

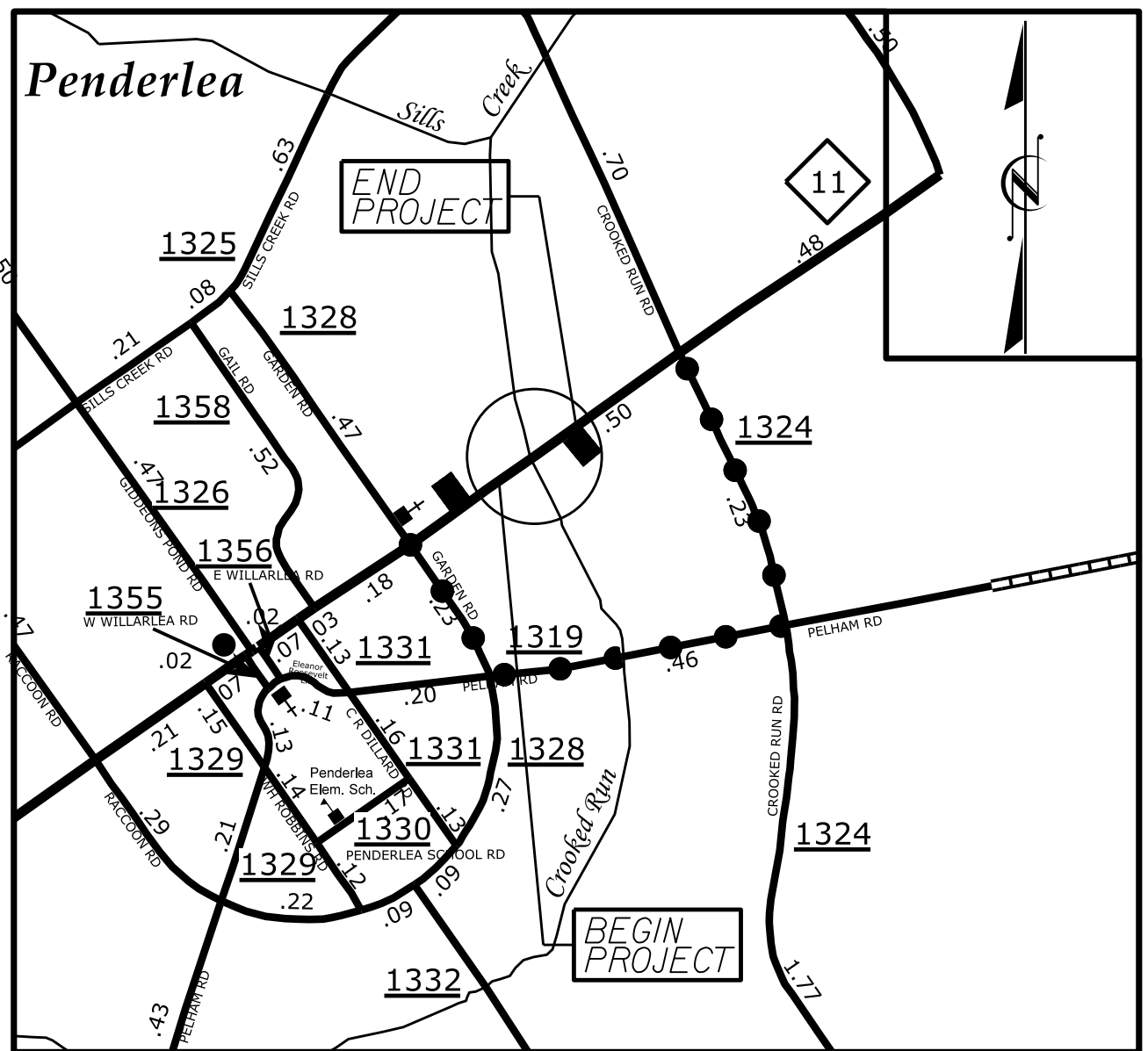
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T.I.P. NO.	SHEET NO.
B-5644	UC-1

TIP PROJECT: B-5644



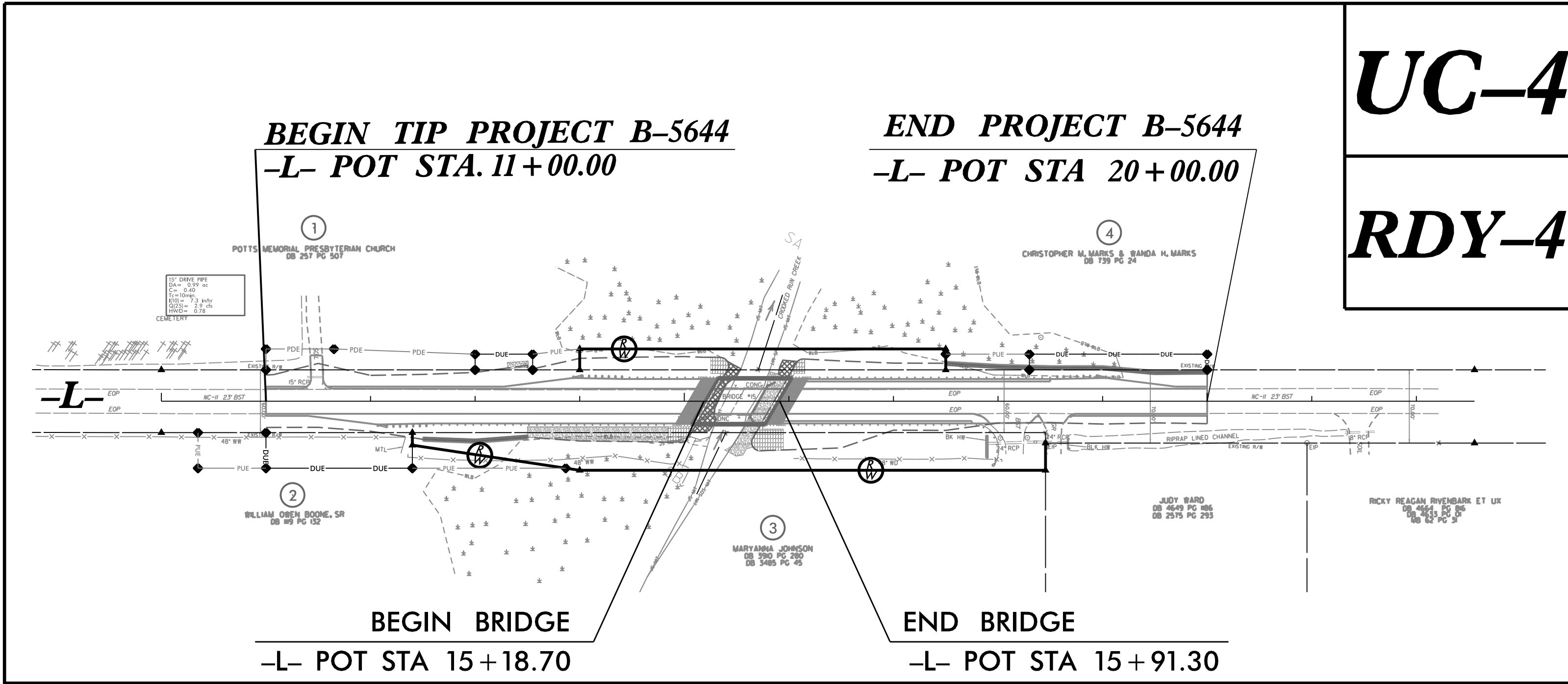
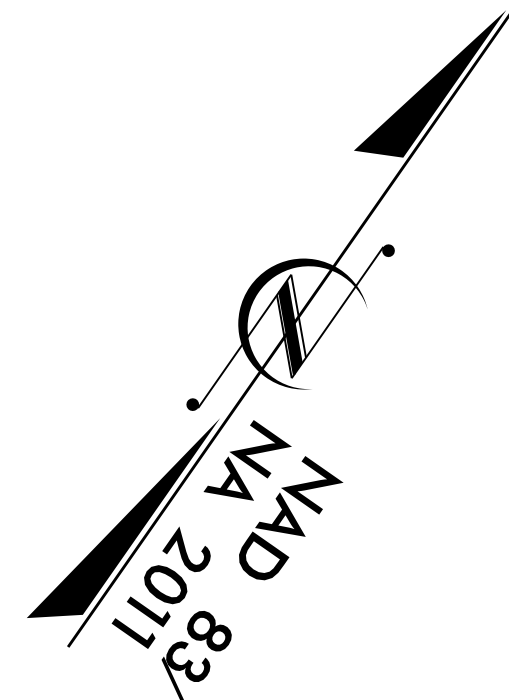
VICINITY MAP

..... DETOUR ROUTE N.T.S.

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS  
PENDER COUNTY

LOCATION: BRIDGE NO. 15 OVER CROOKED RUN ON NC 11  
TYPE OF WORK: WATER LINE RELOCATION



UC-4

RDY-4

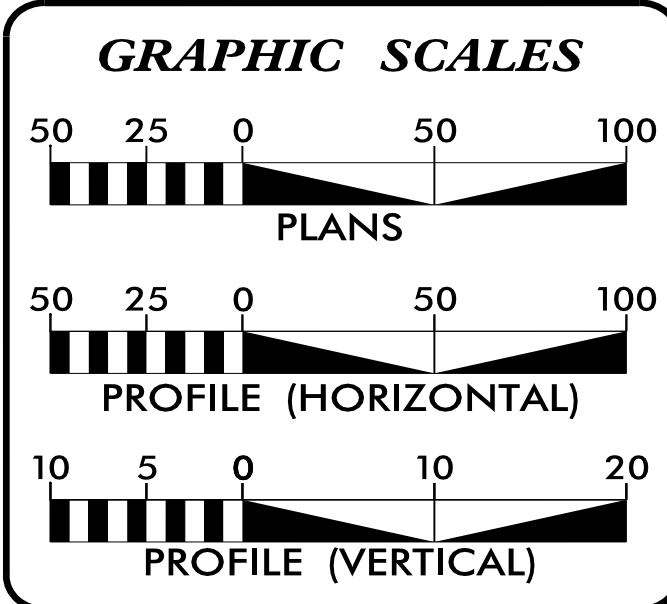
← TO US 421

TO US 117 →

NOTES:

1. THIS PROJECT IS WITHIN THE PENDERLEA HOMESTEAD HISTORIC DISTRICT.

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A	DETAILS
UC-4	PLAN /PROFILE SHEET

WATER AND SEWER OWNERS ON PROJECT	
(A) WATER - PENDER COUNTY UTILITIES	
(B) SEWER - N/A	

PREPARED IN THE OFFICE OF  
**Weston & Sampson** NC License: C-4847  
 WSE of North Carolina, PC 598 East Chatham Street Suite 137 Cary, NC 27511  
 Phone: 919.297.0220 Fax: 919.297.0221

FOR **CDM Smith** CDM Smith Inc. 5400 Glenwood Avenue Suite 400 Raleigh, NC 27612-3228 NC COA No. F-1255

**KEVIN ZDEB, PE** PROJECT ENGINEER  
**AARON COLLINS** PROJECT DESIGN ENGINEER

SEAL

8/16/2022

DIVISION OF HIGHWAYS  
UTILITIES UNIT

1000 BIRCH RIDGE DRIVE  
RALEIGH, NC 27610  
PHONE (919) 707-6690  
FAX (919) 250-4151

**NABIL HAMDAN** REGIONAL UTILITY ENGINEER  
**LARRY JAMES, JR.** UTILITY ENGINEER  
**TANGA SAMPSON** REGIONAL UTILITY COORDINATOR  
**LARRY JAMES, JR.** UTILITY COORDINATOR

# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

## UTILITIES PLAN SHEET SYMBOLS

### PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	
11 1/4 Degree Bend	
22 1/2 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	
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	

### 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		Sanitary Sewer Cleanout	
End of Information			

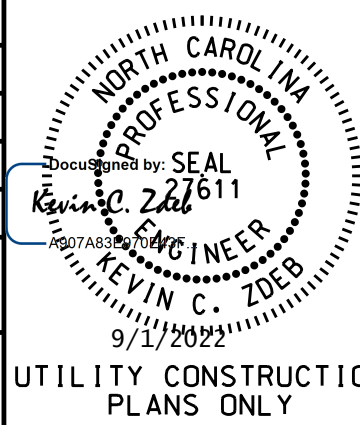
\*For Existing Utilities  
Utility Line Drawn from Record (Type as Shown)  
Designated Utility Line (Type as Shown)

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# UTILITY CONSTRUCTION

**Weston & Sampson**  
 WSE of North Carolina, PC  
 558 East Chatham Street Suite 137  
 Phone: 919.297.0220

NC  
 License:  
 C-4847  
 Cary, NC 27511  
 Fax: 919.297.0221

PROJECT REFERENCE NO. B-5644	SHEET NO. UC-3
DESIGNED BY: AJC	
DRAWN BY: AJC	
CHECKED BY: KSH	
APPROVED BY: KCZ	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
<b>UTILITY CONSTRUCTION</b> DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

## GENERAL NOTES:

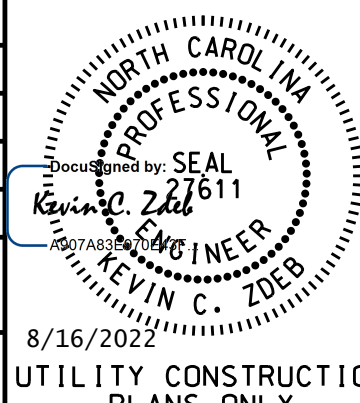
1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018.
2. THE EXISTING WATER LINE UTILITIES BELONG TO PENDER COUNTY UTILITIES (PCU).  
  
CONTACT: ALEX DOVELL  
PHONE: 910-471-0386
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 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 ADDITONAL 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 NOTES:

1. THERE ARE NO KNOWN SEWER SERVICE LINES OR PUBLIC SEWER LINES WITHIN THE PROJECT LIMITS.
2. 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, STREAM, CREEK, WETLANDS, OR BUFFER ZONES.
3. CONTRACTOR SHALL NOT OPERATE ANY VALVES ON THE EXISTING UTILITY SYSTEMS. CONTRACTOR SHALL CONTACT THE UTILITY OWNER TO CONDUCT STRATEGIC OPERATION OF VALVES FOR SERVICE INTERRUPTION IN ORDER TO PERFORM SPECIFIC WORK.
4. ALL PIPE SHALL BE PVC. THE USE OF DUCTILE IRON PIPE IS NOT ALLOWED.
5. PVC PIPE MANUFACTURED MORE THAN TWELVE (12) MONTHS BEFORE THE INSTALLATION DATE WILL NOT BE ACCEPTED.
6. PROPOSED OPEN TRENCH WATER LINE SHALL BE 8" PVC C-900 DR-18 PIPE, OR 8" PVC SDR-21 PIPE.
7. PROPOSED WATER LINE FOR DIRECTIONAL DRILLING SHALL BE FUSIBLE PVC C-900 DR-18 PIPE THAT CONFORMS TO NSF-61.
8. ALL VALVES ON THE WATER LINE SHALL BE GATE VALVES WITH MECHANICAL JOINT ENDS.
9. IN THE EVENT THAT EXCESSIVE GROUNDWATER OR SPRINGS ARE ENCOUNTERED DURING PIPE CONSTRUCTION, THE CONTRACTOR SHALL EMPLOY ALL METHODS NECESSARY TO KEEP THE TRENCHES DRY AS DIRECTED BY THE ENGINEER.
10. ALL PROPOSED FITTINGS (BENDS, TEES, CROSSES, REDUCERS, PLUGS, ETC.) SHALL BE ADEQUATELY RESTRAINED BY THE USE OF RESTRAINED JOINT CONSTRUCTION AS DETAILED ON THESE DRAWINGS, OR AS DIRECTED BY THE ENGINEER. PCU'S STANDARD METHOD OF PIPE RESTRAINT IS MJ GRIP RINGS.

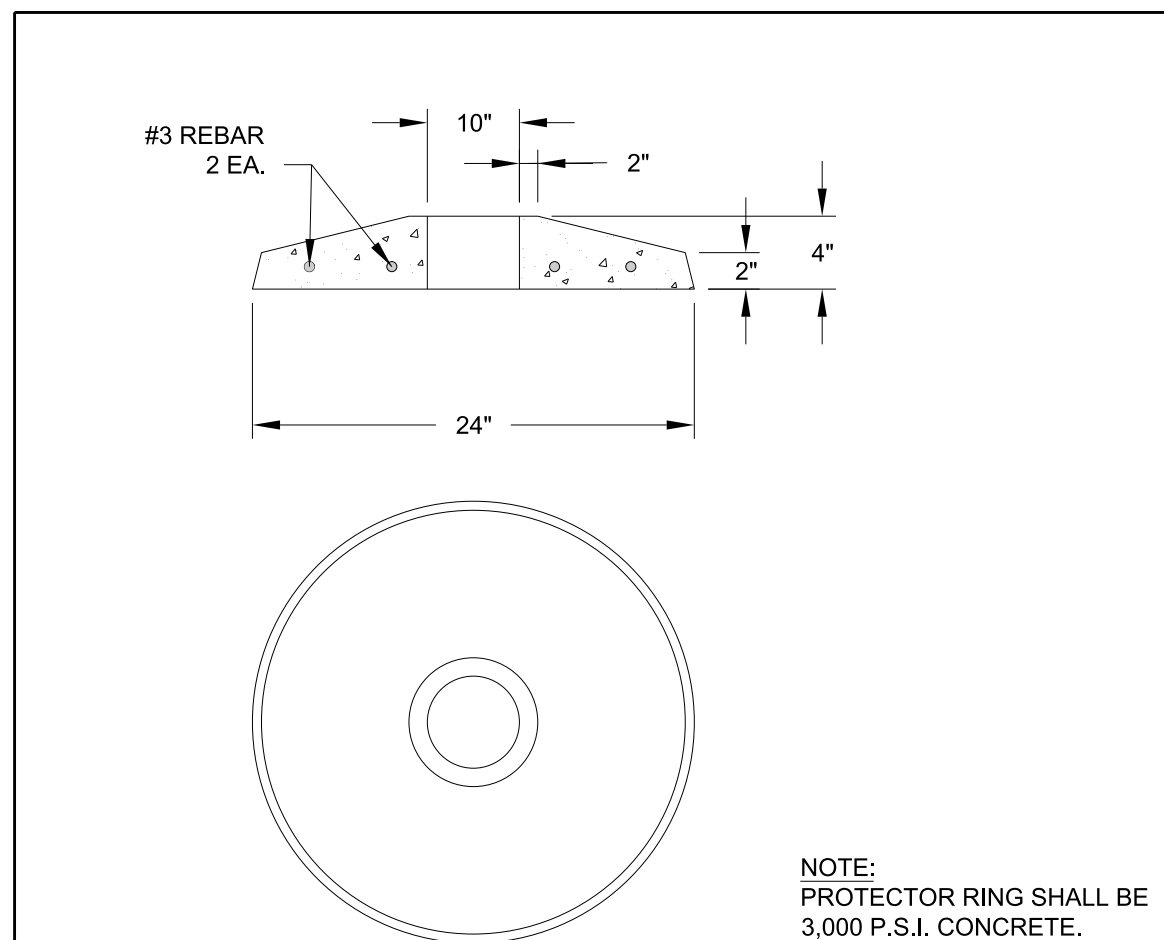
11. ALL WATER LINE FITTINGS, 4-INCHES THROUGH 12-INCHES IN DIAMETER, SHALL BE DUCTILE IRON PRESSURE CLASS 350.
12. EXISTING WATER LINE TO REMAIN THAT IS CONNECTED TO NEWLY INSTALLED VALVE SHALL HAVE EACH PIPE JOINT RESTRAINED FOR THE DISTANCE FROM THE VALVE AS NOTED IN THE PIPE RESTRAINT DETAIL ON SHEET UC-03A.
13. WATER SERVICE LINE SHALL BE 1-INCH DR-11 PRESSURE CLASS 200 CTS POLYETHYLENE PIPE.
14. DOCUMENTS THAT MUST BE RECEIVED PRIOR TO PCU SIGNING THE NCDEQ-PWSS APPLICANT CERTIFICATION INCLUDE THE FOLLOWING: BACTERIOLOGICAL TESTS, PRESSURE TESTS, WARRANTY, AND AS-BUILT PLANS [PROVIDED AS PDF FILES AND AN AUTOCAD (.DGN) FILE, LATEST VERSION OF AUTOCAD].

PROJECT REFERENCE NO. B-5644	SHEET NO. UC-3A
DESIGNED BY: AJC	
DRAWN BY: AJC	
CHECKED BY: KSH	
APPROVED BY: KCZ	
REVISED:	8/16/2022
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	UTILITY CONSTRUCTION PLANS ONLY
UTILITIES ENGINEERING, SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

Weston & Sampson  
 WSE of North Carolina, PC  
 588 East Chatham Street  
 Phone: 919.297.0220

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 Cary, NC 27511  
 Fax: 919.297.0221

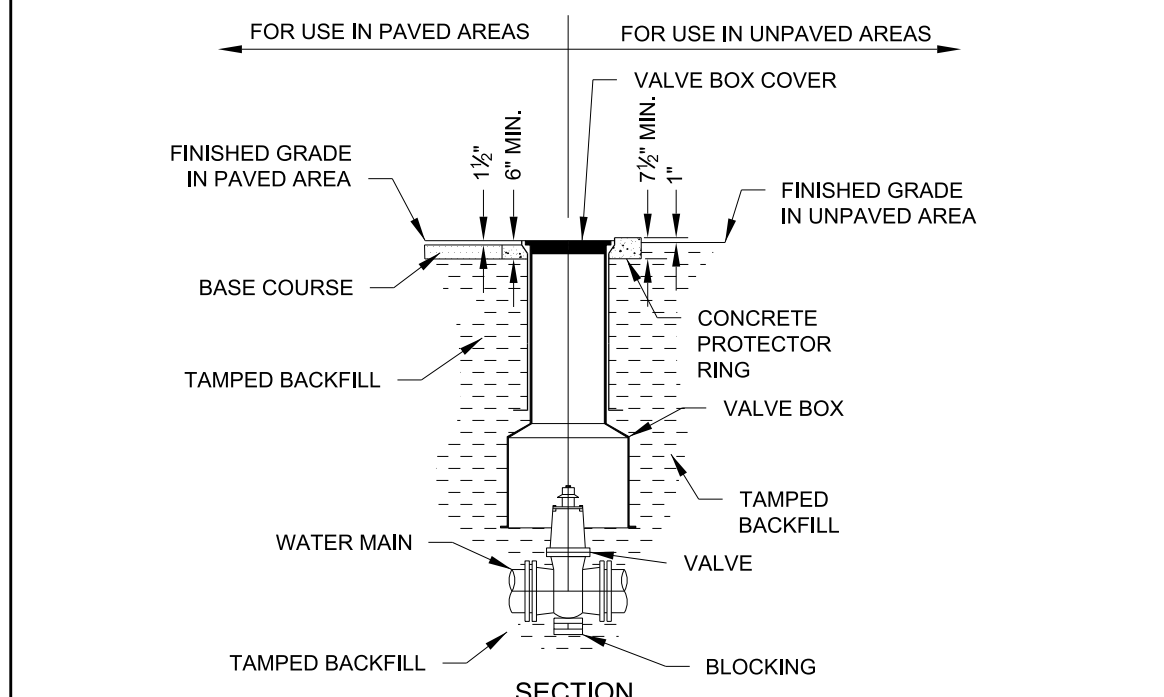
**UTILITY CONSTRUCTION**  
**DOCUMENT NOT CONSIDERED FINAL**  
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NOTE:  
 PROTECTOR RING SHALL BE 3,000 P.S.I. CONCRETE.

**CONCRETE PROTECTOR RING**

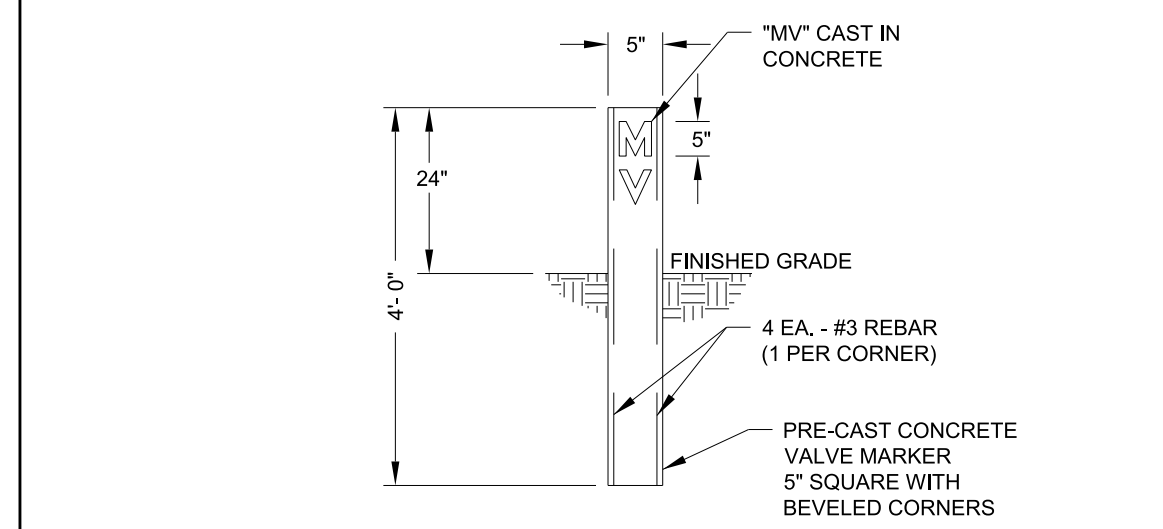
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**VALVE AND VALVE BOX INSTALLATION**

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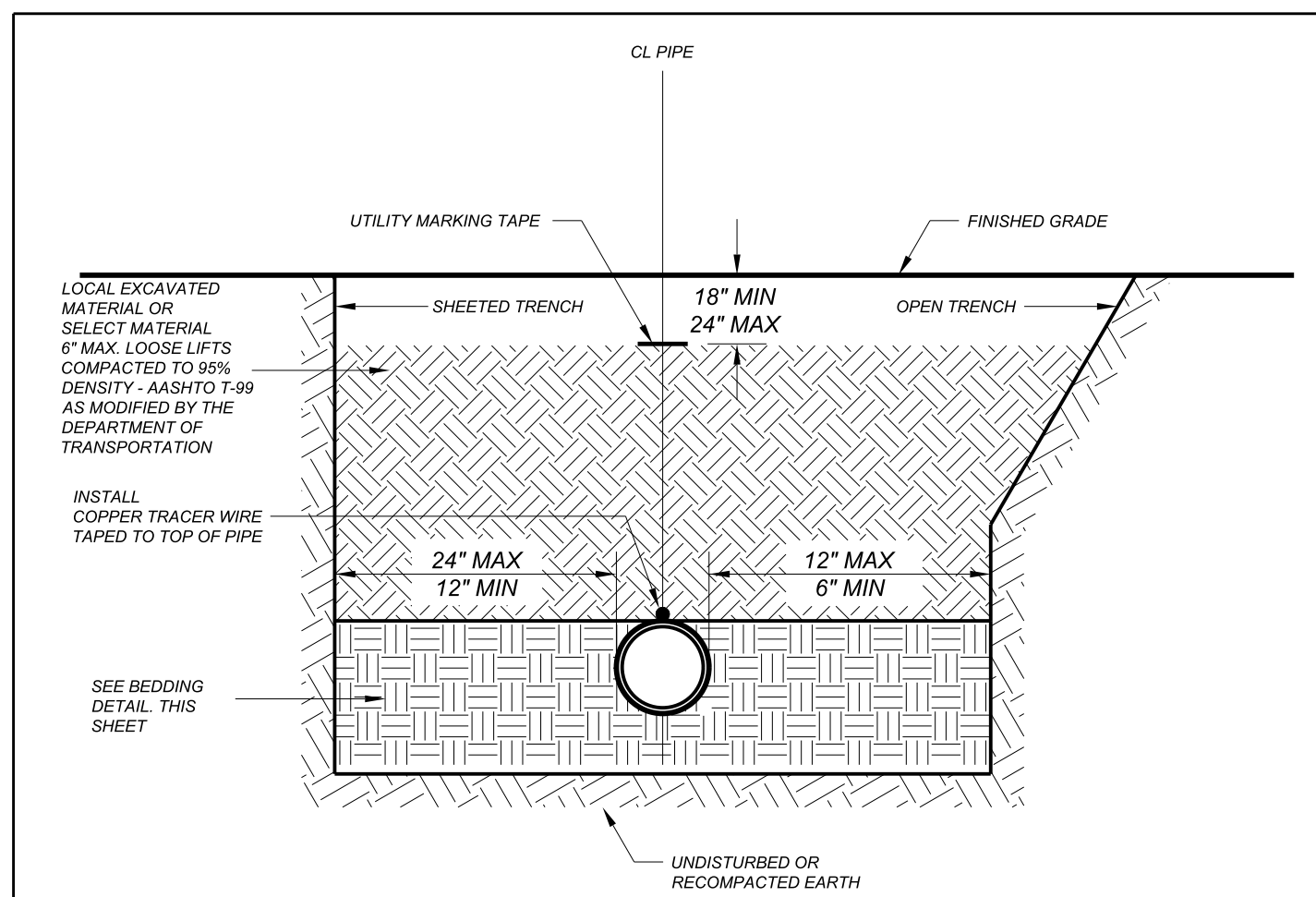
- NOTES:
1. VALVE COVER SHALL BE SET 1/2" BELOW THE TOP OF CONCRETE PROTECTOR RING IN UNPAVED AREAS.
  2. CONCRETE PROTECTOR RING SHALL BE USED IN ALL UNPAVED AREAS.
  3. DO NOT ALLOW VALVE BOX TO REST ON THE VALVE OR WATER MAIN.
  4. ALL MATERIALS USED IN THE POTABLE WATER SYSTEM MUST CONFORM TO NSF61 AND MEET THE LATEST FEDERAL SAFE DRINKING WATER ACT REQUIREMENTS.



**VALVE MARKER DETAIL**

NOT TO SCALE

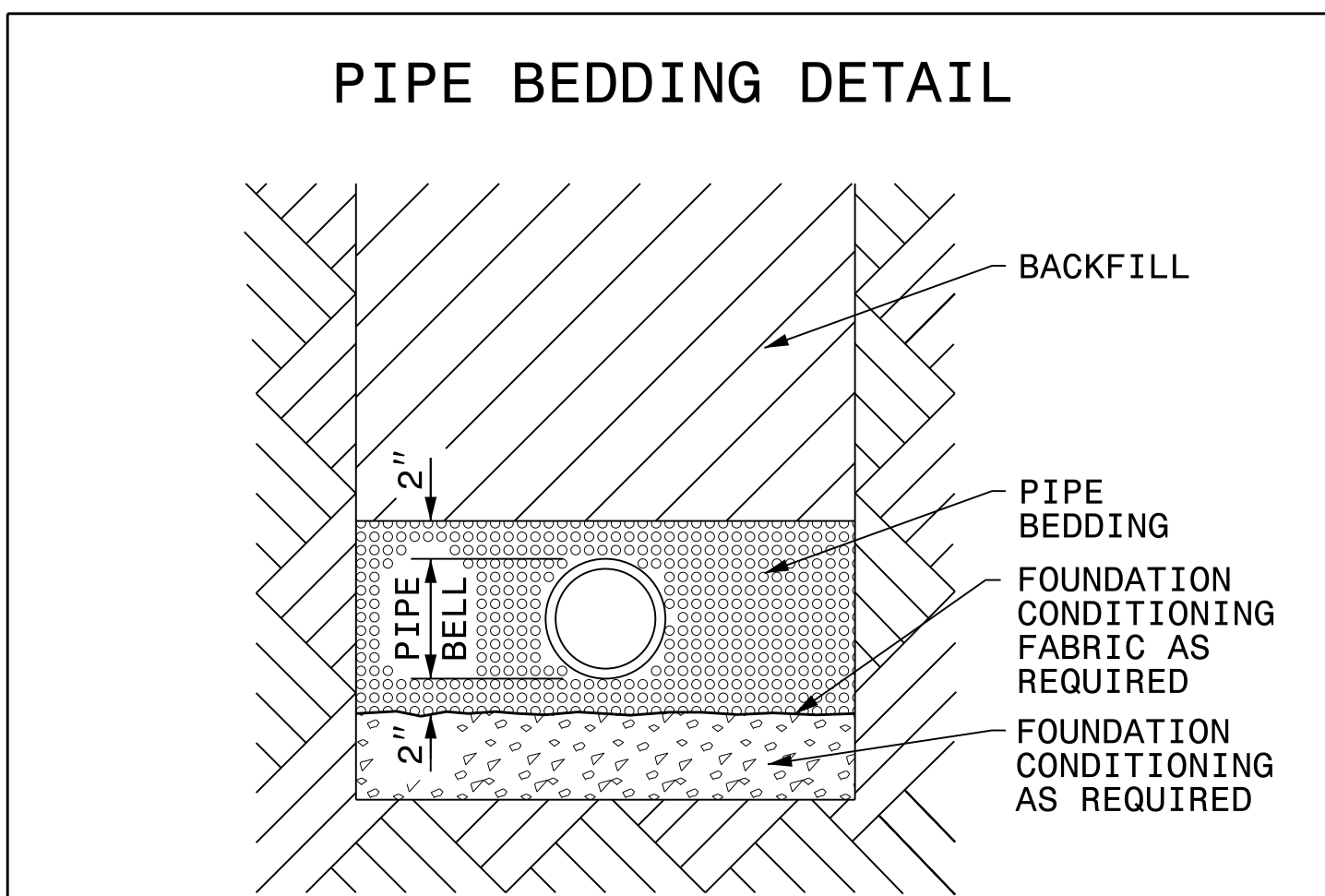
- NOTES:
1. VALVE MARKERS SHALL BE PRE-CAST CONCRETE WITH 3000-PSI COMPRESSIVE STRENGTH.
  2. VALVE MARKERS SHALL BE PAINTED BLUE WITH THE RECESSED LETTERS "MV" PAINTED BLACK.
  3. VALVE MARKERS SHALL BE SET PLUMB AND PLACED AT OR INSIDE THE R/W LINE AWAY FROM TOE PROTECTION, AS DIRECTED BY THE ENGINEER.
  4. THE LETTERS "MV" SHALL FACE TOWARDS THE VALVE LOCATION.



**GENERAL TRENCH DETAIL**

NTS

- NOTES:
1. ALL SHORING AND TRENCHING SHALL COMPLY WITH CURRENT OSHA SAFETY STANDARDS FOR THE CONSTRUCTION INDUSTRY.
  2. ALL BACKFILL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH.
  3. BELL HOLES FOR PIPE NOT SHOWN.



**PIPE BEDDING DETAIL**

- NOTES:
1. PLACE FOUNDATION CONDITIONING MATERIAL BELOW BEDDING IF REQUIRED, AS DIRECTED BY ENGINEER. PIPE BEDDED IN SELECT MATERIAL, CLASS II (TYPE 1) OR CLASS III.
  2. TRENCH BACKFILLED IN LOOSE 6" LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL.
  3. ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH.
  4. COMPACTION SHALL BE TO APPROXIMATELY 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.

**RESTRAINED JOINT DESIGN TABLE FOR PVC PIPE**

FITTING	REQUIRED RESTRAINED LENGTH (FT) OF PVC PIPE ON EACH SIDE OF FITTING
<b>BENDS</b>	
8 INCH - 11.25 DEG	10
8 INCH - 22.5 DEG	20
8 INCH - 45 DEG	40
8 INCH - 90 DEG	90
<b>OTHER FITTINGS</b>	
8 INCH - VALVE	90
8 INCH - PLUG	90

- NOTES:
1. RESTRAINED LENGTHS TAKEN FROM THE PENDER COUNTY UTILITIES (PCU) STANDARD DETAIL.
  2. ALL FITTINGS AND JOINTS SHALL BE RESTRAINED JOINT USING MJ GRIP RINGS, UNLESS OTHERWISE APPROVED BY THE ENGINEER AND PCU.

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WATER LINE DETAILS

8/17/2022

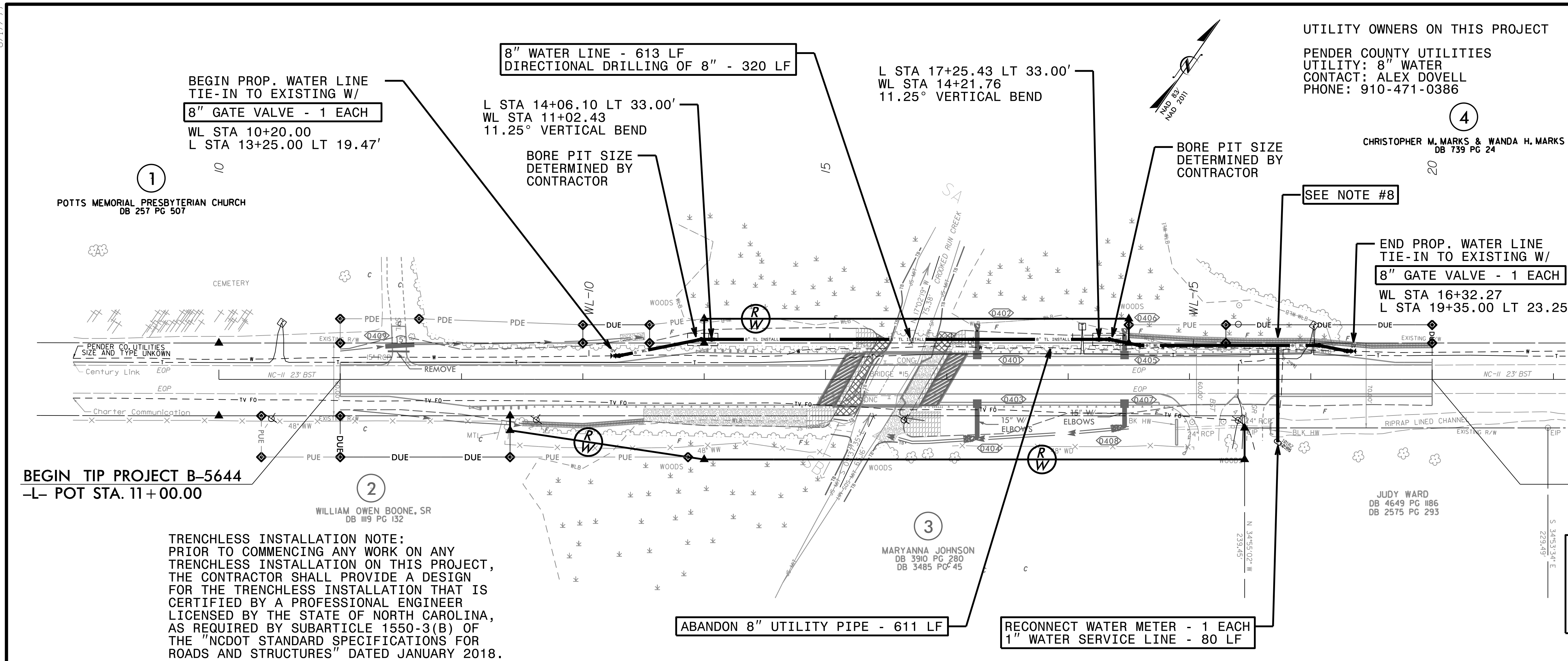
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PROJECT REFERENCE NO.	SHEET NO.
B-5644	UC-4
DESIGNED BY: K CZ	
DRAWN BY: K CZ	
CHECKED BY: K SH	
APPROVED BY: K CZ	
REVISED:	UTILITY CONSTRUCTION PLANS ONLY
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SECTION PHONE: (919) 707-6690 FAX: (919) 250-4151	

UTILITY OWNERS ON THIS PROJECT

PENDER COUNTY UTILITIES  
 UTILITY: 8" WATER  
 CONTACT: ALEX DOVELL  
 PHONE: 910-471-0386

CHRISTOPHER M. MARKS & WANDA H. MARKS  
 DB 739 PG 24



**BEGIN TIP PROJECT B-5644**  
 -L- POT STA. 11+00.00

**END TIP PROJECT B-5644**  
 -L- POT STA 20+00.00

**TRENCHLESS INSTALLATION NOTE:**  
 PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, THE CONTRACTOR SHALL PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION THAT IS CERTIFIED BY A PROFESSIONAL ENGINEER LICENSED BY THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE "NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018.

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 880 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

