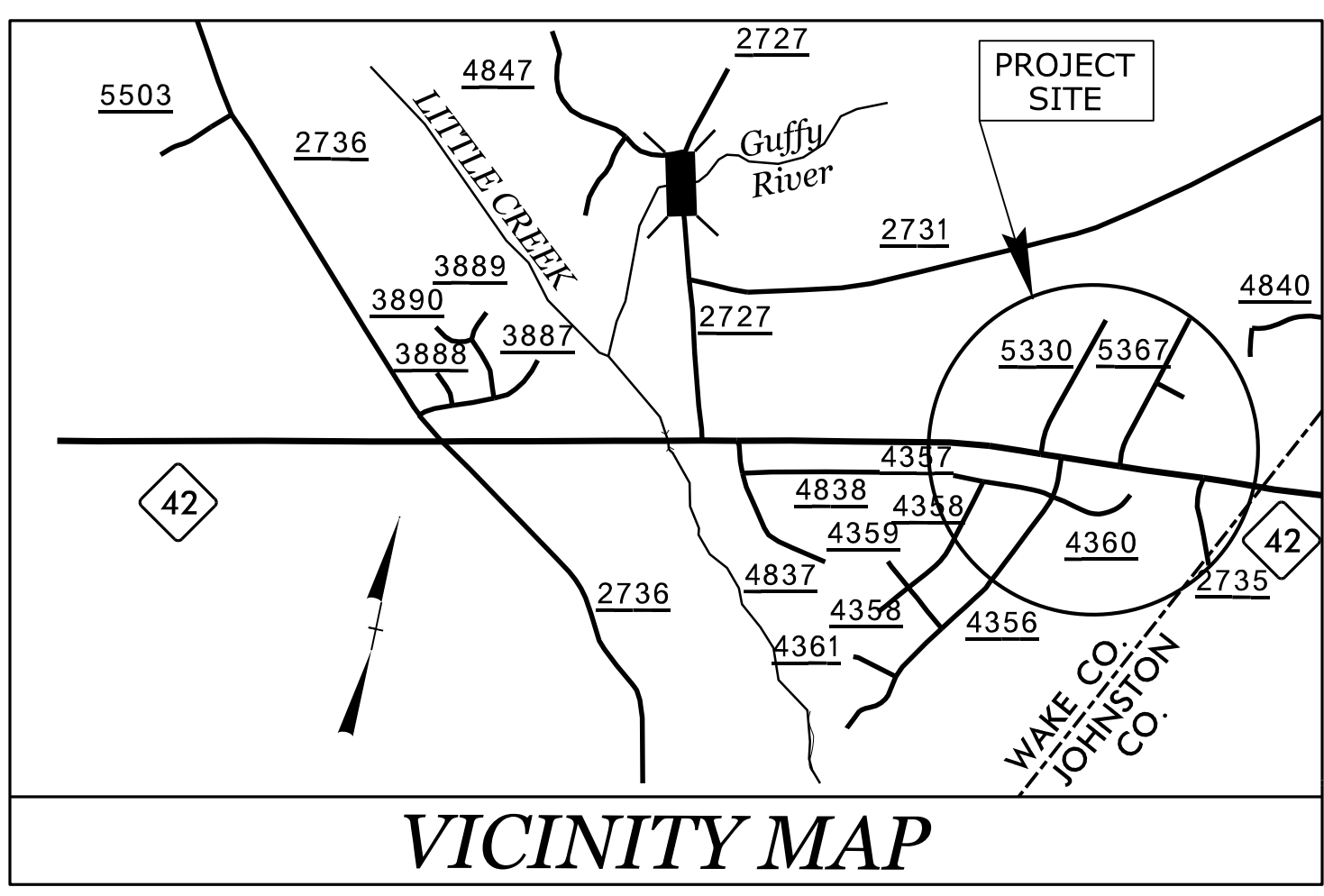


09_08/2019

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\$\$\$\$\$SERVNAME\$\$\$\$\$

TIP PROJECT: W-5601EX



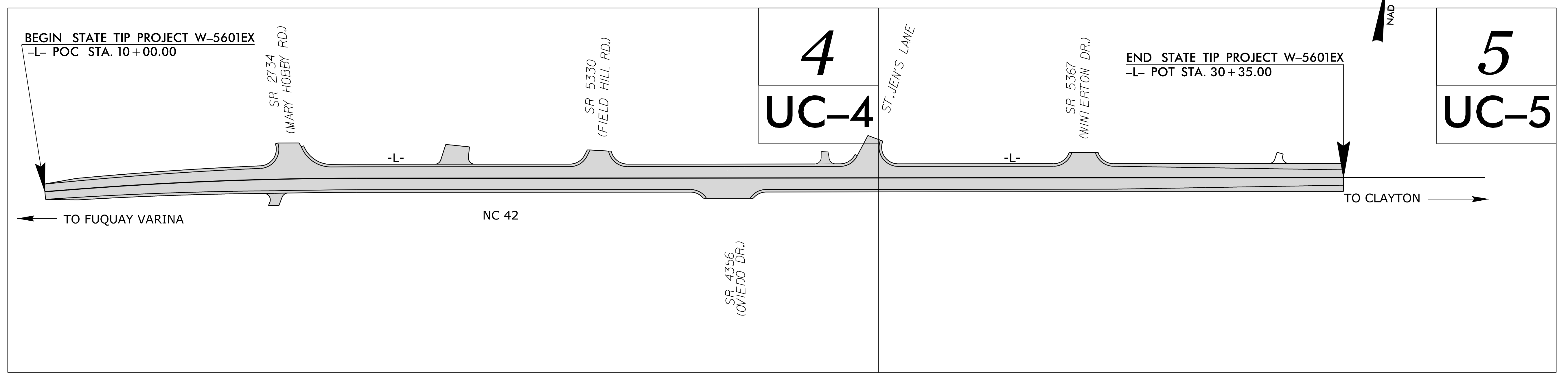
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

**UTILITY CONSTRUCTION PLANS
WAKE COUNTY**

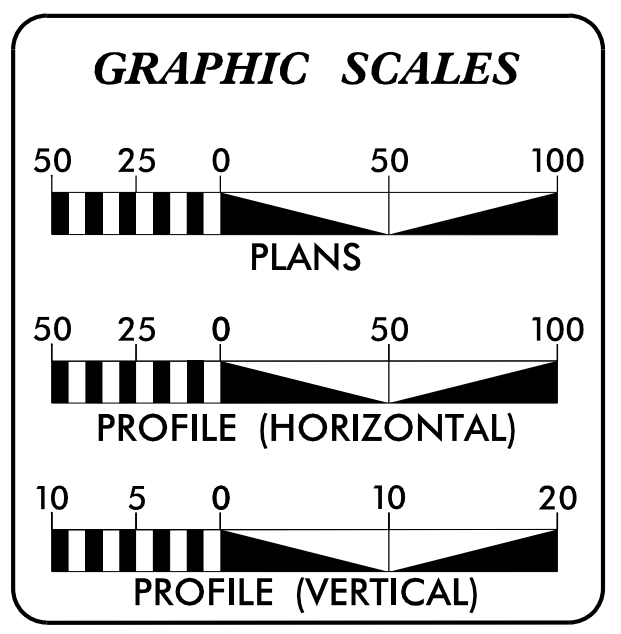
**LOCATION: WIDEN NC 42 FOR CENTER TURN LANE FROM
WEST OF MARY HOBBY ROAD (SR 2734) TO EAST OF
WINTERTON DRIVE (SR 5367)**

TYPE OF WORK: RELOCATION OF WATER LINE

T.I.P. NO.	SHEET NO.
W-5601EX	UC-1



DOCUMENT NOT CONSIDERED FINAL
UNTIL ALL SIGNATURES ARE COMPLETED



INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UC-1	UC TITLE SHEET
UC-2	UTILITY SYMBOLOGY SHEET
UC-3	UC NOTES SHEET
UC-3A	UC DETAIL SHEET
UC-4, UC-5	UC PLAN SHEETS
UC-6	UC PROFILE SHEET

**WATER OWNER
ON PROJECT**

JOHNSTON COUNTY DEPARTMENT
OF PUBLIC UTILITIES
309 E. MARKET ST.
SMITHFIELD, NC 27577

PREPARED IN THE OFFICE OF

DINKISSA KEREYU, P.E. PROJECT ENGINEER
MARCO MENENDEZ, P.E. PROJECT MANAGER
ANGELICA PURA PROJECT DESIGNER

SEAL

DIVISION OF HIGHWAYS
DIVISION 5
PROJECT DELIVERY UNIT
2612 N. DUKE STREET
DURHAM, NC 27704

BEN UPSHAW, P.E. TEAM LEAD
S. REID DAVIDSON, P.E. DDC ENGINEER
DON PROPER DIVISION 5 UTILITIES ENGINEER
MONROE BROWN DIVISION 5 UTILITY COORDINATOR

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	..... 12" WL
11¼ Degree Bend ++
22½ Degree Bend	..... +x
45 Degree Bend	..... +X
90 Degree Bend +†
Plug	..... |
Tee ††
Cross †††
Reducer ▶
Gate Valve	..... GV
Butterfly Valve	..... BV
Tapping Valve	..... TGV
Line Stop	..... LS
Line Stop with Bypass	..... LS/BP
Blow Off	..... BO
Fire Hydrant	..... PFH
Relocate Fire Hydrant	..... RFH
Remove Fire Hydrant	..... REM FH
Water Meter	..... PWM
Relocate Water Meter	..... RWM
Remove Water Meter	..... REM WM
Water Pump Station	..... PST(W)
RPZ Backflow Preventer	..... PRPZ
DCV Backflow Preventer	..... PBFP
Relocate RPZ Backflow Preventer	..... RRPZ
Relocate DCV Backflow Preventer	..... RBFP

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	..... 0
Telephone Pole	..... -0-
Joint Use Pole	..... -0-
Telephone Pedestal	..... TEL PED
Utility Line by Others (Type as Shown)	..... PROP O/H POW LINES
Trenchless Installation	..... 12" TL INSTALL
Encasement by Open Cut	..... 24" ENCAS BY OC
Encasement	..... 24" ENCASUREMENT

Thrust Block	..... |
Air Release Valve	..... AR
Utility Vault	..... UV
Concrete Pier	..... CP
Steel Pier	..... SP
Plan Note	..... NOTE
Pay Item Note	..... PAY ITEM

EXISTING UTILITIES SYMBOLS

Power Pole	..... ●	*Underground Power Line	.....
Telephone Pole	..... ●	*Underground Telephone Cable	.....
Joint Use Pole	..... ●	*Underground Telephone Conduit	.....
Utility Pole	..... ●	*Underground Fiber Optics Telephone Cable	.....
Utility Pole with Base	..... □	*Underground TV Cable	.....
H-Frame Pole	..... ●—●	*Underground Fiber Optics TV Cable	.....
Power Transmission Line Tower	..... ☒	*Underground Gas Pipeline	.....
Water Manhole	..... ⊗	Aboveground Gas Pipeline	..... A/G Gas
Power Manhole	..... ⊗	*Underground Water Line	.....
Telephone Manhole	..... ⊗	Aboveground Water Line	..... A/G Water
Sanitary Sewer Manhole	..... ⊗	*Underground Gravity Sanitary Sewer Line	..... ss
Hand Hole for Cable	..... ☒	Aboveground Gravity Sanitary Sewer Line	..... A/G Sanitary Sewer
Power Transformer	..... ☒	*Underground SS Forced Main Line	.....
Telephone Pedestal	..... ☒	Underground Unknown Utility Line	.....
CATV Pedestal	..... ☒	SUE Test Hole ●
Gas Valve	..... ◇	Water Meter ⊖
Gas Meter	..... ◇	Water Valve ⊗
Located Miscellaneous Utility Object	..... ⊖	Fire Hydrant ◇
Abandoned According to Utility Records	..... AATUR	Sanitary Sewer Cleanout ⊗
End of Information	..... E.O.I.		

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

5/14/99

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 NCDOT 20-AUG-2010 15:37 Wastewater-W-5601EX-ut-sew-rdy-UC02-psb.dgn

5/14/24

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 2024.
2. THE EXISTING UTILITIES BELONG TO JOHNSTON COUNTY DEPARTMENT OF PUBLIC UTILITIES.
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 REFERENCE NO. W-5601EX	SHEET NO. UC-3
DESIGNED BY: <i>DK</i>	
DRAWN BY: <i>AP</i>	
CHECKED BY: <i>MM</i>	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
Engineers • Planners • Scientists • Construction Managers 4509 Falls of Neuse Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 • Fax (919) 783-9266 License No. C-764	

UTILITY CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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15.04

PROJECT REFERENCE NO.	SHEET NO.
W-560IEX	UC-3A
DESIGNED BY: DK	
DRAWN BY: AP	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

JOHNSTON COUNTY DEPARTMENT OF PUBLIC UTILITIES STANDARD DETAILS

UTILITY CONSTRUCTION DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

FIRE HYDRANT ASSEMBLY
NOT TO SCALE

****FIRE HYDRANTS INSTALLED ON EXISTING 6" WATER MAINS, MUST BE INSTALLED USING A 6"x6" TEE CUT INTO THE EXISTING WATER MAIN. FIRE HYDRANTS INSTALLED ON EXISTING WATER MAINS LARGER THAN 6", CAN BE INSTALLED USING A TAPPING SLEEVE AND VALVE ON THE EXISTING WATER MAIN.**

Drawn By:	Name	Date
Checked By:		
Approved By:		
Scale:		
Rev.	Description	Date

JOHNSTON COUNTY Department of Public Utilities P.O. Box 2383 Smithfield, NC 27577

WATER STANDARD DETAIL
Fire Hydrant Assembly

PAGE 4

TAPPING SLEEVE & VALVE ASSEMBLY
NOT TO SCALE

NOTES:
1. TAPPING SLEEVE SHALL BE FABRICATED OF TYPE 304 OR 316 S.S., AND PROVIDE A 360° SEAL AROUND EXISTING PIPE WITH FULL CIRCUMFERENTIAL GASKET.
2. TAPPING SLEEVE SHALL BE JOM 432, MUELLER H-304, FORD FTSS, ROMAC ST III OR APPROVED EQUAL.
3. ALL MATERIALS USED IN THE POTABLE WATER SYSTEM MUST BE NSF61 AND NSF372 CERTIFIED AND MEET THE LATEST FEDERAL SAFE DRINKING WATER ACT REQUIREMENTS.

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Rev.	Description	Date

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WATER STANDARD DETAIL
Tapping Sleeve and Valve Assembly

PAGE 5

VERTICAL BEND RODDING AND BLOCKING DETAIL
NOT TO SCALE

GENERAL NOTES:
1. RODS AND NUTS SHALL BE OF TYPE 304 OR TYPE 316 STAINLESS STEEL.
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT BENDS.

SIZE OF 45° BEND	STATIC THRUST IN POUNDS	NUMBER OF RODS REQUIRED
6"	4,328	2
8"	7,684	2
12"	17,312	4
16"	30,778	6
20"	48,091	8
24"	69,252	10

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WATER STANDARD DETAIL
Vertical Bend Rodding and Blocking Details

PAGE 7

THRUST BLOCK DETAIL
NOT TO SCALE

GENERAL NOTES:
1. CONCRETE SHALL BE 3,000 PSI MIN.
2. CONCRETE FOR THRUST BLOCKING SHALL BE KEPT FAIRLY DRY. THIS MAKING THE CONCRETE WEDGE SHAPE MORE EASILY FORMED WITH THE WIDEST PART BLOCKING AREA AGAINST UNDISTURBED SOIL.
3. NO CONCRETE SHALL COVER ANY BOLTS OR GLANDS.
4. ALL FITTINGS AND ACCESSORIES TO BE WRAPPED WITH 10 MIL POLYETHYLENE PRIOR TO POURING BLOCKING.
5. VOLUME OF THRUST BLOCKING SHALL BE AS SHOWN ON THE THRUST BLOCKING SCHEDULE.

PIPE	90° BEND	45° BEND	22.5° BEND	11.25° BEND	TEE	PLUG
4"	12"	8"	6"	4"	8"	12"
6"	18"	12"	9"	6"	12"	18"
8"	24"	16"	12"	8"	16"	24"
10"	30"	20"	15"	10"	20"	30"
12"	36"	24"	18"	12"	24"	36"
14"	42"	28"	21"	14"	28"	42"
16"	48"	32"	24"	16"	32"	48"
18"	54"	36"	27"	18"	36"	54"
20"	60"	40"	30"	20"	40"	60"
24"	72"	48"	36"	24"	48"	72"

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WATER STANDARD DETAIL
Thrust Block

PAGE 8

THRUST COLLAR INSTALLATION
NOT TO SCALE

SCHEDULE

PIPE DIAMETER	CONCRETE THRUST COLLAR	ANCHOR COLLAR	RRSs REQUIRED
6", 8", 10"	14"	14"	2"
12"	16"	16"	2"
14"	18"	18"	2"
16"	20"	20"	2"
18"	22"	22"	2"
20"	24"	24"	2"
24"	28"	28"	2"
30"	34"	34"	2"
36"	40"	40"	2"
42"	46"	46"	2"

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Rev.	Description	Date

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WATER STANDARD DETAIL
Thrust Collar Installation

PAGE 9

STORM DRAIN PIPE CROSSING DETAIL
NOT TO SCALE

NOTES:
1. CULVERT CROSSINGS IN EXISTING NCDOT RIGHT-OF-WAY REQUIRE 24" MIN. SEPARATION FROM BOTTOM OF CULVERT TO TOP OF WATER MAIN.
2. IN LIEU OF RESTRAINT (TIE) RODS, APPROVED RESTRAINT JOINT PIPE MAY BE USED.

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WATER STANDARD DETAIL
Storm Pipe Crossing

PAGE 11

VALVE AND VALVE BOX INSTALLATION
NOT TO SCALE

NOTES:
1. D.I.P. MAY BE USED FOR VALVE BOX EXTENSIONS.
2. VALVE BOX SHOULD NOT CONTACT WATER MAIN OR VALVE.
3. CONCRETE PROTECTOR RING SHALL BE USED IN ALL UNPAVED AREAS.
4. ALL MATERIALS USED IN THE POTABLE WATER SYSTEM MUST BE NSF61 AND NSF372 CERTIFIED AND MEET THE LATEST FEDERAL SAFE DRINKING WATER ACT REQUIREMENTS.

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Rev.	Description	Date

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WATER STANDARD DETAIL
Valve and Valve Box Installation

PAGE 13

PIPE LAYING CONDITION
NOT TO SCALE

NOTES:
1. PIPE SHALL BE BEDDED UP TO SPRING LINE AND MINIMUM 4" BELOW BOTTOM OF PIPE WHEN WET AREAS ARE ENCOUNTERED.
2. TAPPING SADDLE SHALL BE BRASS OR BRONZE FOR "CC" THREADS WITH DOUBLE STRAPS, FORD S-90, MUELLER BR28 OR APPROVED EQUAL.
3. TAPPING SLEEVE SHALL BE BRASS OR BRONZE FOR "CC" THREADS, FORD S-70, MUELLER H-134, JCM 403 OR APPROVED EQUAL FOR SDR21 PVC.
4. COOPERATION STOP SHALL BE BRONZE WITH "CC" THREADS AND RATED 300 PSI MUELLER B-2008, FORD FS-100AL, OR APPROVED EQUAL.
5. ALL TAPS TO BE MADE ON TOP QUARTER OF MAIN.

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Rev.	Description	Date

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WATER STANDARD DETAIL
Pipe Laying Condition

PAGE 17

STANDARD WATER TAP DETAIL
NOT TO SCALE

NOTES:
1. ALL TAPS 2" AND SMALLER SHALL BE MADE WITH TAPPING SADDLE. ALL TAPS LARGER THAN 2" SHALL BE MADE WITH TAPPING SLEEVE AND VALVE. NO DIRECT TAPS SHALL BE MADE.
2. ALL MATERIALS USED IN THE POTABLE WATER SYSTEM MUST BE NSF61 AND NSF372 CERTIFIED AND MEET THE LATEST FEDERAL SAFE DRINKING WATER ACT REQUIREMENTS.

Drawn By:	Name	Date
Checked By:		
Approved By:		
Scale:		
Rev.	Description	Date

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WATER STANDARD DETAIL
Standard Water Tap

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