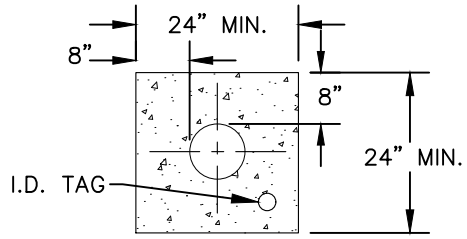
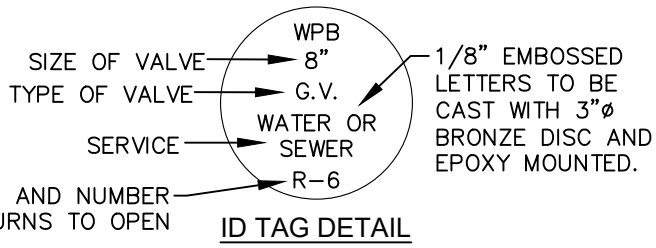


COLLAR DETAIL



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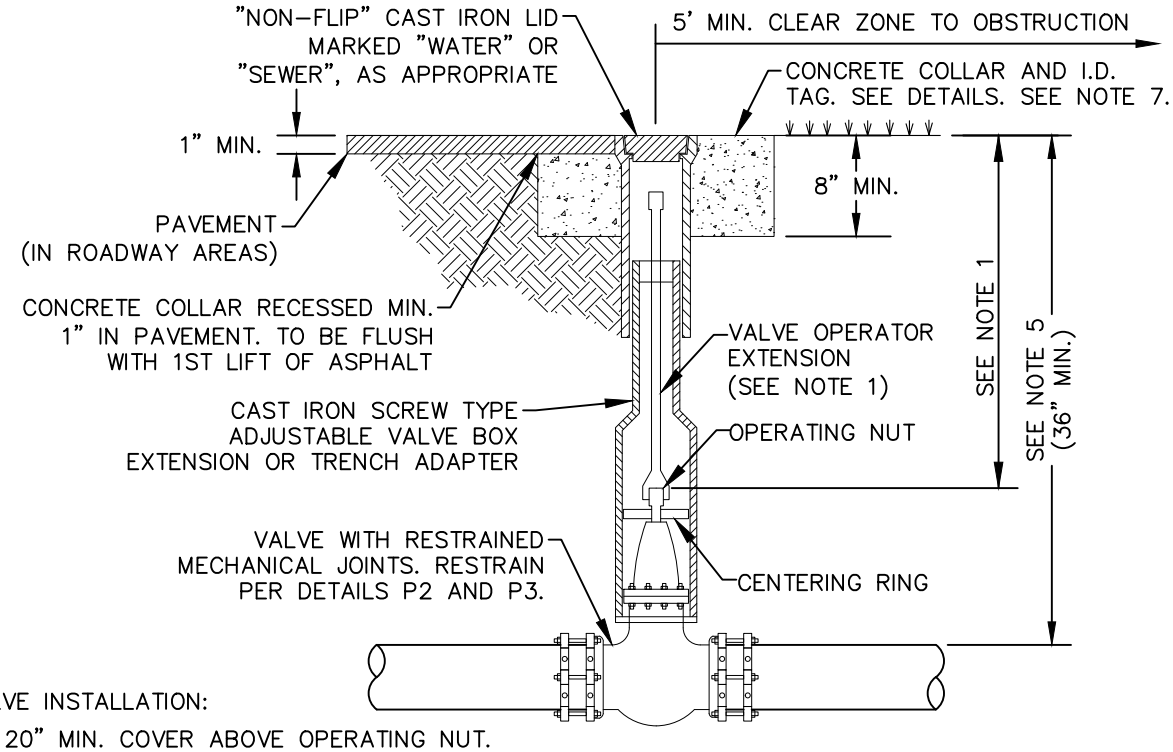
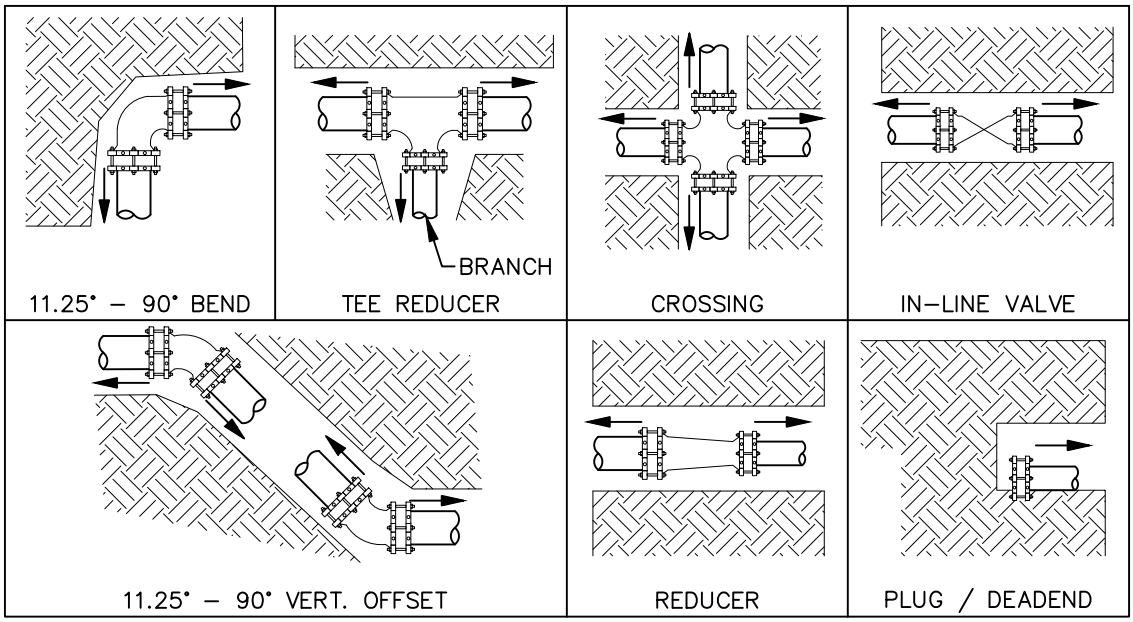


1. VALVE INSTALLATION:
   a. 20" MIN. COVER ABOVE OPERATING NUT.
   b. WHEN TOP OF OPERATING NUT IS DEEPER THAN 36", A STAINLESS STEEL EXTENSION WILL BE REQUIRED TO BRING OPERATING NUT TO NOT MORE THAN 24" BELOW FINISHED GRADE. EXTENSION BOLTS & NUTS SHALL BE 316 STAINLESS STEEL. A STEEL CENTERING PLATE WELDED TO THE EXTENSION IS ALSO REQUIRED.
   c. VALVE TO BE INSTALLED IN STRAIGHT SECTION OF PIPE AND VALVE STEM TO BE PERPENDICULAR TO GROUND SURFACE.
   d. RISER RINGS ARE NOT ALLOWED.
2. VALVE BOXES SHALL HAVE COVERS & LIDS MARKED "WATER" OR "SEWER", AS APPROPRIATE.
3. ALL VALVE BOXES SHALL BE INSTALLED FLUSH TO FINISHED GRADE.
4. VALVE BOX EXTENSIONS TO BE DIP OR C-900 PVC DR-18 (BLUE FOR WATER, GREEN FOR SEWER).
5. IN ORDER TO MAINTAIN ADEQUATE COVER OVER VALVE NUT, THE FOLLOWING MINIMUM COVER OVER PIPE IS REQUIRED:

GATE VALVE SIZE	MIN. COVER OVER PIPE
8"	36"
10"	38"
12"	42"
16"	48"
20"	54"
24"	60"
30"	76"
36"	84"

6. VALVE BOXES SHALL NOT BE LOCATED IN A CURB, RAMP, OR SIDEWALK UNLESS SPECIFICALLY APPROVED BY THE CITY AND SHALL BE LOCATED OUTSIDE OF WHEEL PATHS/PEDESTRIAN AREAS WHERE POSSIBLE.
7. CONCRETE COLLARS SHALL BE INSTALLED ON ALL VALVES.
8. VALVES SHALL NOT BE INSTALLED AT AN INCLINE.

REVISED: 11/21/2025	PRESSURE PIPE - VALVE BOX SETTING	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-1 SCALE: (N.T.S.)



NOTES:

1. ALL PROPOSED FITTINGS FOR WATERMAIN AND FORCEMAIN PIPE SHALL BE RESTRAINED MJ FITTINGS.

2. EXISTING FITTINGS AND VALVES SHALL BE RESTRAINED FOR THE FORCES SHOWN ABOVE WITH JOINT RESTRAINT OR THRUST COLLAR RESTRAINT PER STANDARD DETAILS P–3, P–3.1, AND P–3.2 EVEN WHEN THE FITTINGS OR VALVES ARE CUT–IN AFTER THE INITIAL PIPE INSTALLATION. TRANSITE PIPE WILL BE REPLACED WITH DUCTILE IRON PIPE AT LEAST THROUGH THE RESTRAINING LENGTH.

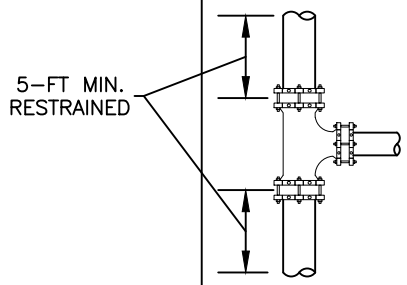
3. CROSSES SHALL BE RESTRAINED IN ALL DIRECTIONS.

4. ENGINEER OF RECORD SHALL BE RESPONSIBLE FOR:
   a. VALIDATING THAT THE THRUST RESTRAINT SHOWN IN THE CITY'S DETAILS CAN HANDLE THE DESIGN FORCES FOR A PARTICULAR SITE AND
   b. DESIGNING ANY ADDITIONAL THRUST RESTRAINT AS NEEDED TO HANDLE THRUST FORCES REQUIRED FOR A PARTICULAR SITE.

5. AT A MINIMUM, A PROPERLY RESTRAINED THRUST BLOCK OR RESTRAINED PILE IS REQUIRED TO BE INSTALLED ON THE BACK SIDE OF ALL ABANDONED VALVES.
   a. VALVE TO BE CLOSED, MJ PLUG TO BE INSTALLED, VALVE BOX AND EXTENSION TO BE REMOVED, BACKFILLED, AND RESTORED TO FINAL PAVEMENT ELEVATION.
   b. ABANDONED VALVE TO BE VISUALLY TESTED BY CITY STAFF TO BE ACCEPTED.
   c. THE CITY MAY REQUIRE PORTIONS OF THE REMAINING PIPE AND VALVE TO BE RODDED BACK.

REVISED: 11/21/2025	PRESSURE PIPE - THRUST RESTRAINT FITTING AND VALVE REQUIREMENTS	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-2 SCALE: (N.T.S.)

MINIMUM LENGTH OF PIPE (FEET) TO BE RESTRAINED													
SOURCE: EBAA IRON'S RESTRAINT LENGTH CALCULATOR V7.1.3 FOR DUCTILE IRON PIPE													
FITTING TYPE		PIPE SIZE (ø)											
		4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"
HORIZ. 90° BEND		19	26	33	40	46	53	59	65	70	81	96	110
HORIZ. 45° BEND		8	11	14	17	20	22	25	27	29	34	40	46
HORIZ. 22.5° BEND		4	6	7	8	10	11	12	13	14	17	20	22
HORIZ. 11.25° BEND		2	3	4	4	5	6	6	7	7	8	10	11
45° VERT. OFFSET BEND	UPPER BEND	14	19	25	30	35	40	45	49	54	63	76	87
	LOWER BEND	8	11	14	17	20	22	25	27	29	34	40	46
22.5° VERT. OFFSET BEND	UPPER BEND	7	9	12	15	17	19	22	24	26	31	37	42
	LOWER BEND	4	6	7	8	10	11	12	13	14	17	20	22
11.25° VERT. OFFSET BEND	UPPER BEND	4	5	6	7	9	10	11	12	13	15	18	21
	LOWER BEND	2	3	4	4	5	6	6	7	7	8	10	11
TEE (BRANCH RESTRAINT)	4" X ø	28	–	–	–	–	–	–	–	–	–	–	–
	6" X ø	26	40	–	–	–	–	–	–	–	–	–	–
	8" X ø	24	39	54	–	–	–	–	–	–	–	–	–
	10" X ø	22	38	53	65	–	–	–	–	–	–	–	–
	12" X ø	20	36	52	64	77	–	–	–	–	–	–	–
	14" X ø	18	35	50	63	76	88	–	–	–	–	–	–
	16" X ø	16	33	49	62	75	87	99	–	–	–	–	–
	18" X ø	13	32	48	61	75	87	99	110	–	–	–	–
	20" X ø	11	30	47	60	74	84	98	109	120	–	–	–
	24" X ø	6	26	44	58	72	85	97	108	119	141	–	–
	30" X ø	1	21	40	55	69	82	95	106	118	140	169	–
	36" X ø	1	15	35	51	66	80	92	104	116	138	168	196
REDUCER (LARGER PIPE RESTRAINT)	6" X ø	24	–	–	–	–	–	–	–	–	–	–	–
	8" X ø	43	25	–	–	–	–	–	–	–	–	–	–
	10" X ø	58	44	24	–	–	–	–	–	–	–	–	–
	12" X ø	73	61	45	25	–	–	–	–	–	–	–	–
	14" X ø	86	76	62	46	25	–	–	–	–	–	–	–
	16" X ø	99	91	79	64	46	25	–	–	–	–	–	–
	18" X ø	112	104	93	80	65	46	25	–	–	–	–	–
	20" X ø	124	117	107	96	82	65	46	24	–	–	–	–
	24" X ø	147	141	133	124	112	99	83	65	46	–	–	–
	30" X ø	178	173	167	160	151	140	128	115	99	64	–	–
	36" X ø	207	204	199	193	185	177	167	156	144	115	64	–
PLUG / DEADEND / IN-LINE VALVE		33	46	60	71	84	96	108	119	130	152	182	210
MINIMUM NUMBER OF JOINTS TO BE RESTRAINED SHALL BE MINIMUM LENGTH AS LISTED ABOVE PLUS ONE FULL LENGTH.													

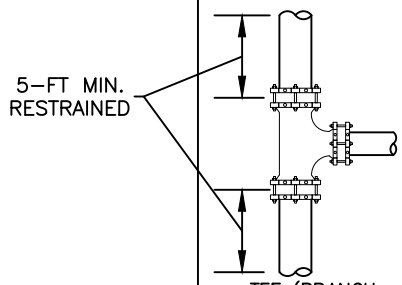


NOTES:

1. THE DATA IN THE ABOVE TABLE ARE BASED UPON EBAA IRON'S RESTRAINT LENGTH CALCULATOR V7.1.3 FOR DUCTILE IRON PIPE WITH THE FOLLOWING ASSUMPTIONS:
   SOIL TYPE: POORLY-GRADED SAND AND GRAVELLY SANDS DEPTH OF BURY: 3 FEET
   TRENCH TYPE: 3 TEST PRESSURE: 150 PSI
   SAFETY FACTOR: 2.0 – 1.0
   MINIMUM PIPE LENGTH ALONG TEE RUN: 5 FEET FROM THE RESTRAINED JOINT
2. THE RESTRAINED PIPE LENGTHS APPLY TO DUCTILE IRON PIPE ONLY.
3. RESTRAINED PIPE LENGTHS APPLY TO PIPE ON BOTH SIDES OF VALVES AND FITTINGS.
4. MULTIPLY PIPE LENGTH BY 1.4 FOR POLYETHYLENE ENCASED PIPE.
5. ALL JOINTS BETWEEN UPPER AND LOWER BENDS SHALL BE RESTRAINED.
6. DESIGN ENGINEER IS RESPONSIBLE TO PROPERLY SIZE THE RESTRAINT PIPE LENGTHS FOR THE PROJECT.
7. DURING THE TEST, THE PIPE BEING TESTED SHALL BE MAINTAINED AT A PRESSURE OF NOT LESS THAN 150 PSI FOR WATERMAINS AND 100 PSI FOR FORCEMAINS.
8. 90° VERTICAL OFFSETS ARE NOT ALLOWED WITHOUT JUSTIFICATION BY DESIGN ENGINEER AND WRITTEN APPROVAL BY THE CITY.
9. RESTRAINED PIPE LENGTHS EQUAL TO AN "INLINE VALVE" CONDITION ARE REQUIRED AT EACH END OF A TRANSITION FROM HDPE PIPE TO OTHER PIPE MATERIALS.
10. RESTRAINT LENGTH FOR THE FOLLOWING CONDITIONS TO BE DESIGNED BY ENGINEER OF RECORD AND SIGNED AND SEALED CALCULATIONS BY A FLORIDA PROFESSIONAL ENGINEER SHALL BE PROVIDED:
    1) PIPES GREATER THAN 36" AND
    2) FIRE LINES
       a. MINIMUM DESIGN PRESSURE FOR FIRE LINES TO BE 200 PSI.

REVISED: 11/21/2025	PRESSURE PIPE - DIP DESIGN TABLE FOR MECHANICAL THRUST RESTRAINT (MIN. PIPE LENGTH)	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-3 SCALE: (N.T.S.)

MINIMUM LENGTH OF PIPE (FEET) TO BE RESTRAINED												
SOURCE: EBAA IRON'S RESTRAINT LENGTH CALCULATOR V7.1.3 FOR PVC C-900												
FITTING TYPE		PIPE SIZE (ø)										
		4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"
HORIZ. 90° BEND		23	32	42	49	58	67	73	80	88	101	119
HORIZ. 45° BEND		10	14	18	21	24	28	31	34	37	42	49
HORIZ. 22.5° BEND		5	7	9	10	12	14	15	16	18	20	24
HORIZ. 11.25° BEND		3	4	5	5	6	7	8	8	9	10	12
45° VERT. OFFSET BEND	UPPER BEND	21	30	39	46	55	64	70	77	85	99	118
	LOWER BEND	10	14	18	21	24	28	31	34	37	42	49
22.5° VERT. OFFSET BEND	UPPER BEND	10	15	19	23	27	31	34	37	41	48	57
	LOWER BEND	5	7	9	10	12	14	15	16	18	20	24
11.25° VERT. OFFSET BEND	UPPER BEND	5	7	10	11	13	16	17	19	21	24	29
	LOWER BEND	3	4	5	5	6	7	8	8	9	10	12
TEE (BRANCH RESTRAINT)	4" x ø	26	–	–	–	–	–	–	–	–	–	–
	6" x ø	14	46	–	–	–	–	–	–	–	–	–
	8" x ø	2	38	68	–	–	–	–	–	–	–	–
	10" x ø	1	29	61	86	–	–	–	–	–	–	–
	12" x ø	1	20	54	81	106	–	–	–	–	–	–
	14" x ø	1	12	48	76	102	127	–	–	–	–	–
	16" x ø	1	1	40	69	96	122	142	–	–	–	–
	18" x ø	1	1	32	62	90	117	138	160	–	–	–
	20" x ø	1	1	24	56	85	113	135	156	177	–	–
	24" x ø	1	1	6	42	74	103	126	149	171	211	–
	30" x ø	1	1	1	20	55	87	112	137	160	202	257
REDUCER (LARGER PIPE RESTRAINT)	6" x ø	37	–	–	–	–	–	–	–	–	–	–
	8" x ø	67	39	–	–	–	–	–	–	–	–	–
	10" x ø	91	69	38	–	–	–	–	–	–	–	–
	12" x ø	114	96	70	39	–	–	–	–	–	–	–
	14" x ø	138	122	100	73	39	–	–	–	–	–	–
	16" x ø	156	142	123	100	72	39	–	–	–	–	–
	18" x ø	175	163	146	126	101	72	38	–	–	–	–
	20" x ø	194	183	168	150	128	102	72	38	–	–	–
	24" x ø	230	221	209	194	176	155	130	102	72	–	–
	30" x ø	279	272	262	251	237	220	201	179	155	100	–
PLUG / DEADEND / IN-LINE VALVE		51	71	93	111	131	153	169	186	204	238	285
MINIMUM NUMBER OF JOINTS TO BE RESTRAINED SHALL BE MINIMUM LENGTH AS LISTED ABOVE PLUS ONE FULL LENGTH.												



NOTES:

1. THE DATA IN THE ABOVE TABLE ARE BASED UPON EBAA IRON'S RESTRAINT LENGTH CALCULATOR V7.1.3 FOR PVC C-900 WITH THE FOLLOWING ASSUMPTIONS:

   SOIL TYPE: POORLY-GRADED SAND AND GRAVELLY SANDS — DEPTH OF BURY: 3 FEET

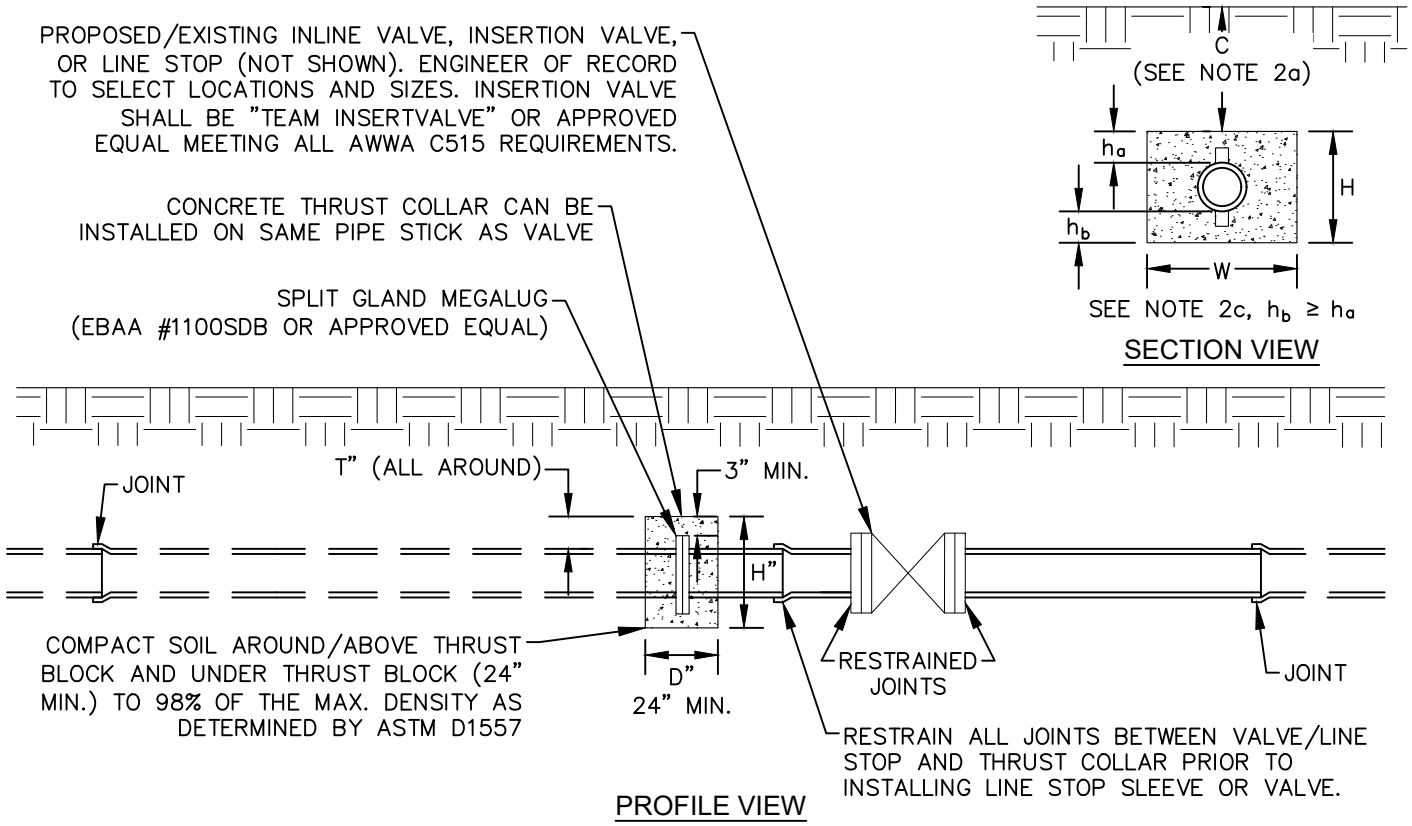
   TRENCH TYPE: 3 — TEST PRESSURE: 150 PSI

   SAFETY FACTOR: 2.0 – 1.0

   MINIMUM PIPE LENGTH ALONG TEE RUN: 5 FEET FROM THE RESTRAINED JOINT

2. THE RESTRAINED PIPE LENGTHS APPLY TO PVC C-900 ONLY.
3. RESTRAINED PIPE LENGTHS APPLY TO PIPE ON BOTH SIDES OF VALVES AND FITTINGS.
4. MULTIPLY PIPE LENGTH BY 1.4 FOR POLYETHYLENE ENCASED PIPE.
5. ALL JOINTS BETWEEN UPPER AND LOWER BENDS SHALL BE RESTRAINED.
6. DESIGN ENGINEER IS RESPONSIBLE TO PROPERLY SIZE THE RESTRAINT PIPE LENGTHS FOR THE PROJECT.
7. MINIMUM NUMBER OF JOINTS TO BE RESTRAINED SHALL BE MINIMUM LENGTH AS LISTED ABOVE PLUS ONE FULL LENGTH.
8. DURING THE TEST, THE PIPE BEING TESTED SHALL BE MAINTAINED AT A PRESSURE OF NOT LESS THAN 150 PSI FOR WATERMAINS AND 100 PSI FOR FORCEMAINS.
9. 90° VERTICAL OFFSETS ARE NOT ALLOWED WITHOUT JUSTIFICATION BY DESIGN ENGINEER AND APPROVAL BY CITY.
10. RESTRAINED PIPE LENGTHS EQUAL TO AN "INLINE VALVE" CONDITION ARE REQUIRED AT EACH END OF A TRANSITION FROM HDPE PIPE TO OTHER PIPE MATERIALS.
11. RESTRAINT LENGTH FOR THE FOLLOWING CONDITIONS TO BE DESIGNED BY ENGINEER OF RECORD AND SIGNED AND SEALED CALCULATIONS BY A FLORIDA PROFESSIONAL ENGINEER SHALL BE PROVIDED:
    1) PIPES GREATER THAN 36" AND
    2) FIRE LINES
       a. MINIMUM DESIGN PRESSURE FOR FIRE LINES TO BE 200 PSI.

REVISED: 11/21/2025	PRESSURE PIPE - PVC C-900/C-905 DESIGN TABLE FOR MECHANICAL THRUST RESTRAINT (MIN. PIPE LENGTH)	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-3.1 SCALE: (N.T.S.)



1. THRUST BLOCKS TO BE DESIGNED IN ACCORDANCE WITH THE LATEST VERSION OF THRUST RESTRAINT FOR DUCTILE IRON PIPE BY DIPRA. THE FOLLOWING THRUST BLOCK MINIMUM DIMENSIONS ARE BASED ON THE FOLLOWING ASSUMPTIONS:

   SOIL BEARING PRESSURE = 3000LB/FT^2 (FOR SANDY-SILT SOIL)

   SAFETY FACTOR = 1.5

   TEST PRESSURE = 150 PSI

2. MINIMUM THRUST BLOCK DIMENSIONS:

   a.

PIPE SIZE	$H"_{MIN.}$	$W"_{MIN.}$	$D"_{MIN.}$	$T"_{MIN.}$	$C"_{MIN.}$	ASSUMED ORIENTATION
6"	20"	24"	24"	6"	30"	CENTERED ON PIPE, W/ MIN. 3'-0" COVER ABOVE PIPE
8"	22"	24"	24"	6"	30"	CENTERED ON PIPE, W/ MIN. 3'-0" COVER ABOVE PIPE
12"	30"	44"	24"	6"	30"	CENTERED ON PIPE, W/ MIN. 3'-3" COVER ABOVE PIPE

   b. MINIMUM WIDTH AND HEIGHT ARE NOT INTERCHANGEABLE.

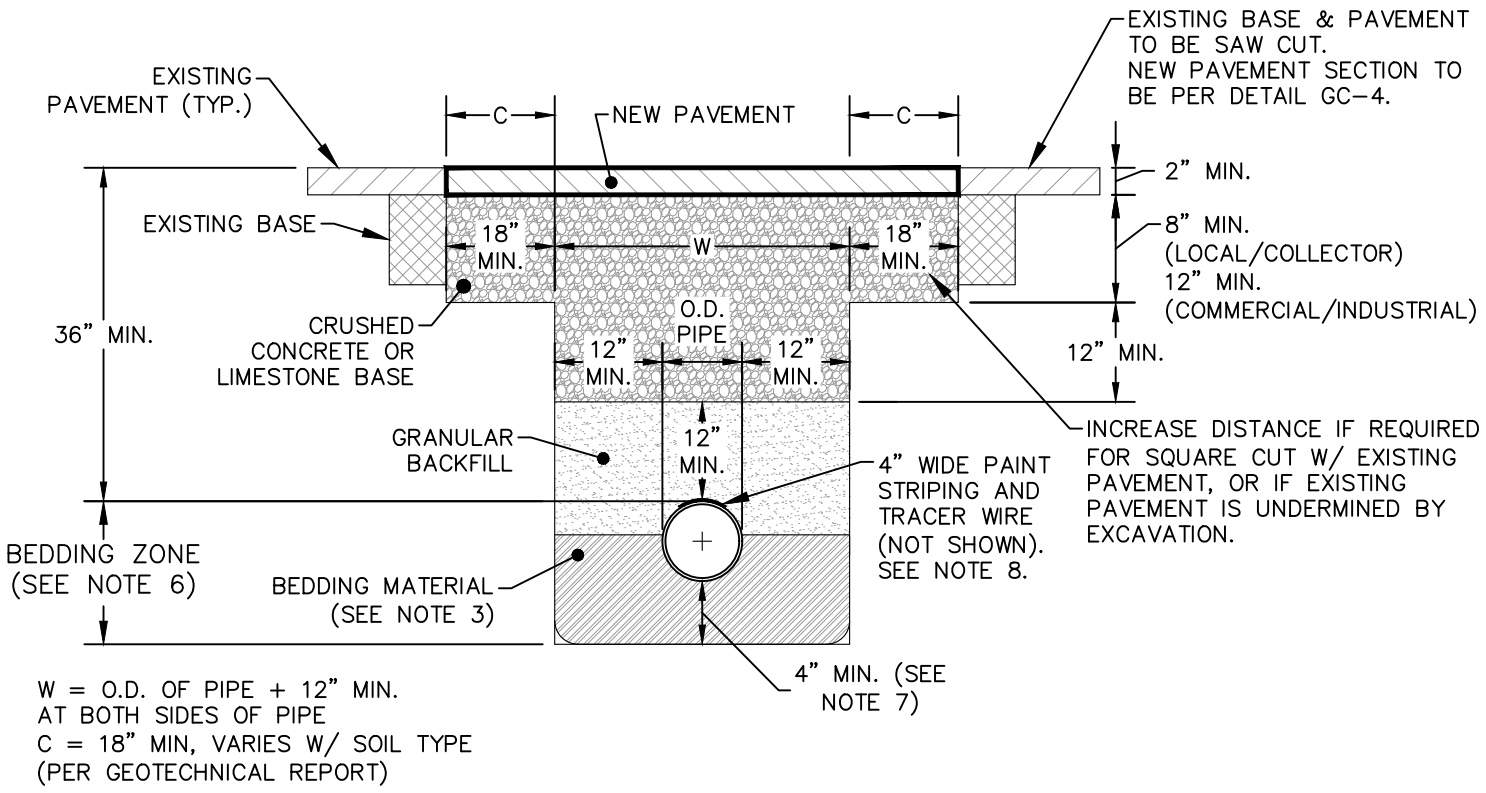
   c. THRUST BLOCK SHALL BE INSTALLED EITHER:

      1. CENTERED ON EXIST. PIPE OR

      2. INSTALLED WITH GREATER PORTION OF THRUST BLOCK BELOW PIPE THAN ABOVE PIPE ($h_b \geq h_a$).

3. LIFTS FOR BACKFILL COMPLETION SHALL BE 12" MAX.
4. ENGINEER OF RECORD SHALL INCREASE THRUST COLLAR DIMENSIONS AS REQUIRED FOR ACTUAL DESIGN CONDITIONS INCLUDING INSUFFICIENT PIPE COVER AND SHALL SUBMIT SIGNED AND SEALED CALCULATIONS PREPARED BY A FLORIDA PROFESSIONAL ENGINEER.
5. THRUST COLLAR MUST HAVE 25 FT MIN. UNDISTURBED SOIL ON EACH SIDE AT ALL TIMES WHEN VALVE/LINE STOP IS ACTIVATED. ANY DISTURBED SOIL SHALL BE RESTORED AND COMPACTED.
6. FOR LINESTOPS, A MINIMUM OF 20 FT OF CLEARANCE FROM THE EDGE OF THE LINESTOP FITTING TO THE POINT IN WHICH THE PIPE WILL BE CUT IS REQUIRED. SEE DETAIL P-6 THROUGH P-8.1 FOR TESTING REQUIREMENTS DUE TO AIR GAP BEING > 20 FT OF PIPE.
7. CONCRETE SHALL BE TYPE II, 2500 PSI MINIMUM AND MINIMUM DESIGN STRENGTH SHALL BE ACHIEVED BEFORE LINE STOP/VALVE IS ACTIVATED.

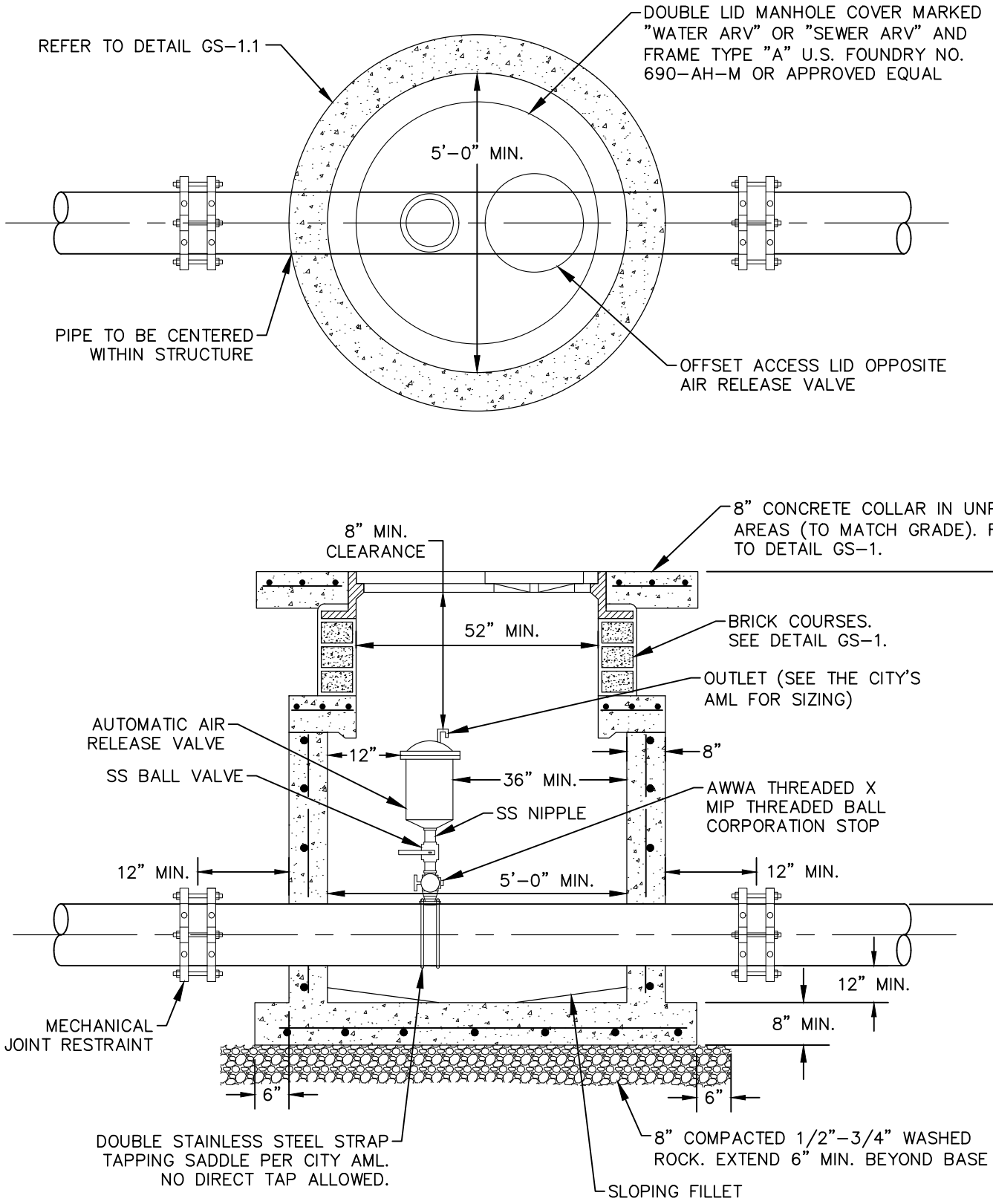
REVISED: 11/21/2025	PRESSURE PIPE - THRUST COLLAR VALVE RESTRAINT	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-3.2 SCALE: (N.T.S.)



W = O.D. OF PIPE + 12" MIN. AT BOTH SIDES OF PIPE
C = 18" MIN, VARIES W/ SOIL TYPE (PER GEOTECHNICAL REPORT)

1. BASE AND PAVEMENT SECTIONS:
   A. UNDER WPB JURISDICTION, TO BE CONSTRUCTED PER CITY OF WEST PALM BEACH STANDARD DETAIL FLEXIBLE PAVEMENT SECTION (CURRENT GC-4) AND PER TRENCH BACKFILL PAVEMENT RESTORATION (CURRENT GC-8). IF THERE IS A DISCREPANCY BETWEEN THE DETAILS, THE MORE CONSERVATIVE REQUIREMENT SHALL GOVERN.
   B. NOT UNDER WPB JURISDICTION, SHALL BE CONSTRUCTED TO THE APPROPRIATE ROAD STANDARDS. REFER TO FDOT, PALM BEACH COUNTY, OR TOWN OF PALM BEACH AS APPROPRIATE.
2. GRANULAR BACKFILL AND BEDDING MATERIALS SHALL CONSIST OF IN-SITU MATERIAL OR WASHED AND GRADED LIMEROCK 3/8" – 7/8" SIZING. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS AND LARGER ROCKS SHALL BE REMOVED AND MATERIALS SHALL BE IN ACCORDANCE WITH FDOT SPECIFICATION 125-8.3.2.
3. CONTRACTOR SHALL PROVIDE ADEQUATE COMPACTED FILL BENEATH THE HAUNCHES OF THE PIPE USING MECHANICAL TAMPS SUITABLE FOR THIS PURPOSE. THIS COMPACTION APPLIES TO THE MATERIAL PLACED BENEATH THE HAUNCHES OF THE PIPE AND ABOVE ANY BEDDING REQUIRED. IF SOIL BELOW PIPE IS NOT SUITABLE IN COMPLIANCE WITH FDOT SPECIFICATION 125-8.3.2.2, CONTRACTOR SHALL OBTAIN THE REQUIRED MATERIAL IN ORDER TO ACHIEVE COMPLIANCE.
4. THE CONTRACTOR SHALL OBTAIN A WELL-COMPACTED BED AND FILL ALONG THE SIDES OF THE PIPE AND TO A POINT INDICATING THE BASEROCK MATERIAL.
5. BACKFILL COMPACTION WITHIN R.O.W. SHALL BE MINIMUM 98% OF MAXIMUM DENSITY PURSUANT TO AASHTO-T180. BACKFILL NOT IN R.O.W. SHALL BE MINIMUM 95% OF MAXIMUM DENSITY PURSUANT TO AASHTO-T180. LIFTS SHALL BE 6" MAXIMUM. DENSITY REPORTS SHALL BE PROVIDED TO CITY PRIOR TO INSTALLATION OF ASPHALT.
6. WHEN UNSTABLE SOILS ARE ENCOUNTERED BENEATH THE BEDDING ZONE, INCLUDING PEAT, MUCK, OR OTHER ORGANIC MATERIALS, ELASTIC SILT AND CLAYS, A FOUNDATION IS REQUIRED AS DETERMINED BY THE DESIGN ENGINEER.
7. WHEN ROCK OR OTHER HARD MATERIAL HAS BEEN REPLACED TO INSTALL THE PIPE, THE BEDDING ZONE BELOW THE PIPE WILL BE INCREASED TO 12-INCHES.
8. INSTALL TRACING OR LOCATING WIRES ON TOP OF NON-METAL (PVC, HDPE, POLYETHYLENE, ETC.) PIPES FOR FUTURE LOCATING PURPOSES. CONTINUOUS 4" WIDE PAINT STRIPING IS REQUIRED FOR WATER MAINS (BLUE) AND FORCE MAINS (GREEN).
9. MAINTAIN A 5' MIN. HORIZONTAL DISTANCE FROM CITY UTILITY PIPELINES TO NEAREST OBSTRUCTIONS, STRUCTURES, OTHER UTILITY PIPELINES, ROOT BARRIER OF NEW/EXISTING TREES, ETC. A ROOT BARRIER IS REQUIRED FOR PIPE INSTALLATION CLOSER THAN 10' FROM AN EXISTING OR PROPOSED TREE.
10. WHERE REQUIRED, SHEETING AND SHORING SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS.
11. IF COMPACTION CANNOT BE ACHIEVED THROUGH NORMAL METHODS, FLOWABLE FILL CAN BE USED PER DETAIL GC-8 WITH THE CITY'S WRITTEN APPROVAL.
12. THE PIPE SHALL BE INSTALLED IN A DRY TRENCH.

REVISED: 11/21/2025	PRESSURE PIPE - TRENCH-BACKFILL-PAVEMENT RESTORATION	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-4 SCALE: (N.T.S.)



LEGEND

SS = STAINLESS STEEL

MIP = MALE IRON PIPE

REVISED: 11/21/2025	PRESSURE PIPE - STANDARD AIR RELEASE VALVE AND VAULT	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-5 SCALE: (N.T.S.)

1. MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH ASTM–C478 AND CONCRETE SHALL BE TYPE II, 4000 PSI. ALL REINFORCING SHALL BE IN ACCORDANCE WITH ASTM A615 WITH SUPPLEMENT, GRADE 60.
2. AIR RELEASE VALVE SHALL BE TYPE AND SIZE APPROPRIATE FOR SERVICE INTENDED. A 1" MIN. SIZE IS REQUIRED FOR WATERMAINS AND A 2" MIN. SIZE IS REQUIRED FOR FORCEMAINS.
3. ALL OPENINGS SHALL BE SEALED WITH WATERPROOF NON–SHRINK MORTAR.
4. COATINGS ON INTERIOR & EXTERIOR OF MANHOLES AND VAULTS SHALL BE IN ACCORDANCE WITH THE CITY'S AML, AND APPLIED IN TWO DIFFERENT COLORED COATS.
5. REINFORCED CONCRETE COLLAR REQUIRED WHEN MANHOLE OR VAULT IS OUTSIDE PAVEMENT.
6. NO WEEP HOLES SHALL BE ALLOWED IN VAULTS ON FORCEMAIN ARVs.
7. FOR VAULT TO BE CONSTRUCTED OVER EXISTING PIPE, SEE DETAIL GS–6 FOR "DOG HOUSE" MANHOLE DESIGN.
8. ARVs SHALL BE INSTALLED AT THE HIGH POINT OF WATERMAIN/FORCEMAIN. CONTRACTOR SHALL ADJUST LOCATION IN FIELD AS REQUIRED TO CONFIRM THE ARV IS INSTALLED AT THE HIGH POINT AND FINAL LOCATION IS TO BE CONFIRMED WITH THE CITY.
9. ARVs SHALL BE INSTALLED WITH SS SADDLE ASSEMBLY. DIRECT TAP IS NOT ACCEPTABLE.
10. WATERMAIN ARVs SHALL BE DESIGNED WITH THE FOLLOWING PROVISIONS TO PROTECT THE ARV OUTLET:
    A. PIPING TO CONNECT ARV OUTLET TO TERMINATION POINT AT LEAST ONE FOOT ABOVE GROUND AND WITH A SCREENED, DOWNWARD FACING ELBOW OR
    B. AN ALTERNATE METHOD OF PREVENTING INFLOW INTO ARV, SUCH AS INSTALLATION OF AN INFLOW PREVENTER, SHALL BE ALLOWED BY THE CITY IF THE ENGINEER OF RECORD RECEIVES APPROVAL FROM THE PALM BEACH COUNTY HEALTH DEPARTMENT (PBCHD).
    C. SEE DETAIL P–5.2 FOR INFLOW PREVENTER DESIGN.
11. A LARGER DIAMETER MANHOLE WILL BE REQUIRED FOR PIPES LARGER THAN 24" DIAMETER.

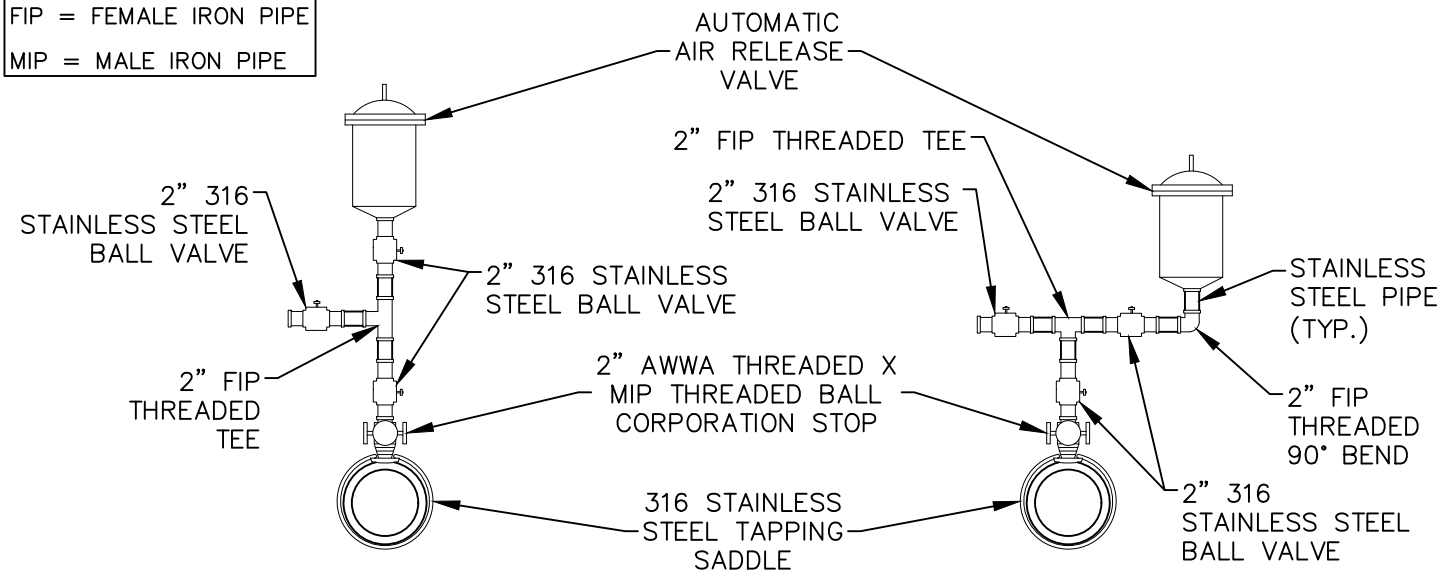
PIPE SIZE	MANHOLE DIAMETER
4" – 24"	60"
30" – 42"	72"

REVISED: 11/21/2025	PRESSURE PIPE - AIR RELEASE VALVE AND VAULT NOTES	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-5.1 SCALE: (N.T.S.)

LEGEND

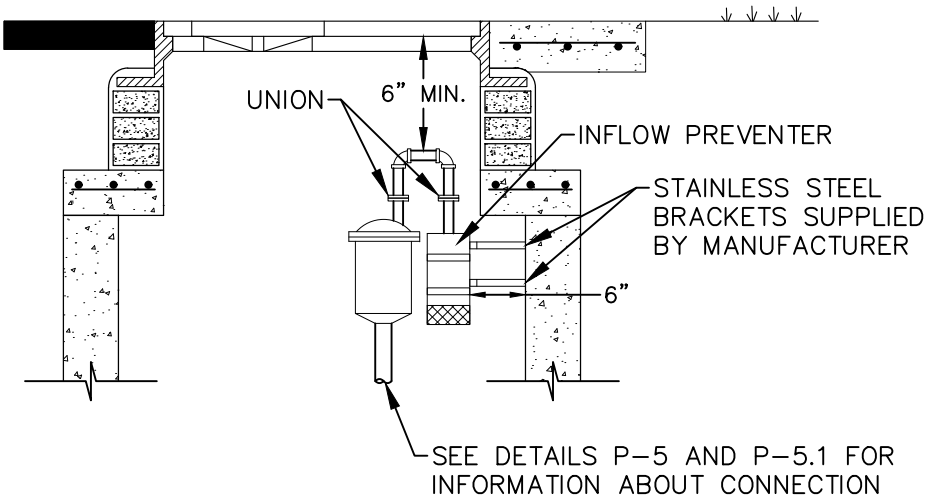
FIP = FEMALE IRON PIPE

MIP = MALE IRON PIPE



PREFERRED ARV INSTALLATION DETAIL

ALTERNATE FOR HEIGHT ISSUES



INFLOW PREVENTER
(WATERMAIN ONLY)

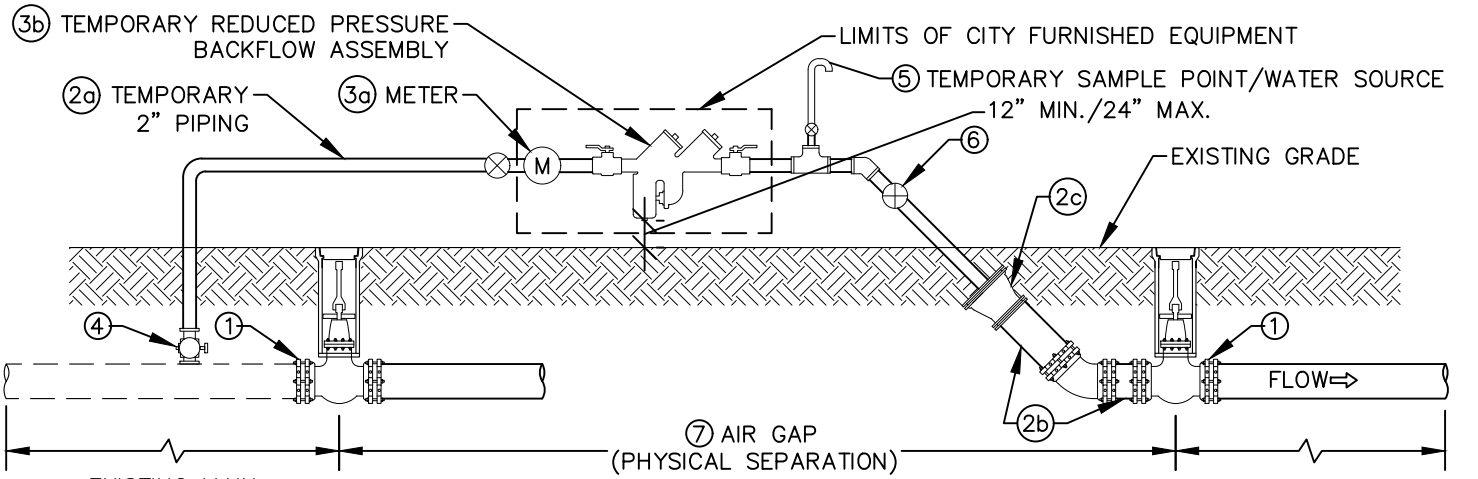
NOTES:

1. ALL PIPING TO BE STAINLESS STEEL.
2. ALTERNATIVE HEIGHT ARV ONLY TO BE USED IF APPROVED BY THE CITY.
3. INFLOW PREVENTER FOR WATERMAIN SHALL BE USED IF APPROVED BY PALM BEACH COUNTY HEALTH DEPARTMENT AND IN ACCORDANCE WITH P–5.1.
4. SHOP DRAWINGS ARE REQUIRED FOR CUSTOM MADE BRACKETS.
5. INFLOW PREVENTER TO MEET REQUIREMENTS OF AWWA C514.
6. WATERMAIN ARV INSTALLATIONS SHALL INCLUDE A 2" CHECK VALVE AFTER THE BALL VALVE AT THE TEE BRANCH. CHECK VALVE TO BE NSF 61 RATED.

REVISED: 11/21/2025	PRESSURE PIPE - AIR RELEASE VALVE DETAILS	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-5.2 SCALE: (N.T.S.)

1. ALL CLEANING, TESTING, AND DISINFECTION SHALL BE PERFORMED IN ACCORDANCE WITH THE FLORIDA ADMINISTRATIVE CODE, AWWA C651 (LATEST REVISION).
2. NEWLY CONSTRUCTED PIPELINE, NOT CLEARED AND RELEASED FOR USE BY FLORIDA DEPARTMENT OF HEALTH, SHALL NOT, AT ANY TIME, BE CONNECTED TO THE EXISTING SYSTEM.
3. UPON COMPLETION OF THE NEW PIPE INSTALLATION, ALL NEW PRESSURE PIPE SHALL:
   A. BE THOROUGHLY CLEANED (BY PIGGING AND FLUSHING).
      1) FOR PROJECTS WITH A TOTAL PIPE LENGTH OF 60 FEET OR LESS OR PIPE DIAMETER LESS THAN 4–IN, PIPE WILL BE CLEANED BY SWABBING WITH A MINIMUM 1% CHLORINE SOLUTION AND BY FLUSHING AT A MINIMUM VELOCITY OF 3.0 FEET PER SECOND TO BE WITNESSED BY THE EOR.
   B. PASS PRESSURE AND LEAKAGE TEST, AND
   C. PASS 2–CONSECUTIVE DAY BACTERIOLOGICAL TEST. (ALL WATERMAIN AND RAW WATERMAIN)
4. PRIOR TO CLEANING, TESTING, AND DISINFECTION:
   A. CONTRACTOR SHALL SUBMIT A PIGGING/FLUSHING, TESTING, AND SAMPLING PLAN AS PART OF THE SHOP DRAWING SUBMITTAL FOR REVIEW AND APPROVAL. THE PLAN SHALL INCLUDE THE OUTLINE OF THE CONSTRUCTION SEQUENCE/PHASING, LOCATION OF ALL SAMPLE POINTS INCLUDING THE POTABLE WATER SOURCE AND VENT TAPPING DETAIL, LOCATION OF HYDRANT METER, PIGGING WYE, PIG INSERTION, EXIT POINTS, DISCHARGE LOCATION AND DECHLORINATION (IF NEEDED) FOR FLUSHED WATER, PRESSURE TESTING DETAILS, AND ALL PHASING STEPS INCLUDING REMOVAL OF TEMPORARY FACILITIES.
   B. THE PIGGING/FLUSHING, TESTING, AND SAMPLING PLAN SHALL BE REVIEWED AND APPROVED BY THE ENGINEER OF RECORD (EOR) PRIOR TO SUBMISSION TO THE CITY FOR FINAL REVIEW AND APPROVAL.
   C. NOTIFY THE CITY REPRESENTATIVE (INCLUDING WATER DISTRIBUTION) AT LEAST 48 HOURS PRIOR TO SCHEDULING THE PIGGING ACTIVITY, PRESSURE/LEAKAGE TESTING, BACTERIOLOGICAL TESTING, FLUSHING, AND TAPS.
5. PIGGING/FLUSHING SETUP:
   A. PRIOR TO PIGGING/FLUSHING, THE CONTRACTOR SHALL INSTALL A JUMPER IN ACCORDANCE WITH DETAIL P–6.1 (OPTION A) OR DETAIL P–6.2 (OPTION B–1). THE DETAIL TO BE USED SHALL BE NOTED IN THE PIGGING/FLUSHING PLAN SUBMITTAL.
   B. JUMPER INSTALLATION SHALL INCLUDE A CITY–PROVIDED HYDRANT METER WHICH INCLUDES A REDUCED PRESSURE BACKFLOW ASSEMBLY. THIS IS THE SOURCE FOR CONSTRUCTION WATER FOR PIGGING/FLUSHING AND SAMPLING OF THE NEWLY CONSTRUCTED PIPELINE.
   C. THE CONTRACTOR SHALL INSTALL A FLUSHING SETUP IN ACCORDANCE WITH DETAIL P–6.4.
   D. AN AIR GAP MUST BE PROVIDED BETWEEN THE EXISTING SYSTEM AND NEWLY CONSTRUCTED PIPELINE. THE DISTANCE OF THE AIR GAP SHALL BE MINIMIZED TO INCLUDE AS MUCH OF THE NEWLY CONSTRUCTED PIPELINE, SERVICES, AND FITTINGS IN THE PRESSURE, LEAKAGE, AND BACTERIOLOGICAL TESTING AS POSSIBLE.
6. PIGGING PROCEDURE:
   A. IF NEEDED, INSTALL A TEMPORARY REDUCER FOR PIGGING PURPOSES.
   B. CLEANING AND FLUSHING SHALL BE ACHIEVED BY TWO (2) POLYURETHANE FOAM PIGS. THE FOAM PIGS WILL BE NEW AND CLEAN.
   C. ONLY ONE PIG WILL BE INSERTED AND ALLOWED TO RUN THROUGH THE MAIN AT A TIME.
   D. NEWLY CONSTRUCTED MAIN SHALL BE PIGGED AT LEAST TWICE UNTIL THE WATER RUNS CLEAR AND IS APPROVED BY AN AUTHORIZED CITY REPRESENTATIVE.
   E. THE REDUCER AND THE PIG WILL BE 2 INCHES LARGER THAN THE PIPE BEING PIGGED.
   F. AT THE END OF THE PIGGING ACTIVITY, REMOVE THE TEMPORARY REDUCER.
7. PRESSURE AND LEAKAGE TEST SHALL BE PERFORMED PER DETAIL P–7.
8. SAMPLING FOR BACTERIOLOGICAL TESTING SHALL BE PERFORMED PER DETAILS P–8 AND P–8.1
9. GENERAL NOTES FOR CLEANING, TESTING, AND DISINFECTION:
   A. AN AUTHORIZED CITY REPRESENTATIVE AND AN EOR REPRESENTATIVE SHALL BE PRESENT TO WITNESS THE ENTIRE PIGGING OPERATION INCLUDING SETUP BEFORE, PRESSURE AND LEAKAGE TESTING, AND BACTERIOLOGICAL SETUP.
   B. NO EXISTING VALVES SHALL BE OPERATED, EXCEPT BY AUTHORIZED CITY PERSONNEL.
   C. ALL TEMPORARY PIPE AND FITTINGS TO BE FULLY RESTRAINED AND ALL MATERIALS SHALL BE IN ACCORDANCE TO THE CITY'S AML.
   D. AFTER CONNECTION AND NEWLY ACCEPTED MAIN IS ACTIVATED, ALL TEMPORARY CORPORATION STOPS ARE TO BE REMOVED AND PLUGGED.

REVISED: 11/21/2025	PRESSURE PIPE - CLEANING, TESTING, AND DISINFECTION NOTES	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-6 SCALE: (N.T.S.)

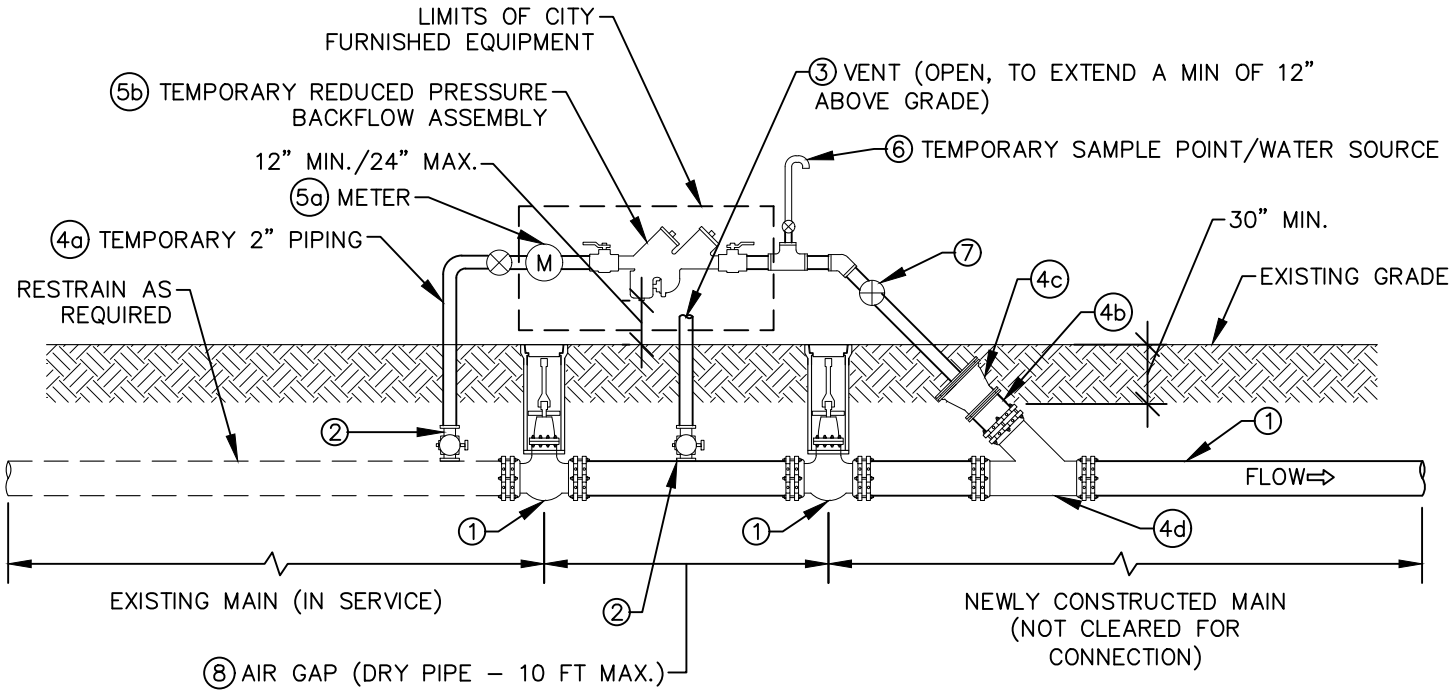


OPTION "A"

SEE DETAIL P-6 FOR ADDITIONAL NOTES AND DETAILS,
P-6.2 AND P-6.3 FOR ALTERNATE JUMPER SETUP,
AND P-6.4 FOR FLUSHING SETUP

1. VALVES MUST BE IN CLOSED POSITION AND FULLY RESTRAINED. CONFIRM EXISTING VALVES CAN BE CLOSED. VALVES TO BE OPENED ONLY AFTER FLORIDA DEPARTMENT OF HEALTH RELEASE AND NEW CONNECTION PIPE HAS BEEN CLEARED FOR SERVICE (SEE ITEM 7). LINESTOP OR INSERTION VALVE TO BE INSTALLED IF EXISTING VALVE IS NOT PRESENT OR OPERATIONAL.
2. TEMPORARY 2" PIPING SHALL BE NSF APPROVED. AFTER NEWLY ACCEPTED MAIN IS CLEARED BY THE HEALTH DEPARTMENT, ALL TEMPORARY PIPING AND FITTINGS SHALL BE REMOVED.
   - 2a. 2" TEMPORARY PIPING AND FITTINGS SHALL BE COPPER, SCHEDULE 40 PVC (PIPE COLOR: WHITE), OR POLYETHYLENE. COPPER SHALL BE LEAD FREE.
   - 2b. TEMPORARY DIP SIZED TO MATCH NEWLY CONSTRUCTED MAIN
   - 2c. TEMPORARY REDUCER SIZED 2" MIN. LARGER THAN PIGGED PIPE
3. CITY-FURNISHED MATERIALS
   - 3a. CITY-FURNISHED HYDRANT METER (CONTRACTOR TO PAY FEE FOR WATER USAGE)
   - 3b. CITY-FURNISHED TEMPORARY REDUCED PRESSURE BACKFLOW ASSEMBLY (CONTRACTOR TO VERIFY CONNECTION FITTINGS WITH CITY STAFF)
4. BALL CORPORATION STOPS
   - a) CORPORATION STOPS SHALL BE AWWA THREADED X FEMALE IRON PIPE (FIP) THREADED INSTALLED WITH:
     - i) BRASS NIPPLE AND COUPLING AS REQUIRED.
     - ii) DOUBLE STAINLESS STEEL STRAP TAPPING SADDLE PER THE CITY'S AML (LATEST REVISION).
   - b) AFTER TIE-IN CONNECTION, ALL CORPORATION STOPS SHALL BE CLOSED AND PLUGGED WITH BRASS PLUG.
5. SAMPLE POINT TO BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DETAIL P-8 AS APPLICABLE. ADDITIONALLY:
   - a) TESTING WATER SHALL BE FROM A POTABLE SOURCE APPROVED BY THE CITY. CONNECTION FOR TESTING WATER SHALL BE FROM AN EXISTING WATER MAIN WITH CORP STOP AS SHOWN ON DETAIL OR FROM A FIRE HYDRANT CONNECTION.
   - b) THE WATER SOURCE SHALL BE SAMPLED.
   - c) SAMPLE POINT SHALL BE DOWNSTREAM OF THE BACKFLOW PREVENTER.
6. BALL VALVE (TYP.)
7. AIR GAP – AFTER PIPE IS CLEARED BY THE HEALTH DEPARTMENT, CONNECTION PIPE TO BE INSTALLED BETWEEN EXISTING MAIN AND NEW MAIN AND TESTED AS FOLLOWS:
   - a) FOR AIR GAPS/FINAL CONNECTIONS ≤ 20 FT OF PIPE, THE NEW PIPE SHALL BE CLEANED AND DISINFECTED IN ACCORDANCE WITH AWWA C651 AND A VISUAL PRESSURE TEST SHALL BE PERFORMED.
   - b) FOR AIR GAPS/FINAL CONNECTIONS > 20 FT OF PIPE, THE NEW PIPE SHALL BE CLEANED, DISINFECTED, PRESSURE TESTED, AND BACTERIOLOGICALLY TESTED IN ACCORDANCE WITH AWWA C651 AND AS REQUIRED BY FAC 62-555.350 (485). PASSING BAC-T'S ARE REQUIRED PRIOR TO OPENING ANY VALVES TO CONNECT FINAL CONNECTION TO EXISTING SYSTEM.
     - i) IF THE CONNECTION PIPE IS CLEANED, DISINFECTED, AND TESTED ABOVE GROUND PRIOR TO INSTALLATION, PIPE ENDS MUST BE SEALED WITH PLASTIC WRAP, WATERTIGHT PLUGS, OR CAPS UNTIL THE PIPE HAS BEEN CLEARED FOR CONNECTION.

REVISED: 11/21/2025	PRESSURE PIPE - OPTION A - JUMPER DETAIL FOR PIGGING & SAMPLING	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-6.1 SCALE: (N.T.S.)



OPTION "B-1" - PIGGING/FLUSHING SETUP

SEE DETAIL P–6 FOR ADDITIONAL NOTES, DETAIL P–6.1 FOR ALTERNATE JUMPER SETUP, DETAIL P–6.3 FOR SAMPLING SETUP, AND DETAIL P–6.4 FOR FLUSHING SETUP

(1) VALVES MUST BE IN CLOSED POSITION AND FULLY RESTRAINED. CONFIRM EXISTING VALVES CAN BE CLOSED. VALVES TO BE OPENED ONLY AFTER FLORIDA DEPARTMENT OF HEALTH RELEASE. LINESTOP OR INSERTION VALVE TO BE INSTALLED IF EXISTING VALVE IS NOT PRESENT OR OPERATIONAL.

(2) BALL CORPORATION STOPS

a) CORPORATION STOPS SHALL BE AWWA THREADED X FEMALE IRON PIPE (FIP) THREADED INSTALLED WITH:

i) BRASS NIPPLE AND COUPLING AS REQUIRED.

ii) DOUBLE STAINLESS STEEL STRAP TAPPING SADDLE PER THE CITY'S AML (LATEST REVISION).

b) AFTER TIE–IN CONNECTION, ALL CORPORATION STOPS SHALL BE CLOSED AND PLUGGED WITH BRASS PLUG.

(3) VENT MUST NOT BE USED AS A SAMPLING POINT, MUST REMAIN OPEN DURING ALL TESTING TO DETECT ANY LEAKING, MUST EXTEND A MIN. OF 12" ABOVE GROUND, AND BE SUPPORTED.

(4) TEMPORARY PIPING SHALL BE NSF APPROVED.

(4a) 2" TEMPORARY PIPING AND FITTINGS SHALL BE COPPER, SCHEDULE 40 PVC (PIPE COLOR: WHITE), OR POLYETHYLENE. COPPER SHALL BE LEAD FREE.

(4b) TEMPORARY DIP SIZED TO MATCH NEWLY CONSTRUCTED MAIN*

(4c) TEMPORARY REDUCER SIZED 2" MIN. LARGER THAN PIGGED PIPE*

*AFTER PIGGING/FLUSHING IS COMPLETE AND BEFORE BACTERIOLOGICALLY SAMPLING, TEMPORARY REDUCER AND SPOOL PIECE TO BE REMOVED.

(4d) ORIENTATION OF PIGGING WYE TO BE CONFIRMED WITH CITY.

(5) CITY–FURNISHED MATERIALS

(5a) CITY–FURNISHED HYDRANT METER (CONTRACTOR TO PAY FEE FOR WATER USAGE)

(5b) CITY–FURNISHED TEMPORARY REDUCED PRESSURE BACKFLOW ASSEMBLY (CONTRACTOR TO VERIFY CONNECTION FITTINGS WITH CITY STAFF)

(6) SAMPLE POINT TO BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DETAIL P–8 AS APPLICABLE.

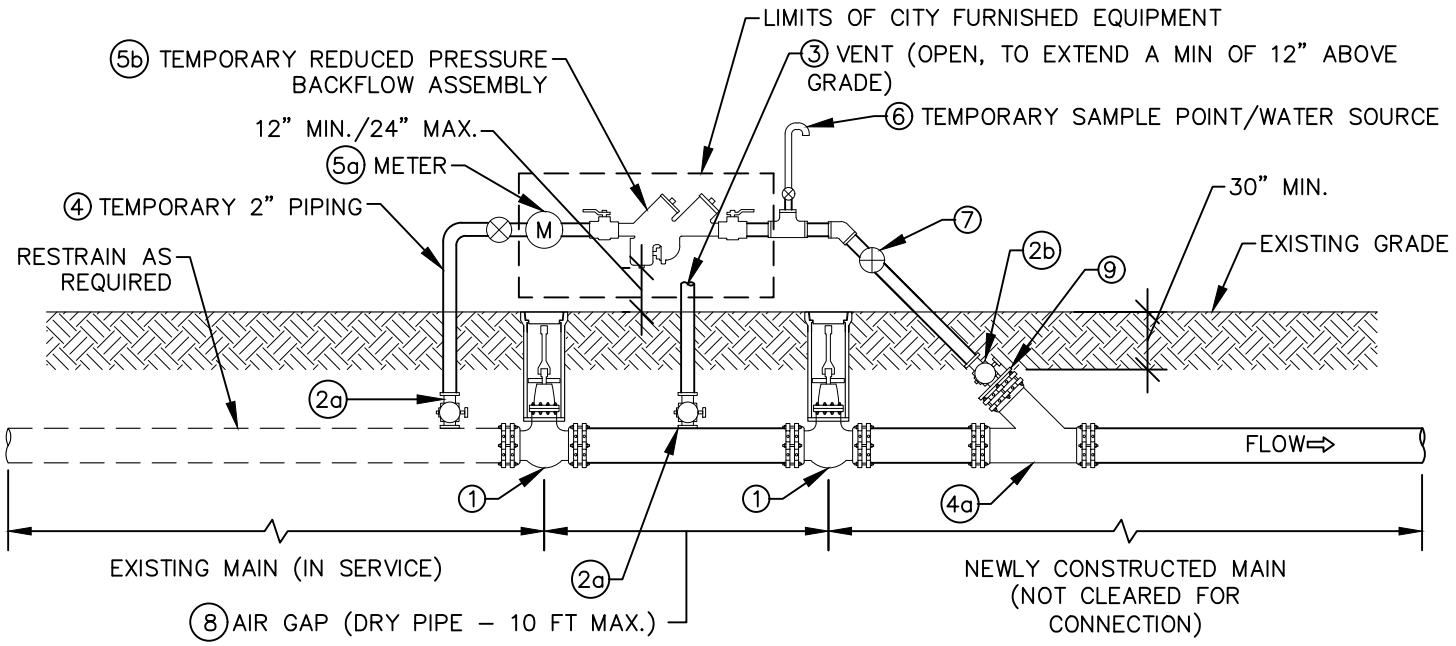
(7) BALL VALVE (TYP.)

(8) AIR GAP

a) DRY PIPE ≤ 10 FT, THE NEW PIPE SHALL BE CLEANED AND DISINFECTED IN ACCORDANCE WITH AWWA C651 AND A VISUAL PRESSURE TEST SHALL BE PERFORMED.

b) IF IT IS NOT FEASIBLE TO HAVE DRY PIPE ≤ 10 FT, JUMPER SHALL BE SET UP IN ACCORDANCE WITH OPTION A (SEE DETAIL P–6.1).

REVISED: 11/21/2025	PRESSURE PIPE - OPTION B - JUMPER DETAIL FOR PIGGING/FLUSHING	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-6.2 SCALE: (N.T.S.)



OPTION "B-2" - TESTING SETUP

SEE DETAIL P–6 FOR ADDITIONAL NOTES, DETAIL P–6.2 FOR OPTION B–1 – PIGGING/FLUSHING SETUP, AND DETAIL P–6.4 FOR FLUSHING SETUP

(1) VALVES MUST BE IN CLOSED POSITION AND FULLY RESTRAINED. CONFIRM EXISTING VALVES CAN BE CLOSED. VALVES TO BE OPENED ONLY AFTER FLORIDA DEPARTMENT OF HEALTH RELEASE. LINESTOP OR INSERTION VALVE TO BE INSTALLED IF EXISTING VALVE IS NOT PRESENT OR OPERATIONAL.

(2) BALL CORPORATION STOPS

(2a) BALL CORPORATION STOP INSTALLED WITH DOUBLE STAINLESS STEEL STRAP TAPPING SADDLE PER THE CITY'S AML (LATEST REVISION)

(2b) BALL CORPORATION STOP ON TAPPED CAP

a) CORPORATION STOPS SHALL BE AWWA THREADED BY FEMALE IRON PIPE (FIP) THREADED INSTALLED WITH:

i) BRASS NIPPLE AND COUPLING AS REQUIRED

b) AFTER TIE–IN CONNECTION, ALL CORPORATION STOPS TO BE CLOSED AND PLUGGED WITH BRASS PLUG.

(3) VENT MUST NOT BE USED AS A SAMPLING POINT, MUST REMAIN OPEN DURING ALL TESTING TO DETECT ANY LEAKING, MUST EXTEND A MIN. OF 12" ABOVE GROUND, AND BE SUPPORTED.

(4) TEMPORARY PIPING AND FITTINGS SHALL BE COPPER, SCHEDULE 40 PVC (PIPE COLOR: WHITE), OR POLYETHYLENE. PIPING SHALL BE NSF APPROVED AND COPPER SHALL BE LEAD FREE. AFTER NEWLY ACCEPTED MAIN IS CLEARED BY THE HEALTH DEPARTMENT, ALL TEMPORARY PIPING AND FITTINGS SHALL BE REMOVED.

(4a) ORIENTATION OF PIGGING WYE TO BE CONFIRMED WITH THE CITY

(5) CITY–FURNISHED MATERIALS

(5a) CITY–FURNISHED HYDRANT METER (CONTRACTOR TO PAY FEE FOR WATER USAGE)

(5b) CITY–FURNISHED TEMPORARY REDUCED PRESSURE BACKFLOW ASSEMBLY (CONTRACTOR TO VERIFY CONNECTION FITTINGS WITH CITY STAFF)

(6) SAMPLE POINT TO BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DETAIL P–8 AS APPLICABLE. ADDITIONALLY:

a) TESTING WATER SHALL BE FROM A POTABLE SOURCE APPROVED BY THE CITY. SEE P–6.2..

b) THE WATER SOURCE SHALL BE SAMPLED.

c) SAMPLE POINT SHALL BE DOWNSTREAM OF THE BACKFLOW PREVENTER.

(7) BALL VALVE (TYP.)

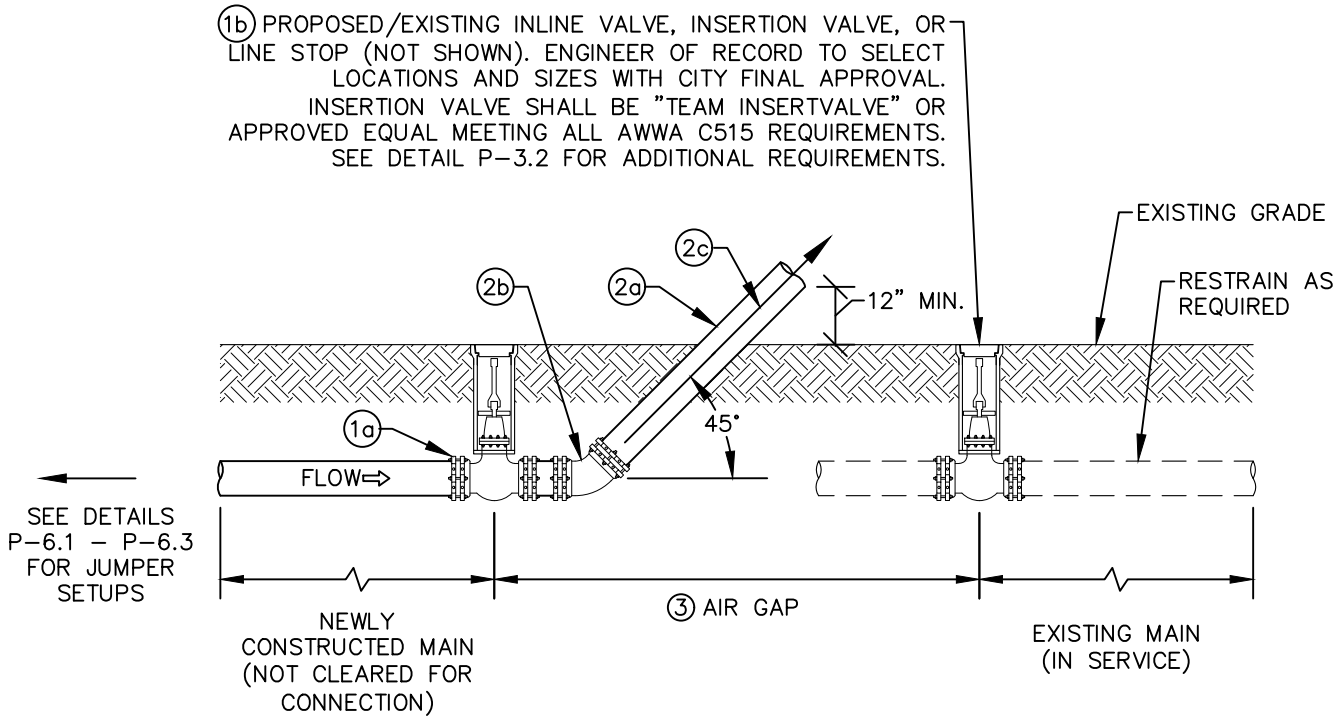
(8) AIR GAP

a) DRY PIPE ≤ 10 FT, THE NEW PIPE SHALL BE CLEANED AND DISINFECTED IN ACCORDANCE WITH AWWA C651 AND A VISUAL PRESSURE TEST SHALL BE PERFORMED.

b) IF IT IS NOT FEASIBLE TO HAVE DRY PIPE ≤ 10 FT, JUMPER SHALL BE SET UP IN ACCORDANCE WITH OPTION A (SEE DETAIL P–6.1).

(9) CAP W/ 2" TAP

REVISED: 11/21/2025	PRESSURE PIPE - OPTION B - JUMPER DETAIL FOR SAMPLING	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-6.3 SCALE: (N.T.S.)



(1) VALVES MUST BE IN CLOSED POSITION AND FULLY RESTRAINED FOR PRESSURE TESTING AND BAC-T TEST. CONFIRM EXISTING VALVES CAN BE CLOSED.

(1a) VALVE TO BE OPENED UPON CITY APPROVAL TO PERFORM CANNON FLUSHING.

(1b) VALVE TO BE OPENED ONLY AFTER TIE-IN FOLLOWING FLORIDA DEPARTMENT OF HEALTH RELEASE.

(2) TEMPORARY CANNON FLUSHING PIPE. AFTER NEWLY ACCEPTED MAIN IS CLEARED BY THE HEALTH DEPARTMENT, ALL CANNON FLUSHING PIPE AND FITTINGS SHALL BE REMOVED.

(2a) TEMPORARY CANNON FLUSHING PIPE AND FITTINGS SHALL BE DIP WITH RESTRAINED MECHANICAL JOINT FITTINGS SIZED TO MATCH NEWLY CONSTRUCTED MAIN.

(2b) TEMPORARY 45° BEND SIZED TO MATCH CANNON FLUSHING PIPE

(2c) CANNON FLUSHING PIPE POSITIONED AS TO NOT FLOOD ANY TRAVEL LANES

(3) AIR GAP - AFTER PIPE IS CLEARED BY THE HEALTH DEPARTMENT, CONNECTION PIPE TO BE INSTALLED BETWEEN EXISTING MAIN AND NEW MAIN AND TESTED AS FOLLOWS:

a) FOR AIR GAPS/FINAL CONNECTIONS ≤ 20 FT OF PIPE, THE NEW PIPE SHALL BE CLEANED AND DISINFECTED IN ACCORDANCE WITH AWWA C651 AND A VISUAL PRESSURE TEST SHALL BE PERFORMED.

b) FOR AIR GAPS/FINAL CONNECTIONS > 20 FT OF PIPE, THE NEW PIPE SHALL BE CLEANED, DISINFECTED, PRESSURE TESTED, AND BACTERIOLOGICALLY TESTED IN ACCORDANCE WITH AWWA C651 AND AS REQUIRED BY FAC 62-555.350 (485). PASSING BAC-T'S ARE REQUIRED PRIOR TO OPENING ANY VALVES TO CONNECT FINAL CONNECTION TO EXISTING SYSTEM.

i) IF THE CONNECTION PIPE IS CLEANED, DISINFECTED, AND TESTED ABOVE GROUND PRIOR TO INSTALLATION, PIPE ENDS MUST BE SEALED WITH PLASTIC WRAP, WATERTIGHT PLUGS, OR CAPS UNTIL THE PIPE HAS BEEN CLEARED FOR CONNECTION.

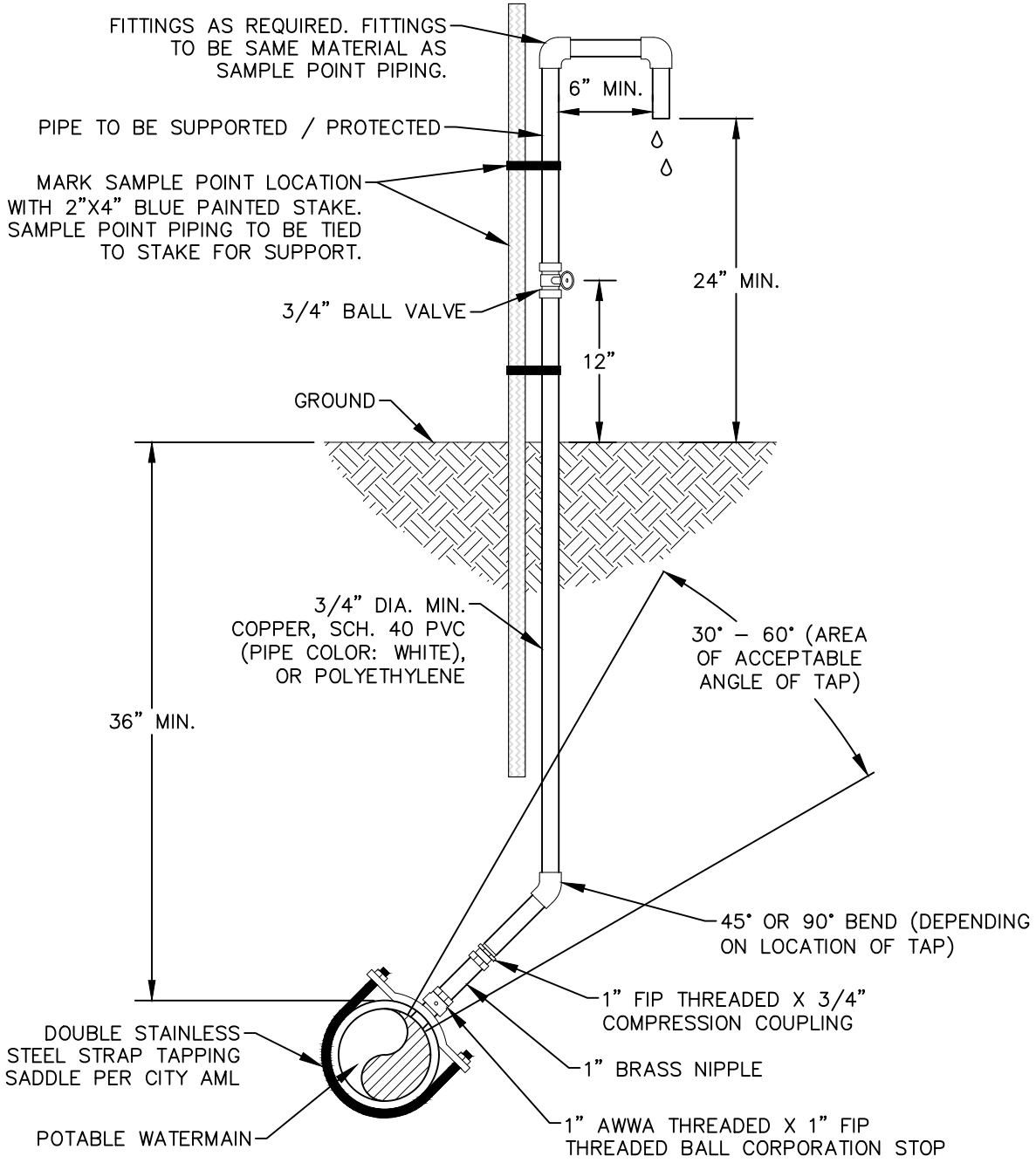
REVISED: 11/21/2025	PRESSURE PIPE - CANNON FLUSHING / EXIT POINT DETAIL	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-6.4 SCALE: (N.T.S.)

1. PRESSURE AND LEAKAGE TESTS SHALL BE CONDUCTED IN THE PRESENCE OF THE ENGINEER OR AN APPOINTED REPRESENTATIVE. CONTRACTOR WILL PROVIDE ALL NECESSARY APPARATUS INCLUDING PUMP, MEASURING DEVICE, PIPING CONNECTIONS, FITTINGS AND THE NECESSARY LABOR TO CONDUCT THE TEST.
   A. DURING THE TEST, THE PIPE BEING TESTED SHALL BE MAINTAINED AT A PRESSURE OF NOT LESS THAN 150 PSI FOR WATER MAINS AND 100 PSI FOR FORCE MAINS.
   B. FOR DIP AND PVC PIPE PRESSURE PIPE, THE PRESSURE TEST SHALL BE A MINIMUM OF 2–HOUR DURATION. THERE SHALL NOT BE A LOSS OR GAIN OF MORE THAN 5 PSI DURING THE TEST.
      i) PRESSURE TESTS SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST VERSION OF AWWA C900 FOR DIP AND C600/605 FOR PVC.
      ii) FOR DIP AND NON–FUSIBLE PVC WATERMAIN, LEAKAGE IS DEFINED AS THE QUANTITY OF WATER ADDED TO THE PIPE AFTER THE TESTING PERIOD. NO PIPE INSTALLATION WILL BE ACCEPTED IF THE LEAKAGE EXCEEDS THE QUANTITIES SPECIFIC IN AWWA C–600 SECTION 5.2 AS FOLLOWS:

$$L = \frac{SD\sqrt{P}}{148{,}000}$$

      WHERE:
      L = TESTING ALLOWANCE (MAKEUP WATER) IN GALLONS PER HOUR
      S = LENGTH OF PIPE TESTED, IN FEET
      D = NOMINAL DIAMETER OF THE PIPE, IN INCHES
      P = AVERAGE REST PRESSURE DURING THE HYDROSTATIC TEST, IN POUNDS PER SQUARE INCH (GAUGE)
      iii) NO LEAKAGE IS ALLOWED FOR FORCE MAINS.
      iv) NO LEAKAGE IS ALLOWED FOR FUSIBLE PVC PIPE.
      v) NO LEAKAGE IS ALLOWED FOR FORCE MAINS AND GRAVITY WASTEWATER MAINS WITHIN A WELLFIELD PROTECTION ZONE.

   C. FOR HDPE PRESSURE PIPE, THE PRESSURE TEST SHALL BE A MINIMUM OF 2–HOUR DURATION. THERE SHALL NOT BE A LOSS OR GAIN OF MORE THAN 5% OF THE TEST PRESSURE DURING THE TEST.
      i) PRIOR TO PRESSURE TESTING, CLEAN WATER WITHIN THE PIPE FOR PRESSURE TESTING PURPOSES SHALL BE ALLOWED TO EQUALIZE TO A COMMON TEMPERATURE WITH SURROUNDING GROUND/GROUNDWATER FOR 24 HOURS.
      ii) PRESSURE TESTS SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST VERSION OF ASTM F2164.
2. ALL NEW PIPING, FITTINGS, VALVES, AND WATER SERVICE CONNECTIONS UP TO CITY'S POINT OF SERVICE SHALL BE PRESSURE TESTED. DURING ALL WATER TESTING, SERVICE CORPORATION STOPS SHALL BE OPEN AT THE MAIN AND CURB STOPS AT THE END OF THE SERVICE LINES SHALL BE CLOSED.
3. PRESSURE TESTS SHALL NEVER BE PERFORMED AGAINST AN EXISTING CITY VALVE.
4. CONTRACTOR SHALL SUBMIT TO THE ENGINEER THE PROPOSED TESTING PATTERN TO FOLLOW. THIS SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER TO THE CITY PRIOR TO TESTING. UNLESS APPROVED BY THE ENGINEER, THE CONTRACTOR SHALL NOT TEST MORE THAN 1,200 LF OF PIPE IN A SINGLE TEST, AND ALL SERVICES MUST BE INSTALLED.
5. THE CITY OF WEST PALM BEACH SHALL BE GIVEN A MINIMUM OF 48 HOURS NOTICE TO ENABLE THE UTILITY DEPARTMENT'S REPRESENTATIVE TO BE PRESENT FOR OBSERVATIONS.
6. PRESSURE AND LEAKAGE TEST SHALL BE CONDUCTED AFTER BACKFILL AND TRENCH RESTORATION.



NOTES:

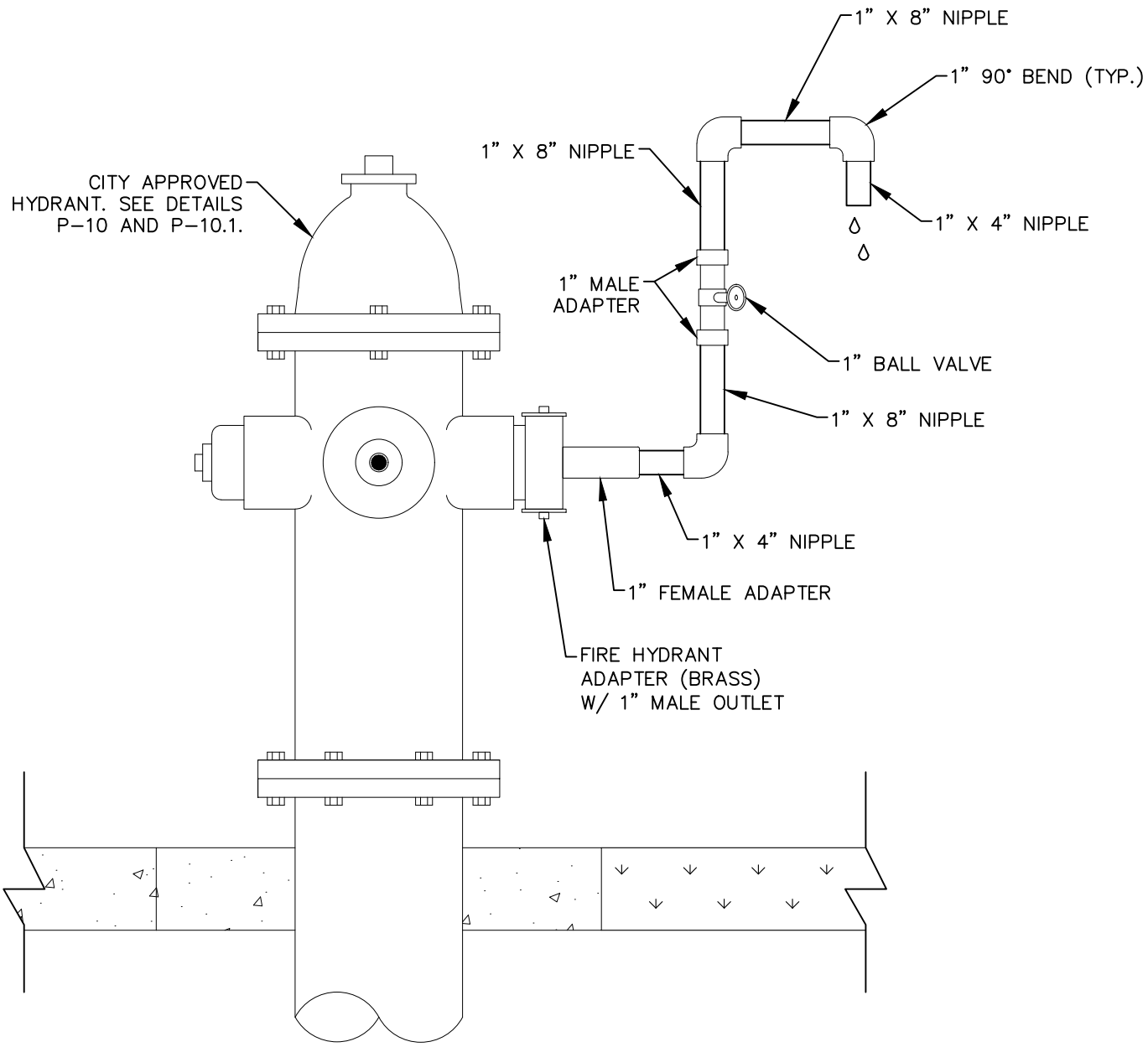
1. SAMPLING POINTS TO BE LOCATED AT THE SOURCE WATER, AT THE END OF EACH LINE, AND AT ALL BRANCHES GREATER THAN ONE PIPE LENGTH. SAMPLE POINTS SHOULD BE AT SERVICE LINES OF FIRE HYDRANT IF POSSIBLE. ALL DEAD ENDS OF THE NEWLY CONSTRUCTED PIPE SHALL BE SAMPLED. WATER SERVICES EXCEEDING 50–FT WILL BE SAMPLED.

2. AFTER SATISFACTORY BACTERIOLOGICAL TESTING AND CLEARANCE FROM THE PALM BEACH COUNTY HEALTH DEPARTMENT, REMOVE THE TUBING, BRASS NIPPLE, COUPLING, AND PLUG THE MAIN WITH BRASS FITTINGS AT CORPORATION STOP.

3. **ALL SAMPLING POINTS TO REMAIN FLOWING UNTIL CLEARANCE FROM THE PALM BEACH COUNTY HEALTH DEPARTMENT IS OBTAINED AND TIE-IN IS COMPLETED.**

4. A TEMPORARY SIGN SHALL BE INSTALLED ADJACENT TO ALL FLOWING SAMPLE POINTS WITH THE FOLLOWING LANGUAGE: "TESTING IN PROGRESS, NO DRINKING".

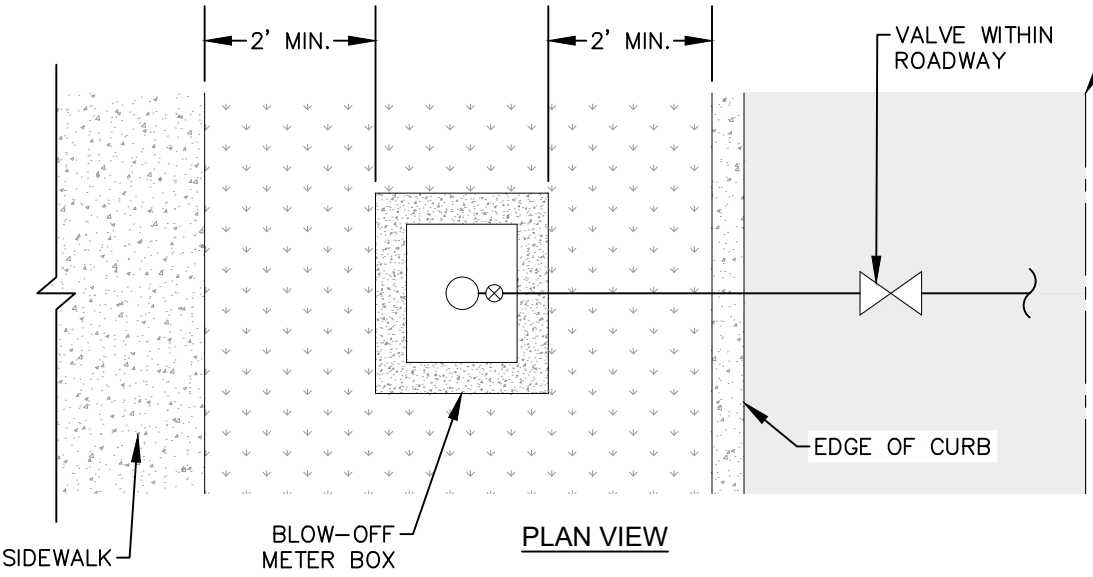
REVISED: 11/21/2025	PRESSURE PIPE - SAMPLING POINT	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-8 SCALE: (N.T.S.)



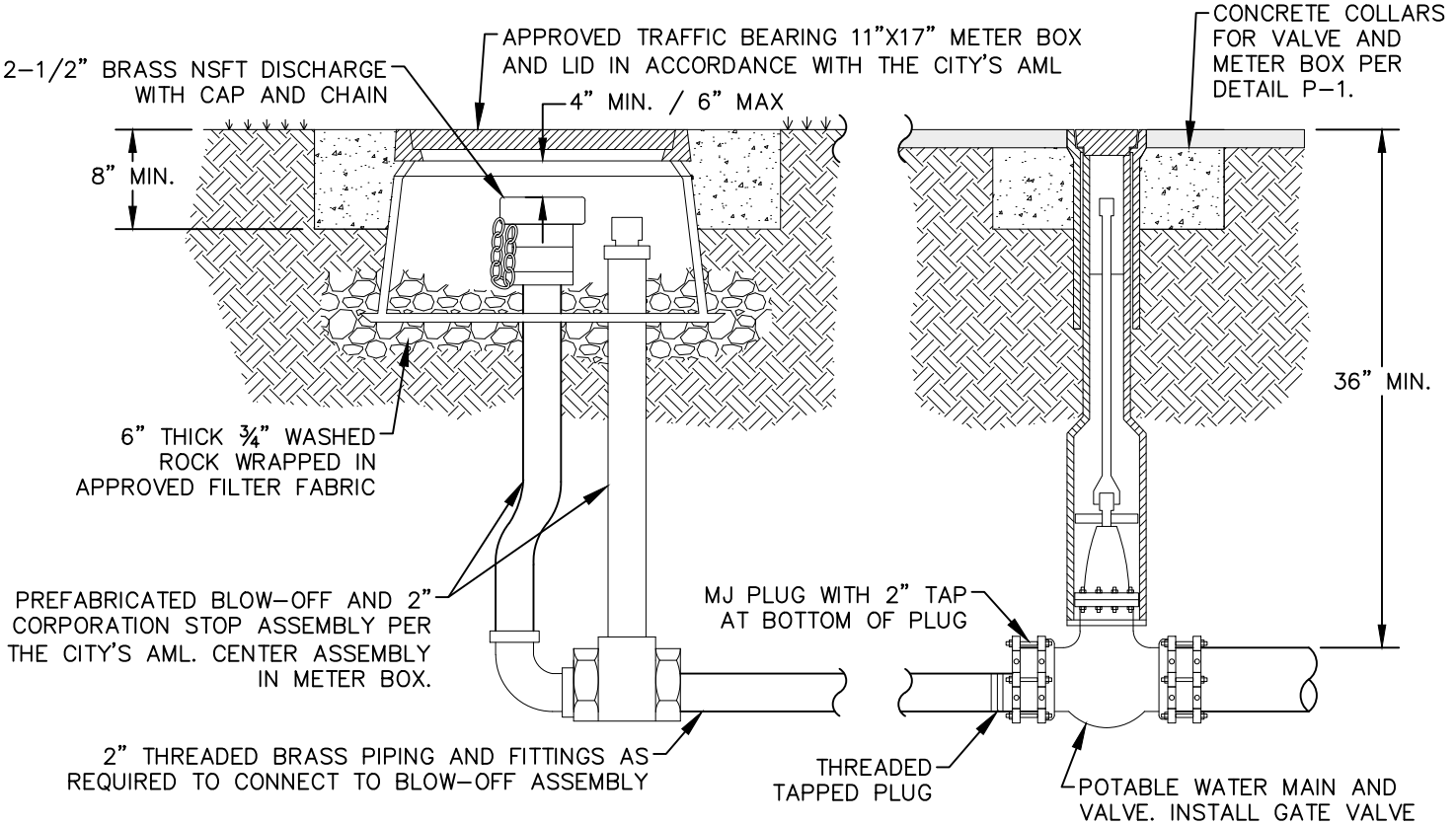
NOTES:

1. USE HYDRANT WRENCH ONLY TO INSTALL/REMOVE SAMPLE POINT.
2. ALL PIPES AND FITTINGS SCHEDULE 40 PVC (PIPE COLOR: WHITE).
3. **ALL SAMPLING POINTS TO REMAIN FLOWING UNTIL CLEARANCE FROM THE PALM BEACH COUNTY HEALTH DEPARTMENT IS OBTAINED AND TIE-IN IS COMPLETED.**
4. REQUIREMENTS FOR SIGNAGE, LOCATION, OPERATION, AND DEACTIVATION TO BE IN ACCORDANCE WITH DETAIL P-8.

REVISED: 11/21/2025	PRESSURE PIPE - FIRE HYDRANT SAMPLING POINT	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-8.1 SCALE: (N.T.S.)



PLAN VIEW

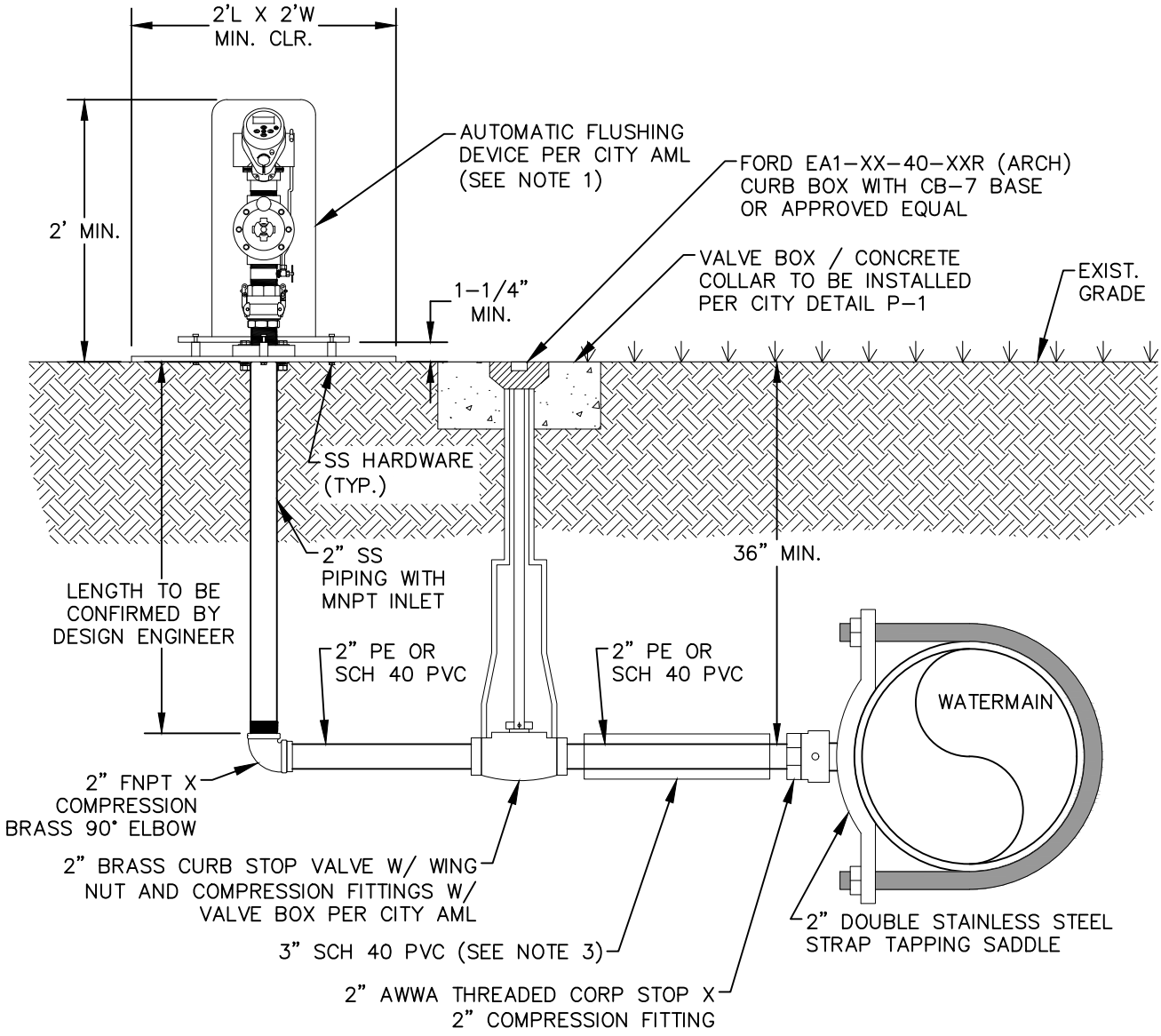


PROFILE VIEW

NOTES:

1. TEMPORARY DEAD END BLOW-OFF ONLY ALLOWED WITH PRIOR CITY WRITTEN APPROVAL.
2. BLOW-OFF BOX LOCATION REQUIREMENTS:
   1) TO BE LOCATED WITHIN CITY RIGHT-OF-WAY OR PERMANENT EASMENT.
   2) TO BE LOCATED WITHIN GRASS AREA OUTSIDE OF TRAVEL LANE, A MIN. 2' FROM SIDEWALK, CURB, OR ROADWAY PAVEMENT.
   3) FINAL LOCATION TO BE COORDINATED WITH CITY STAFF.
3. PERMANENT DEAD ENDS REQUIRE THE INSTALLATION OF AN APPROVED AUTOMATIC FLUSHING ASSEMBLY. SEE DETAIL P-9.1.
4. ALL BRASS SHALL BE LEAD FREE INCLUDING BLOW-OFF ASSEMBLY.

REVISED: 11/21/2025	PRESSURE PIPE - 2" TERMINAL BLOW-OFF	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-9 SCALE: (N.T.S.)

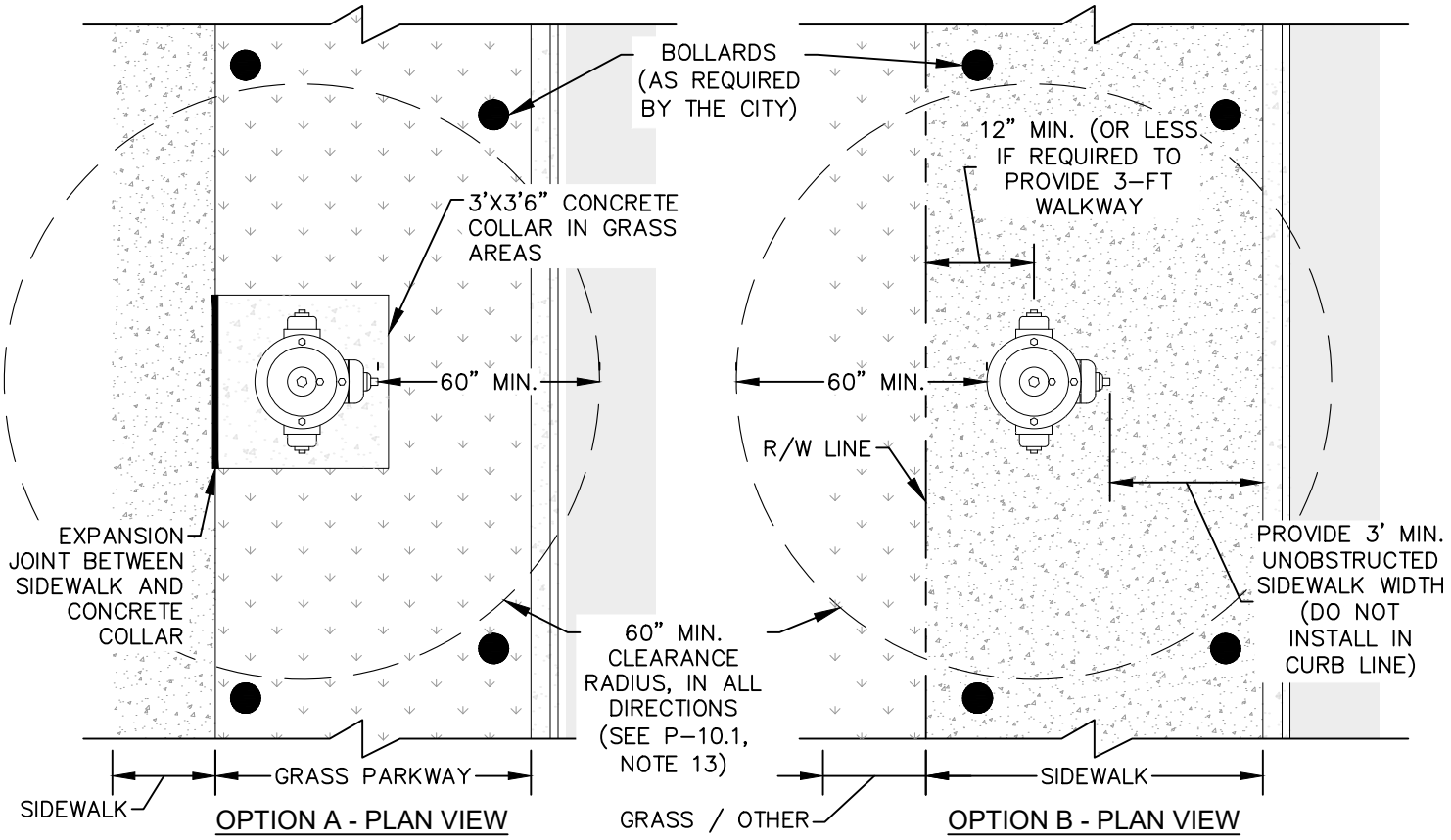


SECTION VIEW

NOTES:

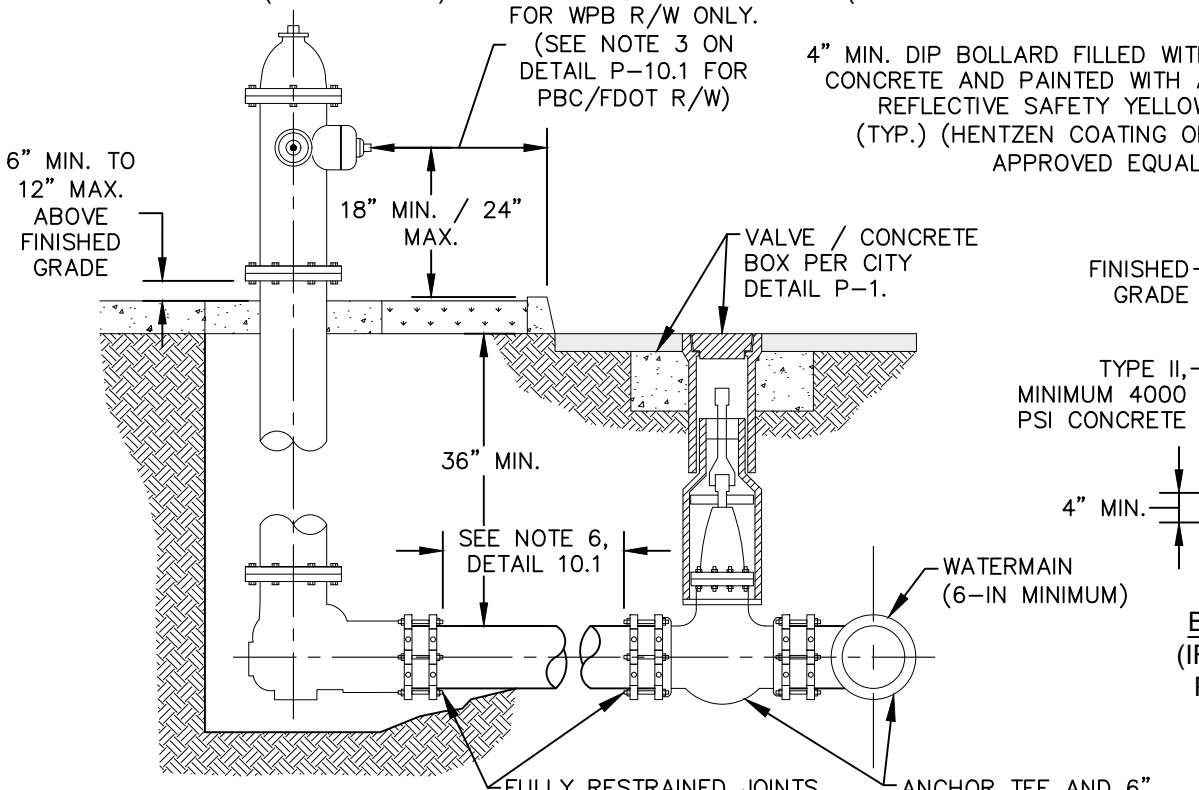
1. THE DETAIL IS SHOWN FOR THE CITY'S PREFERRED PRODUCT, KUPFERLE FOUNDRY CO. 9400-WC-ECLIPSE. IF ALTERNATE PRODUCT FROM THE CITY'S AML IS SELECTED, DESIGN ENGINEER SHALL SUBMIT ALTERNATE DESIGN FOR REVIEW AND APPROVAL BY THE CITY.
2. ALTERNATIVE DESIGNS WILL BE ACCEPTED SUBJECT TO REVIEW AND APPROVAL BY THE CITY.
3. ALL BRASS SHALL BE "LEAD FREE".
4. CASING IS REQUIRED FOR SERVICE PIPING UNDER PAVED AREAS.
5. ALL AUTOMATIC FLUSHING ASSEMBLIES SHALL BE ENCLOSED IN A LOCKABLE, NON-REMOVABLE, ALUMINUM-CAST HOUSING AND PROVIDED WITH A CONTROLLER AND DECHLORINATION BASKET.
6. SEE DETAIL P-10 AND P-10.1 FOR REQUIREMENTS FOR AUTOMATIC FLUSHING ASSEMBLY SITING, CLEAR ZONE, AND ADA REQUIREMENTS FOR ABOVE GROUND INFRASTRUCTURE.
7. ADJUST PIPE FITTINGS/LAYOUT AS NEEDED FOR PIPE MATERIAL AND LAYOUT. ALL PIPING AND FITTINGS SHALL BE IN ACCORDANCE WITH THE CITY'S AML AND SHALL BE NSF 61 APPROVED.
8. AUTOMATIC FLUSHING ASSEMBLY SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

REVISED: 11/21/2025	PRESSURE PIPE - AUTOMATIC FLUSHING ASSEMBLY	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-9.1 SCALE: (N.T.S.)

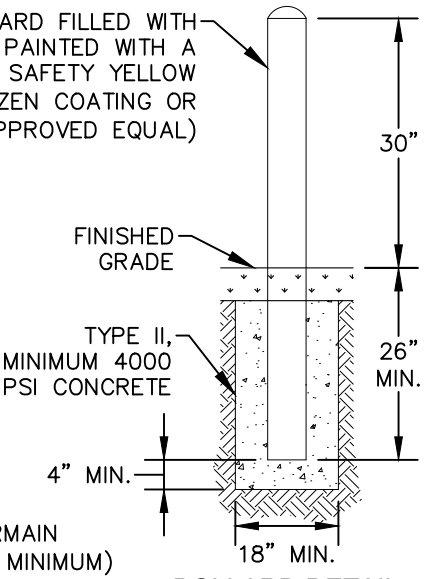


OPTION A - PLAN VIEW
GRASS PARKWAY
(PREFERRED)

OPTION B - PLAN VIEW
NO GRASS PARKWAY
(ONLY IF PARKWAY IS NOT AVAILABLE)



OPTION A / B
(PROFILE)

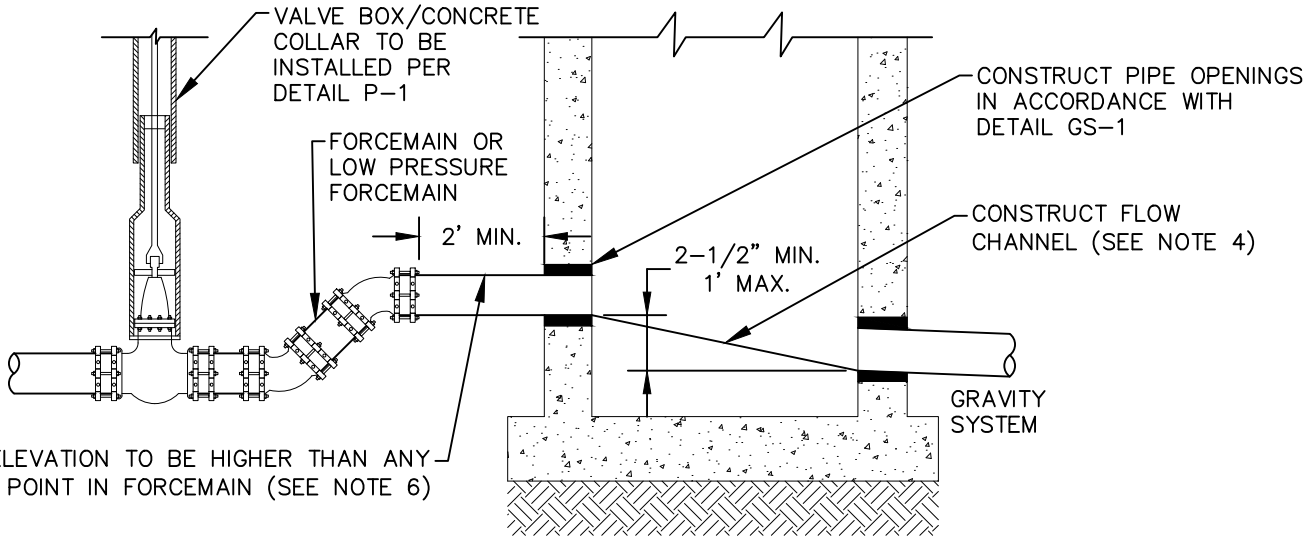


BOLLARD DETAIL
(IF REQUIRED, SEE P-10.1, NOTE 11)

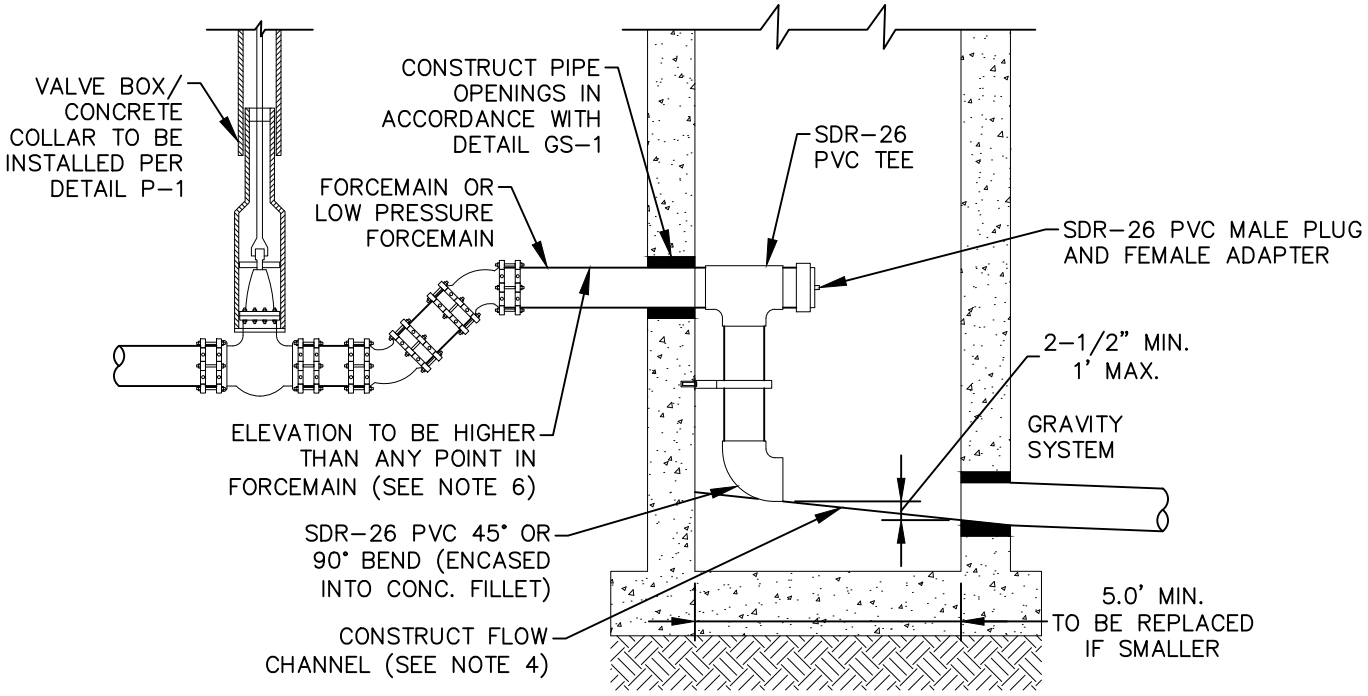
REVISED: 11/21/2025	PRESSURE PIPE - FIRE HYDRANT CONNECTION	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-10 SCALE: (N.T.S.)

1. ALL HYDRANTS TO BE MANUFACTURED TO CITY SPECIFICATIONS, INCLUDING IRON WEATHER CAP, PER THE CITY'S AML.
2. BONNET SHALL BE PAINTED WITH REFLECTIVE COATING. ALL OTHER PARTS ABOVE BREAKWAY FLANGE SHALL BE PAINTED SILVER. ANY OTHER PARTS BELOW BREAKWAY FLANGE SHALL BE PAINTED BLACK. ALL PAINT MATERIALS TO BE AS SPECIFIED ON THE CITY'S AML.
   a) ALL NEW HYDRANTS SHALL BE REPAINTED AFTER INSTALLATION.
3. FOR PROJECTS WITHIN FDOT AND PALM BEACH COUNTY R/W:
   a) HYDRANTS TO BE LOCATED IN DEDICATED EASEMENTS OUTSIDE OF R/W WHEREVER POSSIBLE.
   b) 18" MIN. FOR WEST PALM BEACH R/W ONLY. FIRE HYDRANT LOCATION TO BE ADJUSTED FOR PALM BEACH COUNTY AND FDOT R/W TO BE OUTSIDE OF ROADWAY "CLEAR ZONES".
4. ALL JOINTS INCLUDING BELL AND SPIGOT SHALL BE RESTRAINED.
5. SEE "VALVE BOX SETTING" STANDARD FOR ADDITIONAL DETAILS.
6. IF DISTANCE BETWEEN FIRE HYDRANT AND ANCHOR TEE EXCEEDS 30 FT., ADD A SECOND VALVE WITHIN 4 FT. FROM HYDRANT. NO FITTINGS PERMITTED BETWEEN HYDRANT VALVE AND HYDRANT BASE ELBOW UNLESS APPROVED BY THE CITY.
7. INSTALL AN FDOT APPROVED BLUE RPM (REFLECTIVE PAVEMENT MARKER) IN THE CENTER OF THE TRAVEL LANE, DIRECTLY IN FRONT OF HYDRANT.
8. A FIRE FLOW TEST PERFORMED BY THE CITY FIRE MARSHALL IS REQUIRED FOR ALL NEW HYDRANTS PRIOR TO ACCEPTANCE BY THE CITY. THE DEVELOPER/CONTRACTOR IS RESPONSIBLE FOR SCHEDULING THE FIRE FLOW TEST.
9. FIRE HYDRANT SHALL BE INSTALLED PLUMB AND TRUE IN UNOBSTRUCTED LOCATION AND SHALL NOT INTERFERE WITH PEDESTRIAN WALKWAYS, BIKE PATHS, AND SUCH OTHER SIMILAR PATHWAYS SUCH THAT THE MINIMUM CLEAR SURFACE WIDTH REQUIRED BY CHAPTER 4 OF THE ADA STANDARDS (LATEST REVISION) IS MAINTAINED.
10. FIRE HYDRANTS INSTALLED IN GRASS AREAS TO BE INSTALLED WITH 3'X3'X6" CONCRETE COLLAR POURED IN PLACE.
11. BOLLARDS MAY BE REQUIRED FOR HYDRANTS WITH LESS THAN SIX (6) FEET TO EDGE OF PAVEMENT WITHOUT RAISED CURBING OR AS REQUIRED BY THE CITY.
    a) NO BOLLARDS SHALL BE INSTALLED IN CITY, PBC, OR FDOT R/W "CLEAR ZONE".
    b) FINAL BOLLARD LOCATIONS TO BE VERIFIED WITH CITY AND/OR FDOT.
12. FIRE HYDRANTS AND BOLLARDS LOCATED WITHIN FDOT R/W SHALL NOT BE PLACED IN THE "CLEAR ZONE" IN ACCORDANCE WITH FDOT UTILITY ACCOMMODATION MANUAL (LATEST REVISION). MAXIMUM DISTANCE FROM R/W TO BE APPROVED BY THE CITY FIRE MARSHALL.
13. FIRE HYDRANT SHALL BE LOCATED IN AREA WITH 60" CLEARANCE RADIUS ON ALL SIDES PER CHAPTER 13.1.4 OF THE FLORIDA FIRE PREVENTION CODE (LATEST REVISION).
    a) NO OBSTRUCTIONS TO BE PLACED WITHIN CLEARANCE RADIUS.
    b) OBSTRUCTIONS INCLUDE BUT ARE NOT LIMITED: SHRUBS, TREES, FENCING, PLANTERS, POLES, SIGNS, ETC.
    c) PROPERTY OWNER RESPONSIBLE FOR MAINTAINING CLEARANCE RADIUS AFTER INSTALLATION.
14. APPROVED SECURITY CAPS WITH CHAINS ARE REQUIRED FOR ALL NOZZLES.
15. CITY WILL ONLY ACCEPT NEW FIRE HYDRANT IF THE FOLLOWING HAS BEEN COMPLETED:
    a) INSTALLED IN ACCORDANCE WITH CITY DETAIL/AML.
    b) ACCEPTABLE FIRE FLOW TEST RESULTS BY CITY FIRE MARSHALL. FIRE FLOW TEST TO PERFORMED IN ACCORDANCE WITH AWWA M17.
    c) FIRE HYDRANT HAS BEEN REPAINTED PER THE CITY'S AML.
16. ANY DEVIATIONS FROM DETAILS P–10 AND P–10.1 WILL REQUIRE WRITTEN APPROVAL BY THE CITY BEFORE THE FIRE HYDRANT IS INSTALLED.

REVISED: 11/21/2025	PRESSURE PIPE - FIRE HYDRANT CONNECTION - NOTES	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-10.1 SCALE: (N.T.S.)



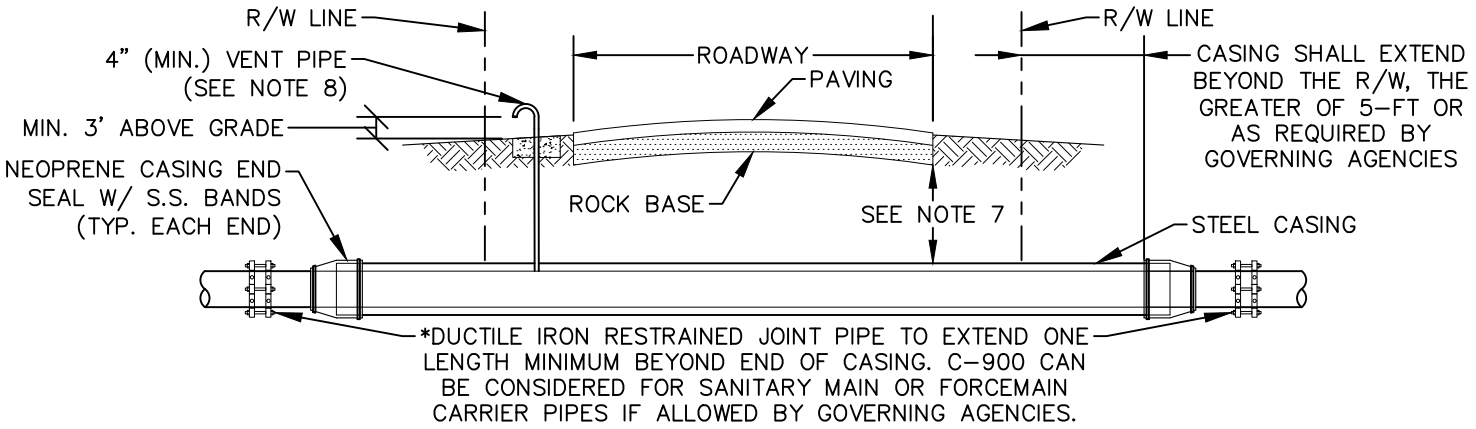
FORCEMAIN INTO SHALLOW MANHOLE - 4.0' DIA.



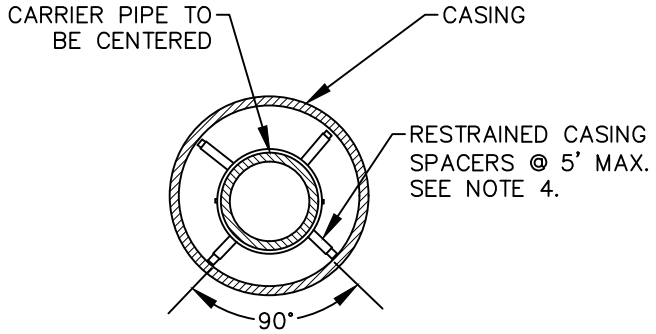
FORCEMAIN INTO DEEP MANHOLE - 5.0' DIA.

1. FORCE MAIN TO ENTER MANHOLE AT 180° ± 10° FROM GRAVITY OUTFLOW.
2. THE INVERT LEVEL OF FORCE MAIN AT POINT OF ENTRY SHALL BE NO LESS THAN 2 ½" ABOVE OUTFLOW INVERT OF MANHOLE.
3. ENTRY INTO EXISTING MANHOLES SHALL BE BY CORING ONLY.
4. FLOW TO BE DIRECTED TOWARDS DOWNSTREAM OPENING. FLOW CHANNEL TO BE CONSTRUCTED PER DETAIL GS-4.
5. IF FORCE MAIN IS TO DISCHARGE INTO AN EXISTING MANHOLE, THEN THE CONTRACTOR SHALL REPLACE OR REHABILITATE/LINE MANHOLE AS REQUIRED BY THE CITY.
6. IF MANHOLE IS NOT HIGH POINT, ENGINEER OF RECORD SHALL INCLUDE PROVISIONS IN THE DESIGN OF THE UPSTREAM FORCEMAIN TO KEEP FORCEMAIN FULL AT ALL TIMES. ADDITIONALLY, ENGINEER OF RECORD TO DETERMINE IF AIR RELEASE VALVE IS REQUIRED UPSTREAM OF MANHOLE.
7. ALL DROP PIPING INCLUDING TEE SHALL BE C-900 PVC OR SDR-26 PVC. REFER TO DETAIL GS-5 FOR PIPE SUPPORT REQUIREMENTS.
8. FORCEMAIN TO BE RESTRAINED PER DETAIL P-2, P-3, AND P-3.1.

REVISED: 11/21/2025	PRESSURE PIPE - FORCEMAIN AT MANHOLE	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-11 SCALE: (N.T.S.)

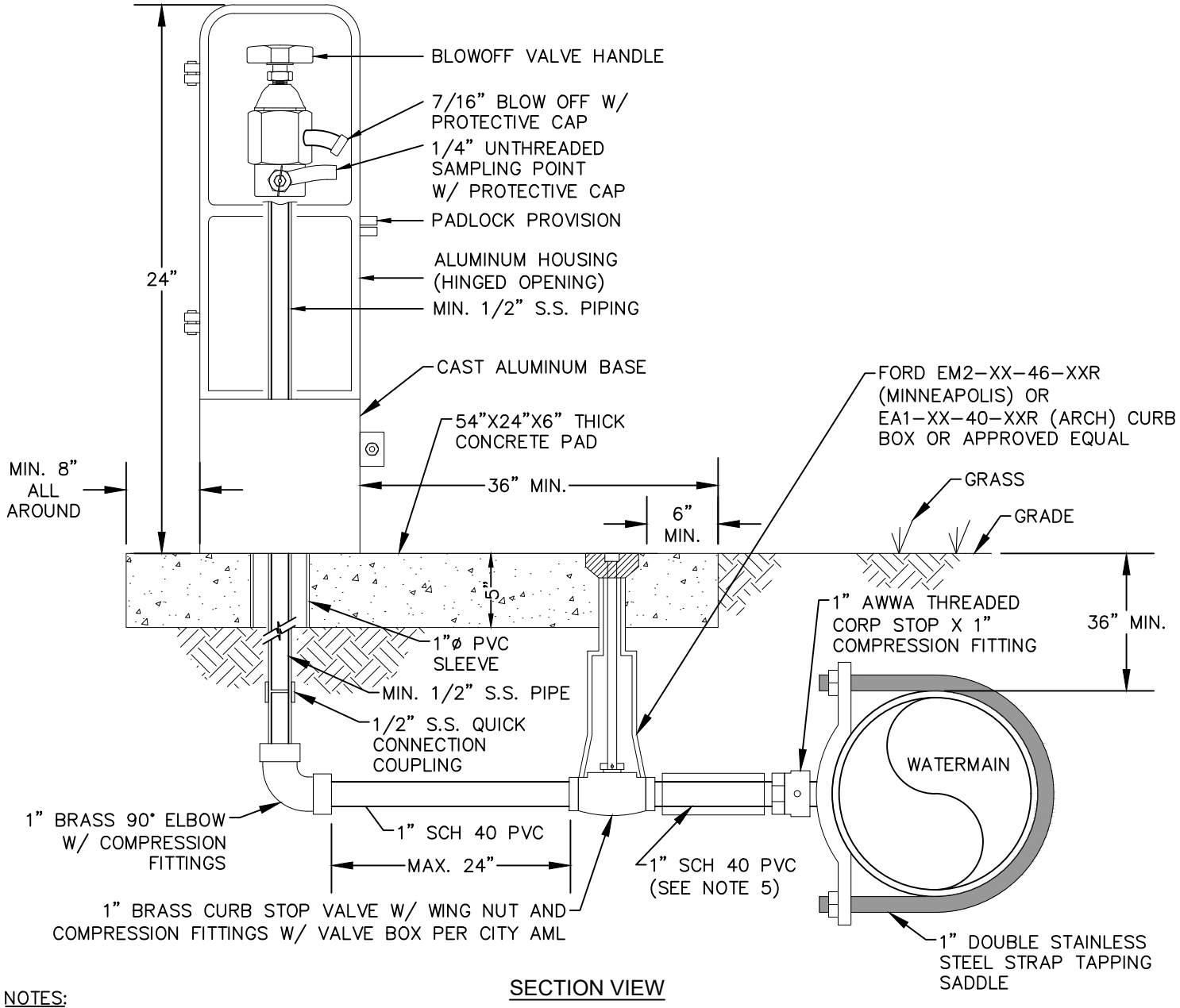


CARRIER PIPE SIZE	STEEL CASING	MIN. WALL THICKNESS	VENT PIPE SIZE
4"	12"	.250	4"
6"	14"	.375	4"
8"	16"	.375	4"
10"	18"	.375	4"
12"	20"	.375	4"
14"	24"	.375	4"
16"	24"	375	4"
18"	30"	.375	4"
20"	30"	.375	4"
24"	36"	.375	4"
30"	42"	.50	4"
36"	48"	.50	4"
42"	60"	.625	4"
48"	72"	.625	4"



1. PIPE CASING SHALL BE IN ACCORDANCE WITH GOVERNING REGULATORY AGENCIES (CSX, SFRTA, FDOT, ETC.) AND CURRENT ASTM SPECIFICATION A139 AND BE PROTECTED BY A BLACK BITUMASTIC COATING FOR PROTECTION AGAINST CORROSION.
2. WALL THICKNESS SHALL BE AS NOTED IN TABLE ABOVE UNLESS SUPERCEDED BY MORE STRINGENT F.D.O.T. STANDARDS, OR RAILROAD STANDARDS APPLYING TO THOSE INSTALLATIONS. CASING PIPE THICKNESS SHALL ALSO BE ABLE TO RESIST JACKING FORCES IF REQUIRED. ENGINEER OF RECORD TO DETERMINE MINIMUM CASING PIPE THICKNESS AND SUBMIT SIGNED AND SEALED CALCULATIONS BY A FLORIDA PROFESSIONAL ENGINEER.
3. CASING FOR PRESSURE PIPE ENDS SHALL BE SEALED WITH APPROVED PRESSURE RESISTANT FITTINGS IN ACCORDANCE WITH THE CITY'S AML. GROUT WILL NOT BE ACCEPTED.
4. AT A MINIMUM, CASING SPACERS TO BE INSTALLED WITHIN 2-FT OF EACH END, AT 4-FT ON EACH SIDE OF CARRIER PIPE JOINTS AND AS RECOMMENDED BY MANUFACTURER OF CARRIER PIPE. ENGINEER OF RECORD TO CONFIRM THE NUMBER OF REQUIRED CASING SPACERS.
5. PIPES THROUGH CONFLICT STRUCTURES SHALL BE IN ACCORDANCE WITH FDOT INDEX 425-8. ADDITIONALLY, THE END CASING MUST EXTEND A MINIMUM OF 12" OUTSIDE OF STRUCTURE. IF SPACERS ARE REQUIRED IN CONFLICT STRUCTURES, THEY SHALL BE INSTALLED PER THIS DETAIL.
6. FINAL LOCATION OF VENT PIPE AND DETERMINATION IF BOLLARDS ARE REQUIRED SHALL BE COORDINATED WITH CITY STAFF AND GOVERNING REGULATORY AGENCIES.
7. ENGINEER OF RECORD SHALL DETERMINE MINIMUM COVER FOR FIELD CONDITIONS AND PERMITTING AGENCY DESIGN REQUIREMENTS.
8. VENT PIPING SIZE AND CASING CONNECTION DETAILS SHALL BE DESIGNED BY ENGINEER OF RECORD. VENT PIPE DESIGN SHALL INCLUDE:
   A) MIN. SCH 40 STEEL AT CONNECTION TO CASING
   B) ABOVE GROUND PIPING SHALL BE WELDED SCH 40 STEEL WITH GOOSENECK AND PAINTED REFLECTIVE SILVER PER THE CITY'S AML FOR FIRE HYDRANTS. BELOW GROUND PIPING SHALL BE MALE THREADED SCH 40 STEEL WITH FEMALE THREADED FITTINGS.
   C) INSECT SCREEN AT VENT OPENING
   D) 1.5'X1.5'X8" THICK CONCRETE COLLAR

REVISED: 11/21/2025	PRESSURE PIPE - PIPE CASING	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-12 SCALE: (N.T.S.)

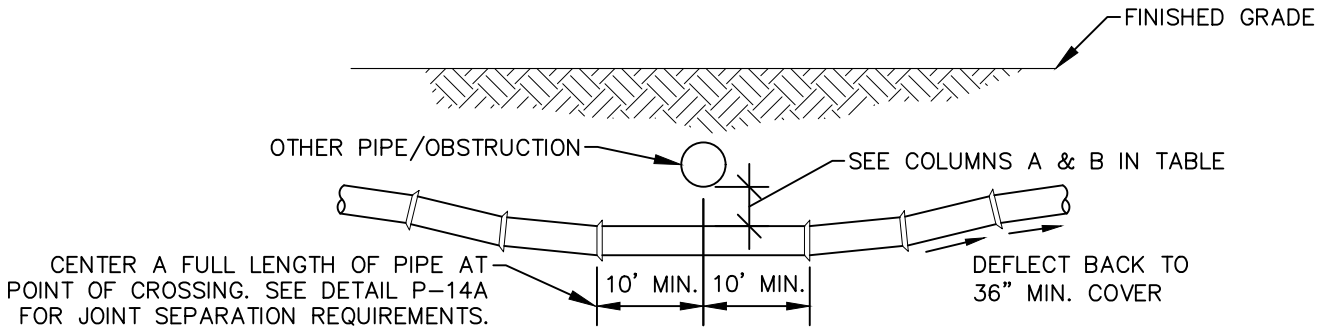


SECTION VIEW

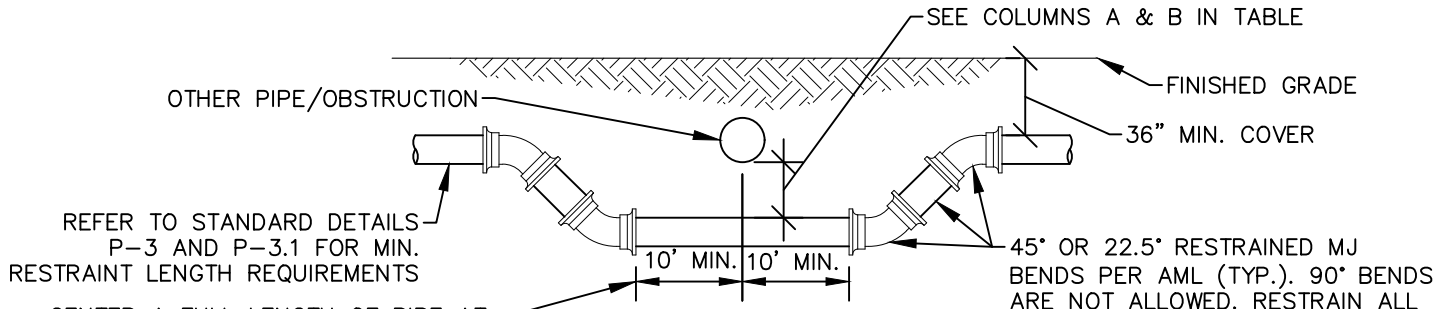
NOTES:

1. THE PERMANENT SAMPLING STATION SHALL BE INSTALLED AT EACH UTILITY WATER SYSTEM INTERCONNECT AND AS DIRECTED BY THE CITY.
2. THE SAMPLING STATION SHALL BE LOCATED IN EASILY ACCESSIBLE MIN. 10' FROM EDGE OF ROADWAY PAVEMENT IN GRASSED AREA.
3. ALTERNATIVE DESIGNS WILL BE ACCEPTED SUBJECT TO REVIEW AND APPROVAL BY THE CITY.
4. ALL BRASS SHALL BE "LEAD FREE".
5. 2" CASING IS REQUIRED FOR SERVICE PIPING UNDER PAVED AREAS.
6. THE ALUMINUM HOUSING COLOR SHALL BE PROVIDED BY KUPFERLE OR APPROVED EQUAL.
7. ALL SAMPLING UNITS SHALL BE ENCLOSED IN A LOCKABLE, NON-REMOVABLE, ALUMINUM-CAST HOUSING.
8. WHEN OPEN, THE SAMPLING UNIT SHALL NOT REQUIRE A KEY FOR OPERATION.
9. SEE DETAIL P-10 AND P-10.1 FOR REQUIREMENTS FOR SAMPLE POINT SITING AND CLEAR ZONE REQUIRED.
10. DESIGN ENGINEER TO VERIFY INLET PIPE SIZE TO SAMPLING STATION AND ADJUST PIPE FITTINGS DOWNSTREAM OF 90° ELBOW AS NEEDED.
11. PE TUBING CAN BE INSTALLED IN PLACE OF PVC PIPE. ENGINEER OF RECORD TO CONFIRM BRASS FITTING CONFIGURATION FOR THIS OPTION.

REVISED: 11/21/2025	PRESSURE PIPE - PERMANENT SAMPLE POINT	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-13 SCALE: (N.T.S.)



DEFLECTION TYPE UTILITY CROSSING
(CITY PREFERRED OPTION)



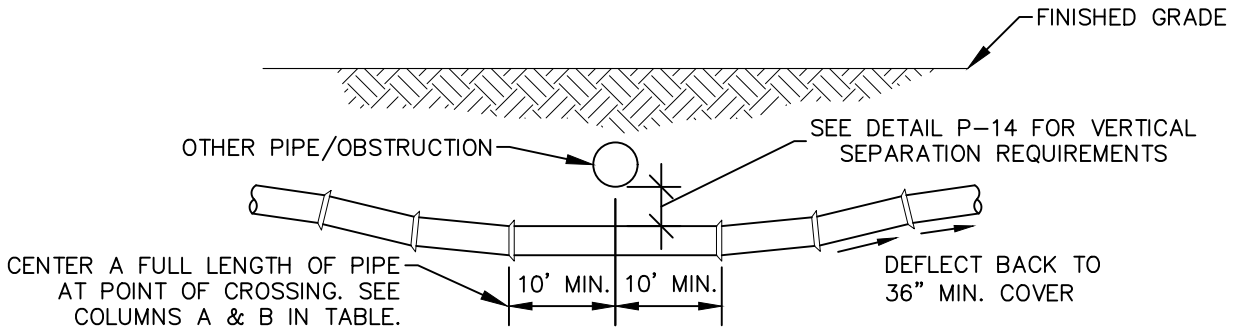
FITTING TYPE UTILITY CROSSING
(CITY APPROVAL REQUIRED)

OTHER PIPE/OBJECT		MINIMUM VERTICAL CLEARANCE BETWEEN (1):		
		A		B
		CITY-OWNED WATERMAIN/RAW WATERMAIN/WATER SERVICES GREATER THAN 3-IN	WATER SERVICES 2-IN OR LESS	ALL OTHER CITY UTILITIES
GRAVITY OR VACUUM-TYPE SANITARY SEWER OR STORM SEWER	BELOW	1-FT PREFERRED 6-IN MIN.(2)	1-FT PREFERRED 6-IN MIN.(2)	6-IN
	ABOVE	1-FT	1-FT	
PRESSURE-TYPE SANITARY SEWER, WASTEWATER OR STORMWATER FORCEMAIN, OR RECLAIMED WATER(3)	BELOW	1-FT	1-FT	6-IN
	ABOVE			
SANITARY LATERALS	BELOW	1-FT PREFERRED 6-IN MIN.(2)	1-FT PREFERRED 6-IN MIN.(2)	6-IN
	ABOVE			
ALL FRANCHISE UTILITIES (GAS, ELEC, TELE, COMM, LIGHTING, ETC.)	BELOW	6-IN	6-IN	6-IN
	ABOVE			

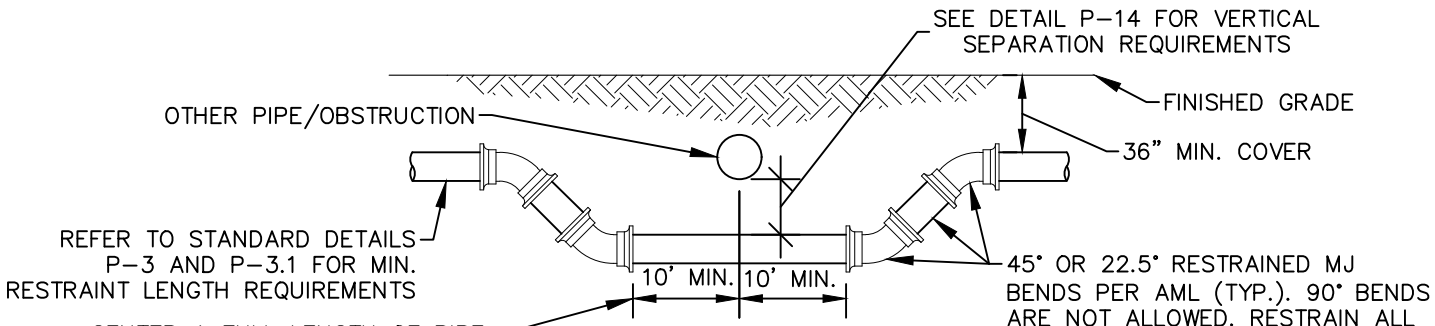
(1) ALL MEASUREMENTS TO BE O.D. TO O.D.
(2) CITY APPROVAL REQUIRED TO REDUCE FROM PREFERRED CLEARANCE TO MINIMUM CLEARANCE.
(3) RECLAIMED WATER REGULATED AND NOT REGULATED UNDER CHAPTER 62-565, F.A.C., OR PART III OF CHAPTER 62-610, F.A.C.

NOTES:
1. PIPE DEFLECTIONS SHALL NOT EXCEED 75% OF THE MANUFACTURER'S MAXIMUM ALLOWABLE DEFLECTION FOR BOTH PUSH-ON PIPE AND RESTRAINED JOINT PIPE. BENDING PVC PIPE TO ACHIEVE DEFLECTION IS NOT PERMITTED.
2. ALL FITTINGS SHALL BE RESTRAINED MJ FITTINGS.
3. UTILITY CROSSINGS SHALL CROSS PERPENDICULARLY WHENEVER POSSIBLE.
4. FOR CROSSINGS INVOLVING MAINS 24-IN AND LARGER, THE CITY MAY REQUIRE ADDITIONAL VERTICAL CLEARANCE.

REVISED: 11/21/2025	PRESSURE PIPE - UTILITY CONFLICT CROSSING - (VERTICAL)	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-14 SCALE: (N.T.S.)



DEFLECTION TYPE UTILITY CROSSING
(CITY PREFERRED OPTION)



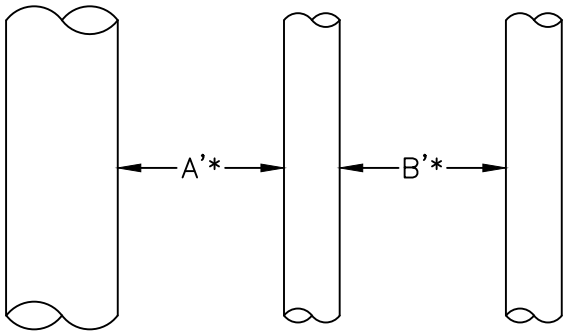
FITTING TYPE UTILITY CROSSING
(CITY APPROVAL REQUIRED)

OTHER PIPE/OBJECT	MINIMUM JOINT CLEARANCE BETWEEN (1):		
	A		B
	CITY-OWNED WATERMAIN/RAW WATERMAIN	WATER SERVICES	ALL OTHER CITY UTILITIES
VACUUM-TYPE SANITARY SEWER, STORM SEWER, STORMWATER FORCEMAIN, RECLAIMED WATER(2)	FULL LENGTH OF PIPE CENTERED (PREFERRED), 3-FT MIN.(3)	NO JOINTS ALLOWED BETWEEN CORP AND METER VALVE	FULL LENGTH OF PIPE CENTERED (PREFERRED), 3-FT MIN.(3)
GRAVITY OR PRESSURE-TYPE SANITARY SEWER, WASTEWATER FORCEMAIN, OR RECLAIMED WATER(4)	FULL LENGTH OF PIPE CENTERED (PREFERRED), 6-FT MIN.(3)	NO JOINTS ALLOWED BETWEEN CORP AND METER VALVE	FULL LENGTH OF PIPE CENTERED (PREFERRED), 6-FT MIN.(3)

(1) ALL MEASUREMENTS TO BE O.D. TO O.D.
(2) RECLAIMED WATER REGULATED UNDER CHAPTER 62-565, F.A.C., OR PART III OF CHAPTER 62-610, F.A.C.
(3) CITY APPROVAL REQUIRED TO REDUCE FROM PREFERRED CLEARANCE TO MINIMUM CLEARANCE.
(4) RECLAIMED WATER NOT REGULATED UNDER CHAPTER 62-565, F.A.C., OR PART III OF CHAPTER 62-610, F.A.C.

NOTES:
1. PIPE DEFLECTIONS SHALL NOT EXCEED 75% OF THE MANUFACTURER'S MAXIMUM ALLOWABLE DEFLECTION FOR BOTH PUSH-ON PIPE AND RESTRAINED JOINT PIPE. BENDING PVC PIPE TO ACHIEVE DEFLECTION IS NOT PERMITTED.
2. ALL FITTINGS SHALL BE RESTRAINED MJ FITTINGS.
3. UTILITY CROSSINGS SHALL CROSS PERPENDICULARLY WHENEVER POSSIBLE.

REVISED: 11/21/2025	PRESSURE PIPE - UTILITY CONFLICT CROSSING - (VERTICAL JOINTS)	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-14A SCALE: (N.T.S.)



*MINIMUM HORIZONTAL CLEARANCES PER TABLE

WATERMAIN/ WATER SERVICES/ RAW WATERMAIN

OTHER UTILITIES

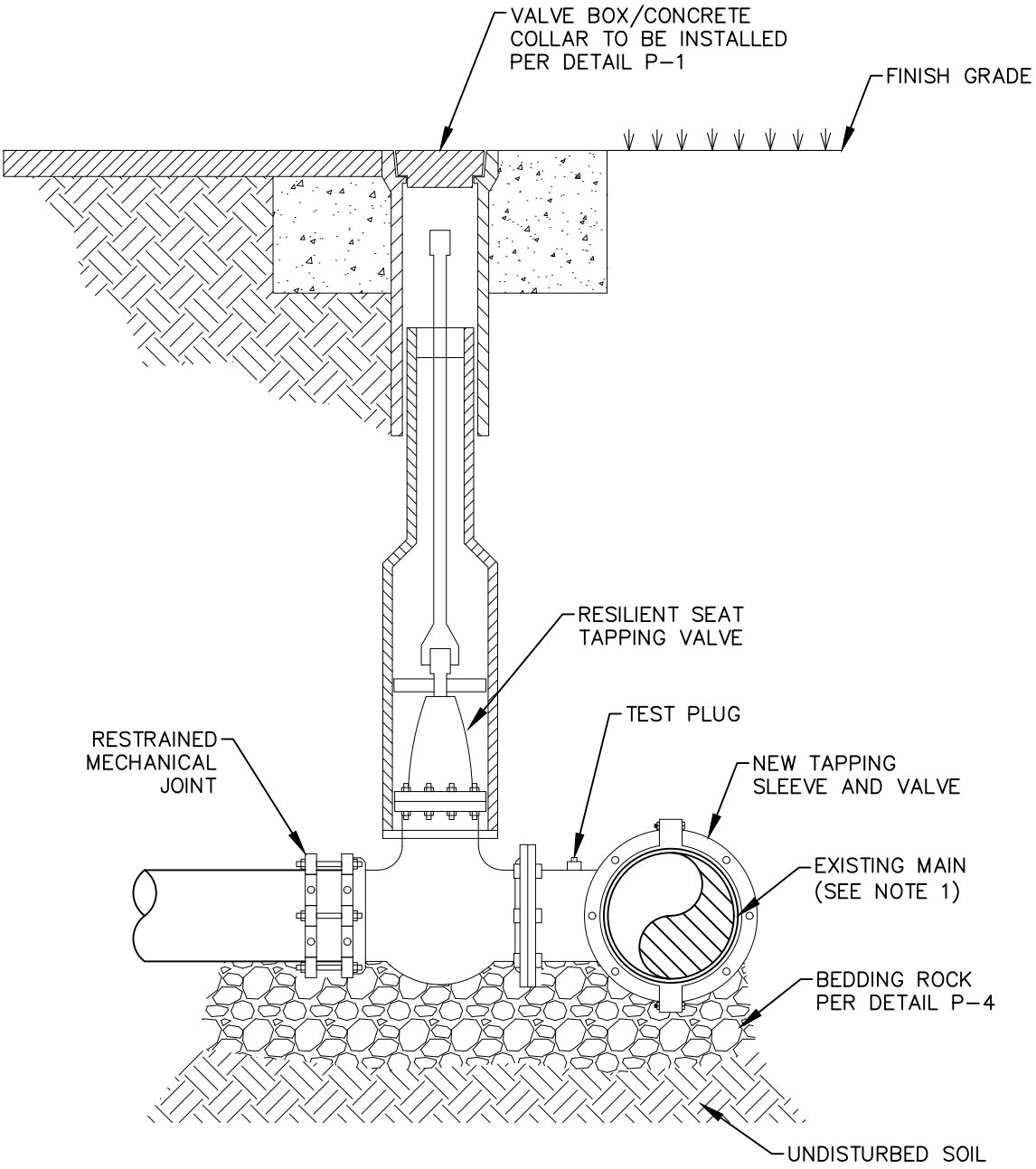
ALL OTHER CITY UTILITIES

HORIZONTAL CLEARANCE
(N.T.S.)

OTHER PIPE/OBJECT	MINIMUM HORIZONTAL CLEARANCE BETWEEN [1]:		
	A		B
	CITY–OWNED WATERMAIN/RAW WATERMAIN/WATER SERVICES GREATER THAN 3–IN	WATER SERVICES 2–IN OR LESS	ALL OTHER CITY UTILITIES
STORM SEWER, STORMWATER FORCEMAIN, RECLAIMED WATER[2]	5–FT[3]	3–FT	5–FT
VACUUM SANITARY SEWER	10–FT PREFERRED 5–FT MIN.[3]	10–FT PREFERRED 5–FT MIN.[3]	5–FT
GRAVITY OR PRESSURE SANITARY SEWER, SANITARY SEWER FORCEMAIN, RECLAIMED WATER[4]	10–FT PREFERRED 6–FT MIN.	10–FT PREFERRED 6–FT MIN.	5–FT
SANITARY LATERALS	5–FT	5–FT[5]	5–FT
ON–SITE SEWAGE TREATMENT & DISPOSAL SYSTEM	10–FT	10–FT	5–FT
ALL FRANCHISE UTILITIES (GAS, ELEC, TELE, COMM, LIGHTING, ETC.)	5–FT	3–FT	5–FT
CURBS, TREES, BUILDING FOOTERS, OTHER OBSTRUCTIONS	5–FT	3–FT	5–FT

(1) ALL MEASUREMENTS TO BE O.D. TO O.D.
(2) RECLAIMED WATER REGULATED UNDER CHAPTER 62–565, F.A.C., OR PART III OF CHAPTER 62–610, F.A.C.
(3) CITY APPROVAL REQUIRED TO REDUCE FROM PREFERRED CLEARANCE TO MINIMUM CLEARANCE PER TABLE OR MINIMUM CLEARANCE PER F.A.C. 62–555.314.
(4) RECLAIMED WATER NOT REGULATED UNDER CHAPTER 62–565, F.A.C., OR PART III OF CHAPTER 62–610, F.A.C.
(5) MINIMUM CLEARANCE CAN BE REDUCED TO 3–FT FOR GRAVITY SANITARY LATERALS WHERE THE BOTTOM OF THE WATER SERVICE IS LAID AT LEAST 6–IN ABOVE THE TOP OF THE GRAVITY SANITARY LATERAL WITH PRIOR CITY APPROVAL ONLY.

REVISED: 11/21/2025	PRESSURE PIPE - UTILITY HORIZONTAL CLEARANCES - (HORIZONTAL)	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-14B SCALE: (N.T.S.)



SECTION VIEW

1. EXISTING MAIN SHALL BE THOROUGHLY CLEANED BEFORE ATTACHING TAPPING SLEEVE.
2. TAPPING SLEEVE AND VALVE SHALL BE PRESSURE TESTED FOR 15 MINUTES AT 150 PSI BEFORE TAPPING EXISTING MAIN. NO PRESSURE LOSS OR LEAKAGE IS ALLOWED FOR THE ENTIRE TEST DURATION. PRESSURE TEST AND TAP SHALL BE MADE IN THE PRESENCE OF AN AUTHORIZED CITY REPRESENTATIVE.
3. TAP SHALL BE MADE NO CLOSER THAN 36" FROM THE NEAREST JOINT, FITTING, OR SADDLE MEASURED FROM EDGE OF TAPPING SLEEVE TO EDGE OF JOINT, FITTING, OR SADDLE.
4. JOINT RESTRAINT REQUIREMENTS SHALL BE IN ACCORDANCE WITH DETAILS P-2, P-3, AND P-3.1. ALL JOINTS ON EXISTING MAIN WITHIN 15-FT OF THE NEW TAP SHALL BE RESTRAINED.
5. TAPPING OF CITY INFRASTRUCTURE SHALL BE PERFORMED BY A CITY-APPROVED TAPPING CONTRACTOR.
6. TAPS CAN ONLY BE INSTALLED ON HORIZONTALLY INSTALLED SECTIONS OF PIPE.
7. CITY APPROVAL REQUIRED FOR SIZE ON SIZE TAPS.

REVISED: 11/21/2025	PRESSURE PIPE - 4" AND LARGER TAPPING SLEEVE AND VALVE INSTALLATION	STANDARD DETAIL
ISSUED: 2025	CITY OF WEST PALM BEACH	P-15 SCALE: (N.T.S.)