

09/08/19

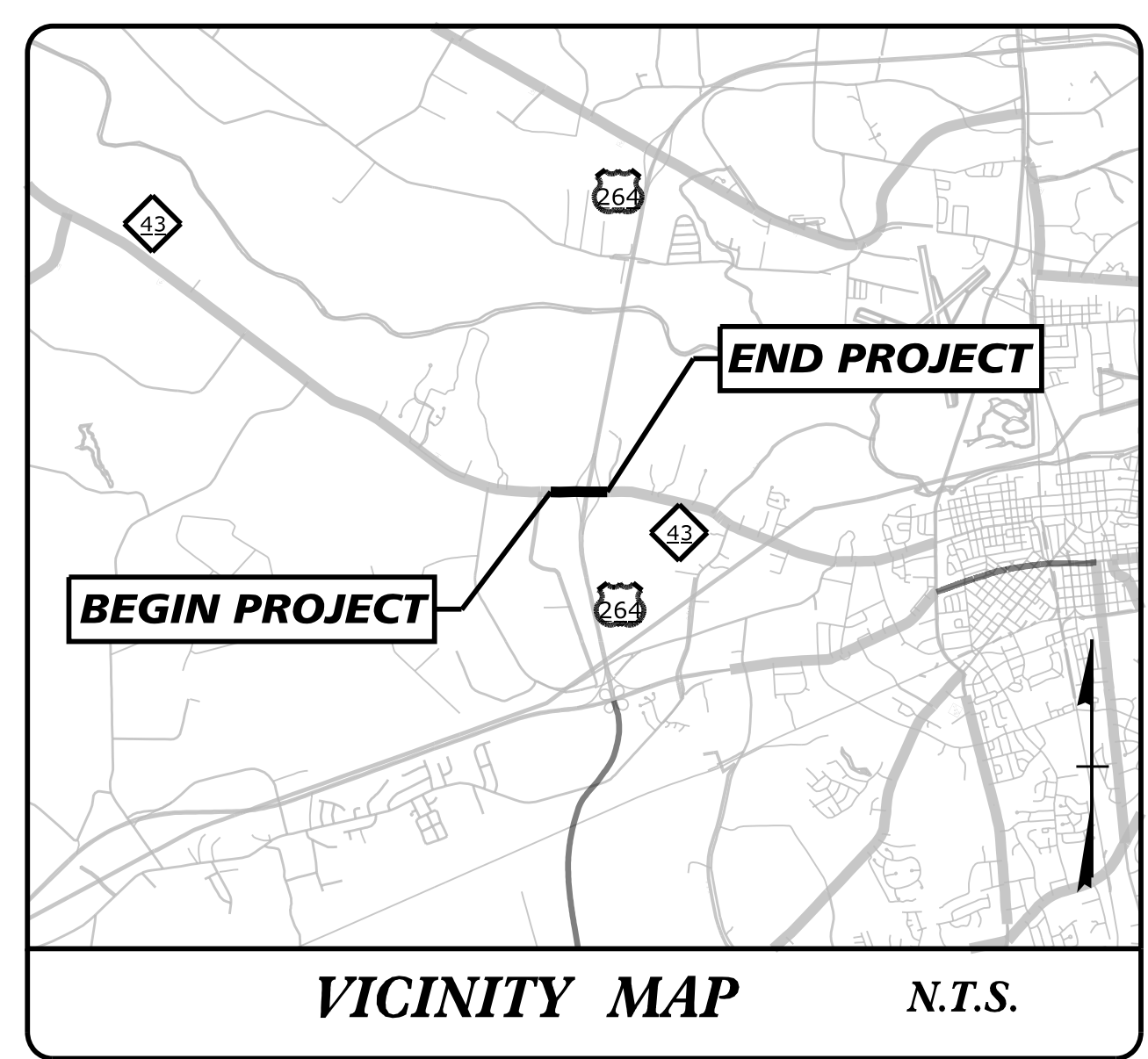
TIP PROJECT: HS-24020

T.I.P. NO.	SHEET NO.
HS-24020	UC-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

**UTILITY CONSTRUCTION PLANS
PITT COUNTY**

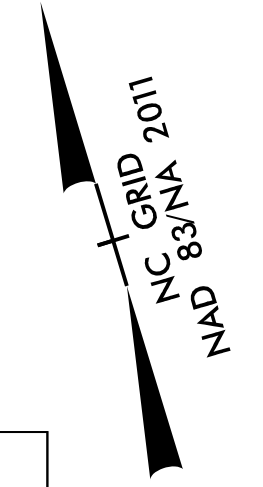
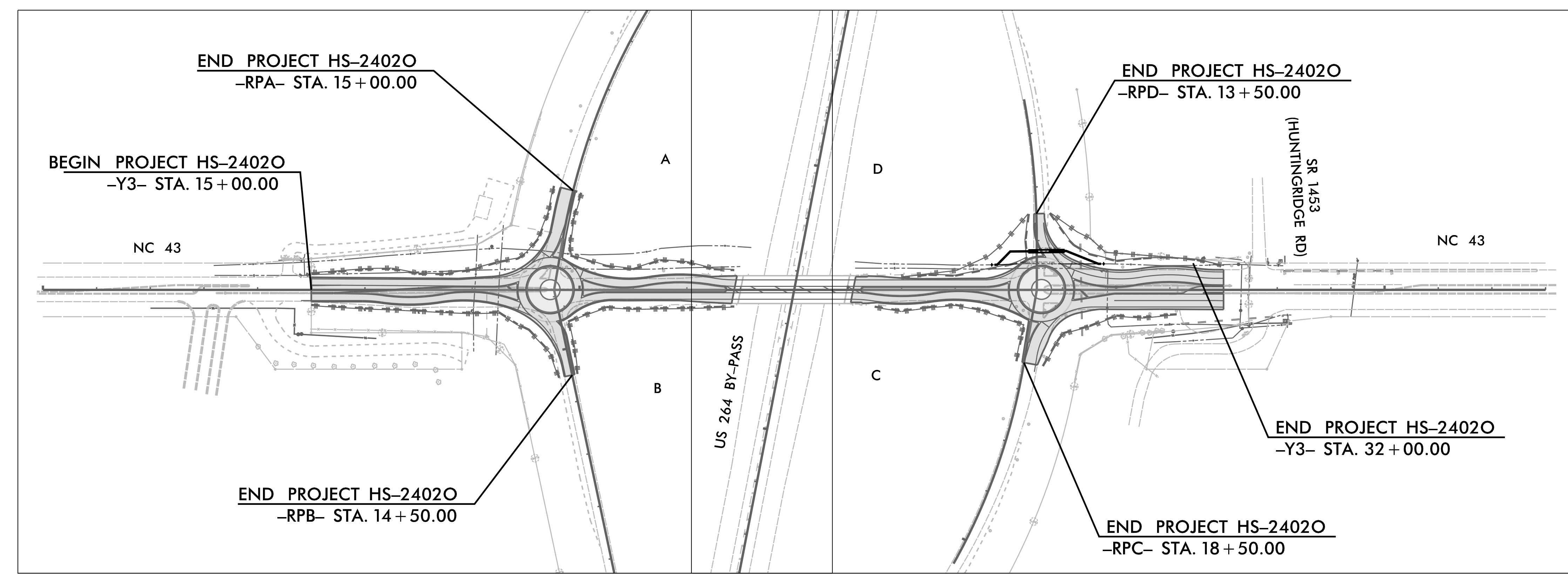
LOCATION: INTERCHANGE AT NC 43 AND US 264 BY-PASS NEAR ROCK SPRING
TYPE OF WORK: RELOCATION OF WATER LINE



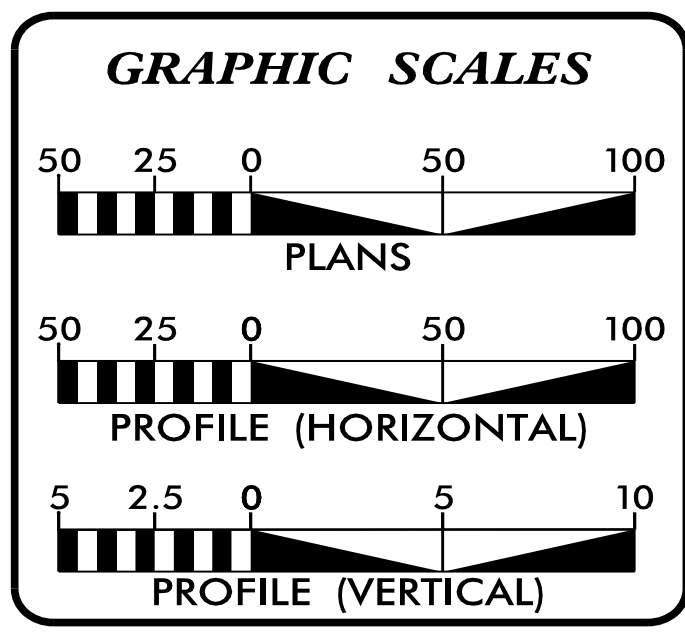
UC PLANS

UC-4

UC-5



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	UTILITY DETAILS
UC-4 THRU UC-5	UTILITY CONSTRUCTION SHEETS
UC-6	UTILITY PROFILE SHEET

WATER OWNER ON PROJECT

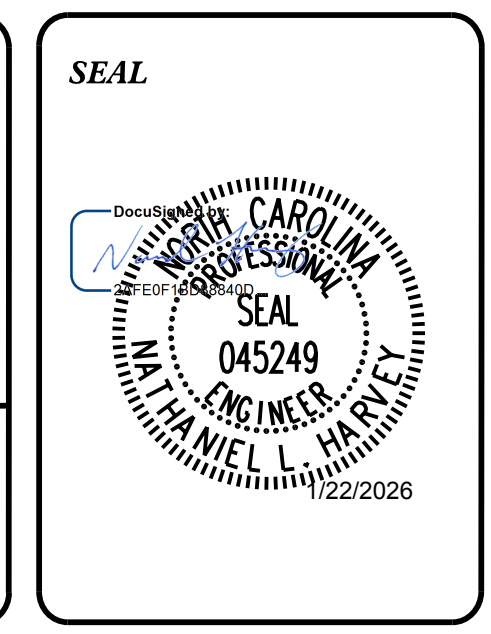
(1) WATER - GREENVILLE UTILITIES COMMISSION

PREPARED IN THE OFFICE OF

Kimley»Horn

NC LICENSE #F-0102
1070 S MAIN STREET, SUITE 230
HOLLY SPRINGS, NORTH CAROLINA 27540
PHONE: (984) 212-4572

Nate Harvey, P.E. CONSULTANT CONTACT #1
Jack Christie, E.I. CONSULTANT CONTACT #2



**DIVISION OF HIGHWAYS
UTILITIES UNIT**
1555 MAIL SERVICES CENTER
RALEIGH, NC 27699-1555
PHONE (919) 707-6690
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David Kramer DIVISION UTILITY ENGINEER
Chad T. Mills DIVISION UTILITY COORDINATOR
Heather C. Lane, PE DIVISION PROJECT DEVELOPMENT ENGINEER

5/14/99

RESULTANT THRUST AT FITTING AT 150 PSI WATER PRESSURE

NOM. PIPE DIA.	TOTAL POUNDS				
	DEAD END	90° BEND	45° BEND	22-1/2° BEND	11-1/4° BEND
4"	2700	3800	2,100	1,100	530
6"	5600	8000	4,300	2,200	1,100
8"	9700	13600	7,400	3,800	1,900
10"	14500	20500	11,100	5,700	2,900
12"	20500	29000	15700	8,000	4,000
14"	27600	39000	21,100	11,000	5,400
16"	35700	50400	27,300	14,000	7,000
18"	44800	63400	34,400	17,500	8,800
20"	55000	77000	42,100	21,500	10,800
24"	78500	110000	60,000	31,600	15,400
30"	120600	170600	92,300	47,100	23,600
36"	172800	244400	132,300	67,500	33,900
42"	233300	330000	178600	91,000	45700
48"	304000	430000	232700	118600	59600
54"	384100	543200	294000	149000	75300

TYPES OF THRUST BLOCKING

SOIL BEARING LOAD (LB./SQ.FT.)

MUCK	0
SOFT CLAY	1000
SILT	1500
SANDY SILT	3000
SAND	4000
SANDY CLAY	6000
HARD CLAY	9000

POLYWRAP SHALL BE USED TO COVER FITTINGS AND BOLTS. TO DETERMINE THE SIZE OF A CONCRETE THRUST BLOCK, DIVIDE THE TOTAL FORCE BY THE BEARING VALUES OF THE SOIL. THE QUOTIENT WILL BE THE SIZE OF THE BEARING AREA OF THE THRUST BLOCK IN SQUARE FEET. APPROXIMATE VALUES FOR VARIOUS TYPES OF SOIL ARE LISTED IN TABLE. NO RESPONSIBILITY CAN BE ASSUMED FOR THE ACCURACY OF THE DATA IN THIS TABLE DUE TO THE WIDE VARIATION OF BEARING LOAD CAPABILITIES FOR EACH SOIL TYPE.

- THRU LINE CONNECTION, TEE
- THRU LINE CONNECTION, TEE CROSS USED AS TEE
- DIRECTION CHANGE, ELBOW
- CHANGE LINE SIZE, REDUCER
- DIRECTION CHANGE, TEE USED AS ELBOW
- DIRECTION CHANGE, CROSS USED AS ELBOW
- DIRECTION CHANGE

THRUST BLOCKING DETAIL				GREENVILLE UTILITIES GREENVILLE, N.C.		
SHEET	DWG. NO.	W-12	DWG	N. WOOTEN	WATER RESOURCES ENGINEERING	
1 OF 1	DATE	3-12-99	APP	H. COREY	GREENVILLE, N.C.	

3000 PSI CONCRETE ENCASEMENT ALL AROUND FOR REACTION BACKING

MECHANICAL RESTRAINT DEVICE

BEARING AREA AGAINST UNDISTURBED EARTH (SEE TABLE)

SOIL BEARING LOAD (lb/sqft)

MUCKY SOFT CLAY	0
SILT	1000
SANDY SILT	1500
SAND	3000
SANDY CLAY	4000
HARD CLAY	6000
	9000

MIN. BEARING AREA (SQ. FT.)

PIPE SIZE	MIN. BEARING AREA (SQ. FT.)					
	SOFT CLAY	SILT	SANDY SILT	SAND	SANDY CLAY	HARD CLAY
4	27	18	10	10	10	10
6	56	37	19	14	10	10
8	97	64	32	24	16	11
10	145	100	48	36	24	16
12	210	140	68	51	34	23
14	276	180	92	69	46	31
16	357	240	120	89	59	40
18	448	300	150	110	74	50
20	550	370	180	140	92	61
24	785	520	260	200	130	87
30	1206	770	400	300	200	130
36	1728	1100	560	430	290	190

NOTE: MIN. BEARING AREAS ARE BASED UPON THE TABLE ABOVE. FOR SOILS HAVING BEARING CAPACITIES DIFFERENT THAN THAT SHOWN ADJUST AREA AS NECESSARY TO PROVIDE EQUIVALENT RESTRAINT.

NOTE: ALTERNATE METHOD OF RESTRAINT SHOULD BE CONSIDERED FOR SITUATIONS FALLING WITHIN OUTLINED AREA.

THRUST RESTRAINT WITH ANCHOR RING				GREENVILLE UTILITIES GREENVILLE, N.C.		
SHEET	DWG. NO.	W-13	DWG	N. WOOTEN	WATER RESOURCES ENGINEERING	
1 OF 1	DATE	3-12-99	APP	H. COREY	GREENVILLE, N.C.	

NOTE:

- ENTIRE SPIDER ASSEMBLY TO BE BITUMINOUS COATED AFTER FABRICATION.
- STEEL ENCASEMENT TO BE INSTALLED IN ACCORDANCE WITH DESIGN PLANS - ALL REVISIONS OR MODIFICATIONS REQUIRE PRIOR APPROVAL.

1-STEEL SPIDER ASSY. AS SHOWN REQD PER JOINT OF DIP FABRICATE AFTER BORE IS COMPLETE. DIMENSION AS NECESSARY TO PROVIDE DESIGN SLOPE AFTER INSTALLATION OF SANITARY SEWER. BITUMINOUS COATING (GLID-GUARD COAL TAR EPOXY)

END ELEVATION

CASING SECTION

Labels include: STEEL ENCASEMENT PIPE, 8" x 3/8" THICK STEEL PLATE, STEEL PLATE SHOE, 1" MAX. CLEARANCE (TYP), SANITARY SEWER (DIP REQUIRED), CENTER LINE OF SANITARY SEWER (DIP REQUIRED), 10" x 2" x 3/8" THICK STEEL PLATE SHOE BEND ENDS 1/2", ENCLOSE END W/ 8" BRICK MASONRY, 2" WEEP HOLE, #57 STONE, CONTINUOUS WELD BOTH SIDES (TYP), 3/4" DIA. X 4" LONG BOLTS W/ HEX NUTS E/SIDE OF SPIDER.

SANITARY SEWER ENCASEMENT DETAIL				GREENVILLE UTILITIES GREENVILLE, N.C.		
SHEET	DWG. NO.	S-12	DWG	N. WOOTEN	WATER RESOURCES ENGINEERING	
1 OF 1	DATE	3-12-99	APP	H. COREY	GREENVILLE, N.C.	

PREPARED BY: **Kimley Horn**

1070 S MAIN STREET, SUITE 230
HOLLY SPRINGS, NC 27540

PROJECT REFERENCE NO. HS-24020 SHEET NO. UC-3A

DESIGNED BY: NLH
DRAWN BY: JHC
CHECKED BY: NDR
APPROVED BY: NLH
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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

UTILITY CONSTRUCTION PLANS ONLY

SEAL 045249

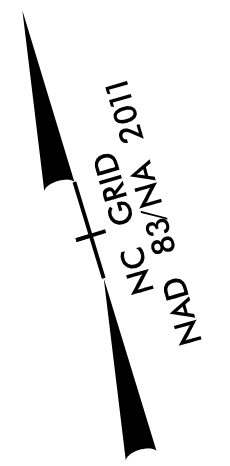
UTILITY CONSTRUCTION

5/14/99

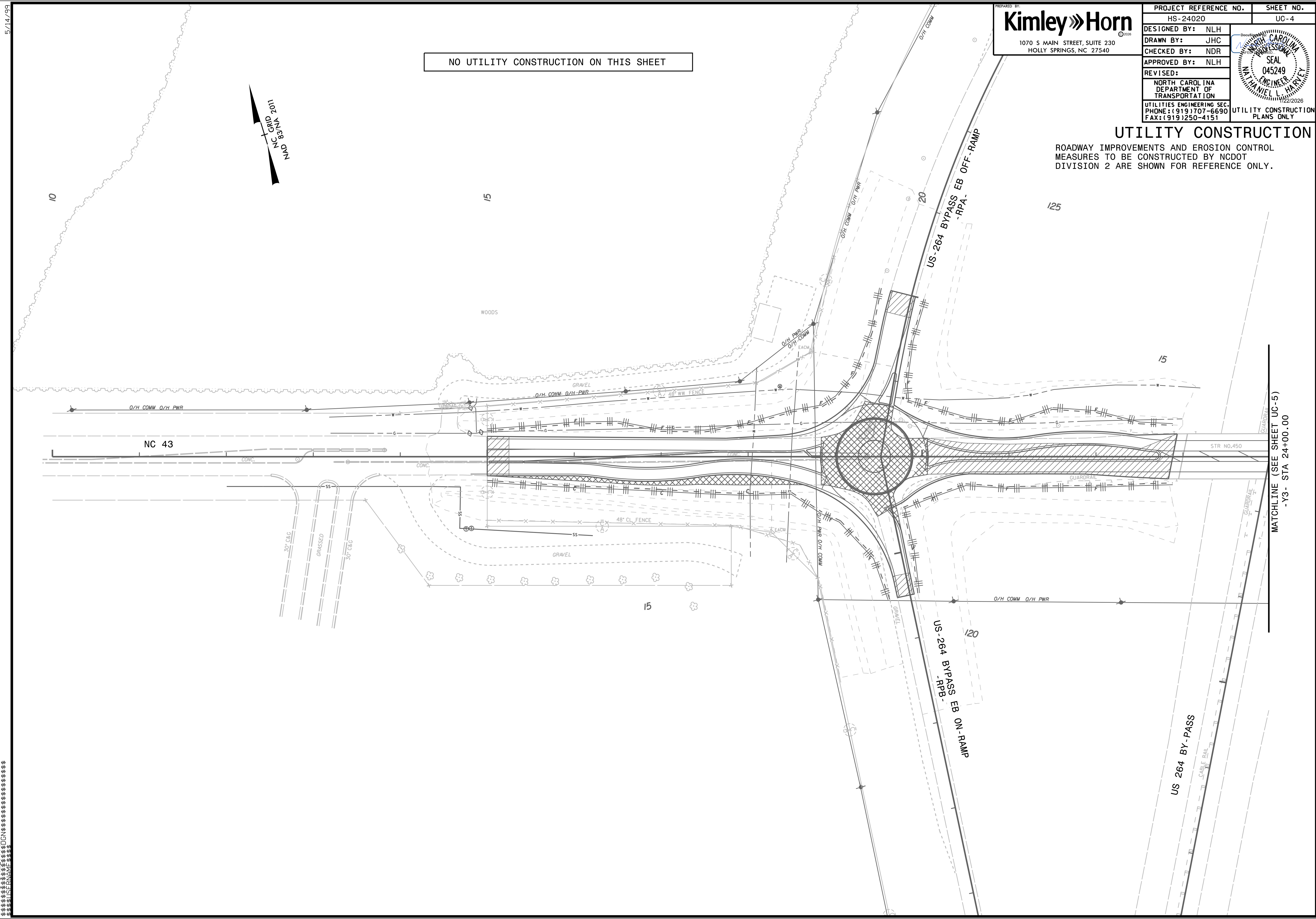
Kimley»Horn
 1070 S MAIN STREET, SUITE 230
 HOLLY SPRINGS, NC 27540

PROJECT REFERENCE NO.	HS-24020	SHEET NO.	UC-4
DESIGNED BY:	NLH		
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CHECKED BY:	NDR		
APPROVED BY:	NLH		
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		UTILITY CONSTRUCTION PLANS ONLY	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151			

NO UTILITY CONSTRUCTION ON THIS SHEET



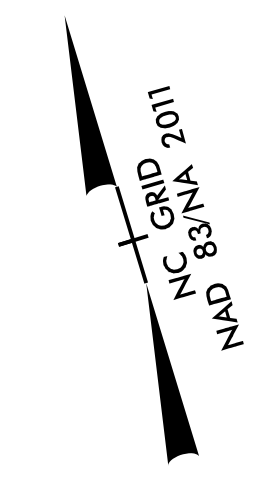
UTILITY CONSTRUCTION
 ROADWAY IMPROVEMENTS AND EROSION CONTROL MEASURES TO BE CONSTRUCTED BY NCDOT DIVISION 2 ARE SHOWN FOR REFERENCE ONLY.



MATCHLINE (SEE SHEET UC-5)
-Y3- STA 24+00.00

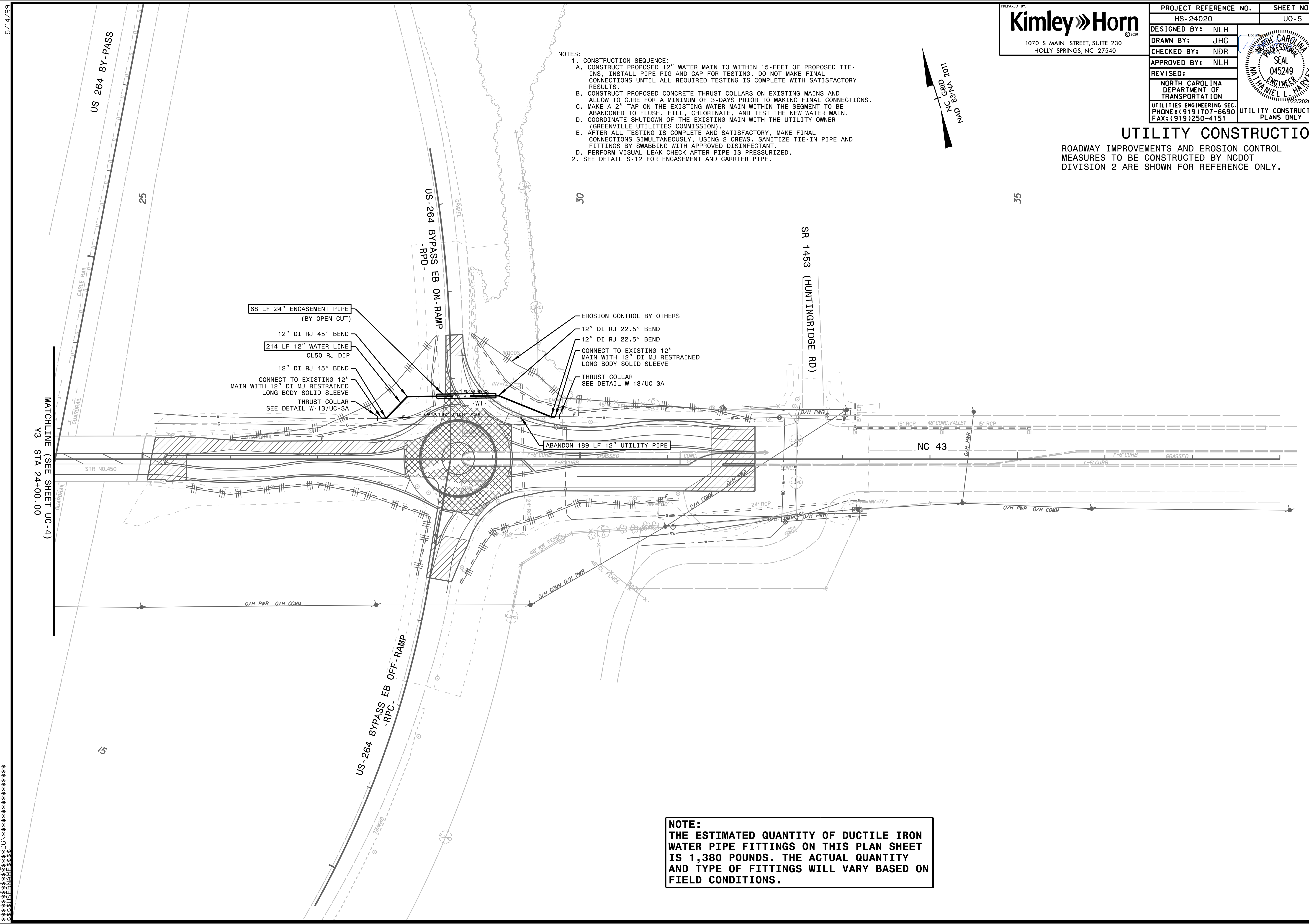
DATE: 5/14/99
 DRAWN BY: JHC
 CHECKED BY: NDR
 APPROVED BY: NLH

- NOTES:
- CONSTRUCTION SEQUENCE:
 - CONSTRUCT PROPOSED 12" WATER MAIN TO WITHIN 15- FEET OF PROPOSED TIE-INS. INSTALL PIPE PIG AND CAP FOR TESTING. DO NOT MAKE FINAL CONNECTIONS UNTIL ALL REQUIRED TESTING IS COMPLETE WITH SATISFACTORY RESULTS.
 - CONSTRUCT PROPOSED CONCRETE THRUST COLLARS ON EXISTING MAINS AND ALLOW TO CURE FOR A MINIMUM OF 3-DAYS PRIOR TO MAKING FINAL CONNECTIONS.
 - MAKE A 2" TAP ON THE EXISTING WATER MAIN WITHIN THE SEGMENT TO BE ABANDONED TO FLUSH, FILL, CHLORINATE, AND TEST THE NEW WATER MAIN.
 - COORDINATE SHUTDOWN OF THE EXISTING MAIN WITH THE UTILITY OWNER (GREENVILLE UTILITIES COMMISSION).
 - AFTER ALL TESTING IS COMPLETE AND SATISFACTORY, MAKE FINAL CONNECTIONS SIMULTANEOUSLY, USING 2 CREWS. SANITIZE TIE-IN PIPE AND FITTINGS BY SWABBING WITH APPROVED DISINFECTANT.
 - PERFORM VISUAL LEAK CHECK AFTER PIPE IS PRESSURIZED.
 - SEE DETAIL S-12 FOR ENCASEMENT AND CARRIER PIPE.



UTILITY CONSTRUCTION

ROADWAY IMPROVEMENTS AND EROSION CONTROL MEASURES TO BE CONSTRUCTED BY NCDOT DIVISION 2 ARE SHOWN FOR REFERENCE ONLY.


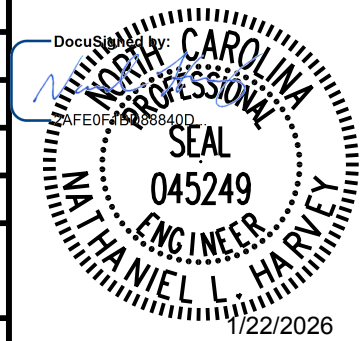


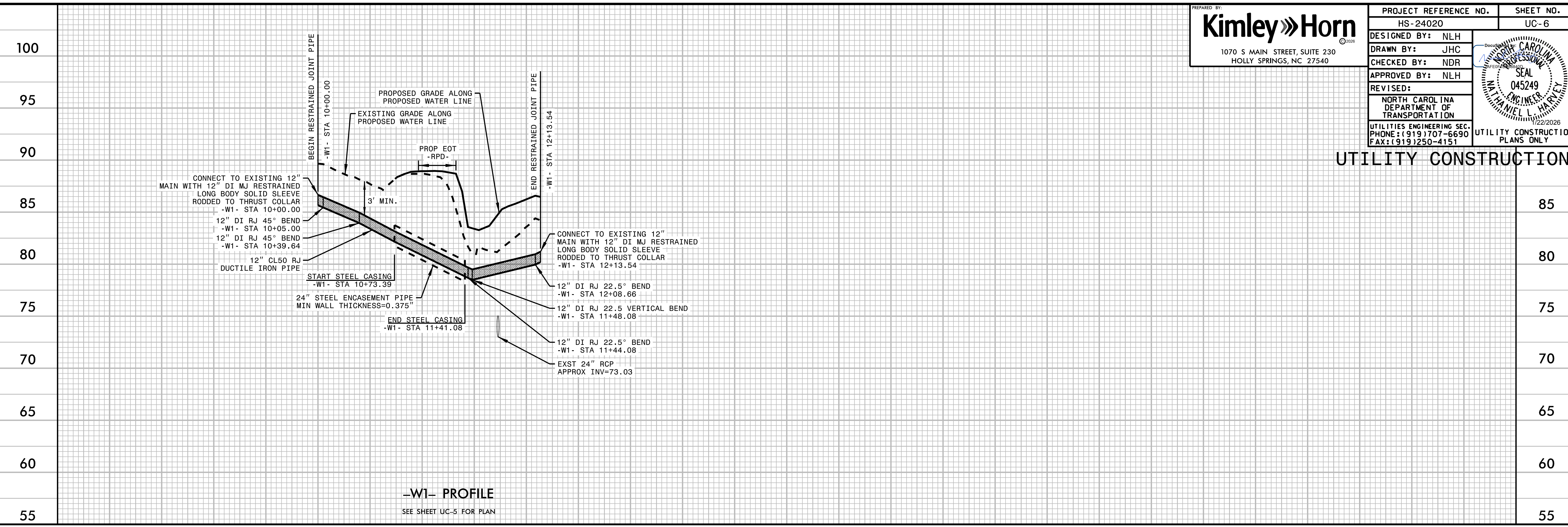
MATCHLINE (SEE SHEET UC-4)
-Y3- STA 24+00.00

NOTE:
THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 1,380 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

5/14/20
 5
 25
 30
 35
 15
 101
 NAD 83
 1070 S MAIN STREET, SUITE 230
 HOLLY SPRINGS, NC 27540
 PROJECT REFERENCE NO. HS-24020
 SHEET NO. UC-5
 DESIGNED BY: NLH
 DRAWN BY: JHC
 CHECKED BY: NDR
 APPROVED BY: NLH
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 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
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 PHONE: (919) 707-6690
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 UTILITY CONSTRUCTION PLANS ONLY
 EROSION CONTROL BY OTHERS
 12" DI RJ 22.5° BEND
 12" DI RJ 22.5° BEND
 CONNECT TO EXISTING 12" MAIN WITH 12" DI MJ RESTRAINED LONG BODY SOLID SLEEVE
 THRUST COLLAR SEE DETAIL W-13/UC-3A
 ABANDON 189 LF 12" UTILITY PIPE
 68 LF 24" ENCASEMENT PIPE (BY OPEN CUT)
 214 LF 12" WATER LINE CL50 RJ DIP
 12" DI RJ 45° BEND
 12" DI RJ 45° BEND
 CONNECT TO EXISTING 12" MAIN WITH 12" DI MJ RESTRAINED LONG BODY SOLID SLEEVE
 THRUST COLLAR SEE DETAIL W-13/UC-3A
 SR 1453 (HUNTINGRIDGE RD)
 NC 43
 STR NO. 450
 CABLE RAIL
 O/H PWR O/H COMM
 48" CONC. VALLEY
 15" RCP
 24" RCP
 48" W/ FENCE
 48" CL FENCE
 101
 NAD 83
 1070 S MAIN STREET, SUITE 230
 HOLLY SPRINGS, NC 27540
 PROJECT REFERENCE NO. HS-24020
 SHEET NO. UC-5
 DESIGNED BY: NLH
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 UTILITY CONSTRUCTION PLANS ONLY

5/14/99

		PROJECT REFERENCE NO. HS-24020	SHEET NO. UC-6
DESIGNED BY: NLH DRAWN BY: JHC CHECKED BY: NDR APPROVED BY: NLH REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919)707-6690 FAX: (919)250-4151		UTILITY CONSTRUCTION PLANS ONLY	



UTILITY CONSTRUCTION

1/20/2026