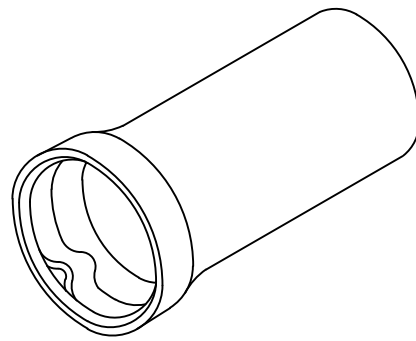
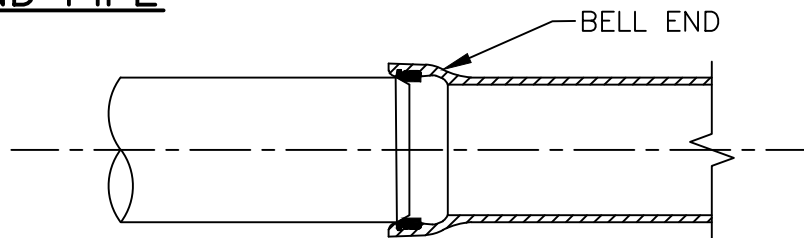


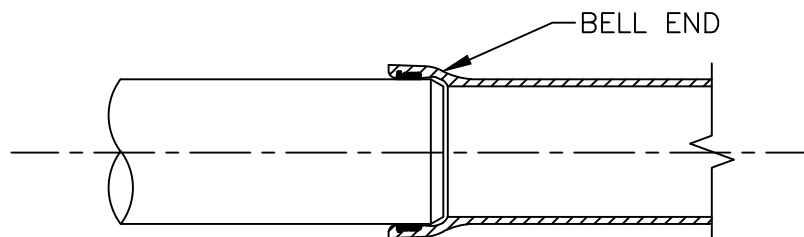
FIELD CUT PLAIN
END PIPE



GASKET INSTALLATION



INITIAL ENTRY
PLAIN END INTO SOCKET

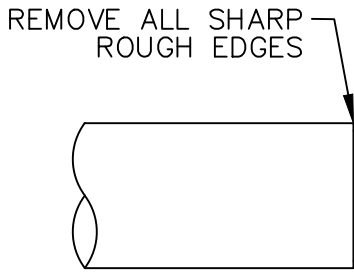


ASSEMBLED JOINT

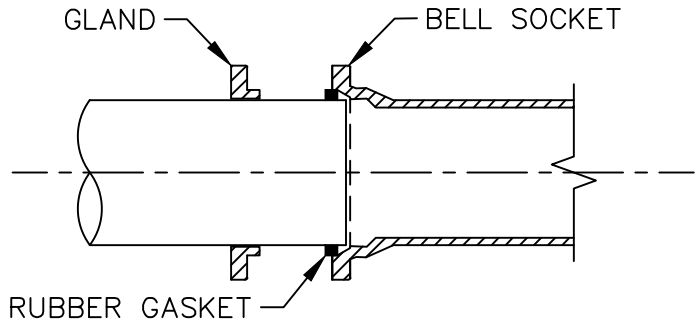
ASSEMBLY INSTRUCTIONS

1. Thoroughly clean the groove and the bell socket and the plain end of the mating pipe. Make a small loop in the gasket and insert it in the socket. Make sure the gasket faces the correct direction.
2. Apply only "Blue Lube" to the exposed surface of the gasket and plain end of the pipe. Do not apply lubricant to the bell socket or the surface of the gasket in contact with the bell socket.
3. When pipe is cut in the field, bevel the plain end with a heavy file or grinder to remove all sharp edges. Refer to a shop-manufactured bevel as a guide for proper shape. Push the plain end into the bell socket keeping the joint straight while pushing. Make deflection after the joint is assembled.
4. Joints within 12 feet of a bend or valve shall be harnessed.

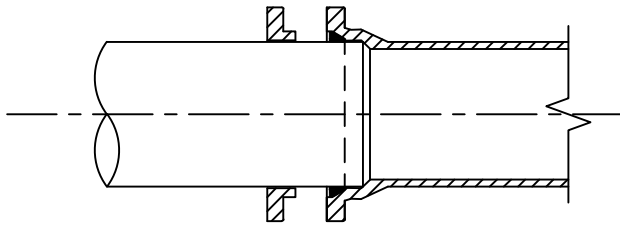
PHILADELPHIA WATER — DEPARTMENT —	PUSH-ON JOINT ASSEMBLY		
	DRAWN BY: D&B GUARINO CHECKED BY: WD	DATE: FEB. 2022 DETAIL ID: INSTALL-01	REV.: 1



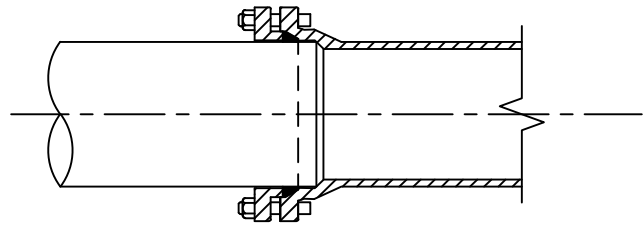
FIELD CUT PLAIN
END PIPE



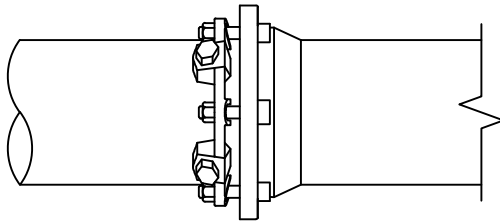
INITIAL ASSEMBLY



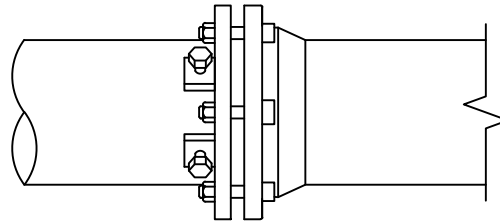
PARTIAL ASSEMBLY



FULL ASSEMBLY



COMPLETED ASSEMBLY
WITH WEDGE ACTION
RETAINER GLAND



COMPLETED ASSEMBLY
WITH SET SCREW
RETAINER GLAND

JOINT SHALL BE ASSEMBLED WITH NO DEFLECTION. JOINT DEFLECTION, IF NECESSARY AND WITHIN ALLOWABLE LIMITS, SHALL BE MADE AFTER FULL ASSEMBLY WITH HAND TIGHTENED T-BOLTS. AFTER JOINT DEFLECTION, TIGHTEN T-BOLTS AND RESTRAINING DEVICES TO MANUFACTURERS RECOMMENDED TORQUE

PHILADELPHIA WATER — DEPARTMENT —	MECHANICAL JOINT WITH RETAINER GLAND ASSEMBLY		
	DRAWN BY: D&B GUARINO	DATE: FEB. 2022	
	CHECKED BY: WD	DETAIL ID: INSTALL-02	REV.: 1

PAVING RESTORATION NOTES

- WHERE THE TRENCH WIDTH IS LESS THAN 3'-0", THE CONCRETE BASE RESTORATION SHALL COVER THE TRENCH AND EXTEND 9" OVER UNDISTURBED OR COMPACTED SOIL ON EACH SIDE OF THE TRENCH
- WHERE THE TRENCH WIDTH IS 3'-0" OR GREATER, THE CONCRETE BASE RESTORATION SHALL COVER THE TRENCH AND EXTEND 12" OVER UNDISTURBED OR COMPACTED SOIL ON EACH SIDE OF THE TRENCH
- SURFACE COURSE PAVING RESTORATION SHALL COVER THE WIDTH OF THE CONCRETE BASE AND EXTEND 6" BEYOND EXCEPT THAT BITUMINOUS CONCRETE SURFACE COURSE RESTORATION SHALL ONLY COVER THE RESTORED CONCRETE BASE
- REMOVAL OF BASE AND PAVING OUTSIDE OF TRENCH LIMITS SHALL BE INCLUDED IN THE COST OF PAVING RESTORATION

PAVING BASE DIMENSIONS AND REPAVING QUANTITIES						
PIPE SIZE	TRENCH WIDTH (FT.)	BASE WIDTH (FT.)	CU. YARDS / LIN. FT 10" BASE	CU. YARDS / LIN. FT 8" BASE	PAVING WIDTH (FT.)	PAVING SQ. YDS. / LIN. FT.
6	1.50	3.00	0.093	0.074	4.00	.44
8	2.00	3.50	0.108	0.086	4.50	.50
10	2.17	3.67	0.113	0.091	4.67	.52
12	2.33	3.83	0.118	0.094	4.83	.54
16	2.67	4.17	0.129	0.103	5.17	.57
20	3.00	4.50	0.139	0.111	5.50	.61
24	4.00	6.00	0.185	0.148	7.00	.78
30	4.50	6.50	0.201	0.160	7.50	.83
36	5.00	7.00	0.216	0.173	8.00	.89
42	5.50	7.50	0.231	0.185	8.50	.94
48	6.00	8.00	0.247	0.197	9.00	1.00

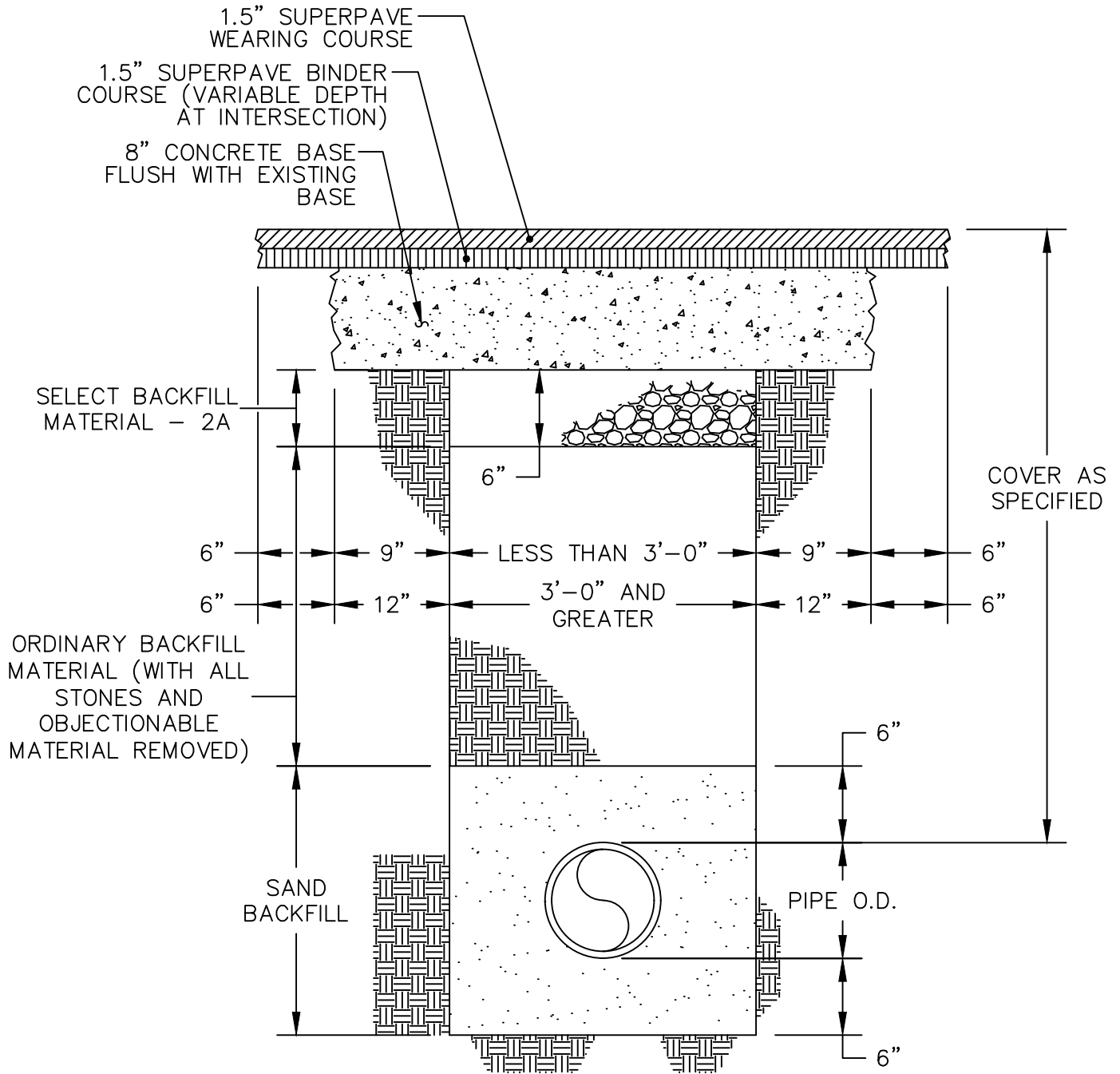
PHILADELPHIA WATER DEPARTMENT	PAVING DIMENSIONS & QUANTITIES - CITY STREETS		
	DRAWN BY: D&B GUARINO	DATE: FEB. 2022	
	CHECKED BY: WD	DETAIL ID: INSTALL-06	REV.: 1

PIPE SIZE (IN)		6	8	10	12	16	20	24	30	36	42	48
EXCAVATION QUANTITIES												
ALL DEPTHS	PIPE AREA (SQ FT)	0.35	0.55	0.79	1.07	1.77	2.64	3.69	5.59	7.88	10.56	13.64
	TRENCH WIDTH (FT)	1.50	2.00	2.17	2.33	2.67	3.00	4.00	4.50	5.00	5.50	6.00
3.0 FT COVER	TRENCH DEPTH (FT)	4.17	4.33	4.50	4.67	5.00	5.33	5.67	6.17	6.67	7.17	7.67
	CU FT PER LF	6.25	8.67	9.75	10.89	13.33	16.00	22.67	27.75	33.33	39.42	46.00
	CU YD PER LF	0.23	0.32	0.36	0.40	0.49	0.59	0.84	1.03	1.23	1.46	1.70
3.5 FT COVER	TRENCH DEPTH (FT)	4.67	4.83	5.00	5.17	5.50	5.83	6.17	6.67	7.17	7.67	8.17
	CU FT PER LF	7.00	9.67	10.83	12.06	14.67	17.50	24.67	30.00	35.83	42.17	49.00
	CU YD PER LF	0.26	0.36	0.40	0.45	0.54	0.65	0.91	1.11	1.33	1.56	1.81
4.0 FT COVER	TRENCH DEPTH (FT)	5.17	5.33	5.50	5.67	6.00	6.33	6.67	7.17	7.67	8.17	8.67
	CU FT PER LF	7.75	10.67	11.92	13.22	16.00	19.00	26.67	32.25	38.33	44.92	52.00
	CU YD PER LF	0.29	0.40	0.44	0.49	0.59	0.70	0.99	1.19	1.42	1.66	1.93
4.5 FT COVER	TRENCH DEPTH (FT)	5.67	5.83	6.00	6.17	6.50	6.83	7.17	7.67	8.17	8.67	9.17
	CU FT PER LF	8.50	11.67	13.00	14.39	17.33	20.50	28.67	34.50	40.83	47.67	55.00
	CU YD PER LF	0.31	0.43	0.48	0.53	0.64	0.76	1.06	1.28	1.51	1.77	2.04
5.0 FT COVER	TRENCH DEPTH (FT)	6.17	6.33	6.50	6.67	7.00	7.33	7.67	8.17	8.67	9.17	9.67
	CU FT PER LF	9.25	12.67	14.08	15.56	18.67	22.00	30.67	36.75	43.33	50.42	58.00
	CU YD PER LF	0.34	0.47	0.52	0.58	0.69	0.81	1.14	1.36	1.60	1.87	2.15
5.5 FT COVER	TRENCH DEPTH (FT)	6.67	6.83	7.00	7.17	7.50	7.83	8.17	8.67	9.17	9.67	10.17
	CU FT PER LF	10.00	13.67	15.17	16.72	20.00	23.50	32.67	39.00	45.83	53.17	61.00
	CU YD PER LF	0.37	0.51	0.56	0.62	0.74	0.87	1.21	1.44	1.70	1.97	2.26
6.0 FT COVER	TRENCH DEPTH (FT)	7.17	7.33	7.50	7.67	8.00	8.33	8.67	9.17	9.67	10.17	10.67
	CU FT PER LF	10.75	14.67	16.25	17.89	21.33	25.00	34.67	41.25	48.33	55.92	64.00
	CU YD PER LF	0.40	0.54	0.60	0.66	0.79	0.93	1.28	1.53	1.79	2.07	2.37
SAND ENCASEMENT QUANTITIES												
ALL DEPTHS	DEPTH (FT)	1.67	1.83	2.00	2.17	2.50	2.83	3.17	3.67	4.17	4.67	5.17
	CU FT PER LF	2.15	3.12	3.55	3.99	4.90	5.86	8.98	10.91	12.96	15.11	17.36
	CU YD PER LF	0.08	0.12	0.13	0.15	0.18	0.22	0.33	0.40	0.48	0.56	0.64

PIPE AREA BASED ON NOMINAL PIPE DIA. PLUS 2" PIPE THICKNESS

SAND DEPTH = NOMINAL PIPE DIA. PLUS 2" PIPE THICKNESS PLUS 6" ABOVE AND BELOW PIPE

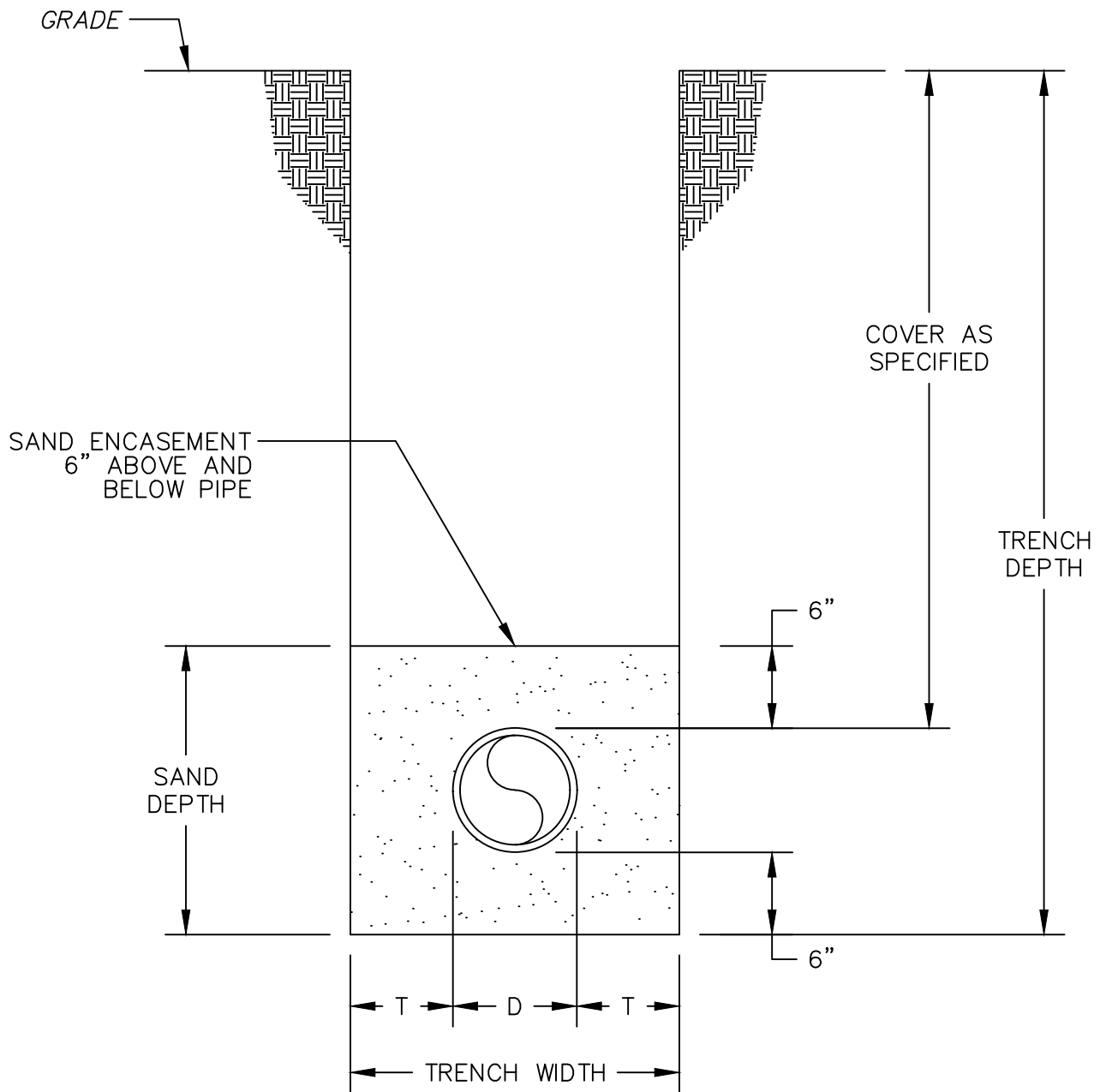
	EXCAVATION PAY LIMIT DIMENSIONS		
	DRAWN BY:	D&B GUARINO	DATE: FEB. 2022
	CHECKED BY:	WD	DETAIL ID: INSTALL-04



NOTE:

1. THE EDGES OF THE ASPHALT WEARING COURSE SHALL BE SEALED WITH HOT ASPHALT CEMENT IMMEDIATELY AFTER ROLLING. THE HOT ASPHALT CEMENT SHALL BE SEALED WITH HOT IRONS TO COMPLETELY FILL THE SURFACE VOIDS AND PROVIDE A WATER TIGHT JOINT
2. DEPTH AND PLACEMENT OF SELECT BACKFILL SUBJECT TO CHANGE DEPENDING ON TEMPORARY PAVING REQUIREMENTS OUTLINED IN THE CONTRACT SPECIFICATIONS

PHILADELPHIA WATER — DEPARTMENT —	TRENCH RESTORATION DETAIL - CITY STREETS		
	DRAWN BY: D&B GUARINO	DATE: FEB. 2022	CHECKED BY: WD
		REV.: 1	

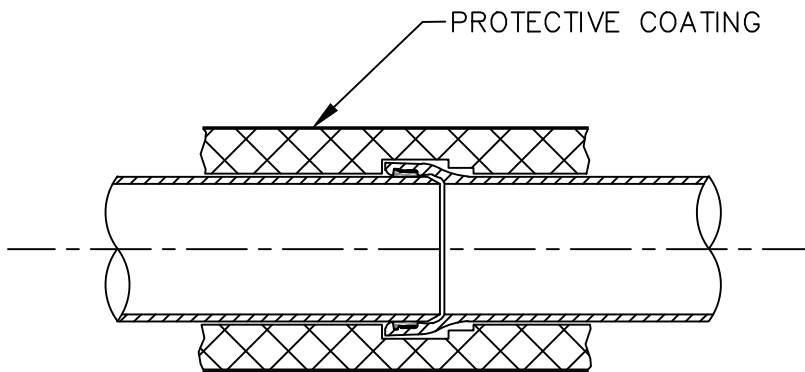
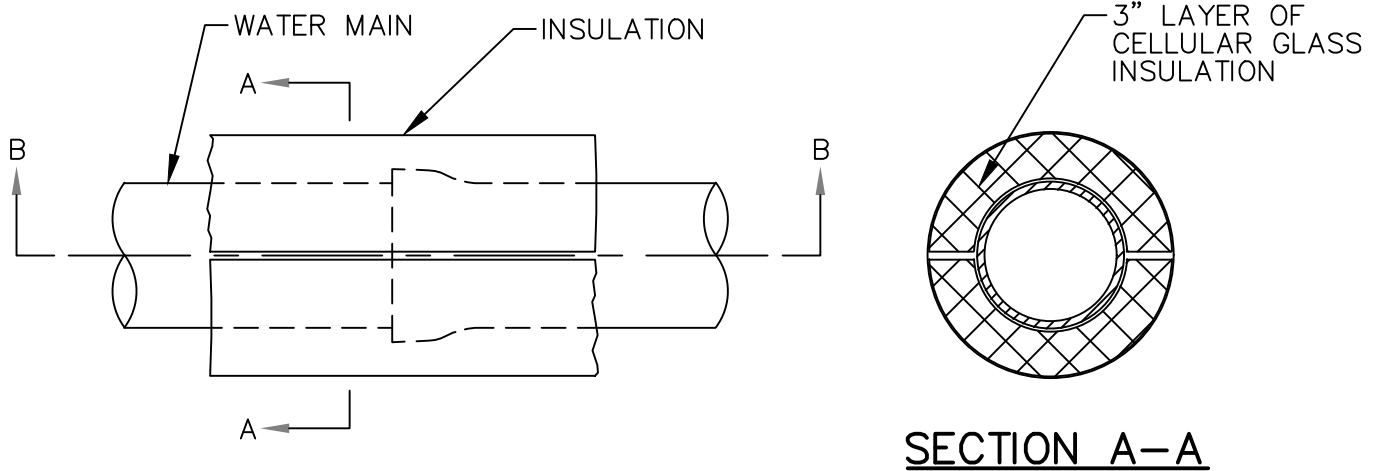


TYPICAL WATER MAIN TRENCH		
D=NOMINAL DIA.	T	TRENCH DEPTH
24" DIA. AND OVER	12"	COVER + DIA. + 8"
8" DIA. TO 20" DIA.	8"	COVER + DIA. + 8"
6" DIA. AND LESS	6"	COVER + DIA. + 8"

TRENCH DEPTH = COVER PLUS NOMINAL PIPE DIA.
PLUS 2" PIPE THICKNESS PLUS SAND 6" BELOW PIPE

TRENCH WIDTH = NOMINAL PIPE DIA. PLUS 2xT WITH
NO PIPE THICKNESS ALLOWANCE

PHILADELPHIA WATER — DEPARTMENT —	PAY LIMITS FOR EXCAVATION OF WATER MAIN TRENCHES		
	DRAWN BY: D&B GUARINO	DATE: FEB. 2022	CHECKED BY: WD
		REV.: 0	

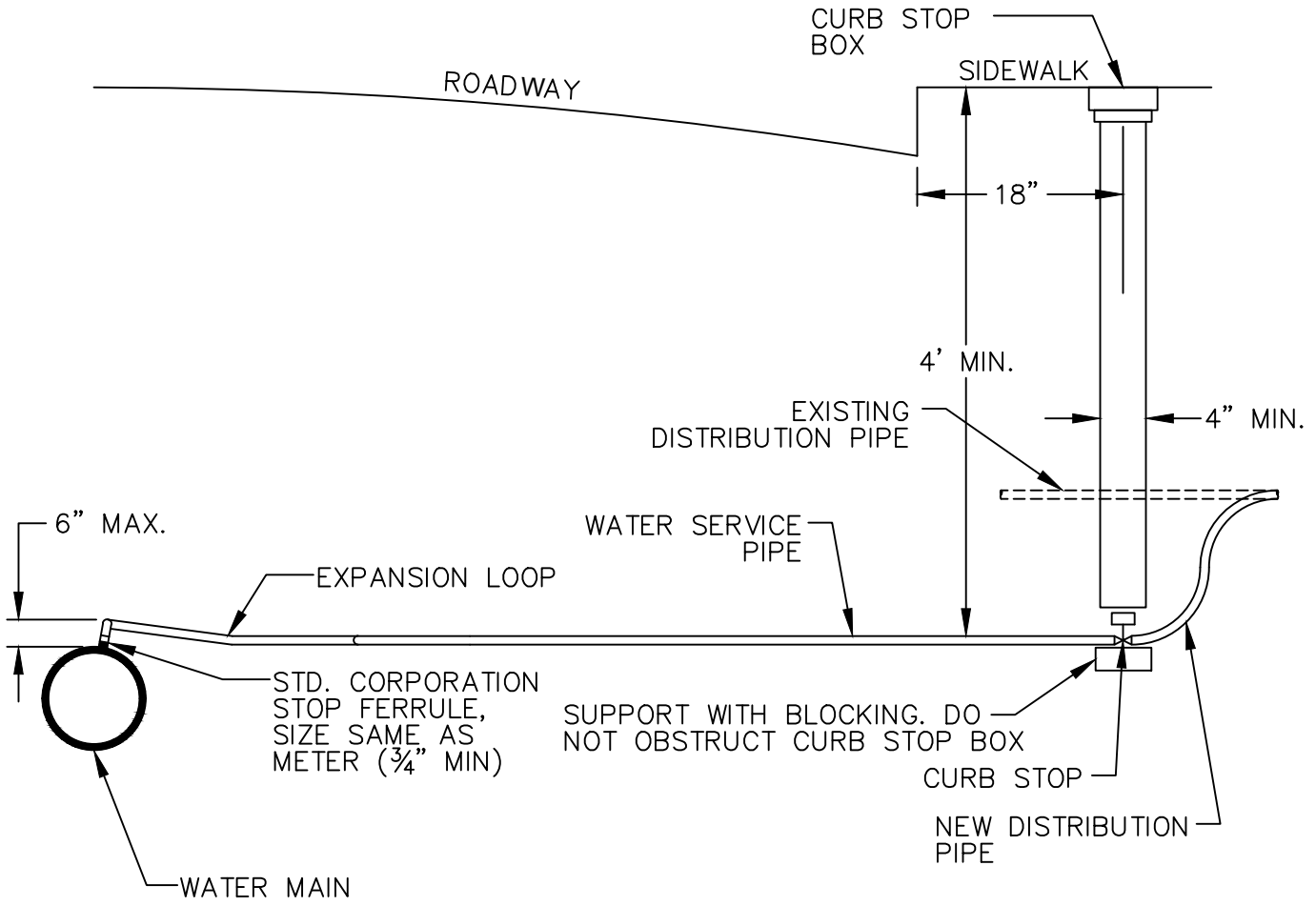


SECTION B-B

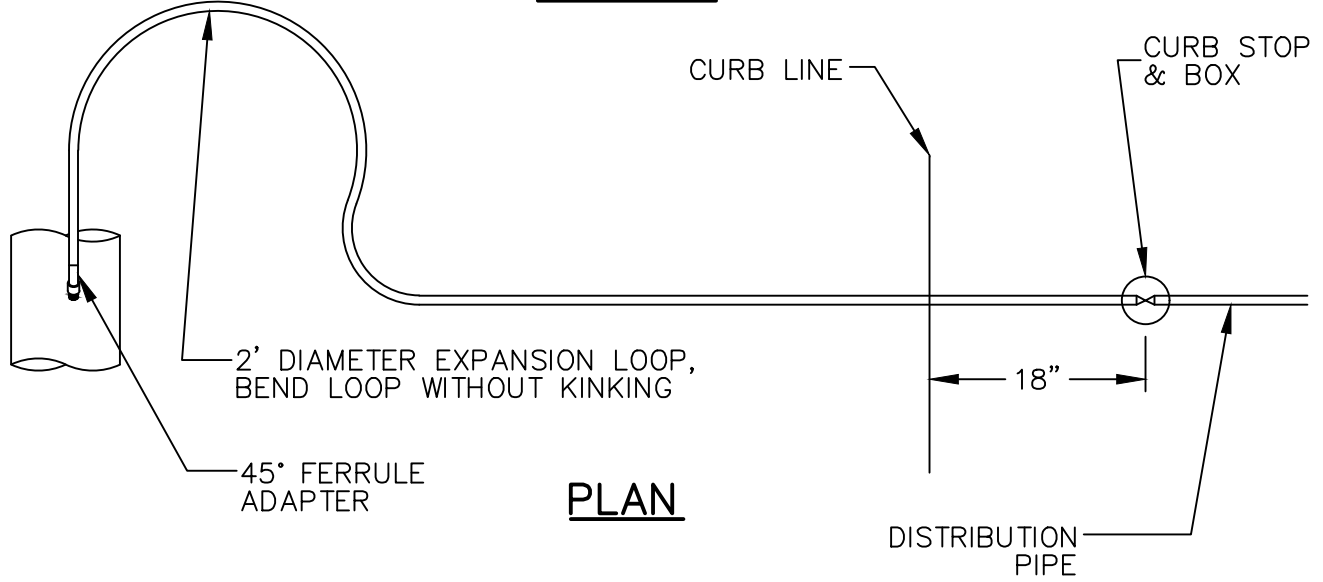
NOTES

1. INSULATION SHALL BE A CELLULAR GLASS CONFORMING TO ASTM C-552, INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
2. THE PROTECTIVE COATING SHALL BE A 125 MIL PREFABRICATED LAMINATE CONTAINING A 10X10 ASPHALT IMPREGENATED GLASS FABRIC AND A 1 MIL ALUMINUM FOIL, SANDWICHED BETWEEN 3 LAYERS OF BITUMINOUS MASTIC. THE EXPOSED SURFACE IS COATED WITH A PROTECTIVE 4 MIL POLYETHYLENE PLASTIC FILM

PHILADELPHIA WATER — DEPARTMENT —	EXPOSED WATER MAIN FROST PROTECTIVE COATING		
	DRAWN BY: D&B GUARINO	DATE: FEB. 2022	
CHECKED BY: WD	DETAIL ID: INSTALL-09	REV.: 1	



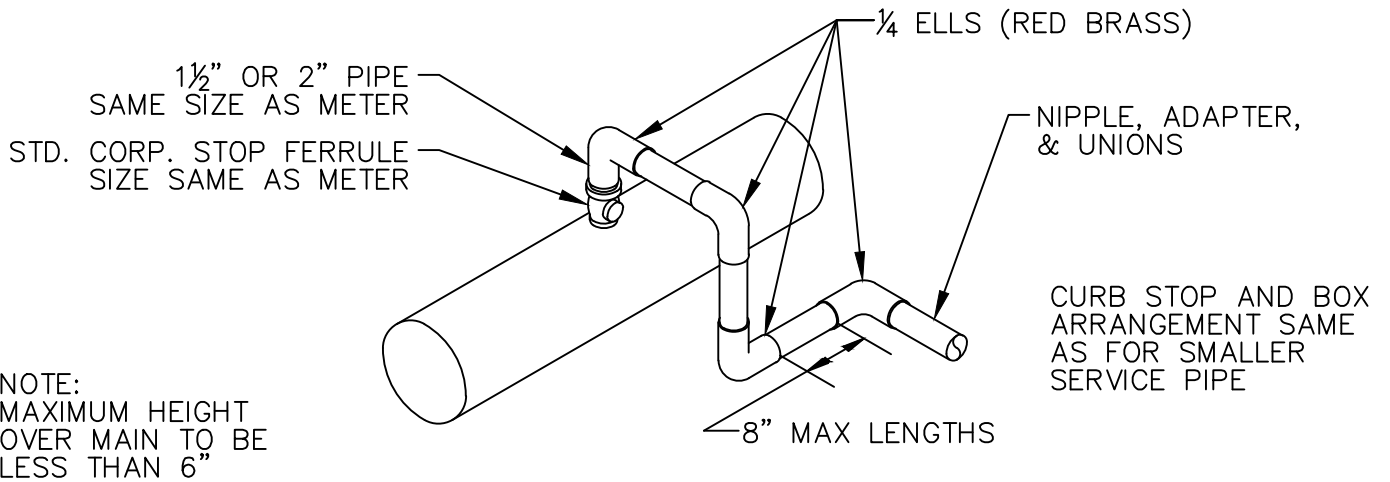
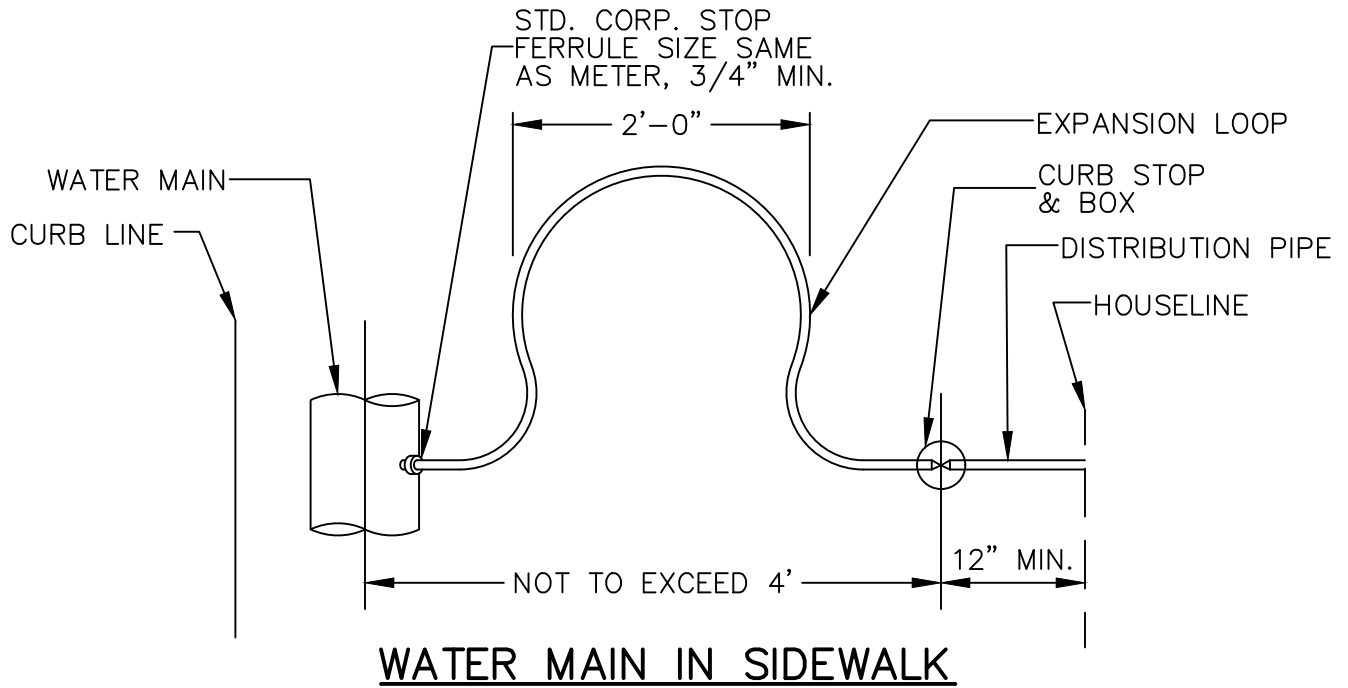
SECTION



PLAN

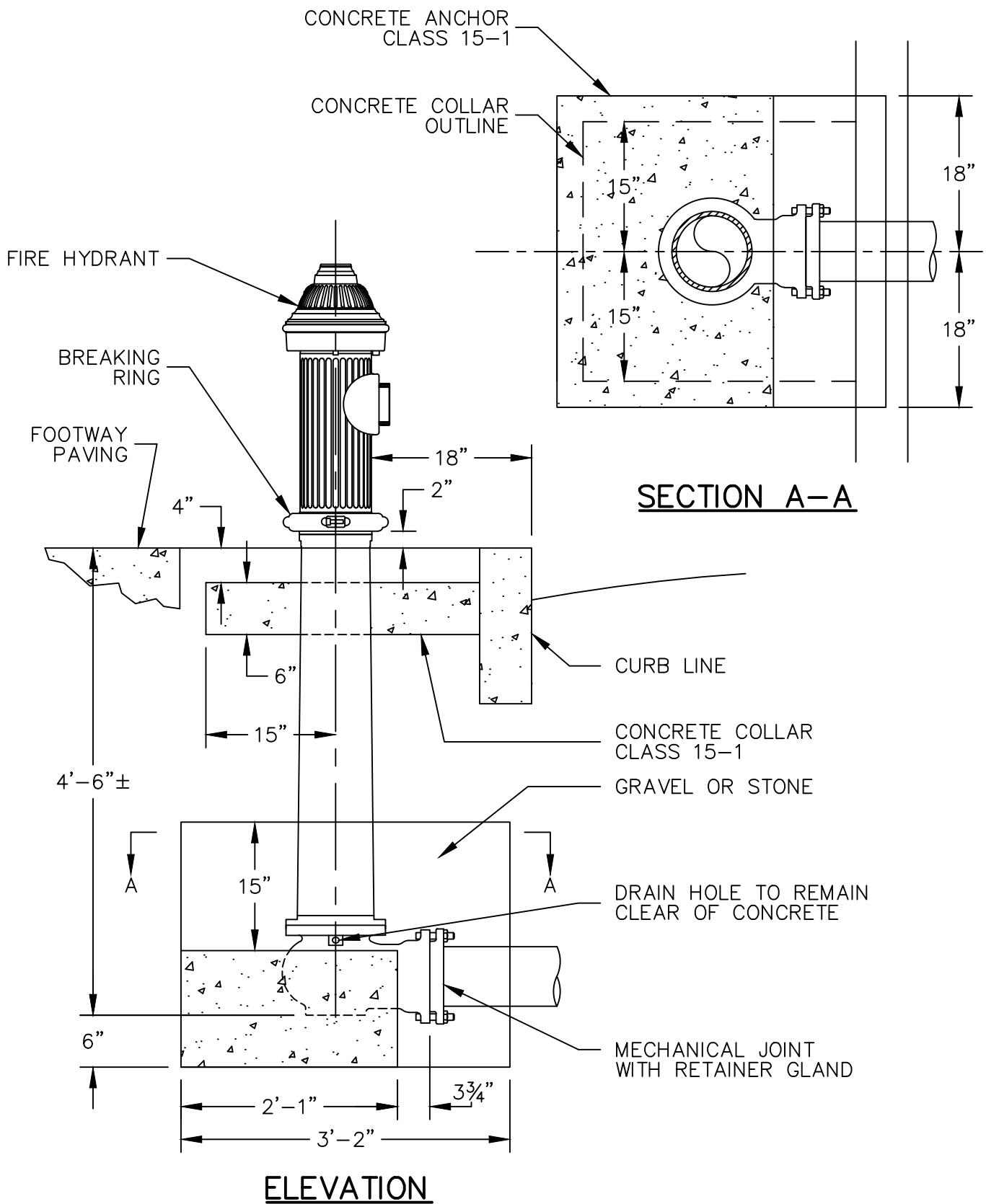
- NOTES:
1. CURB STOP ACCESSABILITY SHALL BE CHECKED AFTER EXCAVATION IS BACKFILLED
 2. COPPER PIPES ARE TO BE TYPE K

PHILADELPHIA WATER DEPARTMENT	SERVICE CONNECTIONS 2" AND SMALLER		
	DRAWN BY: D&B GUARINO	DATE: FEB. 2022	CHECKED BY: WD
		REV.: 1	



SWING JOINT FOR 1 1/2" OR 2" SERVICE PIPE

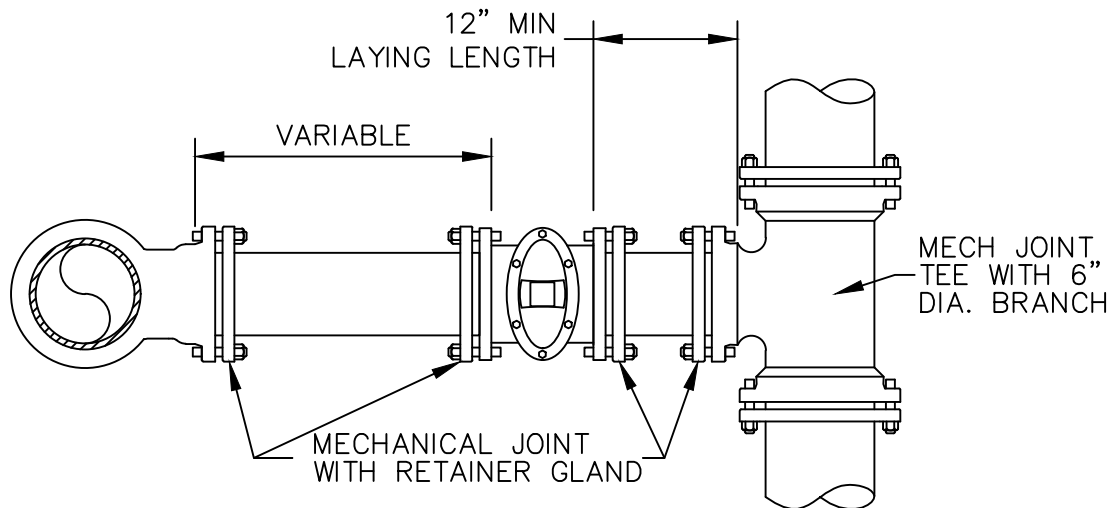
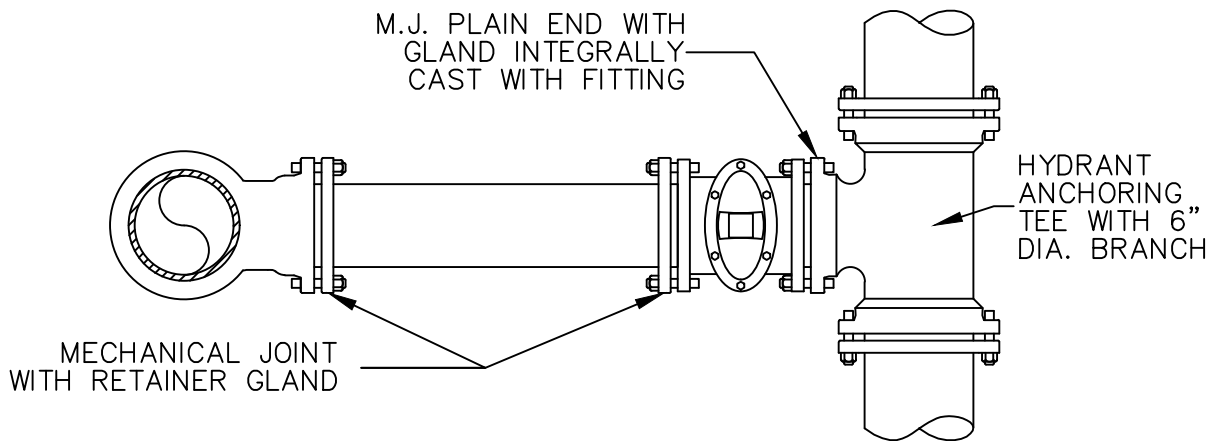
PHILADELPHIA WATER — DEPARTMENT —	SERVICE CONNECTIONS 2" AND SMALLER			
	DRAWN BY: D&B GUARINO	DATE: FEB. 2022	CHECKED BY: WD	DETAIL ID: INSTALL-10-B



PHILADELPHIA
WATER
 — DEPARTMENT —

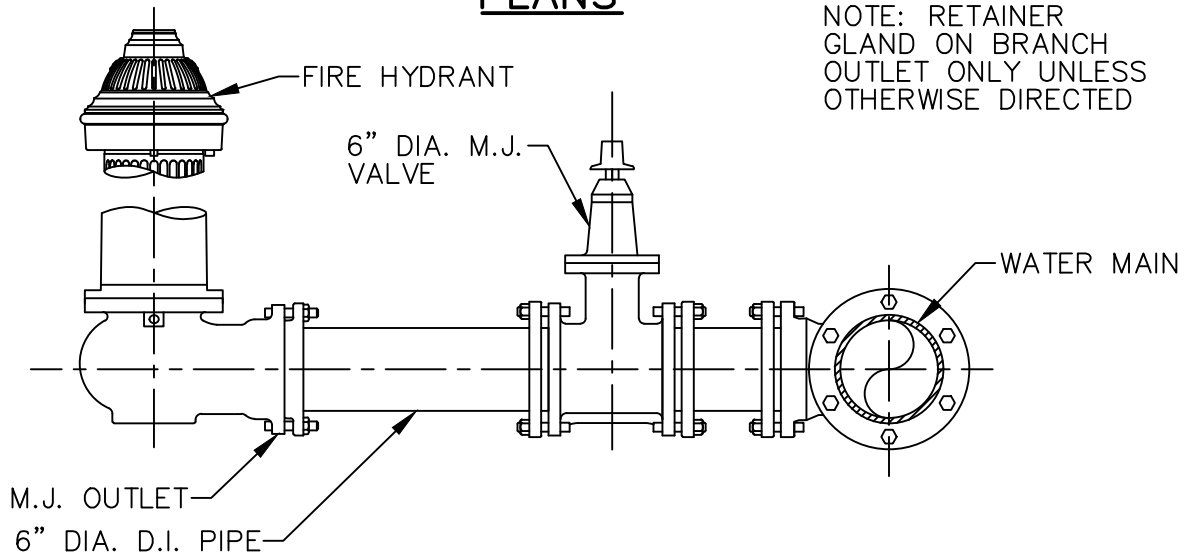
FIRE HYDRANT INSTALLATION

DRAWN BY:	D&B GUARINO	DATE:	FEB. 2022
CHECKED BY:	WD	DETAIL ID:	INSTALL-11
		REV.:	0



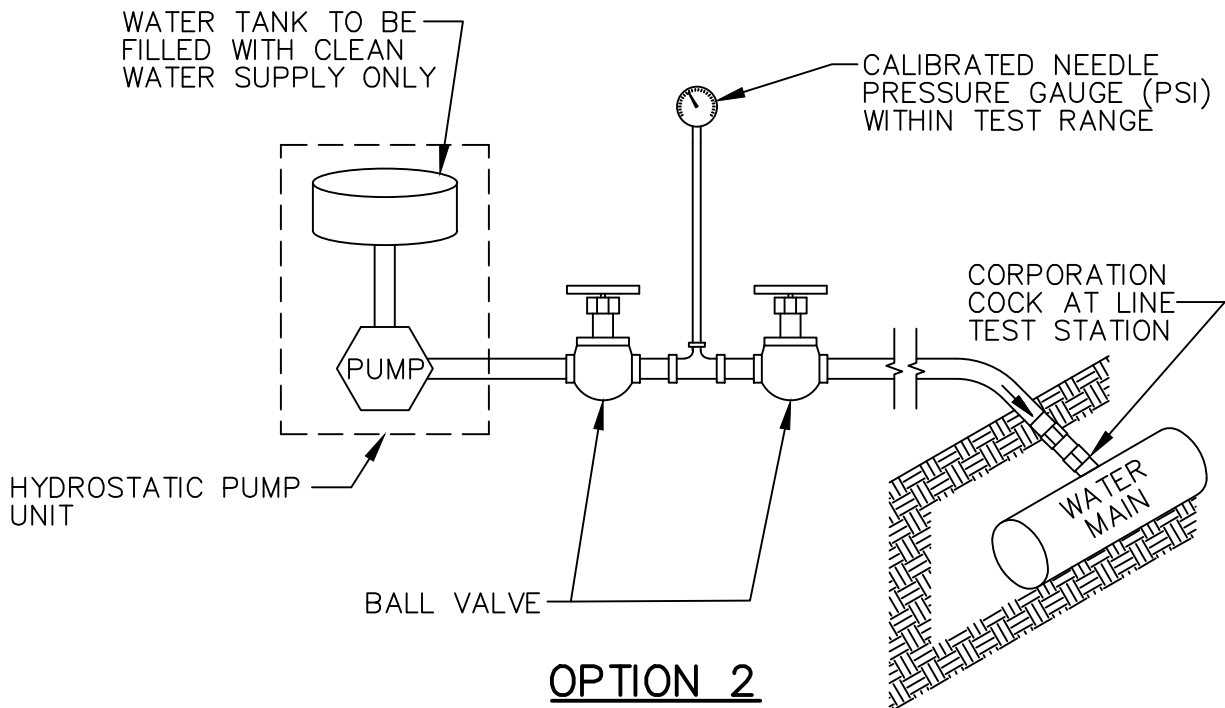
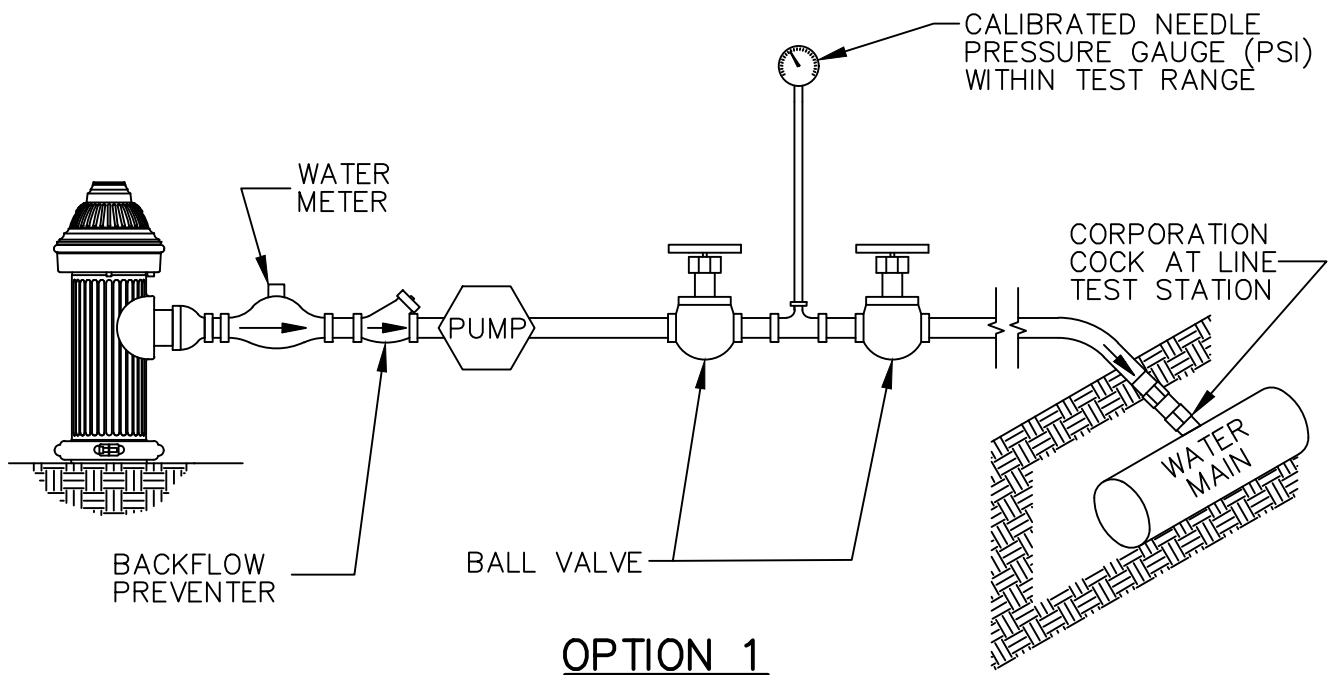
PLANS

NOTE: RETAINER GLAND ON BRANCH OUTLET ONLY UNLESS OTHERWISE DIRECTED



ELEVATION

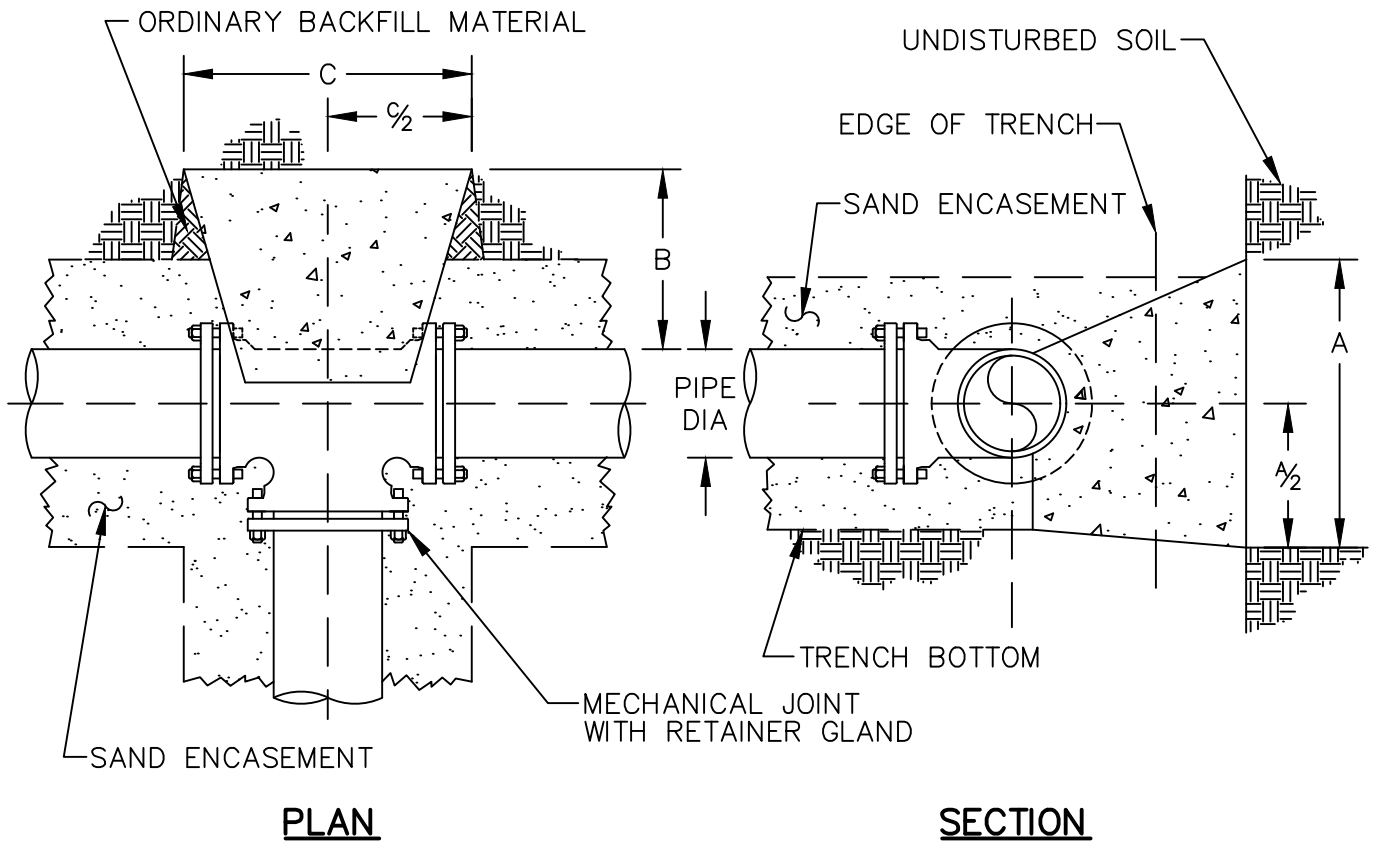
PHILADELPHIA WATER — DEPARTMENT —	FIRE HYDRANT CONNECTIONS MECHANICAL JOINT VALVE & FITTINGS		
	DRAWN BY: D&B GUARINO	DATE: FEB. 2022	
	CHECKED BY: WD	DETAIL ID: INSTALL-12	REV.: 0



NOTES:

1. ALL LINES, FITTINGS AND TEST APPURTENANCES SHALL BE CAPABLE OF WITHSTANDING MAXIMUM TEST PRESSURE
2. PROVIDE ADEQUATE PROTECTION TO ALL LINES, FITTINGS AND TEST APPURTENANCES WHEN TESTING DURING FREEZING WEATHER
3. PUMP MUST BE CAPABLE OF APPLYING PRESSURE WITHIN TEST RANGE (PROVIDE FOR PRESSURE RELIEF ON PUMP)

PHILADELPHIA WATER — DEPARTMENT —	PRESSURE TEST SETUP		
	DRAWN BY:	D&B GUARINO	DATE: FEB. 2022
CHECKED BY:	WD	DETAIL ID: INSTALL-13	REV.: NEW



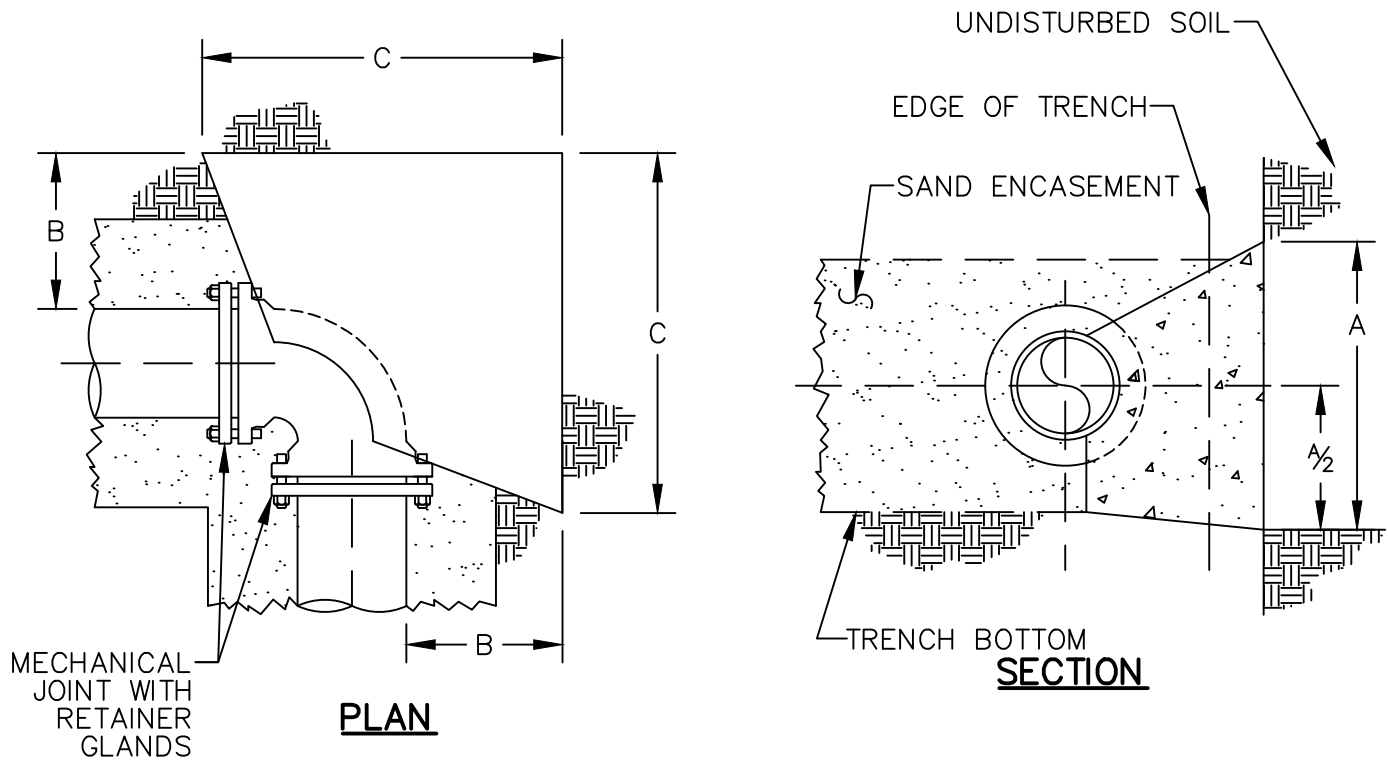
	BRANCH PIPE DIAMETER					
	3", 4", & 6"	8"	12"	16"	20"	24"
A	18"	2'-0"	3'-0"	3'-9"	4'-6"	5'-0"
B	12"	15"	15"	18"	18"	2'-0"
C	18"	2'-0"	3'-0"	4'-0"	5'-6"	6'-0"
D	.1	.2	.4	.8	1.4	2.2

D = APPROXIMATE VOLUME OF CONCRETE IN CUBIC YARDS

NOTES:

1. WRAP FITTING WITH 4 MIL POLYETHYLENE PLASTIC WRAP BEFORE PLACING CONCRETE
2. CONCRETE SHALL BE CLASS 15-1
3. CONCRETE MUST BEAR AGAINST UNDISTURBED SOIL
4. SOIL BEARING VALUE - 2000 PSF
5. RETAINER GLAND ON BRANCH OUTLET ONLY UNLESS OTHERWISE DIRECTED
6. WHERE CONCRETE ANCHOR EXTENDS PAST EDGE OF TRENCH, ADDITIONAL EXCAVATION SHALL BE REQUIRED

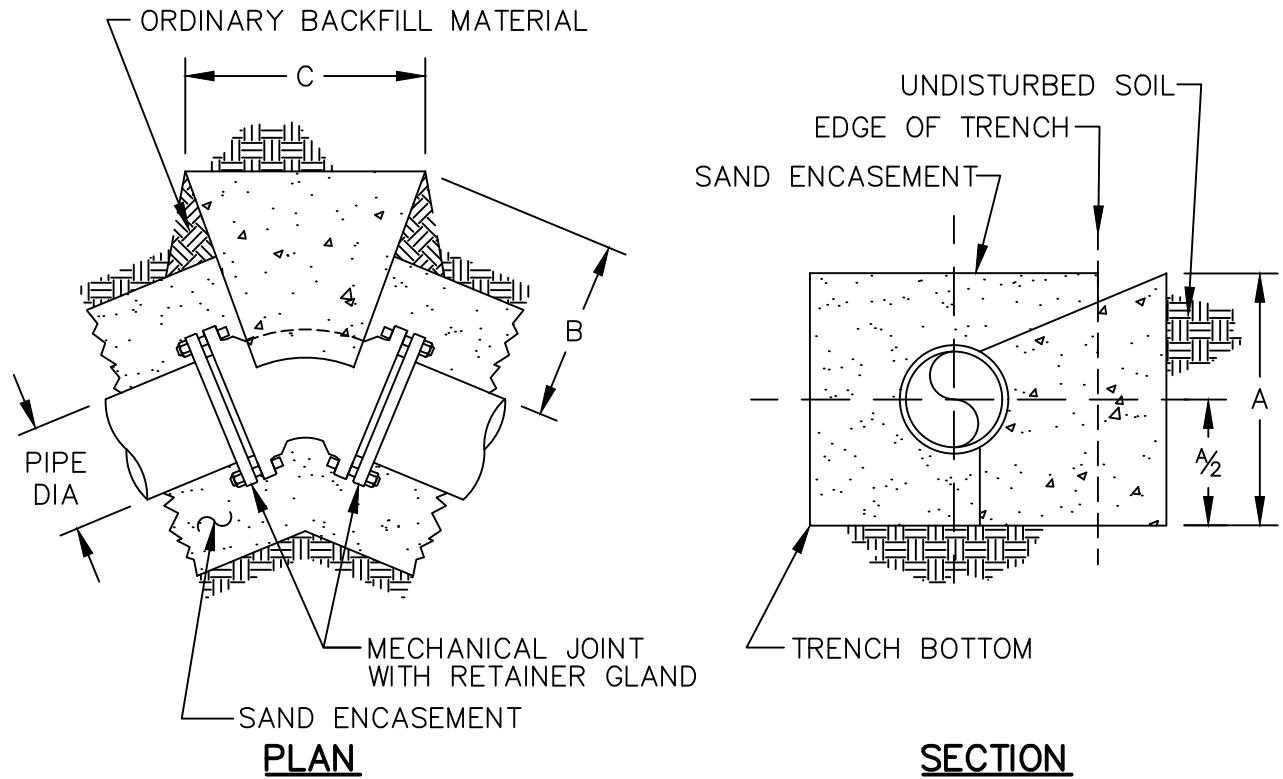
PHILADELPHIA WATER — DEPARTMENT —	CONCRETE ANCHORS FOR TEES		
	DRAWN BY: D&B GUARINO	DATE: FEB. 2022	
CHECKED BY: WD	DETAIL ID: THRUST-01	REV.: 1	



	PIPE DIAMETER					
	3", 4", & 6"	8"	12"	16"	20"	24"
A	18"	2'-0"	3'-0"	3'-0"	4'-6"	5'-0"
B	11"	13"	11"	11"	17"	18"
C	24"	2'-6"	2'-6"	3'-0"	3'-9"	4'-6"
D	.1	.2	.3	.4	1.1	1.56

- NOTES:
1. WRAP FITTING WITH 4 MIL POLYETHYLENE PLASTIC WRAP BEFORE PLACING CONCRETE
 2. CONCRETE SHALL BE CLASS 15-1
 3. CONCRETE MUST BEAR AGAINST UNDISTURBED SOIL
 4. SOIL BEARING VALUE - 2000 PSF

PHILADELPHIA WATER DEPARTMENT	CONCRETE ANCHORS FOR HORIZONTAL 1/4 BENDS		
	DRAWN BY: D&B GUARINO	DATE: FEB. 2022	
	CHECKED BY: WD	DETAIL ID: THRUST-02	REV.: 1



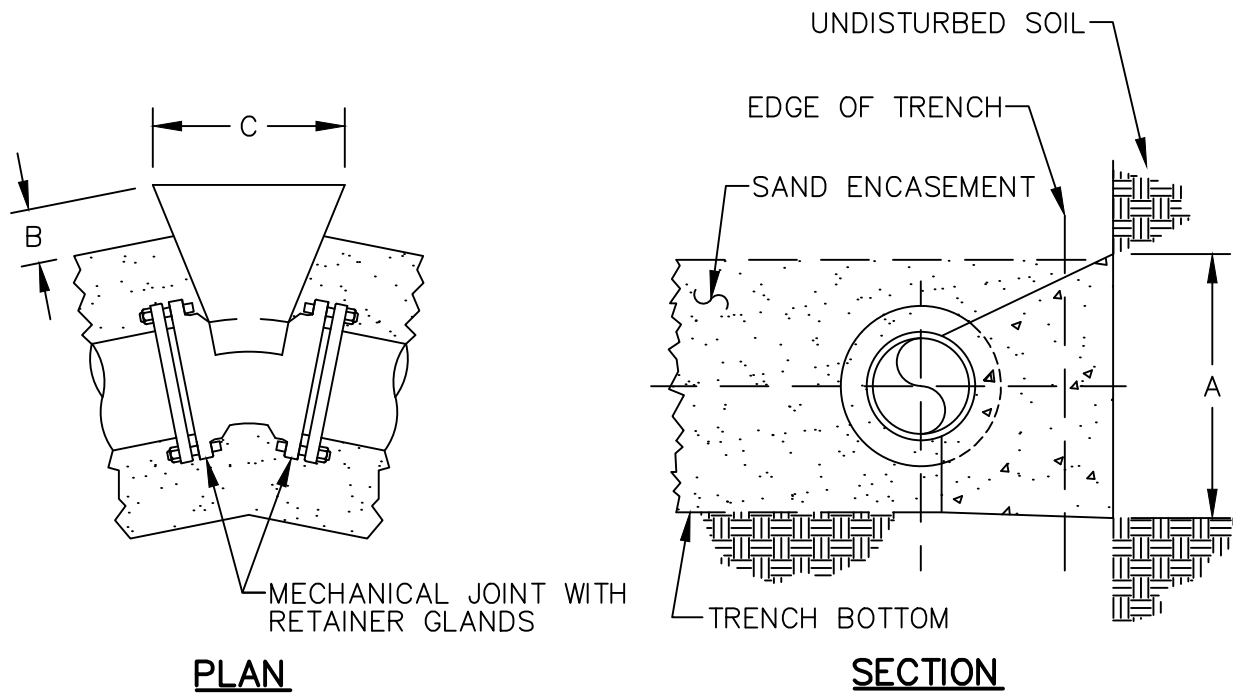
	PIPE DIAMETER					
	3", 4", & 6"	8"	12"	16"	20"	24"
A	18"	21"	2'-6"	3'-6"	4'-0"	5'-0"
B	12"	15"	15"	18"	2'-0"	2'-3"
C	15"	20"	2'-6"	3'-0"	4'-0"	4'-6"
D	.06	.07	.15	.28	.66	1.0

D = APPROXIMATE VOLUME OF CONCRETE IN CUBIC YARDS

NOTES:

1. WRAP FITTING WITH 4 MIL POLYETHYLENE PLASTIC WRAP BEFORE PLACING CONCRETE
2. CONCRETE SHALL BE CLASS 15-1
3. CONCRETE MUST BEAR AGAINST UNDISTURBED SOIL
4. SOIL BEARING VALUE - 2000 PSF
5. WHERE CONCRETE ANCHOR EXTENDS PAST EDGE OF TRENCH, ADDITIONAL EXCAVATION SHALL BE REQUIRED

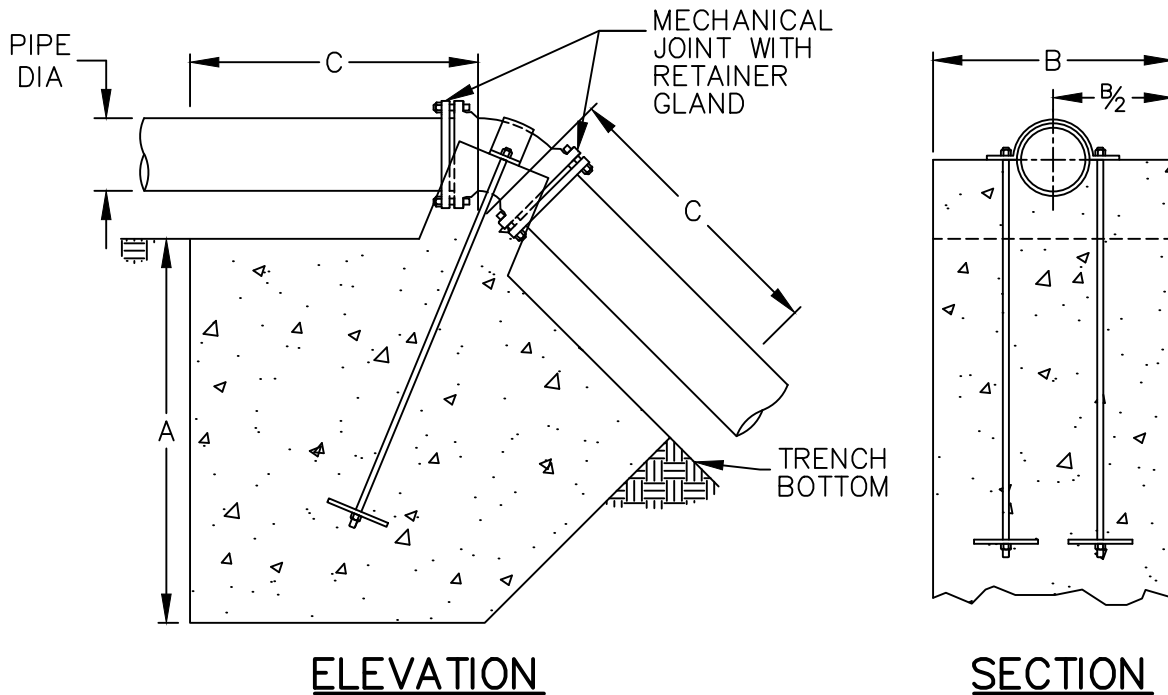
PHILADELPHIA WATER — DEPARTMENT —	CONCRETE ANCHORS FOR HORIZONTAL 1/8 BENDS		
	DRAWN BY:	D&B GUARINO	DATE: FEB. 2022
	CHECKED BY:	WD	DETAIL ID: THRUST-03 REV.: 1



	PIPE DIAMETER					
	3", 4", & 6"	8"	12"	16"	20"	24"
A	20"	22"	2'-2"	2'-6"	3'-0"	3'-6"
B	12"	12"	15"	18"	21"	2'-0"
C	12"	16"	21"	2'-3"	3'-0"	3'-9"
D	.03	.05	.1	.17	.3	.5

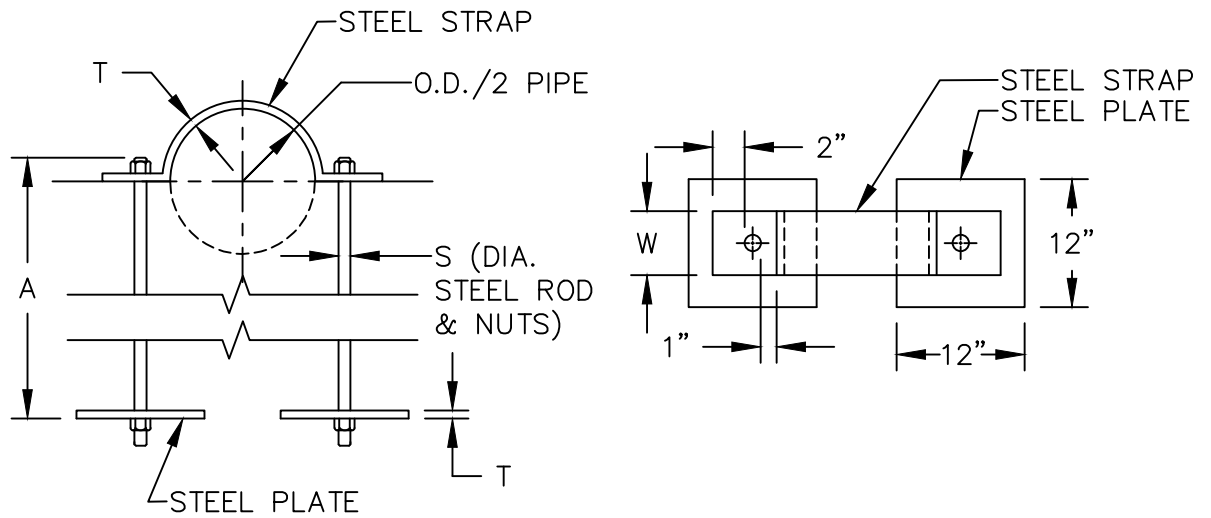
- NOTES:
1. WRAP FITTING WITH 4 MIL POLYETHYLENE PLASTIC WRAP BEFORE PLACING CONCRETE
 2. CONCRETE SHALL BE CLASS 15-1
 3. CONCRETE MUST BEAR AGAINST UNDISTURBED SOIL
 4. SOIL BEARING VALUE - 2000 PSF

PHILADELPHIA WATER DEPARTMENT	CONCRETE ANCHORS FOR HORIZONTAL 1/16 & 1/32 BENDS		
	DRAWN BY: D&B GUARINO CHECKED BY: WD	DATE: FEB. 2022 DETAIL ID: THRUST-04	REV.: 1



ELEVATION

SECTION



ROD AND STRAP HARNESS DETAILS

NOTES:

1. WRAP FITTING WITH PLASTIC WRAP BEFORE PLACING CONCRETE
2. CONCRETE SHALL BE CLASS 15-1
3. CONCRETE SHALL HAVE A 2" MINIMUM CLEARANCE UNDER BELLS & GLANDS
4. APPLY COLD BITUMEN COATING AS SPECIFIED
5. STRAP & PLATES TO BE MADE OF A-36 STEEL
6. RODS TO BE A-193-GRADE B7
7. NUTS TO BE A-194-GRADE 4-HEAVY HEXAGON

PHILADELPHIA
WATER
 — DEPARTMENT —

CONCRETE ANCHORS FOR VERTICAL 1/8, 1/16, 1/32 BENDS (TOP)

DRAWN BY:	D&B GUARINO	DATE:	FEB. 2022
CHECKED BY:	WD	DETAIL ID:	THRUST-05-A
		REV.:	1

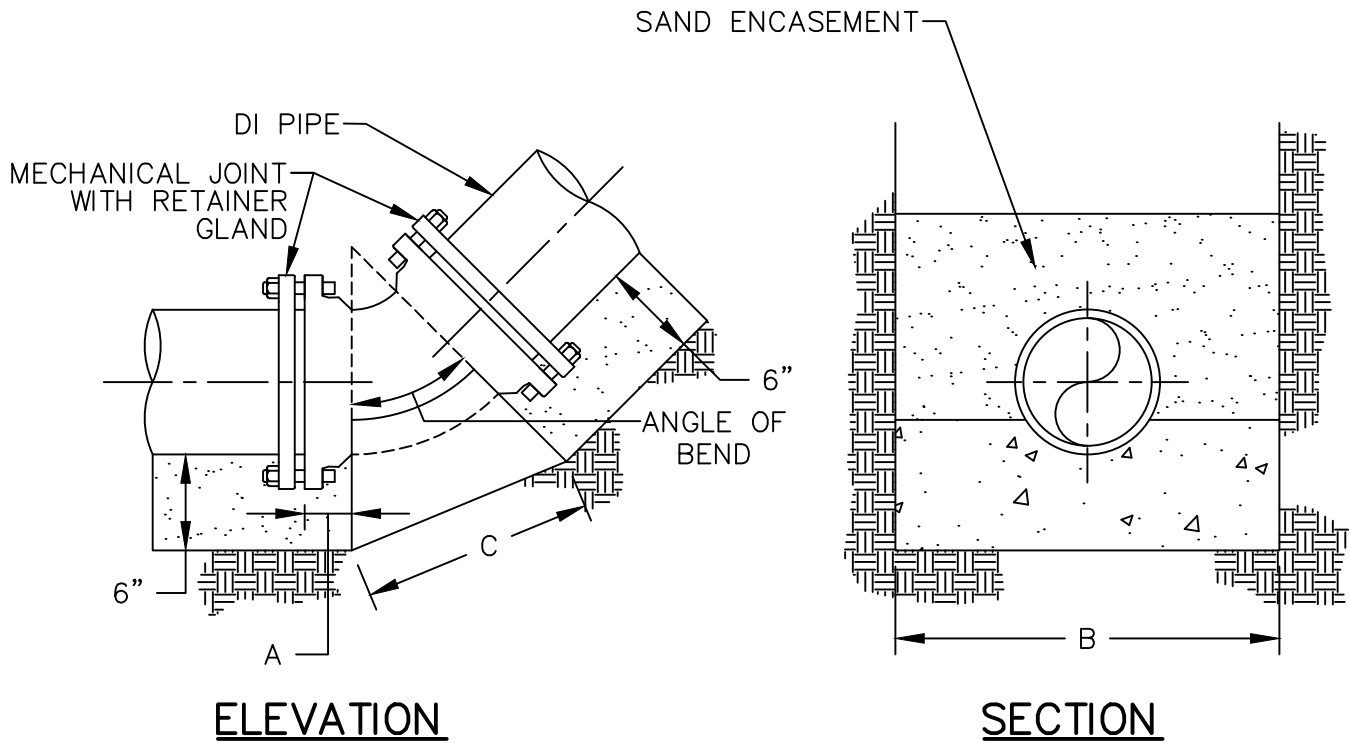
PIPE DIA.	1/8 BEND 45°							
	A	B	C	D	S	T	W	P
6"	2'-10"	2'-6"	2'-0"	.65	3/4"	1/2"	4"	60
8"	4'-0"	2'-6"	3'-0"	1.47	3/4"	1/2"	4"	65
12"	4'-9"	3'-6"	3'-6"	2.8	1"	1/2"	5"	86
16"	5'-8"	4'-6"	4'-0"	4.7	1"	3/4"	5"	127
20"	7'-0"	5'-0"	5'-0"	8.15	1 1/4"	3/4"	6"	172
24"	7'-9"	5'-6"	5'-6"	10.89	1 1/2"	3/4"	6"	219

PIPE DIA.	1/16 BEND 22 1/2°							
	A	B	C	D	S	T	W	P
6"	2'-0"	2'-6"	2'-0"	.4	3/4"	1/2"	3"	55
8"	2'-0"	2'-6"	2'-6"	.55	3/4"	1/2"	4"	59
12"	4'-0"	2'-6"	3'-0"	1.38	3/4"	1/2"	4"	68
16"	4'-6"	3'-0"	4'-0"	2.5	3/4"	1/2"	5"	78
20"	5'-0"	4'-0"	4'-6"	4.15	1"	3/4"	5"	130
24"	5'-0"	4'-0"	5'-0"	6.0	1 1/4"	3/4"	5"	154

PIPE DIA.	1/32 BEND 11 1/4°							
	A	B	C	D	S	T	W	P
6"	18"	18"	18"	.2	3/4"	1/2"	3"	53
8"	2'-0"	2'-0"	2'-0"	.4	3/4"	1/2"	3"	56
12"	2'-6"	2'-6"	2'-6"	.75	3/4"	1/2"	4"	64
16"	3'-0"	3'-0"	2'-6"	1.4	3/4"	1/2"	4"	69
20"	3'-3"	3'-0"	3'-6"	2.1	1"	3/4"	4"	113
24"	3'-6"	4'-0"	3'-6"	3.0	1"	3/4"	5"	129

D = APPROXIMATE VOLUME OF CONCRETE IN CUBIC YARDS
P = WEIGHT IN POUNDS OF STEEL STRAPS, PLATES, RODS, & NUTS

PHILADELPHIA WATER — DEPARTMENT —	CONCRETE ANCHORS FOR VERTICAL 1/8, 1/16, 1/32 BENDS (TOP)		
	DRAWN BY: D&B GUARINO	DATE: FEB. 2022	
	CHECKED BY: WD	DETAIL ID: THRUST-05-B	REV.: 1



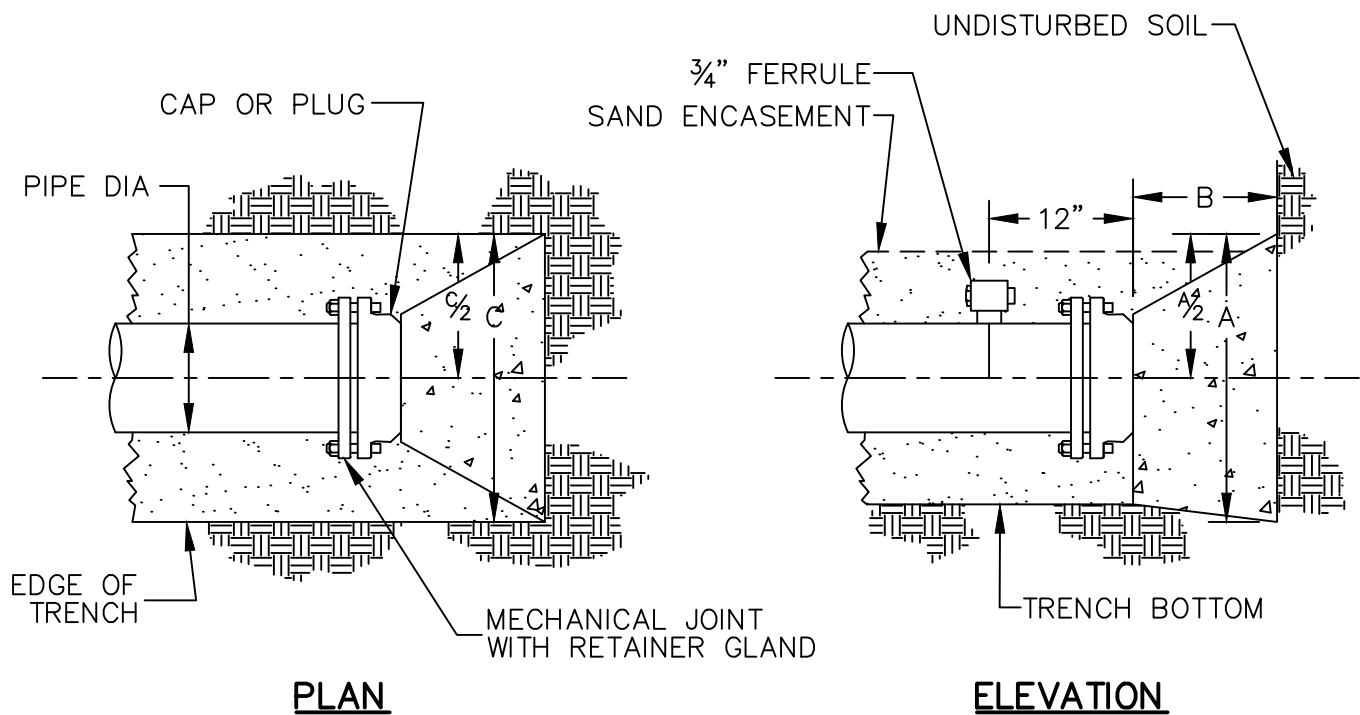
		PIPE DIAMETER (INCHES)						
		3", 4", & 6"	8"	12"	16"	20"	24"	
ANGLE OF BEND	1/8 45°	A	2.5"	2.5"	2.5"	3.5"	3.5"	3.5"
		B	18"	2'-0"	2'-4"	3'-6"	4'-0"	5'-6"
		C	12"	14"	19"	21"	2'-1"	2'-4"
		D	.02	.04	.07	.13	.19	.31
	1/16 22 1/2°	B	18"	2'-0"	2'-4"	2'-8"	3'-0"	4'-0"
		C	9"	11"	16"	16"	20"	22"
		D	.02	.04	.07	.09	.13	.21
	1/32 11 1/4°	B	18"	2'-0"	2'-4"	2'-8"	3'-0"	4'-0"
		C	7"	9"	13"	14"	17"	18"
		D	.03	.03	.06	.08	.12	.19

D = APPROXIMATE VOLUME OF CONCRETE IN CUBIC YARDS

NOTES:

1. WRAP FITTING WITH PLASTIC WRAP BEFORE PLACING CONCRETE
2. CONCRETE SHALL BE CLASS 15-1
3. CONCRETE MUST BEAR AGAINST UNDISTURBED SOIL
4. SOIL BEARING VALUE - 2000 PSF

PHILADELPHIA WATER — DEPARTMENT —	CONCRETE ANCHORS FOR VERTICAL BENDS (BOTTOM)		
	DRAWN BY: D&B GUARINO	DATE: FEB. 2022	
	CHECKED BY: WD	DETAIL ID: THRUST-06	REV.: 1



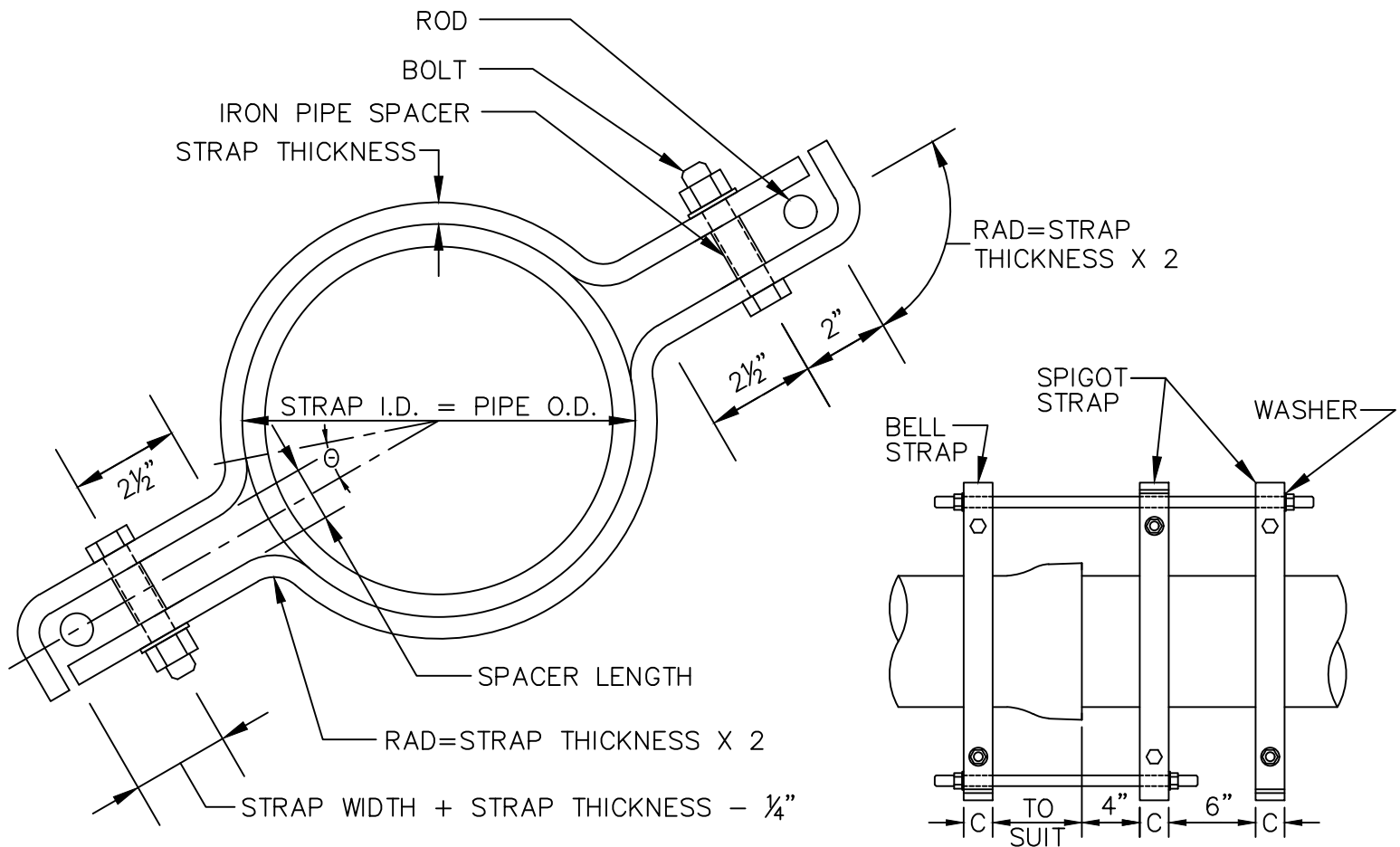
	PIPE DIAMETER					
	3", 4", & 6"	8"	12"	16"	20"	24"
A	18"	2'-0"	2'-6"	3'-9"	4'-6"	5'-0"
B	12"	12"	18"	2'-0"	2'-0"	2'-0"
C	18"	2'-0"	3'-6"	4'-0"	5'-0"	6'-0"
D	.06	.15	.4	.8	1.3	1.7

D = APPROXIMATE VOLUME OF CONCRETE IN CUBIC YARDS

NOTES:

1. WRAP FITTING WITH 4 MIL POLYETHYLENE PLASTIC WRAP BEFORE PLACING CONCRETE
2. CONCRETE SHALL BE CLASS 15-1
3. CONCRETE MUST BEAR AGAINST UNDISTURBED SOIL
4. SOIL BEARING VALUE - 2000 PSF

PHILADELPHIA WATER — DEPARTMENT —	CONCRETE ANCHORS FOR DEAD ENDS		
	DRAWN BY: D&B GUARINO	DATE: FEB. 2022	
CHECKED BY: WD	DETAIL ID: THRUST-07	REV.: 0	



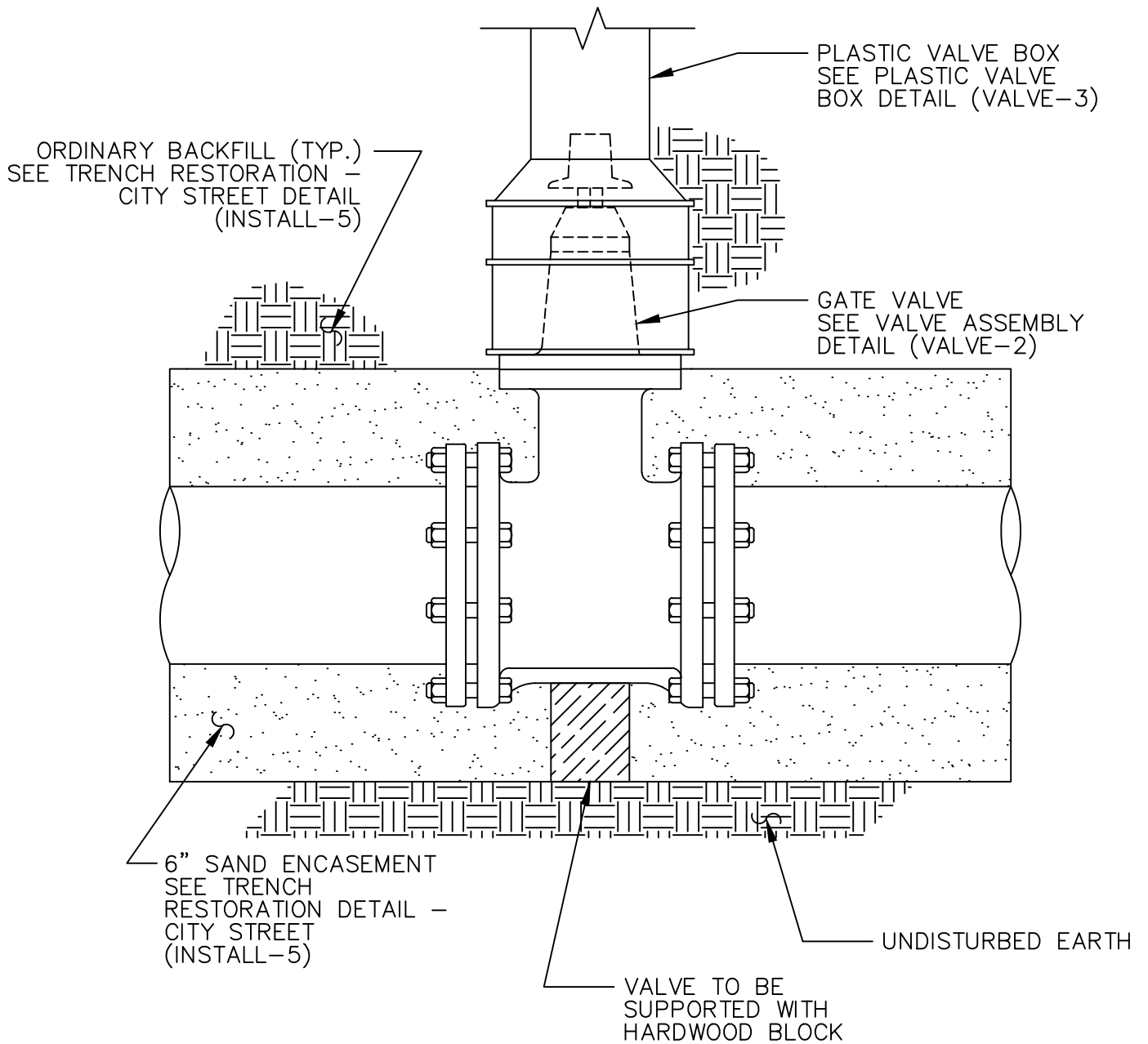
NOTE:
ONLY ONE ROD ENGAGED WITH EACH SPIGOT STRAP

PIPE SIZE	STRAP I.D.	STRAP THICKNESS	STRAP WIDTH	ROD DIAMETER	BOLT SIZE	SPACER SIZE	SPACER LENGTH	θ	BOLT CENTER	WEIGHT (APPROX)
3	—	1/2"	2	5/8"	5/8"	3/4"	1"	—	—	—
4	4.80	1/2"	2	5/8"	5/8"	3/4"	1"	26.179	11.10	72
6	6.90	1/2"	2	3/4"	5/8"	3/4"	1 1/4"	21.418	13.29	98
8	9.05	1/2"	2	3/4"	5/8"	3/4"	1 1/4"	17.105	15.56	100
12	13.20	3/4"	3	1"	7/8"	1"	1 1/2"	16.128	20.56	218
16	17.40	3/4"	3	1"	7/8"	1"	1 1/2"	12.744	24.9	228
20	21.60	3/4"	3	1 1/4"	7/8"	1"	1 3/4"	11.133	29.14	331
24	25.80	3/4"	4	1 1/2"	7/8"	1"	2"	10.000	33.36	520

NOTES:

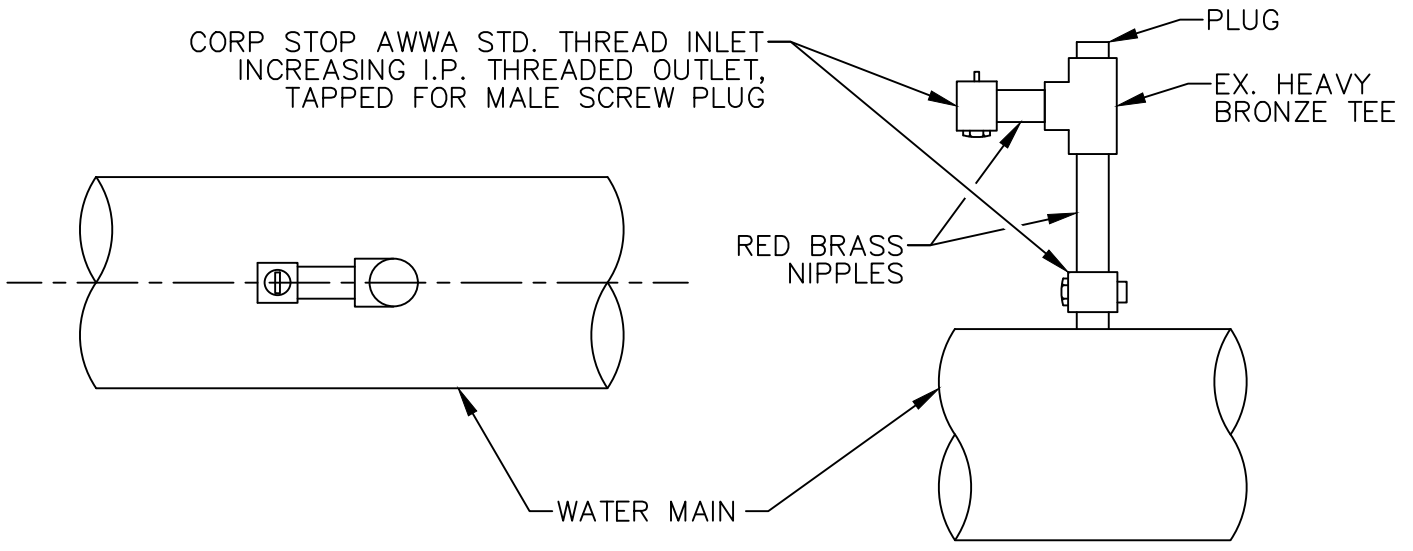
- RODS TO BE LOW ALLOY STEEL THAT CONFORMS TO ANSI/AWWA C111/A21.11
- BOLTS TO BE A-193-GRADE B7
- NUTS TO BE A-194-GRADE 4 HEAVY HEX
- STRAPS TO BE A-36 STEEL
- ALL JOINTS WITHIN 12 FEET OF A BEND TO BE HARNESSSED
- UPON THE APPROVAL OF THE ENGINEER, A WEDGE ACTION RESTRAINT RING ON THE SPIGOT JOINED TO A SPLIT DUCTILE IRON RING BEHIND THE BELL MAY BE USED. SEE SPECIFICATION XXXXX

PHILADELPHIA WATER DEPARTMENT	PUSH-ON JOINT HARNESSING		
	DRAWN BY: D&B GUARINO	DATE: FEB 2022	
	CHECKED BY: WD	DETAIL ID: THRUST-08	REV.: 1



DIRECT BURY VALVE

DRAWN BY:	D&B GUARINO	DATE:	FEB. 2022
CHECKED BY:	WD	DETAIL ID:	VALVE-01
		REV.:	NEW

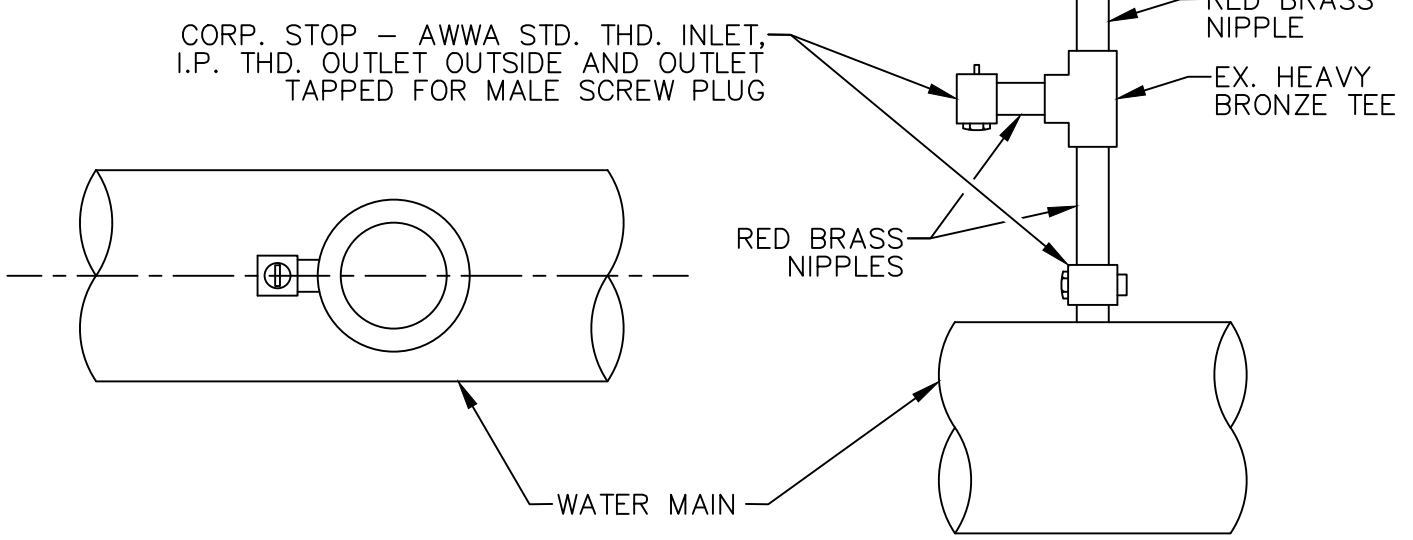


PLAN

SECTION

MANUAL AIR VALVE

APCO 143C COMBINATION AUTOMATIC AIR VALVE OR APPROVED EQUAL, NOMINAL SIZE OF 1" OR AS SPECIFIED WITH FEMALE NPT INLETS. 1" AND 2" AIR VALVES SHALL HAVE FEMALE NPT INLETS. 4" AND LARGER AIR VALVES SHALL HAVE ANSI FLANGE INLETS.

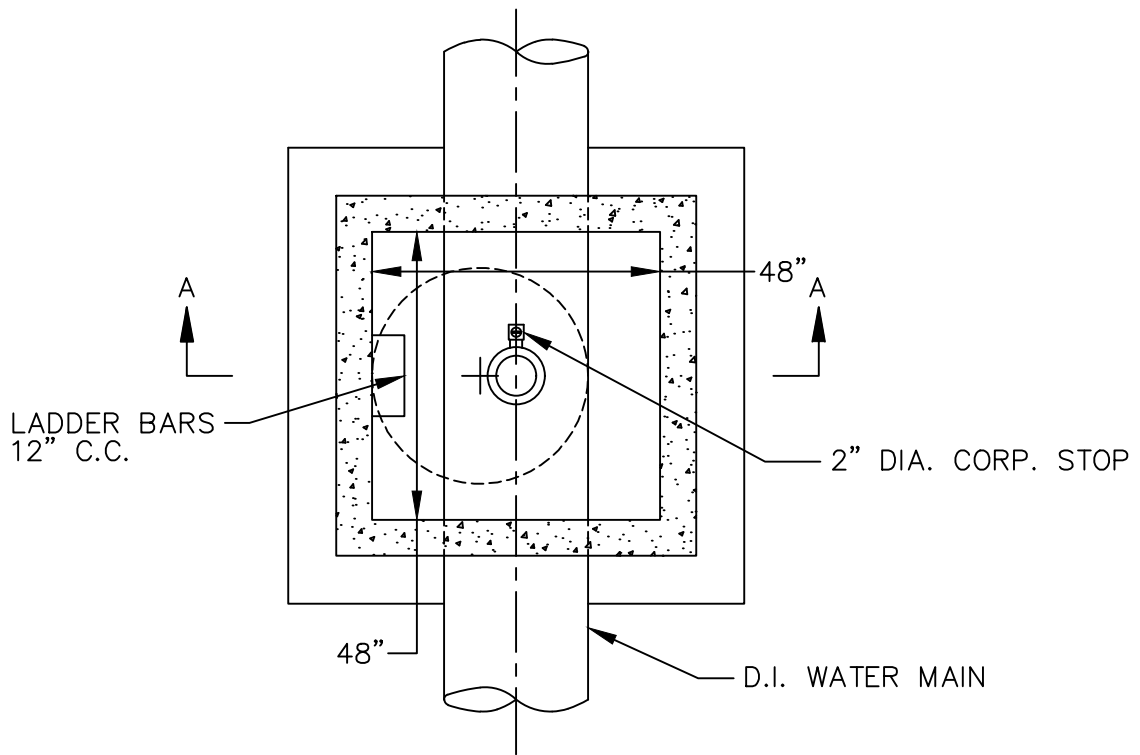


PLAN

SECTION

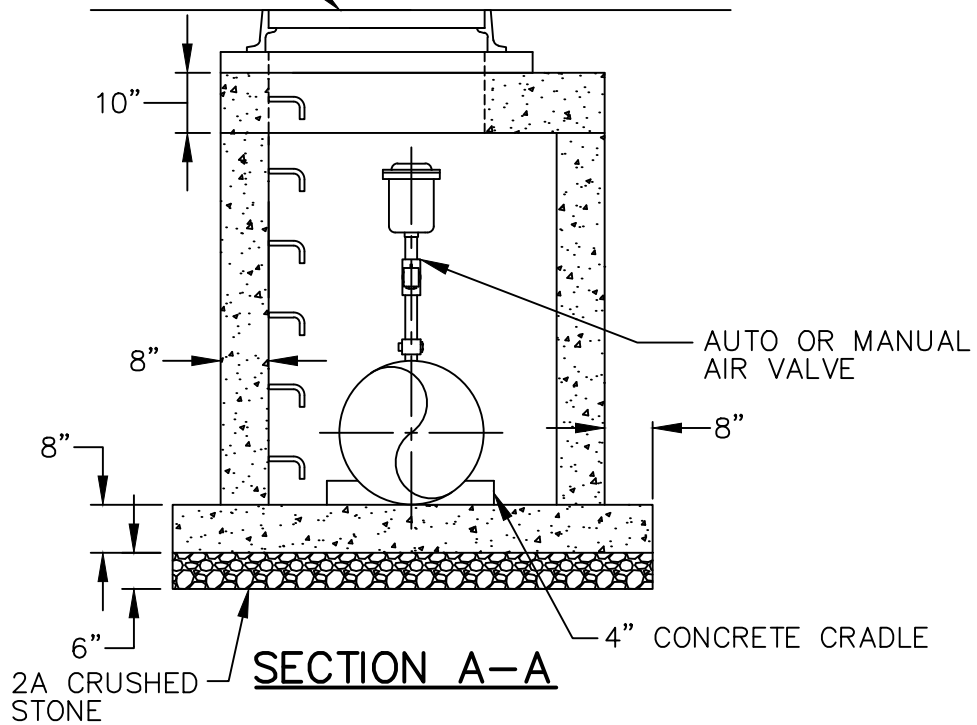
AUTOMATIC AIR VALVE

PHILADELPHIA WATER DEPARTMENT	AIR VALVES		
	DRAWN BY: D&B GUARINO CHECKED BY: WD	DATE: FEB. 2022 DETAIL ID: VALVE-03	REV.: 1



PLAN

MANHOLE FRAME AND COVER

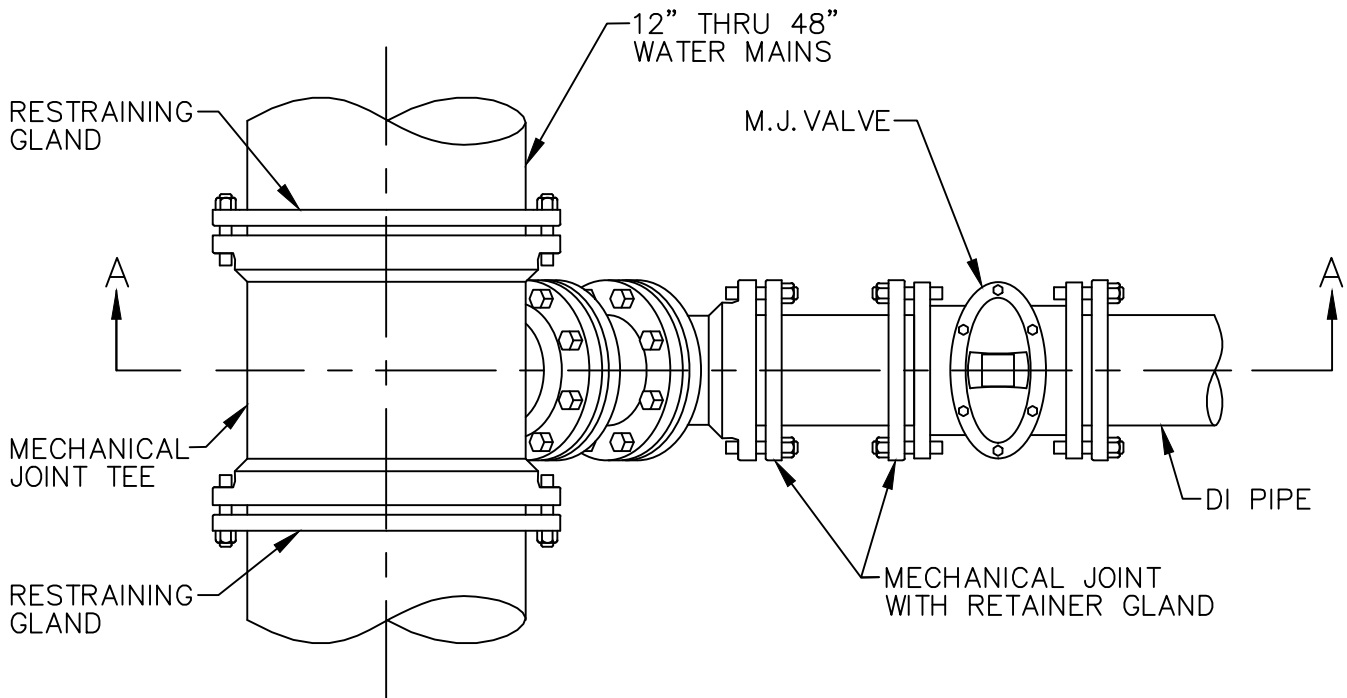


SECTION A-A

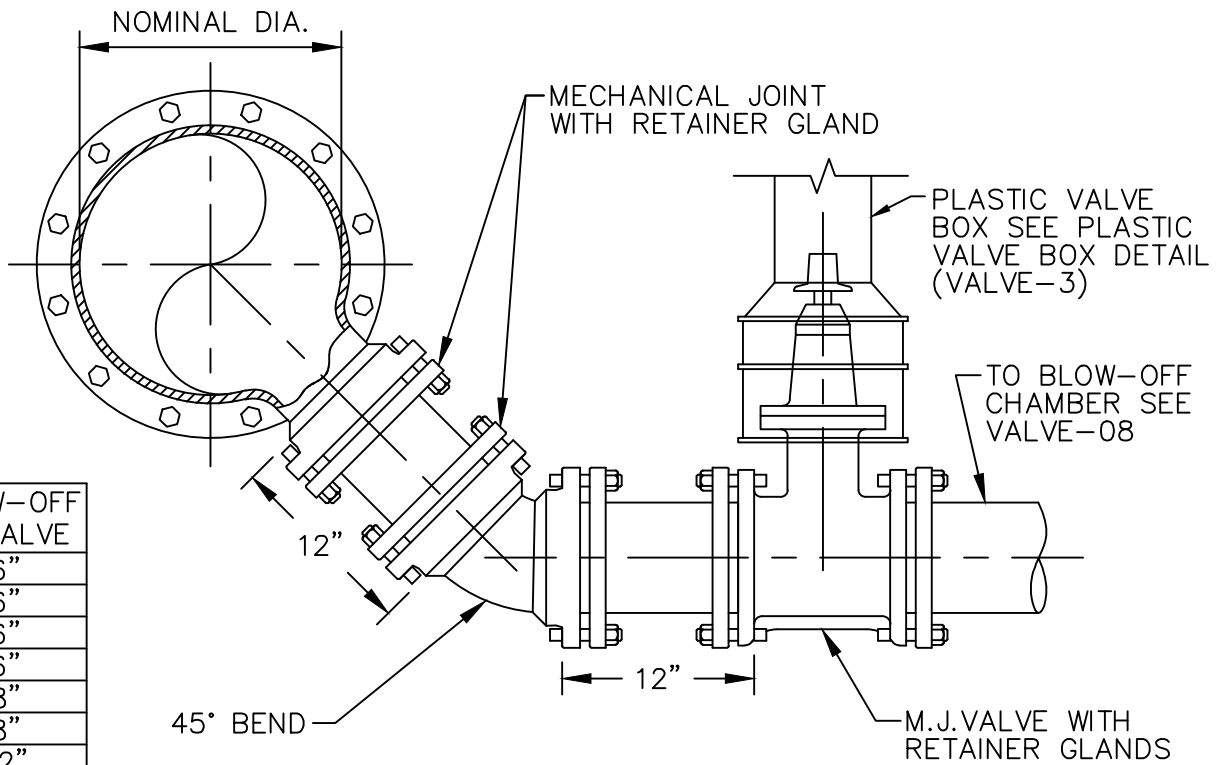
PHILADELPHIA
WATER
— DEPARTMENT —

AIR VALVE CHAMBER

DRAWN BY:	D&B GUARINO	DATE:	FEB. 2022
CHECKED BY:	WD	DETAIL ID:	VALVE-04
		REV.:	1



PLAN



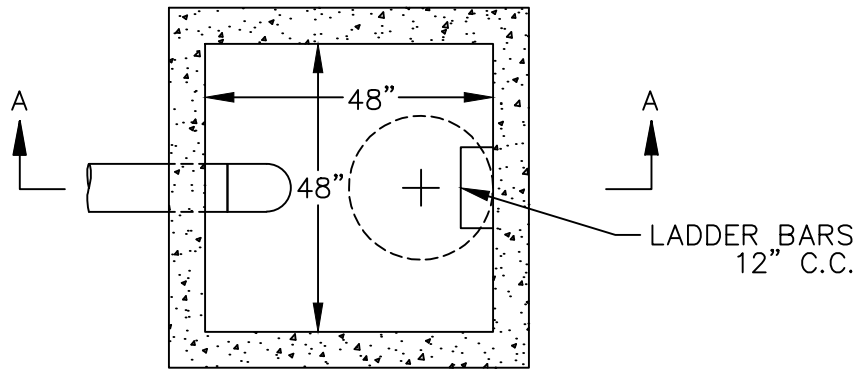
PIPE SIZE	BLOW-OFF & VALVE
12"	6"
16"	6"
20"	6"
24"	6"
30"	8"
36"	8"
42"	12"
48"	12"

SECTION A-A

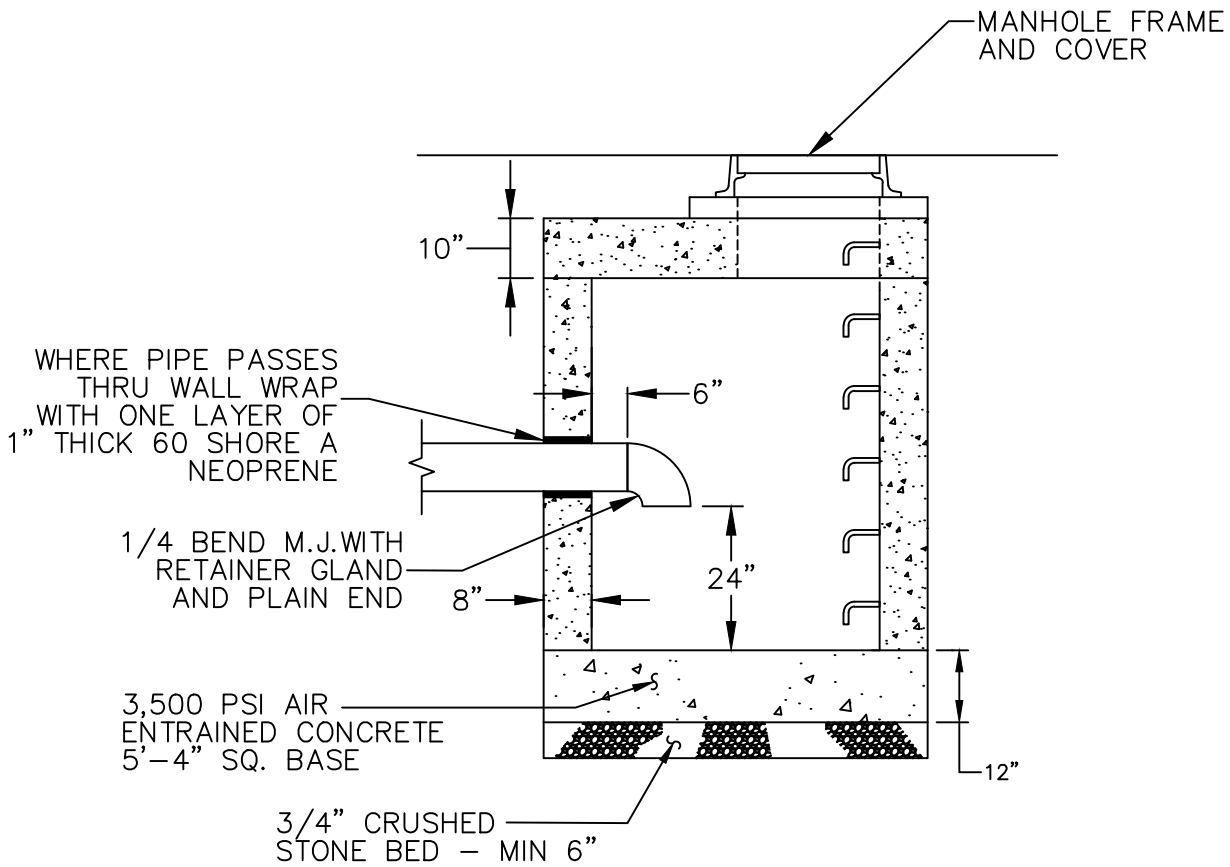
**PHILADELPHIA
WATER
— DEPARTMENT —**

BLOW-OFF BRANCH WITH OUTLET VALVE

DRAWN BY:	D&B GUARINO	DATE:	FEB. 2022
CHECKED BY:	WD	DETAIL ID:	VALVE-05
		REV.:	1



PLAN



SECTION A-A

PHILADELPHIA
WATER
 — DEPARTMENT —

BLOW OFF CHAMBER

DRAWN BY:	D&B GUARINO	DATE:	FEB. 2022
CHECKED BY:	WD	DETAIL ID:	VALVE-06
		REV.:	1

APPROXIMATE WEIGHTS

FRAME - 220 LBS.

COVER - 105 LBS.

MACHINE FINISH

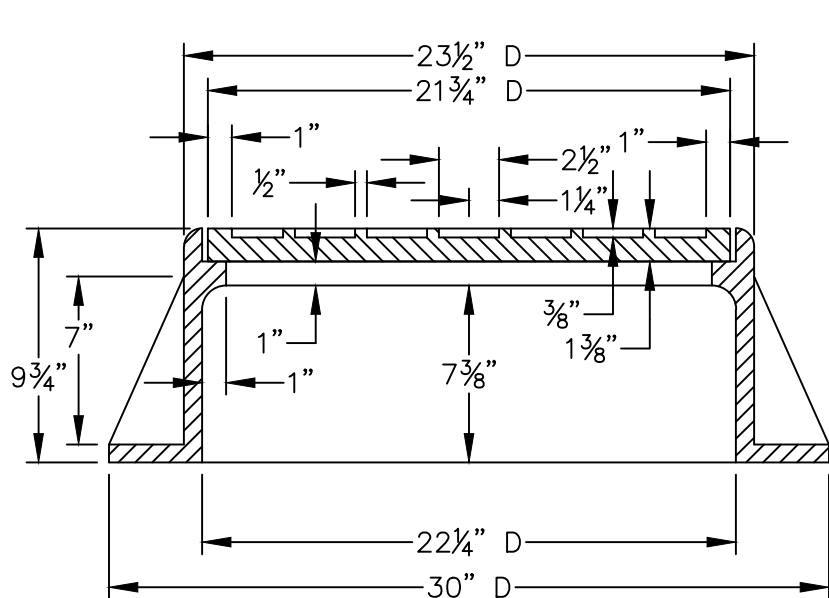
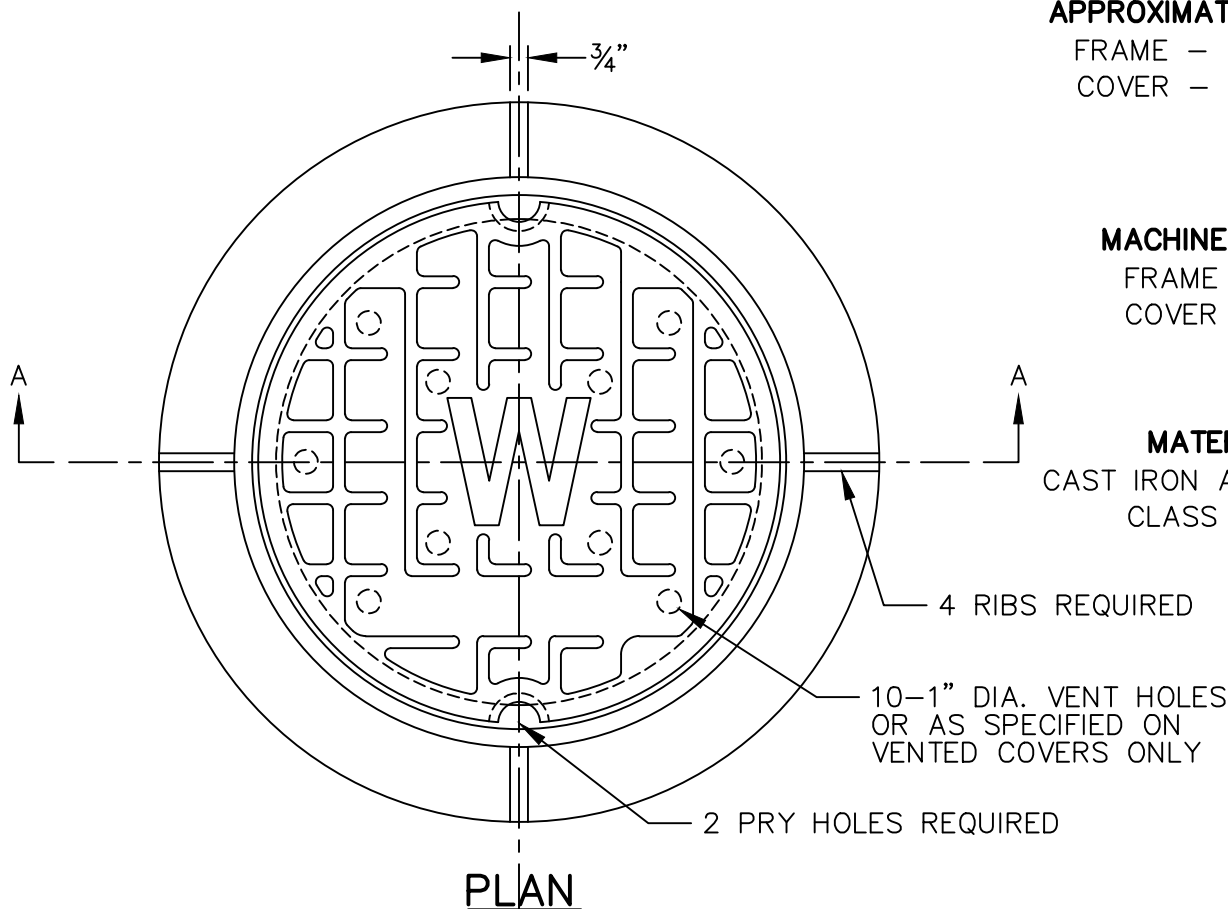
FRAME SEAT

COVER SEAT

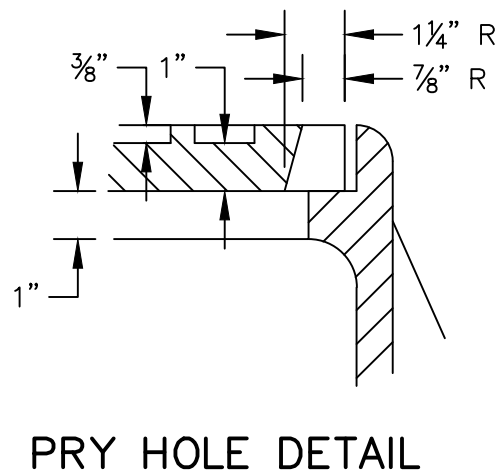
MATERIAL

CAST IRON ASTM A-48

CLASS 30 B

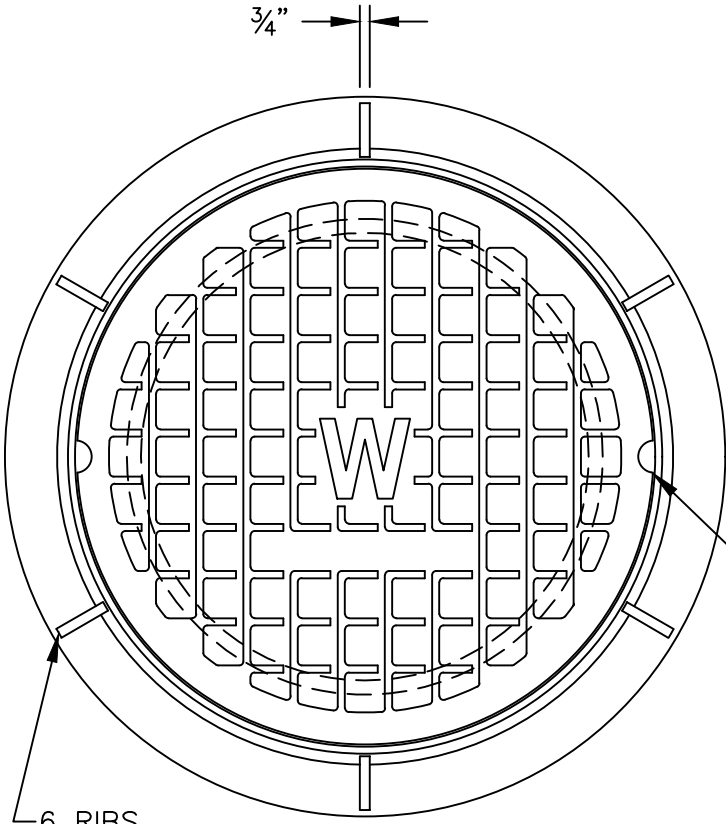


SECTION A-A



**FRAME AND COVER -
21 3/4" DIAMETER**

DRAWN BY:	D&B GUARINO	DATE:	FEB. 2022
CHECKED BY:	WD	DETAIL ID:	VALVE-07
		REV.:	0



PLAN

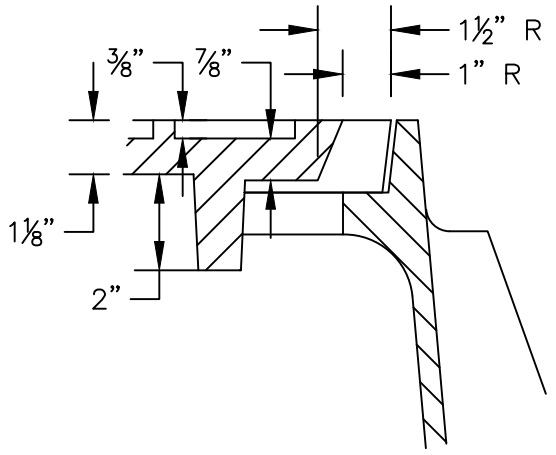
APPROXIMATE WEIGHTS
 FRAME - 190 LBS.
 COVER - 270 LBS.

MACHINE FINISH
 FRAME SEAT
 COVER SEAT
 COVER SIDEWALL

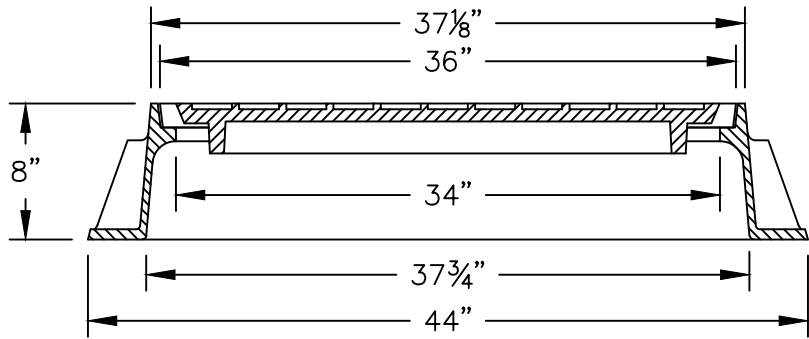
MATERIAL
 CAST IRON ASTM A-48
 CLASS 30 B

2 PRY HOLES REQUIRED

6 RIBS EQUALLY SPACED



PRY HOLE DETAIL



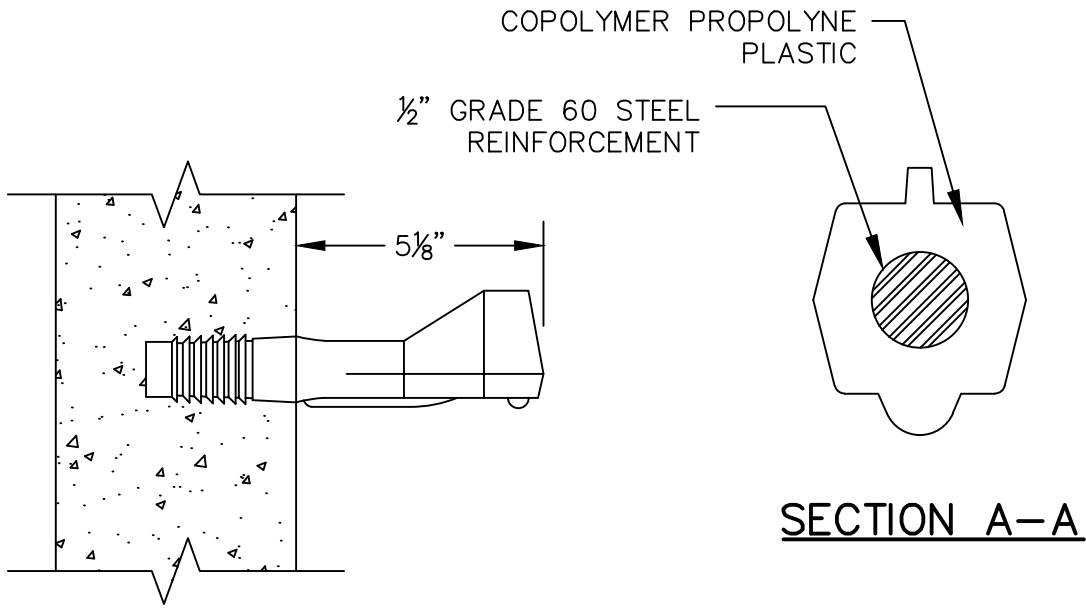
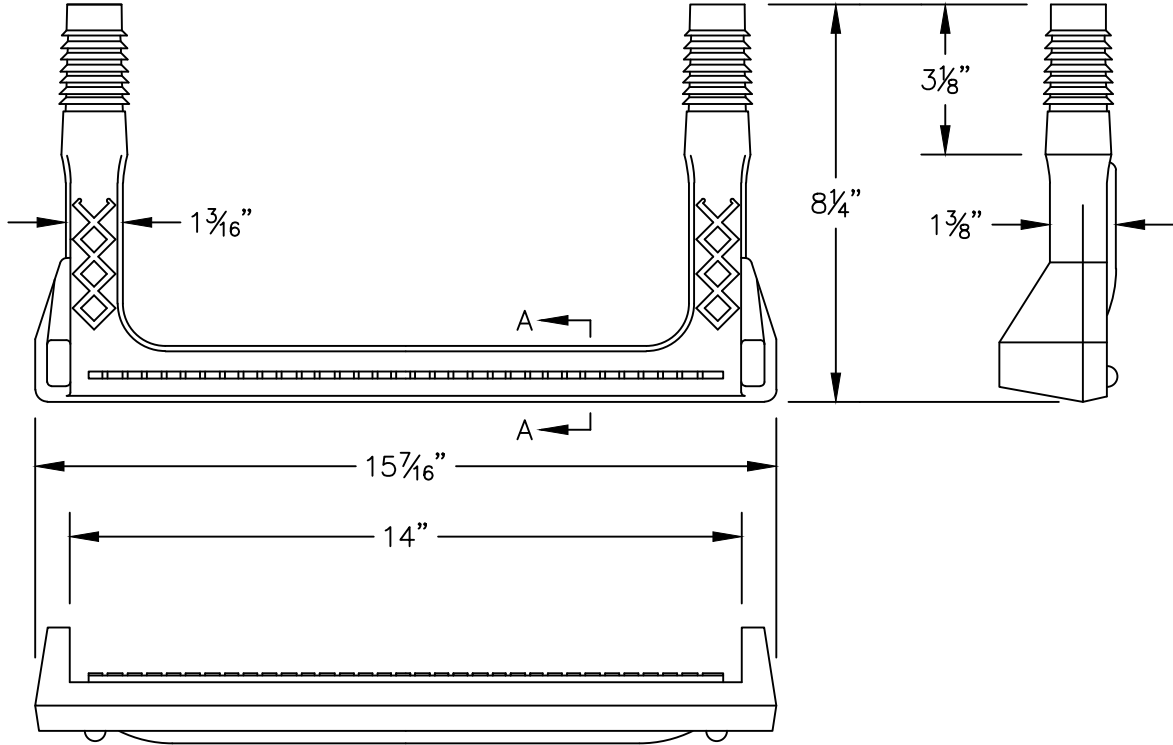
SECTION



**FRAME AND COVER -
 36" DIAMETER**

DRAWN BY:	D&B GUARINO	DATE:	FEB. 2022
CHECKED BY:	WD	DETAIL ID:	VALVE-08
		REV.:	0

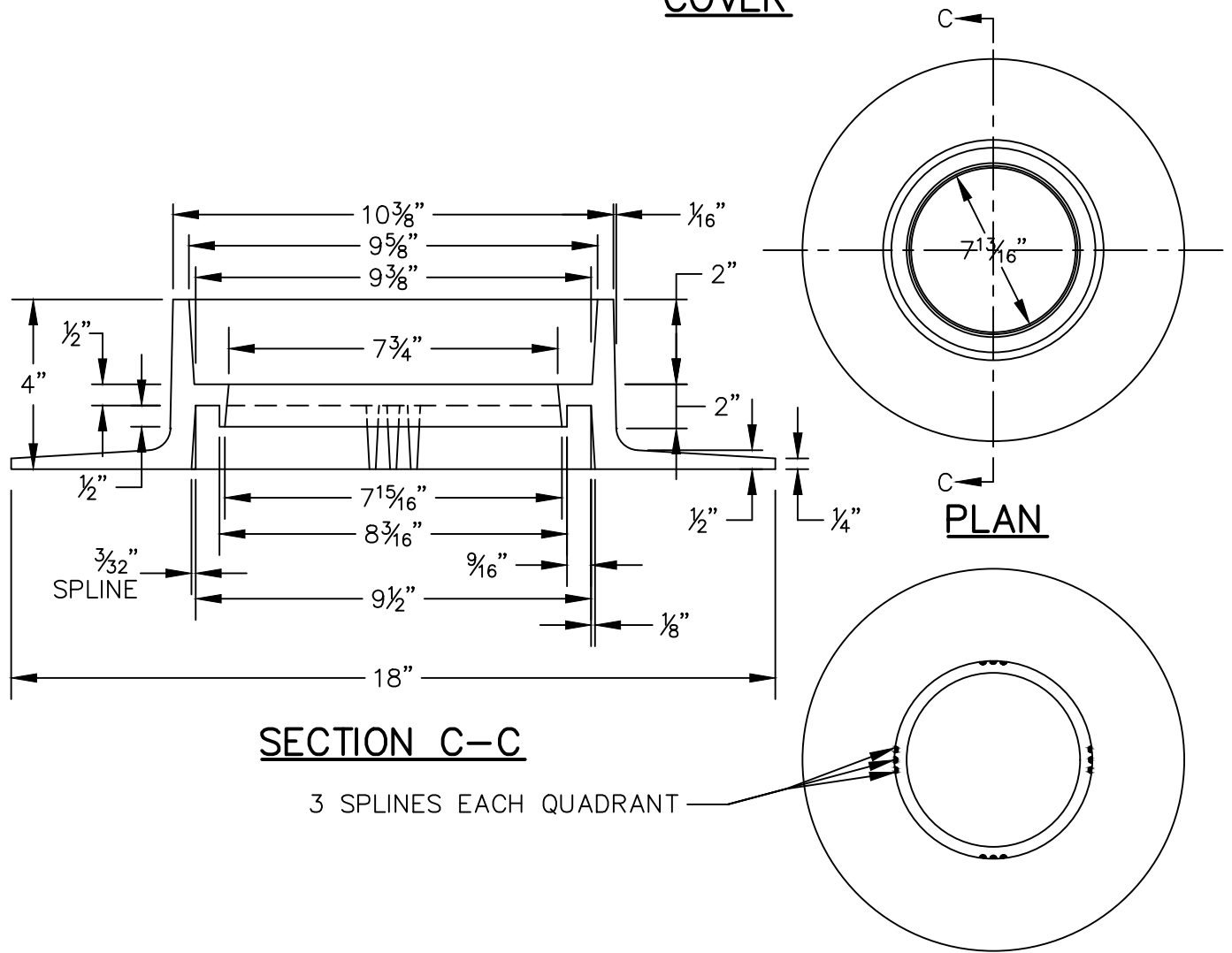
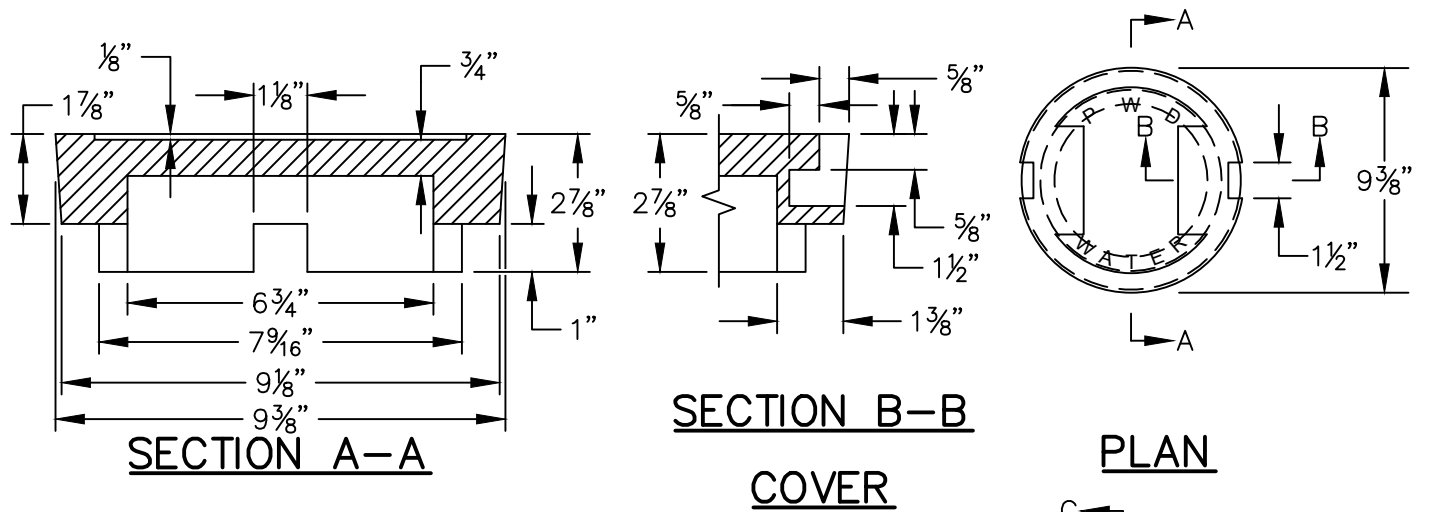
DRILL 2 1¼" HOLES ON 13" CENTERS, 3½" DEEP. USE SLEDGEHAMMER TO INSERT LADDER BAR ENDS INTO HOLES



PHILADELPHIA
WATER
— DEPARTMENT —

MANHOLE STEPS

DRAWN BY:	D&B GUARINO	DATE:	FEB. 2022
CHECKED BY:	WD	DETAIL ID:	VALVE-09
		REV.:	1



FRAME

PHILADELPHIA WATER DEPARTMENT	STANDARD 7" VALVE BOX CAST IRON FRAME AND COVER		
	DRAWN BY: D&B GUARINO	DATE: FEB. 2022	
	CHECKED BY: WD	DETAIL ID: VALVE-12	REV.: 0

MATERIALS SPECIFICATIONS

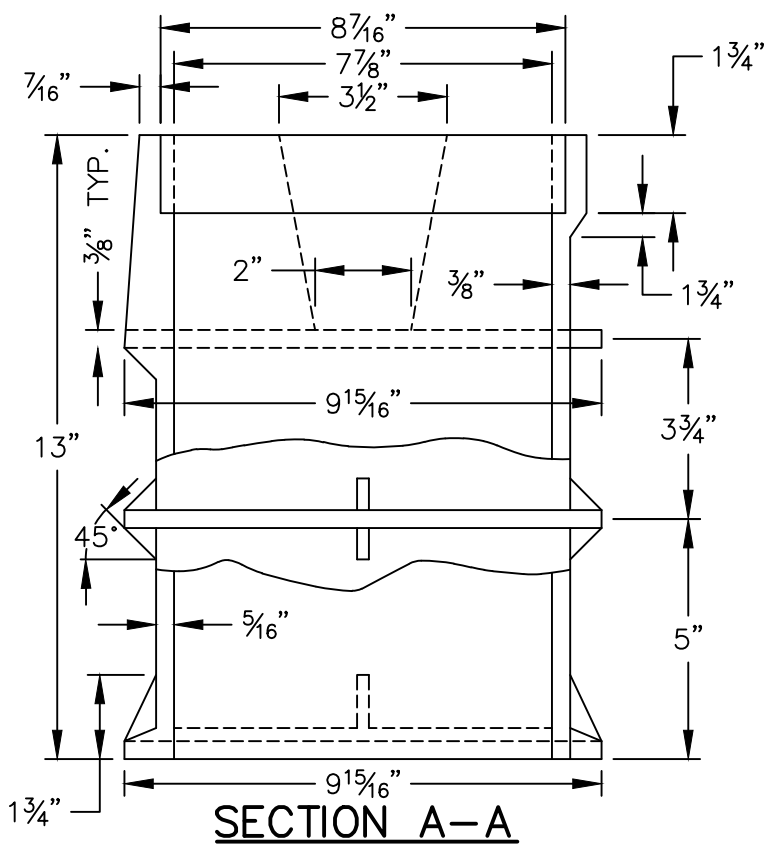
PLASTIC: ALL PLASTIC PARTS SHALL BE INJECTION MOLDED. PLASTIC SHALL BE A REINFORCED **OLEFIC** POLYMER IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM D2853-70, CLASS 1212, REINFORCED WITH A FIBROUS INORGANIC COMPONENT AND STABILIZED WITH CARBON BLACK TO PREVENT MATERIAL DEGRADATION FROM ULTRA-VIOLET LIGHT

PHYSICAL PROPERTIES

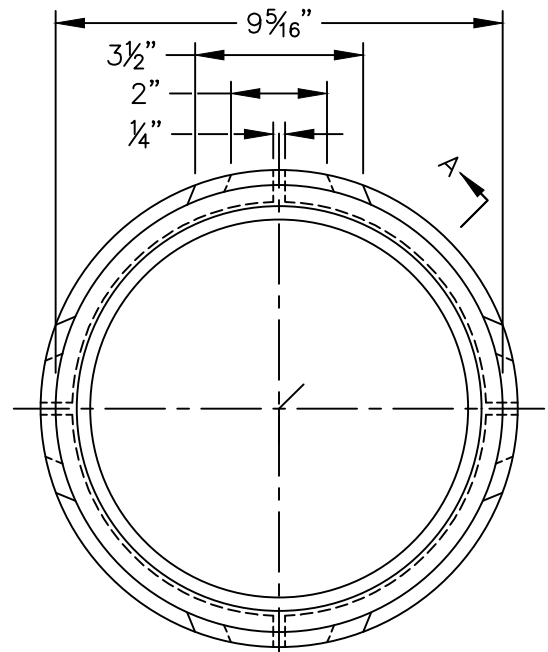
	TEST METHOD-ASTM	MIN TEST VALUES
Tensile Strength (2.0" Min.)	D-638	3400 PSI
Impact Strength I 20 D	D-256	0.6 Ft. Lb./In.
Durometer Hardness, Type D	D-2250	60
Deflection Temperature - 66 PSI Stress	D-648	230° F
Specific Gravity	D-792	1.15

NOTE: SPECIAL ALLOWANCES SHALL BE MADE IF TEST SECTION IS CUT FROM FINISHED PRODUCT

CAST IRON: CAST IRON SHALL CONFORM TO ASTM A-48, CLASS 30B

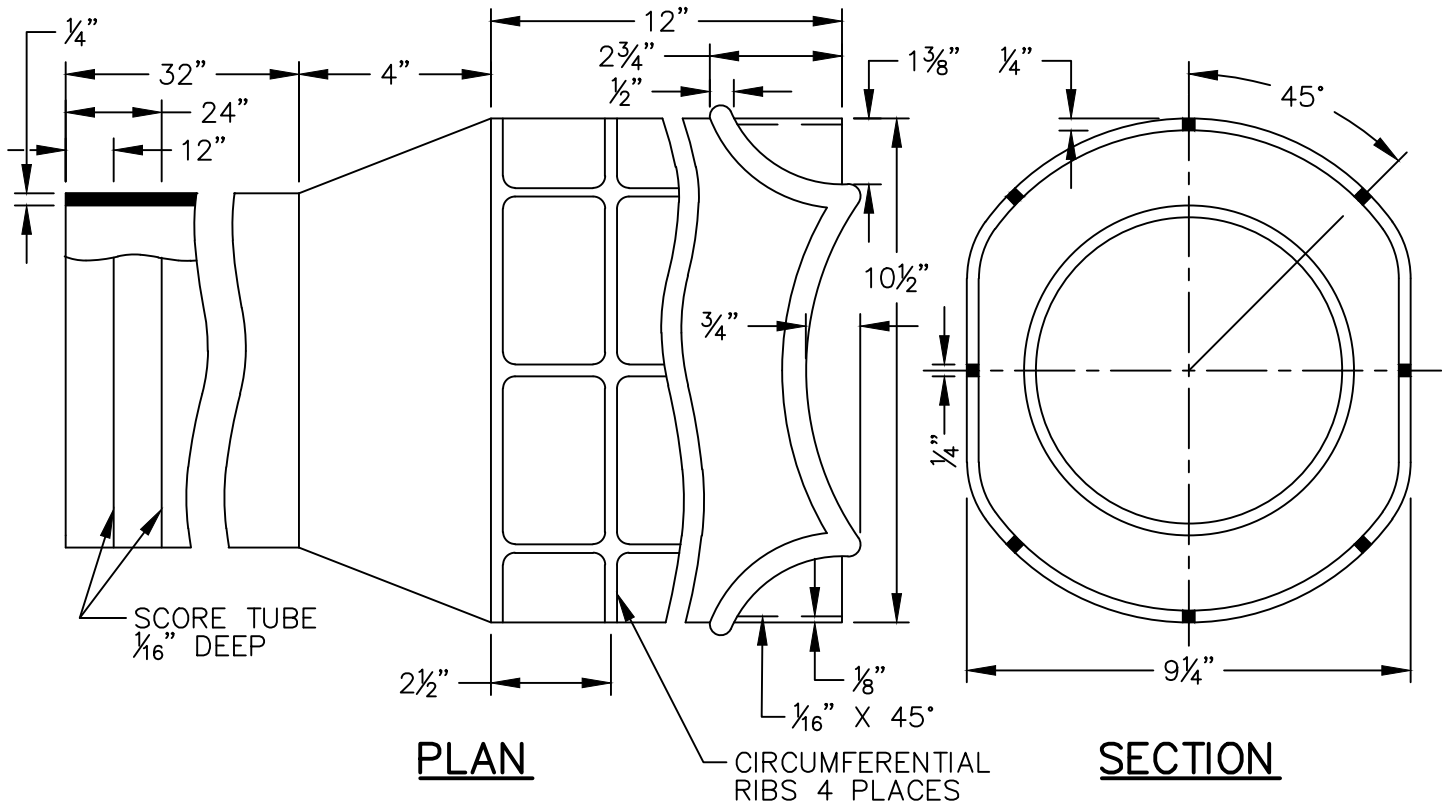


SECTION A-A



PLAN

TOP SECTION



PLAN

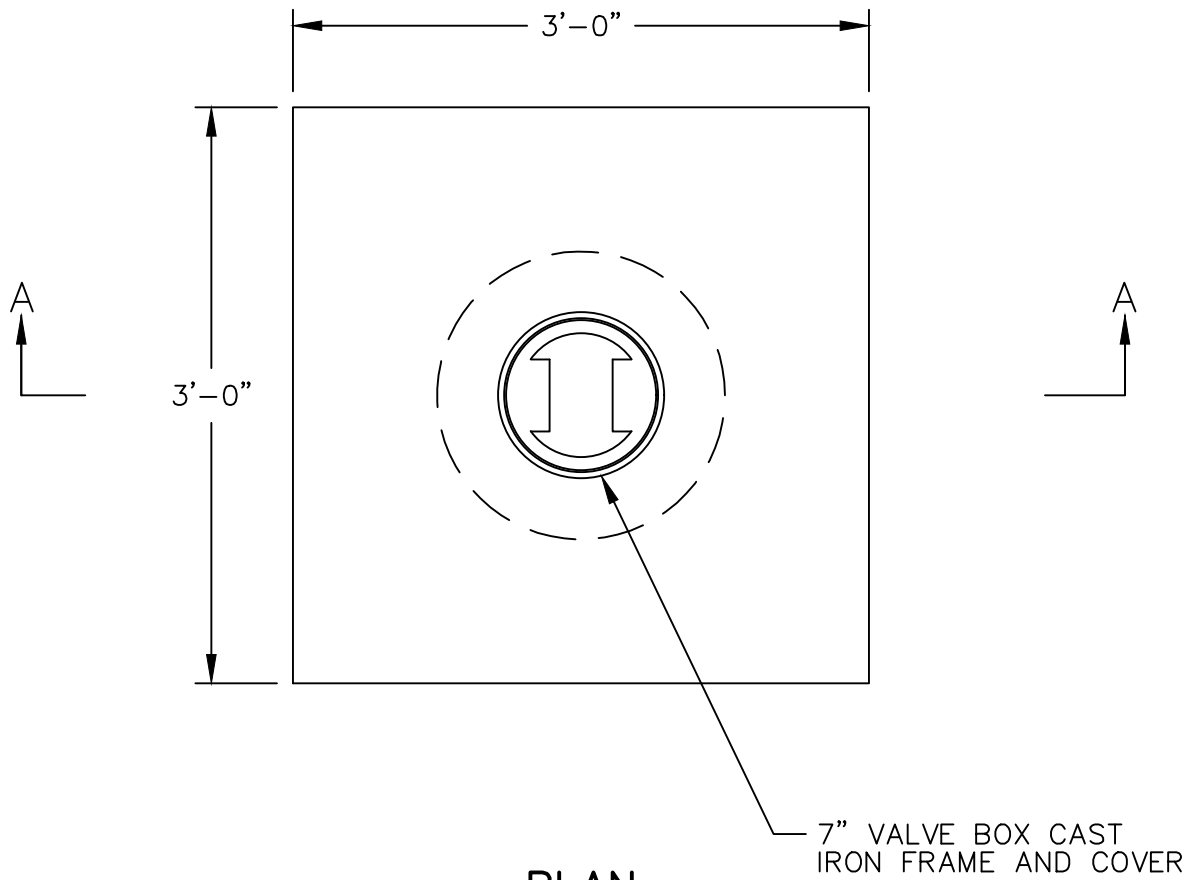
SECTION

BOTTOM SECTION

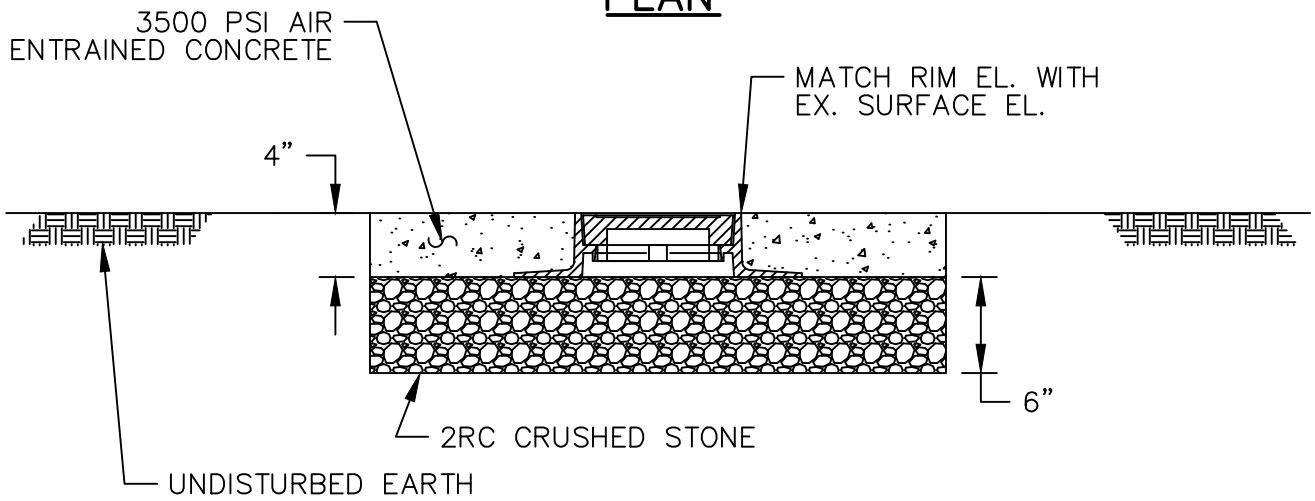
PHILADELPHIA
WATER
— DEPARTMENT —

STANDARD 7" VALVE BOX
PLASTIC TOP & BOTTOM SECTION

DRAWN BY:	D&B GUARINO	DATE:	FEB. 2022
CHECKED BY:	WD	DETAIL ID:	VALVE-13-A
		REV.:	0



PLAN



SECTION A-A

PHILADELPHIA WATER DEPARTMENT	7" VALVE 3'x3' CONCRETE PAD		
	DRAWN BY: D&B GUARINO	DATE: FEB. 2022	
CHECKED BY: WD	DETAIL ID: VALVE-10	REV.: NEW	