

**BSU Standard Specifications
(Revised August 2022)**

Can be located at:

<https://bsu.us/construction-new-development/construction-specifications-details-and-policies/>



STANDARD DETAILS

Revised April 2019

WATER DETAILS:

- W-1 CONSTRUCTION JUMPER ASSEMBLY
- W-2 FIRE HYDRANT ASSEMBLY
- W-3 FIRE HYDRANT ASSEMBLY
WITH GRADE-LOK ADAPTOR
- W-4 FIRE HYDRANT LOCATIONS/CLEARANCE
- W-5 PERMANENT BLOW-OFF ASSEMBLY DETAIL
- W-6 TEMPORARY BLOW-OFF ASSEMBLY DETAIL
- ~~W-7 BACTERIOLOGICAL SAMPLE VALVE~~
- W-8 WATER MAIN FLUSHING DETAIL
- W-9 VALVE INSTALLATION
- ~~W-10 16" AND LARGER VALVE INSTALLATION~~
- W-11 TAPPING SLEEVE AND VALVE
- W-12 2" POTABLE WATER SERVICE
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- ~~W-14 METER BOX ASSEMBLY~~
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- W-15 ELECTRICAL / GAS CLEARANCE

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- ~~CB-2 THRUST RESTRAINING~~
- CB-3 PIPE BEDDING
- CB-4 AIR RELEASE VALVE (2" ONLY)
- CB-5 DUCTILE IRON TRANSITION COUPLING
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- CB-9 TRENCH CROSS SECTION
- CB-10 JACK AND BORE
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- SS-3 DROP MANHOLE CONNECTIONS
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NOTE: REQUIRES SPECIAL APPROVAL BY BSU
- SS-6 FLOW LINE CHANNELS
- SS-7 MANHOLE RING & COVER DETAIL
- SS-8 MANHOLE CONCRETE COLLAR
- SS-9 CLEANOUT ASSEMBLY
- SS-10 SEWER CONNECTION
FOR DEPTHS OVER 8 FEET
- SS-11 GRAVITY GREASE INTERCEPTOR
- SS-25 CONNECTION OPTIONS WITH SHALLOW MANHOLES FOR
MULTIPLE MULTI-FAMILY OR
MULTI-UNIT/MULTI-STORY COMMERCIAL BUILDINGS
- SS-26 CHECK VALVE VAULT

PUMP STATION DETAILS:

- PS-1 54" x 48" ALUMINUM ACCESS HATCH
- PS-2 PUMP STATION DETAIL
- PS-3 CONTROL PANEL (REAR)
- PS-4 CONTROL PANEL (FRONT)
- PS-5 PUMP STATION SITE LAYOUT
AND LANDSCAPE PLAN
- PS-6 6' WETWELL
- PS-7 HEADER PIPES - DETAIL 1 (4" TYPICAL)
- PS-8 HEADER PIPES - DETAIL 2 (4" TYPICAL)
- PS-9 ELECTRIC METER POST
- PS-10 PUMP STATION WETWELL DATA
- PS-11 GENERAL NOTES
- PS-12 EQUIPMENT SPECIFICATIONS
- PS-13 PIPE SUPPORT
- PS-14 PUMP STATION SIGNAGE
- ~~PS-15 LIFT STATION DROP PIPE~~
- PS-16 4" DIAMETER PUMP DISCHARGE BASE PLATE

BACKFLOW DETAILS:

- BF-1 STANDARD METER/BACKFLOW ASSEMBLY DETAIL
- BF-2 3" OR LARGER COMPOUND METER
AND BACKFLOW PREVENTER
(ONLY WITH BSU PRIOR APPROVAL)
- BF-3 BACKFLOW PREVENTION DEVICE 3/4", 1", 2"
(NEW INSTALLATIONS BY BSU, EXCEPT
FOR BACKFLOWS ON FIRE LINES)
- ~~BF-4 PRESSURE VACUUM BREAKER~~
- BF-5 CONTRACTOR'S TEMPORARY HOSE BIBB
BACKFLOW PREVENTION DEVICE 3/4", 1", 2"
(INSTALLED BY BUILDER)

**BONITA SPRINGS
UTILITIES, INC.**

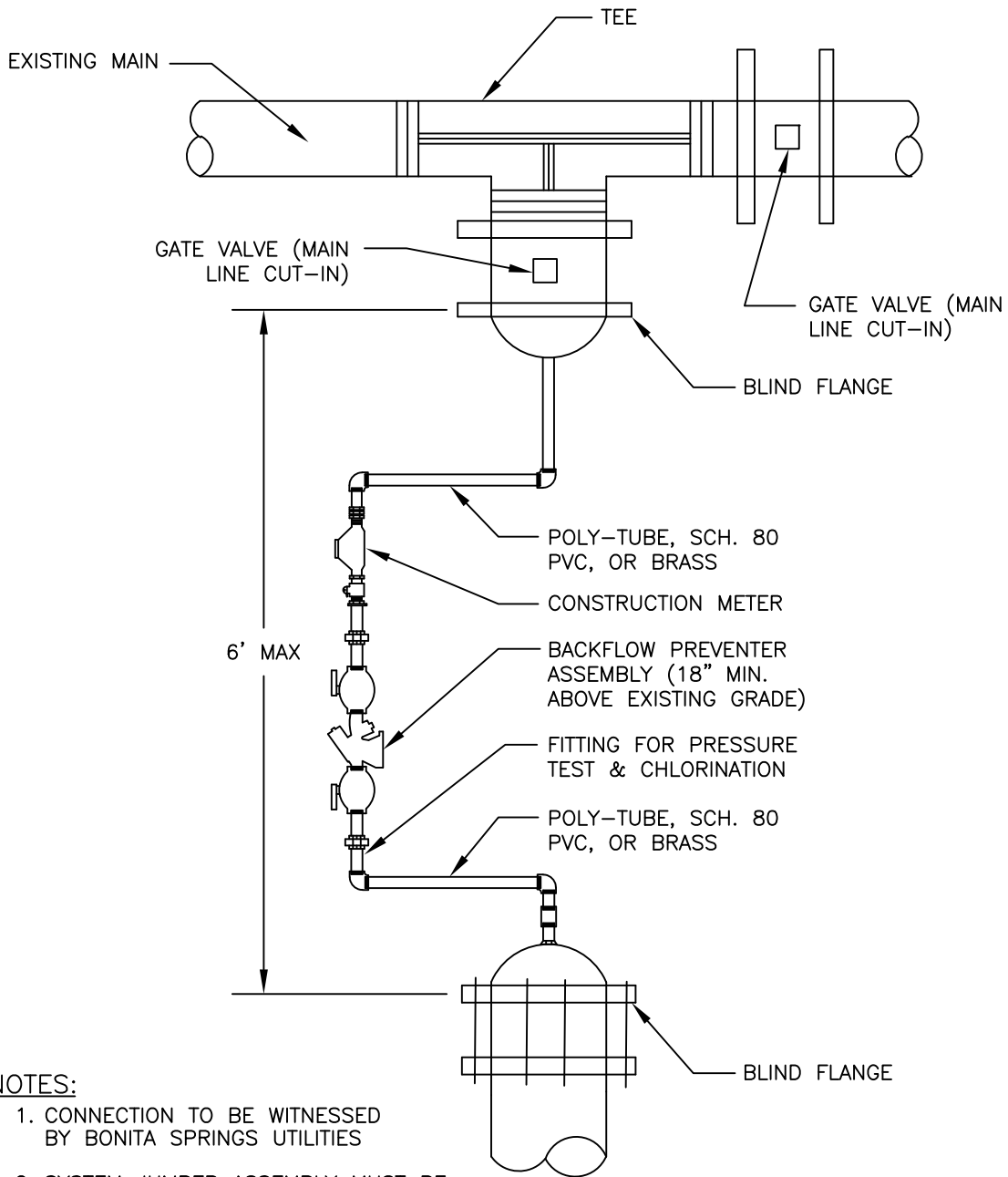
11900 E. TERRY STREET
BONITA SPRINGS, FLORIDA 34135

SCALE: NOT TO SCALE

DATE: APRIL 2019

DWG #: DSI.DWG

WATER DETAILS



NOTES:

1. CONNECTION TO BE WITNESSED BY BONITA SPRINGS UTILITIES
2. SYSTEM JUMPER ASSEMBLY MUST BE INSTALLED WITHIN 48 HOURS AFTER FULL BORE FLUSH

CONSTRUCTION JUMPER ASSEMBLY

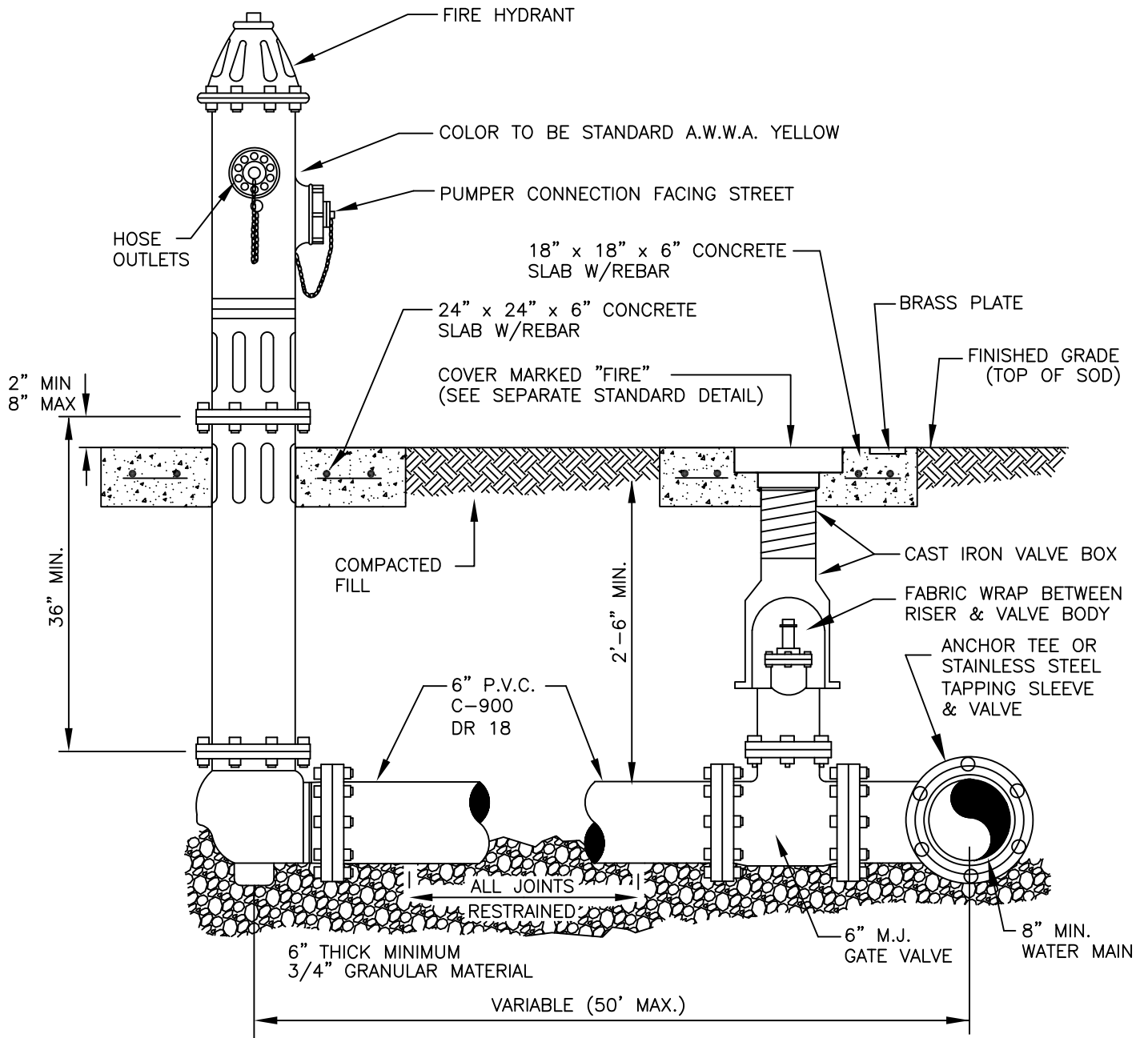
W-1

BONITA SPRINGS UTILITIES, INC.
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DWG #: W-1.DWG



FIRE HYDRANT ASSEMBLY
W-2

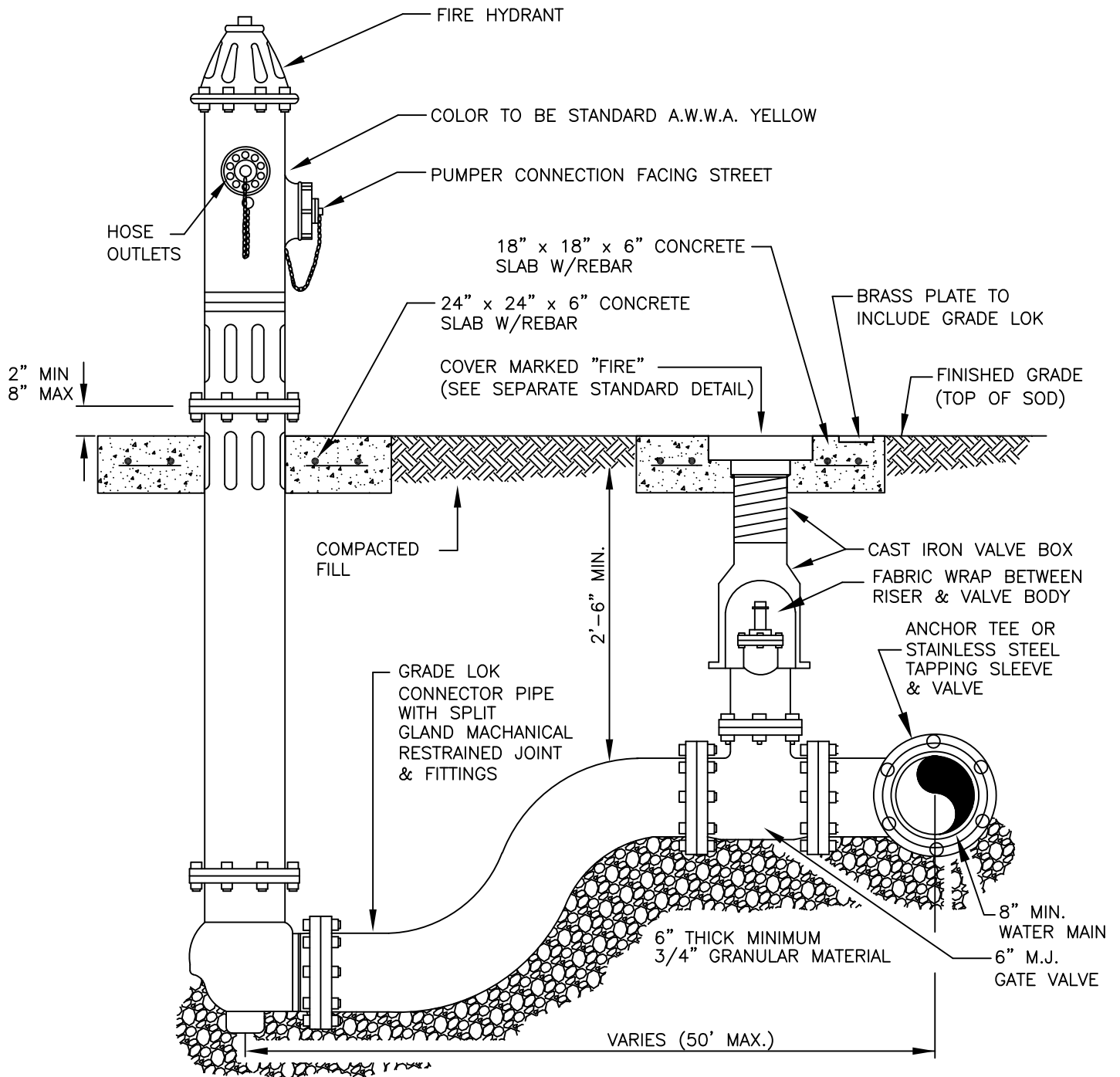
BONITA SPRINGS UTILITIES, INC.

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DATE: APRIL 2019

DWG #: W-2.DWG



**FIRE HYDRANT ASSEMBLY
WITH GRADE-LOK ADAPTOR**

W-3

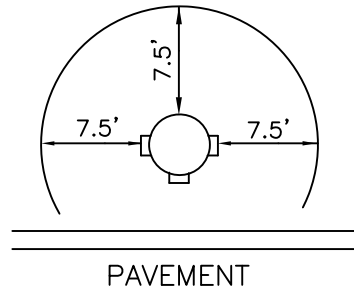
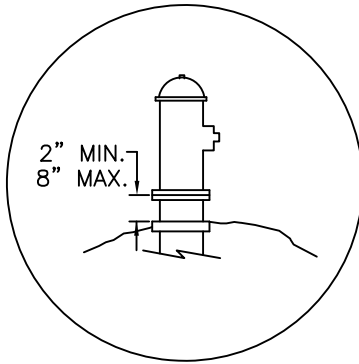
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UTILITIES, INC.**

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DWG #: W-3.DWG

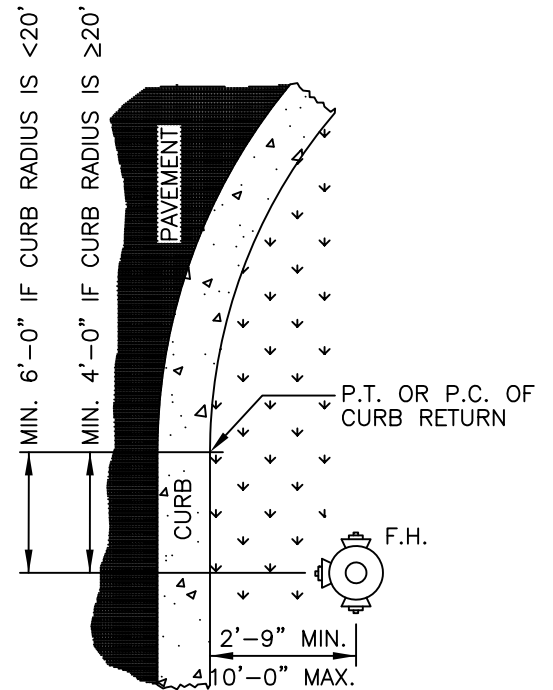
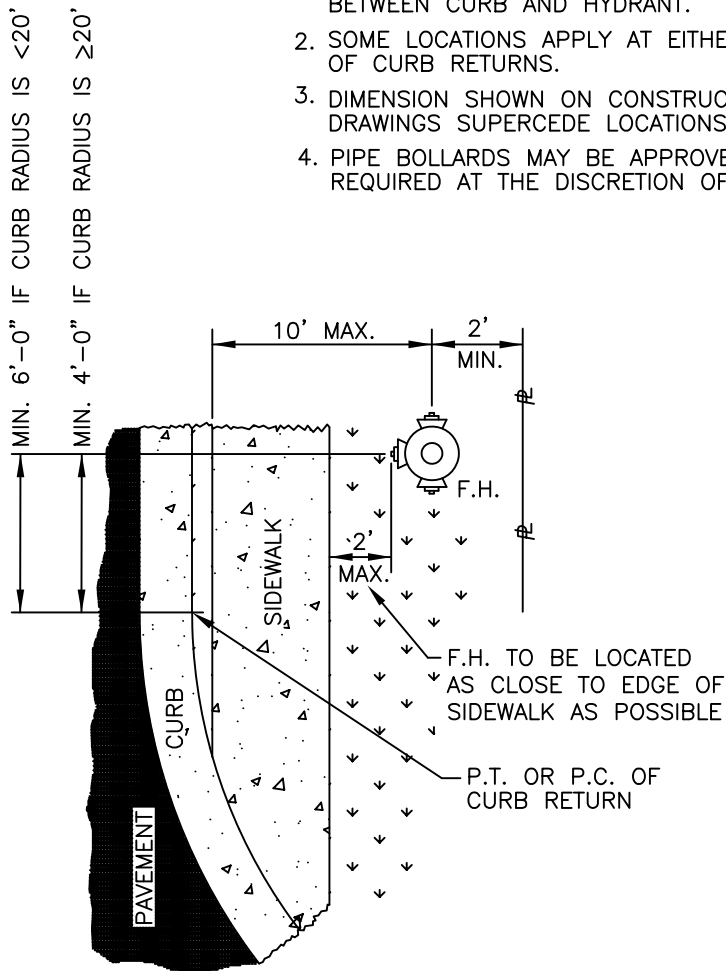


REQUIRED
HYDRANT
CLEARANCE

PAVEMENT

NOTES

1. OBSTRUCTIONS SUCH AS UTILITY POLES, STREET SIGNS, IRRIGATION BOXES, FENCES, LANDSCAPING, ETC. MUST NOT BE PLACED BETWEEN CURB AND HYDRANT.
2. SOME LOCATIONS APPLY AT EITHER END OF CURB RETURNS.
3. DIMENSION SHOWN ON CONSTRUCTION DRAWINGS SUPERCEDE LOCATIONS SHOWN HERE.
4. PIPE BOLLARDS MAY BE APPROVED OR REQUIRED AT THE DISCRETION OF BSU.



PARKWAY AREA OR
NO SIDEWALK

**FIRE HYDRANT
LOCATIONS/CLEARANCE**

W-4

**BONITA SPRINGS
UTILITIES, INC.**

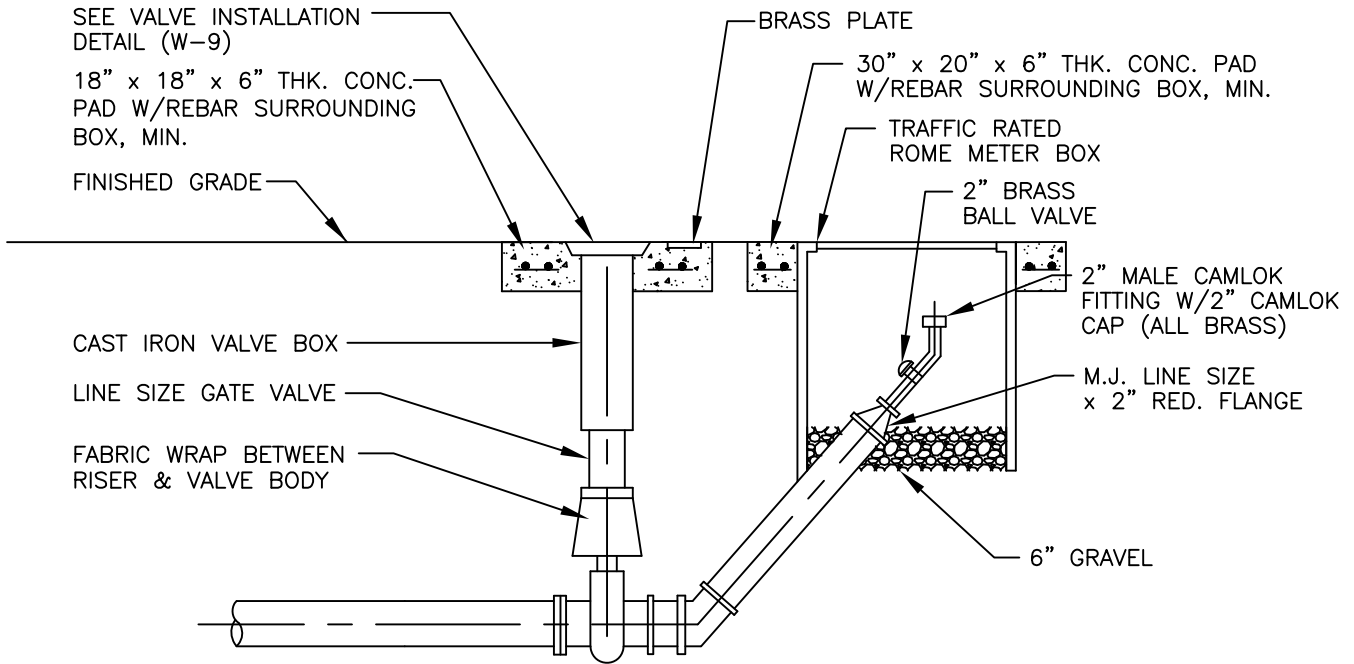
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BONITA SPRINGS, FLORIDA 34135

SCALE: NOT TO SCALE

DATE: APRIL 2019

DWG #: W-4.DWG

NOTE: CONFIGURATION SHOWN TO BE IN PLACE FOR PRESSURE TESTING & BACTERIAL CLEARANCES



NOTES:

1. VALVE BOX RISER SHALL NOT BEAR ON VALVE OR PIPE
2. SEE VALVE INSTALLATION DETAIL FOR VALVE SUPPORT

PERMANENT BLOW-OFF ASSEMBLY DETAIL

W-5

BONITA SPRINGS UTILITIES, INC.

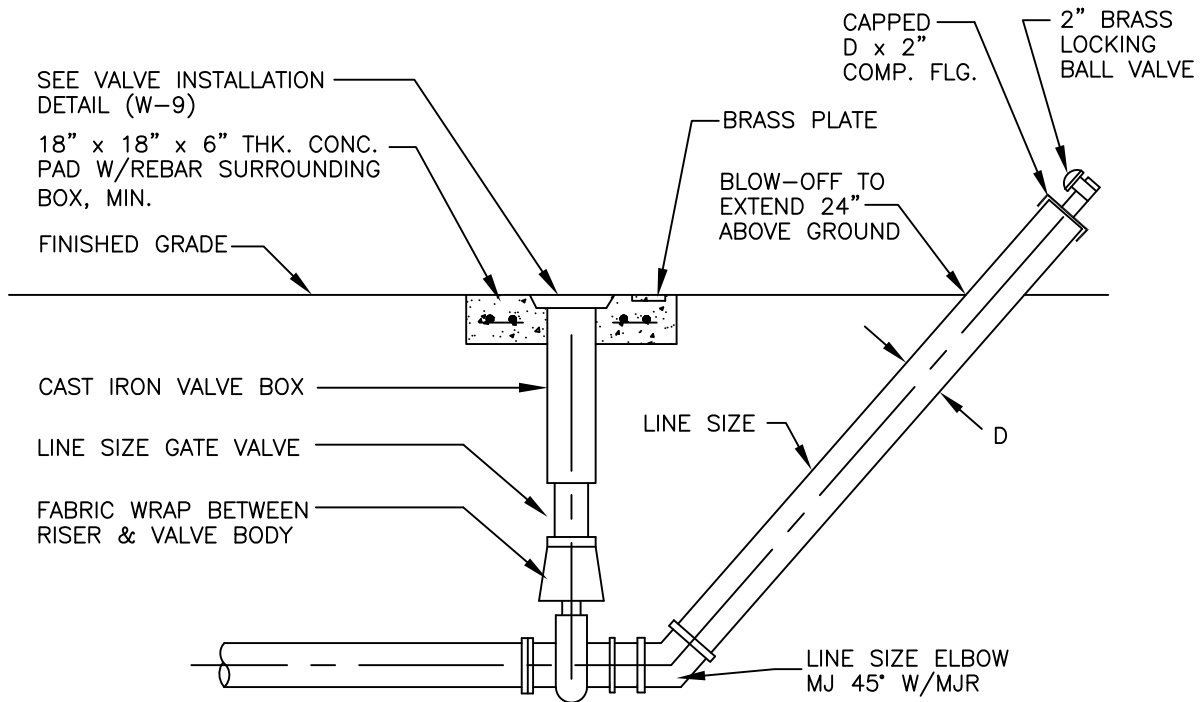
11900 E. TERRY STREET
BONITA SPRINGS, FLORIDA 34135

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DATE: APRIL 2019

DWG #: W-5.DWG

NOTE: TEMPORARY BLOW-OFF TO REMAIN IN PLACE UNTIL DISTRIBUTION SYSTEM HAS BEEN FLUSHED. AFTER CLEARANCE IS OBTAINED REFER TO PERMANENT BLOW-OFF DETAIL FOR FINAL BLOW-OFF CONFIGURATION



NOTES:

1. VALVE BOX RISER SHALL NOT BEAR ON VALVE OR PIPE
2. SEE VALVE INSTALLATION DETAIL FOR VALVE SUPPORT

TEMPORARY BLOW-OFF
ASSEMBLY DETAIL

W-6

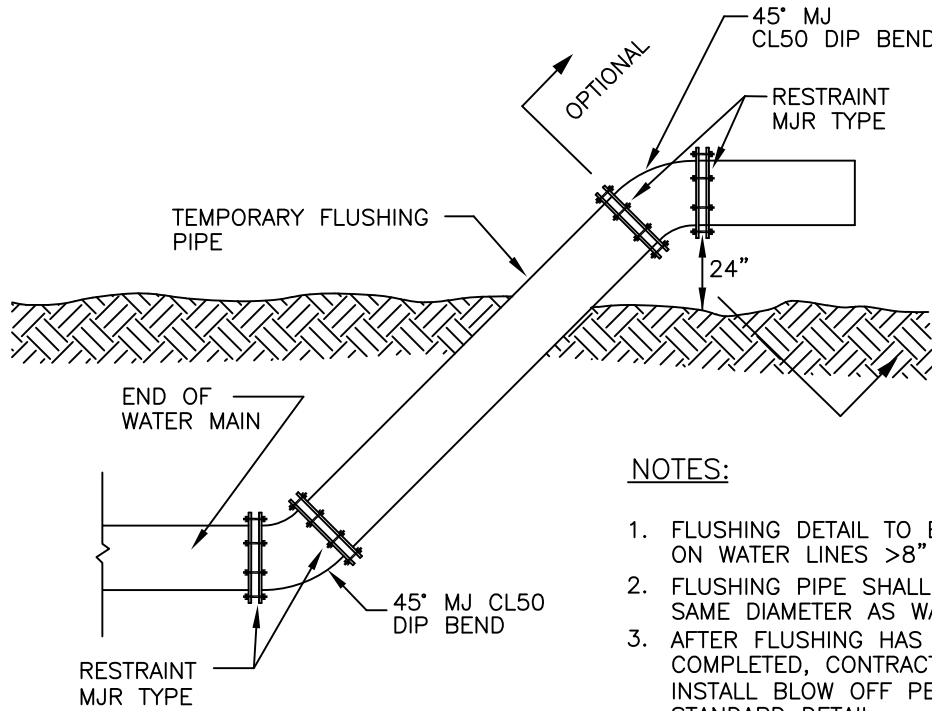
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DWG #: W-6.DWG



NOTES:

1. FLUSHING DETAIL TO BE USED ON WATER LINES >8" DIAMETER.
2. FLUSHING PIPE SHALL BE THE SAME DIAMETER AS WATER MAIN.
3. AFTER FLUSHING HAS BEEN COMPLETED, CONTRACTOR SHALL INSTALL BLOW OFF PER STANDARD DETAIL.
4. CONTRACTOR SHALL PROVIDE ADEQUATE DRAINAGE FOR FLUSHED WATER.

**WATER MAIN
FLUSHING DETAIL**

W-8

**BONITA SPRINGS
UTILITIES, INC.**

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DATE: APRIL 2019

DWG #: W-8.DWG

18" x 18" x 6" THK. CONC.
PAD W/REBAR SURROUNDING
BOX, MIN. 3,000 P.S.I.

SET TOP OF BOX FLUSH
WITH FINISHED GRADE

CAST IRON DROP COVER
MARKED "WATER" "SEWER"
"FIRE" OR "REUSE"

BRASS
PLATE

FINISHED GRADE

BALL MARKER 12" ABOVE MAIN

CAST IRON VALVE BOX

EXTENSION STEM W/2"
OPERATING NUT AS REQUIRED
DUAL DISK ON EXTENSION STEM

FABRIC WRAP BETWEEN
RISER & VALVE BODY

RISER NOT TO BEAR
ON VALVE OR PIPE

MAIN (SEE PLAN FOR SIZE)

(2) #4 BARS EA. SIDE

30"
MAX

30"
MIN

COMPACTED SUITABLE
EARTH BACKFILL

ONE CUBIC FOOT HAND
COMPACTED GRAVEL
FOR DRAIN

*MJ REPAIR SLEEVE
WITH RESTRAINTS

*EXISTING MAIN

*EXISTING
MAIN

*MJ REPAIR
SLEEVE WITH RESTRAINTS

6" THICK MINIMUM
3/4" GRANULAR MATERIAL

MJ VALVE WITH RESTRAINTS
IN ALL NEW CONSTRUCTION

***NOTE** - WHEN INSTALLING A VALVE
IN AN EXISTING MAIN, USE TWO MJ
REPAIR SLEEVES ONE AT EACH
END OF THE CUT.

VALVE INSTALLATION

W-9

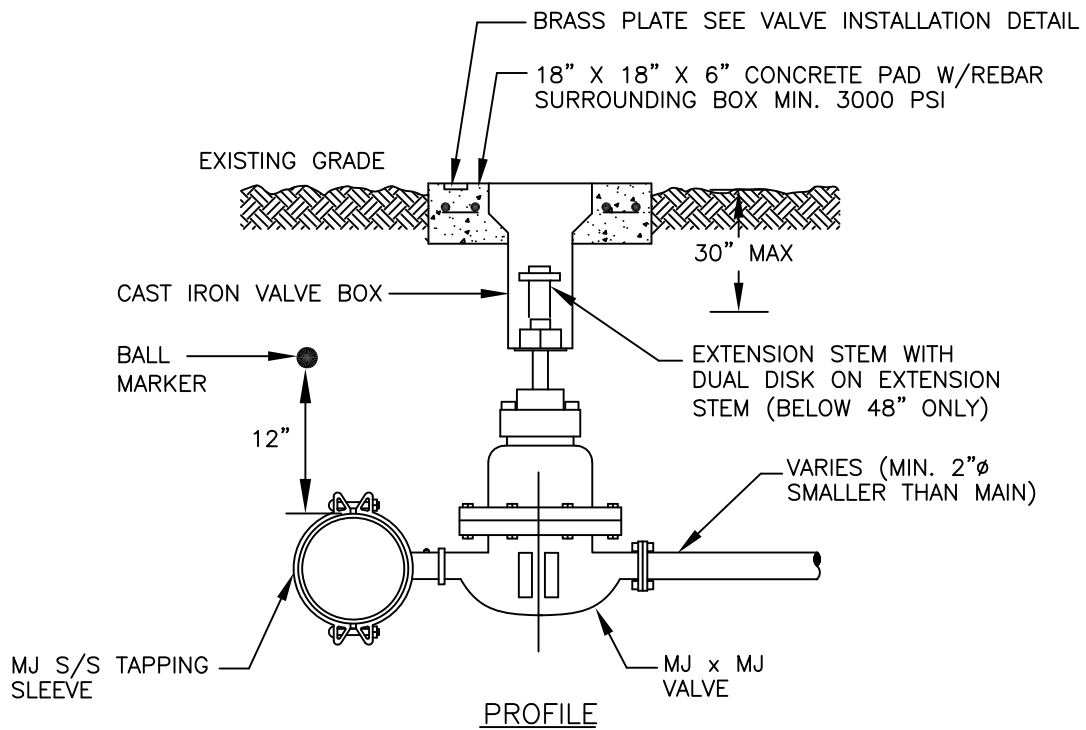
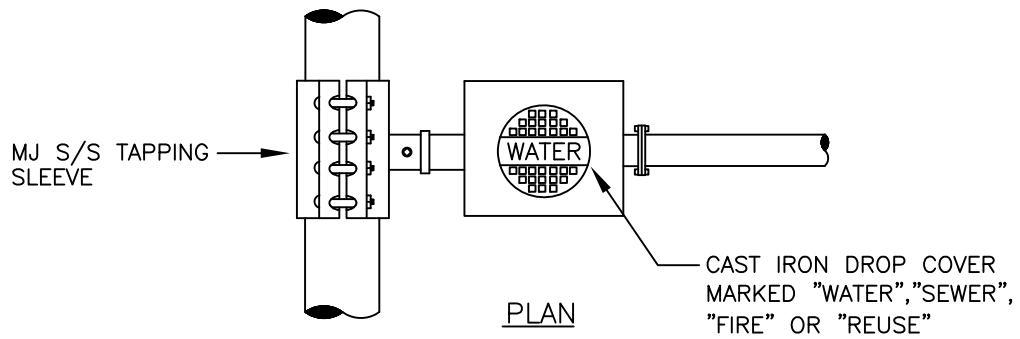
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BONITA SPRINGS, FLORIDA 34135

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DATE: APRIL 2019

DWG #: W-9.DWG



NOTES:

1. SEE VALVE INSTALLATION DETAIL FOR VALVE SUPPORT
2. REQUIRES WRITTEN BSU APPROVAL

**TAPPING SLEEVE
AND VALVE**

W-11

**BONITA SPRINGS
UTILITIES, INC.**

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BONITA SPRINGS, FLORIDA 34135

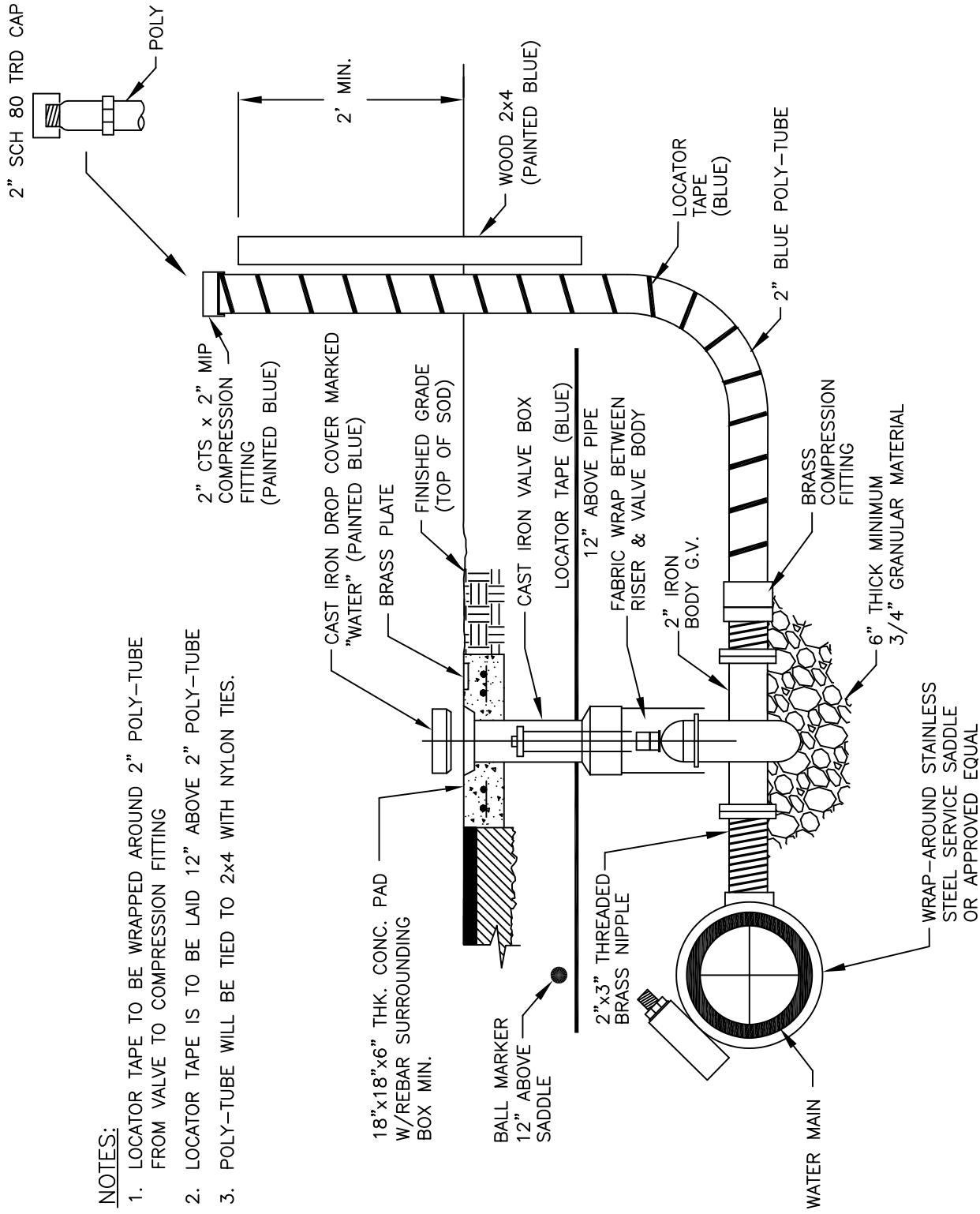
SCALE: NOT TO SCALE

DATE: APRIL 2019

DWG #: W-11.DWG

NOTES:

1. LOCATOR TAPE TO BE WRAPPED AROUND 2" POLY-TUBE FROM VALVE TO COMPRESSION FITTING
2. LOCATOR TAPE IS TO BE LAID 12" ABOVE 2" POLY-TUBE
3. POLY-TUBE WILL BE TIED TO 2x4 WITH NYLON TIES.



2" POTABLE WATER SERVICE

W-12

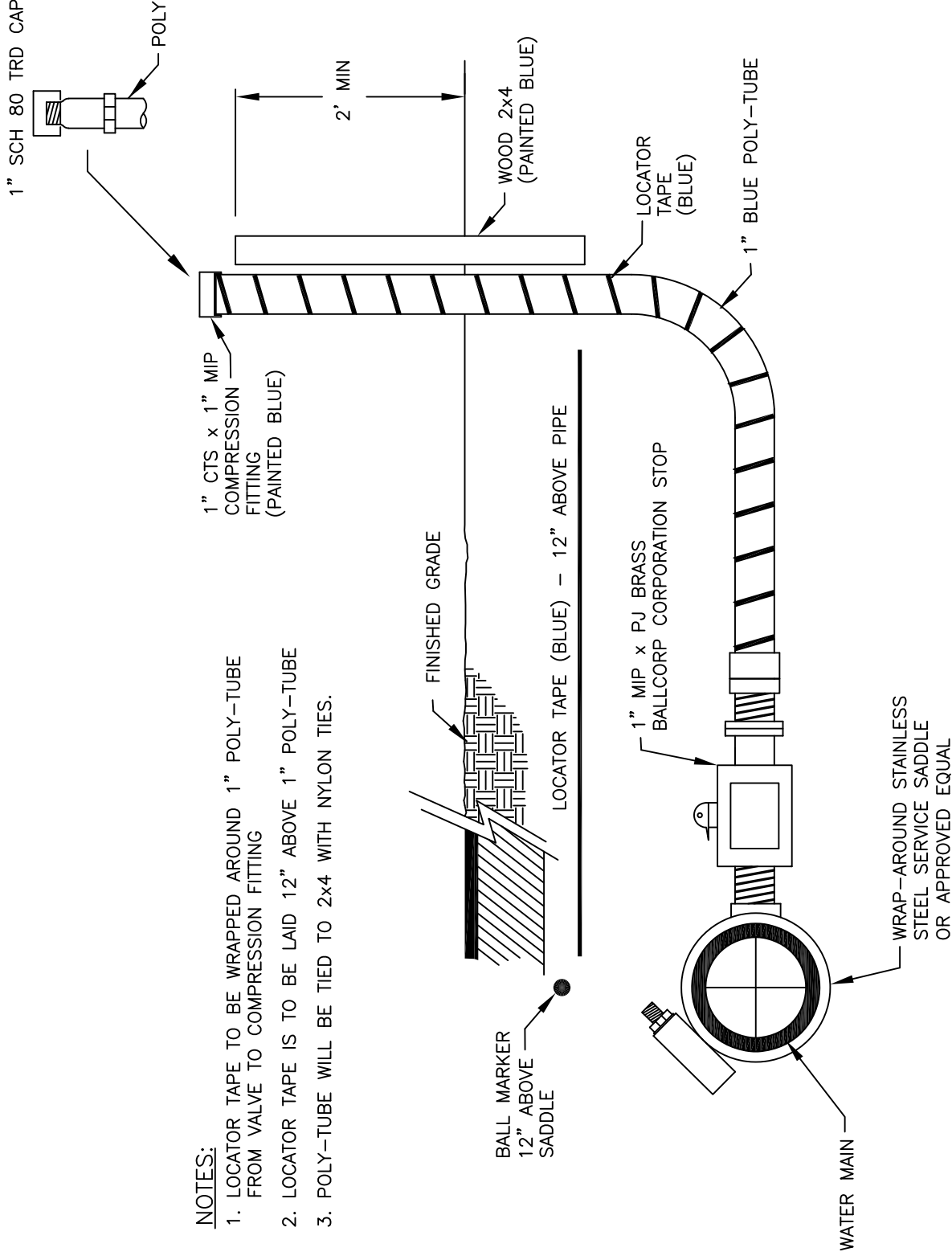
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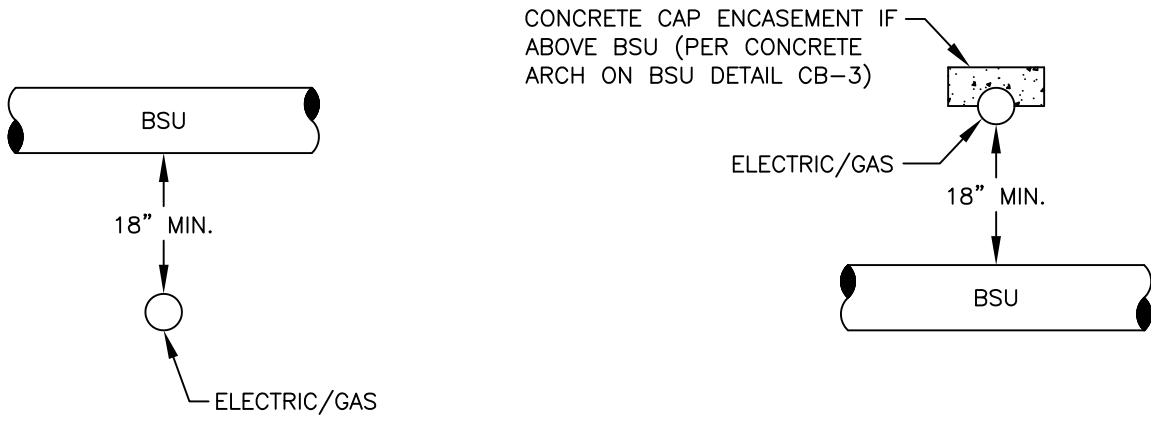
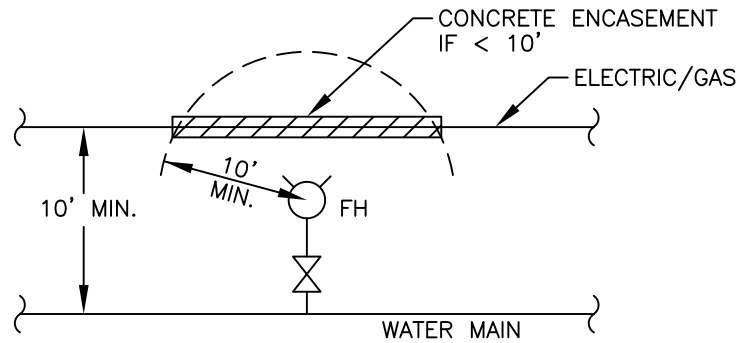
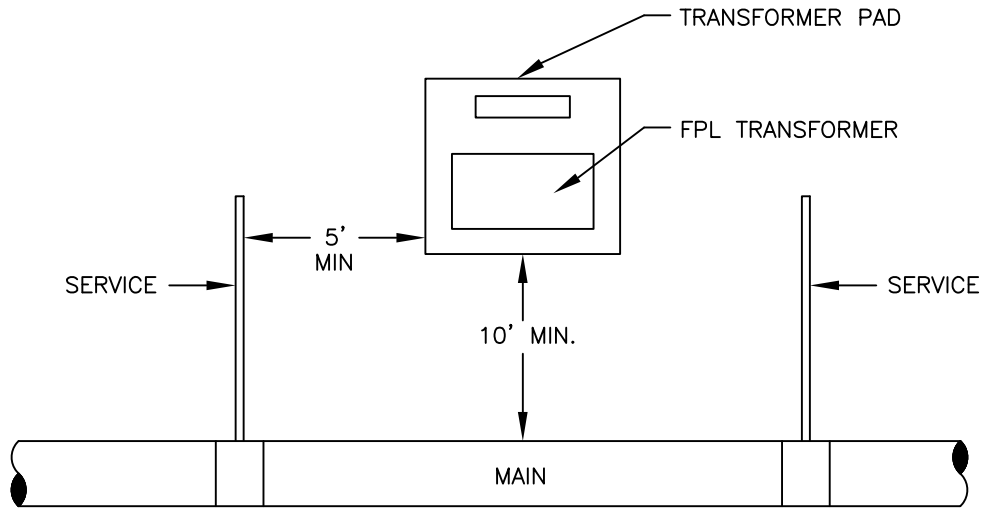
DATE: APRIL 2019

DWG #: W-12.DWG



NOTES:

1. LOCATOR TAPE TO BE WRAPPED AROUND 1" POLY-TUBE FROM VALVE TO COMPRESSION FITTING
2. LOCATOR TAPE IS TO BE LAID 12" ABOVE 1" POLY-TUBE
3. POLY-TUBE WILL BE TIED TO 2x4 WITH NYLON TIES.



ELECTRICAL / GAS CLEARANCE
W-15

BONITA SPRINGS UTILITIES, INC. 11900 E. TERRY STREET BONITA SPRINGS, FLORIDA 34135	SCALE: NOT TO SCALE
	DATE: APRIL 2019
	DWG #: W-15.DWG

COMBINATION WATER/WASTEWATER DETAILS

RESTRAINT TABLE

PIPE SIZE	HORIZONTAL BENDS				VERTICAL OFFSETS		DEAD ENDS Lr (FT.)	TEES				REDUCERS (SEE NOTES)		
	90° BENDS Lr (FT.)	45° BENDS Lr (FT.)	22.5° BENDS Lr (FT.)	11.25° BENDS Lr (FT.)	45° BENDS (SEE NOTE 2)			RUN SIZE	BRANCH SIZE	Lrn (FT.)	Lbr (FT.)	SIZE	L(A) (FT.)	L(B) (FT.)
					Lhs (FT.)	Lls (FT.)								
4"	27	11	5	3	31	8	60	4"	4"	10	11	6 x 4	64	43
6"	37	15	7	4	43	11	84	6"	6" 4" OR LESS	10 10	34 FITTING ONLY	8 x 6	60	46
8"	48	20	10	5	57	15	110					8"	8" 6" 4" OR LESS	10 10 10
10"	57	24	11	6	68	17	131	10"	10" 8" 6" OR LESS	10 10 10	80 45 FITTING ONLY			
12"	57	24	11	6	68	19	131					12"	12" 10" 8" 6" OR LESS	10 10 10 10
16"	58	24	12	6	55	19	106	16"	16" 12" 10" 8" OR LESS	10 10 10 10	80 45 15 FITTING ONLY			
20"	70	29	14	7	67	23	129					20"	20" 16" 12" 10" OR LESS	10 10 10 10
24"	81	33	16	8	78	27	150	24"	24" 20" 16" 12" 10" OR LESS	10 10 10 10 10	116 87 53 10 FITTING ONLY			
												16"	16" 12" 10" 8" OR LESS	10 10 10 10
								20"	20" 16" 12" 10" OR LESS	10 10 10 10	95 63 24 FITTING ONLY			
												24"	24" 20" 16" 12" 10" OR LESS	10 10 10 10 10
								24"	24" 20" 16" 12" 10" OR LESS	10 10 10 10 10	116 87 53 10 FITTING ONLY			

NOTES:

- LENGTHS SHOWN ON THIS TABLE ARE TO BE INTERPRETED FOLLOWS :
 Lhs = RESTRAINED LENGTH FROM HIGH SIDE FITTING OF A VERT. BEND
 Lls = RESTRAINED LENGTH FROM LOW SIDE FITTING OF VERT. BEND
 Lr = RESTRAINED LENGTH ON BOTH SIDES FROM FITTING
 Lrn = MINIMUM LENGTH TO FIRST JOINT OF RUN ON BOTH SIDES
 Lbr = RESTRAINED LENGTH REQUIRED ON BRANCH FROM FITTING
 L(A) = LENGTH OF PIPE ON SMALL SIDE FREE OF FITTING
 L(B) = RESTRAINED LENGTH ON LARGE SIDE OF REDUCER
- A SAFETY FACTOR = 2.5 IS USED FOR VERTICAL OFFSETS TO COMPENSATE FOR SATURATED SOIL CONDITIONS. A SAFETY FACTOR = 2.0 IS USED FOR ALL OTHER CASES.
- L(A) AND L(B) ABOVE ARE TWO OPTIONS FOR PROVIDING THE REQUIRED THRUST RESTRAINT FOR THE FITTING. EITHER L(A) LENGTH OF PIPE FREE OF FITTINGS (BENDS, TEES, REDUCERS OR VALVES) ON THE SMALL SIDE OF THE REDUCER WILL PROVIDE THE REQUIRED RESTRAINT OR L(B) LENGTH CAN BE RESTRAINED ON THE LARGE SIDE OF THE FITTING.
- THE FOLLOWING ARE ASSUMED :
 4" - 10" PIPE HAS 30" MIN. COVER
 12" - 24" PIPE HAS 36" MIN. COVER
 4" - 24" PIPE IS PVC
- VALVES SHALL BE RESTRAINED ON EITHER SIDE OF THE FITTING AS A MINIMUM. IN LINE VALVES SHALL HAVE NO FITTINGS WITHIN THE LENGTHS SHOWN ON THIS TABLE FOR THE SAME SIZE DEAD END. IN CASES WHERE THIS LENGTH CAN NOT BE PROVIDED FREE OF FITTINGS, ADDITIONAL RESTRAINT SHALL BE REQUIRED AS APPROVED BY ENGINEER.
- ALL DEAD END LINES, PERMANENT OR TEMPORARY, SHALL BE RESTRAINED PER THE ABOVE RESTRAINT TABLE.
- ALL VALVES SHALL BE RESTRAINED AS DEAD ENDS, IN BOTH FLOW DIRECTIONS, PER THIS TABLE.

RESTRAINT TABLE

CB-1

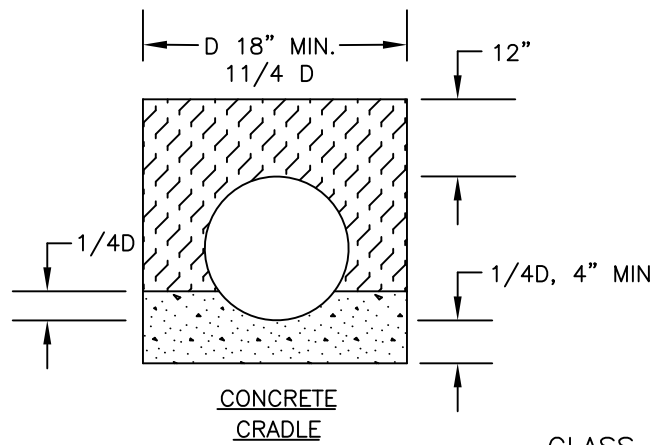
**BONITA SPRINGS
UTILITIES, INC.**

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BONITA SPRINGS, FLORIDA 34135

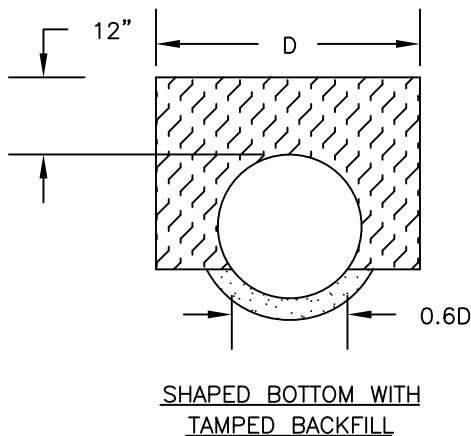
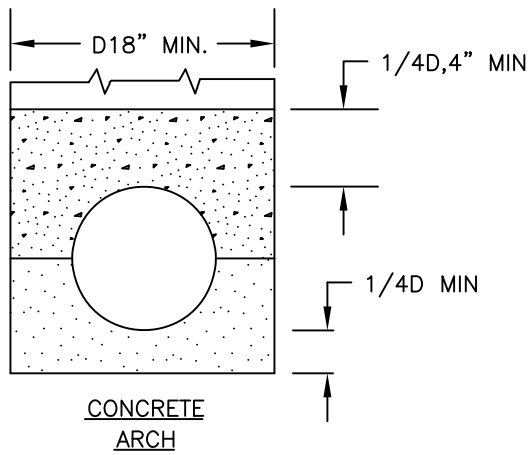
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DATE: APRIL 2019

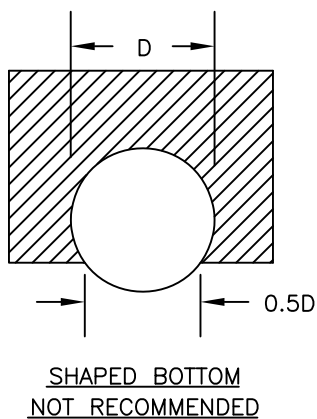
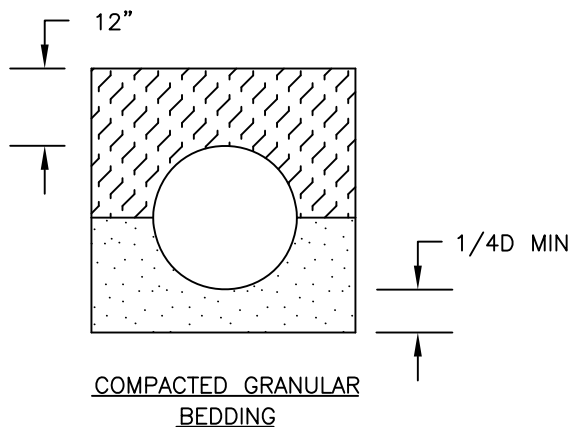
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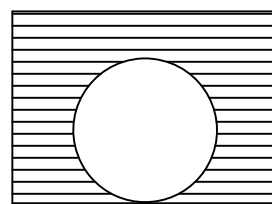
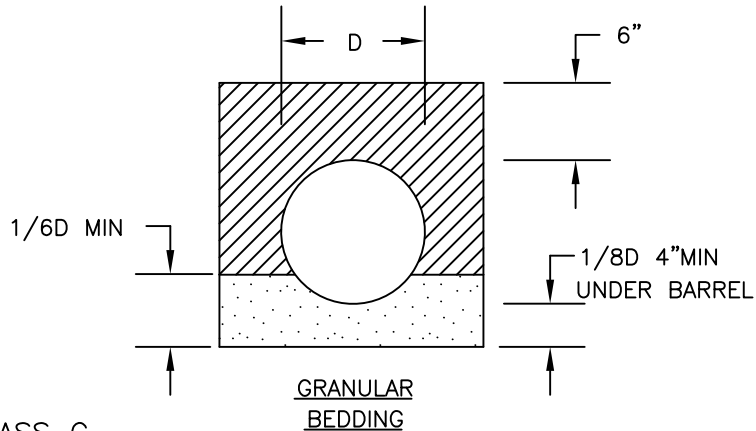
CLASS A



CLASS B









CLASS C



CLASS D

LEGEND

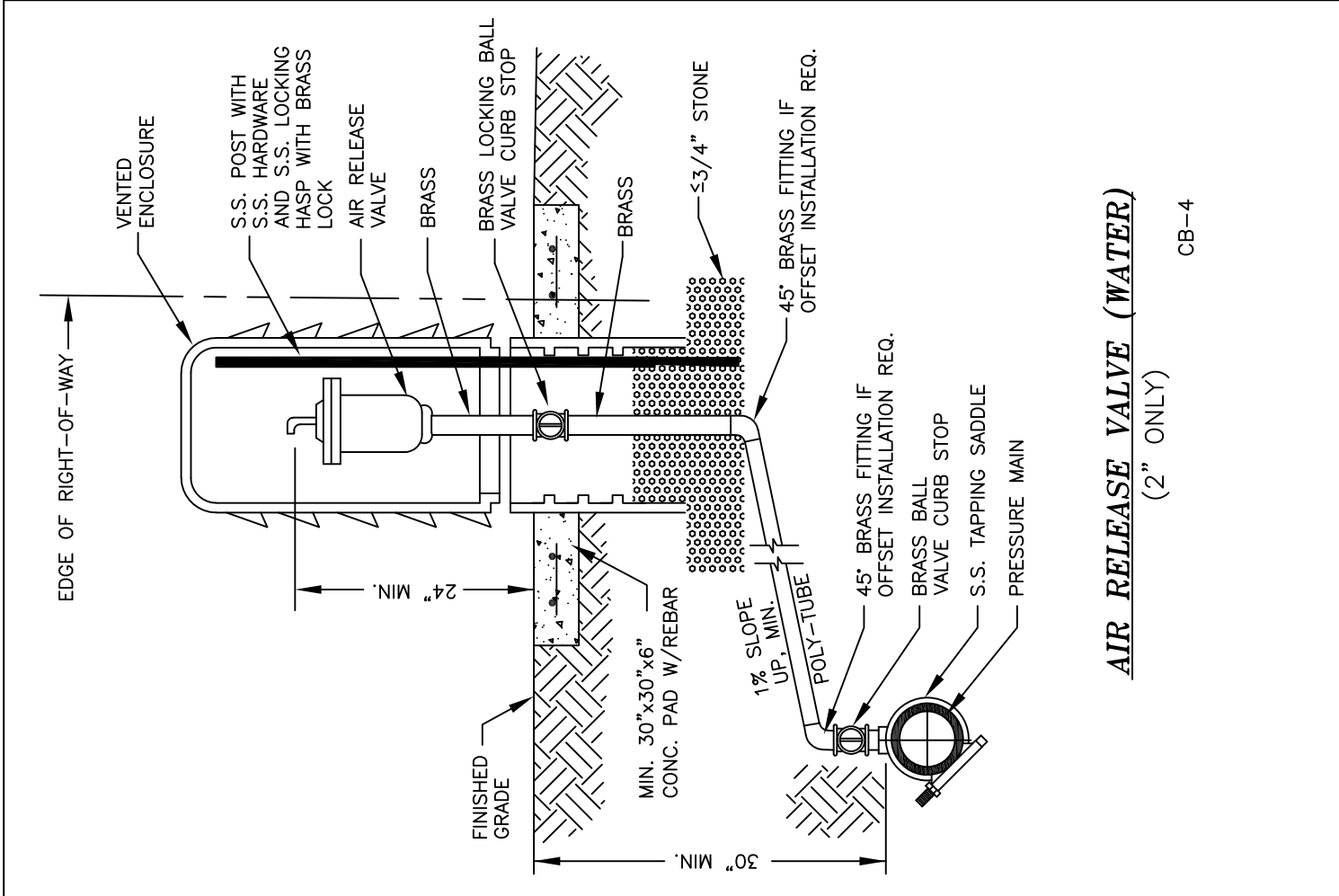
-  CAREFULLY TAMPED BACKFILL
-  PLAIN OR REINFORCED CONC.
-  FINE GRANULAR FILL
-  COMPACTED GRANULAR MATERIAL
-  LIGHTLY COMPACTED BACKFILL
-  LOOSE BACKFILL

SOURCE: ASCE MANUAL NO.37
(WPCF MANUAL OF PRACTICE NO.37)

PIPE BEDDING
CB-3

BONITA SPRINGS UTILITIES, INC.
11900 E. TERRY STREET
BONITA SPRINGS, FLORIDA 34135

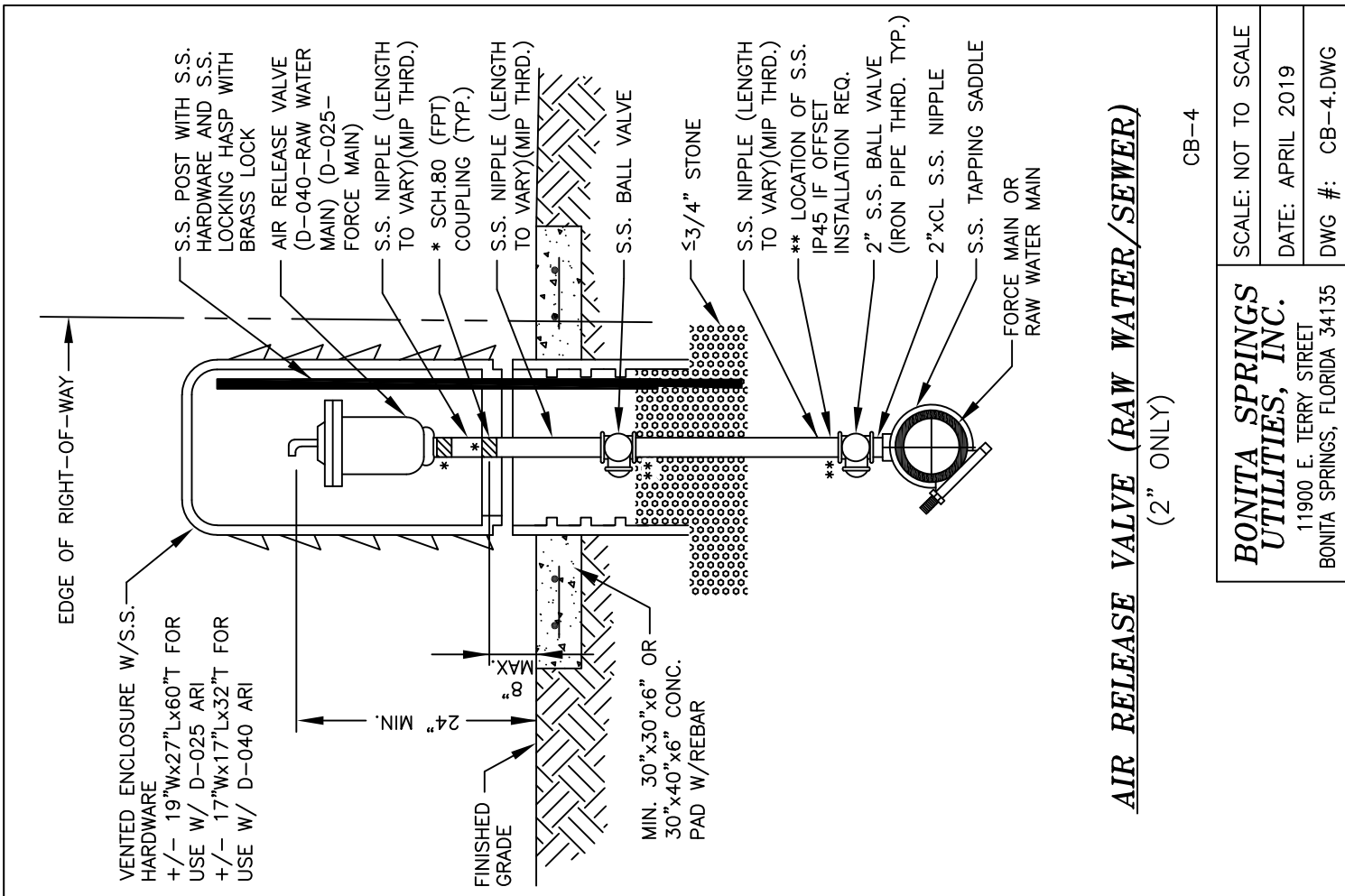
SCALE: NOT TO SCALE
DATE: APRIL 2019
DWG #: CB-3.DWG



AIR RELEASE VALVE (WATER)

(2" ONLY)

CB-4

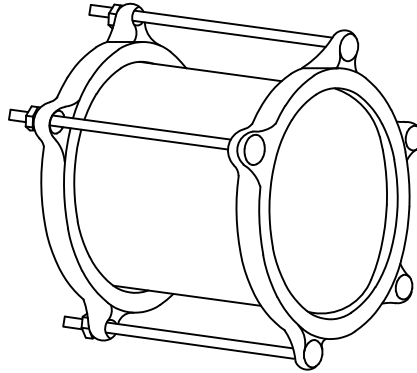


AIR RELEASE VALVE (RAW WATER/SEWER)

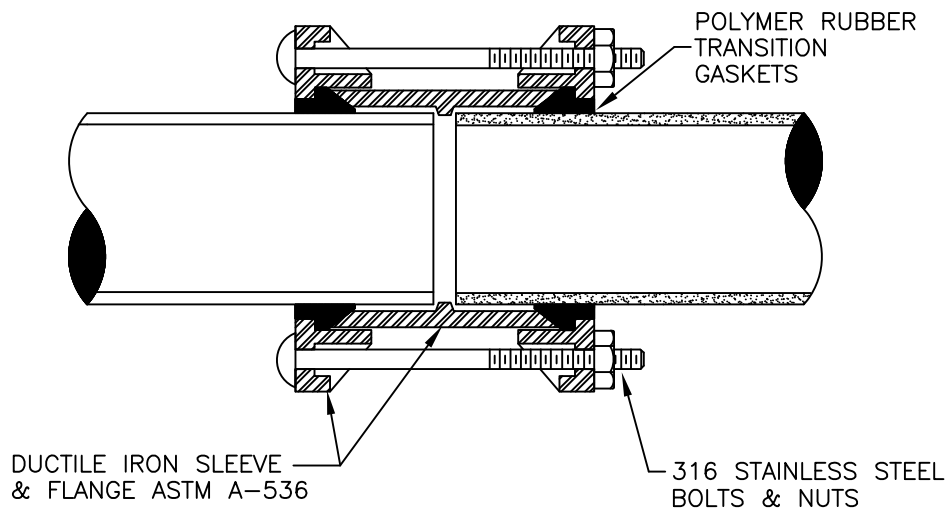
(2" ONLY)

CB-4

BONITA SPRINGS UTILITIES, INC.	SCALE: NOT TO SCALE
11900 E. TERRY STREET	DATE: APRIL 2019
BONITA SPRINGS, FLORIDA 34135	DWG #: CB-4.DWG



DUCTILE IRON TRANSITION
COUPLING OR APPROVED EQUAL



JOINS CAST IRON, DUCTILE IRON, ASBESTOS-CEMENT, C-900
BY MECHANICAL JOINT COMPRESSION PRINCIPAL

DUCTILE IRON
TRANSITION COUPLING
CB-5

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UTILITIES, INC.**

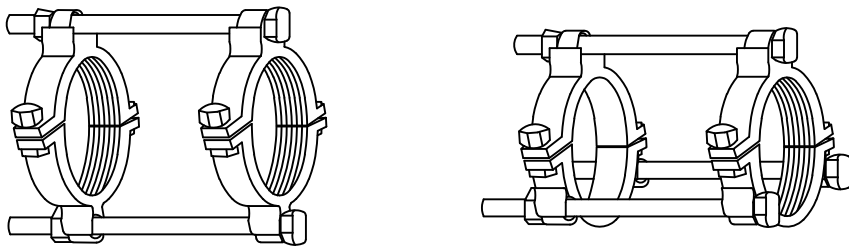
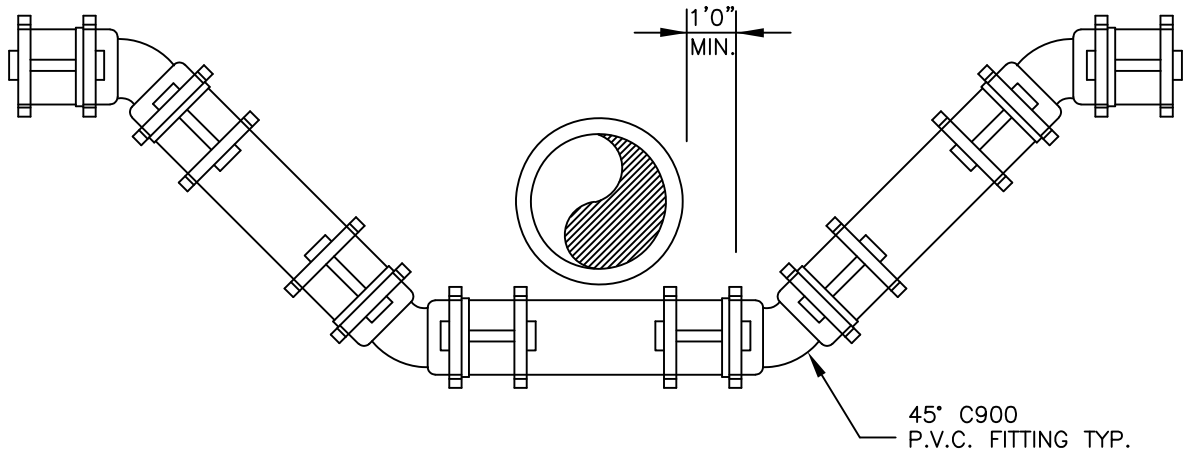
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SCALE: NOT TO SCALE

DATE: APRIL 2019

DWG #: CB-5.DWG

RESTRAINT SYSTEM FOR PUSH ON
P.V.C. FITTINGS & PIPING SIZE AND
TYPE AS SPECIFIED ON PLAN



RESTRAINT DETAIL FOR ADJUSTING
PVC PRESSURE LINE DUE TO CONFLICTS

PVC PRESSURE LINE CONFLICT
ADJUSTMENT FITTINGS

CB-6

**BONITA SPRINGS
UTILITIES, INC.**

11900 E. TERRY STREET
BONITA SPRINGS, FLORIDA 34135

SCALE: NOT TO SCALE

DATE: APRIL 2019

DWG #: CB-6.DWG

LOCATION OF PUBLIC WATER SYSTEM MAINS IN ACCORDANCE WITH F.A.C. RULE 62-555.314

Other Pipe	Horizontal Separation	Crossings (1)	Joint Spacing @ Crossings (Full Joint Centered)
Storm Sewer, Stormwater Force Main, Reclaimed Water (2)	<p style="text-align: center;">Water Main 3 ft. minimum</p>	<p style="text-align: center;">Water Main 12 inches is the minimum, except for storm sewer, then 6 inches is the minimum and 12 inches is the preferred</p>	<p style="text-align: center;">Water Main Alternate 3 ft. minimum</p>
Vacuum Sanitary Sewer	<p style="text-align: center;">Water Main 10 ft. preferred 3 ft. minimum</p>	<p style="text-align: center;">Water Main 12 inches preferred 6 inches minimum</p>	<p style="text-align: center;">Water Main Alternate 3 ft. minimum</p>
Gravity or Pressure Sanitary Sewer Sanitary Sewer Force Main, Reclaimed Water (4)	<p style="text-align: center;">Water Main 10 ft. preferred 6 ft. minimum (3)</p>	<p style="text-align: center;">Water Main 12 inches is the minimum, except for gravity sewer, then 6 inches is the minimum and 12 inches is the preferred</p>	<p style="text-align: center;">Water Main Alternate 6 ft. minimum</p>
Sanitary Sewer Force Main, Reclaimed Water (4)	10 ft. minimum	---	---

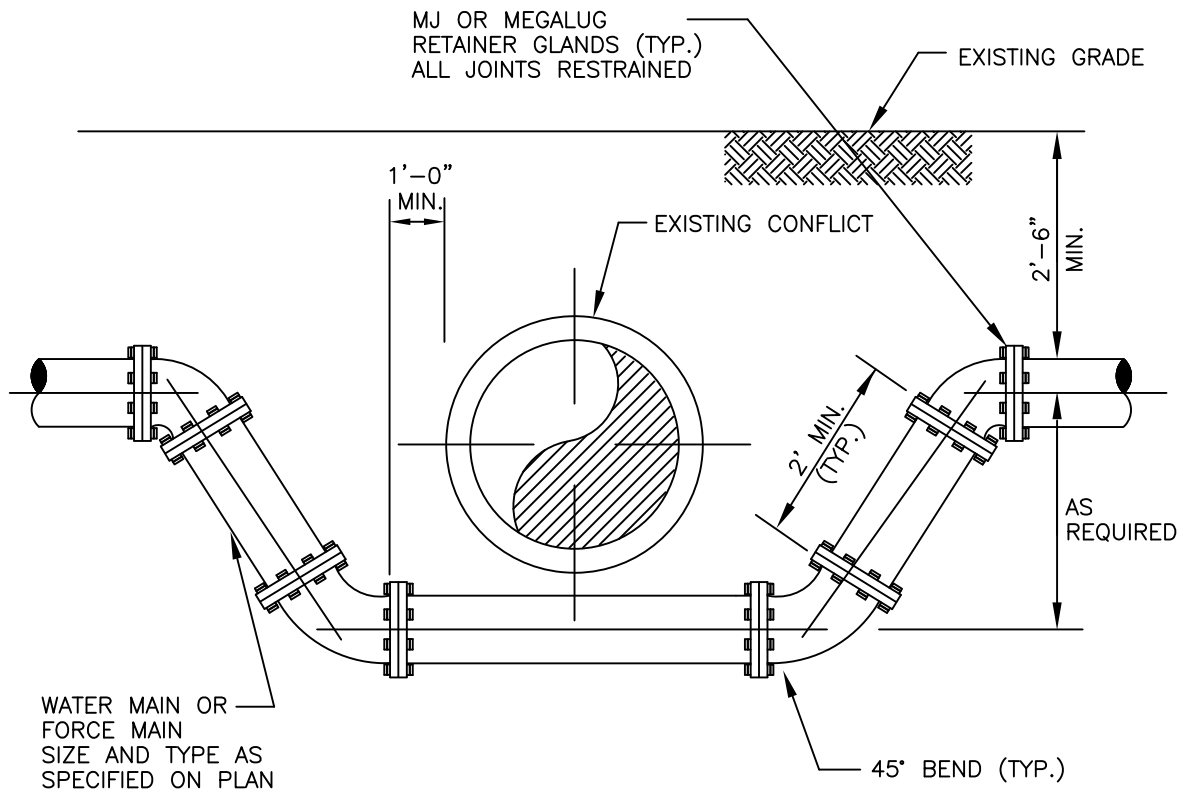
- (1) Water main should cross above other pipe. When water main must be below other pipe, the minimum separation is 12 inches.
- (2) Reclaimed water regulated under Part III of Chapter 62-610, F.A.C.
- (3) 3 ft. for gravity sanitary sewer where the bottom of the water main is laid at least 6 inches above the top of the gravity sanitary sewer.
- (4) Reclaimed water not regulated under Part III of Chapter 62-610, F.A.C.

Disclaimer - This document is provided for your convenience only. Please refer to F.A.C. Rule 62-555-314 for additional construction requirements.

CROSSING DETAIL CB-7

**BONITA SPRINGS
UTILITIES, INC.**
11900 E. TERRY STREET
BONITA SPRINGS, FLORIDA 34135

SCALE: NOT TO SCALE
DATE: APRIL 2019
DWG #: CB-7.DWG



CONFLICT ADJUSTMENT MJ

CB-8

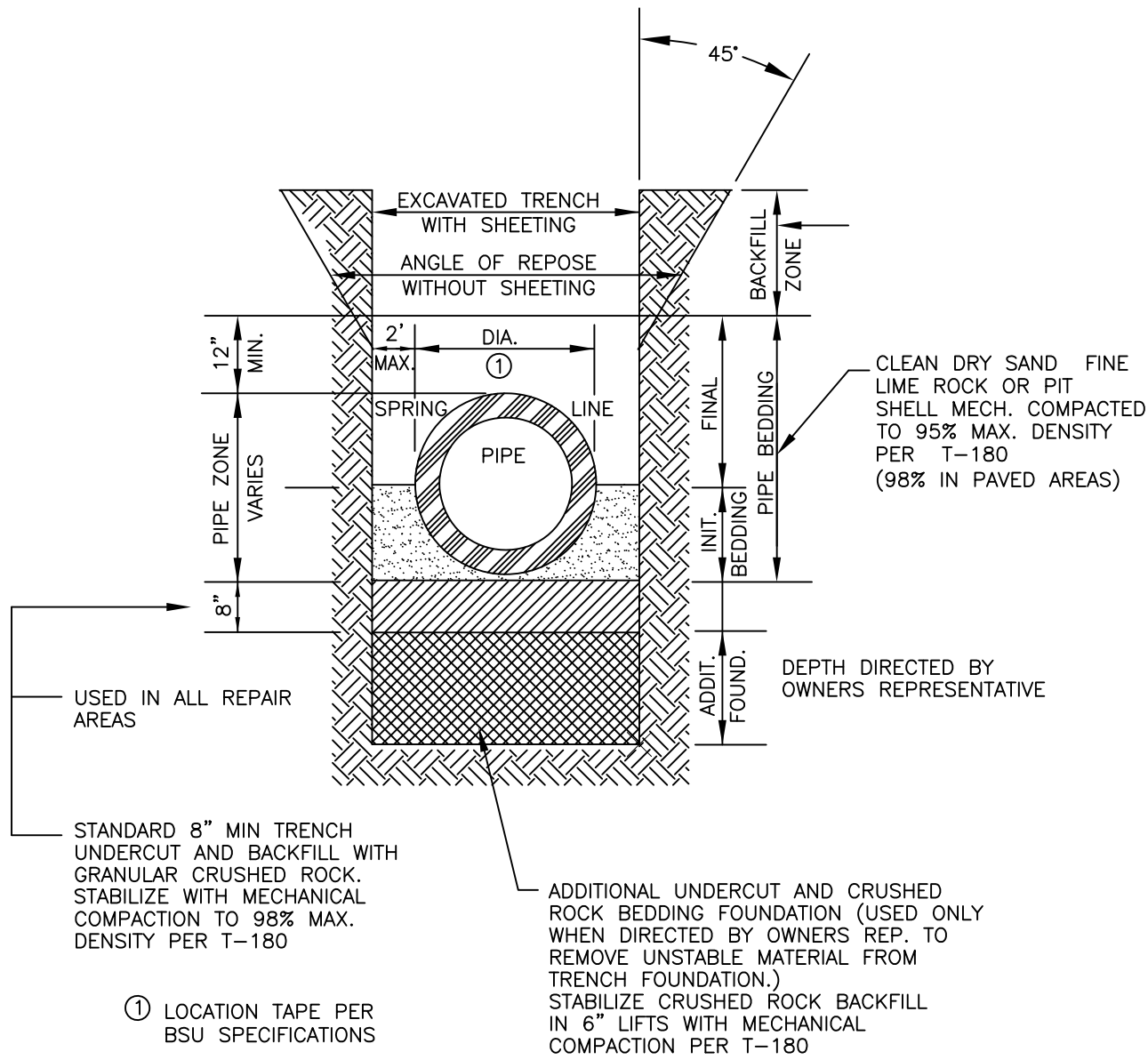
**BONITA SPRINGS
UTILITIES, INC.**

11900 E. TERRY STREET
BONITA SPRINGS, FLORIDA 34135

SCALE: NOT TO SCALE

DATE: APRIL 2019

DWG #: CB-8.DWG



TRENCH CROSS SECTION

CB-9

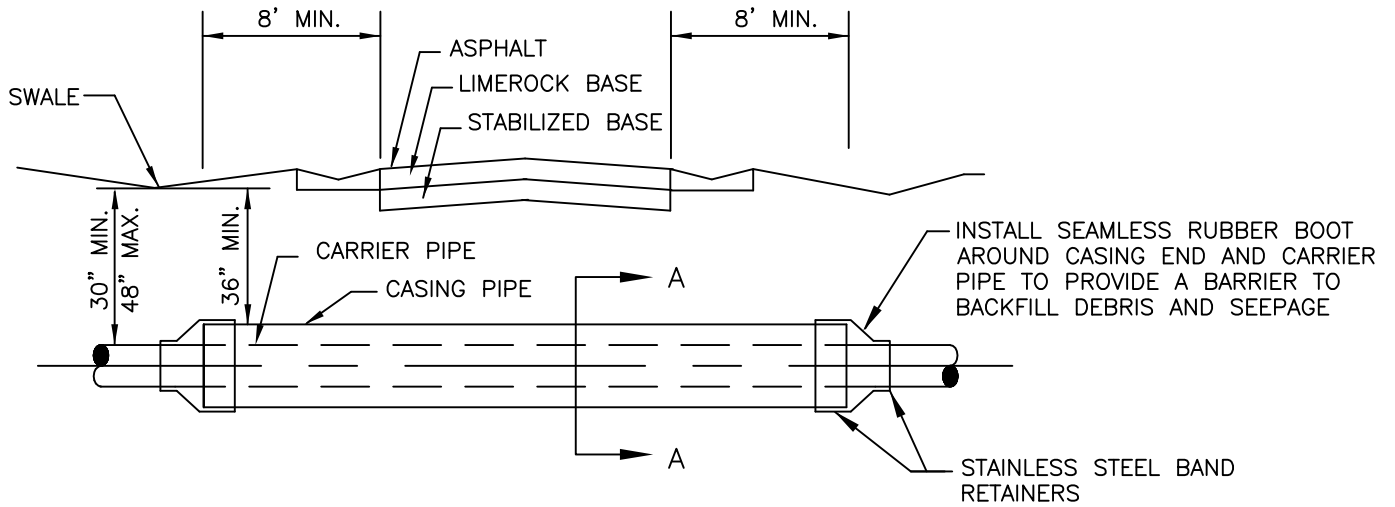
BONITA SPRINGS UTILITIES, INC.

11900 E. TERRY STREET
 BONITA SPRINGS, FLORIDA 34135

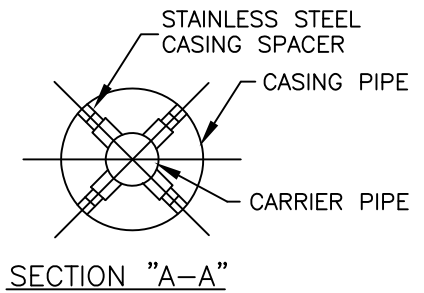
SCALE: NOT TO SCALE

DATE: APRIL 2019

DWG #: CB-9.DWG



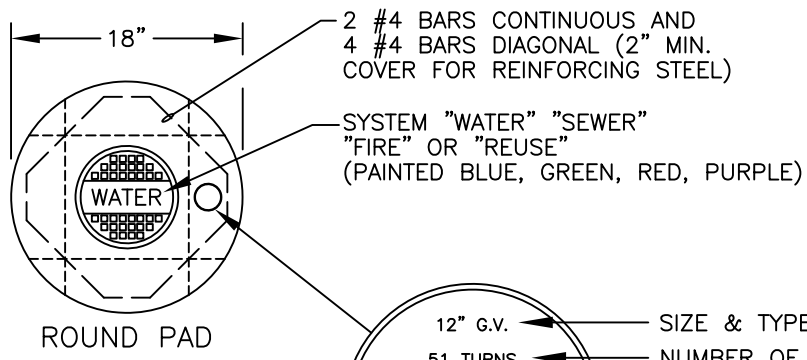
NOTE:
 UNDERGROUND CROSSING REQUIRES A MINIMUM VERTICAL CLEARANCE OF 48" BELOW PAVEMENT SURFACE FOR FREEWAYS, 36" FOR OTHER HIGHWAYS OR 30" BELOW UNPAVED GROUND INCLUDING DITCH GRADE PER F.D.O.T.



JACK AND BORE
 CB-10

BONITA SPRINGS UTILITIES, INC.
 11900 E. TERRY STREET
 BONITA SPRINGS, FLORIDA 34135

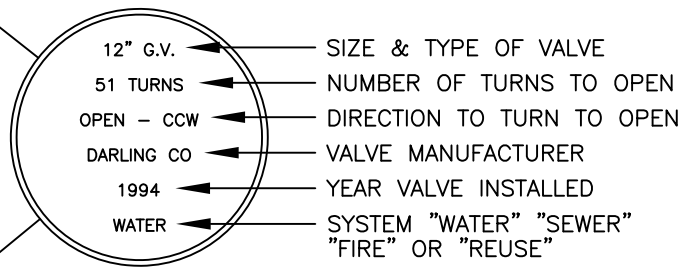
SCALE: NOT TO SCALE
 DATE: APRIL 2019
 DWG #: CB-10.DWG



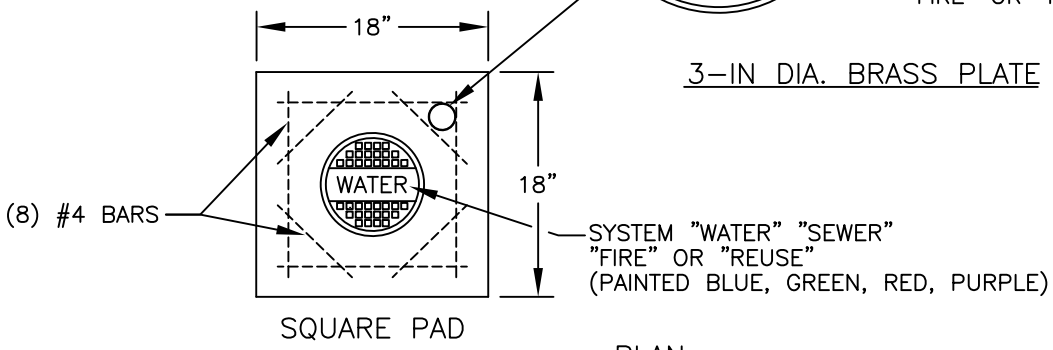
ROUND PAD

2 #4 BARS CONTINUOUS AND
4 #4 BARS DIAGONAL (2" MIN.
COVER FOR REINFORCING STEEL)

SYSTEM "WATER" "SEWER"
"FIRE" OR "REUSE"
(PAINTED BLUE, GREEN, RED, PURPLE)



3-IN DIA. BRASS PLATE

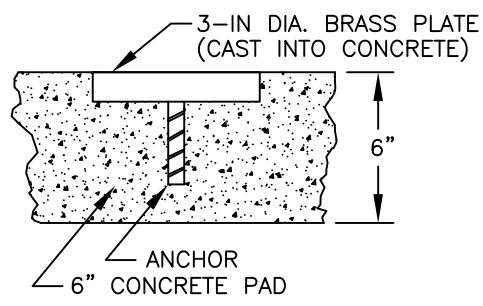


SQUARE PAD

(8) #4 BARS

SYSTEM "WATER" "SEWER"
"FIRE" OR "REUSE"
(PAINTED BLUE, GREEN, RED, PURPLE)

PLAN

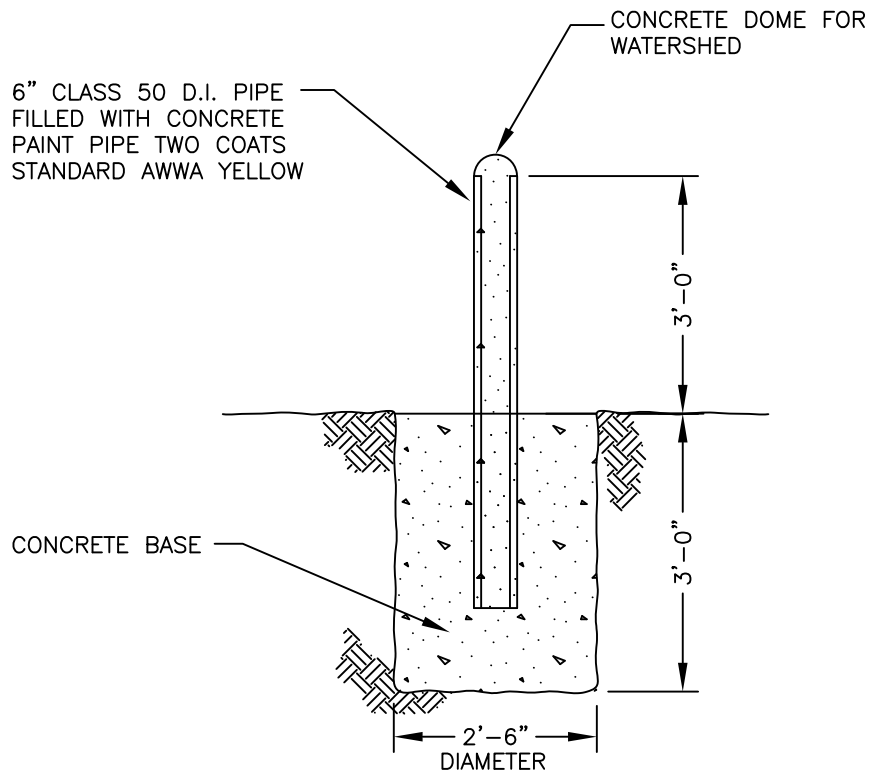


SECTION

VALVE PAD

CB-11

BONITA SPRINGS UTILITIES, INC. 11900 E. TERRY STREET BONITA SPRINGS, FLORIDA 34135	SCALE: NOT TO SCALE
	DATE: APRIL 2019
	DWG #: CB-11.DWG



GUARD POST DETAIL

CB-12

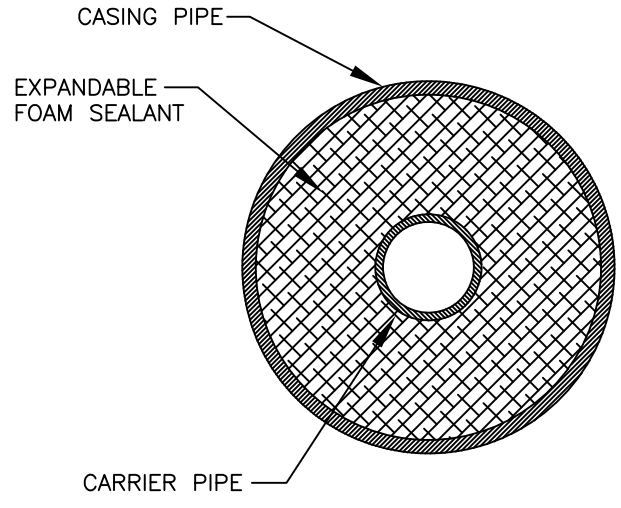
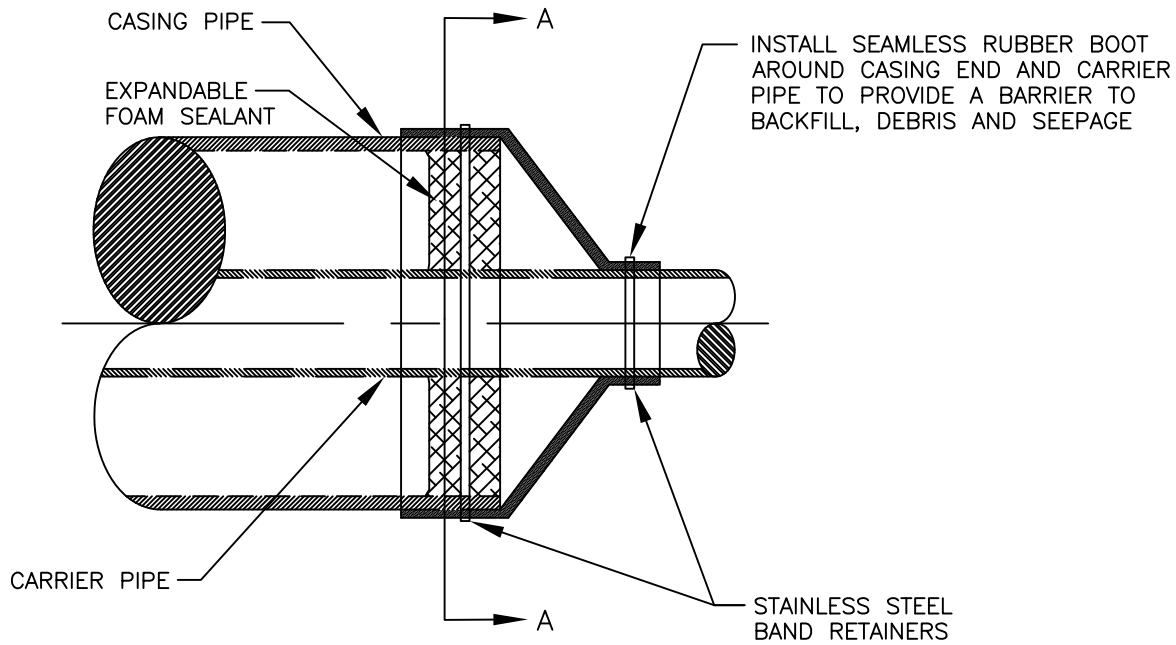
**BONITA SPRINGS
 UTILITIES, INC.**

11900 E. TERRY STREET
 BONITA SPRINGS, FLORIDA 34135

SCALE: NOT TO SCALE

DATE: APRIL 2019

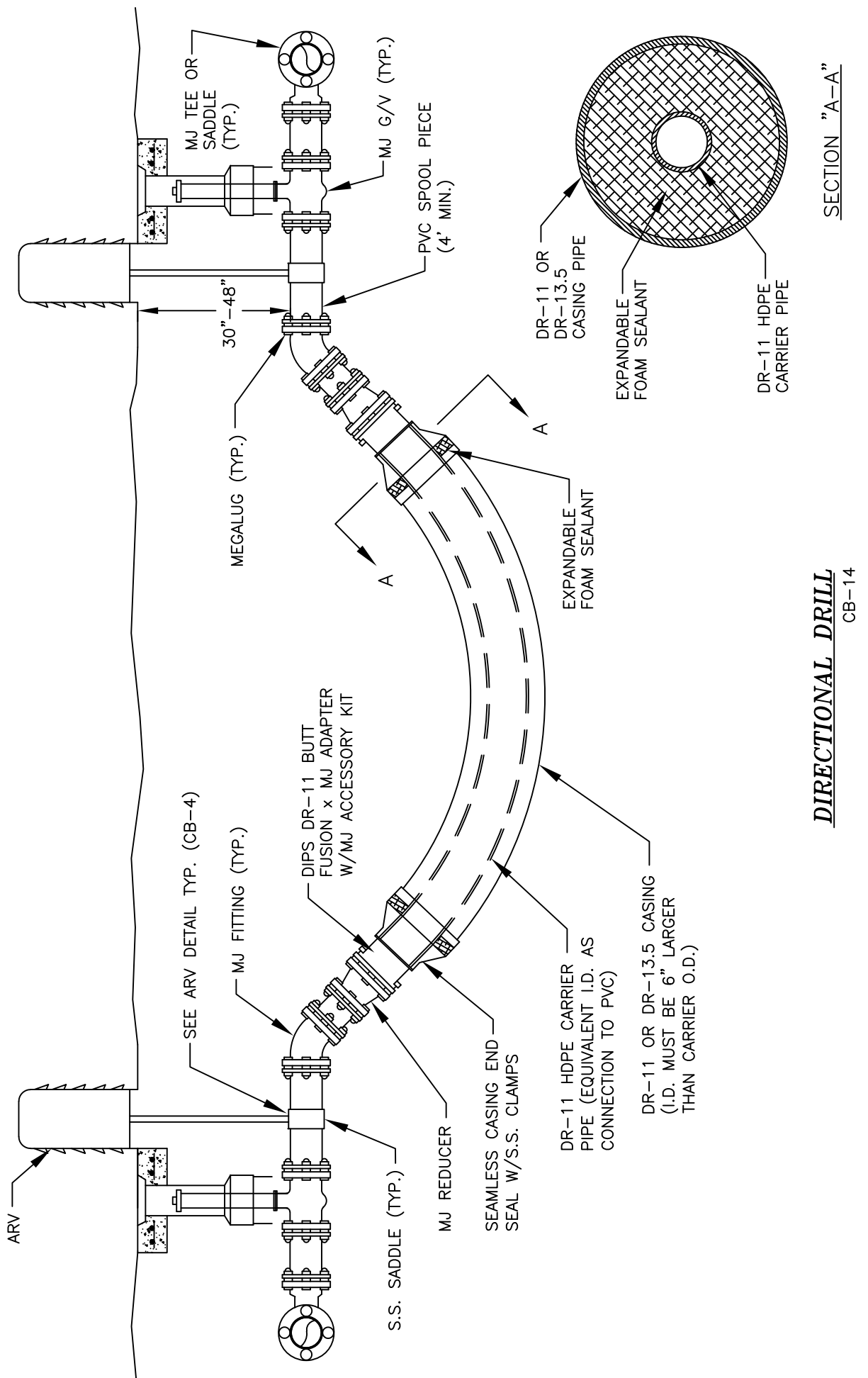
DWG #: CB-12.DWG



SECTION "A-A"

END SEAL/CASING PIPE
CB-13

BONITA SPRINGS UTILITIES, INC. 11900 E. TERRY STREET BONITA SPRINGS, FLORIDA 34135	SCALE: NOT TO SCALE
	DATE: APRIL 2019
	DWG #: CB-13.DWG



DIRECTIONAL DRILL
CB-14

BONITA SPRINGS UTILITIES, INC.
11900 E. TERRY STREET
BONITA SPRINGS, FLORIDA 34135

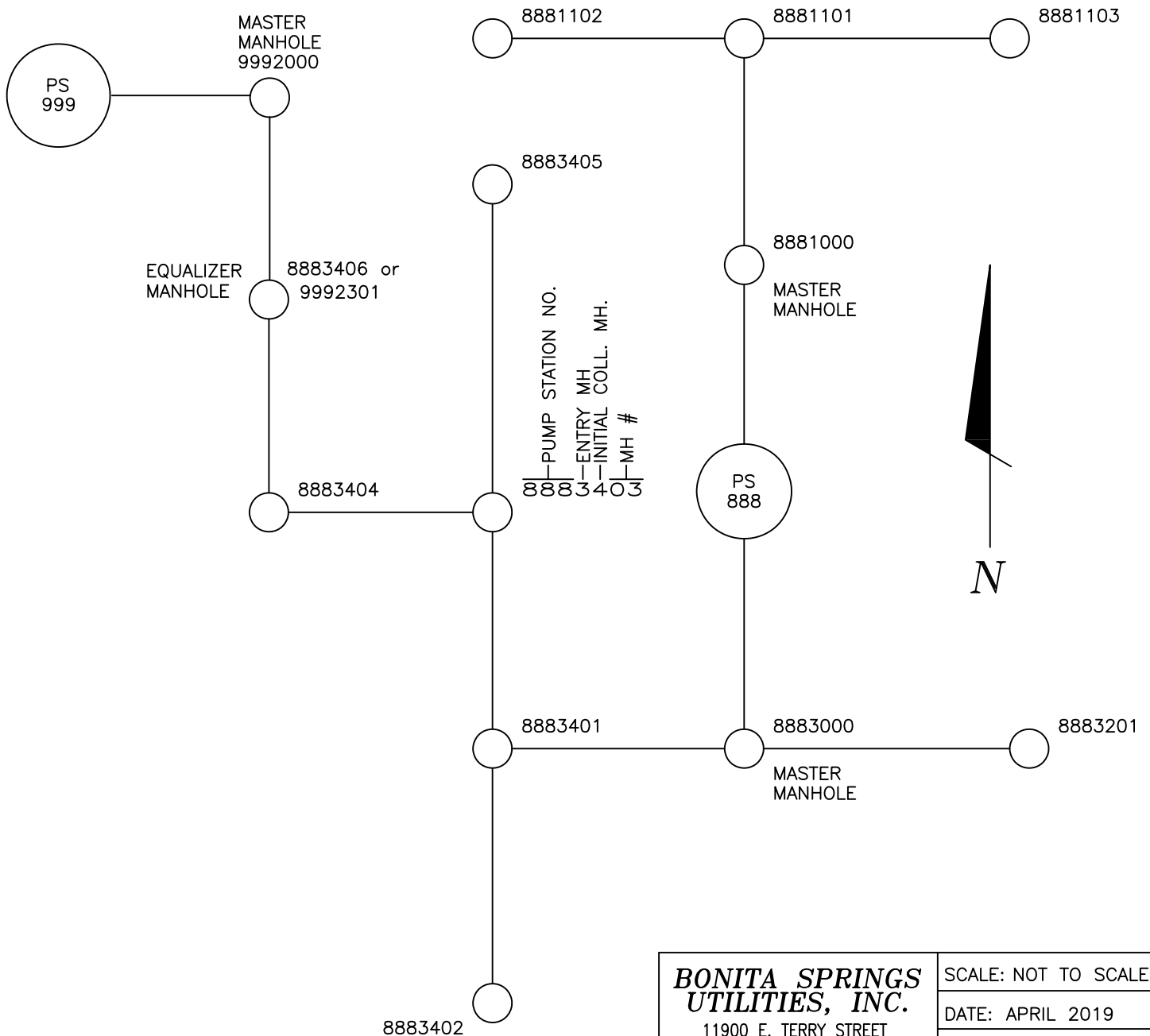
SCALE: NOT TO SCALE
DATE: APRIL 2019
DWG #: CB-14.DWG

WASTEWATER DETAILS

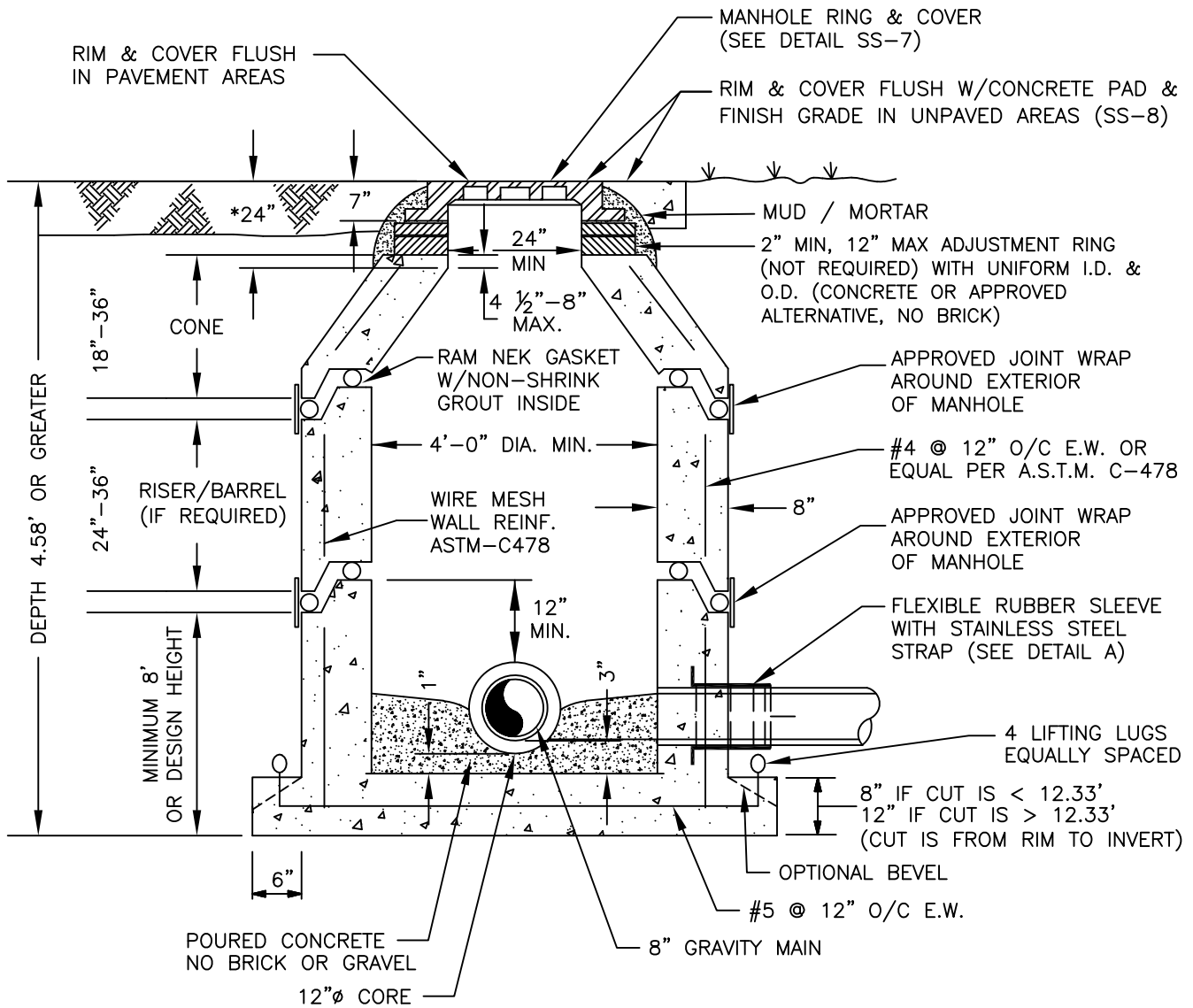
MANHOLE NUMBERING PLAN

- XXXYZKK – SEVEN DIGIT NUMBER
- XXX – PUMP STATION NUMBER (1–999)
- Y – ENTRY MANHOLE NUMBER (1–4, WHERE NUMBER INDICATES DIRECTION: 1=N, 2=E, 3=S & 4=W)
- Z – INITIAL COLLECTION MANHOLE NUMBER (1–4, WHERE NUMBER INDICATES DIRECTION)
- KK – TWO DIGIT MANHOLE NUMBER (Master manholes are 00; Entry manholes are 01; Subsequent manholes are 02–99, if the need arises for additional numbering the following is to be used: a1–a9, b1–b9, etc.)

EXAMPLE



BONITA SPRINGS UTILITIES, INC. 11900 E. TERRY STREET BONITA SPRINGS, FLORIDA 34135	SCALE: NOT TO SCALE
	DATE: APRIL 2019
	DWG #: MHNUMPL.DWG



PRECAST MANHOLE - CONCENTRIC

SS-1

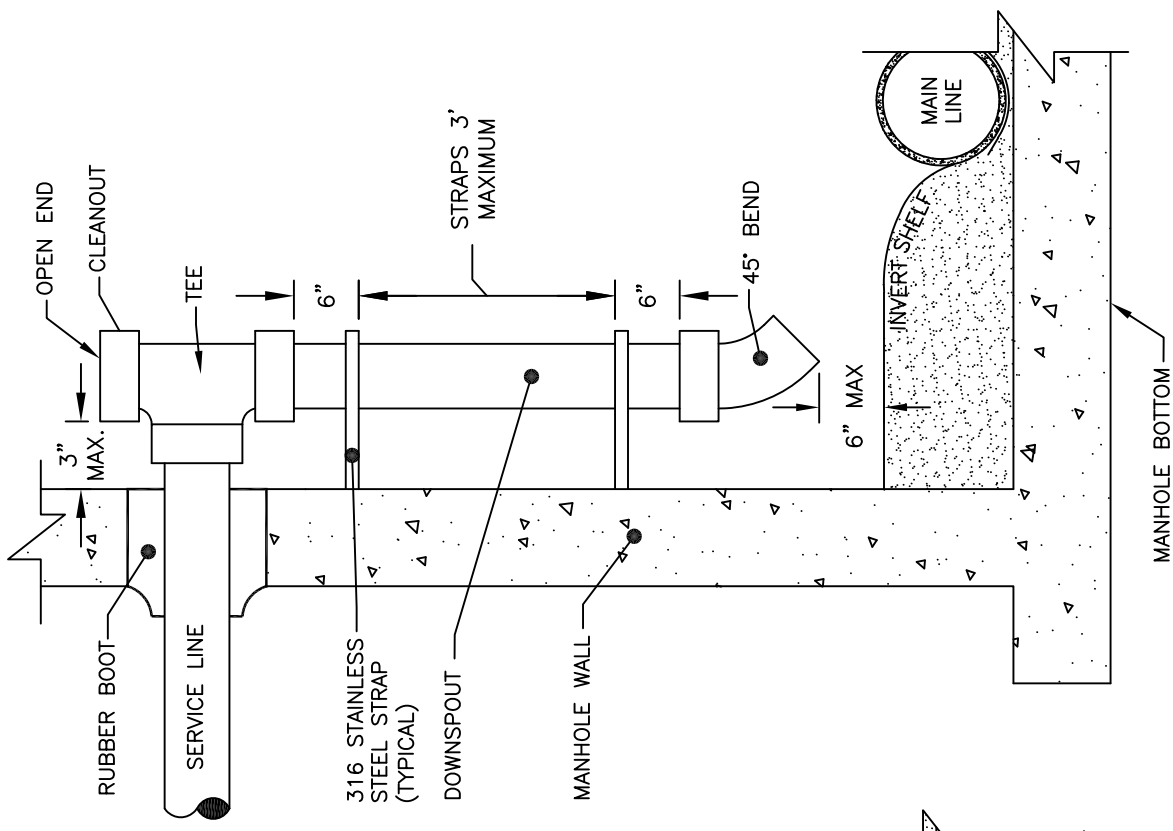
BONITA SPRINGS UTILITIES, INC.

11900 E. TERRY STREET
 BONITA SPRINGS, FLORIDA 34135

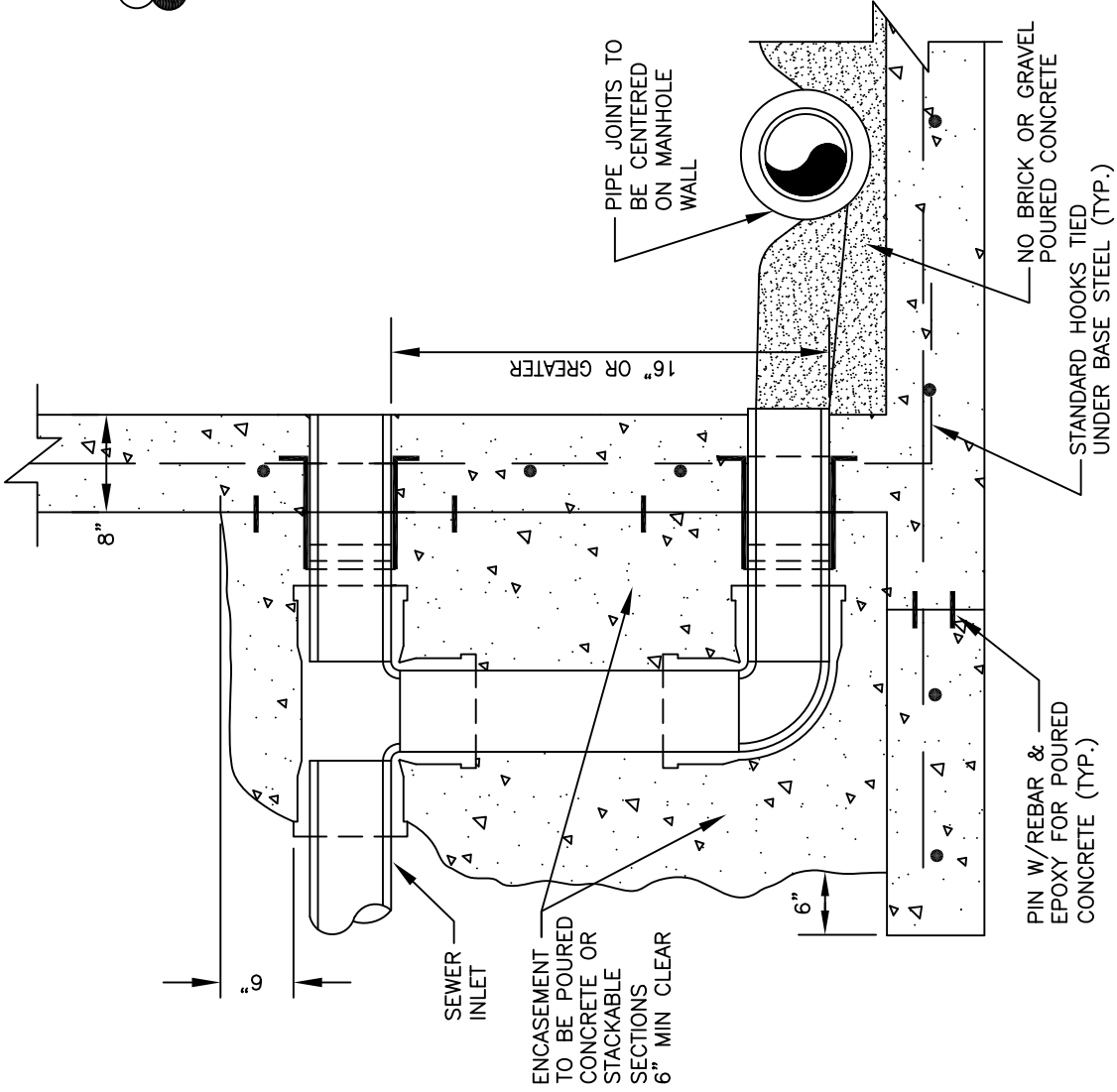
SCALE: NOT TO SCALE

DATE: APRIL 2019

DWG #: SS-1.DWG



INTERNAL DROP MANHOLE CONNECTION
(WITH WRITTEN BSU APPROVAL ONLY)

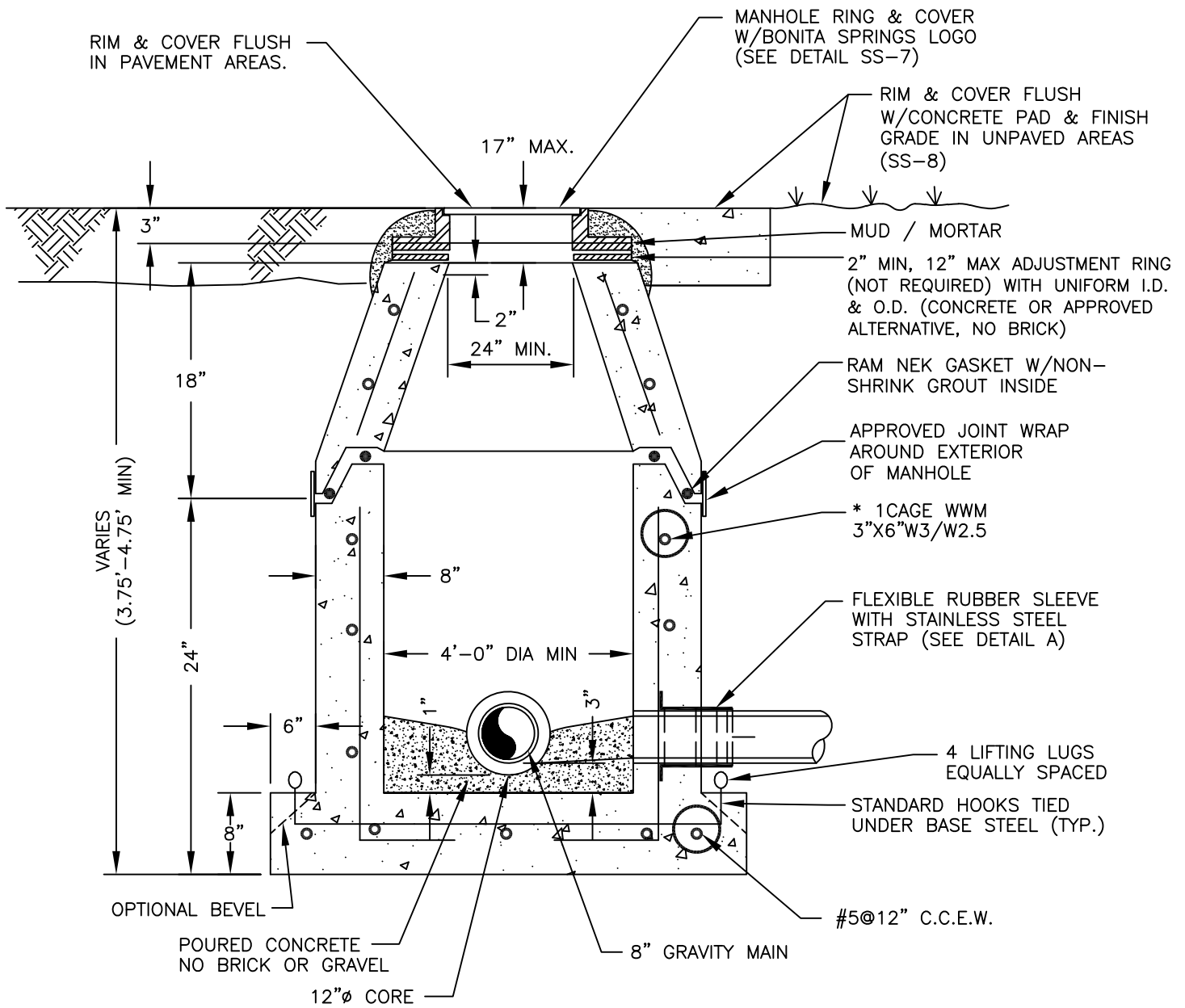


EXTERNAL DROP MANHOLE CONNECTION

BONITA SPRINGS UTILITIES, INC.
11900 E. TERRY STREET
BONITA SPRINGS, FLORIDA 34135

SCALE: NOT TO SCALE
DATE: APRIL 2019
DWG #: SS-3.DWG

DROP MANHOLE CONNECTIONS
SS-3



SHALLOW MANHOLE

SS-4

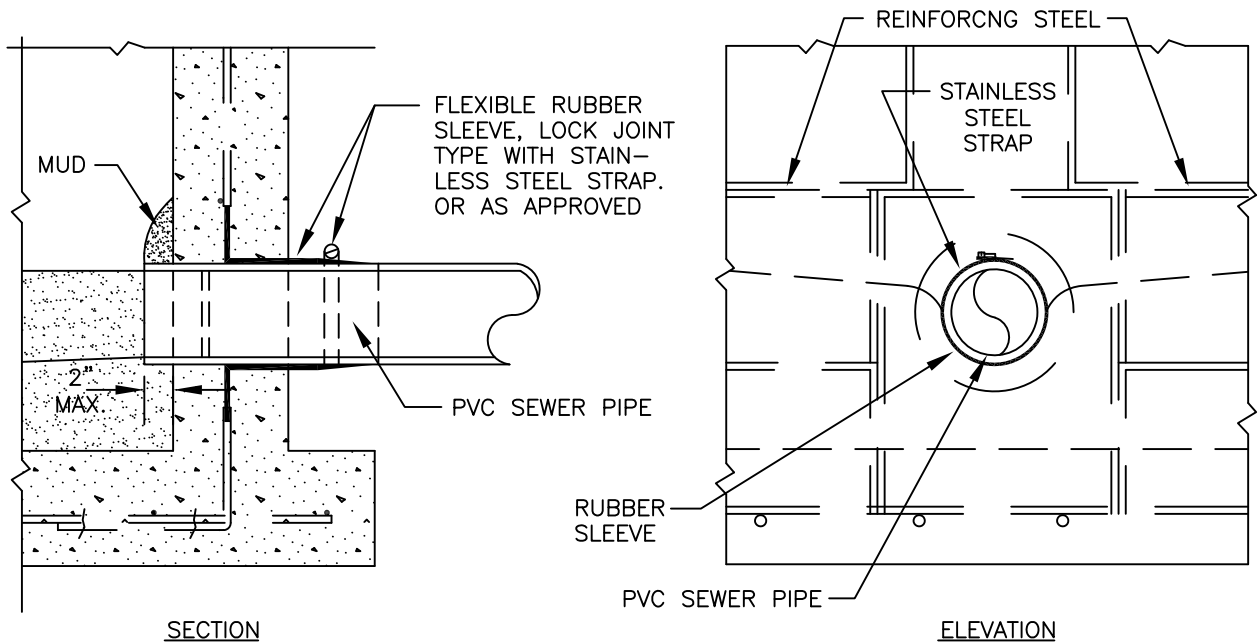
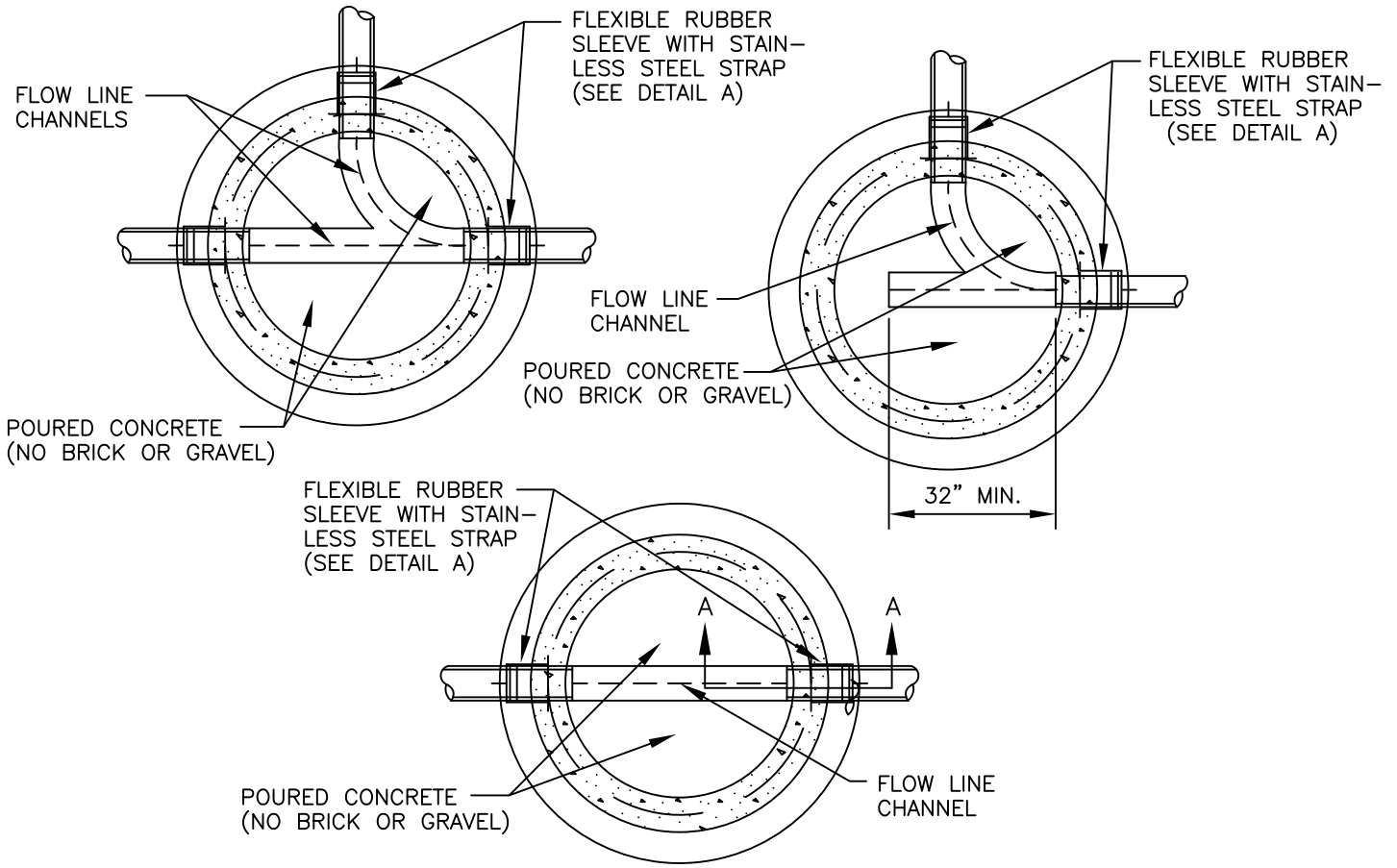
BONITA SPRINGS UTILITIES, INC.

11900 E. TERRY STREET
BONITA SPRINGS, FLORIDA 34135

SCALE: NOT TO SCALE

DATE: APRIL 2019

DWG #: SS-4.DWG

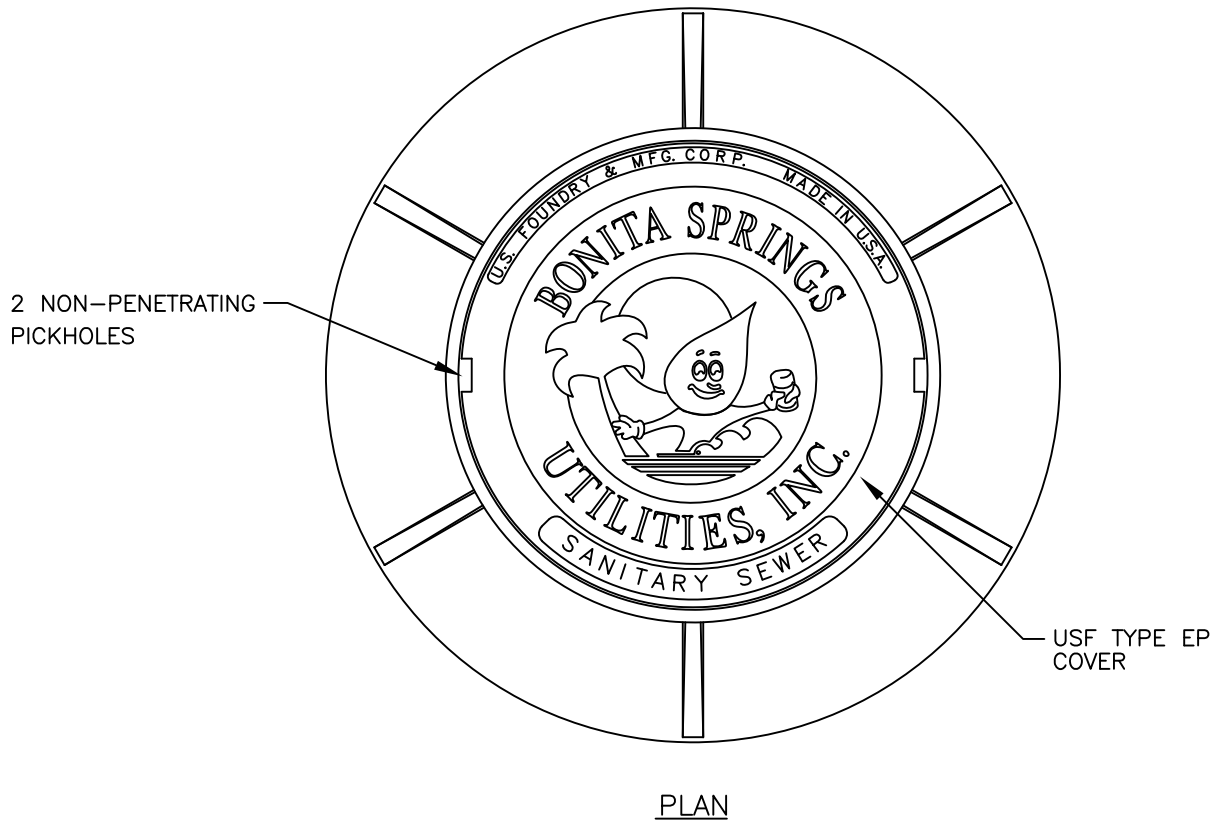
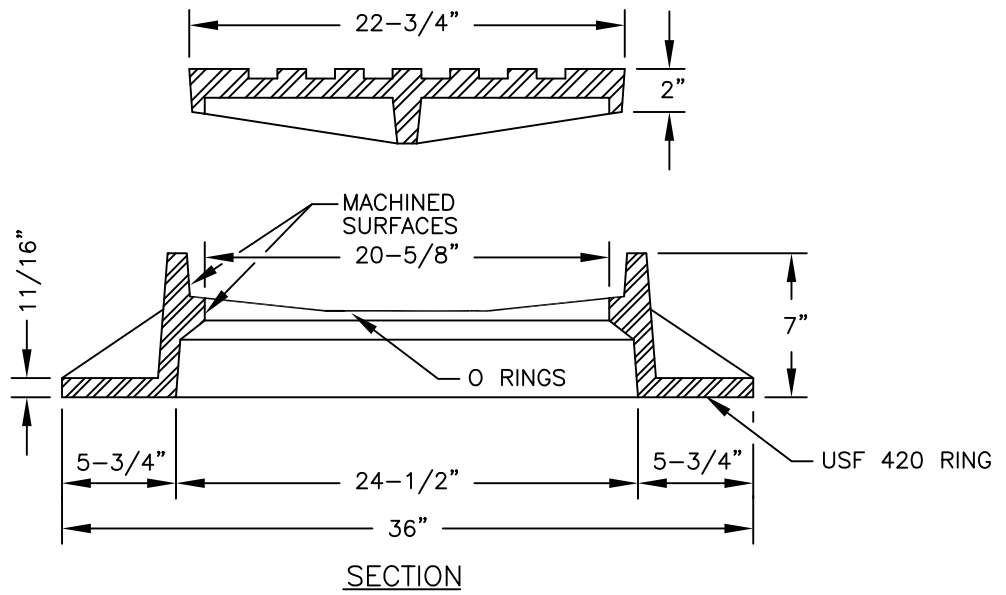


DETAIL A

FLOW LINE CHANNELS

SS-6

BONITA SPRINGS UTILITIES, INC. 11900 E. TERRY STREET BONITA SPRINGS, FLORIDA 34135	SCALE: NOT TO SCALE
	DATE: APRIL 2019
	DWG #: SS-6.DWG



MANHOLE RING & COVER DETAIL

SS-7

* COVER W/BSU CASTING NOT TO BE USED FOR GREASE INTERCEPTORS;
GREASE INTERCEPTOR COVERS TO BE LABELED "GREASE".

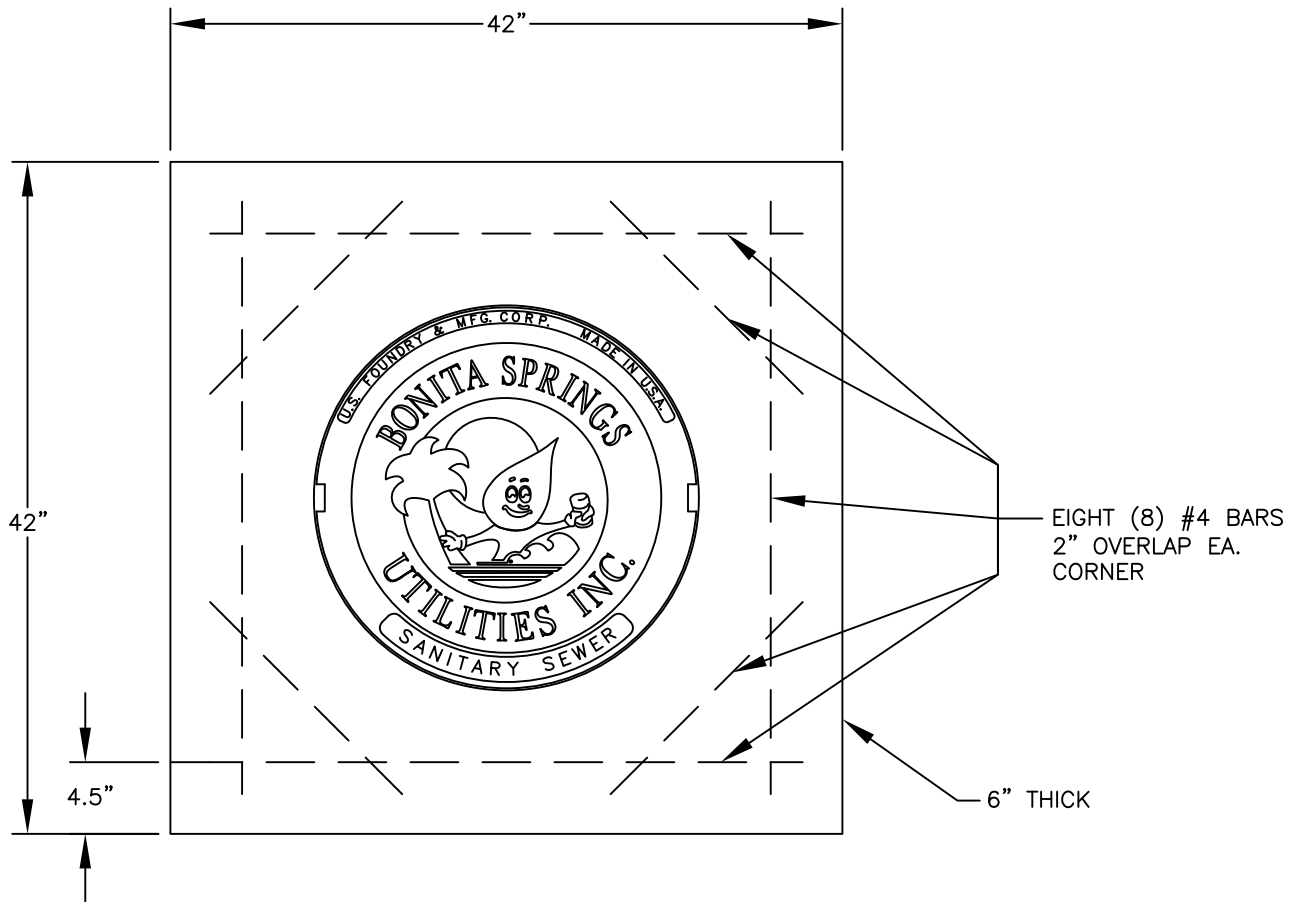
**BONITA SPRINGS
UTILITIES, INC.**

11900 E. TERRY STREET
BONITA SPRINGS, FLORIDA 34135

SCALE: NOT TO SCALE

DATE: APRIL 2019

DWG #: SS-7.DWG

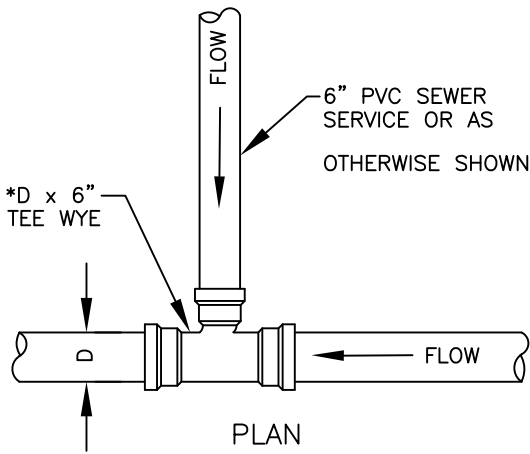


MANHOLE CONCRETE COLLAR
SS-8

*FOR USE IN UNPAVED
AREAS AND/OR AT THE
DISCRETION OF BSU

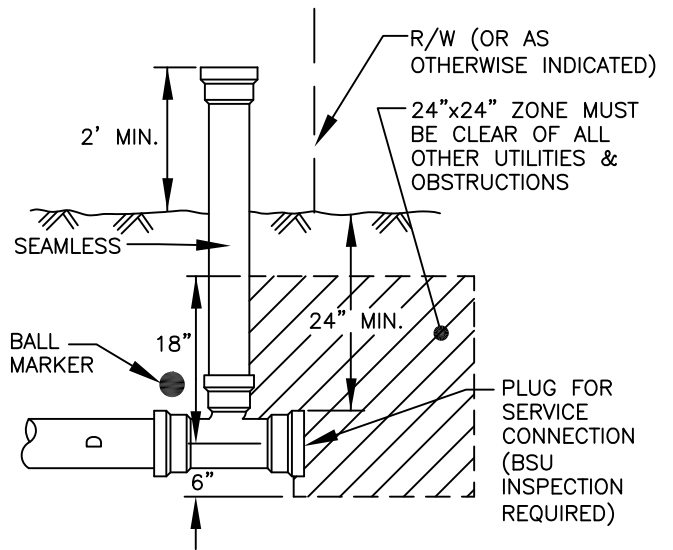
**BONITA SPRINGS
UTILITIES, INC.**
11900 E. TERRY STREET
BONITA SPRINGS, FLORIDA 34135

SCALE: NOT TO SCALE
DATE: APRIL 2019
DWG #: SS-8.DWG

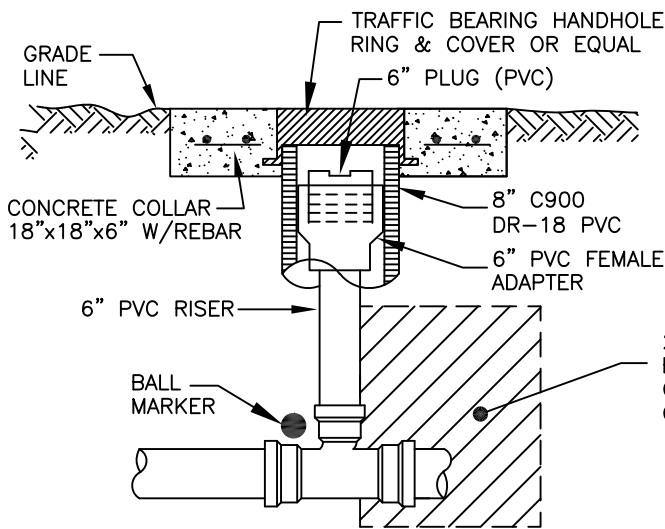


SEWER SERVICE CONNECTION

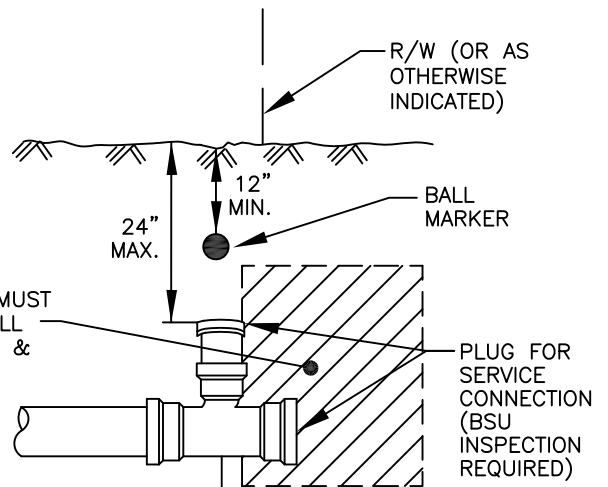
* D IS 8" MIN. Ø



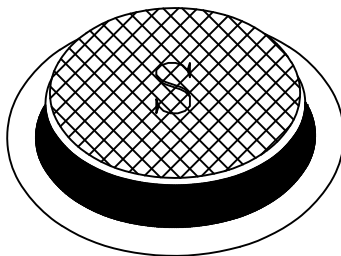
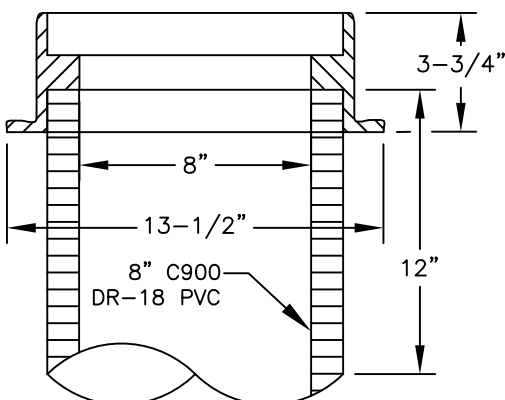
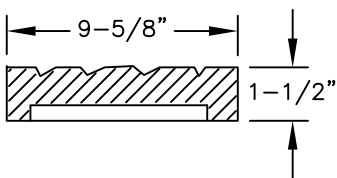
TEMPORARY SERVICE



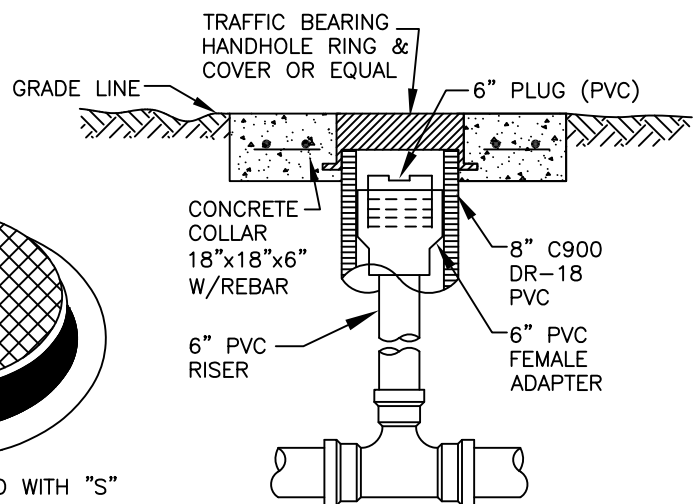
PERMANENT SERVICE



**PERMANENT SERVICE
(REQUIRES WRITTEN BSU APPROVAL)**



COVERS ARE MARKED WITH "S"



TWO-WAY CLEAN OUT ASSEMBLY

CLEANOUT ASSEMBLY

SS-9

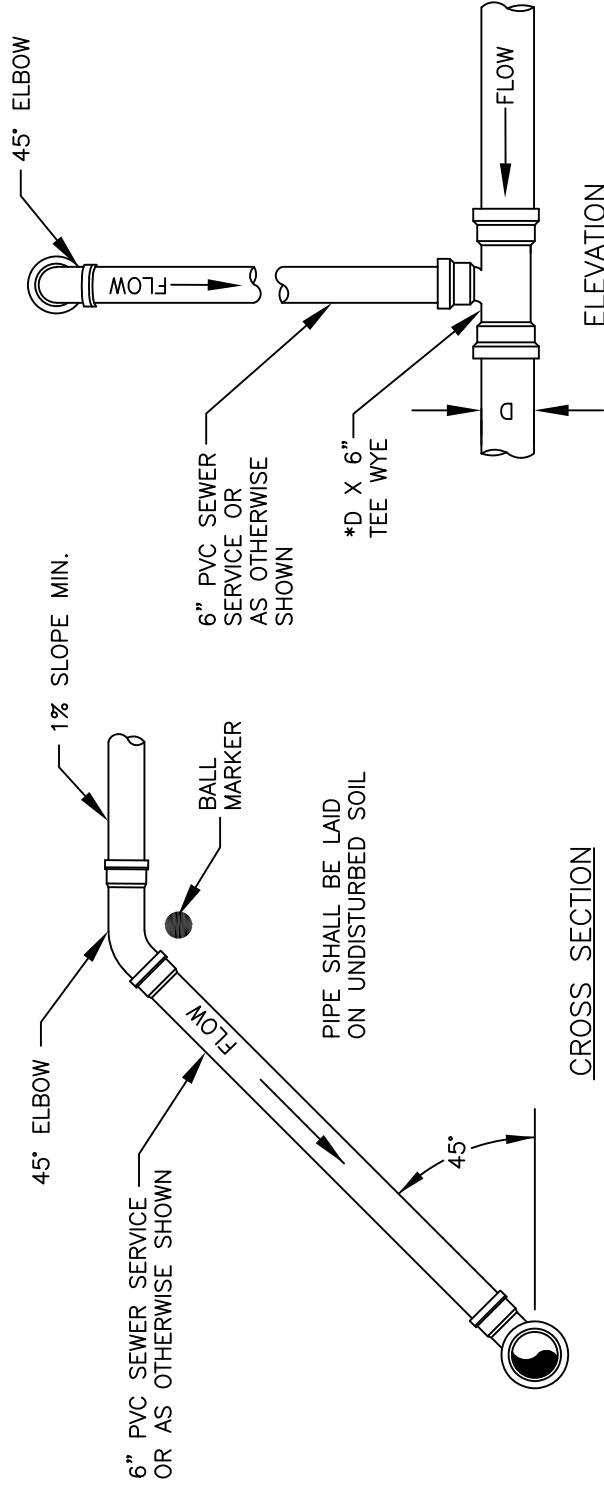
**BONITA SPRINGS
UTILITIES, INC.**

11900 E. TERRY STREET
BONITA SPRINGS, FLORIDA 34135

SCALE: NOT TO SCALE

DATE: APRIL 2019

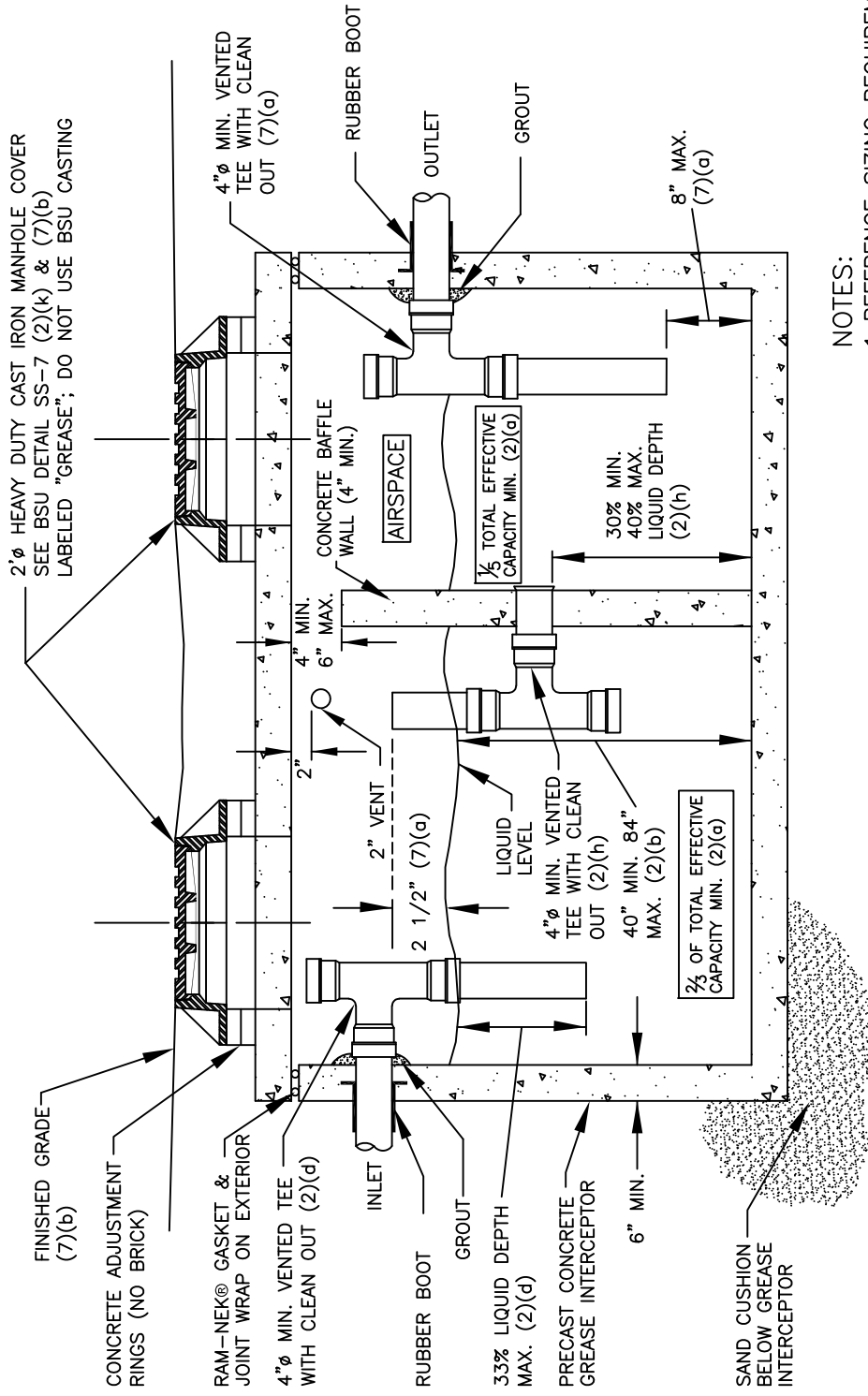
DWG #: SS-9.DWG



SEWER CONNECTION
FOR DEPTHS OVER 8 FEET
 SS-10

SCALE: NOT TO SCALE
DATE: APRIL 2019
DWG #: SS-10.DWG

BONITA SPRINGS UTILITIES, INC.
 11900 E. TERRY STREET
 BONITA SPRINGS, FLORIDA 34135

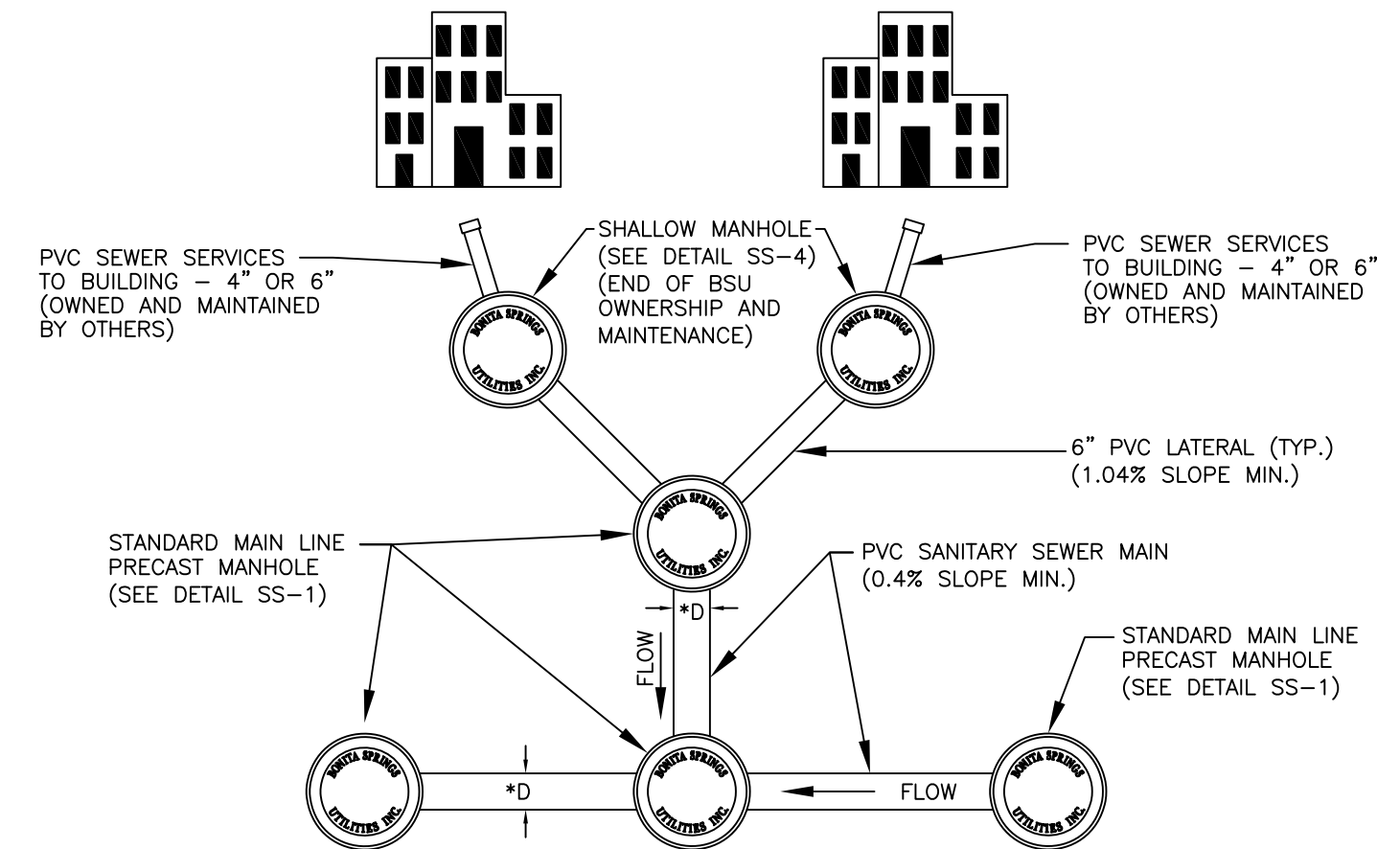
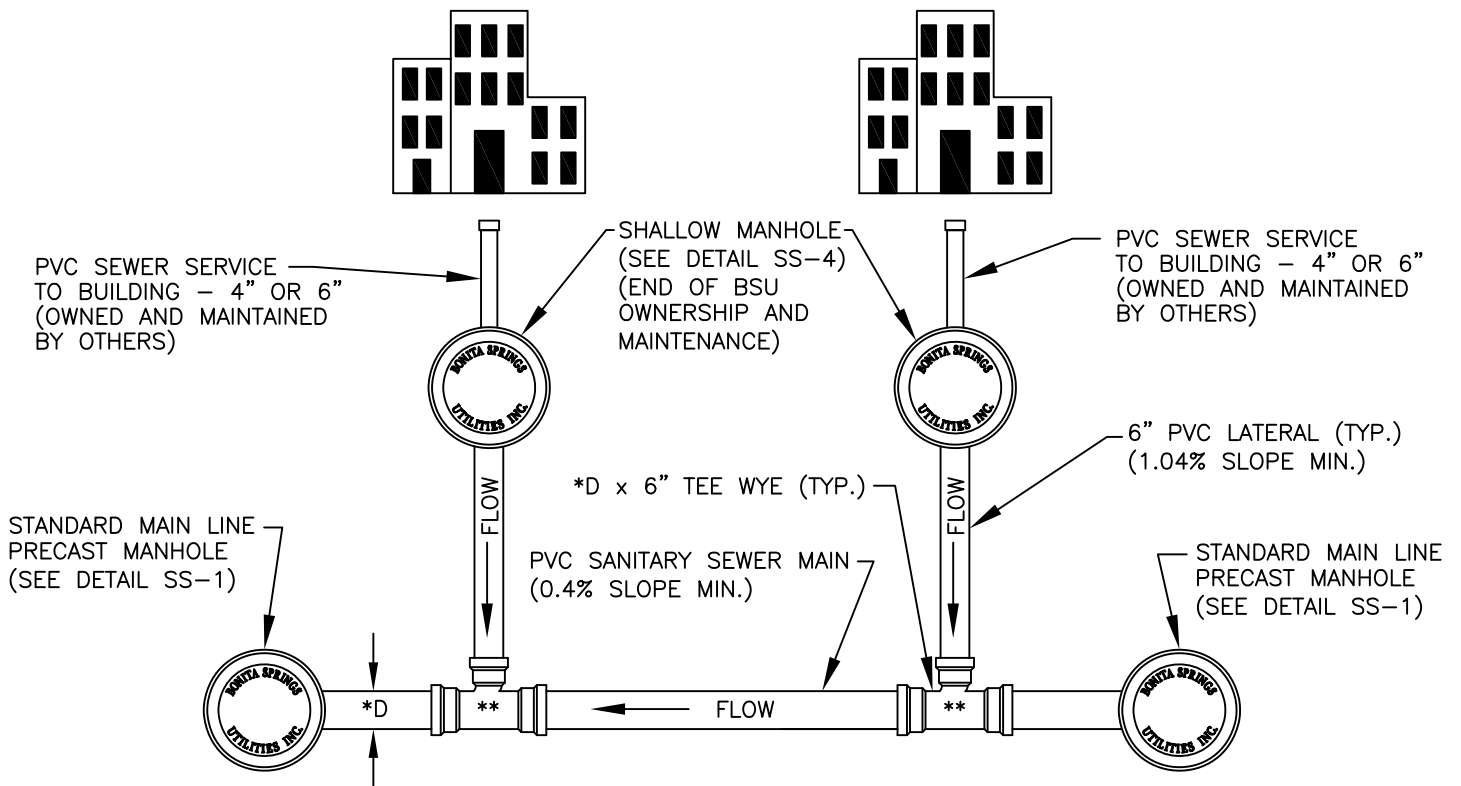


- NOTES:
1. REFERENCE SIZING REQUIREMENTS WITHIN THE STANDARD SPECIFICATIONS
 2. (#)(x) REFERS TO SECTION IN FLORIDA ADMINISTRATIVE CODE CHAPTER 64E-6.013
 3. TRAFFIC RATED PER F.A.C. 64E-6.013 (1)(f)

GRAVITY GREASE INTERCEPTOR
SS-11

SCALE: NOT TO SCALE
DATE: APRIL 2019
DWG #: SS-11.DWG

BONITA SPRINGS UTILITIES, INC.
11900 E. TERRY STREET
BONITA SPRINGS, FLORIDA 34135



**CONNECTION OPTIONS WITH SHALLOW MANHOLES FOR
MULTIPLE MULTI-FAMILY OR
MULTI-UNIT/MULTI STORY COMMERCIAL BUILDINGS**

SS-25

* D IS 8" MIN. Ø

** CAN ALSO CONNECT DIRECTLY TO A M.H. WITH A 6" LATERAL

**BONITA SPRINGS
UTILITIES, INC.**

11900 E. TERRY STREET
BONITA SPRINGS, FLORIDA 34135

SCALE: NOT TO SCALE

DATE: APRIL 2019

DWG #: SS-25.DWG

PRIVATELY OWNED SITE

RIGHT-OF-WAY OR B.S.U.E.

MANHOLE RING & COVER
(DETAIL SS-7)

FLUSH W/ CONCRETE PAD & FINISH
GRADE IN UNPAVED AREAS; FLUSH
WITH PAVEMENT IN TRAVEL WAY

MANHOLE CONCRETE COLLAR
(DETAIL CB-8)

VALVE PAD
(DETAIL CB-11)

4" MIN. CHECK VALVE

30" MINIMUM

2' MIN.

4' MIN.

2' MIN.

FLOW

16" MIN.

6" MIN.

3/4" GRAVEL (MAX.)

MJ FITTING, END OF BSU O&M
(SLEEVE OR REDUCER)

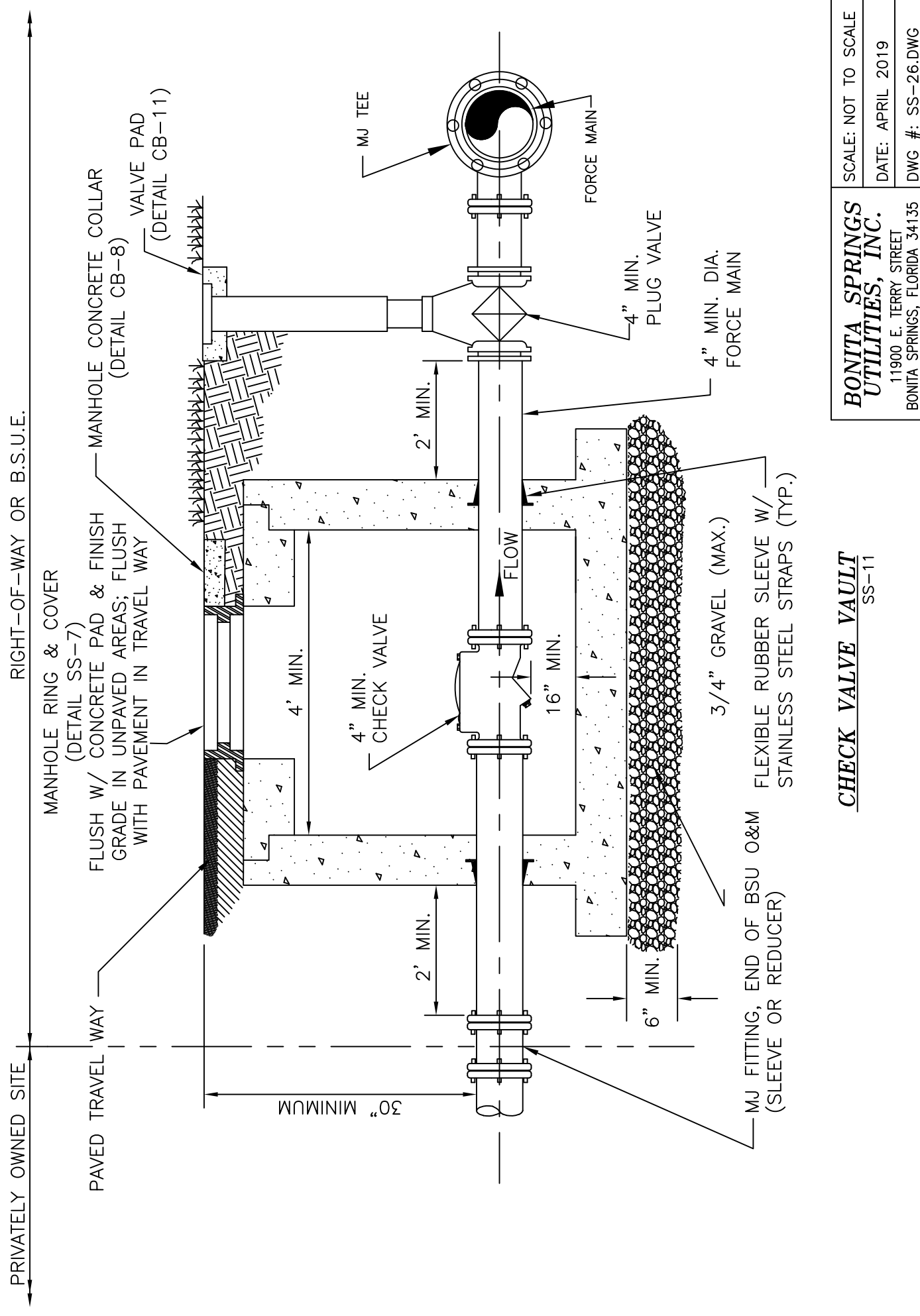
FLEXIBLE RUBBER SLEEVE W/
STAINLESS STEEL STRAPS (TYP.)

MJ TEE

FORCE MAIN

4" MIN.
PLUG VALVE

4" MIN. DIA.
FORCE MAIN

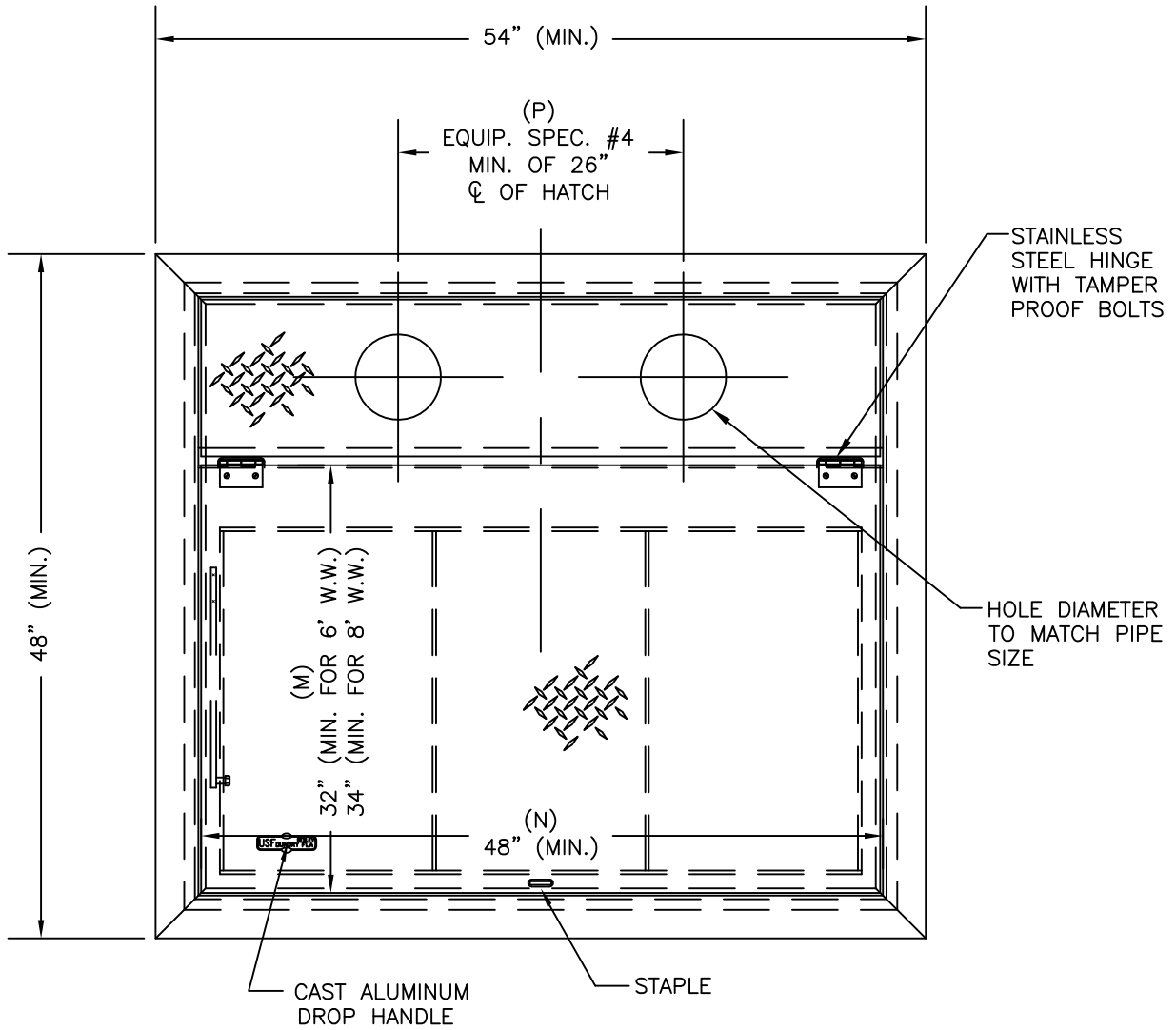


CHECK VALVE VAULT
SS-11

SCALE: NOT TO SCALE
DATE: APRIL 2019
DWG #: SS-26.DWG

BONITA SPRINGS UTILITIES, INC.
11900 E. TERRY STREET
BONITA SPRINGS, FLORIDA 34135

PUMP STATION DETAILS



54" x 48" ALUMINUM
ACCESS HATCH

PS-1

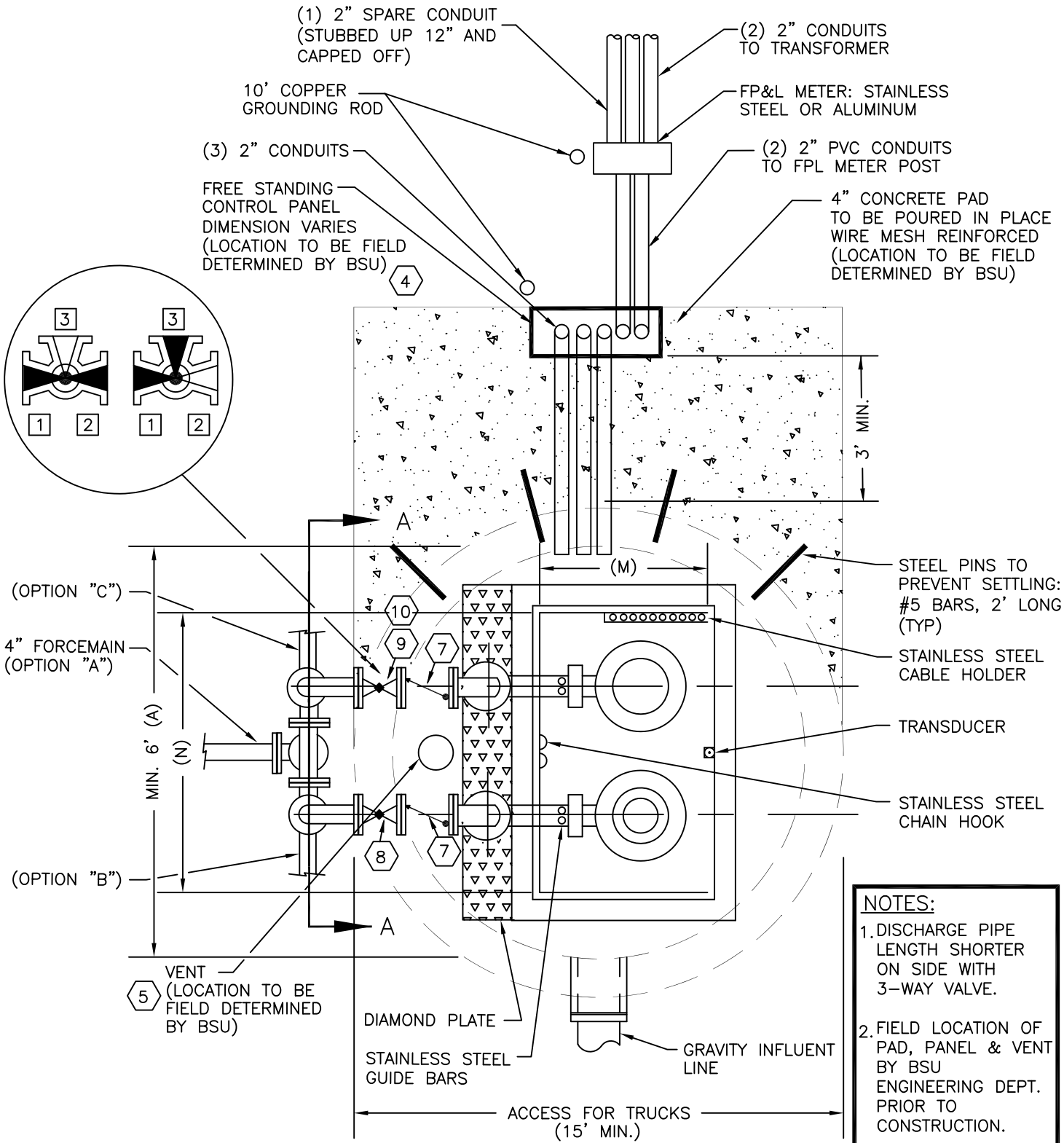
**BONITA SPRINGS
UTILITIES, INC.**

11900 E. TERRY STREET
BONITA SPRINGS, FLORIDA 34135

SCALE: NOT TO SCALE

DATE: APRIL 2019

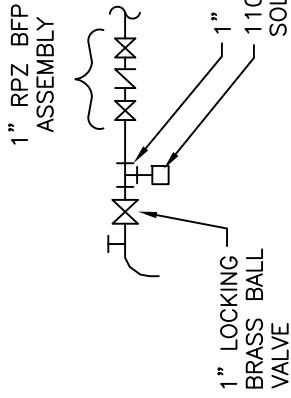
DWG #: PS-1.DWG



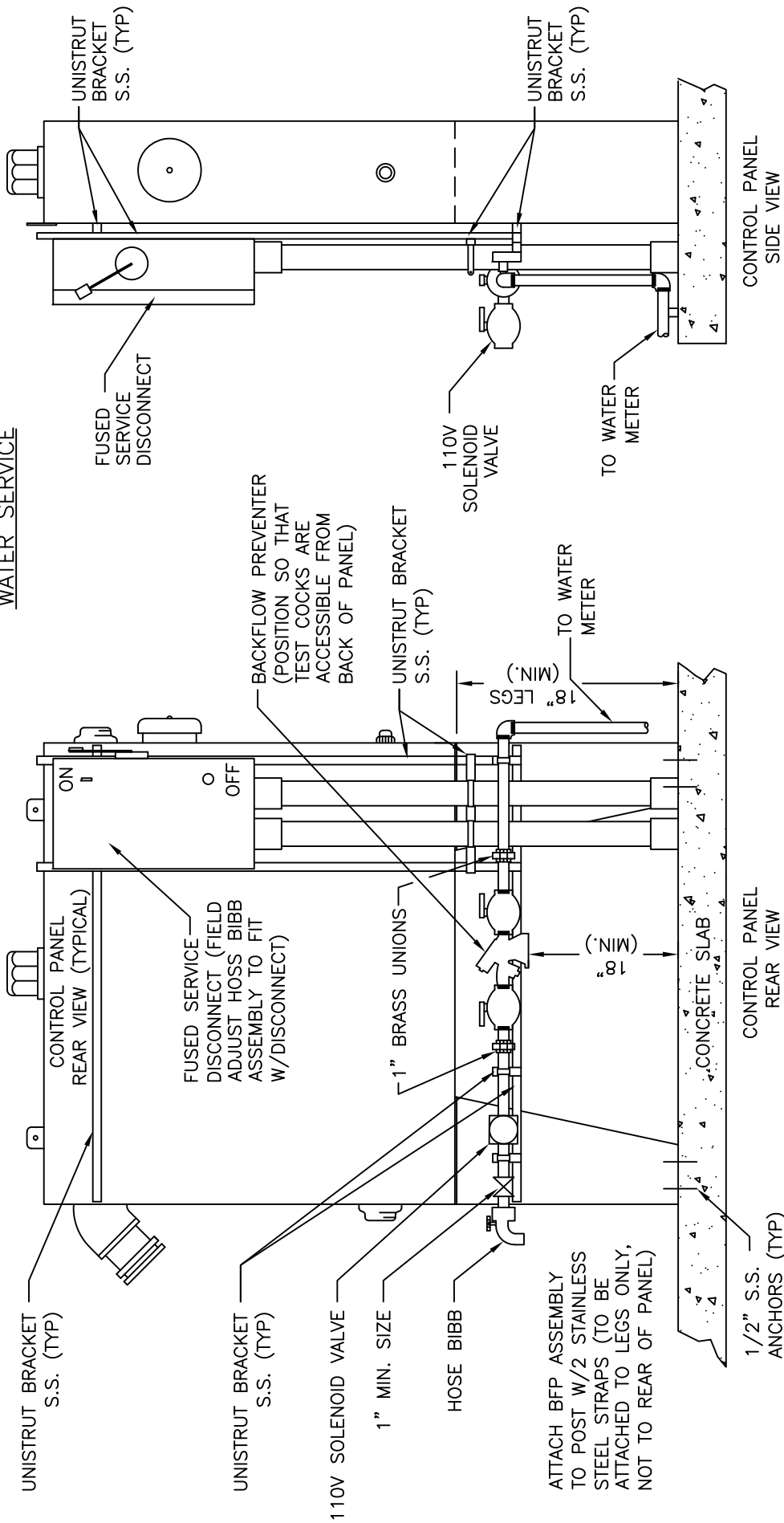
- NOTES:**
1. DISCHARGE PIPE LENGTH SHORTER ON SIDE WITH 3-WAY VALVE.
 2. FIELD LOCATION OF PAD, PANEL & VENT BY BSU ENGINEERING DEPT. PRIOR TO CONSTRUCTION.
 3. FORCE MAIN ORIENTATION OPTION "A", "B" OR "C" BY BSU ENGINEERING DEPT.

PUMP STATION DETAIL
PS-2

BONITA SPRINGS UTILITIES, INC. 11900 E. TERRY STREET BONITA SPRINGS, FLORIDA 34135	SCALE: NOT TO SCALE
	DATE: APRIL 2019
	DWG #: PS-2.DWG



WATER SERVICE



ATTACH BFP ASSEMBLY TO POST W/2 STAINLESS STEEL STRAPS (TO BE ATTACHED TO LEGS ONLY, NOT TO REAR OF PANEL)

CONTROL PANEL (REAR)

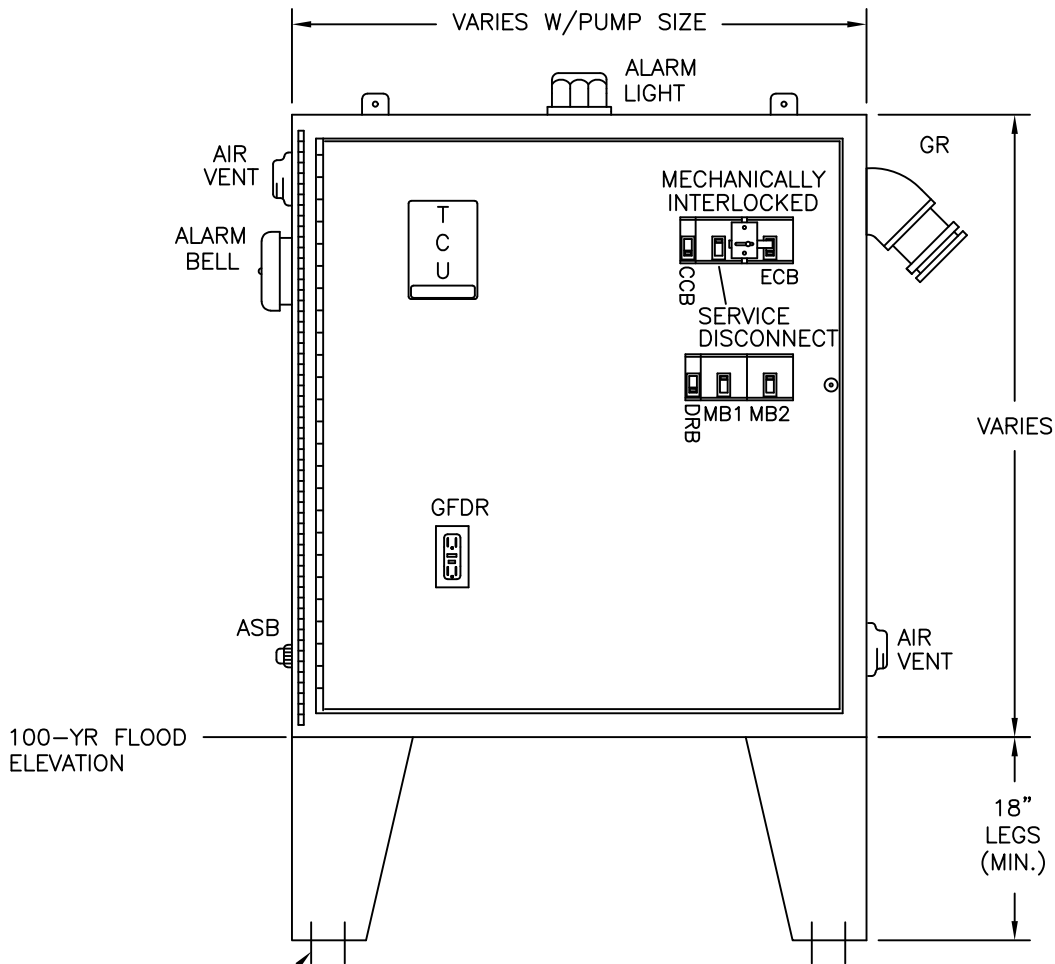
PS-3

BONITA SPRINGS UTILITIES, INC.
 11900 E. TERRY STREET
 BONITA SPRINGS, FLORIDA 34135

SCALE: NOT TO SCALE

DATE: APRIL 2019

DWG #: PS-3.DWG



1/2" S.S.
ANCHORS (TYP)

OUTER DOOR REMOVED TO SHOW DEADFRONT LAYOUT
 NEMA TYPE 4X S.S. ENCLOSURE WITH CONT. HINGE
 ALL HARDWARE STAINLESS STEEL TYPICAL.
 ACTUAL LAYOUT AND SIZE MAY VARY WITH HORSEPOWER

CONTROL PANEL (FRONT)

(FREE STANDING)

PS-4

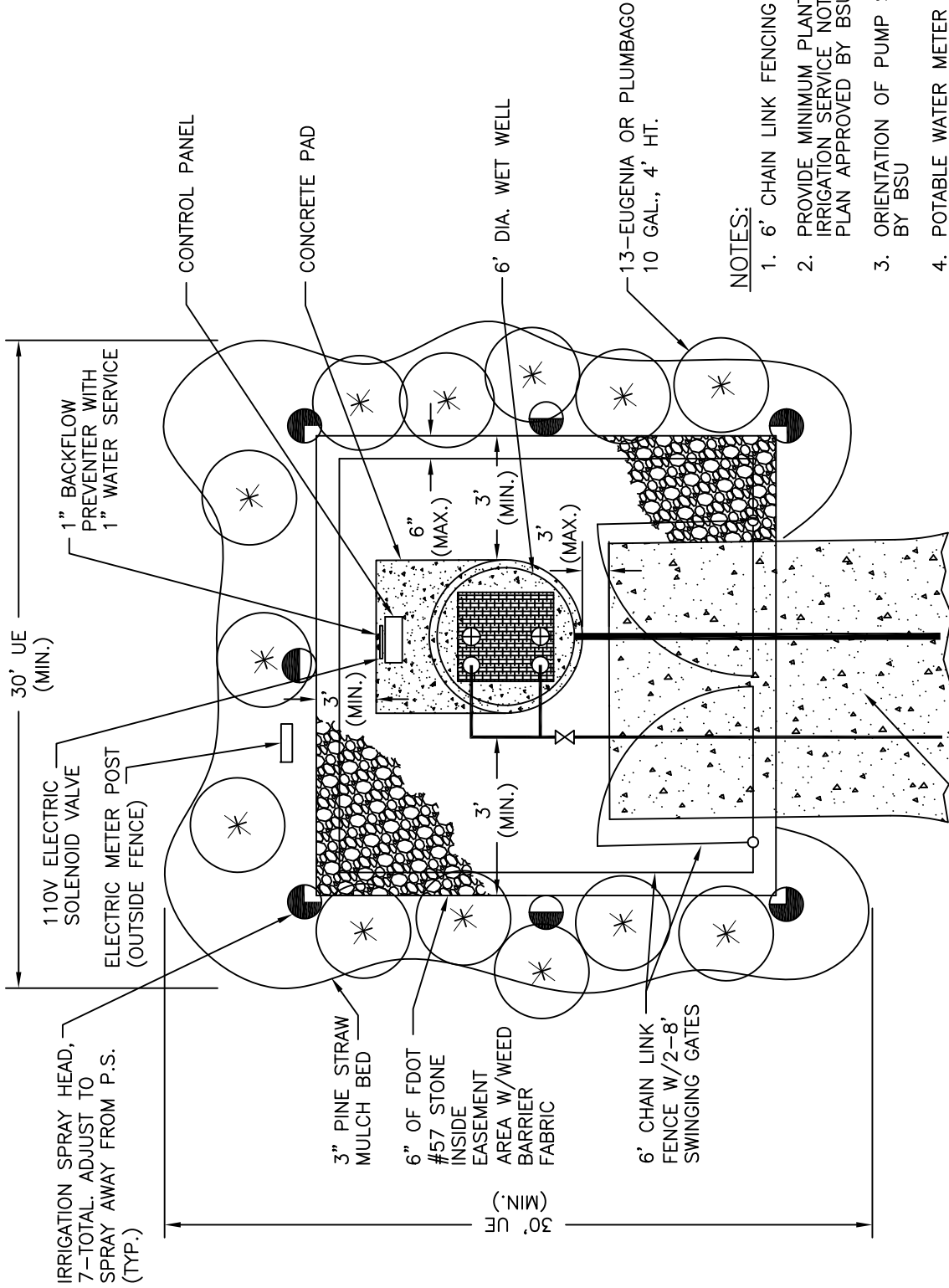
**BONITA SPRINGS
 UTILITIES, INC.**

11900 E. TERRY STREET
 BONITA SPRINGS, FLORIDA 34135

SCALE: NOT TO SCALE

DATE: APRIL 2019

DWG #: PS-4.DWG



NOTES:

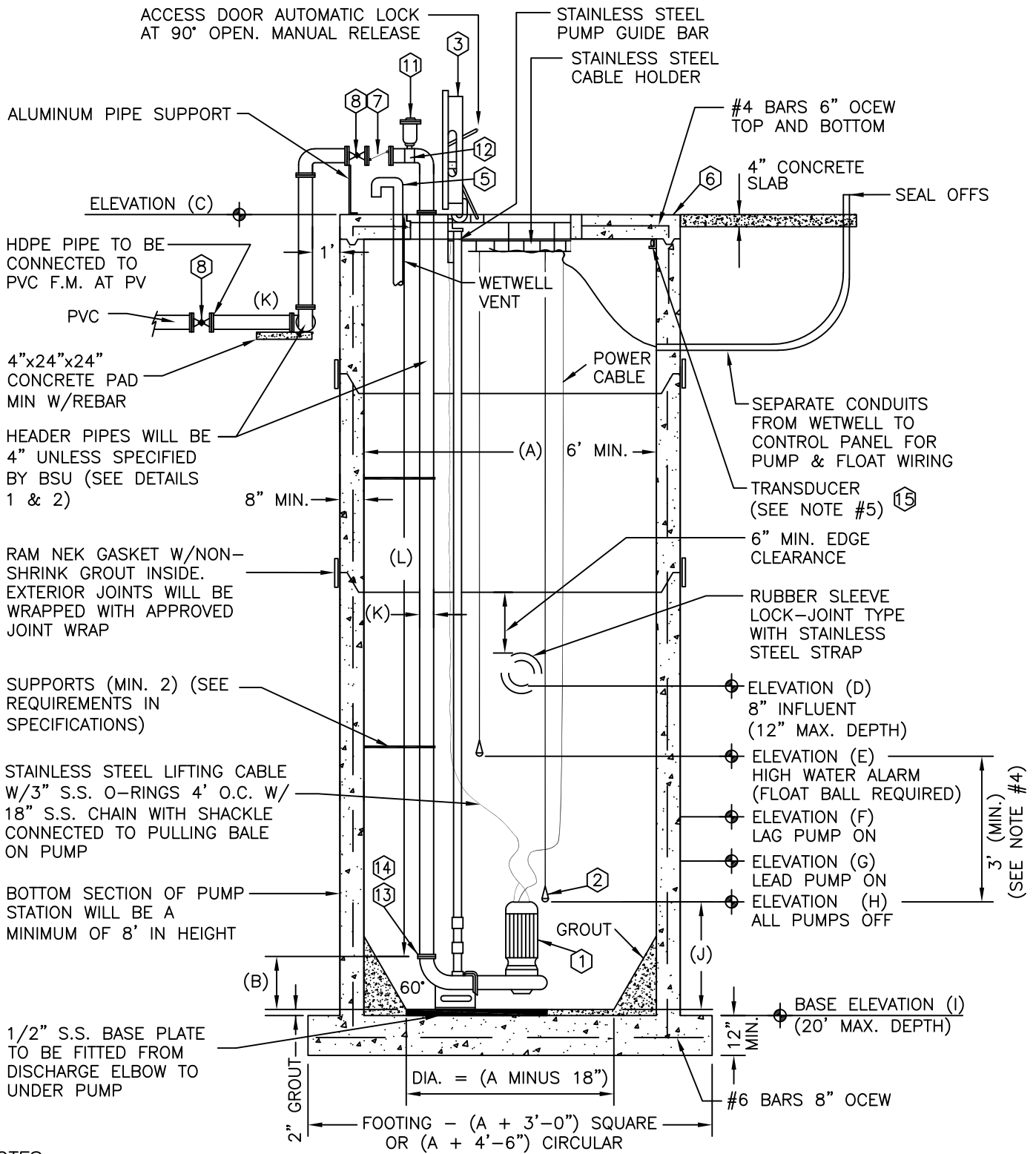
1. 6' CHAIN LINK FENCING PER BSU SPECIFICATIONS
2. PROVIDE MINIMUM PLANTING SCHEDULE AND IRRIGATION SERVICE NOTED ABOVE OR DEVELOPER PLAN APPROVED BY BSU
3. ORIENTATION OF PUMP STATION TO BE PROVIDED BY BSU
4. POTABLE WATER METER AND BOX LOCATION PER BSU
5. AFFIX "EMERGENCY CONTACT" & "NO PARKING" SIGNS (PER DETAIL) TO FENCE
6. LANDSCAPING TO BE WITHIN EASEMENT

PUMP STATION
SITE LAYOUT AND
LANDSCAPE PLAN

PS-5

SCALE: NOT TO SCALE
DATE: APRIL 2019
DWG #: PS-5.DWG

BONITA SPRINGS UTILITIES, INC.
 11900 E. TERRY STREET
 BONITA SPRINGS, FLORIDA 34135



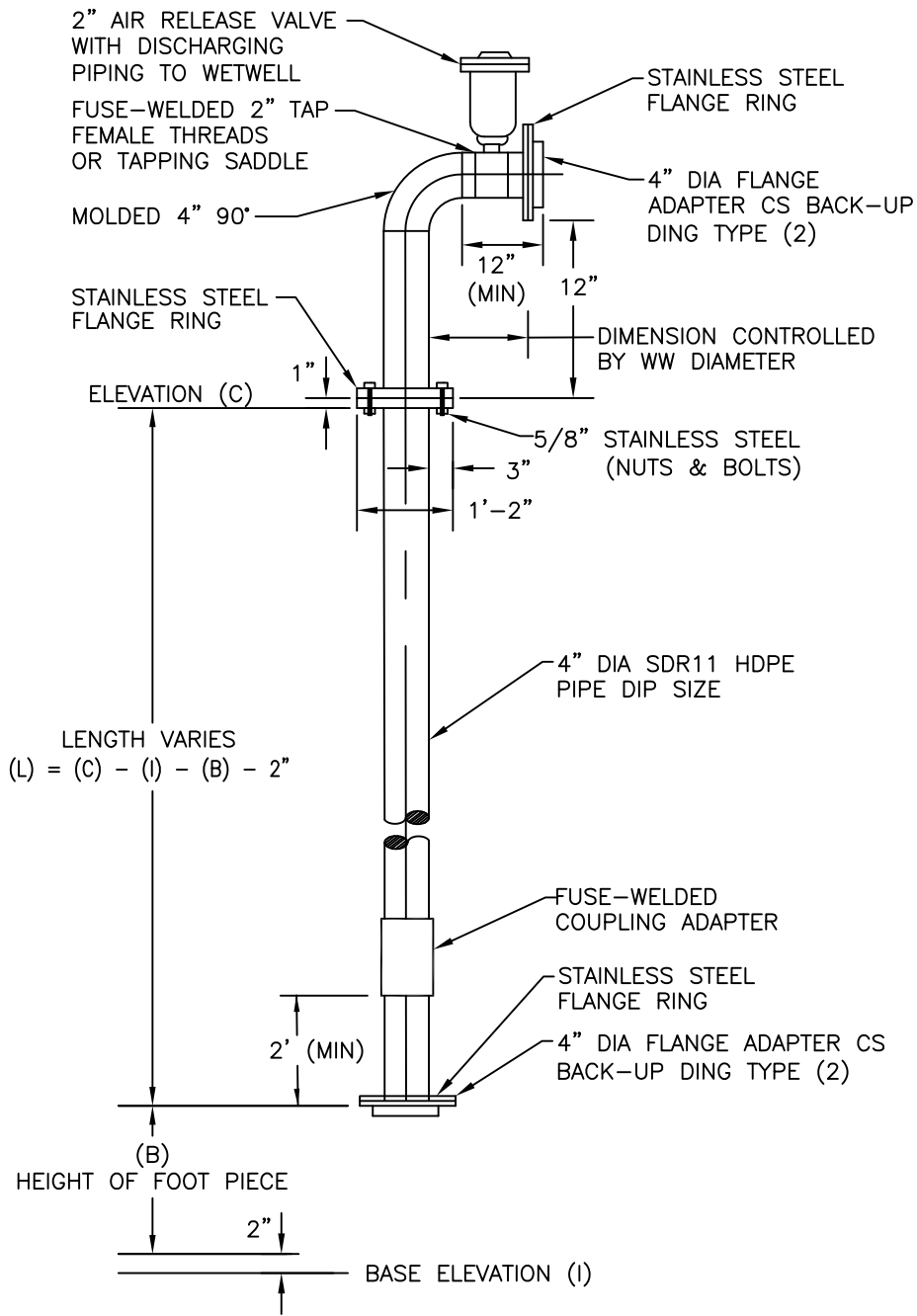
NOTES:

1. PRIOR AUTHORIZATION REQUIRED BY BSU FOR ANY WET WELL SIZE OTHER THAN 6'
2. ALL SURFACES WILL BE PREPARED BY SAND BLASTING PRIOR TO PAINTING OR COATING
3. STAINLESS STEEL U-BOLT AND BRACKET PIPE SUPPORTS SHALL BE REQUIRED TO SUPPORT ALL HEADER PIPES
4. LIQUID LEVEL REGULATORS (FLOAT BALLS) ARE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY (HIGH LEVEL FLOAT BALL REQUIRED)
5. ULTRA SONIC LEVEL INDICATOR (TRANSDUCER) WILL BE MOUNTED AND POSITIONED SO AS TO NOT READ THE TOP OF THE PUMPS. MOUNTING BRACKETS WILL BE SUPPLIED BY BSU.

6' WET WELL
PS-6

BONITA SPRINGS UTILITIES, INC.
11900 E. TERRY STREET
BONITA SPRINGS, FLORIDA 34135

SCALE: NOT TO SCALE
DATE: APRIL 2019
DWG #: PS-6.DWG



HEADER PIPES - DETAIL 1

4" (TYPICAL)

PS-7

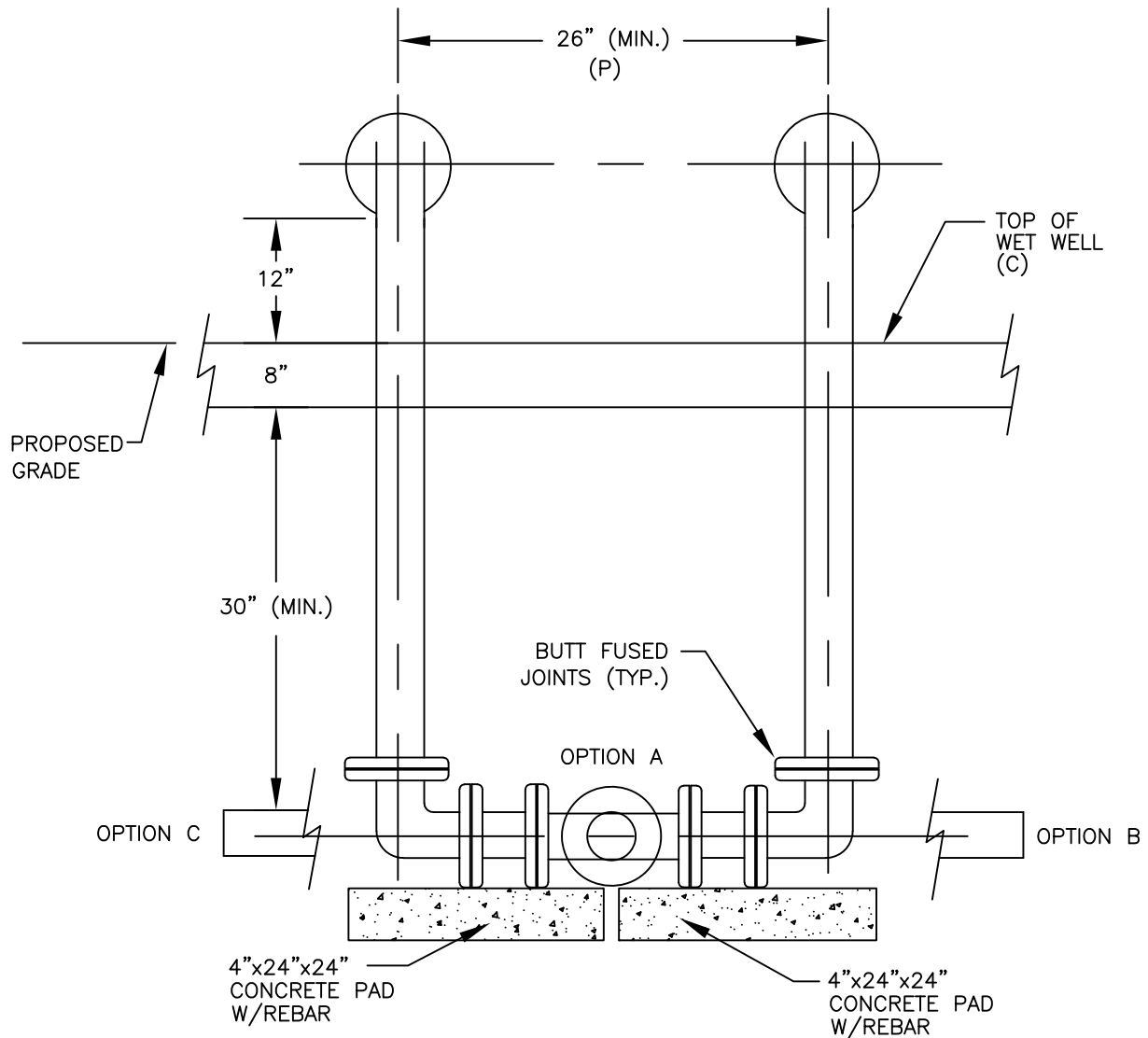
BONITA SPRINGS UTILITIES, INC.

11900 E. TERRY STREET
 BONITA SPRINGS, FLORIDA 34135

SCALE: NOT TO SCALE

DATE: APRIL 2019

DWG #: PS-7.DWG



NOTES:

- 1) SEE PUMP STATION DESIGN TO DETERMINE WHICH OPTION TO USE FOR DISCHARGE PIPING
- 2) ALL DISCHARGE PIPING TO BE CONTINUOUS PRE-ENGINEERED HDPE PIPE WITH DUCTILE IRON O.D.
- 3) HDPE BUTT FUSED MJ ADAPTER WITH MJ ACCESSORY KIT TO BE PROVIDED AT THE END OF THE HDPE HEADER PIPE FOR CONNECTION TO VALVE

HEADER PIPES - DETAIL 2

4" (TYPICAL)

PS-8

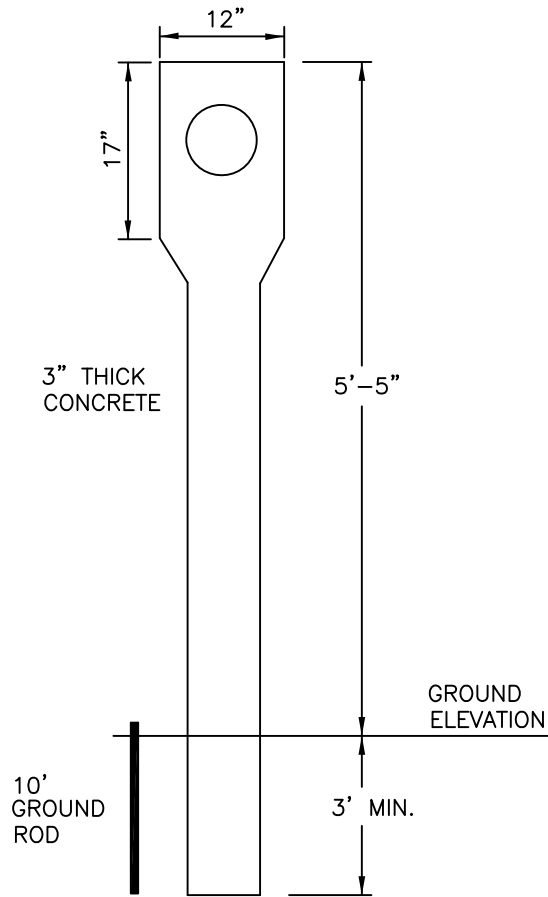
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ELECTRIC METER POST
PS-9

**BONITA SPRINGS
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BONITA SPRINGS, FLORIDA 34135

SCALE: NOT TO SCALE
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DWG #: PS-9.DWG

PUMP STATION WETWELL DATA

DIMENSIONS AND ELEVATIONS															
PS#	PIPE DIA											HATCH DIM			
	A	B	C	D	E	F	G	H	I	J	K		L	M	N
											4" (MIN)		32"	48"	26"
											4" (MIN)		32"	48"	26"
											4" (MIN)		32"	48"	26"
											4" (MIN)		32"	48"	26"

PS#	PUMP DESIGN DATA				DESIGN FLOW DATA				FLOOD ELEV. DATA	
	MODEL #	IMPELLER #	H.P.	RPM	PHASE ϕ / VOLTAGE V	DWELLING UNITS SERVED	AVERAGE DAILY FLOW (GPM)	PEAK DESIGN FLOW (GPM)	25 YR FL. ELE.	100 YR FL. ELE.

NETWORK/SYSTEM CALCULATIONS AND WET WELL STORAGE CALCULATIONS TO BE SUBMITTED TO B.S.U.

PS-10

BONITA SPRINGS UTILITIES, INC.
 11900 E. TERRY STREET
 BONITA SPRINGS, FLORIDA 34135

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GENERAL NOTES

1. INSTALLATION OF COVER, PUMP ANCHOR BOLTS, GUIDE RAILS, ETC. MUST BE COORDINATED WITH THE DETAILS AND SPECIFICATIONS AS RECOMMENDED BY THE MANUFACTURER.
2. ALL ELEVATIONS ARE BASED ON N.A.V.D. 88 (NORTH AMERICAN VERTICAL DATUM).
3. PUMP STATION SHALL INCLUDE WETWELL COMPLETE WITH WALL AND SLAB CONSTRUCTION, ACCESS FRAMES AND DOORS AND ALL OTHER APPURTENANT CONSTRUCTION ITEMS AND MATERIALS.
4. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES FOR CONSTRUCTION AND MAINTENANCE OF ALL EQUIPMENT AND PARTS, INCLUDING BOLT AND ARM REMOVAL.
5. ALL WIRING INCLUDING ELECTRIC SERVICE SHALL BE COPPER.
6. ELECTRICAL COMPONENTS SHALL BE EQUIPPED WITH NATIONAL ELECTRIC CODE AND BUILDING DEPARTMENT APPROVED CONDUIT PIPE "SEAL-OFF" BETWEEN CONTROL PANEL AND WETWELL.
7. ALL HARDWARE FOR INTERIOR WETWELL (NUTS, BOLTS ETC.) SHALL BE STAINLESS STEEL.
8. THE ELECTRIC SERVICE WIRING TO THE PUMP STATION CONTROL PANEL SHALL BE SIZED BY THE ELECTRICAL CONTRACTOR TO PROVIDE A VOLTAGE DROP NOT GREATER THAN 5% OF THE LINE VOLTAGE FROM POWER COMPANY WHEN ALL PUMPS ARE AT MAXIMUM START-UP LOAD.
9. THE CONTRACTOR SHALL SUBMIT THE FINAL LOCATIONS OF TRANSFORMER, ELECTRICAL, SERVICE CONDUITS, PUMP STATION PIPING AND CONTROL PANEL LOCATIONS ON THE PLAN SET PRIOR TO CONSTRUCTION. FINAL APPROVAL REQUIRED BY BSU.
10. CHECK VALVES, PLUG VALVES, 3 WAY PLUG VALVES 6" OR LARGER TO MATCH PUMP DISCHARGE.
11. PATCH LEAKS, CRACKS AND JOINTS WITH PORTLAND CEMENT OR EQUIVALENT.
12. SHOP DRAWING SUBMITTALS REQUIRED FOR EACH PUMP STATION TO BSU.
13. ALL ABOVE GROUND PIPING WILL BE PAINTED WITH A UL RATED PAINT (REFER TO SPECIFICATIONS).
14. A REDUCED-PRESSURE PRINCIPLE ASSEMBLY (RPZ) AND WATER SERVICE IS REQUIRED.
15. 10' COPPER GROUNDING ROD - GROUNDING SYSTEM REQUIRED FOR ALL MASTER PUMP STATIONS WITH GENERATORS. MORE MAY BE REQUIRED IF NO GROUND SHOWN ON METER.

PS-11

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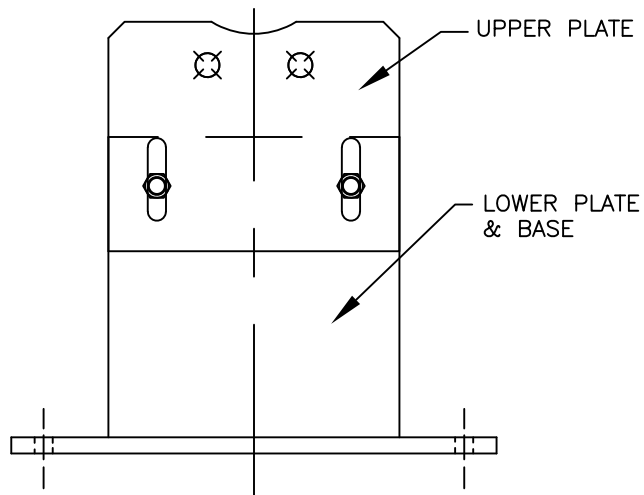
DATE: APRIL 2019

DWG #: PS-11.DWG

EQUIPMENT SPECIFICATIONS

MARK	QTY.	
①	2	DISCHARGE SUBMERSIBLE SEWAGE PUMPS
②	2	LIQUID LEVEL REGULATORS (FLOAT BALLS)
③	1	ACCESS HATCH
④	1	CONTROL PANEL
⑤	1	4" PVC VENT PIPE FOR 6' WET WELL (FINAL DETERMINATION BY BSU)
⑥	1	WETWELL, REINFORCED CONCRETE
⑦	2	4" CHECK VALVE
⑧	1	4" PLUG VALVE
⑨	1	3-WAY 4" PLUG VALVE - 3 PORT (EMERGENCY PORT TO BE 3", FACING THE OUTSIDE - OPERATING NUT TO BE LOCATED ON TOP)
⑩	1	3" QUICK-COUPLING UNIT COMPLETE. CONNECT TO THIRD PORT 3-WAY VALVE WITH A BRONZE MALE THREAD ADAPTOR
⑪	2	AIR RELEASE VALVE, ARI MODEL # ARI-D-040
⑫	2	STAINLESS STEEL SADDLE
⑬	2	HDPE BUTT FUSED MJ ADAPTER W/AN MJ ACCESSORY KIT
⑭	2	MECHANICAL JOINT FLANGED COUPLING ADAPTERS
⑮	1	ULTRA SONIC LEVEL INDICATOR (TRANSDUCER)
<u>FDEP REQUIREMENTS</u>		
CONTROL PANEL SHALL BE (3 PHASE) WITH ALL COMPONENTS FOR OPERATING TWO PUMPS AND LIQUID LEVEL REGULATORS, ALTERNATOR RELAYS, GENERATOR RECEPTACLE, ANGLE ADAPTER AND NEMA 4X STAINLESS STEEL ENCLOSURE (WITH PHASE MONITORING AND LIGHTNING ARRESTORS).		

PS-12



NOTES:

1. IF THE PIPE SUPPORT CANNOT BE ANCHORED TO THE WET WELL SLAB, THEN AN ADDITIONAL SLAB WILL BE REQUIRED. THE ADDITIONAL SLAB WILL NEED TO BE PINNED TO THE WET WELL SLAB.
2. CAN BE USED FOR LARGE METER ASSEMBLIES AND BACKFLOW PREVENTERS

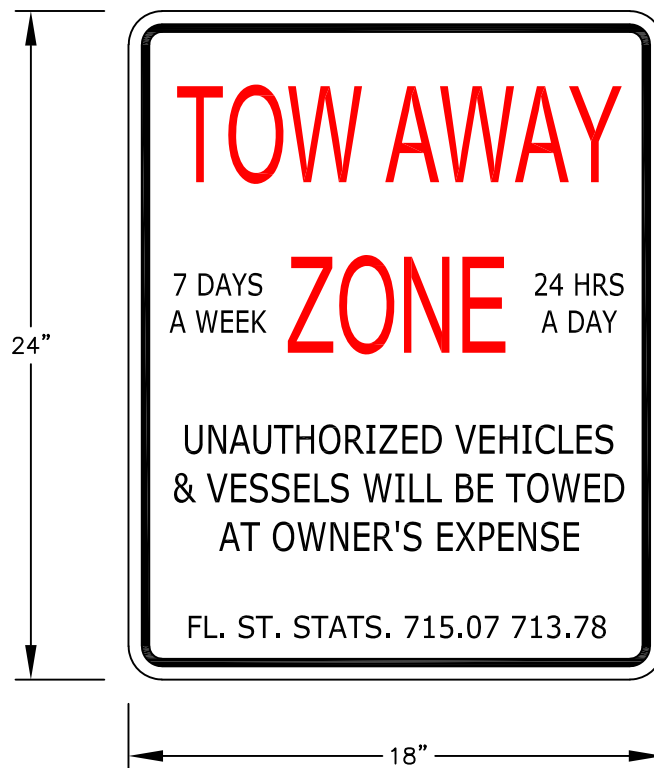
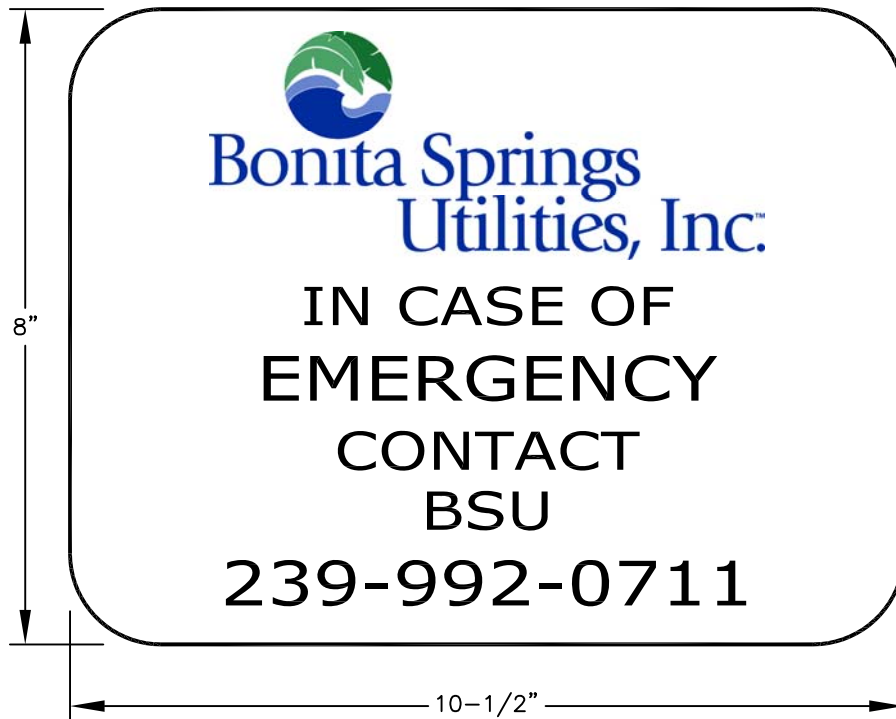
PIPE SUPPORT
PS-13

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DATE: APRIL 2019

DWG #: PS-13.DWG



PUMP STATION SIGNAGE

PS-14

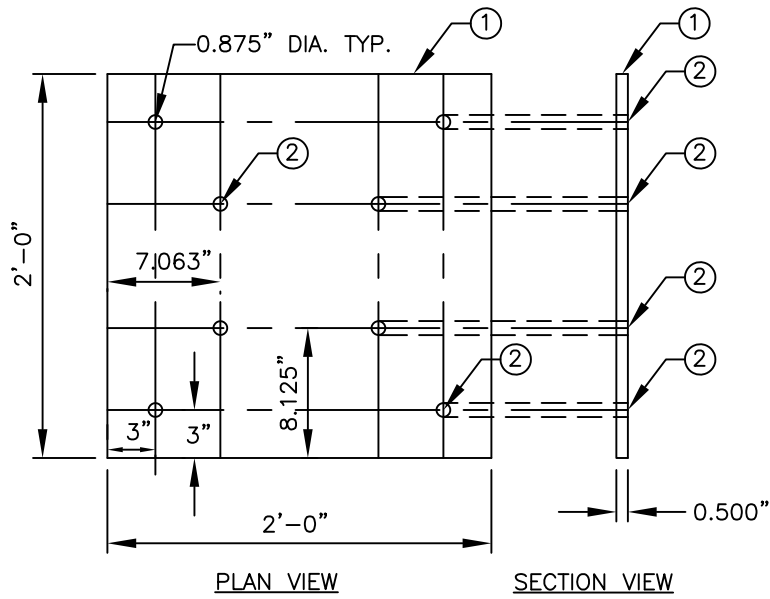
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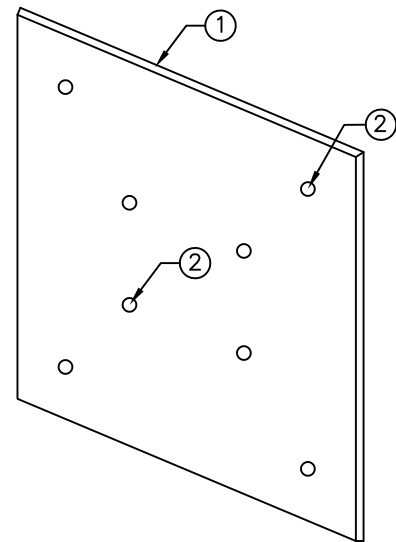
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- ① 316 STAINLESS STEEL BASE PLATE
- ② 3/4" DIA. X8" STAINLESS STEEL WEDGE BOLT SCREW ANCHORS, (8 EA.)



ISOMETRIC VIEW

4" DIAMETER PUMP DISCHARGE BASE PLATE

PS-16

**BONITA SPRINGS
UTILITIES, INC.**

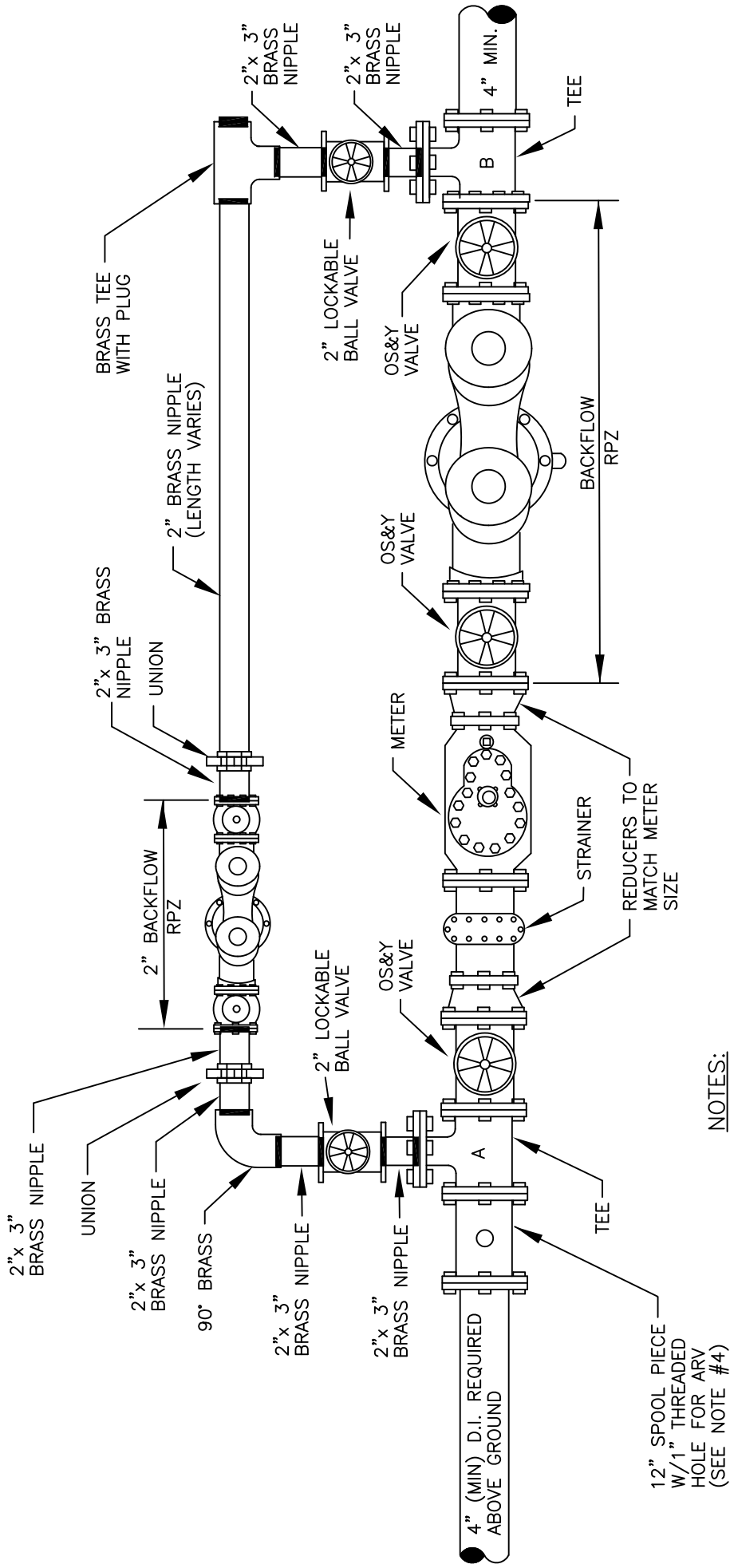
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DWG #: PS-16.DWG

BACKFLOW DETAILS

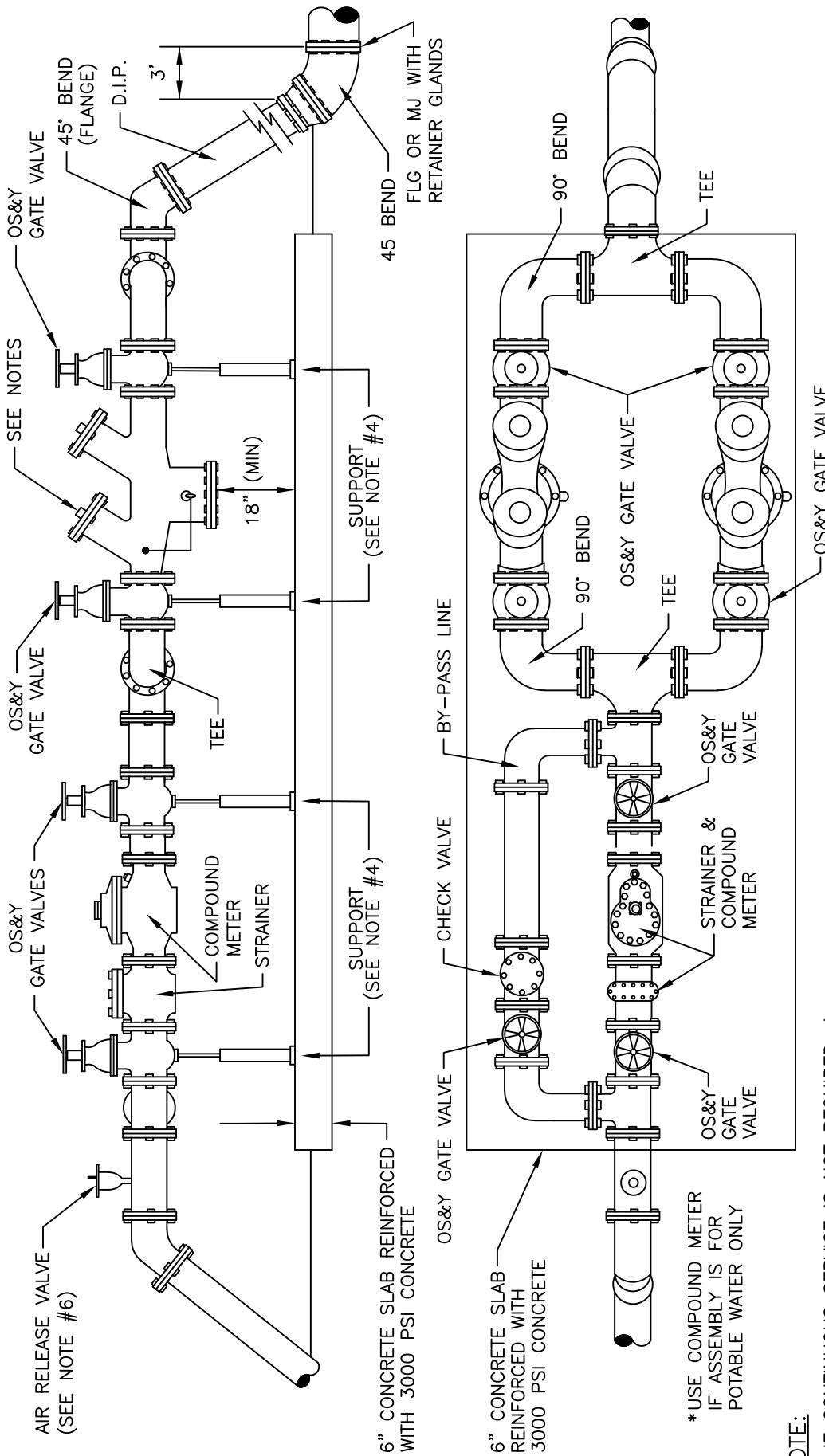


NOTES:

1. METER SIZE DETERMINES CONFIGURATION SIZE BETWEEN TEE "A" & "B".
2. ENTIRE APPARATUS TO BE PAINTED WITH UV RATED PAINT (EXCEPT METER).
3. CONSULT BSU "BACKFLOW PREVENTION CROSS CONNECTION CONTROL PROGRAM" FOR APPROVED SIZES, MODEL NUMBERS & MANUFACTURERS.
4. "N" STYLE BACKFLOWS REQUIRE A LOCATION FOR AN AIR RELEASE VALVE.

**STANDARD METER/BACKFLOW
ASSEMBLY DETAIL**
(3" OR LARGER)
BF-1

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DATE: APRIL 2019
DWG #: BF-1.DWG
BONITA SPRINGS UTILITIES, INC. 11900 E. TERRY STREET BONITA SPRINGS, FLORIDA 34135



NOTE:

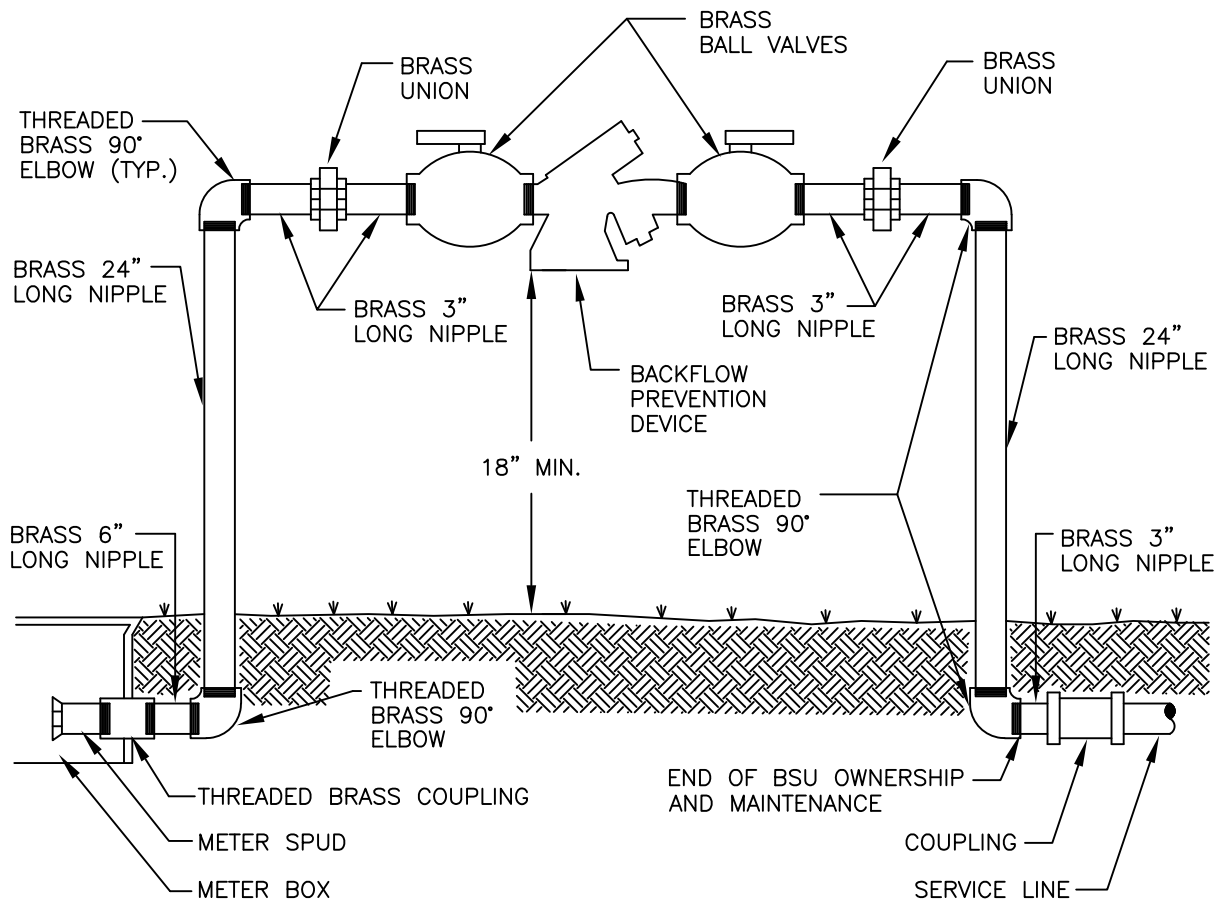
1. IF CONTINUOUS SERVICE IS NOT REQUIRED, A SINGLE BACKFLOW PREVENTER MAY BE INSTALLED. AND TEES AND BENDS ELIMINATED. DEVICE DEPENDENT ON DEGREE OF HAZARD.
2. METER BYPASS LINE OPTIONAL. DEPENDENT ON CUSTOMER NEEDS/CONTINUOUS SUPPLY DURING METER REPAIR.
3. SUPPORT TO BE STAINLESS STEEL.
4. CONSULT BSU "BACKFLOW PREVENTION CROSS CONNECTION CONTROL PROGRAM" FOR APPROVED SIZES, MODEL NUMBERS & MANUFACTURERS.
5. "N" STYLE BACKFLOWS REQUIRE A LOCATION FOR AN AIR RELEASE VALVE.

3" OR LARGER COMPOUND METER AND BACKFLOW PREVENTER

(ONLY WITH BSU PRIOR APPROVAL)
BF-2

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DATE: APRIL 2019
DWG #: BF-2.DWG



NOTE:
 DEVICE DEPENDENT
 ON DEGREE OF HAZARD.

BACKFLOW PREVENTION DEVICE 3/4", 1", 2"

(NEW INSTALLATIONS BY BSU,
 EXCEPT FOR BACKFLOWS ON FIRE LINES)

BF-3

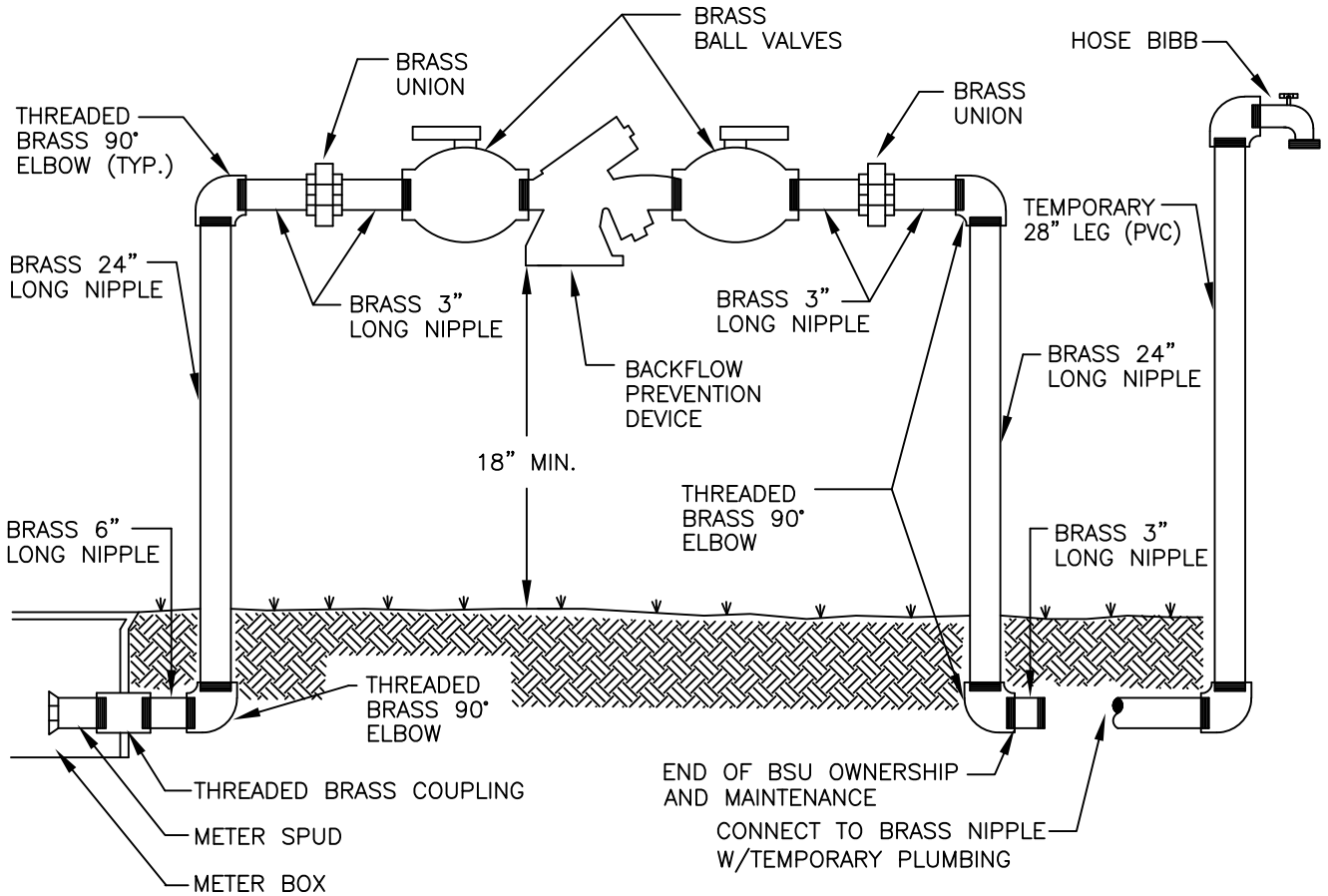
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DWG #: BF-3.DWG



NOTE:
 DEVICE DEPENDENT
 ON DEGREE OF HAZARD.

CONTRACTOR'S TEMPORARY HOSE BIBB
BACKFLOW PREVENTION DEVICE 3/4", 1", 2"
 (INSTALLED BY BUILDER)
 BF-5

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