

Revisions By Date
1-WTR& SWR RVNS 10/7/14

INTEGRITY ENGINEERING

463 White Oak Drive
Blue Ridge, VA 24064
Ph: (540) 537-2390
Email: integrityengpc@gmail.com

UNDERGROUND UTILITY DETAILS

PHASE 1

COTTAGES OF STEEPLECHASE

BOTETOURT COUNTY, VIRGINIA

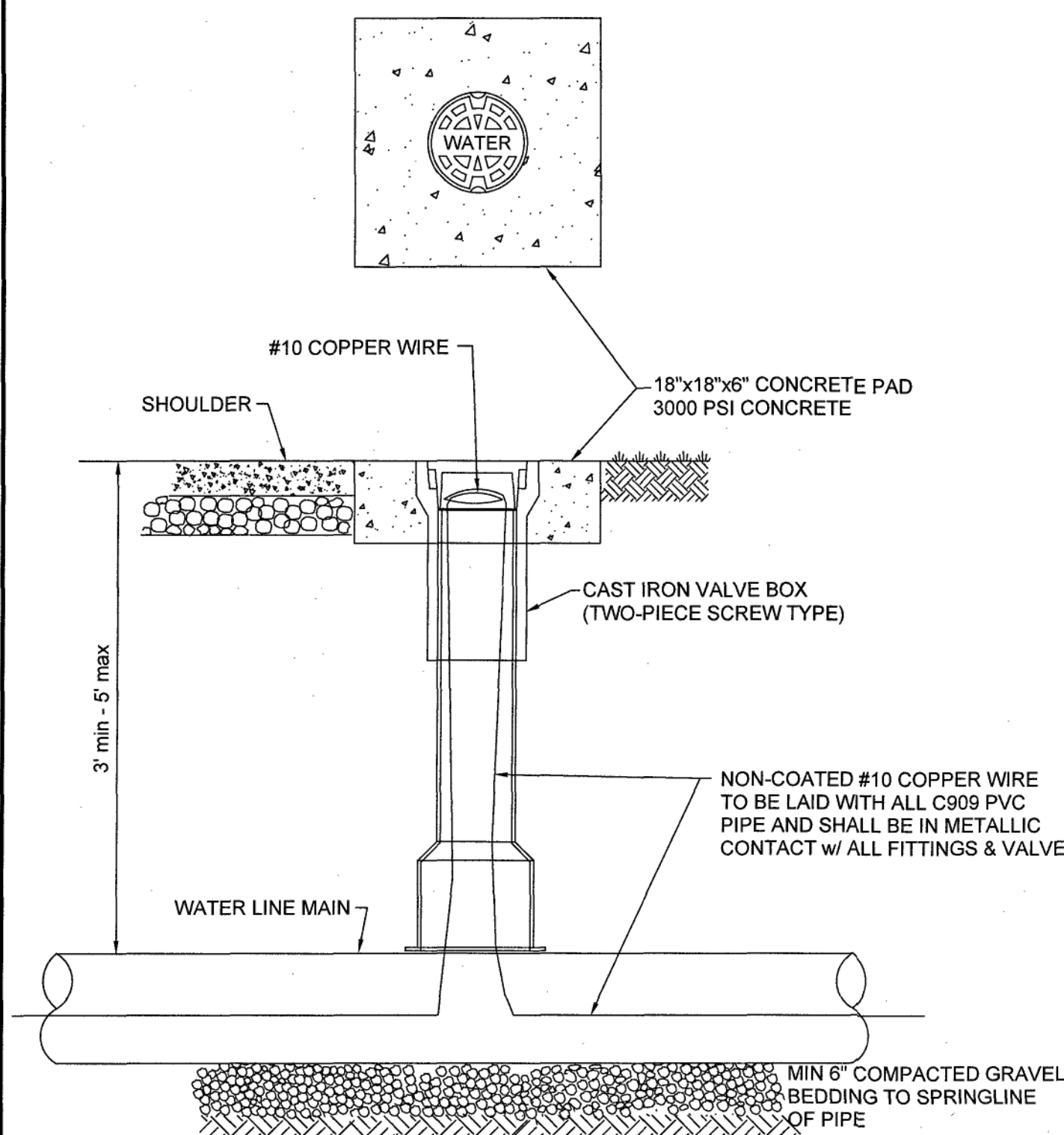
Scale: H:1"=50' V:1"=5'
Date: 9/18/14
Design By: SCG
CAD By: SCG
Checked By:
Project No.: 12052

Sheet No.

C13

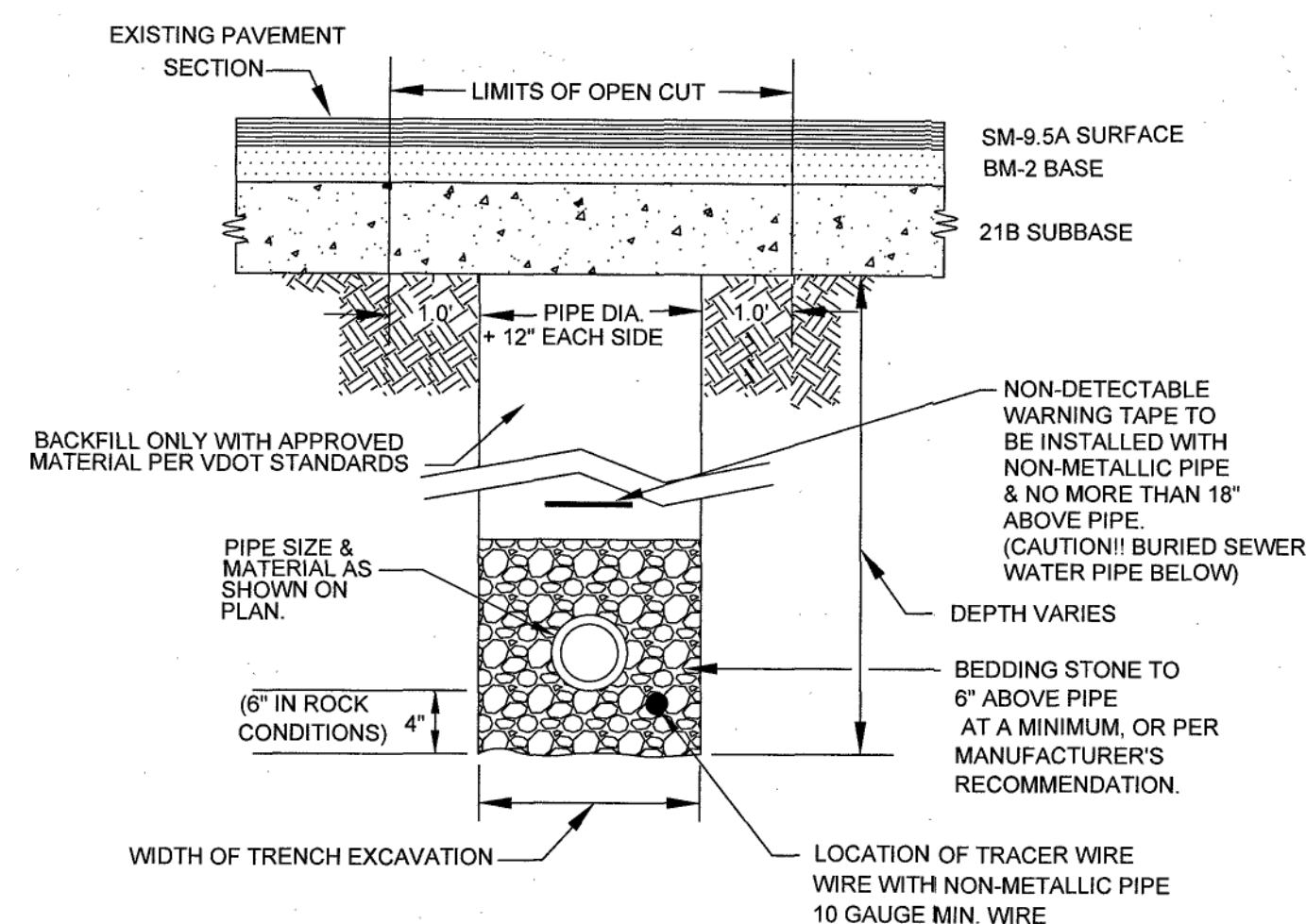
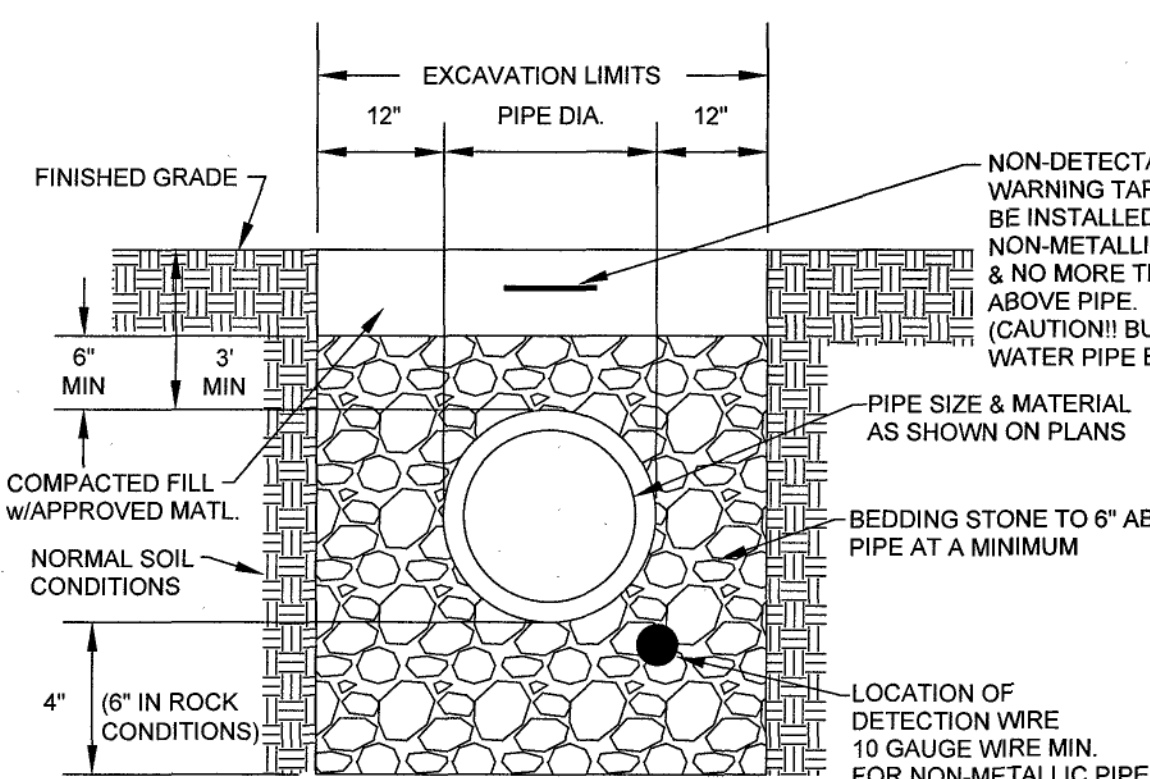
FACTOR OF SAFETY = 1.5														
PIPE SIZE	PIPE MAT'L	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	VALVE /PLUG	TEE BRANCH	REDUCER (NOTE 2)	VERT. 45°	VERT. 22 1/2°	VERT. 11 1/4°	VERT. 45°	VERT. 22 1/2°	VERT. 11 1/4°
6"	D.I.	28'	12'	6'	3'	38'	34'	20'	23'	11'	5'			
8"	D.I.	37'	15'	7'	4'	51'	47'	21'	30'	15'	7'			
10"	D.I.	45'	19'	9'	4'	61'	57'	20'	37'	18'	9'			
12"	D.I.	53'	22'	11'	5'	73'	69'	38'	43'	21'	10'			
6"	PVC	30'	12'	6'	3'	56'	38'	29'	35'	17'	8'			
8"	PVC	40'	16'	8'	4'	74'	56'	31'	46'	22'	11'			
10"	PVC	47'	20'	9'	5'	89'	82'	30'	56'	27'	13'			
12"	PVC	56'	23'	11'	6'	106'	88'	56'	66'	32'	16'			

- ALL JOINTS SHALL BE RESTRAINED ON BOTH SIDES OF THE FITTING FOR THE LENGTH SHOWN UNLESS OTHERWISE INDICATED.
- REDUCER IS ONE SIZE SMALLER THAN PIPE LISTED. RESTRAINED LENGTH IS UPSTREAM ON THE LARGE SIDE OF THE REDUCER.



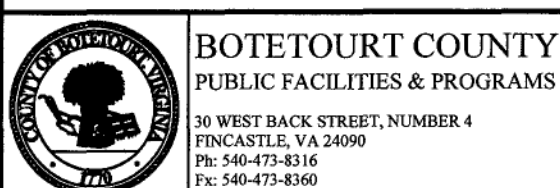
NOTES:

- BEDDING, HAUNCHING AND INITIAL BACKFILL CONSTRUCTION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.
- WHEN INSTALLING NON-METALLIC PIPE, NON-DETECTABLE WARNING TAPE SHALL BE BURIED AT A MINIMUM 6" BELOW GRADE AND APPROXIMATELY 12" TO 18" ABOVE NON-METALLIC PIPE. IT SHALL BE 3 TO 5 MILS IN THICKNESS AND INSTALLED CONTINUOUS FROM VALVE BOX TO VALVE BOX OR MANHOLE TO MANHOLE.
- ALL PVC PIPE SHALL BE BEDDED IN COMPACTED GRANULAR MATERIAL WHICH SHALL BE CRUSHED STONE MEETING VDOT STANDARDS FOR GRADUATION 57 OR 68 STONE.
- IN AREAS NOT SUBJECTED TO VEHICULAR TRAFFIC, BEDDING STONE AND FILL SHALL BE PLACED IN 10" LIFTS AND SHALL BE COMPACTED TO AT LEAST 95% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D 698.
- ALL SEWER LINE PIPE SHALL BE BEDDED IN COMPACTED GRANULAR MATERIAL. BEDDING REQUIREMENTS FOR DUCTILE IRON PIPE ARE DEPENDENT ON MANUFACTURER'S BEDDING CRITERIA.
- ALL EXCAVATIONS SHALL COMPLY WITH OSHA TECHNICAL MANUAL, CHAPTER 2, TITLED "EXCAVATIONS: HAZARD RECOGNITION IN TRENCHING AND SHORING."



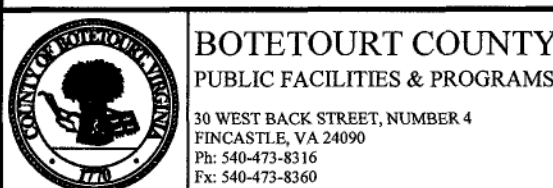
NOTES:

- THE CONTRACTOR SHALL REPLACE THE OPEN CUT WITH A MINIMUM TOP COURSE OF 2" VDOT SM-9.5A, BASE COURSE OF 3" VDOT 8M-2, AND SUBBASE OF 8" VDOT 21B, OR AS REQUIRED BY VDOT.
- ALL CONSTRUCTION WITHIN THE PUBLIC RIGHT-OF-WAY SHALL BE AS SPECIFIED BY VDOT.
- PRIOR TO CONSTRUCTION, CONTRACTOR IS RESPONSIBLE FOR SECURING ALL REQUIRED PERMITS FROM VDOT.
- ALL WATER LINES BENEATH PAVEMENT SHALL BE DUCTILE IRON UNLESS INSTALLED IN CASING PIPE OR BY DIRECTIONAL BORING.
- IN AREAS SUBJECTED TO VEHICULAR TRAFFIC, BEDDING STONE AND FILL SHALL BE PLACED IN 6" LIFTS AND SHALL BE COMPACTED TO AT LEAST 95% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D 698.
- ALL SEWER LINE PIPE SHALL BE BEDDED IN COMPACTED GRANULAR MATERIAL. BEDDING REQUIREMENTS FOR DUCTILE IRON PIPE ARE DEPENDENT ON MANUFACTURER'S BEDDING CRITERIA.
- ALL PVC PIPE SHALL BE BEDDED IN COMPACTED VDOT #57 OR #68 STONE.
- ALL EXCAVATIONS SHALL COMPLY WITH OSHA TECHNICAL MANUAL, CHAPTER 2, TITLED "EXCAVATIONS: HAZARD RECOGNITION IN TRENCHING AND SHORING."



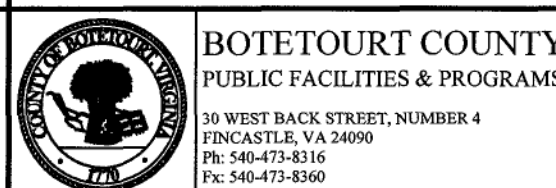
BOTETOURT COUNTY
PUBLIC FACILITIES & PROGRAMS
30 WEST BACK STREET, NUMBER 4
FINCASTLE, VA 24090
Ph: 540-473-8316
F: 540-473-8360

CONSTRUCTION STANDARDS
THRUST RESTRAINT
OF PIPE JOINTS
DESIGN LENGTHS
DATE: MARCH 2005
REVISIONS
BC #
W-14



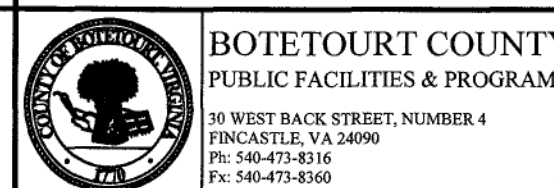
BOTETOURT COUNTY
PUBLIC FACILITIES & PROGRAMS
30 WEST BACK STREET, NUMBER 4
FINCASTLE, VA 24090
Ph: 540-473-8316
F: 540-473-8360

CONSTRUCTION STANDARDS
LEAK DETECTION &
LOCATION ACCESS POINTS
FOR C909 PVC PIPE
DATE: MAY 2008
REVISIONS
BC #
W-16



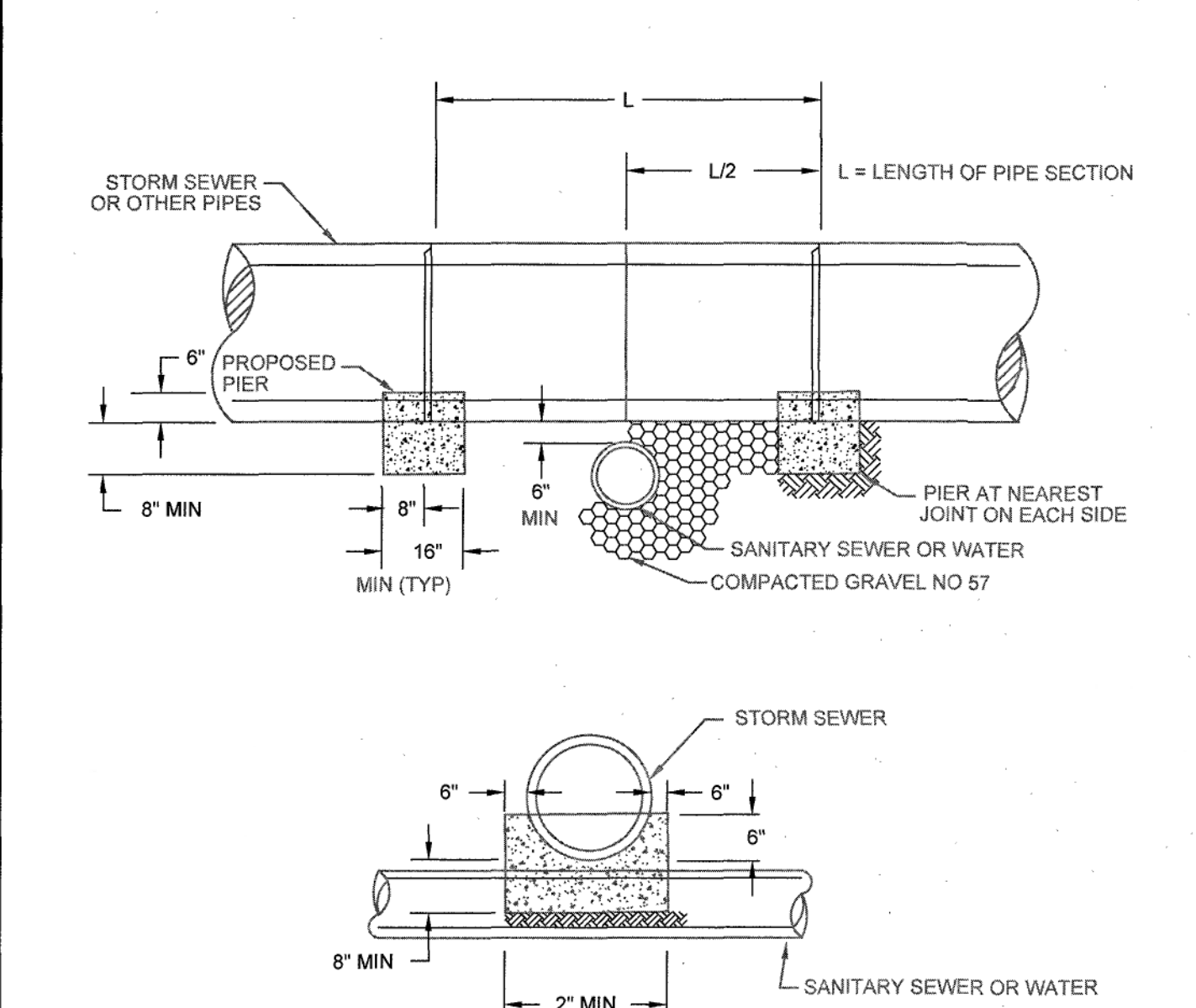
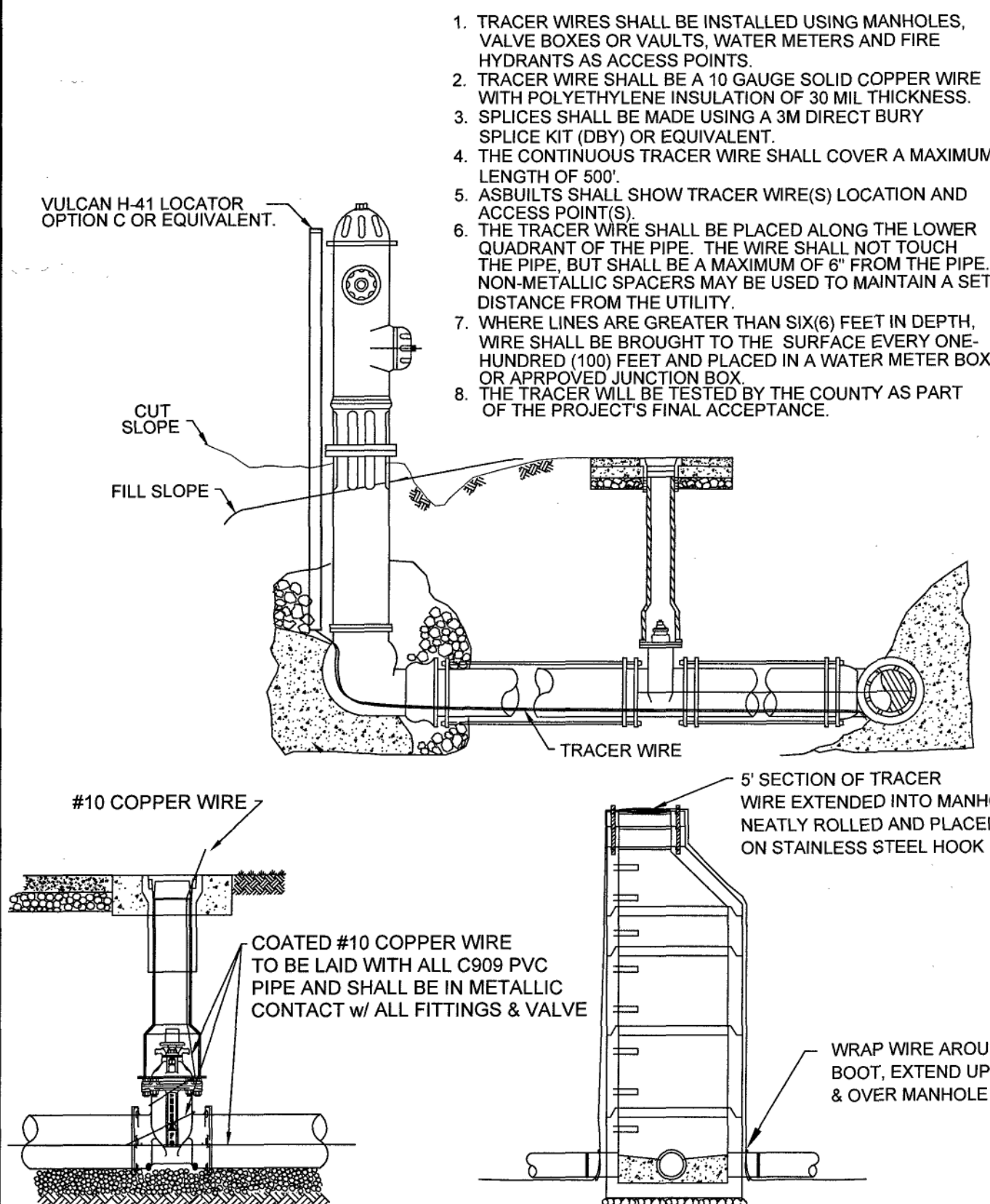
BOTETOURT COUNTY
PUBLIC FACILITIES & PROGRAMS
30 WEST BACK STREET, NUMBER 4
FINCASTLE, VA 24090
Ph: 540-473-8316
F: 540-473-8360

CONSTRUCTION STANDARDS
BEDDING AND BACKFILL
OUTSIDE OF PAVED AREAS
DATE: MARCH 2005
REVISIONS
BC #
G-01



BOTETOURT COUNTY
PUBLIC FACILITIES & PROGRAMS
30 WEST BACK STREET, NUMBER 4
FINCASTLE, VA 24090
Ph: 540-473-8316
F: 540-473-8360

CONSTRUCTION STANDARDS
BEDDING AND BACKFILL
UNDER PAVEMENT
DATE: MARCH 2005
REVISIONS
BC #
G-02



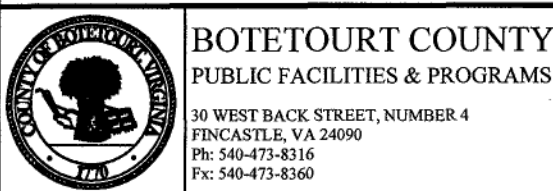
NOTE:

- PIER REQUIRED WHEN STORM DRAIN OR OTHER PIPES CROSS OVER THE OTHER UTILITY WITH A VERTICAL CLEARANCE OF LESS THAN 18".
- PIER TO BE BUILT ON UNDISTURBED EARTH.
- CONCRETE TO BE READY MIX, CLASS A3.



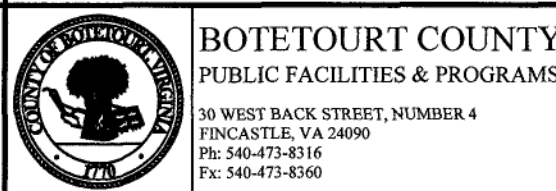
BOTETOURT COUNTY
PUBLIC FACILITIES & PROGRAMS
30 WEST BACK STREET, NUMBER 4
FINCASTLE, VA 24090
Ph: 540-473-8316
F: 540-473-8360

CONSTRUCTION STANDARDS
TRACER WIRE INSTALLATION
FOR NON-METALLIC PIPE
DATE: MARCH 2005
REVISIONS
BC #
G-05



BOTETOURT COUNTY
PUBLIC FACILITIES & PROGRAMS
30 WEST BACK STREET, NUMBER 4
FINCASTLE, VA 24090
Ph: 540-473-8316
F: 540-473-8360

CONSTRUCTION STANDARDS
CONCRETE PIER
DATE: MARCH 2005
REVISIONS
BC #
SS-17



BOTETOURT COUNTY
PUBLIC FACILITIES & PROGRAMS
30 WEST BACK STREET, NUMBER 4
FINCASTLE, VA 24090
Ph: 540-473-8316
F: 540-473-8360

CONSTRUCTION STANDARDS
CONCRETE ENCASED
SEWER PIPE
DATE: MARCH 2005
REVISIONS
BC #
SS-15