

TABLE OF CONTENTS

STANDARD DRAWINGS

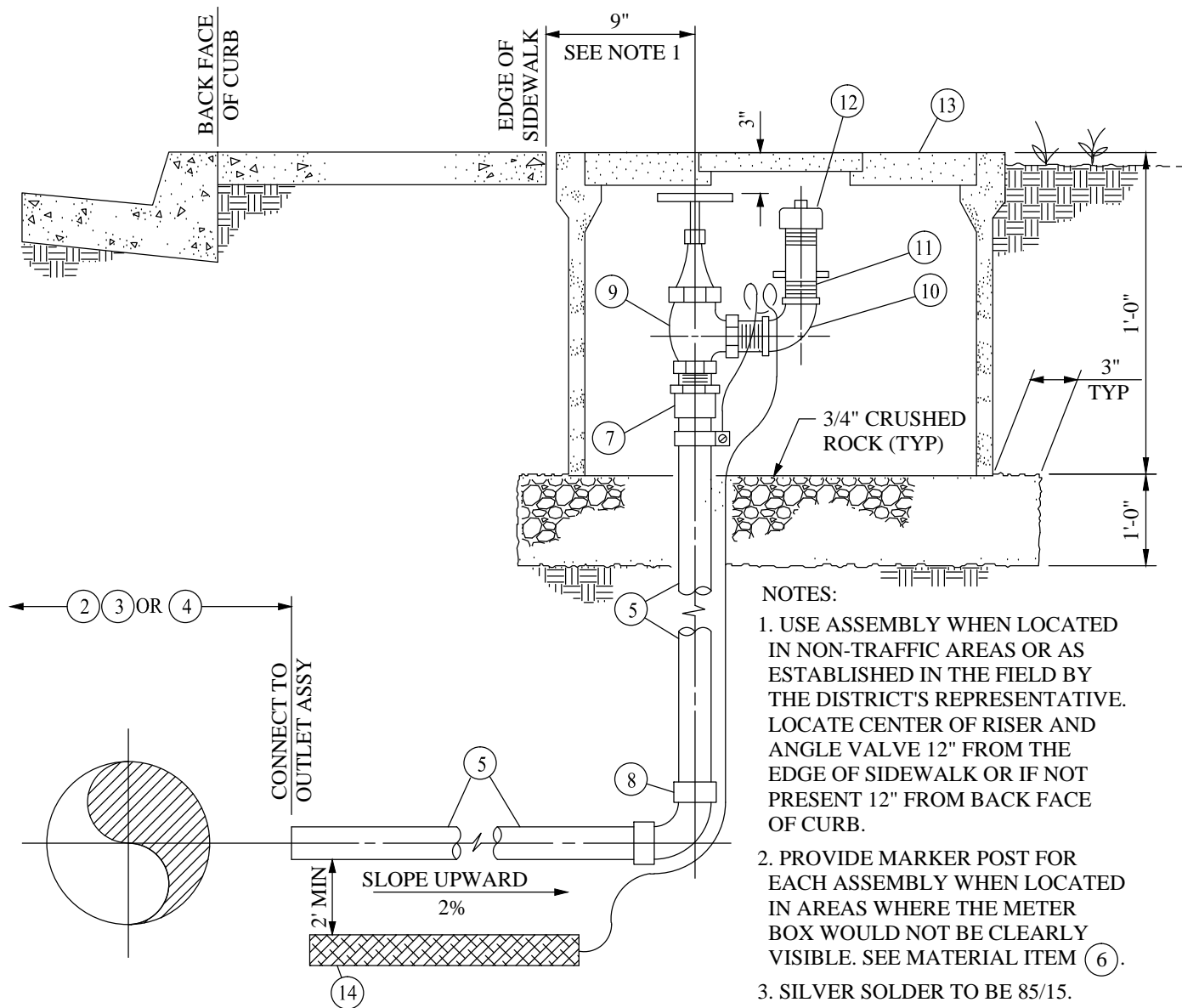
<u>DWG NO</u>	<u>DESCRIPTION</u>
A-1.1	2-Inch Blow-Off Assembly Working Pressure 0-300 PSI (Non-Traffic)
A-1.2	2-Inch Blow-Off Assembly Working Pressure 0-300 PSI (Traffic)
A-1.3	4-Inch Blow-Off Assembly Working Pressure 0-200 PSI (PVC)
A-1.4	4-Inch Blow-Off Assembly Working Pressure 0-200 PSI (DIP)
A-1.5	4-Inch Blow-Off Assembly Working Pressure 0-200 PSI (CML&C)
A-1.6	4-Inch Blow-Off Assembly Working Pressure 201-300 PSI (DIP)
A-1.7	4-Inch Blow-Off Assembly Working Pressure 201-300 PSI (CML&C)
A-2.1	2-Inch Manual Air Release Assembly Working Pressure 0-300 PSI (Non-Traffic)
A-2.2	2-Inch Manual Air Release Assembly Working Pressure 0-300 PSI (Traffic)
A-3.1	1-Inch Comb Air Valve Assembly Working Pressure 0-300 PSI
A-3.2	2-Inch Comb Air Valve Assembly Working Pressure 0-300 PSI
A-4.1	1-Inch Water Sample Point Assembly Working Pressure 0-300 PSI
A-4.2	Water Sample Station
B-1.1	Water Service Assembly for 5/8-inch through 1-inch Meter Working Pressure 0-300 PSI
B-1.2	Water Service Assembly for 1-1/2-inch or 2-inch Meter Working Pressure 0-300 PSI
B-1.3	Water Service Assembly for 4-inch to 10-inch Meter Working Pressure 0-200 PSI (PVC/DIP)
B-1.4	Water Service Assembly for 4-inch to 10-inch Meter Working Pressure 201-300 PSI (DIP/Steel)
B-1.5	Recycled Water Service Assembly for 1-inch and 2-inch Irrigation Meter and POC Sequence Installation.
C-1.1	Fire Hydrant Assembly Working Pressure 0-150 PSI
C-1.2	Fire Hydrant Assembly Working Pressure 151-200 PSI
C-1.3	Fire Hydrant Assembly Working Pressure 201-250 PSI
C-1.4	Fire Hydrant Assembly Working Pressure 251-300 PSI
C-2.1	Reduced Pressure Backflow Preventer Assembly for Sizes 3/4-Inch Thru 2-Inch
C-2.2	Reduced Pressure Backflow Preventer Assembly for Sizes 2-1/2-Inch & 3-Inch
C-2.3	Reduced Pressure Backflow Preventer Assembly for Sizes 4-Inch Thru 10-Inch
C-3.1	Reduced Pressure Detector Check Assembly for Sizes 4-Inch Thru 10-Inch
C-3.2	Double Check Detector Check Assembly for Sizes 4-Inch Thru 8-Inch
C-3.3	Double Check Detector Check Assembly for Sizes 4-Inch Thru 10-Inch
D-1.1	Outlets on Ductile Iron Pipe for 1-Inch Thru 2-Inch Assemblies
D-1.2	Outlets on CML&C Steel Pipe for 1-Inch Thru 2-Inch Assemblies
D-1.3	Outlets on PVC Pressure Pipe for 1-Inch Thru 2-Inch Assemblies
D-2.1	Selection of Line & Branch Valves for Water Mains
D-2.2	Gate Valve Installation with Concrete Anchor Block (6 to 10-inch, 0-150 PSI)
D-2.3	Gate Valve Installation with Concrete Anchor Block (12-inch, 0-150 PSI; 6 to 12-inch, 151-200 PSI)
D-2.4	Gate Valve Installation with Concrete Anchor Block (6 to 12-inch, 0-200 PSI)
D-2.5	Gate Valve Installation with Concrete Anchor Block (14 to 24-inch, 0-150 PSI)
D-2.6	Gate Valve Installation with Concrete Anchor Block (14 to 24-inch, 151-200 PSI)
D-2.7	Gate Valve Cross Installation with Concrete Support Blocks
D-2.8	Anchor Plate Detail
D-3.1	Thrust Block for Pipe Reducers Working Pressure 0-150 PSI

D-3.2 Thrust Block for Pipe Reducers Working Pressure 151-200 PSI
D-3.3 Thrust Block for Tees or Caps Working Pressure 0-150 PSI
D-3.4 Thrust Block for Tees or Caps Working Pressure 151-200 PSI
D-3.5 Thrust Block for Pipe Bends Working Pressure 0-150 PSI
D-3.6 Thrust Block for Pipe Bends Working Pressure 151-200 PSI

E-1.1 Valve Box Installation for Buried MAR & Blow Off Assemblies
E-1.2 Valve Box Installation for Buried Potable/Recycled Water Valves
E-1.3 Guard Post Installation for Above Ground Assemblies
E-1.4 Recycled Water Sign
E-2.1 Typical Trench Section for Water Mains
E-2.2 Trench Cut-Off Wall and Redwood Baffle Board

F-1 5-Foot Diameter Precast Manhole
F-2 5-Foot Diameter Shallow Precast Manhole
F-3 5-Foot Diameter Manhole Bases
F-4 Manhole Pipe Connectors
F-5 Manhole Access Locations, Stub Out and Joint Details
F-6 Manhole Frame and Covers
F-7 Manhole Coating and Lining System
F-8 5-Foot Diameter Drop Manhole for Sewer Mains
F-9 5-Foot Diameter Drop Manhole, Sections, Details and Notes
F-10 Locking Manhole Cover
F-11 Pipe Bedding and Trench Backfill for Sewer Facilities
F-12 Concrete Pipe Cradle
F-13 4-Inch and 6-Inch Sewer Lateral Installation
F-14 4-Inch and 6-Inch Deep-Cut Sewer Lateral Installation
F-15 Sewer Lateral Notes and Details
F-16 Sewer Cut In Wyes Connections
F-17 Standard Dead End (Cleanout)
F-18 Standard Cleanout Cover
F-19 Cleanout Sewer Force main
F-20 Concrete Encasement
F-21 Warning /Identification Tape Installation
F-22 Concrete Manhole Collar (Type A-Paved Areas)
F-23 Concrete Manhole Collar (Type B-Unpaved Traveled Ways)
F-24 Concrete Manhole Collar (Type C-Unpaved Areas)

G-1 2-Wire Cathodic Test Station (CTS)
G-2 At-Grade Test Box
G-3 Post-Mounted Test Box
G-4 Wiring in Post-Mounted Test Box
G-5 Pipe Joint Bonding
G-6 Mechanical Joint Bonding
G-7 Above-Grade Insulating Flange
G-8 Buried Insulating Flange
G-9 Single Anode Installation
G-10 Multiple Anode Installation
G-11 Magnesium Anode
G-12 4-Wire Test Station for Pipe Casing
G-13 Exothermic Weld
G-14 Buried Copper Tubing Cathodic Protection
G-15 1-inch to 2-inch Isolation Union



WATER MAINS - 12 INCHES AND SMALLER

ITEM	DESCRIPTION	SPEC/DWG
1	2-INCH BLOW-OFF ASSEMBLY FOR PIPELINES 12 INCHES AND SMALLER	15090
2	OUTLET ON DUCTILE IRON PIPE, 0-300 PSI	15240/D-1.1
3	OUTLET ON CML&C STEEL PIPE, 0-300 PSI	15061/D-1.2
4	OUTLET ON PVC PRESSURE PIPE, 0-200 PSI	15292/D-1.3
5	2" COPPER WATER TUBE, TYPE K, SOFT	15220
6	MARKER POST, REDWOOD	15090
7	2" COPPER ADAPTER, COPPER SOLDER JOINT x MALE IPT, 0-300 PSI	15220
8	2" COPPER 90° ELBOW, COPPER SOLDER JOINTS, 0-300 PSI	15220
9	2" BRONZE ANGLE VALVE WITH FEMALE IPT, 0-300 PSI	15080
10	2-1/2" x 2" CL 125 CAST BRONZE RDC ELBOW WITH CLOSE BRASS NIPPLE	15220
11	2-1/2" BRONZE EXT NIPPLE WITH MALE IPT x OUTSIDE HOSE THREADS	15090
12	2-1/2" PLASTIC HOSE CAP	15090
13	METER BOX AND COVER FOR NON-TRAFFIC AREA.	15090
14	30 LB ZINC ANODE(S) WITH ANODE LEAD WIRE AND PIPE CLAMP 1" BELOW FITTING	13110 / G-14

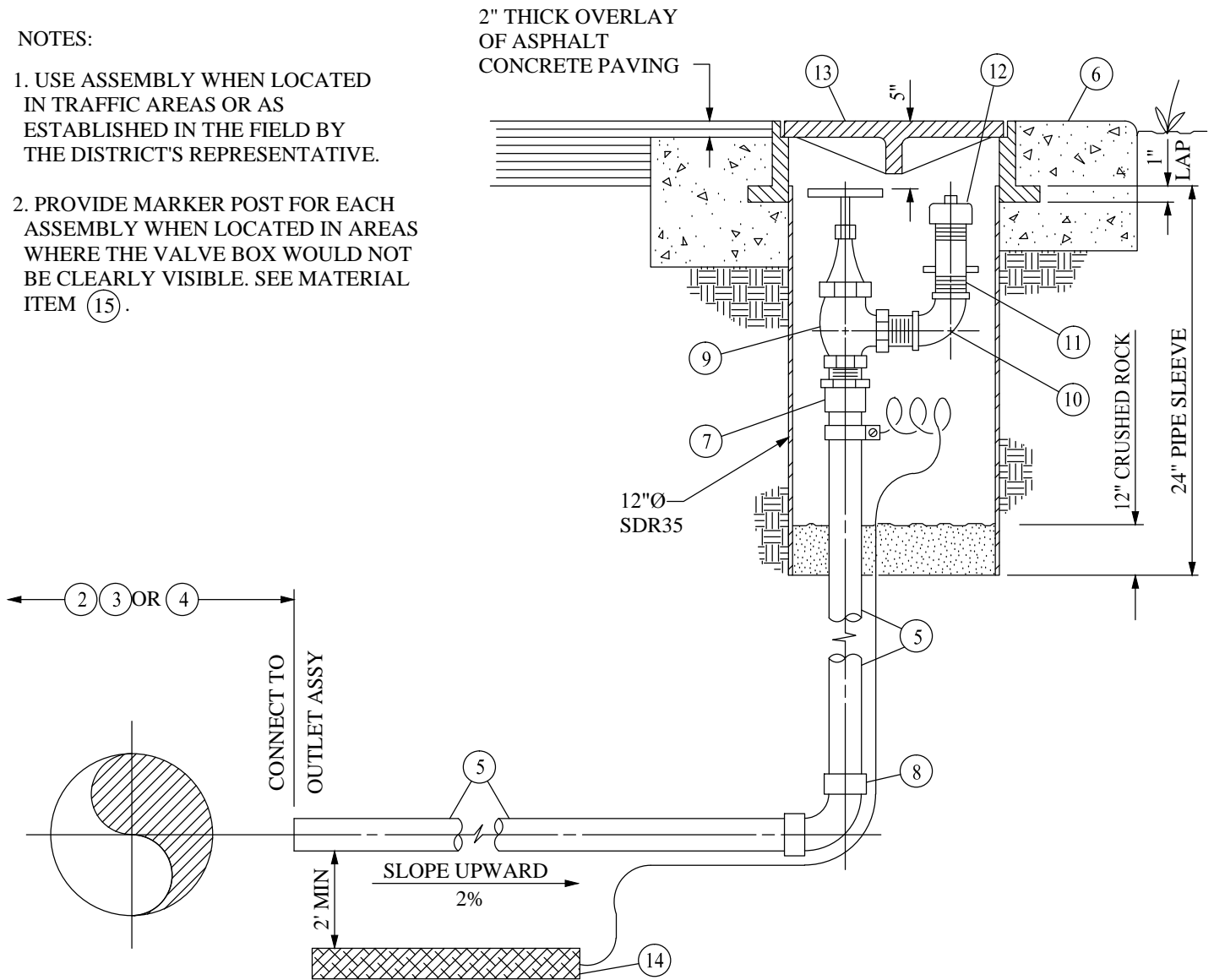
OLIVENHAIN MUNICIPAL WATER DISTRICT

2-INCH BLOW-OFF ASSEMBLY
WORKING PRESSURE 0-300 PSI (NON-TRAFFIC)

STD DWG NO.
A-1.1
FEBRUARY 2017

NOTES:

1. USE ASSEMBLY WHEN LOCATED IN TRAFFIC AREAS OR AS ESTABLISHED IN THE FIELD BY THE DISTRICT'S REPRESENTATIVE.
2. PROVIDE MARKER POST FOR EACH ASSEMBLY WHEN LOCATED IN AREAS WHERE THE VALVE BOX WOULD NOT BE CLEARLY VISIBLE. SEE MATERIAL ITEM (15).



WATER MAINS - 12 INCHES AND SMALLER

ITEM	DESCRIPTION	SPEC/DWG
1	2-INCH BLOW-OFF ASSEMBLY FOR PIPELINES 12 INCHES AND SMALLER	15090
2	OUTLET ON DUCTILE IRON PIPE, 0-300 PSI	15240/D-1.1
3	OUTLET ON CML&C STEEL PIPE, 0-300 PSI	15061/D-1.2
4	OUTLET ON PVC PRESSURE PIPE, 0-200 PSI	15292/D-1.3
5	2" COPPER WATER TUBE, TYPE K, SOFT	15220
6	30" DIAMETER x 8" THICK CONCRETE RING, CONCRETE TRANSIT MIX ONLY	15090
7	2" COPPER ADAPTER, COPPER SOLDER JOINT x MALE IPT, 0-300 PSI	15220
8	2" COPPER 90° ELBOW, COPPER SOLDER JOINTS, 0-300 PSI	15220
9	2" BRONZE ANGLE VALVE WITH FEMALE IPT, 0-300 PSI	15080
10	2-1/2" x 2" CL 125 CAST BRONZE RDC ELBOW WITH CLOSE BRASS NIPPLE	15220
11	2-1/2" BRONZE EXT NIPPLE WITH MALE IPT x OUTSIDE HOSE THREADS	15090
12	2-1/2" PLASTIC HOSE CAP	15090
13	VALVE BOX INSTALLATION FOR BURIED ASSEMBLIES	15090/E-1.1
14	30 LB ZINC ANODE(S) WITH ANODE LEAD WIRE AND PIPE CLAMP 1" BELOW FITTING	13110 / G-14
15	MARKER POST, REDWOOD	15090

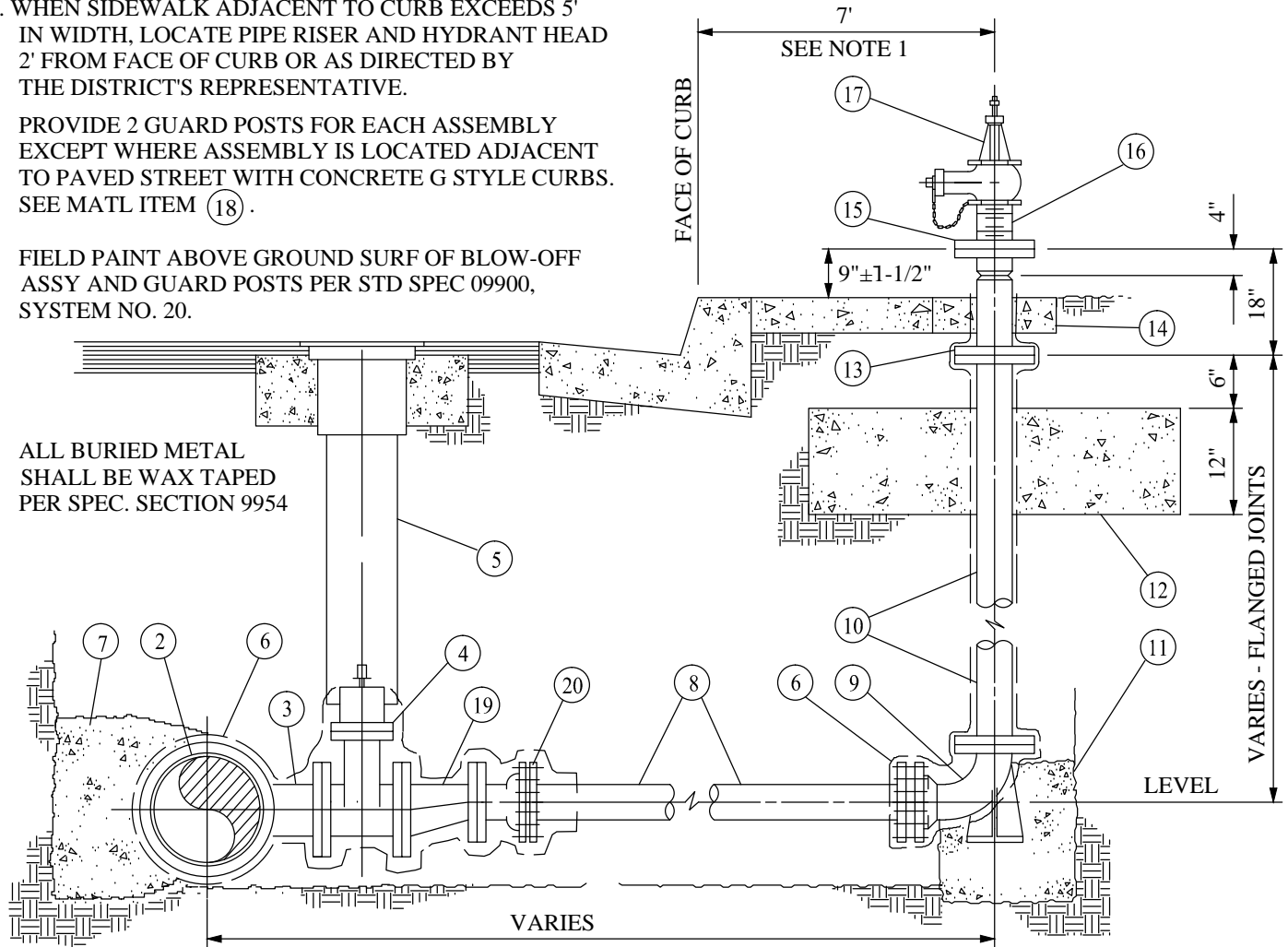
OLIVENHAIN MUNICIPAL WATER DISTRICT

2-INCH BLOW-OFF ASSEMBLY
WORKING PRESSURE 0-300 PSI (TRAFFIC)

STD DWG NO.
A-1.2
FEBRUARY 2017

NOTES:

1. WHEN SIDEWALK ADJACENT TO CURB EXCEEDS 5' IN WIDTH, LOCATE PIPE RISER AND HYDRANT HEAD 2' FROM FACE OF CURB OR AS DIRECTED BY THE DISTRICT'S REPRESENTATIVE.
2. PROVIDE 2 GUARD POSTS FOR EACH ASSEMBLY EXCEPT WHERE ASSEMBLY IS LOCATED ADJACENT TO PAVED STREET WITH CONCRETE G STYLE CURBS. SEE MATL ITEM (18).
3. FIELD PAINT ABOVE GROUND SURF OF BLOW-OFF ASSY AND GUARD POSTS PER STD SPEC 09900, SYSTEM NO. 20.
4. ALL BURIED METAL SHALL BE WAX TAPED PER SPEC. SECTION 9954



WATER MAINS - 14 INCHES AND LARGER

ITEM	DESCRIPTION	SPEC/DWG
1	4-INCH BLOW-OFF ASSEMBLY FOR PIPELINES 14 INCHES AND LARGER	15090
2	DR14/18 PVC DISTRIBUTION PIPE 14 INCHES AND LARGER	15293
3	DUCTILE IRON TEE WITH 6" CL 150 FLANGED OUTLET	15293
4	6" RESILIENT SEATED GATE VALVE WITH CL 125 FLG x FLG, 0-250 PSI	15101
5	VALVE BOX INSTALLATION FOR BURIED VALVES	15101/E-1.2/E-1.3
6	WAX TAPE SYSTEM	09954
7	CONCRETE THRUST BLOCK	02223/D-3.3/D-3.4
8	4" DR14/18 PVC PRESSURE PIPE	15292
9	4" DUCTILE IRON BASE BEND WITH CL 150 FLANGE x MECHANICAL JOINT / PUSH ON	15292
10	4" CLASS 53 DUCTILE IRON PIPE WITH CL 150 FLANGES	15240
11	CONCRETE THRUST BLOCK	02223/D-3.5
12	42" SQUARE x 12" THICK CONCRETE ANCHOR BLOCK	15090
13	4" BREAK-OFF RISER WITH CL 150 FLANGES AND CUT GROOVE	15090
14	36" SQUARE x 4" THICK CONCRETE PAD	15090
15	4" CAST BRONZE CL 150 FLANGE WITH FEMALE IPT	15220
16	4" BRASS NIPPLE, REGULAR WALL, IPT, 5" LONG	15220
17	4" FEMALE IPT x 2-1/2" MALE NH BRONZE HYDRANT HEAD ANGLE VALVE	15080
18	GUARD POST INSTALLATION FOR ABOVE GROUND ASSEMBLIES	15090/E-1.3
19	6"x4" DUCTILE IRON ECCENTRIC REDUCER WITH CL 150 FLG x FLG	15293
20	4" DUCTILE IRON FLANGE ADAPTER WITH CL 150 FLG x MECHANICAL JT OR PUSH ON	15293

OLIVENHAIN MUNICIPAL WATER DISTRICT

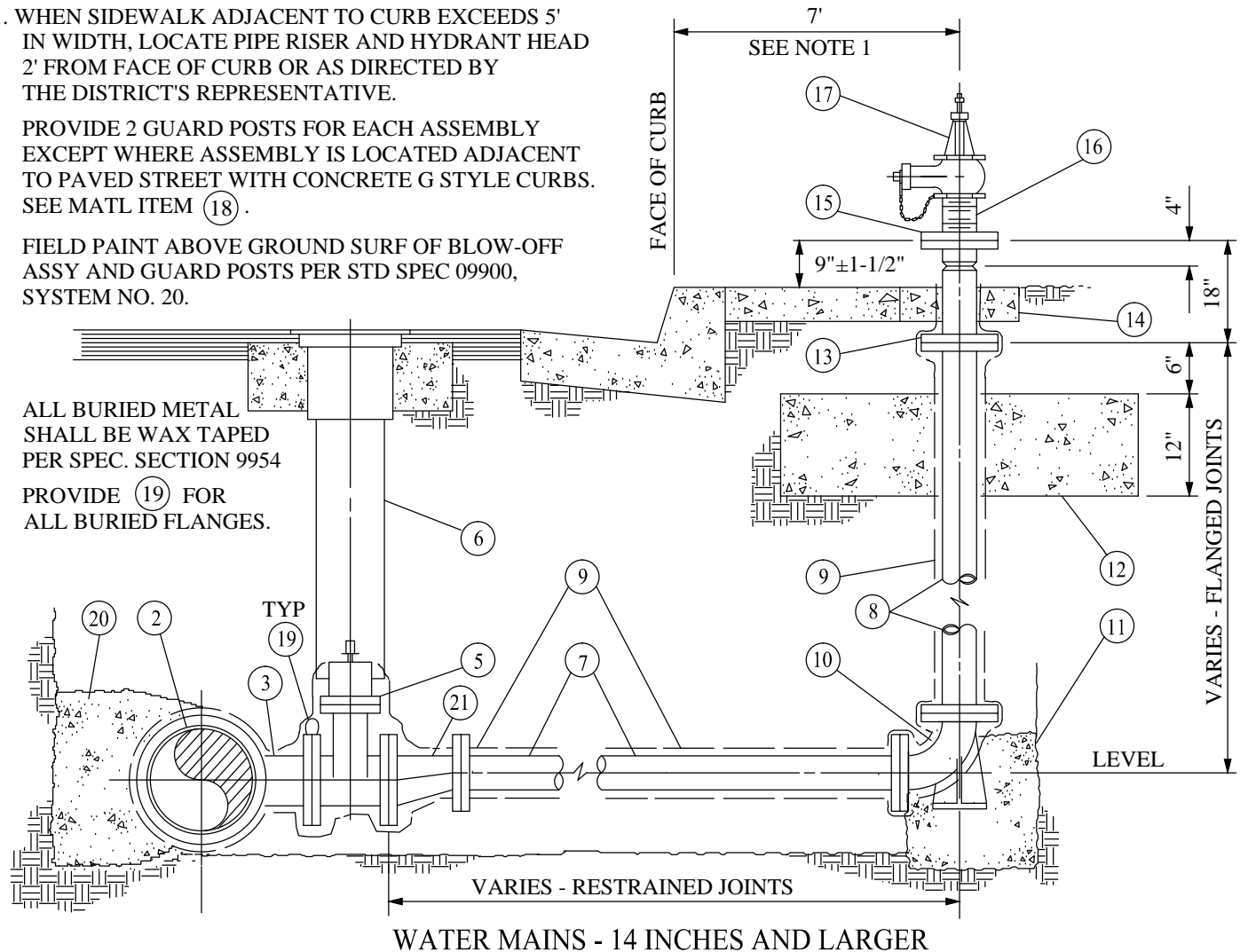
4-INCH BLOW-OFF ASSEMBLY (PVC)
WORKING PRESSURE 0-200 PSI

STD DWG NO.
A-1.3
FEBRUARY 2017

NOTES:

1. WHEN SIDEWALK ADJACENT TO CURB EXCEEDS 5' IN WIDTH, LOCATE PIPE RISER AND HYDRANT HEAD 2' FROM FACE OF CURB OR AS DIRECTED BY THE DISTRICT'S REPRESENTATIVE.
2. PROVIDE 2 GUARD POSTS FOR EACH ASSEMBLY EXCEPT WHERE ASSEMBLY IS LOCATED ADJACENT TO PAVED STREET WITH CONCRETE G STYLE CURBS. SEE MATL ITEM (18).
3. FIELD PAINT ABOVE GROUND SURF OF BLOW-OFF ASSY AND GUARD POSTS PER STD SPEC 09900, SYSTEM NO. 20.

4. ALL BURIED METAL SHALL BE WAX TAPED PER SPEC. SECTION 9954
5. PROVIDE (19) FOR ALL BURIED FLANGES.



WATER MAINS - 14 INCHES AND LARGER

ITEM	DESCRIPTION	SPEC/DWG
1	4-INCH BLOW-OFF ASSEMBLY FOR PIPELINES 14 INCHES AND LARGER	15090
2	DUCTILE IRON PIPE	15240
3	DUCTILE IRON TEE WITH 6" CL 150 FLANGED OUTLET	15240
4	-	-
5	6" RESILIENT SEATED GATE VALVE WITH CL 125 FLANGES, 0-250 PSI	15101
6	VALVE BOX INSTALLATION FOR BURIED VALVES	15101/E-1.2/E-1.3
7	4" DUCTILE IRON PIPE CL 150 FLANGES	15240
8	4" CLASS 53 DUCTILE IRON PIPE WITH CL 150 FLANGES	15240
9	WAX TAPE SYSTEM	09954
10	4" DUCTILE IRON BASE BEND WITH CL 150 FLANGES	15240
11	CONCRETE ANCHOR BLOCK	02223/D-3.5/D-3.6
12	42" SQUARE x 12" THICK CONCRETE ANCHOR BLOCK	15090
13	4" BREAK-OFF RISER WITH CL 150 FLANGES AND CUT GROOVE	15090
14	36" SQUARE x 4" THICK CONCRETE PAD	15090
15	4" CAST BRONZE CL 150 FLANGE WITH FEMALE IPT	15220
16	4" BRASS NIPPLE, REGULAR WALL, IPT, 5" LONG	15220
17	4" FEMALE IPT x 2-1/2" MALE NH BRONZE HYDRANT HEAD ANGLE VALVE	15080
18	GUARD POST INSTALLATION FOR ABOVE GROUND ASSEMBLIES	15090/E-1.3
19	BOND WIRES 2 #8 HMWPE. ALL BURIED FLANGES	13110
20	CONCRETE THRUST BLOCK	02223/D-3.3
21	6"x4" DUCTILE IRON ECCENTRIC REDUCER WITH CL 150 FLG x FLG	15240

OLIVENHAIN MUNICIPAL WATER DISTRICT

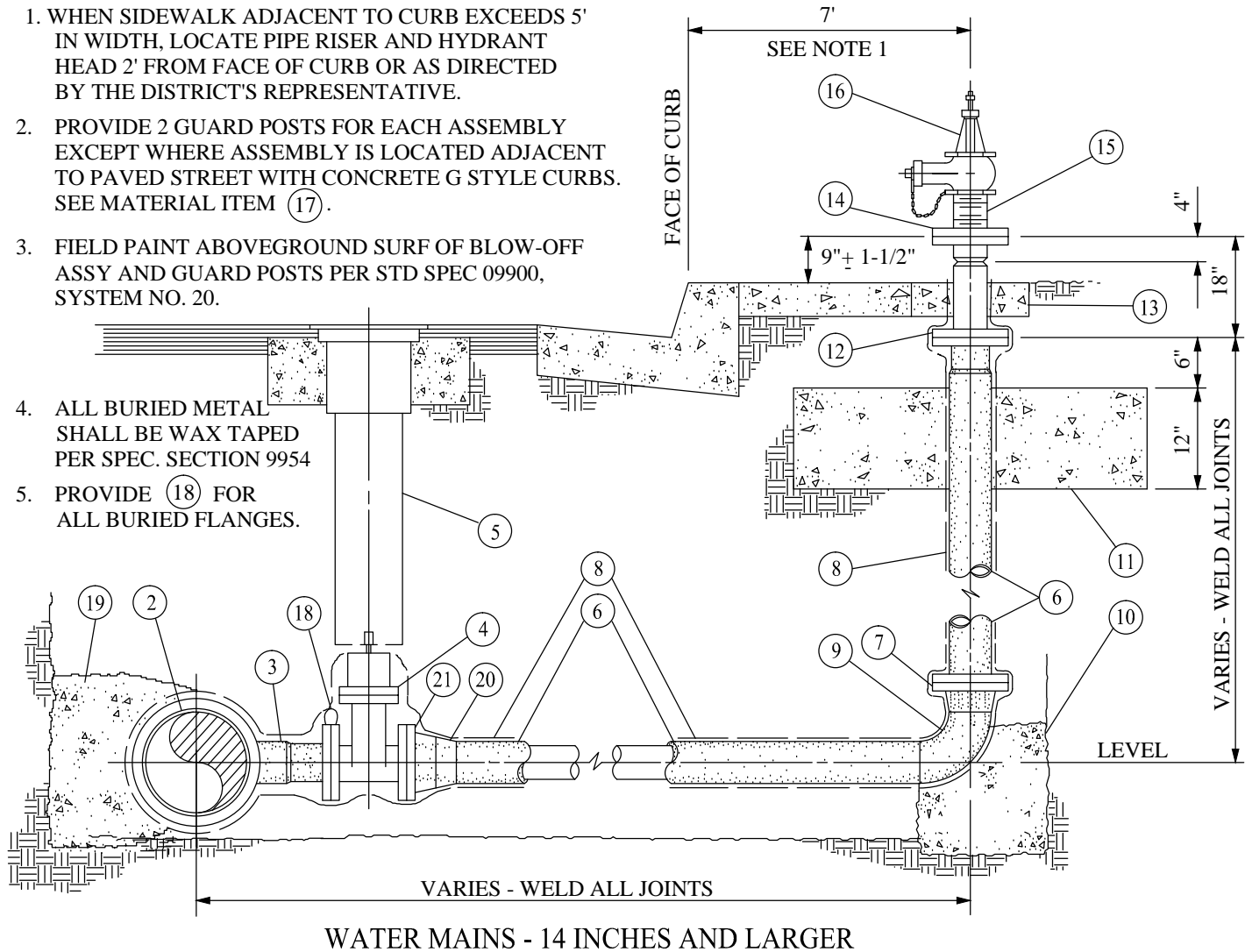
4-INCH BLOW-OFF ASSEMBLY (DIP)
WORKING PRESSURE 0-200 PSI

STD DWG NO.
A-1.4
FEBRUARY 2017

NOTES:

1. WHEN SIDEWALK ADJACENT TO CURB EXCEEDS 5' IN WIDTH, LOCATE PIPE RISER AND HYDRANT HEAD 2' FROM FACE OF CURB OR AS DIRECTED BY THE DISTRICT'S REPRESENTATIVE.
2. PROVIDE 2 GUARD POSTS FOR EACH ASSEMBLY EXCEPT WHERE ASSEMBLY IS LOCATED ADJACENT TO PAVED STREET WITH CONCRETE G STYLE CURBS. SEE MATERIAL ITEM (17).
3. FIELD PAINT ABOVEGROUND SURF OF BLOW-OFF ASSY AND GUARD POSTS PER STD SPEC 09900, SYSTEM NO. 20.

4. ALL BURIED METAL SHALL BE WAX TAPED PER SPEC. SECTION 9954
5. PROVIDE (18) FOR ALL BURIED FLANGES.



WATER MAINS - 14 INCHES AND LARGER

ITEM	DESCRIPTION	SPEC/DWG
1	4-INCH BLOW-OFF ASSEMBLY FOR PIPELINES 14 INCHES AND LARGER	15090
2	STEEL PIPE, CEMENT MORTAR LINED AND COATED	15061
3	6" STEEL OUTLET WITH CL 150 FLANGE, CML&C	15061
4	6" RESILIENT SEATED GATE VALVE WITH CL 125 FLANGES, 0-250 PSI	15101
5	VALVE BOX INSTALLATION FOR BURIED VALVES	15101/E-1.2/E-1.3
6	4" STD WT STEEL PIPE WITH CL 150 FLANGES, CML&C	15253
7	4" CL 150 WELDING NECK FLANGE, CML&C	15253
8	WAX TAPE SYSTEM	09954
9	4" STD WT STEEL 90° ELBOW, LONG RADIUS, CML&C	15253
10	CONCRETE ANCHOR BLOCK	02223/D-3.5/D-3.6
11	42" SQUARE x 12" THICK CONCRETE ANCHOR BLOCK	15090
12	4" BREAK-OFF RISER WITH CL 150 FLANGES AND CUT GROOVE	15090
13	36" SQUARE x 4" THICK CONCRETE PAD	15090
14	4" CAST BRONZE CL 150 FLANGE WITH FEMALE IPT	15220
15	4" BRASS NIPPLE, REGULAR WALL, IPT, 5" LONG	15220
16	4" FEMALE IPT x 2-1/2" MALE NH BRONZE HYDRANT HEAD ANGLE VALVE	15080
17	GUARD POST INSTALLATION FOR ABOVE GROUND ASSEMBLIES	15090/E-1.3
18	BOND WIRES 2 #8 HMWPE ALL BURIED FLANGES.	13110
19	CONCRETE THRUST BLOCK	02223/D-3.3/D-3.4
20	6"x4" STD WT STEEL CONCENTRIC REDUCER, CML&C	15253
21	6" CL 150 WELDING NECK FLANGE, CML&C	15253

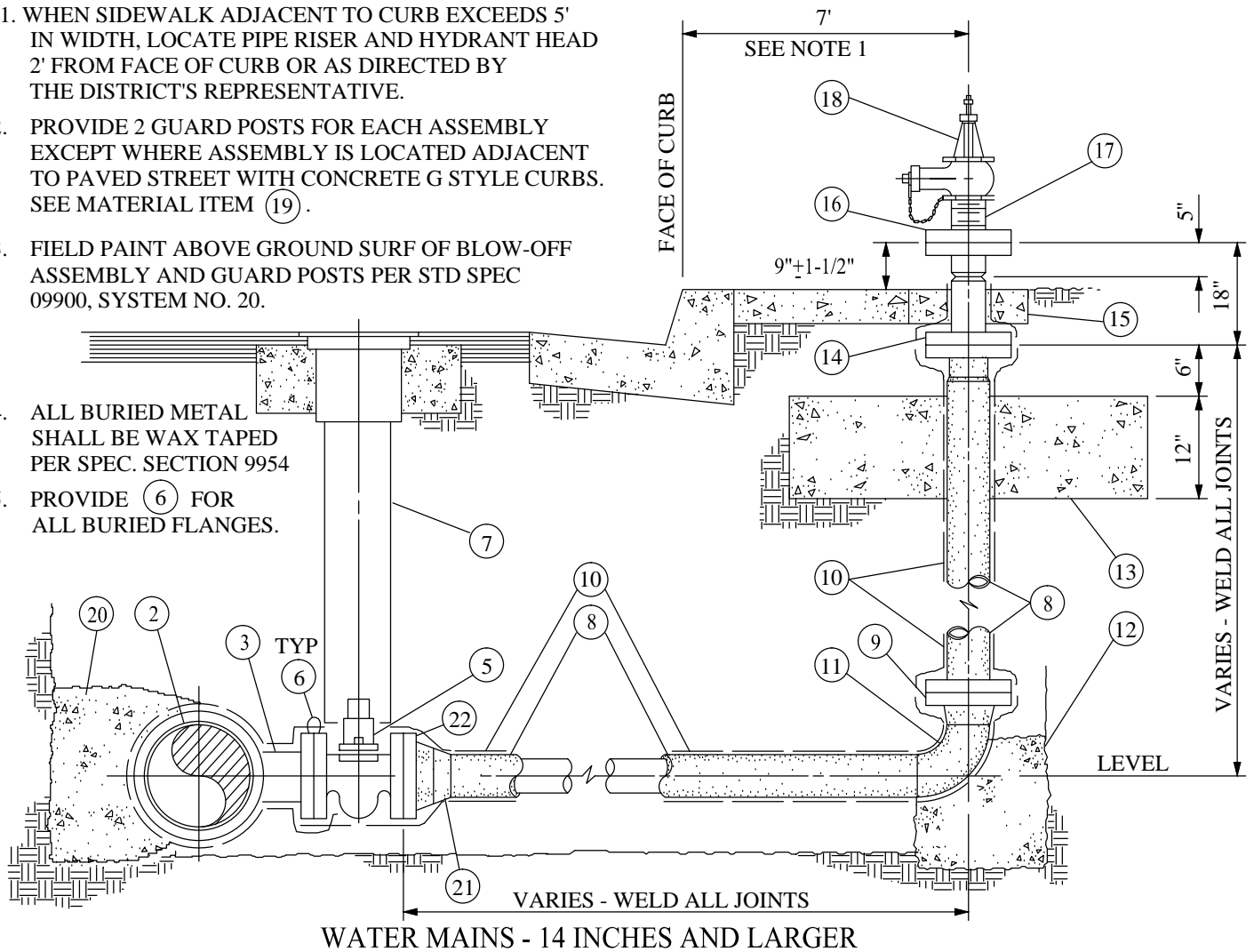
OLIVENHAIN MUNICIPAL WATER DISTRICT

4-INCH BLOW-OFF ASSEMBLY (CML&C)
WORKING PRESSURE 0-200 PSI

STD DWG NO.
A-1.5
FEBRUARY 2017

NOTES:

1. WHEN SIDEWALK ADJACENT TO CURB EXCEEDS 5' IN WIDTH, LOCATE PIPE RISER AND HYDRANT HEAD 2' FROM FACE OF CURB OR AS DIRECTED BY THE DISTRICT'S REPRESENTATIVE.
2. PROVIDE 2 GUARD POSTS FOR EACH ASSEMBLY EXCEPT WHERE ASSEMBLY IS LOCATED ADJACENT TO PAVED STREET WITH CONCRETE G STYLE CURBS. SEE MATERIAL ITEM (19).
3. FIELD PAINT ABOVE GROUND SURF OF BLOW-OFF ASSEMBLY AND GUARD POSTS PER STD SPEC 09900, SYSTEM NO. 20.
4. ALL BURIED METAL SHALL BE WAX TAPED PER SPEC. SECTION 9954
5. PROVIDE (6) FOR ALL BURIED FLANGES.



ITEM	DESCRIPTION	SPEC/DWG
1	4-INCH BLOW-OFF ASSEMBLY FOR PIPELINES 14 INCHES AND LARGER	15090
2	DUCTILE IRON PIPE	15240
3	DUCTILE IRON TEE WITH 6" CL 300 FLANGED OUTLET	15240
4	-	15240
5	6" BALL VALVE WITH CL 250 OR 300 FLANGES	-
6	BOND WIRES 2 #8 HMWPE. ALL BURIED FLANGES	13110
7	VALVE BOX INSTALLATION FOR BURIED VALVES	E-1.2/E-1.3
8	4" STD WT STEEL PIPE WITH CL 300 FLANGES, CML&C	15253
9	4" CL 300 WELDING NECK FLANGE, CML&C	15253
10	WAX TAPE SYSTEM	09954
11	4" STD WT STEEL 90° ELBOW, LONG RADIUS, CML&C	15253
12	CONCRETE ANCHOR BLOCK	02223
13	42" SQUARE x 12" THICK CONCRETE ANCHOR BLOCK	15090
14	4" BREAK-OFF RISER WITH CL 300 FLANGES AND CUT GROOVE	15090
15	36" SQUARE x 4" THICK CONCRETE PAD	15090
16	4" CAST BRONZE CL 300 FLANGE WITH FEMALE IPT	15220
17	4" BRASS NIPPLE, REGULAR WALL, IPT, 5" LONG	15220
18	4" FEMALE IPT x 2-1/2" MALE NH BRONZE HYDRANT HEAD ANGLE VALVE	15080
19	GUARD POST INSTALLATION FOR ABOVE GROUND ASSEMBLIES	15090/E-1.3
20	CONCRETE THRUST BLOCK	02223
21	6"x4" STD WT STEEL CONCENTRIC REDUCER, CML&C	15253
22	6" CL 300 WELDING NECK FLANGE, CML&C	15253

OLIVENHAIN MUNICIPAL WATER DISTRICT

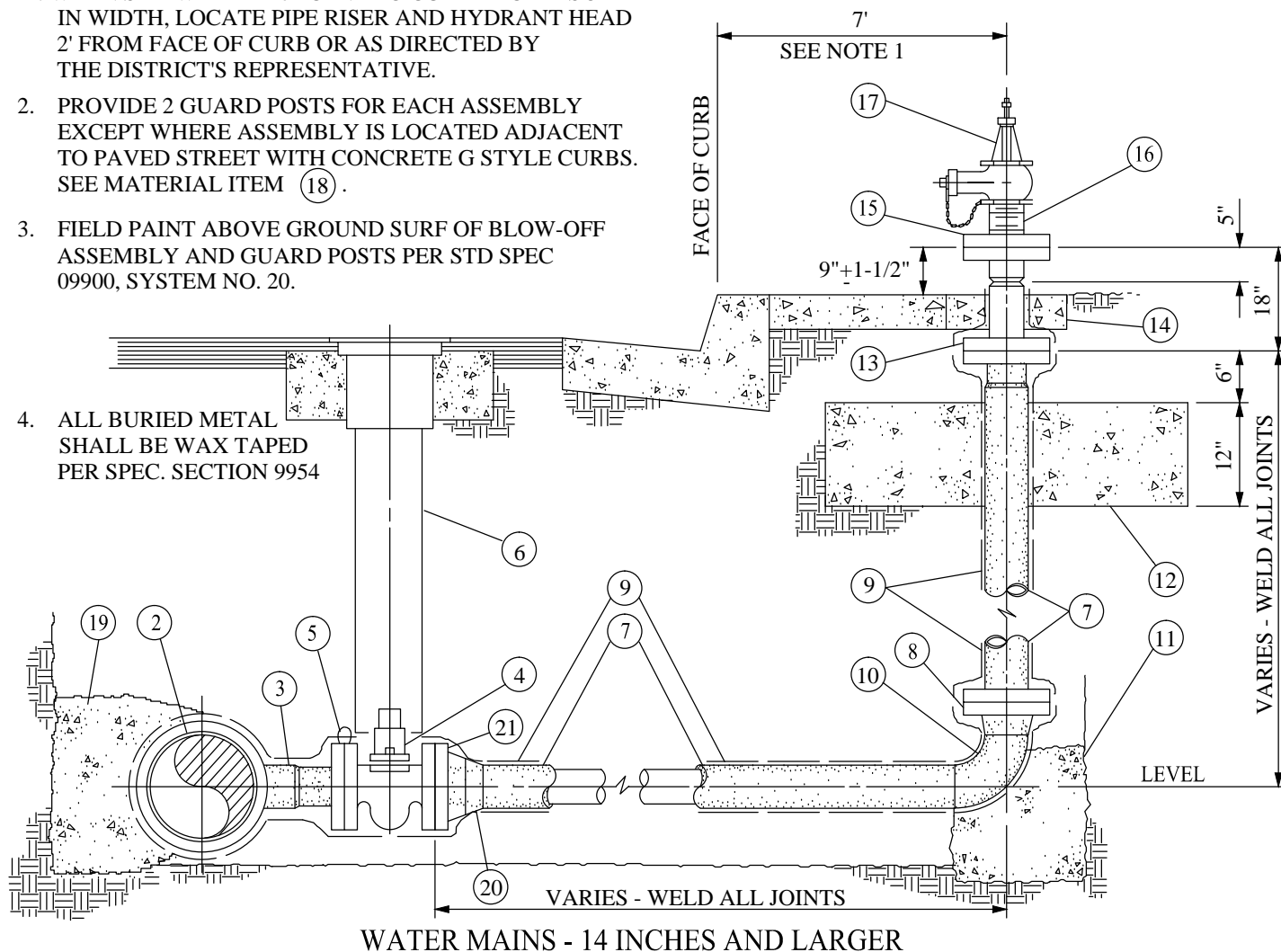
4-INCH BLOW-OFF ASSEMBLY (DIP)
WORKING PRESSURE 201-300 PSI

STD DWG NO.
A-1.6
FEBRUARY 2017

NOTES:

1. WHEN SIDEWALK ADJACENT TO CURB EXCEEDS 5' IN WIDTH, LOCATE PIPE RISER AND HYDRANT HEAD 2' FROM FACE OF CURB OR AS DIRECTED BY THE DISTRICT'S REPRESENTATIVE.
2. PROVIDE 2 GUARD POSTS FOR EACH ASSEMBLY EXCEPT WHERE ASSEMBLY IS LOCATED ADJACENT TO PAVED STREET WITH CONCRETE G STYLE CURBS. SEE MATERIAL ITEM (18) .
3. FIELD PAINT ABOVE GROUND SURF OF BLOW-OFF ASSEMBLY AND GUARD POSTS PER STD SPEC 09900, SYSTEM NO. 20.

4. ALL BURIED METAL SHALL BE WAX TAPED PER SPEC. SECTION 9954

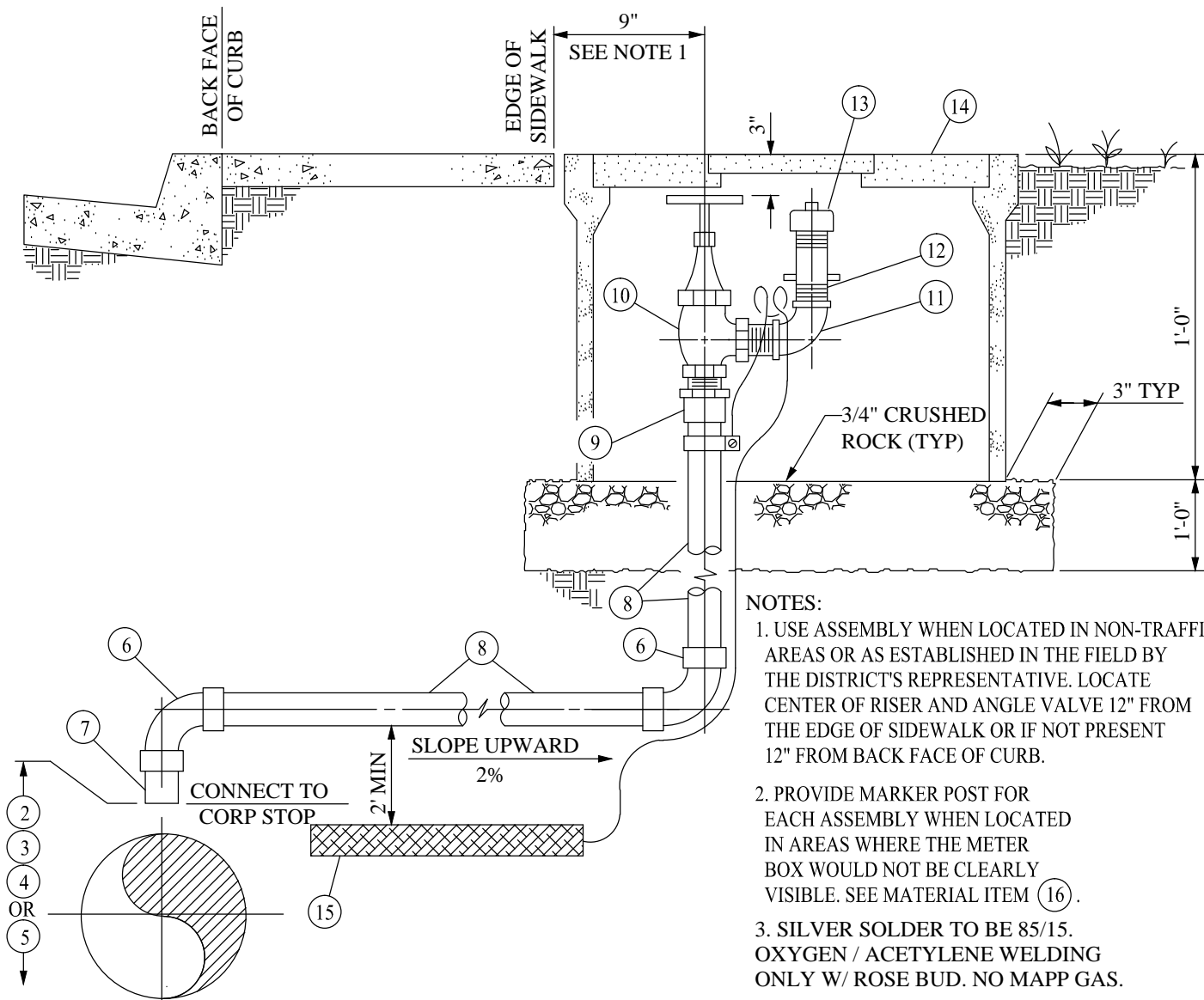


ITEM	DESCRIPTION	SPEC/DWG
1	4-INCH BLOW-OFF ASSEMBLY FOR PIPELINES 14 INCHES AND LARGER	15090
2	STEEL PIPE, CEMENT MORTAR LINED AND COATED	15061
3	6" STEEL OUTLET WITH CL 300 FLANGE, CML&C	15061
4	6" BALL VALVE WITH CL 250 OR 300 FLANGES	-
5	BOND WIRES 2 #8 HMWPE ALL BURIED FLANGES	13110
6	VALVE BOX INSTALLATION FOR BURIED VALVES	E-1.2/E-1.3
7	4" STD WT STEEL PIPE WITH CL 300 FLANGES, CML&C	15253
8	4" CL 300 WELDING NECK FLANGE, CML&C	15253
9	WAX TAPE SYSTEM	09954
10	4" STD WT STEEL 90° ELBOW, LONG RADIUS, CML&C	15253
11	CONCRETE ANCHOR BLOCK	02223
12	42" SQUARE x 12" THICK CONCRETE ANCHOR BLOCK	15090
13	4" BREAK-OFF RISER WITH CL 300 FLANGES AND CUT GROOVE	15090
14	36" SQUARE x 4" THICK CONCRETE PAD	15090
15	4" CAST BRONZE CL 300 FLANGE WITH FEMALE IPT	15220
16	4" BRASS NIPPLE, REGULAR WALL, IPT, 5" LONG	15220
17	4" FEMALE IPT x 2-1/2" MALE NH BRONZE HYDRANT HEAD ANGLE VALVE	15080
18	GUARD POST INSTALLATION FOR ABOVE GROUND ASSEMBLIES	15090/E-1.3
19	CONCRETE THRUST BLOCK	02223
20	6"x4" STD WT STEEL CONCENTRIC REDUCER, CML&C	15253
21	6" CL 300 WELDING NECK FLANGE, CML&C	15253

OLIVENHAIN MUNICIPAL WATER DISTRICT

4-INCH BLOW-OFF ASSEMBLY (CML&C)
WORKING PRESSURE 201-300 PSI

STD DWG NO.
A-1.7
FEBRUARY 2017



WATER MAINS - 4 INCHES AND LARGER

ITEM	DESCRIPTION	SPEC/DWG
1	2-INCH MAR ASSEMBLY FOR PIPELINES 4 INCHES AND LARGER	15091
2	OUTLET ON DUCTILE IRON PIPE, 0-300 PSI	15240/D-1.1
3	OUTLET ON CML&C STEEL PIPE, 0-300 PSI	15061/D-1.2
4	OUTLET ON PVC PRESSURE PIPE, 0-200 PSI	15292/D-1.3
5	OUTLET ON PVC DISTRIBUTION PIPE, 0-150 PSI	15293/D-1.3
6	2" COPPER 90° ELBOW, COPPER SOLDER JOINTS, 0-300 PSI	15220
7	2" COPPER WATER TUBE, TYPE K, SOFT, 6" LONG	-
8	2" COPPER WATER TUBE, TYPE K, SOFT	15220
9	2" COPPER ADAPTER, COPPER SOLDER JOINT x MALE IPT, 0-300 PSI	15220
10	2" BRONZE ANGLE VALVE WITH FEMALE IPT, 0-300 PSI	15080
11	2-1/2" x 2" CL 125 CAST BRONZE RDC ELBOW WITH CLOSE BRASS NIPPLE	15220
12	2-1/2" BRONZE EXT NIPPLE WITH MALE IPT x OUTSIDE HOSE THREADS	15091
13	2-1/2" PLASTIC HOSE CAP	15091
14	METER BOX AND COVER FOR NON-TRAFFIC AREA	15091
15	30 LB ZINC ANODE(S) WITH ANODE LEAD WIRE AND PIPE CLAMP 1" BELOW FITTING	13110 / G-14
16	MARKER POST, REDWOOD	15091

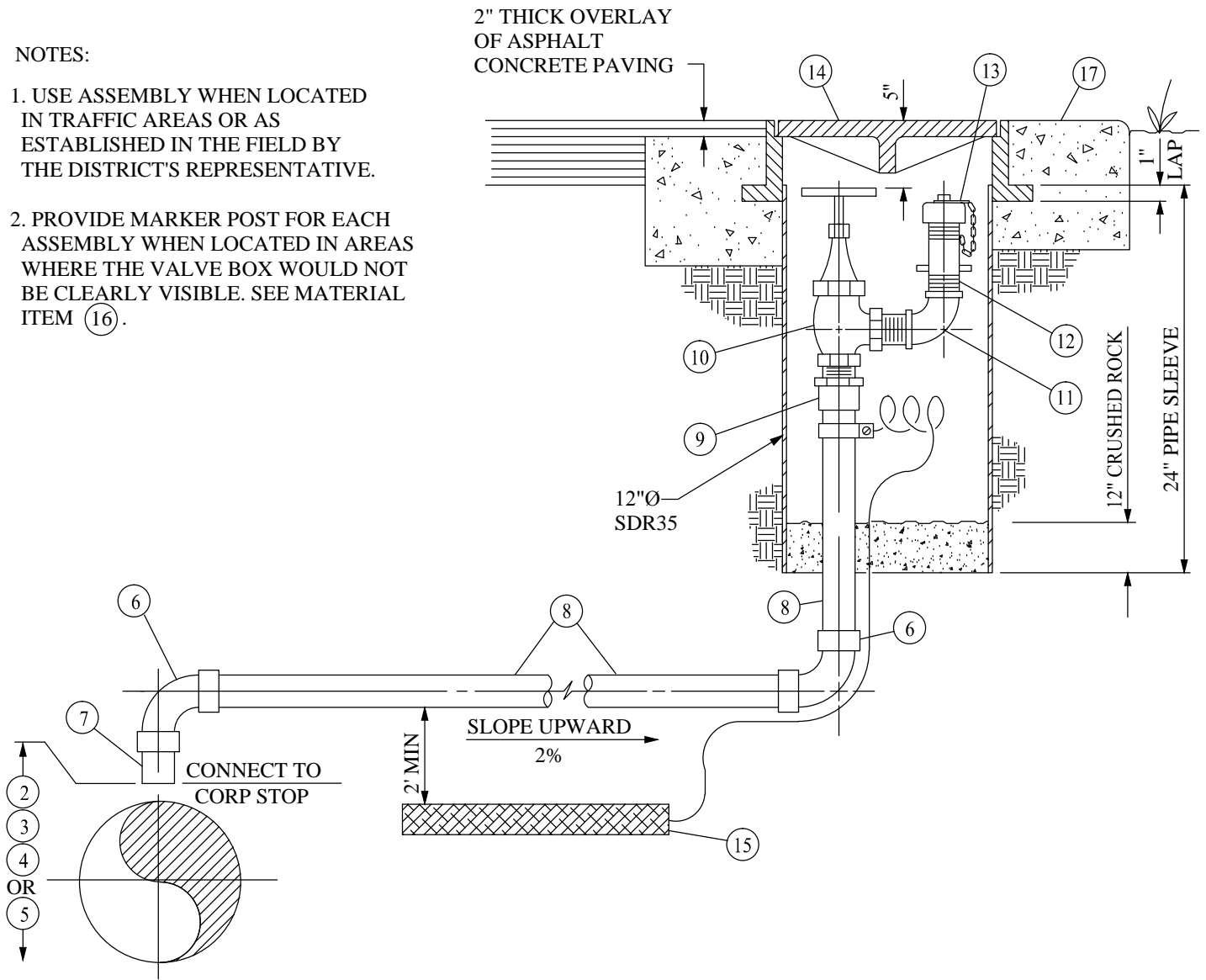
OLIVENHAIN MUNICIPAL WATER DISTRICT

2-INCH MANUAL AIR RELEASE ASSY
WORKING PRESSURE 0-300 PSI (NON-TRAFFIC)

STD DWG NO.
A-2.1
FEBRUARY 2017

NOTES:

1. USE ASSEMBLY WHEN LOCATED IN TRAFFIC AREAS OR AS ESTABLISHED IN THE FIELD BY THE DISTRICT'S REPRESENTATIVE.
2. PROVIDE MARKER POST FOR EACH ASSEMBLY WHEN LOCATED IN AREAS WHERE THE VALVE BOX WOULD NOT BE CLEARLY VISIBLE. SEE MATERIAL ITEM (16).



WATER MAINS - 4 INCHES AND LARGER

ITEM	DESCRIPTION	SPEC/DWG
1	2-INCH MAR ASSEMBLY FOR PIPELINES 4 INCHES AND LARGER	15091
2	OUTLET ON DUCTILE IRON PIPE, 0-300 PSI	15240/D-1.1
3	OUTLET ON CML&C STEEL PIPE, 0-300 PSI	15061/D-1.2
4	OUTLET ON PVC PRESSURE PIPE, 0-200 PSI	15292/D-1.3
5	OUTLET ON PVC DISTRIBUTION PIPE, 0-150 PSI	15293/D-1.3
6	2" COPPER 90° ELBOW, COPPER SOLDER JOINTS, 0-300 PSI	15220
7	2" COPPER WATER TUBE, TYPE K, SOFT	15220
8	2" COPPER WATER TUBE, TYPE K, SOFT	15220
9	2" COPPER ADAPTER, COPPER SOLDER JOINT x MALE IPT, 0-300 PSI	15220
10	2" BRONZE ANGLE VALVE WITH FEMALE IPT, 0-300 PSI	15080
11	2-1/2" x 2" CL 125 CAST BRONZE RDC ELBOW WITH CLOSE BRASS NIPPLE	15220
12	2-1/2" BRONZE EXT NIPPLE WITH MALE IPT x OUTSIDE HOSE THREADS	15091
13	2-1/2" PLASTIC HOSE CAP	15091
14	VALVE BOX INSTALLATION FOR BURIED ASSEMBLIES	15091/E-1.1
15	30 LB ZINC ANODE(S) WITH ANODE LEAD WIRE AND PIPE CLAMP 1" BELOW FITTING	13110 / G-14
16	MARKER POST, REDWOOD	15091
17	30" DIAMETER x 8" THICK CONCRETE RING, CONCRETE TRANSIT MIX ONLY	15091

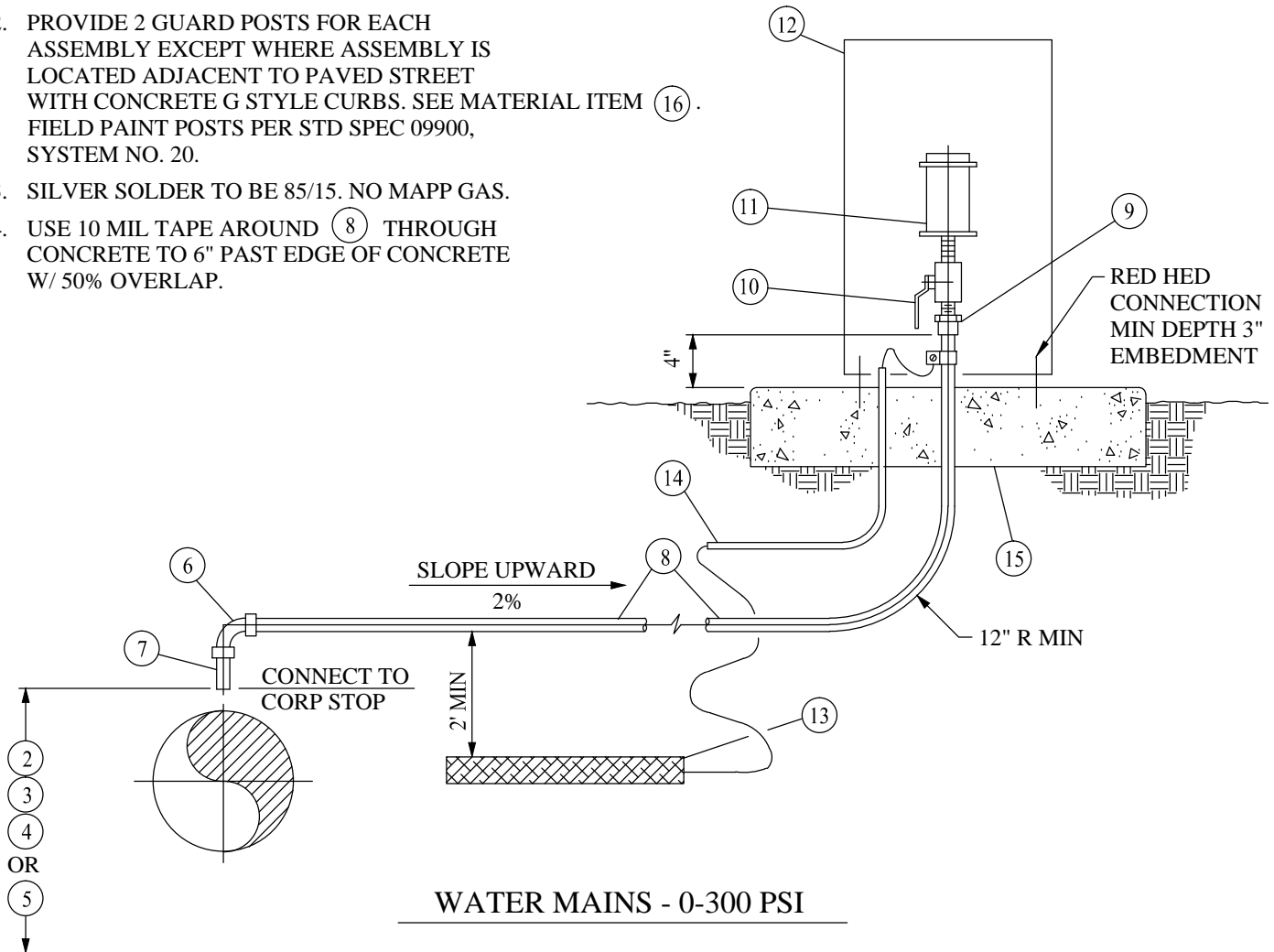
OLIVENHAIN MUNICIPAL WATER DISTRICT

2-INCH MANUAL AIR RELEASE ASSY
WORKING PRESSURE 0-300 PSI (TRAFFIC)

STD DWG NO.
A-2.2
FEBRUARY 2017

NOTES:

1. LOCATE AIR VALVE AND ENCLOSURE WHERE SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE DISTRICT'S REPRESENTATIVE.
2. PROVIDE 2 GUARD POSTS FOR EACH ASSEMBLY EXCEPT WHERE ASSEMBLY IS LOCATED ADJACENT TO PAVED STREET WITH CONCRETE G STYLE CURBS. SEE MATERIAL ITEM (16) . FIELD PAINT POSTS PER STD SPEC 09900, SYSTEM NO. 20.
3. SILVER SOLDER TO BE 85/15. NO MAPP GAS.
4. USE 10 MIL TAPE AROUND (8) THROUGH CONCRETE TO 6" PAST EDGE OF CONCRETE W/ 50% OVERLAP.



ITEM	DESCRIPTION	SPEC/DWG
1	1-INCH COMBINATION AIR VALVE ASSEMBLY	15092
2	OUTLET ON DUCTILE IRON PIPE, 0-300 PSI	15240/D-1.1
3	OUTLET ON CML&C STEEL PIPE, 0-300 PSI	15061/D-1.2
4	OUTLET ON PVC PRESSURE PIPE, 0-200 PSI	15292/D-1.3
5	OUTLET ON PVC DISTRIBUTION PIPE, 0-150 PSI	15293/D-1.3
6	1" COPPER 90° ELB, COPPER SOLDER JOINTS, 0-300 PSI	15220
7	1" COPPER WATER TUBE, TYPE K, SOFT, 6" LONG	15220
8	1" COPPER WATER TUBE, TYPE K, SOFT	15220
9	1" COPPER ADAPTER, COPPER SOLDER JOINT x MALE IPT, 0-300 PSI	15220
10	1" SST BALL VALVE WITH FEMALE IPT, 0-300 PSI	15080
11	1" COMBINATION AIR RELEASE AND VACUUM VALVE WITH MALE IPT	15108
12	AIR VALVE ENCLOSURE FOR 1-INCH CAV ASSEMBLY	15092
13	30 LB ZINC ANODE(S) WITH ANODE LEAD WIRE AND PIPE CLAMP 1" BELOW FITTING	13110 / G-14
14	1/2" SCHEDULE 40 PVC CONDUIT WITH SWEEP BEND	15092
15	30" SQUARE x 6" THICK CONCRETE PAD	15092
16	GUARD POST INSTALLATION FOR ABOVE GROUND ASSEMBLIES	15092/E-1.3

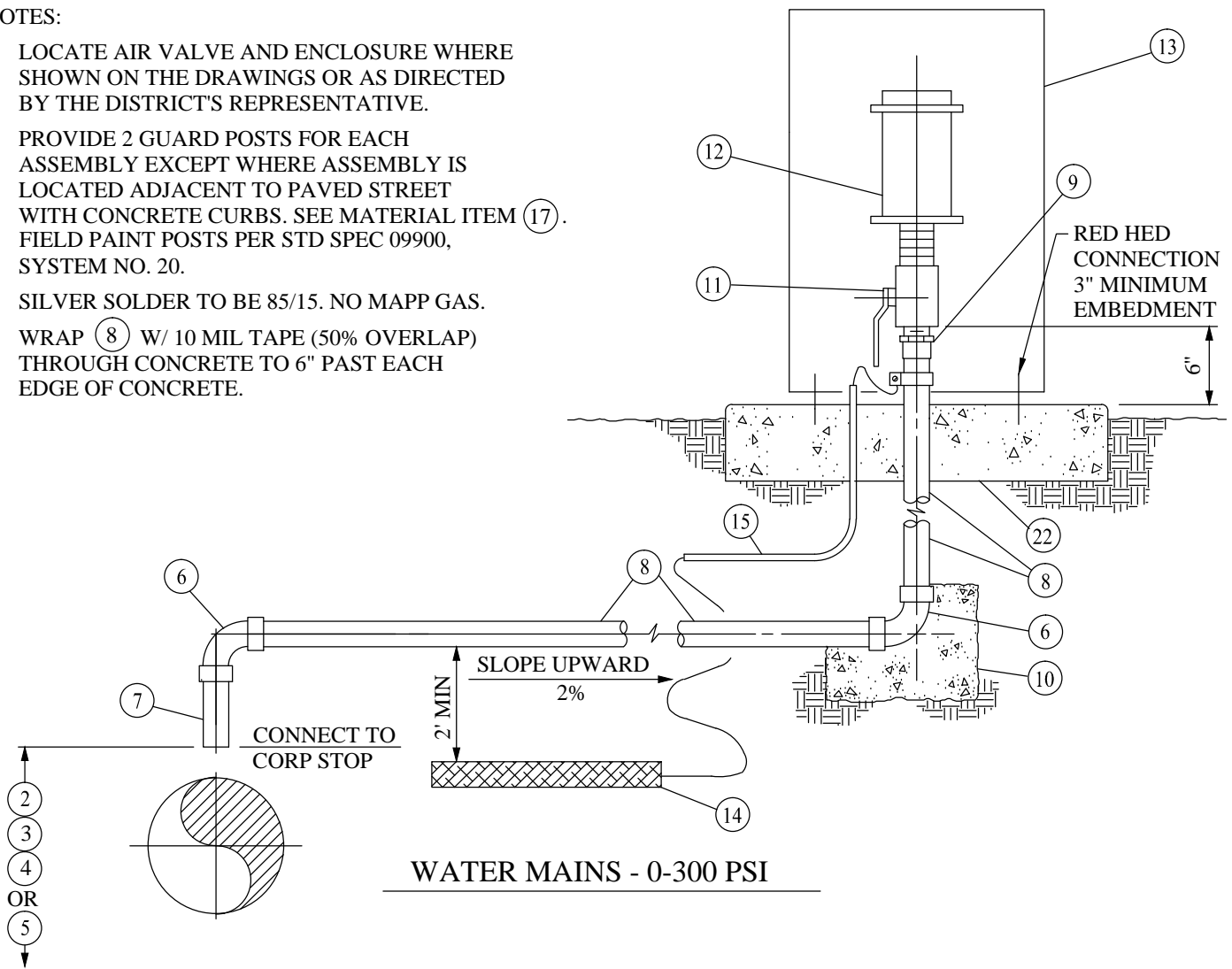
OLIVENHAIN MUNICIPAL WATER DISTRICT

1-INCH COMB AIR VALVE ASSEMBLY
WORKING PRESSURE 0-300 PSI

STD DWG NO.
A-3.1
FEBRUARY 2017

NOTES:

1. LOCATE AIR VALVE AND ENCLOSURE WHERE SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE DISTRICT'S REPRESENTATIVE.
2. PROVIDE 2 GUARD POSTS FOR EACH ASSEMBLY EXCEPT WHERE ASSEMBLY IS LOCATED ADJACENT TO PAVED STREET WITH CONCRETE CURBS. SEE MATERIAL ITEM (17). FIELD PAINT POSTS PER STD SPEC 09900, SYSTEM NO. 20.
3. SILVER SOLDER TO BE 85/15. NO MAPP GAS.
4. WRAP (8) W/ 10 MIL TAPE (50% OVERLAP) THROUGH CONCRETE TO 6" PAST EACH EDGE OF CONCRETE.



ITEM	DESCRIPTION	SPEC/DWG
1	2-INCH COMBINATION AIR VALVE ASSEMBLY	15092
2	OUTLET ON DUCTILE IRON PIPE, 0-300 PSI	15240/D-1.1
3	OUTLET ON CML&C STEEL PIPE, 0-300 PSI	15061/D-1.2
4	OUTLET ON PVC PRESSURE PIPE, 0-200 PSI	15292/D-1.3
5	OUTLET ON PVC DISTRIBUTION PIPE, 0-150 PSI	15293/D-1.3
6	2" COPPER 90° ELBOW, COPPER SOLDER JOINTS, 0-300 PSI	15220
7	2" COPPER WATER TUBE, TYPE K, SOFT, 6" LONG	15220
8	2" COPPER WATER TUBE, TYPE K, SOFT	15220
9	2" COPPER ADAPTER, COPPER SOLDER JOINT x MALE IPT, 0-300 PSI	15220
10	CONCRETE ANCHOR BLOCK WITH 2 CUBIC FEET	02223
11	2" BRONZE BALL VALVE WITH FEMALE IPT, 0-300 PSI	15080
12	2" COMBINATION AIR RELEASE AND VACUUM VALVE WITH MALE IPT	15108
13	AIR VALVE ENCLOSURE FOR 2-INCH CAV ASSEMBLY	15092
14	30 LB ZINC ANODE(S) WITH ANODE LEAD WIRE AND PIPE CLAMP 1" BELOW FITTING	13110 / G-14
15	1/2" SCHEDULE 40 PVC CONDUIT WITH SWEEP BEND	15092
16	30" SQUARE x 6" THICK CONCRETE PAD	15092
17	GUARD POST INSTALLATION FOR ABOVE GROUND ASSEMBLIES	15092/E-1.3

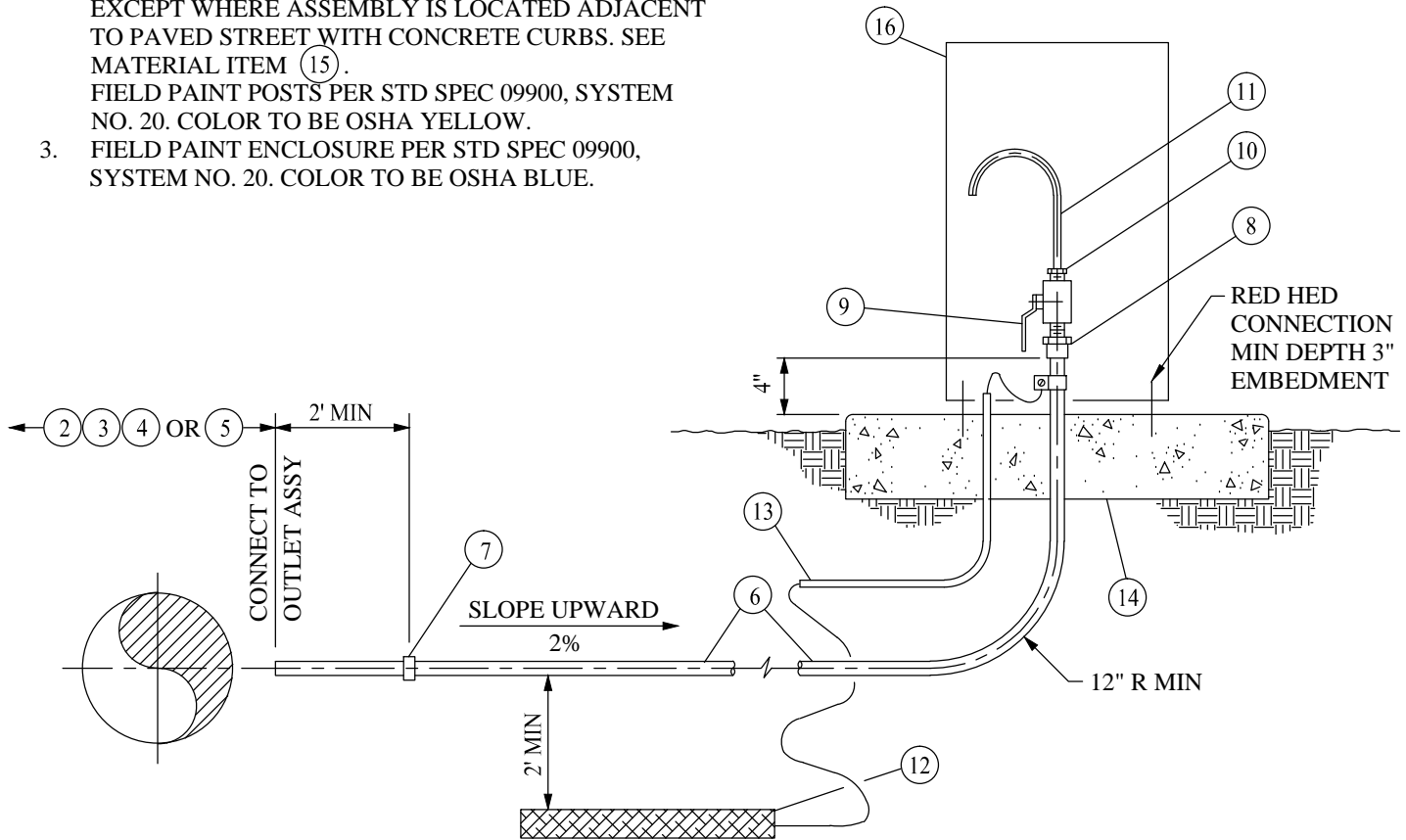
OLIVENHAIN MUNICIPAL WATER DISTRICT

2-INCH COMB AIR VALVE ASSEMBLY
WORKING PRESSURE 0-300 PSI

STD DWG NO.
A-3.2
FEBRUARY 2017

NOTES:

1. LOCATE WATER SAMPLE POINT ENCLOSURE WHERE SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE DISTRICTS REPRESENTATIVE.
2. PROVIDE 2 GUARD POSTS FOR EACH ASSEMBLY EXCEPT WHERE ASSEMBLY IS LOCATED ADJACENT TO PAVED STREET WITH CONCRETE CURBS. SEE MATERIAL ITEM (15).
FIELD PAINT POSTS PER STD SPEC 09900, SYSTEM NO. 20. COLOR TO BE OSHA YELLOW.
3. FIELD PAINT ENCLOSURE PER STD SPEC 09900, SYSTEM NO. 20. COLOR TO BE OSHA BLUE.



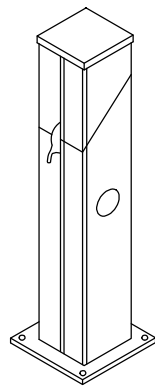
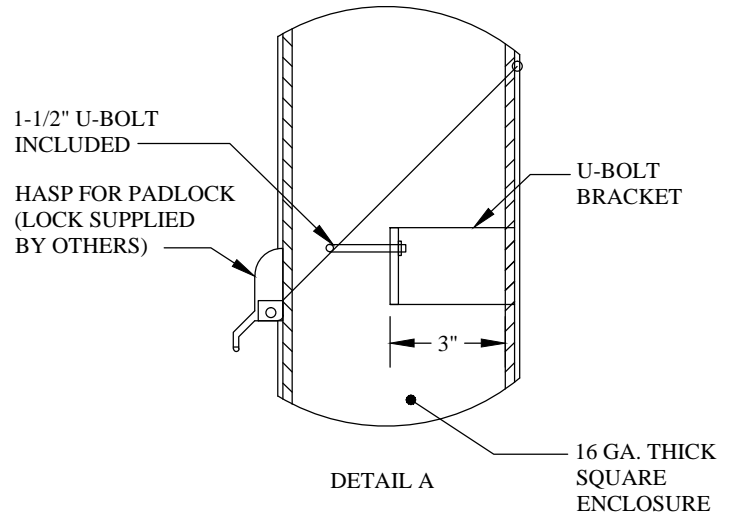
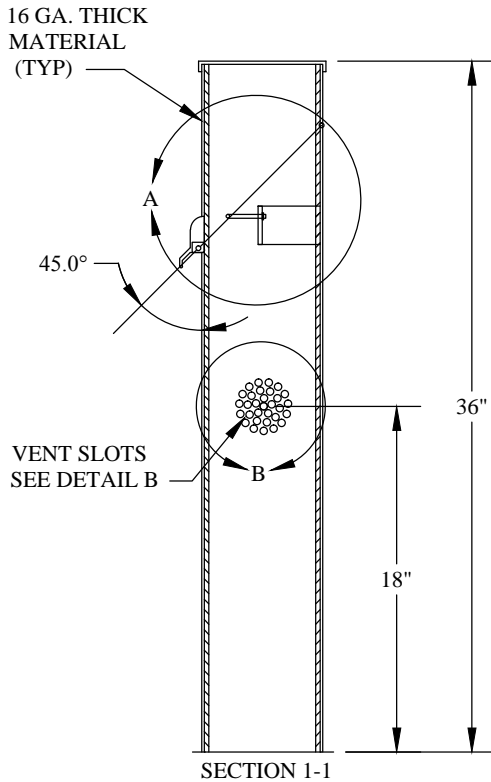
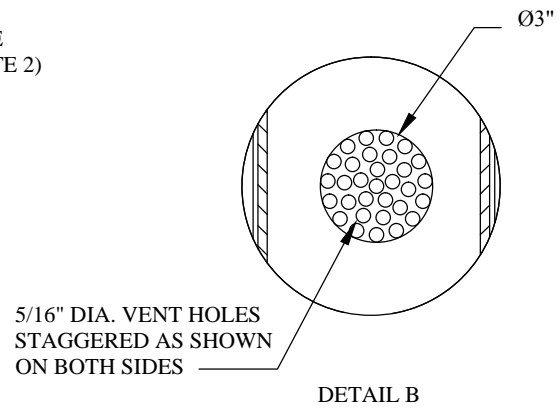
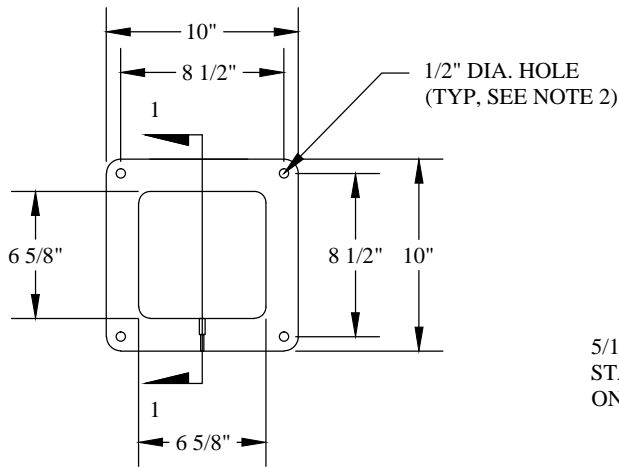
WATER MAINS - 0-300 PSI

ITEM	DESCRIPTION	SPEC/DWG
1	1-INCH WATER SAMPLE POINT ASSEMBLY	15093
2	OUTLET ON DUCTILE IRON PIPE, 0-200 PSI	15056/D-1.1
3	OUTLET ON CML&C STEEL PIPE, 0-300 PSI	15061/D-1.2
4	OUTLET ON PVC PRESSURE PIPE, 0-200 PSI	15064/D-1.3
5	OUTLET ON PVC DISTRIBUTION PIPE, 0-150 PSI	15070/D-1.3
6	1" COPPER WATER TUBE, TYPE K, SOFT	15057
7	1" COPPER CPLG WITH STOPS, COPPER SOLDER JOINTS, 0-300 PSI	15057
8	1"x1/2" COPPER ADAPTER, COPPER SOLDER JOINT x MALE IPT, 0-300 PSI	15057
9	1/2" STAINLESS STEEL BALL VALVE WITH FEMALE IPT, 0-600 PSI	-
10	1"x3/8" STAINLESS STEEL ADAPTER, COMPRESSION JOINT x MALE IPT, 0-300 PSI	-
11	3/8" STAINLESS STEEL TUBE	-
12	30 LB ZINC ANODE(S) WITH ANODE LEAD WIRE AND PIPE CLAMP 1" BELOW FITTING	13110 / G-14
13	1/2" SCHEDULE 40 PVC CONDUIT WITH SWEEP BEND	15058
14	24" SQUARE x 6" THICK CONCRETE PAD	15093
15	GUARD POST INSTALLATION FOR ABOVE GROUND ASSEMBLIES	15093/E-1.3
16	WATER SAMPLE POINT ENCLOSURE FOR 1 INCH WATER SAMPLE POINT ASSY	15093/A-4.2

OLIVENHAIN MUNICIPAL WATER DISTRICT

**1-INCH WATER SAMPLE POINT ASSY
WORKING PRESSURE 0-300 PSI**

**STD DWG NO.
A-4.1
FEBRUARY 2017**



ISOMETRIC VIEW

NOTES:

1. ALL MATERIAL SHALL BE TYPE 304/304L STAINLESS STEEL.
2. ANCHOR BOLTS SHALL BE SUPPLIED BY OTHERS

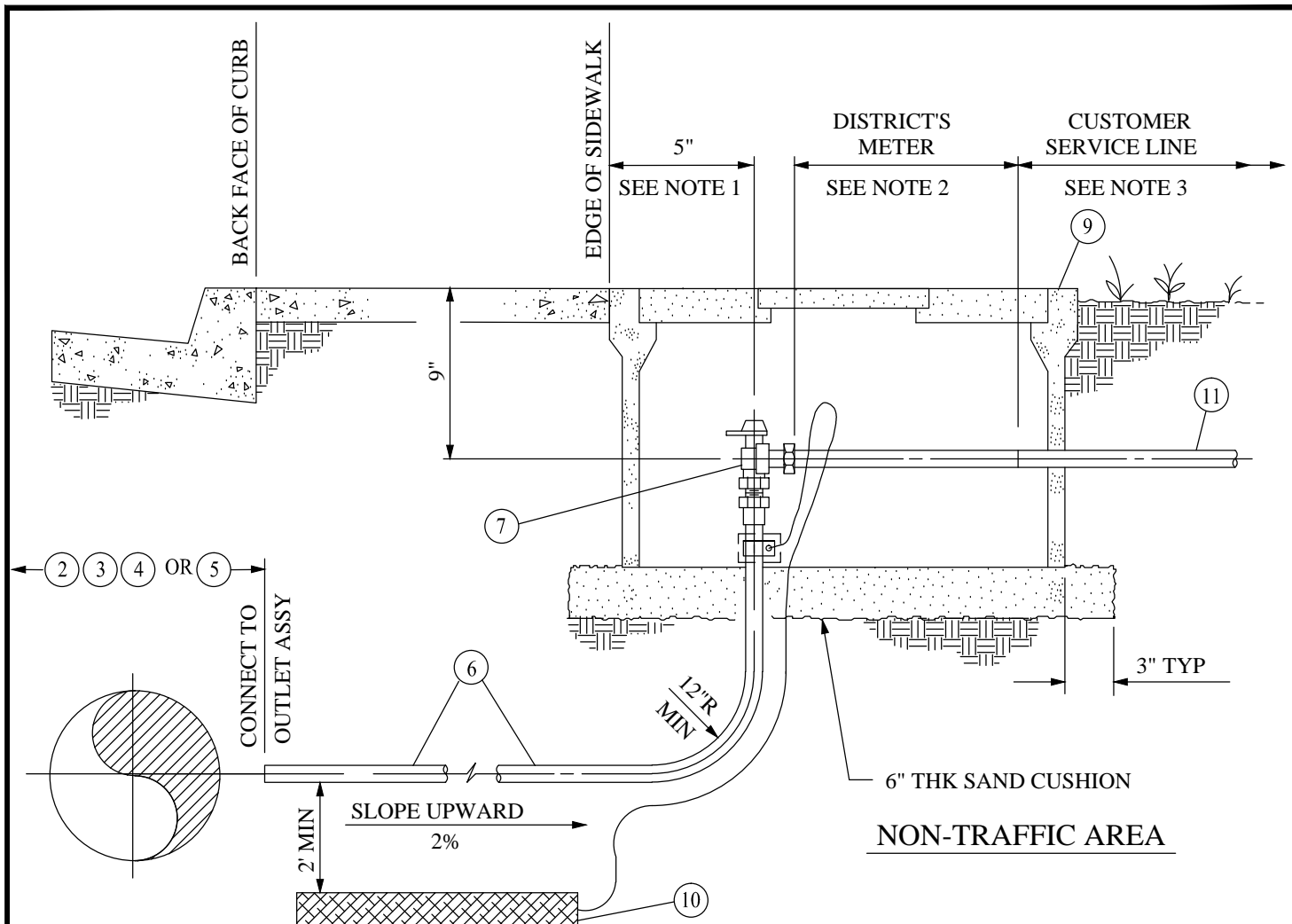
OLIVENHAIN MUNICIPAL WATER DISTRICT

WATER SAMPLE STATION

STD DWG NO.

A-4.2

FEBRUARY 2017



NOTES:

1. WHERE SIDEWALKS ARE NOT PRESENT, LOCATE CENTER OF ANGLE BALL VALVE 5" FROM BACK FACE OF CURB.
2. AFTER THE SPECIFIED COMPONENTS HAVE BEEN INSTALLED BY OTHERS, THE DISTRICT WILL FURNISH AND INSTALL A METER AND BALL VALVE IN THE INDICATED SPACE.
3. AFTER DISTRICT'S METER INSTALLATION, CONNECT CUSTOMER SERVICE LINE TO INSTALLED BALL VALVE. USE A NON-METALLIC PIPE NIPPLE AT THE VALVE.
4. FOR DUAL METERS, CUT BACK OF BOX. NO BREAKING OF BOX IS ALLOWED.

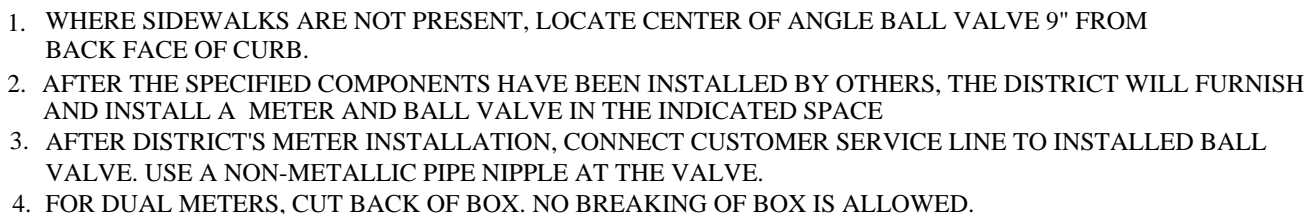
WATER MAINS - 0-300 PSI

ITEM	DESCRIPTION	SPEC/DWG
1	1-INCH WATER SERVICE ASSY FOR 5/8", 3/4" OR 1" WATER METER	15081
2	OUTLET ON DUCTILE IRON PIPE, 0-200 PSI	15240/D-1.1
3	OUTLET ON CML&C STEEL PIPE, 0-200 PSI	15061/D-1.2
4	OUTLET ON PVC PRESSURE PIPE, 0-200 PSI	15292/D-1.3
5	OUTLET ON PVC DISTRIBUTION PIPE, 0-150 PSI	15293/D-1.3
6	1" COPPER WATER TUBE, TYPE K, SOFT	15220
7	1" BRZ ANGLE BALL VALVE W/INLET QUICK JOINT x METER CPLG NUT	15081
8	-	-
9	METER BOX AND TWO PIECE POLYMER COVER	15081
10	30 LB ZINC ANODE(S) WITH ANODE LEAD WIRE AND PIPE CLAMP 1" BELOW VALVE	13110 / G-14
11	CUSTOMER SERVICE LINE	—

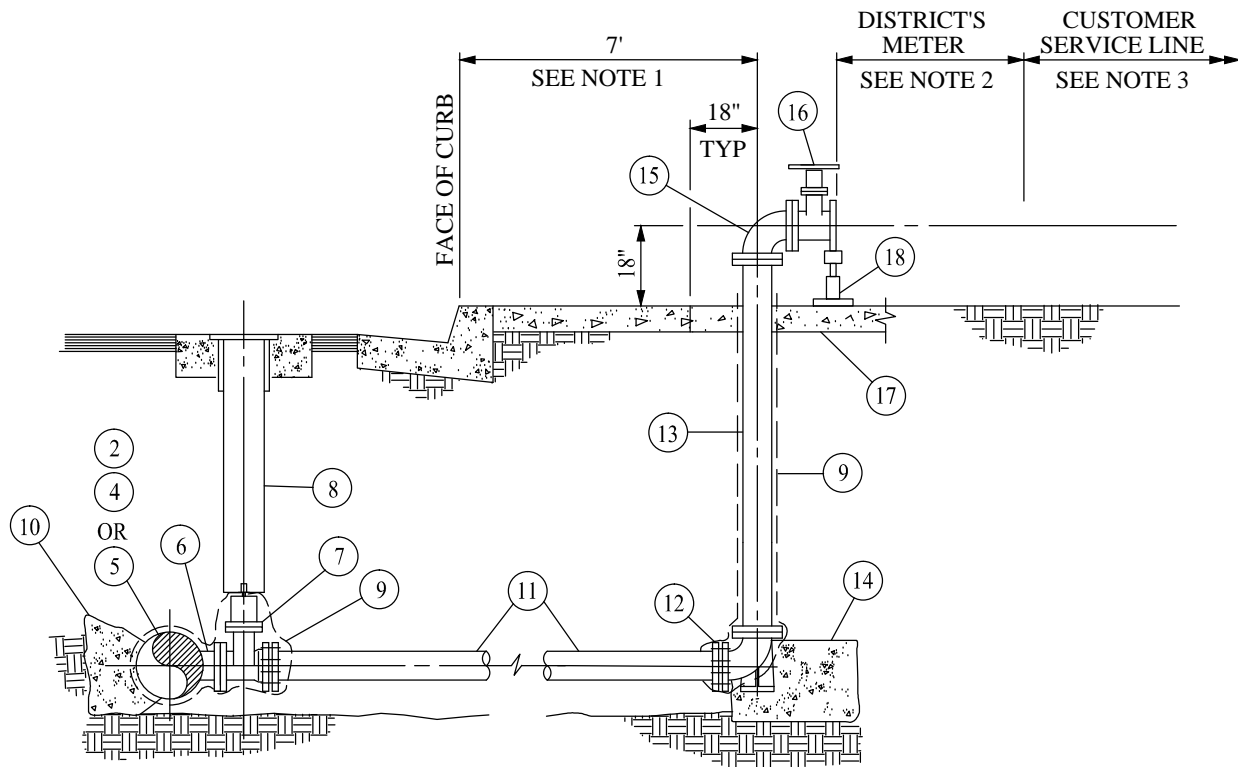
OLIVENHAIN MUNICIPAL WATER DISTRICT

**WTR SERVICE ASSY FOR 5/8" THROUGH 1"
METER-WKG PRESS 0-300 PSI**

**STD DWG NO.
B-1.1
FEBRUARY 2017**



STD DWG NO.
B-1.2
FEBRUARY 2017



NOTES:

1. WHEN SIDEWALK ADJACENT TO CURB EXCEED 5' IN WIDTH, LOCATE ASSEMBLY AS DIRECTED BY THE DISTRICT'S REPRESENTATIVE. ASSEMBLY MAY BE INSTALLED PERPENDICULAR TO FACE OF CURB AS SHOWN OR ROTATED 90° TO BE PARALLEL TO FACE OF CURB.
2. AFTER THE SPECIFIED COMPONENTS HAVE BEEN INSTALLED BY OTHERS, THE DISTRICT WILL FURNISH AND INSTALL A PRESSURE REDUCING VALVE (IF NECESSARY), METER, GATE VALVE, AND PIPE SUPPORT IN THE INDICATED SPACE.
3. AFTER DISTRICT'S METER INSTALLATION, CONNECT CUSTOMER SERVICE LINE TO INSTALLED GATE VALVE. POUR A CONCRETE PAD ON GRADE FOR THE COMPLETED ASSEMBLY.
4. PROVIDE GUARD POSTS WHEN DIRECTED BY THE DISTRICT'S REPRESENTATIVE.

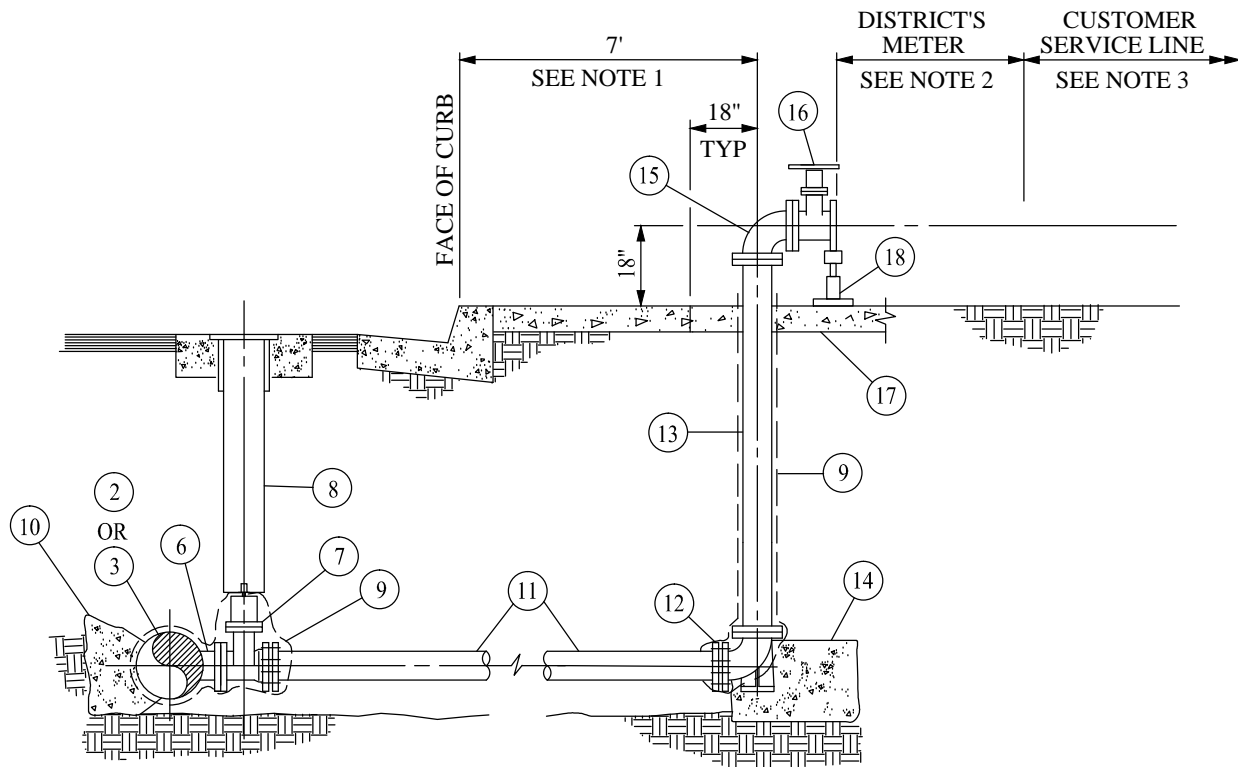
WATER MAINS - 0-200 PSI

ITEM	DESCRIPTION	SPEC/DWG
1	4" THRU 10" WATER SERVICE ASSY FOR 4" THRU 10" WATER METER	15081
2	DUCTILE IRON PIPE AND DI TEE WITH CL 150 FLANGED OUTLET, 0-200 PSI	15240
3		
4	DR14/18 PVC PRESSURE PIPE 12 INCHES AND SMALLER, 0-200 PSI	15292
5	DR14/18 PVC DISTRIBUTION PIPE 14 INCHES AND LARGER, 0-200 PSI	15293
6	DI TEE WITH CL 150 FLANGED OUTLET FOR PVC PIPE INSTALLATION	15292/15293
7	RESILIENT SEATED GATE VALVE WITH CL 125 FLANGE x MECH JT OR P.O., 0-250 PSI, 6" MIN SIZE	15101
8	VALVE BOX INSTALLATION FOR BURIED VALVES	15101/E-1.2/E-1.3
9	WAX TAPE SYSTEM	09954
10	CONCRETE THRUST BLOCK	D-3.3/D-3.4
11	DR14/18 PVC PRESSURE PIPE PER WORKING PRESSURE	15292
12	DI BASE BEND WITH CL 150 FLANGE x MECHANICAL JOINT OR PUSH ON	15240
13	CLASS 53 DUCTILE IRON PIPE WITH CL 150 FLANGES	15240
14	CONCRETE THRUST BLOCK	D-3.5/D-3.6
15	DUCTILE IRON 1/4 BEND WITH CL 150 FLANGES	15240
16	RESILIENT SEATED GATE VALVE WITH CL 125 FLANGES, 0-250 PSI	15101
17	36" WIDE x 4" THICK CONCRETE PAD, LENGTH VARIES PER SIZE	15081
18	ADJUSTABLE PIPE SUPPORT	15081

OLIVENHAIN MUNICIPAL WATER DISTRICT

WATER SERVICE ASSY FOR 4" THRU 10"
METER - WORKING PRESSURE 0-200 PSI (PVC/DIP)

STD DWG NO.
B-1.3
FEBRUARY 2017



NOTES:

1. WHEN SIDEWALK ADJACENT TO CURB EXCEED 5' IN WIDTH, LOCATE ASSEMBLY AS DIRECTED BY THE DISTRICT'S REPRESENTATIVE. ASSEMBLY MAY BE INSTALLED PERPENDICULAR TO FACE OF CURB AS SHOWN OR ROTATED 90° TO BE PARALLEL TO FACE OF CURB.
2. AFTER THE SPECIFIED COMPONENTS HAVE BEEN INSTALLED BY OTHERS, THE DISTRICT WILL FURNISH AND INSTALL A PRESSURE REDUCING VALVE (IF NECESSARY), METER, GATE VALVE, AND PIPE SUPPORT IN THE INDICATED SPACE.
3. AFTER DISTRICT'S METER INSTALLATION, CONNECT CUSTOMER SERVICE LINE TO INSTALLED GATE VALVE. POUR A CONCRETE PAD ON GRADE FOR THE COMPLETED ASSEMBLY.
4. PROVIDE GUARD POSTS WHEN DIRECTED BY THE DISTRICT'S REPRESENTATIVE.

WATER MAINS - 201-300 PSI

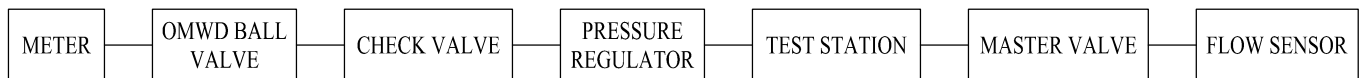
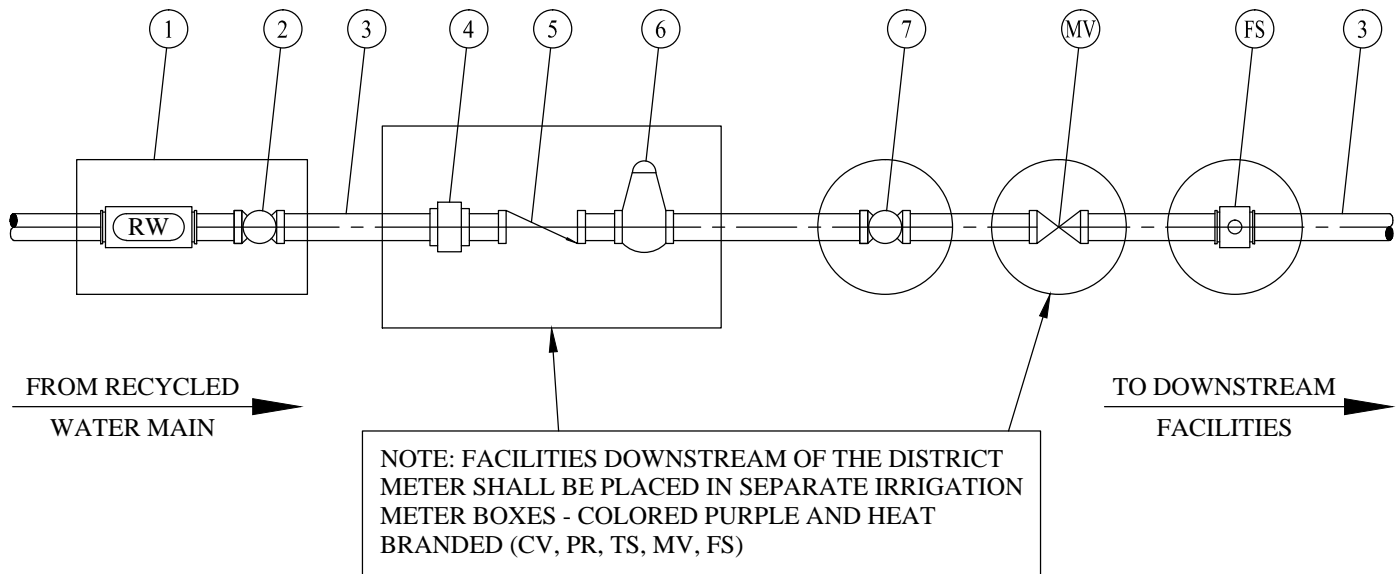
ITEM	DESCRIPTION	SPEC/DWG
1	4" THRU 10" WATER SERVICE ASSY FOR 4" THRU 10" WATER METER	15081
2	DUCTILE IRON PIPE AND DI TEE WITH CL 300 FLANGED OUTLET, 201-300 PSI	15240
3	STEEL PIPE, CML&C AND STEEL OUTLET WITH CL 300 FLANGE, 201-300 PSI	15061
4	-	-
5	-	-
6	DI TEE WITH CL 300 FLANGED OUTLET	15292/15293
7	BALL VALVE WITH CL 300 FLANGE x FLANGE, 6" MIN SIZE	-
8	VALVE BOX INSTALLATION FOR BURIED VALVES	15101/E-1.2/E-1.3
9	WAX TAPE SYSTEM	09954
10	CONCRETE THRUST BLOCK	D-3.3/D-3.4
11	CLASS 53 DUCTILE IRON PIPE WITH CL 300 FLANGES	15292
12	DI BASE BEND WITH CL 300 FLANGE x MECHANICAL JOINT OR PUSH ON	15240
13	CLASS 53 DUCTILE IRON PIPE WITH CL 300 FLANGES	15240
14	CONCRETE THRUST BLOCK	D-3.5/D-3.6
15	DUCTILE IRON 1/4 BEND WITH CL 300 FLANGES	15240
16	RESILIENT SEATED GATE VALVE WITH CL 300 FLANGES, 0-300 PSI	15101
17	36" WIDE x 4" THICK CONCRETE PAD, LENGTH VARIES PER SIZE	15081
18	ADJUSTABLE PIPE SUPPORT	15081

OLIVENHAIN MUNICIPAL WATER DISTRICT

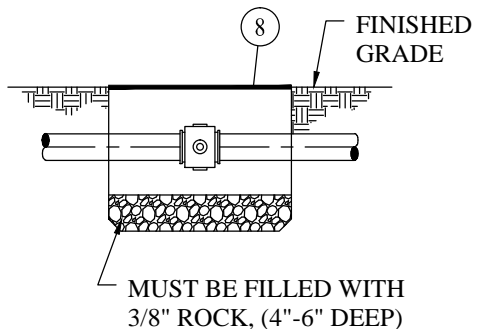
**WATER SERVICE ASSY FOR 4" THRU 10"
METER - WORKING PRESSURE 201-300 PSI (DIP/CML&C)**

**STD DWG NO.
B-1.4
FEBRUARY 2017**

RECYCLED WATER POINT OF CONNECTION STANDARD DRAWING



POC SEQUENCE



NOTES:

1. REFER TO SECTION 15081 OF THE OMWD STANDARD SPECIFICATIONS.
2. SET TOP OF METER BOX FLUSH WITH SIDEWALK, CURB OR FINISHED GRADE.
3. INSTALL WARNING/IDENTIFICATION TAPE AS SHOWN ON F-21.
4. MATERIALS SHALL BE SELECTED FROM THE APPROVED MATERIALS LIST.

ITEM	DESCRIPTION	SPEC/DWG
1	OMWD METER ASSEMBLY PER B-1.1 & B-1.2	-
2	OMWD BALL VALVE	-
3	BRASS OR COPPER PIPE - MUST BE SAME SIZE AS METER	-
4	BRASS UNION (OPTIONAL - NOT REQUIRED)	-
5	BRASS CHECK VALVE (OPTIONAL - NOT REQUIRED)	-
6	PRESSURE REGULATOR - MUST BE SAME SIZE AS METER (OPTIONAL - NOT REQUIRED)	-
7	TEST POINT STATION - QUARTER TURN BALL VALVE WITH TEST COCK PORT - D/S	-
8	METER BOX WITH LID 10"x20" OR 17"x30"	-
MV	MASTER VALVE - MUST BE CONNECTED (WIRED) TO CONTROLLER	-
FS	FLOW SENSOR - MUST BE CONNECTED (WIRED) TO CONTROLLER	-
-	-	-
-	-	-

OLIVENHAIN MUNICIPAL WATER DISTRICT

1" & 2" RECYCLED WATER IRRIGATION
METER AND POC SEQUENCE INSTALLATION

STD DWG NO.
B-1.5
FEBRUARY 2017

1. WHEN SIDEWALK ADJACENT TO CURB EXCEEDS 5' IN WIDTH, LOCATE BURY SECTION AND HYDRANT 2' FROM FACE OF CURB OR AS DIRECTED BY THE DISTRICT'S REPRESENTATIVE.
2. PROVIDE 2 GUARD POSTS FOR EACH ASSEMBLY EXCEPT WHERE ASSEMBLY IS LOCATED ADJACENT TO PAVED STREET WITH CONC G STYLE CURBS. SEE MATERIAL ITEM (19).
3. FIELD PAINT ABOVE GROUND SURF OF RISER, HYDRANT, GUARD POSTS, AND TOP SIDE OF VALVE BOX COVER PER STD SPEC 09900, SYSTEM NO. 20. COLOR TO BE OSHA YELLOW.

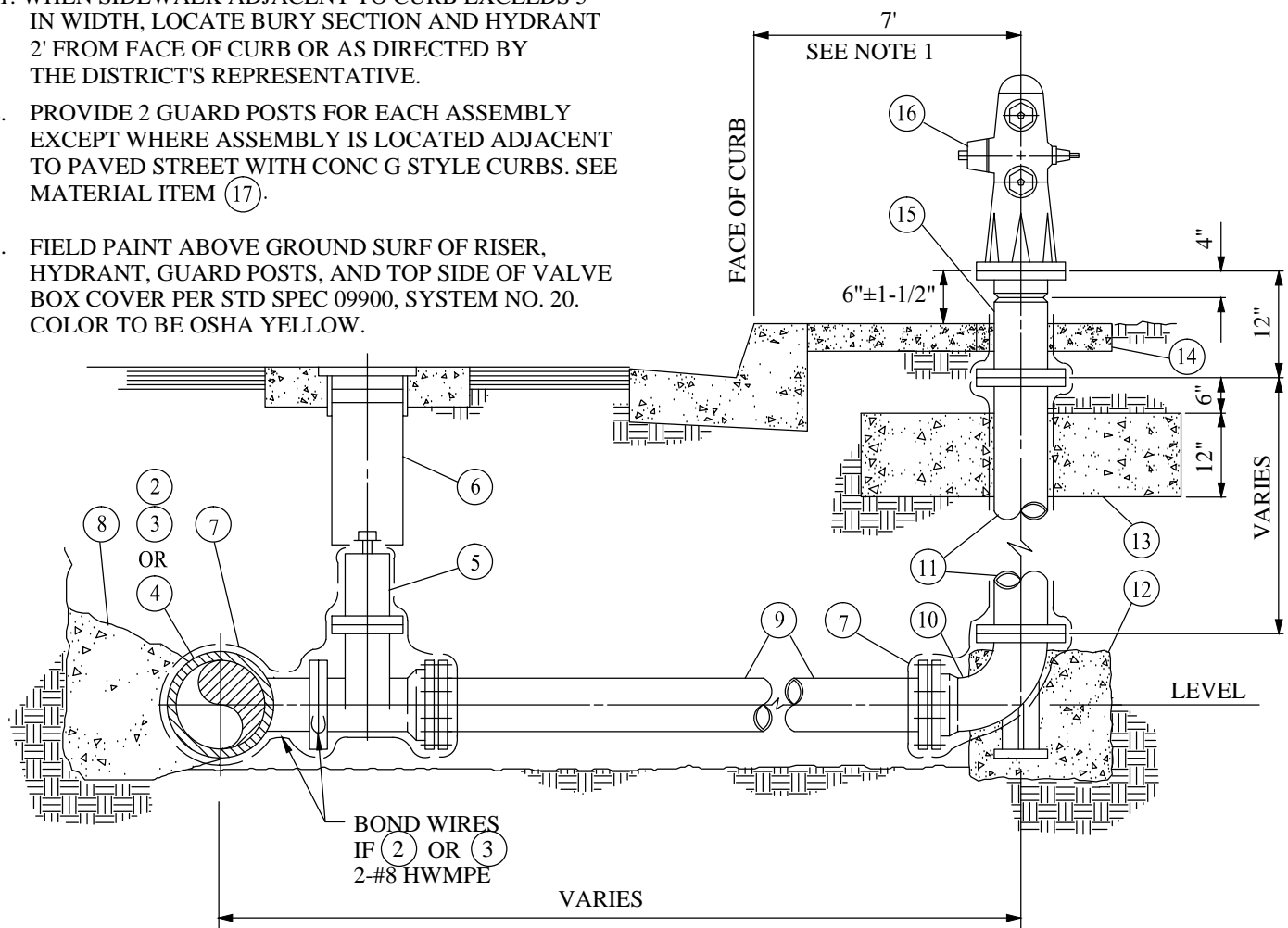


OLIVENHAIN MUNICIPAL WATER DISTRICT

STD DWG NO.
C-1.1
FEBRUARY 2017

NOTES:

1. WHEN SIDEWALK ADJACENT TO CURB EXCEEDS 5' IN WIDTH, LOCATE BURY SECTION AND HYDRANT 2' FROM FACE OF CURB OR AS DIRECTED BY THE DISTRICT'S REPRESENTATIVE.
2. PROVIDE 2 GUARD POSTS FOR EACH ASSEMBLY EXCEPT WHERE ASSEMBLY IS LOCATED ADJACENT TO PAVED STREET WITH CONC G STYLE CURBS. SEE MATERIAL ITEM (17).
3. FIELD PAINT ABOVE GROUND SURF OF RISER, HYDRANT, GUARD POSTS, AND TOP SIDE OF VALVE BOX COVER PER STD SPEC 09900, SYSTEM NO. 20. COLOR TO BE OSHA YELLOW.



WATER MAINS - 151-200 PSI

ITEM	DESCRIPTION	SPEC/DWG
1	6-INCH FIRE HYDRANT ASSEMBLY	15109
2	DUCTILE IRON PIPE AND DI TEE WITH 6" CL 150 FLANGED OUTLET	15240
3	STEEL PIPE, CML&C AND 6" STEEL OUTLET WITH CL 150 FLANGE	15061
4	DR 14 PVC PRESSURE PIPE, 12" AND SMALLER & DI TEE W/6" CL 150 FLG	15292
5	6" RESILIENT SEATED GATE VALVE WITH CL 125 FLG x MECH JT, 0-250 PSI OR P.O.	15101
6	VALVE BOX INSTALLATION FOR BURIED VALVES	15101/E-1.2/E-1.3
7	WAX TAPE SYSTEM	09954
8	CONCRETE THRUST BLOCK	02223/D-3.4
9	6" DR 14 PVC PRESSURE PIPE	15292
10	6" BURY ELBOW SECTION WITH BASE AND MECHANICAL JT x FLANGED END OR P.O.	15109
11	6" BURY EXTENSION SECTION WITH FLANGED ENDS	15109
12	CONCRETE THRUST BLOCK	02223/D-3.6
13	42" SQUARE x 12" THICK CONCRETE ANCHOR BLOCK	15109
14	36" SQUARE x 4" THICK CONCRETE PAD	15109
15	6" BREAK-OFF RISER WITH FLANGED ENDS AND CUT GROOVE	15109
16	BRONZE FIRE HYDRANT, FOR 200 PSI MAXIMUM WORKING PRESSURE - 3 PORT	15109
17	GUARD POST INSTALLATION FOR ABOVE GROUND ASSEMBLIES	15109/E-1.3

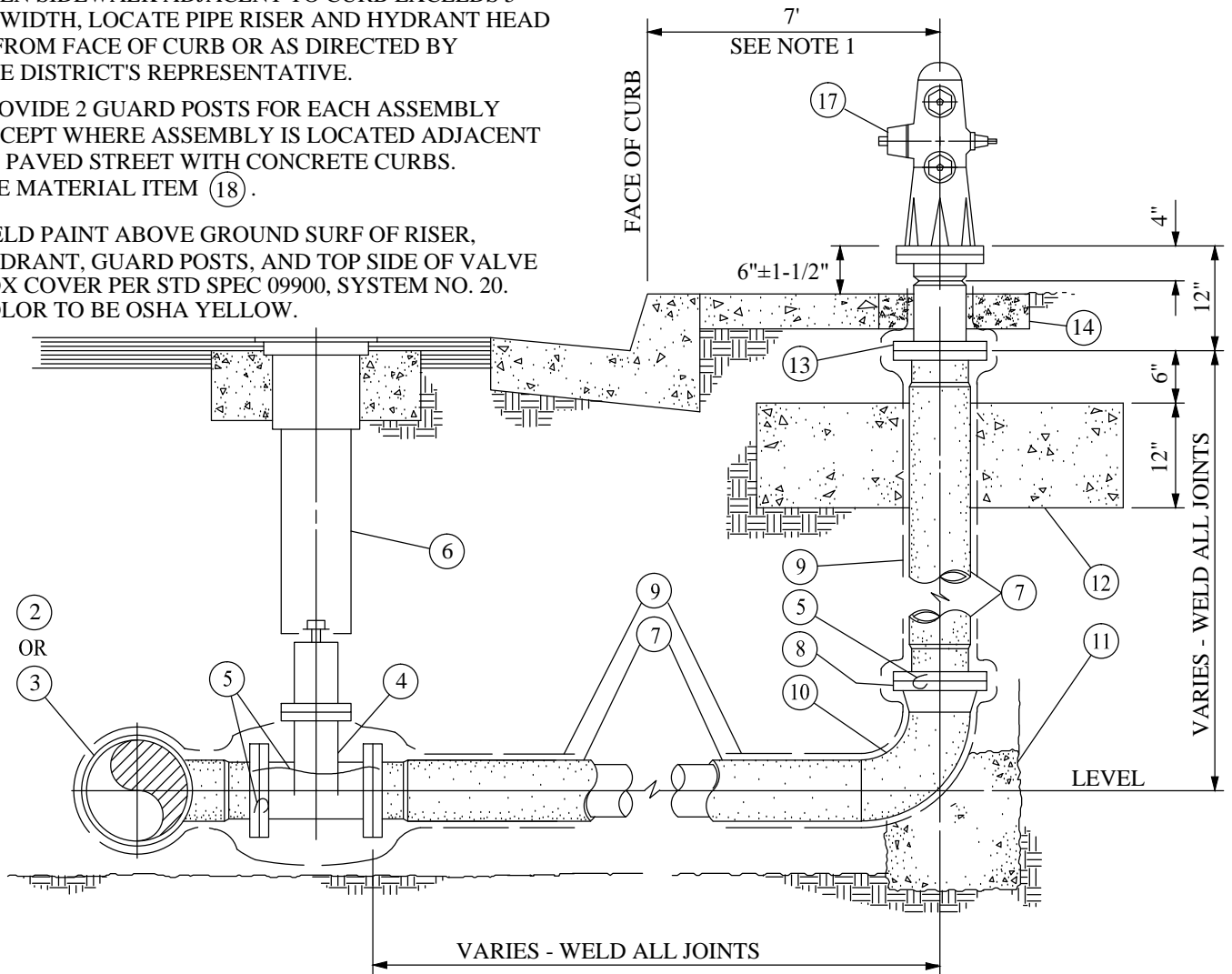
OLIVENHAIN MUNICIPAL WATER DISTRICT

FIRE HYDRANT ASSEMBLY
WORKING PRESSURE 151-200 PSI

STD DWG NO.
C-1.2
FEBRUARY 2017

NOTES:

1. WHEN SIDEWALK ADJACENT TO CURB EXCEEDS 5' IN WIDTH, LOCATE PIPE RISER AND HYDRANT HEAD 2' FROM FACE OF CURB OR AS DIRECTED BY THE DISTRICT'S REPRESENTATIVE.
2. PROVIDE 2 GUARD POSTS FOR EACH ASSEMBLY EXCEPT WHERE ASSEMBLY IS LOCATED ADJACENT TO PAVED STREET WITH CONCRETE CURBS. SEE MATERIAL ITEM (18).
3. FIELD PAINT ABOVE GROUND SURF OF RISER, HYDRANT, GUARD POSTS, AND TOP SIDE OF VALVE BOX COVER PER STD SPEC 09900, SYSTEM NO. 20. COLOR TO BE OSHA YELLOW.



WATER MAINS - 201-250 PSI

ITEM	DESCRIPTION	SPEC/DWG
1	6-INCH FIRE HYDRANT ASSEMBLY	15109
2	DUCTILE IRON PIPE AND DI TEE WITH 6" CL 150 FLANGED OUTLET	15240
3	STEEL PIPE, CML&C AND 6" STEEL OUTLET WITH CL 150 FLANGE	15061
4	6" RESILIENT SEATED GATE VALVE WITH CL 125 FLANGES, 0-250 PSI	15101
5	BOND WIRES 2-#8 EWMPE	13110
6	VALVE BOX INSTALLATION FOR BURIED VALVES	15101/E-1.2/E-1.3
7	6" STD WT STEEL PIPE WITH CL 150 FLANGES, CML&C	15253
8	6" CL 150 WELDING NECK FLANGE, CML&C	15253
9	WAX TAPE SYSTEM	09954
10	6" STD WT STEEL 90° ELBOW, LONG RADIUS WITH CML&C	15253
11	CONCRETE ANCHOR BLOCK WITH 6 CUBIC FEET	15109
12	42" SQUARE x 12" THICK CONCRETE ANCHOR BLOCK	15109
13	6" BREAK-OFF RISER WITH CL 150 FLANGES AND CUT GROOVE	15109
14	36" SQUARE x 4" THICK CONCRETE PAD	15109
15	-	-
16	-	-
17	BRONZE FIRE HYDRANT FOR 201-250 PSI MAXIMUM WORKING PRESSURE - 3 PORT	15109
18	GUARD POST INSTALLATION FOR ABOVE GROUND ASSEMBLIES	15092/E-1.3

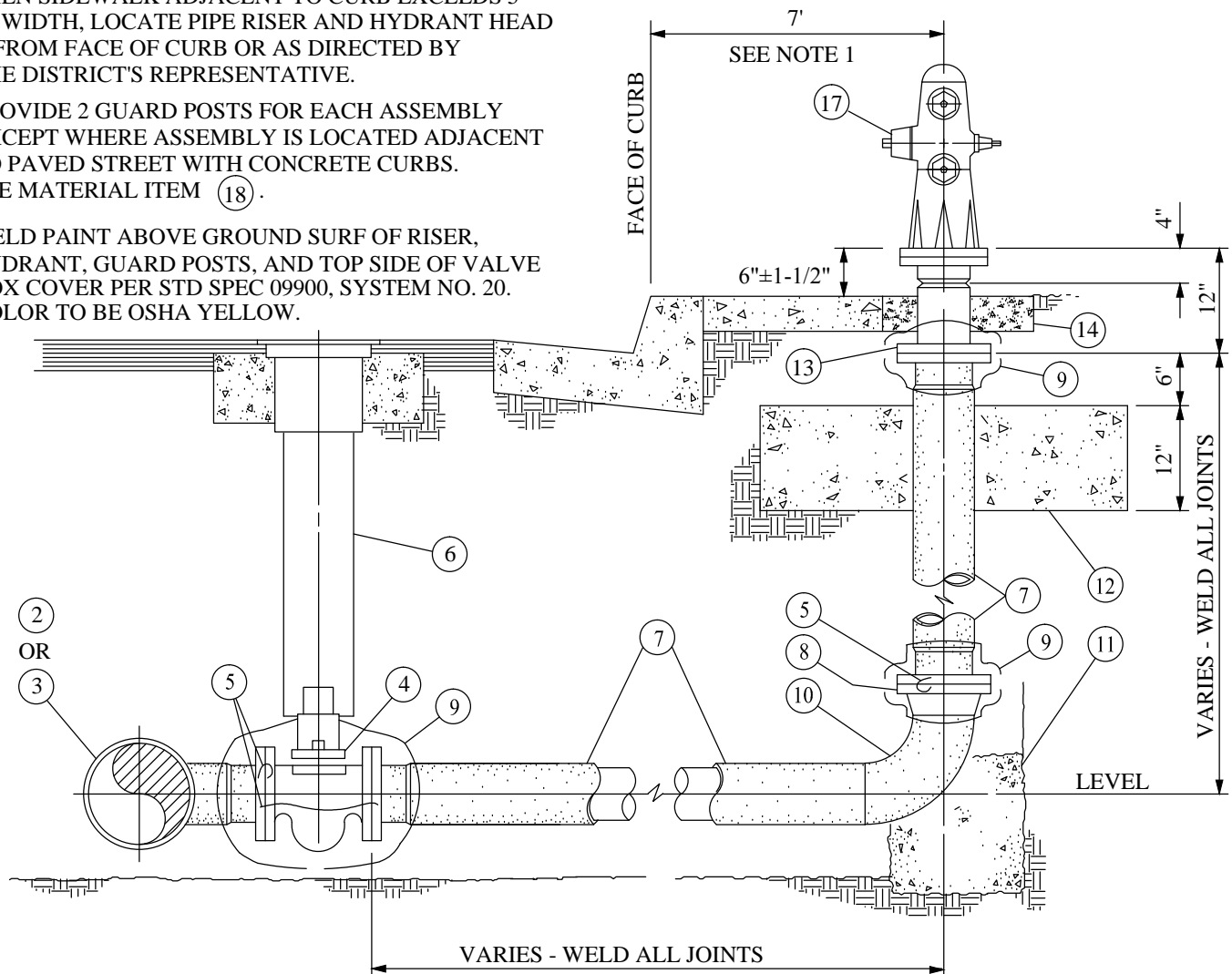
OLIVENHAIN MUNICIPAL WATER DISTRICT

**FIRE HYDRANT ASSEMBLY
WORKING PRESSURE 201-250 PSI**

STD DWG NO.
C-1.3
FEBRUARY 2017

NOTES:

1. WHEN SIDEWALK ADJACENT TO CURB EXCEEDS 5' IN WIDTH, LOCATE PIPE RISER AND HYDRANT HEAD 2' FROM FACE OF CURB OR AS DIRECTED BY THE DISTRICT'S REPRESENTATIVE.
2. PROVIDE 2 GUARD POSTS FOR EACH ASSEMBLY EXCEPT WHERE ASSEMBLY IS LOCATED ADJACENT TO PAVED STREET WITH CONCRETE CURBS. SEE MATERIAL ITEM (18).
3. FIELD PAINT ABOVE GROUND SURF OF RISER, HYDRANT, GUARD POSTS, AND TOP SIDE OF VALVE BOX COVER PER STD SPEC 09900, SYSTEM NO. 20. COLOR TO BE OSHA YELLOW.



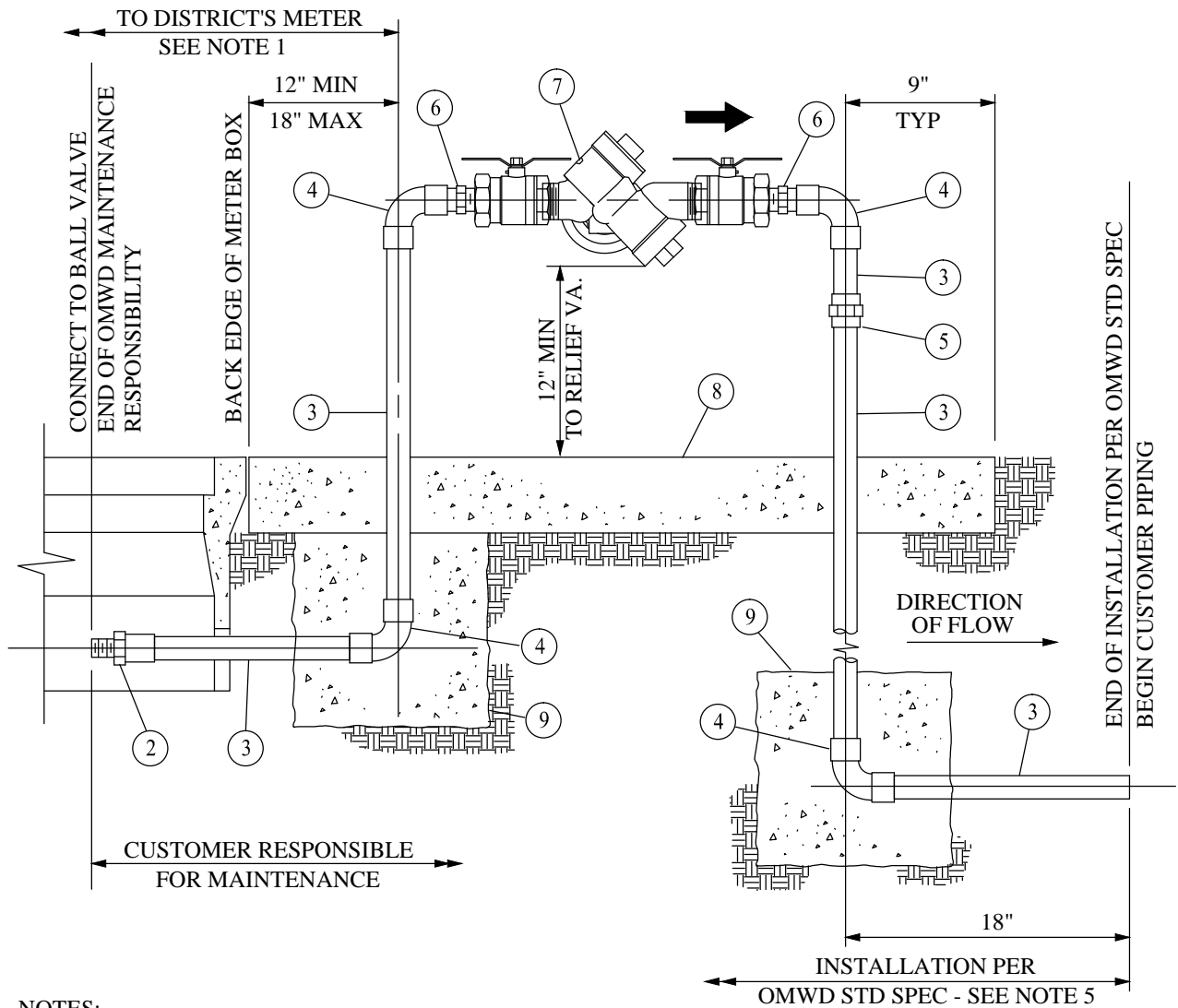
WATER MAINS - 251-300 PSI

ITEM	DESCRIPTION	SPEC/DWG
1	6-INCH FIRE HYDRANT ASSEMBLY	15109
2	DUCTILE IRON PIPE AND DI TEE WITH 6" CL 300 FLANGED OUTLET	15240
3	STEEL PIPE, CML&C AND 6" STEEL OUTLET WITH CL 300 FLANGE	15061
4	6" BALL VALVE WITH CL 250 OR 300 FLANGES	—
5	BOND WIRES	13110
6	VALVE BOX INSTALLATION FOR BURIED VALVES	15104/E-1.2/E-1.3
7	6" STD WT STEEL PIPE WITH CL 300 FLANGES, CML&C	15253
8	6" CL 300 WELDING NECK FLANGE, CML&C	15253
9	WAX TAPE SYSTEM	09954
10	6" STD WT STEEL 90° ELBOW, LONG RADIUS WITH CML&C	15253
11	CONCRETE ANCHOR BLOCK WITH 6 CUBIC FEET	15109
12	42" SQUARE x 12" THICK CONCRETE ANCHOR BLOCK	15109
13	6" BREAK-OFF RISER WITH CL 300 FLANGES AND CUT GROOVE	15109
14	36" SQUARE x 4" THICK CONCRETE PAD	15109
15	-	-
16	-	-
17	BRONZE FIRE HYDRANT FOR 251-300 PSI MAXIMUM WORKING PRESSURE - 3 PORT	15109
18	GUARD POST INSTALLATION FOR ABOVE GROUND ASSEMBLIES	15092/E-1.3

OLIVENHAIN MUNICIPAL WATER DISTRICT

FIRE HYDRANT ASSEMBLY
WORKING PRESSURE 251-300 PSI

STD DWG NO.
C-1.4
FEBRUARY 2017



NOTES:

1. NO OUTLETS WILL BE ALLOWED IN THE PIPING BETWEEN THE METER AND BACKFLOW PREVENTER. BACKFLOW PREVENTER SHALL BE THE SAME SIZE AS THE METER AND PIPING TO THE ASSEMBLY. A PRESSURE REGULATOR MAY BE INSTALLED BETWEEN THE METER AND BACKFLOW PREVENTER. CUSTOMER IS RESPONSIBLE FOR MAINTENANCE FROM THE METER.
2. BRASS PIPE WITH THREADED FITTINGS HAVING THE SAME CONFIGURATION MAY BE USED IN LIEU OF THE COPPER WATER TUBE.
3. PROVIDE GUARD POSTS AND/OR ENCLOSURE WHEN DIRECTED BY THE DISTRICT'S REPRESENTATIVE.
4. OMWD MAINTENANCE RESPONSIBILITY STOPS AT THE METER.
5. NO OTHER PIPING OR UTILITIES ARE ALLOWED WITHIN BACKFLOW PREVENTER INSTALLATION AREA.

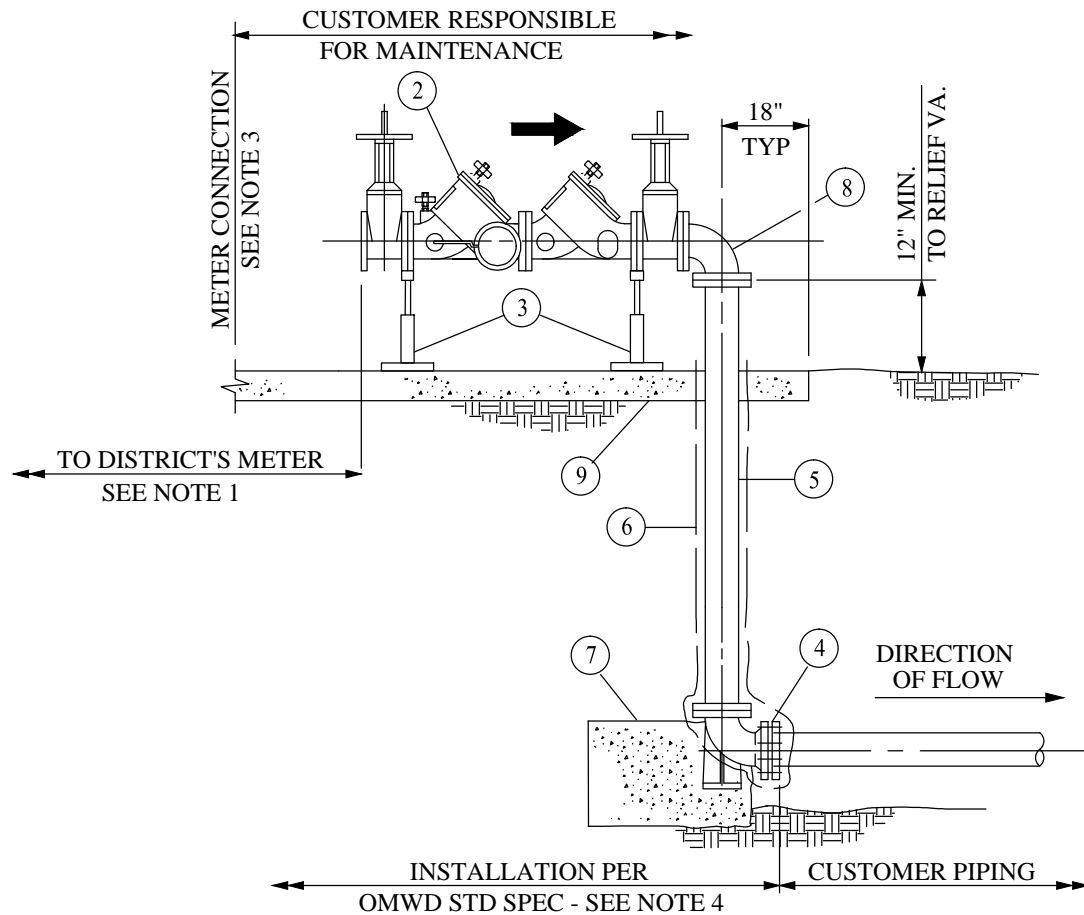
ITEM	DESCRIPTION	SPEC/DWG
1	3/4" THRU 2" REDUCED PRESSURE BACKFLOW PREVENTER ASSEMBLY	15112
2	COPPER ADAPTER, COPPER SOLDER JOINT x MALE IPT	15220
3	COPPER WATER TUBE, TYPE K, HARD	15220
4	COPPER 90° ELBOW WITH COPPER SOLDER JOINTS	15220
5	COPPER UNION WITH COPPER SOLDER JOINTS	15220
6	COPPER ADAPTER, MALE SOLDER x MALE IPT	15220
7	REDUCED PRESSURE BACKFLOW PREVENTER WITH BALL VALVES	15112
8	18" WIDE x 4" THICK CONCRETE PAD, LENGTH VARIES PER SIZE	15112
9	CONCRETE ANCHOR BLOCK WITH 1 CUBIC FOOT	15112

OLIVENHAIN MUNICIPAL WATER DISTRICT

REDUCED PRESSURE BACKFLOW PREVENTER
ASSY FOR SIZES 3/4-INCH THRU 2-INCH

STD DWG NO.
C-2.1
FEBRUARY 2017

STD DWG NO.
C-2.2
FEBRUARY 2017



NOTES:

1. NO OUTLETS WILL BE ALLOWED IN THE PIPING BETWEEN THE METER AND BACKFLOW PREVENTER. BACKFLOW PREVENTER SHALL BE THE SAME SIZE AS THE METER AND PIPING TO THE ASSEMBLY. A PRESSURE REGULATOR MAY BE INSTALLED BETWEEN PREVENTER. CUSTOMER IS RESPONSIBLE FOR MAINTENANCE FROM THE METER.
2. PROVIDE GUARD POSTS AND/OR ENCLOSURE WHEN DIRECTED BY THE DISTRICT'S REPRESENTATIVE.
3. OMWD MAINTENANCE RESPONSIBILITY STOPS AT THE METER.
4. NO OTHER PIPING OR UTILITIES ARE ALLOWED WITHIN BACKFLOW PREVENTER INSTALLATION AREA.

ITEM	DESCRIPTION	SPEC/DWG
1	4" THRU 8" REDUCED PRESSURE BACKFLOW PREVENTER ASSEMBLY	15112
2	REDUCED PRESSURE BACKFLOW PREVENTER WITH VALVES	15112
3	ADJUSTABLE PIPE SUPPORT	15112
4	DI BASE BEND WITH CL 150 FLANGE x MECHANICAL JOINT	15240
5	CLASS 53 DUCTILE IRON PIPE WITH CL 150 FLANGES	15240
6	POLYETHYLENE ENCASEMENT	09954
7	CONCRETE THRUST BLOCK	D-3.5/D-3.6
8	DUCTILE IRON 1/4 BEND WITH CL 150 FLANGES	15240
9	36" WIDE x 4" THICK CONCRETE PAD, LENGTH VARIES PER SIZE	15112

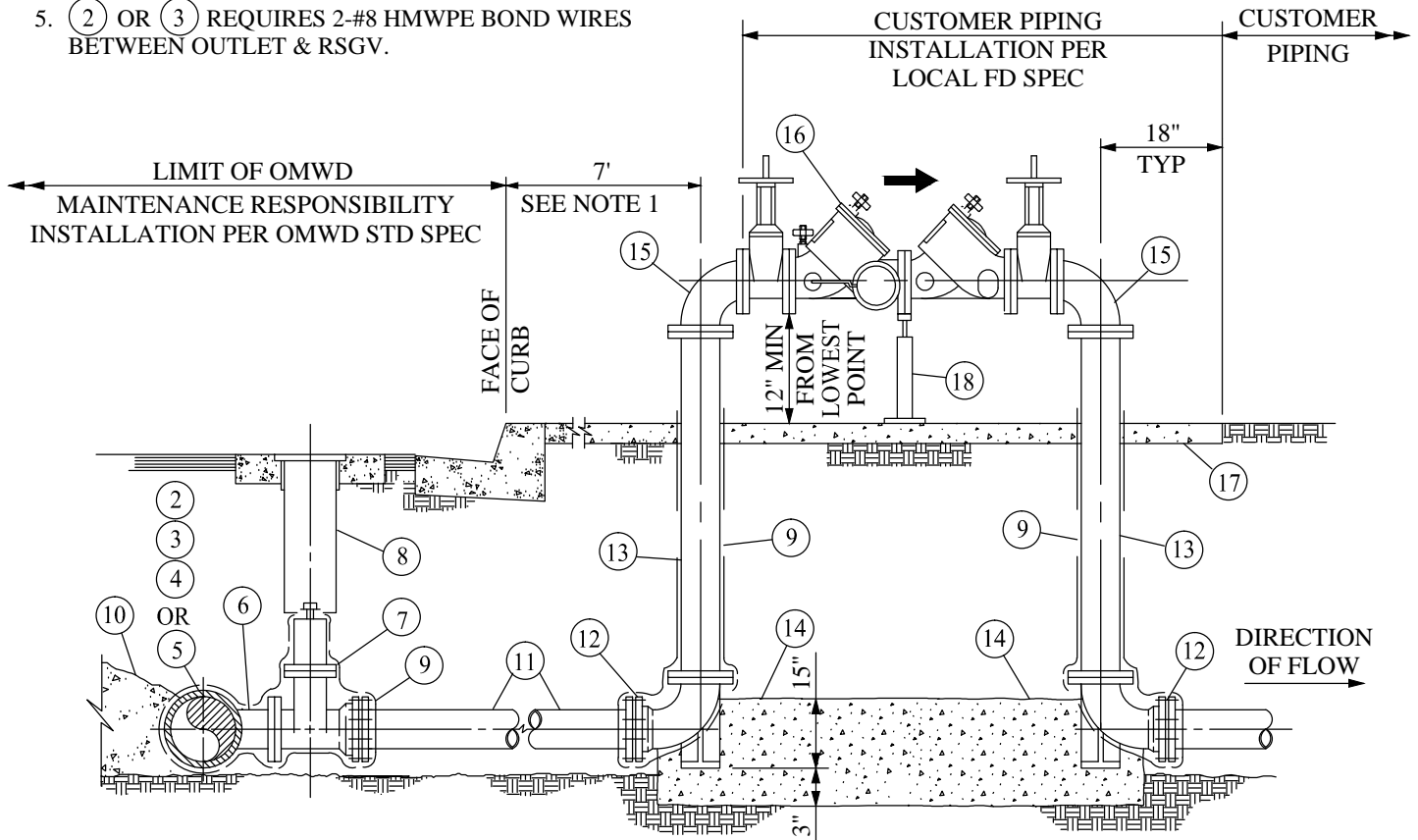
OLIVENHAIN MUNICIPAL WATER DISTRICT

REDUCED PRESSURE BACKFLOW PREVENTER
ASSY FOR SIZES 4-INCH THRU 10-INCH

STD DWG NO.
C-2.3
FEBRUARY 2017

NOTES:

1. WHEN SIDEWALK ADJACENT TO CURB EXCEEDS 5' IN WIDTH, LOCATE ASSEMBLY AS DIRECTED BY THE DISTRICT'S REPRESENTATIVE. DETECTOR CHECK ASSEMBLY MAY BE INSTALLED PERPENDICULAR TO FACE OF CURB AS SHOWN OR ROTATED 90° TO BE PARALLEL TO FACE OF CURB.
2. DETECTOR CHECKS SHALL BE THE SAME SIZE AS THE OUTLET AND PIPING TO THE ASSEMBLY.
3. PROVIDE GUARD POSTS WHEN DIRECTED BY THE DISTRICT'S REPRESENTATIVE OR G STYLE CURB.
4. CHAIN LOCK BY OWNER.
5. (2) OR (3) REQUIRES 2-#8 HMWPE BOND WIRES BETWEEN OUTLET & RSGV.



ITEM	DESCRIPTION	SPEC/DWG
1	4" THRU 10" REDUCED PRESSURE DETECTOR CHECK ASSEMBLY	15112
2	DUCTILE IRON PIPE AND DI TEE WITH CL 150 FLANGED OUTLET	15240
3	STEEL PIPE, CML&C AND STEEL OUTLET WITH CL 150 FLANGE	15061
4	DR14/18 PVC PRESSURE PIPE 12 INCHES AND SMALLER	15292
5	DR 18 PVC DISTRIBUTION PIPE 14 INCHES AND LARGER	15293
6	DI TEE WITH CL 150 FLANGED OUTLET FOR PVC PIPE INSTALLATION	15292/15293
7	RESILIENT SEATED GATE VALVE WITH CL 125 FLG x MECH JT, 0-250 PSI OR P.O.	15101
8	VALVE BOX INSTALLATION FOR BURIED VALVES	15101/E-1.2/E-1.3
9	WAX TAPE SYSTEM	09954
10	CONCRETE THRUST BLOCK	D-3.3/D-3.4
11	DR14/18 PVC PRESSURE PIPE PER WORKING PRESSURE	15292
12	DI BASE BEND WITH CL 150 FLANGE x MECHANICAL JOINT OR P.O.	15240
13	CLASS 53 DUCTILE IRON PIPE WITH CL 150 FLANGES	15240
14	CONCRETE THRUST BLOCK-POUR BACK TO BACK	D-3.5/D-3.6
15	DUCTILE IRON 1/4 BEND WITH CL 150 FLANGES	15240
16	REDUCED PRESSURE DETECTOR CHECK WITH BYPASS METER AND VALVES	15112
17	36" WIDE x 4" THICK CONCRETE PAD, LENGTH VARIES PER SIZE	15112
18	ADJUSTABLE PIPE SUPPORT	15112

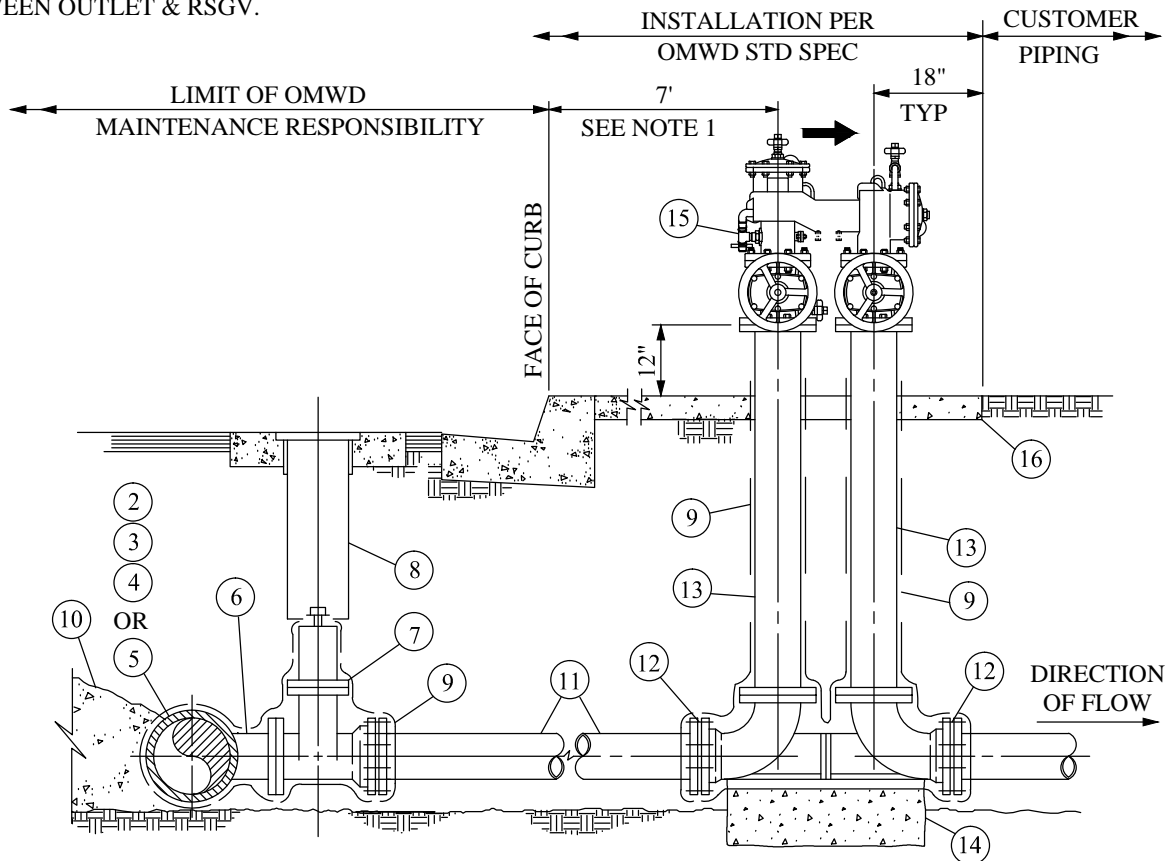
OLIVENHAIN MUNICIPAL WATER DISTRICT

REDUCED PRESSURE DETECTOR CHECK ASSEMBLY FOR SIZES 4-INCH THRU 10-INCH

STD DWG NO.
C-3.1
FEBRUARY 2017

NOTES:

1. WHEN SIDEWALK ADJACENT TO CURB EXCEEDS 5' IN WIDTH, LOCATE ASSEMBLY AS DIRECTED BY THE DISTRICT'S REPRESENTATIVE. DETECTOR CHECK ASSEMBLY SHALL BE INSTALLED PERPENDICULAR TO FACE OF CURB AS SHOWN. WHERE NO SIDEWALK PLACE ASSEMBLY 2' FROM FACE OF CURB.
2. DETECTOR CHECKS SHALL BE THE SAME SIZE AS THE OUTLET AND PIPING TO THE ASSEMBLY.
3. PROVIDE GUARD POSTS WHEN DIRECTED BY THE DISTRICT'S REPRESENTATIVE OR G STYLE CURB.
4. CHAIN LOCK BY OWNER.
5. BOND WIRES (IF USED) TO BE 2-#8 HWMPE.
6. (2) OR (3) REQUIRES 2-#8 HWMPE BOND WIRES BETWEEN OUTLET & RSGV.



ITEM	DESCRIPTION	SPEC/DWG
1	4" THRU 8" DOUBLE CHECK DETECTOR CHECK ASSEMBLY	15112
2	DUCTILE IRON PIPE AND DI TEE WITH CL 150 FLANGED OUTLET	15240
3	STEEL PIPE, CML&C AND STEEL OUTLET WITH CL 150 FLANGE W/ BOND WIRES	15061
4	DR14/18 PVC PRESSURE PIPE 12 INCHES AND SMALLER	15292
5	DR 18 PVC DISTRIBUTION PIPE 14 INCHES AND LARGER	15293
6	DI TEE WITH CL 150 FLANGED OUTLET FOR PVC PIPE INSTALLATION	15292/15293
7	RESILIENT SEATED GATE VALVE WITH CL 125 FLG x MECH JT, 0-250 PSI OR P.O.	15101
8	VALVE BOX INSTALLATION FOR BURIED VALVES	15101/E-1.2/E-1.3
9	WAX TAPE SYSTEM	09954
10	CONCRETE THRUST BLOCK	D-3.3/D-3.4
11	DR14/18 PVC PRESSURE PIPE PER WORKING PRESSURE	15292
12	DUCTILE IRON VALVE SETTER PER ITEM 15 MFG RECOMMENDED	15112
13	CLASS 53 DUCTILE IRON PIPE WITH CL 150 FLANGES	15240
14	CONCRETE ANCHOR BLOCK WITH 6 CUBIC FEET 2x3x1	15112
15	DOUBLE CHECK DETECTOR CHECK WITH BYPASS METER AND VALVES	15112
16	36" WIDE x 4" THICK CONCRETE PAD, LENGTH VARIES PER SIZE	15112

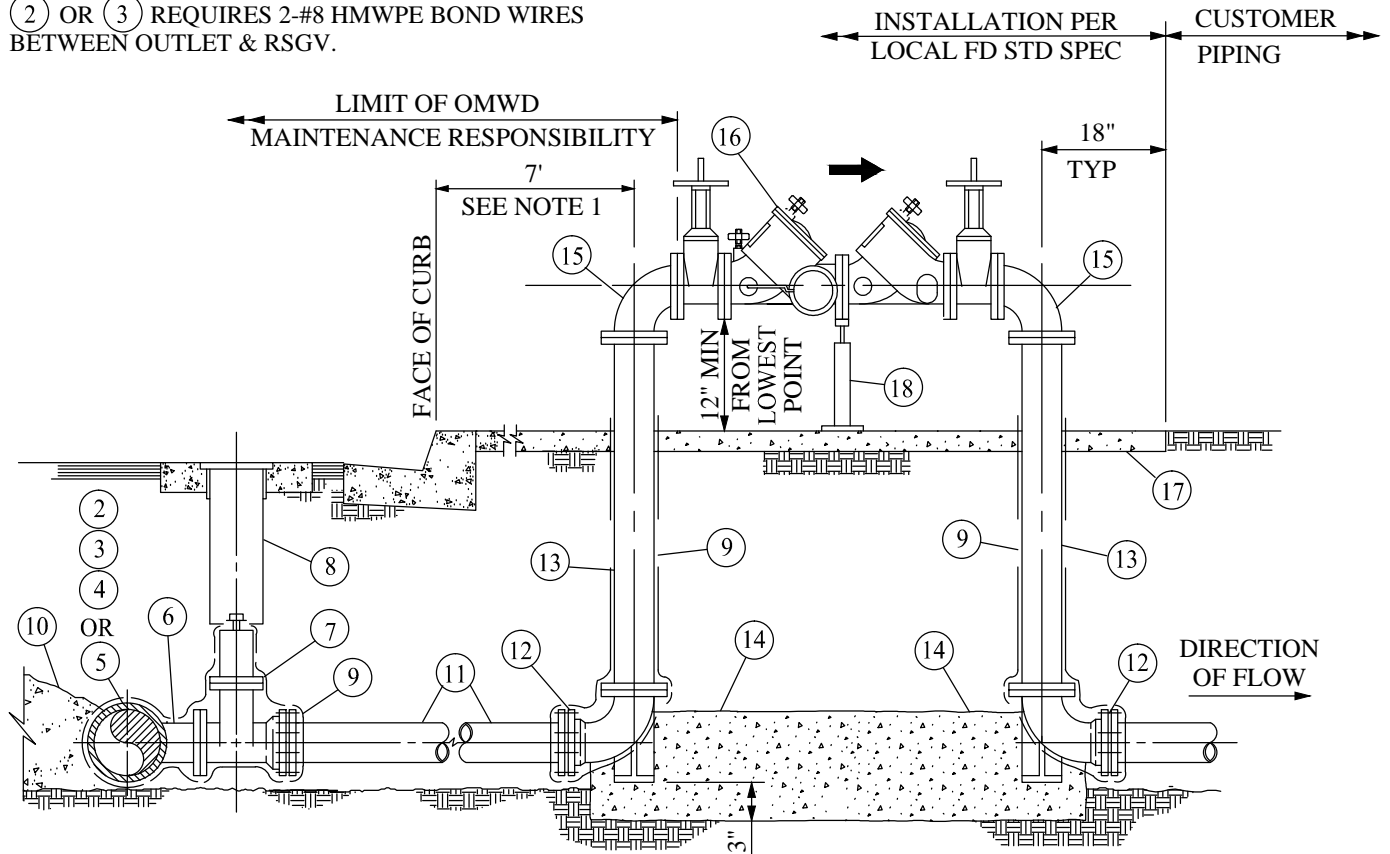
OLIVENHAIN MUNICIPAL WATER DISTRICT

DOUBLE CHECK DETECTOR CHECK ASSEMBLY FOR SIZES 4-INCH THRU 8-INCH

STD DWG NO.
C-3.2
FEBRUARY 2017

NOTES:

1. WHEN SIDEWALK ADJACENT TO CURB EXCEEDS 5' IN WIDTH, LOCATE ASSEMBLY AS DIRECTED BY THE DISTRICT'S REPRESENTATIVE. DETECTOR CHECK ASSEMBLY MAY BE INSTALLED PERPENDICULAR TO FACE OF CURB AS SHOWN OR ROTATED 90° TO BE PARALLEL TO FACE OF CURB.
2. DETECTOR CHECKS SHALL BE THE SAME SIZE AS THE OUTLET AND PIPING TO THE ASSEMBLY.
3. PROVIDE GUARD POSTS WHEN DIRECTED BY THE DISTRICT'S REPRESENTATIVE OR G STYLE CURB.
4. CHAIN LOCK BY OWNER.
5. (2) OR (3) REQUIRES 2-#8 HMWPE BOND WIRES BETWEEN OUTLET & RSGV.



ITEM	DESCRIPTION	SPEC/DWG
1	4" THRU 10" DOUBLE CHECK DETECTOR CHECK ASSEMBLY	15112
2	DUCTILE IRON PIPE AND DI TEE WITH CL 150 FLANGED OUTLET	15240
3	STEEL PIPE, CML&C AND STEEL OUTLET WITH CL 150 FLANGE	15061
4	DR14/18 PVC PRESSURE PIPE 12 INCHES AND SMALLER	15292
5	DR 18 PVC DISTRIBUTION PIPE 14 INCHES AND LARGER	15293
6	DI TEE WITH CL 150 FLANGED OUTLET FOR PVC PIPE INSTALLATION	15292/15293
7	RESILIENT SEATED GATE VALVE WITH CL 125 FLG x MECH JT, 0-250 PSI OR P.O.	15101
8	VALVE BOX INSTALLATION FOR BURIED VALVES	15101/E-1.2/E-1.3
9	WAX TAPE SYSTEM	09954
10	CONCRETE THRUST BLOCK	D-3.3/D-3.4
11	DR14/18 PVC PRESSURE PIPE PER WORKING PRESSURE	15292
12	DI BASE BEND WITH CL 150 FLANGE x MECHANICAL JOINT OR P.O.	15240
13	CLASS 53 DUCTILE IRON PIPE WITH CL 150 FLANGES	15240
14	CONCRETE THRUST BLOCK - POUR BACK TO BACK, 3' WIDE x L x 18" THICK	D-3.5/D-3.6
15	DUCTILE IRON 1/4 BEND WITH CL 150 FLANGES	15240
16	DOUBLE CHECK DETECTOR CHECK WITH BYPASS METER AND VALVES	15112
17	36" WIDE x 4" THICK CONCRETE PAD, LENGTH VARIES PER SIZE	15112
18	ADJUSTABLE PIPE SUPPORT	15112

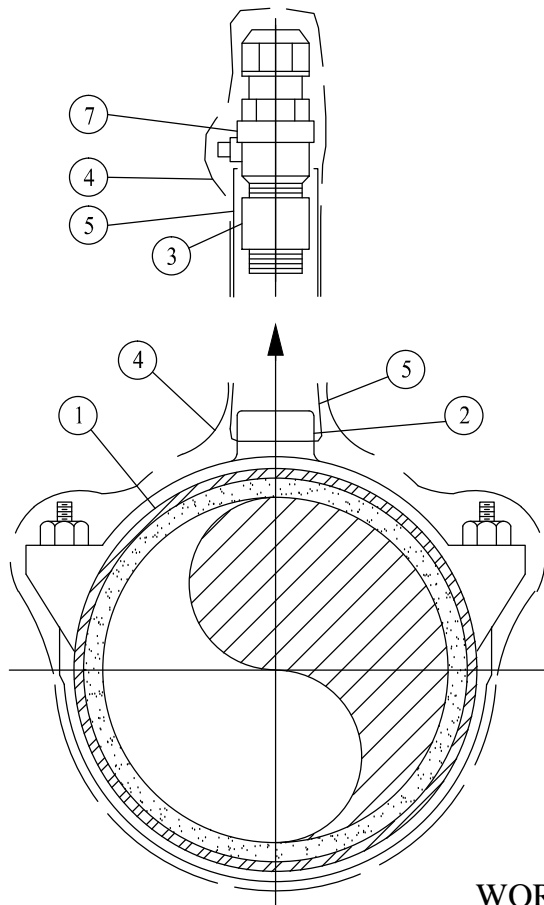
OLIVENHAIN MUNICIPAL WATER DISTRICT

DOUBLE CHECK DETECTOR CHECK
ASSEMBLY FOR SIZES 4-INCH THRU 10-INCH

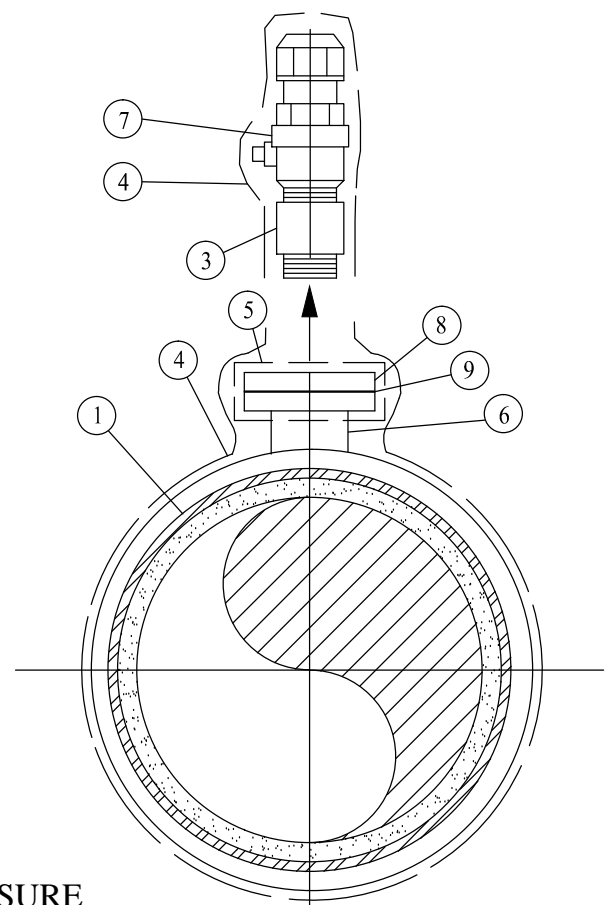
STD DWG NO.
C-3.3
FEBRUARY 2017

NOTES:

1. OUTLETS FOR MANUAL AIR RELEASE ASSEMBLIES AND COMBINATION AIR VALVE ASSEMBLIES ARE ON THE TOP OF PIPE.
2. OUTLETS FOR BLOW-OFF ASSEMBLIES AND WATER SERVICE ASSEMBLIES ARE ON THE SIDE OR SPRINGLINE OF PIPE.



0-200 PSI



201-300 PSI

WORKING PRESSURE

ASSEMBLY SIZE	② SIZE	③ SIZE	⑦ VALVE SIZE	⑧ OUTLET SIZE
1"	1"	1"	1"	1"
1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"
2"	2"	2"	2"	2"

ITEM	DESCRIPTION	SPEC/DWG
1	DUCTILE IRON PIPE	15240
2	BRONZE SERVICE SADDLE WITH FEMALE IPT OUTLET	15240
3	1"-2" ISOLATION UNION	15080 / G-15
4	POLYETHYLENE ENCASMENT	09954
5	WAX TAPE COATING SYSTEM	09952
6	DUCTILE IRON TEE WITH 4" CL 300 FLANGED OUTLET, 0-300 PSI	15240
7	BRZ CORP STOP BALL TYPE W/INLET MALE IPT x OUTLET QUICK JOINT, 0-300 PSI	15080
8	CAST BRONZE REDUCING FLANGE WITH FEMALE IPT OUTLET	15220
9	INSULATING FLANGE KIT	13110

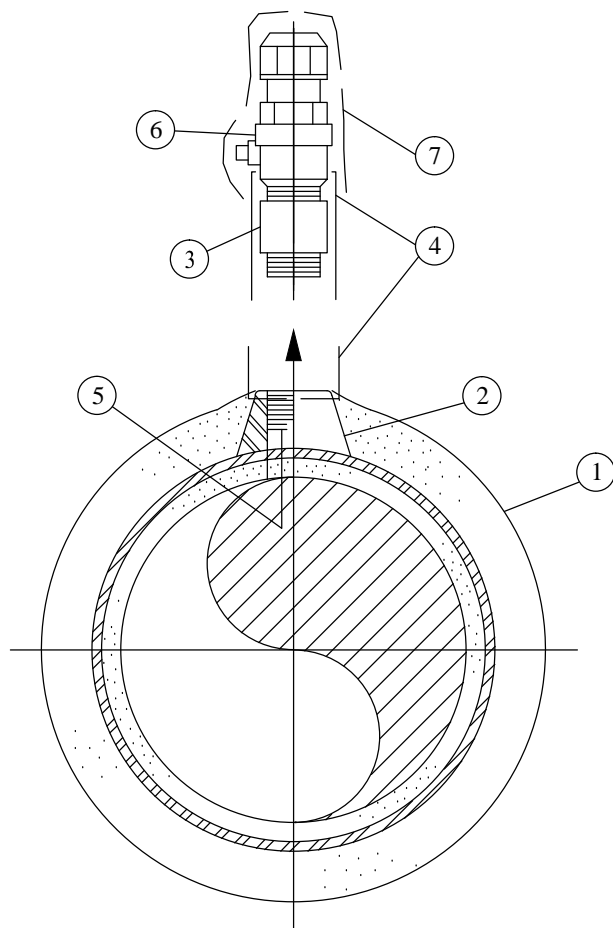
OLIVENHAIN MUNICIPAL WATER DISTRICT

OUTLETS ON DUCTILE IRON PIPE FOR
1-INCH THRU 2-INCH ASSEMBLIES

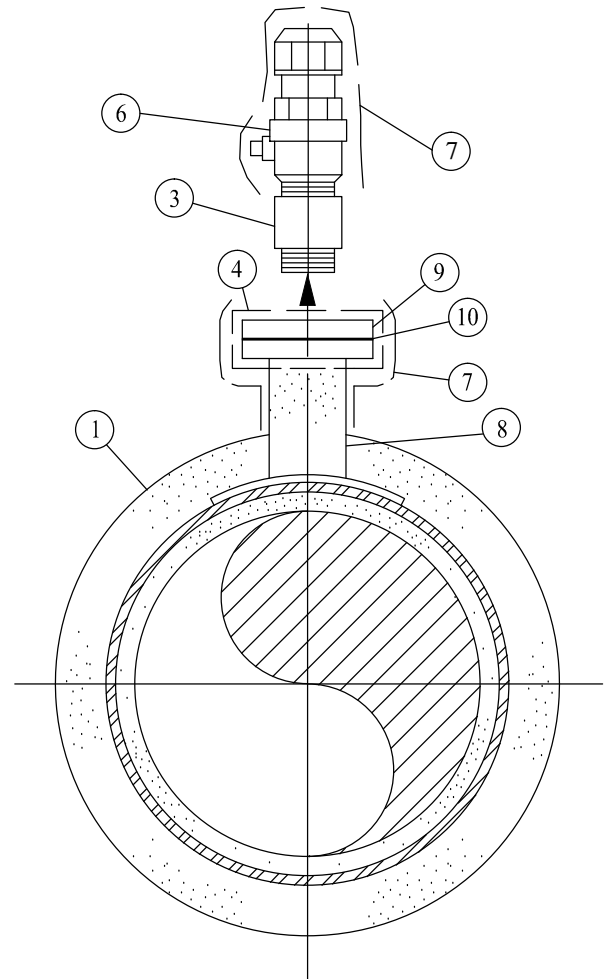
STD DWG NO.
D-1.1
FEBRUARY 2017

NOTES:

1. OUTLETS FOR MANUAL AIR RELEASE ASSEMBLIES AND COMBINATION AIR VALVE ASSEMBLIES ARE ON THE TOP OF PIPE.
2. OUTLETS FOR BLOW-OFF ASSEMBLIES AND WATER SERVICE ASSEMBLIES ARE ON THE SIDE OR SPRINGLINE OF PIPE.



0-200 PSI



201-300 PSI

WORKING PRESSURE

ASSEMBLY SIZE	② SIZE	③ SIZE	⑥ VALVE SIZE	⑨ OUTLET SIZE
1"	1"	2"	1"	1"
1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"
2"	2"	2"	2"	2"

ITEM	DESCRIPTION	SPEC/DWG
1	STEEL PIPE, CEMENT MORTAR LINED AND COATED	15061
2	STEEL OUTLET WITH FEMALE IPT - WELD TO PIPE	15061
3	1'-2' ISOLATION UNION	15080 / G-15
4	WAX TAPE COATING SYSTEM	09952
5	PAINT COATING SYSTEM NO. 5 APPLIED TO INSIDE STEEL SURFACES	09900
6	BRZ CORP STOP BALL TYPE W/INLET MALE IPT x OUTLET QUICK JOINT, 0-300 PSI	15080
7	POLYETHYLENE ENCASEMENT	09954
8	4" STEEL OUTLET WITH CL 300 FLANGE, CML&C	15061
9	CAST BRONZE REDUCING FLANGE WITH FEMALE IPT OUTLET	15220
10	INSULATING FLANGE KIT	13110

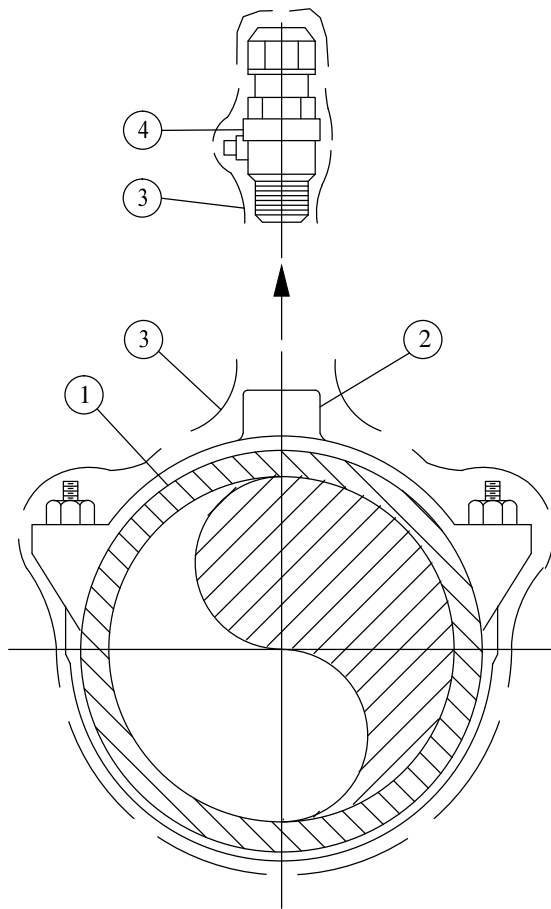
OLIVENHAIN MUNICIPAL WATER DISTRICT

OUTLETS ON CML&C STEEL PIPE FOR
1-INCH THRU 2-INCH ASSEMBLIES

STD DWG NO.
D-1.2
FEBRUARY 2017

NOTES:

1. OUTLETS FOR MANUAL AIR RELEASE ASSEMBLIES AND COMBINATION AIR VALVE ASSEMBLIES ARE ON THE TOP OF PIPE.
2. OUTLETS FOR BLOW-OFF ASSEMBLIES AND WATER SERVICE ASSEMBLIES ARE ON THE SIDE OR SPRINGLINE OF PIPE.
3. TORQUE TO MANUFACTURER'S SPECIFICATIONS.



0-200 PSI

WORKING PRESSURE

ASSEMBLY	② SIZE	④ VALVE SIZE
1"	1"	1"
1-1/2"	1-1/2"	1-1/2"
2"	2"	2"

ITEM	DESCRIPTION	SPEC/DWG
1	PVC PRESSURE PIPE - AWWA C900 DR14 OR DR18	15292
2	BRONZE SERVICE SADDLE WITH FEMALE IPT OUTLET	15292
3	WAX TAPE SYSTEM	09954
4	BRZ CORP STOP BALL TYPE W/INLET MALE IPT x OUTLET QUICK JOINT, 0-300 PSI	15080

OLIVENHAIN MUNICIPAL WATER DISTRICT

OUTLETS ON PVC PRESSURE PIPE FOR
1-INCH THRU 2-INCH ASSEMBLIES

STD DWG NO.
D-1.3
FEBRUARY 2017

VALVE CHARACTERISTICS

GATE VALVES — SEE STANDARD SPECIFICATION SECTION 15101.

SIZE RANGE: 3" THRU 12"; 14", 16", 18", AND 24"
WORKING PRESSURE: 0-250 PSI; 0-250 PSI
VALVE ENDS: CL 125 FLANGE x CL 125 FLANGE,
CL 125 FLANGE x MECHANICAL JOINT,
CL 125 FLANGE x PUSH ON (PVC),
MECHANICAL JOINT x MECHANICAL JOINT

NOTES:

1. BELOW GRADE VALVES SHALL BE 6" MINIMUM.

VALVE SELECTION CHART

WORKING PRESSURE	VALVE SIZE, TYPE AND RATING									
	3"	4"	6"	8"	10"	12"	14"	16"	18"	24"
0-150 PSI	GATE (0-250 PSI)						GATE (0-250 PSI)			
151-200 PSI	GATE (0-250 PSI)						GATE (0-250 PSI)			
201-250 PSI	GATE (0-250 PSI)						GATE (0-250 PSI)			
251-300 PSI	PROJECT SPECIFIC									

NOTE: WHERE VALVES ARE INSTALLED WITH PIPE HAVING NON-RESTRAINED JOINTS, PROVIDE REINFORCED CONCRETE ANCHOR AND ADAPTER WITH THRUST COLLAR. SPECIAL DESIGN REQUIRED FOR INSTALLATIONS WITH WORKING PRESSURE ABOVE 200 PSI.

OLIVENHAIN MUNICIPAL WATER DISTRICT

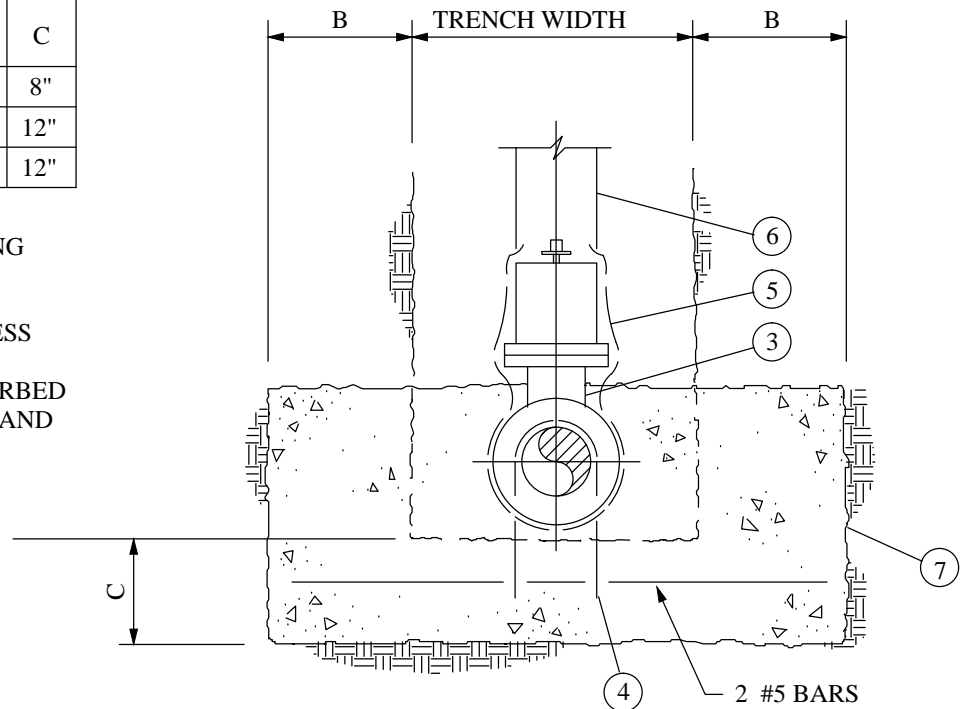
SELECTION OF LINE & BRANCH
VALVES FOR WATER MAINS

STD DWG NO.
D-2.1
FEBRUARY 2017

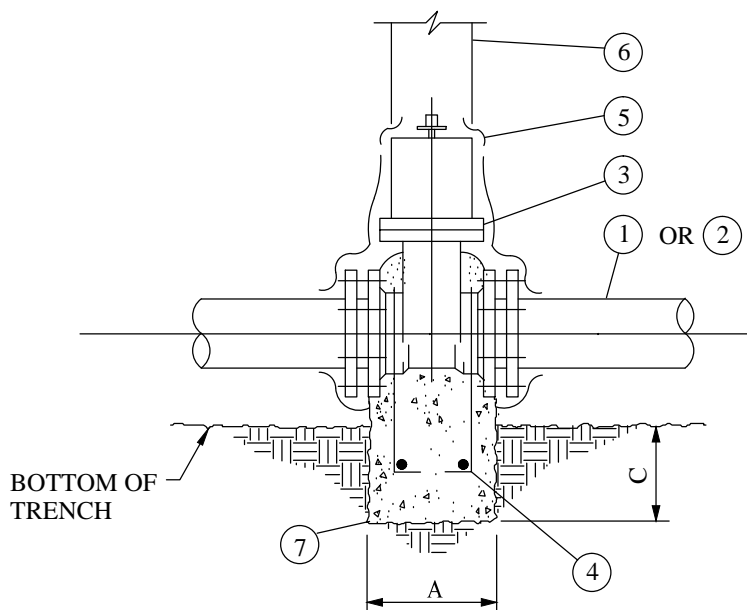
VALVE SIZE	WKG PRESS	A	B	C
6"	0-150	12"	12"	8"
8"	0-150	12"	16"	12"
10"	0-150	12"	24"	12"

NOTE: BASED ON SOIL BEARING CAPACITY OF 2000 LBS/SF. SPECIAL DESIGN REQUIRED IF SOIL BEARING CAPACITY IS LESS THAN 2000 LBS/SF. PLACE CONCRETE AGAINST UNDISTURBED GROUND IN TRENCH BOTTOM AND SIDES.

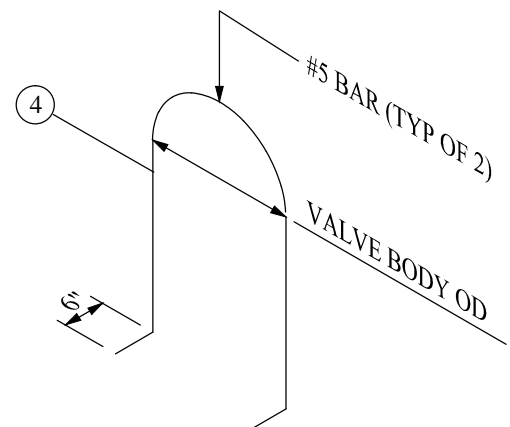
CONCRETE TO STOP BELOW BONNET BOLTS. ALL BOLTS TO REMAIN ACCESSIBLE.



TRENCH SECTION



TRENCH ELEVATION



- WRAP EXPOSED REBAR W/ 10 MIL TAPE 6" INTO CONCRETE

6"-10" WATER MAINS - 0-150 PSI

ITEM	DESCRIPTION	SPEC/DWG
1	DUCTILE IRON PIPE WITH NON-RESTRAINED JOINTS	15240
2	DR18 PVC PRESSURE PIPE WITH NON-RESTRAINED JOINTS	15292
3	RESILIENT SEATED GATE VALVE WITH MECHANICAL JOINTS OR P.O.	15101
4	REINFORCING STEEL	15101
5	WAX TAPE SYSTEM	09954
6	VALVE BOX INSTALLATION FOR BURIED VALVES	15101/E-1.2/E-1.3
7	CONCRETE ANCHOR BLOCK WITH REINFORCING STEEL	02223

OLIVENHAIN MUNICIPAL WATER DISTRICT

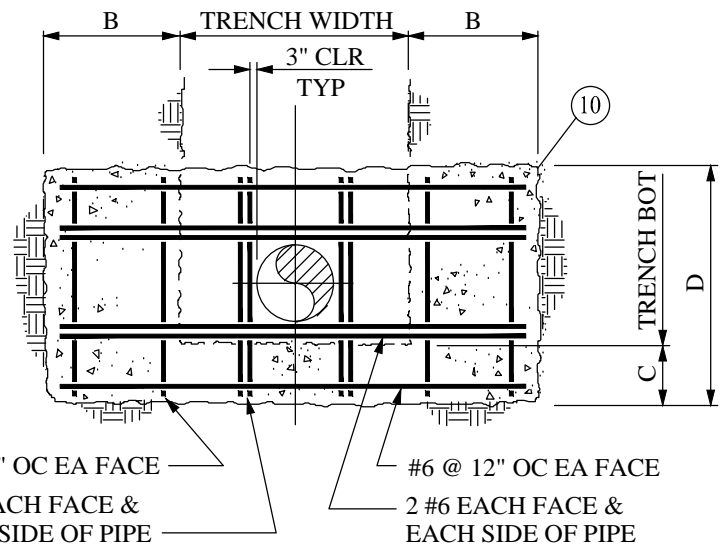
GATE VALVE INSTALLATION WITH CONCRETE ANCHOR BLOCK

STD DWG NO.
D-2.2
FEBRUARY 2017

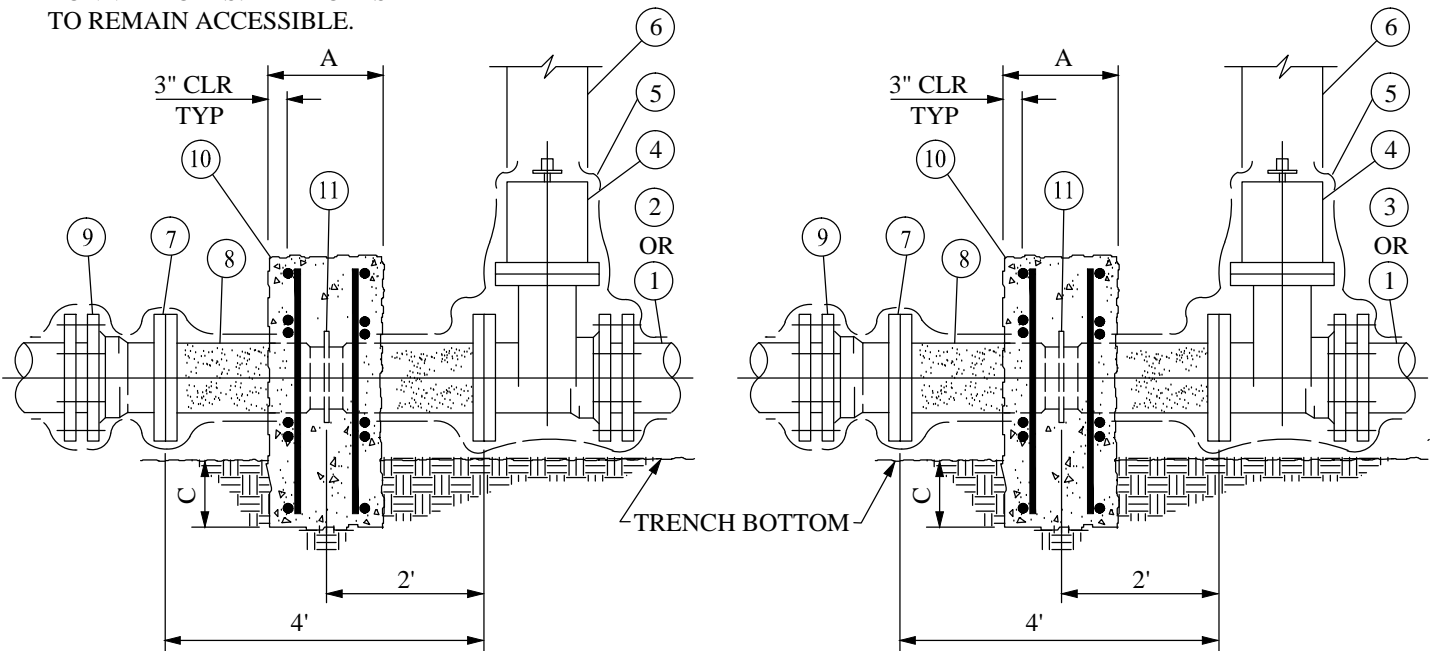
VALVE SIZE	WKG PRESS	A	B	C	D
12"	0-150	21"	32"	12"	36"
6"	151-200	18"	13"	12"	27"
8"	151-200	18"	22"	12"	32"
10"	151-200	18"	30"	12"	37"
12"	151-200	21"	38"	12"	42"

NOTE: BASED ON SOIL BEARING CAPACITY OF 2000 LBS/SF. SPECIAL DESIGN REQUIRED IF SOIL BEARING CAPACITY IS LESS THAN 2000 LBS/SF OR FOR INSTALLATIONS WITH WORKING PRESSURE ABOVE 200 PSI. PLACE CONCRETE AGAINST UNDISTURBED GROUND IN TRENCH BOTTOM AND SIDES.

CONCRETE TO STOP BELOW BONNET BOLTS. ALL BOLTS TO REMAIN ACCESSIBLE.



TRENCH SECTION



TRENCH ELEVATIONS

12" WATER MAIN - 0-150 PSI & 6"-12" WATER MAINS - 151-200 PSI

ITEM	DESCRIPTION	SPEC/DWG
1	DUCTILE IRON PIPE WITH NON-RESTRAINED JOINTS	15240
2	DR18 PVC PRESSURE PIPE WITH NON-RESTRAINED JOINTS	15292
3	DR14 PVC PRESSURE PIPE WITH NON-RESTRAINED JOINTS	15292
4	RESILIENT SEATED GATE VALVE WITH CL 125 FLANGE x MECHANICAL JOINT OR P.O.	15101
5	WAX TAPE SYSTEM	09954
6	VALVE BOX INSTALLATION FOR BURIED VALVES	15101/E-1.2/E-1.3
7	STD WT STEEL PIPE WITH CL 150 FLANGES	15253
8	CEMENT MORTAR LINING 5/16" THK & COATING 1-1/4" THK	15253
9	DUCTILE IRON FLANGE ADAPTER WITH CL 150 FLG x MECHANICAL JT OR PUSH ON	15240/15292
10	CONCRETE ANCHOR BLOCK WITH REINFORCING STEEL	02223
11	1/4" THK x 9" LG WRAPPER PLATE W/ 1" THK x 1-1/2" HIGH ANNULAR RING PLATE	15061/D-2.8

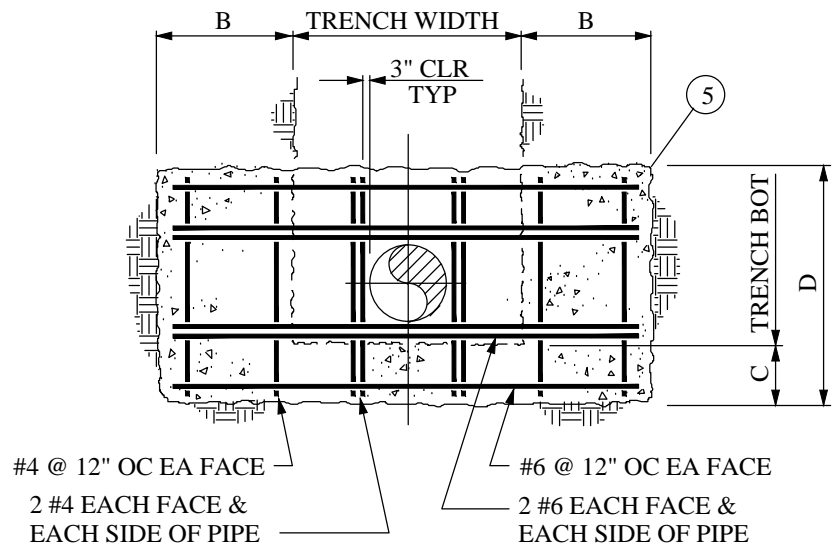
OLIVENHAIN MUNICIPAL WATER DISTRICT

GATE VALVE INSTALLATION WITH CONCRETE ANCHOR BLOCK

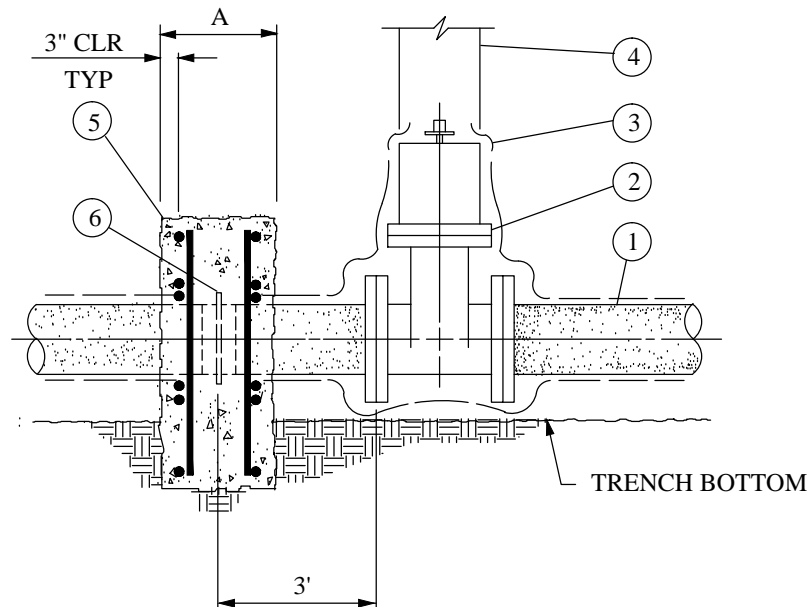
STD DWG NO.
D-2.3
FEBRUARY 2017

VALVE SIZE	WKG PRESS	A	B	C	D
6"	0-200	18"	13"	12"	27"
8"	0-200	18"	22"	12"	32"
10"	0-200	18"	30"	12"	37"
12"	0-200	21"	38"	12"	42"

NOTE: BASED ON SOIL BEARING CAPACITY OF 2000 LBS/SF. SPECIAL DESIGN REQUIRED IF SOIL BEARING CAPACITY IS LESS THAN 2000 LBS/SF OR FOR INSTALLATIONS WITH WORKING PRESSURE ABOVE 200 PSI. PLACE CONCRETE AGAINST UNDISTURBED GROUND IN TRENCH BOTTOM AND SIDES.



TRENCH SECTION



TRENCH ELEVATION

6"-12" WATER MAINS - 0-200 PSI

ITEM	DESCRIPTION	SPEC/DWG
1	STEEL PIPE, CML&C WITH NON-RESTRAINED JOINTS & CL 150 FLANGES	15061
2	RESILIENT SEATED GATE VALVE WITH CL 125 FLANGES	15101
3	WAX TAPE SYSTEM	09954
4	VALVE BOX INSTALLATION FOR BURIED VALVES	15101/E-1.2/E-1.3
5	CONCRETE ANCHOR BLOCK WITH REINFORCING STEEL	02223
6	1/4" THK x 9" LG WRAPPER PL W/1" THK x 1-1/2" HIGH ANNULAR RING PL	15061/D-2.8

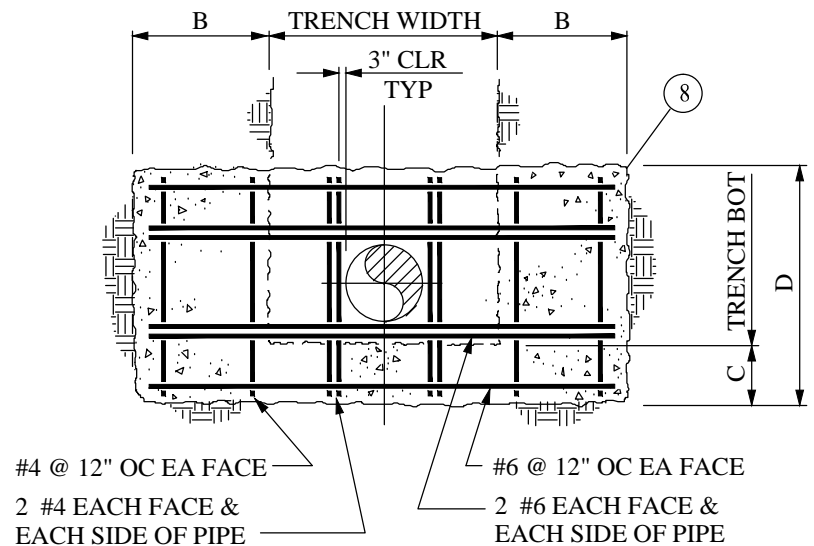
OLIVENHAIN MUNICIPAL WATER DISTRICT

GATE VALVE INSTALLATION
WITH CONCRETE ANCHOR BLOCK

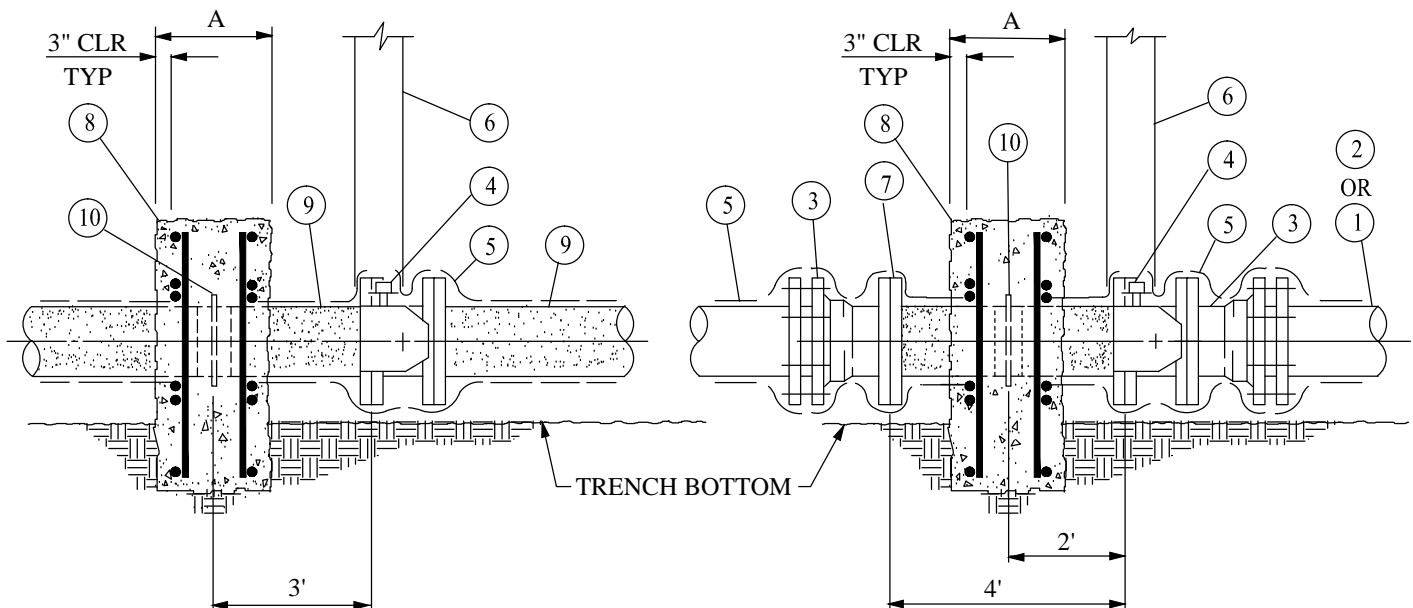
STD DWG NO.
D-2.4
FEBRUARY 2017

VALVE SIZE	WKG PRESS	A	B	C	D
14"	0-150	24"	38"	15"	42"
16"	0-150	24"	44"	15"	48"
18"	0-150	24"	48"	18"	54"
24"	0-150	SPECIAL			

NOTE: BASED ON SOIL BEARING CAPACITY OF 2000 LBS/SF. SPECIAL DESIGN REQUIRED IF SOIL BEARING CAPACITY IS LESS THAN 2000 LBS/SF. PLACE CONCRETE AGAINST UNDISTURBED GROUND IN TRENCH BOTTOM AND SIDES.



TRENCH SECTION



TRENCH ELEVATIONS

14"-24" WATER MAINS - 0-150 PSI

ITEM	DESCRIPTION	SPEC/DWG
1	DUCTILE IRON PIPE WITH NON-RESTRAINED JOINTS	15240
2	DR 18 PVC DISTRIBUTION PIPE WITH NON-RESTRAINED JOINTS	15293
3	DUCTILE IRON FLANGE ADAPTER WITH CL 150 FLG x MECHANICAL JT OR PUSH ON	15240/15293
4	GATE VALVE WITH CL 125 FLANGES	15101
5	WAX TAPE SYSTEM	09954
6	VALVE BOX INSTALLATION FOR BURIED VALVES	15101/E-1.2/E-1.3
7	STEEL PIPE SPOOL, CML&C & CL 150 FLANGES	15061
8	CONCRETE ANCHOR BLOCK WITH REINFORCING STEEL	02223
9	STEEL PIPE, CML&C WITH NON-RESTRAINED JOINTS & CL 150 FLANGES	15061
10	1/4" THK x 9" LG WRAPPER PL W/1" THK x 1-1/2" HIGH ANNULAR RING PL	15061/D-2.8

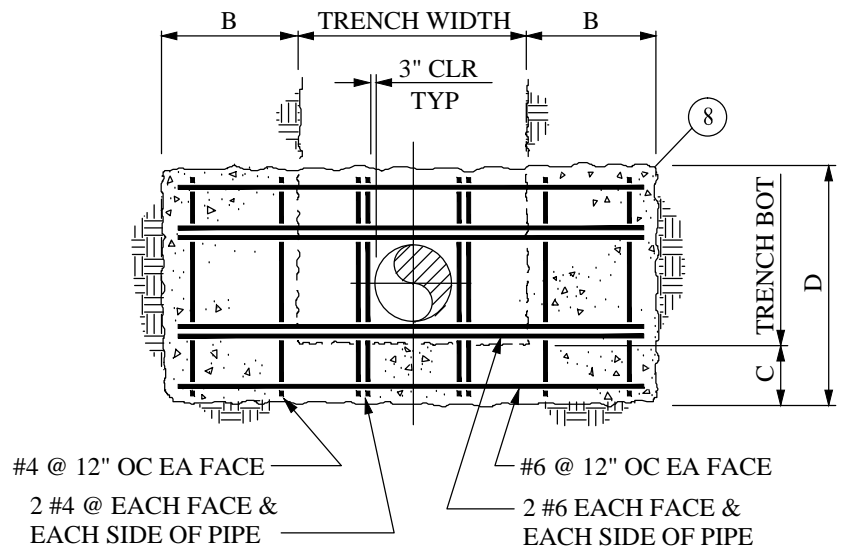
OLIVENHAIN MUNICIPAL WATER DISTRICT

GATE VALVE INSTALLATION WITH CONCRETE ANCHOR BLOCK

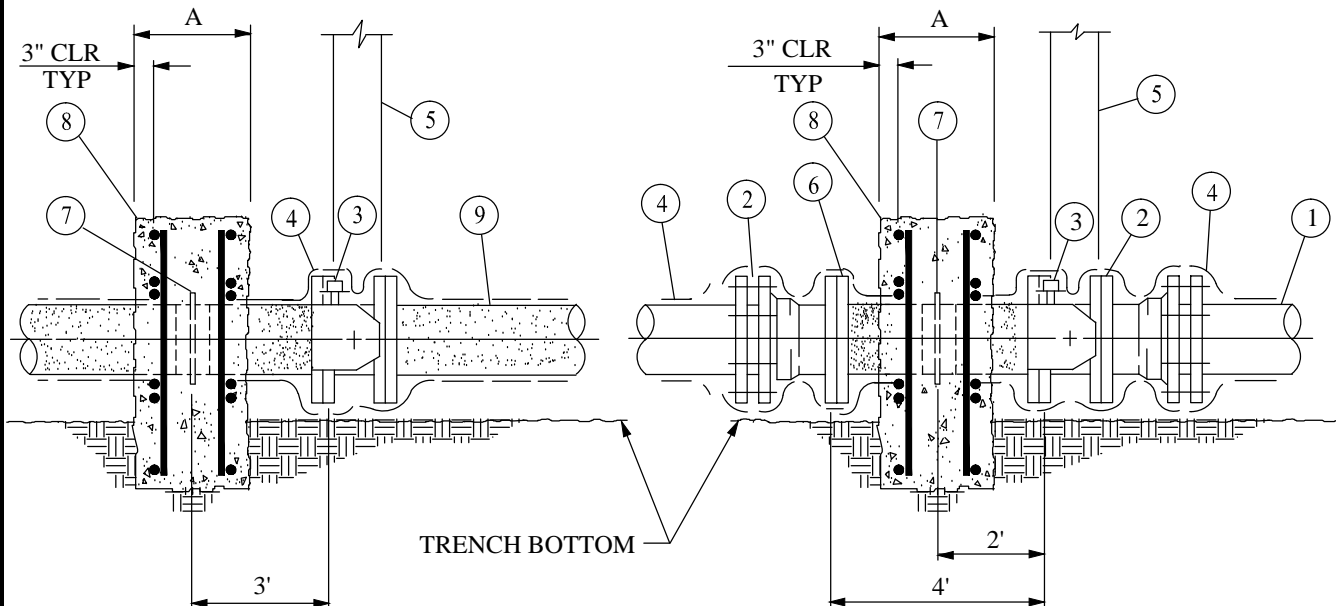
STD DWG NO.
D-2.5
FEBRUARY 2017

VALVE SIZE	WKG PRESS	A	B	C	D
14"	151-200	24"	45"	15"	50"
16"	151-200	24"	50"	15"	55"
18"	151-200	24"	55"	18"	63"
24"	151-200	SPECIAL			

NOTE: BASED ON SOIL BEARING CAPACITY OF 2000 LBS/SF. SPECIAL DESIGN REQUIRED IF SOIL BEARING CAPACITY IS LESS THAN 2000 LBS/SF OR FOR INSTALLATIONS WITH WORKING PRESSURE ABOVE 200 PSI. PLACE CONCRETE AGAINST UNDISTURBED GROUND IN TRENCH BOTTOM AND SIDES.



TRENCH SECTION



TRENCH ELEVATIONS

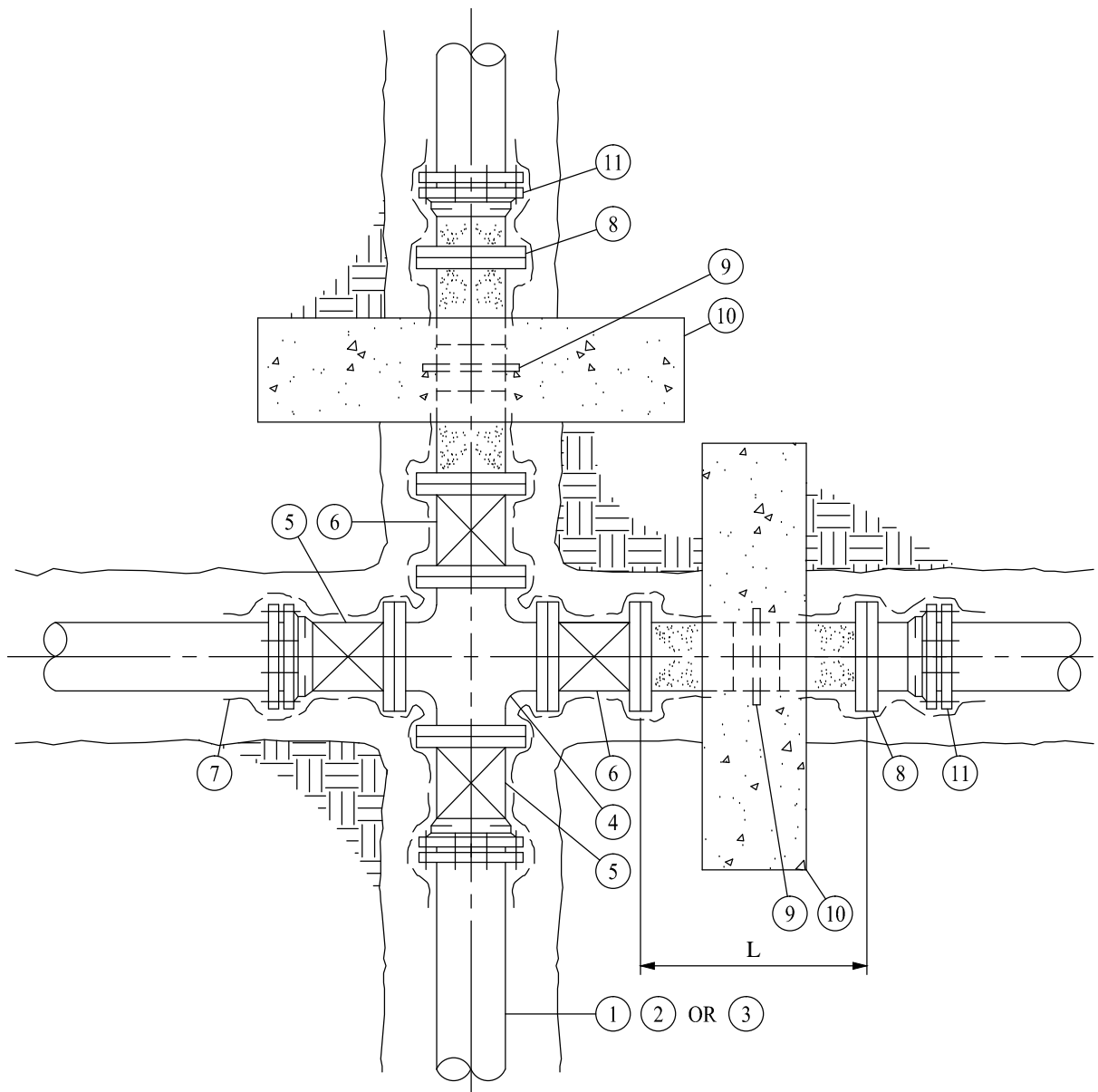
14"-24" WATER MAINS - 151-200 PSI

ITEM	DESCRIPTION	SPEC/DWG
1	DUCTILE IRON PIPE WITH NON-RESTRAINED JOINTS	15240
2	DUCTILE IRON FLANGE ADAPTER WITH CL 150 FLG x MECHANICAL JT OR PUSH ON	15240
3	GATE VALVE WITH CL 125 FLANGES	15101
4	WAX TAPE SYSTEM	09954
5	VALVE BOX INSTALLATION FOR BURIED VALVES	15104/E-1.2/E-1.3
6	STEEL PIPE SPOOL, CML&C & CL 150 FLANGES	15061
7	1/4 " THK x 12" LG WRAPPER PL W/1" THK x 2" HIGH ANNULAR RING PL	15061/D-2.8
8	CONCRETE ANCHOR BLOCK WITH REINFORCING STEEL	02223
9	STEEL PIPE, CML&C WITH NON-RESTRAINED JOINTS & CL 150 FLANGES	15061

OLIVENHAIN MUNICIPAL WATER DISTRICT

GATE VALVE INSTALLATION
WITH CONCRETE ANCHOR BLOCK

STD DWG NO.
D-2.6
FEBRUARY 2017



L = 4' OR 6'

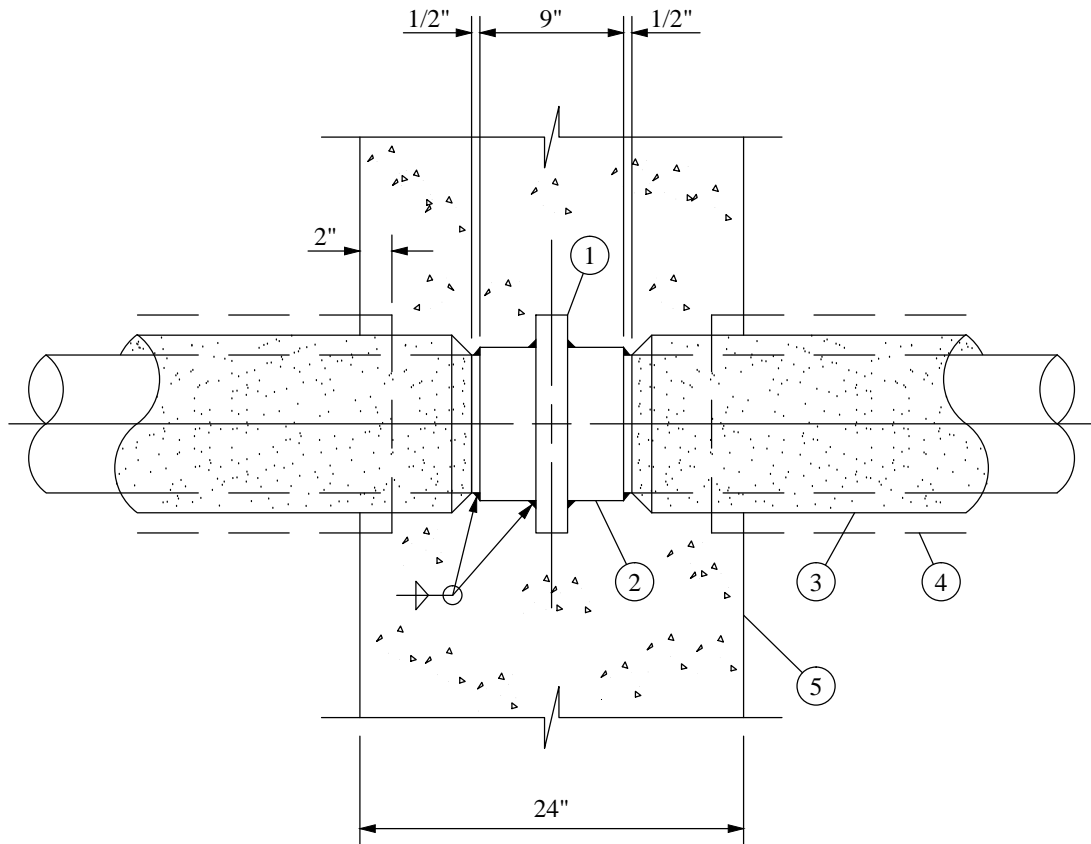
ITEM	DESCRIPTION	SPEC/DWG
1	DUCTILE IRON PIPE WITH NON-RESTRAINED JOINTS	15240
2	DR14 OR DR18 PVC PRESSURE PIPE	15292
3	DR18 PVC DISTRIBUTION PIPE C905	15293
4	DUCTILE IRON CROSS WITH CL 150 FLANGES	15240/15292/15293
5	RESILIENT SEATED GATE VALVE WITH CL 125 FLG x MECHANICAL JT OR PUSH ON	15101
6	RESILIENT SEATED GATE VALVE WITH CL 125 FLANGE x FLANGE	15101
7	WAX TAPE SYSTEM	09954
8	STEEL PIPE SPOOL, CML&C, AND CL 150 FLANGES	15061/15253
9	1/4" THK x 9" LG WRAPPER PLATE W/1" THK x 1-1/2" HIGH ANNULAR RING PLATE	15061/15253/D-2.8
10	CONCRETE ANCHOR BLOCK WITH REINFORCING STEEL	D-2.3/D-2.5/D-2.6
11	DUCTILE IRON FLANGE ADAPTER WITH CL 150 FLG x MECHANICAL JT OR PUSH ON	15240/15292/15293

OLIVENHAIN MUNICIPAL WATER DISTRICT

INSTALLATION OF CROSS WITH GATE VALVES AND ANCHOR BLOCKS

STD DWG NO.
D-2.7
FEBRUARY 2017

* 1 1/4" THICK CEMENT COATING (OUTSIDE)
5/16" THICK CEMENT LINING (INSIDE)



ANCHOR PLATE

ITEM	DESCRIPTION	SPEC/DWG
1	1" THK x 1-1/2" OR 2" HIGH ANNULAR RING PLATE	15061/15253
2	1/4" THK x 9" LONG WRAPPER PLATE	15061/15253
3	STEEL PIPE, CML&C	15061/15253
4	POLYETHYLENE ENCASEMENT	09954
5	CONCRETE ANCHOR BLOCK WITH REINFORCING STEEL	02223

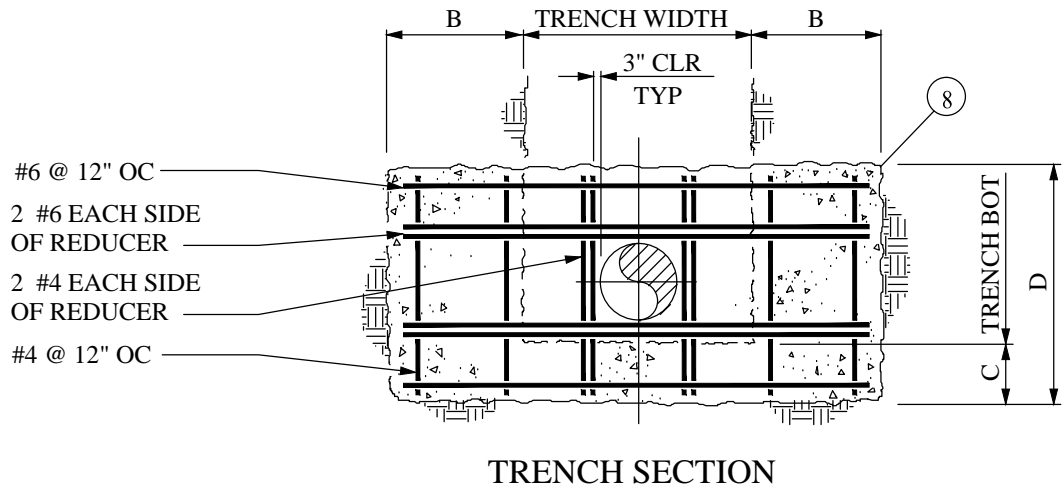
OLIVENHAIN MUNICIPAL WATER DISTRICT

ANCHOR PLATE DETAIL

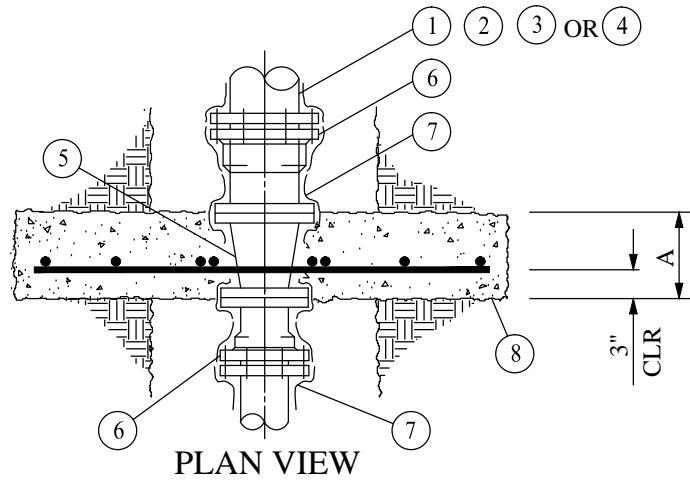
STD DWG NO.

D-2.8

FEBRUARY 2017



NOTE: BASED ON SOIL BEARING CAPACITY OF 2000 LBS/SF. SPECIAL DESIGN REQUIRED IF SOIL BEARING CAPACITY IS LESS THAN 2000 LBS/SF. PLACE CONCRETE AGAINST UNDISTURBED GROUND IN TRENCH BOTTOM AND SIDES.



MINIMUM DIMENSIONS OF BLOCK IN INCHES															
SIZE	16"			14"		12"		10"		8"		6"		4"	
18"	A=19 C=12	B=11 D=42	A=19 C=12	B=22 D=42	A=19 C=12	B=33 D=42	A=19 C=18	B=35 D=48	A=19 C=18	B=38 D=54					
16"			A=18 C=12	B=11 D=42	A=18 C=12	B=22 D=42	A=18 C=12	B=32 D=42	A=18 C=18	B=32 D=48	A=18 C=18	B=38 D=48			
14"					A=16 C=12	B=11 D=42	A=16 C=12	B=18 D=42	A=16 C=12	B=27 D=42	A=16 C=12	B=32 D=42			
12"							A=14 C=12	B=11 D=42	A=14 C=12	B=14 D=42	A=14 C=12	B=22 D=42	A=14 C=12	B=27 D=42	
10"									A=12 C=12	B=9 D=36	A=12 C=12	B=11 D=42	A=12 C=12	B=16 D=42	
8"											A=11 C=12	B=9 D=36	A=11 C=12	B=11 D=42	
6"													A=9 C=12	B=9 D=36	

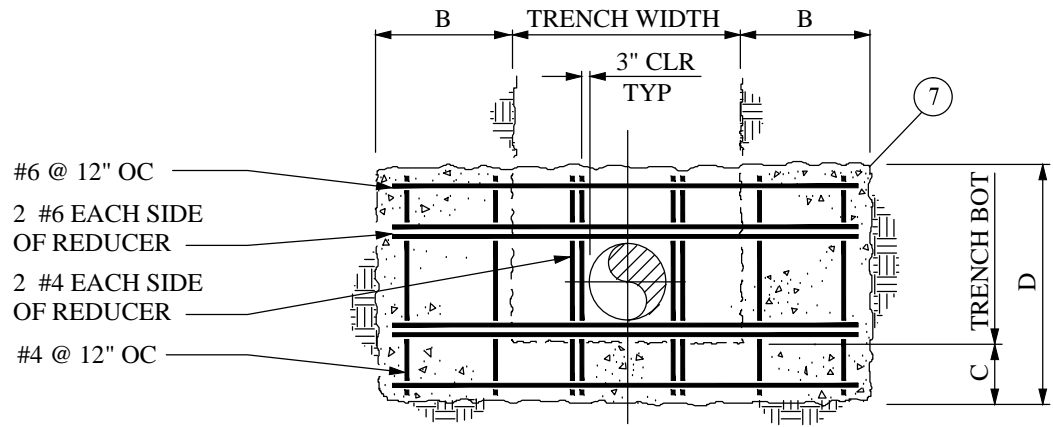
4"-18" WATER MAINS - 0-150 PSI

ITEM	DESCRIPTION	SPEC/DWG
1	DUCTILE IRON PIPE WITH NON-RESTRAINED JOINTS	15240
2	STEEL PIPE, CML&C WITH NON-RESTRAINED JOINTS	15061
3	DR18 PVC PRESSURE PIPE, 12" & SMALLER WITH NON-RESTRAINED JOINTS	15292
4	DR18 PVC DISTRIBUTION PIPE, 14 INCHES & LARGER W/NON-RESTRAINED JT C905	15293
5	DI CONCENTRIC REDUCER W/ CL 150 FLANGES FOR DI OR PVC PIPE - STEEL NOT SHOWN	15240/15292/15293
6	DUCTILE IRON FLANGE ADAPTER WITH CL 150 FLG x MECHANICAL JT OR PUSH ON	15240/15292/15293
7	WAX TAPE SYSTEM	09954
8	CONCRETE THRUST BLOCK WITH REINFORCING STEEL	02223

OLIVENHAIN MUNICIPAL WATER DISTRICT

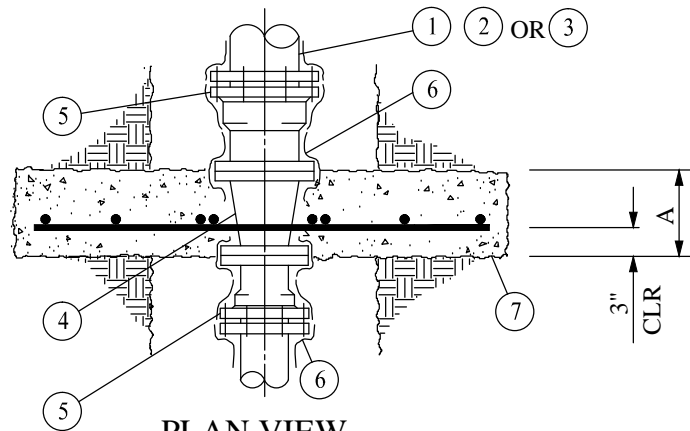
THRUST BLOCK FOR PIPE REDUCERS WORKING PRESSURE 0-150 PSI

STD DWG NO.
D-3.1
FEBRUARY 2017



TRENCH SECTION

NOTE: BASED ON SOIL BEARING CAPACITY OF 2000 LBS/SF. SPECIAL DESIGN REQUIRED IF SOIL BEARING CAPACITY IS LESS THAN 2000 LBS/SF OR FOR INSTALLATIONS WITH WORKING PRESSURE ABOVE 200 PSI. PLACE CONCRETE AGAINST UNDISTURBED GROUND IN TRENCH BOTTOM AND SIDES.



PLAN VIEW

MINIMUM DIMENSIONS OF BLOCK IN INCHES														
SIZE	16"		14"		12"		10"		8"		6"		4"	
18"	A=19 C=12	B=14 D=42	A=19 C=15	B=25 D=48	A=19 C=18	B=36 D=48	A=19 C=18	B=42 D=54	A=19 C=18	B=46 D=60				
16"			A=18 C=12	B=12 D=42	A=18 C=15	B=22 D=48	A=18 C=18	B=32 D=48	A=18 C=18	B=36 D=54	A=18 C=18	B=42 D=54		
14"					A=16 C=12	B=12 D=42	A=16 C=15	B=18 D=48	A=16 C=15	B=27 D=48	A=16 C=18	B=34 D=48		
12"							A=14 C=12	B=12 D=36	A=14 C=12	B=18 D=42	A=14 C=15	B=22 D=48	A=14 C=15	B=27 D=48
10"									A=12 C=12	B=11 D=36	A=12 C=12	B=14 D=42	A=12 C=12	B=20 D=42
8"											A=11 C=12	B=9 D=36	A=11 C=12	B=12 D=36
6"													A=9 C=12	B=9 D=36

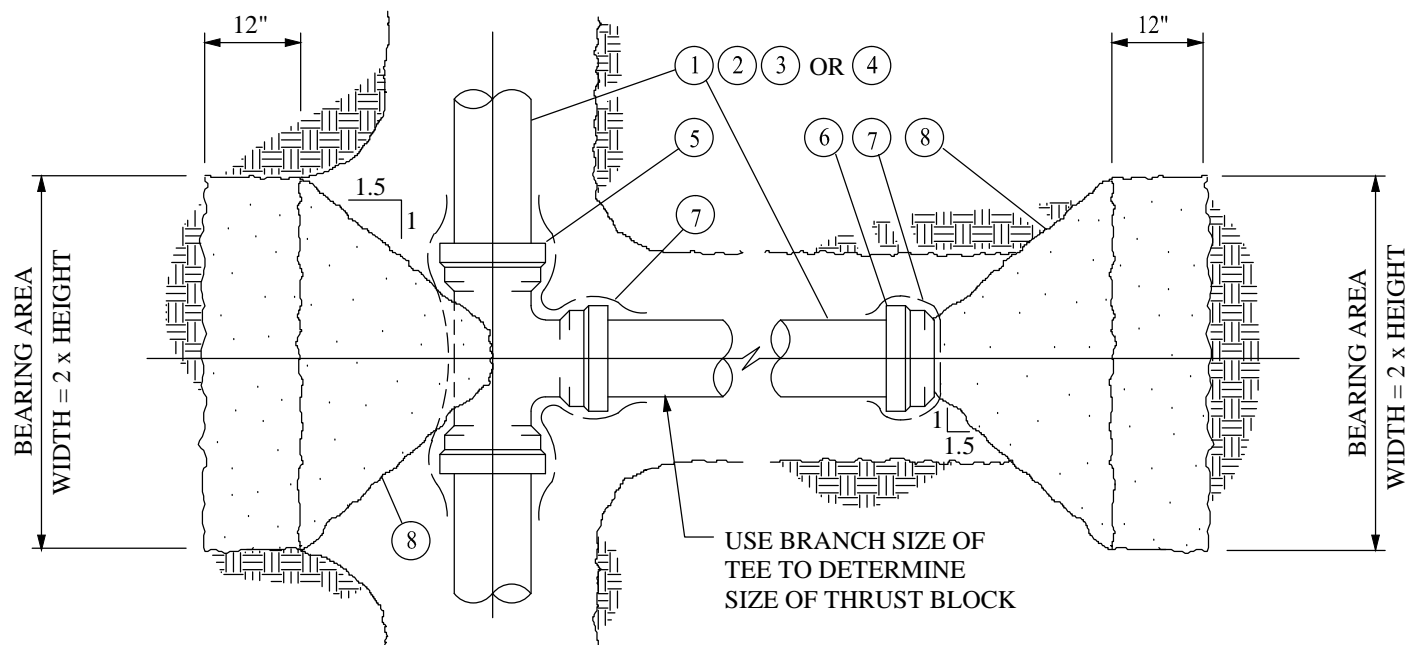
4"-18" WATER MAINS - 151-200 PSI

ITEM	DESCRIPTION	SPEC/DWG
1	DUCTILE IRON PIPE WITH NON-RESTRAINED JOINTS	15240
2	STEEL PIPE, CML&C WITH NON-RESTRAINED JOINTS	15061
3	DR14 PVC PRESSURE PIPE, 12 INCHES & SMALLER WITH NON-RESTRAINED JT C900	15292
4	DI CONCENTRIC REDUCER W/ CL 150 FLANGES FOR DI OR PVC PIPE - STEEL NOT SHOWN	15240/15292
5	DUCTILE IRON FLANGE ADAPTER WITH CL 150 FLG x MECHANICAL JT OR PUSH ON	15240/15292
6	WAX TAPE SYSTEM	09954
7	CONCRETE THRUST BLOCK WITH REINFORCING STEEL	02223

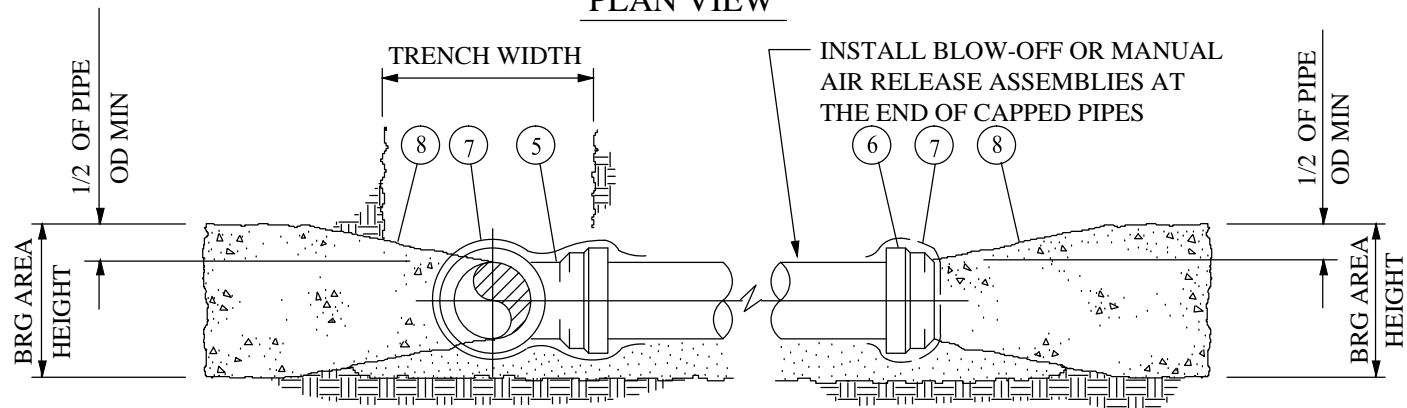
OLIVENHAIN MUNICIPAL WATER DISTRICT

**THRUST BLOCK FOR PIPE REDUCERS
WORKING PRESSURE 151-200 PSI**

STD DWG NO.
D-3.2
FEBRUARY 2017



PLAN VIEW



TRENCH SECTION

MINIMUM BEARING AREA OF BLOCK IN SQUARE FEET								
SIZE	4"	6"	8"	10"	12"	14"	16"	18"
TEE	3	6	10	15	21	28	36	45
CAP	3	6	10	15	21	28	36	45

$$\text{HEIGHT} = \sqrt{\frac{\text{BRG AREA}}{2}}$$

$$\text{WIDTH} = 2 \times \text{HEIGHT}$$

NOTE BASED ON SOIL BEARING CAPACITY OF 2000 LBS/SF. SPECIAL DESIGN REQUIRED IF SOIL BEARING CAPACITY IS LESS THAN 2000 LBS/SF. PLACE CONCRETE AGAINST UNDISTURBED GROUND IN TRENCH BOTTOM AND SIDE.

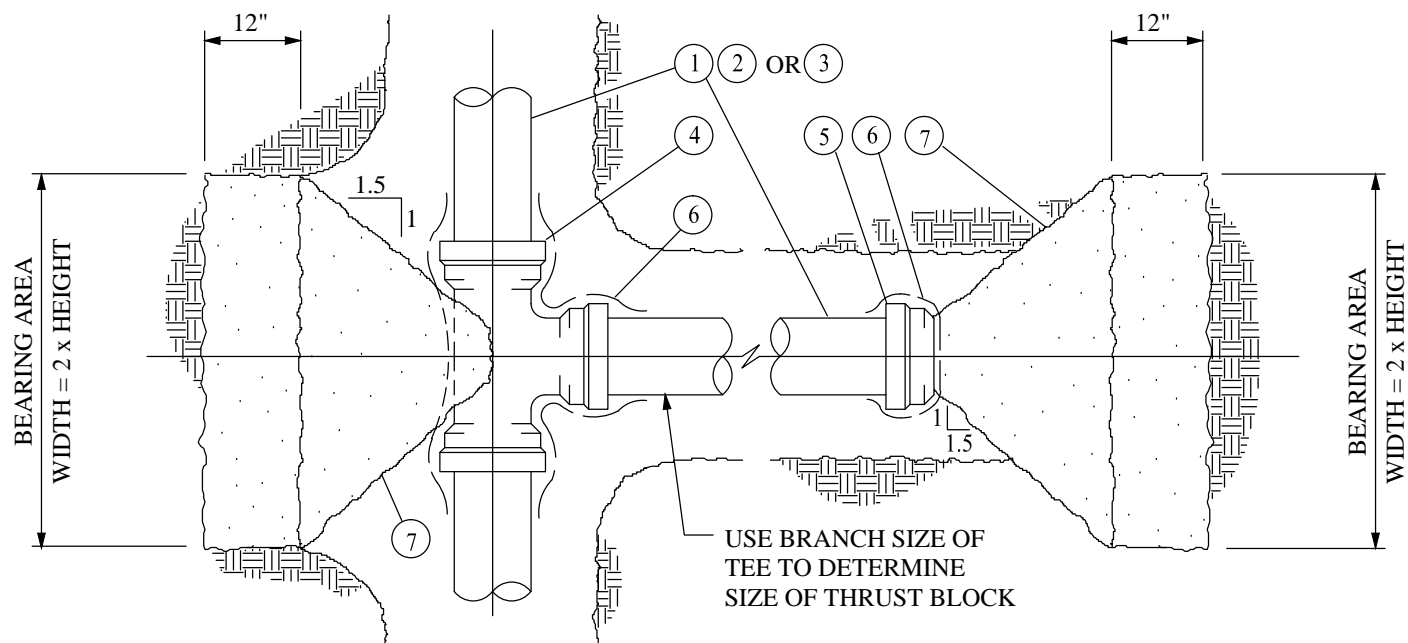
4"-18" WATER MAINS - 0-150 PSI

ITEM	DESCRIPTION	SPEC/DWG
1	DUCTILE IRON PIPE WITH NON-RESTRAINED JOINTS	15240
2	STEEL PIPE, CML&C WITH NON-RESTRAINED JOINTS	15061
3	DR18 PVC PRESSURE PIPE, 12 INCHES & SMALLER WITH NON-RESTRAINED JT C900	15292
4	DR18 PVC DISTRIBUTION PIPE, 14 INCHES & LARGER W/NON-RESTRAINED JT C905	15293
5	DUCTILE IRON TEE FOR DI OR PVC PIPE - STEEL OUTLET NOT SHOWN	15240/15292/15293
6	DUCTILE IRON CAP FOR DI OR PVC PIPE - STEEL BULKHEAD NOT SHOWN	15240/15292/15293
7	WAX TAPE SYSTEM	09954
8	CONCRETE THRUST BLOCK	02223

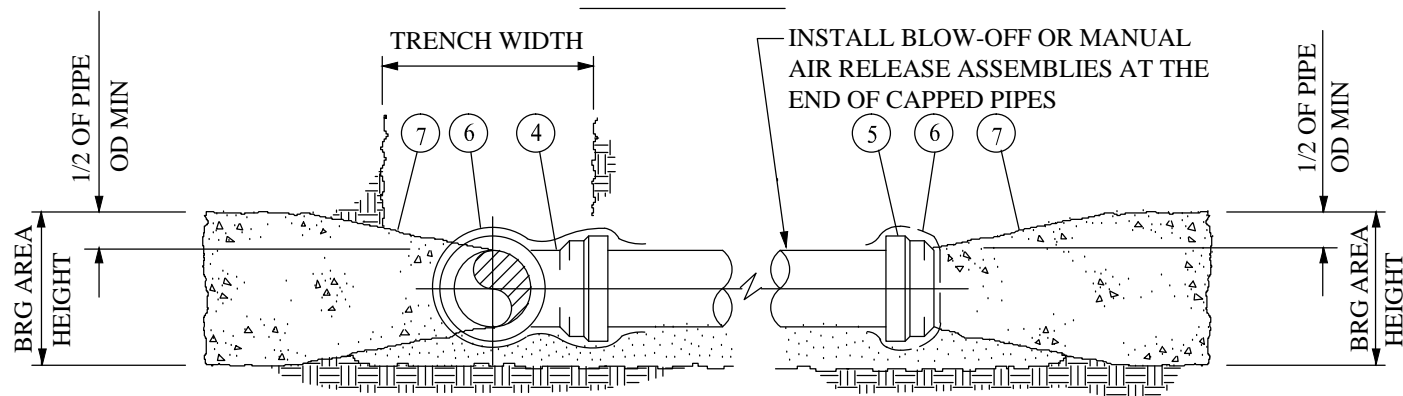
OLIVENHAIN MUNICIPAL WATER DISTRICT

THRUST BLOCK FOR TEES OR CAPS WORKING PRESSURE 0-150 PSI

STD DWG NO.
D-3.3
FEBRUARY 2017



PLAN VIEW



TRENCH SECTION

MINIMUM BEARING AREA OF BLOCK IN SQUARE FEET								
SIZE	4"	6"	8"	10"	12"	14"	16"	18"
TEE	4	8	13	19	26	35	45	56
CAP	4	8	13	19	26	35	45	56

$$\text{HEIGHT} = \sqrt{\frac{\text{BRG AREA}}{2}}$$

$$\text{WIDTH} = 2 \times \text{HEIGHT}$$

NOTE: BASED ON SOIL BEARING CAPACITY OF 2000 LBS/SF. SPECIAL DESIGN REQUIRED IF SOIL BEARING CAPACITY IS LESS THAN 2000 LBS/SF OR FOR INSTALLATIONS WITH WORKING PRESSURE ABOVE 200 PSI. PLACE CONCRETE AGAINST UNDISTURBED GROUND IN TRENCH BOTTOM AND SIDE.

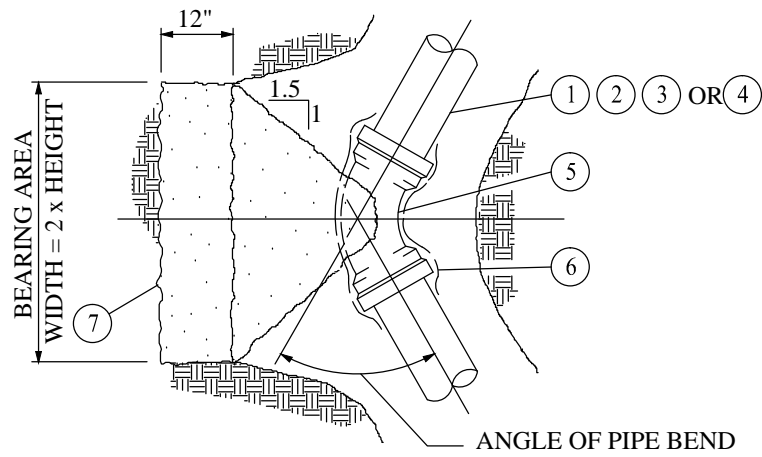
4"-18" WATER MAINS - 151-200 PSI

ITEM	DESCRIPTION	SPEC/DWG
1	DUCTILE IRON PIPE WITH NON-RESTRAINED JOINTS	15240
2	STEEL PIPE, CML&C WITH NON-RESTRAINED JOINTS	15061
3	DR14 PVC PRESSURE PIPE, 12 INCHES & SMALLER WITH NON-RESTRAINED JT	15292
4	DUCTILE IRON TEE FOR DI OR PVC PIPE - STEEL OUTLET NOT SHOWN	15240/15292
5	DUCTILE IRON CAP FOR DI OR PVC PIPE - STEEL BULKHEAD NOT SHOWN	15240/15292
6	WAX TAPE SYSTEM	09954
7	CONCRETE THRUST BLOCK	02223

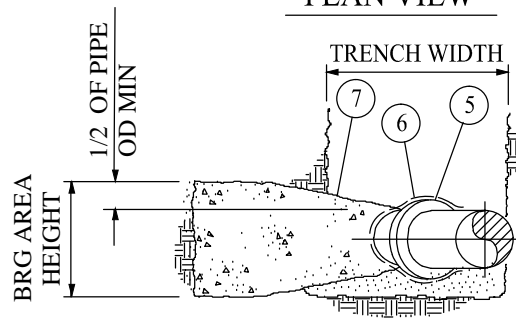
OLIVENHAIN MUNICIPAL WATER DISTRICT

THRUST BLOCK FOR TEES OR CAPS
WORKING PRESSURE 151-200 PSI

STD DWG NO.
D-3.4
FEBRUARY 2017



PLAN VIEW



TRENCH SECTION

MINIMUM BEARING AREA OF BLOCK IN SQUARE FEET									
ANGLE OF PIPE BEND	SIZE	4"	6"	8"	10"	12"	14"	16"	18"
11-1/4°		1	2	2	3	5	6	8	9
22-1/2°		2	2	4	6	8	11	14	18
33-3/4°		2	4	6	9	12	17	21	26
45°		2	5	8	11	16	21	28	35
56-1/4°		3	5	10	14	20	26	34	43
67-1/2°		3	7	11	17	23	31	40	50
90°		5	8	14	21	29	39	51	64

$$\text{HEIGHT} = \sqrt{\frac{\text{BRG AREA}}{2}}$$

$$\text{WIDTH} = 2 \times \text{HEIGHT}$$

NOTE: BASED ON SOIL BEARING CAPACITY OF 2000 LBS/SF. SPECIAL DESIGN REQUIRED IF SOIL BEARING CAPACITY IS LESS THAN 2000 LBS/SF. PLACE CONCRETE AGAINST UNDISTURBED GROUND IN TRENCH BOTTOM AND SIDE.

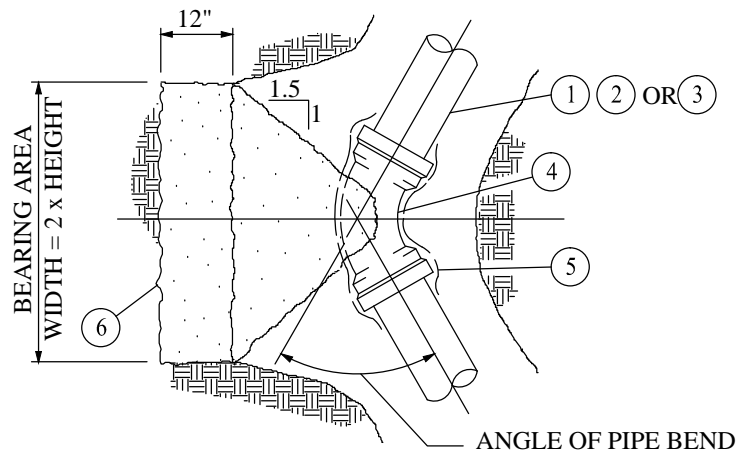
4"-18" WATER MAINS - 0-150 PSI

ITEM	DESCRIPTION	SPEC/DWG
1	DUCTILE IRON PIPE WITH NON-RESTRAINED JOINTS	15240
2	STEEL PIPE, CML&C WITH NON-RESTRAINED JOINTS	15061
3	DR18 PVC PRESSURE PIPE, 12 INCHES & SMALLER WITH NON-RESTRAINED JT	15292
4	DR18 PVC DISTRIBUTION PIPE, 14 INCHES & LARGER W/NON-RESTRAINED JT	15293
5	DUCTILE IRON BEND FOR DI OR PVC PIPE - STEEL NOT SHOWN	15240/15292/15293
6	WAX TAPE SYSTEM	09954
7	CONCRETE THRUST BLOCK	02223

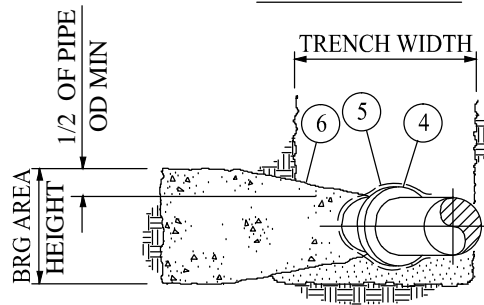
OLIVENHAIN MUNICIPAL WATER DISTRICT

THRUST BLOCK FOR PIPE BENDS
WORKING PRESSURE 0-150 PSI

STD DWG NO.
D-3.5
FEBRUARY 2017



PLAN VIEW



TRENCH SECTION

MINIMUM BEARING AREA OF BLOCK IN SQUARE FEET									
ANGLE OF PIPE BEND	SIZE	4"	6"	8"	10"	12"	14"	16"	18"
	11-1/4°	2	2	3	4	6	8	10	11
	22-1/2°	2	3	5	8	11	14	18	23
	33-3/4°	2	5	8	11	15	21	26	33
	45°	3	6	10	14	20	26	35	44
	56-1/4°	4	7	13	18	25	33	43	54
	67-1/2°	4	9	14	21	29	39	50	63
	90°	6	11	18	26	37	49	64	80

$$\text{HEIGHT} = \sqrt{\frac{\text{BRG AREA}}{2}}$$

$$\text{WIDTH} = 2 \times \text{HEIGHT}$$

NOTE: BASED ON SOIL BEARING CAPACITY OF 2000 LBS/SF. SPECIAL DESIGN REQUIRED IF SOIL BEARING CAPACITY IS LESS THAN 2000 LBS/SF OR FOR INSTALLATIONS WITH WORKING PRESSURE ABOVE 200 PSI. PLACE CONCRETE AGAINST UNDISTURBED GROUND IN TRENCH BOTTOM AND SIDE.

4"-18" WATER MAINS - 151-200 PSI

ITEM	DESCRIPTION	SPEC/DWG
1	DUCTILE IRON PIPE WITH NON-RESTRAINED JOINTS	15240
2	STEEL PIPE, CML&C WITH NON-RESTRAINED JOINTS	15061
3	DR14 PVC PRESSURE PIPE, 12 INCHES & SMALLER WITH NON-RESTRAINED JT	15292
4	DUCTILE IRON BEND FOR DI OR PVC PIPE - STEEL NOT SHOWN	15240/15292
5	WAX TAPE SYSTEM	09954
6	CONCRETE THRUST BLOCK	02223

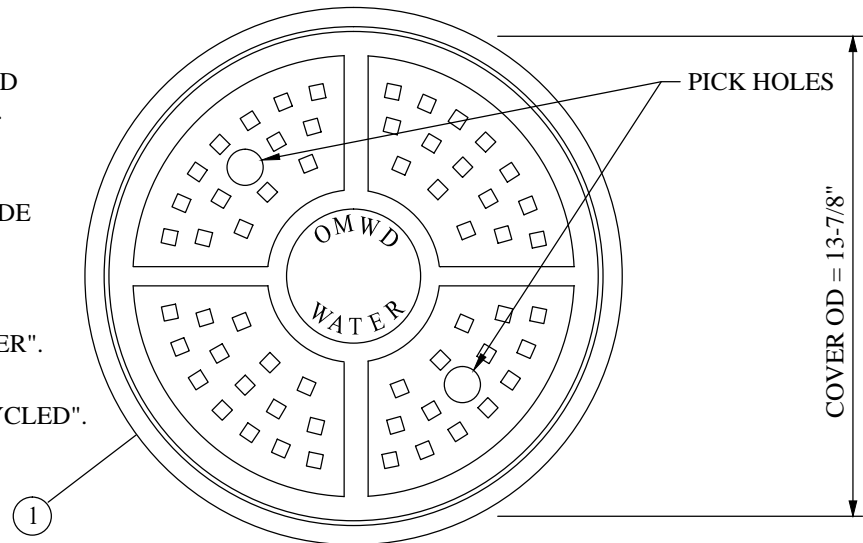
OLIVENHAIN MUNICIPAL WATER DISTRICT

THRUST BLOCK FOR PIPE BENDS
WORKING PRESSURE 151-200 PSI

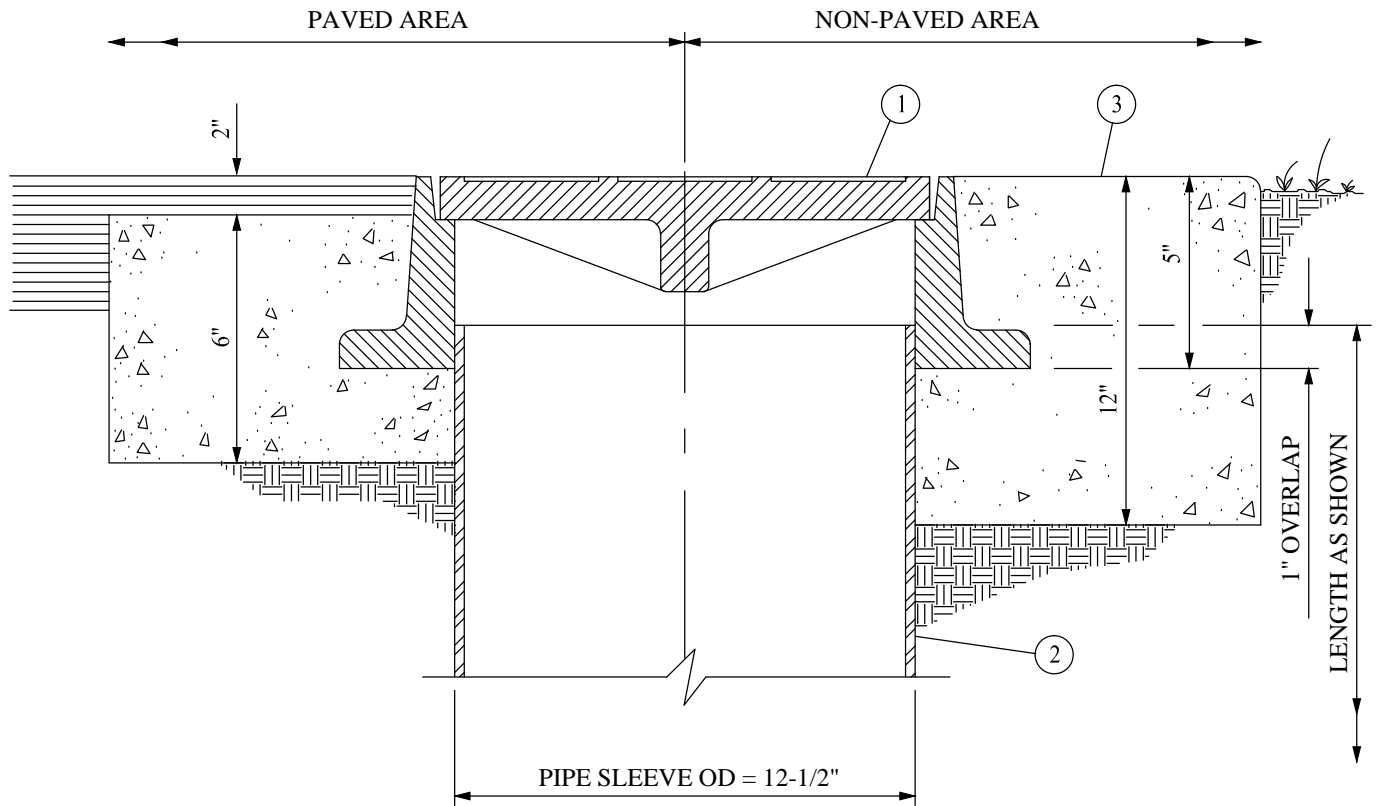
STD DWG NO.
D-3.6
FEBRUARY 2017

NOTE:

1. FIELD PAINT TOP SIDE OF VALVE BOX COVER PER STD SPEC 09900, SYSTEM NO. 20.
2. IN NON-PAVED AREAS W/O TRAFFIC, CONCRETE RING TO EXTEND 6" ABOVE GRADE TO RAISE LID. MARKER POST REQUIRED.
3. FOR POTABLE WATER LID TO READ "OMWD WATER".
4. FOR RECYCLED WATER LID TO READ "OMWD RECYCLED".



PLAN



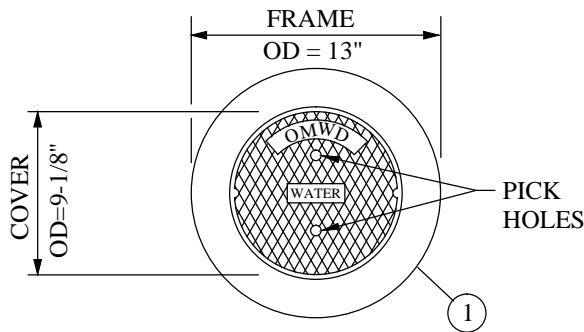
SECTION

ITEM	DESCRIPTION	SPEC/DWG
1	CAST IRON FRAME AND LID FOR TRAFFIC LOADING	15090/15091
2	12" PVC GRAVITY SEWER PIPE SDR 35	15090/15091
3	30" DIAMETER x 8" THICK CONCRETE RING. CONCRETE TO BE TRANSIT MIX	03000

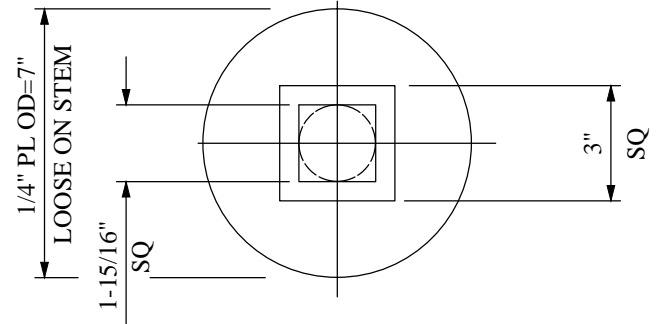
OLIVENHAIN MUNICIPAL WATER DISTRICT

VALVE BOX INSTALLATION
FOR BURIED MAR OR BLOW OFF ASSEMBLIES

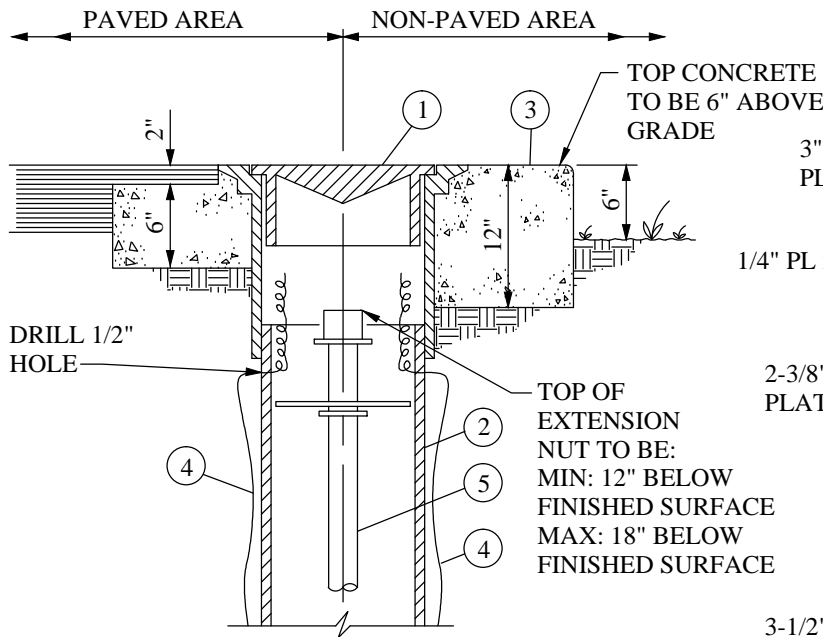
STD DWG NO.
E-1.1
FEBRUARY 2017



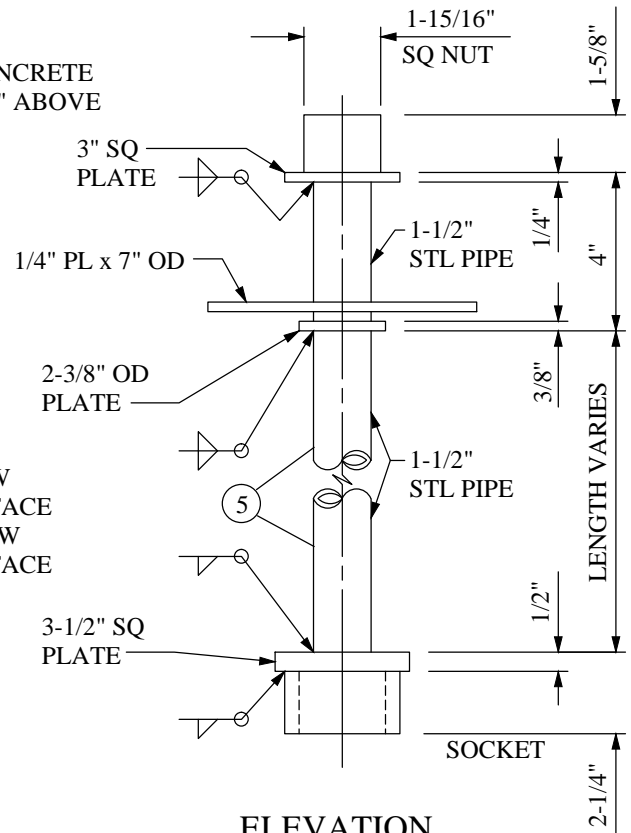
PLAN



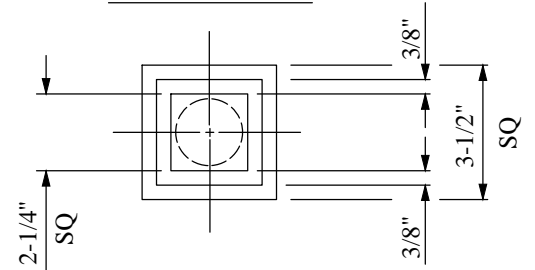
TOP VIEW



SECTION



ELEVATION



BOTTOM VIEW

NOTES:

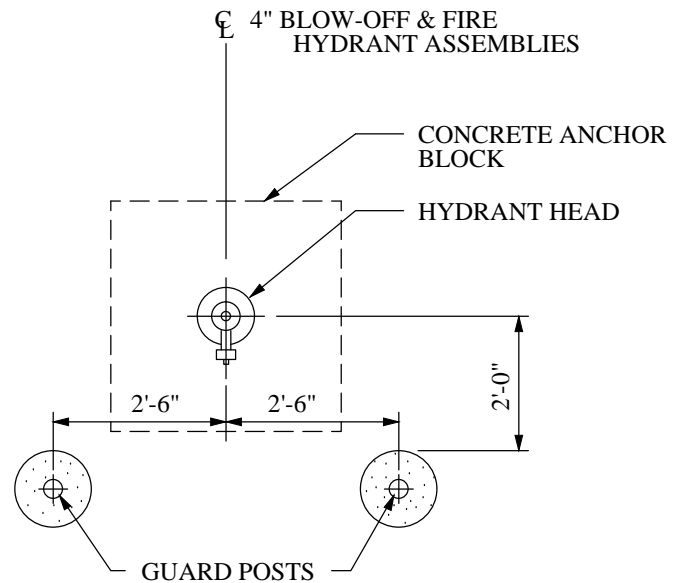
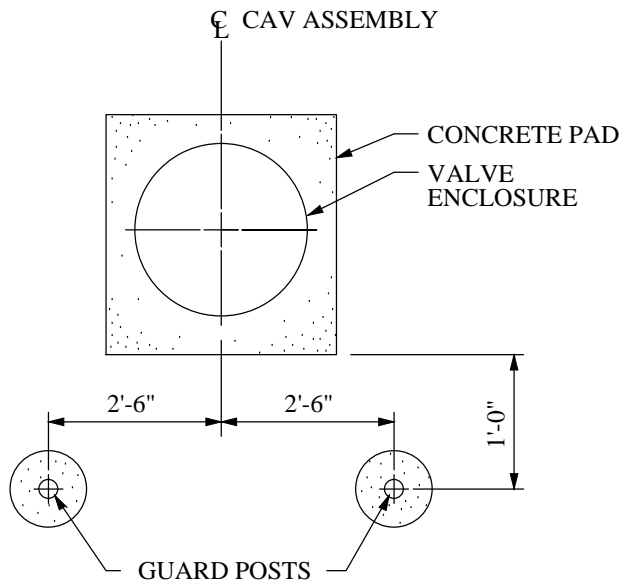
1. FIELD PAINT TOP SIDE OF VALVE BOX FRAME AND COVER PER STD SPEC 09900, SYSTEM NO. 20. COLOR TO BE OSHA BLUE, OSHA ORANGE, OSHA YELLOW, OSHA PURPLE, OR OSHA RED DEPENDING ON VALVE PURPOSE.
2. PROVIDE EXTENSION STEM IF VALVE OPERATING NUT IS MORE THAN 7 FEET BELOW VALVE BOX COVER.
3. VALVE COVER TO READ "OMWD WATER" FOR POTABLE WATER.
4. VALVE COVER TO READ "OMWD RECYCLED" FOR RECYCLED WATER.

ITEM	DESCRIPTION	SPEC/DWG
1	CAST IRON FRAME AND COVER FOR TRAFFIC LOADING - 1208N	15101
2	8" PVC PLASTIC IRRIGATION PIPE (PIP) SDR 41 - EXTENSION PIPE	15101
3	24" DIAMETER x 6" THICK CONCRETE RING	03000
4	TRACER WIRE, SECURE W/PLASTIC ADHESIVE TAPE TO EXTENSION PIPE	15292/15293
5	EXTENSION STEM, HOT DIP GALVANIZE AFTER FABRICATION	15101

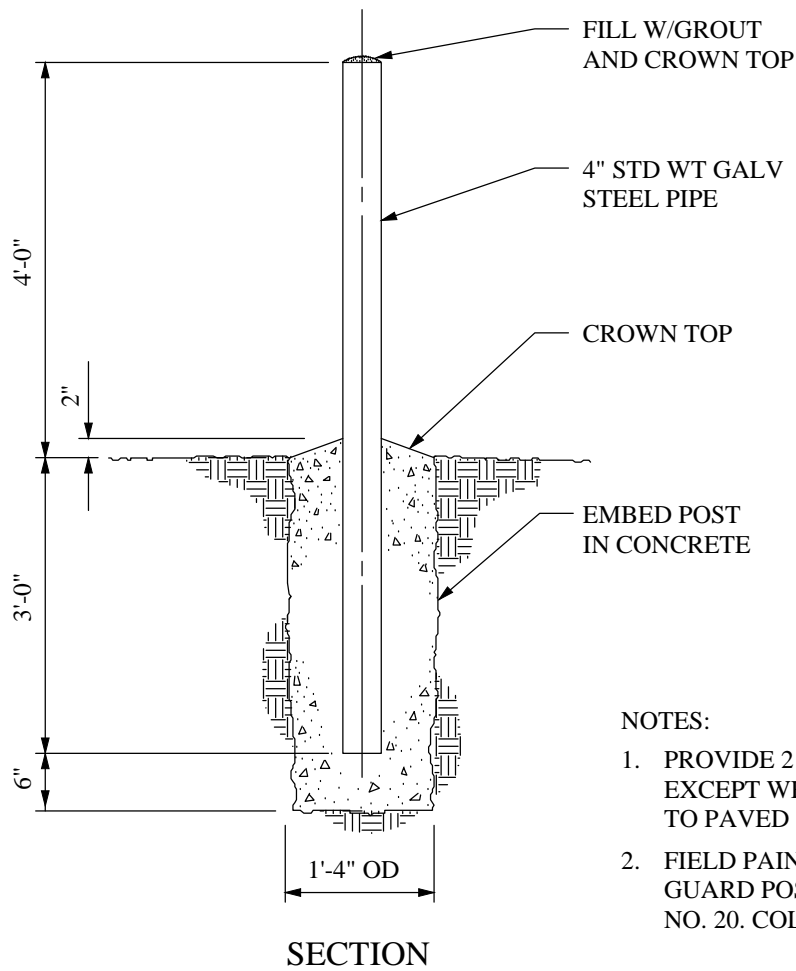
OLIVENHAIN MUNICIPAL WATER DISTRICT

VALVE BOX INSTALLATION FOR BURIED VALVES

STD DWG NO.
E-1.2
FEBRUARY 2017



PLAN VIEWS



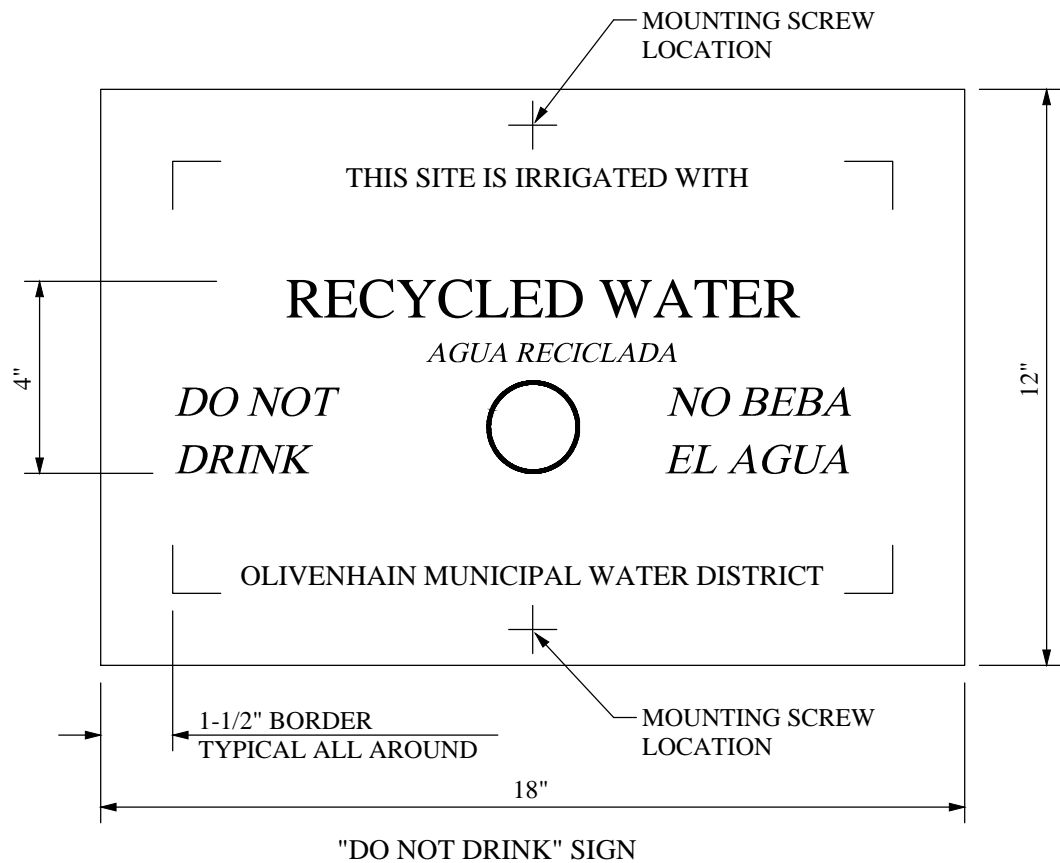
NOTES:

1. PROVIDE 2 GUARD POSTS FOR EACH ASSEMBLY EXCEPT WHERE ASSEMBLY IS LOCATED ADJACENT TO PAVED STREET WITH CONCRETE CURBS.
2. FIELD PAINT ABOVE GROUND SURFACES OF GUARD POSTS PER STD SPEC 09900, SYSTEM NO. 20. COLOR TO BE OSHA YELLOW.

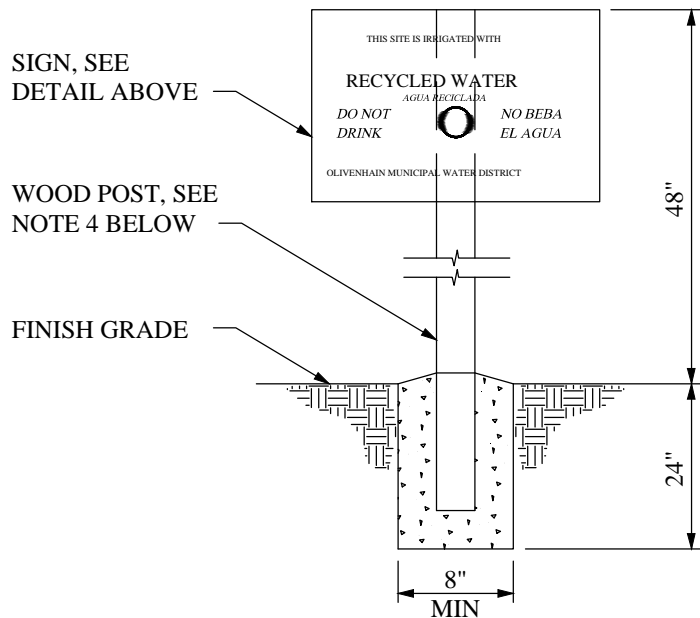
OLIVENHAIN MUNICIPAL WATER DISTRICT

GUARD POST INSTALLATION FOR ABOVE GROUND ASSEMBLIES

STD DWG NO.
E-1.3
FEBRUARY 2017



"DO NOT DRINK" SIGN



NOTES:

1. REFER TO SECTION 15292 OF THE SPECIFICATIONS.
2. SIGNS SHALL BE MANUFACTURED OF ALUMINUM SHEET, THICKNESS SHALL BE 18 GAGE.
3. THE SIGN SHALL INCORPORATE A PURPLE BACKGROUND WITH WHITE LETTERS AND SYMBOLS.
4. SIGNS SHALL BE MOUNTED ON A 4" x 4" PRESSURE TREATED WOOD POST 36" FROM FINISHED GRADE. ATTACH THE SIGN TO THE POST USING 1/4" x 2-1/2" ANODIZED LAG SCREWS AND WASHERS (2 EACH) OR USE TELSPAR SQUARE TUBING.

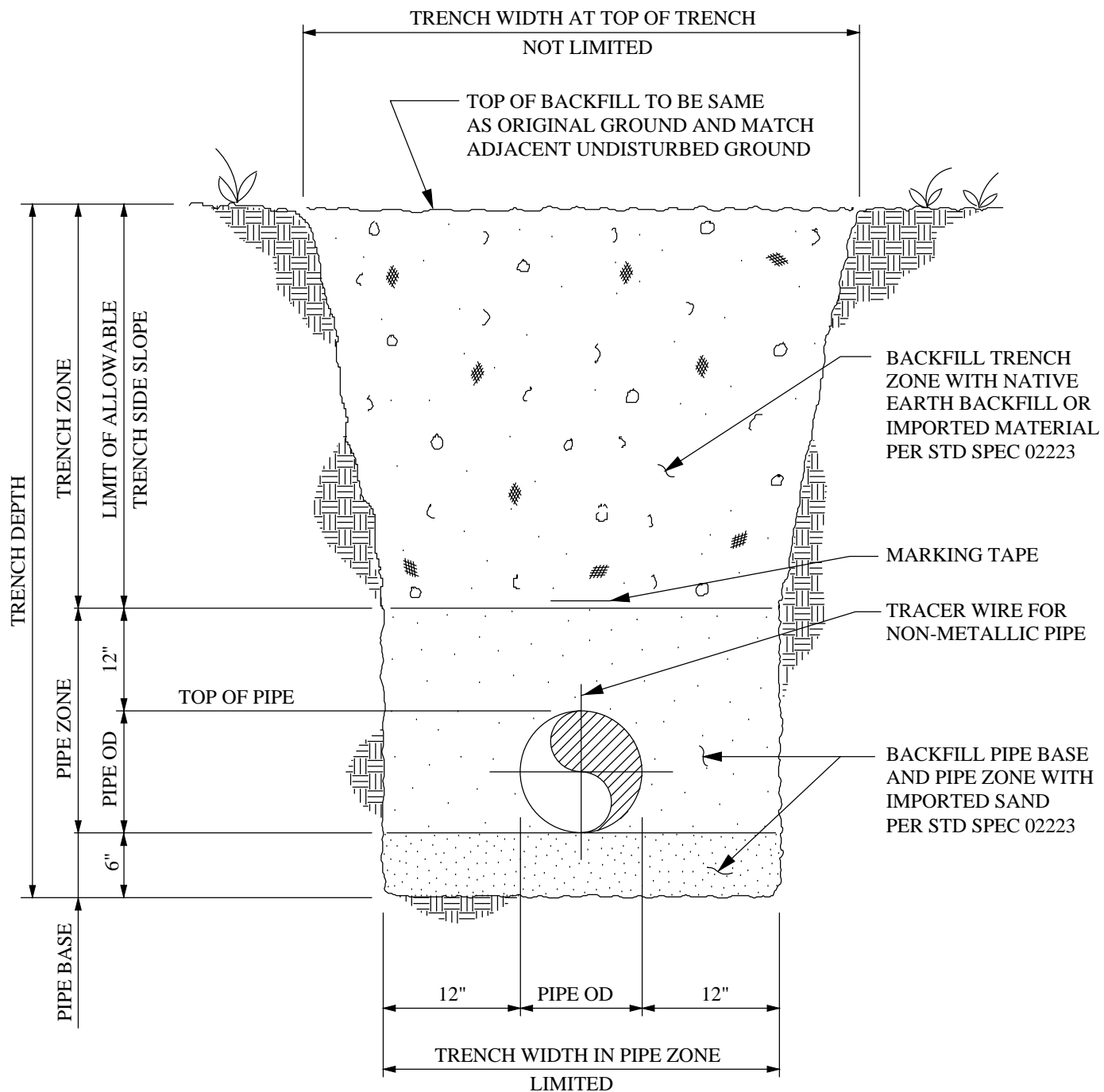
OLIVENHAIN MUNICIPAL WATER DISTRICT

RECYCLED WATER SIGN

STD DWG NO.

E-1.4

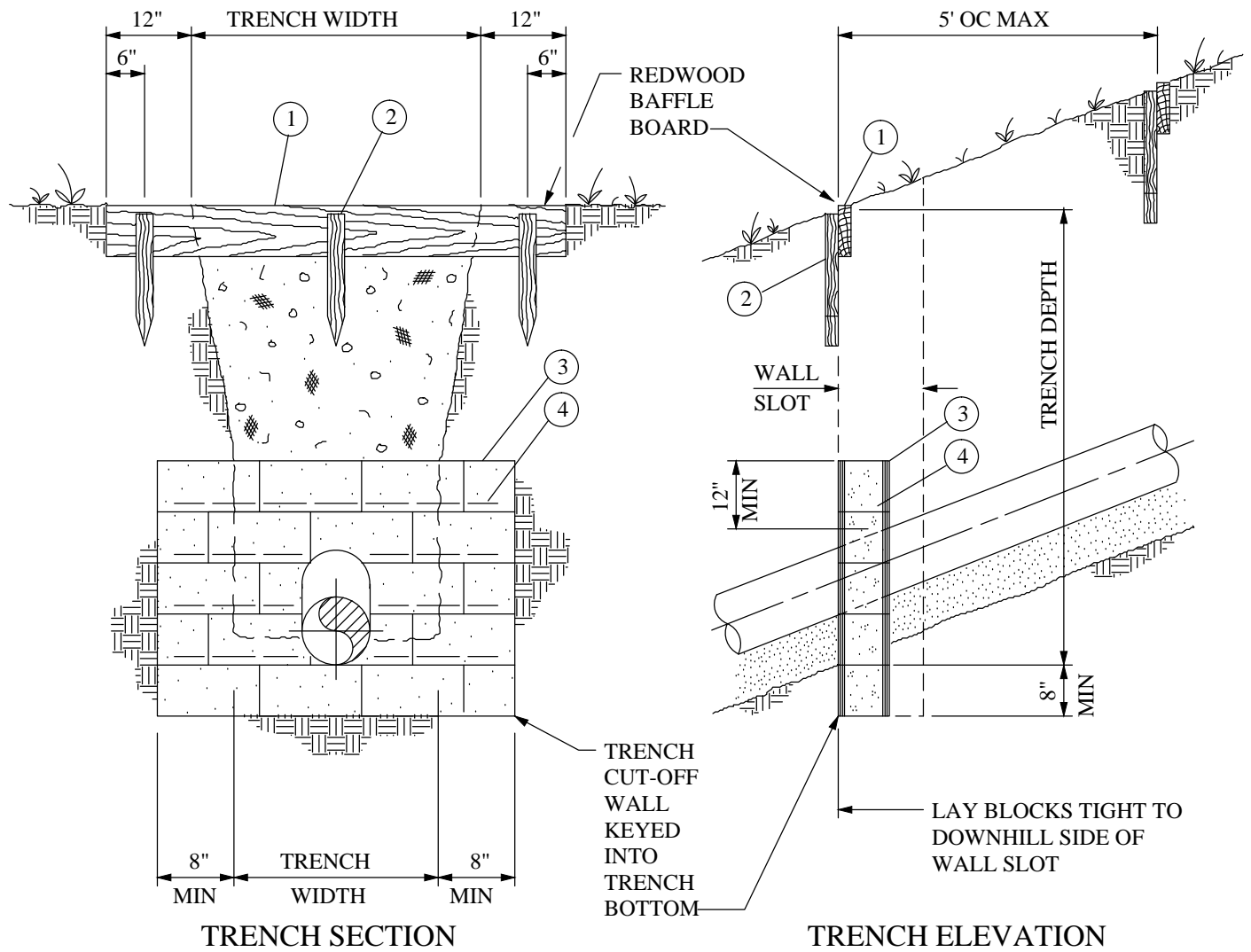
FEBRUARY 2017



OLIVENHAIN MUNICIPAL WATER DISTRICT

TYPICAL TRENCH SECTION
FOR POTABLE / RECYCLED WATER MAINS

STD DWG NO.
E-2.1
FEBRUARY 2017



NOTES:

1. INSTALL TRENCH CUT-OFF WALLS AT 25 FEET ON CENTER ON SLOPES 35% AND STEEPER. PLACE CONCRETE BLOCKS IN HORIZONTAL LAYERS AND REINFORCE WITH LADDER STEEL. LAY BLOCKS FULL-BEDDED IN MORTAR AND FILL HEAD JOINTS SOLID WITH MORTAR. CUT BLOCKS TO FIT AROUND THE PIPE AND MORTAR IN PLACE. PROVIDE ONE 1/2" DIAMETER WEEP HOLE FOR EACH 1.5 SF OF WALL IN THE TRENCH PIPE ZONE. GROUT ALL CELLS OF THE WALL SOLID.
2. USE REDWOOD BAFFLE BOARDS ON SLOPES 35% AND STEEPER OR AS DETERMINED BY THE DISTRICT'S REPRESENTATIVE. PLACE BAFFLE BOARDS 5 FEET ON CENTER MAXIMUM OR AS DIRECTED. INSTALL BOARDS IN A VERTICAL POSITION AND LEVEL WITH THE CONTOURS OF THE SLOPE. INSTALL REDWOOD STAKES ON THE DOWNHILL SIDE OF THE BAFFLE BOARD AT 3 FEET ON CENTER.
3. EXTEND TRENCH CUT-OFF WALLS AND REDWOOD BAFFLE BOARDS INTO THE UNDISTURBED GROUND BEYOND THE LIMITS OF ACTUAL TRENCH EXCAVATION.

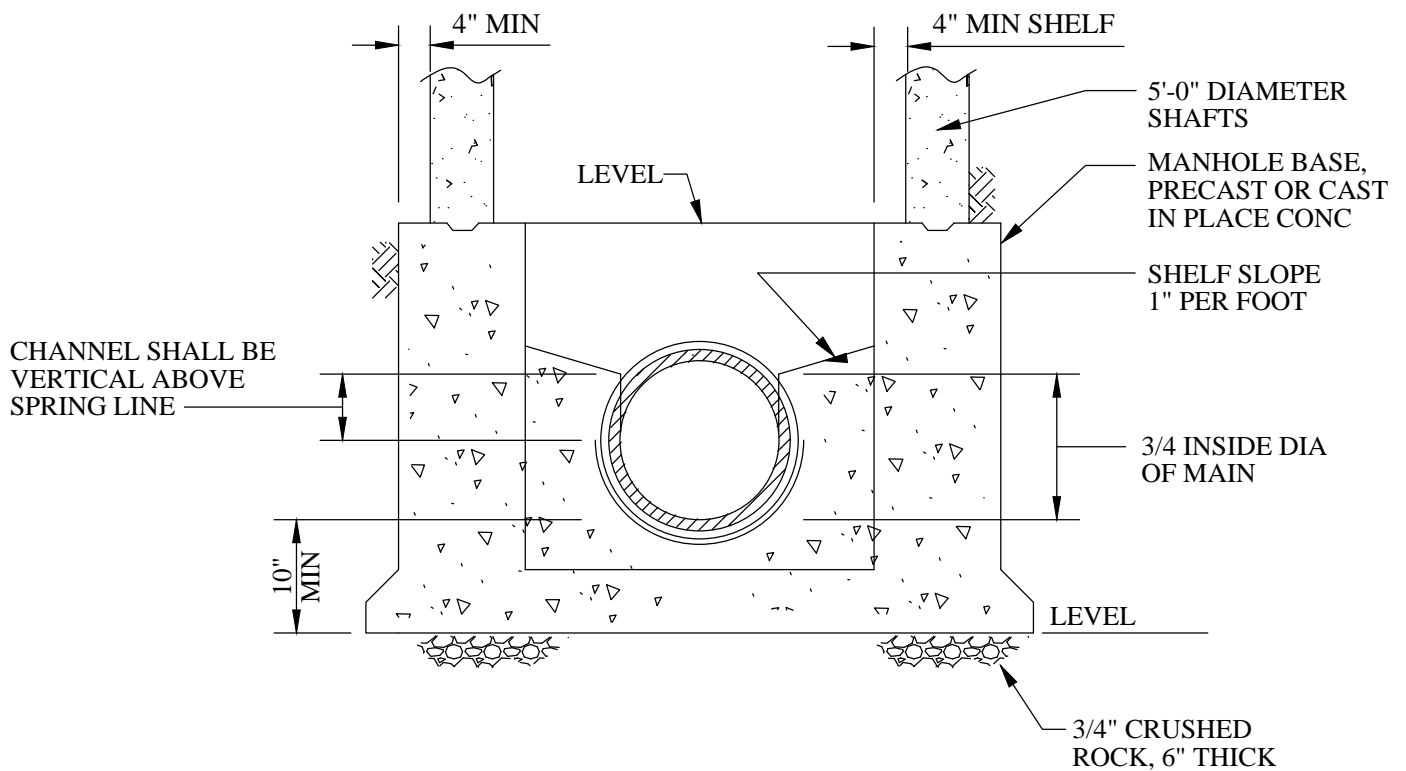
ITEM	DESCRIPTION	SPEC/DWG
1	2" x 12" MERCHANTABLE HEART GARDEN GRADE REDWOOD BAFFLE BOARD	02223
2	2" x 2" x 24" MERCHANTABLE HEART GARDEN GRADE REDWOOD STAKE	02223
3	8" x 8" x 16" CONCRETE MASONRY BLOCK - GROUT CELLS SOLID OR CAST IN PLACE W #6 REBAR 12" O.C. E.W. W/ 1" Ø PVC SCH 80 DRAIN TUBES @ BOTTOM (3 EACH)	02223
4	NO. 9 WIRE LADDER TYPE STEEL REINFORCING IN ALL HORIZONTAL JOINTS	02223

OLIVENHAIN MUNICIPAL WATER DISTRICT

TRENCH CUT-OFF WALL AND REDWOOD BAFFLE BOARD

**STD DWG NO.
E-2.2
FEBRUARY 2017**

STD DWG NO.
F-2
FEBRUARY 2017



SECTION
5'-0" DIAMETER MANHOLE BASE

NOTES:

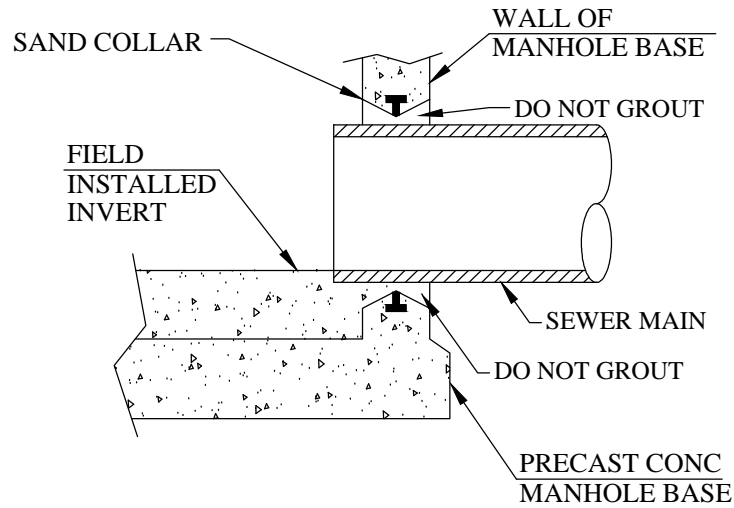
1. SEE STANDARD SPECIFICATION SECTION 03461.
2. FOR MANHOLE INSTALLATIONS, SEE STD DWG NO. F-1 AND F-2.
3. MANHOLES FOR SEWER MAINS 18" AND LARGER SHALL BE COATED AND LINED PER STD DWG NO. F-7.

OLIVENHAIN MUNICIPAL WATER DISTRICT

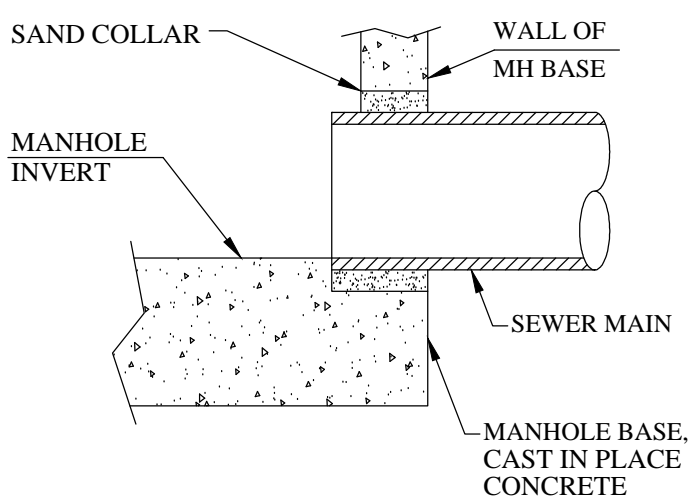
5 FOOT DIAMETER
MANHOLE BASES

STD DWG NO.
F-3
FEBRUARY 2017

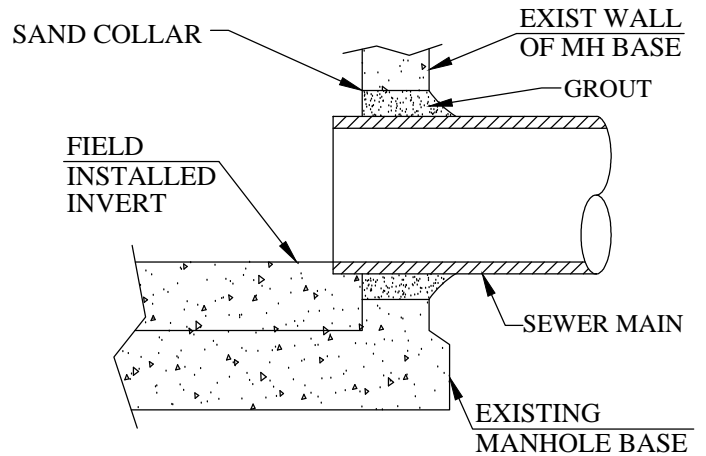
ONLY SAND COLLAR CONNECTIONS ALLOWED



PRECAST MANHOLE BASE TYPE "A"



CAST IN PLACE MANHOLE BASE



BREAKING INTO EXISTING MANHOLE BASE

NOTES:

1. SEE STANDARD SPECIFICATION SECTION 03461.
2. MANHOLES FOR SEWER MAINS 18" AND LARGER SHALL BE COATED AND LINED PER STD DWG NO. F-7.

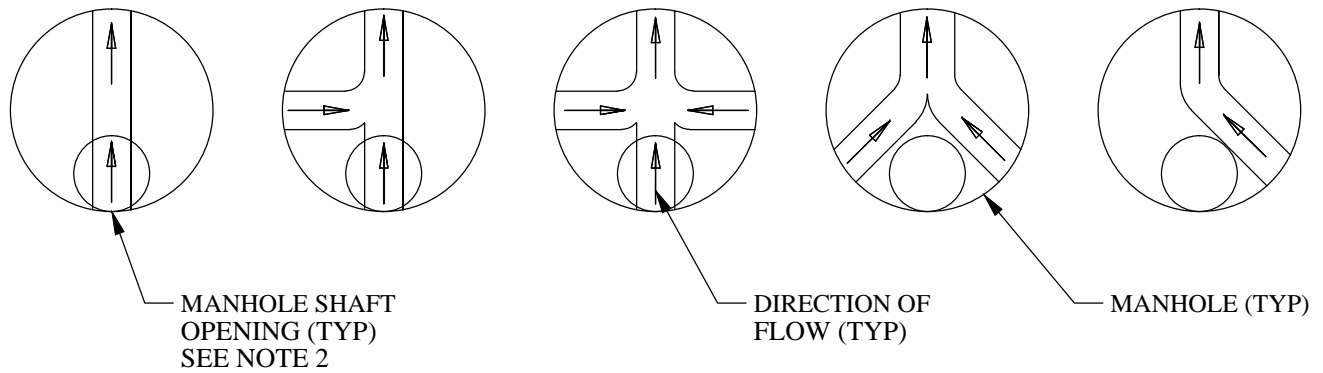
OLIVENHAIN MUNICIPAL WATER DISTRICT

**MANHOLE PIPE
CONNECTORS**

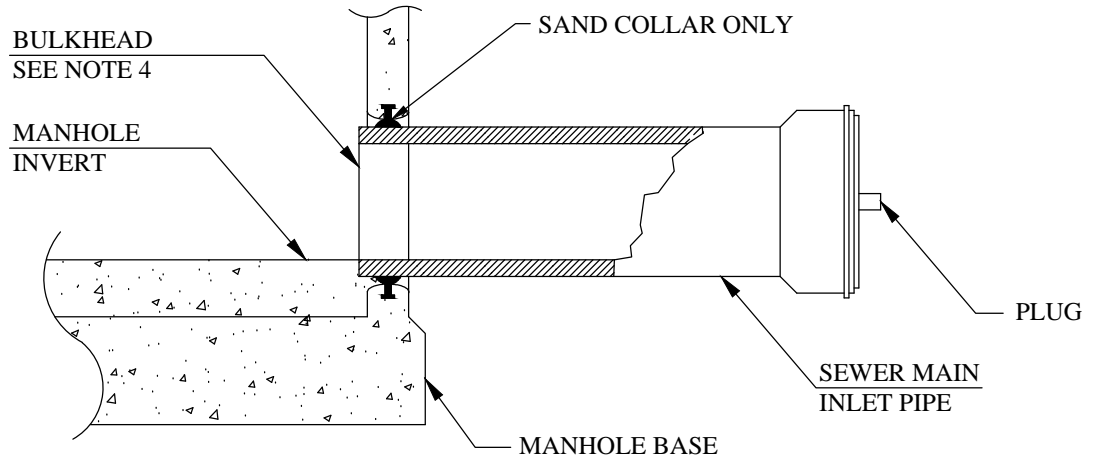
STD DWG NO.

F-4

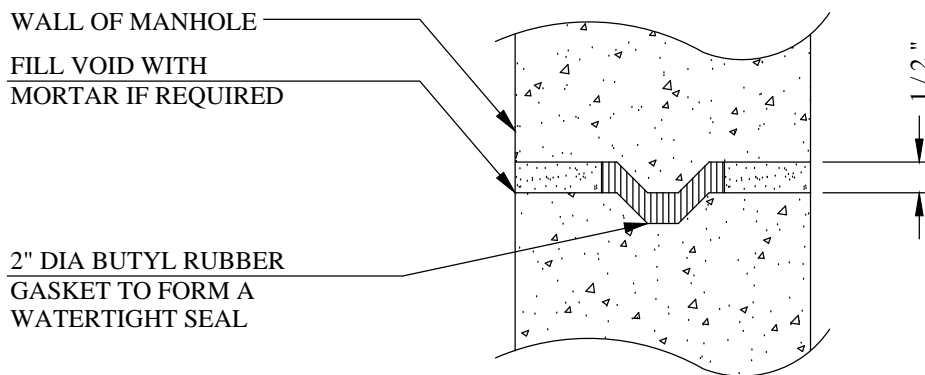
FEBRUARY 2017



MANHOLE ACCESS LOCATION PLAN VIEW



MANHOLE STUB OUT FOR FUTURE CONNECTION



WATERTIGHT MANHOLE JOINT

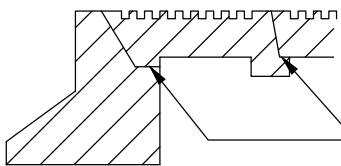
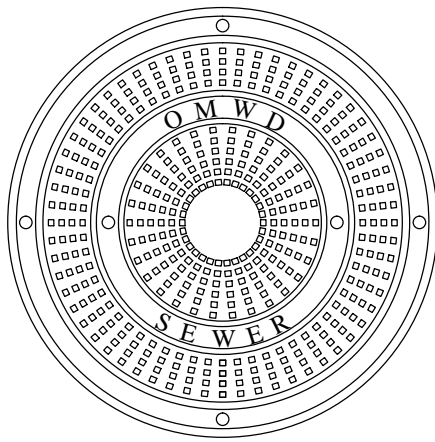
NOTES:

1. SEE STANDARD SPECIFICATION SECTION 03461.
2. VERTICAL WALL OF CONE TO BE ON THE UPSTREAM SIDE OF MANHOLE.
3. MANHOLES FOR SEWER MAINS 18" AND LARGER SHALL BE COATED AND LINED PER STD DWG NO. F-7.
4. BULKHEADS SHALL BE INSTALLED AT THE MANHOLE END OF STUBS.
5. SEWER MAINS TO BE LAID WITH BELLS UP-GRADE.

OLIVENHAIN MUNICIPAL WATER DISTRICT

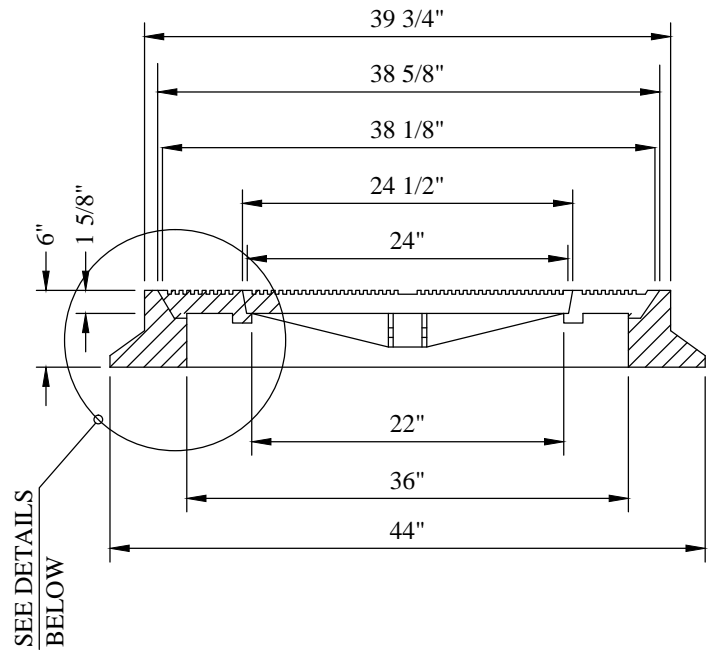
MANHOLE ACCESS LOCATIONS AND STUB OUT AND JOINT DETAILS

STD DWG NO.
F-5
FEBRUARY 2017



MATING SURFACES
SHALL BE MACHINED-FIT

MACHINED DETAIL



MANHOLE FRAME AND COVERS

USE ALHAMBRA A-1325 OR
DISTRICT APPROVED EQUAL.

NOTE:

1. SEE STANDARD SPECIFICATION SECTION 03461.

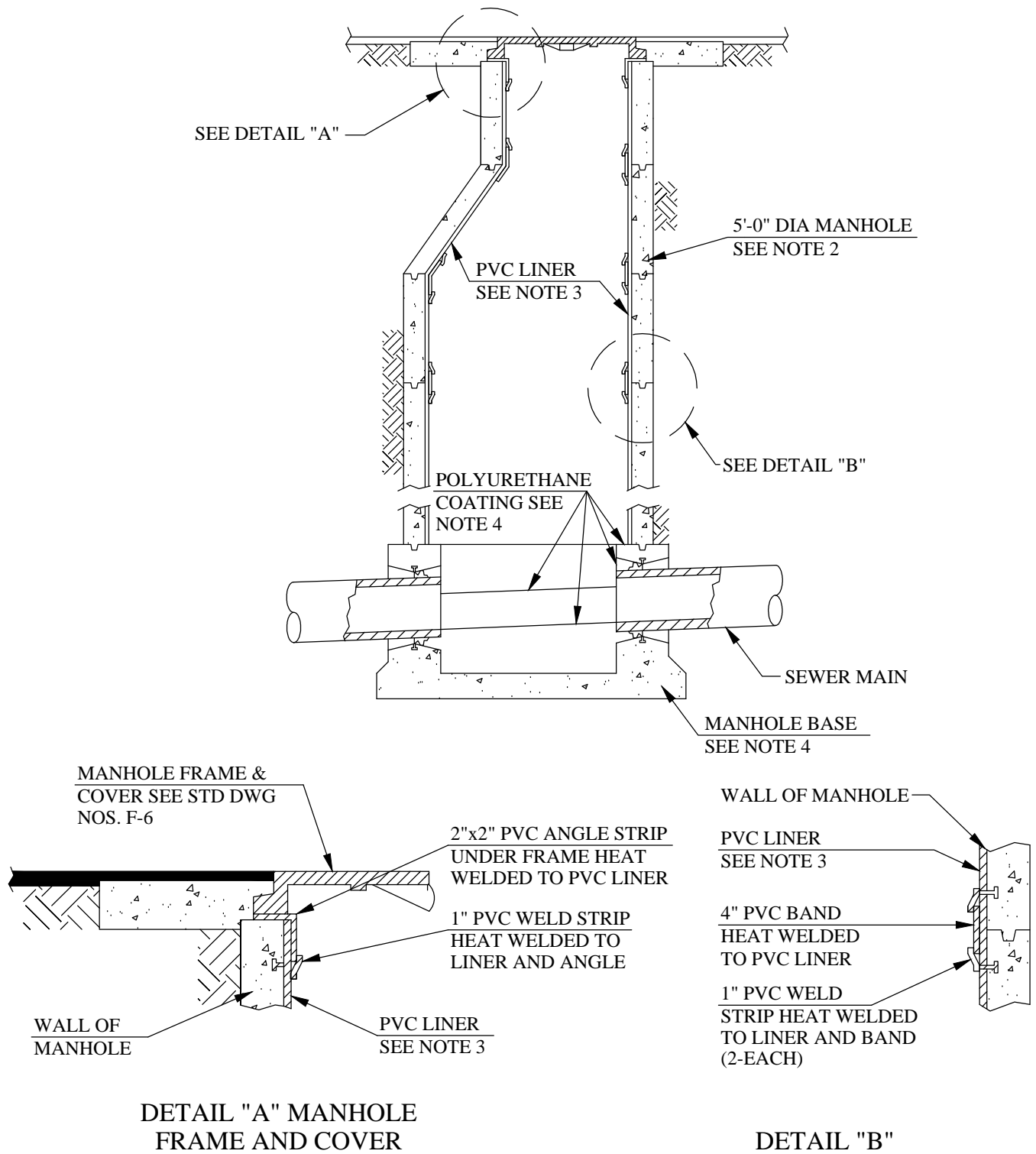
OLIVENHAIN MUNICIPAL WATER DISTRICT

36-INCH MANHOLE FRAME AND COVERS

STD DWG NO.

F-6

FEBRUARY 2017



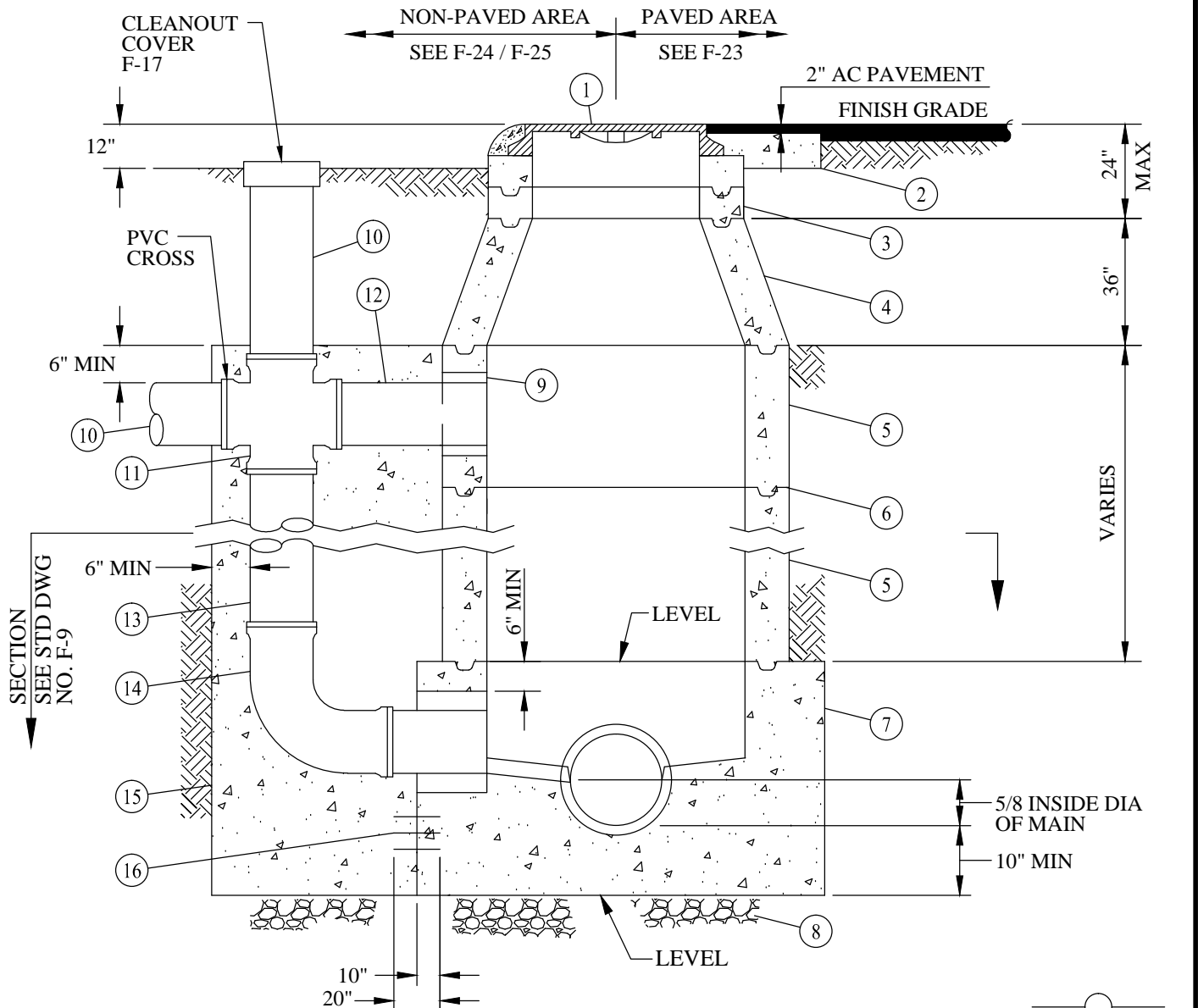
NOTES:

1. SEE STANDARD SPECIFICATION SECTION 03461.
2. MANHOLES FOR SEWER MAINS 18" AND LARGER SHALL BE COATED AND LINED.
3. MANHOLE SHAFT, CONE SECTION, AND GRADE RINGS SHALL HAVE A PVC LINER WITH T-SHAPED SUPPORTS INTERGRALLY CAST INTO THE CONCRETE.
4. ELASTOMERIC POLYURETHANE COATING SHALL BE APPLIED TO THE INTERIOR OF MANHOLE BASES.

OLIVENHAIN MUNICIPAL WATER DISTRICT

MANHOLE COATING AND LINING SYSTEM

STD DWG NO.
F-7
FEBRUARY 2017



NOTE:
1. FOR DROP MANHOLE NOTES, SEE STD DWG NO. F-9.

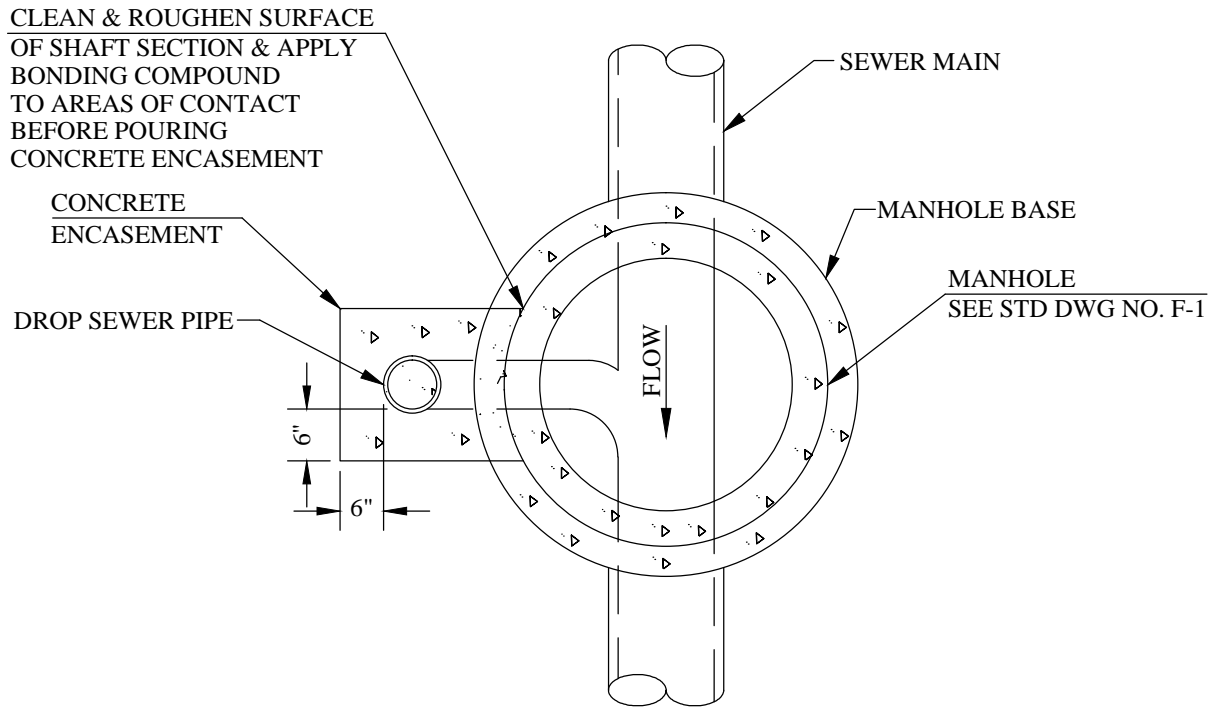
LEGEND ON PLANS

ITEM	DESCRIPTION	SPEC/DWG
1	36" MANHOLE FRAME AND COVER(S)	03461/F-6
2	12" WIDE x 6" THICK CONCRETE RING	03000
3	36" DIA PRECAST CONC GRADE RINGS, 6" TO 18" HIGH	03461
4	PRECAST CONCRETE ECCENTRIC CONE, 2' x 4' OR 3' x 5'	03461
5	5'-0" DIA PRECAST CONC SHAFT SECTIONS	03461
6	WATERTIGHT JOINTS	03461/F-5
7	PRECAST OR CAST IN PLACE CONCRETE BASE	03461/03000/F-3
8	3/4" CRUSHED ROCK, 6" THICK	02223
9	MANHOLE PIPE CONNECTORS	03461/F-4
10	SEWER PIPE	15065
11	GASKETED CROSS, RUN & BRANCH SAME SIZE AS ITEM 10	15065
12	SEWER PIPE, 12" LONG	15065
13	DROP SEWER PIPE, LENGTH AS REQUIRED	15065
14	GASKETED 90° LONG RADIUS BEND	15065
15	CONCRETE ENCASEMENT	02223
16	#4 DOWELS @ 6" ON CENTER, EPOXY INTO EXST OR NEW MH	03000

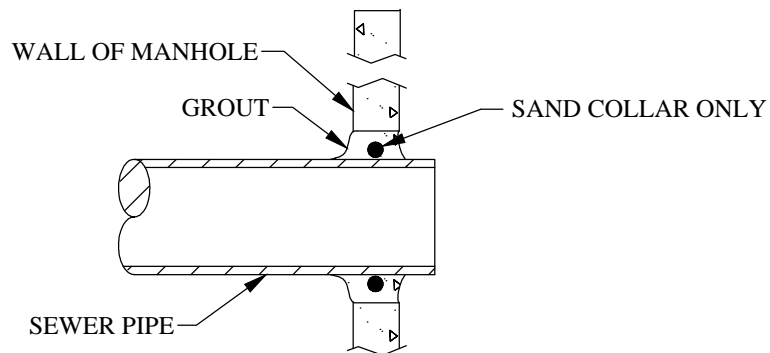
OLIVENHAIN MUNICIPAL WATER DISTRICT

5 FOOT DIAMETER DROP MANHOLE FOR SEWER MAINS

STD DWG NO.
F-8
FEBRUARY 2017



DROP MANHOLE SECTION



DROP MANHOLE PIPE CONNECTOR

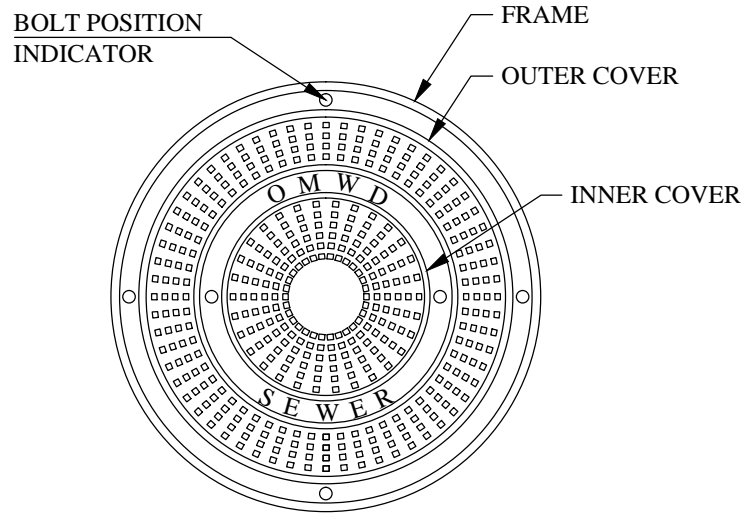
NOTES:

1. SEE STANDARD SPECIFICATION SECTION 03461.
2. VERTICAL WALL OF CONE TO BE ON THE UPSTREAM SIDE OF MANHOLE. SEE STD DWG NO. F-5 FOR ACCESS LOCATIONS.
3. DROP MANHOLES INSTALLED ON SEWER MAINS 18" AND LARGER SHALL INCORPORATE A 4" SHELF AS SHOWN ON STD DWG NO. F-3.
4. INSIDE SURFACES OF DROP MANHOLES TO BE COATED AND LINED, PER STD DWG NO. F-7.
5. DROP MANHOLES SHALL BE INSTALLED ONLY WITH PRIOR APPROVAL OF THE DISTRICT .

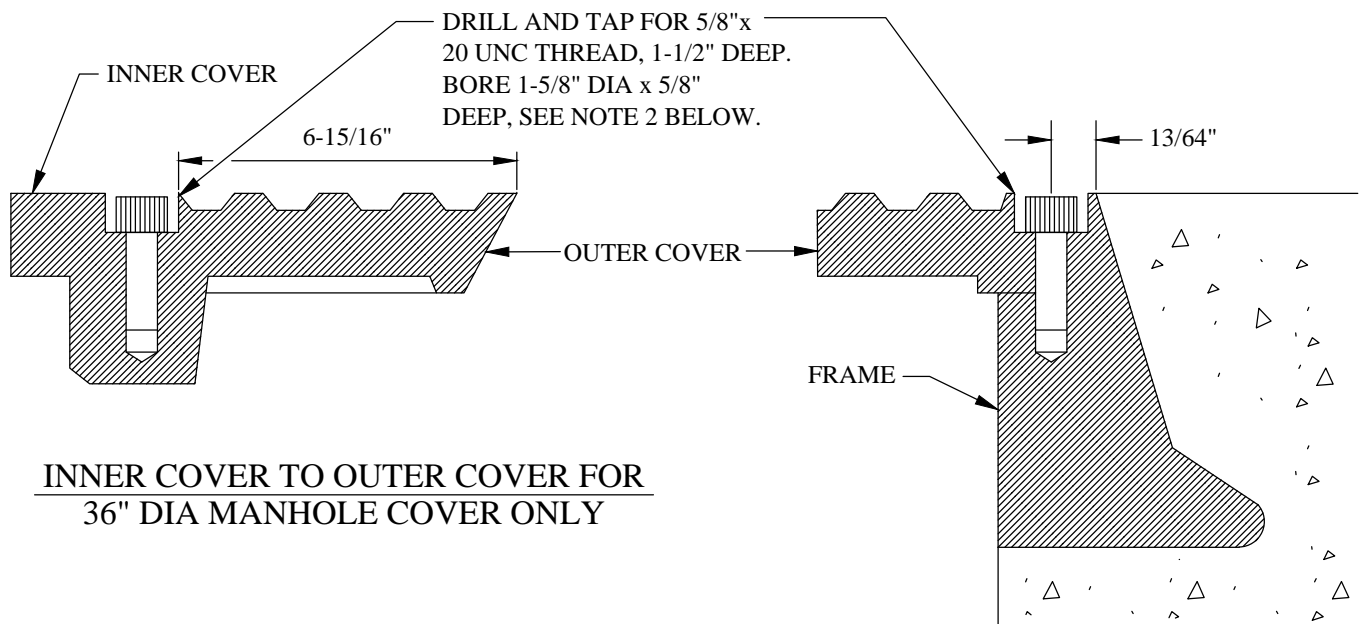
OLIVENHAIN MUNICIPAL WATER DISTRICT

5 FOOT DIAMETER DROP MANHOLE SECTION, DETAIL AND NOTES

STD DWG NO.
F-9
FEBRUARY 2017



**CONCENTRIC COVERS AND FRAME
BOLT PLACEMENT-36" DIA MANHOLE**



**INNER COVER TO OUTER COVER FOR
36" DIA MANHOLE COVER ONLY**

OUTER COVER TO FRAME

NOTES:

1. SEE STANDARD SPECIFICATION SECTION 03461.
2. 5/8" x 20 UNC THREAD, 316 STAINLESS STEEL SOCKET HEAD CAP SCREW AND 1-1/2" OD x 11/16" ID x 5/64" THICK 316 STAINLESS STEEL WASHER.
3. BOLTDOWN PATTERNS:
BETWEEN INNER AND OUTER COVERS, INSTALL TWO (2) BOLTS AT 180-DEGREES.
BETWEEN OUTER COVER AND FRAME, INSTALL FOUR (4) BOLTS AT 90-DEGREES.
4. INNER COVER MUST HAVE SEAL RUBBER.

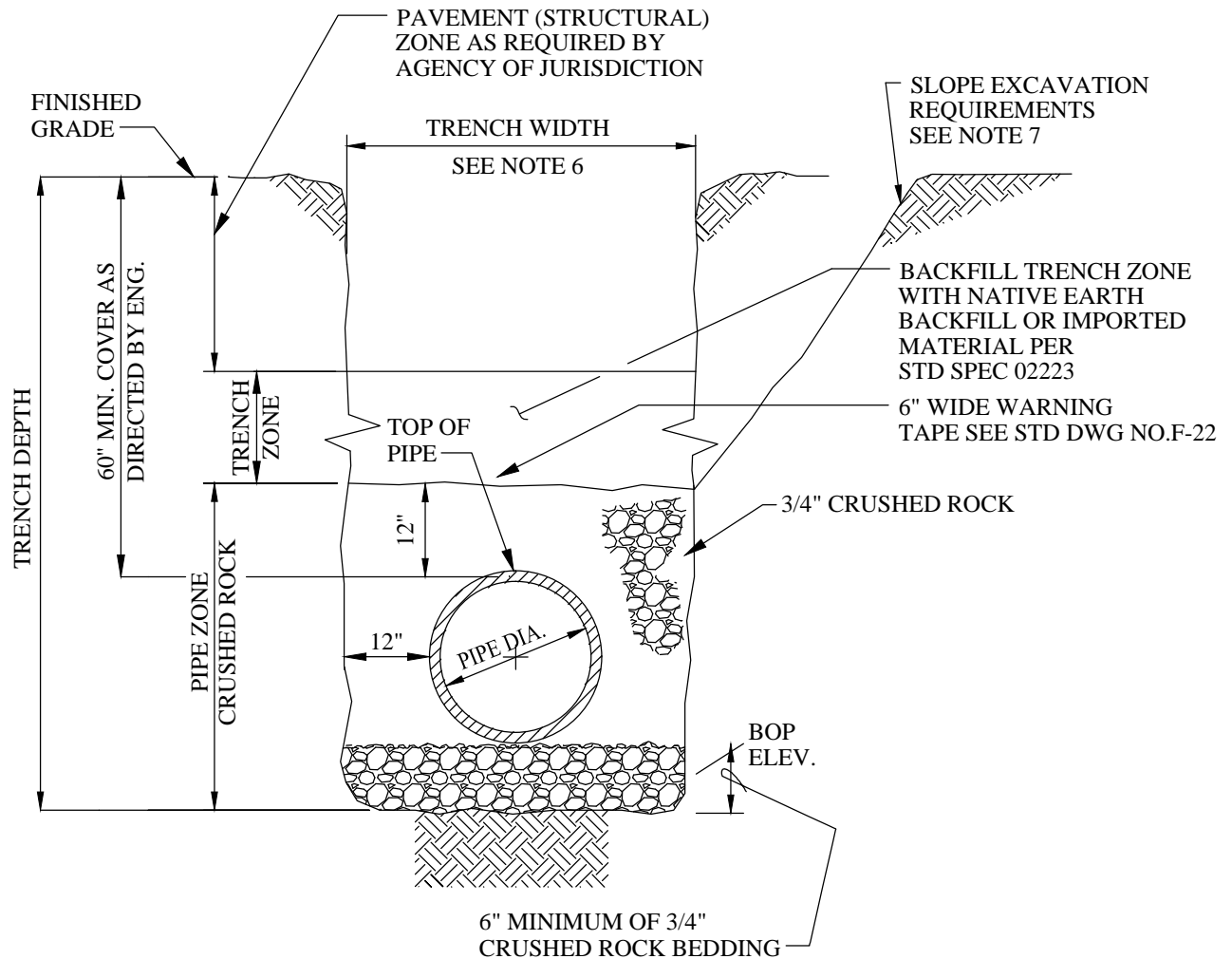
OLIVENHAIN MUNICIPAL WATER DISTRICT

LOCKING MANHOLE COVER

STD DWG NO.

F-10

FEBRUARY 2017



TRENCH SECTION

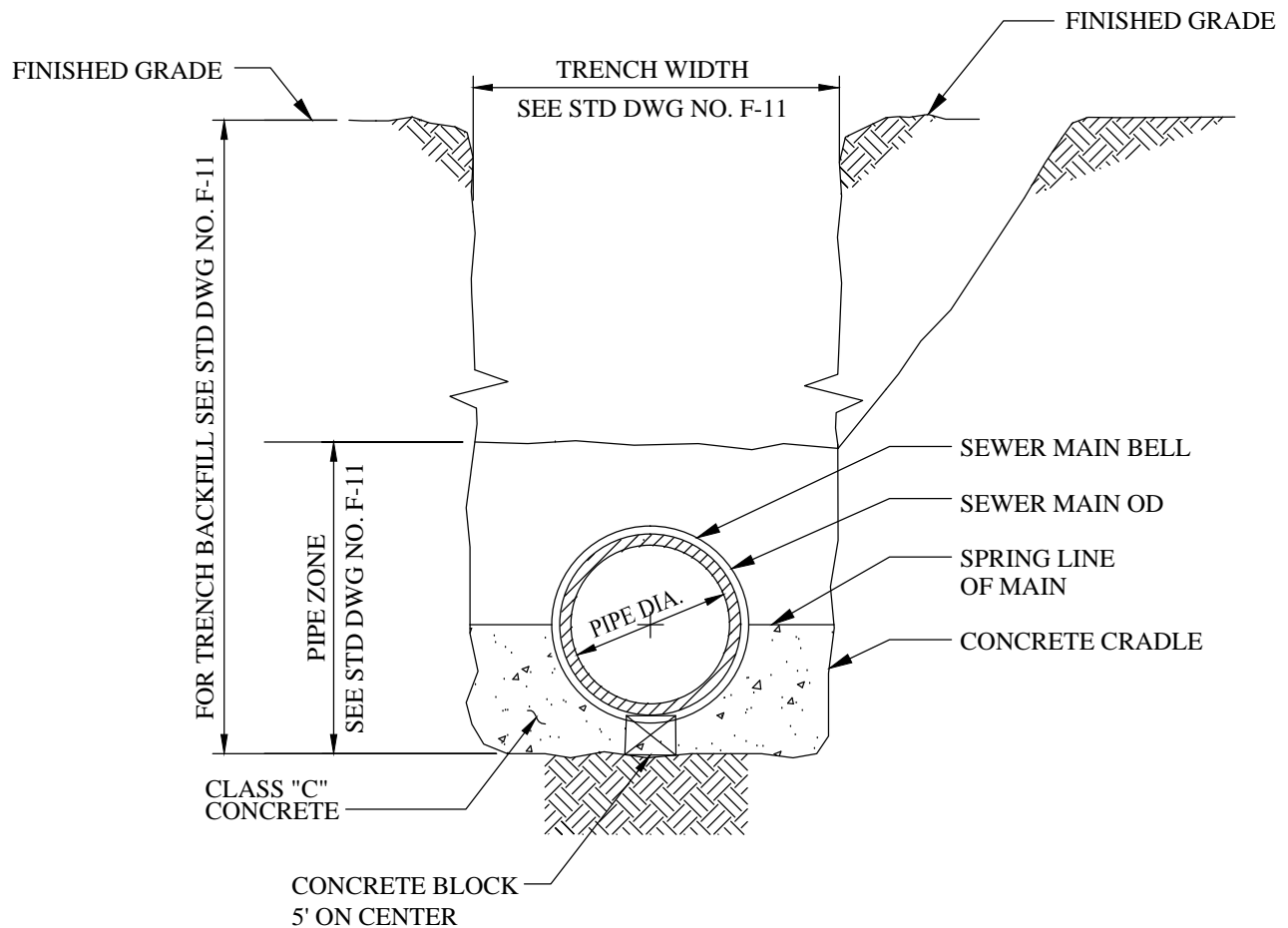
NOTES:

1. SEE STANDARD SPECIFICATION SECTION 02223 AND 15065.
2. PAVING OR PAVEMENT REPAIR TO BE DONE IN ACCORDANCE WITH AGENCY OF JURISDICTION.
3. ALL PIPELINE TRENCHES SHALL BE EXCAVATED SO THAT THE DISTANCE BETWEEN TRENCH WALLS AT THE TOP OF PIPE SHALL BE AS CALLED OUT IN NOTE 6.
4. CONCRETE CRADLE PER STD DWG NO. F-12 THE TRENCH WIDTH AT THE UPPER LIMIT OF THE PIPE ZONE EXCEEDS THE MAXIMUM WIDTH SPECIFIED.
5. EXCAVATE BELL HOLES AT EACH JOINT TO PERMIT PROPER ASSEMBLY AND INSPECTION OF THE ENTIRE JOINT.
6. THE TRENCH WIDTH EQUALS, SEWER MAIN OD PLUS 12" EACH SIDE.
7. CONTRACTOR IS SOLELY RESPONSIBLE FOR JOBSITE AND TRENCH SAFETY AND SHALL ASSURE ALL OSHA AND OTHER FEDERAL, STATE AND LOCAL REGULATIONS AND REQUIREMENTS PRETAINING TO TRENCH CONSTRUCTION ARE MET.

OLIVENHAIN MUNICIPAL WATER DISTRICT

PIPE BEDDING AND TRENCH BACKFILL FOR SEWER FACILITIES

STD DWG NO.
F-11
FEBRUARY 2017



TRENCH SECTION

NOTES:

1. SEE STANDARD SPECIFICATION SECTION 02223.
2. CONCRETE CRADLE SHALL BE USED AS DIRECTED BY THE DISTRICT ENGINEER WHEN THE TRENCH WIDTH AT THE UPPER LIMIT OF THE PIPE ZONE EXCEEDS THE MAX WIDTH SPECIFIED ON STD DWG NO. F-11.
3. ALTERNATE PIPE MATERIALS MAY BE USED, SUCH AS AWWA C-900 WATER PIPE AS DIRECTED BY THE DISTRICT ENGINEER.
4. FOR PIPE BEDDING AND TRENCH BACKFILL, SEE STD DWG NO. F-11.

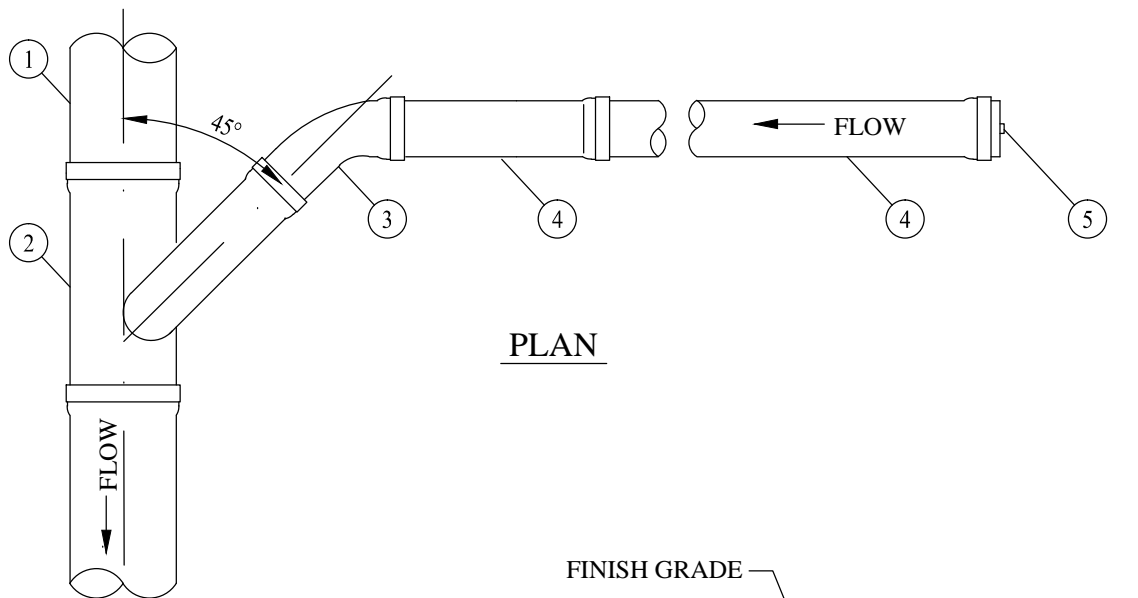
OLIVENHAIN MUNICIPAL WATER DISTRICT

CONCRETE PIPE CRADLE

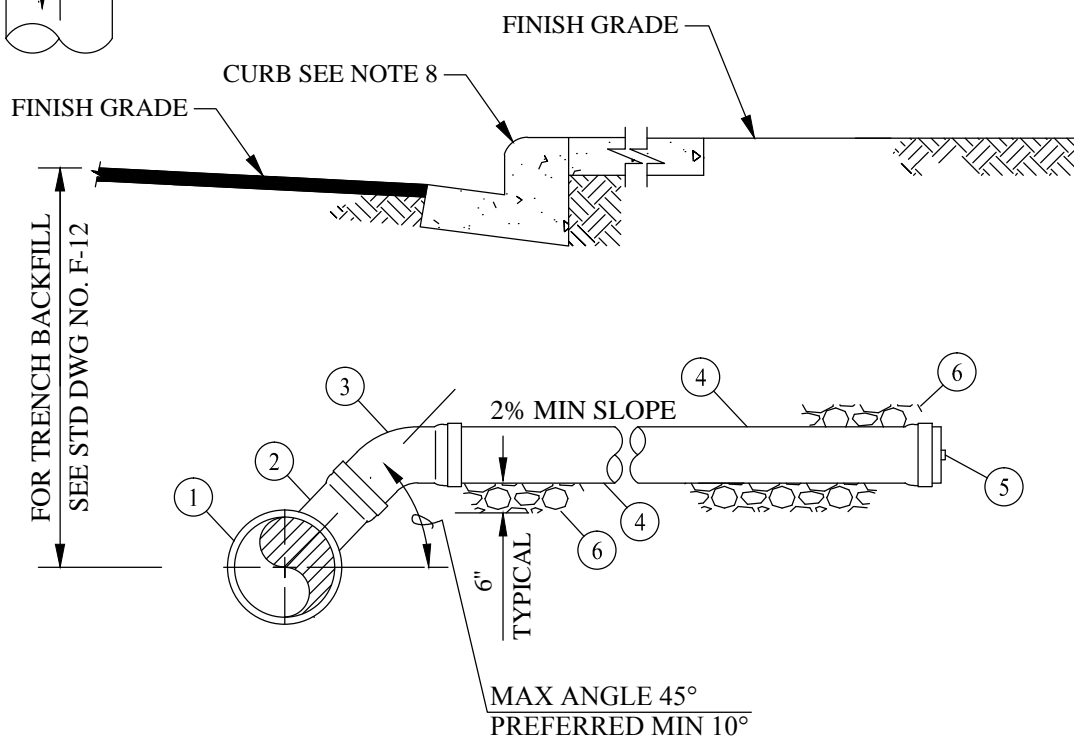
STD DWG NO.

F-12

FEBRUARY 2017

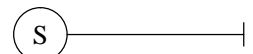


PLAN



ELEVATION

(INDICATE SIZE)



LEGEND ON PLANS

NOTE:

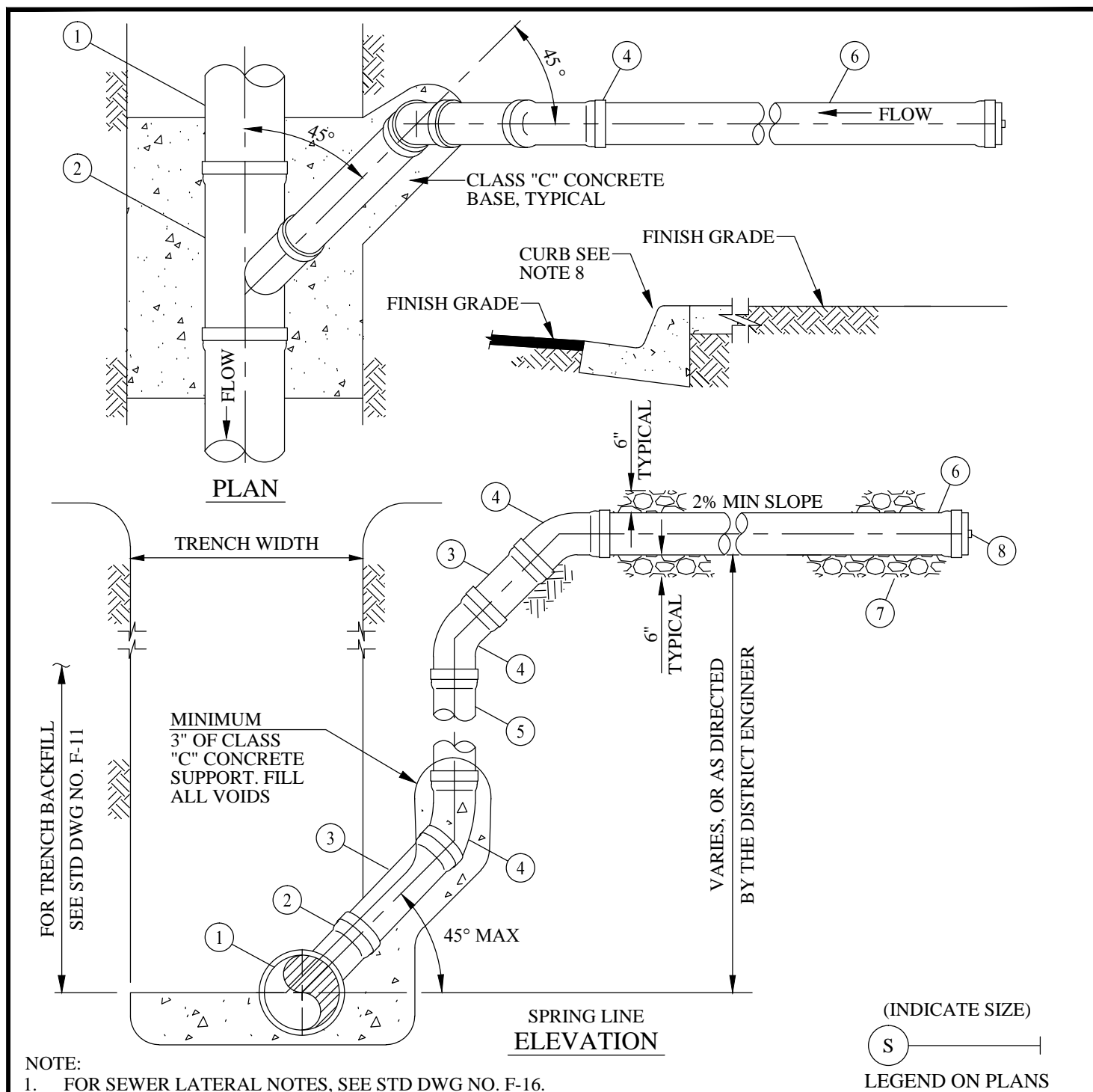
1. FOR SEWER LATERAL NOTES, SEE STD DWG NO. F-16

ITEM	DESCRIPTION	SPEC/DWG
1	SEWER MAIN	15065
2	45° WYE	15065
3	45° ELBOW	15065
4	PVC PIPE LATERAL, SEE NOTES 3 & 5 ON SHEET F-16	15065/F-16
5	PVC PLUG OR CAP	15065
6	3/4" CRUSHED ROCK, 6" THICK	02223
7	-	-
8	-	-

OLIVENHAIN MUNICIPAL WATER DISTRICT

4-INCH AND 6-INCH SEWER
LATERAL INSTALLATION

STD DWG NO.
F-13
FEBRUARY 2017

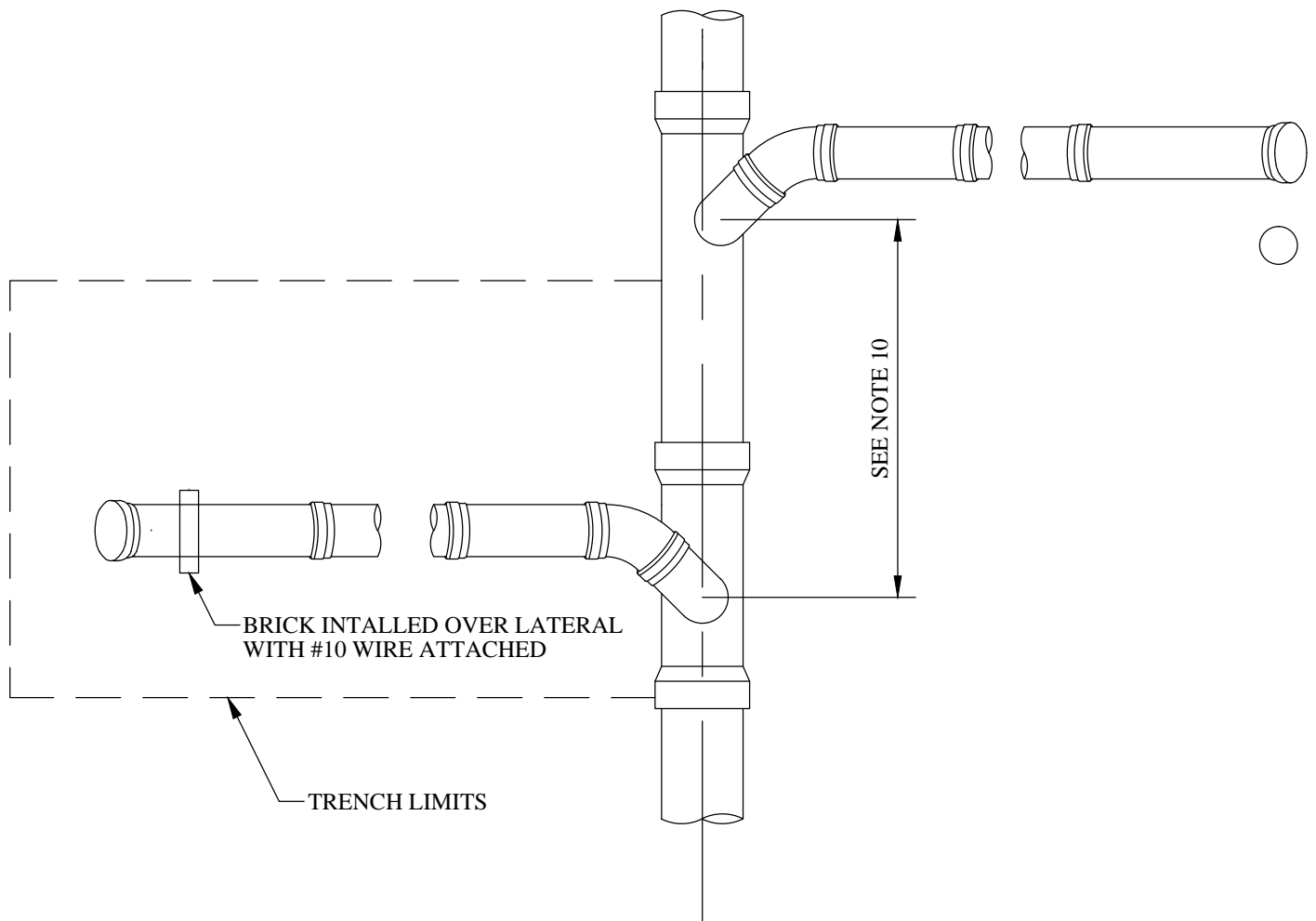


ITEM	DESCRIPTION	SPEC/DWG
1	SEWER MAIN	15065
2	45° WYE	15065
3	PVC PIPE	15065
4	45° BELOW	15065
5	PVC PIPE, SEE NOTE 6 ON SHEET F-16	15065/F-16
6	PVC PIPE LATERAL, SEE NOTES 3 & 5 ON SHEET F-16	15065/F-16
7	3/4" CRUSHED ROCK, 6" THICK	02223
8	PVC PLUG OR CAP	-
9	-	-
10	-	-

OLIVENHAIN MUNICIPAL WATER DISTRICT

4-INCH AND 6-INCH DEEP-CUT SEWER LATERAL INSTALLATION

STD DWG NO.
F-14
FEBRUARY 2017



SEWER LATERAL DETAIL

SEE NOTE 10 BELOW

NOTES:

1. SEE STANDARD SPECIFICATION SECTION 15065.
2. IN NO CASE SHALL A LATERAL CONNECT DIRECTLY ON TOP OF A SEWER MAIN.
3. LATERAL SHALL BE INSTALLED TO PROPERTY LINE UNLESS SPECIFIED ON PLANS.
4. MINIMUM 4' COVER ABOVE LATERAL AT PROPERTY LINE.
5. LATERAL TO HAVE A MINIMUM SLOPE OF 2%.
6. VERTICAL PIPE SHALL BE BRACED WHILE BACKFILLING TRENCH.
7. INSTALL WARNING/IDENTIFICATION TAPE AS SHOWN ON STD DWG NO. F-21.
8. STAMP OR CHISEL A 2" HIGH "S" IN CURB FACE OVER LATERAL TO IDENTIFY SEWER LATERAL LOCATION.
9. FOR SEWER LATERAL INSTALLATIONS, SEE STD DWG NOS. F-13 AND F-14.
10. SEWER MAIN SHALL HAVE A MINIMUM 3' SECTION OF PIPE BETWEEN FITTINGS.

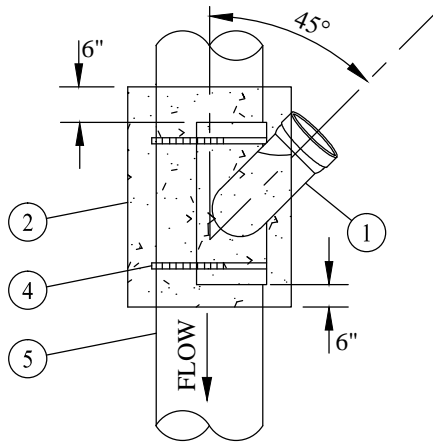
OLIVENHAIN MUNICIPAL WATER DISTRICT

SEWER LATERAL NOTES AND DETAIL

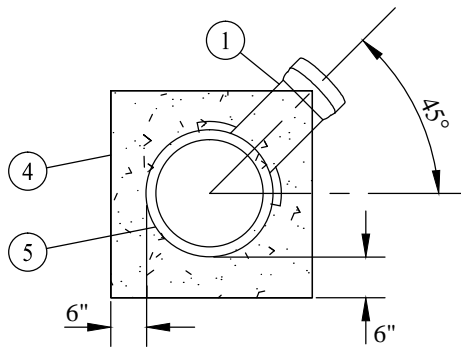
STD DWG NO.

F-15

FEBRUARY 2017



PLAN



ELEVATION

CUT IN WYE CONNECTION
FOR EXISTING PVC PIPE
TYPE B

NOTES:

1. SEE STANDARD SPECIFICATION SECTION 15065.
2. CONNECTIONS TO EXISTING SEWER MAINS TO BE MADE BY DISTRICT PERSONNEL UNLESS OTHERWISE NOTED ON PLANS.
3. IN NO CASE SHALL CONNECTION BE MADE DIRECTLY ON TOP OF SEWER MAIN.
4. NO MORE THAN ONE CUT IN WYE WILL BE ALLOWED FOR EACH LENGTH OF ANY EXISTING VCP SEWER MAIN.
5. FOR SEWER LATERAL INSTALLATION, SEE STD DWG NOS. F-13 AND F-14.
6. FOR TRENCH BACKFILL, SEE STD DWG NO. F-11.
7. MECHANICALLY CUT OPENINGS IN EXISTING SEWER MAIN PRIOR TO SADDLE INSTALLATION. DISTRICT TO VERIFY HOLE PRIOR TO INSTALLATION OF SADDLE. NO BREAKING OF CLAY PIPE.

(INDICATE SIZE)



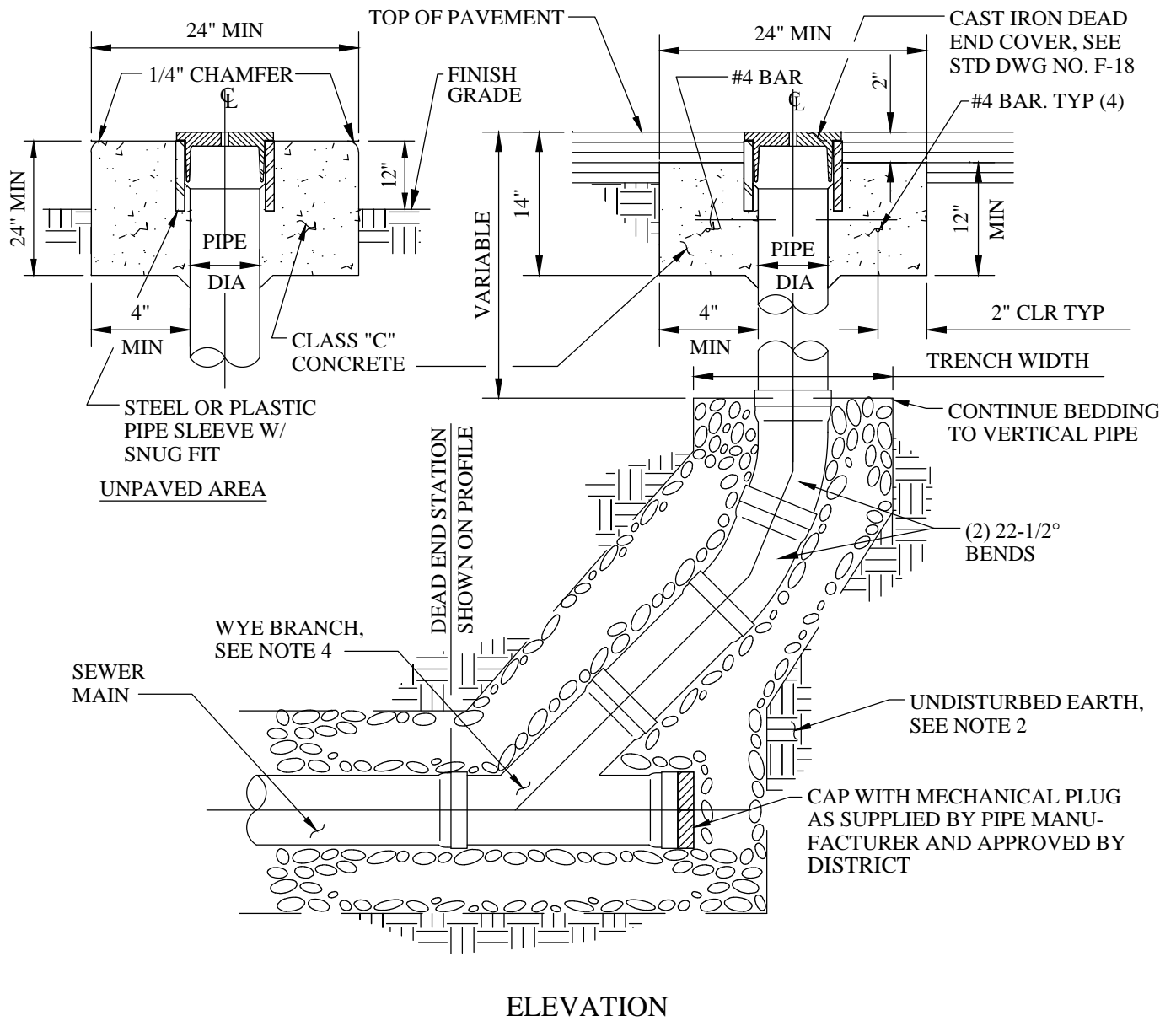
LEGEND ON PLANS

ITEM	DESCRIPTION	SPEC/DWG
1	45° SADDLE WYE WITH GASKET	15065
2	STAINLESS STEEL HOSE CLAMPS (2-EACH)	15065
3	EXISTING PVC SEWER MAIN	-
4	CLASS "C" CONCRETE ENCASEMENT	02223
5	EXISTING VCP SEWER MAIN	-

OLIVENHAIN MUNICIPAL WATER DISTRICT

SEWER CUT IN WYE CONNECTIONS

STD DWG NO.
F-16
FEBRUARY 2017



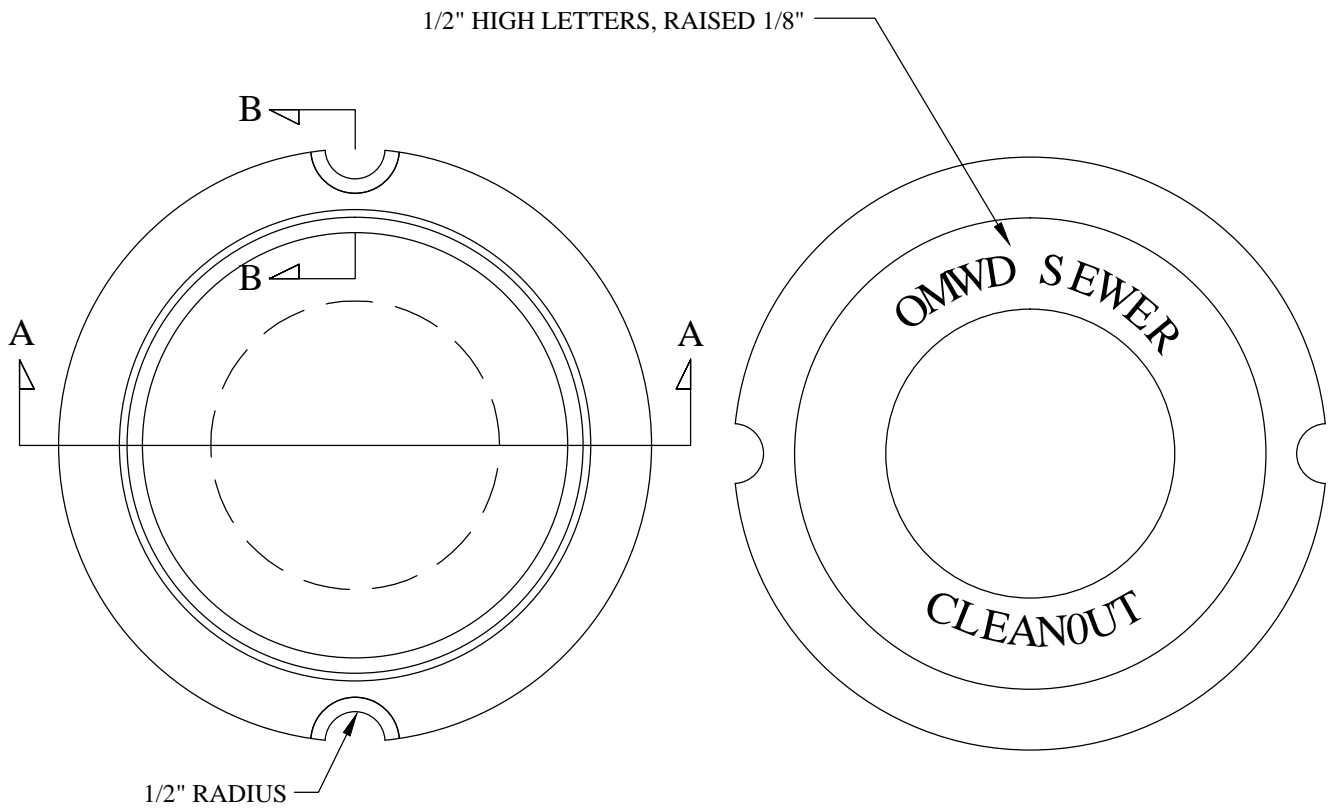
NOTES:

1. THE SEWER MAIN SHALL BE LAID FOR THE FULL LENGTH AND DEPTH SHOWN ON THE PLAN AND PROFILE TO THE POINT MARKED DEAD END (D.E.).
2. THE TRENCH FOR A DEAD END SHALL BE EXCAVATED ONLY TO SUBGRADE, WHICH IS THE BOTTOM OF THE SLOPING PIPE AND FITTINGS. SHOULD THE EXCAVATION FOR ANY REASON BE CARRIED BELOW SUBGRADE, IT SHALL BE REFILLED TO SUBGRADE WITH CRUSHED ROCK WHICH SHALL BE TAMPED UNTIL FIRM AND UNYIELDING. SHOULD A FIRM AND UNYIELDING FOUNDATION BE UNOBTAINABLE BY THIS METHOD A CONCRETE PIPE CRADLE SHALL BE USED.
3. DEAD END SHALL BE SAME SIZE PIPE DIAMETER AS THE MAIN LINE SEWER.
4. WYE BRANCH SHALL BE REPLACED WITH (2) 22-1/2° BENDS, IN AREAS WHERE SEWER WILL NOT BE EXTENDED.
5. CLEANOUT COLLAR SHALL BE CENTERED IN CONCRETE COLLAR.

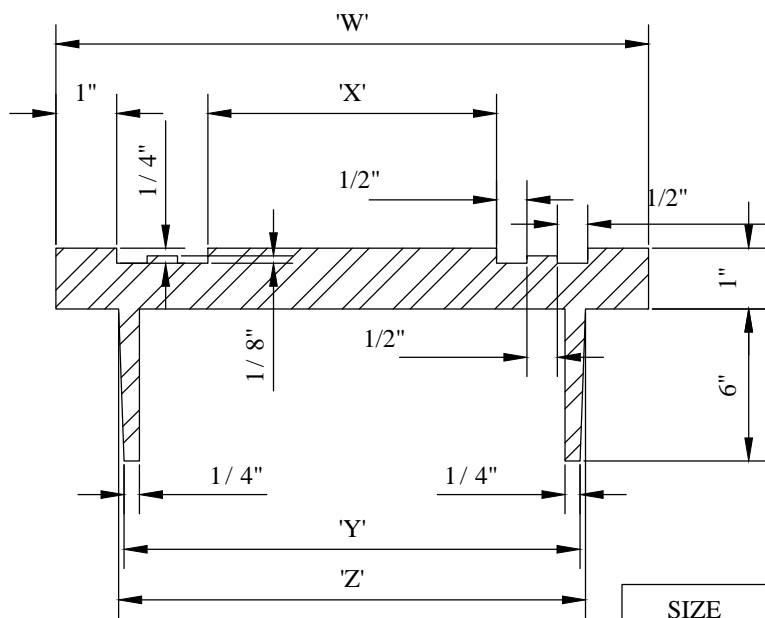
OLIVENHAIN MUNICIPAL WATER DISTRICT

STANDARD DEAD END (CLEANOUT)

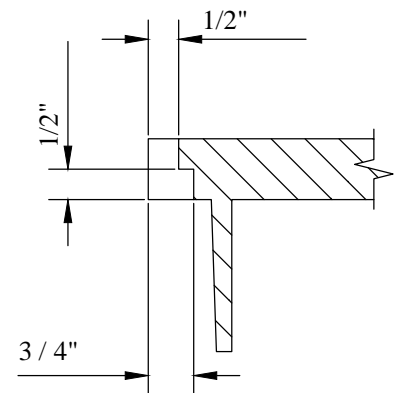
STD DWG NO.
F-17
FEBRUARY 2017



BOTTOM VIEW



SECTION A-A



SECTION B-B

SIZE	'W'	'X'	'Y'	'Z'
6" PIPE	9-3/4"	4-3/4"	7-1/2"	7-3/4"
8" PIPE	11-3/4"	6-3/4"	9-1/2"	9-3/4"

NOTE:

- COVER TO BE SBF-1243.

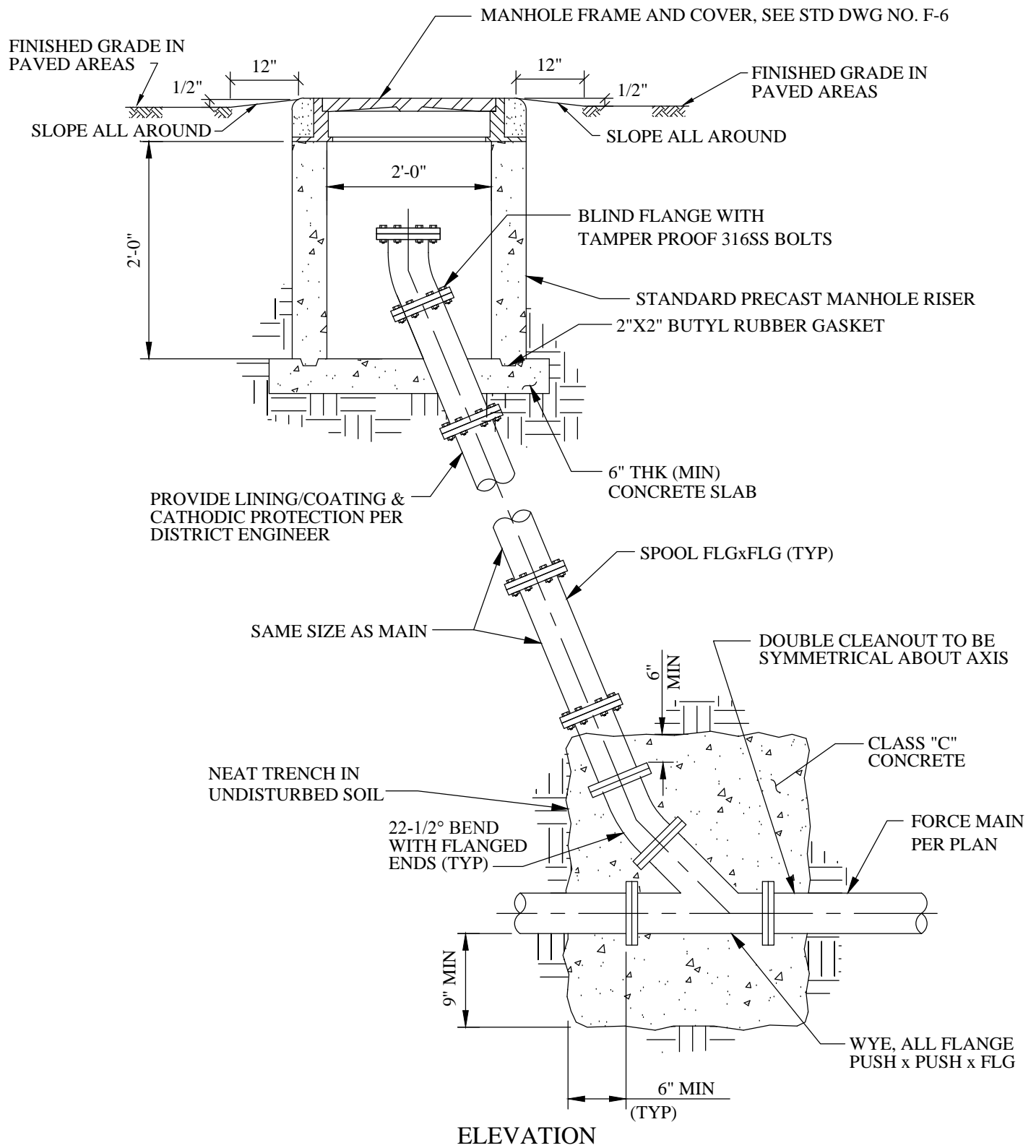
OLIVENHAIN MUNICIPAL WATER DISTRICT

STANDARD CLEANOUT COVER

STD DWG NO.

F-18

FEBRUARY 2017



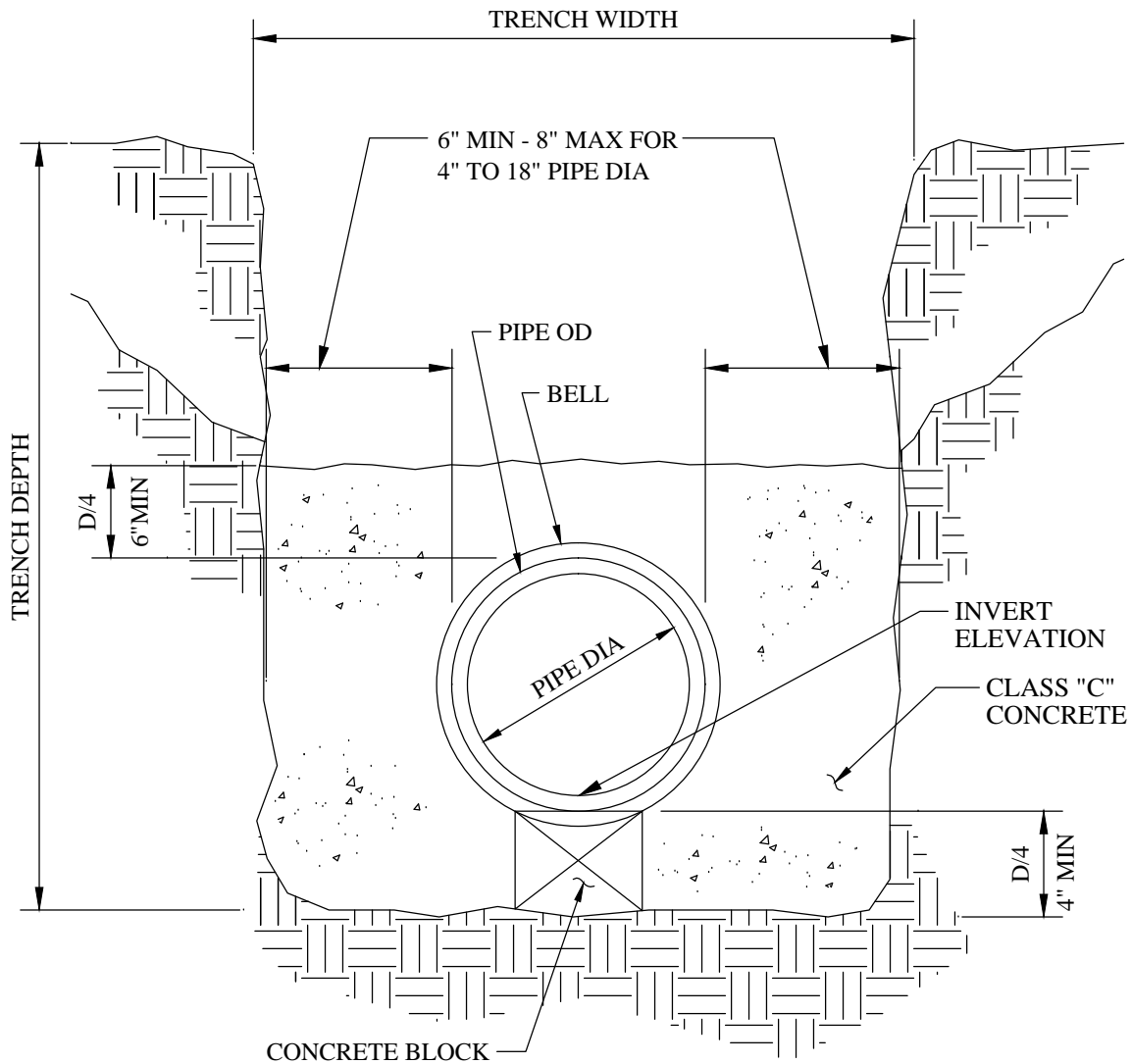
NOTES:

1. SIMILAR POLYVINYL CHLORIDE COMPONENTS SHALL BE USED IN ACCORDANCE WITH ASTM FOR < 4"Ø PIPE D3033 AND HAVE SOLVENT CEMENT JOINTS. ≥ 4"Ø PIPE TO BE DUCTILE IRON.
2. CONCRETE SLAB TO BE CLASS "C".

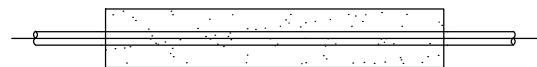
OLIVENHAIN MUNICIPAL WATER DISTRICT

CLEANOUT SEWER FORCE MAIN

STD DWG NO.
F-19
FEBRUARY 2017



SECTION



LEGEND ON PLANS

NOTE:

1. ENCASE PIPE TO NEAREST FLEXIBLE JOINT.

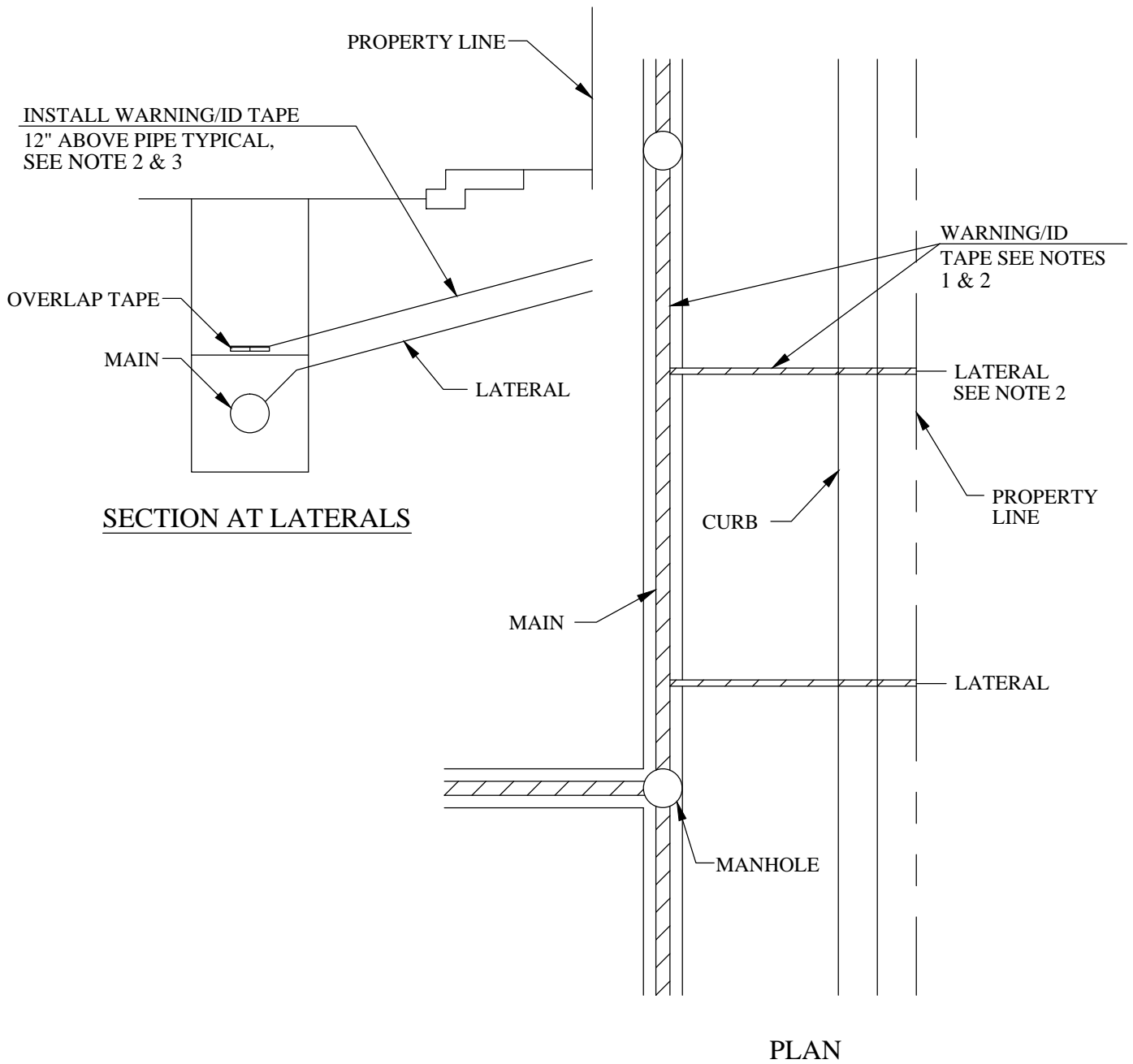
OLIVENHAIN MUNICIPAL WATER DISTRICT

CONCRETE
ENCASEMENT

STD DWG NO.

F-20

FEBRUARY 2017



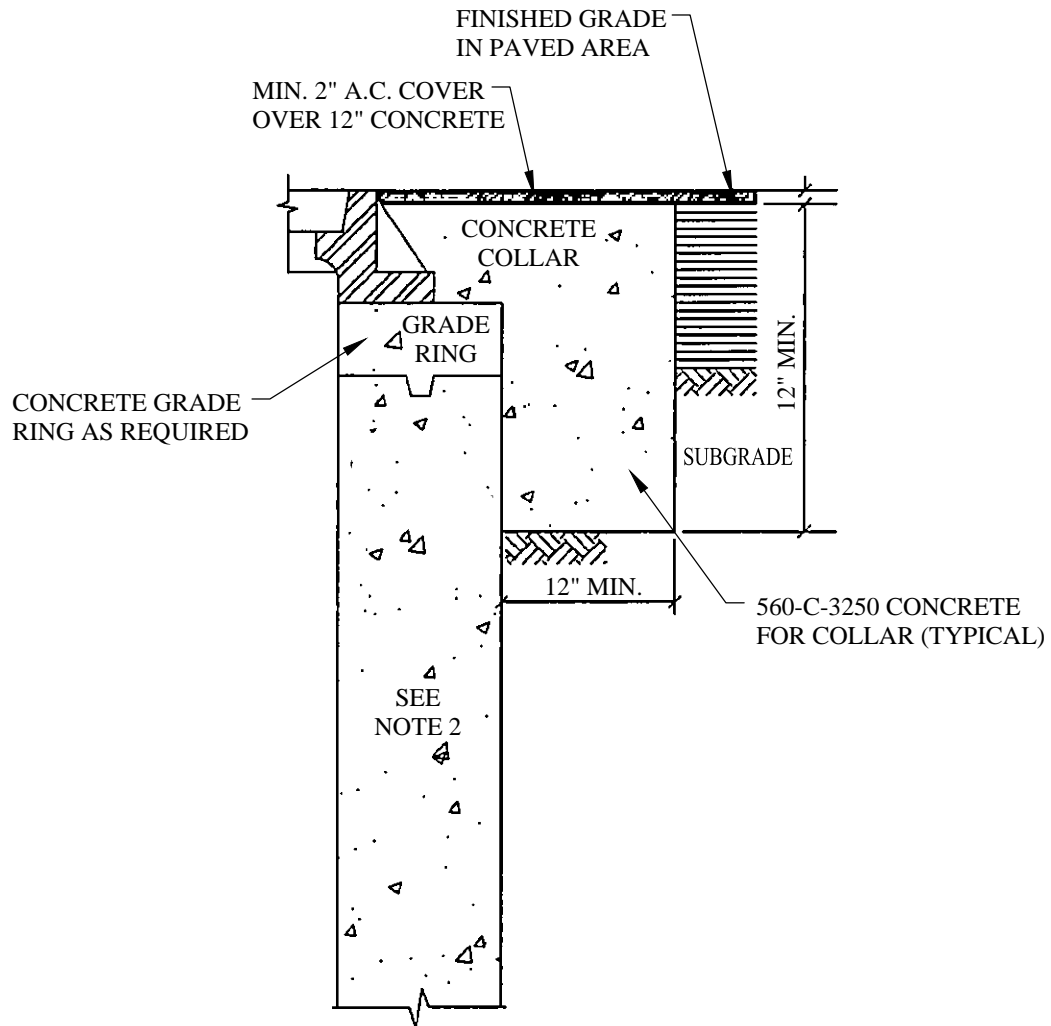
NOTES:

1. LINES SHALL HAVE A 6" WIDE COLOR APPROPRIATE FOR TYPE OF PIPE, WARNING/IDENTIFICATION TAPE MARKED AS APPROPRIATE FOR TYPE OF PIPE, SEE NOTE 3.
2. WARNING/IDENTIFICATION TAPE SHALL BE INSTALLED 12" ABOVE THE PIPE AND PLACED CONTINUOUSLY ALONG THE ENTIRE LENGTH OF THE PIPE AND ALL RELATED APPURTENANCES.
3. FOR APPURTENANCES OFF MAIN LINE EXTEND TAPE TO PROPERTY LINE.

OLIVENHAIN MUNICIPAL WATER DISTRICT

WARNING / IDENTIFICATION TAPE INSTALLATION

STD DWG NO.
F-21
FEBRUARY 2017

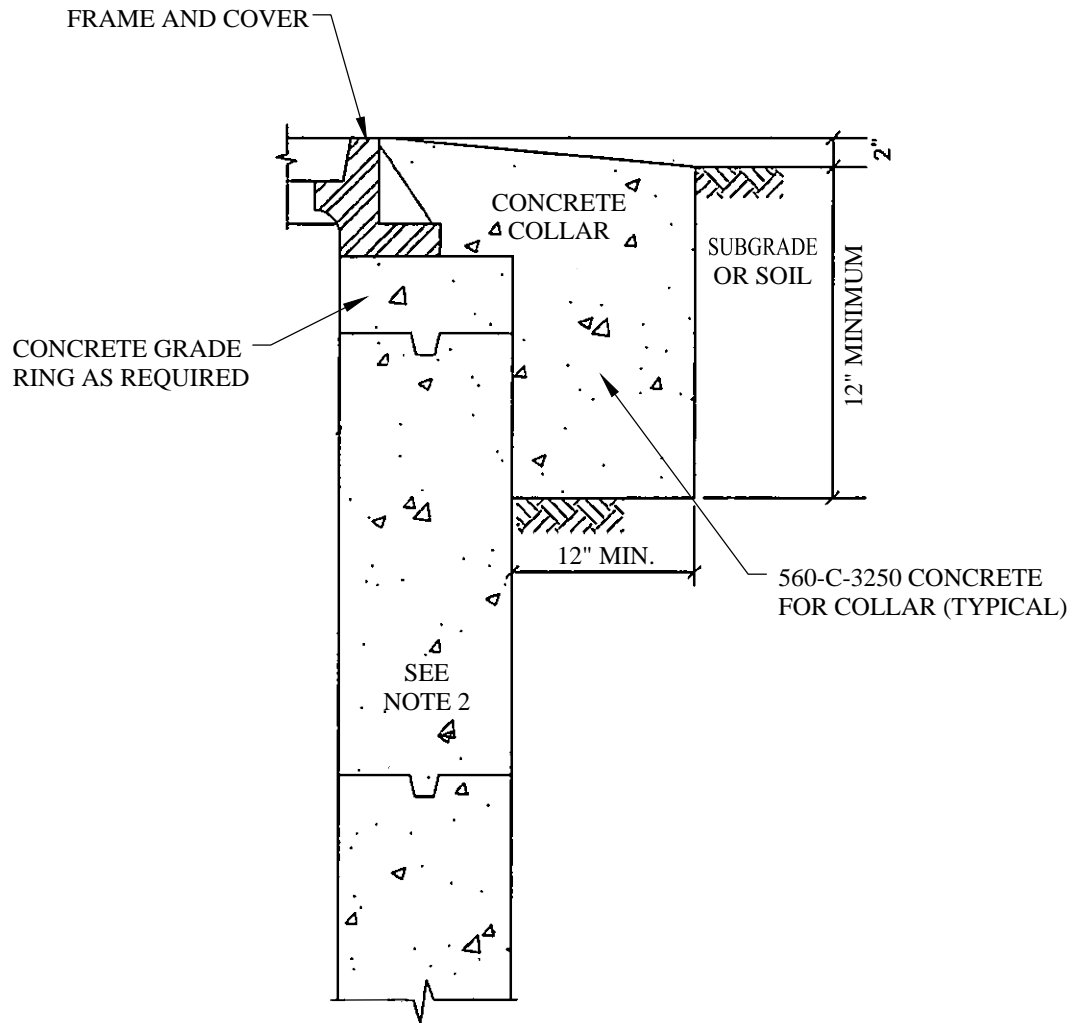


TYPE "A" FOR PAVED AREAS

OLIVENHAIN MUNICIPAL WATER DISTRICT

CONCRETE MANHOLE COLLAR
(TYPE A - PAVED AREAS)

STD DWG NO.
F-22
FEBRUARY 2017

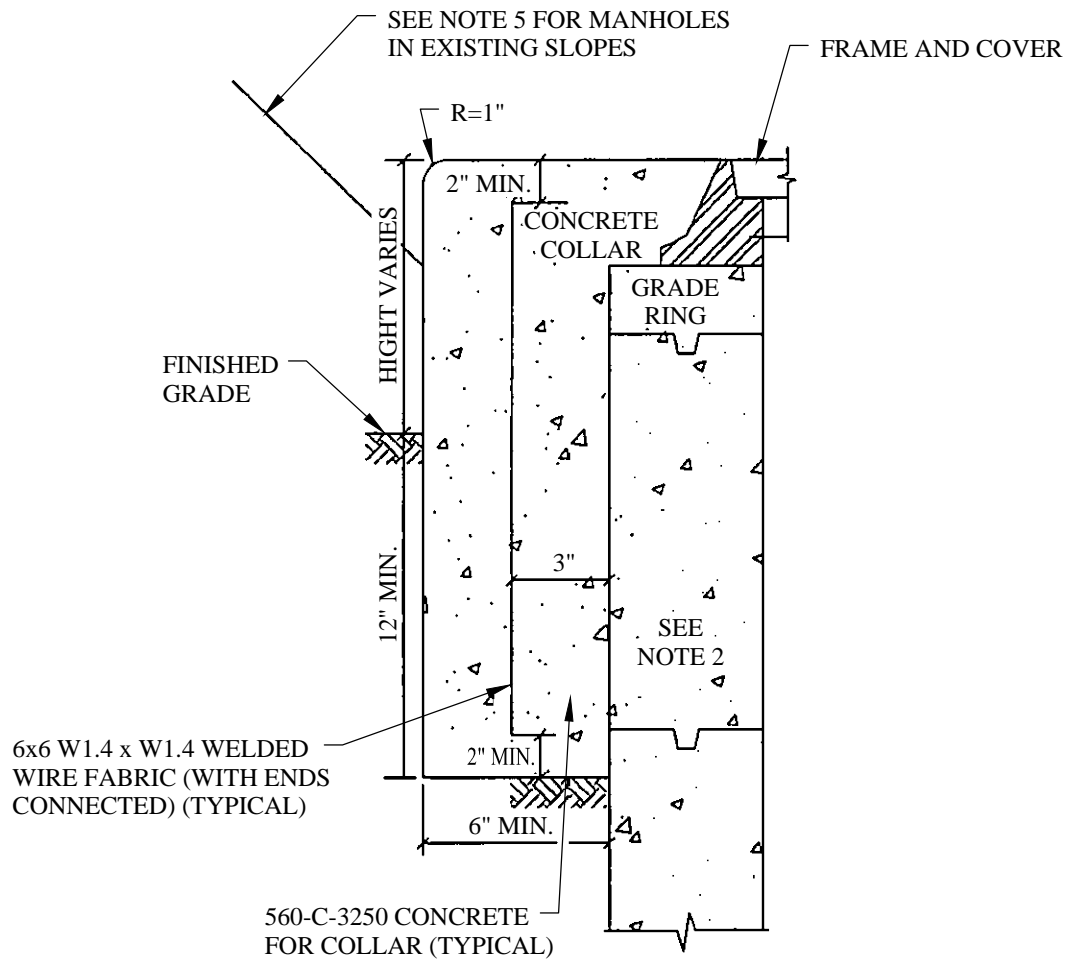


TYPE "B" FOR UNPAVED TRAVELED WAYS

OLIVENHAIN MUNICIPAL WATER DISTRICT

CONCRETE MANHOLE COLLAR
(TYPE B - UNPAVED TRAVELED WAYS)

STD DWG NO.
F-23
FEBRUARY 2017

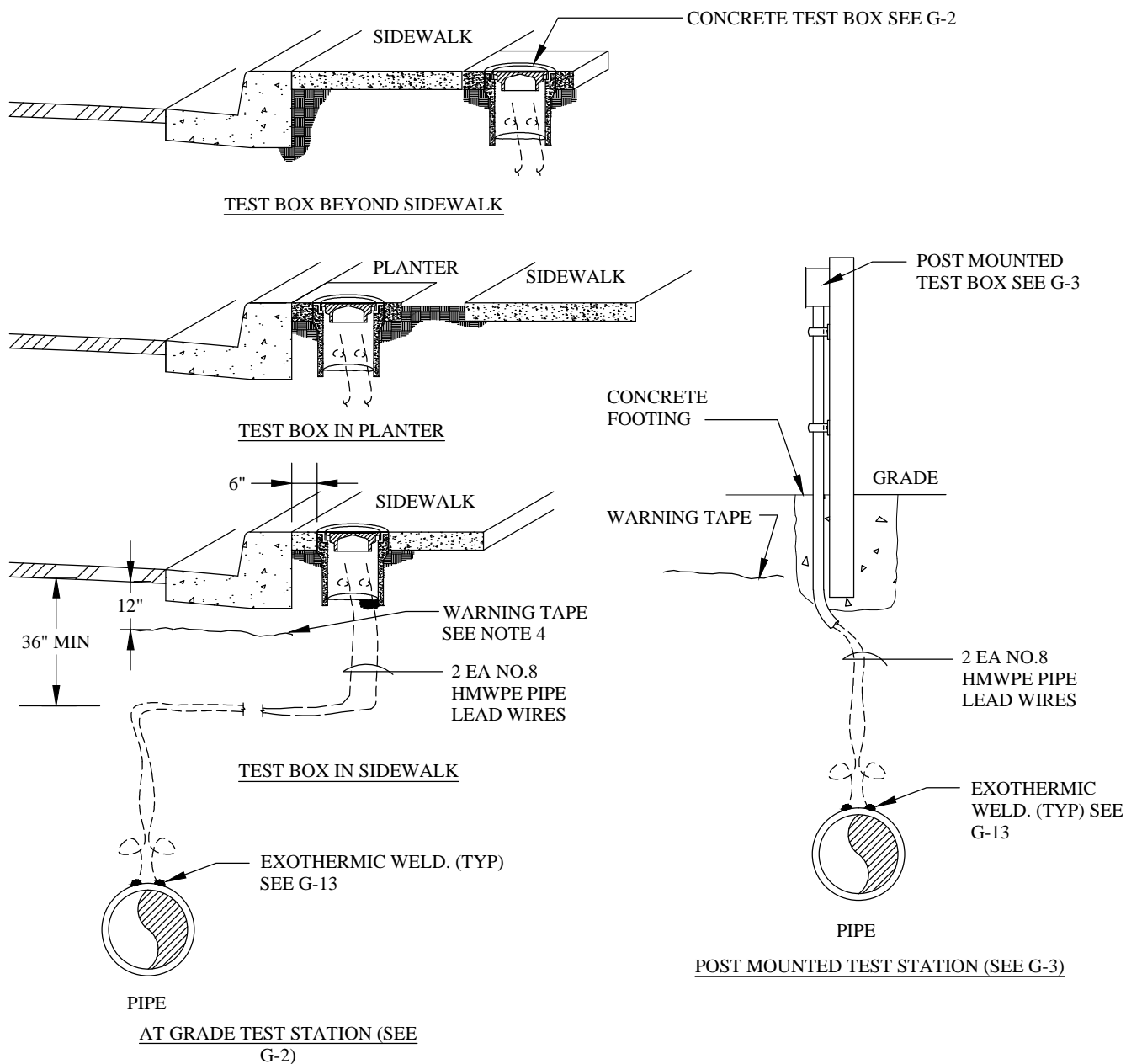


TYPE "C" FOR UNPAVED AREAS

OLIVENHAIN MUNICIPAL WATER DISTRICT

CONCRETE MANHOLE COLLAR
(TYPE C - UNPAVED AREAS)

STD DWG NO.
F-24
FEBRUARY 2017



NOTES:

1. PLACE AT GRADE BOX AT ONE OF THE THREE LOCATIONS SHOWN PER DRAWINGS OR PER DIRECTION FROM DISTRICT'S REPRESENTATIVE. FOR ROAD WITHOUT CURB PLACE AT-GRADE CTS BEYOND PAVEMENT OUT OF TRAFFIC LANES BUT WITHIN EASEMENT.
2. USE POST-MOUNTED CTS IN UNDEVELOPED SITES. PLACE DIRECTLY OVER PIP WHERE POSSIBLE, OR AS DIRECTED BY DISTRICT'S REPRESENTATIVE.
3. PROVIDE SAND BEDDING AND BACKFILL IN WIRE TRENCHES. SEE STD SPEC. 02223
4. WARNING TAPE SHALL BE 6" WIDE, 4 MIL THICK INERT PLASTIC WARNING TAPE PRINTED WITH "CAUTION: CATHODIC PROTECTION CABLE BELOW".
5. USE SIMILAR MOUNTING FOR MULTI-WIRE CTS.

OLIVENHAIN MUNICIPAL WATER DISTRICT

2-WIRE CATHODIC TEST STATION (CTS)

STD DWG NO.
G-1
FEBRUARY 2017

CAST IRON TRAFFIC COVER
MARKED "CP TEST"

CONCRETE PAD 26" SQ
AT UNPAVED SITES

NO. 4 REBAR W/2"
COVER (TYP)

② BRASS TAGS
SEE NOTE 3

① CONCRETE BODY

NATIVE SOIL.
SEE NOTE 2.

2 EA. NO. 8 AWG HMWPE TEST
LEADS (SIMILAR FOR OTHER
TEST CONFIGURATIONS WITH
MORE WIRES)

NOTES:

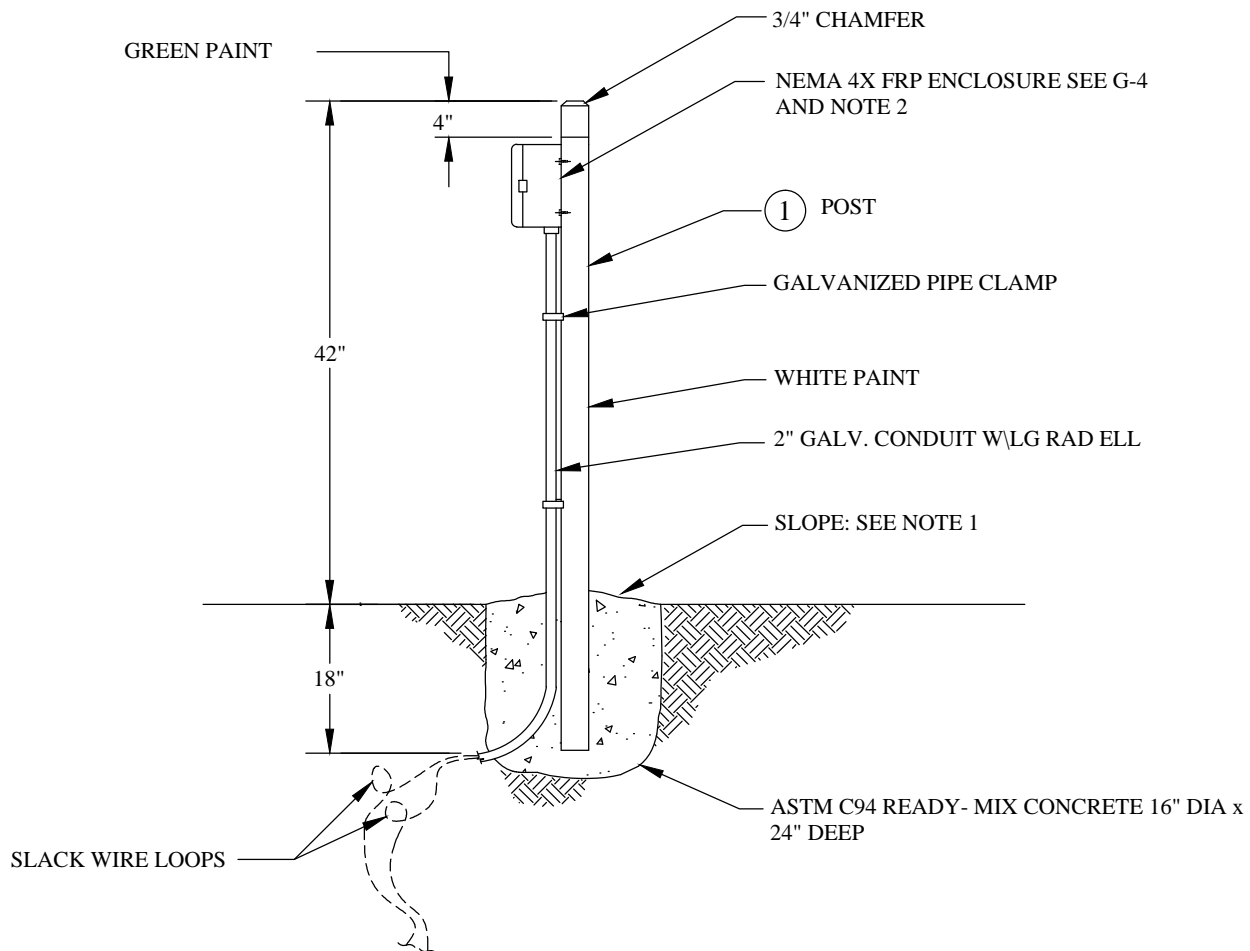
1. ALL WIRES SHALL HAVE 18" MIN. SLACK IN BOX.
2. BOTTOM OF TEST BOX SHALL BE 3/4" GRAVEL BASE\LEACH FIELD.
3. FIRMLY STAMP BRASS TAGS "OMWD, SIZE AND SERVICE" (EXAMPLE: OMWD 24" RW). USE 1/4" HIGH CHARACTERS. SECURELY ATTACH BRASS TAGS TO TEST LEADS WITH BARE NO. 14 COPPER WIRE.

ITEM	DESCRIPTION	SPEC/DWG
1	CHRISTY G5 TRAFFIC VALVE BOX	13110
2	18 GA. 1-1/2" DIA. WITH 1/16" OFFSET HOLE	13110

OLIVENHAIN MUNICIPAL WATER DISTRICT

AT-GRADE TEST BOX

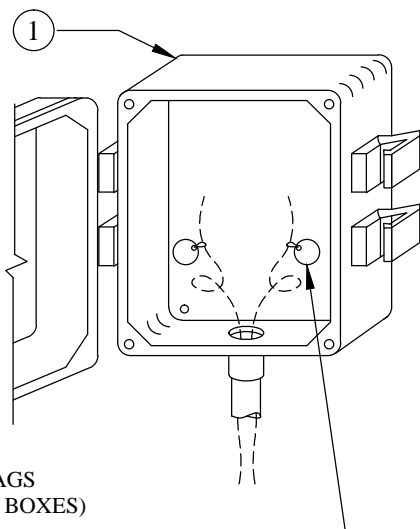
STD DWG NO.
G-2
FEBRUARY 2017



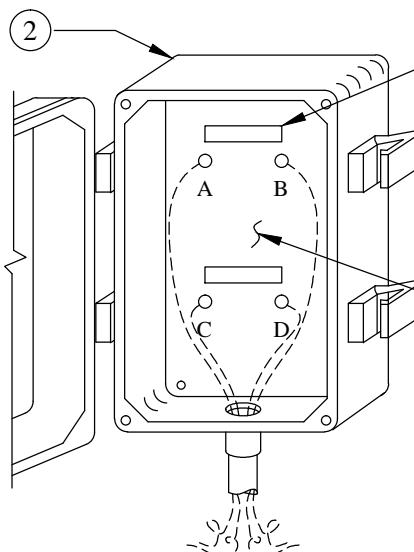
NOTES:

1. SLOPE CONCRETE SLIGHTLY TO PREVENT WATER FROM POOLING NEXT TO POST.
2. ATTACH FRP BOX TO POST WITH 1-1/2" NO. 10 WOOD SCREWS.

ITEM	DESCRIPTION	SPEC/DWG
1	CONSTRUCTION REDWOOD 4"x4"x5' LONG	13110
OLIVENHAIN MUNICIPAL WATER DISTRICT		
POST MOUNTED TEST BOX		STD DWG NO. G-3 FEBRUARY 2017



BRASS TAGS
(TYP ALL BOXES)
SEE G-2



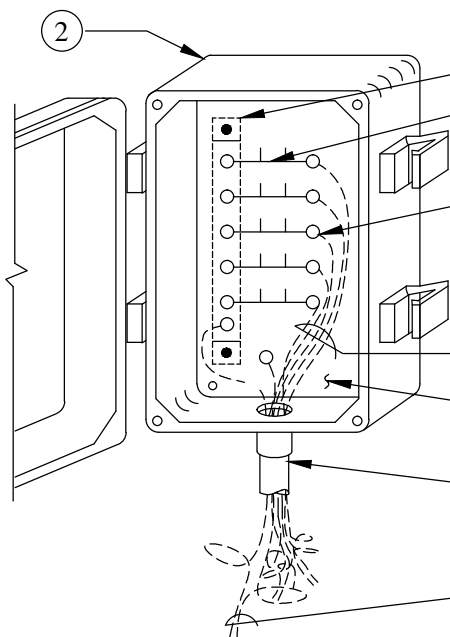
DYMO LABEL W/PIPE SIZE,
MATL. AND DIRECTION
(EXAMPLE: 24" CML&C
NO.)

BACK PANEL
(OFFSET)

4-WIRE CTS

(2 PIPE INSULATOR OR CASING (CTS))

2-WIRE CTS



1/8" X 1" Cu BUS BAR

0.01 OHM SHUNT (TYP.)
(HOLLOWAY TYPE RS)

BRASS LUGS (TYP)

NO. 8 HMWPE ANODE LEADS

BACK PANEL (OFFSET)

2" PVC (TYP)

NO.8 HMWPE PIPE/TEST LEADS (TYP)

1 TO 5 ANODE CTS

NOTE:

1. FIX TO POST WITH 1-1/2" NO.10 WOOD SCREWS. SEE G-3

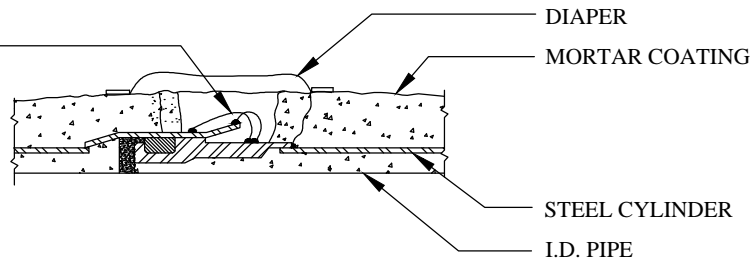
ITEM	DESCRIPTION	SPEC/DWG
1	HOFFMAN 4X FRP ENCLOSURE (A-645JFGQRR) 6"x4"x5"	13110
2	HOFFMAN 4X FRP ENCLOSURE (A-1287JFGQRR) 12"x8"x7"	13110

OLIVENHAIN MUNICIPAL WATER DISTRICT

WIRING IN POST-MOUNTED TEST BOX

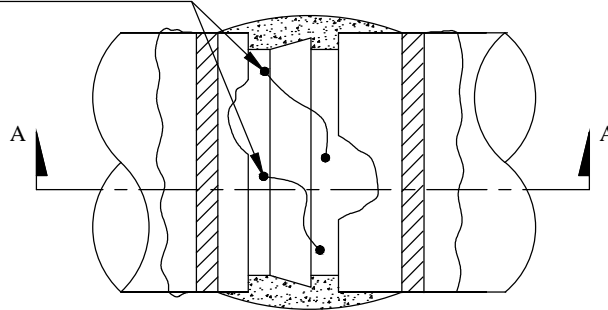
STD DWG NO.
G-4
FEBRUARY 2017

2 EA BOND WIRES
SEE NOTE 1



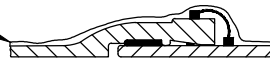
SECTION A-A

EXOTHERMIC WELD (TYP)
SEE G-13



STEEL

MORTAR LINED
DIP

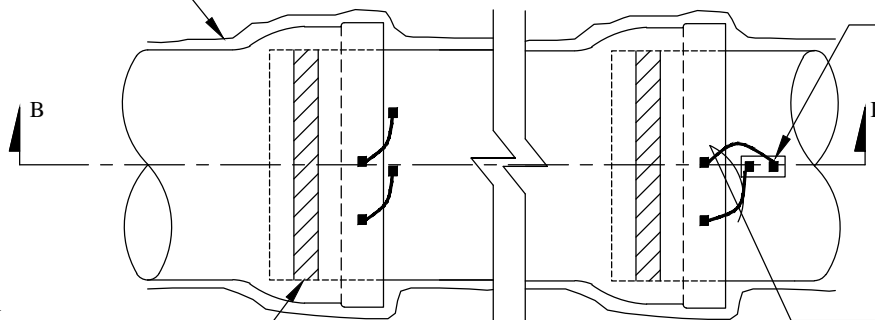


PLASTIC LINED DIP



POLYETHYLENE
ENCASEMENT
SEE NOTE 4

SECTION B-B



STL. BONDING PAD
(4-1/2"X2"X3/8" THK.) SEE
NOTE 2

RUBBER
GASKET

2 EA BOND WIRES
SEE NOTE 1

DUCTILE IRON PIPE

NOTES:

1. BOND WIRE SIZE:

PIPE DIA	WIRE SIZE
> 18"	NO. 2 AWG HMWPE (OR AS SPECIFIED ON DRAWINGS)
≤ 18"	NO. 4 AWG HMWPE

BOND WIRES TO BE AS SHORT AS PRACTICAL BUT NOT LESS THAN 6"

- PADS TO BE INSTALLED ON PLASTIC LINED DIP BY PIPE SUPPLIER BEFORE APPLICATION OF COATING OR LINING. PADS TO BE FULLY SEAL WELDED.
- ALL BONDED PIPE REACHES SHALL BE CONTINUITY TESTED.
- POLYETHYLENE ENCASEMENT SHOWN FOR REFERENCE ONLY. SEE DRAWINGS AND STD SPECS FOR DIP COATING REQUIREMENTS.

OLIVENHAIN MUNICIPAL WATER DISTRICT

PIPE JOINT BONDING

STD DWG NO.

G-5

FEBRUARY 2017

1-NO. 6 HMWPE
SEE NOTE 2

EXOTHERMIC WELD
(TYP). SEE F-13

1-NO.6 HMWPE

2-BOND WIRES (TYP)
SEE NOTE 1

WAX TAPE (TYP)
SEE NOTE 3

2-BOND WIRES (TYP) SEE
NOTE 1

COUPLING

1-NO. 6 HMWPE
(TYP)

3" (TYP)

WAX TAPE (TYP)
SEE NOTE 3

2-BOND WIRES (TYP)
SEE NOTE 1

ALTERNATIVE
SEE NOTE 2

VALVE

FLANGE

NOTES:

1. BOND WIRE SIZE:

<u>PIPE DIA</u>	<u>WIRE SIZE</u>
> 18"	NO. 2 AWG HMWPE
≤ 18"	NO. 4 AWG HMWPE

2. WIRES CAN BE WELDED DIRECTLY TO PIPE CYLINDER OR FLANGE. JUMPER FROM PIPE TO COUPLING CAN BE BRAZED TO FOLLOWER.

3. WAX TAPE WRAP ALL BONDS, BOLTS & IRREGULAR SURFACES PER STD. SPEC SECTION 09952.

4. CARE SHALL BE TAKEN WHEN BACKFILLING TRENCH TO PREVENT DAMAGE TO WAX TAPE SYSTEM.

OLIVENHAIN MUNICIPAL WATER DISTRICT

MECHANICAL JOINT BONDING

STD DWG NO.

G-6

FEBRUARY 2017

INSULATING SLEEVE (FULL WIDTH OF MATED
FLANGES - SEE NOTE 1)

STEEL NUT (2 EA. TYP.)

STEEL WASHER
(BOTH ENDS OF STUD)

INSULATING WASHER
(BOTH ENDS OF STUD)

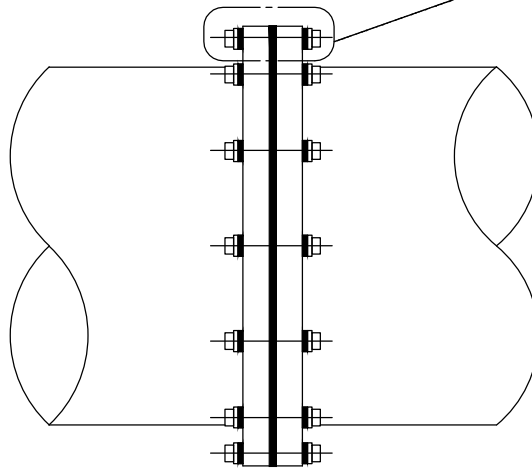
STEEL THREADED STUD

INSULATING GASKET

INSUL WASHER

STL WASHER

STL NUT



NOTES:

1. USE HALF WIDTH SLEEVES AT THREADED FLANGE BOLTS.
2. INSULATING MATERIALS:
 - GASKET- 12" AND GREATER -TYPE "E" FULLFACED NEPORENE WITH RECTANGULAR NITRILE OR VITON O-RING SEAL. (PSI LINEBACKER OR EQUAL).
 - 12" OR LESS-TYPE "E" FULLFACED NEOPRENE FACED PHENOLIC.
 - SLEEVE- 1/32-INCH THICK, FULL LENGTH TUBE, LAMINATED G-10 GLASS
 - WASHER- 1/8-INCH THICK LAMINATED G-10 GLASS.
3. ALIGN FLANGE PROPERLY AND FOLLOW GASKET MANUFACTURER BOLT TIGHTENING SEQUENCE INSTRUCTIONS.
4. DO NOT PAINT OUTER SURFACE OF FLANGE WITH METALLIC PIGMENTED OR CONDUCTIVE PAINTS.
5. TEST MATED FLANGE WITH GAS ELECTRONICS MODEL 601 INSULATION CHECKER (OR EQUIVALENT). PRIOR TO ACCEPTANCE. SEE STD. SPEC. 15310.

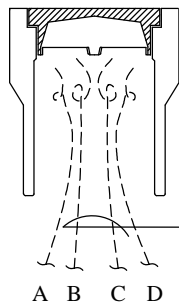
OLIVENHAIN MUNICIPAL WATER DISTRICT

ABOVE-GRADE INSULTING FLANGE

STD DWG NO.

G-7

FEBRUARY 2017



FOR POST-MOUNTED CTS WIRING
SEE G-3

FOR AT-GRADE BOX LOCATION
SEE G-1

HMWPE TEST WIRES
SEE NOTE 3

INSULATING SLEEVE (FULL LENGTH)

STEEL NUT, WASHER &
INSULATING WASHER
BOTH ENDS OF STUD

STEEL THREADED STUD
(SIMILAR FOR BOLTS)

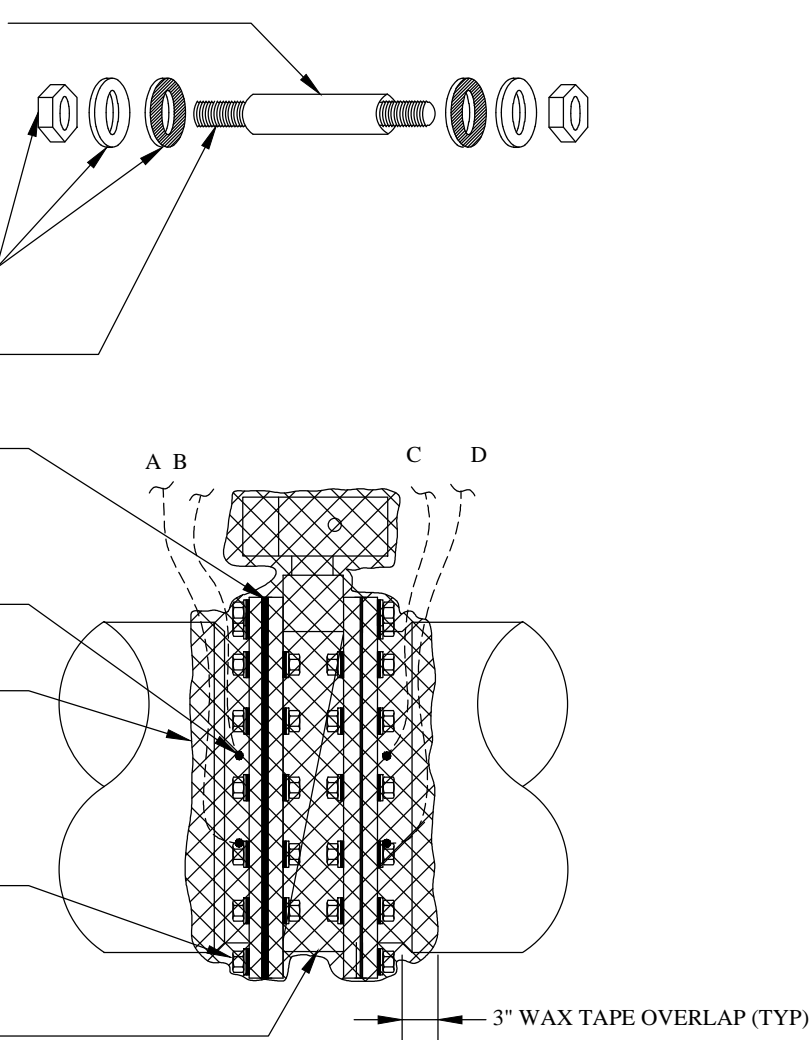
INSULATING GASKET
TYPE "E"

EXOTHERMIC WELD (TYP)
SEE G-13

WAX TAPE WRAP
SEE G-6

THREADED BOLT AT BONNET AND
BASE. SEE NOTE 2

VALVE (SIMILAR FOR FLANGE PAIR
WITHOUT VALVE)



NOTES:

1. FOR INSULATING MATERIALS SEE STD DWG G-7
2. FULL LENGTH INSULATING SLEEVES REQUIRED AT ALL THRU-FLANGE BOLTS OR STUDS. HALF LENGTH SLEEVES REQUIRED AT THREADED BOLT HOLES AT VALVE BONNET AND BASE.
3. WIRE SIZE TO BE AS INDICATED ON PROJECT DRAWINGS.

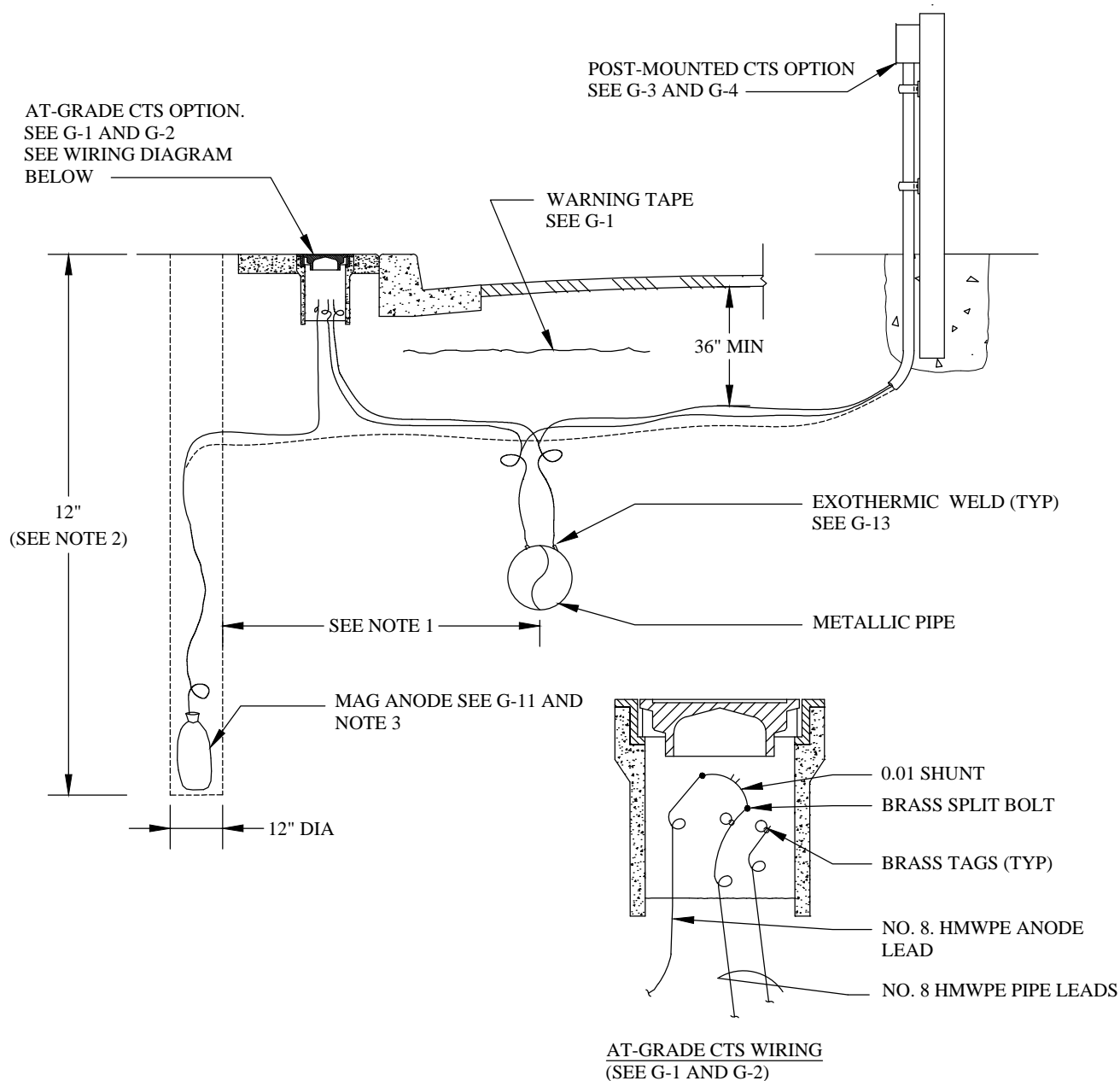
OLIVENHAIN MUNICIPAL WATER DISTRICT

BURIED INSULATING FLANGE

STD DWG NO.

G-8

FEBRUARY 2017



NOTES:

1. HORIZONTAL ANODE DISTANCE FROM PIPE SHALL BE MAXIMUM ALLOWABLE WITHIN OMWD RIGHT-OF-WAY OR AS INDICATED IN THE DRAWINGS. DO NOT INSTALL ANODE SUCH THAT A FOREIGN METALLIC PIPELINE EXISTS BETWEEN ANODE AND PIPE. MINIMUM OFFSET IS 8' UNLESS OTHERWISE SPECIFIED ON DRAWINGS.
2. DEPTH IS 12' UNLESS OTHERWISE INDICATED ON DRAWINGS.
3. LOCATE ANODE AND TEST BOX PER DRAWINGS OR DISTRICT REPRESENTATIVE'S DIRECTION.
4. INSTALL EITHER AT-GRADE CTS OR POST-MOUNTED CTS AS DEFINED ON DRAWINGS.

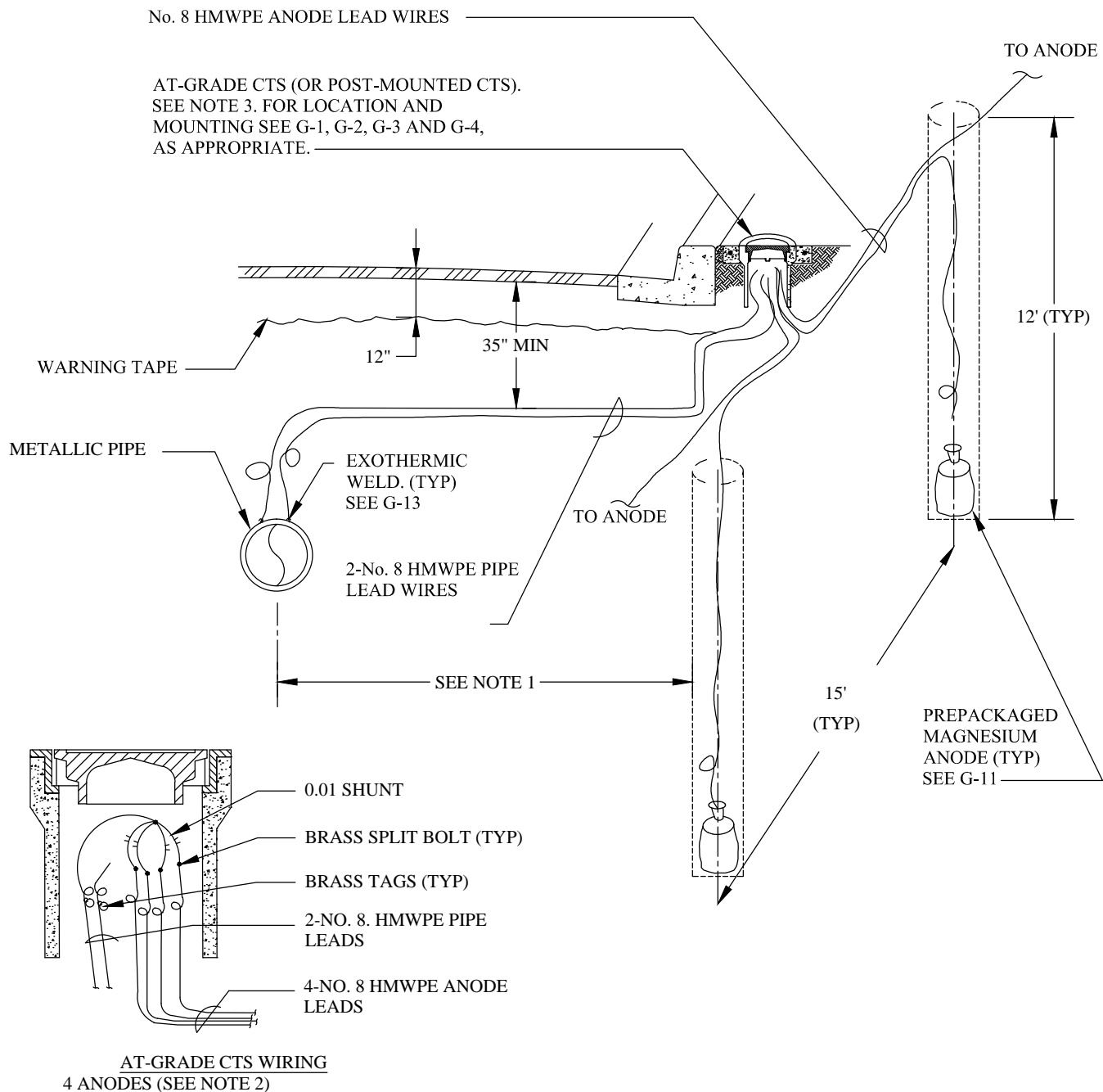
OLIVENHAIN MUNICIPAL WATER DISTRICT

SINGLE ANODE INSTALLATION

STD DWG NO.

G-9

FEBRUARY 2017



NOTES:

1. HORIZONTAL ANODE DISTANCE FROM PIPE SHALL BE MAXIMUM ALLOWABLE WITHIN OMWD RIGHT-OF-WAY OR AS INDICATED IN THE DRAWINGS. DO NOT INSTALL ANODE SUCH THAT A FOREIGN METALLIC PIPELINE EXISTS BETWEEN ANODE AND PIPE. MINIMUM OFFSET IS 8' UNLESS OTHERWISE SPECIFIED ON DRAWINGS.
2. WIRING FOR 4 ANODES SHOWN. USE SIMILAR WIRING FOR 2 TO 5 ANODES.
3. INSTALL EITHER AT-GRADE CTS OR POST-MOUNTED CTS AS DEFINED ON DRAWINGS.

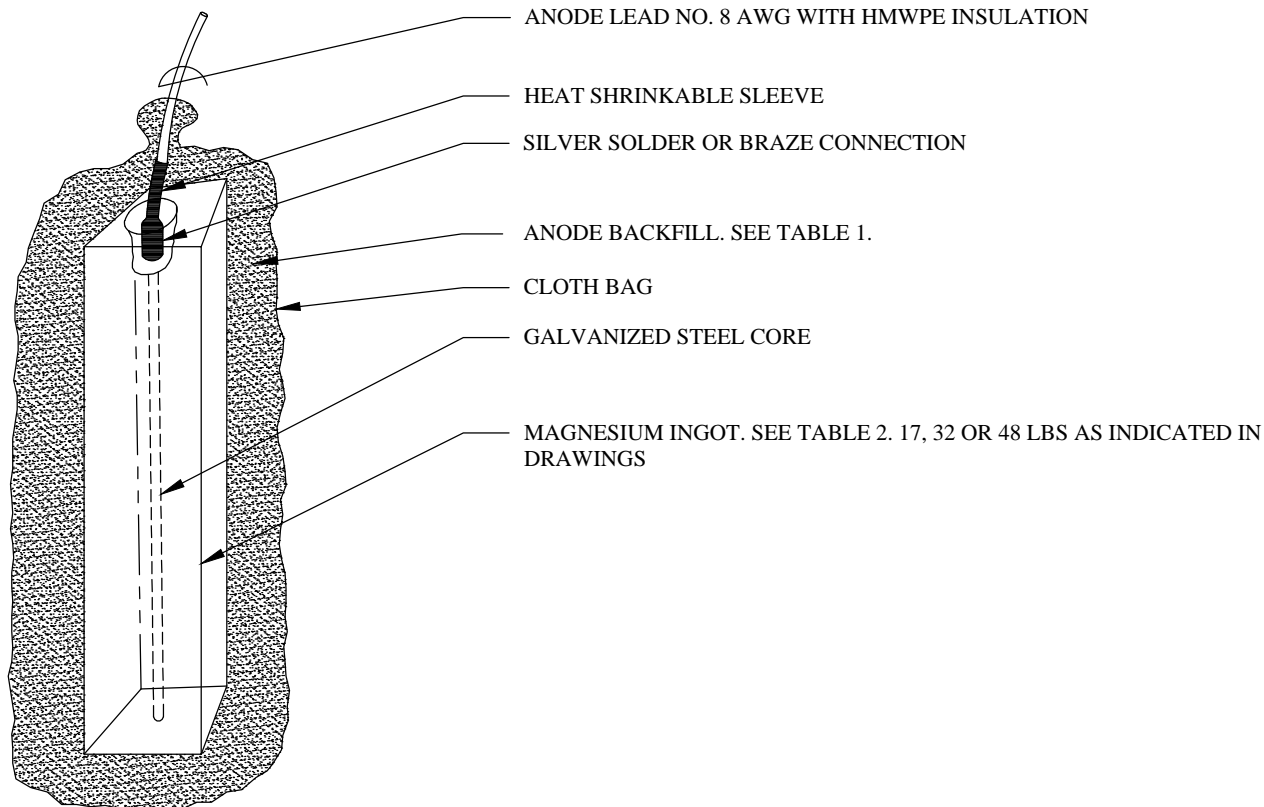
OLIVENHAIN MUNICIPAL WATER DISTRICT

MULTIPLE ANODE INSTALLATION

STD DWG NO.

G-10

FEBRUARY 2017



NOTE:

1. SEE SPEC SECT 15310 FOR ANODE SOAKING AND INSTALLATION REQUIREMENTS.
2. USE HIGH POTENTIAL ANODES UNLESS STANDARD POTENTIAL ANODES ARE REQUIRED ON DRAWINGS.
3. SEE DRAWINGS FOR ANODE WEIGHT.

TABLE 1

BACKFILL COMPOSITION

75% GYPSUM
20% BENTONITE
5% SODIUM SULFATE

TABLE 1

MAGNESIUM ANODE ALLOY COMPOSITION
HIGH & STANDARD POTENTIALS

	HIGH POTENTIAL <u>Weight %</u>	STANDARD POTENTIAL <u>Weight %</u>
<u>Element</u>		
Al	.01 Max	5.3 to 6.7
Mn	0.05 to 1.3	0.15 to 0.30 2.5 to 3.5
Zn	0.002 Max	0.02 Max 0.002 Max
Cu	0.02 Max	0.003 Max 0.10 Max
Ni	0.001 Max	0.05 each Max and 0.3
Fe	0.03 Max	Total Max
Si	0.05 Max	Balance
Other	0.05 each Max and 0.3 Total	
Mg	Balance	

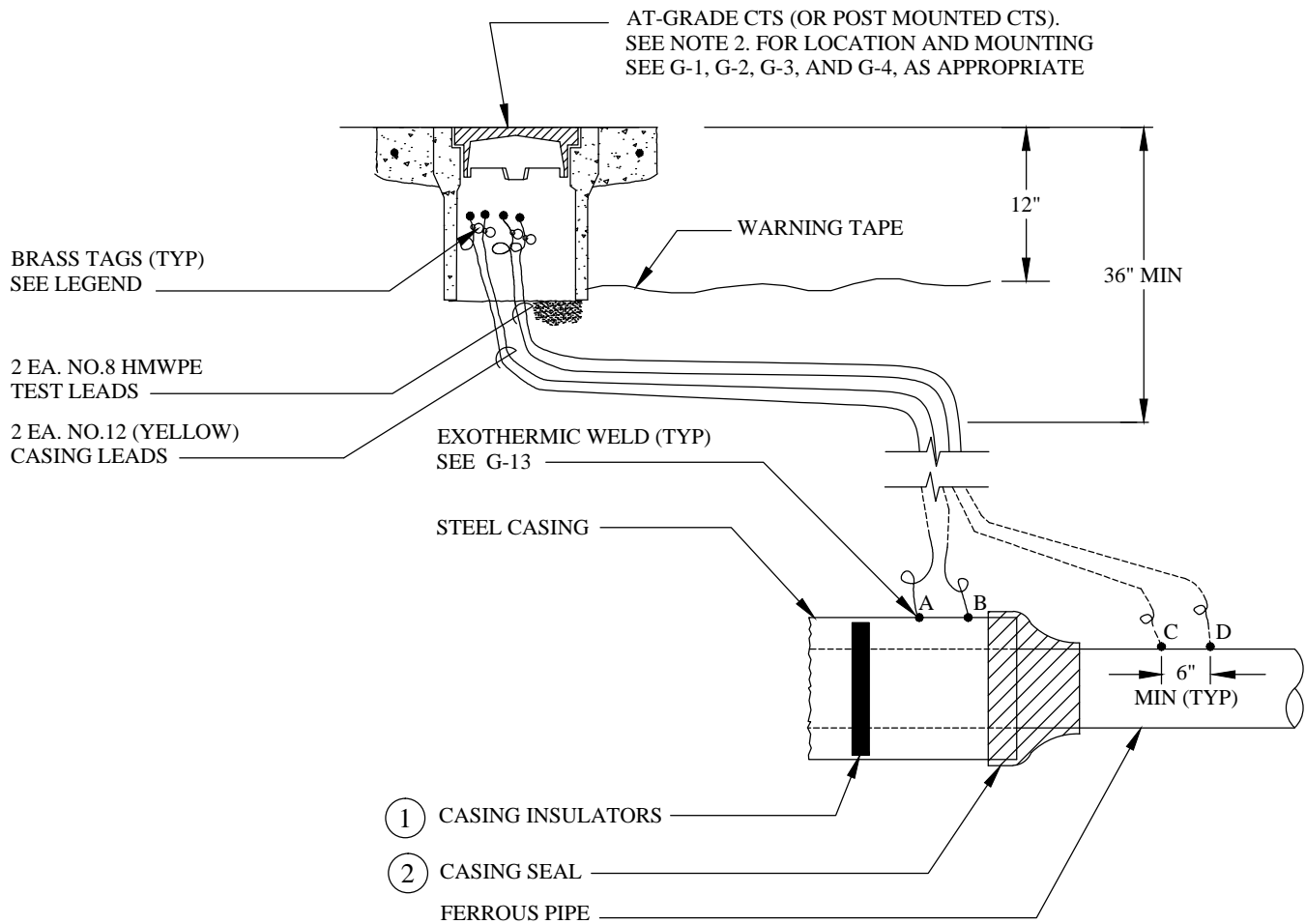
OLIVENHAIN MUNICIPAL WATER DISTRICT

MAGNESIUM ANODE

STD DWG NO.

G-11

FEBRUARY 2017



BRASS TAG LEGEND

WIRE	SIZE	ID STAMP
A	NO. 12 (YEL) THWN	CASING
B	NO. 12 (YEL) THWN	CASING
C	NO. 8 HMWPE	OMWD, SIZE, SERVICE
D	NO. 8 HMWPE	OMWD, SIZE, SERVICE

NOTES:

1. PROVIDE ELECTRICAL/METALLIC ISOLATION BETWEEN THE CASING AND THE CARRIER PIPE.
2. INSTALL EITHER AT-GRADE CTS OR POST-MOUNTED CTS AS DEFINED ON DRAWINGS.

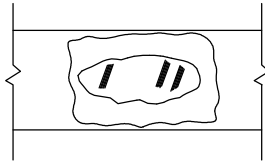
ITEM	DESCRIPTION	SPEC/DWG
1	PSI MODEL A12 G-2 OR EQUAL	15310
2	HEAT SHRINK OR MECH LINK TYPE	15310

OLIVENHAIN MUNICIPAL WATER DISTRICT

4-WIRE TEST STATION FOR PIPE CASING

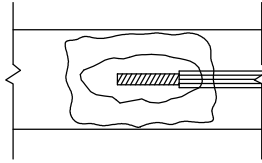
STD DWG NO.
G-12
FEBRUARY 2017

STEP 1



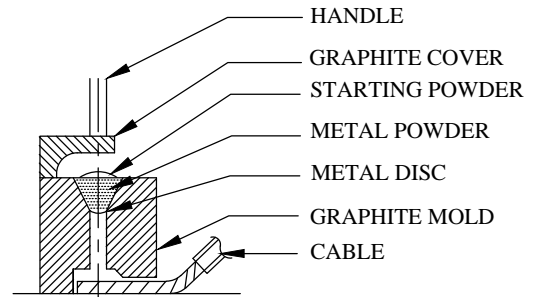
CHIP AWAY MORTAR
IF NECESSARY
FILE/GRIND SURFACE
TO BRIGHT METAL
AND CLEAN

STEP 2



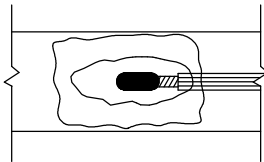
STRIP INSULATION
FROM WIRE

STEP 3



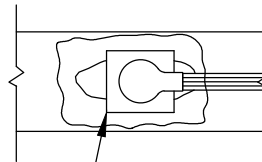
HOLD WELDER FIRMLY WITH OPENING AWAY
FROM OPERATOR, IGNITE STARTING POWDER

STEP 4



REMOVE SLAG FROM
CONNECTION AND TEST.
SEE NOTE 4.

STEP 5

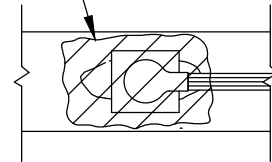


WELD CAP

APPLY 2 COATS PRIMER AND
COVER CONNECTION WITH
PRE-FORMED WELD CAP

BITUMINOUS COATING
UNDER/MORTAR PATCH

STEP 6



COAT WITH A BITUMINOUS
COMPOUND SEE NOTE 3

NOTES:

1. WELDER SHOWN IS FOR HORIZONTAL SURFACES. FOR VERTICAL SURFACES SIDE WELDER IS REQUIRED.
2. ATTACH 1 WIRE PER WELD ALL WIRE WELDS SHALL BE 6 INCHES APART, MINIMUM.
3. ALL EXPOSED METAL (STRUCTURE, WIRE, & WELD) SHALL BE COVERED WITH 2 COATS OF PRIMER AND AN ELASTOMERIC WELD CAP, THEN OVER-COATED WITH BITUMINOUS COMPOUND OVERLAPPING PIPE COATING BY 2 INCHES MIN.
4. ALL WELDS SHALL BE TESTED BY STRIKING THE WELD WITH A 2LB HAMMER WHILE PULLING FIRMLY ON WIRE. ANY WELDS BROKEN OR LOOSENED SHALL BE RE-WELDED AND RE-TESTED. THE SURFACE MUST BE RE-GROUND AND CLEAN BEFORE RE-WELDING. ALL WELD SLAG SHALL BE REMOVED FROM THE WELD.

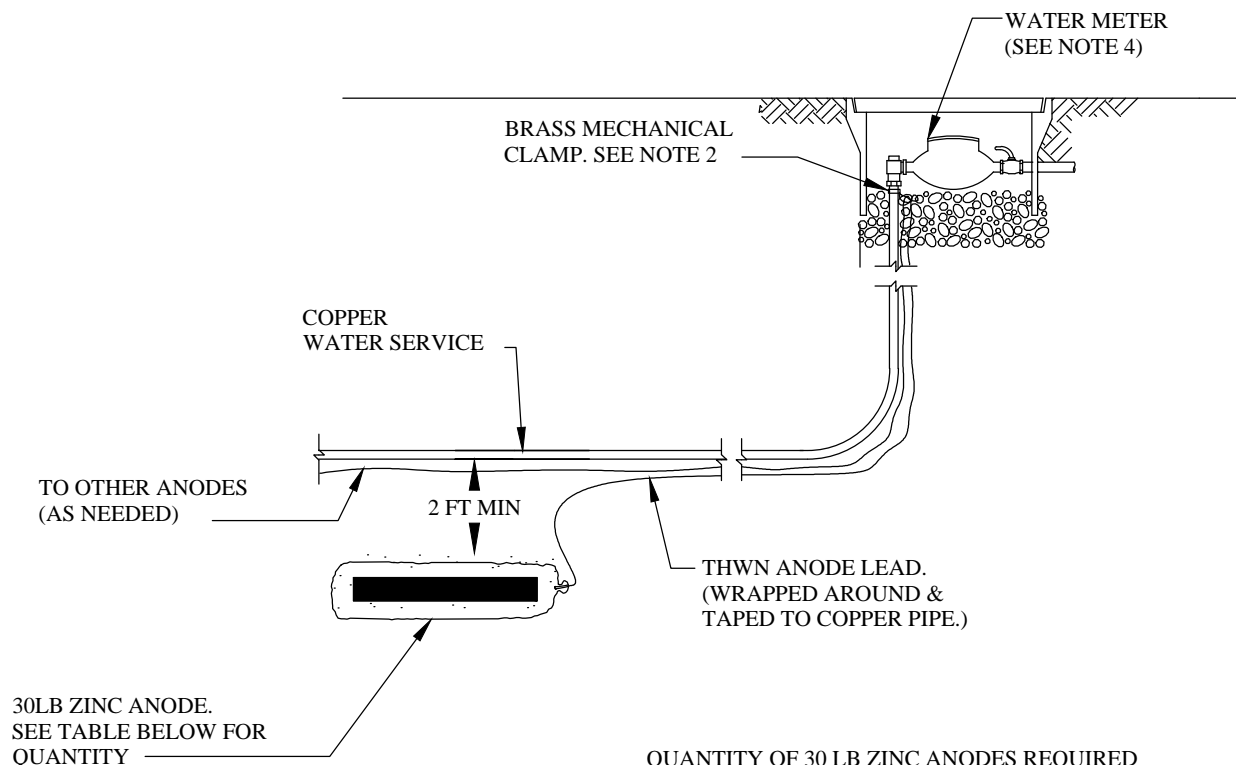
OLIVENHAIN MUNICIPAL WATER DISTRICT

EXOTHERMIC WELD

STD DWG NO.

G-13

FEBRUARY 2017



QUANTITY OF 30 LB ZINC ANODES REQUIRED FOR INSTALLATION

DIAM. LENGTH	≤ 1"	1.5"-2"	>2"
	≤ 30'	30'-60'	>60'
≤ 30'	1	1	2
30'-60'	1	2	3
>60'	2	3	4

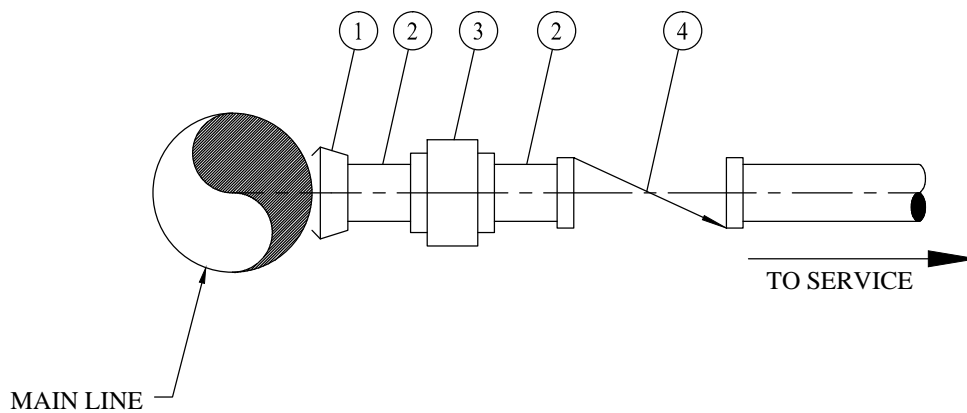
NOTES:

1. NO. OF ANODES REQUIRED IS BASED ON TUBING DIAMETER AND LENGTH. SEE TABLE ABOVE.
2. ATTACH ANODE WIRE TO COPPER TUBING USING BRASS MECHANICAL GROUNDING CLAMP.
3. FOR SINGLE ANODE INSTALLATION, POSITION ANODE MIDWAY BETWEEN METER AND PIPELINE. FOR MULTIPLE ANODE INSTALLATIONS, SPACE ANODES EQUIDISTANT FROM METER, PIPELINE AND ONE ANOTHER.
4. COPPER WATER SERVICE SHOWN, SIMILAR INSTALLATION FOR COPPER AIR-VAC OR BLOW-OFF PIPING, WATER SAMPLE STATION OR SIMILAR APPURTENANCES.

OLIVENHAIN MUNICIPAL WATER DISTRICT

BURIED COPPER TUBING CATHODIC PROTECTION

STD DWG NO.
G-14
FEBRUARY 2017



ITEM	DESCRIPTION	SPEC/DWG
1	CARBON STEEL, MAIN SIZE x 2" THRED-O-LET / SERVICE SADDLE	-
2	1"-2" SS NIPPLE	-
3	1"-2" DIELECTRIC UNION (FEMALE x FEMALE)	-
4	CORPORATION STOP	-
5	-	-
6	-	-
7	-	-
8	-	-

OLIVENHAIN MUNICIPAL WATER DISTRICT

1-INCH TO 2-INCH ISOLATION UNION

STD DWG NO.

G-15

FEBRUARY 2017