



# CITY OF GARDEN GROVE PUBLIC WORKS STANDARD PLANS

## SERIES B-700 WATER

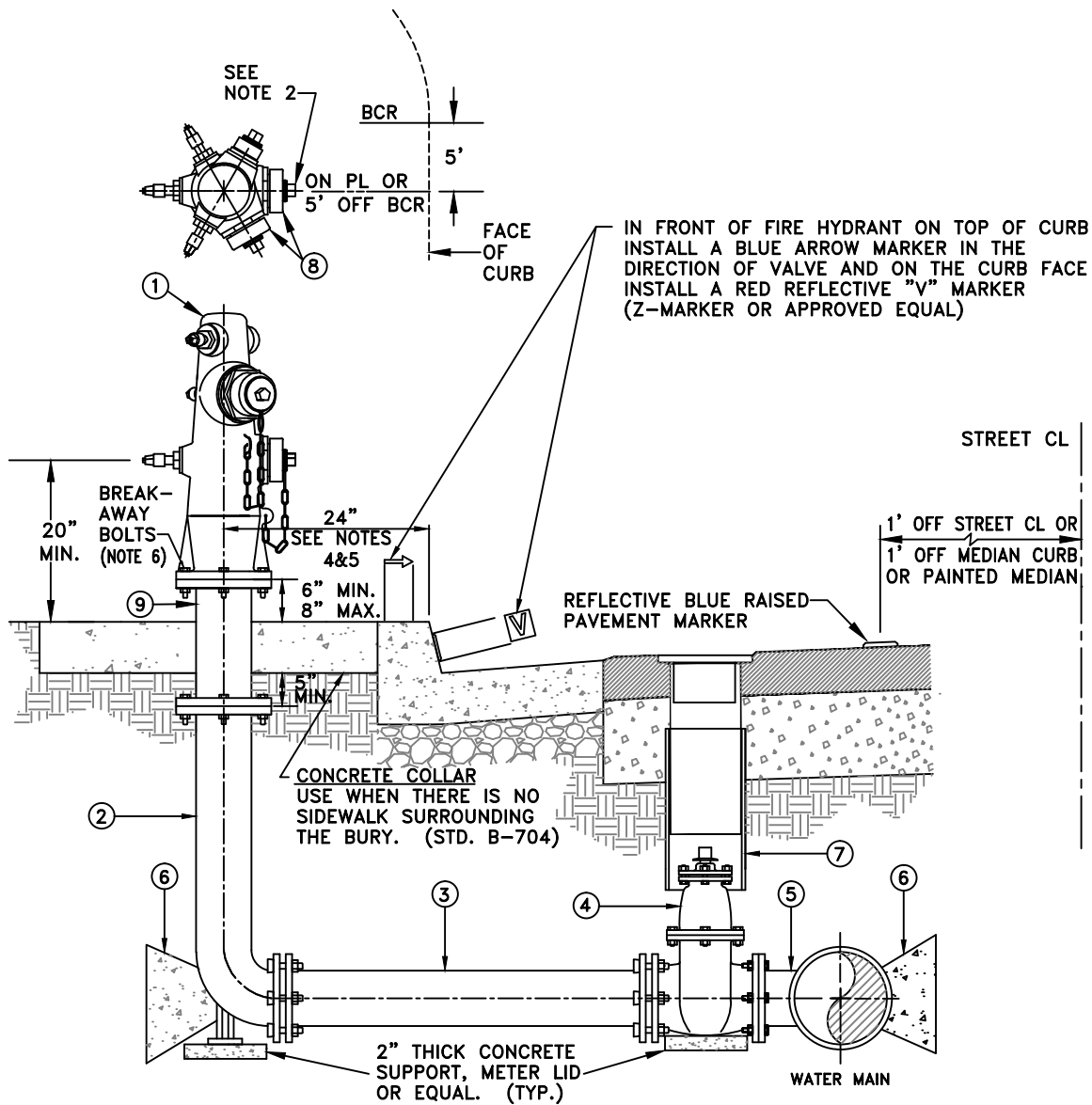
- B-701 WET BARREL FIRE HYDRANT – COMMERCIAL/INDUSTRIAL
- B-702 WET BARREL FIRE HYDRANT – RESIDENTIAL
- ~~B-703 GUARD POST DETAIL FOR FIRE HYDRANTS~~
- B-704 CONCRETE COLLAR DETAIL
- B-705 FIRE HYDRANT SETBACK DETAIL
- B-710 ANCHOR BLOCK DETAILS FOR 4" THRU 12" D.I. FITTINGS
- B-711 ANCHOR BLOCK DETAIL FOR 45° VERTICAL BEND
- B-712 ANCHOR BLOCK DETAIL FOR PVC WATER MAIN VALVES
- B-713 ANCHOR BLOCK DETAILS FOR 6" THRU 16" PIPE
- B-714 REVERSE TIE ANCHOR BLOCK ASSEMBLY FOR 6" THRU 16" PIPE
- B-718 METER BOX INSTALLATION WITH NEW CONCRETE REPLACEMENT
- B-719 1" COPPER WATER SERVICE FOR RESIDENTIAL FIRE SPRINKLER
- B-720 1" COPPER WATER SERVICE SAMPLE CONNECTION
- B-721 1" COPPER WATER SERVICE INSTALLATION FOR 5/8" & 1" METERS
- B-722 1-1/2" & 2" OMNI R2-C2 METERS AND 2" COPPER WATER SERVICE INSTALLATION
- ~~B-723 1-1/2" & 2" TURBO METER AND 2" COPPER WATER SERVICE INSTALLATION~~
- B-724 3", 4", & 6" COMPOUND WATER METER AND SERVICE INSTALLATION
- ~~B-725 3", 4", & 6" TURBO METER AND SERVICE INSTALLATION~~
- B-729 SERVICE LATERAL INSTALLATION FOR PRIVATE FIRE HYDRANTS
- B-730 2-1/2" TEMPORARY WATER SERVICE
- B-739 2" TAP TO 1" AIR AND VACUUM RELIEF VALVE ASSEMBLY
- B-740 1" AIR AND VACUUM RELIEF VALVE ASSEMBLY
- B-741 2" AIR AND VACUUM RELIEF VALVE ASSEMBLY
- B-742 AIR & VACUUM RELIEF ENCLOSURE ASSEMBLY
- B-743 AIR RELEASE & VACUUM RELIEF ENCLOSURE SETBACK DETAIL
- B-744 2" BLOWOFF INSTALLATION AT END OF 4" WATER MAIN PIPE
- B-745 4" BLOWOFF INSTALLATION FOR 6" OR LARGER MAINS
- B-746 SAMPLE POINT FOR NEW WATER MAIN
- B-749 CUT-IN VALVE
- B-750 TAPPING SLEEVE AND GATE VALVE



# CITY OF GARDEN GROVE PUBLIC WORKS STANDARD PLANS

## SERIES B-700 WATER (continued)

- B-751 WELDED TAPPING NOZZLE AND GATE VALVE FOR STEEL CYLINDER PIPE
- B-752 GATE VALVE CAN ASSEMBLY
- B-753 GATE VALVE CAN ASSEMBLY FOR CONCRETE AREAS
- B-754 OLD GATE VALVE CAN ASSEMBLY REPLACEMENT
- B-760 SEPARATION REQUIREMENTS FOR NEW WATER MAIN & EXISTING SEWER MAIN
- B-761 SEPARATION REQUIREMENTS FOR NEW SEWER MAIN & EXISTING WATER MAIN
- B-762 SEWER MAIN CROSSING UNDER WATER MAIN
- B-763 WATER MAIN CROSSING UNDER SEWER MAIN
- B-764 INSTALLATION OF WATER PIPE THROUGH STEEL CASING
- B-765 DUCTILE IRON VERTICAL OFFSET
- B-766 DUCTILE IRON HORIZONTAL OFFSET
- B-767 WELDED STEEL OFFSET
- B-769 ABOVE GROUND FIRE LINE AND BACKFLOW DEVICE SCREENING AND SETBACK REQUIREMENTS
- B-770 TYPICAL 2" OR SMALLER REDUCED PRESSURE PRINCIPAL DEVICE (RPPD)
- B-771 TYPICAL 2-1/2" OR LARGER REDUCED PRESSURE PRINCIPAL DEVICE (RPPD)
- B-773 TYPICAL 2-1/2" OR LARGER DOUBLE CHECK DETECTOR CHECK FIRE LINE ONLY
- B-774 BACKFLOW CAGE FOR TYPICAL 2" OR SMALLER REDUCED PRESSURE PRINCIPAL DEVICE (RPPD)
- B-781 WARNING IDENTIFICATION TAPE AND TRACER WIRE INSTALLATION



ALL UNDERGROUND BOLTS TO BE COATED WITH NO-OX-ID WATER WORKS OR APPROVED EQUAL

MATERIAL LIST

ITEM NO.	QUAN.	DESCRIPTION	MFR.
①	1	WET BARREL FIRE HYDRANT, (1) 2-1/2" AND (2) 4" OUTLETS; 1-1/2" PENTAGON OPERATING NUT; 6 BOLT PATTERN.	CLOW, MODEL F-865
②	1	MECHANICAL JOINT FIRE HYDRANT BURY W/ RESTRAINT IN 24", 30", 36", 42", & 48" LENGTHS AS NEEDED; 6 BOLT PATTERN.	CLOW OR APPROVED EQUAL
③	—	6" AWWA C900 PVC PIPE, DR14, CLASS 305, PER STD. B-763, AS REQUIRED	—
④	1	6" RESILIENT WEDGE GATE VALVE, FLG. x MJ W/ JOINT RESTRAINT	SEE SECTION 2-05.03
⑤	1	TEE OR TAPPING SLEEVE, TAPPING TO BE PER STD. B-750	—
⑥	—	THRUST BLOCK PER STD. B-710.	—
⑦	1	GATE VALVE CAN ASSEMBLY PER STD. B-752, B-753 IF WITHIN CONCRETE.	—
⑧	—	(2) 4" AND (1) 2-1/2" IRON PROTECTOR CAPS W/ 1-1/2" OPERATING NUTS AND CHAINS.	—
⑨	1	6" x 12", 18", OR 24" SOLID EXTENSION, WITH 6 BOLT PATTERN. (THIS SPOOL IS MANDATORY)	—



WET BARREL FIRE HYDRANT  
COMMERCIAL/INDUSTRIAL

Approved  Date 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-701**  
SHEET 1 OF 2

NOTES:

1. PROVIDE 24" X 36" EXPANSION JOINT AROUND FIRE HYDRANT FOR NEW SIDEWALK CONSTRUCTION.
2. FIRE HYDRANT SHALL BE LOCATED A MINIMUM OF 5' FROM BCR, ECR, OR DRIVEWAY APPROACH.
3. 4" OUTLET TO BE FACING STREET, PERPENDICULAR TO CURB.
4. DISTANCE TO BE 5'-3" WHEN 4' SIDEWALK IS ADJACENT TO CURB. FOR MORE DETAIL, REFER TO STD PLAN B-705.
5. FOR ALL CASES, THE LOCATION OF FIRE HYDRANT SHALL MEET ADA REQUIREMENTS THAT A MINIMUM 48" CLEARANCE SHALL BE MAINTAINED FROM ANY OBSTRUCTION IN THE WALKWAY.
6. BREAK-AWAY FEATURES OTHER THAN BOLTS WILL NOT BE ALLOWED.
7. FIRE HYDRANT SHALL BE PAINTED IN ACCORDANCE WITH SECTION 2-14.
8. CONTRACTOR SHALL USE ADDITIONAL RESTRAINED BEND(S) NECESSARY TO AVOID OTHER EXISTING OR PROPOSED UTILITIES WHEN REQUIRED.
9. FOR ROLLED CURB, THE DISTANCE FROM THE EDGE OF PAVEMENT TO THE FIRE HYDRANT SHALL BE AS DIRECTED BY THE WATER SERVICES DIVISION.



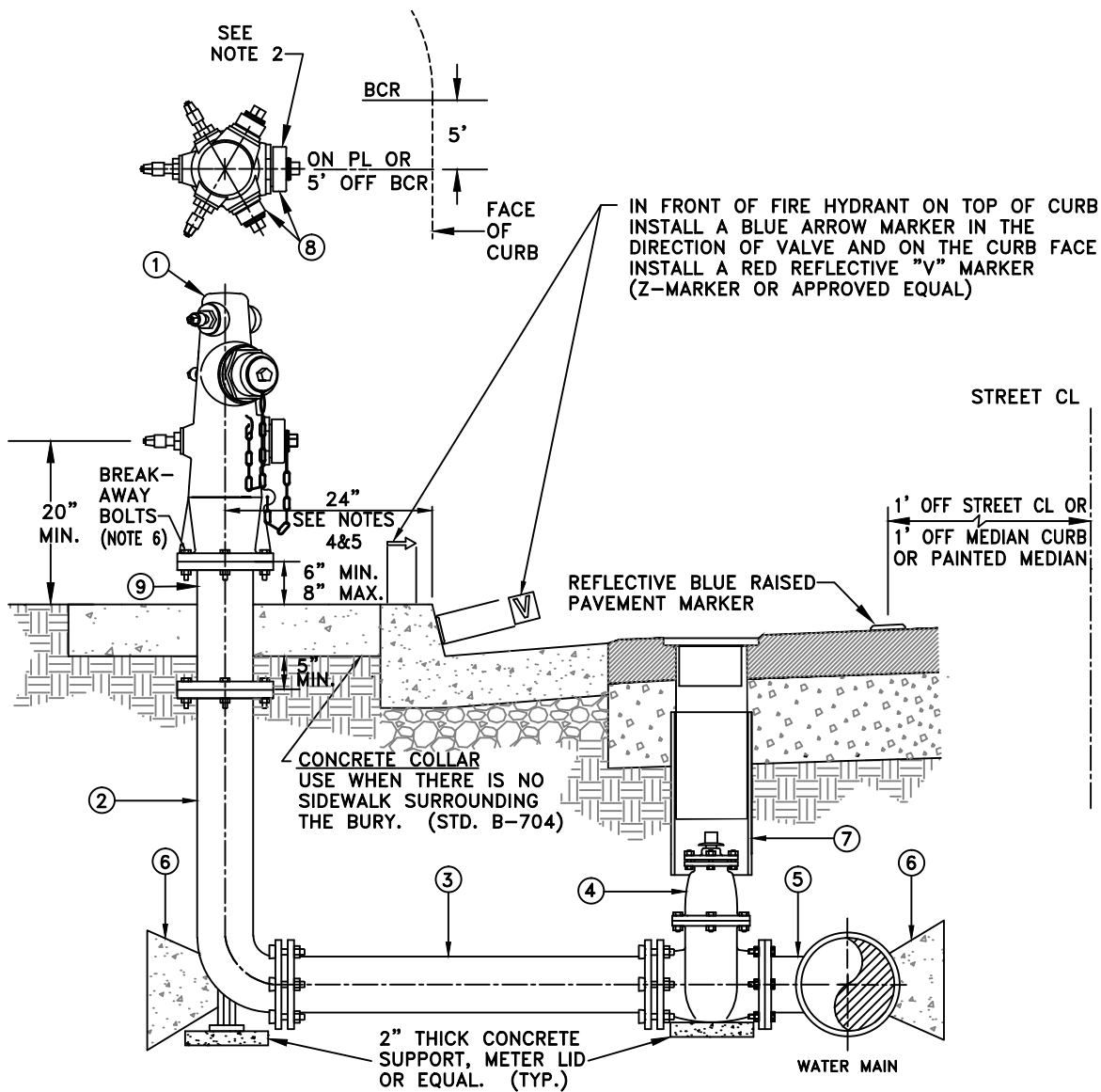
City of  
Garden Grove  
California

**WET BARREL FIRE HYDRANT  
COMMERCIAL/INDUSTRIAL**

Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-701**  
SHEET 2 OF 2



ALL UNDERGROUND BOLTS TO BE COATED WITH NO-OX-ID WATER WORKS OR APPROVED EQUAL

MATERIAL LIST

ITEM NO.	QUAN.	DESCRIPTION	MFR.
①	1	WET BARREL FIRE HYDRANT, (2) 2-1/2" AND (1) 4" OUTLETS; 1-1/2" PENTAGON OPERATING NUT; 6 BOLT PATTERN.	CLOW, MODEL F-860
②	1	MECHANICAL JOINT FIRE HYDRANT BURY W/ RESTRAINT IN 24", 30", 36", 42", & 48" LENGTHS AS NEEDED; 6 BOLT PATTERN.	CLOW OR APPROVED EQUAL
③	—	6" AWWA C900 PVC PIPE, DR14, CLASS 305, PER STD. B-763, AS REQUIRED	—
④	1	6" RESILIENT WEDGE GATE VALVE, FLG. x MJ W/ JOINT RESTRAINT	SEE SECTION 2-05.03
⑤	1	TEE OR TAPPING SLEEVE, TAPPING TO BE PER STD. B-750	—
⑥	—	THRUST BLOCK PER STD. B-710.	—
⑦	1	GATE VALVE CAN ASSEMBLY PER STD. B-752, B-753 IF WITHIN CONCRETE.	—
⑧	—	(1) 4" AND (2) 2-1/2" IRON PROTECTOR CAPS W/ 1-1/2" OPERATING NUTS AND CHAINS.	—
⑨	1	6" x 12", 18", OR 24" SOLID EXTENSION, WITH 6 BOLT PATTERN. (THIS SPOOL IS MANDATORY)	—



# WET BARREL FIRE HYDRANT RESIDENTIAL

Approved:  Date: 12-8-15  
 City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-702**  
 SHEET 1 OF 2

NOTES:

1. PROVIDE 24" X 36" EXPANSION JOINT AROUND FIRE HYDRANT FOR NEW SIDEWALK CONSTRUCTION.
2. FIRE HYDRANT SHALL BE LOCATED A MINIMUM OF 5' FROM BCR, ECR, OR DRIVEWAY APPROACH.
3. 4" OUTLET TO BE FACING STREET, PERPENDICULAR TO CURB.
4. DISTANCE TO BE 5'-3" WHEN 4' SIDEWALK IS ADJACENT TO CURB. FOR MORE DETAIL, REFER TO STD PLAN B-705.
5. FOR ALL CASES, THE LOCATION OF FIRE HYDRANT SHALL MEET ADA REQUIREMENTS THAT A MINIMUM 48" CLEARANCE SHALL BE MAINTAINED FROM ANY OBSTRUCTION IN THE WALKWAY.
6. BREAK-AWAY FEATURES OTHER THAN BOLTS WILL NOT BE ALLOWED.
7. FIRE HYDRANT SHALL BE PAINTED IN ACCORDANCE WITH SECTION 2-14.
8. CONTRACTOR SHALL USE ADDITIONAL RESTRAINED BEND(S) NECESSARY TO AVOID OTHER EXISTING OR PROPOSED UTILITIES WHEN REQUIRED.
9. FOR ROLLED CURB, THE DISTANCE FROM THE EDGE OF PAVEMENT TO THE FIRE HYDRANT SHALL BE AS DIRECTED BY THE WATER SERVICES DIVISION.



City of  
Garden Grove  
California

## WET BARREL FIRE HYDRANT RESIDENTIAL

Approved

A handwritten signature in black ink, likely belonging to the City Engineer.

Date 12-8-15

City Engineer

R.C.E. 52125 Exp.12-31-16

REVISIONS

BY

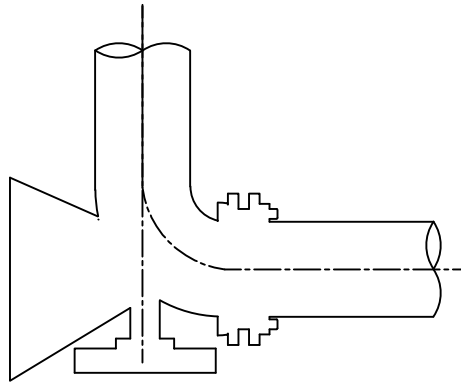
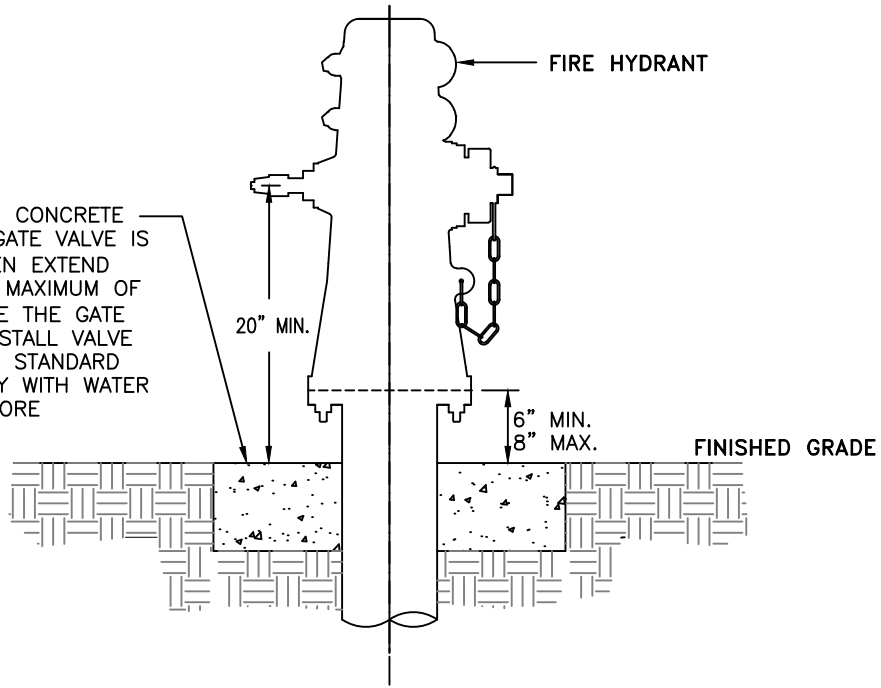
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STD. PLAN NUMBER

**B-702**

SHEET 2 OF 2

4'x4'x8" DEEP CONCRETE COLLAR. IF GATE VALVE IS WITHIN 4' THEN EXTEND COLLAR TO A MAXIMUM OF 4' TO INCLUDE THE GATE VALVE AND INSTALL VALVE CAN PER CITY STANDARD B-753. VERIFY WITH WATER SERVICES BEFORE INSTALLING.




**NOTES:**

CONCRETE COLLAR NOT TO BE USED ON FIRE HYDRANTS WHERE THERE IS NO CONCRETE SIDEWALK UNLESS DIRECTED BY THE WATER SERVICES DIVISION.



City of  
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**CONCRETE COLLAR DETAIL**

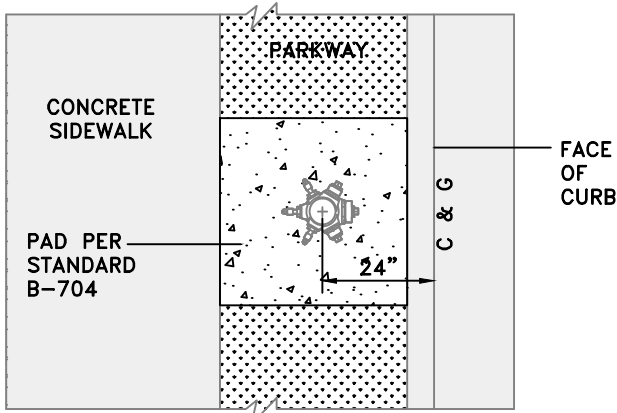
Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER

**B-704**

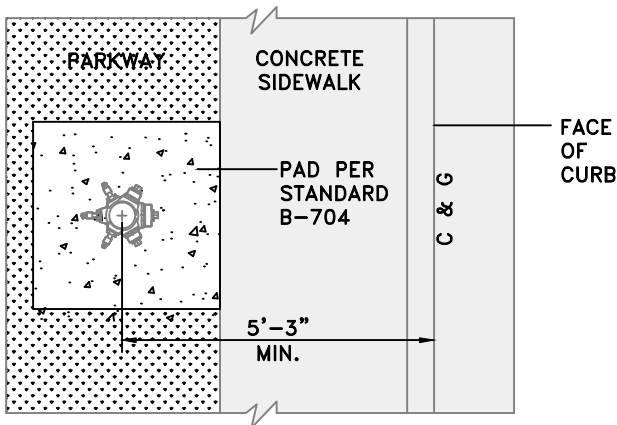
SHEET 1 OF 1



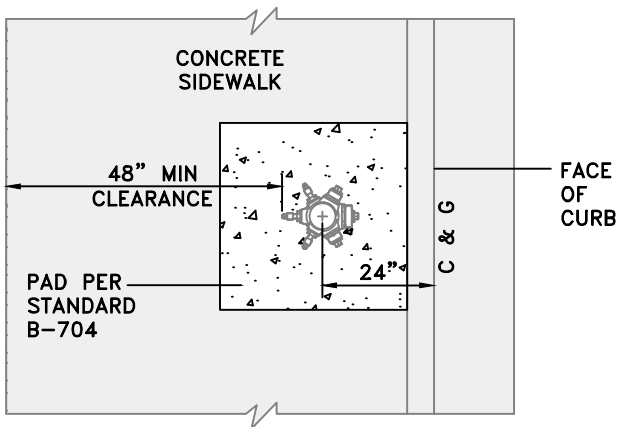
**DETACHED SIDEWALK**

**NOTE:**

FOR ALL CASES, THE LOCATION OF FIRE HYDRANT SHALL MEET ADA REQUIREMENTS THAT A MINIMUM 48" CLEARANCE SHALL BE MAINTAINED FROM ANY OBSTRUCTION IN THE WALKWAY.



**4' WIDE ATTACHED SIDEWALK**



**6' OR WIDER SIDEWALK**



City of  
Garden Grove  
California

**FIRE HYDRANT  
SETBACK DETAIL**

Approved: *[Signature]* Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

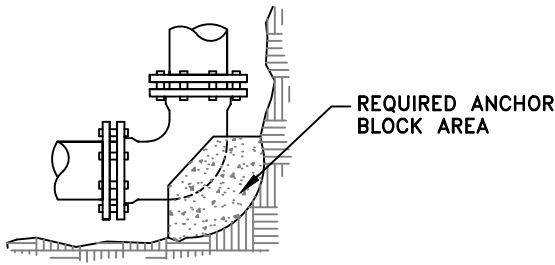
REVISIONS	BY	DATE

STD. PLAN NUMBER

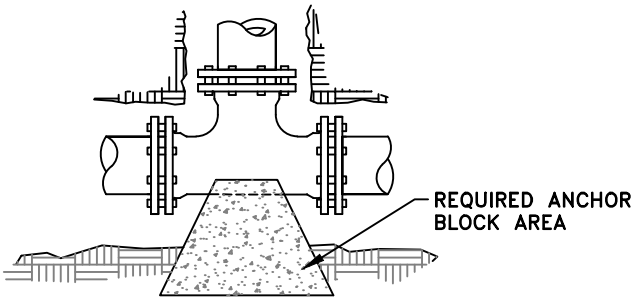
**B-705**

SHEET 1 OF 1

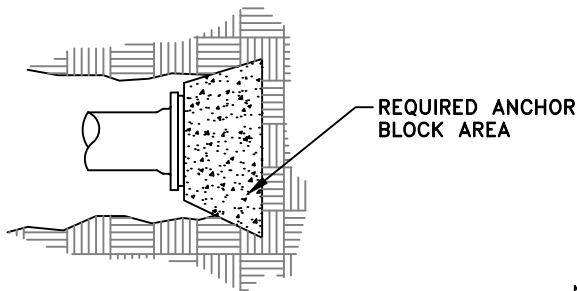




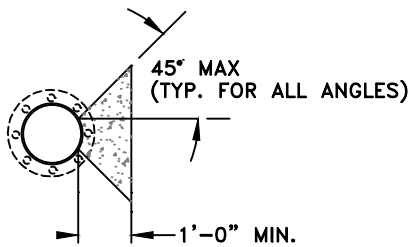
ANCHOR BLOCK FOR C.I. BEND



ANCHOR BLOCK FOR TEE OUTLET



ANCHOR BLOCK FOR DEAD END



TYPICAL SECTION THRU ANCHOR BLOCK

ANCHOR BLOCK AREA REQUIRED (SQ. FT.)	
FITTINGS	ALLOWABLE SOIL BEARING VALUE: 2000 LB/SQ.FT
6"-11 1/4" BEND	1.0
6"-22 1/2"	1.5
6"-45°	3.0
6"-90°	5.5
6"-TEE OUTLET	4.0
6"-DEAD END	4.0
8"-11 1/4" BEND	1.5
8"-22 1/2"	3.0
8"-45°	5.0
8"-90°	9.5
8"-TEE OUTLET	6.5
8"-DEAD END	6.5
10"-11 1/4" BEND	2.5
10"-22 1/2"	4.5
10"-45°	8.5
10"-90°	15.5
10"-TEE OUTLET	11.0
10"-DEAD END	11.0
12"-11 1/4"	3.0
12"-22 1/2"	6.0
12"-45°	12.0
12"-90°	22.0
12"-TEE OUTLET	15.0
12"-DEAD END	15.0

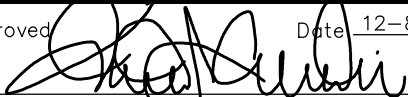
NOTES:

1. ANCHOR BLOCKS SHALL BE 560-C-3250 CONCRETE (GREENBOOK) AND POURED AGAINST UNDISTURBED SOIL.
2. ANCHOR BLOCK REQUIREMENTS ON ALL 4" FITTINGS ARE THE SAME AS FOR 6" FITTINGS.
3. CONCRETE SHALL HAVE 3" MINIMUM CLEARANCE AROUND ALL JOINTS.
4. FOR THRUST BLOCKS ON FITTINGS LARGER THAN 12" CONTACT WATER ENGINEER AT (714) 741-5395.



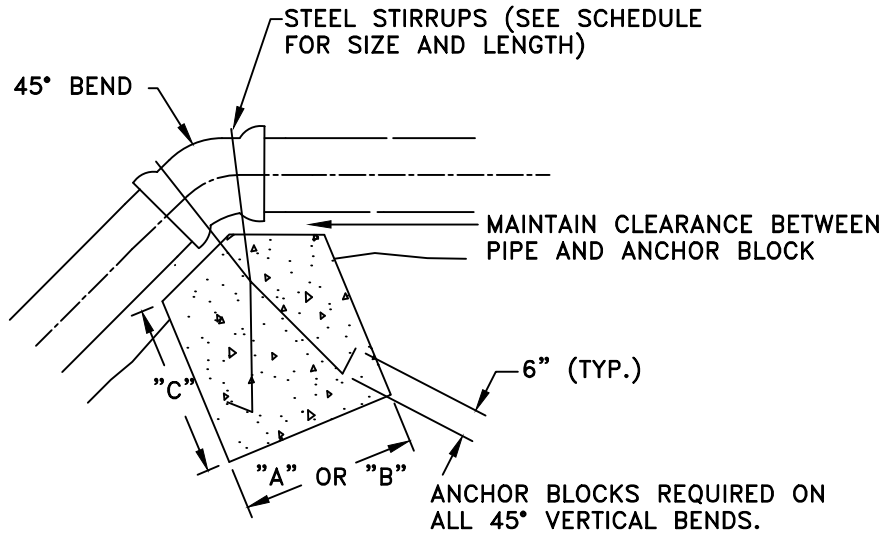
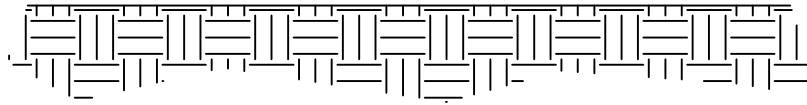
City of  
Garden Grove  
California

## ANCHOR BLOCK DETAILS FOR 4" THRU 12" D.I. FITTINGS

Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-710**  
SHEET 1 OF 1



**NOTES:**

1. ANCHOR BLOCK SHALL BE 560-C-3250 CONCRETE (GREENBOOK) AND POURED AGAINST UNDISTURBED SOIL.
2. ALL STEEL STIRRUPS NOT EMBEDDED IN CONCRETE SHALL BE COATED WITH 1/8" THICK KOPPER BITUMASTIC #50 OR AS APPROVED BY THE ENGINEER.

**SCHEDULE**

CONCRETE ANCHOR BLOCK FOR 45° UPPER BEND AT VERTICAL OFFSET

FITTING	CONCRETE ANCHOR BLOCK			STEEL STIRRUPS		
	"A" LENGTH	"B" LENGTH	"C" LENGTH	SIZE	QUANTITY	LENGTH
4" & 6" x 45° BEND	2'-0"	2'-0"	2'-0"	NO. 4	2	8'-6"
8" x 45° BEND	2'-6"	2'-6"	2'-6"	NO. 4	2	9'-0"
10" x 45° BEND	3'-0"	3'-0"	3'-6"	NO. 4	2	11'-6"
12" x 45° BEND	4'-0"	4'-0"	4'-0"	NO. 4	2	12'-0"

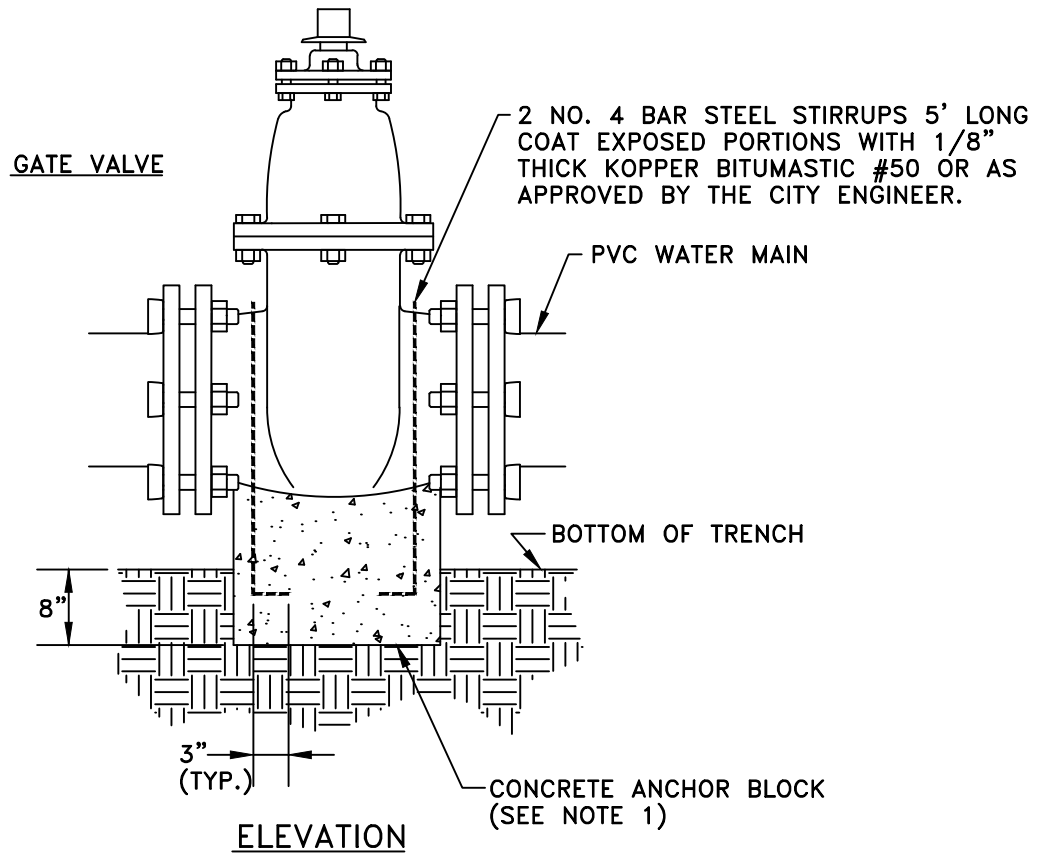
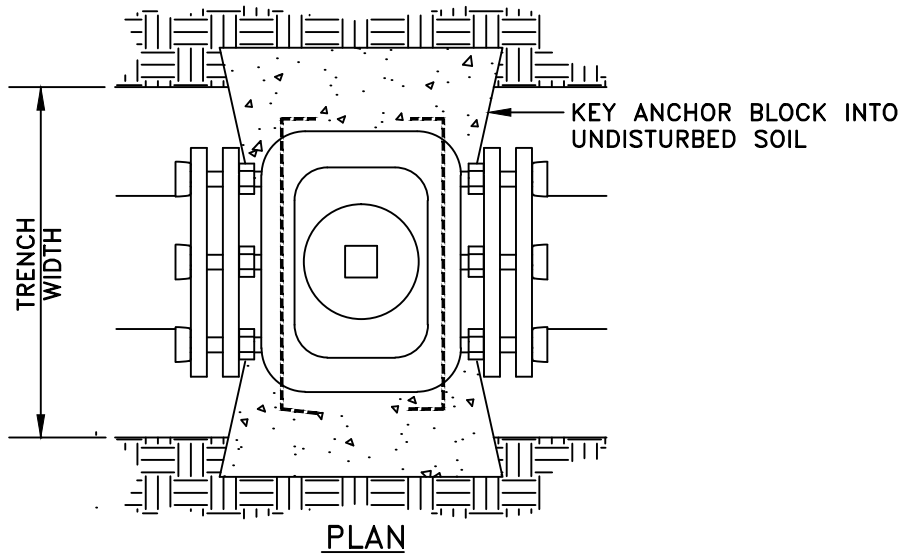


**ANCHOR BLOCK DETAIL FOR 45° VERTICAL BEND**

Approved:  Date: 12-8-15  
 City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-711**  
 SHEET 1 OF 1



**NOTES:**

1. ANCHOR BLOCK SHALL BE 560-C-3250 CONCRETE (GREENBOOK) AND POURED AGAINST UNDISTURBED SOIL.



City of  
Garden Grove  
California

## ANCHOR BLOCK DETAIL FOR PVC WATER MAIN VALVES

Approved  Date 12-8-15  
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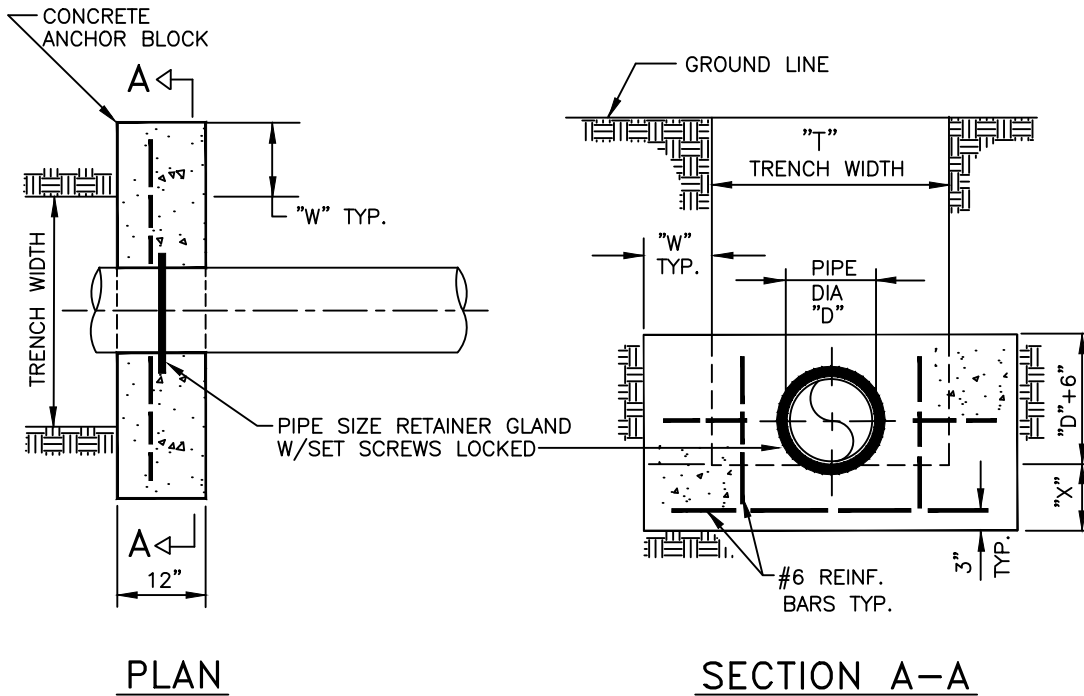
STD. PLAN NUMBER

**B-712**

SHEET 1 OF 1

### ANCHOR BLOCK DIMENSIONS

T	D	VARIABLE	STATIC WATER PRESSURE – PSI										
			100	110	120	130	140	150	160	170	180	190	200
30"	6"	AREA SF	2.1	2.3	2.5	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2
		W (INCHES)	14	14	16	18	18	13	14	15	15	16	17
		X (INCHES)	0	0	0	0	0	6	6	6	6	6	6
30"	8"	AREA SF	3.8	4.1	4.5	4.9	5.3	5.7	6.0	6.4	6.8	7.2	7.5
		W (INCHES)	10	12	12	14	16	16	14	16	16	18	18
		X (INCHES)	6	6	6	6	6	6	9	9	9	9	9
30"	10"	AREA SF	5.9	6.5	7.1	7.7	8.2	8.8	9.4	10.0	10.6	11.2	11.8
		W (INCHES)	16	18	16	18	16	18	18	20	22	24	24
		X (INCHES)	6	6	9	9	12	12	12	12	12	12	12
36"	12"	AREA SF	8.5	9.3	10.2	11.0	11.9	12.7	13.6	14.4	15.3	16.1	17.0
		W (INCHES)	18	16	18	20	22	24	20	20	22	24	26
		X (INCHES)	9	12	12	12	12	12	18	18	18	18	18
36"	16"	AREA SF	15.1	16.6	18.1	19.6	21.1	22.6	24.1	25.6	27.1	28.7	30.2
		W (INCHES)	18	18	18	18	18	18	20	20	22	22	24
		X (INCHES)	15	15	18	21	25	30	30	30	30	30	30



**NOTES**

1. ANCHOR BLOCK SHALL BE 560-C-3250 CONCRETE (GREEN BOOK)
2. ALL STEEL REINFORCEMENT BOLTS, ETC., IN CONTACT WITH THE SOIL SHALL BE COATED WITH BITUMASTIC OR APPROVED EQUAL
3. CONCRETE SHALL BE PORED AGAINST UNDISTURBED EARTH.
4. DIMENSIONS ARE BASED ON 1.5 TIMES STATIC WATER PRESSURE, 2000 P.S.F. SOIL BEARING CAPACITY PRESSURE & 60,000 LB. REINFORCE BAR TENSILE STRENGTH.



## ANCHOR BLOCK DETAILS FOR 6" THRU 16" PIPE

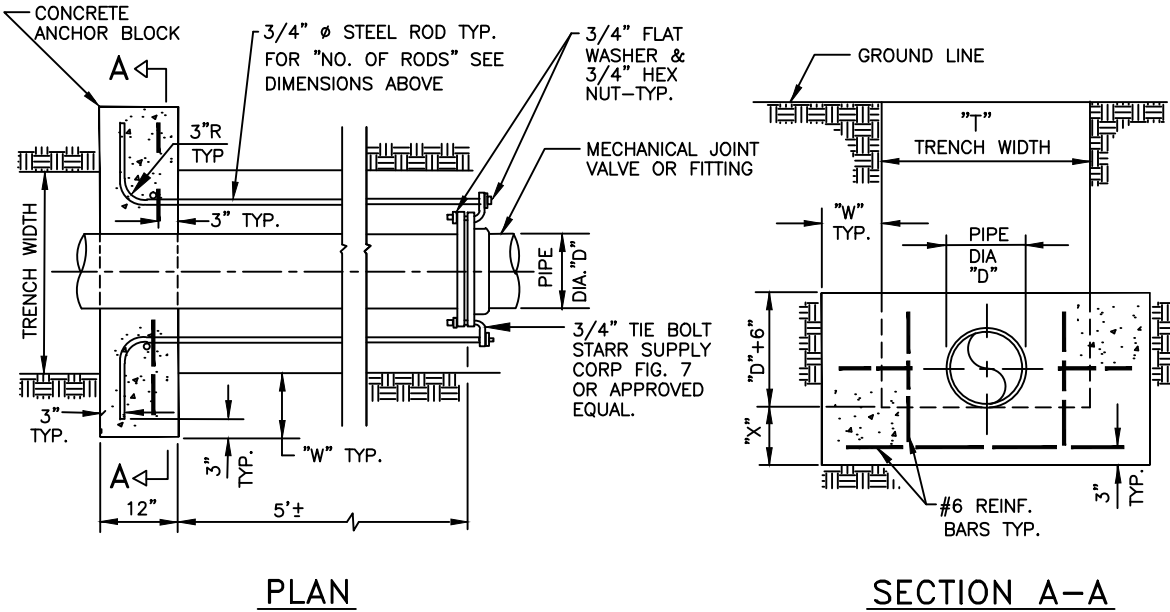
Approved:  Date: 12-8-15  
 City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

**STD. PLAN NUMBER**  
B-713  
 SHEET 1 OF 1

ANCHOR BLOCK DIMENSIONS

T	D	VARIABLE	STATIC WATER PRESSURE — PSI										
			100	110	120	130	140	150	160	170	180	190	200
30"	6"	AREA SF	2.1	2.3	2.5	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2
		W (INCHES)	14	14	16	18	18	10	10	10	12	12	12
		X (INCHES)	0	0	0	0	0	6	6	6	6	6	6
		NO. OF RODS	2	2	2	2	2	2	2	2	2	2	2
30"	8"	AREA SF	3.8	4.1	4.5	4.9	5.3	5.7	6.0	6.4	6.8	7.2	7.5
		W (INCHES)	10	12	12	14	16	16	14	16	16	18	18
		X (INCHES)	6	6	6	6	6	6	9	9	9	9	9
		NO. OF RODS	2	2	2	2	2	2	3	3	3	3	3
30"	10"	AREA SF	5.9	6.5	7.1	7.7	8.2	8.8	9.4	10.0	10.6	11.2	11.8
		W (INCHES)	16	18	16	18	16	18	18	20	22	24	24
		X (INCHES)	6	6	9	9	12	12	12	12	12	12	12
		NO. OF RODS	3	3	3	3	3	3	4	4	4	4	4
36"	12"	AREA SF	8.5	9.3	10.2	11.0	11.9	12.7	13.6	14.4	15.3	16.1	17.0
		W (INCHES)	18	16	18	20	22	24	20	20	22	24	26
		X (INCHES)	9	12	12	12	12	12	18	18	18	18	18
		NO. OF RODS	4	4	4	4	4	5	5	5	6	6	6
36"	16"	AREA SF	15.1	16.6	18.1	19.6	21.1	22.6	24.1	25.6	27.1	28.7	30.2
		W (INCHES)	18	18	18	18	18	18	20	20	22	22	24
		X (INCHES)	15	15	18	21	25	30	30	30	30	30	30
		NO. OF RODS	6	6	7	7	8	8	9	9	10	10	11



NOTES

1. ANCHOR BLOCK SHALL BE 560-C-3250 CONCRETE (GREEN BOOK)
2. ALL STEEL REINFORCEMENT BOLTS, ETC., IN CONTACT WITH THE SOIL SHALL BE COATED WITH BITUMASTIC OR APPROVED EQUAL
3. CONCRETE SHALL BE PORED AGAINST UNDISTURBED EARTH.
4. DIMENSIONS ARE BASED ON 1.5 TIMES STATIC WATER PRESSURE, 2000 P.S.F. SOIL BEARING CAPACITY PRESSURE & 60,000 LB. REINFORCE BAR TENSILE STRENGTH.

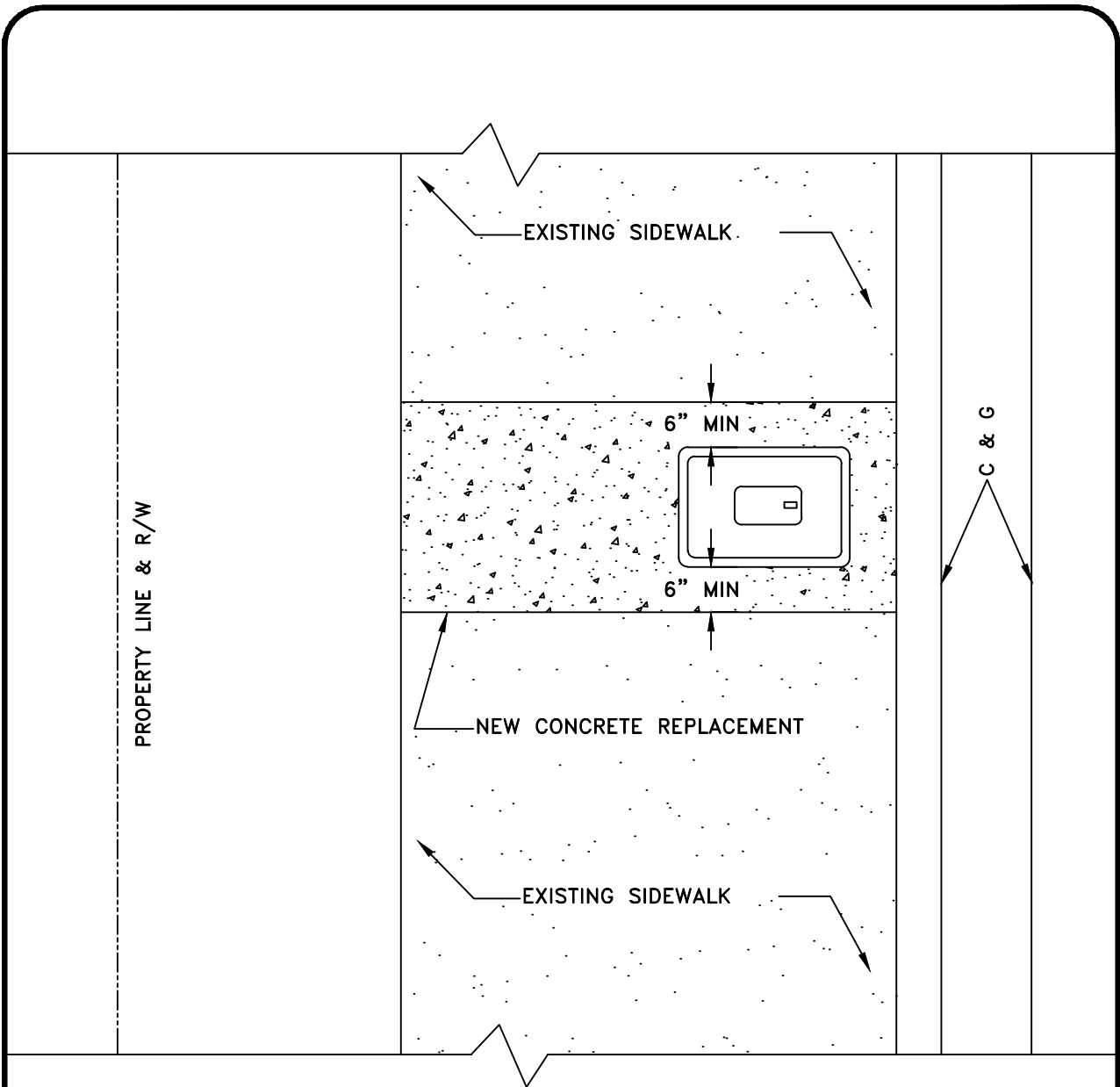


REVERSE TIE ANCHOR BLOCK ASSEMBLY FOR 6" THRU 16" PIPE

Approved: *[Signature]* Date: 12-8-15  
 City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-714**  
 SHEET 1 OF 1




**NOTES:**

1. INSTALL CONCRETE REPLACEMENT PER STANDARD PLAN B-105



City of  
Garden Grove  
California

**METER BOX INSTALLATION  
WITH NEW CONCRETE REPLACEMENT**

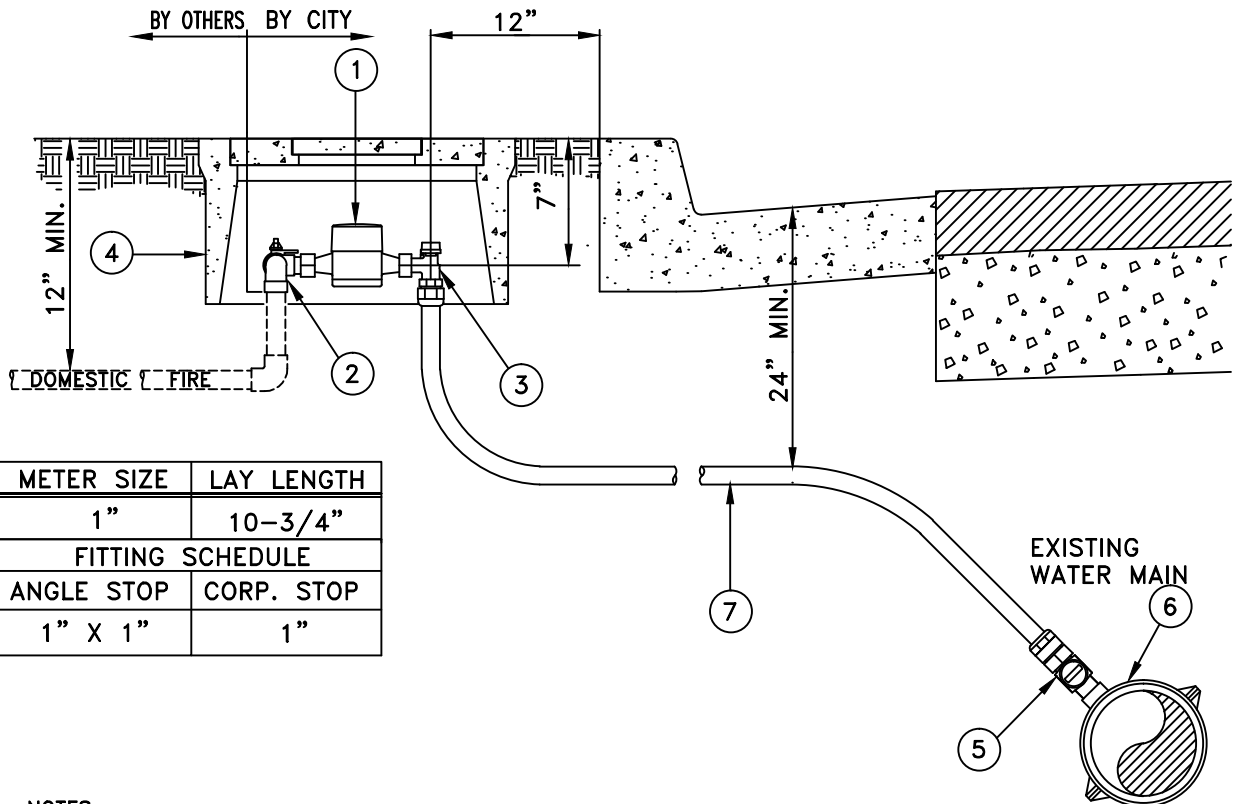
Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER

**B-718**

SHEET 1 OF 1



METER SIZE	LAY LENGTH
1"	10-3/4"
FITTING SCHEDULE	
ANGLE STOP	CORP. STOP
1" X 1"	1"

**NOTES**

1. ALL CITY SERVICES TO BE TYPE K SOFT COPPER.
2. TUBING TO BE ONE CONTINUOUS PIECE, NO SPLICES OR HEATING PERMITTED UNLESS APPROVED BY WATER SERVICES.
3. TAPS SHALL BE MADE AT LEAST 12" FROM ANY OTHER TAP OR COUPLING. STAGGER ANGLE OF TAPS MADE NEXT TO EACH OTHER 15°.
4. METER, METER BOX, ANGLE METER VALVE, AND RESIDENTIAL FIRE SERVICE CONNECTION BY CITY AT CONTRACTOR'S EXPENSE, UNLESS OTHERWISE APPROVED.
5. FIRE SERVICE RISER TO HAVE A SINGLE SPRING LOADED CHECK VALVE.

**MATERIAL LIST**

ITEM NO.	QUAN.	DESCRIPTION	MFR.
①	1	1" METER	SENSUS, SRII
②	1	1" MUELLER RESIDENTIAL FIRE SERVICE CONNECTION OR APPROVED EQUAL	MUELLER
③	1	1" x 1" ANGLE METER VALVE, COMPRESSION TYPE OR APPROVED EQUAL	MUELLER, JONES OR FORD
④	1	#37 METER BOX W/ 2 PC. CONCRETE COVER	
⑤	1	1" CORPORATION STOP (COMPRESSION TYPE), BALL TYPE, C.C. THREAD	
⑥	1	SERVICE SADDLE (FORD 202BS OR APPROVED EQUAL)	MUELLER, JONES OR FORD
⑦	AS NEEDED	1/2" SOFT COPPER TUBING, TYPE "K"	



**1" COPPER WATER SERVICE FOR RESIDENTIAL FIRE SPRINKLER**

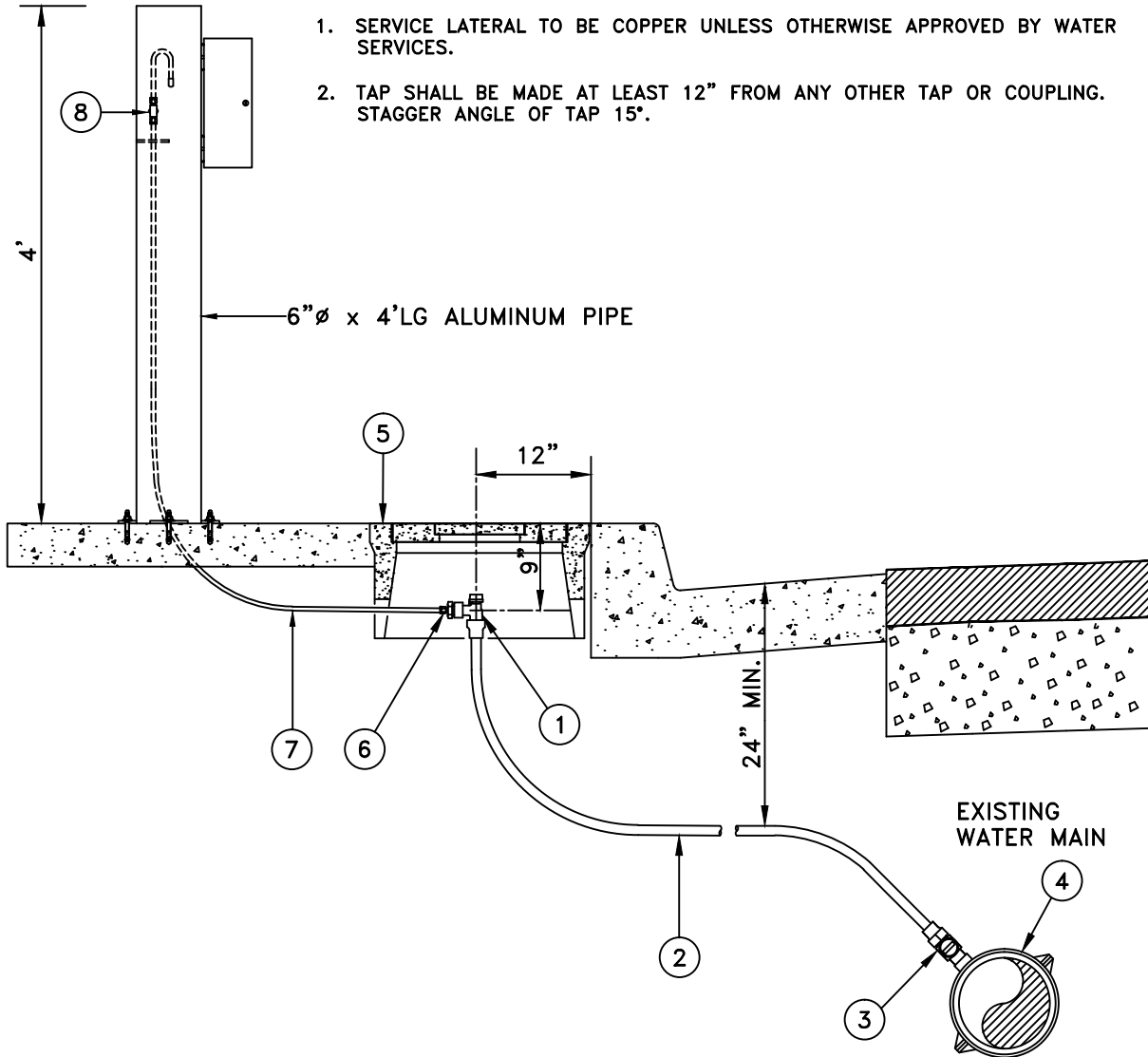
Approved:  Date: 12-8-15  
 City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-719**  
 SHEET 1 OF 1

**NOTES**

1. SERVICE LATERAL TO BE COPPER UNLESS OTHERWISE APPROVED BY WATER SERVICES.
2. TAP SHALL BE MADE AT LEAST 12" FROM ANY OTHER TAP OR COUPLING. STAGGER ANGLE OF TAP 15°.



**MATERIAL LIST**

ITEM NO.	QUAN.	DESCRIPTION	MFR.
1	1	3/4" x 1" ANGLE METER VALVE COMPRESSION TYPE OR APPROVED EQUAL	MUELLER, JONES, OR FORD
2	AS NEEDED	1" SOFT COPPER TUBING, TYPE "K"	
3	1	1" CORPORATION STOP (COMPRESSION TYPE), BALL TYPE, C.C. THREAD	MUELLER, JONES, OR FORD
4	1	SERVICE SADDLE (FORD 202BS OR APPROVED EQUAL)	MUELLER, JONES, OR FORD
5	1	#37 METER BOX W/ 2 PIECE CONCRETE COVER	
6	1	3/4" MALE THREAD x 3/8" SWAGelok TUBING ADAPTER, STAINLESS STEEL	
7	AS NEEDED	3/8" STAINLESS STEEL TUBING	
8	1	3/8" SWAGelok BALL VALVE	



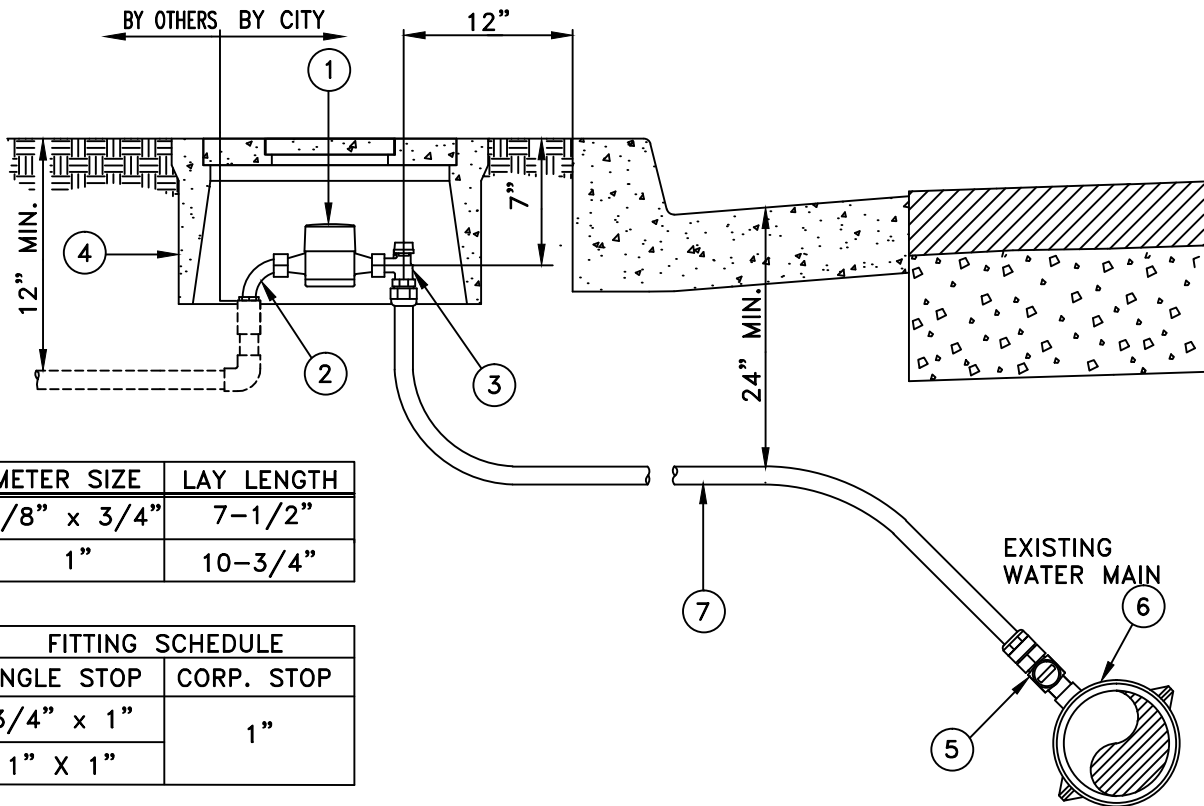
**1" COPPER WATER SERVICE SAMPLE CONNECTION**

Approved:  Date: 12-8-15  
 City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-720**  
 SHEET 1 OF 1





METER SIZE	LAY LENGTH
5/8" x 3/4"	7-1/2"
1"	10-3/4"

FITTING SCHEDULE	
ANGLE STOP	CORP. STOP
3/4" x 1"	1"
1" X 1"	

**NOTES**

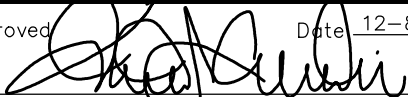
1. ALL CITY SERVICES TO BE TYPE "K" SOFT COPPER.
2. TUBING TO BE ONE CONTINUOUS PIECE, NO SPLICES OR HEATING PERMITTED UNLESS APPROVED BY WATER SERVICES.
3. TAPS SHALL BE MADE AT LEAST 12" FROM ANY OTHER TAP OR COUPLING. STAGGER ANGLE OF TAPS MADE NEXT TO EACH OTHER 15°.
4. METER, METER BOX, ANGLE METER VALVE AND TAILPIECE, BY CITY AT CONTRACTOR'S EXPENSE, UNLESS OTHERWISE APPROVED.

**MATERIAL LIST**

ITEM NO.	QUAN.	DESCRIPTION	MFR.
①	1	5/8" OR 1" METER	SENSUS, SRII
②	1	3/4" OR 1" ANGLE METER COUPLING	
③	1	3/4" x 1" OR 1" x 1" ANGLE METER VALVE, COMPRESSION TYPE OR APPROVED EQUAL	MUELLER, JONES OR FORD
④	1	#37 METER BOX W/ 2 PC. CONCRETE COVER	
⑤	1	1" CORPORATION STOP (COMPRESSION TYPE), BALL TYPE, C.C. THREAD	MUELLER, JONES OR FORD
⑥	1	SERVICE SADDLE (FORD 202BS OR APPROVED EQUAL)	MUELLER, JONES OR FORD
⑦	AS NEEDED	1Ø SOFT COPPER TUBING, TYPE "K"	

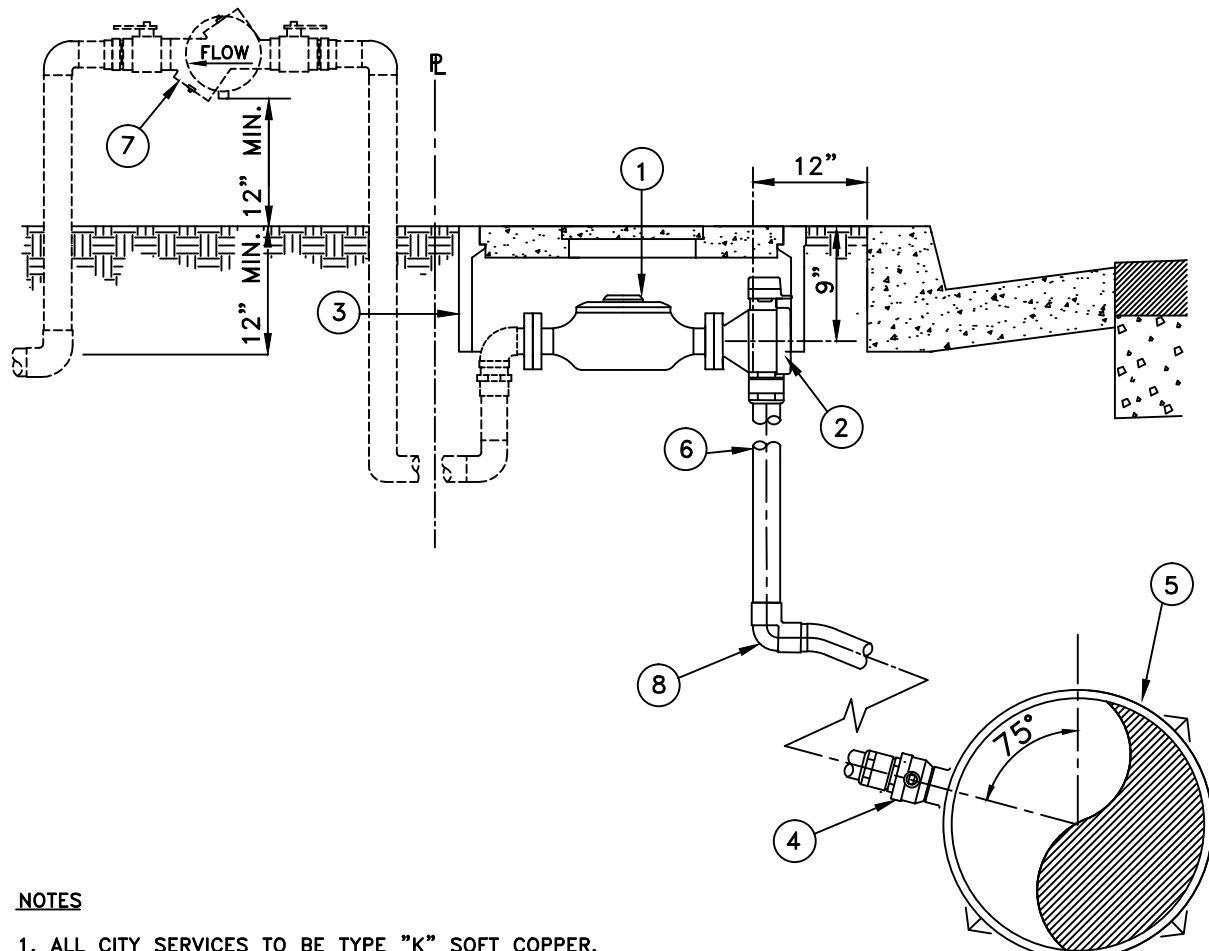


**1" COPPER WATER SERVICE  
INSTALLATION FOR 5/8" & 1" METERS**

Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-721**  
SHEET 1 OF 1



**NOTES**

1. ALL CITY SERVICES TO BE TYPE "K" SOFT COPPER.
2. TUBING TO BE ONE CONTINUOUS PIECE, NO SPLICES OR HEATING PERMITTED UNLESS APPROVED BY WATER SERVICES.
3. TAPS SHALL BE MADE AT LEAST 12" FROM ANY OTHER TAP OR COUPLING. STAGGER ANGLE OF TAPS MADE NEXT TO EACH OTHER 15°.
4. METER, METER BOX, ANGLE METER VALVE AND TAILPIECE, BY CITY AT CONTRACTOR'S EXPENSE, UNLESS OTHERWISE APPROVED.

**MATERIAL LIST**

ITEM NO.	QUAN.	DESCRIPTION	MFR.
①	1	1-1/2" OR 2" OMNI R2 100 CF 5 WHEEL METER.	SENSUS (DR)
②	1	GROUND KEY 2" ANGLE METER VALVE, COMPRESSION TYPE MUELLER OR APPROVED EQUAL	MUELLER, JONES OR FORD
③	1	#65 CONCRETE METER BOX W/ 2 PC. CONCRETE COVER	
④	1	2" CORPORATION STOP (COMPRESSION TYPE), BALL TYPE, C.C. THREAD	MUELLER, JONES OR FORD
⑤	1	SERVICE SADDLE (FORD 202BS OR APPROVED EQUAL)	MUELLER, JONES OR FORD
⑥	1	2"Ø SOFT COPPER TUBING (TYPE "K"), OR RIGID AS APPROVED BY THE ENGINEER	
⑦	1	REDUCED PRESSURE PRINCIPLE DEVICE PER STD B-771 (BY OTHERS)	
⑧	1	2" CU 45° OR 90° SLIP x SLIP	



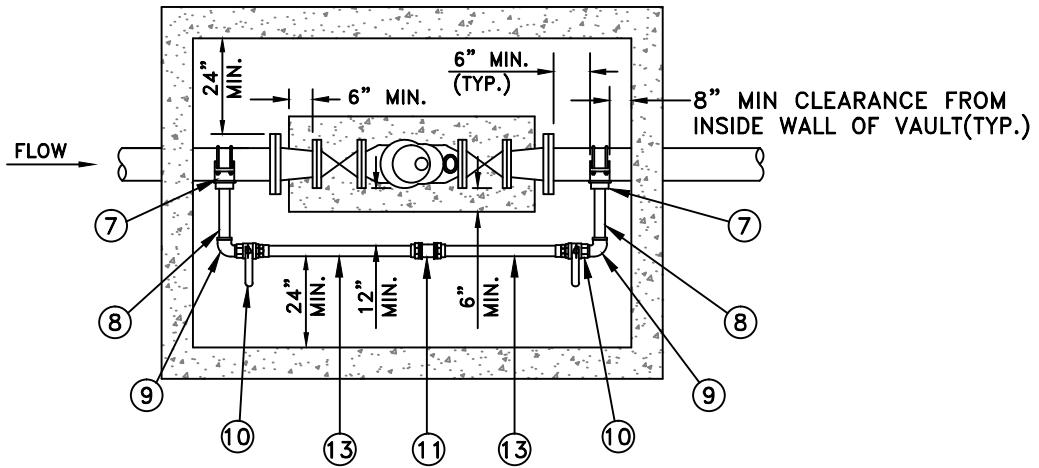
**1"-1/2" & 2" OMNI R2 - C2 METERS AND 2" COPPER WATER SERVICE INSTALLATION**

Approved:  Date: 12-8-15  
 City Engineer R.C.E. 52125 Exp. 12-31-16

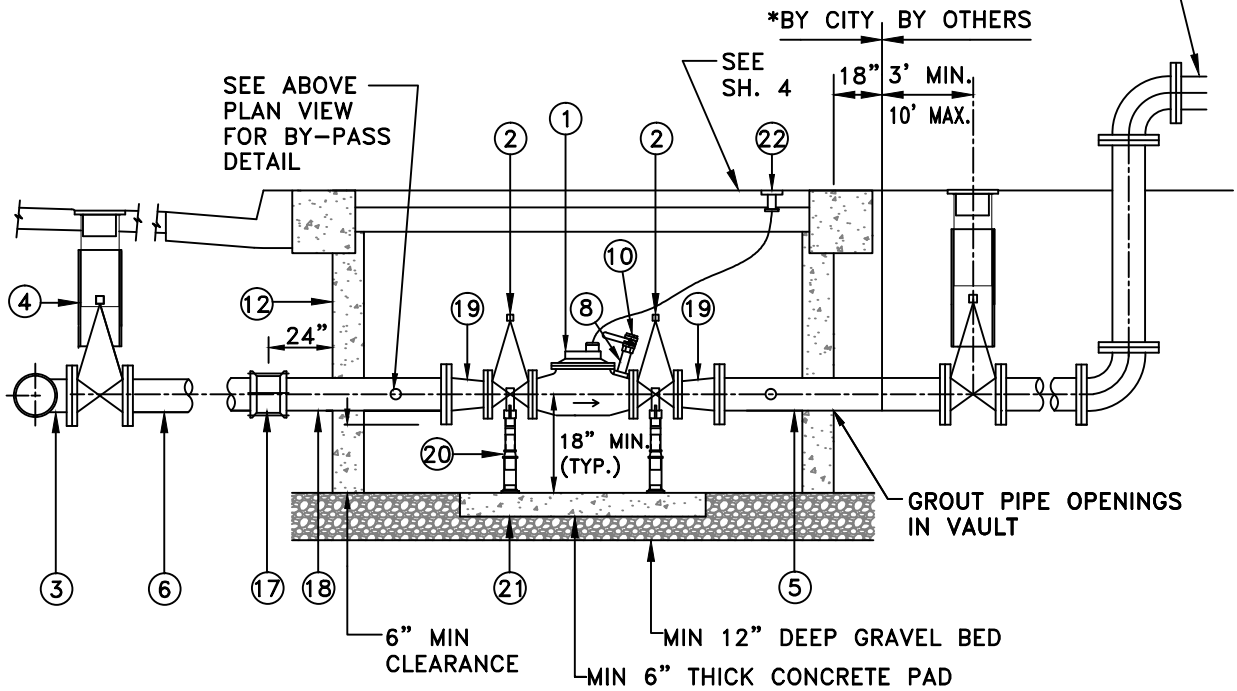
REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-722**  
 SHEET 1 OF 1

3" METER



REDUCED PRESSURE PRINCIPAL DEVICE (RPPD) PER CITY STD PLAN B-771, BY OTHERS

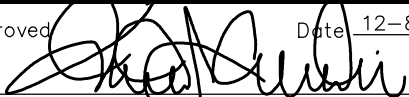


\* DEVELOPER'S CONTRACTOR MAY BE RESPONSIBLE FOR INSTALLATION. DETERMINATION TO BE MADE BY CITY DURING PLAN CHECK PROCESS. INSTALLATION TO BE PER THIS STANDARD AND INSPECTED BY CITY. CONTRACTOR TO HAVE C-34, OR CLASS A LICENSE.

PROPERTY OWNER MUST OPEN A WATER ACCOUNT UPON INSTALLATION OF METER.



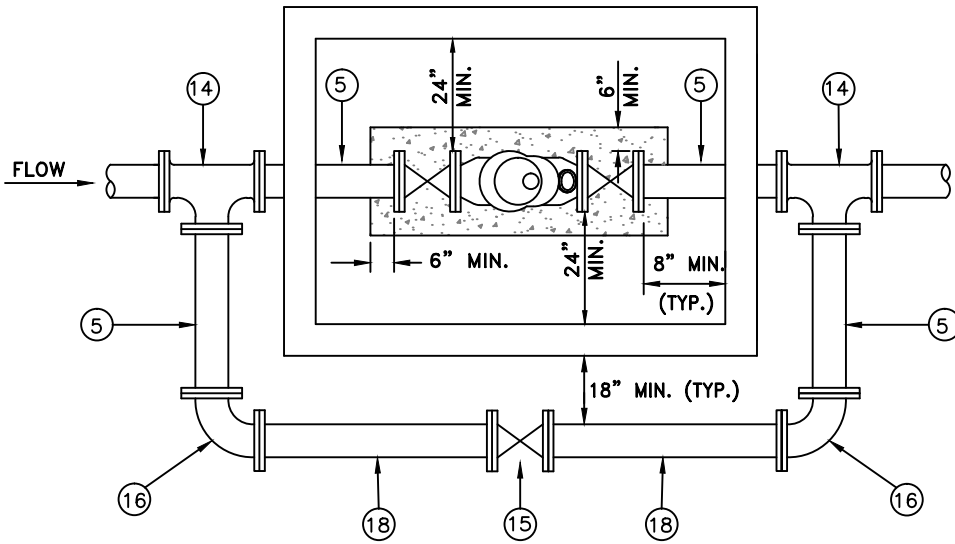
3", 4" & 6" COMPOUND  
WATER METER  
AND SERVICE INSTALLATION

Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

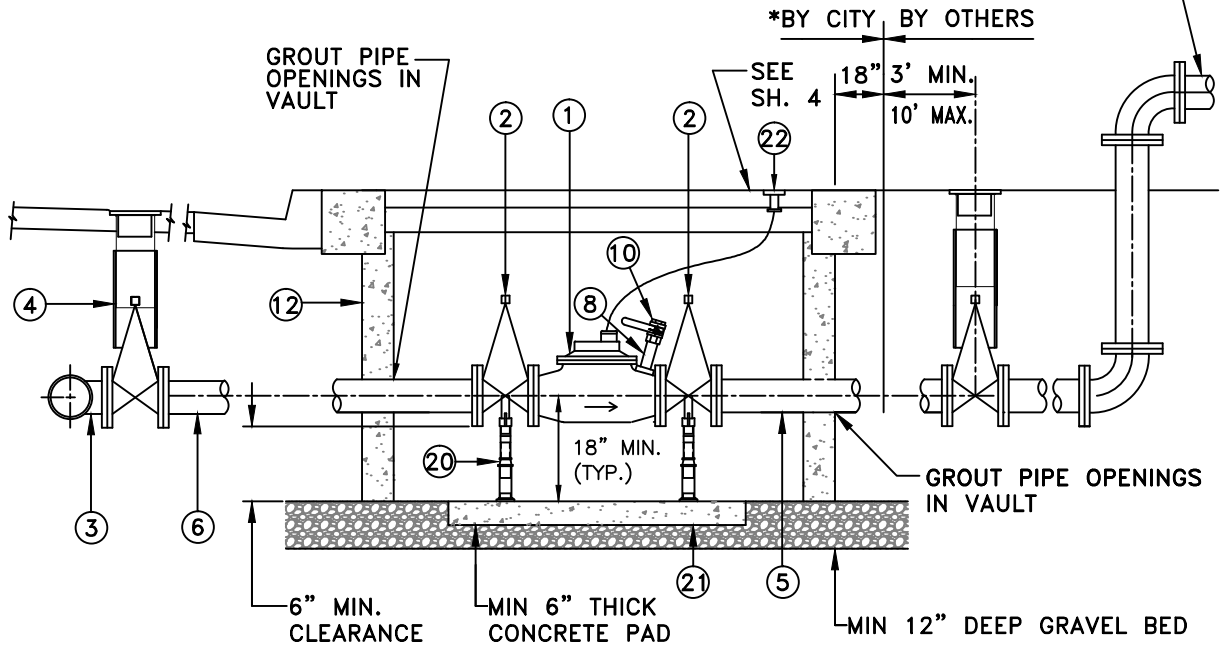
REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-724**  
SHEET 1 OF 4

4" & 6" METER



REDUCED PRESSURE PRINCIPAL DEVICE (RPPD) PER CITY STD PLAN B-771, BY OTHERS



\* DEVELOPER'S CONTRACTOR MAY BE RESPONSIBLE FOR INSTALLATION. DETERMINATION TO BE MADE BY CITY DURING PLAN CHECK PROCESS. INSTALLATION TO BE PER THIS STANDARD AND INSPECTED BY CITY. CONTRACTOR TO HAVE C-34, OR CLASS A LICENSE.

PROPERTY OWNER MUST OPEN A WATER ACCOUNT UPON INSTALLATION OF METER.



3", 4" & 6" COMPOUND WATER METER AND SERVICE INSTALLATION

Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-724**  
SHEET 2 OF 4

## LIST OF MATERIALS

ITEM NO.	DESCRIPTION	3" METER		4" METER		6" METER	
		QTY.	SIZE	QTY.	SIZE	QTY.	SIZE
1	OMNI C2 100 CU FT 5 WHEEL W/ TOUCH READ METER	1	3"	1	4"	1	6"
2	RESILIENT WEDGE GATE VALVE, FLG'D W/2" OPERATING NUT	2	3"	2	4"	2	6"
3	TAPPING SLEEVE AND GATE VALVE PER STD. B-750	1	4"	1	4"	1	6"
4	GATE VALVE CAN ASSEMBLY PER STD. B-752						
5	DUCTILE IRON PIPE SPOOL OR PVC C900 DR14, CLASS 305	1	4"	1	4"	1	6"
6	PVC C900 DR14, CLASS 305		4"		4"		6"
7	SERVICE SADDLE FOR DIP OR PVC PIPE, WITH 2" FEMALE I.P. THREADS	2					
8	2" BRASS NIPPLE, 7" LONG UNLESS OTHERWISE APPROVED	3					
9	2" ELL, BRASS	2					
10	2" FULL PORT BALL VALVE, BRASS BODY MUELLER 300 OR APPROVED EQUAL	2	2"				
11	2" COMPRESSION COUPLING, BRASS	1					
12	METER VAULT	1		1		1	
13	2" COPPER - TYPE K RIGID						
14	DUCTILE IRON TEE, FLG'D OR MJ			2	4"	2	6"
15	RESILIENT WEDGE GATE VALVE, FLG'D WITH 2" OPERATING NUT			2	4"	2	6"
16	DUCTILE IRON 90° BEND, FLG'D OR MJ x MJ			2	4"	2	6"
17	FLEX COUPLING (Smith & Blair) OR APPROVED EQUAL	1	4"				
18	DUCTILE IRON PIPE OR PVC C 900 DR14, CLASS 305		4"		4"		6"
19	3" x 4" FLG. x FLG. OR FLG x MJ REDUCER - 3" METER ONLY	2	3"x4"				
20	SADDLE PIPE STAND (SUBMIT FOR APPROVAL)	2		2		2	
21	CONCRETE PAD (560-C-3250) W/ #3 REBAR WIRE TIED 12" O.C. BOTH WAYS	1		1		1	
22	TOUCH READ COUPLER (PURCHASE FROM CITY)	1		1		1	

**NOTES**

1. ALL GATE VALVES SHALL BE U.S. PIPE, MUELLER OR APPROVED EQUAL.
2. CONCRETE VAULT SHALL BE SIZED TO HOUSE METER INSTALLATION WITH MINIMUM CLEARANCES SHOWN IN SHEETS 1 & 2.
3. TRAFFIC RATING LIDS SHALL BE APPROVED BY WATER SERVICES DIVISION.
4. ALL MJ FITTINGS MUST BE JOINT RESTRAINED.



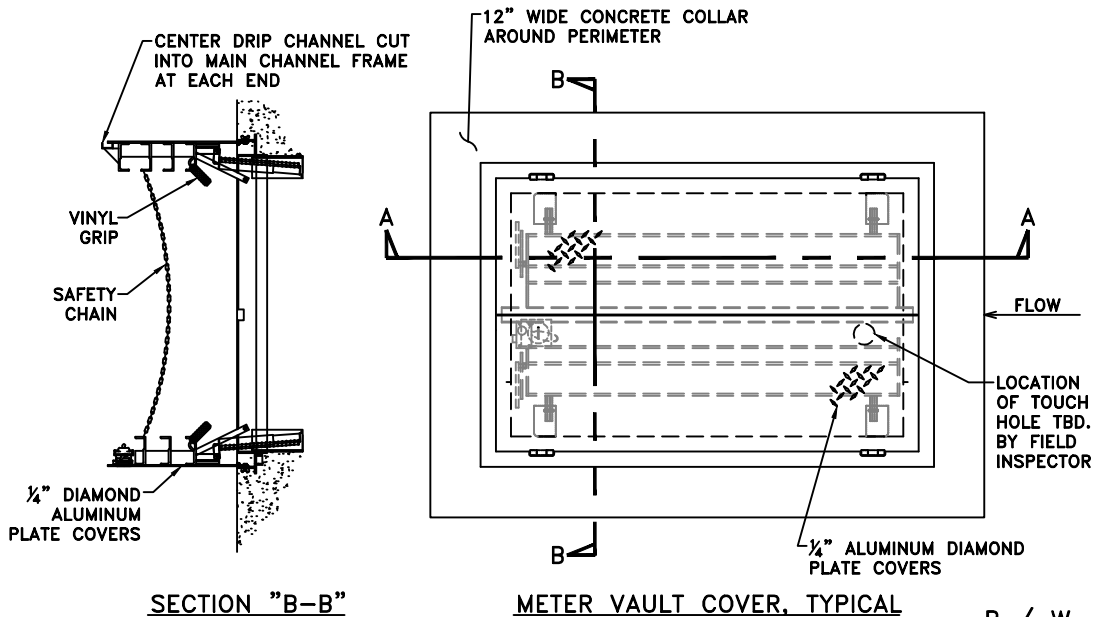
City of  
Garden Grove  
California

### 3", 4", & 6" COMPOUND WATER METER AND SERVICE INSTALLATION

Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

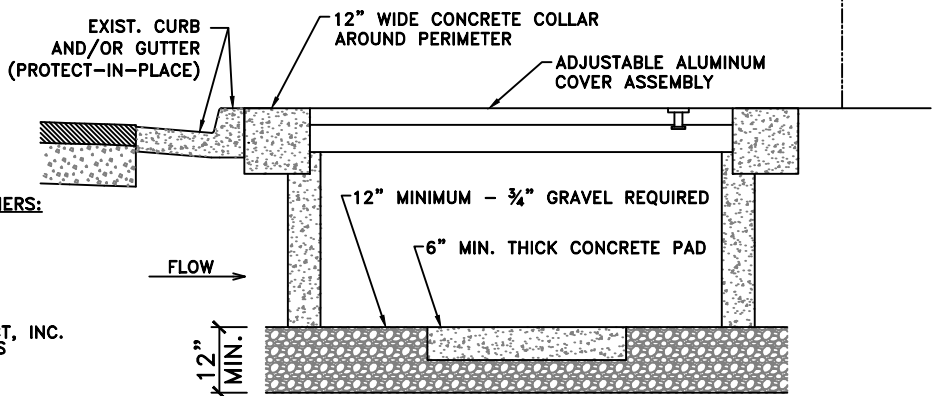
REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-724**  
SHEET 3 OF 4



SECTION "B-B"

METER VAULT COVER, TYPICAL



SECTION "A-A"

**APPROVED VAULT COVER SUPPLIERS:**

1. BILCO
2. ACCESS MANUFACTURING
3. USF FABRICATION

**APPROVED VAULT SUPPLIERS:**

1. BROOKS-JENSEN PRODUCT, INC.
2. BES CONCRETE PRODUCTS
3. UTILITY VAULT CO.
4. ASSOCIATED CONCRETE

**NOTES:**

1. VAULTS GREATER THAN 4' IN DEPTH REQUIRE A FIBER REINFORCED PLASTIC (FRP) LADDER SET PERPENDICULAR TO HINGE.
2. HOLES TO BE SEALED WITH NON-SHRINK GROUT, LINK SEALS, OR APPROVED EQUAL.
3. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND APPROVAL THE VAULT AND VAULT COVER DETAIL INDICATING THE LOCATION OF THE HINGED LID OPENING PRIOR TO FABRICATION. THE LOCATION OF THE HINGED LID SHALL ALLOW FOR CLEAR ACCESS TO THE METER READING REGISTER.
4. THE CONTRACTOR SHALL ONE SACK SLURRY BACK FILL UNDERNEATH THE CURB & GUTTER. REMOVE AND REPLACE THE CURB & GUTTER, SIDEWALK AND LANDSCAPE AT THE CONTRACTOR'S EXPENSE IF CONTRACTOR DAMAGED DURING CONSTRUCTION.
5. JOIN NEW METER TO EXISTING CUSTOMER SERVICE LINE INCLUDING ALL REQUIRED PARTS AT THE CONTRACTOR'S EXPENSE AFTER PASSING REQ'D TEST(S) & SERVICE IN NEW LINE FROM NEW MAIN.



City of  
Garden Grove  
California

**3", 4", & 6" COMPOUND  
WATER METER  
AND SERVICE INSTALLATION**

Approved  Date 12-8-15

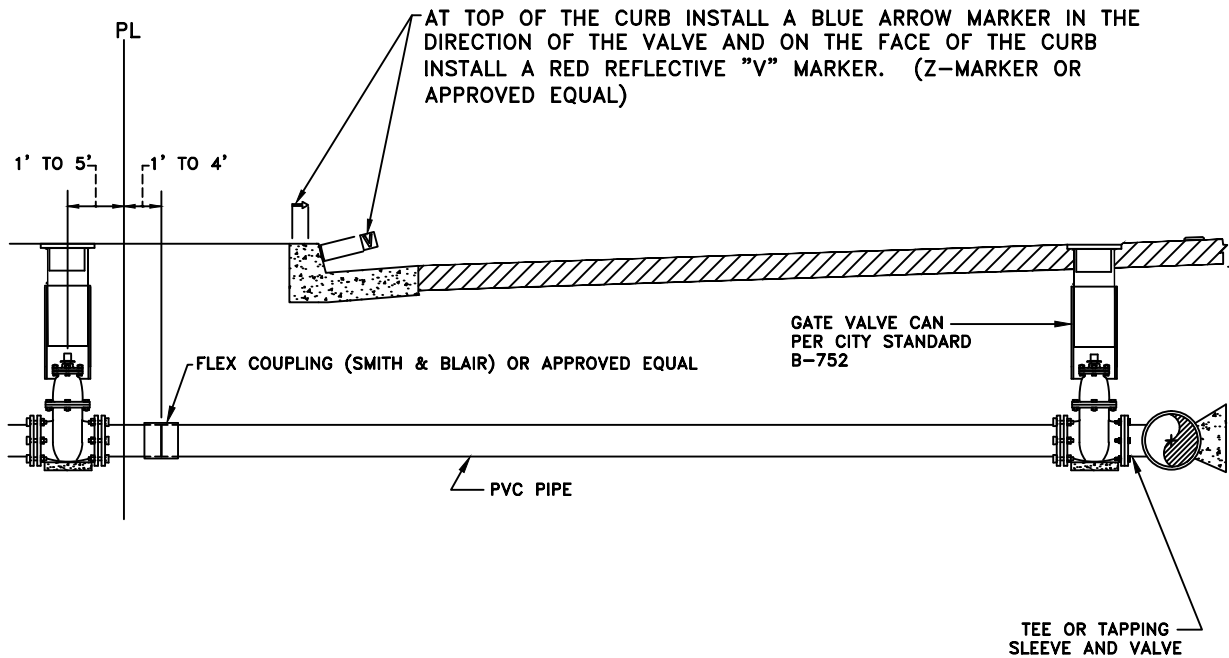
City Engineer R.C.E. 52125 Exp.12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER

**B-724**

SHEET 4 OF 4



\* DEVELOPER'S CONTRACTOR MAY BE RESPONSIBLE FOR INSTALLATION. DETERMINATION TO BE MADE BY CITY DURING PLAN CHECK PROCESS. INSTALLATION TO BE PER THIS STANDARD AND INSPECTED BY CITY. CONTRACTOR TO HAVE C-34, OR CLASS A LICENSE.



City of  
Garden Grove  
California

## SERVICE LATERAL INSTALLATION FOR PRIVATE FIRE HYDRANTS

Approved  Date 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

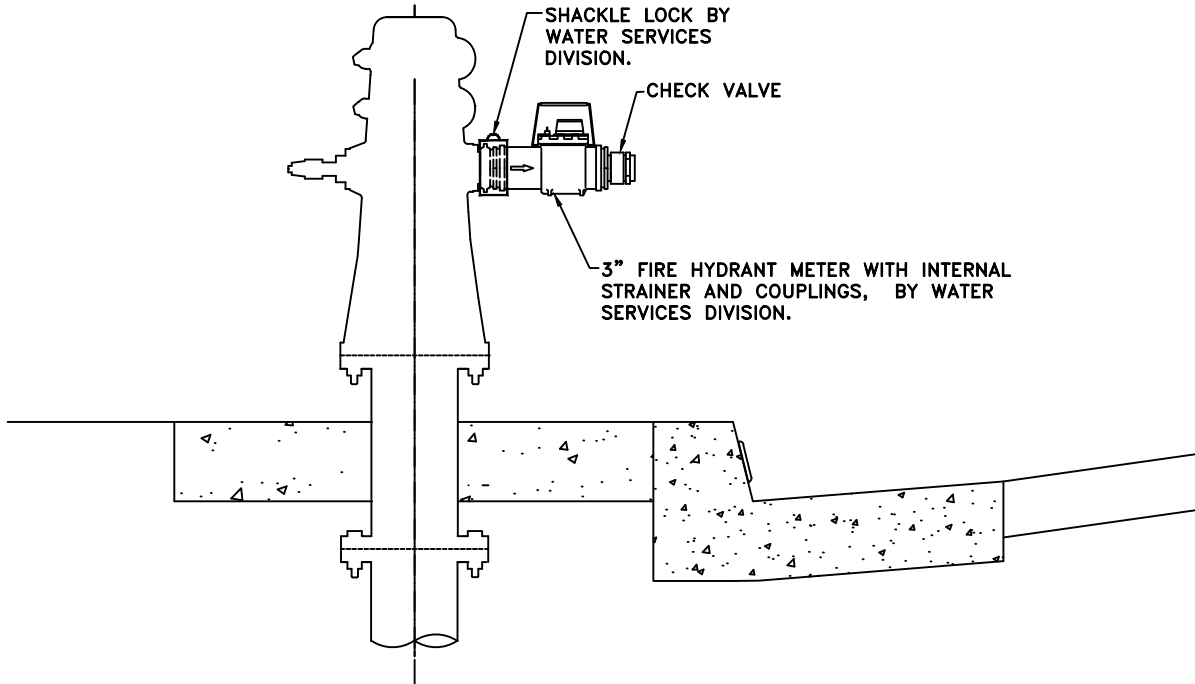
REVISIONS	BY	DATE

STD. PLAN NUMBER

**B-729**

SHEET 1 OF 1

FIRE HYDRANT



**NOTES**

1. OPENING AND CLOSING OF HYDRANT IS PERMITTED ONLY WITH A HYDRANT WRENCH.
2. CONSTRUCTION METER MAY BE MOVED FROM ONE LOCATION TO ANOTHER ONLY BY THE WATER SERVICES DIVISION UNLESS OTHERWISE APPROVED.
3. BACKFLOW DEVICES MAY BE REQUIRED FOR CERTAIN USES.
4. SERVICE CONNECTION MAY BE TERMINATED AT ANY TIME AT THE DISCRETION OF THE WATER SERVICES DIVISION.
5. CHARGES FOR LOSS OR DAMAGE TO ANY SERVICE MATERIAL WILL BE BASED UPON CURRENT PRICES.



City of  
Garden Grove  
California

**2-1/2" TEMPORARY  
WATER SERVICE**

Approved  Date 12-8-15  
City Engineer R.C.E. 52125 Exp.12-31-16

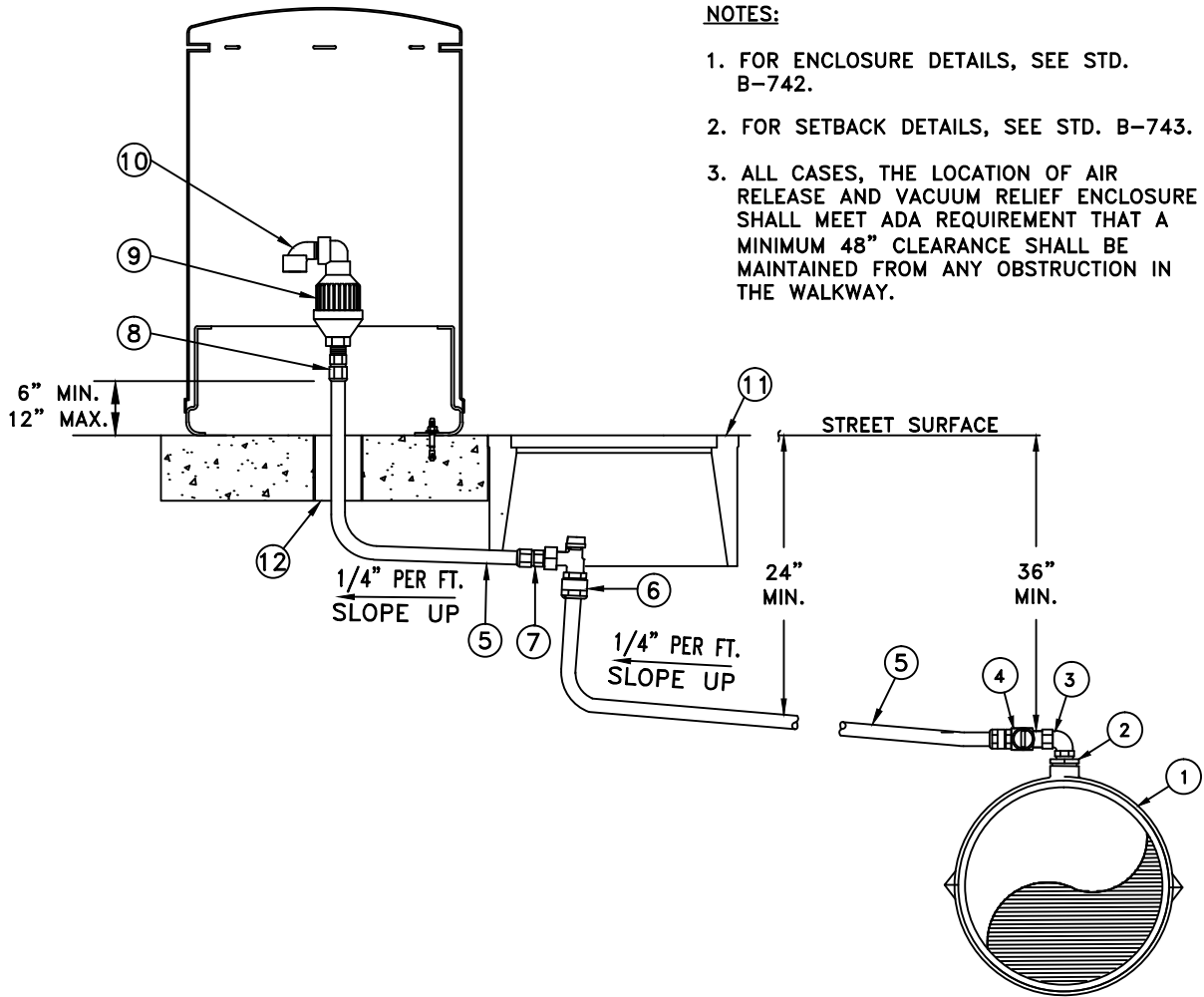
REVISIONS	BY	DATE

STD. PLAN NUMBER

**B-730**

SHEET 1 OF 1





**NOTES:**

1. FOR ENCLOSURE DETAILS, SEE STD. B-742.
2. FOR SETBACK DETAILS, SEE STD. B-743.
3. ALL CASES, THE LOCATION OF AIR RELEASE AND VACUUM RELIEF ENCLOSURE SHALL MEET ADA REQUIREMENT THAT A MINIMUM 48" CLEARANCE SHALL BE MAINTAINED FROM ANY OBSTRUCTION IN THE WALKWAY.

**MATERIAL LIST**

ITEM NO.	QUAN.	DESCRIPTION	MFR.
①		2" SERVICE SADDLE, DOUBLE STRAP, WITH 2" F.I.P.T.	
②		2" x 1" BRASS BUSHING, I.P.T.	
③		1" BRASS STREET ELL, M.I.P.T. x F.I.P.T.	
④		1" CORPORATION STOP, I.P.T.	FORD OR APP'D EQUAL
⑤		1"Ø TYPE "K" SOFT COPPER TUBING	
⑥		1" ANGLE METER VALVE	
⑦		1" M.I.P. x COMPRESSION FITTING	
⑧		1" F.I.P. x COMPRESSION COUPLING	
⑨		AIR AND VACUUM RELIEF VALVE, PLASTIC BODY	
⑩		1" PVC STREET ELBOW	
⑪		#37 METER BOX W/ 2 PC. CONCRETE COVER	
⑫		PIPE INSULATION (FOAM)	



City of  
Garden Grove  
California

**2" TAP TO 1" AIR AND VACUUM RELIEF VALVE ASSEMBLY**

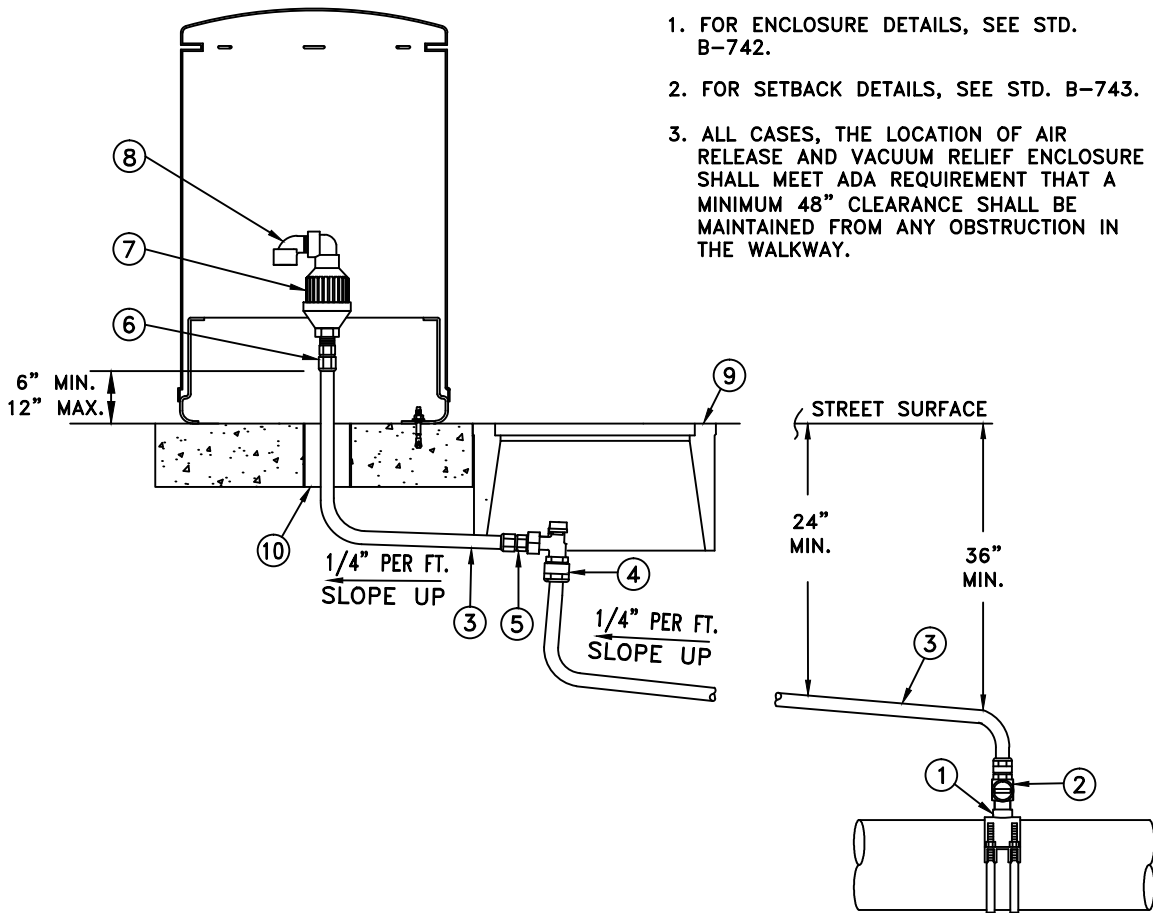
Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-739**  
SHEET 1 OF 1

**NOTES:**

1. FOR ENCLOSURE DETAILS, SEE STD. B-742.
2. FOR SETBACK DETAILS, SEE STD. B-743.
3. ALL CASES, THE LOCATION OF AIR RELEASE AND VACUUM RELIEF ENCLOSURE SHALL MEET ADA REQUIREMENT THAT A MINIMUM 48" CLEARANCE SHALL BE MAINTAINED FROM ANY OBSTRUCTION IN THE WALKWAY.



**MATERIAL LIST**

ITEM NO.	QUAN.	DESCRIPTION	MFR.
①		2" SERVICE SADDLE WITH 2" x 1" F.I.P. CONNECTION UNLESS OTHERWISE APPROVED	
②		1" CORPORATION STOP, I.P.T.	FORD OR APP'D EQUAL
③		1"Ø TYPE "K" SOFT COPPER TUBING	
④		1" ANGLE METER VALVE	
⑤		1" M.I.P. x COMPRESSION FITTING	
⑥		1" F.I.P. x COMPRESSION COUPLING	
⑦		AIR AND VACUUM RELIEF VALVE, PLASTIC BODY	
⑧		1" PVC STREET ELBOW	
⑨		#37 METER BOX W/ 2 PC. CONCRETE COVER	
⑩		PIPE INSULATION (FOAM)	



City of  
Garden Grove  
California

**1" AIR AND VACUUM RELIEF VALVE ASSEMBLY**

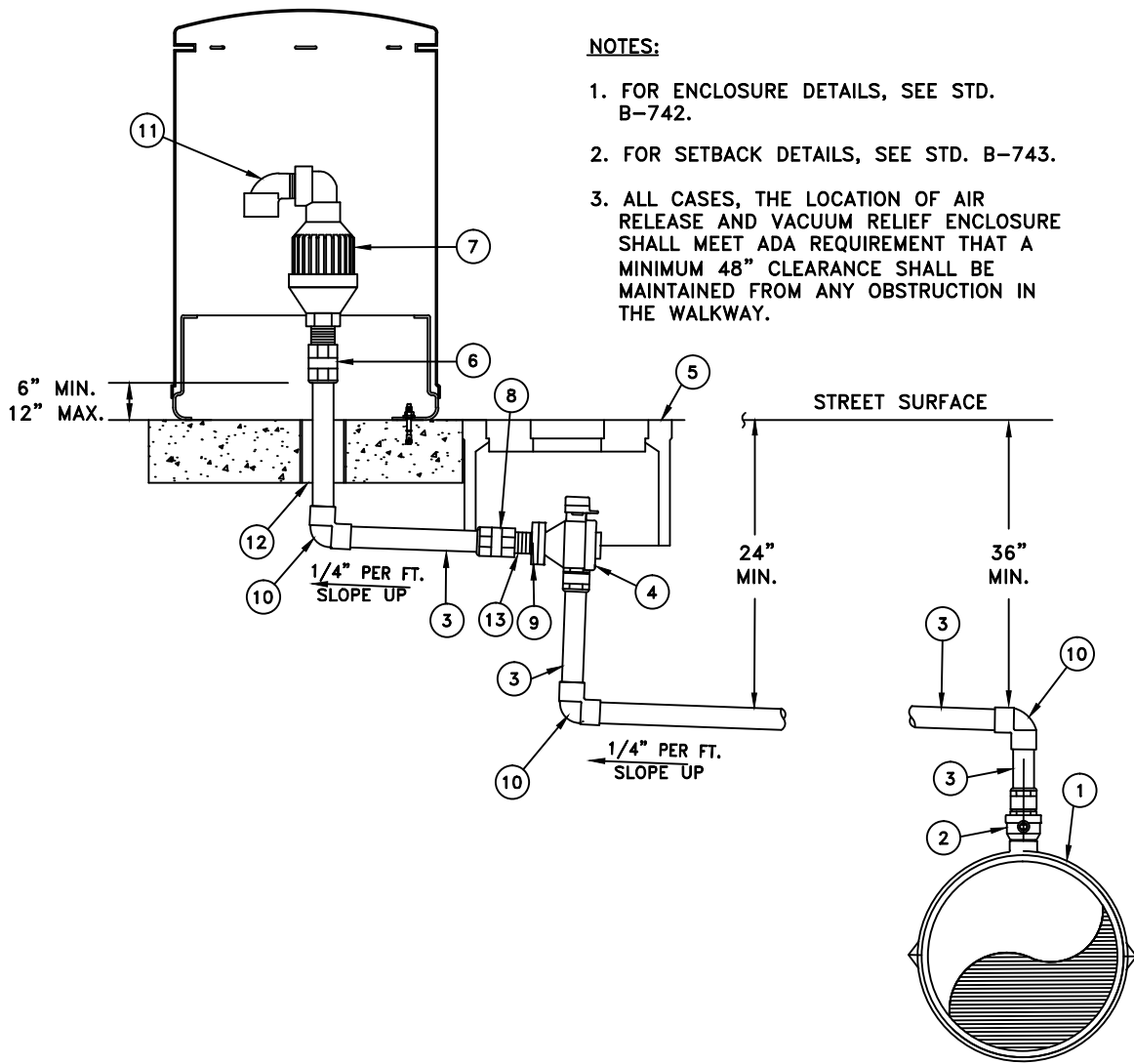
Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER

**B-740**

SHEET 1 OF 1



**NOTES:**

1. FOR ENCLOSURE DETAILS, SEE STD. B-742.
2. FOR SETBACK DETAILS, SEE STD. B-743.
3. ALL CASES, THE LOCATION OF AIR RELEASE AND VACUUM RELIEF ENCLOSURE SHALL MEET ADA REQUIREMENT THAT A MINIMUM 48" CLEARANCE SHALL BE MAINTAINED FROM ANY OBSTRUCTION IN THE WALKWAY.

**MATERIAL LIST**

ITEM NO.	QUAN.	DESCRIPTION	MFR.
①		2" SERVICE SADDLE, DOUBLE STRAP, WITH 2" F.I.P.T.	
②		2" CORPORATION STOP, COMPRESSION FITTING W/ I.P.T.	
③		2"Ø TYPE "K" SOFT COPPER	
④		2" ANGLE METER VALVE COMPRESSION TYPE (MUELLER OR APPROVED EQUAL) W/ SS BOLTS	
⑤		#37 CONCRETE METER BOX W/ 2 PC CONCRETE COVER	
⑥		2" F.I.P. x COMPRESSION COUPLING	
⑦		2" AIR AND VACUUM RELIEF VALVE, PLASTIC BODY	
⑧		2" CU SLIP x M.I.P. COUPLING	
⑨		2" METER FLANGE WITH 2" F.I.P.	
⑩		2" CU 90° SLIP x SLIP COUPLING	
⑪		2" 90° PVC STREET ELBOW	
⑫		PIPE INSULATION (FOAM)	
⑬		2" x 4" BRASS NIPPLE	



City of  
Garden Grove  
California

**2" AIR AND VACUUM RELIEF  
VALVE ASSEMBLY**

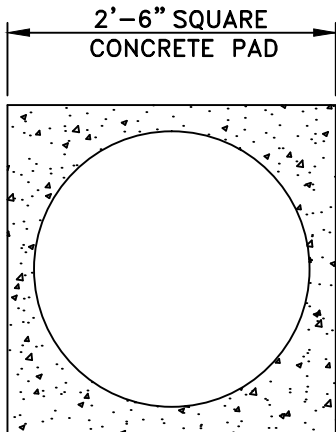
Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER

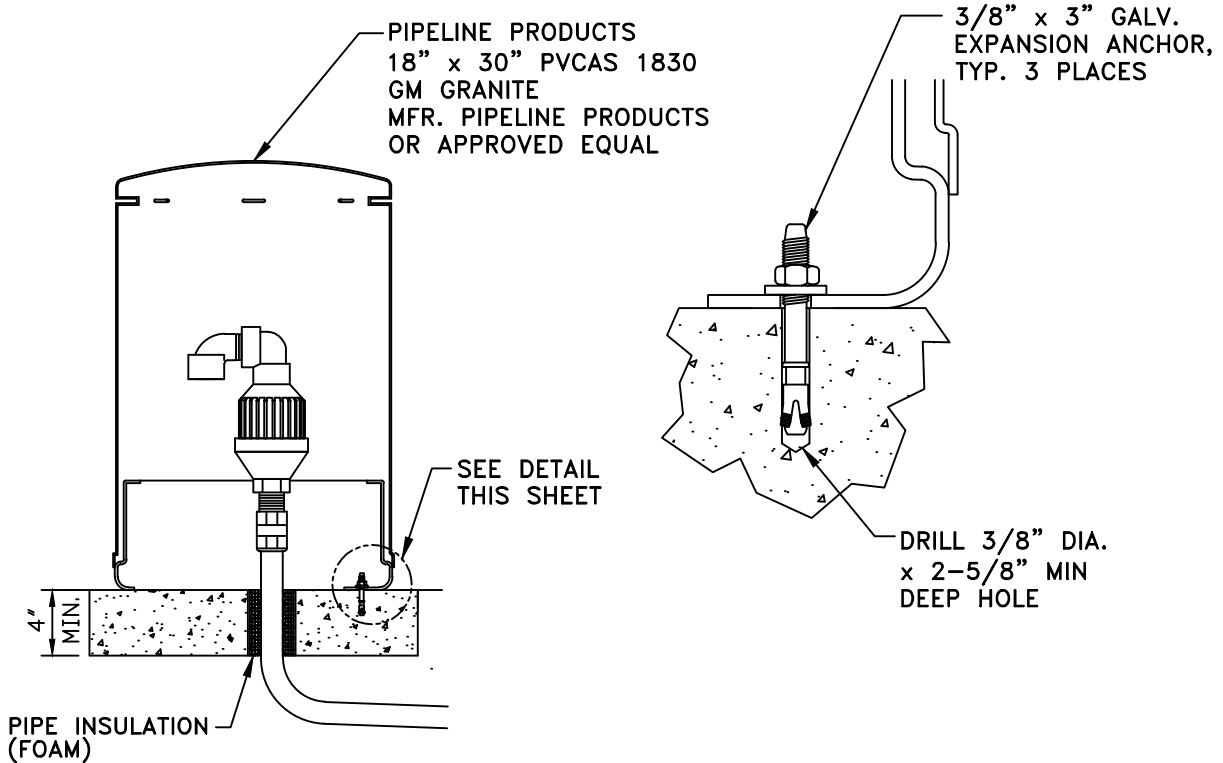
**B-741**

SHEET 1 OF 1



**NOTES:**

1. FOR ENCLOSURE DETAILS, SEE STD. B-742.
2. FOR SETBACK DETAILS, SEE STD. B-743.
3. ALL CASES, THE LOCATION OF AIR RELEASE AND VACUUM RELIEF ENCLOSURE SHALL MEET ADA REQUIREMENT THAT A MINIMUM 48" CLEARANCE SHALL BE MAINTAINED FROM ANY OBSTRUCTION IN THE WALKWAY.



City of  
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**AIR RELEASE & VACUUM RELIEF  
ENCLOSURE ASSEMBLY**

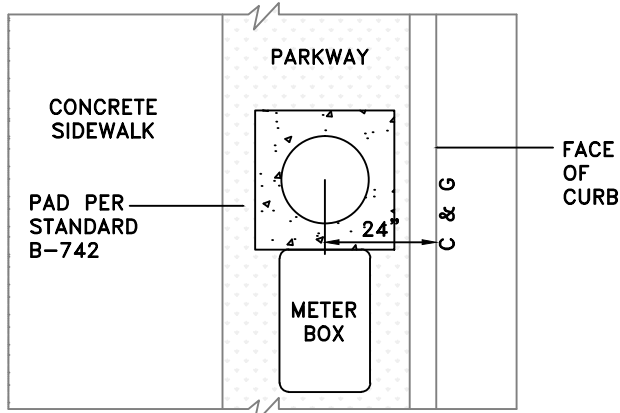
Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER

**B-742**

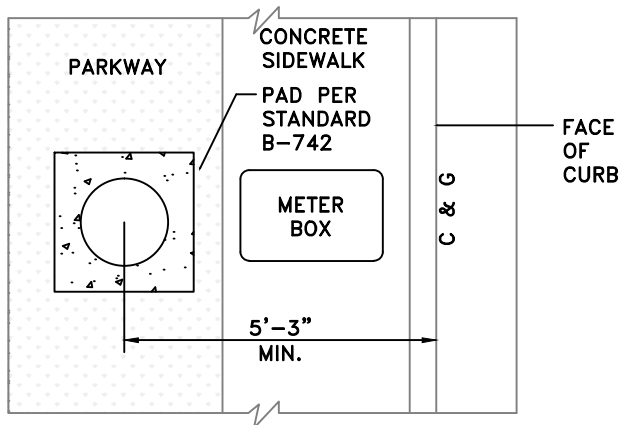
SHEET 1 OF 1



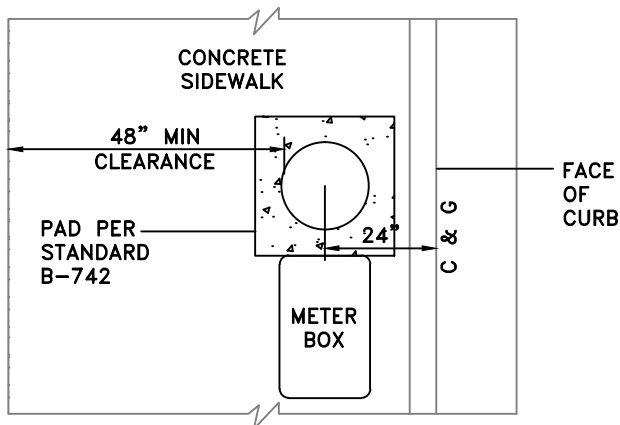
**DETACHED SIDEWALK**

**NOTE:**

FOR ALL CASES, THE LOCATION OF AIR RELEASE AND VACUUM RELIEF ENCLOSURE SHALL MEET ADA REQUIREMENTS THAT A MINIMUM 48" CLEARANCE SHALL BE MAINTAINED FROM ANY OBSTRUCTION IN THE WALKWAY.



**4' WIDE ATTACHED SIDEWALK**




**6' OR WIDER SIDEWALK**



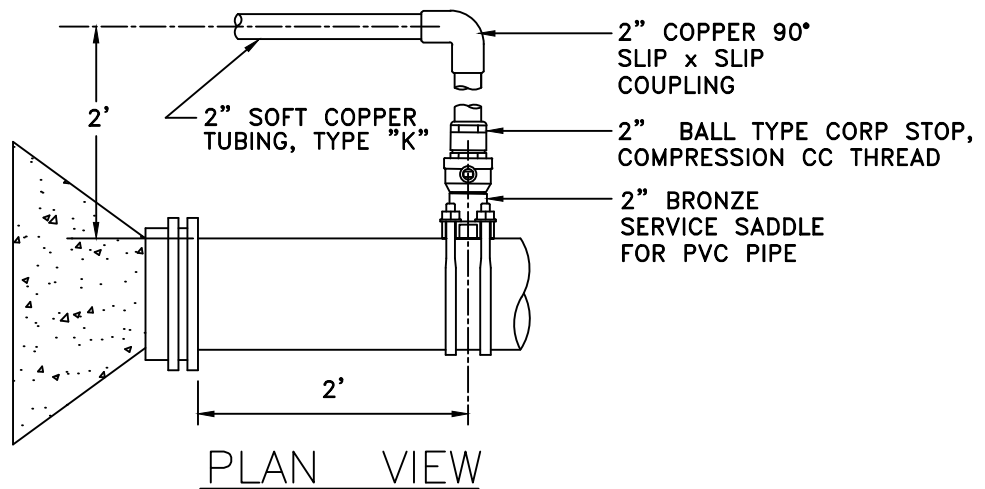
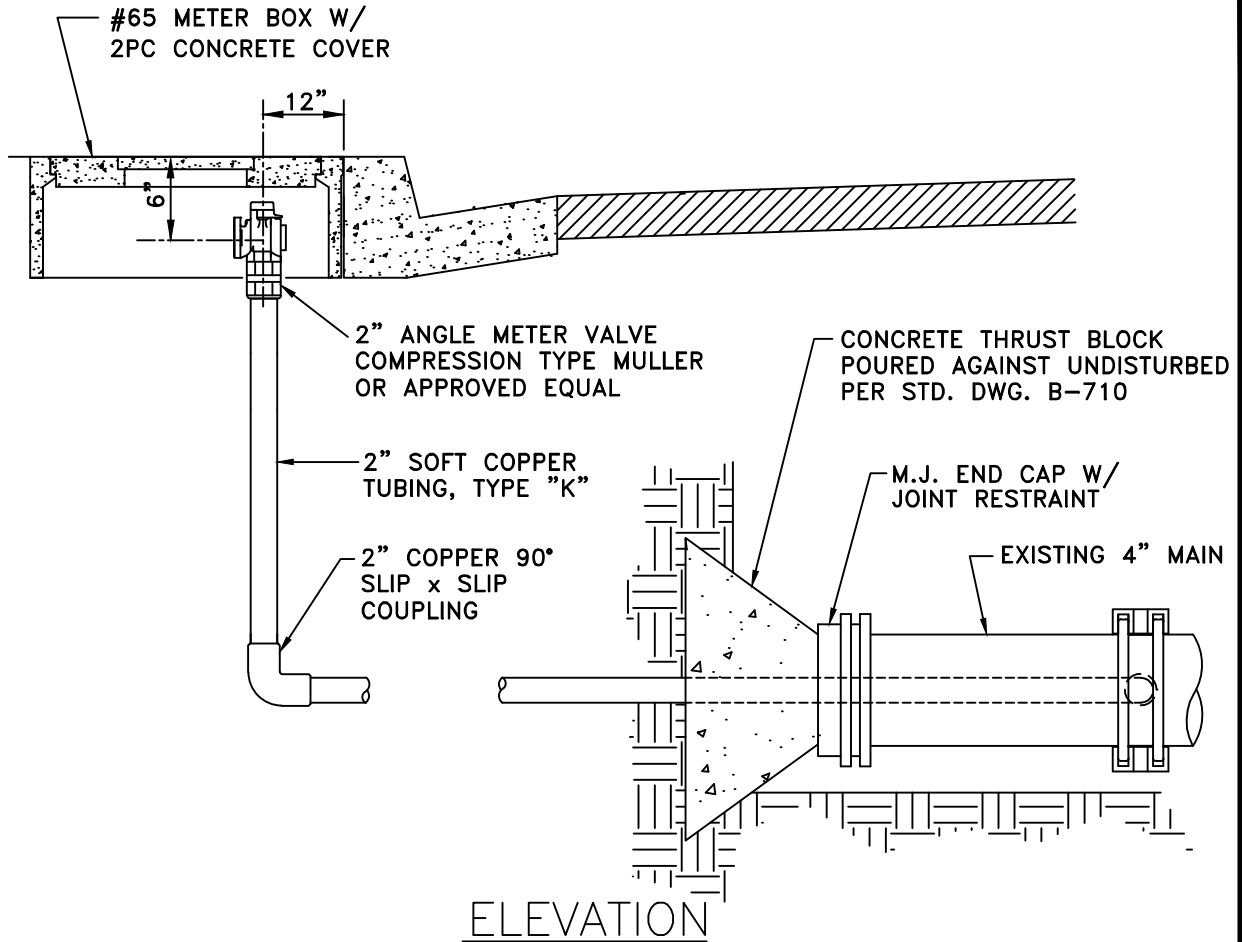
City of  
Garden Grove  
California

**AIR RELEASE & VACUUM RELIEF  
ENCLOSURE SETBACK DETAIL**

Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-743**  
SHEET 1 OF 1



City of  
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## 2" BLOWOFF INSTALLATION AT END OF 4" WATER MAIN PIPE

Approved  Date 12-8-15  
City Engineer R.C.E. 52125 Exp.12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER

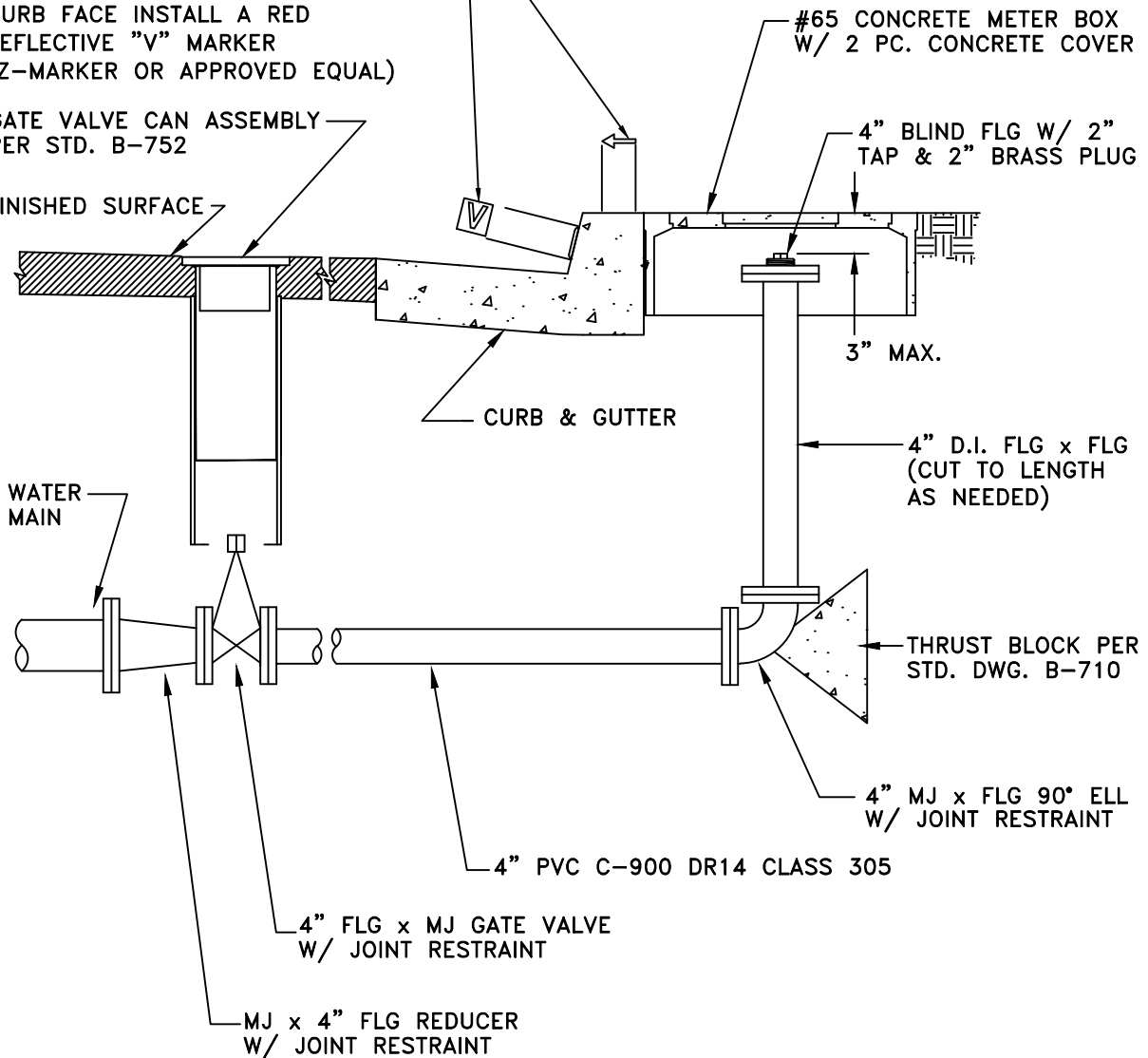
**B-744**

SHEET 1 OF 1

IN FRONT OF BLOWOFF OR FIRE HYDRANT ON TOP OF CURB INSTALL A BLUE ARROW MARKER IN THE DIRECTION OF VALVE AND ON THE CURB FACE INSTALL A RED REFLECTIVE "V" MARKER (Z-MARKER OR APPROVED EQUAL)

GATE VALVE CAN ASSEMBLY PER STD. B-752

FINISHED SURFACE



**NOTE**

THIS DRAWING APPLIES TO PIPES 6" & 8" WATER MAINS.  
FOR 10" & 12" WATER MAIN INSTALL A FIRE HYDRANT.



City of  
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**4" BLOWOFF INSTALLATION  
FOR 6" OR LARGER MAINS**

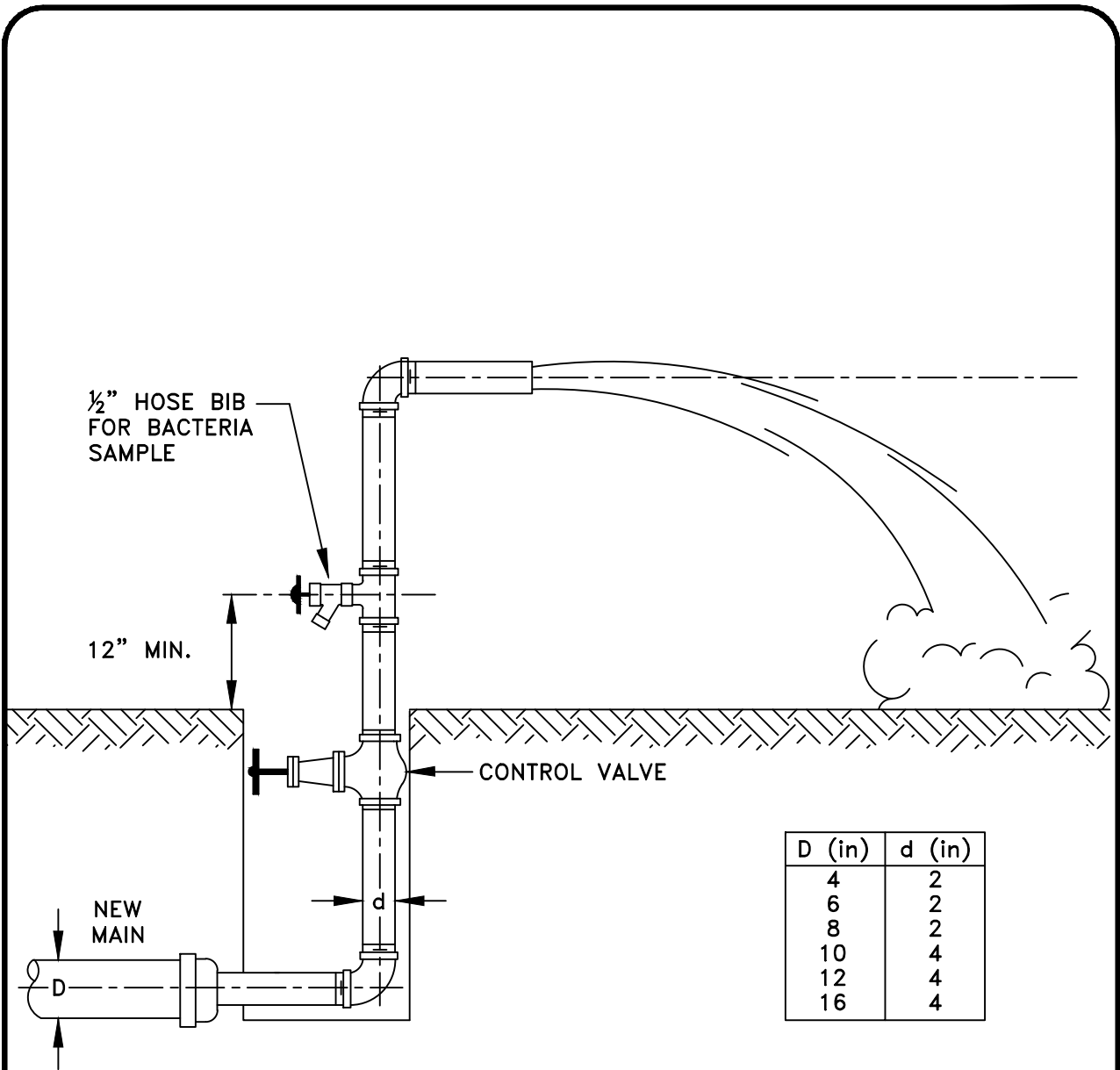
Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER

**B-745**

SHEET 1 OF 1



**NOTE:** FLUSHING IS NOT REQUIRED FOR SECOND SET OF SAMPLES.



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### SAMPLE POINT FOR NEW WATER MAIN

Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

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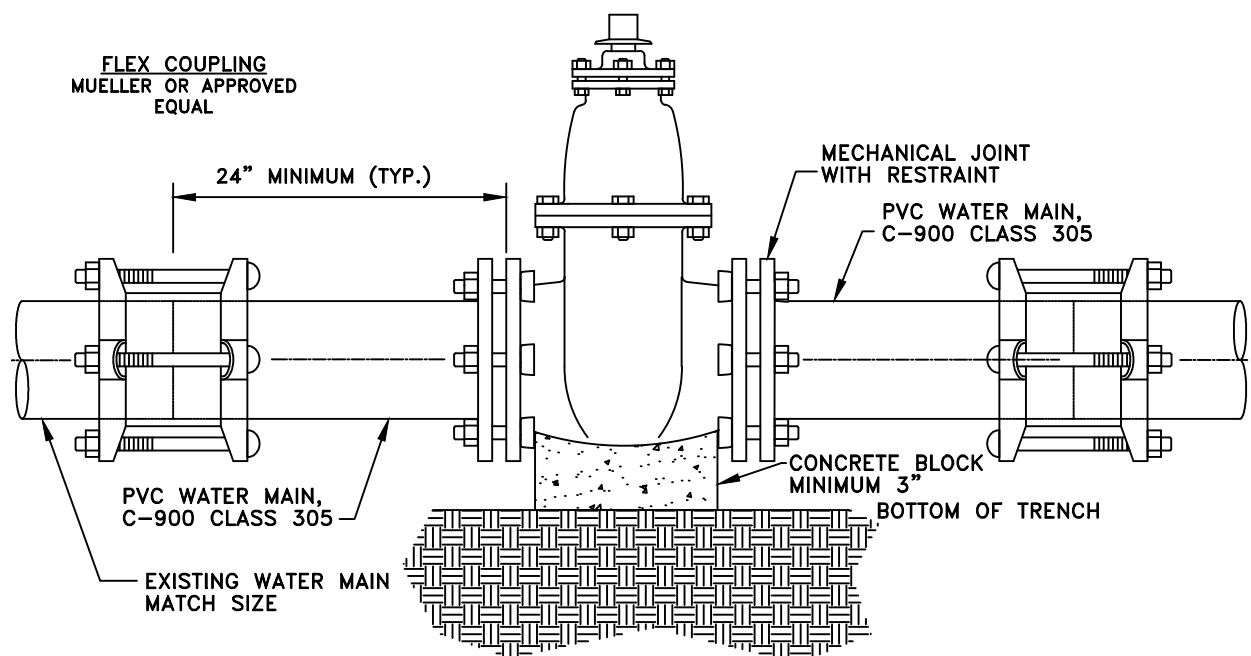
STD. PLAN NUMBER

**B-746**

SHEET 1 OF 1



**MJ GATE VALVE**  
**MUELLER A-2362**  
**OR APPROVED EQUAL**



**CUT-IN VALVE DETAIL**



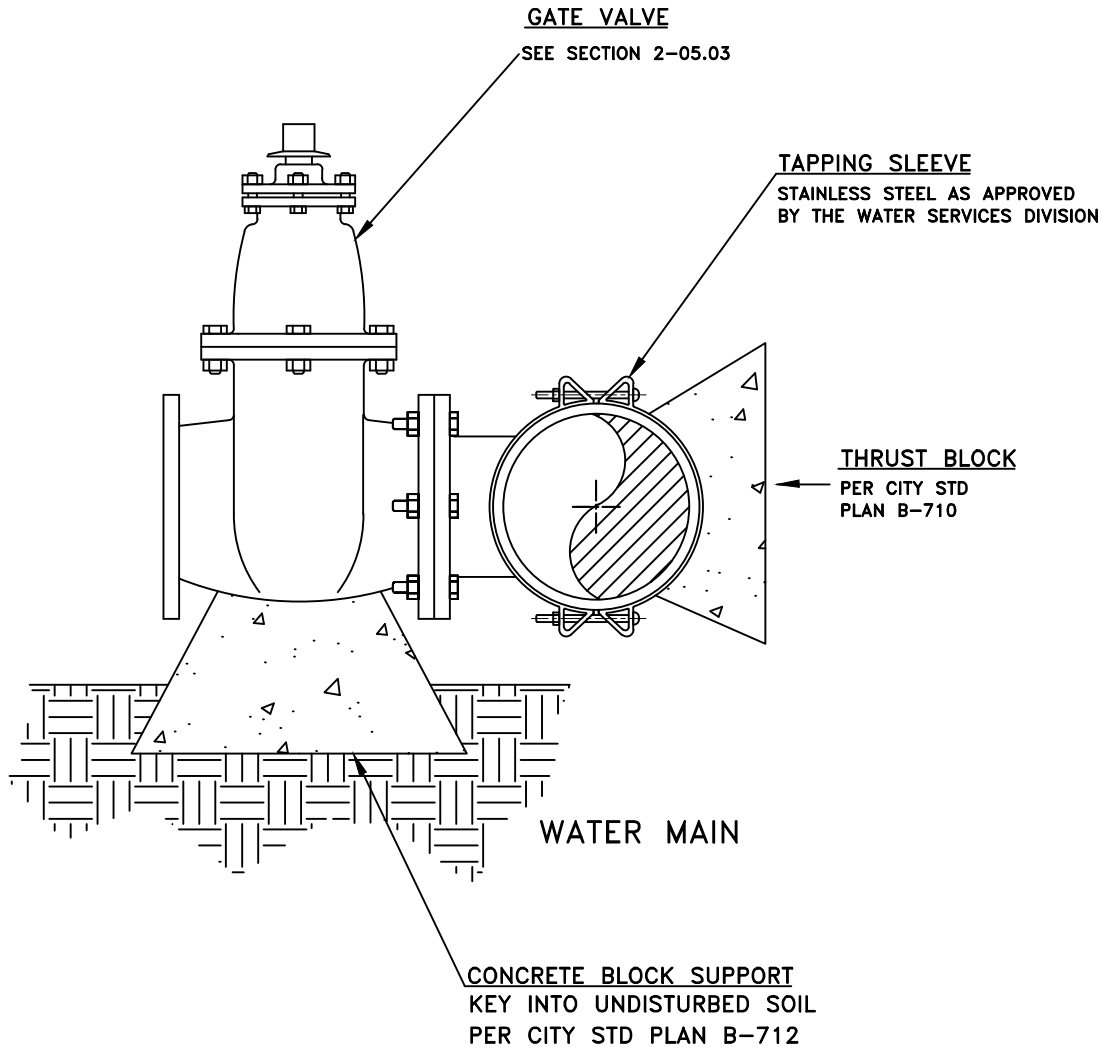
City of  
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 California

**CUT-IN VALVE**

Approved:  Date: 12-8-15  
 City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-749**  
 SHEET 1 OF 1




**NOTES:**

1. TAPPING CUTTER SHALL BE MAXIMUM ALLOWABLE DIAMETER CONSISTENT WITH NOMINAL GATE VALVE SIZE. WHEN TAPPING GATE SIZE EQUALS THE DIAMETER OF THE PIPE TO BE TAPPED, INSTALL TEE UNLESS APPROVED BY WATER SERVICES DIVISION.
2. GATE VALVE SHALL BE RESILIENT WEDGE EPOXEY LINED AND COATED TYPE, FLG. x MECH. JOINT OR FLG x FLG.
3. MAKE TAP A MINIMUM OF 3' CLEAR OF PIPE JOINT UNLESS APPROVED BY WATER SERVICES



City of  
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**TAPPING SLEEVE  
AND GATE VALVE**

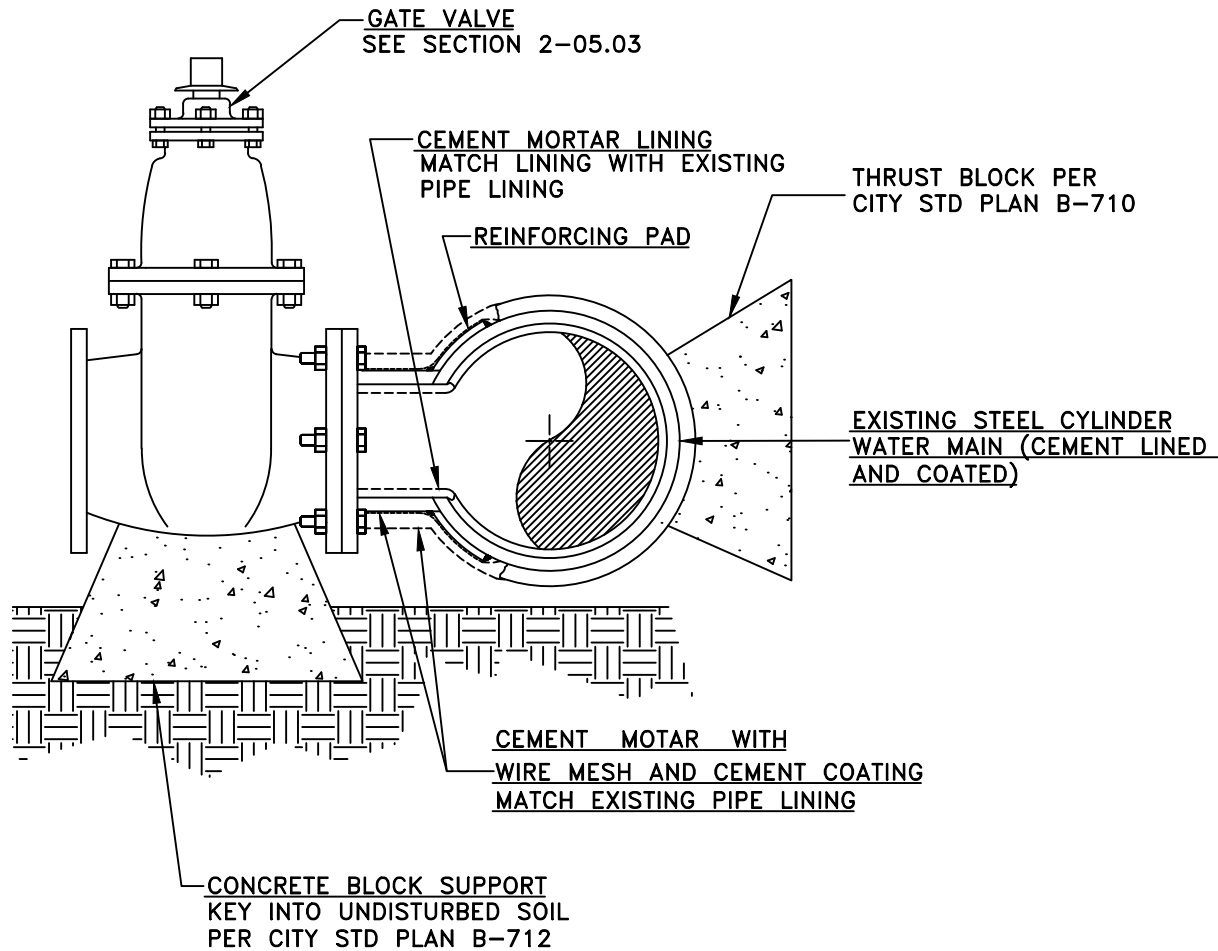
Approved  Date 12-8-15  
City Engineer R.C.E. 52125 Exp.12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER

**B-750**

SHEET 1 OF 1



**NOTES:**

1. CEMENT LINED FLANGED NOZZLE WITH REINFORCING PAD. ALL WORK SHALL BE DONE BY A CONTRACTOR APPROVED BY THE ENGINEER. (CERTIFIED WELDER REQUIRED)
2. GATE VALVES SHALL BE RESILIENT WEDGE EPOXY LINED AND COATED TYPE, FLANGED x MECHANICAL JOINT, OR FLG x FLG.
3. TAPPING CUTTER SHALL BE MAXIMUM ALLOWABLE DIAMETER CONSISTENT WITH NOMINAL GATE VALUE SIZE. WHEN THE TAPPING GATE SIZE EQUALS THE DIAMETER OF THE PIPE TO BE TAPPED, REDUCE CUTTER DIAMETER, AS APPROVED BY THE CITY.
4. CONTRACTOR TO PROVIDE CERTIFICATION FOR WELDER.
5. MAKE TAP A MINIMUM OF 3' CLEAR OF ANY PIPE JOINT, UNLESS APPROVED BY WATER SERVICES.



City of  
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**WELDED TAPPING NOZZLE  
AND GATE VALVE FOR  
STEEL CYLINDER PIPE**

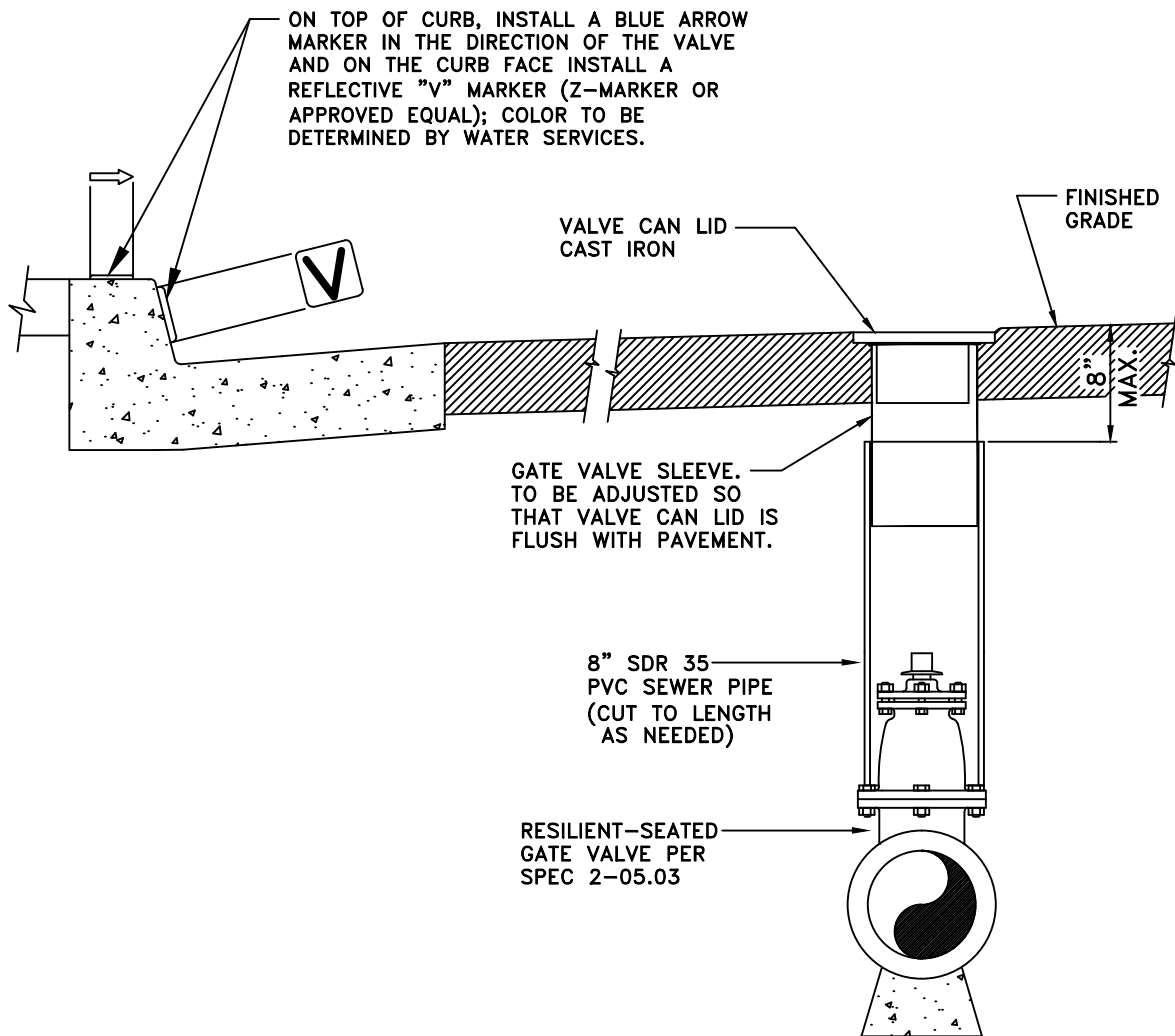
Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER

**B-751**

SHEET 1 OF 1



**NOTES:**

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RAISING VALVE CAN TO GRADE AND MAKING SURE THE VALVE CAN IS CLEAR OF DEBRIS AFTER STREET IS PAVED.
2. CONTRACTOR SHALL PURCHASE LID FROM THE PUBLIC WORKS COUNTER IN CITY HALL.

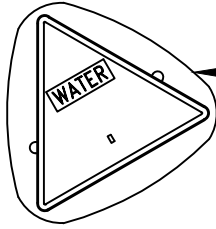


**GATE VALVE CAN ASSEMBLY**

Approved:  Date: 12-8-15  
 City Engineer R.C.E. 52125 Exp. 12-31-16

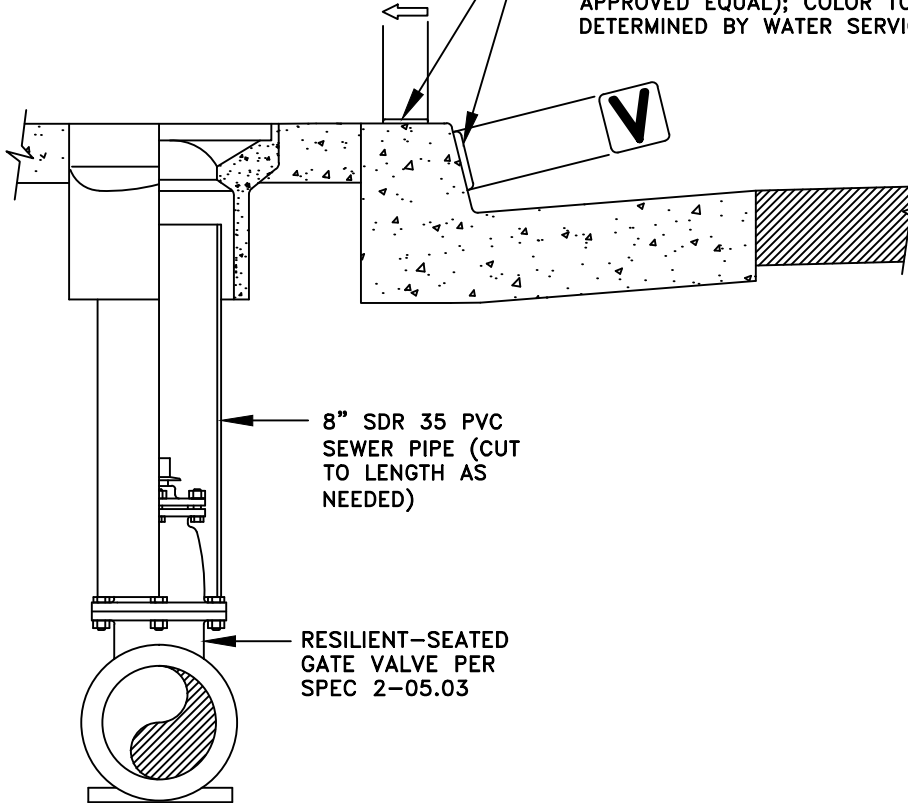
REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-752**  
 SHEET 1 OF 1



BROOKS 4-TT TRAFFIC BOX  
WITH TRIANGULAR LID

ON TOP OF CURB, INSTALL A BLUE ARROW  
MARKER IN THE DIRECTION OF THE VALVE  
AND ON THE CURB FACE INSTALL A  
REFLECTIVE "V" MARKER (Z-MARKER OR  
APPROVED EQUAL); COLOR TO BE  
DETERMINED BY WATER SERVICES.



8" SDR 35 PVC  
SEWER PIPE (CUT  
TO LENGTH AS  
NEEDED)

RESILIENT-SEATED  
GATE VALVE PER  
SPEC 2-05.03

**NOTES:**

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RAISING VALVE CAN TO GRADE PRIOR TO FORMING AND POURING NEW CONCRETE.



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**GATE VALVE CAN ASSEMBLY  
FOR CONCRETE AREAS**

Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER

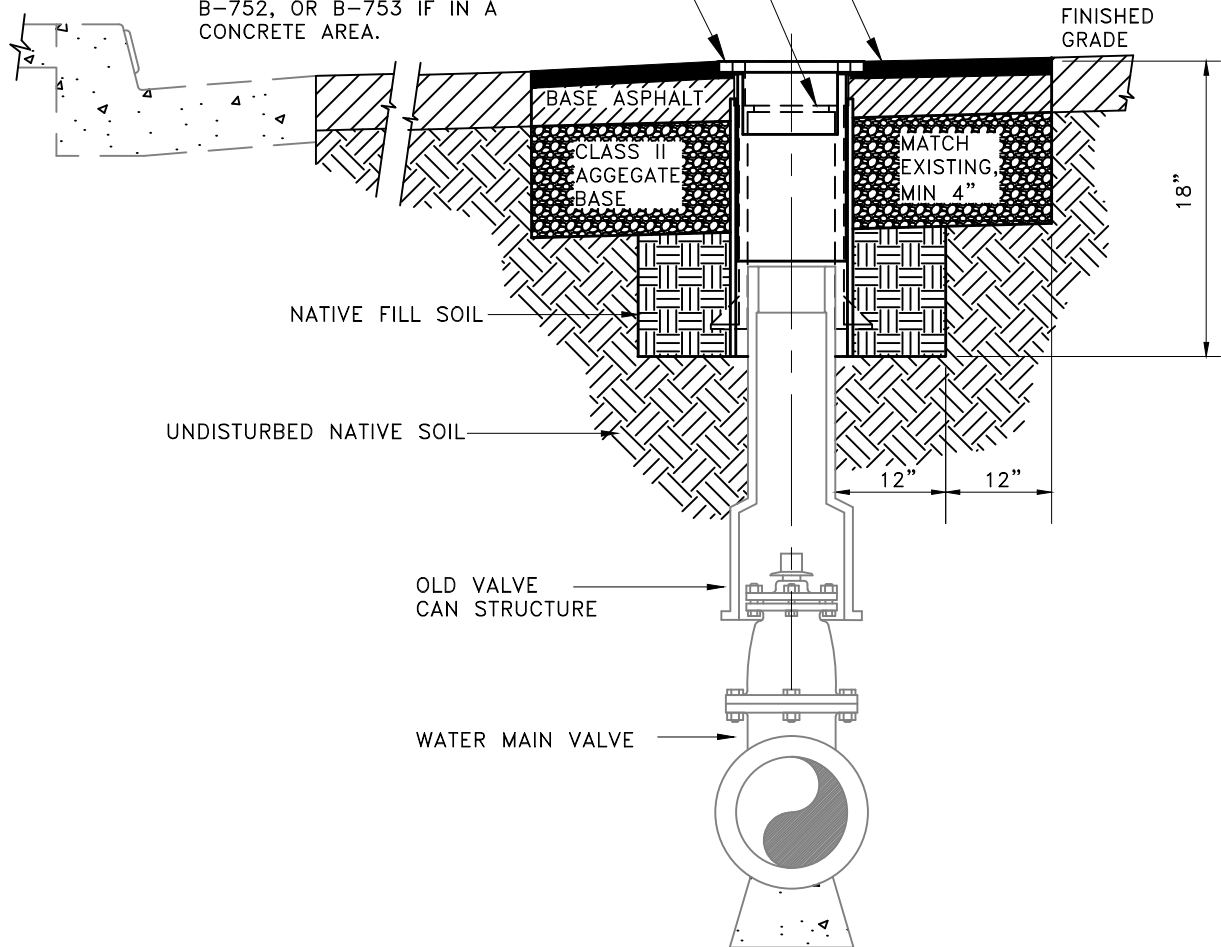
**B-753**

SHEET 1 OF 1

A MIN. OF 12" OF THE TOP PORTION OF THE OLD VALVE CAN STRUCTURE AND LID SHALL BE REMOVED. THE NEW VALVE CAN LINER SHALL HAVE A MINIMUM 4" OVERLAP OVER THE OLD VALVE CAN.

SEE CITY STD. B-134, CASE "A" T.CAP DETAIL. MATCH EXISTING PAVEMENT, 3" MINIMUM THICKNESS.

GG C.I. VALVE CAN LID, 8" X 12"  
 GALVANIZED VALVE CAN LINER,  
 AND 8" PVC SLEEVE, MIN 16" LG  
 (SDR 35) PER CITY STARDARD  
 B-752, OR B-753 IF IN A  
 CONCRETE AREA.



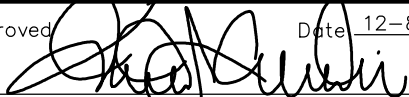
**NOTES:**

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RAISING VALVE CAN TO GRADE WITHIN 5 DAYS AFTER STREET IS PAVED.
2. COMPACT NATIVE SOIL AND AGGREGATE BASE TO 95% RELATIVE COMPACTION.
3. PURCHASE CI GG WATER LID FROM THE PUBLIC WORKS COUNTER IN CITY HALL.
4. SEE STD. PLAN NO. B-101 THRU B-104 FOR REPLACEMENT STREET SECTION THICKNESS.



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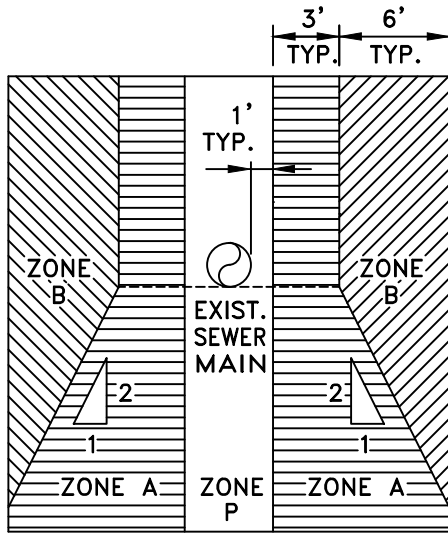
## OLD GATE VALVE CAN ASSEMBLY REPLACEMENT

Approved:  Date: 12-8-15  
 City Engineer R.C.E. 52125 Exp. 12-31-16

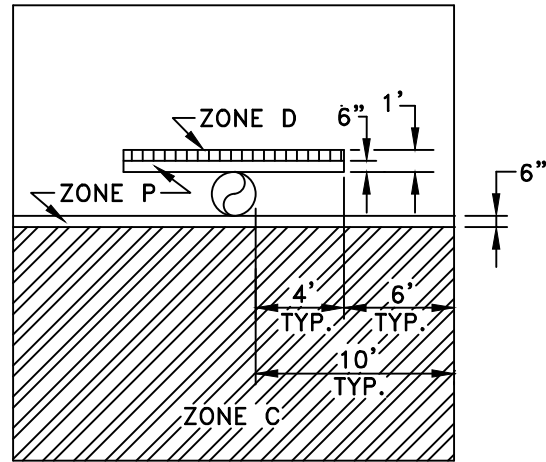
REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-754**  
 SHEET 1 OF 1

PARALLEL CONSTRUCTION



PERPENDICULAR CONSTRUCTION



IF WATER MAIN CANNOT BE LOCATED TEN OR MORE FEET FROM SEWER MAIN AND MUST BE LOCATED WITHIN ANY OF THE ABOVE INDICATED ZONES, SPECIAL CONSTRUCTION SHALL BE REQUIRED AS NOTED BELOW.

IF WATER MAIN MUST CROSS SEWER MAIN WITHIN ANY OF THE ABOVE INDICATED ZONES, SPECIAL CONSTRUCTION WILL BE REQUIRED AS NOTED BELOW.

ZONES

A,B,C,D WATER MAIN CONSTRUCTION PARALLEL TO SEWER MAIN SHALL NOT BE PERMITTED WITHOUT THE APPROVAL FROM THE CITY WATER ENGINEER AND THE STATE WATER RESOURCES CONTROL BOARD (SWRCB).

B AWWA C-900, DR14, CLASS 305, PVC WATER MAIN PIPE SHALL BE USED.

C & D CENTER A FULL 20' LENGTH OF AWWA C-900, DR14, CLASS 305 PVC WATER MAIN PIPE OVER/UNDER SEWER MAIN PIPE PER DETAIL ON STD PLAN B-763.

P PROHIBITED ZONE

NOTE:

NO WATER MAIN SHALL BE CONSTRUCTED IN ZONES A, B, OR C NEAR FORCE SEWER MAIN. NEW WATER MAIN CROSSING PERPENDICULAR TO A FORCE SEWER MAIN SHALL FOLLOW THE REQUIREMENTS FOR ZONE D WITH A MINIMUM CLEARANCE OF 12 FEET.



City of  
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**SEPARATION REQUIREMENTS FOR NEW  
WATER MAIN & EXISTING SEWER MAIN**

Approved  Date 12-8-15  
City Engineer R.C.E. 52125 Exp.12-31-16

REVISIONS	BY	DATE

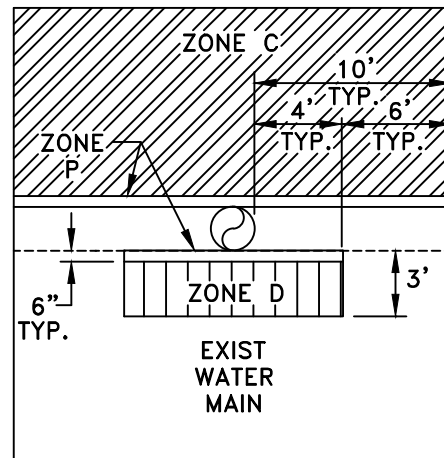
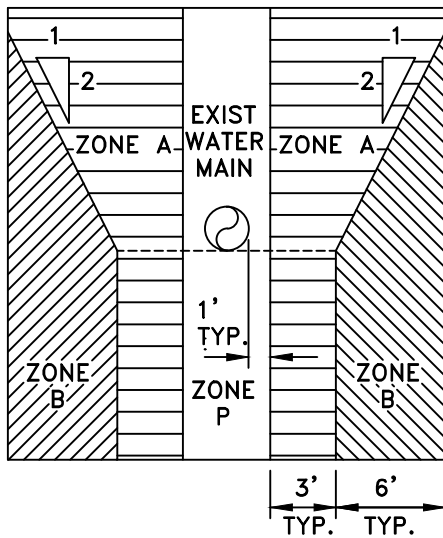
STD. PLAN NUMBER

**B-760**

SHEET 1 OF 1

PARALLEL CONSTRUCTION

PERPENDICULAR CONSTRUCTION



IF SEWER MAIN CANNOT BE LOCATED TEN OR MORE FEET FROM WATER MAIN AND MUST BE LOCATED WITHIN ANY OF THE ABOVE INDICATED ZONES, SPECIAL CONSTRUCTION SHALL BE REQUIRED AS NOTED BELOW.

IF SEWER MAIN MUST CROSS WATER MAIN WITHIN ANY OF THE ABOVE INDICATED ZONES, SPECIAL CONSTRUCTION WILL BE REQUIRED AS NOTED BELOW.

ZONES

A,B,C,D SEWER MAIN CONSTRUCTION PARALLEL TO WATER MAIN SHALL NOT BE PERMITTED WITHOUT THE APPROVAL FROM THE CITY WATER ENGINEER AND THE STATE WATER RESOURCES CONTROL BOARD (SWRCB).

B AWWA C-900, DR14, CLASS 305 PVC WATER MAIN PIPE SHALL BE USED WITH STEEL REPAIR COUPLINGS AS APPROVED BY THE CITY WATER ENGINEER. ALL C-900 PIPE TO BE WRAPPED WITH SEWER MARKING TAPE.

C & D CENTER A FULL 20' LENGTH OF AWWA C-900, DR14, CLASS 305 PVC WATER MAIN OVER/UNDER WATER MAIN PIPE PER CITY STD. B-762.

P PROHIBITED ZONE

NOTE:

NO WATER MAIN SHALL BE CONSTRUCTED IN ZONES A, B, OR C NEAR FORCE SEWER MAIN. NEW WATER MAIN CROSSING PERPENDICULAR TO A FORCE SEWER MAIN SHALL FOLLOW THE REQUIREMENTS FOR ZONE D WITH A MINIMUM CLEARANCE OF 12 FEET.



City of  
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California

**SEPARATION REQUIREMENTS FOR NEW  
SEWER MAIN & EXISTING WATER MAIN**

Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

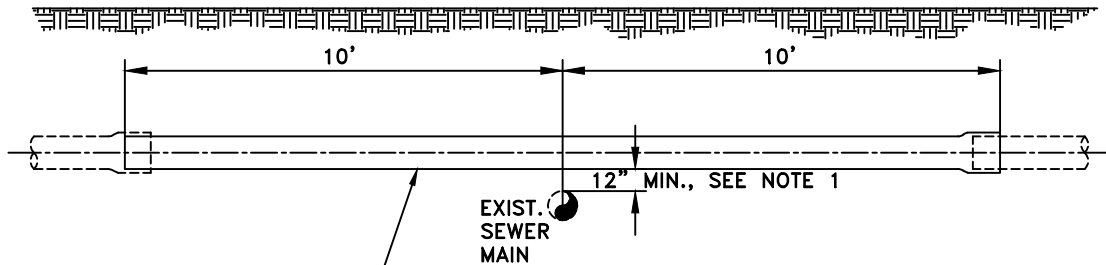
REVISIONS	BY	DATE

STD. PLAN NUMBER

**B-761**

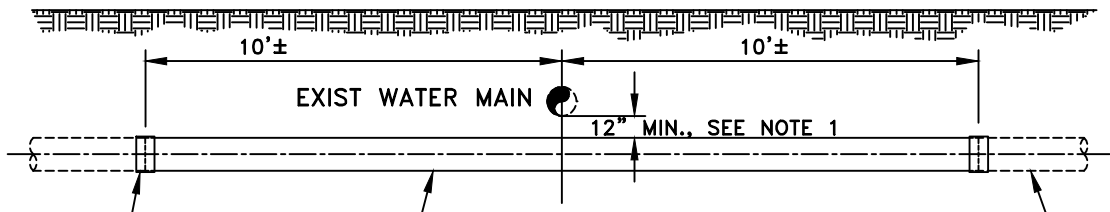
SHEET 1 OF 1





EXIST. SEWER MAIN  
 CENTER FULL 20 FOOT LENGTH OF AWWA C-900, DR14, CLASS 305, PVC WATER MAIN PIPE OVER SEWER MAIN. WATER AND SEWER MAINS TO BE AS CLOSE TO PERPENDICULAR TO ONE ANOTHER AS POSSIBLE.

**NEW WATER MAIN CROSSING OVER EXISTING SEWER MAIN**  
 N.T.S.



EXIST WATER MAIN  
 NEW SEWER PIPE  
 CENTER FULL LENGTH OF AWWA C-900, DR14, CLASS 305 PVC SEWER MAIN UNDER WATER MAIN. WATER AND SEWER MAINS TO BE AS CLOSE TO PERPENDICULAR TO ONE ANOTHER AS POSSIBLE. WRAP THIS PORTION OF C-900 PIPE WITH SEWER MARKING TAPE. CUT OFF BELL.

**NEW SEWER MAIN CROSSING UNDER EXISTING WATER MAIN**  
 N.T.S.

NOTE 1. IF THE SEPARATION REQUIREMENT CANNOT BE MET, APPROVAL FROM THE STATE WATER RESOURCES CONTROL BOARD (SWRCB) AND THE CITY IS REQUIRED.

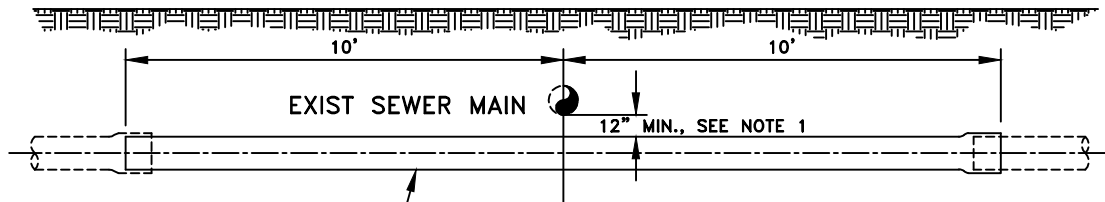


**SEWER MAIN CROSSING UNDER WATER MAIN**

Approved: *[Signature]* Date: 12-8-15  
 City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

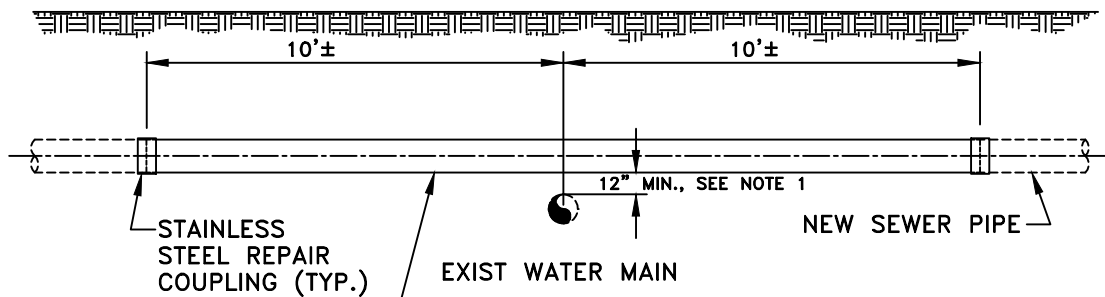
STD. PLAN NUMBER  
**B-762**  
 SHEET 1 OF 1



CENTER FULL 20 FOOT LENGTH OF AWWA C-900, DR14, CLASS 305, PVC WATER MAIN PIPE UNDER SEWER MAIN. WATER AND SEWER MAINS TO BE AS CLOSE TO PERPENDICULAR TO ONE ANOTHER AS POSSIBLE.

**NEW WATER MAIN CROSSING UNDER EXISTING SEWER MAIN**

N.T.S.



CENTER FULL LENGTH OF AWWA C-900, DR14, CLASS 305 PVC SEWER MAIN OVER WATER MAIN. WATER AND SEWER MAINS TO BE AS CLOSE TO PERPENDICULAR TO ONE ANOTHER AS POSSIBLE. WRAP THIS PORTION OF C-900 PIPE WITH SEWER MARKING TAPE. CUT OFF BELL.

**NEW SEWER MAIN CROSSING OVER EXISTING WATER MAIN**

N.T.S.

NOTE 1. IF THE SEPARATION REQUIREMENT CANNOT BE MET, APPROVAL FROM THE STATE WATER RESOURCES CONTROL BOARD (SWRCB) AND THE CITY IS REQUIRED.



City of  
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**WATER MAIN CROSSING  
UNDER SEWER MAIN**

Approved:  Date: 12-8-15  
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REVISIONS	BY	DATE

STD. PLAN NUMBER

**B-763**

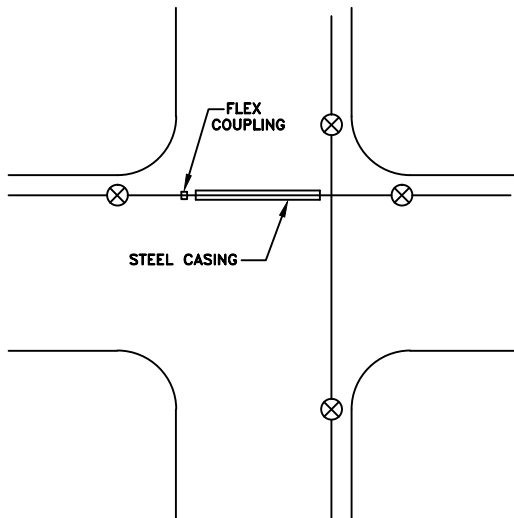
SHEET 1 OF 1

## STEEL CASING SCHEDULE

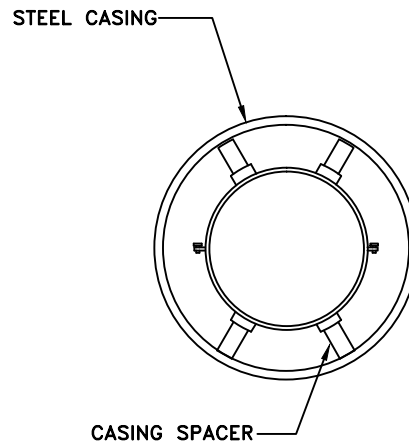
NOMINAL PIPE SIZE	MINIMUM CASING SIZE	MIN. WALL	CASING SPACERS
6"	12" I.D.	1/4"	CASCADE WATERWORKS MFG. OR APPROVED EQUAL
8"	16" I.D.	1/4"	
10"	18" I.D.	1/4"	
12"	20" I.D.	1/4"	
14"	24" I.D.	1/4"	
16"	26" I.D.	1/4"	
18"	28" I.D.	1/4"	

**NOTES:**

1. CASING SHALL BE INSTALLED BY THE BORE JACK AND/OR TUNNEL METHOD.
2. USE STAINLESS STEEL CASING SPACERS AT INTERVALS REQUIRED BY MFG.
3. SIZE AND THICKNESS OF CASING SHALL BE AS SHOWN IN SCHEDULE AT LEFT.
4. WHEN CASING IS OVER 60 FEET LONG, A GATE VALVE AT EACH END WILL BE REQUIRED AND ONE FLEX COUPLING.
5. EACH END OF CASING SHALL BE SEALED WITH A STEEL BULKHEAD OR AN APPROVED FLEXIBLE SEAL.
6. VOIDS AROUND OUTSIDE OF CASING SHALL BE PRESSURE GROUT (4 TO 1) MIX CEMENT.
7. ALL CASING SECTIONS TO BE JOINED BY CONTINUOUS WELD.



TYPICAL STREET CROSSING  
(100 FT OR WIDER)



CROSS SECTION



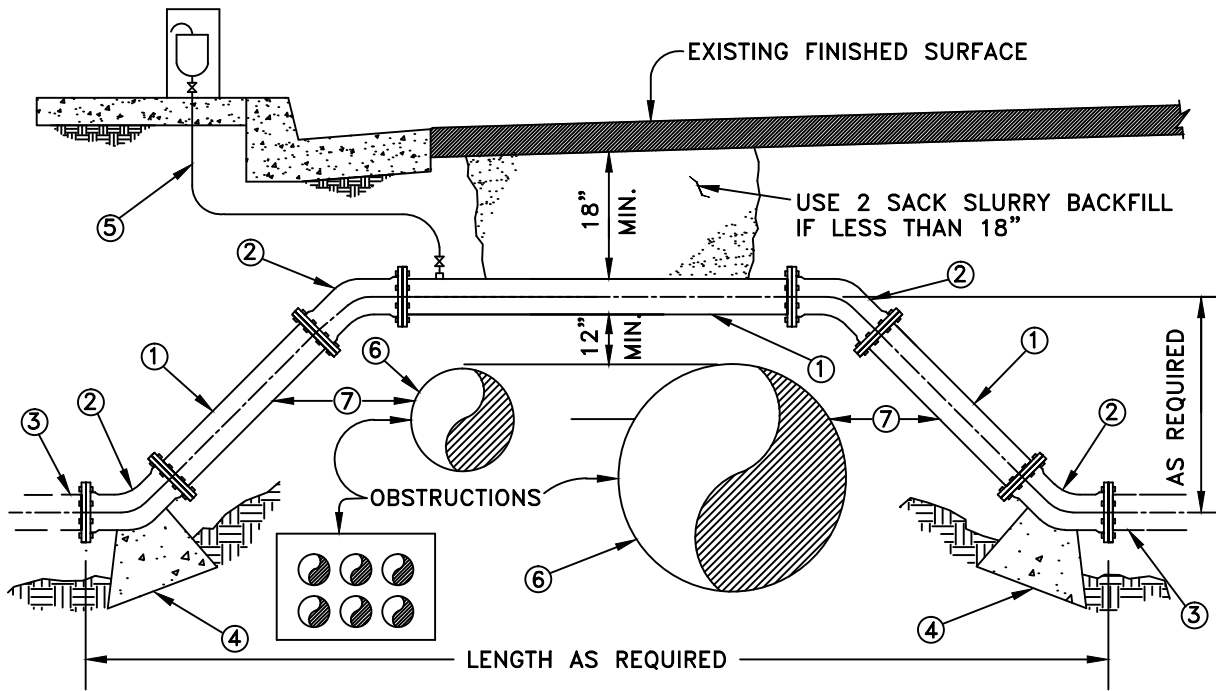
City of  
Garden Grove  
California

### INSTALLATION OF WATER PIPE THROUGH STEEL CASING

Approved: Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-764**  
SHEET 1 OF 1



**CONSTRUCTION NOTES**

1. DUCTILE IRON FLANGED SPOOL (CLASS 150) AS PER AWWA STANDARDS C115-75, C150-76, C151-76, C104-80, & C111-80 (LENGTH AS REQUIRED).
2. 45° CAST IRON FLANGED BEND AS PER AWWA STANDARDS C110-71, C104-80, C111-80.
3. MJ x FLG ADAPTER (IF REQ'D.).
4. ANCHOR BLOCK PER STD. DWG. B-710.
5. 1" AIR RELEASE ASSEMBLY PER STD. DWG. B-740 (INSTALL ON HIGH END).
6. SEE CITY STD PLAN NO. B-762 AND B-763 IF OBSTRUCTIONS ARE SEWER OR STORM DRAIN MAINS.
7. SEPARATION REQUIREMENT PER AWWA AND STATE

**NOTE**

MJ FITTINGS W/JOINT RESTRAINTS MAY BE USED IN PLACE OF FLANGED FITTINGS WITH THE APPROVAL OF THE CITY WATER ENGINEER.

ALL BOLTS TO COATED WITH NO-OX-ID WATERWORKS OR APPROVED EQUAL.



City of  
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**DUCTILE IRON  
VERTICAL OFFSET**

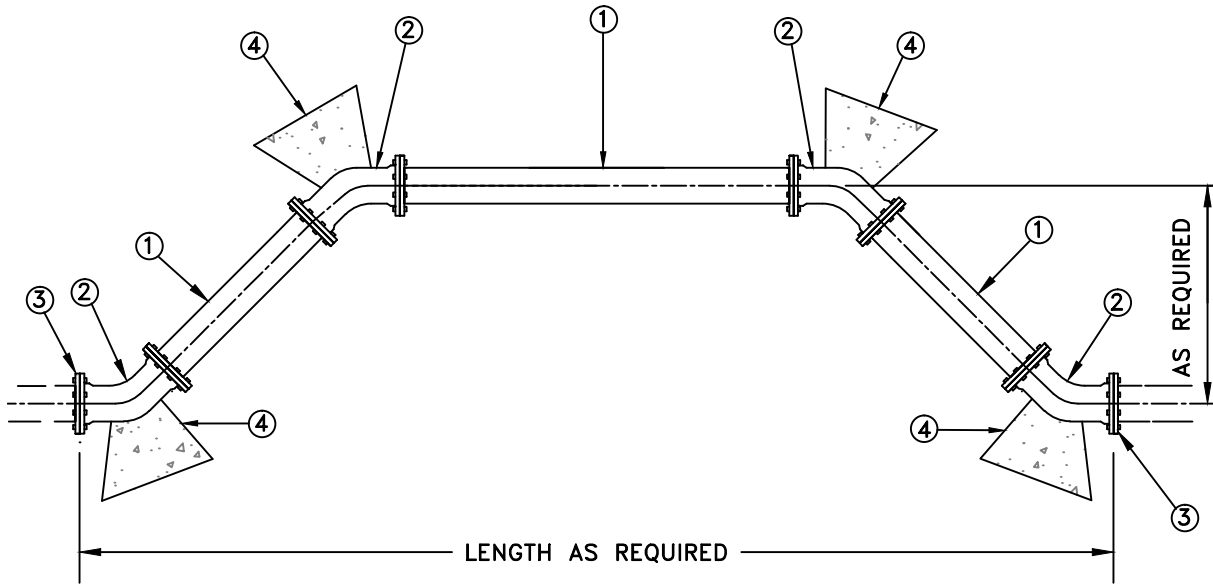
Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER

**B-765**

SHEET 1 OF 1



**CONSTRUCTION NOTES**

1. DUCTILE IRON FLANGED SPOOL (CLASS 150) AS PER AWWA STANDARDS C115-75, C150-76, C151-76, C104-80, & C111-80 (LENGTH AS REQUIRED).
2. 45° CAST IRON FLANGED BEND AS PER AWWA STANDARDS C110-71, C104-80, C111-80.
3. MJ x FLG ADAPTER (IF REQ'D.).
4. ANCHOR BLOCK PER STD. DWG. B-710.

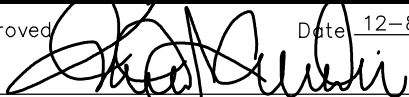
**NOTE**  
 MJ FITTINGS W/JOINT RESTRAINTS MAY BE USED IN PLACE OF FLANGED FITTINGS WITH THE APPROVAL OF THE CITY WATER ENGINEER.

ALL BOLTS TO COATED WITH NO-OX-ID WATERWORKS OR APPROVED EQUAL.



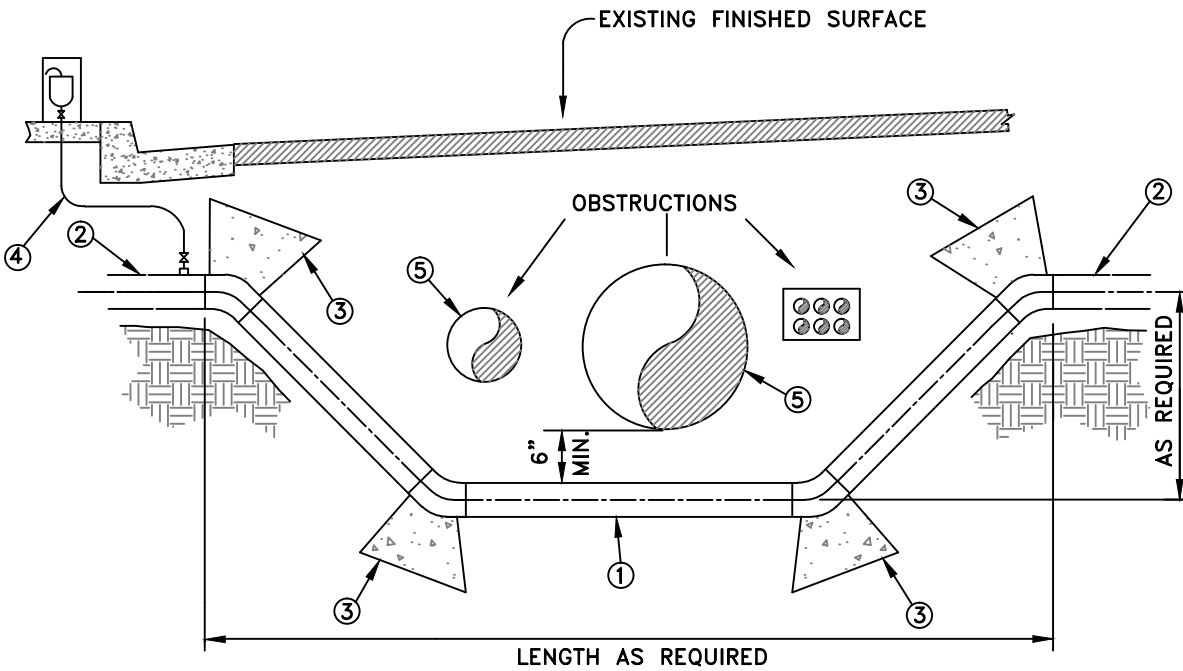
City of  
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 California

**DUCTILE IRON  
 HORIZONTAL OFFSET**

Approved:  Date: 12-8-15  
 City Engineer R.C.E. 52125 Exp.12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-766**  
 SHEET 1 OF 1



**CONSTRUCTION NOTES**

1. FABRICATE ONE PIECE WELDED STEEL OFFSET PER FOLLOWING SPECIFICATIONS:
  - A. MATERIAL – PIPE (AWWA SPEC. C202-64) ELECTRICALLY WELDED PIPE, GRADE B.
  - B. BENDS – PER AWWA SPEC. C208-59.
  - C. LINING – CEMENT MORTAR LINING PER AWWA SPEC. C205-80.
  - D. PRIMING – PREPARE EXTERIOR OF PIPE TO RECEIVE RUST INHIBITING PRIMER PER AWWA SPEC. C203-73.
  - E. COATING – AFTER PRIMING EXTERIOR OF PIPE, APPLY COAL-TAR ENAMEL (PER AWWA SPEC. C203-73) INTO WHICH A SINGLE LAYER OF FELT WRAP SHALL BE BONDED, FINISH WITH A SINGLE WRAP OF KRAFT PAPER.
2. MJ x FLG ADAPTER (ID REQ'D), WITH JOINT RESTRAINT.
3. ANCHOR BLOCKS PER DETAILS ON STD. DWG. B-710 & 711.
4. 1" AIR RELEASE ASSEMBLY PER STD. DWG. B-740 (IF REQ'D).
5. SEE CITY STD PLAN NO. B-762 AND B-763 IF OBSTRUCTIONS ARE SEWER OR STORM DRAIN MAINS.

ALL BOLTS TO BE COATED WITH NO-OX-1D WATERWORKS OR APPROVED EQUAL



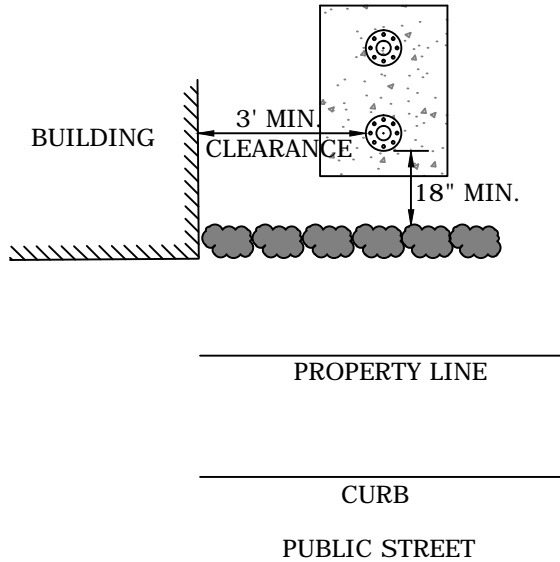
City of  
Garden Grove  
California

**WELDED STEEL OFFSET**

Approved  Date 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-767**  
SHEET 1 OF 1



STANDARD ORIENTATION


NOTES

1. ABOVE GROUND FIRE LINE AND BACKFLOW ASSEMBLIES MUST BE SHIELDED FROM PUBLIC VIEW FROM STREET WITH LANDSCAPING (IN SOME CASES WALLS MAY BE USED) OR OTHER MEANS IN ACCORDANCE WITH SECTION 4-10 OF THE STANDARD SPECIFICATIONS OR AS DIRECTED BY THE PLANNING SERVICES DIVISION.
2. CLINGING VINES TO BE PLANTED ADJACENT TO WALL (IF WALL IS USED) PER PLANNING DEPARTMENT REQUIREMENTS
3. ALL LANDSCAPING WITH IRRIGATION TO BE INSTALLED AND MAINTAINED BY PROPERTY OWNER.
4. FIRE DEPARTMENT CONNECTIONS CANNOT BE PLACED ON THE ASSEMBLY WITHOUT PRIOR APPROVAL. CONTACT FIRE DEPARTMENT AT 741-5628 FOR ACCEPTABLE LOCATION.
5. THE DISTANCE FROM THE SETBACK LINE TO THE PROPERTY LINE VARIES BY ZONING AND AS APPROVED BY THE CITY.



City of  
Garden Grove  
California

**ABOVE GROUND FIRE LINE AND  
BACKFLOW DEVICE SCREENING  
AND SETBACK REQUIREMENTS**

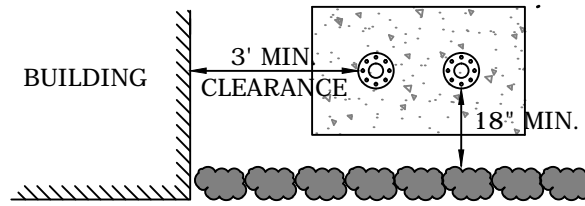
Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER

**B-769**

SHEET 1 OF 2



PROPERTY LINE

CURB

PUBLIC STREET

PARALLEL ORIENTATION

NOTES

1. ABOVE GROUND FIRE LINE AND BACKFLOW ASSEMBLIES MUST BE SHIELDED FROM PUBLIC VIEW FROM STREET WITH LANDSCAPING (IN SOME CASES WALLS MAY BE USED) OR OTHER MEANS IN ACCORDANCE WITH SECTION 4-10 OF THE STANDARD SPECIFICATIONS OR AS DIRECTED BY THE PLANNING SERVICES DIVISION.
2. CLINGING VINES TO BE PLANTED ADJACENT TO WALL (IF WALL IS USED) PER PLANNING DEPARTMENT REQUIREMENTS
3. ALL LANDSCAPING WITH IRRIGATION TO BE INSTALLED AND MAINTAINED BY PROPERTY OWNER.
4. FIRE DEPARTMENT CONNECTIONS CANNOT BE PLACED ON THE ASSEMBLY WITHOUT PRIOR APPROVAL. CONTACT FIRE DEPARTMENT AT 741-5628 FOR ACCEPTABLE LOCATION.
5. THE DISTANCE FROM THE SETBACK LINE TO THE PROPERTY LINE VARIES BY ZONING AND AS APPROVED BY THE CITY.



City of  
Garden Grove  
California

**ABOVE GROUND FIRE LINE AND  
BACKFLOW DEVICE SCREENING  
AND SETBACK REQUIREMENTS**

Approved  Date 12-8-15  
City Engineer R.C.E. 52125 Exp.12-31-16

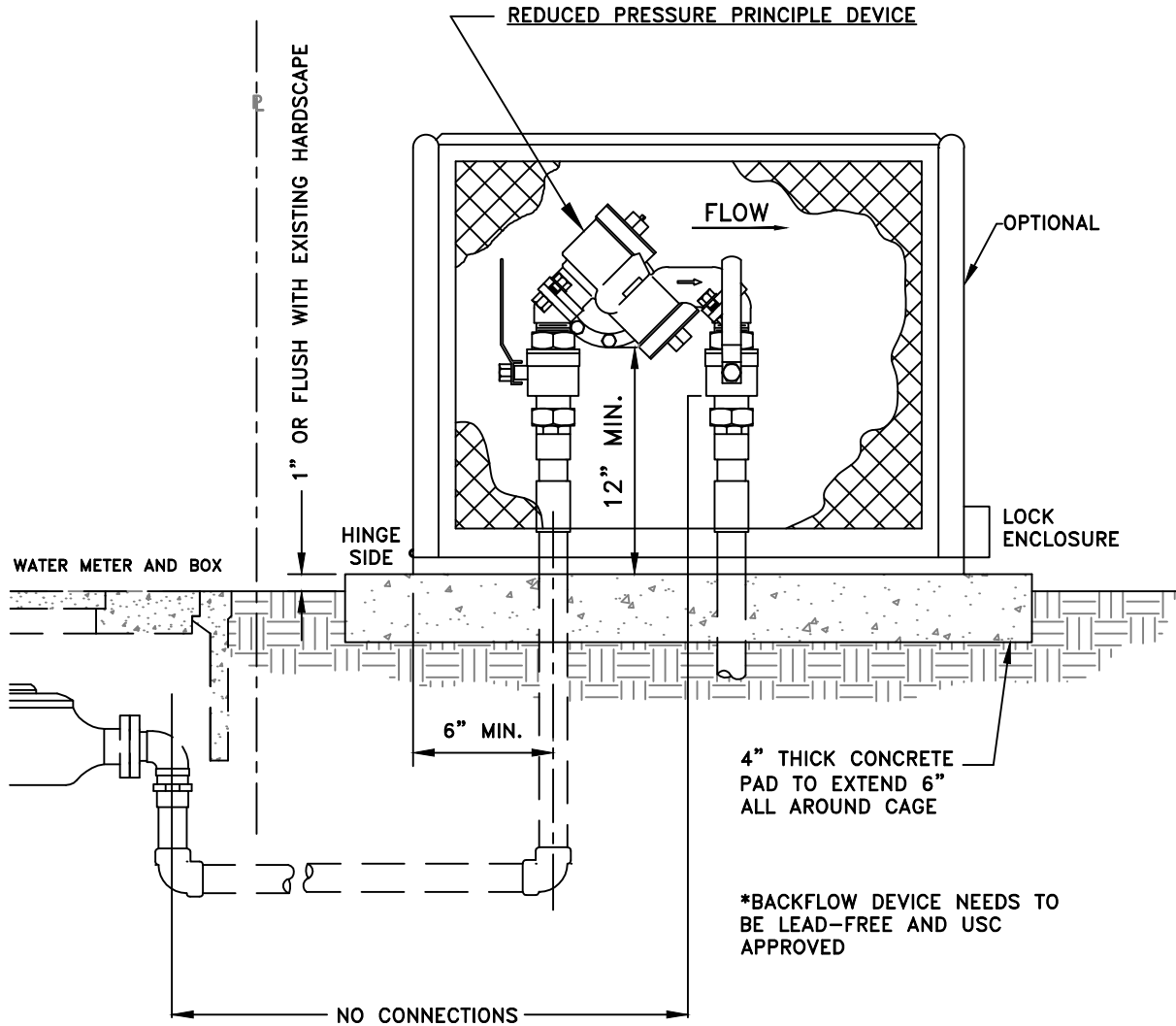
REVISIONS	BY	DATE

STD. PLAN NUMBER

**B-769**

SHEET 2 OF 2





**NOTES:**

1. THE BACKFLOW DEVICE MUST BE AS APPROVED BY THE CITY OF GARDEN GROVE WATER SERVICES DIVISION. FOR AN APPROVED LIST CONTACT THE WATER SERVICES DIVISION AT (714) 741-5395.
2. EACH BACKFLOW DEVICE SHALL BE TESTED IMMEDIATELY AFTER INSTALLATION AND ANNUALLY BY A CERTIFIED TESTER AS APPROVED BY THE ORANGE COUNTY HEALTH DEPARTMENT.
3. RELIEF SPOUT OF BACKFLOW DEVICE SHALL BE 12" MIN. ABOVE SURROUNDING GROUND. CLEARANCE AROUND TEST OUTLETS SHALL BE SUCH THAT ANY DEVICE CAN BE CONVENIENTLY TESTED.
4. THERE SHALL BE NO CONNECTIONS BETWEEN THE METER AND THE BACKFLOW DEVICE.
5. KEEP 30" CLEARANCE ON THE HINGE SIDE OF CAGE TO ALLOW FOR CAGE ACCESS PLACEMENT.



City of  
Garden Grove  
California

## TYPICAL 2" OR SMALLER REDUCED PRESSURE PRINCIPAL DEVICE (RPPD)

Approved

Date 12-8-15

REVISIONS

BY

DATE

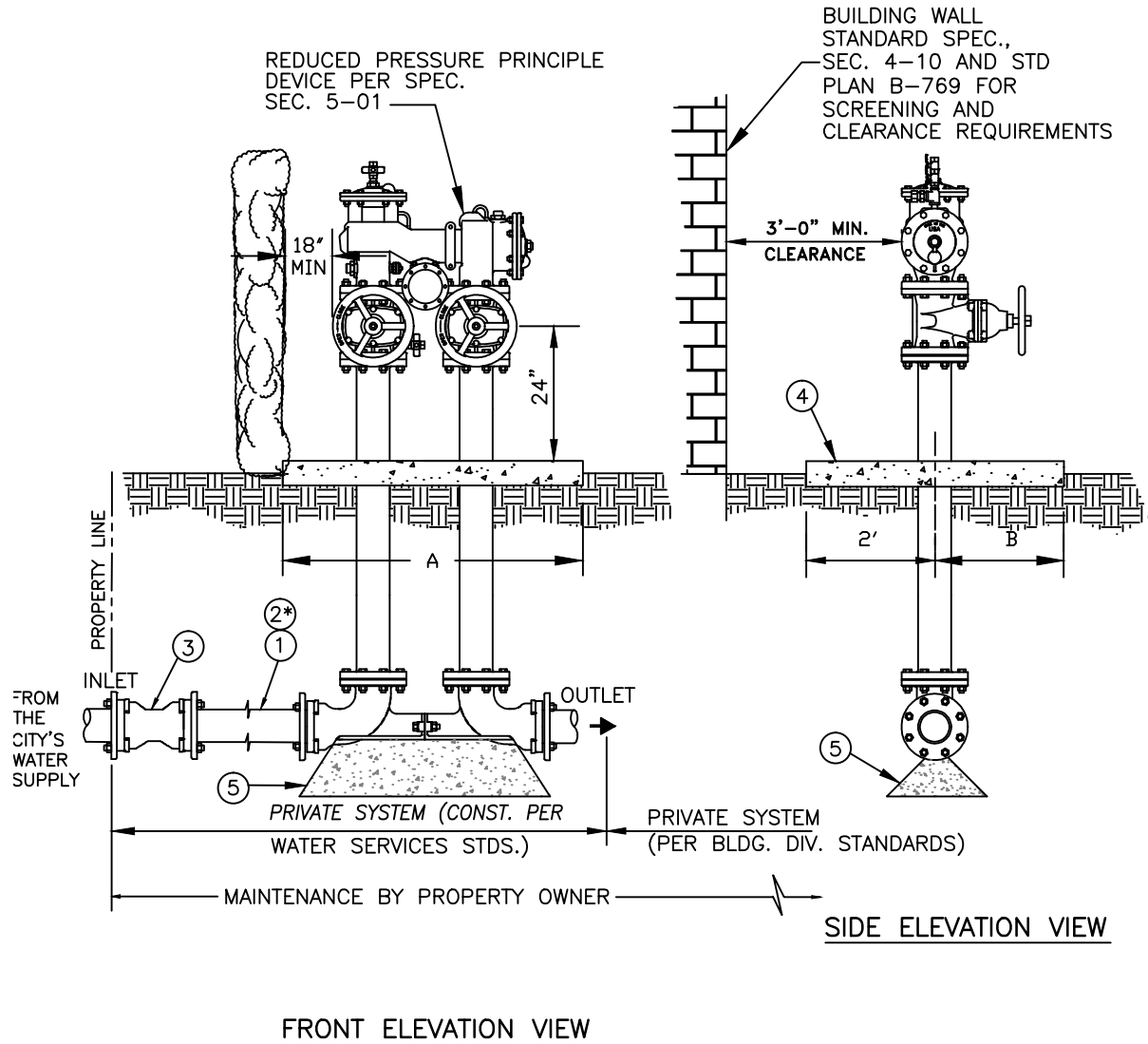
STD. PLAN NUMBER

City Engineer

R.C.E. 52125 Exp.12-31-16

**B-770**

SHEET 1 OF 1



\* FOR PVC WATER MAIN CONSTRUCTION ONLY - SEE ITEM 2\* AND NOTES 9 AND 10 ON SHEET 2.



# TYPICAL 2-1/2" OR LARGER REDUCED PRESSURE PRINCIPLE DEVICE (RPPD)

Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-771**  
SHEET 1 OF 2

LIST OF MATERIAL	
ITEM	DESCRIPTION
1	PIPE SIZE X FIELD LENGTH D.I. SPOOL, P.E.. X P.E. (TYP).
2*	IN LIEU OF ITEM 1, PIPE SHALL BE AWWA C900 PVC, DR14, CLASS 305, P.E.XP.E. (SEE NOTES 9 AND 10)
3	D.I. SOLID SLEEVE M.J. X M.J. (SEE NOTE 8); M.J.'S SHALL BE RESTRAINED PER SECTION 2-12.01
4	CONCRETE PAD 4" THICK, SIZE AS INDICATED HEREIN; CLASS 520-C-2500 CONCRETE
5	ANCHOR BLOCKS SHALL BE 560-C-3250 CONCRETE (GREENBOOK) AND POURED AGAINST UNDISTURBED SOIL.

BACKFLOW DEVICE SIZE	A	B
2 1/2"	6.0'	3.0'
3"	6.5'	3.5'
4"	6.5'	4.0'
6"	7.0'	4.5'
8"	7.5'	5.0'
10"	8.0'	6.0'


NOTES:

1. APPROVED PRESSURE PRINCIPLE DEVICE SHALL BE PER SECTION 5-01.
2. LOCATION AND INSTALLATION SHALL BE PER PLAN AS SUBMITTED TO AND APPROVED BY THE CITY.
3. ALL PIPE SHALL BE DUCTILE IRON PER SECTION 2-01.
4. ALL PIPE FITTINGS AND APPURTENANCES (GASKETS, NUTS, BOLTS, RESTRAINTS) SHALL BE PER SECTION 2-08 AND 2-12.
5. SEE STANDARD DRAWING B-769 FOR ABOVE GROUND ASSEMBLY INSTALLATION REQUIREMENTS.
6. THE COMPLETED ASSEMBLY SHALL BE PAINTED PER SECTION 2-14.
7. NO CONNECTIONS TO BE MADE BETWEEN METER AND BACKFLOW PREVENTER.
8. ITEM 3 ABOVE IS REQUIRED IF THE BACKFLOW DEVICE IS NOT INSTALLED AT THE SAME TIME OF THE LATERAL INSTALLATION.
9. PVC WATER CONSTRUCTION SHALL BE PER SECTION 2-02.
10. MECHANICAL JOINT RESTRAINT FOR PVC PIPE SHALL BE 2000PV RESTRAINT OR EQUAL AS PER SPECIFICATION SECT. 2-12.01 FOR PVC.



City of  
Garden Grove  
California

**TYPICAL 2-1/2" OR LARGER REDUCED PRESSURE PRINCIPAL DEVICE (RPPD)**

Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

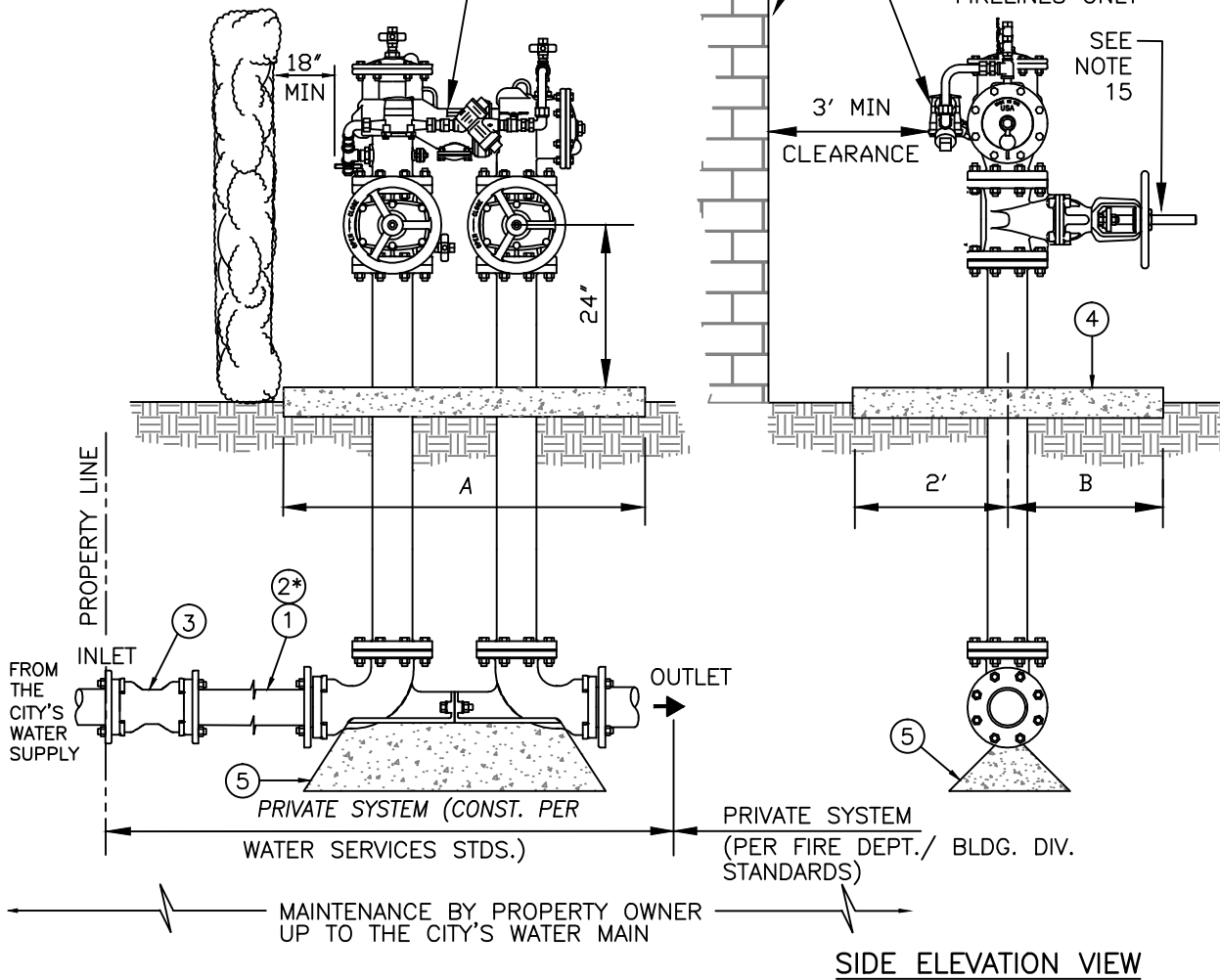
STD. PLAN NUMBER  
**B-771**  
SHEET 2 OF 2

BUILDING WALL, SEE  
STANDARD SPEC. SEC.  
4-10 AND STD B-769  
FOR SCREENING AND  
CLEARANCE  
REQUIREMENTS

DOUBLE CHECK  
DETECTOR CHECK PER  
SPEC. SEC. 5-01

BYPASS METER  
PER SPEC. SEC.  
4-06 FOR  
FIRELINES ONLY

SEE  
NOTE  
15



FRONT ELEVATION VIEW

SIDE ELEVATION VIEW

\* FOR PVC WATER MAIN CONSTRUCTION ONLY- SEE ITEM 2\* AND NOTES 13 AND 14 ON SHEET 2



City of  
Garden Grove  
California

**TYPICAL 2-1/2" OR LARGER DOUBLE  
CHECK DETECTOR FIRE LINE ONLY**

Approved  Date 12-8-15  
City Engineer R.C.E. 52125 Exp.12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-773**  
SHEET 1 OF 2

LIST OF MATERIAL	
ITEM	DESCRIPTION
1	PIPE SIZE X FIELD LENGTH D.I. SPOOL, P.E.. X P.E. (TYP).
2*	IN LIEU OF ITEM 1, PIPE SHALL BE AWWA C900 PVC, DR14, CLASS 305, P.E.XP.E. (SEE NOTES 12 AND 13)
3	D.I. SOLID SLEEVE M.J. X M.J. (SEE NOTE 11); M.J.'S SHALL BE RESTRAINED PER SECTION 2-12.01
4	CONCRETE PAD 4" THICK, SIZE AS INDICATED HEREIN; CLASS 520-C-2500 CONCRETE
5	ANCHOR BLOCKS SHALL BE 560-C-3250 CONCRETE (GREENBOOK) AND POURED AGAINST UNDISTURBED SOIL.

BACKFLOW DEVICE SIZE	A	B
2 1/2"	6.0'	3.0'
3"	6.5'	3.5'
4"	6.5'	4.0'
6"	7.0'	4.5'
8"	7.5'	5.0'
10"	8.0'	6.0'

NOTES:

1. APPROVED DOUBLE CHECK DETECTOR CHECK SHALL BE PRE SECTION CHECK DETECTOR ASSEMBLY, SEE SECTION 5-01.
2. LOCATION AND INSTALLATION SHALL BE PER PLAN AS SUBMITTED TO AND APPROVED BY THE CITY.
3. FROM THE OUTLET SECTION OF THE DOUBLE CHECK DETECTOR CHECK ASSEMBLY ON THE PRIVATE SYSTEM SIDE, REMOVE THE POST INDICATOR VALVE FROM THE UNDERGROUND, UNLESS PROPERTY IS DONE IN SECTIONS WITH MULTIPLE PIV SHUT OFFS OR WITH FIRE DEPT. APPROVAL.
4. FIRE DEPT. CONNECTIONS CANNOT BE PLACED ON THE ASSEMBLY WITHOUT PRIOR APPROVAL, CONTACT FIRE DEPT. AT 741-5628. WHERE APPROVED BY FIRE DEPT., A FLG X FLG X FLG, D.I., CEMENT MORTAR LINED TEE MAY BE INSTALLED ON FIRELINES.
5. O.S.&Y. VALVES TO BE LOCKED IN OPEN POSITION WITH CHAIN AND OWNER'S PADLOCK(S). PADLOCK(S) SHALL BE BREAKAWAY TYPE.
6. ALL PIPE SHALL BE DUCTILE IRON PER SECTION 2-01.
7. ALL PIPE FITTINGS AND APPURTENANCES (GASKETS, NUTS, BOLTS, RESTRAINTS) SHALL BE PER SECTION 2-08 AND 2-12.
8. SEE STANDARD DRAWING W-769 (SHEET 2) FOR ABOVE GROUND ASSEMBLY INSTALLATION REQUIREMENTS.
9. THE COMPLETED ASSEMBLY SHALL BE PAINTED PER SECTION 2-14.
10. NO CONNECTIONS TO BE MADE BEFORE BACKFLOW PREVENTER.
11. BACKFLOW DEVICE SIZE SHALL BE EQUAL TO OR GREATER THAN PIPE SIZE.
12. ITEM 3 ABOVE IS REQUIRED IF THE BACKFLOW DEVICE ASSEMBLY IS NOT INSTALLED AT THE SAME TIME OF THE LATERAL INSTALLATION.
13. PVC WATER CONSTRUCTION SHALL BE PER SECTION 2-02.
14. MECHANICAL JOINT RESTRAINT FOR PVC PIPE SHALL BE AS PER SECT. 2-12.01 RESTRAINT SHALL BE 2000PV BY EBBA IRON OR APPROVED EQUAL.
15. INSTALLATION OF AN OUTSIDE SCREW AND YOKE (OS&Y) SHALL BE CONNECTED TO A SUPERVISED FIRE ALARM PANEL.



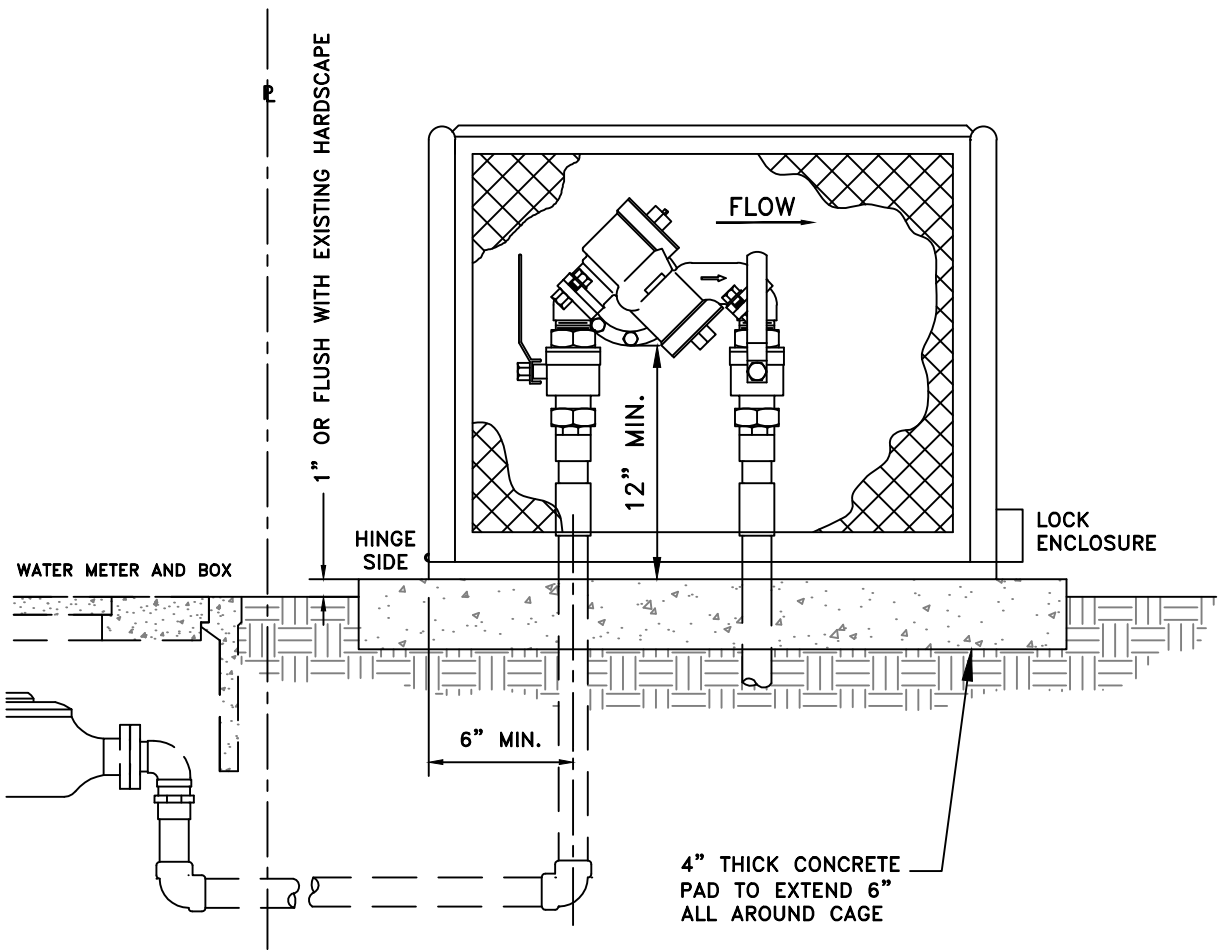
City of  
Garden Grove  
California

**TYPICAL 2-1/2" OR LARGER DOUBLE CHECK DETECTOR FIRE LINE ONLY**

Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-773**  
SHEET 2 OF 2




**NOTES:**

1. CAGE TO BE AN ORANGE COUNTY WELDING MODEL 22 BACKFLOW CAGE, HUNTER GREEN POWDER COATED, OR APPROVED EQUAL. OVERALL CAGE DIMENSIONS ARE 14"W x 32"L x 25.50"H
2. KEEP 30" CLEARANCE ON THE HINGE SIDE OF CAGE TO ALLOW FOR CAGE ACCESS PLACEMENT.



City of  
Garden Grove  
California

**BACKFLOW CAGE FOR TYPICAL 2" OR SMALLER  
REDUCED PRESSURE PRINCIPAL DEVICE (RPPD)**

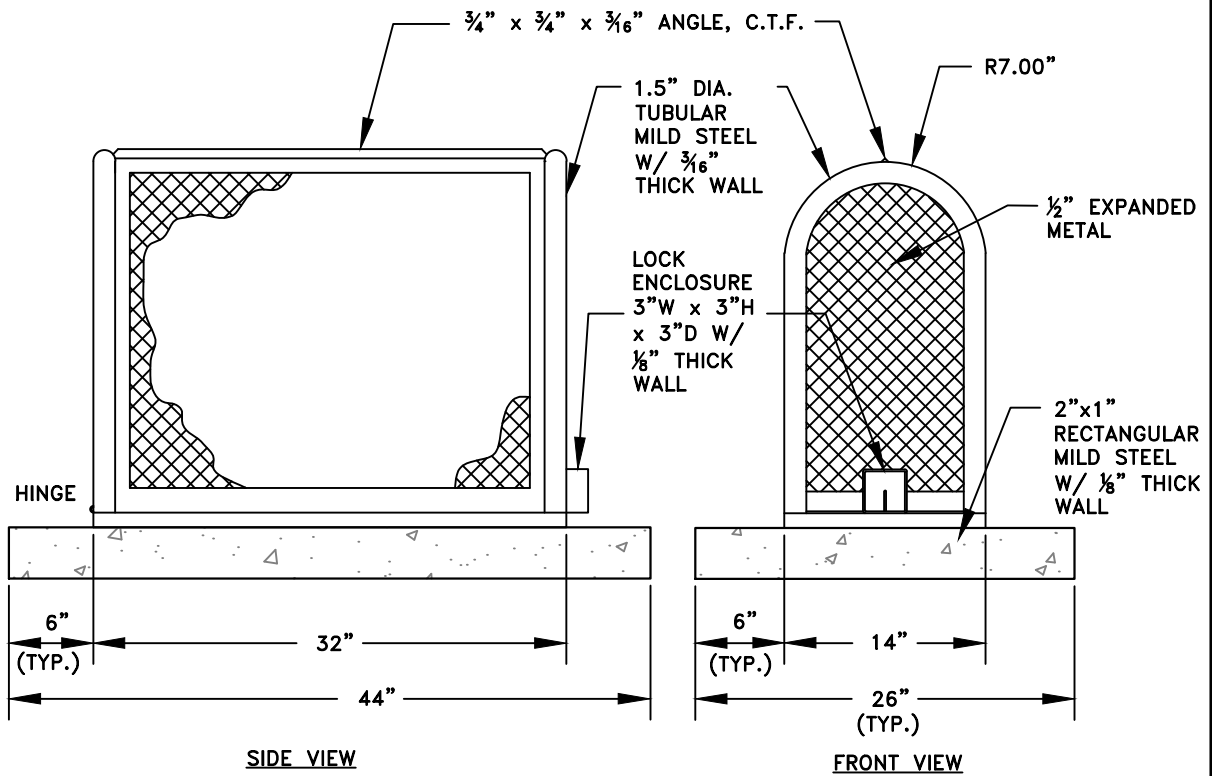
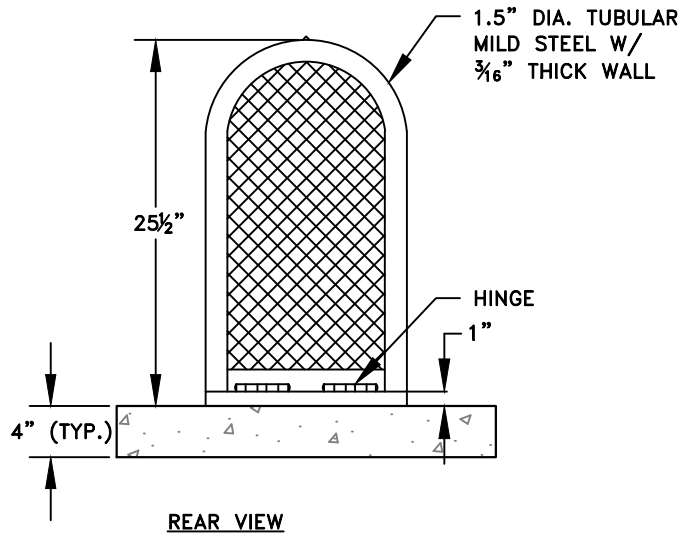
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City Engineer R.C.E. 52125 Exp.12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER

**B-774**

SHEET 1 OF 2



**NOTES:**

1. CAGE TO BE AN ORANGE COUNTY WELDING MODEL 22 BACKFLOW CAGE, HUNTER GREEN POWDER COATED, OR APPROVED EQUAL. OVERALL CAGE DIMENSIONS ARE 14"W x 32"L x 25.50"H
2. KEEP 30" CLEARANCE ON THE HINGE SIDE OF CAGE TO ALLOW FOR CAGE ACCESS PLACEMENT.

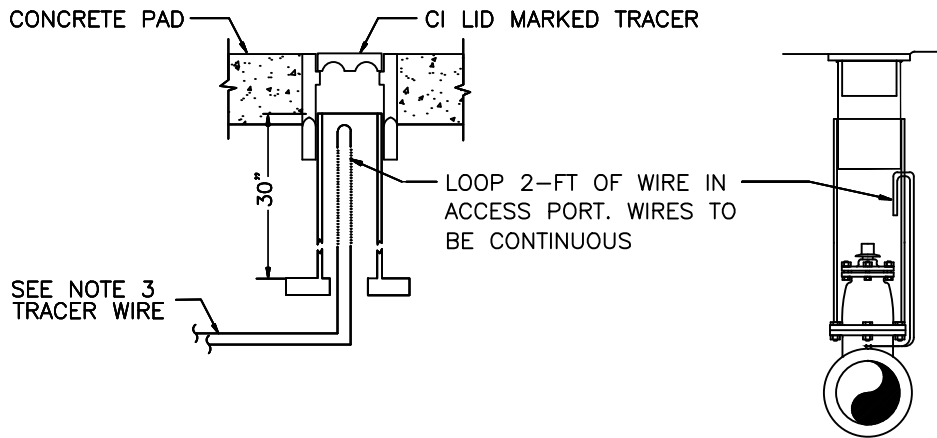
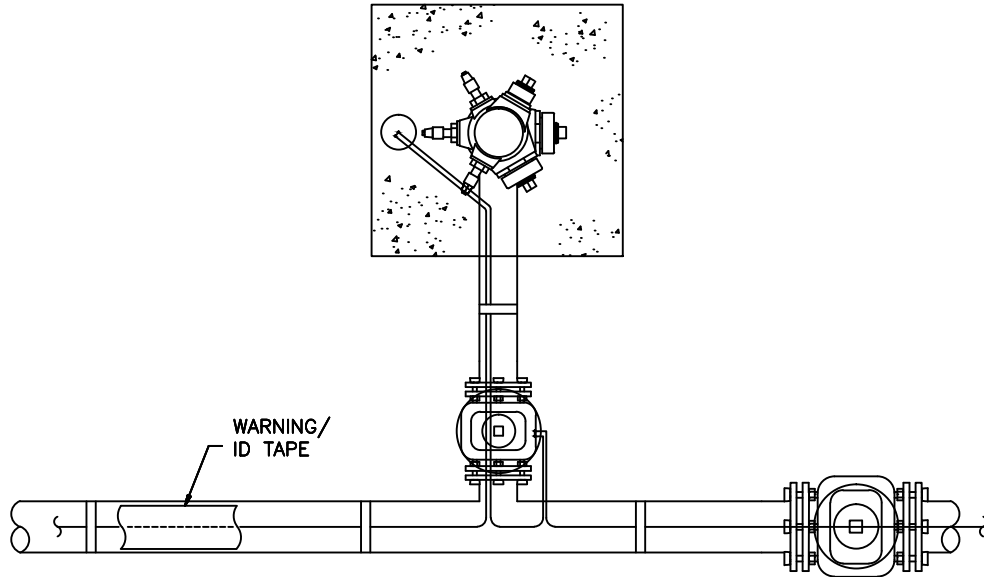


**BACKFLOW CAGE FOR TYPICAL 2" OR SMALLER REDUCED PRESSURE PRINCIPAL DEVICE (RPPD)**

Approved:  Date: 12-8-15  
 City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER  
**B-774**  
 SHEET 2 OF 2



TRACER WIRE ACCESS PORT

VALVE CAN W/ TRACER WIRE

**NOTES:**

1. TRACER WIRE TO BE 14 GAUGE SOLID COPPER WIRE, UF OR THWN.
2. TRACER WIRE SHALL BE SECURED TO THE PIPE AT 10-FOOT INTERVALS WITH PLASTIC ADHESIVE TAPE, DUCT TAPE OR PLASTIC TIE STRAPS. THE WIRE SHALL RUN CONTINUOUSLY ALONG THE TOP OF PIPE FOR THE ENTIRE LENGTH OF PIPE.
3. TRACER WIRE ACCESS PORT (SHOWN ABOVE) SHALL BE INSTALLED WITHIN THE CONCRETE PAD OF ALL NEW FIRE HYDRANTS INSTALLED AND AIR VALVE ENCLOSURES ONLY AS DIRECTED BY THE ENGINEER AT INTERVALS OF NOT MORE THAN 1000- FEET.
4. SUFFICIENT SLACK SHALL BE LEFT IN LEADS NEAR CONNECTIONS TO PIPE TO PREVENT BREAKAGE OF CONNECTION DURING BACKFILLING.
5. WARNING/ IDENTIFICATION TAPE SHALL BE 6-INCH WIDE, BLUE IN COLOR AND MARKED "CAUTION WATER LINE BELOW" BURIED AT A DEPTH OF 1' ABOVE PIPE.
6. A CONTINUITY TEST IS TO BE PERFORMED ON ALL TRACER WIRES.



City of  
Garden Grove  
California

**WARNING IDENTIFICATION TAPE  
AND TRACER WIRE INSTALLATION**

Approved:  Date: 12-8-15  
City Engineer R.C.E. 52125 Exp. 12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER

**B-781**

SHEET 1 OF 1