VICINITY MAP
NOT TO SCALE TIP

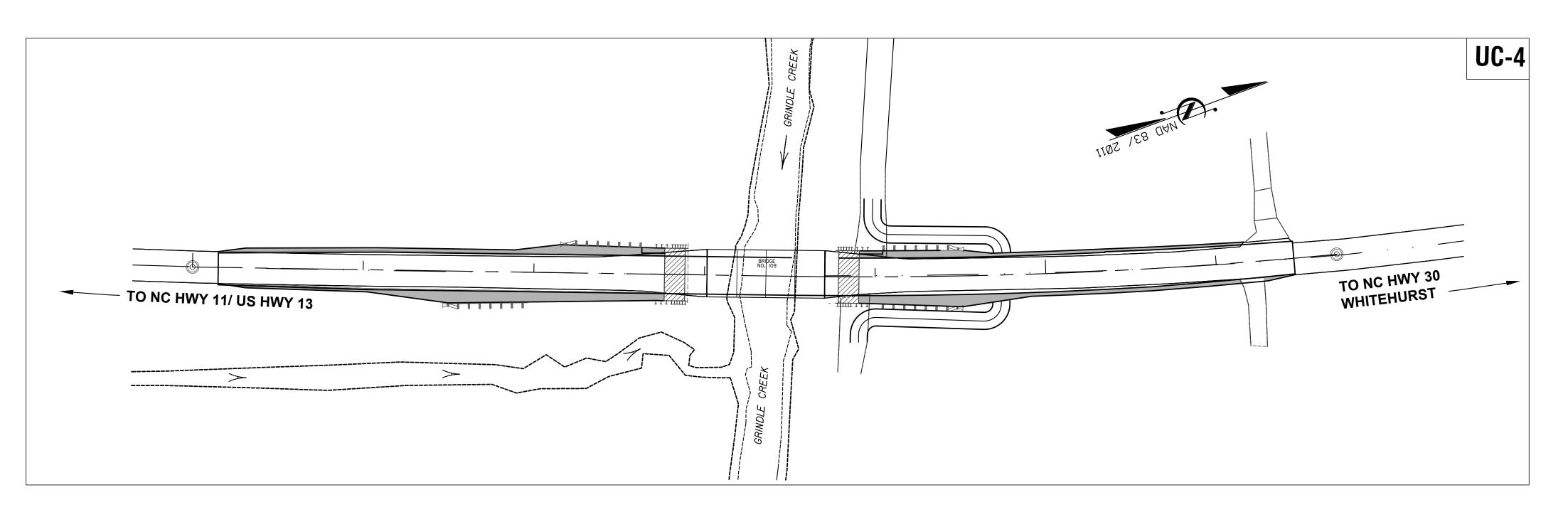
STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS PITT COUNTY

LOCATION: BRIDGE No. 730109 ON SR 1514 (STATON MILL RD) OVER GRINDLE CREEK

TYPE OF WORK: WATER MAIN RELOCATION





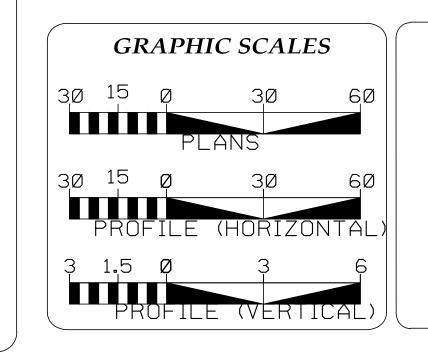
DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED

T.I.P. NO.

BR-0119

SHEET NO.

UC-1



INDEX OF SHEETS

SHEET NO.: UC-2 *UC-3* UC-3A

DESCRIPTION: TITLE SHEET **UTILITY SYMBOLOGY NOTES DETAILS UTILITY CONSTRUCTION SHEET PROFILE SHEET**

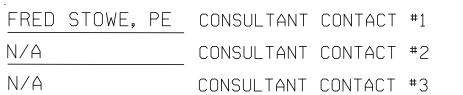
WATER AND SEWER OWNERS ON PROJECT

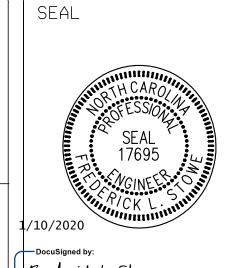
(A) WATER - GREENVILLE UTILITIES COMMISION (B) SANITARY SEWER - N/A

PREPARED IN THE OFFICE OF

riversandassociates.com Since 1918

Engineers **Planners** Surveyors Landscape Architects 107 East Second Stree Greenville, NC 27858







DIVISION OF HIGHWAYS UTILITIES UNIT 1555 MAIL SERVICES CENTER RALEIGH NC 27699-1555 PHONE (919) 707-6690 FAX (919) 250-4151

UTILITIES REGIONAL ENGINEER

UTILITIES ENGINEER KIFAH KAMIL KYLE PLEASANT UTILITIES AREA COORDINATOR LARRY JAMES UTILITIES COORDINATOR

\$\$SYSTIME\$\$\$\$\$ \$\$\$\$\$\$\$\$\$\$\$\$DGN JSERNAME\$\$\$\$ ₩₩ ₩₩ $\Theta \Theta \Theta$

 $\Theta \Theta \Theta$

Frederick L. Stowe

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	
111/4 Degree Bend	++
221/2 Degree Bend	++
45 Degree Bend	· +×
90 Degree Bend	ل ه .
Plug	· þ
Tee	<u>-</u>
Cross	+++
Reducer	•
Gate Valve	· GV
Butterfly Valve	BV
Tapping Valve	TGY
Line Stop	LS
Line Stop with Bypass	LS/BP
Blow Off	. BO .
Fire Hydrant	PEH
Relocate Fire Hydrant	REH
Remove Fire Hydrant	REM FH
Water Meter	PWM
Relocate Water Meter	RYM
Remove Water Meter	REM WM
Water Pump Station	· PS(W)
RPZ Backflow Preventer	PRPZ
DCV Backflow Preventer	PBFP
Relocate RPZ Backflow Preventer	RRPZ
Relocate DCV Backflow Preventer	RBEP
	

PROPOSED SEWER SYMBOLS

Gravity Sewer Line (Sized as Shown) Force Main Sewer Line	
(Sized as Shown)	
Manhole (Sızed per Note)	· •
Sewer Pump Station	·PS(SS)]

PROPOSED MISCELLANOUS UTILITIES SYMBOLS

ower Pole	. 6	Thrust Block	• 1
elephone Pole	0-	Aır Release Valve	. AR . ●
oınt Use Pole		Utılıty Vault	. UV
elephone Pedestal	TEL PED	Concrete Pier	CP ·
tılıty Lıne by Others 'ype as Shown)		Steel Pier	SP ·
renchless Installation	· 	Plan Note	
ncasement by Open Cut	. 	Pay Item Note	
ncasement	· ————————————————————————————————————		
	EXISTING UTIL	LITIES SYMBOLS	
ower Pole	. •	*Underground Power Line	
elephone Pole	· - - -	*Underground Telephone Cable	

	Ŀ
Power Pole	•
Telephone Pole	-
Joint Use Pole	—
Utılıty Pole	•
Utility Pole with Base	
H-Frame Pole	•—•
Power Transmission Line Tower	
Water Manhole	•
Power Manhole	(P)
Telephone Manhole	•
Sanıtary Sewer Manhole	(
Hand Hole for Cable	FH.
Power Transformer	M
Telephone Pedestal	T
CATV Pedestal	
Gas Valve	◊
Gas Meter	♦
Located Miscellaneous Utility Object	\odot
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

*Underground	Power Line	
*Underground	Telephone Cable	
*Underground	Telephone Conduit	
*Underground	Fiber Optics Telephone Cabl	e
*Underground	TV Cable .	
*Underground	Fiber Optics TV Cable	
*Underground	Gas Pipeline	
Aboveground	Gas Pipeline	A/G Gas
*Underground	Water Line	
Aboveground	Water Line	A/G Water
*Underground	Gravity Sanitary Sewer Line	
Aboveground	Gravity Sanitary Sewer Line	A/G Sanitary Sewer
*Underground	SS Forced Main Line	
Underground	Unknown Utility Line	
SUE Test Hol	le .	•
Water Meter		©
Water Valve		⊗
Fire Hydrant		•
Sanıtary Sew	er Cleanout	\oplus
_		

*For Existing Utilities Utility Line Drawn from Record (Type as Shown) Designated Utility Line (Type as Shown)

UTILITY CONSTRUCTION

GENERAL NOTES:

- 1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018.
- 2. THE EXISTING UTILITIES BELONG TO GREENVILLE UTILITIES COMMISSION.
- 3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT QUALITY, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.
- 4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED. BUT ARE NOT BINDING UPON THE DEPARTMENT.
- 5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION, NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION, KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

- 6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.
- 7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.
- 8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.
- 9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, "SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

PROJECT SPECIFIC NOTES:

1. PROPOSED WATER LINE FROM -X- LINE STATION 00+25 TO -X- LINE STATION 04+16 SHALL BE D.I.R.J. (DUCTILE IRON RESTRAINED JOINT) PIPE. (EXAMPLE)

RELATION OF WATER MAINS TO SEWERS:

LATERAL SEPARATION OF SEWERS AND WATER MAINS. WATER MAINS SHALL BE LAID AT LEAST 10 FEET LATERALLY FROM EXISTING OR PROPOSED SEWERS, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT A 10-FOOT LATERAL SEPARATION- IN WHICH CASE:

THE WATER MAIN IS LAID IN A SEPARATE TRENCH, WITH THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER; OR THE WATER MAIN IS LAID IN THE SAME TRENCH AS THE SEWER WITH THE WATER MAIN LOCATED AT ONE SIDE ON A BENCH OF UNDISTURBED EARTH, AND WITH THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER

CROSSING A WATER MAIN OVER A SEWER. WHENEVER IT IS NECESSARY FOR A WATER MAIN TO CROSS OVER A SEWER THE WATER MAIN SHALL BE LAID AT SUCH AN ELEVATION THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT AN 18 INCH VERTICAL SEPARATION- IN WHICH CASE BOTH THE WATER MAIN AND SEWER SHALL BE CONSTRUCTED OF FERROUS MATERIALS AND WITH JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE POINT OF CROSSING.

CROSSING A WATER MAIN UNDER A SEWER. WHENEVER IT IS NECESSARY FOR A WATER MAIN TO CROSS UNDER A SEWER, BOTH THE WATER MAIN AND THE SEWER SHALL BE CONSTRUCTED OF FERROUS MATERIALS AND WITH JOINTS EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE POINT OF CROSSING. A SECTION OF WATER MAIN PIPE SHALL BE CENTERED AT POINT OF CROSSING.

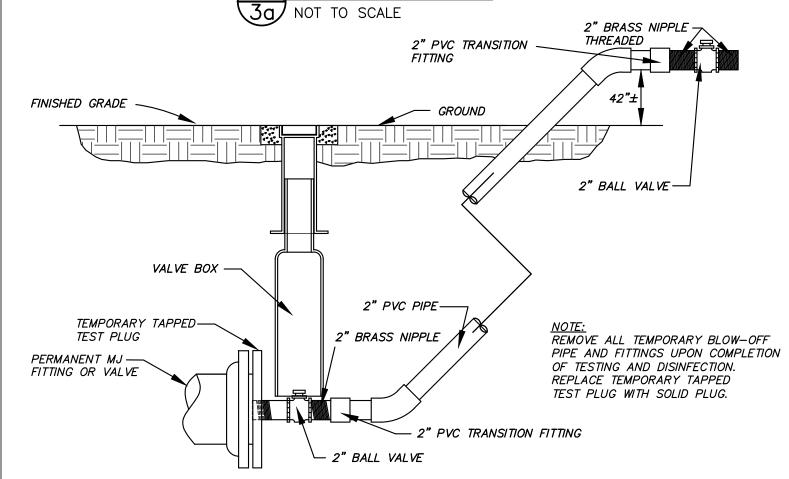
PROJECT REFERENCE NO. SHEET NO. BR-0119 UC-3 **DESIGNED BY: FLS-**DRAWN BY: IML CHECKED BY: FLS SEAL 17695 APPROVED BY: FLS REVISED: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION Friends L. Stown UTHELTENGENSTRUCTION PLANS ONLY UTILITIES ENGINEERING SEC. PHONE: (919)707–6690 FAX: (919)250–4151

UTILITY CONSTRUCTION

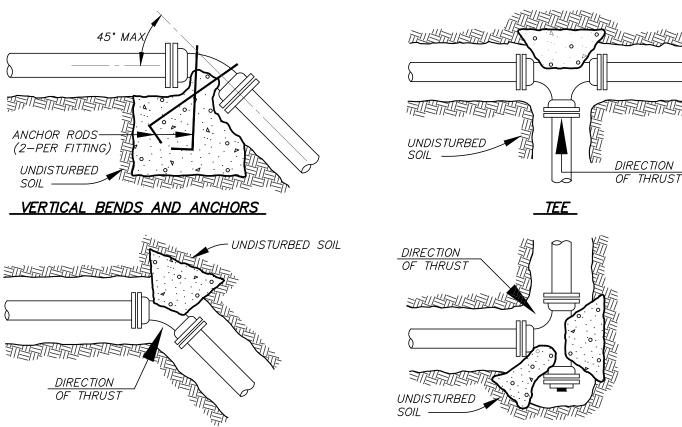
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED PLACE FOUNDATION CONDITIONING MATERIAL BELOW BEDDING IF REQUIRED, AS DIRECTED BY ENGINEER. PIPE BEDDED IN SELECT MATERIAL, CLASS II (TYPE 1) OR CLASS III. TRENCH BACKFILLED IN LOOSE 6" LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL. ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROXIMATELY 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.

CONDITIONING AS REQUIRED

1 TRENCH DETAIL



3 TEMPORARY 2" BLOW OFF VALVE CONNECTED TO TEMPORARY TAPPED TEST PLUGOT TO SCALE



CONCRETE THRUST BLOCKING SCHEDULE CONCRETE SCHEDULE VERTICAL BENDS						ANCHOR ROD SIZE					
FITTING	BE	ARING AF	REA IN S	QUARE FEE	T	MIN. CU. YARDS CONCRETE			FOR VERTICAL		
SIZE	TEE/PLUG	90°	45°	22-1/2°	11-1/4°	90°	45°	22-1/2°	11-1/2°	BEND AND ANCHORS	
4"	1	2	1	1	1	1	1	1	1	1/2"	
6 "	3	3	2	1	1	1	1	1	1	1/2	
8"	4	6	3	2	1	2	2	1	1	3/4"	
10"	7	9	5	3	2	3	3	2	1	3/4	
12"	9	12	7	4	2	5	3	2	1	7/8"	
14"	12	17	9	5	3	6	4	3	2		
16"	16	22	12	6	3	8	6	3	2		
18"	20	27	15	8	4	10	7	4	2		
20"	24	34	18	10	5	12	9	5	3		
24"	34	48	26	14	7	17	12	7	4	1-1/8"	
30"	53	75	41	21	11	27	19	10	5		
36"	77	108	59	30	15	38	27	15	8	1-3/8"	

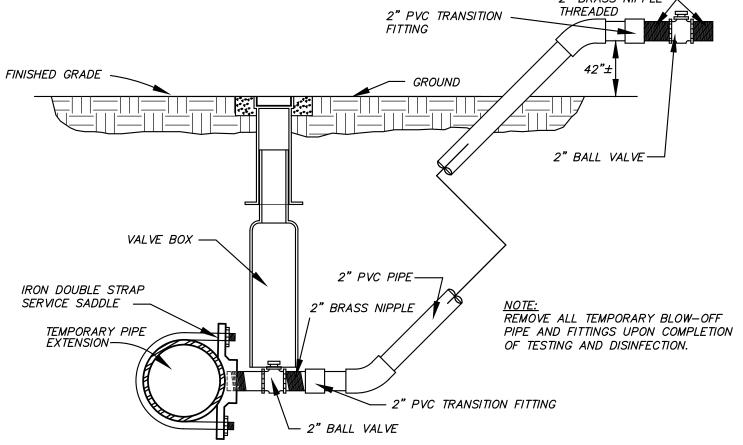
TEE AND PLUG

- 1. MINIMUM BEARING AREA (IN SQUARE FEET) AGAINST UNDISTURBED TRENCH WALL OF SAND. 2. AREAS SHOWN ARE FOR 150 PSI TEST PRESSURE. IF TEST PRESSURE IS OTHER THAN 150 PSI, ADJUST AREA OF REACTION BACKING IN DIRECT PROPORTION.
- 3. <u>OTHER SOIL CONDITIONS</u> CEMENTED SAND OR HARDPAN MULTIPLY ABOVE BY 0.5 GRAVEL OR HARD DRY CLAY - MULTIPLY ABOVE BY 0.7 MULTIPLY ABOVE BY 2.0

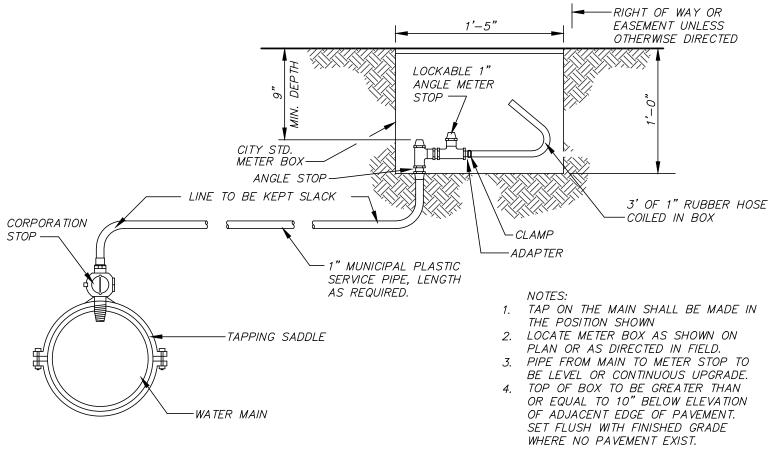
HORIZONTAL BENDS

MUCK: SECURE ALL FITTINGS WITH APPROVED HARNESS OR TIE ROD CLAMPS, WITH CONCRETE REACTION BACKING THE SAME AS LISTED FOR SAND CONDITIONS. THRUST BLOCKING AND ANCHORING SCHEDULE NOT TO SCALE

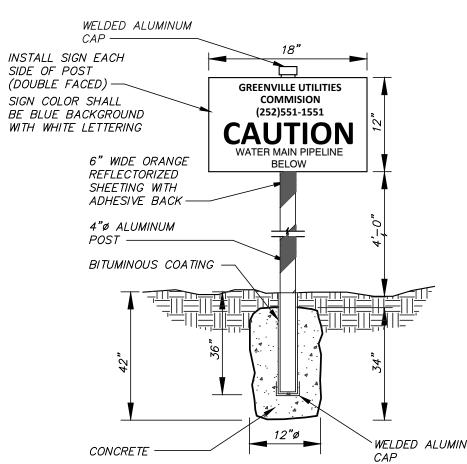
PROJECT TYPICAL DETAILS



TEMPORARY 2" BLOW OFF VALVE CONNECTED TO TEMPORARY PIPE EXTENSIONNOT TO SCALE



5 TYP. 1" AIR RELEASE VALVE 3a NOT TO SCALE



6 WATER MAIN CROSSING SIGN DETAIL
3a NOT TO SCALE

BEND TYPE	ANGLE (DEG)	DIAMETER (IN)	BARE RESTRAINT (FT)	POLY-WRAPPED RESTRAINT (FT)
	11.25	4	2	3
	22.5	4	5	6
	30	4	6	8
	45	4	10	12
	60	4	14	16
	90	4	24	28
	11.25	6	3	4
	22.5	6	7	8
	30	6	9	11
	45	6	14	17
	60	6	19	23
	90	6	33	40
	11.25	8	4	5
HORIZONTAL	22.5	8	9	10
AND	30	8	11	14
VERTICAL BEND	45	8	18	21
UP	60	8	25	30
01	90	8	43	51
	11.25	10	5	6
	22.5	10	10	12
	30	10	14	17
	45	10	21	<u>26</u>
	60	10	30	36
	90	10	52	62
	11.25	12	6	7
	22.5	12	12	14
	30	12	16	<u>19</u>
	45	12	25	30
	60	12	35	42
	90	12	60	72
	11.25	4	4	6
	22.5	4	8	12
	30	4	11	16
	45	4	17	24
	60	4	24	34
	90	4	41	59
	11.25	6	8	8
	22.5	6	12 16	17 22
	30 45		24	
	60	6	34	
	90	6	59	
		_	7	
	11.25 22.5	8 8	15	11 22
VEDTION	30	8	20	29
VERTICAL BEND	45	8	31	45
DOWN	60	8	44	62
	90	8	76	108
	11.25	10	9	13
	22.5	10	18	26
	30	10	25	35
	45	10	38	54
	60	10	53	76
	90	10	92	131
	11.25	12	11	15
	22.5	12	21	30
	30	12	29	41
	45	12	44	63
	60	12	62	88
	90	12	107	153
	N/A	4	35	50
TEE	N/A	6	52	75
	N/A	8	70	99
	N/A	10	85	122
	N/A	12	101	144
	N/A	4x1	13	19
	N/A	4x2	13	19
	N/A	6x4	30	43
	N/A	8x6	32	45
REDUCER	N/A	10x4	74	106
= = = = ···	N/A	10x6	58	80
	N/A	10x8	31	44
	N/A	12x4	93	133
	N/A	12x6	78	111
	N/A	12x10	31	45
	11//		44	F0

7 PIPE RESTRAINT DETAIL
30 NOT TO SCALE

N/A

PROJECT REFERENCE NO. SHEET NO. BR-0119 UC-3a DESIGNED BY: FLS DRAWN BY: JML CHECKED BY: FLS APPROVED BY: FLS **REVISED:** NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. Frederick L.

UTILITY CONSTRUCTION

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