09/08/99

TIP PROJECT: U-4909

CONTRACT:

SEE SHEET 1-A FOR INDEX OF SHEETS
SEE SHEET 1-B FOR CONVENTIONAL SYMBOLS

STATE PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-1

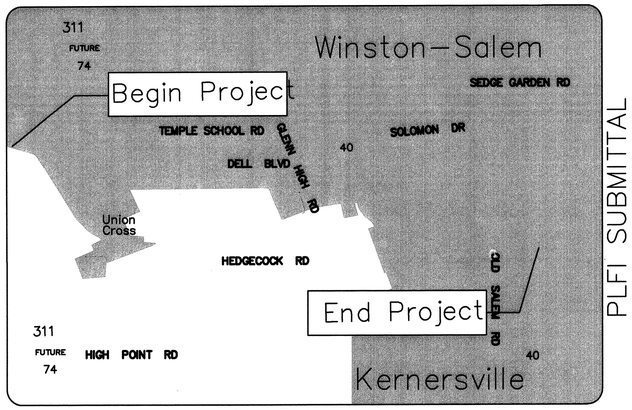
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS
FORSYTH COUNTY

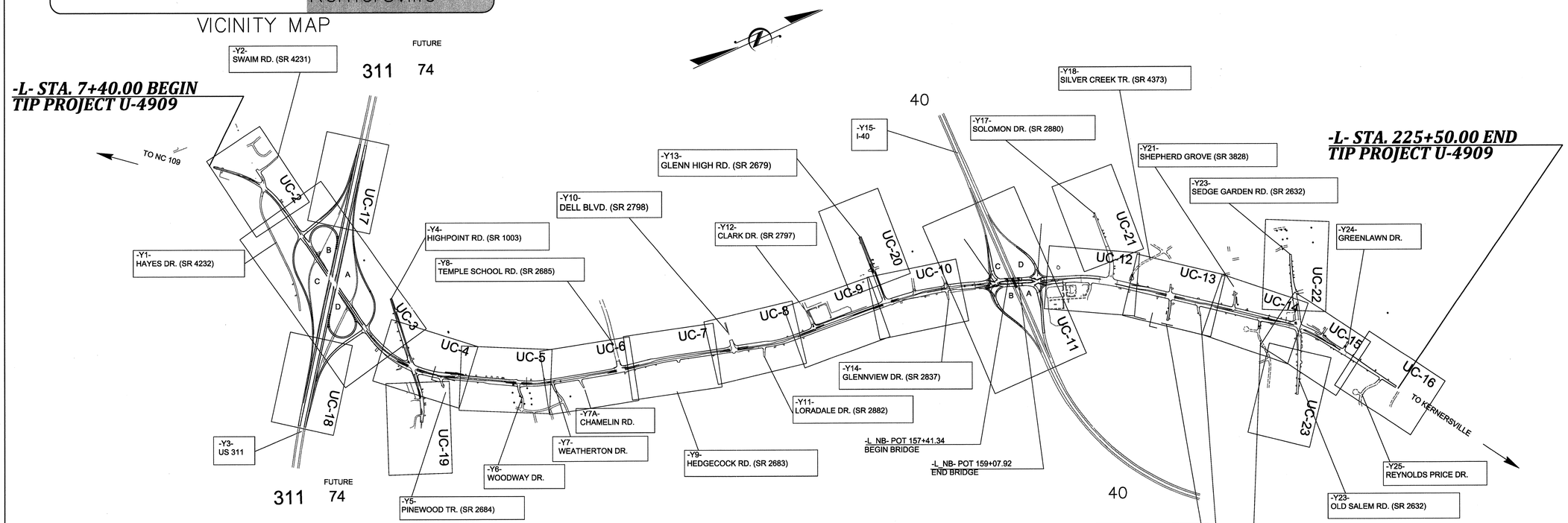
LOCATION: WINSTON SALEM - SR 2643 (UNION CROSS RD.) FROM SR 2691 (WALLBURG RD) TO SR 2632 (SEDGE GARDEN RD.)

TYPE OF WORK: UTILITY CONSTRUCTION

PLFI SUBMITTAL



VICINITY MAP



NOTES:
1. THIS IS A PARTIAL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON PLANS.
2. ROADWAY PLANS HAVE BEEN PREPARED BY RKK
3. BASE MAPPING HAS BEEN PROVIDED BY NCDOT.

ALL UTILITY CONSTRUCTION SHALL BE COMPLETED PER "CITY OF WINSTON-SALEM DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION TECHNICAL SPECIFICATIONS AND DETAIL DRAWINGS WATERLINE AND SANITARY SEWER LINE CONSTRUCTION".

GRAPHIC SCALES

50 0 50 100
PLANS

50 0 50 100
PROFILE (HORIZONTAL)

5 0 5 10
PROFILE (VERTICAL)

INDEX OF SHEETS

	DESCRIPTION
UC-1	TITLE SHEET
UC-2 THRU UC-23	UTILITY CONSTRUCTION PLAN SHEETS
UC-24	PROFILE & DETAIL SHEET

WATER OWNERS ON PROJECT

(1) WATER - CITY OF WINSTON-SALEM

PLANS PREPARED BY :

Gavel & Dorn Engineering, PLLC
License No. P-0601
P.O. Box 1791 Denver, NC 28037
704-483-2054

NORTH CAROLINA PROFESSIONAL SEAL 036837 ENGINEER SEAN M. MAYO 10/12/11

PREPARED FOR:

DIVISION OF HIGHWAYS
UTILITIES ENGINEERING SECTION

1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 250-4128
FAX (919) 250-4119

ROGER WORTHINGTON, P.E.	UTILITIES SECTION ENGINEER
R.B. WILKINS, P.E.	UTILITIES SQUAD LEADER PROJECT ENGINEER
MICHAEL R. BRIGHT	UTILITIES PROJECT DESIGNER

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-2

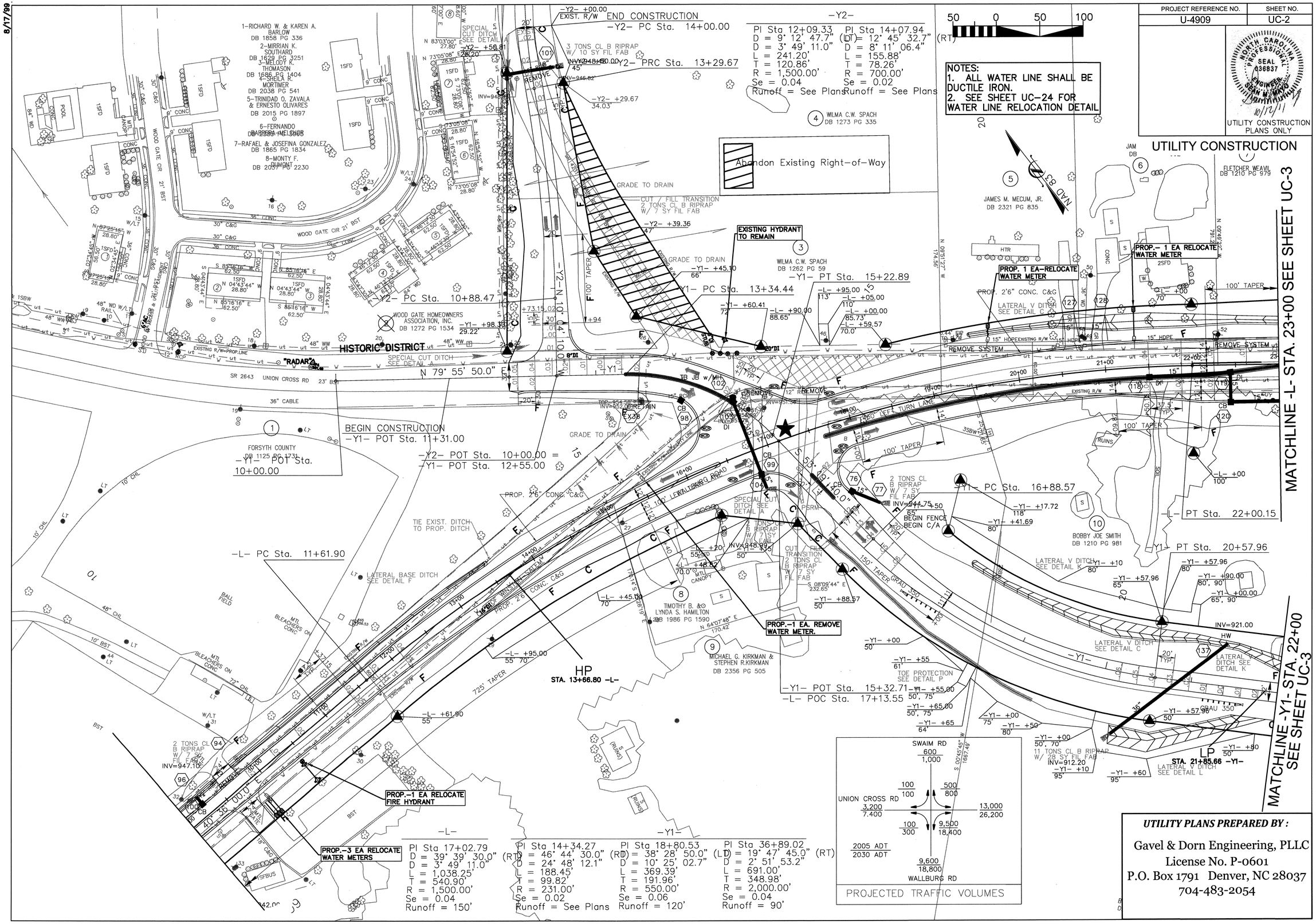
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036837 SEAN M. WARD

10/12/11

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

NOTES:
1. ALL WATER LINE SHALL BE DUCTILE IRON.
2. SEE SHEET UC-24 FOR WATER LINE RELOCATION DETAIL



-Y2-

PI Sta 12+09.33	PI Sta 14+07.94
D = 9° 12' 47.7"	(LT) = 12° 45' 32.7"
D = 3° 49' 11.0"	D = 8° 11' 06.4"
L = 241.20'	L = 155.88'
T = 120.86'	T = 78.26'
R = 1,500.00'	R = 700.00'
Se = 0.04	Se = 0.02
Runoff = See Plans	Runoff = See Plans

-L-

PI Sta 17+02.79
D = 39° 39' 30.0" (RT)
D = 3° 49' 11.0"
L = 1,038.25'
T = 540.90'
R = 1,500.00'
Se = 0.04
Runoff = 150'

-Y1-

PI Sta 14+34.27	PI Sta 18+80.53	PI Sta 36+89.02
(RT) = 46° 44' 30.0"	(RT) = 38° 28' 50.0"	(LT) = 19° 47' 45.0" (RT)
D = 24° 48' 12.1"	D = 10° 25' 02.7"	D = 2° 51' 53.2"
L = 188.45'	L = 369.39'	L = 691.00'
T = 99.82'	T = 191.96'	T = 348.98'
R = 231.00'	R = 550.00'	R = 2,000.00'
Se = 0.02	Se = 0.06	Se = 0.04
Runoff = See Plans	Runoff = 120'	Runoff = 90'

UTILITY PLANS PREPARED BY :

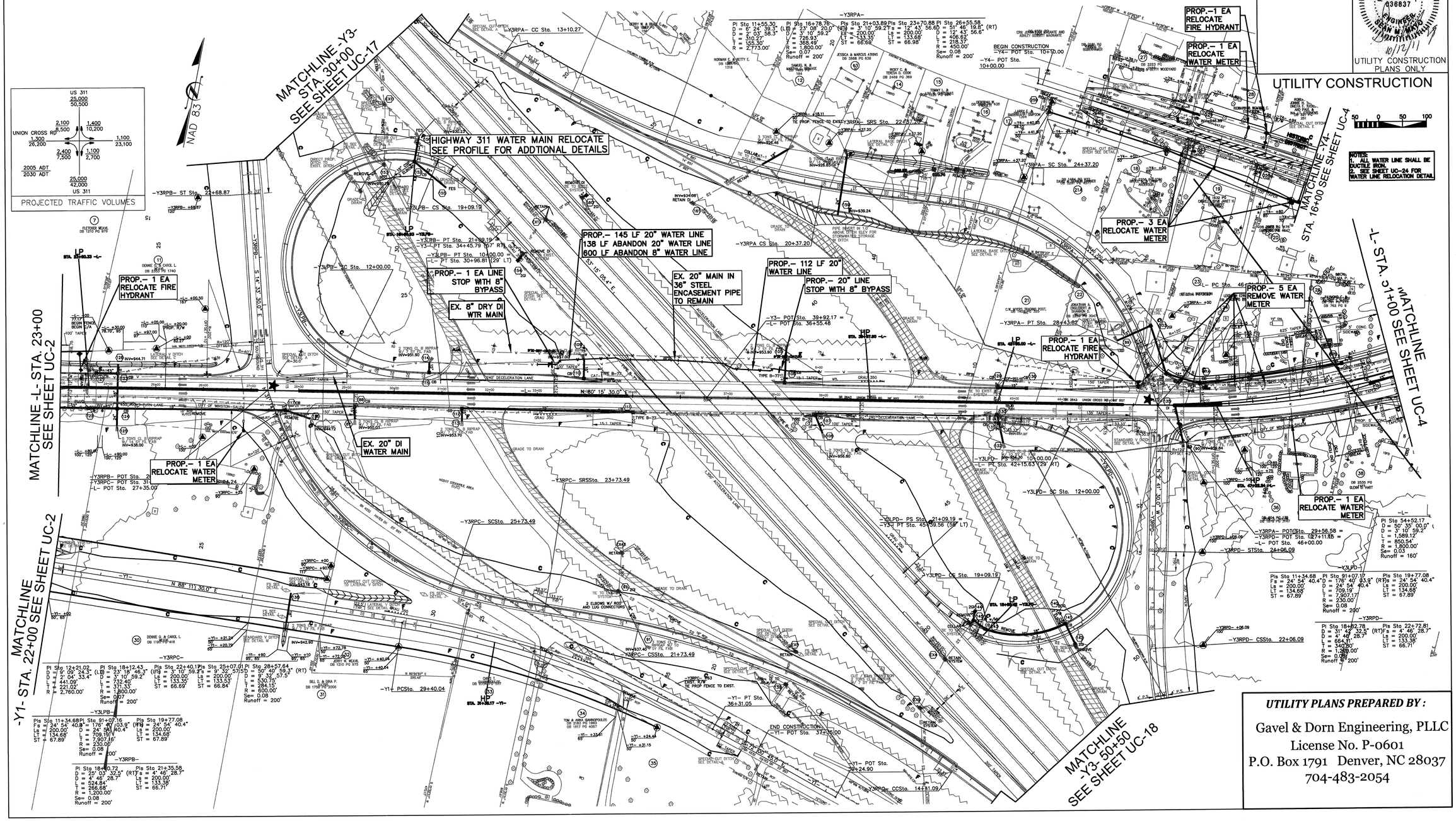
Gavel & Dorn Engineering, PLLC
License No. P-0601
P.O. Box 1791 Denver, NC 28037
704-483-2054

PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-3

NORTH CAROLINA PROFESSIONAL SEAL 036837 ENGINEER SEAN W. HAYES 10/12/11

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION



NOTES:
1. ALL WATER LINE SHALL BE DUCTILE IRON.
2. SEE SHEET UC-24 FOR WATER LINE RELOCATION DETAIL

UTILITY PLANS PREPARED BY :

Gavel & Dorn Engineering, PLLC
License No. P-0601
P.O. Box 1791 Denver, NC 28037
704-483-2054

8/17/99

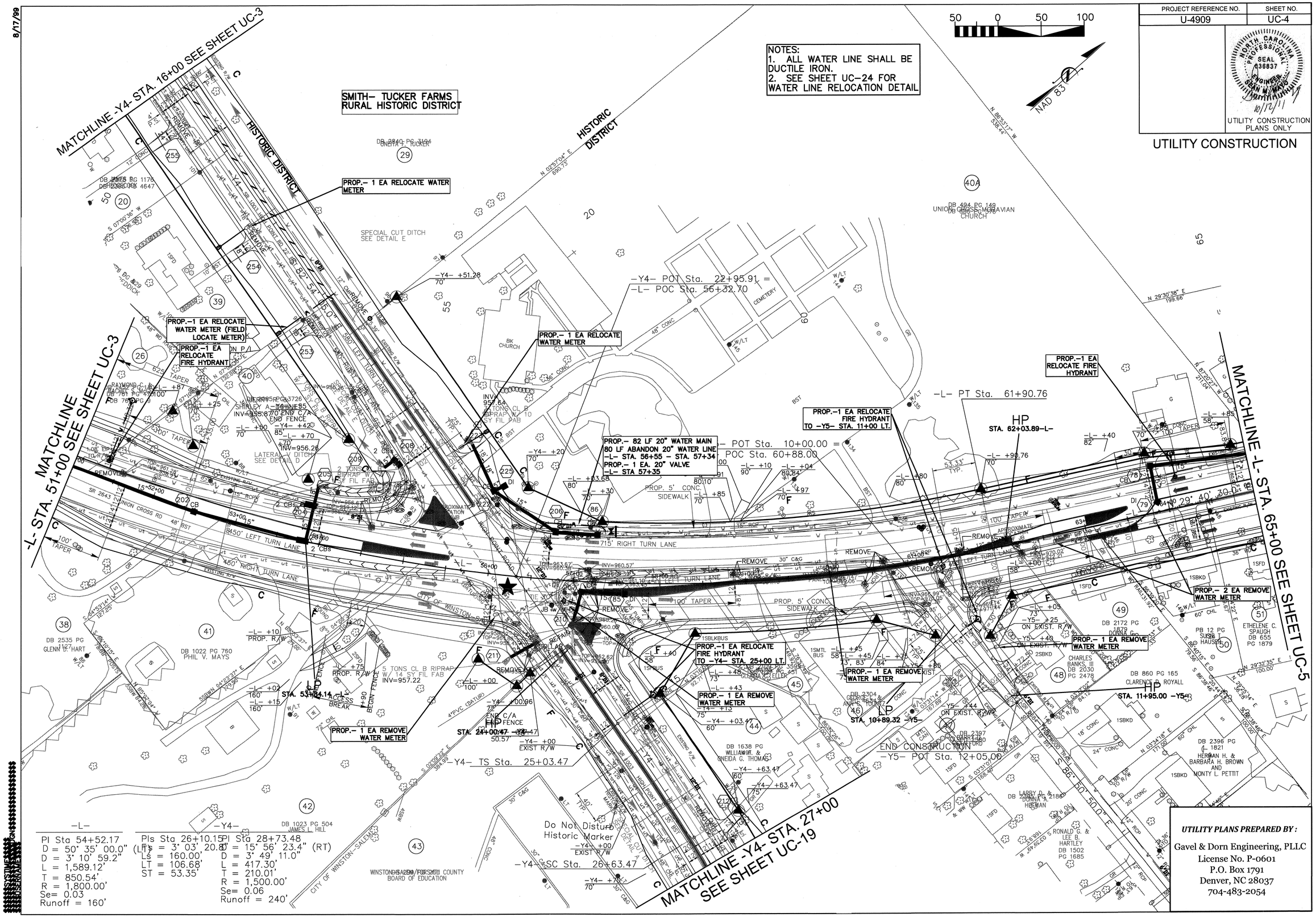
PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-4

NORTH CAROLINA PROFESSIONAL SEAL 036837 ENGINEER SEAN M. MAYO 10/12/11

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

NOTES:
1. ALL WATER LINE SHALL BE DUCTILE IRON.
2. SEE SHEET UC-24 FOR WATER LINE RELOCATION DETAIL



UTILITY PLANS PREPARED BY :

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P.O. Box 1791
Denver, NC 28037
704-483-2054

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-5

NORTH CAROLINA PROFESSIONAL SEAL 036837 ENGINEER SEAN M. MAYO 10/12/11

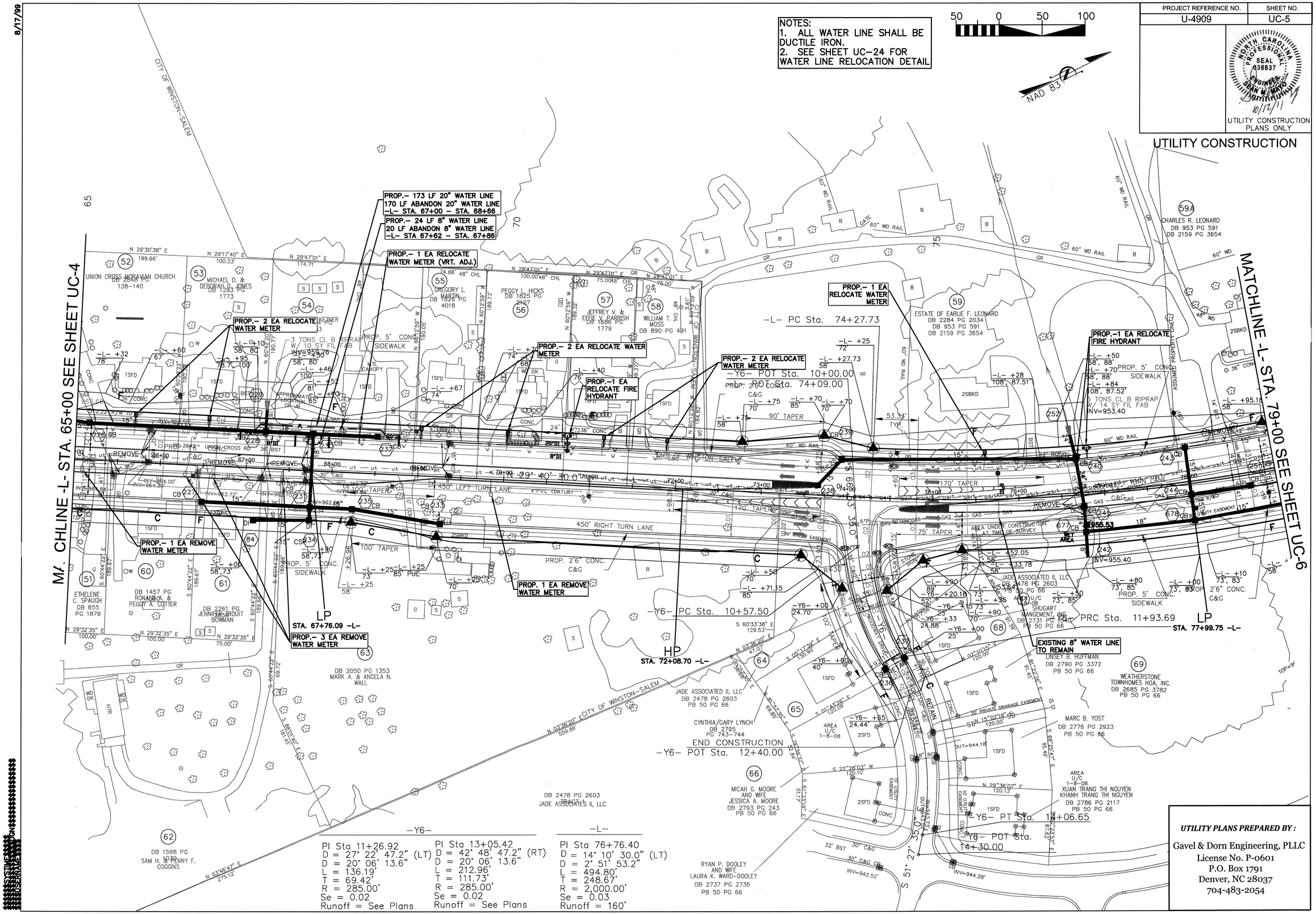
UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

NOTES:
1. ALL WATER LINE SHALL BE DUCTILE IRON.
2. SEE SHEET UC-24 FOR WATER LINE RELOCATION DETAIL

50 0 50 100

NAD 83



-Y6-		-L-
PI Sta 11+26.92	PI Sta 13+05.42	PI Sta 76+76.40
D = 27° 22' 47.2" (LT)	D = 42° 48' 47.2" (RT)	D = 14° 10' 30.0" (LT)
D = 20° 06' 13.6"	D = 20° 06' 13.6"	D = 2° 51' 53.2"
L = 136.19'	L = 212.96'	L = 494.80'
T = 69.42'	T = 111.73'	T = 248.67'
R = 285.00'	R = 285.00'	R = 2,000.00'
Se = 0.02	Se = 0.02	Se = 0.03
Runoff = See Plans	Runoff = See Plans	Runoff = 160'

UTILITY PLANS PREPARED BY :

Gavel & Dorn Engineering, PLLC
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P.O. Box 1791
Denver, NC 28037
704-483-2054

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PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-6

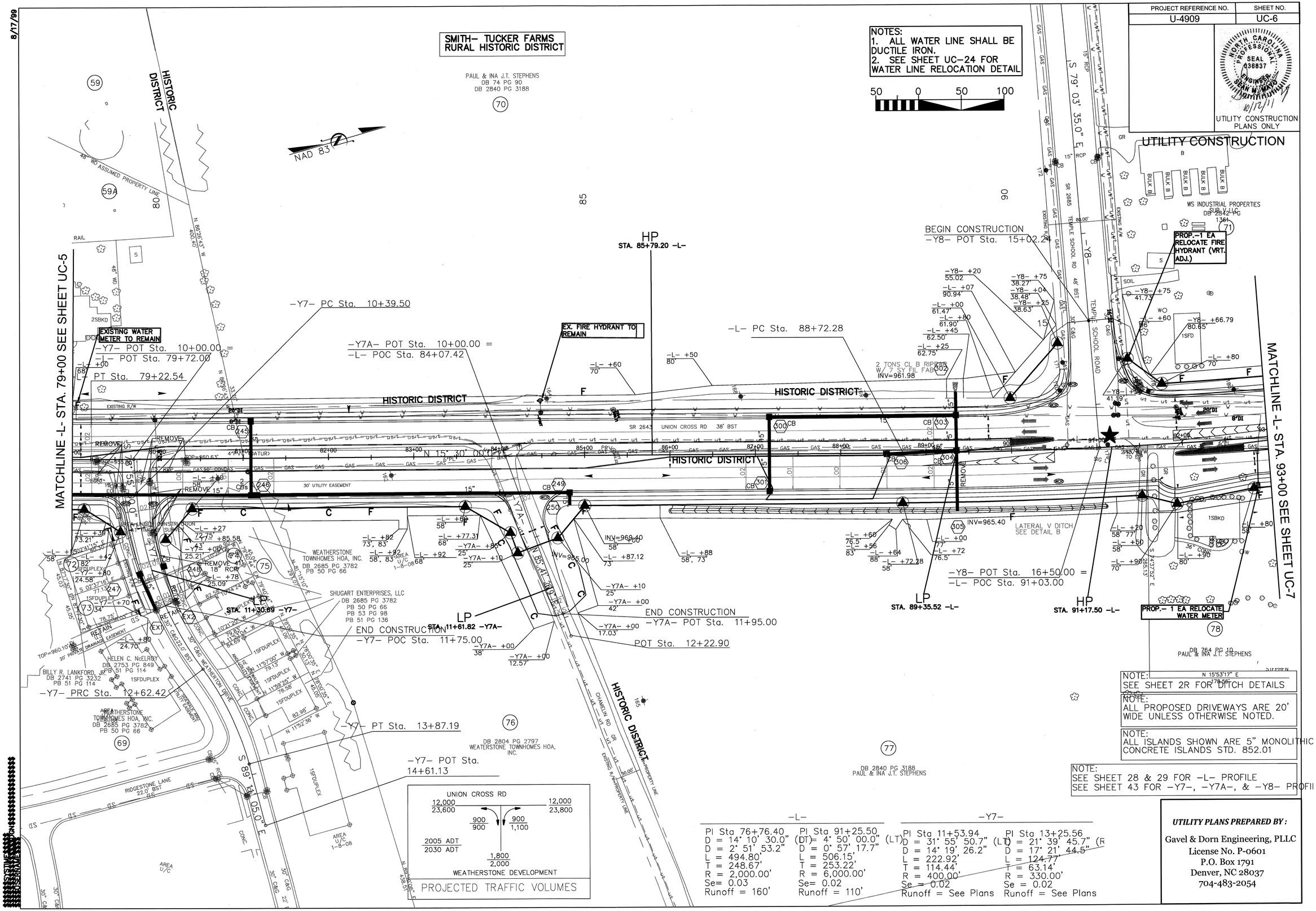
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036837 SEAN M. MAYO
10/12/11

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

SMITH– TUCKER FARMS RURAL HISTORIC DISTRICT

NOTES:
1. ALL WATER LINE SHALL BE DUCTILE IRON.
2. SEE SHEET UC–24 FOR WATER LINE RELOCATION DETAIL



NOTE:
SEE SHEET 2R FOR DITCH DETAILS

NOTE:
ALL PROPOSED DRIVEWAYS ARE 20' WIDE UNLESS OTHERWISE NOTED.

NOTE:
ALL ISLANDS SHOWN ARE 5" MONOLITHIC CONCRETE ISLANDS STD. 852.01

NOTE:
SEE SHEET 28 & 29 FOR –L– PROFILE
SEE SHEET 43 FOR –Y7–, –Y7A–, & –Y8– PROFII

–L–	
PI Sta 76+76.40	PI Sta 91+25.50
D = 14° 10' 30.0"	(DT)= 4° 50' 00.0" (LT)
D = 2° 51' 53.2"	D = 0° 57' 17.7"
L = 494.80'	L = 506.15'
T = 248.67'	T = 253.22'
R = 2,000.00'	R = 6,000.00'
Se= 0.03	Se= 0.02
Runoff = 160'	Runoff = 110'

–Y7–	
PI Sta 11+53.94	PI Sta 13+25.56
(LT) D = 31° 55' 50.7"	(LT) D = 21° 39' 45.7" (R
D = 14° 19' 26.2"	D = 17° 21' 44.5"
L = 222.92'	L = 124.77'
T = 114.44'	T = 63.14'
R = 400.00'	R = 330.00'
Se = 0.02	Se = 0.02
Runoff = See Plans	Runoff = See Plans

UTILITY PLANS PREPARED BY :

Gavel & Dorn Engineering, PLLC
License No. P-0601
P.O. Box 1791
Denver, NC 28037
704-483-2054

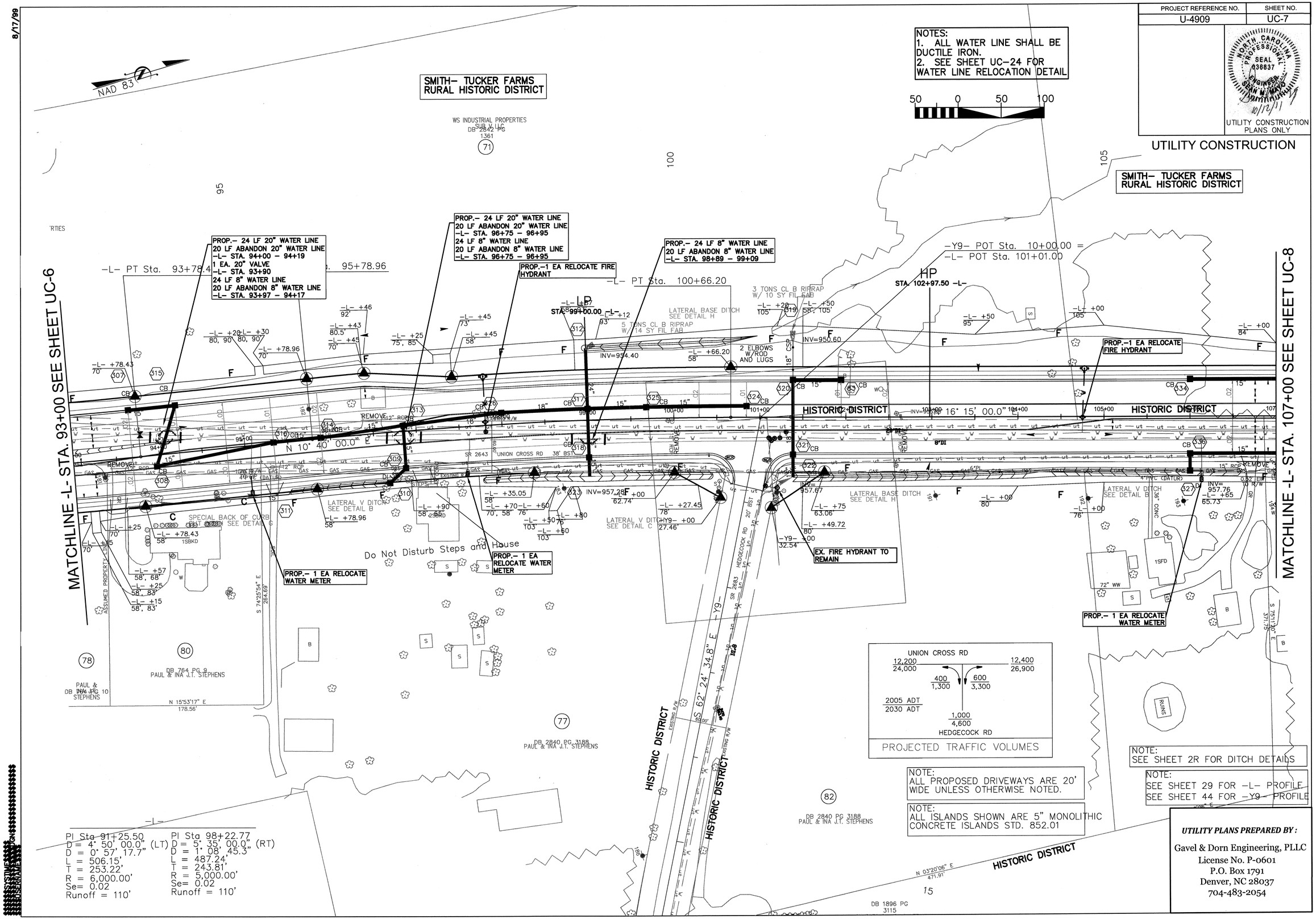
PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-7

UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 036837 ENGINEER SEAN M. MAYO 10/12/11

UTILITY CONSTRUCTION

NOTES:
1. ALL WATER LINE SHALL BE DUCTILE IRON.
2. SEE SHEET UC-24 FOR WATER LINE RELOCATION DETAIL



NOTE:
ALL PROPOSED DRIVEWAYS ARE 20' WIDE UNLESS OTHERWISE NOTED.

NOTE:
ALL ISLANDS SHOWN ARE 5" MONOLITHIC CONCRETE ISLANDS STD. 852.01

NOTE:
SEE SHEET 2R FOR DITCH DETAILS

NOTE:
SEE SHEET 29 FOR -L- PROFILE
SEE SHEET 44 FOR -Y9- PROFILE

PI Sta 91+25.50
D = 4° 50' 00.0" (LT)
D = 0° 57' 17.7"
L = 506.15'
T = 253.22'
R = 6,000.00'
Se= 0.02
Runoff = 110'

PI Sta 98+22.77
D = 5° 35' 00.0" (RT)
D = 1° 08' 45.3"
L = 487.24'
T = 243.81'
R = 5,000.00'
Se= 0.02
Runoff = 110'

UTILITY PLANS PREPARED BY :

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Denver, NC 28037
704-483-2054

8/17/99

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-8

NORTH CAROLINA PROFESSIONAL SEAL 038837 ENGINEER SEAN M. MATO 10/12/11

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

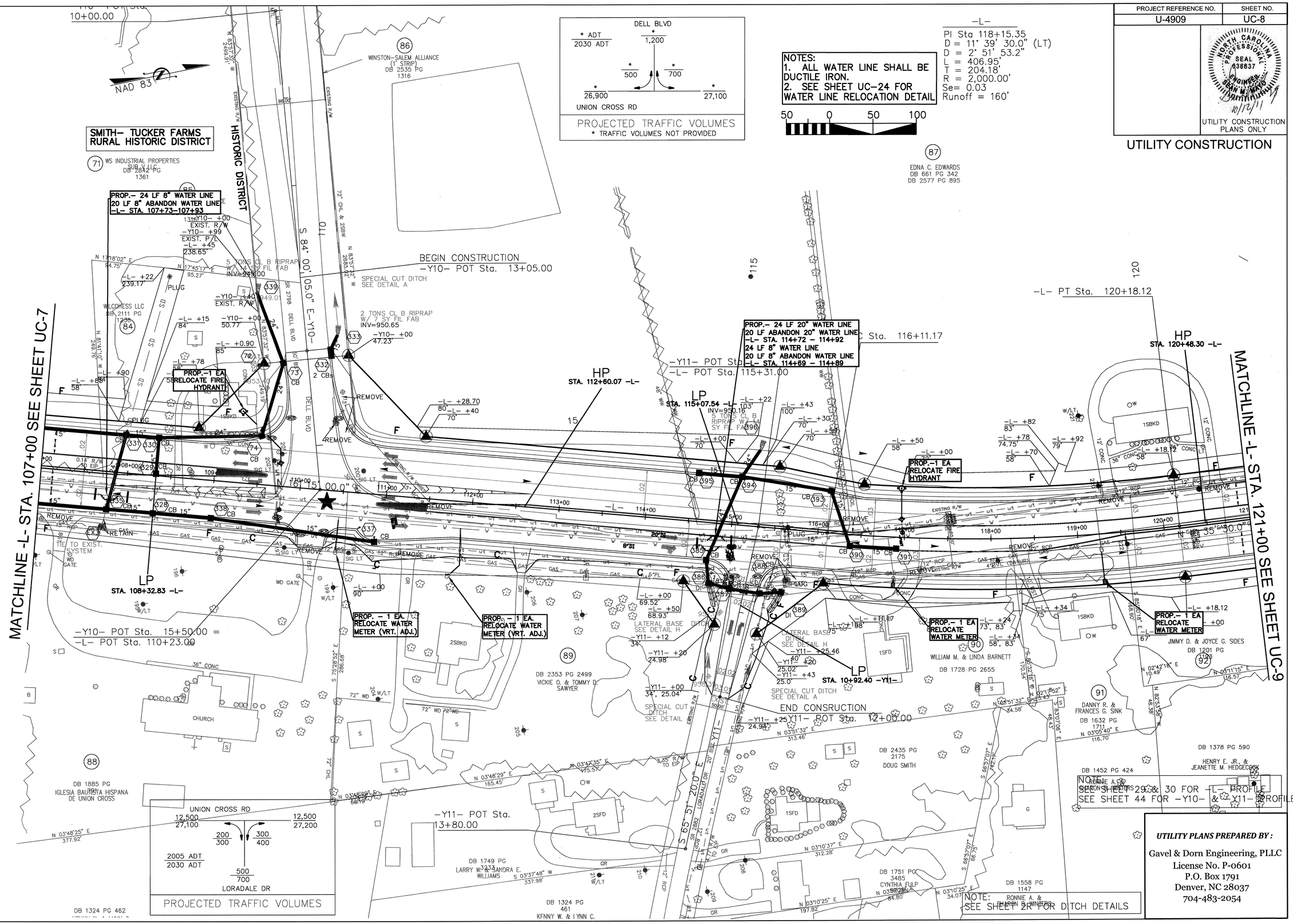
NOTES:
1. ALL WATER LINE SHALL BE DUCTILE IRON.
2. SEE SHEET UC-24 FOR WATER LINE RELOCATION DETAIL

-L-
PI Sta 118+15.35
D = 11° 39' 30.0" (LT)
D = 2° 51' 53.2"
L = 406.95'
T = 204.18'
R = 2,000.00'
Se= 0.03
Runoff = 160'

50 0 50 100

DELL BLVD
* ADT / 2030 ADT
* 1,200
* 500
* 700
* 26,900
* 27,100
UNION CROSS RD

PROJECTED TRAFFIC VOLUMES
* TRAFFIC VOLUMES NOT PROVIDED



NOTE: SEE SHEET 29 & 30 FOR -L- PROFILE
SEE SHEET 44 FOR -Y10- & -Y11- PROFILE

NOTE: SEE SHEET 2R FOR DITCH DETAILS

UTILITY PLANS PREPARED BY:

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License No. P-0601
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Denver, NC 28037
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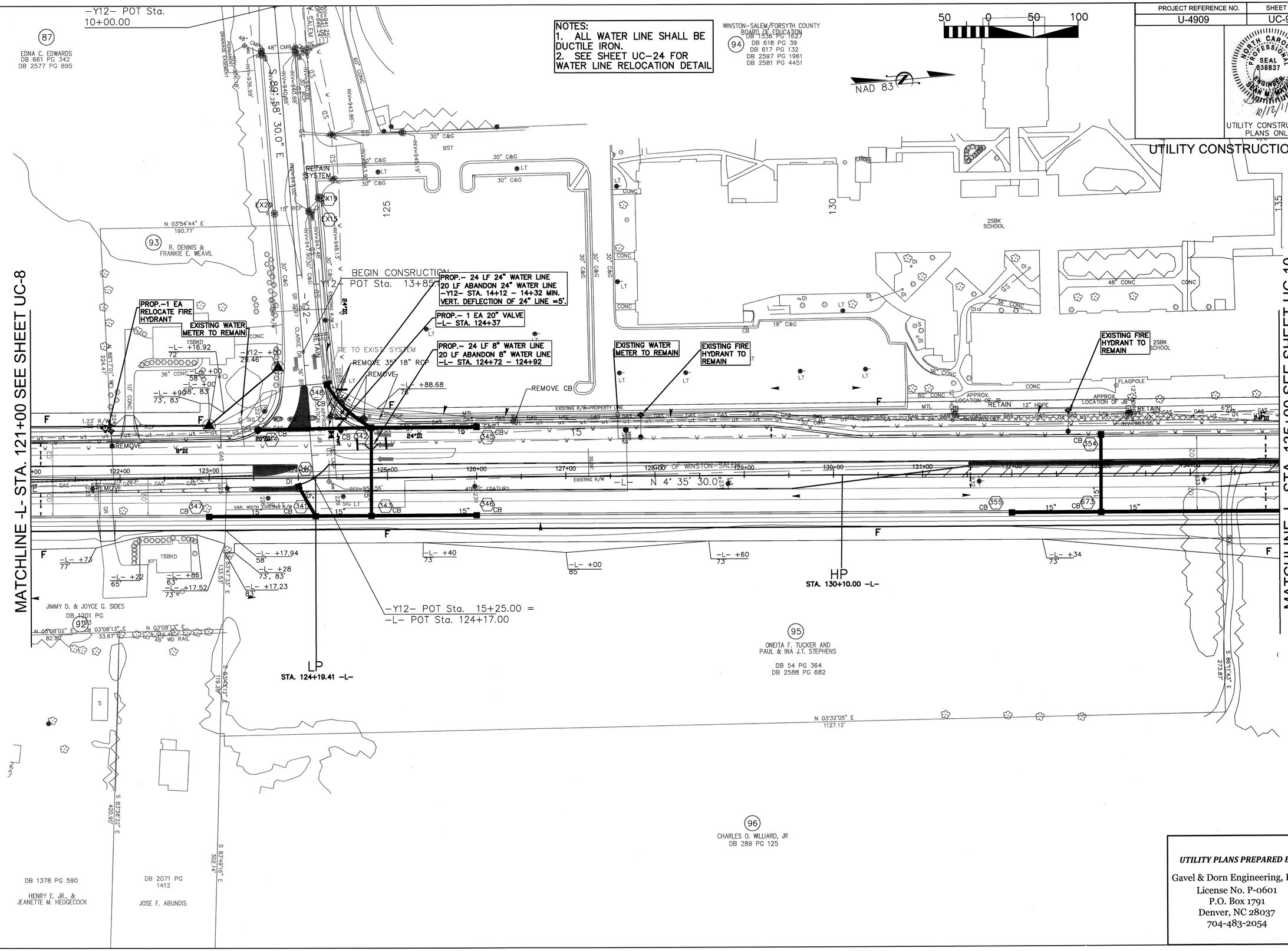
PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-9

NORTH CAROLINA PROFESSIONAL SEAL 036837 ENGINEER SEAN W. MAYO 10/12/11

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

NOTES:
1. ALL WATER LINE SHALL BE DUCTILE IRON.
2. SEE SHEET UC-24 FOR WATER LINE RELOCATION DETAIL



UTILITY PLANS PREPARED BY :

Gavel & Dorn Engineering, PLLC
License No. P-0601
P.O. Box 1791
Denver, NC 28037
704-483-2054

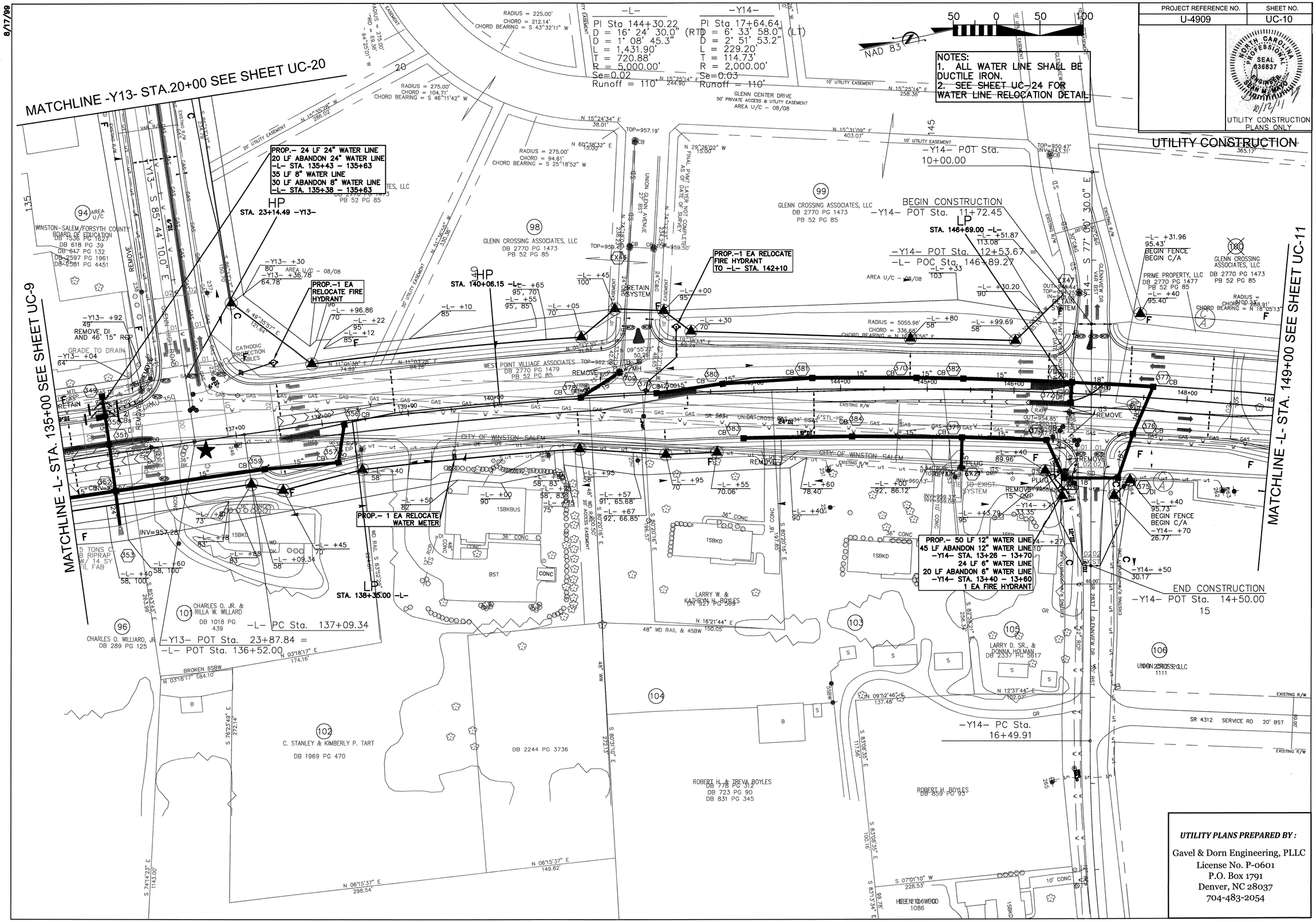
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-10

NORTH CAROLINA PROFESSIONAL SEAL 036837 ENGINEER
10/12/11

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION



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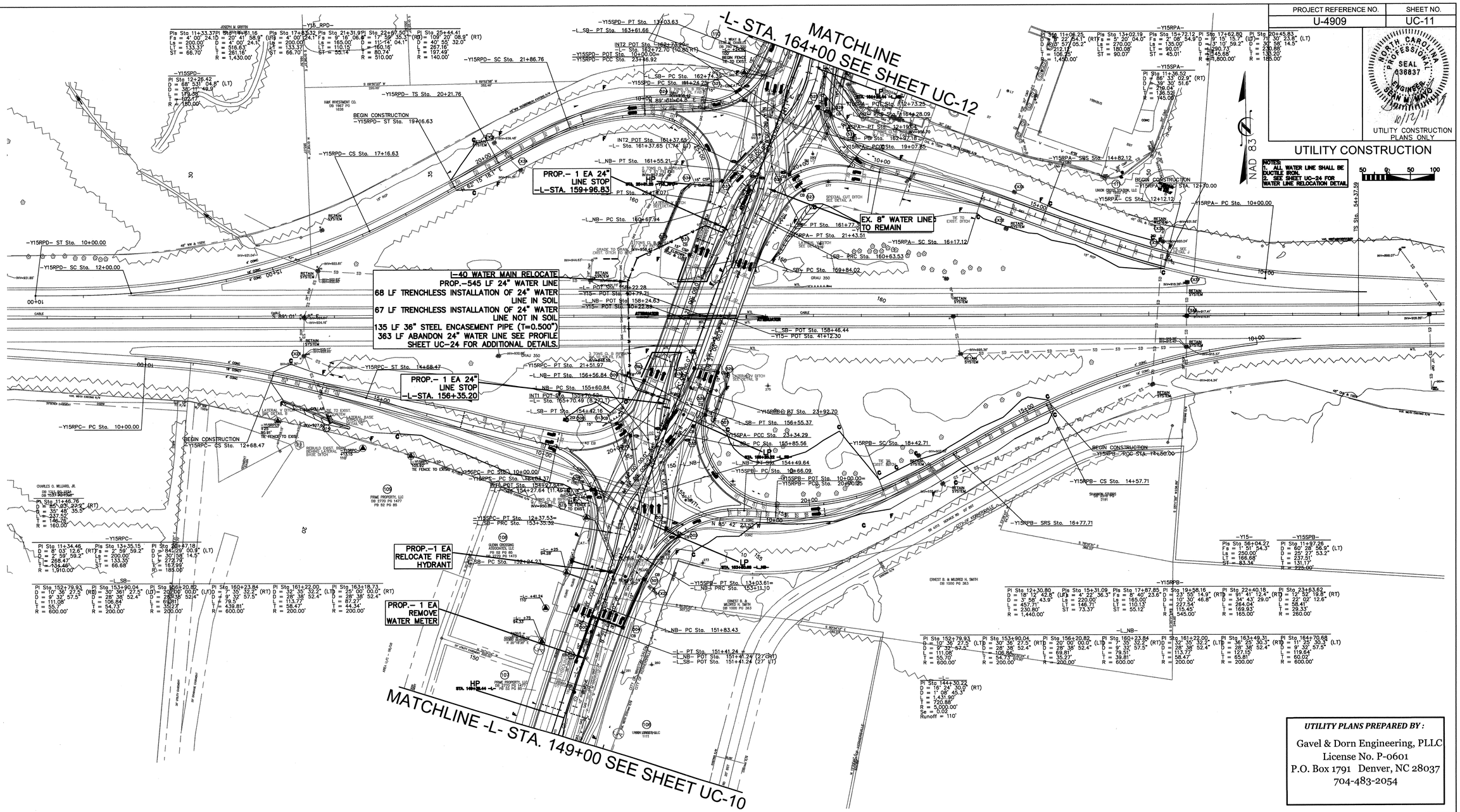
License No. P-0601
P.O. Box 1791
Denver, NC 28037
704-483-2054

PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-11



NORTH CAROLINA PROFESSIONAL SEAL 036837 ENGINEER SEAN M. MAYO 10/12/11

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

NOTES:
1. ALL WATER LINE SHALL BE DUCTILE IRON.
2. SEE SHEET UC-24 FOR WATER LINE RELOCATION DETAIL.

50 0 50 100

UTILITY PLANS PREPARED BY :

Gavel & Dorn Engineering, PLLC
License No. P-0601
P.O. Box 1791 Denver, NC 28037
704-483-2054

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-12

NORTH CAROLINA PROFESSIONAL SEAL 036837 ENGINEER SEAN M. MAYO 10/12/11

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

NOTES:
1. ALL WATER LINE SHALL BE DUCTILE IRON.
2. SEE SHEET UC-24 FOR WATER LINE RELOCATION DETAIL

50 0 50 100

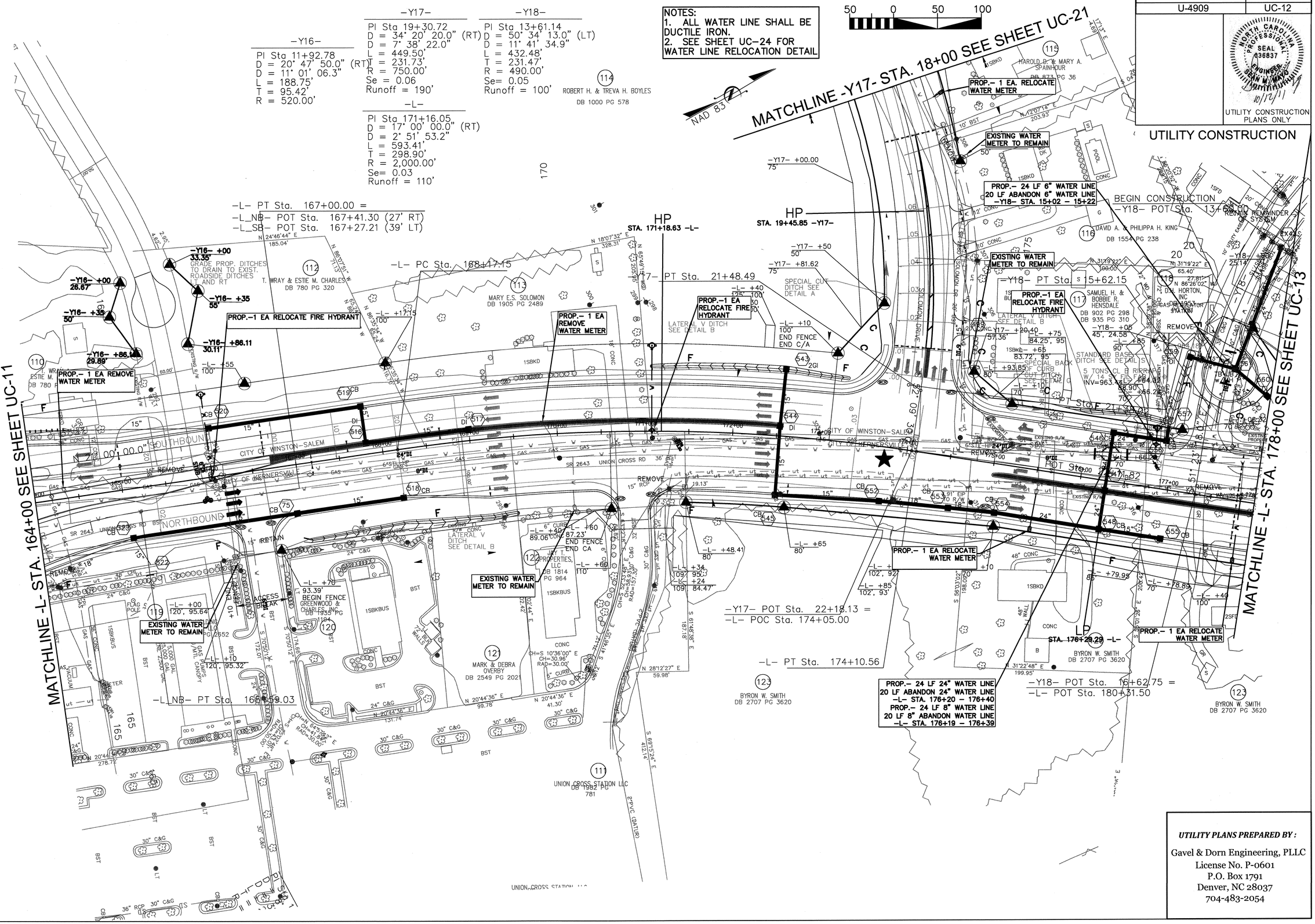
-Y16-
PI Sta 11+92.78
D = 20° 47' 50.0" (RT)
D = 11° 01' 06.3"
L = 188.75'
T = 95.42'
R = 520.00'

-Y17-
PI Sta 19+30.72
D = 34° 20' 20.0" (RT)
D = 7° 38' 22.0"
L = 449.50'
T = 231.73'
R = 750.00'
Se = 0.06
Runoff = 190'

-Y18-
PI Sta 13+61.14
D = 50° 34' 13.0" (LT)
D = 11° 41' 34.9"
L = 432.48'
T = 231.47'
R = 490.00'
Se= 0.05
Runoff = 100'

-L-
PI Sta 171+16.05
D = 17° 00' 00.0" (RT)
D = 2° 51' 53.2"
L = 593.41'
T = 298.90'
R = 2,000.00'
Se= 0.03
Runoff = 110'

-L- PT Sta. 167+00.00 =
-L_NB- POT Sta. 167+41.30 (27' RT)
-L_SB- POT Sta. 167+27.21 (39' LT)



UTILITY PLANS PREPARED BY :

Gavel & Dorn Engineering, PLLC
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P.O. Box 1791
Denver, NC 28037
704-483-2054

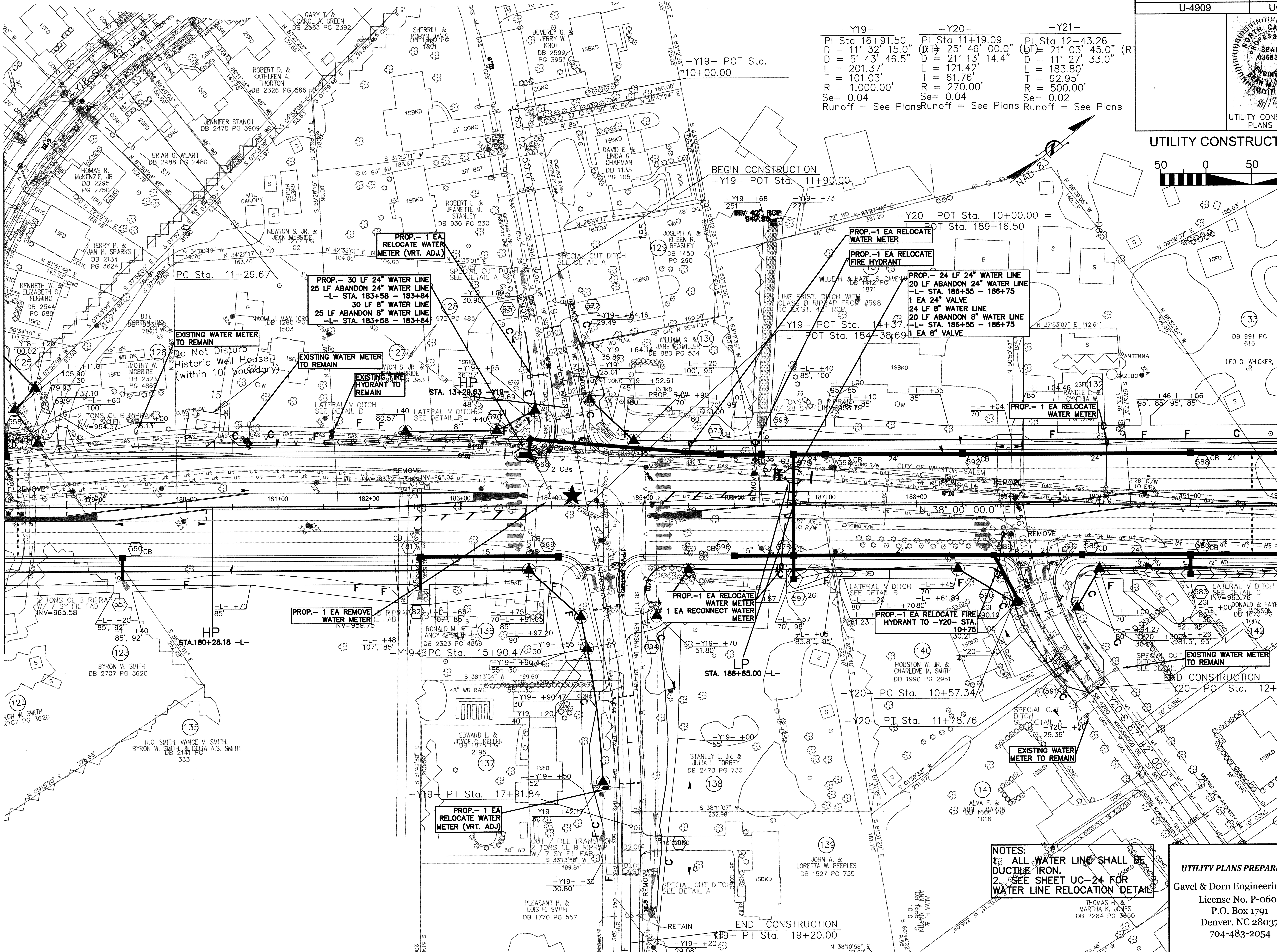
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-13

NORTH CAROLINA PROFESSIONAL SEAL 036837 ENGINEER SEAN M. MAYO 10/12/11

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION



NOTES:
1. ALL WATER LINE SHALL BE DUCTILE IRON.
2. SEE SHEET UC-24 FOR WATER LINE RELOCATION DETAIL

UTILITY PLANS PREPARED BY :

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Denver, NC 28037
704-483-2054

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-14

NORTH CAROLINA PROFESSIONAL SEAL 036837 ENGINEER SEAN W. MAYO 10/12/11

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

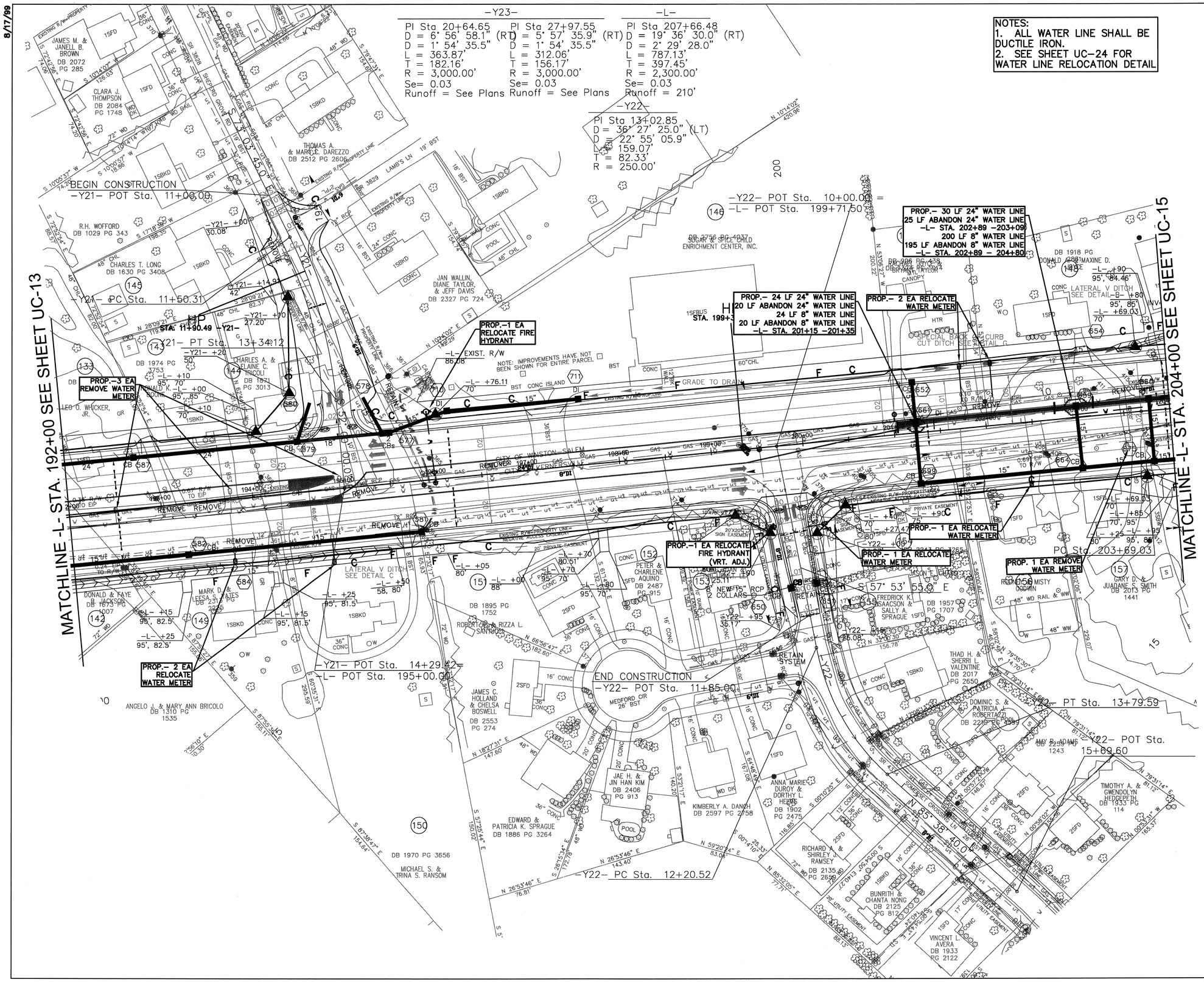
NOTES:
1. ALL WATER LINE SHALL BE DUCTILE IRON.
2. SEE SHEET UC-24 FOR WATER LINE RELOCATION DETAIL

-Y23-
PI Sta 20+64.65
D = 6° 56' 58.1" (RT)
D = 1° 54' 35.5"
L = 363.87'
T = 182.16'
R = 3,000.00'
Se= 0.03
Runoff = See Plans

PI Sta 27+97.55
D = 5° 57' 35.9" (RT)
D = 1° 54' 35.5"
L = 312.06'
T = 156.17'
R = 3,000.00'
Se= 0.03
Runoff = See Plans

-L-
PI Sta 207+66.48
D = 19° 36' 30.0" (RT)
D = 2° 29' 28.0"
L = 787.13'
T = 397.45'
R = 2,300.00'
Se= 0.03
Runoff = 210'

-Y22
PI Sta 13+02.85
D = 36° 27' 25.0" (LT)
D = 22° 55' 05.9"
L = 159.07'
T = 82.33'
R = 250.00'



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704-483-2054

8/17/99

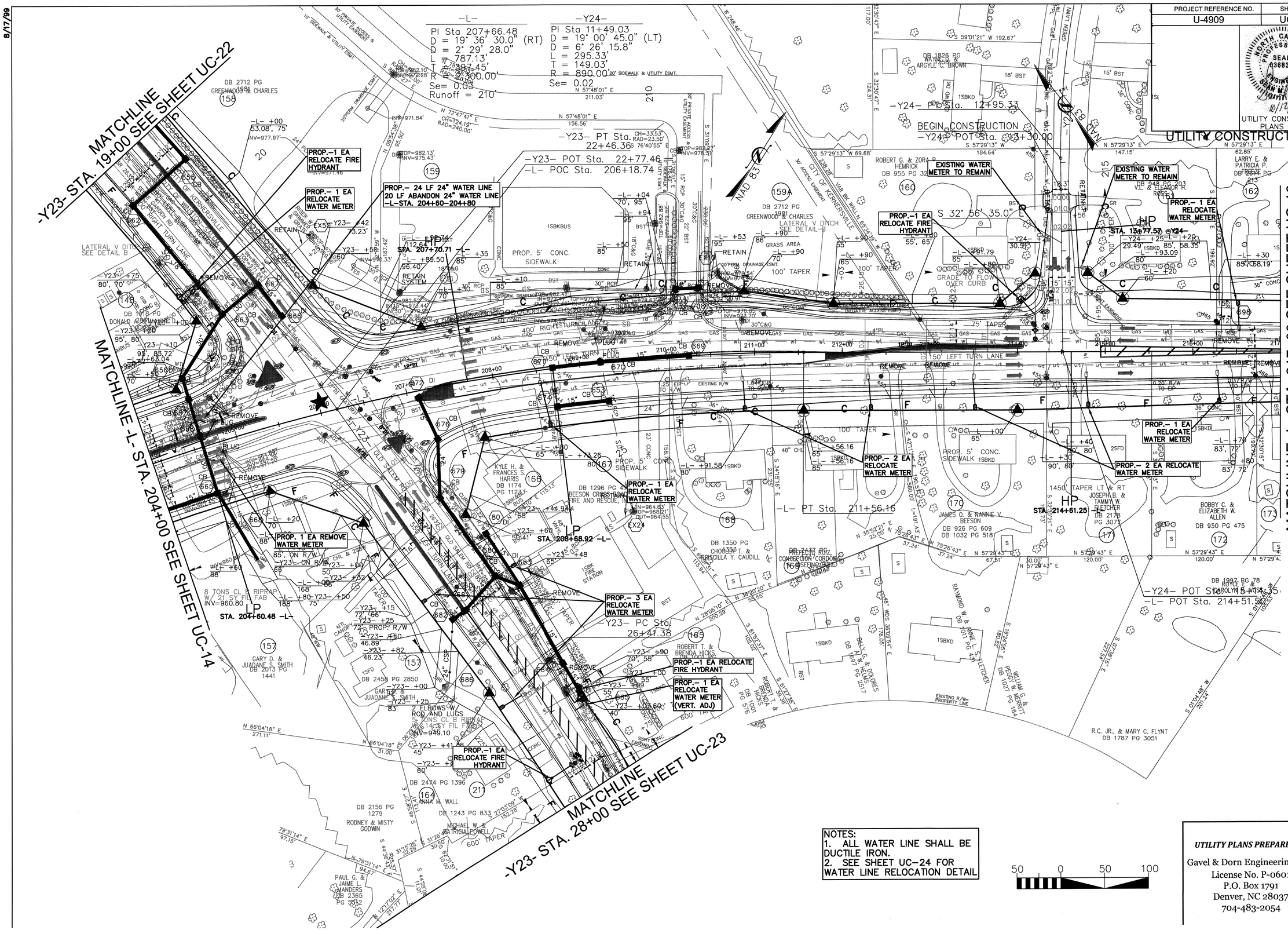
PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-15

NORTH CAROLINA PROFESSIONAL SEAL 036837 ENGINEER SEAN W. MAYO

10/12/11

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION



NOTES:
1. ALL WATER LINE SHALL BE DUCTILE IRON.
2. SEE SHEET UC-24 FOR WATER LINE RELOCATION DETAIL

50 0 50 100

UTILITY PLANS PREPARED BY :

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Denver, NC 28037
704-483-2054

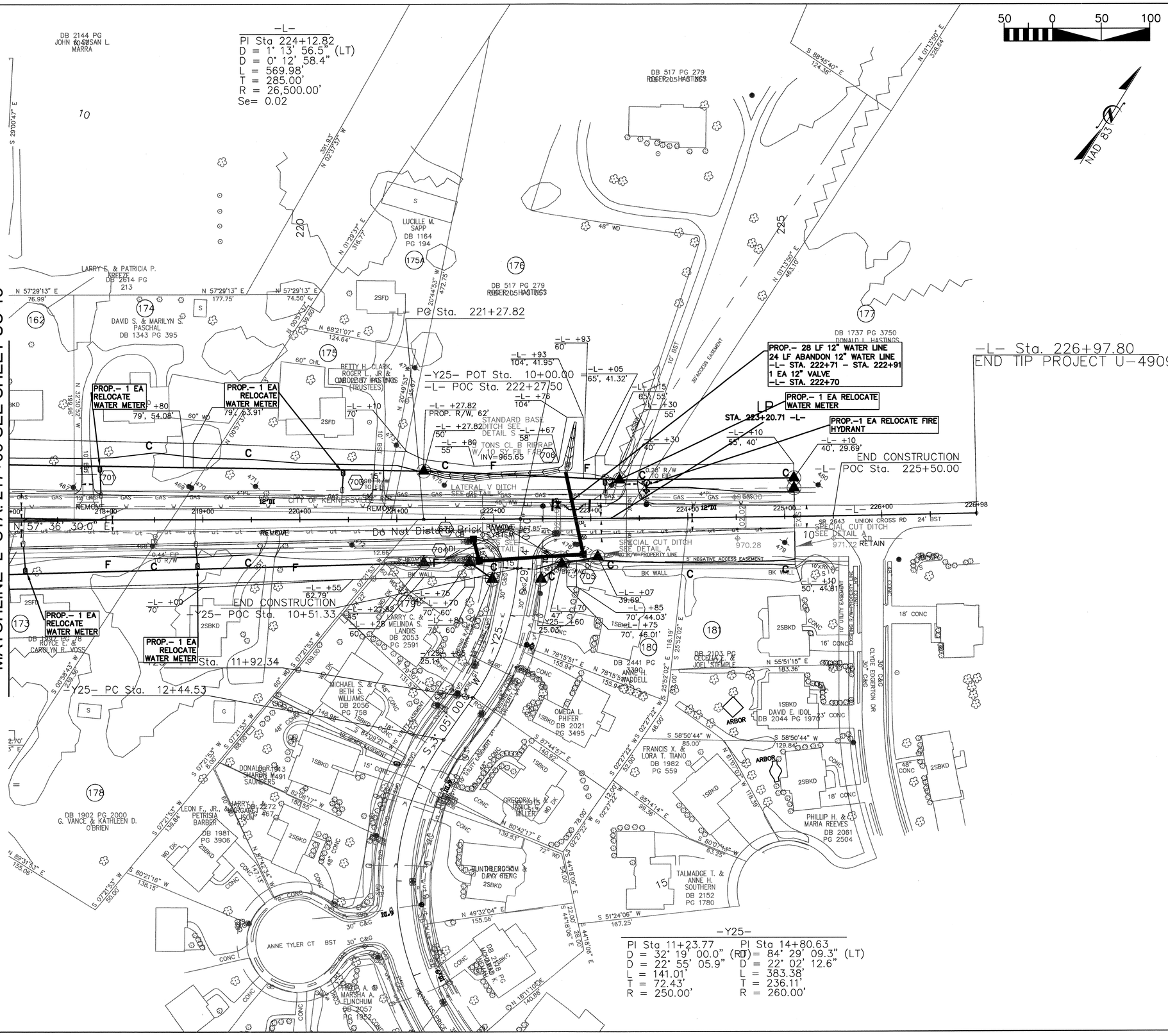
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-16

NORTH CAROLINA PROFESSIONAL SEAL 036837 ENGINEER SEAN M. WATTS 10/12/11

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION



NOTES:
1. ALL WATER LINE SHALL BE DUCTILE IRON.
2. SEE SHEET UC-24 FOR WATER LINE RELOCATION DETAIL

UTILITY PLANS PREPARED BY :

Gavel & Dorn Engineering, PLLC
License No. P-0601
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Denver, NC 28037
704-483-2054

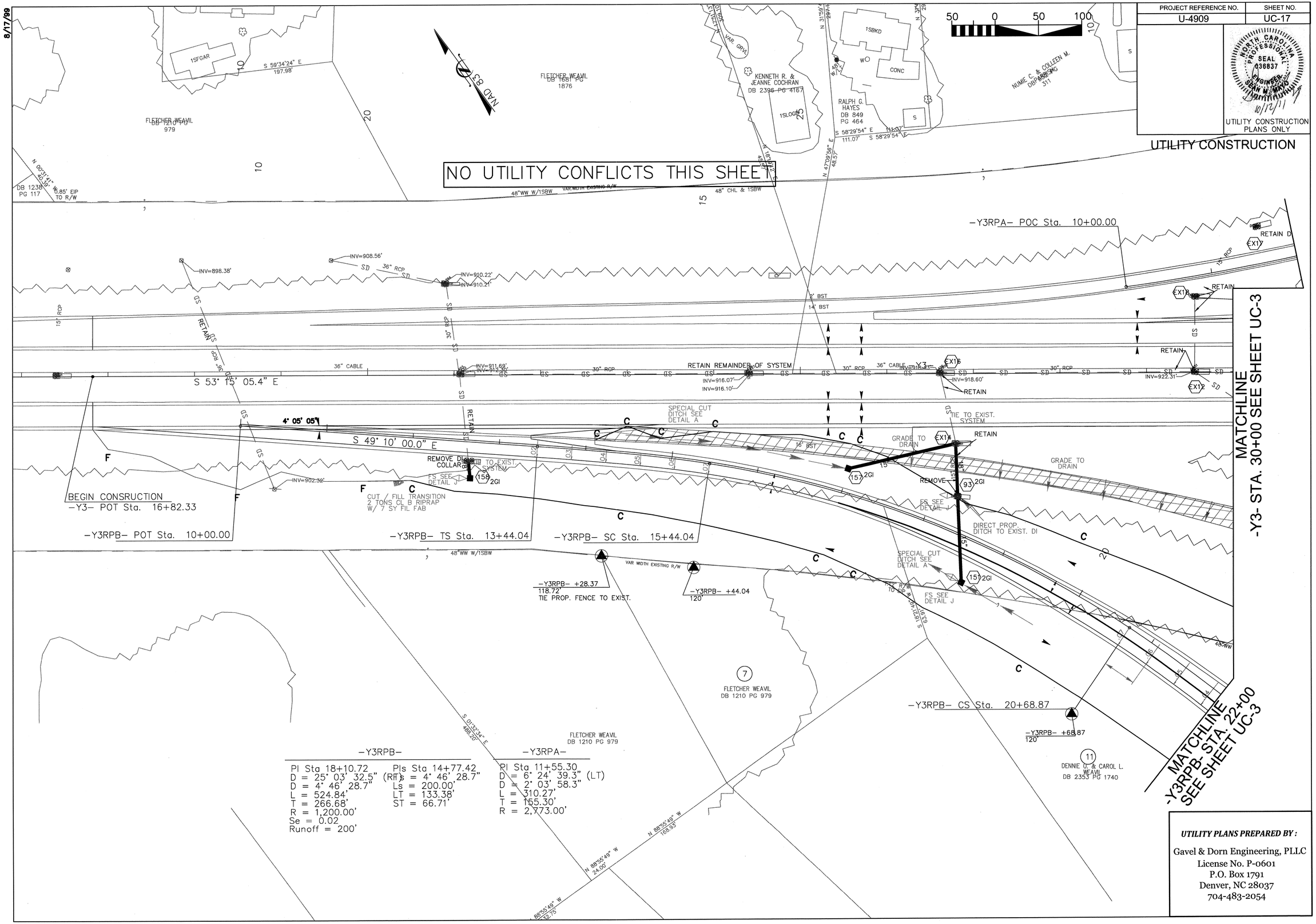
PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-17

UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 036837 ENGINEER SEAN M. MAYO 10/12/11

UTILITY CONSTRUCTION

8/17/99



-Y3RPB-

PI Sta 18+10.72	PIs Sta 14+77.42
D = 25° 03' 32.5" (RT)	Ts = 4° 46' 28.7"
D = 4° 46' 28.7"	Ls = 200.00'
L = 524.84'	LT = 133.38'
T = 266.68'	ST = 66.71'
R = 1,200.00'	
Se = 0.02	
Runoff = 200'	

-Y3RPA-

PI Sta 11+55.30
D = 6° 24' 39.3" (LT)
D = 2° 03' 58.3"
L = 310.27'
T = 155.30'
R = 2,773.00'

UTILITY PLANS PREPARED BY :

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License No. P-0601
P.O. Box 1791
Denver, NC 28037
704-483-2054

8/17/99

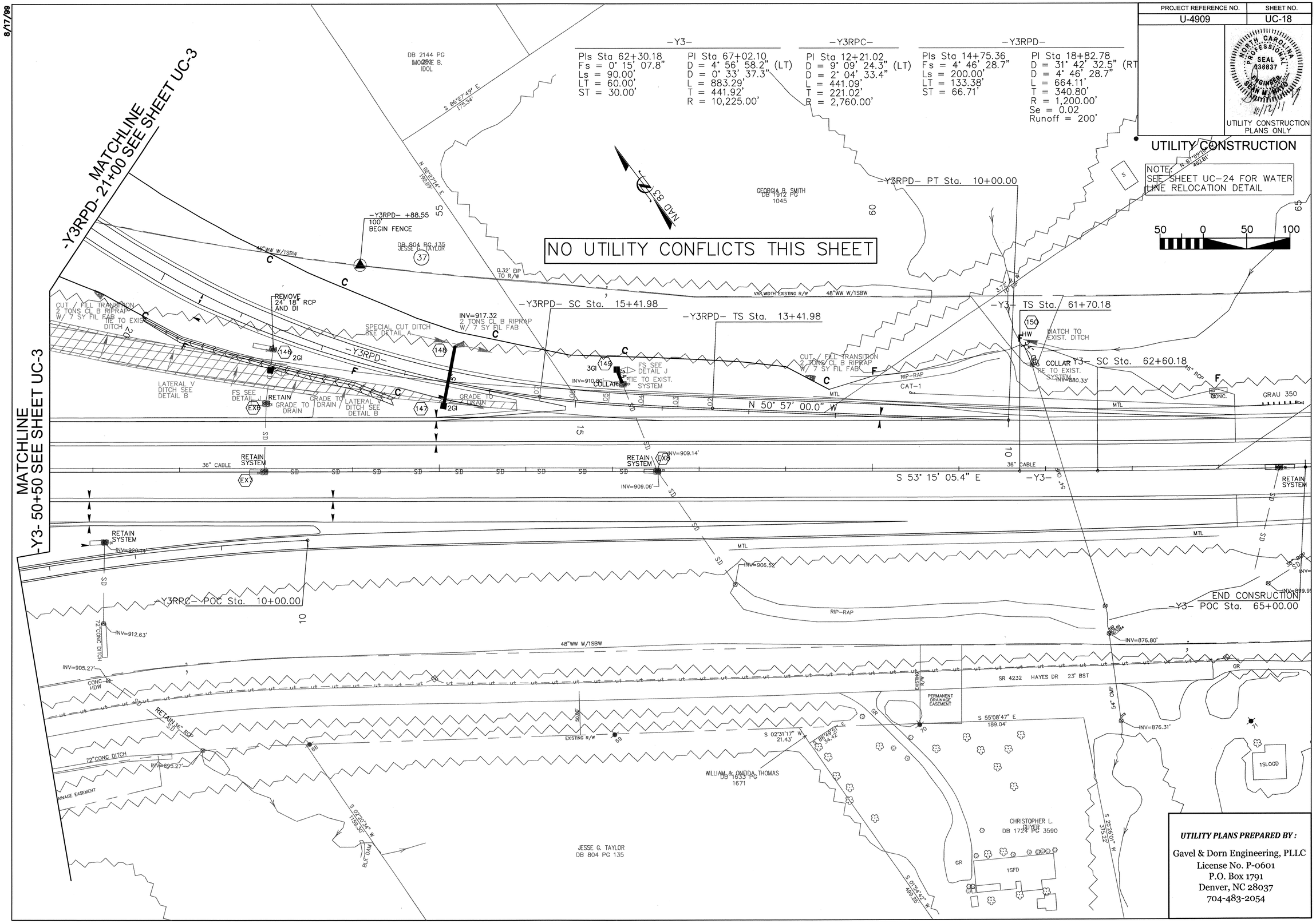
PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-18

NORTH CAROLINA PROFESSIONAL SEAL 036837 ENGINEER SEAN M. MAHONEY 10/12/11

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

NOTE:
SEE SHEET UC-24 FOR WATER LINE RELOCATION DETAIL



UTILITY PLANS PREPARED BY :

Gavel & Dorn Engineering, PLLC
License No. P-0601
P.O. Box 1791
Denver, NC 28037
704-483-2054

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-19

NORTH CAROLINA PROFESSIONAL SEAL 036837 ENGINEER GLENN M. WHITE

10/12/11

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

-Y4-

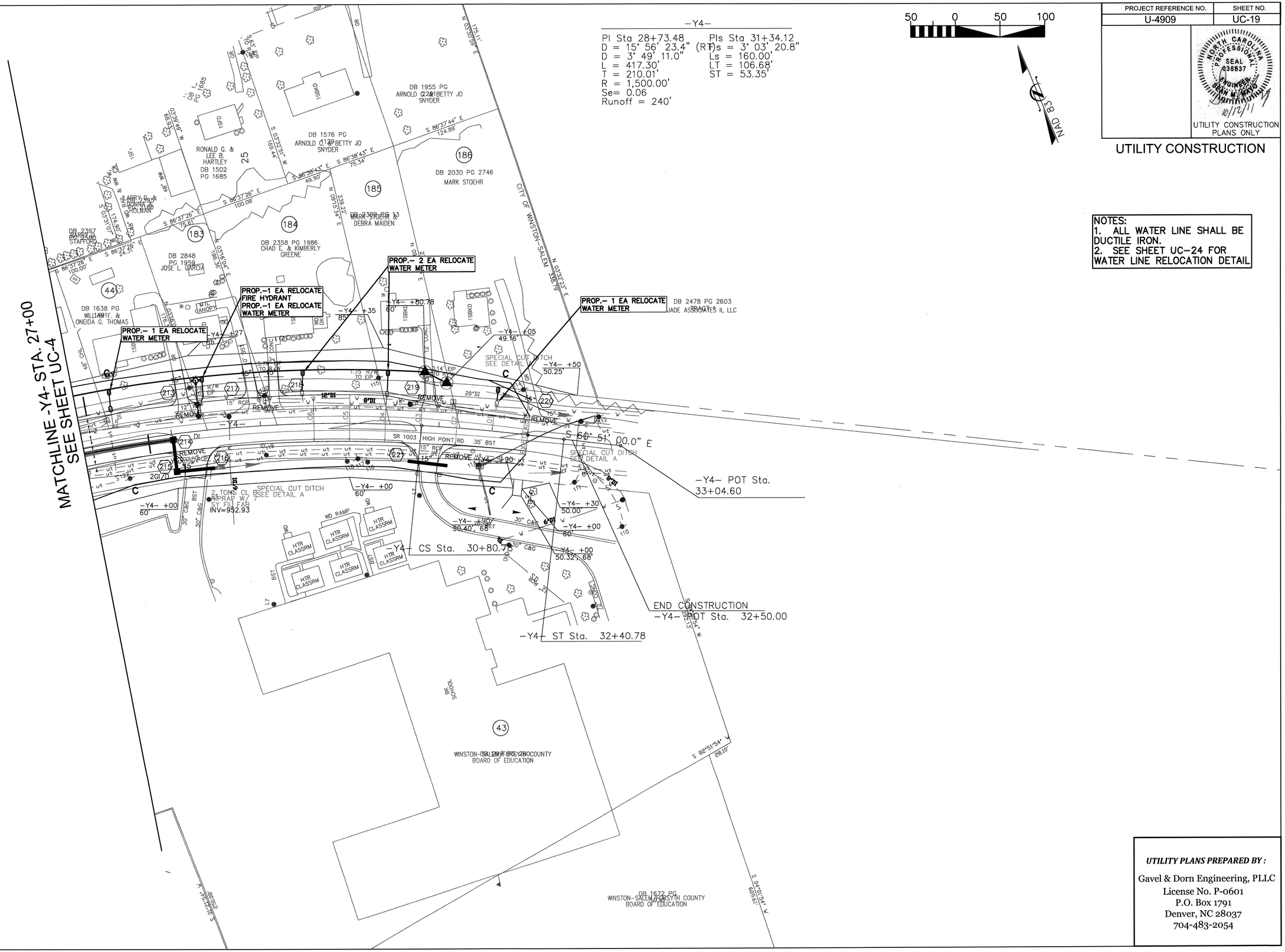
PI Sta 28+73.48
D = 15° 56' 23.4"
D = 3° 49' 11.0"
L = 417.30'
T = 210.01'
R = 1,500.00'
Se= 0.06
Runoff = 240'

PIs Sta 31+34.12 (RT)
Ds = 3° 03' 20.8"
Ls = 160.00'
LT = 106.68'
ST = 53.35'

50 0 50 100

NAD 83

NOTES:
1. ALL WATER LINE SHALL BE DUCTILE IRON.
2. SEE SHEET UC-24 FOR WATER LINE RELOCATION DETAIL



UTILITY PLANS PREPARED BY :

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P.O. Box 1791
Denver, NC 28037
704-483-2054

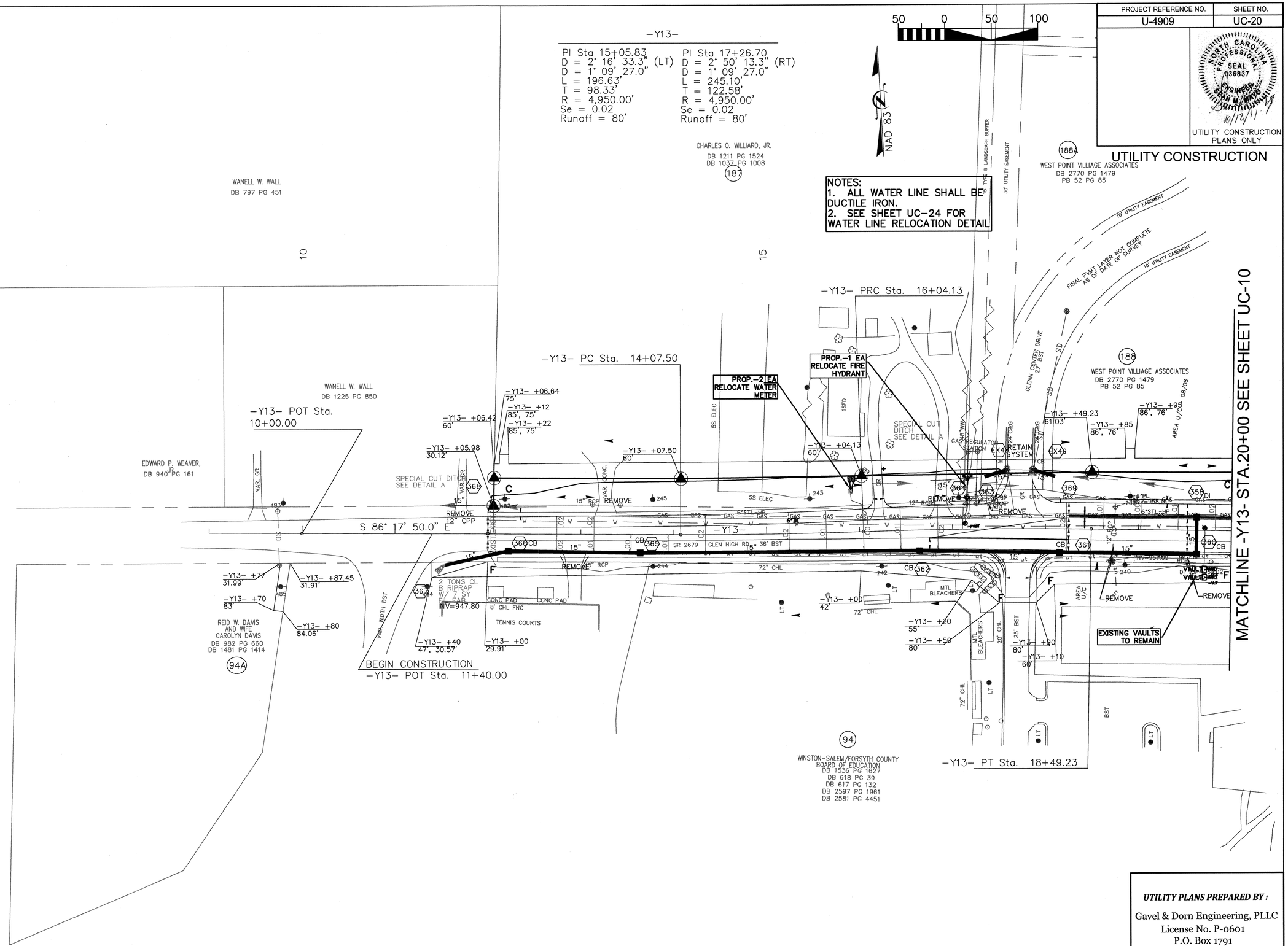
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-20

NORTH CAROLINA PROFESSIONAL SEAL 036837 ENGINEER DEAN W. GAVEL 10/12/11

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION



UTILITY PLANS PREPARED BY :

Gavel & Dorn Engineering, PLLC
License No. P-0601
P.O. Box 1791
Denver, NC 28037
704-483-2054

PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-21

NORTH CAROLINA PROFESSIONAL SEAL 036837 ENGINEER GLENN M. MAYO 10/12/11

UTILITY CONSTRUCTION PLANS ONLY

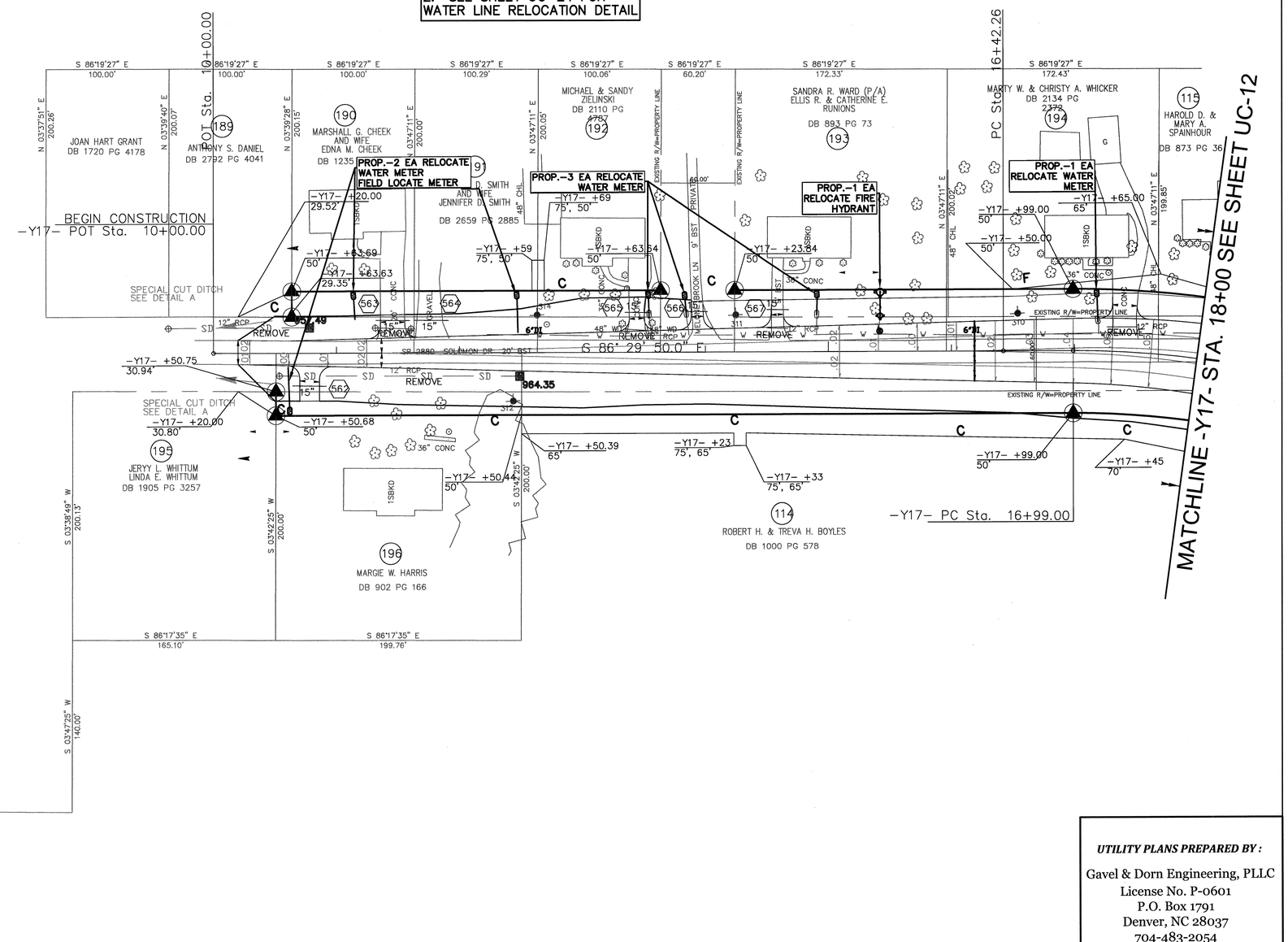
UTILITY CONSTRUCTION

-Y17-
PI Sta 19+30.72
D = 34° 20' 20.0" (RT)
D = 7° 38' 22.0"
L = 449.50'
T = 231.73'
R = 750.00'
Se = 0.06
Runoff = 190'

NAD 83

50 0 50 100

NOTES:
1. ALL WATER LINE SHALL BE DUCTILE IRON.
2. SEE SHEET UC-24 FOR WATER LINE RELOCATION DETAIL



UTILITY PLANS PREPARED BY :

Gavel & Dorn Engineering, PLLC
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P.O. Box 1791
Denver, NC 28037
704-483-2054

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-22

NORTH CAROLINA PROFESSIONAL SEAL 036837 ENGINEER SEAN W. MATO 10/12/11

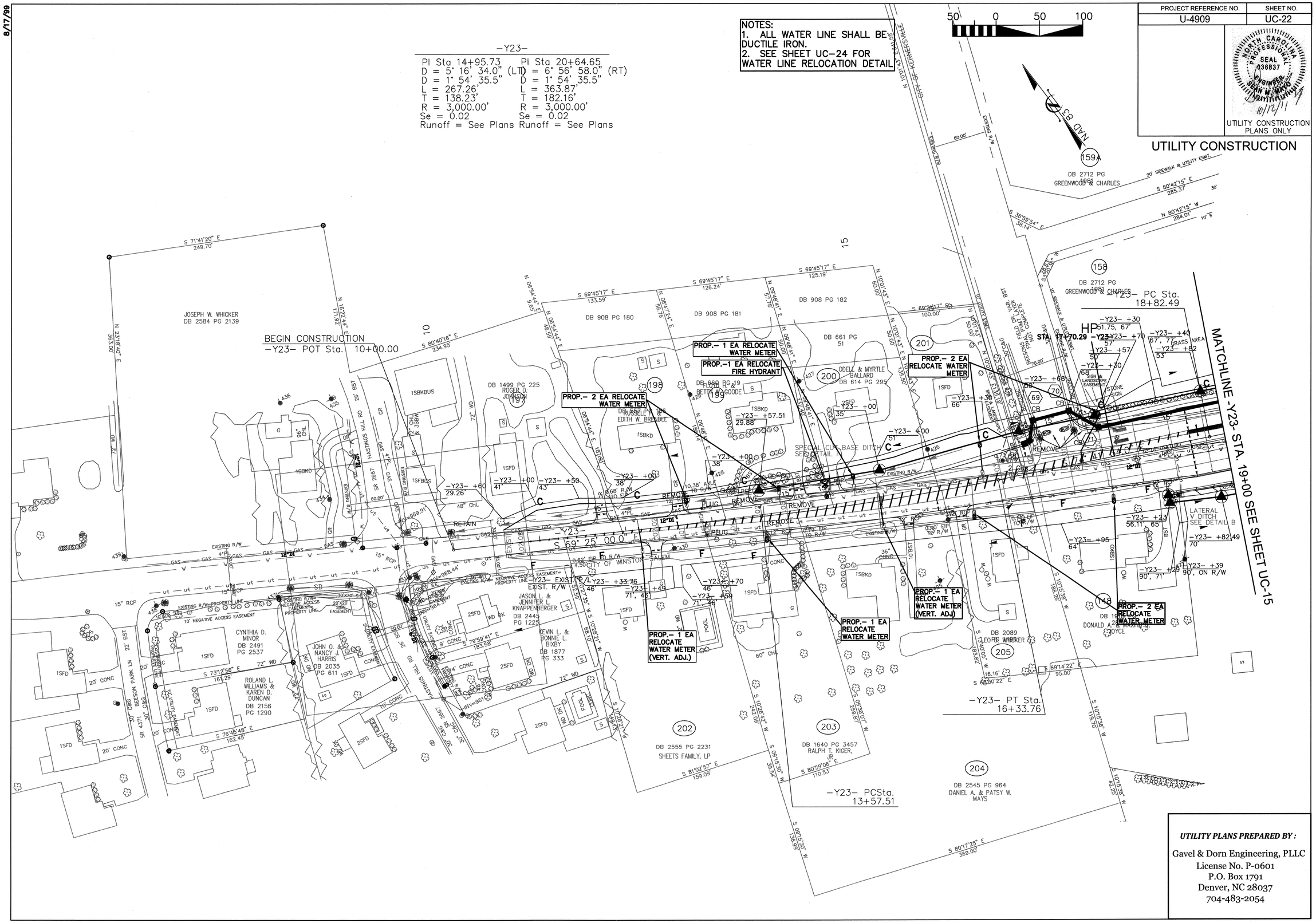
UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

NOTES:
1. ALL WATER LINE SHALL BE DUCTILE IRON.
2. SEE SHEET UC-24 FOR WATER LINE RELOCATION DETAIL

-Y23-

PI Sta 14+95.73	PI Sta 20+64.65
D = 5° 16' 34.0" (LT)	D = 6° 56' 58.0" (RT)
D = 1° 54' 35.5"	D = 1° 54' 35.5"
L = 267.26'	L = 363.87'
T = 138.23'	T = 182.16'
R = 3,000.00'	R = 3,000.00'
Se = 0.02	Se = 0.02
Runoff = See Plans	Runoff = See Plans



UTILITY PLANS PREPARED BY :

Gavel & Dorn Engineering, PLLC
License No. P-0601
P.O. Box 1791
Denver, NC 28037
704-483-2054

PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-23

UTILITY CONSTRUCTION PLANS ONLY

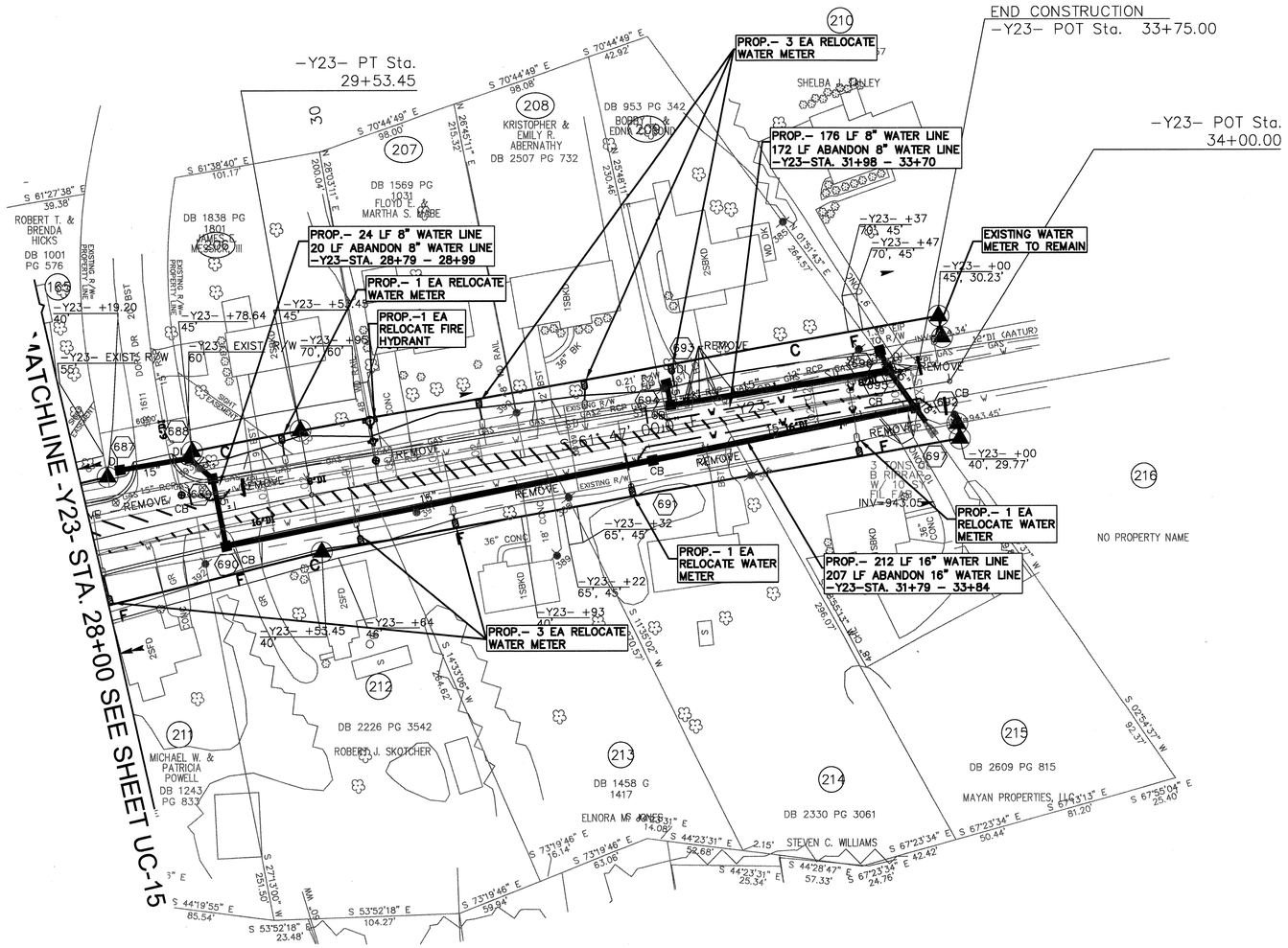
UTILITY CONSTRUCTION

NOTES:
1. ALL WATER LINE SHALL BE DUCTILE IRON.
2. SEE SHEET UC-24 FOR WATER LINE RELOCATION DETAIL

50 0 50 100

NAD 83

-Y23-
PI Sta. 27+97.56
D = 5° 57' 36.0" (RT)
D = 1° 54' 35.5"
L = 312.06'
T = 156.17'
R = 3,000.00'
Se = 0.02
Runoff = See Plans



UTILITY PLANS PREPARED BY :

Gavel & Dorn Engineering, PLLC
License No. P-0601
P.O. Box 1791
Denver, NC 28037
704-483-2054

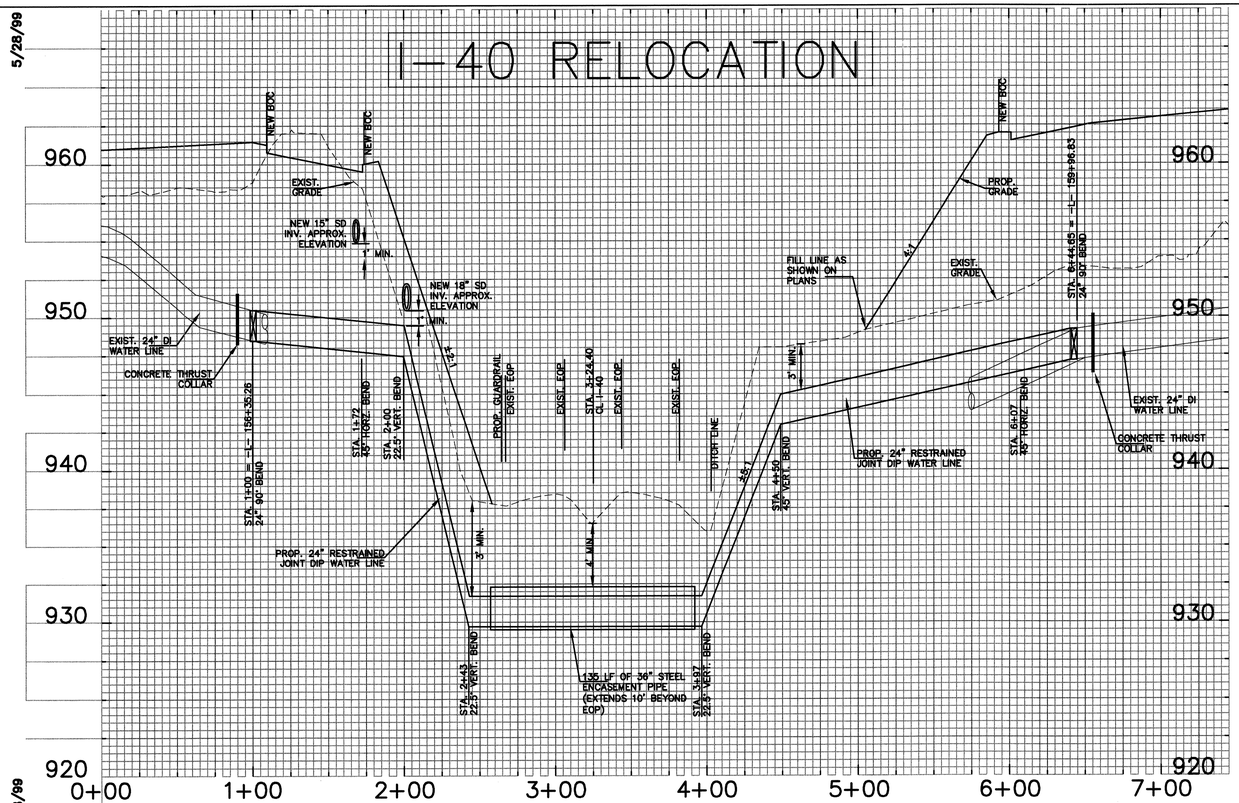
PROJECT REFERENCE NO.	SHEET NO.
U-4909	UC-24

NORTH CAROLINA PROFESSIONAL SEAL 036837 ENGINEER SEAN W. MAHON 10/12/11

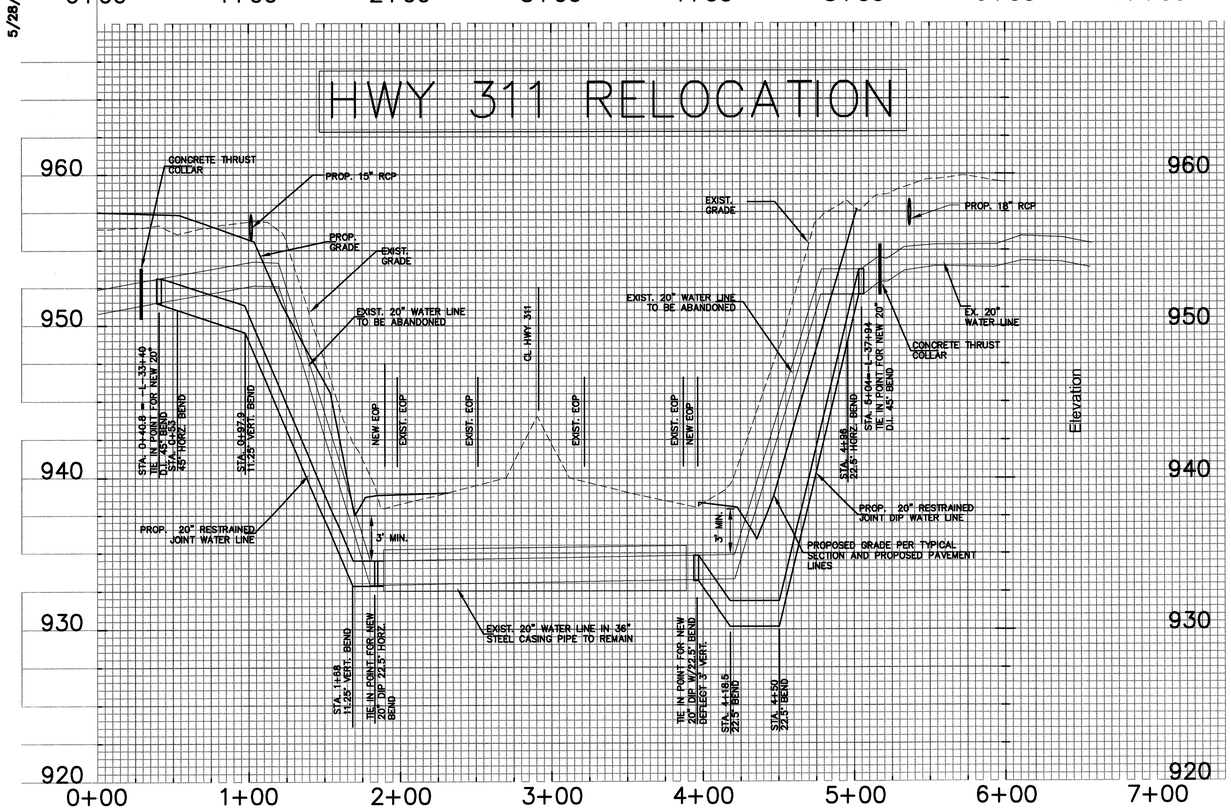
UTILITY CONSTRUCTION PLANS ONLY

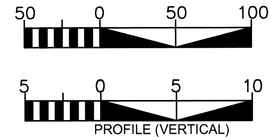
UTILITY CONSTRUCTION

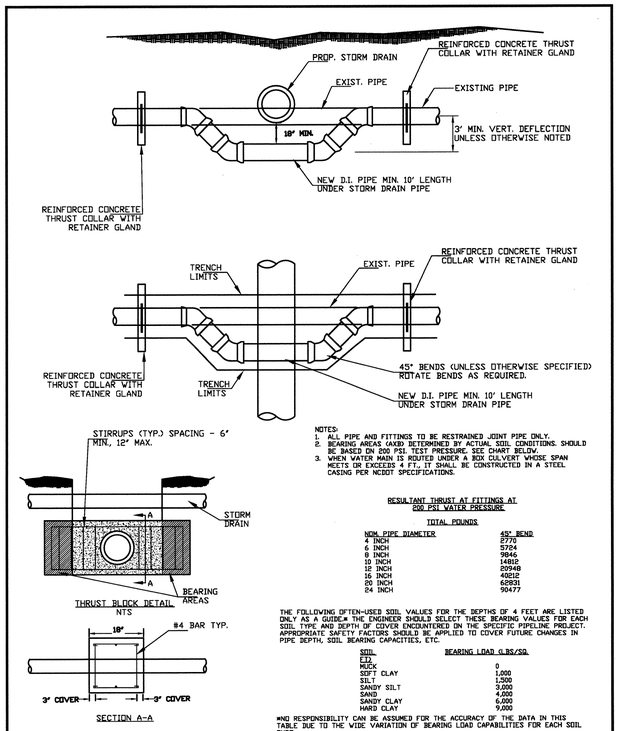
5/28/99



5/28/99







NOTES:
1. ALL PIPE AND FITTINGS TO BE RESTRAINED JOINT PIPE ONLY.
2. BEARING AREAS (AXB) DETERMINED BY ACTUAL SOIL CONDITIONS. SHOULD BE BASED ON 200 PSI. TEST PRESSURE. SEE CHART BELOW.
3. WHEN WATER MAIN IS ROUTED UNDER A BOX CULVERT WHOSE SPAN MEETS OR EXCEEDS 4 FT., IT SHALL BE CONSTRUCTED IN A STEEL CASING PER NCDOT SPECIFICATIONS.

RESULTANT THRUST AT FITTINGS AT 200 PSI WATER PRESSURE

TOTAL POUNDS

NOM. PIPE DIAMETER	45° BEND
4 INCH	2770
6 INCH	5724
8 INCH	9846
10 INCH	14812
12 INCH	20948
16 INCH	40812
20 INCH	62831
24 INCH	90477

THE FOLLOWING OFTEN-USED SOIL VALUES FOR THE DEPTHS OF 4 FEET ARE LISTED ONLY AS A GUIDE.# THE ENGINEER SHOULD SELECT THESE BEARING VALUES FOR EACH SOIL TYPE AND DEPTH OF COVER ENCOUNTERED IN THE SPECIFIC PIPELINE PROJECT. APPROPRIATE SAFETY FACTORS SHOULD BE APPLIED TO COVER FUTURE CHANGES IN PIPE DEPTH, SOIL BEARING CAPACITIES, ETC.

SOIL TYPE	BEARING LOAD LBS/SQ.
MUCK	0
SOFT CLAY	1,000
SILT	1,500
SANDY SILT	3,000
SAND	4,000
SANDY CLAY	6,000
HARD CLAY	9,000

#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.

PROJECT NO. UNION CROSS FILENAME: RELOCATE DETAIL SCALE: NTS DATE: 06-18-10	UNION CROSS ROAD WIDENING WATERLINE RELOCATION TYPICAL RELOCATE DETAIL	Gavel & Dorn Engineering, PLLC P.O. Box 1791 Denver, NC 28037 704-483-2054 License No. P-0601

UTILITY PLANS PREPARED BY :

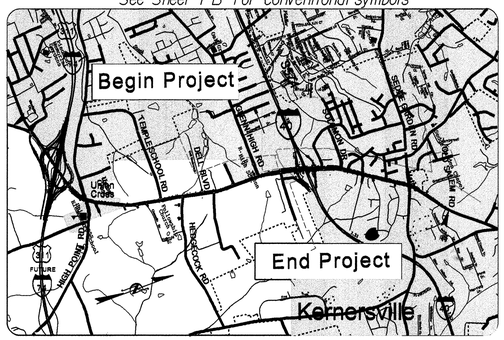
Gavel & Dorn Engineering, PLLC
License No. P-0601
P.O. Box 1791
Denver, NC 28037
704-483-2054

09/08/99

TIP PROJECT:U4909

CONTRACT:

See Sheet 1-A For Index of Sheets
See Sheet 1-B for conventional symbols



VICINITY MAP

100% (FINAL) SUBMITTAL

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

FORSYTH COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4909	U-1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
40278.1.1	STP-2643(2)	PE
40278.2.1	STP-2643(3)	R/W
40278.3.1	STP-2643(5)	CONST

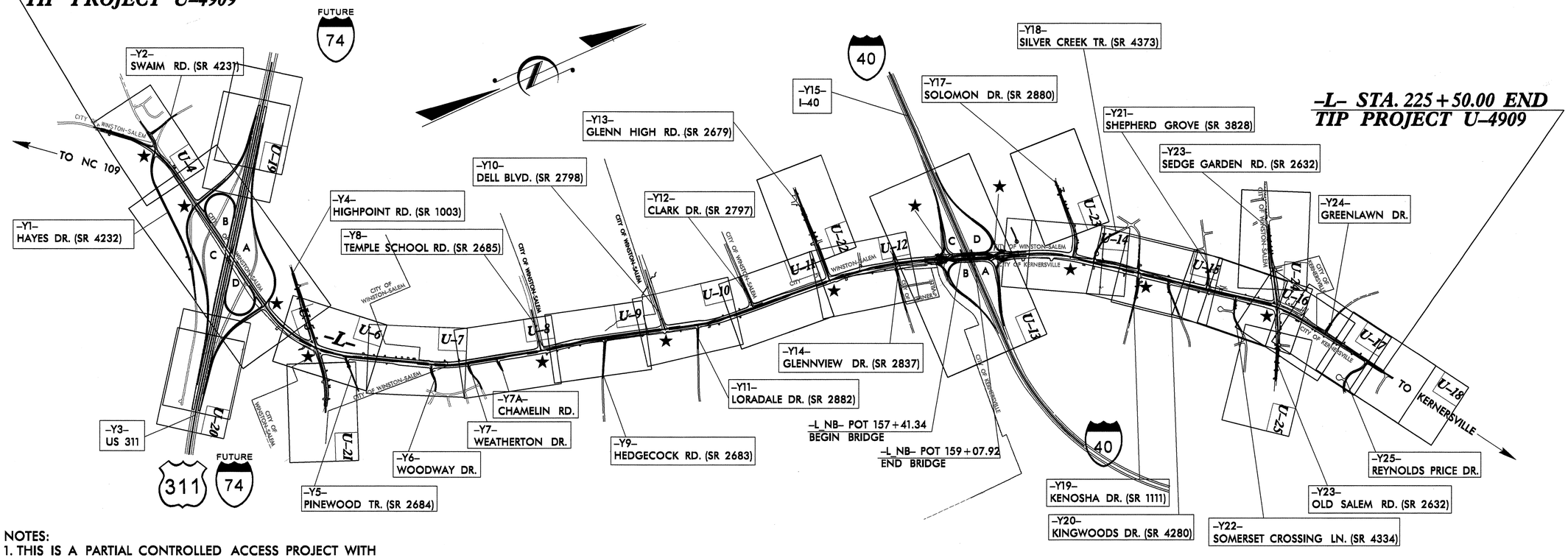
UTILITIES BY OTHERS
All proposed utility work shown on this sheet will be done by others. Information provided by utility owners, for information only.

LOCATION: WINSTON SALEM - SR 2643 (UNION CROSS RD.) FROM SR 2691 (WALLBURG RD) TO SR 2632 (SEDGE GARDEN RD.)

TYPE OF WORK: UTILITY CONFLICT PLANS

-L- STA. 7+40.00 BEGIN
TIP PROJECT U-4909

-L- STA. 225+50.00 END
TIP PROJECT U-4909



NOTES:
1. THIS IS A PARTIAL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON PLANS.
2. PLAN SHEETS U-2 AND U-3 HAVE BEEN OMITTED FOR PURPOSES OF CLARITY AND CORRESPONDENCE TO THE ROADWAY PLAN SHEET NUMBERING.

GRAPHIC SCALES

50 0 50 100
PLANS

50 0 50 100
PROFILE (HORIZONTAL)

10 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2011 = 25,120
ADT 2031 = 41,520
DHV = 10%
D = 60%
T = 9% *
V = 50 MPH
CLASS = URBAN COLLECTOR
DUAL = 6%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-4909 ..... 4.031 mi
LENGTH STRUCTURE TIP PROJECT U-4909 ..... 0.100 mi
TOTAL LENGTH TIP PROJECT U-4909 ..... 4.131 mi

PLANS PREPARED BY :

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE, SUITE 350
RALEIGH, NORTH CAROLINA 27609
NC LICENSE NO. F-0112

FOR

DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 15, 2008

LETTING DATE:
DECEMBER 20, 2011

J.T. PEACOCK, JR., P.E.
PROJECT ENGINEER

MICHAEL T. MERRITT, P.E.
PROJECT DESIGN ENGINEER

NCDOT CONTACT:
K. ZAK HAMIDI, PE
PROJECT ENGINEER - PROJECT SERVICES

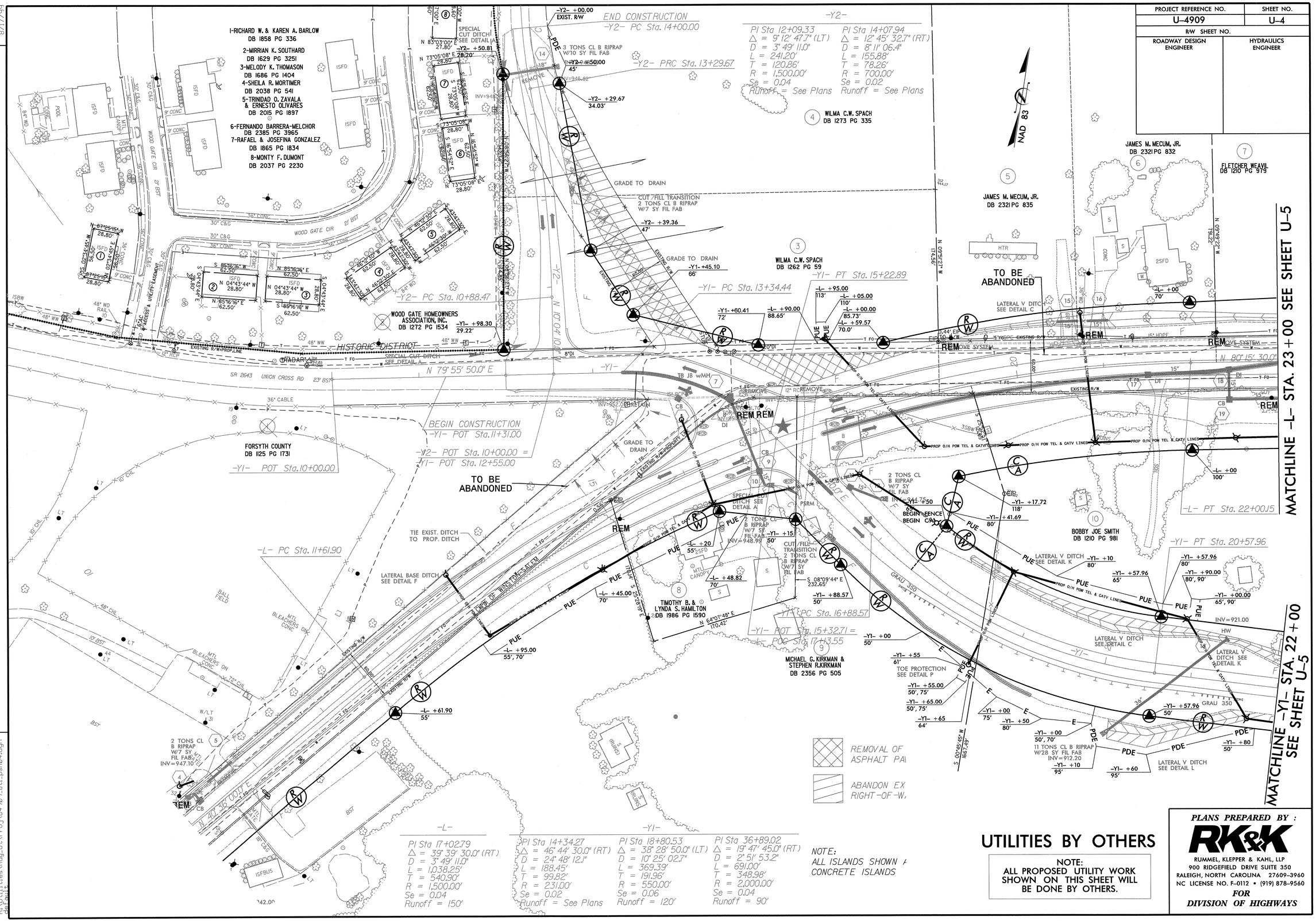
HYDRAULICS ENGINEER
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER
SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
P.E.
STATE HIGHWAY DESIGN ENGINEER

9/6/2011
R:\Utilities\Rdy_Ut\Proj\u4909_utl_tsh.dgn
bholden

PROJECT REFERENCE NO.	SHEET NO.
U-4909	U-4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



-Y2-

PI Sta 12+09.33
Δ = 9° 12' 47.7" (LT)
D = 3° 49' 11.0"
L = 241.20'
T = 120.86'
R = 1,500.00'
Se = 0.04
Runoff = See Plans

PI Sta 14+07.94
Δ = 12° 45' 32.7" (RT)
D = 8° 11' 06.4"
L = 155.88'
T = 78.26'
R = 700.00'
Se = 0.02
Runoff = See Plans

-L-

PI Sta 17+02.79
Δ = 39° 39' 30.0" (RT)
D = 3° 49' 11.0"
L = 1,038.25'
T = 540.90'
R = 1,500.00'
Se = 0.04
Runoff = 150'

-Y1-

PI Sta 14+34.27
Δ = 46° 44' 30.0" (RT)
D = 24° 48' 12.1"
L = 188.45'
T = 99.82'
R = 231.00'
Se = 0.02
Runoff = See Plans

PI Sta 18+80.53
Δ = 38° 28' 50.0" (LT)
D = 10° 25' 02.7"
L = 369.39'
T = 191.96'
R = 550.00'
Se = 0.06
Runoff = 120'

PI Sta 36+89.02
Δ = 19° 47' 45.0" (RT)
D = 2° 51' 53.2"
L = 691.00'
T = 348.98'
R = 2,000.00'
Se = 0.04
Runoff = 90'

NOTE:
ALL ISLANDS SHOWN A
CONCRETE ISLANDS

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS.

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560
FOR DIVISION OF HIGHWAYS

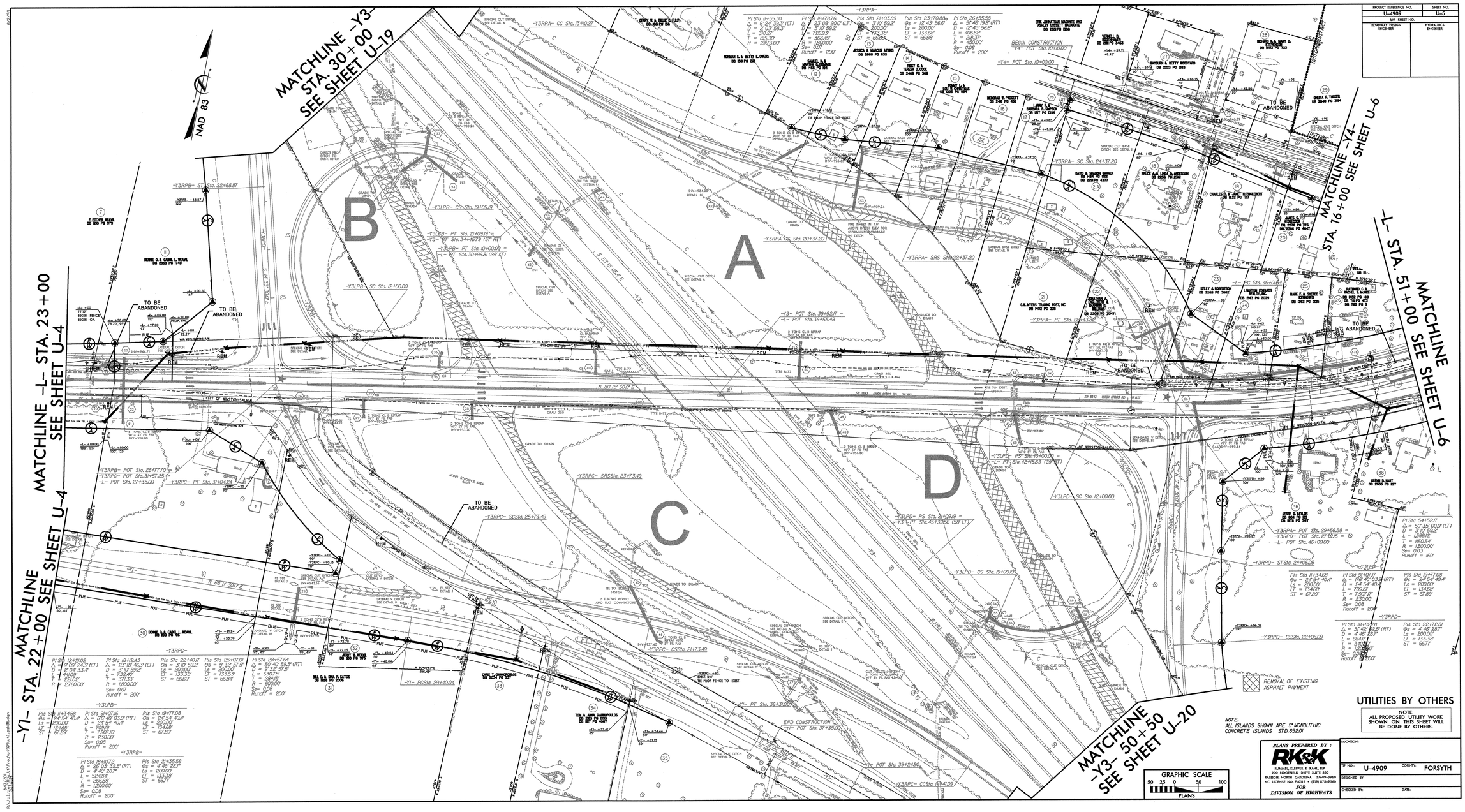
REVISIONS

R/W Revision: Date: – Revised property owner name for Parcel 8. Added PUE on Parcel 4. Revised PUE to tie to existing R/W at -L- Sta.9+10 and 13+00 Lt.

R/W Revision: Date: – Eliminated Claim for Parcel 1.

8/17/99

8/17/2011 R:\Utilities\Rdy_Ut\Proj\u4909_utl_psh04.dgn



PROJECT REFERENCE NO.	SHEET NO.
U-4909	U-5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NOTE:
ALL ISLANDS SHOWN ARE 5' MONOLITHIC CONCRETE ISLANDS STD.862.01

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS.

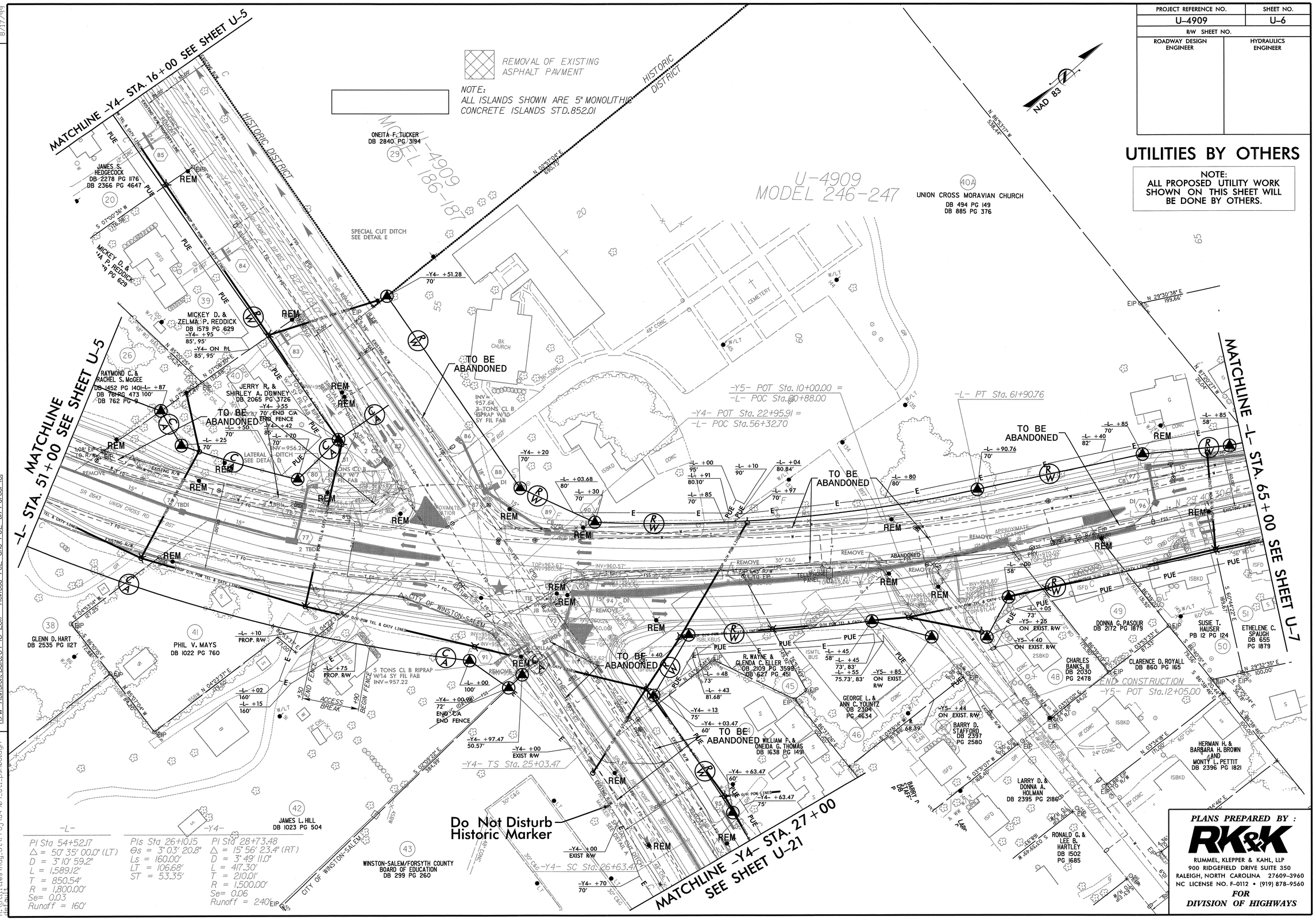
PLANS PREPARED BY:
RK&K
BUMGARDNER, KLEPPER & KAHN, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-2960
NC LICENSE NO. F-0112 • (919) 878-9560
FOR
DIVISION OF HIGHWAYS

LOCATION:	
TIP NO.: U-4909	COUNTY: FORSYTH
DESIGNED BY:	
CHECKED BY:	DATE:

PROJECT REFERENCE NO.	SHEET NO.
U-4909	U-6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS.



-L-
PI Sta 54+52.17
Δ = 50° 35' 00.0" (LT)
D = 3° 10' 59.2"
L = 1,589.12'
T = 850.54'
R = 1,800.00'
Se= 0.03
Runoff = 160'

-Y4-
PIs Sta 26+10.15
Θs = 3° 03' 20.8"
Ls = 160.00'
LT = 106.68'
ST = 53.35'

PI Sta 28+73.48
Δ = 15° 56' 23.4" (RT)
D = 3° 49' 11.0"
L = 417.30'
T = 210.01'
R = 1,500.00'
Se= 0.06
Runoff = 240'

REVISIONS

R/W Revision: Date: 12/02/2008 - Revised PUE on Parcel 39. Revised R/W and Easements on Parcel 46 and 48. Eliminated claim on Parcel 47 by removing proposed construction easement.
R/W Revision: Date: - Revised property owner names for Parcels 29 and 38.
R/W Revision: Date: - Eliminated claim for parcel 29. Added note "Do no disturb historic marker" on parcel 43. Revised easement on Parcel 43.
R/W Revision: Date: 04-18-2011 - Revised TCE and PUE on Parcel 46.

8/17/99

8/17/2011
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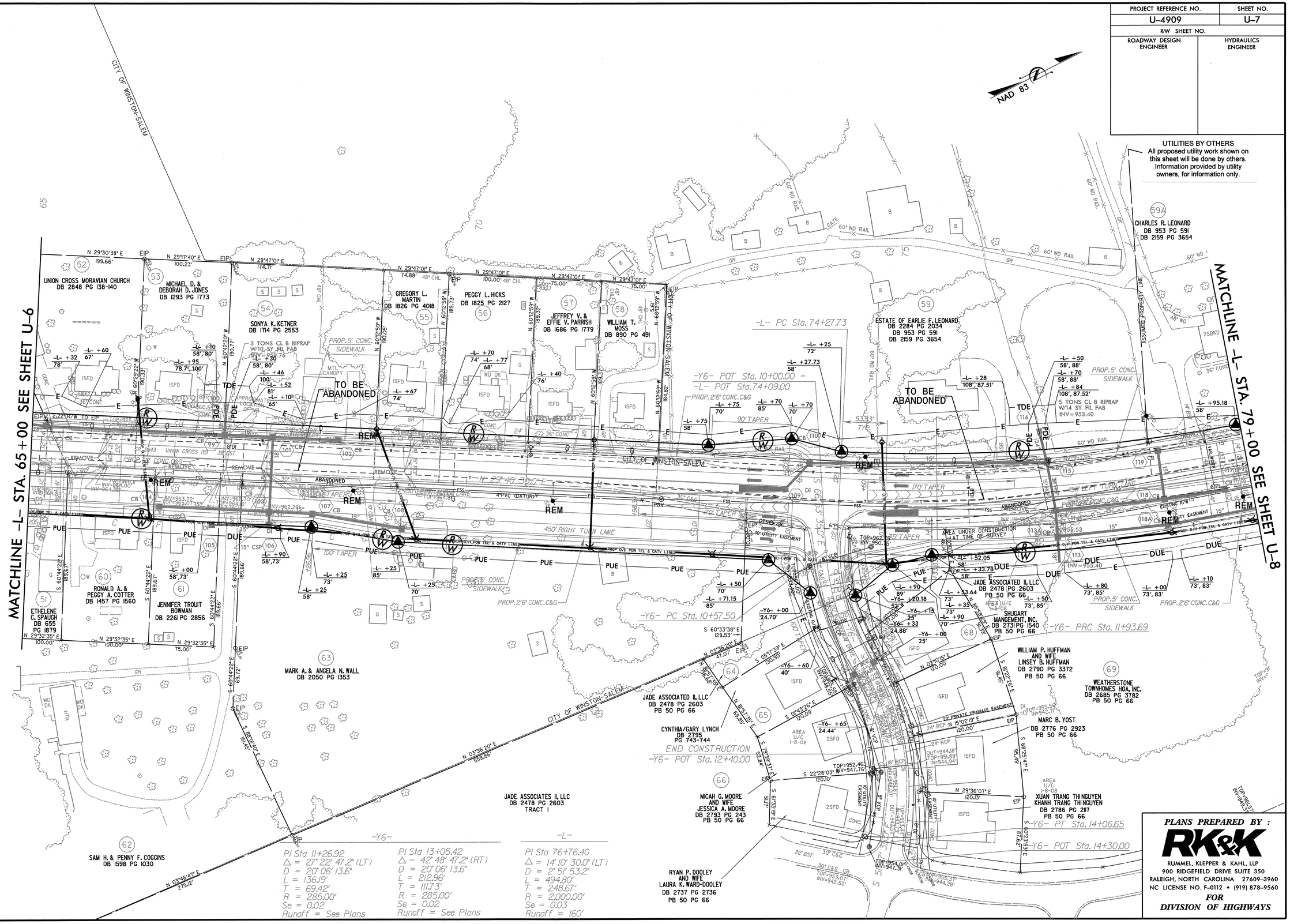
default

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560
FOR DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-4909	U-7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

UTILITIES BY OTHERS
All proposed utility work shown on this sheet will be done by others. Information provided by utility owners, for information only.



PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560
FOR DIVISION OF HIGHWAYS

REVISIONS

R/W Revision: Date: – Revised property owner names for Parcels 52,59 and 65. Added new Parcel 59A. Added PDE at -L- Sta.67+00 TO 67+90 Rt.

R/W Revision: Date: – Revised PUE to overlap PDE at -L- Sta.76+60 Rt.

R/W Revision: Date: – Revised overlapping PDE and PUE to DUE for parcels 61,62,63,and 69.

8/17/99

8/17/2011
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PROJECT REFERENCE NO.	SHEET NO.
U-4909	U-8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

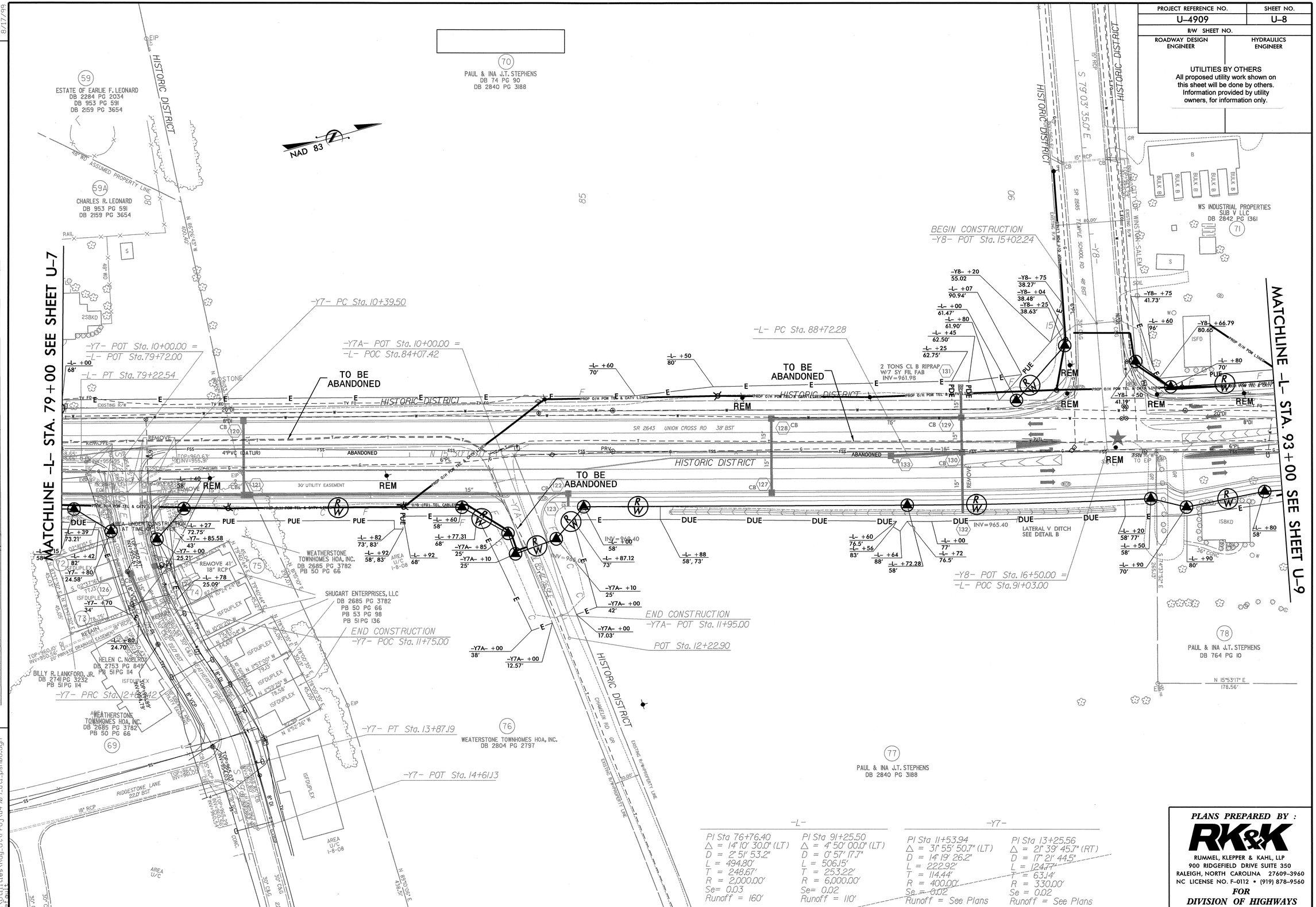
UTILITIES BY OTHERS
All proposed utility work shown on this sheet will be done by others. Information provided by utility owners, for information only.

REVISIONS

R/W Revision Date: – Revised property owner names for Parcels 70 and 76. Combined Parcels 77 and 81. Eliminated Parcel 81.
– Revised PUE to fee to proposed R/W –L– Sta.88+70 Rt.

R/W Revision Date: – Revised overlapping PDE and PUE to DUE for parcel 69 and 77. Revised PUE and CE for parcel 71.

8/17/99



-L-	
PI Sta 76+76.40	PI Sta 91+25.50
Δ = 14° 10' 30.0" (LT)	Δ = 4° 50' 00.0" (LT)
D = 2° 51' 53.2"	D = 0° 57' 17.7"
L = 494.80'	L = 506.15'
T = 248.67'	T = 253.22'
R = 2,000.00'	R = 6,000.00'
Se= 0.03	Se= 0.02
Runoff = 160'	Runoff = 110'

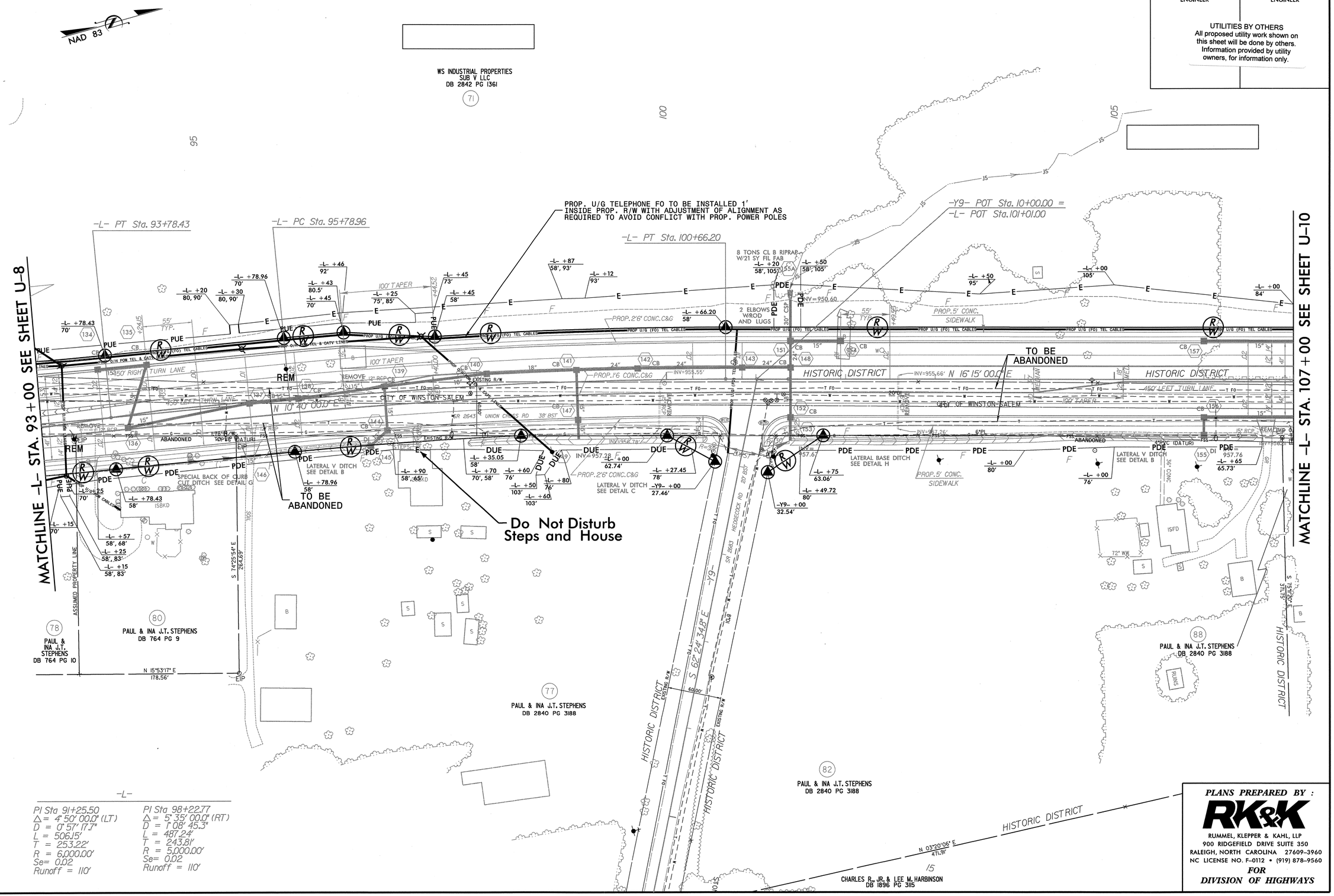
-Y7-	
PI Sta 11+53.94	PI Sta 13+25.56
Δ = 31° 55' 50.7" (LT)	Δ = 21° 39' 45.7" (RT)
D = 14° 19' 26.2"	D = 17° 21' 44.5"
L = 222.92'	L = 124.77'
T = 114.44'	T = 63.14'
R = 400.00'	R = 330.00'
Se = 0.02	Se = 0.02
Runoff = See Plans	Runoff = See Plans

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560
FOR
DIVISION OF HIGHWAYS

8/17/2011
R:\Roadways\Shared Roadway Files\Projects\U4909_ut1_psh08.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-4909	U-9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

UTILITIES BY OTHERS
All proposed utility work shown on this sheet will be done by others. Information provided by utility owners, for information only.



-L-

PI Sta 91+25.50	PI Sta 98+22.77
Δ = 4° 50' 00.0" (LT)	Δ = 5° 35' 00.0" (RT)
D = 0° 57' 17.7"	D = 1° 08' 45.3"
L = 506.15'	L = 487.24'
T = 253.22'	T = 243.81'
R = 6,000.00'	R = 5,000.00'
Se= 0.02	Se= 0.02
Runoff = 110'	Runoff = 110'

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560
FOR
DIVISION OF HIGHWAYS

REVISIONS

R/W Revision Date: - Changed Construction Easement to PDE on Parcel 71 -L- Sta.99+00 to 101+50 Left.
- Revised property owner name for Parcel 71. Combined Parcels 71 and 79. Combined Parcels 82 and 83. Eliminated Parcel 79 and 83.
R/W Revision Date: - Revised PUE to tie to existing R/W at -L- Sta.98+50 Rt.
- Revised PUE and CE for parcel 71. Added PUE to Parcel 78 at -L- Sta.93+20 Rt. Revised overlapping PDE and PUE to DUE for parcel 77.
Added note "Do not disturb steps and house" on Parcel 77.
R/W Revision Date: - Revised PDE to TCE -L- 100+00 Lt.
R/W Revision Date: 8/4/2011- Removed Temporary Construction Easement from parcel no.88, Iglesia Bautista Hispania.

8/17/99

8/17/2011
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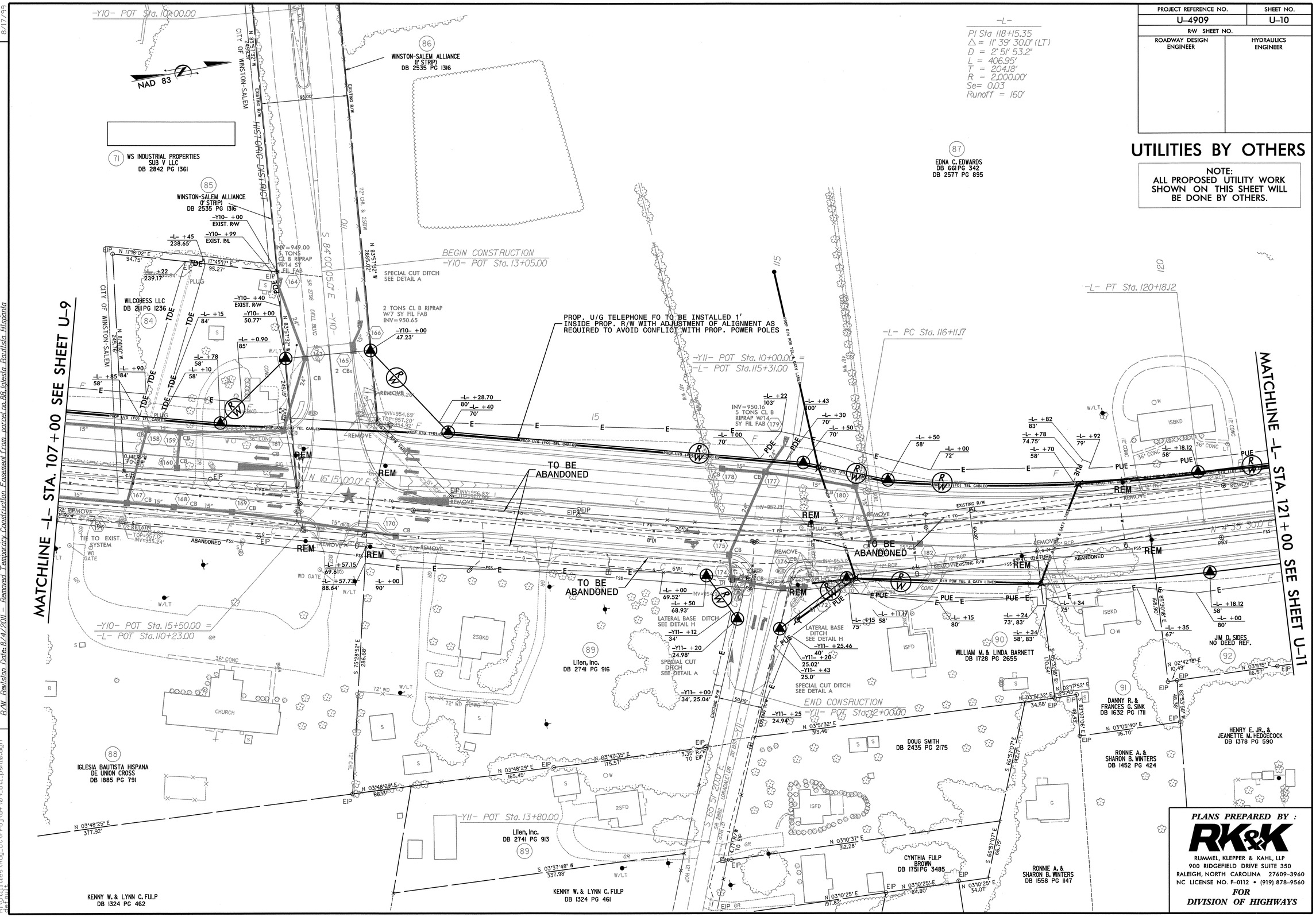
PROJECT REFERENCE NO.	SHEET NO.
U-4909	U-10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS.



PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560
FOR DIVISION OF HIGHWAYS

REVISIONS

R/W Revision Date: - Revised PDE to TDE on Parcel 84 and added PDE on Parcel 84 (-Y10- Sta.13+00 to 13+40 Rtgt).
- Revised property owner name for Parcel 84. Combined Parcels 71 and 79. Eliminated Parcel 79.
R/W Revision Date: 5/22/2011 - Revised property owner name on Parcel no.89
R/W Revision Date: 6/15/2011 - Added a property line on parcel no.92 and revised the owner name on the property
R/W Revision Date: 8/4/2011 - Removed Temporary Construction Easement from parcel no.88, Iglesia Bautista Hispania

8/17/99

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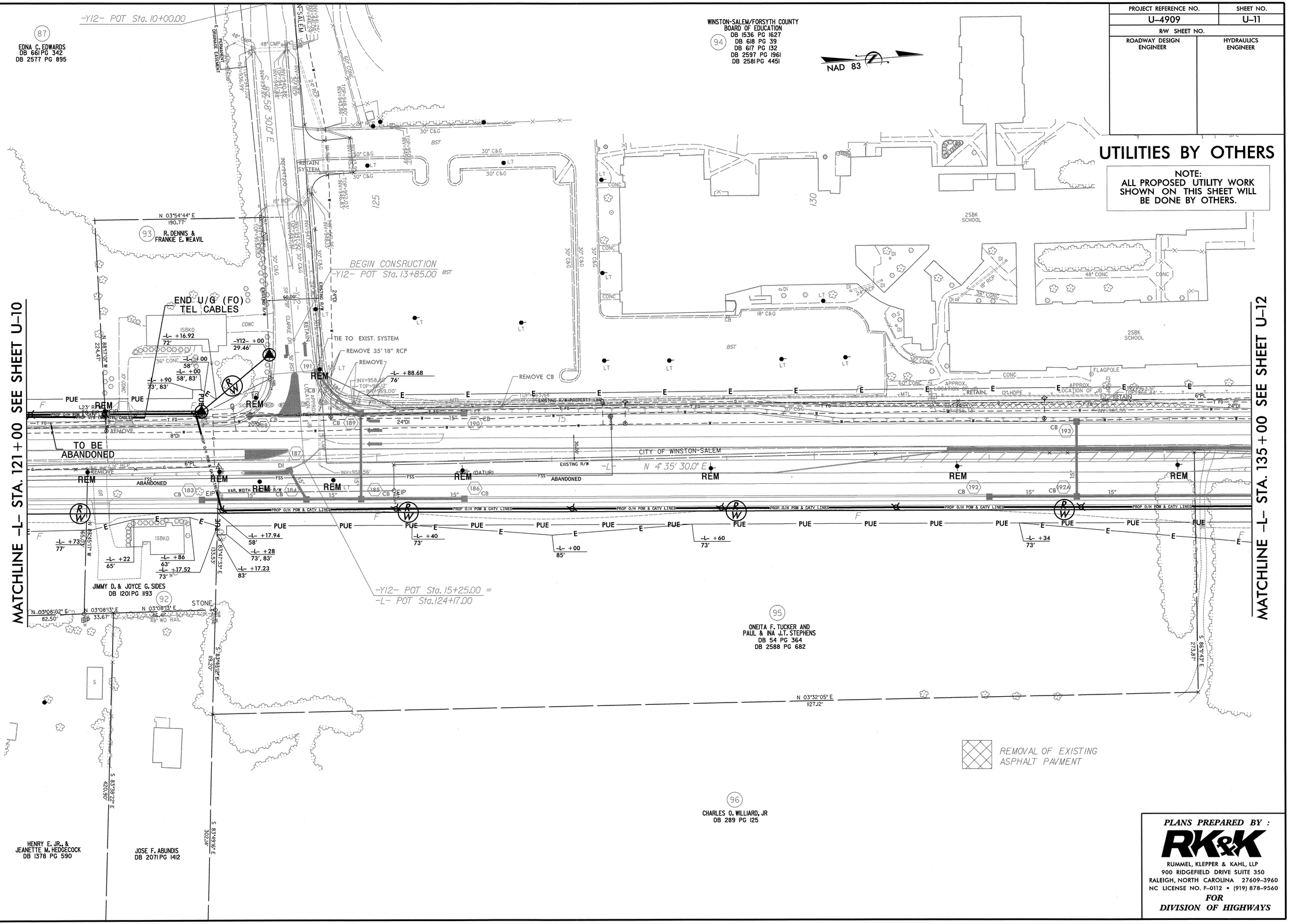
PROJECT REFERENCE NO.	SHEET NO.
U-4909	U-11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS.



REVISIONS

R/W Revision Date: – Revised property owner name for Parcel 95.
R/W Revision Date: 6/15/2011 – Added a property line on parcel no. 92 and revised the owner name on the property.

8/17/98

8/17/2011
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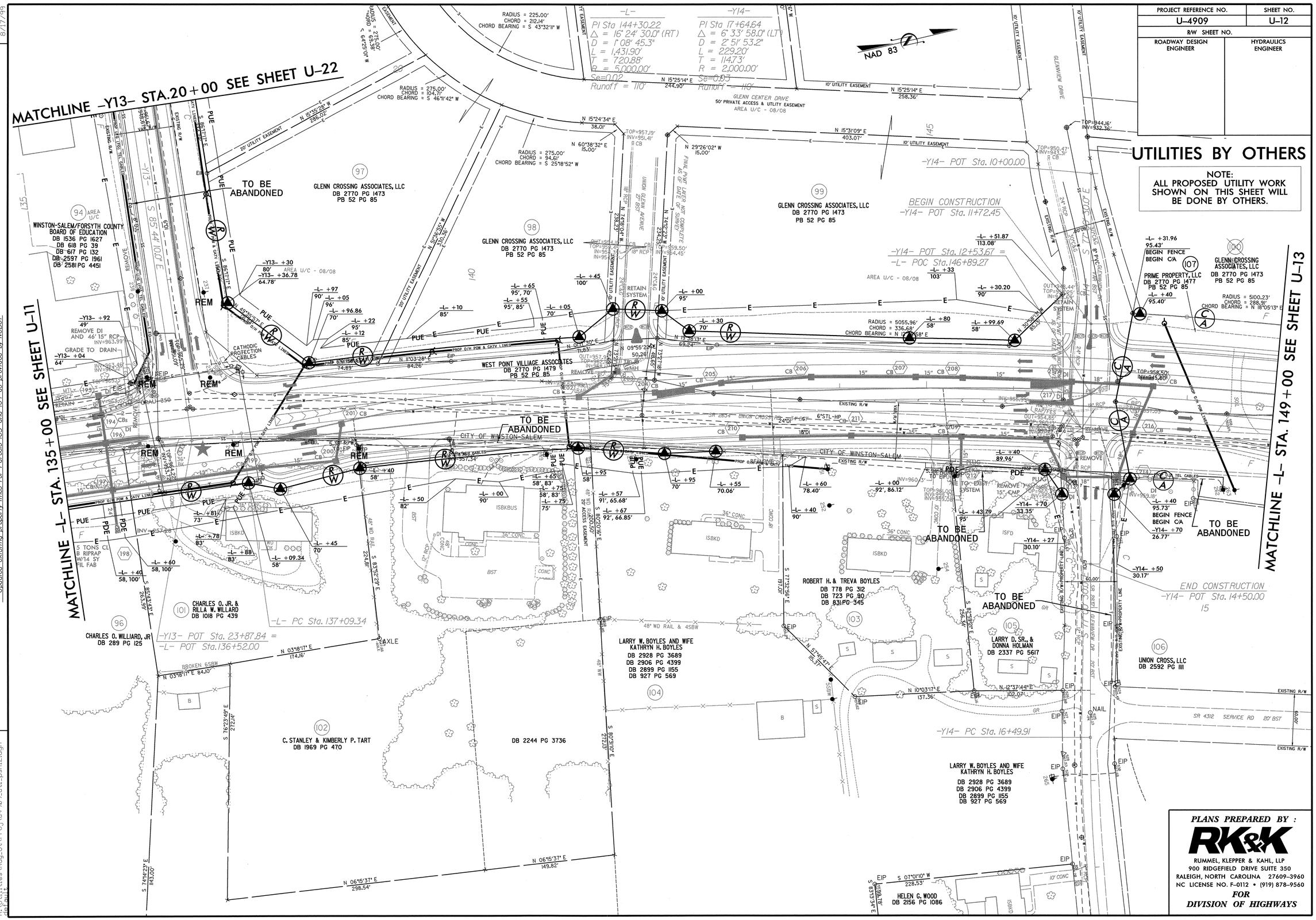
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

FOR
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-4909	U-12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS.



REVISIONS	
R/W Revision Date:	- Removed PDE and revised Construction Easement on Parcel 99. Revised PUE to overlap PDE at -L- Sta.135+50 Rt.
R/W Revision Date:	- Revised CA on Parcels 106 and 107.
	- Updated existing ROW for Parcel 102 as provided by NCDOT.
R/W Revision Date:	- Updated existing property lines for Parcels 103 and 104 as provided by NCDOT.

8/17/99

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PLANS PREPARED BY :

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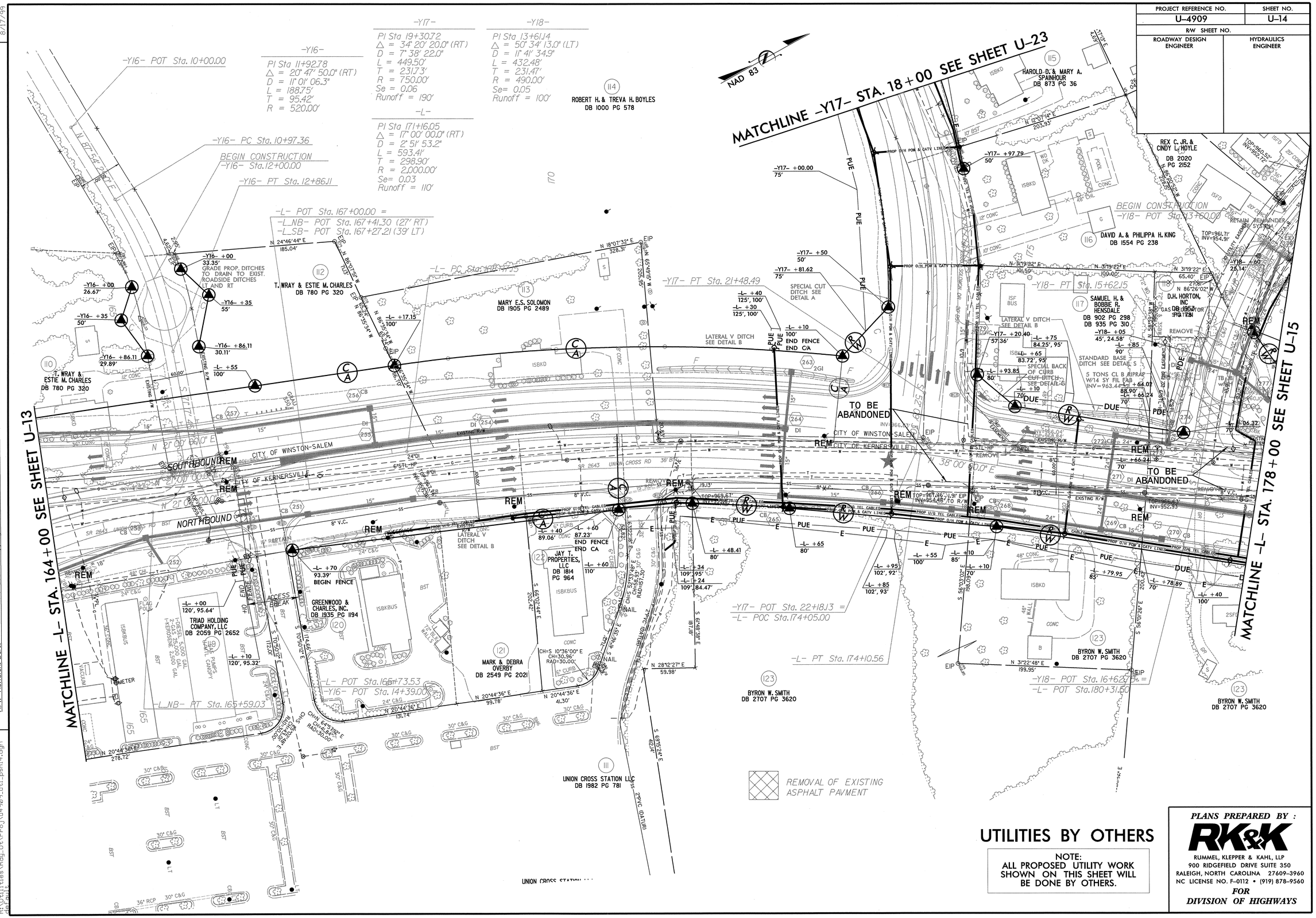
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

FOR
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. U-4909
SHEET NO. U-13
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
REVISIONS
6/2/99
MATCHLINE -L- STA. 164+00 SEE SHEET U-14
MATCHLINE -L- STA. 149+00 SEE SHEET U-12
NAD 83
A
B
C
-Y15RPD-
PIs Sta 11+33.37 Θs = 4°00′24.1″ Ls = 200.00′ LT = 133.37′ ST = 66.70′
PI Sta 14+61.16 Δ = 20°41′58.9″ (LT) D = 4°00′24.1″ L = 516.63′ T = 261.16′ R = 1,430.00′
PIs Sta 17+83.32 Θs = 4°00′24.1″ Ls = 200.00′ LT = 133.37′ ST = 66.70′
PIs Sta 21+31.91 Θs = 9°16′06.4″ LT = 110.15′ ST = 55.14′
PI Sta 22+67.80 Δ = 17°59′35.3″ (RT) D = 11°14′04.1″ L = 180.16′ T = 80.74′ R = 510.00′
PI Sta 25+44.41 Δ = 109°20′08.9″ (RT) D = 40°55′32.0″ L = 267.16′ T = 197.49′ R = 140.00′
-Y15SPD-
PI Sta 12+26.42 Δ = 68°...04.8″ (LT) D = 38°11′49.9″ L = 178.58′ T = 102.17′ R = 150.00′
JOSEPH M GRIFFIN DB 752 PG 17
H&K INVESTMENT CO. DB 1967 PG 1626
BEGIN CONSTRUCTION -Y15RPD- ST Sta. 19+16.63
-Y15RPD- CS Sta. 17+16.63
-Y15RPD- TS Sta. 20+21.76
-Y15RPD- SC Sta. 21+86.76
-Y15SPD- POT Sta. 10+00.00= -Y15RPD- PCC Sta. 23+46.92
-Y15SPD- PT Sta. 13+03.63
-L_SB- PT Sta. 163+61.66
INT2 POT Sta. 162+73.29= -L- Sta. 162+72.70 (10.85′RT)
-L_SB- PC Sta. 162+...
-Y15SPD- PC Sta. 11+24.25
T. WRAY & ESTIE M. CHARLES DB 780 PG 320
-L- +24.80 100′ BEGIN FENCE TIE TO EXIST.
INT2 POT Sta. 161+37.65 -L- Sta. 161+37.65 (1.74′ LT)
-L_NB- PT Sta. 161+55.21
-Y15RPD- PT Sta. 26+14.07
-L_NB- PC Sta. 160+67.94
GAS MAIN TO BE RELOCATED AS NECESSARY
-BY14- 52 PINC 26+14.04
U2579AB-3 "GPS" -BY14- PINC 16+96.56
-Y15RPD- ST Sta. 10+00.00
-Y15RPD- SC Sta. 12+00.00
-L- POT Sta. 158+22.28
-Y15- POT Sta. 40+77.71
-L_NB- POT Sta. 158+24.63
-Y15- POT Sta. 40+22.89
S 89° 13′ 36.3″ E
S 89° 58′ 53.5″ E
N 86° 44′ 18.2″ E
S 86° 19′ 20.5″ E
CITY OF WINSTON-SALEM
CITY OF KERNERSVILLE
-Y15SPA- POT Sta. 12+73.25
-L_NB- PRC Sta. 164+28.09
-Y15SPA- PT Sta. 12+19.04
-L_NB- PC Sta. 163+97.18
-Y15RPA- PCC Sta. 19+07.85
-BL- 20 PINC 151+86.56
-L_SB- PT Sta. 161+77.30
-Y15SPA- PC Sta. 10+00.00
-Y15RPA- PT Sta. 21+43.51
-Y15RPA- SC Sta. 16+17.12
-L_SB- PRC Sta. 160+63.53
-L_SB- PC Sta. 159+84.02
-Y15RPA-
PI Sta 11+06.25 Δ = 8°22′54.1″ (RT) D = 3°57′05.2″ L = 212.12′ T = 106.25′ R = 1,450.00′ Se = .08 RUNOFF = 270′
PIs Sta 13+02.19 Θs = 5°20′04.0″ Ls = 270.00′ LT = 180.08′ ST = 90.07′
PIs Sta 15+72.12 Θs = 2°08′54.9″ Ls = 135.00′ LT = 90.00′ ST = 45.01′
PI Sta 17+62.80 Δ = 9°15′15.7″ (LT) D = 3°10′59.2″ L = 290.73′ T = 145.68′ R = 1,800.00′ Se = .03 RUNOFF = 135′
PI Sta 20+45.83 Δ = 71°30′23.8″ (LT) D = 30°58′14.5″ L = 230.88′ T = 133.20′ R = 185.00′
-Y15SPA-
PI Sta 11+36.52 Δ = 86°33′02.9″ (RT) D = 39°30′51.6″ L = 219.04′ T = 136.52′ R = 145.00′ Se = .02 RUNOFF = SEE PLANS
-Y15RPA- SRS Sta. 14+82.12
UNION CROSS STATION, LLC DB 1982 PG 761
-BY14- 53 PINC 36+59.90
BEGIN CONSTRUCTION -Y15RPA- POC STA. 12+10.00
-Y15RPA- CS Sta. 12+12.12
-Y15RPA- PC Sta. 10+00.00
-Y15- TS Sta. 54+37.59
-Y15RPC- ST Sta. 14+68.47
-Y15RPC- PT Sta. 21+51.97
-L_NB- PT Sta. 156+56.84
-L_NB- PC Sta. 155+60.84
INT1 POT Sta. 155+70.52= -L- Sta. 155+70.49 (8.27′LT)
-L_SB- PT Sta. 154+42.16
-L_SB- POT Sta. 158+46.44
-Y15- POT Sta. 41+12.30
-BY14- POT 27... (NOT SET)
-Y15RPB- SC Sta. 18+42.71
-Y15RPB- PT Sta. 23+92.70
-L_SB- PT Sta. 156+55.37
-Y15SPA- PCC Sta. 23+34.29
-L_SB- PC Sta. 155+85.56
-BL- 19 PINC 144+46.75
-L_NB- PT Sta. 154+49.64
-Y15SPB- PC Sta. 10+66.09
-Y15SPB- POT Sta. 10+00.00= -Y15RPB- PCC Sta. 20+70.25
-Y15RPC- PC Sta. 10+00.00
BEGIN CONSTRUCTION -Y15RPC- CS Sta. 12+68.47
-Y15SPC- PC Sta. 10+00.00
-Y15RPC- PC Sta. 18+83.37
INT1 POT Sta. 154+27.64= -L- Sta. 154+27.64 (11.46′LT)
-Y15SPC- PT Sta. 12+37.53= -L_SB- PRC Sta. 153+35.32
-L_SB- PC Sta. 152+24.23
CHARLES O. WILLIARD, JR. DB 121 PG 1524 DB 1037 PG 1006
PRIME PROPERTY, LLC DB 2770 PG 1477 PB 52 PG 85
GLENN CROSSING ASSOCIATES, LLC PB 52 PG 85 DB 2770 PG 1473
UNION CROSS, LLC DB 2592 PG III
ERNEST B. & MILDRED H. SMITH DB 1000 PG 363
SHANNON STUBBS DB 2516 PG 2191
SOUTHBOUND
NORTHBOUND
-Y15SPB- PT Sta. 13+93.61= -L_NB- PRC Sta. 153+11.10
-L_NB- PC Sta. 151+83.43
-L- PT Sta. 151+41.24 = -L_NB- POT Sta. 151+41.24 (27′ RT) -L_SB- POT Sta. 151+41.24 (27′ LT)
BEGIN CONSTRUCTION -Y15RPB- POC STA. 14+50.00
-Y15RPB- CS Sta. 14+57.71
-Y15RPB- SRS Sta. 16+77.71
-Y15RPC-
PI Sta 11+34.46 Δ = 8°03′12.6″ (RT) D = 2°59′59.2″ L = 268.47′ T = 134.46′ R = 1,910.00′ Se = 0.07 RUNOFF = 200′
PIs Sta 13+35.15 Θs = 2°59′59.2″ Ls = 200.00′ LT = 133.35′ ST = 66.68′
PI Sta 20+47.18 Δ = 84°29′00.9″ (LT) D = 30°58′14.5″ L = 272.79′ T = 166.98′ R = 185.00′ Se = 0.02 RUNOFF = 80′
-Y15SPC-
PI Sta 11+46.76 Δ = 85°03′27.2″ (RT) D = 35°48′35.5″ L = 237.52′ T = 146.76′ R = 160.00′
-L_SB-
PI Sta 152+79.93 Δ = 10°36′27.5″ (RT) D = 9°32′57.5″ L = 111.08′ T = 55.7′ R = 600.00′ Se = SEE PLANS
PI Sta 153+90.04 Δ = 30°36′27.5″ (LT) D = 28°38′52.4″ L = 106.84′ T = 54.73′ R = 200.00′ Se = SEE PLANS
PI Sta 156+20.82 Δ = 20°00′00.0″ (LT) D = 28°38′52.4″ L = 69.81′ T = 35.27′ R = 200.00′ Se = SEE PLANS
PI Sta 160+23.84 Δ = 7°35′32.2″ (RT) D = 9°32′57.5″ L = 79.5′ T = 439.81′ R = 600.00′ Se = SEE PLANS
PI Sta 161+22.00 Δ = 32°35′32.2″ (LT) D = 28°38′52.4″ L = 113.77′ T = 58.47′ R = 200.00′ Se = SEE PLANS
PI Sta 163+18.73 Δ = 25°00′00.0″ (RT) D = 28°38′52.4″ L = 87.27′ T = 44.34′ R = 200.00′ Se = SEE PLANS
-L-
PI Sta 144+30.22 Δ = 16°24′30.0″ (RT) D = 1°08′45.3″ L = 1,431.90′ T = 720.88′ R = 5,000.00′ Se = 0.02 Runoff = 110′
-Y15SPB-
PI Sta 11+97.26 Δ = 60°28′56.9″ (LT) D = 25°27′53.2″ L = 237.51′ T = 131.17′ R = 225.00′
-Y15RPB-
PI Sta 12+30.80 Δ = 18°12′42.8″ (LT) D = 3°58′43.9″ L = 457.71′ T = 230.80′ R = 1,440.00′ Se = 0.02 RUNOFF = SEE PLANS
PIs Sta 15+31.09 Θs = 4°22′36.3″ Ls = 220.00′ LT = 146.71′ ST = 73.37′
PIs Sta 17+87.85 Θs = 8°40′23.6″ Ls = 165.00′ LT = 110.13′ ST = 55.12′
PI Sta 19+58.16 Δ = 23°55′14.9″ (RT) D = 10°30′46.8″ L = 227.54′ T = 115.45′ R = 545.00′ Se = 0.06 RUNOFF = 165′
PI Sta 22+40.18 Δ = 91°41′12.4″ (RT) D = 34°43′29.0″ L = 264.04′ T = 169.93′ R = 165.00′ Se = 0.02
PI Sta 23+63.62 Δ = 12°52′19.8″ (RT) D = 22°02′12.6″ L = 58.41′ T = 29.33′ R = 260.00′
-L_NB-
PI Sta 152+79.93 Δ = 10°36′27.5″ (LT) D = 9°32′57.5″ L = 111.08′ T = 55.70′ R = 600.00′ Se = SEE PLANS
PI Sta 153+90.04 Δ = 30°36′27.5″ (RT) D = 28°38′52.4″ L = 106.84′ T = 54.73′ R = 200.00′ Se = SEE PLANS
PI Sta 156+20.82 Δ = 20°00′00.0″ (LT) D = 28°38′52.4″ L = 69.81′ T = 35.27′ R = 200.00′ Se = SEE PLANS
PI Sta 160+23.84 Δ = 7°35′32.2″ (RT) D = 9°32′57.5″ L = 79.51′ T = 39.81′ R = 600.00′ Se = SEE PLANS
PI Sta 161+22.00 Δ = 32°35′32.2″ (LT) D = 28°38′52.4″ L = 113.77′ T = 58.47′ R = 200.00′ Se = SEE PLANS
PI Sta 163+49.31 Δ = 36°25′30.3″ (RT) D = 28°38′52.4″ L = 127.15′ T = 65.81′ R = 200.00′ Se = SEE PLANS
PI Sta 164+70.68 Δ = 11°25′30.3″ (LT) D = 9°32′57.5″ L = 119.64′ T = 60.02′ R = 600.00′ Se = SEE PLANS
UTILITIES BY OTHERS
NOTE: ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS.
NOTE: ALL PROP. FENCE IS 48″ WOVEN WIRE UNLESS OTHERWISE NOTED.
NOTE: ALL PROPOSED DRIVEWAYS ARE 20′ WIDE UNLESS OTHERWISE NOTED.
NOTE: ALL ISLANDS SHOWN ARE 5″ MONOLITHIC CONCRETE ISLANDS STD. 852.01
NOTE: SEE SHEET 31 FOR -L- PROFILE SEE SHEET 46 FOR -Y15- PROFILE SEE SHEET 47 FOR -Y15RPA- & -Y15RPB PROFILES SEE SHEET 48 FOR -Y15RPC- & -Y15RPD- PROFILES SEE SHEET 49 FOR -Y15SPA-, Y15SPB, -Y15SPC-, & -Y15SPD- PROFILES SEE SHEETS 53 & 54 FOR -L_NB- PROFILE SEE SHEET 54 FOR -L_SB- PROFILE SEE SHEET 54 FOR -INT1- & -INT2- PROFILES
NOTE: SEE SHEET 2S FOR DITCH DETAILS
GRAPHIC SCALE 50 25 0 50 100 PLANS
PLANS PREPARED BY : RK&K RUMMEL, KLEPPER & KAHL, LLP 900 RIDGEFIELD DRIVE SUITE 350 RALEIGH, NORTH CAROLINA 27609-3960 NC LICENSE NO. F-0112 • (919) 878-9560 FOR DIVISION OF HIGHWAYS
LOCATION:
TIP NO.: U-4909 COUNTY: FORSYTH
DESIGNED BY:
CHECKED BY: DATE:
8/17/2011 R:\Utilities\Rdy_Ut\Proj\u4909_utl_psh13.dgn default

PROJECT REFERENCE NO.	SHEET NO.
U-4909	U-14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



UTILITIES BY OTHERS

NOTE:
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PLANS PREPARED BY :

RK&K

RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

FOR DIVISION OF HIGHWAYS

REVISIONS

R/W Revision: Date: - Revised property owner name for Parcel 121. Added new Parcel 111. Combined Parcels 123, 124 and 134. Eliminated Parcels 124 and 134.
- Revised PUE to fit to proposed R/W at -L- Sta. 175+70 LT.

R/W Revision: Date: - Revised overlapping PDE and PUE to DUE for parcels 117 and 123.

8/17/99

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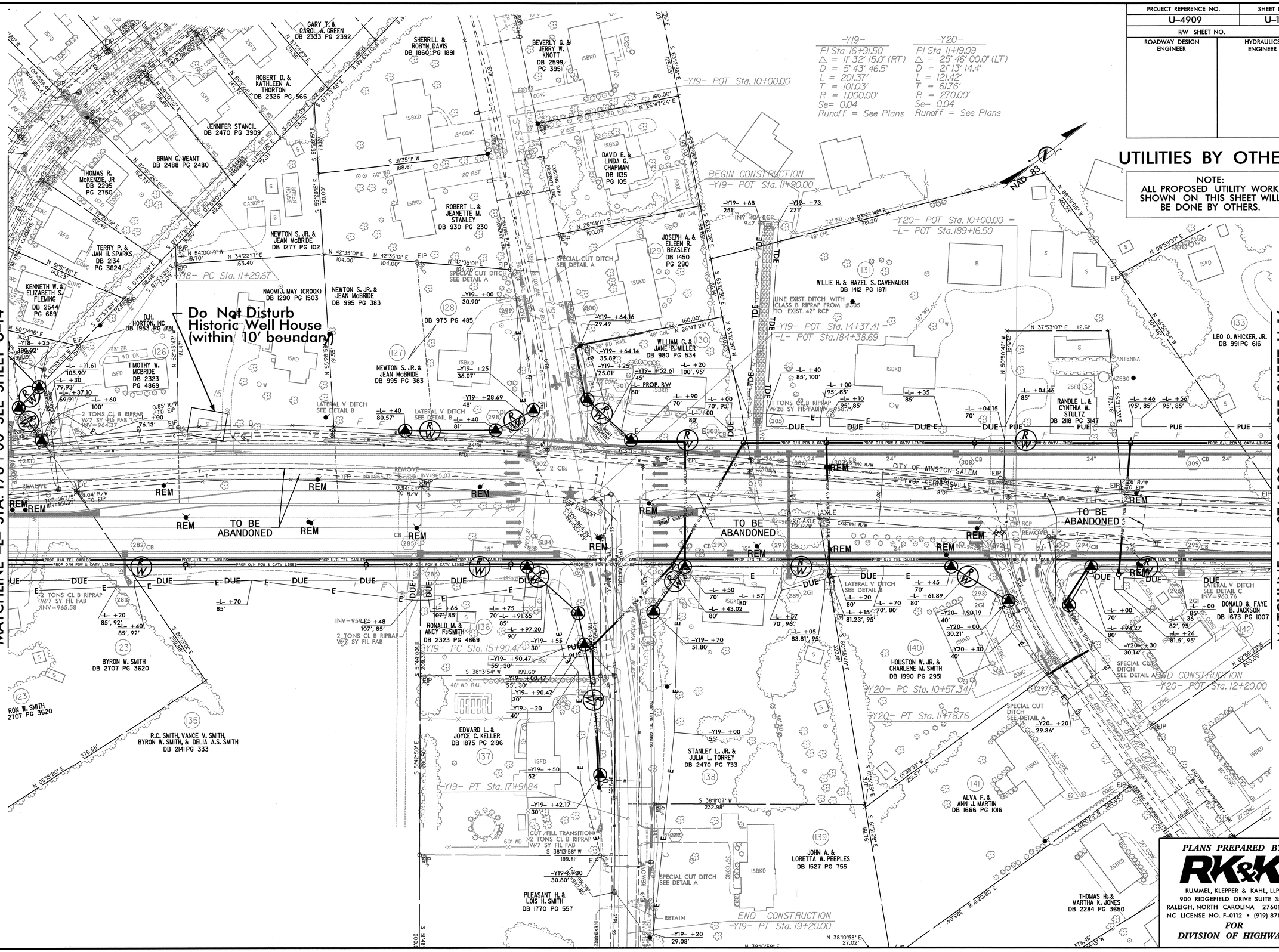
PROJECT REFERENCE NO.	SHEET NO.
U-4909	U-15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-Y19-
PI Sta 16+91.50
△ = 11° 32' 15.0" (RT)
D = 5° 43' 46.5"
L = 201.37'
T = 101.03'
R = 1,000.00'
Se= 0.04
Runoff = See Plans

-Y20-
PI Sta 11+19.09
△ = 25° 46' 00.0" (LT)
D = 21° 13' 14.4"
L = 121.42'
T = 61.76'
R = 270.00'
Se= 0.04
Runoff = See Plans

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS.



REVISIONS

R/W Revision Date:	– Revised Construction Easement on Parcel 136. Revised PDE and Construction Easement on Parcel 140. Revised PUE and PDE on Parcel 131
	– Combined Parcels 123, 124 and 134. Eliminated Parcels 124 and 134. Revised PUE to tie to proposed R/W at -L- Sta.187+10 and 190+30 Rt.
	– Revised PUE to overlap PDE at -L- Sta.179+30, 182+60 Rt. and 186+30 Lt.
	– Revised PUE to overlap PDE at -L- Sta.204+70 Rt.
R/W Revision Date:	– Revised overlapping PDE and PUE to DUE for parcels 123, 130, 131, 135, 136, 138, 140, and 142.
Added easement for Parcel 130 at -L- 185+00 Lt. and added note "Do not disturb historic well" at -L- Sta 180+00 Lt.	
R/W Revision Date: 02/16/11	– Eliminated Construction Easement on Parcel 129

8/17/99

8/17/2011
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PLANS PREPARED BY :
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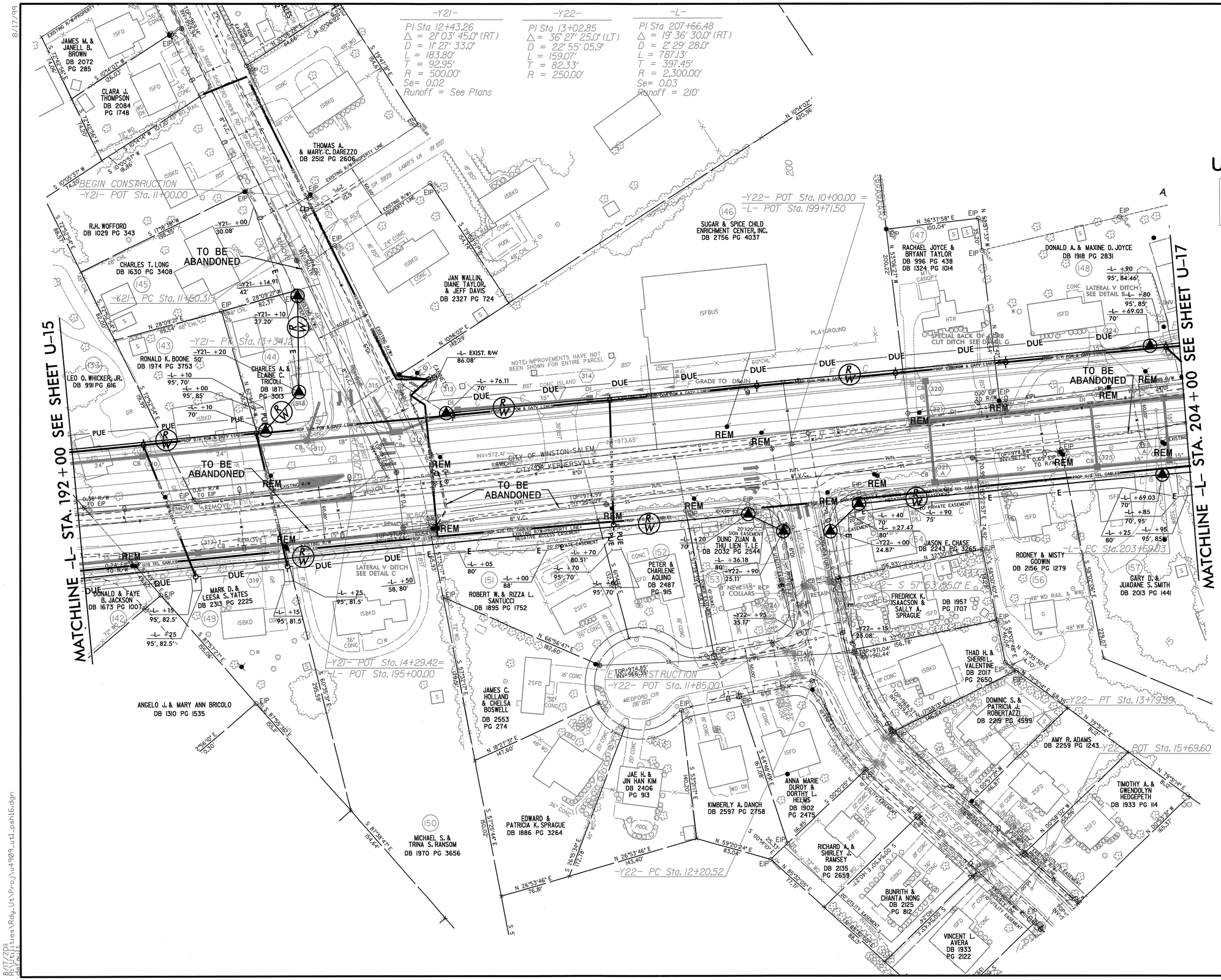
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560
FOR
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-4909	U-16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS.

NAD 83



PLANS PREPARED BY :

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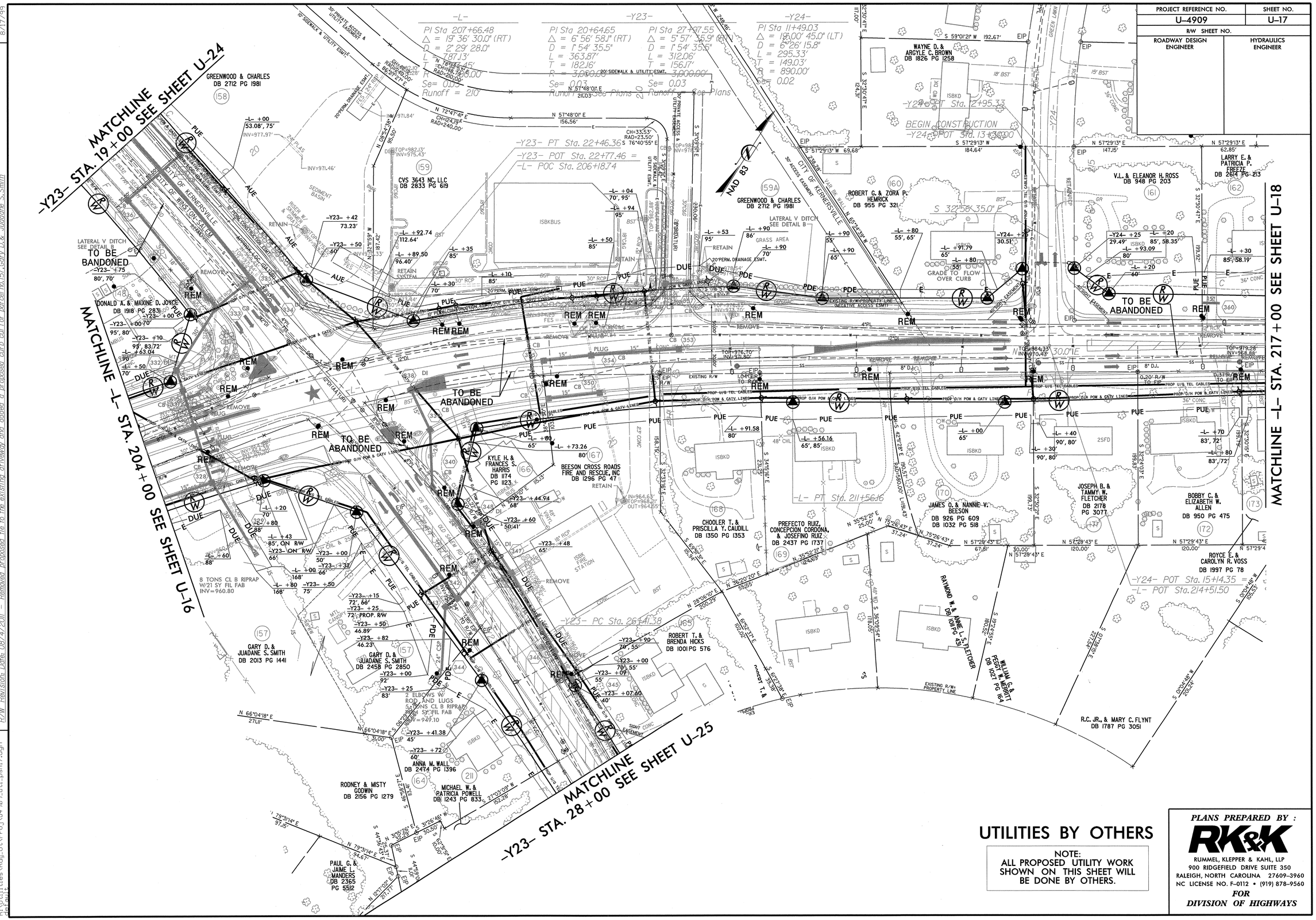
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

FOR
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-4909	U-17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



UTILITIES BY OTHERS

NOTE:
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PLANS PREPARED BY :

RK&K

RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

FOR
DIVISION OF HIGHWAYS

REVISIONS

R/W Revision: Date: 12/02/2008 - Revised PUE on Parcels 165 and 167 (-Y23- Sta.27+00 to 28+00 Left).
R/W Revision: Date: - Revised PUE on Parcels 158 (-Y23- Sta.19+00 to 21+50 Left).Revised PDE and PUE on Parcels 159 and 160 (-L- Sta.207+00 to 213+00 Left)
- Revised Construction Easement and PDE on Parcel 166 (-Y23- Sta.24+50 to 27+00 Left).
- Revised property owner names on Parcels 158 and 159. Combined Parcels 157 and 163. Eliminated Parcel 163. Added new Parcel 159A.
- Revised overlapping PDE and PUE to DUE for parcels 148, 157, 159, 159A, 166 and 167. Revised a portion of PDE to AUE for parcel 158.
R/W Revision: Date: Replaced 4' outside asphalt shoulder with 2'-6" concrete curb and gutter at -L- Sta 211+18 to 222+00 Rt.
R/W Revision: Date: 08/4/2011 - Removed proposed tie to the existing driveway and added a proposed curb cut for parcel no.157, Gary D.& Juadane S.Smith

8/17/99

8/17/2011
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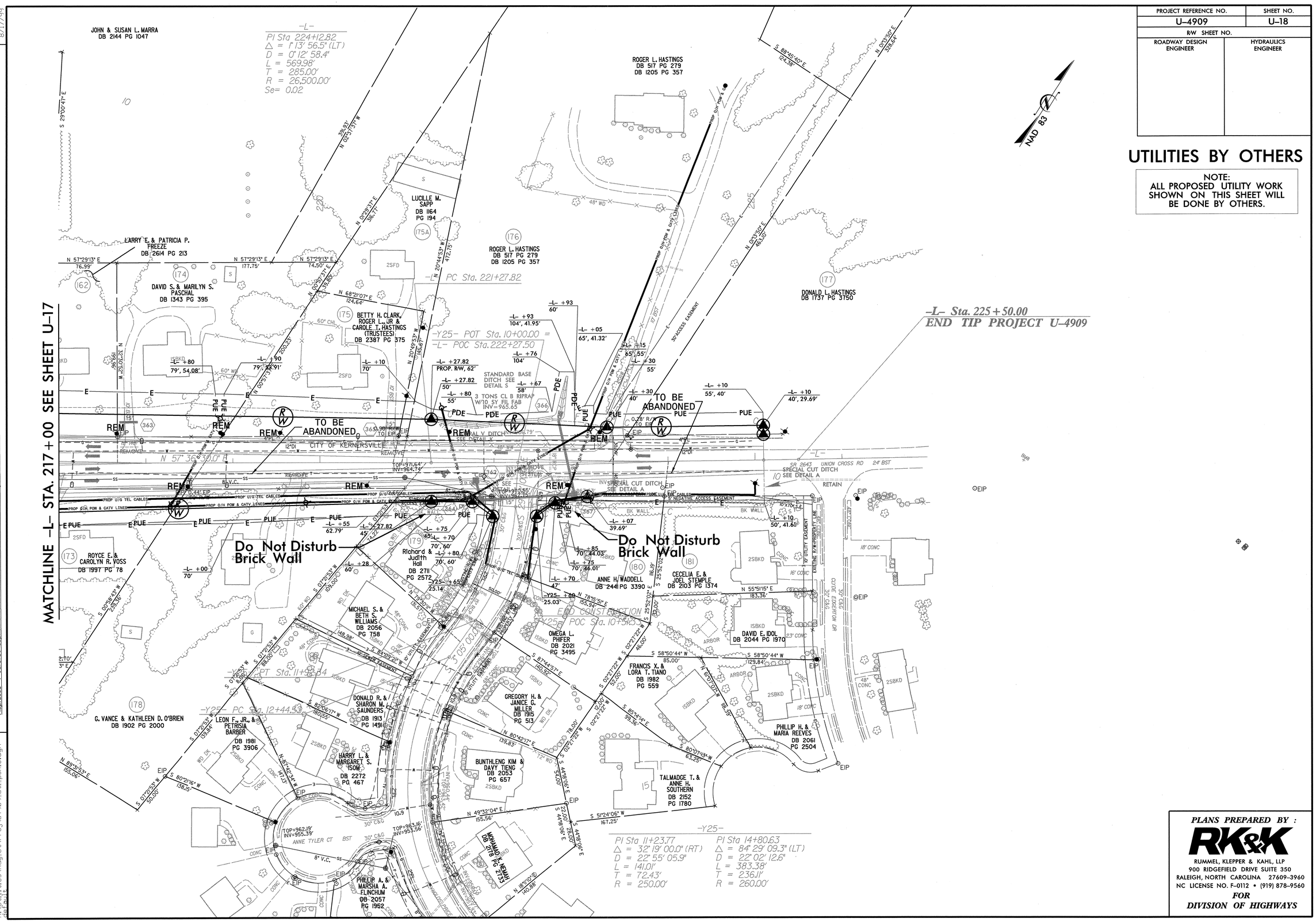
PROJECT REFERENCE NO.	SHEET NO.
U-4909	U-18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS.



REVISIONS

R/W Revision: Date: - Added Parcel 175A.

R/W Revision: Date: -Added note "Do not disturb brick walls" on parcels 179 and 180. Changed parcel 179 owner name to Richard and Judith Hall. Replaced 4' outside asphalt shoulder with 2'-6" concrete curb and gutter at -L- Sta 211+18 to 222+00 Rt.

8/17/99

8/17/2011
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default

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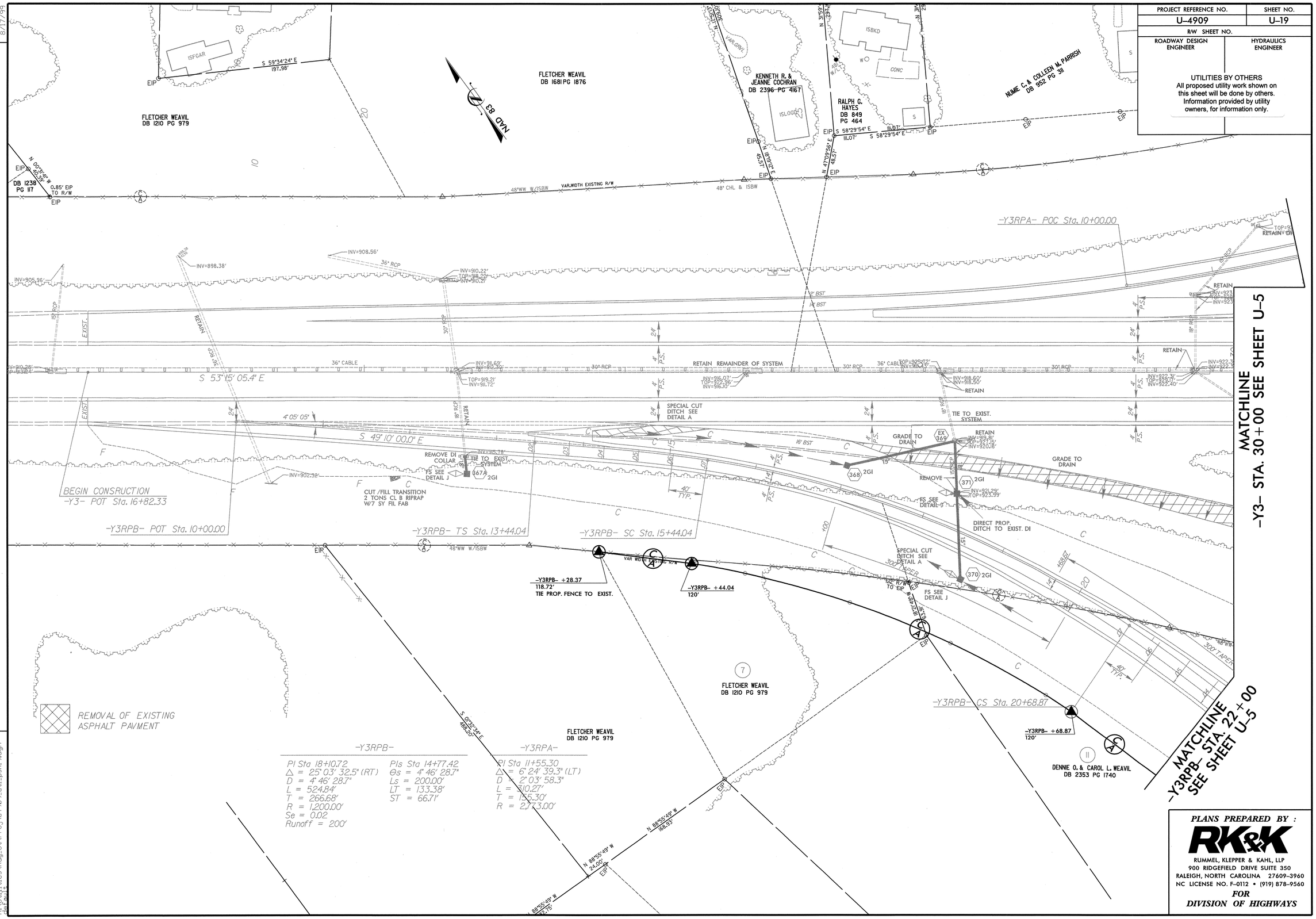
PROJECT REFERENCE NO.	SHEET NO.
U-4909	U-19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

UTILITIES BY OTHERS
All proposed utility work shown on this sheet will be done by others. Information provided by utility owners, for information only.



-Y3RPB-

PI Sta 18+10.72
Δ = 25° 03' 32.5" (RT)
D = 4° 46' 28.7"
L = 524.84'
T = 266.68'
R = 1,200.00'
Se = 0.02
Runoff = 200'

PIs Sta 14+77.42
Θs = 4° 46' 28.7"
Ls = 200.00'
LT = 133.38'
ST = 66.71'

-Y3RPA-

PI Sta 11+55.30
Δ = 6° 24' 39.3" (LT)
D = 2° 03' 58.3"
L = 310.27'
T = 155.30'
R = 2,773.00'

REVISIONS

R/W Revision: Date: - Renamed Parcel 182 to Parcel 7, and eliminated Parcel 182.

8/17/99

8/17/2011
R:\Utilities\Rdy_Ut\Proj\u4909_utl_psh19.dgn
default

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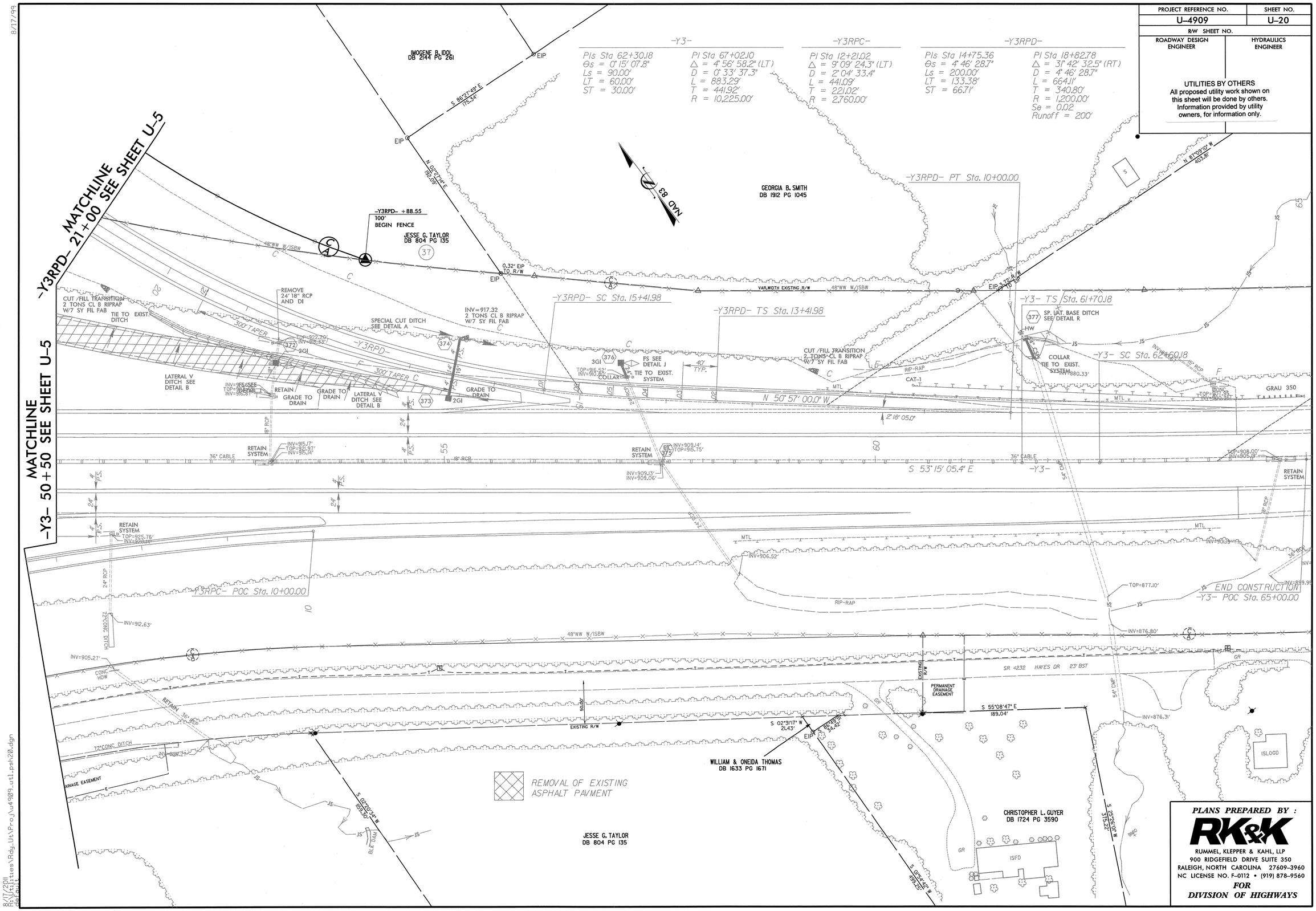
PROJECT REFERENCE NO.	SHEET NO.
U-4909	U-20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

UTILITIES BY OTHERS
All proposed utility work shown on this sheet will be done by others. Information provided by utility owners, for information only.



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8/17/99
8/17/2011
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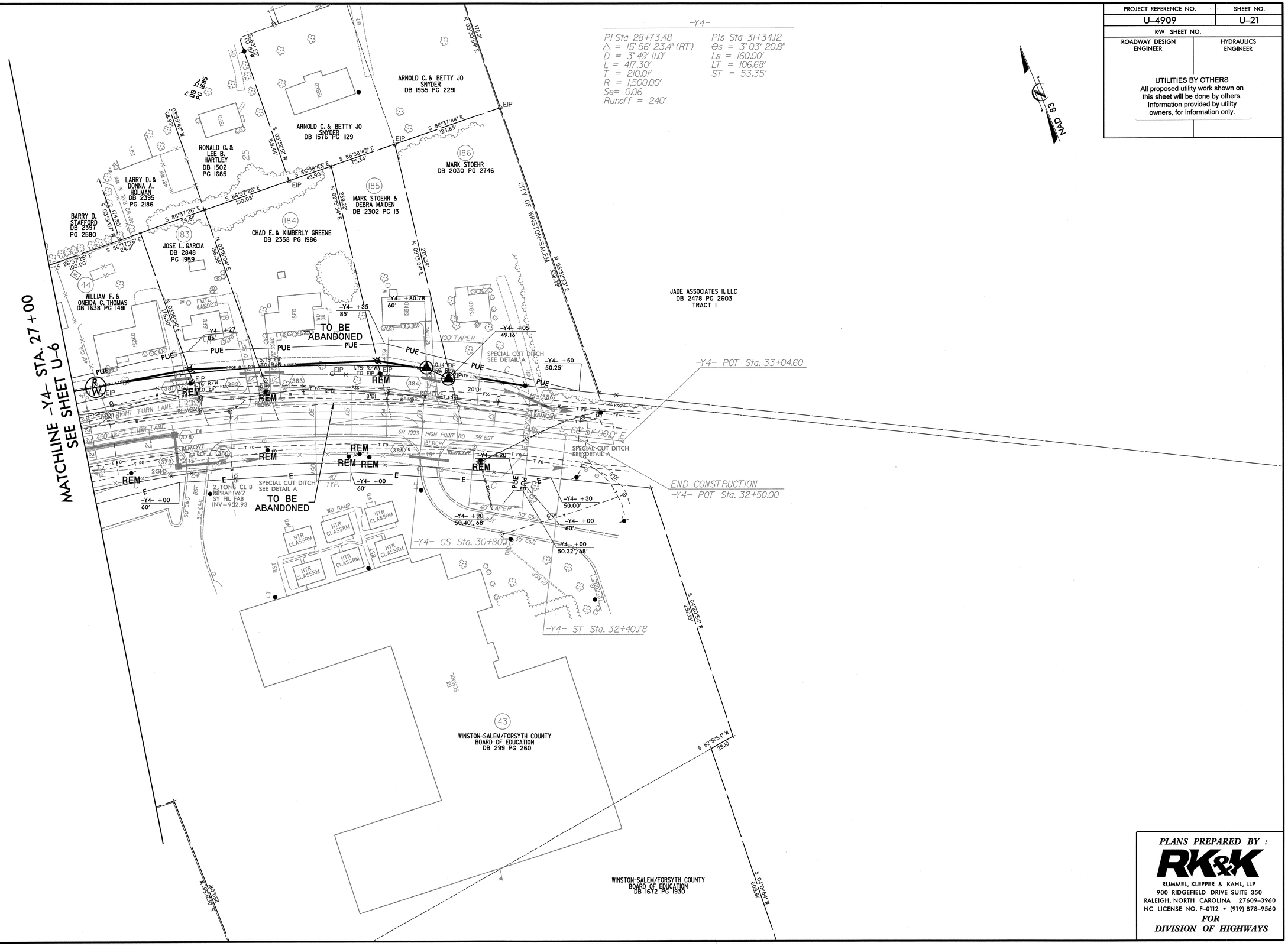
default

PROJECT REFERENCE NO.	SHEET NO.
U-4909	U-21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

UTILITIES BY OTHERS
All proposed utility work shown on this sheet will be done by others. Information provided by utility owners, for information only.



REVISIONS

R/W Revision: Date: - Changed Construction Easement to PUE on Parcels 44, 183, 184, 185, and 186. Added PUE to Parcels 43.
- Revised property owner names for Parcels 183 and 185.

8/17/99

8/17/2011
R:\Utilities\Rdy_Ut\Proj\u4909_utl_psh21.dgn
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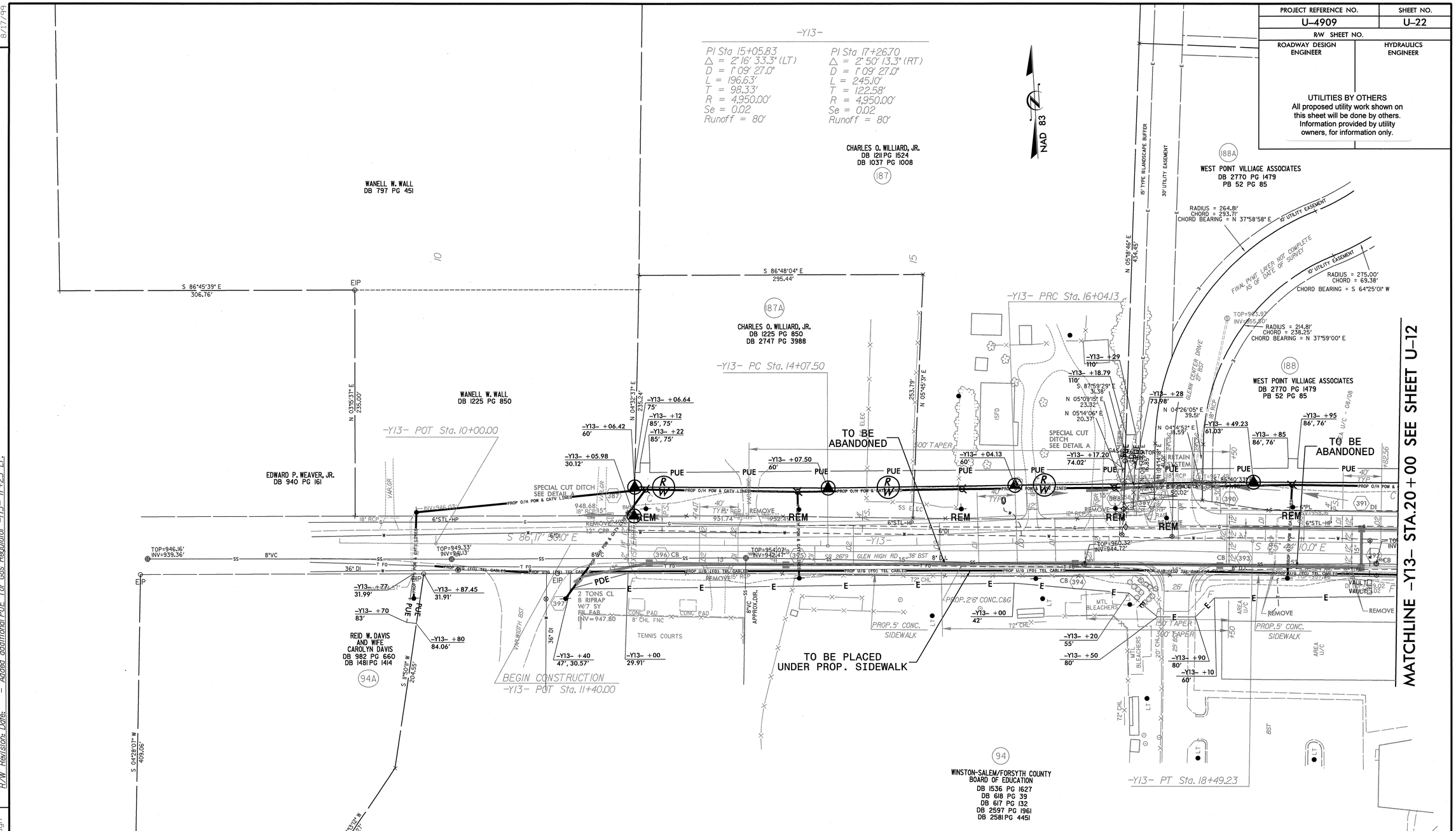
PROJECT REFERENCE NO.	SHEET NO.
U-4909	U-22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

UTILITIES BY OTHERS
All proposed utility work shown on this sheet will be done by others. Information provided by utility owners, for information only.



REVISIONS	
R/W Revision: Date:	- Added Parcel 188A
R/W Revision: Date:	- Eliminated PUE for parcel 94.
R/W Revision: Date:	- Added property lines to Parcel 187, thus creating parcel 187A.
R/W Revision: Date:	- Added additional PUE for Gas Regulator -Y13- 17+23 LT.

8/17/99

8/17/2011
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PROJECT REFERENCE NO.	SHEET NO.
U-4909	U-23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

UTILITIES BY OTHERS

NOTE:
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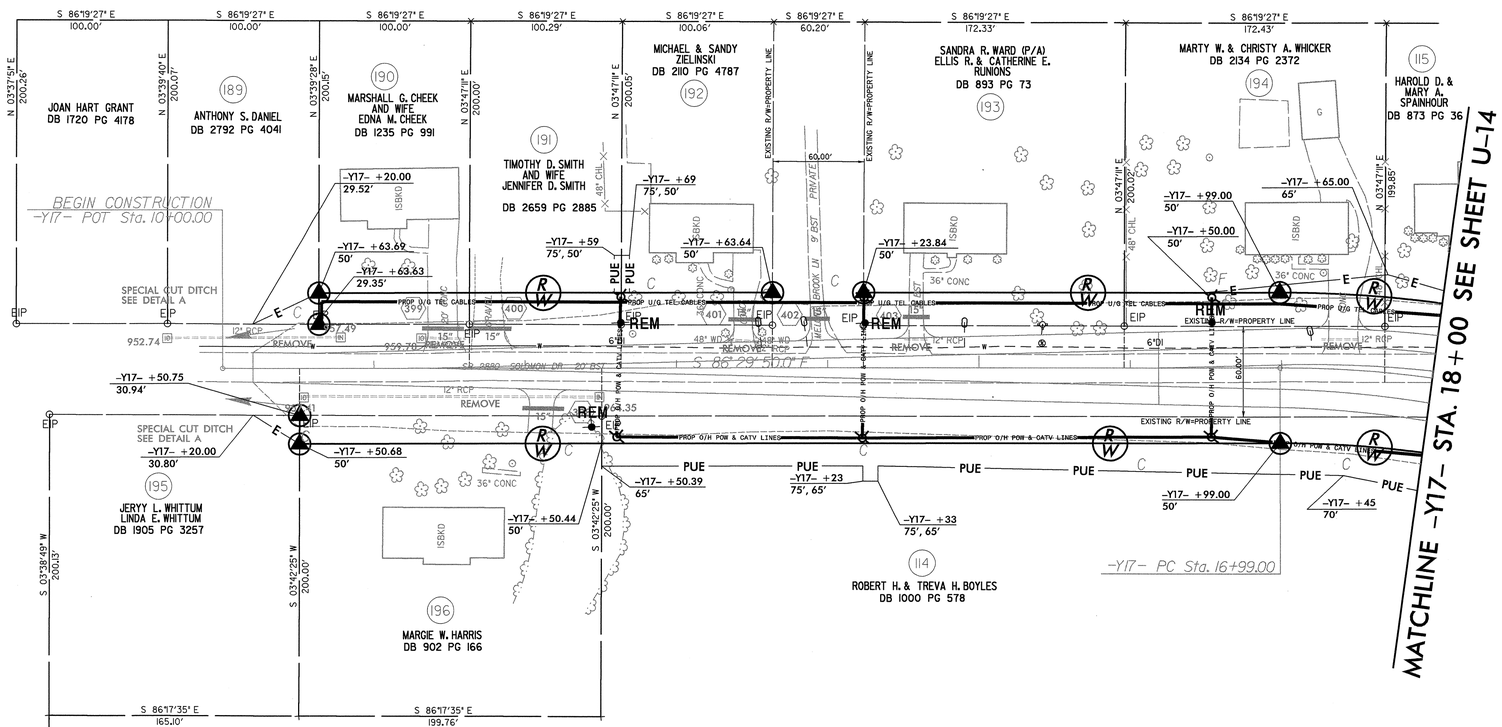

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REVISIONS

8/17/99

8/17/2011
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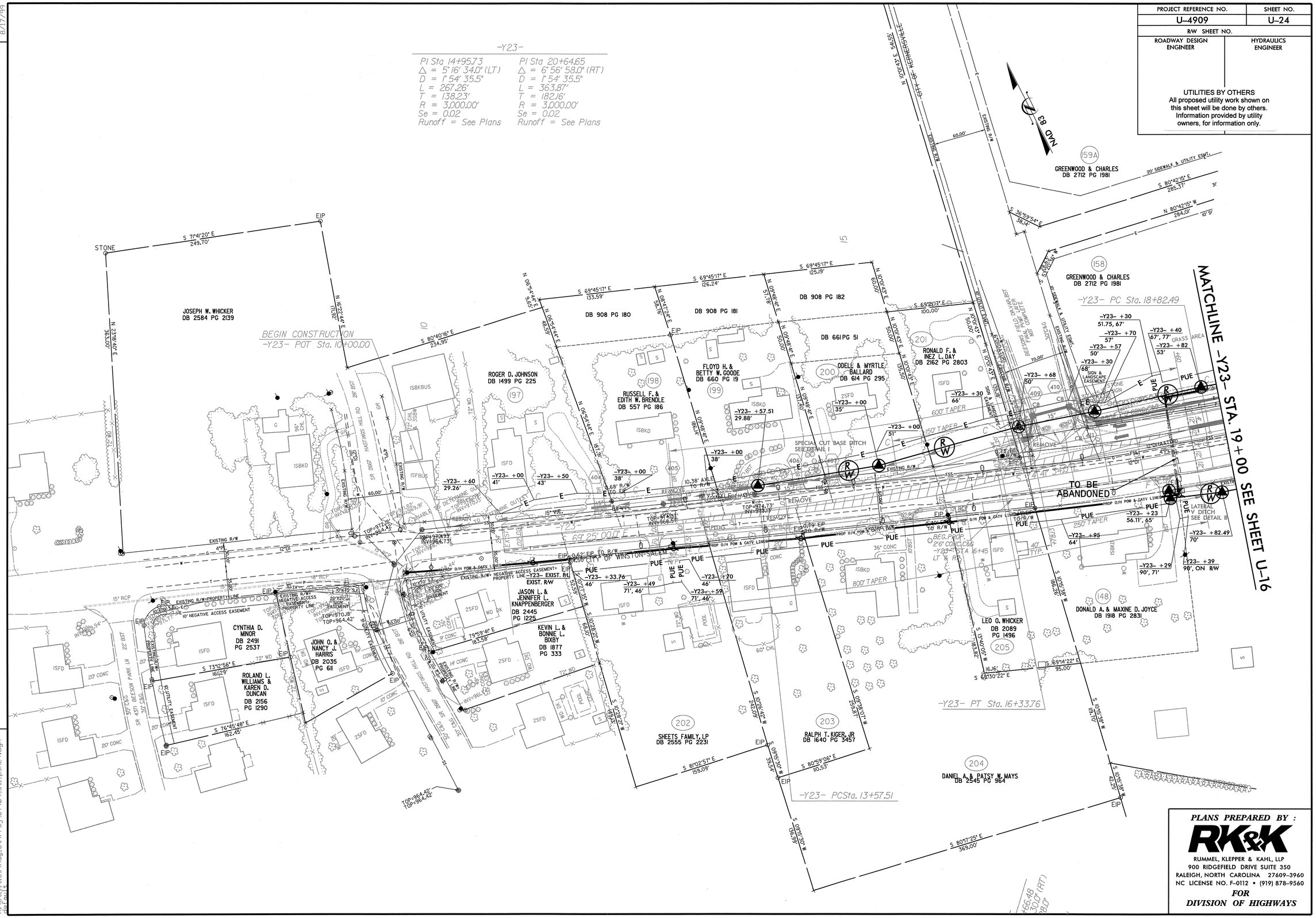
PROJECT REFERENCE NO.	SHEET NO.
U-4909	U-24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

UTILITIES BY OTHERS
All proposed utility work shown on this sheet will be done by others. Information provided by utility owners, for information only.

-Y23-

PI Sta 14+95.73	PI Sta 20+64.65
Δ = 5° 16' 34.0" (LT)	Δ = 6° 56' 58.0" (RT)
D = 1° 54' 35.5"	D = 1° 54' 35.5"
L = 267.26'	L = 363.87'
T = 138.23'	T = 182.16'
R = 3,000.00'	R = 3,000.00'
Se = 0.02	Se = 0.02
Runoff = See Plans	Runoff = See Plans



PLANS PREPARED BY :

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REVISIONS

R/W Revision: Date: 12/02/2008 – Removed Construction Easement and added PUE
R/W Revision: Date: – Revised Easements on Parcels 158, 197, 198, 199, 200 and 201.
– Revised property owner name for Parcel 158. Added Parcel 159A.

8/17/99

8/17/2011
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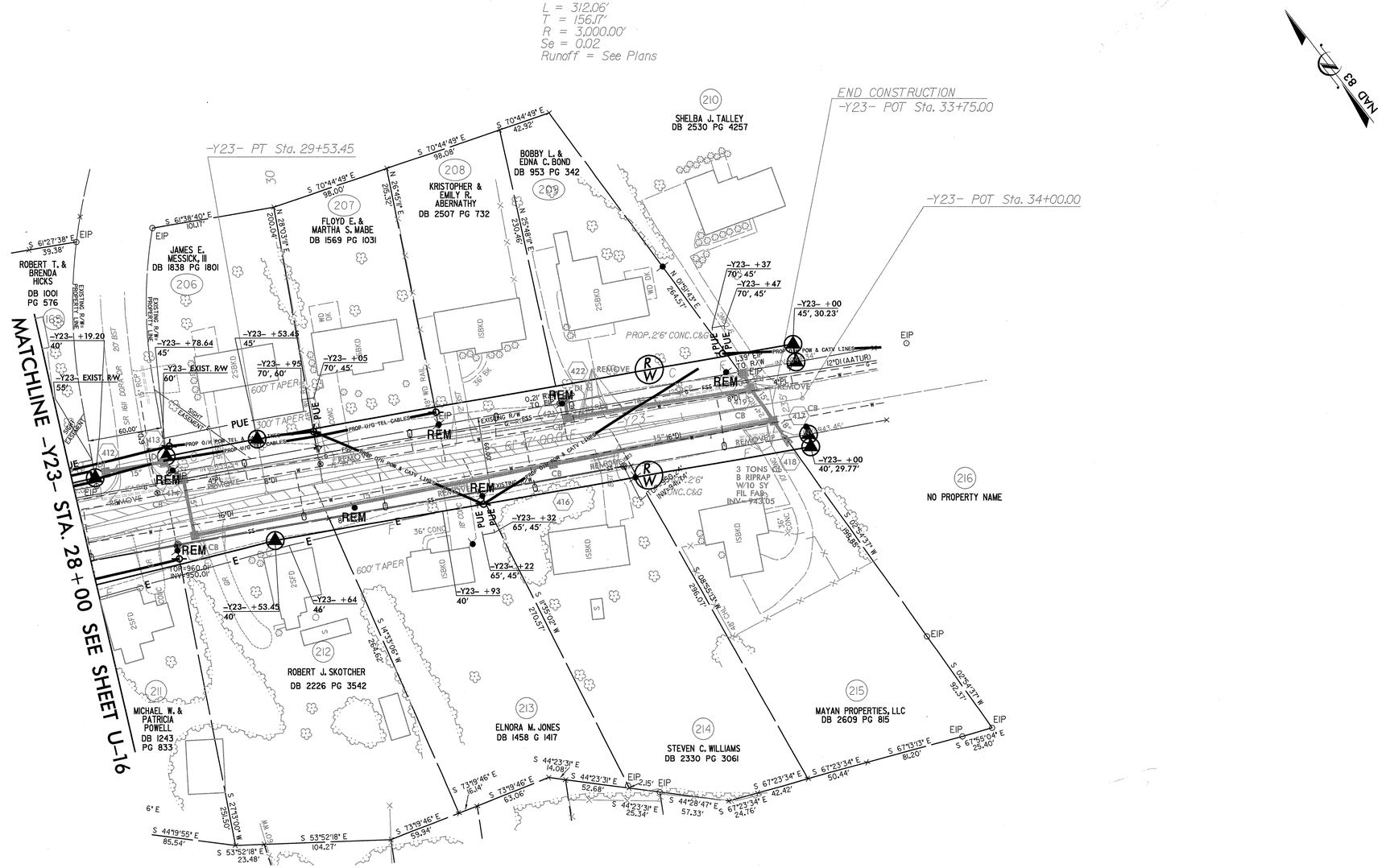
PROJECT REFERENCE NO.	SHEET NO.
U-4909	U-25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS.



REVISIONS

R/W Revision: Date: 12/02/2008 - Added PUE on Parcels 165, 206, 207, 209, 210, 213 and 214.
R/W Revision: Date: - Added property owner name for Parcel 210.

8/17/99

8/17/2011
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