

09\_08/19/19

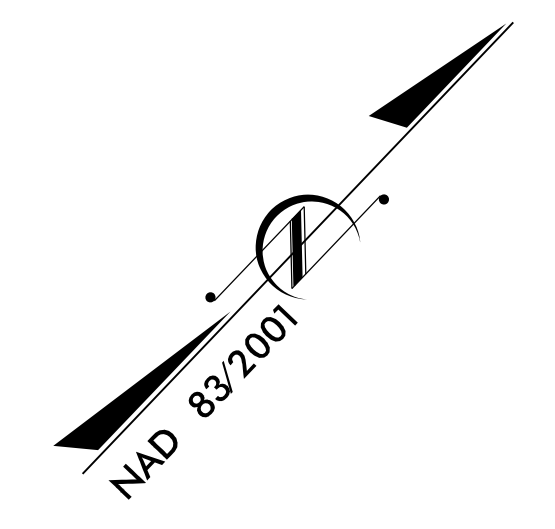
T.I.P. NO.	SHEET NO.
B-4484	UC-1

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

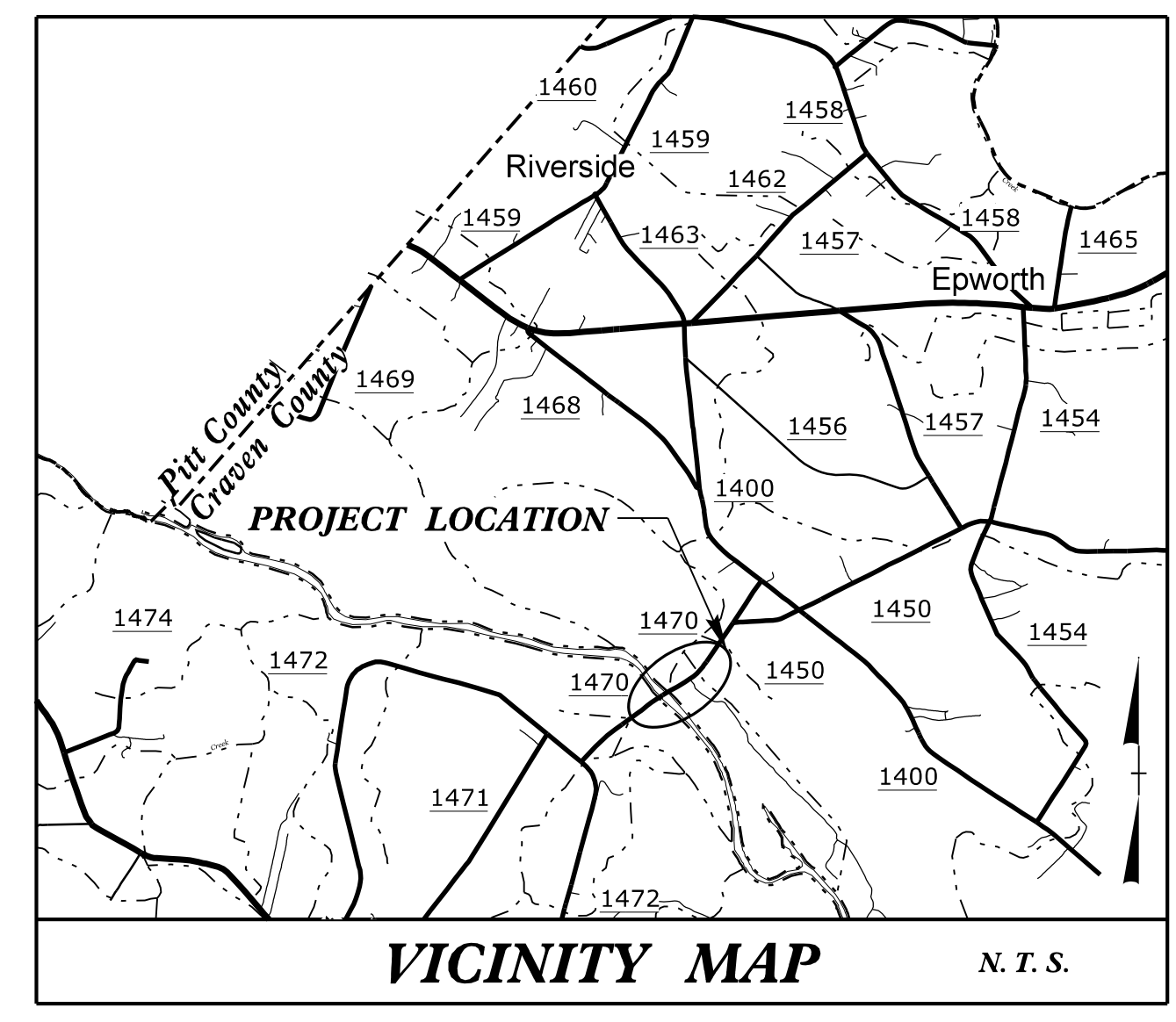
**UTILITY CONSTRUCTION PLANS  
CRAVEN COUNTY**

**LOCATION: REPLACE BRIDGES NO. 138 & 139 OVER NEUSE RIVER AND NEUSE RIVER OVERFLOW ON SR 1470 (MAPLE CYPRESS ROAD)**

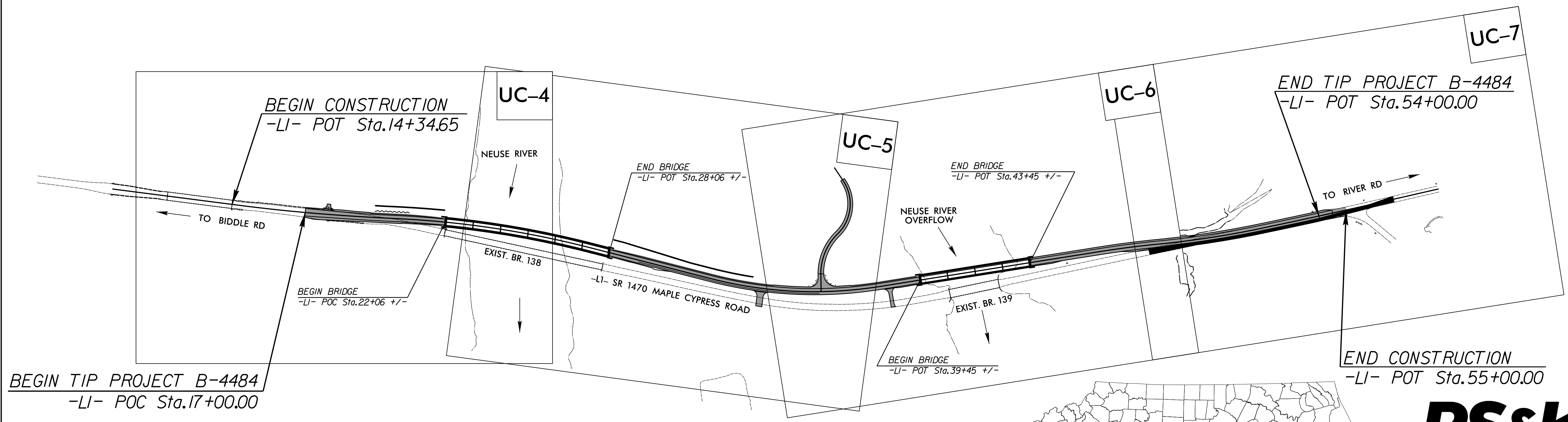
**TYPE OF WORK: WATER LINE RELOCATION**



**TIP PROJECT: B-4484**



**UC PLANS**

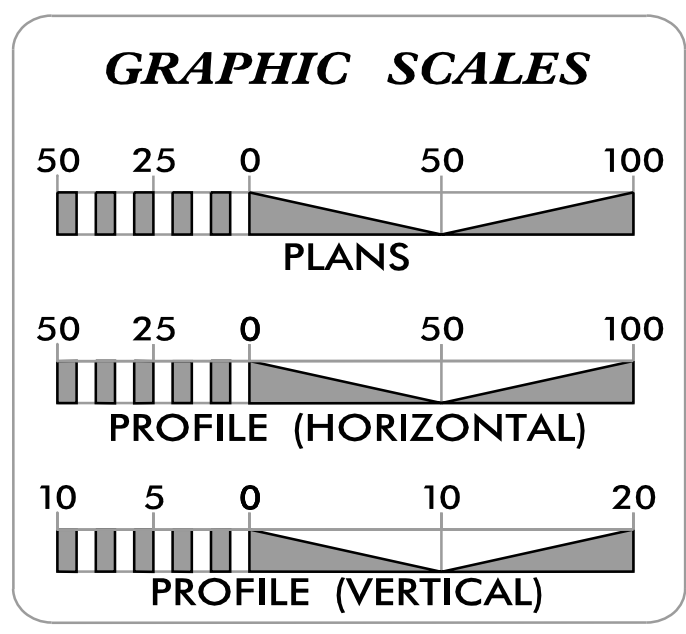


THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.  
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.  
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**CONTRACT:**

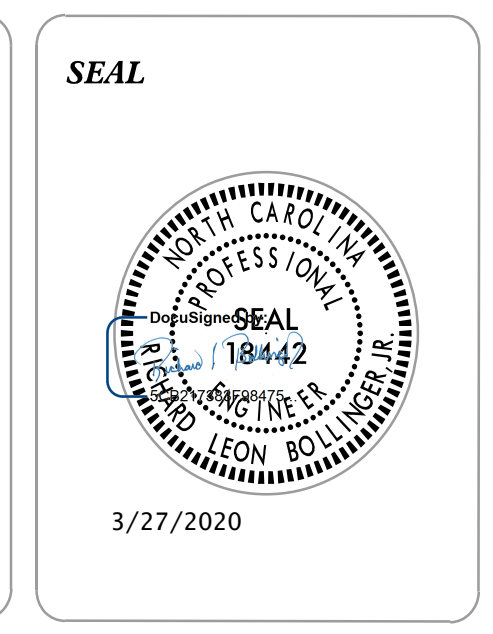


**INDEX OF SHEETS**

SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A TO UC-3E	DETAILS
UC-4 TO UC-7	UTILITY CONSTRUCTION SHEET
UC-8 TO UC-9	PROFILE SHEET

**WATER AND SEWER OWNERS ON PROJECT**

(A) CRAVEN COUNTY WATER



PREPARED IN THE OFFICE OF  
**RS&H**  
ARCHITECTS-ENGINEERS-PLANNERS, INC.  
8521 SIX FORKS ROAD, SUITE 400  
RALEIGH, NC 27615

**RICHARD BOLLINGER, PE**  
PROJECT ENGINEER

**ALEXANDER VINSON, PE**  
PROJECT DESIGN ENGINEER

**HON YEUNG, PE**  
NCDOT CONTACT

# 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	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)

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5/14/99

# UTILITY CONSTRUCTION

PROJECT REFERENCE NO. B-4484	SHEET NO. UC-3
DESIGNED BY: ARV	
DRAWN BY: ARV	
CHECKED BY: RLB	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION 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 2018.
2. THE EXISTING UTILITIES BELONG TO CRAVEN COUNTY WATER .
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. ALL PROPOSED WATER LINE SHALL BE PC350 D.I.R.J. (DUCTILE IRON RESTRAINED JOINT) PIPE FOR TRENCHED INSTALLATION AND DR-9 HDPE FOR TRENCHLESS UNLESS OTHERWISE SPECIFIED IN PLANS.
2. THE EXISTING ABOVE GROUND WATER LINE IS TO BE REMOVED AND THE EXISTING UNDER GROUND WATER LINE IS TO BE ABANDONED OR REMOVED WHERE RELOCATIONS ARE PROPOSED.
3. 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.

## UTILITY CONSTRUCTION

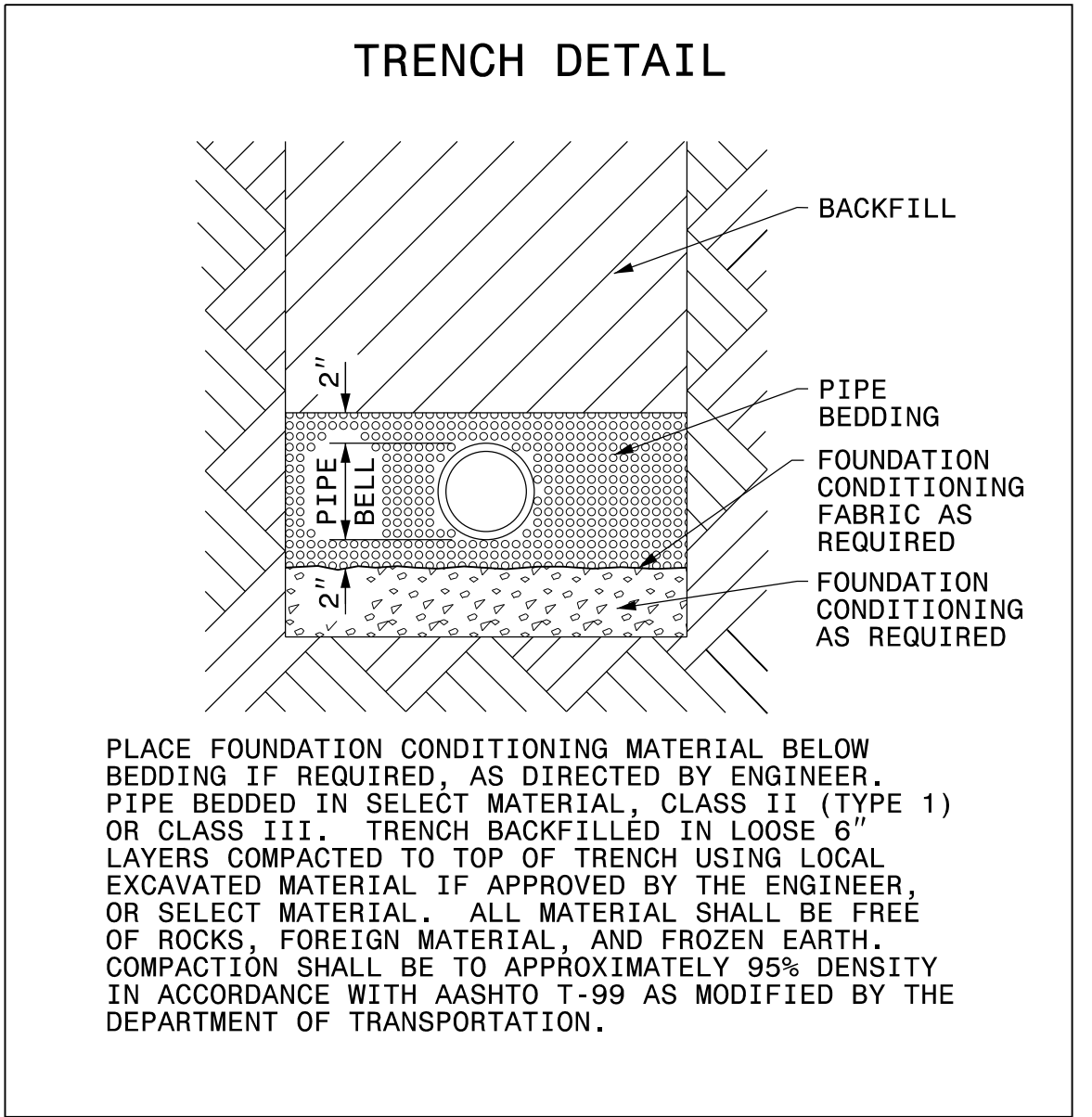
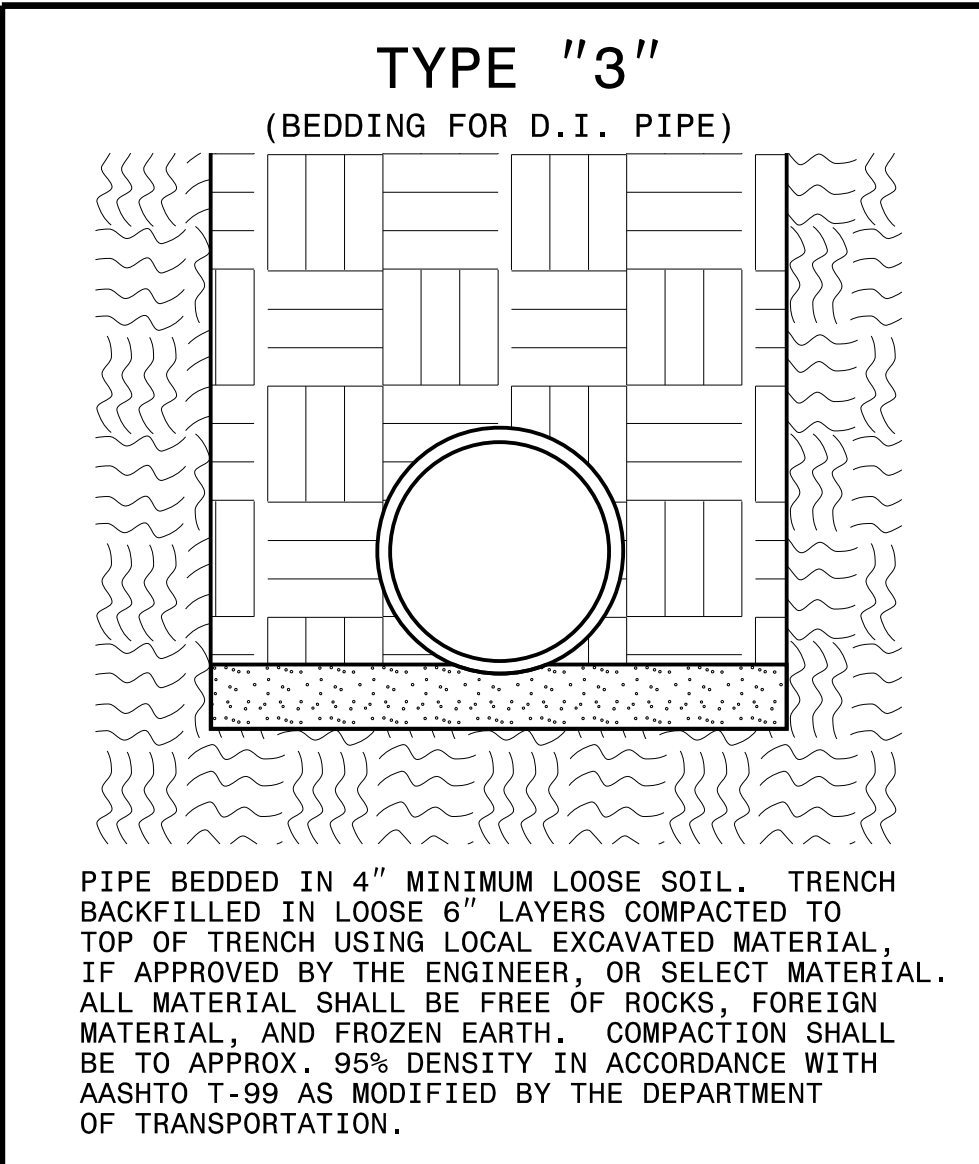
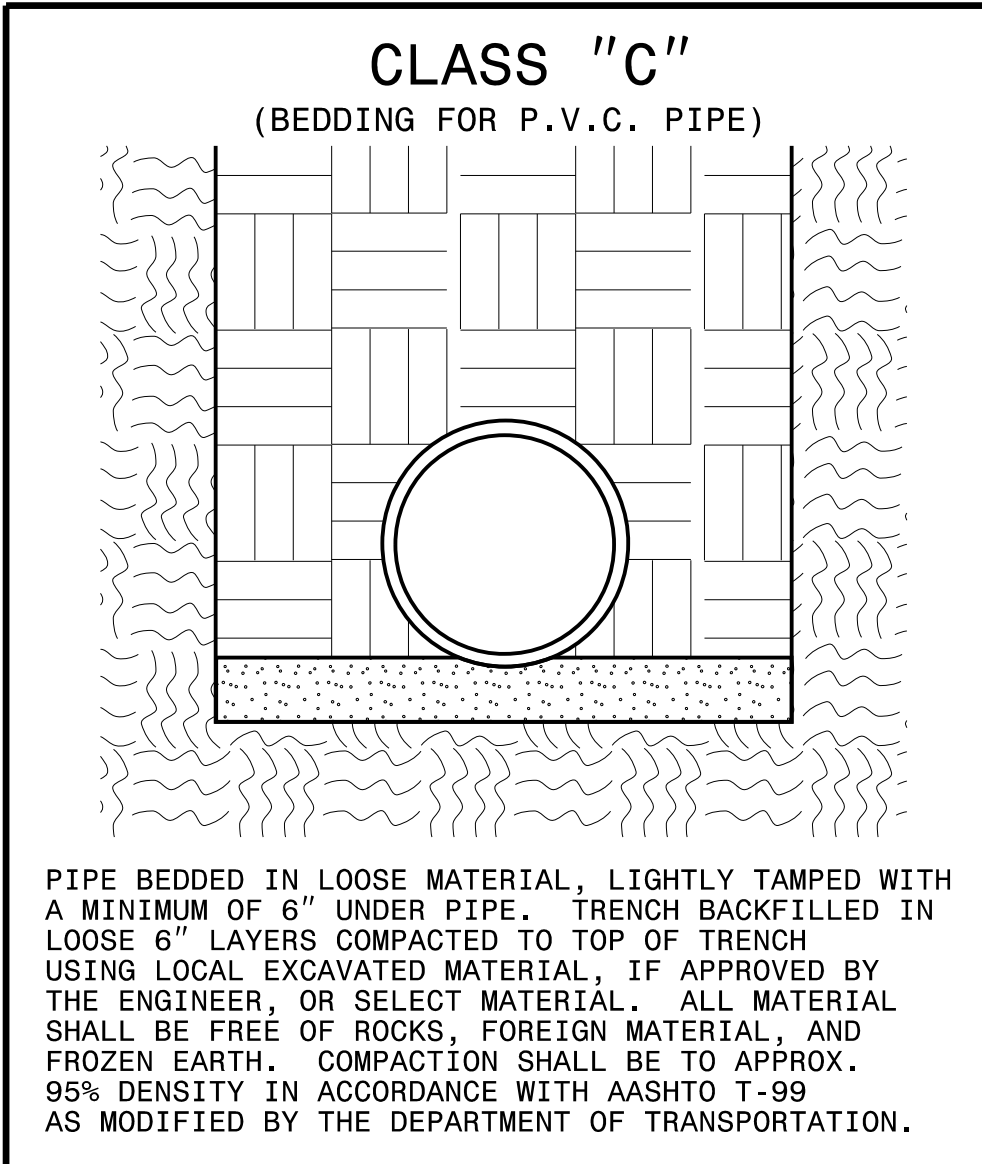
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5/14/99

# PROJECT TYPICAL DETAILS

PROJECT REFERENCE NO. <i>B-4484</i>	SHEET NO. <b>UC-3A</b>
DESIGNED BY: <i>ARV</i>	
DRAWN BY: <i>ARV</i>	
CHECKED BY: <i>RLB</i>	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

## UTILITY CONSTRUCTION PLANS ONLY



GENERAL TRENCH DETAIL  
NOT TO SCALE

**NOTES:**

1. CONSIDERATION OF THE PIPE-ZONE EMBEDMENT CONDITIONS INCLUDED IN THIS FIGURE MAY BE INFLUENCED BY FACTORS OTHER THAN PIPE STRENGTH. FOR ADDITIONAL INFORMATION ON PIPE BEDDING AND BACKFILL, SEE ANSI/AWWA C600.

## STANDARD PIPE BEDDING DETAILS

NOT TO SCALE

MAXIMUM TRENCH WIDTH AT TOP OF PIPE			
NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)	NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)
4	28	20	44
6	30	24	48
8	32	30	54
10	34	36	60
12	36	42	66
14	38	48	72
16	40	54	78
18	42		

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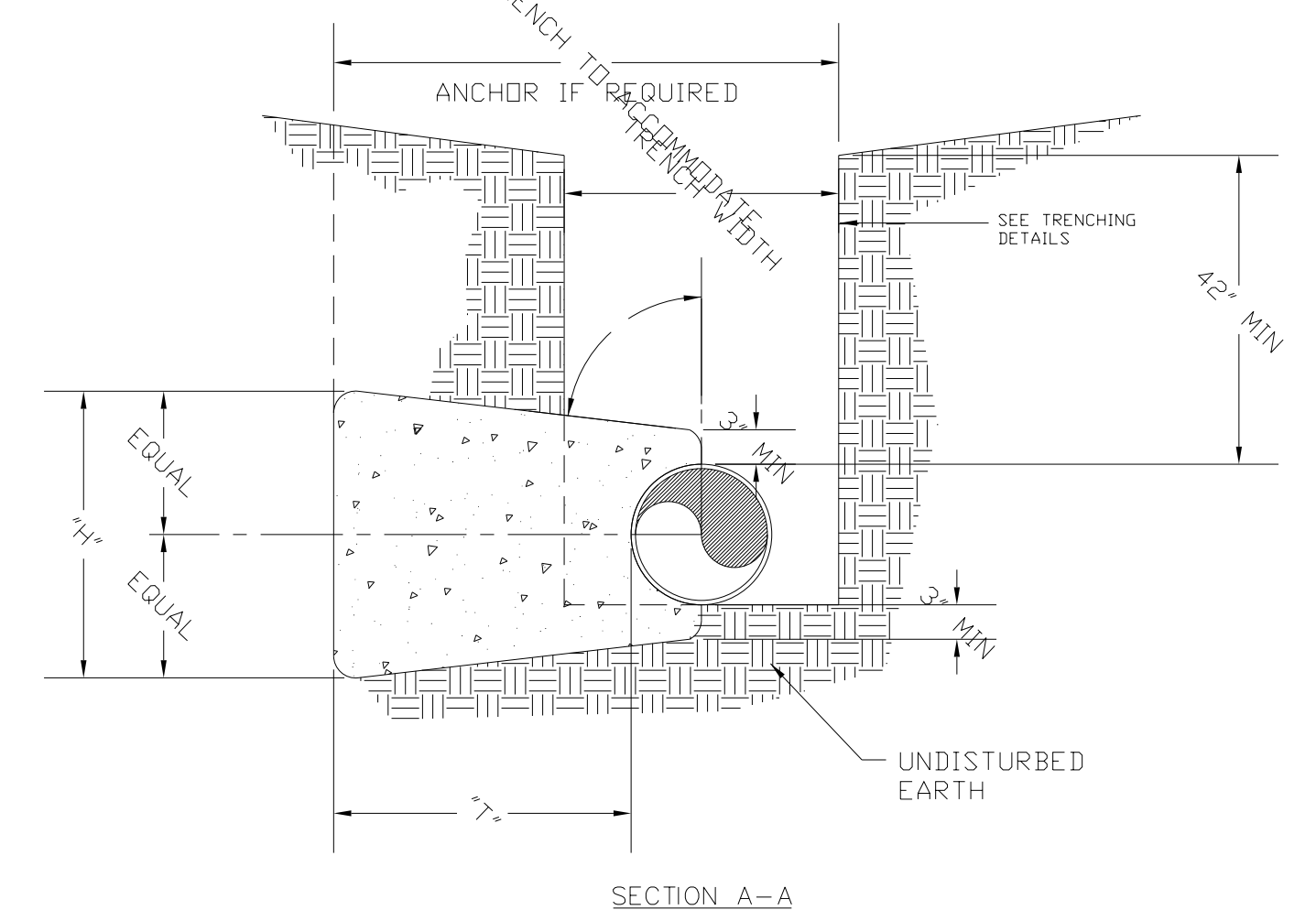
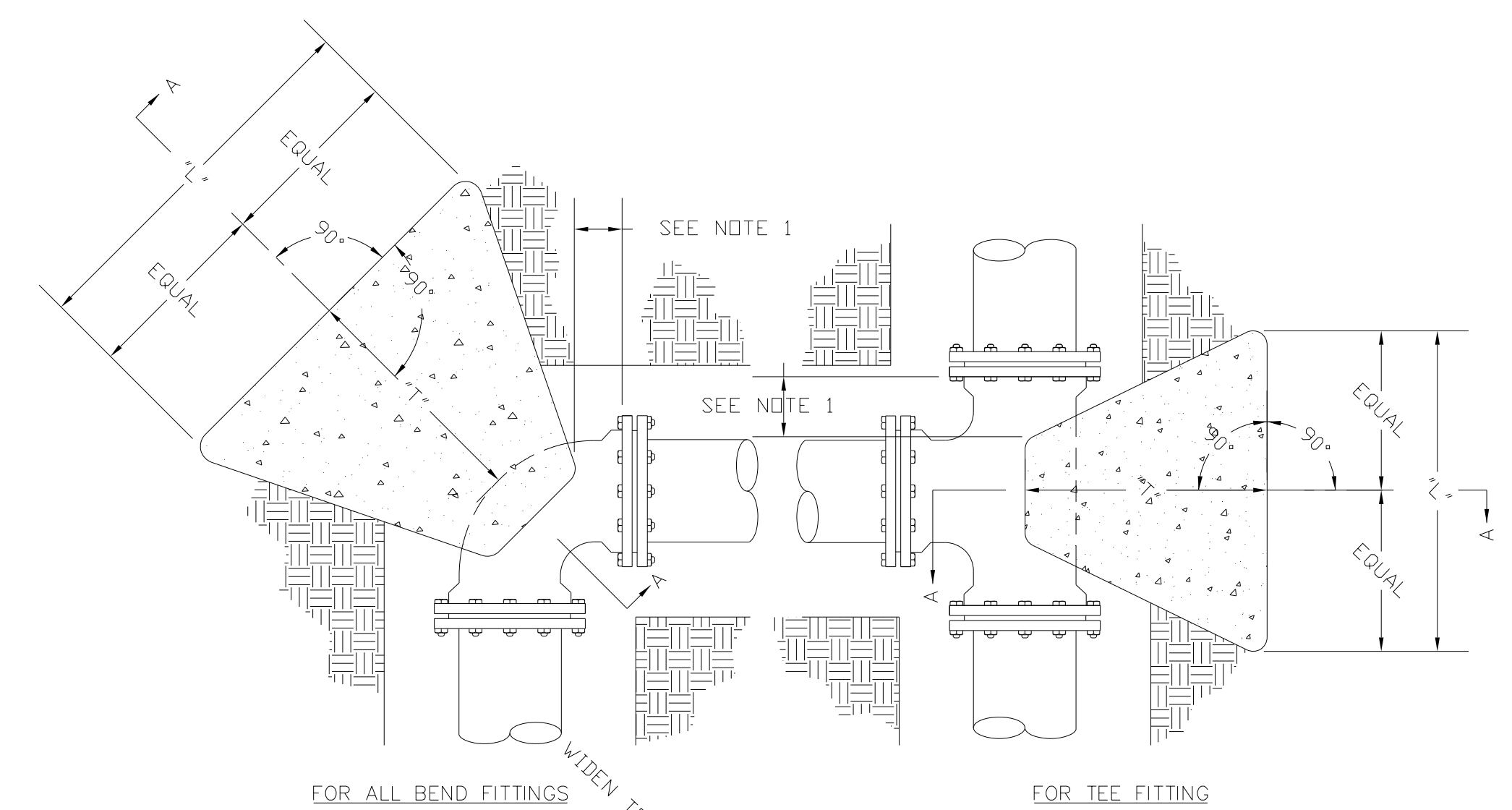


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# PROJECT TYPICAL DETAILS

PROJECT REFERENCE NO.	SHEET NO.
B-4484	UC-3B
DESIGNED BY: ARV	
DRAWN BY: ARV	
CHECKED BY: RLB	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
3/27/2020 UTILITY CONSTRUCTION PLANS ONLY	

## UTILITY CONSTRUCTION



- NOTES:**
- CONCRETE BLOCKING IS TO BE FORMED TO ENSURE ACCESSIBILITY TO FITTINGS AND POURED AGAINST UNDISTURBED EARTH.
  - ALL FITTINGS SHALL BE WRAPPED IN POLYETHYLENE TO PREVENT CONCRETE FROM CONTACTING FITTINGS, BOLTS, OR ENDS OF MECHANICAL JOINT BENDS.
  - CONCRETE TO BE MINIMUM 3,000 PSI @ 28 DAYS.
  - WHEN SACKCRETE IS TO BE USED, IT SHALL BE PROPERLY MIXED PER MANUFACTURER SPECIFICATIONS.
  - FOR REQUIRED DIMENSIONS, SEE THRUST BLOCKING TABLE ON RIGHT

THRUST BLOCKING  
NOT TO SCALE

TEST PRESSURE = 150 PSI

PIPE SIZE	TYPE FITTING	DIMENSIONS (FT)			VOLUME CONCRETE CU. YD.
		*L*	*H*	*T*	
<4 INCHES	11 1/4"	----	----	----	----
	22 1/2"	1.00	1.00	1.50	0.06
	45"	1.00	1.00	1.50	0.06
	90"	1.00	1.00	2.50	0.09
	TEE	1.00	1.00	2.00	0.07
4 INCHES	11 1/4"	1.00	1.00	2.50	0.09
	22 1/2"	1.00	1.00	2.50	0.09
	45"	1.00	1.00	2.50	0.09
	90"	1.50	1.50	2.50	0.15
	TEE	1.50	1.50	2.00	0.12
6 INCHES	11 1/4"	1.50	1.50	2.50	0.15
	22 1/2"	1.50	1.50	2.50	0.15
	45"	1.50	1.50	2.50	0.15
	90"	2.00	2.00	3.00	0.28
	TEE	2.00	2.00	2.50	0.23
8 INCHES	11 1/4"	2.00	2.00	2.50	0.23
	22 1/2"	2.00	2.00	2.50	0.23
	45"	2.00	2.00	2.75	0.25
	90"	3.00	3.00	3.00	0.39
	TEE	3.00	2.00	2.50	0.32
10 INCHES	11 1/4"	2.00	2.00	3.00	0.28
	22 1/2"	2.00	2.00	3.00	0.28
	45"	3.00	2.50	3.00	0.47
	90"	4.50	3.00	3.50	0.94
	TEE	4.50	3.00	3.00	0.81
12 INCHES	11 1/4"	2.00	2.00	3.00	0.28
	22 1/2"	2.00	2.00	3.00	0.28
	45"	3.00	2.50	3.00	0.47
	90"	4.50	3.00	3.50	0.94
	TEE	4.50	3.00	3.00	0.81
16 INCHES	11 1/4"	2.00	2.00	3.00	0.28
	22 1/2"	3.00	2.00	3.00	0.39
	45"	4.00	3.00	3.50	0.84
	90"	6.50	3.50	3.50	1.54
	TEE	6.50	3.50	3.00	1.32

TEST PRESSURE = 200 PSI

PIPE SIZE	TYPE FITTING	DIMENSIONS (FT)			VOLUME CONCRETE CU. YD.
		*L*	*H*	*T*	
<4 INCHES	11 1/4"	1.00	1.00	1.00	0.04
	22 1/2"	1.00	1.00	1.50	0.06
	45"	1.00	1.00	1.50	0.06
	90"	1.50	1.50	2.50	0.15
	TEE	1.50	1.50	2.00	0.12
4 INCHES	11 1/4"	1.00	1.00	2.50	0.09
	22 1/2"	1.00	1.00	2.50	0.09
	45"	1.50	1.50	2.50	0.15
	90"	1.50	1.50	2.50	0.15
	TEE	1.50	1.50	2.00	0.12
6 INCHES	11 1/4"	1.50	1.50	2.50	0.15
	22 1/2"	1.50	1.50	2.50	0.15
	45"	1.50	1.50	2.50	0.15
	90"	2.50	2.00	3.00	0.33
	TEE	2.50	2.00	2.50	0.28
8 INCHES	11 1/4"	2.00	2.00	2.50	0.23
	22 1/2"	2.00	2.00	2.50	0.23
	45"	2.00	2.00	2.75	0.23
	90"	4.00	2.00	3.00	0.50
	TEE	4.00	2.00	2.50	0.42
10 INCHES	11 1/4"	2.00	2.00	3.00	0.28
	22 1/2"	3.00	2.00	3.00	0.39
	45"	4.00	2.50	3.00	0.61
	90"	5.50	3.00	3.50	1.13
	TEE	5.50	3.00	3.00	0.97
12 INCHES	11 1/4"	2.00	2.00	3.00	0.28
	22 1/2"	3.00	2.00	3.00	0.39
	45"	4.00	2.50	3.00	0.61
	90"	5.50	3.00	3.50	1.13
	TEE	5.50	3.00	3.00	0.97
16 INCHES	11 1/4"	2.00	2.00	3.00	0.28
	22 1/2"	4.00	2.00	3.00	0.50
	45"	5.50	3.00	3.50	1.13
	90"	7.50	4.00	3.50	2.01
	TEE	7.50	4.00	3.00	1.72

- CHART NOTES:**
- IF BLOCKING EXCAVATION IS IN LIGHTLY COMPACTED FILL AREAS, OR IN AREAS WHERE BOULDERS OR STUMPS HAVE BEEN REMOVED, BLOCKING SIZE MUST BE RE-SIZED FOR THE SPECIFIC LOCATION/CIRCUMSTANCE BY A NC LICENSED PROFESSIONAL ENGINEER.
  - BLOCKING SIZES SHOWN IN THESE TABLES ASSUME THE FOLLOWING:
    - BLOCKING IS CONSTRUCTED IN RESIDUAL SOILS AS SHOWN IN DETAIL
    - SOIL BEARING PRESSURE = 2000 PSF
    - VELOCITY OF FLOW = 15 FPS
  - THIS DETAIL NOT APPLICABLE TO REDUCING BENDS.
  - NEITHER THE WEIGHT OF THE CONCRETE BLOCKING NOR FRICTION BETWEEN CONCRETE BLOCKING AND SOIL WAS ADDED INTO BLOCKING SIZES COMPUTATION. THEREFORE, BLOCKING SIZE IS CONSERVATIVE.

THRUST BLOCKING  
NOT TO SCALE

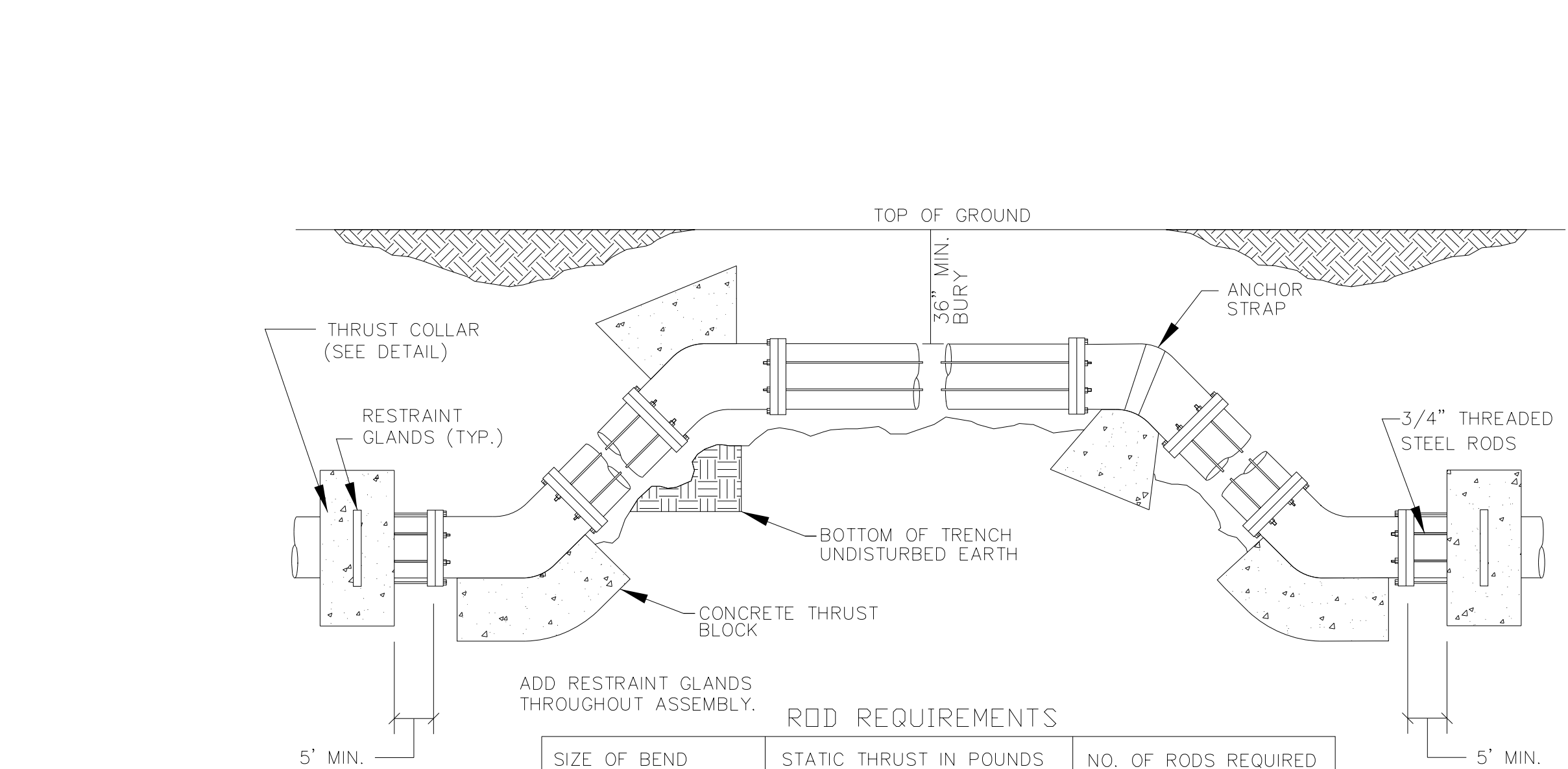
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# PROJECT TYPICAL DETAILS

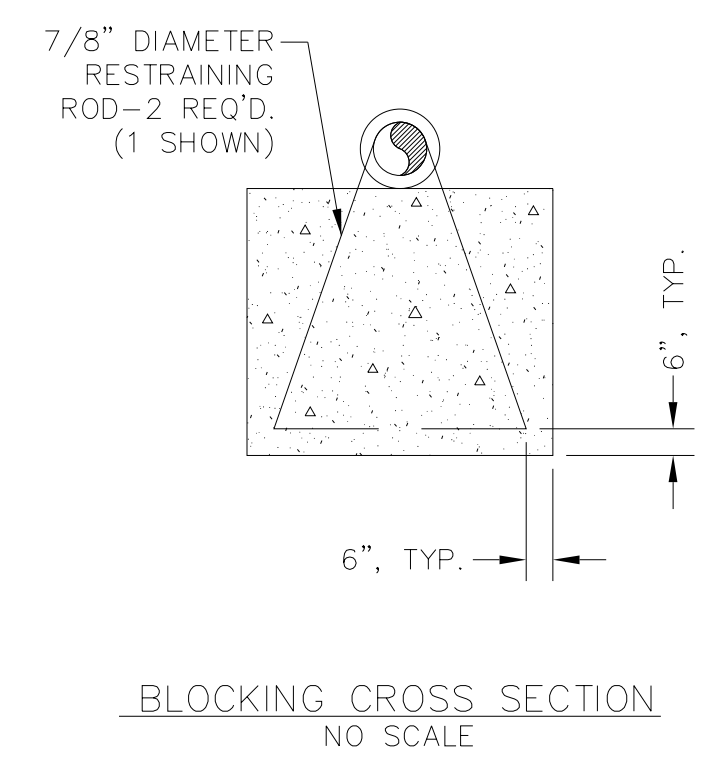
PROJECT REFERENCE NO.	SHEET NO.
B-4484	UC-3C
DESIGNED BY: ARV	
DRAWN BY: ARV	
CHECKED BY: RLB	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

## UTILITY CONSTRUCTION



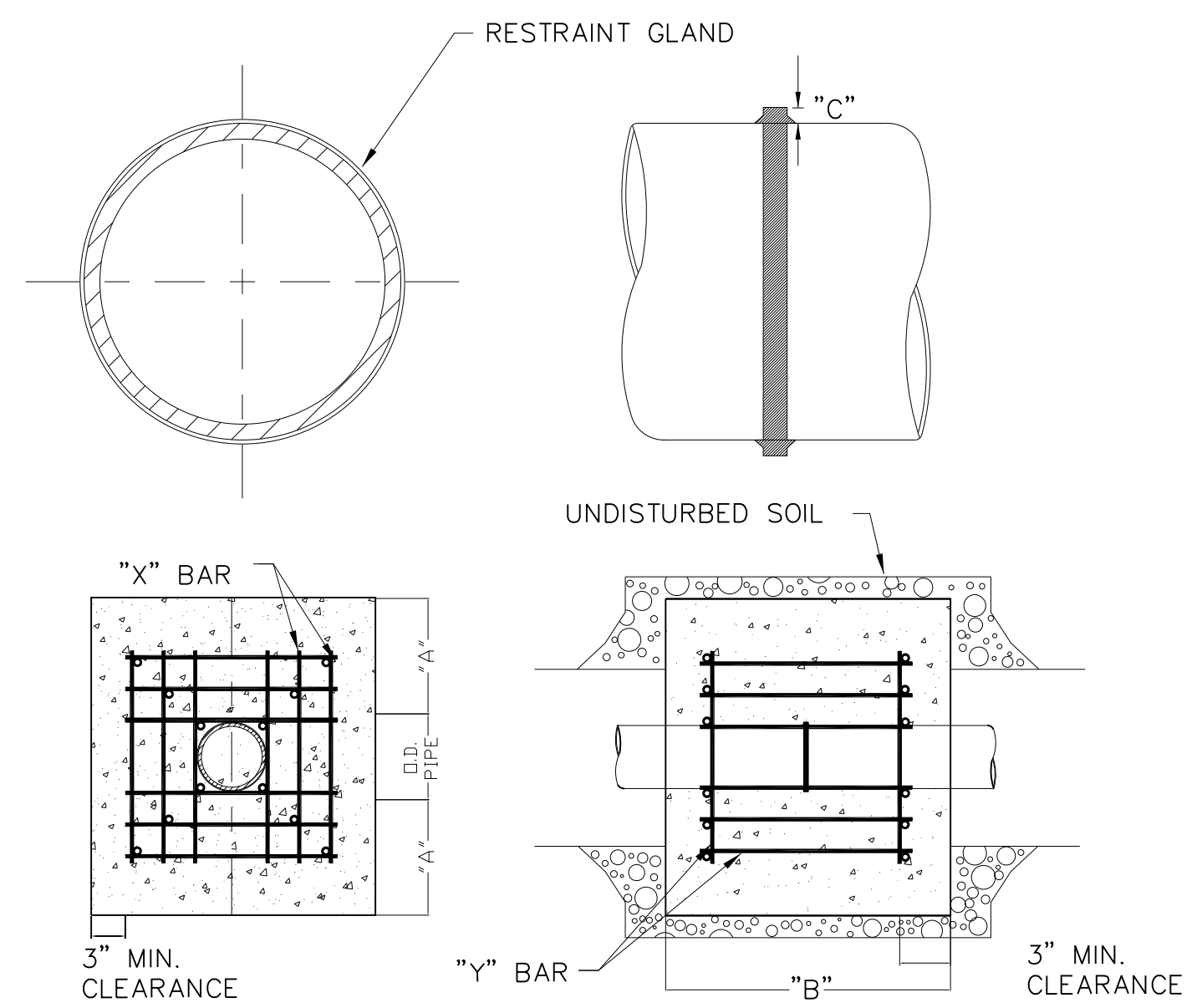
ADD RESTRAINT GLANDS THROUGHOUT ASSEMBLY.

SIZE OF BEND	STATIC THRUST IN POUNDS	NO. OF RODS REQUIRED
6"	4,328	4
8"	7,694	4
12"	17,312	4
16"	30,779	8
24"	69,252	8



- GENERAL NOTES:
- ALL FITTINGS SHALL BE WRAPPED IN POLYETHYLENE TO PREVENT CONCRETE FROM CONTACTING FITTINGS, BOLTS, OR ENDS OF MECHANICAL JOINT BENDS.
  - EACH FITTING SHALL BE SECURED BY TWO FORMS OF RESTRAINT. RESTRAINING GLANDS AND CONCRETE THRUST BLOCKING ARE PREFERRED. WEDGE-ACTION RESTRAINT GLANDS (I.E. MEGALUGS) ARE APPROVED ONLY FOR USE ON DUCTILE IRON PIPE. FULL-CIRCUMFERENTIAL PIPE RESTRAINT GLANDS (I.E. GRIP RINGS) MAY BE USED ON PVC OR DUCTILE IRON PIPE. ALL RESTRAINT GLANDS SHALL BE SPECIFICALLY DESIGNED FOR USE ON THE TYPE OF PIPE FOR WHICH THEY ARE BEING INSTALLED. OTHER FORMS OF RESTRAINT SUCH AS THREADED ROD, BELL RESTRAINT HARNESSSES, ETC. MAY BE APPROVED BY CRAVEN COUNTY ON A CASE-BY-CASE BASIS.
  - IF APPROVED FOR USE BY CRAVEN COUNTY, STEEL RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED.
  - USE EYE BOLTS WHERE NECESSARY TO PROVIDE RESTRAINT OF MECHANICAL JOINTS AS REQUIRED BY MANUFACTURER.

THRUST BLOCKING DESIGN QUANTITY TABLE  
NOT TO SCALE



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

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"

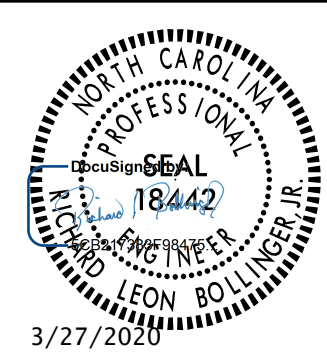
- NOTES:
- CONCRETE SHALL BE 3000 PSI AND TRANSIT MIXED.
  - REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER.
  - TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK INSTALLATION SHALL BE THE MINIMUM WIDTH AS SHOWN ON STANDARD EMBEDMENT DETAIL.
  - BACKFILL TAMPED IN 6" LIFTS PER STANDARD EMBEDMENT DETAIL.

THRUST COLLAR DESIGN QUANTITY TABLE  
NOT TO SCALE

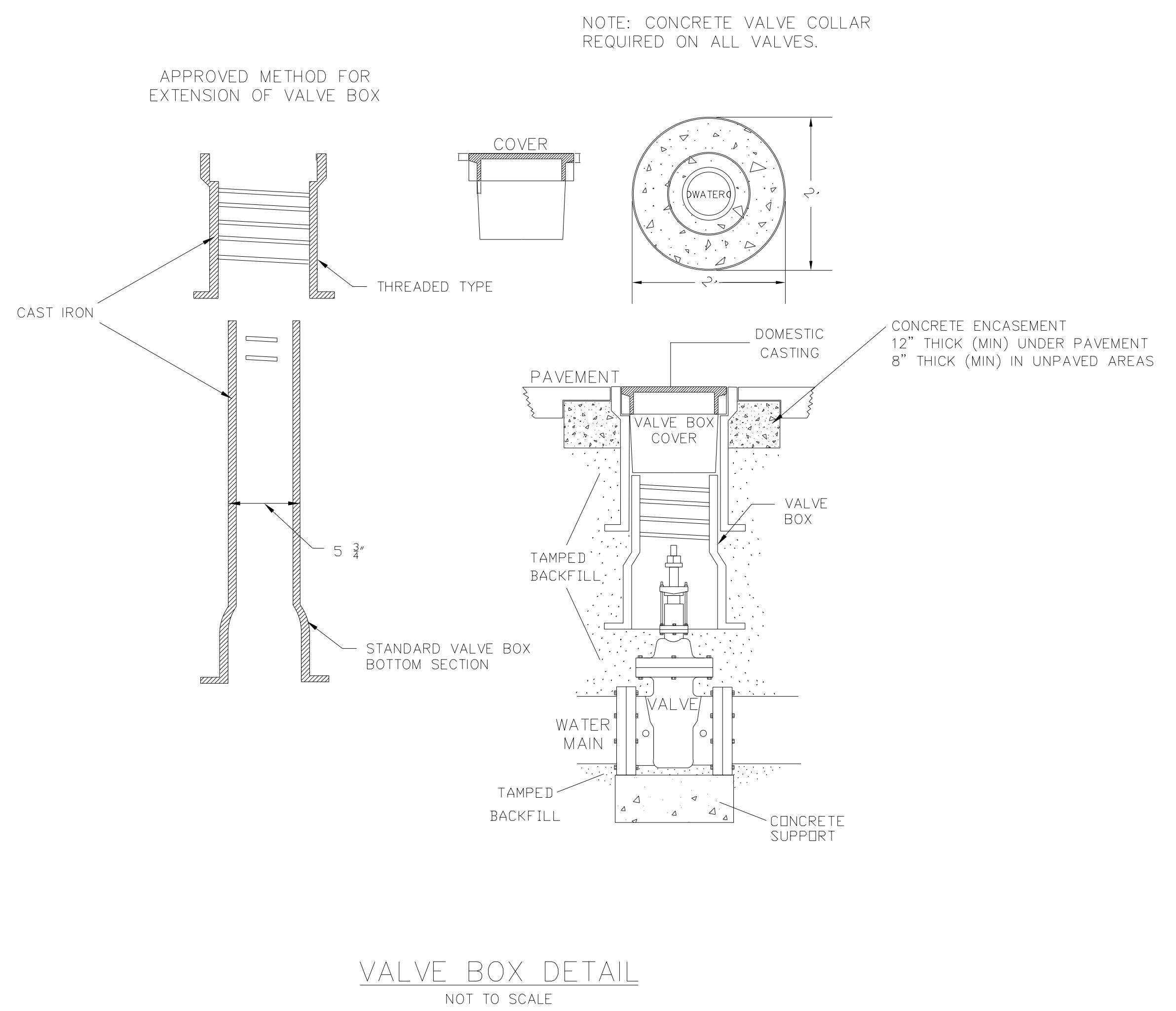
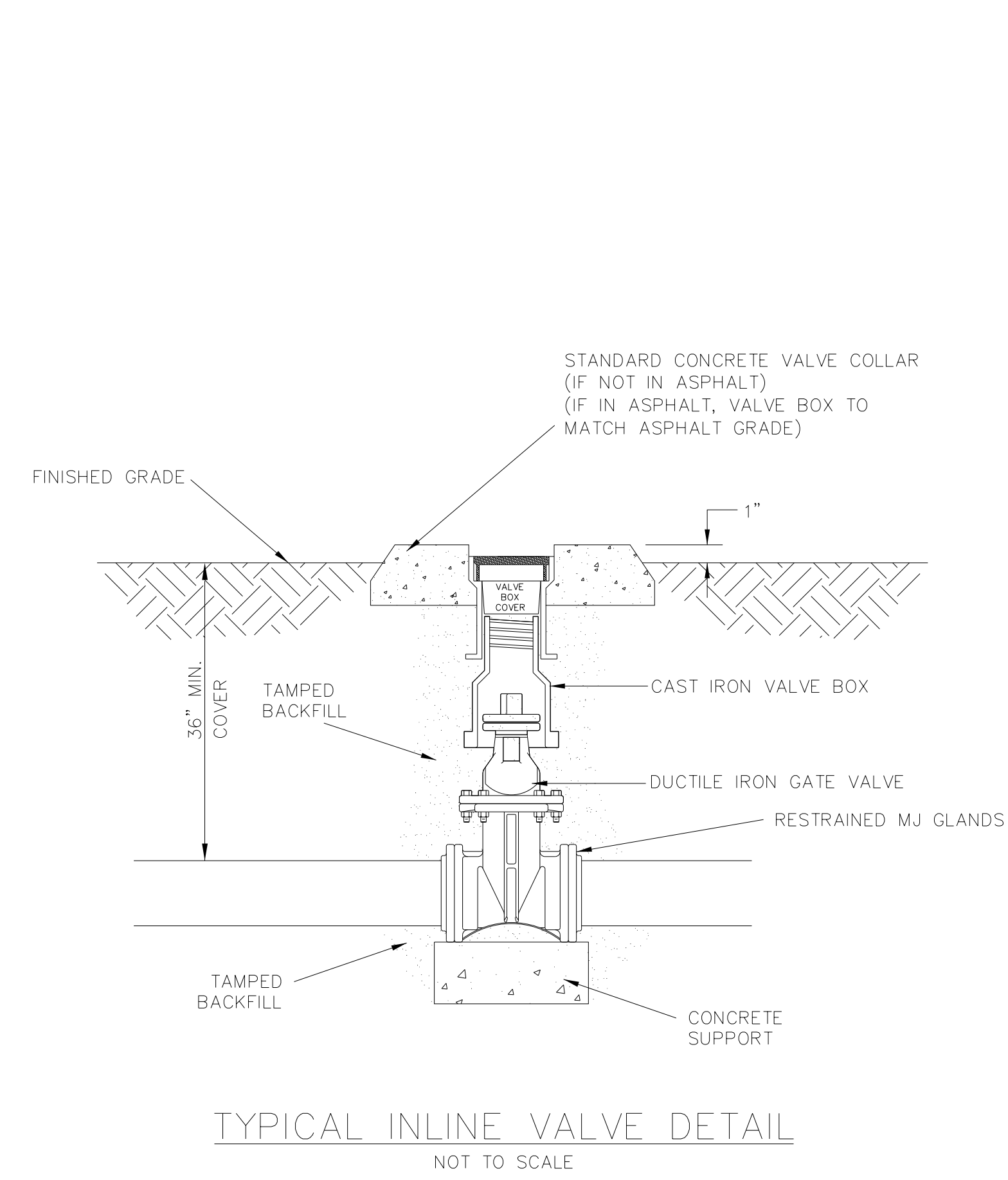
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5/14/99

# PROJECT TYPICAL DETAILS

PROJECT REFERENCE NO.	SHEET NO.
B-4484	UC-3D
DESIGNED BY: ARV	
DRAWN BY: ARV	
CHECKED BY: RLB	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
3/27/2020	
UTILITY CONSTRUCTION PLANS ONLY	

## UTILITY CONSTRUCTION



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5/14/99

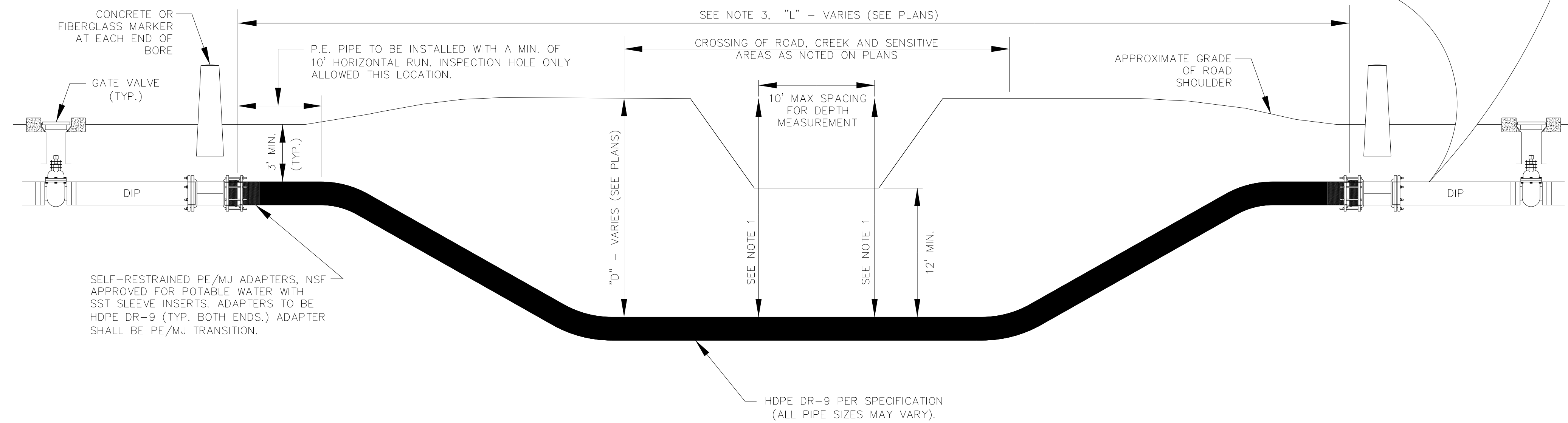
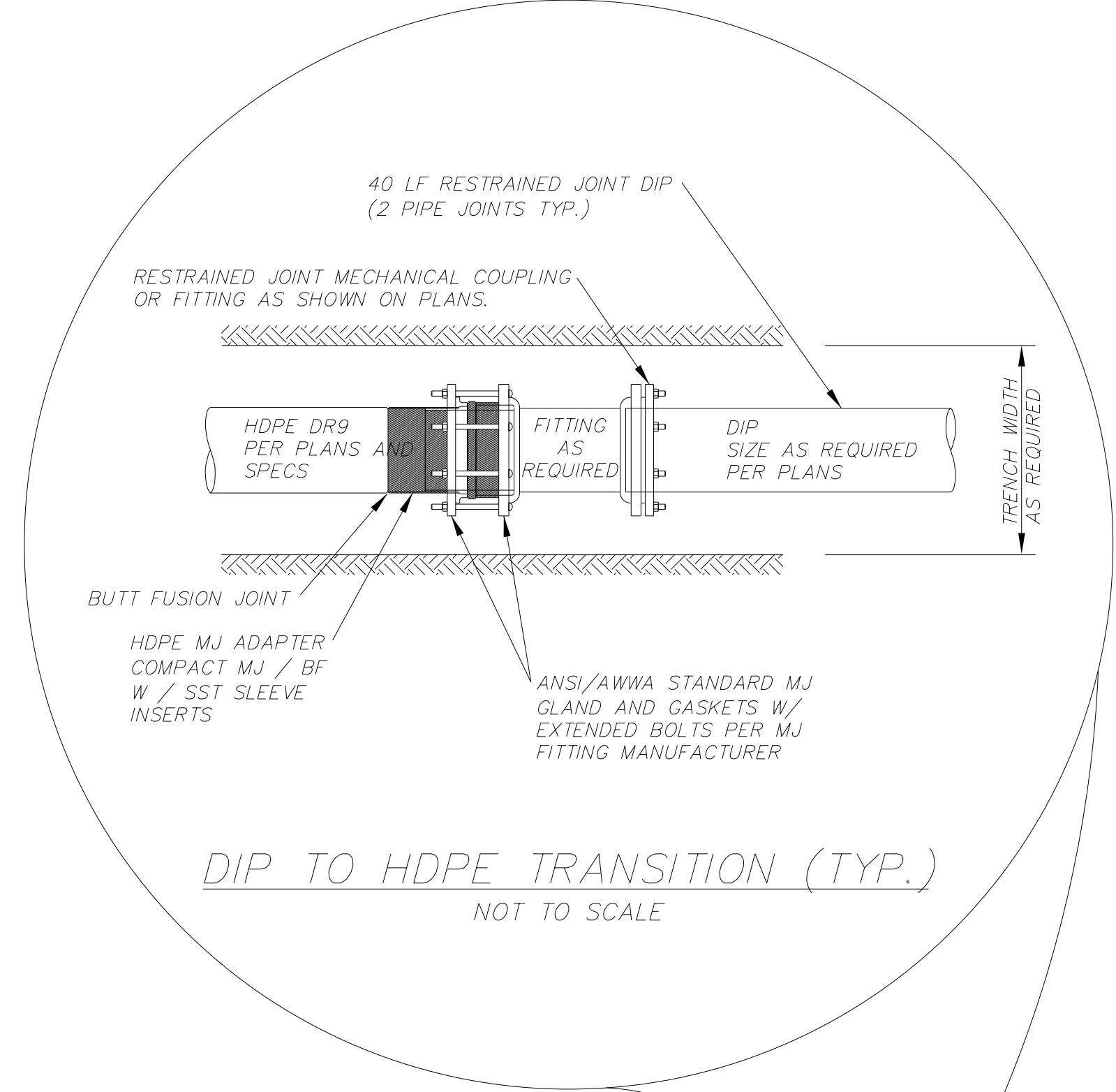
# PROJECT TYPICAL DETAILS

PROJECT REFERENCE NO. <b>B-4484</b>	SHEET NO. <b>UC-3E</b>
DESIGNED BY: <b>ARV</b>	
DRAWN BY: <b>ARV</b>	
CHECKED BY: <b>RLB</b>	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

## UTILITY CONSTRUCTION

### NOTES:

1. A PROFILE AND PLAN SHALL BE PROVIDED FROM ENTRY TO EXIT FOR EACH DIRECTIONAL BORE SECTION BY THE DIRECTIONAL BORE CONTRACTOR.
2. ALL BORE SECTIONS SHALL BE HYDROSTATICALLY TESTED, PER SPECIFICATIONS UPON COMPLETION OF INSTALLATION AND PRIOR TO CONNECTION TO THE MAIN WATER LINE.
3. LENGTH OF CROSSING, LOCATION OF INSPECTION/OBSERVATION EXCAVATION, NUMBER OF POLYETHYLENE PIPE JOINTS, LOCATION OF BORE MACHINE, AUGER ENTRANCE LOCATION, AND TIE-IN POINTS ARE TO BE APPROVED BY CRAVEN COUNTY WATER PRIOR TO ANY START OF WORK OR ORDERING MATERIALS.
4. CONCRETE OR FIBERGLASS MARKERS SHALL BE PLACED AT THE BOTH THE ENTRY AND EXIT POINT OF ALL DIRECTIONAL BORES, REFERENCING THE TYPE OF UTILITY UNDERGROUND.
5. THE BORE DEVELOPED FOR THE LEAD-IN END OF THE PIPE SHALL BE KEPT AT A MINIMUM DIAMETER FOR THE PIPE INSTALLATION. THE LEAD-IN END SHALL BE PULLED THROUGH WITHOUT THE M.J. FLANGE ATTACHED FOR LARGER THAN 6" PIPE INSTALLATION. THE M.J. FLANGE FOR SAID LEAD-IN END SHALL BE INSTALLED AFTER THE PIPE INSTALLATION WITH THE USE OF A SPLIT M.J. FLANGE.
6. IF BURIED OBSTRUCTIONS ARE LOCATED IN THE LENGTH OF THE DIRECTIONAL BORE, DIRECTIONAL BORE CONTRACTOR SHALL AVOID CONFLICT WITH THESE OBSTRUCTIONS BY GOING UNDER A MINIMUM OF 12" WITH PROPOSED PIPE UNLESS OTHERWISE SPECIFIED OR IDENTIFIED IN GENERAL NOTES ON SHEET, OR IN SPECIFICATIONS.



SELF-RESTRAINED PE/MJ ADAPTERS, NSF APPROVED FOR POTABLE WATER WITH SST SLEEVE INSERTS. ADAPTERS TO BE HDPE DR-9 (TYP. BOTH ENDS.) ADAPTER SHALL BE PE/MJ TRANSITION.

HORIZONTAL DIRECTIONAL DRILL PROFILE (TYP.)  
NOT TO SCALE

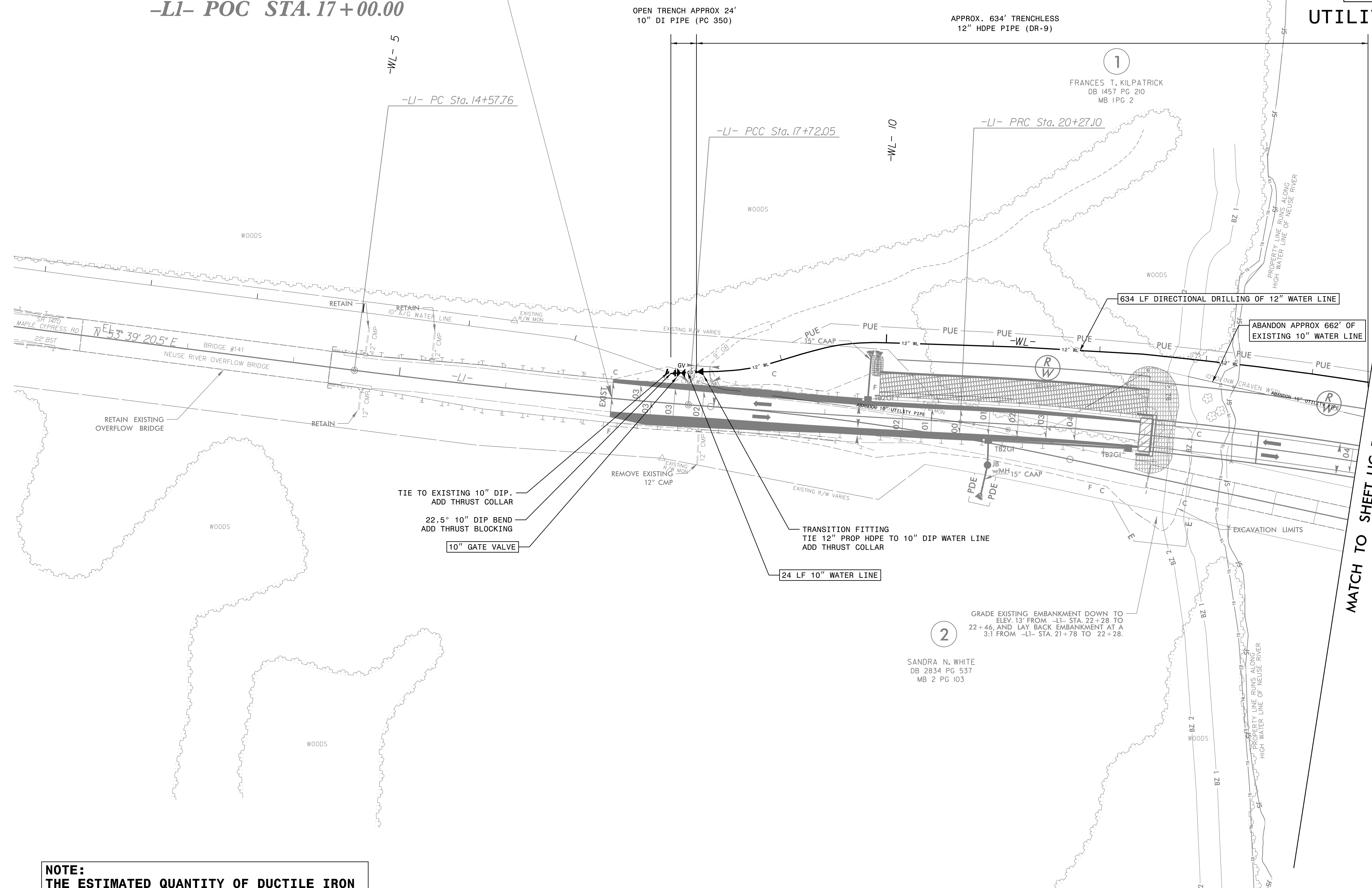
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 \$\$\$USERNAME\$\$\$



8/17/99

PROJECT REFERENCE NO. B-4484	SHEET NO. UC-4
DESIGNED BY: ARV	
DRAWN BY: ARV	
CHECKED BY: RLB	
APPROVED BY:	
REVISED:	3/27/2020
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

**BEGIN TIP PROJECT B-4484**  
**-LI- POC STA. 17+00.00**



**UTILITY CONSTRUCTION**

REVISIONS

MATCH TO SHEET UC-5 -WL- STA. 14+54

**NOTE:**  
 THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 465 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

NOTE: PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION CERTIFIED BY AN ENGINEER LICENSED BY THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE STANDARD SPECIFICATIONS.

FOR -WL- PROFILE, SEE SHEET UC-8

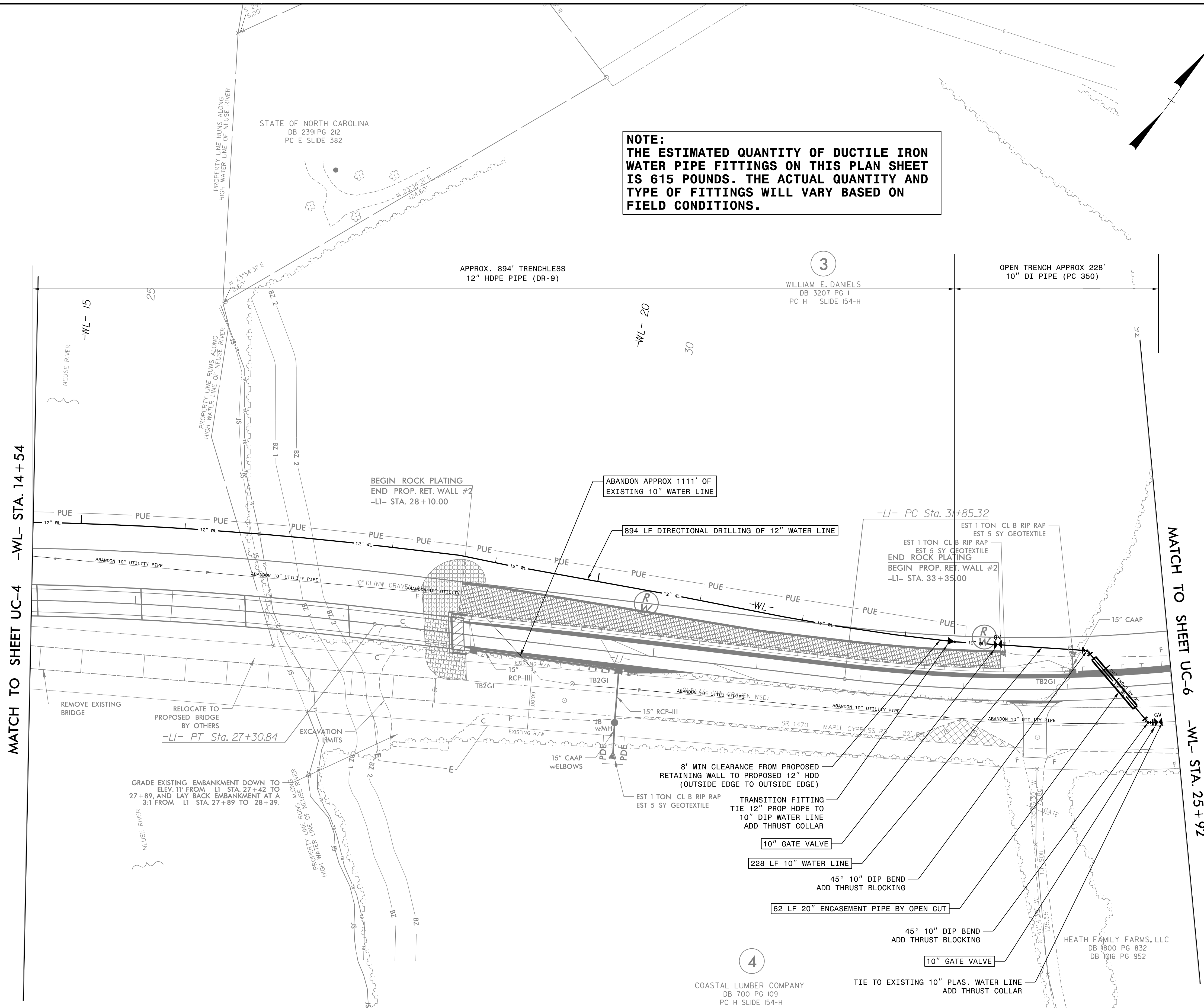


8/17/99

PROJECT REFERENCE NO. B-4484	SHEET NO. UC-5
DESIGNED BY: ARV	
DRAWN BY: ARV	
CHECKED BY: RLB	
APPROVED BY:	
REVISED:	3/27/2020
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

# UTILITY CONSTRUCTION

**NOTE:**  
 THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 615 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



REVISIONS

MATCH TO SHEET UC-4 -WL- STA. 14+54

MATCH TO SHEET UC-6 -WL- STA. 25+92

4

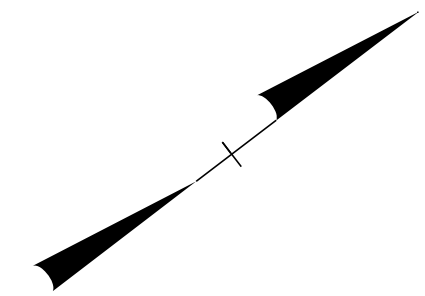
COASTAL LUMBER COMPANY  
 DB 700 PG 109  
 PC H SLIDE 154-H

**NOTE:** PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION CERTIFIED BY AN ENGINEER LICENSED BY THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE STANDARD SPECIFICATIONS.

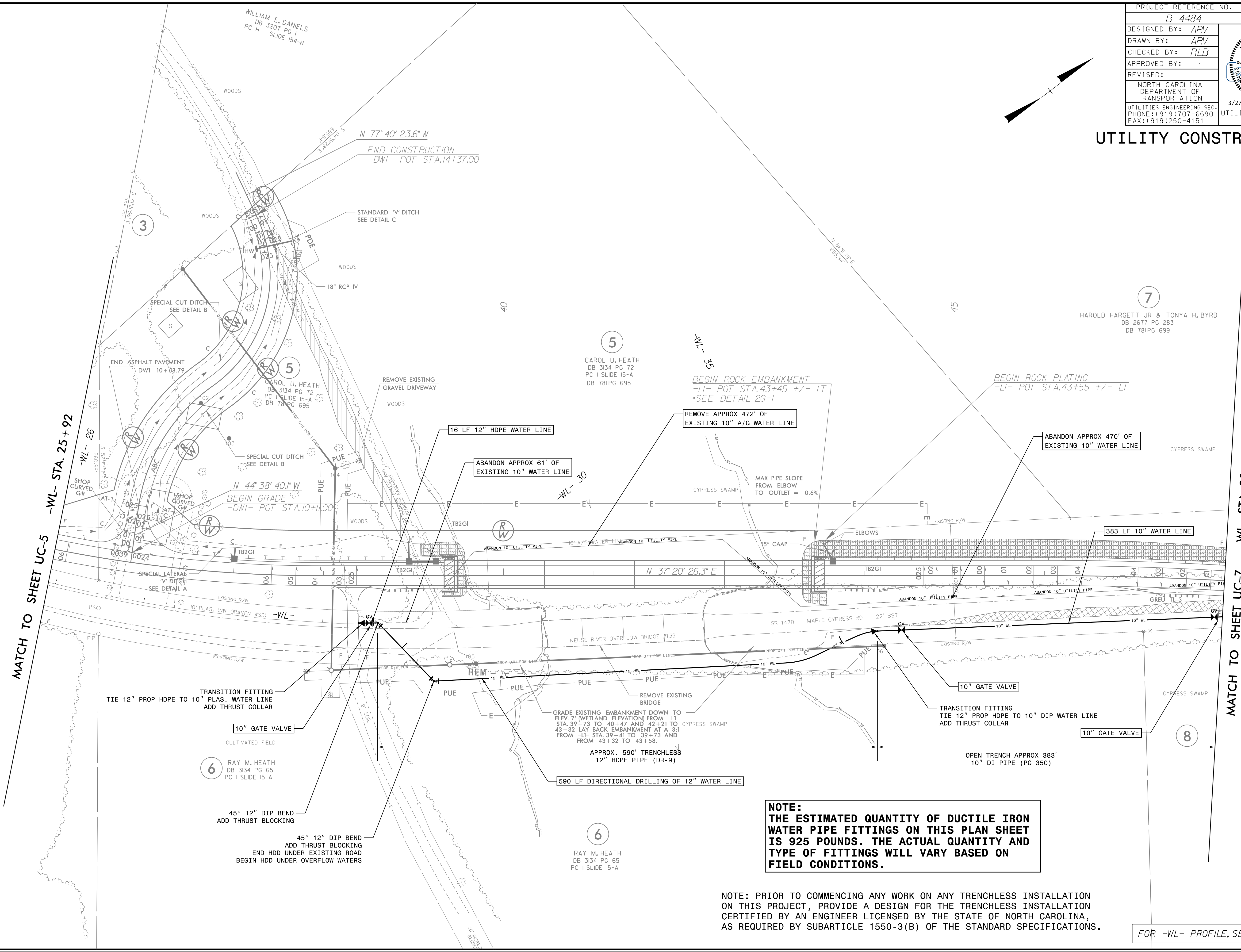
FOR -WL- PROFILE, SEE SHEET 8



PROJECT REFERENCE NO.	SHEET NO.
B-4484	UC-6
DESIGNED BY: ARV	
DRAWN BY: ARV	
CHECKED BY: RLB	
APPROVED BY:	
REVISED:	3/27/2020
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	



**UTILITY CONSTRUCTION**



REVISIONS

MATCH TO SHEET UC-5  
-WL- STA. 25+92

MATCH TO SHEET UC-7  
-WL- STA. 39+34

6 RAY M. HEATH  
DB 3134 PG 65  
PC 1 SLIDE 15-A

6 RAY M. HEATH  
DB 3134 PG 65  
PC 1 SLIDE 15-A


**NOTE:**  
THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 925 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

NOTE: PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION CERTIFIED BY AN ENGINEER LICENSED BY THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE STANDARD SPECIFICATIONS.

FOR -WL- PROFILE, SEE SHEET 9

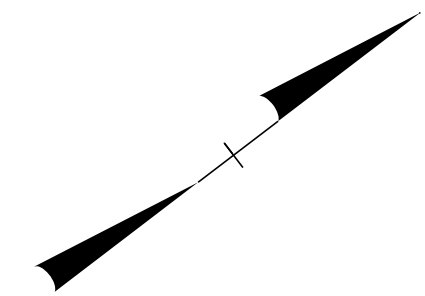


8/17/99

PROJECT REFERENCE NO. B-4484	SHEET NO. UC-7
DESIGNED BY: ARV	
DRAWN BY: ARV	
CHECKED BY: RLB	
APPROVED BY:	
REVISED:	3/27/2020
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

# UTILITY CONSTRUCTION

**NOTE:**  
 THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 650 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

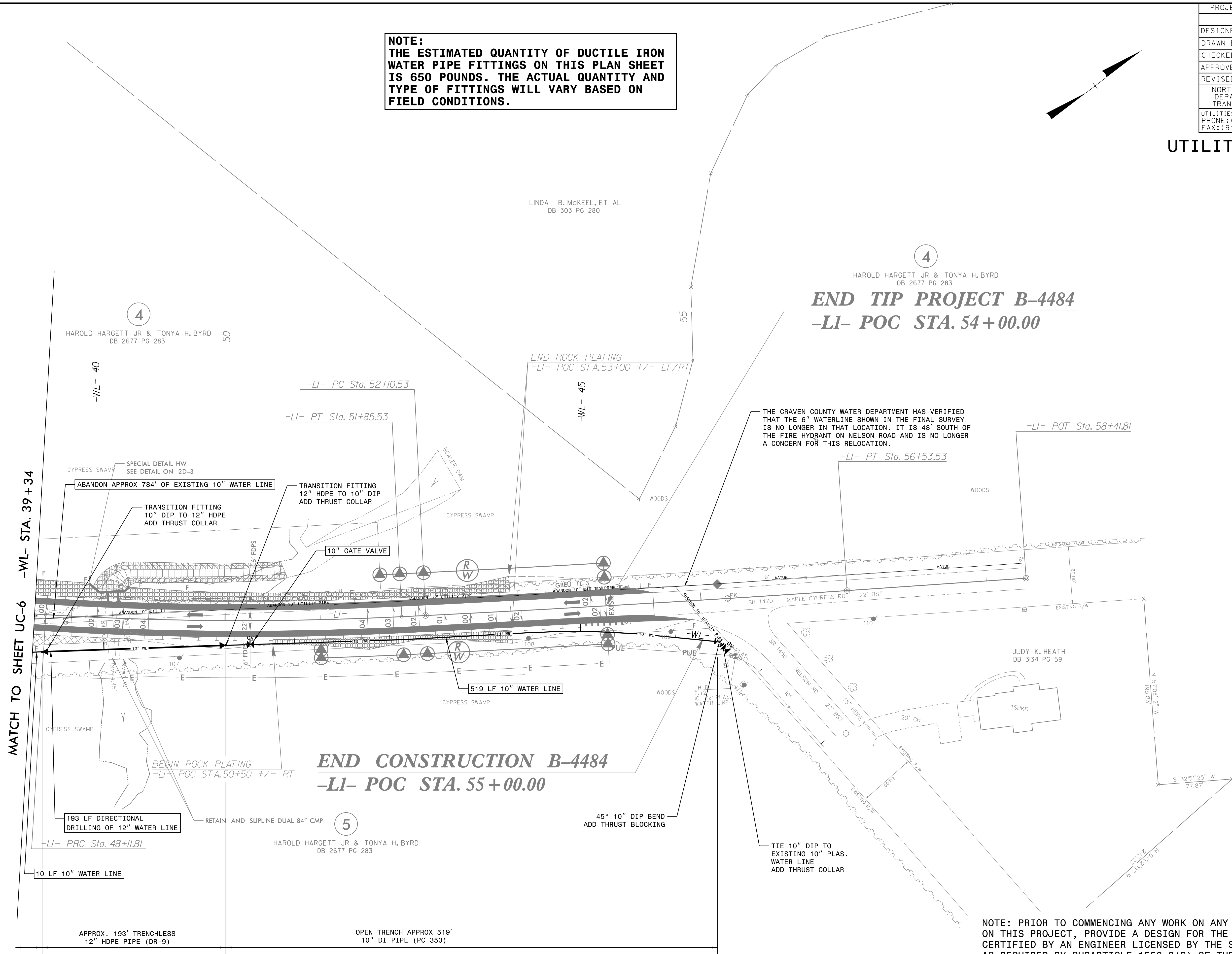


LINDA B. McKEEL, ET AL  
 DB 303 PG 280

4

HAROLD HARGETT JR & TONYA H. BYRD  
 DB 2677 PG 283

## END TIP PROJECT B-4484 -LI- POC STA. 54+00.00



THE CRAVEN COUNTY WATER DEPARTMENT HAS VERIFIED THAT THE 6" WATERLINE SHOWN IN THE FINAL SURVEY IS NO LONGER IN THAT LOCATION. IT IS 48' SOUTH OF THE FIRE HYDRANT ON NELSON ROAD AND IS NO LONGER A CONCERN FOR THIS RELOCATION.

## END CONSTRUCTION B-4484 -LI- POC STA. 55+00.00

HAROLD HARGETT JR & TONYA H. BYRD  
 DB 2677 PG 283

5

NOTE: PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION CERTIFIED BY AN ENGINEER LICENSED BY THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE STANDARD SPECIFICATIONS.

FOR -WL- PROFILE, SEE SHEET 9

REVISIONS

MATCH TO SHEET UC-6  
 -WL- STA. 39+34

OPEN TRENCH APPROX 10'  
 10" DI PIPE (PC 350)

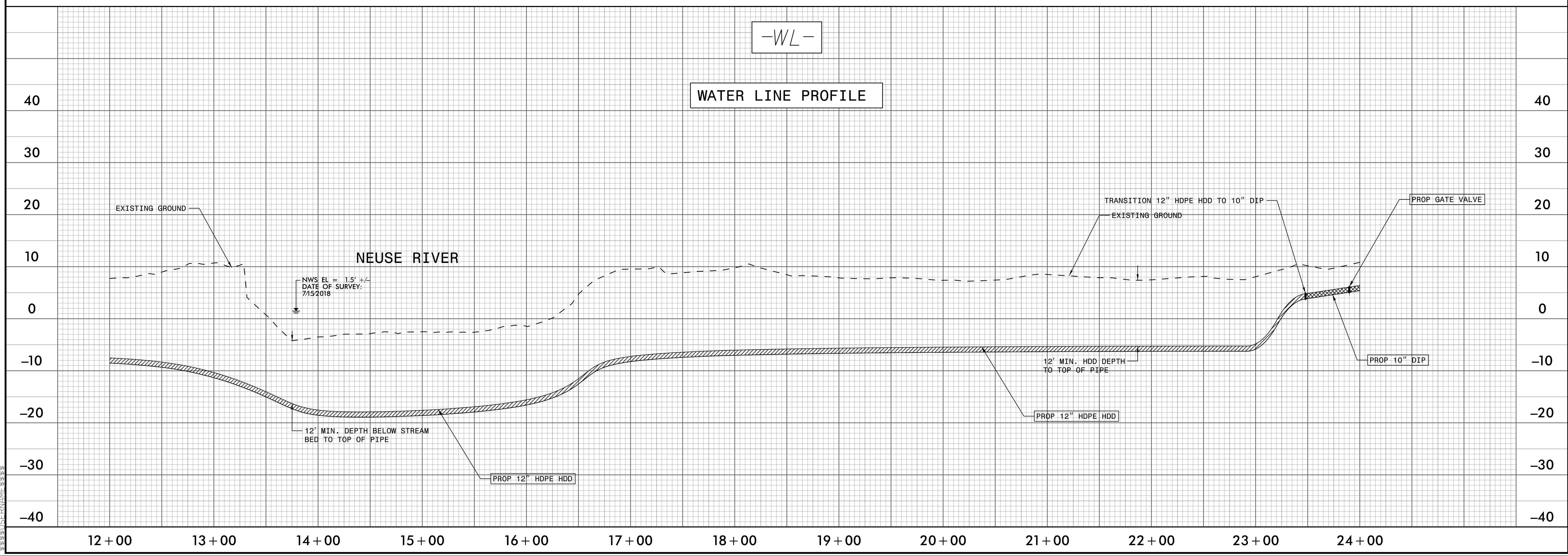
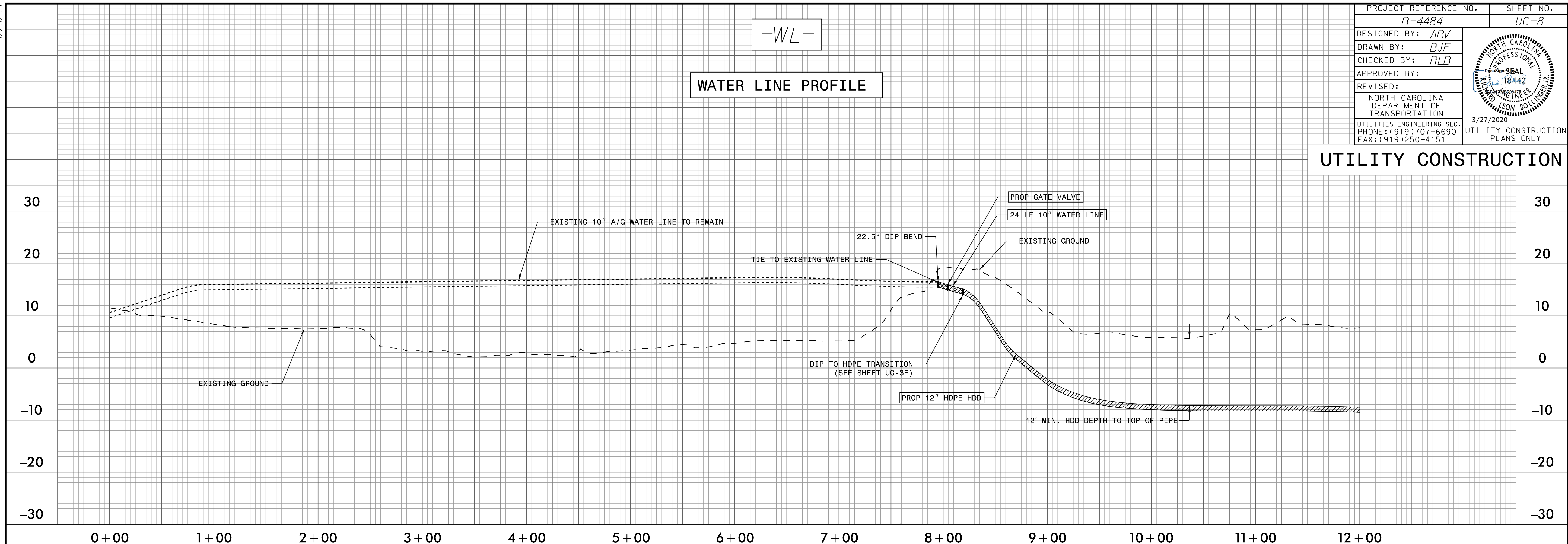
APPROX. 193' TRENCHLESS  
 12" HDPE PIPE (DR-9)

OPEN TRENCH APPROX 519'  
 10" DI PIPE (PC 350)

5/28/19

PROJECT REFERENCE NO. B-4484	SHEET NO. UC-8
DESIGNED BY: ARV	
DRAWN BY: BJF	
CHECKED BY: RLB	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 3/27/2020 UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

### UTILITY CONSTRUCTION



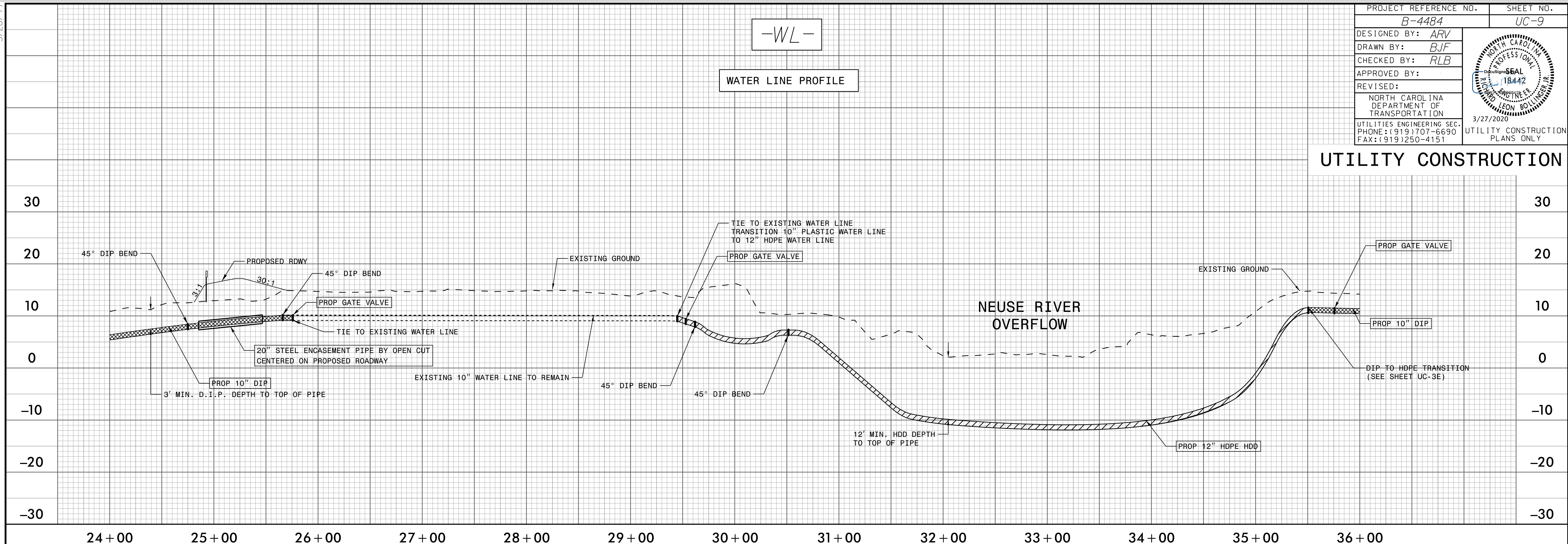
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LEON BOLLINGER, P.E.  
18442



5/28/99

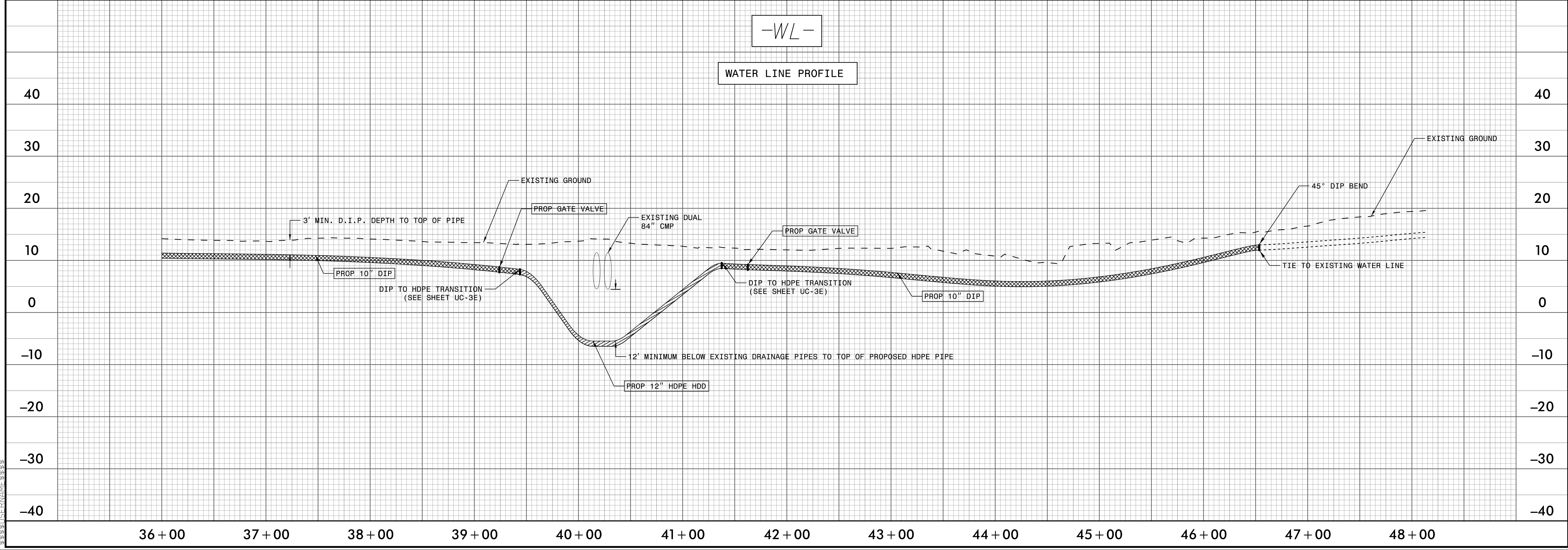
PROJECT REFERENCE NO. B-4484	SHEET NO. UC-9
DESIGNED BY: ARV	
DRAWN BY: BJF	
CHECKED BY: RLB	
APPROVED BY:	
REVISED:	3/27/2020
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

### UTILITY CONSTRUCTION



-WL-

WATER LINE PROFILE



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