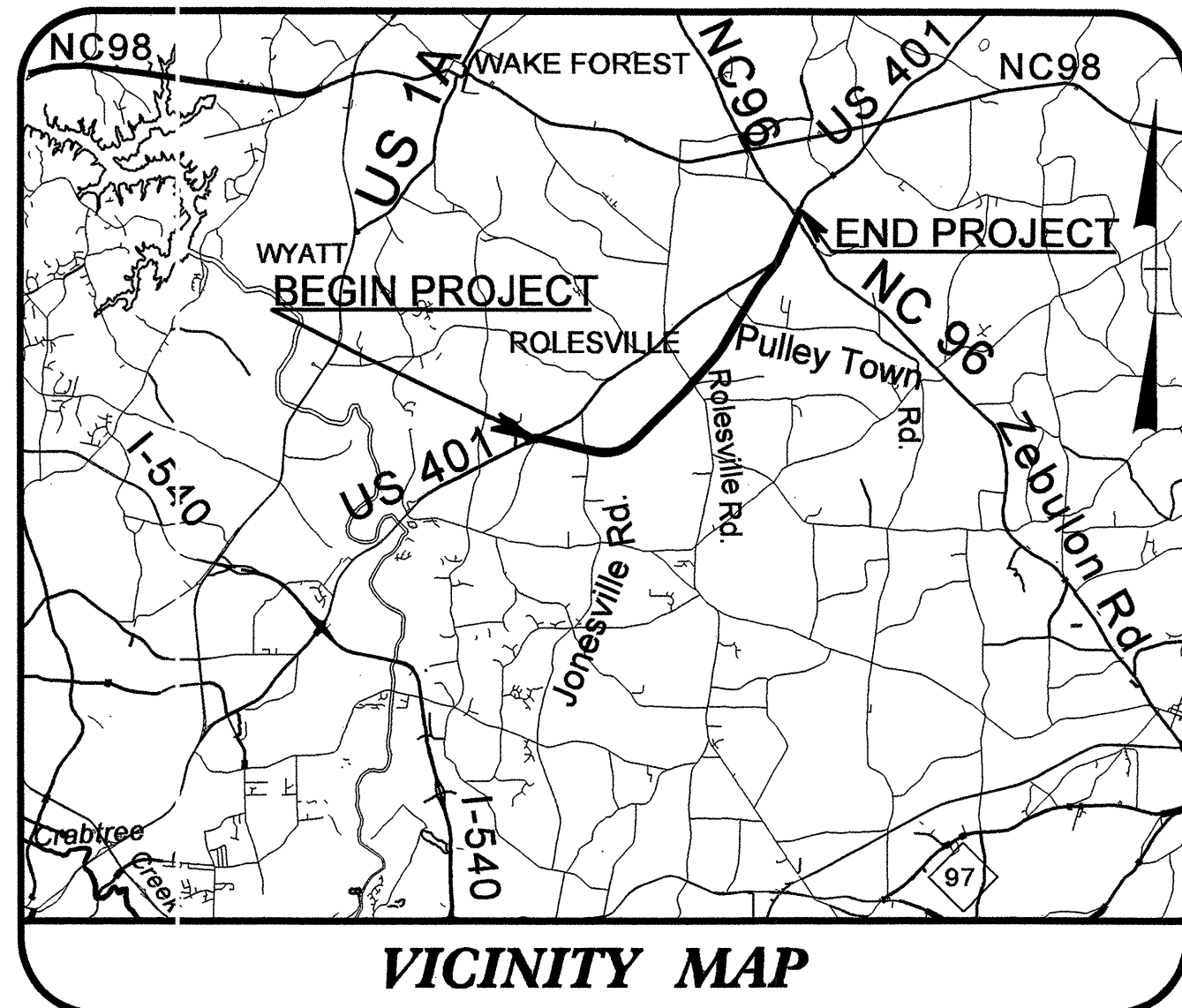


TIP PROJECT: R-2814B

CONTRACT: 202583



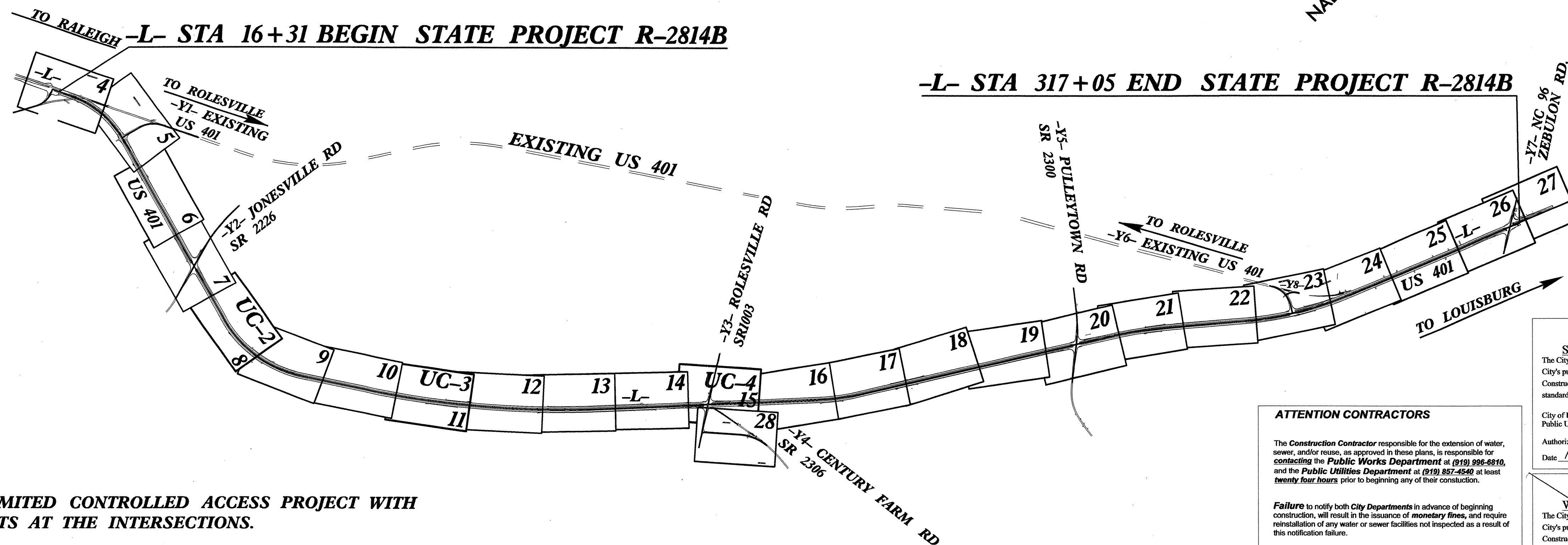
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**UTILITY CONSTRUCTION PLANS  
WAKE COUNTY**

**LOCATION: US 401 ROLESVILLE BYPASS FROM SR 2225,  
LOUISBURY ROAD TO NC 96, ZEBULON ROAD**

**TYPE OF WORK: UTILITY RELOCATION**

T.I.P. NO.	SHEET NO.
R-2814B	UC-1



**NOTES:**  
**THIS IS A LIMITED CONTROLLED ACCESS PROJECT WITH ACCESS POINTS AT THE INTERSECTIONS.**  
**CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.**  
**THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARY OF ROLESVILLE.**

**ATTENTION CONTRACTORS**

The Construction Contractor responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for contacting the Public Works Department at (919) 996-6810, and the Public Utilities Department at (919) 857-4540 at least twenty-four hours prior to beginning any of their construction.

**Failure** to notify both City Departments in advance of beginning construction, will result in the issuance of monetary fines, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

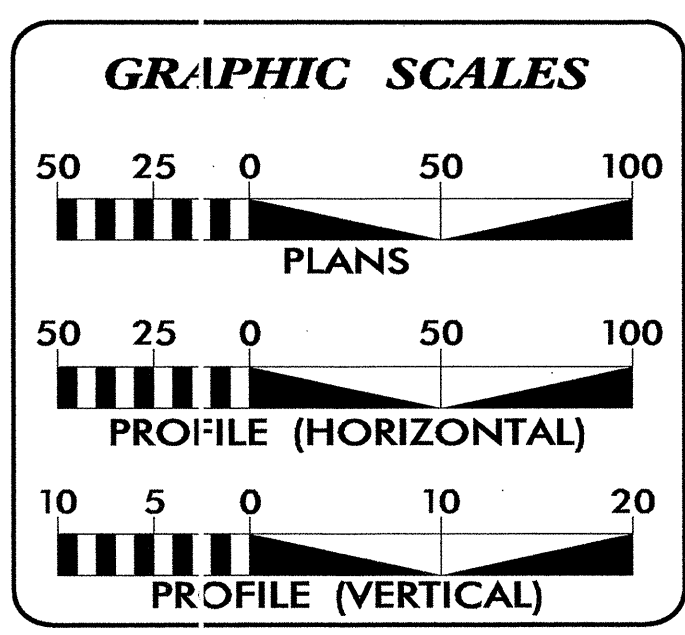
**Failure** to call for inspection, install a Downstream Plug, have Permitted Plans on the Jobsite, or any other Violation of City of Raleigh Standards will result in a Fine and Possible Exclusion from future work in the City of Raleigh.

**Public**  
**Sewer Collection / Extension System**  
 The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh  
 Public Utilities Department Permit # S-3606  
 Authorization to Construct: *[Signature]*  
 Date: 10/26/2010

**Public**  
**Water Distribution / Extension System**  
 The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

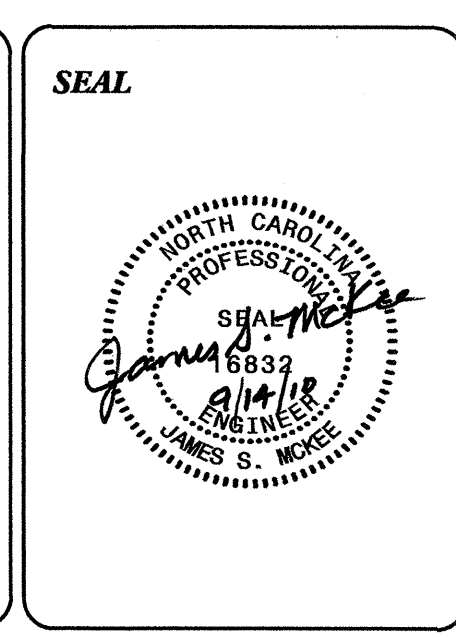
City of Raleigh  
 Public Utilities Department Permit #  
 Authorization to Construct:  
 Date:



INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2 THRU UC-3	UTILITY CONSTRUCTION PLAN & PROFILE SHEETS
UC-4	PLAN SHEET
UC-5 THRU UC-6	DETAILS SHEETS

**WATER AND SEWER OWNERS ON PROJECT**

(1) WATER - CITY OF RALEIGH  
 (2) SANITARY SEWER - CITY OF RALEIGH



PREPARED IN THE OFFICE OF:  
**DIVISION OF HIGHWAYS  
 UTILITIES ENGINEERING  
 SECTION**

1555 MAIL SERVICES CENTER  
 RALEIGH NC 27699-1555  
 PHONE (919) 250-4128  
 FAX (919) 250-4151

**Roger Worthington, P.E.** UTILITIES SECTION ENGINEER  
**Steve McKee, P.E.** UTILITIES SQUAD LEADER PROJECT ENGINEER  
**Donald Proper** UTILITIES PROJECT DESIGNER

NOTES TO CONTRACTOR:  
 PROPOSED CONCRETE THRUST COLLARS WILL BE CONSIDERED INCIDENTAL TO THE COST OF THE GRAVITY SANITARY SEWER PIPE INSTALLATION

THE CITY OF RALEIGH STANDARDS AND SPECIFICATIONS REQUIRES 5' DIAMETER MANHOLES FOR 15" TO 30" DIAMETER SANITARY SEWER LINES

**UTILITY CONSTRUCTION**

**Public**  
**Sewer Collection / Extension System**

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh  
 Public Utilities Department Permit # S-3606

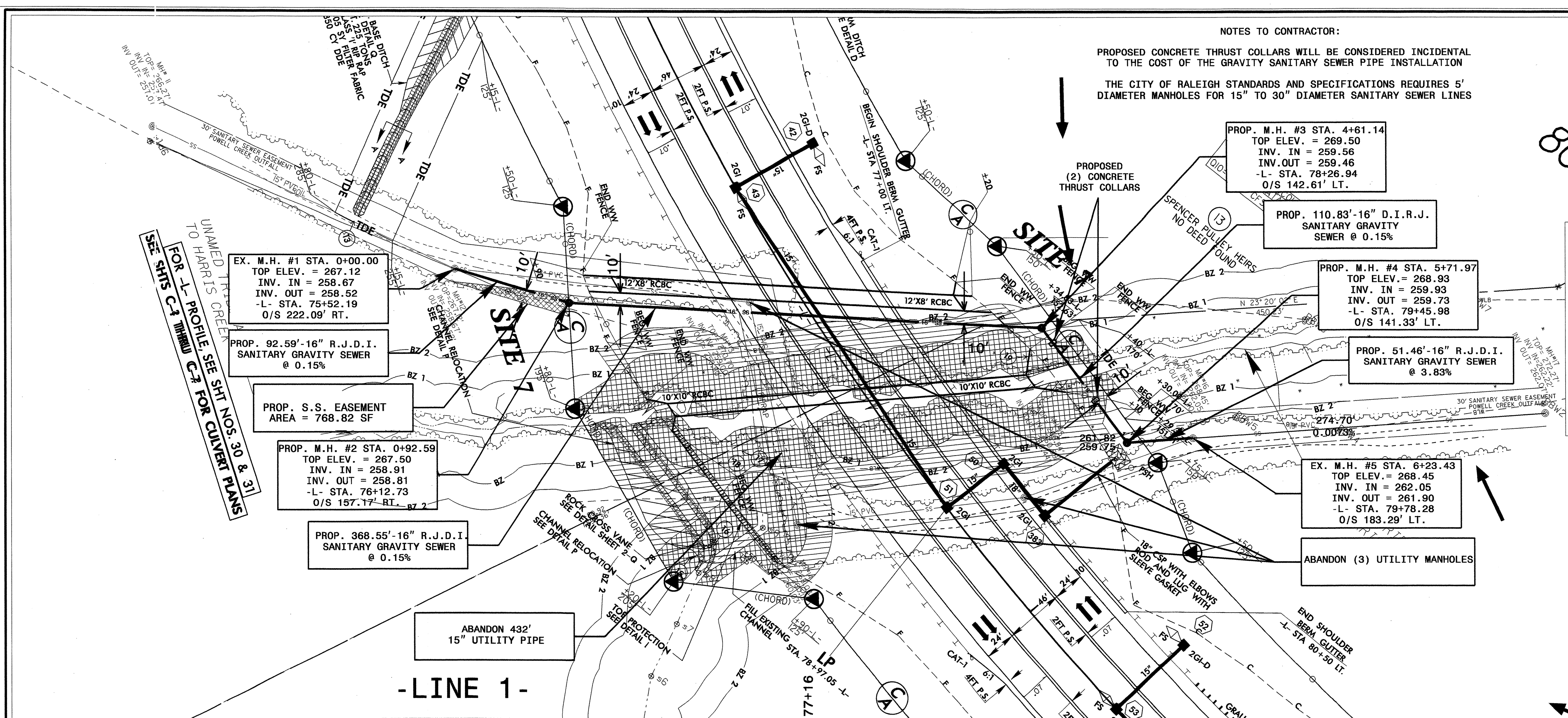
Authorization to Construct *J.M. Smith*  
 Date 10/28/2010

**ATTENTION CONTRACTORS**

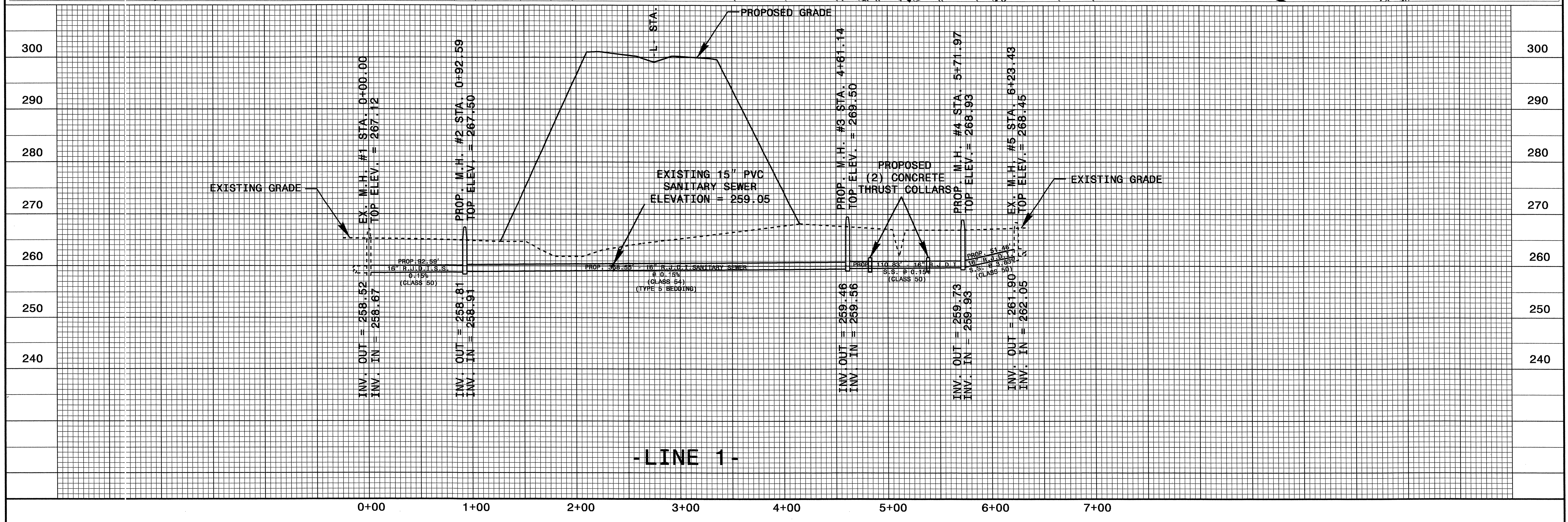
The Construction Contractor responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for contacting the Public Works Department at (919) 831-6810, and the Public Utilities Department at (919) 857-4540 at least twenty four hours prior to beginning any of their construction.

Failure to notify both City Departments in advance of beginning construction, will result in the issuance of monetary fines, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for Inspection, Install a Downstream Plug, have Permitted Plans on the Jobsite, or any other Violation of City of Raleigh Standards will result in a Fine and Possible Exclusion from future work in the City of Raleigh.



-LINE 1-



-LINE 1-

PROJECT REFERENCE NO.	SHEET NO.
R-2814B	UC-3
DESIGNED BY: DWP	
DRAWN BY: DWP	
CHECKED BY: JSM	
APPROVED BY: JSM	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 250-4128 FAX: (919) 250-4119	
UTILITY CONSTRUCTION PLANS ONLY	

## UTILITY CONSTRUCTION

### Public

#### Sewer Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh  
 Public Utilities Department Permit # S-3606

Authorization to Construct *[Signature]*

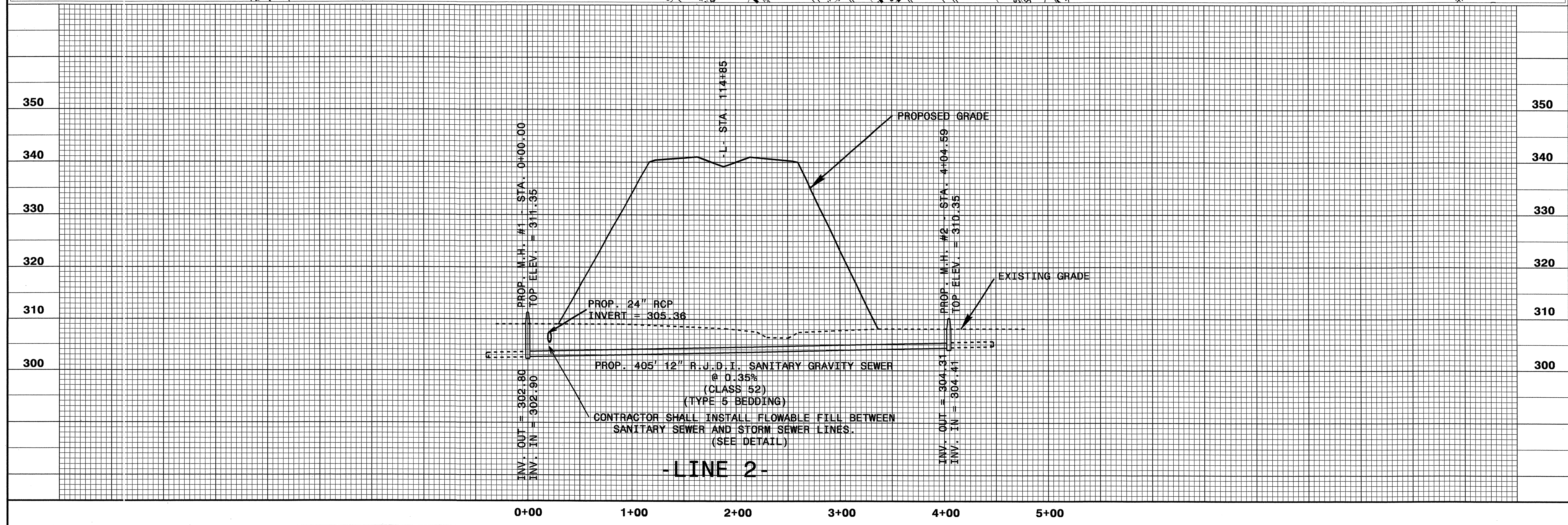
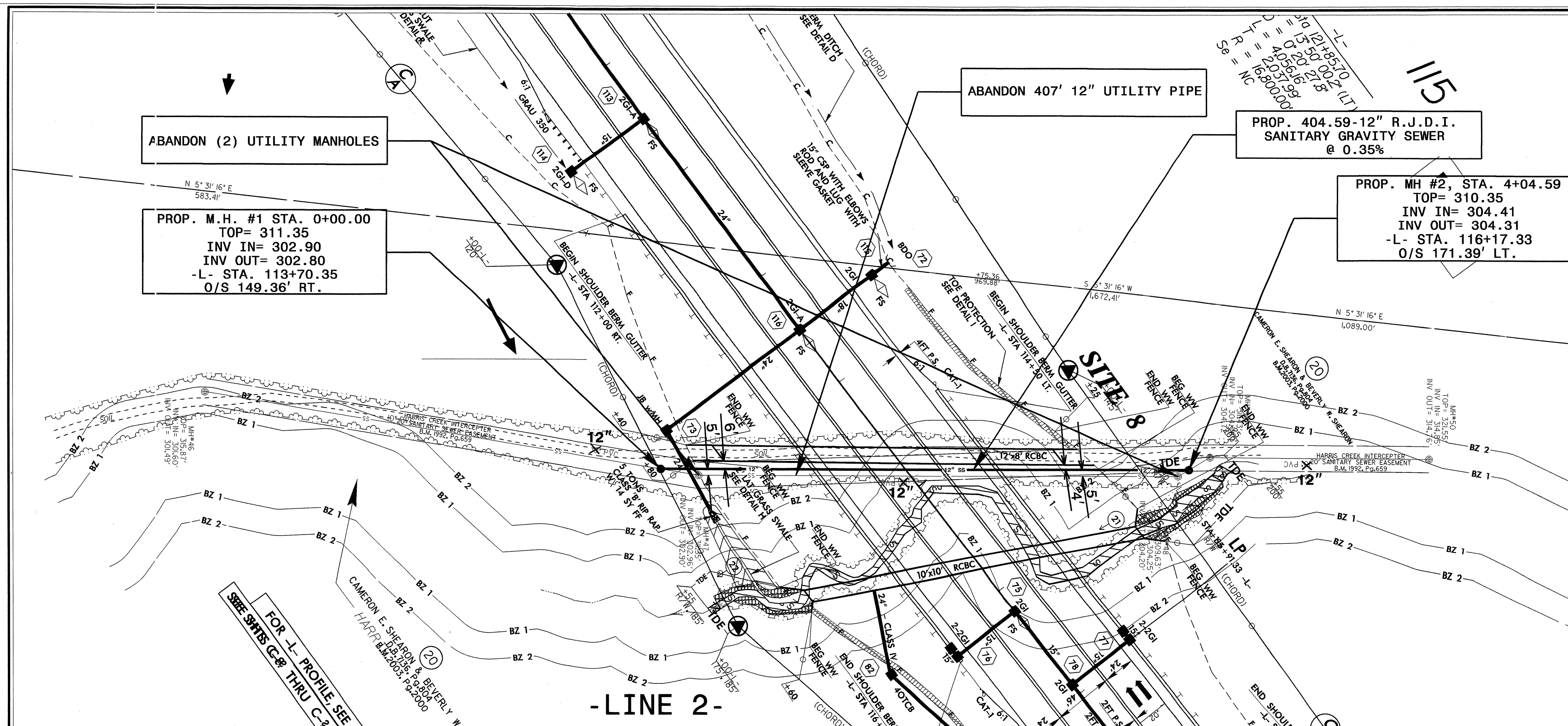
Date 10/26/2010

#### ATTENTION CONTRACTORS

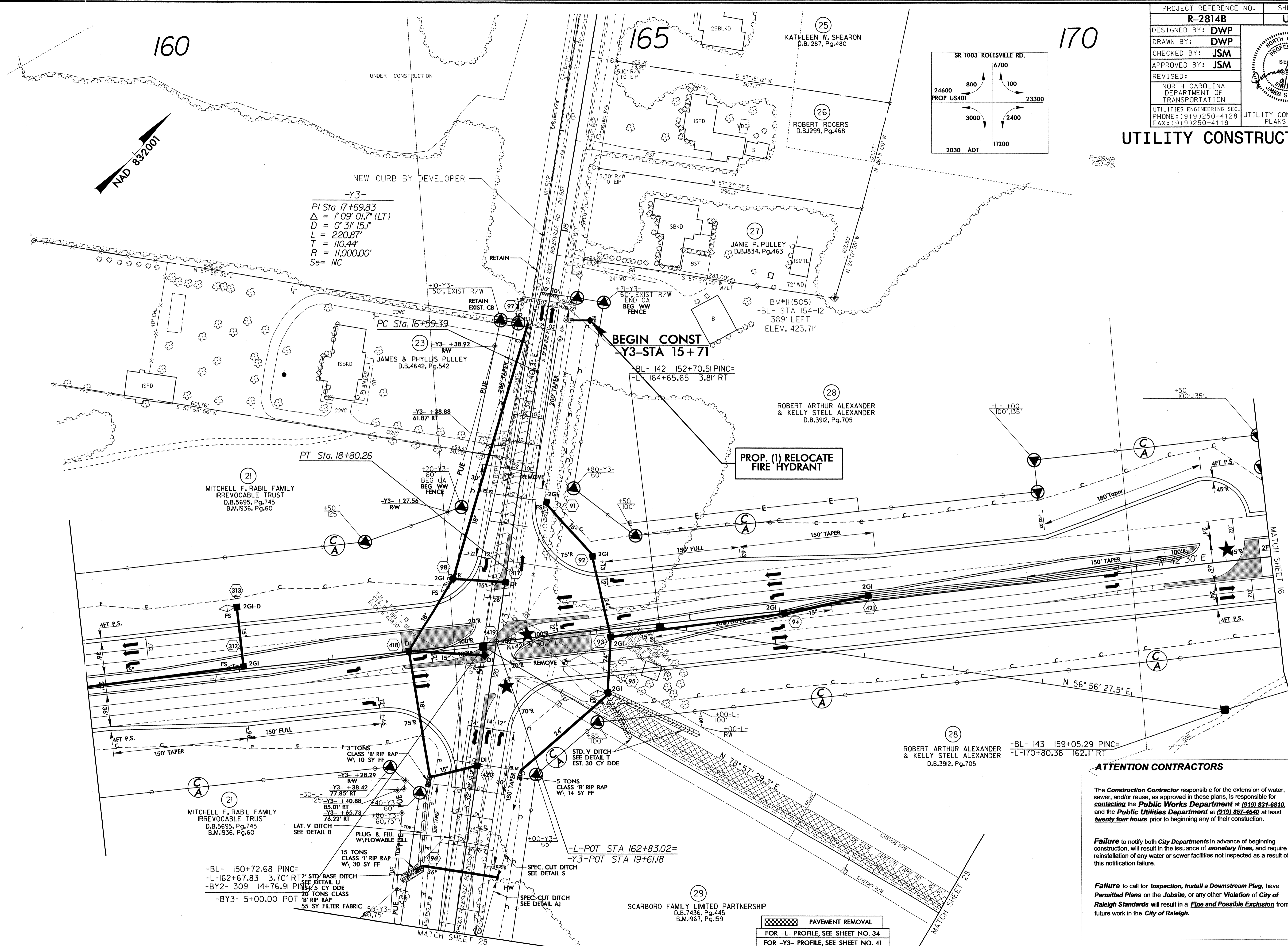
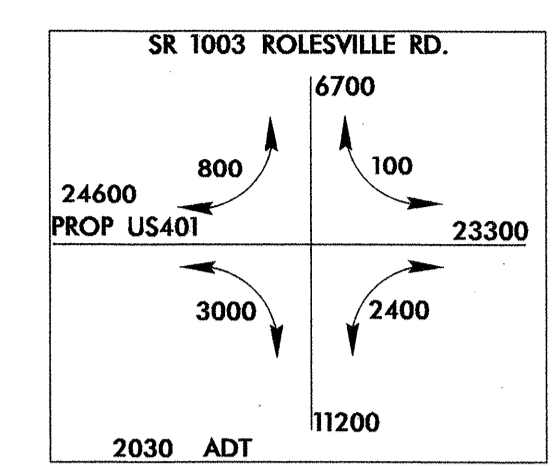
The Construction Contractor responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for contacting the **Public Works Department** at (919) 831-6810, and the **Public Utilities Department** at (919) 857-4540 at least **twenty four hours** prior to beginning any of their construction.

**Failure** to notify both City Departments in advance of beginning construction, will result in the issuance of **monetary fines**, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

**Failure** to call for **Inspection, Install a Downstream Plug**, have **Permitted Plans** on the Jobsite, or any other **Violation of City of Raleigh Standards** will result in a **Fine and Possible Exclusion** of future work in the City of Raleigh.



# UTILITY CONSTRUCTION



-Y3-  
 PI Sta 17+69.83  
 $\Delta = 1'09'01.7''$  (LT)  
 $D = 0'31'15.1''$   
 $L = 220.87'$   
 $T = 110.44'$   
 $R = 11,000.00'$   
 $Se = NC$

BEGIN CONST  
 Y3-STA 15+71

PROP. (1) RELOCATE  
 FIRE HYDRANT

**ATTENTION CONTRACTORS**

The Construction Contractor responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for contacting the Public Works Department at (919) 831-8810, and the Public Utilities Department at (919) 857-4540 at least **twenty four hours** prior to beginning any of their construction.

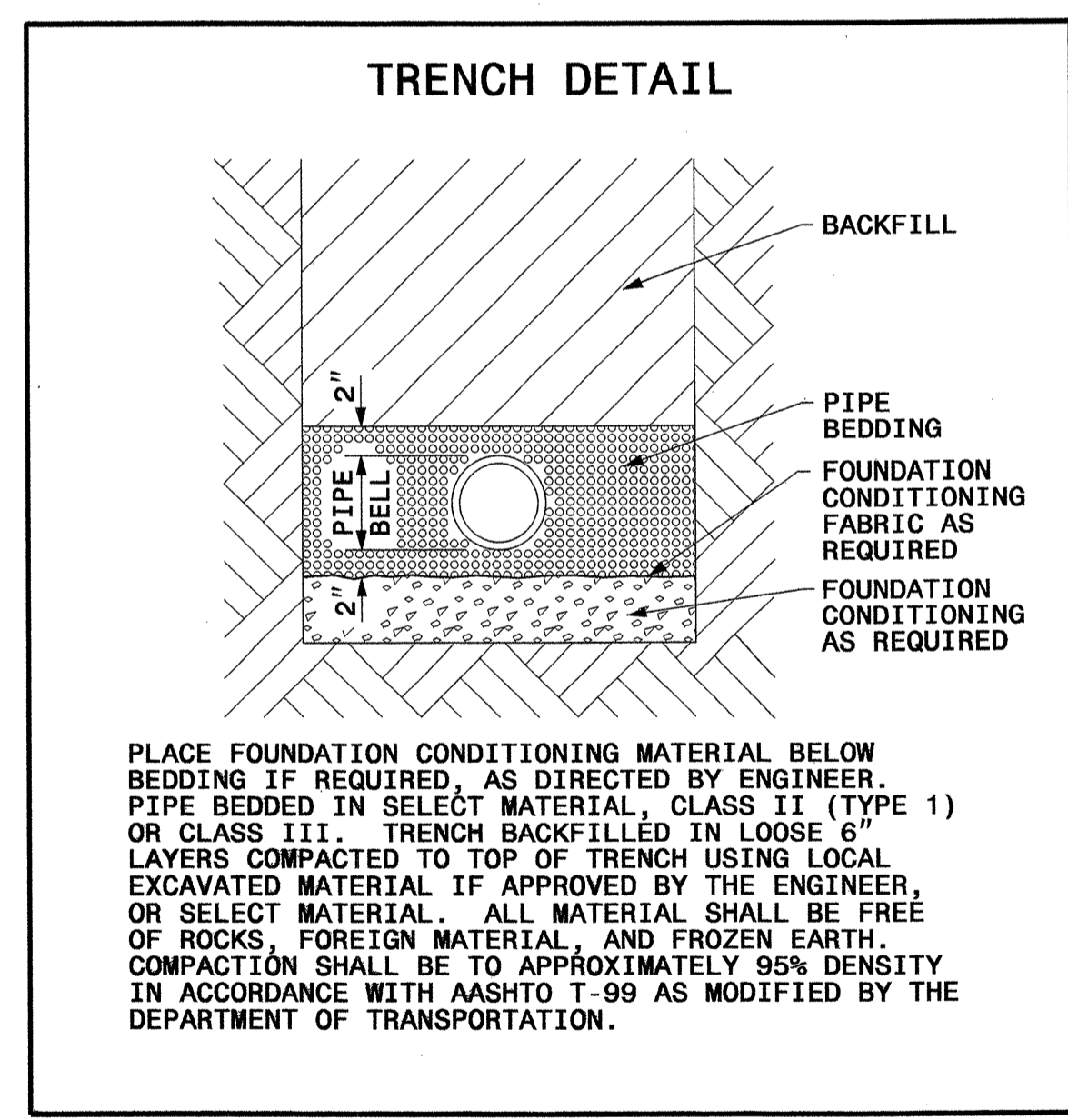
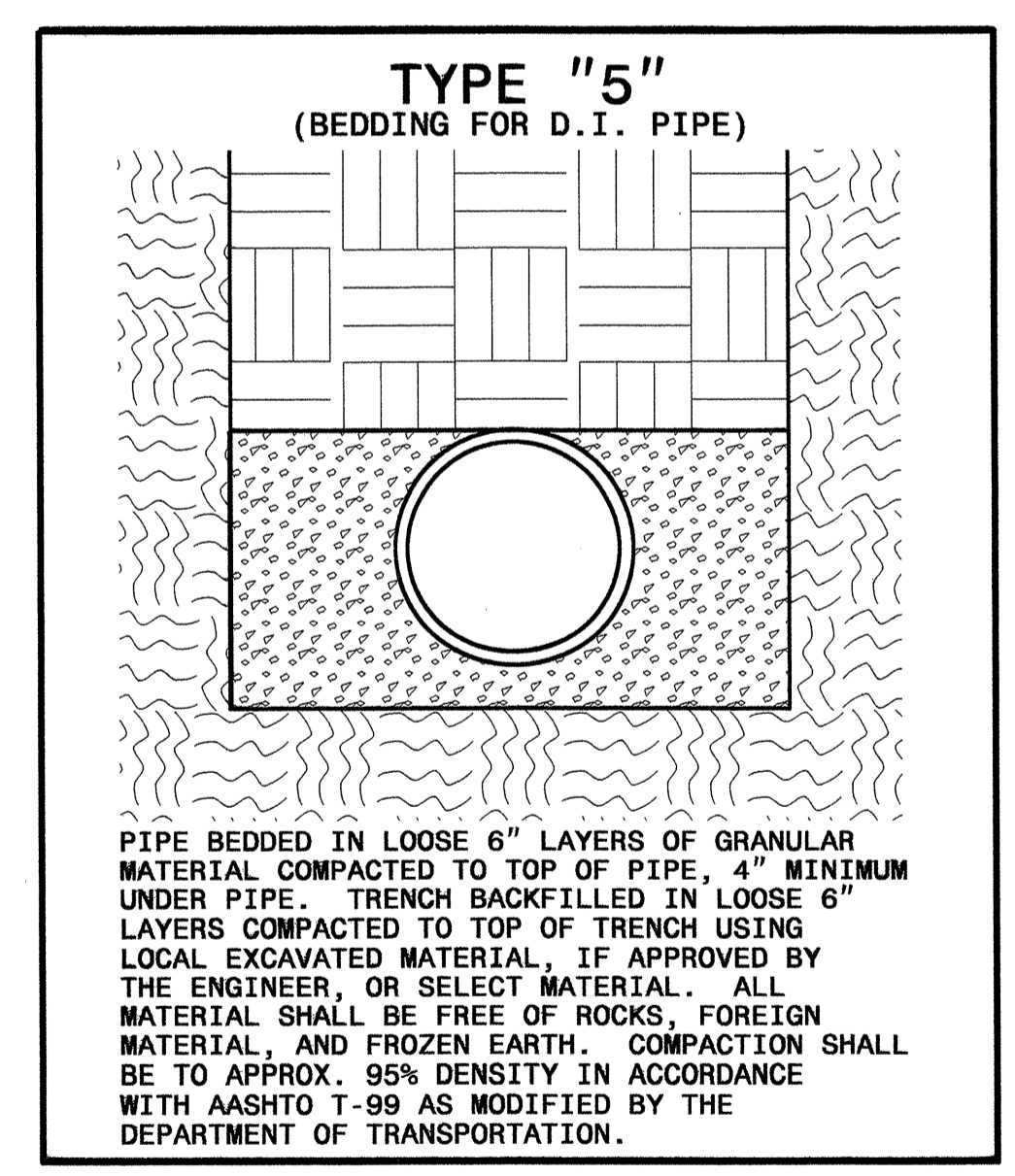
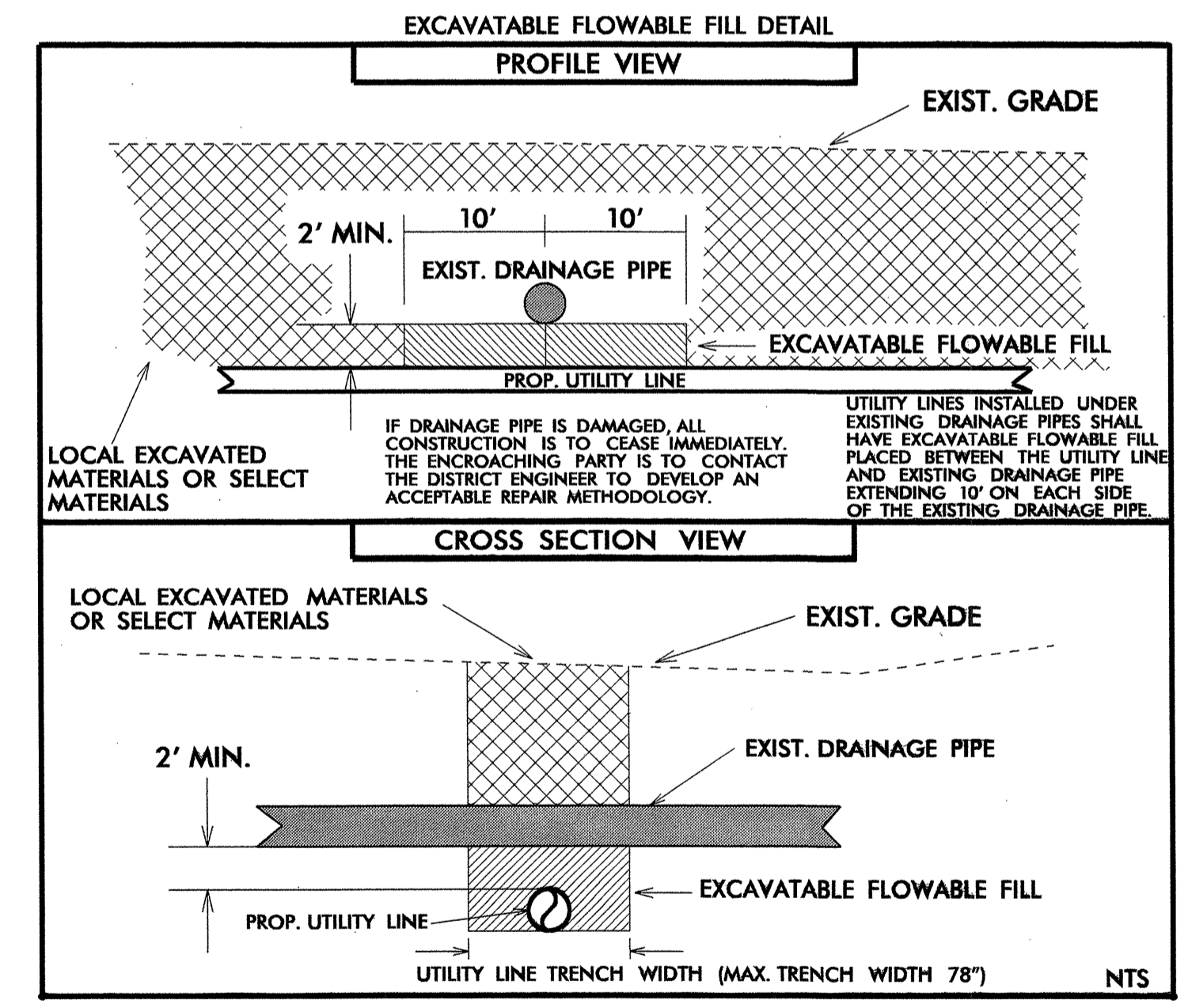
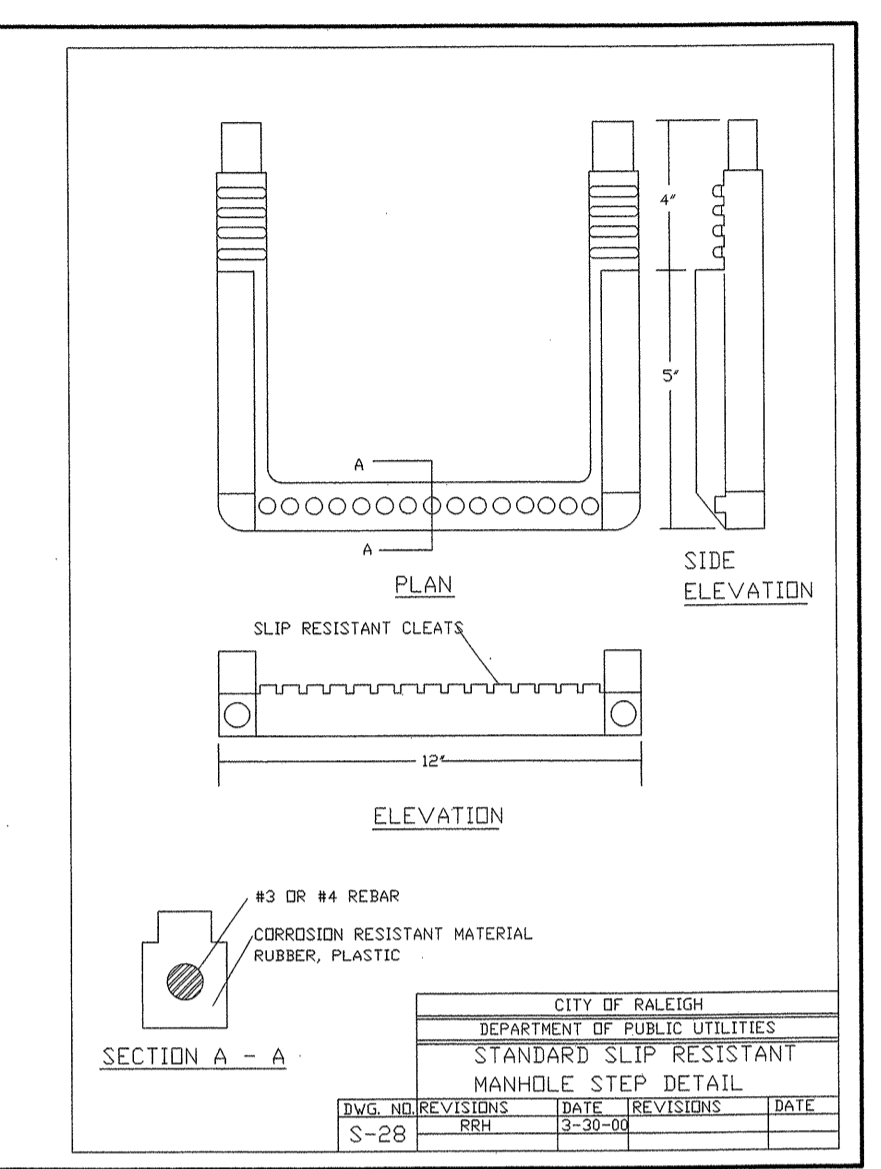
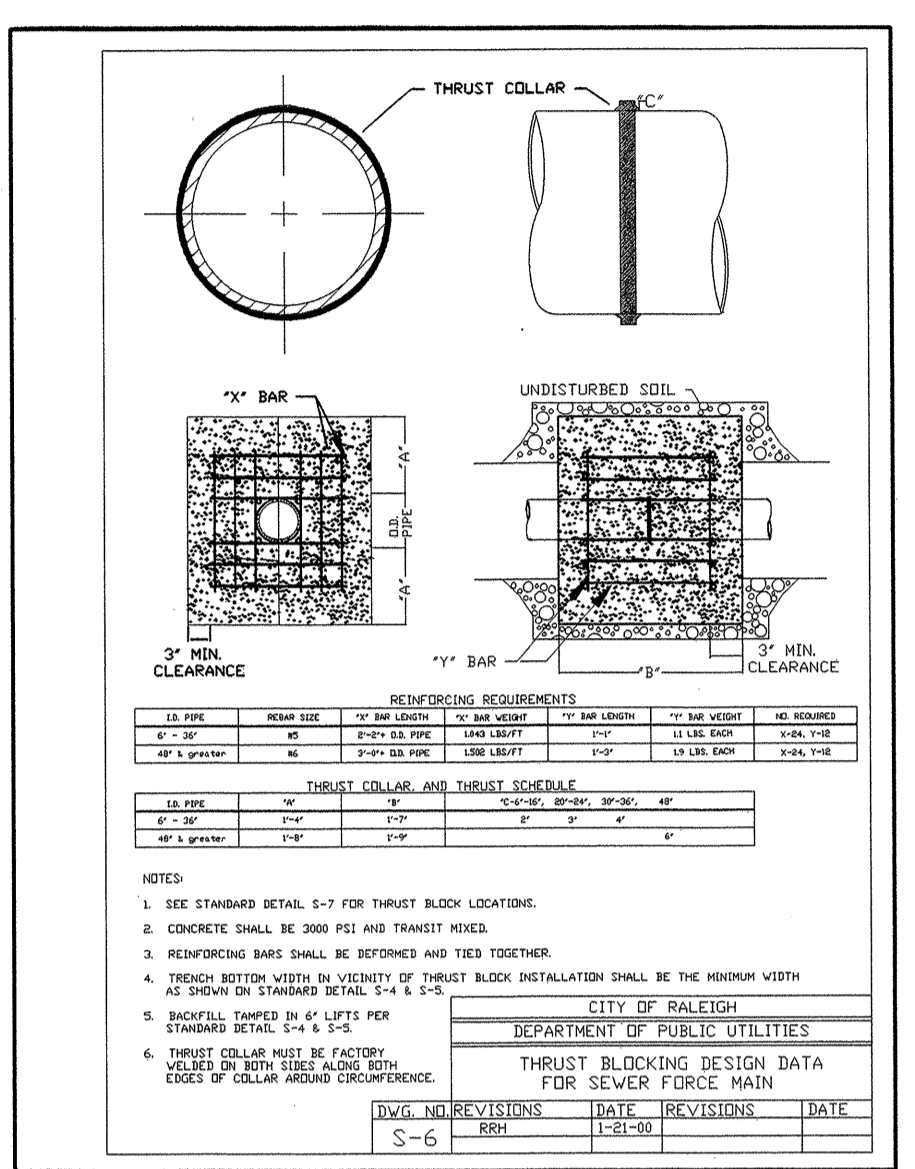
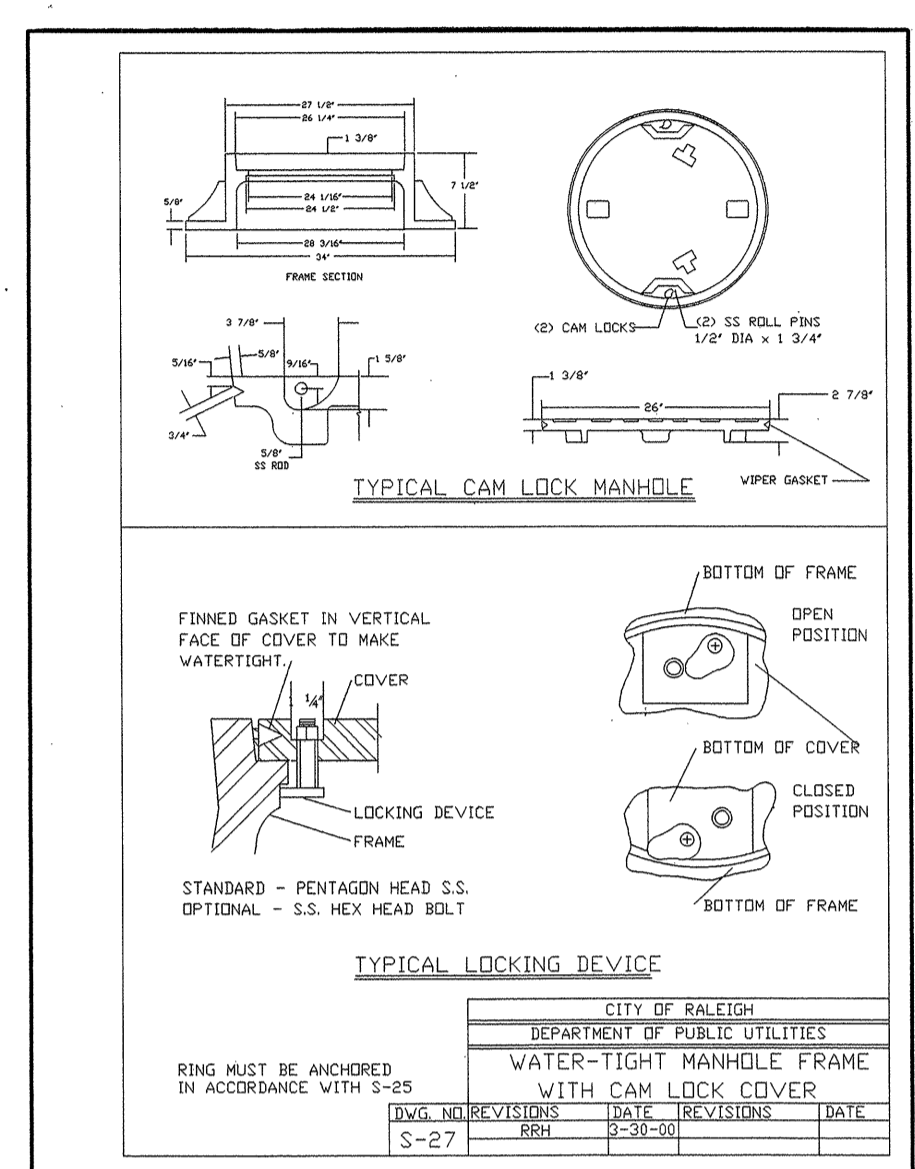
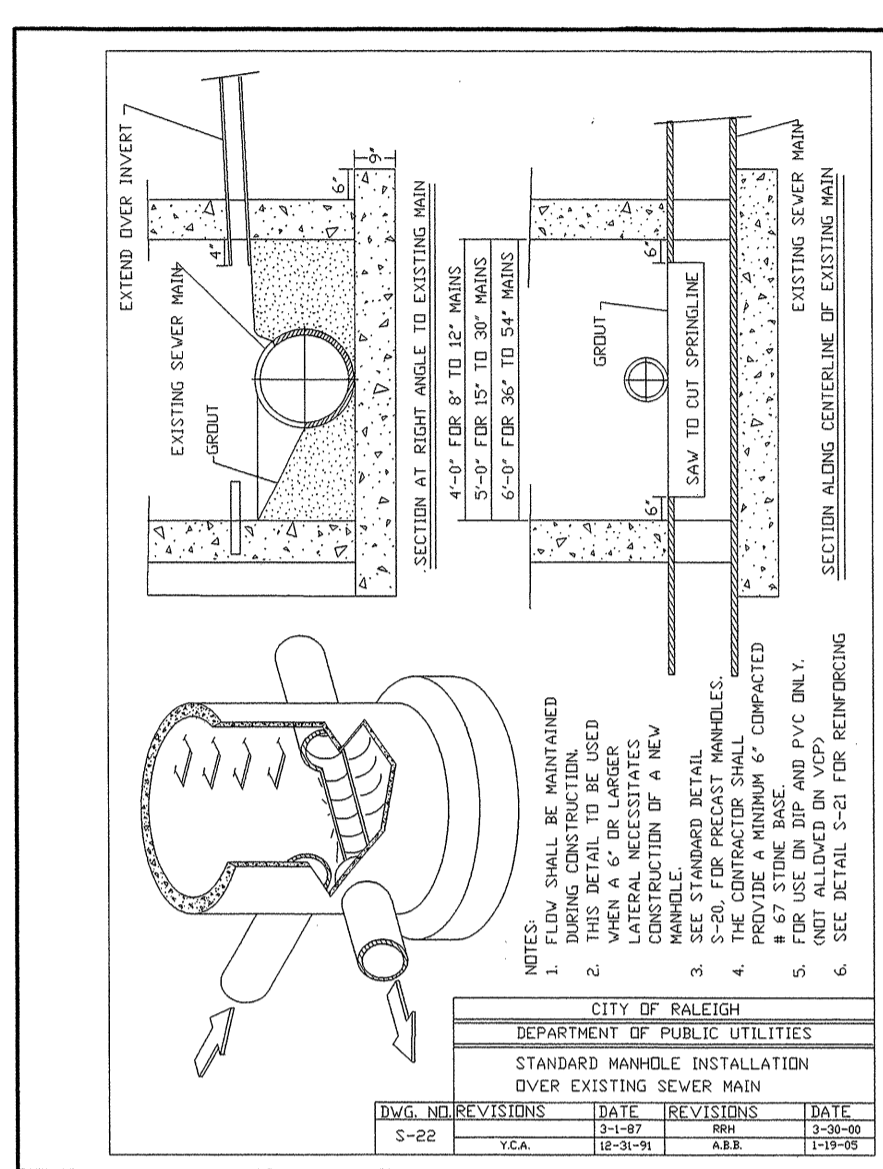
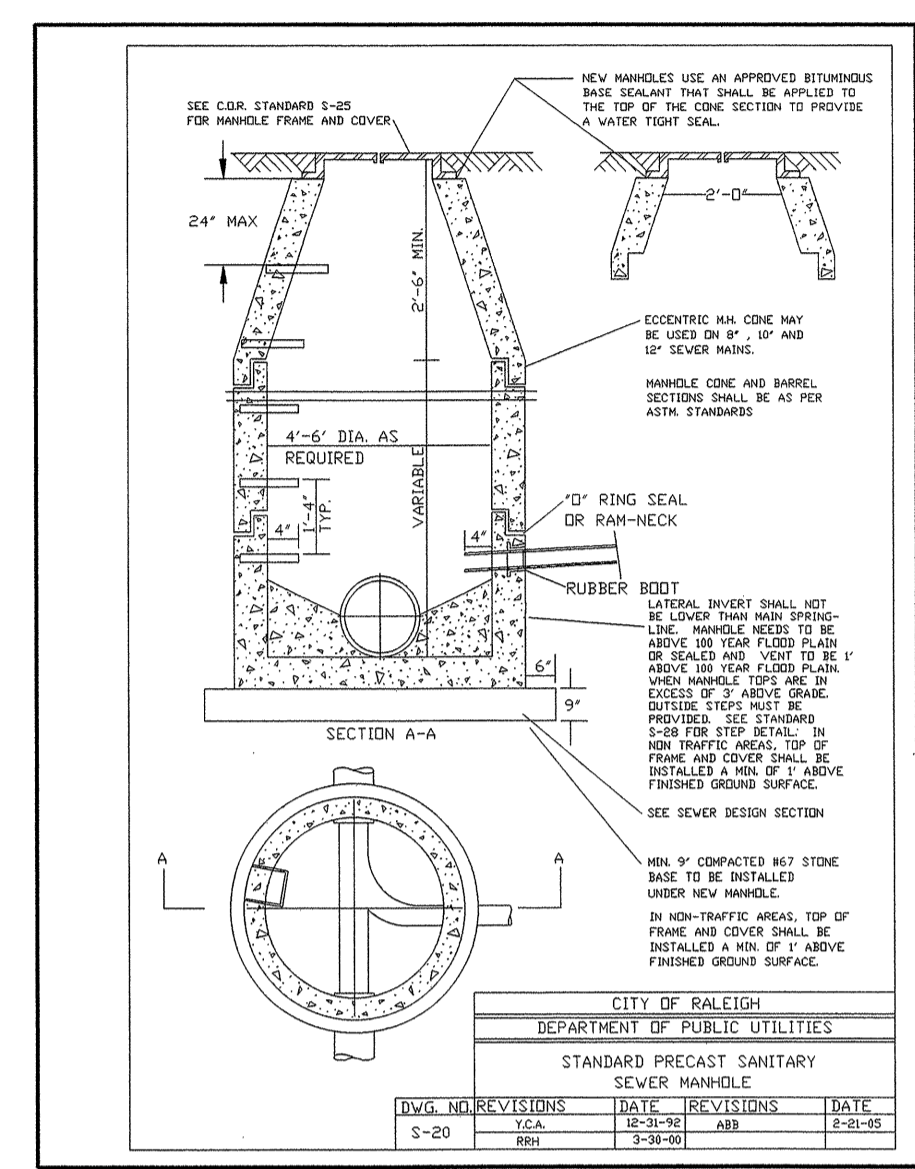
Failure to notify both City Departments in advance of beginning construction, will result in the issuance of monetary fines, and require reinstatement of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for inspection, install a Downstream Plug, have Permitted Plans on the Jobsite, or any other Violation of City of Raleigh Standards will result in a Fine and Possible Exclusion from future work in the City of Raleigh.

PAVEMENT REMOVAL  
 FOR -L- PROFILE, SEE SHEET NO. 34  
 FOR -Y3- PROFILE, SEE SHEET NO. 41

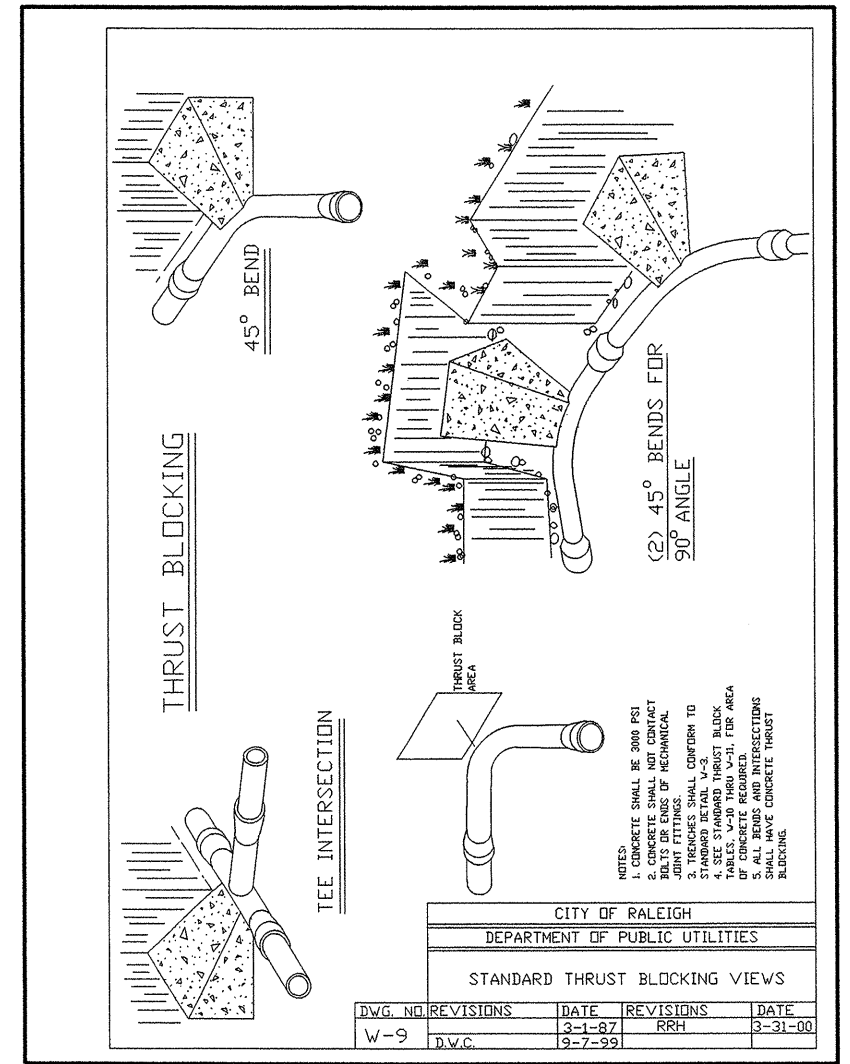
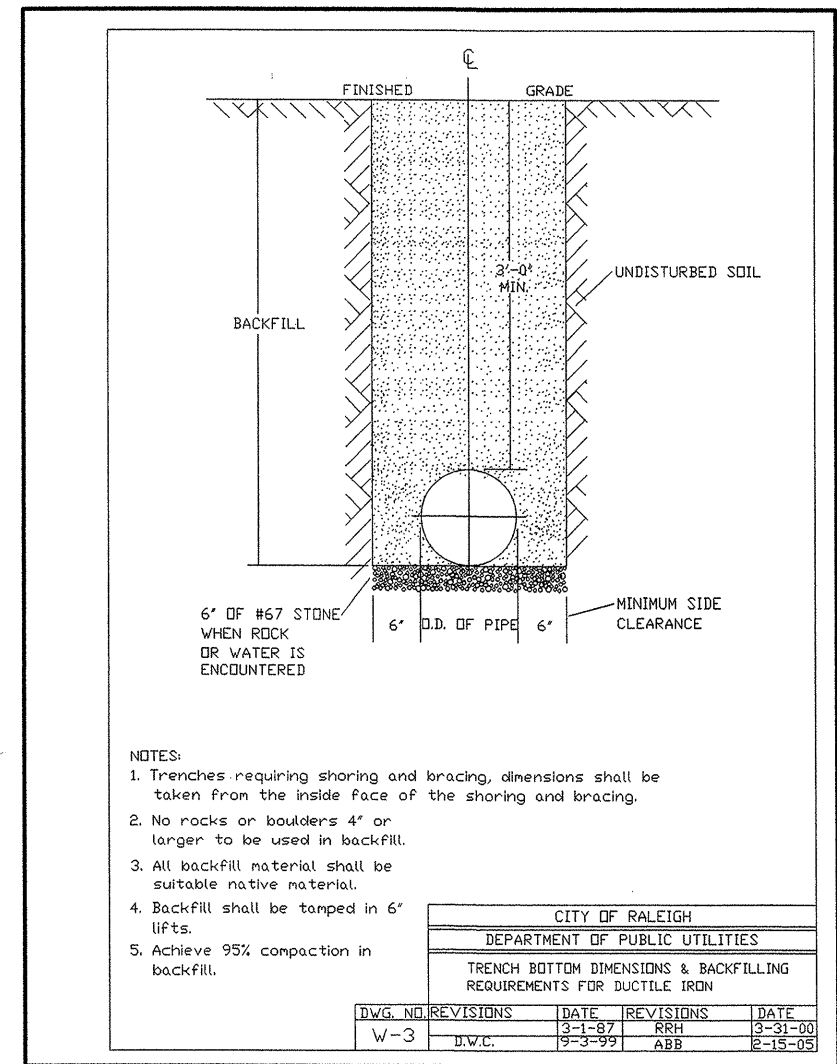
REVISIONS

NO.	DATE	DESCRIPTION



**SANITARY SEWER DETAILS (NTS)**

NO.	REVISIONS	DATE	BY

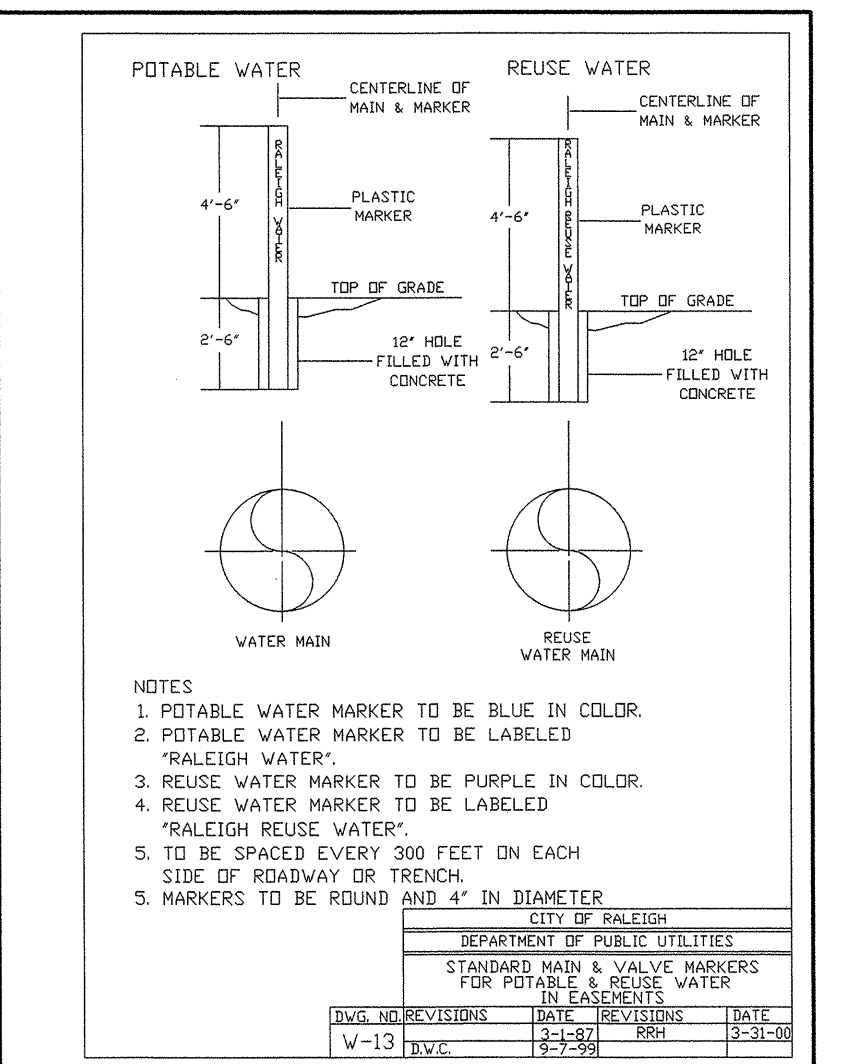
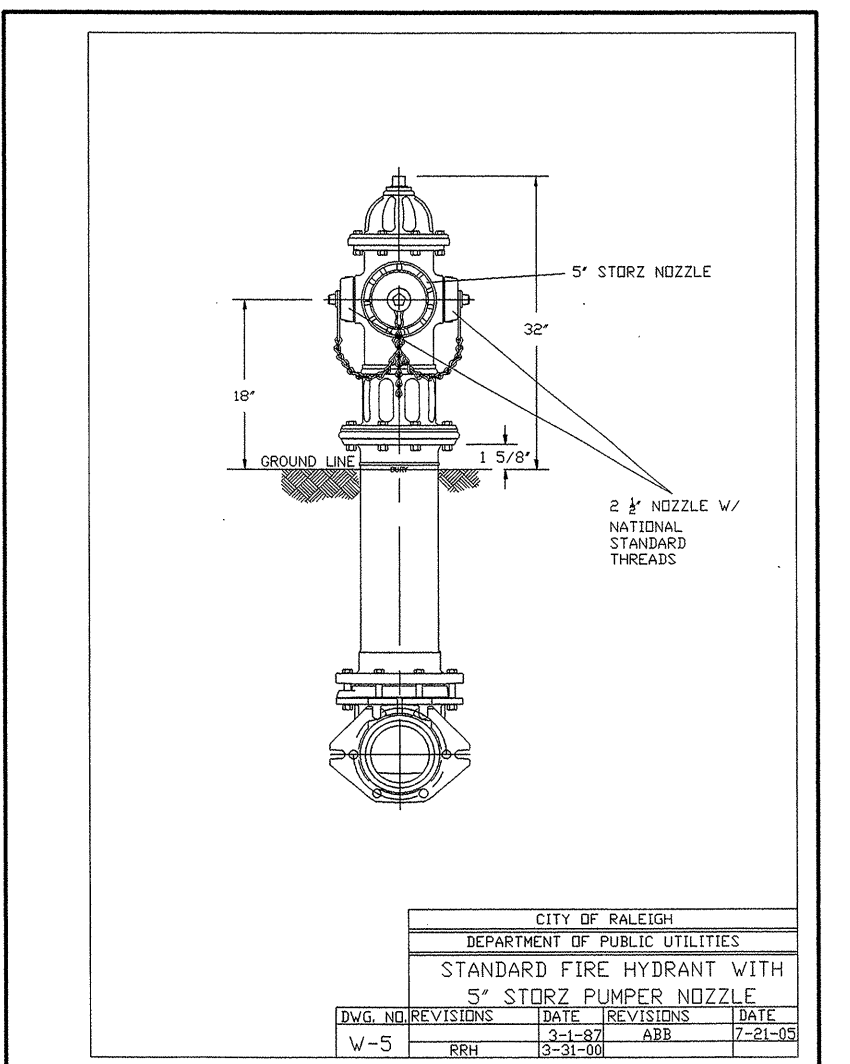
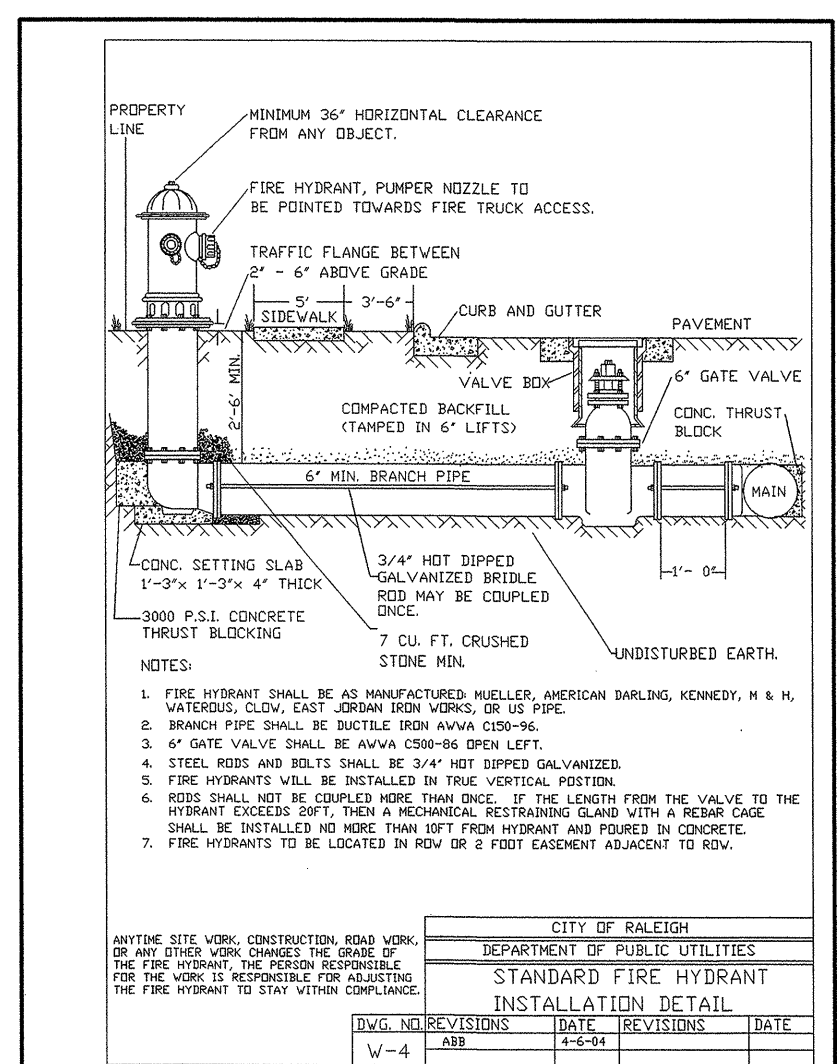


REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS  
 BASED ON TEST PRESSURE OF 200 P.S.I.  
 ALL MEAS. GIVEN IN SQUARE FEET.

SIZE AND BEND OF PIPE	STATIC THRUST IN POUNDS	WATER PRESSURE PER SQ. IN.	REACTION BEARING AREA FOR 45° BEND	REACTION BEARING AREA FOR 90° BEND
11 1/4"	1,088	1	1	1
12 1/2"	2,207	1	2	2
14"	4,288	2	3	3
16"	7,956	2	4	4
18"	14,255	2	5	5
20"	22,219	2	6	6
24"	40,213	2	8	8

**CITY OF RALEIGH**  
 DEPARTMENT OF PUBLIC UTILITIES  
 THRUST BLOCKING DESIGN QUANTITY TABLE

DWG. NO.	REVISIONS	DATE	BY
W-10		11-23-91	ARR

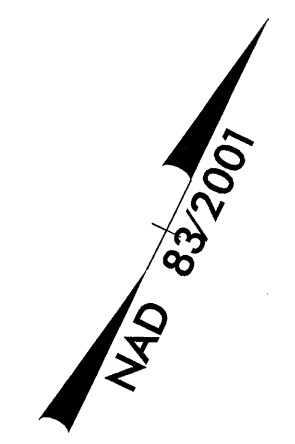


**WATER DETAILS  
 (NTS)**



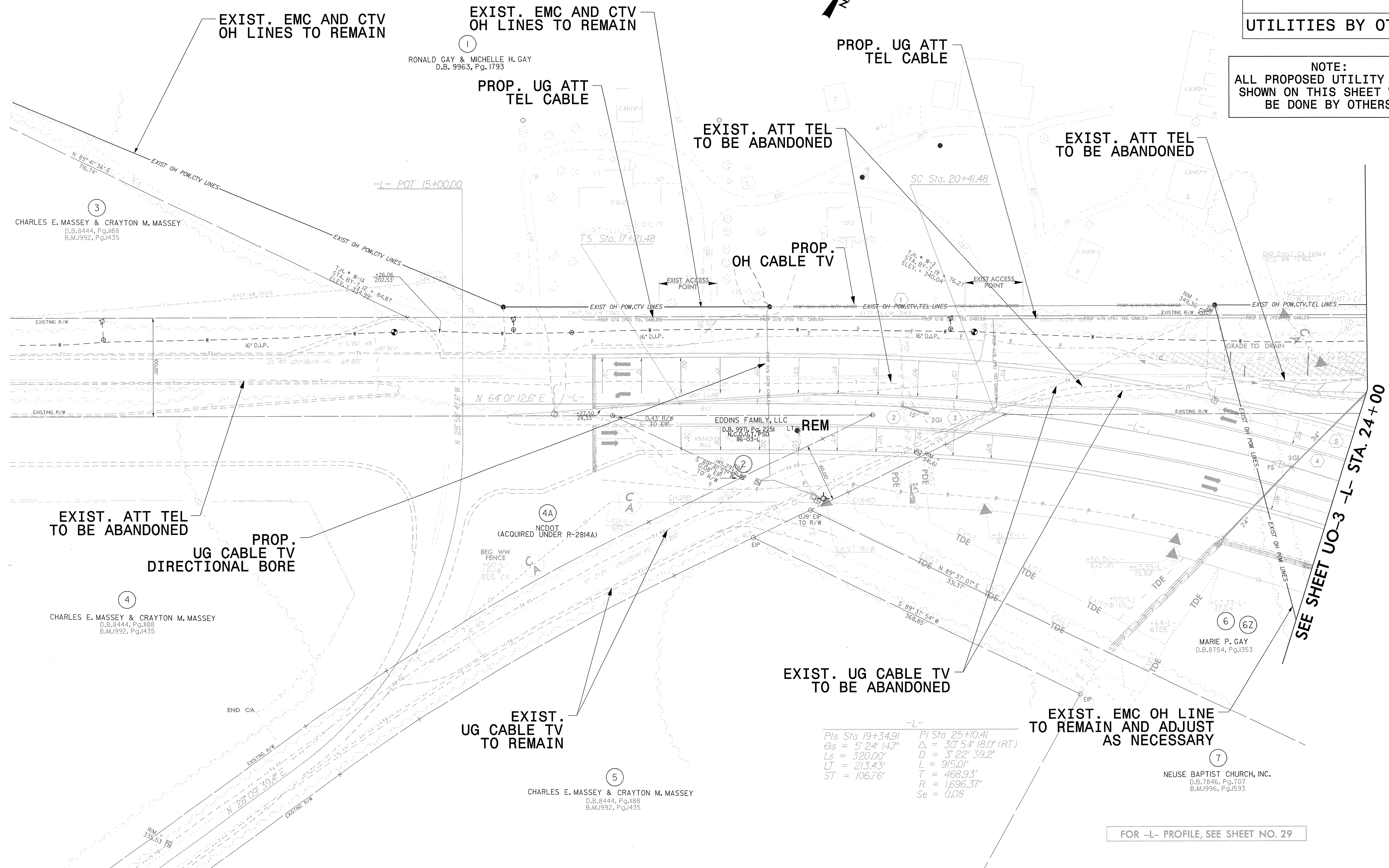
NOTE:  
ALL PROPOSED UTILITY WORK  
SHOWN ON THIS SHEET WILL  
BE DONE BY OTHERS

PAVEMENT REMOVAL



15

20



EXIST. EMC AND CTV  
OH LINES TO REMAIN

EXIST. EMC AND CTV  
OH LINES TO REMAIN

PROP. UG ATT  
TEL CABLE

EXIST. ATT TEL  
TO BE ABANDONED

EXIST. ATT TEL  
TO BE ABANDONED

3  
CHARLES E. MASSEY & CRAYTON M. MASSEY  
D.B.8444, Pg.1188  
B.M.1992, Pg.1435

1  
RONALD GAY & MICHELLE H. GAY  
D.B. 9963, Pg. 1793

PROP. UG ATT  
TEL CABLE

PROP. OH  
CABLE TV

EXIST. ATT TEL  
TO BE ABANDONED

PROP.  
UG CABLE TV  
DIRECTIONAL BORE

4  
CHARLES E. MASSEY & CRAYTON M. MASSEY  
D.B.8444, Pg.1188  
B.M.1992, Pg.1435

4A  
NCDOT  
(ACQUIRED UNDER R-2814A)

EXIST. UG CABLE TV  
TO BE ABANDONED

EXIST. UG CABLE TV  
TO REMAIN

5  
CHARLES E. MASSEY & CRAYTON M. MASSEY  
D.B.8444, Pg.1188  
B.M.1992, Pg.1435

EXIST. EMC OH LINE  
TO REMAIN AND ADJUST  
AS NECESSARY

7  
NEUSE BAPTIST CHURCH, INC.  
D.B.7846, Pg.707  
B.M.1996, Pg.1593

-L-  
Pis Sta 19+34.91    PI Sta 25+10.41  
Os = 5' 24' 14.7"    Δ = 30' 54' 18.0" (RT)  
Ls = 320.00'        D = 3' 22' 39.2"  
LT = 213.43'        L = 915.01'  
ST = 106.76'        T = 468.93'  
                        R = 1,696.37'  
                        Se = 0.08

FOR -L- PROFILE, SEE SHEET NO. 29

SEE SHEET UO-3 -L- STA. 24+00

REVISIONS

29-OCT-2010 16:02 UTILITY\_COORDINATION\Projects\NCDOT\Utility On-Cell Contr\AL LPA\2814B\Utility\2814B\_Utility\2814B\_rdy.psh\_U002.dgn



25

-L-		-YI-	
PI Sta 25+10.41	PIs Sta 30+63.25	PI Sta 19+41.84	
$\Delta = 30^{\circ} 54' 19.0''$ (RT)	$\Theta_s = 5^{\circ} 24' 14.7''$	$\Delta = 50^{\circ} 01' 41.2''$ (LT)	
$D = 3^{\circ} 22' 39.2''$	$L_s = 320.00'$	$D = 11^{\circ} 27' 53.0''$	
$L = 915.01'$	$LT = 213.43'$	$L = 436.58'$	
$T = 468.93'$	$ST = 106.76'$	$T = 233.30'$	
$R = 1,696.37'$		$R = 500.00'$	
$Se = 0.08$		$Se = 0.04$	

NAD 83/2001

PE TRANS. LINES (550KV)  
TO REMAIN

PAVEMENT REMOVAL

EXIST. ATT TEL  
TO BE ABANDONED

EXIST. EMC, CTV AND TEL  
OH LINES TO REMAIN

35

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

FOR -L- PROFILE, SEE SHEET NO. 29  
FOR -YI- PROFILE, SEE SHEET NO. 40

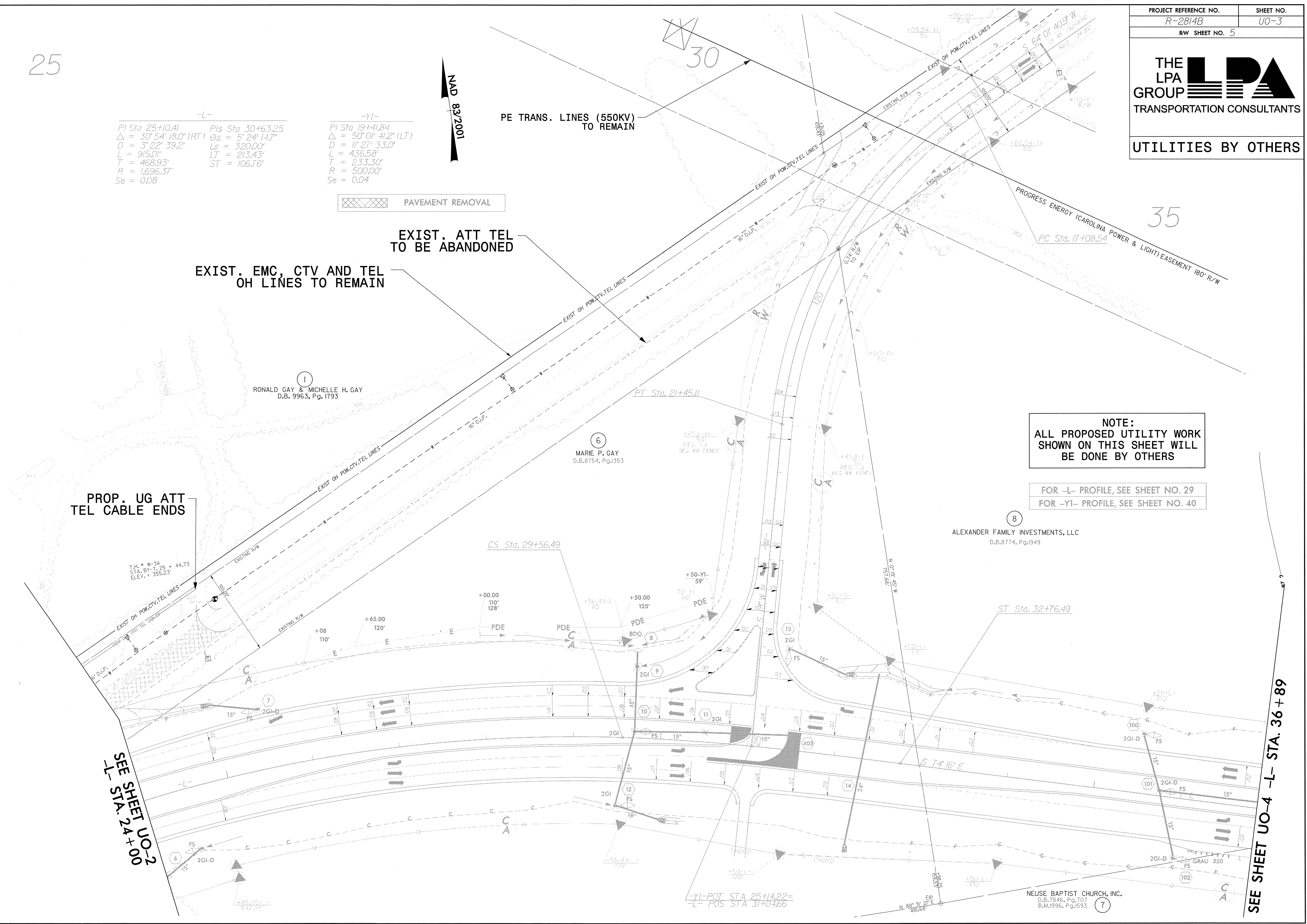
PROP. UG ATT  
TEL CABLE ENDS

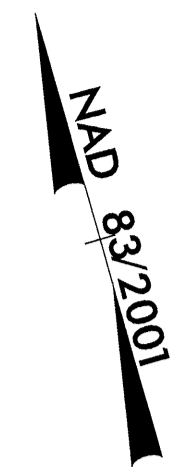
SEE SHEET UO-2  
-L- STA. 24+00

SEE SHEET UO-4 -L- STA. 36+89

REVISIONS

28-OCT-2010 16:02 (UTILITY COORDINATION)  
 C:\Projects\2814B\Utility\2814B\_Utility\2814B\_rdy\_psh\_U003.dgn  
 A:\PA30366





8  
ALEXANDER FAMILY INVESTMENTS, LLC  
D.B.8774, Pg.1949

PROGRESS ENERGY (CAROLINA POWER & LIGHT) EASEMENT 180' R/W

8  
ALEXANDER FAMILY INVESTMENTS, LLC  
D.B.8774, Pg.1949

8  
ALEXANDER FAMILY INVESTMENTS, LLC  
D.B.8774, Pg.1949

7  
NEUSE BAPTIST CHURCH, INC.  
D.B.7846, Pg.707  
B.M.1996, Pg.1593

PE TRANS. LINES (550KV) TO BE RAISED TO PROVIDE 40' VERTICAL CLEARANCE OVER PROPOSED ROAD

PIPE SHOULD NOT BE BURIED BELOW EXISTING GROUND ELEVATION AT INLET OR OUTLET END

FOR -L- PROFILE, SEE SHT NOS. 29 & 30

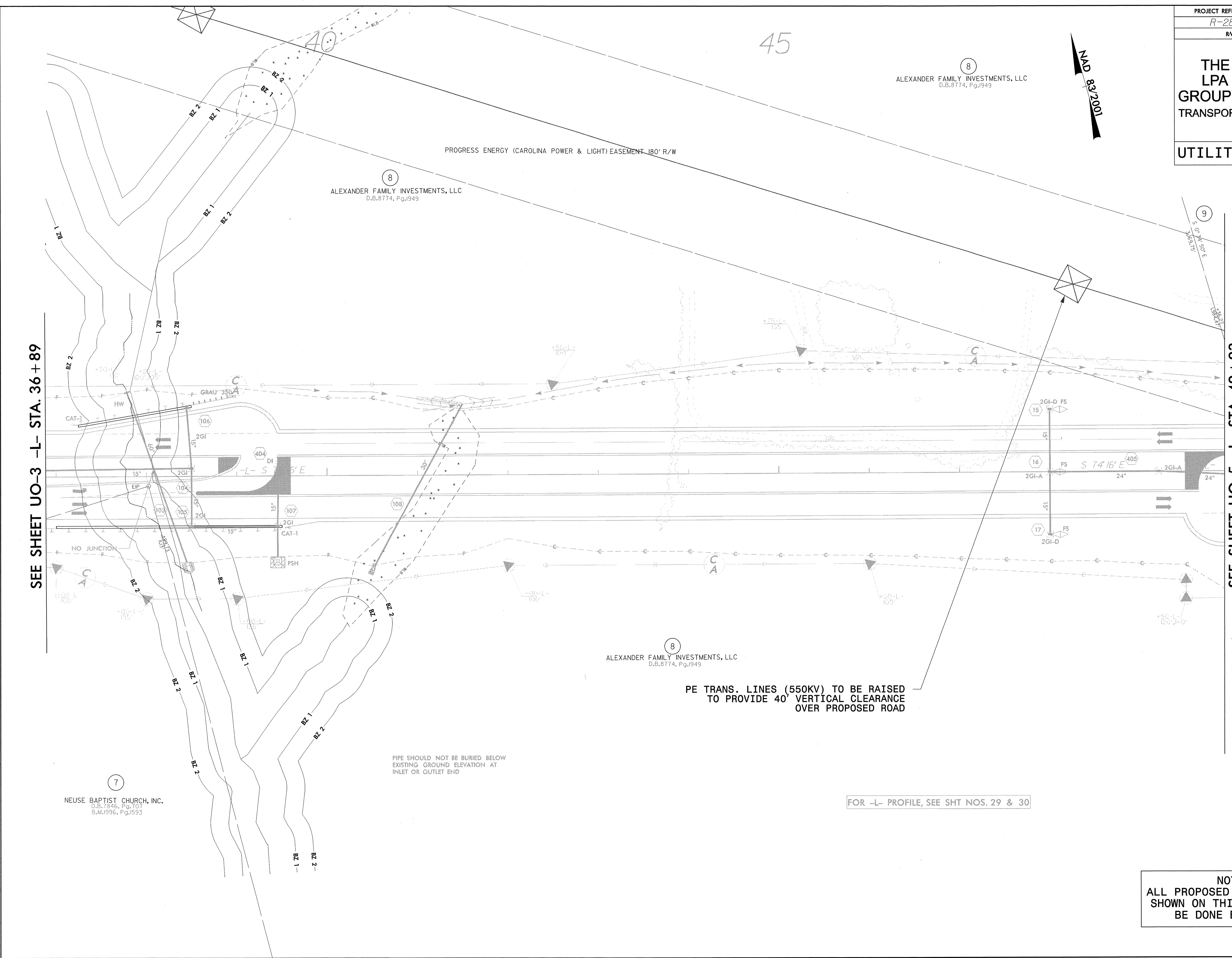
**NOTE:**  
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

SEE SHEET UO-3 -L- STA. 36+89

SEE SHEET UO-5 -L- STA. 49+93

REVISIONS

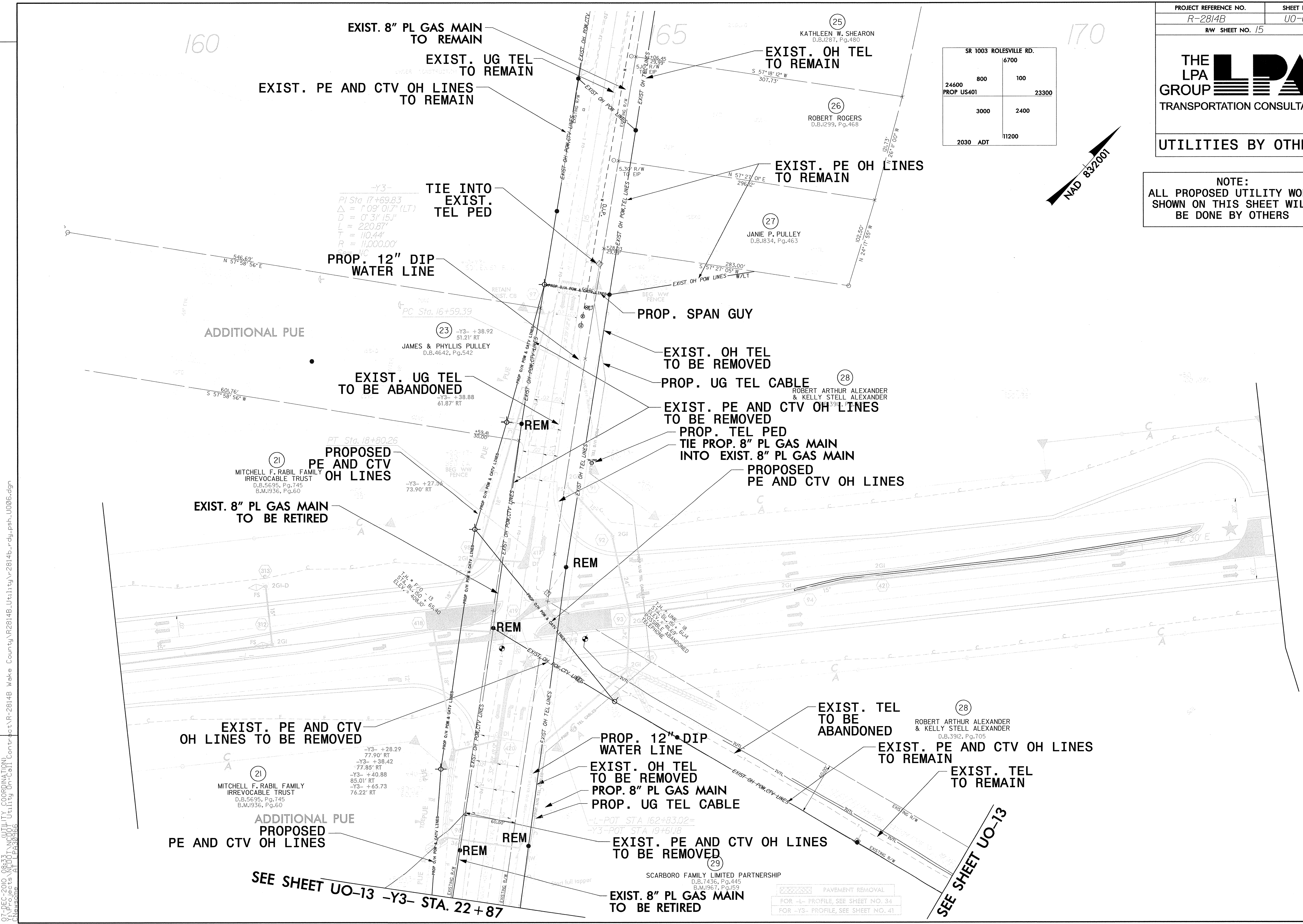
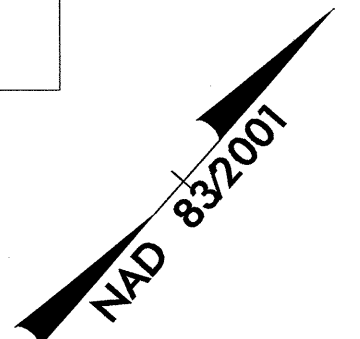
29-OCT-2010 16:02 UTILITY\_COORDINATION  
C:\Projects\NCDOT\Projects\Utility Dr-Cell\Constr-V-2814B\_Weke County\N2814B\_UTILITY\_V-2814B\_r-dj\_psh\_U004.dgn  
Newsome A1 11/16/2010





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

SR 1003 ROLESVILLE RD.	
24600	6700
PROP US401	23300
3000	2400
2030	11200



SEE SHEET UO-13 -Y3- STA. 22+87

SEE SHEET UO-13

PAVEMENT REMOVAL  
FOR -L- PROFILE, SEE SHEET NO. 34  
FOR -Y3- PROFILE, SEE SHEET NO. 41

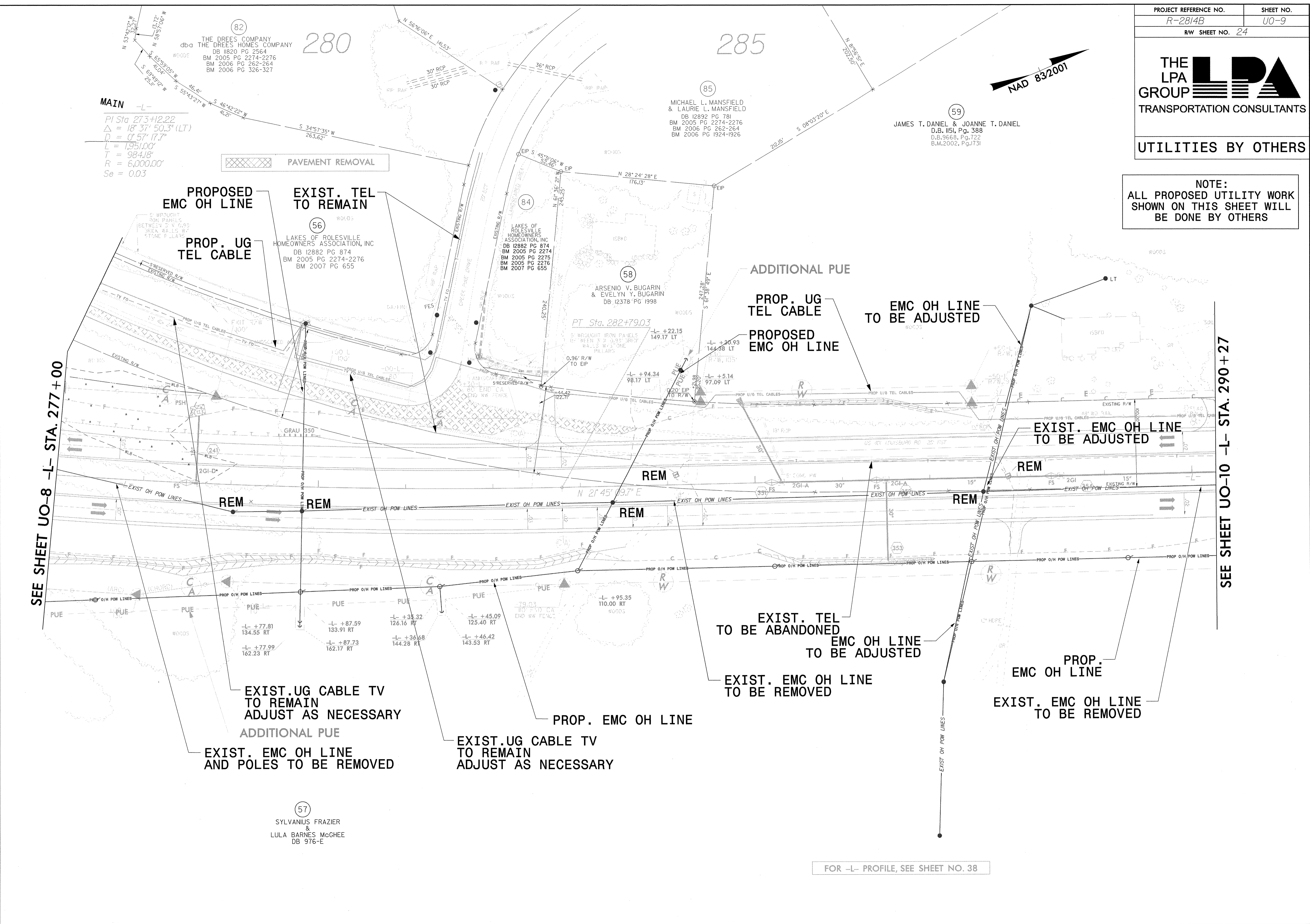
REVISIONS

07-DEC-2010 08:33 UTILITY COORDINATION  
Y:\Projects\NCDOT\Utility On-Call\Contract\R-2814B Wake County\R2814B-Utility\Ar2814b-rdy.psh\_U006.dgn  
Newsome AT LEA30566





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



**MAIN -L-**  
 PI Sta 273+12.22  
 $\Delta = 18^\circ 37' 50.3" (LT)$   
 $D = 0' 57' 17.7"$   
 $L = 1,951.00'$   
 $T = 984.18'$   
 $R = 6,000.00'$   
 $Se = 0.03$

PAVEMENT REMOVAL

**PROPOSED EMC OH LINE**

**PROP. UG TEL CABLE**

**EXIST. TEL TO REMAIN**

**EXIST. UG CABLE TV TO REMAIN ADJUST AS NECESSARY**

**ADDITIONAL PUE**

**PROP. UG TEL CABLE**

**PROPOSED EMC OH LINE**

**EMC OH LINE TO BE ADJUSTED**

**EXIST. EMC OH LINE TO BE ADJUSTED**

**EXIST. UG CABLE TV TO REMAIN ADJUST AS NECESSARY**

**EXIST. EMC OH LINE AND POLES TO BE REMOVED**

**PROP. EMC OH LINE**

**EXIST. UG CABLE TV TO REMAIN ADJUST AS NECESSARY**

**EXIST. TEL TO BE ABANDONED**

**EMC OH LINE TO BE ADJUSTED**

**EXIST. EMC OH LINE TO BE REMOVED**

**PROP. EMC OH LINE**

**EXIST. EMC OH LINE TO BE REMOVED**

SEE SHEET UO-8 -L- STA. 277+00

SEE SHEET UO-10 -L- STA. 290+27

REVISIONS

29-OCT-2010 16:03 UTILITY COORDINATION  
 C:\Projects\UO-9\UO-9.dwg Utility On-Call  
 Contractor: R-2814B Wake County NR2814B-Utility-2814B-rdy-psh-0009.dgn

FOR -L- PROFILE, SEE SHEET NO. 38

**57**  
 SYLVANIUS FRAZIER  
 &  
 LULA BARNES MCGHEE  
 DB 976-E

**82**  
 THE DREES COMPANY  
 dba THE DREES HOMES COMPANY  
 DB 11820 PG 2564  
 BM 2005 PG 2274-2276  
 BM 2006 PG 262-264  
 BM 2006 PG 326-327

**85**  
 MICHAEL L. MANSFIELD  
 & LAURIE L. MANSFIELD  
 DB 12892 PG 781  
 BM 2005 PG 2274-2276  
 BM 2006 PG 262-264  
 BM 2006 PG 1924-1926

**59**  
 JAMES T. DANIEL & JOANNE T. DANIEL  
 D.B. 1151, Pg. 388  
 D.B. 9668, Pg. 722  
 B.M. 2002, Pg. 1731

**56**  
 LAKES OF ROLESVILLE  
 HOMEOWNERS ASSOCIATION, INC  
 DB 12882 PG 874  
 BM 2005 PG 2274-2276  
 BM 2007 PG 655

**84**  
 LAKES OF ROLESVILLE  
 HOMEOWNERS ASSOCIATION, INC  
 DB 12882 PG 874  
 BM 2005 PG 2274-2276  
 BM 2005 PG 2275  
 BM 2005 PG 2276  
 BM 2007 PG 655

**58**  
 ARSENIO V. BUGARIN  
 & EVELYN Y. BUGARIN  
 DB 12378 PG 1998

**59**  
 SYLVANIUS FRAZIER  
 &  
 LULA BARNES MCGHEE  
 DB 976-E

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

59  
JAMES T. DANIEL & JOANNE T. DANIEL  
D.B. 1151, Pg. 388  
D.B. 9668, Pg. 722  
B.M. 2002, Pg. 1731

64  
A.L. CARTER & HENRY H. CARTER  
D.B. 1984, Pg. 363  
B.M. 1924, Pg. 87

62  
JEFFREY C. AUSTIN  
D.B. 1028, Pg. 2498  
B.M. 1992, Pg. 617

60  
SYLVESTER M. PURYEAR & LOVIE B. PEARCE  
D.B. 9668, Pg. 731  
B.M. 2002, Pg. 1731

66  
A.L. CARTER & HENRY H. CARTER  
D.B. 1984, Pg. 363  
B.M. 1924, Pg. 87

63  
KENNETH ALLE JONES & LEIGH GAY JONES  
D.B. 6723, Pg. 582  
B.M. 1986, Pg. 1650

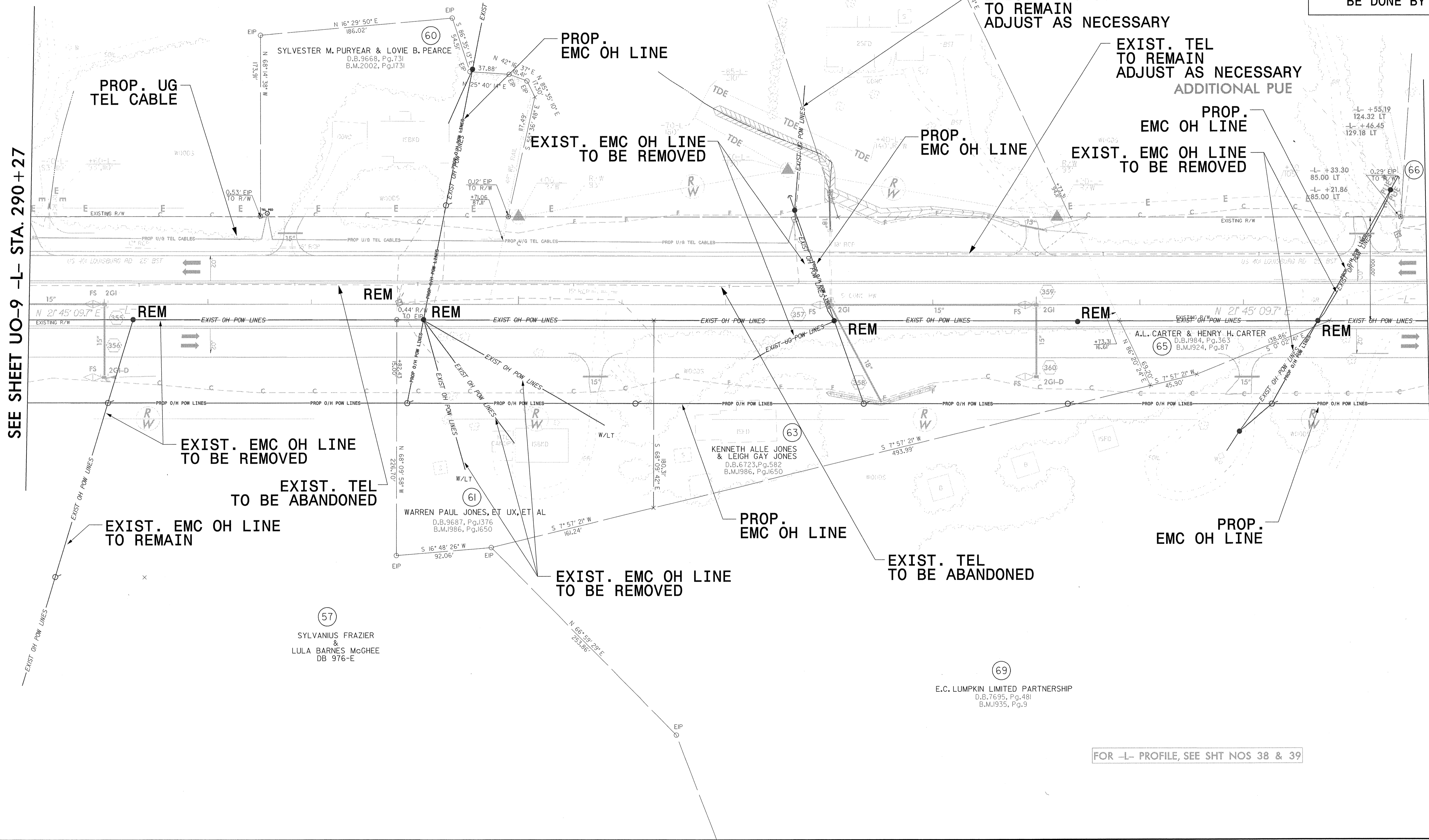
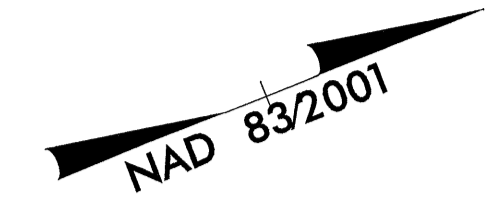
61  
WARREN PAUL JONES, ET UX, ET AL  
D.B. 9687, Pg. 1376  
B.M. 1986, Pg. 1650

57  
SYLVANIUS FRAZIER & LULA BARNES McCHEE  
DB 976-E

69  
E.C. LUMPKIN LIMITED PARTNERSHIP  
D.B. 7695, Pg. 481  
B.M. 1935, Pg. 9

SEE SHEET UO-9 -L- STA. 290+27

SEE SHEET UO-11 -L- STA. 303+78



FOR -L- PROFILE, SEE SHT NOS 38 & 39

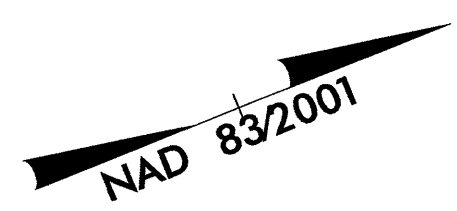
REVISIONS

29-OCT-2010 16:03 C:\UTILITY\_COORDINATION\Projects\NC001\NC001\_Utility On-Call\_Contract\UO-2814B\_Utilities\UO10.dgn  
 C:\Newsome\A1\PA30365



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

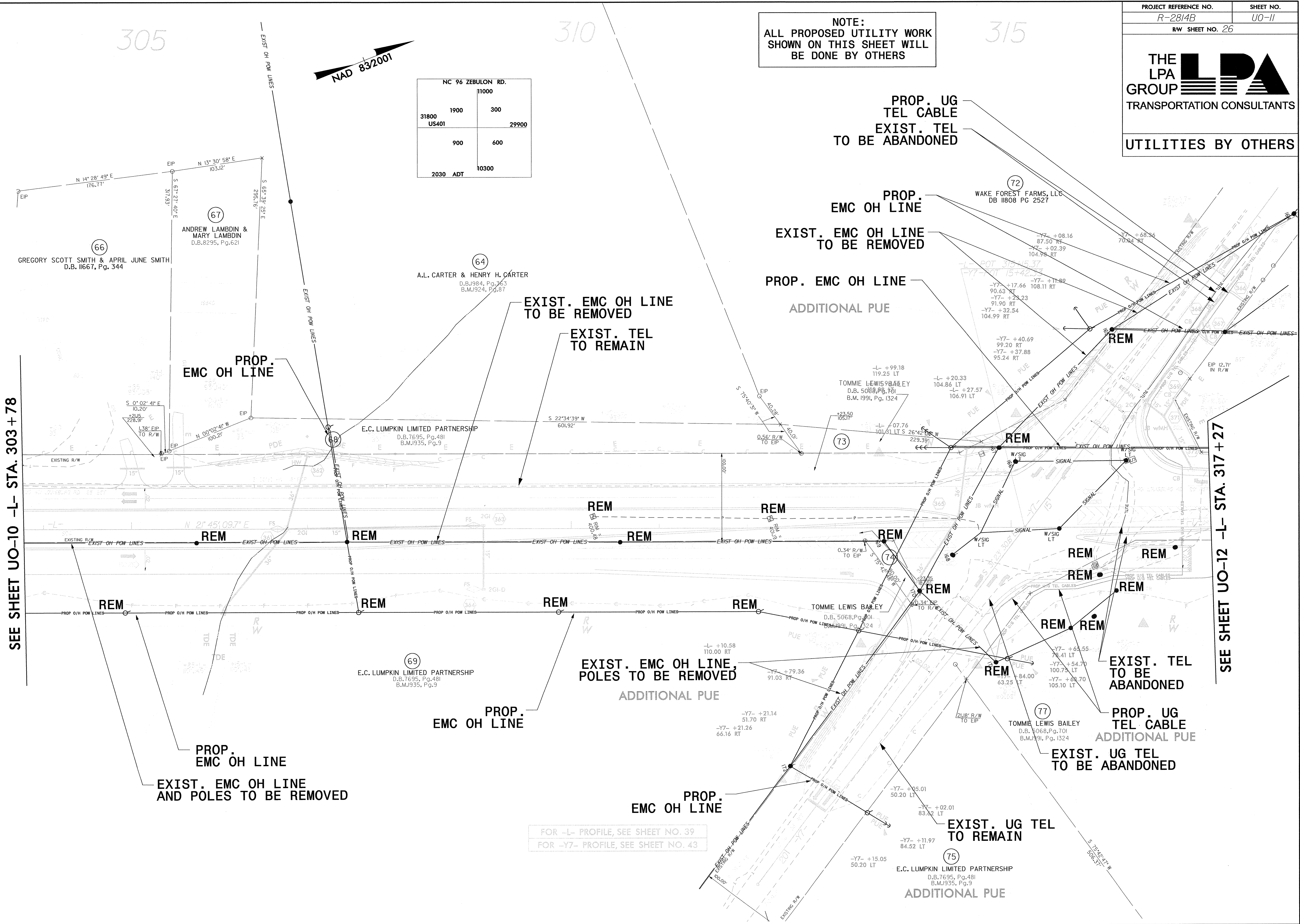
NC 96 ZEBULON RD.		11000	
31800	1900	300	
US401		29900	
	900	600	
2030	ADT	10300	



SEE SHEET UO-10 -L- STA. 303 + 78

SEE SHEET UO-12 -L- STA. 317 + 27

21-DEC-2010 17:07 UTILITY COORDINATION  
 Y:\Projects\NC001\UO01\Utility On-Cell\Contract\UO-2814B\Utility\UO11.dgn  
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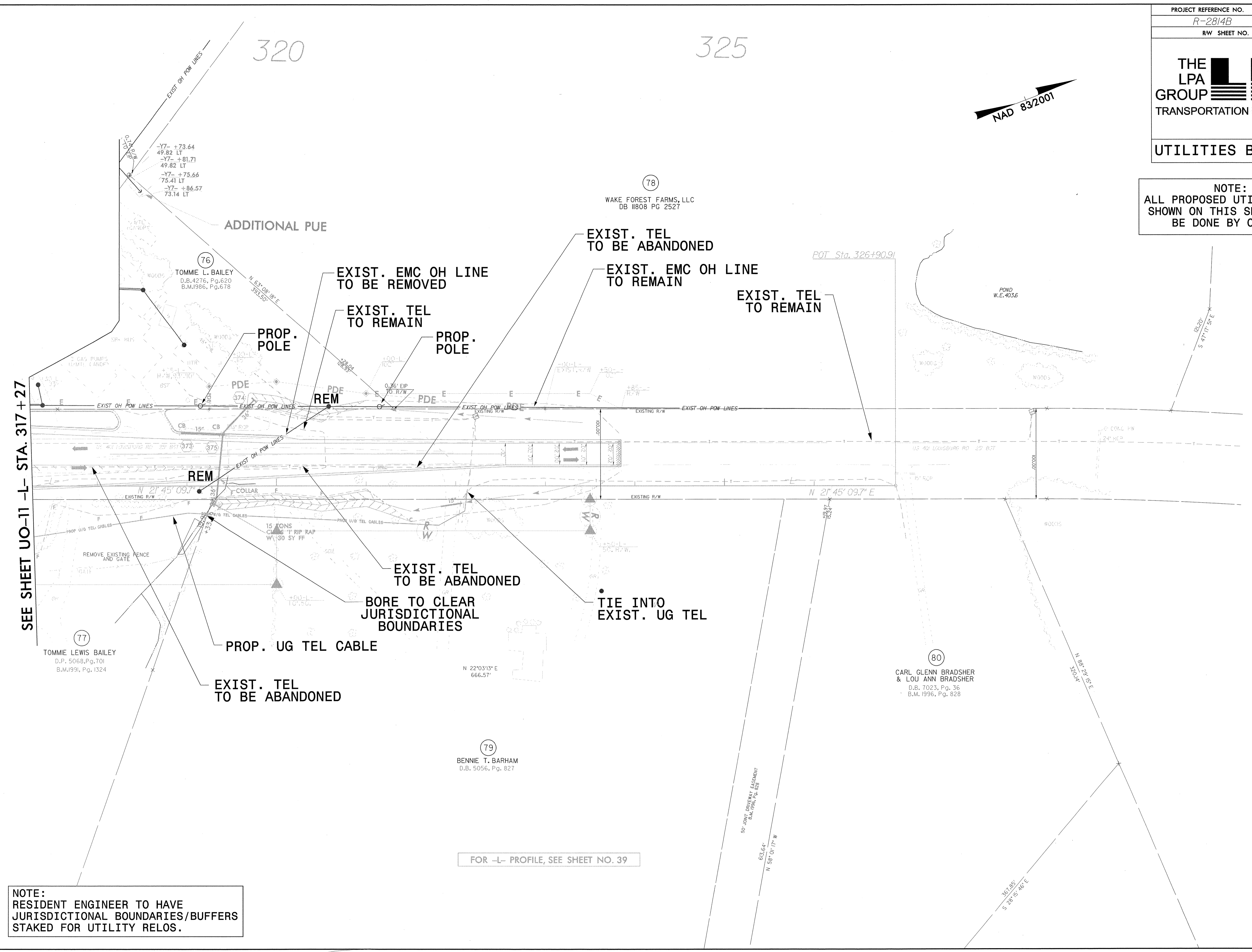


FOR -L- PROFILE, SEE SHEET NO. 39  
 FOR -Y7- PROFILE, SEE SHEET NO. 43

REVISIONS

**UTILITIES BY OTHERS**

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



REVISIONS

SEE SHEET UO-11 -L- STA. 317 + 27

FOR -L- PROFILE, SEE SHEET NO. 39

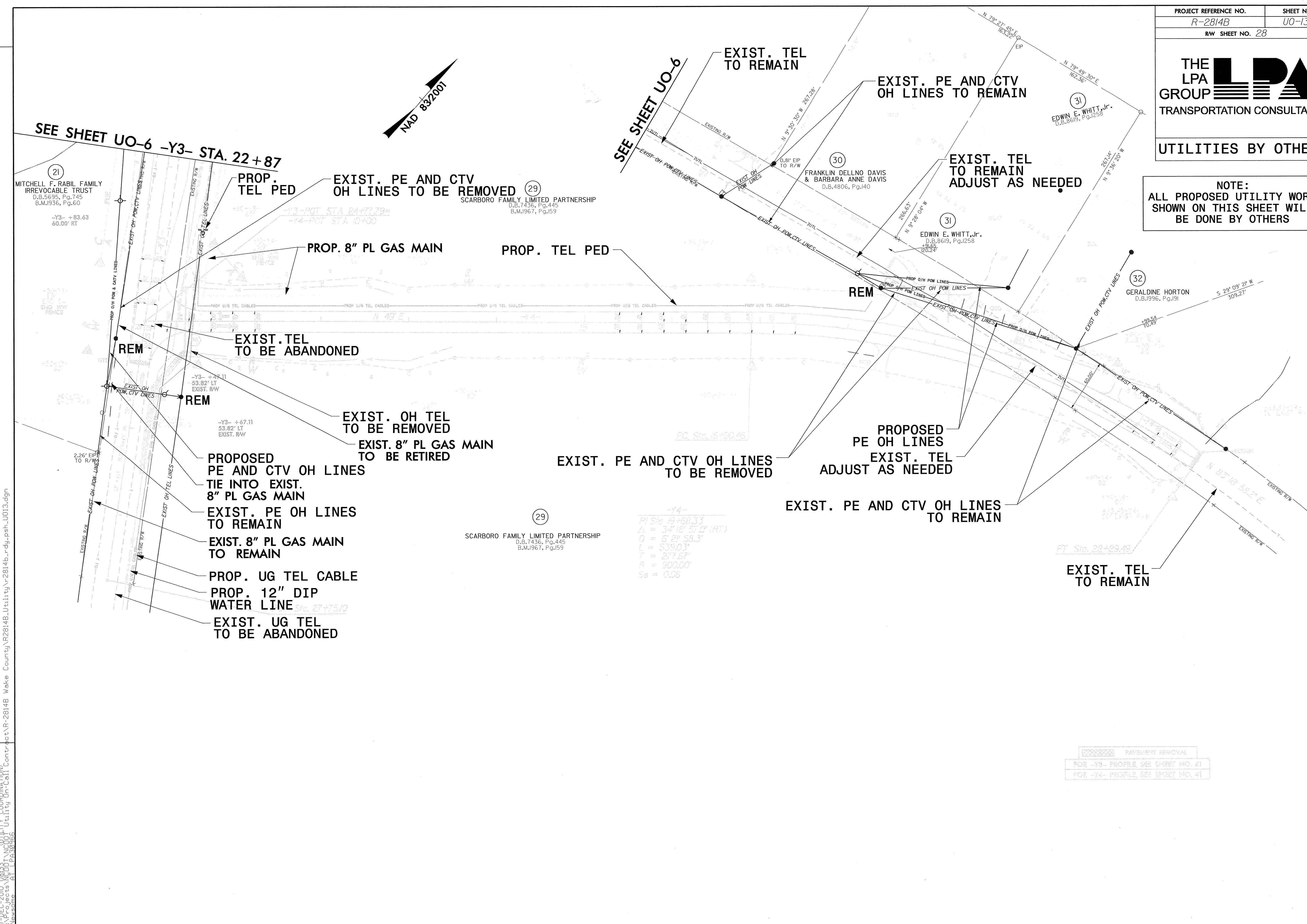
**NOTE:**  
RESIDENT ENGINEER TO HAVE JURISDICTIONAL BOUNDARIES/BUFFERS STAKED FOR UTILITY RELOS.

29-OCT-2010 16:03 (UTILITY COORDINATION)  
X:\Projects\2814B\U0-12\Utility On-Cell Contract\R-2814B-Utility\U012.dgn  
Checked by: [Signature]



**UTILITIES BY OTHERS**

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



SEE SHEET UO-6 -Y3- STA. 22+87

SEE SHEET UO-6

REVISIONS

07-DEC-2010 08:53 UTILITY COORDINATION  
 C:\Projects\W001\W001 Utility On-Cell\Contract\R-2814B Wake County\R2814B\_Utilities\Y-2814b\_rdy\_psh\_U013.dgn  
 LPA\2814B

- PROPOSED PE AND CTV OH LINES TIE INTO EXIST. 8" PL GAS MAIN
- EXIST. PE OH LINES TO REMAIN
- EXIST. 8" PL GAS MAIN TO REMAIN
- PROP. UG TEL CABLE
- PROP. 12" DIP WATER LINE
- EXIST. UG TEL TO BE ABANDONED

(29)  
SCARBORO FAMILY LIMITED PARTNERSHIP  
D.B.7436, Pg.445  
B.M.967, Pg.159

-Y4-  
PI Sta. 19+68.33  
Δ = 34° 18' 51.0" (RT)  
D = 6' 21" 55.3"  
L = 539.03'  
T = 277.87'  
R = 900.00'  
Ss = 0.06

XXXXXXXXXX PAVEMENT REMOVAL  
FOR -Y3- PROFILE, SEE SHEET NO. 41  
FOR -Y4- PROFILE, SEE SHEET NO. 41