END PROJECT

BEGIN PROJECT

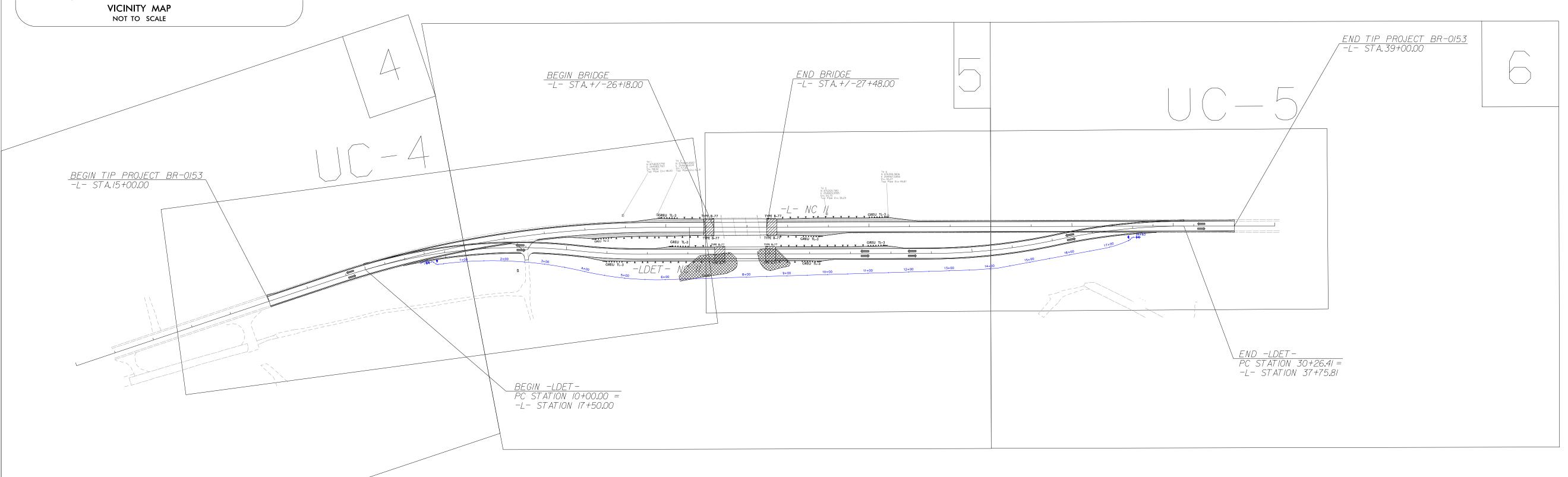
50 50 P STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS T.I.P. NO. SHEET NO. UC-1

# UTILITY CONSTRUCTION PLANS BERTIE COUNTY

LOCATION: BRIDGE 24 ON NC 11 OVER CASHIE RIVER

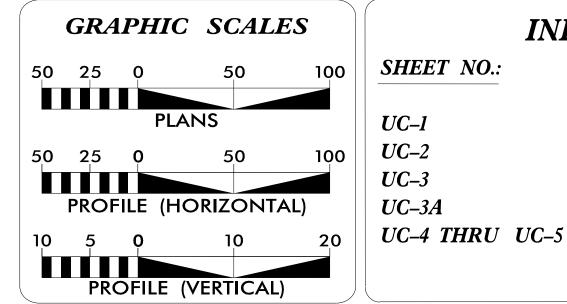
TYPE OF WORK: WATERLINE RELOCATION





ROADWAY IMPROVEMENTS BY BENESCH

DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED



# INDEX OF SHEETS DESCRIPTION:

TITLE SHEET

UTILITY SYMBOLOGY

NOTES

DETAILS

UTILITY CONSTRUCTION & PROFILE SHEETS

WATER AND SEWER
OWNERS ON PROJECT

WATER - BERTIE COUNTY



PREPARED IN THE OFFICE OF

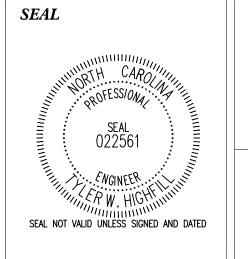
HIGHFILL
INFRASTRUCTURE
ENGINEERING, P.C.

2703 JONES FRANKLIN RD
SUITE 201
CARY, NC 27518
NC LICENSE NO. C-2586

TYLER HIGHFILL, PE CONSULTANT CONTACT #1

JEREMY MCCALL, PE CONSULTANT CONTACT #2

ASHLYNN FRYE, EI CONSULTANT CONTACT #3





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

NABIL HAMDANUTIITEVIN ASAMOAHUTIITANGA SAMPSONUTII

UTILITIES REGIONAL ENGINEER
UTILITIES ENGINEER

TANGA SAMPSONUTILITIES AREA COORDINATORTYRON STALLINGSUTILITIES COORDINATOR

PROJECT REFERENCE NO. SHEET NO. BR-0153 UC-2

UTILITIES PLAN SHEET SYMBOLS

# PROPOSED WATER SYMBOLS

# Water Line (Sized as Shown) 111⁄4 Degree Bend 22½ Degree Bend 45 Degree Bend 90 Degree Bend Cross Reducer Gate Valve Butterfly Valve Tapping Valve Line Stop Line Stop with Bypass Blow Off Fire Hydrant Relocate Fire Hydrant REM FH Remove Fire Hydrant Water Meter Relocate Water Meter Remove Water Meter Water Pump Station RPZ Backflow Preventer DCV Backflow Preventer Relocate RPZ Backflow Preventer Relocate DCV Backflow Preventer PROPOSED SEWER SYMBOLS Gravity Sewer Line (Sized as Shown) Force Main Sewer Line (Sized as Shown) Manhole (Sized per Note)

Sewer Pump Station

REV: 2/1/2012

### PROPOSED MISCELLANOUS UTILITIES SYMBOLS

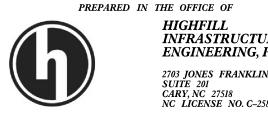
Power Pole ······	Thrust Block
Telephone Pole	Air Release Valve
Joint Use Pole	Utility Vault
Telephone Pedestal	Concrete Pier
Utility Line by Others	Steel Pier
Trenchless Installation	Plan Note
Encasement by Open Cut	Pay Item Note PAY ITEM
Encasement	PATILIVI

## EXISTING UTILITIES SYMBOLS

		4	
Power Pole	•	*Underground Power Line	P
Telephone Pole		*Underground Telephone Cable	Т
Joint Use Pole		*Underground Telephone Conduit	тс-
Utility Pole	•	*Underground Fiber Optics Telephone Cable —	Т F0
Utility Pole with Base		*Underground TV Cable	ТУ
H-Frame Pole	•—•	*Underground Fiber Optics TV Cable	TV FO
Power Transmission Line Tower		*Underground Gas Pipeline	
Water Manhole	<b>⊗</b>	Aboveground Gas Pipeline	A/G Gas
Power Manhole		*Underground Water Line	w ————————————————————————————————————
Telephone Manhole	$\odot$	Aboveground Water Line	A/G Water
Sanitary Sewer Manhole	⊗	*Underground Gravity Sanitary Sewer Line	ss
Hand Hole for Cable	HH	Aboveground Gravity Sanitary Sewer Line	A/G Sanitary Sewer
Power Transformer		*Underground SS Forced Main Line	FSS
Telephone Pedestal	T	Underground Unknown Utility Line	?UTL
CATV Pedestal		SUE Test Hole ····································	
Gas Valve	<b>♦</b>	Water Meter	
Gas Meter	$\Diamond$	Water Valve ••••••	
Located Miscellaneous Utility Object	$\odot$	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	
Designated Utility Line (Type as Shown)	

## UTILITY CONSTRUCTION



HIGHFILL INFRASTRUCTURE ENGINEERING, P.C. 2703 JONES FRANKLIN RD SUITE 201 CARY, NC 27518 NC LICENSE NO. C-2586

PROJECT REFERENCE NO. | SHEET NO. BR-0153 UC-3 DESIGNED BY: JLM ORTH CAROLIN JĿM DRAWN BY: PROFESSIONAL CHECKED BY: AGF PPROVED BY: **TWH** REVISED: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION ENGINEER. KAW HIGH UTILITIES ENGINEERING SEC. PHONE: (919)707-6690 UTILITY CONSTRUCTION FAX: (919)250-4151 PLANS ONLY

#### **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 BERTIE COUNTY. CONTACT RICKY SPIVEY @ 252-794-5350 OR RICKY.SPIVEY@BERTIE.NC.GOV. BERTIE COUNTY HAS HIRED GREEN **ENGINEERING TO ASSIST WITH THE WATER** LINE. CONTACT LANDON YOUNCE @ 252-237-5365 OR L.YOUNCE@GREENENG.COM.
- 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 ENVIRONMENTAL 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. 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 DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO RIVER. WETLANDS, OR BUFFER ZONES.
- 2. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH BERTIE COUNTY ON RECONNECTING WATER SERVICES.
- 3. FITTINGS SHALL BE RESTRAINED WITH GRIP RINGS IN ACCORDANCE WITH BERTIE COUNTY STANDARDS, AND PIPE RESTRAINED WITH SPLIT PIPE RESTRAINT TO THE LENGTH INDICATED ON DETAIL 1/UC-3A. USE RESTRAINT SYSTEM ON ALL BURIED FITTINGS AND VALVES.
- 4. CONTRACTOR SHALL COORDINATE OUTAGES WITH BERTIE COUNTY AND OWNER.
- 5. CONTRACTOR SHALL COORDINATE WITH BERTIE COUNTY TO MINIMIZE INTERRUPTING SERVICE TO CUSTOMERS.
- 6. REPAIR ANY DISTURBED PAVEMENT TO MATCH EXISTING PAVEMENT TYPE UNLESS OTHERWISE NOTED.

### UTILITY CONSTRUCTION DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

- 7. TRENCHES SHALL BE CLOSED DURING NON-WORK HOURS EXCEPT WHERE **COVERING WITH STEEL PLATING IS** SPECIFICALLY APPROVED BY THE ENGINEER.
- 8. PROVIDE AND MAINTAIN ACCESS TO FIRE HYDRANTS AND CONTROL VALVES FREE OF OBSTRUCTION.
- 9. EACH HORIZONTAL DIRECTIONAL DRILL MUST COMPRISE OF 12-INCH DIPS DR9 250 PSI HDPE PIPE OR 10-INCH DIPS DR18 FUSIBLE PVC.
- 10. 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.

# PROJECT TYPICAL DETAILS

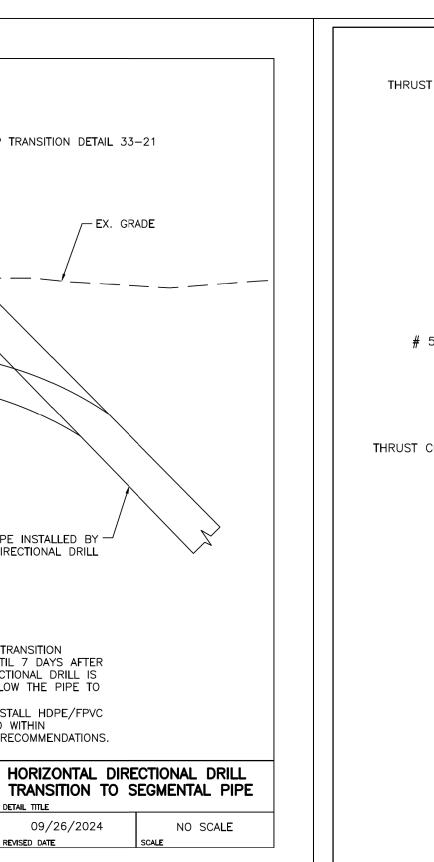


HIGHFILL INFRASTRUCTURE ENGINEERING, P.C. 2703 JONES FRANKLIN RD SUITE 201 CARY, NC 27518 NC LICENSE NO. C-2586

PROJECT REFERENCE NO. SHEET NO. BR-0153 UC-3A DESIGNED BY: JLM DRAWN BY: PROFESSIONA; CHECKED BY: APPROVED BY: TWH REVISED: NORTH CAROLINA DEPARTMENT OF . ENGINEER.. SAW. HIGH TRANSPORTATION SEAL NOT VALID UNLESS SIGNED AND DATE UTILITIES ENGINEERING SEC. PHONE: (919)707-6690 UTILITY CONSTRUCTION FAX: (919)250-4151 PLANS ONLY

#### UTILITY CONSTRUCTION

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- SEE HDPE TO DIP TRANSITION DETAIL 33-21

HDPE/FPVC PIPE INSTALLED BY -

HORIZONTAL DIRECTIONAL DRILL

DO NOT INSTALL TRANSITION
CONNECTIONS UNTIL 7 DAYS AFTER

HORIZONTAL DIRECTIONAL DRILL IS COMPLETE TO ALLOW THE PIPE TO

EXCAVATE AND INSTALL HDPE/FPVC

MANUFACTURERS RECOMMENDATIONS.

PER PROFILE AND WITHIN

33-20

EX. GRADE

PER PLANS

FOR HDPE, MIN. BENDING RADIUS: —/ R=50 X PIPE OUTSIDE DIA. FOR FPVC PIPE, SEE TABLE BELOW

FPVC MIN. BENDING RADIUS

DIPS

4 100 94

6 144 138

8 189 180

10 231 224

12 275 266

14 319 292

18 406 375

20 450 417

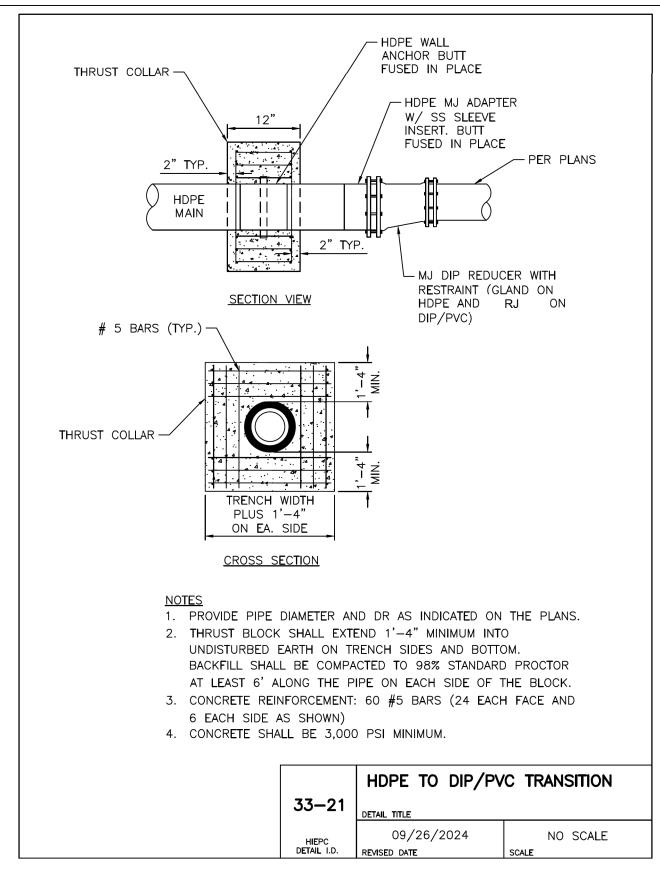
24 538 500

16 363

30 667

36 798

SIZE (IN.)



PIPE DIA.	PIPE TYPE	ANGLE	RJ LENGTH (FT)
10"	DIP	90°	59
10"	DIP	<b>4</b> 5°	25
10"	DIP	22.5°	12
10"	DIP	11.25°	6

PIPE DIA.	PIPE TYPE	RJ LENGTH (FT)
6"	DIP	83
8"	DIP	107
10"	DIP	129
12"	DIP	150

PIPE DIA.	PIPE TYPE	RJ LENGTH (FT)
10"x16"	DIP	173
10'x12"	DIP	125
10"x8"	DIP	68

#### VERTICAL OFFSETS

PIPE DIA.	PIPE TYPE	ANGLE	rj length Downward/Upward (FT)
8"	DIP	11.25°	15 / 4
8"	DIP	22.5°	31 / 8
8"	DIP	<b>4</b> 5°	63 / 16
10"	DIP	11.25°	16 / 4
10"	DIP	22.5°	44 / 11
10"	DIP	<b>4</b> 5°	102 / 37
12"	DIP	11.25°	22 / 6
12"	DIP	22.5°	44 / 11
12"	DIP	<b>4</b> 5°	90/ 23

- 1. RJ LENGTHS ARE BASED ON 200 PSI, TYPE 3 TRENCH AND A SOIL TYPE SM (SILTY SANDS). THE CONTRACTOR SHALL USE RJ LENGTH INDICATED ON PLANS SINCE CERTAIN BENDS WITH DEEPER BURY DEPTH AND NOTIFY ENGINEER IF CONDITIONS DIFFER.
- 2. TEES SHALL BE RESTRAINED AS INDICATED ON PLANS. 3. ASSUMED BURY DEPTH OF 4 FT. OBTAIN GUIDANCE FROM ENGINEER IF ACTUAL BURY
- 4. USE DEAD ENDS RESTRAINT LENGTHS FOR VALVES AND BRANCH OF PLUGS.
- 5. WHERE FITTINGS AND VALVES ARE IN CLOSE PROXIMITY AND RJ LENGTHS REQUIRED OVERLAP, DETERMINE THE RJ LENGTH REQUIRED FROM EACH AND USE THE HIGHEST (MOST RESTRICTIVE) CONDITION.
- 6. WHERE REQUIRED RJ LENGTH PASSES THROUGH A CASING PIPE, THE CARRIER PIPE WITHIN THE CASING PIPE DOES NOT COUNT TOWARD THE MINIMUM REQUIRED RJ LENGTH REQUIRED. 7. RJ LENGTHS SHALL BE INSTALLED IN EACH DIRECTION OF FITTINGS AND VALVES.
  - 1 DETAIL REQUIRED RJ LENGTHS

