS 200 (DR 14 PER AWWA C900) PLASTIC PIPE OR EQUIVALENT; OR A CONTINUOUS SECTION OF REINFORCED CONCRETE PIPE (PER AWWA C302-74); OR ANY SEWER PIPE WITHIN A CONTINUOUS SLEEVE.
D	A CONTINUOUS SECTION OF DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING; OR A CONTINUOUS SECTION OF CLASS 200 (DR 14 PER AWWA C900) PLASTIC PIPE OR EQUIVALENT; OR A CONTINUOUS SECTION OF REINFORCED CONCRETE PIPE (PER AWWA C302-74); OR ANY SEWER PIPE WITHIN A CONTINUOUS SLEEVE; OR ANY SEWER PIPE SEPARATED BY A 10 FOOT x 10 FOOT, 4 INCH THICK REINFORCED CONCRETE SLAB.
P	ZONE P IS A PROHIBITED ZONE, SECTION 64630 (e) (2) CALIFORNIA ADMINISTRATION CODE, TITLE 22.

**NOTES:**

- ① INDICATES WATER MAIN. DIMENSIONS ARE FROM OUTSIDE OF WATER PIPE TO OUTSIDE OF SEWER PIPE.
- SEWER MAINS SHALL BE INSTALLED AS FAR FROM WATER MAIN AS POSSIBLE. IF THE HORIZONTAL SEPARATION BETWEEN SEWER AND WATER MAIN MUST BE LESS THAN 10 FEET AND THE SEWER IS NOT MORE THAN 1 FEET BELOW THE WATER MAIN, SPECIAL CONSTRUCTION AS SHOWN ABOVE IS REQUIRED.
- IN CASES WHERE THE SEWER MAIN CROSSES A WATER MAIN, A FULL JOINT OF SEWER PIPE SHALL BE CENTERED ON THE WATER MAIN.
- BUILDING LATERALS SHALL BE INSTALLED BELOW WATER MAIN. IF THIS CONDITION CANNOT BE MET, SPECIAL CONSTRUCTION WILL BE REQUIRED AS SHOWN ABOVE.
- SEWER MAINS SHALL NOT BE INSTALLED WITHIN 25 FEET OF A LOW HEAD (5 PSI OR LESS) WATER MAIN WITHOUT PRIOR APPROVAL OF THE DEPARTMENT OF HEALTH SERVICES, STATE OF CALIFORNIA.
- SEWER MAINS SHALL BE PRESSURE TESTED WHEN SPECIAL CONSTRUCTION IS REQUIRED AS SHOWN ABOVE.

SHEET 1 OF 2



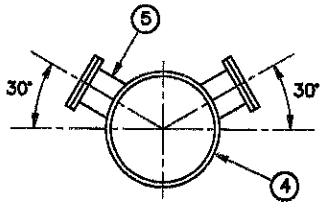
**SEPARATION CRITERIA FOR EXISTING  
WATER MAINS AND NEW SANITARY SEWERS**

APPROVED BY GENERAL MANAGER

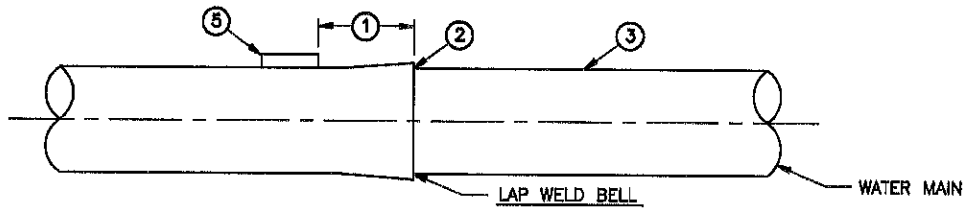
*Charles Moorrees*  
CHARLES MOORREES

STANDARD DRAWING No.  
**SAWCO-1 (1 of 2)**

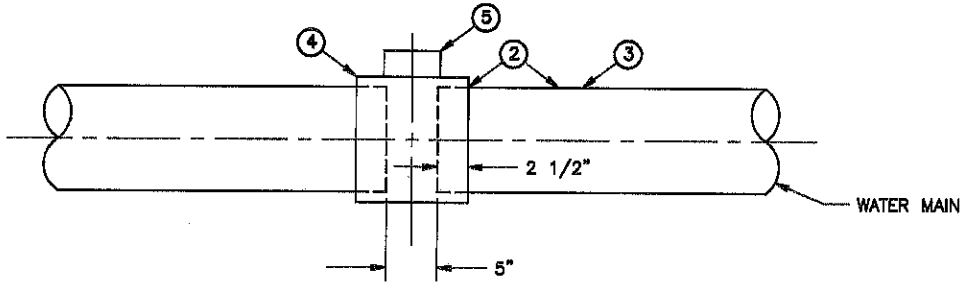
DATE: JUNE 2013



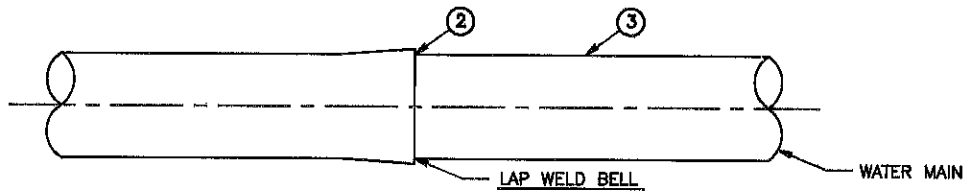
LOCATION OF  
2 - HAND HOLES  
NOT TO SCALE



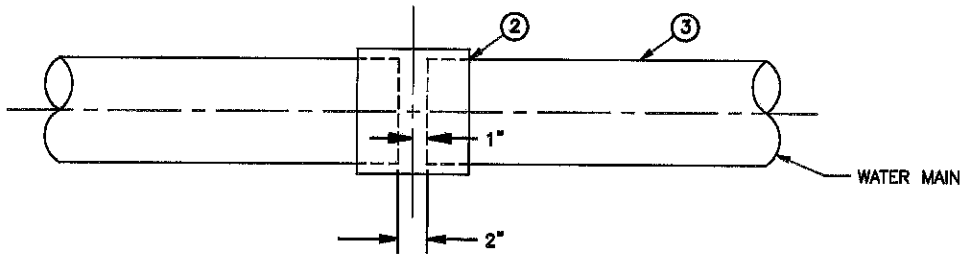
TYPE-I



TYPE-II



TYPE-III



TYPE-IV

### Notes

- ① 1'-0"  $\phi$  (12" THRU 30"  $\phi$ ) AND 6" (LESS THAN 12"  $\phi$ ).
- ② CUT-TO-FIT (C.T.F.) OPTIONAL TO THE CONTRACTOR, UNLESS OTHERWISE SPECIFIED ON THE PLANS. WELD IN COMPLIANCE WITH THE SPECIFICATIONS.
- ③ CUT-TO-FIT PIPE (LENGTH AS SHOWN ON PLANS). HOLD COATING 6" FROM C.T.F. FIELD APPLY COATING, ONCE JOINT IS FULLY WELDED.
- ④ SPLIT BUTT-STRAP WITH 1 OR 2 HAND HOLES.
- ⑤ 1-6" HAND HOLE FOR 6" - 18" WATER MAINS AND 2 - 6" DIAMETER HAND HOLES FOR 20" - 36" WATER MAINS. REINFORCE OUTLET IN COMPLIANCE WITH AWWA M-11.
- ⑥ FABRICATION DRAWINGS MUST BE APPROVED BY SAWCO PRIOR TO FABRICATION.



### TYPICAL CUT-TO-FIT DETAILS FOR TYPES I, II, III, & IV

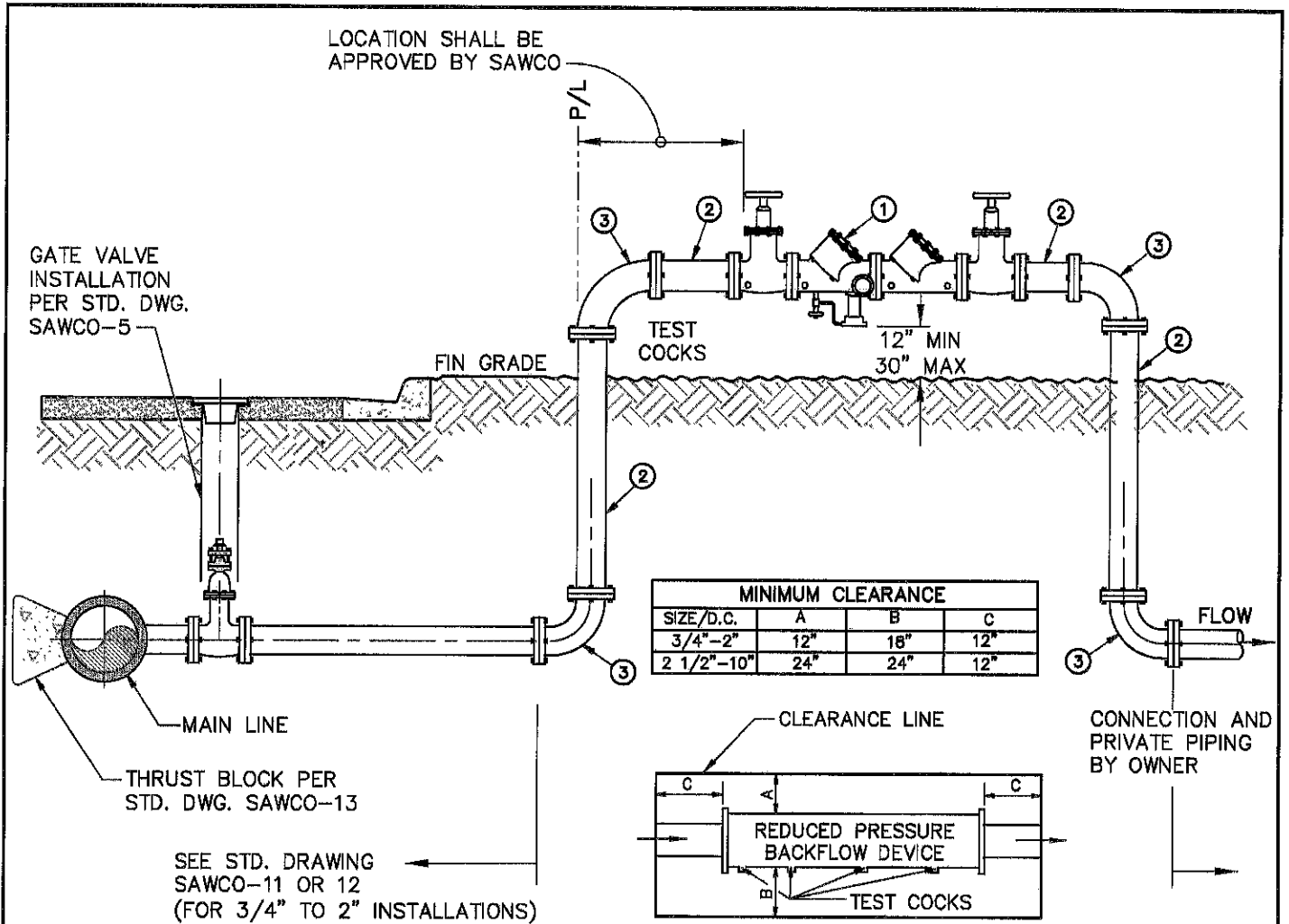
APPROVED BY GENERAL MANAGER

*Charles Moorrees*  
CHARLES MOORREES

STANDARD DRAWING No.

SAWCO-2

DATE: JUNE 2013



**Notes:**

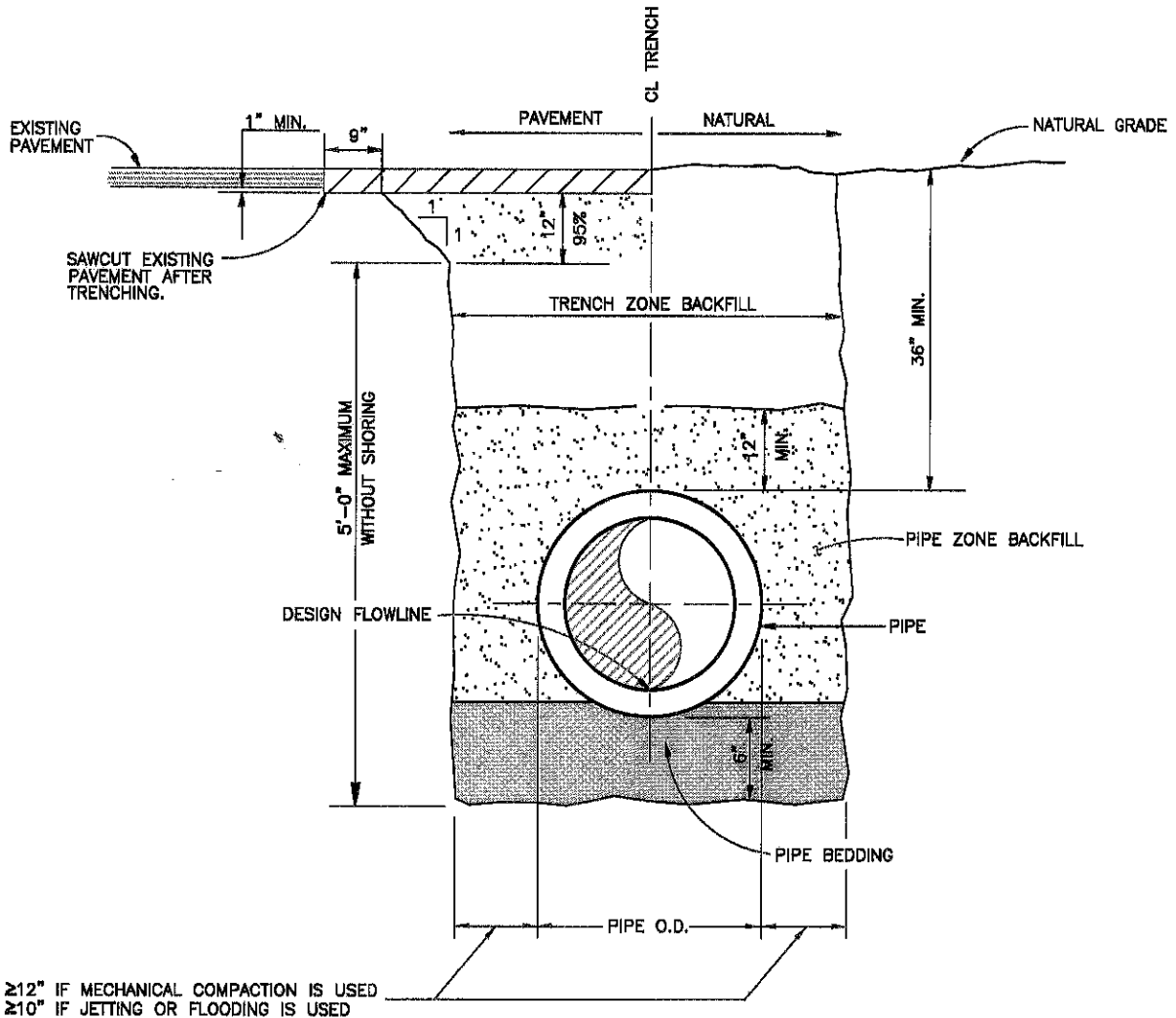
1. REDUCE PRESSURE BACKFLOW DEVICE SHALL BE IN COMPLIANCE WITH THE CONSTRUCTION DRAWINGS.
2. PLACE BOTTOM OF VALVE A MINIMUM OF 12" AND A MAXIMUM OF 30" ABOVE FINISH GRADE.
3. CUSTOMER SHALL PROTECT DEVICE FROM FREEZING AND MAINTAIN ACCESS FOR TESTING.

ITEM	3/4" - 2" DESCRIPTION	APPROVED MATERIAL LIST NO.
①	REDUCED PRESSURE BACKFLOW DEVICE	4-C
②	PIPE TO BE D.I.P. OR STEEL	1-B OR 1-D
③	90° ELBOW	
ITEM	2 1/2" - 10" DESCRIPTION	APPROVED MATERIAL LIST NO.
①	REDUCED PRESSURE BACKFLOW DEVICE	4-C
②	PIPE, D.I.P. CLASS 350 OR CML & C STEEL, STANDARD WEIGHT	
③	90° ELBOW, D.I.P. CLASS 350 OR CML & C STEEL, STANDARD WEIGHT	
④	FLANGE, D.I. CLASS 125 OR STEEL, CLASS 150	



**REDUCED PRESSURE BACKFLOW INSTALLATION**

APPROVED BY GENERAL MANAGER  
  
 CHARLES MOORREES  
 STANDARD DRAWING No.  
**SAWCO-3**  
 DATE: JUNE 2013



**Trench Zone Backfill Material:**

COMPACTED TO 90% OF ASTM D-1557-91 SELECT MATERIAL OR APPROVED IMPORT.

IF MECHANICAL COMPACTION IS USED, MATERIAL MAY NOT BE GRTEATER THAN 3 INCHES IN ANY DIMENSION.

IF FLOODING OR JETTING IS USED, MATERIAL MUST MEET THE FOLLOWING:

1/2" 100% PASSING  
 #200 0% - 10% PASSING  
 (SE ≥ 20)

**Pipe Bedding and Pipe Zone Backfill Material:**


COMPACTED TO 95% OF ASTM D-1557-91 RECOMMENDED GRADATION - SEE SPEC.

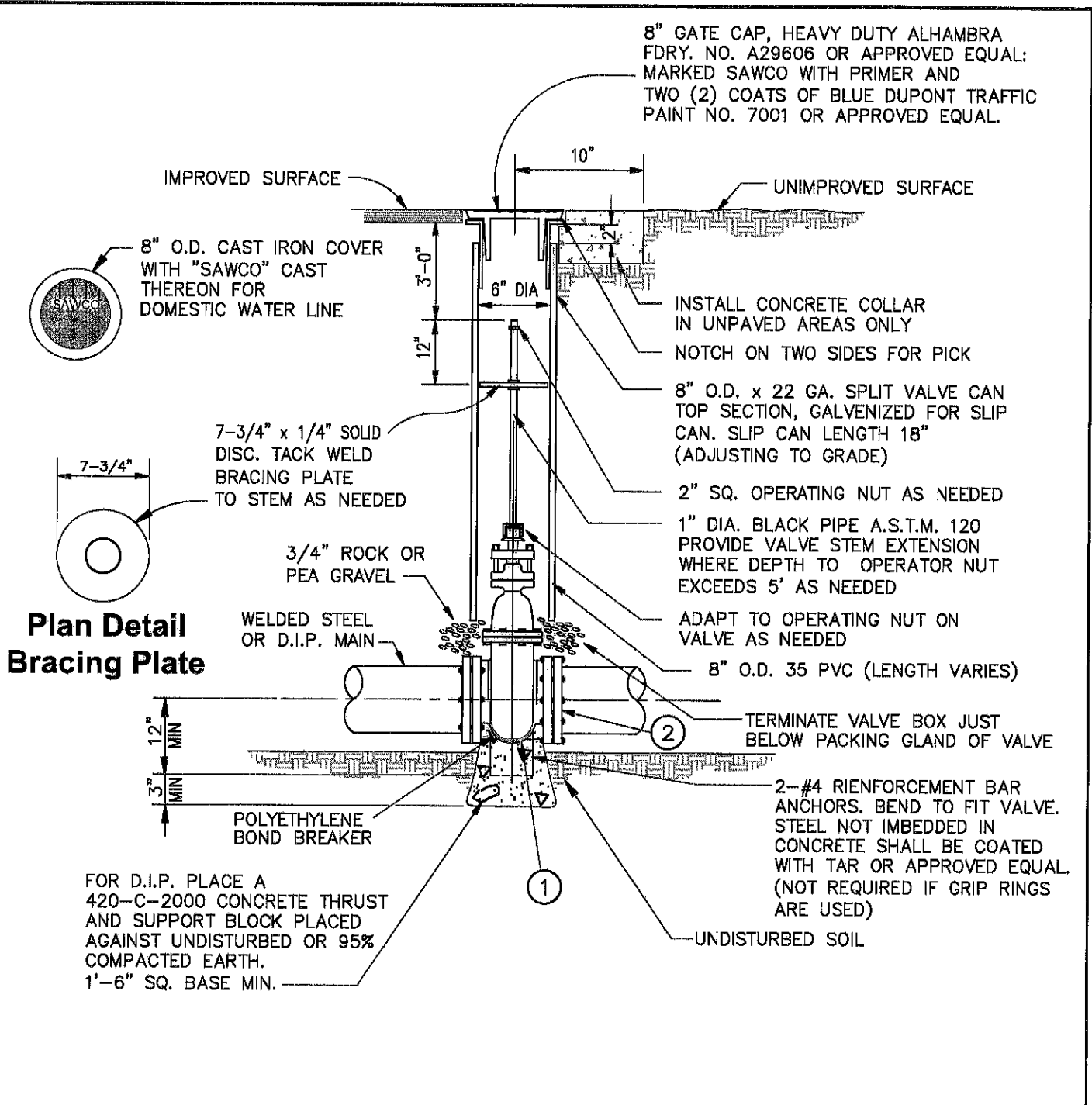
1/2" 100% PASSING  
 #200 0% - 10% PASSING

(SE ≥ 20 IF FLOODING OR JETTING IS USED)




TYPICAL EXCAVATION BACKFILL SCHEMATIC

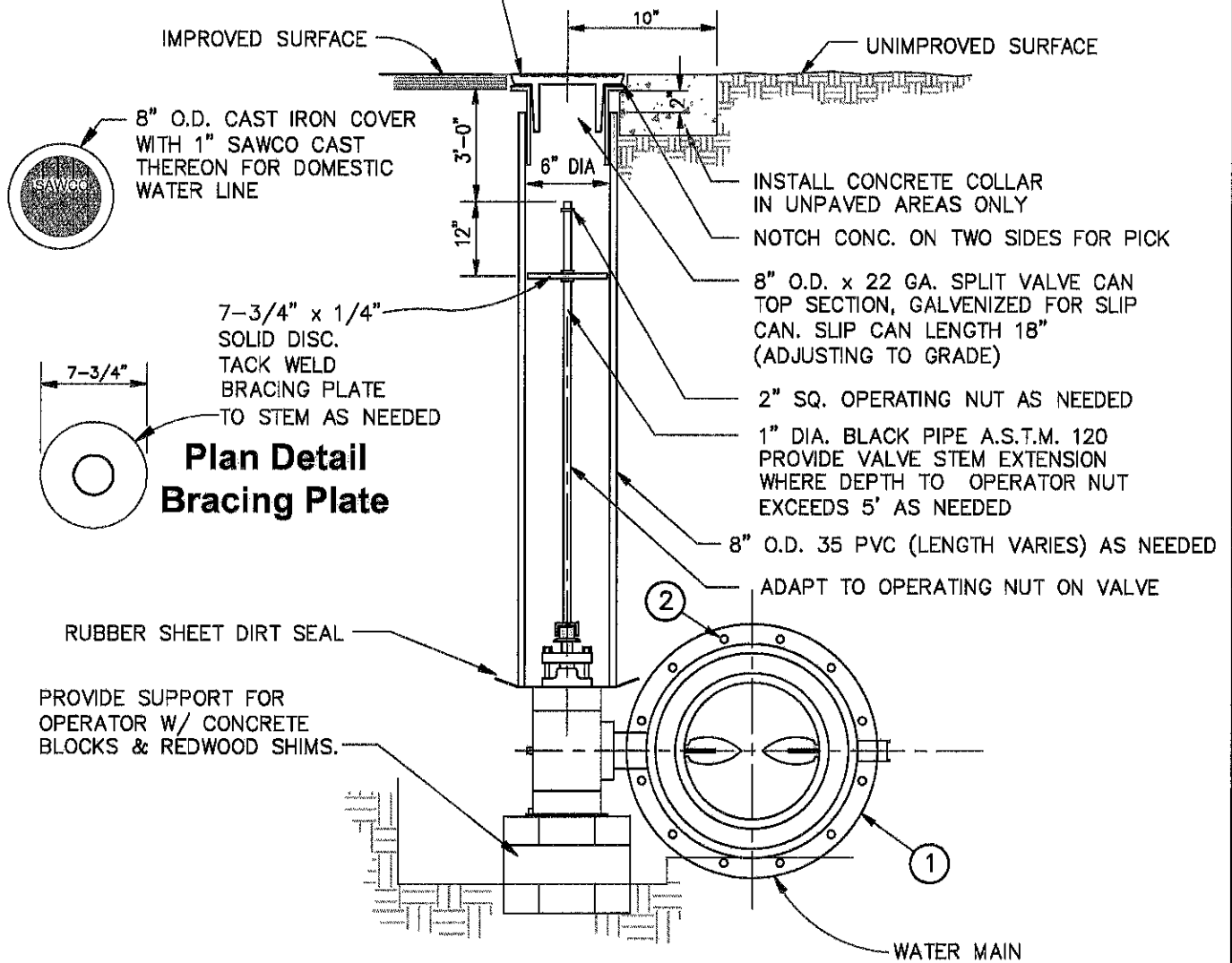
APPROVED GENERAL MANAGER  
  
 CHARLES MOORREES  
 STANDARD DRAWING No.  
 SAWCO-4  
 DATE: JUNE 2013



ITEM	DESCRIPTION	APPROVED MATERIAL LIST NO.
①	FLANGED OR MECHANICAL JOINT RESILIENT-SEATED GATE VALVE WITH 2" OPERATING NUT.	2-G.1
②	HEX HEAD BOLTS.	7-E.2

	<p><b>GATE VALVE INSTALLATION MID BLOCK VALVE</b></p>	<p>APPROVED BY GENERAL MANAGER</p> <p><i>Charles Moorrees</i></p> <p>CHARLES MOORREES</p>
		<p>STANDARD DRAWING No.</p> <p><b>SAWCO-5</b></p>
		<p>DATE: JUNE 2013</p>

8" GATE CAP, HEAVY DUTY ALHAMBRA FDRY. NO. A29606 OR APPROVED EQUAL:  
 MARKED SAWCO WATER WITH PRIMER AND TWO (2) COATS OF BLUE DUPONT TRAFFIC  
 PAINT NO. 7001 OR APPROVED EQUAL.



**Note**

1. BUTTERFLY VALVE ACTUATORS TO BE ON THE LEFT SIDE, WHEN VIEWED FROM THE FITTING THROUGH THE VALVE.

ITEM	DESCRIPTION	APPROVED MATERIAL LIST NO.
①	FLANGED BUTTERFLY VALVE.	2-F.1
②	HEX HEAD BOLTS	7-E.2



BUTTERFLY VALVE INSTALLATION

APPROVED BY GENERAL MANAGER

*Charles Moorrees*  
 CHARLES MOORREES

STANDARD DRAWING No.

SAWCO-6

DATE: JUNE 2013

LOCATION SHALL BE APPROVED BY SAWCO

GATE VALVE INSTALLATION PER STD. DWG. SAWCO-5

MAIN LINE

THRUST BLOCK PER STD. DWG. SAWCO-13

VARIES

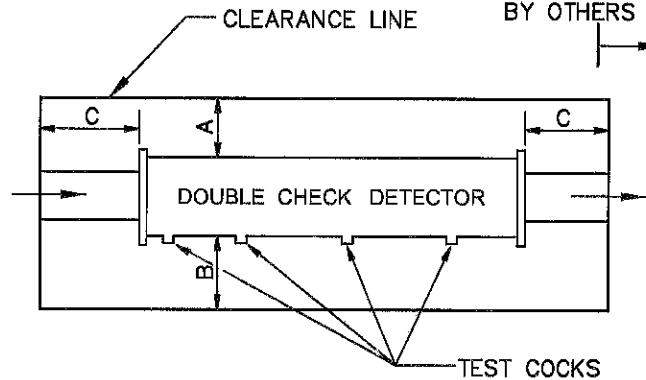
P/L

12" MIN.  
30" MAX.

FLOW

CONNECTION AND PRIVATE PIPING BY OTHERS

MINIMUM CLEARANCE			
SIZE/D.C.	A	B	C
3" - 10"	24"	24"	12"



**Note:**

1. DOUBLE CHECK DETECTOR ASSEMBLY SHALL BE SIZE IN COMPLIANCE WITH THE CONSTRUCTION DRAWINGS.
2. PLACE BOTTOM OF VALVE A MINIMUM OF 12" AND A MAXIMUM OF 30" ABOVE FINISH GRADE.
3. BOOSTER PUMPS ARE NOT PERMITTED DOWN STREAM OF THE DOUBLE CHECK DETECTOR ASSEMBLY.
4. CUSTOMER SHALL PROTECT DEVICE FROM FREEZING AND MAINTAIN ACCESS FOR TESTING.

ITEM	DESCRIPTION	APPROVED MATERIAL LIST NO.
①	3" TO 10" DOUBLE CHECK DETECTOR ASSEMBLY	4-B
②	3" TO 10" PIPE, DUCTILE IRON CLASS 350 OR CML & C STEEL, STANDARD WEIGHT	1-B OR 1-D
③	3" TO 10" 90° ELBOW, D.I.P. , CLASS 350 OR CML & C STEEL, STANDARD WEIGHT	5-B OR 5-D
④	3" TO 10" FLANGE, D.I., CLASS 125 OR STEEL, CLASS 150	7-C.1 OR 7-C.2
⑤	MAIN SIZE x 3" TO 10" FLANGED, OR MECHANICAL JOINT x FLANGE, TEE, D.I., OR STEEL	5-B OR 5-D



DOUBLE CHECK DETECTOR ASSY.  
INSTALLATION

APPROVED BY GENERAL MANAGER

*Charles Moorrees*  
CHARLES MOORREES

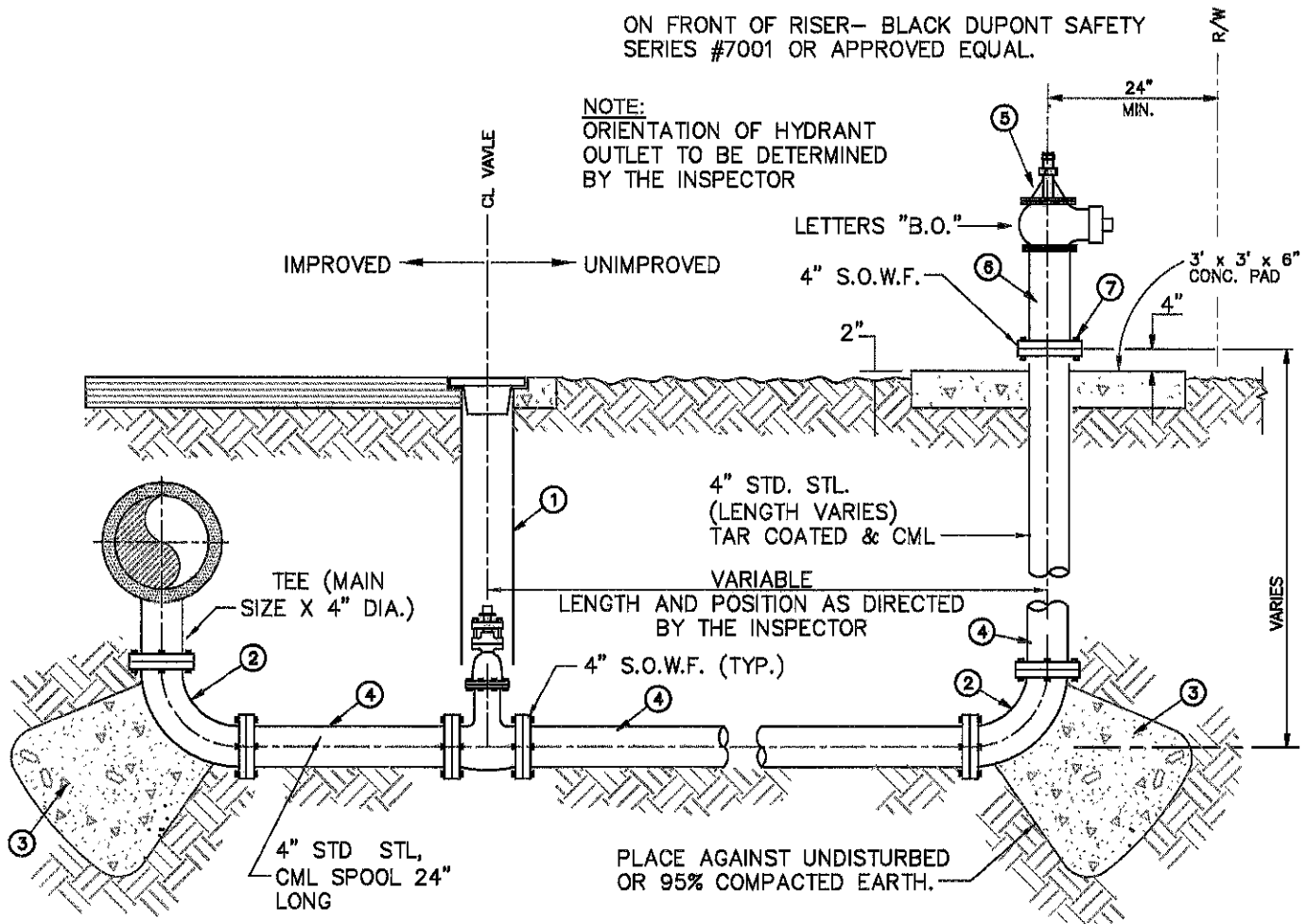
STANDARD DRAWING No.  
SAWCO-7

DATE: JUNE 2013



ON FRONT OF RISER- BLACK DUPONT SAFETY SERIES #7001 OR APPROVED EQUAL.

NOTE:  
ORIENTATION OF HYDRANT  
OUTLET TO BE DETERMINED  
BY THE INSPECTOR



### Notes

1. ALL BLOW-OFFS SHALL HAVE GUARD POSTS, SIZE AND PLACEMENT DETERMINED BY SAWCO.
2. ALL EXPOSED COMPONENTS TO BE PAINTED WITH PRIMER AND TWO COATS OF YELLOW DUPONT SAFETY SERIES #7001 OR APPROVED EQUAL (NO PRIMER ON BRASS OR BRONZE).
3. ALL BURIED STEEL TO BE TAR COATED & CML
4. SEE STANDARD DRAWING SAWCO-15 FOR BLOW-OFF LOCATION WHEN SIDEWALK EXISTS.

ITEM	DESCRIPTION	APPROVED MATERIAL LIST NO.
1	4" DIA. GATE VALVE INSTALLATION PER STD. DWG. SAWCO-5.	SEE SAWCO-5
2	4" STD. 90° FLANGED ELBOW, LINED AND COATED SAME AS MAIN.	5-D
3	THRUST BLOCK PER STD. DWG. SAWCO-13.	SEE SAWCO-13
4	4" STEEL OR DIP PIPE, 10 GA. OR CLASS 350	1-B OR 1-D
5	4" x 2-1/2" BRONZE WHARF HYDRANT	3-B
6	4" STD. STEEL PIPE, STL. CEMENT LINED AND PAINTED, STANDARD WEIGHT	1-D
7	BREAKAWAY BOLTS	7-E.1



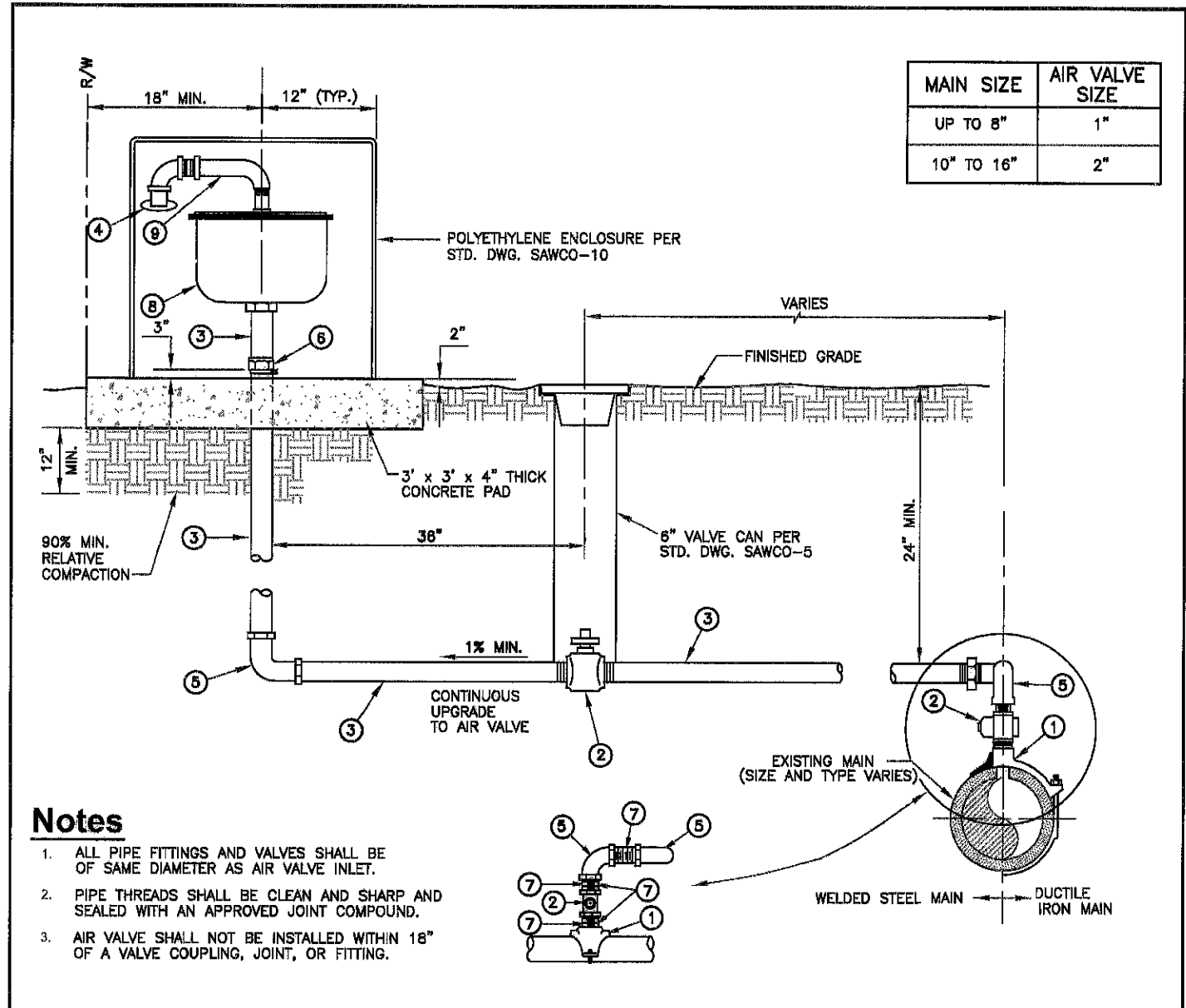
## 4" DIAMETER BLOW-OFF INSTALLATION FOR 12" OR LESS WATERMAIN

APPROVED BY GENERAL MANAGER

*Charles Moorrees*  
CHARLES MOORREES

STANDARD DRAWING No.  
**SAWCO-8**

DATE: JUNE 2013




**Notes**

1. ALL PIPE FITTINGS AND VALVES SHALL BE OF SAME DIAMETER AS AIR VALVE INLET.
2. PIPE THREADS SHALL BE CLEAN AND SHARP AND SEALED WITH AN APPROVED JOINT COMPOUND.
3. AIR VALVE SHALL NOT BE INSTALLED WITHIN 18" OF A VALVE COUPLING, JOINT, OR FITTING.

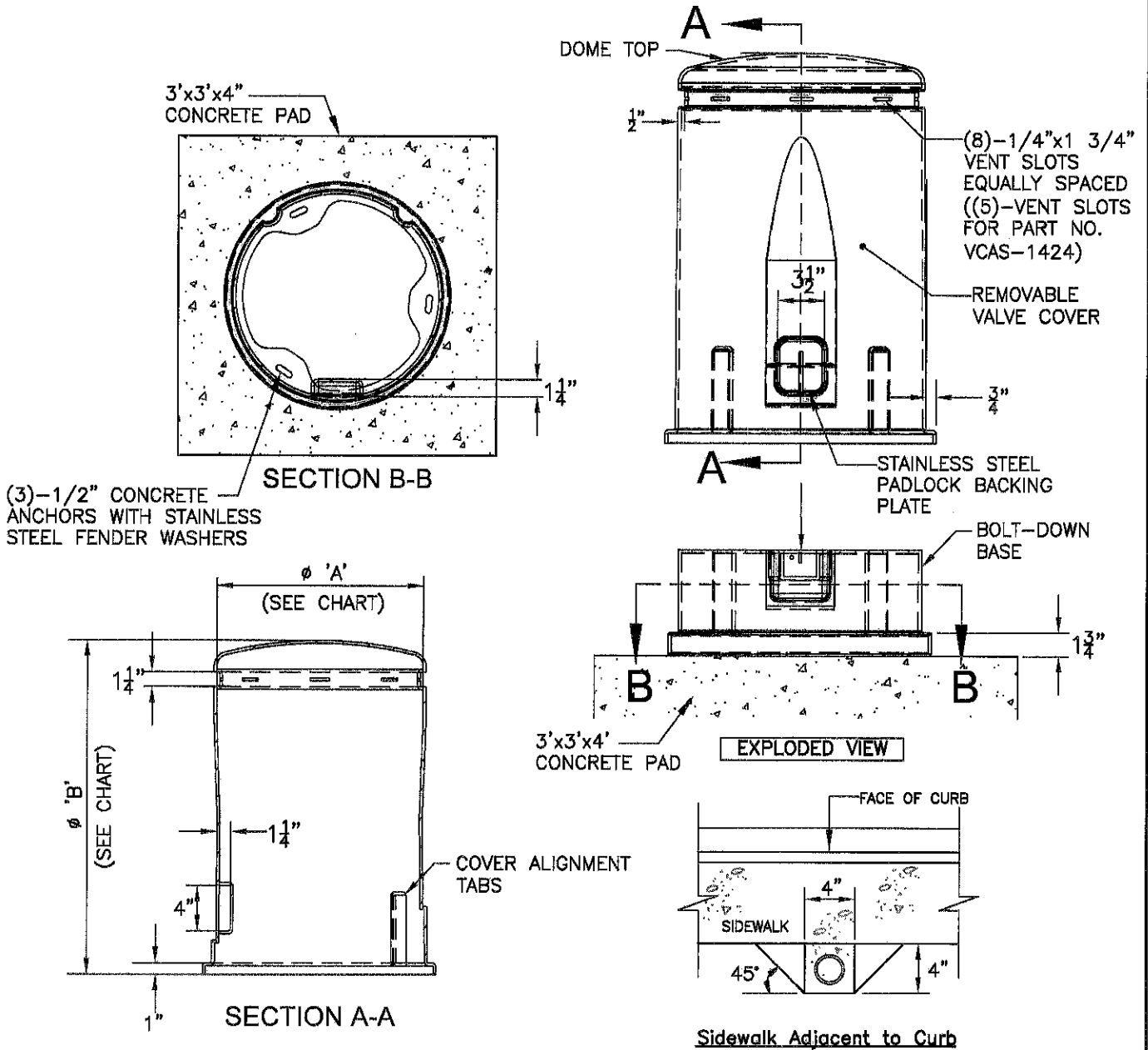
ITEM	DESCRIPTION	APPROVED MATERIAL LIST NO.
①	DOUBLE STRAP BRASS SERVICE SADDLE 1" OR 2" 1" OR 2" STEEL COUPLING. STANDARD WEIGHT	7-H 5-D
②	1" OR 2" GATE VALVE	2-G.2
③	1" OR 2" G.I.P.	1-C
④	AIR-VALVE SCREEN	7-A.1 OR 7-A.2
⑤	1" G.I.P. 90° ELBOWS THREADED	5-C
⑥	G.I.P. COUPLING	5-C
⑦	1" OR 2" G.I.P. THREADED NIPPLE	5-C
⑧	1" OR 2" AIR RELEASE VALVE	2-A OR 2-B
⑨	STANDARD GALV. 90° ST. ELBOW; 3 INCH LONG GALV. NIPPLE; STANDARD GALV. 90° ELBOW; AND 3 INCH STANDARD GALV. NIPPLE. ORIENTED TO CLEAR AIR VALVE BODY.	1-C



**AIR VALVE INSTALLATION  
1" OR 2" DIAMETER**

APPROVED BY GENERAL MANAGER  
  
 CHARLES MOORREES  
 STANDARD DRAWING No.  
**SAWCO-9**  
 DATE: JUNE 2013

PART NO.	'A'	'B'	COLOR
VCAS-1424-SM	Ø 14"	24"	GRANITE
VCAS-1830-SM	Ø 18"	30"	GRANITE
VCAS-2436-SM	Ø 24"	36"	GRANITE



**Notes:**

1. GUARD POST SHALL BE PLACED AS SPECIFIED ON THE CONSTRUCTION DRAWINGS IN COMPLIANCE WITH STANDARD DRAWING SAWCO-17.
2. AIR & VACUUM VALVE MAY ENCR OACH INTO SIDEWALK IF A FOUR FOOT MINIMUM WIDTH IS MAINTAINED.
3. ENCLOSURE SHALL BE MANUFACTURED BY PIPELINE PRODUCTS "ADVANTAGE SERIES" (800-998-1079) OR APPROVED EQUAL.
4. ENCLOSURE SHALL HAVE A BOLT DOWN BASE WITH REMOVABLE COVER.
5. COVER AND BASE TO BE MANUFACTURED FROM 3/16" WALL POLYETHYLENE WITH UV STABILIZERS.
6. COVER SHALL LOCK TO BASE WITH AN INTEGRAL AUTO-LATCH AND PADLOCK HASP.
7. ENCLOSURE SHALL BE PIPELINE PRODUCTS "GRANITE" IN COLOR.



**POLYETHYLENE AIR & VACUUM VALVE ENCLOSURE**

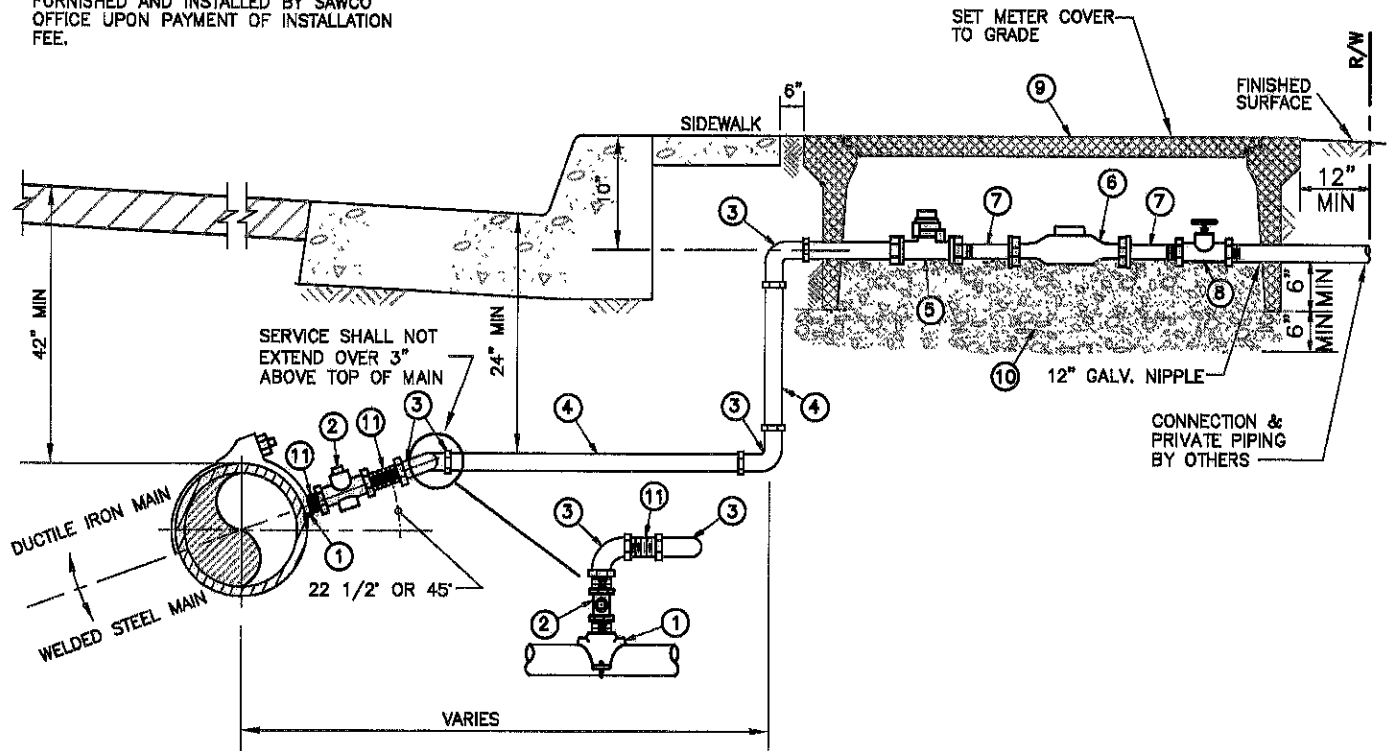
APPROVED BY GENERAL MANAGER

*Charles Moorrees*  
CHARLES MOORREES

STANDARD DRAWING No.  
**SAWCO-10**

DATE: JUNE 2013

METER AND CUSTOMER SERVICE VALVE  
FURNISHED AND INSTALLED BY SAWCO  
OFFICE UPON PAYMENT OF INSTALLATION  
FEE.



## Notes

1. PIPE THREADS SHALL BE CLEAN, SHARP AND SEALED WITH AN APPROVED JOINT COMPOUND
2. WATER METER BOX AND COVER SHALL BE NEW FOR METER RELOCATION WORK.
3. PROVIDE BRASS BUSHINGS FOR 3/4" METER INSTALLATIONS.

ITEM	DESCRIPTION	APPROVED MATERIAL LIST NO.
①	DOUBLE STRAP BRASS SERVICE 1" I.P. OUTLET OR 1" STEEL COUPLING, STANDARD WEIGHT	7-H, 5-D
②	1" GATE VALVE	2-G.2
③	1" 90° ELBOW, STANDARD WEIGHT	5-C
④	1" PIPE, STANDARD WEIGHT	1-C
⑤	1" CURB STOP, BRASS	2-D
⑥	5/8" x 3/4" METER (FURNISHED BY SAWCO), 3/4" METER (FURNISHED BY SAWCO), OR 1" METER (FURNISHED BY SAWCO)	7-D.1, 7-D.2, 7-D.3
⑦	3/4" OR 1" STRAIGHT METER COUPLING	7-J
⑧	1" BALL VALVE, BRONZE (FIPTxFIPT)	2-G.4
⑨	PLASTIC METER BOX WITH T-COVER	6-B.1
⑩	3/4" ROCK BASE. 12" THICK	N/A
⑪	1" THREADED NIPPLE, STANDARD WEIGHT	5-C



TYPICAL SERVICE INSTALLATION  
FOR 3/4" & 1" METERS  
GALVANIZED SERVICE

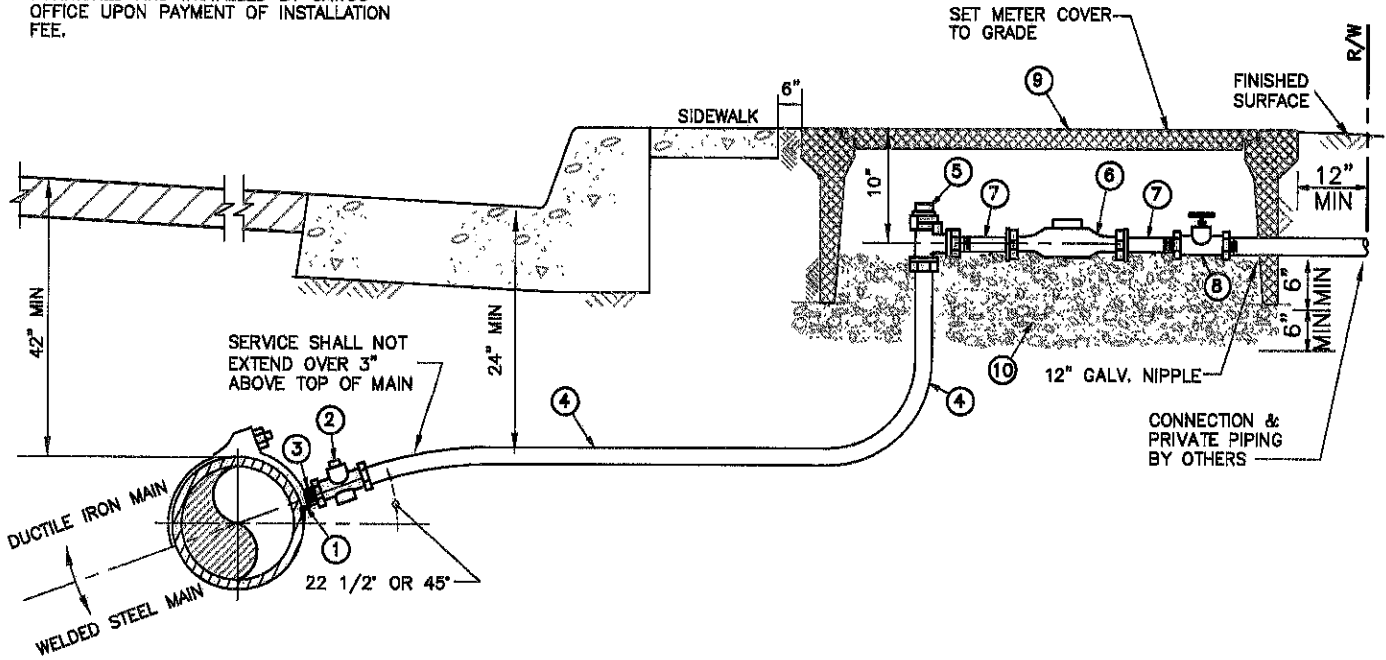
APPROVED BY GENERAL MANAGER

*Charles Moorrees*  
CHARLES MOORREES

STANDARD DRAWING No.  
SAWCO-11

DATE: JUNE 2013

METER AND CUSTOMER SERVICE VALVE  
FURNISHED AND INSTALLED BY SAWCO  
OFFICE UPON PAYMENT OF INSTALLATION  
FEE.



### Notes

1. PIPE THREADS SHALL BE CLEAN, SHARP AND SEALED WITH AN APPROVED JOINT COMPOUND
2. WATER METER BOX AND COVER SHALL BE NEW FOR METER RELOCATION WORK.
3. PROVIDE BRASS BUSHINGS FOR 3/4" METER INSTALLATIONS.

ITEM	DESCRIPTION	APPROVED MATERIAL LIST NO.
①	DOUBLE STRAP BRASS SERVICE SADDLE W/ 1 1/2" OR 2" IRON PIPE OUTLET	7-H, 5-D
②	1" CURB STOP (FIP x COMPRESSION FITTING) COPPER TUBE SIZE (CTS)	2-D
③	1" CLOSE NIPPLE	5-C
④	1" TYPE "L" COPPER TUBING	1-E
⑤	ANGLE METER STOP (FIP x COMPRESSION FITTING) COPPER TUBE SIZE (CTS)	2-H
⑥	3/4" METER (FURNISHED BY SAWCO), OR 1" METER (FURNISHED BY SAWCO)	7-D.2, 7-D.3
⑦	3/4" OR 1" STRAIGHT METER COUPLING	7-J
⑧	1" BALL VALVE, BRONZE (FIPT x FIPT)	2-G.4
⑨	PLASTIC METER BOX WITH T-COVER	6-B.1
⑩	3/4" ROCK BASE. 12" THICK	N/A



### TYPICAL SERVICE INSTALLATION FOR 3/4" & 1" METERS COPPER SERVICE

APPROVED BY GENERAL MANAGER

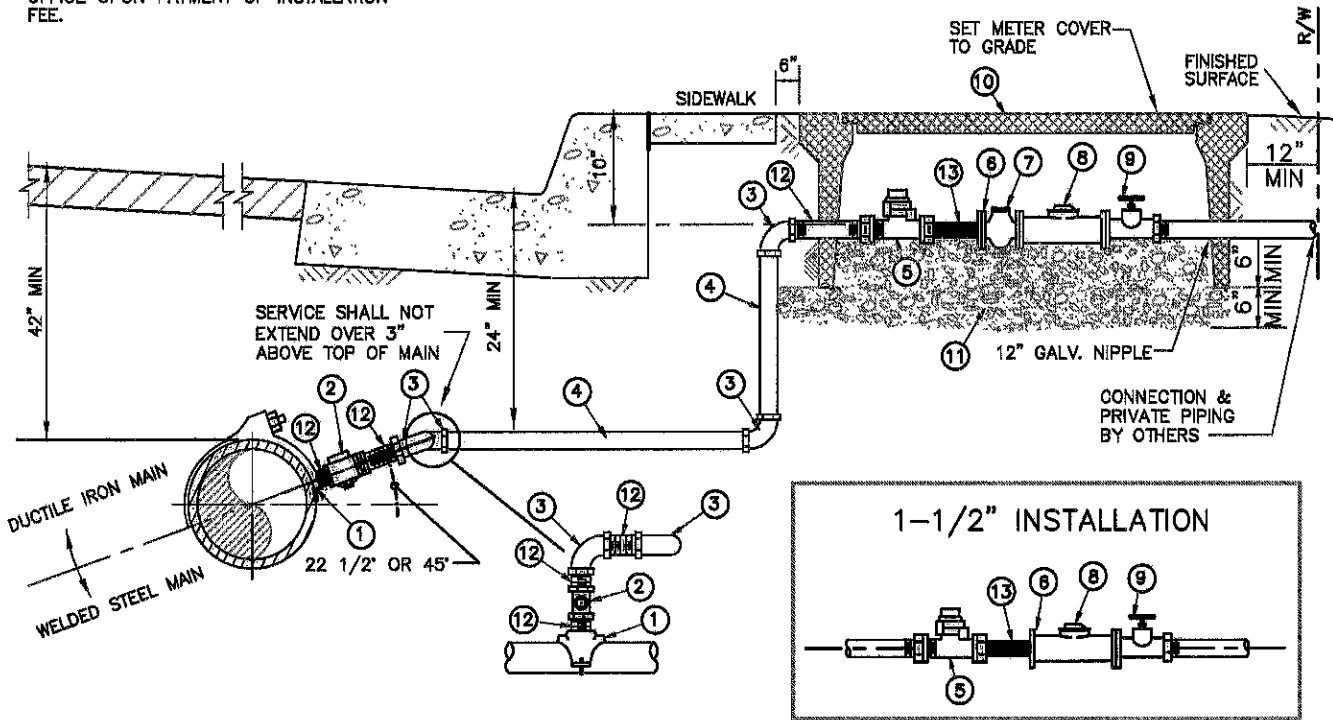
*Charles Moorrees*  
CHARLES MOORREES

STANDARD DRAWING No.  
**SAWCO-11-A**

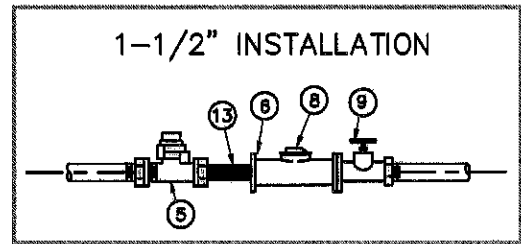
DATE: JUNE 2013

METER AND CUSTOMER SERVICE VALVE  
FURNISHED AND INSTALLED BY SAWCO  
OFFICE UPON PAYMENT OF INSTALLATION  
FEE.

## 2" INSTALLATION



## 1-1/2" INSTALLATION



## Notes

1. PIPE THREADS SHALL BE CLEAN, SHARP AND SEALED WITH AN APPROVED JOINT COMPOUND.
2. WATER METER BOX AND COVER SHALL BE NEW FOR METER RELOCATION WORK.
3. STRAINER ON 2" METER INSTALLATIONS ONLY.

ITEM	DESCRIPTION	APPROVED MATERIAL LIST NO.
①	DOUBLE STRAP BRASS SERVICE 1 1/2" OR 2" IRON PIPE OUTLET OR 1 1/2" OR 2" STEEL COUPLING, STANDARD WEIGHT	7-H.1 OR 5-D
②	1 1/2" OR 2" GATE VALVE	2-G.2
③	1 1/2" OR 2" 90° ELBOW, STANDARD WEIGHT	5-C
④	1 1/2" OR 2" PIPE, STANDARD WEIGHT	1-C
⑤	1 1/2" OR 2" CURB STOP, BRASS	2-C OR 2-E
⑥	1 1/2" OR 2" WATER METER FLANGE	7-B
⑦	STRAINER, (NOT REQUIRED WITH 1 1/2" INSTALLATION)	7-I
⑧	1 1/2" OR 2" NEPTUNE TURBINE METER, FLANGED (FURNISHED BY SAWCO)	7-D.4 OR 7-D.5
⑨	1 1/2" OR 2" BALL VALVE - BRONZE	2-G.3
⑩	PLASTIC METER BOX	6-B.2
⑪	3/4" ROCK BASE. 12" THICK	N/A
⑫	1 1/2" OR 2" NIPPLE, GALVANIZED	5-C
⑬	1 1/2" OR 2" CLOSE NIPPLE, BRASS	5-A



## TYPICAL SERVICE INSTALLATION FOR 1 1/2 & 2" METERS GALVANIZED SERVICE

APPROVED BY GENERAL MANAGER

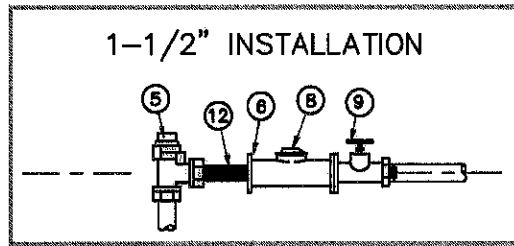
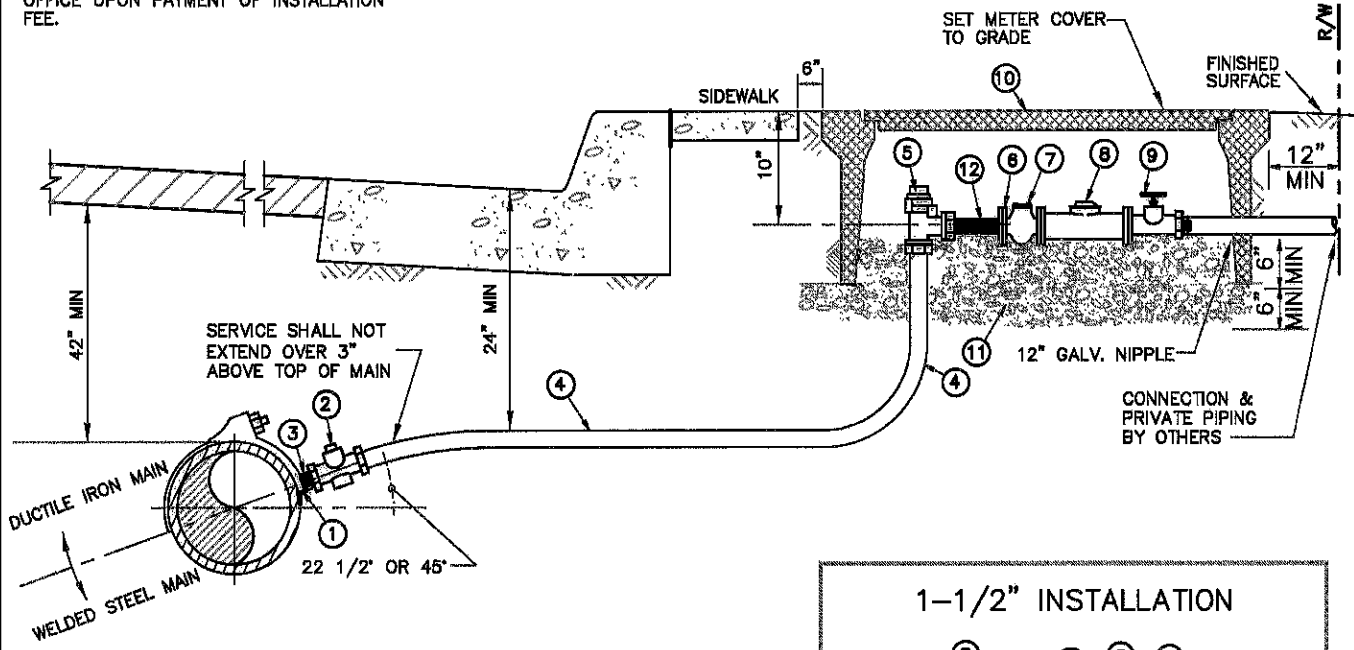
*Charles Moorrees*  
CHARLES MOORREES

STANDARD DRAWING No.  
SAWCO-12

DATE: JUNE 2013

METER AND CUSTOMER SERVICE VALVE  
FURNISHED AND INSTALLED BY SAWCO  
OFFICE UPON PAYMENT OF INSTALLATION  
FEE.

2" INSTALLATION



**Notes**

1. PIPE THREADS SHALL BE CLEAN, SHARP AND SEALED WITH AN APPROVED JOINT COMPOUND.
2. WATER METER BOX AND COVER SHALL BE NEW FOR METER RELOCATION WORK.
3. STRAINER ON 2" METER INSTALLATIONS ONLY.

ITEM	DESCRIPTION	APPROVED MATERIAL LIST NO.
①	DOUBLE STRAP BRASS SERVICE SADDLE W/ 1 1/2" OR 2" IRON PIPE OUTLET	7-H.1 OR 5-D
②	1 1/2" OR 2" CURB STOP (FIP x COMPRESSION FITTING) COPPER TUBE SIZE (CTS)	2-D
③	1 1/2" OR 2" CLOSE NIPPLE	5-C
④	1 1/2" OR 2" COPPER TUBING	1-E
⑤	ANGLE METER STOP (FIP x COMPRESSION FITTING) COPPER TUBE SIZE (CTS)	2-H
⑥	1 1/2" OR 2" WATER METER FLANGE, BRONZE	7-B
⑦	STRAINER, (NOT REQUIRED WITH 1 1/2" INSTALLATION)	7-I
⑧	1 1/2" OR 2" NEPTUNE TURBINE METER, FLANGED (FURNISHED BY SAWCO)	7-D.4 OR 7-D.5
⑨	1 1/2" OR 2" BALL VALVE - BRONZE	2-G.3
⑩	PLASTIC METER BOX	6-B.2
⑪	3/4" ROCK BASE. 12" THICK	N/A
⑫	1 1/2" OR 2" CLOSE NIPPLE (BRASS)	5-A



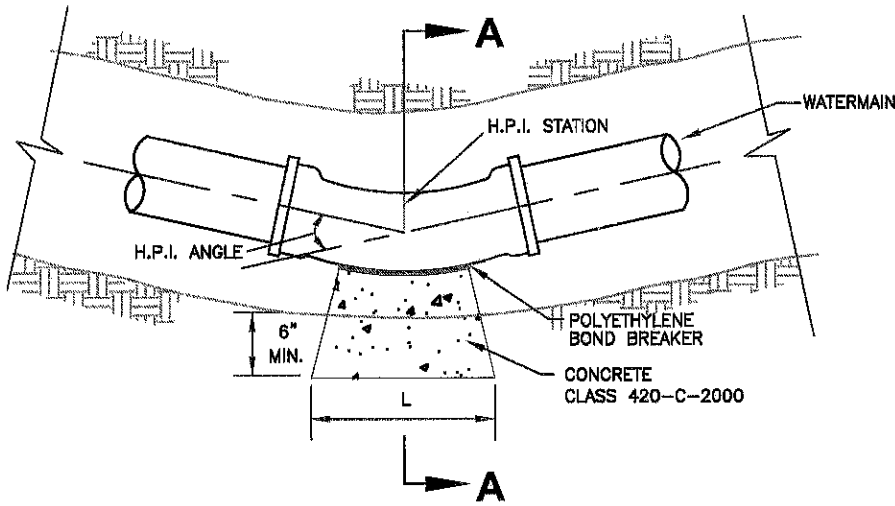
TYPICAL SERVICE INSTALLATION  
FOR 1 1/2" & 2" METERS  
COPPER SERVICE

APPROVED BY GENERAL MANAGER  
*Charles Moorrees*  
CHARLES MOORREES

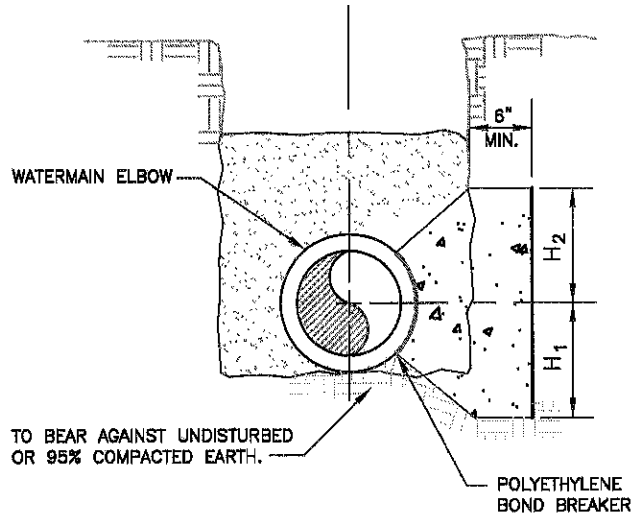
STANDARD DRAWING No.  
SAWCO-12-A

DATE: JUNE 2013

# HORIZONTAL BEND THRUST BLOCK



**SECTIONAL PLAN**



**SECTION A-A**

PIPE DIA.	H <sub>1</sub>	H <sub>2</sub>	L	H.P.I. ANGLE
4"	1/2 O.D.	1/2 O.D.	4'-0"	5° TO 41°
4"	4"	4"	4'-0"	42° TO 83°
4"	10"	5"	4'-0"	84° TO 104°
6"	1/2 O.D.	1/2 O.D.	4'-0"	5° TO 27°
6"	6"	6"	4'-0"	28° TO 51°
6"	1'-5"	9"	4'-0"	52° TO 90°
8"	1/2 O.D.	1/2 O.D.	4'-0"	5° TO 20°
8"	8"	8"	4'-0"	21° TO 36°
8"	1'-6"	10"	4'-0"	37° TO 54°
8"	2'-2"	1'-1"	4'-0"	55° TO 78°
8"	2'-8"	1'-4"	4'-0"	79° TO 111°
10"	1/2 O.D.	1/2 O.D.	4'-0"	5° TO 16°
10"	10"	10"	4'-0"	17° TO 28°
10"	1'-10"	11"	4'-0"	29° TO 39°
10"	2'-4"	1'-2"	4'-0"	40° TO 53°
10"	2'-10"	1'-8"	4'-0"	54° TO 70°
10"	2'-10"	1'-6"	6'-0"	71° TO 120°
12"	1/2 O.D.	1/2 O.D.	4'-0"	5° TO 13°
12"	12"	12"	4'-0"	14° TO 22°
12"	2'-0"	12"	4'-0"	23° TO 30°
12"	2'-6"	1'-3"	4'-0"	31° TO 40°
12"	3'-0"	1'-8"	4'-0"	41° TO 52°
12"	3'-0"	1'-8"	6'-0"	53° TO 83°

TO BEAR AGAINST UNDISTURBED OR 95% COMPACTED EARTH.

## Notes

- PIPE INSTALLED UNDER CONDITIONS DIFFERENT FROM THOSE NORMALLY ENCOUNTERED SHALL REQUIRE THRUST BLOCKS DESIGNED FOR THOSE PARTICULAR CONDITIONS.
- ALL THRUST BLOCKS SHALL BE 420-C-2000 CONCRETE AND PLACE AGAINST UNDISTURBED OR 95% COMPACTED SOIL. SAWCO WILL DETERMINE SIZES NOT SHOWN.
- THRUST BLOCKS ON CROSSES SHALL BE USED WHENEVER PIPE SIZES DIFFER OR WHEN ONE OR MORE OPENINGS ARE PLUGGED.
- REINFORCING STEEL SHALL CONFORM TO A.S.T.M. SPECIFICATIONS A15 AND A305 INTERMEDIATE GRADE.
- ALL FITTINGS TO BE WRAPPED WITH POLYETHYLENE.
- VERTICAL THRUST BLOCKS SHALL BE IN COMPLIANCE WITH THE CONSTRUCTION DRAWINGS.



THRUST BLOCKS FOR STEEL AND D.I.P. PIPELINES, 225 P.S.I. MAX.

APPROVED BY GENERAL MANAGER

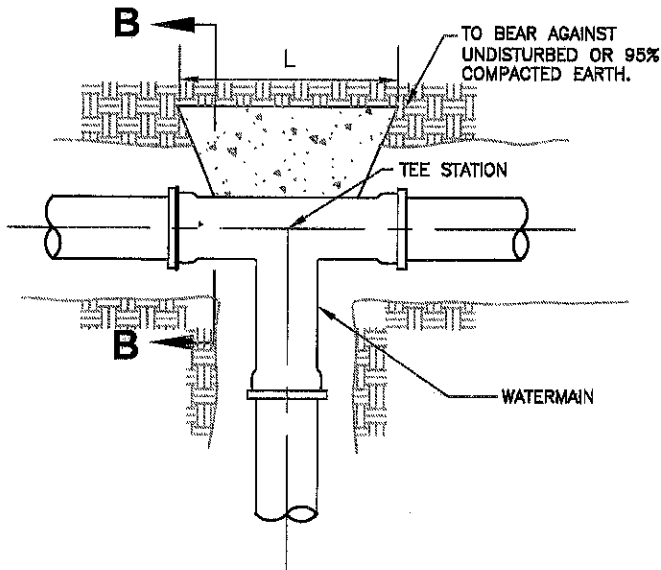
*Charles Moorrees*  
CHARLES MOORREES

STANDARD DRAWING No.  
SAWCO-13 (1 OF 3)

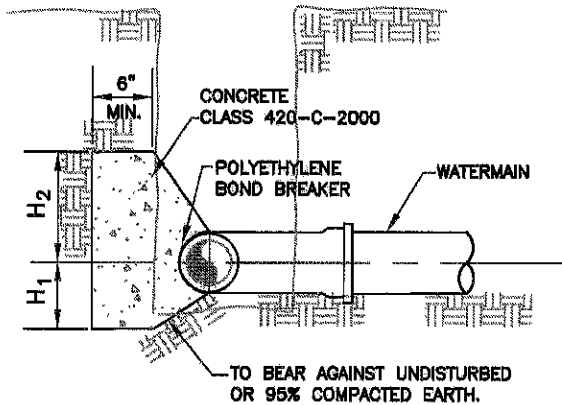
DATE: JUNE 2013



# TEE THRUST BLOCK

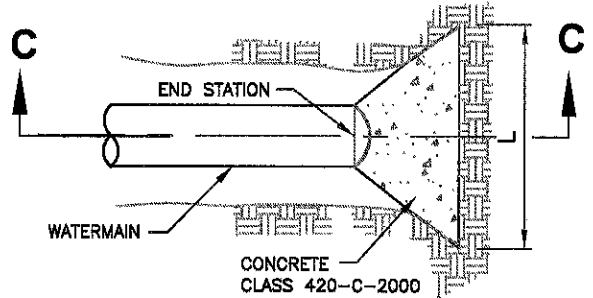


**SECTIONAL PLAN**

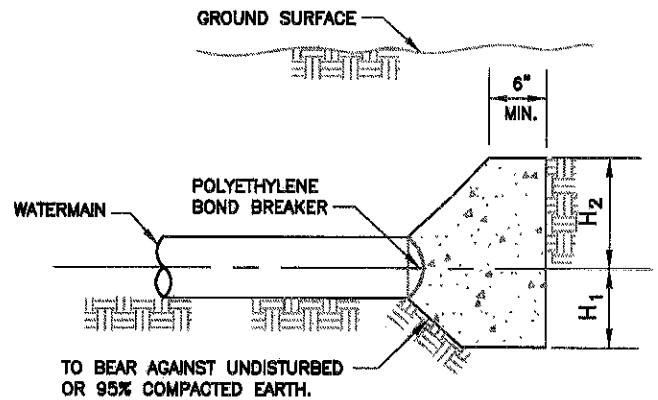


**SECTION B-B**

# END THRUST BLOCK



**SECTIONAL PLAN**



**SECTION C-C**

## Notes

1. PIPE INSTALLED UNDER CONDITIONS DIFFERENT FROM THOSE NORMALLY ENCOUNTERED SHALL REQUIRE THRUST BLOCKS DESIGNED FOR THOSE PARTICULAR CONDITIONS.
2. ALL THRUST BLOCKS SHALL BE 420-C-2000 CONCRETE AND PLACE AGAINST UNDISTURBED OR 95% COMPACTED SOIL. SAWCO WILL DETERMINE SIZES NOT SHOWN.
3. THRUST BLOCKS ON CROSSES SHALL BE USED WHENEVER PIPE SIZES DIFFER OR WHEN ONE OR MORE OPENINGS ARE PLUGGED.
4. REINFORCING STEEL SHALL CONFORM TO A.S.T.M. SPECIFICATIONS A15 AND A305 INTERMEDIATE GRADE.
5. ALL FITTINGS TO BE WRAPPED WITH POLYETHYLENE.
6. VERTICAL THRUST BLOCKS SHALL BE IN COMPLIANCE WITH THE CONSTRUCTION DRAWINGS.

*PIPE DIA.	H <sub>1</sub>	H <sub>2</sub>	L
4"	9"	6"	3'-6"
6"	1'-6"	9"	4'-0"
8"	2'-2"	1'-1"	4'-0"
10"	2'-10"	1'-5"	4'-0"
12"	3'-0"	1'-6"	5'-0"

\* USE OUTLET PIPE DIAMETER



THRUST BLOCKS FOR STEEL AND D.I.P. PIPELINES, 225 P.S.I. MAX.

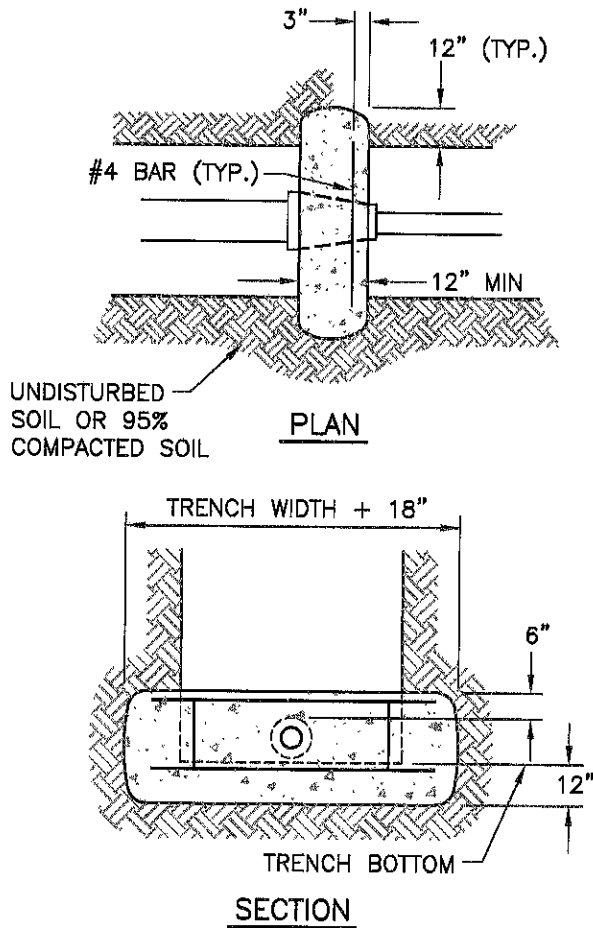
APPROVED BY GENERAL MANAGER

*Charles Moorrees*  
CHARLES MOORREES

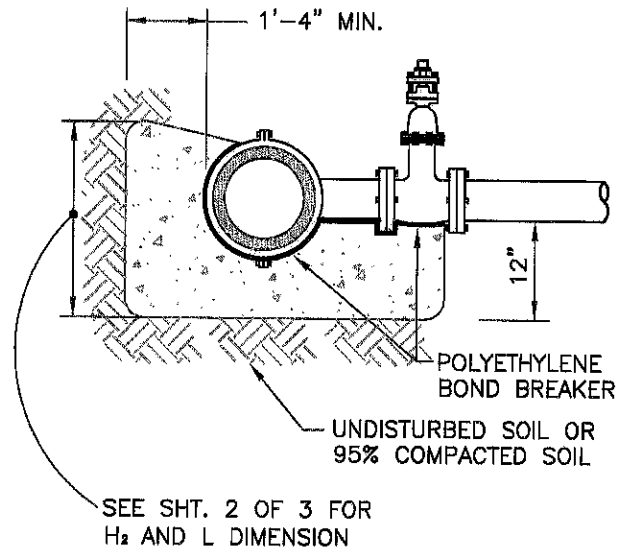
STANDARD DRAWING No.  
SAWCO-13 (2 OF 3)

DATE: JUNE 2013

# REDUCER THRUST BLOCK



# HOT TAP THRUST BLOCK



## Notes

1. PIPE INSTALLED UNDER CONDITIONS DIFFERENT FROM THOSE NORMALLY ENCOUNTERED SHALL REQUIRE THRUST BLOCKS DESIGNED FOR THOSE PARTICULAR CONDITIONS.
2. ALL THRUST BLOCKS SHALL BE 420-C-2000 CONCRETE AND PLACE AGAINST UNDISTURBED OR 95% COMPACTED SOIL. SAWCO WILL DETERMINE SIZES NOT SHOWN.
3. THRUST BLOCKS ON CROSSES SHALL BE USED WHENEVER PIPE SIZES DIFFER OR WHEN ONE OR MORE OPENINGS ARE PLUGGED.
4. REINFORCING STEEL SHALL CONFORM TO A.S.T.M. SPECIFICATIONS A15 AND A305 INTERMEDIATE GRADE.
5. ALL FITTINGS TO BE WRAPPED WITH POLYETHYLENE.
6. THRUST BLOCK NOT REQUIRED IF GRIP RINGS ARE USED ON PIPE LINES



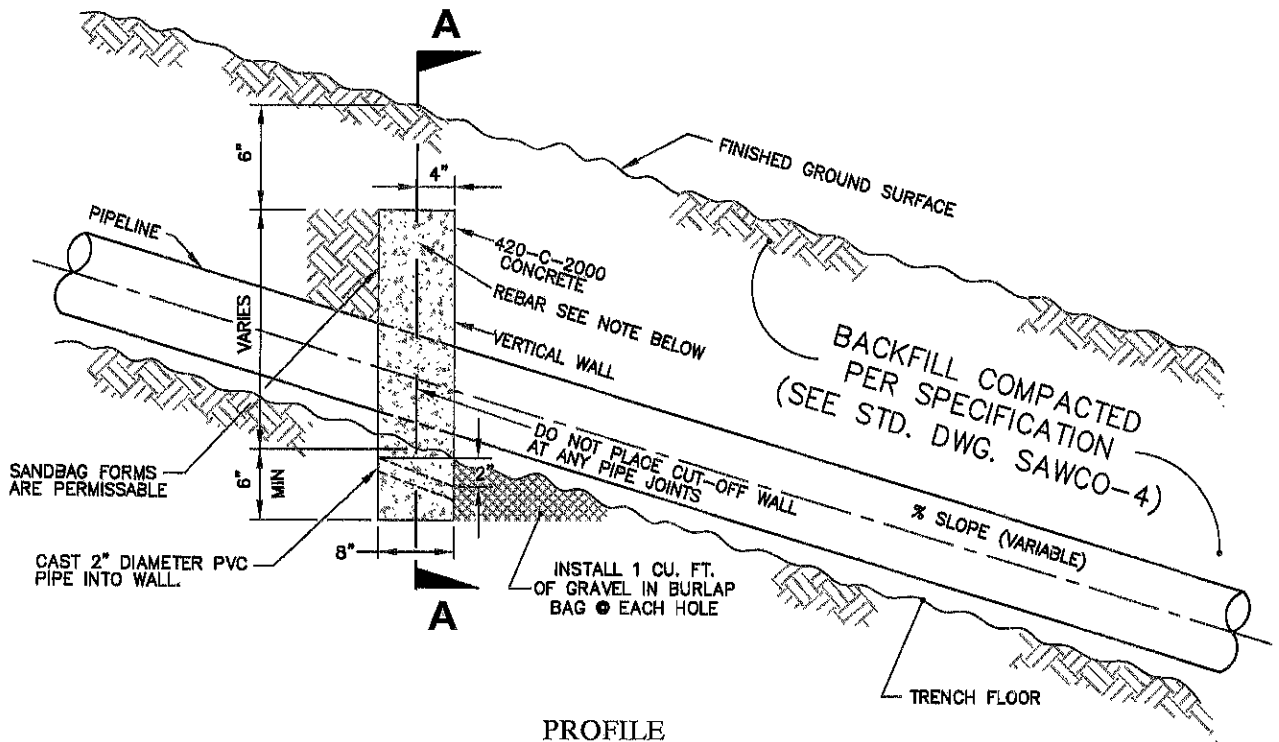
THRUST BLOCKS FOR STEEL AND D.I.P.  
PIPELINES, 225 P.S.I. MAX.

APPROVED BY GENERAL MANAGER

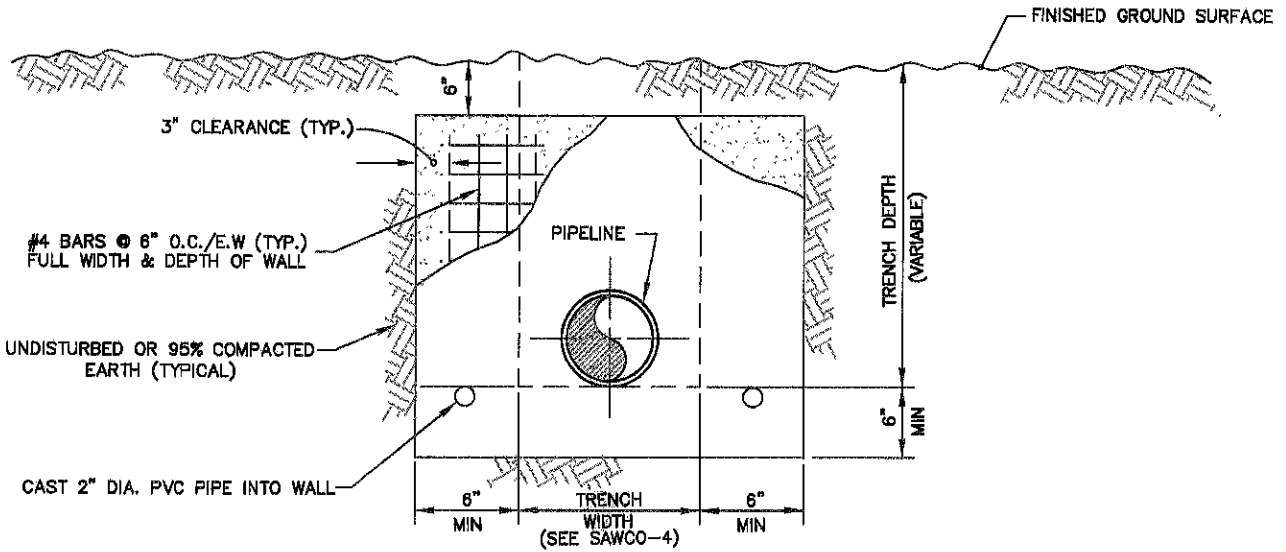
*Charles Moorrees*  
CHARLES MOORREES

STANDARD DRAWING No.  
SAWCO-13 (3 OF 3)

DATE: JUNE 2013



PROFILE



SECTION A-A

**Notes**

1. SLOPE PROTECTION CUT-OFF WALLS TO BE INSTALLED WHERE DIRECTED ON THE PLANS OR BY THE OWNER.
2. REINFORCING STEEL SHALL CONFORM TO A.S.T.M. SPECIFICATIONS A15 AND A305.



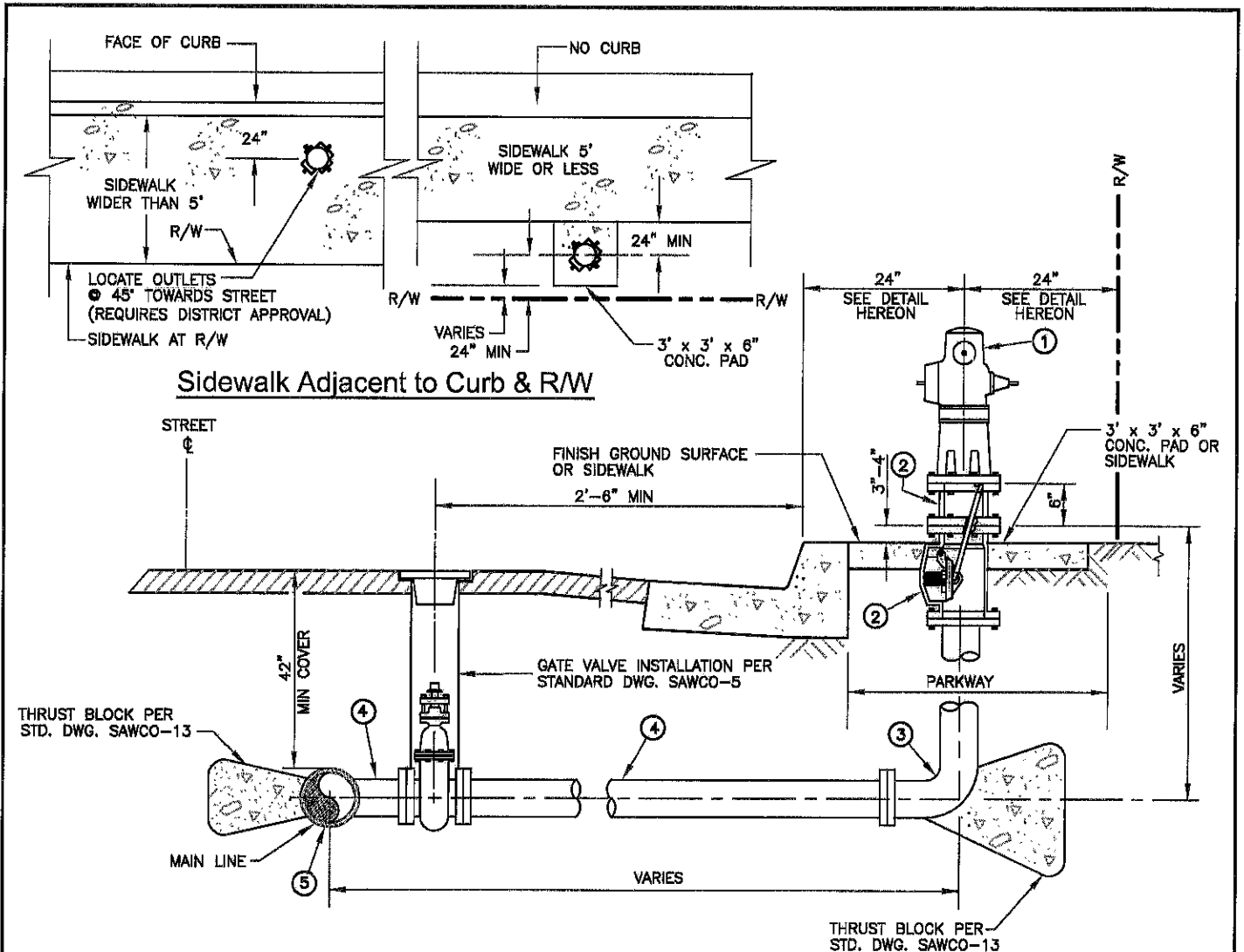
**SLOPE PROTECTION  
CUT-OFF WALL**

APPROVED BY GENERAL MANAGER

*Charles McCorrees*  
CHARLES MCCORREES

STANDARD DRAWING No.  
**SAWCO-14**

DATE: JUNE 2013




**Notes**

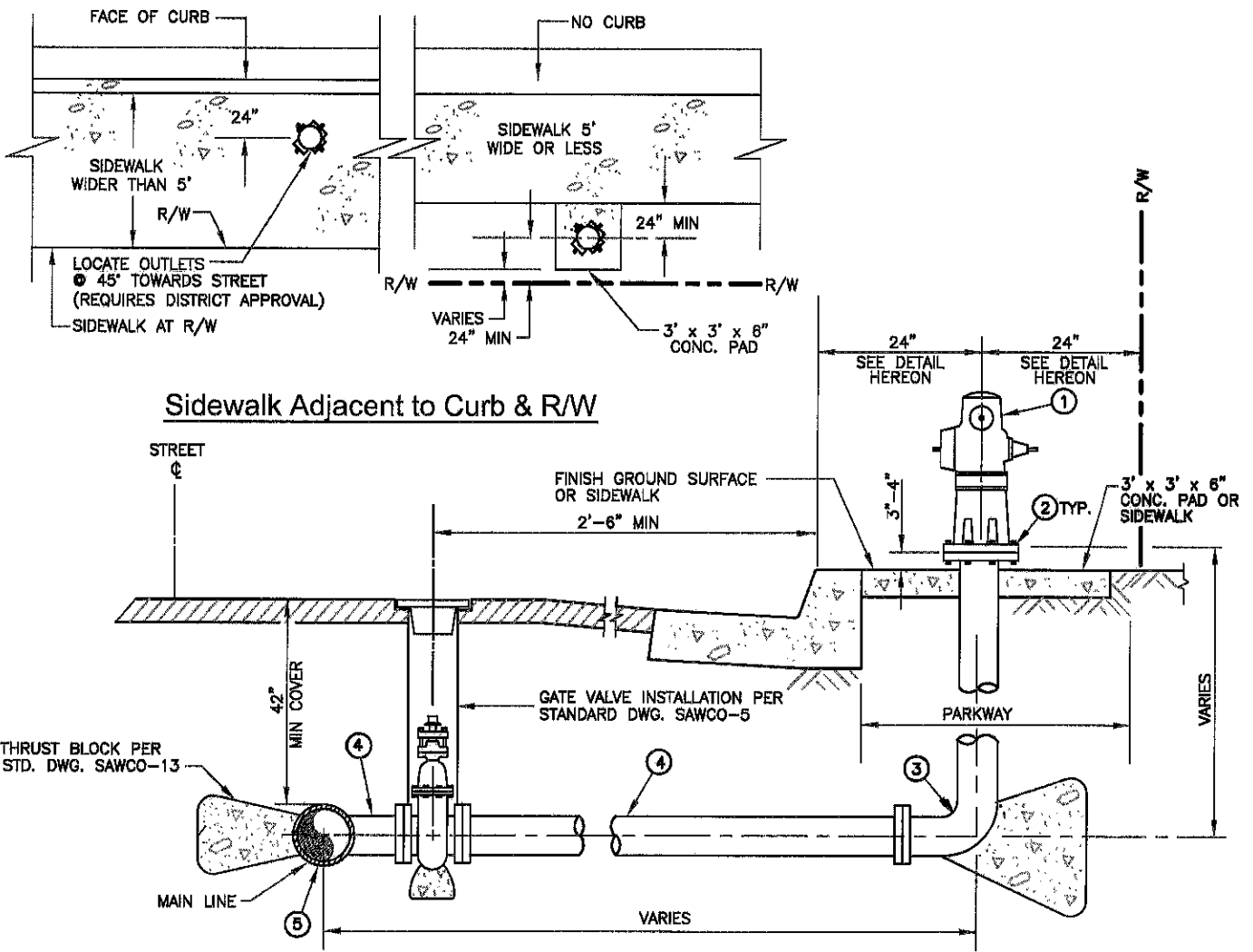
1. NORMAL LOCATION WATER HYDRANT IS 2'-0" AWAY FROM FACE OF CURB WHEN SIDEWALK IS AT PROPERTY LINE. IF THERE IS NO CURB LOCATE WATER HYDRANT 2'-0" FROM PROPERTY LINE OR AS DETERMINED BY SAWCO.
2. WATER HYDRANTS IN UNPAVED ROAD SHALL HAVE GUARD POSTS, SIZE AND PLACEMENT DETERMINED BY SAWCO.
3. A CONCRETE PAD OF 3' x 3' x 6" MUST BE PROVIDED WHEN THE HYDRANT IS LOCATED OUTSIDE OF A SIDEWALK.
4. WRAP 8 MIL POLYETHYLENE AROUND PARTS REQUIRING THRUST BLOCKS.

ITEM	QTY	DESCRIPTION	APPROVED MATERIAL LIST NO.
①		6" x 2- 1/2" x 4" FIRE HYDRANT HEAD, 6 HOLE BOLT PATTERN.	3-A
②		BREAK-OFF CHECK VALVE , 6 HOLE BOLT PATTERN	3-C & 7-E.2
③		FLANGED x MECHANICAL JOINT BURY, DUCTILE IRON (CLASS 350) OR FLANGE x FLANGE BURY, CMC & C, STEEL (STANDARD WEIGHT)	5-B OR 5-D
④		DUCTILE IRON CLASS 350, CML & TAR COATED, OR CML & C STEEL, STANDARD WEIGHT.	1-B OR 1-D
⑤		MAIN SIZE x 6" FLANGED, OR MECHANICAL JOINT x FLANGE, DUCTILE IRON TEE	5-B.1, 5-B.2



**TYPICAL 6" WATER HYDRANT  
INSTALLATION  
WITH BREAK-OFF CHECK VALVE ASSEMBLY**

APPROVED BY GENERAL MANAGER  
  
 CHARLES MOORREES  
 STANDARD DRAWING No.  
**SAWCO-15 (1 OF 2)**  
 DATE: JUNE 2013



### Notes

1. NORMAL LOCATION WATER HYDRANT IS 2'-0" AWAY FROM FACE OF CURB WHEN SIDEWALK IS AT PROPERTY LINE. IF THERE IS NO CURB LOCATE WATER HYDRANT 2'-0" FROM PROPERTY LINE OR AS DETERMINED BY SAWCO.
2. WATER HYDRANTS IN UNPAVED ROAD SHALL HAVE GUARD POSTS, SIZE AND PLACEMENT DETERMINED BY SAWCO.
3. A CONCRETE PAD OF 3' x 3' x 6" MUST BE PROVIDED WHEN THE HYDRANT IS LOCATED OUTSIDE OF A SIDEWALK.
4. WRAP 8 MIL POLYETHYLENE AROUND PARTS REQUIRING THRUST BLOCKS.

ITEM	QTY	DESCRIPTION	APPROVED MATERIAL LIST NO.
①		6" x 2- 1/2" x 4" FIRE HYDRANT HEAD, 6 HOLE BOLT PATTERN.	3-A
②		BREAK-OFF BOLTS	7-E.1
③		FLANGED x MECHANICAL JOINT BURY, DUCTILE IRON (CLASS 350) OR FLANGE x FLANGE BURY, CMC & C, STEEL (STANDARD WEIGHT)	5-B OR 5-D
④		DUCTILE IRON CLASS 350, CML & TAR COATED, OR CML & C STEEL, STANDARD WEIGHT.	1-B OR 1-D
⑤		MAIN SIZE x 6" FLANGED, OR MECHANICAL JOINT x FLANGE, DUCTILE IRON TEE	5-B.1, 5-B.2



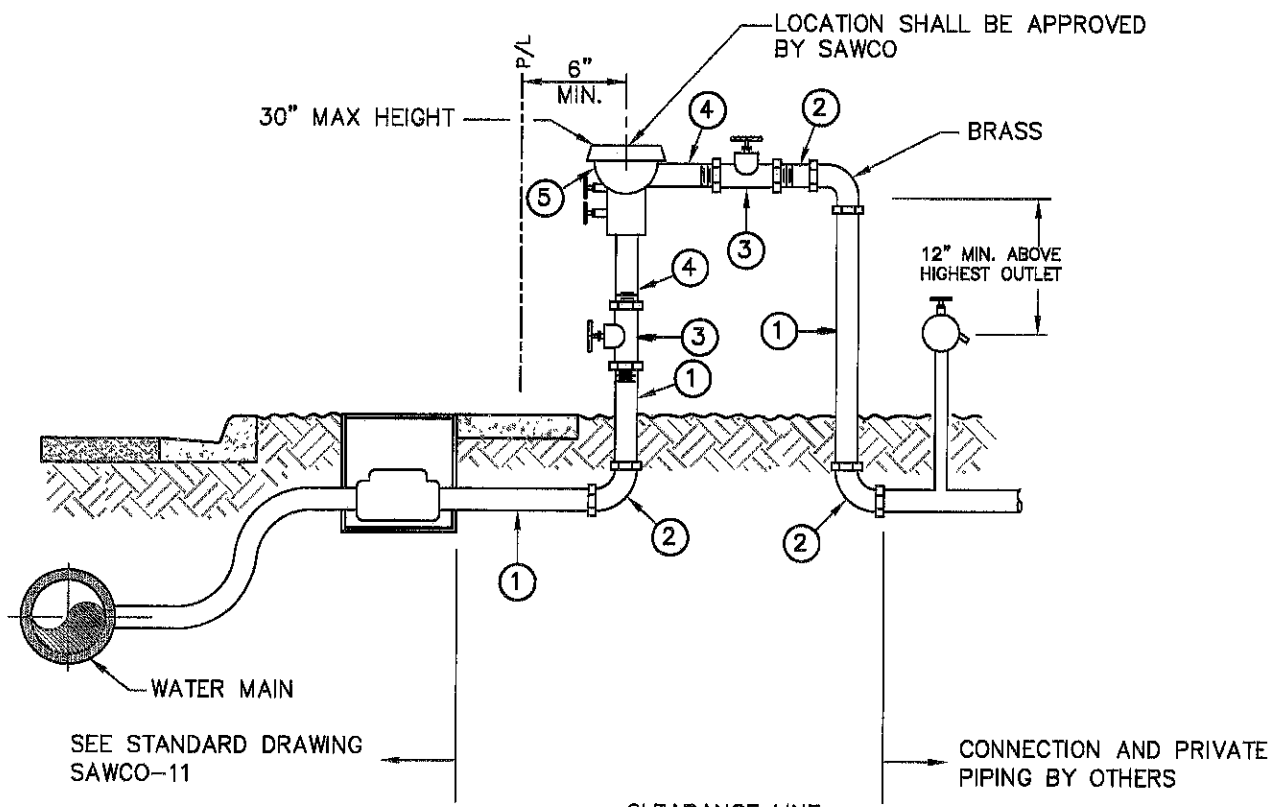
### TYPICAL 6" WATER HYDRANT INSTALLATION

APPROVED BY GENERAL MANAGER

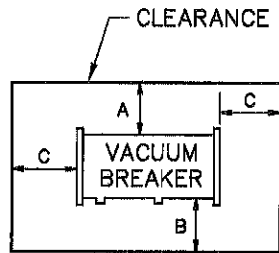
*Charles Moorrees*  
CHARLES MOORREES

STANDARD DRAWING No.  
SAWCO-15 (2 OF 2)

DATE: JUNE 2013



MINIMUM CLEARANCE			
SIZE	A	B	C
3/4" - 2"	12"	12"	12"



**Note:**

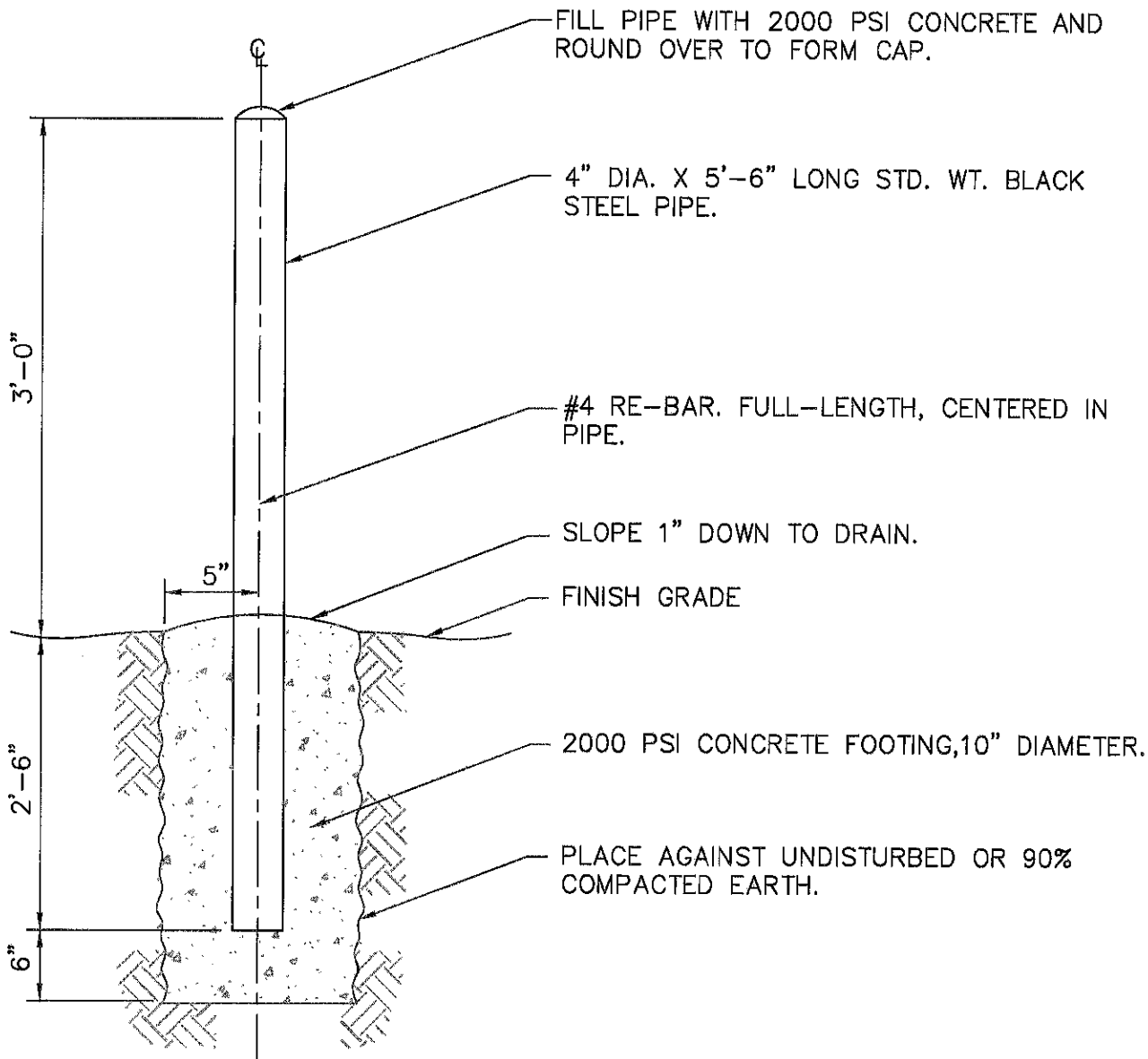
1. VACUUM BREAKER AND PIPING SHALL BE THE SAME DIAMETER AS THE METER .
2. PLACE BOTTOM OF VALVE A MINIMUM OF 12" AND A MAXIMUM OF 30" ABOVE FINISH GRADE.
3. BOOSTER PUMPS ARE NOT PERMITTED DOWN STREAM OF THE VACUUM BREAKER.
4. CUSTOMER SHALL PROTECT DEVICE FROM FREEZING AND MAINTAIN ACCESS FOR TESTING.

ITEM	DESCRIPTION	APPROVED MATERIAL LIST NO.
①	3/4" TO 2" PIPE, BRASS	
②	3/4" TO 2" 90° ELBOW, BRASS	
③	3/4" TO 2" GATE VALVE	
④	3/4" TO 2" THREADED NIPPLE, BRASS	
⑤	3/4" TO 2" PRESSURE VACUUM BREAKER	



**PRESSURE VACUUM BREAKER INSTALLATION**

APPROVED BY GENERAL MANAGER  
  
 CHARLES MOORREES  
 STANDARD DRAWING No.  
**SAWCO-16**  
 DATE: JUNE 2013



**Note**

1. LOCATION SHALL BE AS SHOWN ON PLAN VIEW, OR AS DIRECTED IN THE FIELD INSPECTOR OR ENGINEER.
2. GUARD POST SHALL BE PAINTED WITH PRIMER AND TWO (2) COATS OF YELLOW DUPONT PAINT # 7001 OR APPROVED EQUAL. FINAL DRY FILM THICKNESS SHALL BE 8 MILS. MINIMUM.



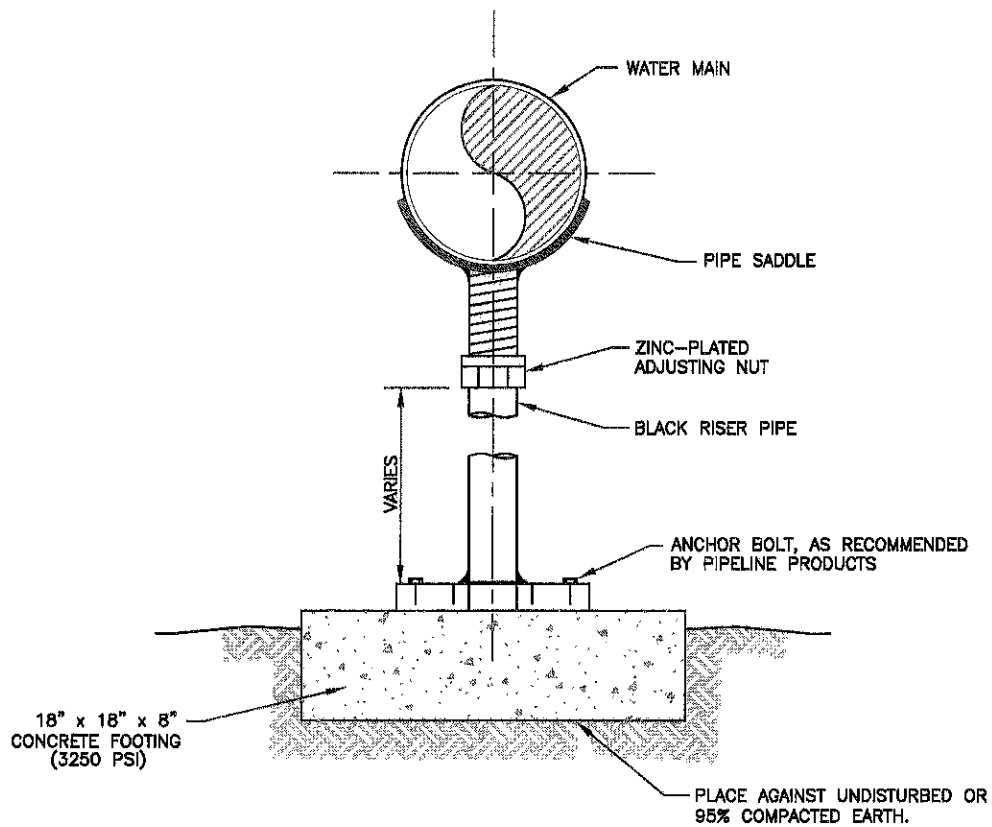
**GUARD POST INSTALLATION DETAIL**

APPROVED BY GENERAL MANAGER

*Charles Moorrees*  
CHARLES MOORREES

STANDARD DRAWING No.  
**SAWCO-17**

DATE: JUNE 2013



DIA.	MAX SPACING
2" & LESS	8'
4"-24"	10'

### Notes

1. PIPE SUPPORT SHALL BE MANUFACTURED BY PIPELINE PRODUCTS.
2. RISER PIPE AND BASE FLANGE SHALL BE AS RECOMMENDED BY PIPELINE PRODUCTS.
3. PIPE SUPPORT LOCATIONS SHALL BE IN COMPLIANCE WITH THE CONSTRUCTION DRAWINGS BUT SHALL NOT EXCEED THE MAXIMUM SPACING REQUIREMENTS.



PIPE SUPPORT DETAIL  
PIPELINE PRODUCTS

APPROVED BY GENERAL MANAGER

*Charles Moorrees*  
CHARLES MOORREES

STANDARD DRAWING No.

SAWCO-18

DATE: JUNE 2013