

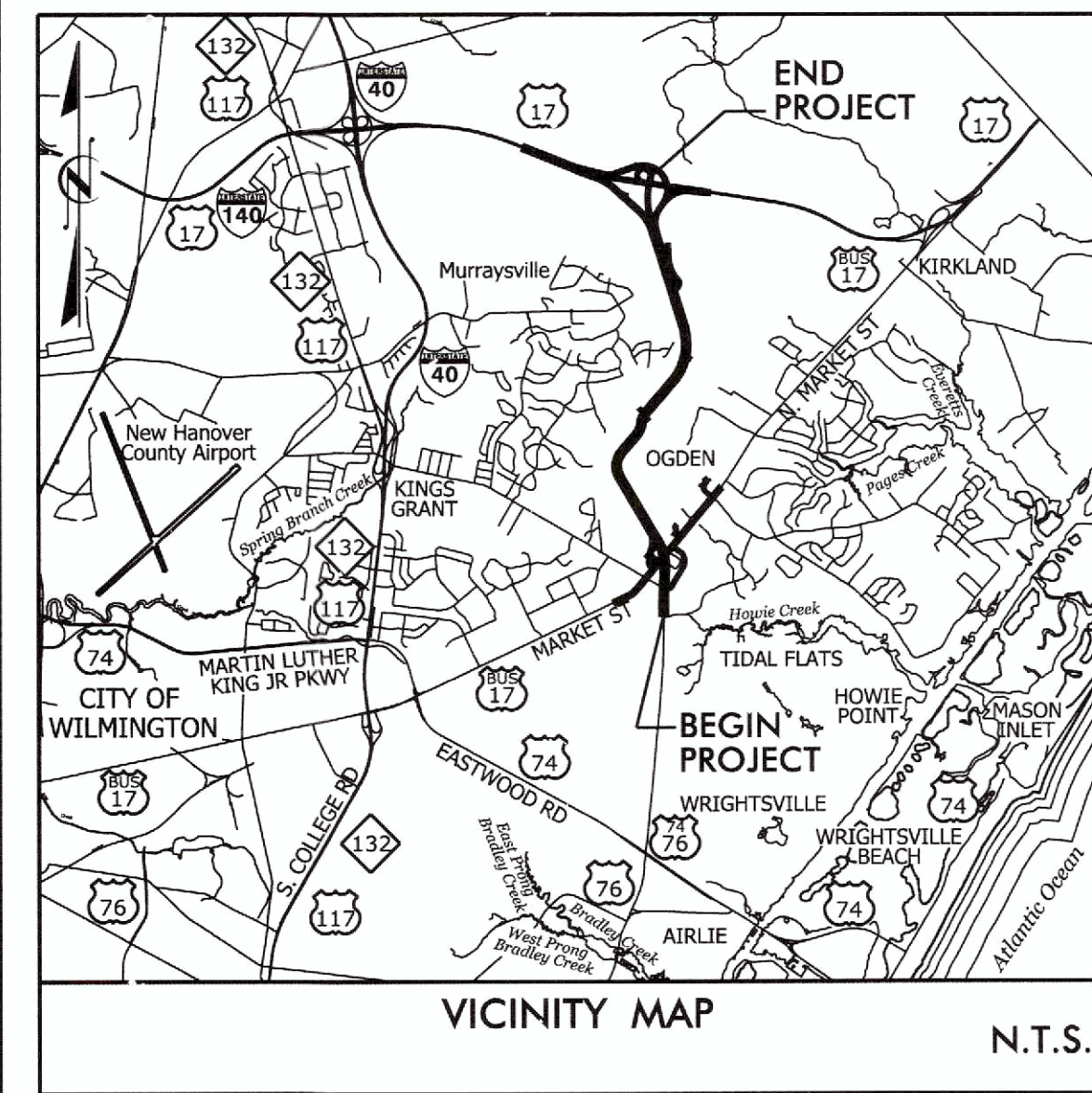
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4751A	1	7
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
40191.1.2		PE	

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# UTILITY CONSTRUCTION PLANS

## NEW HANOVER COUNTY

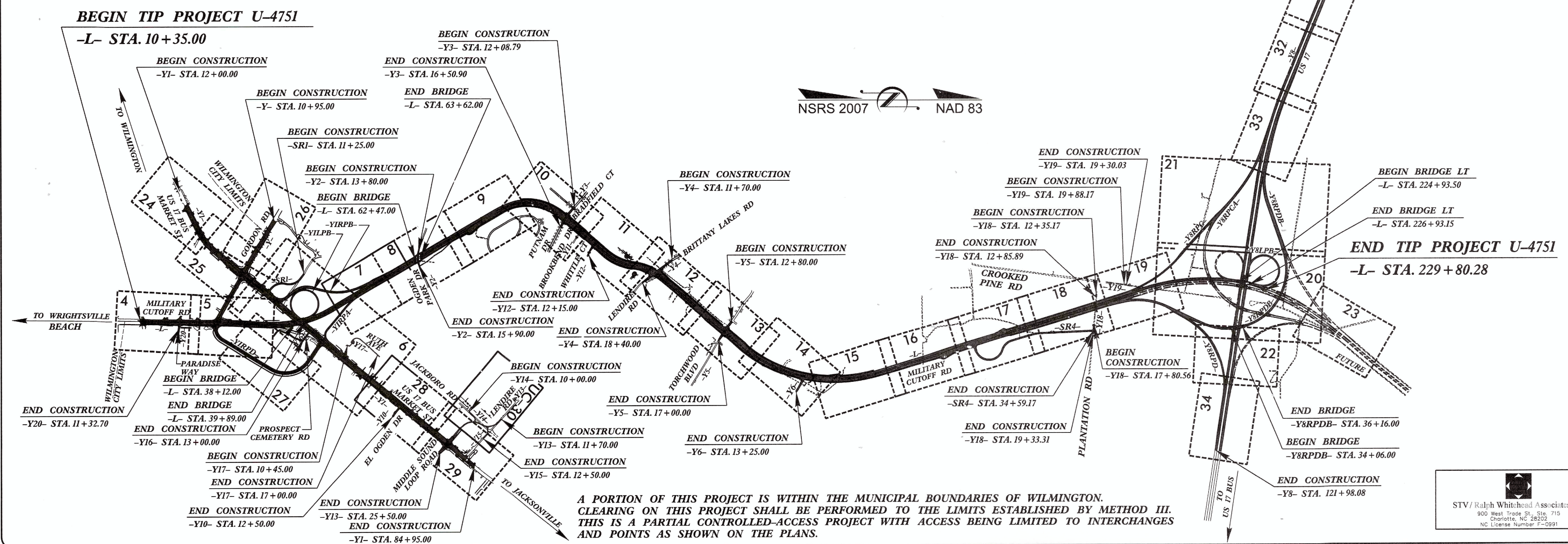
LOCATION: SR 1409 (MILITARY CUTOFF ROAD) TO US 17 IN WILMINGTON  
TYPE OF WORK: RELOCATION OF WATER AND SANITARY SEWER LINES



INDICATES OMITTED SHEETS NOT INCLUDED IN U-4751A PROJECT LIMITS



TIP PROJECT: U-4751A

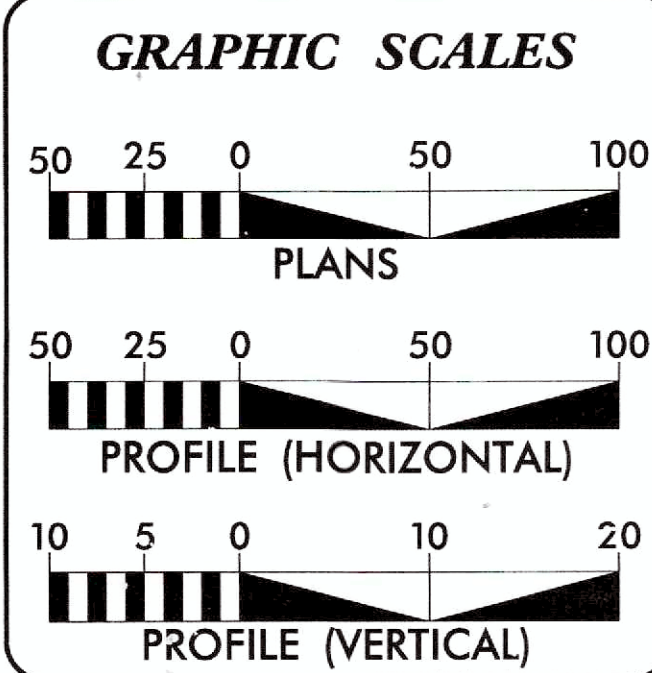


NSRS 2007 NAD 83

A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF WILMINGTON. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III. THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES AND POINTS AS SHOWN ON THE PLANS.

STV/Ralph Whitehead Associates, Inc.  
900 West Trade St., Ste. 715  
Charlotte, NC 28202  
NC License Number F-0991

CONTRACT:



**DESIGN DATA**

ADT 2016 =	22,600
ADT 2036 =	47,800
K =	12%
D =	60%
T =	7%*
V =	50 MPH
* (TTST = 3% + DUAL 4%)	
FUNC CLASS = ARTERIAL/FREEWAY	
STATEWIDE TIER	

**SHEET INDEX**

UC-1	TITLE SHEET
UC-2	SYMBOLS
UC-3	PROJECT NOTES
UC-3a THRU UC-3b	DETAILS
UC-30	PLAN SHEET
UC-120	PROFILE SHEET

**UTILITY OWNER:**  
CAPE FEAR PUBLIC UTILITY AUTHORITY

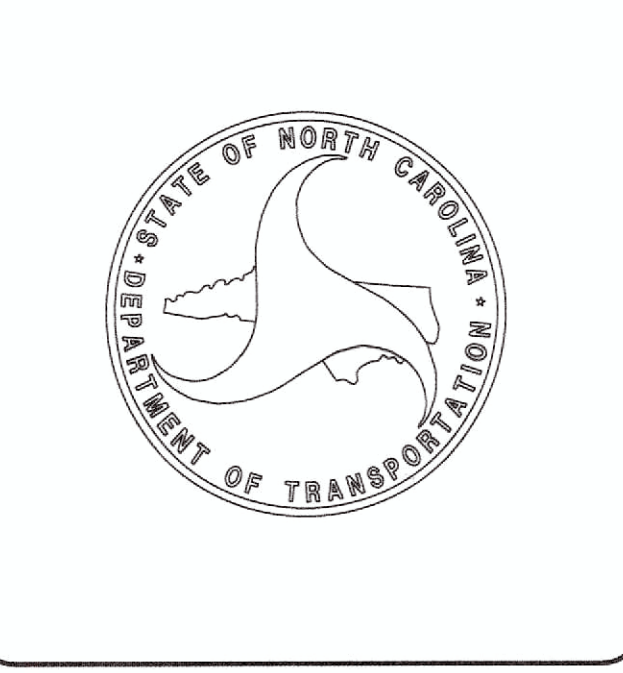
NCDOT CONTACT: GARY LOVERING, PE  
Project Engineer, Roadway Design

PLANS PREPARED FOR THE NCDOT BY:  
**STV/RALPH WHITEHEAD ASSOCIATES, INC.**  
900 West Trade St., Ste. 715, Charlotte NC, 28202  
NC License Number F-0991

2012 STANDARD SPECIFICATIONS	
<b>RIGHT OF WAY DATE:</b> APRIL 17, 2015	<b>KIT A. PERSIANI, PE</b> PROJECT ENGINEER
<b>LETTING DATE:</b> OCTOBER 17, 2017	<b>SEAN C. STEPHENS, EI</b> PROJECT DESIGNER

**SEAL**  
NORTH CAROLINA PROFESSIONAL ENGINEER  
32634  
BRYAN M. BLODY  
8/19/2016

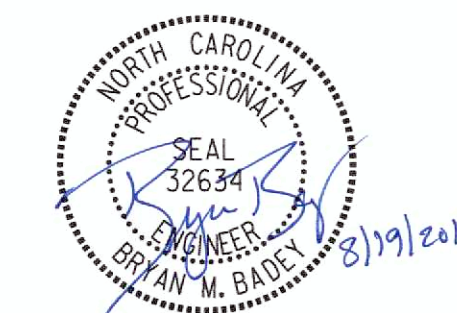
SIGNATURE: *Bryan Blody* P.E.



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**UTILITIES PLAN SHEET SYMBOLS**

PROJECT REFERENCE NO. U-4751A SHEET NO. UC-2



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

UTILITY CONSTRUCTION PLANS

**PROPOSED WATER SYMBOLS**

Water Line (Sized as Shown)	12" WL
11¼ Degree Bend	+†
22½ Degree Bend	+‡
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	PH
Relocate Fire Hydrant	REH
Remove Fire Hydrant	REM FH
Water Meter	PWM
Relocate Water Meter	REW
Remove Water Meter	REM WM
Water Pump Station	PS(W)
RPZ Backflow Preventer	RPZ
DCV Backflow Preventer	PBFP
Relocate RPZ Backflow Preventer	RRPZ
Relocate DCV Backflow Preventer	REBFP

**PROPOSED SEWER SYMBOLS**

Gravity Sewer Line (Sized as Shown)	12" SS
Force Main Sewer Line (Sized as Shown)	12" FSS
Manhole (Sized per Note)	•
Sewer Pump Station	PS(SS)

**PROPOSED MISCELLANEOUS UTILITIES SYMBOLS**

Power Pole	⊖
Telephone Pole	⊖
Joint Use Pole	⊖
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" ENCASEMENT

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	P
Telephone Pole	•	*Underground Telephone Cable	T
Joint Use Pole	•	*Underground Telephone Conduit	TC
Utility Pole	•	*Underground Fiber Optics Telephone Cable	T FO
Utility Pole with Base	□	*Underground TV Cable	TV
H-Frame Pole	•	*Underground Fiber Optics TV Cable	TV FO
Power Transmission Line Tower	⊗	*Underground Gas Pipeline	G
Water Manhole	⊗	Aboveground Gas Pipeline	A/G Gas
Power Manhole	⊗	*Underground Water Line	W
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	FSS
Telephone Pedestal	⊗	Underground Unknown Utility Line	UUL
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)

PLANS PREPARED BY:  
**RK&K**  
RUMMEL, KLEPPER & KAHL, LLP  
900 RIDGEFIELD DRIVE SUITE 350  
RALEIGH, NORTH CAROLINA 27609-3960  
NC LICENSE NO. F-0112 • (919) 878-9560

5/14/99  
8/12/2016 Construction U-4751A UC-PSH-02.dgn  
REV: 2/1/2012

# UTILITY CONSTRUCTION



**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

*UTILITY CONSTRUCTION PLANS*

## 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 2012 AND CAPE FEAR PUBLIC UTILITY AUTHORITY TECHNICAL STANDARDS REVISION NUMBER 1.04 DATED OCTOBER 11, 2010.
2. THE EXISTING UTILITIES BELONG TO CAPE FEAR PUBLIC UTILITY AUTHORITY.
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, 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. 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.

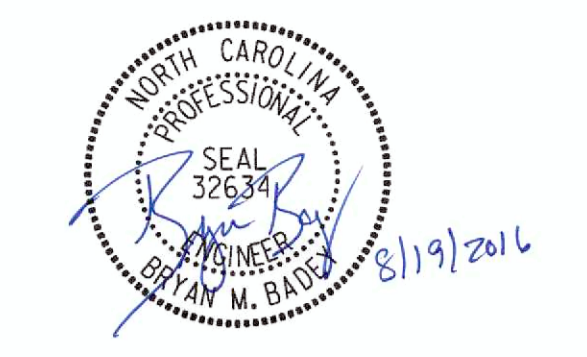
6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING 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.
10. ALL SANITARY SEWER DUCTILE IRON PIPE SHALL BE SEWER RATED DIP, 401 PROTECTO OR EQUAL.

## PROJECT SPECIFIC NOTES:

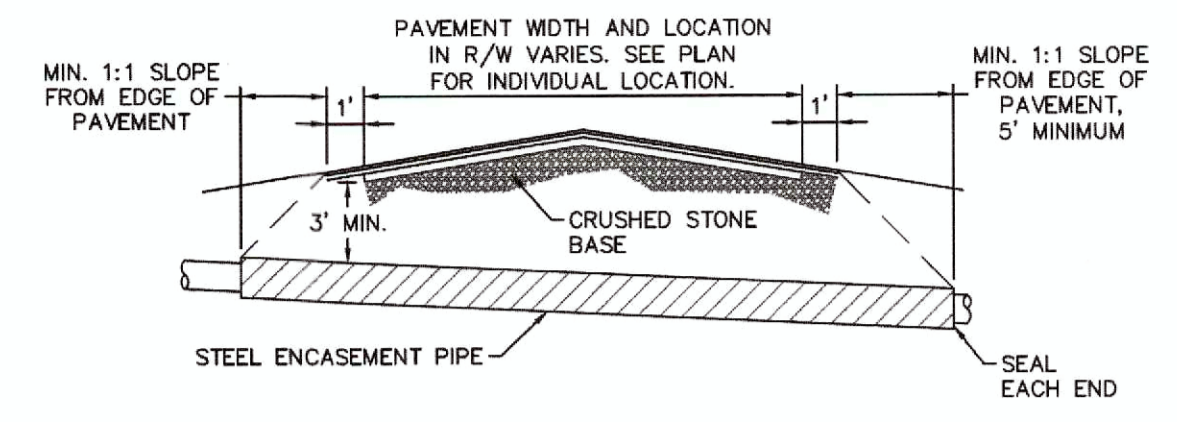
1. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS CONTRACTOR'S RESPONSIBILITY TO HAVE BORE PATH DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO RIVER, WETLANDS, OR BUFFER ZONES.
2. NITRILE GASKETS SHALL BE USED IF PETROLEUM CONTAMINATED SOILS ARE FOUND.
3. IF HDPE PIPE IS INSTALLED BY DIRECTIONAL DRILL. IT SHALL BE FILLED WITH WATER AND NOT BE CONNECTED TO ANY OTHER PIPE OR FITTINGS FOR ONE WEEK FROM THE TIME OF INSTALLATION.

5/14/2016 8/12/2016 Rdy\_Ut\_V\_Proj\_Construction\U-4751A\U4751A\_UC\_PSH\_03.dgn

**PLANS PREPARED BY :**  
  
 RUMMEL, KLEPPER & KAHL, LLP  
 900 RIDGEFIELD DRIVE SUITE 350  
 RALEIGH, NORTH CAROLINA 27609-3960  
 NC LICENSE NO. F-0112 • (919) 878-9560

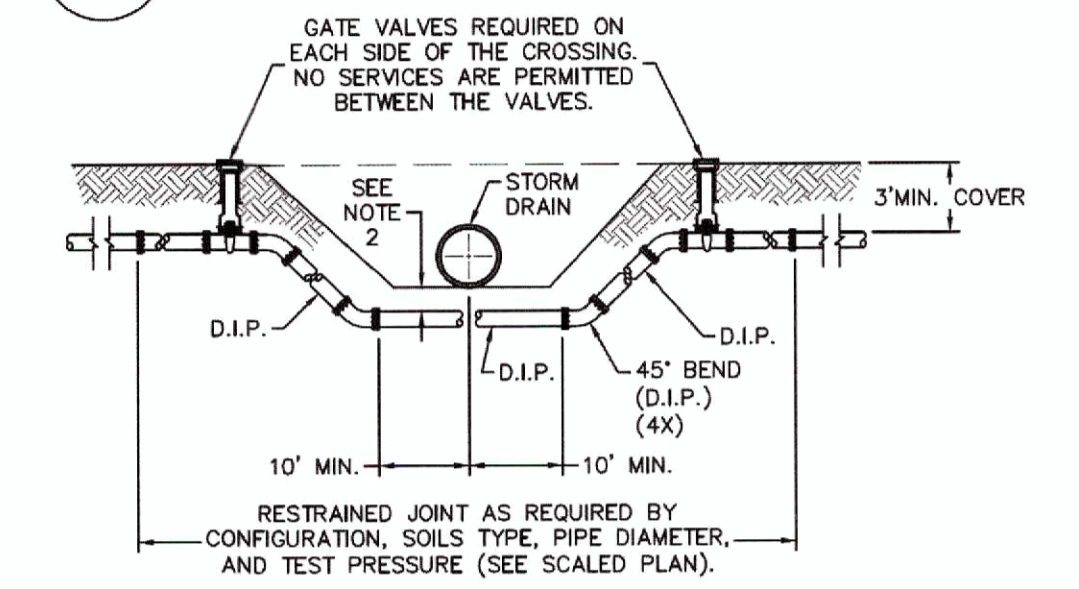


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



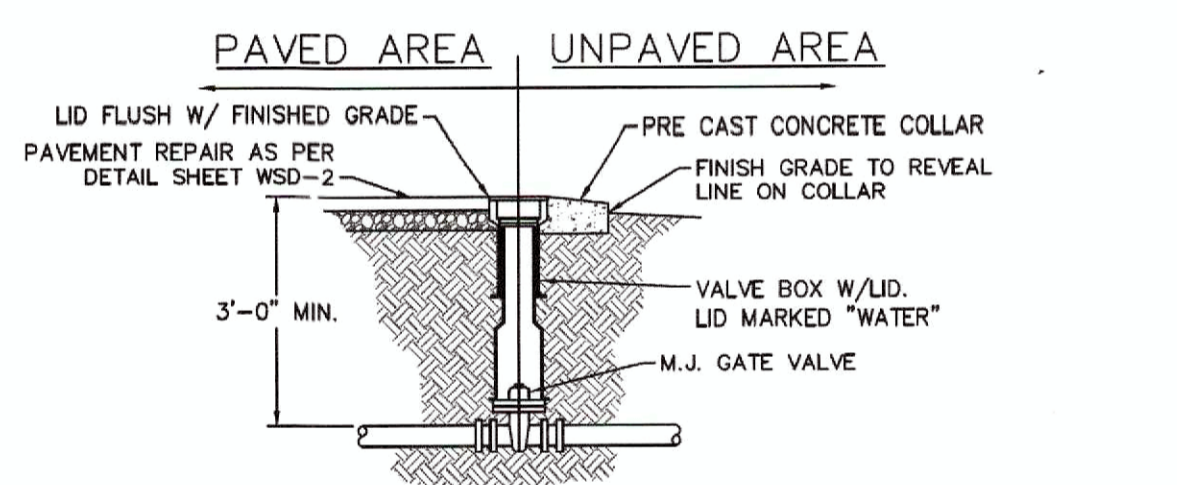
NOTES:  
1. CASING WILL BE INSTALLED AT LINE AND GRADE SHOWN ON INDIVIDUAL PROFILE FOR EACH CROSSING. BORING/JACKING TO LINE AND GRADE IS REQUIRED.  
2. TRACER WIRE SHALL BE CONTINUED THROUGH CASING.

WD-16 TYPICAL BORING/ JACKING DETAIL NOT TO SCALE

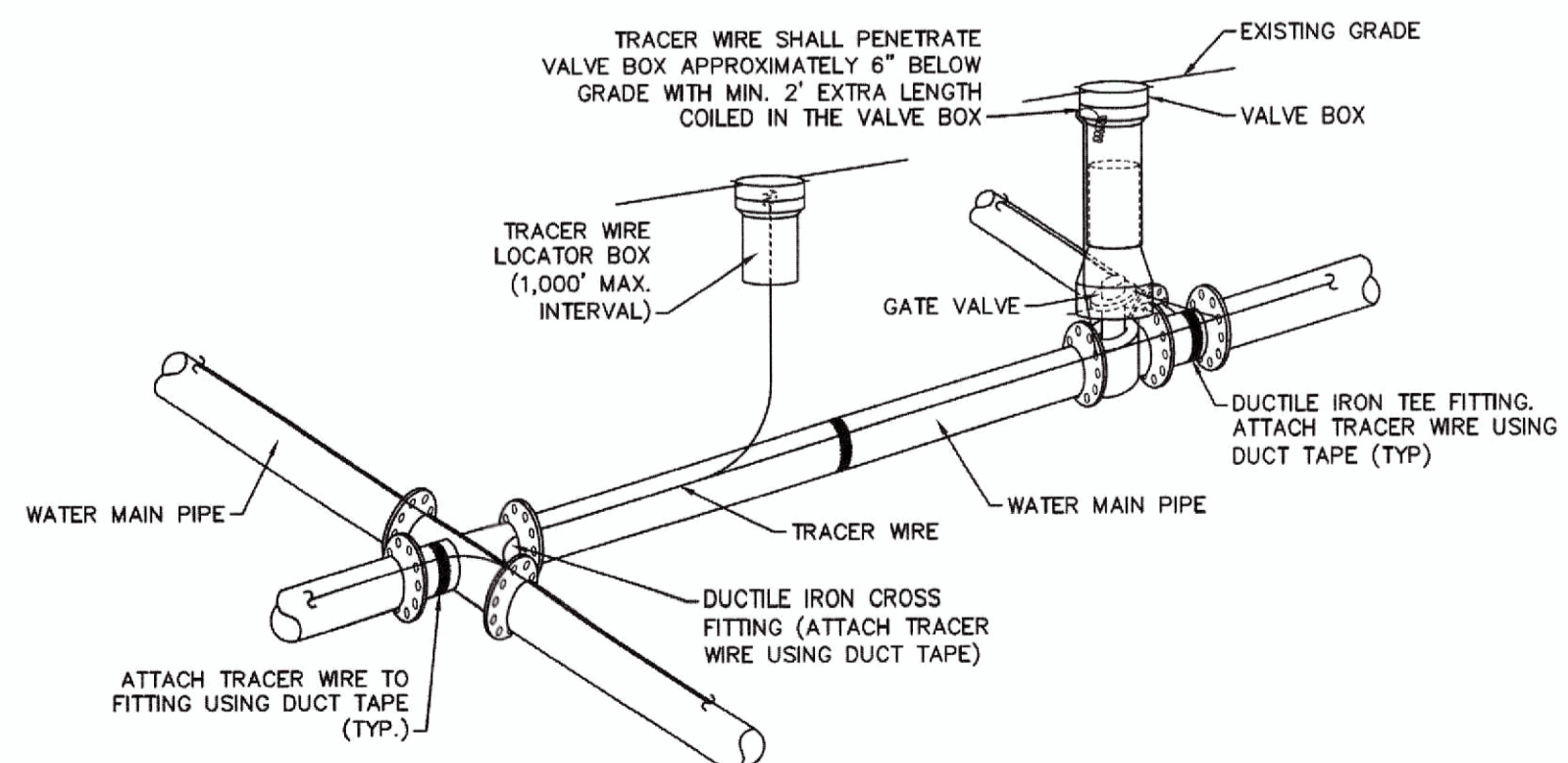


NOTES:  
1. USE PRESSURE CLASS 350 DIP, UNLESS SPECIFIED OTHERWISE.  
2. MINIMUM DEPTH REQUIRED, UNLESS SPECIFIED OTHERWISE BY CFPUA:  
a. IN DOT R/W, 36" MIN. TYPICAL, OR 24" MIN. WHEN CROSSING A DITCH LINE.  
b. ALL OTHER LOCATIONS, 30" MIN.  
c. WHEN STORM DRAIN INVERT IS BURIED AT OR BELOW ABOVE DEPTHS, 18" MIN. CLEARANCE IS REQUIRED.

WD-2 WATER MAIN DITCH AND STORM DRAIN CROSSING NOT TO SCALE

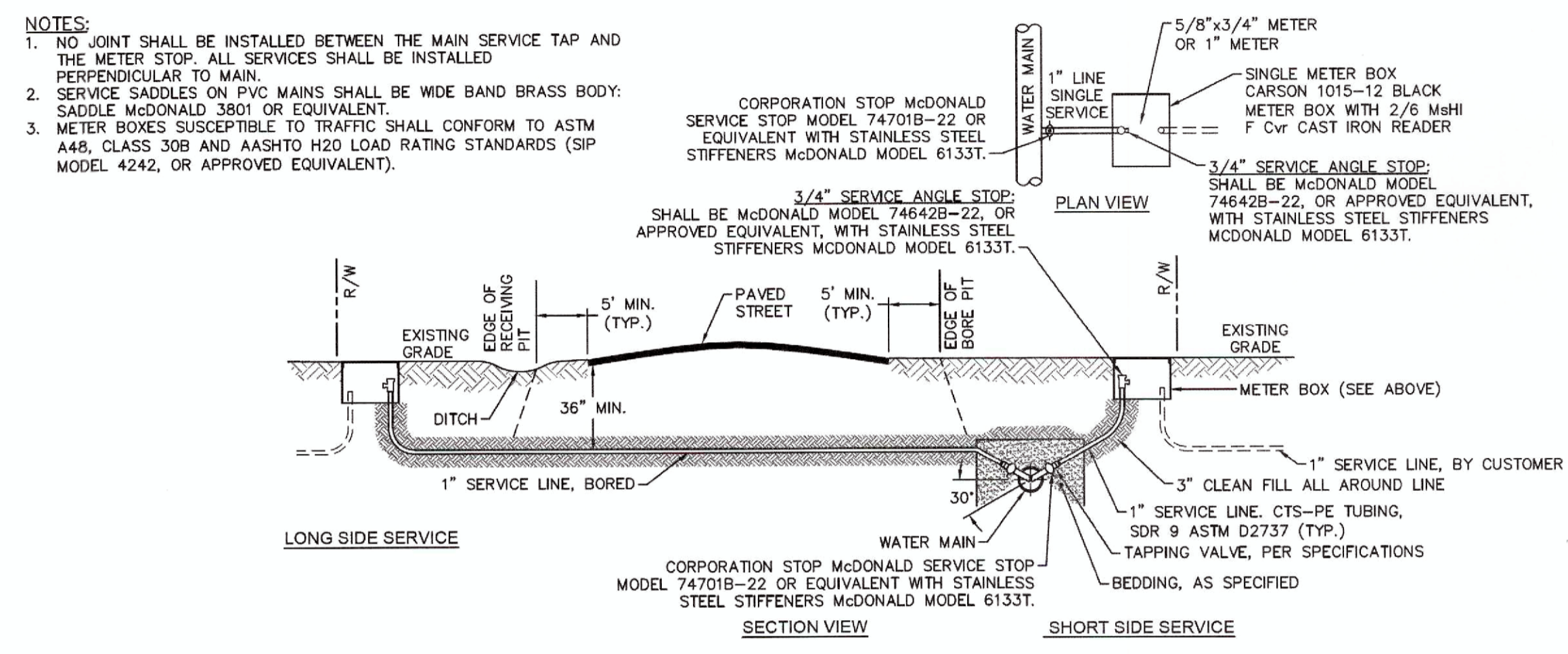


WD-3 VALVE DETAIL NOT TO SCALE



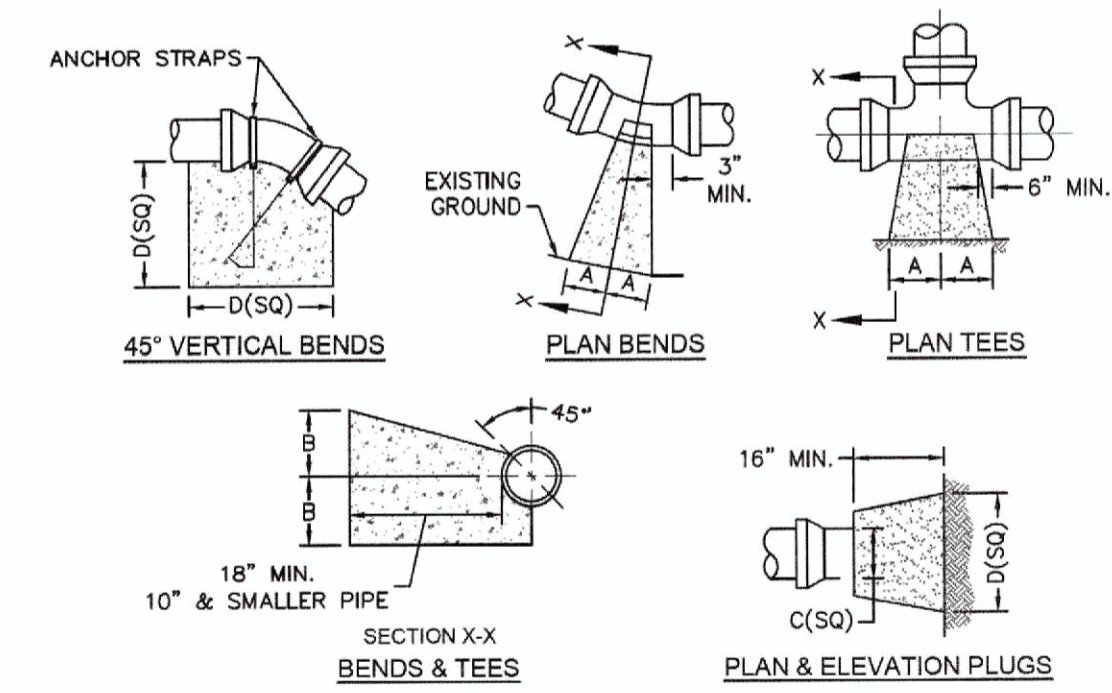
NOTES:  
1. TRACER WIRE SHALL BE #10 COPPER SOLID CORE COPPER WIRE WITH GAS AND OIL RESISTANT INSULATION.  
2. WIRE SHALL BE STRAPPED TO ALL PVC WATER MAIN PIPING WITH DUCT TAPE AT 12 FOOT INTERVALS ALONG THE PIPE.  
3. SECURE WIRE TO ALL TEE AND CROSS FITTINGS WITH DUCT TAPE.  
4. ALL SPLICES IN THE WIRE SHALL BE MADE WITH 3M DBR DIRECT BURY SPLICE KIT AN UNDERGROUND RATED, WATERTIGHT, AND APPROVED SPLICE CONNECTOR OR APPROVED EQUAL.

WD-17 TRACER WIRE DETAIL NOT TO SCALE



NOTE:  
TYPICAL WATER SERVICE CONNECTION FOR RESIDENTIAL SINGLE FAMILY HOME ON CFPUA WATER SYSTEM

WD-18 SINGLE SERVICE CONNECTION NOT TO SCALE



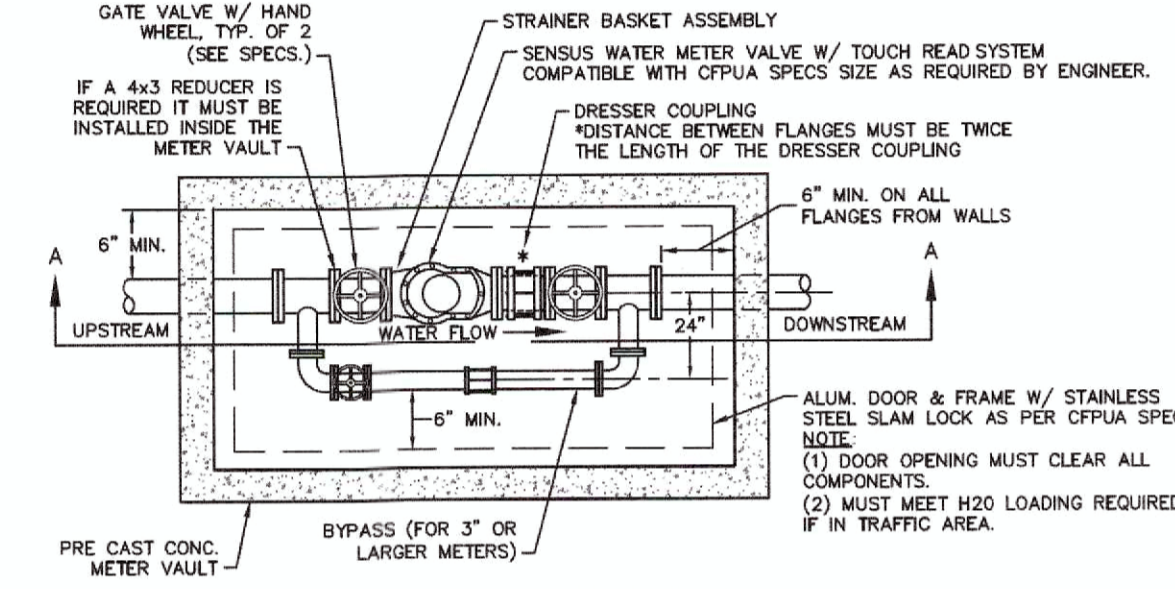
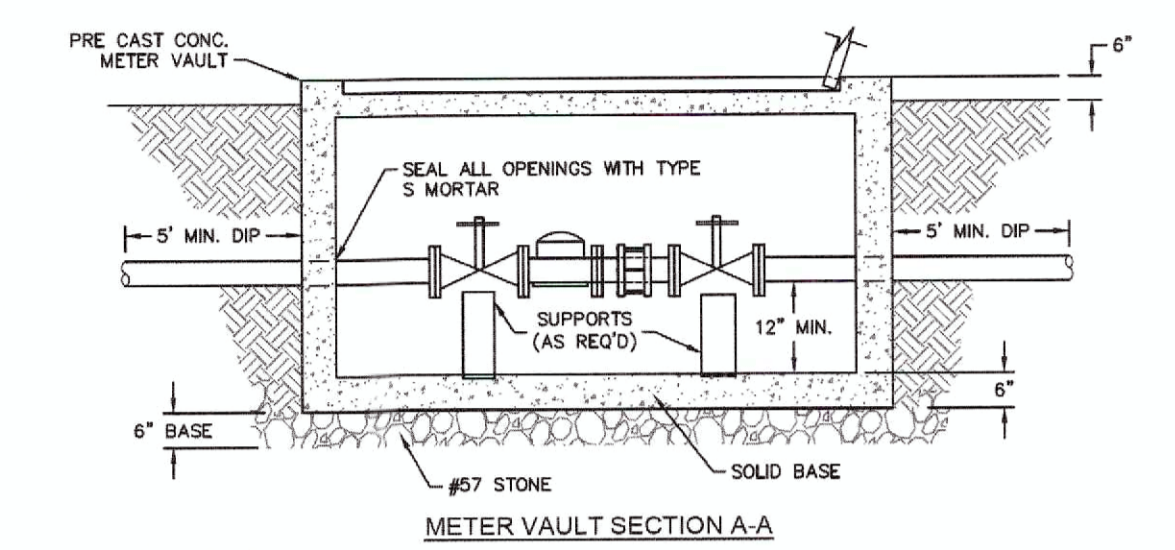
SIZE	90° BENDS		45° BENDS		22-1/2° BENDS		TEES/PLUGS		45° VERT. BENDS
	A	B	A	B	A	B	A	B	
3"	8"	6"	5"	6"	3"	7"	6"	8"	27"
4"	8"	9"	5"	8"	3"	11"	6"	9"	28"
6"	14"	11"	9"	9"	8"	8"	8"	9"	36"
8"	16"	16"	12"	12"	10"	13"	14"	13"	42"
10"	18"	22"	15"	14"	14"	16"	18"	15"	50"
12"	20"	28"	18"	17"	16"	16"	22"	18"	62"
14"	26"	29"	21"	19"	18"	18"	26"	20"	72"
16"	33"	29"	25"	21"	20"	21"	32"	21"	83"
18"	40"	30"	28"	24"	22"	23"	36"	24"	88"

NOTES:  
1. BASED ON 160 PSI TEST PRESSURE AND 2000 PSF SOIL BEARING CAPACITY.  
2. ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED GROUND.  
3. USE MEG-A-LUG (PREFERRED) IN LIEU OF BLOCKING AND RODDING.

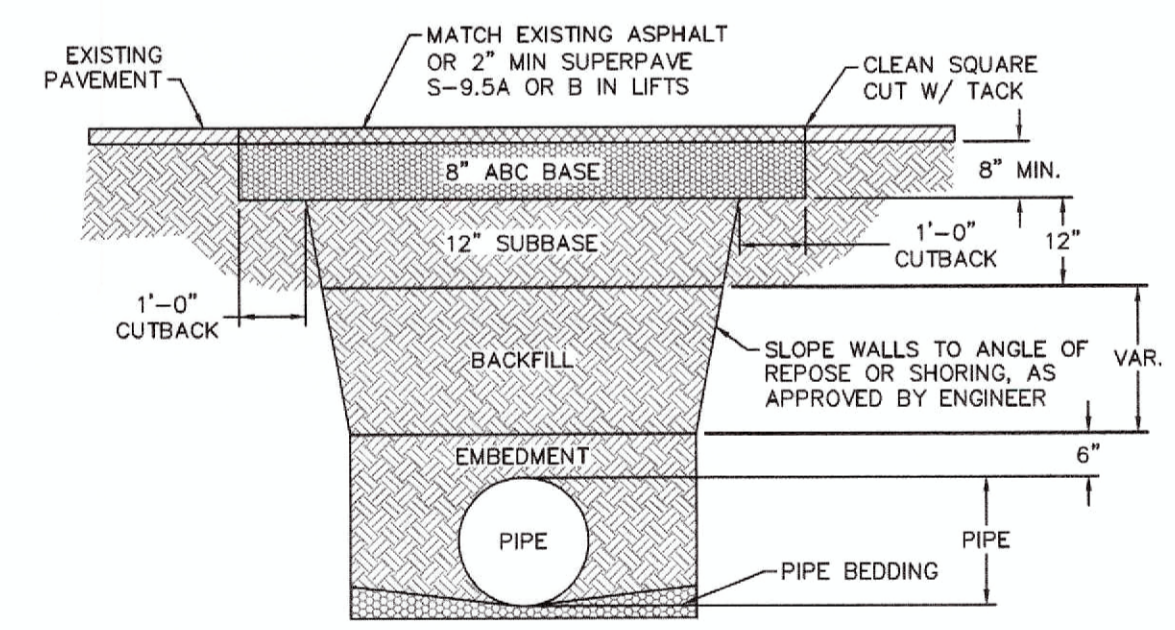
WD-4 THRUST BLOCK DETAIL NOT TO SCALE

GENERAL NOTES:  
1. NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.  
2. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.  
3. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.  
4. THE CONTRACTOR IS RESPONSIBLE FOR STABILIZATION OF ALL DISTURBED AREAS.  
5. THE CONTRACTOR IS RESPONSIBLE FOR LAY DOWN AND STOCKPILE AREAS (TO ARRANGE AND ENSURE COMPLIANCE WITH ALL LOCAL AND STATE REGULATIONS).

THE DETAILS SHOWN HEREON SUPERCEDE CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04

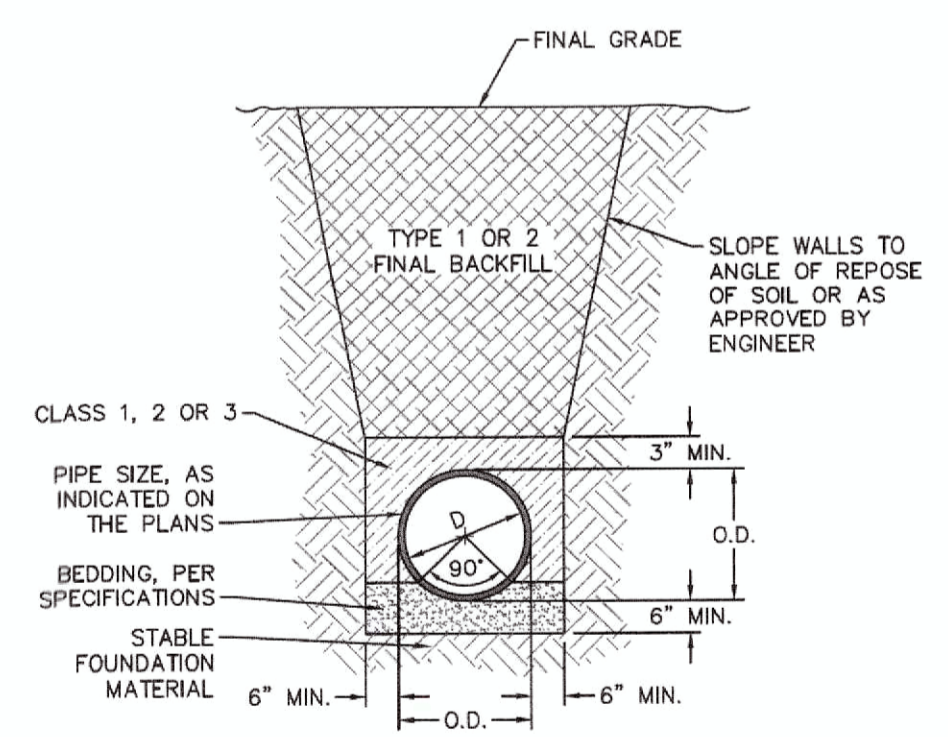


WD-1 WATER METER VAULT NOT TO SCALE



NOTES:  
1. BACKFILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBS, DEBRIS, ORGANICS AND LITTLE TO NO EXCESSIVE MOISTURE.  
2. SELECT BACKFILL MAY BE SUBSTITUTED OR REQUIRED BY CITY TO ACHIEVE COMPACTION. (I.E. #57, ABC, CRUSHED LIMESTONE, CLEAN SAND, FLOWABLE FILL, ETC.)  
3. 8-INCH OF ABC BASE MATERIAL SHALL BE USED ON CITY STREETS.  
4. BACKFILL AND BASE MATERIALS SHALL BE COMPACTED 12" MINIMUM LIFTS  
5. SOIL SHALL BE COMPACTED BY A MECHANIZED TAMPER (I.E. JUMPING JACK), HOWEVER, VIBRATORY ROLLERS > 18" WIDTH MAY BE USED FOR LARGER EXCAVATIONS. THE PLATE TAMP METHOD SHALL NOT BE USED.  
6. ALL APPROVED CASTINGS SHALL BE SET FLUSH TO GRADE AND SUPPORTED IF APPLICABLE.  
7. ABC BASE AND SUBBASE COMPACTED TO 98% AND BACKFILL AND EMBEDMENT COMPACTED TO 90% AS DETERMINED BY THE MODIFIED PROCTOR AASHTO METHOD T-99.  
8. 1-FOOT CUTBACKS OF ASPHALT SHALL BE PREPARED ON UNDISTURBED SOIL. MINIMUM ASPHALT DENSITY IS 90%.

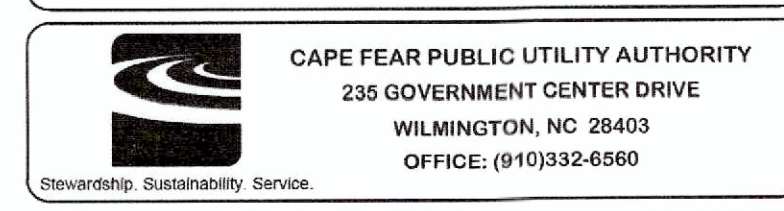
WD-14 PAVEMENT REPAIR WHERE PIPE INSTALLED NOT TO SCALE



WD-13 TYPICAL TRENCH DETAIL NOT TO SCALE

CFPUA WATER DISTRIBUTION SYSTEM

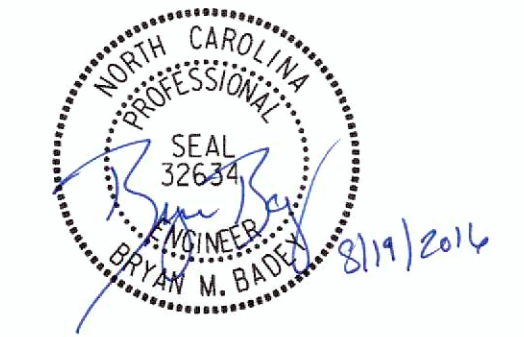
STANDARD DETAILS



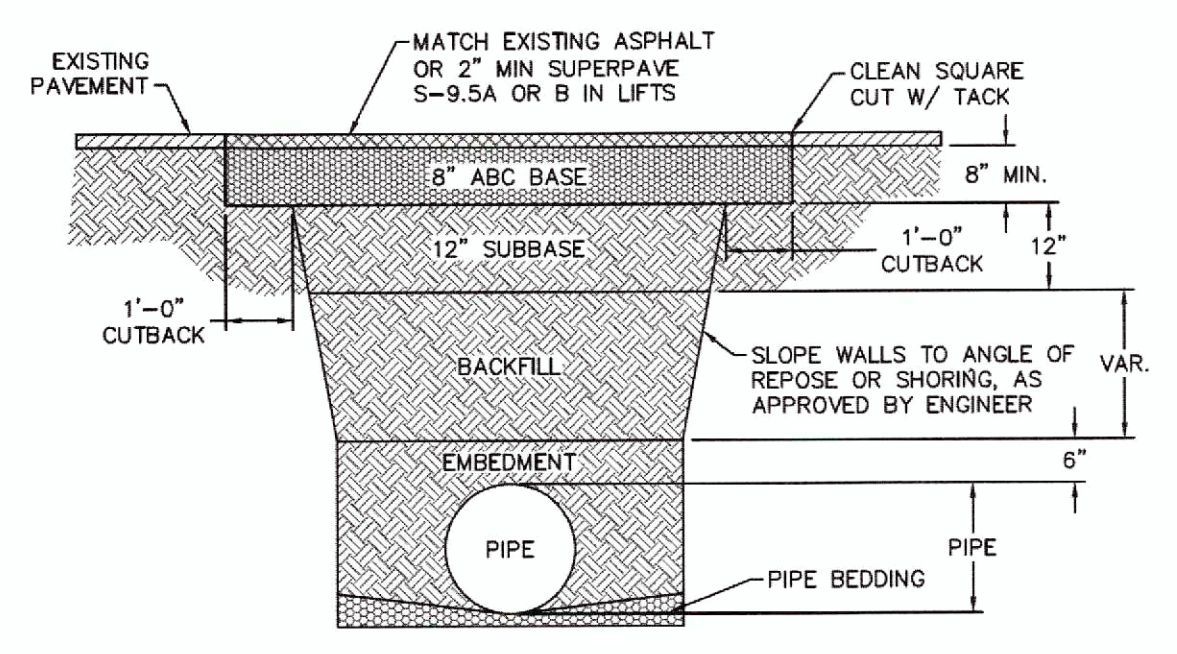
PLANS PREPARED BY :  
**RK&K**  
RUMMEL, KLEPPER & KAHL, LLP  
900 RIDGEFIELD DRIVE SUITE 350  
RALEIGH, NORTH CAROLINA 27609-3960  
NC LICENSE NO. F-0112 • (919) 878-9560  
FOR  
THE NORTH CAROLINA  
TURNPIKE AUTHORITY

8/17/99

PROJECT REFERENCE NO. U-4751	SHEET NO. UC-3b
RW SHEET NO.	



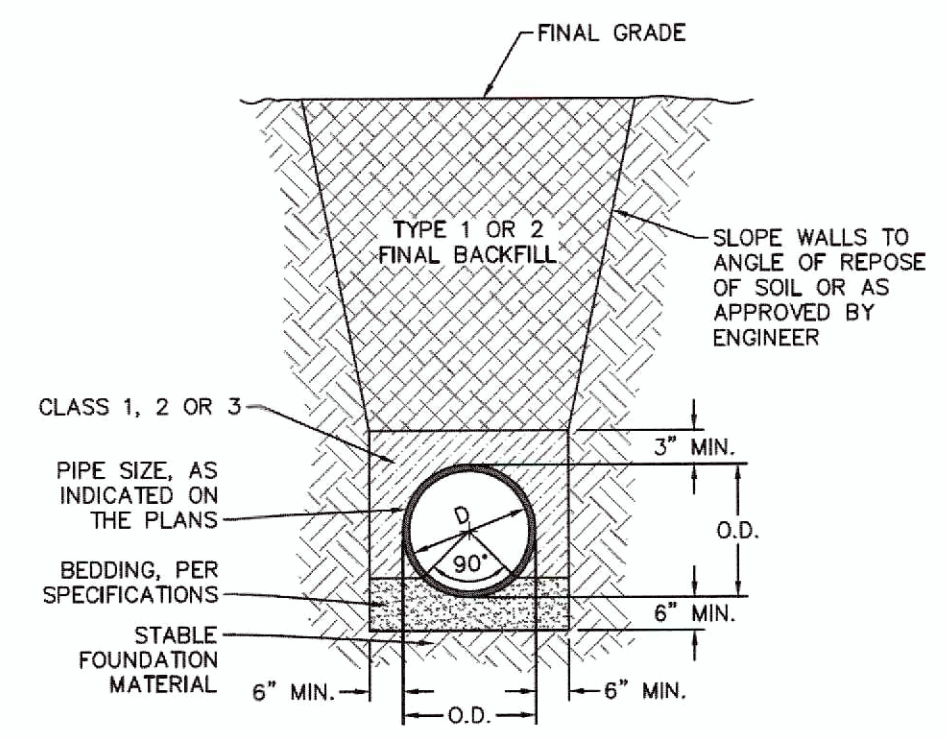
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



- NOTES:**
1. BACKFILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBOS, DEBRIS, ORGANICS AND LITTLE TO NO EXCESSIVE MOISTURE.
  2. SELECT BACKFILL MAY BE SUBSTITUTED OR REQUIRED BY CITY TO ACHIEVE COMPACTION, (I.E. #57, ABC, CRUSHED LIMESTONE, CLEAN SAND, FLOWABLE FILL, ETC).
  3. 8-INCH OF ABC BASE MATERIAL SHALL BE USED ON CITY STREETS.
  4. BACKFILL AND BASE MATERIALS SHALL BE COMPACTED 12" MINIMUM LIFTS
  5. SOIL SHALL BE COMPACTED BY A MECHANIZED TAMPER (I.E. JUMPING JACK), HOWEVER, VIBRATORY ROLLERS > 18" WIDTH MAY BE USED FOR LARGER EXCAVATIONS. THE PLATE TAMP METHOD SHALL NOT BE USED.
  6. ALL APPROVED CASTINGS SHALL BE SET FLUSH TO GRADE AND SUPPORTED IF APPLICABLE.
  7. ABC BASE AND SUBBASE COMPACTED TO 98% AND BACKFILL AND EMBEDMENT COMPACTED TO 90% AS DETERMINED BY THE MODIFIED PROCTOR AASHTO METHOD T-99.
  8. 1-FOOT OUTBACKS OF ASPHALT SHALL BE PREPARED ON UNDISTURBED SOIL. MINIMUM ASPHALT DENSITY IS 90%.

(FOR PRIVATE ROADS AND PAVED AREAS; CONTRACTOR TO MEET MIN. REQUIREMENTS AS DEFINED BY RIGHT-OF-WAY OWNER FOR PUBLIC ROAD REPAIRS)

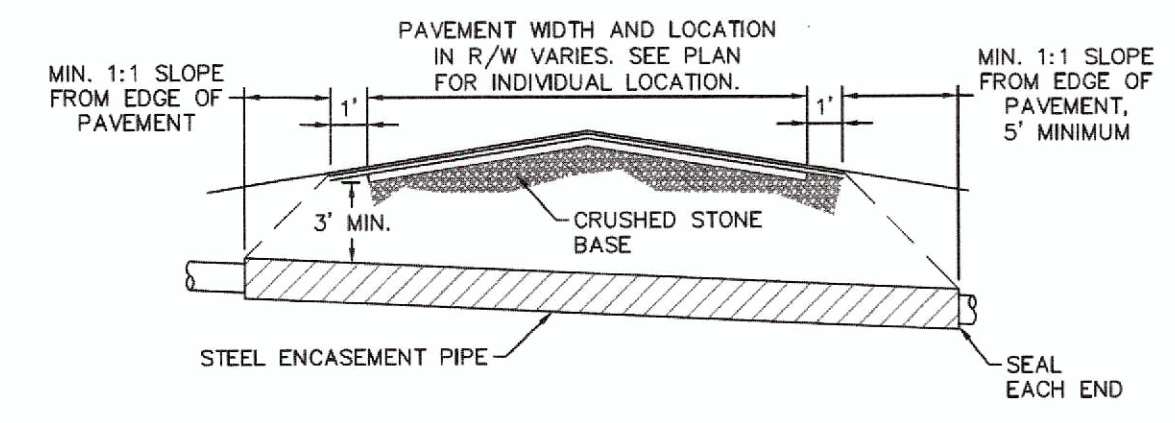
SD-14 PAVEMENT REPAIR WHERE PIPE INSTALLED NOT TO SCALE



SD-15 TYPICAL TRENCH DETAIL NOT TO SCALE

- GENERAL NOTES:**
1. NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.
  2. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.
  3. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.
  4. THE CONTRACTOR IS RESPONSIBLE FOR STABILIZATION OF ALL DISTURBED AREAS.
  5. THE CONTRACTOR IS RESPONSIBLE FOR LAY DOWN AND STOCKPILE AREAS (TO ARRANGE AND ENSURE COMPLIANCE WITH ALL LOCAL AND STATE REGULATIONS).

THE DETAILS SHOWN HEREON SUPERCEDE CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04

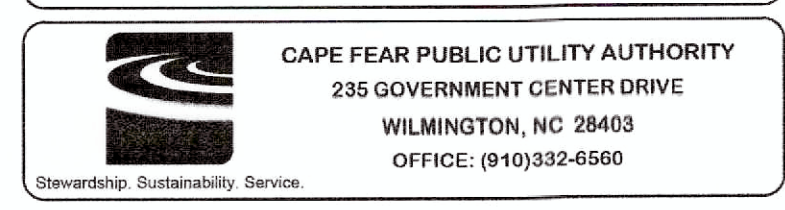


- NOTES:**
1. CASING WILL BE INSTALLED AT LINE AND GRADE SHOWN ON INDIVIDUAL PROFILE FOR EACH CROSSING. BORING/JACKING TO LINE AND GRADE IS REQUIRED.
  2. TRACER WIRE SHALL BE CONTINUED THROUGH CASING.

SD-16 TYPICAL BORING/ JACKING DETAIL NOT TO SCALE

CFPUA SANITARY SEWER

STANDARD DETAILS



PLANS PREPARED BY :

**RK&K**

RUMMEL, KLEPPER & KAHL, LLP  
 900 RIDGEFIELD DRIVE SUITE 350  
 RALEIGH, NORTH CAROLINA 27609-3960  
 NC LICENSE NO. F-0112 • (919) 878-9560

FOR  
**THE NORTH CAROLINA  
 TURNPIKE AUTHORITY**

8/16/2016 11:42:00 AM C:\Users\rdy\Documents\Utility Construction\U-4751A\U4751A\_UC\_PSH\_DETAILS.dgn

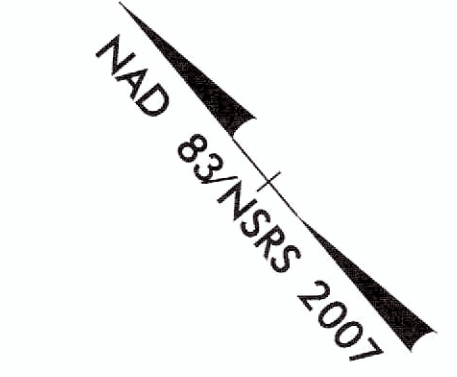
8/12/2016 8:11 Utilities\Rdy\_Ut\Proj\Utility Construction\U-4751A\U4751-ut\_UC30-psh.dgn

STV/Ralph Whitehead Associates, Inc.  
900 West Trade St., Ste. 715  
Charlotte, NC 28202  
NC License Number F-0991



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

UTILITY CONSTRUCTION PLANS



MATCHLINE (SHEET 29)

MATCHLINE STA 18+30 (SHEET 29)

CURVE DATA -Y13-

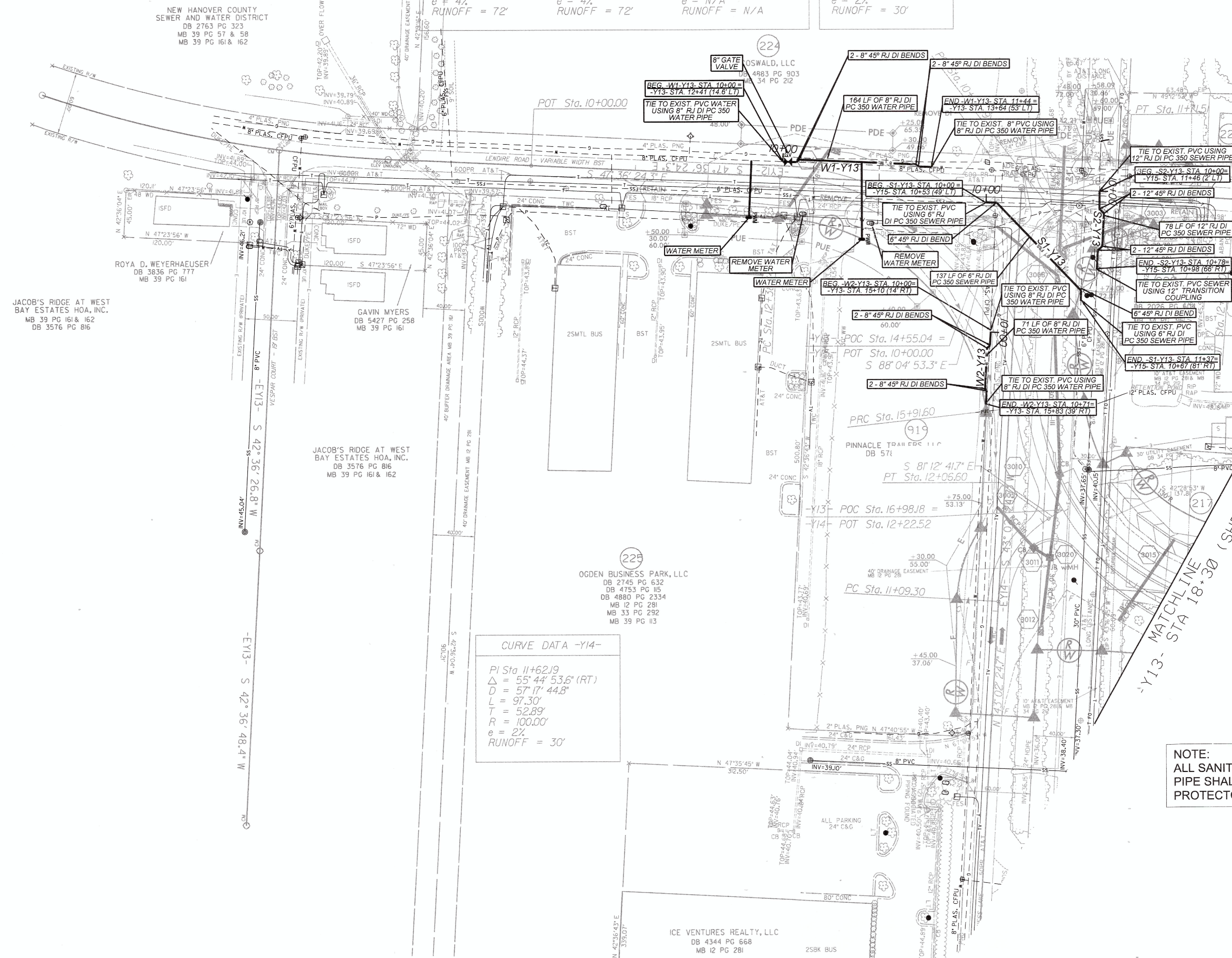
PI Sta 14+51.80 $\Delta = 80^\circ 49' 21.3''$ (RT) D = 22' 55" 05.9" L = 352.66' T = 212.85' R = 250.00' e = 4% RUNOFF = 72'	PI Sta 17+67.74 $\Delta = 70^\circ 20' 06.3''$ (LT) D = 22' 55" 05.9" L = 306.89' T = 176.14' R = 250.00' e = 4% RUNOFF = 72'	PI Sta 19+48.70 $\Delta = 12^\circ 43' 56.6''$ (LT) D = 12' 43" 56.6" L = 100.00' T = 50.21' R = 450.00' e = N/A RUNOFF = N/A
--	--	--

CURVE (224) -Y15-

PI Sta 11+56.71 $\Delta = 41^\circ 58' 13.1''$ (RT) D = 57' 17" 44.8" L = 73.02' T = 38.22' R = 100.00' e = 2% RUNOFF = 30'
--

CURVE DATA -Y14-

PI Sta 11+62.19 $\Delta = 55^\circ 44' 53.6''$ (RT) D = 57' 17" 44.8" L = 97.30' T = 52.89' R = 100.00' e = 2% RUNOFF = 30'
--



NOTE:  
ALL SANITARY SEWER DUCTILE IRON  
PIPE SHALL BE SEWER RATED DIP, 401  
PROTECTO OR EQUAL.

PLANS PREPARED BY :  
**RK&K**  
RUMMEL, KLEPPER & KAHL, LLP  
900 RIDGEFIELD DRIVE SUITE 350  
RALEIGH, NORTH CAROLINA 27609-3960  
NC LICENSE NO. F-0112 • (919) 878-9560