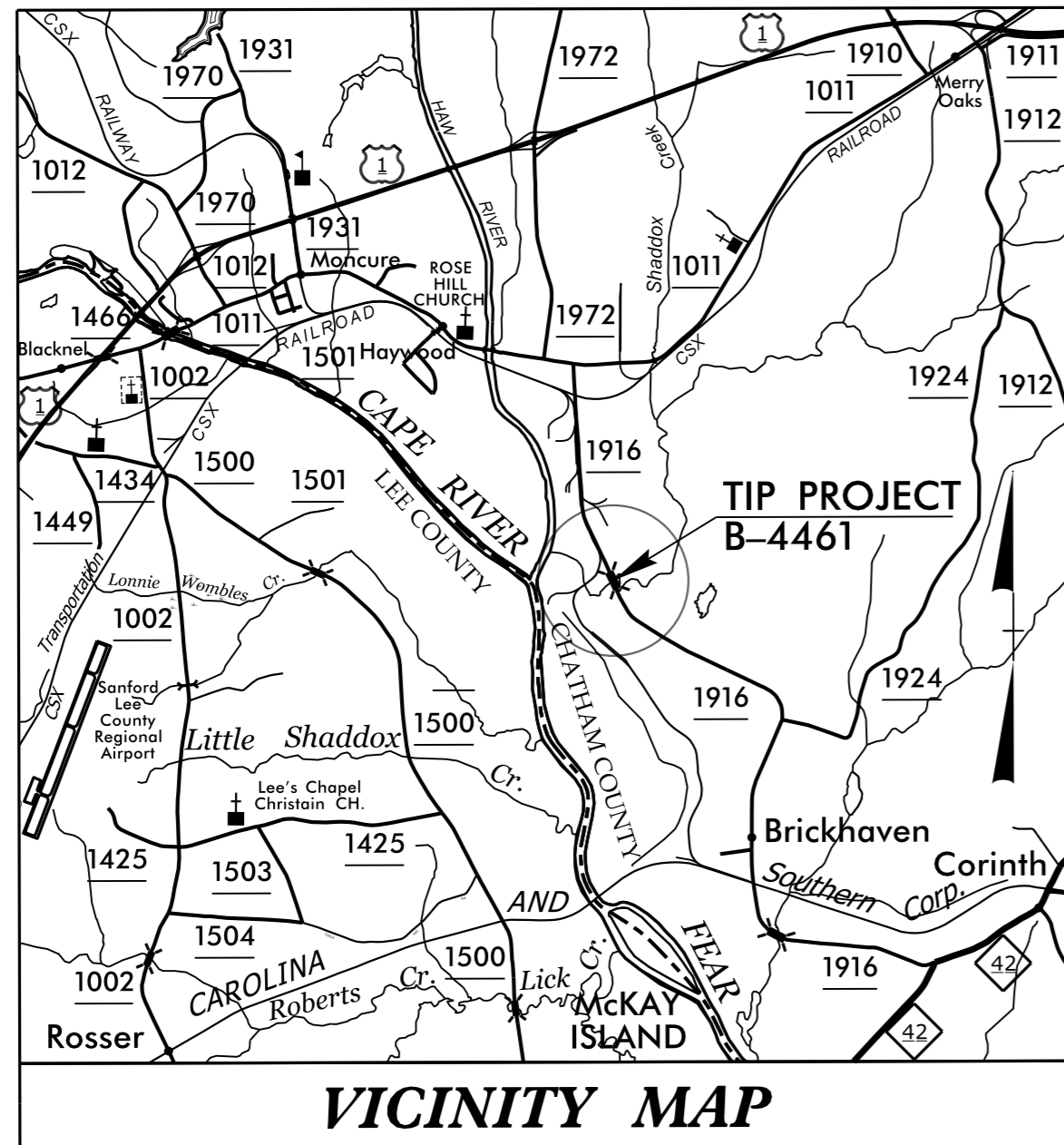


**This electronic collection of documents is provided  
for the convenience of the user  
and is Not a Certified Document –**

**The documents contained herein were originally issued  
and sealed by the individuals whose names and license  
numbers appear on each page, on the dates appearing  
with their signature on that page.**

**This file or an individual page  
shall not be considered a certified document.**

**TIP PROJECT: B-4461**

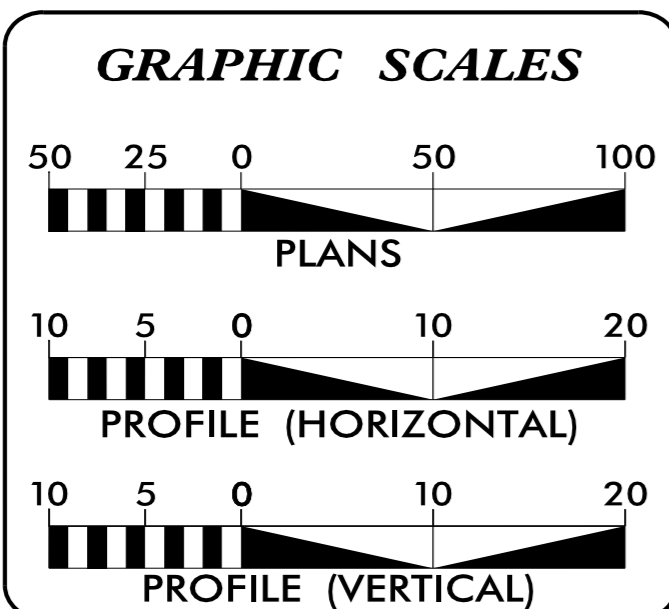
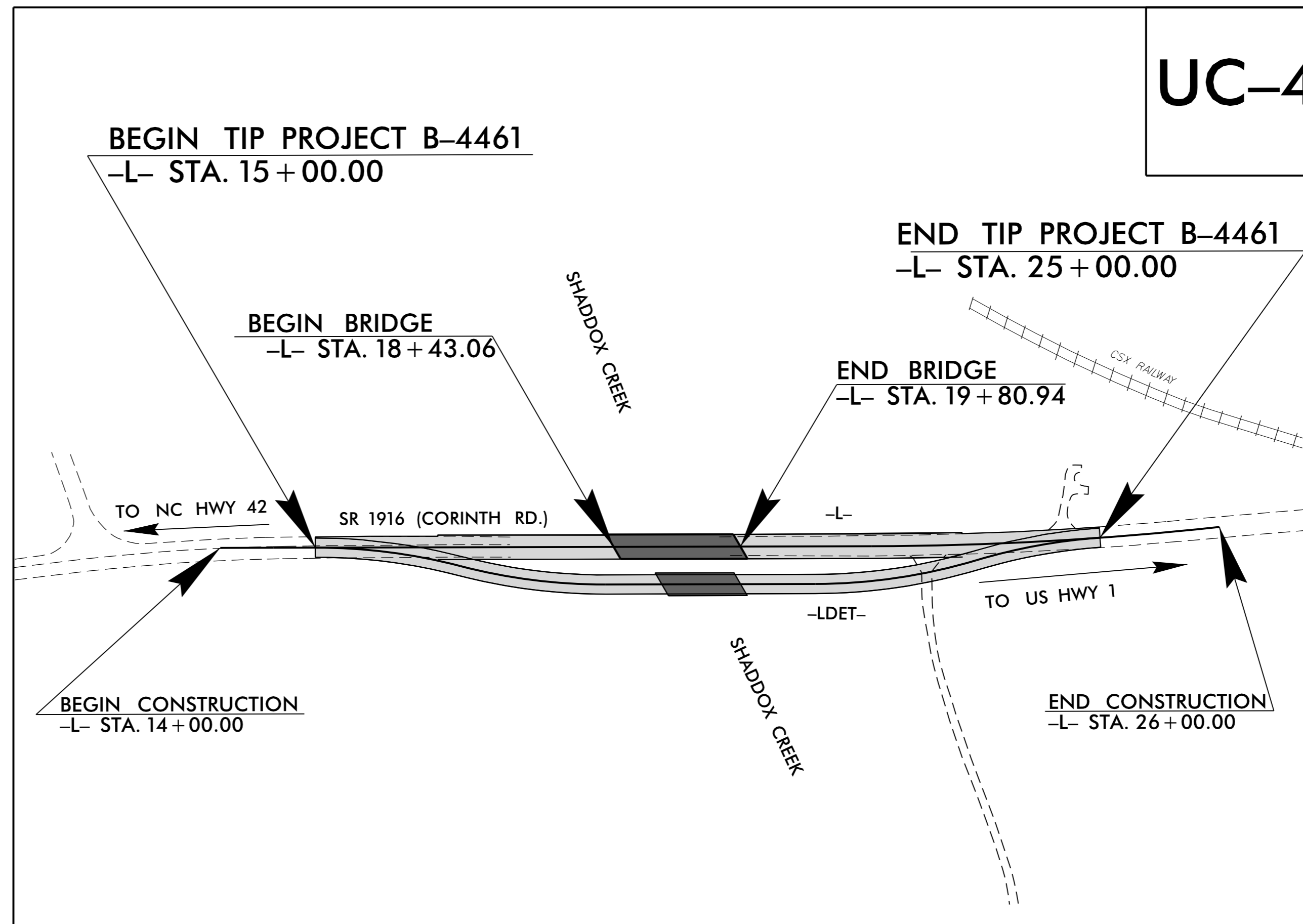
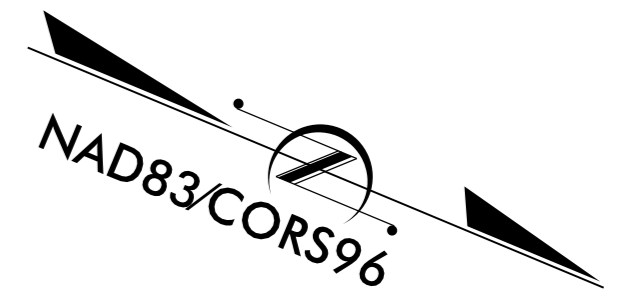


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**UTILITY CONSTRUCTION PLANS  
CHATHAM COUNTY**

**LOCATION: BRIDGE 10 OVER SHADDOX CREEK ON SR 1916  
TYPE OF WORK: UTILITY CONSTRUCTION**

|                             |                          |
|-----------------------------|--------------------------|
| T.I.P. NO.<br><b>B-4461</b> | SHEET NO.<br><b>UC-1</b> |
|-----------------------------|--------------------------|



| SHEET NO.      | DESCRIPTION                 |
|----------------|-----------------------------|
| UC-1           | TITLE SHEET                 |
| UC-1A          | UTILITY SYMBOLOGY           |
| UC-2           | NOTES                       |
| UC-3           | DETAILS                     |
| UC-4           | UTILITY CONSTRUCTION SHEETS |
| UC-5 THUR UC-6 | PROFILE SHEETS              |

**WATER AND SEWER OWNERS ON PROJECT**

(1) WATER - CHATHAM COUNTY UTILITIES



PREPARED IN THE OFFICE OF:  
**DIVISION OF HIGHWAYS  
UTILITIES UNIT  
UTILITIES ENGINEERING**

1555 MAIL SERVICES CENTER  
RALEIGH NC 27699-1555  
PHONE (919) 707-6690  
FAX (919) 250-4151

**Roger Worthington, P.E.** UTILITIES SECTION ENGINEER

**Steve McKee, P.E.** UTILITIES SQUAD LEADER PROJECT ENGINEER

**John Nigro, P.E.** UTILITIES PROJECT DESIGN ENGINEER

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# UTILITIES PLAN SHEET SYMBOLS

## PROPOSED WATER SYMBOLS

|                                 |        |
|---------------------------------|--------|
| Water Line (Sized as Shown)     |        |
| 11¼ Degree Bend                 |        |
| 22½ Degree Bend                 |        |
| 45 Degree Bend                  |        |
| 90 Degree Bend                  |        |
| Plug                            |        |
| Tee                             |        |
| Cross                           |        |
| Reducer                         |        |
| Gate Valve                      |        |
| Butterfly Valve                 |        |
| Tapping Valve                   |        |
| Line Stop                       |        |
| Line Stop with Bypass           |        |
| Blow Off                        |        |
| Fire Hydrant                    |        |
| Relocate Fire Hydrant           |        |
| Remove Fire Hydrant             | REM FH |
| Water Meter                     |        |
| Relocate Water Meter            |        |
| Remove Water Meter              | REM WM |
| 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                     |  |

## PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

|  |  |
|--|--|
| Power Pole                             |  |
| Telephone Pole                         |  |
| Joint Use Pole                         |  |
| Telephone Pedestal                     |  |
| Utility Line by Others (Type as Shown) |  |
| Trenchless Installation                |  |
| Encasement by Open Cut                 |  |
| Encasement                             |  |

|                   |  |
|-------------------|--|
| Thrust Block      |  |
| Air Release Valve |  |
| Utility Vault     |  |
| Concrete Pier     |  |
| Steel Pier        |  |
| Plan Note         |  |
| Pay Item Note     |  |

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                  |  |
| Power Manhole                          |        | *Underground Water Line                   |  |
| Telephone Manhole                      |        | Aboveground Water Line                    |  |
| Sanitary Sewer Manhole                 |        | *Underground Gravity Sanitary Sewer Line  |  |
| Hand Hole for Cable                    |        | Aboveground Gravity Sanitary Sewer Line   |  |
| 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)



# UTILITY CONSTRUCTION

## GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NCDOT "STANDARD SPECIFICATIONS FOR ROAD AND STRUCTURES" DATE JANUARY 2012 AND ORANGE WATER AND SEWER AUTHORITY STANDARDS AND SPECIFICATIONS DATED AUGUST 2003 OR LATEST REVISED VERSION.
2. THE EXISTING UTILITIES BELONG TO CHATHAM COUNTY UTILITIES AND WATER DIVISION . CONTACT PERSON IS MR. LEONARD McBRYDE III, PE AT 919-542-8238.
3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES, DIVISION OF ENVIRONMENTAL HEALTH. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, DIVISION OF WATER QUALITY. 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 OPPROTUNITY 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 VALVES AND BENDS SHALL BE RESTRAINED TO PIPE AND HAVE AT LEAST ONE (1) FULL LENGTH OF PIPE INSTALLED WHERE FEASIBLE. ALL TEES SHALL HAVE A FULL LENGTH OF PIPE INSTALLED OUT AT LEAST TWO (2) LEGS WHERE FEASIBLE.

## PROJECT SPECIFIC NOTES:

1. WATER LINE SHALL BE 8" DUCTILE IRON RESTRAINED JOINT PIPE PC 350.
2. WATER LINE TIE-IN NEEDS TO BE COORDINATED WITH OWNER AND RESIDENT ENGINEER FOR THE TIE-INS MAY BE REQUIRED ON A WEEKEND OR NIGHT.
3. COST OF VALVE MARKER POST SHALL BE INCIDENTAL TO THE COST OF THE VALVE.
4. CONTRACTOR SHALL PROVIDE HORIZONTAL AND VERTICAL LOCATIONS BASED ON PROJECT COORDINATES OF ALL TIE-IN POINTS, EVERY 50 FEET ALONG WATER LINES, AT ALL VALVES, AND AT ALL HORIZONTAL AND VERTICAL FITTINGS.

Chain WL-1 contains:

Beginning chain WL-1 description

|   |            |                |                    |         |
|---|------------|----------------|--------------------|---------|
| Point WAT91   | N          | 671,833.6021 E | 1,987,030.0650 Sta | 0+00.00 |
| Course from WAT91 to WAT92 N 20° 52' 14.42" W Dist 1.0000   |            |                |                    |         |
| Point WAT92   | 45° BEND N | 671,834.5365 E | 1,987,029.7088 Sta | 0+01.00 |
| Course from WAT92 to WAT93 N 24° 07' 45.58" E Dist 6.0225   |            |                |                    |         |
| Point WAT93   | 45° BEND N | 671,840.0327 E | 1,987,032.1707 Sta | 0+07.02 |
| Course from WAT93 to WAT94 N 20° 52' 14.42" W Dist 331.5290 |            |                |                    |         |
| Point WAT94   | 45° BEND N | 672,149.8092 E | 1,986,914.0603 Sta | 3+38.55 |
| Course from WAT94 to WAT95 N 65° 52' 14.42" W Dist 63.2469  |            |                |                    |         |
| Point WAT95   | 45° BEND N | 672,175.6643 E | 1,986,856.3396 Sta | 4+01.80 |
| Course from WAT95 to WAT96 N 21° 46' 04.08" W Dist 1.0000   |            |                |                    |         |
| Point WAT96   | N          | 672,176.5930 E | 1,986,855.9688 Sta | 4+02.80 |

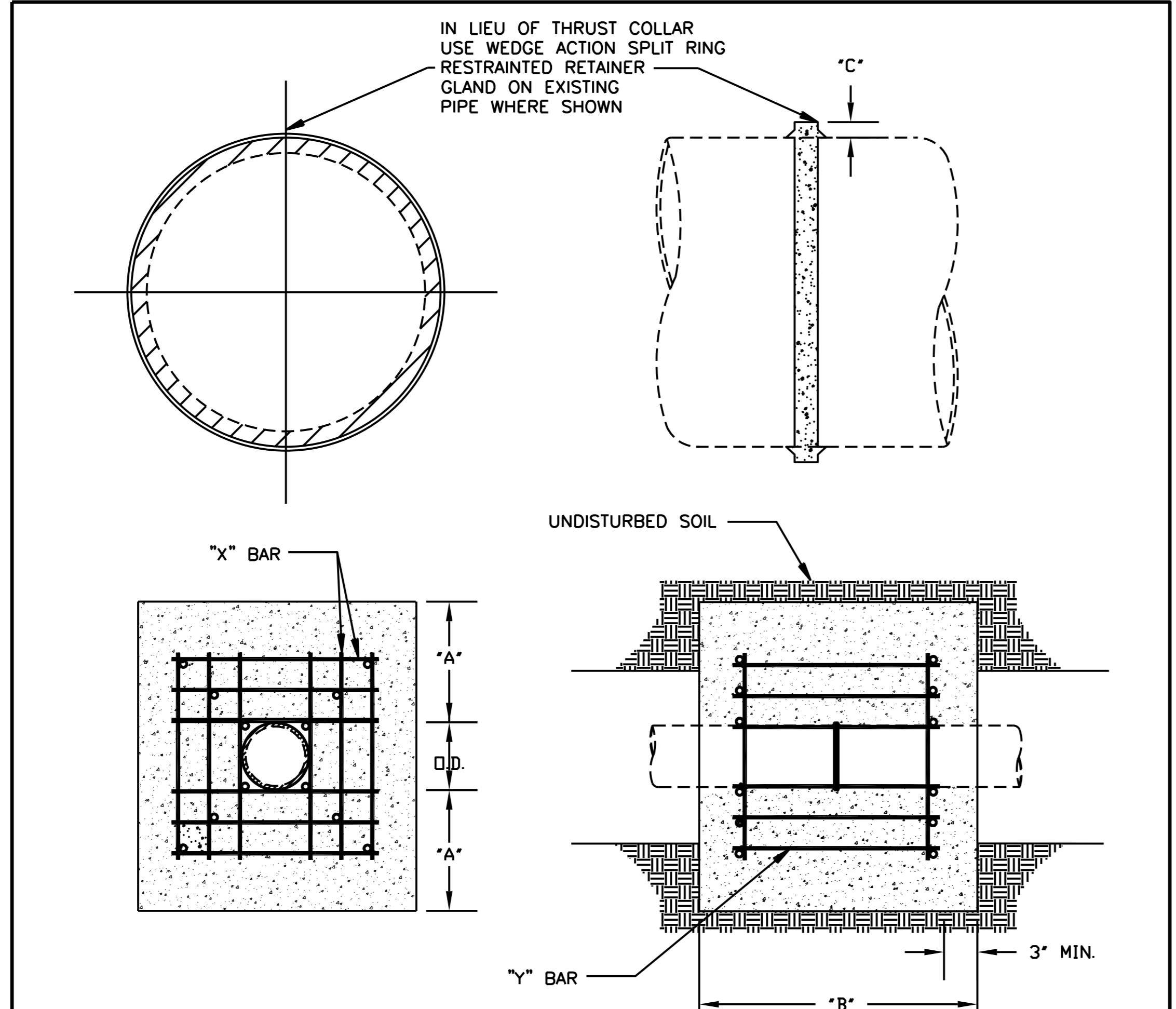
Ending chain WL-1 description

| PROJECT REFERENCE NO.   | SHEET NO. |
|---|-----------|
| B-4461  | UC-2      |
| DESIGNED BY: JAN  |           |
| DRAWN BY: JAN   |           |
| CHECKED BY: JSM   |           |
| APPROVED BY: JSM  |           |
| REVISED:  |           |
| NORTH CAROLINA DEPARTMENT OF TRANSPORTATION<br>UTILITIES ENGINEERING SEC.<br>PHONE: (919) 707-6690<br>FAX: (919) 250-4151 |           |
| UTILITY CONSTRUCTION PLANS ONLY   |           |

**UTILITY CONSTRUCTION**



## UTILITY CONSTRUCTION



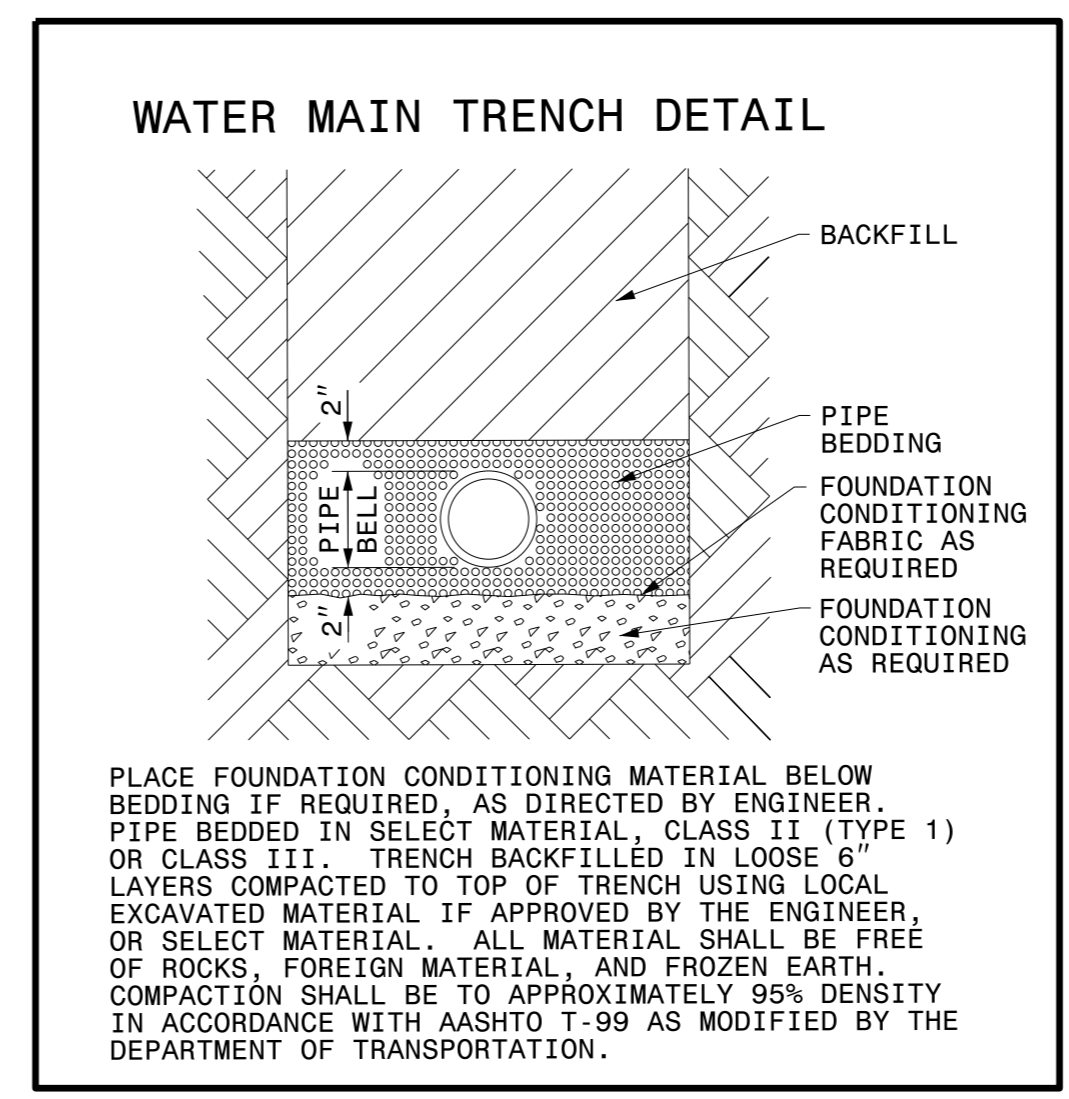
- NOTES:
1. CONCRETE SHALL BE CLASS B AND TRANSIT MIXED.
  2. REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER.
  3. THRUST COLLAR MUST BE FACTORY WELDED ON BOTH SIDES ALONG BOTH EDGES OF COLLAR AROUND CIRCUMFERENCE.

### REINFORCING REQUIREMENTS

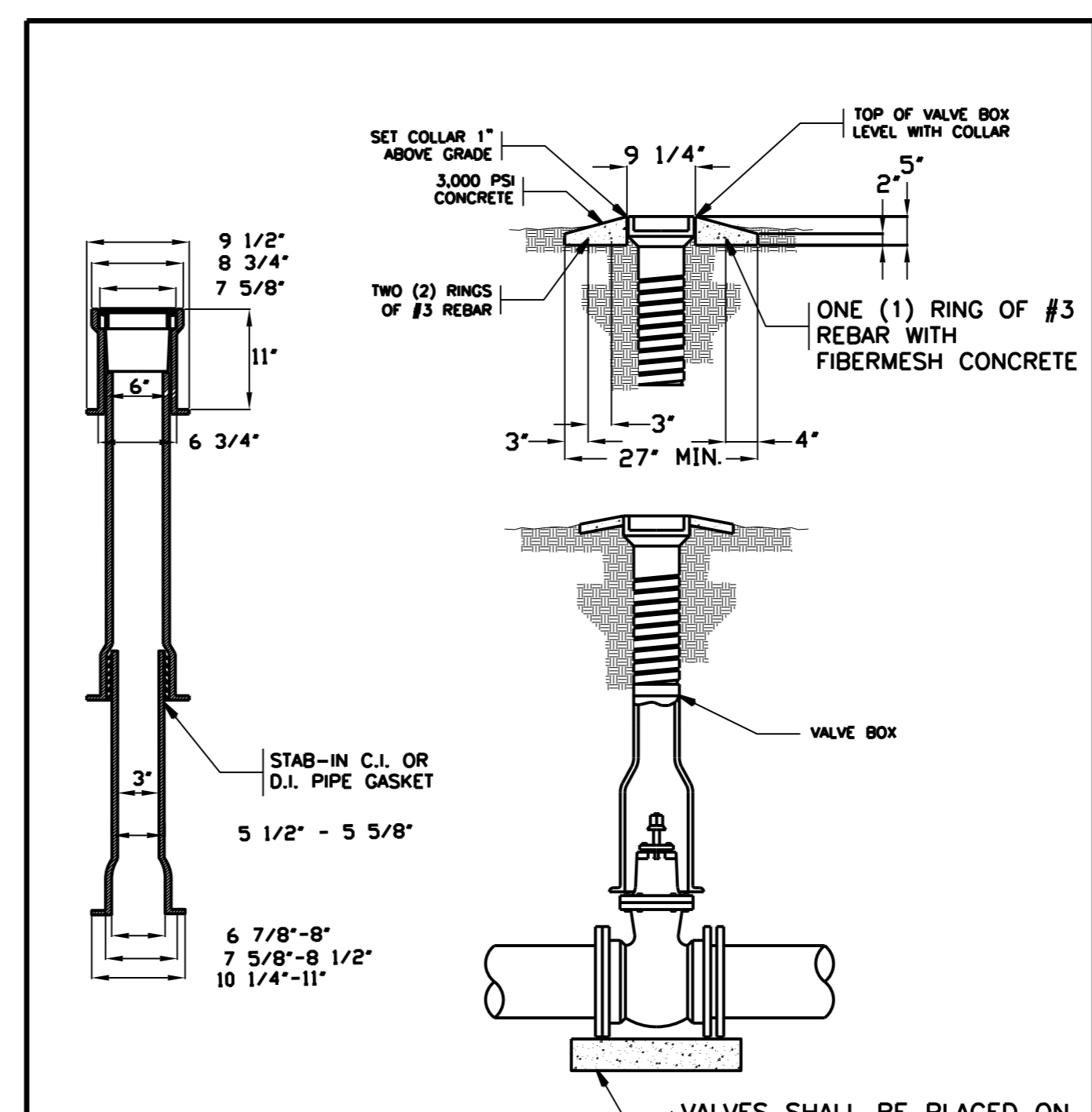
| I.D. PIPE     | REBAR SIZE | "X" BAR LENGTH   | "X" BAR WEIGHT | "Y" BAR LENGTH | "Y" BAR WEIGHT | NO. REQUIRED |
|---------------|------------|------------------|----------------|----------------|----------------|--------------|
| 6" - 36"      | #5         | 2'-2"+ O.D. PIPE | 1.043 LBS/FT   | 1'-1"          | 1.1 LBS. EACH  | X-24, Y-12   |
| 48" & GREATER | #6         | 3'-0"+ O.D. PIPE | 1.502 LBS/FT   | 1'-3"          | 1.9 LBS. EACH  | X-24, Y-12   |

### THRUST COLLAR AND THRUST SCHEDULE

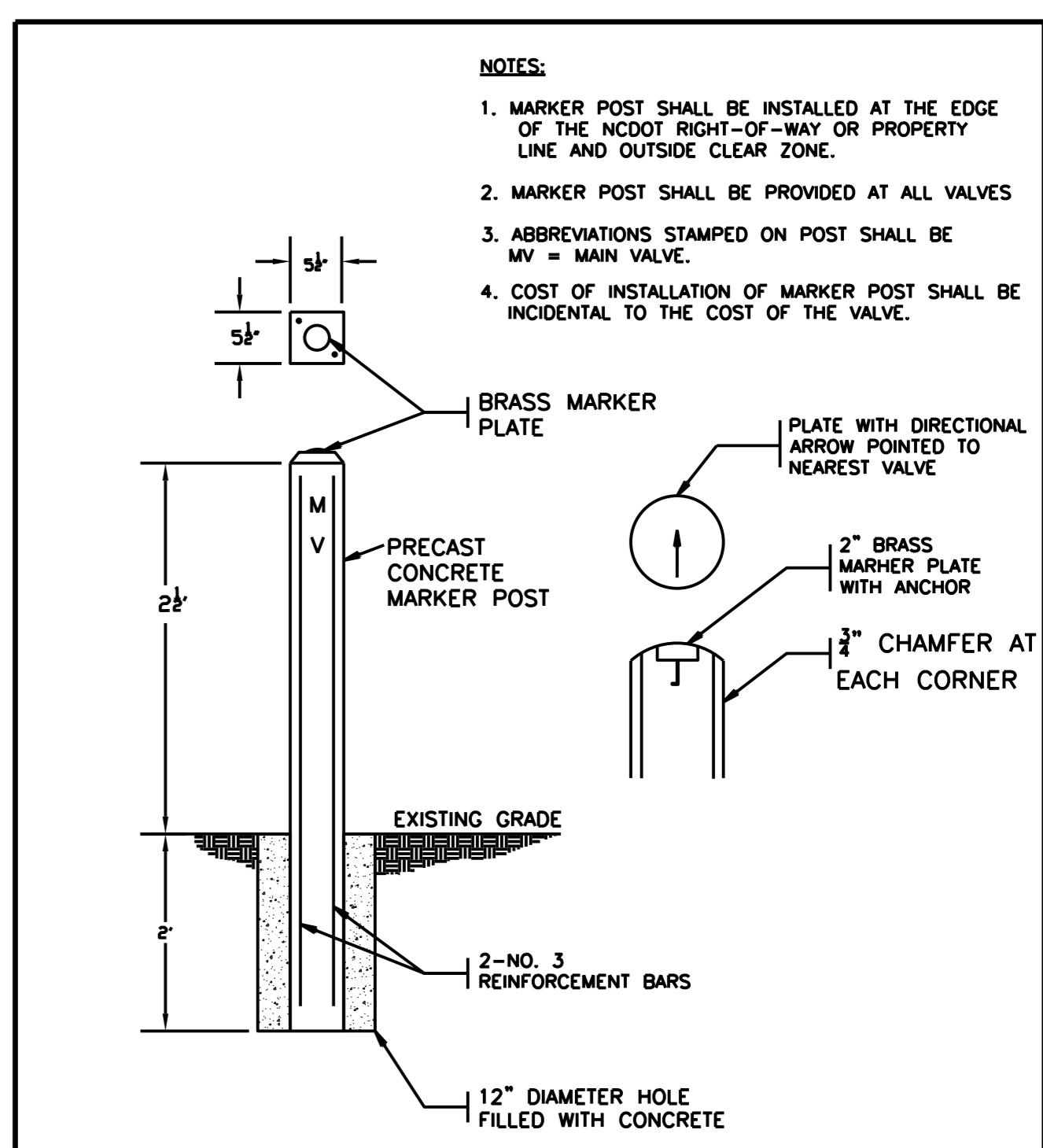
| I.D. PIPE     | "A"   | "B"   | "C-6"-16" | 20"-24" | 30"-36" | 48" |
|---------------|-------|-------|-----------|---------|---------|-----|
| 6" - 36"      | 1'-4" | 1'-7" | 2"        | 3"      | 4"      |     |
| 48" & GREATER | 1'-8" | 1'-9" |           |         |         | 6"  |



| NOMINAL PIPE SIZE (INCHES) | TRENCH WIDTH (INCHES) |
|----------------------------|-----------------------|
| 4                          | 28                    |
| 6                          | 30                    |
| 8                          | 32                    |
| 10                         | 34                    |
| 12                         | 36                    |
| 14                         | 38                    |
| 16                         | 40                    |
| 18                         | 42                    |



- NOTES:
- 1) VALVE BOX NOT TO CONTACT WATER MAIN
  - 2) ALL TRAFFIC CASTINGS MUST BE CLASS 35 OR GREATER.
  - 3) TOTAL VALVE BOX WEIGHT: MINIMUM OF 85 LBS.
  - 4) NOT TO SCALE



- NOTES:
1. MARKER POST SHALL BE INSTALLED AT THE EDGE OF THE NCDOT RIGHT-OF-WAY OR PROPERTY LINE AND OUTSIDE CLEAR ZONE.
  2. MARKER POST SHALL BE PROVIDED AT ALL VALVES
  3. ABBREVIATIONS STAMPED ON POST SHALL BE MV = MAIN VALVE.
  4. COST OF INSTALLATION OF MARKER POST SHALL BE INCIDENTAL TO THE COST OF THE VALVE.

UNDERGROUND SERVICE ALERT  
  
 CALL TOLL FREE  
**811**  
 TWO WORKING DAYS BEFORE YOU DIG

**CONCRETE THRUST COLLAR FOR WATER MAINS**

CHATHAM COUNTY  
 PUBLIC UTILITIES & WATER DIVISION  
 P.O. BOX 910  
 PITTSBORO, NC 27312  
 964 EAST STREET, SUITE 205  
 PITTSBORO, NC 27312  
 (919) 852-8270 (BUS)  
 (919) 852-8282 (FAX)

UNDERGROUND SERVICE ALERT  
  
 CALL TOLL FREE  
**811**  
 TWO WORKING DAYS BEFORE YOU DIG

**VALVE BOX AND COLLAR**

CHATHAM COUNTY  
 PUBLIC UTILITIES & WATER DIVISION  
 P.O. BOX 910  
 PITTSBORO, NC 27312  
 964 EAST STREET, SUITE 205  
 PITTSBORO, NC 27312  
 (919) 852-8270 (BUS)  
 (919) 852-8282 (FAX)

UNDERGROUND SERVICE ALERT  
  
 CALL TOLL FREE  
**811**  
 TWO WORKING DAYS BEFORE YOU DIG

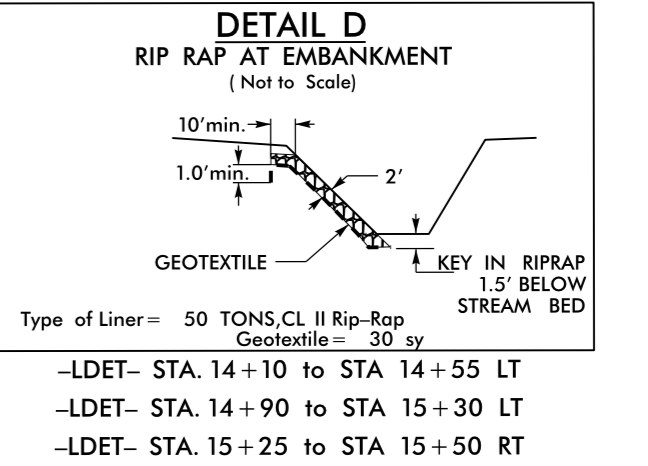
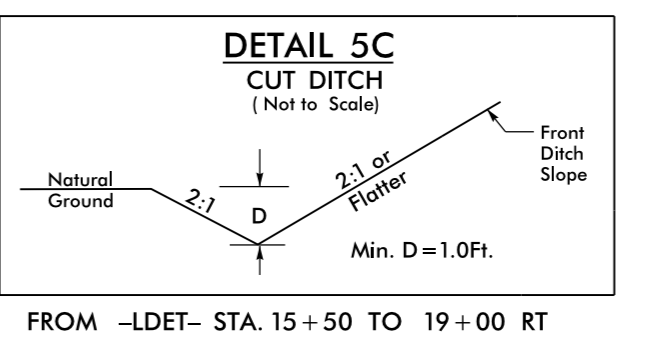
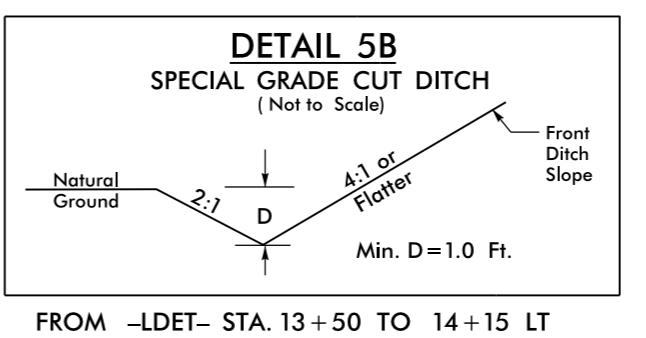
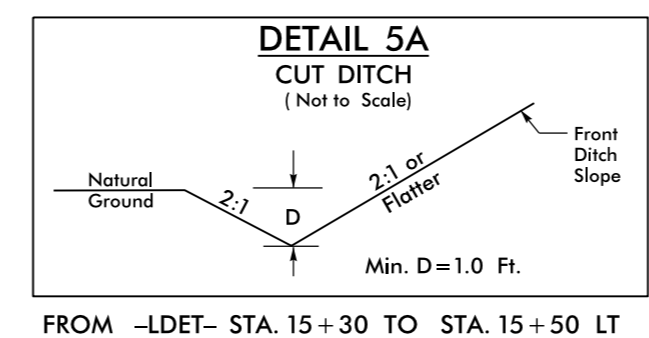
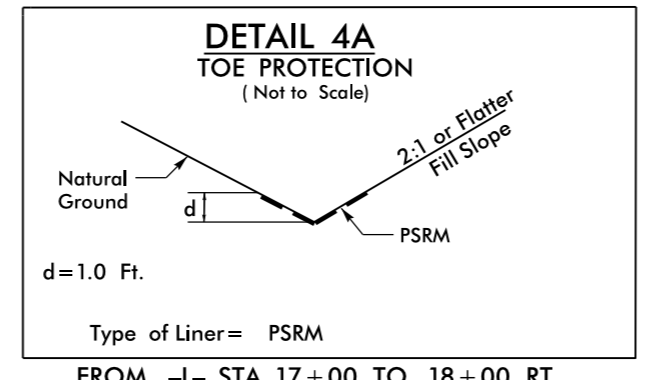
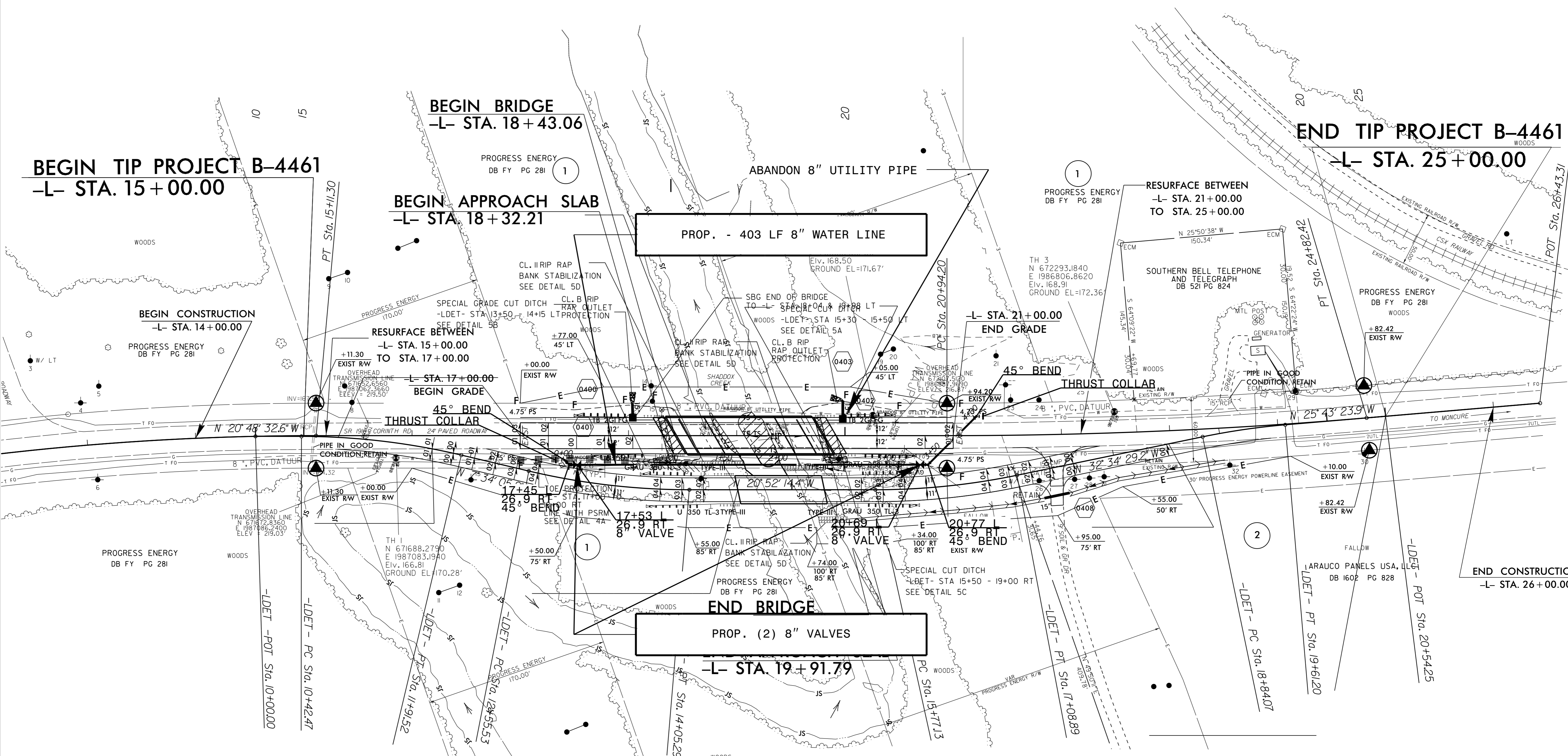
**VALVE MARKER POST**

CHATHAM COUNTY  
 PUBLIC UTILITIES & WATER DIVISION  
 P.O. BOX 910  
 PITTSBORO, NC 27312  
 964 EAST STREET, SUITE 205  
 PITTSBORO, NC 27312  
 (919) 852-8270 (BUS)  
 (919) 852-8282 (FAX)



|   |           |
|---|-----------|
| PROJECT REFERENCE NO.   | SHEET NO. |
| B-4461  | UC-4      |
| DESIGNED BY: JAN  |           |
| DRAWN BY: JAN   |           |
| CHECKED BY: JSM   |           |
| APPROVED BY: JSM  |           |
| REVISED:  |           |
| NORTH CAROLINA<br>DEPARTMENT OF<br>TRANSPORTATION<br>UTILITIES ENGINEERING SEC.<br>PHONE: (919) 707-6690<br>FAX: (919) 250-4151 |           |
| UTILITY CONSTRUCTION PLANS ONLY   |           |

UTILITY CONSTRUCTION





PIPE TO BE 8" RESTRAINED JOINT PC 350

UTILITY CONSTRUCTION

STA 0+01 45° HOR. BEND  
 STA 0+07 45° HOR. BEND  
 STA 0+80 45° VERT. BEND  
 STA 0+84.7 45° VERT. BEND  
 STA 1+46.4 22 1/2° VERT. BEND  
 STA 1+75.9 22 1/2° VERT. BEND  
 STA 1+98.2 22 1/2° VERT. BEND

ALL ELEVATIONS TO C/L OF PIPE

# 8" WATER LINE

|              |              |              |              |              |              |              |              |              |              |              |        |
|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------|
| 168.40       | 168.76       | 168.63       | 168.35       | 168.16       | 163.40       | 163.35       | 163.27       | 157.55       | 150.96       | 151.72       | 160.00 |
| 0+00         |              | 0+50         |              | 1+00         |              | 1+50         |              | 2+00         |              |              |        |
| VPI #1       | VPI #2       | VPI #3       | VPI #4       | VPI #5       | VPI #6       | VPI #7       | VPI #8       | VPI #9       | VPI #10      | VPI #11      |        |
| 0+00.00      | 0+20.00      | 0+40.00      | 0+60.00      | 0+80.00      | 0+84.70      | 1+05.90      | 1+46.42      | 1+63.48      | 1+75.89      | 1+98.16      |        |
| ELEV. 168.40 | ELEV. 168.76 | ELEV. 168.63 | ELEV. 168.35 | ELEV. 168.16 | ELEV. 163.40 | ELEV. 163.40 | ELEV. 163.24 | ELEV. 156.10 | ELEV. 150.96 | ELEV. 150.96 |        |

0

1+00

2+00

250  
240  
230  
220  
210  
200  
190  
180  
170  
160  
150  
140  
130  
120  
110  
100  
90  
80  
70  
60  
50

250  
240  
230  
220  
210  
200  
190  
180  
170  
160  
150  
140  
130  
120  
110  
100  
90  
80  
70  
60  
50

|  |           |
|--|-----------|
| PROJECT REFERENCE NO.  | SHEET NO. |
| B-4461   | UC-6      |
| DESIGNED BY: JAN   |           |
| DRAWN BY: JAN  |           |
| CHECKED BY: JSM  |           |
| APPROVED BY: JSM   |           |
| REVISED:   |           |
| NORTH CAROLINA<br>DEPARTMENT OF<br>TRANSPORTATION<br>1/13/2016<br>UTILITIES ENGINEERING SEC.<br>PHONE: (919) 707-6690<br>FAX: (919) 250-4151 |           |

UTILITY CONSTRUCTION

