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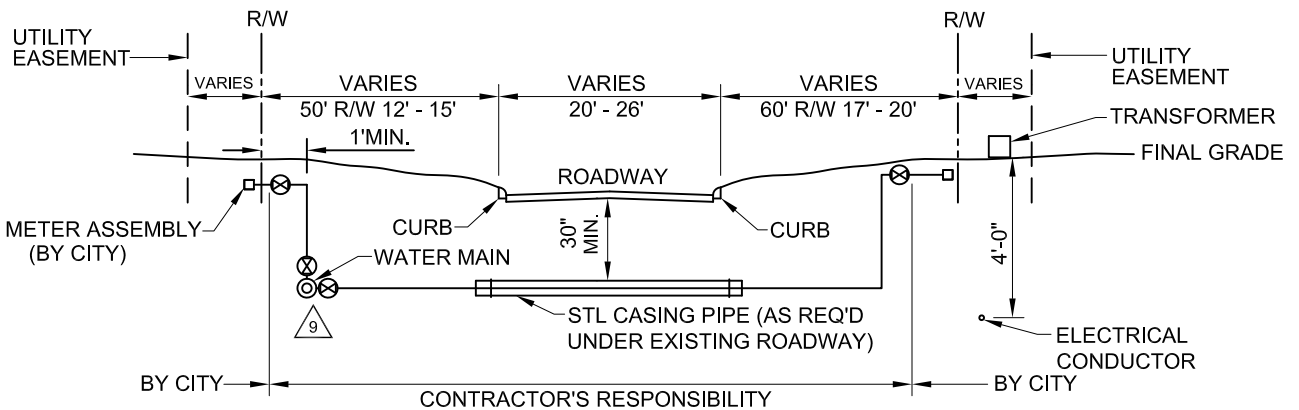
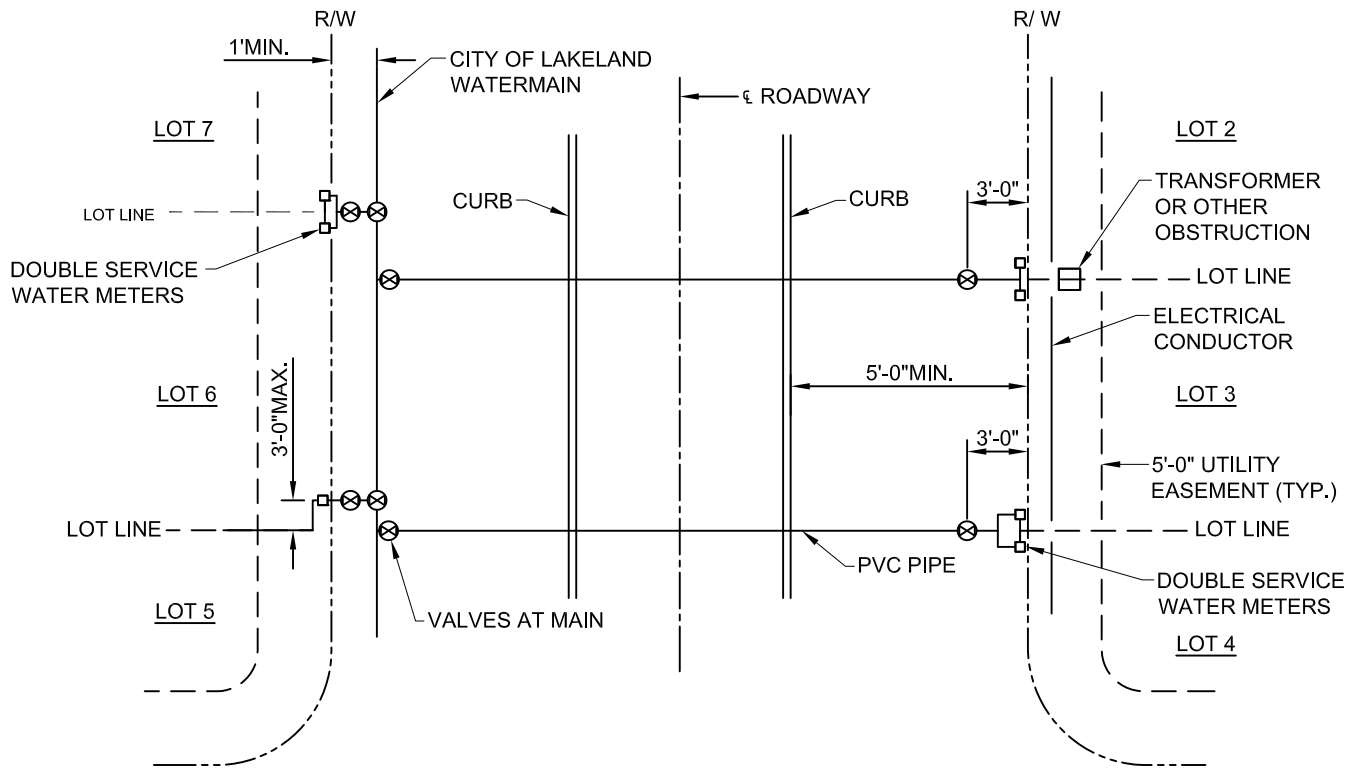


WATER STANDARDS
WATER ENGINEERING DIVISION

STD. NO. WS-101

SINGLE AND DOUBLE SERVICES
PLAN AND PROFILE

SHT. 1 OF 3



GENERAL NOTES:

1. WATER METER SERVICE SHALL BE LOCATED TO AVOID CONTACT WITH TRANSFORMER LOCATIONS OR OTHER UTILITY OBSTRUCTIONS.
2. ELECTRICAL CONDUCTOR AND TRANSFORMER MAY BE ON EITHER SIDE OF THE ROADWAY WITH A 5'-0" SEPARATION FROM WATER MAIN REQUIRED.
3. ALL WATER METER ASSEMBLIES SHALL BE INSTALLED BY CITY OF LAKELAND WATER OPERATIONS.
4. WATER MAIN TAPS BY CITY OF LAKELAND CREWS ONLY. (SEE WATER OPERATIONS MANUAL FOR FURTHER INFORMATION).
5. SEE DETAIL OF TYPICAL SHORT SIDE AND LONG SIDE WATER SERVICE LAYOUT FOR FURTHER INFORMATION.

APPROVED	DATE	PREPARED BY GEG	DATE 11/14/01	REVISION	10
APPROVED	DATE	CHECKED BY	ISSUE DATE: 08/16/16	REVISION DATE: 07/20/16	

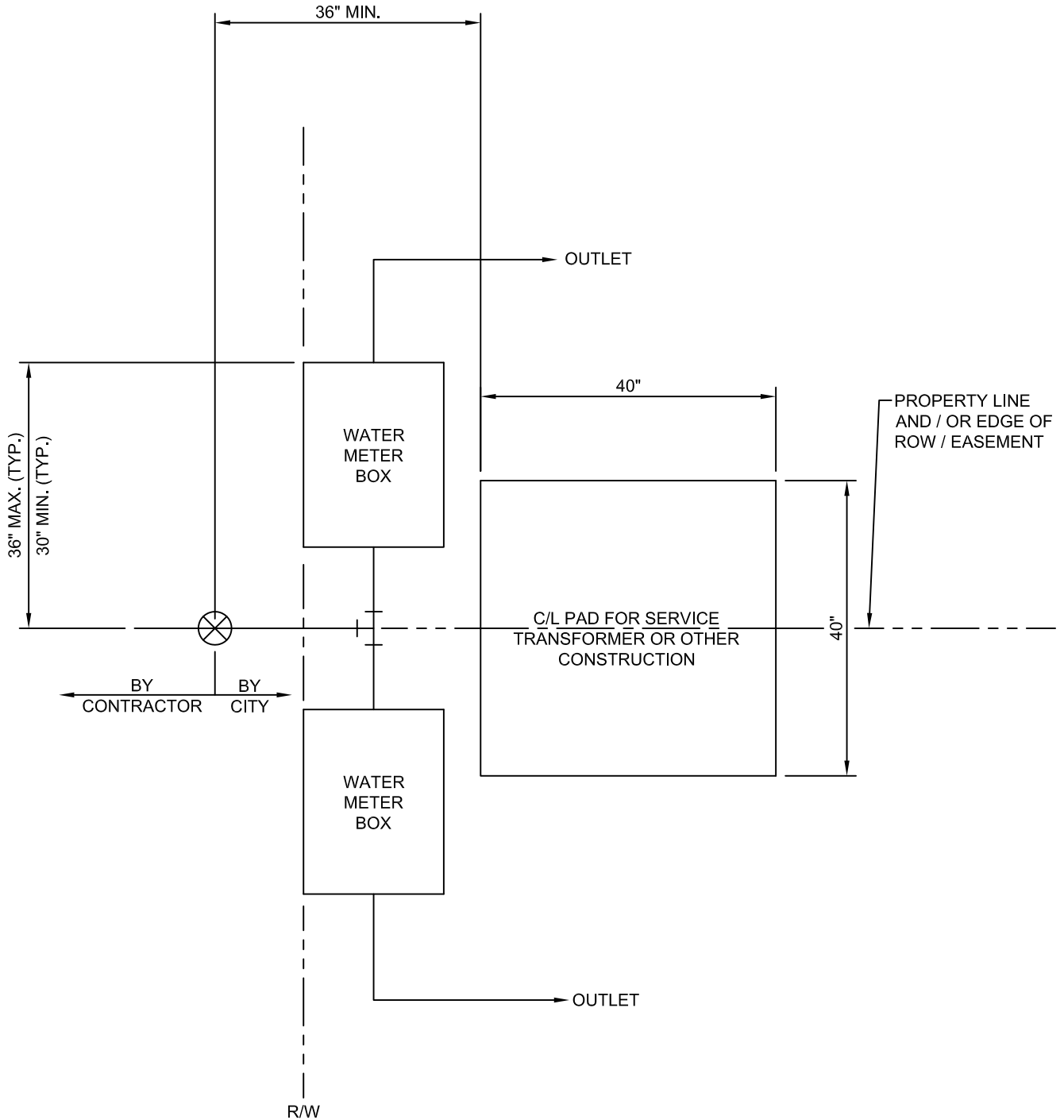


WATER STANDARDS
WATER ENGINEERING DIVISION

STD. NO. WS-101

DOUBLE METER INSTALLATION WITH
PROPERTY LINE OBSTRUCTION

SHT. 2 OF 3



APPROVED	DATE	PREPARED BY DW	DATE 02/03/99	REVISION	7
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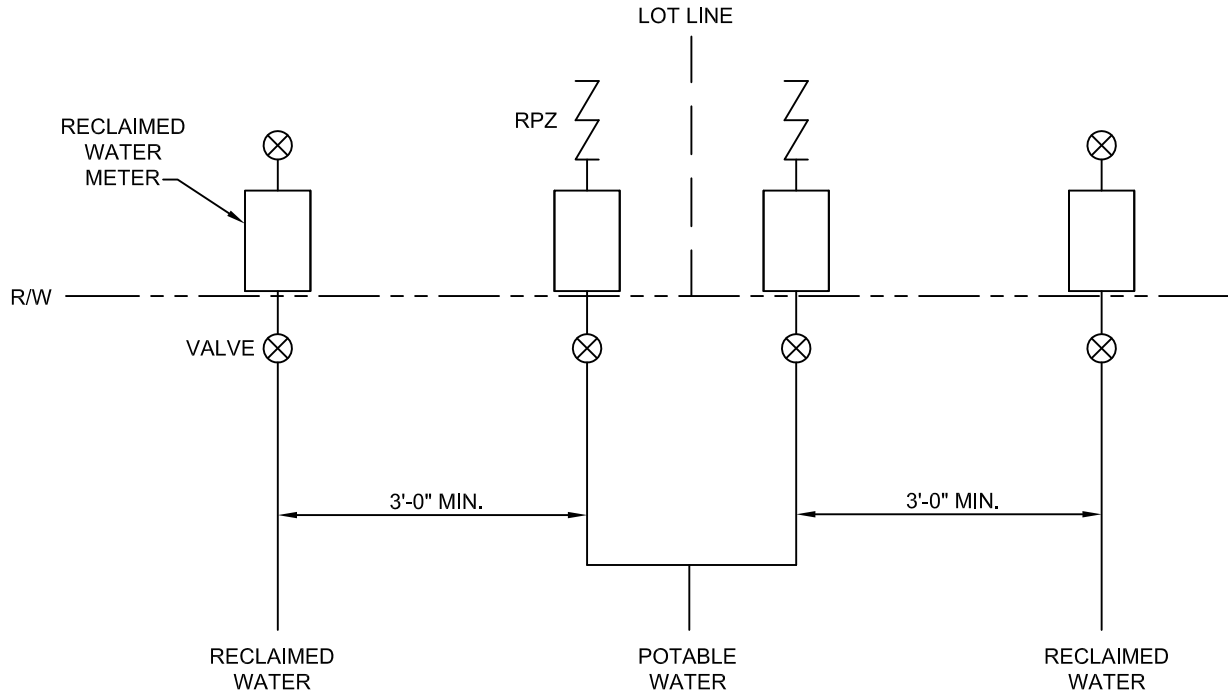


WATER STANDARDS
WATER ENGINEERING DIVISION

STD. NO. WS-101

RECLAIMED WATER
POTABLE WATER SERVICE SEPARATION

SHT. 3 OF 3



POTABLE WATER ADJACENT TO LOT LINE

GENERAL NOTES:

1. ALL WATER METER ASSEMBLIES SHALL BE INSTALLED BY CITY OF LAKELAND WATER OPERATIONS.
2. WATER MAIN TAPS BY CITY OF LAKELAND CREWS ONLY. (SEE WATER OPERATIONS MANUAL FOR FURTHER INFORMATION).
3. REFERENCE CITY OF LAKELAND WATER UTILITIES ALTERNATIVE IRRIGATION WATER SYSTEM EXCEPTION TABLE.

APPROVED	DATE	PREPARED BY W.G.	DATE 10/19/06	REVISION	1
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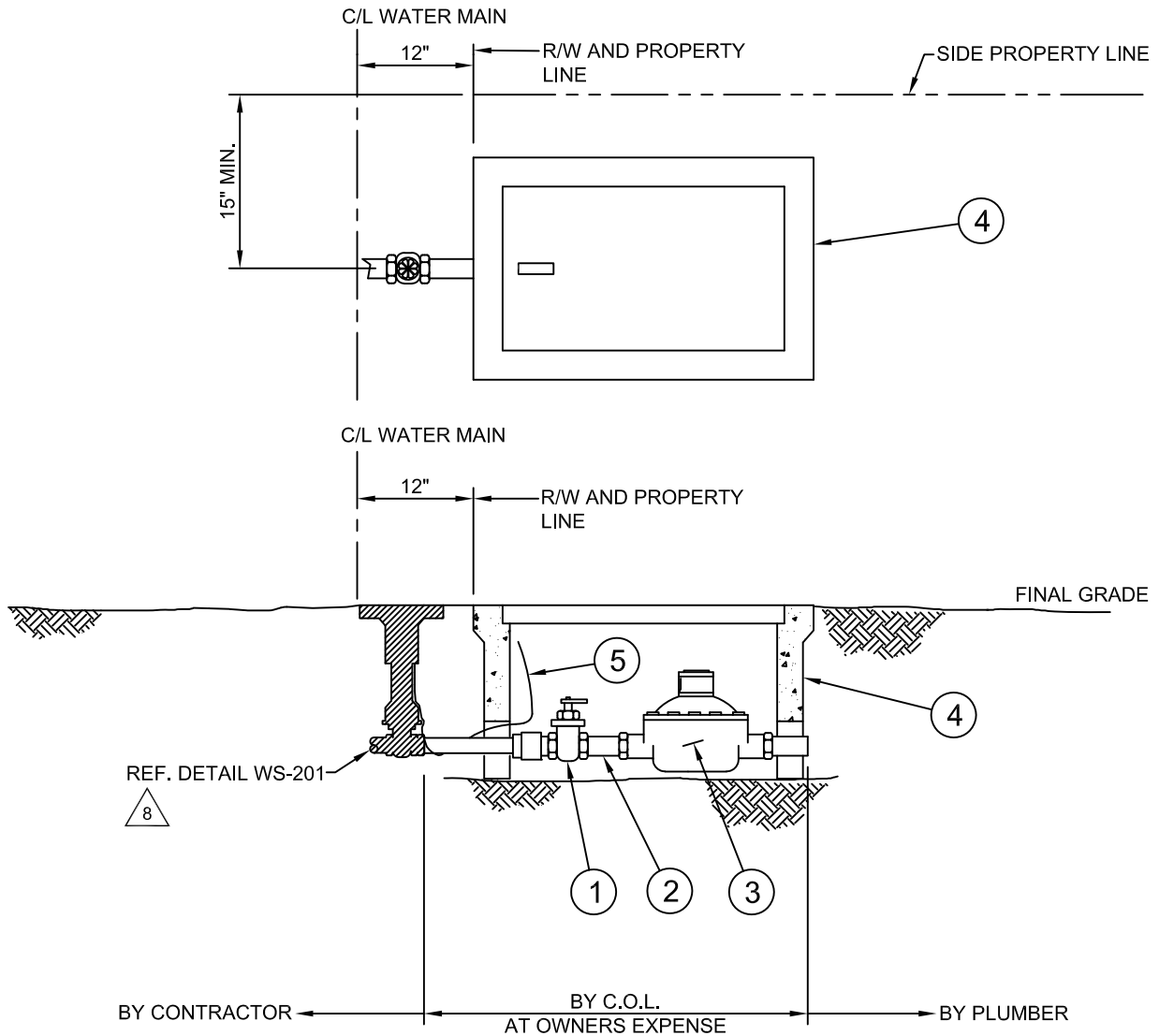


WATER STANDARDS
WATER ENGINEERING DIVISION

STD. NO. WS-102

SINGLE WATER METER ASSEMBLY
3/4" TO 2"

SHT. 1 OF 2



REF. DETAIL WS-201
8

BILL OF MATERIALS		
ITEM	QUAN.	DESCRIPTION
1	1	BALL VALVE, W/ LOCKING RING (SIZE = METER SIZE)
2	1	METER COUPLING W/ GASKETS (SIZE = METER SIZE)
3	1	WATER METER (BY CITY OF LAKELAND)
4	1	PRECAST CONCRETE, PLASTIC, OR CAST IRON METER BOX W/ LID
5	-	SOLID CORE INSULATED COPPER TRACER WIRE. REF. WS-501

8

APPROVED	DATE	PREPARED BY XRH	DATE 11/14/01	REVISION	9
APPROVED	DATE	CHECKED BY	ISSUE DATE: 08/16/16	REVISION DATE: 7/20/16	NO.

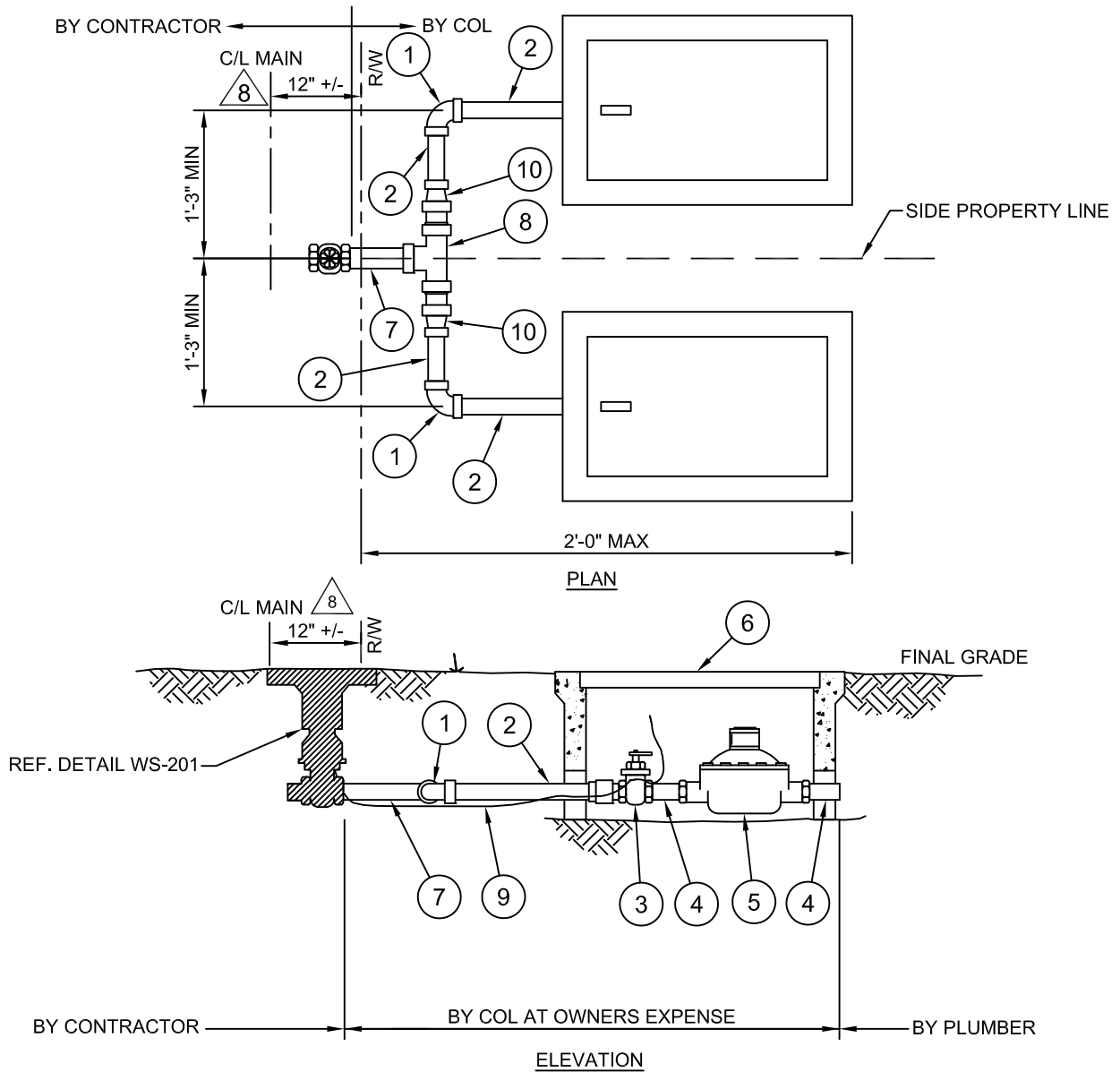


WATER STANDARDS
WATER ENGINEERING DIVISION

STD. NO. WS-102

DOUBLE WATER METER ASSEMBLY
3/4 OR 1 INCH

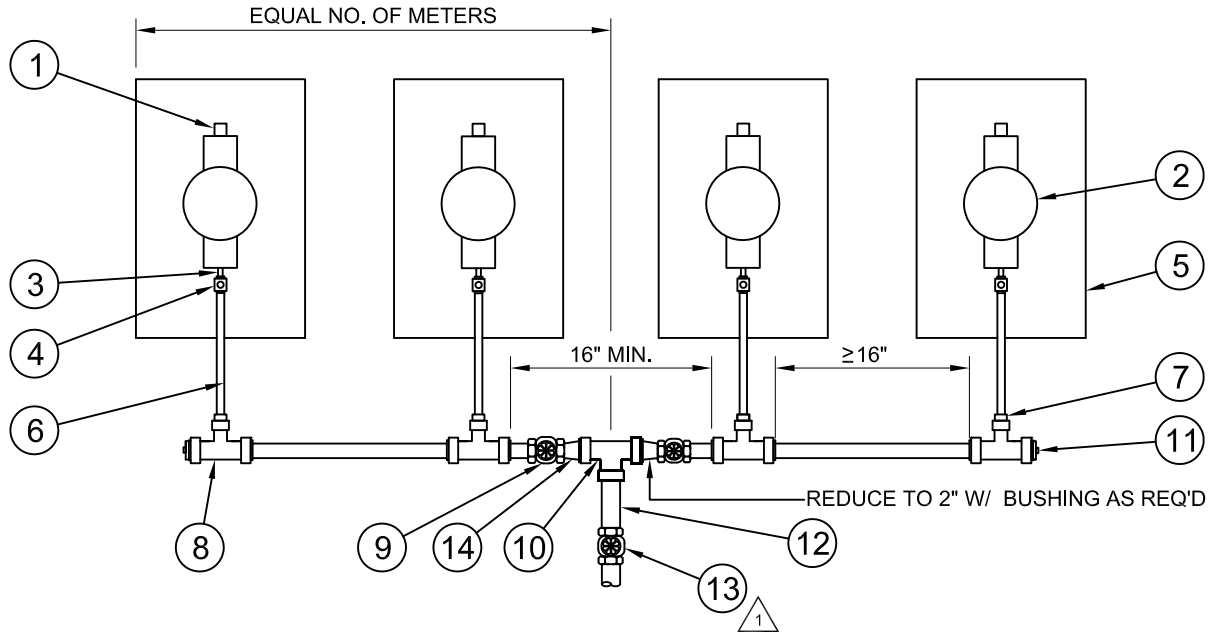
SHT. 2 OF 2



BILL OF MATERIALS		
ITEM	QUAN.	DESCRIPTION
1	2	1" ELBOW, GALVANIZED OR PVC (SCH 40)
2	-	1" PIPE, GALVANIZED SCH 40
3	1	1" BALL VALVE, W/ LOCKING RING
4	2	METER COUPLING W/ GASKETS
5	1	SINGLE READ METER (BY CITY OF LAKELAND)
6	-	PRECAST CONCRETE, PLASTIC, OR CAST IRON METER BOX W/ LID
7	-	2" PIPE, GALVANIZED OR PVC (SCH 40)
8	-	2"x2" STR. TEE, GALVANIZED OR PVC (SCH 40)
9	-	SOLID CORE INSULATED COPPER TRACER WIRE. REF. WS-501
10	2	2"x1" REDUCER, GALVANIZED OR PVC (SCH 40)



APPROVED	DATE	PREPARED BY GEG	DATE 11/14/01	REVISION	9
APPROVED	DATE	CHECKED BY	ISSUE DATE: 08/16/16	REVISION DATE: 7/20/16	NO. 8

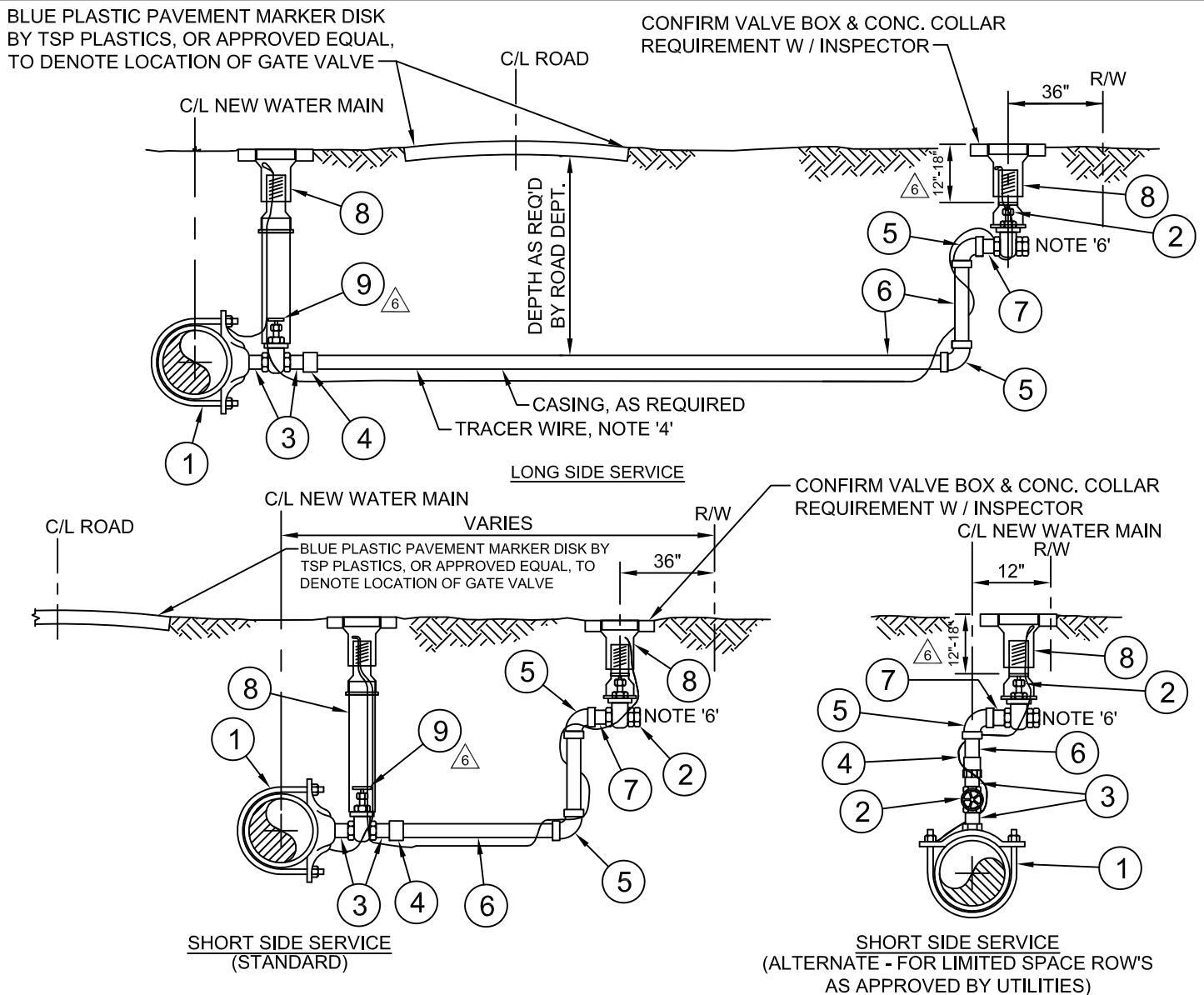


BILL OF MATERIALS											
NUMBER OF METERS											
	4		6		8		10		12		
ITEM	QUAN.	SIZE	QUAN.	SIZE	QUAN.	SIZE	QUAN.	SIZE	QUAN.	SIZE	DESCRIPTION
1	4	3/4"	6	3/4"	8	3/4"	10	3/4"	12	3/4"	METER COUPLER
2	4	3/4"	6	3/4"	8	3/4"	10	3/4"	12	3/4"	METER
3	4	1"x3/4"	6	1"x3/4"	8	1"x3/4"	10	1"x3/4"	12	1"x3/4"	METER COUPLER
4	4	1"	6	1"	8	1"	10	1"	12	1"	POLY BALL VALVE
5	4	3/4"	6	3/4"	8	3/4"	10	3/4"	12	3/4"	1" METER BOX
6	-	1"	-	1"	-	1"	-	1"	-	1"	POLY TUBING
7	4	1"	6	1"	8	1"	10	1"	12	1"	POLY ADAPTER
8	4	2"x2"x1"	6	2"x2"x1"	8	2"x2"x1"	10	2"x2"x1"	12	2"x2"x1"	GALVANIZED TEE
9	2	2"	2	2"	2	2"	2	2"	2	2"	GATE VALVE W/ BOX
10	1	2"	1	2"	1	4"	1	4"	1	4"	GALVANIZED TEE
11	2	2"	2	2"	2	2"	2	2"	2	2"	GALVANIZED PLUG
12	1	2"	1	2"	1	4"	1	4"	1	4"	GALVANIZED NIPPLE
13	1	2"	1	2"	1	4"	1	4"	1	4"	STUB GATE VALVE
14	-	-	-	-	2	4"x2"	2	4"x2"	2	4"x2"	REDUCING BUSHING

GENERAL NOTES:

- FOR MULTI-FAMILY APPLICATIONS ONLY W / PRIOR APPROVAL FROM WATER UTILITIES ENGINEERING.
- ALL NIPPLES ARE GALVANIZED AFTER STUB.
- PROVIDE VALVE BOX FOR STUB VALVE ACCESS.
- ALL POLY FITTINGS SHALL HAVE 1" SS INSERTS.
- SINGLE METER BOX DIMENSIONS SHALL BE 16"W X 21"L AT BOTTOM.

APPROVED	DATE	PREPARED BY GEG	DATE 08/26/05	REVISION	2
APPROVED	DATE	CHECKED BY	ISSUE DATE: 08/16/16	REVISION DATE: 07/20/16	



BILL OF MATERIALS ⁶		
ITEM	QUAN.	DESCRIPTION
1	1	TAPPING SADDLE
2	1	GATE VALVE (RISING STEM) OR LOCKING BALL VALVE
3	2	4" LONG NIPPLES, GALVANIZED SCH 40
4	2	FEMALE ADAPTER, FOR GALVANIZED OR PVC PIPE (SCH 40 <= 2", SLIP X NPT)
5	2	90 DEG ELBOW, GALVANIZED OR PVC (SCH 40 <= 2")
6	CUT TO FIT	PIPE, GALVANIZED OR PVC (SCH 40)
7	1	GALVANIZED NIPPLE, <= 2" X 3" MIN.
8	1	VALVE BOX, SEE NOTES 1 AND 5
9	1	GATE VALVE (RISING STEM) 2"

⁵

GENERAL NOTES:

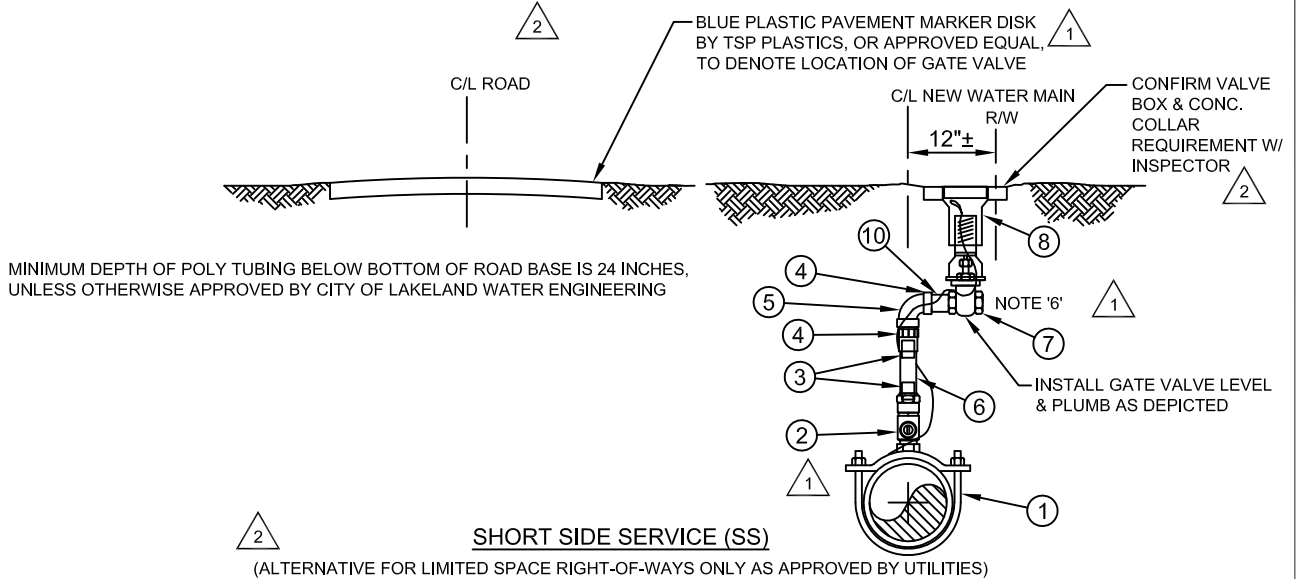
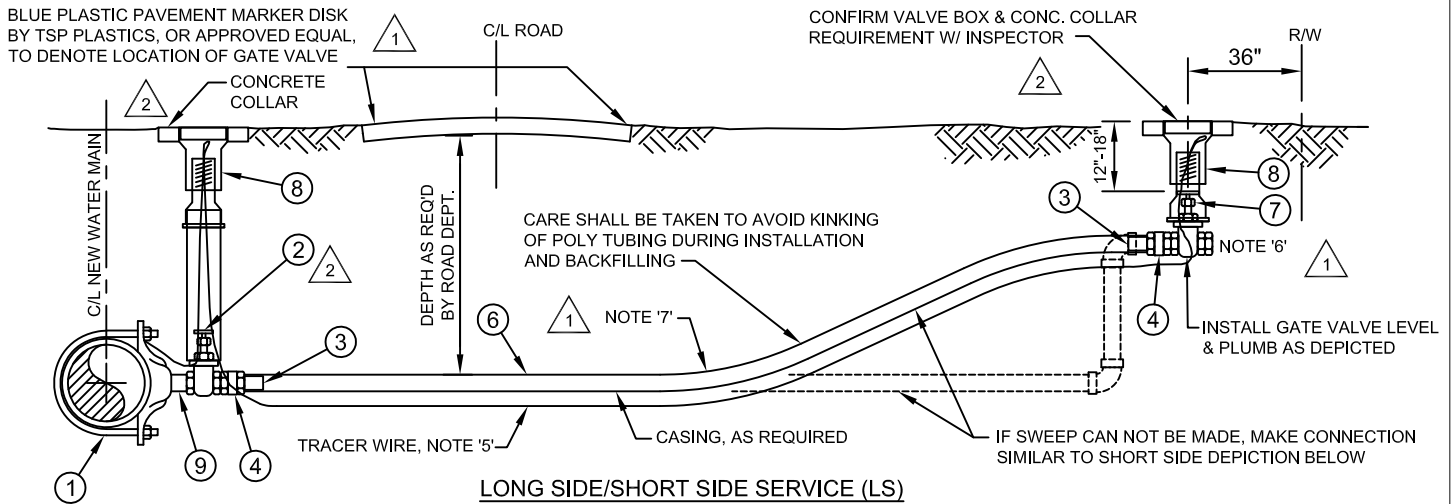
- ADJUSTABLE VALVE BOX TO BE INSTALLED.
- FIELD CONDITIONS MAY CHANGE THE LAYOUT DEPICTED ON THIS DRAWING.
- CHANGES SHALL BE AT THE DISCRETION OF THE WATER DEPARTMENT.
- TRACER WIRE TO BE BROUGHT UP TO GRADE AT EVERY IN-LINE VALVE AND SERVICE VALVE. WIRE SHALL BE CONTINUOUS AND TAPED. REFERENCE STANDARD DETAIL WS-501.
- DISTANCE FROM FINISHED GRADE TO TOP OF VALVE SHALL BE 12".
- REFERENCE DETAIL WS-102 FOR CONTINUATION.

SPECIAL NOTE

ALL HYDROSTATIC TESTING, FLUSHING AND DISINFECTION OF NEW WATER MAINS SHALL BE IN ACCORDANCE WITH THE LATEST UPDATES OF ANSI/AWWA C600 AND C651 - DUCTILE IRON AWWA M23 - PVC

APPROVED	DATE	PREPARED BY XRH	DATE 07/15/16	REVISION	⁶
APPROVED	DATE	CHECKED BY	ISSUE DATE: 08/16/16	REVISION DATE: 07/15/16	

SERVICE DETAIL
FOR USE W/ POLYETHYLENE TUBING



MINIMUM DEPTH OF POLY TUBING BELOW BOTTOM OF ROAD BASE IS 24 INCHES, UNLESS OTHERWISE APPROVED BY CITY OF LAKELAND WATER ENGINEERING

ITEM NO	QUAN.		DESCRIPTION
	LS	SS	
1	1	1	TAPPING SADDLE
2	-	1	GATE VALVE (RISING STEM) 2"
3	2	4	PIPE STIFFENER INSERT, FORD OR MUELLER
4	2	3	POLYETHYLENE PIPE ADAPTER, MUELLER H-15428 (3/4" & 1"), P-15428 (2")
5	-	1	90 DEG ELBOW, GALVANIZED
6	CUT TO FIT		PIPE, POLYETHYLENE, CTS-OD, PE 3408, ASTM D-2737, 200 PSI
7	1	1	GATE VALVE (RISING STEM) OR LOCKING BALL VALVE
8	2	1	VALVE BOX, SEE NOTES 1 AND 5
9	1	-	4" LONG NIPPLE, GALVANIZED SCH 40
10	-	1	GALVANIZED NIPPLE, <= 2" X 3" MIN.



GENERAL NOTES:

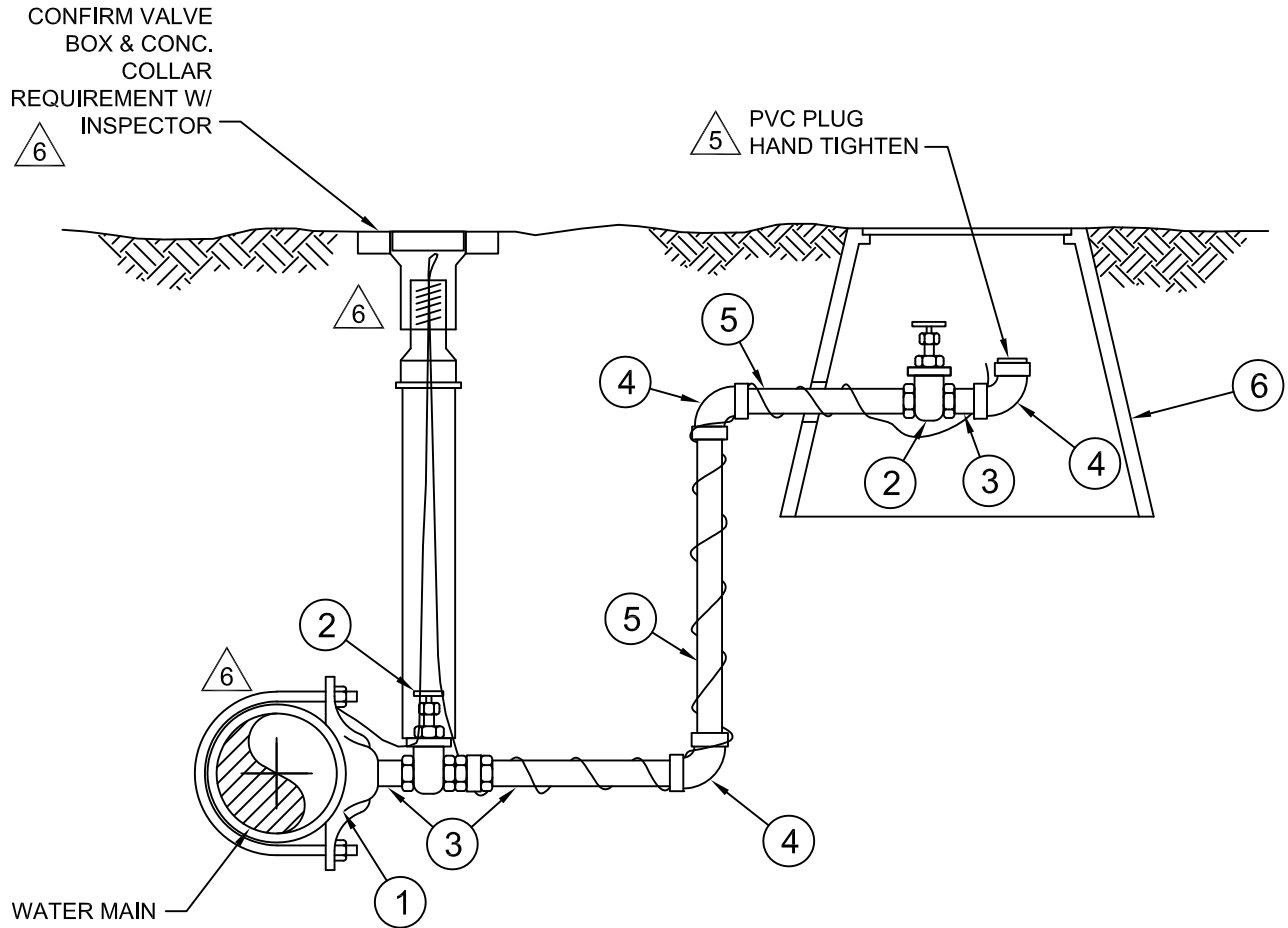
- ADJUSTABLE VALVE BOX TO BE INSTALLED.
- FIELD CONDITIONS MAY CHANGE THE LAYOUT OF THIS DRAWING.
- CHANGES SHALL BE AT THE DISCRETION OF THE WATER DEPARTMENT.
- ROAD CROSSINGS TO MEET LATEST D.O.T. SPECIFICATIONS.
- TRACER WIRE TO BE BROUGHT UP TO GRADE AT EVERY IN-LINE VALVE AND SERVICE VALVE. THE WIRE SHALL BE CONTINUOUS AND TAPED REFERENCE STANDARD DETAIL WS-501, SHEET 2, FOR TRACER WIRE INSTALLATION.
- REFERENCE DETAIL WS-102 FOR CONTINUATION.
- MINIMUM DEPTH OF POLY TUBING BELOW BOTTOM OF ROAD BASE IS 24 INCHES, UNLESS OTHERWISE APPROVED BY CITY OF LAKELAND WATER ENGINEERING.

SPECIAL NOTE

ALL HYDROSTATIC TESTING, FLUSHING AND DISINFECTION OF NEW WATER MAINS SHALL BE IN ACCORDANCE WITH THE LATEST UPDATES OF AWWA C901 - POLYETHYLENE

APPROVED	DATE	PREPARED BY XRH	DATE 07/15/16	REVISION	2
APPROVED	DATE	CHECKED BY	ISSUE DATE: 08/16/16	REVISION DATE: 07/15/16	NO.

FLUSH VALVE
DETAIL




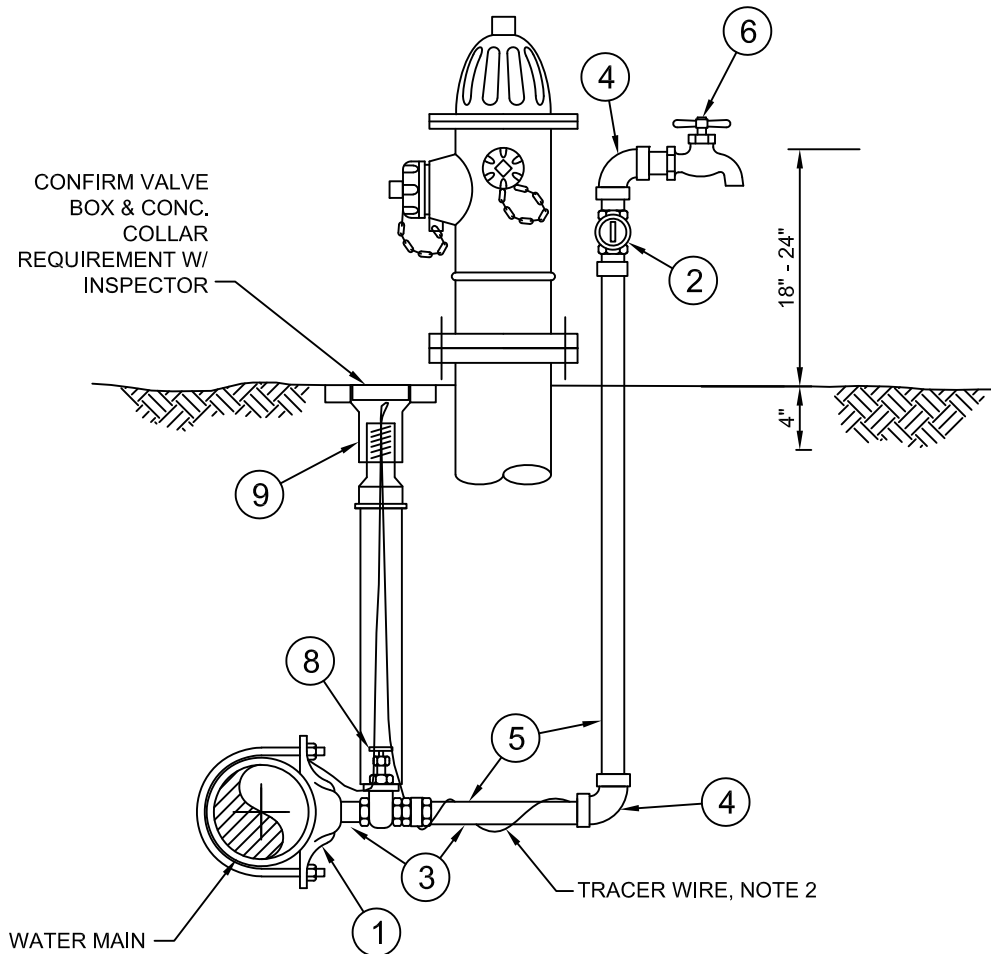
BILL OF MATERIALS	
ITEM	DESCRIPTION
1	TAPPING SADDLE
2	GATE VALVE (RISING STEM)
3	THREADED NIPPLE, GALVANIZED SCH 40
4	90 DEG ELBOW, GALVANIZED
5	PIPE, GALVANIZED (SCH 40)
6	METER BOX



GENERAL NOTES:

1. ADJUSTABLE VALVE BOX TO BE INSTALLED.
2. FIELD CONDITIONS MAY CHANGE THE LAYOUT DEPICTED ON THIS DRAWING.
3. ALL CHANGES MAY BE AT THE DISCRETION OF THE WATER DEPARTMENT.
4. TRACER WIRE TO BE BROUGHT UP TO GRADE AT EVERY IN-LINE VALVE AND SERVICE VALVE. WIRE SHALL BE CONTINUOUS AND TAPED. REFERENCE STANDARD DETAIL WS-501.
5. FLUSH VALVE SHALL BE A MINIMUM OF 2". SEE SECTION 2.7.8.
6. STEM OF GATE VALVE TO RUN WITH PIPE.

APPROVED	DATE	PREPARED BY GEG	DATE 11/14/01	REVISION	
APPROVED	DATE	CHECKED BY	ISSUE DATE: 08/16/16	REVISION DATE: 07/21/16	



BILL OF MATERIALS		
ITEM	QUAN.	DESCRIPTION
1	1	TAPPING SADDLE
2	2	3/4" LOCKING BALL VALVE
3	2	3/4" THREADED NIPPLE, GALVANIZED SCH 40
4	2	90 DEG ELBOW, GALVANIZED
5	CUT TO FIT	3/4" PIPE, GALVANIZED, SCH 40
6	1	SMOOTH NOSE HOSE BIBB
7	1	2" GALVANIZED POST, CONCRETE FILLED AND CAPPED
8	1	GATE VALVE, RISING STEM, 2"
9	1	VALVE BOX ADJUSTABLE

GENERAL NOTES:

1. FIELD CONDITIONS MAY CHANGE THE LAYOUT DEPICTED ON THIS DRAWING.
2. TRACER WIRE TO BE BROUGHT UP TO GRADE. WIRE SHALL BE CONTINUOUS AND TAPED. REFERENCE STANDARD DETAIL WS-501.
3. LOCATE PERMANENT SAMPLE POINT NEAR THE CENTER OF THE DEVELOPMENT, IN CLOSE PROXIMITY TO A FIRE HYDRANT.

APPROVED	DATE	PREPARED BY XRH	DATE 07/15/16	REVISION	
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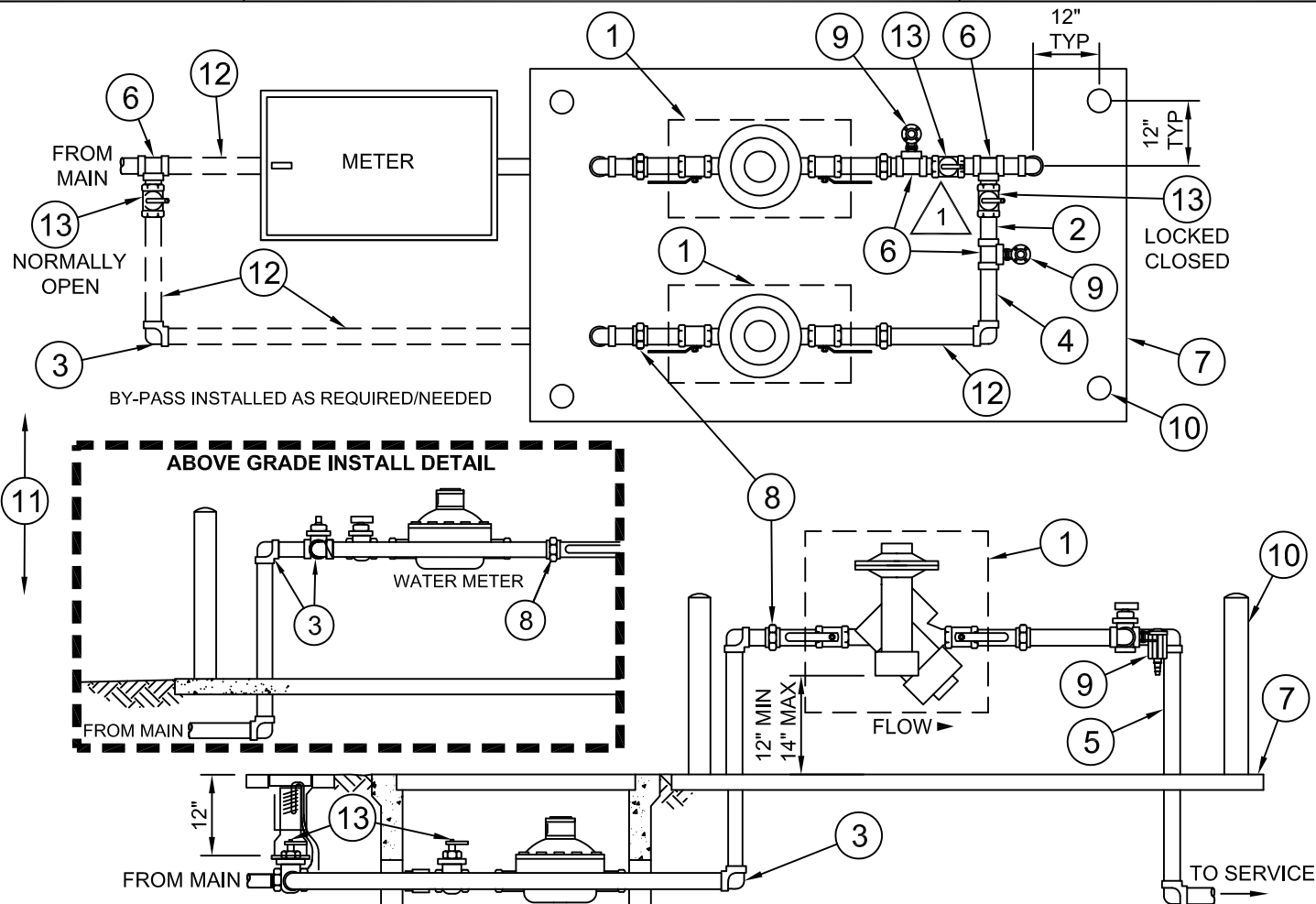


WATER STANDARDS
WATER ENGINEERING DIVISION

STD. NO. WS-302

DOMESTIC METER WITH OR WITHOUT BY-PASS
SINGLE SERVICE: 3/4" TO 2"

SHT. 1 OF 2



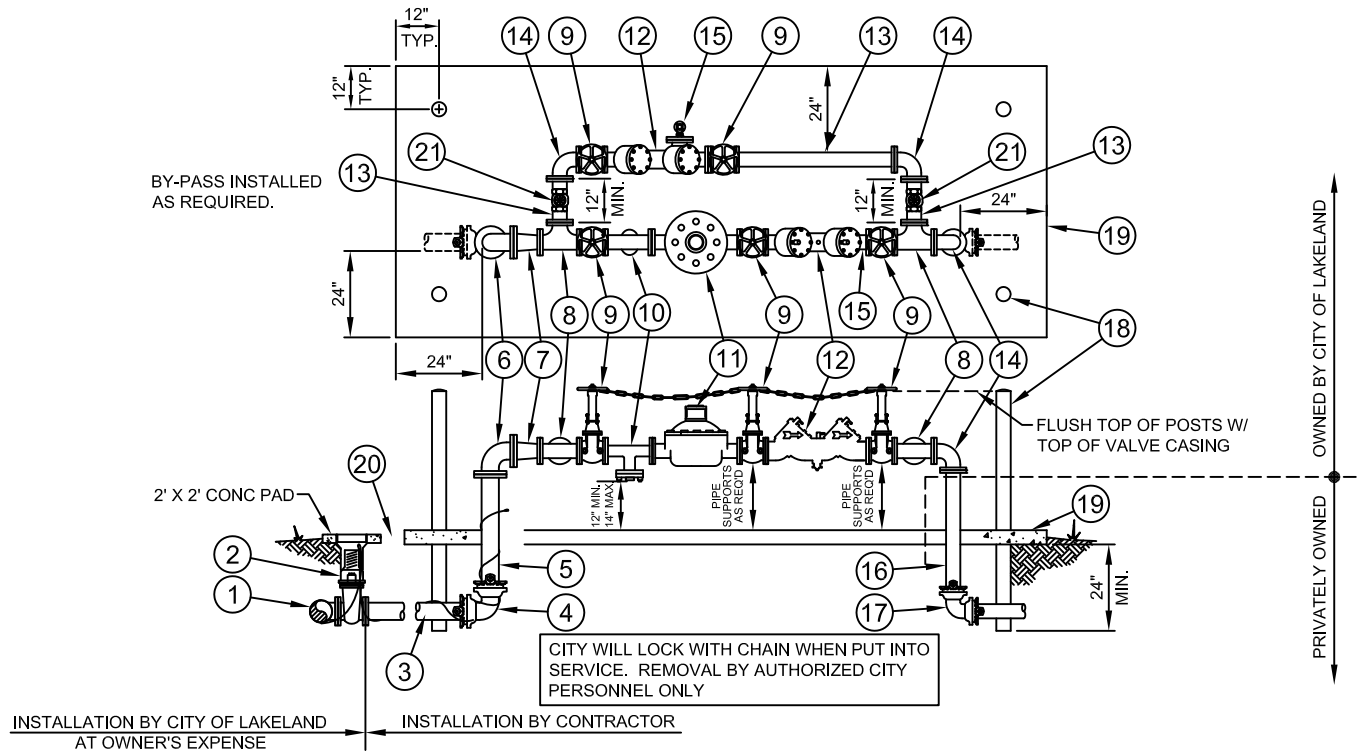
PRE-APPROVAL REQUIRED FOR INSTALLATION AS SHOWN ON THIS DETAIL

BILL OF MATERIALS	
ITEM	DESCRIPTION
1	2" BACKFLOW PREVENTER ASSEMBLY (DEFINED AS UNIT INCLUDING VALVES) W/ IN-OUT BALL VALVES W/ TEST COCK
2	2"x4" NIPPLES, GALVANIZED SCH 40
3	2" X 90 DEG ELBOW, GALVANIZED SCH 40
4	2"x6" NIPPLES, GALVANIZED SCH 40
5	GALVANIZED RISER PIPE - CONTINUOUS, NO JOINTS
6	2" TEE, GALVANIZED SCH 40 (IF BY-PASS INSTALLED)
7	4" CONCRETE SLAB W/ POST IN CORNERS
8	2" UNIONS, GALVANIZED SCH 40
9	EATON FP-45 FREEZE PROTECTION DEVICE, OR APPROVED EQUAL
10	2" GALVANIZED POSTS (UNLESS EXEMPTED BY CITY) - CONCRETE FILLED AND CAPPED
11	LANDSCAPING PER WATER ENGINEERING STANDARD WS-601
12	PIPE, GALVANIZED
13	LOCKABLE BALL VALVE FOR ABOVE GRADE INSTALL OR 1" MIN. GATE VALVE FOR BELOW GROUND INSTALL

GENERAL NOTES:

- INSTALLATION SHOWN ABOVE IS FOR A 2 INCH SERVICE. CHANGE PIPING, FITTINGS, AND BACKFLOW PREVENTER SIZES ACCORDINGLY TO MATCH METER SIZE.
- ALL PIPE THROUGH CONCRETE PADS MUST BE WRAPPED IN POLYETHYLENE.
- LANDSCAPE AS REQUIRED BY CITY CODES.
- THE SIDE WITH TEST COCKS SHALL BE LOCATED A MINIMUM OF 24 INCHES FROM NEAREST WALL OR OBSTRUCTION.
- BACKFLOW PREVENTER IS LOCATED ON CUSTOMER SIDE OF PROPERTY LINE. THERE SHALL BE NO CONNECTIONS BETWEEN THE METER AND BACKFLOW PREVENTER.
- THERMAL EXPANSION MUST BE ADDRESSED IN THE CONSUMERS CLOSED-LOOP POTABLE WATER SYSTEM.
- LONGER PIPE NIPPLES NEEDED FOR 1 1/2 INCH AND 2 INCH PIPE.
- POSTS TO BE SIZED AND INSTALLED PER LATEST WATER UTILITIES DEPARTMENT SPECIFICATION 6.1.6.3.
- PIPE SIZE FOR BY-PASS BRANCH SHALL BE EQUAL TO METER SIZE.
- ALL POTABLE PIPE MATERIALS SHALL BE DOMESTIC ONLY.
- IF METER TO BE SET ABOVE GRADE IN-LINE WITH BACKFLOW, BY-PASS MUST ALSO BE ABOVE GRADE. SEE DETAIL.

APPROVED	DATE	PREPARED BY XRH	DATE 08/09/2016	REVISION
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				NO.



BILL OF MATERIALS

MARK	DESCRIPTION
1	EXISTING CITY MAIN, TAPPED BY CITY OF LAKELAND AT OWNERS EXPENSE
2	TAPPING VALVE & VALVE BOX (VALVE BOX AND 2' X 2' CONC. PAD INSTALLED BY CONTRACTOR)
3	TRACER WIRE - REFERENCE WATER UTILITIES DEPARTMENT SPECIFICATION 2.7.17 & 4.1.5
4	4" 90 DEG ELL, MJ, WITH RESTRAINERS
5	4" MIN. X VARIES DUCTILE IRON INLET RISER - CONTINUOUS, NO JOINTS
6	90 DEG ELL, FJ, REDUCING (OPTIONAL)
7	REDUCER, FJ (OPTIONAL)
8	TEE, FJ (IF BYPASS INSTALLED)
9	OS & Y VALVE
10	STRAINER
11	METER
12	BACKFLOW PREVENTER
13	DIP SPOOL, CUT TO FIT
14	90 DEG ELL, FJ
15	EATON FP-45 FREEZE PROTECTION DEVICE, OR APPROVED EQUAL (ON BFP SIDE OF VALVE) INSTALLED ON #4 TEST PORT ON BY-PASS LINE. FREEZE PROTECTOR LOCATION ON MAIN LINE PER INSPECTOR'S DISCRETION.
16	3" MIN. X VARIES DUCTILE IRON OUTLET RISER - CONTINUOUS, NO JOINTS
17	3" 90 DEG ELL, MJ, WITH RESTRAINERS
18	4" GALVANIZED OR DIP POSTS (UNLESS EXEMPTED BY CITY) - CONCRETE FILLED AND CAPPED
19	4" CONCRETE SLAB W/ POSTS IN CORNERS
20	LANDSCAPING PER WATER ENGINEERING STANDARD WS-601
21	BALL VALVE W/ LOCKING RING

GENERAL NOTES:

- INSTALLATION SHOWN ABOVE IS FOR 3 INCH AND LARGER METERS WITH BY-PASS AND BACKFLOW PREVENTERS.
- BY-PASS AND SIZE TO BE DETERMINED BY THE ENGINEER AND APPROVED BY CITY OF LAKELAND.
- ALL ABOVEGROUND PIPING SHALL BE FLANGED DUCTILE IRON PIPE.
- TWO INCHES AND SMALLER BY-PASS PIPING SHALL BE GALVANIZED.
- PIPE SUPPORTS SHALL BE INSTALLED AS NECESSARY.
- ALL PIPE THROUGH CONCRETE PAD MUST BE WRAPPED IN POLYETHYLENE.
- LANDSCAPE AS REQUIRED BY CITY CODE.
- THE SIDE WITH TEST COCKS SHALL BE LOCATED A MINIMUM OF 24 INCHES FROM NEAREST WALL OR OBSTRUCTION.
- BACKFLOW PREVENTER IS TO BE LOCATED ON CUSTOMERS SIDE OF PROPERTY LINE. THERE SHALL BE NO CONNECTIONS BETWEEN THE METER AND BACKFLOW PREVENTER.
- THERMAL EXPANSION MUST BE ADDRESSED IN THE CONSUMERS CLOSED-LOOP POTABLE WATER SYSTEM.
- EASEMENT SHALL BE PROVIDED AS REQUIRED BY THE CITY OF LAKELAND.

APPROVED	DATE	PREPARED BY GEG	DATE 02/25/14	REVISION 1
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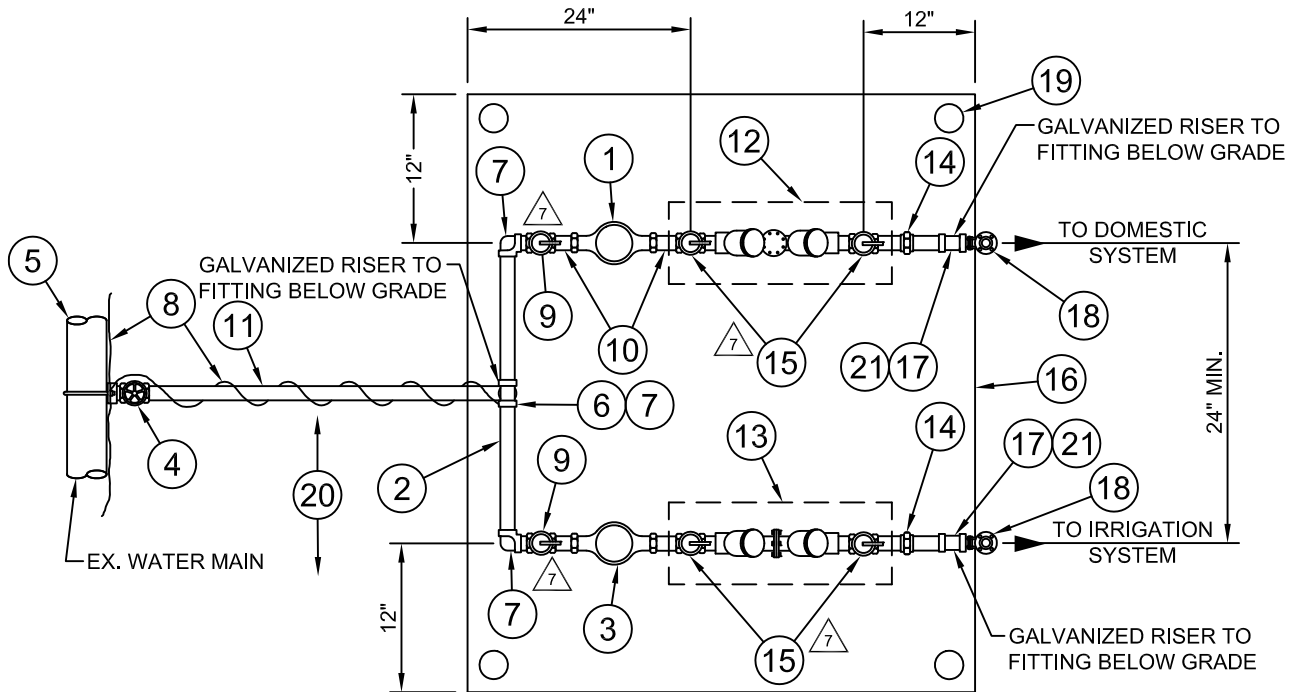


WATER STANDARDS
WATER ENGINEERING DIVISION

STD. NO. WS-303

DUAL METER (ABOVE GRADE)
WITH BACKFLOW PREVENTER ARRANGEMENT

SHT. 1 OF 2

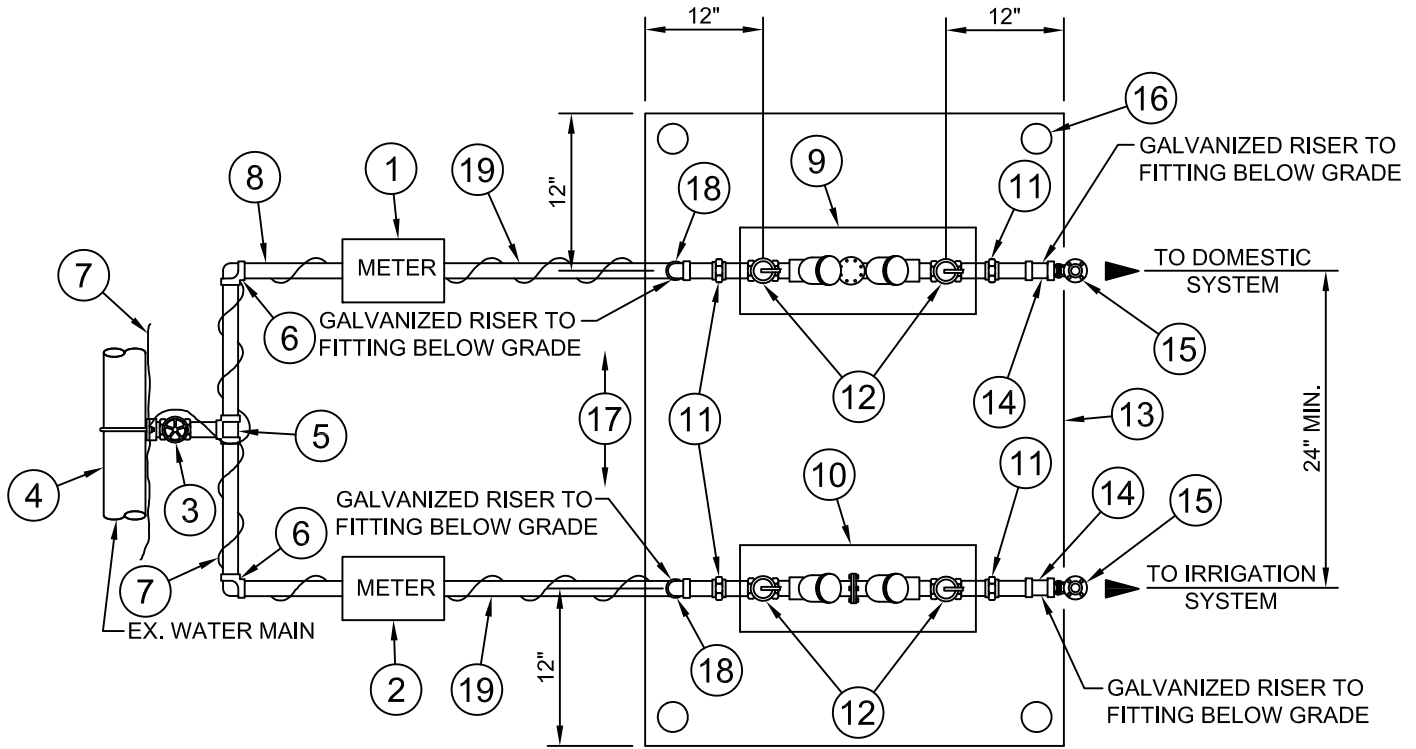


BILL OF MATERIALS - CITY RESPONSIBILITY		
ITEM	QUAN.	DESCRIPTION
1	1	DOMESTIC METER - MAY BE BELOW GRADE IN BOX (REF. WS-303-2)
2	CUT TO FIT	PIPE, GALVANIZED SCH 40
3	1	IRRIGATION METER
4	1	TAPPING VALVE, INSTALLED BY CITY
5	-	EXISTING CITY WATERMAIN
6	1	STR. TEE, GALVANIZED SCH 40
7	3	90 DEG ELBOW, GALVANIZED SCH 40 (2 ABOVE GRADE)
8	-	TRACER WIRE
9	2	LOCKING BALL VALVE
10	4	BRASS METER NIPPLES
11	CUT TO FIT	PIPE, GALVANIZED OR PVC (SCH 40 <= 2")
BILL OF MATERIALS - CUSTOMER RESPONSIBILITY		
12	1	REDUCED PRESSURE BACKFLOW PREVENTER, PROVIDED BY OWNER (AS REQUIRED, ABOVE GRADE)
13	2	REDUCED PRESSURE BACKFLOW PREVENTER, PROVIDED BY OWNER (AS REQUIRED, ABOVE GRADE)
14	2	UNION, GALVANIZED SCH 40
15	4	HAND CONTROL BALL VALVE
16	1	4" CONCRETE PAD W/ POST IN CORNERS
17	2	TEE, GALVANIZED SCH 40
18	2	EATON FP-45 FREEZE PROTECTION DEVICE OR APPROVED EQUAL
19	4	GALVANIZED POSTS (UNLESS EXEMPTED BY CITY) - CONCRETE FILLED AND CAPPED
20	-	LANDSCAPING PER WATER ENGINEERING STANDARD WS-601
21	2	90 DEG ELBOW, GALVANIZED SCH 40 (BELOW GRADE)

GENERAL NOTES:

- ALL PIPE THROUGH CONCRETE PADS MUST BE WRAPPED IN POLYETHYLENE.
- LANDSCAPE AS REQUIRED BY CITY CODE.
- THE SIDE WITH THE TEST COCKS SHALL BE LOCATED A MINIMUM OF 24 INCHES FROM NEAREST WALL OR OBSTRUCTION.
- IF BACKFLOW PREVENTER IS LOCATED ON CUSTOMER SIDE OF PROPERTY LINE, THERE SHALL BE NO CONNECTIONS BETWEEN THE METER AND THE BACKFLOW PREVENTER.
- THERMAL EXPANSION MUST BE ADDRESSED IN THE CONSUMERS CLOSED-LOOP POTABLE WATER SYSTEM.
- PIPE SIZE BETWEEN CITY MAIN AND TEE TO BE EQUAL IN SIZE TO DOMESTIC METER.
- PIPE SIZE FOR IRRIGATION BRANCH TO BE EQUAL IN SIZE TO IRRIGATION METER.
- PIPE SIZE FOR IRRIGATION BRANCH TO BE EQUAL TO OR LESS THAN DOMESTIC METER SIZE.
- BACKFLOW PREVENTERS TO BE INSTALLED PARALLEL TO EACH OTHER.
- POSTS TO BE SIZED PER LATEST WATER UTILITIES DEPARTMENT SPECIFICATION 6.1.6.3.
- BACKFLOW UNITS 3" OR LARGER IN SIZE TO HAVE OS&Y VALVES INSTEAD OF HAND CONTROL BALL VALVES.

APPROVED	DATE	PREPARED BY GEG	DATE 04/18/02	REVISION	7
APPROVED	DATE	CHECKED BY	ISSUE DATE: 08/16/16	REVISION DATE: 7/20/16	NO.



BILL OF MATERIALS - CITY RESPONSIBILITY

ITEM	QUAN.	DESCRIPTION
1	1	DOMESTIC METER - MAY BE BELOW GRADE IN BOX
2	1	IRRIGATION METER
3	1	TAPPING VALVE, INSTALLED BY CITY
4	-	EXISTING CITY WATER MAIN
5	1	STR. TEE, GALVANIZED SCH 40
6	2	90 DEG. ELBOW, GALVANIZED SCH 40
7	-	TRACER WIRE
8	CUT TO FIT	PIPE, GALVANIZED OR PVC (SCH 40 <=2")

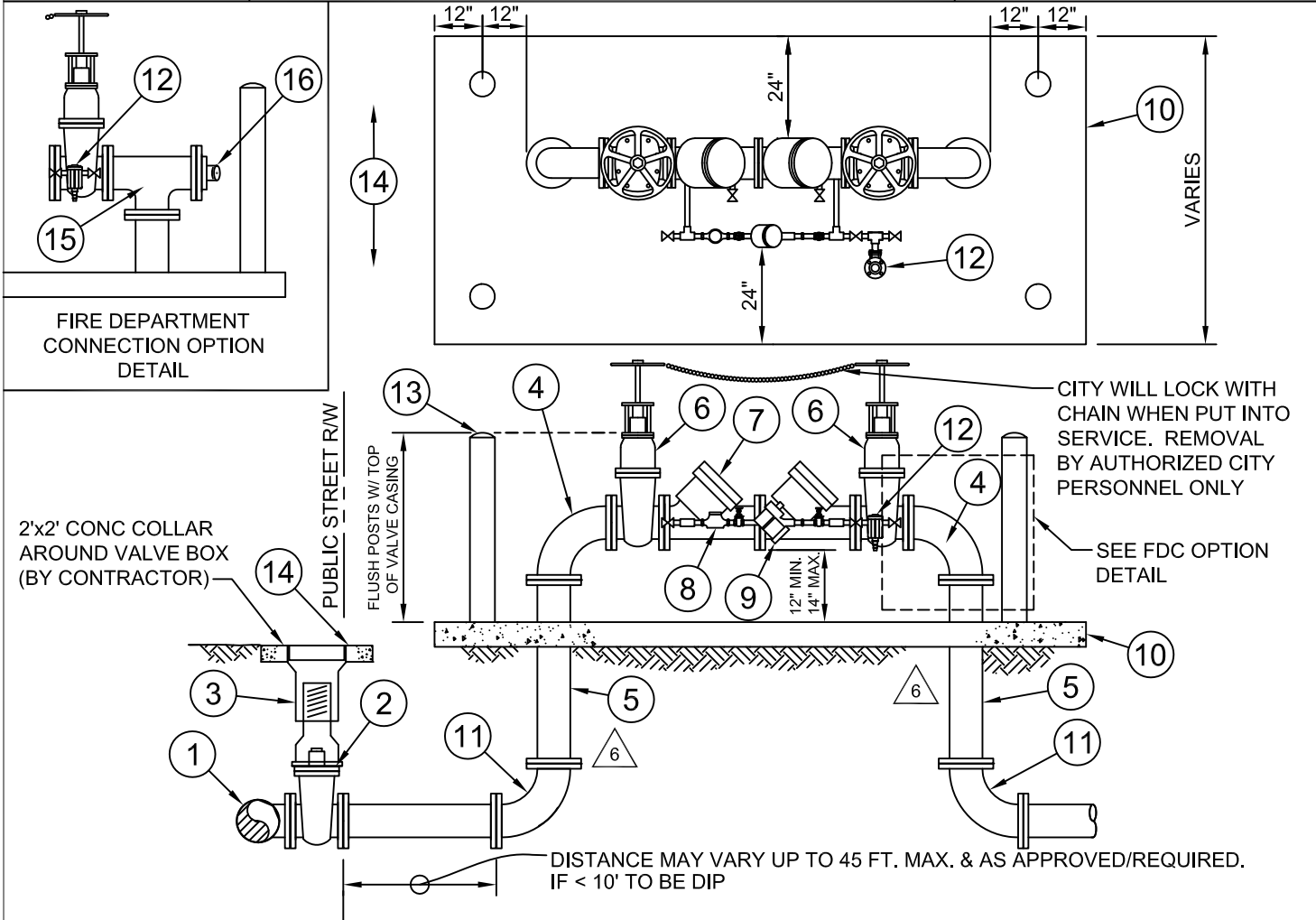
BILL OF MATERIALS - CUSTOMER RESPONSIBILITY

9	1	REDUCED PRESSURE BACKFLOW PREVENTER, PROVIDED BY OWNER (AS REQUIRED, ABOVE GRADE)
10	2	REDUCED PRESSURE BACKFLOW PREVENTER, PROVIDED BY OWNER (AS REQUIRED, ABOVE GRADE)
11	4	UNIONS, GALVANIZED SCH 40
12	4	BALL VALVE W/ HAND CONTROL
13	1	4" CONCRETE PAD W/ POSTS IN CORNERS
14	2	TEE, GALVANIZED SCH 40
15	2	EATON FP-45 FREEZE PROTECTION DEVICE OR APPROVED EQUAL
16	4	GALVANIZED POSTS (UNLESS EXEMPTED BY CITY) - CONCRETE FILLED AND CAPPED
17	-	LANDSCAPING PER WATER ENGINEERING STANDARD WS-601
18	6	90 DEG ELBOW, GALVANIZED SCH 40 (BELOW GRADE)
19	CUT TO FIT	PIPE

GENERAL NOTES:

- ALL PIPE THROUGH CONCRETE PADS MUST BE WRAPPED IN POLYETHYLENE.
- LANDSCAPE AS REQUIRED PER CITY CODE.
- THE SIDE WITH TEST COCKS SHALL BE LOCATED A MINIMUM OF 24 INCHES FROM NEAREST WALL OR OBSTRUCTION.
- IF BACKFLOW PREVENTER IS LOCATED ON CUSTOMER SIDE OF PROPERTY LINE, THERE SHALL BE NO CONNECTIONS BETWEEN THE METER AND THE BACKFLOW PREVENTER.
- THERMAL EXPANSION MUST BE ADDRESSED IN THE CONSUMERS CLOSED-LOOP POTABLE WATER SYSTEM.
- PIPE SIZE BETWEEN CITY MAIN AND TEE TO BE EQUAL IN SIZE TO DOMESTIC METER.
- PIPE SIZE FOR IRRIGATION BRANCH TO BE EQUAL IN SIZE TO IRRIGATION METER.
- PIPE SIZE FOR IRRIGATION BRANCH TO BE EQUAL TO OR LESS THAN DOMESTIC METER SIZE.
- BACKFLOW PREVENTERS TO BE INSTALLED PARALLEL TO EACH OTHER.
- POSTS TO BE SIZED PER LATEST WATER UTILITIES SPECIFICATION 6.1.6.3.
- BACKFLOW UNITS 3" OR LARGER IN SIZE TO HAVE OS&Y VALVES INSTEAD OF HAND CONTROL BALL VALVES.

APPROVED	DATE	PREPARED BY GEG	DATE 08/21/02	REVISION	3
APPROVED	DATE	CHECKED BY	ISSUE DATE: 08/16/16	REVISION DATE: 7/20/16	NO.



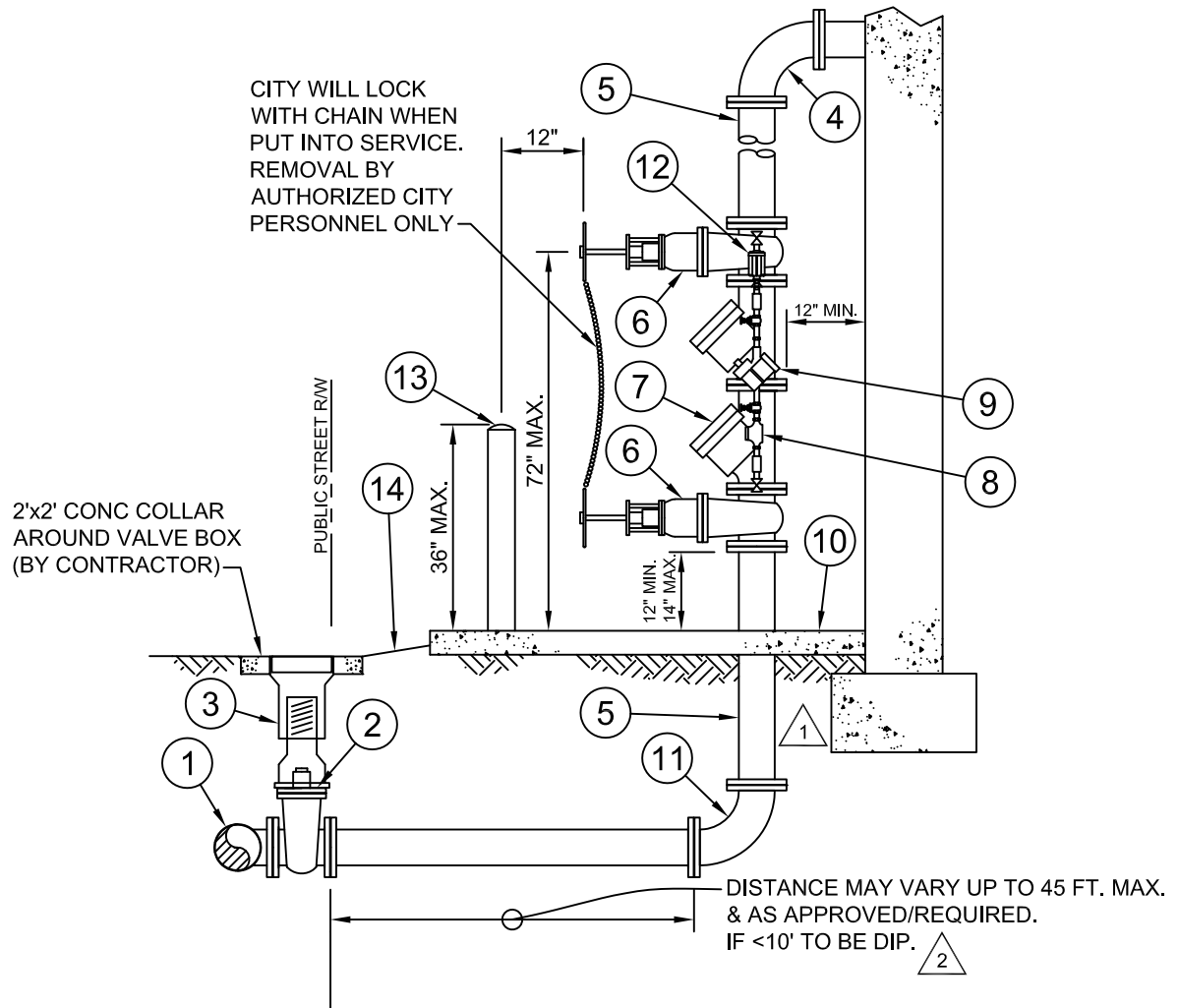
BILL OF MATERIALS

ITEM	DESCRIPTION
1	EXISTING CITY MAIN
2	TAPPING VALVE, INSTALLED BY CITY AT DEVELOPER'S EXPENSE
3	VALVE BOX, W/ 2'x2' CONC COLLAR AS REQ'D
4	90 DEG ELBOW, FLANGED [NON-FDC OPTION]
5	DUCTILE IRON PIP-E, FLANGED, CONTINUOUS, NO JOINTS
6	OS & Y VALVE
7	BACKFLOW PREVENTER (DDC OR RPZDC)
8	3/4" DETECTOR METER
9	3/4" BACKFLOW PREVENTER
10	4" CONCRETE SLAB W/ POSTS IN CORNERS
11	90 DEG ELBOW, FLANGED OR MJ WITH RETAINER GLAND
12	EATON FP-45 FREEZE PROTECTION DEVICE OR APPROVED EQUAL
13	GALVANIZED OR DIP POSTS (UNLESS EXEMPTED BY CITY) - CONCRETE FILLED AND CAPPED
14	LANDSCAPING PER WATER ENGINEERING STANDARD WS-601
15	TEE, FLANGED [FDC OPTION]
16	FIRE DEPARTMENT CONNECTION (FDC PER COL SPECS.) [FDC OPTION]

GENERAL NOTES:

- ALL PIPE THROUGH CONCRETE MUST BE WRAPPED IN POLYETHYLENE.
- LANDSCAPE AS REQUIRED PER CITY CODE.
- THE SIDE WITH TEST COCKS SHALL BE LOCATED A MINIMUM OF 24 INCHES FROM NEAREST WALL OR OBSTRUCTION.
- BACKFLOW PREVENTER IS LOCATED ON CUSTOMER SIDE OF PROPERTY LINE.
- THERMAL EXPANSION MUST BE ADDRESSED IN THE CONSUMERS CLOSED-LOOP POTABLE WATER SYSTEM.
- EASEMENT SHALL BE PROVIDED AS REQUIRED BY THE CITY OF LAKELAND.
- POSTS TO BE SIZED PER LATEST WATER UTILITIES DEPARTMENT SPECIFICATION 6.1.6.3.

APPROVED	DATE	PREPARED BY GEG	DATE 11/14/01	REVISION	7
APPROVED	DATE	CHECKED BY	ISSUE DATE: 08/16/16	REVISION DATE: 7/20/16	NO.

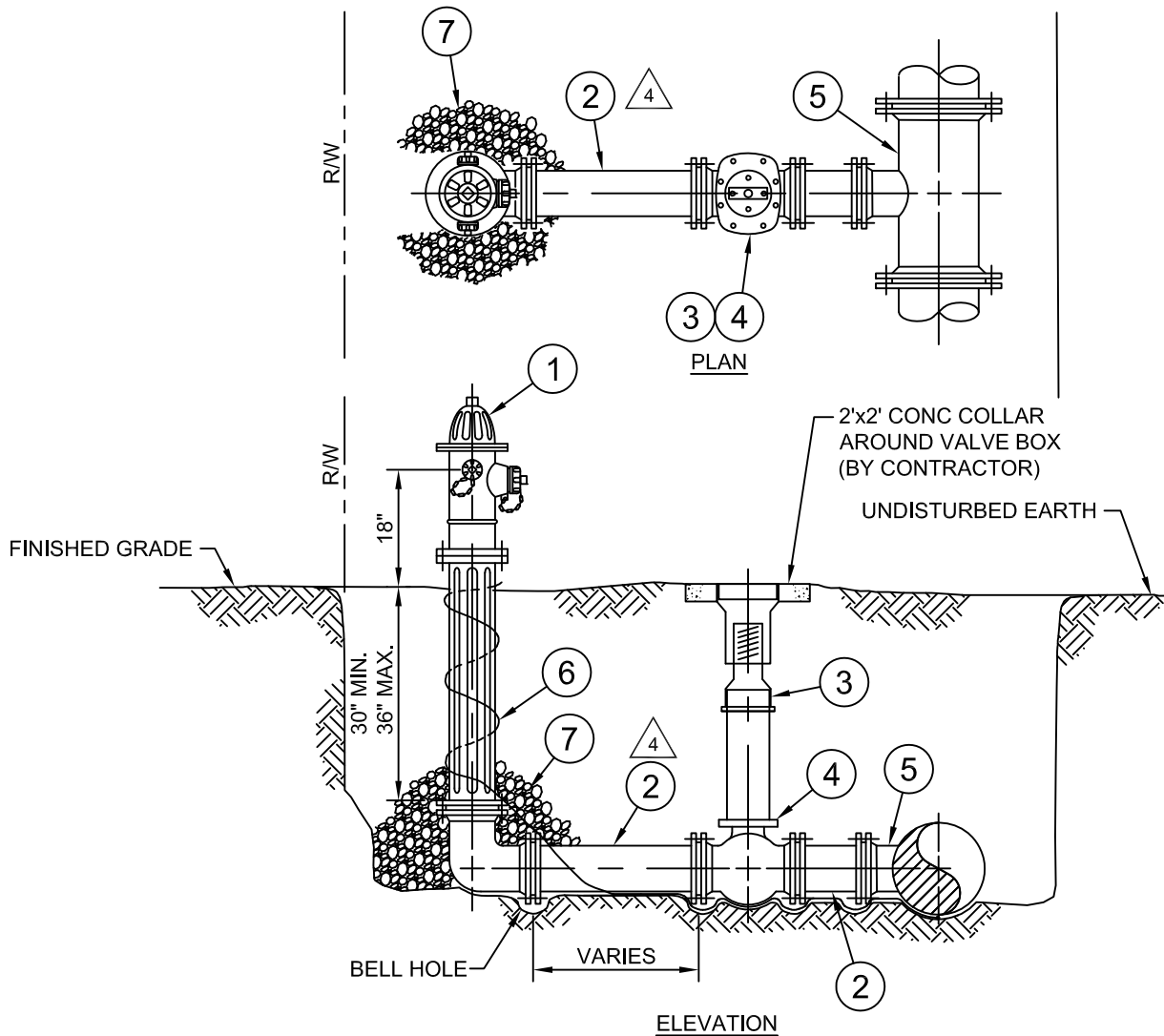


BILL OF MATERIALS		
ITEM	QUAN.	DESCRIPTION
1	-	EXISTING CITY MAIN
2	1	TAPPING VALVE, INSTALLED BY CITY AT DEVELOPER'S EXPENSE
3	1	VALVE BOX, W/ 2'x2' CONC COLLAR AS REQ'D
4	2	90 DEG ELBOW, FLANGED
5	CUT TO FIT	DUCTILE IRON PIP-E, FLANGED, CONTINUOUS, NO JOINTS
6	2	OS & Y VALVE
7	1	BACKFLOW PREVENTER (DDC OR RPZDC)
8	1	3/4" DETECTOR METER
9	1	3/4" BACKFLOW PREVENTER
10	1	4" CONCRETE SLAB W/ POSTS IN CORNERS
11	2	90 DEG ELBOW, FLANGED OR MJ WITH RETAINER GLAND
12	1	EATON FP-45 FREEZE PROTECTION DEVICE OR APPROVED EQUAL
13	4	GALVANIZED POSTS (UNLESS EXEMPTED BY CITY) - CONCRETE FILLED AND CAPPED
14	-	LANDSCAPING PER WATER ENGINEERING STANDARD WS-601

GENERAL NOTES:

- ALL PIPE THROUGH CONCRETE MUST BE WRAPPED IN POLYETHYLENE.
- LANDSCAPE AS REQUIRED PER CITY CODE.
- THE SIDE WITH TEST COCKS SHALL BE LOCATED A MINIMUM OF 24 INCHES FROM NEAREST WALL OR OBSTRUCTION.
- BACKFLOW PREVENTER IS LOCATED ON CUSTOMER SIDE OF PROPERTY LINE.
- THERMAL EXPANSION MUST BE ADDRESSED IN THE CONSUMERS CLOSED-LOOP POTABLE WATER SYSTEM.
- EASEMENT SHALL BE PROVIDED AS REQUIRED BY THE CITY OF LAKELAND.
- POSTS TO BE SIZED PER LATEST WATER UTILITIES DEPARTMENT SPECIFICATION 6.1.6.3.

APPROVED	DATE	PREPARED BY GEG	DATE 08/26/02	REVISION	2
APPROVED	DATE	CHECKED BY	ISSUE DATE: 08/16/16	REVISION DATE: 07/21/16	NO.



BILL OF MATERIALS

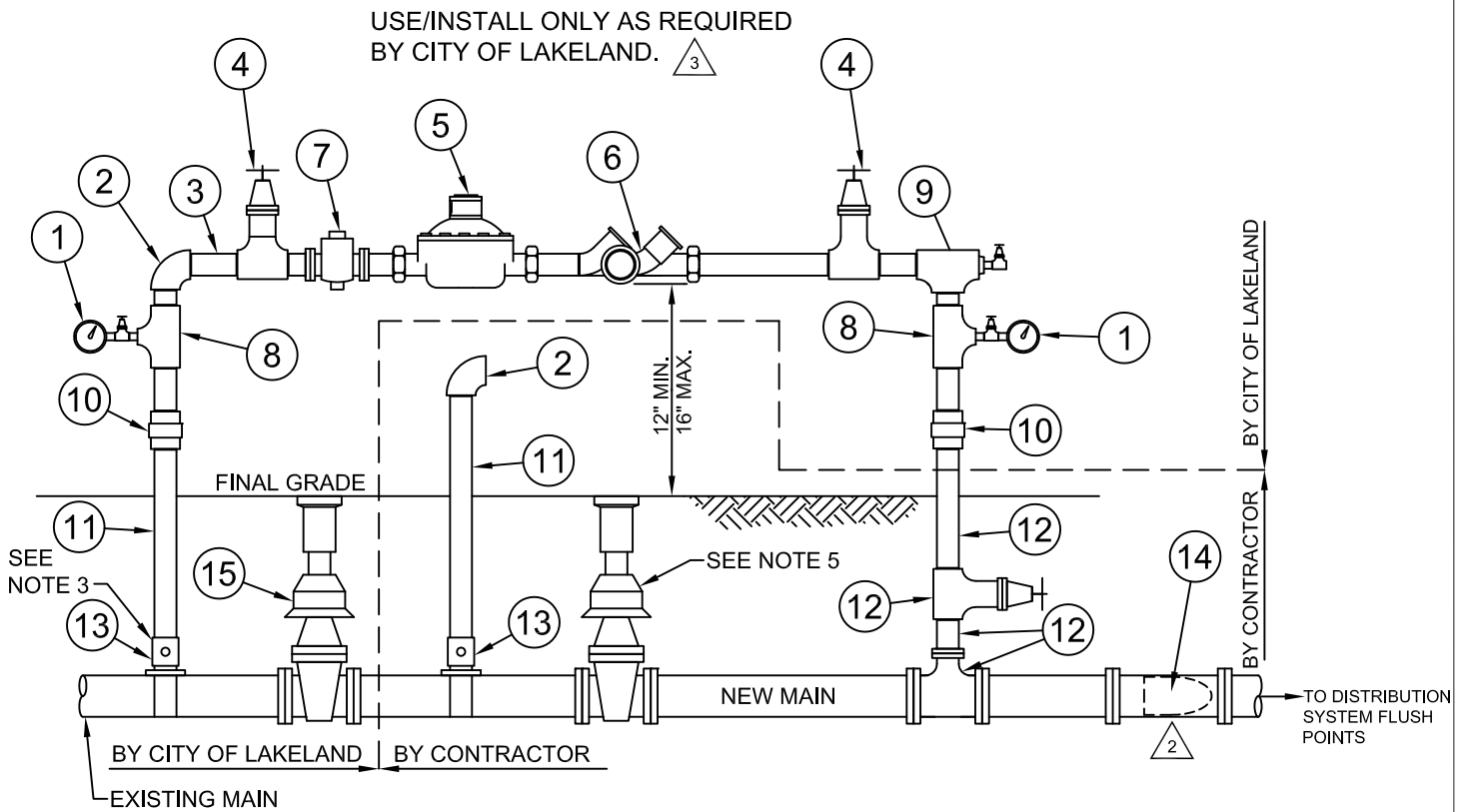
ITEM	QUAN.	DESCRIPTION
1	1	HYDRANT, FIRE
2	-	6" PIPE, DIP
3	1	BOX, VALVE, W/ 2'x2' CONCRETE COLLAR AS REQ'D
4	1	6" VALVE, GATE, MJ
5	1	TEE, ANCHORING, MJ
6	-	SOLID CORE INSULATED COPPER TRACER WIRE. REF. WS-601
7	-	DRAINAGED BED, 57 OR LARGER STONE, COMPACTED. 30"x30"x12" DEEP

GENERAL NOTES:

1. SEE 'FIRE HYDRANT ASSEMBLIES' FOR FURTHER INFORMATION.
2. ALL FITTINGS TO BE RESTRAINED.
3. TRACER WIRE TO BE BROUGHT UP TO GRADE. REFERENCE STANDARD DETAIL WS-501.



APPROVED	DATE	PREPARED BY GEG	DATE 11/14/01	REVISION	5
APPROVED	DATE	CHECKED BY	ISSUE DATE: 08/16/16	REVISION DATE: 07/21/16	NO.



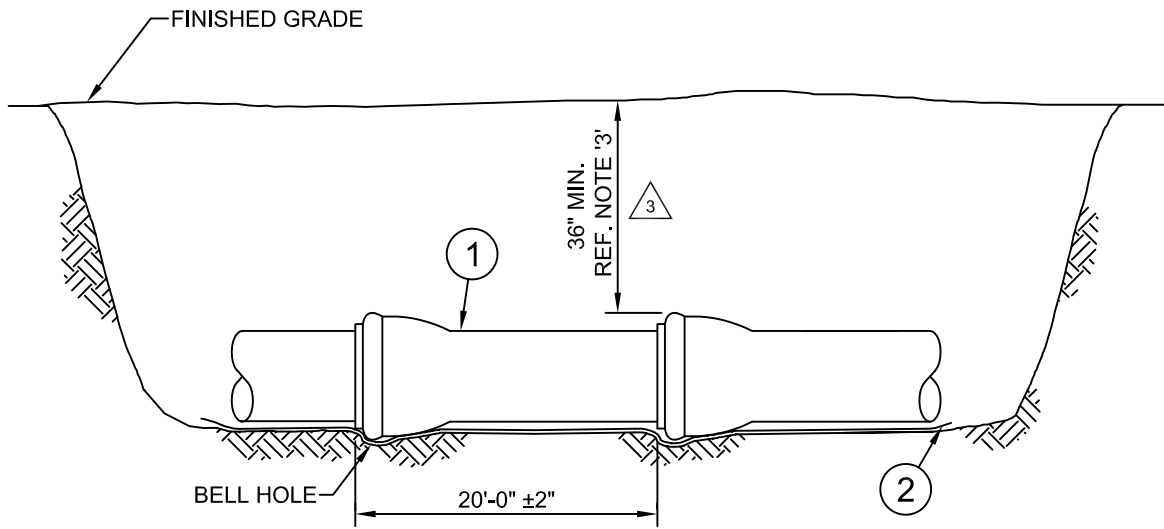
BILL OF MATERIALS

ITEM	QUAN.	DESCRIPTION
1	2	PRESSURE GAUGE W/ <u> </u> " BALL VALVE
2	2	2" 90 DEG ELBOW, GALVANIZED SCH 40
3	-	2" THREADED NIPPLE, GALVANIZED SCH 40
4	2	2" GATE VALVE, THREADED x FLANGED
5	1	2" METER, FLANGED
6	1	2" RPZ BACKFLOW PREVENTER, FLANGED
7	1	STRAINER, FLANGED
8	2	2"x1" RED. TEE, GALVANIZED SCH 40
9	1	2" TEE, GALVANIZED SCH 40
10	2	2" UNION, GALVANIZED SCH 40
11	CUT TO FIT	2" PIPE, GALVANIZED SCH 40
12	1 ASSY.	2" TEE, NIPPLES, AND GATE VALVE BY OTHERS (SEE NOTE 4)
13	1	TAPPING SLEEVE AND VALVE
14	-	INSERT PIG(S) DURING ASSEMBLY
15	1	TIE-IN VALVE - SIZE AND TYPE - LATER

GENERAL NOTES:

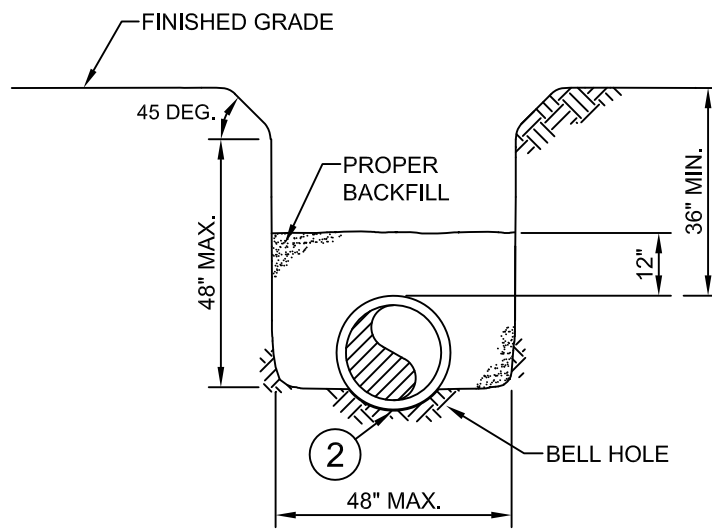
1. ALL PIPES AND FITTINGS 2 INCHES AND SMALLER SHALL BE THREADED SCH 40 GALVANIZED STEEL.
2. PROVIDE PIPE SUPPORTS AS REQUIRED.
3. TAP ON CITY MAIN BY CITY OF LAKELAND PERSONNEL, AT DEVELOPER'S EXPENSE.
4. CONTRACTOR TO EXTEND NIPPLE TO 12 INCHES ABOVE GRADE.
5. AFTER INITIAL FLUSHING, TIE-IN VALVE SHALL BE LOCKED IN THE CLOSED POSITION AND OPERATED BY CITY OF LAKELAND PERSONNEL ONLY (TYPICAL FOR BOTH VALVES).
6. PIGGING PLAN TO BE PROVIDED BY CONTRACTOR.

APPROVED	DATE	PREPARED BY GEG	DATE 11/14/01	REVISION	3
APPROVED	DATE	CHECKED BY	ISSUE DATE: 08/16/16	REVISION DATE: 07/21/16	NO.



ELEVATION

SPECIAL NOTE
TRACER WIRE SHOULD BE INSTALLED
UNDERNEATH WATER LINE



SECTION

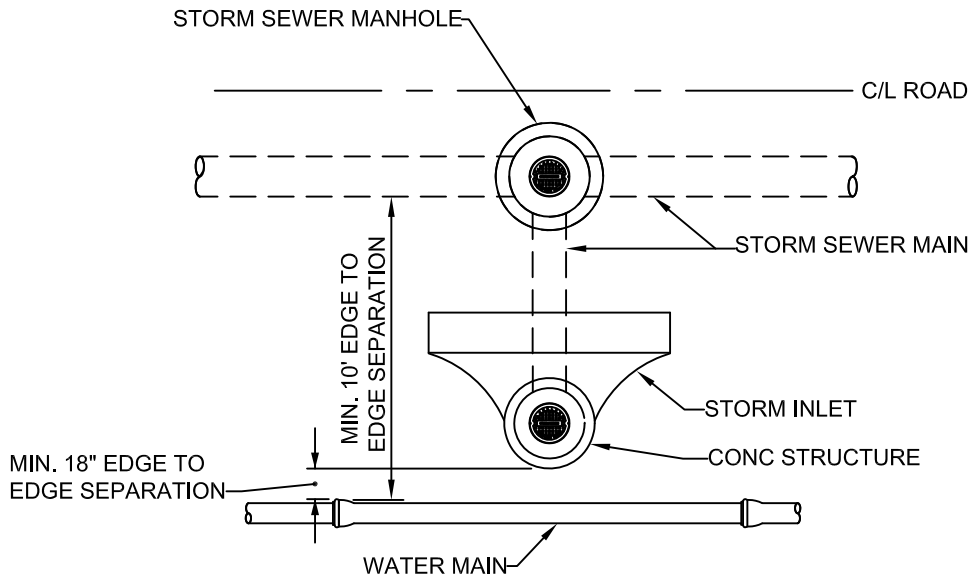
BILL OF MATERIALS		
ITEM	QUAN.	DESCRIPTION
1	CUT TO FIT	PIPE, D.I. (CLASS 30) OR PVC (C900 DR-18)
2	CUT TO FIT	SOLID CORE INSULATED COPPER TRACER WIRE. REF. WS-501



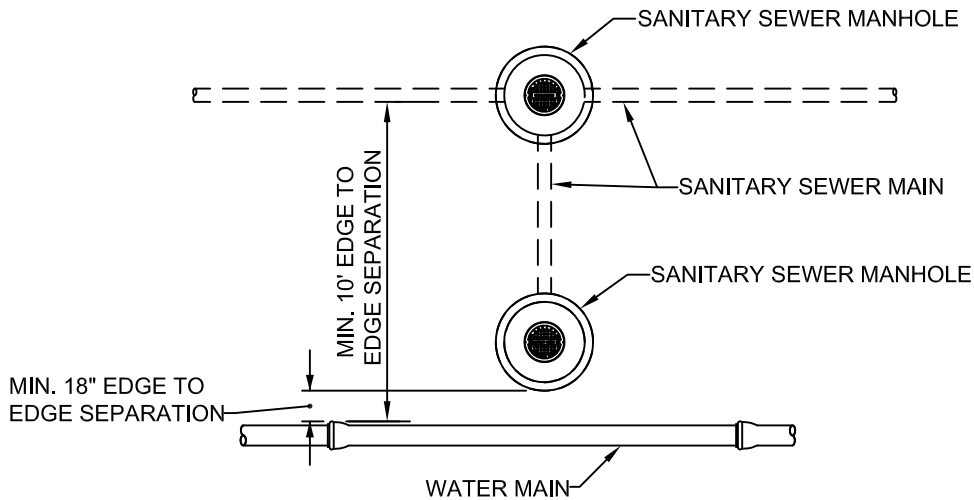
GENERAL NOTES:

- 3
- ALL PIPE SHALL BE INSTALLED WITH A CONTINUOUS BLUE COATED SOLID TRACER WIRE TAPED EVERY TEN FEET TO THE SIDE OF THE PIPE AND WRAPPED AROUND EACH FIRE HYDRANT AT FINAL GRADE.
 - TRACER WIRE TO BE BROUGHT UP TO GRADE AT EVERY IN-LINE VALVE AND SERVICE VALVE.
 - DEPTH OF PIPE MAY BE FIELD ADJUSTED TO MEET SPECIAL CONDITIONS AS DETERMINED BY ENGINEER OR INSPECTOR, INCLUDING, BUT NOT LIMITED TO, ARV INSTALLATIONS. DEPTH OF PIPE SHOULD REMAIN CONSTANT WHEN APPROACHING AND DEPARTING AN ARV LOCATION.

APPROVED	DATE	PREPARED BY DW	DATE 02/04/99	REVISION	4
APPROVED	DATE	CHECKED BY	ISSUE DATE: 08/16/16	REVISION DATE: 07/21/16	NO. 4

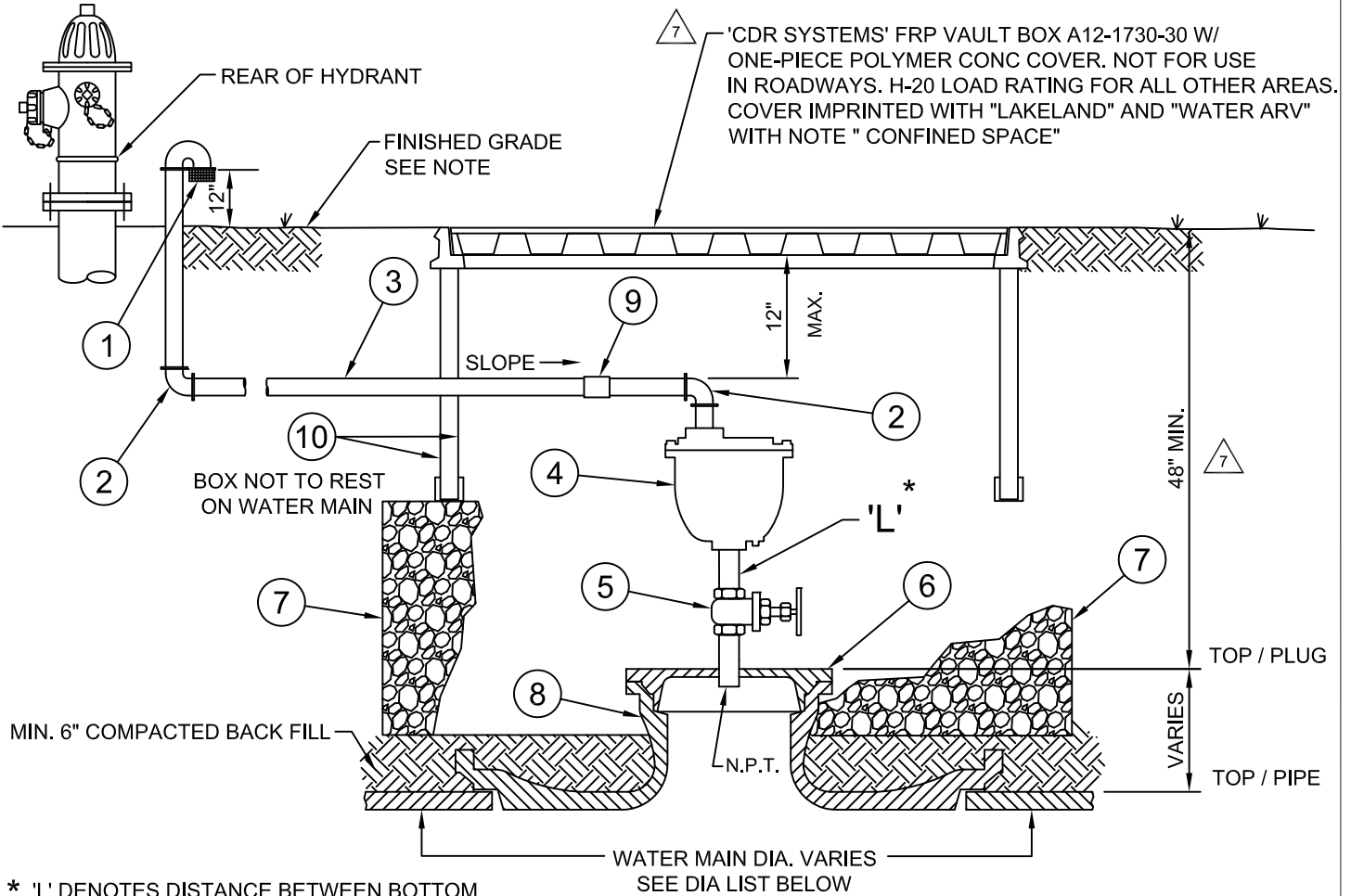


WATER MAIN / STORM SEWER STRUCTURE CLEARANCE



WATER MAIN / SANITARY SEWER STRUCTURE CLEARANCE

APPROVED	DATE	PREPARED BY GEG	DATE 04/22/05	REVISION	1
APPROVED	DATE	CHECKED BY	ISSUE DATE: 08/16/16	REVISION DATE: 07/21/16	NO.



* 'L' DENOTES DISTANCE BETWEEN BOTTOM OF AIR RELEASE VALVE & GATE VALVE. A 2ND VALVE IS REQUIRED IF 'L' IS >3 FT.

BILL OF MATERIALS

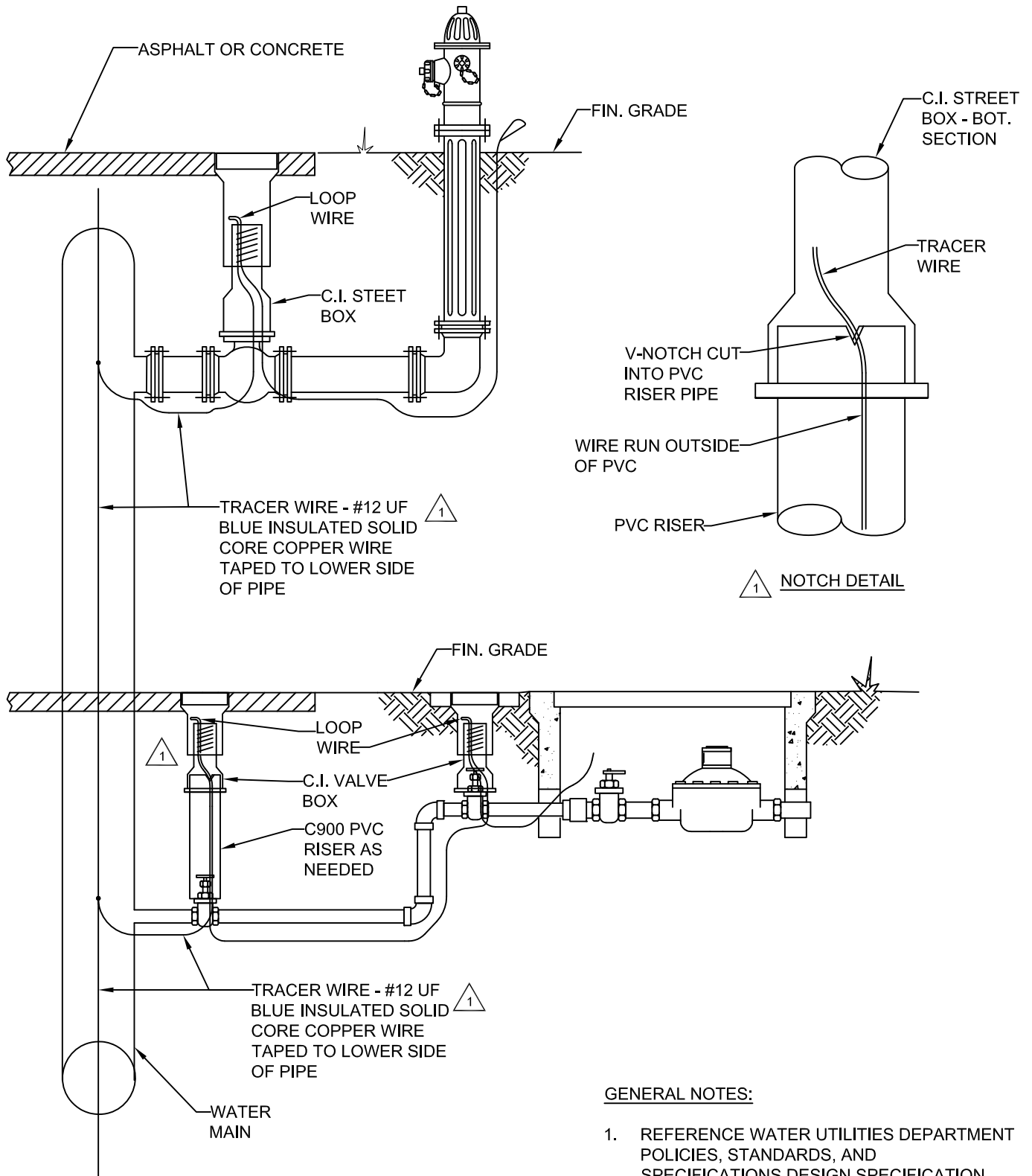
ITEM	QUAN	DESCRIPTION
1	1	BUG SCREEN - STAINLESS STEEL
2	2	2" 90 DEG ELBOW, GALVANIZED SCH 40
3	1	2" PIPE, GALVANIZED SCH 40
4	1	2" AIR & VAC RELEASE VALVE APCO MOD 145C
5	1	GATE VALVE *
6	1	MJ PLUG W / 2" TAP
7	--	DRAINAGE BED, #57 STONE
8	1	TEE, REDUCING, DIP, MJ, RESTRAINED
9	1	GALVANIZED UNION
10	1	'CDR SYSTEMS' FRP VAULT BOX W / POLYMER CONCRETE ONE-PIECE COVER

DIA. OF WATER MAIN (IN.)	MJ TEE, BRANCH DIA. (IN.)
48	16
42	16
36	12
30	10
24	10
20	8
16	8
12	8
10	6
8	6
6	6

GENERAL NOTES:

1. WHEN AIR RELEASE VALVE VAULT IS IN CONFLICT WITH STABILIZED ROAD OR EXISTING PAVEMENT TOP OF POLYMER CONCRETE VAULT COVER WILL BE AT THE SAME ELEVATION.
2. INSTALL COMBINATION AIR / VACUUM VALVE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
3. DRAINAGE BED IS REQUIRED REGARDLESS OF SOIL TYPE.
4. ADJUST DEPTH OF WATERMAIN VIA SMOOTH TRANSITION TO ACCOMMODATE REQUIRED DEPTH OF MJ PLUG IN ARV VAULT.

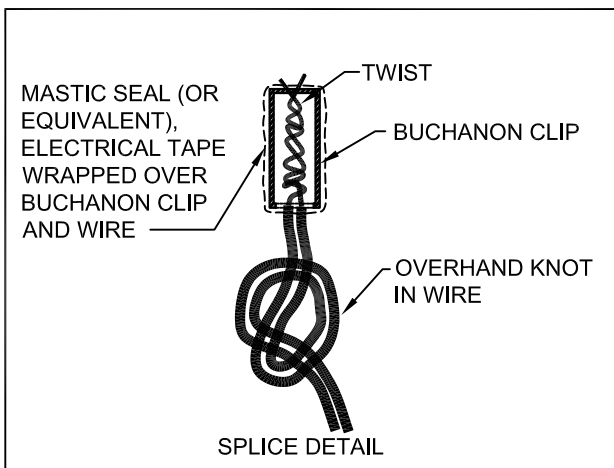
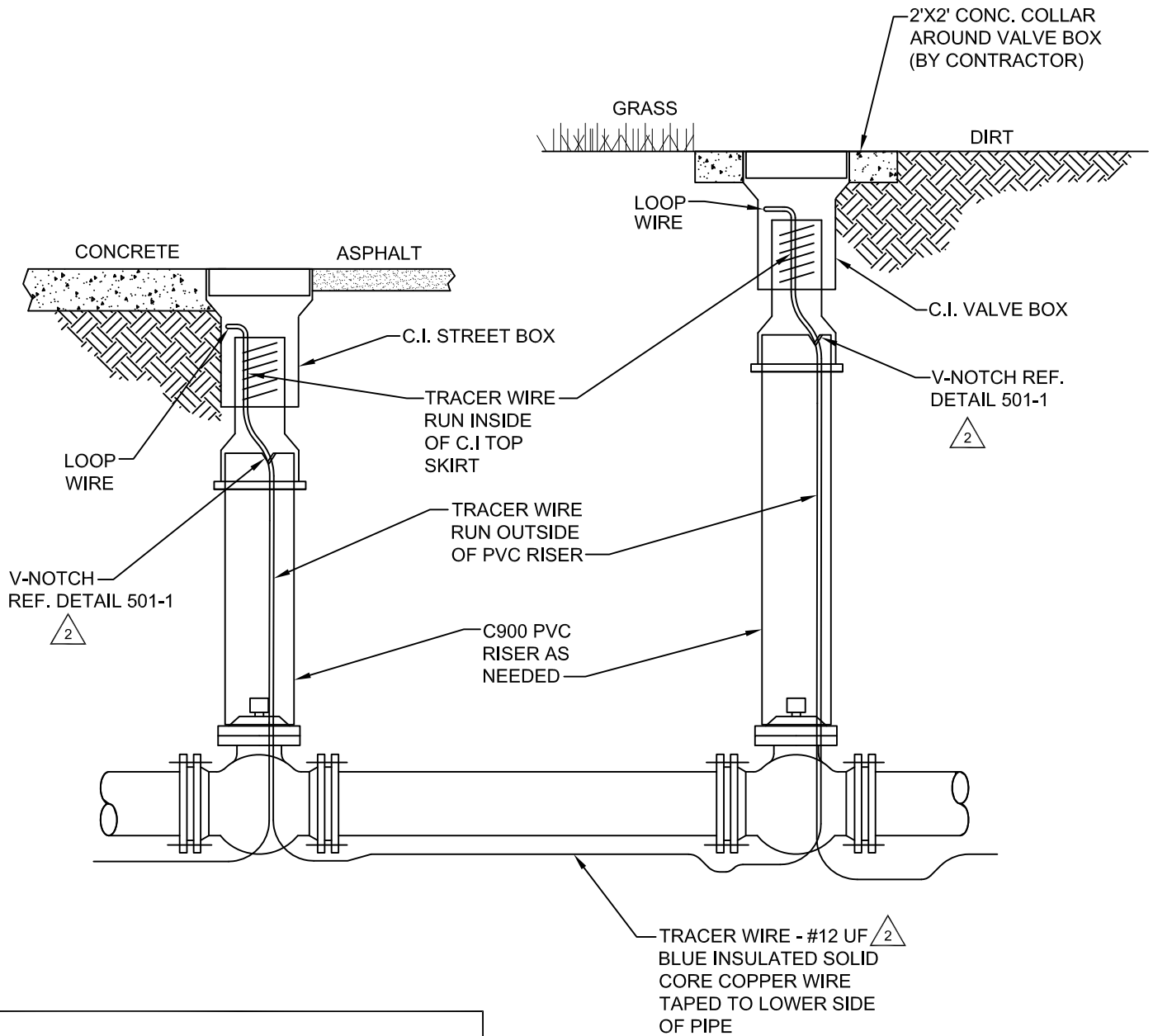
APPROVED	DATE	PREPARED BY GEG	DATE 10/11/06	REVISION	8
APPROVED	DATE	CHECKED BY	ISSUE DATE: 08/16/16	REVISION DATE: 07/21/16	NO.



GENERAL NOTES:

1. REFERENCE WATER UTILITIES DEPARTMENT POLICIES, STANDARDS, AND SPECIFICATIONS DESIGN SPECIFICATION 2.7.17 AND 4.1.5.
2. REFERENCE DETAIL 501-2.

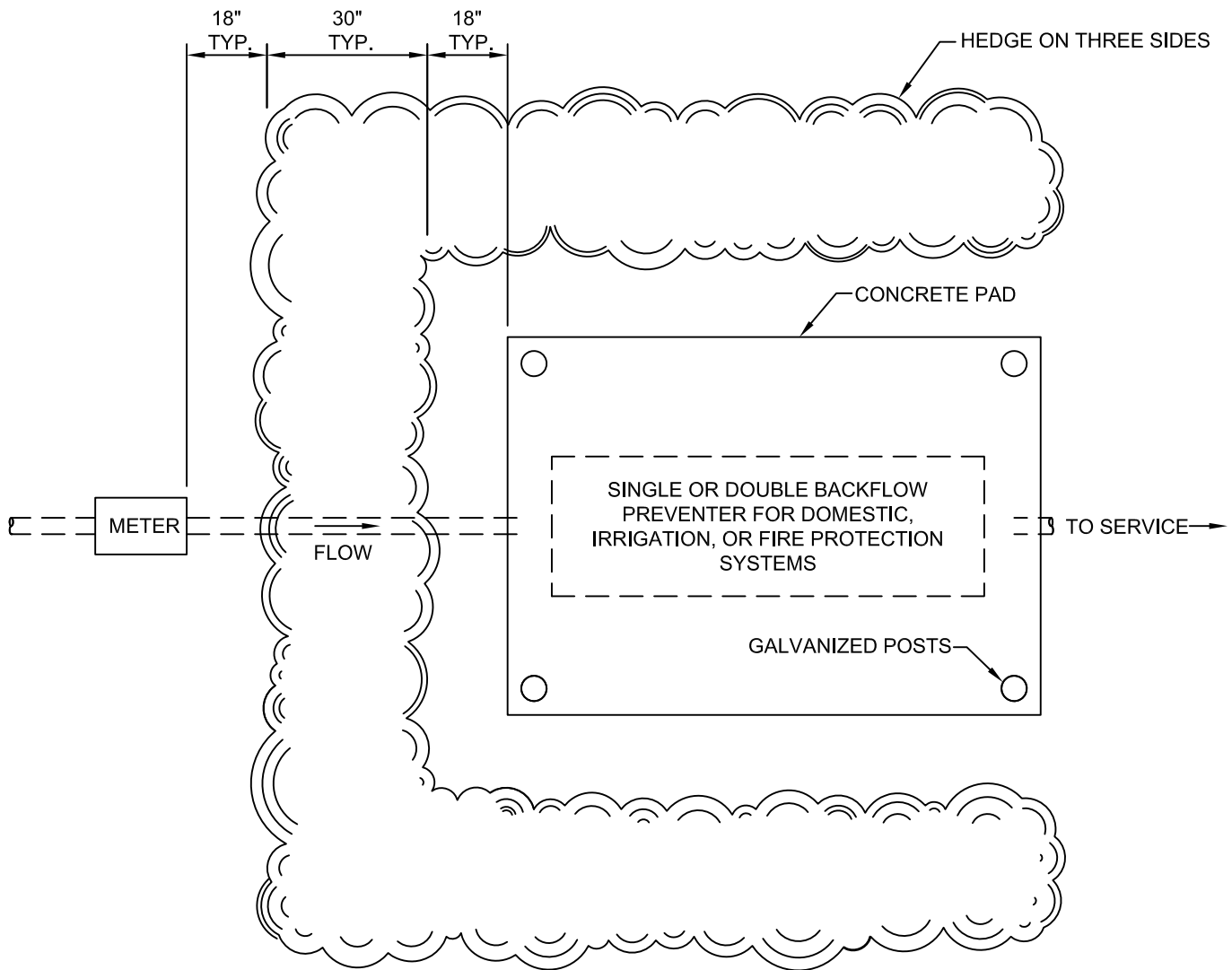
APPROVED	DATE	PREPARED BY GEG	DATE 10/11/00	REVISION	2
APPROVED	DATE	CHECKED BY	ISSUE DATE: 08/16/16	REVISION DATE: 07/21/16	NO.



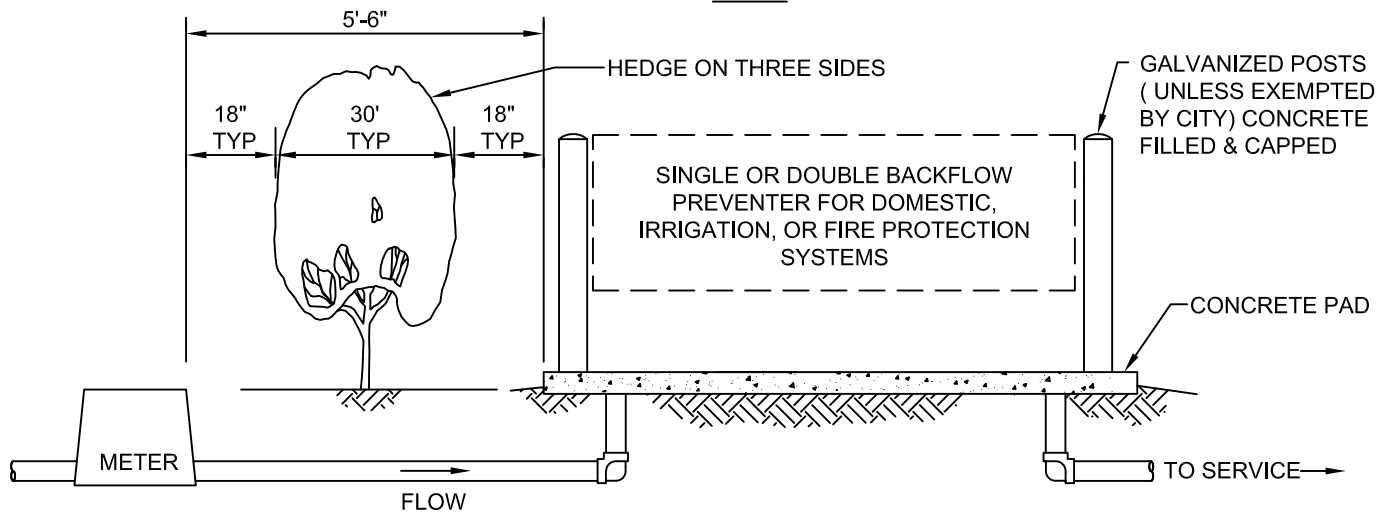
GENERAL NOTES:

1. REFERENCE WATER UTILITIES DEPARTMENT POLICIES, STANDARDS, AND SPECIFICATIONS DESIGN SPECIFICATION 2.7.17 AND 4.1.5

APPROVED	DATE	PREPARED BY GEG	DATE 11/14/01	REVISION	3
APPROVED	DATE	CHECKED BY	ISSUE DATE: 08/16/16	REVISION DATE: 07/21/16	NO.



PLAN



ELEVATION

APPROVED	DATE	PREPARED BY GEG	DATE 08/20/02	REVISION	1
APPROVED	DATE	CHECKED BY	ISSUE DATE: 08/16/16	REVISION DATE: 07/21/16	