

NOTES:

1. WHEN TOP OF OPERATING NUT IS DEEPER THAN 36", A HIGH STRENGTH 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.
2. VALVE BOXES IN PAVEMENT SHALL HAVE LOCKING COVERS & LIDS MARKED "WATER" OR "SEWER", AS APPROPRIATE.
3. ALL VALVE BOXES SHALL BE PROVIDED WITH A DEBRIS CAP.
4. A PLUMB DUCTILE IRON PIPE OR C-900 PVC RISER SHALL BE USED IF DEPTH SO REQUIRES, WITH APPROVAL.

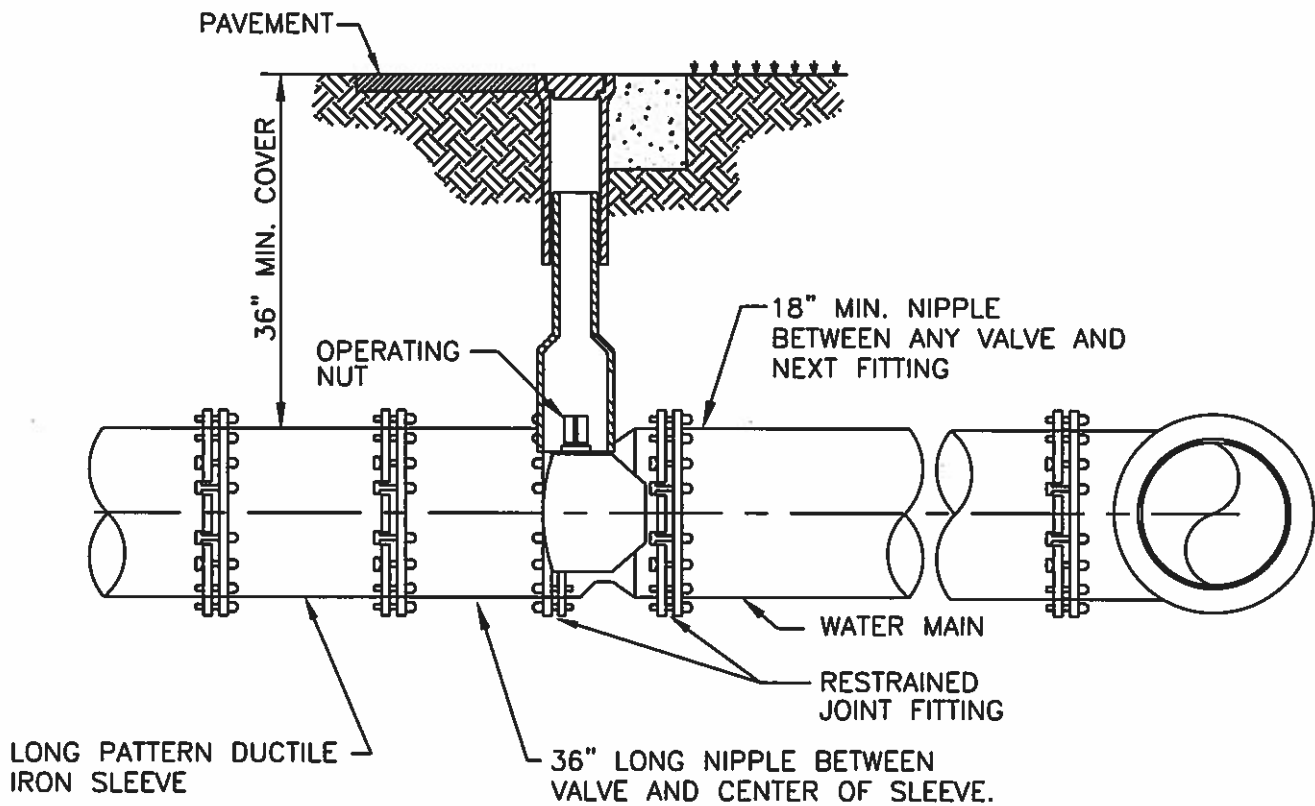
**PRESSURE PIPE
VALVE BOX
SETTING**

**REVISED:
SEPTEMBER 2010**



**HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION**

**STANDARD
P-1**



NOTES:

1. SEE "VALVE BOX SETTING" STANDARD (P-1) FOR ADDITIONAL DETAILS.
2. ALL BUTTERFLY VALVES SHALL BE INSTALLED WITH AN IN-LINE SLEEVE.
3. ALL JOINTS SHALL BE RESTRAINED.

**PRESSURE PIPE
BUTTERFLY VALVE**

**REVISED:
SEPTEMBER 2010**



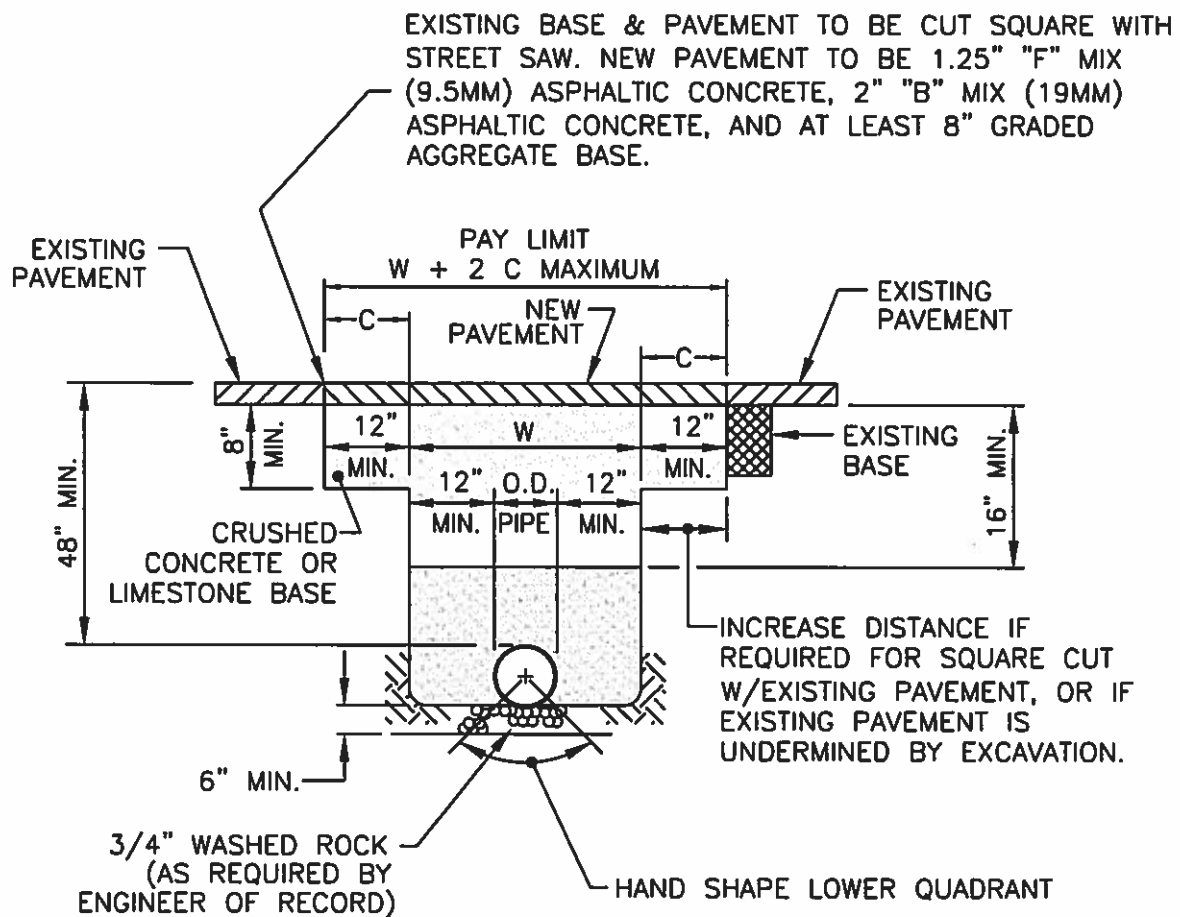
**HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION**

**STANDARD
P-2**

NOMINAL PIPE DIAMETER (INCHES)	PIPE LENGTH (IN FEET) TO BE RESTRAINED IN EACH DIRECTION FROM FITTING											TEE (BRANCH)	DEAD END & VALVE	
	HORZ. 90° BEND	HORZ. 60° BEND	HORZ. 45° BEND	HORZ. 30° BEND	HORZ. 22.5° BEND	HORZ. 11.25° BEND	VERT. HORZ. 90° BEND	VERT. HORZ. 60° BEND	VERT. HORZ. 45° BEND	VERT. HORZ. 30° BEND	VERT. HORZ. 22.5° BEND			VERT. HORZ. 11.25° BEND
4	31	18	13	8	6	3	65	37	27	17	13	6	32	65
6	43	25	18	12	9	4	92	53	38	25	18	9	58	92
8	56	32	23	15	11	5	118	68	49	32	23	12	84	118
10	67	39	28	18	13	7	142	82	59	38	28	14	108	142
12	78	45	32	21	16	8	167	96	69	45	33	16	132	167
14	88	51	37	24	18	9	190	109	79	51	38	19	155	190
18	98	57	41	26	20	10	212	123	88	57	42	21	177	212
18	108	62	45	29	22	11	234	135	97	63	47	23	199	234
20	118	68	49	32	23	12	256	148	106	69	51	25	221	256
24	136	78	56	36	27	13	297	171	123	80	59	29	261	297
30	160	92	66	43	32	16	354	205	147	95	70	35	318	354
36	182	105	75	49	36	18	407	235	169	109	81	40	370	407
42	202	116	84	54	40	20	455	263	188	122	90	45	417	455
48	220	127	91	59	44	22	500	289	207	134	99	49	462	500
54	237	137	98	64	47	23	542	313	224	145	108	53	503	542
60	247	143	102	66	49	24	570	329	236	153	113	56	530	570
64	256	148	106	69	51	25	594	343	246	159	118	59	554	594

NOTES:

1. NO THRUST BLOCKS ALLOWED!
2. CHART EXTRACTED FROM DIPRA MANUAL, "THRUST RESTRAINT DESIGN FOR D.I.P.", 6TH EDITION, USING THE FOLLOWING DESIGN CRITERIA:
 TRENCH TYPE 2
 SOIL TYPE = CLAY
 POLYWRAP REQUIRED = NO (MULTIPLY BY 1.50 FOR POLYWRAPPED PIPE)
 DESIGN PRESSURE = 150 PSI
 MINIMUM COVER REQUIRED = 5 FEET
3. TEE CALCULATIONS ARE BASED ON FULL OPENING TEE. CALCULATIONS MUST BE ADJUSTED IF RUN DIAMETER EXCEEDS TWICE THE BRANCH DIAMETER.
4. MINIMUM NUMBER OF JOINTS TO BE RESTRAINED SHALL BE MINIMUM LENGTH AS LISTED ABOVE PLUS ONE FULL LENGTH.
5. VALVES SHALL BE RESTRAINED AT EACH SIDE USING DEAD END CRITERIA LISTED IN TABLE ABOVE.



W = O.D. OF PIPE + 12" MIN. AT BOTH SIDES OF PIPE.

C = VARIES W/SOIL TYPE (CONTACT ENGINEER OF RECORD FOR DETERMINATION IN FIELD).

NOTES:

1. BACKFILL COMPACTION WITHIN R.O.W. SHALL BE 98% OF MAXIMUM DENSITY PURSUANT TO ASTM 1557. BACKFILL NOT IN R.O.W. SHALL BE 95% OF MAXIMUM DENSITY PURSUANT TO ASTM 1557. LIFTS SHALL BE 12" MAXIMUM.
2. FOR ROADS NOT UNDER HALL COUNTY JURISDICTION, THE APPROPRIATE ROAD AUTHORITY STANDARDS SHALL TAKE PRECEDENCE OVER THE COUNTY STANDARDS. REFER TO GDOT, GAINESVILLE OR OTHER MUNICIPALITY'S STANDARDS, AS APPROPRIATE.
3. RESTRIPING MUST MATCH EXISTING WHENEVER NECESSARY.

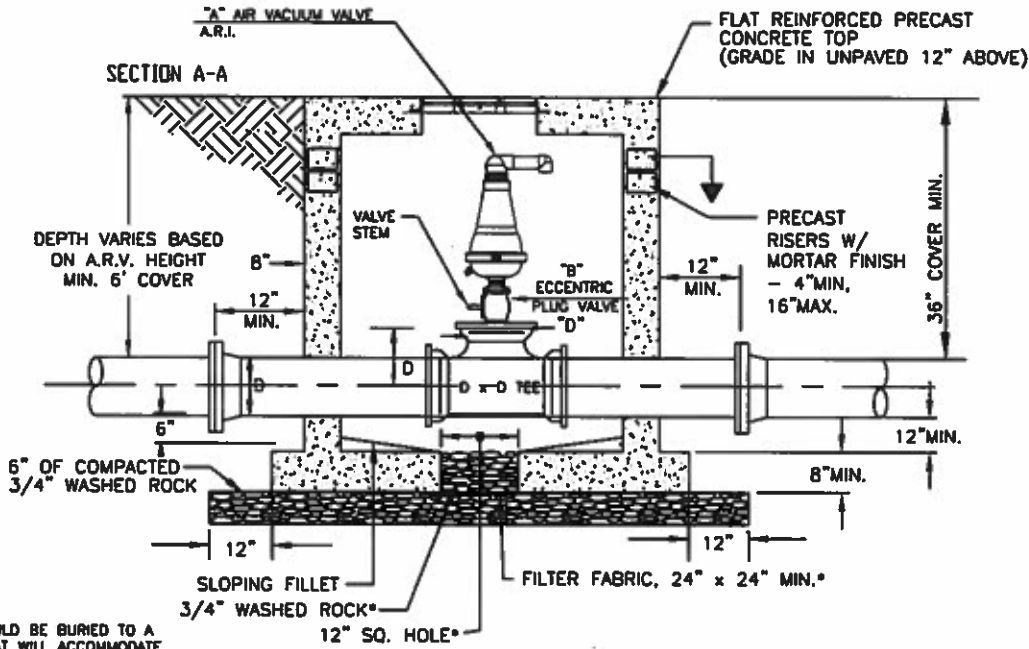
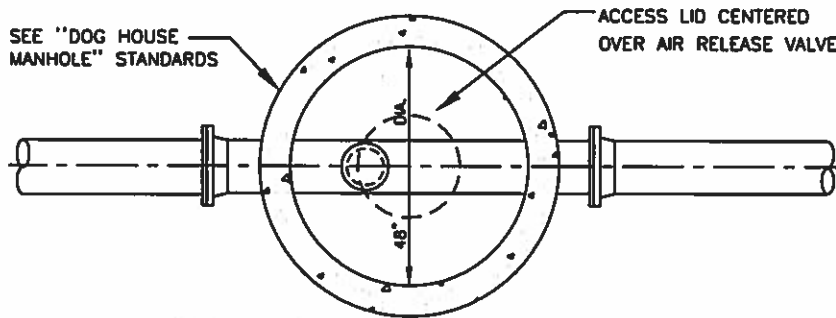
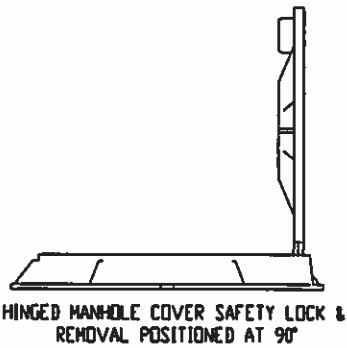
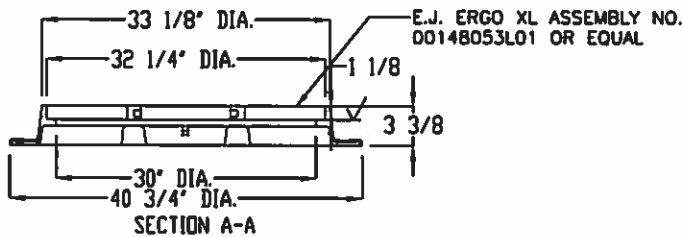
**PRESSURE PIPE
PIPELINE TRENCH/BACKFILL/PAVEMENT RESTORATION**

REVISED:
DECEMBER 2014



**HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION**

**STANDARD
P-4**



- NOTES:
- PIPE SHOULD BE BURIED TO A DEPTH THAT WILL ACCOMMODATE THE MINIMUM REQUIREMENTS OF THIS STANDARD AND THOSE OF THE SPECIFIED ARV.
 - ORIFICE AREA OF A.R.V. SHALL NOT EXCEED TOTAL AREA PROVIDED BY VENT HOLES IN MANHOLE LID.

"A" - TO BE SIZED PER ARV MANUFACTURERS SPECIFICATIONS.
"B" - TO BE SIZED PER ARV MANUFACTURERS SPECIFICATIONS.
"D" - MAIN SIZE

*SEE NOTE 7 ON "AIR RELEASE VALVE AND VAULT NOTES" STANDARD (P-6)

**PRESSURE PIPE
AIR RELEASE VALVE AND VAULT**

**REVISED:
MARCH 2017**



**HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION**

**STANDARD
P-5**

NOTES:

1. CONCRETE USED FOR VAULTS, MANHOLES, AND RISERS SHALL HAVE AN ULTIMATE COMPRESSIVE STRENGTH AT 28 DAYS OF 4000 P.S.I. CEMENT SHALL BE TYPE II PORTLAND.
2. VAULT SHALL BE PRECAST OR POURED IN PLACE CONCRETE IN ACCORDANCE WITH ASTM C478.
3. AIR RELEASE VALVE SHALL BE TYPE AND SIZE APPROPRIATE FOR SERVICE INTENDED.
4. ALL OPENINGS SHALL BE SEALED WITH WATERPROOF NON-SHRINK GROUT.
5. COATINGS ON INTERIOR & EXTERIOR OF MANHOLES AND VAULTS SHALL BE IN ACCORDANCE WITH PUBLIC WORKS AND UTILITIES DEPT. APPROVED PRODUCT LIST, AND APPLIED IN TWO DIFFERENT COLORED COATS.
6. REINFORCED CONCRETE COLLAR REQUIRED WHEN MANHOLE OR VAULT IS OUTSIDE PAVEMENT.
7. NO SUMPS SHALL BE ALLOWED IN VAULTS FOR FORCE MAIN ARV'S.
8. SUMPS OF ARV'S SHALL HAVE 3/4" WASHED ROCK PLACED IN SUMP ABOVE FILTER FABRIC.
9. FOR VAULT TO BE CONSTRUCTED OVER EXISTING PIPE, SEE "DOG HOUSE MANHOLE" STANDARDS.

**PRESSURE PIPE
AIR RELEASE VALVE
AND VAULT NOTES**

**REVISED:
DECEMBER 2014**



**HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION**

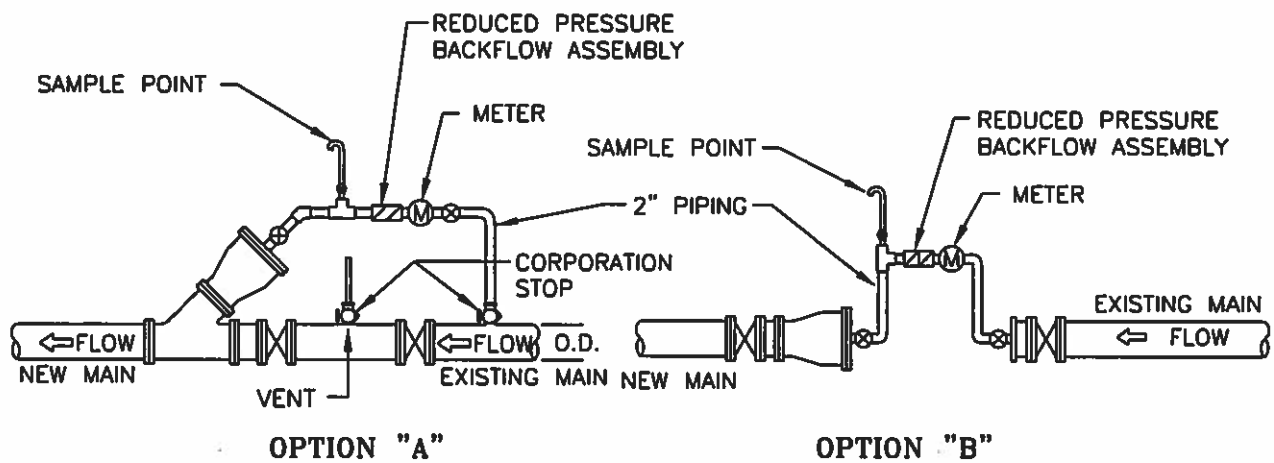
**STANDARD
P-6**

EXCEPT AS INDICATED BELOW FOR SHORT LENGTHS, EACH SECTION OF PIPELINE SHALL BE THOROUGHLY CLEANED WITH ONE POLYURETHANE FOAM PIG EACH TIME.

A COUNTY PUBLIC UTILITIES CONSTRUCTION COORDINATOR SHALL BE PRESENT AT THE TIME OF INSERTION AND EXIT OF THE PIGS. LINES SHALL BE PIGGED AND/OR FLUSHED UNTIL THE WATER RUNS CLEAR AND IS APPROVED BY THE PUBLIC UTILITIES REPRESENTATIVE. THE COUNTY REPRESENTATIVE SHALL BE GIVEN 48 HOURS MINIMUM NOTICE PRIOR TO PIGGING OR FLUSHING.

ON SHORT LENGTHS OF PIPELINE (100' MAX.) CLEANING MAY BE ACCOMPLISHED BY FLUSHING WITH WATER AT A MINIMUM VELOCITY OF 2.5 FEET PER SECOND. WATER REQUIRED FOR TESTING AND CLEANING SHALL BE SUPPLIED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE. WATER SHALL BE FROM A SOURCE SATISFACTORY TO THE COUNTY.

1. REDUCER TO BE NEW MAIN SIZE PLUS 2" LARGER.
2. WYE TO BE PLUGGED AND RESTRAINED AT THE END OF PIGGING.
3. AT THE END OF THE PROJECT, ALL CORPORATIONS TO BE REMOVED AND CORPORATION PLUGS TO BE INSTALLED.
4. SAMPLE POINT TO BE LOCATED AFTER BACKFLOW PREVENTER.
5. ALL MATERIALS, PIPE AND FITTINGS TO BE TO HALL COUNTY SERVICE STANDARDS.
6. INSTALL REDUCER WITH PIG INSIDE. ONLY ONE PIG WILL BE ALLOWED TO BE RUN THROUGH THE MAIN AT A TIME. PIPE EXTENSION CAP MAY BE REQUIRED.



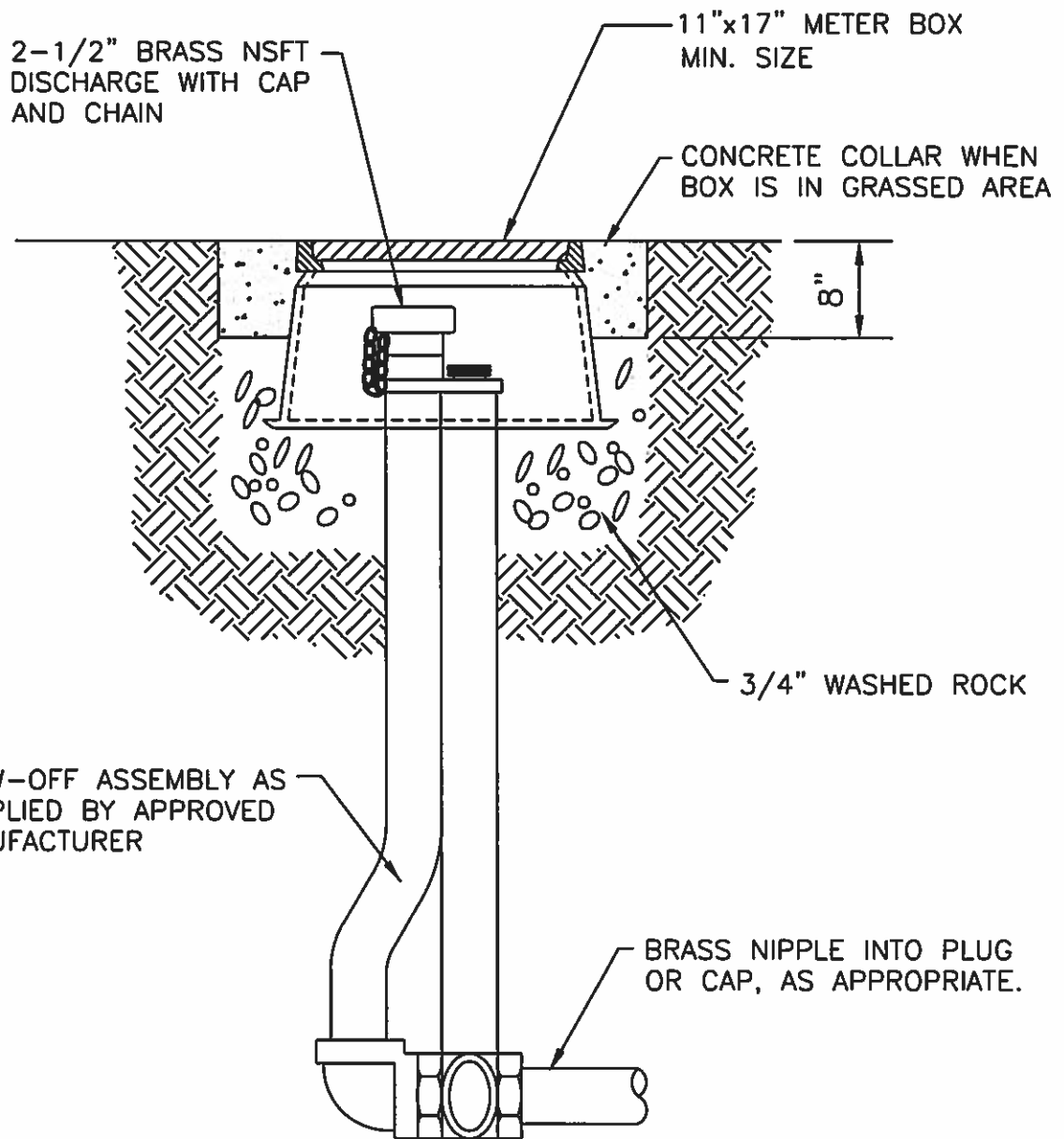
PRESSURE PIPE PIGGING PROCEDURE

REVISED:
SEPTEMBER 2010



HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION

STANDARD
P-7



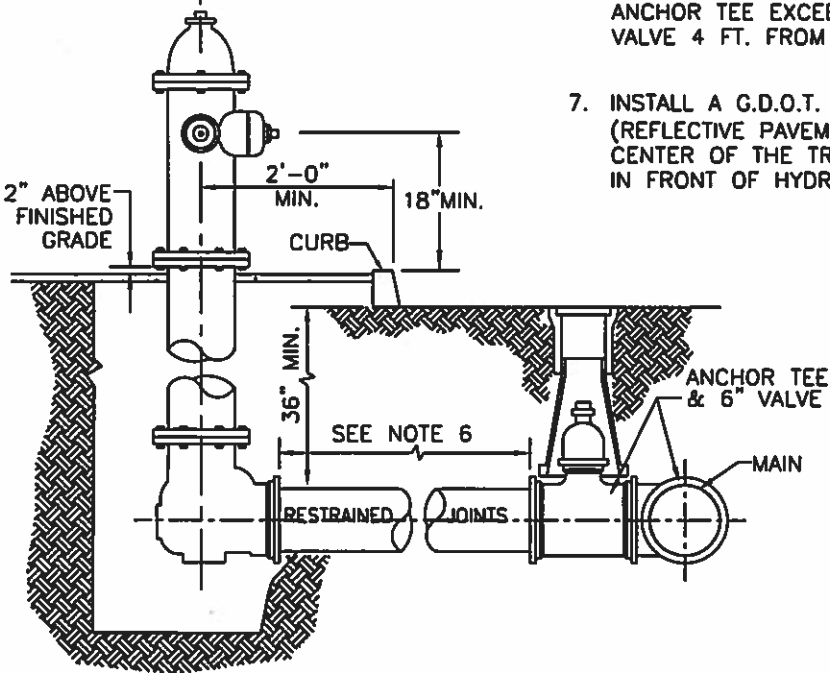
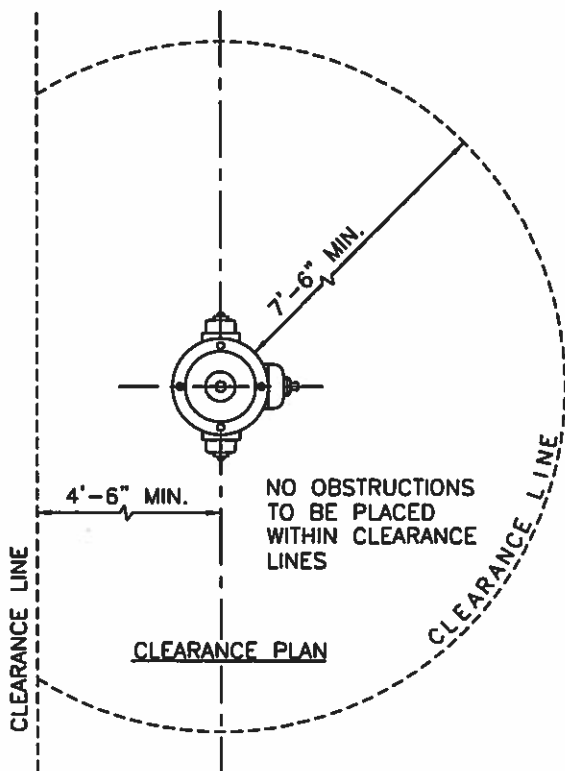
**PRESSURE PIPE
2" TERMINAL
BLOW-OFF**

**REVISED:
SEPTEMBER 2010**



**HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION**

**STANDARD
P-8**



NOTES:

1. ALL HYDRANTS TO BE MANUFACTURED TO HALL COUNTY SPECIFICATIONS, INCLUDING IRON WEATHER CAP, PER HALL COUNTY APPROVED PRODUCTS LIST.
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 APPROVED MATERIALS LIST.
3. FOR PROJECTS WITHIN OTHER MUNICIPALITIES R/W: HYDRANTS TO BE LOCATED IN DEDICATED EASEMENTS OUTSIDE OF R/W.
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 4 FT. FROM HYDRANT.
7. INSTALL A G.D.O.T. APPROVED BLUE R.P.M. (REFLECTIVE PAVEMENT MARKER) IN THE CENTER OF THE TRAVELING LANE, DIRECTLY IN FRONT OF HYDRANT.

**PRESSURE PIPE
FIRE HYDRANT
CONNECTION**

REVISED:
SEPTEMBER 2010



HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION

STANDARD
P-9

HYDRANT INFO:

1. 50' MAXIMUM ALLOWABLE DISTANCE FROM A FDC (FIRE DEPARTMENT CONNECTION) TO A FIRE HYDRANT.
2. NORMALLY HYDRANTS SHALL BE A MINIMUM DISTANCE OF 40 FEET FROM A BUILDING. HYDRANTS CAN BE CLOSER THAN 40 FEET TO A BUILDING BASED UPON A REVIEW BY THE FIRE OFFICIAL.
3. FIRE HYDRANT SPACING;
 - A. 300' SEPARATION BETWEEN HYDRANTS IN A COMMERCIAL ZONE
 - B. 500' SEPARATION BETWEEN HYDRANTS IN A RESIDENTIAL NEIGHBORHOOD.
 - C. 1,000' SEPARATION IN UNDEVELOPED AREAS.
4. 7.6' CLEARANCE IN FRONT AND TO THE SIDES (FULL-CIRCLE) OF HYDRANTS, 4.5' BEHIND.
5. WET FIRE HYDRANTS ARE REQUIRED PRIOR TO, DURING AND AFTER CONSTRUCTION.
6. THE FOLLOWING HORIZONTAL SEPARATION REQUIREMENTS FOR FIRE HYDRANT DRAINS IS REQUIRED:
 - A. 3' (MINIMUM) FROM EXISTING OR PROPOSED STORM SEWER, STORMWATER FORCE MAIN, OR PIPELINE CONVEYING REGULATED RECLAIMED WATER
 - B. 3' (MINIMUM) TO 10' (PREFERABLE) FROM EXISTING OR PROPOSED VACUUM-TYPE SANITARY SEWER
 - C. 6' (MINIMUM) TO 10' (PREFERABLE) FROM EXISTING OR PROPOSED GRAVITY OR PRESSURE-TYPE SANITARY SEWER, WASTEWATER FORCE MAIN, OR PIPELINE CONVEYING NON-REGULATED RECLAIMED WATER.
 - D. 10' (MINIMUM) FROM EXISTING OR PROPOSED ON-SITE SEWAGE TREATMENT AND DISPOSAL SYSTEM.
7. WHERE FIRE HYDRANTS ARE SUBJECT TO IMPACT BY A MOTOR VEHICLE, GUARD POSTS OR OTHER APPROVED MEANS SHALL COMPLY TO SECTION 312.

ROADWAY ACCESS:

1. 18' OF CLEARANCE FROM HYDRANTS TO ANYTHING ALONG THE ROADWAY, SUCH AS PARKING SPACES.
2. FOR FIRE TRUCK ACCESS, THE MIN. DRIVEWAY WIDTH ON THE ENTRY DRIVE SHALL BE 20'. LESS THAN 20' ON EXIT DRIVE CAN BE APPROVED BY THE FIRE OFFICIAL AFTER REVIEW.
3. THE MINIMUM RADIUS FOR CUL-DE-SAC DESIGNS IS 50' OF PAVED AREA, FOR FIRE TRUCK TURNING RADIUS. T OR Y TURN-A-ROUNDS CAN BE APPROVED BY THE FIRE OFFICIAL AFTER REVIEW.
4. FIRE TRUCKS NEED TO HAVE NO LESS THAN 13.5' HIGH VERTICAL CLEARANCE FOR THE TRUCK TO DRIVE THROUGH AN OPENING.

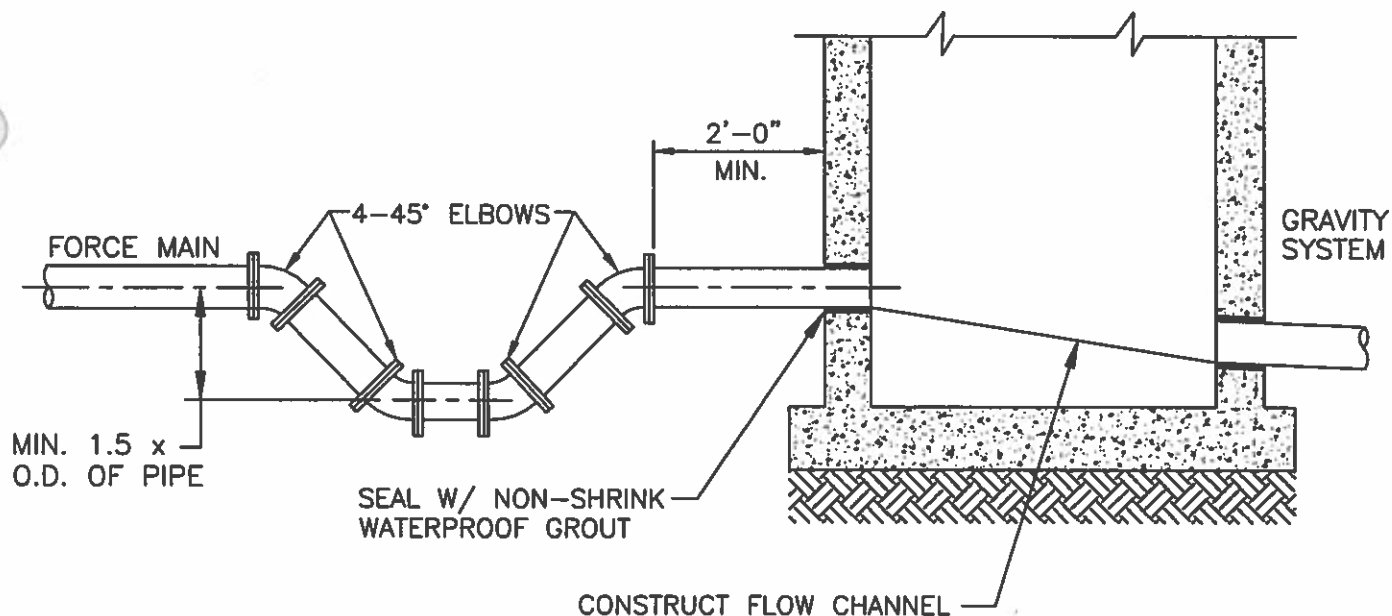
**PRESSURE PIPE
FIRE DEPARTMENT REQUIREMENTS
FOR R.O.W. HYDRANTS**

**REVISED:
DECEMBER 2014**



**HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION**

**STANDARD
P-10**



NOTES:

1. FORCE MAIN TO ENTER MANHOLE AT $180^{\circ} \pm 10^{\circ}$ FROM GRAVITY OUTFLOW.
2. THE INVERT LEVEL OF FORCE MAIN AT POINT OF ENTRY SHALL BE NO MORE THAN 4" ABOVE INVERT OF GRAVITY OUTLET, AND NO LESS THAN 2 1/2".
3. ENTRY INTO EXISTING MANHOLES SHALL BE BY CORING ONLY.
4. TRAP TO BE INSTALLED PRIOR TO DROP INTO MANHOLE AND, IF POSSIBLE, SHALL BE LOCATED OUTSIDE OF PAVED AREAS.
5. USE TWO 45° ELBOWS BETWEEN TRAP AND MANHOLE IF ELEVATION DROP IS REQUIRED TO ENTER MANHOLE.
6. FLOW CHANNEL REQUIRED TO GRAVITY SYSTEM FROM FORCE MAIN.
7. INSIDE MANHOLE AND FLOW CHANNEL TO HAVE SPECTRASHIELD LINER OR APPROVED EQUAL.
8. MEGALUG 1100 SERIES M.J. ADAPTERS ON ALL 3" OR LARGER FITTINGS & PIPE.
9. IF FORCE MAIN IS TO DISCHARGE INTO AN EXISTING MANHOLE, THEN THE CONTRACTOR SHALL REPLACE OR REHABILITATE MANHOLE AS REQUIRED BY THE COUNTY. COST SHALL BE INCLUDED IN PRICE OF THE FORCE MAIN.

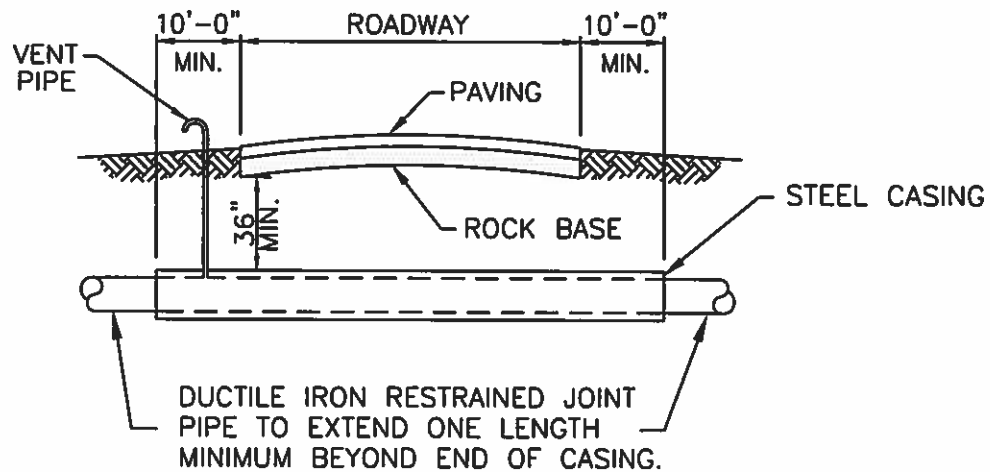
**PRESSURE PIPE
FORCE MAIN
AT MANHOLE**

**REVISED:
JULY 2017**

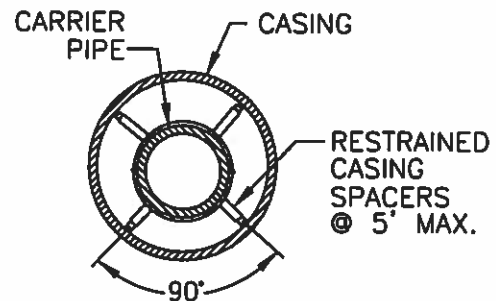


**HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION**

**STANDARD
P-11**



CARRIER PIPE SIZE	STEEL CASING	MIN. WALL THICKNESS	VENT PIPE SIZE
4"	12"	.188	2"
6"	14"	.250	2"
8"	16"	.250	2"
10"	18"	.250	2"
12"	20"	.250	3"
14"	24"	.250	3"
16"	24"	.250	3"
18"	30"	.250	4"
20"	30"	.250	4"
24"	36"	.250	4"
30"	42"	.312	4"
36"	48"	.375	4"
42"	60"	.500	4"
48"	72"	.500	4"



NOTES:

1. PIPE CASING SHALL BE IN ACCORDANCE WITH CURRENT ASTM SPECIFICATION A139 AND BE PROTECTED BY A BLACK BITUMASTIC COATING FOR PROTECTION AGAINST CORROSION.
2. EXCEPT AS NOTED, WALL THICKNESS SHALL BE AS NOTED IN TABLE ABOVE, EXCEPT THAT LATEST G.D.O.T. STANDARDS, OR RAILROAD STANDARDS SHALL APPLY TO THOSE INSTALLATIONS.
3. PIPE THROUGH CONFLICT STORM AND SANITARY STRUCTURES MUST USE THIS DETAIL. THE END OF THE CASING MUST EXTEND A MINIMUM OF 12" OUTSIDE OF THE STRUCTURE.
4. ENDS SHALL BE SEALED WITH APPROVED PRESSURE RESISTANT FITTINGS, NO GROUT.

**PRESSURE PIPE
PIPE CASING**

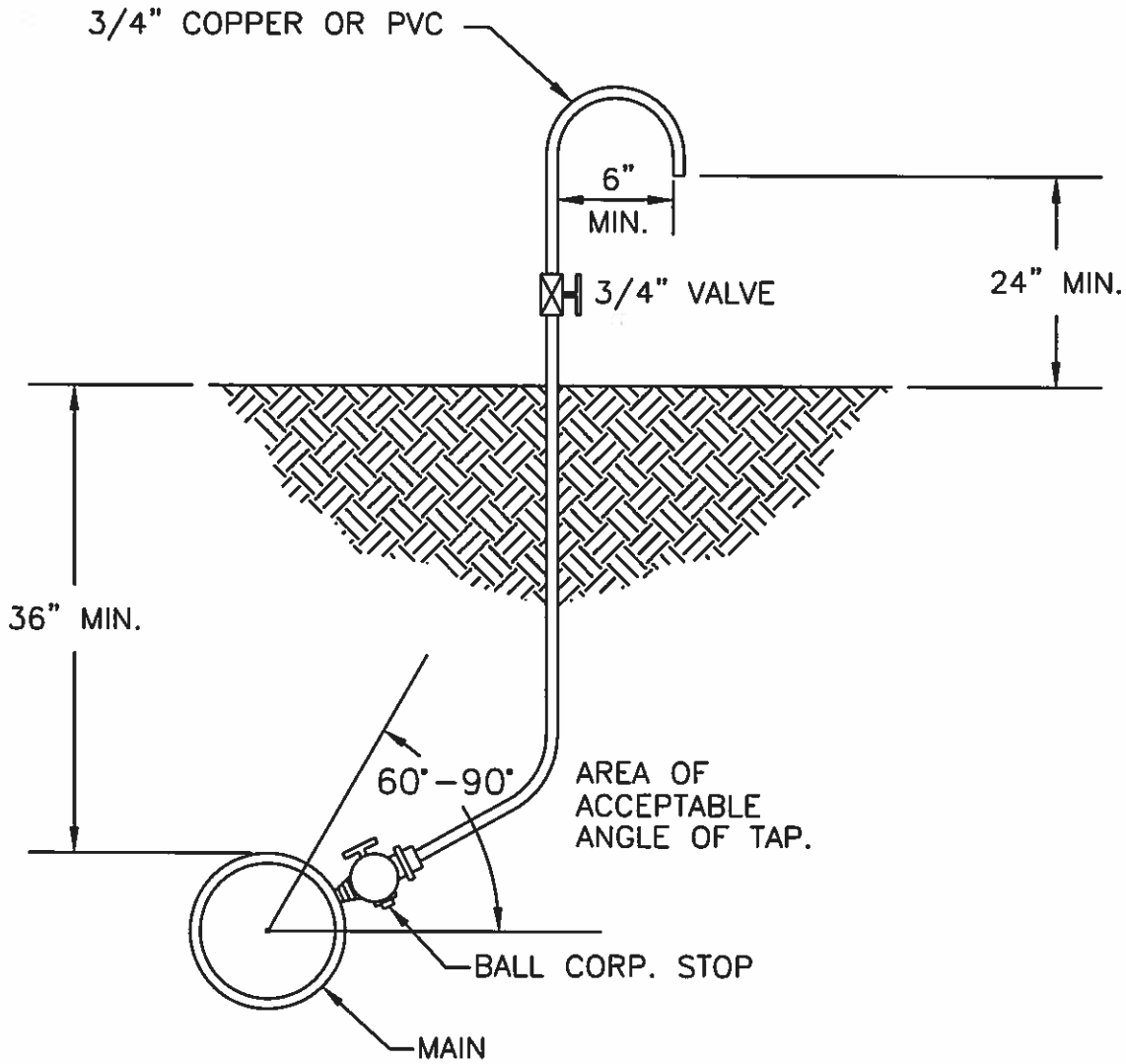
REVISED:
SEPTEMBER 2010



HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION

STANDARD
P-12

AFTER SATISFACTORY BACTERIOLOGICAL TESTING, REMOVE THE TUBING, CORPORATION AND PLUG THE MAIN WITH CORPORATION PLUGS.



SAMPLING POINT CONNECTION

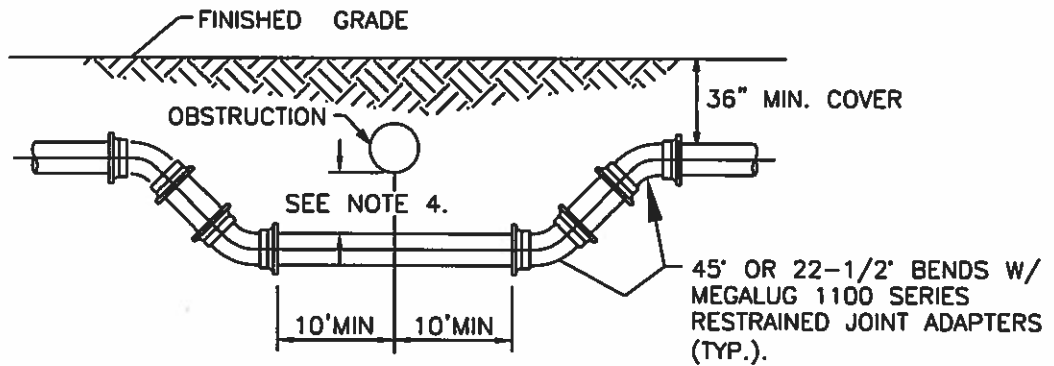
PRESSURE PIPE
SAMPLING POINT

REVISED:
SEPTEMBER 2010

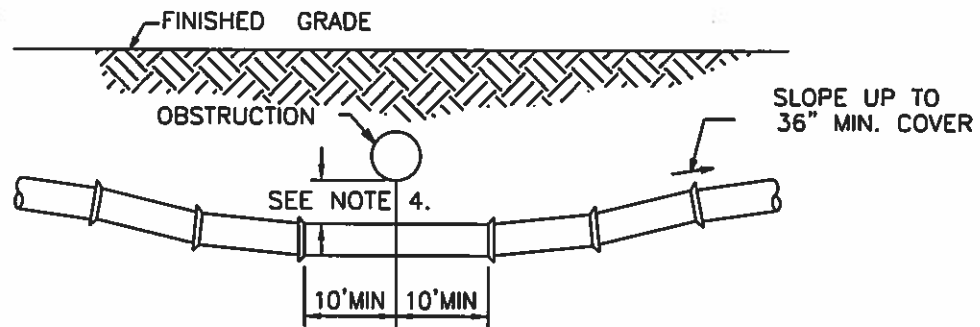


HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION

STANDARD
P-13



SPECIAL UTILITY CROSSING - FITTING TYPE



SPECIAL UTILITY CROSSING - DEFLECTION TYPE

N.T.S.

1. THE DEFLECTION TYPE CROSSING SHALL BE USED WHEREVER POSSIBLE. ONLY UNDER SPECIFIC ORDERS BY THE ENGINEER SHALL THE FITTING TYPE CROSSING BE ALLOWED.
2. CONSTRUCT DEFLECTION CROSSING USING 75% OF MANUFACTURER'S MAXIMUM JOINT DEFLECTION.
3. ALL MECHANICAL JOINTS SHALL BE RESTRAINED PER COUNTY STANDARDS.
4. UNLESS SHOWN OTHERWISE, 18" MIN. CLEARANCE WILL BE REQUIRED FOR WATER AND SEWER MAIN CROSSINGS. 6" MIN. CLEARANCE WILL BE REQUIRED FOR OTHER TYPE OF UTILITIES CROSSINGS.
5. IF DEFLECTION CANNOT BE OBTAINED THEN USE USE PIPE CASING AS SHOWN IN "PIPE CASING DETAIL"
6. WHERE EITHER OF THESE CROSSINGS OR THE ENCASEMENT DETAIL CANNOT BE USED, THEN A CONFLICT STRUCTURE MUST BE BUILT AROUND THE HALL COUNTY PRESSURE PIPE WITH THE HALL COUNTY PIPE ENCASED THROUGH THE STRUCTURE USING A CASING AS SHOWN IN THE "PIPE CASING DETAIL"

UTILITY CONFLICT CROSSING

PRESSURE PIPE

REVISED:
SEPTEMBER 2010



HALL COUNTY PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION

STANDARD
P-14