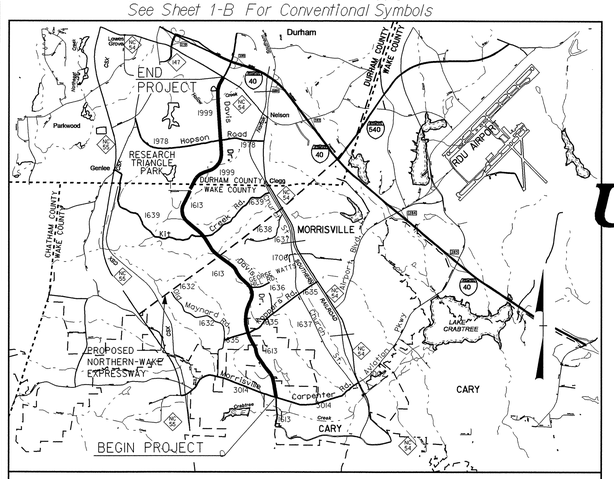
CONTRACT: C200868 TIP PROJECT:U-4026

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

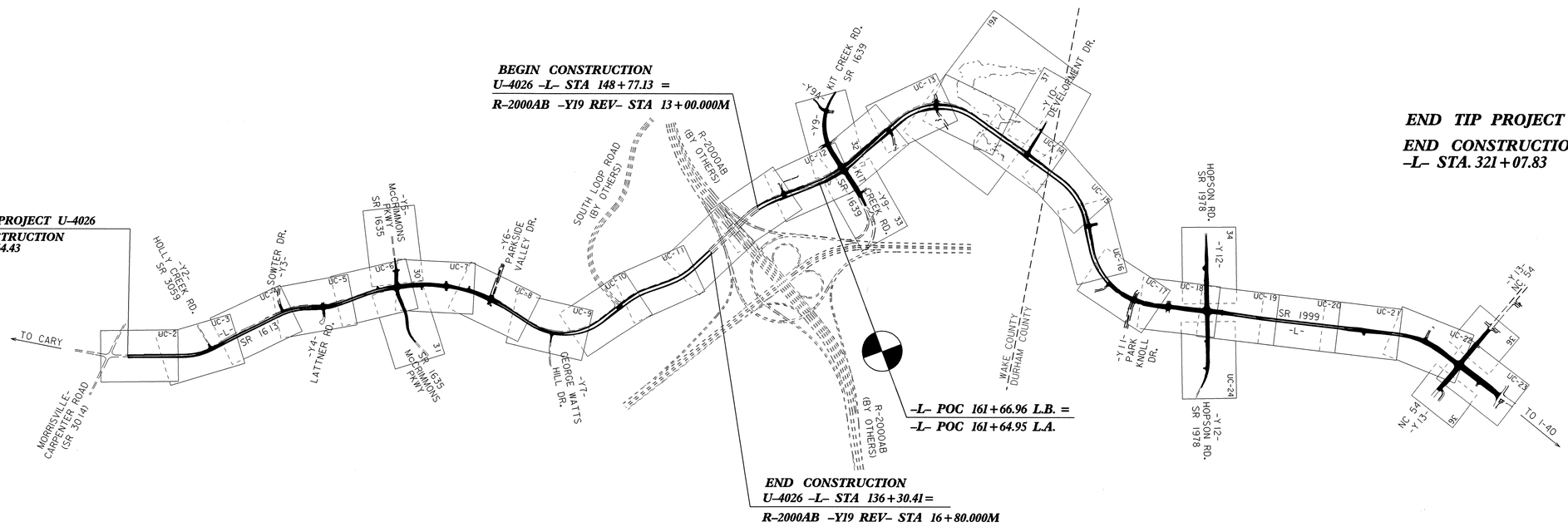
T.I.P. NO.	SHEET NO.
U–4026	UC–1

UTILITY CONSTRUCTION PLANS
WAKE–DURHAM COUNTIES

LOCATION: DAVIS DRIVE (SR 1613/1999) FROM 390' NORTH OF MORRISVILLE–CARPENTER ROAD (SR 3014) TO NC 54

TYPE OF WORK: RELOCATION OF WATER AND SEWER LINES

NC GRID NAD 83



2006 STANDARD SPECIFICATION FOR ROADS AND STRUCTURES
ALL PIPE 4" AND LARGER WILL BE DI, PC 350

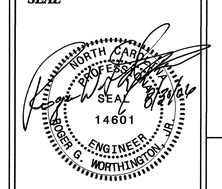
INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UC–1	TITLE SHEET
UC–2 THRU UC–24	UTILITY CONSTRUCTION PLAN SHEETS
UC–25 THRU UC–29	PROFILE SHEET(S)
UC–30 THRU UC–31	DETAILS SHEET(S)
UC–32 THRU UC–36	GRAVITY SEWER

WATER AND SEWER OWNERS ON THE PROJECT

(1) WATER: (TOWN OF CARY)
(2) WATER: (CITY OF DURHAM)
(3) GRAVITY SEWER: (TOWN OF CARY)
(4) FORCE MAIN: (TOWN OF CARY)
(5) FORCE MAIN: (DURHAM COUNTY)
(6) GRAVITY SEWER: (DURHAM COUNTY)

SEAL



PREPARED IN THE OFFICE OF:
DIVISION OF HIGHWAYS
PROJECT SERVICES
UTILITY SECTION
1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 250-4128
FAX (919) 250-4119

Roger Worthington, P.E. UTILITIES SECTION ENGINEER
Ali Koucheki UTILITIES PROJECT DESIGNER

REVISIONS
6/23/04 CHANGED PARCEL NO's 1, 2 & 3.

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-2
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: RGW	
APPROVED BY: RGW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DESIGN SERVICES UNIT PHONE:(919)250-4128 FAX:(919)250-4119	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 14601 ENGINEER ROGER G. NORTHINGTON, JR.

UTILITY CONSTRUCTION

NAD 83 / NC GRID

WATER LINE OWNED BY TOWN OF CARY

2-RELOCATE EXISTING ¾" WATER METER
1-RELOCATE EXISTING FIRE HYDRANT

KAMAL ALI MANSOUR
DB 3241 PG 525

GROVER O. & PEGGY H. LEWTER
DB 2511 PG 206

WILLIAM M. & GALE D. YEAGER
DB 2545 PG 30

WETLANDS DO NOT DISTURB

FUTURE PROJECT BY OTHERS

BY-202 PINC 8+60.76
-L- STA. 11+52.19
(304.900' LT.)

BEGIN TIP PROJECT U-4026
-L- PT STA.13+64.43 =
PROJECT TOC 99-040
-L- PT STA.220+71.66

-L- STA.13+64.43
BEGIN 200' TAPER
LT.TURN LANE,SB

-L- STA.15+64.43
END 200' TAPER
LT.TURN LANE,SB

IDA WILLIAMS MILLS
DB 2577 PG 346

DANNY E. & PATRICIA R. BLACKBURN
DB 5190 PG 302

BILLY H. & WILMA SAULS
DB 2878 PG 466

SPECIAL DITCH GRADE (SEE PROFILES)

CLASS "B" RIP RAP
EST 2 TONS
EST 7 SY FF

2' BASE TAIL DITCH
EST 16 CY DDE
SEE DITCH DETAIL A

SLOPE STAKE LINE

PROP. 1'-6" C&G

SR 1613 DAVIS DR BST

J. T. HOBBY & SON INC.
DB 1230 PG 354

LEE MOORE OIL COMPANY
DB 4088 PG 495

THE FIRE HYDRANTS AT THESE LOCATIONS WILL BE RELOCATED BY OTHERS

JAMES L. MICHAEL, ET UX
DB 2926 PG 604

KEP MORRISVILLE REALTY, LLC.
DB 8328 PG 807

BL-2 PINC 28+77.37
GPS U-4026-2
-L- STA. 20+04.74
(18.185' RT.)

LEE-MOORE OIL COMPANY
DB 4160 PG 409

CLARENCE B. & PEGGY C. RIDOUT
DB 3005 PG 926

BY-204 PINC 16+85.75

-MATCHLINE- STA. 22+00.00 SEE SHEET NO. UC-3

-L-
PI Sta 11+83.85
Δ = 5° 25' 17.3" (LT)
D = 1° 30' 00.0"
L = 361.43'
T = 180.85'
R = 3,819.72'
SE = 0.024 FT/FT
RUNOFF = 188.0 FT

NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6' MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEET 2-H & 2-I
FOR -L- PROFILE, SEE SHEET 38

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2000-26" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 765141.403(ft) EASTING: 2040233.344(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991540
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2000-26" TO -L- STATION 13+64.43 IS S 23°09'22.0" E ; 12,375.43'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

LEGEND

PAVED SHOULDER

24-MAY-2006 07:53
r:\proj\u4026p04_uc_2.dgn
$$$$USERNAME$$$$

PS228334 5/24/2006 u4026p04_uc_2 AKOUCHEKI PS-Oce34dtbond

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-3

DESIGNED BY: ARK
DRAWN BY: ARK
CHECKED BY: RGW
APPROVED BY: RGW
REVISED:

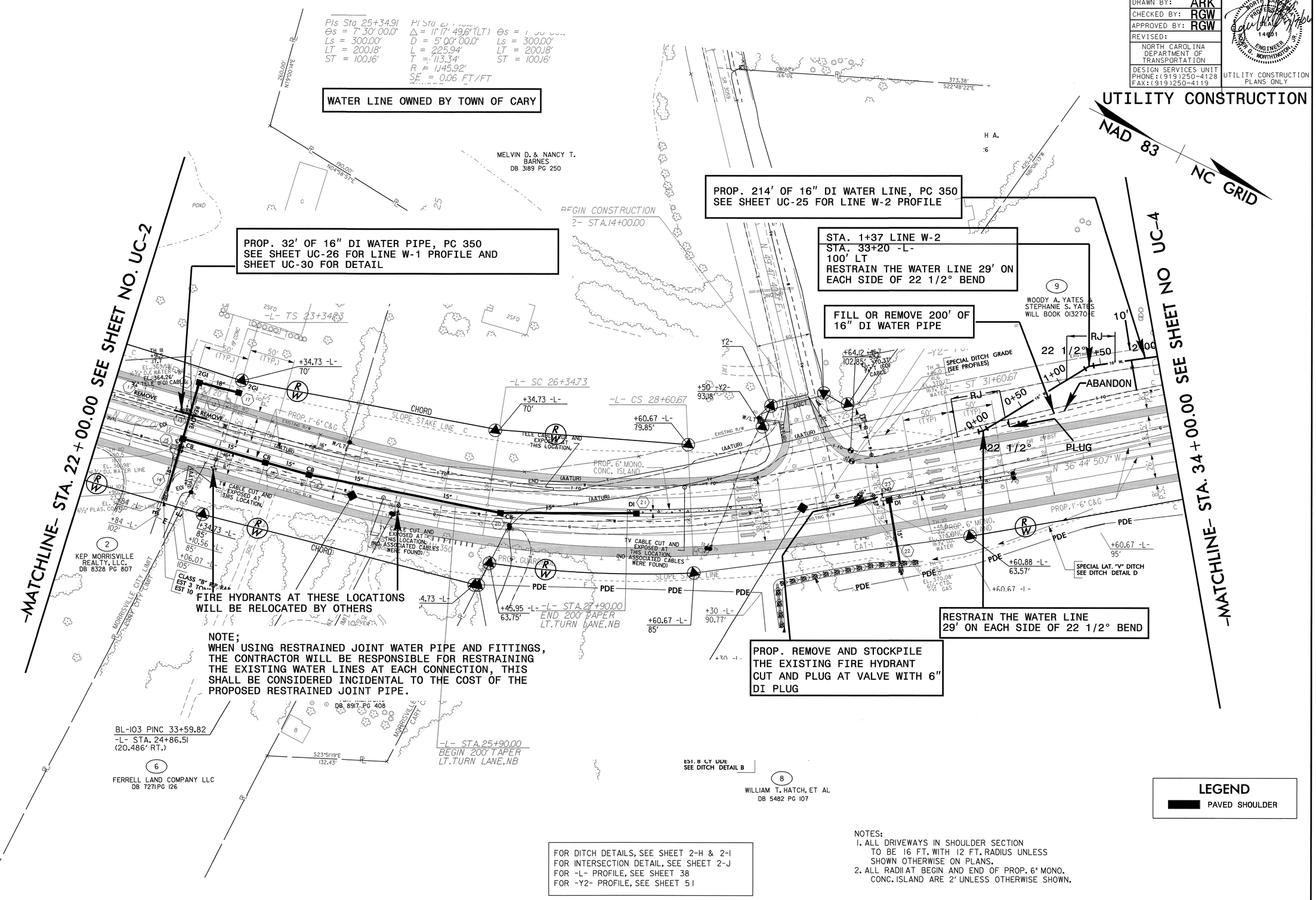
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN SERVICES UNIT
PHONE:(919)250-4128
FAX:(919)250-4119

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

NAD 83 / NC GRID



NOTE;
WHEN USING RESTRAINED JOINT WATER PIPE AND FITTINGS, THE CONTRACTOR WILL BE RESPONSIBLE FOR RESTRAINING THE EXISTING WATER LINES AT EACH CONNECTION, THIS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE PROPOSED RESTRAINED JOINT PIPE.

FOR DITCH DETAILS, SEE SHEET 2-H & 2-I
FOR INTERSECTION DETAIL, SEE SHEET 2-J
FOR -L- PROFILE, SEE SHEET 38
FOR -Y2- PROFILE, SEE SHEET 51

LEGEND
PAVED SHOULDER

NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

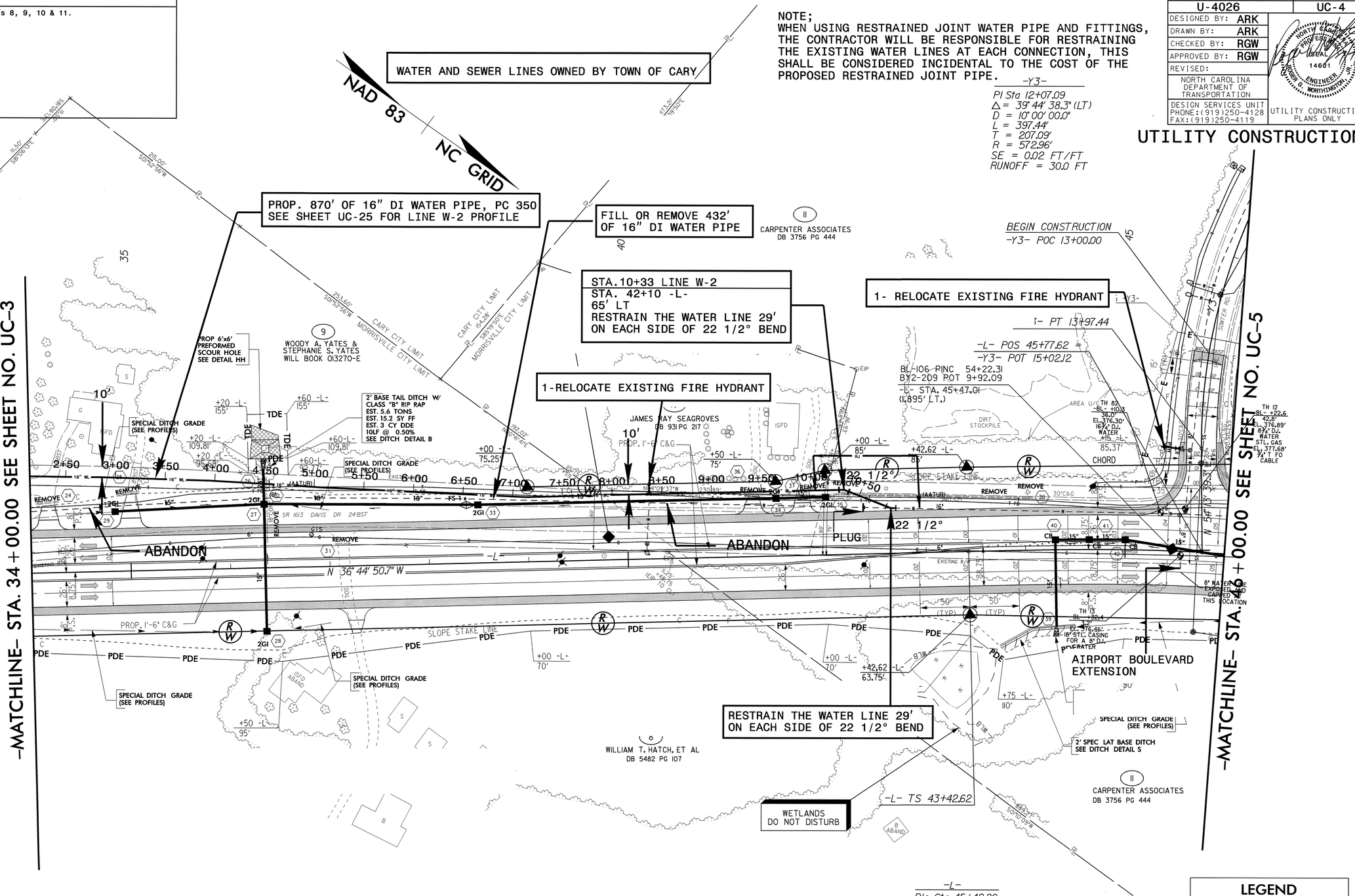
24-MAY-2006 09:05
$$$$USERNAME$$$$

REVISIONS
6/23/04 CHANGED PARCEL NO's 8, 9, 10 & 11.

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-4
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: RGW	
APPROVED BY: RGW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DESIGN SERVICES UNIT PHONE:(919)250-4128 FAX:(919)250-4119	UTILITY CONSTRUCTION PLANS ONLY

NOTE;
WHEN USING RESTRAINED JOINT WATER PIPE AND FITTINGS, THE CONTRACTOR WILL BE RESPONSIBLE FOR RESTRAINING THE EXISTING WATER LINES AT EACH CONNECTION, THIS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE PROPOSED RESTRAINED JOINT PIPE.

UTILITY CONSTRUCTION



-L-
PIs Sta 45+42.80
Θs = 7° 30' 00.0"
Ls = 300.00'
LT = 200.18'
ST = 100.16'

LEGEND
PAVED SHOULDER

NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6' MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEET 2-H & 2-I
FOR INTERSECTION DETAIL, SEE SHEET 2-J
FOR C&G TRANSITION SECTION, SEE SHEET 2-N
FOR -L- PROFILE, SEE SHEET 39
FOR -Y3- PROFILE, SEE SHEET 51

24-MAY-2006 08:09
r:\utilities\rdy_ut\proj\u4026p06_uc_4.dgn
$$$$USERNAME$$$$

REVISIONS
6/23/04 CHANGED PARCEL NO's 11, 12, 13, 14, 15,16 & 17.
00.00

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-5
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: RGW	
APPROVED BY: RGW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DESIGN SERVICES UNIT PHONE:(919)250-4128 FAX:(919)250-4119	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 14601 ENGINEER ROBERT G. WORTHINGTON, JR.

UTILITY CONSTRUCTION

NAD 83 / NC GRID

WATER AND SEWER LINES OWNED BY TOWN CARY

1-RELOCATE EXISTING FIRE HYDRANT

CUT AND PLUG AT VALVE WITH 6" DI PLUG

RELOCATE EXISTING FIRE HYDRANT

-MATCHLINE- STA. 46+00.00 SEE SHEET NO.UC-4

-MATCHLINE- STA. 58+00.00 SEE SHEET NO. UC-7

-Y3-
PI Sta 12+07.09
Δ = 39° 44' 38.3" (LT)
D = 10° 00' 00.0"
L = 397.44'
T = 207.09'
R = 572.96'
SE = 0.02 FT/FT
RUNOFF = 30.0 FT

-L-
PIs Sta 54+31.89
θs = 7° 30' 00.0"
Ls = 300.00'
LT = 200.18'
ST = 100.16'

PI Sta 55+47.04
Δ = 1° 32' 00.0" (LT)
D = 5° 00' 00.0"
L = 30.67'
T = 15.33'
R = 1,145.92'
SE = 0.06 FT/FT
RUNOFF = 300.0 FT

PIs Sta 56+62.54
θs = 7° 30' 00.0"
Ls = 300.00'
LT = 200.18'
ST = 100.16'

-Y4-
PIs Sta 45+42.80
θs = 7° 30' 00.0"
Ls = 300.00'
LT = 200.18'
ST = 100.16'

PI Sta 47+16.63
Δ = 7° 42' 13.3" (RT)
D = 5° 00' 00.0"
L = 154.09'
T = 77.16'
R = 1,145.92'
SE = 0.06 FT/FT
RUNOFF = 300.0 FT

PIs Sta 48+96.87
θs = 7° 30' 00.0"
Ls = 300.00'
LT = 200.18'
ST = 100.16'

-Y4-
PI Sta 12+01.05
Δ = 17° 17' 49.2" (RT)
D = 24° 45' 00.0"
L = 69.89'
T = 35.21'
R = 231.50'
SE = MATCH EXIST.

PI Sta 12+81.70
Δ = 41° 44' 29.7" (RT)
D = 60° 30' 00.0"
L = 68.99'
T = 36.11'
R = 94.70'

BL-107 PINC 61+80.24
BY3-210 POT 5+00.00
-L- STA. 53+10.76
(25.652' RT.)

BY3-211 POT 7+16.81
-L- STA. 53+22.03
(242.145' RT.)

-L- STA.57+60.00
END 200' TAPER
LT.TURN LANE,SB

-L- STA.56+60.00
END 150' TAPER
RT.TURN LANE,SB

-L- CS 55+62.37

-L- STA.55+60.00
BEGIN 200' TAPER
LT.TURN LANE,SB

-L- SC 55+31.71

-L- STA.55+10.00
BEGIN 150' TAPER
RT.TURN LANE,SB

-L- TS 52+31.71

-L- ST 50+96.71

-L- CS 47+96.71

-L- SC 46+42.62

-L- STA.49+50.00
BEGIN 200' TAPER
LT.TURN LANE,NB

-L- STA.49+90.00
BEGIN 200' TAPER
RT.TURN LANE,NB

-L- STA.54+60.00
BEGIN 210' TAPER
BUS LANE,NB

-L- STA.56+70.00
END 210' TAPER
BUS LANE,NB

-Y4- PT 12+35.73

-Y4- PC 12+45.59

-Y4- PT 13+14.59

END CONSTRUCTION
-Y4- POT 12+00.00

N 14° 02' 35.2" W

N 75° 43' 02.1" E

N 75° 55' 08.7" E

N 14° 45' 09" W

S 10° 43' 48" E

N 00° 00' 00.0" E

N 00° 29' 10" E

N 00° 28' 10" W

2' BASE TAIL DITCH
EST. 9 CY DDE
SEE DITCH DETAIL A

SPECIAL DITCH GRADE
(SEE PROFILES)

PROP. 6' MONO.
CONC. ISLAND

REMOVE
EXISTING
SIDEWALK

CHORD
SLOPE STAKE LINE

PROP. 1'-6" C&G

CLASS "B" RIP RAP
EST 2 TONS
EST 7 SY FF

SPECIAL LAT. "V" DITCH
SEE DITCH DETAIL D

WM REMOVED
FROM ASPHALT
ENTRANCE

12
KAT PARTNERS LLC
DB 8339 PG 1365

11
CARPENTER ASSOCIATES
DB 3756 PG 444

14
DAVIS PARTNERS, LLC
BK 10067 PG 457

15
FORREST DEVELOPMENT CO., INC.
BK 8808 PG 781

16
DVS INVESTORS, LLC
BK 10613 PG 939

17AA
DANIEL O &
INA P RHEW
DB 2538 PG 523

BILLY W. & MAGARET S.
MAYNARD
BK 2408 PG 623

EVA R. MAYNARD, ET AL
BK 6268 PG 208

CARY CITY LIMIT
MORRISVILLE CITY LIMIT

NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6' MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEET 2-H & 2-I
FOR INTERSECTION DETAIL, SEE SHEET 2-J
FOR C&G TRANSITION SECTION, SEE SHEET 2-N
FOR -L- PROFILE, SEE SHEET 39
FOR -Y4- PROFILE, SEE SHEET 51

LEGEND
PAVED SHOULDER

7/2/99
8/17/99

15-AUG-2006 16:31
u4026p07_uc_5.dgn

PS228334 8/15/2006 u4026p07_uc_5 akoucheki PS-Oce34dtbond

8/17/99

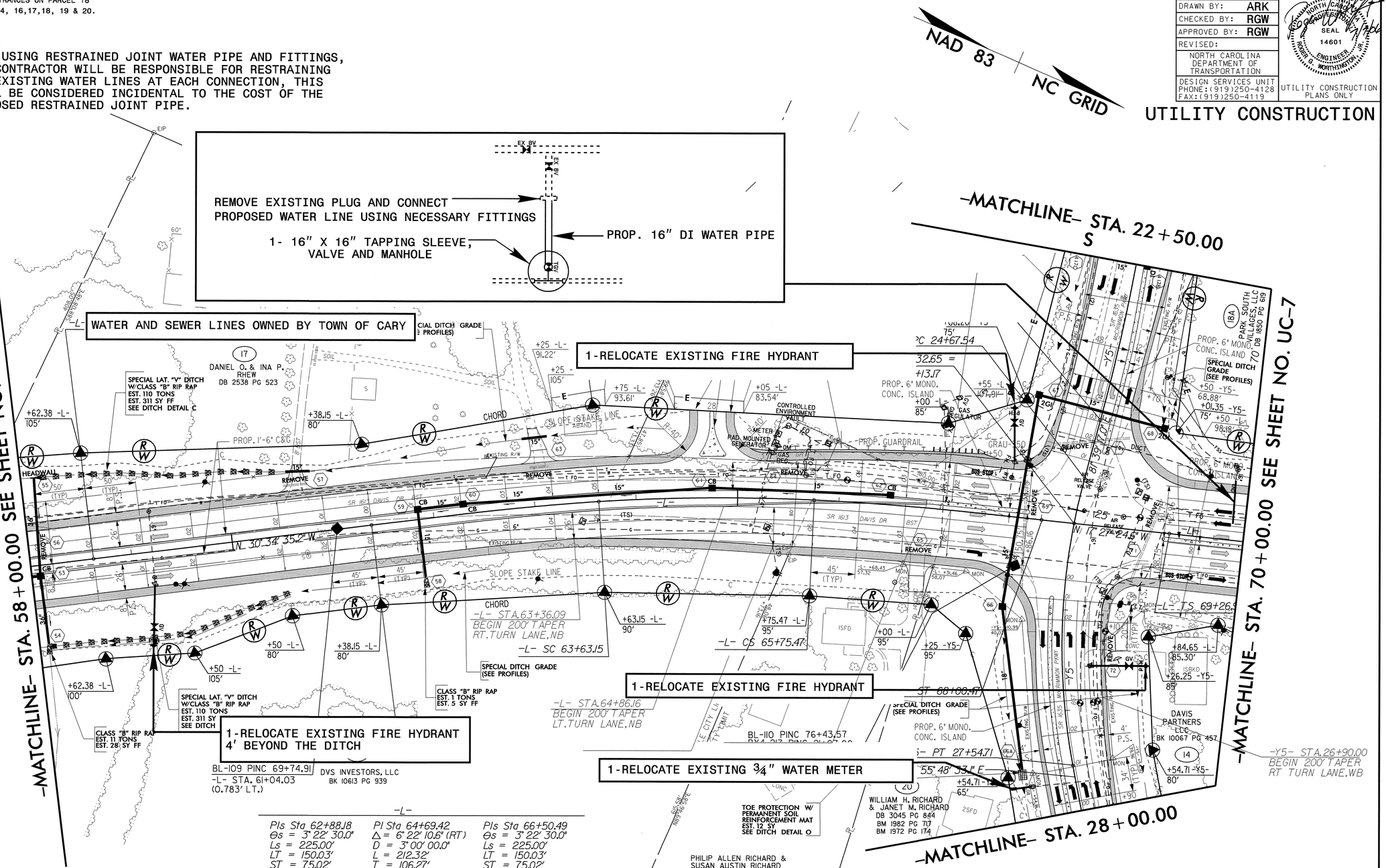
7/18/03 REVISED ROW, CE & ENTRANCES ON PARCEL 18
6/24/04 CHANGED PARCEL NO's 14, 16,17,18, 19 & 20.

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-6
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: RGW	
APPROVED BY: RGW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DESIGN SERVICES UNIT PHONE:(919)250-4128 FAX:(919)250-4119	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 14601 ENGINEER ROBB D. WORTHINGTON

UTILITY CONSTRUCTION

NOTE;
WHEN USING RESTRAINED JOINT WATER PIPE AND FITTINGS, THE CONTRACTOR WILL BE RESPONSIBLE FOR RESTRAINING THE EXISTING WATER LINES AT EACH CONNECTION, THIS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE PROPOSED RESTRAINED JOINT PIPE.


NAD 83 / NC GRID
REMOVE EXISTING PLUG AND CONNECT PROPOSED WATER LINE USING NECESSARY FITTINGS
1- 16" X 16" TAPPING SLEEVE, VALVE AND MANHOLE
PROP. 16" DI WATER PIPE
-MATCHLINE- STA. 22+50.00
WATER AND SEWER LINES OWNED BY TOWN OF CARY
1-RELOCATE EXISTING FIRE HYDRANT
1-RELOCATE EXISTING FIRE HYDRANT 4' BEYOND THE DITCH
1-RELOCATE EXISTING FIRE HYDRANT
1-RELOCATE EXISTING 3/4" WATER METER
-MATCHLINE- STA. 58+00.00 SEE SHEET NO.UC-5
-MATCHLINE- STA. 70+00.00 SEE SHEET NO. UC-7
-MATCHLINE- STA. 28+00.00
DANIEL O. & INA P. RHEW DB 2538 PG 523
PARK SOUTH VILLAGES, LLC DB 1850 PG 669
DVS INVESTORS, LLC BK 10613 PG 939
DAVIS PARTNERS LLC BK 10067 PG 457
WILLIAM H. RICHARD & JANET M. RICHARD DB 3045 PG 844 BM 1982 PG 717 BM 1972 PG 174
PHILIP ALLEN RICHARD & SUSAN AUSTIN RICHARD DB 3062 PG 347 BM 1982 PG 923
SPECIAL LAT. "V" DITCH W/CLASS "B" RIP RAP EST. 110 TONS EST. 311 SY FF SEE DITCH DETAIL C
SPECIAL DITCH GRADE (SEE PROFILES)
CLASS "B" RIP RAP EST. 11 TONS EST. 28 SY FF
CLASS "B" RIP RAP EST. 1 TONS EST. 5 SY FF
TOE PROTECTION W/ PERMANENT SOIL REINFORCEMENT MAT EST. 12 SY SEE DITCH DETAIL O
-L- STA.63+36.09 BEGIN 200' TAPER RT.TURN LANE,NB
-L- SC 63+63.15
-L- CS 65+75.47
-L- STA.64+86.16 BEGIN 200' TAPER LT.TURN LANE,NB
-Y5- STA.26+90.00 BEGIN 200' TAPER RT TURN LANE,WB
BL-109 PINC 69+74.91
-L- STA. 61+04.03 (0.783' LT.)
BL-110 PINC 76+43.57
-L- PT 27+54.71
-L- TS 69+26.9
PROP. 6" MONO. CONC. ISLAND
PROP. GUARDRAIL
SR 1613 DAVIS DR
N 30°34'35.2" W
N 27°24'46" W
SLOPE STAKE LINE
CHORD
CONTROLLED ENVIRONMENT FAULT
RAD. MOUNTED GENERATOR
GAS REGULATOR
BUS STOP
HEADWALL
REMOVE
PROP. 1'-6" C&G
EXISTING R/W
ISFD
2SFD
ISBKD
ISMON
ISCP
ISGV
ISAV
ISBUS
ISLTS
ISLP
ISPP
ISTS
ISWM
ISWV
ISFH
ISPM
ISCO
ISCB
ISMH
ISPS
ISPB
ISPL
ISPT
ISPV
ISPW
ISPX
ISPY
ISPZ
ISPA
ISPC
ISPD
ISPE
ISPF
ISPG
ISPH
ISPI
ISPJ
ISPK
ISPM
ISPN
ISPO
ISPP
ISPQ
ISPR
ISPS
ISPT
ISPU
ISPV
ISPW
ISPX
ISPY
ISPZ
ISPA
ISPB
ISPC
ISPD
ISPE
ISPF
ISPG
ISPH
ISPI
ISPJ
ISPK
ISPL

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-7
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: RGW	
APPROVED BY: RGW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DESIGN SERVICES UNIT PHONE:(919)250-4128 FAX:(919)250-4119	UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

-L-

Pls Sta 70+60.27	Pl Sta 80+83.70	Pls Sta 90+40.41
Θs = 2° 00' 00.0"	Δ = 36° 56' 10.4" (RT)	Θs = 2° 00' 00.0"
Ls = 200.00'	D = 2° 00' 00.0"	Ls = 200.00'
LT = 133.34'	L = 1,846.81'	LT = 133.34'
ST = 66.67'	T = 956.77'	
	R = 2,865.08'	
	SE = 0.0	
	RUNOFF	

NAD 83 | NC GRID

WATER LINE OWNED BY TOWN OF CARY

PROP. REMOVE AND STOCKPILE THE EXISTING FIRE HYDRANT. CUT AND PLUG AT VALVE WITH 6" DI PLUG

PROP. 2" BLOW OFF ASSEMBLY USING 16" DI PLUG WITH 2" TAP SEE SHEET UC-31 FOR DETAIL

FILL OR REMOVE 205' OF 16" DI WATER PIPE

FILL OR REMOVE 245' OF 16" DI WATER PIPE

-MATCHLINE- STA. 70+00.00 SEE SHEET NO. UC-6

-MATCHLINE- STA. 82+00.00 SEE SHEET NO. UC-8

-L- STA.71+21.87 BEGIN 200' TAPER RT TURN LANE,SB

-L- STA.72+21.87 END 200' TAPER RT TURN LANE,SB

-L- STA.73+70.00 BEGIN 200' TAPER LT TURN LANE,SB

-L- STA.72+52.81 BEGIN 200' TAPER RT TURN LANE,NB

-L- SC 71+26.92

PARK SOUTH VILLAGES, LLC DB 10585 PG 78

WEXFORD INVESTORS, LLC. DB 10613 PG 947

DAVIS PARTNERS LLC MB 1972 PG 174

DAVIS PARTNERS LLC BK 10061 PG 457

JOHN D. NUTT DB 2074 PG 196

RTP/PARKSIDE, L.L.C. DB 8238 PG 900 MB 1999 PG 150

SPECIAL LAT. "V" DITCH SEE DITCH DETAIL D

CLASS "B" RIP RAP EST. 3 TONS EST. 10 SY FF

SPECIAL DITCH GRADE (SEE PROFILES)

EST 2 CY DDE SEE DITCH DETAIL R

2' BASE TAIL DITCH EST. 8 CY DDE SEE DITCH DETAIL A

FUTURE C&G. TURNOUTS (BY OTHERS)

FUTURE C&G. TURNOUTS & ISLAND BY OTHERS

PROP. 6" MONO. CONC. ISLAND

PROP. GUARDRAIL

MORRISVILLE CITY LIMIT

CARY CITY LIMIT

NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR -L- PROFILE, SEE SHEET 40

LEGEND
PAVED SHOULDER

07-JUL-2006 17:14
s:\ppms\projects\proj\u4026p09_uc_7.dgn
$$$$USERNAME$$$$
8/17/09
PS228334 7/10/2006 u4026p09 uc 7 akoucheki PS-Oce34dtbond

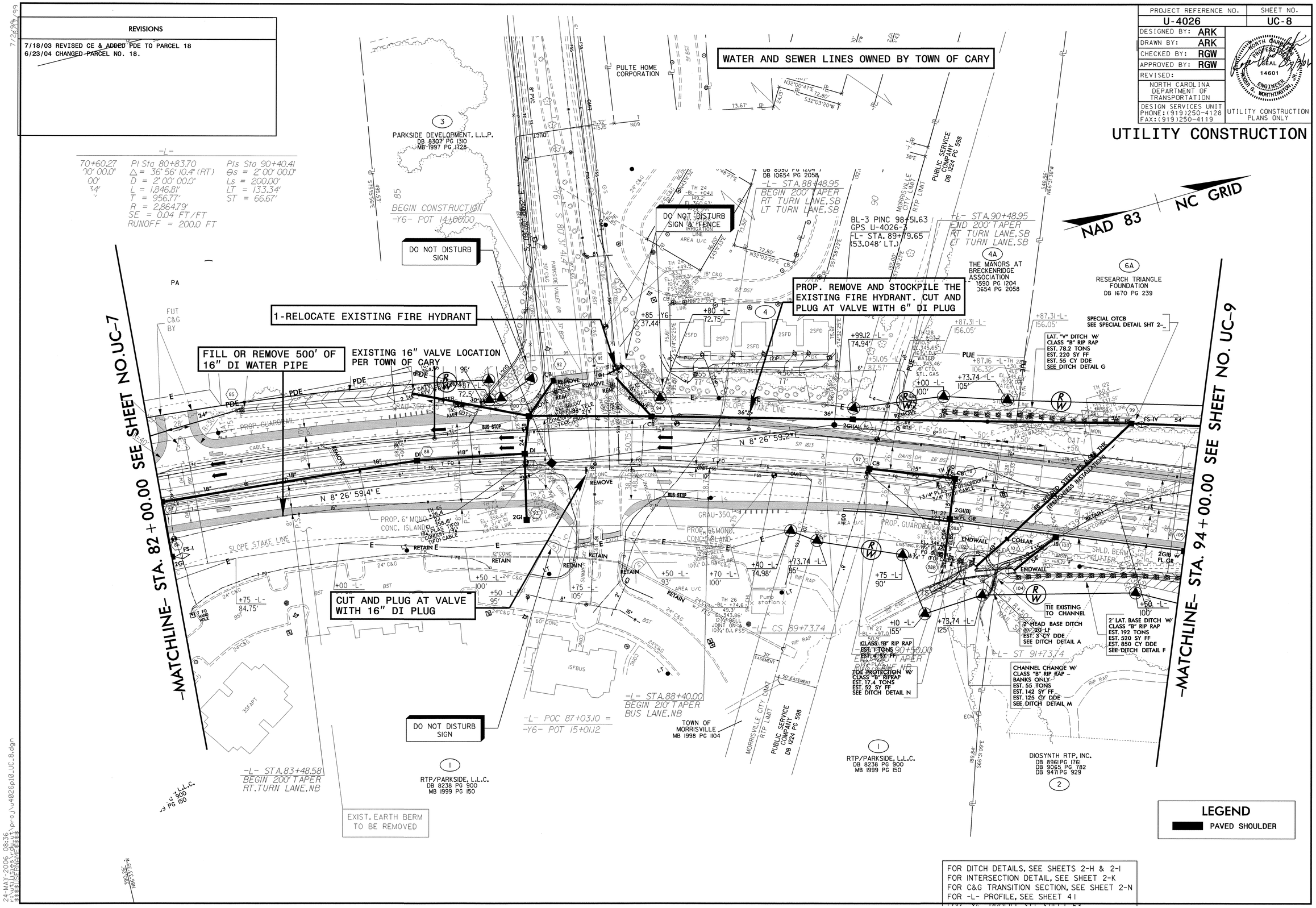
PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-8
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: RGW	
APPROVED BY: RGW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DESIGN SERVICES UNIT PHONE:(919)250-4128 FAX:(919)250-4119	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 14601 ENGINEER R. G. WORTHINGTON

UTILITY CONSTRUCTION

REVISIONS

7/18/03 REVISED CE & ADDED PDE TO PARCEL 18
6/23/04 CHANGED PARCEL NO. 18.



FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR INTERSECTION DETAIL, SEE SHEET 2-K
FOR C&G TRANSITION SECTION, SEE SHEET 2-N
FOR -L- PROFILE, SEE SHEET 4 I

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F:\utilities\rdu_ut\proj\u4026p10_UC_8.dgn
$$$$USERNAME$$$$

PS228334 5/24/2006 u4026p10_UC_8 AKOUCHEKLPS-Oce34dtbond

REVISIONS
3/16/04 REVISED PARCEL NO. 6 TO PARCEL NO. 6A & 6B
3/25/04 NAME CHANGE PARCEL NO. 2
6/24/04 REVISED R/W & CE PARCEL NO. 2 & REVISED CE ON PARCEL NO. 6B

NOTE: AREA 1
1- CONTRACTOR SHALL NOTIFY TOWN OF CARY FOUR WEEKS PRIOR TO ANY WORK INVOLVING EXISTING WATER LINES. TOWN OF CARY WILL ISOLATE THE WATER LINES BETWEEN STATION 101+00 TO STATION 166+40 FOR THE CONTRACTOR TO MAKE THE FINAL TIE-INS.

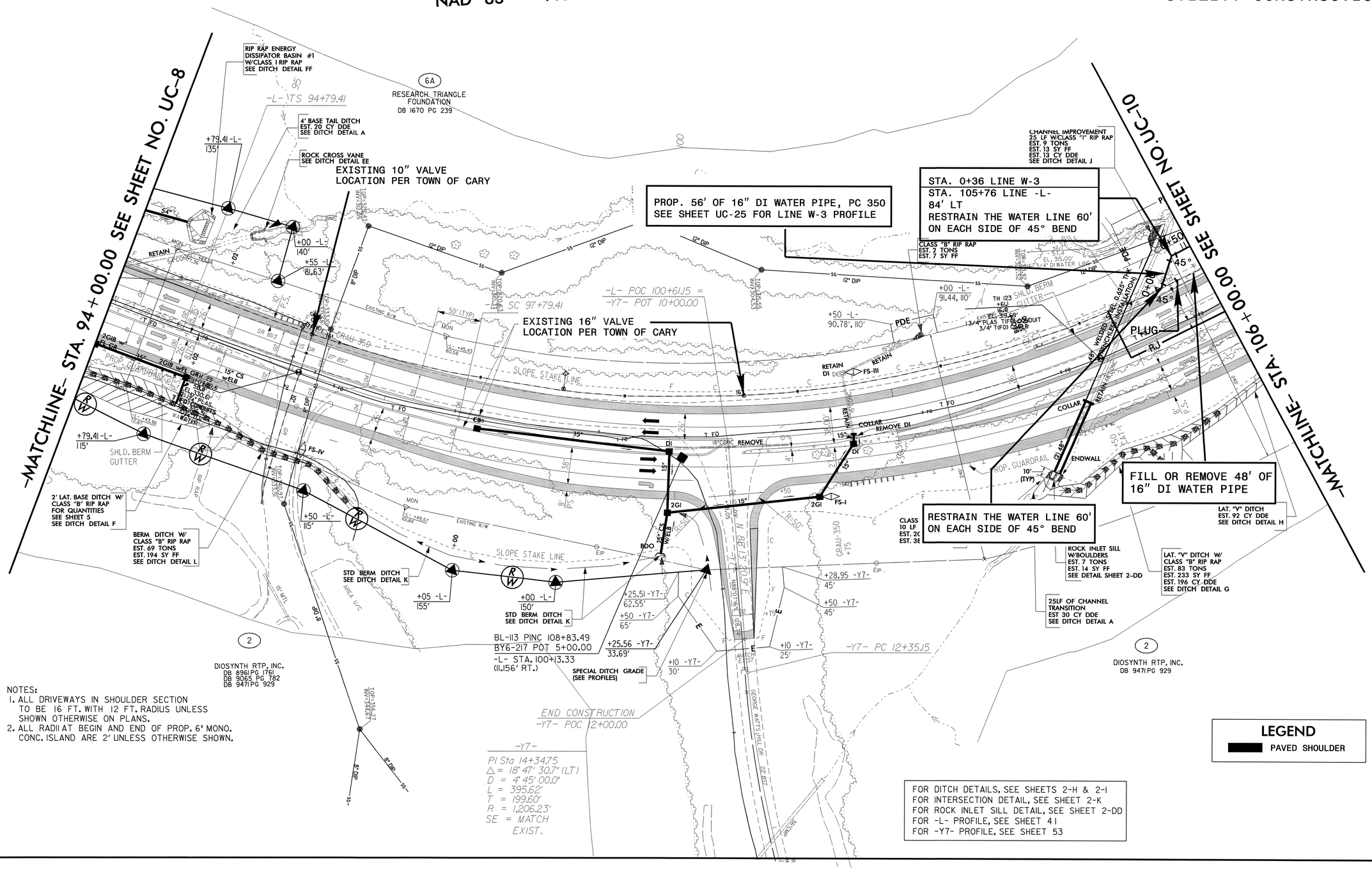
PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-9
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: RGW	
APPROVED BY: RGW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DESIGN SERVICES UNIT PHONE:(919)250-4128 FAX:(919)250-4119	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 14601 ENGINEER RODER G. WORTHINGTON, JR.

UTILITY CONSTRUCTION

WATER AND SEWER LINES LINE OWNED BY TOWN OF CARY

NAD 83 | NC GRID



NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

LEGEND
PAVED SHOULDER

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR INTERSECTION DETAIL, SEE SHEET 2-K
FOR ROCK INLET SILL DETAIL, SEE SHEET 2-DD
FOR -L- PROFILE, SEE SHEET 41
FOR -Y7- PROFILE, SEE SHEET 53

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$$$$USERNAME$$$$

REVISIONS
3/16/04 REVISED PARCEL NO. 6 TO PARCEL NO. 6A & 6B

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-10
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: RGW	
APPROVED BY: RGW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DESIGN SERVICES UNIT PHONE:(919)250-4128 FAX:(919)250-4119	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 14601 ENGINEER ROBERT G. WORTHINGTON

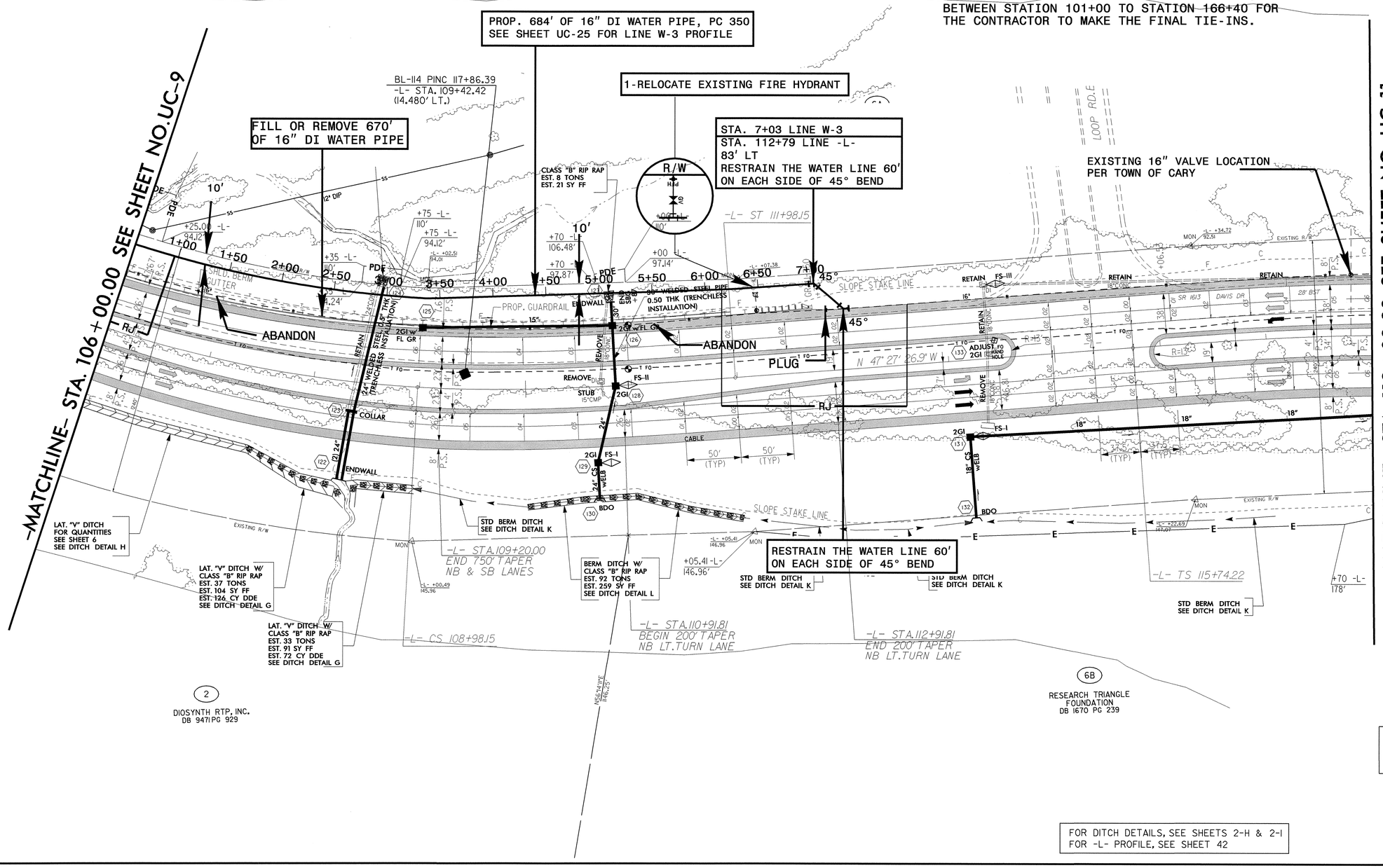
UTILITY CONSTRUCTION

WATER AND SEWER LINES OWNED BY TOWN OF CARY

NOTE;
WHEN USING RESTRAINED JOINT WATER PIPE AND FITTINGS, THE CONTRACTOR WILL BE RESPONSIBLE FOR RESTRAINING THE EXISTING WATER LINES AT EACH CONNECTION, THIS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE PROPOSED RESTRAINED JOINT PIPE.

NAD 83 / NC GRID

NOTE: AREA 1
1- CONTRACTOR SHALL NOTIFY TOWN OF CARY FOUR WEEKS PRIOR TO ANY WORK INVOLVING EXISTING WATER LINES. TOWN OF CARY WILL ISOLATE THE WATER LINES BETWEEN STATION 101+00 TO STATION 166+40 FOR THE CONTRACTOR TO MAKE THE FINAL TIE-INS.



LEGEND
PAVED SHOULDER

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR -L- PROFILE, SEE SHEET 42

07-JUL-2006 17:21
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$$$$USERNAME$$$$

REVISIONS
3/16/04 PARCEL NO. 6 TO PARCEL NO. 6A & 6B

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-11

DESIGNED BY: ARK
DRAWN BY: ARK
CHECKED BY: RGW
APPROVED BY: RGW
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DESIGN SERVICES UNIT
PHONE:(919)250-4128
FAX:(919)250-4119

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

WATER AND SEWER LINES OWNED BY TOWN OF CARY

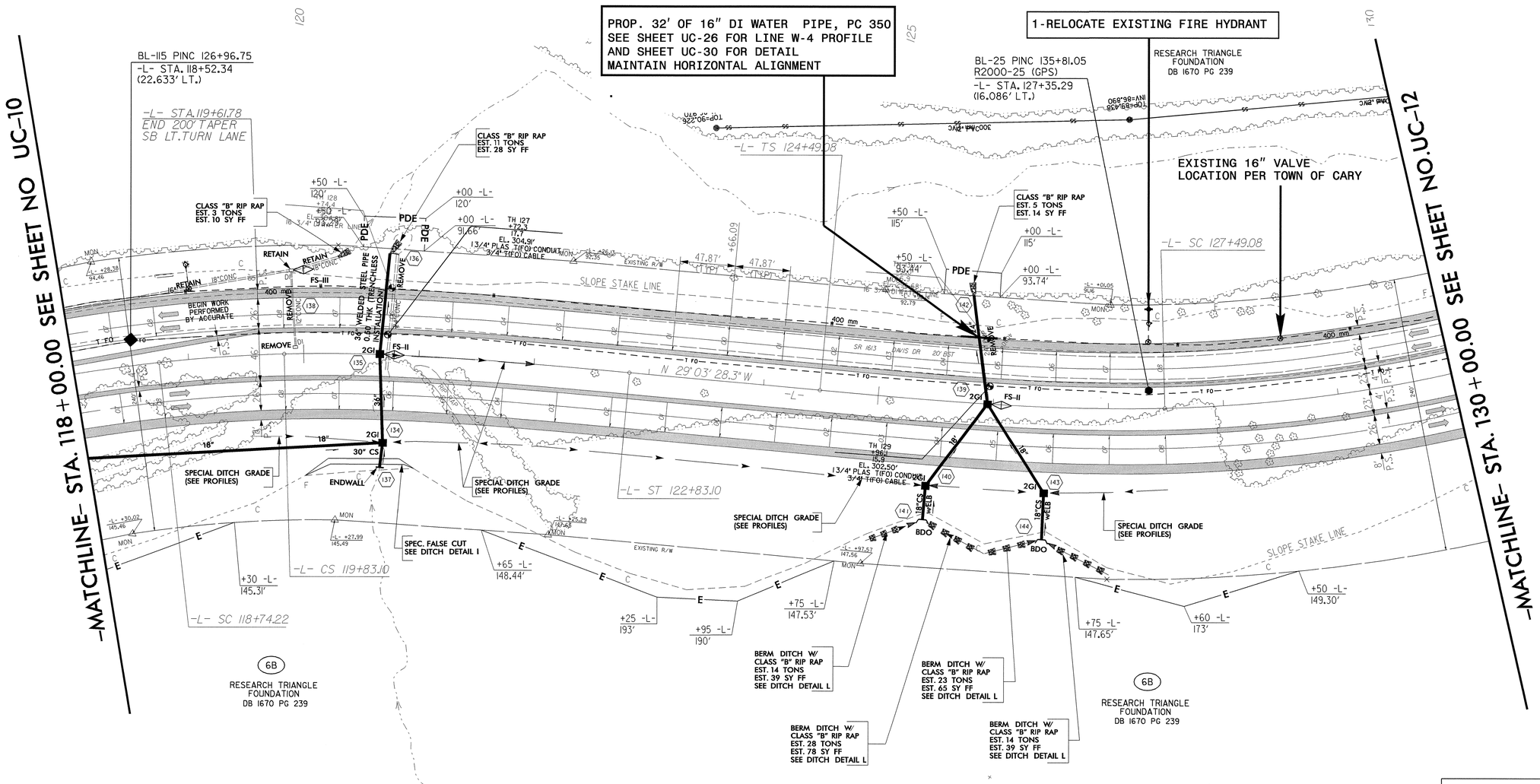
NOTE;
WHEN USING RESTRAINED JOINT WATER PIPE AND FITTINGS, THE CONTRACTOR WILL BE RESPONSIBLE FOR RESTRAINING THE EXISTING WATER LINES AT EACH CONNECTION, THIS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE PROPOSED RESTRAINED JOINT PIPE.

NOTE: AREA 1
1- CONTRACTOR SHALL NOTIFY TOWN OF CARY FOUR WEEKS PRIOR TO ANY WORK INVOLVING EXISTING WATER LINES. TOWN OF CARY WILL ISOLATE THE WATER LINES BETWEEN STATION 101+00 TO STATION 166+40 FOR THE CONTRACTOR TO MAKE THE FINAL TIE-INS.

-L-
PIs Sta 126+49.22
Θs = 6° 45' 00.0"
Ls = 300.00'
LT = 200.15'
ST = 100.13'

PI Sta 128+78.04
Δ = 11° 34' 03.7" (LT)
D = 4° 30' 00.0"
L = 257.06'
T = 128.97'
R = 1,273.24'
SE = 0.08 FT/FT
RUNOFF = 300.0 FT

NAD 83 NC GRID



-L-
PIs Sta 117+74.37
Θs = 6° 45' 00.0"
Ls = 300.00'
LT = 200.15'
ST = 100.13'

PI Sta 119+28.69
Δ = 4° 53' 58.6" (RT)
D = 4° 30' 00.0"
L = 108.88'
T = 54.47'
R = 1,273.24'
SE = 0.08 FT/FT
RUNOFF = 300.0 FT

PIs Sta 120+83.23
Θs = 6° 45' 00.0"
Ls = 300.00'
LT = 200.15'
ST = 100.13'

LEGEND
PAVED SHOULDER

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR -L- PROFILE, SEE SHEET 42

24-MAY-2006 11:37
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REVISIONS
09/23/03 REVISED R/W PARCEL 7
3/16/04 REVISED PARCEL NO. 6 TO PARCEL NO. 6D
3/25/04 REVISED PARCEL NO. 7 TO PARCEL NO. 10 & NAME CHANGE

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-12
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: RGW	
APPROVED BY: RGW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DESIGN SERVICES UNIT PHONE:(919)250-4128 FAX:(919)250-4119	UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

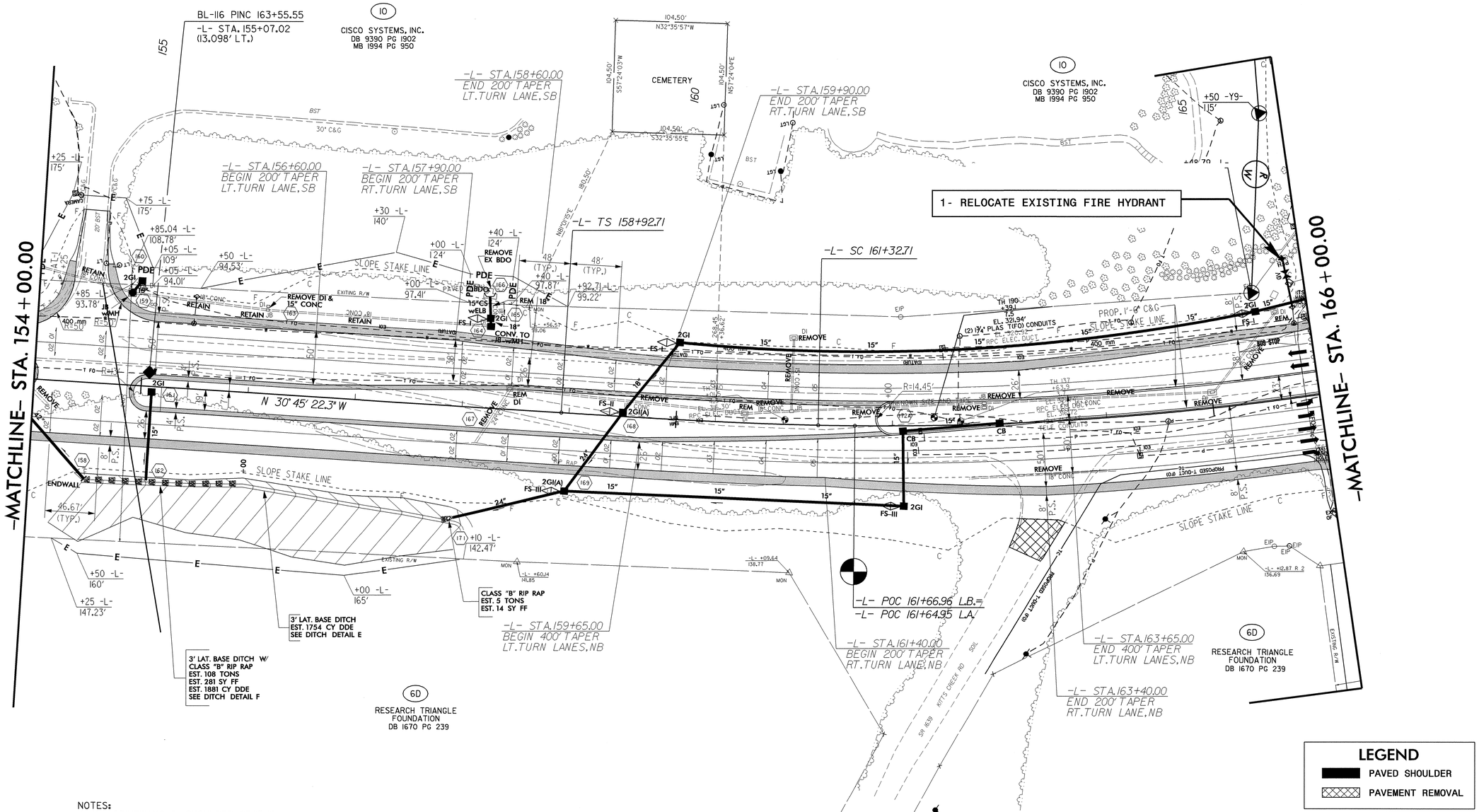
NAD 83 / NC GRID

WATER AND SEWER LINES OWNED BY TOWN OF CARY

-L-

PIs Sta 160+52.73	PI Sta 161+49.84	PI Sta 165+33.95
Θs = 2° 24' 00.0"	Δ = 0° 41' 05.9" (LT)	Δ = 14° 40' 45.7" (LT)
Ls = 240.00'	D = 2° 00' 00.0"	D = 2° 00' 00.0"
LT = 160.01'	L = 34.25'	L = 733.97'
ST = 80.01'	T = 17.12'	T = 369.00'
	R = 2,864.79'	R = 2,864.79'
	SE = 0.05 FT/FT	
	RUNOFF = 240.0 FT	

NOTE: AREA 1
1- CONTRACTOR SHALL NOTIFY TOWN OF CARY FOUR WEEKS PRIOR TO ANY WORK INVOLVING EXISTING WATER LINES. TOWN OF CARY WILL ISOLATE THE WATER LINES BETWEEN STATION 101+00 TO STATION 166+40 FOR THE CONTRACTOR TO MAKE THE FINAL TIE-INS.



NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

LEGEND
- PAVED SHOULDER
- PAVEMENT REMOVAL

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR C&G TRANSITION SECTION, SEE SHEET 2-N
FOR -L- PROFILE, SEE SHEET 44

24-MAY-2006 09:24
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PS228334 5/24/2006 u4026p16_UC_12 AKOUCHEKI PS-Oce34dtbond

REVISIONS
9/24/03 CHANGED R/W TO PDE ON PARCEL 11
2/4/04 PROPERTY NAME CHANGE PARCELS 8
3/16/04 REVISED PARCEL NO. 6 TO PARCEL NO. 6E
3/25/04 REVISED PARCEL NO. 10 TO PARCEL NO. 10B

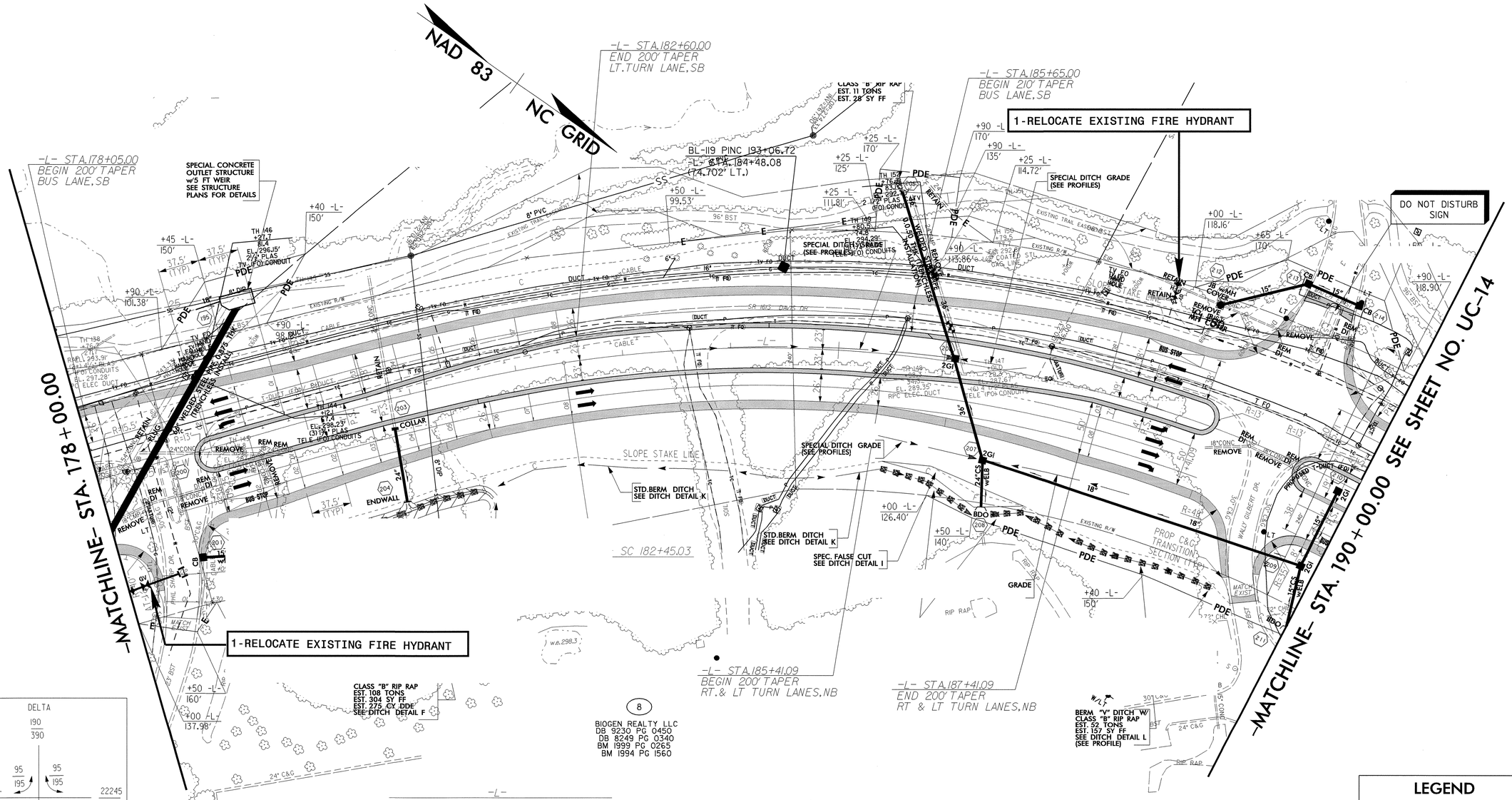
WATER AND SEWER LINES OWNED BY TOWN OF CARY

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-13
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: RGW	
APPROVED BY: RGW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DESIGN SERVICES UNIT PHONE:(919)250-4128 FAX:(919)250-4119	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 14601 ENGINEER R. G. WORTHINGTON, JR.

NOTE;
WHEN USING RESTRAINED JOINT WATER PIPE AND FITTINGS, THE CONTRACTOR WILL BE RESPONSIBLE FOR RESTRAINING THE EXISTING WATER LINES AT EACH CONNECTION, THIS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE PROPOSED RESTRAINED JOINT PIPE.

UTILITY CONSTRUCTION



-L-

PIs Sta 181+45.20	PI Sta 189+78.62
Θs = 7° 07' 30.0"	Δ = 62° 36' 45.7" (RT)
Ls = 300.00'	D = 4° 45' 00.0"
LT = 200.16'	L = 1,318.16'
ST = 100.15'	T = 733.58'
	R = 1,206.23'
	SE = 0.08 FT/FT
	RUNOFF = 300.0 FT

NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR C&G TRANSITION SECTION, SEE SHEET 2-N
FOR -L- PROFILE, SEE SHEET 45

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PS228334 5/24/2006 u4026p18_UC_14 AKOUCHEKI PS-Oce34dtbond

REVISIONS
12/29/03 REVISED R/W, CE AND PDE ON PARCEL 12
2/4/04 PROPERTY NAME CHANGE PARCELS 6 & 8
3/16/04 REVISED PARCEL NO. 6 TO PARCEL NO. 6F & 6G
3/29/04 REVISED PARCEL NO. 8 TO PARCEL NO. 8A

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-14

DESIGNED BY: ARK
DRAWN BY: ARK
CHECKED BY: RGW
APPROVED BY: RGW
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DESIGN SERVICES UNIT
PHONE:(919)250-4128
FAX:(919)250-4119

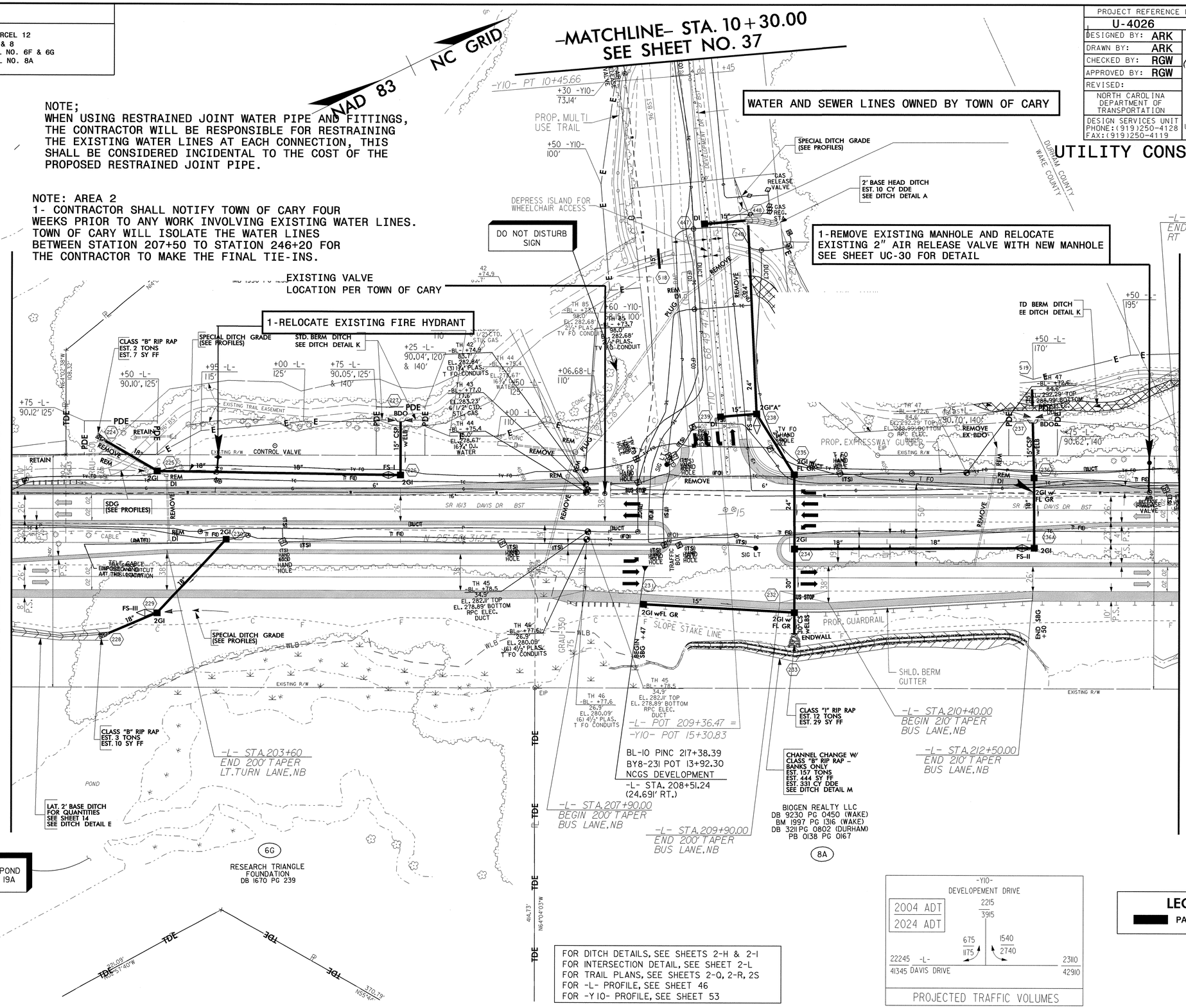
UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 14601 ENGINEER ROGER G. WORTHINGTON, JR.

UTILITY CONSTRUCTION

NOTE;
WHEN USING RESTRAINED JOINT WATER PIPE AND FITTINGS, THE CONTRACTOR WILL BE RESPONSIBLE FOR RESTRAINING THE EXISTING WATER LINES AT EACH CONNECTION, THIS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE PROPOSED RESTRAINED JOINT PIPE.

NOTE: AREA 2
1- CONTRACTOR SHALL NOTIFY TOWN OF CARY FOUR WEEKS PRIOR TO ANY WORK INVOLVING EXISTING WATER LINES. TOWN OF CARY WILL ISOLATE THE WATER LINES BETWEEN STATION 207+50 TO STATION 246+20 FOR THE CONTRACTOR TO MAKE THE FINAL TIE-INS.



FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR INTERSECTION DETAIL, SEE SHEET 2-L
FOR TRAIL PLANS, SEE SHEETS 2-Q, 2-R, 2S
FOR -L- PROFILE, SEE SHEET 46
FOR -Y10- PROFILE, SEE SHEET 53

PROJECTED TRAFFIC VOLUMES

LEGEND
PAVED SHOULDER

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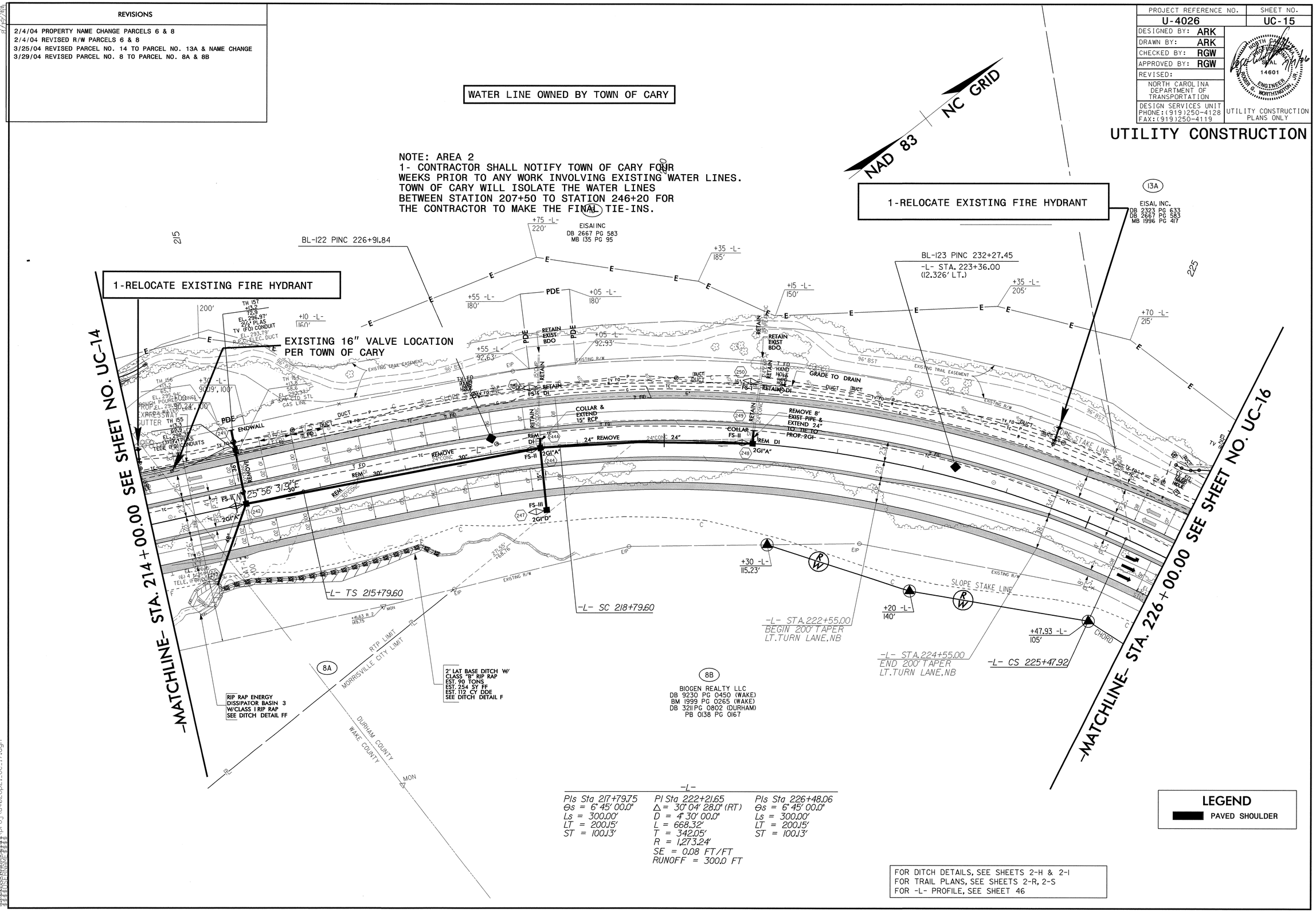
REVISIONS
2/4/04 PROPERTY NAME CHANGE PARCELS 6 & 8
2/4/04 REVISED R/W PARCELS 6 & 8
3/25/04 REVISED PARCEL NO. 14 TO PARCEL NO. 13A & NAME CHANGE
3/29/04 REVISED PARCEL NO. 8 TO PARCEL NO. 8A & 8B

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-15
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: RGW	
APPROVED BY: RGW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DESIGN SERVICES UNIT PHONE:(919)250-4128 FAX:(919)250-4119	UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION



-L-

PIs Sta 217+79.75	PI Sta 222+21.65	PIs Sta 226+48.06
Θs = 6° 45' 00.0"	Δ = 30° 04' 28.0" (RT)	Θs = 6° 45' 00.0"
Ls = 300.00'	D = 4° 30' 00.0"	Ls = 300.00'
LT = 200.15'	L = 668.32'	LT = 200.15'
ST = 100.13'	T = 342.05'	ST = 100.13'
	R = 1,273.24'	
	SE = 0.08 FT/FT	
	RUNOFF = 300.0 FT	

LEGEND

PAVED SHOULDER

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR TRAIL PLANS, SEE SHEETS 2-R, 2-S
FOR -L- PROFILE, SEE SHEET 46

REVISIONS
2/4/04 PROPERTY NAME CHANGE PARCELS 6 & 8
2/4/04 REVISED R/W & TDE PARCELS 6 & 8
3/8/04 REVISED R/W & CE TO PDE PARCEL 14
3/16/04 REVISED PARCEL NO 6 TO PARCEL NO. 6H & 6I
3/25/04 REVISED PARCEL NO 14 TO PARCEL NO. 13A & NAME CHANGE
3/29/04 REVISED PARCEL NO 8 TO PARCEL NO. 8B

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-16

DESIGNED BY: ARK
DRAWN BY: ARK
CHECKED BY: RGW
APPROVED BY: RGW
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DESIGN SERVICES UNIT
PHONE:(919)250-4128
FAX:(919)250-4119

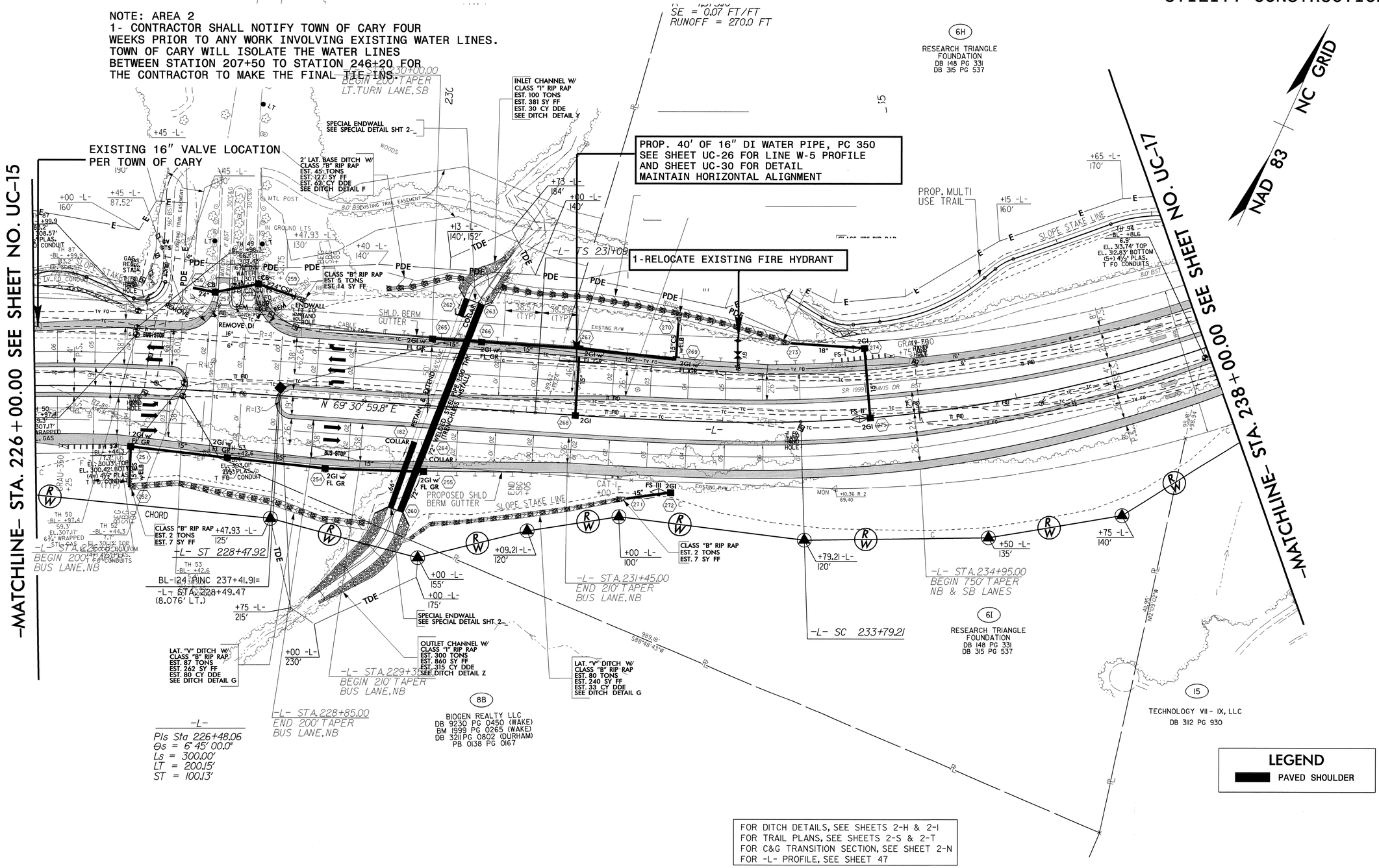
UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

WATER LINE OWNED BY TOWN OF CARY

NOTE;
WHEN USING RESTRAINED JOINT WATER PIPE AND FITTINGS, THE CONTRACTOR WILL BE RESPONSIBLE FOR RESTRAINING THE EXISTING WATER LINES AT EACH CONNECTION, THIS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE PROPOSED RESTRAINED JOINT PIPE.

NOTE: AREA 2
1- CONTRACTOR SHALL NOTIFY TOWN OF CARY FOUR WEEKS PRIOR TO ANY WORK INVOLVING EXISTING WATER LINES. TOWN OF CARY WILL ISOLATE THE WATER LINES BETWEEN STATION 207+50 TO STATION 246+20 FOR THE CONTRACTOR TO MAKE THE FINAL TIE-INS.



LEGEND
PAVED SHOULDER

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR TRAIL PLANS, SEE SHEETS 2-S & 2-T
FOR C&G TRANSITION SECTION, SEE SHEET 2-N
FOR -L- PROFILE, SEE SHEET 47

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PS228334 5/24/2006 u4026p22_uc_18 AKOUCHEKI PS-Oce34dtbond

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-17
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: RGW	
APPROVED BY: RGW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
PROJECT SERVICES UNIT PHONE:(919)250-4128 FAX:(919)250-4119	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 14601 ENGINEER ROGER G. NORTHINGTON

UTILITY CONSTRUCTION

NC GRID

NAD 83

-L-
PI Sta 241+99.29
Δ = 61° 37' 18.9" (LT)
D = 4° 10' 00.0"
L = 1,478.93'
T = 820.08'
R = 1,375.10'
SE = 0.07' FT/FT
RUNOFF = 270.0 FT

PIs Sta 249+48.21
Θs = 5° 37' 30.0"
Ls = 270.00'
LT = 180.09'
ST = 90.08'

WATER LINE OWNED BY CITY OF DURHAM

2004 ADT / 2024 ADT
-L- DAVIS DRIVE: 23110 / 42910; 24155 / 45055; 480 / 880; 190 / 390; 190 / 390; 285 / 585; 1330 / 2730
-Y11- PARK KNOLL DRIVE: 1715 / 3415
PROJECTED TRAFFIC VOLUMES

BL-125 PINC 247+17.35=
-L- STA. 238+26.69
(27.503' RT.)

PROP. 32' OF 16" DI WATER PIPE, PC 350
SEE SHEET UC-26 FOR LINE W-6 PROFILE
AND SHEET UC-30 FOR DETAIL
MAINTAIN HORIZONTAL ALIGNMENT

1-RELOCATE EXISTING FIRE HYDRANT

ADJUST MANHOLE
ROTATE EXISTING MANHOLE
OUTSIDE OF CURB

-MATCHLINE- STA. 238+00.00 SEE SHEET NO.UC-16

-MATCHLINE- STA. 250+00.00 SEE SHEET NO. UC-18

-L- STA.249+75.00
END 200' TAPER
SB RT TURN LANE

-L- STA.249+20.00
BEGIN 200' TAPER
NB RT TURN LANE

-L- STA.247+75.00
BEGIN 200' TAPER
SB RT TURN LANE

-L- STA.244+50.00
END 200' TAPER
NB LT TURN LANE
END 200' TAPER
SB LT TURN LANE

-L- STA.242+45.00
END 750' TAPER
NB & SB LANES

-L- POC 246+09.29 =
-Y11- POT 10+00.00

-L- CS 248+58.13

-Y11- PC 11+06.17

-Y11- PT 12+12.67

-Y11-
PI Sta 11+59.50
Δ = 7° 37' 57.0" (LT)
D = 7° 10' 00.0"
L = 106.50'
T = 53.33'
R = 799.48'
SE = MATCH EXIST.

DO NOT DISTURB SIGN

TOE PROTECTION W/ PERMANENT SOIL REINFORCEMENT MAT EST. 187 SY SEE DITCH DETAIL O

TOE PROTECTION W/ PERMANENT SOIL REINFORCEMENT MAT EST. 107 SY SEE DITCH DETAIL O

2' LAT. BASE DITCH W/ CLASS "B" RIP RAP
EST. 45 TONS
EST. 127 SY FF
EST. 20 CY DDE
SEE DITCH DETAIL F

CLASS "B" RIP RAP
EST 5 TONS
EST 14 SY FF

CONN. DTCB TO JB W/MT COVER

REVISE UNKNOWN TO 4"FSS

REMOVE EX ENDWALL

CONNECT TO EXISTING 8" WATER

RESEARCH TRIANGLE FOUNDATION
DB 148 PG 331
DB 315 PG 537

KEYSTONE OFFICE 100 - 200, LLC
DB 3149 PG 668

KEYSTONE OFFICE, 100 - 200 LLC
DB 3149 PG 668
MB 145 PG 55

DUKE POWER CO
DB 937 BK 392

TOWN OF CARY
DB 2253 PG 672
MB 136 PG 62

TECHNOLOGY VII - IX, LLC
DB 3112 PG 930

KEYSTONE TECHNOLOGY PARK OWNERS ASSOC., INC
DB 2447 PG 655
MB 140 PG 75

KEYSTONE WAREHOUSE PARK OWNERS ASSOC., INC
DB 2602 PG 549
MB 142 PG 156

TECHNOLOGY V, LLC
DB 2498 PG 533
MB140 PG 214

TECHNOLOGY I, LLC
DB 2305 PG 577
BM 137 PG 204

DUKE POWER CO
DB 937 BK 392

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR INTERSECTION DETAIL, SEE SHEET 2-L
FOR TRAIL PLANS, SEE SHEETS 2-T
FOR -L- PROFILE, SEE SHEET 47

NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

LEGEND
PAVED SHOULDER

PS228334 5/24/2006 u4026p23_uc19 AKOUCHEKI PS-Oce34dtbond

REVISIONS
3/25/04 CHANGED PARCEL NO. 15 TO PARCEL NO. 17A & 17B & NAME CHANGE

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-18

DESIGNED BY: ARK
DRAWN BY: ARK
CHECKED BY: RGW
APPROVED BY: RGW
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DESIGN SERVICES UNIT
PHONE:(919)250-4128
FAX:(919)250-4119

UTILITY CONSTRUCTION PLANS ONLY

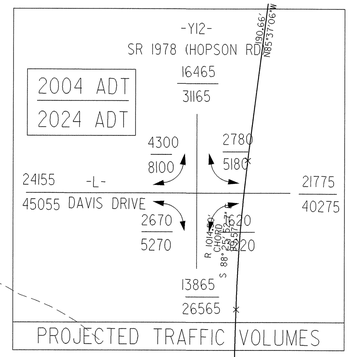
UTILITY CONSTRUCTION

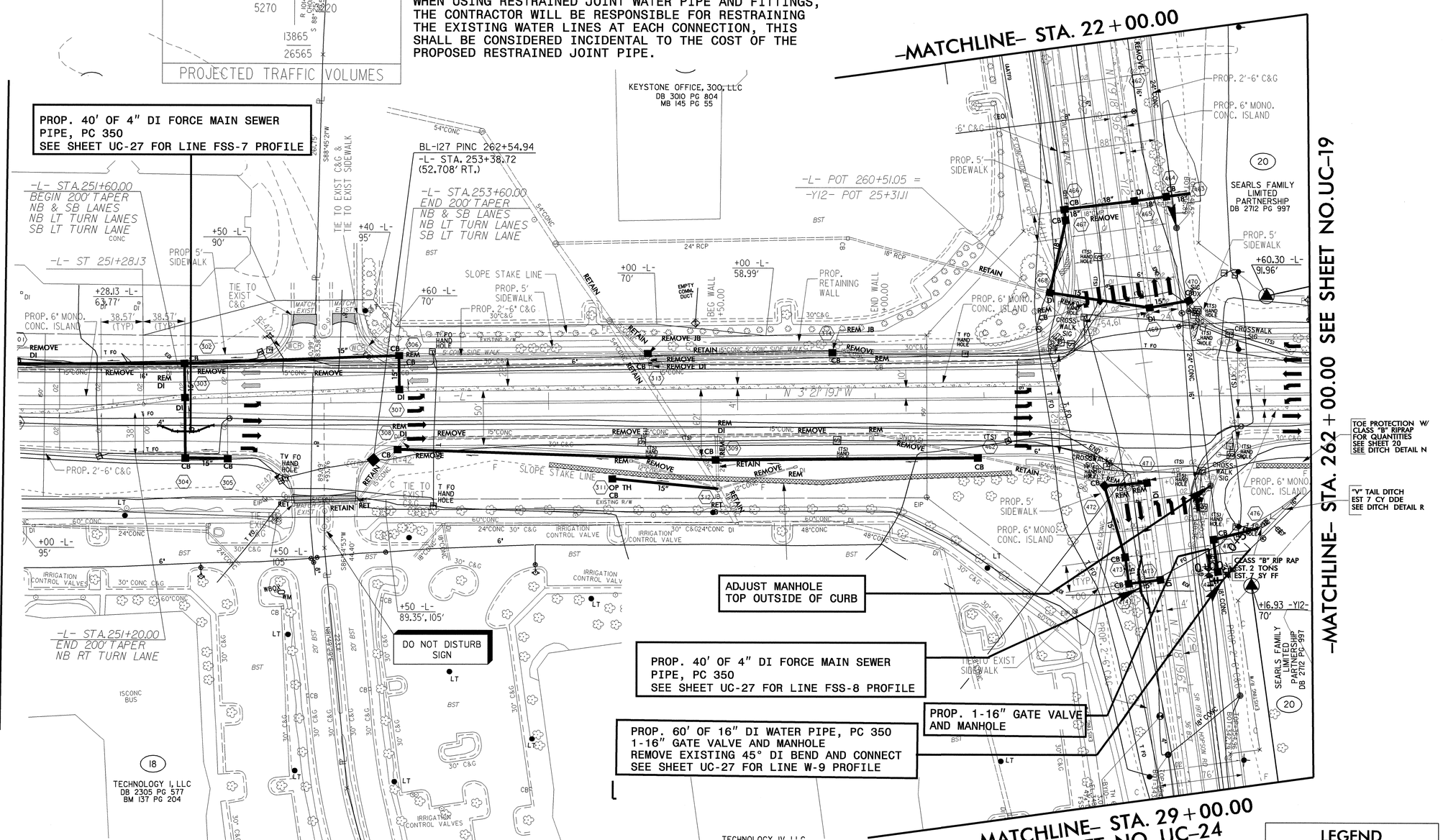
NAD 83 | NC GRID

WATER LINE OWNED BY CITY OF DURHAM

SEWER LINE OWNED BY DURHAM COUNTY

NOTE;
WHEN USING RESTRAINED JOINT WATER PIPE AND FITTINGS, THE CONTRACTOR WILL BE RESPONSIBLE FOR RESTRAINING THE EXISTING WATER LINES AT EACH CONNECTION, THIS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE PROPOSED RESTRAINED JOINT PIPE.





LEGEND
PAVED SHOULDER

NOTES:
1. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR INTERSECTION DETAIL, SEE SHEET 2-L
FOR RETAINING WALL DETAIL, SEE SHEET 2-EE
FOR -L- PROFILE, SEE SHEET 48
FOR -Y12- PROFILE, SEE SHEET 56

14-JUL-2006 13:38
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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-19
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: RGW	
APPROVED BY: RGW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DESIGN SERVICES UNIT PHONE:(919)250-4128 FAX:(919)250-4119	UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

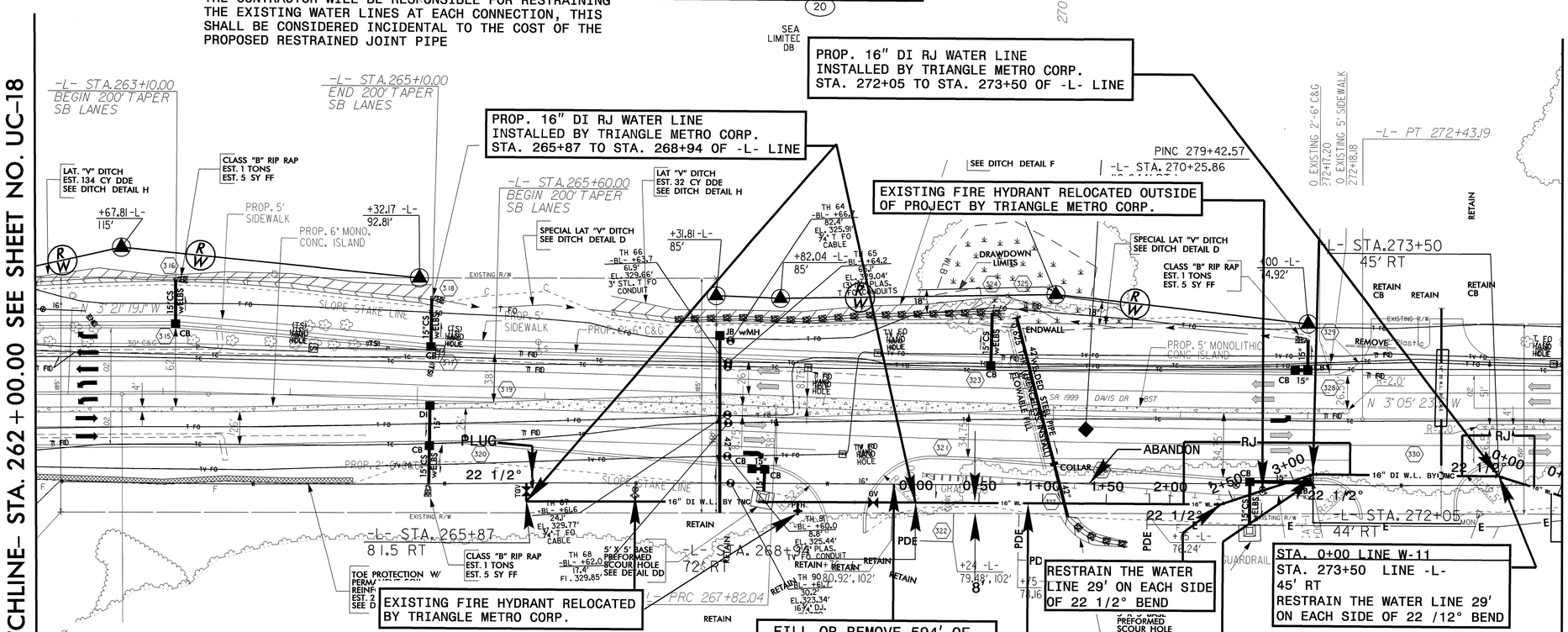
NAD 83 | NC GRID

WATER LINE OWNED BY CITY OF DURHAM

SEWER LINE OWNED BY DURHAM COUNTY

NOTE;
WHEN USING RESTRAINED JOINT WATER PIPE AND FITTINGS, THE CONTRACTOR WILL BE RESPONSIBLE FOR RESTRAINING THE EXISTING WATER LINES AT EACH CONNECTION, THIS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE PROPOSED RESTRAINED JOINT PIPE

-L-
PI Sta 270+12.65
Δ = 2° 18' 20.7" (LT)
D = 0° 30' 00.0"
L = 461.15'
T = 230.61'
R = 11,459.16'
SE = 0.02 FT/FT



NOTE:1

T.M.C. WILL INSTALL 16" DI RJ WATER LINE IN TWO SEGMENTS FROM STA.265+87 TO STA.268+94 AND STA. 272+05 TO STA. 273+50

T.M.C. CONTRACTOR WILL INSTALL TAPPING SLEEVE AND VALVE, 16" DI RJ WATER LINE AND ASSOCIATED APPURTENANCES.

T.M.C. CONTRACTOR WILL PRESSURE TEST, CHLORINATE AND ACTIVATE WATER LINE.

NOTE 2:

DOT CONTRACTOR SHALL INSTALL 16" WATER LINE FROM STA.268+94 TO STA.272+05 AND STA.273+50 TO STA.309+35.

CONTRACTOR SHALL INSTALL THE 16" WATER LINE AND ASSOCIATED APPURTENANCES

CONTRACTOR SHALL PRESSURE TEST AND CHLORINATE FROM VALVE AT STA. 268+61 TO STA. 309+35.. UPON COMPLETION OF TEST AND CHLORINATION CONTRACTOR SHALL CONNECT 16" WATER LINE AT ALL LOCATIONS.

CONTRACTOR SHALL CUT AND PLUG EXISTING WATER LINE AT STA. 266+00. THE EXISTING 16" WATER LINE SHALL BE ABANDONED BY FILLING OR REMOVING.

NOTES:
1. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR -L- PROFILE, SEE SHEET 48

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25-MAY-2006 13:52
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$$$$USERNAME$$$$

REVISIONS
3/16/04 REVISED PARCEL NO. 6 TO PARCEL NO. 6J
4/19/04 NAME CHANGE PARCEL NO. 22

NOTE;
WHEN USING RESTRAINED JOINT WATER PIPE AND FITTINGS, THE CONTRACTOR WILL BE RESPONSIBLE FOR RESTRAINING THE EXISTING WATER LINES AT EACH CONNECTION, THIS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE PROPOSED RESTRAINED JOINT PIPE

NOTE: THE CONTRACTOR SHALL REPLACE THE EXISTING FIRE HYDRANTS THAT ARE TO BE RELOCATED WITH NEW FIRE HYDRANTS SUPPLIED BY THE CITY OF DURHAM.

SEWER LINE OWNED BY DURHAM COUNTY

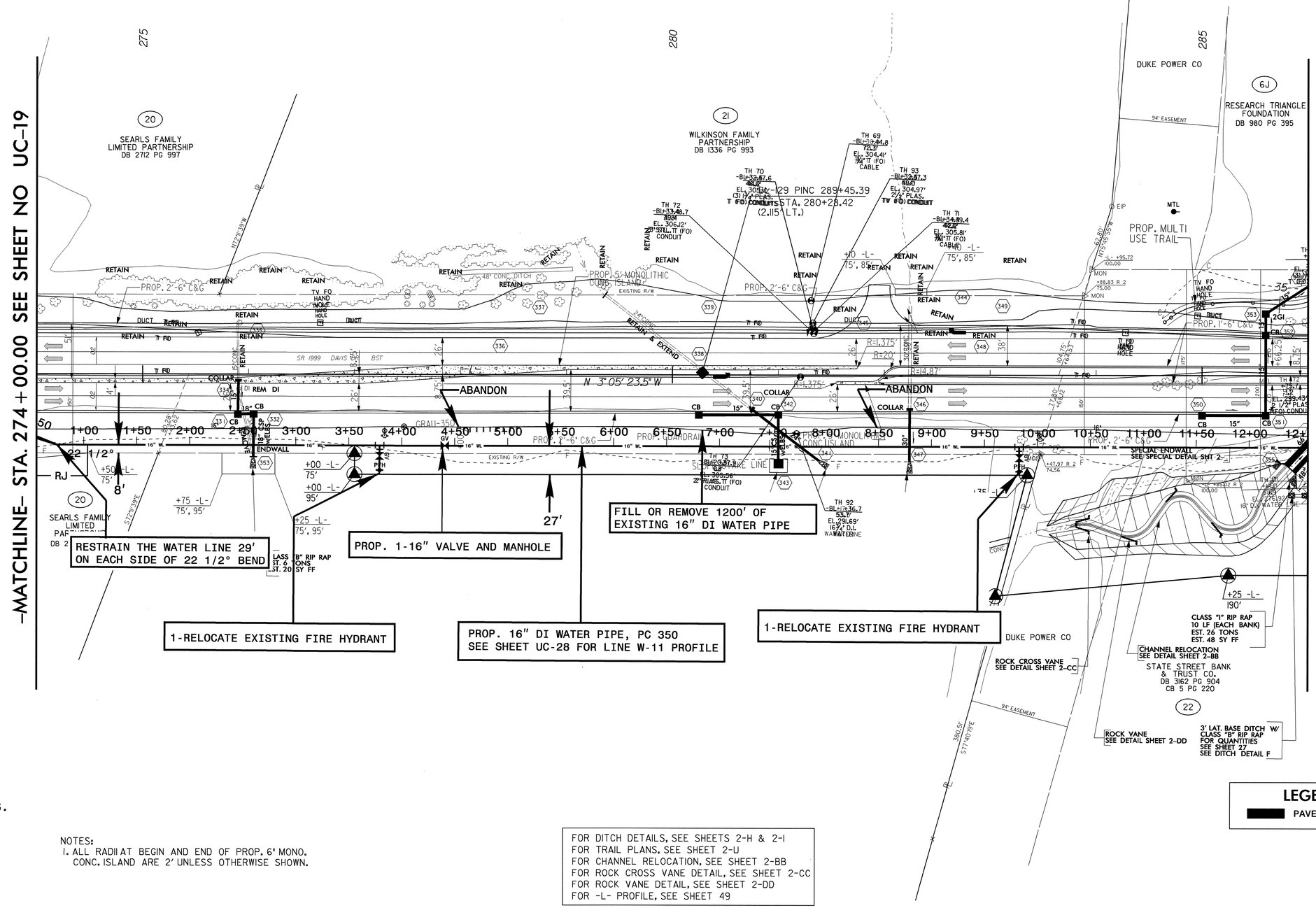
WATER LINE OWNED BY CITY OF DURHAM

NAD 83 | NC GRID

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-20
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: RGW	
APPROVED BY: RGW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DESIGN SERVICES UNIT PHONE:(919)250-4128 FAX:(919)250-4119	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 14601 ENGINEER ROBERT G. WORTHINGTON, JR.

UTILITY CONSTRUCTION



LEGEND
PAVED SHOULDER

- LOCATIONS.

ING.

NOTES:
1. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR TRAIL PLANS, SEE SHEET 2-U
FOR CHANNEL RELOCATION, SEE SHEET 2-BB
FOR ROCK CROSS VANE DETAIL, SEE SHEET 2-CC
FOR ROCK VANE DETAIL, SEE SHEET 2-DD
FOR -L- PROFILE, SEE SHEET 49

25-MAY-2006 13:34
$$$$USERNAME$$$$ proj\u4026p26_uc_22.dgn

REVISIONS
9/23/03 REVISED TDE & PDE ON PARCEL 23
3/16/04 REVISED PARCEL NO. 6 TO PARCEL NO. 6J & 6K
4/19/04 NAME CHANGE PARCEL NO. 22
6/25/04 REVISED CE & PDE ON PARCEL NO. 6K

NOTE;
WHEN USING RESTRAINED JOINT WATER PIPE AND FITTINGS, THE CONTRACTOR WILL BE RESPONSIBLE FOR RESTRAINING THE EXISTING WATER LINES AT EACH CONNECTION, THIS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE PROPOSED RESTRAINED JOINT PIPE.

WATER LINE OWNED BY CITY OF DURHAM

SEWER LINE OWNED BY DURHAM COUNTY

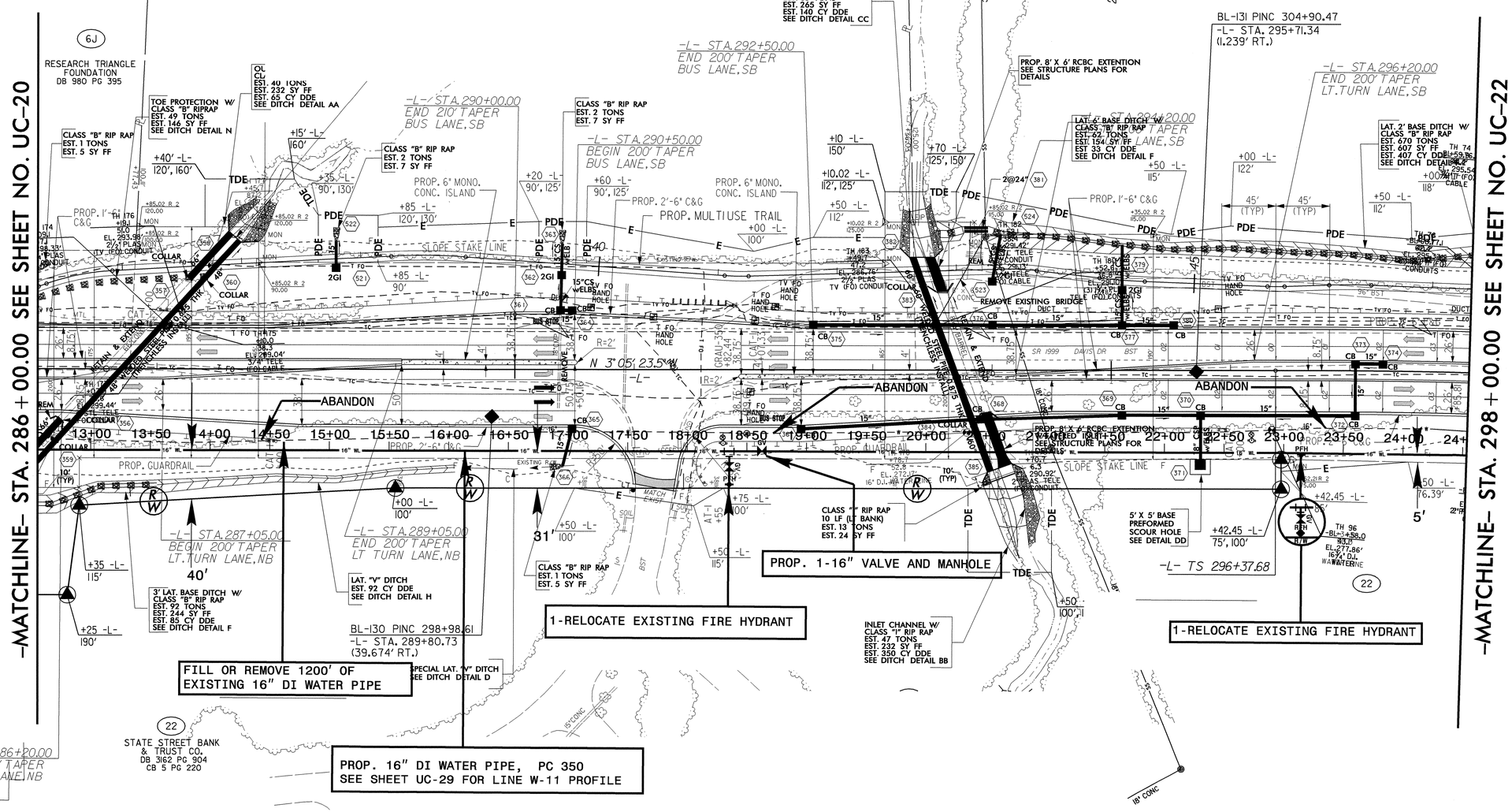
NOTE: THE CONTRACTOR SHALL REPLACE THE EXISTING FIRE HYDRANTS THAT ARE TO BE RELOCATED WITH NEW FIRE HYDRANTS SUPPLIED BY THE CITY OF DURHAM.

NAD 83 | NC GRID

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-21
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: RGW	
APPROVED BY: RGW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DESIGN SERVICES UNIT PHONE:(919)250-4128 FAX:(919)250-4119	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER 14601 ROBERT G. NORTHINGTON, JR.

UTILITY CONSTRUCTION



-L-
Pls Sta 297+87.71
Θs = 3° 22' 30.0"
Ls = 225.00'
LT = 150.03'
ST = 75.02'

LEGEND
PAVED SHOULDER

NOTES:
1. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR -L- PROFILE, SEE SHEET 49

25-MAY-2006 13:30
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REVISIONS
9/23/03 REVISED TDE & PDE ON PARCEL 23
2/4/04 REVISED PDE ON PARCEL 24
3/16/04 REVISED PARCEL NO. 6 TO PARCEL NO. 6L
3/25/04 NAME CHANGE ON PARCEL NO.24
4/19/04 NAME CHANGE ON PARCEL NO.22

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-22
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: RGW	
APPROVED BY: RGW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DESIGN SERVICES UNIT PHONE:(919)250-4128 FAX:(919)250-4119	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 14601 ENGINEER RUSS G. NORTHINGTON, JR.

UTILITY CONSTRUCTION

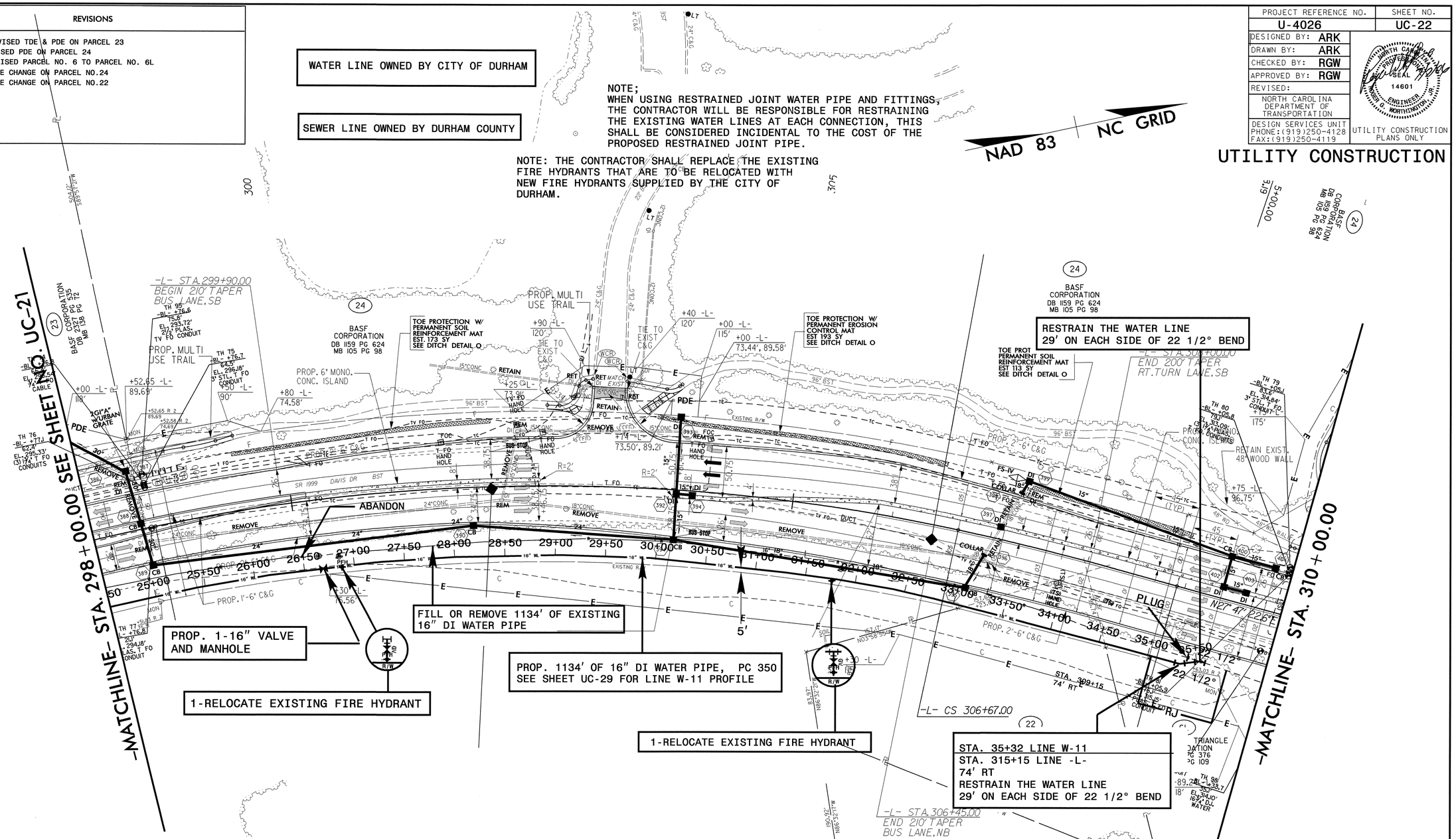
WATER LINE OWNED BY CITY OF DURHAM

SEWER LINE OWNED BY DURHAM COUNTY

NOTE;
WHEN USING RESTRAINED JOINT WATER PIPE AND FITTINGS, THE CONTRACTOR WILL BE RESPONSIBLE FOR RESTRAINING THE EXISTING WATER LINES AT EACH CONNECTION, THIS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE PROPOSED RESTRAINED JOINT PIPE.

NOTE: THE CONTRACTOR SHALL REPLACE THE EXISTING FIRE HYDRANTS THAT ARE TO BE RELOCATED WITH NEW FIRE HYDRANTS SUPPLIED BY THE CITY OF DURHAM.

NAD 83 NC GRID



-L-

PIs Sta 297+87.71	PI Sta 265+24.97	PIs Sta 307+42.02
Θs = 3° 22' 30.0"	Δ = 2° 34' 16.3" (RT)	Θs = 3° 22' 30.0"
Ls = 225.00'	D = 0° 30' 00.0"	Ls = 225.00'
LT = 150.03'	L = 514.24'	LT = 150.03'
ST = 75.02'	T = 257.16'	ST = 75.02'
	R = 11,459.16'	
	SE = 0.02 FT/FT	

NOTES:
1. ALL RADII AT BEGIN AND END OF PROP. 6' MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR TRAIL PLANS, SEE SHEETS 2-V & 2-W
FOR -L- PROFILE, SEE SHEET 50

LEGEND
PAVED SHOULDER

REVISIONS
3/16/04 REVISED PARCEL NO. 6 TO PARCEL NO. 6L
3/25/04 NAME CHANGE PARCEL NO. 24
4/19/04 NAME CHANGE PARCEL NO. 22

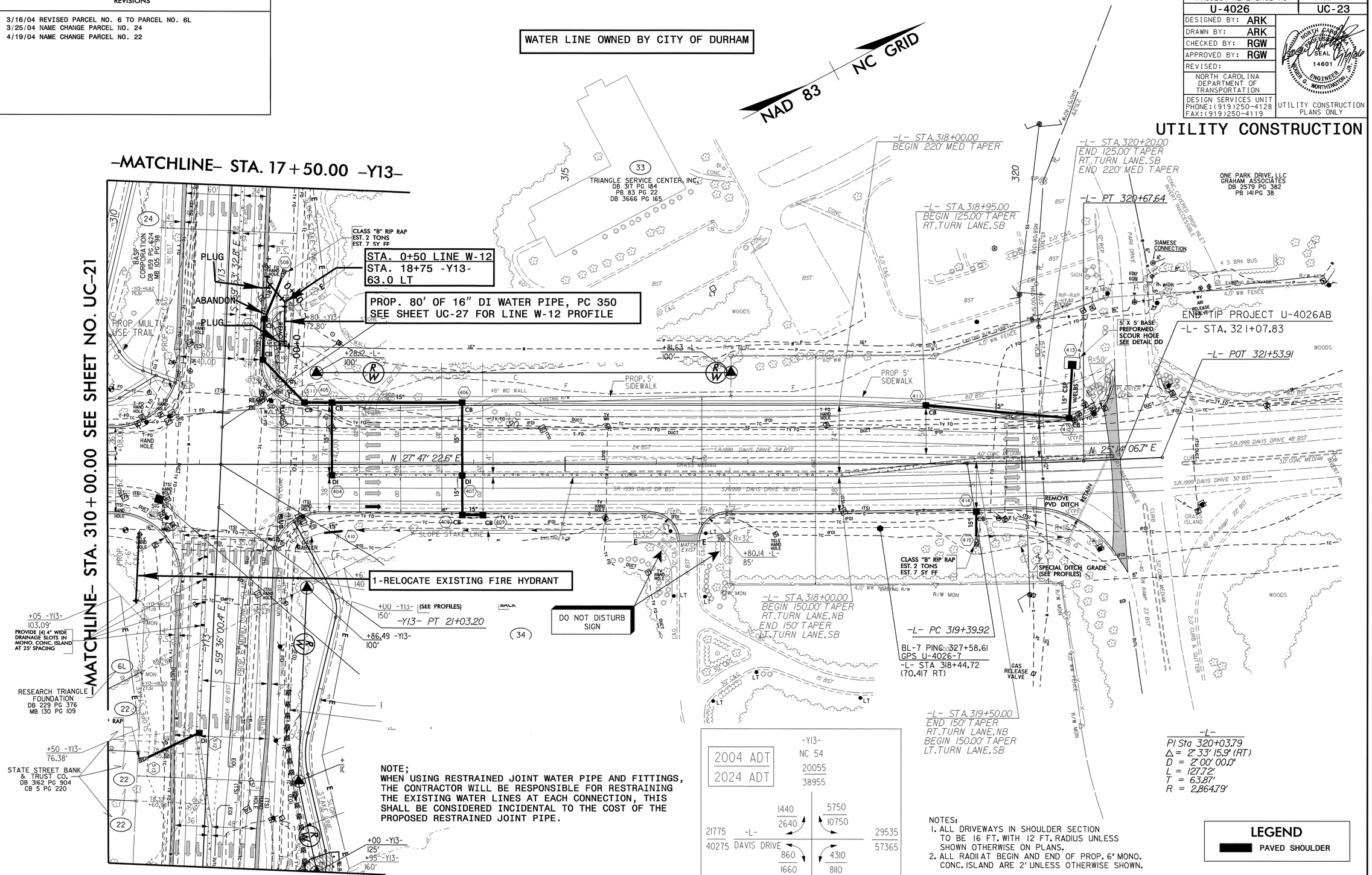
PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-23

DESIGNED BY: ARK
DRAWN BY: ARK
CHECKED BY: RGW
APPROVED BY: RGW
REVISED:

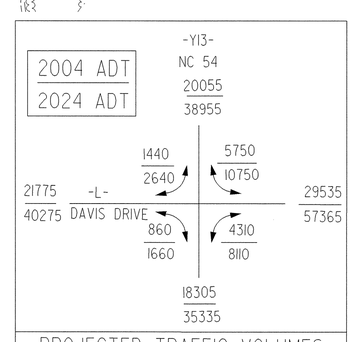
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DESIGN SERVICES UNIT
PHONE:(919)250-4128
FAX:(919)250-4119

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION



NOTE;
WHEN USING RESTRAINED JOINT WATER PIPE AND FITTINGS, THE CONTRACTOR WILL BE RESPONSIBLE FOR RESTRAINING THE EXISTING WATER LINES AT EACH CONNECTION, THIS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE PROPOSED RESTRAINED JOINT PIPE.



PROJECTED TRAFFIC VOLUMES

NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR INTERSECTION DETAIL, SEE SHEET 2-M
FOR C&G TRANSITION SECTION, SEE SHEET 2-N
FOR -L- PROFILE, SEE SHEET 50
FOR -Y13- PROFILE, SEE SHEET 57
FOR TRAIL PLANS SEE 2-W & 2-X

LEGEND
PAVED SHOULDER

PS228334 5/25/2006 u4026p29_uc_27 akoucheki PS-Oce34dtbond

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-24
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: RGW	
APPROVED BY: RGW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DESIGN SERVICES UNIT PHONE:(919)250-4128 FAX:(919)250-4119	UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

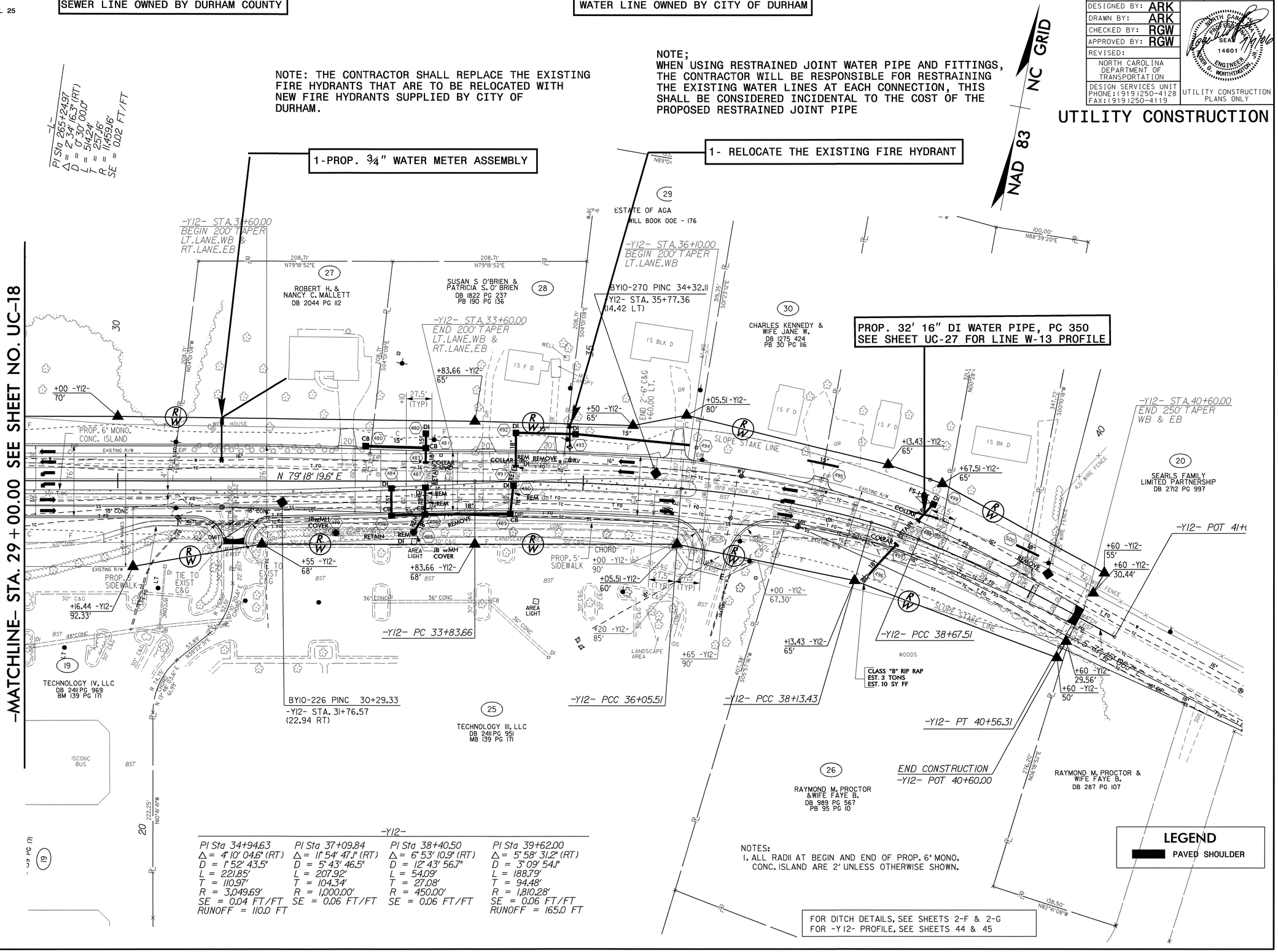
9/23/03 REVISED CE ON PARCEL 25

SEWER LINE OWNED BY DURHAM COUNTY

WATER LINE OWNED BY CITY OF DURHAM

NOTE: THE CONTRACTOR SHALL REPLACE THE EXISTING FIRE HYDRANTS THAT ARE TO BE RELOCATED WITH NEW FIRE HYDRANTS SUPPLIED BY CITY OF DURHAM.

NOTE;
WHEN USING RESTRAINED JOINT WATER PIPE AND FITTINGS, THE CONTRACTOR WILL BE RESPONSIBLE FOR RESTRAINING THE EXISTING WATER LINES AT EACH CONNECTION, THIS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE PROPOSED RESTRAINED JOINT PIPE



-Y12-

PI Sta 34+94.63	PI Sta 37+09.84	PI Sta 38+40.50	PI Sta 39+62.00
Δ = 4° 10' 04.6" (RT)	Δ = 11° 54' 47.1" (RT)	Δ = 6° 53' 10.9" (RT)	Δ = 5° 58' 31.2" (RT)
D = 1° 52' 43.5"	D = 5° 43' 46.5"	D = 12° 43' 56.7"	D = 3° 09' 54.1"
L = 221.85'	L = 207.92'	L = 54.09'	L = 188.79'
T = 110.97'	T = 104.34'	T = 27.08'	T = 94.48'
R = 3,049.69'	R = 1,000.00'	R = 450.00'	R = 1,810.28'
SE = 0.04 FT/FT	SE = 0.06 FT/FT	SE = 0.06 FT/FT	SE = 0.06 FT/FT
RUNOFF = 110.0 FT			RUNOFF = 165.0 FT

NOTES:
1. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEETS 2-F & 2-G
FOR -Y12- PROFILE, SEE SHEETS 44 & 45

PS228334 5/24/2006 u4026p28_uc_26 AKOUCHEKI PS-Oce34dtbond

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-25

DESIGNED BY: ARK
DRAWN BY: ARK
CHECKED BY: RGW
APPROVED BY: RGW
REVISED:

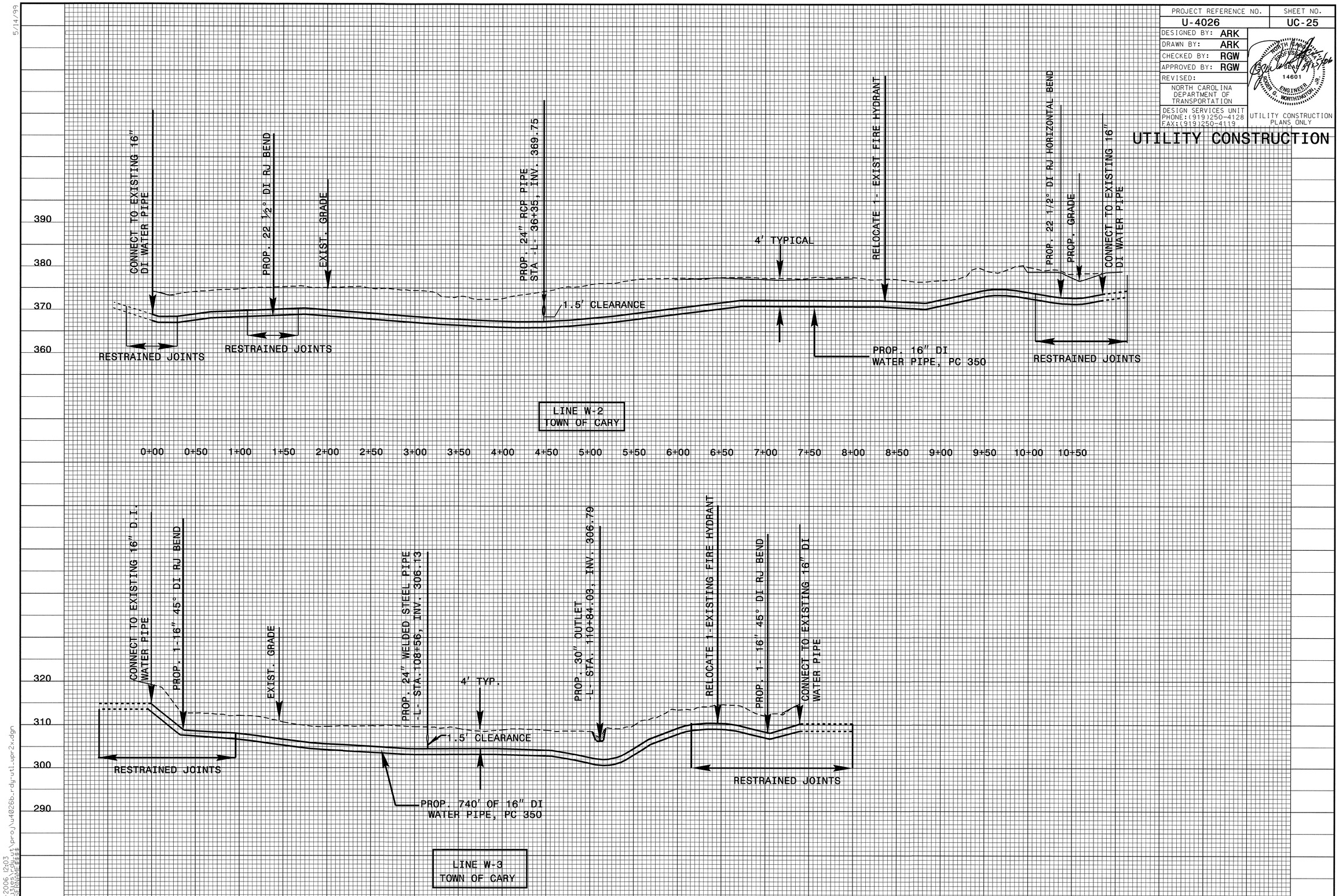
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN SERVICES UNIT
PHONE:(919)250-4128
FAX:(919)250-4119

UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER 14601 ROGER G. WORTHINGTON, JR.

UTILITY CONSTRUCTION



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14-JUL-2006 12:03
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PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-26

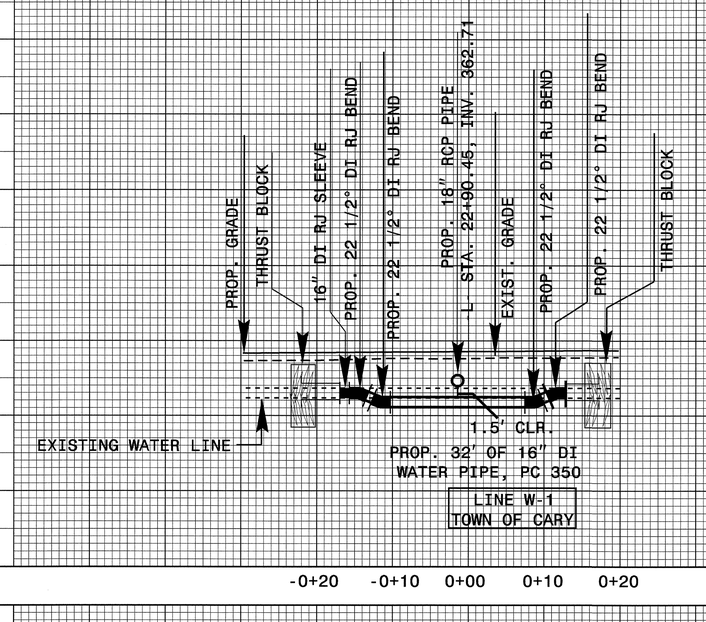
DESIGNED BY: ARK
DRAWN BY: ARK
CHECKED BY: RGW
APPROVED BY: RGW
REVISED:

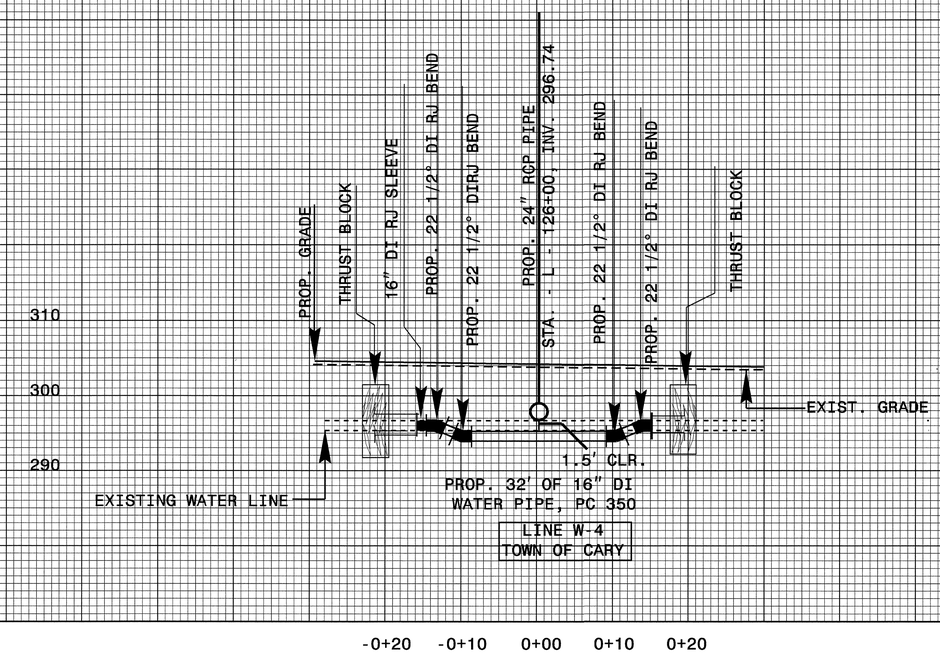
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PROJECT SERVICES UNIT
PHONE:(919)250-4128
FAX:(919)250-4119

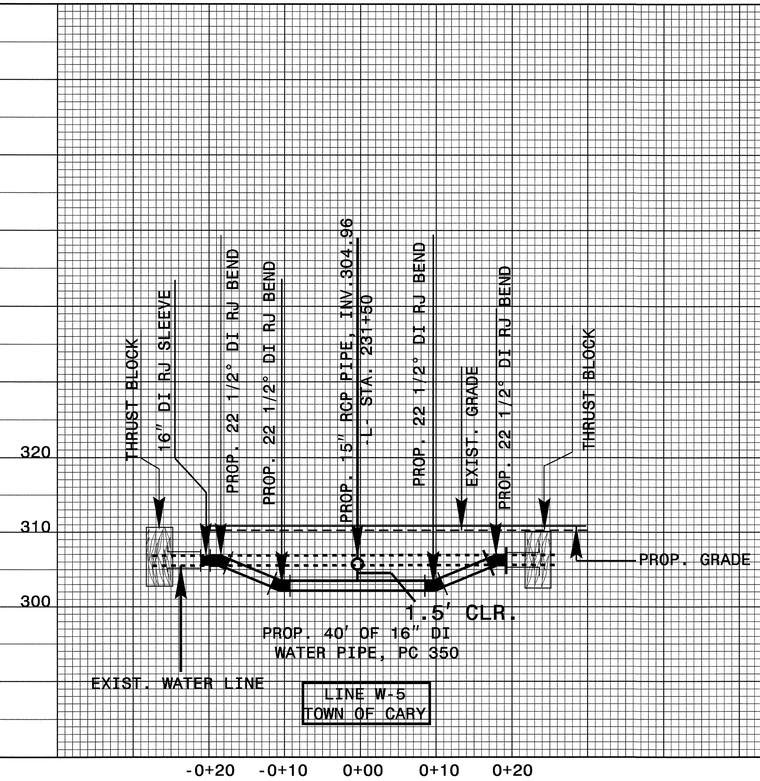
NORTH CAROLINA PROFESSIONAL SEAL 14601 ENGINEER ROBERT G. WORTHINGTON, JR. 5/17/06

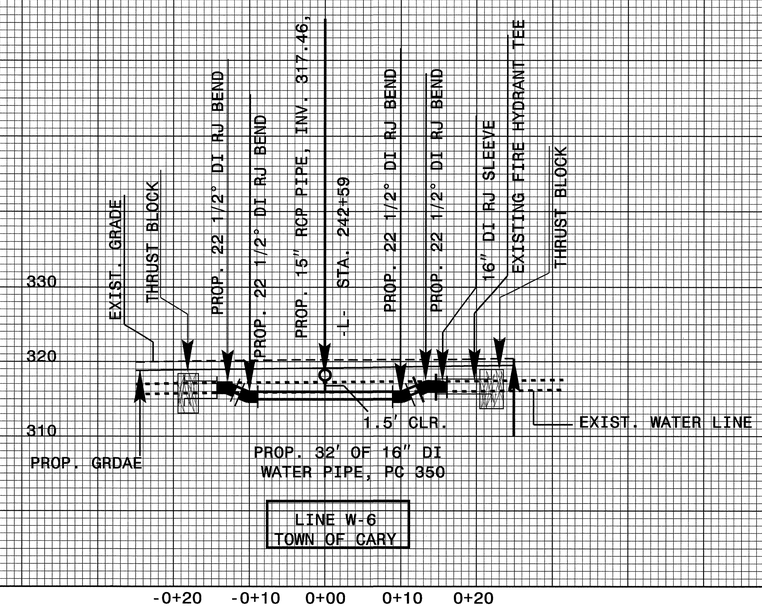
UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION









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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-27

DESIGNED BY: ARK
DRAWN BY: ARK
CHECKED BY: RGW
APPROVED BY: RGW
REVISED:

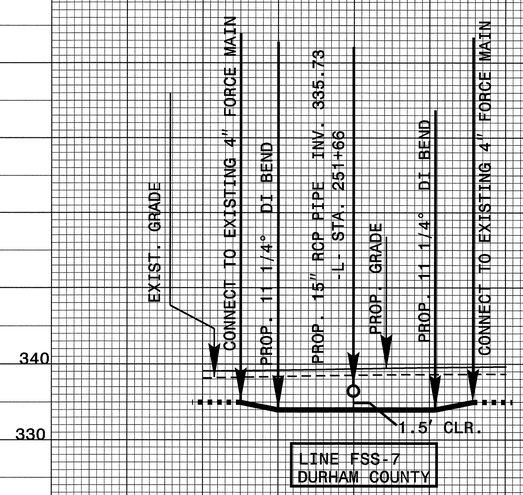
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

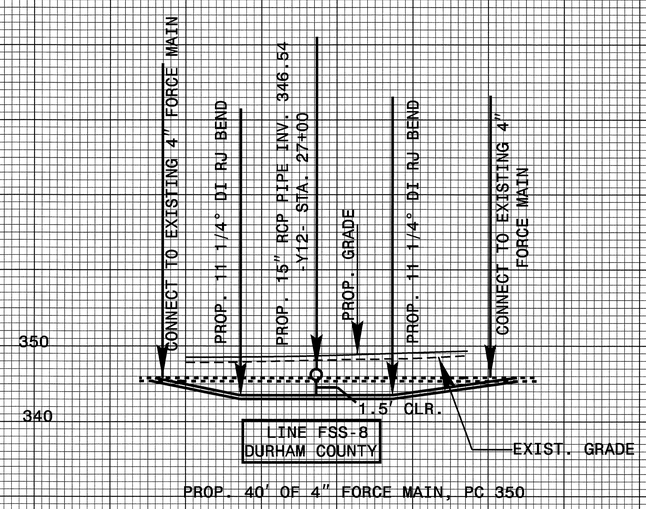
PROJECT SERVICES UNIT
PHONE:(919)250-4128
FAX:(919)250-4119

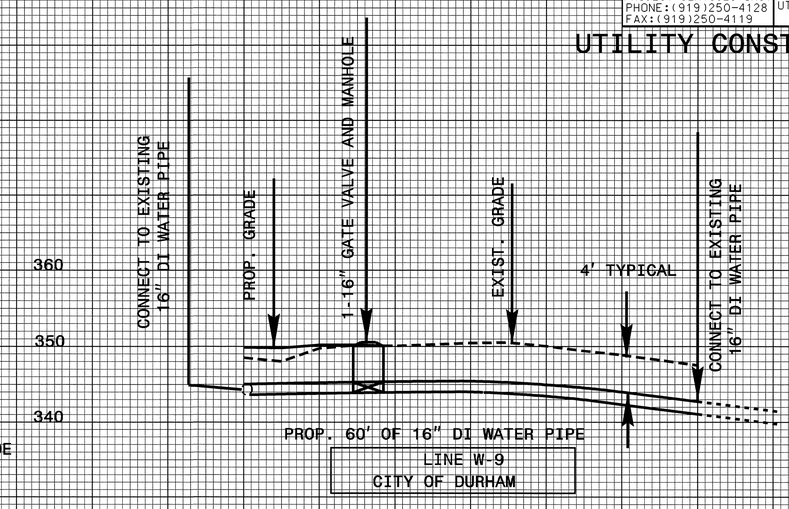
SEAL 14601 ENGINEER ROBERT G. WORTHINGTON

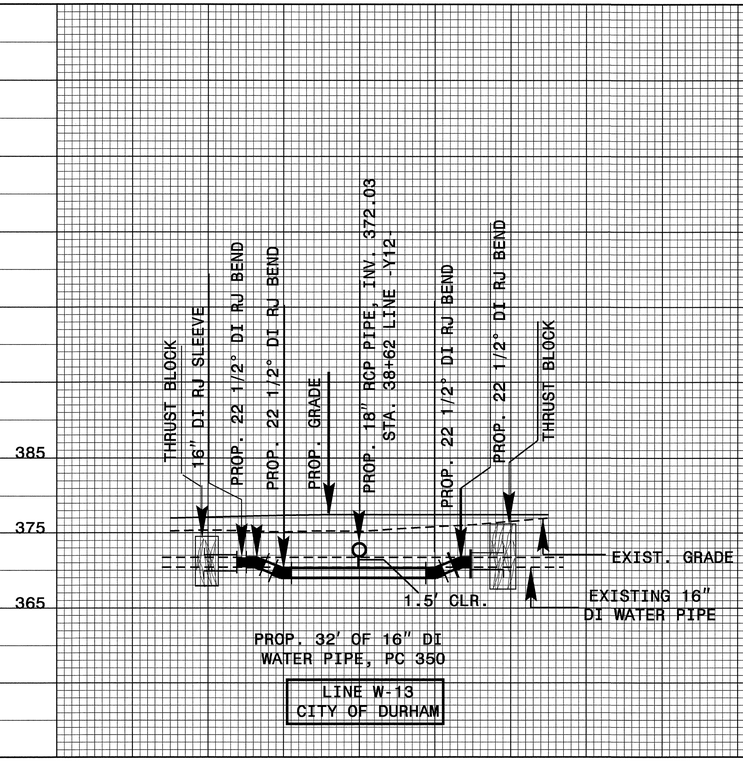
UTILITY CONSTRUCTION PLANS ONLY

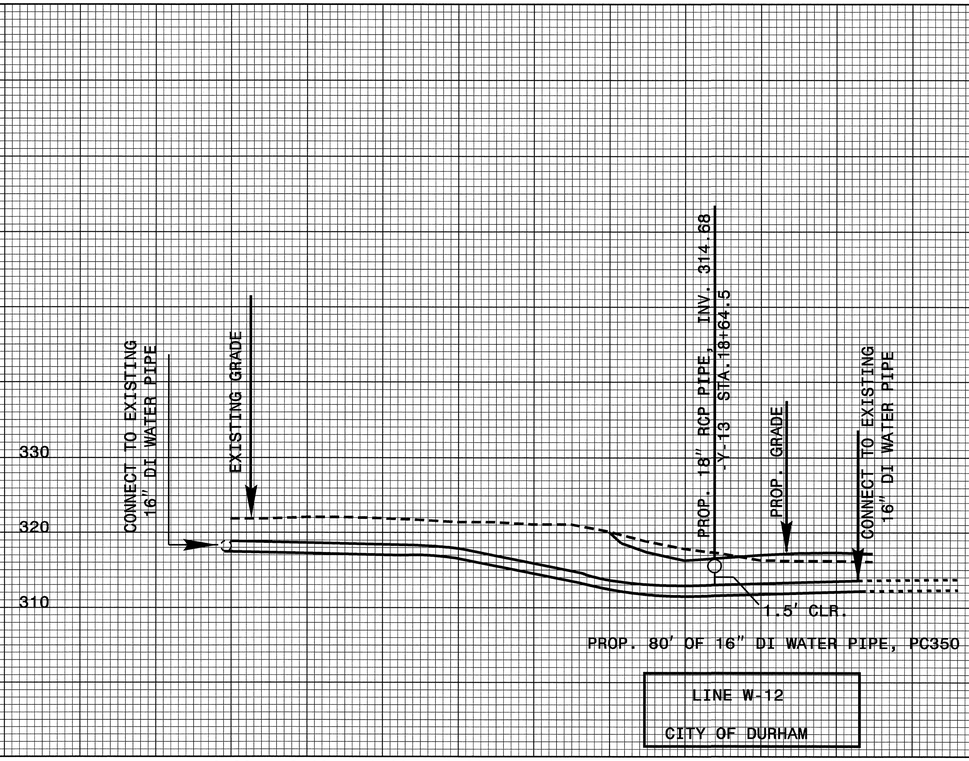
UTILITY CONSTRUCTION











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$$$$USERNAME$$$$

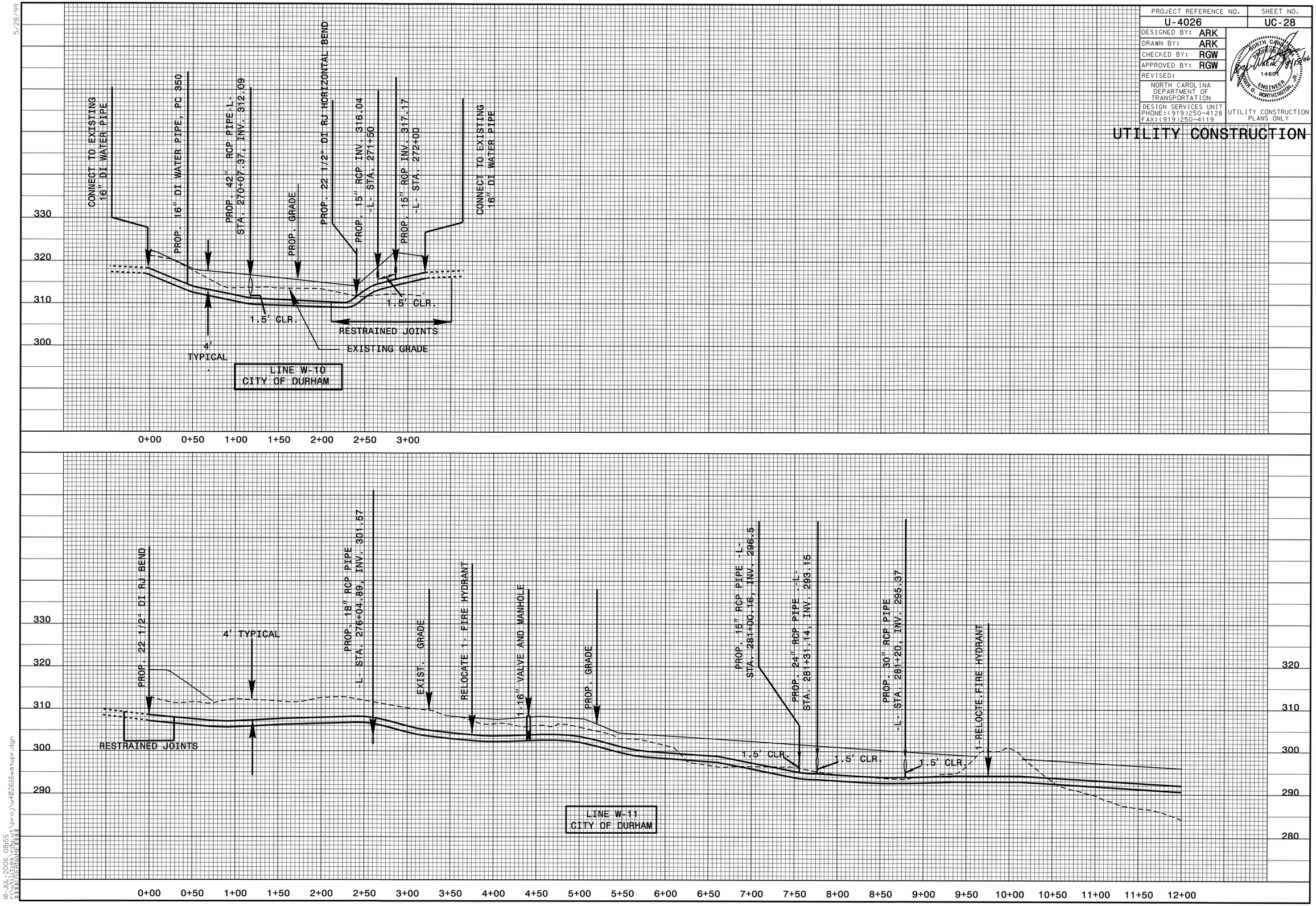
PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-28

DESIGNED BY: ARK
DRAWN BY: ARK
CHECKED BY: RGW
APPROVED BY: RGW
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DESIGN SERVICES UNIT
PHONE:(919)250-4128
FAX:(919)250-4119

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION



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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-29

DESIGNED BY: ARK
DRAWN BY: ARK
CHECKED BY: RGW
APPROVED BY: RGW
REVISED:

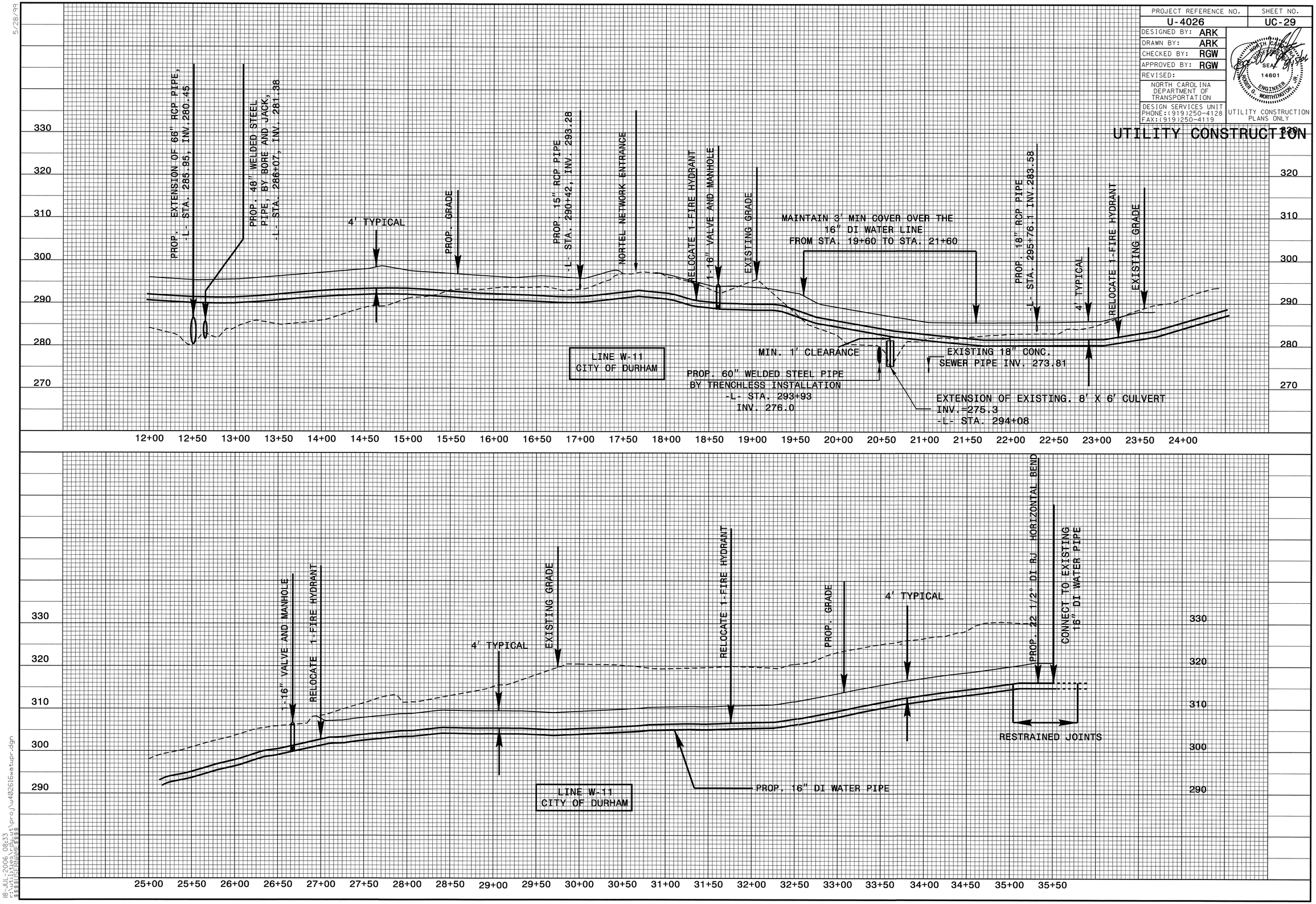
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN SERVICES UNIT
PHONE:(919)250-4128
FAX:(919)250-4119

NORTH CAROLINA PROFESSIONAL SEAL 14601 ENGINEER ROBERT G. WORTHINGTON JR. 9/15/06

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION



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18-JUL-2006 08:33
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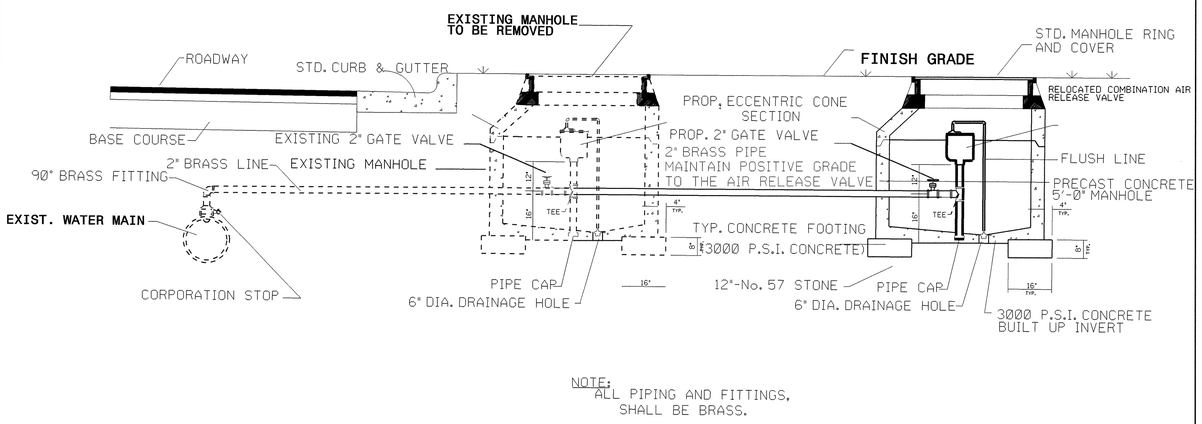
PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-30
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: RGW	
APPROVED BY: RGW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DESIGN SERVICES UNIT PHONE:(919)250-4128 FAX:(919)250-4119	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 14601 ENGINEER ROBERT G. WORTHINGTON, JR.

UTILITY CONSTRUCTION

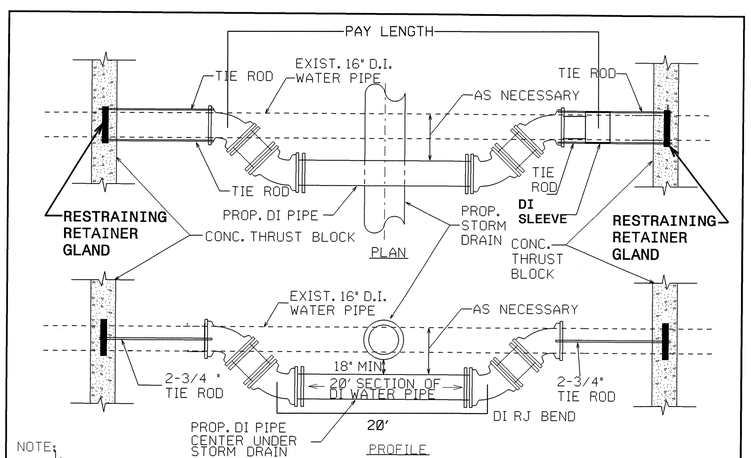


NOTE:
ALL PIPING AND FITTINGS, SHALL BE BRASS.

RELOCATION OF COMBINATION AIR VALVE MANHOLE
FOR WATER MAINS, TYPE 2

MAXIMUM TRENCH WIDTH AT TOP OF PIPE

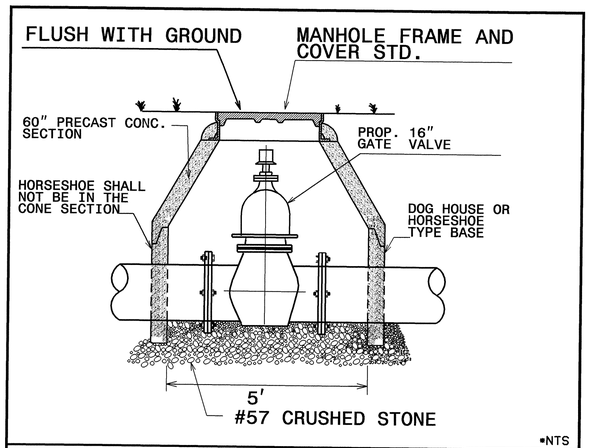
NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)	NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)
4	28	20	44
6	30	24	48
8	32	30	54
10	34	36	60
12	36	42	66
14	38	48	72
16	40	54	78
18	42		



NOTE:
1. FITTINGS SHALL BE RESTRAINED BY USING TIE RODS OR OTHER METHOD AS APPROVED BY ENGINEER.

*NTS

RELOCATION OF 16" D.I. WATER PIPE AT PROP. STORM DRAINAGE AS SHOWN ON PLANS

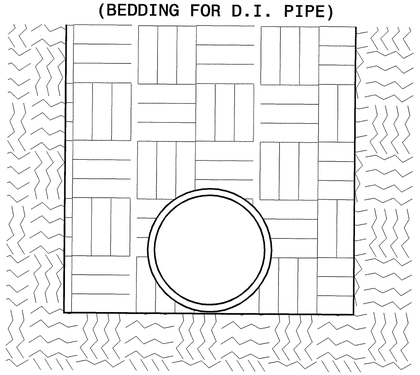


*NTS

TYPICAL 16" WATER GATE VALVE
AND 5' DIA. MANHOLE
CITY OF DURHAM

TYPE "2"

(BEDDING FOR D.I. PIPE)



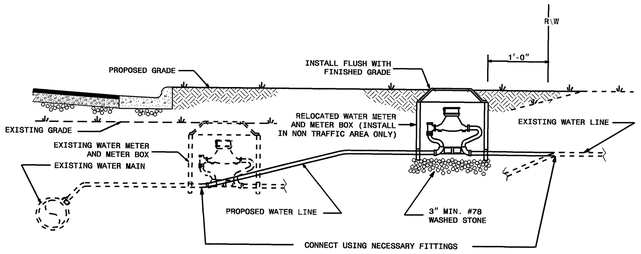
PIPE BEDDED IN FLAT-BOTTOM TRENCH. TRENCH BACKFILLED IN LOOSE 6" LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL, IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL. ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROX. 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.

8/17/99
07-SEP-2006 08:26
$$$$USERNAME$$$$
PS228334 9/7/2006 u4026adetail_uc_11 akoucheki PS-Oce34dtbond

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UC-31
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: RGW	
APPROVED BY: RGW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DESIGN SERVICES UNIT PHONE:(919)250-4128 FAX:(919)250-4119	UTILITY CONSTRUCTION PLANS ONLY

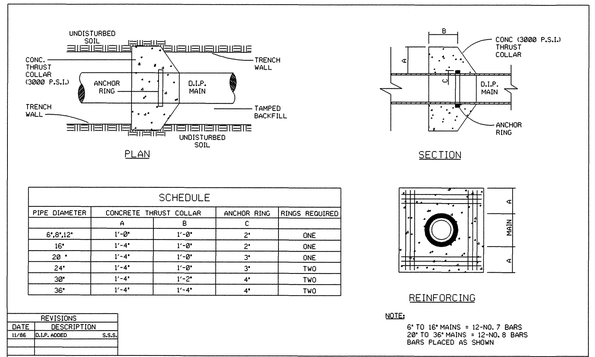
NORTH CAROLINA PROFESSIONAL SEAL 14601 ENGINEER R. GRAHAM WORTHINGTON, JR. 8/17/06

UTILITY CONSTRUCTION



1. THE NEW WATER SERVICE LINE SHALL BE OF THE SAME TYPE AND GRADE AS THE EXISTING WATER SERVICE LINE UNLESS OTHERWISE SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER.
2. THE NEW WATER SERVICE LINE SHALL BE INSTALLED WITH A MINIMUN OF 48" COVER BELOW FINISHED GRADE.

WATER METER RELOCATION DETAIL



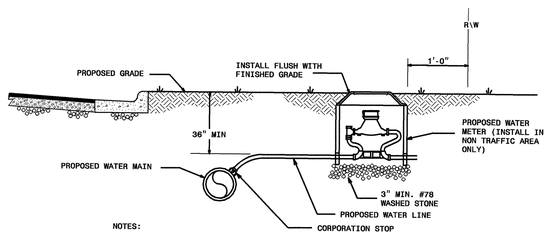
SCHEDULE				
PIPE DIAMETER	CONCRETE THRUST COLLAR		ANCHOR RING	RINGS REQUIRED
	A	B	C	
6",8",12"	1'-0"	1'-0"	2"	ONE
16"	1'-4"	1'-0"	2"	ONE
20"	1'-4"	1'-0"	3"	ONE
24"	1'-4"	1'-0"	3"	TWO
30"	1'-4"	1'-2"	4"	TWO
36"	1'-4"	1'-4"	4"	TWO

NOTE:
6" TO 16" MAINS = 12-NO. 7 BARS
20" TO 36" MAINS = 12-NO. 8 BARS
BARS PLACED AS SHOWN

REVISIONS		
DATE	DESCRIPTION	
11/06	D.I.P. ADDED	S.S.S.

STANDARD THRUST COLLAR INSTALLATION

STD. No. 6.10

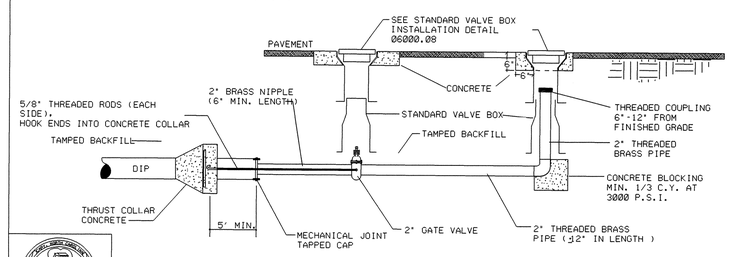


NOTES:
1. THE NEW WATER SERVICE LINE SHALL BE INSTALLED WITH A MINIMUN OF 48" COVER BELOW FINISHED GRADE.

WATER METER INSTALLATION DETAIL

MAIN SIZE	END PIPE SIZE
4" - 12"	2" BLOW-OFF
16" & GREATER	AS APPROVED BY TOWN ENGINEER

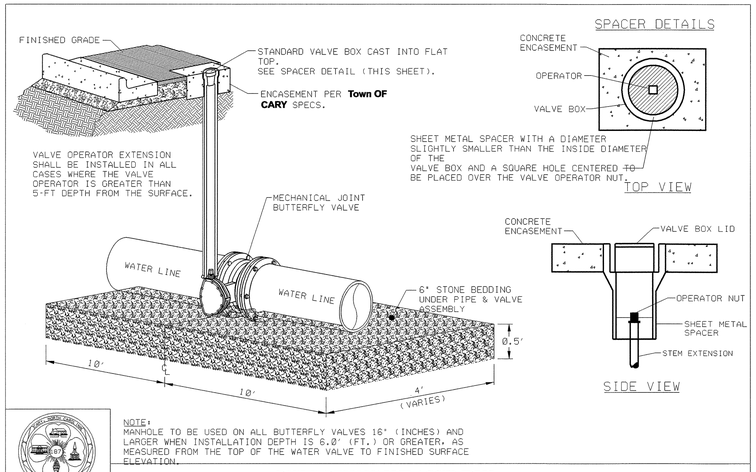
NOTE:
1. FOR MAINS THAT ARE TO BE EXTENDED USE A VALVE EQUAL TO THE MAIN SIZE AS THE BLOW-OFF VALVE AND THEN REDUCE TO THE 2" STANDPIPE.
2. ROD SHALL BE "HOOKED" INTO THRUST COLLAR.



EFFECTIVE:07/01/04

STANDARD 2" BLOW-OFF ASSEMBLY

DETAIL No. 06000.11
SHEET 1 OF 1



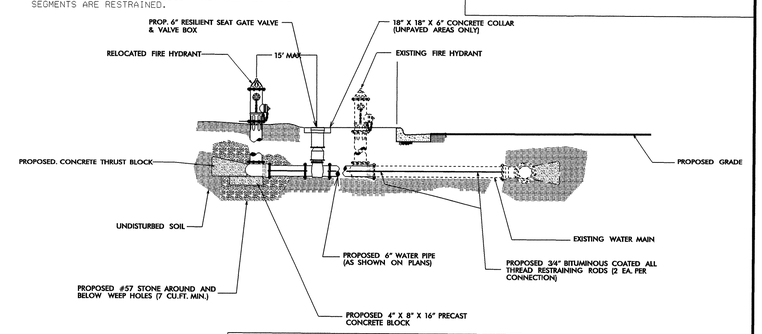
NOTE:
MANHOLE TO BE USED ON ALL BUTTERFLY VALVES 16" (INCHES) AND LARGER WHEN INSTALLATION DEPTH IS 6.0' (FT.) OR GREATER. AS MEASURED FROM THE TOP OF THE WATER VALVE TO FINISHED SURFACE ELEVATION.

EFFECTIVE: 09/08/05

BUTTERFLY VALVE ASSEMBLY FOR WATER VALVE 6-ft OR LESS IN DEPTH

NOTES:
1. TOP OF BLOCKING TO BE 2" FROM HYDRANT WEEP HOLES.
2. HYDRANT TEE MAY BE SUBSTITUTED FOR D.I.P. NIPPLE AND RODDING TO VALVE.
3. TAPPING SADDLES MAY BE USED INSTEAD OF A TEE FOR WATER LINES LARGER THAN 16 INCHES.
4. STD. RODDING AND BLOCKING FROM GATE VALVE TO HYDRANT MAY BE SUBSTITUTED WITH A CONCENTRIC RING RESTRAINT SYSTEM SUCH AS MUELLER AQUAGRIP OR AN APPROVED EQUAL PRODUCT PROVIDED ALL PIPE SEGMENTS ARE RESTRAINED.

GENERAL NOTES:
1. FIRE HYDRANTS SHALL BE PLACED AS FAR AS POSSIBLE FROM THE PAVEMENT EDGE WITHIN RIGHT OF WAY OUTER LIMITS. PUMPER NOZZLE SHALL BE PERPENDICULAR TO ROADWAY.
   SWIVEL (LOCKED JOINTS) FITTINGS MAY BE USED IN LIEU OF 3/4" RESTRAINING RODS.
2. ALL CONCRETE SHALL BE CLASS "B".
3. HYDRANT BRANCH LINE SHALL HAVE THE SAME COVER AS THE MAIN (48" MINIMUM).
4.



FIRE HYDRANT RELOCATION DETAIL

01-AUG-2006 09:06
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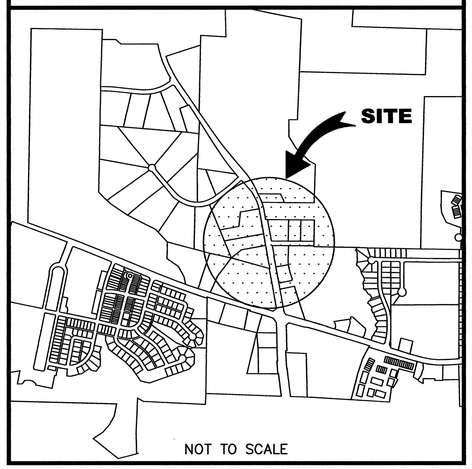
$$$$USERNAME$$$$

PS228334 8/1/2006 u4026adetail_uc_11 akoucheki PS-Oce34dtbond

VICINITY MAP

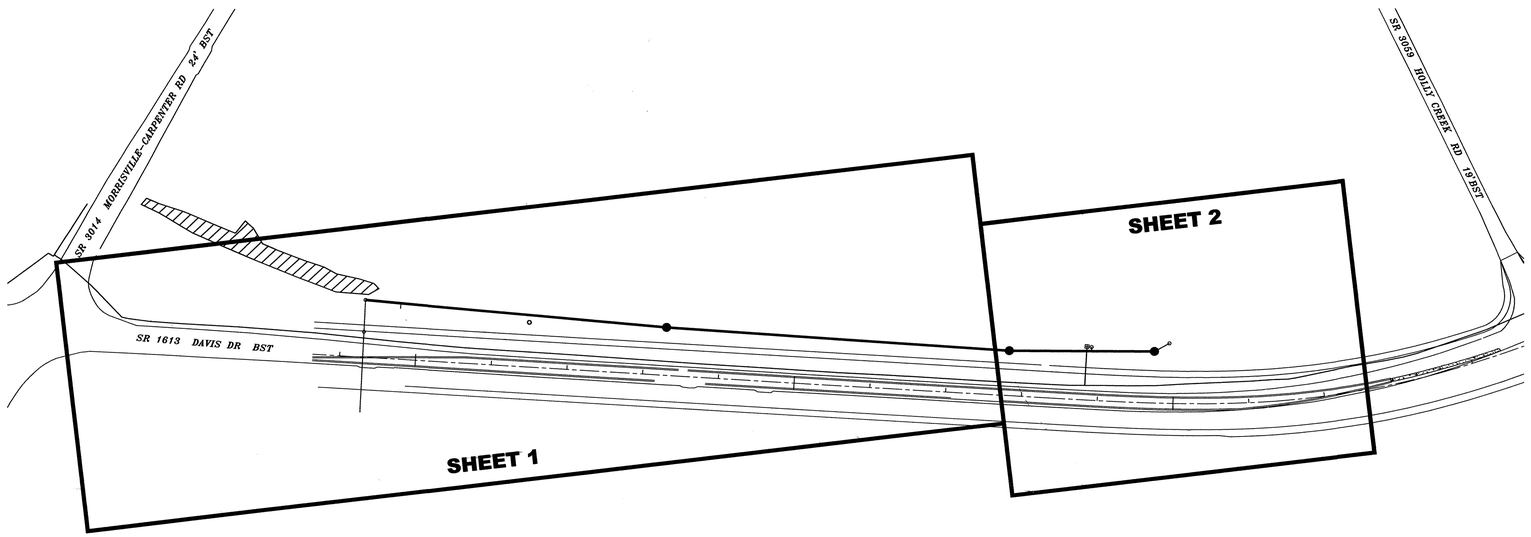


TOWN OF CARY
ENGINEERING DEPARTMENT

PROPOSED 8-INCH SANITARY SEWER MAIN
DAVIS DRIVE
PROJECT NO. ST-1102
NCDOT - U-4026

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	GENERAL NOTES
3	PLAN & PROFILE
4	PLAN & PROFILE
5	DETAIL SHEET
TOTAL SHEETS	5



SEWER MAIN PLAN

REVISIONS

DATE	DESCRIPTION
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.	.
.	.
.	.

PLAN SCALE:	AS SHOWN
DESIGNED BY:	J. BUCHANAN
DRAWN BY:	A. POBEE-MENSAH
DATE:	APRIL 2006
FILENAME:	DAVIS DRIVE TOC2.dwg

PREPARED IN THE OFFICE OF THE
TOWN OF CARY
ENGINEERING DEPARTMENT
316 N. ACADEMY STREET
CARY, NORTH CAROLINA 27513

ENGINEER

SIGNATURE — DATE 5/01/06 — SEAL (NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 25931 JOHN GLEN HARRELL)

TOWN OF CARY ENGINEERING DIRECTOR

SIGNATURE — DATE 5-1-2006 — SEAL (NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18431 LOUIS TIMOTHY BALEY)

GENERAL NOTES

1. EXISTING UTILITY LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL LOCATE ALL UTILITIES AND DETERMINE IF CONFLICTS EXIST. THE CONTRACTOR SHALL REPORT ANY CONFLICTS TO THE ENGINEER.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL REGULATORY AGREEMENTS AND PERMITS THAT HAVE BEEN ACQUIRED BY THE OWNER. FAILURE TO COMPLY SHALL SERVE AS A BASIS TO ISSUE FINES BY THE CONTROLLING LEGAL AUTHORITY. PAYMENT OF THESE FINES WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

3. ALL SURVEY AND BASE MAPPING TAKEN FROM NCDOT PLANS FOR DAVIS DRIVE WIDENING.

4. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST REVISION OF THE TOWN OF CARY'S "STANDARD SPECIFICATIONS AND DETAILS" AND THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES", UNLESS OTHERWISE STATED BY THE PLANS.

5. THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION OPERATIONS WITHIN THE RIGHT-OF-WAY, EASEMENTS, OR CONSTRUCTION LIMITS AS SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE COMPLETELY AND SOLELY RESPONSIBLE FOR ANY ENCROACHMENT ONTO PRIVATE PROPERTY. THE TOWN OF CARY SHALL NOT BE RESPONSIBLE FOR AGREEMENTS BETWEEN THE CONTRACTOR AND PRIVATE PROPERTY OWNERS.

6. ALL MONUMENTATION DISTURBED BY THE CONTRACTOR SHALL BE REPLACED BY THE CONTRACTOR IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. ANY PROPERTY IRONS THAT ARE DESTROYED OR DISTURBED DURING THE PROPOSED WORK SHALL BE SET FOLLOWING CONSTRUCTION BY A PROFESSIONAL LAND SURVEYOR. NO DIRECT PAYMENT WILL BE MADE FOR SUCH RELOCATIONS.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND REPLACING STREET SIGNS, STORM DRAINAGE PIPES, AND OTHER RELATED ITEMS DISTURBED DURING CONSTRUCTION. ALL ITEMS SHALL BE REPLACED IN THEIR ORIGINAL LOCATION AND CONDITION. NO DIRECT PAYMENT SHALL BE MADE FOR SUCH RELOCATION.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ASSURING THAT MAIL SERVICE IS NOT DISRUPTED THROUGHOUT THE DURATION OF CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL TAKE ALL NECESSARY ACTIONS TO PRESERVE MAIL DELIVERY ACCESS.

9. EXCAVATED OR CONSTRUCTION MATERIAL SHALL NOT BE STORED ON PAVED AREAS THAT ARE OPEN TO VEHICULAR TRAFFIC. EXCAVATED MATERIALS SHALL BE STOCKPILED AWAY FROM THE ROADWAY. IN CASES WHERE EXCAVATED OR CONSTRUCTION MATERIALS MUST BE STOCKPILED INSIDE THE STREET RIGHT-OF-WAY, THEY SHALL BE RELOCATED WITHIN 5 CONSECUTIVE CALENDAR DAYS OF PLACEMENT.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING AND REPLACING PAVEMENT DAMAGED BY CONSTRUCTION EQUIPMENT THAT IS OUTSIDE THE IMMEDIATE CONSTRUCTION ZONE AT NO ADDITIONAL COST TO THE OWNER.

11. UTILITY SERVICE DISRUPTIONS ARE NOT ALLOWED FOR THIS PROJECT.

12. SHOULD THE CONTRACTOR DAMAGE ANY EXISTING TOWN OF CARY UTILITIES, INCLUDING WATER, SEWER, AND STORM DRAINAGE INFRUSTRUCTURE, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEERING INSPECTOR AND THE TOWN OF CARY'S PUBLIC WORKS DEPARTMENT. THE CONTRACTOR SHALL BE COMPLETELY AND SOLELY RESPONSIBLE FOR THE COMPLETE RESTORATION OF THE DAMAGED UTILITIES INCLUDING TEMPORARY REPAIRS MADE BY THE CONTRACTOR AND/OR THE PUBLIC WORKS DEPARTMENT.

13. SHOULD THE CONTRACTOR DAMAGE ANY EXISTING UTILITIES OWNED BY OUTSIDE UTILITY PROVIDERS SUCH AS PROGRESS ENERGY COROLINAS INC., PSNC, BELLSOUTH, THE TOWN OF APEX, ETC, THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE UTILITY OWNER AND SCHEDULE REPAIRS. THE TOWN OF CARY SHALL NOT BE RESPONSIBLE FOR UTILITY DAMAGE CAUSED BY THE CONTRACTOR.

14. THE CONTRACTOR SHALL BE COMPLETELY AND SOLELY RESPONSIBLE FOR MAINTAINING SITE SAFETY AND MEETING ALL APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

15. TRAFFIC CONTROL MEASURES SHALL BE PROVIDED BY THE CONTRACTOR AS OUTLINED IN THE NCDOT "MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES" AND THE CONTRACT DOCUMENTS.

16. THE CONTRACTOR SHALL BE COMPLETELY AND SOLELY RESPONSIBLE FOR SITE CLEANUP THROUGHOUT THE LIFE OF THE PROJECT. THE CONTRACTOR SHALL BE COMPLETELY AND SOLELY RESPONSIBLE FOR FINAL SITE CLEANUP AND SITE REHABILITATION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING SITE DAMAGE THAT EXISTED PRIOR TO CONSTRUCTION, INCLUDING THE GRADING AND ESTABLISHMENT OF DRAINAGE DITCHES AND DRAINS WHERE SUCH PRE-EXISTING FEATURES HAVE BEEN DISTURBED OR OTHERWISE MODIFIED.

17. THE CONTRACTOR SHALL NOT BE ALLOWED TO BLOCK STREETS WITH UNATTENDED VEHICLES OR STOCKPILED MATERIALS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MOVING UNDERUTILIZED OR UNUSED EQUIPMENT AWAY FROM ROADWAY TRAFFIC.

18. THE CONTRACTOR SHALL INSTALL ALL SILT FENCE AND EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND MAINTAIN THEM THROUGHOUT THE LIFE OF THE PROJECT. DURING THE CONSTRUCTION WORK, IF ADDITIONAL EROSION CONTROL MEASURES, SUCH AS SILT FENCE, ARE NECESSARY THE CONTRACTOR SHALL INSTALL THEM AS DIRECTED BY THE ENGINEER.

19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ESTABLISHMENT OF STAGING AREAS FOR THEIR EQUIPMENT, SUPPLIES, AND MATERIALS REQUIRED FOR CONSTRUCTION. THE CONTRACTOR'S EQUIPMENT, SUPPLIES, AND MATERIALS SHALL NOT OCCUPY THE STREET RIGHT-OF-WAY.

SEWER CONSTRUCTION

1. ALL SEWER LINES SHALL BE CONSTRUCTED AT THE LINES AND GRADES AS SHOWN ON THE PLANS. ANY SEWER CONSTRUCTION NOT INSTALLED AT THE GRADES SPECIFIED ON THE PLANS +/- 0.03% ALLOWABLE TOLERANCE SHALL BE SUBJECT TO REJECTION BY THE OWNER. ANY SEWER INSTALLED BELOW 0.61% GRADE SHALL BE REJECTED WITH NO REGARD TO TOLERANCE.

2. DUCTILE IRON PIPE APPROVED BY THE TOWN OF CARY IS REQUIRED FOR THE CONSTRUCTION OF ALL SEWER MAINS UNDER THIS PROJECT.

3. ALL SEWER MAIN CONSTRUCTION SHALL BE TESTED AS SPECIFIED INCLUDING VIDEO ASSESSMENT AND CLEANING.

4. ALL MAIN LINE CONNECTIONS SHALL BE CONSTRUCTED WITH MJ IN-LINE WYE FITTINGS.

5. ALL SERVICE LATERALS SHALL BE CONSTRUCTED WITH DUCTILE IRON PIPE.

MANHOLE CONSTRUCTION

1. ALL MANHOLE EXTERIOR JOINTS SHALL BE WRAPPED WITH AN APPROVED SEALING PRODUCT SUCH AS INFI-SHIELD SEAL WRAP OR AN APPROVED EQUIVALENT PRODUCT.

2. ALL MANHOLE CONNECTIONS FOR EXISTING MANHOLES, ETC. SHALL BE CORED WITH A CONCRETE CORING MACHINE. UNAPPROVED CONNECTIONS SHALL BE REJECTED.

3. ALL MANHOLES CONSTRUCTED WITH THIS PROJECT SHALL PASS A VACUUM TEST AS SPECIFIED PRIOR TO ACCEPTANCE BY THE OWNER.

TOWN OF CARY
ENGINEERING DEPARTMENT
316 N. ACADEMY STREET
CARY, N.C. 27513

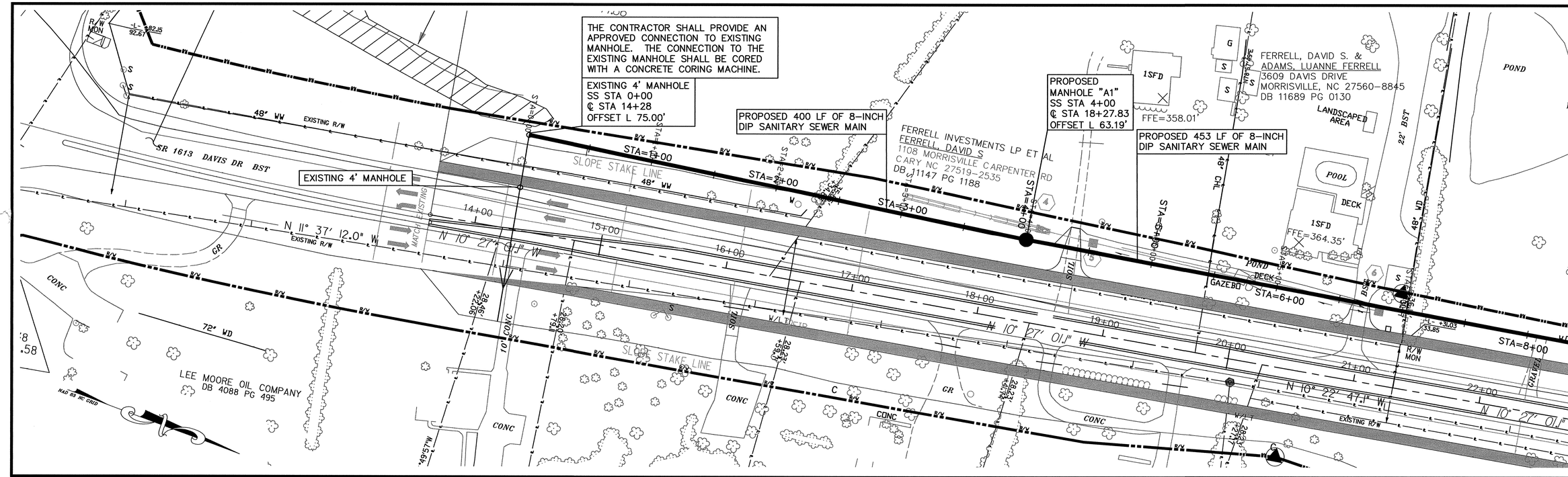
PROJECT NAME
TOWN OF CARY
PROPOSED 8-INCH SANITARY SEWER MAIN
NCDOT - U-4026

GENERAL NOTES

05/01/06
NORTH CAROLINA PROFESSIONAL SEAL 25931 ENGINEER JOHN GLEN HARRELL
SIGNATURE

REVISIONS

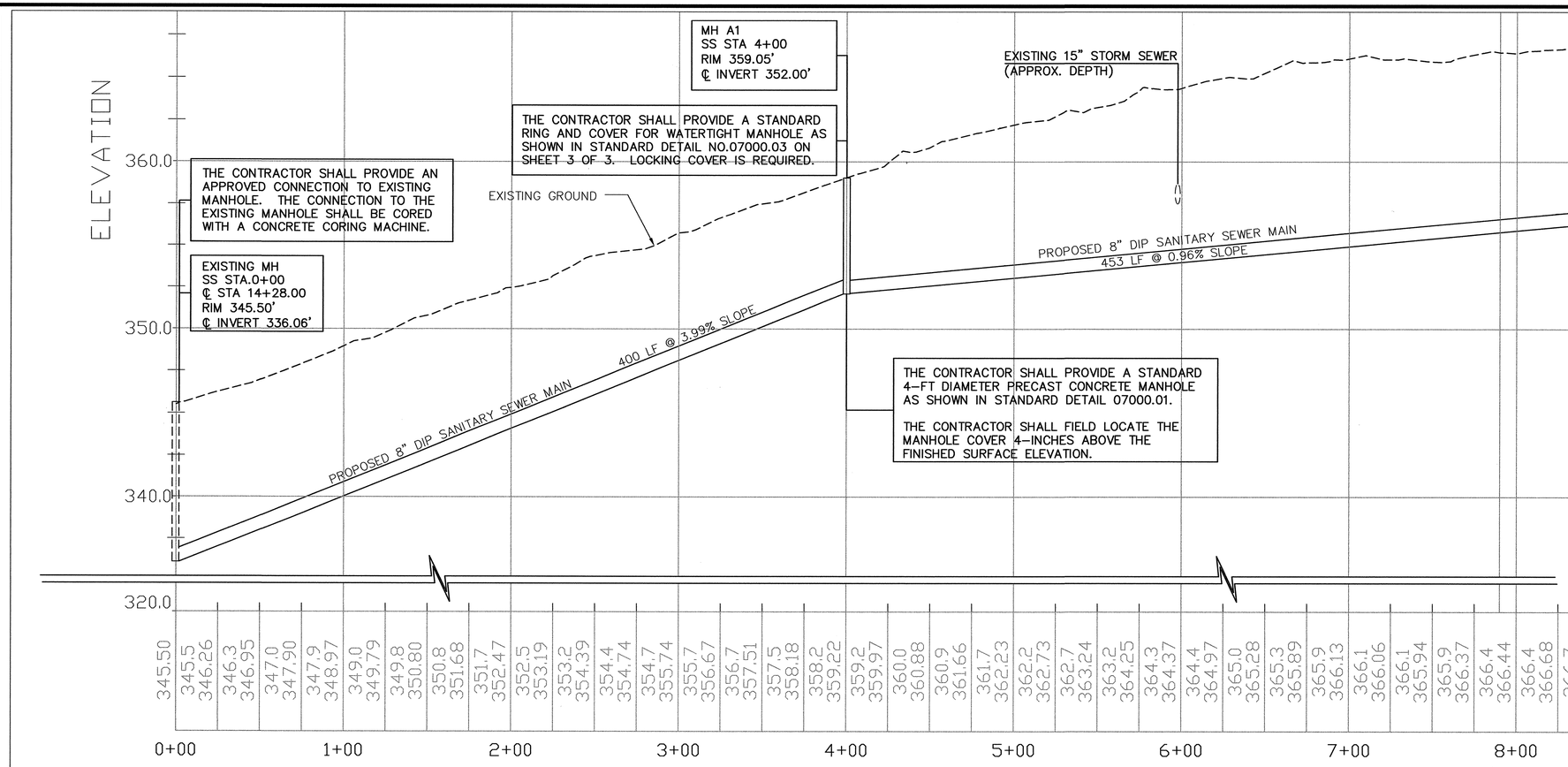
PROJ.# ST-1102
DESIGN BY: JAB
DRAWN BY: APM
DATE: APR 2006
SCALE HOR: NTS
SCALE VER:



LEGEND:

PROPOSED TEXT = BOLD
EXISTING TEXT = SHADED

EXISTING ELECTRIC	E
EXISTING WATER LINE	W
EXISTING SANITARY SEWER LINE	SS
EXISTING RIGHT-OF-WAY	R/W
EXISTING PROPERTY LINE	℄
EXISTING EASEMENT LINE	
EXISTING OVERHEAD WIRE	OHPL
EXISTING IRON PIPE	EIP
EXISTING SEWER MANHOLE	MH
EXISTING GAS VALVE	GV
EXISTING TELEPHONE PEDESTAL	T.PED.
EXISTING CABLE PEDESTAL	CATV
EXISTING CATCH BASIN	CB
EXISTING MAIL BOX	MB
EXISTING LANDSCAPE LIGHT	LL
EXISTING POWER POLE	PP
EXISTING CLEANOUT	CO
EXISTING WATER METER	WM
EXISTING WATER VALVE	WV
EXISTING FIRE HYDRANT	FH
PROPOSED WATER TAP	**WM**
PROPOSED SEWER TAP	**CO**



TOWN OF CARY
ENGINEERING DEPARTMENT
316 N. ACADEMY STREET
CARY, N.C. 27513

PROJECT NAME
TOWN OF CARY
PROPOSED 8-INCH SANITARY SEWER MAIN
NCDOT - U-4026

PLAN & PROFILE

03/01/06
NORTH CAROLINA PROFESSIONAL SEAL 25931 ENGINEER JOHN GLEN HARRELL
SIGNATURE

REVISIONS

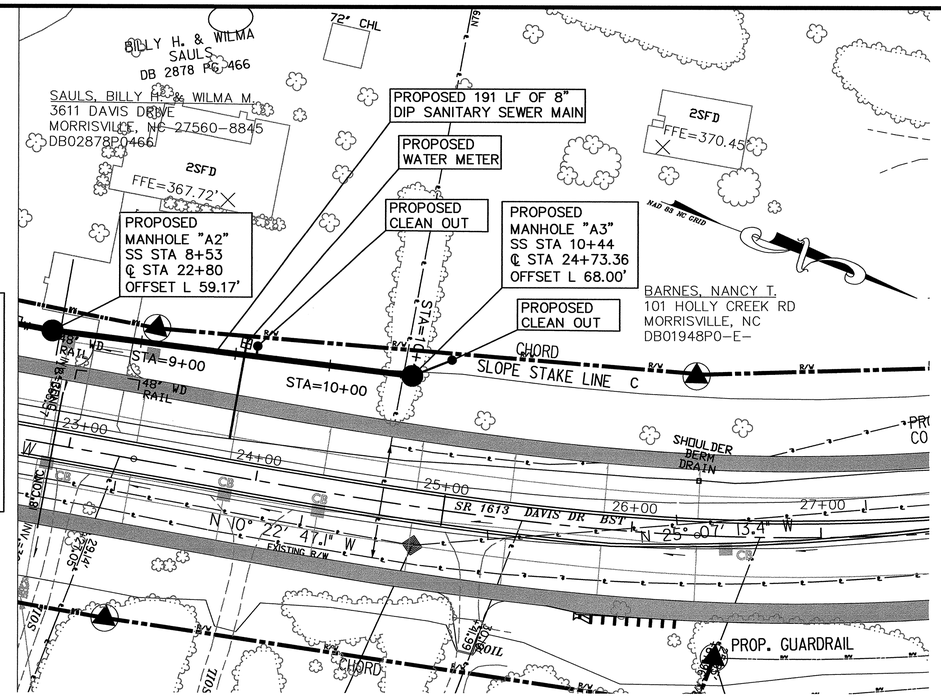
PROJ.# ST-1102
DESIGN BY: JAB
DRAWN BY: APM
DATE: APR 2006
SCALE HOR: 1"=40'
SCALE VER: 1"=4'

SHEET NO.
3 OF 5

LEGEND:

PROPOSED TEXT = BOLD

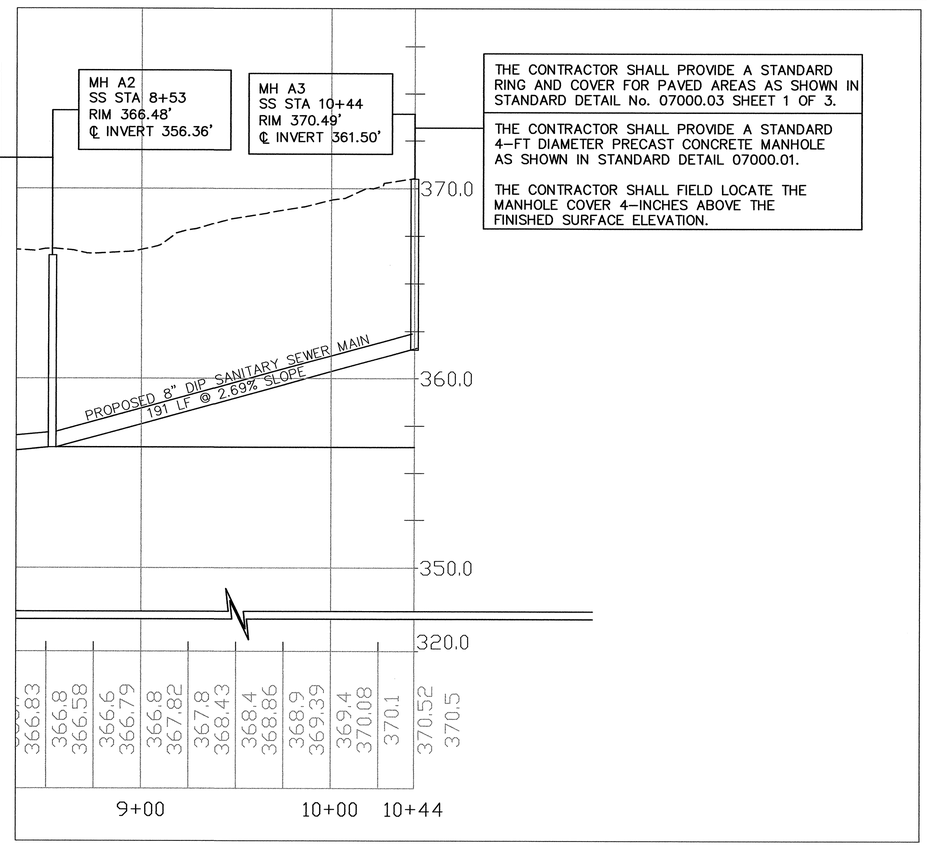
- EXISTING TEXT = SHADED
- EXISTING ELECTRIC — E —
- EXISTING WATER LINE — W —
- EXISTING SANITARY SEWER LINE — SS —
- EXISTING RIGHT-OF-WAY — R/W
- EXISTING PROPERTY LINE
- EXISTING EASEMENT LINE
- EXISTING OVERHEAD WIRE — OHPL
- EXISTING IRON PIPE — EIP
- EXISTING SEWER MANHOLE — MH
- EXISTING GAS VALVE — GV
- EXISTING TELEPHONE PEDESTAL — T.PED.
- EXISTING CABLE PEDESTAL — CATV
- EXISTING CATCH BASIN — CB
- EXISTING MAIL BOX — MB
- EXISTING LANDSCAPE LIGHT — LL
- EXISTING POWER POLE — PP
- EXISTING CLEANOUT — CO
- EXISTING WATER METER — WM
- EXISTING WATER VALVE — WV
- EXISTING FIRE HYDRANT — FH
- **PROPOSED WATER TAP — WM**
- **PROPOSED SEWER TAP — CO**



THE CONTRACTOR SHALL PROVIDE A STANDARD RING AND COVER FOR PAVED AREAS AS SHOWN IN STANDARD DETAIL No. 07000.03 SHEET 1 OF 3.

THE CONTRACTOR SHALL PROVIDE A STANDARD 4-FT DIAMETER PRECAST CONCRETE MANHOLE AS SHOWN IN STANDARD DETAIL 07000.01.

THE CONTRACTOR SHALL FIELD LOCATE THE MANHOLE COVER 4-INCHES ABOVE THE FINISHED SURFACE ELEVATION.



THE CONTRACTOR SHALL PROVIDE A STANDARD RING AND COVER FOR PAVED AREAS AS SHOWN IN STANDARD DETAIL No. 07000.03 SHEET 1 OF 3.

THE CONTRACTOR SHALL PROVIDE A STANDARD 4-FT DIAMETER PRECAST CONCRETE MANHOLE AS SHOWN IN STANDARD DETAIL 07000.01.

THE CONTRACTOR SHALL FIELD LOCATE THE MANHOLE COVER 4-INCHES ABOVE THE FINISHED SURFACE ELEVATION.

TOWN OF CARY
ENGINEERING DEPARTMENT
316 N. ACADEMY STREET
CARY, N.C. 27513

PROJECT NAME
TOWN OF CARY
PROPOSED 8-INCH SANITARY SEWER MAIN
NCDOT - U-4026

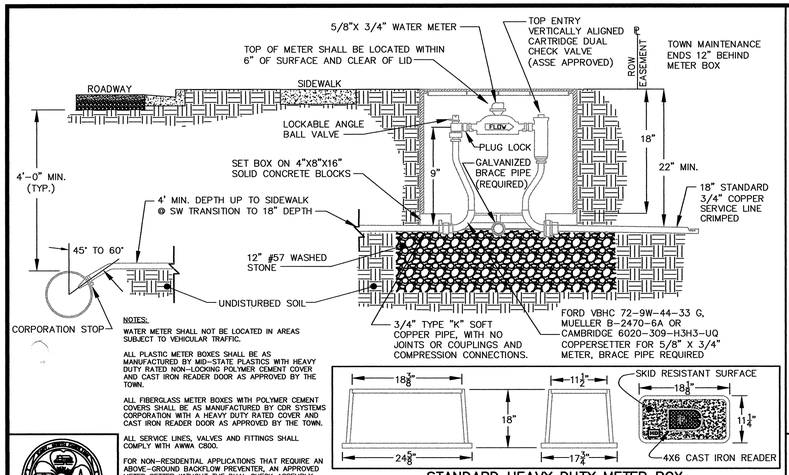
PLAN & PROFILE

05/08/06
NORTH CAROLINA PROFESSIONAL SEAL 25931 ENGINEER JOHN GLEN HARRELL
SIGNATURE

REVISIONS

PROJ.# ST-1102
DESIGN BY: JAB
DRAWN BY: APM
DATE: APR 2006
SCALE HOR: 1"=40'
SCALE VER: 1"=4'

SHEET NO.
4 OF 5



NOTES:

WATER METER SHALL NOT BE LOCATED IN AREAS SUBJECT TO VEHICULAR TRAFFIC.

ALL PLASTIC METER BOXES SHALL BE AS MANUFACTURED BY MID-STATE PLASTICS WITH HEAVY DUTY RATED NON-LOOKING POLYMER CEMENT COVER AND CAST IRON READER DOOR AS APPROVED BY THE TOWN.

ALL FIBERGLASS METER BOXES WITH POLYMER CEMENT COVERS SHALL BE AS MANUFACTURED BY COR SYSTEMS CORPORATION WITH A HEAVY DUTY RATED COVER AND CAST IRON READER DOOR AS APPROVED BY THE TOWN.

ALL SERVICE LINES, VALVES AND FITTINGS SHALL COMPLY WITH AWWA C800.

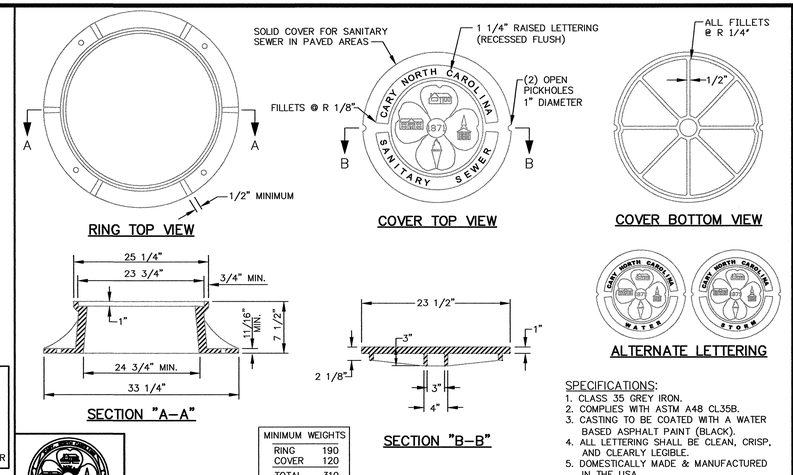
FOR NON-RESIDENTIAL APPLICATIONS THAT REQUIRE AN ABOVE-GROUND BACKFLOW PREVENTER, AN APPROVED METER SETTER WITHOUT THE DUAL CHECK ASSEMBLY MAY BE UTILIZED.

STANDARD HEAVY DUTY METER BOX

EFFECTIVE: 09/08/05

STANDARD 3/4" WATER SERVICE & METER BOX INSTALLATION

DETAIL No. 06000.01 SHEET 1 OF 2



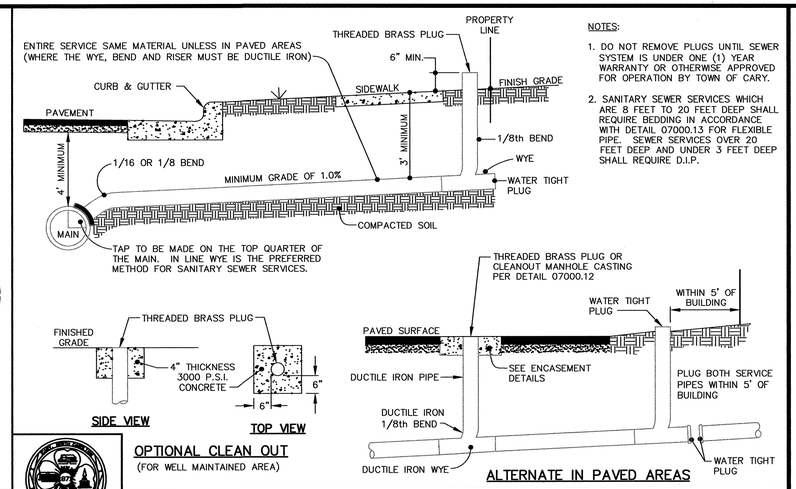
MINIMUM WEIGHTS	
RING	190
COVER	120
TOTAL	310

SPECIFICATIONS:
1. CLASS 35 GREY IRON.
2. COMPLIES WITH ASTM A48 CL35B.
3. CASTING TO BE COATED WITH A WATER BASED ASPHALT PAINT (BLACK).
4. ALL LETTERING SHALL BE CLEAN, CRISP, AND CLEARLY LEGIBLE.
5. DOMESTICALLY MADE & MANUFACTURED IN THE USA.

EFFECTIVE: 07/01/04

STANDARD MANHOLE RING AND COVER (TYPE 1 PAVED AREAS)

DETAIL No. 07000.03 SHEET 1 OF 3



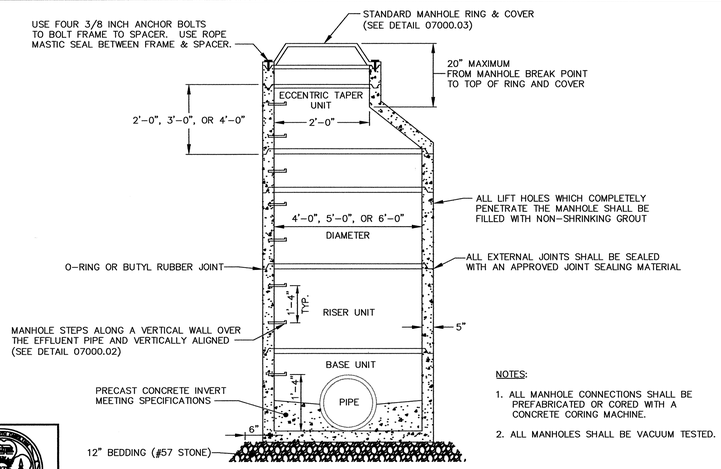
NOTES:

1. DO NOT REMOVE PLUGS UNTIL SEWER SYSTEM IS UNDER ONE (1) YEAR WARRANTY OR OTHERWISE APPROVED FOR OPERATION BY TOWN OF CARY.
2. SANITARY SEWER SERVICES WHICH ARE 8 FEET TO 20 FEET DEEP SHALL REQUIRE BEDDING IN ACCORDANCE WITH DETAIL 07000.13 FOR FLEXIBLE PIPE. SEWER SERVICES OVER 20 FEET DEEP AND UNDER 3 FEET DEEP SHALL REQUIRE D.I.P.

EFFECTIVE: 09/08/05

STANDARD SANITARY SEWER TAP AND SERVICE

DETAIL No. 07000.10 SHEET 1 OF 2



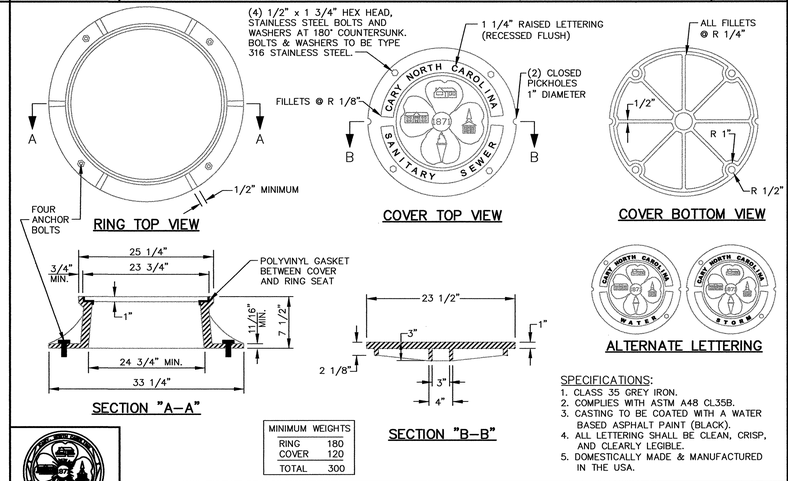
NOTES:

1. ALL MANHOLE CONNECTIONS SHALL BE PREFABRICATED OR CORED WITH A CONCRETE CORING MACHINE.
2. ALL MANHOLES SHALL BE VACUUM TESTED.

EFFECTIVE: 07/01/04

STANDARD PRECAST CONCRETE MANHOLE

DETAIL No. 07000.01 SHEET 1 OF 1



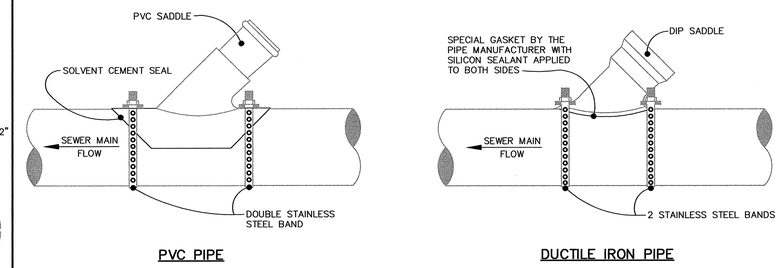
MINIMUM WEIGHTS	
RING	180
COVER	120
TOTAL	300

SPECIFICATIONS:
1. CLASS 35 GREY IRON.
2. COMPLIES WITH ASTM A48 CL35B.
3. CASTING TO BE COATED WITH A WATER BASED ASPHALT PAINT (BLACK).
4. ALL LETTERING SHALL BE CLEAN, CRISP, AND CLEARLY LEGIBLE.
5. DOMESTICALLY MADE & MANUFACTURED IN THE USA.

EFFECTIVE: 07/01/04

STANDARD MANHOLE RING AND COVER (TYPE 3 FOR WATERTIGHT MANHOLES)

DETAIL No. 07000.03 SHEET 3 OF 3



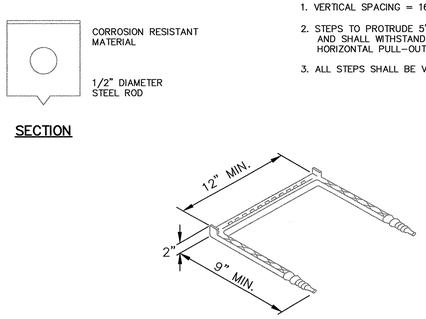
NOTES:

1. PVC SOLVENT CEMENT SHALL BE USED FOR PVC SADDLES.
2. TRUSS SADDLES SHALL BE USED WITH TRUSS PIPE.
3. DIP CONNECTIONS SHALL BE MJ IN-LINE WYE OR ROMAC SEWER SADDLE TYPE CB OR OTHER AS APPROVED.

EFFECTIVE: 07/01/04

STANDARD SANITARY SEWER LATERAL CONNECTIONS

DETAIL No. 07000.11 SHEET 1 OF 1



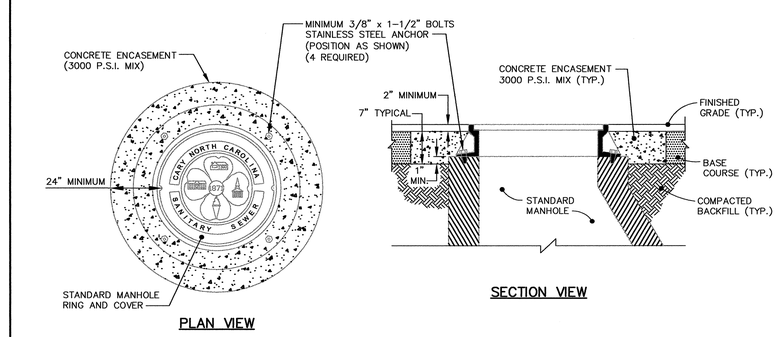
NOTES:

1. VERTICAL SPACING = 16" O.C., ON VERTICAL WALL ONLY.
2. STEPS TO PROTRUDE 5" FROM FACE OF STRUCTURE WALL, AND SHALL WITHSTAND A VERTICAL LOAD OF 400 LBS. AND A HORIZONTAL PULL-OUT LOAD OF 1000 LBS. WHEN INSTALLED.
3. ALL STEPS SHALL BE VERTICALLY ALIGNED IN A STRAIGHT LINE.

EFFECTIVE: 07/01/04

MANHOLE STEPS

DETAIL No. 07000.02 SHEET 1 OF 1



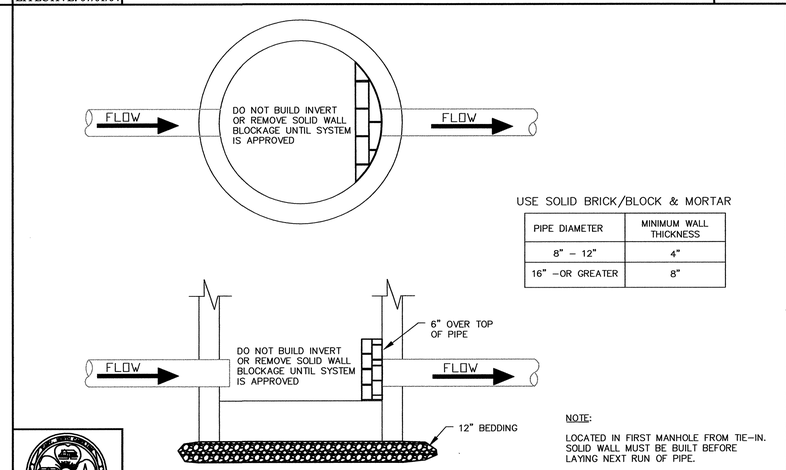
NOTES:

1. MANHOLE RING TO BE BOLTED AS SHOWN W/ ROPE MASTIC SEAL BETWEEN FRAME & SPACER.
2. INSURE CONCRETE ENCASEMENT FORMS BOND AROUND LIP OF MANHOLE TOP.

EFFECTIVE: 07/01/04

STANDARD MANHOLE RING AND COVER ENCASEMENT

DETAIL No. 07000.05 SHEET 1 OF 1



USE SOLID BRICK/BLOCK & MORTAR

PIPE DIAMETER	MINIMUM WALL THICKNESS
8" – 12"	4"
16" –OR GREATER	8"

NOTE:

LOCATED IN FIRST MANHOLE FROM TIE-IN. SOLID WALL MUST BE BUILT BEFORE LAYING NEXT RUN OF PIPE.

EFFECTIVE: 07/01/04

SANITARY SEWER PROTECTION DURING CONSTRUCTION

DETAIL No. 07000.17 SHEET 1 OF 1

TOWN OF CARY
ENGINEERING DEPARTMENT
316 N. ACADEMY STREET
CARY, N.C. 27513

PROJECT NAME
TOWN OF CARY
PROPOSED 8-INCH SANITARY SEWER MAIN
NCDOT - U-4026

STANDARD DETAILS

05/01/06
NORTH CAROLINA PROFESSIONAL SEAL 25931 ENGINEER JOHN GLEN HARRELL
SIGNATURE

REVISIONS

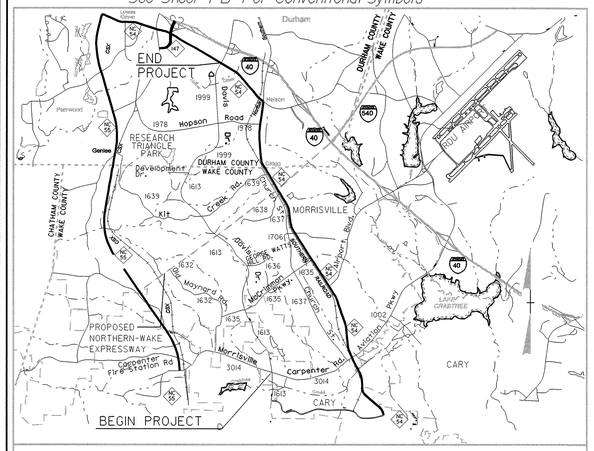
PROJ.# ST-1102
DESIGN BY: JAB
DRAWN BY: APM
DATE: APR 2006
SCALE HOR: NTS
SCALE VER:

SHEET NO.
5 OF 5

T.I.P. NO.	SHEET NO.
U-4026	UO-1

TIP PROJECT: U-4026

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



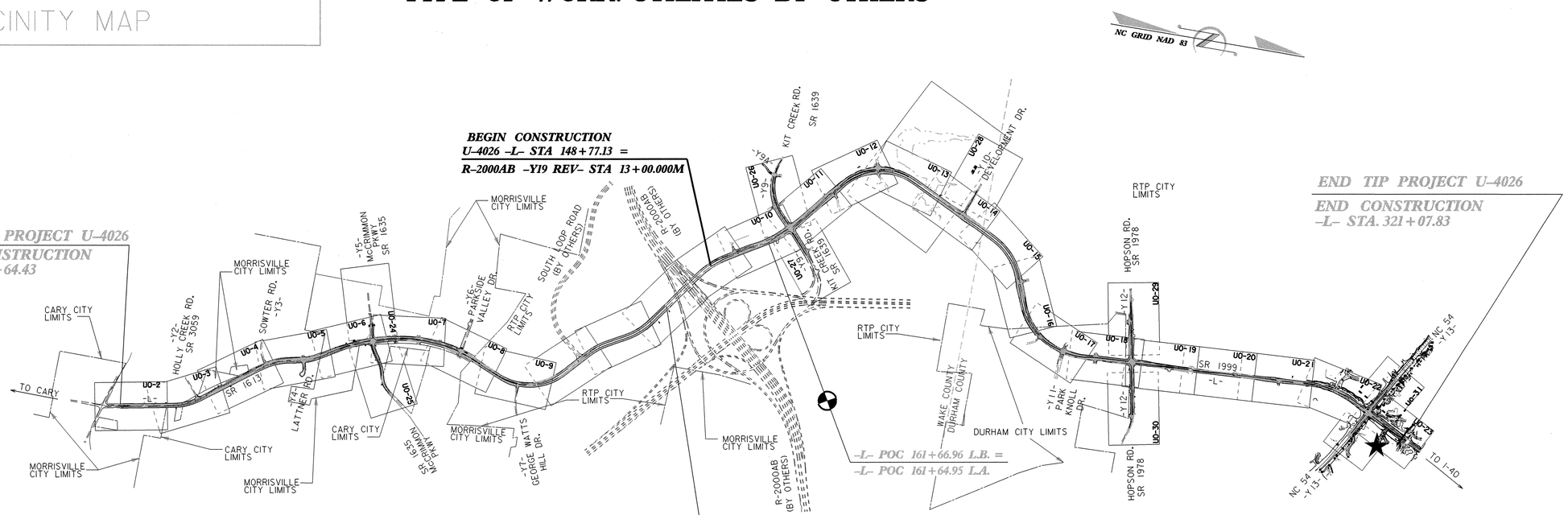
VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITY BY OTHERS PLANS
DURHAM /WAKE COUNTIES

LOCATION: DAVIS DRIVE (SR 1613 /1999) FROM 390' NORTH OF MORRISVILLE-CARPENTER ROAD (SR 3014) TO NORTH OF NC 54

TYPE OF WORK: UTILITIES BY OTHERS



INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UO-1	TITLE SHEET
UO-2 THRU UO-31	UTILITY BY OTHERS PLAN SHEETS

UTILITY OWNERS ON PROJECT

(1) PROGRESS ENERGY
(2) DUKE POWER
(3) BELLSOUTH
(4) AT&T
(5) VERIZON
(6) TEL COV
(7) IBM
(8) MCI
(9) PROGRESS TELECOM
(10) PSNC
(11) TIME WARNER

PREPARED IN THE OFFICE OF:
DIVISION OF HIGHWAYS
PROJECT SERVICES
UTILITY SECTION
1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 250-4128
FAX (919) 250-4119

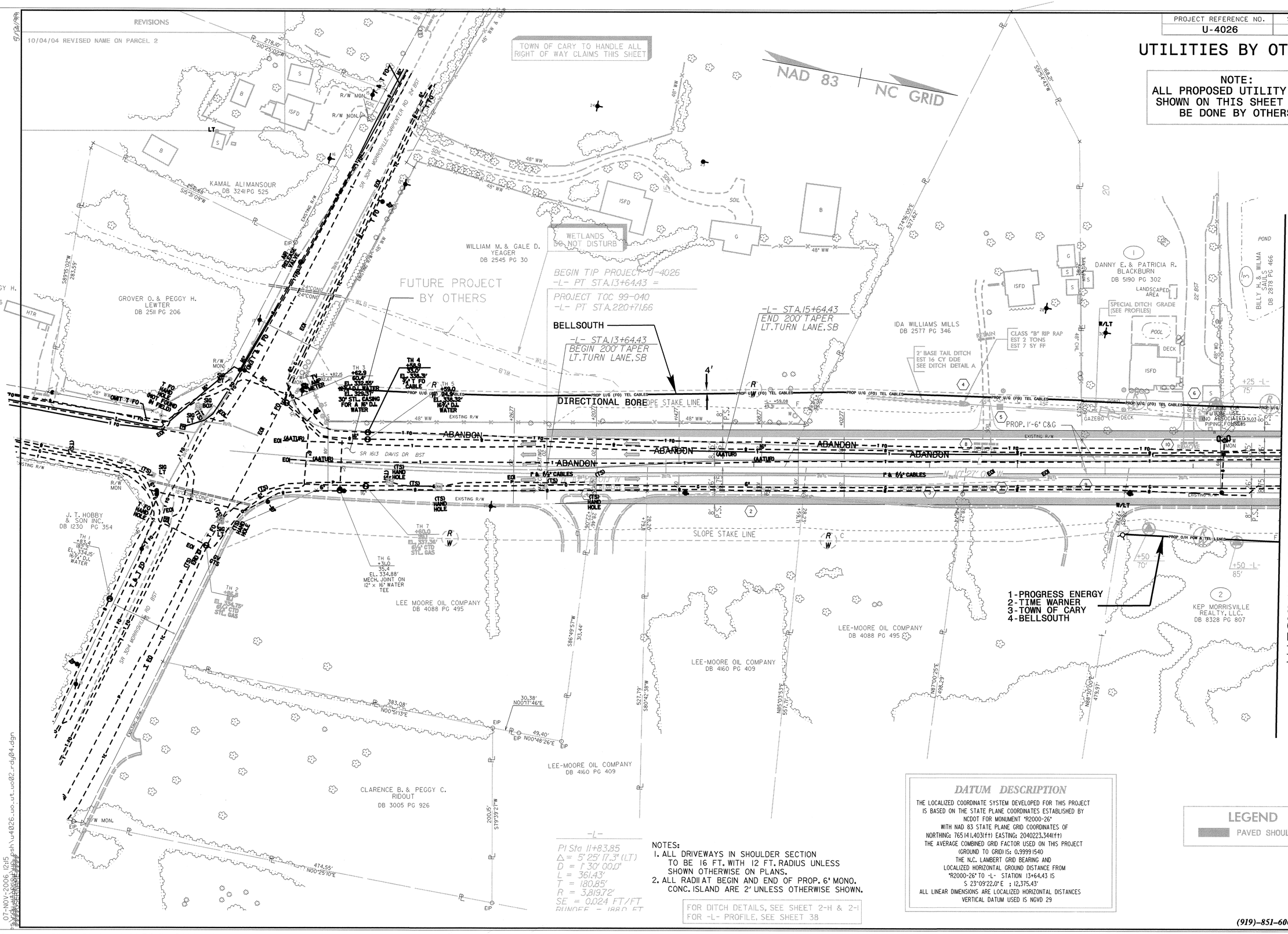
R.G. WORTHINGTON, P.E.	UTILITIES SECTION ENGINEER
	UTILITIES SQUAD LEADER PROJECT ENGINEER
A. KOUCHEKI	UTILITIES PROJECT DESIGNER

09/08/99
06-SEP-2006 11:37
r:\utilities\rdy_ut\proj\uo psh\u4026_UO_UT_U001_RDY01.dgn
$$$USERNAME$$$

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UO-2

UTILITIES BY OTHERS

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



-L-
PI Sta 11+83.85
Δ = 5° 25' 17.3" (LT)
D = 1° 30' 00.0"
L = 361.43'
T = 180.85'
R = 3,819.72'
SE = 0.024 FT/FT
RUNOFF = 188.0 FT

NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEET 2-H & 2-I
FOR -L- PROFILE, SEE SHEET 38

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2000-26" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 765141.403(ft) EASTING: 2040223.344(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991540 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2000-26" TO -L- STATION 13+64.43 IS S 23°09'22.0" E ; 12,375.43' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NGVD 29

LEGEND
PAVED SHOULDER

(919)-851-6066

07-NOV-2006 12:15
psh\u4026_uo_ut_uo02_rdy04.dgn

PS228334 11/7/2006 u4026_uo_ut_uo02_rdy04 akoucheki PS-Oce34dtbond

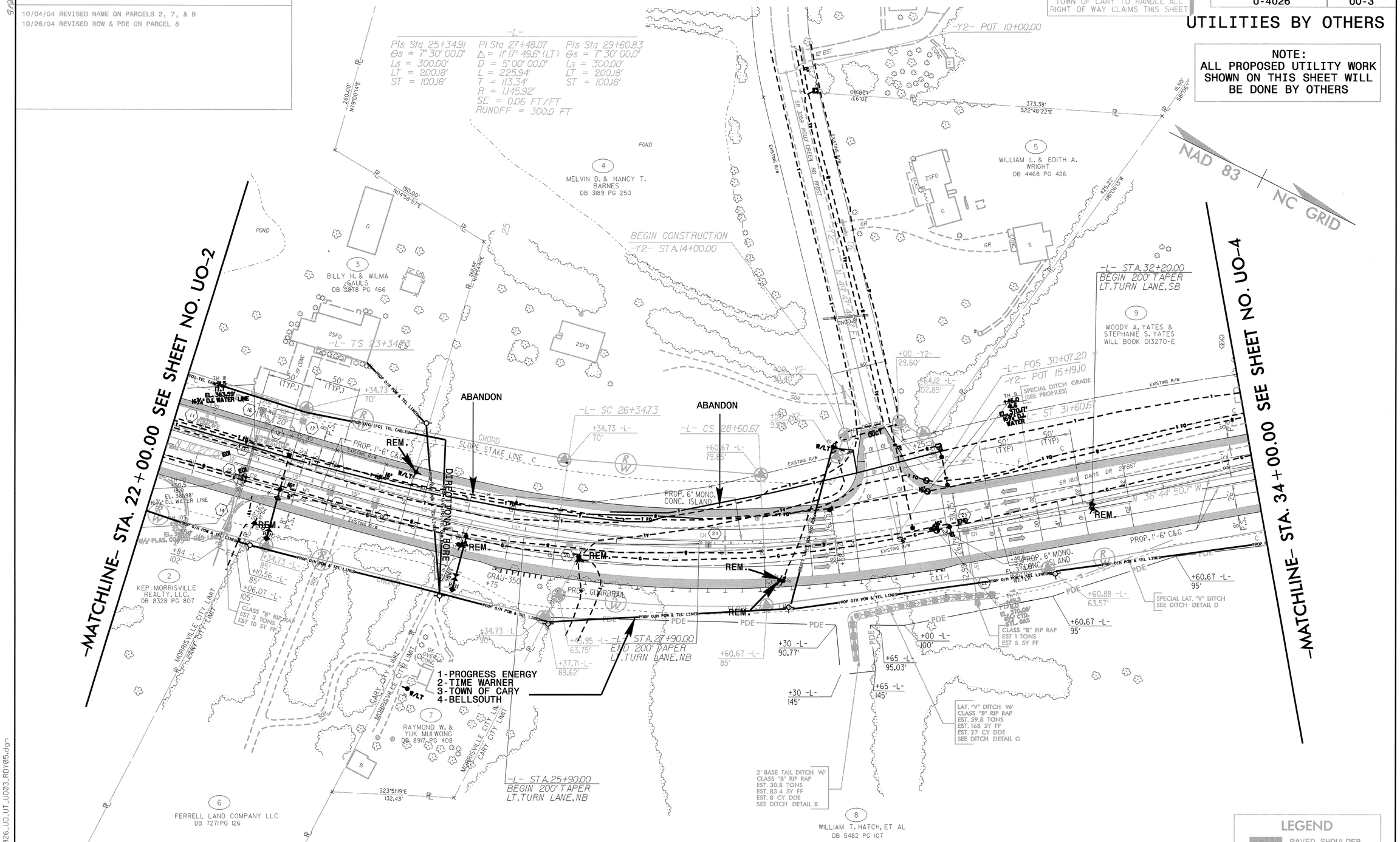
REVISIONS
10/04/04 REVISED NAME ON PARCELS 2, 7, & 9
10/26/04 REVISED ROW & PDE ON PARCEL 8

TOWN OF CARY TO HANDLE ALL RIGHT OF WAY CLAIMS THIS SHEET

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UO-3

UTILITIES BY OTHERS

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



FOR DITCH DETAILS, SEE SHEET 2-H & 2-I
FOR INTERSECTION DETAIL, SEE SHEET 2-J
FOR -L- PROFILE, SEE SHEET 38
FOR -Y2- PROFILE, SEE SHEET 51

NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

07-NOV-2006 12:15
s:\roadway\proj\u4026_uo_ut_uo03_rdy05.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UO-4

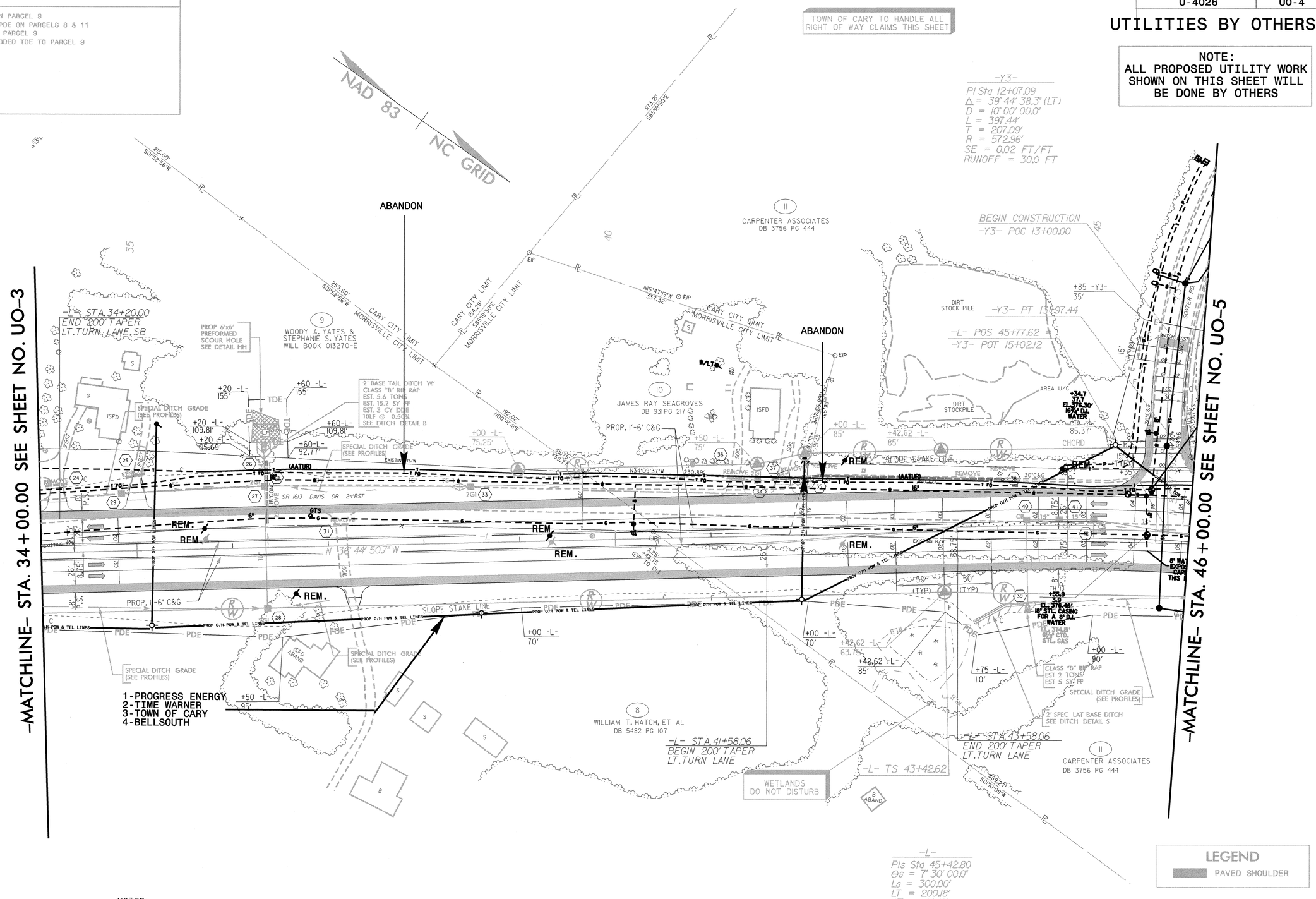
UTILITIES BY OTHERS

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

REVISIONS

10/04/04 REVISED NAME ON PARCEL 9
10/26/04 REVISED ROW & PDE ON PARCELS 8 & 11
11/09/04 REVISED PDE ON PARCEL 9
2/22/05 REVISED PDE & ADDED TDE TO PARCEL 9

TOWN OF CARY TO HANDLE ALL RIGHT OF WAY CLAIMS THIS SHEET



NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6' MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEET 2-H & 2-I
FOR INTERSECTION DETAIL, SEE SHEET 2-J
FOR C&G TRANSITION SECTION, SEE SHEET 2-N
FOR -L- PROFILE, SEE SHEET 39
FOR -Y3- PROFILE, SEE SHEET 51

LEGEND
PAVED SHOULDER

27-OCT-2006 10:26
$$$$USERNAME$$$$

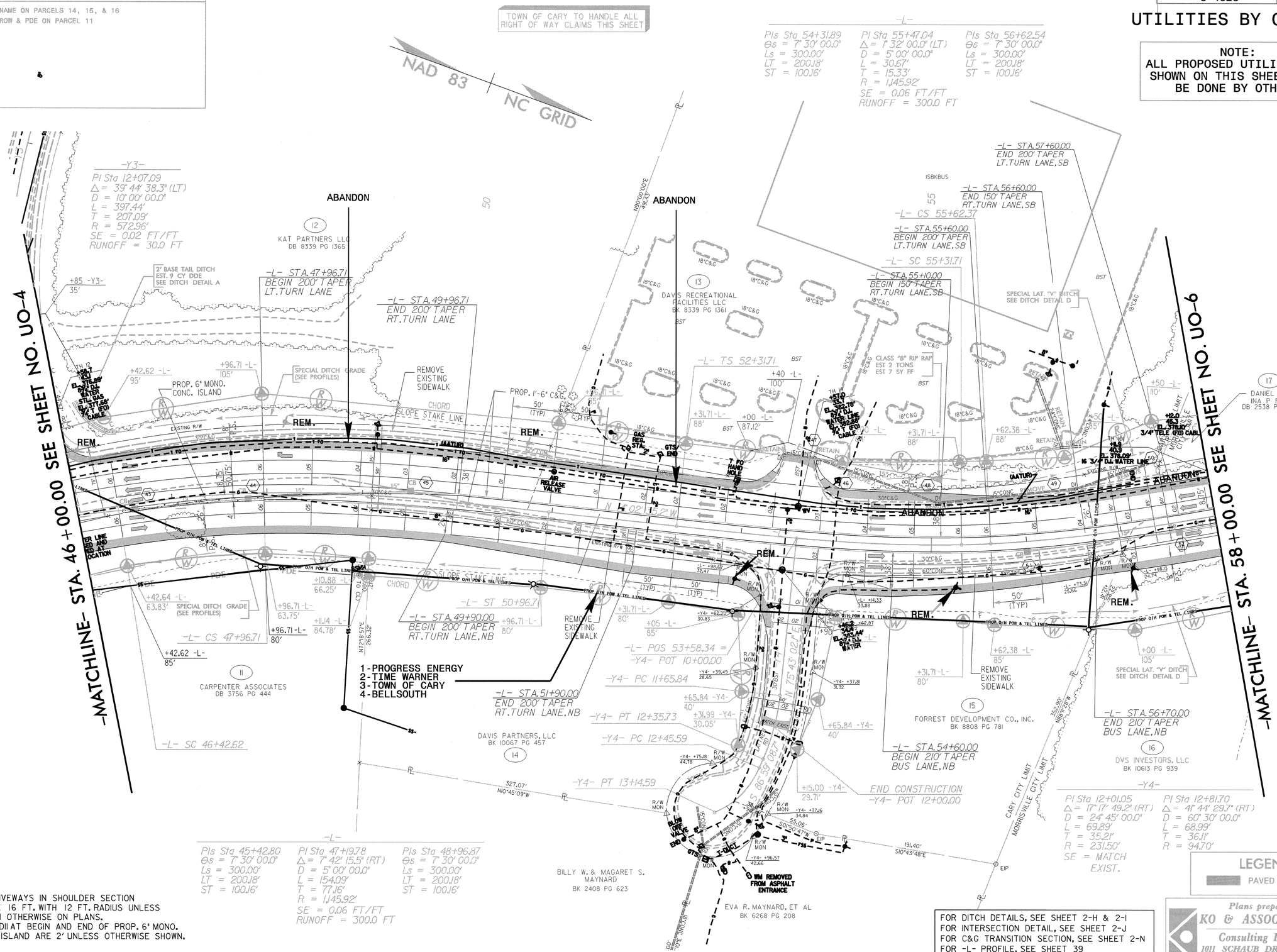
REVISIONS

10/04/04 REVISED NAME ON PARCELS 14, 15, & 16
10/26/04 REVISED ROW & PDE ON PARCEL 11

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UO-5

UTILITIES BY OTHERS

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



NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6' MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEET 2-H & 2-I
FOR INTERSECTION DETAIL, SEE SHEET 2-J
FOR C&G TRANSITION SECTION, SEE SHEET 2-N
FOR -L- PROFILE, SEE SHEET 39
FOR -Y4- PROFILE, SEE SHEET 51

Plans prepared by:
KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE #202
RALEIGH, N.C. 27606
(919)-851-6066

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UO-6

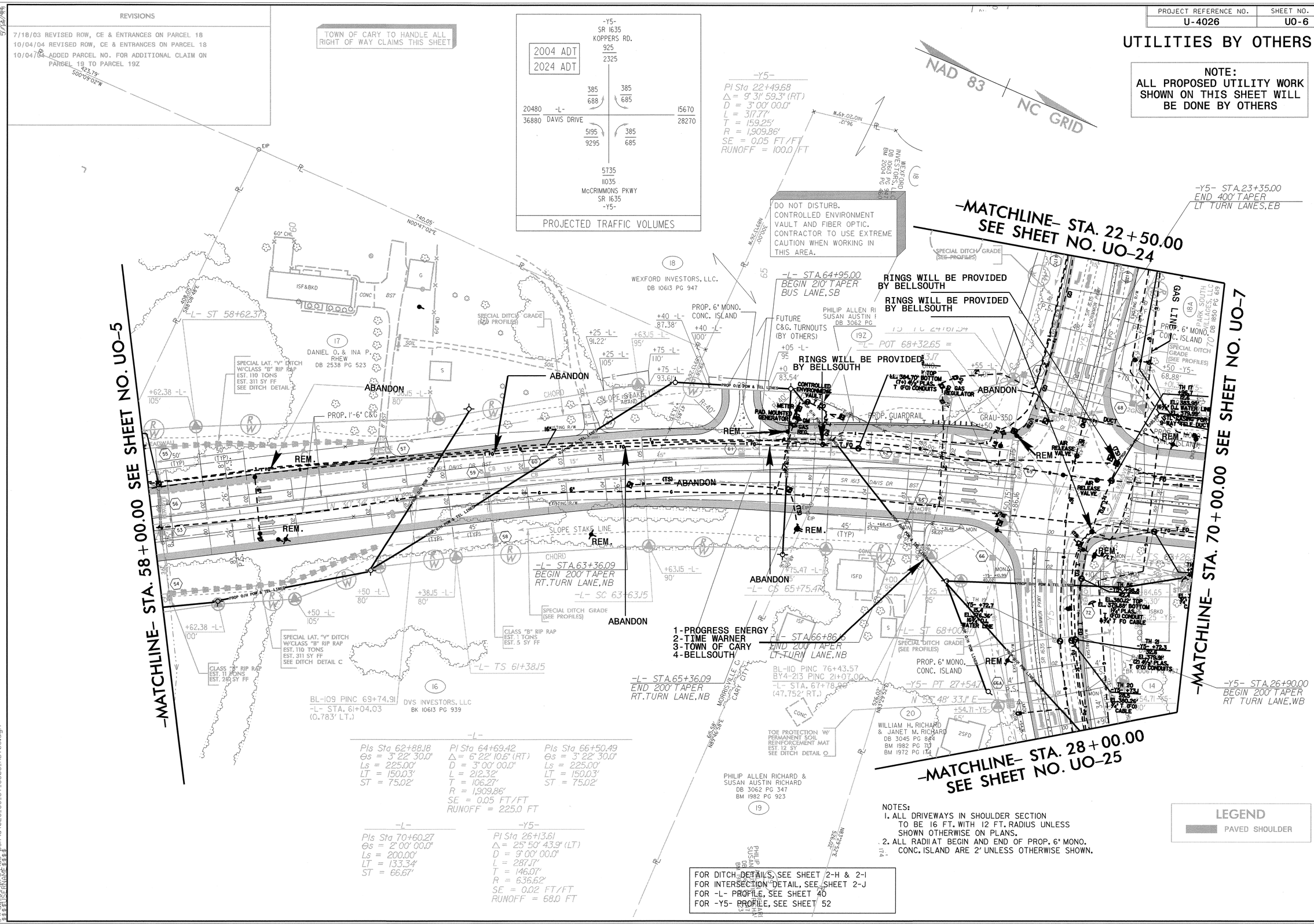
UTILITIES BY OTHERS

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

REVISIONS

7/18/03 REVISED ROW, CE & ENTRANCES ON PARCEL 18
10/04/04 REVISED ROW, CE & ENTRANCES ON PARCEL 18
10/04/04 ADDED PARCEL NO. FOR ADDITIONAL CLAIM ON PARCEL 19 TO PARCEL 19Z

TOWN OF CARY TO HANDLE ALL RIGHT OF WAY CLAIMS THIS SHEET



5/12/99

30-OCT-2006 16:48
$$$$USERNAME$$$$
$$$$DGNFILE$$$$

PS228334 10/30/2006 u4026_UO_UT_UO06_RDY08 akoucheki PS-Oce34dtbond

PROJECT REFERENCE NO.	SHEET NO.
U-4026	U0-7

UTILITIES BY OTHERS

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

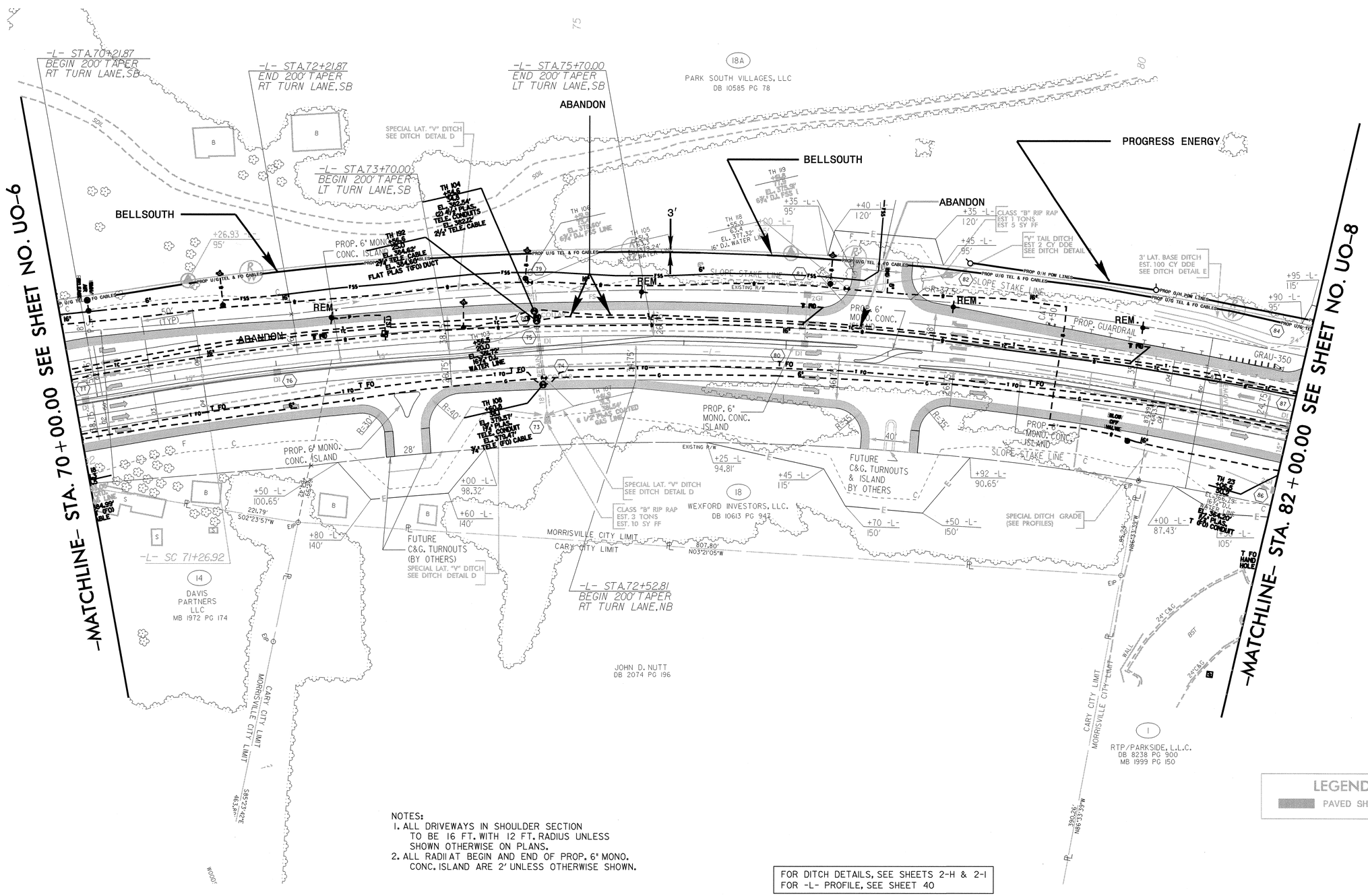
REVISIONS

TOWN OF CARY TO HANDLE CLAIMS ON PARCEL NO. 14 & 18 THIS SHEET

-L-

PIs Sta 70+60.27	PI Sta 80+83.70	PIs Sta 90+40.41
Θs = 2° 00' 00.0"	Δ = 36° 56' 10.4" (RT)	Θs = 2° 00' 00.0"
Ls = 200.00'	D = 2° 00' 00.0"	Ls = 200.00'
LT = 133.34'	L = 1,846.81'	LT = 133.34'
ST = 66.67'	T = 956.77'	ST = 66.67'
	R = 2,864.79'	
	SE = 0.04 FT/FT	
	RUNOFF = 200.0 FT	

NAD 83 | NC GRID



LEGEND
PAVED SHOULDER

NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR -L- PROFILE, SEE SHEET 40

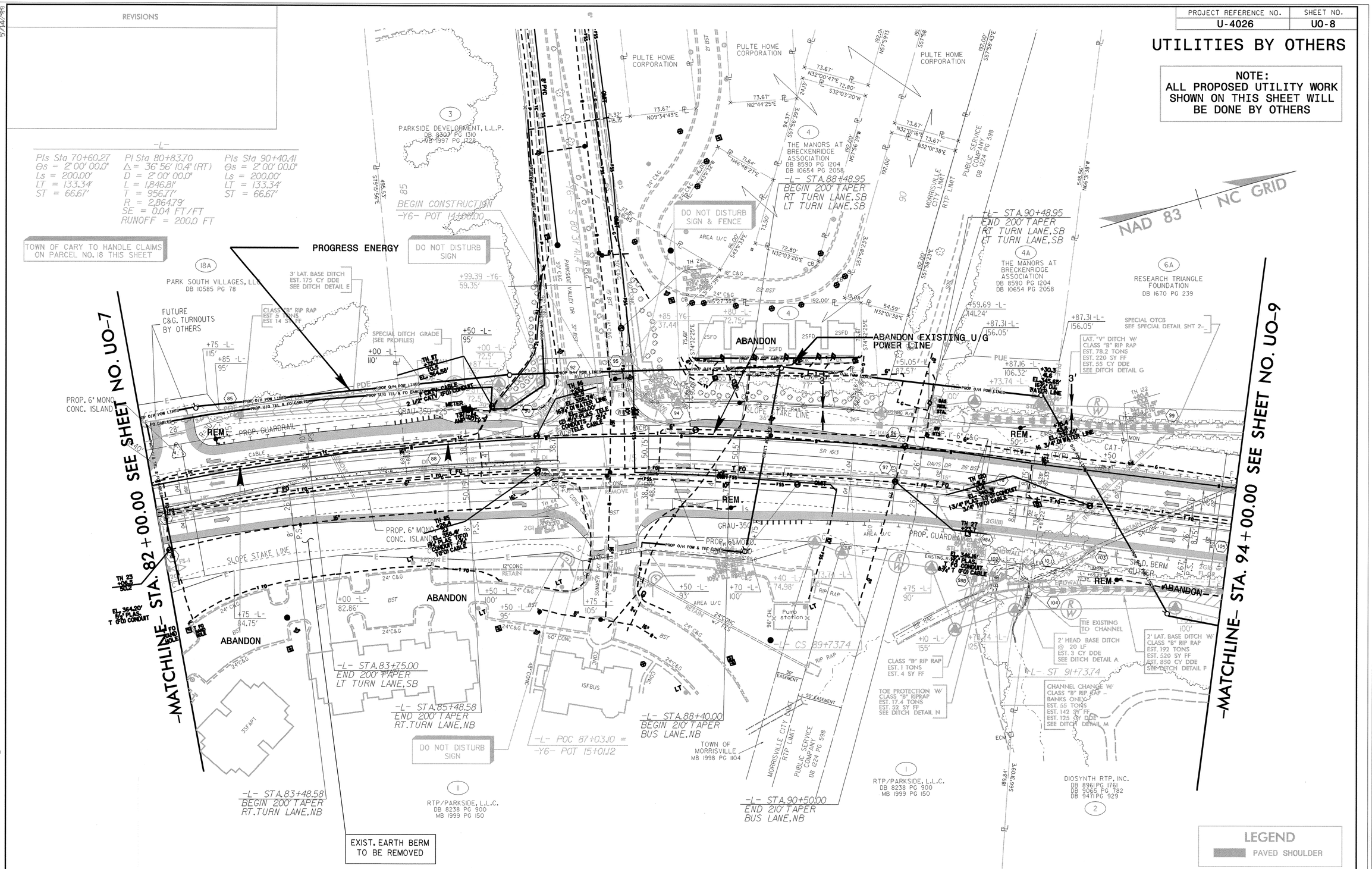
30-OCT-2006 15:11

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UO-8

UTILITIES BY OTHERS

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

REVISIONS



LEGEND
PAVED SHOULDER

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR INTERSECTION DETAIL, SEE SHEET 2-K
FOR C&G TRANSITION SECTION, SEE SHEET 2-N
FOR -L- PROFILE, SEE SHEET 41
FOR -Y6- PROFILE, SEE SHEET 53

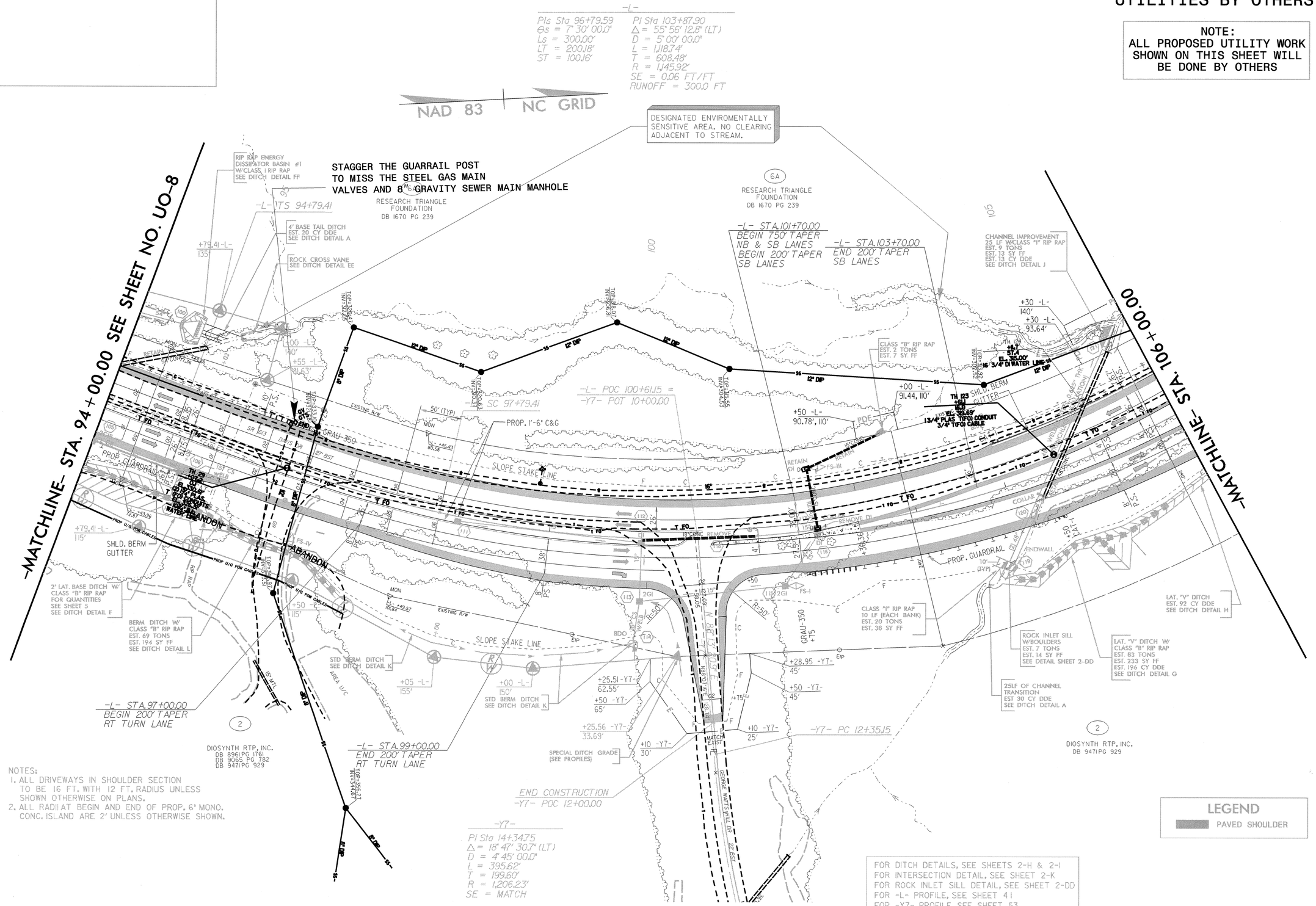
31-OCT-2006 13:31

PROJECT REFERENCE NO.	SHEET NO.
U-4026	U0-9

UTILITIES BY OTHERS

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

REVISIONS



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PROJECT REFERENCE NO.	SHEET NO.
U-4026	U0-10

UTILITIES BY OTHERS

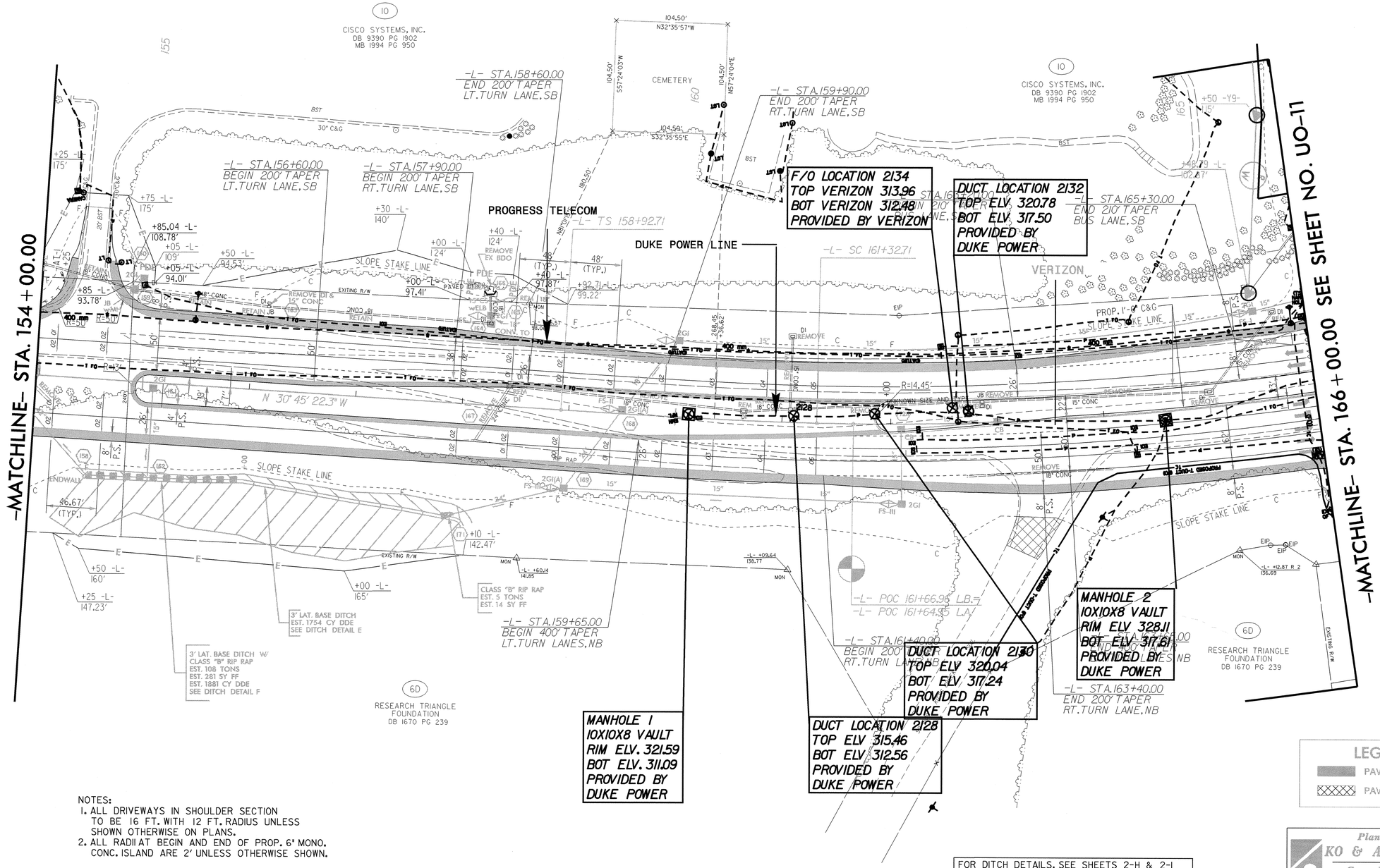
NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

REVISIONS

NAD 83 / NC GRID

-L-

Pls Sta 160+52.73	Pl Sta 161+49.84	Pl Sta 165+33.95
Θs = 2° 24' 00.0"	Δ = 0° 4' 05.9" (LT)	Δ = 14° 40' 45.7" (LT)
Ls = 240.00'	D = 2° 00' 00.0"	D = 2° 00' 00.0"
LT = 160.01'	L = 34.25'	L = 733.97'
ST = 80.01'	T = 17.12'	T = 369.00'
	R = 2,864.79'	R = 2,864.79'
	SE = 0.05 FT/FT	
	RUNOFF = 240.0 FT	



NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR C&G TRANSITION SECTION, SEE SHEET 2-N
FOR -L- PROFILE, SEE SHEET 44

LEGEND
PAVED SHOULDER
PAVEMENT REMOVAL

Plans prepared by:
KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE #202
RALEIGH, N.C. 27606
(919)-851-6066

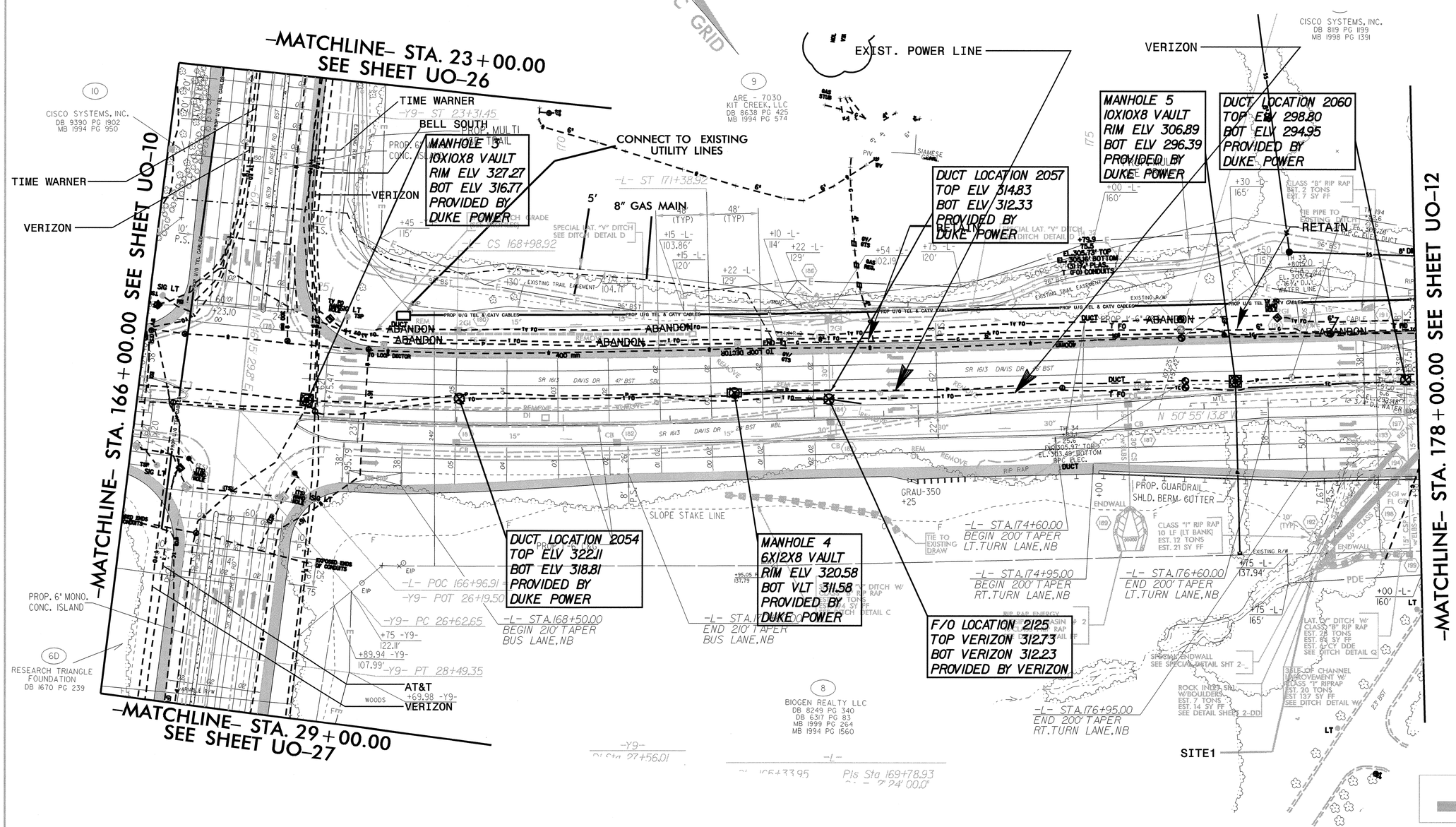
02-AUG-2006 09:10
s:\ka\projects\u4026\dgn\u4026_uo_ut_u012.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UO-11

REVISIONS

UTILITIES BY OTHERS

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



NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6' MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

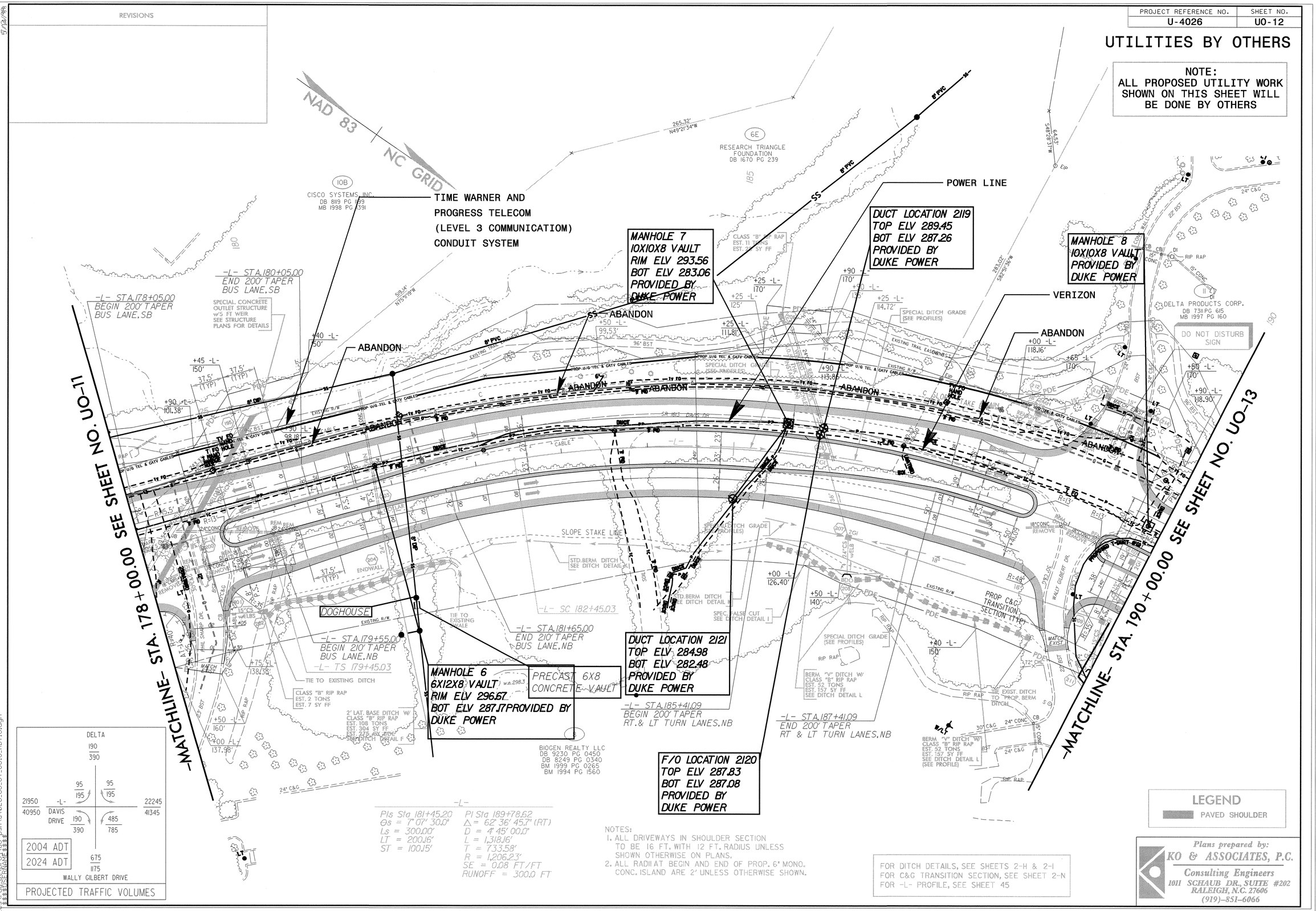
FOR DITCH DETAILS, SEE SHEETS 2-H& 2-I
FOR INTERSECTION DETAIL, SEE SHEET 2-K
FOR TRAIL PLANS, SEE SHEETS 2-O THRU 2-P
FOR ROCK INLET SILL DETAIL, SEE SHEET 2-DD
FOR -L- PROFILE, SEE SHEET 44
FOR -Y9- PROFILE, SEE SHEET 54

06-SEP-2006 12:22
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-4026	U0-12

UTILITIES BY OTHERS

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



-L-

PIs Sta 181+45.20	PI Sta 189+78.62
Θs = 7° 07' 30.0"	Δ = 62° 36' 45.7" (RT)
Ls = 300.00'	D = 4° 45' 00.0"
LT = 200.16'	L = 1,318.16'
ST = 100.15'	T = 733.58'
	R = 1,206.23'
	SE = 0.08 FT/FT
	RUNOFF = 300.0 FT

NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR C&G TRANSITION SECTION, SEE SHEET 2-N
FOR -L- PROFILE, SEE SHEET 45

LEGEND
PAVED SHOULDER

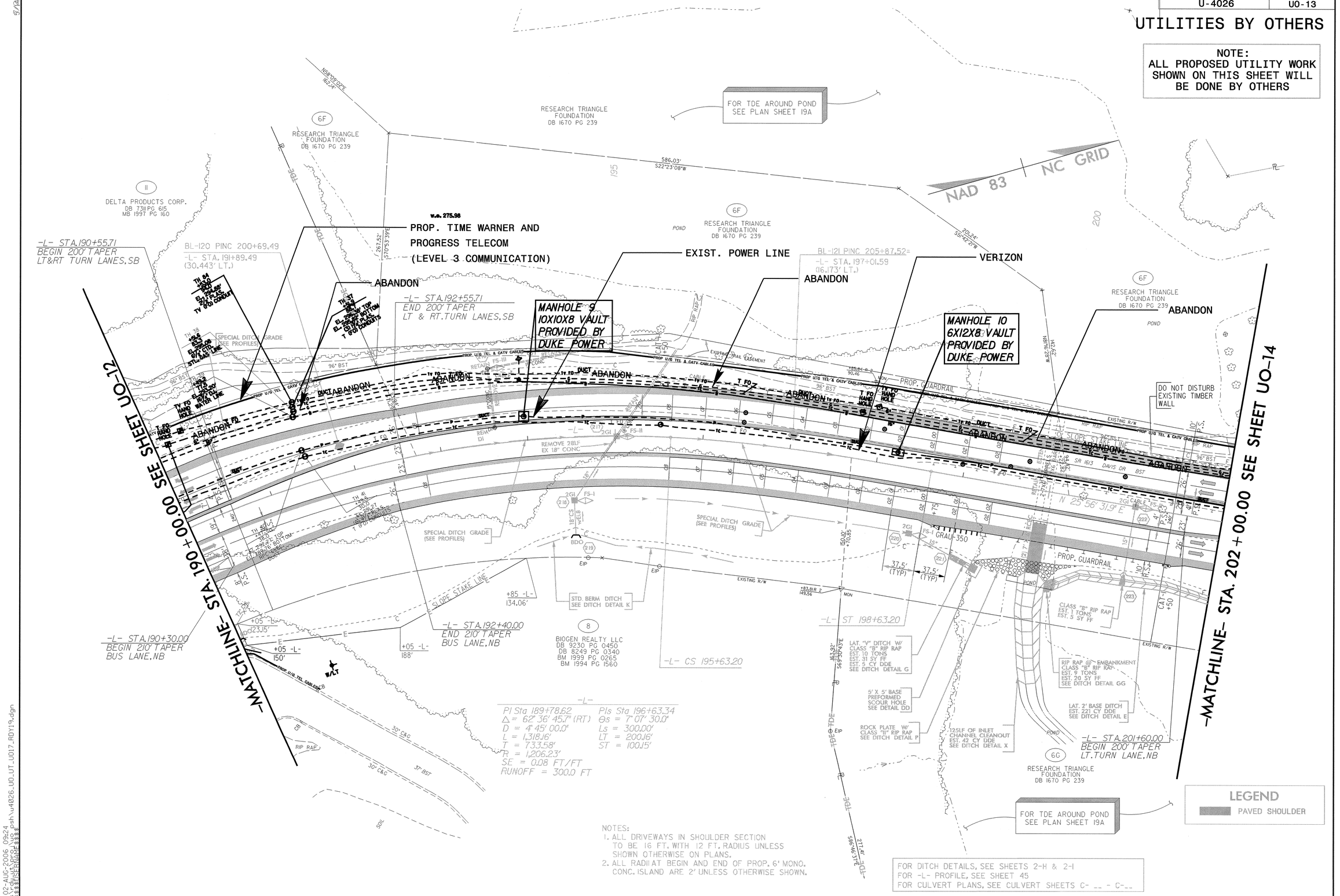
Plans prepared by:
KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE #202
RALEIGH, N.C. 27606
(919)-851-6066

02-AUG-2006 09:18

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UO-13

UTILITIES BY OTHERS

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



NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6' MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

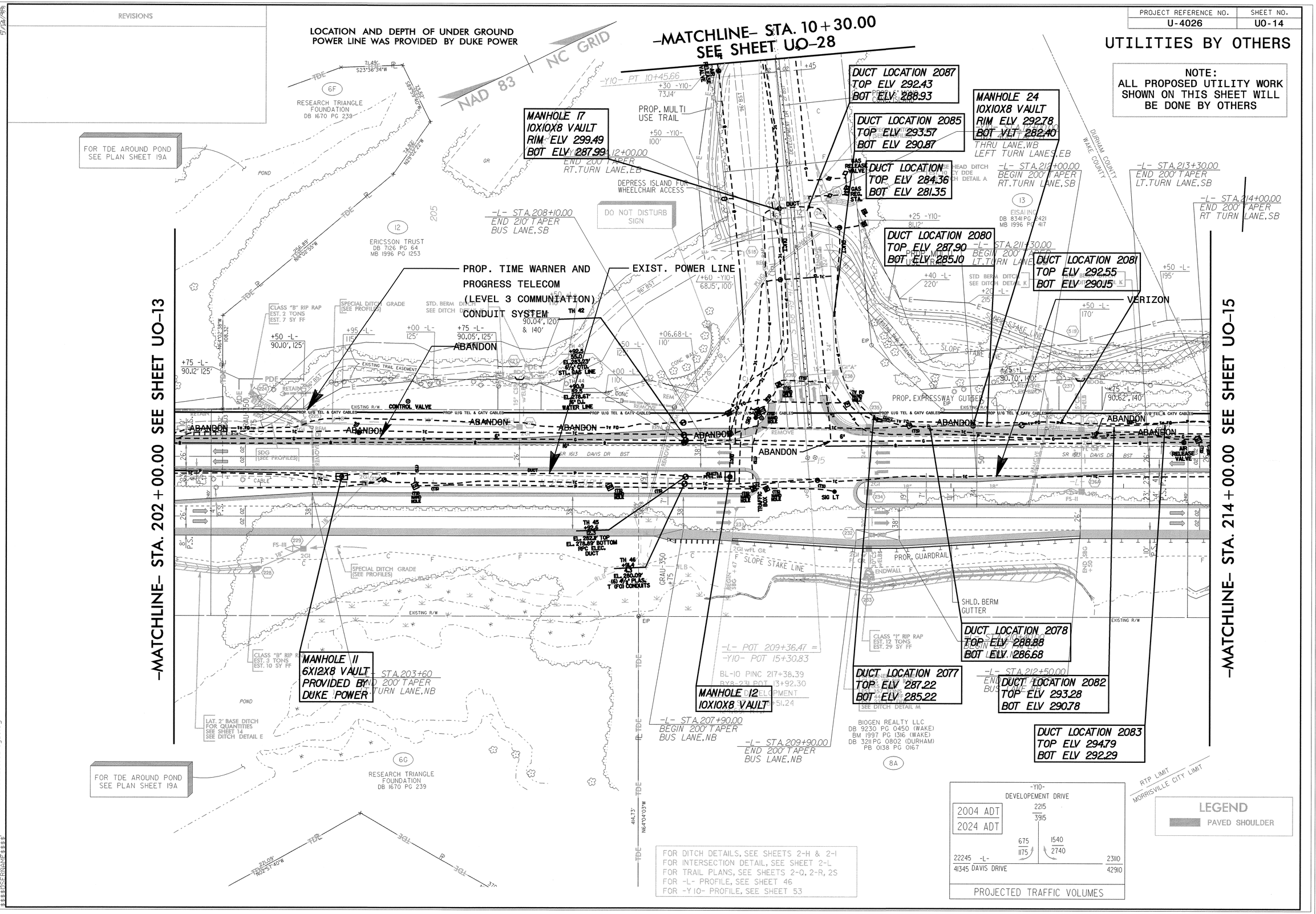
FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR -L- PROFILE, SEE SHEET 45
FOR CULVERT PLANS, SEE CULVERT SHEETS C- __ - C-__

02-AUG-2006 09:24

PROJECT REFERENCE NO.	SHEET NO.
U-4026	U0-14

UTILITIES BY OTHERS

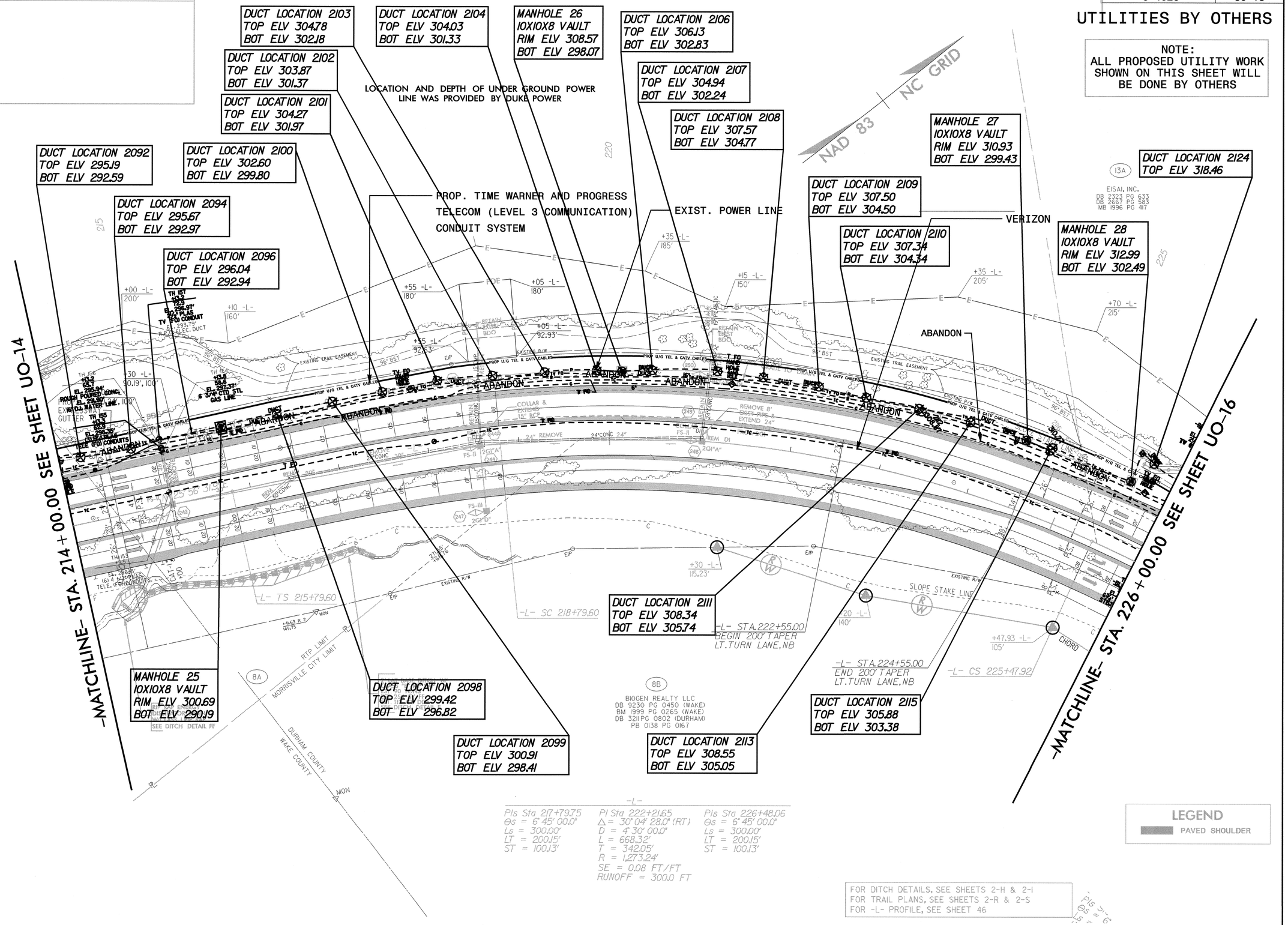
NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS



PROJECT REFERENCE NO.	SHEET NO.
U-4026	UO-15

UTILITIES BY OTHERS

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



-L-

Pls Sta 217+79.75	Pl Sta 222+21.65	Pls Sta 226+48.06
Θs = 6° 45' 00.0"	Δ = 30° 04' 28.0" (RT)	Θs = 6° 45' 00.0"
Ls = 300.00'	D = 4° 30' 00.0"	Ls = 300.00'
LT = 200.15'	L = 668.32'	LT = 200.15'
ST = 100.13'	T = 342.05'	ST = 100.13'
	R = 1,273.24'	
	SE = 0.08 FT/FT	
	RUNOFF = 300.0 FT	

LEGEND
PAVED SHOULDER

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR TRAIL PLANS, SEE SHEETS 2-R & 2-S
FOR -L- PROFILE, SEE SHEET 46

02-AUG-2006 09:29

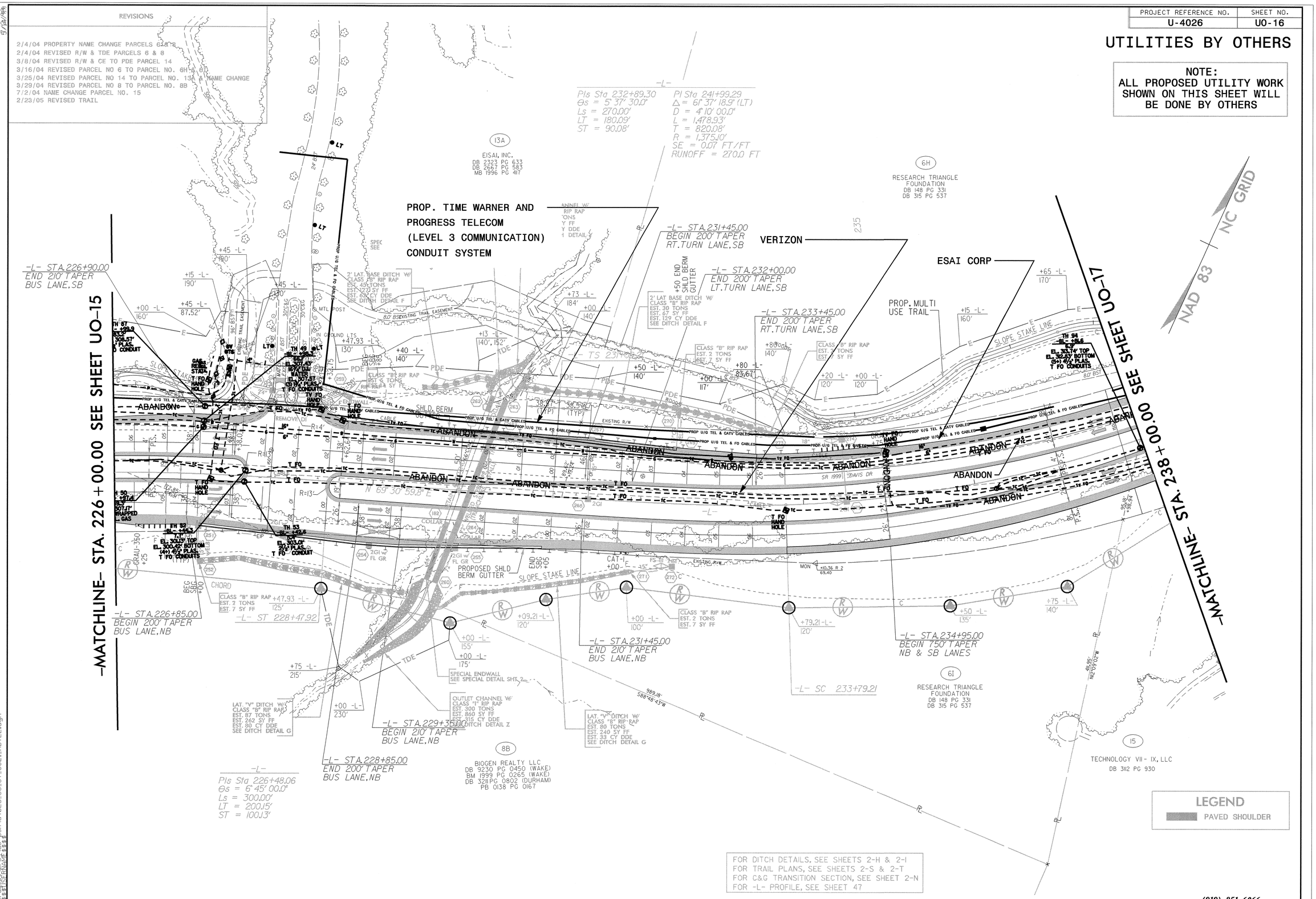
PROJECT REFERENCE NO.	SHEET NO.
U-4026	U0-16

UTILITIES BY OTHERS

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

REVISIONS

2/4/04 PROPERTY NAME CHANGE PARCELS 6H & 8
2/4/04 REVISED R/W & TDE PARCELS 6 & 8
3/8/04 REVISED R/W & CE TO PDE PARCEL 14
3/16/04 REVISED PARCEL NO 6 TO PARCEL NO. 6H & 6I
3/25/04 REVISED PARCEL NO 14 TO PARCEL NO. 13A & NAME CHANGE
3/29/04 REVISED PARCEL NO 8 TO PARCEL NO. 8B
7/2/04 NAME CHANGE PARCEL NO. 15
2/23/05 REVISED TRAIL



FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR TRAIL PLANS, SEE SHEETS 2-S & 2-T
FOR C&G TRANSITION SECTION, SEE SHEET 2-N
FOR -L- PROFILE, SEE SHEET 47

(919)-851-6066

5/20/99

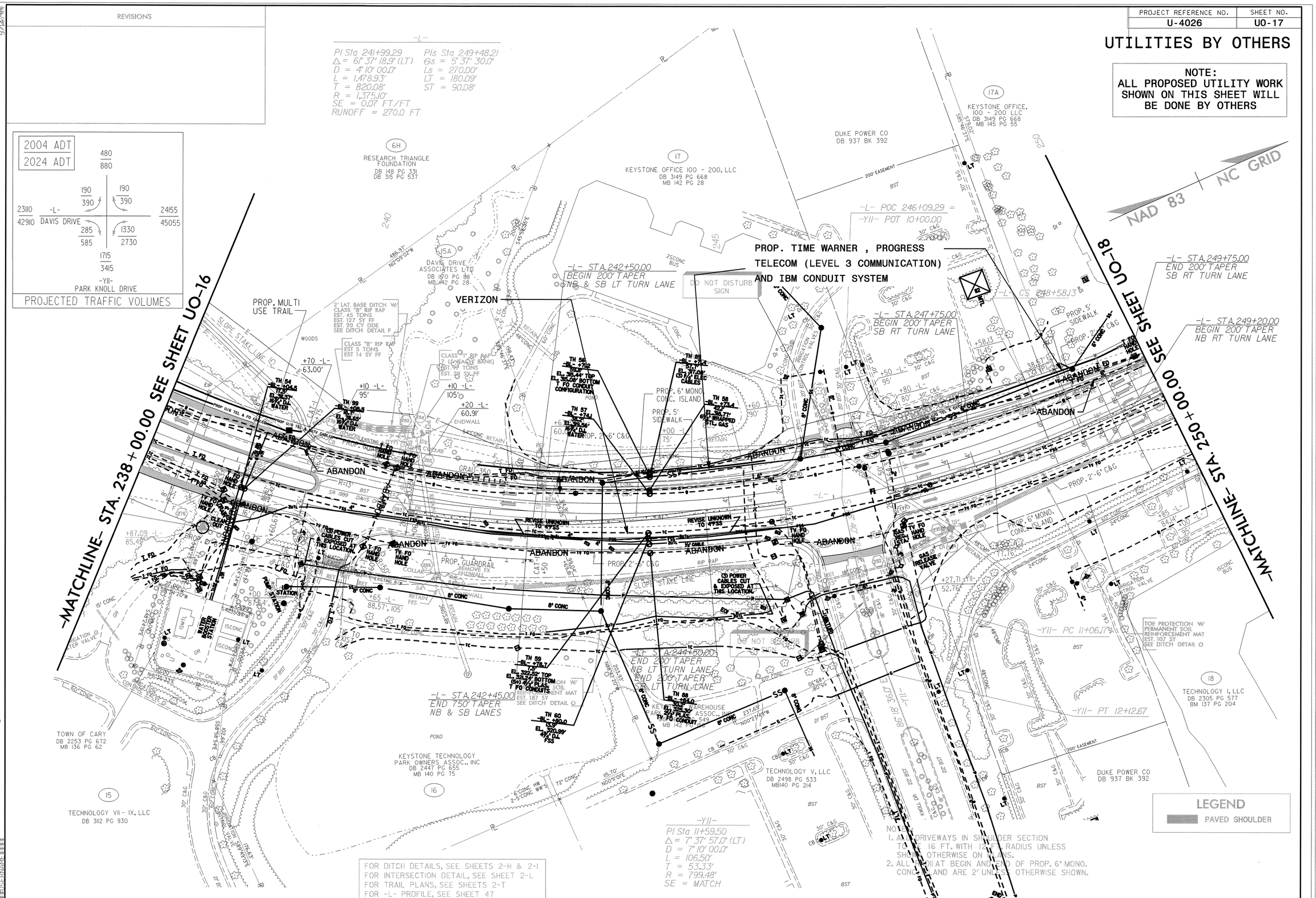
02-AUG-2006 09:37
$$$$TIDENROUT$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UO-17

UTILITIES BY OTHERS

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

REVISIONS



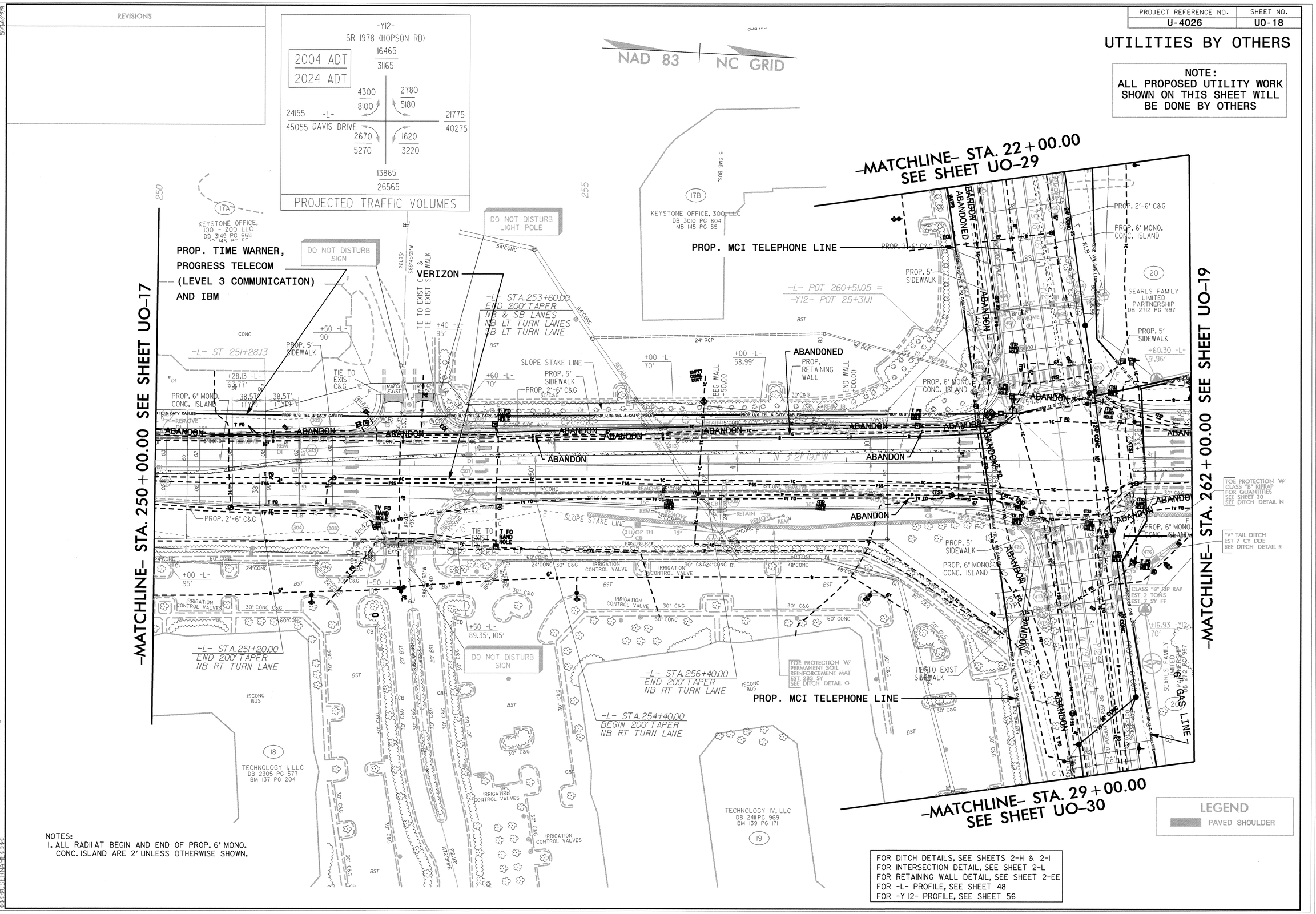
5/12/98

02-AUG-2006 09:39
$$$$USERNAME$$$$
utilities\rdu\u4026_uo_ut\u022_ut\u022_ut\u022_ROY23.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UO-18

UTILITIES BY OTHERS

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



NOTES:
1. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR INTERSECTION DETAIL, SEE SHEET 2-L
FOR RETAINING WALL DETAIL, SEE SHEET 2-EE
FOR -L- PROFILE, SEE SHEET 48
FOR -Y12- PROFILE, SEE SHEET 56

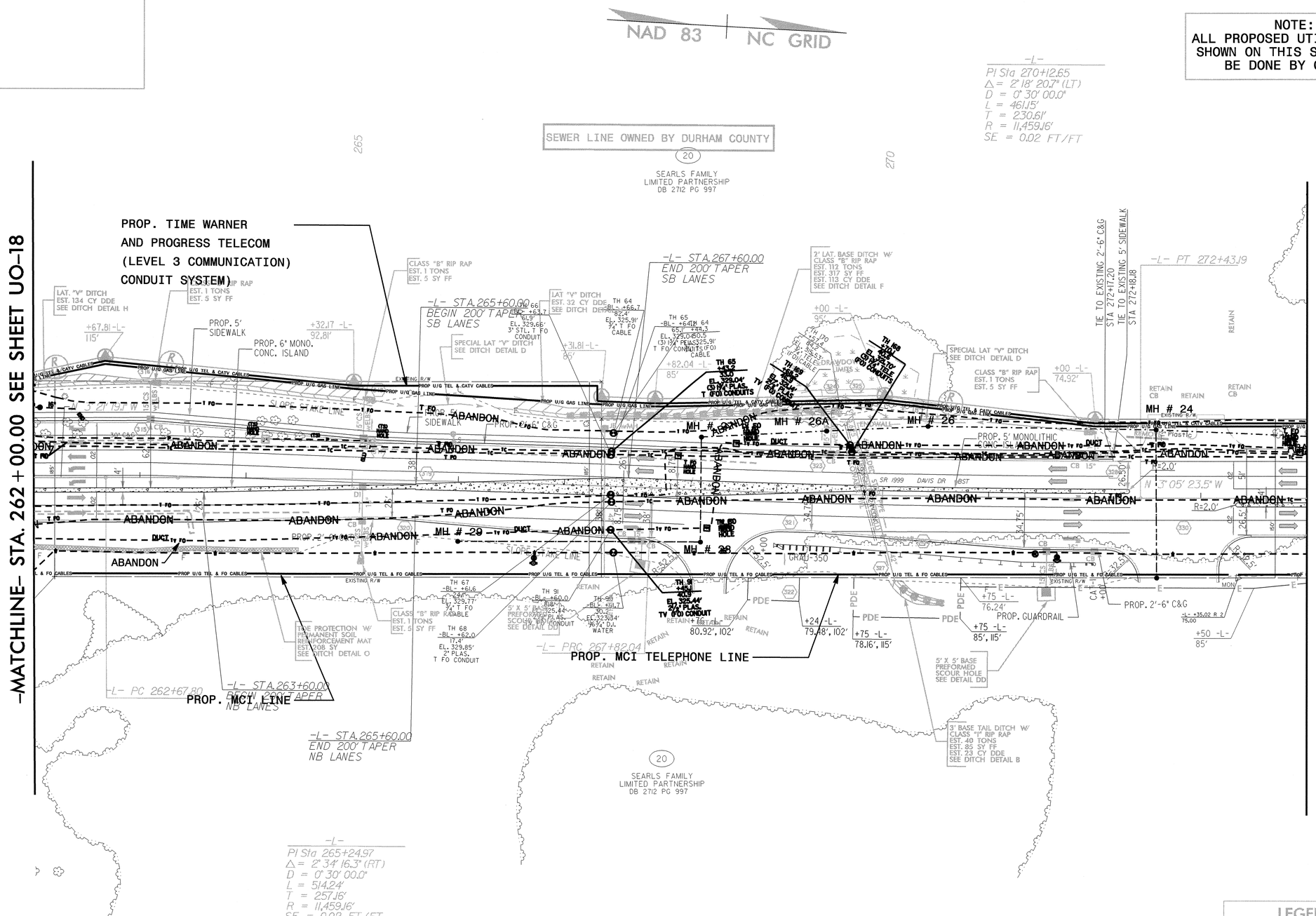
06-SEP-2006 11:55

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UO-19

UTILITIES BY OTHERS

REVISIONS

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



NOTES:
1. ALL RADII AT BEGIN AND END OF PROP. 6' MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR -L- PROFILE, SEE SHEET 48

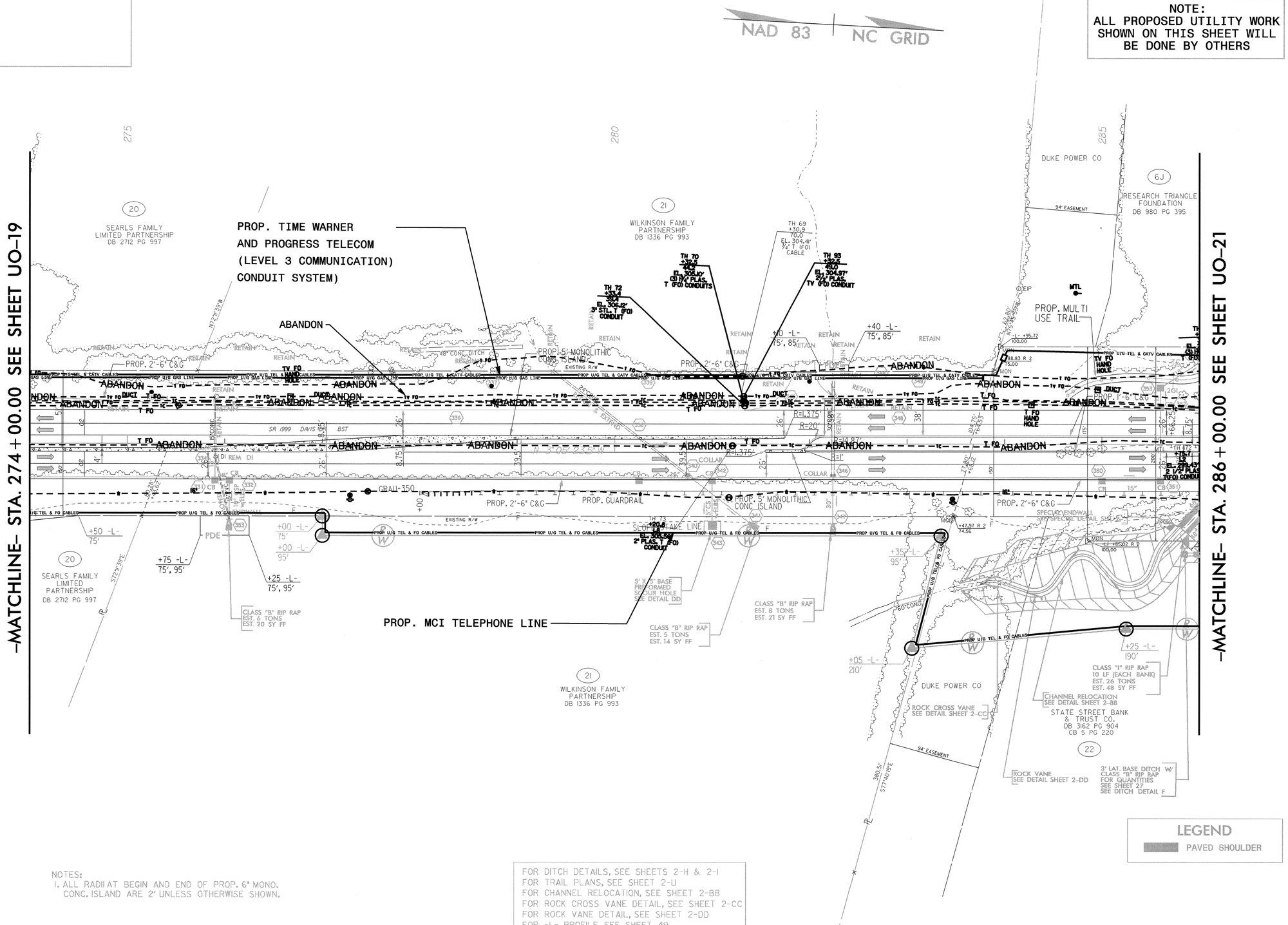
06-SEP-2006 11:54
\rdu_ut\proj\uo_psh\u4026_uo_ut_uo26_rdy25.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UO-20

UTILITIES BY OTHERS

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

REVISIONS



NOTES:
1. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR TRAIL PLANS, SEE SHEET 2-U
FOR CHANNEL RELOCATION, SEE SHEET 2-BB
FOR ROCK CROSS VANE DETAIL, SEE SHEET 2-CC
FOR ROCK VANE DETAIL, SEE SHEET 2-DD
FOR -L- PROFILE, SEE SHEET 49

02-AUG-2006 11:41

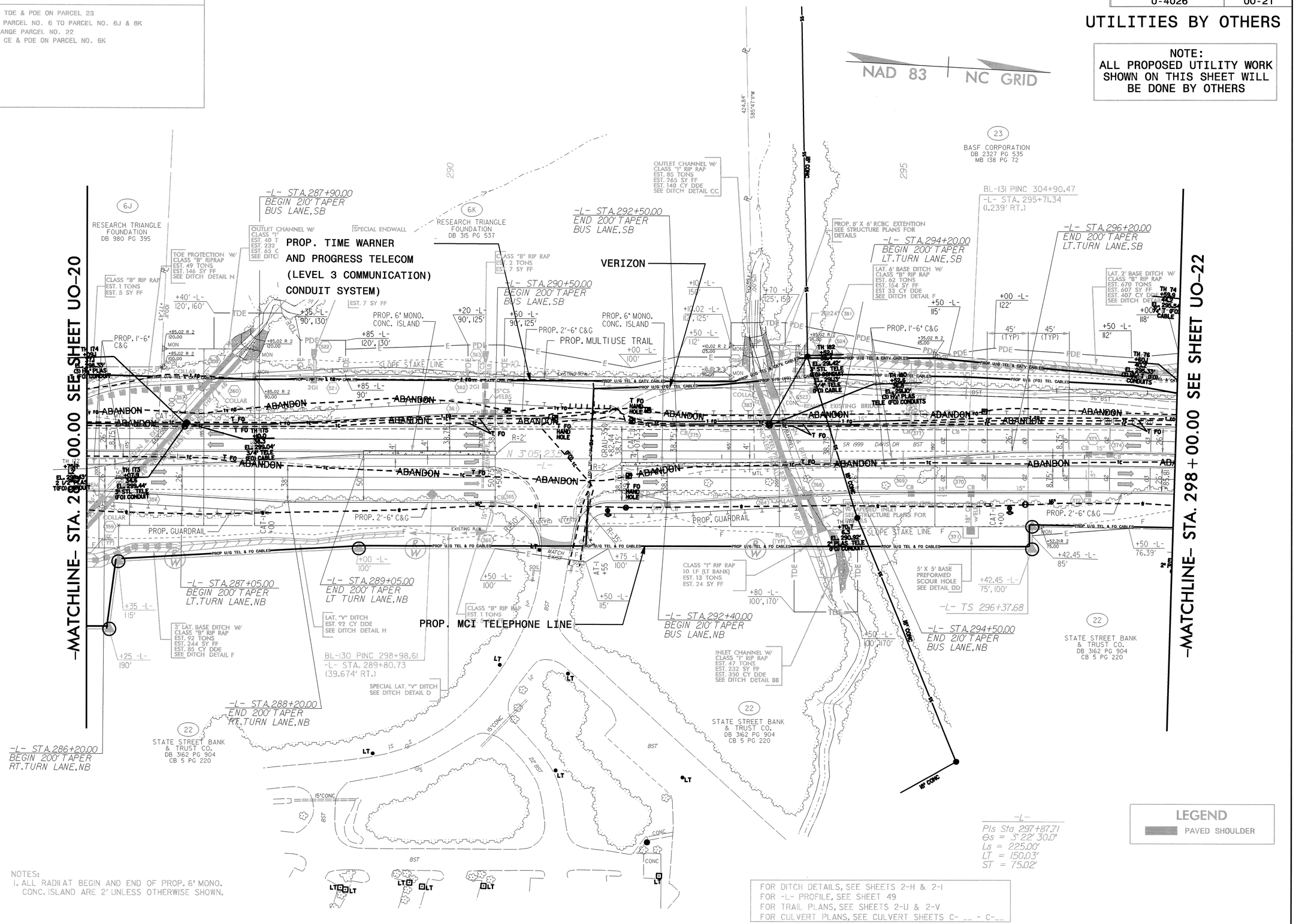
PROJECT REFERENCE NO.	SHEET NO.
U-4026	U0-21

UTILITIES BY OTHERS

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

REVISIONS

9/23/03 REVISED TDE & PDE ON PARCEL 23
3/16/04 REVISED PARCEL NO. 6 TO PARCEL NO. 6J & 6K
4/19/04 NAME CHANGE PARCEL NO. 22
6/25/04 REVISED CE & PDE ON PARCEL NO. 6K



NOTES:
1. ALL RADII AT BEGIN AND END OF PROP. 6' MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

-L-
Pls Sta 297+87.71
Θs = 3° 22' 30.0"
Ls = 225.00'
LT = 150.03'
ST = 75.02'

LEGEND
PAVED SHOULDER

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR -L- PROFILE, SEE SHEET 49
FOR TRAIL PLANS, SEE SHEETS 2-U & 2-V
FOR CULVERT PLANS, SEE CULVERT SHEETS C- __ - C-__

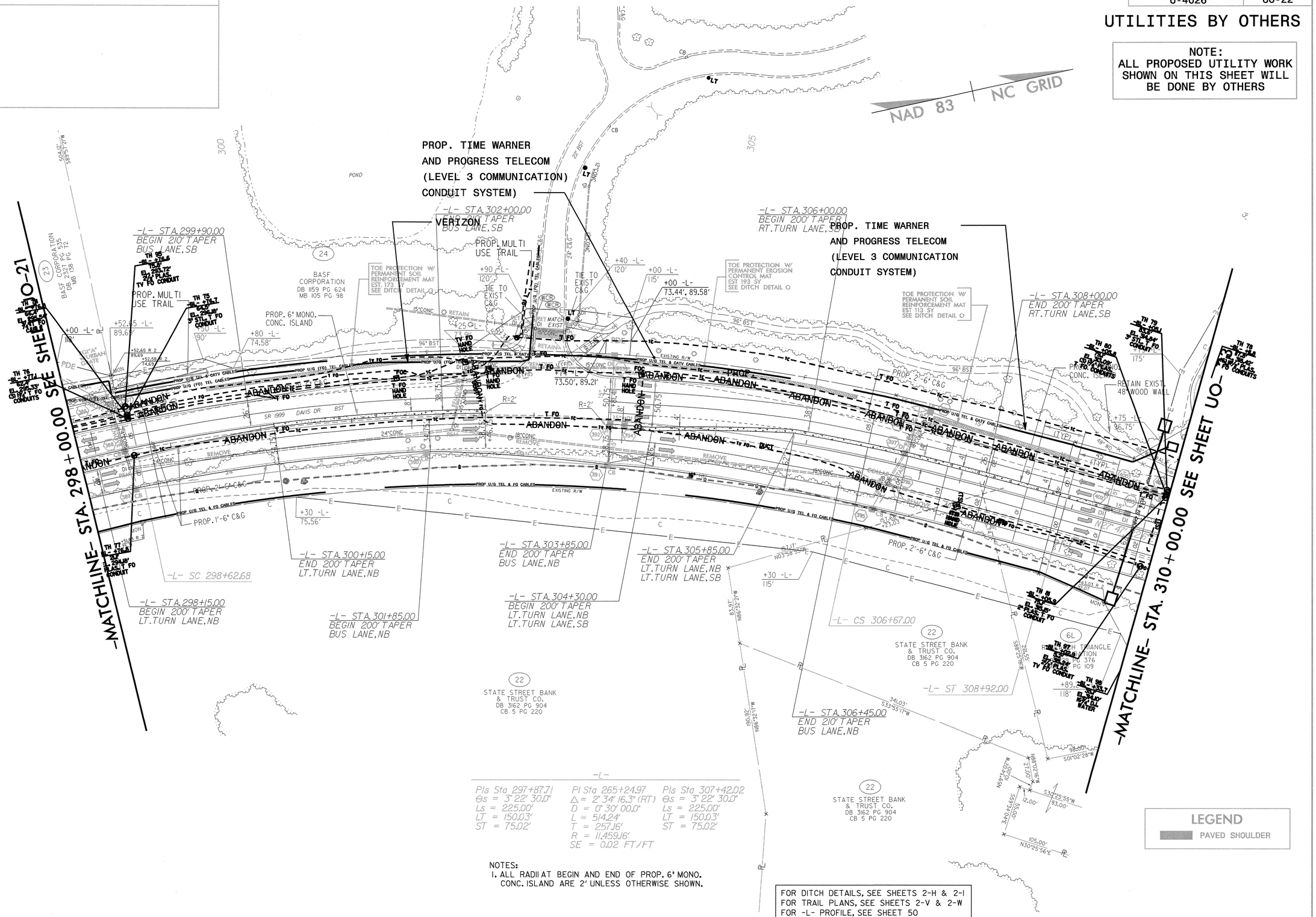
02-AUG-2006 11:42

PROJECT REFERENCE NO.	SHEET NO.
U-4026	U0-22

UTILITIES BY OTHERS

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

REVISIONS



NOTES:
1. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR TRAIL PLANS, SEE SHEETS 2-V & 2-W
FOR -L- PROFILE, SEE SHEET 50

LEGEND
PAVED SHOULDER

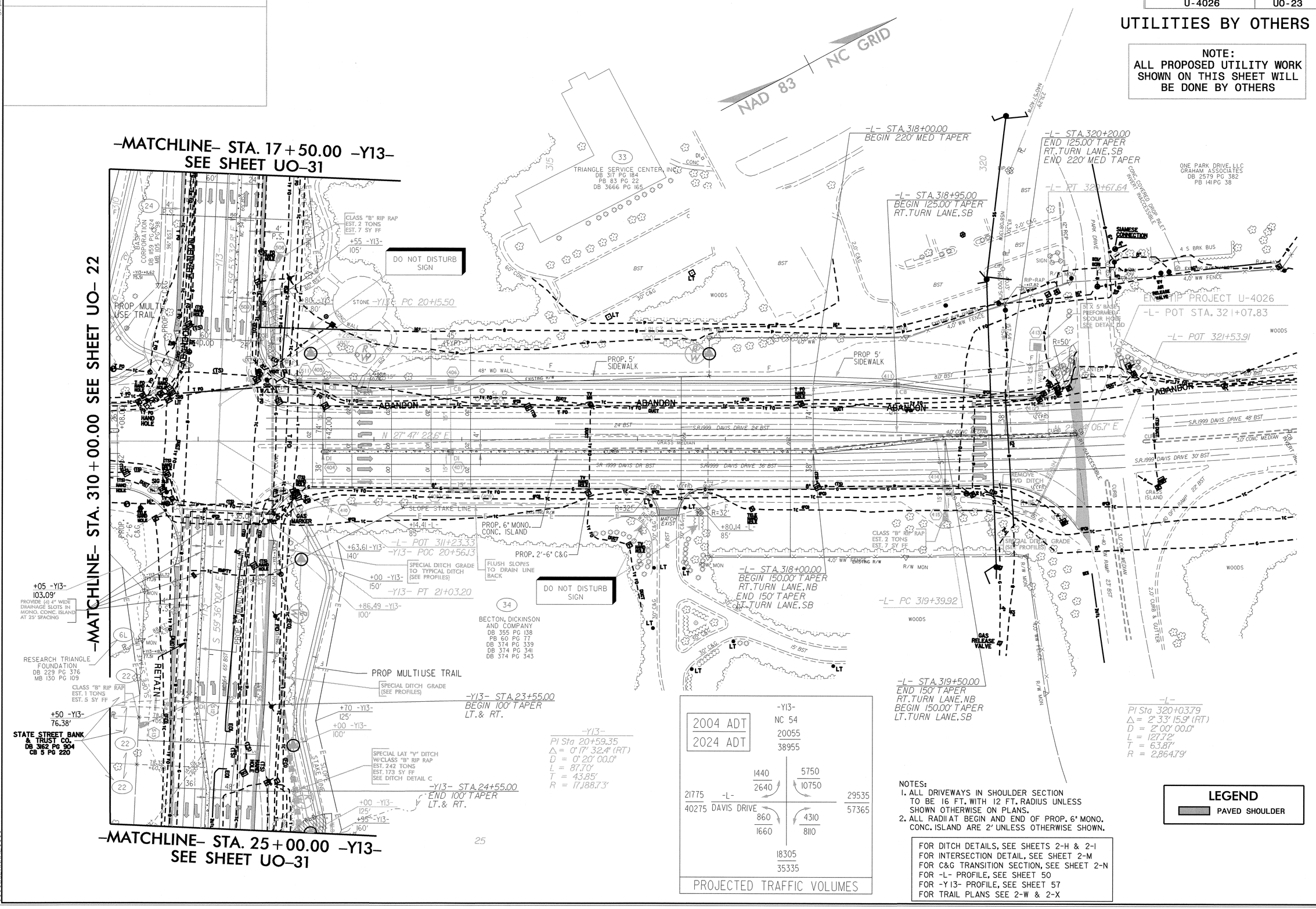
02-AUG-2006 11:43
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-4026	U0-23

REVISIONS

UTILITIES BY OTHERS

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



NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6' MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR INTERSECTION DETAIL, SEE SHEET 2-M
FOR C&G TRANSITION SECTION, SEE SHEET 2-N
FOR -L- PROFILE, SEE SHEET 50
FOR -Y13- PROFILE, SEE SHEET 57
FOR TRAIL PLANS SEE 2-W & 2-X

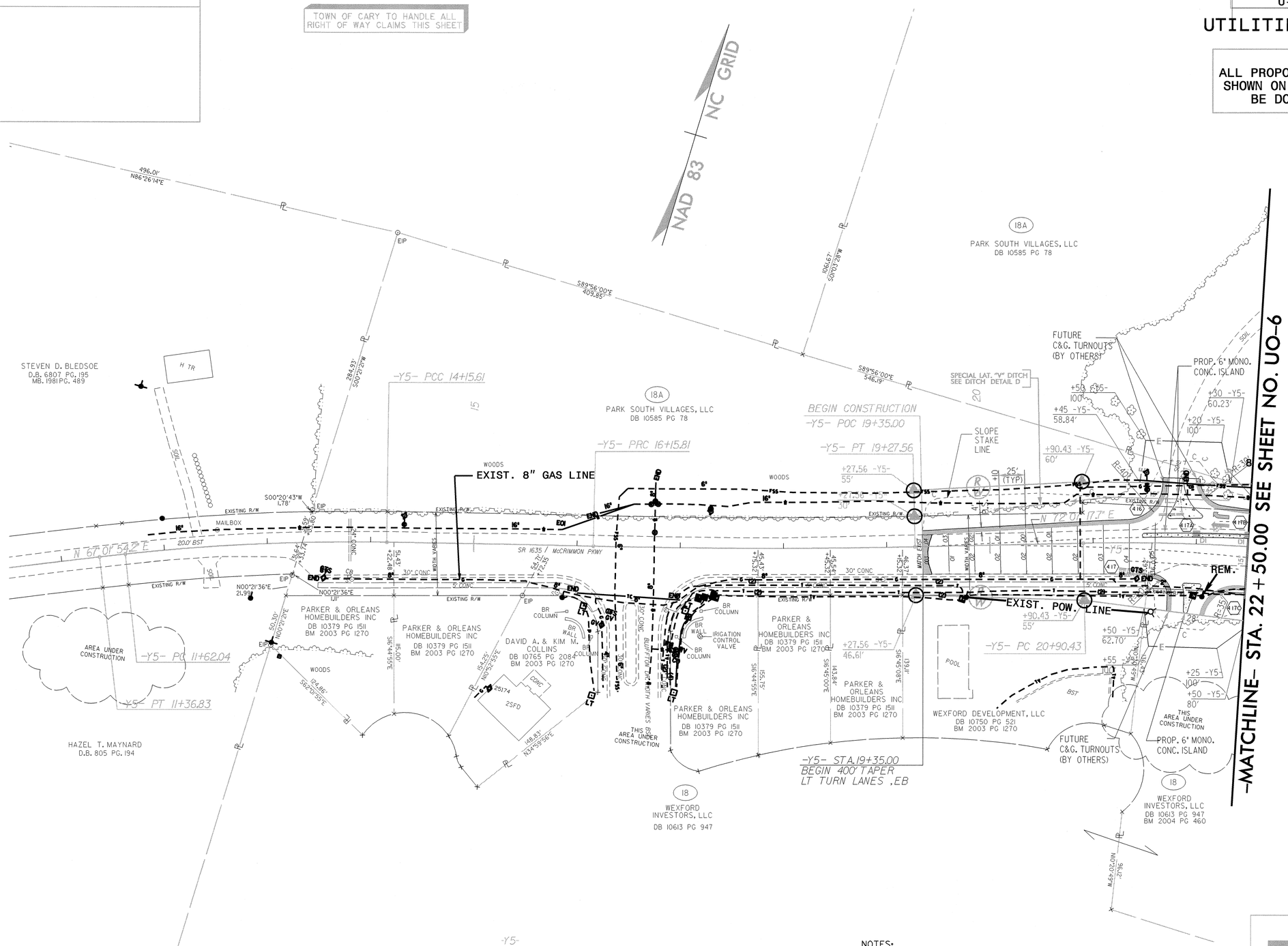
PROJECT REFERENCE NO.	SHEET NO.
U-4026	UO-24

UTILITIES BY OTHERS

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

REVISIONS

TOWN OF CARY TO HANDLE ALL RIGHT OF WAY CLAIMS THIS SHEET



-Y5-

PI Sta 10+68.42	PI Sta 12+88.98	PI Sta 15+15.71	PI Sta 17+71.71	PI Sta 22+49.68
Δ = 0° 45' 05.2" (RT)	Δ = 6° 47' 36.3" (RT)	Δ = 0° 33' 57.3" (RT)	Δ = 2° 36' 25.6" (LT)	Δ = 9° 31' 59.3" (RT)
D = 0° 32' 57.0"	D = 2° 40' 44.6"	D = 0° 16' 57.7"	D = 0° 50' 10.6"	D = 3° 00' 00.0"
L = 136.83'	L = 253.57'	L = 200.19'	L = 311.75'	L = 317.77'
T = 68.42'	T = 126.94'	T = 100.10'	T = 155.90'	T = 159.25'
R = 10,433.18'	R = 2,138.65'	R = 20,268.54'	R = 6,851.31'	R = 1,909.86'
				SE = 0.05 FT/FT
				RUNOFF = 100.0 FT

NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEET 2-H
FOR -Y5- PROFILE, SEE SHEET 52

LEGEND
PAVED SHOULDER

5/13/98

02-AUG-2006 10:16
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UO-25

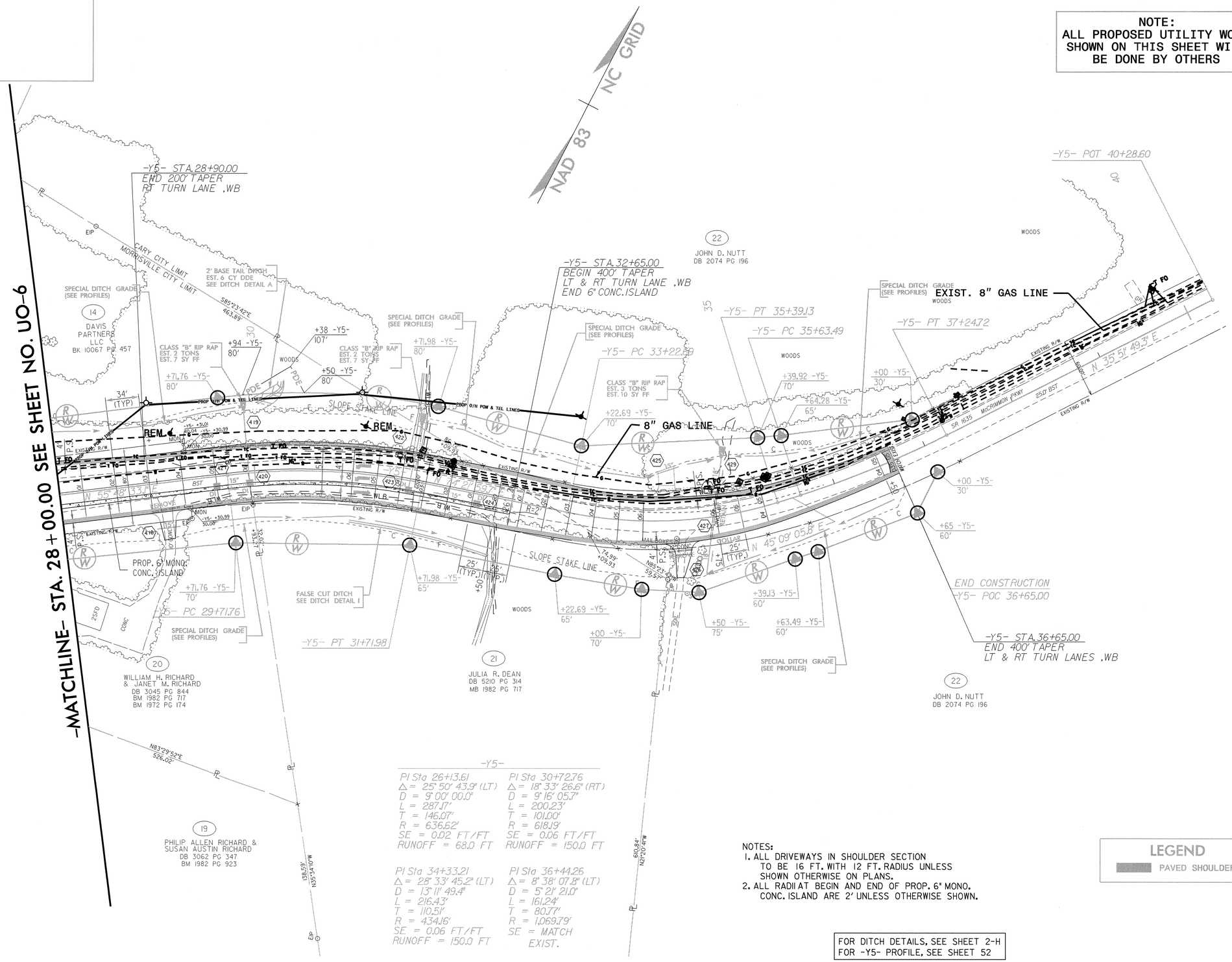
UTILITIES BY OTHERS

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

REVISIONS

10/26/04 REMOVED PDE ON PARCEL 21

TOWN OF CARY TO HANDLE ALL RIGHT OF WAY CLAIMS THIS SHEET



-Y5-

PI Sta 26+13.61	PI Sta 30+72.76
Δ = 25° 50' 43.9" (LT)	Δ = 18° 33' 26.6" (RT)
D = 9° 00' 00.0"	D = 9° 16' 05.7"
L = 287.17'	L = 200.23'
T = 146.07'	T = 101.00'
R = 636.62'	R = 618.19'
SE = 0.02 FT/FT	SE = 0.06 FT/FT
RUNOFF = 68.0 FT	RUNOFF = 150.0 FT

PI Sta 34+33.21	PI Sta 36+44.26
Δ = 28° 33' 45.2" (LT)	Δ = 8° 38' 07.8" (LT)
D = 13° 11' 49.4"	D = 5° 21' 21.0"
L = 216.43'	L = 161.24'
T = 110.51'	T = 80.77'
R = 434.16'	R = 1,069.79'
SE = 0.06 FT/FT	SE = MATCH EXIST.
RUNOFF = 150.0 FT	

NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

LEGEND
PAVED SHOULDER

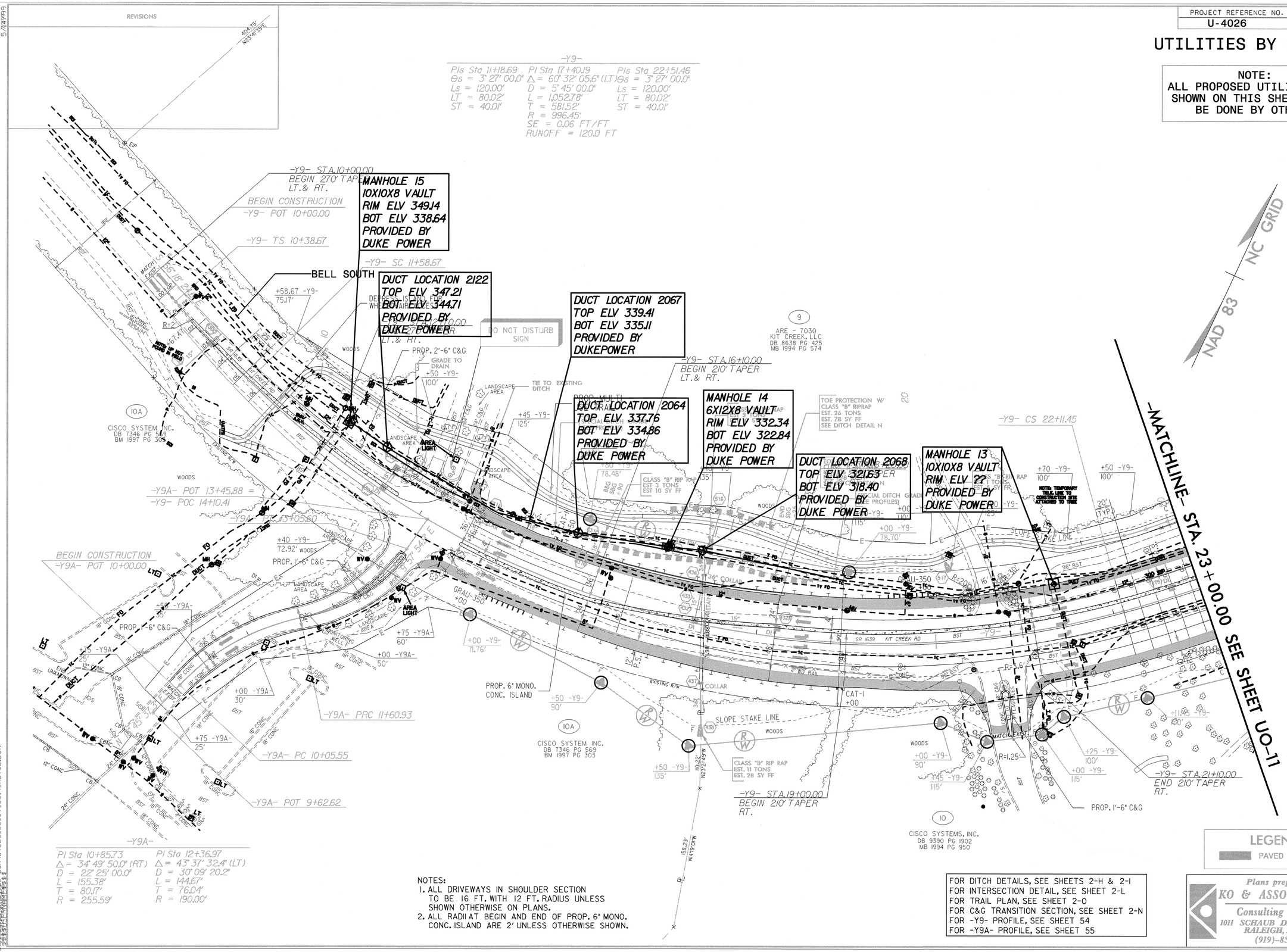
FOR DITCH DETAILS, SEE SHEET 2-H
FOR -Y5- PROFILE, SEE SHEET 52

02-AUG-2006 10:17

PROJECT REFERENCE NO.	SHEET NO.
U-4026	U0-26

UTILITIES BY OTHERS

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



NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR INTERSECTION DETAIL, SEE SHEET 2-L
FOR TRAIL PLAN, SEE SHEET 2-O
FOR C&G TRANSITION SECTION, SEE SHEET 2-N
FOR -Y9- PROFILE, SEE SHEET 54
FOR -Y9A- PROFILE, SEE SHEET 55

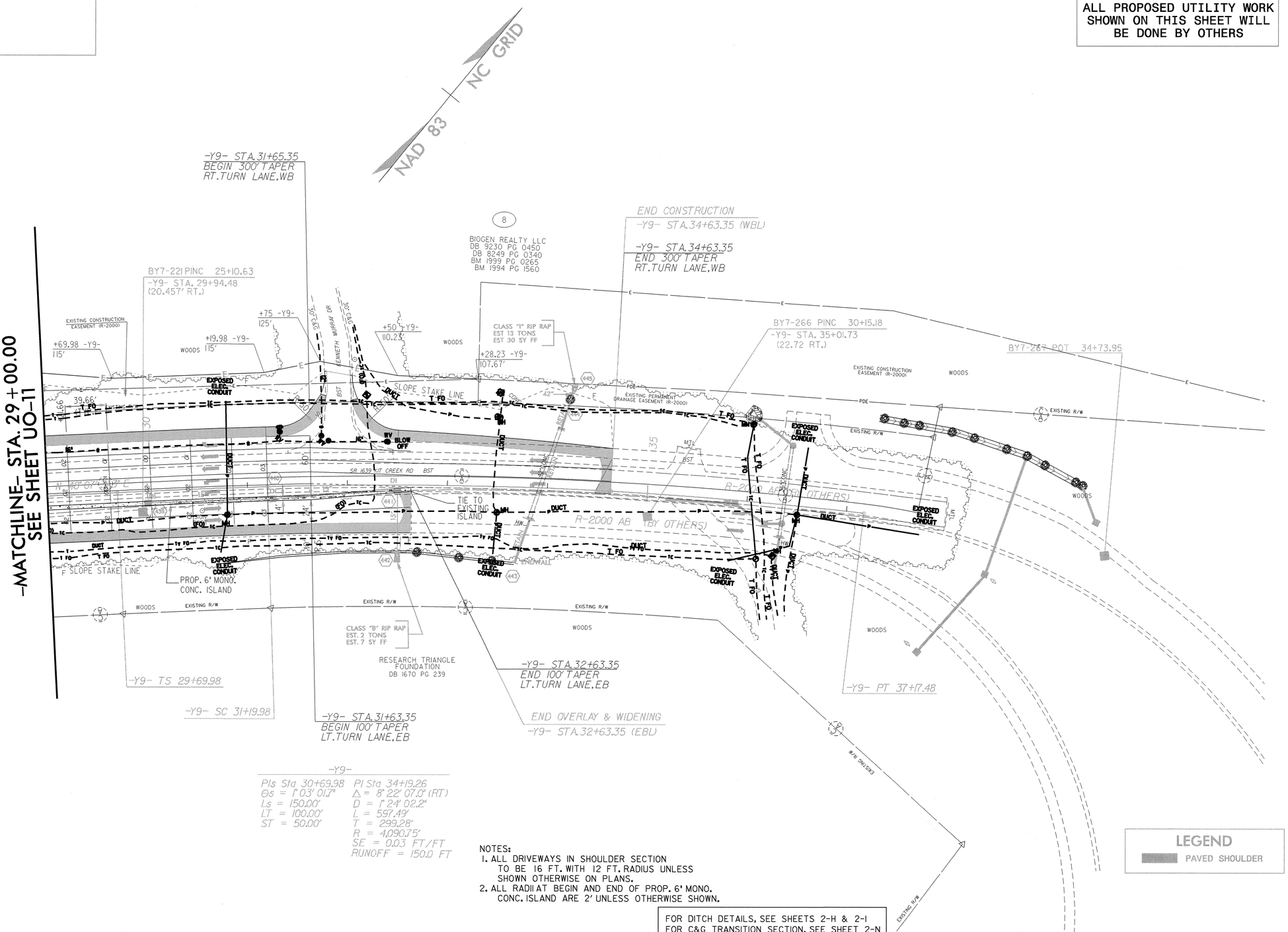
Plans prepared by:
KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE #202
RALEIGH, N.C. 27606
(919)-851-6066

PROJECT REFERENCE NO.	SHEET NO.
U-4026	UO-27

UTILITIES BY OTHERS

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

REVISIONS



-Y9-

PIs Sta 30+69.98	PI Sta 34+19.26
Θs = 1° 03' 01.7"	Δ = 8° 22' 07.0" (RT)
Ls = 150.00'	D = 1° 24' 02.2"
LT = 100.00'	L = 597.49'
ST = 50.00'	T = 299.28'
	R = 4,090.75'
	SE = 0.03 FT/FT
	RUNOFF = 150.0 FT

NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6" MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR C&G TRANSITION SECTION, SEE SHEET 2-N
FOR -Y9- PROFILE, SEE SHEET 54

LEGEND
PAVED SHOULDER

02-AUG-2006 14:14
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$$$$USERNAME$$$$

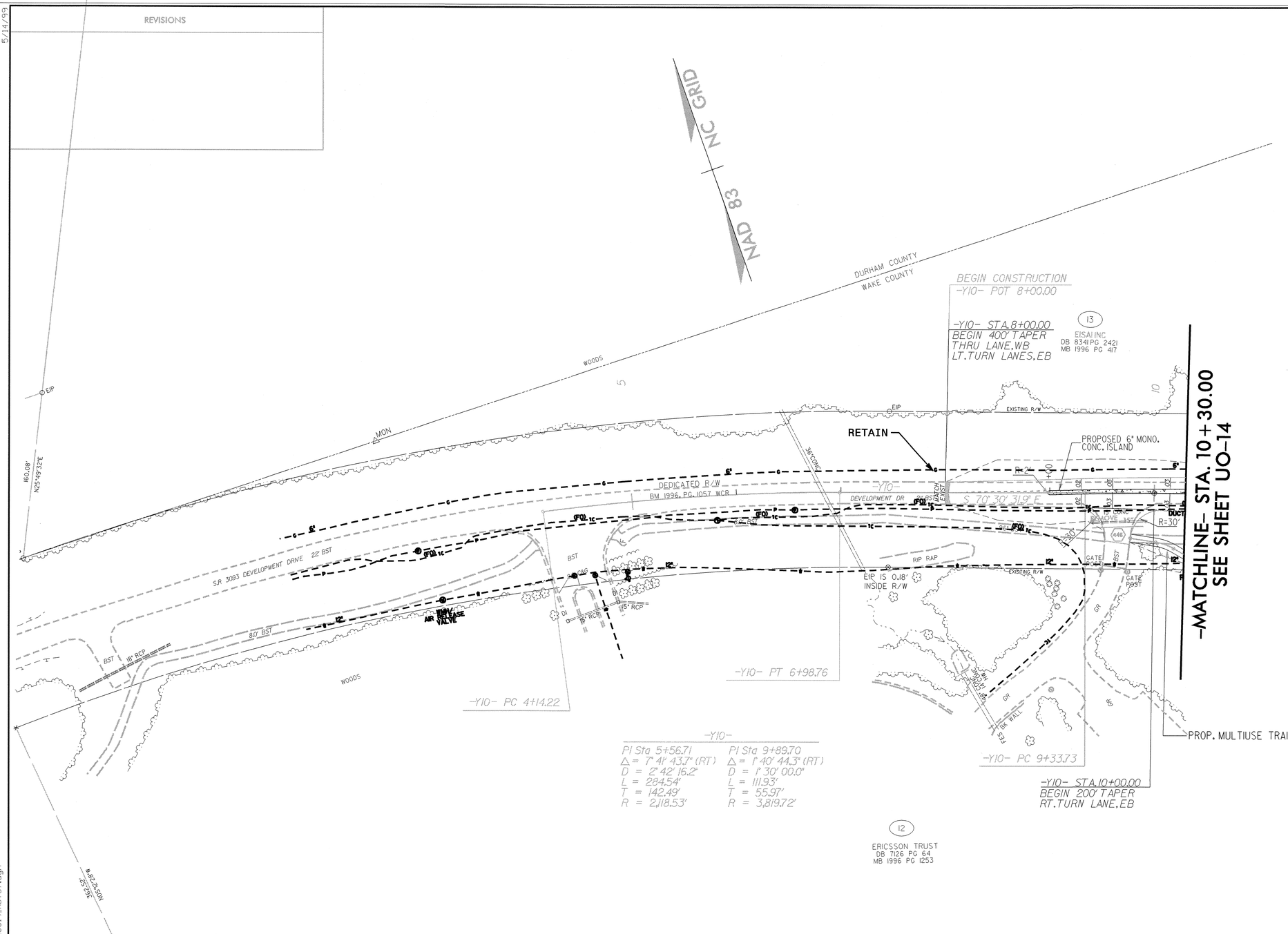
PROJECT REFERENCE NO.	SHEET NO.
U-4026	UO-28

UTILITIES BY OTHERS

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

REVISIONS

5/14/99



NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6' MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

LEGEND
PAVED SHOULDER

FOR TRAIL PLANS SEE SHEET 2-Q
FOR DITCH DETAILS SEE SHEET 2-H & 2-I
FOR -Y10- PROFILE, SEE SHEET 53

Plans prepared by:
KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE #202
RALEIGH, N.C. 27606
(919)-851-6066

06-SEP-2006 14:35
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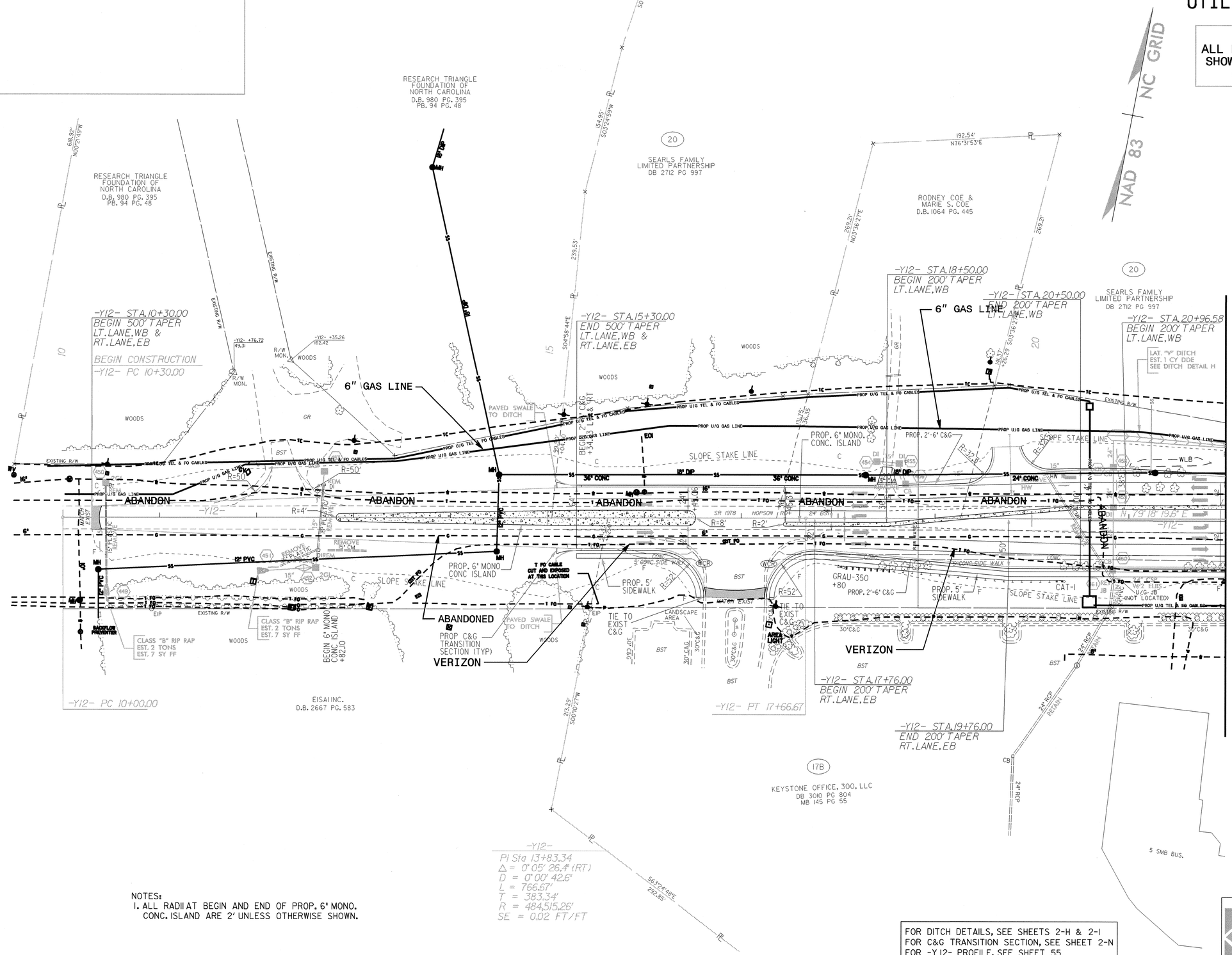
PROJECT REFERENCE NO.	SHEET NO.
U-4026	U0-29

UTILITIES BY OTHERS

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

REVISIONS



NOTES:
1. ALL RADII AT BEGIN AND END OF PROP. 6' MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR C&G TRANSITION SECTION, SEE SHEET 2-N
FOR -Y12- PROFILE, SEE SHEET 55

LEGEND
PAVED SHOULDER

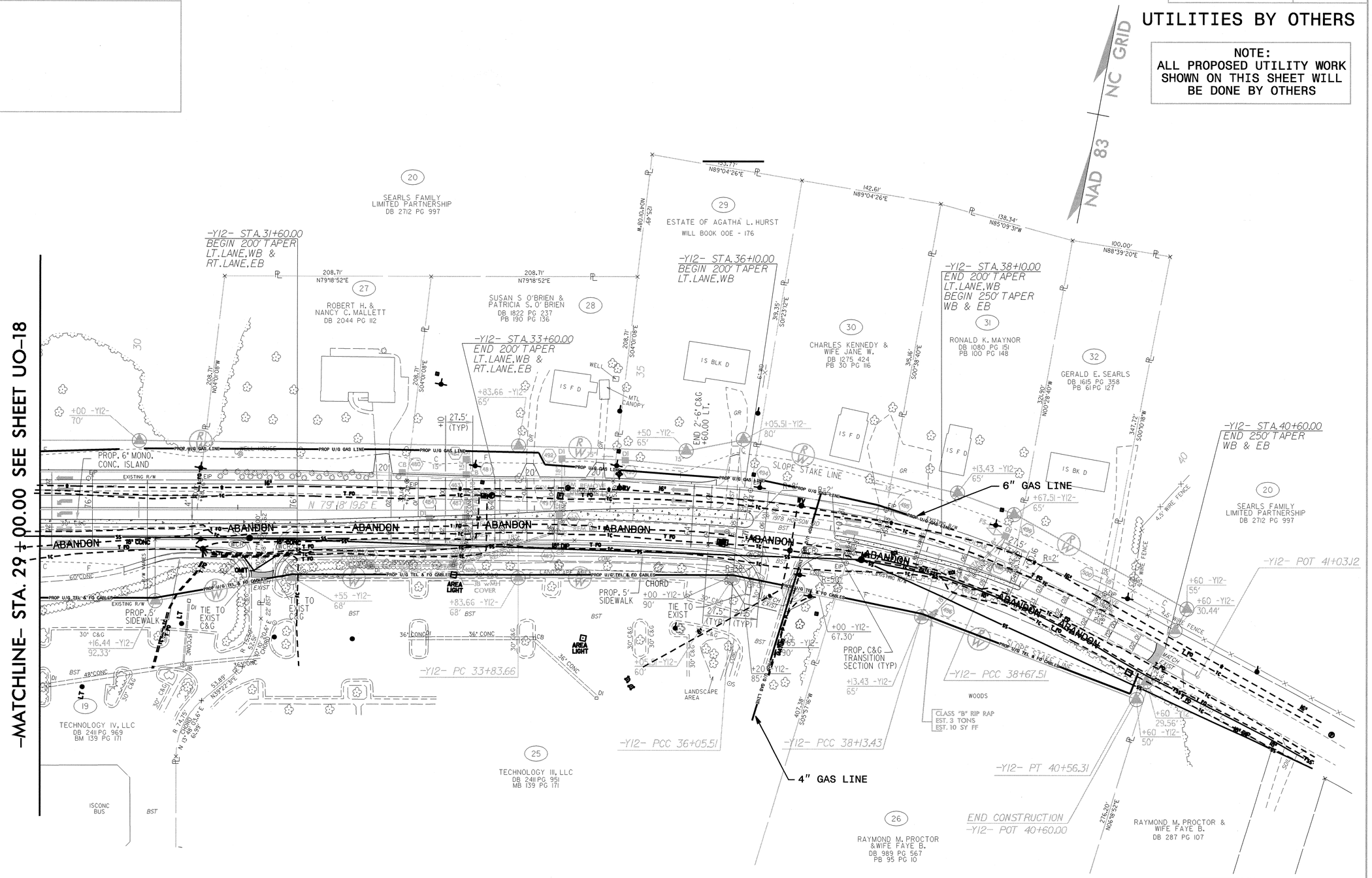
Plans prepared by:
KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE #202
RALEIGH, N.C. 27606
(919)-851-6066

PROJECT REFERENCE NO.	SHEET NO.
U-4026	U0-30

REVISIONS

UTILITIES BY OTHERS

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



NOTES:
1. ALL RADII AT BEGIN AND END OF PROP. 6' MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR C&G TRANSITION SECTION, SEE SHEET 2-N
FOR -Y12- PROFILE, SEE SHEET 56

LEGEND
PAVED SHOULDER

Plans prepared by:
KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE #202
RALEIGH, N.C. 27606
(919)-851-6066

03-AUG-2006 08:40
$$$$USERNAME$$$$

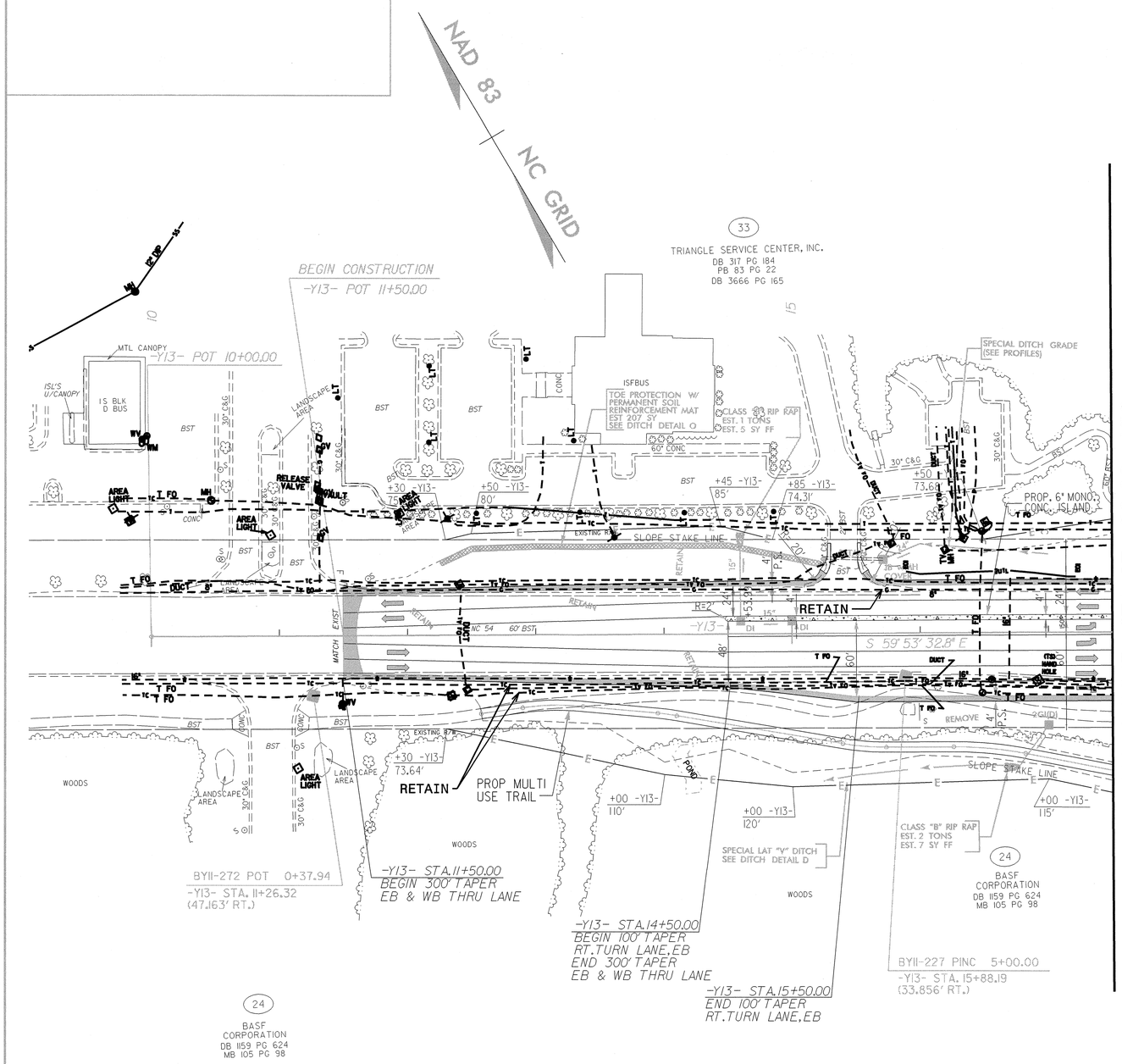
PROJECT REFERENCE NO.	SHEET NO.
U-4026	UO-31

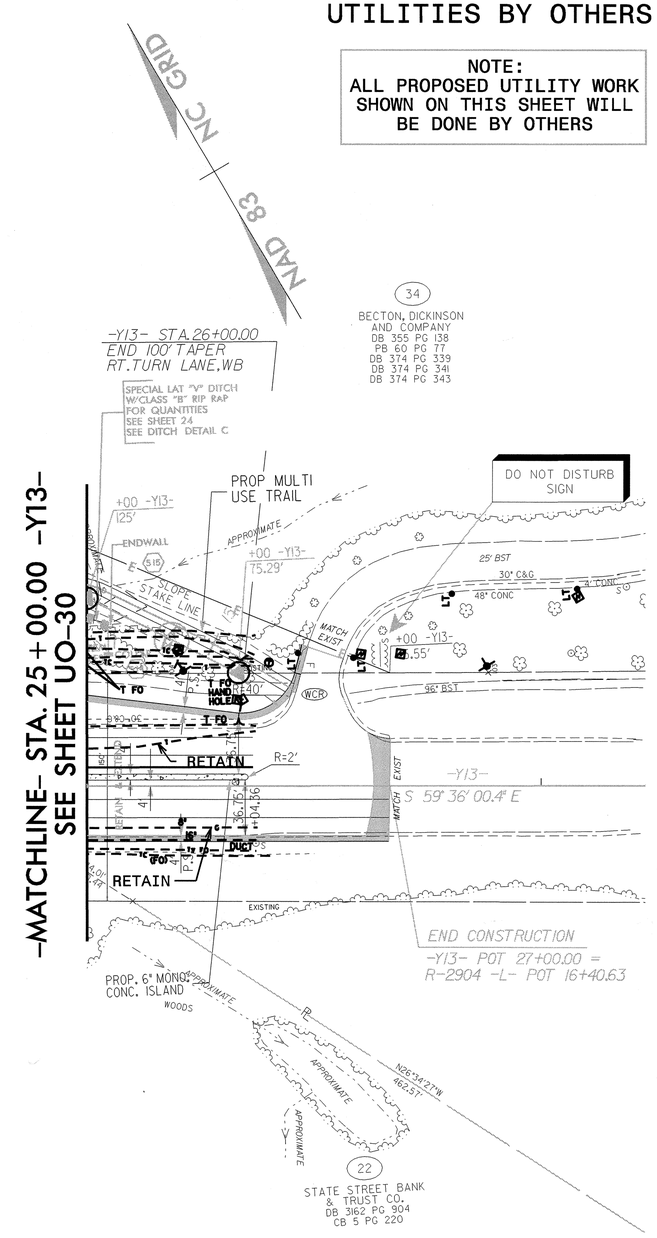
UTILITIES BY OTHERS

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

REVISIONS

10/03/03 REVISED SHEET LAYOUT
3/25/04 NAME CHANGE PARCEL NO. 24
4/19/04 NAME CHANGE PARCEL NO. 22





NOTES:
1. ALL DRIVEWAYS IN SHOULDER SECTION TO BE 16 FT. WITH 12 FT. RADIUS UNLESS SHOWN OTHERWISE ON PLANS.
2. ALL RADII AT BEGIN AND END OF PROP. 6' MONO. CONC. ISLAND ARE 2' UNLESS OTHERWISE SHOWN.

LEGEND
PAVED SHOULDER

FOR DITCH DETAILS, SEE SHEETS 2-H & 2-I
FOR C&G TRANSITION, SEE SHEET 2-N
FOR TRAIL PLANS, SEE SHEETS 2-W & 2-X
FOR -Y13- PROFILE, SEE SHEET 57

Plans prepared by:
KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE #202
RALEIGH, N.C. 27606
For Division of Highways