

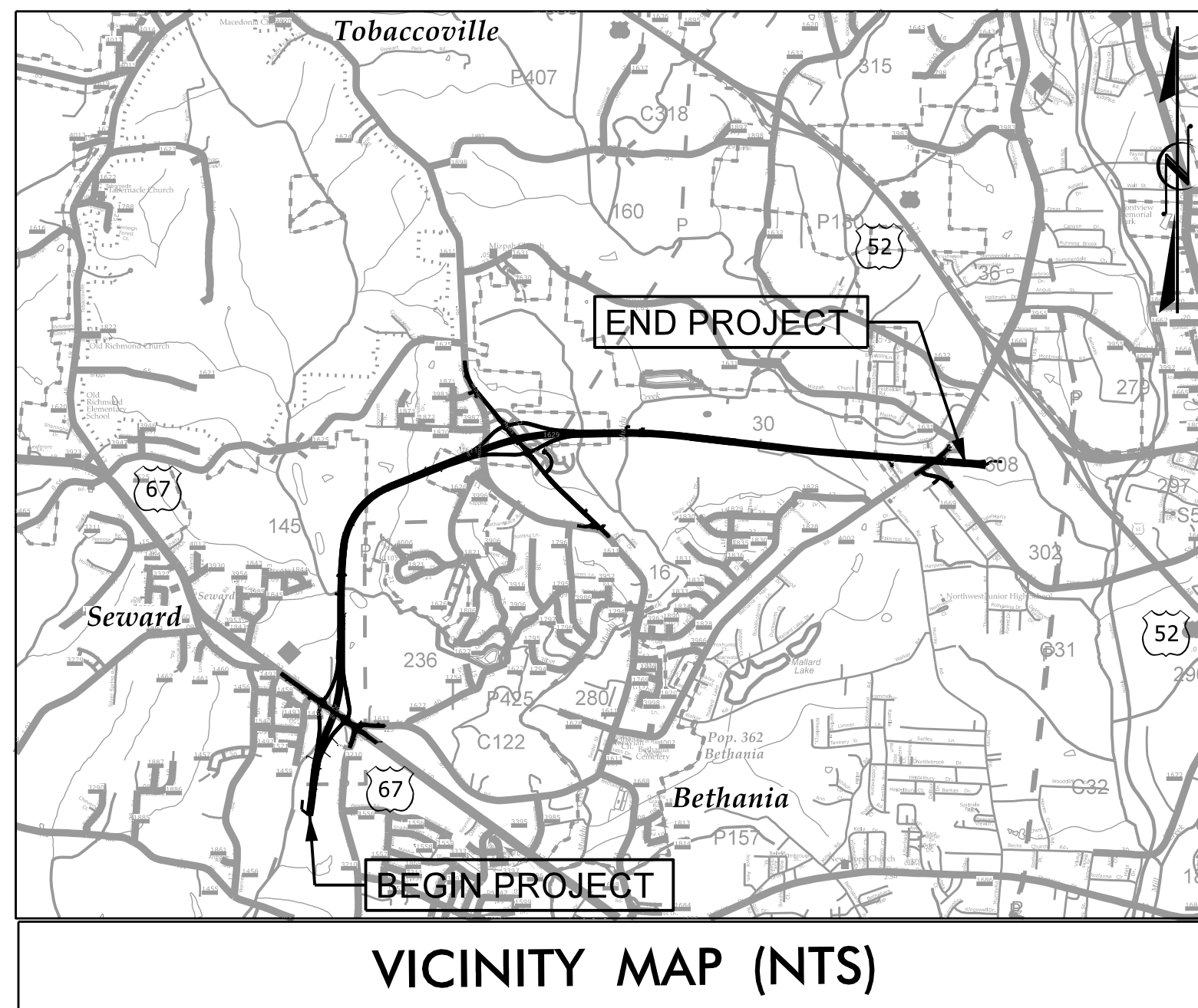
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C. | R-2247EA | 1 | |
| STATE PROJ. NO. | P.A. PROJ. NO. | DESCRIPTION | |
| 34409.1.21 | STP-0918(022) | PE | |
| 34409.2.27 | STP-0918(022) | R / W | |
| 34409.2.27 | STP-0918(022) | UTIL | |
| 34409.3.16 | STP-0918(022) | CONST | |

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
FORSYTH COUNTY

LOCATION: WINSTON-SALEM NORTHERN BELTWAY FROM NC 67 TO SOUTH OF US 52
TYPE OF WORK: GRADING, PAVING, DRAINAGE, STRUCTURES AND RETAINING WALLS

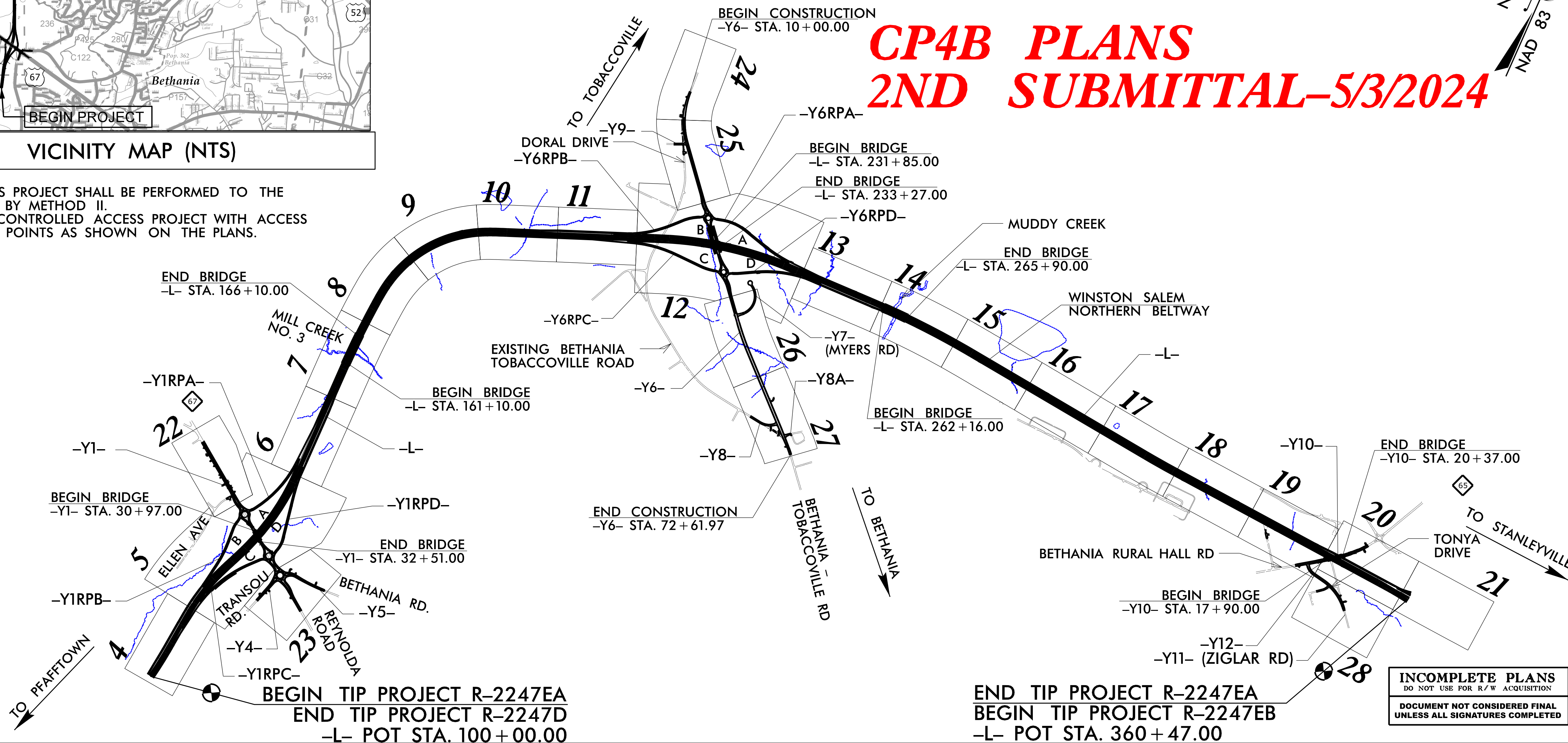
REDLINE DRAINAGE - SHEETS 4-27

**CP4B PLANS
2ND SUBMITTAL-5/3/2024**



VICINITY MAP (NTS)

- CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
- THIS IS A PARTIAL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.



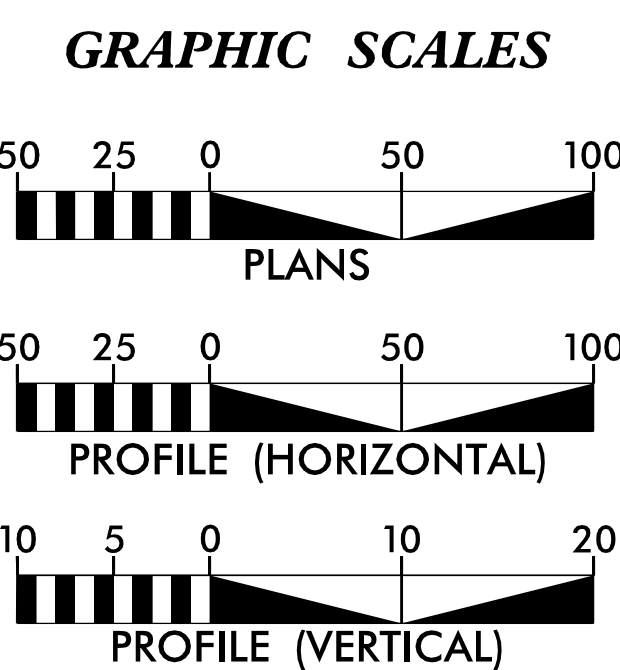
BEGIN TIP PROJECT R-2247EA
END TIP PROJECT R-2247D
-L- POT STA. 100+00.00

END TIP PROJECT R-2247EA
BEGIN TIP PROJECT R-2247EB
-L- POT STA. 360+47.00

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

TIP PROJECT: R-2247EA

CONTRACT:



DESIGN DATA

| |
|--|
| ADT 2028 = 15,720 |
| ADT 2048 = 19,100 |
| K = 9 % |
| D = 55 % |
| T = 6 % * |
| V = 70 MPH |
| * TTST = 4% DUAL 2% |
| FUNC. CLASSIFICATION: RURAL FREEWAY STATEWIDE TIER |

PROJECT LENGTH

| | |
|--------------------------------------|---------------|
| LENGTH ROADWAY TIP PROJECT R-2247EA | = 4.709 MILES |
| LENGTH BRIDGE TIP PROJECT R-2247EA | = 0.224 MILES |
| TOTAL LENGTH OF TIP PROJECT R-2247EA | = 4.933 MILES |

NCDOT POINT OF CONTACT:

COLIN MELLOR
PROJECT ENGINEER

JMT. Prepared in the Office of:
JOHNSON, MIRMIRAN, & THOMPSON, INC.
1130 Situs Court, Suite 200, Raleigh NC, 27606

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: AUGUST 20, 2028

LETTING DATE: OCTOBER 16, 2029

CHARLES J. YOUNG, PE
PROJECT ENGINEER

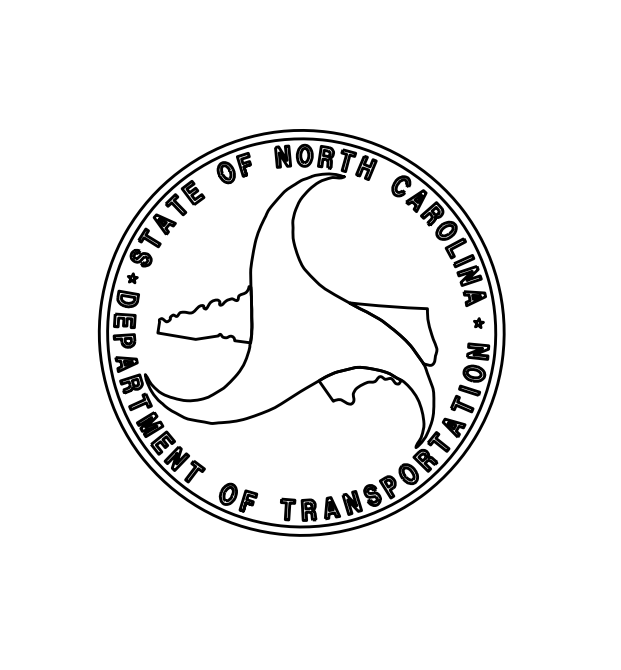
JOSHUA Q. ROEMER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

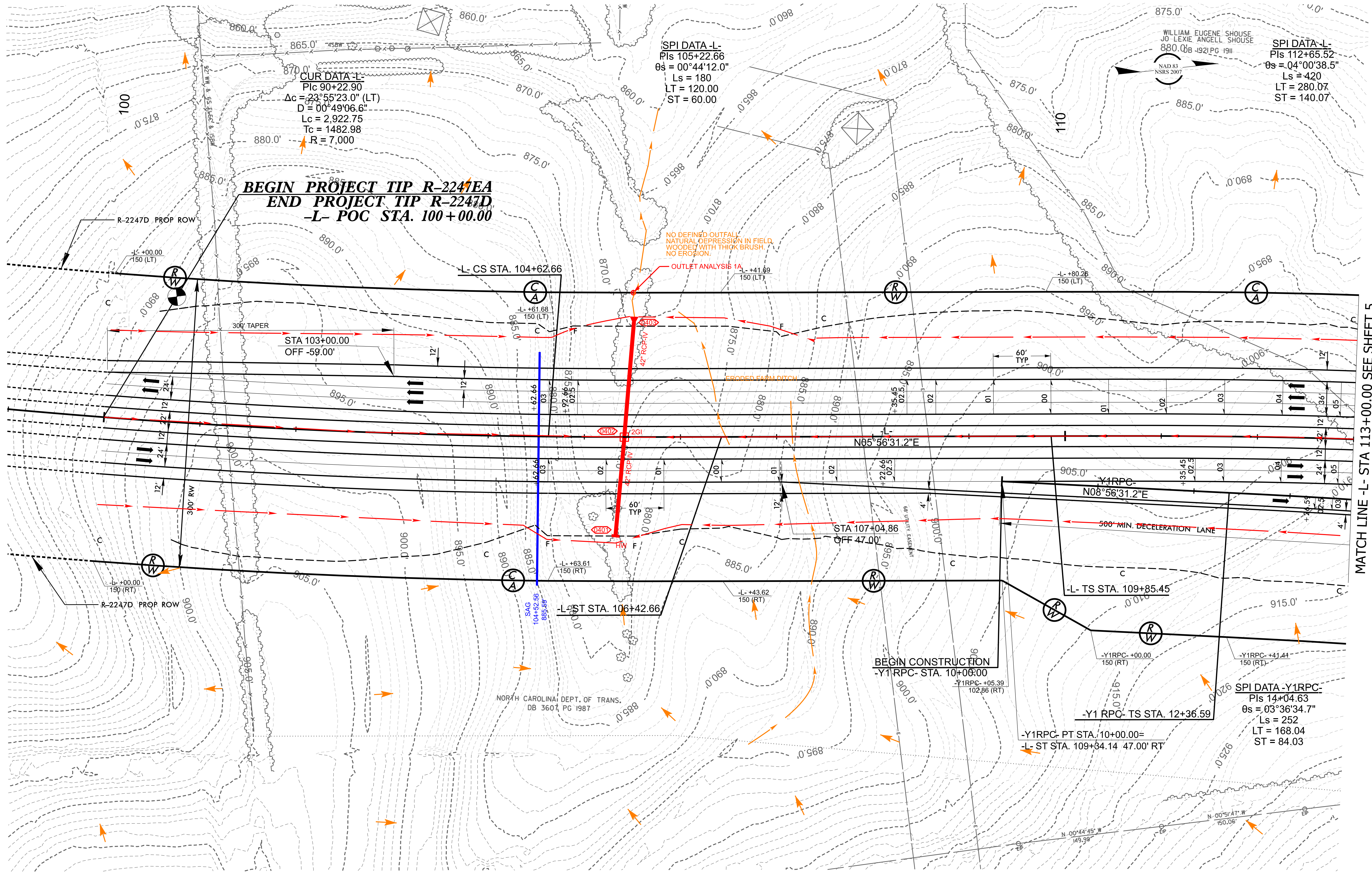
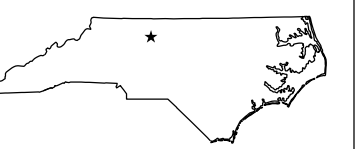
SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



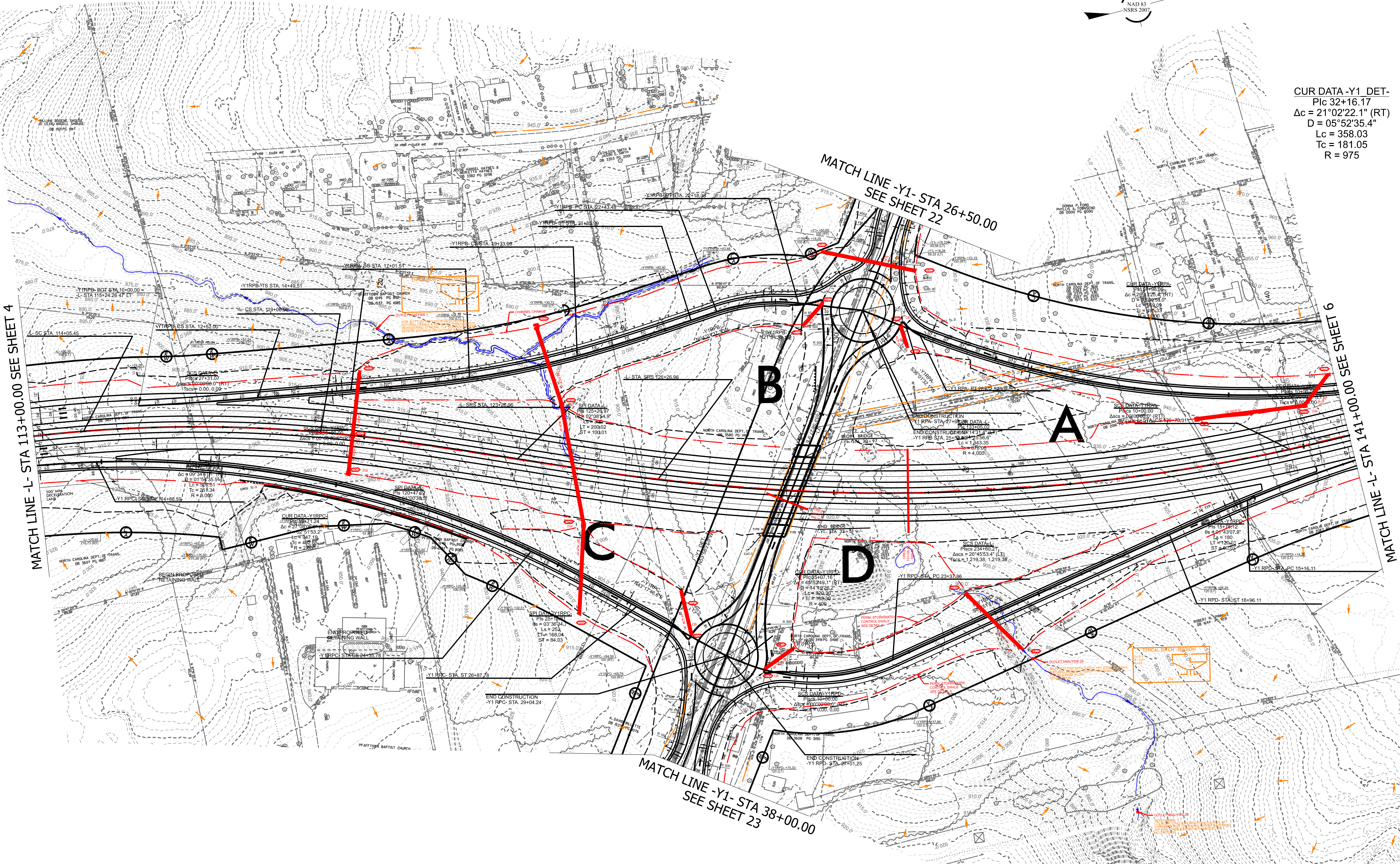
\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DDN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$



MATCH LINE -L- STA 113+00.00 SEE SHEET 5



CUR DATA -Y1 DET-
Pc 32+16.17
 $\Delta c = 21^{\circ}02'22.1''$ (RT)
 $D = 05^{\circ}52'35.4''$
 $Lc = 358.03$
 $Tc = 181.05$
 $R = 975$



MATCH LINE -L- STA 113+00.00 SEE SHEET 4

MATCH LINE -Y1- STA 26+50.00
SEE SHEET 22

MATCH LINE -L- STA 141+00.00 SEE SHEET 6

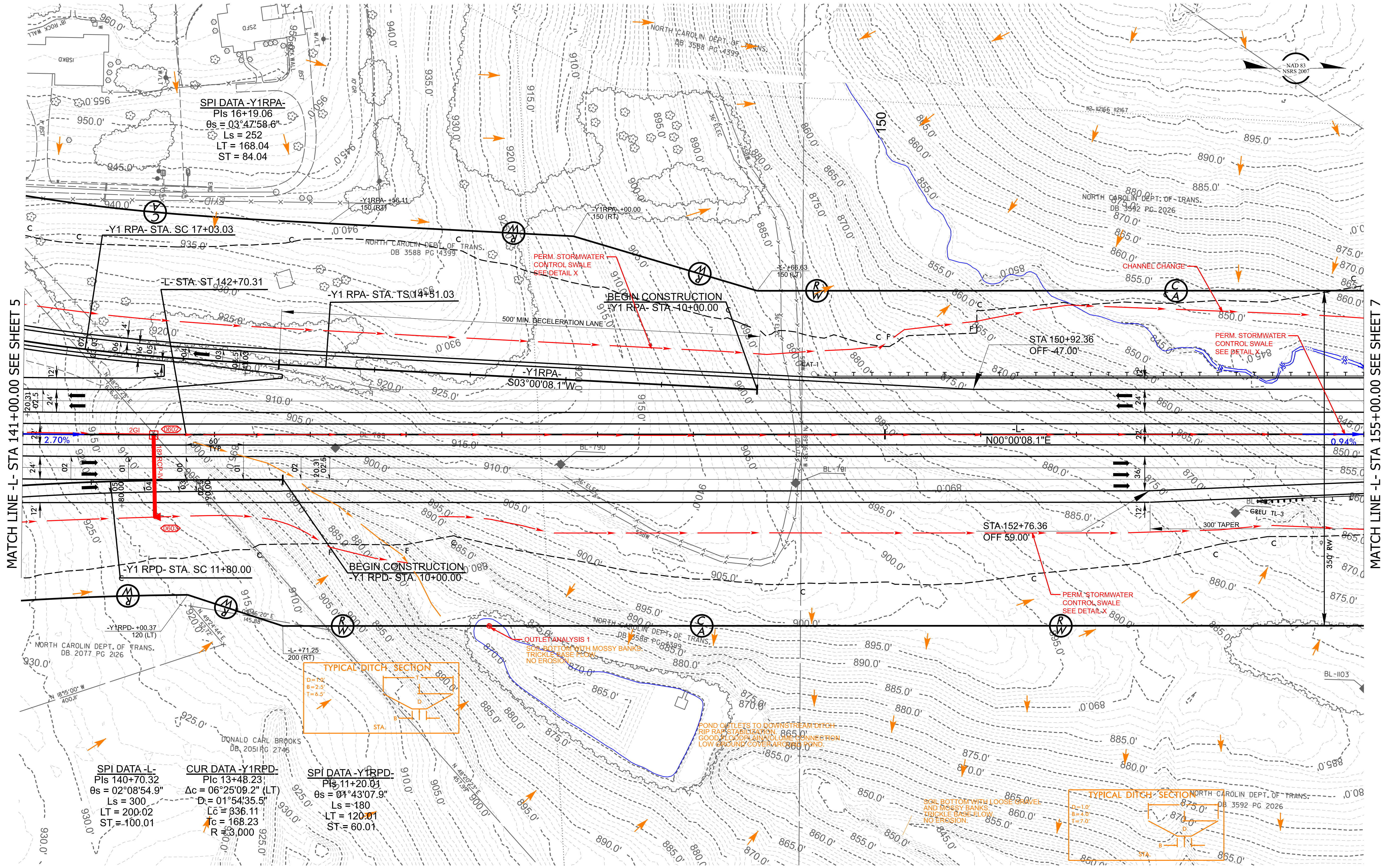
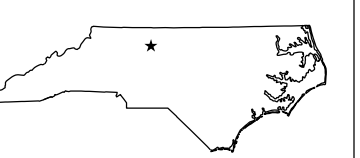
MATCH LINE -Y1- STA 38+00.00
SEE SHEET 23

B

A

C

D

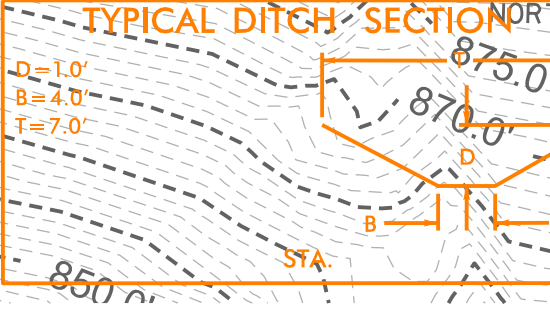
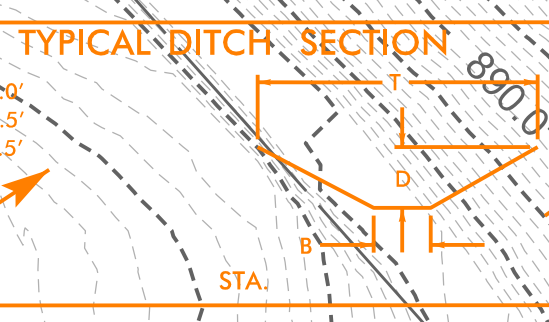


SPI DATA -Y1RPA-
Pls 16+19.06
 $\theta_s = 03^\circ 47' 58.6''$
Ls = 252
LT = 168.04
ST = 84.04

SPI DATA -L-
Pls 140+70.32
 $\theta_s = 02^\circ 08' 54.9''$
Ls = 300
LT = 200.02
ST = 100.01

CUR DATA -Y1RPD-
Plc 13+48.23
 $\Delta c = 06^\circ 25' 09.2''$ (LT)
D = 01' 54' 35.5"
Lc = 336.11
Tc = 168.23
R = 3,000

SPI DATA -Y1RPD-
Pls 11+20.01
 $\theta_s = 01^\circ 43' 07.9''$
Ls = 180
LT = 120.01
ST = 60.01



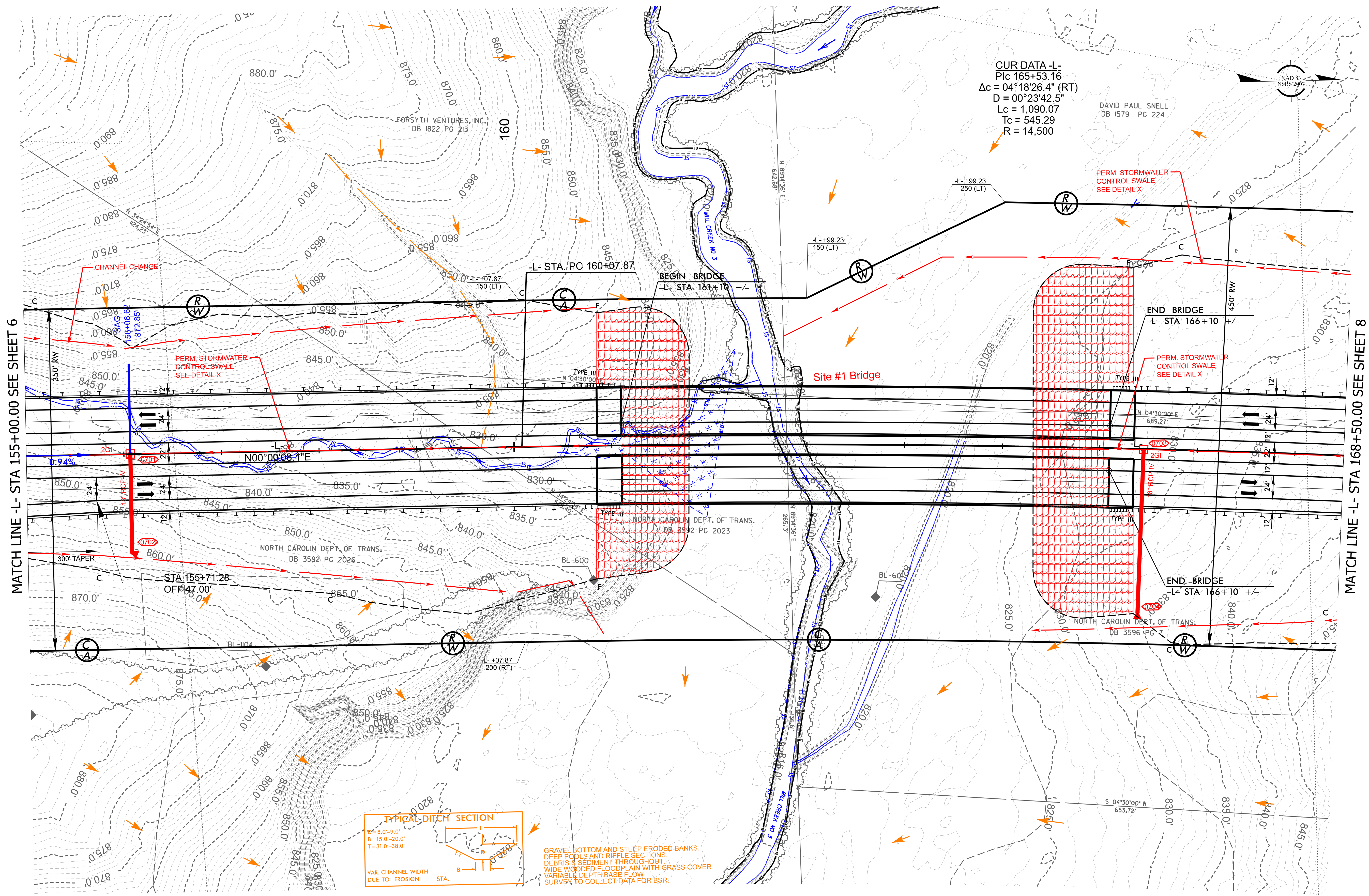
OUTLET ANALYSIS 1
SOIL BOTTOM WITH MOSSY BANKS
TRICKLE BASE FLOW
NO EROSION

POND OUTLETS TO DOWNSTREAM DITCH
RIP RAP STABILIZATION
GOOD FLOODPLAIN VOLUME CONNECTION
LOW GROUND COVER AROUND POND.

SOIL BOTTOM WITH LOOSE GRAVEL
AND MOSSY BANKS
TRICKLE BASE FLOW
NO EROSION

MATCH LINE -L- STA 141+00.00 SEE SHEET 5

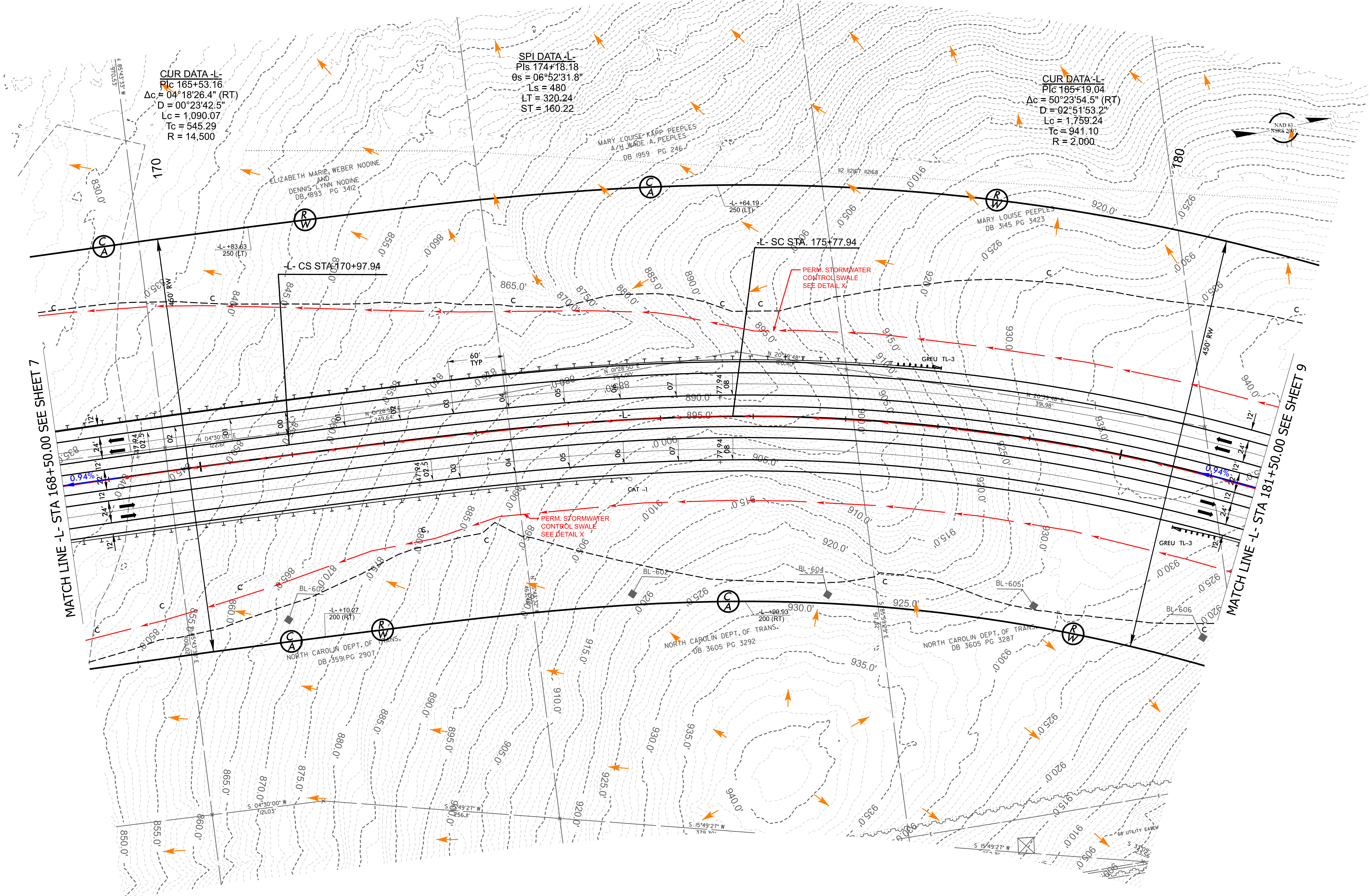
MATCH LINE -L- STA 155+00.00 SEE SHEET 7



MATCH LINE -L- STA 155+00.00 SEE SHEET 6

MATCH LINE -L- STA 168+50.00 SEE SHEET 8

NOT A CERTIFIED DOCUMENT AS TO THE ORIGINAL DOCUMENT BUT ONLY AS TO THE REVISIONS



MATCH LINE -L- STA 168+50.00 SEE SHEET 7

MATCH LINE -L- STA 181+50.00 SEE SHEET 9

CUR DATA -L-
P/C 165+53.16
 $\Delta c = 04^{\circ}18'26.4''$ (RT)
 $D = 00^{\circ}23'42.5''$
 $Lc = 1,090.07$
 $Tc = 545.29$
 $R = 14,500$

SPI DATA -L-
P/Is 174+18.18
 $\theta_s = 06^{\circ}52'31.8''$
 $L_s = 480$
 $LT = 320.24$
 $ST = 160.22$

CUR DATA -L-
P/C 185+19.04
 $\Delta c = 50^{\circ}23'54.5''$ (RT)
 $D = 02^{\circ}51'53.2''$
 $Lc = 1,759.24$
 $Tc = 941.10$
 $R = 2,000$



PERM. STORMWATER
CONTROL SWALE
SEE DETAIL X

PERM. STORMWATER
CONTROL SWALE
SEE DETAIL X

NORTH CAROLIN. DEPT. OF
TRANS.
DB 3559 PG 2907

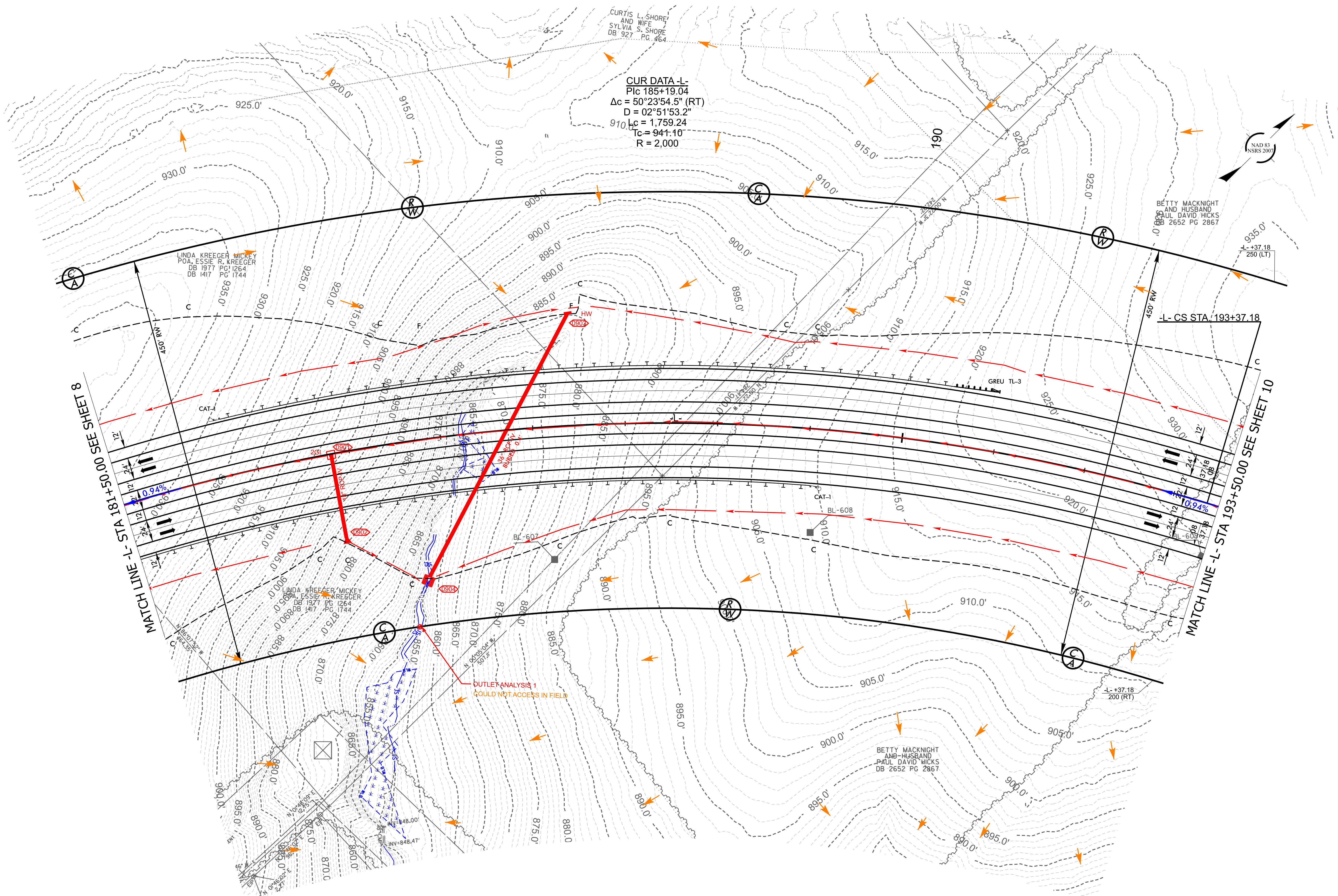
NORTH CAROLIN. DEPT. OF TRANS.
DB 3605 PG 3292

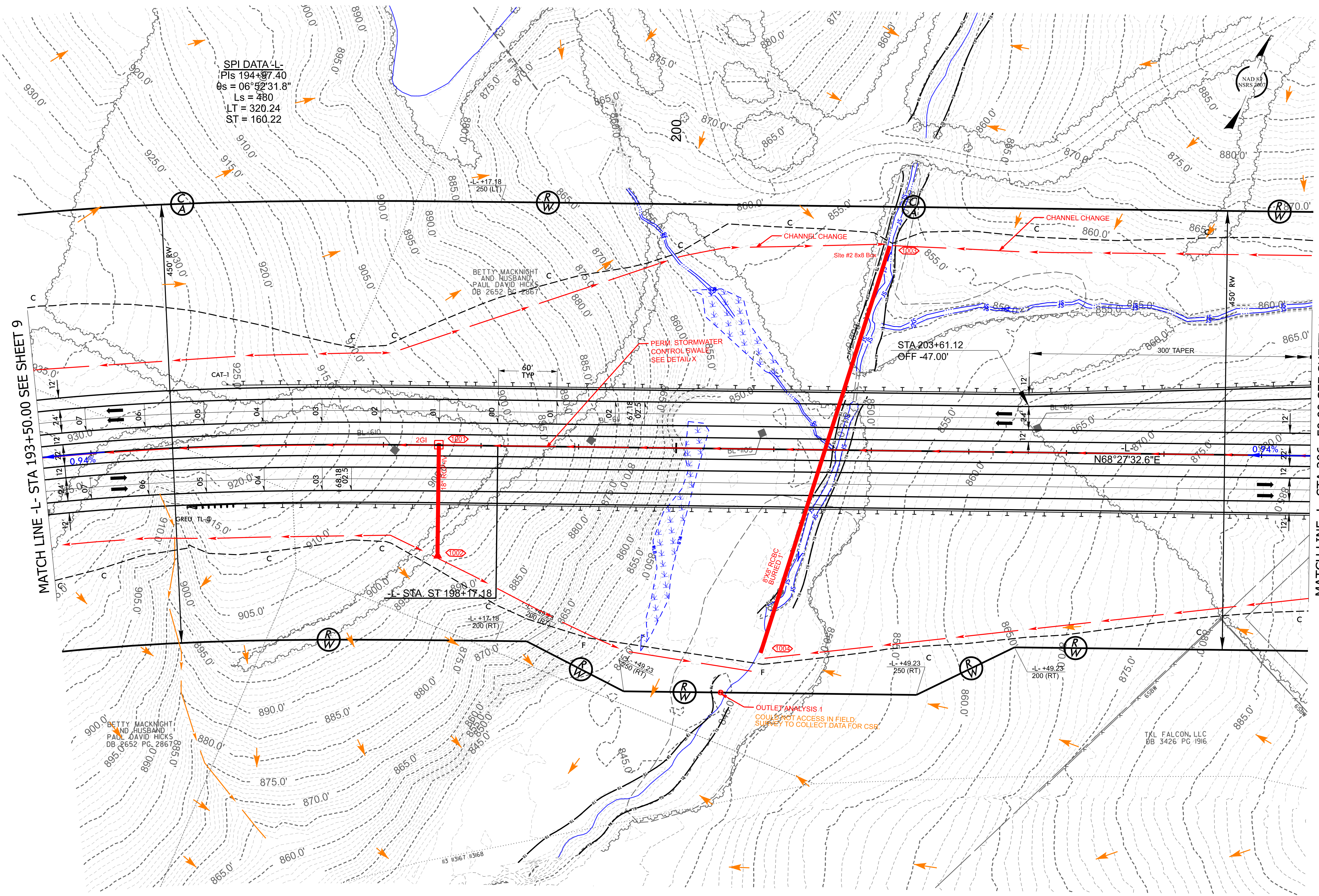
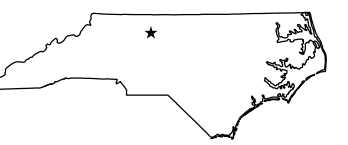
NORTH CAROLIN. DEPT. OF TRANS.
DB 3605 PG 3287

GREU TL-3

GREU TL-3

6" UTILITY EASEMENT





MATCH LINE -L- STA 193+50.00 SEE SHEET 9

MATCH LINE -L- STA 206+50.00 SEE SHEET 11

SPI DATA-L
PIs = 194+97.40
theta_s = 06°52'31.8"
Ls = 480
LT = 320.24
ST = 160.22

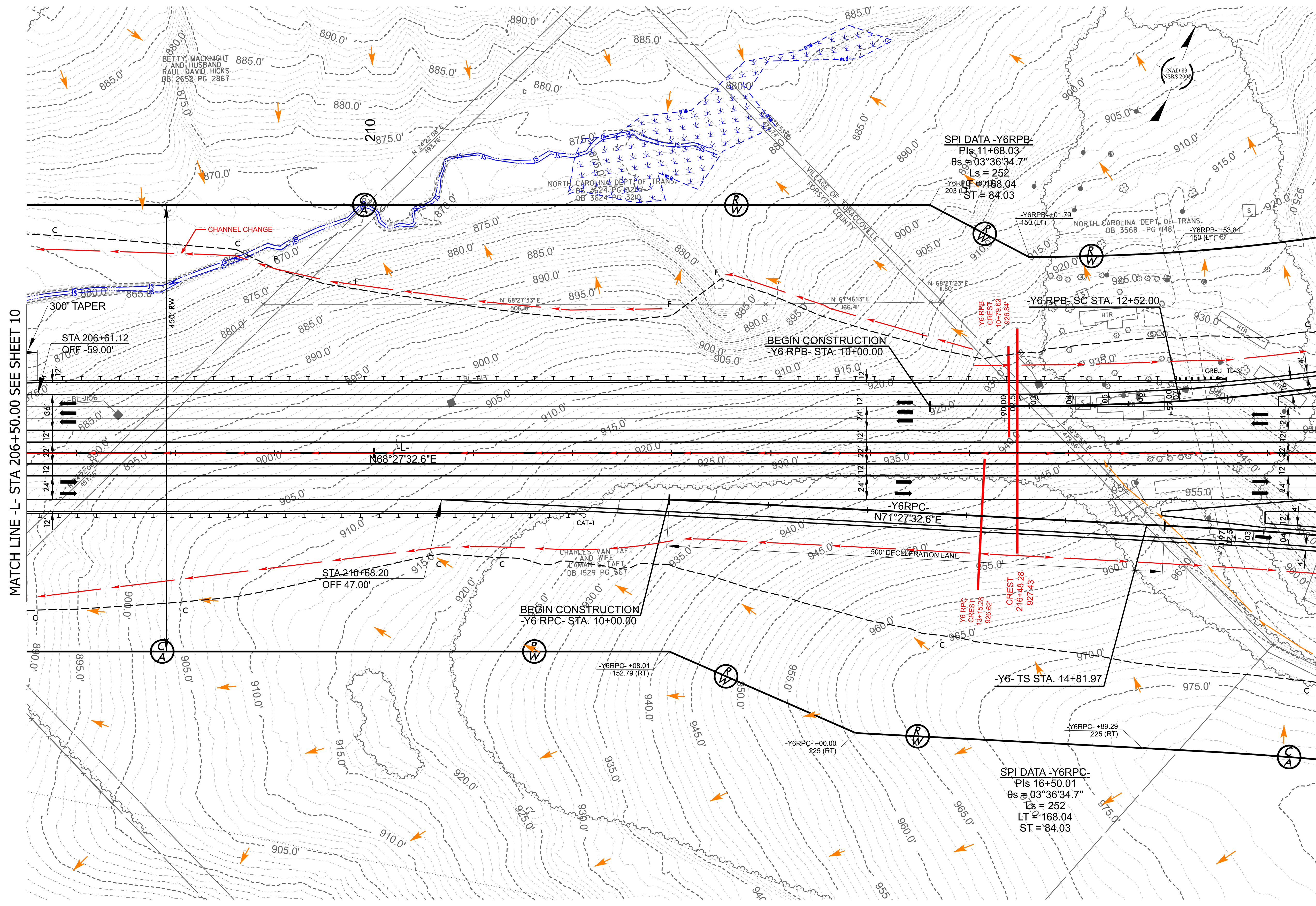
BETTY MACKNIGHT
AND HUSBAND
PAUL DAVID HICKS
DB 2652 PG 2867

STA 203+61.12
OFF -47.00'

-L- STA. ST 198+17.18

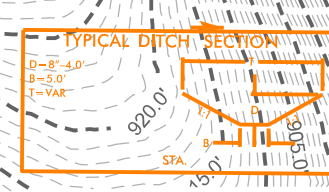
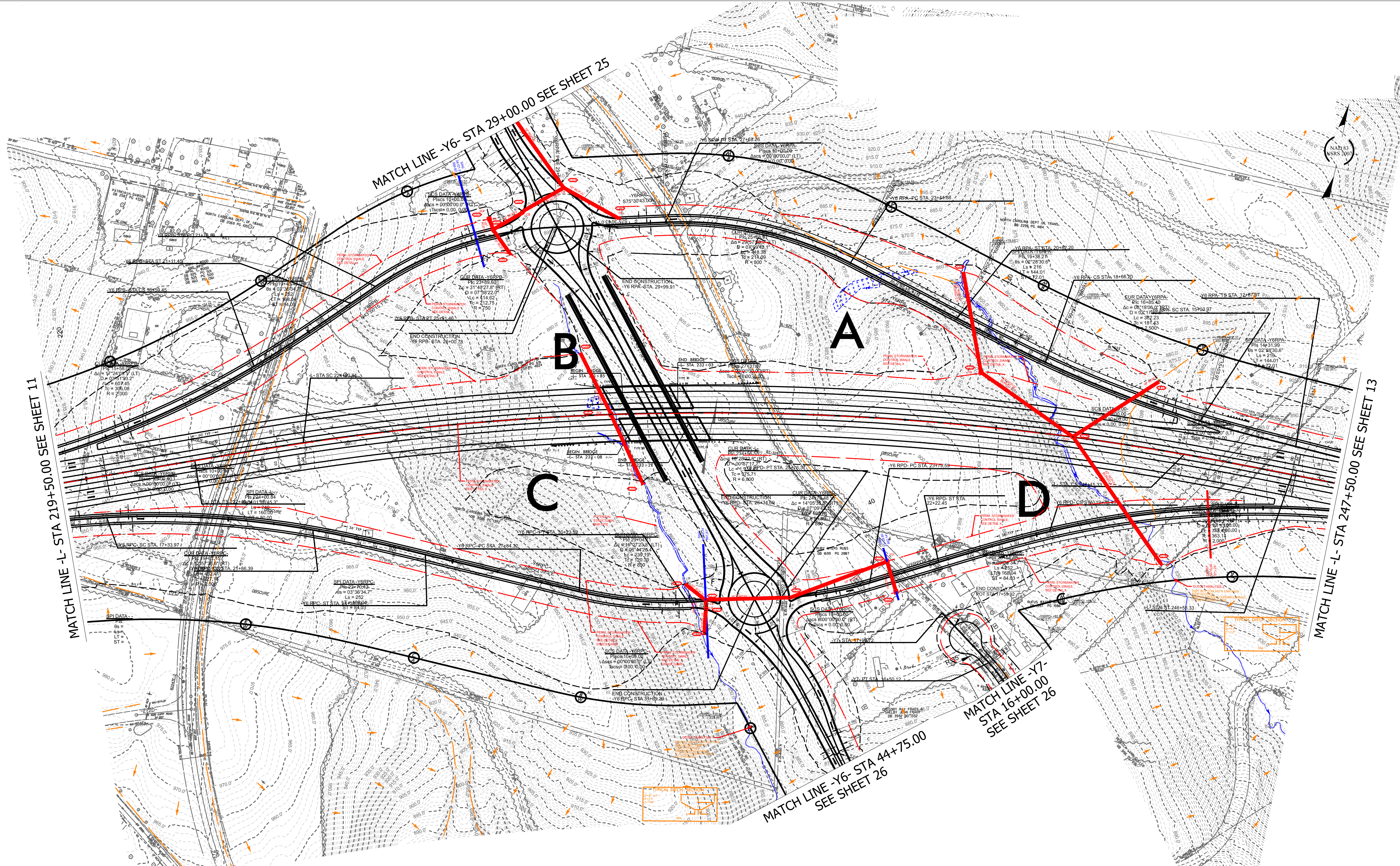
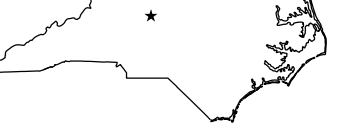
OUTLET ANALYSIS 1
COULD NOT ACCESS IN FIELD.
SURVEY TO COLLECT DATA FOR CSR.

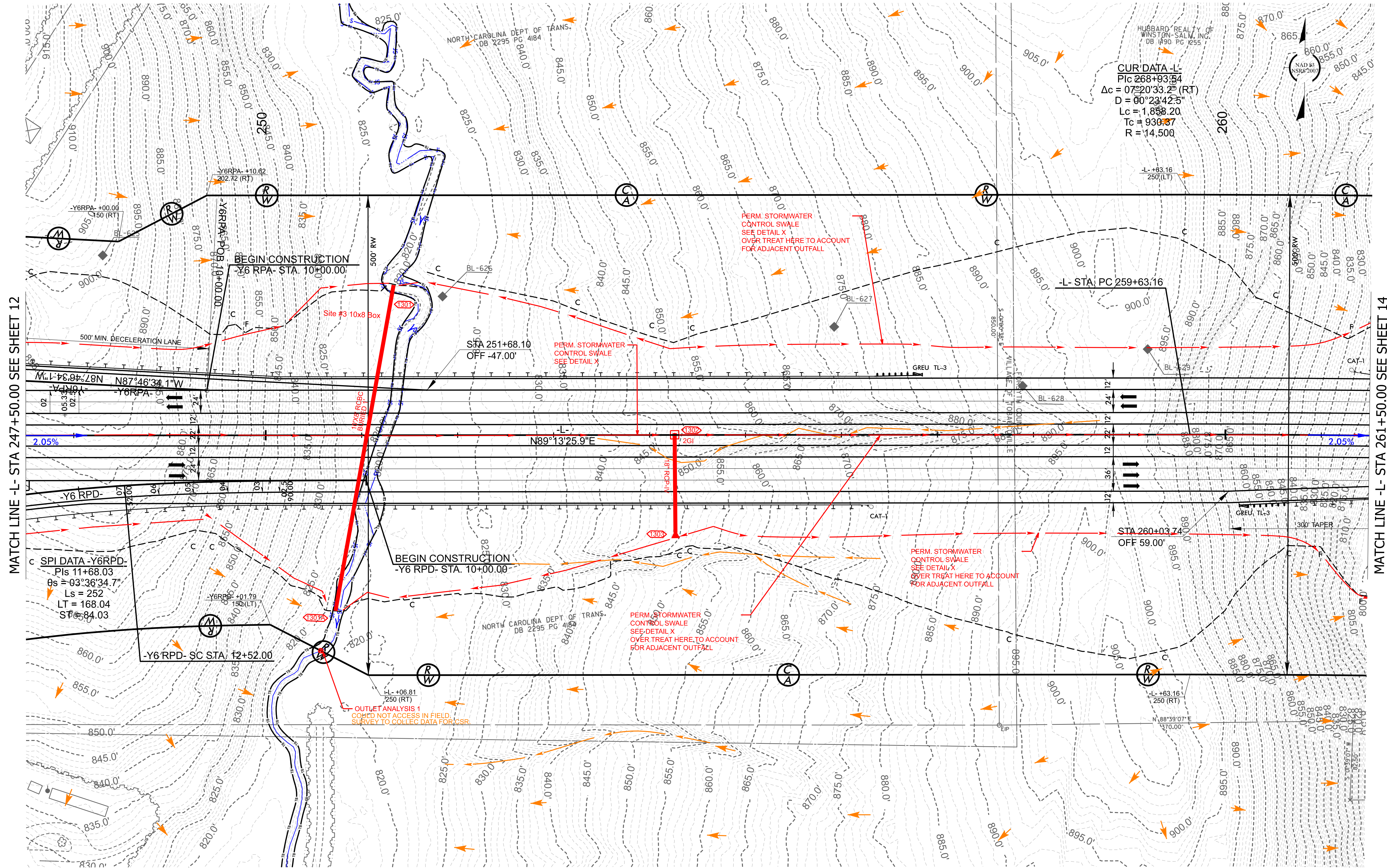
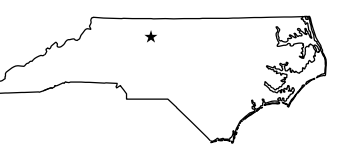
T&L FALCON, LLC
DB 3426 PG 1916

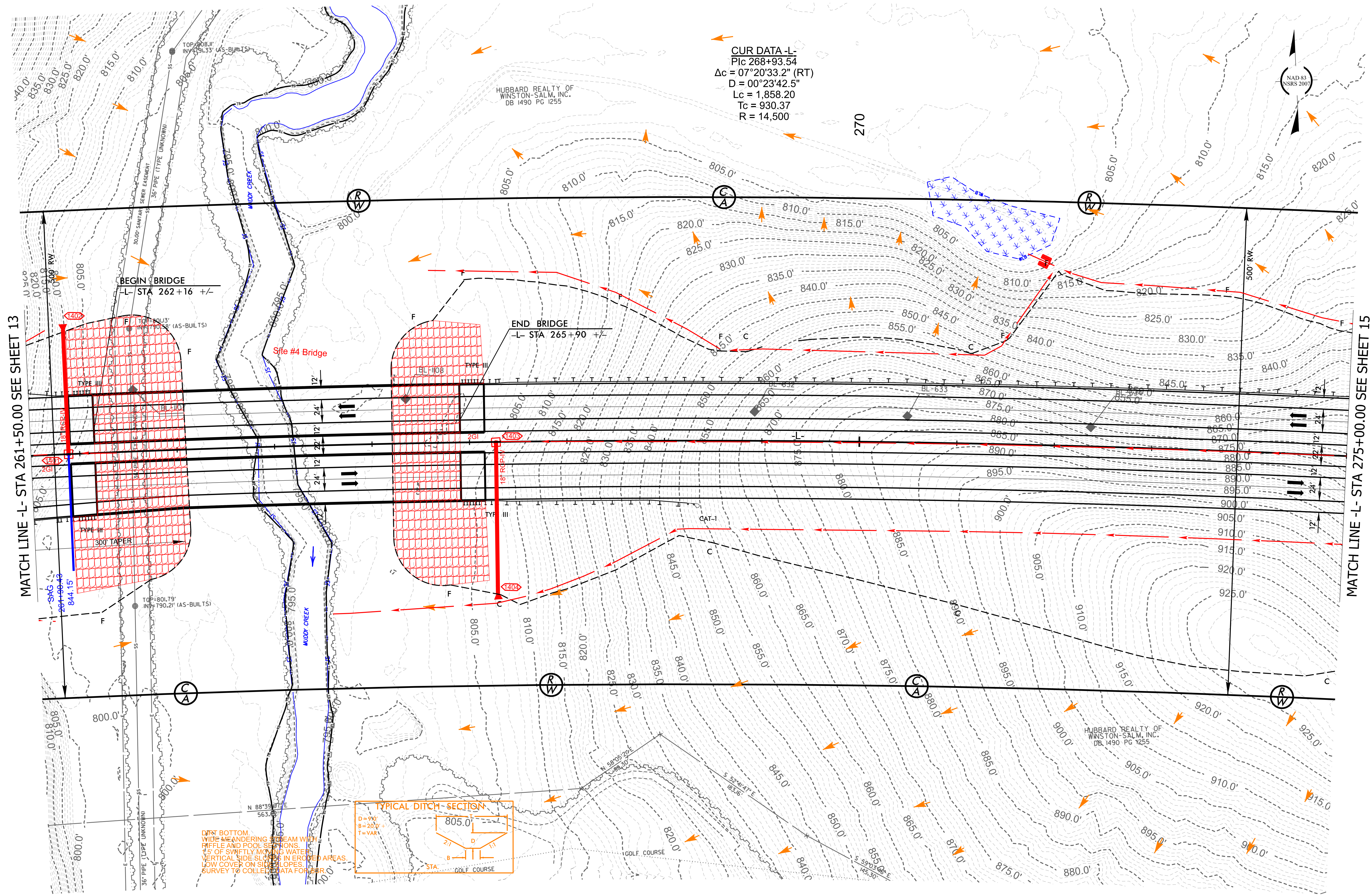


MATCH LINE -L- STA 206+50.00 SEE SHEET 10

MATCH LINE -L- STA 219+50.00 SEE SHEET 12

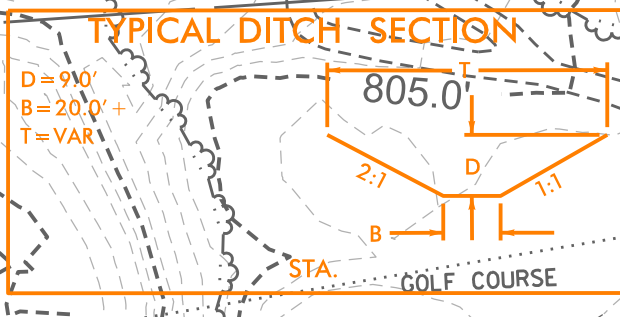






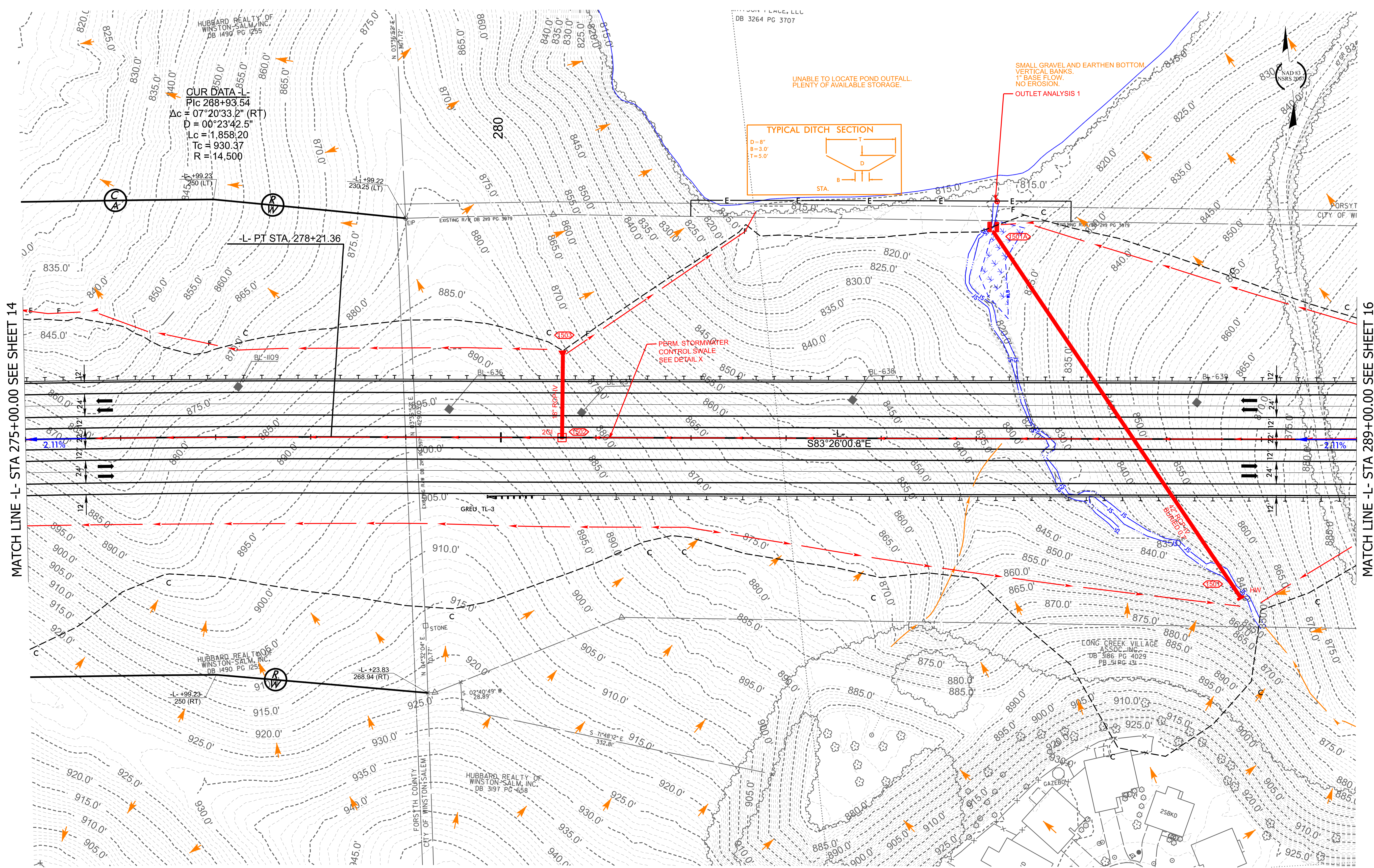
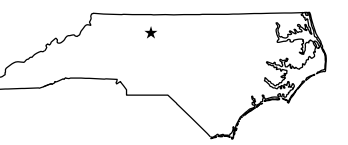
MATCH LINE -L- STA 261+50.00 SEE SHEET 13

MATCH LINE -L- STA 275+00.00 SEE SHEET 15



DITCH BOTTOM
WIDE MEANDERING STREAM WITH
PIFFLE AND POOL SECTIONS. C
1.5' OF SWIFTLY MOVING WATER.
VERTICAL SIDE SLOPES IN ERODED AREAS.
LOW COVER ON SLOPES. SURVEY TO COLLECT DATA FOR LATER

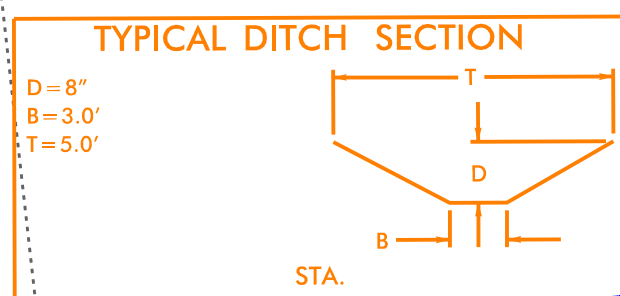
CUR DATA -L-
P/C 268+93.54
 $\Delta c = 07^\circ 20' 33.2''$ (RT)
D = $00^\circ 23' 42.5''$
Lc = 1,858.20
Tc = 930.37
R = 14,500



MATCH LINE -L- STA 275+00.00 SEE SHEET 14

MATCH LINE -L- STA 289+00.00 SEE SHEET 16

CUR DATA -L
P/C 268+93.54
Δc = 07°20'33.2" (RT)
D = 00°23'42.5"
Lc = 1,858.20
Tc = 930.37
R = 14,500



SMALL GRAVEL AND EARTHEN BOTTOM
VERTICAL BANKS.
1" BASE FLOW.
NO EROSION.

UNABLE TO LOCATE POND OUTFALL.
PLENTY OF AVAILABLE STORAGE.

PERM. STORMWATER
CONTROL SWALE
SEE DETAIL X

S83°26'00.8"E

L+99.23
250 (LT)

L+99.22
230.25 (LT)

-L- PT STA, 278+21.36

L+99.23
250 (RT)

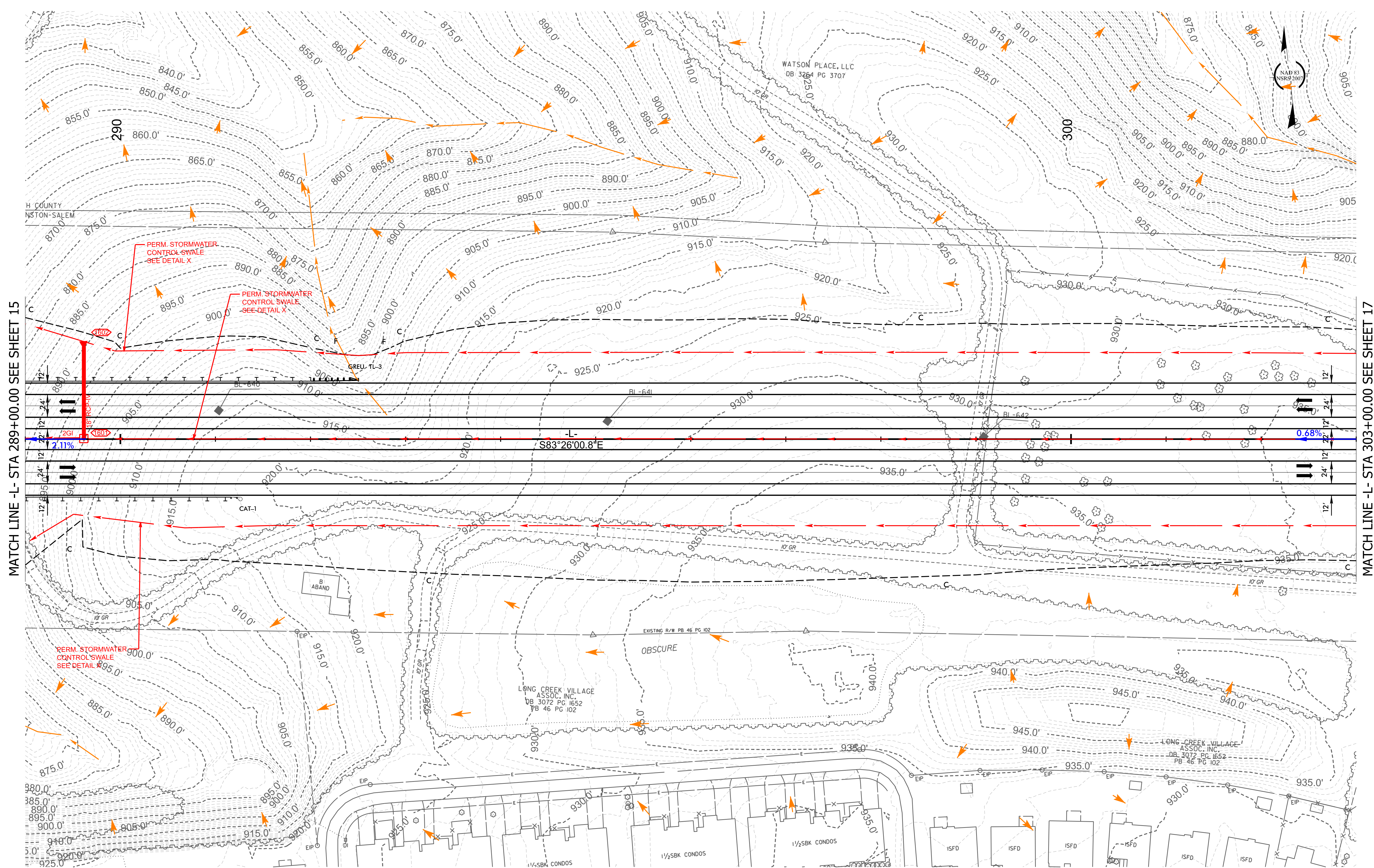
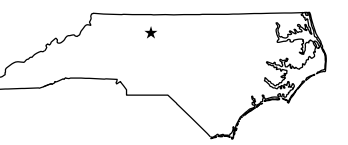
L+23.83
268.94 (RT)

HUBBARD REALTY OF
WINSTON-SALM, INC.
DB 1490 PG 125

HUBBARD REALTY OF
WINSTON-SALM, INC.
DB 3197 PG 658

LONG CREEK VILLAGE
ASSOC. INC.
DB 3186 PG 4029
PG 3186-131





MATCH LINE -L- STA 289+00.00 SEE SHEET 15

MATCH LINE -L- STA 303+00.00 SEE SHEET 17

PERM. STORMWATER
CONTROL SWALE
SEE DETAIL X

PERM. STORMWATER
CONTROL SWALE
SEE DETAIL X

PERM. STORMWATER
CONTROL SWALE
SEE DETAIL X

S83°26'00.8"E

0.68%

EXISTING R/W# 46 PG 102
OBSCURE

LONG CREEK VILLAGE
ASSOC. INC.
DB 3072 PG 1652
PB 46 PG 102

LONG CREEK VILLAGE
ASSOC. INC.
DB 3072 PG 1652
PB 46 PG 102

1 1/2 SBK CONDOS

1 1/2 SBK CONDOS

ISFD

ISFD

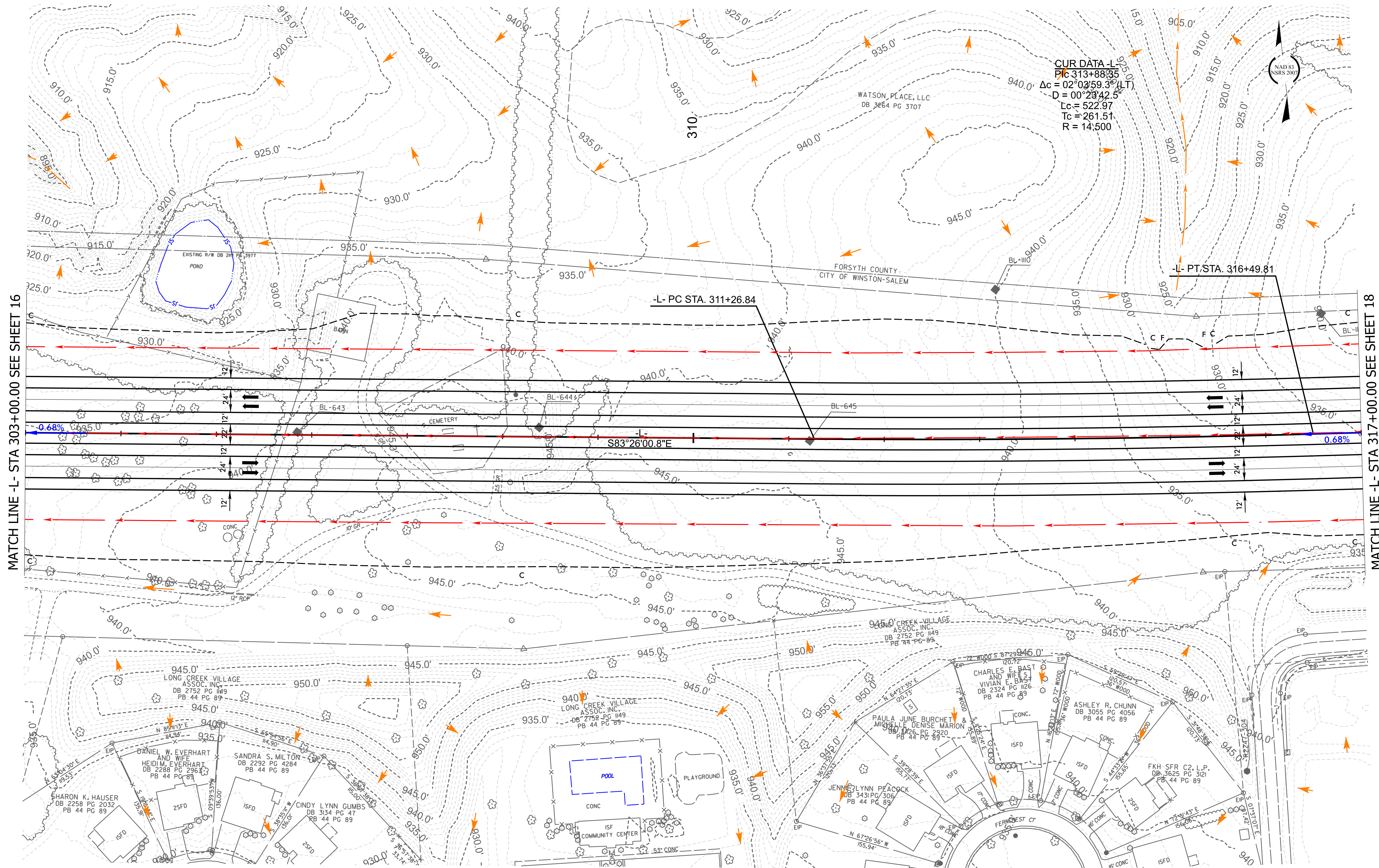
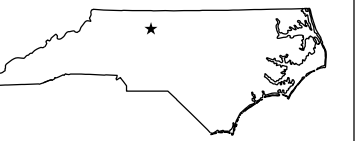
ISFD

ISFD

ISFD

ISFD

ISFD



CUR DATA - L
PC 313+88.35
 $\Delta c = 02^{\circ}03'59.3''$ (LT)
D = 00'2342.5"
Lc = 522.97
Tc = 261.51
R = 14,500

-L- PC STA. 311+26.84

-L- PT. STA. 316+49.81

S83°26'00.8"E

MATCH LINE -L- STA 303+00.00 SEE SHEET 16

MATCH LINE -L- STA 317+00.00 SEE SHEET 18

EXISTING R/W DB 244 PG 1977
POND

WATSON PLACE, LLC
DB 3264 PG 3707

FORSYTH COUNTY
CITY OF WINSTON-SALEM

NAD 83
NSRS 2007

LONG CREEK VILLAGE
ASSOC. INC.
DB 2752 PG 149
PB 44 PG 89

LONG CREEK VILLAGE
ASSOC. INC.
DB 2752 PG 149
PB 44 PG 89

PAULA JUNE BURCHE
MICHELLE DENISE MARION
DB 2752 PG 149
PB 44 PG 89

ASHLEY R. CHUNN
DB 3055 PG 4056
PB 44 PG 89

FKH SFR C2, L.P.
DB 3625 PG 3121
PB 44 PG 89

DANIEL W. EVERHART
AND WIFE
HEIDI M. EVERHART
DB 2288 PG 2963
PB 44 PG 89

SANDRA S. MILTON
DB 2292 PG 4284
PB 44 PG 89

CINDY LYNN GUMBS
DB 3134 PG 47
PB 44 PG 89

JENNEZLYNN PEACOCK
DB 3431 PG 306
PB 44 PG 89

SHARON K. HAUSER
DB 2258 PG 2032
PB 44 PG 89

25FD

ISFD

CONC

ISF
COMMUNITY CENTER

POOL

PLAYGROUND

ISFD

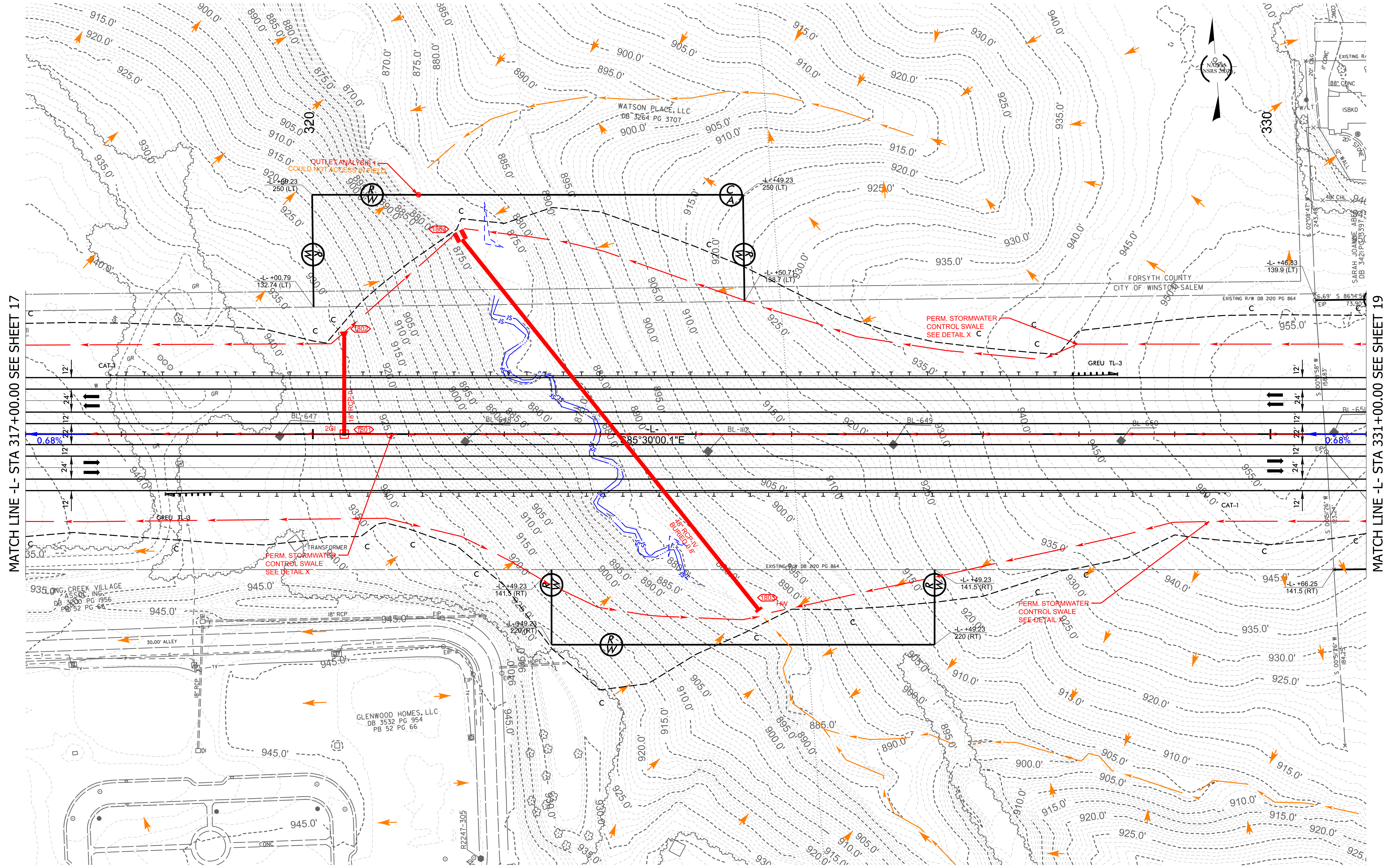
ISFD

ISFD

ISFD

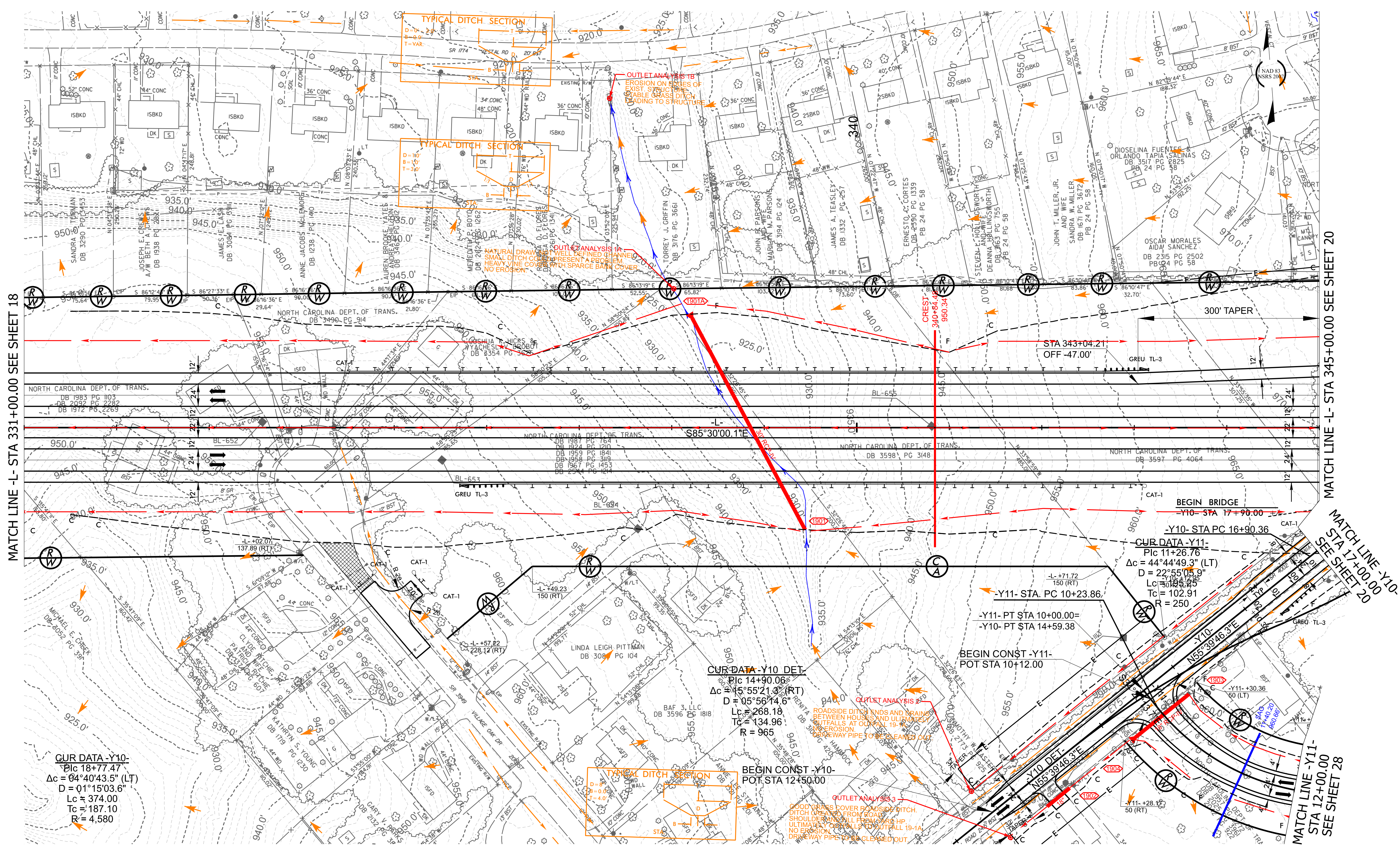
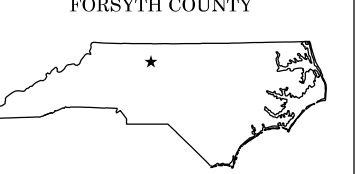
ISFD

ISFD



MATCH LINE -L- STA 317+00.00 SEE SHEET 17

MATCH LINE -L- STA 331+00.00 SEE SHEET 19



MATCH LINE -L- STA 331+00.00 SEE SHEET 18

MATCH LINE -L- STA 345+00.00 SEE SHEET 20

MATCH LINE -Y10-
STA 17+00.00
SEE SHEET 20

MATCH LINE -Y11-
STA 12+00.00
SEE SHEET 28

PAVEMENT TO BE REMOVED

REVISIONS

INCOMPLETE PLANS
DO NOT BE CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CUR DATA -Y10-
Pic 18+77.47
Δc = 04°40'43.5" (LT)
D = 01°15'03.6"
Lc = 374.00
Tc = 187.10
R = 4,580

CUR DATA -Y10 DET-
Pic 14+90.06
Δc = 15°55'21.3" (RT)
D = 05°56'14.6"
Lc = 268.18
Tc = 134.96
R = 965

CUR DATA -Y11-
Pic 11+26.76
Δc = 44°44'49.3" (LT)
D = 22°55'05.9"
Lc = 185.25
Tc = 102.91
R = 250

BEGIN CONST -Y10-
POT STA 12+50.00

BEGIN CONST -Y11-
POT STA 10+12.00

-Y11- PT STA 10+00.00=
-Y10- PT STA 14+59.38

-Y11- STA. PC 10+23.86.
-Y10- STA PC 16+90.36

BEGIN BRIDGE
-Y10- STA 17+90.00

STA 343+04.21
OFF -47.00'

CREST-
340+84.49

S85°30'00.11"E

TYPICAL DITCH SECTION
D=11"
B=14"
T=3.0'

TYPICAL DITCH SECTION
D=11"
B=14"
T=3.0'

TYPICAL DITCH SECTION
D=8"
B=8"
T=4.0'

OUTLET ANALYSIS 1B
EROSION ON SIDES OF
EXISTING DITCH
DRAINAGE TO STRUCTURE

OUTLET ANALYSIS 1A
NATURAL DRAINAGE
WELL DEFINED CHANNEL
HEAVY VINE COVER
NO EROSION

OUTLET ANALYSIS 2
ROADSIDE DITCH ENDS AND BRAINS
BETWEEN HOUSES AND UTILITIES
NO EROSION

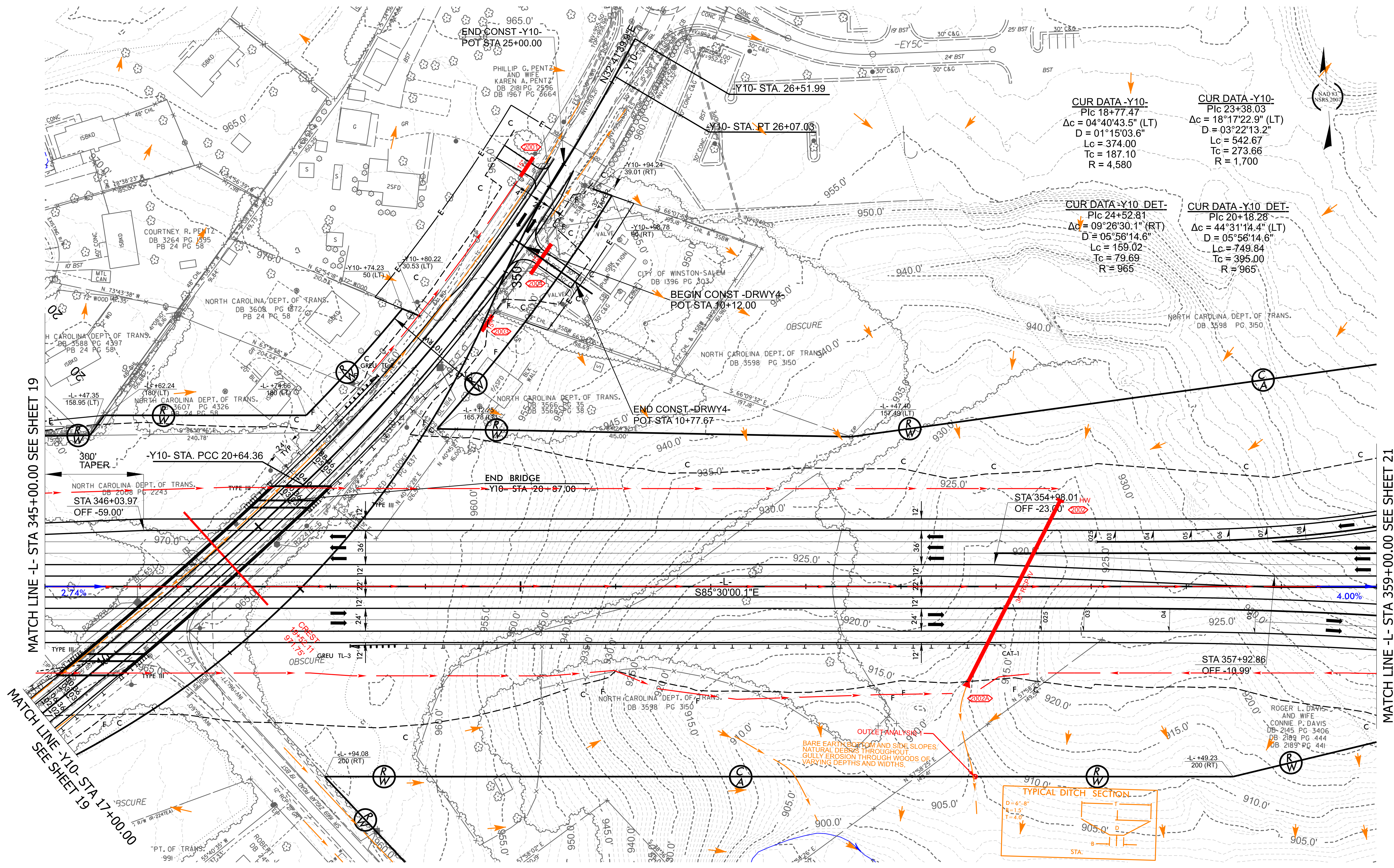
OUTLET ANALYSIS 3
GOOD GRASS COVER ROADSIDE DITCH
DITCH AREA FROM ROADS
SHOULDER FULL FROM MARK HP
NO EROSION

ROADSIDE DITCH ENDS AND BRAINS
BETWEEN HOUSES AND UTILITIES
NO EROSION
DRAINAGE PIPE 30" CLEANED OUT

GOOD GRASS COVER ROADSIDE DITCH
DITCH AREA FROM ROADS
SHOULDER FULL FROM MARK HP
NO EROSION
DRAINAGE PIPE 30" CLEANED OUT

GOOD GRASS COVER ROADSIDE DITCH
DITCH AREA FROM ROADS
SHOULDER FULL FROM MARK HP
NO EROSION
DRAINAGE PIPE 30" CLEANED OUT

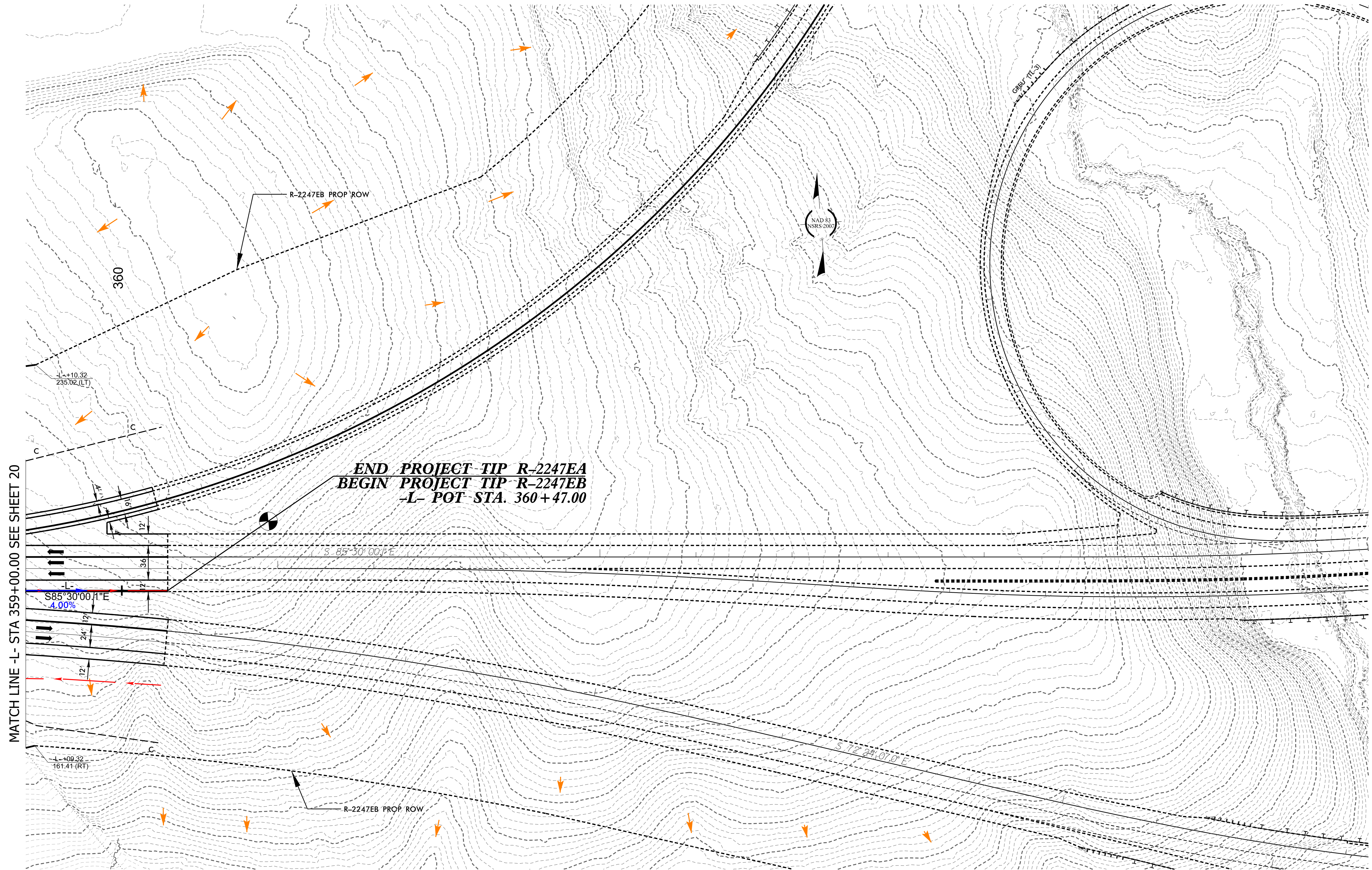
GOOD GRASS COVER ROADSIDE DITCH
DITCH AREA FROM ROADS
SHOULDER FULL FROM MARK HP
NO EROSION
DRAINAGE PIPE 30" CLEANED OUT

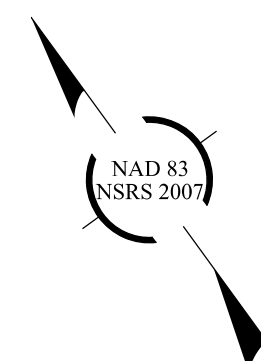
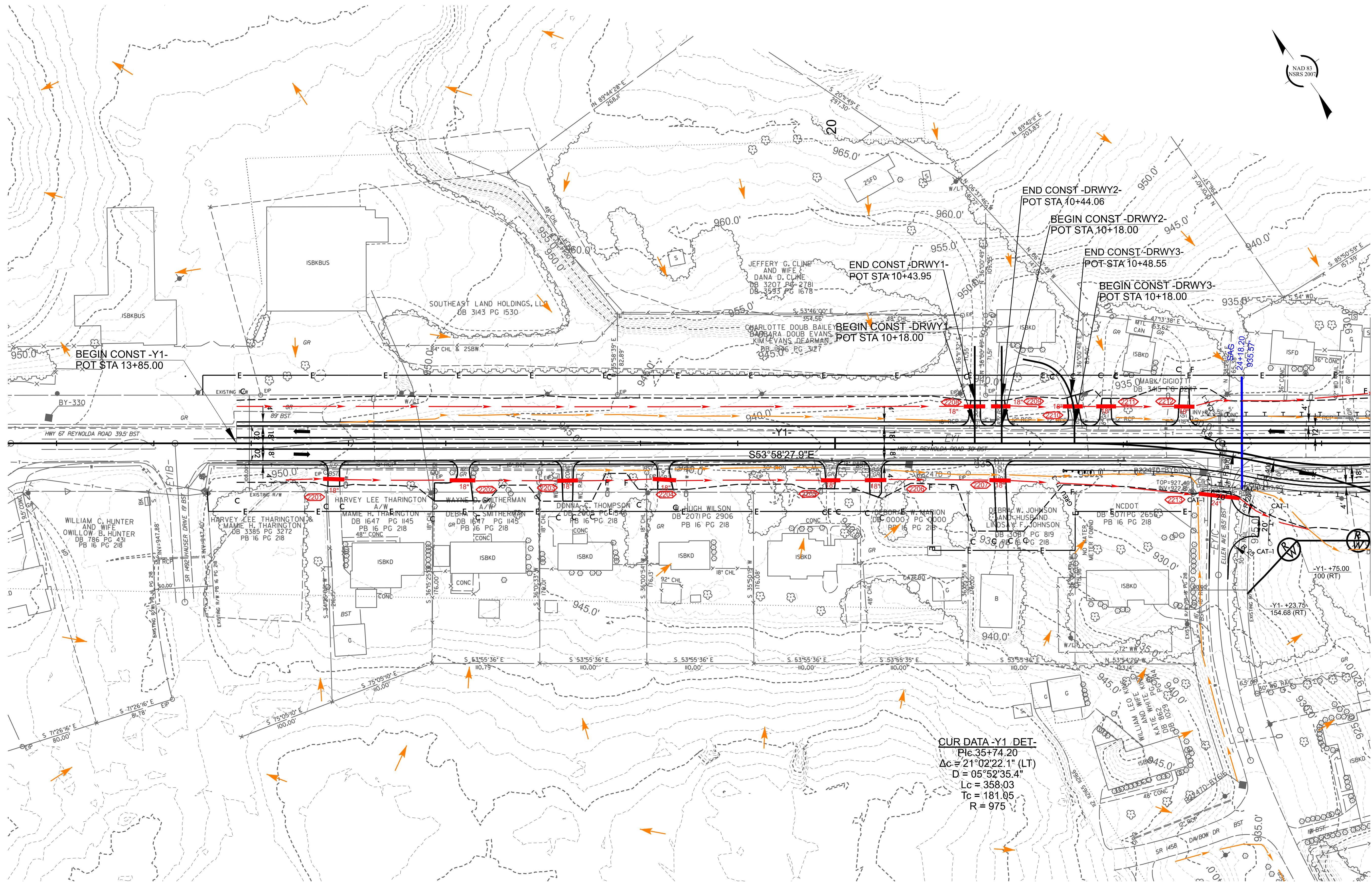


MATCH LINE -L- STA 345+00.00 SEE SHEET 19

MATCH LINE -L- STA 359+00.00 SEE SHEET 21

MATCH LINE -Y10- STA 17+00.00 SEE SHEET 19





NAD 83
NSRS 2007

BEGIN CONST -Y1-
POT STA 13+85.00

END CONST -DRWY1-
POT STA 10+43.95

END CONST -DRWY2-
POT STA 10+44.06

BEGIN CONST -DRWY2-
POT STA 10+18.00

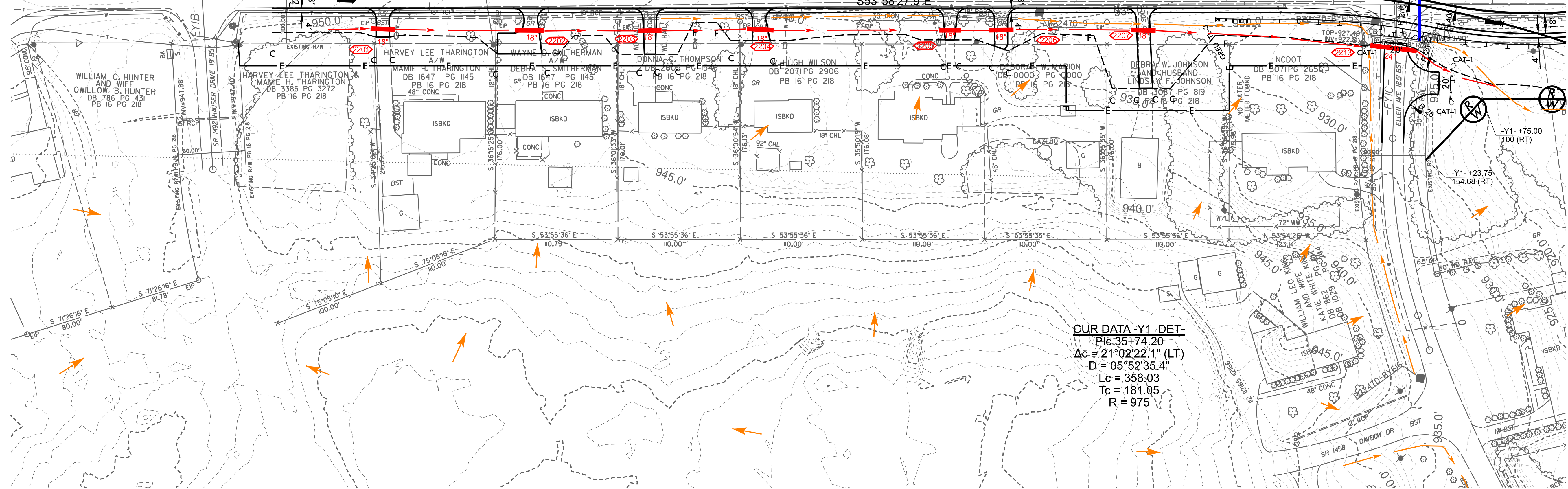
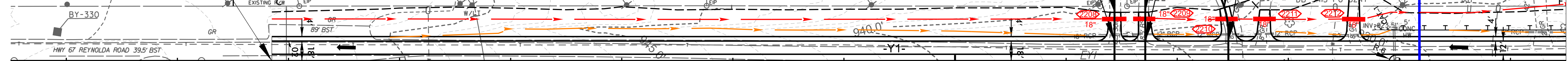
END CONST -DRWY3-
POT STA 10+48.55

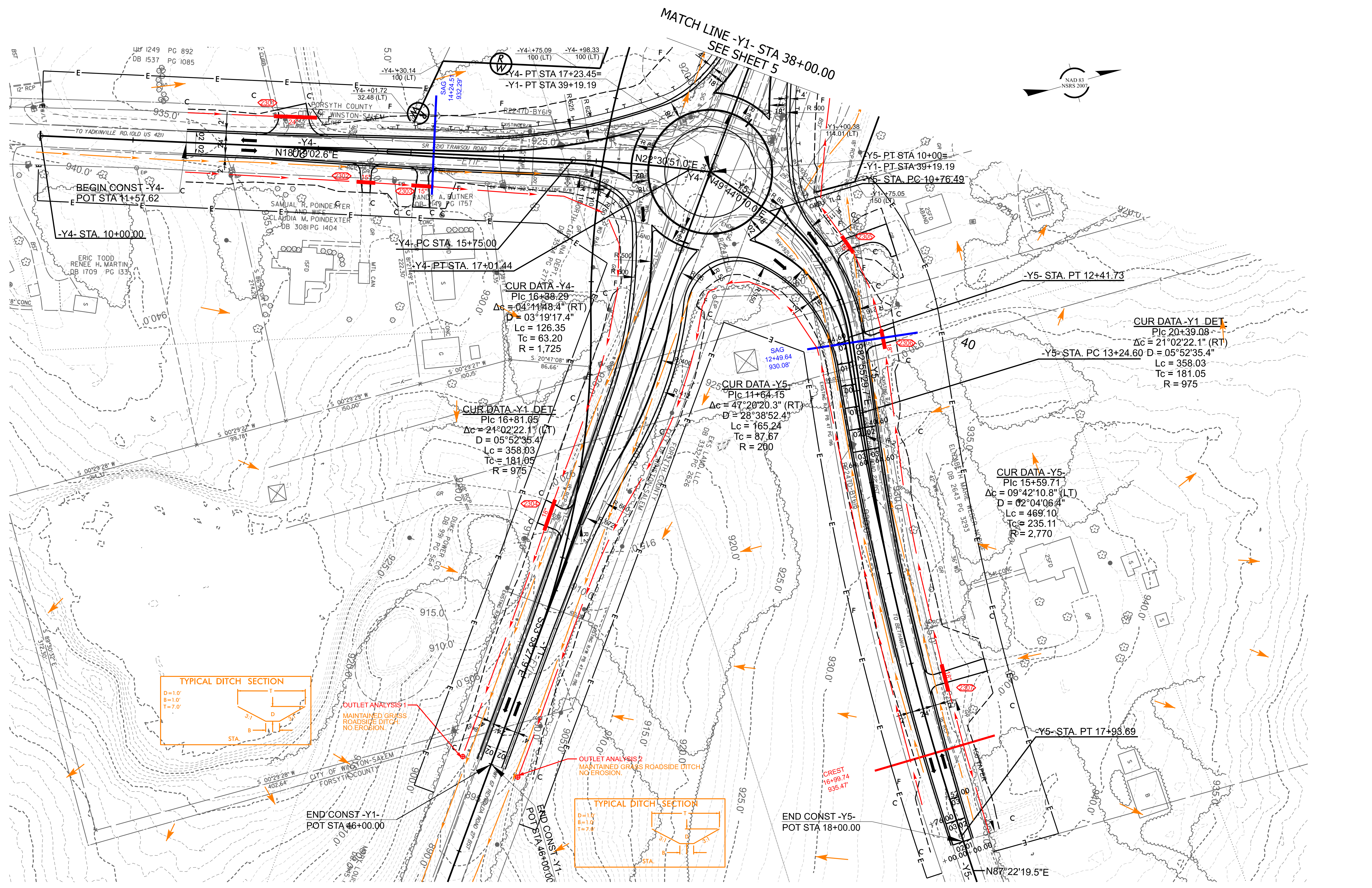
BEGIN CONST -DRWY3-
POT STA 10+18.00

BEGIN CONST -DRWY1-
POT STA 10+18.00

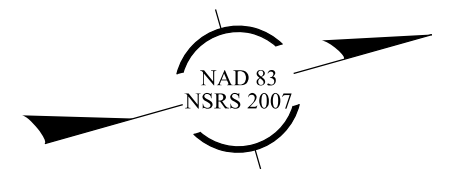
CUR DATA -Y1 DET-
Pc 35+74.20
 $\Delta c = 21^{\circ}02'22.1''$ (LT)
D = 05°52'35.4"
Lc = 358.03
Tc = 181.05
R = 975

MATCH LINE -Y1- STA 26+50.00
SEE SHEET 5





MATCH LINE -Y1- STA 38+00.00
SEE SHEET 5



BEGIN CONST -Y4-
POT STA 11+57.62
-Y4- STA. 10+00.00

-Y4- PC STA. 15+75.00
-Y4- PT STA. 17+01.44

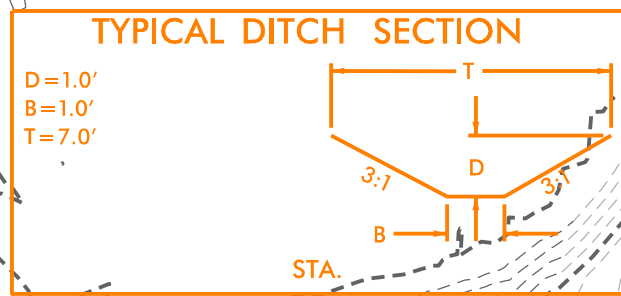
CUR DATA -Y4-
P/c 16+38.29
Δc = 04°14'48.4" (RT)
D = 03°19'17.4"
Lc = 126.35
Tc = 63.20
R = 1,725

CUR DATA -Y1- DET
P/c 16+81.05
Δc = 21°02'22.1" (LT)
D = 05°52'35.4"
Lc = 358.03
Tc = 181.05
R = 975

CUR DATA -Y5-
P/c 11+64.15
Δc = 47°20'20.3" (RT)
D = 28°38'52.4"
Lc = 165.24
Tc = 87.67
R = 260

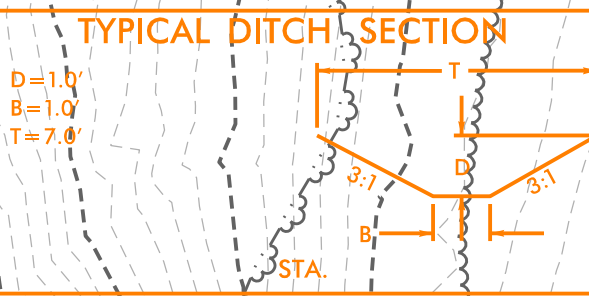
CUR DATA -Y1- DET
P/c 20+39.08
Δc = 21°02'22.1" (RT)
D = 05°52'35.4"
Lc = 358.03
Tc = 181.05
R = 975

CUR DATA -Y5-
P/c 15+59.71
Δc = 09°42'10.8" (LT)
D = 02°04'06.4"
Lc = 469.10
Tc = 235.11
R = 2,770



OUTLET ANALYSIS 1
MAINTAINED GRASS
ROADSIDE DITCH;
NO EROSION.

OUTLET ANALYSIS 2
MAINTAINED GRASS ROADSIDE DITCH;
NO EROSION.



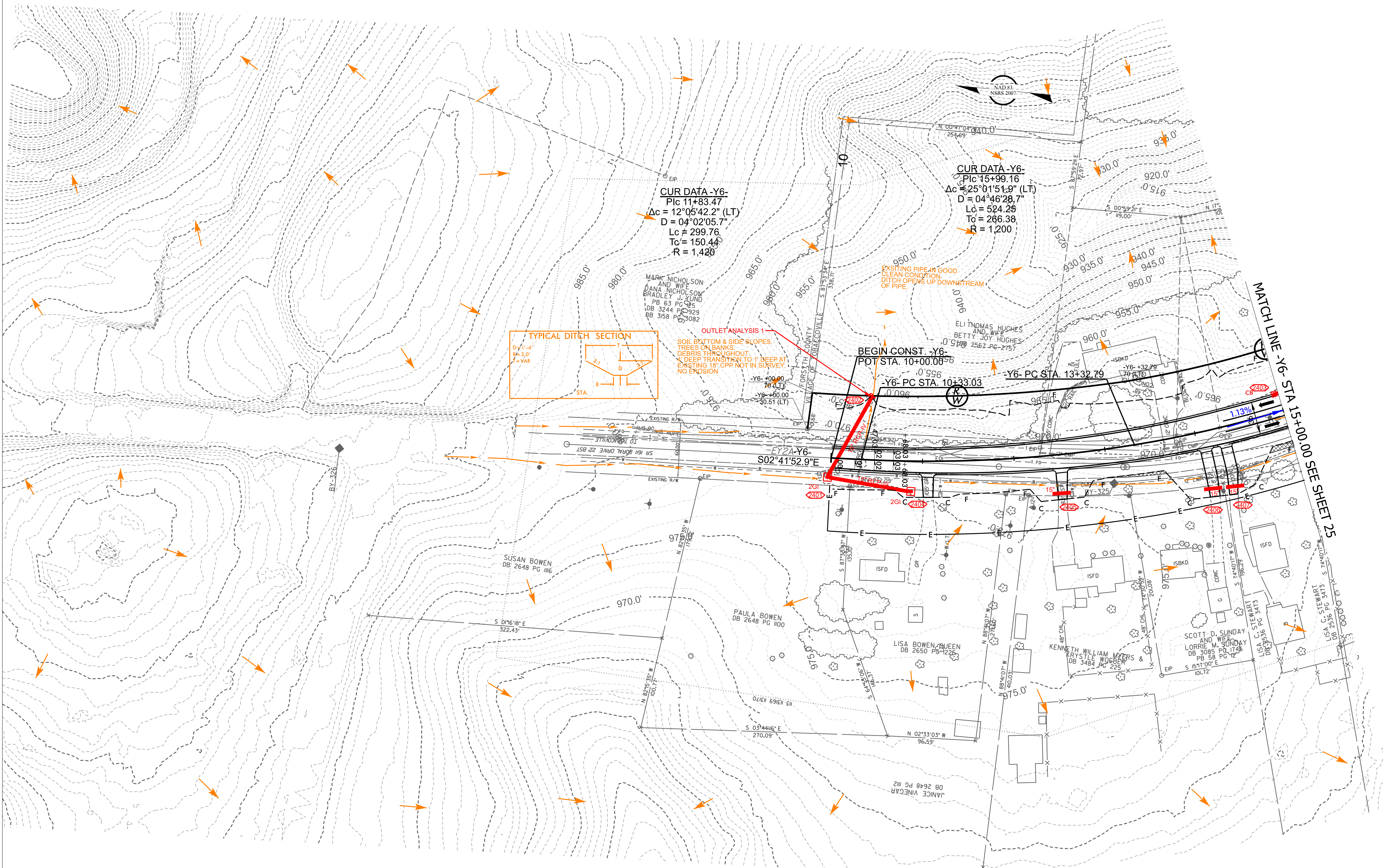
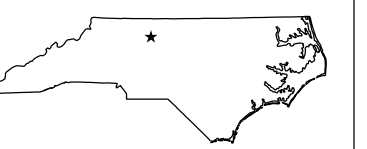
END CONST -Y1-
POT STA 46+00.00

END CONST -Y5-
POT STA 18+00.00

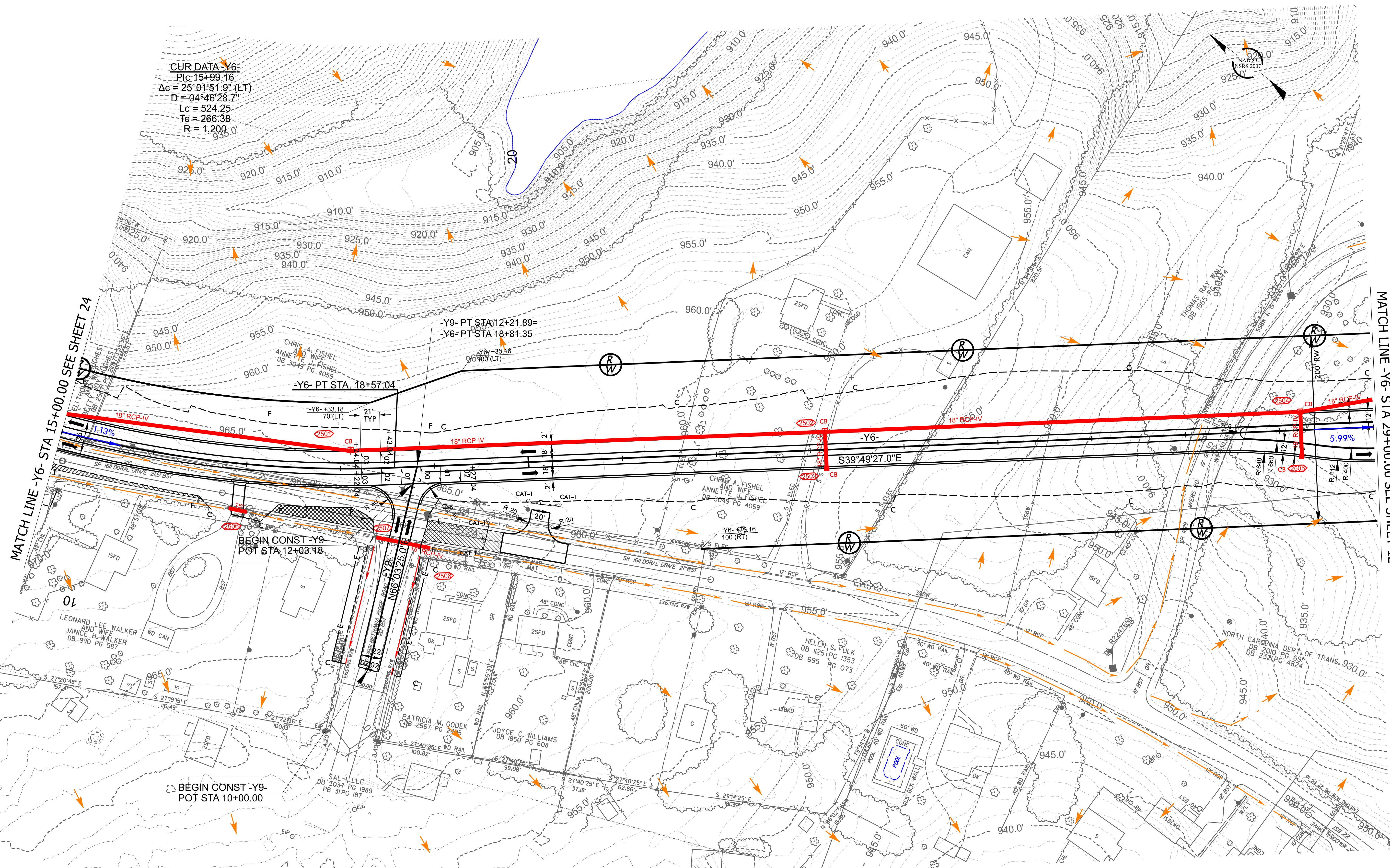
CREST
16+99.74
935.47

-Y5- STA. PT 17+93.69

N87°22'19.5"E



PAVEMENT TO BE REMOVED



MATCH LINE -Y6- STA 15+00.00 SEE SHEET 24

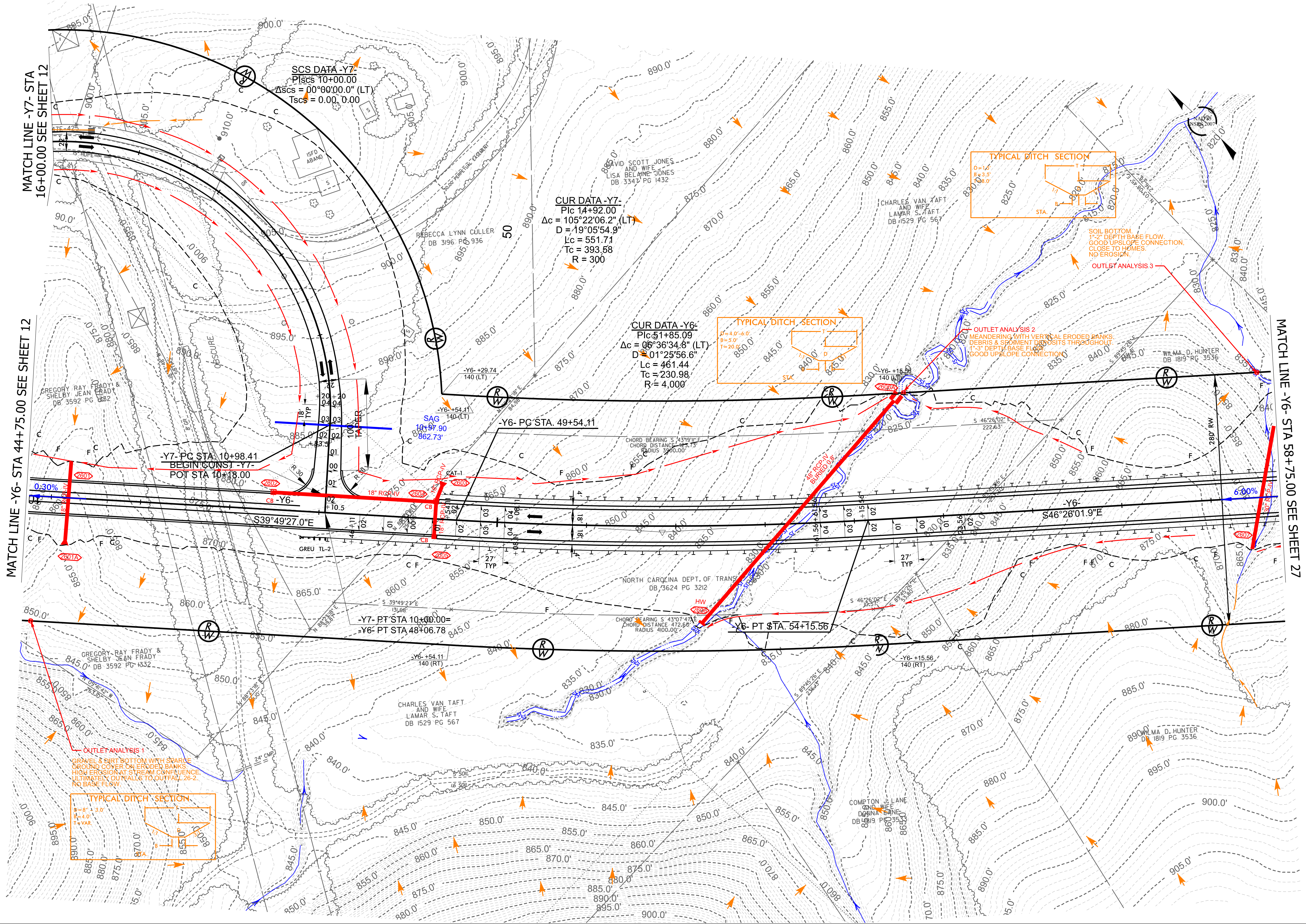
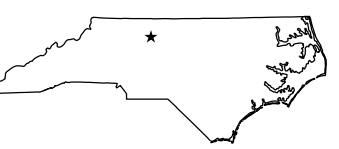
MATCH LINE -Y6- STA 29+00.00 SEE SHEET 12

CUR DATA -Y6:
P/C 15+99.16
 $\Delta c = 25^{\circ}01'51.9''$ (LT)
 $D = 04^{\circ}46'28.7''$
 $Lc = 524.25$
 $Tc = 266.38$
 $R = 1,200.0$

BEGIN CONST -Y9-
POT STA 10+00.00

BEGIN CONST -Y9-
POT STA 12+03.18

PAVEMENT TO BE REMOVED



MATCH LINE -Y7- STA
16+00.00 SEE SHEET 12

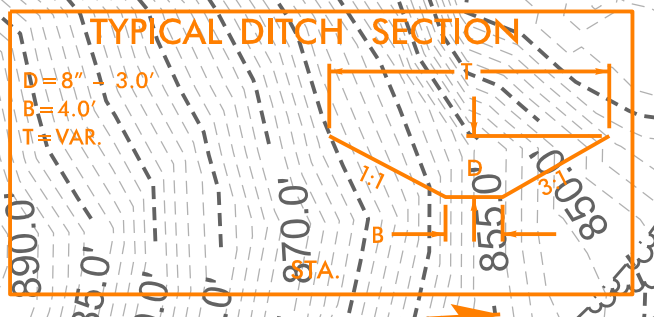
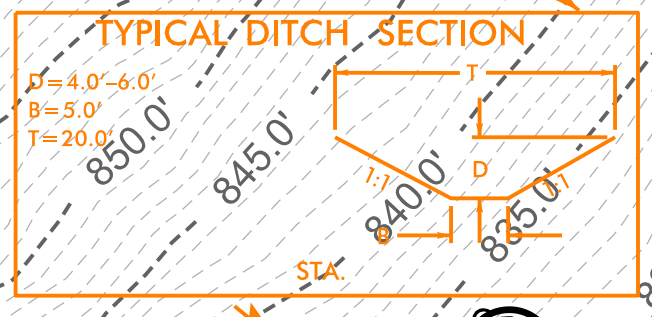
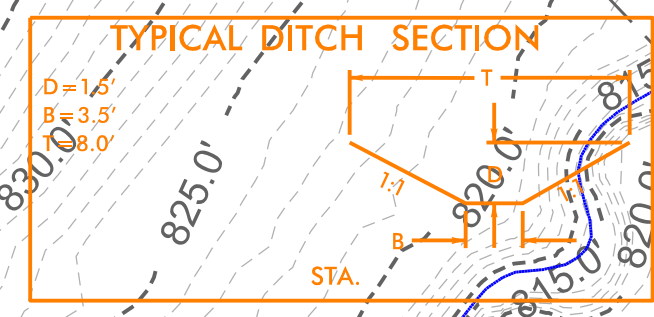
MATCH LINE -Y6- STA 44+75.00 SEE SHEET 12

MATCH LINE -Y6- STA 58+75.00 SEE SHEET 27

SCS DATA -Y7-
Pics 10+00.00
 $\Delta s_{cs} = 00^{\circ}00'00.0''$ (LT)
Tscs = 0.00, 0.00

CUR DATA -Y7-
Pic 14+92.00
 $\Delta c = 105^{\circ}22'06.2''$ (LT)
D = $19^{\circ}05'54.9''$
Lc = 551.71
Tc = 393.68
R = 300

CUR DATA -Y6-
Pic 51+85.09
 $\Delta c = 06^{\circ}36'34.8''$ (LT)
D = $01^{\circ}25'56.6''$
Lc = 461.44
Tc = 230.98
R = 4,000'



OUTLET ANALYSIS 2
MEANDERING WITH VERTICAL ERODED BANKS
DEBRIS & SEDIMENT DEPOSITS THROUGHOUT
1'-3" DEPTH BASE FLOW
GOOD UPSLOPE CONNECTION

SOIL BOTTOM,
1'-2" DEPTH BASE FLOW,
GOOD UPSLOPE CONNECTION,
CLOSE TO HOMES,
NO EROSION.

OUTLET ANALYSIS 1
GRAVEL & DIRT BOTTOM WITH SPARSE
GROUND COVER ON ERODED BANKS,
HIGH EROSION AT STREAM CONFLUENCE
ULTIMATELY OUTFALLS TO OUTFALL 26-2,
NO BASE FLOW

-Y7- PC STA. 10+98.41
BEGIN CONST -Y7-
PT STA 10+18.00

-Y6- PC STA. 49+54.11

-Y6- PT STA. 54+15.56

-Y7- PT STA 10+00.00=
-Y6- PT STA 48+06.78

NORTH CAROLINA DEPT. OF TRANS
DB/3624 PG 3212

COMPTON J. LANE
AND WIFE
DOMINIC E. LANE
DB 1819 PG 3535

CHARLES VAN TAFT
AND WIFE
LAMAR S. TAFT
DB 1529 PG 567

WILMA D. HUNTER
DB 1819 PG 3536

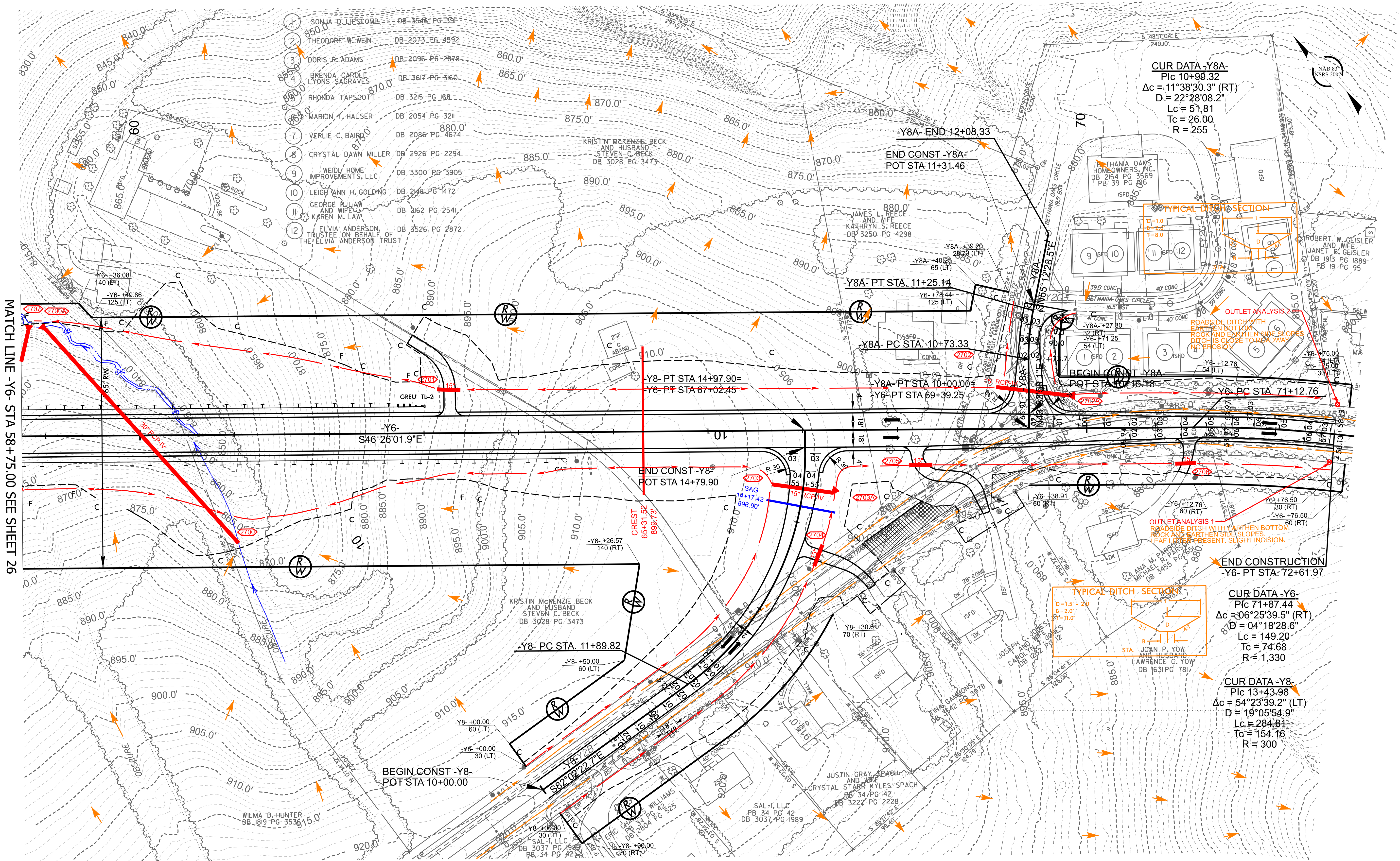
CHARLES VAN TAFT
AND WIFE
LAMAR S. TAFT
DB 1529 PG 567

DAVID SCOTT JONES
AND WIFE
LISA BELAINE JONES
DB 3347 PG 1432

REBECCA LYNN CULLER
DB 3196 PG 936

GREGORY RAY FRADY &
SHELBY JEAN FRADY
DB 3592 PG 882

GREGORY RAY FRADY &
SHELBY JEAN FRADY
DB 3592 PG 1332



MATCH LINE - Y6 - STA 58+75.00 SEE SHEET 26

CUR DATA -Y8A-
 P/c 10+99.32
 $\Delta c = 11^\circ 38' 30.3''$ (RT)
 $D = 22^\circ 28' 08.2''$
 $Lc = 57.81$
 $Tc = 26.00$
 $R = 255$

CUR DATA -Y6-
 P/c 71+87.44
 $\Delta c = 06^\circ 25' 39.5''$ (RT)
 $D = 04^\circ 18' 28.6''$
 $Lc = 149.20$
 $Tc = 74.68$
 $R = 1,330$

CUR DATA -Y8-
 P/c 13+43.98
 $\Delta c = 54^\circ 23' 39.2''$ (LT)
 $D = 19^\circ 05' 54.9''$
 $Lc = 284.81$
 $Tc = 154.16$
 $R = 300$

PAVEMENT TO BE REMOVED

