

09/20/24 9:59 AM

**TIP PROJECTS: R-5809A**

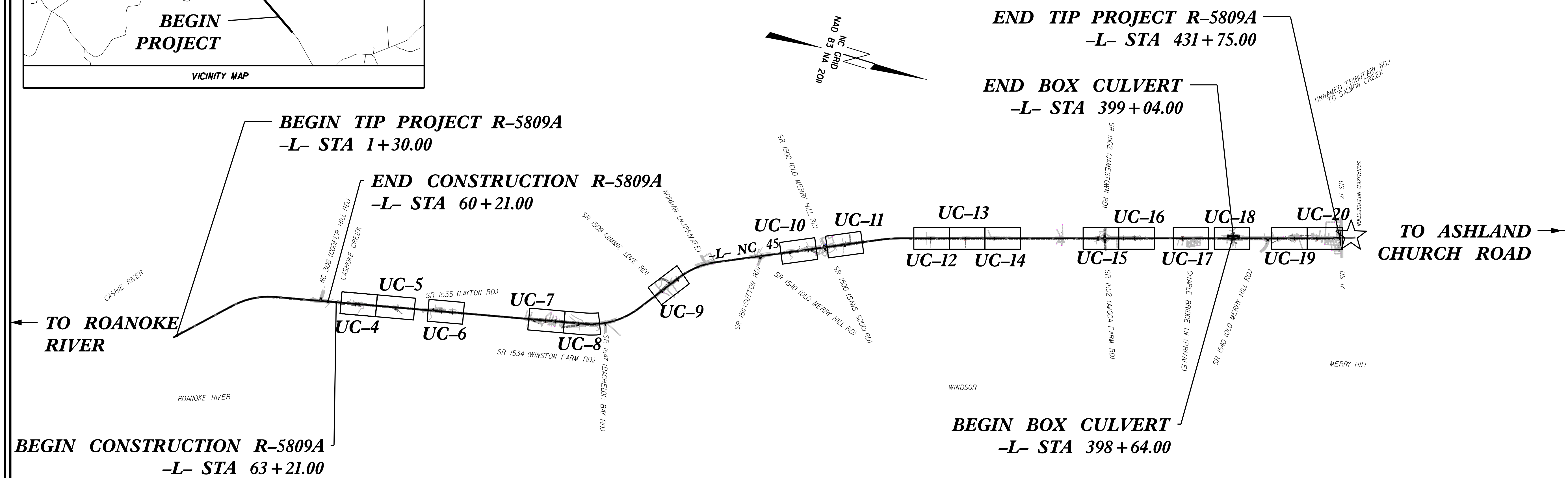
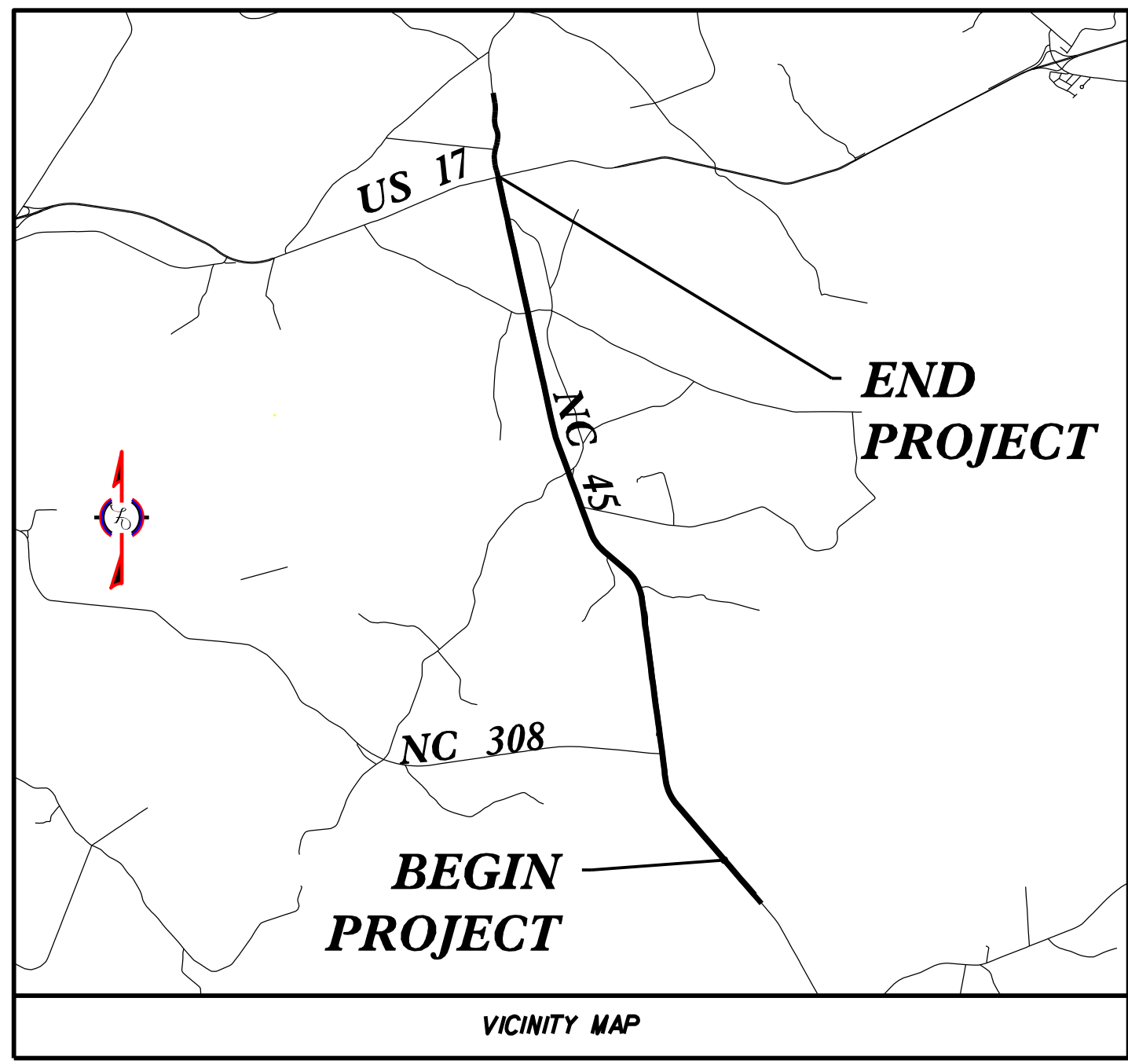
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
R-5809A	UC-1

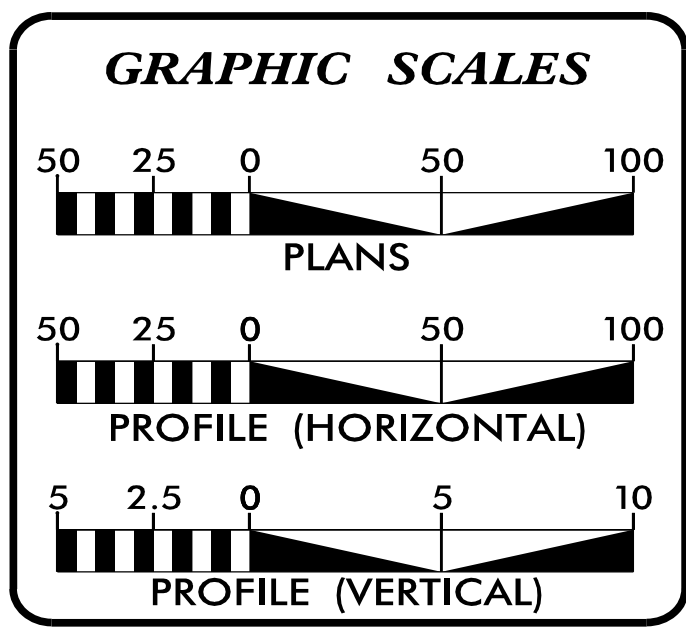
# UTILITY CONSTRUCTION PLANS BERTIE COUNTY

**LOCATION: NC 45 0.98 MI. NORTH OF WASHINGTON COUNTY LINE  
TO 0.13 MI. SOUTH OF US 17 AT MIDWAY**

**TYPE OF WORK: WATERLINE RELOCATIONS**



DOCUMENT NOT CONSIDERED FINAL  
UNTIL ALL SIGNATURES ARE COMPLETED



**INDEX OF SHEETS**

SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	UTILITY NOTES
UC-3A THRU UC-3C	UTILITY DETAIL SHEETS
UC-4 THRU UC-20	UTILITY CONSTRUCTION SHEETS

**WATER AND SEWER OWNERS ON PROJECT**

POTABLE WATER  
- BERTIE COUNTY

PREPARED IN THE OFFICE OF

**Kimley»Horn**

NATE HARVEY, P.E. UTILITIES DESIGN ENGINEER

SEAL

10/16/2024

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

DANIEL MERRITT, P.E. DIVISION 1 UTILITY ENGINEER

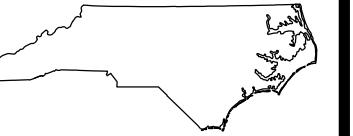
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION

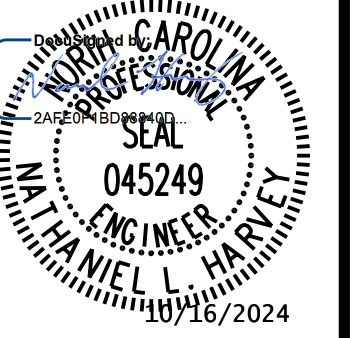
R-5809A

UC-2

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
WARE COUNTY



UTILITY DESIGN UNIT  
UTILITY CONSTRUCTION  
PLANS ONLY



DESIGNED BY: NLH

DRAWN BY: JHC

CHECKED BY: NDR

APPROVED BY: NLH

REVISED:

UTILITIES ENGINEERING SEC.  
PHONE: (919) 707-6690  
FAX: (919) 250-4151

**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	
Telephone Pole	
Joint Use Pole	
Utility Pole	
Utility Pole with Base	
H-Frame Pole	
Power Transmission Line Tower	
Water Manhole	
Power Manhole	
Telephone Manhole	
Sanitary Sewer Manhole	
Hand Hole for Cable	
Power Transformer	
Telephone Pedestal	
CATV Pedestal	
Gas Valve	
Gas Meter	
Located Miscellaneous Utility Object	
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

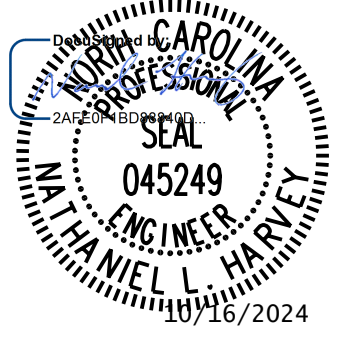
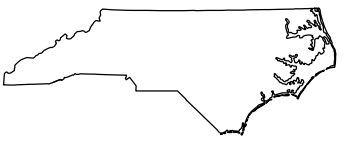
*Underground Power Line	
*Underground Telephone Cable	
*Underground Telephone Conduit	
*Underground Fiber Optics Telephone Cable	
*Underground TV Cable	
*Underground Fiber Optics TV Cable	
*Underground Gas Pipeline	
Aboveground Gas Pipeline	
*Underground Water Line	
Aboveground Water Line	
*Underground Gravity Sanitary Sewer Line	
Aboveground Gravity Sanitary Sewer Line	
*Underground SS Forced Main Line	
Underground Unknown Utility Line	
SUE Test Hole	
Water Meter	
Water Valve	
Fire Hydrant	
Sanitary Sewer Cleanout	

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

REVISIONS

06/16/22

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DESIGNED BY: NLH

DRAWN BY: JHC

CHECKED BY: NDR

APPROVED BY: NLH

REVISED:

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PHONE: (919) 707-6690  
FAX: (919) 250-4151

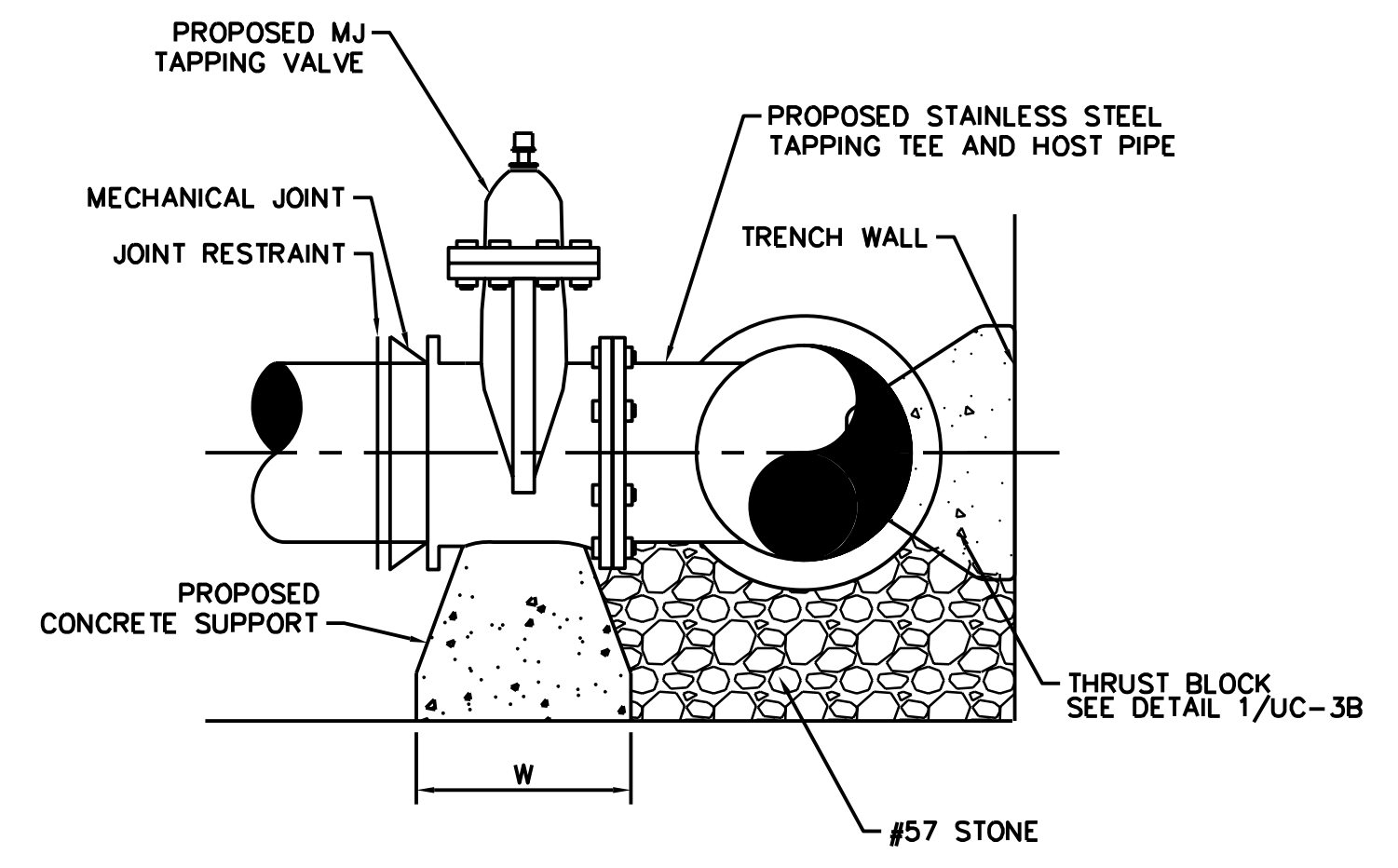
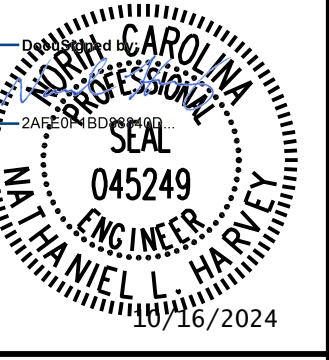
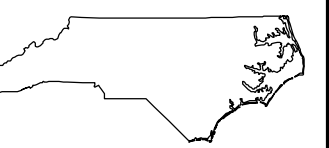
## NCDOT GENERAL UTILITY NOTES:

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 THE COUNTY OF BERTIE.
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 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 AND NATURAL 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 AND THE UTILITY OWNER 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 A MINIMUM OF ONE WEEK PRIOR TO SERVICE INTERRUPTIONS AND TESTING. 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 SPECIFIC UTILITY NOTES:

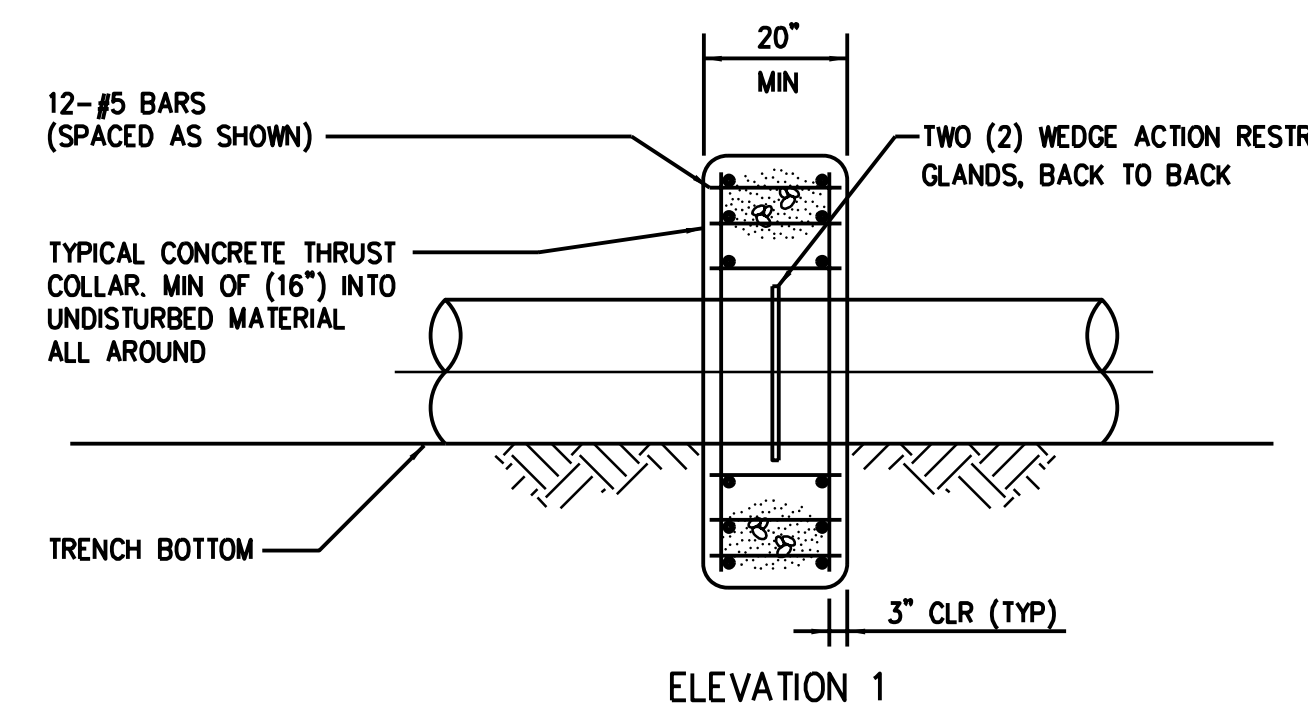
1. DEVIATION FROM THESE PLANS AND NOTES WITHOUT THE PRIOR WRITTEN CONSENT OF THE UTILITY OWNER OR THEIR REPRESENTATIVE OR THE ENGINEER MAY BE CAUSE FOR THE WORK TO BE UNACCEPTABLE.
2. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY SHOULD ANY FIELD CONDITIONS BE ENCOUNTERED THAT VARY FROM THE INFORMATION PROVIDED IN THE CONTRACT DOCUMENTS. ANY NECESSARY FIELD REVISIONS ARE SUBJECT TO REVIEW & APPROVAL OF AN AMENDED PLAN &/OR PROFILE BY THE UTILITY OWNER PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE ALL WORK WITH UTILITY OWNER AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION, OR AS OTHERWISE SPECIFIED HEREIN.
4. CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS FOR ALL UTILITY CONSTRUCTION PRIOR TO PLACING THE PIPELINE(S) IN SERVICE
5. PIPE ALIGNMENT SHOWN IS BASED ON STANDARD DUCTILE IRON MECHANICAL JOINT FITTINGS. JOINT DEFLECTIONS SHALL NOT EXCEED 75 PERCENT OF MANUFACTURER'S RECOMMENDED DEFLECTION. CONTRACTOR SHALL ADJUST PIPELINE ALIGNMENT AND DEFLECT JOINTS AS NECESSARY TO ACCOMMODATE THE STANDARD BENDS SHOWN.
6. ALL PIPE FITTINGS SHALL BE DUCTILE IRON RESTRAINED MECHANICAL JOINT WITH PRESSURE RATING EQUAL TO OR HIGHER THAN HOST PIPE, UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
7. ALL MECHANICAL JOINT CONNECTIONS SHALL BE RESTRAINED WITH WEDGE-TYPE MECHANICAL RESTRAINT ACCESSORY KITS DESIGNED FOR THE INTENDED USE AND MATERIAL, AS APPROVED BY UTILITY OWNER.
8. ALL UTILITY PIPING SHALL BE IDENTIFIED WITH DETECTABLE WARNING TAPE IN ACCORDANCE WITH OWNER SPECIFICATIONS.

REVISIONS

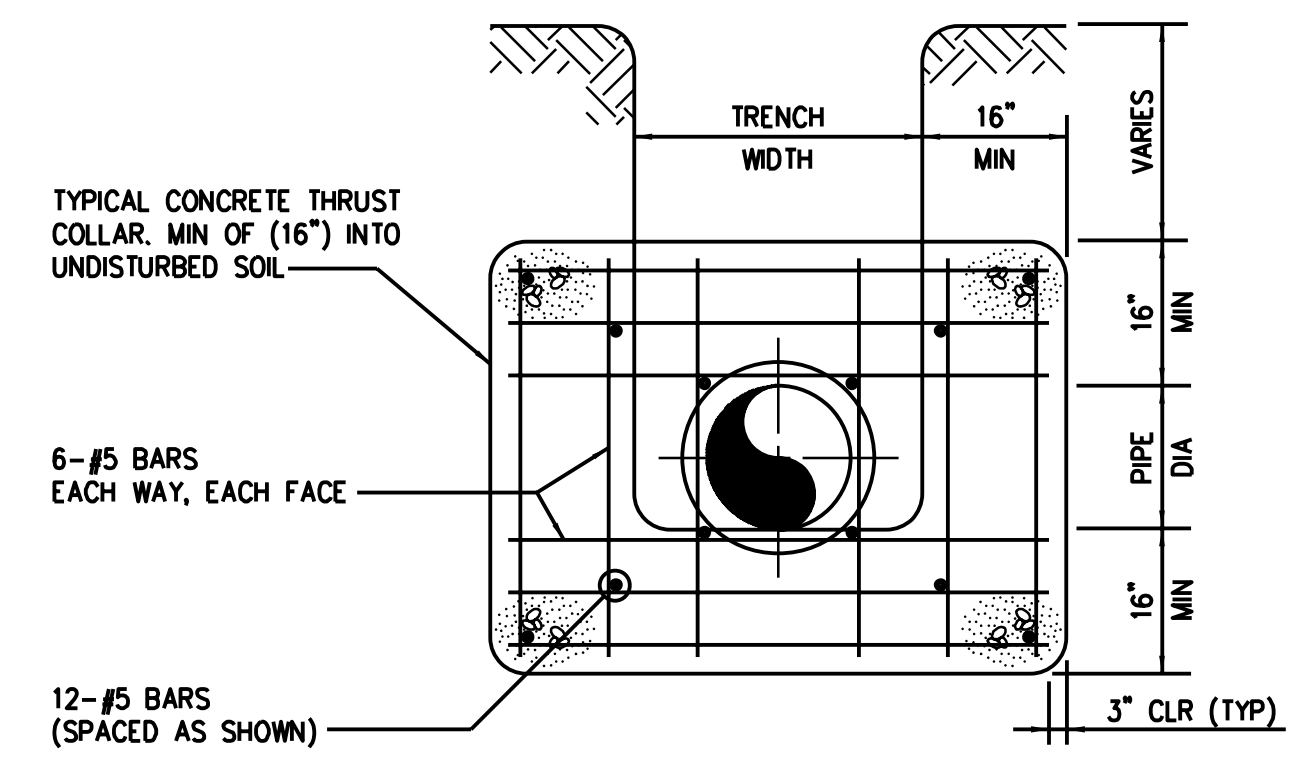


NOTES:  
1. THE "W" DIMENSION SHALL BE THE NOMINAL DIAMETER OF THE VALVE PLUS 12". "W" DIMENSION SHALL ALSO EXTEND INTO THE PAGE.

1	TAPPING SLEEVE AND VALVE
UC-3A	SCALE: N.T.S.

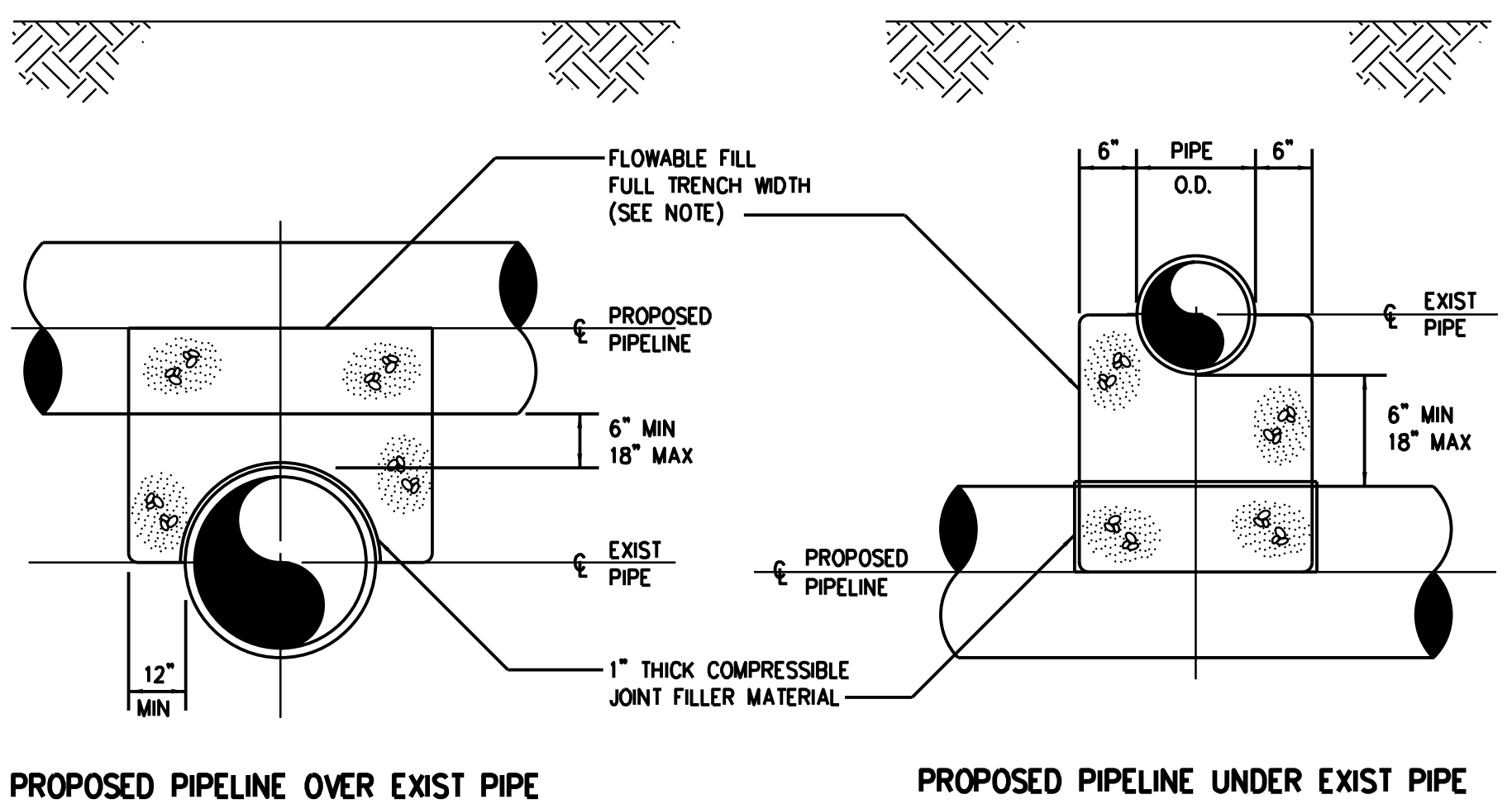


ELEVATION 1



ELEVATION 2

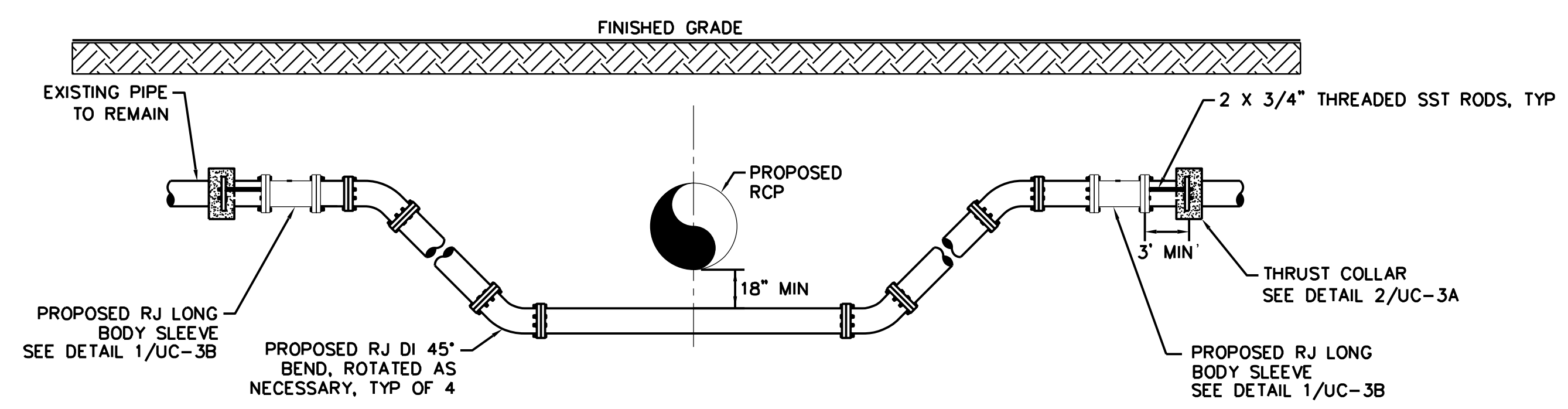
2	THRUST COLLAR
UC-3A	SCALE: N.T.S.



PROPOSED PIPELINE OVER EXIST PIPE      PROPOSED PIPELINE UNDER EXIST PIPE

NOTE: NO ENCASEMENT REQUIRED FOR VERTICAL SEPARATION GREATER THAN 18"

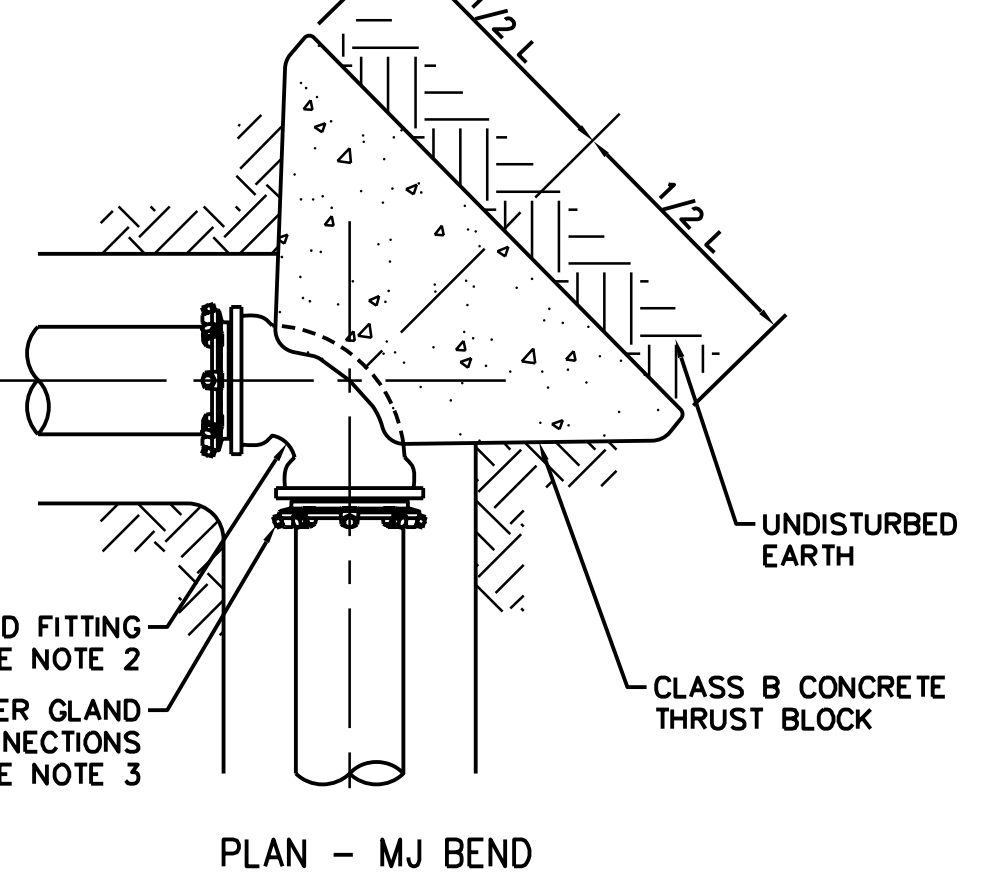
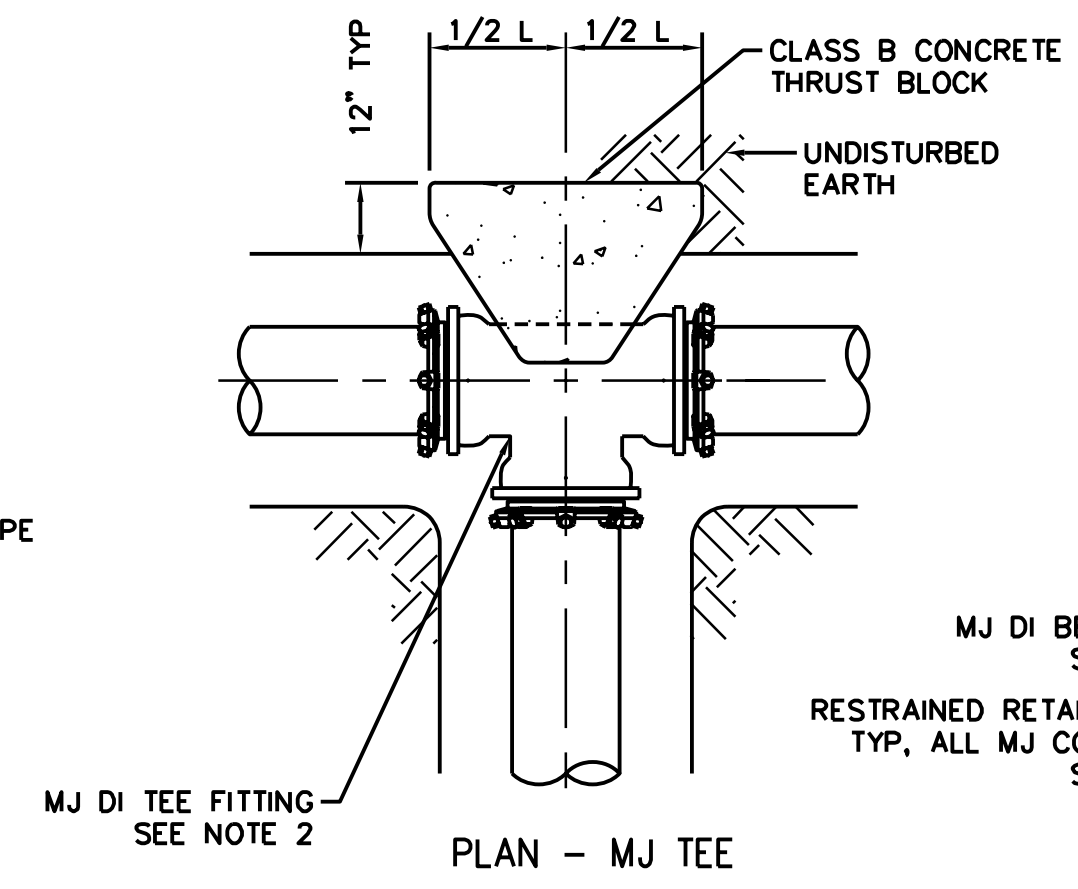
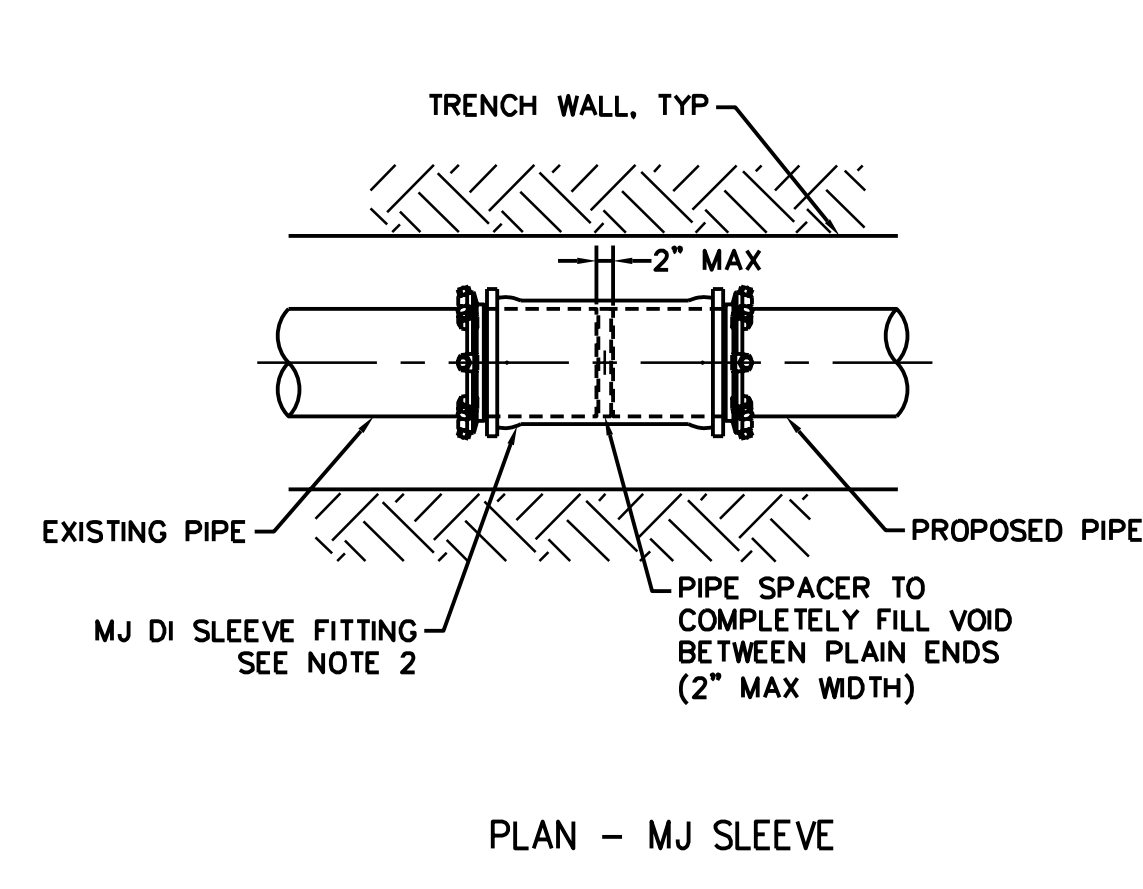
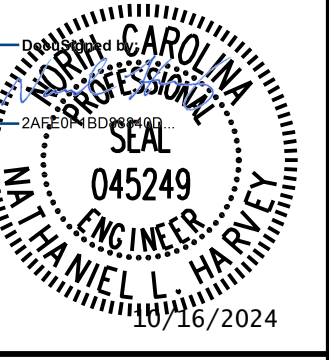
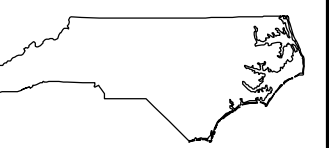
3	PROPOSED PIPELINE OVER/UNDER EXIST PIPE
UC-3A	SCALE: N.T.S.



NOTES:  
1. WEDGE ACTION RESTRAINT GLANDS TO BE USED FOR ALL FITTINGS AND VALVES BETWEEN THRUST COLLARS.  
2. ALL WATERLINE SHALL BE PC350 DI RESTRAINED JOINT.  
3. WATERLINE SHALL BE OFFSET VERTICALLY TO PROVIDE 18" VERTICAL SEPARATION TO PROPOSED RCP.

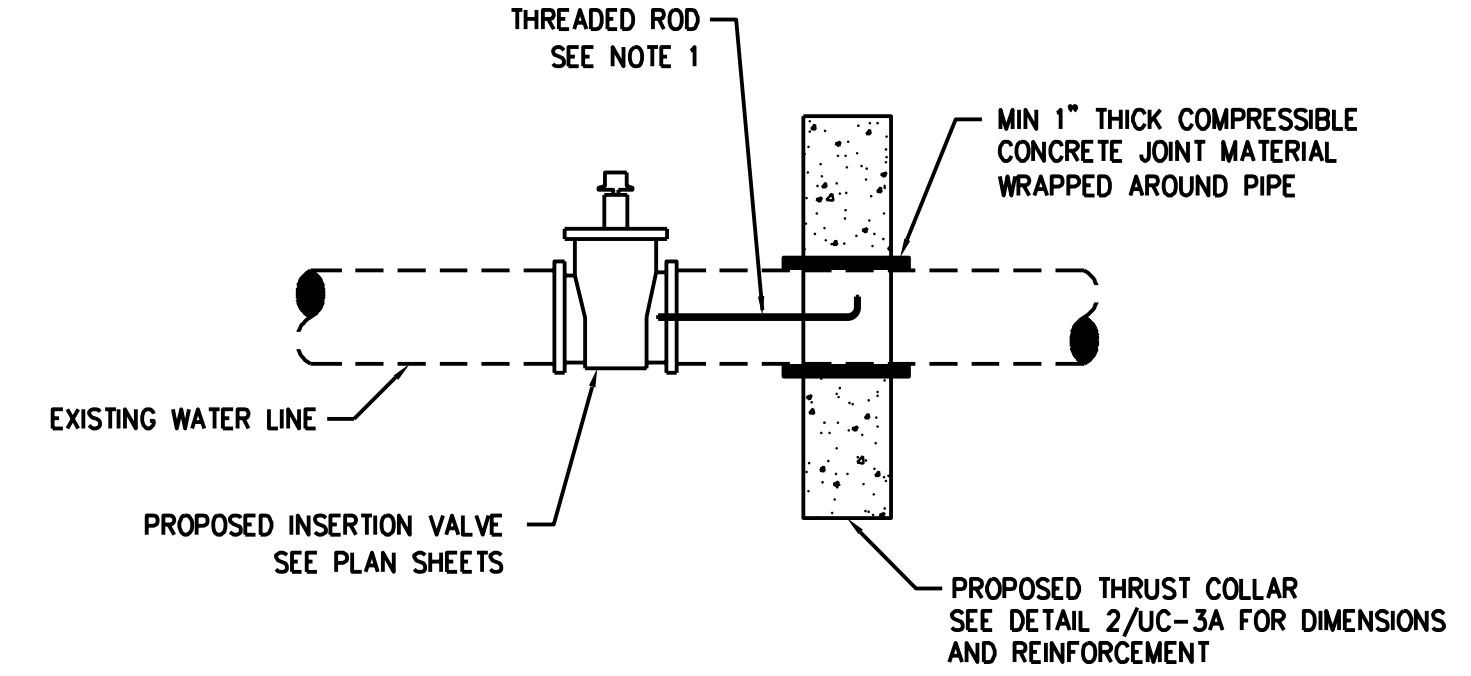
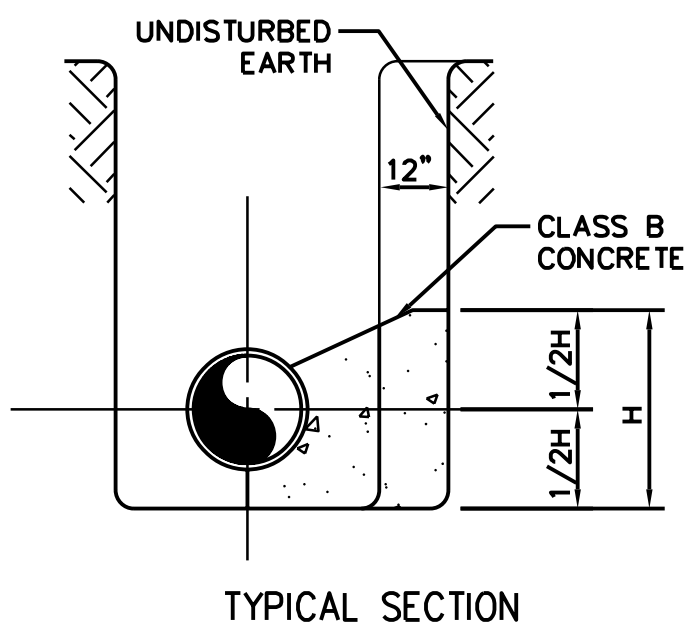
4	VERTICAL/HORIZONTAL OFFSET
UC-3A	SCALE: N.T.S.

REVISIONS



PIPE SIZE (IN)	CONCRETE THRUST BLOCK SCHEDULE (DIMENSIONS IN FT)							
	FITTING				RESTRAINT GLAND			
	90° / TEE		45°		22.5°		11.25°	
	H	W	H	W	H	W	H	W
4	2.0	4.0	1.5	2.9	1.0	2.1	0.7	1.5
6	2.0	4.0	1.5	2.9	1.0	2.1	0.7	1.5
8	2.6	5.2	1.9	3.8	1.4	2.7	1.0	1.9

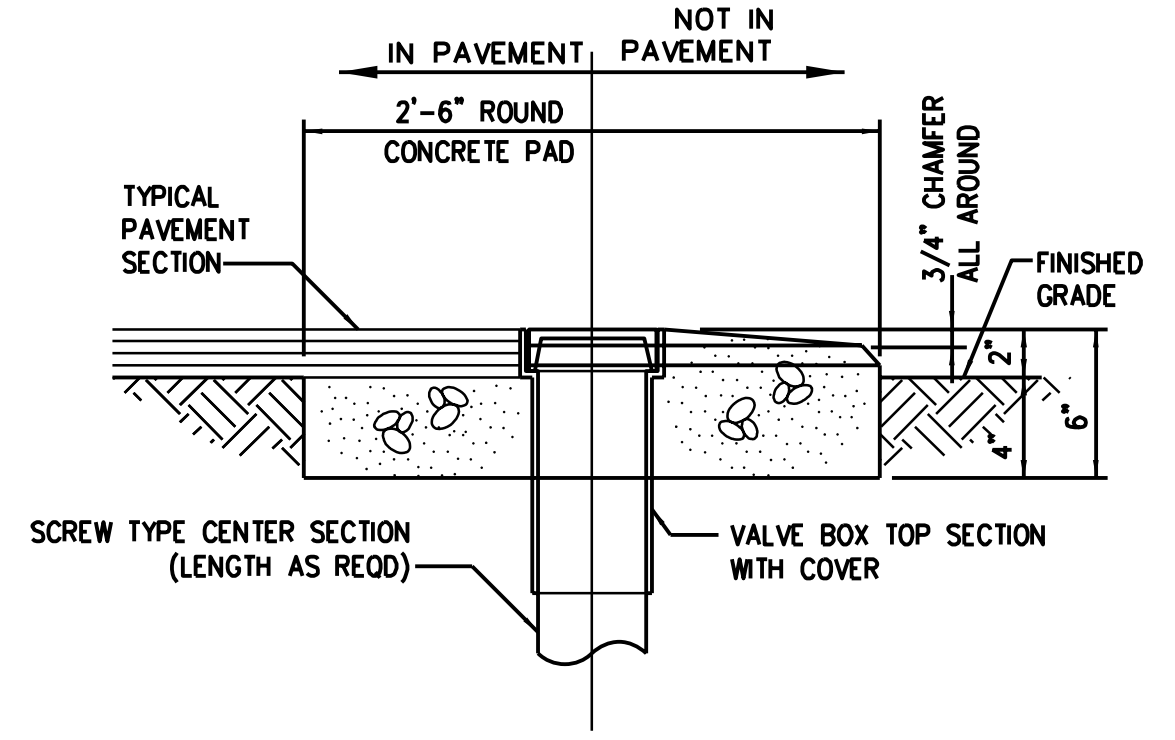
- NOTES:
- THRUST BLOCK DIMENSIONS BASED ON AVERAGE SOIL PASSIVE BEARING STRENGTH OF 2000 PSF USING SF OF 1.5 AND DESIGN TEST PRESSURE OF 200 PSI. FOR PIPE SIZES NOT LISTED, USE DIMENSIONS FOR NEXT LARGER PIPE SIZE.
  - ALL FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINT (DI MJ) OF THE SAME OR HIGHER PRESSURE RATING AS THE HOST PIPE AND SHALL BE RESTRAINED AGAINST THRUST VIA RESTRAINT GLANDS AND CONCRETE THRUST BLOCKING.
  - RESTRAINT GLANDS DESIGNED FOR THE INTENDED USE. RESTRAINT GLANDS SHALL CONSIST OF MULTIPLE GRIPPING WEDGES INCORPORATED INTO A FOLLOWER GLAND AND BOLT-ACTUATED BY TORQUE-LIMITING TWIST OFF NUTS.
  - DIRECT CONTACT BETWEEN CONCRETE AND FITTINGS, PIPE, OR HARDWARE SHALL NOT BE PERMITTED. THRUST BLOCK SHALL NOT OBSTRUCT ACCESS TO RESTRAINT GLAND BOLTS.



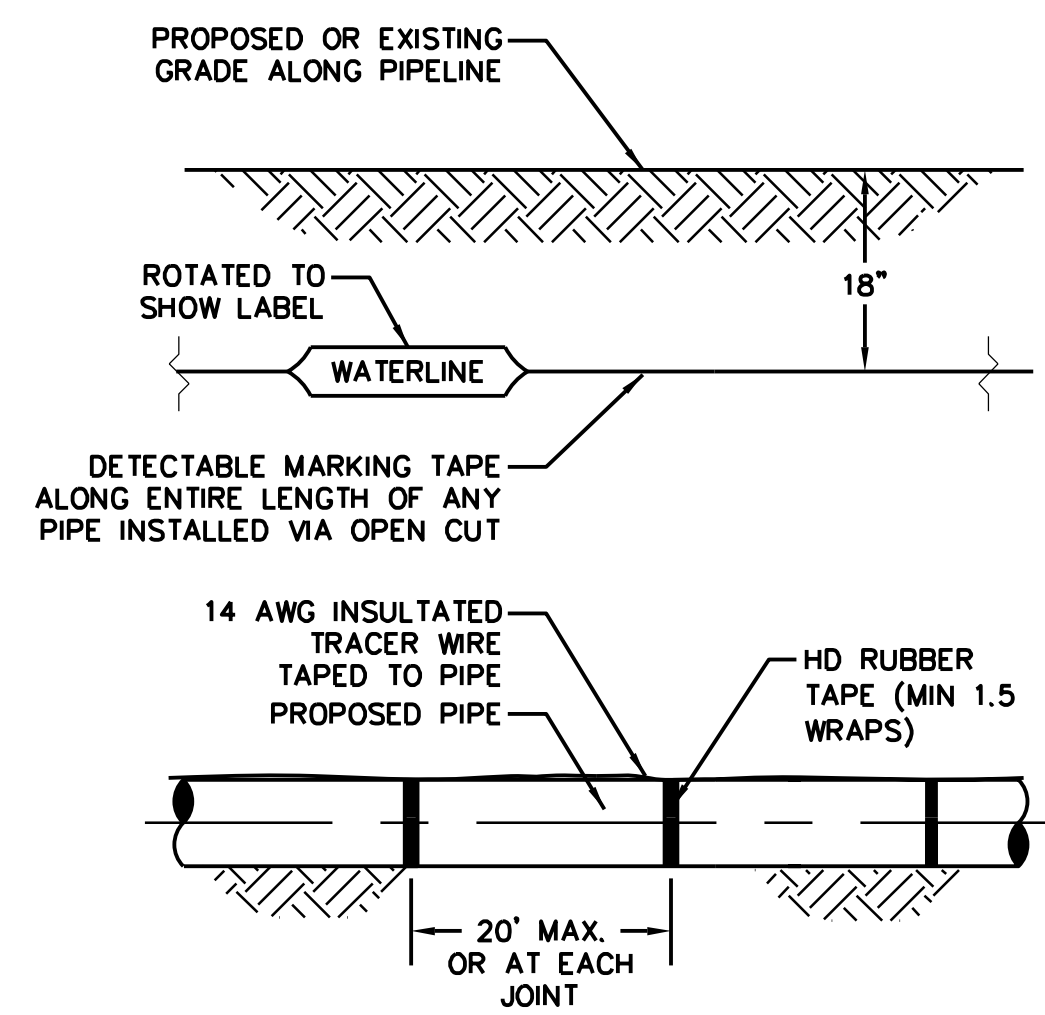
- NOTES:
- MECHANICALLY FASTEN THREADED ROD TO REBAR WITHIN THRUST COLLAR AND TO EXISTING/PROPOSED VALVE. 2 RODS TO BE USED OF 3/4\"/>

1 THRUST RESTRAINT FOR FITTINGS  
UC-3B SCALE: N.T.S.

2 INSERTION VALVE ON EXISTING PIPE  
UC-3B SCALE: N.T.S.



3 VALVE BOX PAD  
UC-3B SCALE: N.T.S.

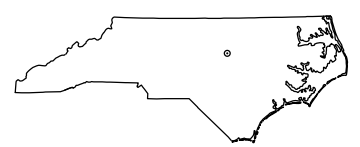


4 DETECTABLE MARKING TAPE AND WIRE  
UC-3B SCALE: N.T.S.

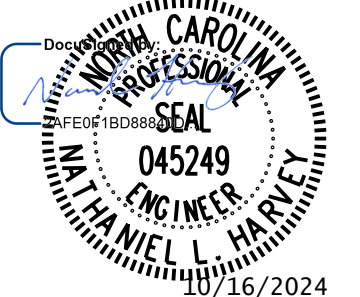
REVISIONS

**R-5809A**  
**UC-4**

NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 WAKE COUNTY

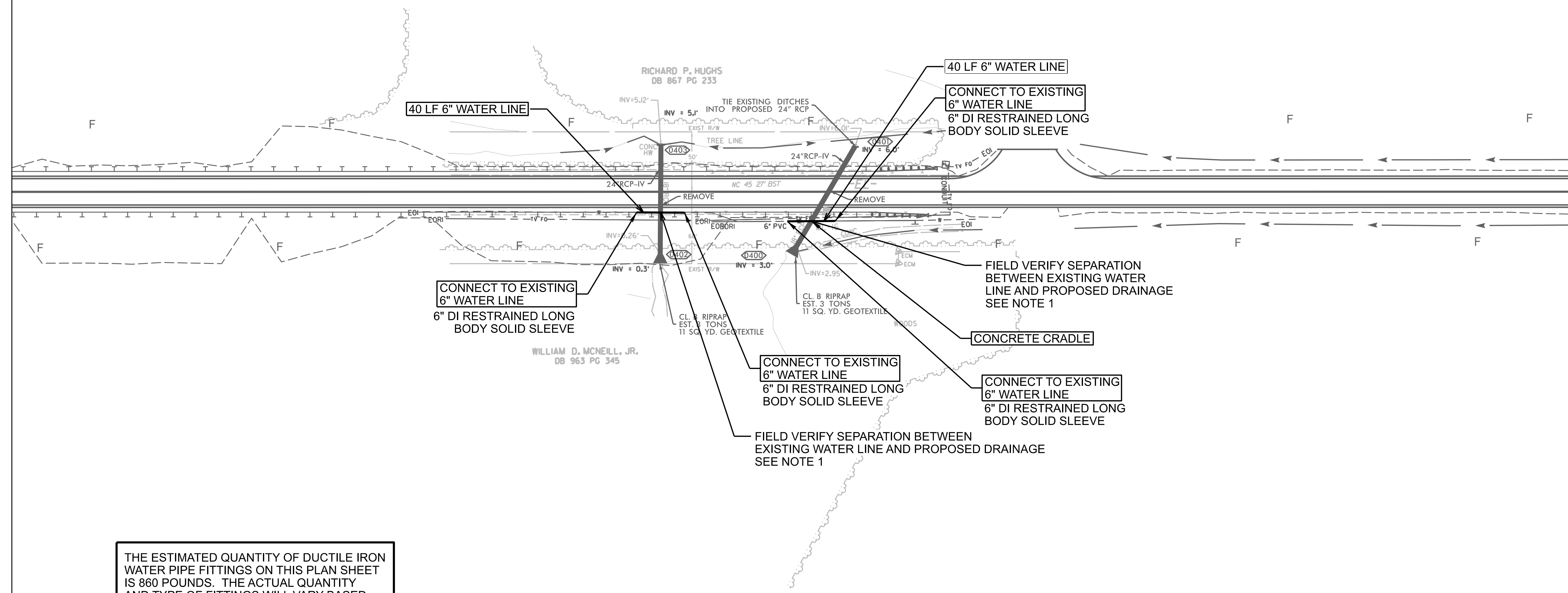


UTILITY DESIGN UNIT  
 UTILITY CONSTRUCTION  
 PLANS ONLY



DESIGNED BY: NLH  
 DRAWN BY: JHC  
 CHECKED BY: ZGP  
 APPROVED BY: NLH  
 REVISED:  
 UTILITIES ENGINEERING SEC.  
 PHONE: (919) 707-6690  
 FAX: (919) 250-4151

- NOTES:**
- FIELD VERIFY ELEVATION OF EXISTING WATER LINE PRIOR TO CONSTRUCTING PROPOSED DRAINAGE AND PROVIDE FINDINGS TO ENGINEER.
    - WHERE THERE IS AT LEAST 18" OF VERTICAL SEPARATION BETWEEN THE PROPOSED DRAINAGE AND EXISTING WATER LINE, NO RELOCATION OR CONCRETE CRADLE IS REQUIRED.
    - WHERE THERE IS LESS THAN 18" BUT MORE THAN 6" OF VERTICAL SEPARATION, INSTALL CONCRETE CRADLE PER DETAIL 3/UC-3A. SEE UC SPECIAL PROVISIONS.
    - WHERE THERE IS LESS THAN 6" OF VERTICAL SEPARATION, RELOCATE WATER LINE PER DETAIL 4/UC-3A.

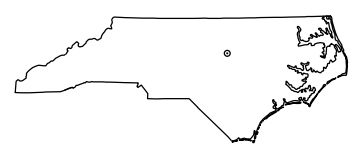


THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 860 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

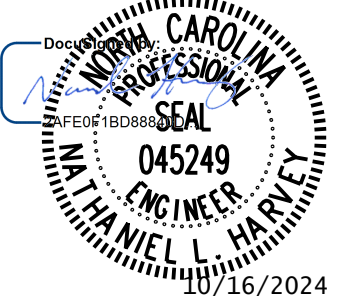
REVISIONS

**R-5809A**  
UC-5

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
WAKE COUNTY

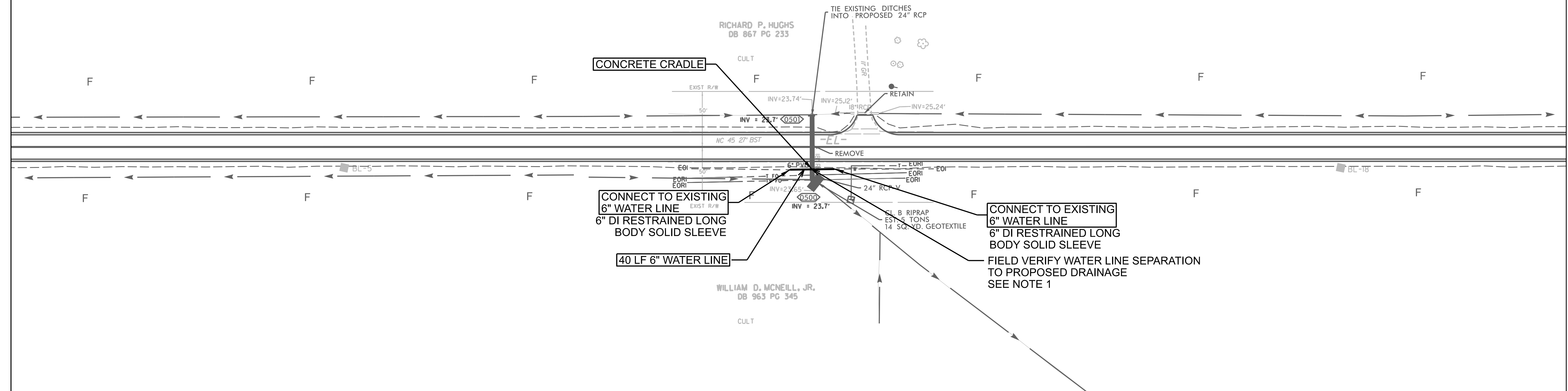


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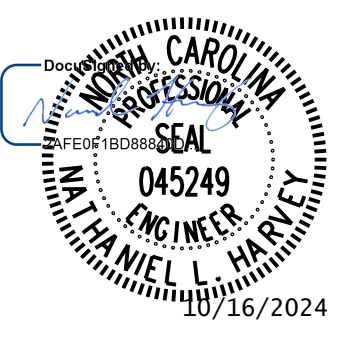
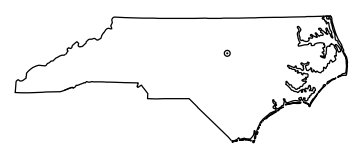
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    - WHERE THERE IS LESS THAN 18" BUT MORE THAN 6" OF VERTICAL SEPARATION, INSTALL CONCRETE CRADLE PER DETAIL 3/UC-3A. SEE UC SPECIAL PROVISIONS.
    - WHERE THERE IS LESS THAN 6" OF VERTICAL SEPARATION, RELOCATE WATER LINE PER DETAIL 4/UC-3A.



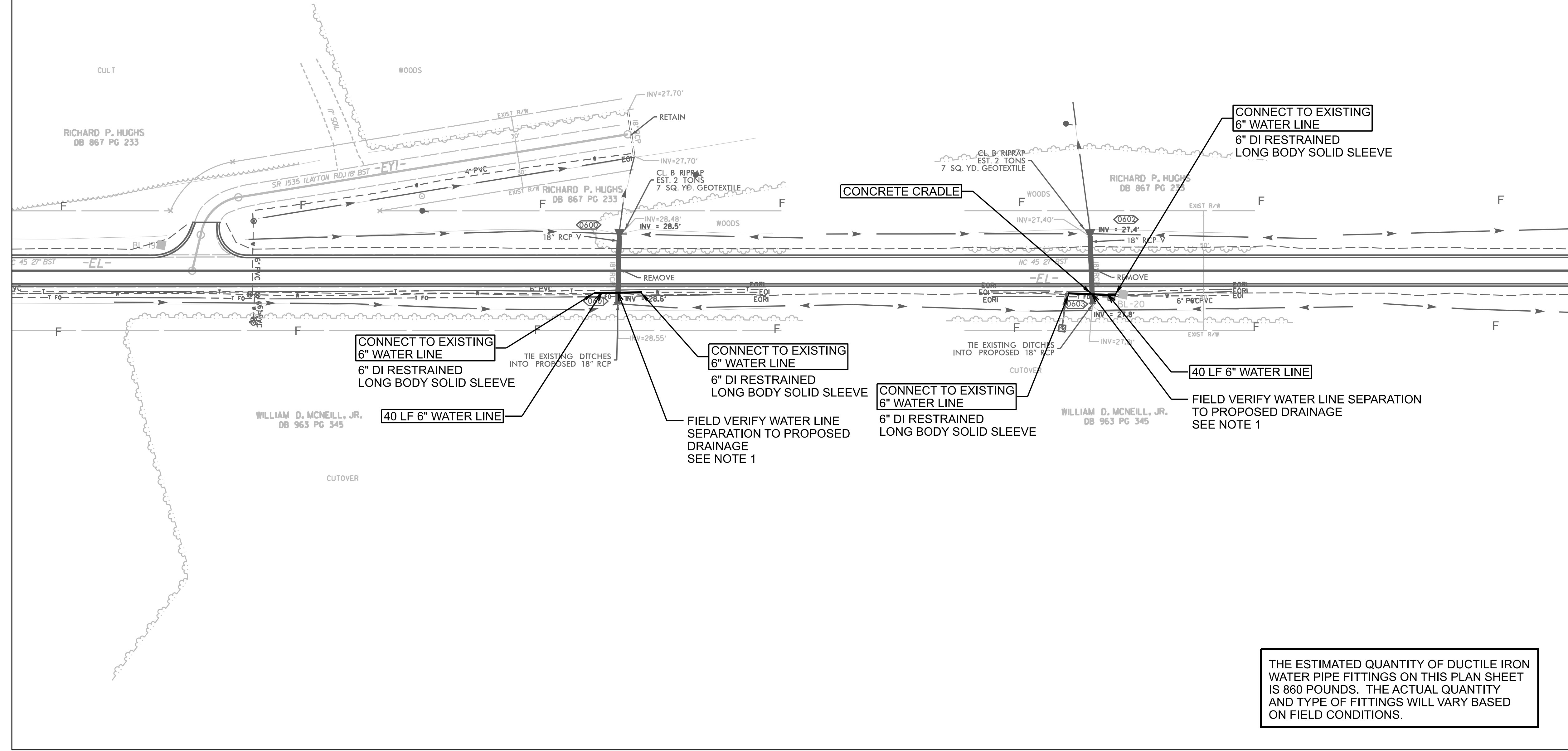
THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 430 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

REVISIONS



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DRAWN BY: JHC
CHECKED BY: ZGP
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    - WHERE THERE IS LESS THAN 6" OF VERTICAL SEPARATION, RELOCATE WATER LINE PER DETAIL 4/UC-3A.



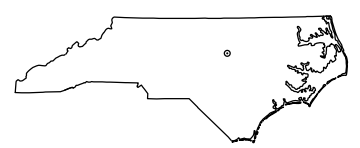
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REVISIONS

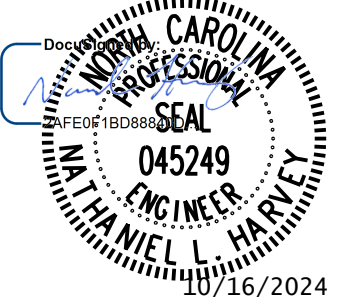


**R-5809A**  
UC-7

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
WAKE COUNTY

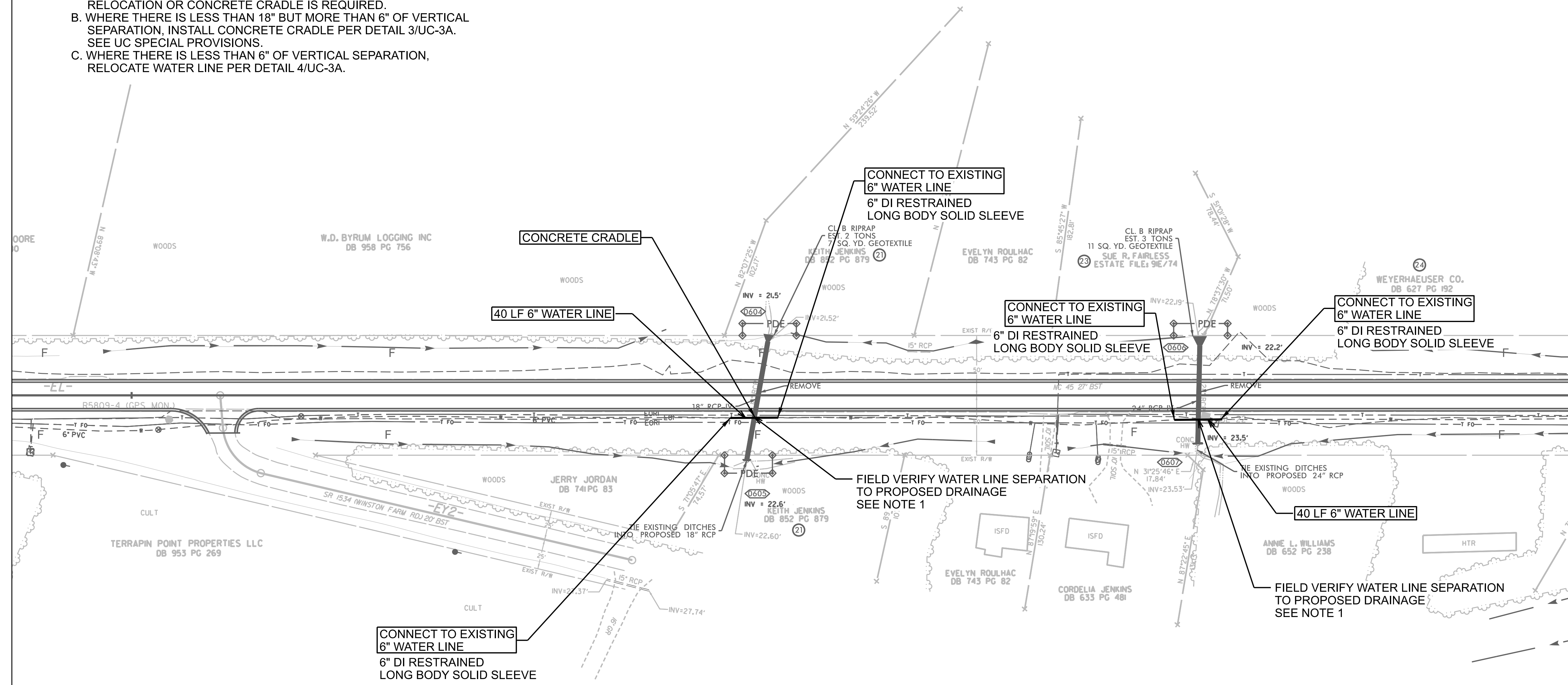


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PLANS ONLY



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FAX: (919) 250-4151

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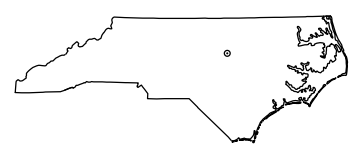


THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 860 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

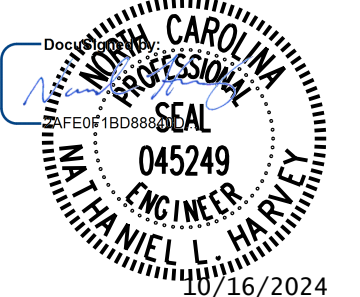
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**UC-8**

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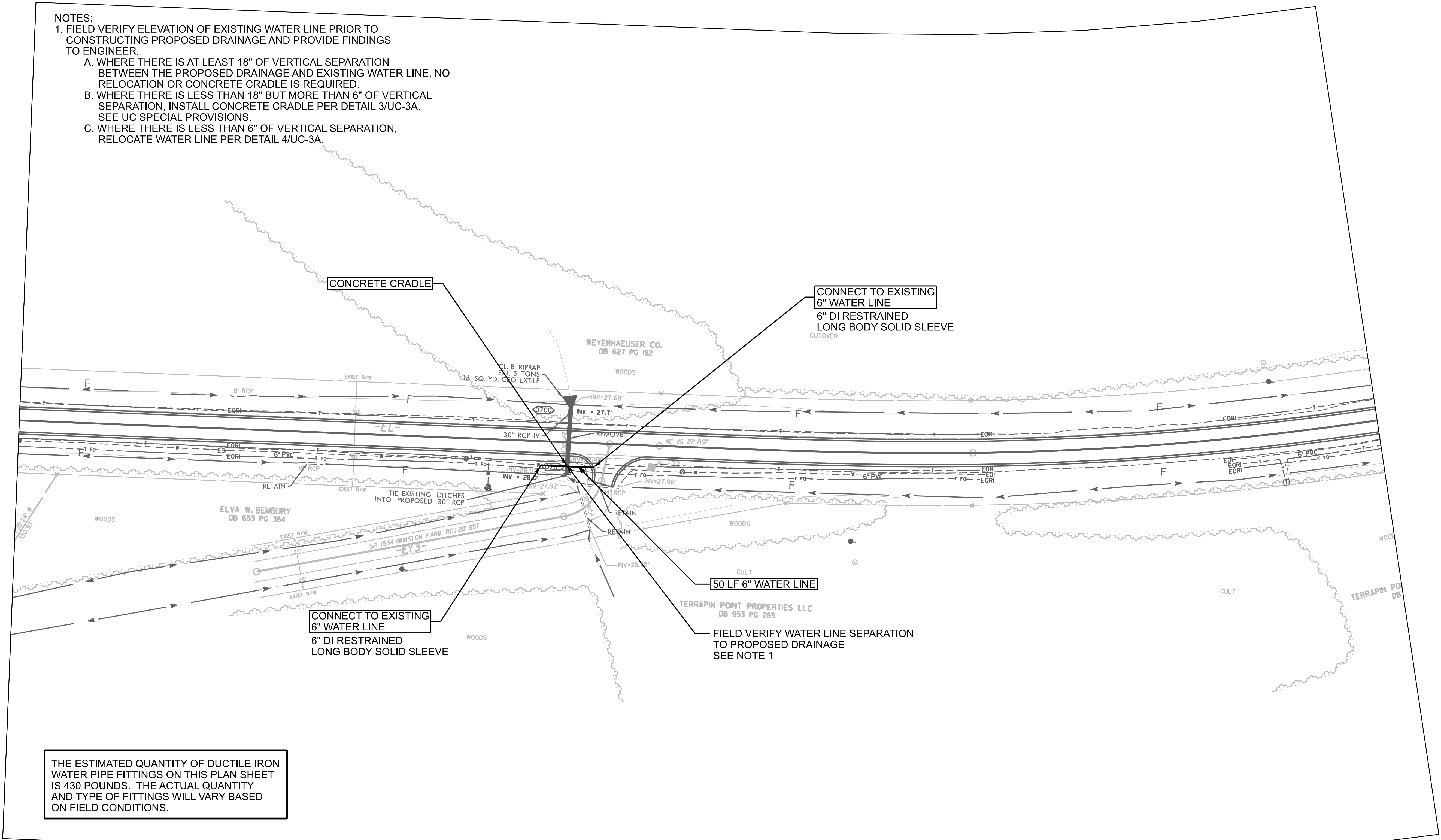


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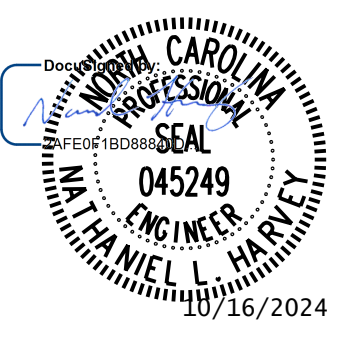
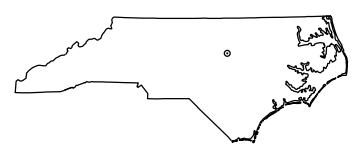
DESIGNED BY: NLH  
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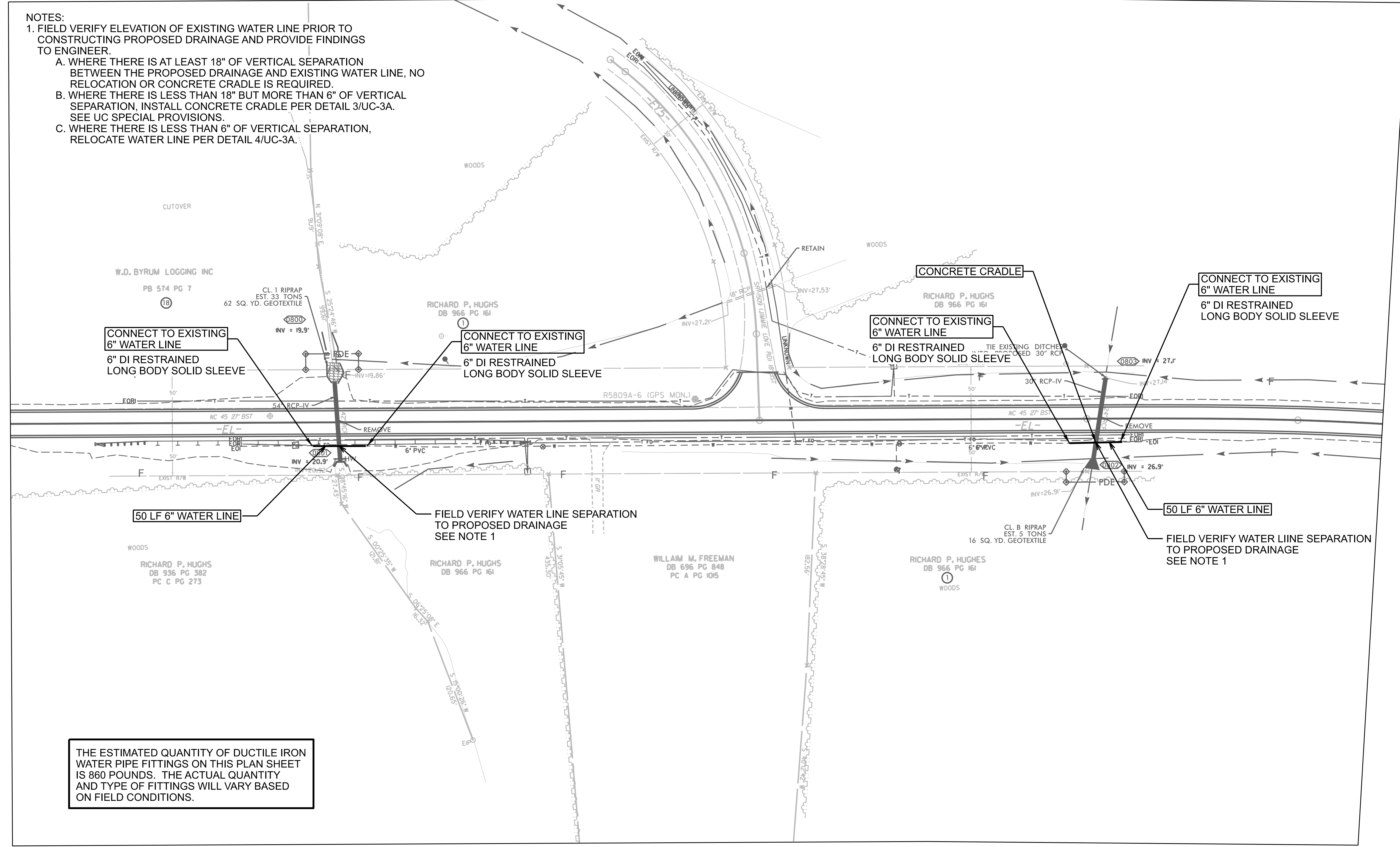
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REVISIONS



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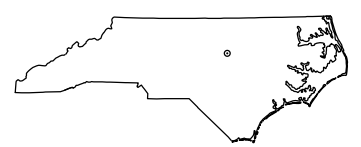


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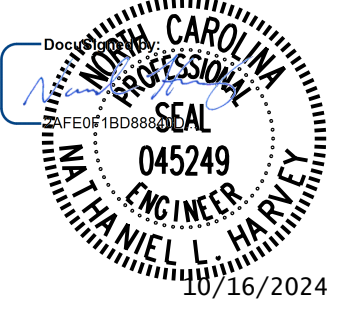
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**UC-10**

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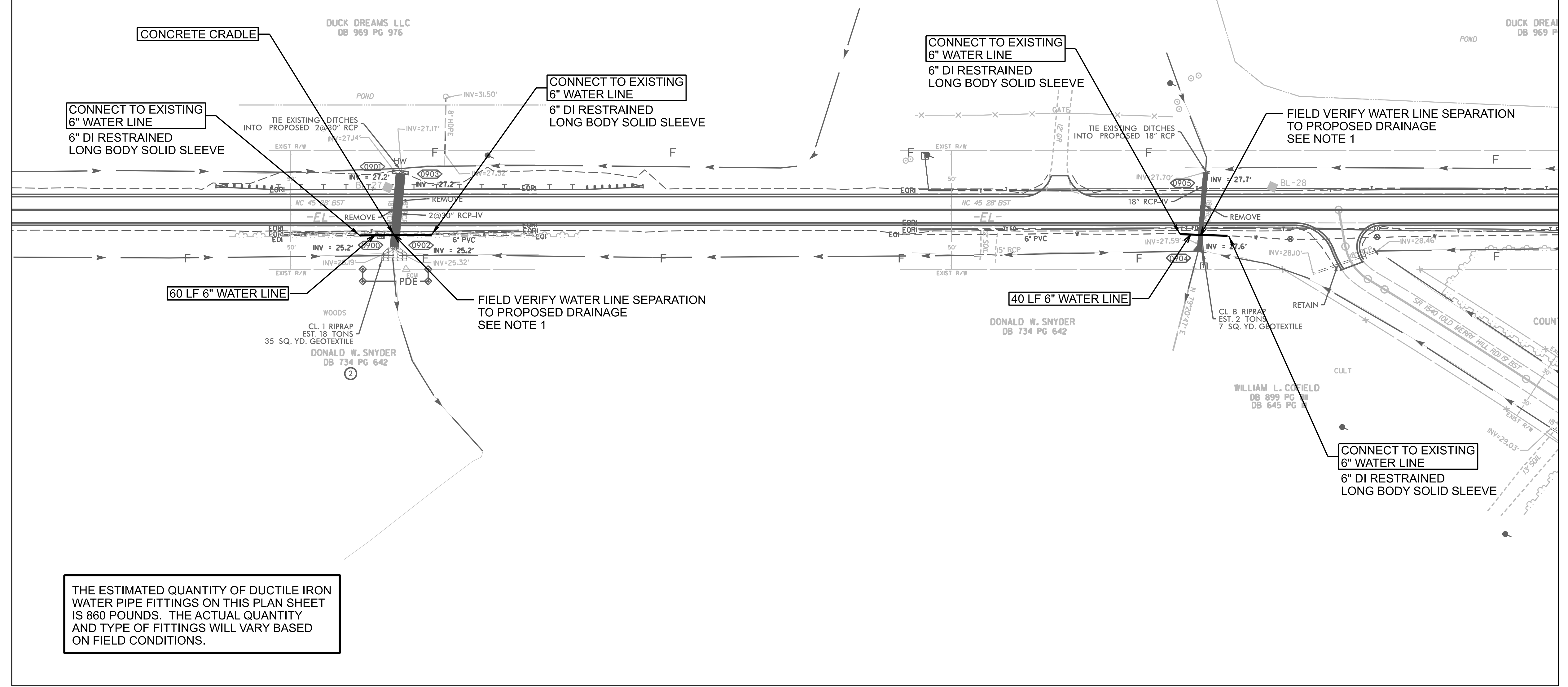
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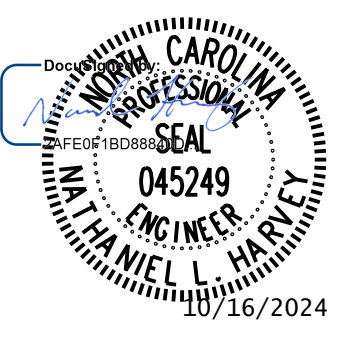
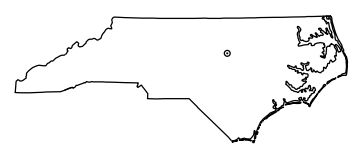
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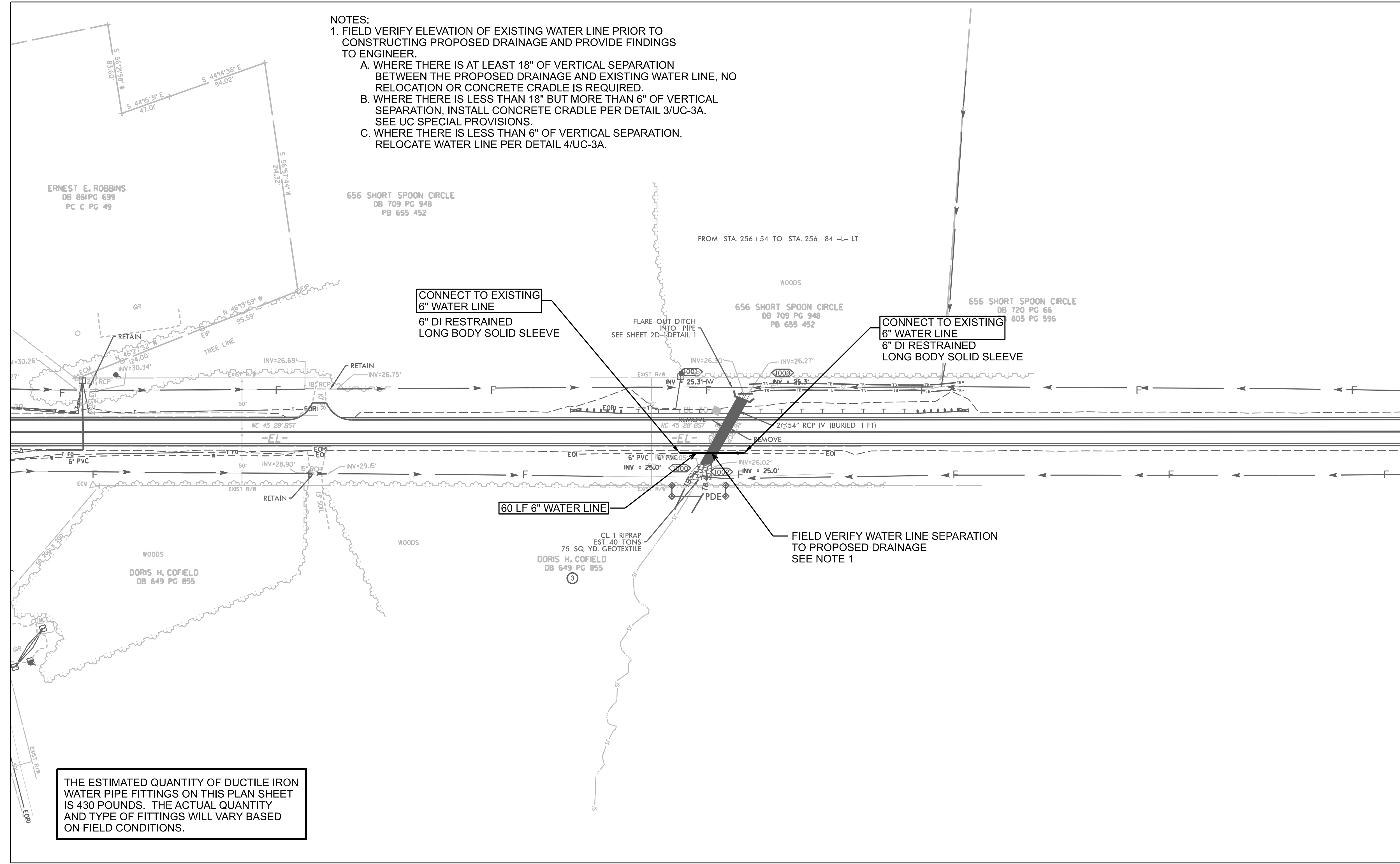
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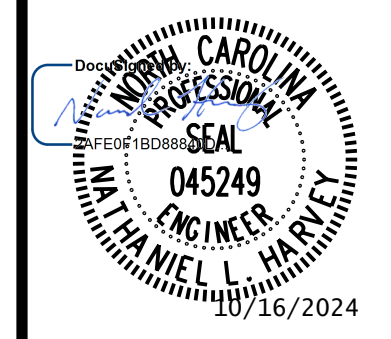
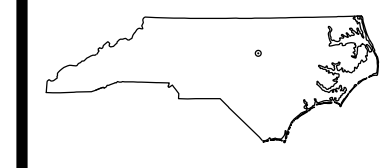
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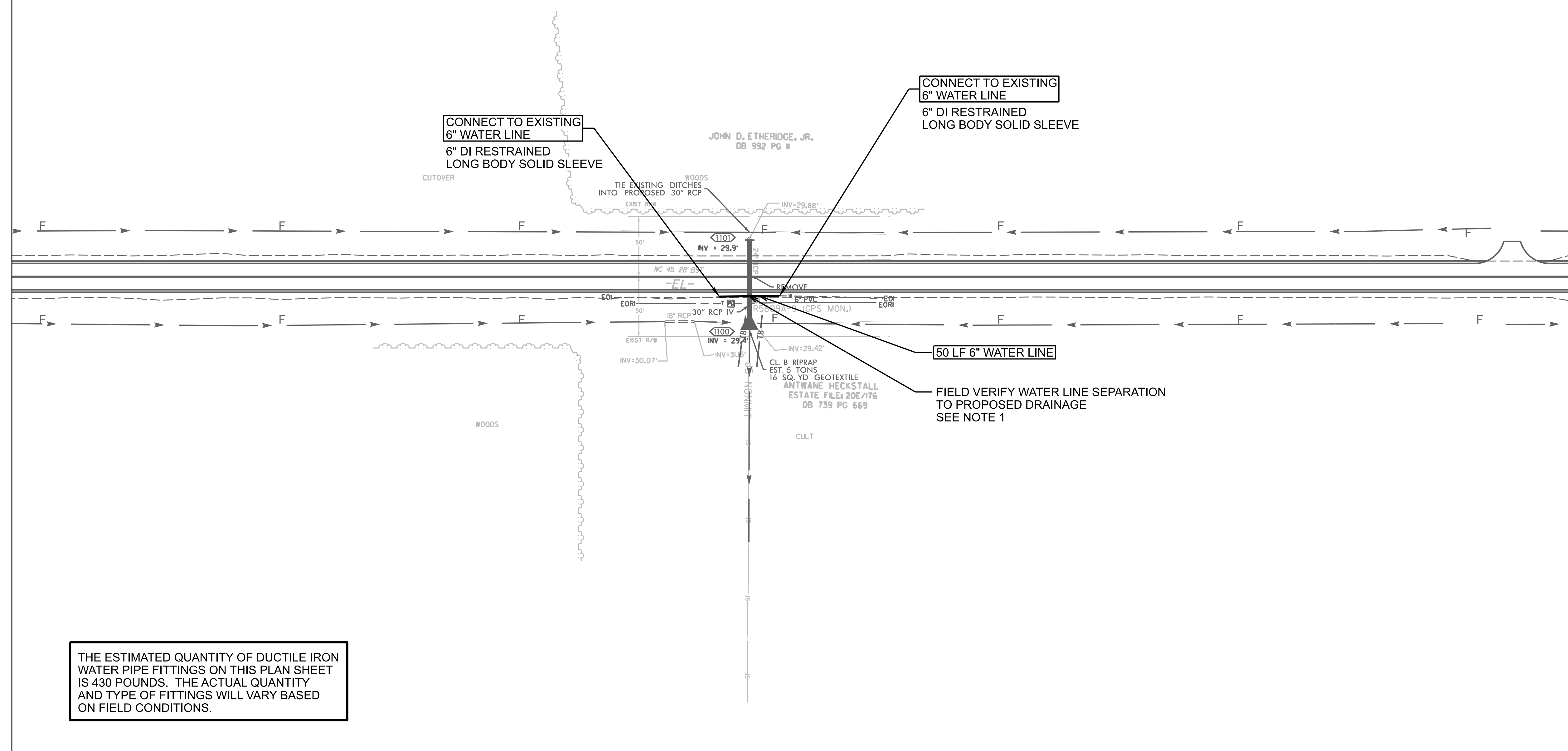
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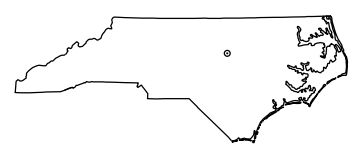


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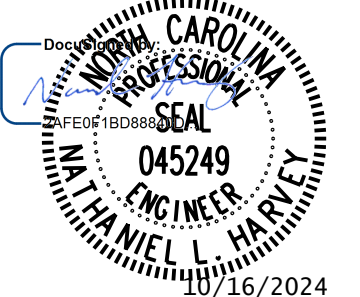
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**UC-13**

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
WAKE COUNTY



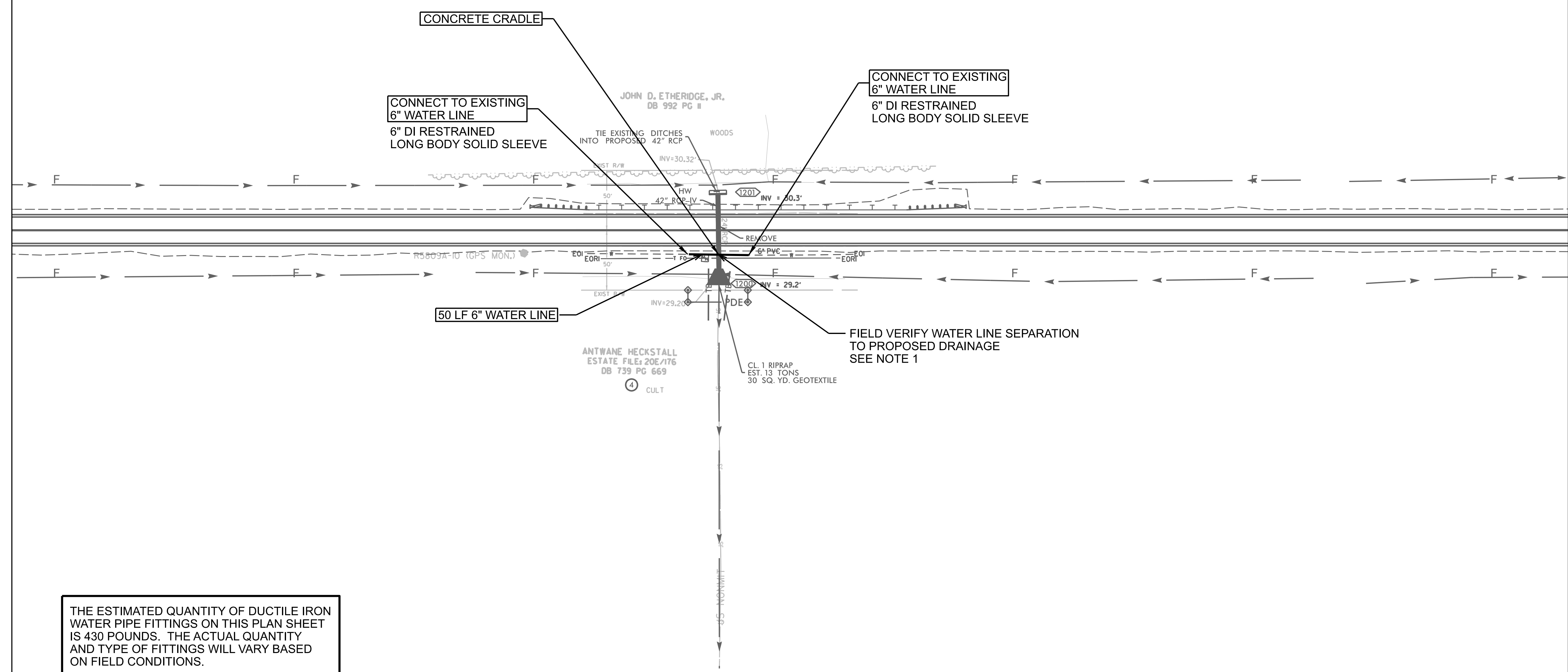
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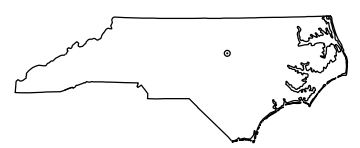


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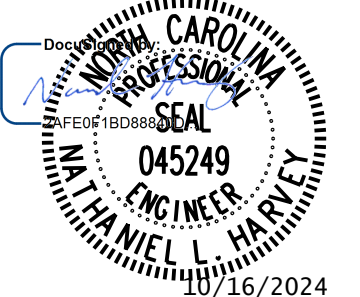
REVISIONS

**R-5809A**  
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NORTH CAROLINA  
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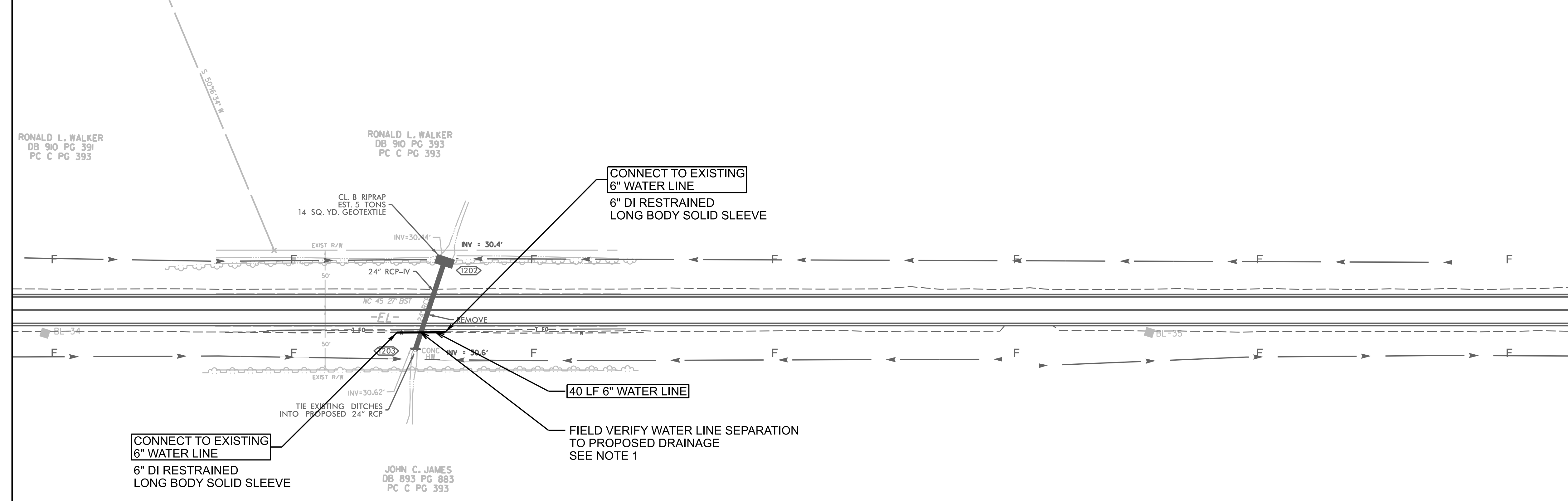


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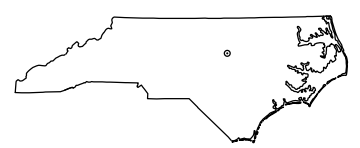
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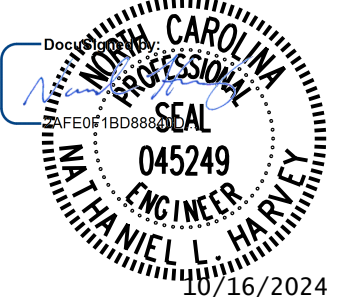


**R-5809A**  
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NORTH CAROLINA  
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WAKE COUNTY



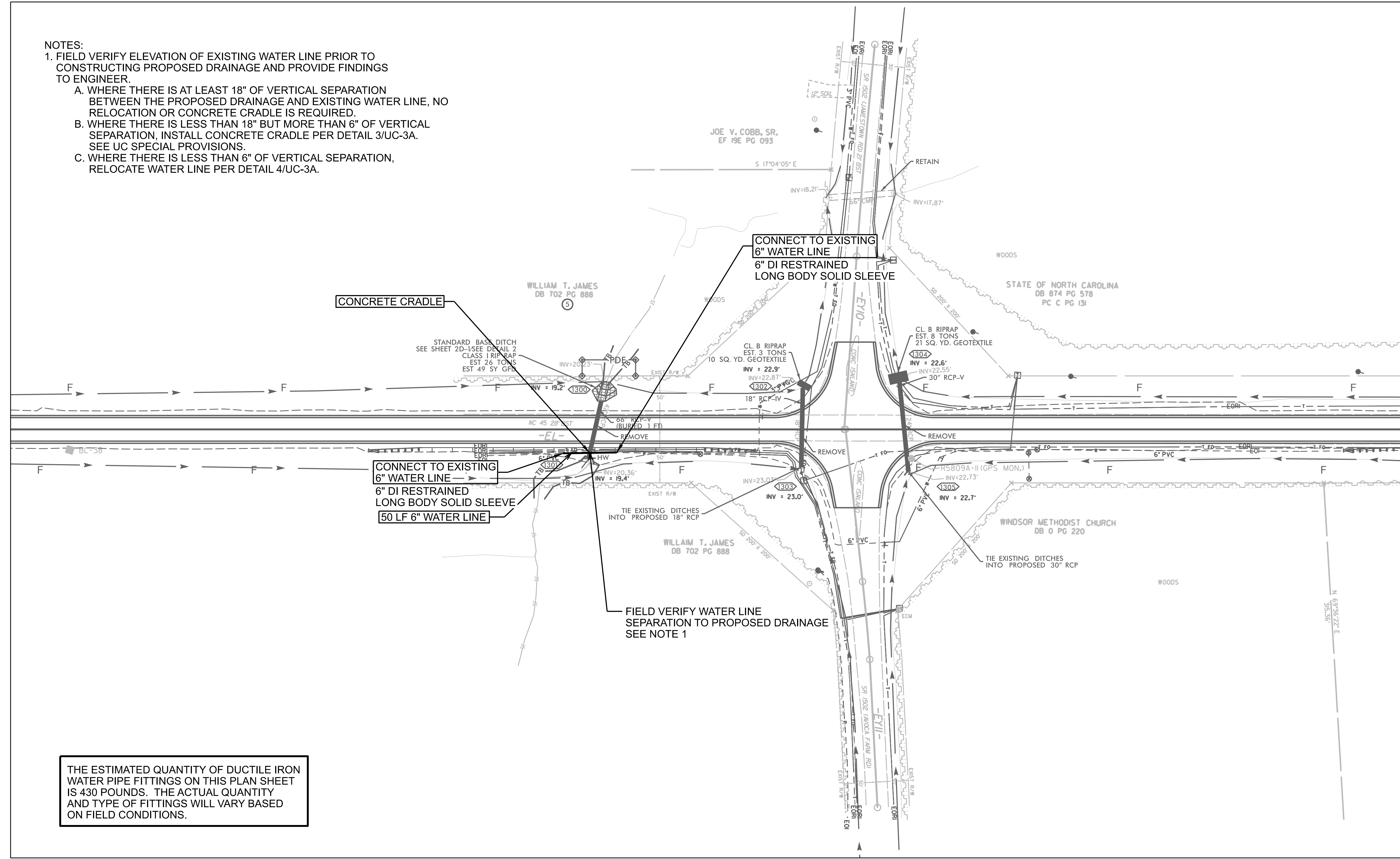
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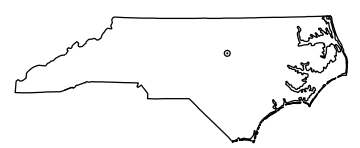


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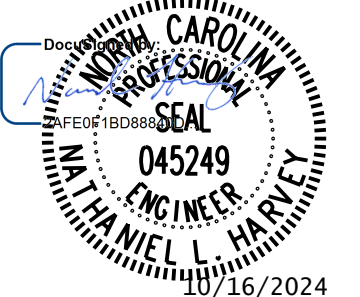
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**R-5809A**  
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NORTH CAROLINA  
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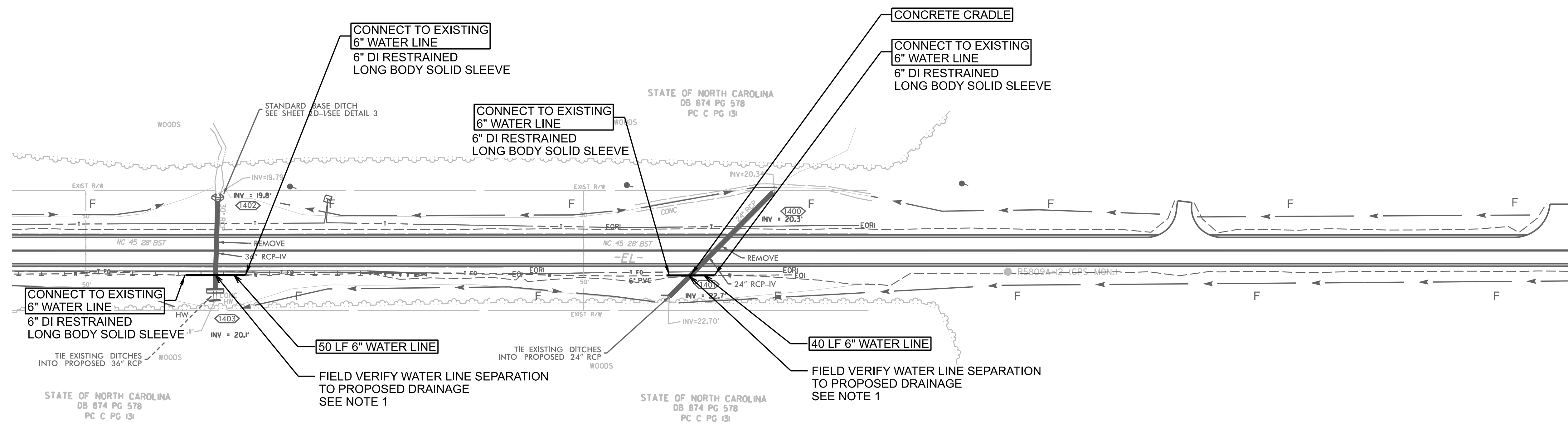


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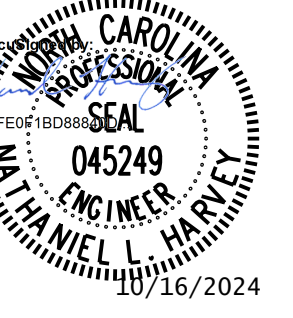
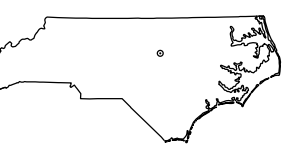
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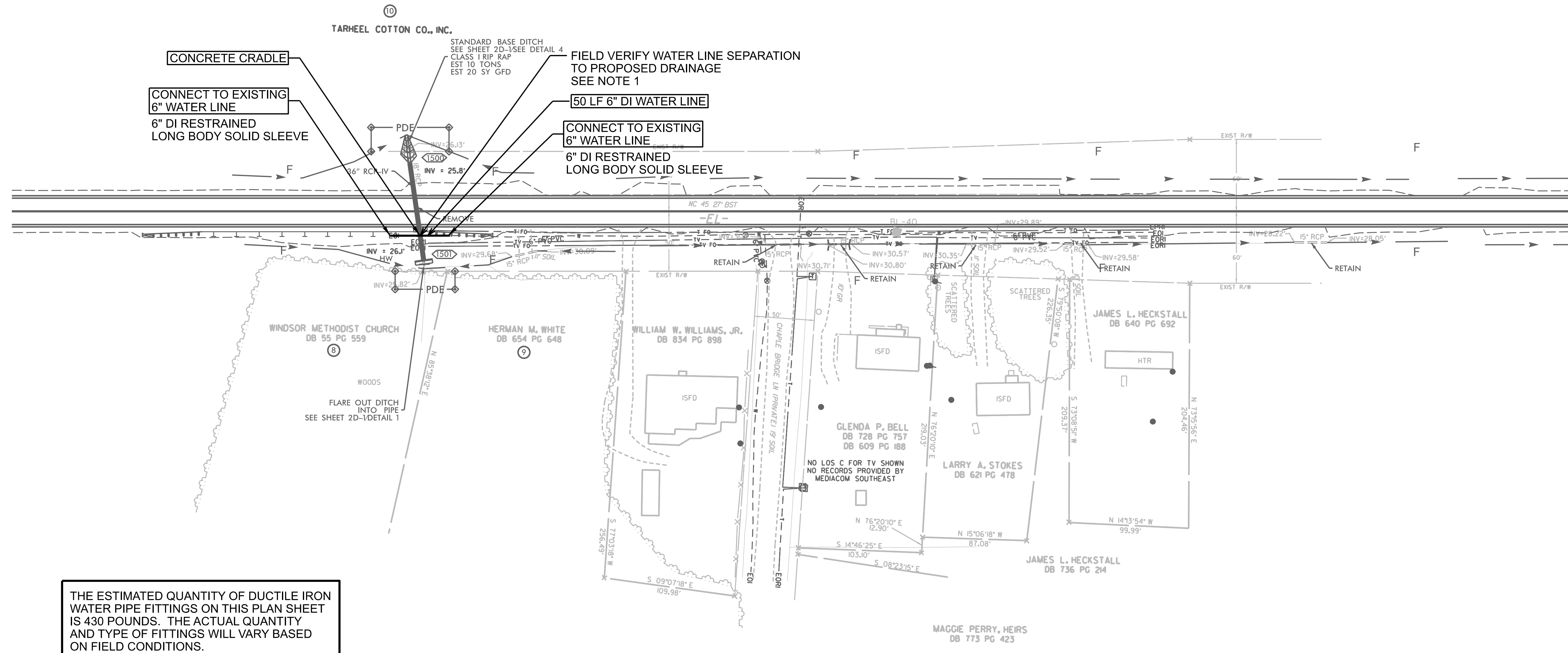
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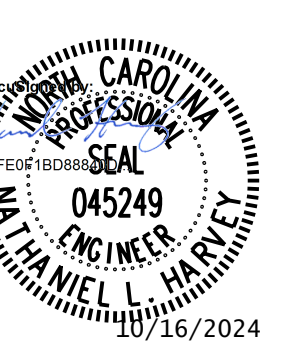
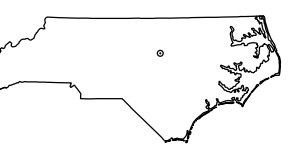
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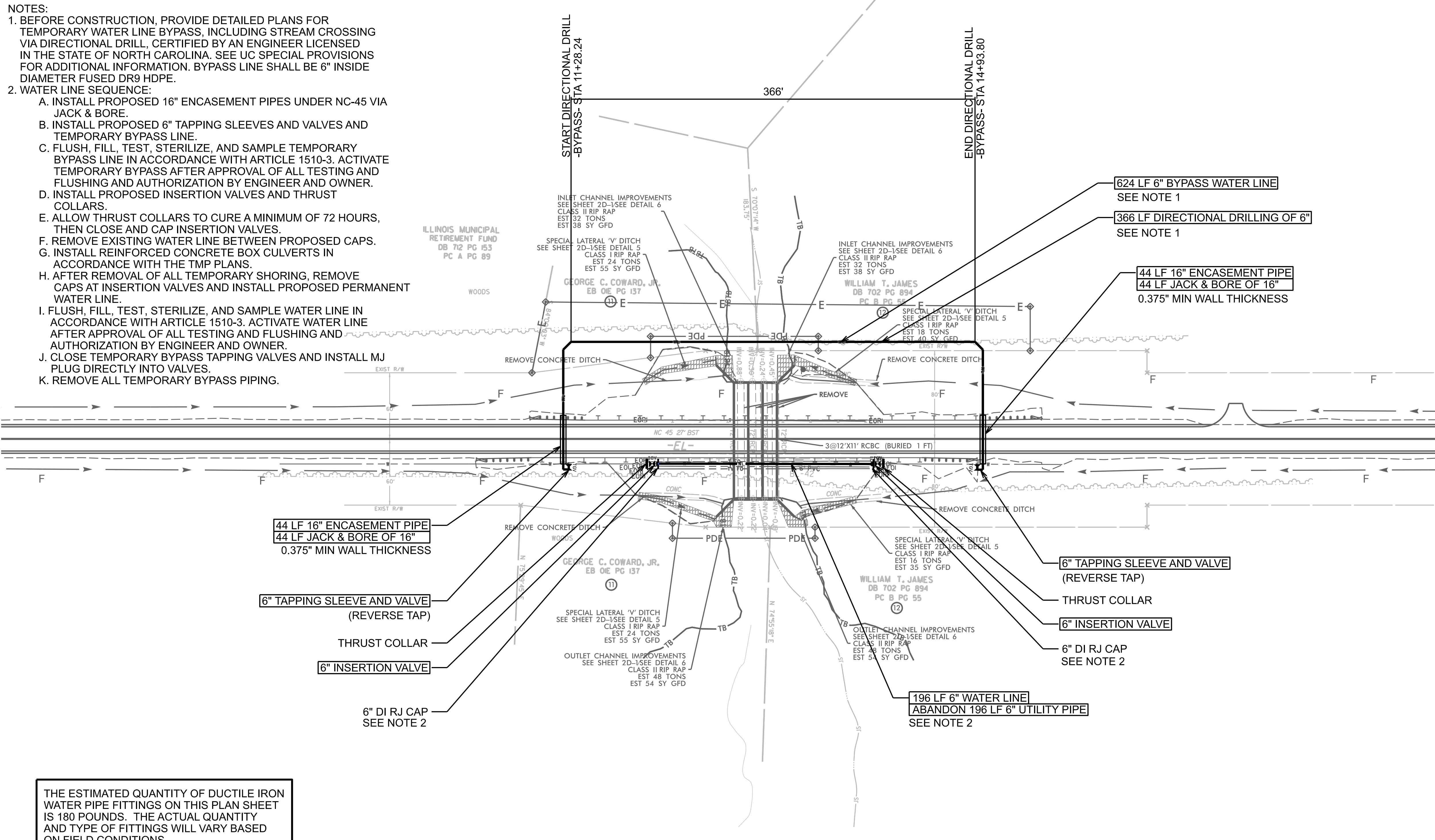
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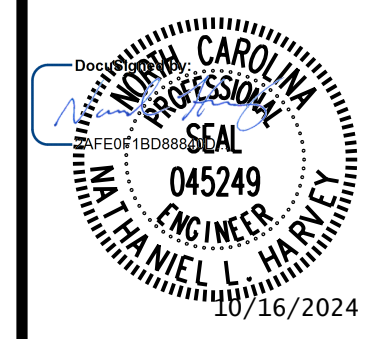
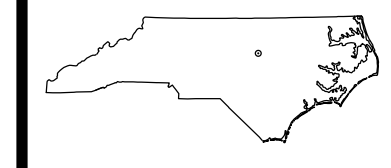
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- NOTES:
- BEFORE CONSTRUCTION, PROVIDE DETAILED PLANS FOR TEMPORARY WATER LINE BYPASS, INCLUDING STREAM CROSSING VIA DIRECTIONAL DRILL, CERTIFIED BY AN ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA. SEE UC SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION. BYPASS LINE SHALL BE 6" INSIDE DIAMETER FUSED DR9 HDPE.
  - WATER LINE SEQUENCE:
    - INSTALL PROPOSED 16" ENCASEMENT PIPES UNDER NC-45 VIA JACK & BORE.
    - INSTALL PROPOSED 6" TAPPING SLEEVES AND VALVES AND TEMPORARY BYPASS LINE.
    - FLUSH, FILL, TEST, STERILIZE, AND SAMPLE TEMPORARY BYPASS LINE IN ACCORDANCE WITH ARTICLE 1510-3. ACTIVATE TEMPORARY BYPASS AFTER APPROVAL OF ALL TESTING AND FLUSHING AND AUTHORIZATION BY ENGINEER AND OWNER.
    - INSTALL PROPOSED INSERTION VALVES AND THRUST COLLARS.
    - ALLOW THRUST COLLARS TO CURE A MINIMUM OF 72 HOURS, THEN CLOSE AND CAP INSERTION VALVES.
    - REMOVE EXISTING WATER LINE BETWEEN PROPOSED CAPS.
    - INSTALL REINFORCED CONCRETE BOX CULVERTS IN ACCORDANCE WITH THE TMP PLANS.
    - AFTER REMOVAL OF ALL TEMPORARY SHORING, REMOVE CAPS AT INSERTION VALVES AND INSTALL PROPOSED PERMANENT WATER LINE.
    - FLUSH, FILL, TEST, STERILIZE, AND SAMPLE WATER LINE IN ACCORDANCE WITH ARTICLE 1510-3. ACTIVATE WATER LINE AFTER APPROVAL OF ALL TESTING AND FLUSHING AND AUTHORIZATION BY ENGINEER AND OWNER.
    - CLOSE TEMPORARY BYPASS TAPPING VALVES AND INSTALL MJ PLUG DIRECTLY INTO VALVES.
    - REMOVE ALL TEMPORARY BYPASS PIPING.



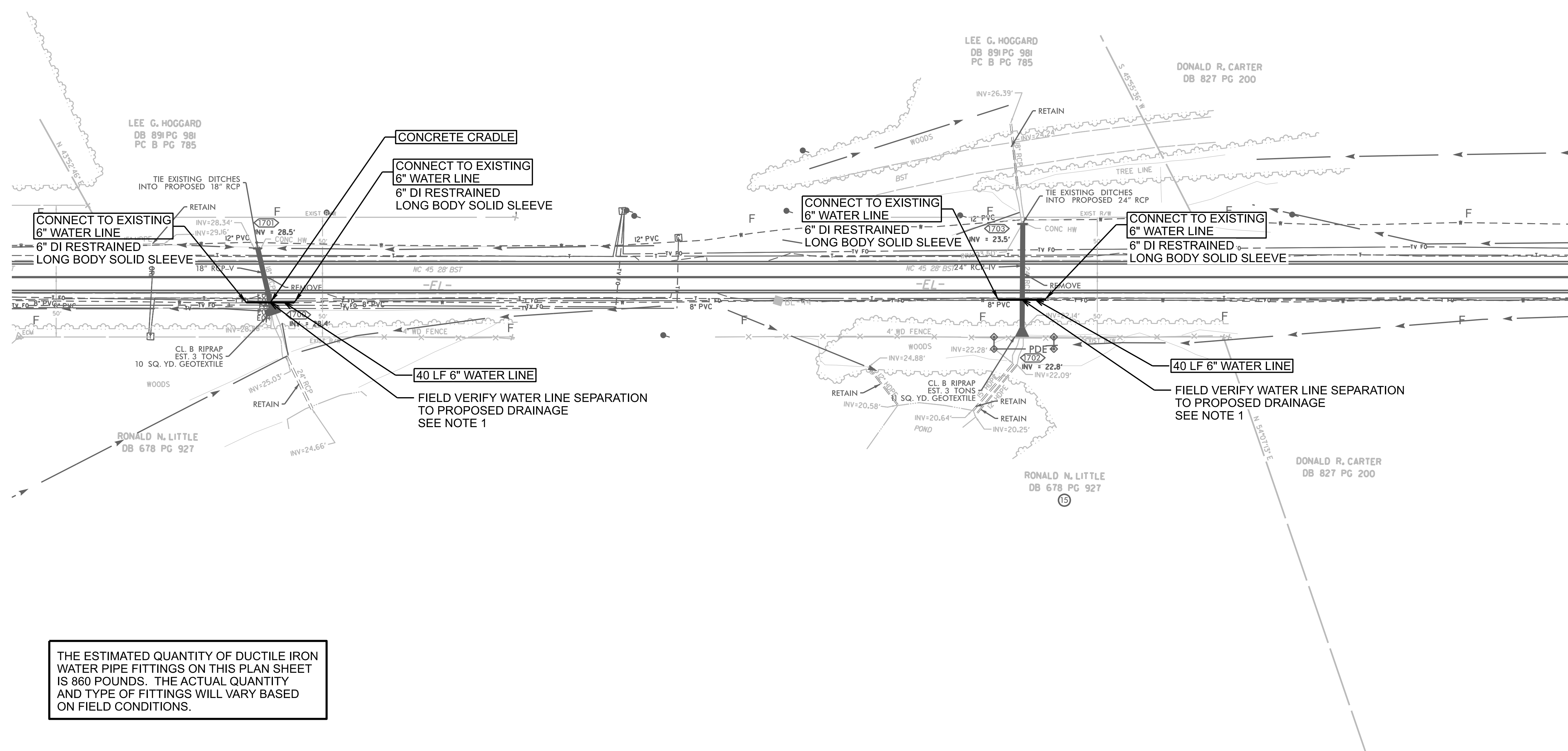
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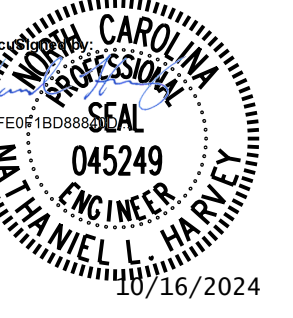
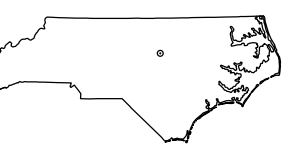
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UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151

- NOTES:
- FIELD VERIFY ELEVATION OF EXISTING WATER LINE PRIOR TO CONSTRUCTING PROPOSED DRAINAGE AND PROVIDE FINDINGS TO ENGINEER.
    - WHERE THERE IS AT LEAST 18" OF VERTICAL SEPARATION BETWEEN THE PROPOSED DRAINAGE AND EXISTING WATER LINE, NO RELOCATION OR CONCRETE CRADLE IS REQUIRED.
    - WHERE THERE IS LESS THAN 18" BUT MORE THAN 6" OF VERTICAL SEPARATION, INSTALL CONCRETE CRADLE PER DETAIL 3/UC-3A. SEE UC SPECIAL PROVISIONS.
    - WHERE THERE IS LESS THAN 6" OF VERTICAL SEPARATION, RELOCATE WATER LINE PER DETAIL 4/UC-3A.



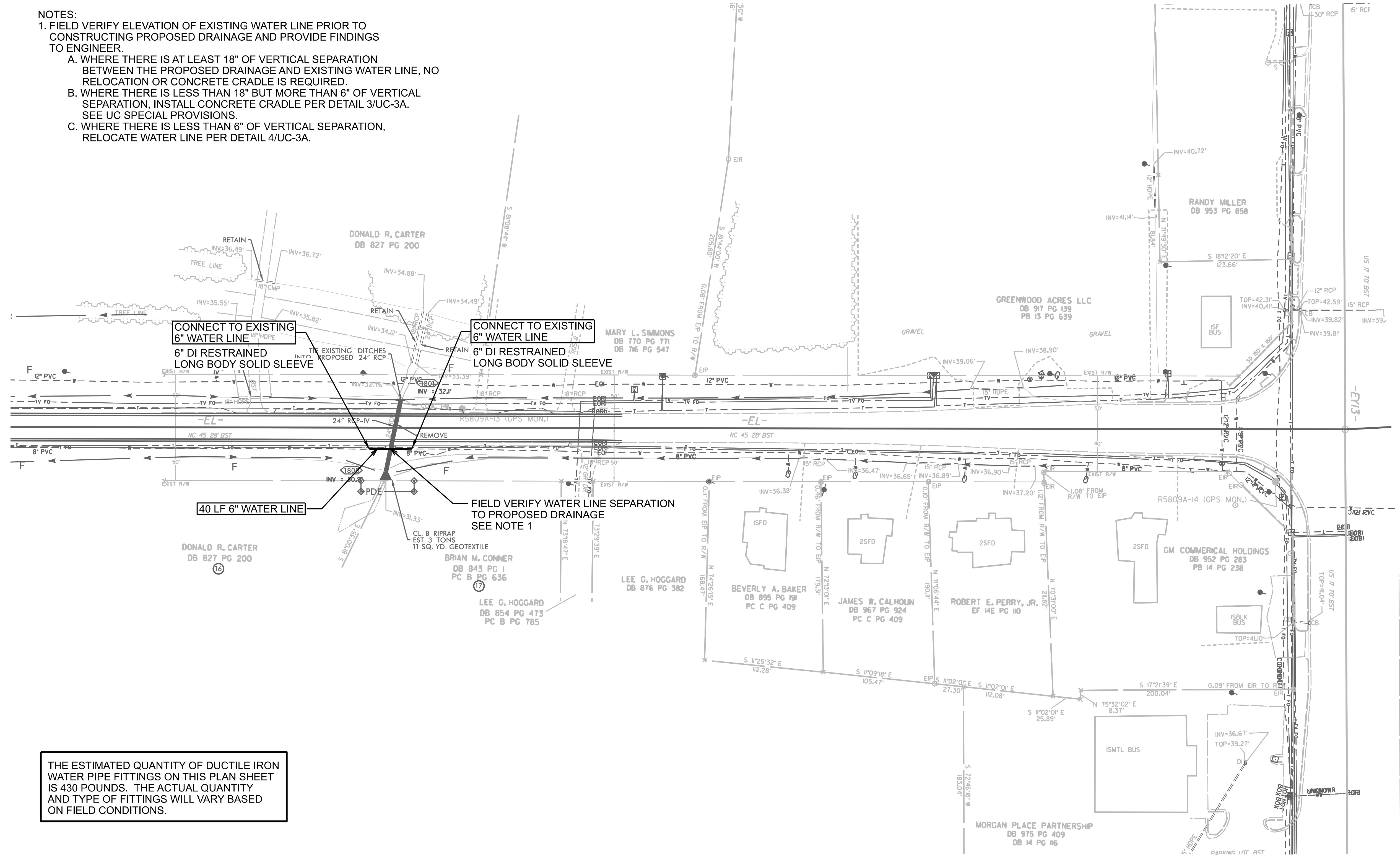
THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 860 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

REVISIONS



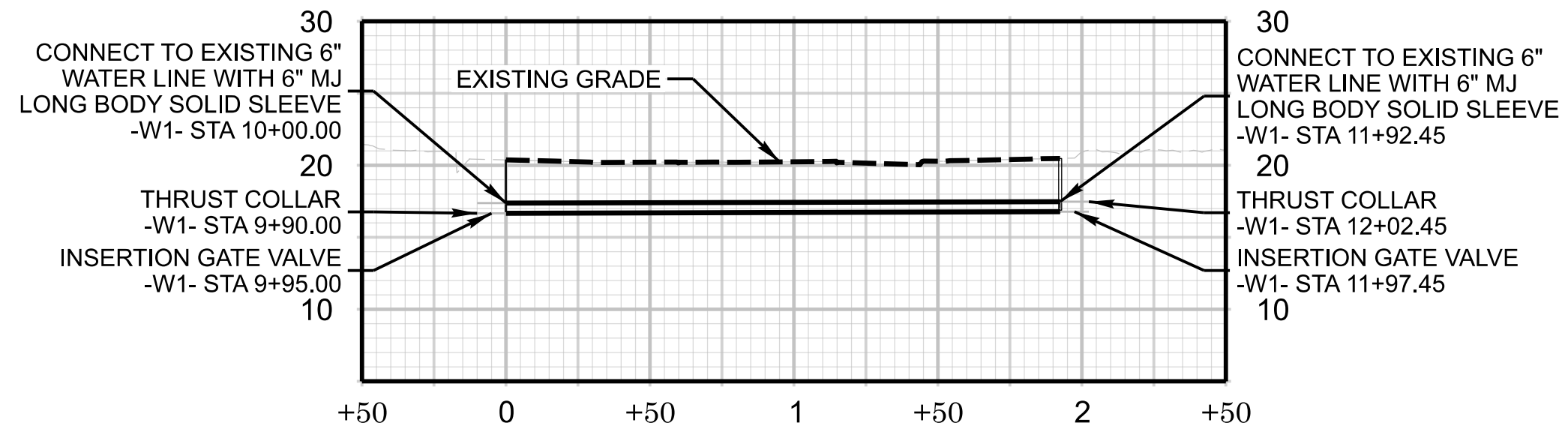
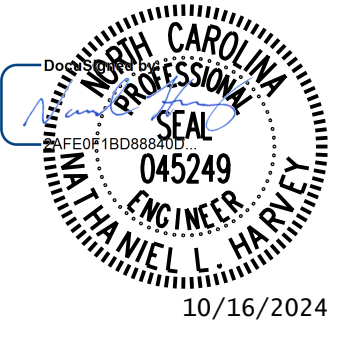
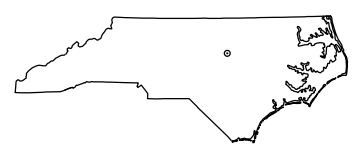
DESIGNED BY: NLH
DRAWN BY: JHC
CHECKED BY: ZGP
APPROVED BY: NLH
REVISED:
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151

- NOTES:
- FIELD VERIFY ELEVATION OF EXISTING WATER LINE PRIOR TO CONSTRUCTING PROPOSED DRAINAGE AND PROVIDE FINDINGS TO ENGINEER.
    - WHERE THERE IS AT LEAST 18" OF VERTICAL SEPARATION BETWEEN THE PROPOSED DRAINAGE AND EXISTING WATER LINE, NO RELOCATION OR CONCRETE CRADLE IS REQUIRED.
    - WHERE THERE IS LESS THAN 18" BUT MORE THAN 6" OF VERTICAL SEPARATION, INSTALL CONCRETE CRADLE PER DETAIL 3/UC-3A. SEE UC SPECIAL PROVISIONS.
    - WHERE THERE IS LESS THAN 6" OF VERTICAL SEPARATION, RELOCATE WATER LINE PER DETAIL 4/UC-3A.

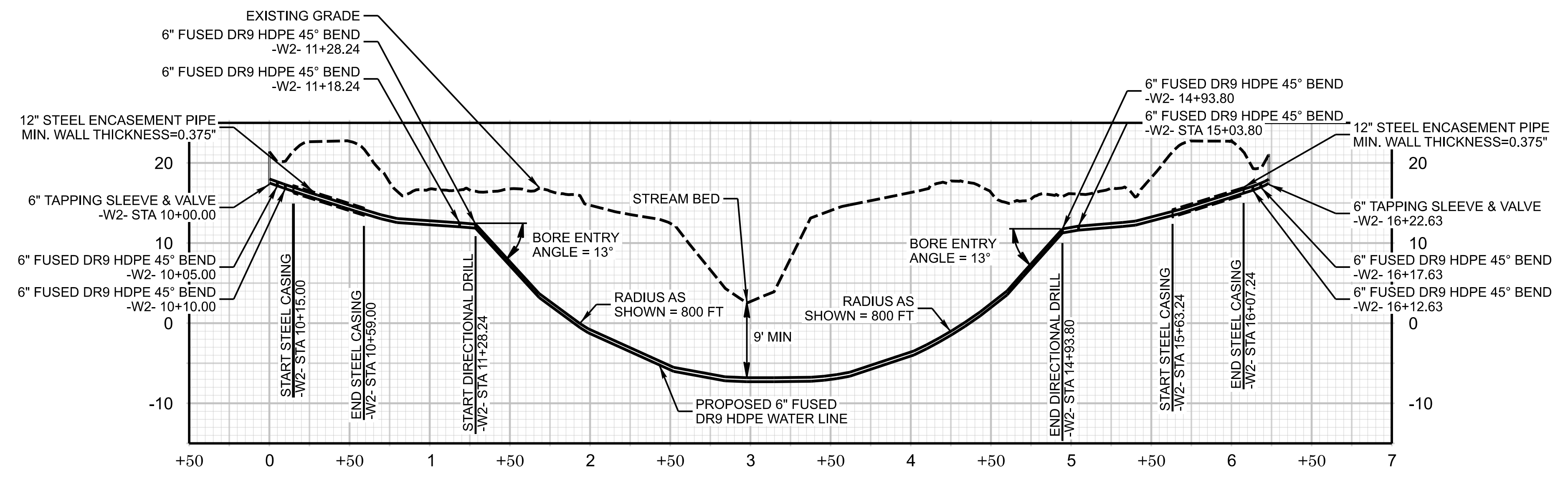


THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 430 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

REVISIONS



-W1-



-W2- TEMPORARY BYPASS LINE

REVISIONS