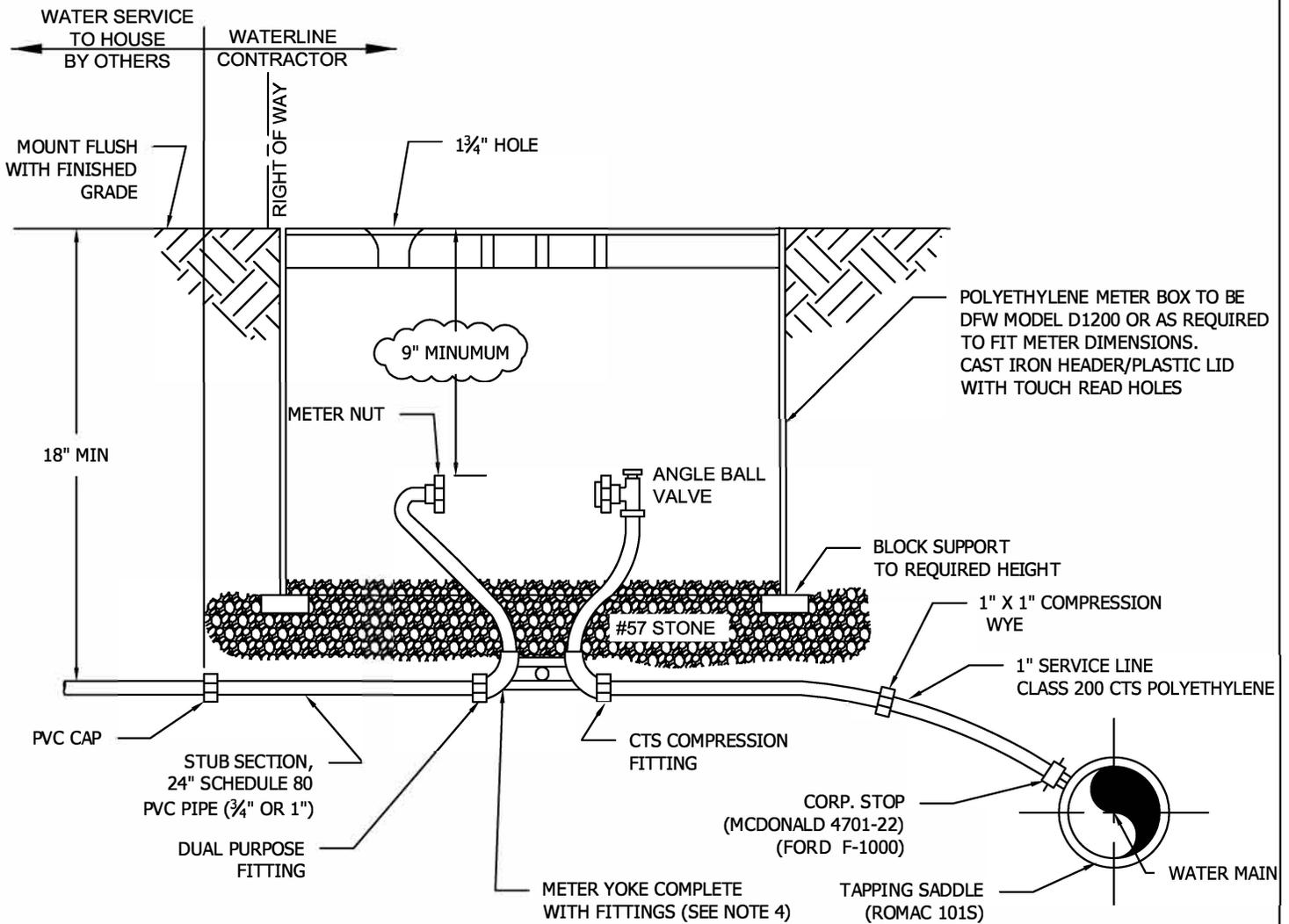


## PCU STANDARD NOTES

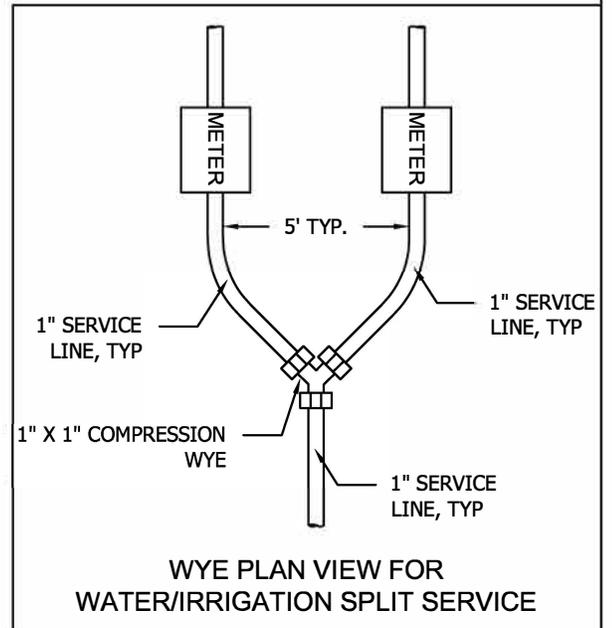
1. A PRE-CONSTRUCTION MEETING IS REQUIRED BEFORE BEGINNING WORK. THE MEETING MUST BE SCHEDULED WITH PENDER COUNTY UTILITIES (PCU) AT LEAST ONE WEEK IN ADVANCE. ATTENDEES MUST INCLUDE PCU, THE UTILITY CONTRACTOR'S SUPERINTENDENT, THE SUPPLIER, AND THE CONSULTING ENGINEER.
2. ALL MATERIALS USED SHALL CONFORM TO PENDER COUNTY UTILITIES REQUIREMENTS. NON-CONFORMING MATERIAL WILL NOT BE ACCEPTED FOR FINAL CERTIFICATION.
3. ALL PIPE SHALL BE C900 CR18 PVC, UNLESS OTHERWISE NOTED (SEE PCU STANDARD DETAIL). PCU MUST APPROVE THE USE OF DIP IN THE FIELD BEFORE INSTALLATION. PIPE SHOULD NEVER BE UNDER THE ROADWAY, PARKING LOT, OR SIDEWALKS. PENDER COUNTY UTILITIES DOES NOT ALLOW SIZE-ON-SIZE TAPS.
4. PCU STANDARD WATERLINE PIPE RESTRAINING METHOD IS MEGA LUGS. AT A MINIMUM ALL FITTINGS, VALVES, ETC. MUST BE RESTRAINED (SEE PCU STANDARD DETAIL).
5. PCU MUST INSPECT CASING INSTALLATIONS PRIOR TO BACKFILL. PCU MUST WITNESS PRESSURE TESTS, AND WITHDRAWAL OF BACTERIOLOGICAL SMAPLES. CONTACT PENDER COUNTY UTILITIES INSPECTOR TO SCHEDULE.
6. CLOSE-OUT DOCUMENTS WHICH MUST BE RECEIVED PRIOR TO PCU SIGNING THE NCDEQ PWSS APPLICANT CERTIFICATION INCLUDE: BACTERIOLOGICAL TESTS, PRESSURE TESTS, DEED OF DEDICATION, AFFIDAVIT/RELEASE OF LIENS, WARRANTY, AND RECORDS DRAWINGS (PDF & GIO REFERENCED CAD).
7. AN 18-MONTH WARRANTY PERIOD APPLIES TO ALL WATERLINE CONSTRUCTION. THIS WARRANTY PERIOD DOES NOT BEGIN UNTIL FINAL APPROVAL OF THE SYSTEM HAS BEEN RECEIVED FROM NCDEQ PWSS.





**NOTE:**

1. CONTRACTOR SHALL PLACE METER BOX IN NON-TRAFFIC AREA ONLY.
2. ALL TAPS TO BE MADE ON THE TOP QUARTER OF THE WATER MAIN.
3. CONTRACTOR SHALL CENTER METER YOKE IN METER BOX.
4. (3/4") MCDONALD 26-702WX2D 33, FORD FVB727W4143NL (1") MCDONALD 26-410WX2D 44, FORD FVB7410W4144NL BOX TO BE ADJUSTED VERTICALLY TO ACCEPT COUNTY'S STANDARD SERVICE METER. (NEPTUNE T-10, PRO READ REGISTER, R900 MIU)
6. METER TO BE SET BY COUNTY UPON RECEIPT OF WATER SERVICE FEES, AND SATISFACTORY INSPECTION OF WATER SERVICE TO HOUSE.
7. TAPS ON WATER MAINS LARGER THAN 16" SHALL BE MADE WITH DUAL WIDE BAND, STAINLESS STEEL TAPPING SADDLES (ROMAC 202S).
8. 1 1/2" METERS REQUIRE 2" TAP AND 2" SQUARE NUT GATE VALVE PER 2" METER DETAIL. REDUCE TO 1 1/2" SERVICE
9. INSTALL WYE TO PROVIDE A DOMESTIC METER SETTER AND IRRIGATION METER SETTER PER SPLIT SERVICE INSET.



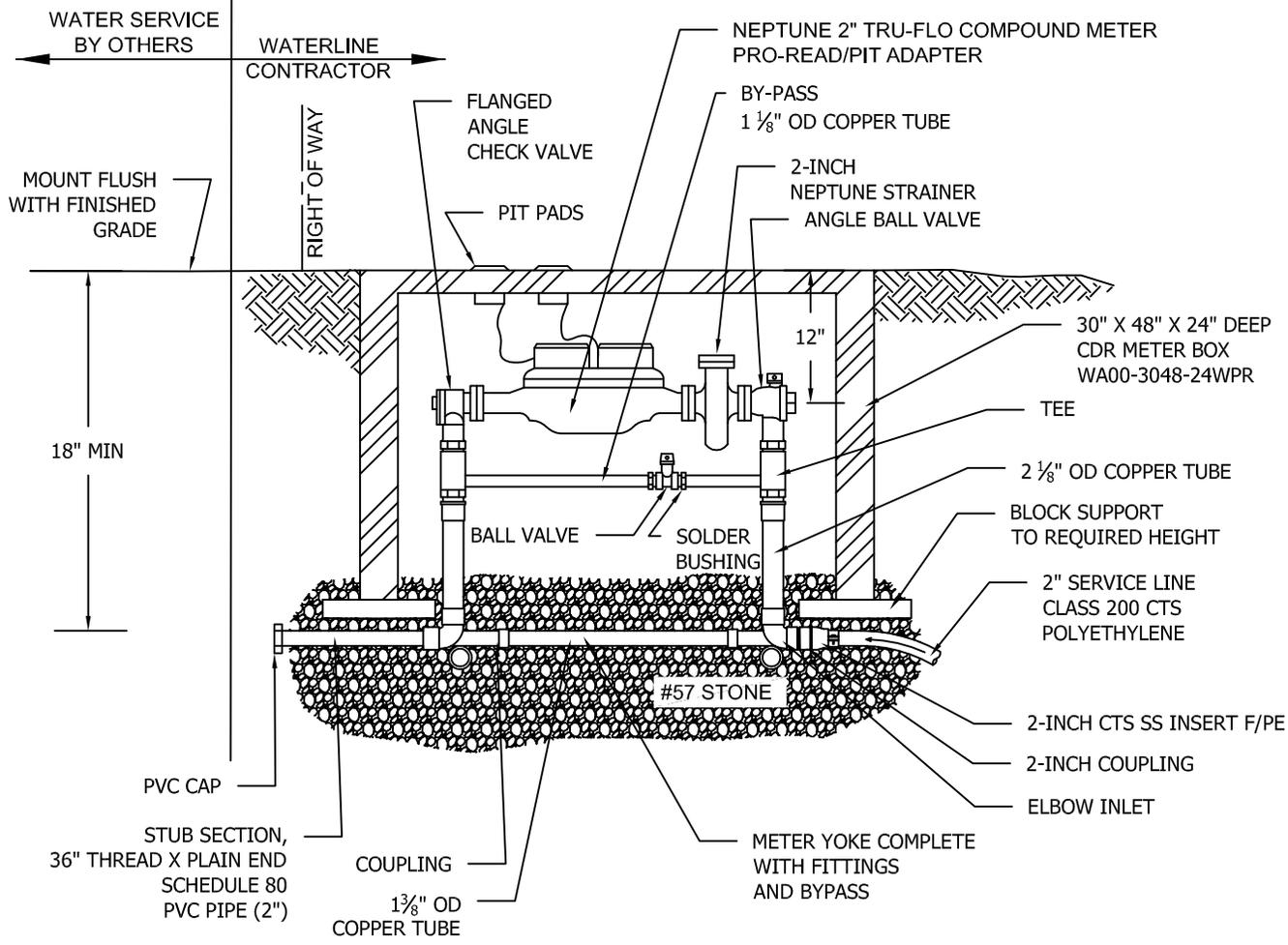
**STANDARD WATER SERVICE DETAIL**

NOT TO SCALE

**PENDER COUNTY UTILITIES**  
 605 EAST FREMONT STREET  
 BURGAW, NC 28425

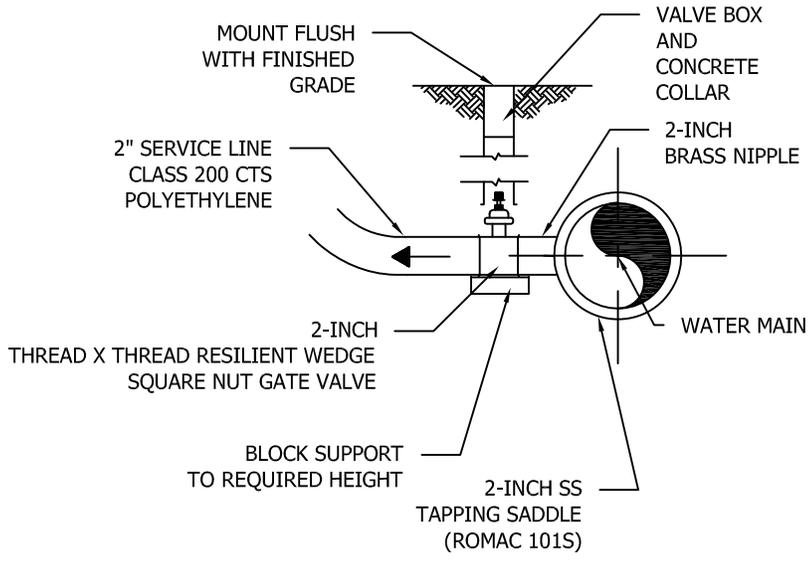


**WATER SERVICE (3/4" - 1")**  
**STANDARD DETAIL**  
**VERSION #4 - FEB 2016**



**2-INCH METER DETAIL**

- NOTE:**
1. CONTRACTOR SHALL PLACE METER BOX IN NON-TRAFFIC AREA ONLY.
  2. CONTRACTOR SHALL CENTER METER YOKE IN METER BOX AS REQUIRED TO PROPERLY FIT METER.
  3. BOX TO BE ADJUSTED VERTICALLY TO ACCEPT COUNTY'S STANDARD SERVICE METER AND STRAINER. (NEPTUNE 2" TRU-FLO COMPOUND METER PRO-READ/PIT ADAPTER)
  4. TAPS ON WATER MAINS LARGER THAN 16" SHALL BE MADE WITH DUAL WIDE BAND, STAINLESS STEEL TAPPING SADDLES (ROMAC 202S). ANY TAP LARGER THAN 2-INCHES SHALL BE MADE WITH A TAPPING SLEEVE AND VALVE. A STRAINER AND BY-PASS SHALL ALSO BE PROVIDED.



**2-INCH TAP DETAIL**

**STANDARD 2-INCH WATER SERVICE DETAIL**

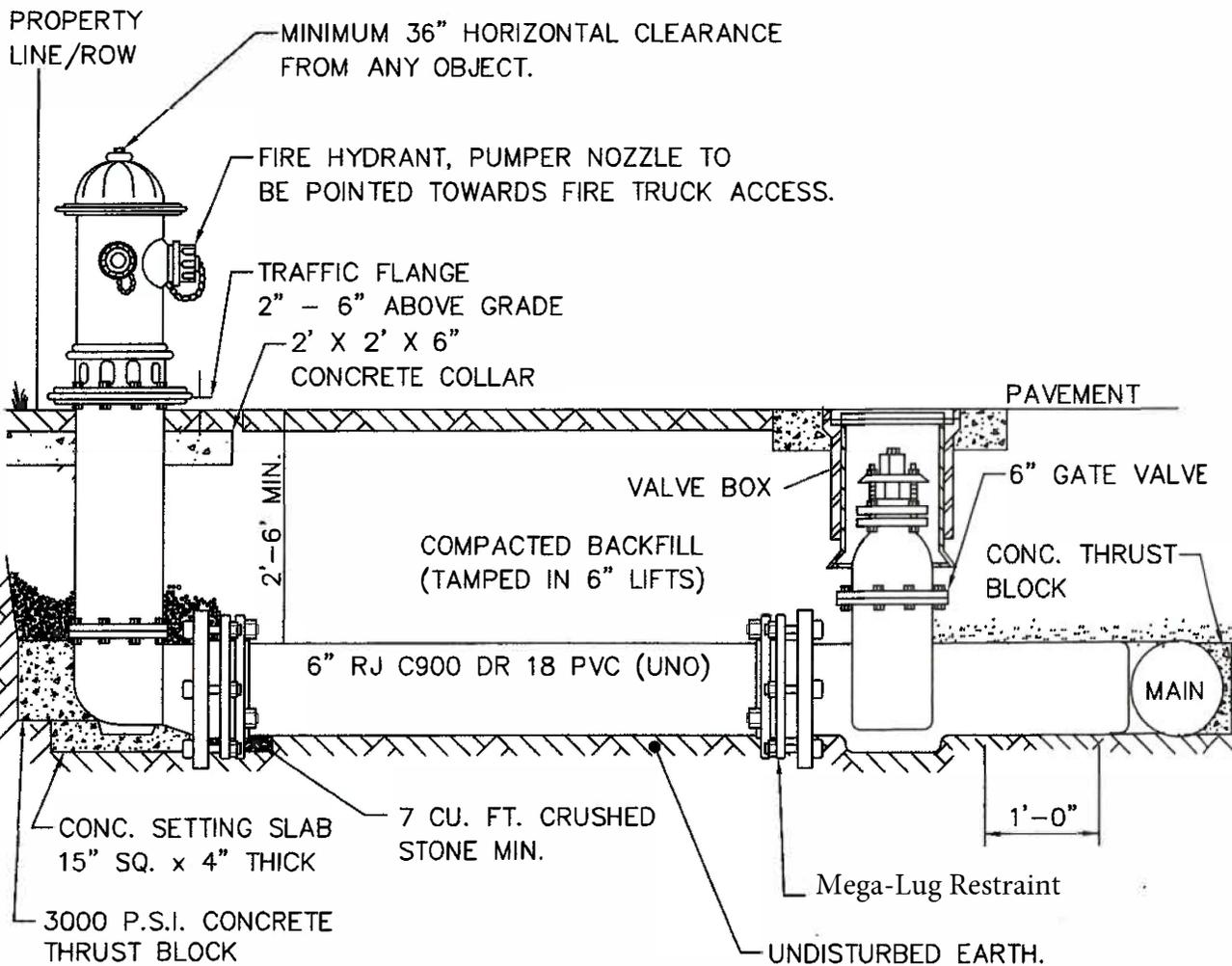
NOT TO SCALE

**PENDER COUNTY UTILITIES**  
 605 EAST FREMONT STREET  
 BURGAW, NC 28425



**2-INCH WATER SERVICE  
 STANDARD DETAIL  
 VERSION #1 - AUGUST 2010**

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NOTES:

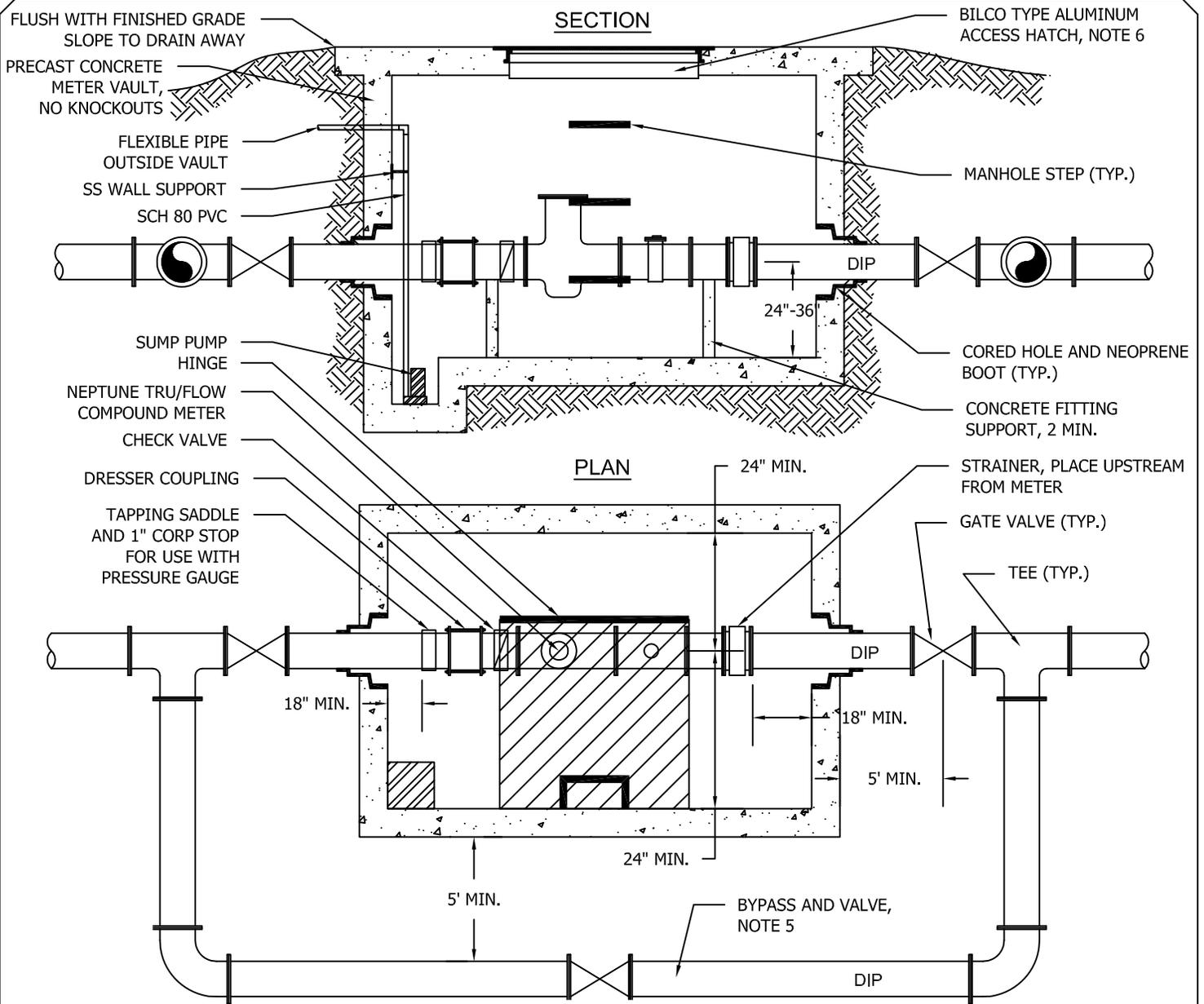
1. FIRE HYDRANTS WILL BE INSTALLED IN TRUE VERTICAL POSITION.
2. FIRE HYDRANTS TO BE LOCATED IN RIGHT-OF-WAY.
3. INSTALL WITH BURY LINE FLUSH TO FINAL GRADE.
4. HYDRANTS TO BE EJ5CD250 OR CLOW MEDALLION WITH STAINLESS STEEL STEMS.
5. HYDRANTS SHALL BE NOSTALGIC STYLE DRY BARREL.
6. HYDRANTS TO BE RED WITH SILVER CAPS AND BONNET.

FIRE HYDRANT ASSEMBLY DETAIL  
NOT TO SCALE

PENDER COUNTY UTILITIES  
605 EAST FREMONT STREET  
BURGAW, NC 28425



FIRE HYDRANT ASSEMBLY  
STANDARD DETAIL  
VERSION #2 - APRIL 2016



**NOTES**

1. VAULTS SHALL BE PROPERLY DESIGNED AND SIZED FOR EACH SPECIFIC APPLICATION AND SITE CONDITION.
2. VAULTS SHALL BE LOCATED SUCH THAT THE RIM ELEVATION IS A MINIMUM OF 2 FEET ABOVE THE BASE FLOOD ELEVATION.
3. PROVIDE ADEQUATE DESIGN FOR ALL SITE CONDITIONS INCLUDING BUT NOT LIMITED TO FLOTATION, TRAFFIC LOADING, ACCESSIBILITY, PROJECTED DEMAND, AND OTHER DESIGN CRITERIA AS REQUIRED.
4. MINIMUM CLEARANCES SHOWN ARE REQUIRED FOR PROPER ACCESSIBILITY TO ALLOW OPERATION AND MAINTENANCE. CLEARANCES SHALL BE VERIFIED DURING THE SUBMITTAL PROCESS.
5. METERS SHALL BE PROVIDED A BYPASS WITH AT LEAST ONE VALVE OF THE SAME SIZE AS THE METER.
6. THE ACCESS HATCH SHALL BE LOCATED OVER THE METER, AND SHALL BE LOCATED TO ALLOW ENTRY WITHOUT CLIMBING OVER VAULT COMPONENTS. HATCH SHALL ALSO BE LOCATED AND OF APPROPRIATE SIZE TO ALLOW REMOVAL OF EQUIPMENT. PROVIDE 1 <sup>3</sup>/<sub>4</sub>" HOLE IN ACCESS HATCH FOR TOUCH-READ SYSTEM.
7. THRUST RESTRAINT AND SUPPORTS SHALL BE PROPERLY DESIGNED, SIZED, AND INSTALLED TO PREVENT MOVEMENT OF ALL VAULT COMPONENTS, INCLUDING THE BY PASS.
8. THERE SHALL BE NO VALVES, DIRECTIONAL CHANGES, OR OTHER DISTURBANCES WITHIN 5 PIPE DIAMETERS UPSTREAM OF THE METER THAT MAY INTERFERE WITH LAMINAR FLOW.
9. VAULTS SHALL BE PROPERLY WATERPROOFED AND HYDROSTATICALLY TESTED. AN AUTOMATIC SUMP PUMP SHALL BE PROVIDED. THE FLOOR OF THE VAULT SHALL BE SLOPED TOWARD THE SUMP.
10. AT LEAST ONE, 20 AMP, GFI OUTLET WITH STANDARD THREE PRONG RECEPTACLE SHALL BE PROVIDED ON THE ELECTRIC PANEL. THE OUTLET SHALL BE WEATHER PROOF AND HAVE A LOCKABLE COVER.
11. AT LEAST ONE SPARE BREAKER SHALL BE PROVIDED IN THE ELECTRICAL PANEL.

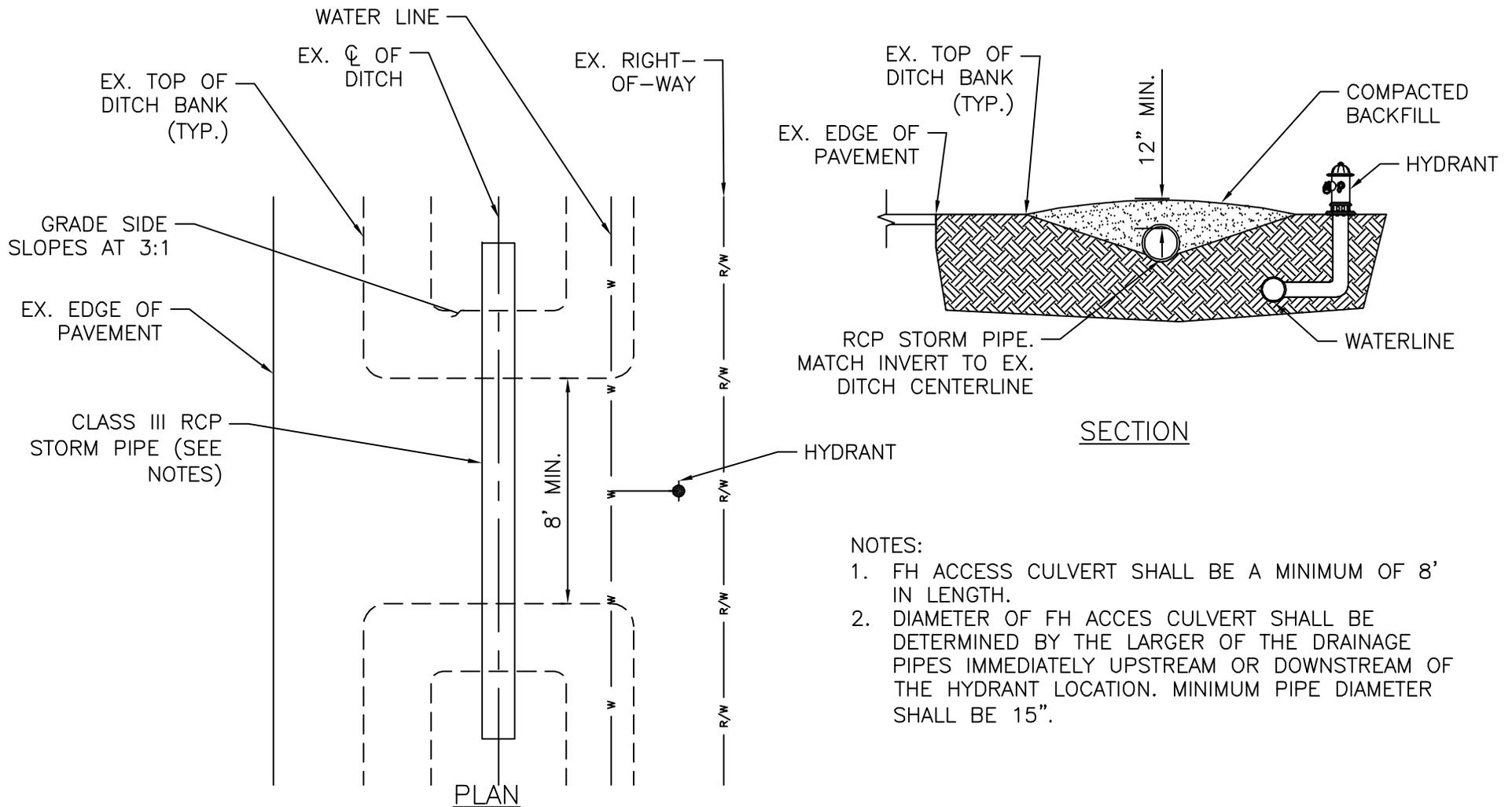
**BULK METER DETAIL**

NOT TO SCALE

PENDER COUNTY UTILITIES  
 605 EAST FREMONT STREET  
 BURGAW, NC 28525



BULK METER  
 STANDARD DETAIL  
 VERSION #3 - FEB 2016



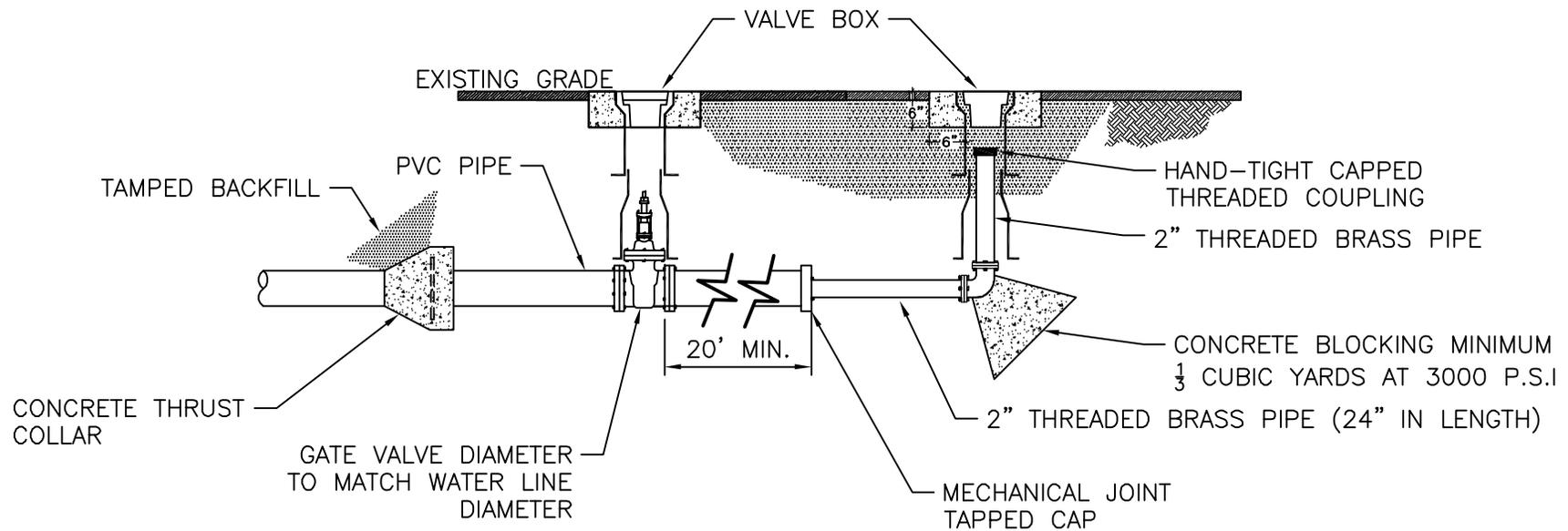
- NOTES:
1. FH ACCESS CULVERT SHALL BE A MINIMUM OF 8' IN LENGTH.
  2. DIAMETER OF FH ACCES CULVERT SHALL BE DETERMINED BY THE LARGER OF THE DRAINAGE PIPES IMMEDIATELY UPSTREAM OR DOWNSTREAM OF THE HYDRANT LOCATION. MINIMUM PIPE DIAMETER SHALL BE 15".

FIRE HYDRANT ACCESS DETAIL  
NOT TO SCALE



NOTE:

1. ALL PVC SHALL BE RESTRAINED PER THE RESTRAINED LENGTH SCHEDULE PROVIDED ELSEWHERE.
2. A BLOW OFF MARKER SHALL BE PLACED ON THE RIGHT OF WAY AT EACH BLOW.
3. BLOW OFF MARKER TO BE SAME DESIGN AS VALVE MARKER EXCEPT DENOTE "BO" ON MARKER RATHER THAN "MV"



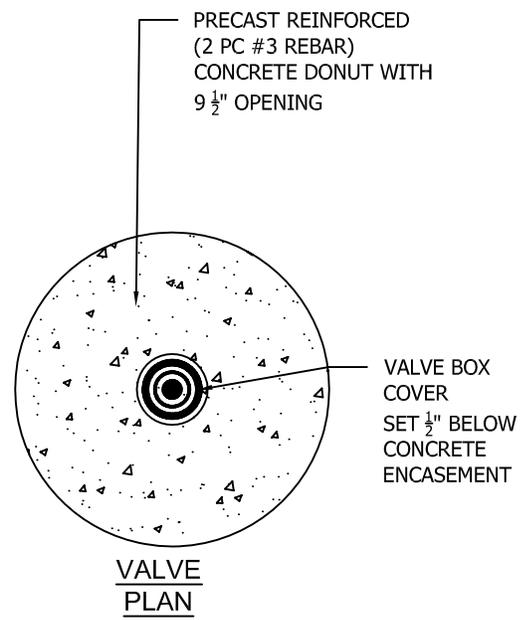
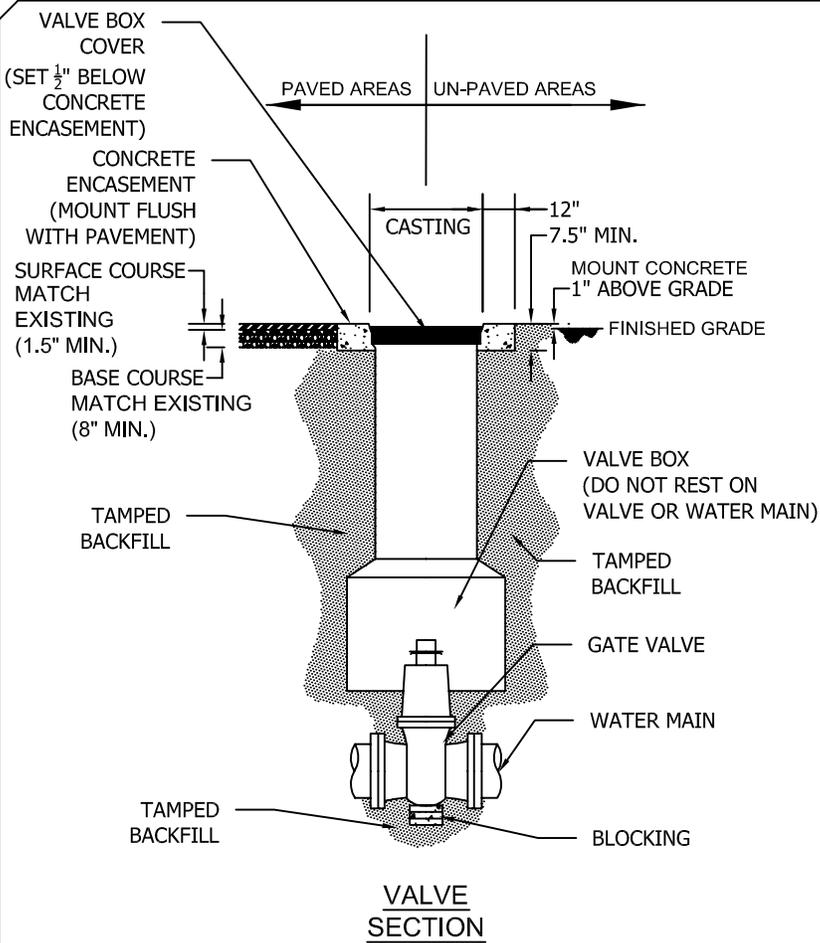
TEMPORARY BLOW-OFF ASSEMBLY DETAIL

NOT TO SCALE

PENDER COUNTY UTILITIES  
605 EAST FREMONT STREET  
BURGAW, NC 28425

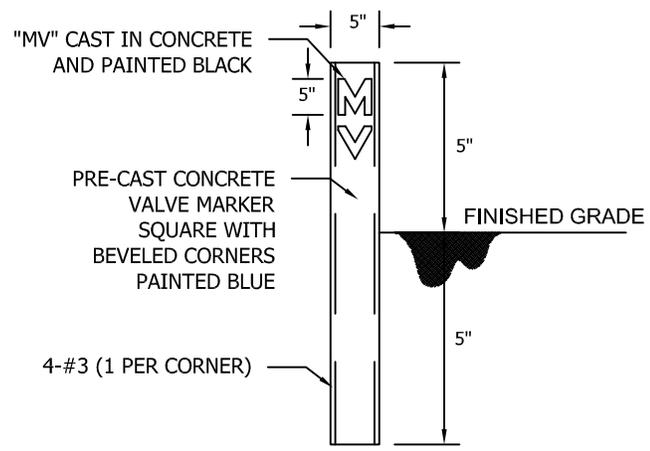


TEMPORARY BLOW-OFF ASSEMBLY  
STANDARD DETAIL  
VERSION #1 - SEPTEMBER 2015



VALVE SECTION

VALVE PLAN



VALVE MARKER SECTION

- NOTE:
1. DO NOT ALLOW VALVE BOX TO REST ON THE VALVE OR WATER MAIN.
  2. A VALVE MARKER SHALL BE PLACED ON THE RIGHT OF WAY AT EACH ISOLATION VALVE.
  3. VALVES MAY NOT BE LOCATED IN DITCHES, DITCH OR SWELL, ASPHALT OR SIDEWALKS.

VALVE INSTALLATION DETAIL

NOT TO SCALE

PENDER COUNTY UTILITIES  
 605 EAST FREMONT STREET  
 BURGAW, NC 28425



VALVE INSTALLATION  
 STANDARD DETAIL  
 VERSION #3 - JUNE 2016

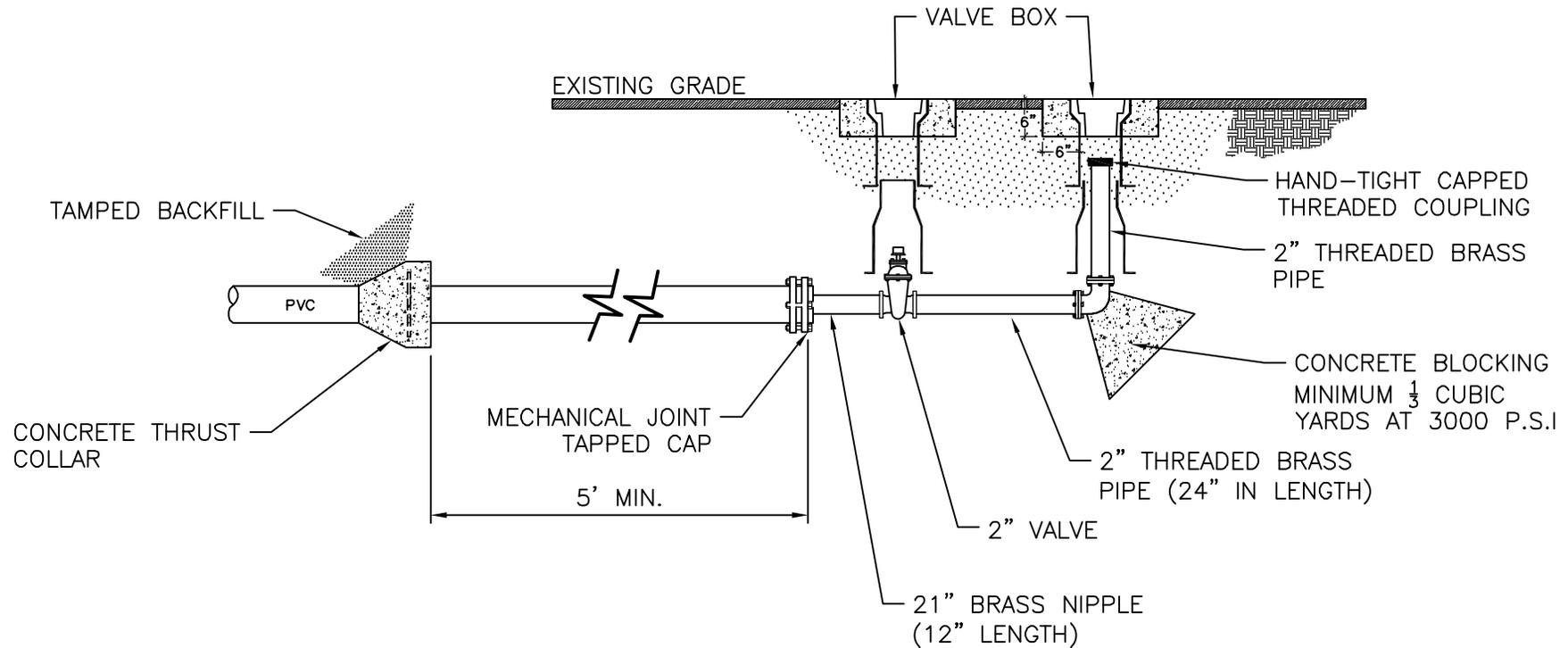
P:\VCO\pender Water Spans & Standards\PCU Standard Details\Current CAD Files\PCU Standard Valve Installation Detail.dwg

NOTE:

1. A BLOW OFF MARKER SHALL BE PLACED ON THE RIGHT OF WAY AT EACH BLOW.
2. BLOW OFF MARKER TO BE SAME DESIGN AS VALVE MARKER EXCEPT DENOTE "BO" ON MARKER RATHER THAN "MV"

NOTES:

1. ALL PVC SHALL BE RESTRAINED PER THE RESTRAINED LENGTH SCHEDULE PROVIDED ELSEWHERE.



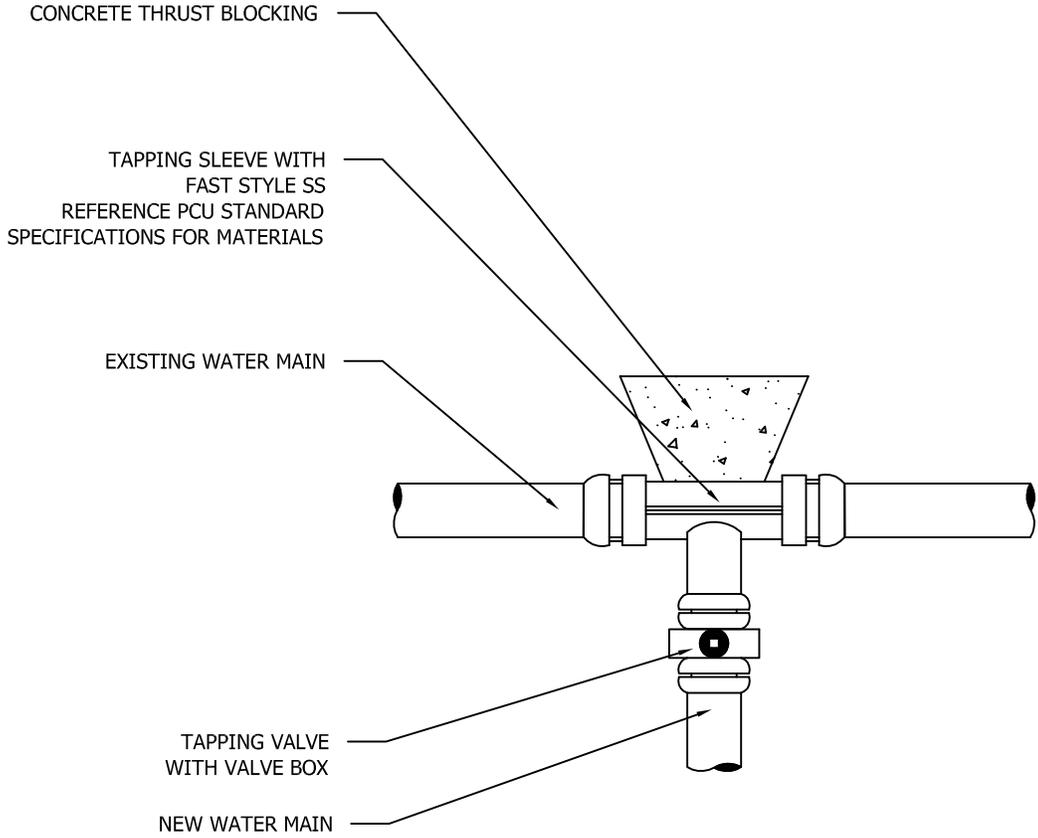
PERMANENT BLOW-OFF ASSEMBLY DETAIL

NOT TO SCALE

PENDER COUNTY UTILITIES  
605 EAST FREMONT STREET  
BURGAW, NC 28425



PERMANENT BLOW-OFF ASSEMBLY  
STANDARD DETAIL  
VERSION #1 - SEPTEMBER 2015



TAPPING SLEEVE AND VALVE ASSEMBLY DETAIL

NOT TO SCALE

PENDER COUNTY UTILITIES  
 605 EAST FREMONT STREET  
 BURGAW, NC 28425



TAPPING SLEEVE AND VALVE ASSEMBLY  
 STANDARD DETAIL  
 VERSION #3 - FEB 2016

### Restrained Length In Feet Each Side of Fitting Joint

PIPE DIAMETER (INCHES)	D. I. P.				P. V. C.			
	90°	45°	22 1/2°	11 1/4°	90°	45°	22 1/2°	11 1/4°
3"	30'	15'	10'	5'	40'	20'	10'	5'
4"	35'	15'	10'	5'	55'	25'	15'	10'
6"	55'	25'	10'	5'	80'	35'	20'	10'
8"	65'	30'	15'	10'	90'	40'	20'	10'
10"	80'	35'	20'	10'	110'	50'	25'	15'
12"	95'	40'	20'	10'	130'	55'	30'	15'
16"	120'	50'	25'	15'	165'	70'	35'	20'
20"	150'	65'	30'	15'	200'	85'	40'	20'
24"	180'	70'	35'	20'	210'	90'	45'	25'
30"	190'	80'	40'	20'	250'	105'	50'	25'
36"	220'	95'	45'	25'	0	0	0	0
42"	245'	105'	50'	25'	0	0	0	0
48"	260'	120'	60'	30'	0	0	0	0

Restrained lengths for valves, dead ends and branches from tees shall be the same as for 90° (degree) bends

### Restrained Length In Feet For Reducer

PIPE DIAMETER (INCHES)	3"	4"	6"	8"	10"	12"	16"	20"	24"	30"
	3"	0	0	0	0	0	0	0	0	0
4"	40'	0	0	0	0	0	0	0	0	0
6"	50'	45'	0	0	0	0	0	0	0	0
8"	75'	70'	40'	0	0	0	0	0	0	0
10"	95'	90'	70'	40'	0	0	0	0	0	0
12"	120'	115'	100'	75'	40'	0	0	0	0	0
16"	160'	155'	140'	125'	100'	70'	0	0	0	0
20"	200'	195'	185'	170'	150'	130'	75'	0	0	0
24"	160'	155'	150'	140'	135'	120'	90'	50'	0	0
30"	195'	190'	185'	180'	170'	160'	120'	105'	70'	0
36"	225'	220'	215'	210'	205'	195'	180'	160'	125'	70'
42"	245'	240'	235'	230'	225'	220'	205'	180'	155'	105'
48"	255'	250'	245'	240'	235'	230'	215'	195'	175'	125'

Length of restrained joint for larger diameter pipe

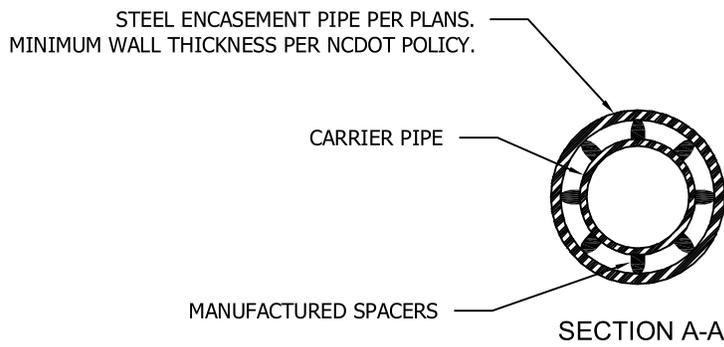
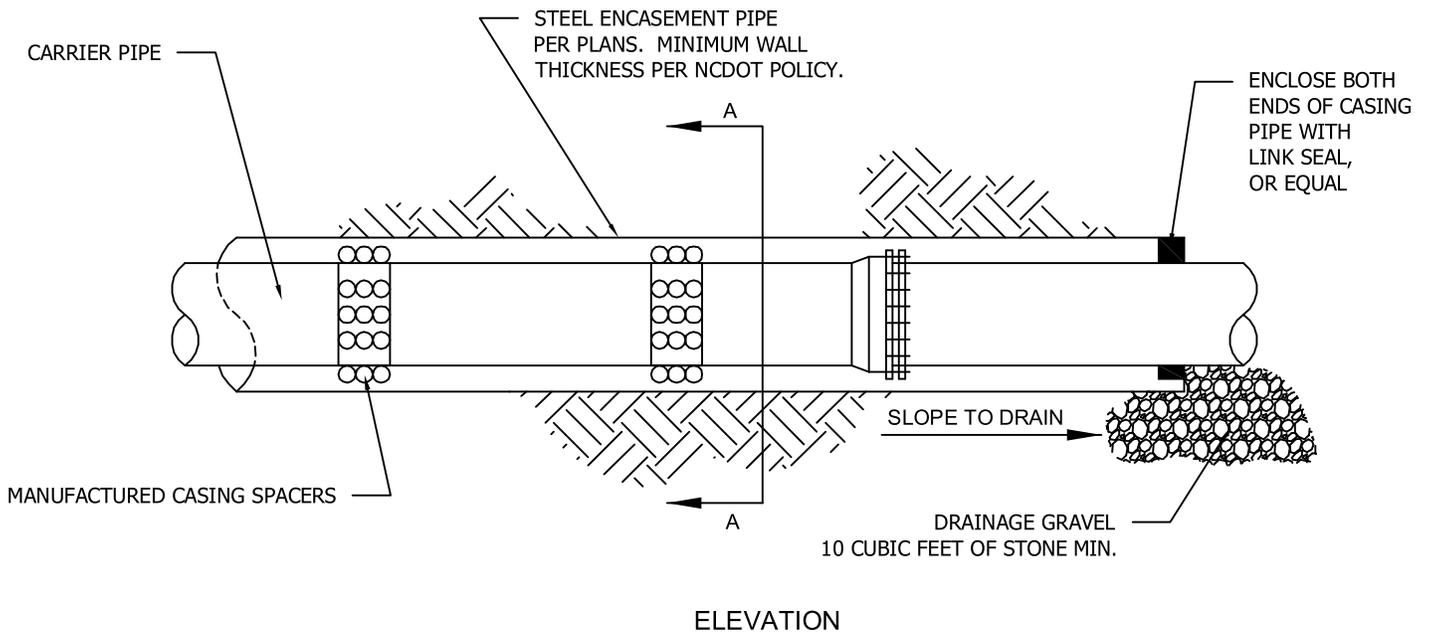
**NOTES:**

1. PENDER COUNTY STANDARD RESTRAINT METHOD IS MEGA LUGS, UNLESS SPECIFICALLY APPROVED BY PCU IN WRITING.
2. ALL FITTINGS AND JOINTS SHALL BE RESTRAINED JOINT.
3. "L" ABOVE IS GIVEN IN FEET FROM FITTING JOINT.

PENDER COUNTY UTILITIES  
605 E FREMONT STREET  
PO BOX 995, BURGAW, NC 28425



RESTRAINED JOINT TABLE  
STANDARD DETAIL  
VERSION #2 – OCTOBER 2023



NOTE:

1. EITHER STAINLESS STEEL OR HDPE CASING SPACERS ARE ACCEPTABLE, BUT IN EITHER CASE, THE SPACERS MUST BE MANUFACTURED.
2. CARRIER PIPE SHALL BE C900 DR 18 PVC WITH RESTRAINED JOINTS.
3. ENCASEMENT PIPE TO BE STEEL WITH MINIMUM WALL THICKNESS IN ACCORDANCE WITH NCDOT MINIMUM REQUIREMENTS OR BETTER.
4. TOP OF ENCASEMENT PIPE SHALL BE INSTALLED A MINIMUM OF THREE FEET BELOW EXISTING AND/OR PROPOSED PAVEMENT SUB-GRADE.

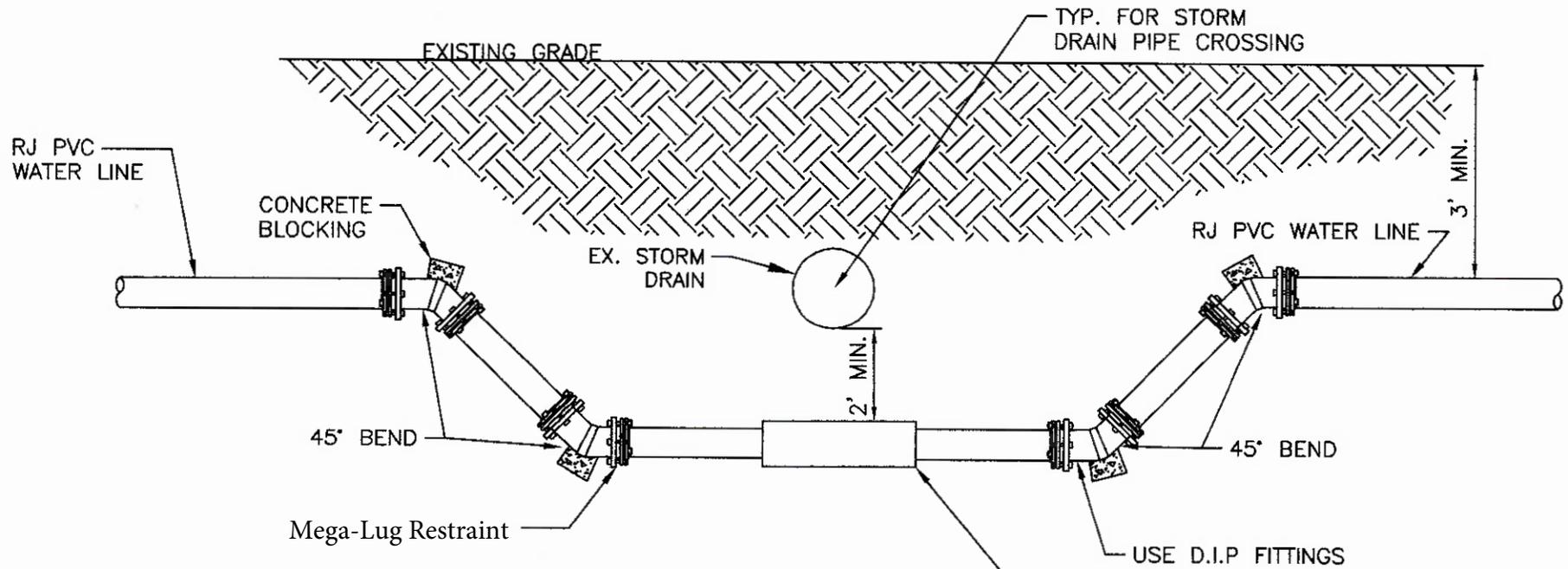
**STANDARD BORE ENCASEMENT DETAIL**

NOT TO SCALE

PENDER COUNTY UTILITIES  
605 EAST FREMONT STREET  
BURGAW, NC 28425



BORE ENCASEMENT  
STANDARD DETAIL  
VERSION #3 - APRIL 2017



**NOTES:**

1. SPACERS SHALL BE PROVIDED WITHIN THE CASING PIPE AND CASING ENDS SHALL BE SEALED PER "PCU STANDARD BORE ENCASEMENT".
2. DIP SHALL NOT BE USED WITHOUT PRIOR APPROVAL OF PCU IN THE FIELD.
3. CARRIER PIPE TO BE C900 DR 18 PVC.

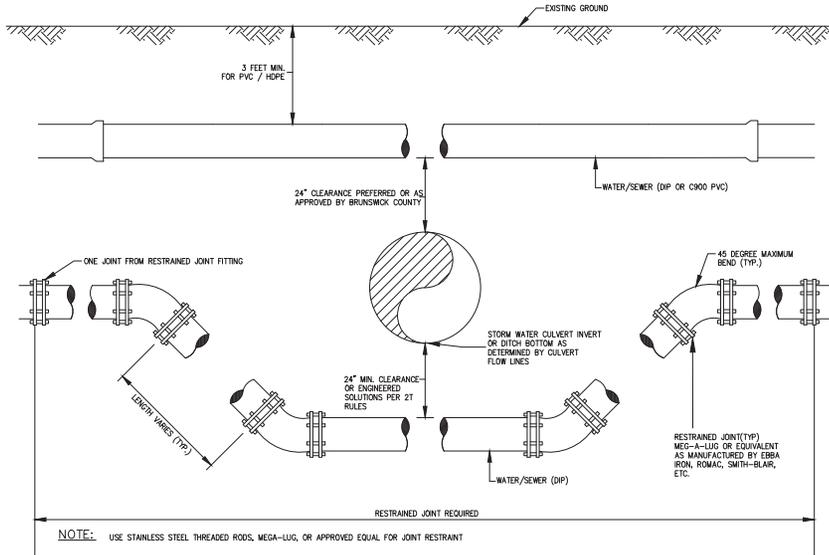
STEEL CASING TO EXTEND 10' FROM THE CL OF THE STORM DRAIN CROSSING IN BOTH DIRECTIONS. CASING TO MEET THE REQUIREMENTS OF CASING FOR BORE AND JACK INSTALLATIONS.

**PIPE CROSSING "A" DETAIL**  
NOT TO SCALE

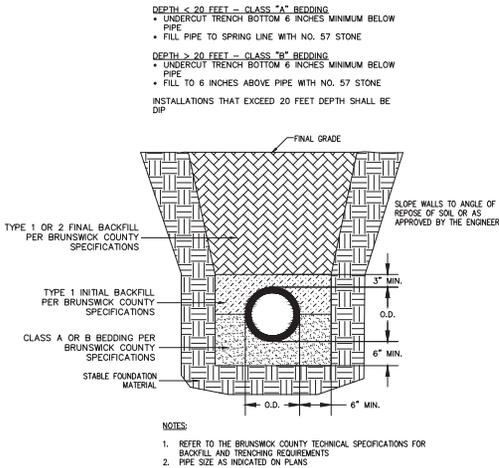
**PENDER COUNTY UTILITIES**  
605 EAST FREMONT STREET  
BURGAW, NC 28425



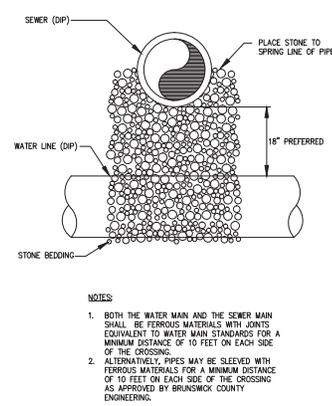
**PIPE CROSSING "A"**  
STANDARD DETAIL  
VERSION #1 - SEPTEMBER 2015



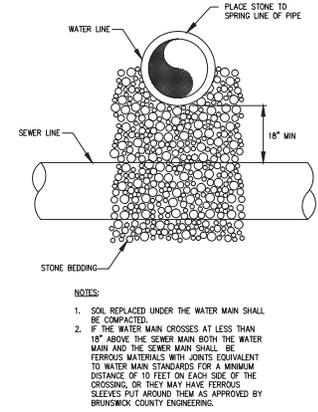
DITCH AND/OR STORM DRAIN CROSSING OFFSETS BETWEEN WATER/SEWER PRESSURE MAIN AND STORM DRAIN  
DETAIL WS-20



GRAVITY SEWER PIPE TRENCH / BEDDING DETAIL  
DETAIL WS-22

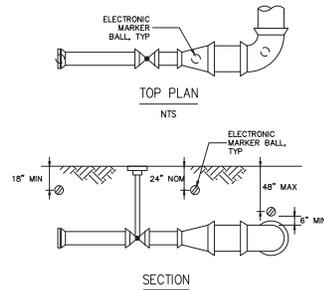


SEWER CROSSING ABOVE WATER LINE



SEWER CROSSING BELOW WATER LINE

SEWER OFFSETS ABOVE AND BELOW WATER MAINS  
DETAIL WS-21



- NOTES:
- ELECTRONIC MARKER BALL MATERIALS SHALL BE AS FOLLOWS:
    - WATER - 3M SCOTCHMARK ELECTRONIC MARKER, MODEL # 1403-XR, 4-INCH DIAMETER, BLUE
    - SEWER - 3M SCOTCHMARK ELECTRONIC MARKER, MODEL # 1404-XR, 4-INCH DIAMETER, GREEN
    - RECLAIMED WATER - 3M SCOTCHMARK ELECTRONIC MARKER, MODEL # 1408-XR, 4-INCH DIAMETER, PURPLE
  - PLACEMENT SHALL CONFORM TO DETAILS ABOVE. FOR FURTHER GUIDANCE, REFER TO BRUNSWICK COUNTY TECHNICAL SPECIFICATIONS SECTION TITLED "ELECTRONIC MARKER BALLS FOR WATER AND SEWER FORCE MAINS".

ELECTRONIC MARKER BALL PLACEMENT DETAIL  
DETAIL WS-23

