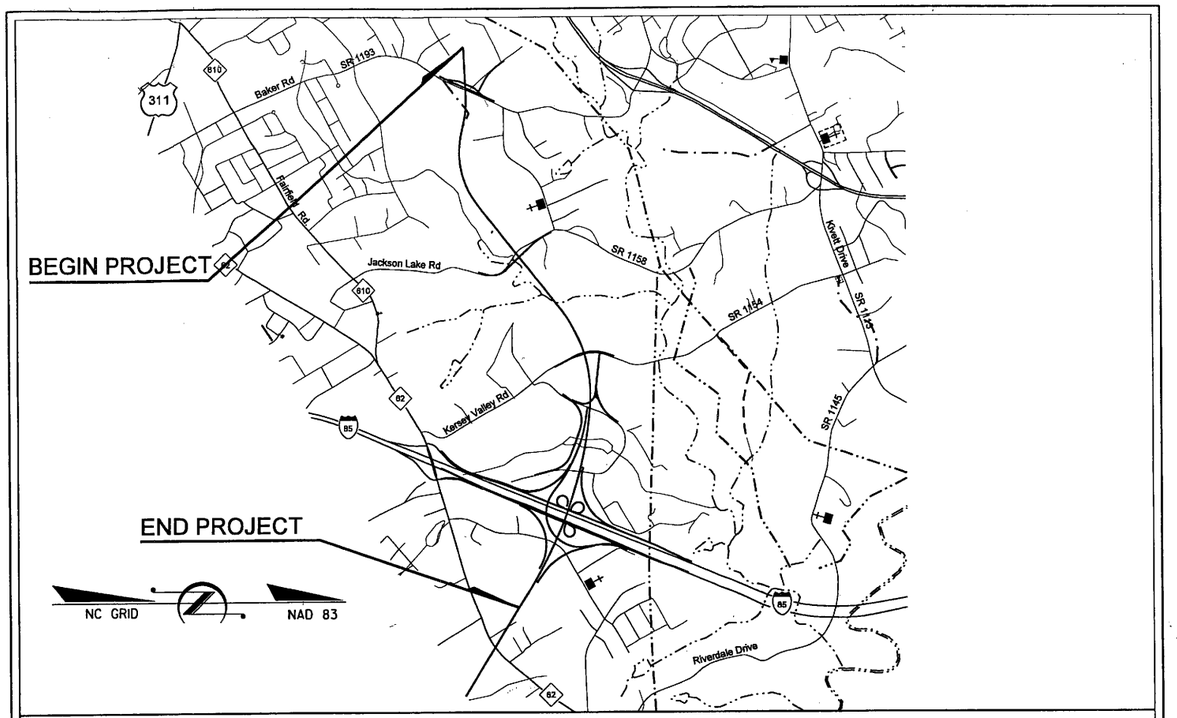
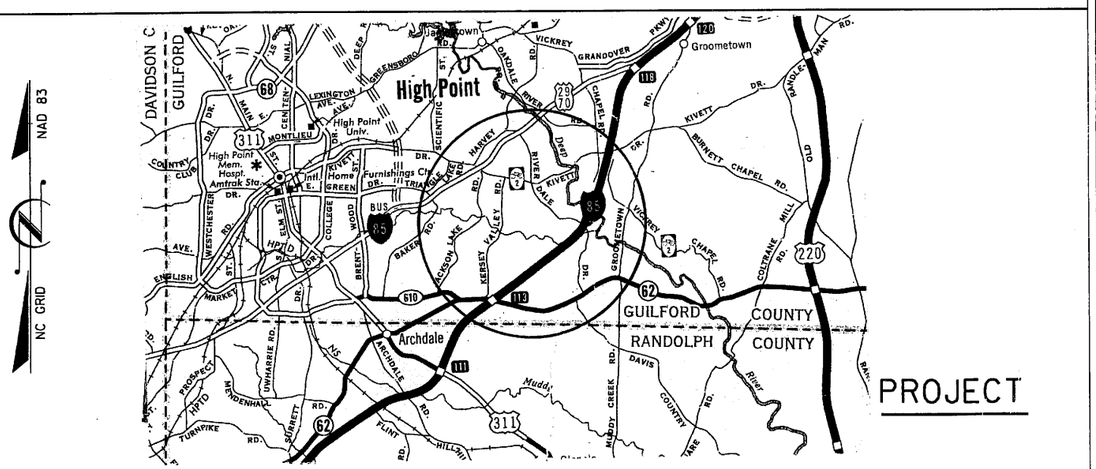


PORTION OF GUILFORD COUNTY MAP



PORTION OF STATE MAP

WETLAND IMPACTS

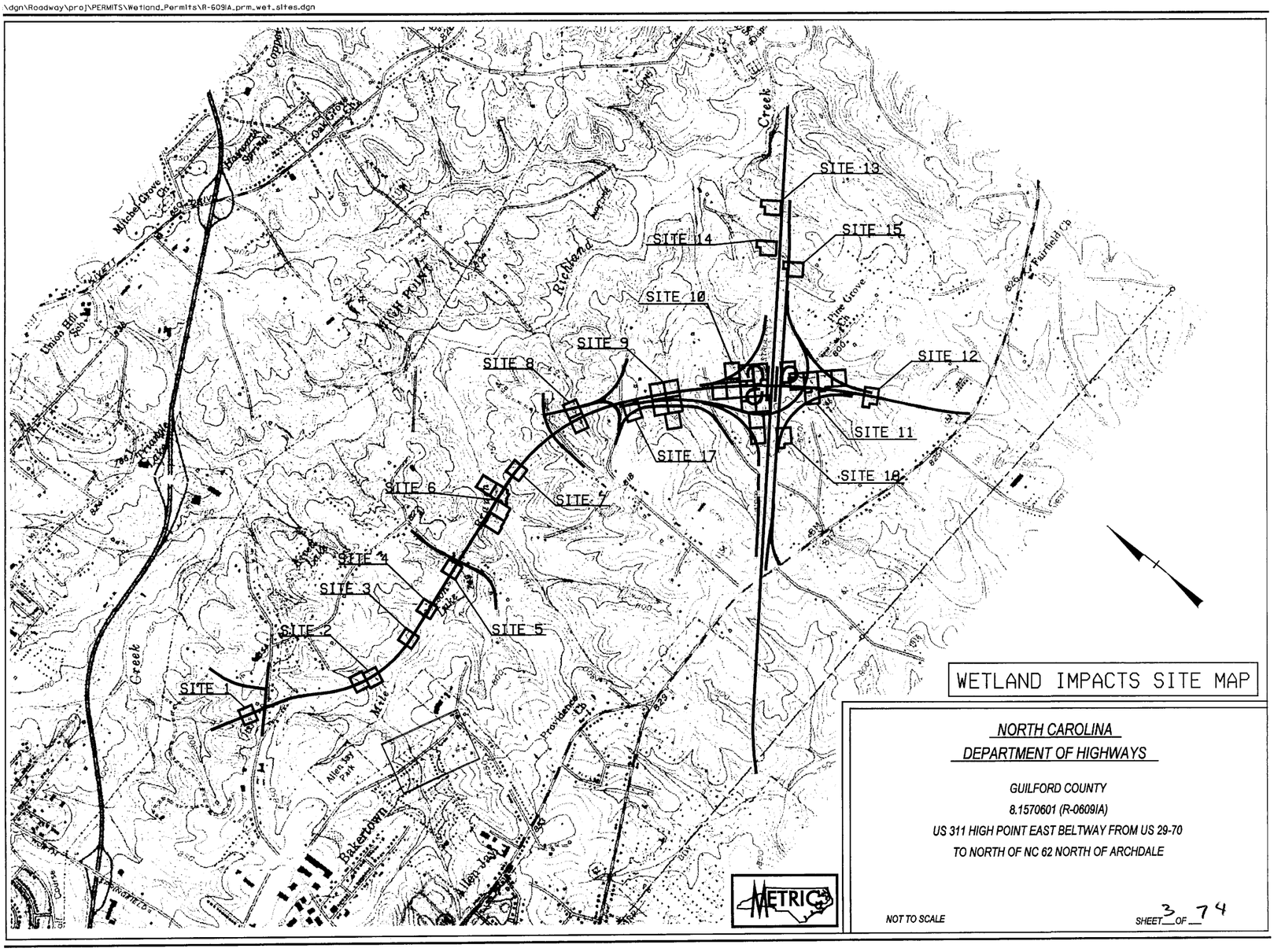
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 2 OF 74

01/16/2002
04:52:41PM
g:\NCTA\029\DIO\PLANS\PERMITS\Wetland_Permits\Title.dgn



WETLAND IMPACTS SITE MAP

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

NOT TO SCALE

SHEET 3 OF 74

WETLAND LEGEND

WLB — WETLAND BOUNDARY

WLB WLB — WETLAND

F F — DENOTES FILL IN WETLAND

S S — DENOTES FILL IN SURFACE WATER

P P — DENOTES FILL IN SURFACE WATER (POND)

T T — DENOTES TEMPORARY FILL IN WETLAND

E E — DENOTES EXCAVATION IN WETLAND

TS TS — DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

FLOW DIRECTION

TB — TOP OF BANK

WE — EDGE OF WATER

C — PROP. LIMIT OF CUT

F — PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG — NATURAL GROUND

PL — PROPERTY LINE

TDE — TEMP. DRAINAGE EASEMENT

PDE — PERMANENT DRAINAGE EASEMENT

EAB — EXIST. ENDANGERED ANIMAL BOUNDARY

EPB — EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT

12"-48" PIPES

54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTING STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 — ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE (PSH)

LEVEL SPREADER (LS)

GRASS SWALE

METRIC

SCALE IN METERS

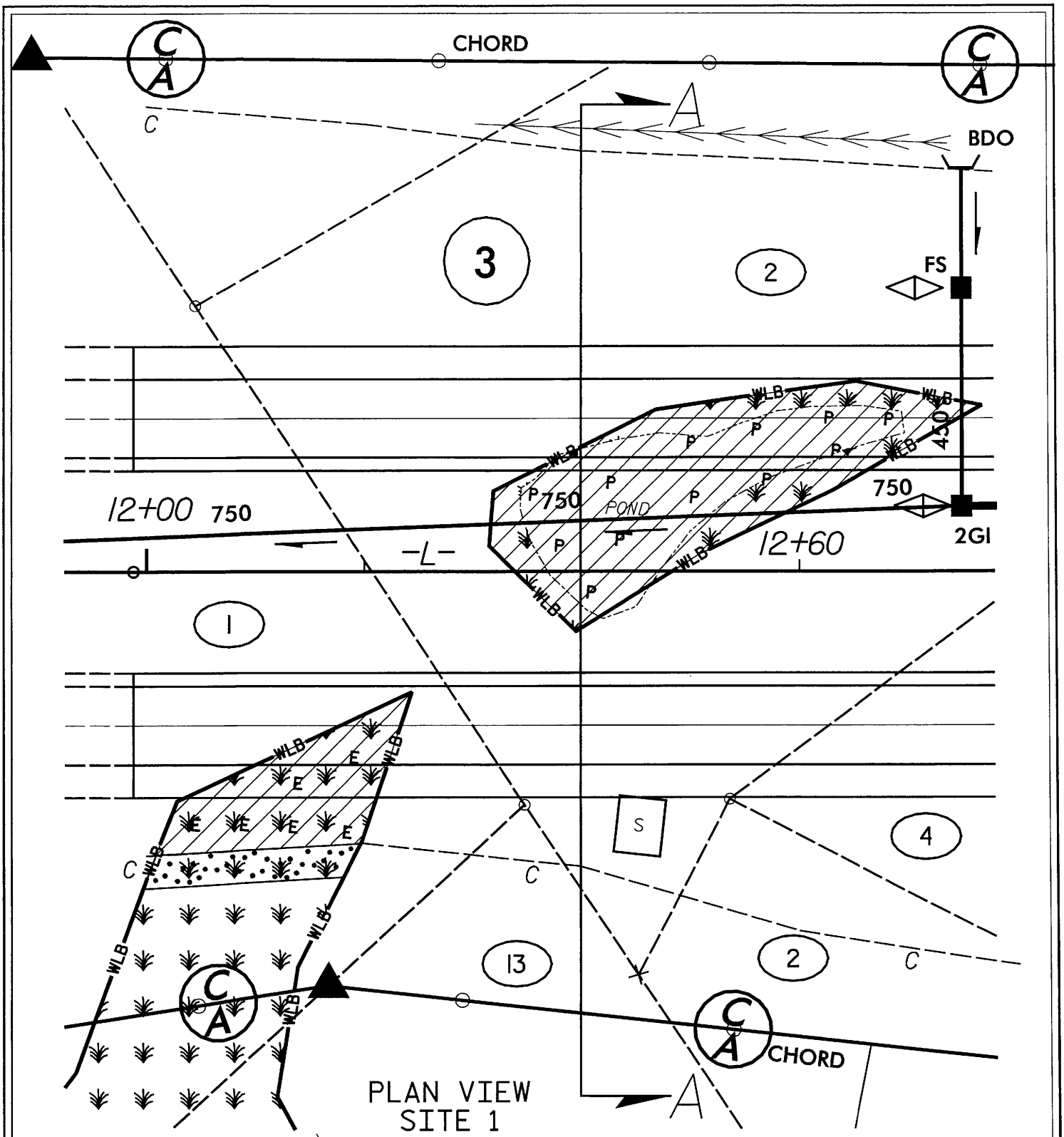
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 4 OF 74

17/02/2003
17:48:28 AM
:\DOT\PLANS\PERMITS\Wetland_Permits\wetland_legend.psh



SHEET 1

LEGEND

- WLB — WETLAND
- E E — DENOTES EXCAVATION IN WETLAND
- P P — DENOTES FILL IN SURFACE WATER (POND)
- DENOTES MECHANIZED CLEARING

METRIC

5 0 10
SCALE IN METERS

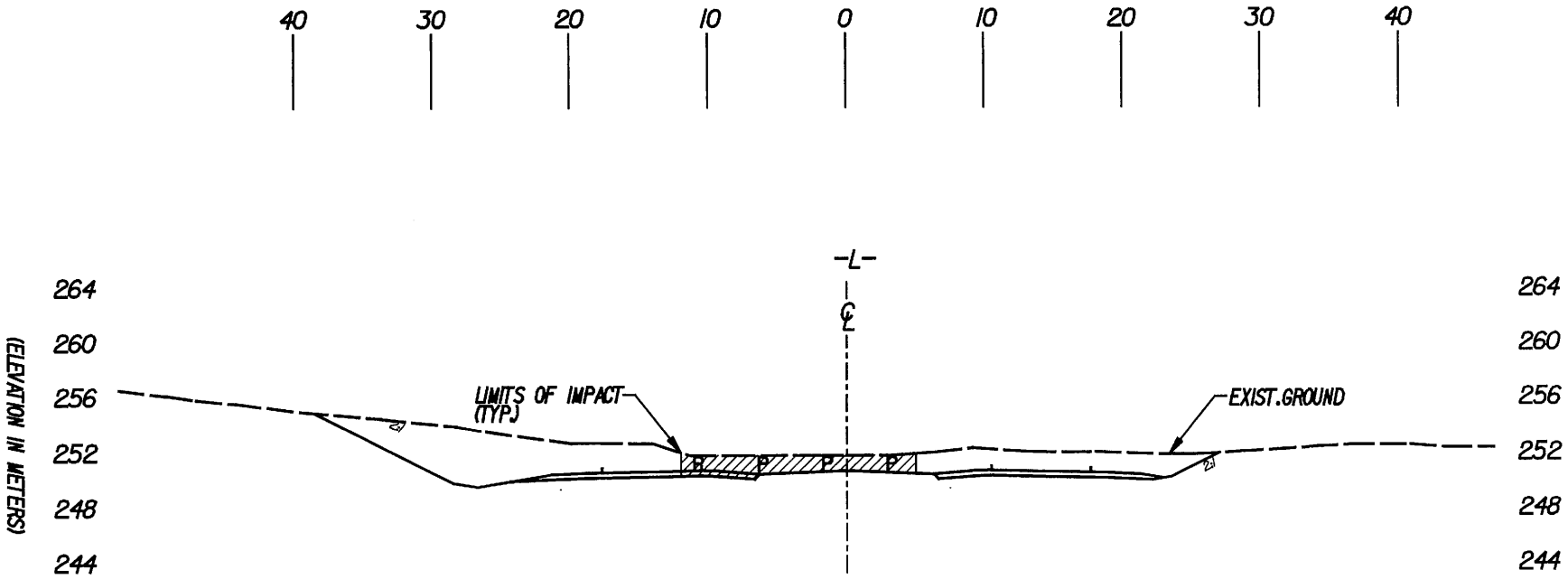
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 5 OF 74

/13/2006
3:33:44 AM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_01.psh



SECTION "A-A"

SITE 1

CROSS SECTION
(-L- 12+40)

LEGEND

P P DENOTES FILL IN SURFACE WATER (POND)

METRIC

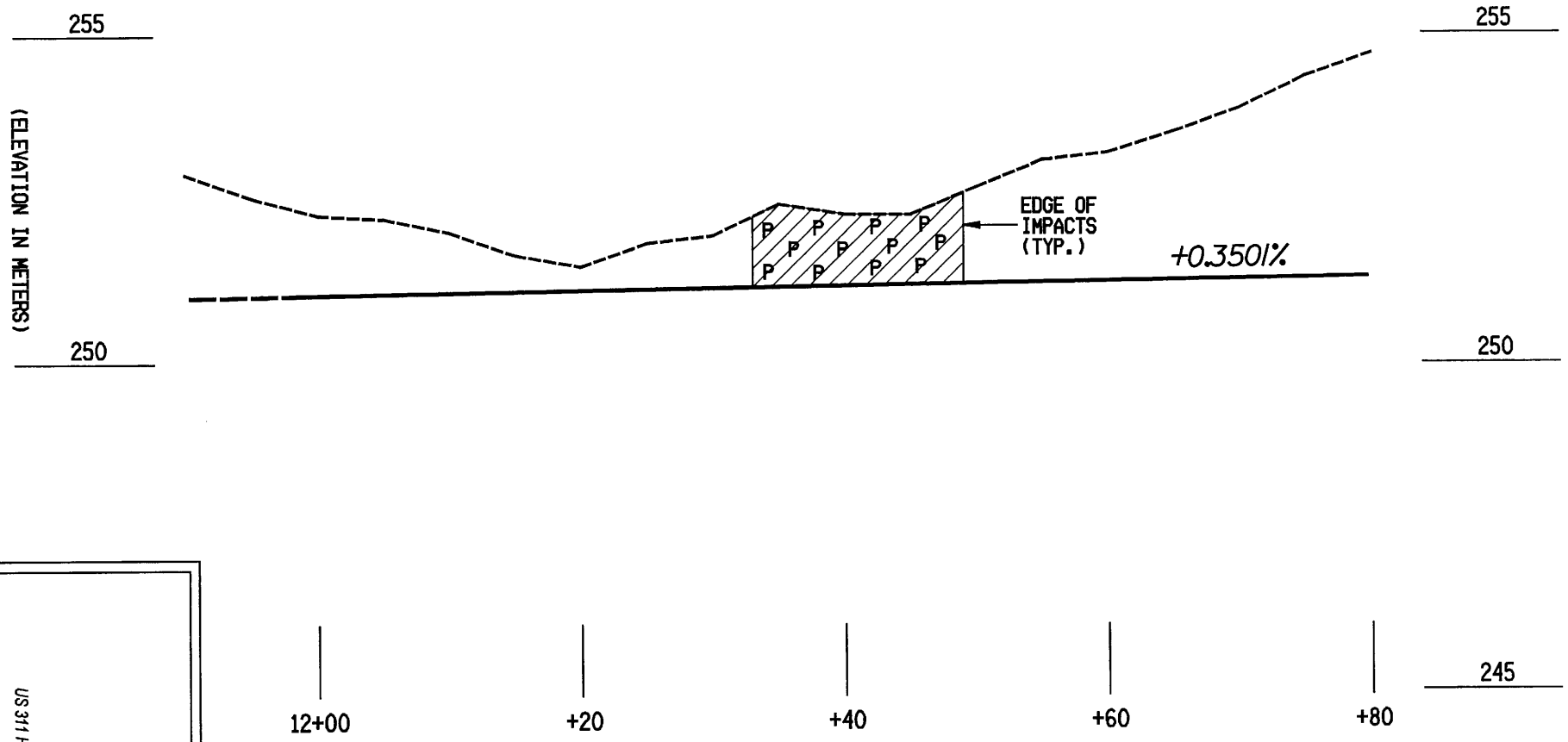
5 0 10

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 6 OF 74



SITE 1
-L- LINE PROFILE

LEGEND

DENOTES FILL IN SURFACE WATER (POND)

METRIC

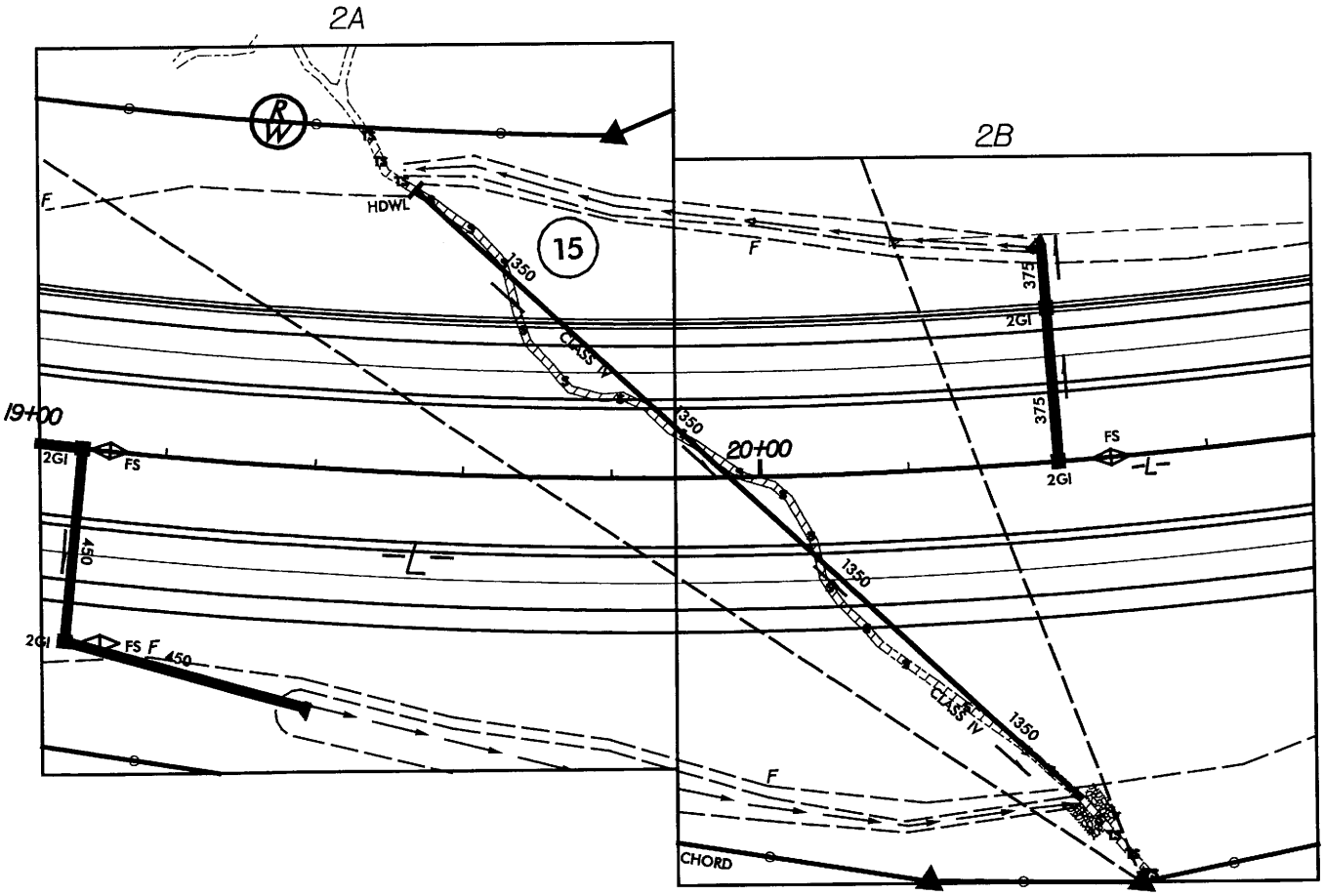
5 0 10

NORTH CAROLINA
DIVISION OF HIGHWAYS

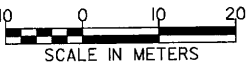
GUILFORD COUNTY
8.1570601 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 7 OF 74



SHEET LAYOUT
PLAN VIEW
SITE 2



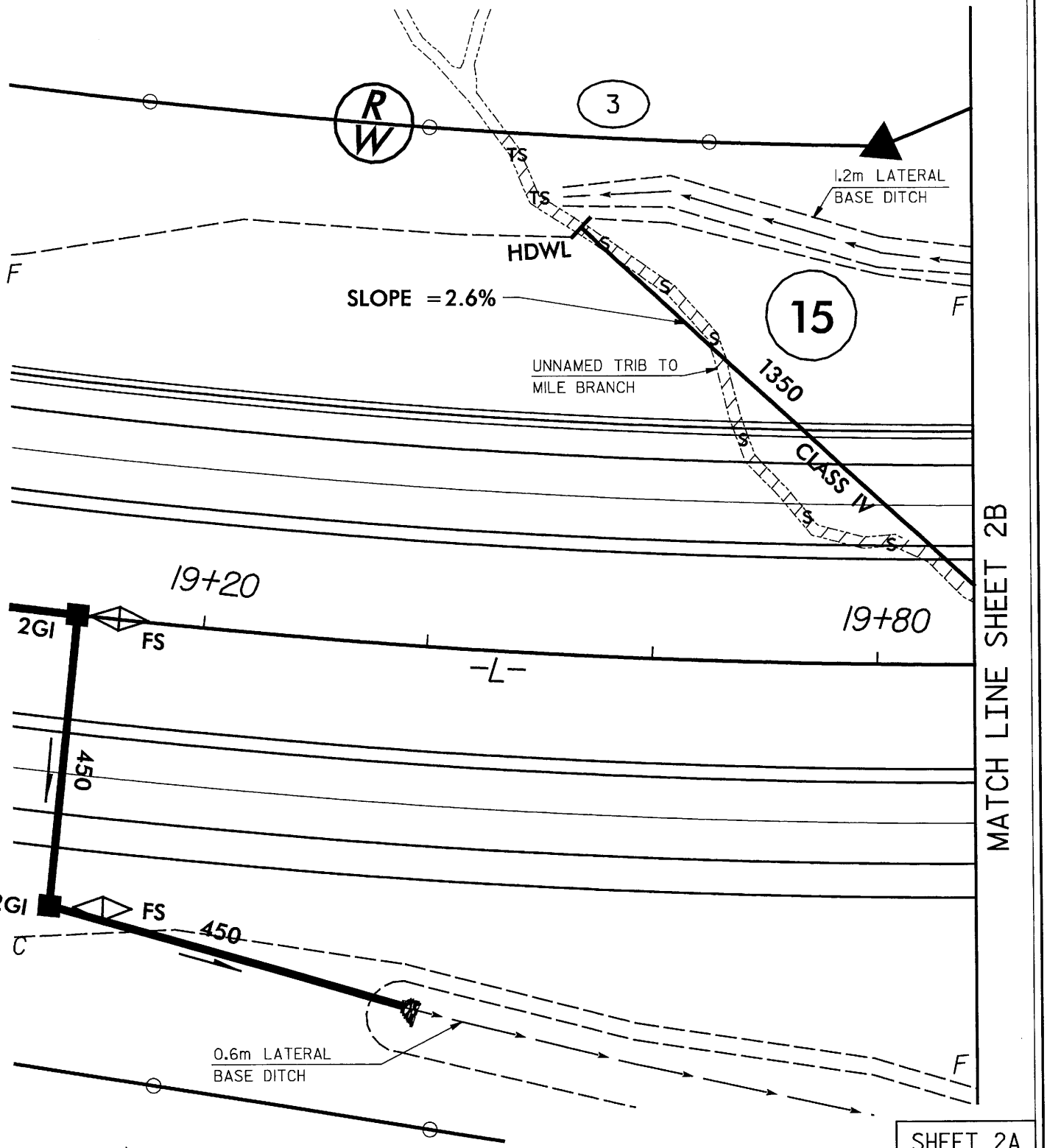
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 8 OF 74

13/2006
:09:51 AM
:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_02.lay.psh



SHEET 2A

PLAN VIEW
SITE 2

LEGEND

S S DENOTES SURFACE WATER LOSS

TS TS DENOTES TEMPORARY SURFACE WATER LOSS

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

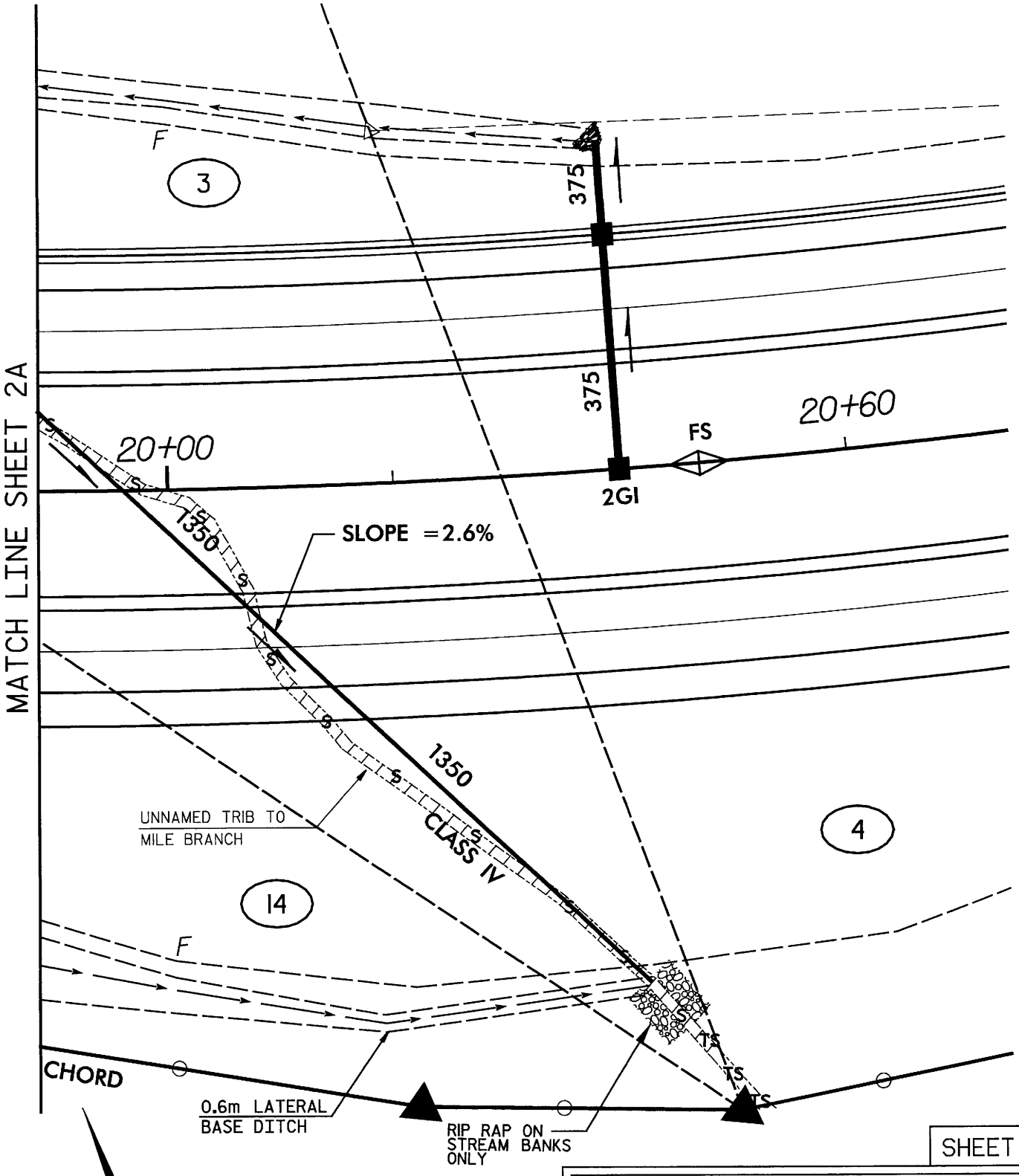
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

9 of 74

SCALE AS SHOWN

SHEET___OF___

/13/2006
0:04:07 AM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_02a.psh



SHEET 2B

PLAN VIEW
SITE 2

LEGEND

S S DENOTES SURFACE WATER LOSS

TS TS DENOTES TEMPORARY SURFACE WATER LOSS

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

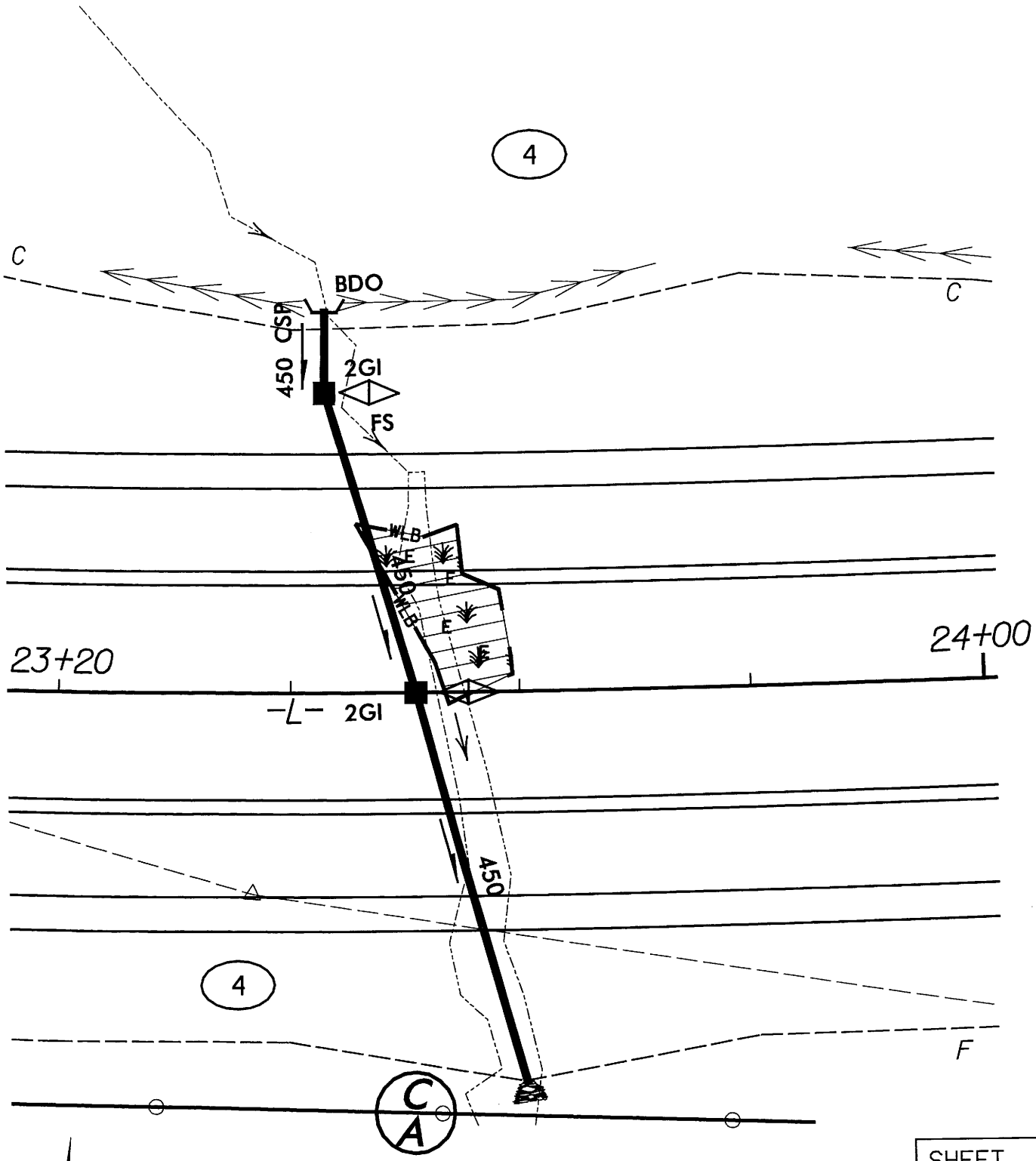
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

10 of 74

SCALE AS SHOWN

SHEET___OF___

/13/2006
0:06:04 AM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_02b.psh



SHEET 3

PLAN VIEW
SITE 3

LEGEND

—WLB— WETLAND

E E DENOTES EXCAVATION IN WETLAND

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

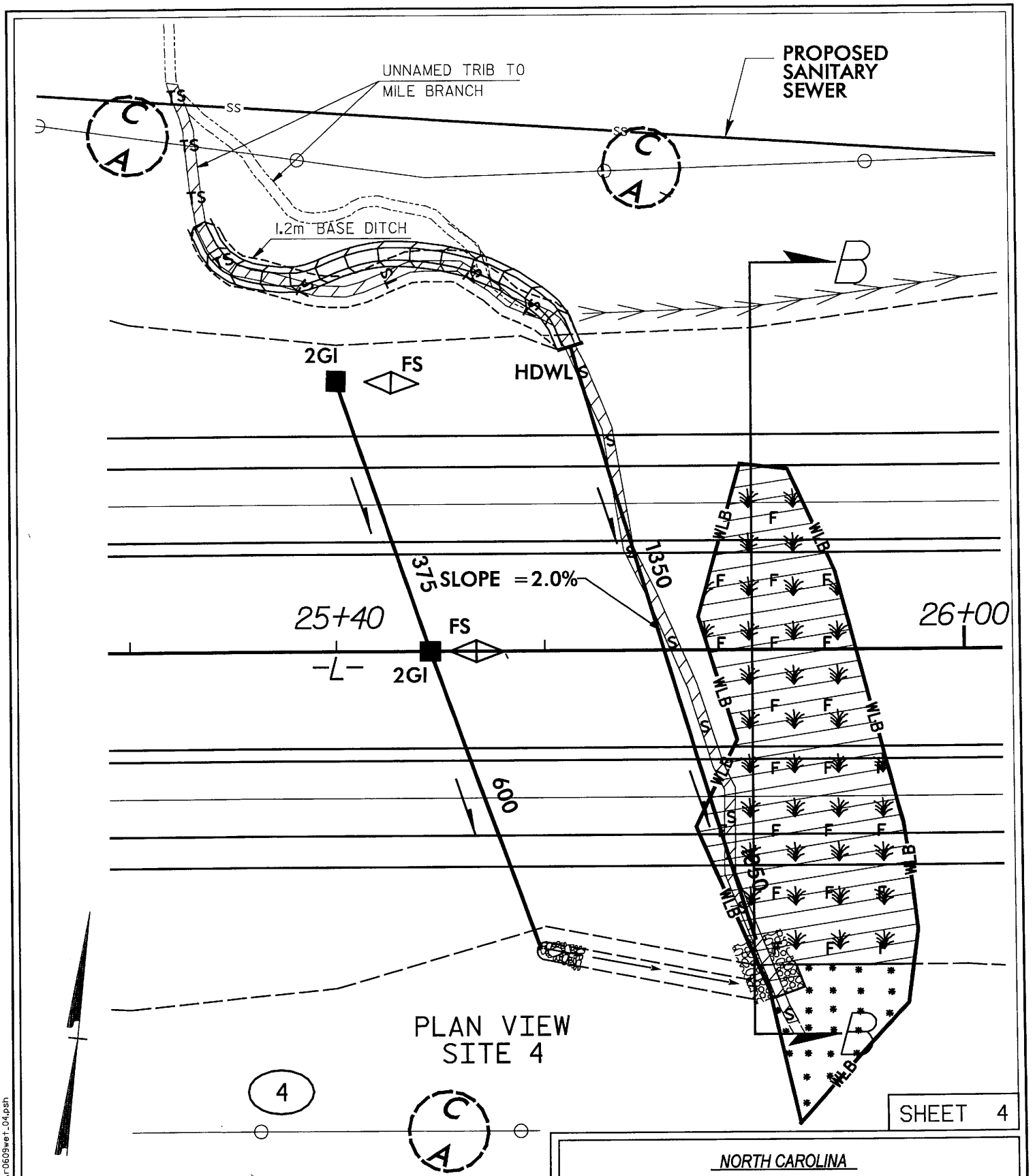
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

11 of 74

SCALE AS SHOWN

SHEET___OF___

3/2006
15:38 AM
\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_03.psh



LEGEND

—WLB— WETLAND

F F DENOTES FILL IN WETLAND

S S DENOTES SURFACE WATER LOSS

DENOTES MECHANIZED CLEARING

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

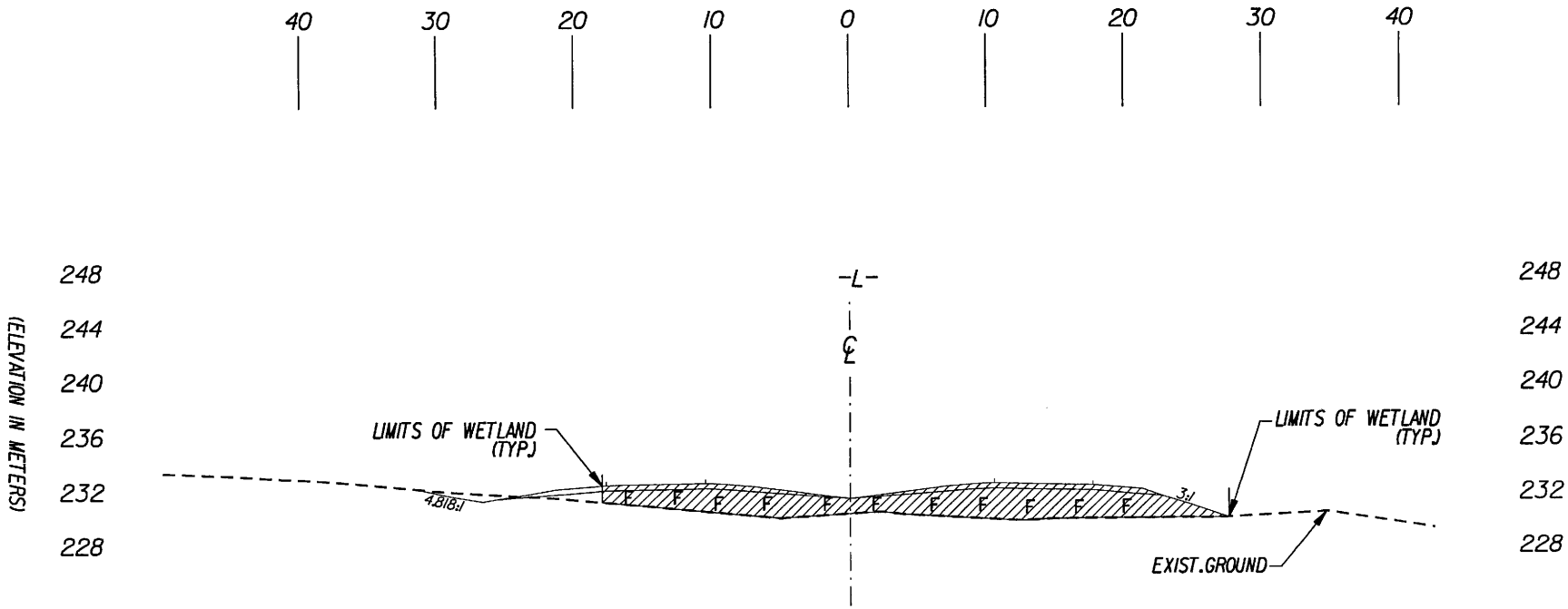
12 OF 74

SCALE AS SHOWN

SHEET___OF___

13/2006
:35:55 AM
:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_04.psh

07/17/2002
01:01:22 PM
g:\NCT\029\010\PLANS\PERMITS\Wetland_Permits\r0609wet_04.xsc



SECTION "B-B"

SITE 4

CROSS SECTION
(-L- 25+80)

LEGEND

F F DENOTES FILL IN WETLAND

METRIC

5 0 10

NORTH CAROLINA
DIVISION OF HIGHWAYS

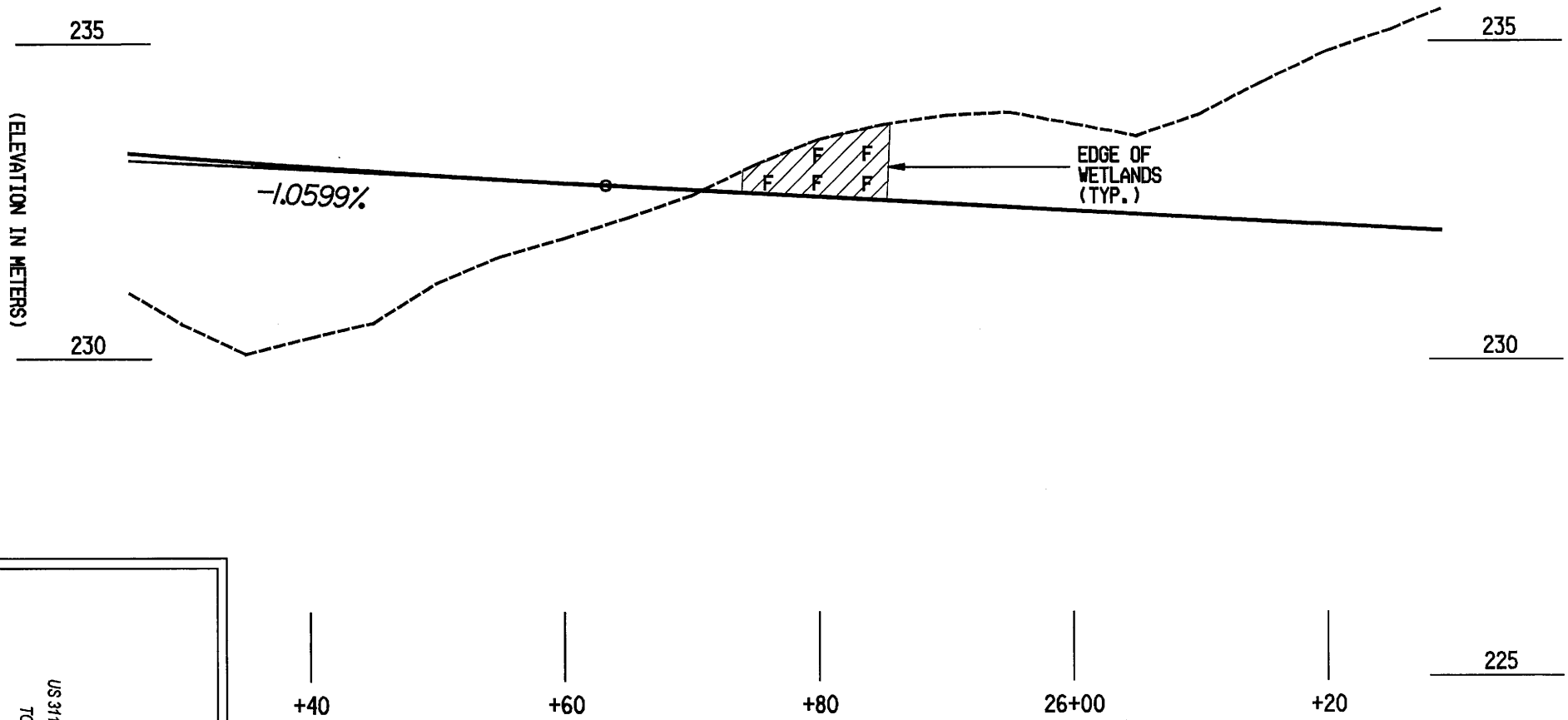
GUILFORD COUNTY
8.1570601 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET ___ OF ___

13 of 74

/13/2006
0:55:22 AM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_04.pfl



SITE 4
-L- LINE PROFILE

LEGEND

F F DENOTES FILL IN WETLAND

METRIC

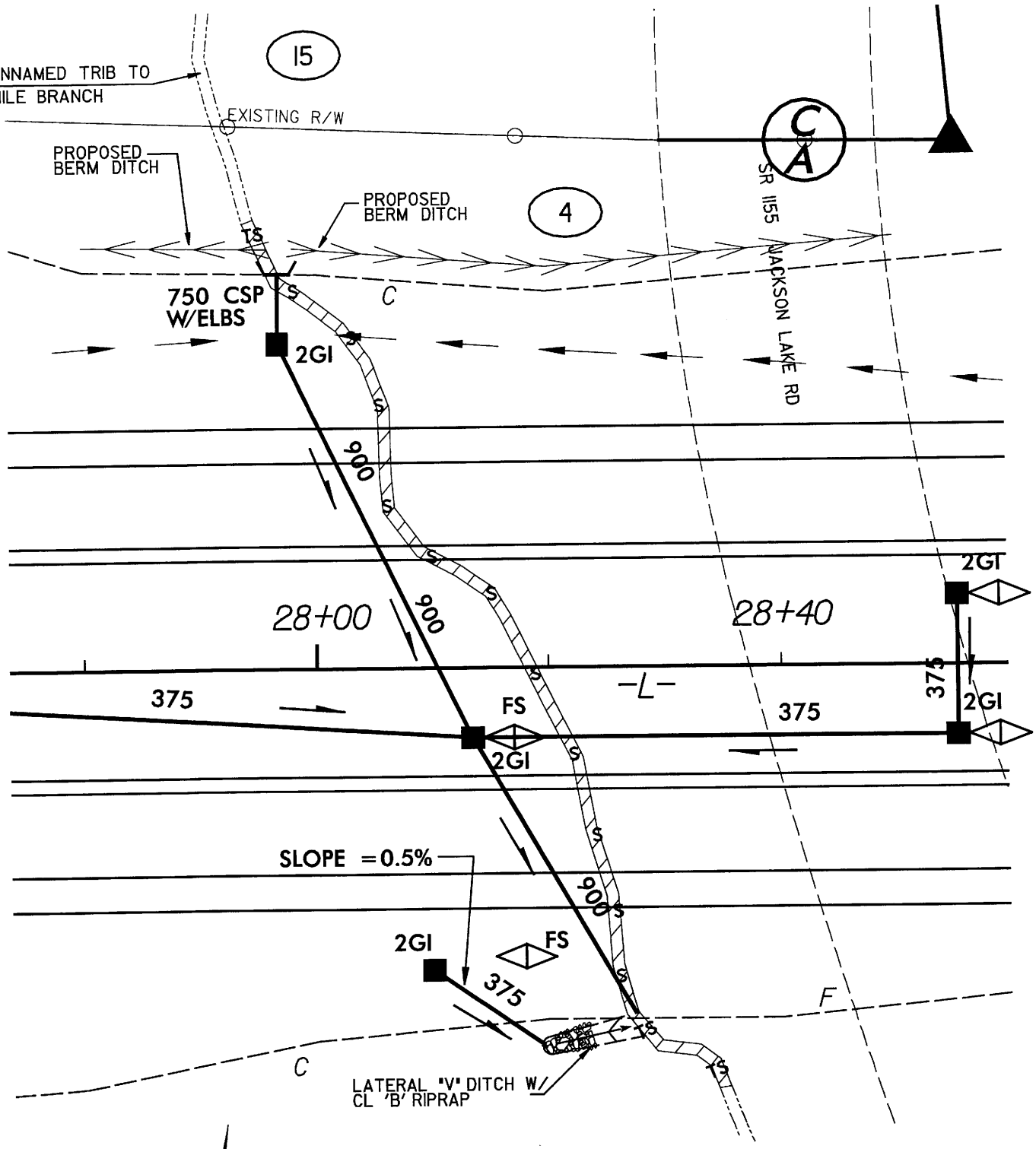
5 0 10

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570801 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 14 OF 74 OF



SHEET 5

PLAN VIEW
SITE 5

LEGEND

S S DENOTES SURFACE WATER LOSS

TS TS DENOTES TEMPORARY SURFACE WATER LOSS

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

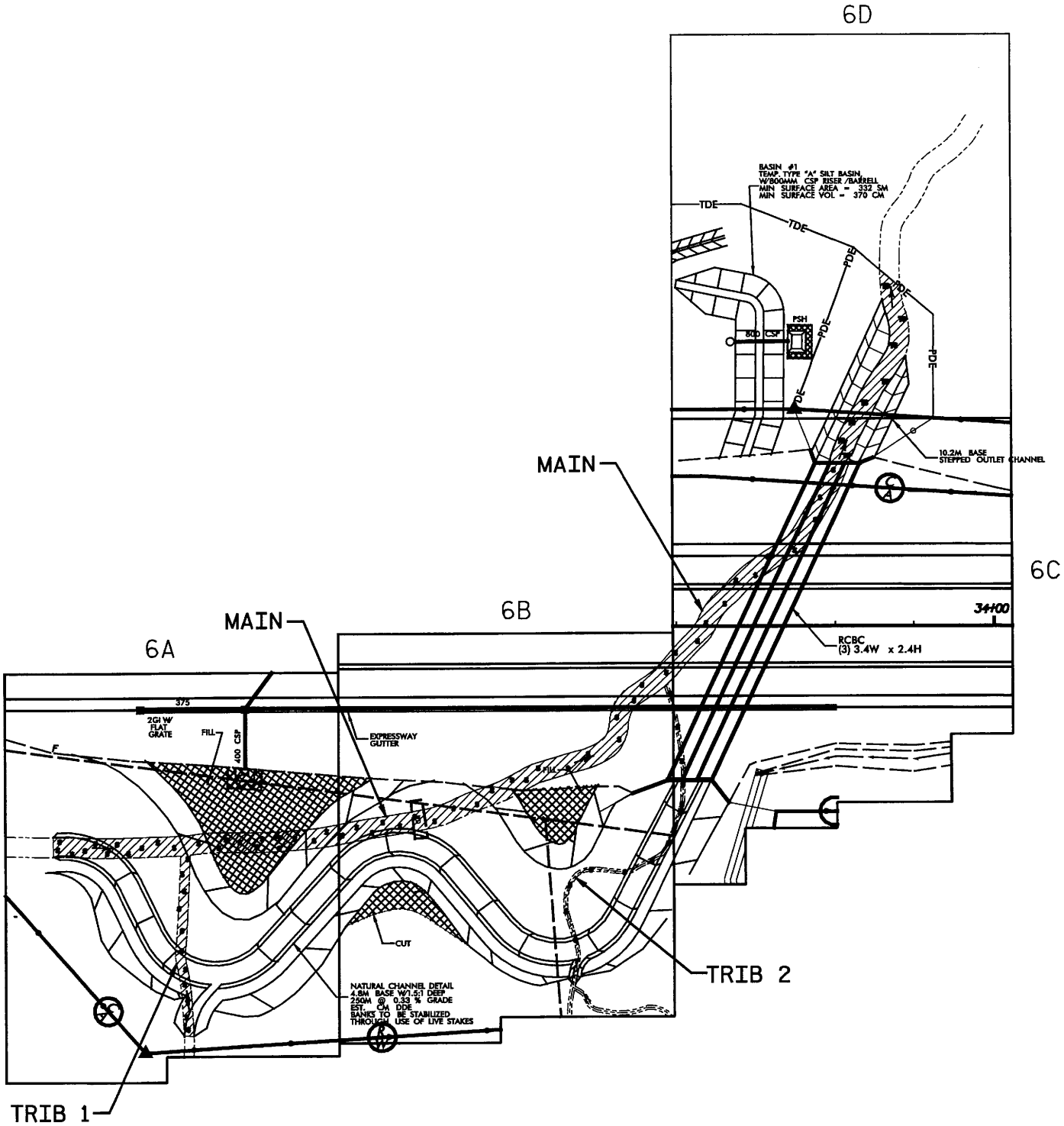
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

15 of 74

SCALE AS SHOWN

SHEET___OF___

13/2006
02:03 AM
\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_05.psh



SHEET LAYOUT
PLAN VIEW
SITE 6

METRIC

15 0 15 30
SCALE IN METERS

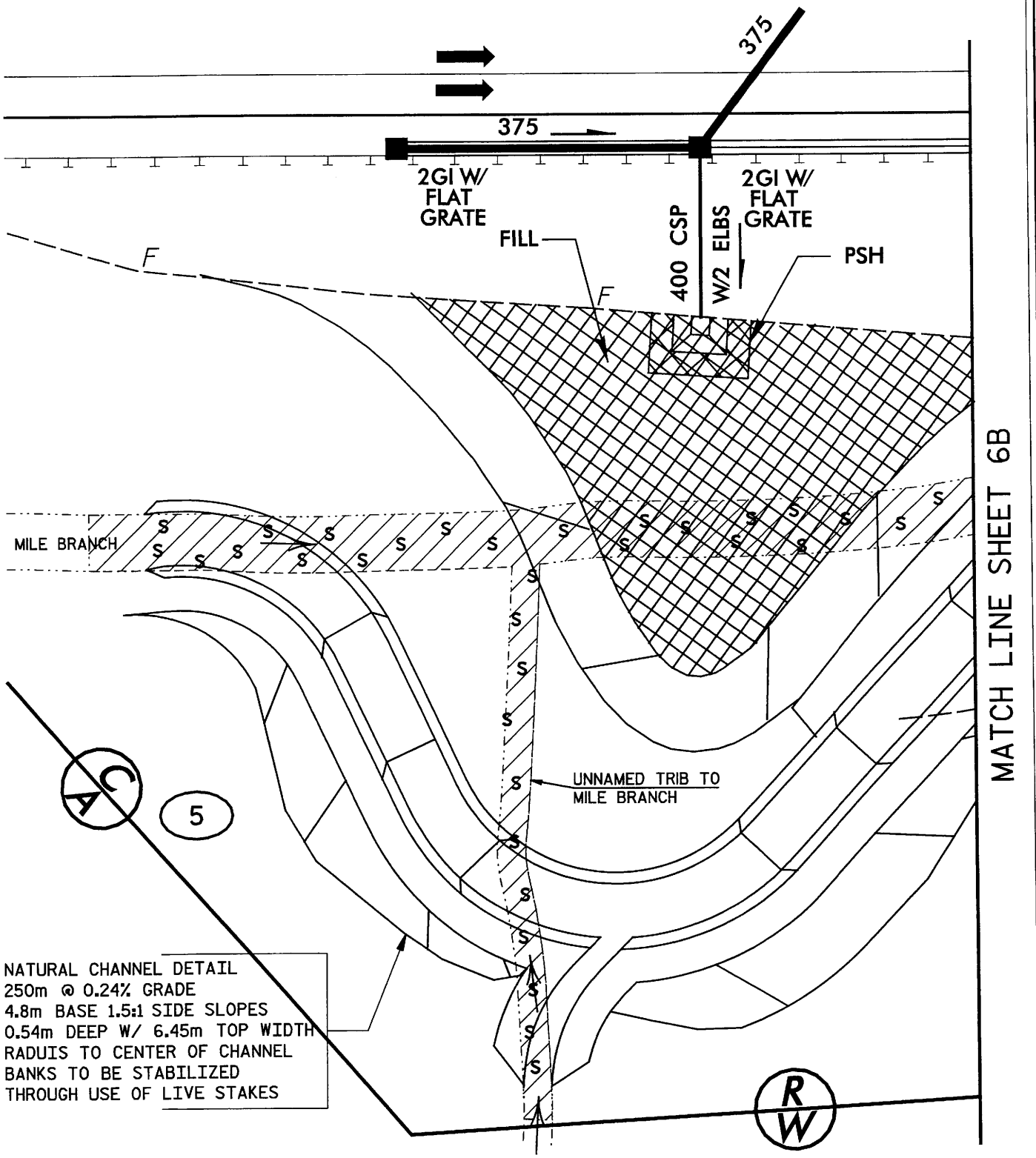
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

16 of 74
SHEET___OF___

/2006
:00 AM
dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_06_lay.psh



SHEET 6A

PLAN VIEW SITE 6

METRIC

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

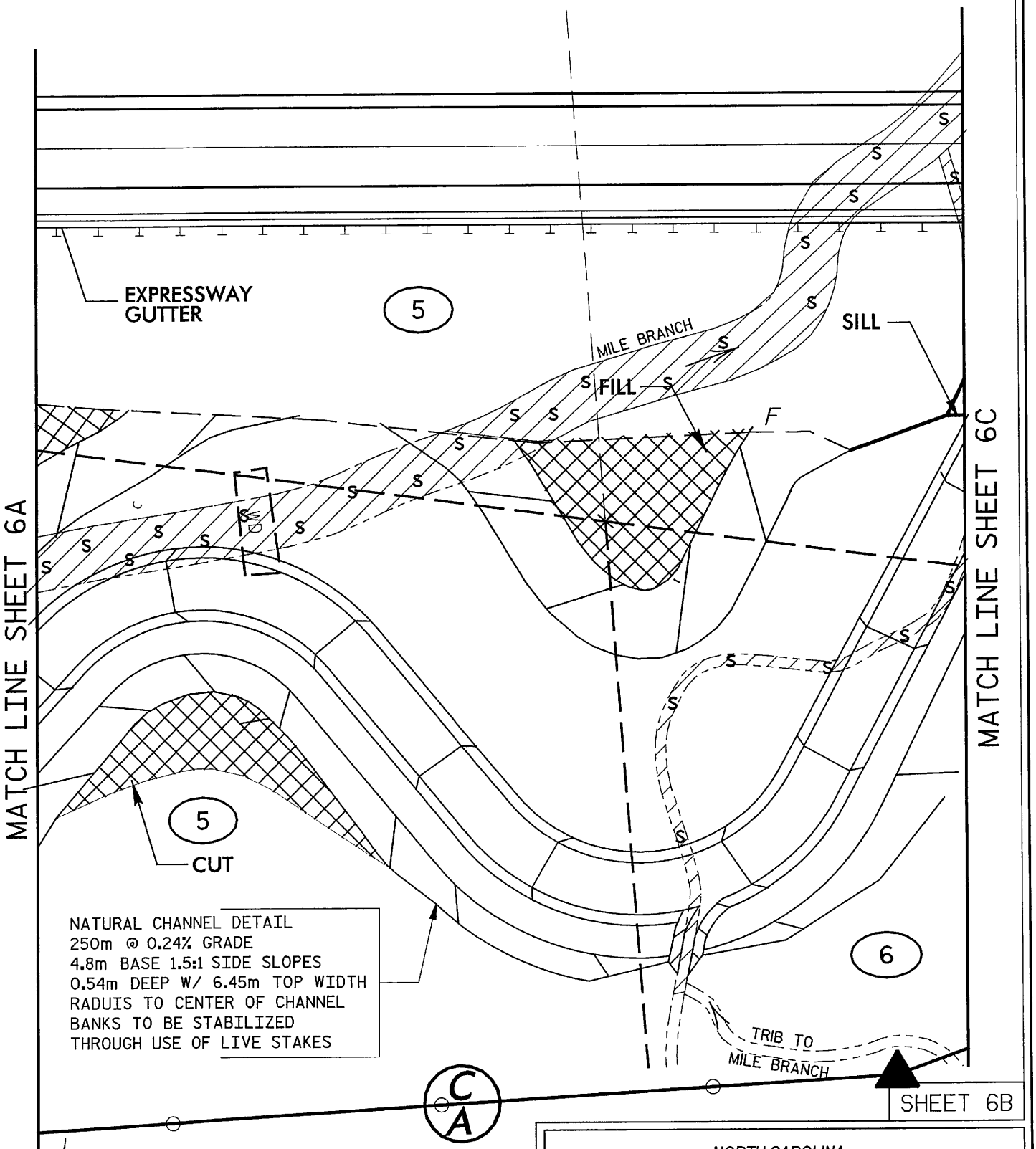
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 17 OF 74

/9/2005
:02:06 PM
:\dgn\Roadway\proj\PERMITS\WetLand_Permits\r0609wet_06a.psh



PLAN VIEW SITE 6

METRIC

LEGEND

S S — DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

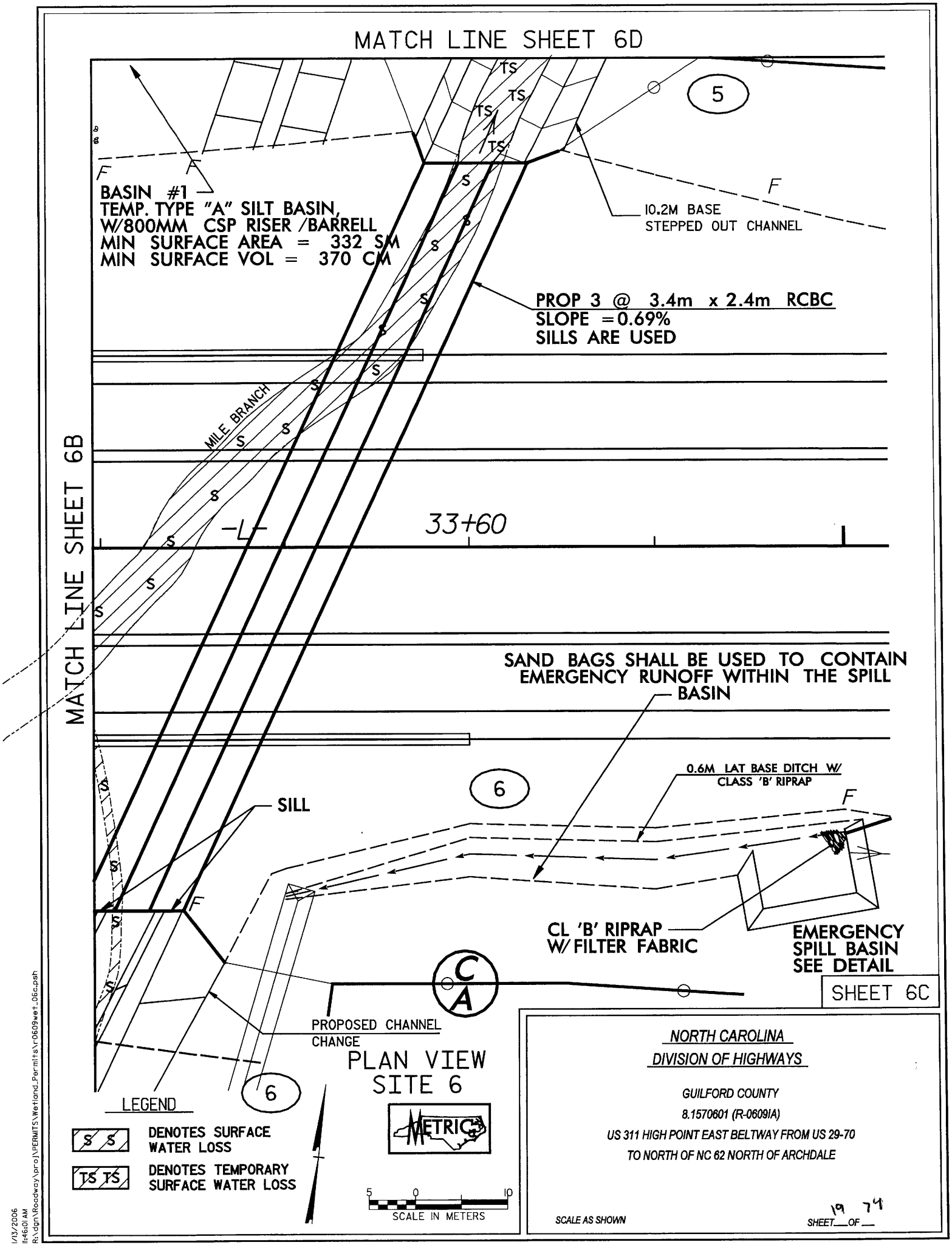
NORTH CAROLINA
DIVISION OF HIGHWAYS

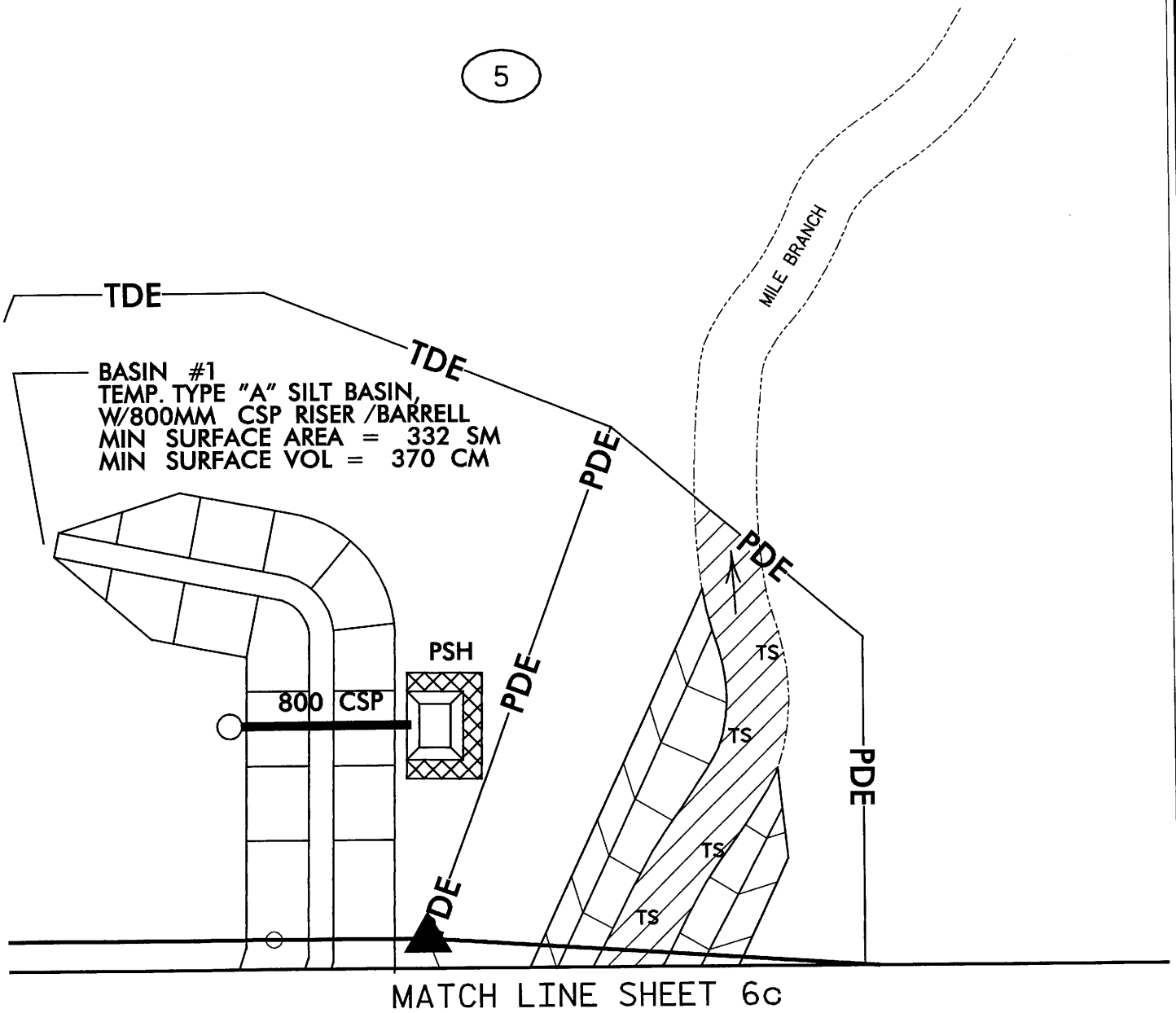
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 11 OF 14

01/09/2005
06:44:57 PM
r:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_06b.psh


MATCH LINE SHEET 6D
MATCH LINE SHEET 6B
BASIN #1
TEMP. TYPE "A" SILT BASIN,
W/800MM CSP RISER /BARRELL
MIN SURFACE AREA = 332 SM
MIN SURFACE VOL = 370 CM
10.2M BASE
STEPPED OUT CHANNEL
PROP 3 @ 3.4m x 2.4m RCBC
SLOPE =0.69%
SILLS ARE USED
MILE BRANCH
33+60
-L-
SAND BAGS SHALL BE USED TO CONTAIN
EMERGENCY RUNOFF WITHIN THE SPILL
BASIN
0.6M LAT BASE DITCH W/
CLASS 'B' RIPRAP
SILL
CL 'B' RIPRAP
W/ FILTER FABRIC
EMERGENCY
SPILL BASIN
SEE DETAIL
SHEET 6C
PROPOSED CHANNEL
CHANGE
PLAN VIEW
SITE 6
LEGEND
DENOTES SURFACE
WATER LOSS
DENOTES TEMPORARY
SURFACE WATER LOSS
METRIC
SCALE IN METERS
NORTH CAROLINA
DIVISION OF HIGHWAYS
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE
SCALE AS SHOWN
SHEET 19 OF 74



PLAN VIEW
SITE 6

LEGEND

S S DENOTES SURFACE WATER LOSS

TS TS DENOTES TEMPORARY SURFACE WATER LOSS

METRIC

SCALE IN METERS

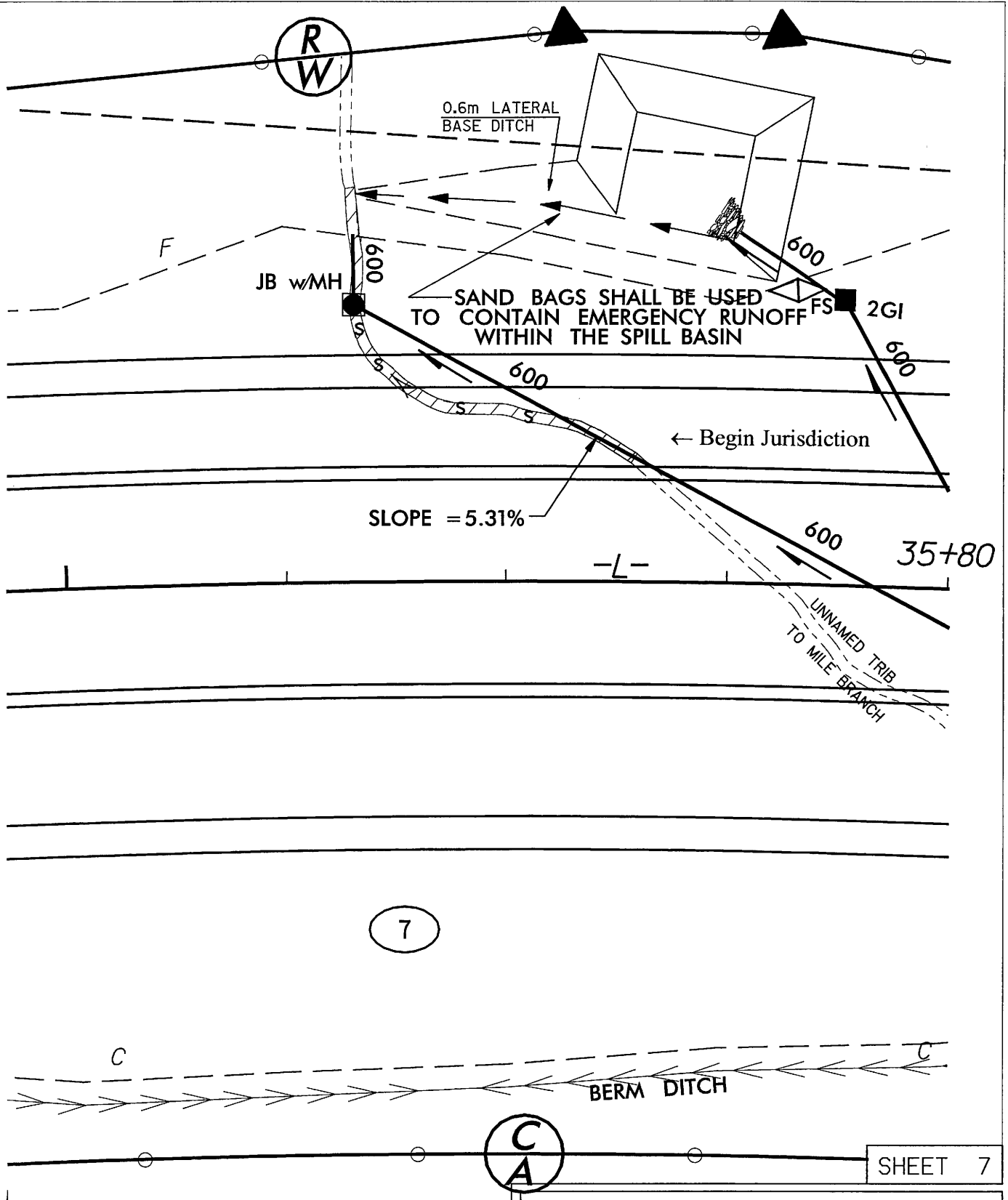
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 20 OF 74

13/2006
47:16 AM
:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_06d.psh



SHEET 7

PLAN VIEW
SITE 7

METRIC

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

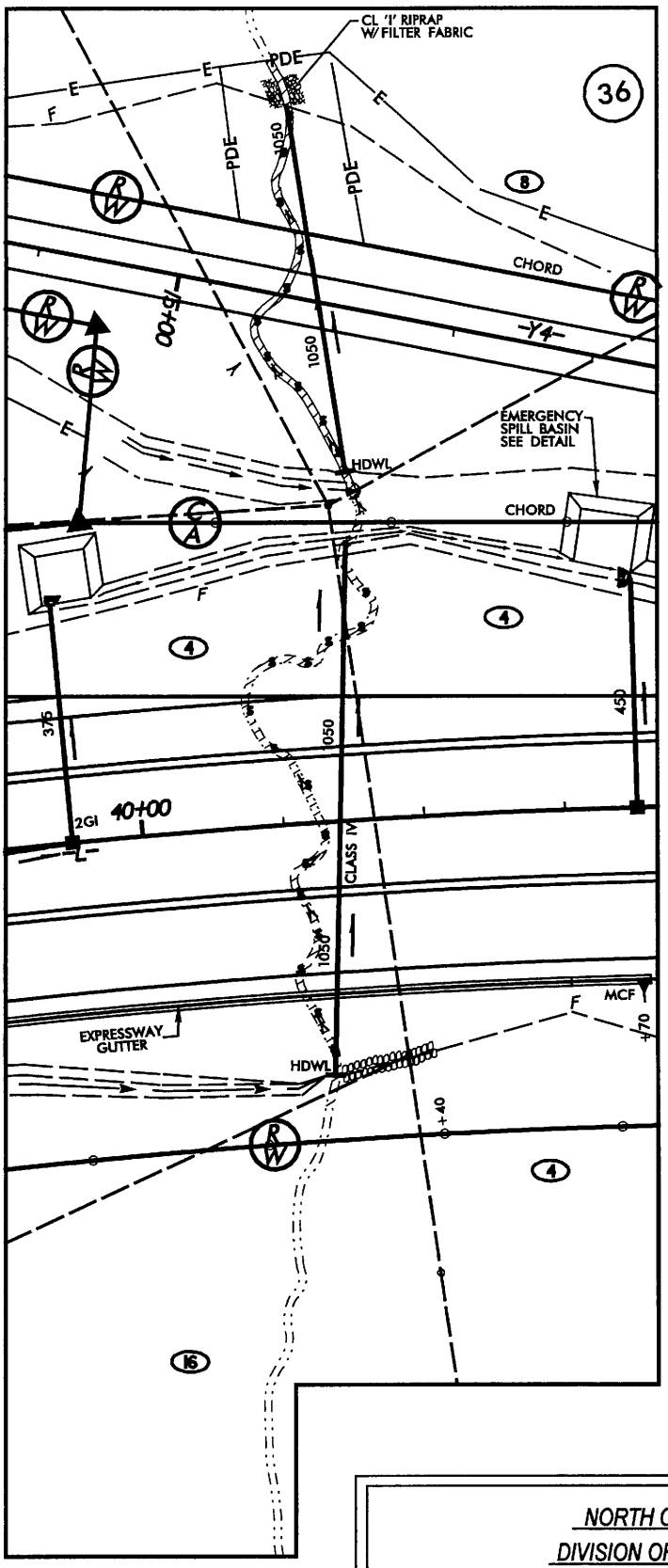
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 21 OF 74

01/09/2005
06:50:43 PM
r:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_07.psh



SHEET LAYOUT
PLAN VIEW
SITE 8

METRIC

10 0 20
SCALE IN METERS

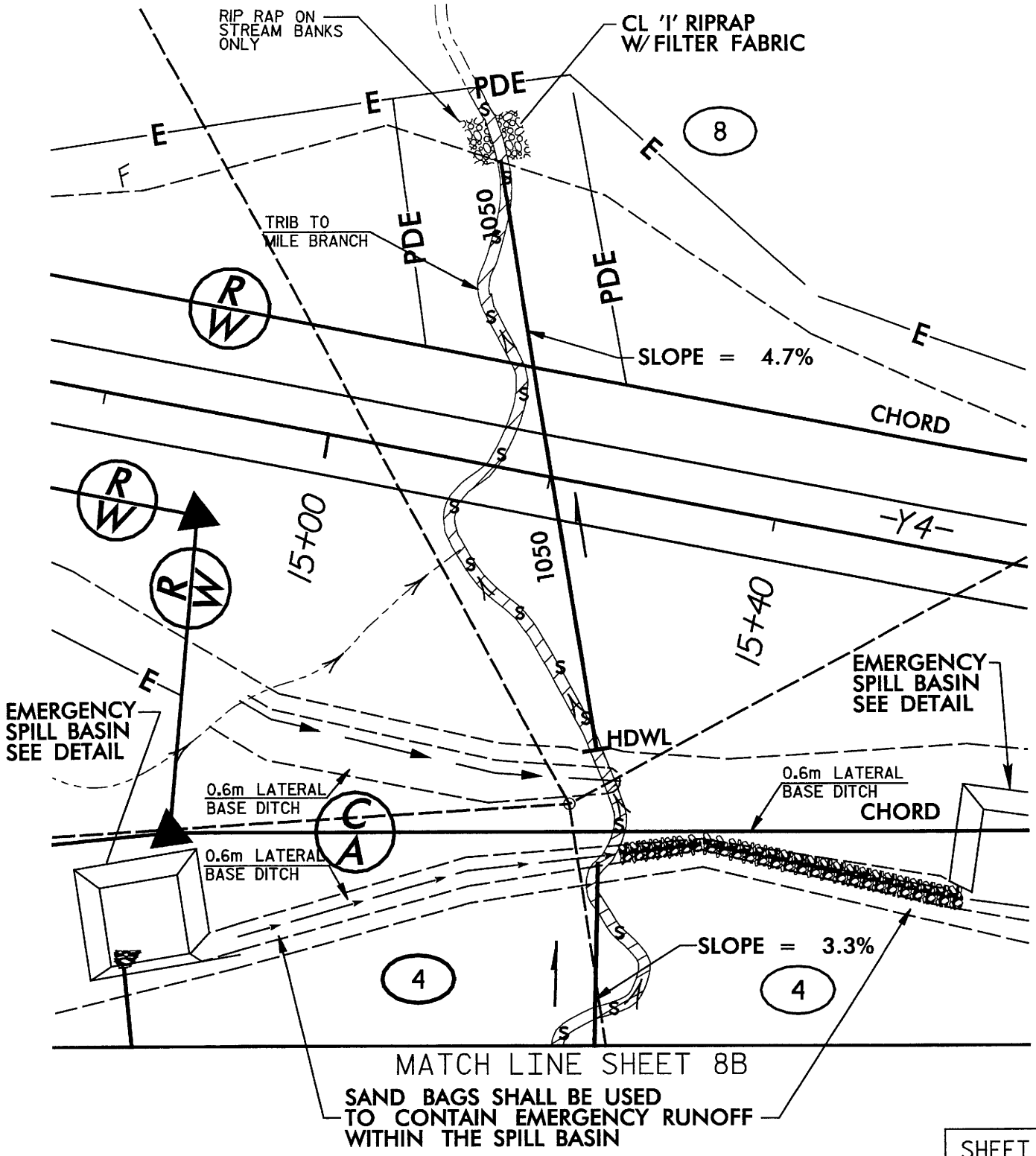
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 22 OF 174

8/9/2005
3:45:59 PM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_08_lay.psh



SHEET 8A

PLAN VIEW
SITE 8

METRIC

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

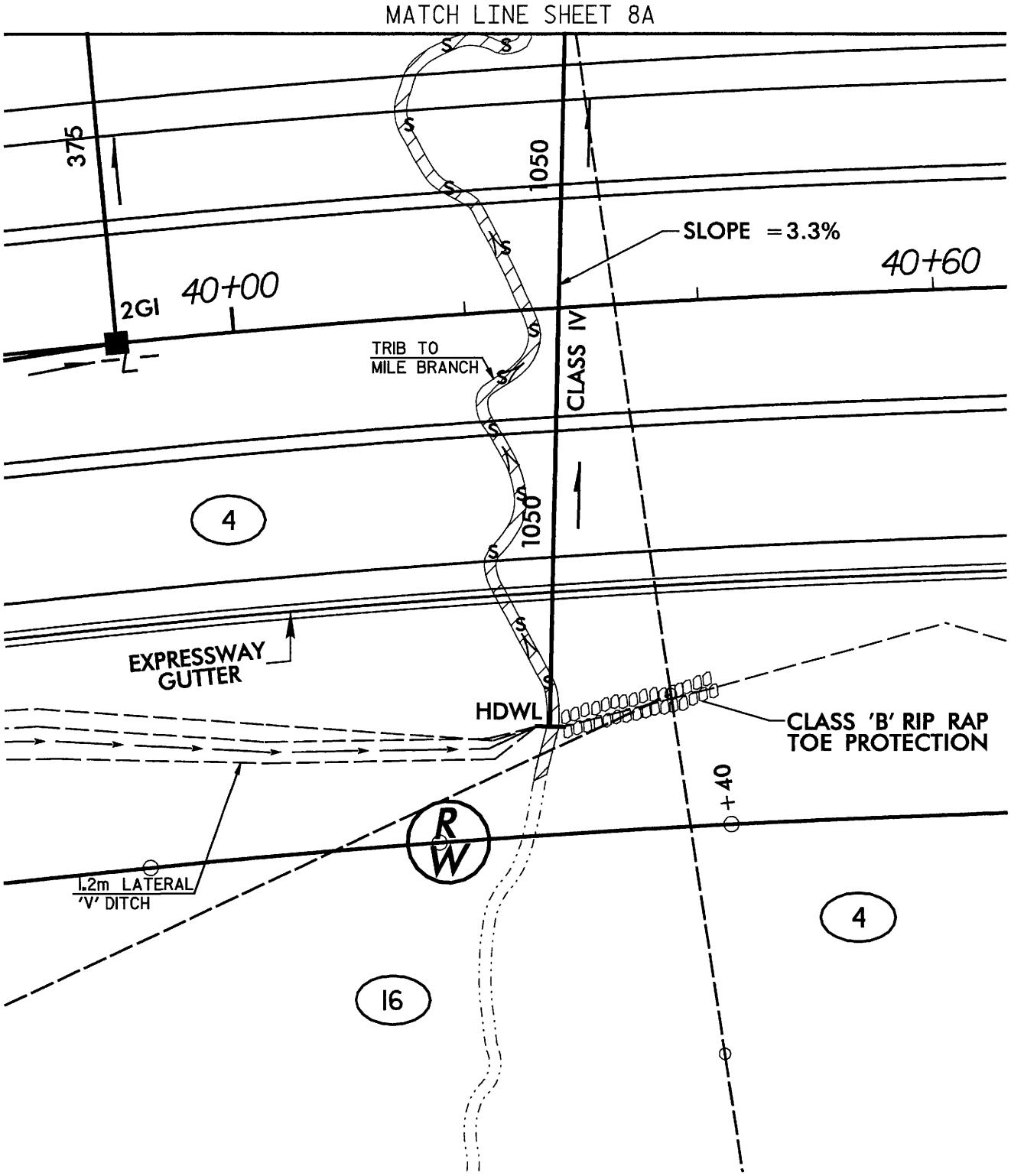
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 3 OF 74

3/8/2005
3:16:37 AM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_08a.psh



SHEET 8B

PLAN VIEW
SITE 8

METRIC

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

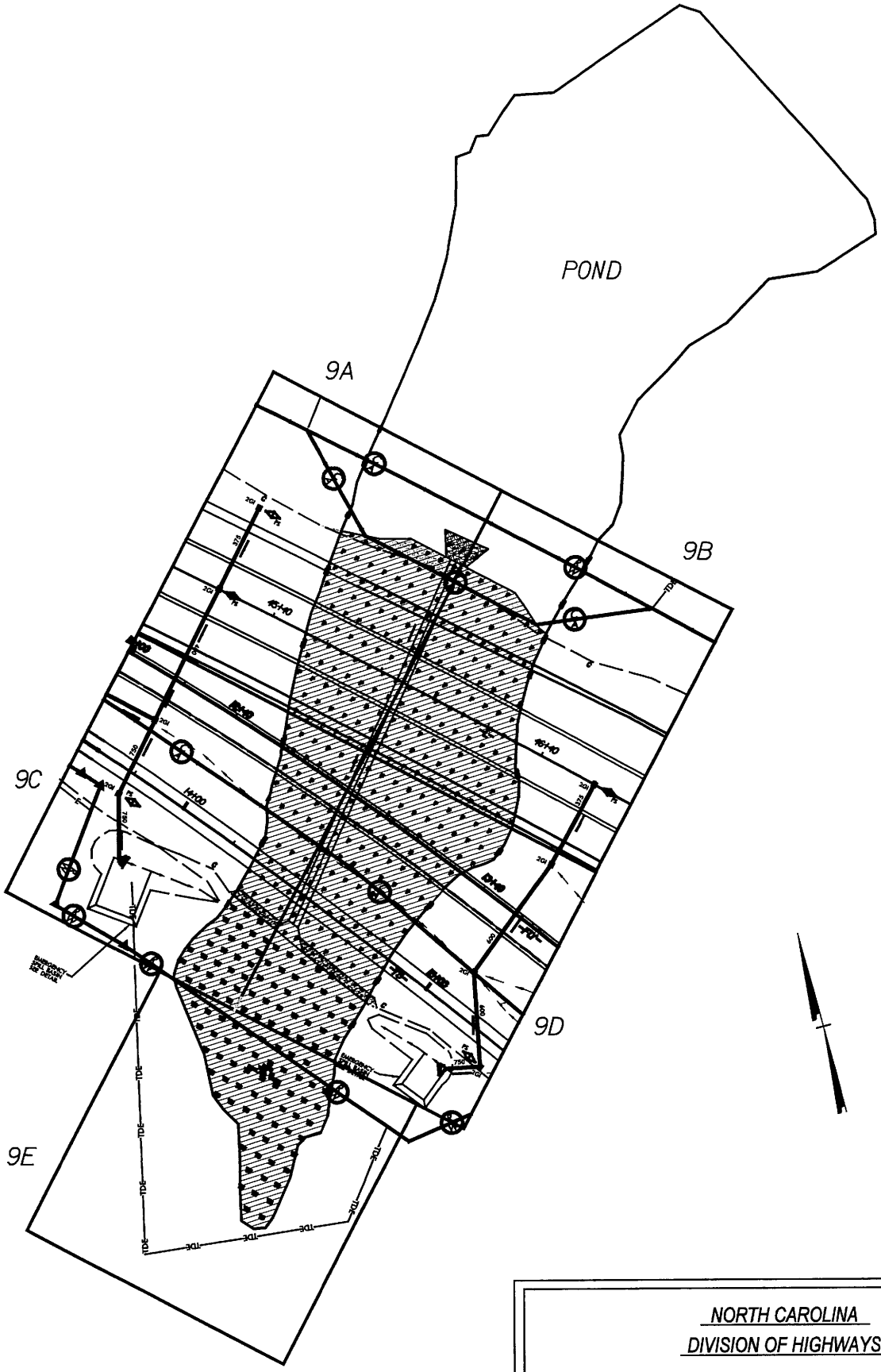
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 47 OF 48

8/9/2005
1:45:11 PM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_08b.psh



SHEET LAYOUT
PLAN VIEW
SITE 9

METRIC

20 0 30
SCALE IN METERS

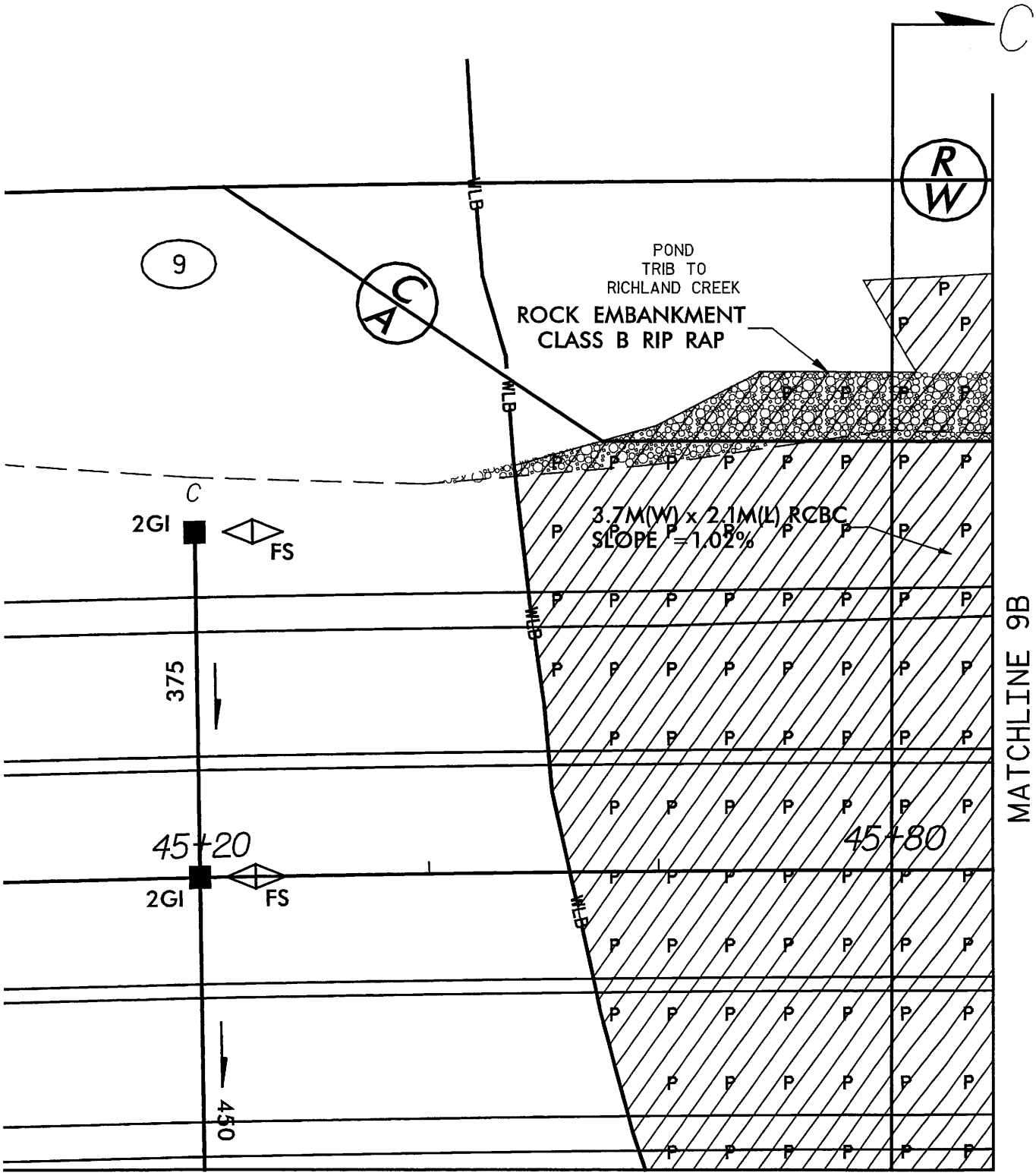
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 25 OF 74

1/19/2006
9:11:32 AM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_09_lay.psh



SHEET 9A

PLAN VIEW
SITE 9

LEGEND

—WLB— WETLAND

P/P DENOTES FILL IN POND

METRIC

5 0 10
SCALE IN METERS

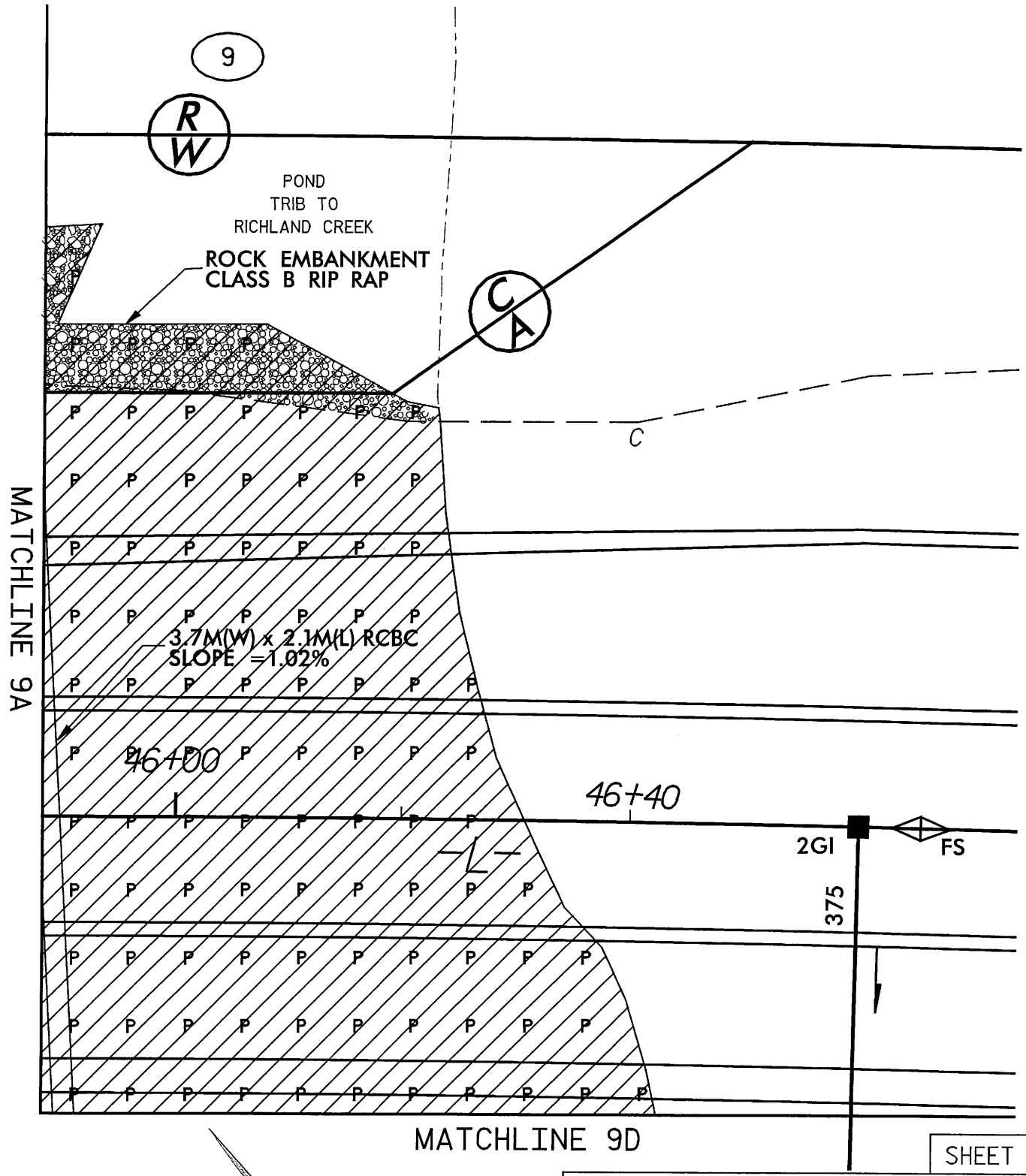
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 26 OF 74

01/09/2005
06:59:55 PM
r:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_09a.psh



SHEET 9B

PLAN VIEW
SITE 9

LEGEND

WLB WETLAND

P P DENOTES FILL IN POND

METRIC

5 0 10
SCALE IN METERS

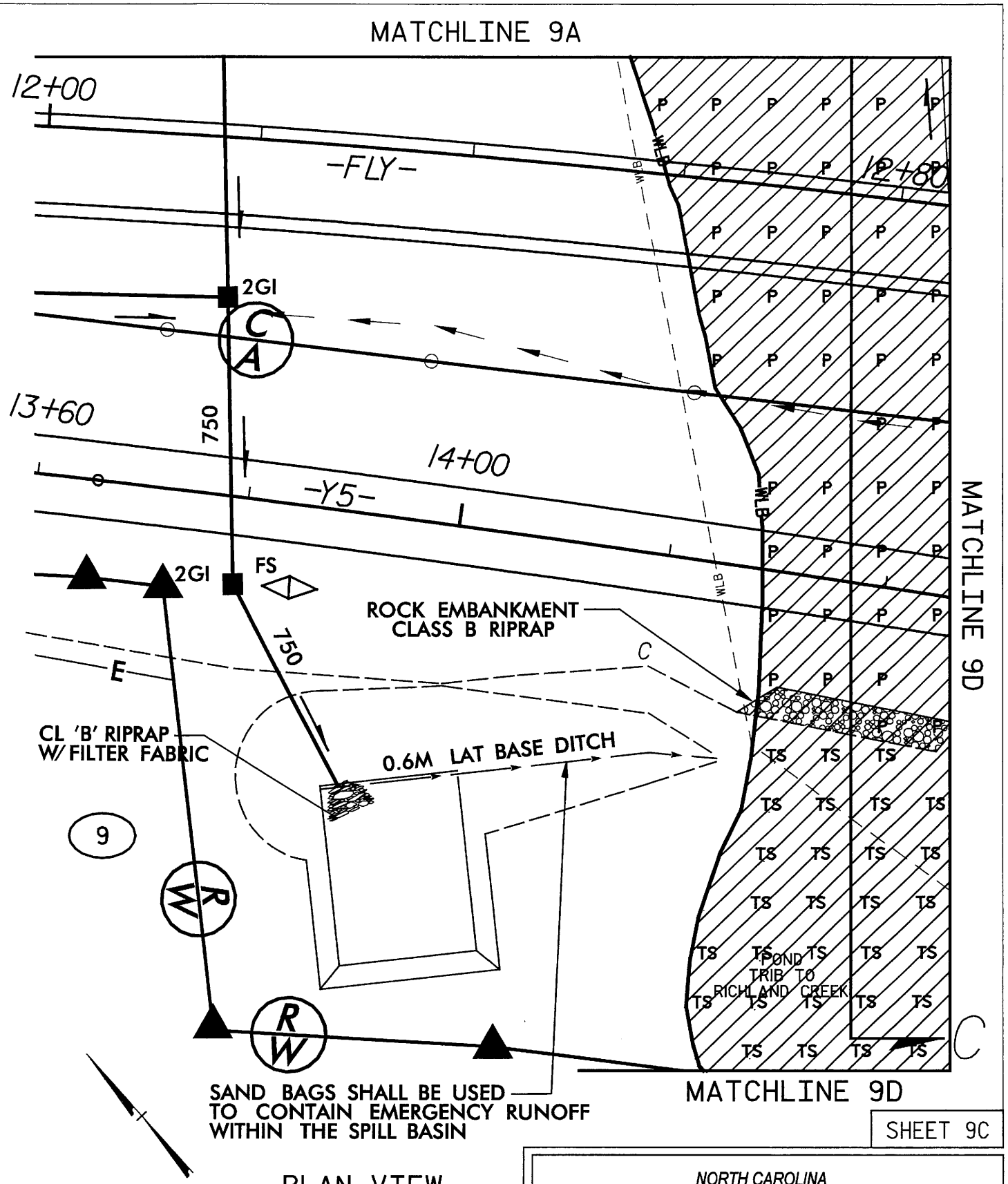
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 27 OF 74

01/09/2005
07:00:56 PM
r:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r-0609wet_09b.psh



SHEET 9C

PLAN VIEW
SITE 9

LEGEND

WLB — WETLAND

P / P — DENOTES FILL IN POND

TS / TS — DENOTES TEMPORARY FILL IN SURFACE WATER (POND)

METRIC

5 0 10
SCALE IN METERS

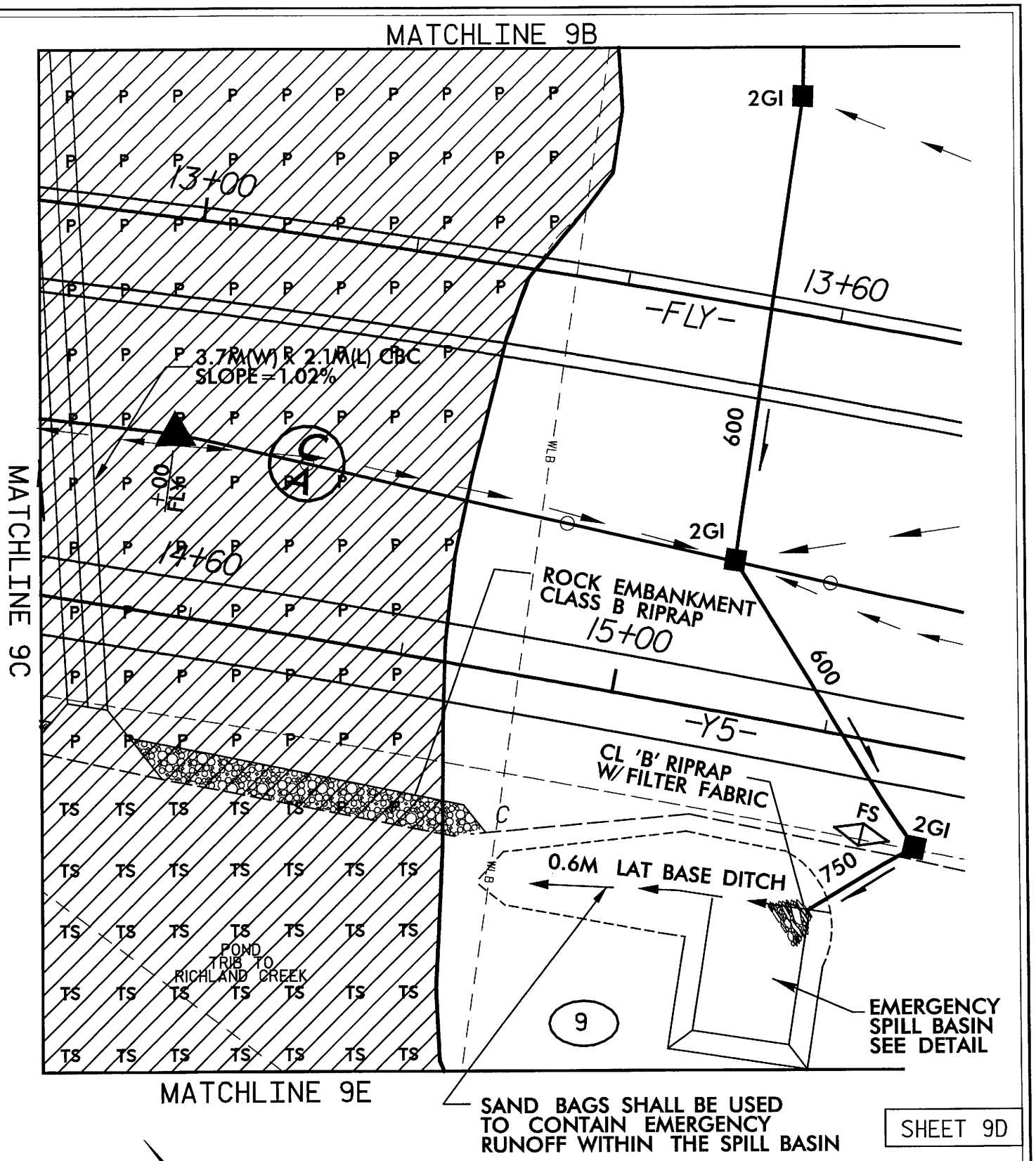
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 32 OF 74

/19/2006
:10:34 AM
:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_09c.psh



SHEET 9D

PLAN VIEW
SITE 9

LEGEND

—WLB— WETLAND

P P DENOTES FILL IN POND

TS TS DENOTES TEMPORARY FILL IN SURFACE WATER (POND)

METRIC

5 0 10
SCALE IN METERS

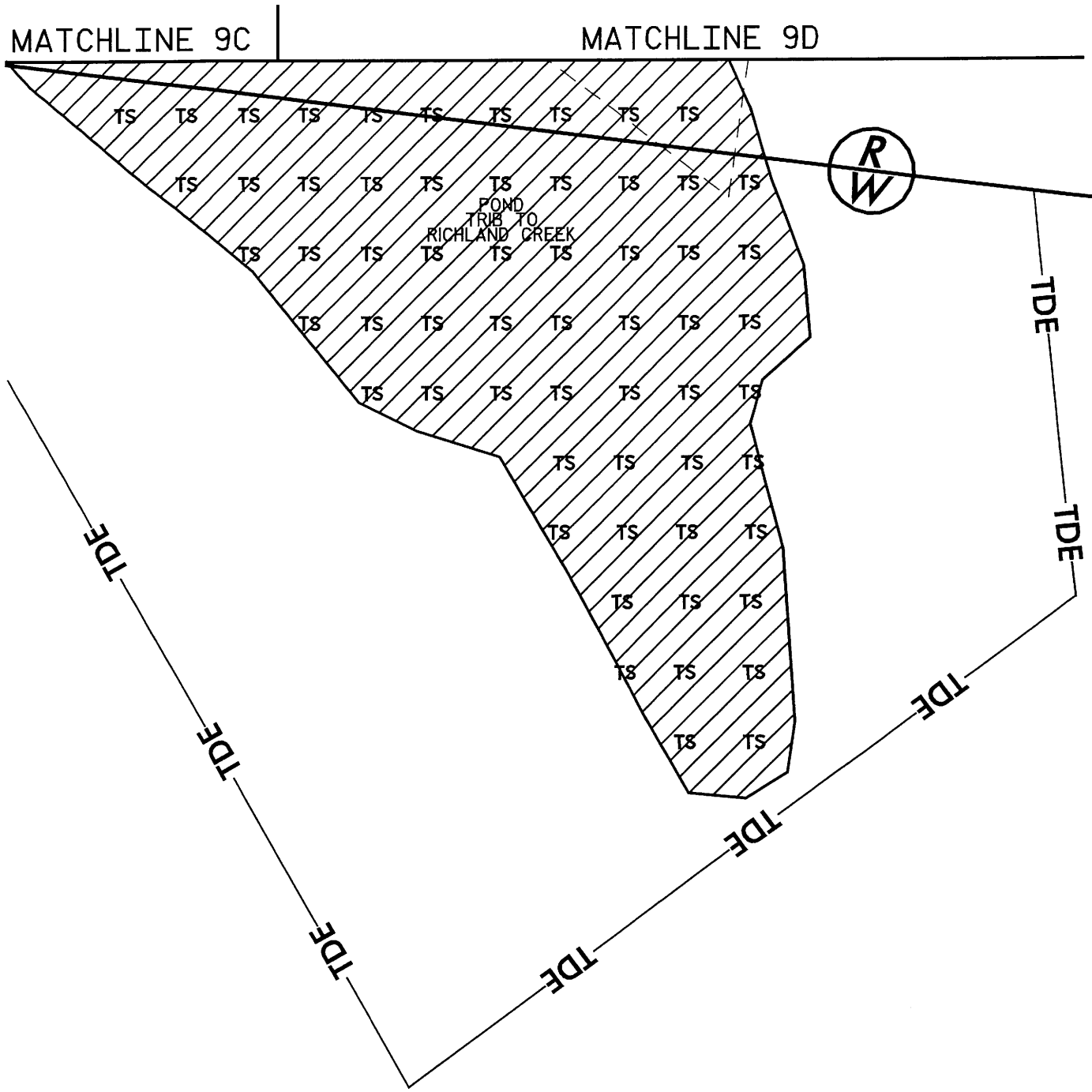
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 9 OF 14

/19/2006
1:54:33 AM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_09d.psh



PLAN VIEW
SITE 9

SHEET 9E

LEGEND

—WLB— WETLAND

TS/TS DENOTES TEMPORARY FILL IN SURFACE WATER (POND)

METRIC

5 0 10
SCALE IN METERS

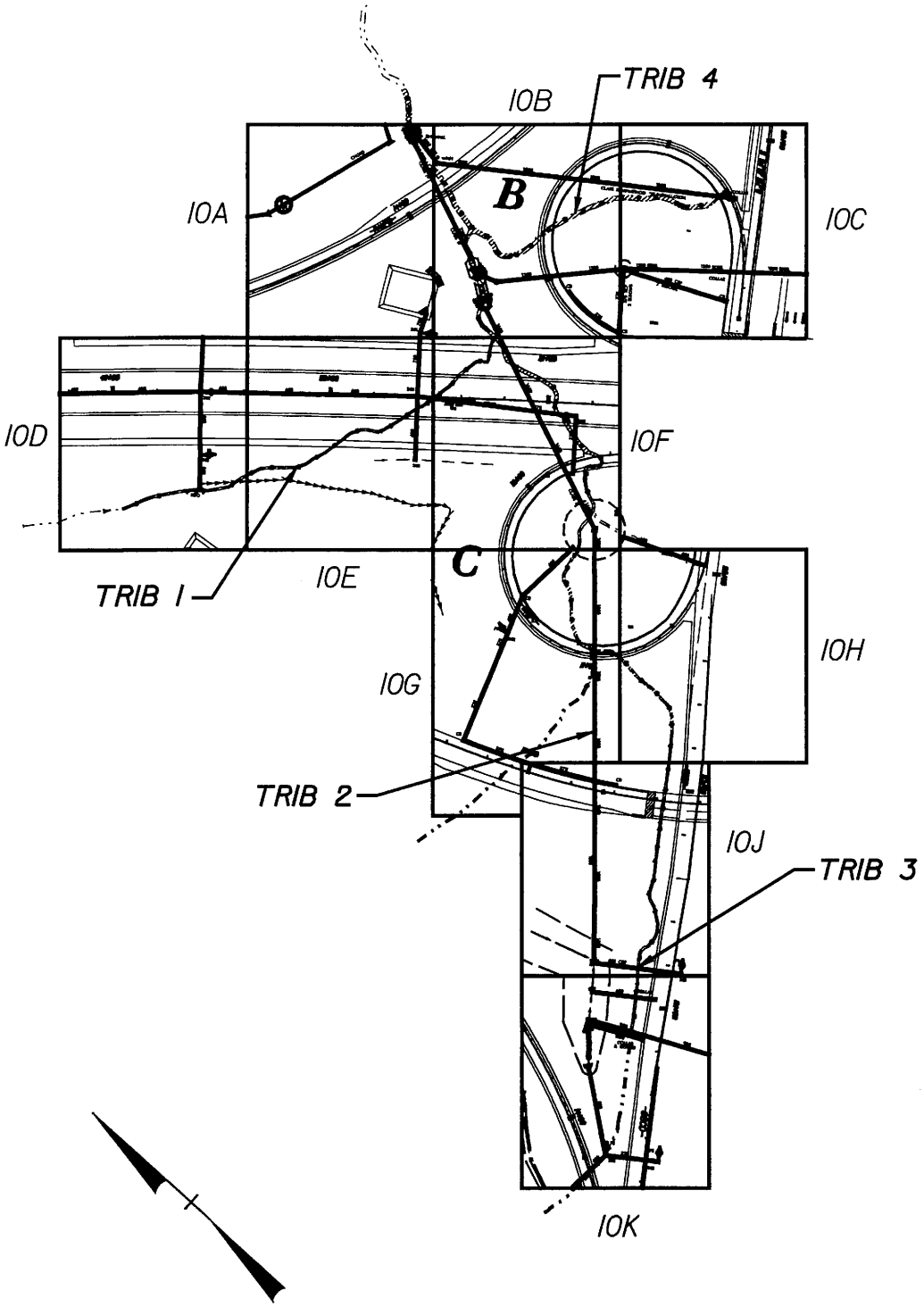
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 30 OF 74

/19/2006
:36:30 AM
:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_09e.psh



SHEET LAYOUT
PLAN VIEW
SITE 10

METRIC

30 0 30 60
SCALE IN METERS

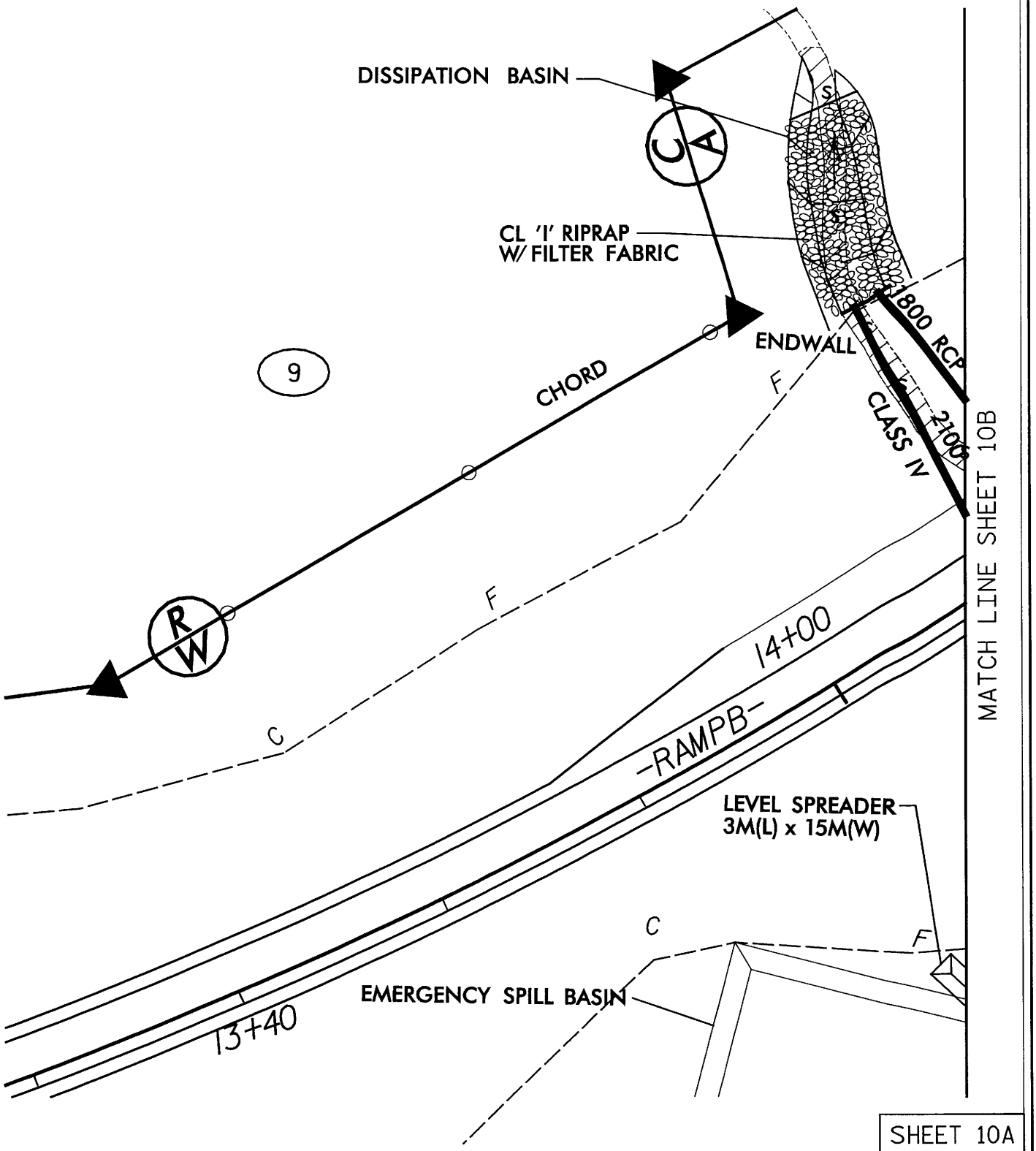
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 31 OF 74

8/9/2005
3:31:16 PM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_10_icy.psh



PLAN VIEW
SITE 10

METRIC

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

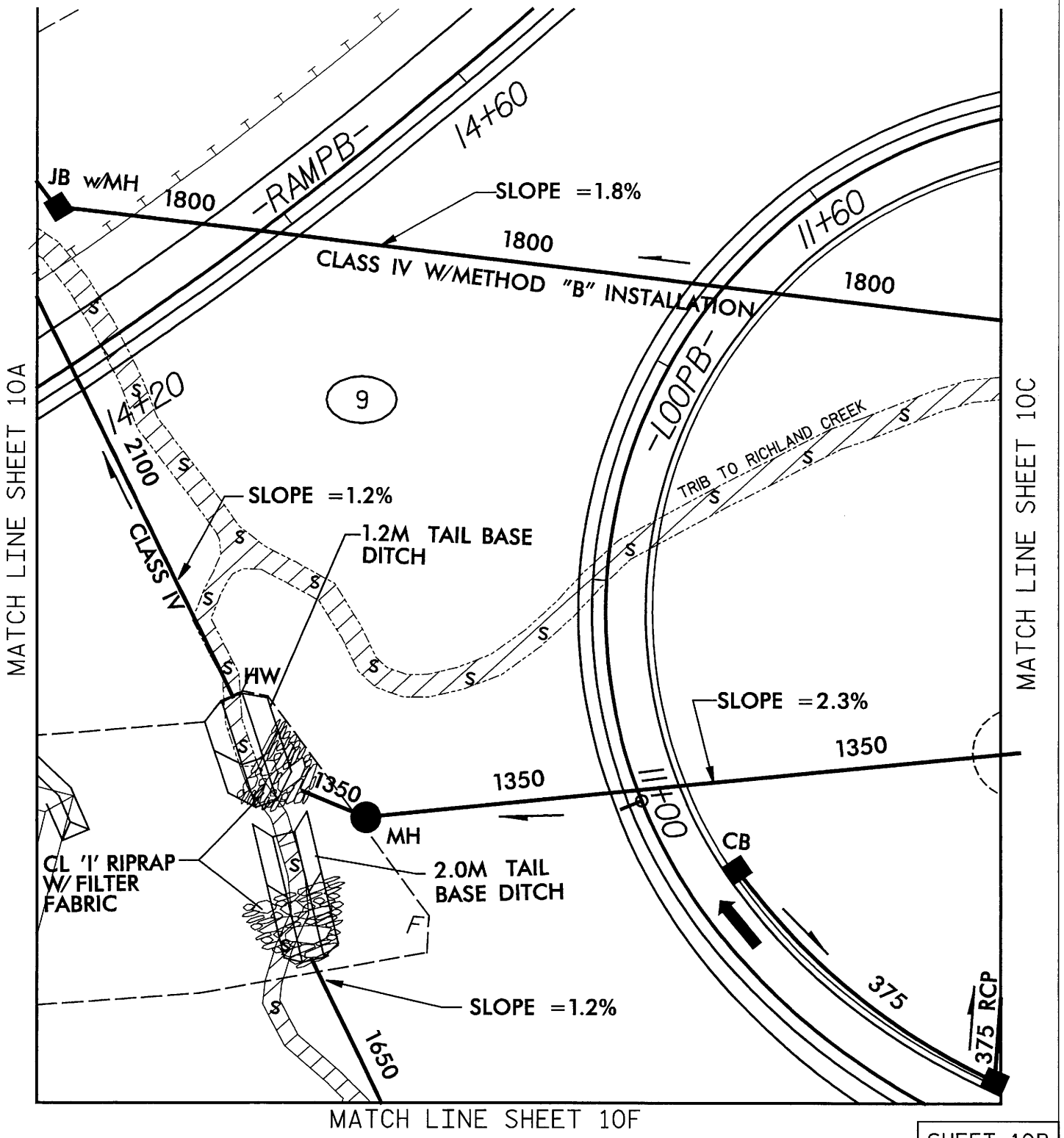
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 38 OF 74

/13/2006
2:09:09 PM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_10a.psh



SHEET 10B

PLAN VIEW
SITE 10

LEGEND

S S DENOTES SURFACE WATER LOSS

METRIC

5 0 10
SCALE IN METERS

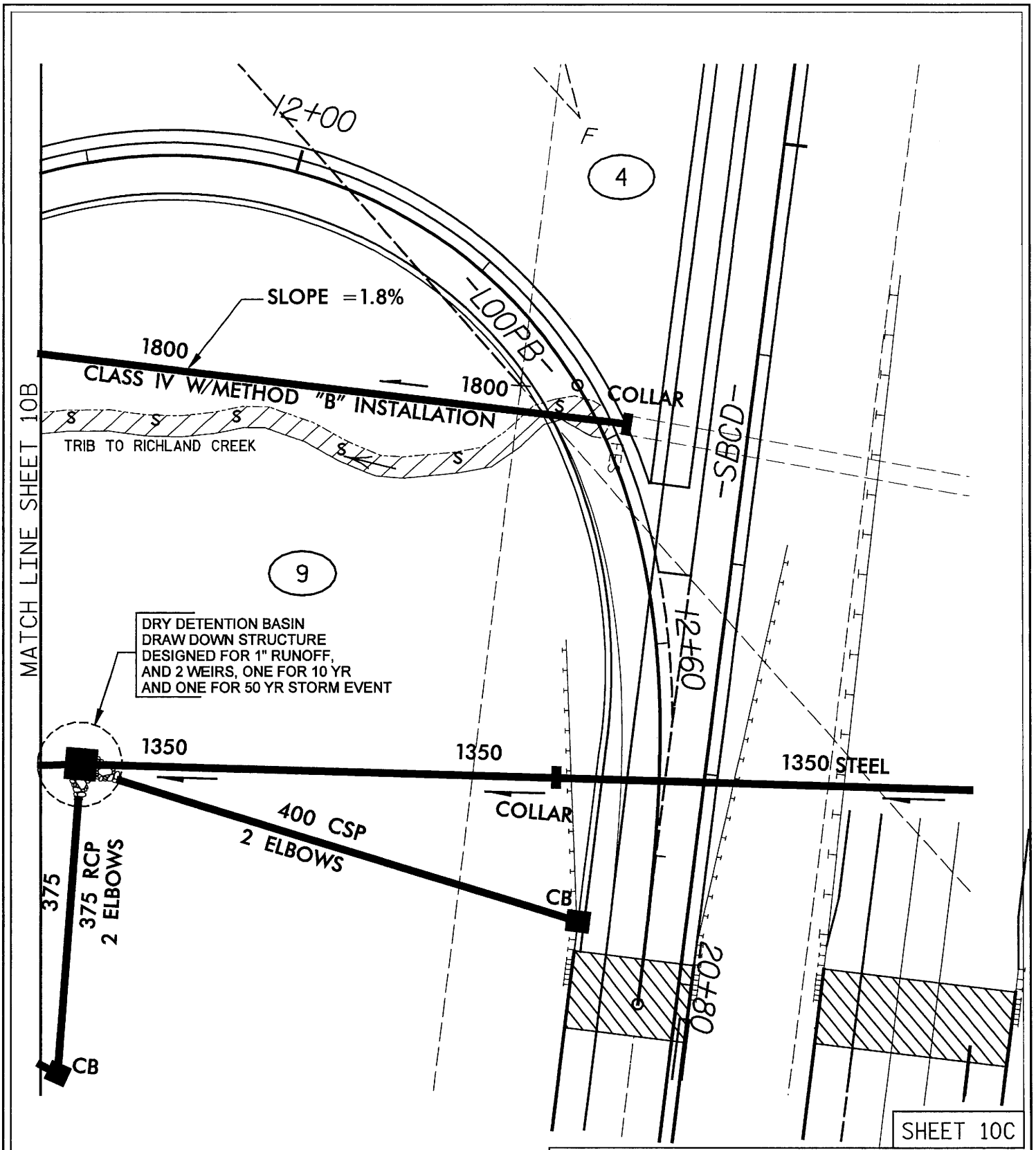
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 33 OF 74

1/19/2006
9:34:59 AM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_10b.psh



PLAN VIEW
SITE 10

LEGEND

DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

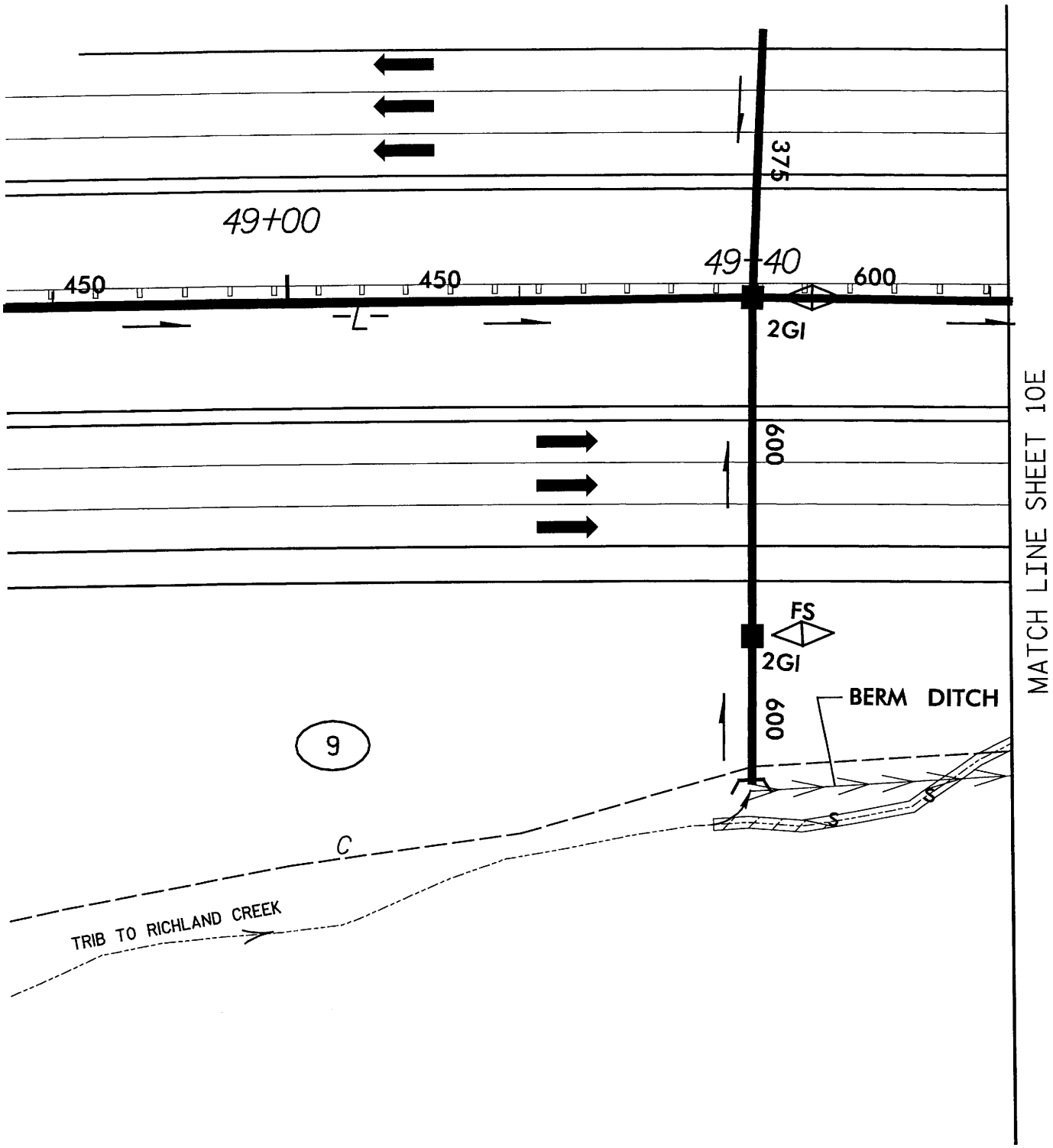
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 31 OF 74

1/19/2006
9:35:43 AM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_10c.psh



SHEET 10D

PLAN VIEW
SITE 10

LEGEND

S S DENOTES SURFACE WATER LOSS

METRIC

5 0 10
SCALE IN METERS

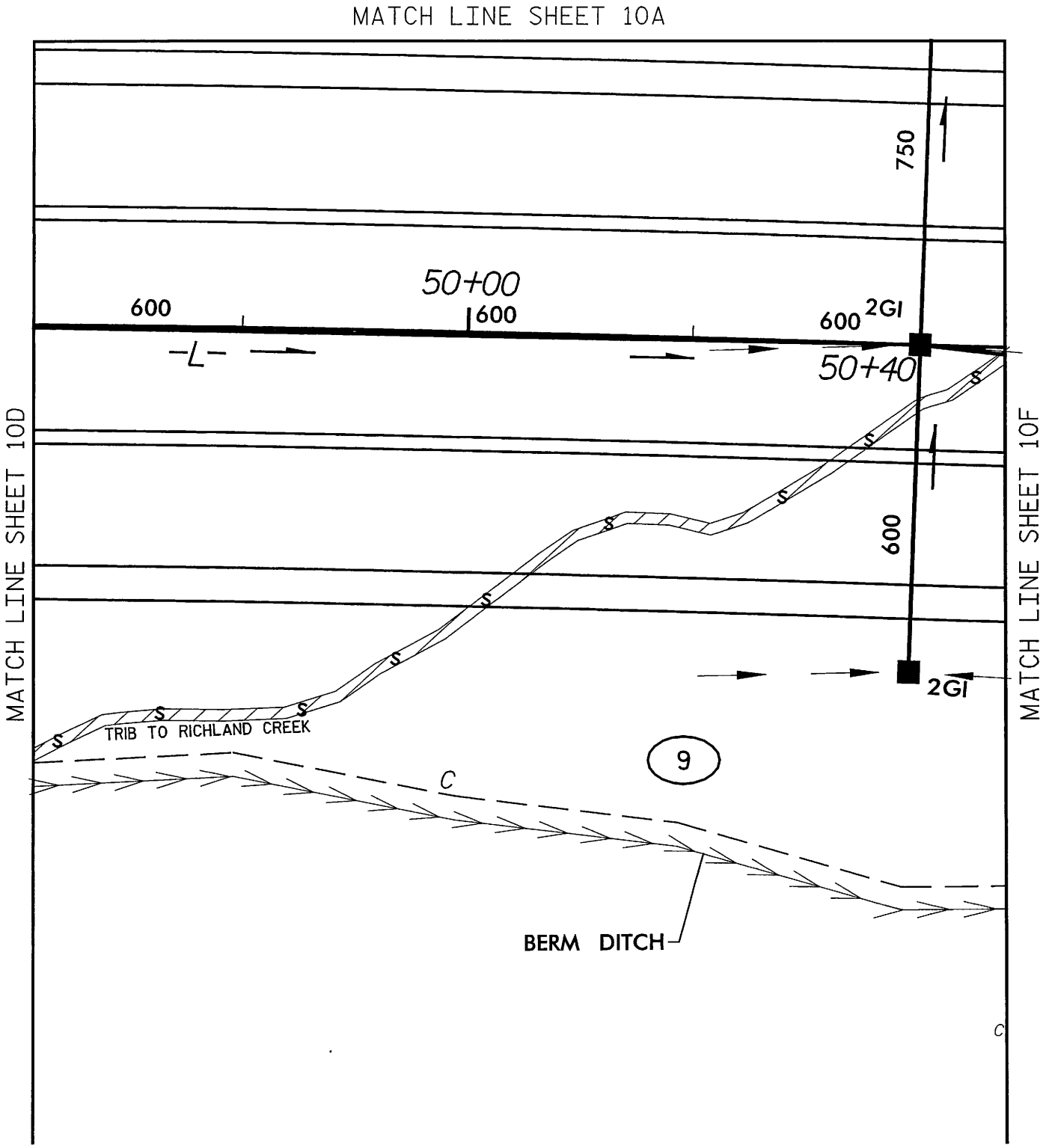
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 35 OF 74

13/2006
:20:03 PM
:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_10d.psh



SHEET 10E

PLAN VIEW
SITE 10

METRIC

5 0 10
SCALE IN METERS

LEGEND

S S DENOTES SURFACE WATER LOSS

NORTH CAROLINA
DIVISION OF HIGHWAYS

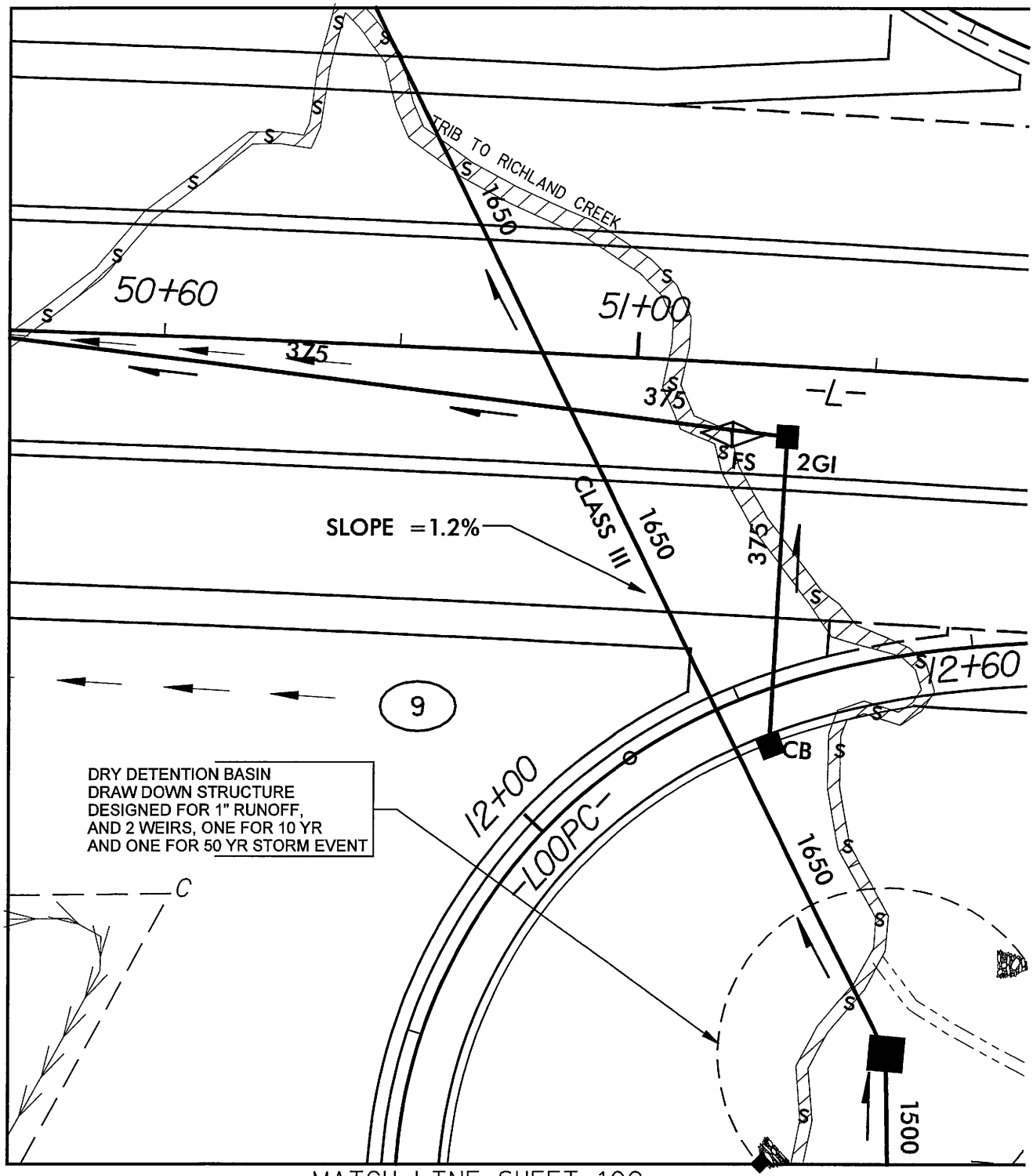
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 39 OF 47

1/6/2005
8:44:44 AM
r:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_10e.psh

MATCH LINE SHEET 10B



MATCH LINE SHEET 10E

MATCH LINE SHEET 10G

SHEET 10F

PLAN VIEW
SITE 10

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

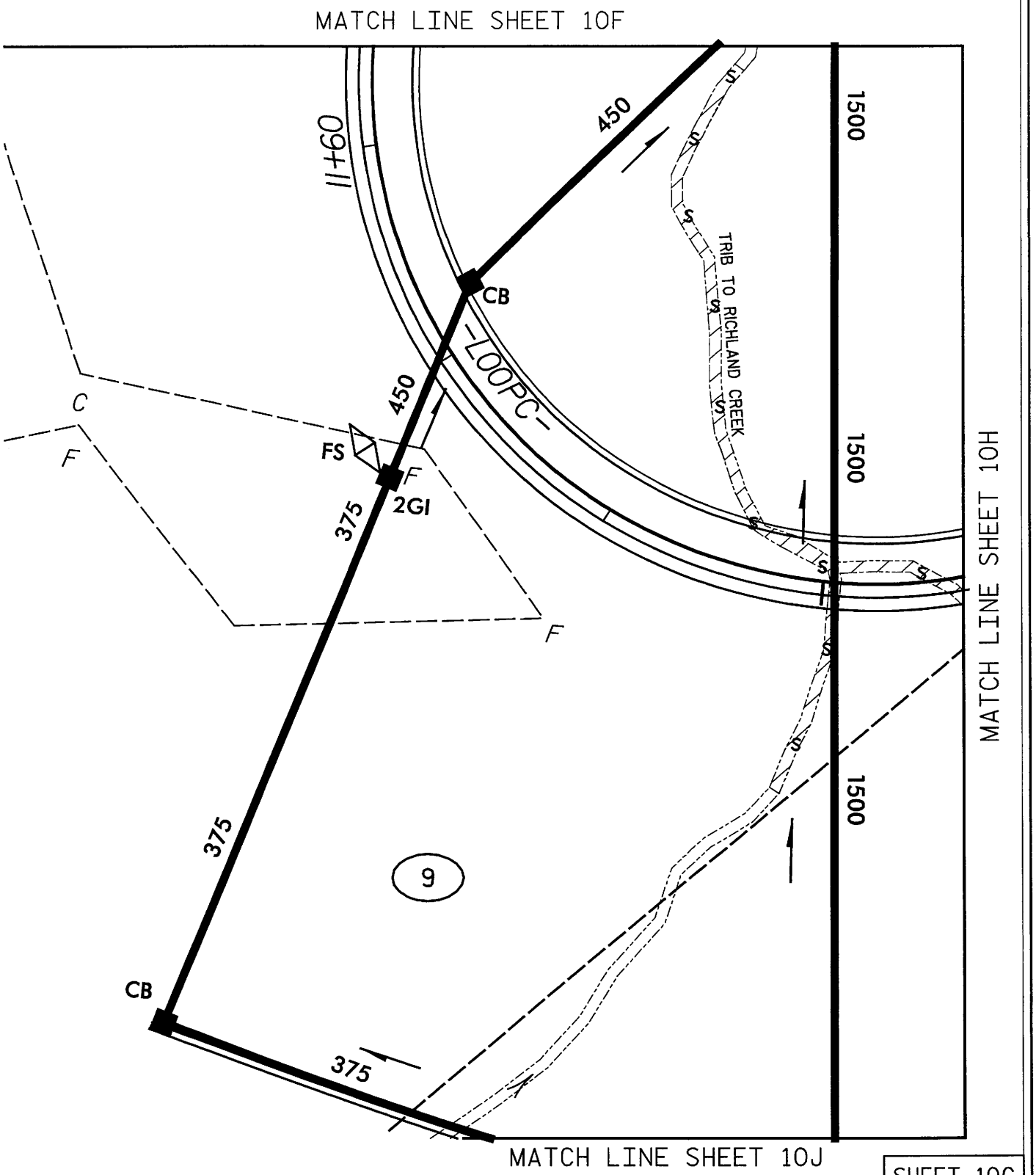
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 37 OF 74

01/09/2005
07:09:31 PM
r:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_l01f.psh



PLAN VIEW
SITE 10

LEGEND

S/S DENOTES SURFACE WATER LOSS

METRIC

5 0 10
SCALE IN METERS

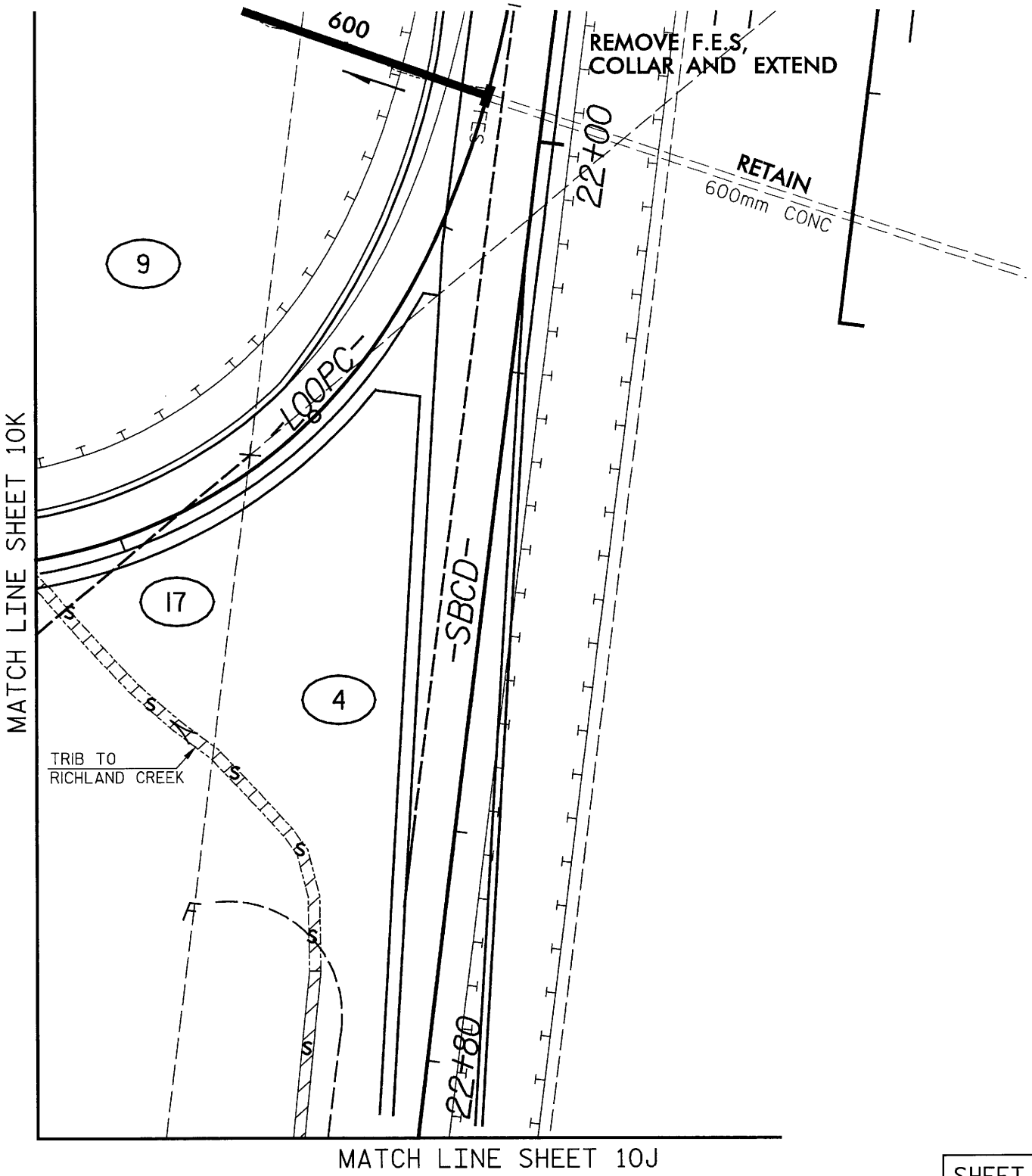
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 3 OF 14

1/13/2006
2:26:45 PM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_10g.psh



SHEET 10H

PLAN VIEW
SITE 10

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

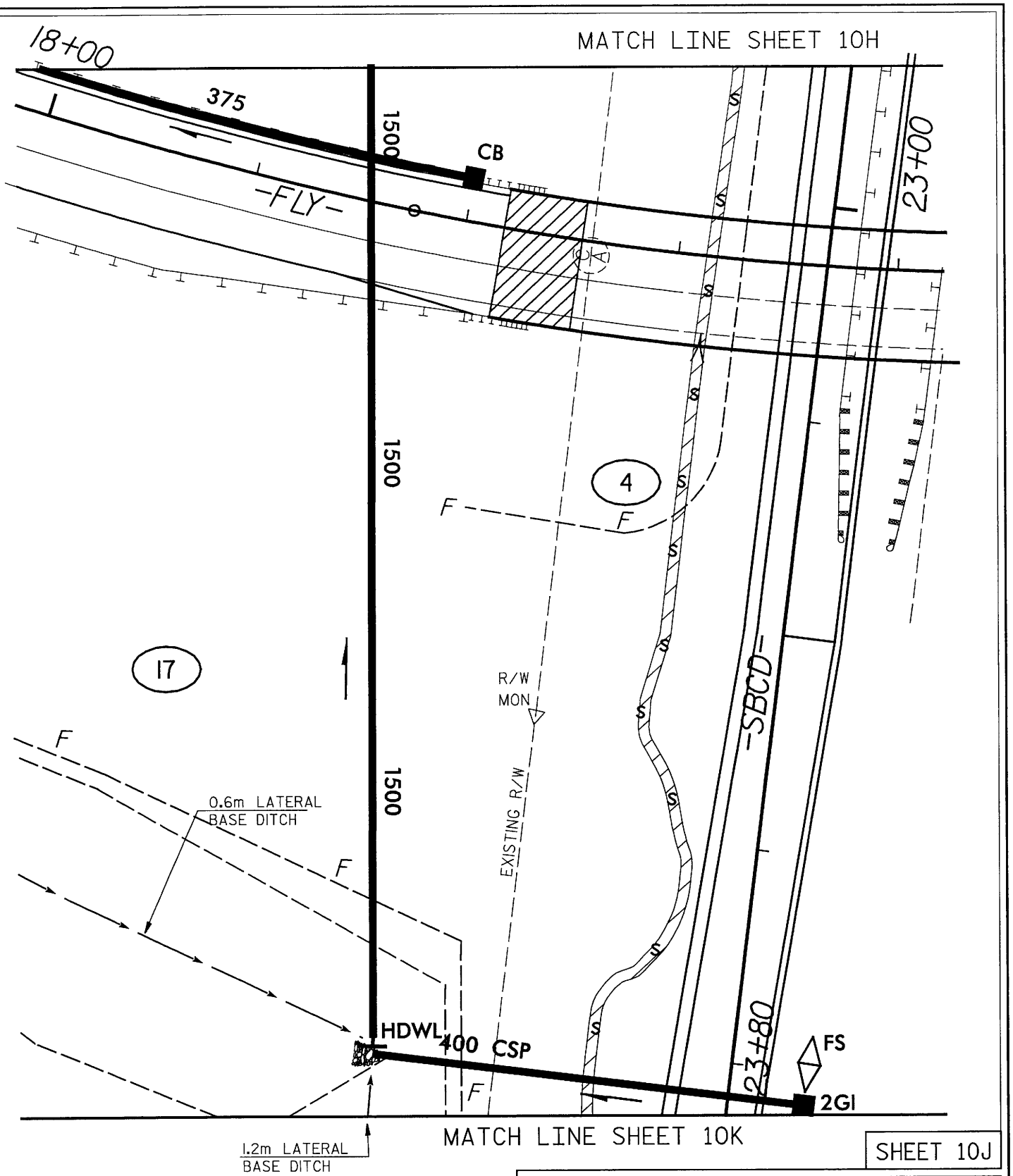
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 39 OF 74

1/13/2006
2:37:35 PM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r-0609wet_10h.PSH



SHEET 10J

PLAN VIEW
SITE 10

METRIC

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 40 OF 74

1/19/2006
9:38:22 AM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_10j.psh

MATCH LINE SHEET 10J

CL 'B' RIPRAP W/ FILTER FABRIC

450

COLLAR

450mm CMP

FES

24+00

CL 'B' RIPRAP W/ FILTER FABRIC

1050 STEEL

SLOPE =0.98%

17

13+60

1050

CLASS IV BORE & JACK UNDER Y6 (I-85)

1.2m LATERAL BASE DITCH

FES

COLLAR & EXTEND

1050mm CONC

SLOPE =0.98%

F

EXISTING R/W

4

C

600

-SBCD-

-RAMPC-

14+00

F

FS

10

R/W MON

375

FS

0.6M BASE LATERAL DITCH

600

2GI

2GI

24+80

F

SHEET 10K

PLAN VIEW
SITE 10

METRIC

LEGEND

DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

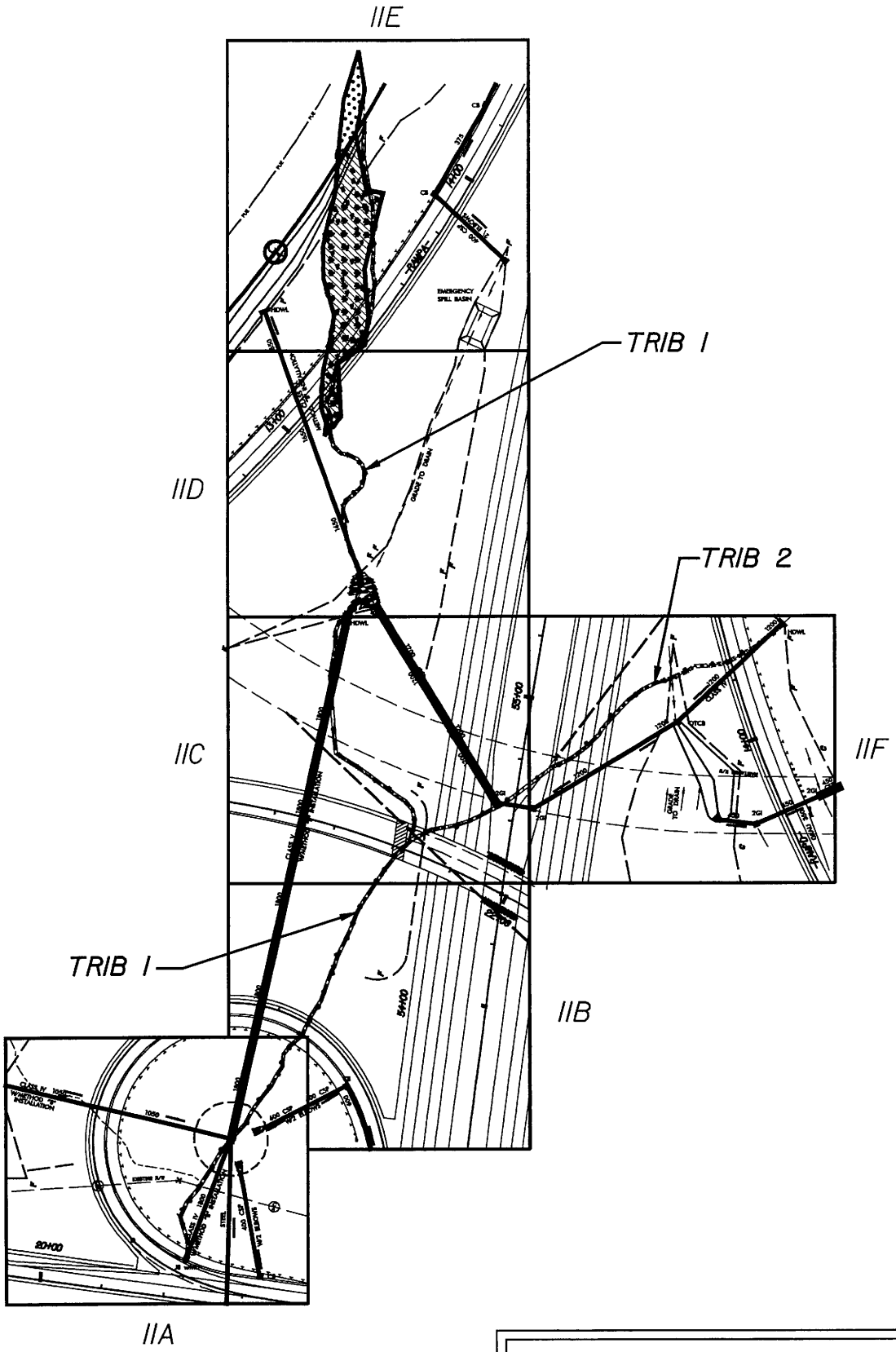
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 41 OF 74

/13/2006
:43:00 PM
t:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_10k.psh



SHEET LAYOUT
PLAN VIEW
SITE 11

METRIC

20 0 20 40
SCALE IN METERS

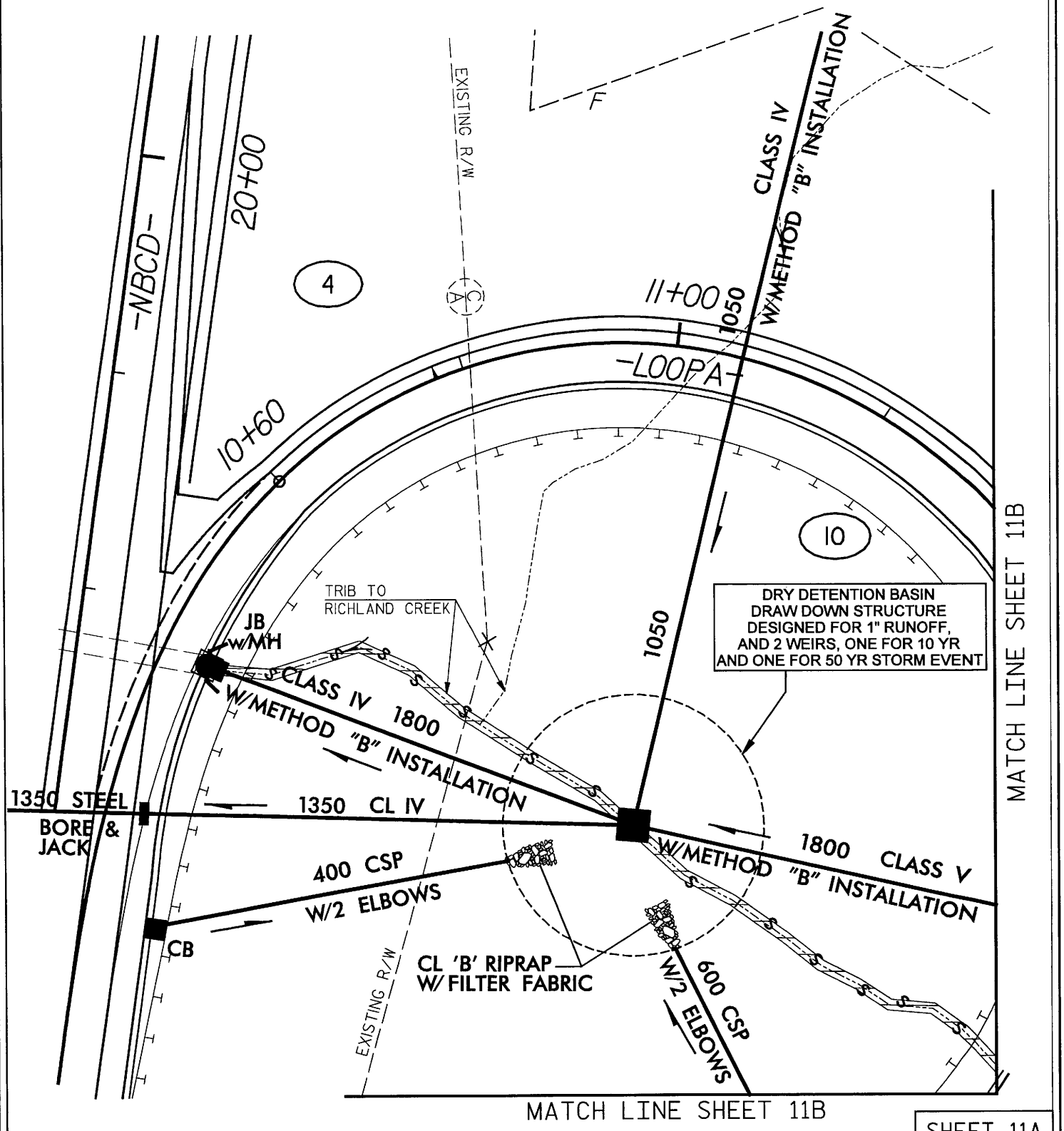
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 47 OF 74

1/13/2006
3:13:31 PM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_11_lay.psh



SHEET 11A

PLAN VIEW
SITE 11

METRIC

LEGEND

DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

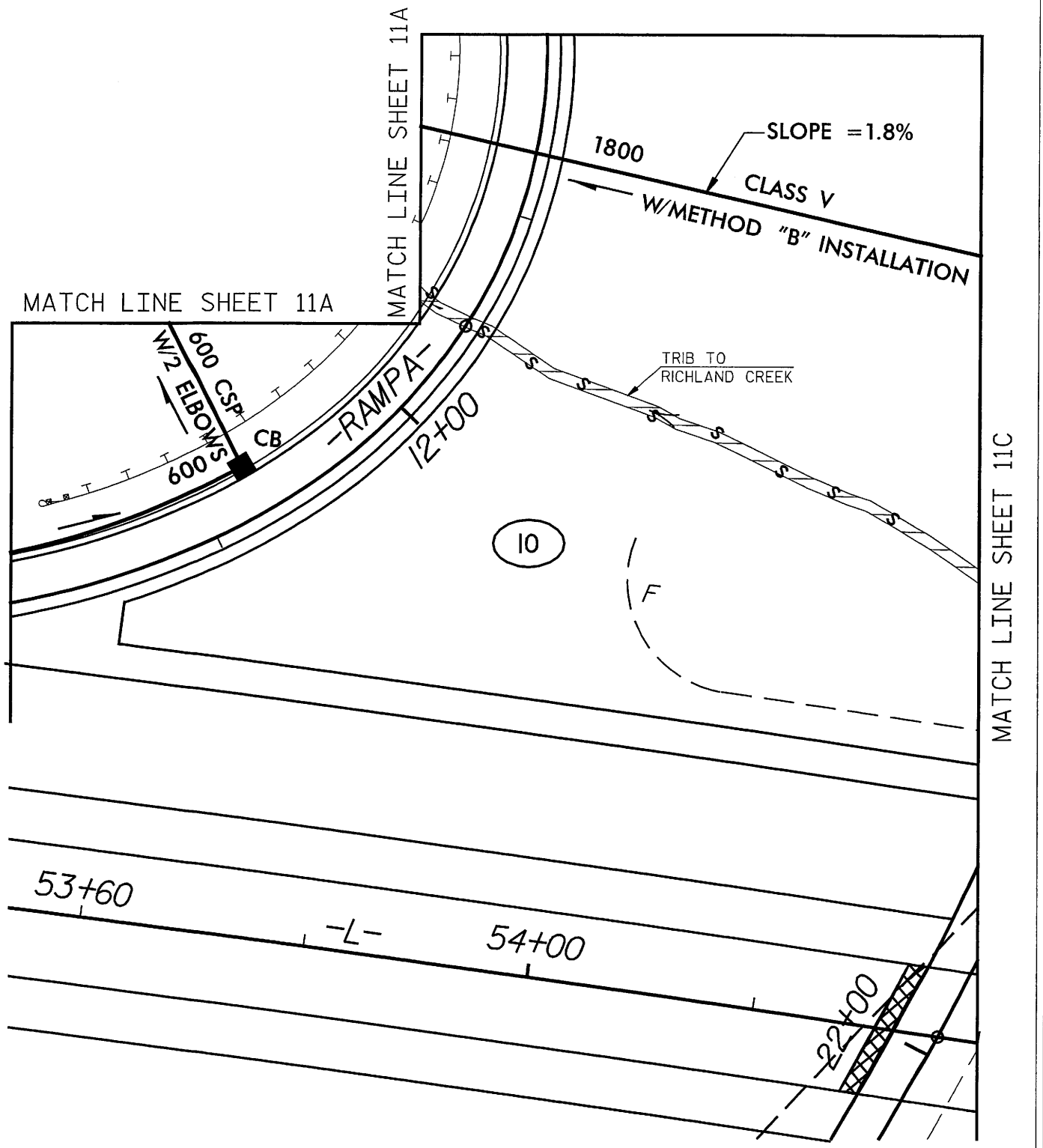
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 43 OF 74

/19/2006
:40:59 AM
:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_11A.psh



SHEET 11B

PLAN VIEW
SITE 11

LEGEND

S S DENOTES SURFACE WATER LOSS

METRIC

5 0 10
SCALE IN METERS

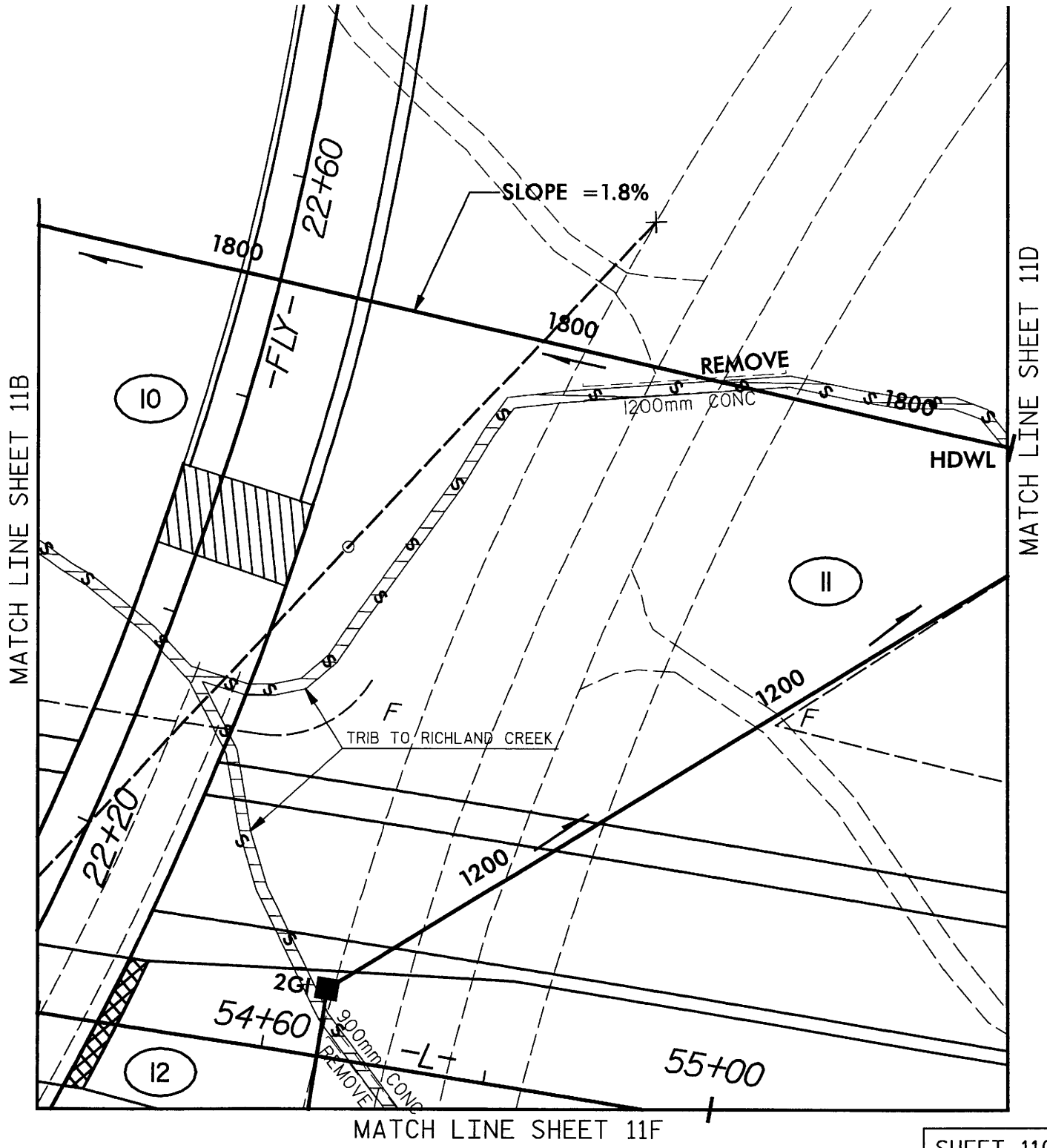
NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 44 OF 74

1/6/2005
9:56:37 AM
r:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_IIB.psh



SHEET 11C

PLAN VIEW
SITE 11

LEGEND

S S DENOTES SURFACE WATER LOSS

METRIC

5 0 10
SCALE IN METERS

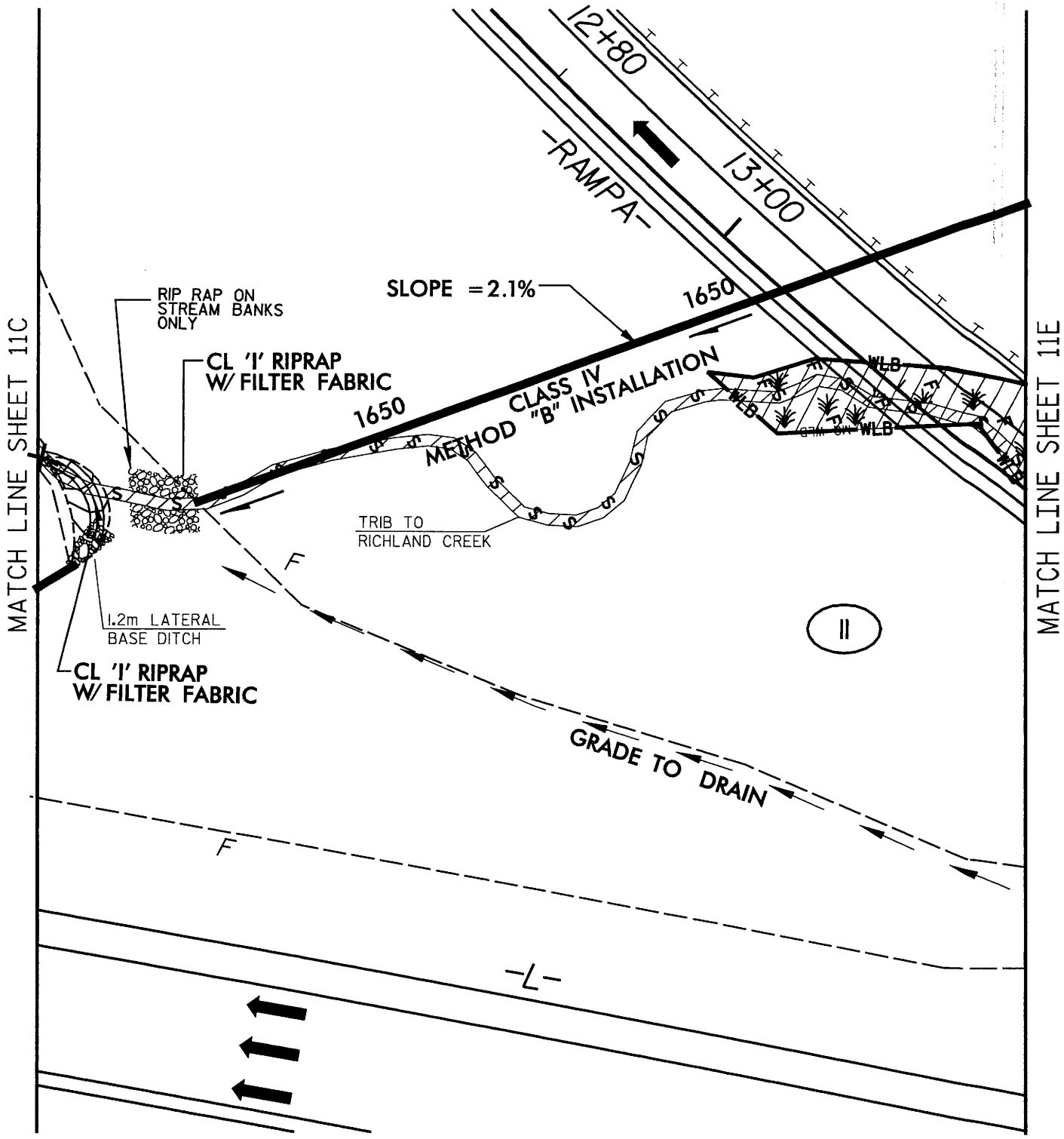
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 45 OF 79

8/9/2005
3:35:56 PM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_11C.psh



SHEET 11D

PLAN VIEW
SITE 11

LEGEND

F F DENOTES FILL IN WETLAND

S S DENOTES SURFACE WATER LOSS

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

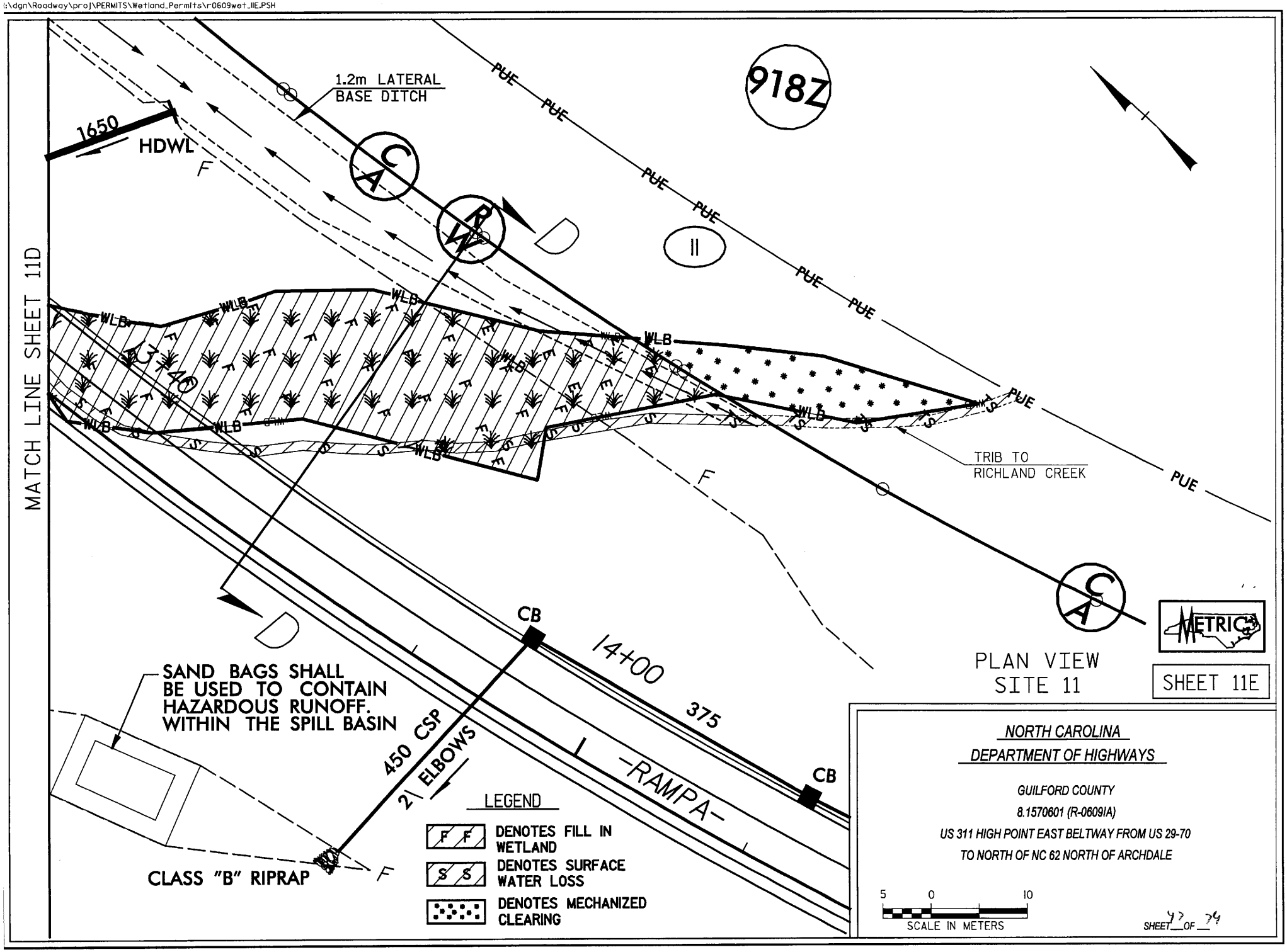
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

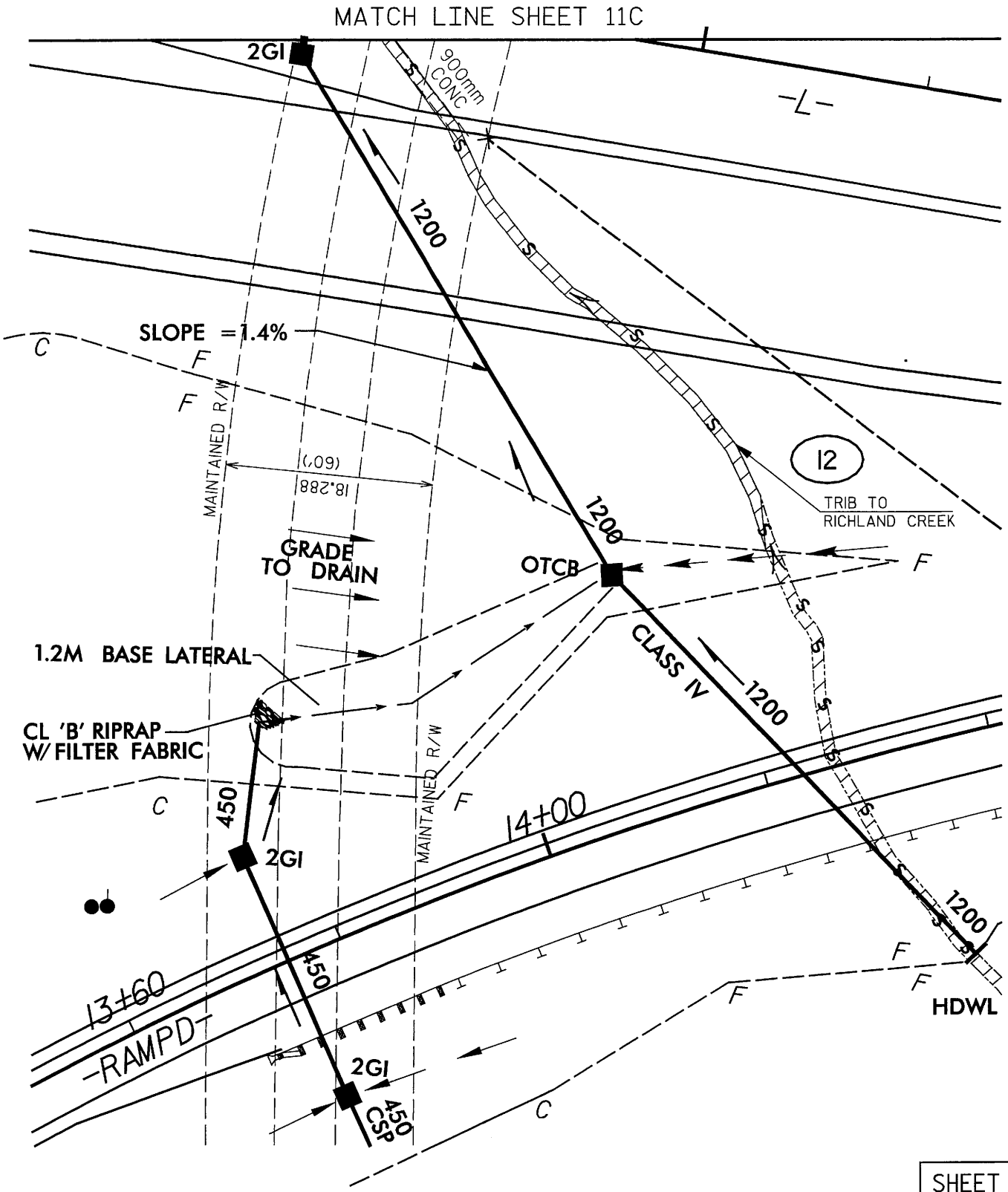
SCALE AS SHOWN

SHEET 46 OF 74

9/8/2005
10:05:43 AM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_11D.psh

/13/2006
:55:33 PM
:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_11E.PSH





SHEET 11F

PLAN VIEW
SITE 11

LEGEND

S S DENOTES SURFACE WATER LOSS

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

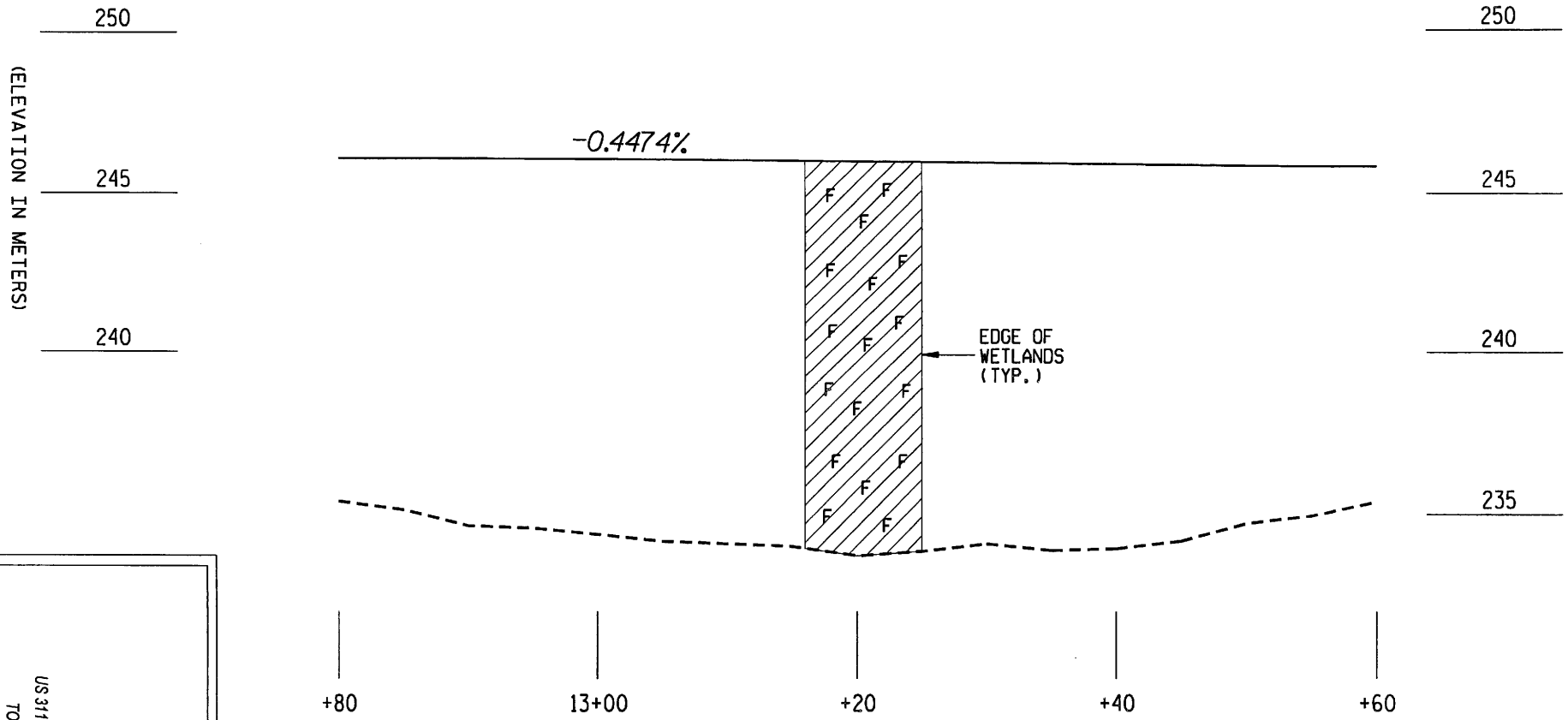
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 48 OF 74

1/13/2006
2:57:24 PM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_11F.psh

07/17/2002
01:41:03 PM
g:\NCT\029\010\PLANS\PERMITS\Wetland_Permits\r0609wet_11.PFL



SITE 11
-RAMPA- LINE PROFILE

LEGEND

WLB WETLAND

F F DENOTES FILL IN WETLAND

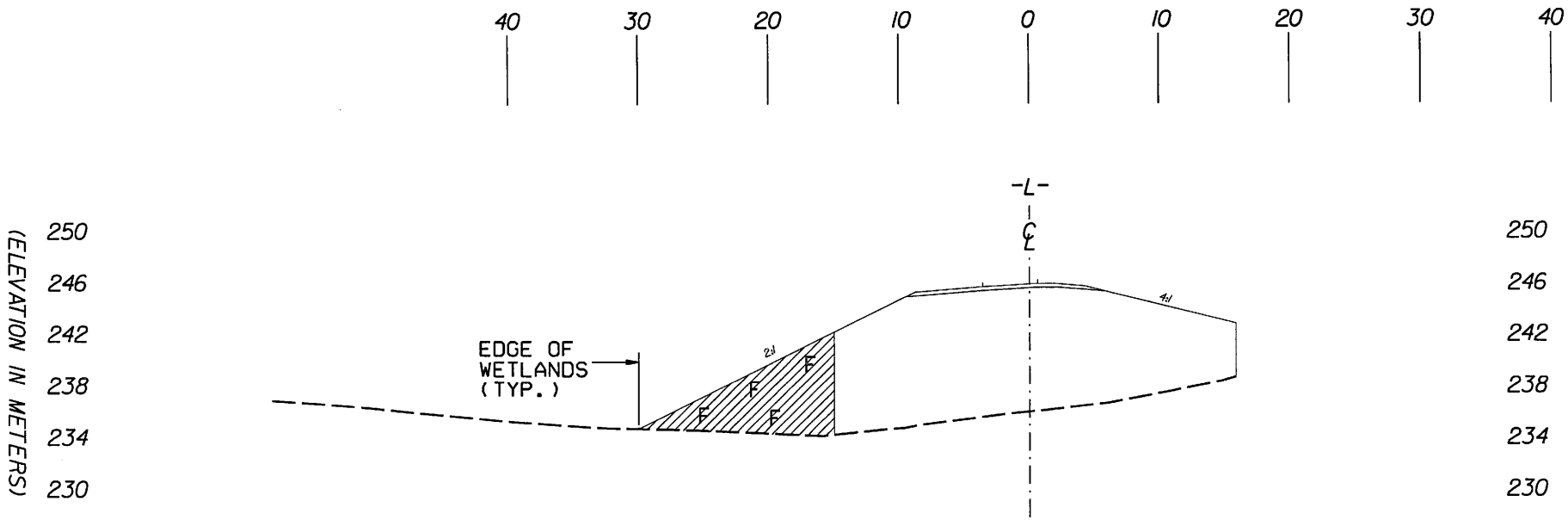
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 46 OF 74

07/17/2002
01:41:30 PM
g:\NCT\029\010\PLANS\PERMITS\Wetland_Permits\r0609wet_II.xsc



SECTION "D-D"

SITE II

CROSS SECTION
(-RAMPA- 13+60)

METRIC

5 0 10

LEGEND

WLB — WETLAND

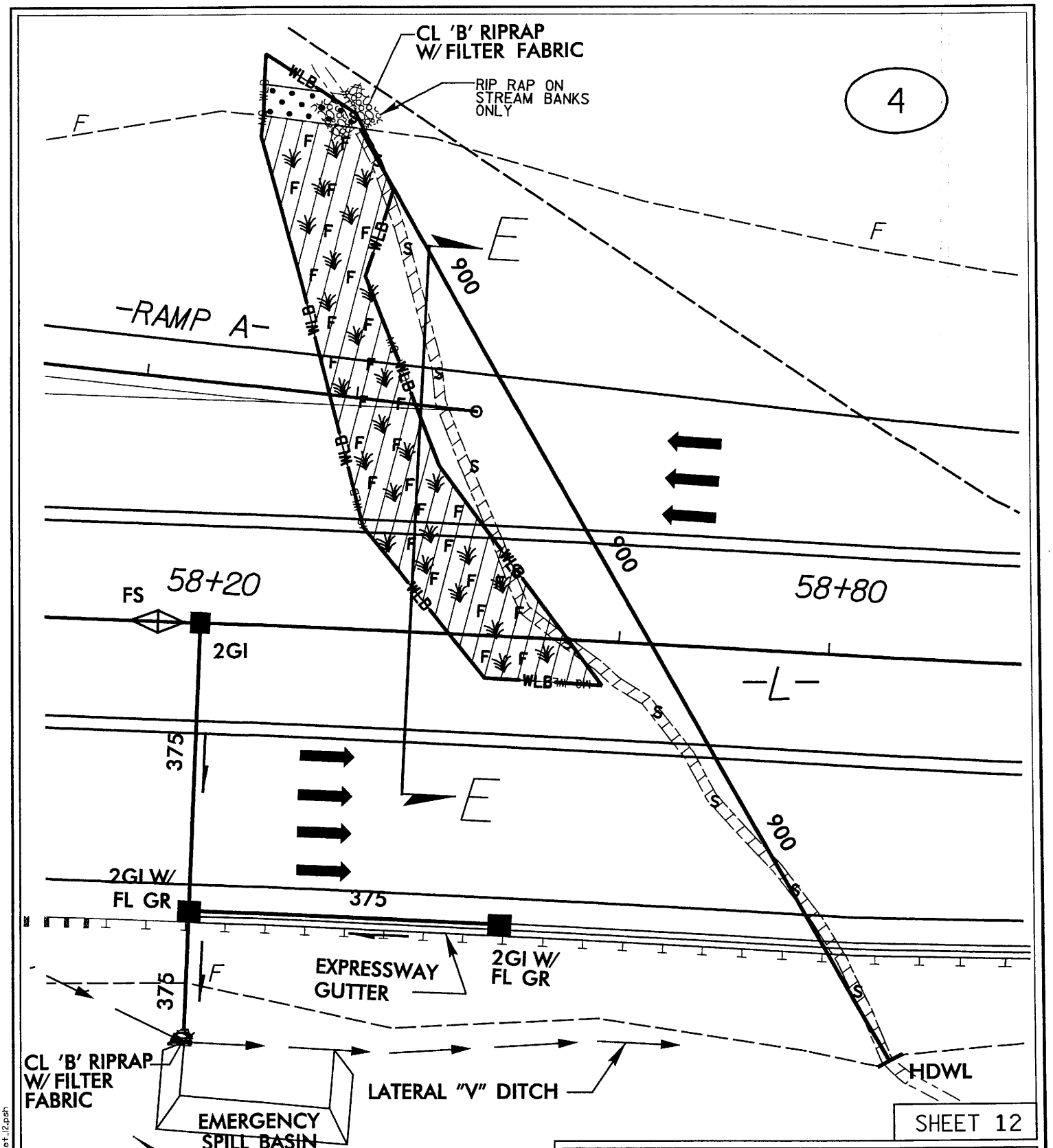
F F DENOTES FILL IN WETLAND

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

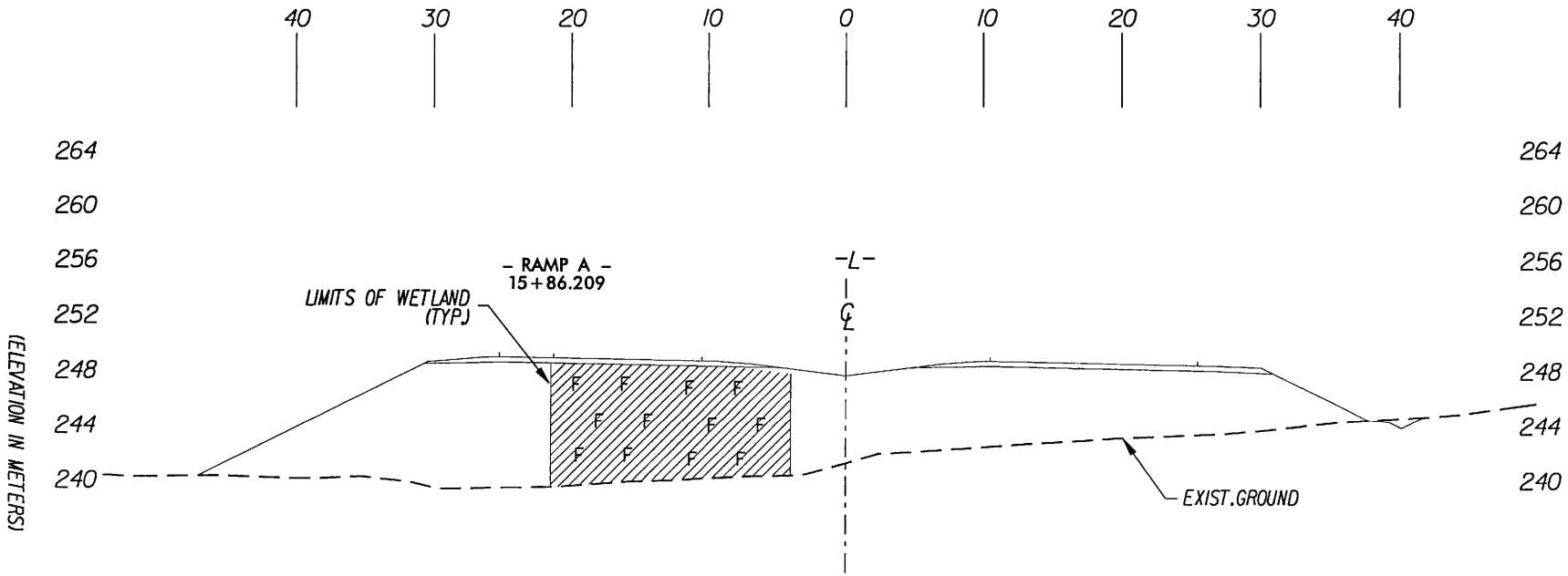
SCALE AS SHOWN

SHEET 50 OF 74



/8/2005
:57:48 AM
:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r-0609wet_12.psh

02/20/2004
02:10:30 PM
p:\Hydro\R-6091A\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_12.xsc



SECTION "E-E"

SITE 12

CROSS SECTION
(-L- 58+40)

LEGEND

F F DENOTES FILL IN WETLAND

METRIC

5 0 10

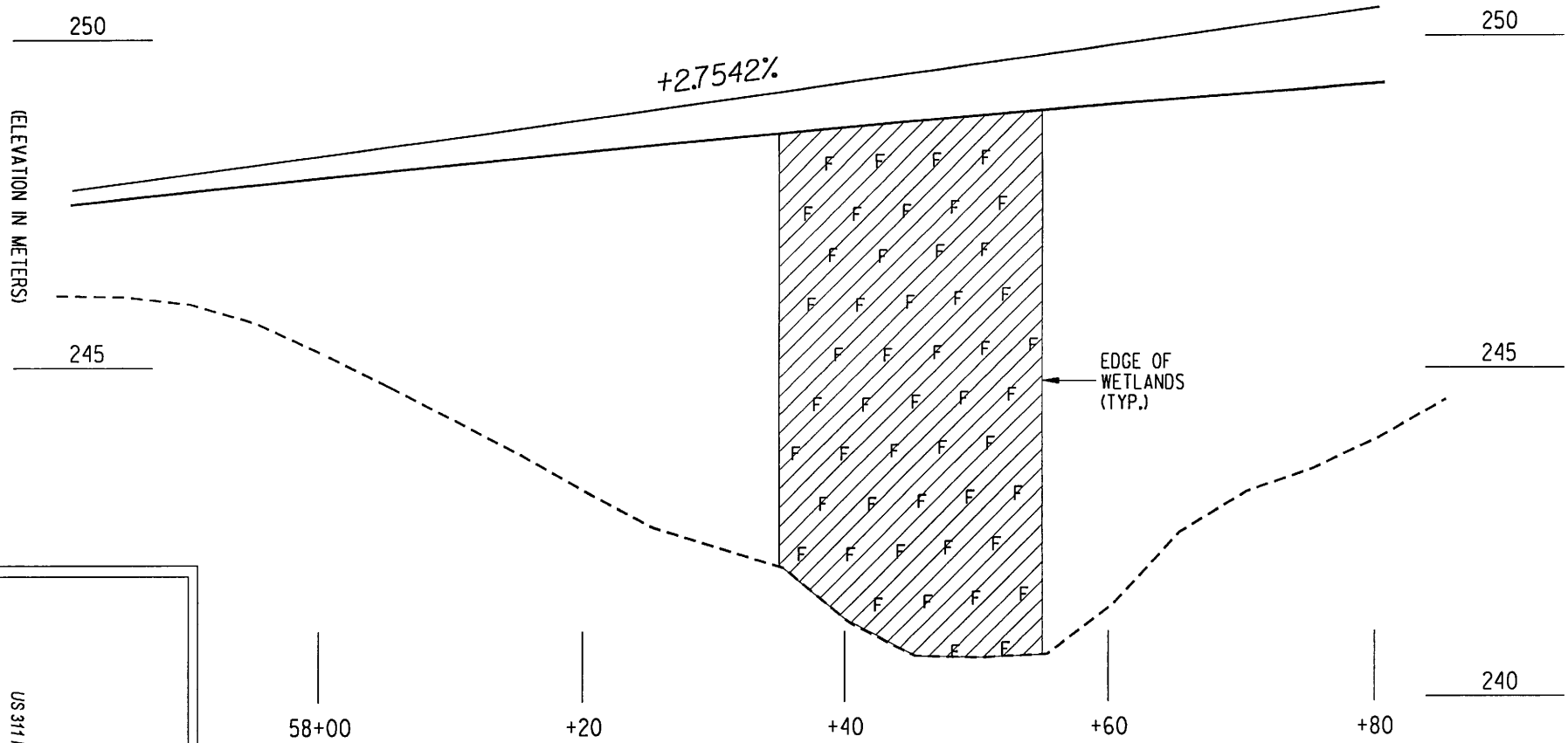
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 12 OF 14

02/20/2004
02:02:00 PM
p:\Hydro\R-6091A\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_12.pfl



SITE 12
-L- LINE PROFILE

LEGEND

F F DENOTES FILL IN WETLAND

METRIC

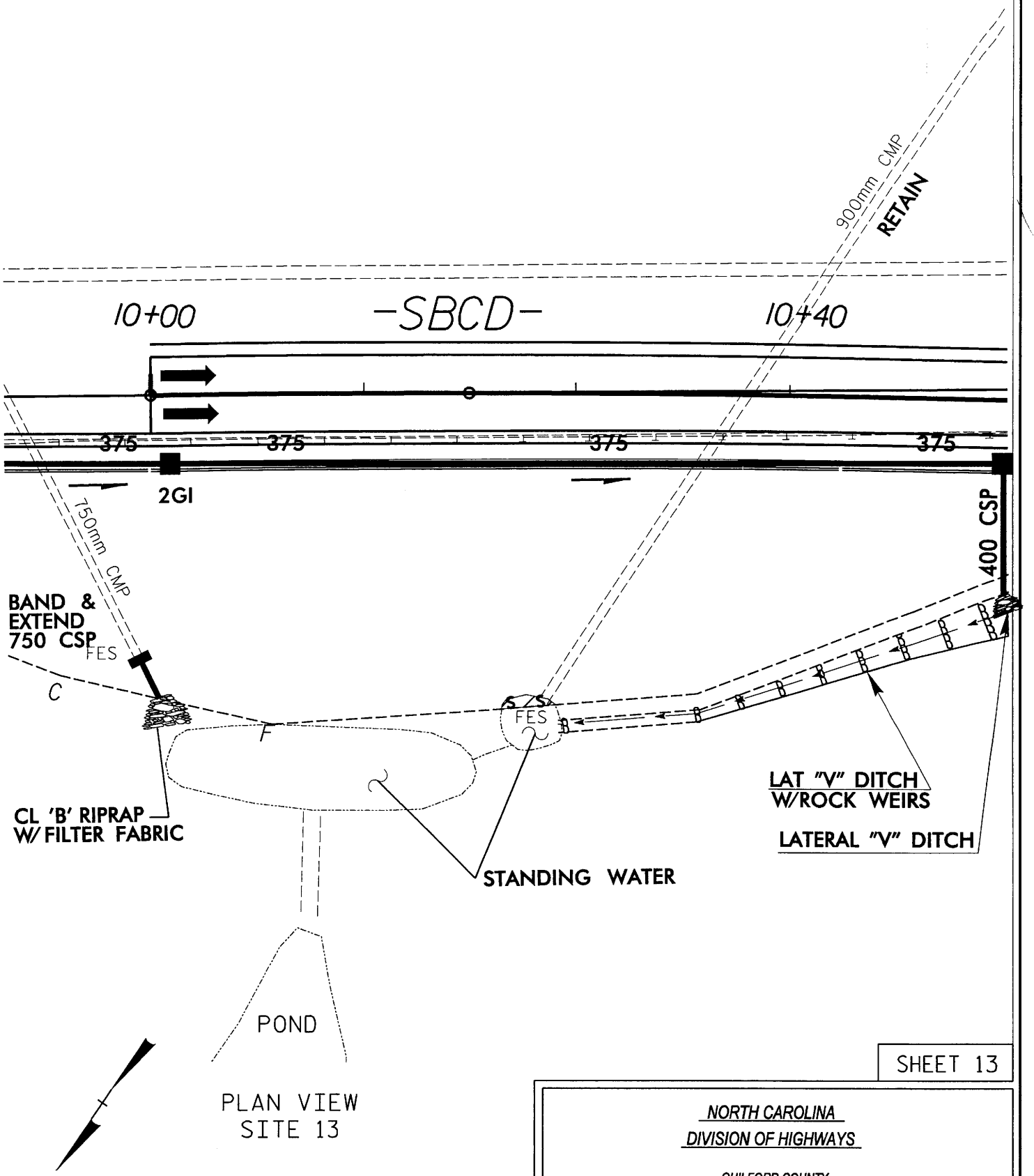
5 0 10

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 53 OF 94



PLAN VIEW
SITE 13

SHEET 13

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

METRIC

LEGEND

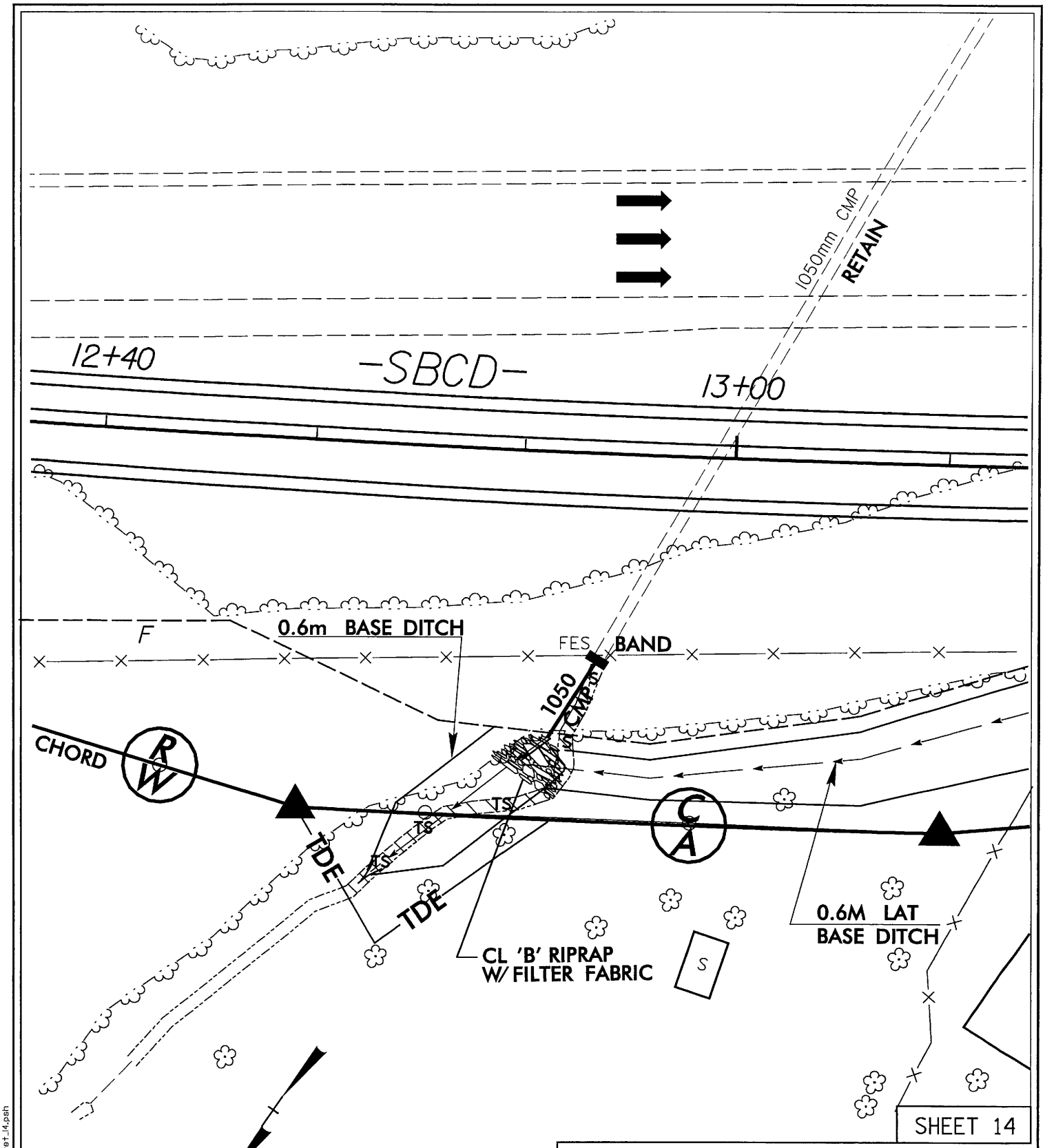
S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

SCALE AS SHOWN

SHEET 54 OF 74

8/10/2005
9:22:34 AM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_13.psh



PLAN VIEW
SITE 14

METRIC

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

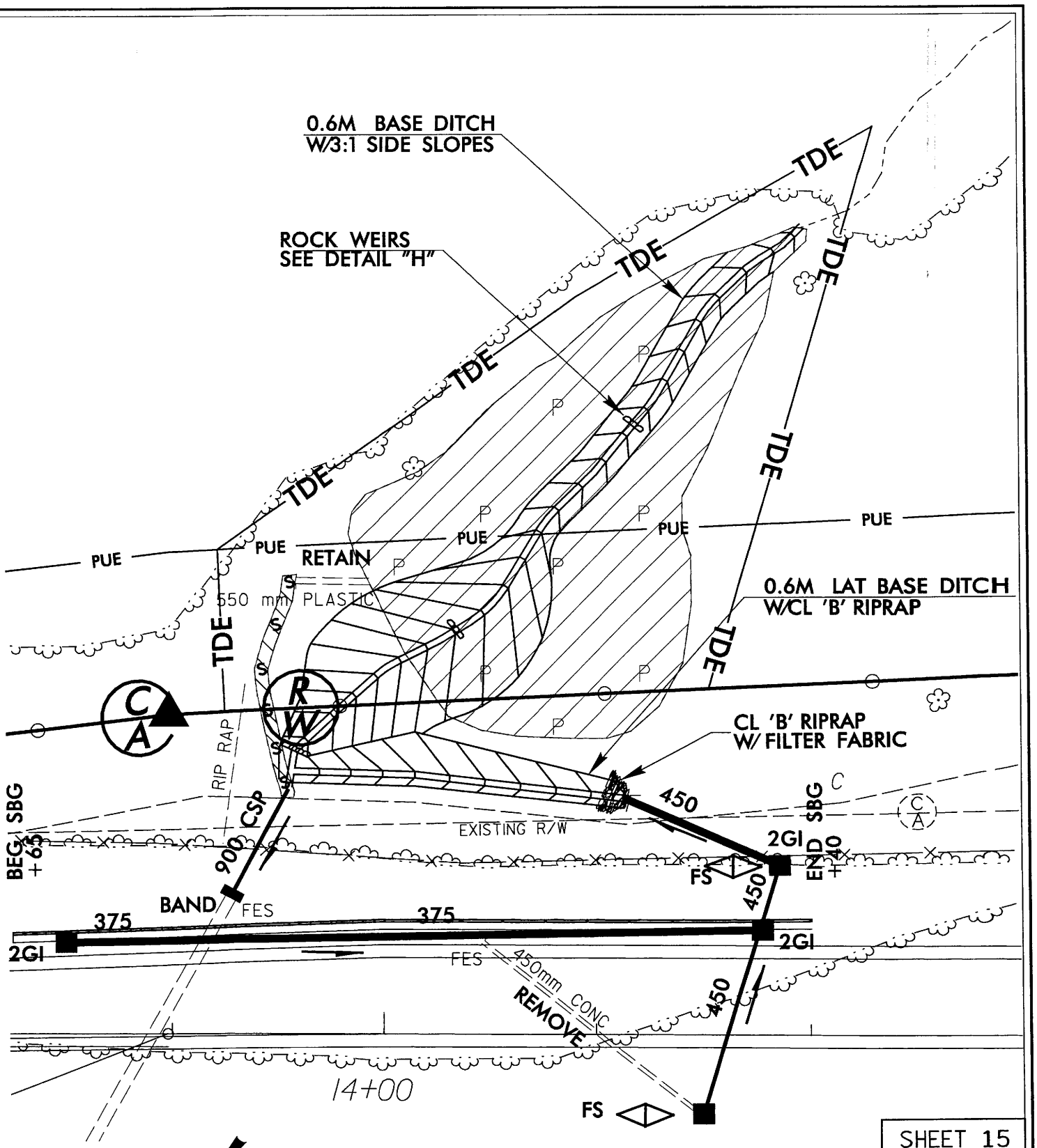
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 35 OF 74

1/13/2006
3:13:54 PM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_14.psh



PLAN VIEW
SITE 15

LEGEND

S S DENOTES SURFACE WATER LOSS

P P DENOTES SURFACE WATER LOSS (POND)

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 56 OF 74

/8/2005
:27:37 AM
:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_15.psh

24+00

11+40

RAMP D

C

11+00

900

COLLAR & EXTEND

EXISTING R/W

HDWL

S1050 RCP HDWL

12

F

0.6m BASE DITCH W/ CLASS "B" RIP RAP

R/W

PDE

PDE

PDE

PUE

PUE

PUE

PUE

19

TS

TS

TS

TRIB TO RICHLAND CREEK

1.2m LATERAL BASE DITCH

SHEET 16

PLAN VIEW
SITE 16

LEGEND

S S DENOTES SURFACE WATER LOSS

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

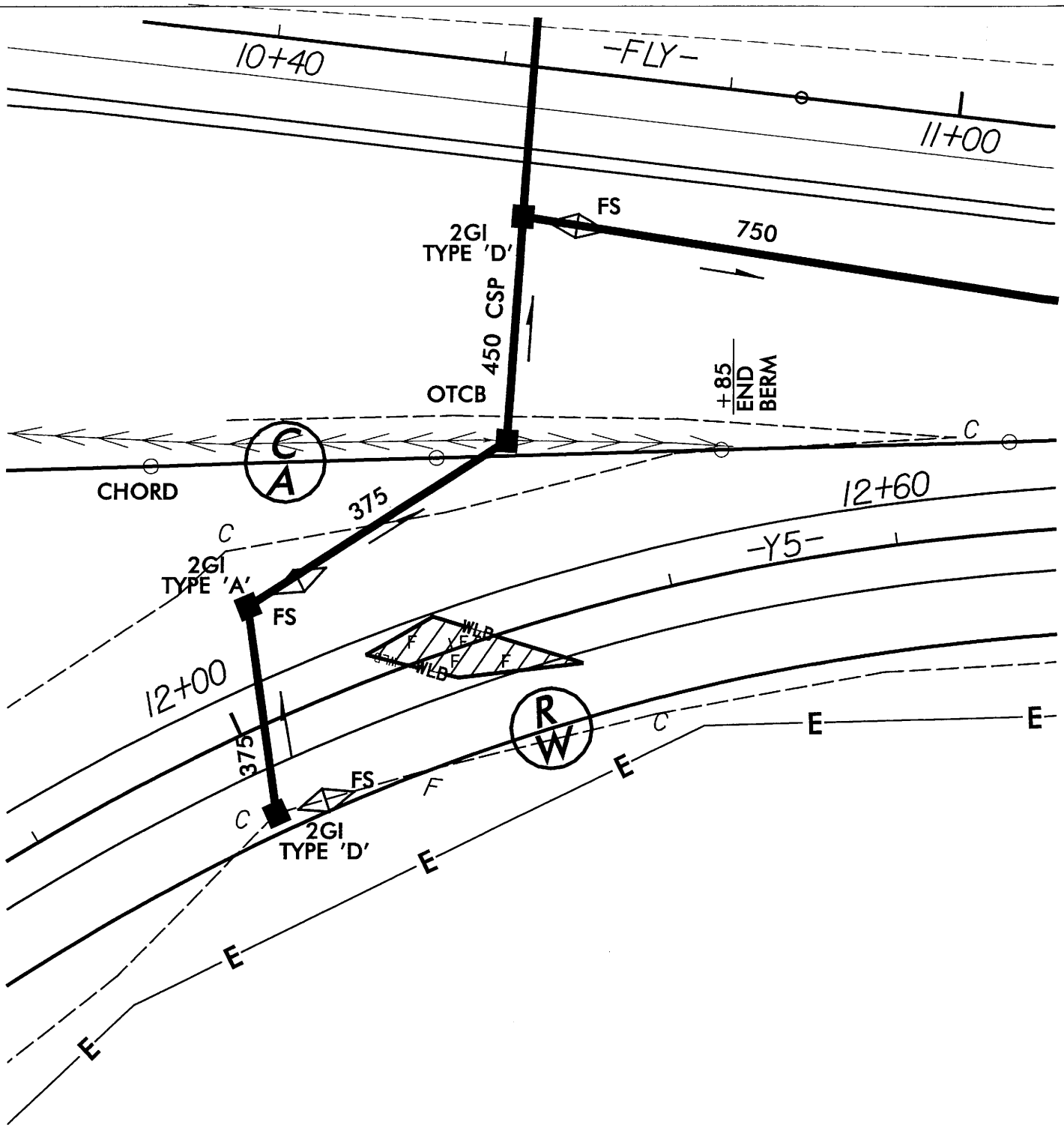
8.1570601 (R-0609IA)

US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 57 OF 74

13/2006
:03:40 PM
:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r-0609wet_16.psh



SHEET 17

PLAN VIEW
SITE 17

LEGEND

F F DENOTES FILL IN WETLAND

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 58 OF 71

/13/2006
3:15:13 AM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_17.psh

NCDOT Project I.D. R-609IA
Guildford County, NC
US 311 High Point East Beltway From US 29-70
To North of NC 62 North of Archdale

Prepared by: Stantec Consulting
801 Jones Franklin Road Suite 300
Raleigh, NC 27606

May 20, 2002

NATURAL CHANNEL DESIGN

MILE BRANCH

Right of Project Station 31+60
through
Right of Project Station 33+25
Permit Site 6

The alignment of US 311 (High Point East Beltway) will require that a portion of Mile Branch be relocated south from Project Station 31+60 Rt. to 33+25 Rt. of L-Line for approximately 165 meters in length. The proposed channel relocation is designed according to "natural channel" design principles proposed by Dave Rosgen.

The stream was found to be perennial in nature, having flow through the riffles and pools.

There is no hydraulic gage data available on this stream nor on nearby streams. Current discharges were estimated using the NCDOT procedures for rural watersheds.

EXISTING CHANNEL

A representative portion of the existing channel (around station 32+20) was surveyed in detail for the purpose of channel classification. The existing channel was measured to have an entrenchment ratio of 7.37, a width/depth ratio of 6.23, a sinuosity of 1.24 and an average slope of 0.003 m/m. A pebble count was preformed and the channel was found to have a concentration of sand in the pools, gravel in the riffles and a classification of gravel bottom. The channel was found to be a B4c stream type according to the Rosgen classification system.

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 59 OF 74

06/14/2002
08:31:40 AM
G:\NCT\029\010\PLANS\PERMITS\permit.bar

REFERENCE REACH

The reference reach was surveyed in detail for the purpose of channel classification and use in natural channel design. A 143 ft long reach was surveyed in detail. The reference reach channel was measured to have an entrenchment ratio of 8.55, a width/depth ratio of 10.13, a sinuosity of 1.19 and an average slope of 0.015 ft/ft. A pebble count was preformed and the channel was found to have a classification of sand bottom. The channel was found to be a C5 stream type according to the Rosgen classification system.

PROPOSED CHANNEL

Based upon the existing valley type and the flood prone width desired, the proposed channel design has a C4 stream type classification. Design data is given in the attached table along with existing reach and reference reach data. Channel gradient is controlled by the natural channel tie upstream and by the three 3.4m by 2.4m reinforced concrete box culverts downstream. Mean "bankfull" depth was set at 0.54 meters. This gives a maximum bankfull depth of 0.80 meters. Above bankfull depth it is proposed to excavate an approximately 45 meter wide flood plain (including the channel).

It is believed that by forming a flood plain above bankfull depth channel stability will be enhanced by reducing velocities for those discharges above the bankfull discharge. This should lead to a more stable channel during and after watershed development. It is anticipated that the proposed channel will have a natural gravel bottom. Maximum pool depths of 1.61 meters are proposed at outside bends of meanders.

Using the proposed channel geometry, sediment transport computations were performed to determine whether the bankfull discharge would be able to initiate movement of the D50 particle obtained. The proposed bankfull shear stress has been reduced from 2.39 to 1.24 kg/m2 (0.49 to 0.254 lbs/ft sq). The D50 particle recorded during the bar sample was 16mm. Using Rosgen's version of Shields Curve the shear stress to initiate movement of a 16mm particle can be a low as 0.97 kg/m2 (0.20 lbs/ft sq). Therefore since the proposed shear stress for the Type C channel is less than the existing conditions the proposed channel should be stable.

Proposed channel stabilization is shown on the attached detail sheet. It is anticipated that channel banks will be planted with native trees and shrubs above bankfull depth. Rock Vanes, Cross Vanes and Root Wads will be utilized to control the near bank shear stress in the meanders, along the proposed roadway.

Stantec

Location: WETLAND PERMIT SITE 6

Site #1b Sta 32+20-L-R to 33+25 -L-R

Design by: C. Heath Wadsworth, EI 12/1/2000

Checked by: Kevin Williams, PE 12/2/2000

ITEM	EXISTING CHANNEL	PROPOSED REACH	REFERENCE REACH (English)	REFERENCE REACH (Metric)
STREAM NAME	Mile Branch	Mile Branch	Dixon Branch	Dixon Branch
STREAM TYPE	B4c	C4	C5	C5
DRAINAGE AREA (DA)	581.03 ha	581.03 ha	402 Ac	162.69 ha
BANKFULL WIDTH (W_{bkf})	5.75 m	6.45 m	15.20 ft	4.63 m
BANKFULL MEAN DEPTH (d_{bkf})	0.92 m	0.54 m	1.50 ft	0.46 m
WIDTH/DEPTH RATIO (W_{bkf}/d_{bkf})	6.23	12.00	10.13	10.13
BANKFULL X-SECTION AREA (A_{bkf})	5.32 m^2	3.45 m^2	22.70 ft^2	2.11 m^2
BANKFULL MEAN VELOCITY, m/s	1.15 mps	1.77 mps	2.81 fps	0.86 mps
BANKFULL DISCHARGE, m^3/s	6.09 m^3/s	6.10 m^3/s	64 cfs	1.81 m^3/s
BANKFULL MAX DEPTH (d_{max})	1.37 m	0.80 m	1.60 ft	0.49 m
WIDTH Flood-Prone Area (W_{fpa})	42.40 m	45.00 m	130.0 ft	39.62 m
ENTRENCHMENT RATIO (ER)	7.37	6.98	8.55	8.55
MEANDER LENGTH (Lm)	9.5 m	75 m	33 - 71 ft	10 - 22 m
RATIO OF Lm TO W_{bkf}	1.65	12	2.2 - 4.7	2.2 - 4.7
RADIUS OF CURVATURE	10.0 m	18 m	6 - 9 ft	2 - 3 m
RATIO OF Rc TO W_{bkf}	1.7	2.8	0.37	0.4
BELT WIDTH	16.0	45.2	30	9.14
MEANDER WIDTH RATIO	2.8	7.0	2.0	2.0
SINUOSITY (K)	1.24	1.40	1.19	1.19
VALLEY SLOPE	0.004 m/m	0.0034 m/m	0.018 ft/ft	0.018 m/m
AVERAGE SLOPE (S)	0.003 m/m	0.0024 m/m	0.015 ft/ft	0.015 m/m
POOL SLOPE	0.005 m/m	0.0005 m/m	0.003 - 0.012 ft/ft	0.003 - 0.012m/m
RATIO OF POOL SLOPE TO AVERAGE SLOPE	1.78	0.20	0.19 - 0.83	0.19 - 0.83
MAX POOL DEPTH	1.86 m	1.61 m	1.90 - 5.80 ft	0.58 - 2 m
RATIO OF POOL DEPTH TO AVERAGE BANKFULL WIDTH	2.01	3.00	1.3 - 3.9	1.3 - 3.9
POOL WIDTH	10.98 m	9.68 m	31 ft	9 m
RATIO OF POOL WIDTH TO BANKFULL WIDTH	1.91	1.50	2.04	2.04
POOL TO POOL SPACING	30.00 m	32.3 m	18 - 30 ft	5 - 9 m
RATIO OF POOL TO POOL SPACING TO BANKFULL WIDTH	5.21	5	1.2 - 2.0	1.2 - 2.0

NORTH CAROLINA

DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY

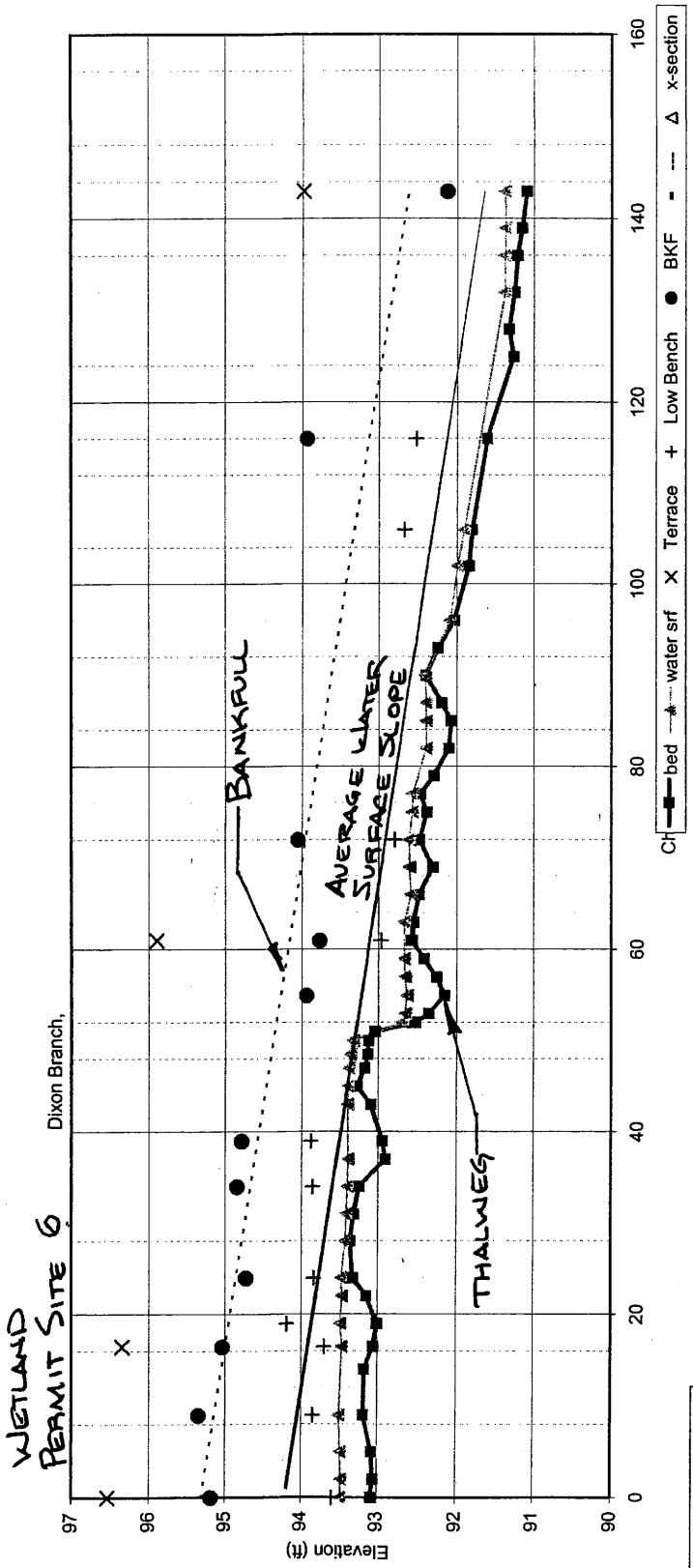
8.1570601 (R-0609IA)

US 311 HIGH POINT EAST BELTWAY FROM US 29-70

TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

06/14/2002
08:31:37 AM
G:\NCTA\029\010\PLANS\PERMITS\permit.bdr



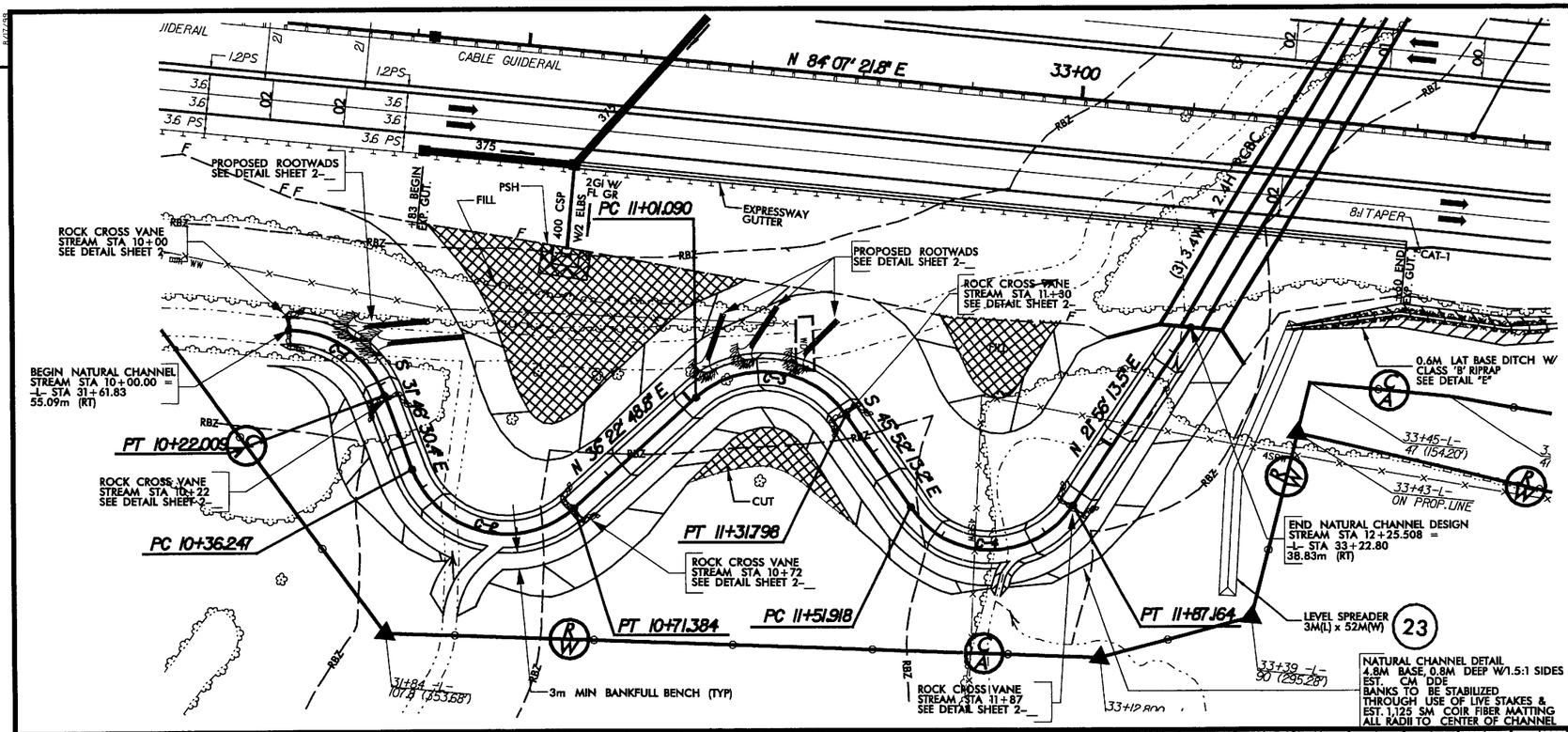
NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 62 OF 71

06/14/2002
08:31:38 AM
G:\NCT\029\DIO\PLANS\PERMITS\permit.bdr



C-1	C-2
PI Sta 10+12.617	PI Sta 10+62.855
Δ = 70° 03' 22.2" (RT)	Δ = 111° 50' 40.8" (LT)
L = 22.009	L = 35.137
T = 12.617	T = 26.608
R = 18.000	R = 18.000

C-3	C-4
PI Sta 11+21.705	PI Sta 11+78.701
Δ = 97° 44' 58.0" (RT)	Δ = 112° 11' 33.3" (LT)
L = 30.709	L = 35.246
T = 20.615	T = 26.783
R = 18.000	R = 18.000

METRIC

5 0 10

CONST.REV.

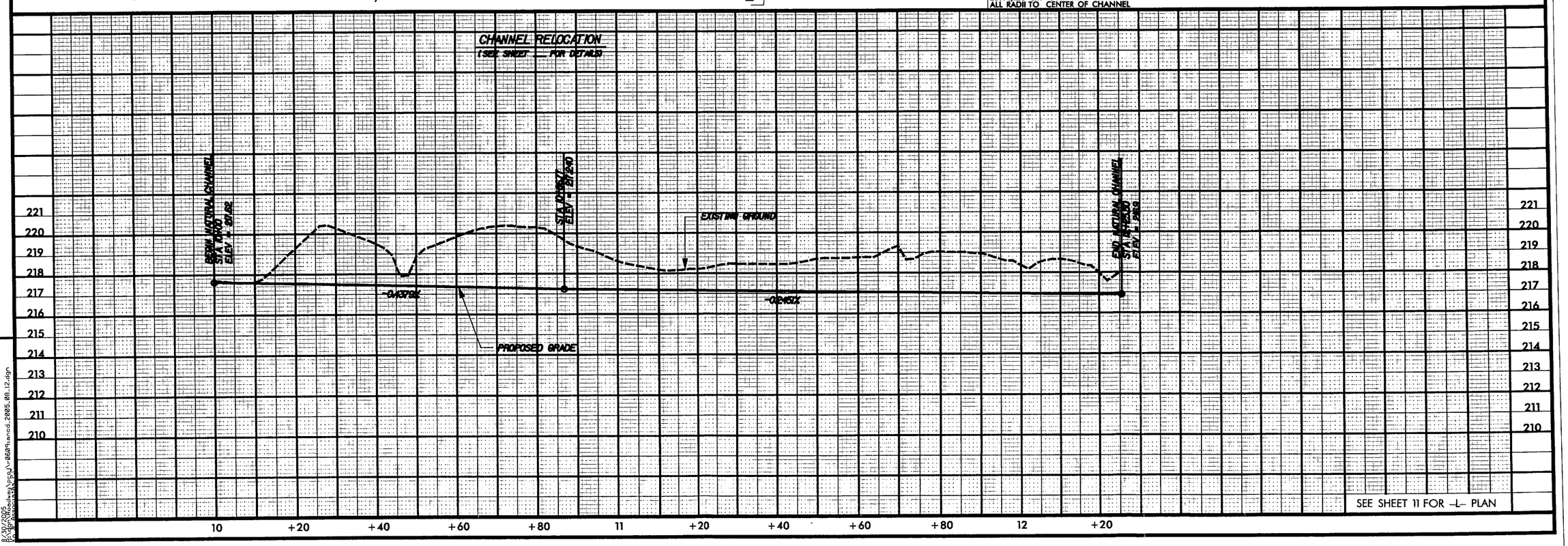
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R6091A	
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

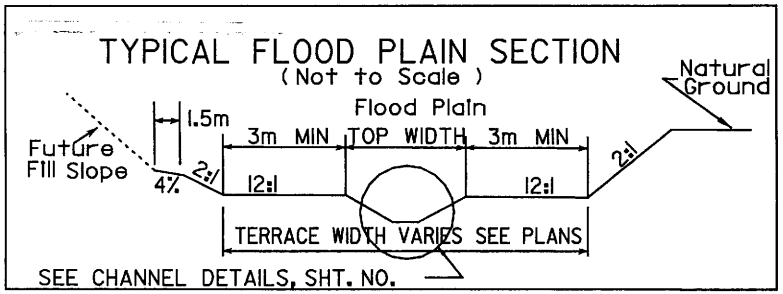
REVISIONS

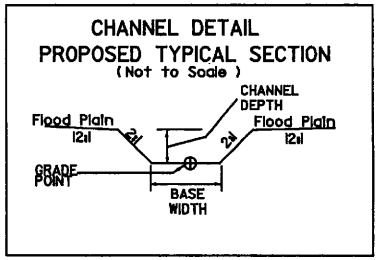
63 of 74



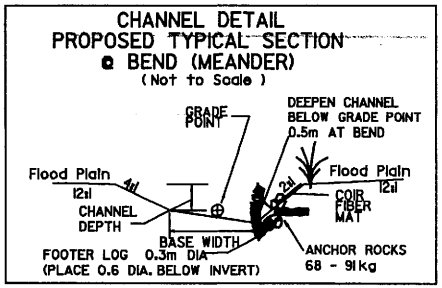
8/30/2005
R:\Design\Roadways\Geo\R-6091A-end-2005_08_12.dgn

NATURAL CHANNEL DESIGN TYPICALS





TYPICAL SECTION 1 BETWEEN BENDS



TYPICAL SECTION 2 AT BENDS

NOTES:

NUMBER OF ROOTWADS INSTALLED TO BE DETERMINED ON SITE

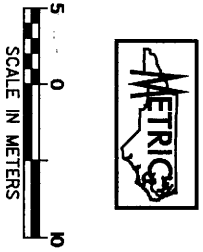
NUMBER OF LOW STAGE CHECK DAMS TO BE DETERMINED ON SITE

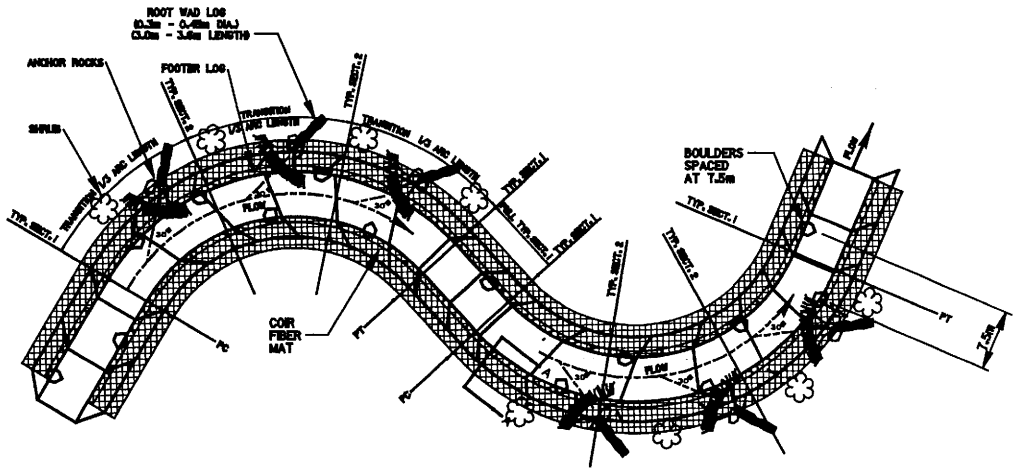
ROOTWADS TO BE SPACED 4x DIAMETER OF ROOT BASE

FOOTER LOG ANCHOR ROCK TO BE PLACED ON THE DOWNSTREAM END OF EACH FOOTER LOG SO THAT IT IS LEANING AGAINST THE LOG ON THE SIDE AWAY FROM THE CHANNEL.

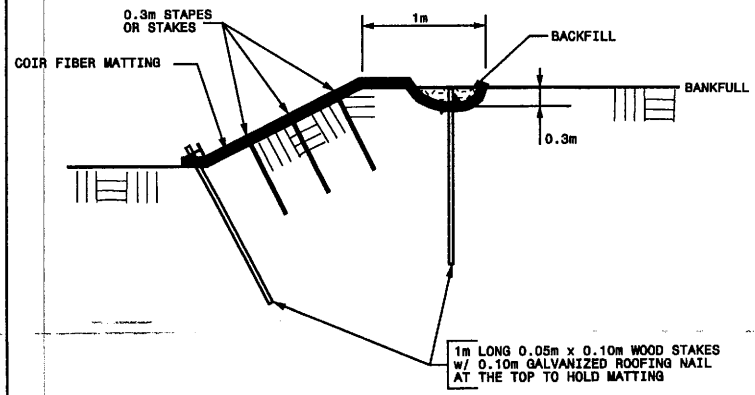
WHEN BACKFILLING OVER AND AROUND FOOTER LOGS, ROOTWAD LOGS AND ANCHOR ROCKS FIRMLY SECURE ALL COMPONENTS INCLUDING JOINTS, CONNECTIONS AND GAPS.

PLANTINGS SHOULD BE PLACED ABOVE BANKFULL DEPTH





CHANNEL PLAN VIEW



SECTION A-A

NOTES:
1. USE WOOD STAKES (NOT METAL) FOR MATTING INSTALLED IN PUMP AROUNDS OR IN THE WET.
2. USE OF METAL STAPLES IS ACCEPTABLE WHEN CONSTRUCTING IN THE DRY AND VEGETATION IS ESTABLISHED PRIOR TO DIVERTING WATER.

NORTH CAROLINA
DIVISION OF HIGHWAYS

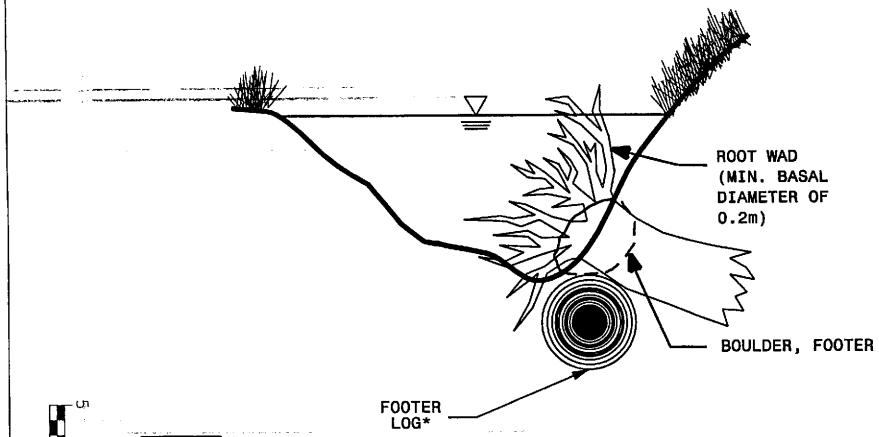
GUILFORD COUNTY

8.1570601 (R-0609A)

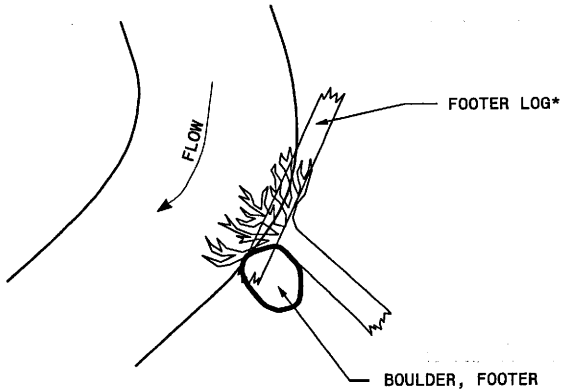
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 57 OF 74



CROSS SECTION



PLAN VIEW

5 0 10
SCALE IN METERS

METRIC

*FOOTER LOGS SHALL HAVE A MINIMUM BASAL DIAMETER OF 0.2m AND HAVE A LENGTH OF 2.1m -3.0m.

ROOT WAD

SCALE: NTS

PLACEMENT OF ROOT WAD STRUCTURES

A TRENCH SHALL BE DUG ALONG THE TOE OF THE BANK TO A DEPTH OF ½ THE DIAMETER OF THE FOOTER LOG. A PRUNED FOOTER LOG SHALL BE PLACED AT THE TOE OF THE CHANNEL AND THE ROOT WAD SHALL BE PLACED DIRECTLY ABOVE IT. THE ROOT MASS SHALL BE ORIENTED IN SUCH A WAY THAT THE VELOCITY VECTORS OF THE WATER WILL INTERSECT THE ROOT MASS AT A 90-DEGREE ANGLE. THERE SHALL BE NO VOID BETWEEN THE ROOT MASS AND THE BANK ON THE UPSTREAM SIDE OF THE CHANNEL. A BOULDER SHALL BE PLACED ON THE DOWNSTREAM SIDE BETWEEN THE ROOT MASS AND THE BANK TO PROVIDE EROSION CONTROL. THE BOULDER, FOOTER SHALL BE APPROXIMATELY 0.9m X 0.9m X 0.6m.

THE PREFERRED METHOD FOR INSTALLATION OF A ROOT WAD IS TO DRIVE THE SHARPENED TRUNK OF THE ROOT WAD INTO THE STREAMBANK USING A BACKHOE. IF IT IS DEEMED NOT POSSIBLE TO DRIVE THE TRUNK INTO THE BANK, A TRENCH SHALL BE DUG IN THE BANK AND THE TRUNK SHALL BE PLACED IN THE TRENCH. THE TRENCH SHALL BE BACK FILLED AND COMPACTED.

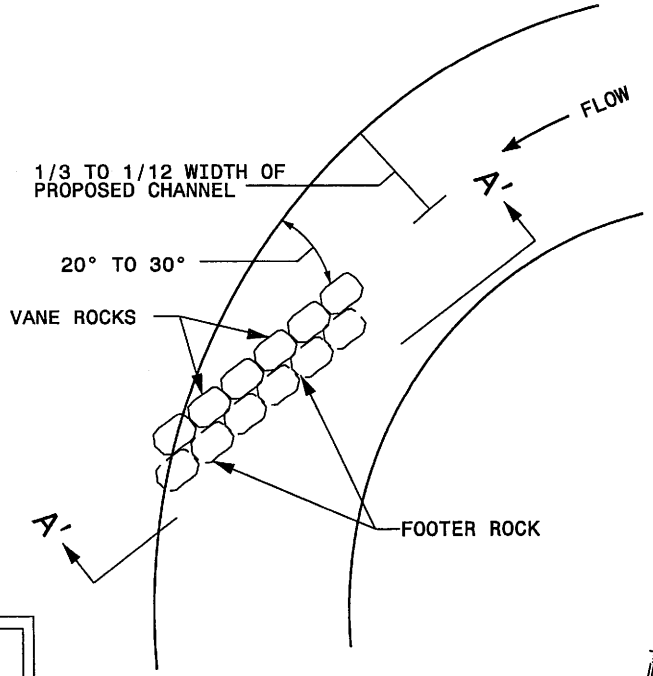
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

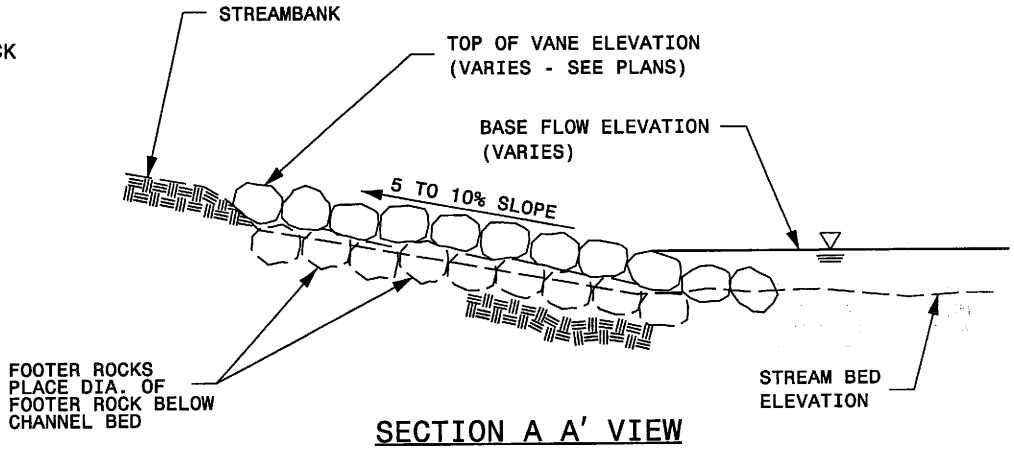
SCALE AS SHOWN

SHEET 65 OF 74

07/17/2002
04:09:31 PM
g:\NCT\029\010\PLANS\PERMITS\Buffer_Permits\CHANNEL DETAILS.psh



PLAN VIEW

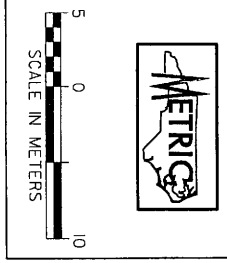


SECTION A A' VIEW

NOTE: ALL ROCKS OR STONE ARE NATURAL STONE BOULDERS

ROCK VANE

SCALE: NTS



NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

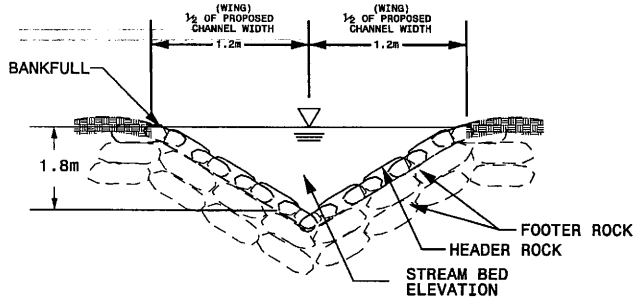
SCALE AS SHOWN

SHEET 66 OF 74

07/17/2002
04:09:41 PM
g:\NCT\029\010\PLANS\PERMITS\Buffer_Permits\CHANNEL DETAILS.psh

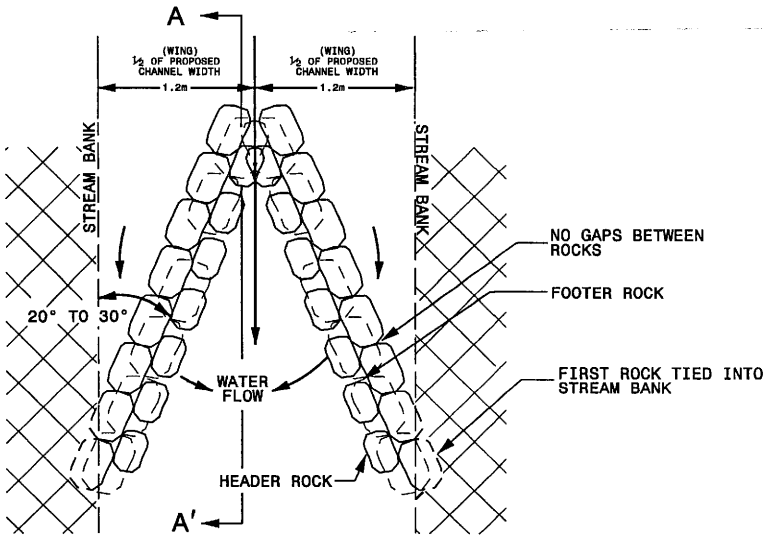
"V" CROSS VANE

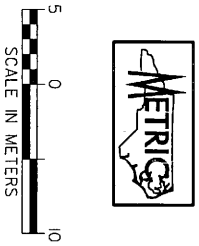
SCALE: NTS

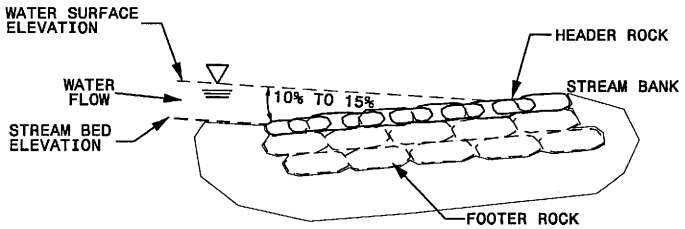


CROSS SECTION

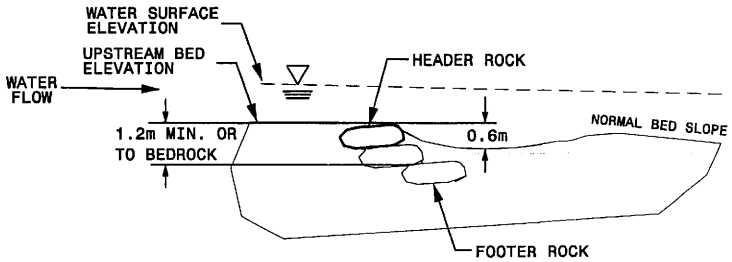
PLAN VIEW







PROFILE VIEW



SECTION A A' VIEW

INSTALLATION OF CROSS VANE

A TRENCH SHALL BE DUG IN SUCH A MANNER THAT THE FOOTER ROCKS, THE CROSS HEADER ROCKS AND AT LEAST 1/3 OF THE WING HEADER ROCKS ARE BURIED BENEATH THE BED SURFACE ELEVATION. AN EXCAVATOR, WITH A BUCKET THAT CONTAINS A HYDRAULIC THUMB, SHALL BE USED TO PLACE ROCKS WITH THE SUPERVISION OF THE RESIDENT ENGINEER. HEADER AND FOOTER ROCKS SHALL BE NO SMALLER THAN 0.9m X 0.9m X0.6m FOOTER ROCKS SHALL BE PLACED IN THE TRENCH FIRST WITH HEADER ROCKS PLACED ON TOP PRIOR TO BACK FILLING OF THE TRENCH. IN THE CENTER, OR CROSS, PORTION OF THE CHANNEL, THE HEADER ROCKS SHALL BE PLACED SUCH THAT THE TOP OF THE HEADER ROCK IS PLACED AT AN ELEVATION EQUAL TO THE BED ELEVATION. THE HEADER ROCKS ON THE SIDE, OR WING, PORTION SHALL BE PLACED IN SUCH A MANNER AS THEY SLOPE UP FROM BED ELEVATION AT THE CROSS PORTION TO THE TOP OF THE BANK AT A 10-15% SLOPE.

NORTH CAROLINA
DIVISION OF HIGHWAYS

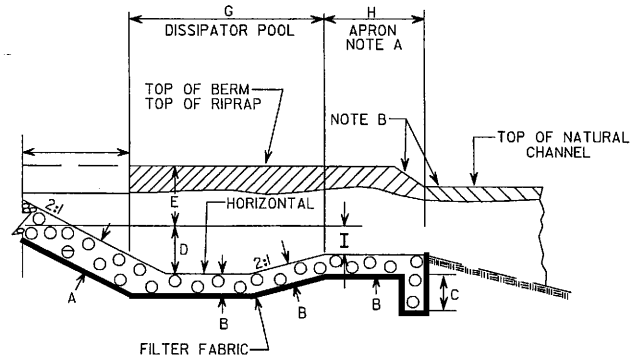
GUILFORD COUNTY
8.1570601 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

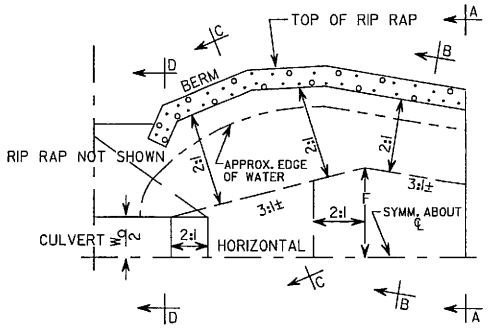
SHEET 67 OF 74

01/09/2005
07:40:05 PM
r:\dgn\Roadway\proj\PERMITS\r0609-details.dgn

℄ SECTION

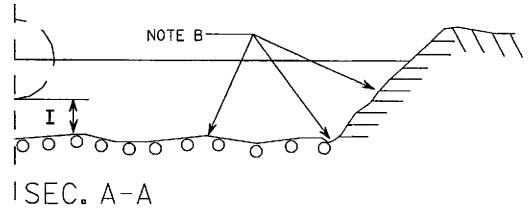


HALF PLAN

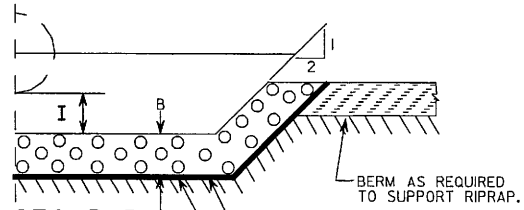


NOTE A IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A-A SUCH THAT Q_{des} /(CROSS SECTION AREA AT SEC. A-A) = SPECIFIED EXIT VELOCITY.

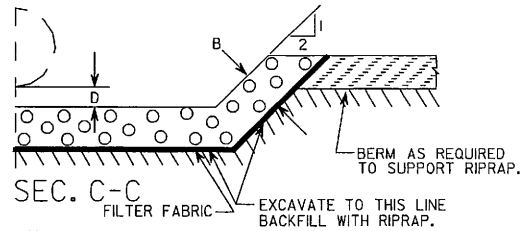
NOTE B WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIPRAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A-A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.



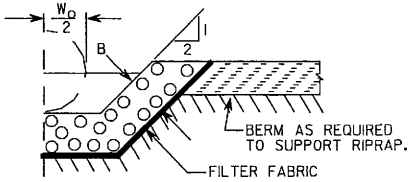
SEC. A-A



SEC. B-B



SEC. C-C



SEC. D-D

NOTE:
W_o = DIAMETER FOR PIPE CULVERT
W_o = BARREL WIDTH FOR BOX CULVERT
W_o = SPAN OF PIPE-ARCH CULVERT

DIM.	RIP RAP BASIN #							
	1	2	3	4	5	6	7	8
A	0.68							
B	0.68							
C	0							
D	1.19							
E	0.30							
F	7.95							
G	11.94							
H	5.97							
I	0.55							

ALL DIMENSIONS APPROXIMATE

BASIN #	LOCATION (AT OUTLET)
1	13+80 -RP B-
2	
3	
4	
5	
6	
7	
8	

DETAIL OF RIP-RAPPED ENERGY DISSIPATOR BASIN

METRIC

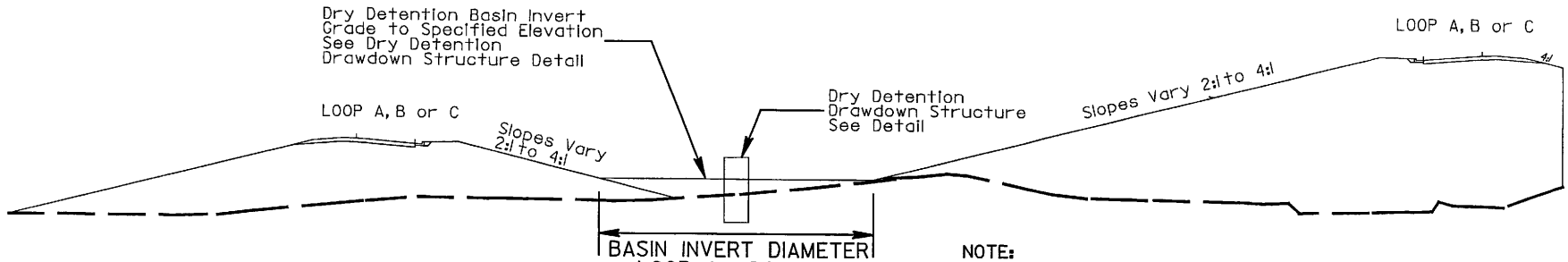
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 78 OF 79

DRY DETENTION BASIN GRADING DETAIL



BASIN INVERT DIAMETER
LOOP A 24M
LOOP B 8M
LOOP C 28M

NOTE:
BASIN NVERT ELEVATIONS HAVE BEEN SET TO PROVIDE 2-3 FEET OF FREEBOARD BETWEEN THE CONTROLLING ROADWAY CENTERLINE ELEVATION AND THE 50 YEAR EVENT. ADJUSTING THE BASIN INVERT OR DRAWDOWN STRUCTURE ELEVATIONS HIGHER THAN INDICATED IN PLANS MAY RESULT IN STORMWATER ENCROACHING INTO THE ROADWAY.

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

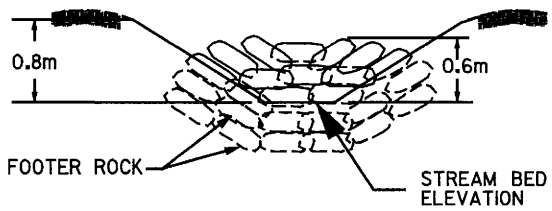
SCALE AS SHOWN

SHEET 66 OF 74

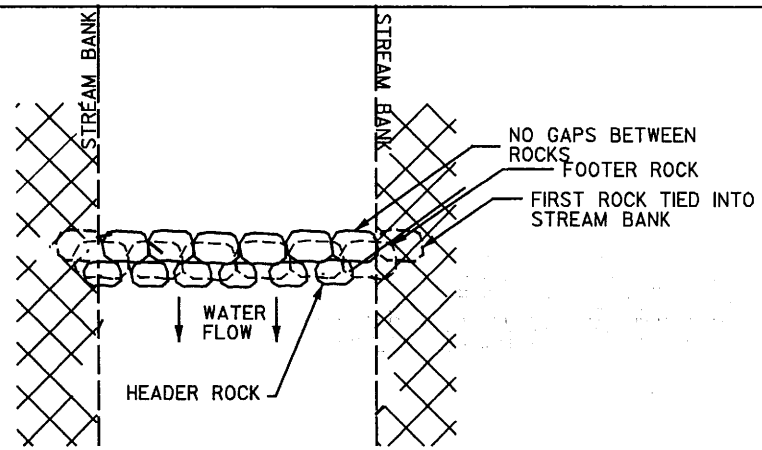
METRIC

ROCK WEIR

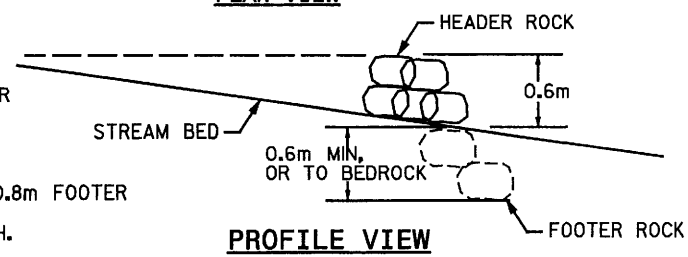
SCALE: NTS



CROSS SECTION



PLAN VIEW



PROFILE VIEW

INSTALLATION OF ROCK WEIR

A TRENCH SHALL BE DUG IN SUCH A MANNER THAT THE FOOTER ROCKS ARE BURIED BENEATH THE BED SURFACE ELEVATION. AN EXCAVATOR, WITH A BUCKET THAT CONTAINS A HYDRAULIC THUMB, SHALL BE USED TO PLACE ROCKS WITH THE SUPERVISION OF THE RESIDENT ENGINEER. HEADER AND FOOTER ROCKS SHALL BE NO SMALLER THAN 0.5m X 0.5m X 0.8m FOOTER ROCKS SHALL BE PLACED IN THE TRENCH FIRST WITH HEADER ROCKS PLACED ON TOP PRIOR TO BACK FILLING OF THE TRENCH.

METRIC

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

8.1570601 (R-0609A)

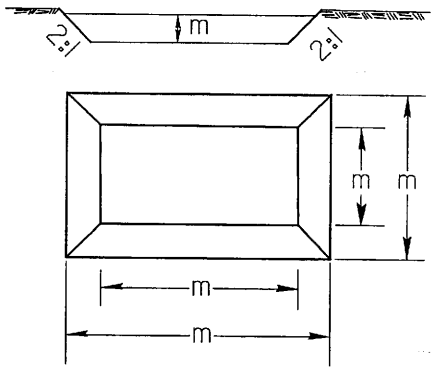
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 70 OF 74

DETAIL OF EMERGENCY SPILL BASIN

TOTAL CAPACITY REQUIRED : cu. m.
TOTAL CAPACITY PROVIDED : cu. m.



Ditch to be blocked with sandbags 1.0 m deep at outlet

STATION	REQ. VOL. (Cu. m.)	DEPTH (m)	BOTTOM LENGTH (m)	BOTTOM WIDTH (m)	TOP LENGTH (m)	TOP WIDTH (m)	PROVIDED VOL (Cu. m.)
FLY 16+20 L	78	1.0	9.0	5.0	13.0	9.0	81
-L- 34+00 R	104	1.0	10.0	7.0	14.0	11.0	112
-L- 35+60 L	158	1.0	11.0	10.0	15.0	14.0	160
-L- 39+90 L	78	1.0	7.0	7.0	11.0	11.0	85
-L- 40+70 L	103	1.0	8.0	8.0	12.0	12.0	104
-L- 50+40 L	396	1.0	20.0	16.0	24.0	20.0	400
-L- 56+00 L	50	1.0	5.0	5.0	9.0	9.0	53
-L- 58+20 R	77	1.0	11.0	4.0	15.0	8.0	82
-Y5- 14+00 R	275	1.0	17.0	13.0	21.0	17.0	289
-Y5- 15+20 R	178	1.0	14.0	9.0	18.0	13.0	180
RAMPB 12+90 R	174	1.0	14.0	9.0	18.0	13.0	180
RAMPD 15+20 R	127	1.0	12.0	7.0	16.0	11.0	130

METRIC

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 74 OF 74

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ha)	Temp. Fill In Wetlands (ha)	Excavation In Wetlands (ha)	Mechanized Clearing (Method III) (ha)	Hand Clearing in Wetlands (ha)	Permanent SW Impacts (ha)	Temporary SW Impacts (ha)	Existing Channel Impacts Permanent (m)	Existing Channel Impacted Temporary (m)	Natural Stream Design (m)
1	12+00 to 12+80 *	750mm			0.017	0.006		0.048				
2	19+30 to 20+40	1350mm						0.013	0.003	140.600	21.0	
3	23+45 to 23+60	450mm	0.011						0.003		21.0	
4	25+65 to 25+95	1350mm	0.066			0.011		0.008	0.006	124.800	50.0	
5	28+00 to 28+30	900mm						0.006	0.001	70.300	15.0	
6 (Main)	31+70 to 33+60	3@3.4m x 2.4m RCBC						0.024		294.600		288.2
6 (Trib 1)	32+00	Stream						0.025		51.200		
6 (Trib 2)	33+00	Stream						0.010		98.500		
7	35+20 to 35+50	600mm						0.004		44.600		
8	40+20 to 40+40	1050mm						0.018		180.000		
9	45+30 to 46+30 **	1 @ 3.7m x 3.7m						0.958				
10 (Trib 1)	48+85 to 50+75	Interchange						0.015		193.200		
10 (Trib 2)	51+20	Interchange						0.002		20.600		
10 (Trib 3)	50+20 to 51+60	Interchange						0.056		560.100		
10 (Trib 4)	900 mm	Interchange						0.027		137.800		
11 (Trib 1)	53+00 to 56+75	Interchange	0.081		0.013	0.014		0.042	0.003	455.600	21.0	
11 (Trib 2)	54+40 to 55+45	Interchange						0.013		133.400		
12	58+20 to 59+00	900mm	0.050			0.002		0.012		118.800		
13	10+20 R -SBCD-	900mm						0.001		1.500		
14	12+80 R -SBCD-	1050						0.001	0.002	31.900	17.0	
15	14+00 -NBCD- **	900 mm						0.108		22.800		
16	10+90 -RPD-	900mm& 1050mm						0.005	0.002	54	20.0	
17	12+20 -Y5-	Roadway Fill	0.005									
TOTALS:			0.212	0.000	0.013	0.028		1.397	0.020	2734.300	165.0	288.2

* Excavation in Pond (0.048 ha)

** Fill in Surface Water (Pond): Site 9 = 0.958 ha; Site 15 = 0.105 ha

Form Revised 3/22/01

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
PROJECT: 34345.1.1 (R-609IA)
Jan-06
SHEET 72 OF 74

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (Ac)	Temp. Fill In Wetlands (Ac)	Excavation In Wetlands (Ac)	Mechanized Clearing (Method III) (Ac)	Hand Clearing in Wetlands (Ac)	Permanent SW impacts (Ac)	Temp. SW impacts (Ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temporary (ft)	Natural Stream Design (ft)
1	12+00 to 12+80 *	750mm			0.04	0.01		0.12		0		
2	19+30 to 20+40	1350mm						0.03	0.01	461	69	
3	23+45 to 23+60	450mm	0.03						0.01	0	69	
4	25+65 to 25+95	1350mm	0.16			0.03		0.02	0.01	409	164	
5	28+00 to 28+30	900mm						0.01	0.00	231	49	
6 (Main)	31+70 to 33+60	3@3.4m x 2.4m RCBC						0.06		967	0	946
6 (Trib 1)	32+00	Stream						0.06		168	0	
6 (Trib 2)	33+00	Stream						0.02		323	0	
7	35+20 to 35+50	600mm						0.01		146	0	
8	40+20 to 40+40	1050mm						0.04		591	0	
9	45+30 to 46+30 **	1 @ 3.7m x 3.7m						2.37		0		
10 (Trib 1)	48+85 to 50+75	Interchange						0.04		634	0	
10 (Trib 2)	51+20	Interchange						0.00		68	0	
10 (Trib 3)	50+20 to 51+60	Interchange						0.14		1838	0	
10 (Trib 4)	50+70 to 51+90	Interchange						0.07		452	0	
11 (Trib 1)	53+00 to 56+75	Interchange	0.20		0.030	0.04		0.10	0.01	1495	69	
11 (Trib 2)	54+40 to 55+45	Interchange						0.03		438	0	
12	58+20 to 59+00	900mm	0.12					0.03		390	0	
13	10+20 R -SBCD-	900mm						0.00		5	0	
14	12+80 R -SBCD-	1050						0.00	0.00	105	56	
15	14+00 -NBCD- **	900 mm						0.27		75	0	
16	10+90 -RPD-	900mm& 1050mm						0.01	0.00	177	66	
17	12+20 -Y5-	Roadway Fill	0.012					0.00		0	0	
TOTALS:			0.52	0.00	0.03	0.07		3.43	0.04	8971	541	946

* Excavation in Pond (0.12 ac)

** Fill in Surface Water (Pond): Site 9 = 2.37 ac; Site 15 = 0.026 ac)

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
PROJECT: 34345.1.1 (R-609IA)

Jan-06

Form Revised 3/22/01

SUMMARY OF AFFECTED PROPERTY OWNERS

TRACT NO.	PROPERTY OWNER	ADDRESS	SITE NO.
1	M.C. DEVELOPMENT COMPANY	P.O. BOX 506 HIGH POINT,NC 27263	1
2	ALLEN J. BODENHEIMER	400 FORESTDALE DR JAMESTOWN,NC 27282	1
3	BEVERLY B. CAUDLE	1308 COX AVE HIGH POINT,NC 27263	2
4	NCDOT	P.O. BOX 14996 GREENSBORO,NC 27145	3,4,5,8,12
5	CLIFFORD L. HILL	RT. 4 BOX 345 HIGH POINT,NC 27263	6
6	VIRGINIA HUBBARD	1566 KERSEY VALLEY RD HIGH POINT,NC 27263	6
7	MARJORIE SURRETT	6802 DRESDEN RD HIGH POINT,NC 27263	7
8	FRANK MARTINEZ	1539 KERSEY VALLEY RD HIGH POINT,NC 27263	9
9	BOBBY L. CECIL	1119 LIBERTY RD ARCGDALE,NC 27263	10
10	GLENN P. MORGAN	6027 CHECKER RD HIGH POINT,NC 27263	11
11	LILLIE L. CRUTHIS	6027 CHECKER RD HIGH POINT,NC 27263	11
12	LAWRENCE E. MODLIN	6132 CHECKER RD HIGH POINT,NC 27263	11 & 16
13	ROBERT WARD	3001 ALAMANCE RD GEENSBORO,NC 27407	1
14	WALTER DANIEL	1620 EASTCHESTER DR HIGH POINT,NC 27263	2
15	THOMAS RAGSDALE	P.O. BOX 757 JAMESTOWN,NC 27282	5
16	CHARLES BOYD	1553 KERSEY VALLEY RD HIGH POINT,NC 27263	8
17	MR. FOSTER	6861 DRESDEN RD HIGH POINT,NC 27263	10
18	W. GERALD LEONARD	6801 JOPLIN RD HIGH POINT,NC 27263	15
19	ROBERT L. SLATE		16

METRIC

SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

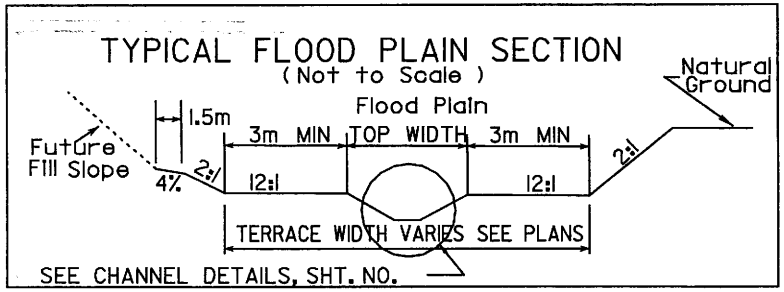
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

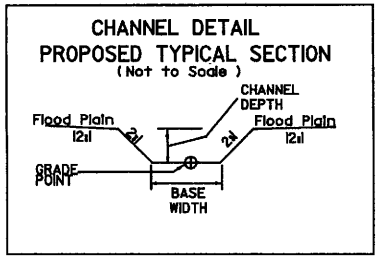
SCALE AS SHOWN

SHEET 74 OF 74

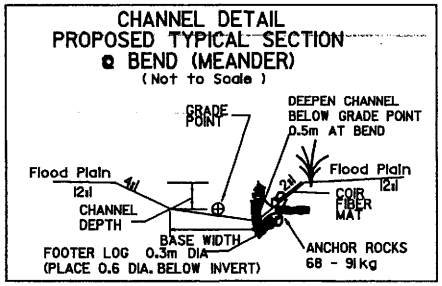
8/12/2005
12:26:19 PM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_prop.sum

NATURAL CHANNEL DESIGN TYPICALS





TYPICAL SECTION 1 BETWEEN BENDS



TYPICAL SECTION 2 AT BENDS

NOTES:

NUMBER OF ROOTWADS INSTALLED TO BE DETERMINED ON SITE

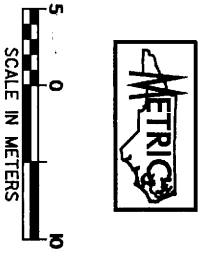
NUMBER OF LOW STAGE CHECK DAMS TO BE DETERMINED ON SITE

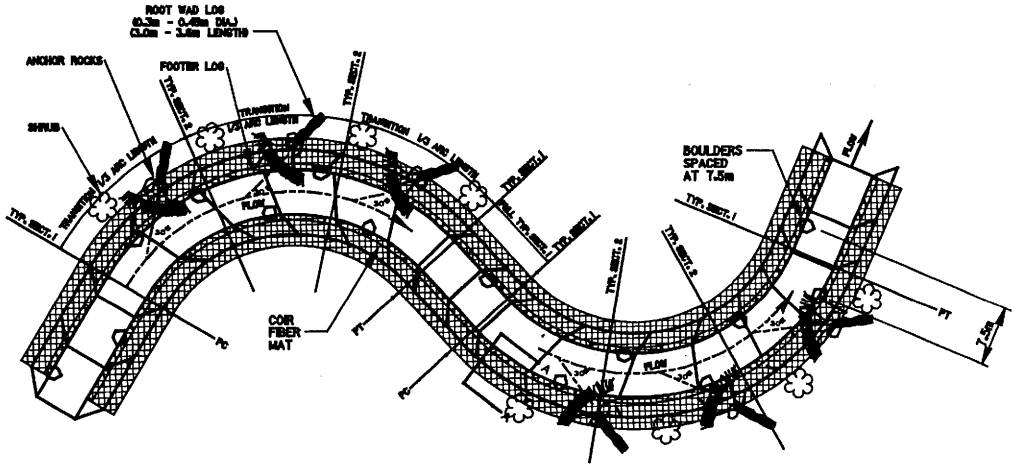
ROOTWADS TO BE SPACED 4x DIAMETER OF ROOT BASE

FOOTER LOG ANCHOR ROCK TO BE PLACED ON THE DOWNSTREAM END OF EACH FOOTER LOG SO THAT IT IS LEANING AGAINST THE LOG ON THE SIDE AWAY FROM THE CHANNEL.

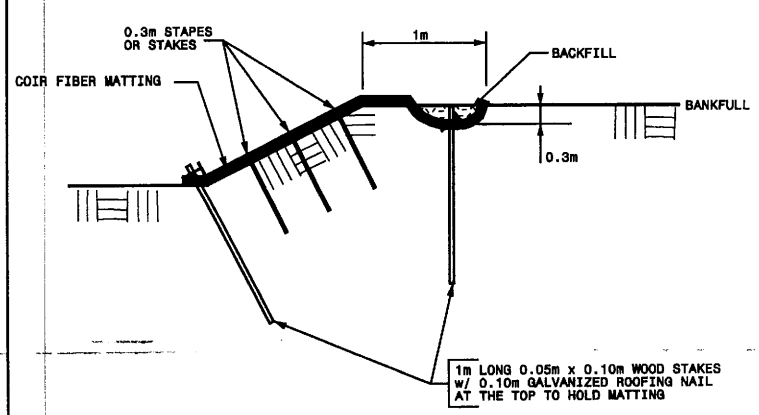
WHEN BACKFILLING OVER AND AROUND FOOTER LOGS, ROOTWAD LOGS AND ANCHOR ROCKS FIRMLY SECURE ALL COMPONENTS INCLUDING JOINTS, CONNECTIONS AND GAPS.

PLANTINGS SHOULD BE PLACED ABOVE BANKFULL DEPTH





CHANNEL PLAN VIEW



SECTION A-A

NOTES:
1. USE WOOD STAKES (NOT METAL) FOR MATTING INSTALLED IN PUMP AROUNDS OR IN THE WET.
2. USE OF METAL STAPLES IS ACCEPTABLE WHEN CONSTRUCTING IN THE DRY AND VEGETATION IS ESTABLISHED PRIOR TO DIVERTING WATER.

NORTH CAROLINA
DIVISION OF HIGHWAYS

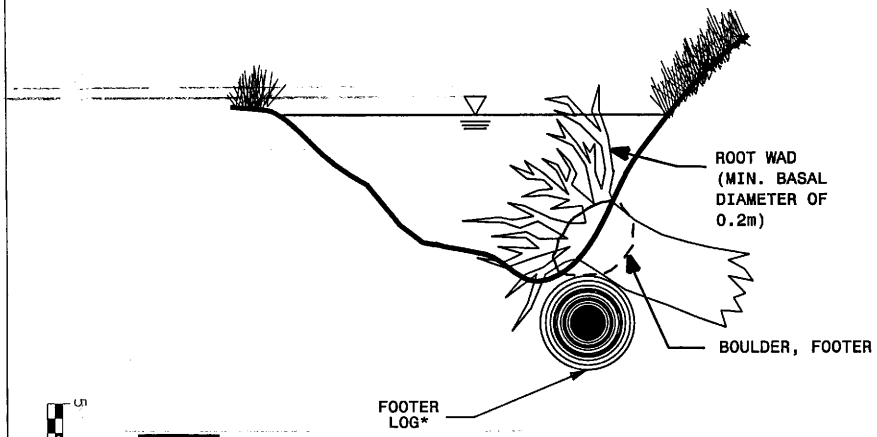
GUILFORD COUNTY

8.1570601 (R-0609A)

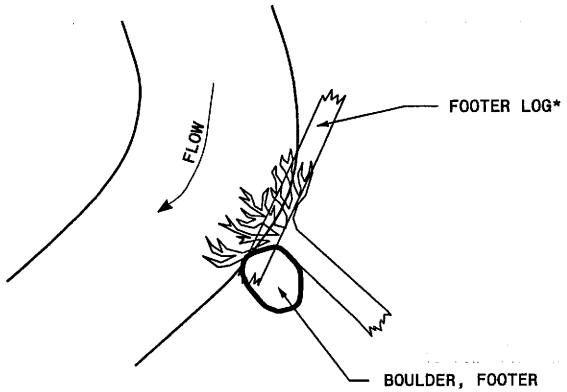
US 311 HIGH POINT EAST BELTWAY FROM US 29-70 TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

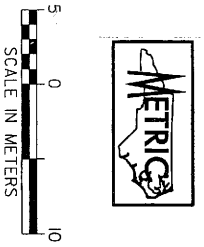
SHEET 59 OF 74



CROSS SECTION



PLAN VIEW



*FOOTER LOGS SHALL HAVE A MINIMUM BASAL DIAMETER OF 0.2m AND HAVE A LENGTH OF 2.1m -3.0m.

ROOT WAD

SCALE: NTS

PLACEMENT OF ROOT WAD STRUCTURES

A TRENCH SHALL BE DUG ALONG THE TOE OF THE BANK TO A DEPTH OF ½ THE DIAMETER OF THE FOOTER LOG. A PRUNED FOOTER LOG SHALL BE PLACED AT THE TOE OF THE CHANNEL AND THE ROOT WAD SHALL BE PLACED DIRECTLY ABOVE IT. THE ROOT MASS SHALL BE ORIENTED IN SUCH A WAY THAT THE VELOCITY VECTORS OF THE WATER WILL INTERSECT THE ROOT MASS AT A 90-DEGREE ANGLE. THERE SHALL BE NO VOID BETWEEN THE ROOT MASS AND THE BANK ON THE UPSTREAM SIDE OF THE CHANNEL. A BOULDER SHALL BE PLACED ON THE DOWNSTREAM SIDE BETWEEN THE ROOT MASS AND THE BANK TO PROVIDE EROSION CONTROL. THE BOULDER, FOOTER SHALL BE APPROXIMATELY 0.9m X 0.9m X 0.6m.

THE PREFERRED METHOD FOR INSTALLATION OF A ROOT WAD IS TO DRIVE THE SHARPENED TRUNK OF THE ROOT WAD INTO THE STREAMBANK USING A BACKHOE. IF IT IS DEEMED NOT POSSIBLE TO DRIVE THE TRUNK INTO THE BANK, A TRENCH SHALL BE DUG IN THE BANK AND THE TRUNK SHALL BE PLACED IN THE TRENCH. THE TRENCH SHALL BE BACK FILLED AND COMPACTED.

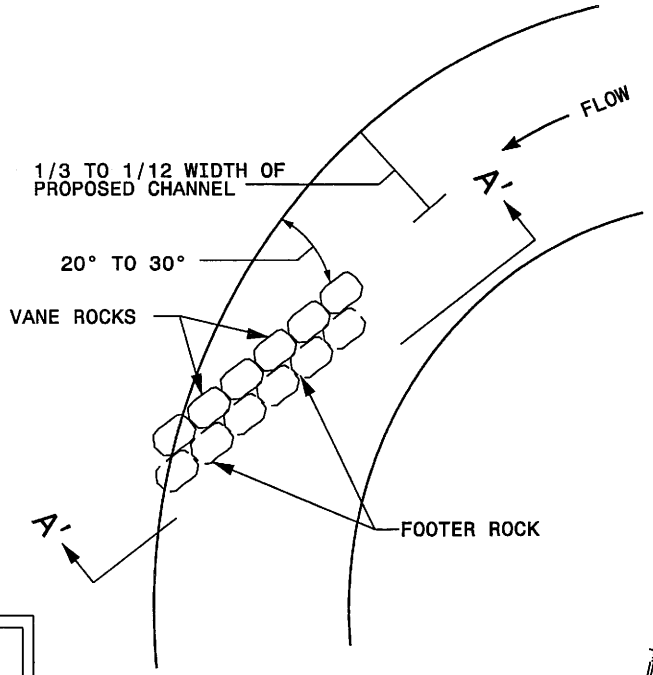
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

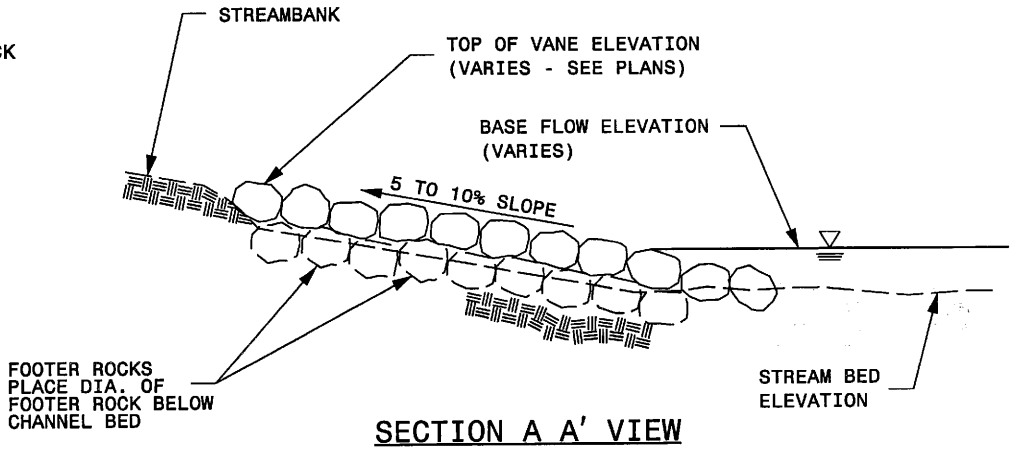
SCALE AS SHOWN

SHEET 65 OF 74

07/17/2002
04:09:31 PM
g:\NCT\029\010\PLANS\PERMITS\Buffer_Permits\CHANNEL DETAILS.psh



PLAN VIEW

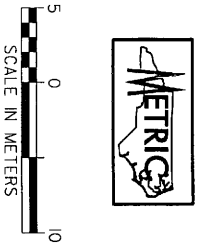


SECTION A A' VIEW

NOTE: ALL ROCKS OR STONE ARE NATURAL STONE BOULDERS

ROCK VANE

SCALE: NTS



NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

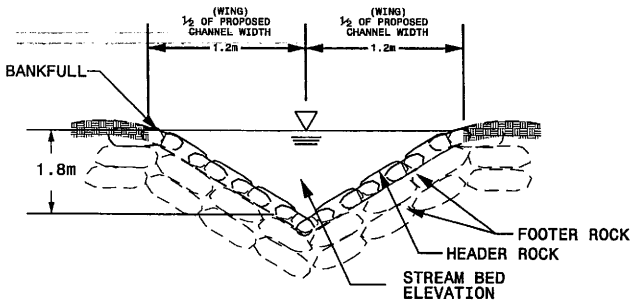
SCALE AS SHOWN

SHEET 66 OF 74

07/17/2002
04:09:41PM
g:\NCT\029\010\PLANS\PERMITS\Buffer_Permits\CHANNEL DETAILS.psh

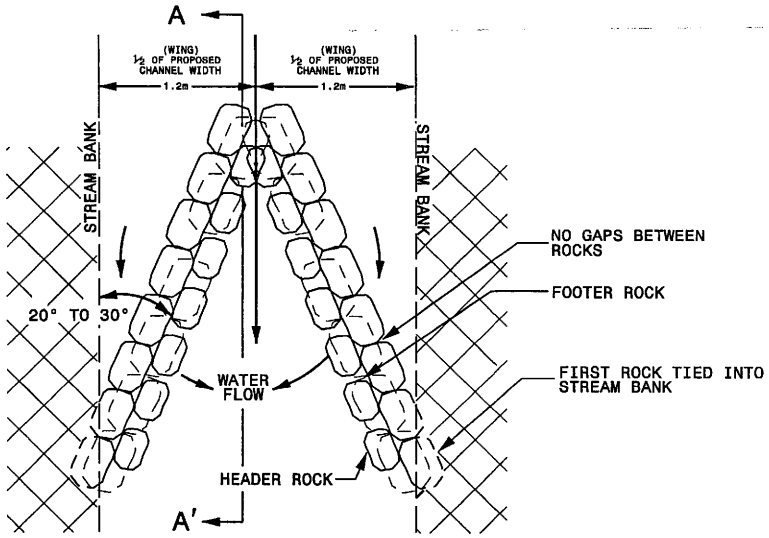
"V" CROSS VANE

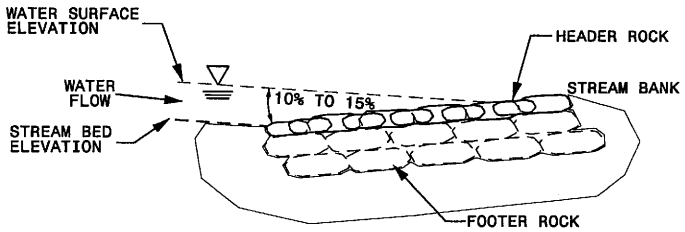
SCALE: NTS



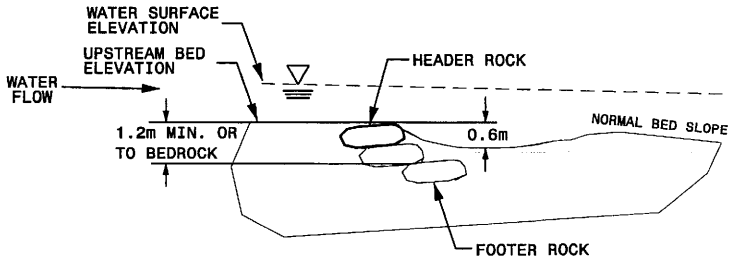
CROSS SECTION

PLAN VIEW





PROFILE VIEW



SECTION A A' VIEW

INSTALLATION OF CROSS VANE

A TRENCH SHALL BE DUG IN SUCH A MANNER THAT THE FOOTER ROCKS, THE CROSS HEADER ROCKS AND AT LEAST 1/3 OF THE WING HEADER ROCKS ARE BURIED BENEATH THE BED SURFACE ELEVATION. AN EXCAVATOR, WITH A BUCKET THAT CONTAINS A HYDRAULIC THUMB, SHALL BE USED TO PLACE ROCKS WITH THE SUPERVISION OF THE RESIDENT ENGINEER. HEADER AND FOOTER ROCKS SHALL BE NO SMALLER THAN 0.9m X 0.9m X0.6m FOOTER ROCKS SHALL BE PLACED IN THE TRENCH FIRST WITH HEADER ROCKS PLACED ON TOP PRIOR TO BACK FILLING OF THE TRENCH. IN THE CENTER, OR CROSS, PORTION OF THE CHANNEL, THE HEADER ROCKS SHALL BE PLACED SUCH THAT THE TOP OF THE HEADER ROCK IS PLACED AT AN ELEVATION EQUAL TO THE BED ELEVATION. THE HEADER ROCKS ON THE SIDE, OR WING, PORTION SHALL BE PLACED IN SUCH A MANNER AS THEY SLOPE UP FROM BED ELEVATION AT THE CROSS PORTION TO THE TOP OF THE BANK AT A 10-15% SLOPE.

NORTH CAROLINA
DIVISION OF HIGHWAYS

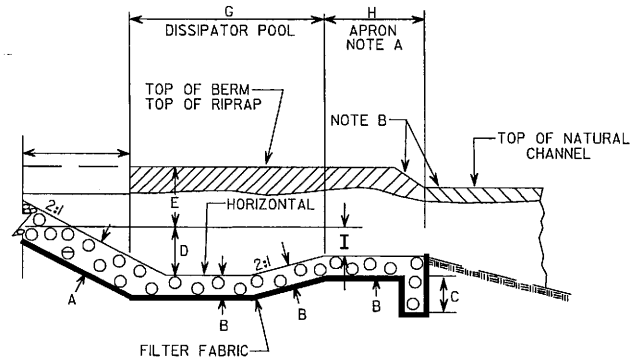
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 67 OF 74

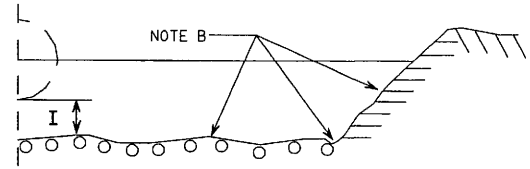
01/09/2005
07:40:05 PM
r:\dgn\Roadway\proj\PERMITS\r0609-details.dgn

℄ SECTION



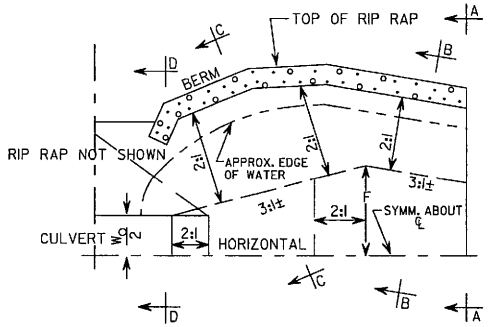
NOTE A IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A-A SUCH THAT Q_{des} /(CROSS SECTION AREA AT SEC. A-A) = SPECIFIED EXIT VELOCITY.

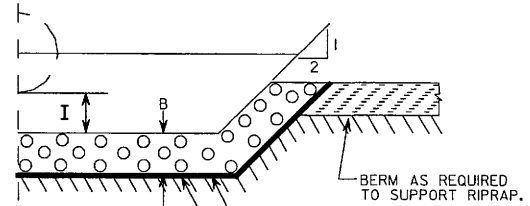
NOTE B WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIPRAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A-A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.



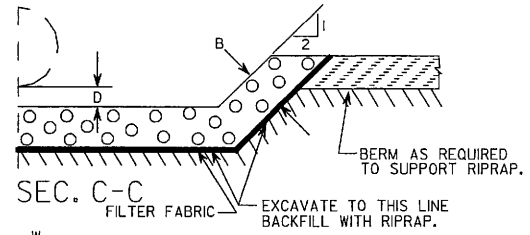
SEC. A-A

HALF PLAN

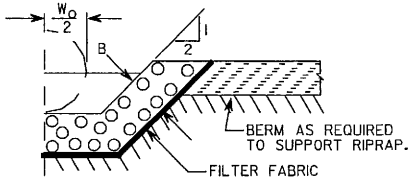




SEC. B-B



SEC. C-C



SEC. D-D

NOTE:
W_o = DIAMETER FOR PIPE CULVERT
W_o = BARREL WIDTH FOR BOX CULVERT
W_o = SPAN OF PIPE-ARCH CULVERT

DIM.	RIP RAP BASIN #							
	1	2	3	4	5	6	7	8
A	0.68							
B	0.68							
C	0							
D	1.19							
E	0.30							
F	7.95							
G	11.94							
H	5.97							
I	0.55							

ALL DIMENSIONS APPROXIMATE

BASIN #	LOCATION (AT OUTLET)
1	13+80 -RP B-
2	
3	
4	
5	
6	
7	
8	

DETAIL OF RIP-RAPPED ENERGY DISSIPATOR BASIN

METRIC

NORTH CAROLINA
DIVISION OF HIGHWAYS

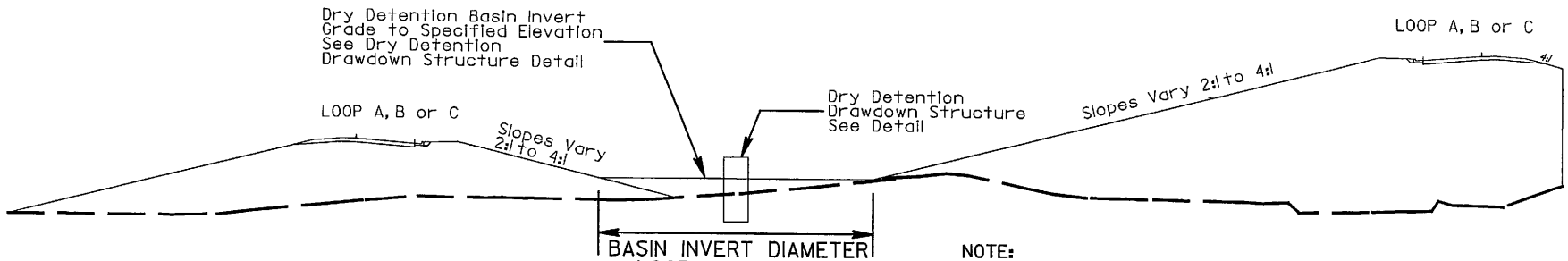
GUILFORD COUNTY
8.1570601 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 68 OF 79

01/09/2005
07:40:21PM
r:\dgn\Roadway\proj\PERMITS\r0609-details.dgn

DRY DETENTION BASIN GRADING DETAIL



BASIN INVERT DIAMETER
LOOP A 24M
LOOP B 8M
LOOP C 28M

NOTE:
BASIN NVERT ELEVATIONS HAVE BEEN SET TO PROVIDE 2-3 FEET OF FREEBOARD BETWEEN THE CONTROLLING ROADWAY CENTERLINE ELEVATION AND THE 50 YEAR EVENT. ADJUSTING THE BASIN INVERT OR DRAWDOWN STRUCTURE ELEVATIONS HIGHER THAN INDICATED IN PLANS MAY RESULT IN STORMWATER ENCROACHING INTO THE ROADWAY.

NORTH CAROLINA
DIVISION OF HIGHWAYS

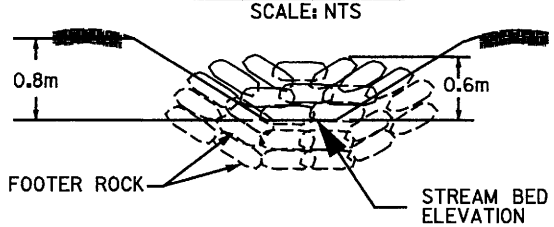
GUILFORD COUNTY
8.1570601 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

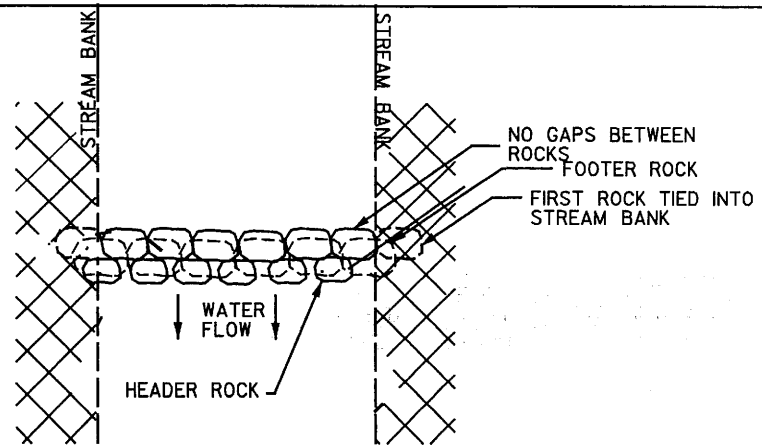
SHEET 68 OF 74

ROCK WEIR

SCALE: NTS



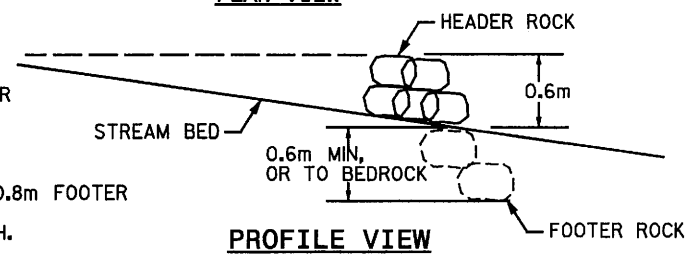
CROSS SECTION



PLAN VIEW

INSTALLATION OF ROCK WEIR

A TRENCH SHALL BE DUG IN SUCH A MANNER THAT THE FOOTER ROCKS ARE BURIED BENEATH THE BED SURFACE ELEVATION. AN EXCAVATOR, WITH A BUCKET THAT CONTAINS A HYDRAULIC THUMB, SHALL BE USED TO PLACE ROCKS WITH THE SUPERVISION OF THE RESIDENT ENGINEER. HEADER AND FOOTER ROCKS SHALL BE NO SMALLER THAN 0.5m X 0.5m X 0.8m FOOTER ROCKS SHALL BE PLACED IN THE TRENCH FIRST WITH HEADER ROCKS PLACED ON TOP PRIOR TO BACK FILLING OF THE TRENCH.



PROFILE VIEW

METRIC

NORTH CAROLINA
DIVISION OF HIGHWAYS

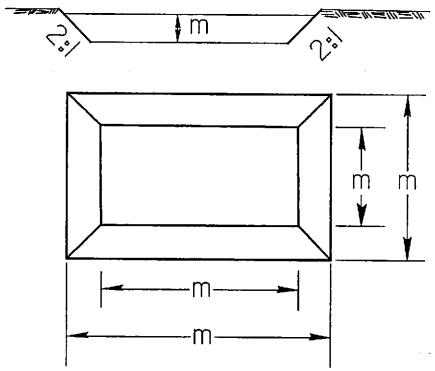
GUILFORD COUNTY
8.1570801 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 70 OF 74

DETAIL OF EMERGENCY SPILL BASIN

TOTAL CAPACITY REQUIRED : cu. m.
TOTAL CAPACITY PROVIDED : cu. m.



Ditch to be blocked with sandbags 1.0 m deep at outlet

STATION	REQ. VOL. (Cu. m.)	DEPTH (m)	BOTTOM LENGTH (m)	BOTTOM WIDTH (m)	TOP LENGTH (m)	TOP WIDTH (m)	PROVIDED VOL (Cu. m.)
FLY 16+20 L	78	1.0	9.0	5.0	13.0	9.0	81
-L- 34+00 R	104	1.0	10.0	7.0	14.0	11.0	112
-L- 35+60 L	158	1.0	11.0	10.0	15.0	14.0	160
-L- 39+90 L	78	1.0	7.0	7.0	11.0	11.0	85
-L- 40+70 L	103	1.0	8.0	8.0	12.0	12.0	104
-L- 50+40 L	396	1.0	20.0	16.0	24.0	20.0	400
-L- 56+00 L	50	1.0	5.0	5.0	9.0	9.0	53
-L- 58+20 R	77	1.0	11.0	4.0	15.0	8.0	82
-Y5- 14+00 R	275	1.0	17.0	13.0	21.0	17.0	289
-Y5- 15+20 R	178	1.0	14.0	9.0	18.0	13.0	180
RAMPB 12+90 R	174	1.0	14.0	9.0	18.0	13.0	180
RAMPD 15+20 R	127	1.0	12.0	7.0	16.0	11.0	130

METRIC

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 71 OF 74

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ha)	Temp. Fill In Wetlands (ha)	Excavation In Wetlands (ha)	Mechanized Clearing (Method III) (ha)	Hand Clearing in Wetlands (ha)	Permanent SW Impacts (ha)	Temporary SW Impacts (ha)	Existing Channel Impacts Permanent (m)	Existing Channel Impacted Temporary (m)	Natural Stream Design (m)
1	12+00 to 12+80 *	750mm			0.017	0.006		0.048				
2	19+30 to 20+40	1350mm						0.013	0.003	140.600	21.0	
3	23+45 to 23+60	450mm	0.011						0.003		21.0	
4	25+65 to 25+95	1350mm	0.066			0.011		0.008	0.006	124.800	50.0	
5	28+00 to 28+30	900mm						0.006	0.001	70.300	15.0	
6 (Main)	31+70 to 33+60	3@3.4m x 2.4m RCBC						0.024		294.600		288.2
6 (Trib 1)	32+00	Stream						0.025		51.200		
6 (Trib 2)	33+00	Stream						0.010		98.500		
7	35+20 to 35+50	600mm						0.004		44.600		
8	40+20 to 40+40	1050mm						0.018		180.000		
9	45+30 to 46+30 **	1 @ 3.7m x 3.7m						0.958				
10 (Trib 1)	48+85 to 50+75	Interchange						0.015		193.200		
10 (Trib 2)	51+20	Interchange						0.002		20.600		
10 (Trib 3)	50+20 to 51+60	Interchange						0.056		560.100		
10 (Trib 4)	900 mm	Interchange						0.027		137.800		
11 (Trib 1)	53+00 to 56+75	Interchange	0.081		0.013	0.014		0.042	0.003	455.600	21.0	
11 (Trib 2)	54+40 to 55+45	Interchange						0.013		133.400		
12	58+20 to 59+00	900mm	0.050			0.002		0.012		118.800		
13	10+20 R -SBCD-	900mm						0.001		1.500		
14	12+80 R -SBCD-	1050						0.001	0.002	31.900	17.0	
15	14+00 -NBCD- **	900 mm						0.108		22.800		
16	10+90 -RPD-	900mm& 1050mm						0.005	0.002	54	20.0	
17	12+20 -Y5-	Roadway Fill	0.005									
TOTALS:			0.212	0.000	0.013	0.028		1.397	0.020	2734.300	165.0	288.2

* Excavation in Pond (0.048 ha)

** Fill in Surface Water (Pond): Site 9 = 0.958 ha; Site 15 = 0.105 ha

Form Revised 3/22/01

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
PROJECT: 34345.1.1 (R-609IA)
Jan-06
SHEET 72 OF 74

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (Ac)	Temp. Fill In Wetlands (Ac)	Excavation In Wetlands (Ac)	Mechanized Clearing (Method III) (Ac)	Hand Clearing in Wetlands (Ac)	Permanent SW impacts (Ac)	Temp. SW impacts (Ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temporary (ft)	Natural Stream Design (ft)
1	12+00 to 12+80 *	750mm			0.04	0.01		0.12		0		
2	19+30 to 20+40	1350mm						0.03	0.01	461	69	
3	23+45 to 23+60	450mm	0.03						0.01	0	69	
4	25+65 to 25+95	1350mm	0.16			0.03		0.02	0.01	409	164	
5	28+00 to 28+30	900mm						0.01	0.00	231	49	
6 (Main)	31+70 to 33+60	3@3.4m x 2.4m RCBC						0.06		967	0	946
6 (Trib 1)	32+00	Stream						0.06		168	0	
6 (Trib 2)	33+00	Stream						0.02		323	0	
7	35+20 to 35+50	600mm						0.01		146	0	
8	40+20 to 40+40	1050mm						0.04		591	0	
9	45+30 to 46+30 **	1 @ 3.7m x 3.7m						2.37		0		
10 (Trib 1)	48+85 to 50+75	Interchange						0.04		634	0	
10 (Trib 2)	51+20	Interchange						0.00		68	0	
10 (Trib 3)	50+20 to 51+60	Interchange						0.14		1838	0	
10 (Trib 4)	50+70 to 51+90	Interchange						0.07		452	0	
11 (Trib 1)	53+00 to 56+75	Interchange	0.20		0.030	0.04		0.10	0.01	1495	69	
11 (Trib 2)	54+40 to 55+45	Interchange						0.03		438	0	
12	58+20 to 59+00	900mm	0.12					0.03		390	0	
13	10+20 R -SBCD-	900mm						0.00		5	0	
14	12+80 R -SBCD-	1050						0.00	0.00	105	56	
15	14+00 -NBCD- **	900 mm						0.27		75	0	
16	10+90 -RPD-	900mm& 1050mm						0.01	0.00	177	66	
17	12+20 -Y5-	Roadway Fill	0.012					0.00		0	0	
TOTALS:			0.52	0.00	0.03	0.07		3.43	0.04	8971	541	946

* Excavation in Pond (0.12 ac)

** Fill in Surface Water (Pond): Site 9 = 2.37 ac; Site 15 = 0.026 ac)

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
PROJECT: 34345.1.1 (R-609IA)

Jan-06

Form Revised 3/22/01

SUMMARY OF AFFECTED PROPERTY OWNERS

TRACT NO.	PROPERTY OWNER	ADDRESS	SITE NO.
1	M.C. DEVELOPMENT COMPANY	P.O. BOX 506 HIGH POINT,NC 27263	1
2	ALLEN J. BODENHEIMER	400 FORESTDALE DR JAMESTOWN,NC 27282	1
3	BEVERLY B. CAUDLE	1308 COX AVE HIGH POINT,NC 27263	2
4	NCDOT	P.O. BOX 14996 GREENSBORO,NC 27145	3,4,5,8,12
5	CLIFFORD L. HILL	RT. 4 BOX 345 HIGH POINT,NC 27263	6
6	VIRGINIA HUBBARD	1566 KERSEY VALLEY RD HIGH POINT,NC 27263	6
7	MARJORIE SURRETT	6802 DRESDEN RD HIGH POINT,NC 27263	7
8	FRANK MARTINEZ	1539 KERSEY VALLEY RD HIGH POINT,NC 27263	9
9	BOBBY L. CECIL	1119 LIBERTY RD ARCGDALE,NC 27263	10
10	GLENN P. MORGAN	6027 CHECKER RD HIGH POINT,NC 27263	11
11	LILLIE L. CRUTHIS	6027 CHECKER RD HIGH POINT,NC 27263	11
12	LAWRENCE E. MODLIN	6132 CHECKER RD HIGH POINT,NC 27263	11 & 16
13	ROBERT WARD	3001 ALAMANCE RD GEENSBORO,NC 27407	1
14	WALTER DANIEL	1620 EASTCHESTER DR HIGH POINT,NC 27263	2
15	THOMAS RAGSDALE	P.O. BOX 757 JAMESTOWN,NC 27282	5
16	CHARLES BOYD	1553 KERSEY VALLEY RD HIGH POINT,NC 27263	8
17	MR. FOSTER	6861 DRESDEN RD HIGH POINT,NC 27263	10
18	W. GERALD LEONARD	6801 JOPLIN RD HIGH POINT,NC 27263	15
19	ROBERT L. SLATE		16

METRIC

SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

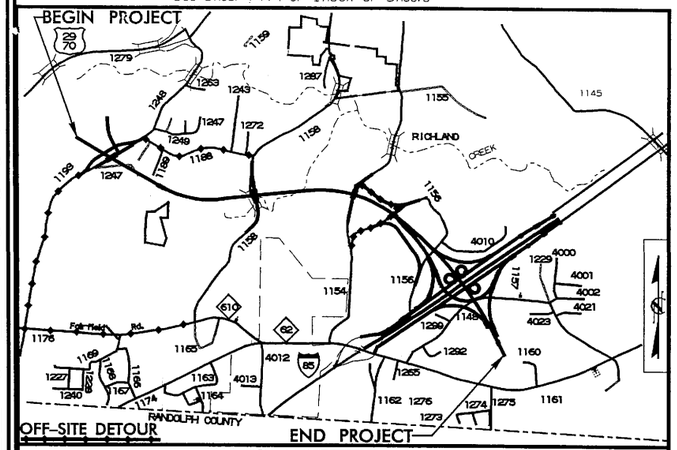
SCALE AS SHOWN

SHEET 74 OF 74

8/12/2005
12:26:19 PM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_prop.sum

CONTRACT: 34345.1.1 TIP: R-0609IA

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

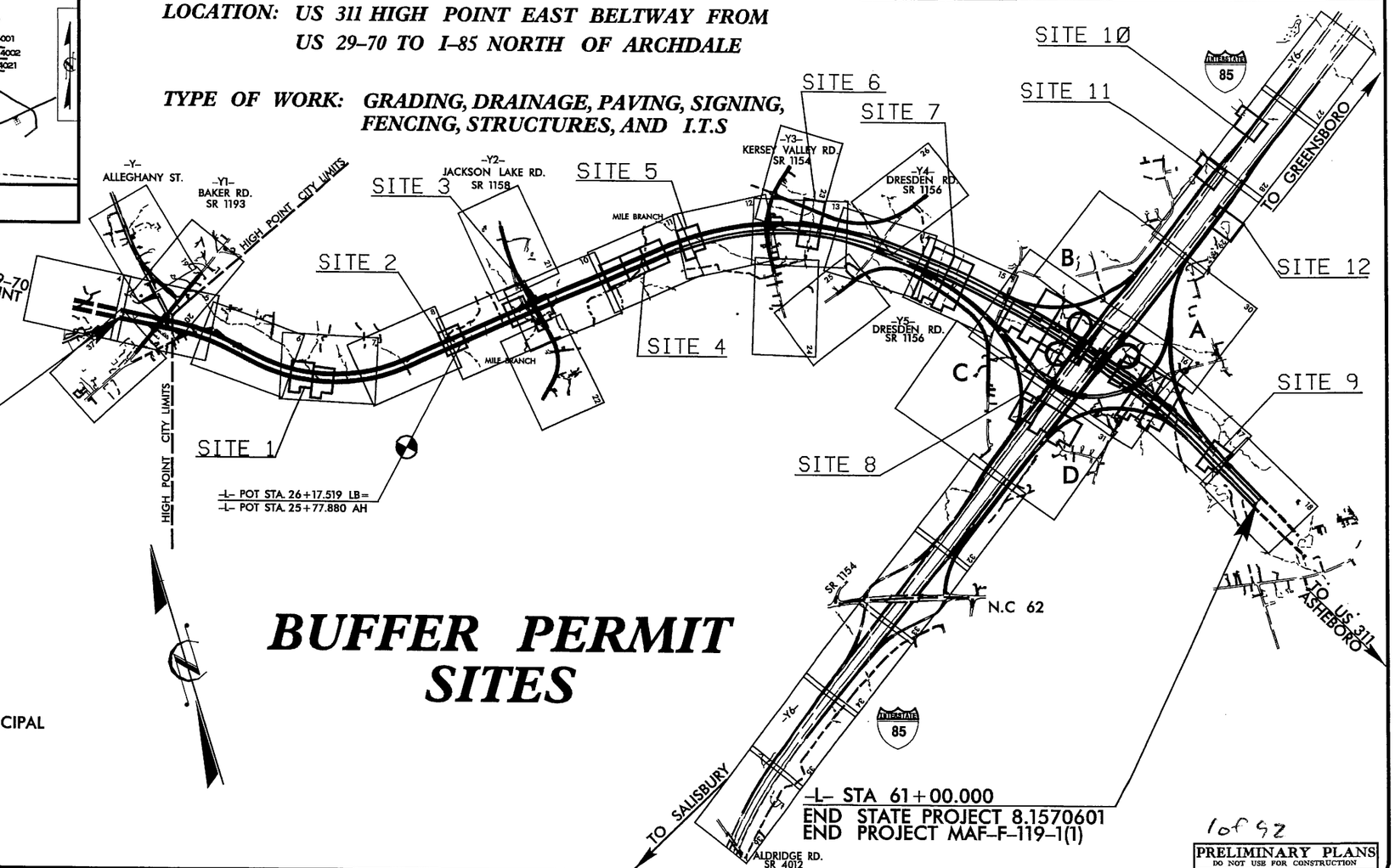
LOCATION: US 311 HIGH POINT EAST BELTWAY FROM US 29-70 TO I-85 NORTH OF ARCHDALE

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNING, FENCING, STRUCTURES, AND I.T.S

METRIC
ALL DIMENSIONS IN THESE PLANS ARE IN METERS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-0609IA	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34345.1.1	MAF-F-119-1(1)	PE
34345.2.7	STP-NHF-119-1(11)	ROW & UTILITIES



-L- STA 11+98.805
BEGIN STATE PROJECT 8.1570601
BEGIN PROJECT MAF-F-119-1(1)

-L- POT STA. 26+17.519 LB=
-L- POT STA. 25+77.880 AH

BUFFER PERMIT SITES

-L- STA 61+00.000
END STATE PROJECT 8.1570601
END PROJECT MAF-F-119-1(1)

A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF HIGH POINT

THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES

CLEARING ON THIS PROJECT SHALL BE PREFORMED TO THE LIMITS ESTABLISHED BY METHOD (III)

1 of 92

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES
5 0 10 PLANS
5 0 10 PROFILE (HORIZONTAL)
1 0 2 PROFILE (VERTICAL)

DESIGN DATA

ADT 2005	=	27,000
ADT 2025	=	39,000
DHV	=	10 %
D	=	60 %
T	=	13 % *
V	=	110 km/h

* TTST 7 % DUAL 6 %
FUNC CLASS - FREEWAY

PROJECT LENGTH

LENGTH ROADWAY F.A PROJECT MAF-F-119-1(1) =	4.901 KM
LENGTH STRUCTURE F.A PROJECT MAF-F-119-1(1) =	KM
TOTAL LENGTH STATE PROJECT 8.1570601 =	4.901 KM

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh, NC 27610

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER, 2003

LETTING DATE: MARCH 15, 2005

JIMMY GOODNIGHT, PE
PROJECT ENGINEER

STEVE KENDALL
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
SIGNATURE: P.E.

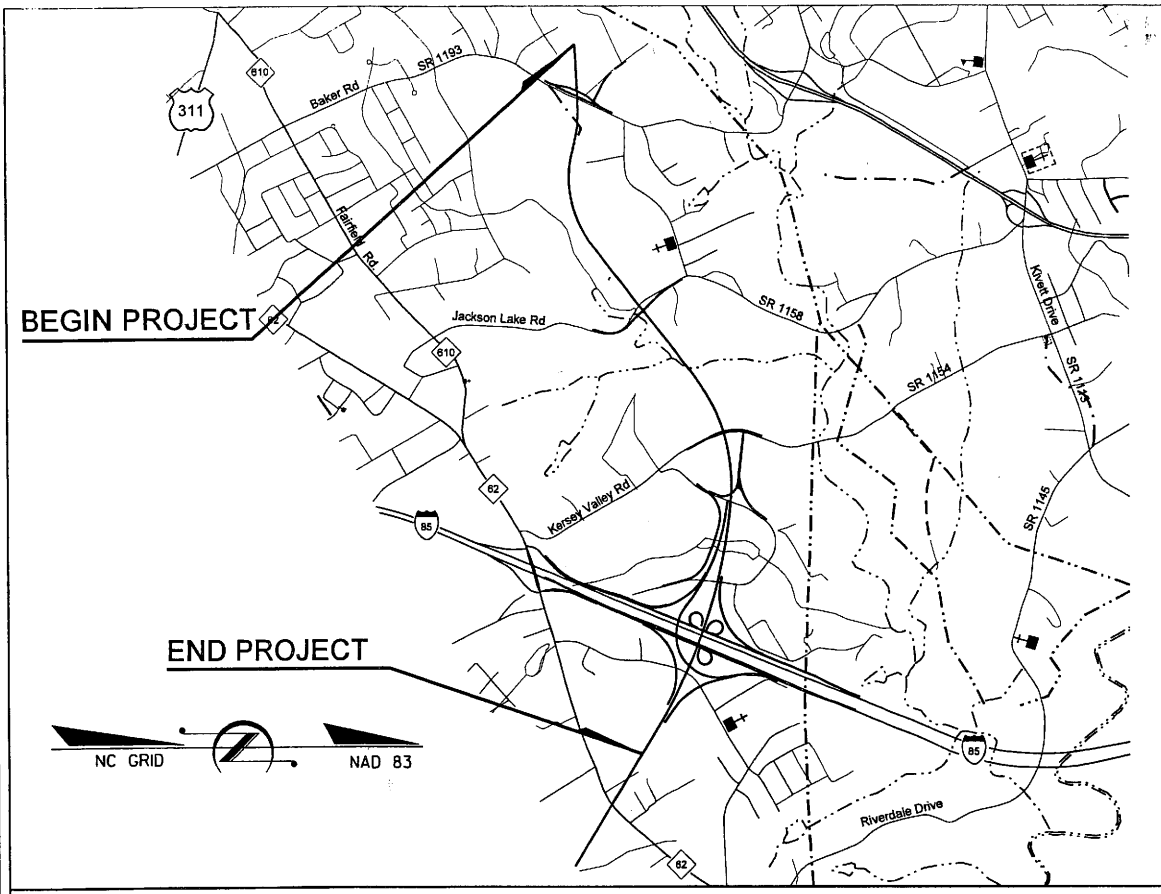
ROADWAY DESIGN ENGINEER
SIGNATURE: P.E.

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

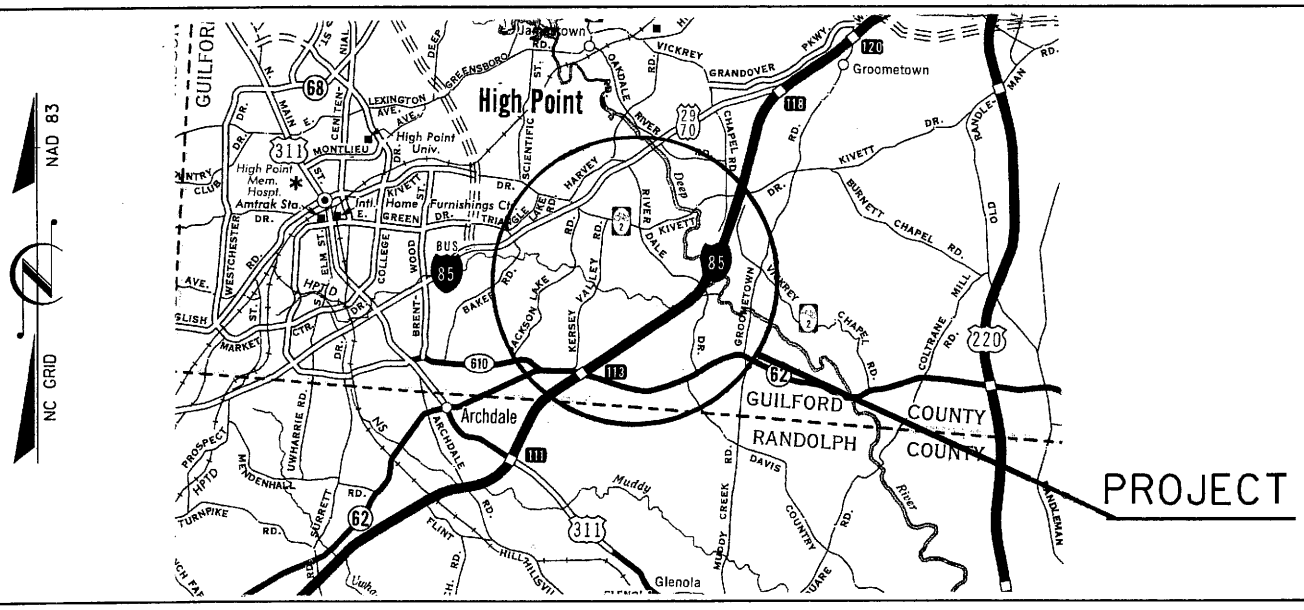
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

9/09/99
1/19/2006
R:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609ia_waites.tsh



PORTION OF GUILFORD COUNTY MAP



PORTION OF STATE MAP

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

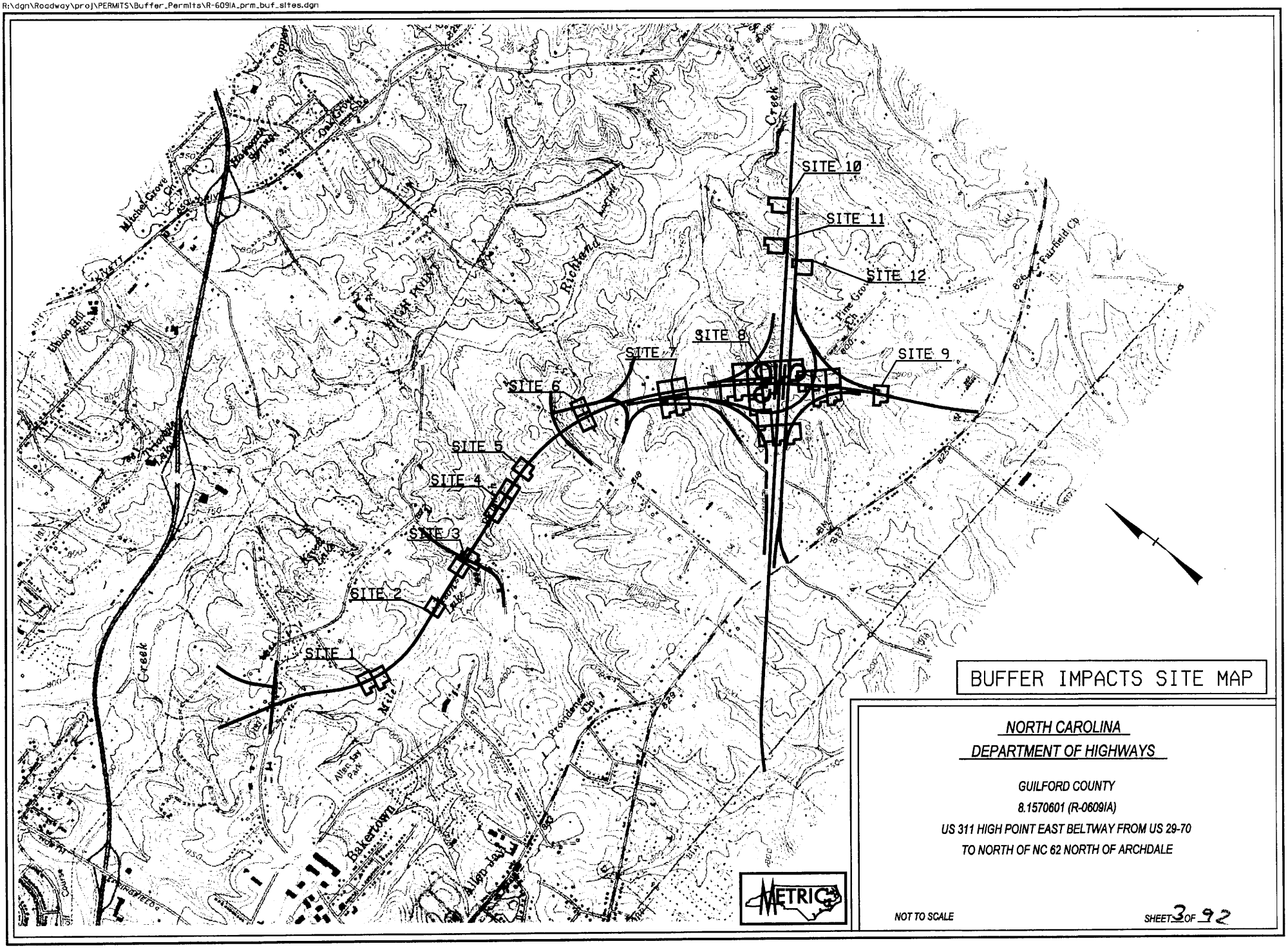
SCALE AS SHOWN

SHEET 2 OF 12

BUFFER IMPACTS

07/16/2002
04:52:33 PM
g:\NC\1\029\010\PLANS\PERMITS\Wetland_Permits\title.psh

8/12/2005
11:36:12 AM
R:\dgn\Roadway\proj\PERMITS\Buffer_Permits\R-0609A_prm_buf_sites.dgn



BUFFER IMPACTS SITE MAP

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

NOT TO SCALE

SHEET 3 OF 92

BUFFER LEGEND

WLB — WETLAND BOUNDARY

WLB WLB — WETLAND

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

— RBZ — RIPARIAN BUFFER ZONE

— RBZ1 — RIPARIAN BUFFER ZONE 1
30 ft (9.2m)

— RBZ2 — RIPARIAN BUFFER ZONE 2
20 ft (6.1m)

FLOW DIRECTION

TB — TOP OF BANK

WE — EDGE OF WATER

C — PROP. LIMIT OF CUT

F — PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

— NG — NATURAL GROUND

PL — PROPERTY LINE

— TDE — TEMP. DRAINAGE EASEMENT

— PDE — PERMANENT DRAINAGE EASEMENT

— EAB — EXIST. ENDANGERED ANIMAL BOUNDARY

— EPB — EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT
12"-48" PIPES
54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTING STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 — ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE (PSH)

LEVEL SPREADER (LS)

GRASS SWALE

METRIC

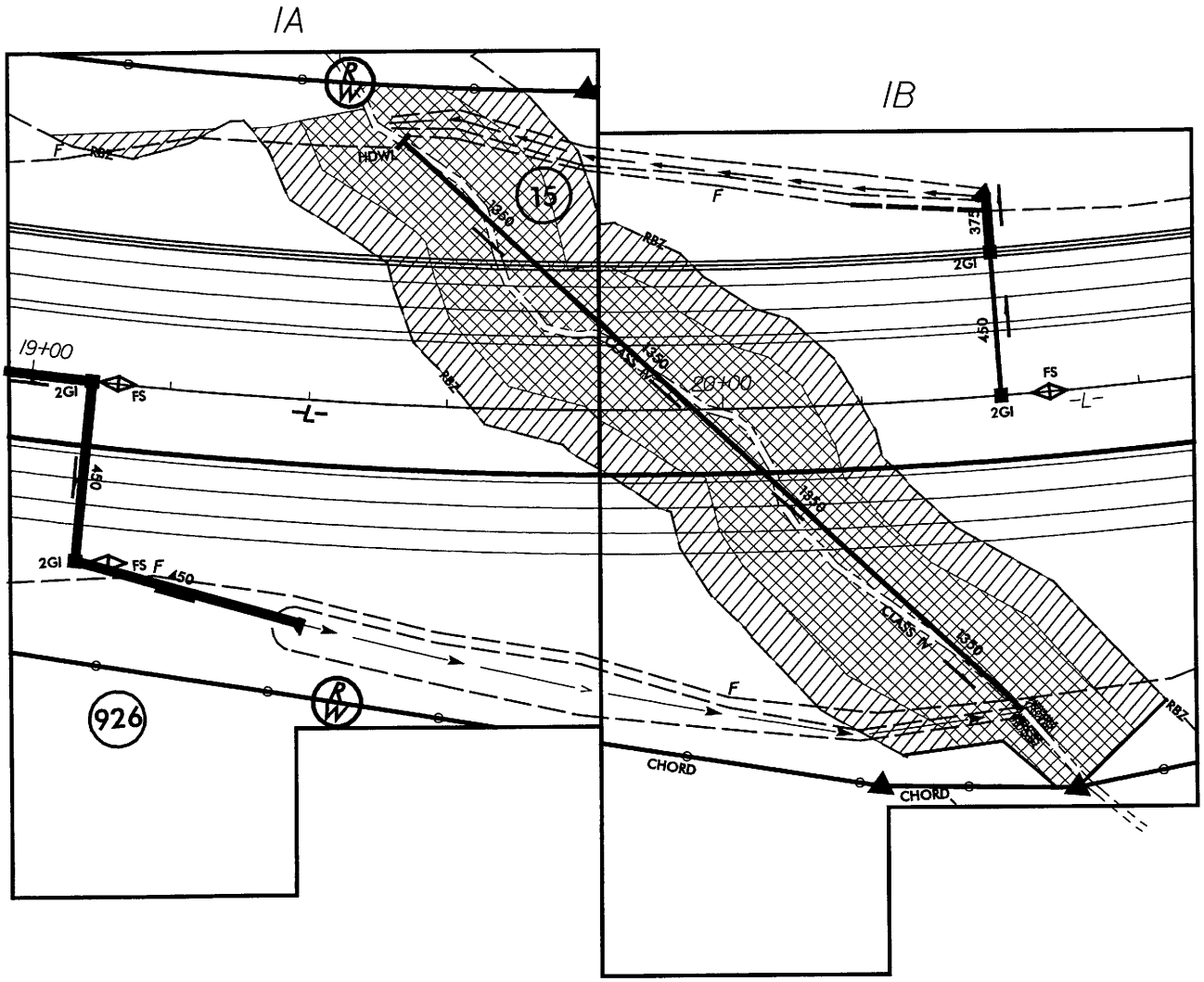
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

07/02/2003
03:46:08 PM
u:\70001931\transportation\design\000\PLANS\PERMITS\Buffer_Permits\buffer_legend.psh



SHEET LAYOUT
PLAN VIEW
SITE I

METRIC

10 0 20
SCALE IN METERS

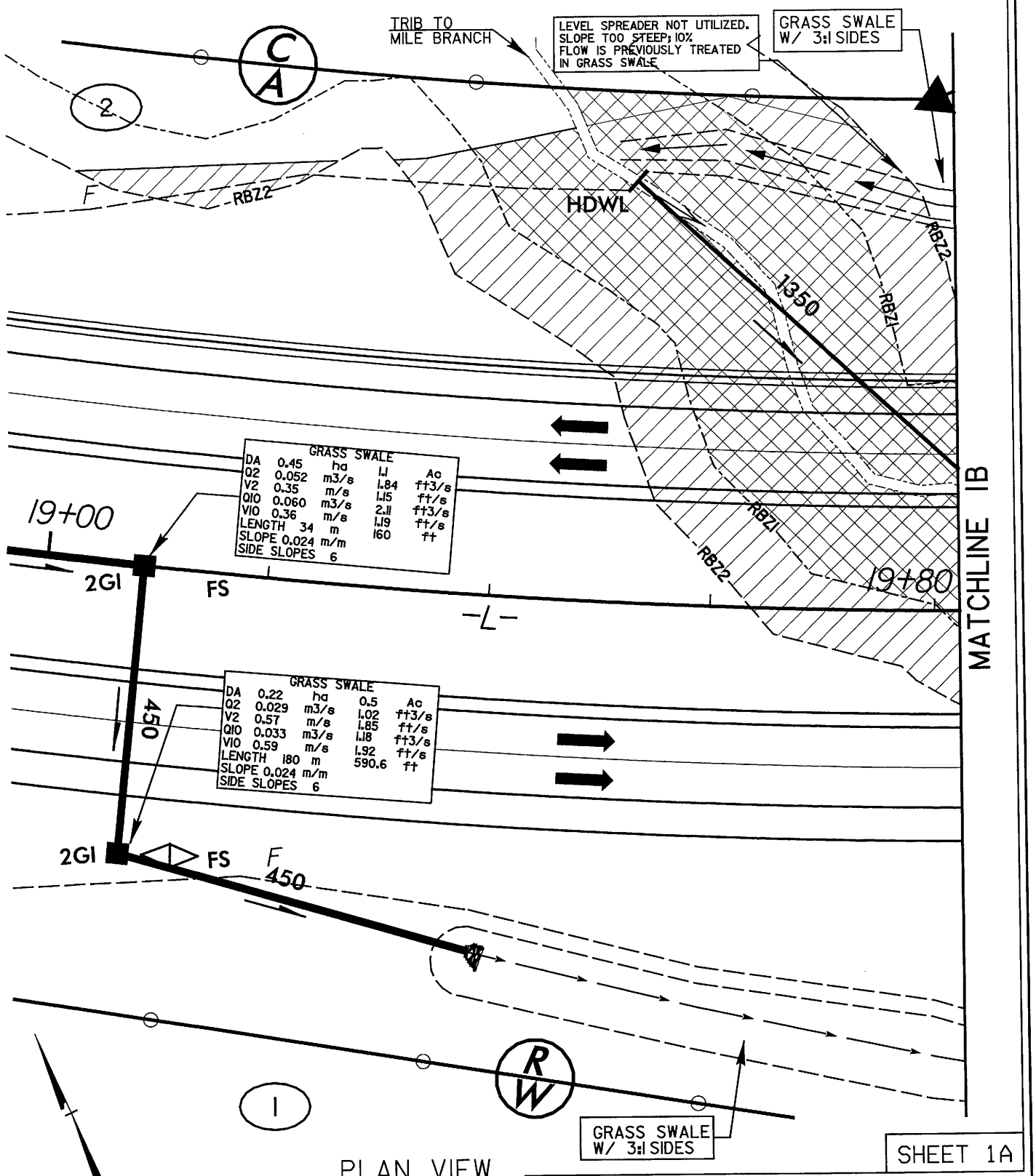
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 5 OF 92

1/13/2006
3:27:48 PM
R:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_01_lay.psh



SHEET 1A

PLAN VIEW
SITE 1

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

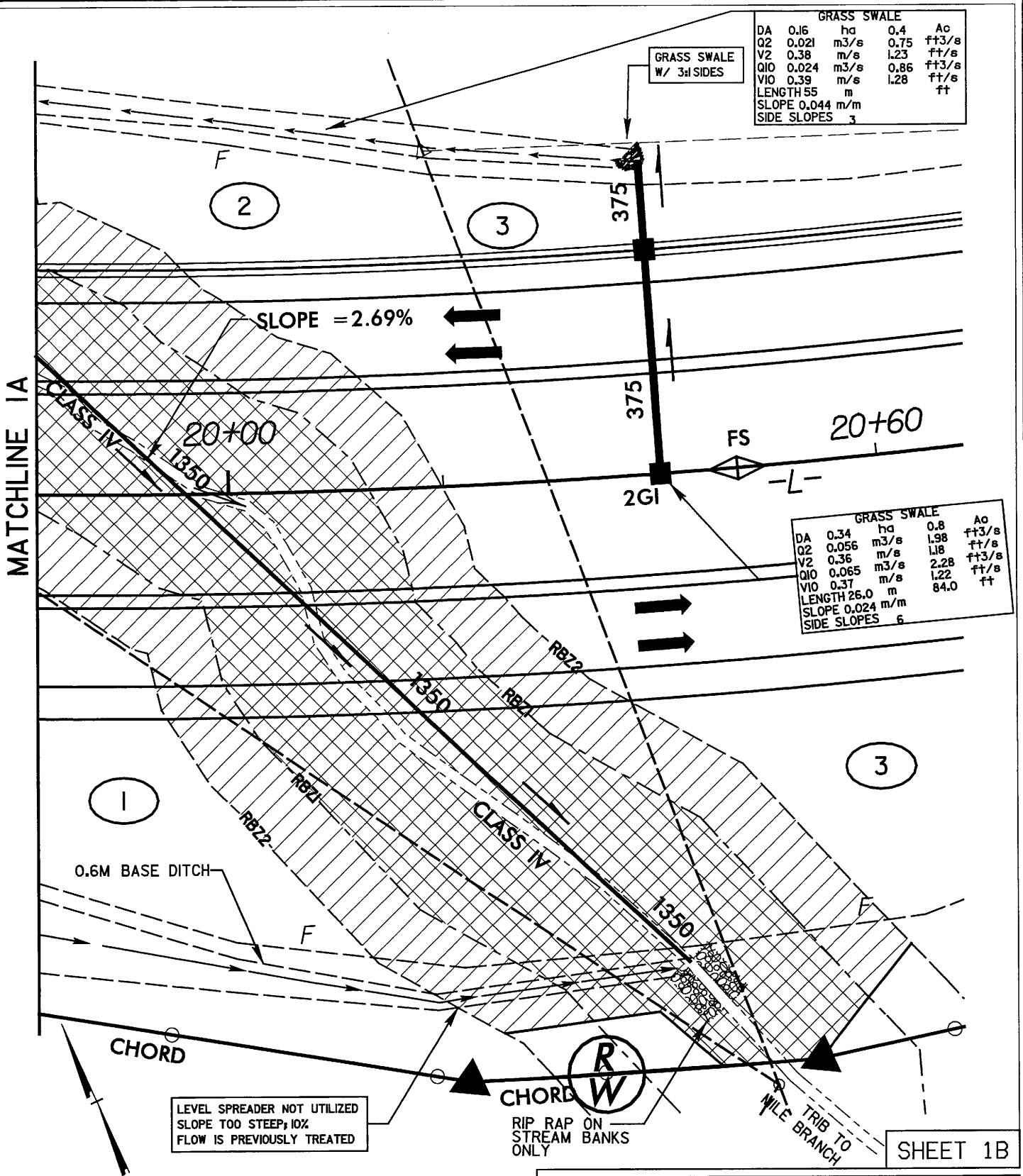
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 6 OF 92

19/2006
54:24 AM
\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_01a.psh



SHEET 1B

PLAN VIEW
SITE 1

LEGEND

RBZ1 — RIPARIAN BUFFER - ZONE 1

RBZ2 — RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

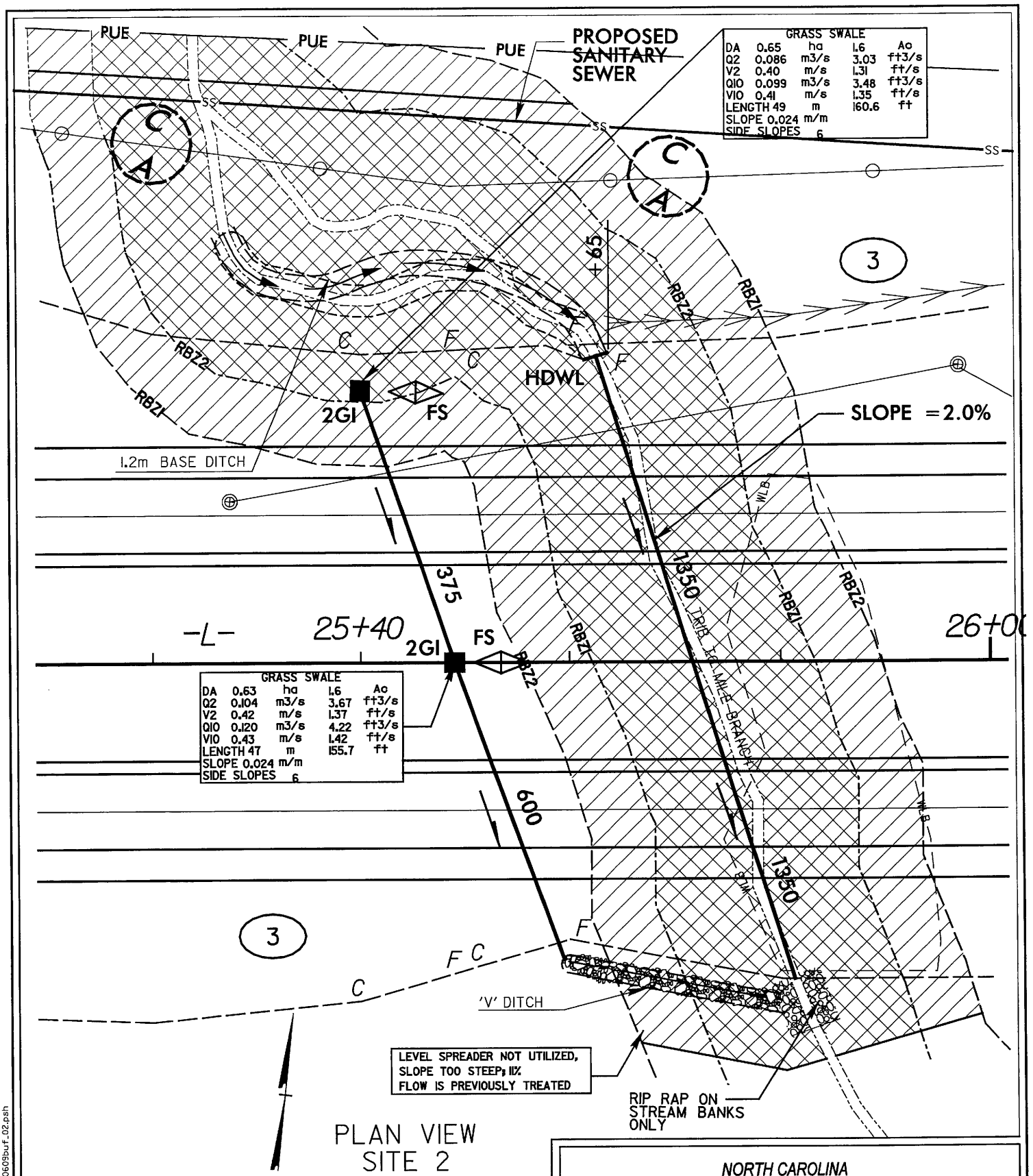
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 7 OF 92

1/13/2006
3:32:55 PM
R:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_01b.psh



PLAN VIEW
SITE 2

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 5 10
SCALE IN METERS

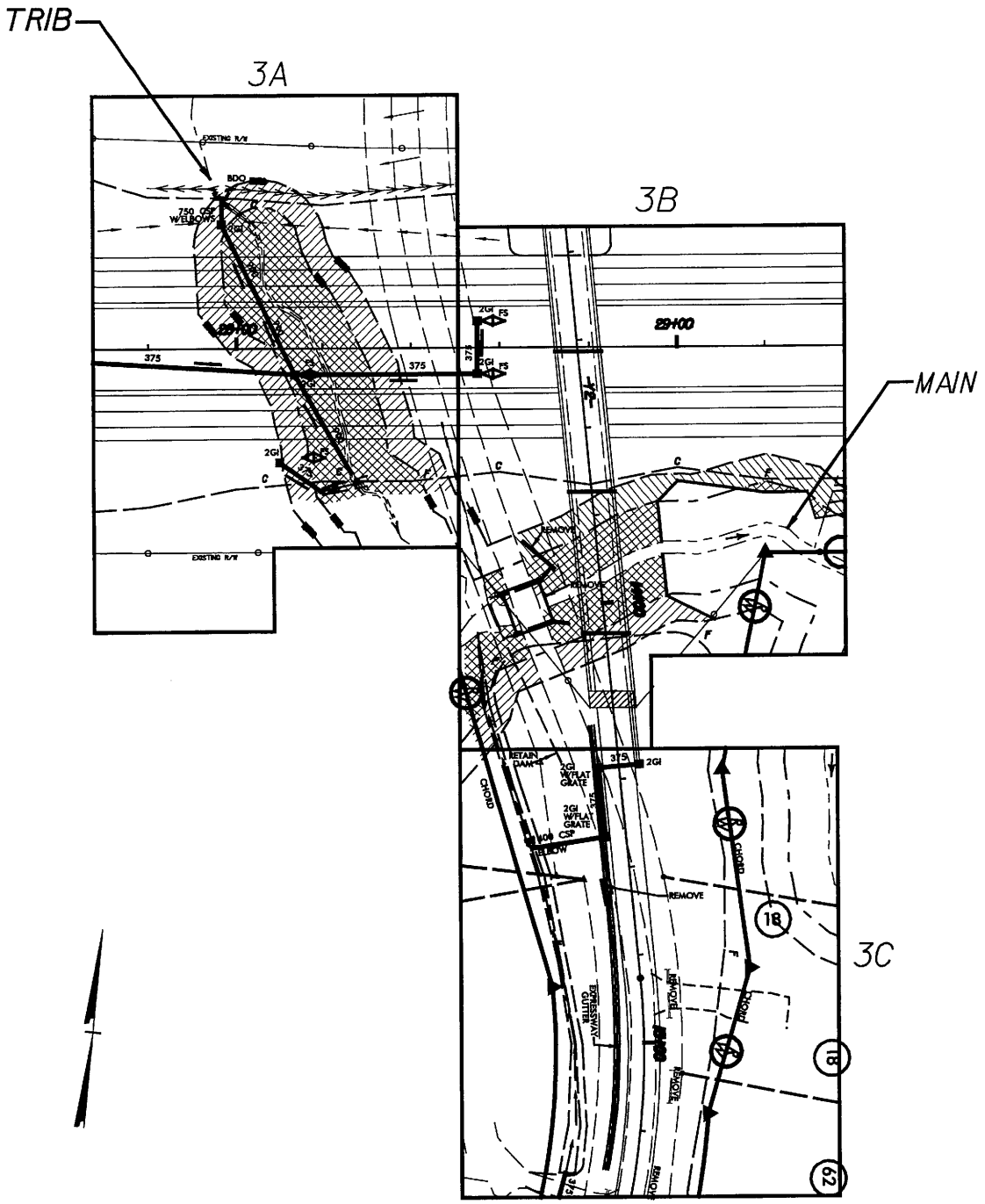
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 8 OF 92

1/24/2006
7:59:56 AM
R:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_02.psh



SHEET LAYOUT
PLAN VIEW
SITE 3

METRIC

10 0 20
SCALE IN METERS

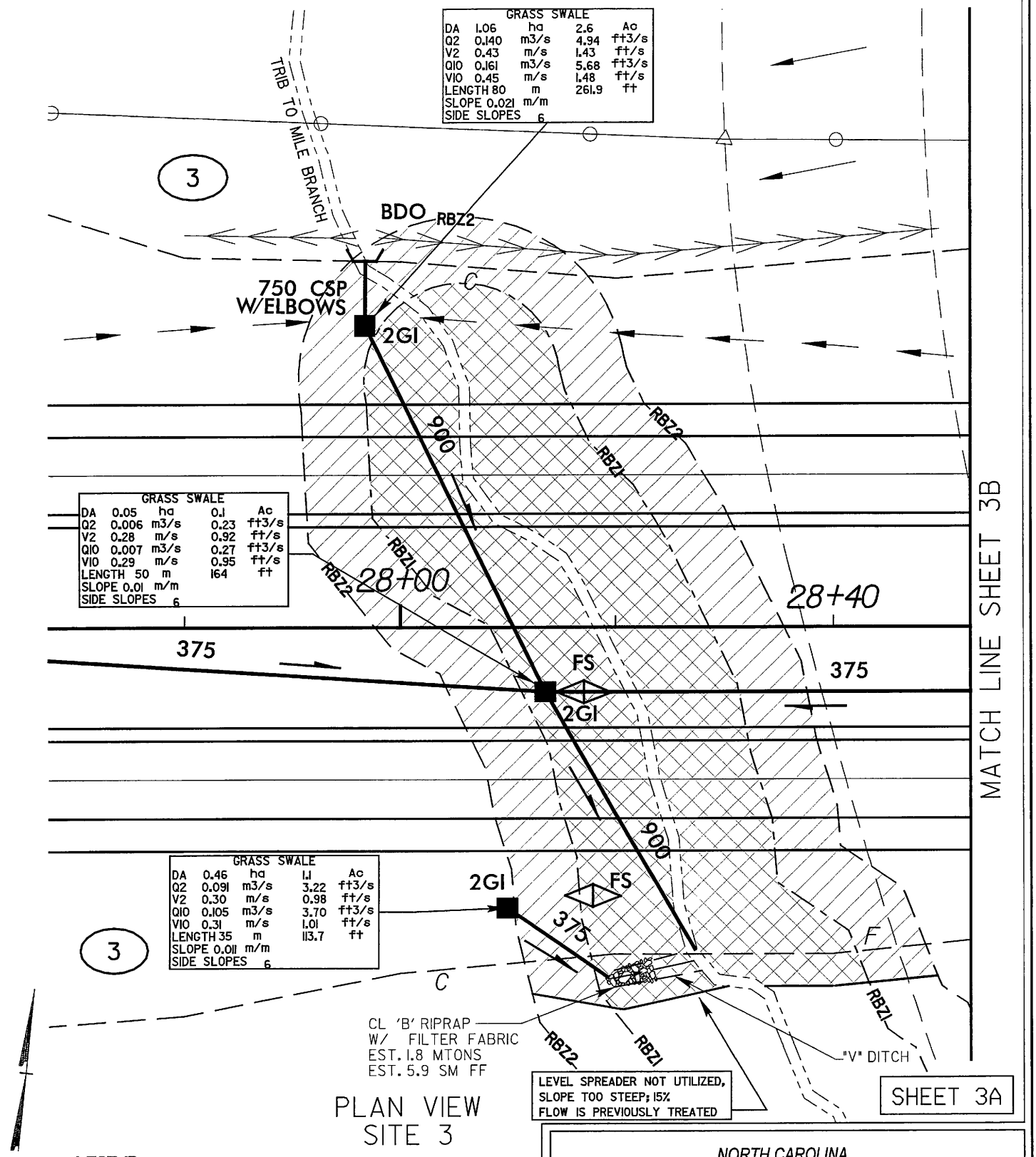
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 9 OF 92

1/13/2006
3:40:08 PM
R:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_03_lay.psh



PLAN VIEW
SITE 3

LEGEND

RBZ1 — RIPARIAN BUFFER - ZONE 1

RBZ2 — RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10

SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

8.1570601 (R-0609IA)

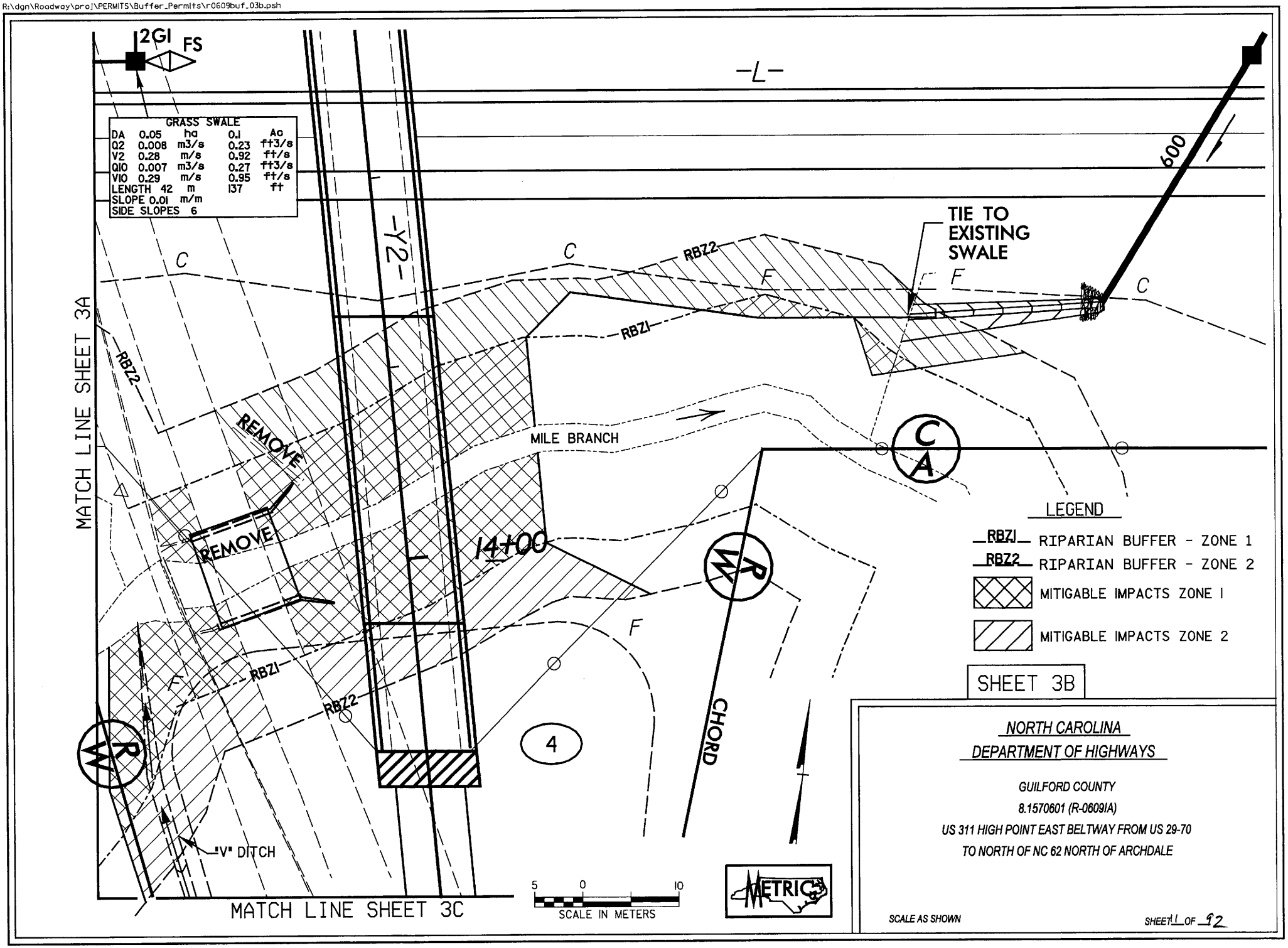
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

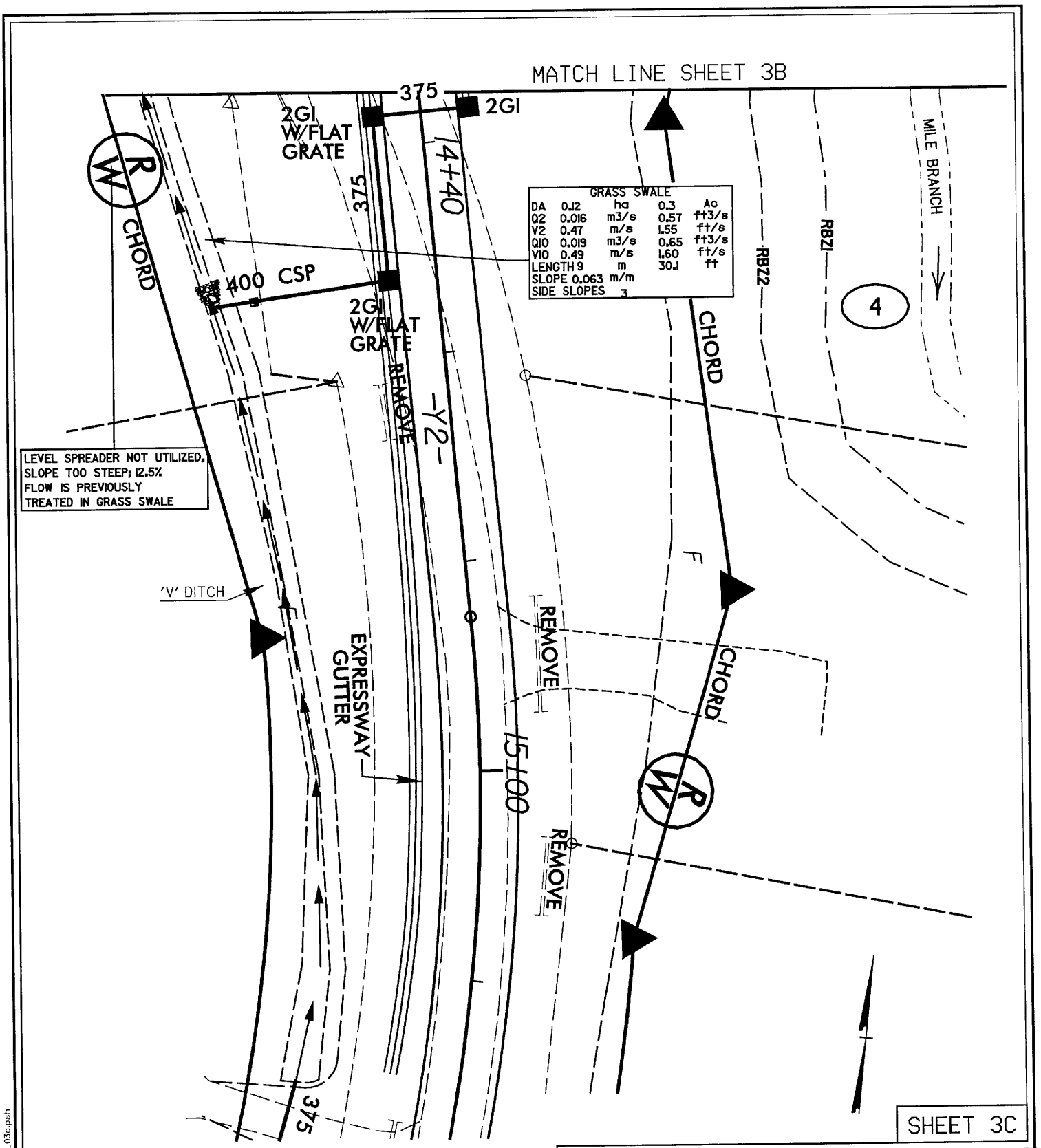
SCALE AS SHOWN

SHEET 10 OF 92

01/09/2005
12:24:00 PM
r:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_03a.psh

1/12/2006
10:03:11 AM
R:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_03b.psh





LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10

SCALE IN METERS

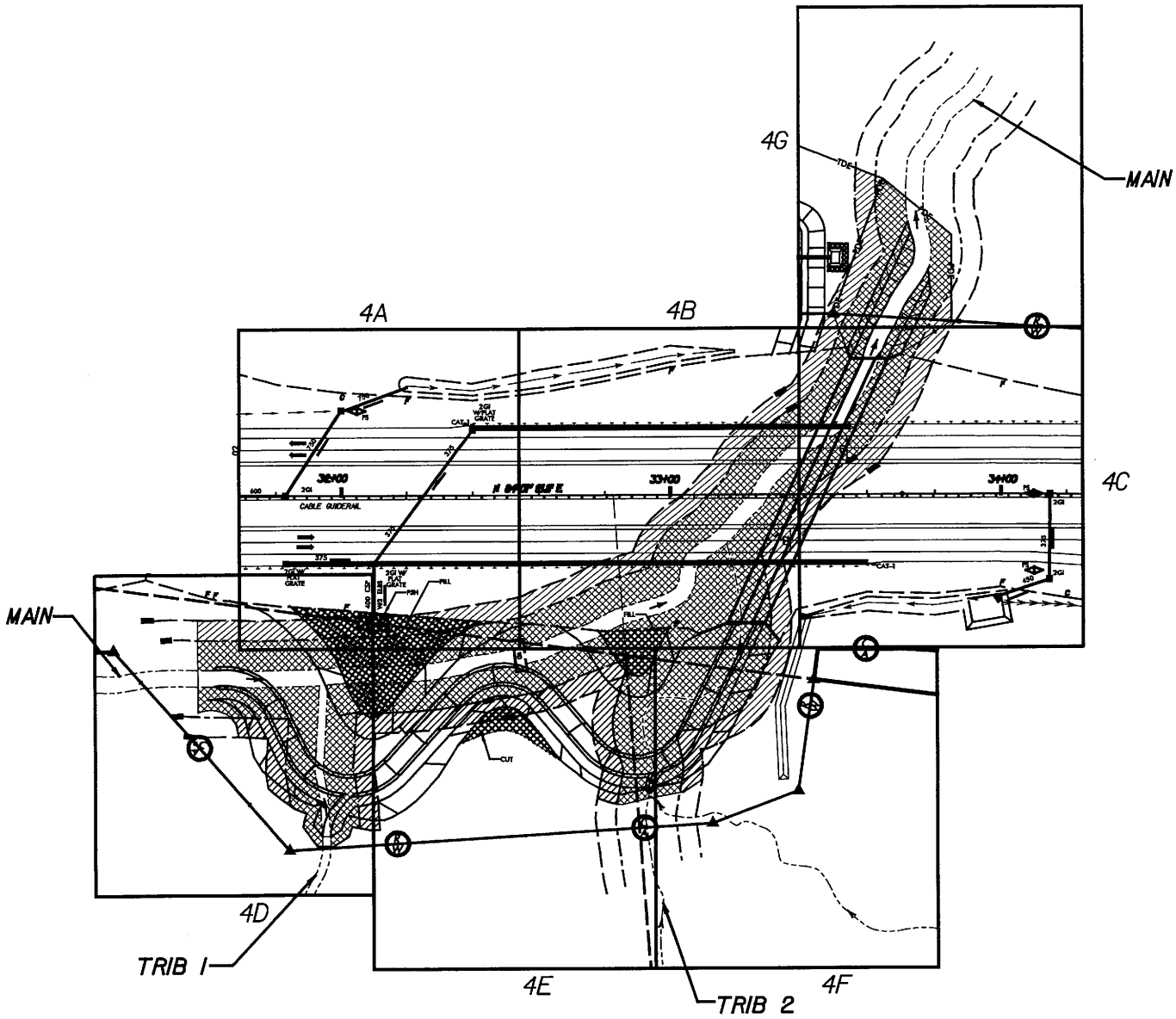
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 12 OF 92

/13/2006
:44:22 PM
t:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_03c.psh



SHEET LAYOUT
PLAN VIEW
SITE 4

METRIC

15 0 30
SCALE IN METERS

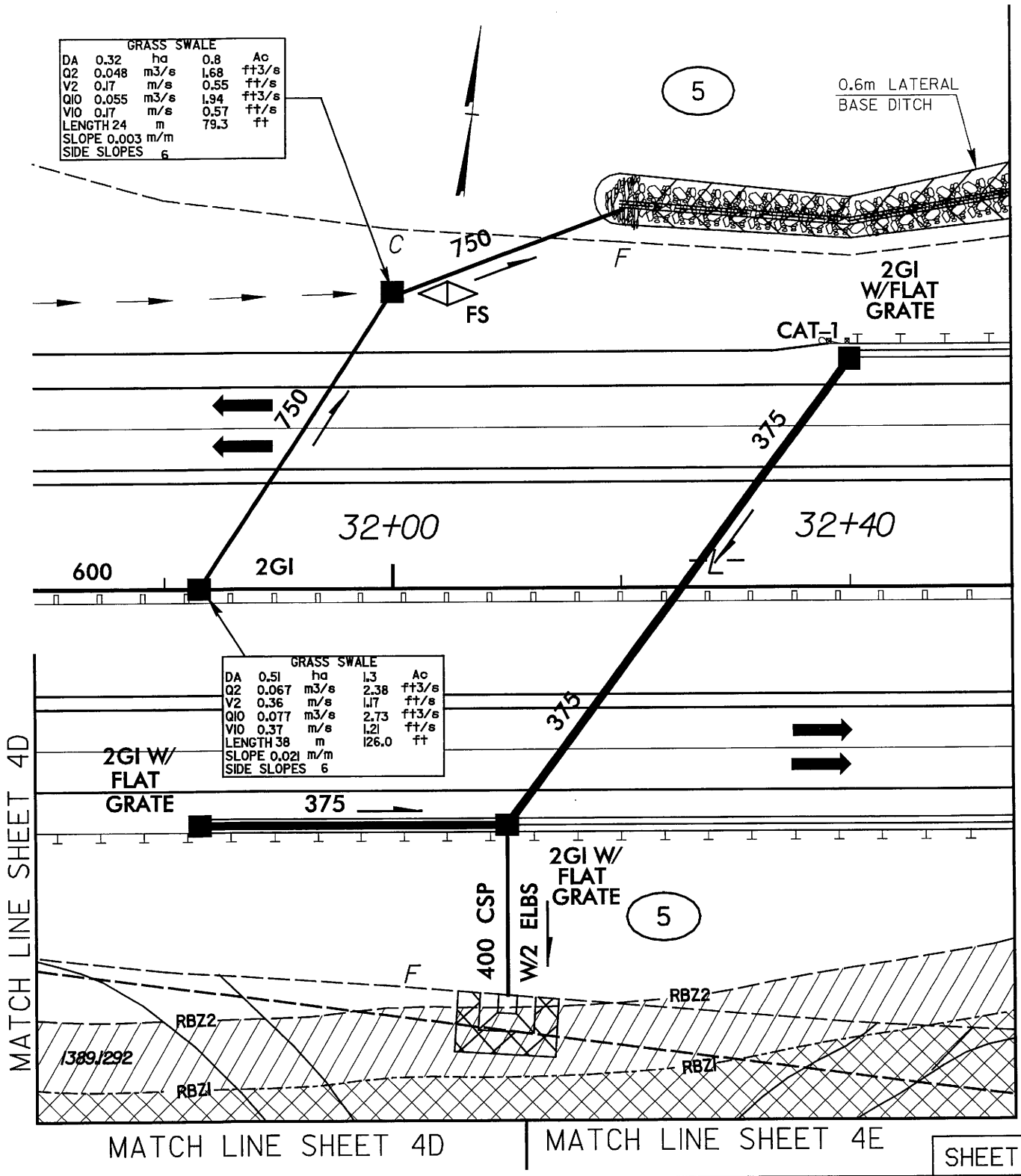
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 13 OF 92

12/2006
:20:08 PM
:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_04_lay.psh



SHEET 4A

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

PLAN VIEW
SITE 4

METRIC

SCALE IN METERS

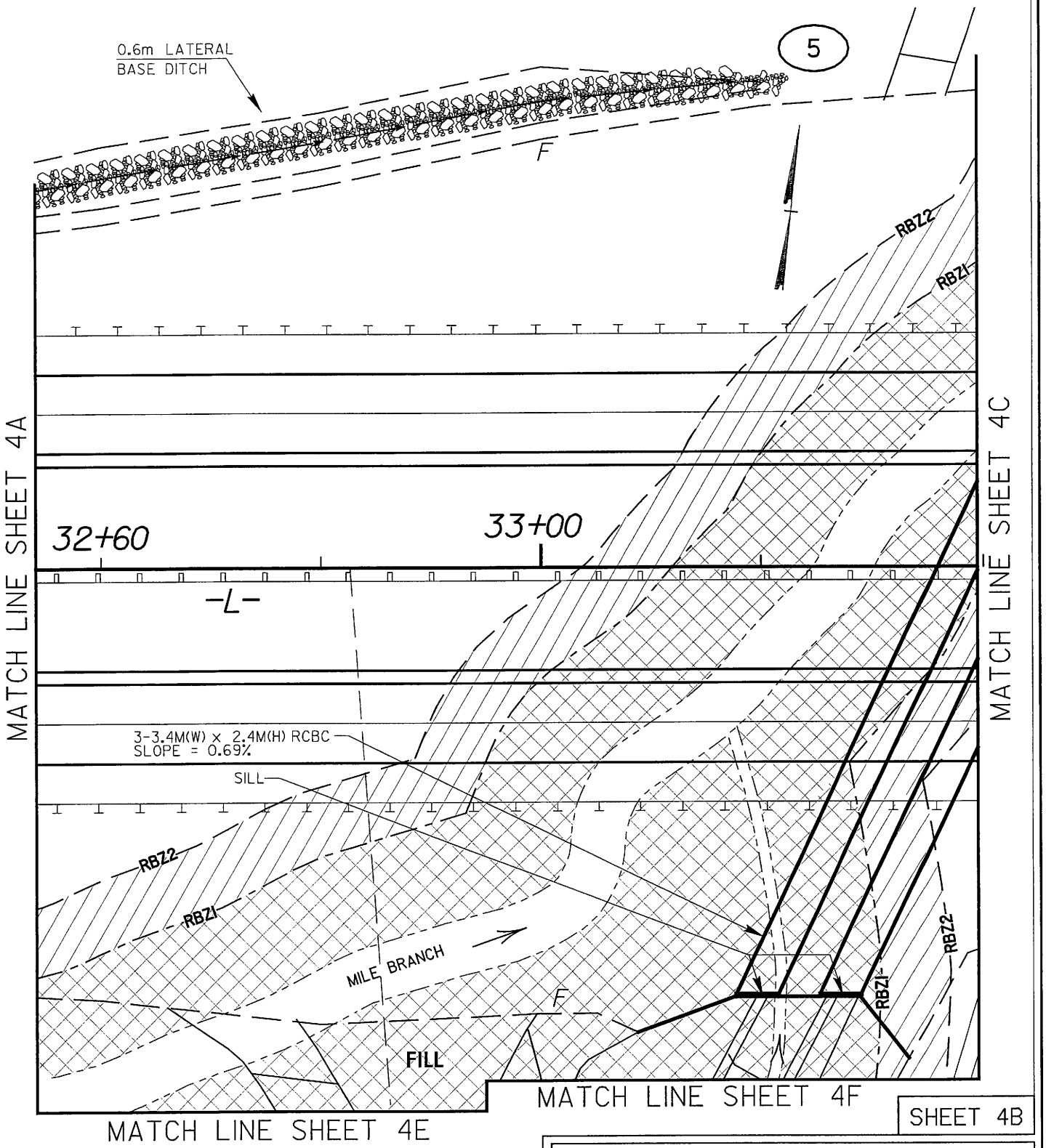
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 14 OF 52

/19/2006
10:09:31 AM
R:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_04a.psh



SHEET 4B

PLAN VIEW
SITE 4

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

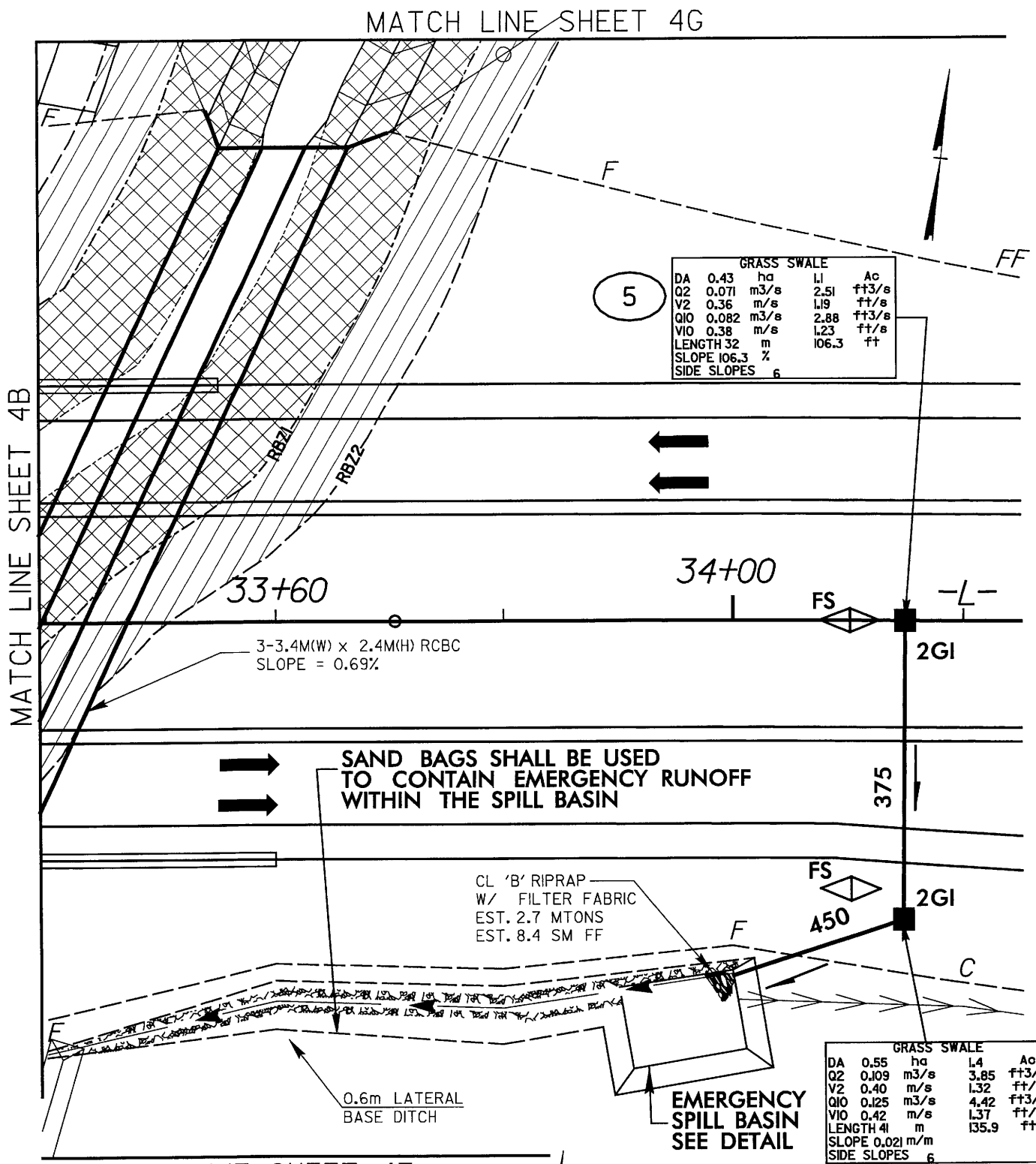
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 15 OF 92

01/09/2005
01:02:40 PM
r:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_04b.psh



SHEET 4C

PLAN VIEW
SITE 4

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

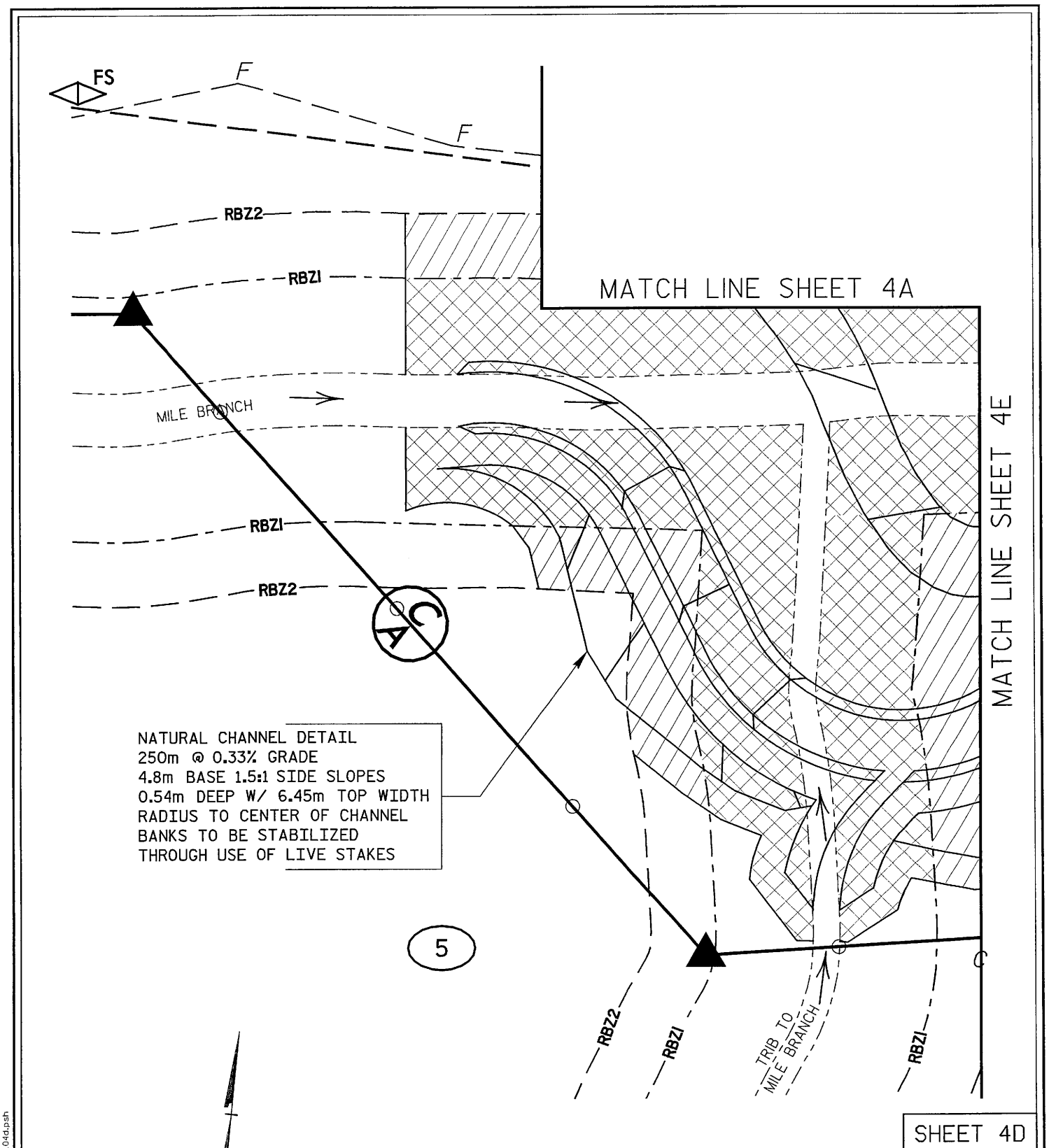
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 16 OF 92

12/2006
50:32 PM
:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_04c.psh



PLAN VIEW
SITE 4

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

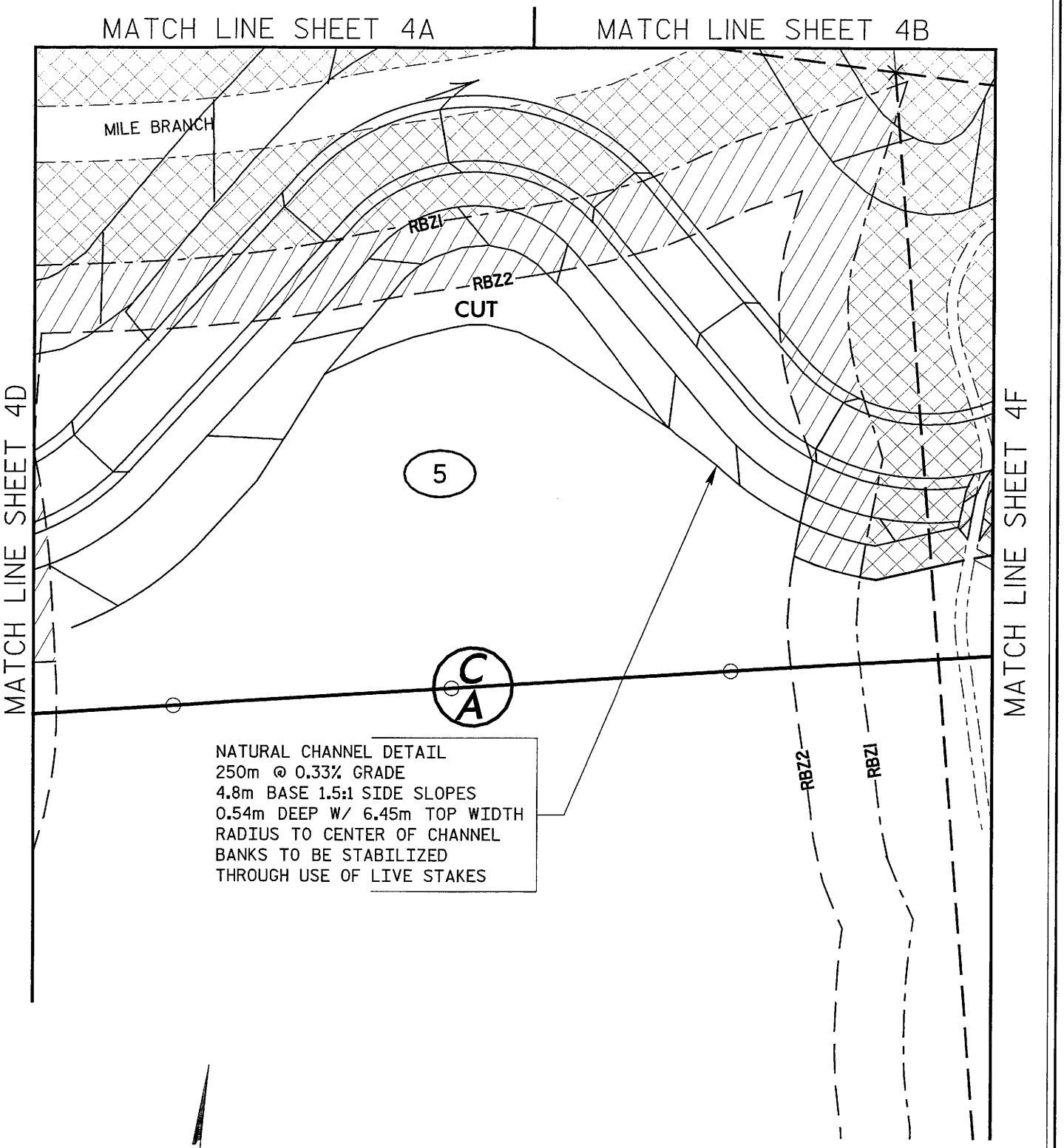
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 17 OF 92

01/09/2005
01:05:18 PM
r:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r-0609buf_04d.psh



SHEET 4E

PLAN VIEW
SITE 4

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

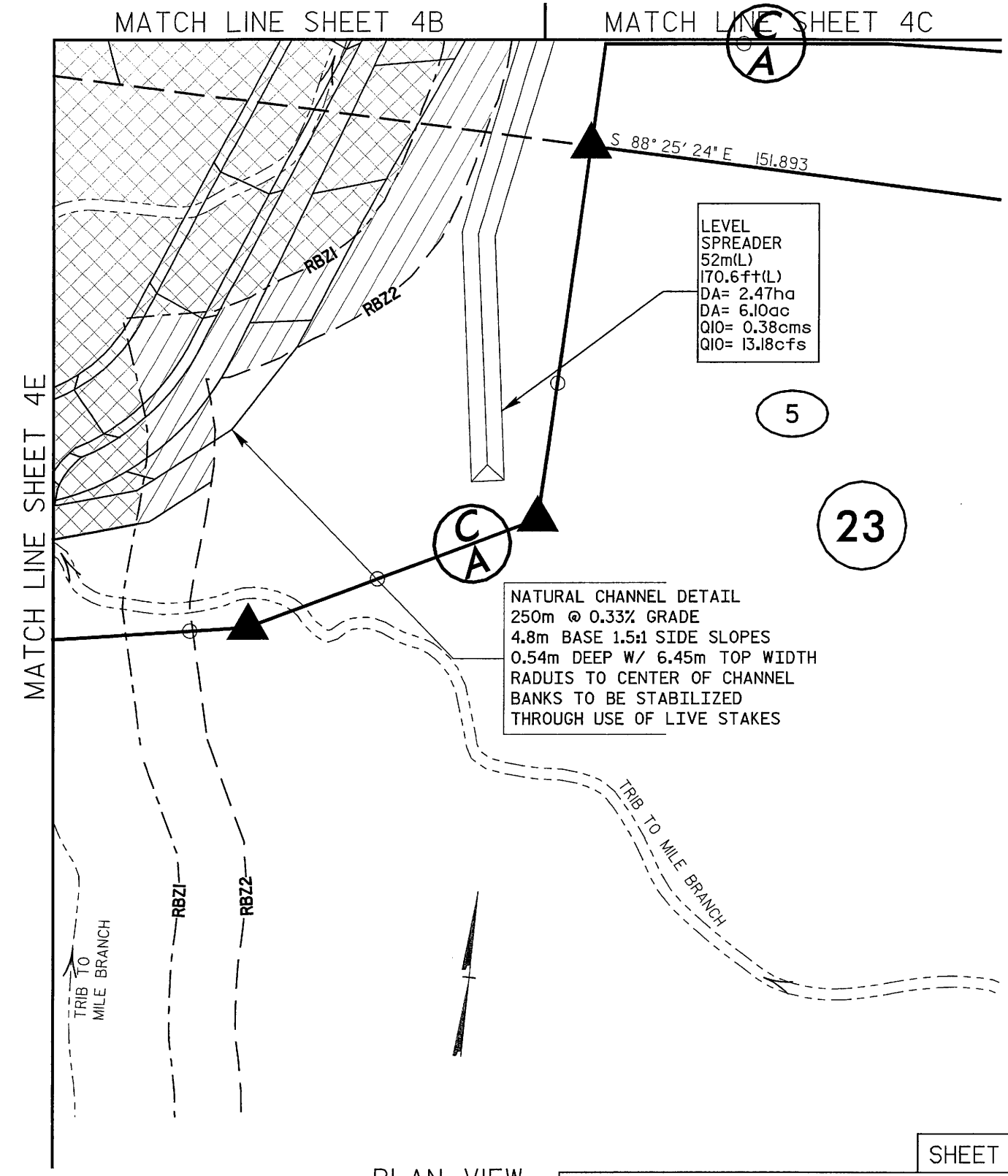
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 18 OF 92

01/03/2005
01:07:04 PM
r:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_04a.psh



SHEET 4F

PLAN VIEW
SITE 4

LEGEND

RBZ1 — RIPARIAN BUFFER - ZONE 1

RBZ2 — RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

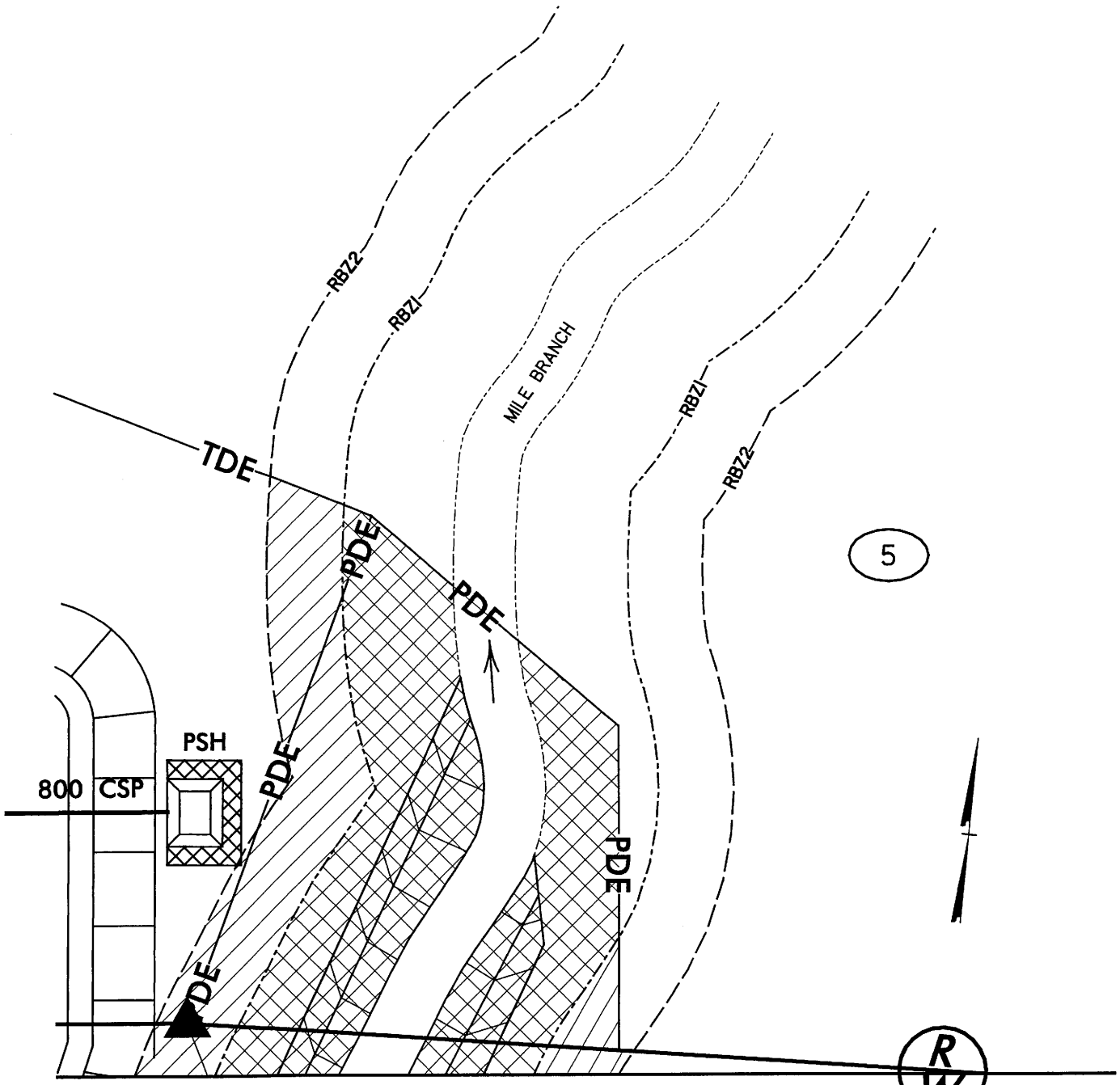
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 14 OF 92

01/09/2005
06:08:17 PM
r:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_04f.psh



MATCH LINE SHEET 4C

SHEET 4G

PLAN VIEW
SITE 4

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

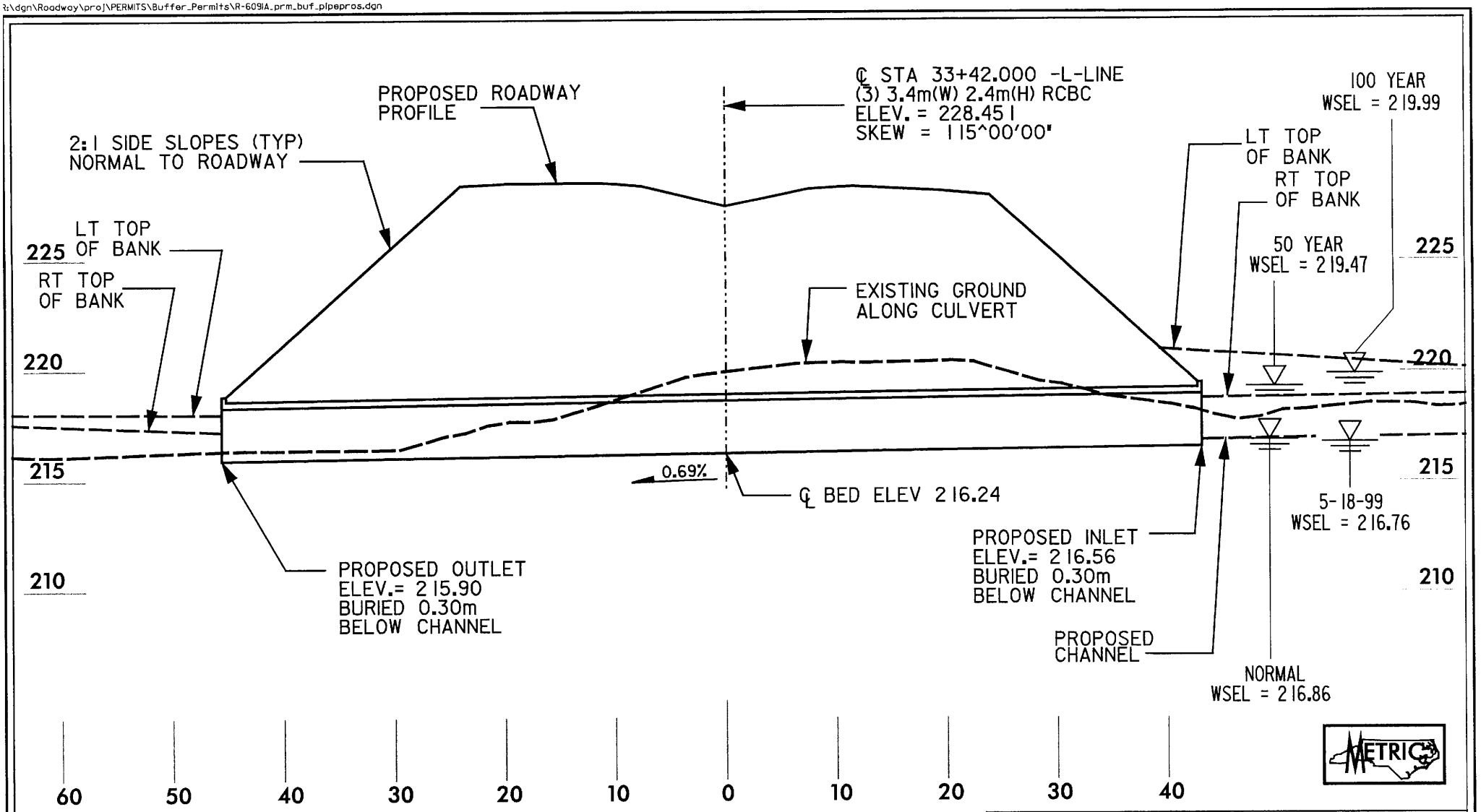
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 20 OF 92

/12/2006
:11:32 PM
:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_04g.psh

3/12/2005
3:57:31 PM
R:\dgn\Roadway\proj\PERMITS\Buffer_Permits\R-6091A_prm_buf_pipepros.dgn



SCALE:
1 = 500 HORIZONTAL
1 = 250 VERTICAL

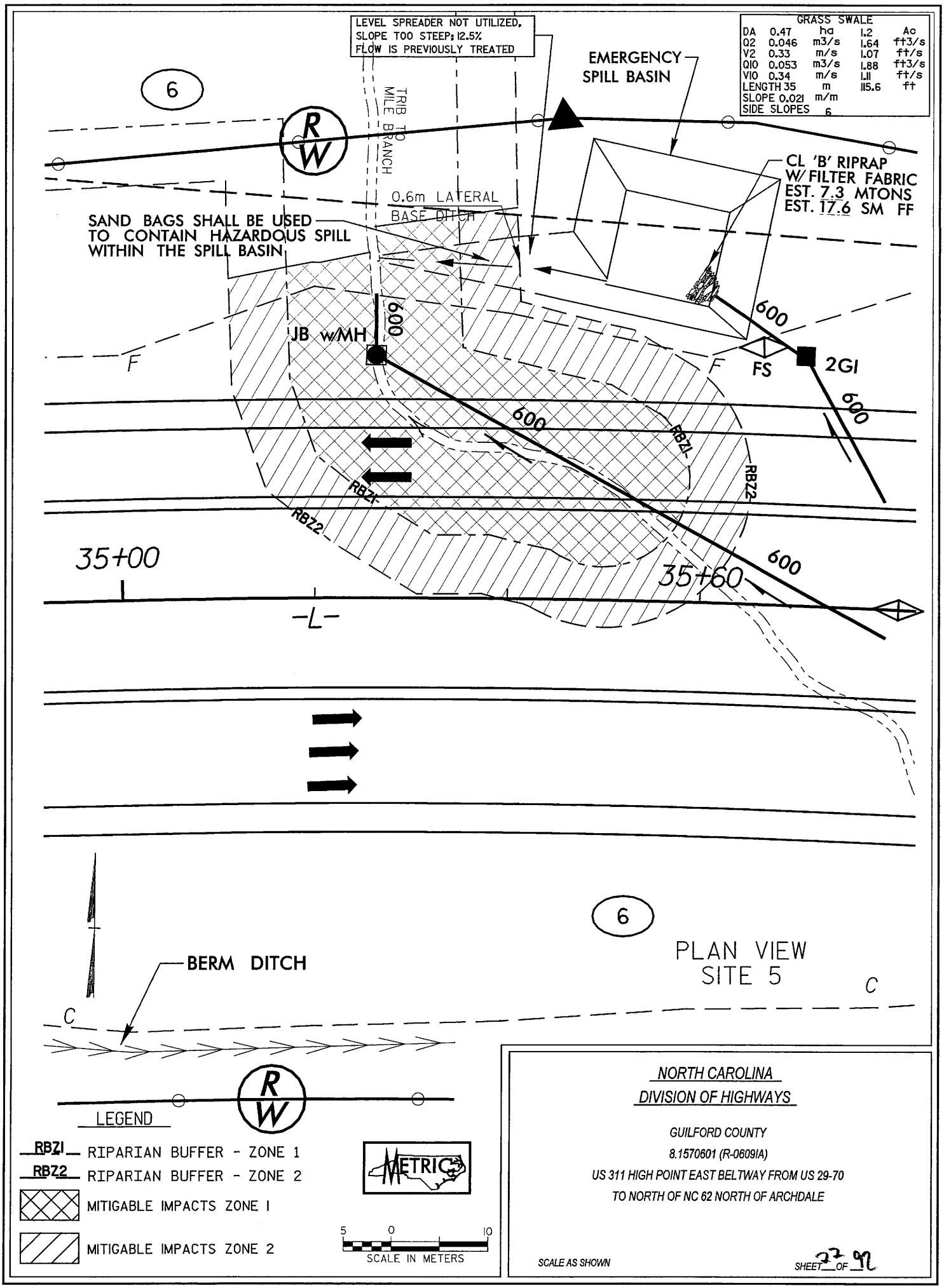
PROFILE
PERMIT SITE 4 (4B & 4C)
(3) 3.4m X 2.4m RCBC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

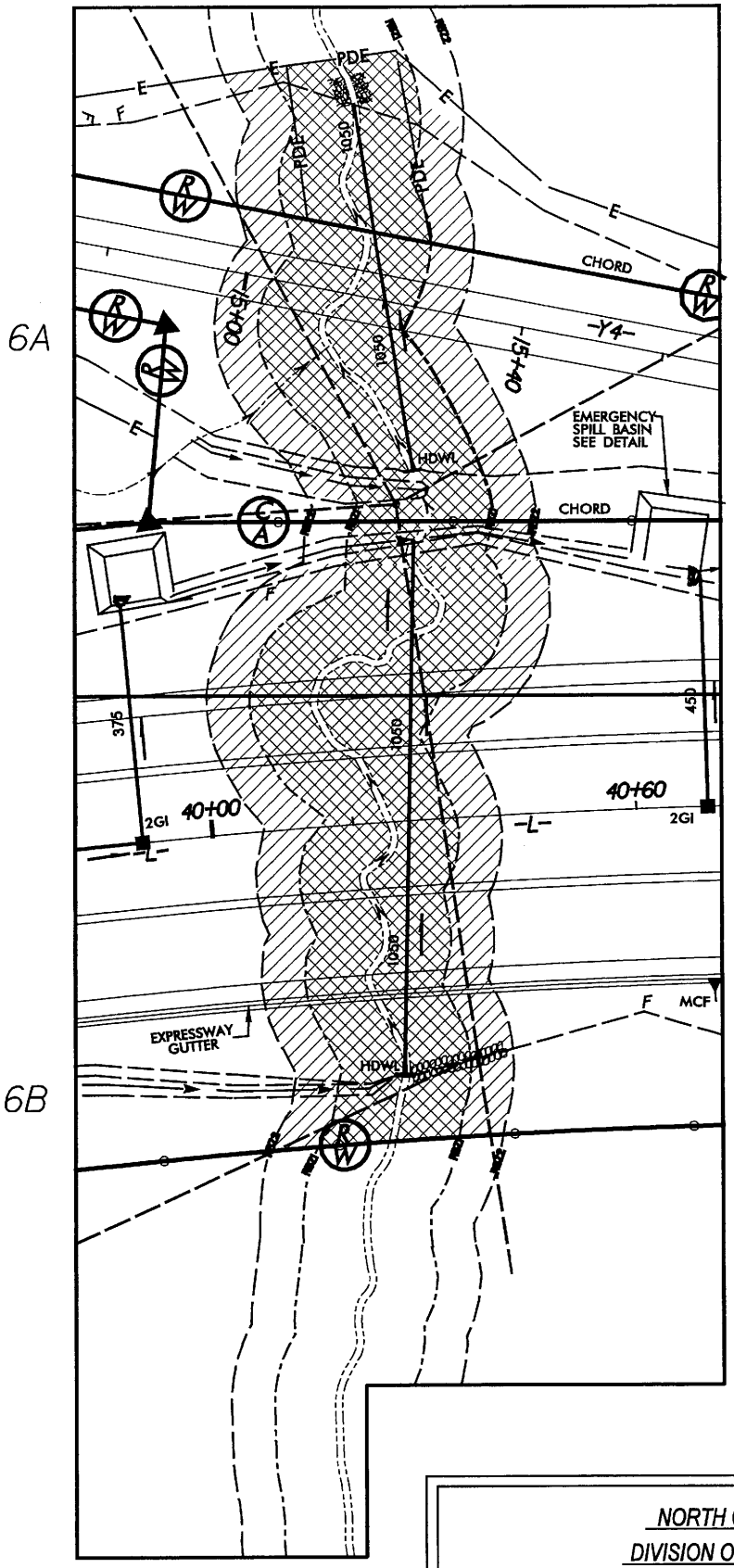
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 26 OF 92



01/09/2005
01:30:51 PM
r:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_05.dsh



SHEET LAYOUT
PLAN VIEW
SITE 6

METRIC

10 0 20
SCALE IN METERS

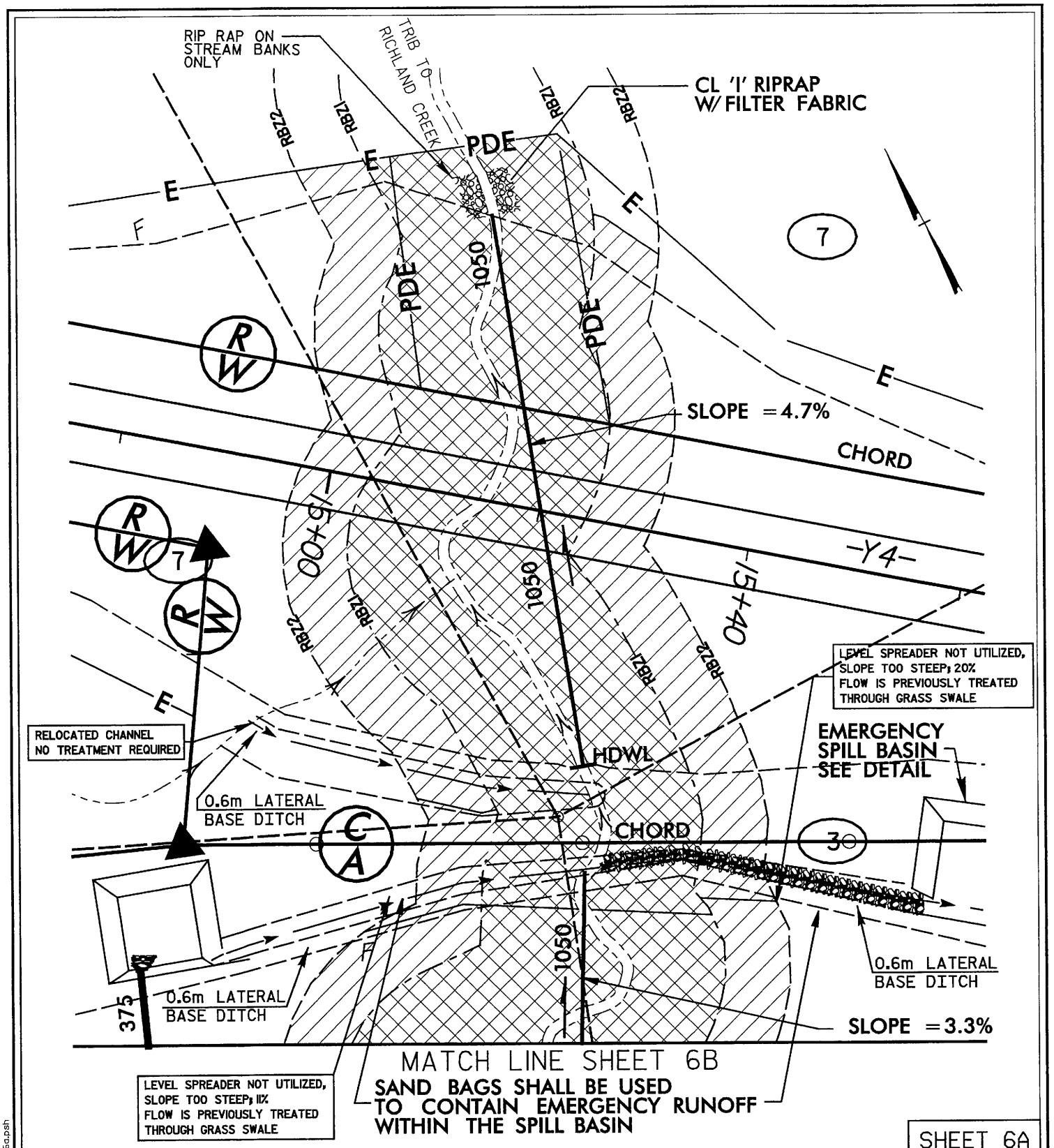
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 23 OF 92

1/12/2006
2:38:19 PM
R:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_06_jcy.pah



SHEET 6A

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

PLAN VIEW
SITE 6

METRIC

5 0 10
SCALE IN METERS

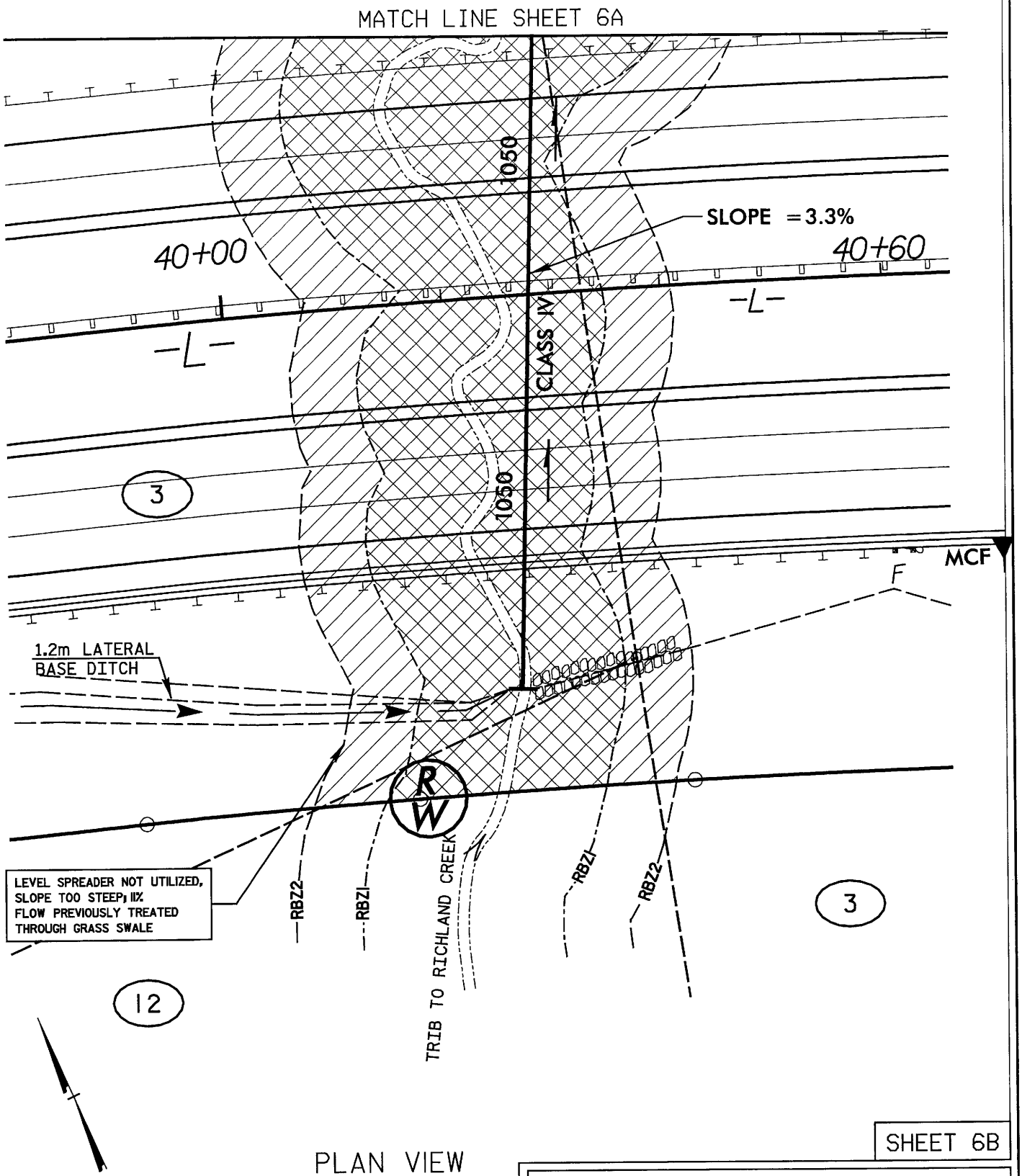
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 21 OF 92

/8/2005
:32:39 AM
:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_06a.psh



SHEET 6B

PLAN VIEW
SITE 6

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

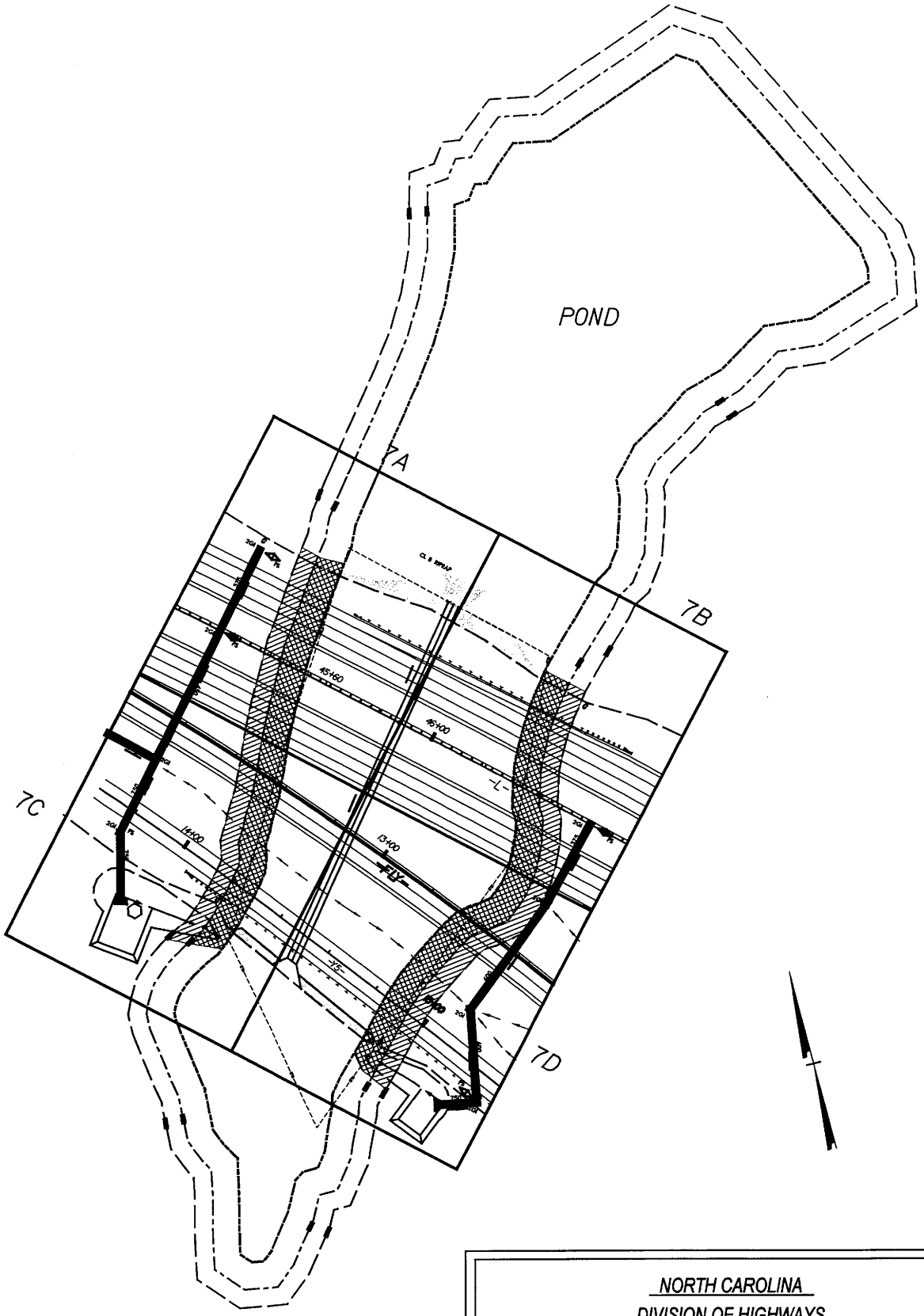
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 25 OF 92

/12/2006
2:34:21 PM
R:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_06b.psh



SHEET LAYOUT
PLAN VIEW
SITE 7

METRIC

20 0 30
SCALE IN METERS

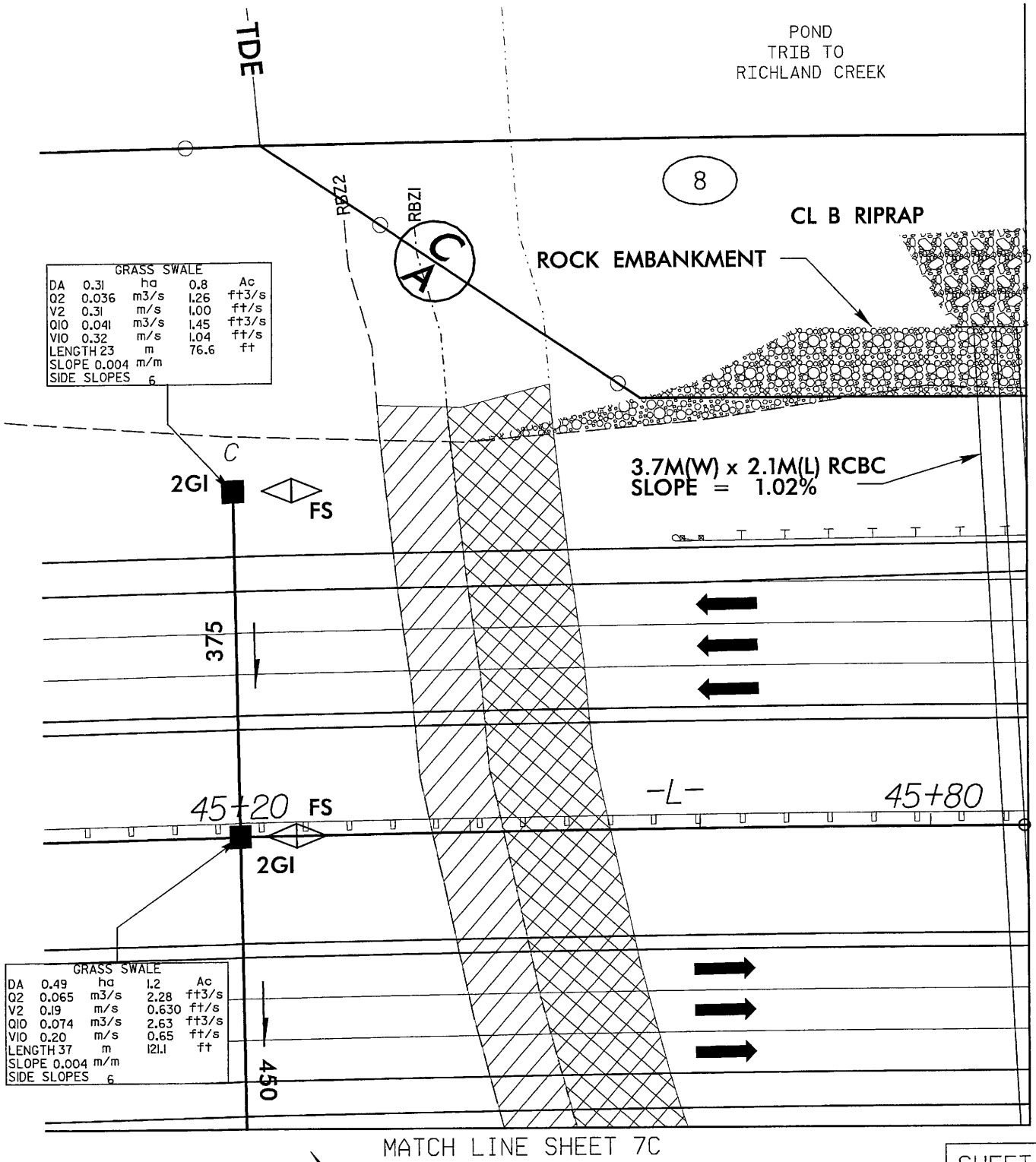
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 26 OF 92

1/19/2006
11:48:07 AM
R:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_07_jay.psh



MATCH LINE SHEET 7C

SHEET 7A

PLAN VIEW
SITE 7

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

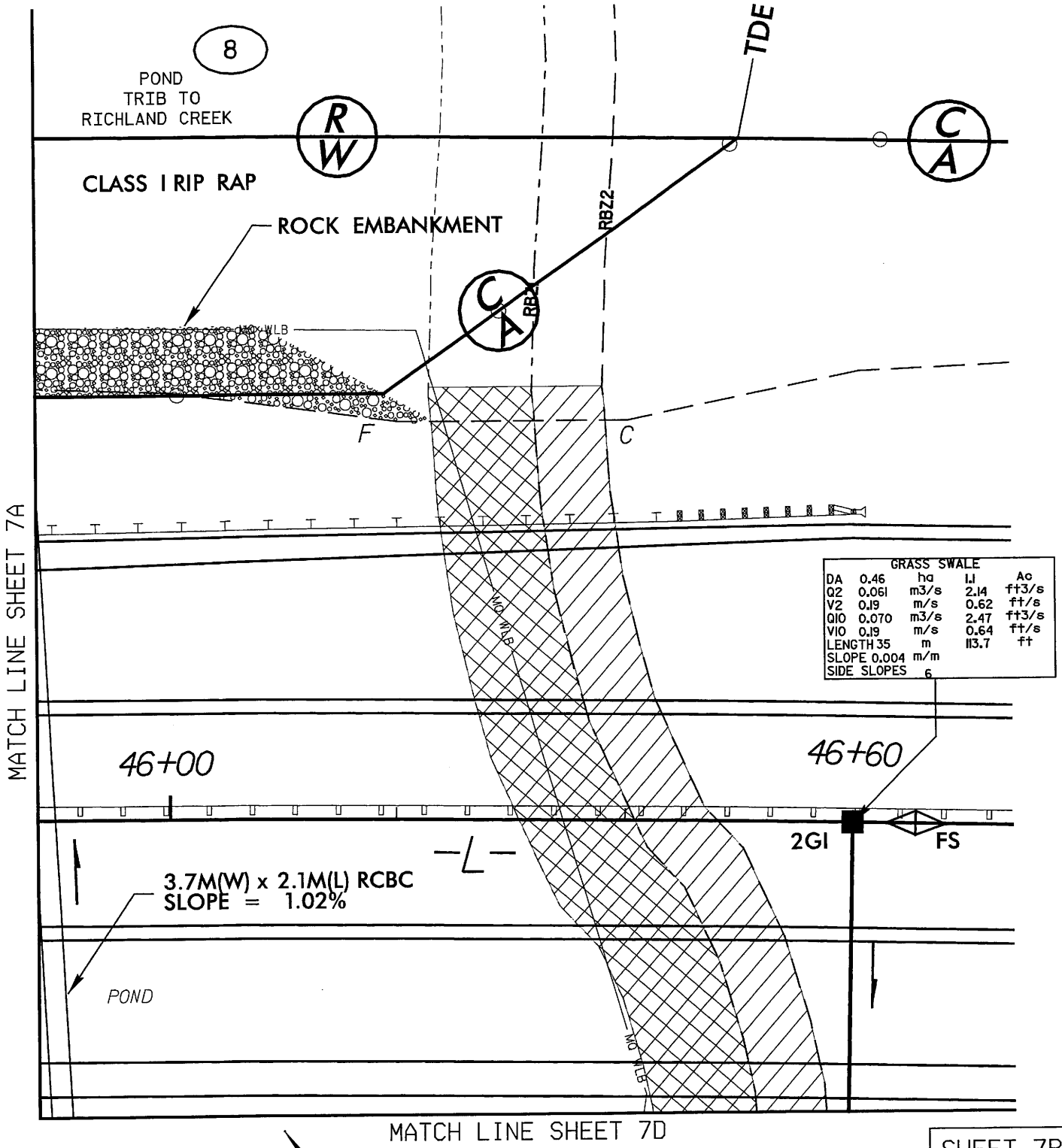
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 27 OF 92

12/9/2004
4:26:59 PM
r:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_07a.psh



SHEET 7B

PLAN VIEW
SITE 7

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

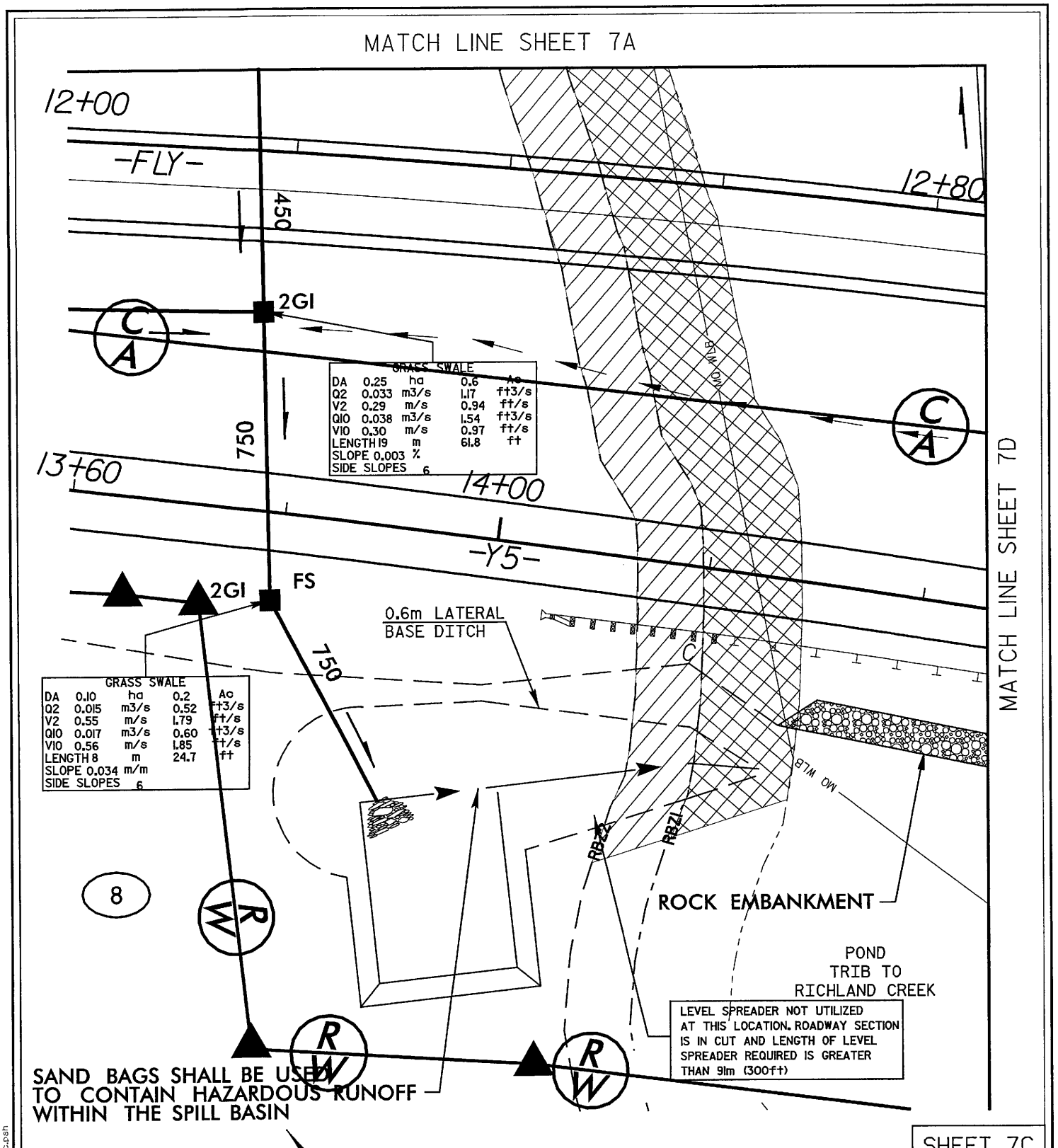
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 28 OF 92

12/13/2004
3:46:22 PM
r:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_07b.psh



SHEET 7C

PLAN VIEW
SITE 7

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

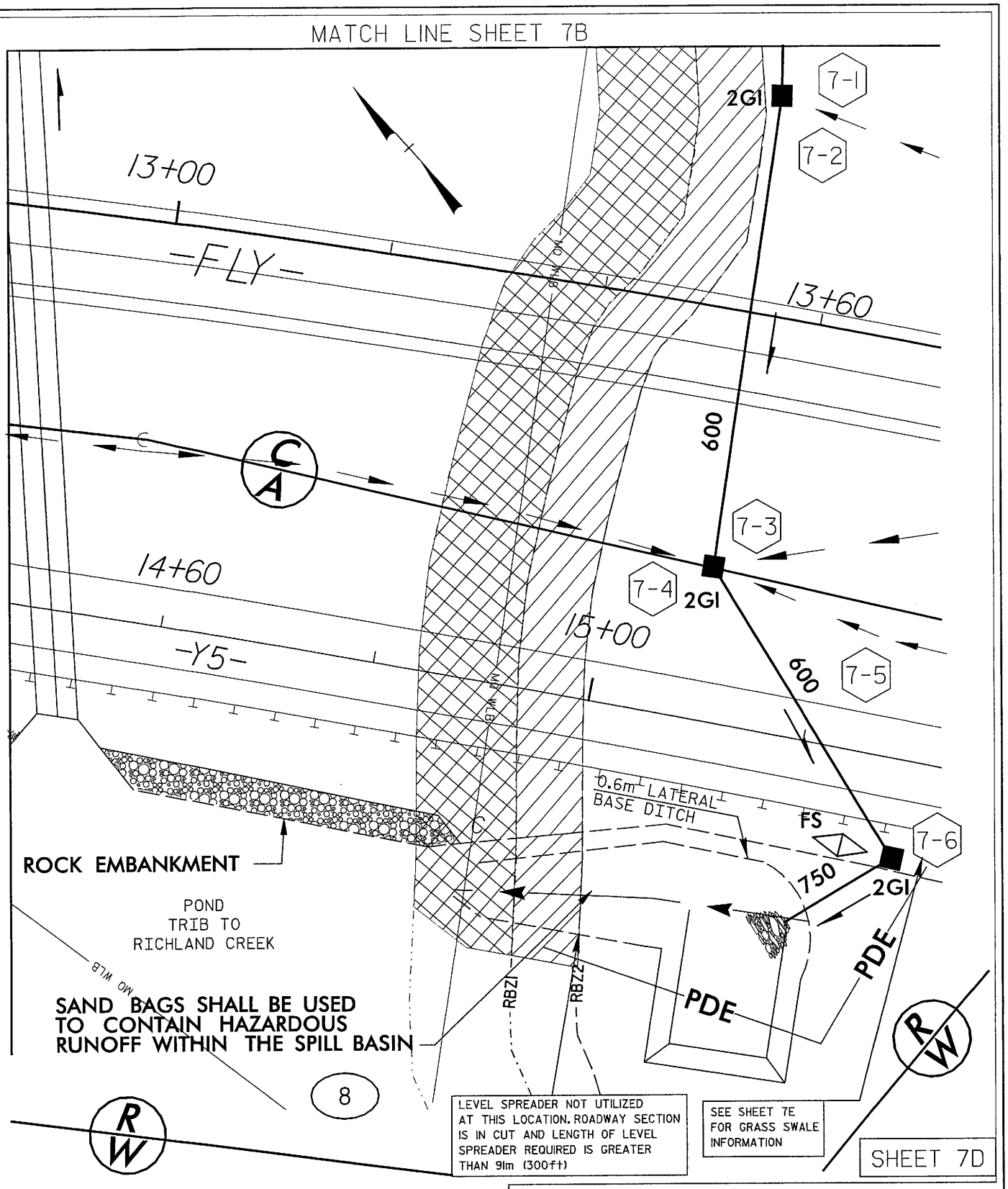
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 29 OF 92

12/13/2004
3:58:20 PM
r:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_07c.psh



LEGEND

- RBZ1 -- RIPARIAN BUFFER - ZONE 1
- RBZ2 -- RIPARIAN BUFFER - ZONE 2
- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2

PLAN VIEW
SITE 7

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 39 OF 92

12/10/2004
3:06:11 AM
r:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_07d.psh

7-1

GRASS SWALE				
DA	0.40	ha	1.0	Ac
Q2	0.066	m3/s	2.33	ft3/s
V2	0.19	m/s	0.63	ft/s
Q10	0.076	m3/s	2.68	ft3/s
V10	0.20	m/s	0.65	ft/s
LENGTH	30	m	98.8	ft
SLOPE	0.004	m/m		
SIDE SLOPES	6			

7-2

GRASS SWALE				
DA	0.44	ha	1.1	Ac
Q2	0.058	m3/s	2.05	ft3/s
V2	0.49	m/s	1.61	ft/s
Q10	0.067	m3/s	2.36	ft3/s
V10	0.51	m/s	1.66	ft/s
LENGTH	33	m	108.7	ft
SLOPE	0.054	m/m		
SIDE SLOPES	6			

7-3

GRASS SWALE				
DA	0.60	ha	1.5	Ac
Q2	0.099	m3/s	3.50	ft3/s
V2	0.69	m/s	2.26	ft/s
Q10	0.114	m3/s	4.02	ft3/s
V10	0.71	m/s	2.34	ft/s
LENGTH	45	m	148.3	ft
SLOPE	0.094	m/m		
SIDE SLOPES	6			

7-4

GRASS SWALE				
DA	0.18	ha	0.4	Ac
Q2	0.030	m3/s	1.05	ft3/s
V2	0.40	m/s	1.30	ft/s
Q10	0.034	m3/s	1.21	ft3/s
V10	0.41	m/s	1.34	ft/s
LENGTH	14	m	44.5	ft
SLOPE	0.009	m/m		
SIDE SLOPES	6			

7-5

GRASS SWALE				
DA	0.24	ha	0.6	Ac
Q2	0.032	m3/s	1.12	ft3/s
V2	0.48	m/s	1.57	ft/s
Q10	0.036	m3/s	1.29	ft3/s
V10	0.50	m/s	1.63	ft/s
LENGTH	18	m	59.3	ft
SLOPE	0.076	m/m		
SIDE SLOPES	6			

7-6

GRASS SWALE				
DA	0.12	ha	0.3	Ac
Q2	0.020	m3/s	0.70	ft3/s
V2	0.71	m/s	2.33	ft/s
Q10	0.023	m3/s	0.80	ft3/s
V10	0.73	m/s	2.41	ft/s
LENGTH	9	m	29.7	ft
SLOPE	0.056	m/m		
SIDE SLOPES	6			

SHEET 7E

NORTH CAROLINA

DIVISION OF HIGHWAYS

GUILFORD COUNTY

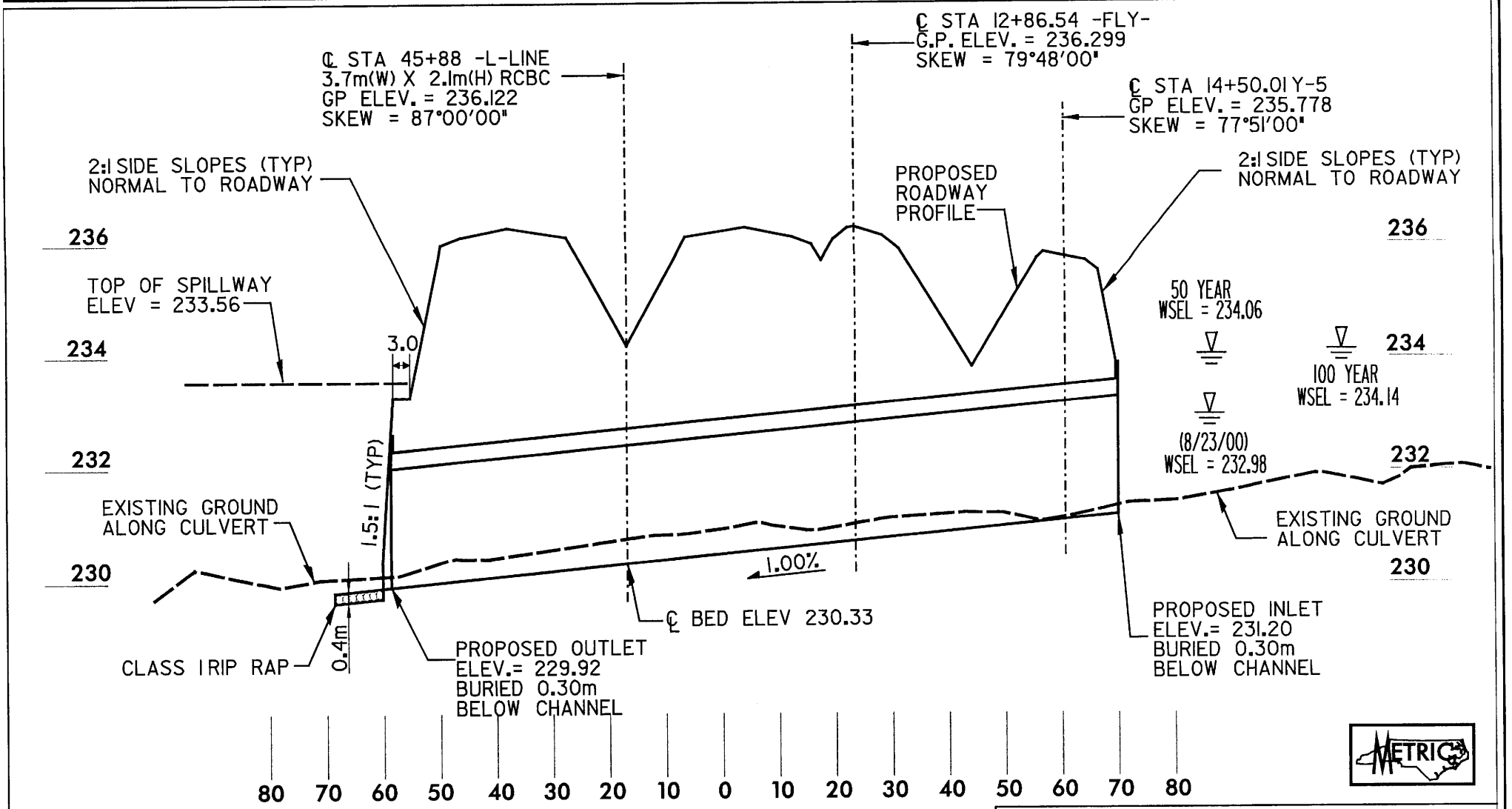
8.1570601 (R-0609IA)

US 311 HIGH POINT EAST BELTWAY FROM US 29-70

TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

12/10/2004
9:07:47 AM
r:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_07e.psh



SCALE:
1 = 100 HORIZONTAL
1 = 100 VERTICAL

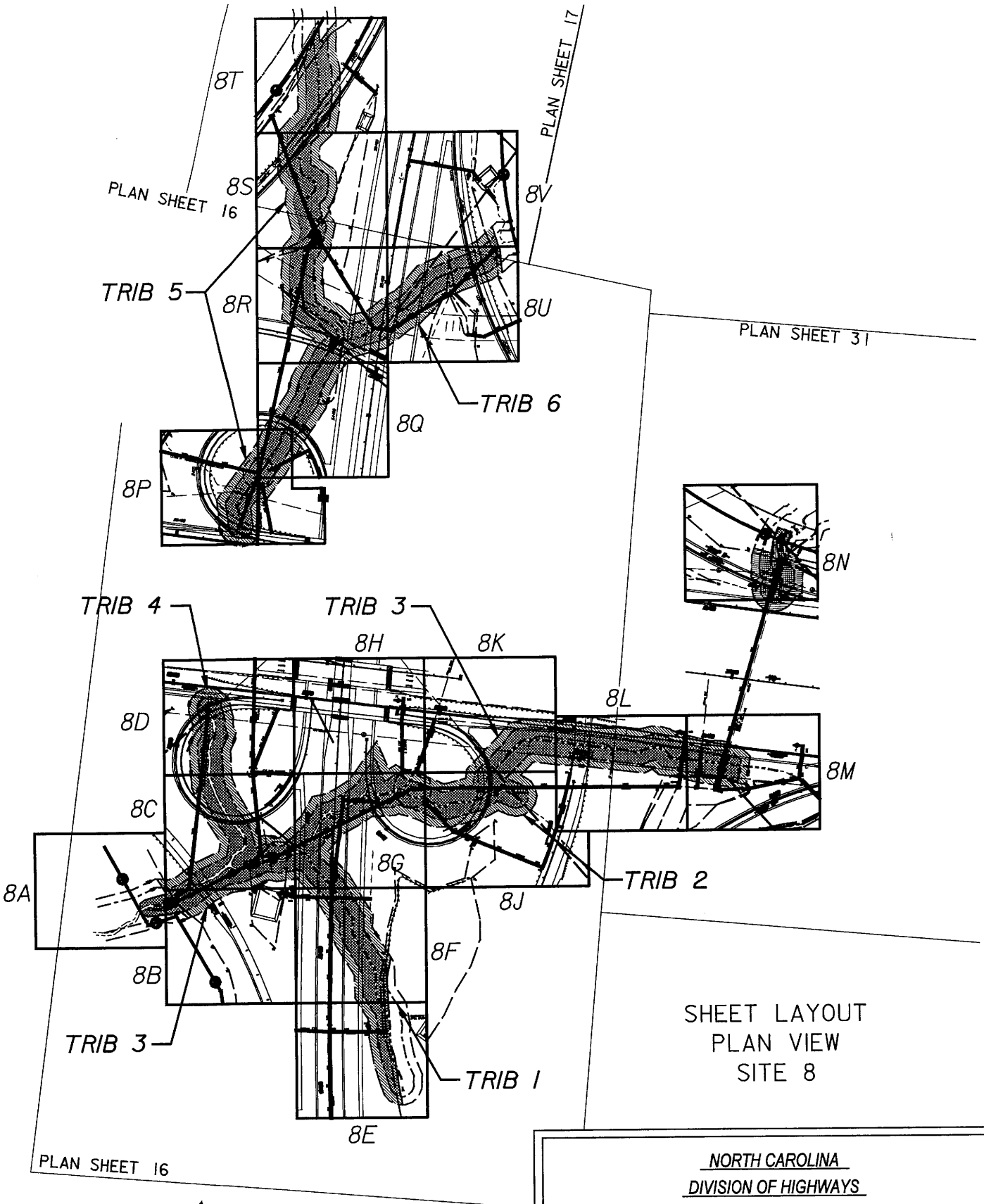
PROFILE
PERMIT SITE 7 (7A - 7D)
2 100mm RCP

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 72 OF 92



SHEET LAYOUT
PLAN VIEW
SITE 8

METRIC

40 0 80
SCALE IN METERS

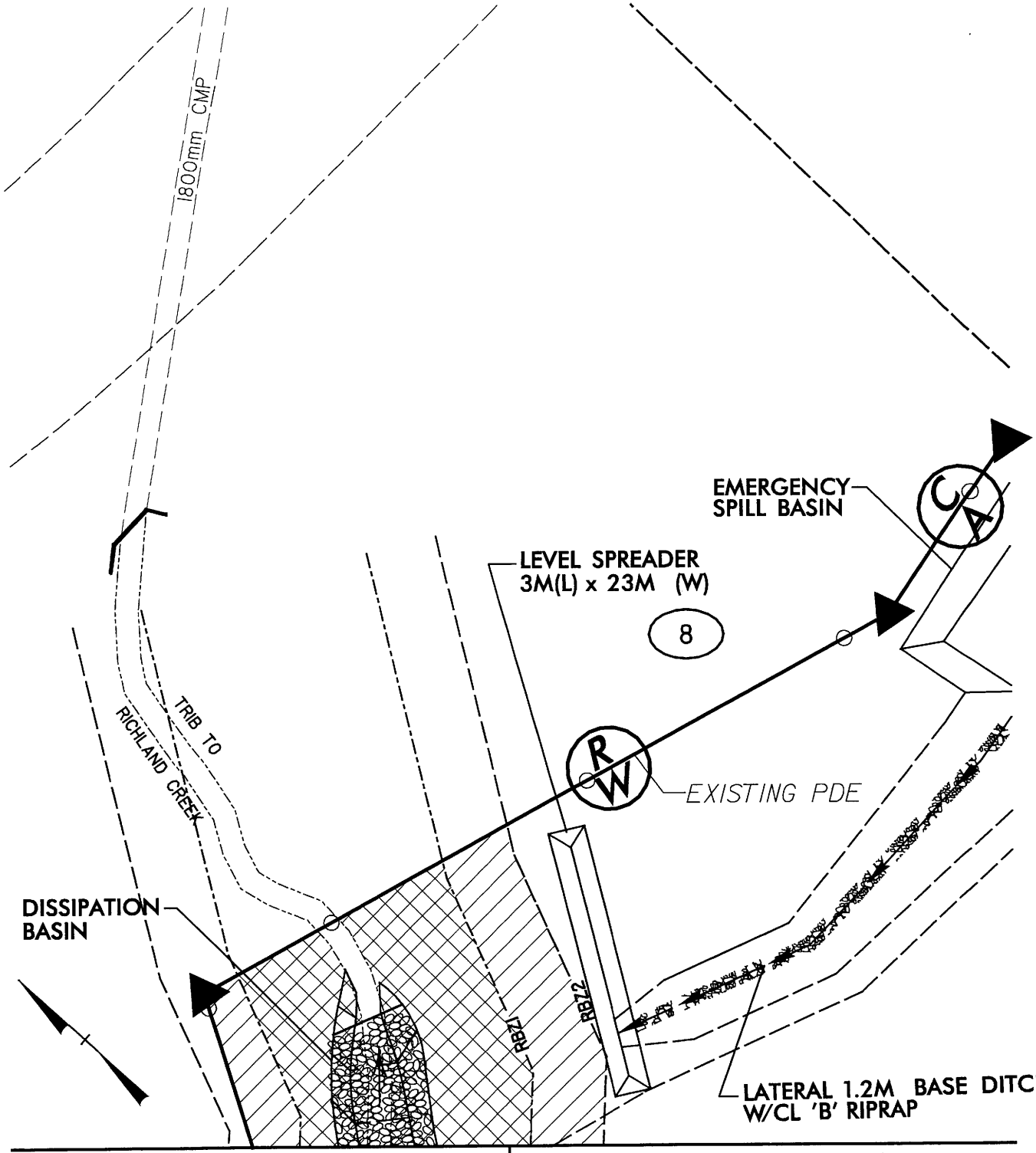
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 3 OF 92

19/2006
39:42AMM
\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_08_lay.psh



MATCH LINE SHEET 8B | MATCH LINE SHEET 8C

SHEET 8A

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

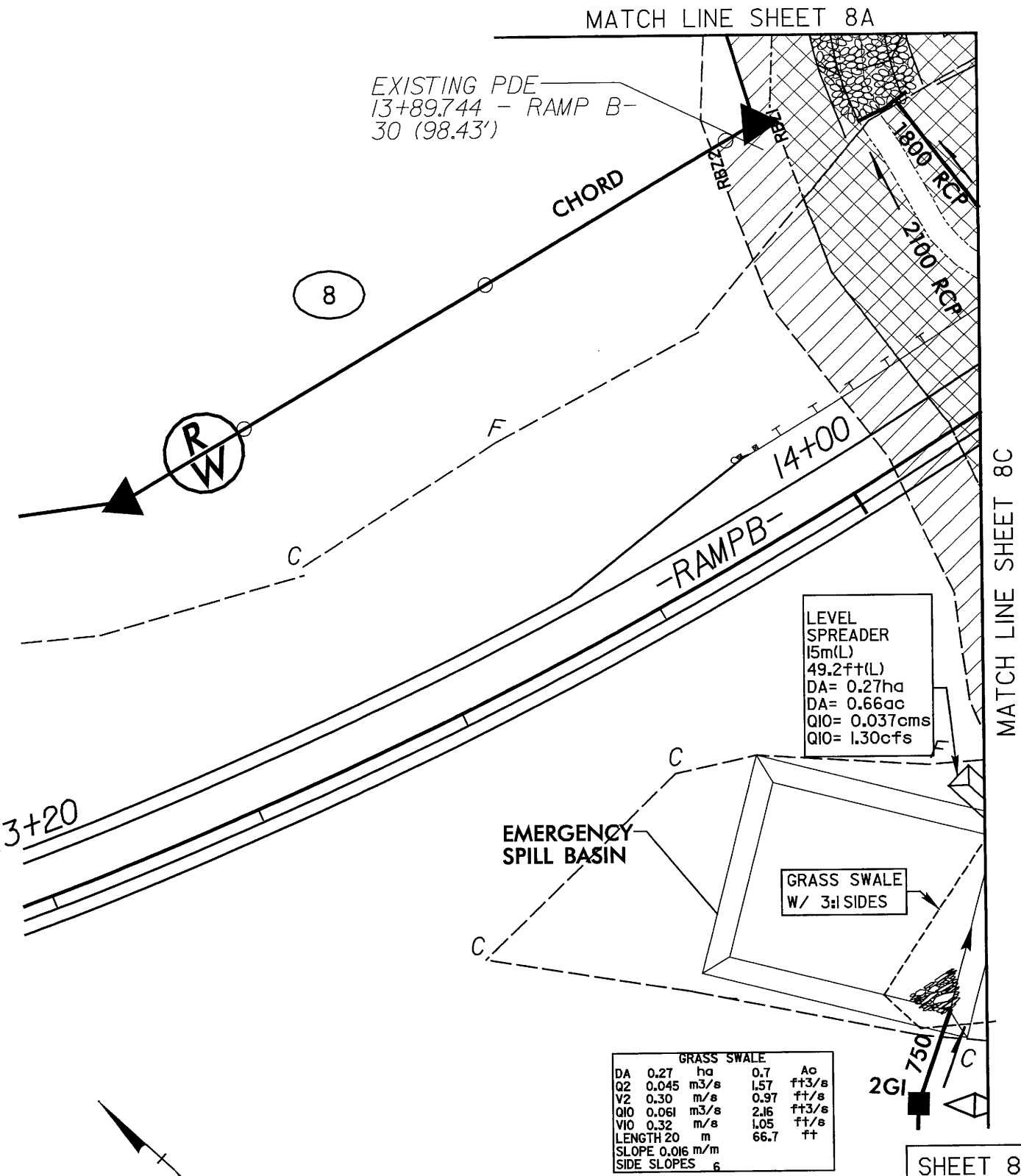
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 51 OF 62

12/2006
08:39 PM
\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_08A.psh



GRASS SWALE				
DA	0.27	ha	0.7	Ac
Q2	0.045	m3/s	1.57	ft3/s
V2	0.30	m/s	0.97	ft/s
Q10	0.061	m3/s	2.16	ft3/s
V10	0.32	m/s	1.05	ft/s
LENGTH	20	m	66.7	ft
SLOPE	0.016	m/m		
SIDE SLOPES	6			

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

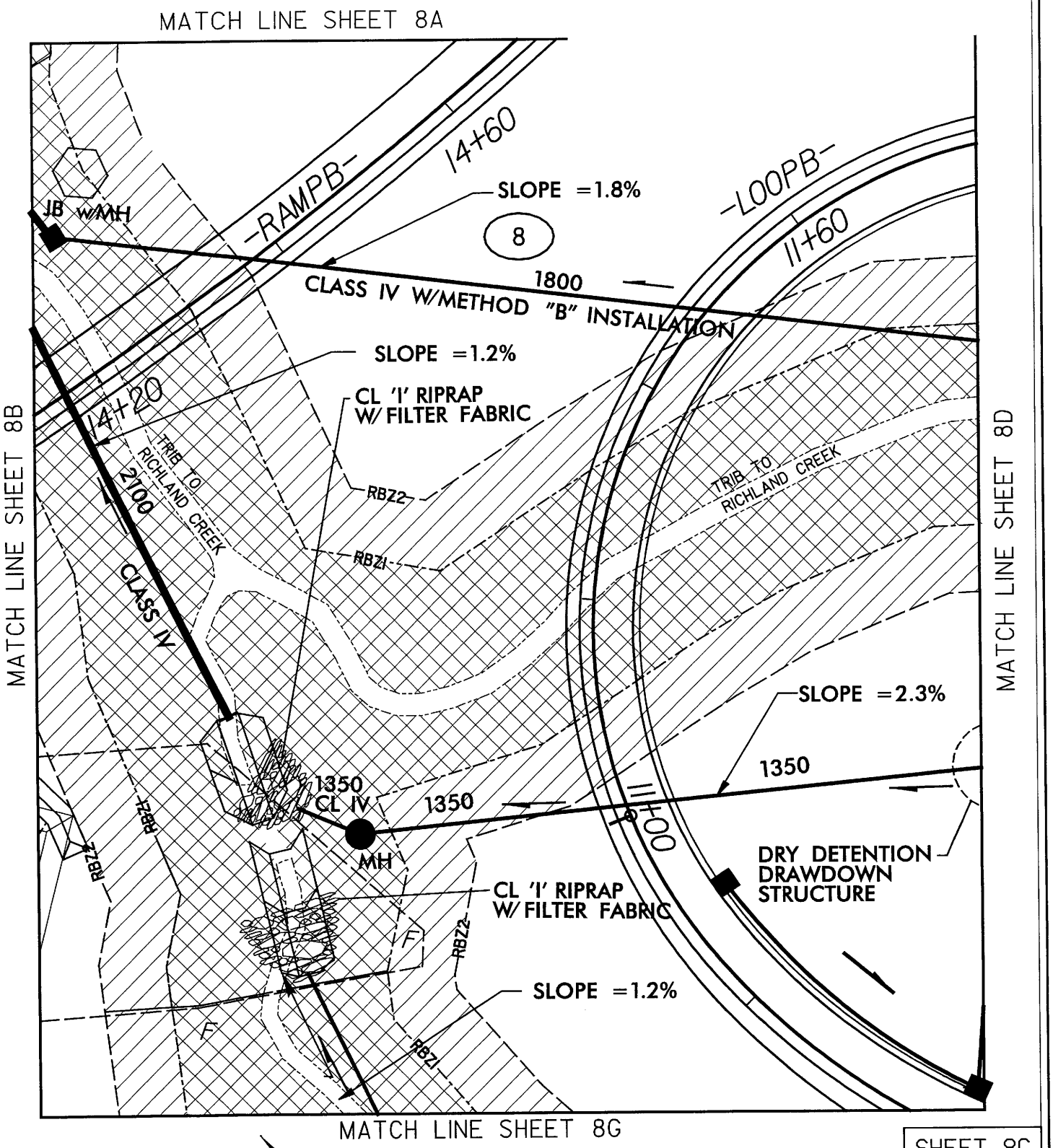
8.1570601 (R-0609IA)

US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 25 OF 92

9/2006
:25 AM
dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_08B.psh



SHEET 8C

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

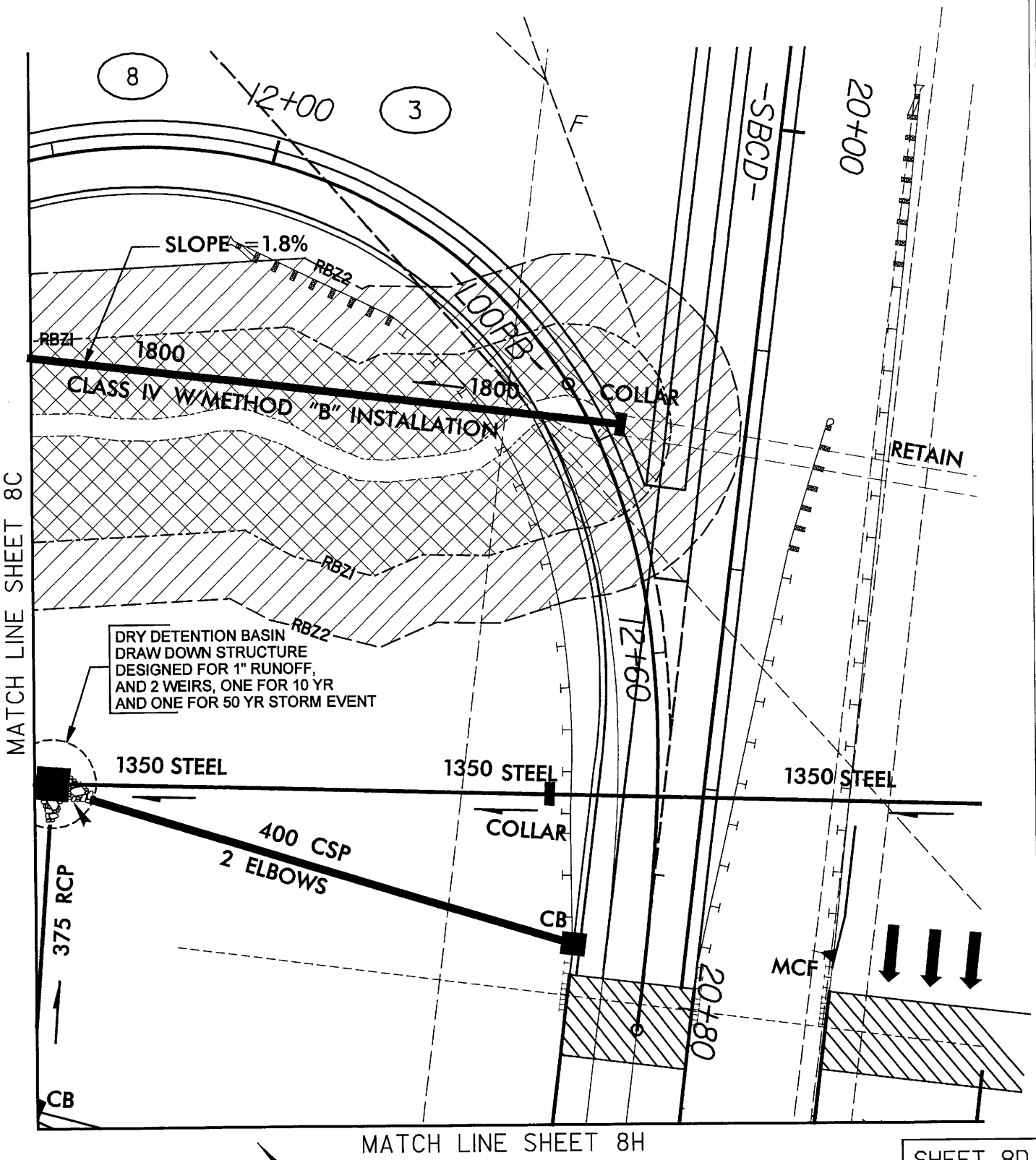
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 16 OF 92

19/2006
20:06 AM
:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_08c.psh



SHEET 8D

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

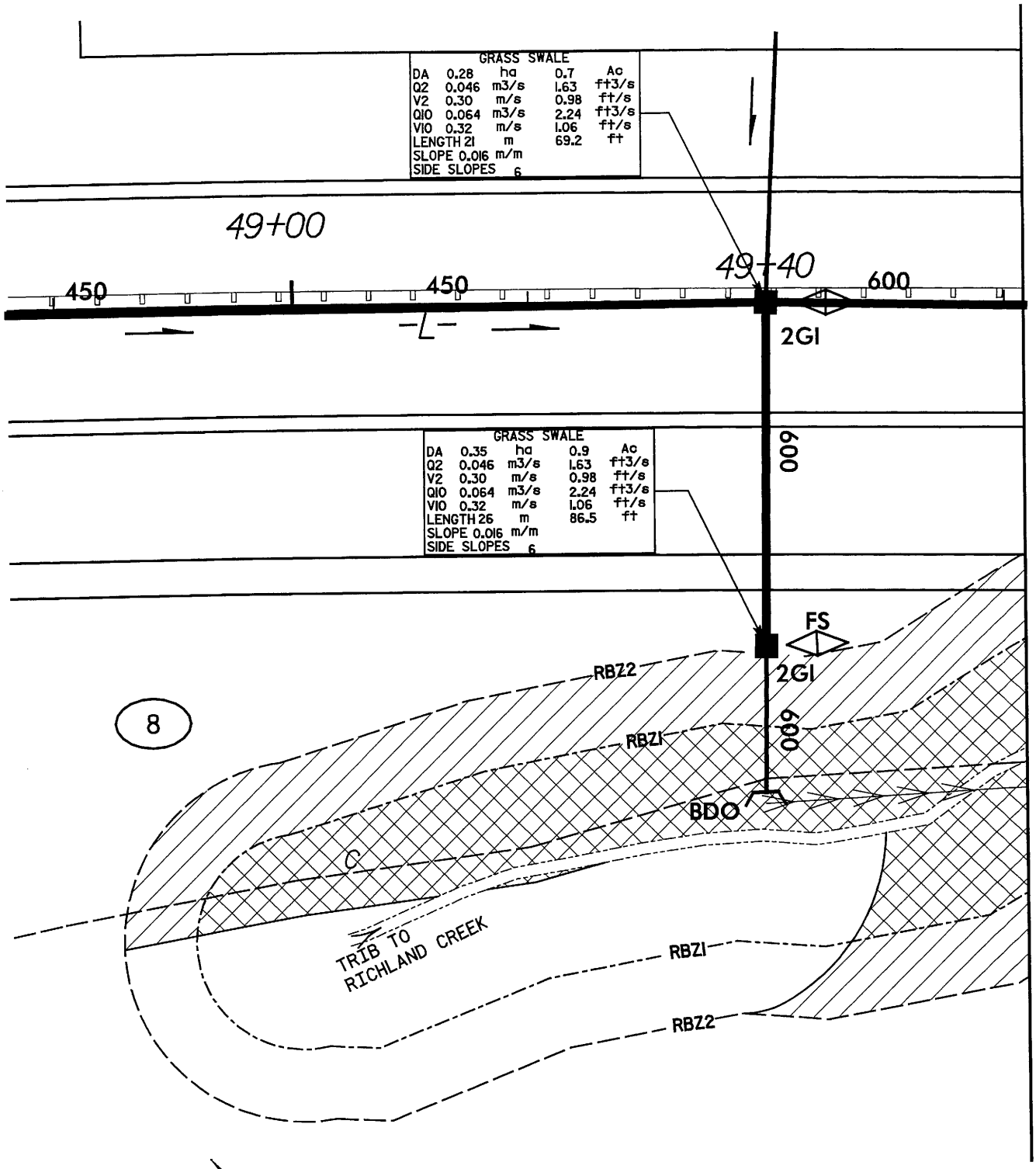
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 37 OF 92

19/2006
22:38 AM
\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_08D.psh



SHEET 8E

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10

SCALE IN METERS

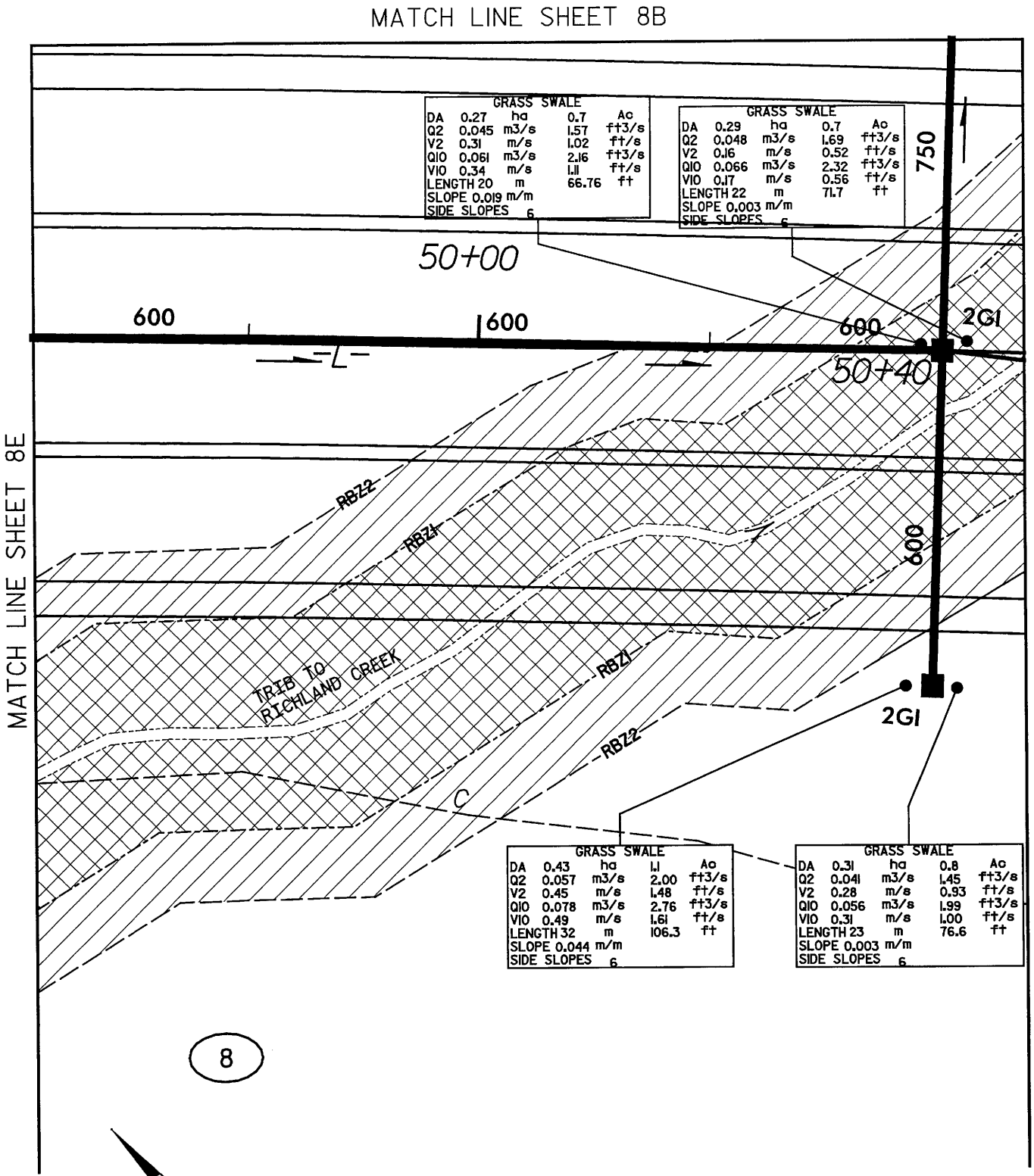
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 38 OF 42

2/2006
2:45 PM
\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_08E.psh



SHEET 8F

LEGEND

- RBZ1 — RIPARIAN BUFFER - ZONE 1
- RBZ2 — RIPARIAN BUFFER - ZONE 2
- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2

PLAN VIEW
SITE 8

METRIC

5 0 10
SCALE IN METERS

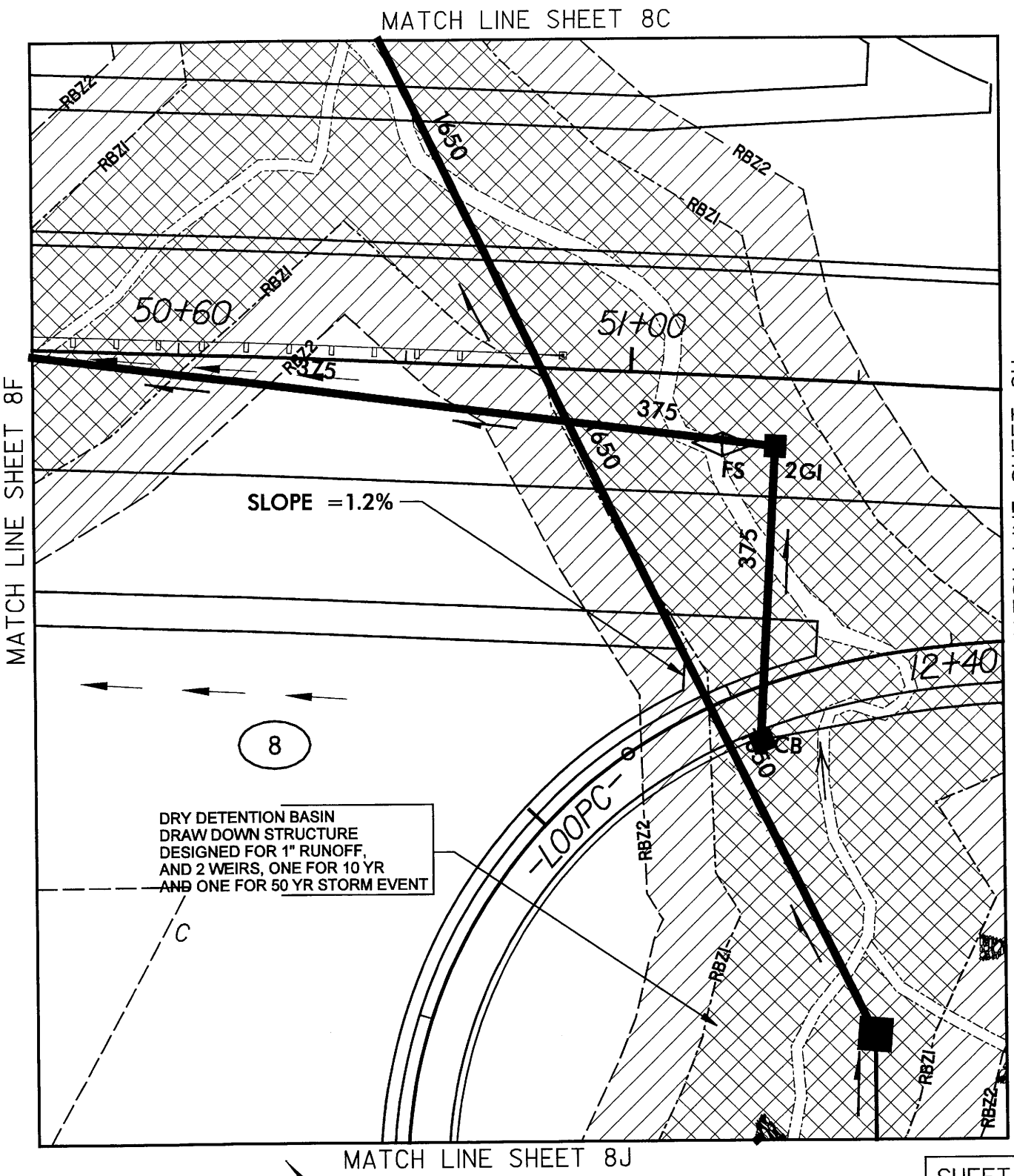
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 39 OF 92

12/2006
:23:27 PM
:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_08F.psh



SHEET 8G

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

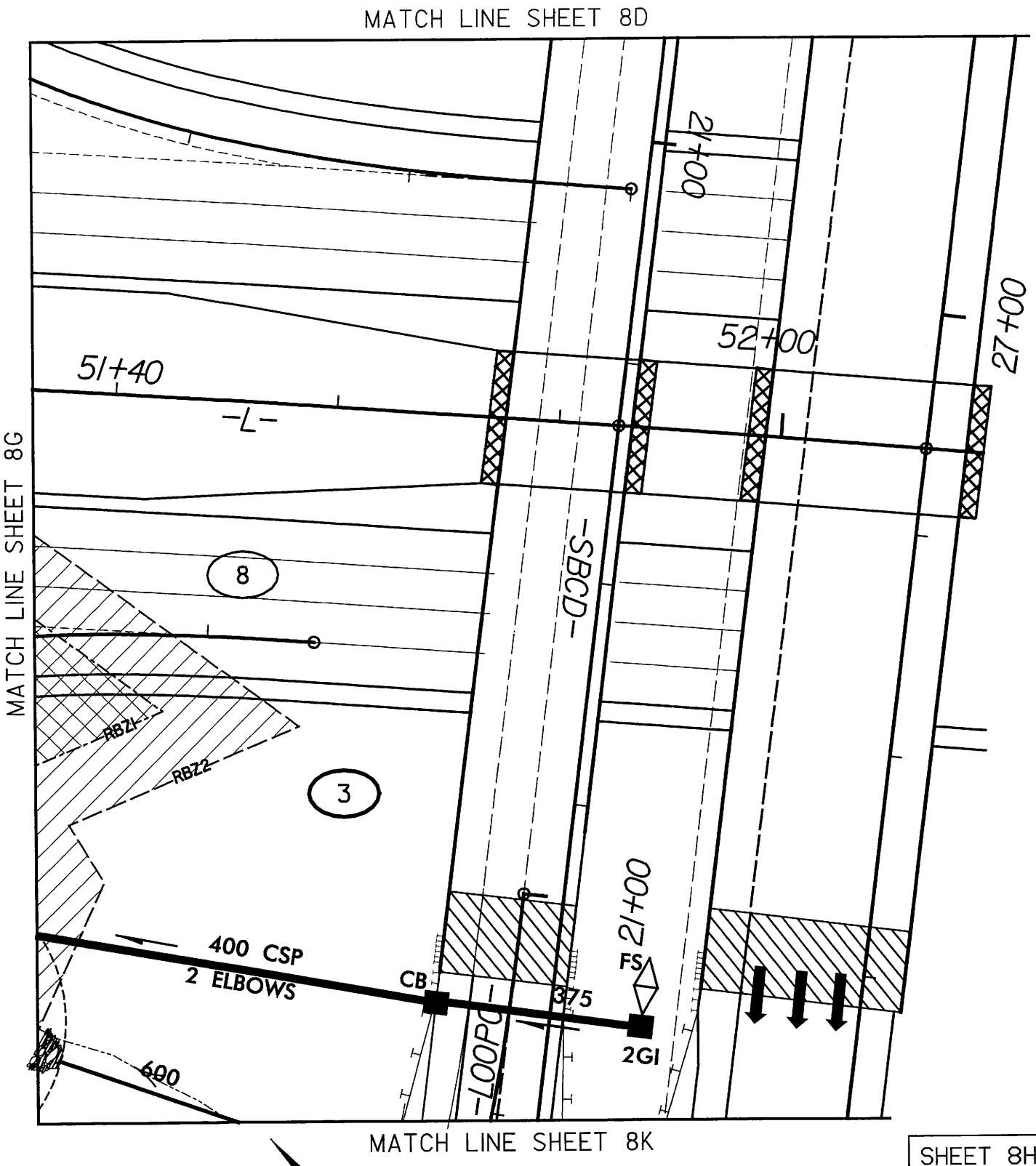
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 90 OF 92

12/2006
29:30 PM
\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_086.psh



SHEET 8H

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

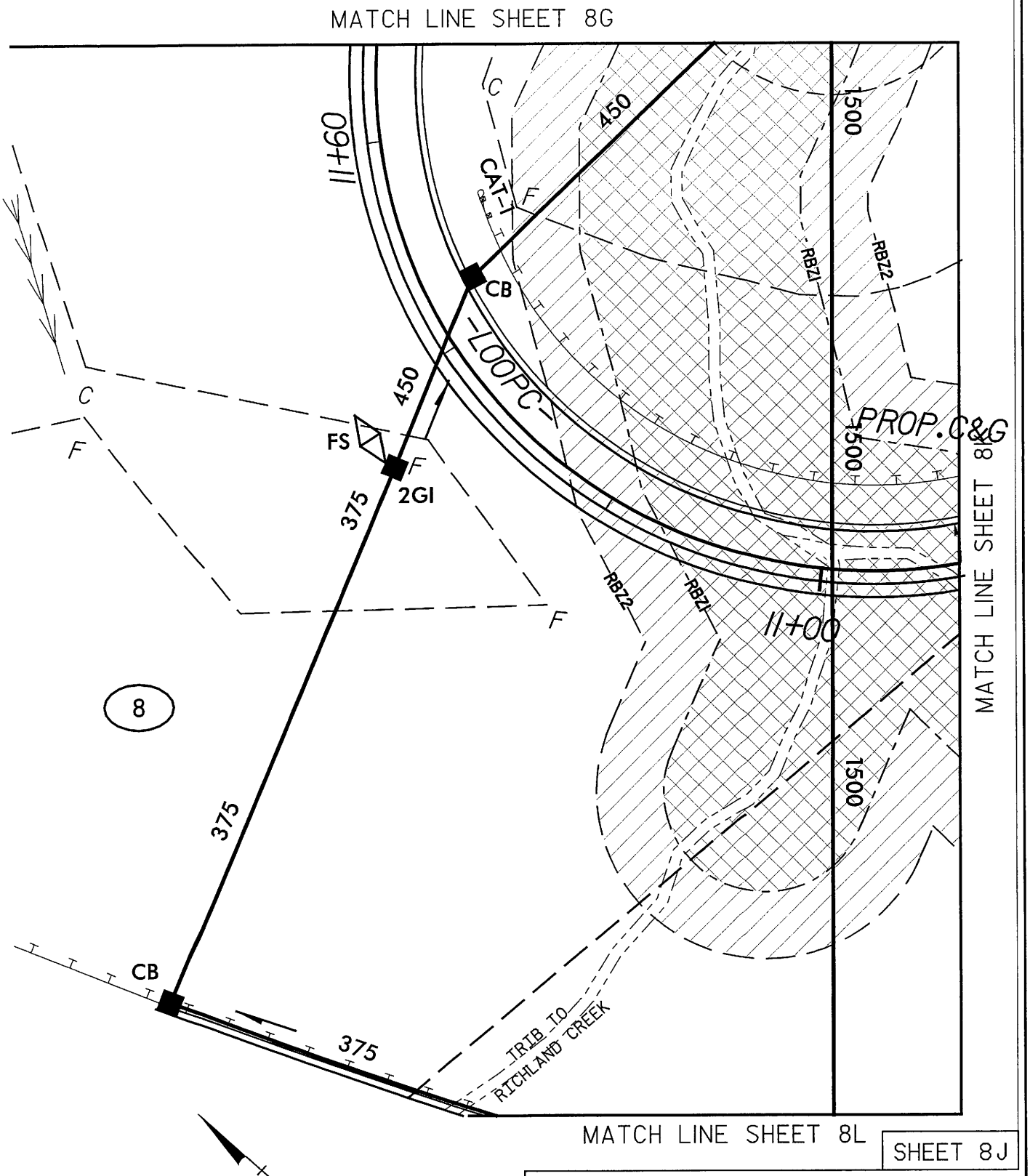
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 41 OF 92

12/2006
3:42 PM
:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_08H.psh



SHEET 8J

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

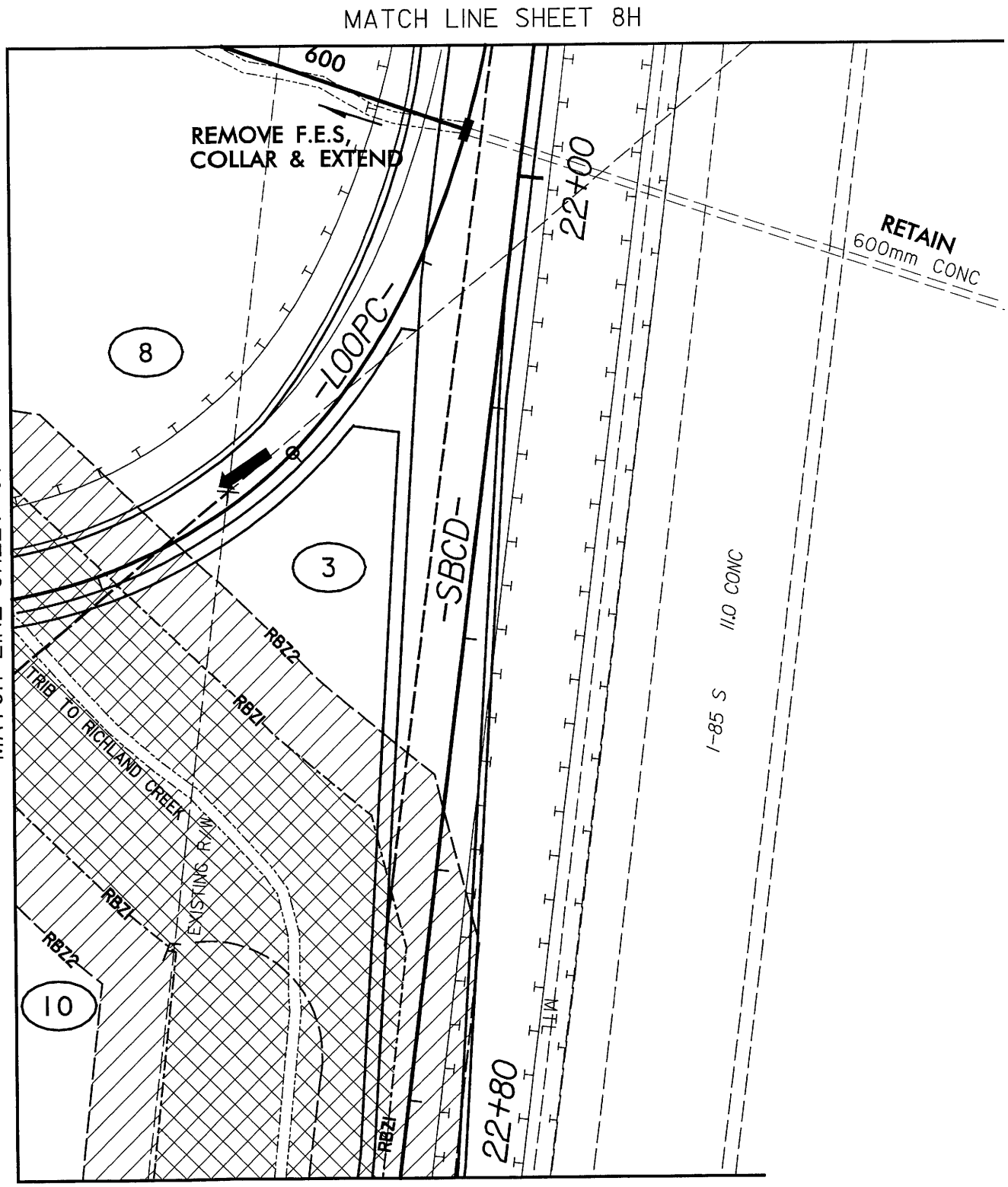
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 42 OF 62

01/09/2005
04:33:05 PM
r:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_08J.psh



SHEET 8K

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

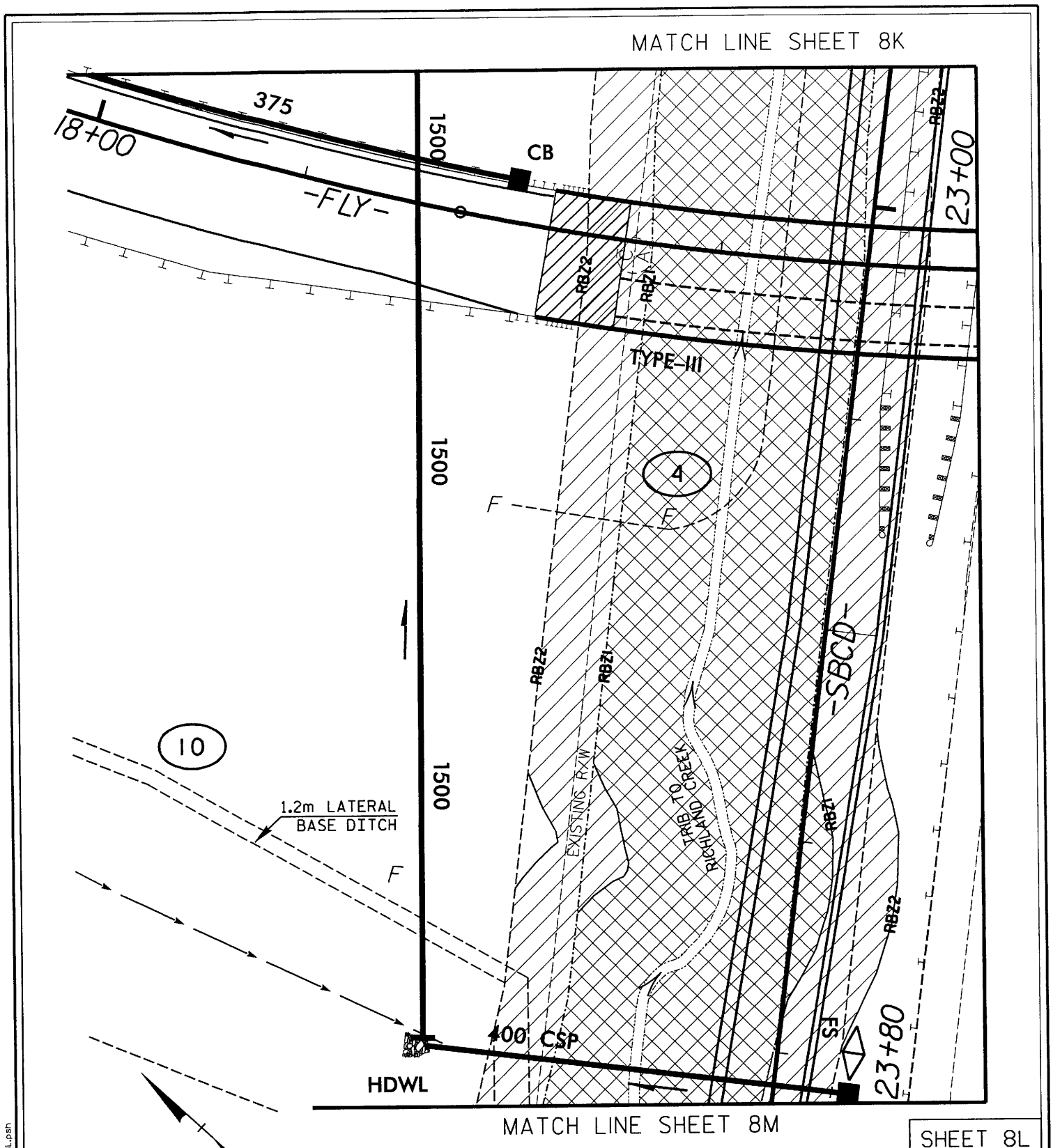
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 13 OF 92

3/2006
45:05 PM
\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_08K.PSH



SHEET 8L

LEGEND

- RBZ1 - RIPARIAN BUFFER - ZONE 1
- RBZ2 - RIPARIAN BUFFER - ZONE 2
- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2

PLAN VIEW
SITE 8

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 41 OF 62

10/2005
06:01PM
\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_08L.psh

MATCH LINE SHEET 8L

CL 'B' RIPRAP W/ FILTER FABRIC

1.2m LATERAL BASE DITCH

CL 'B' RIPRAP W/ FILTER FABRIC

450

1050

1050

1050 STEEL CLASS IV BORE & JACK UNDER -Y6- (I-85)

2GI

RBZ1

RBZ2

COLLAR

24+00

13+60

10

RBZ2

F

EXISTING R/W

600

14+00

-RAMPC-

-SBCD-

9

FS

375

FS

2GI

2GI

24+80

600

SHEET 8M

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10

SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

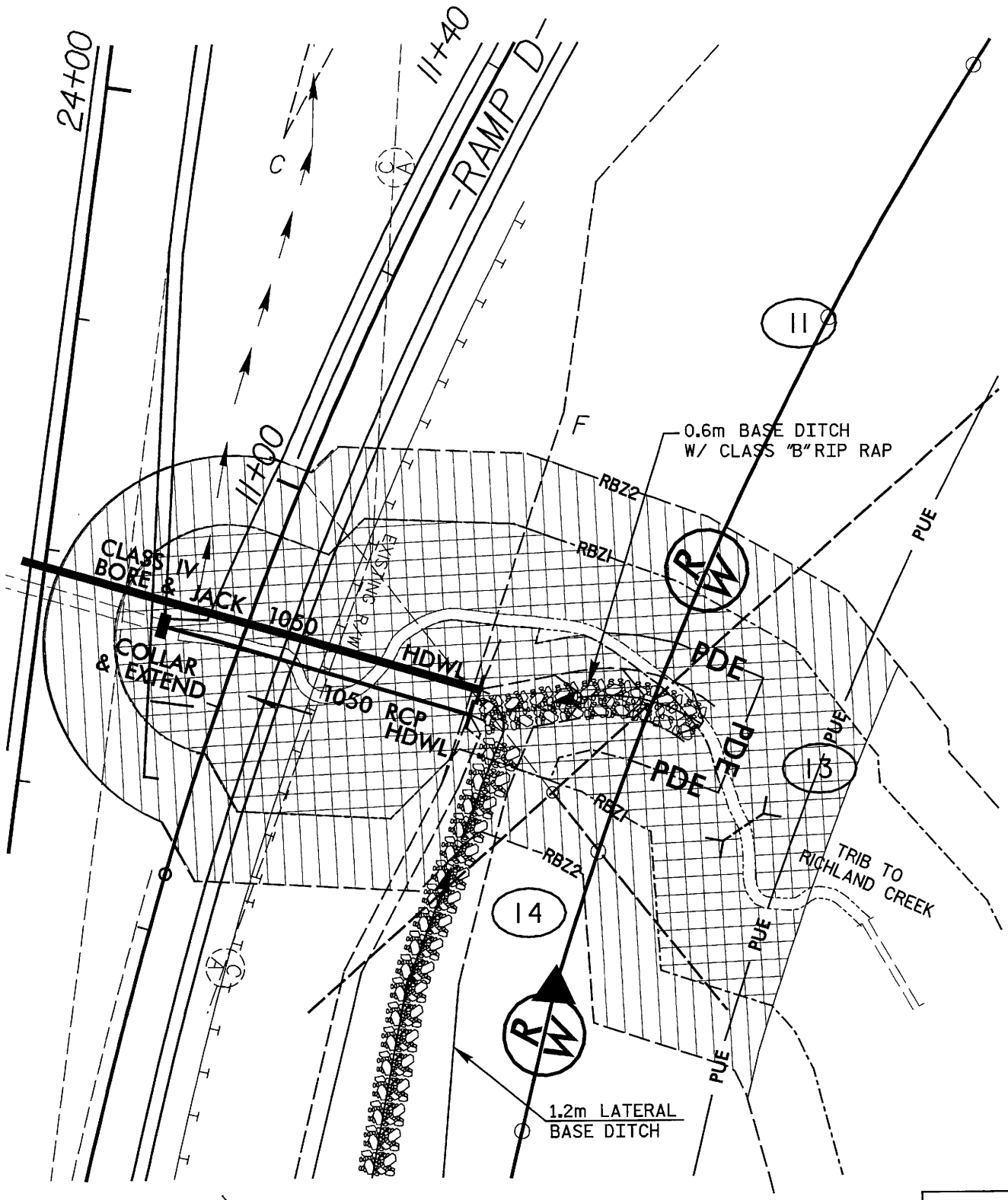
8.1570601 (R-0609IA)

US 311 HIGH POINT EAST BELTWAY FROM US 29-70 TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 45 OF 92

/19/2006
:3:45 AM
R:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_08M.psh



SHEET 8N

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

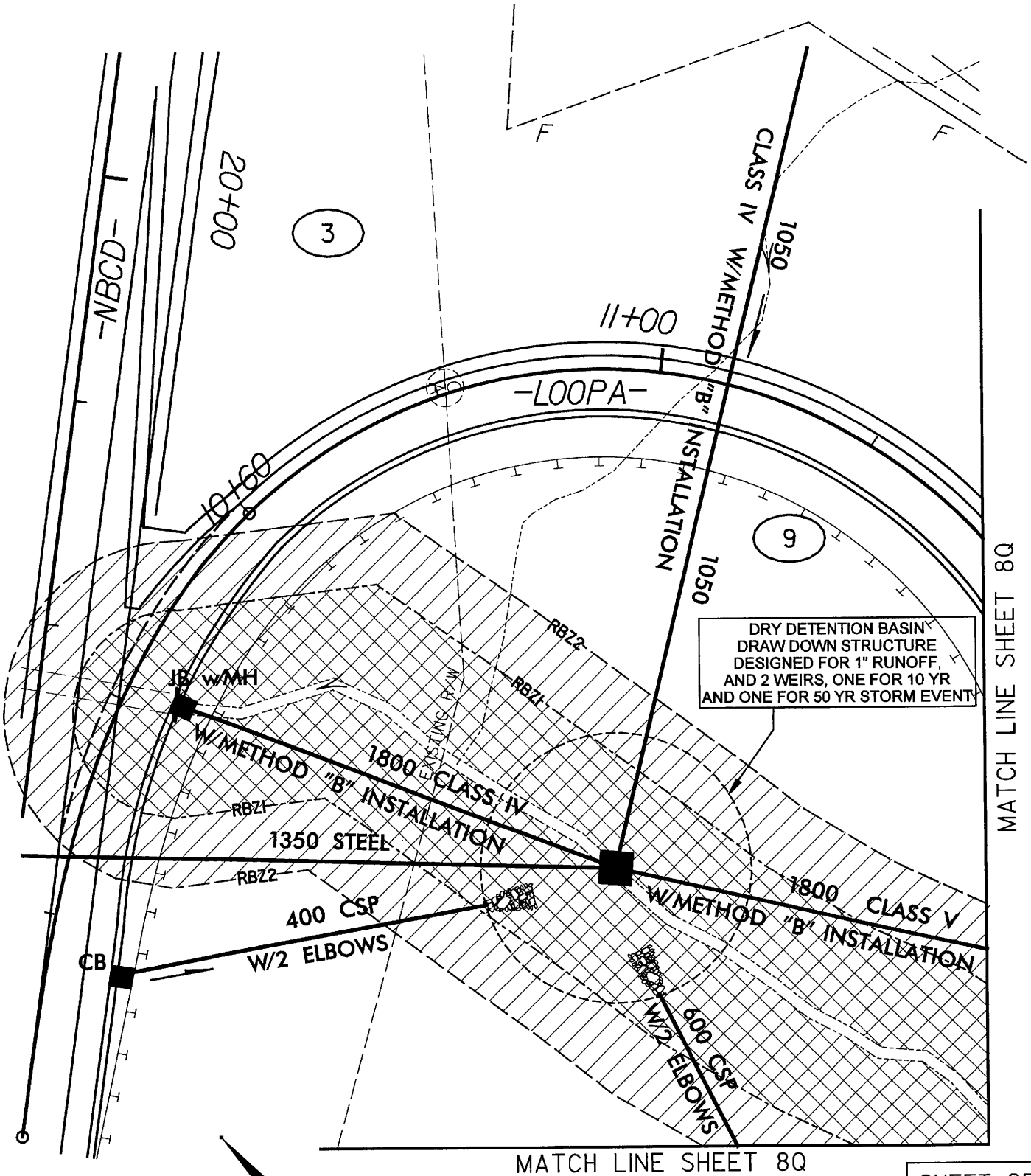
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 46 OF 92

19/2006
34:40 AM
\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_08N.psh



SHEET 8P

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

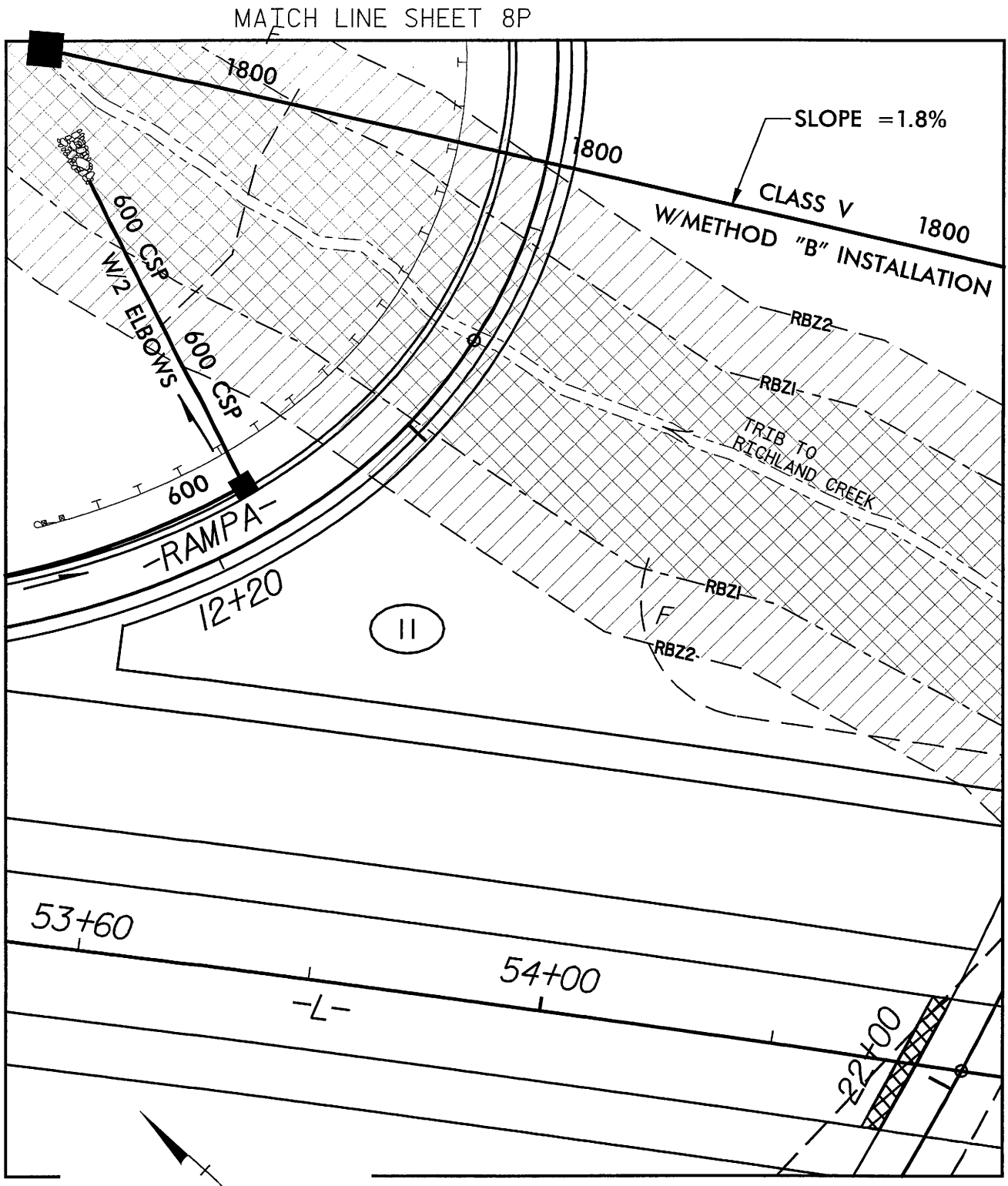
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 47 OF 92

19/2006
36:43 AM
:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_08P.psh



SHEET 8Q

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

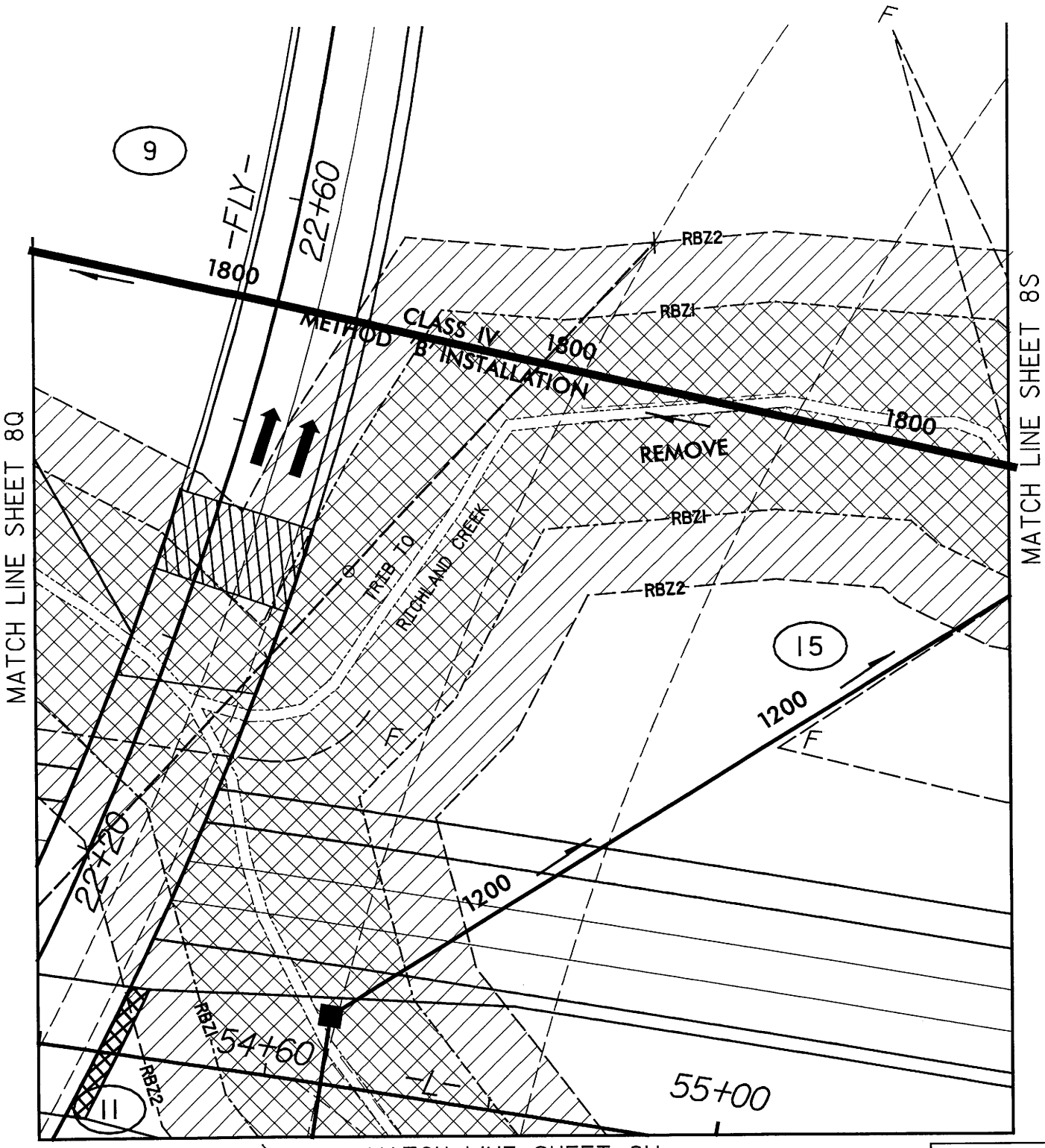
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 48 OF 92

01/09/2005
04:54:44 PM
r:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_080.psh



SHEET 8R

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

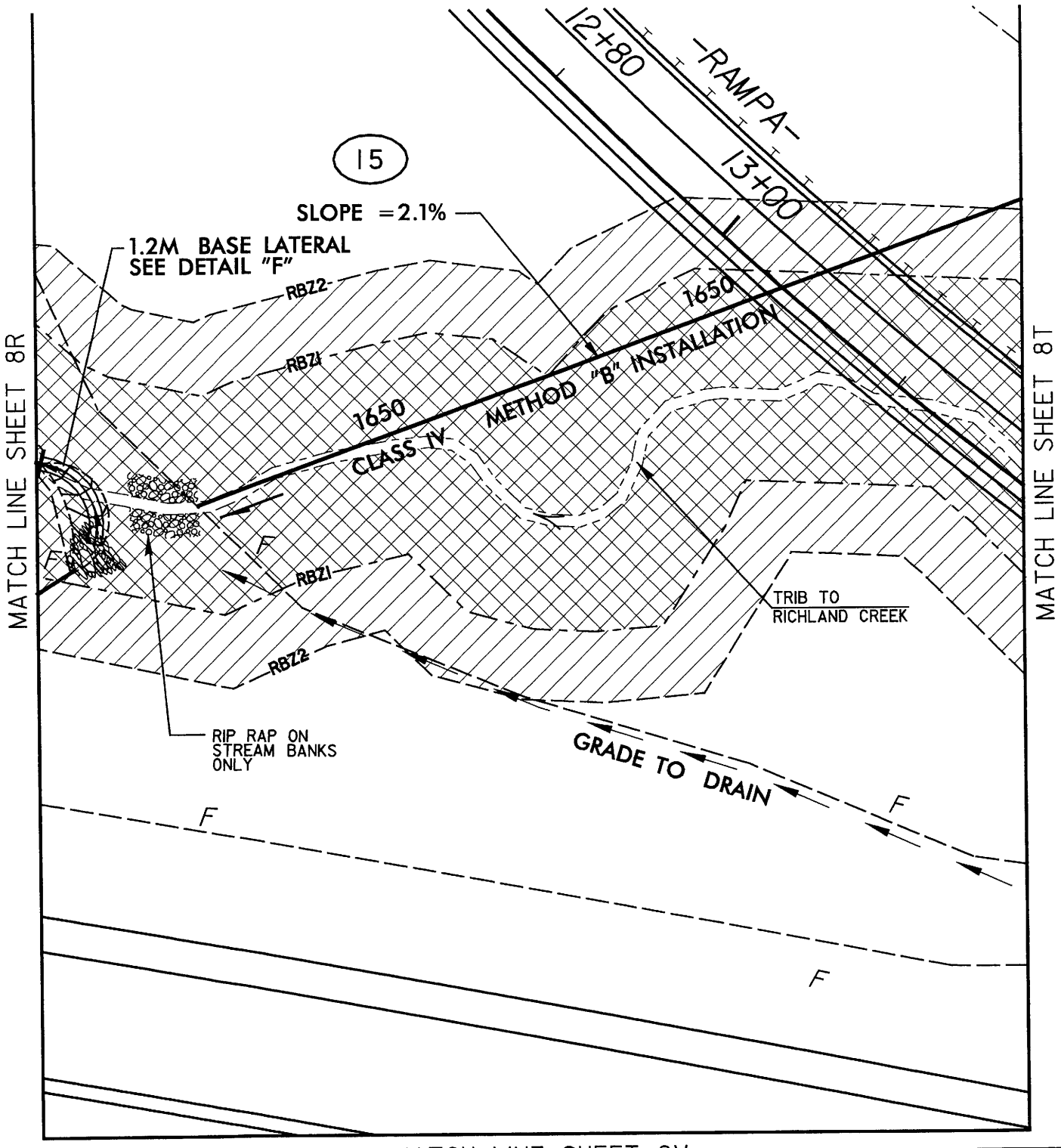
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 46 OF 92

12/2006
44:00 PM
\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_08R.psh



MATCH LINE SHEET 8V

SHEET 8S

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

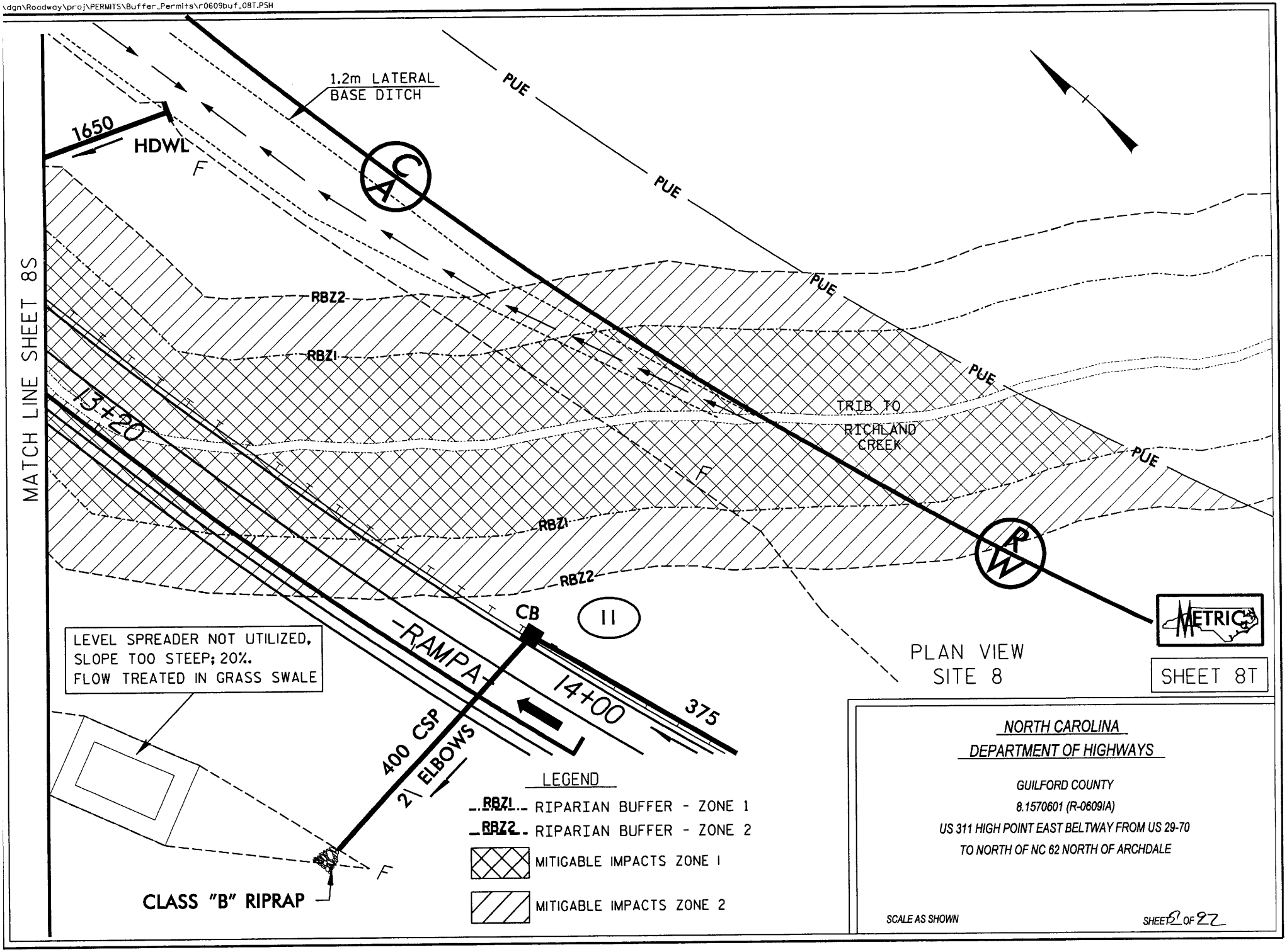
NORTH CAROLINA
DIVISION OF HIGHWAYS

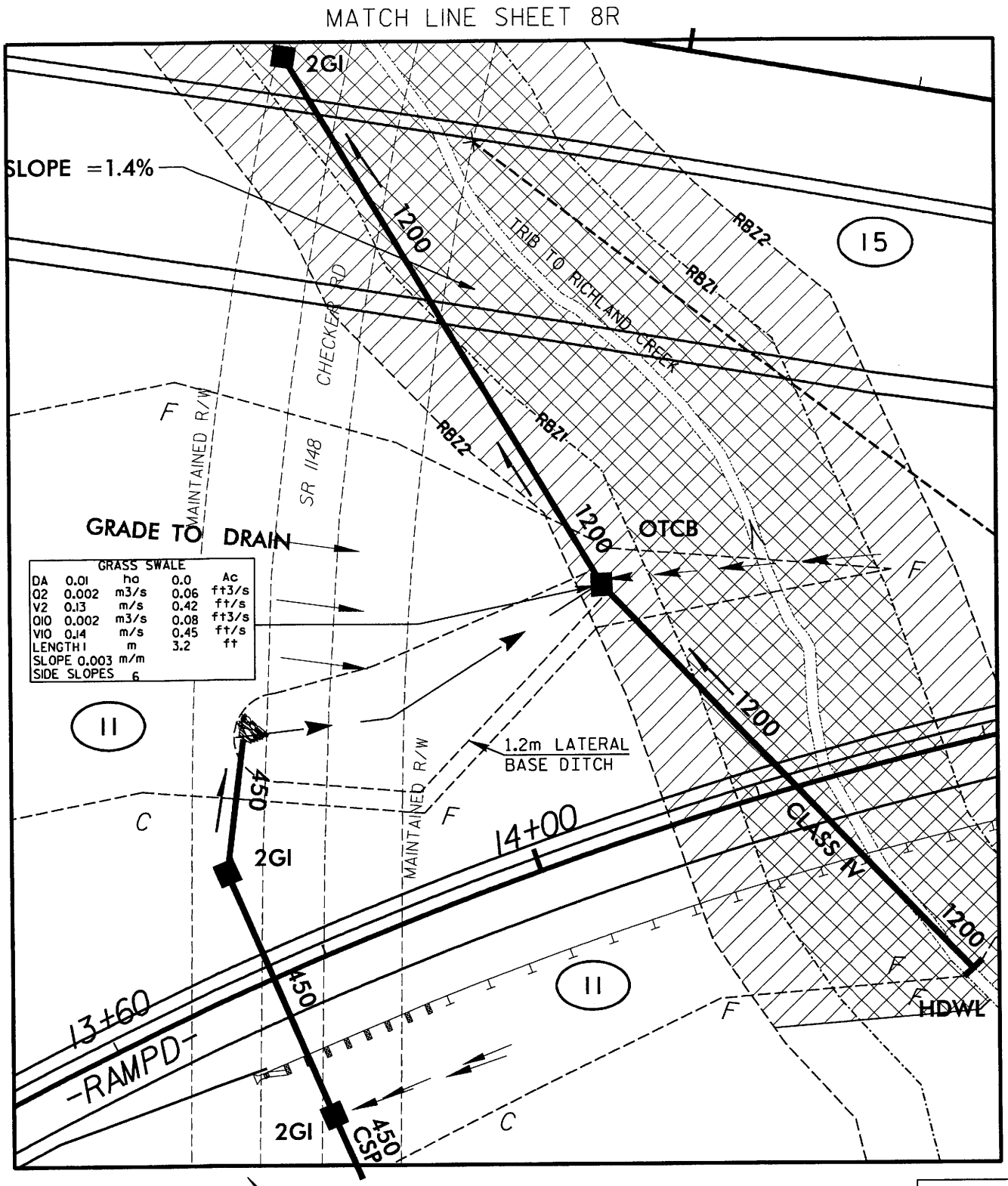
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 50 OF 92

/8/2005
:34:54 AM
:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_085.psh


1.2m LATERAL
BASE DITCH
PUE
PUE
PUE
PUE
PUE
1650
HDWL
F
C
A
RBZ2
RBZ1
13+20
TRIB TO
RICHLAND
CREEK
F
RBZ1
RBZ2
P
W
CB
11
RAMP A
14+00
375
400 CSP
2\ ELBOWS
F
CLASS "B" RIPRAP
MATCH LINE SHEET 8S
LEVEL SPREADER NOT UTILIZED,
SLOPE TOO STEEP; 20%.
FLOW TREATED IN GRASS SWALE
LEGEND
RBZ1 RIPARIAN BUFFER - ZONE 1
RBZ2 RIPARIAN BUFFER - ZONE 2
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2
METRIC
PLAN VIEW
SITE 8
SHEET 8T
NORTH CAROLINA
DEPARTMENT OF HIGHWAYS
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE
SCALE AS SHOWN
SHEET 21 OF 22



SHEET 8U

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

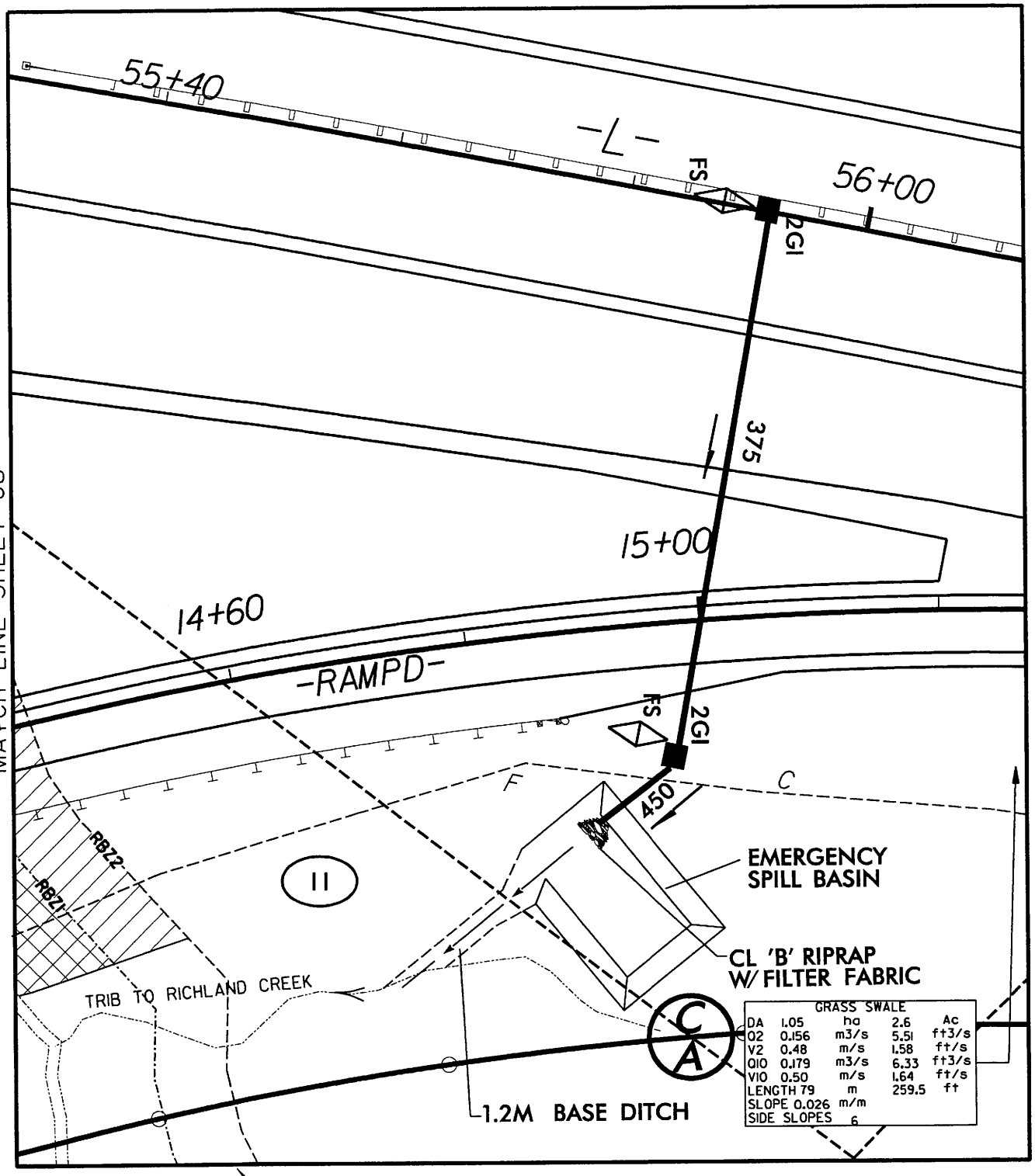
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 52 OF 92

010/2005
29:33 PM
:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_08U.psh

MATCH LINE SHEET 8S



GRASS SWALE				
DA	1.05	ha	2.6	Ac
Q2	0.156	m3/s	5.51	ft3/s
V2	0.48	m/s	1.58	ft/s
Q10	0.179	m3/s	6.33	ft3/s
V10	0.50	m/s	1.64	ft/s
LENGTH 79		m	259.5	ft
SLOPE 0.026		m/m		
SIDE SLOPES		6		

SHEET 8V

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

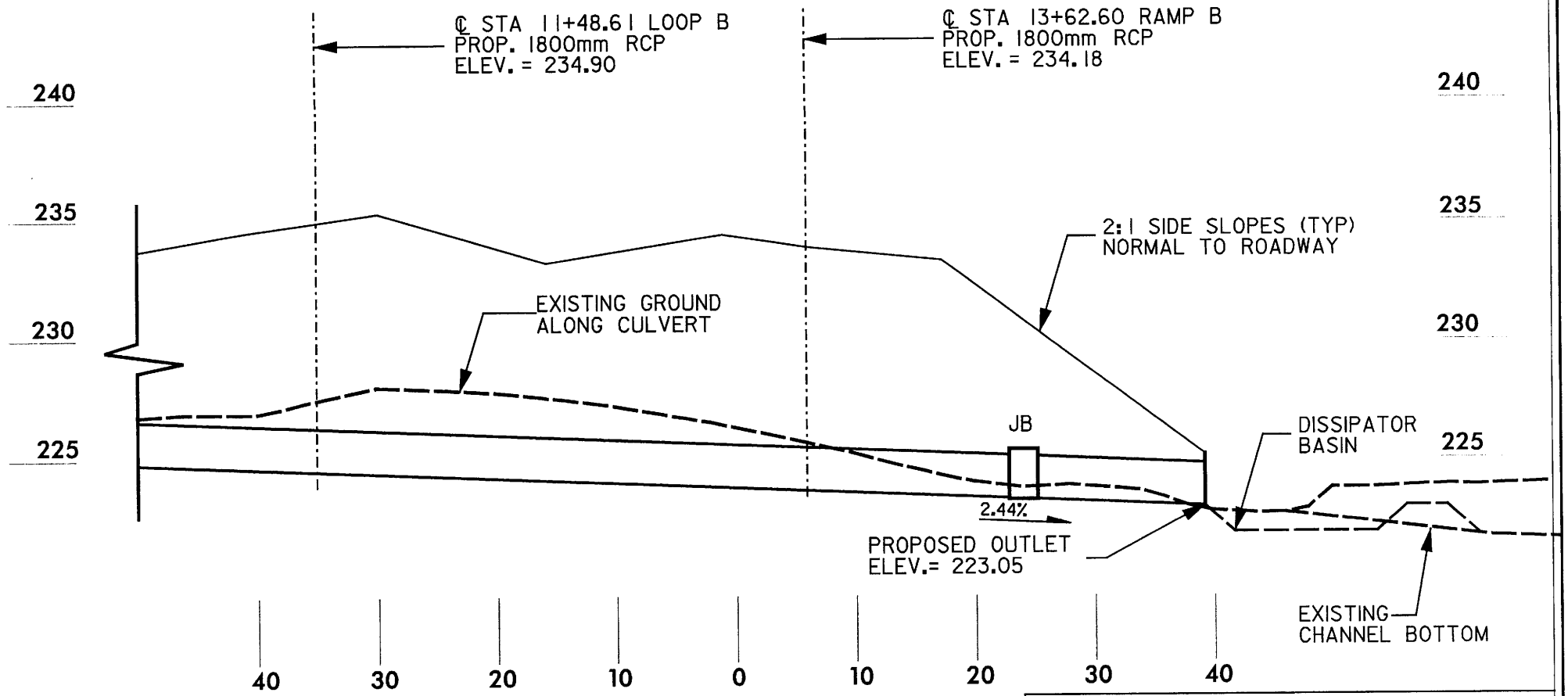
8.1570601 (R-0609IA)

US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 53 OF 91

/10/2005
:30:23 PM
:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_08V.psh



SCALE:
1 = 500 HORIZONTAL
1 = 250 VERTICAL

METRIC

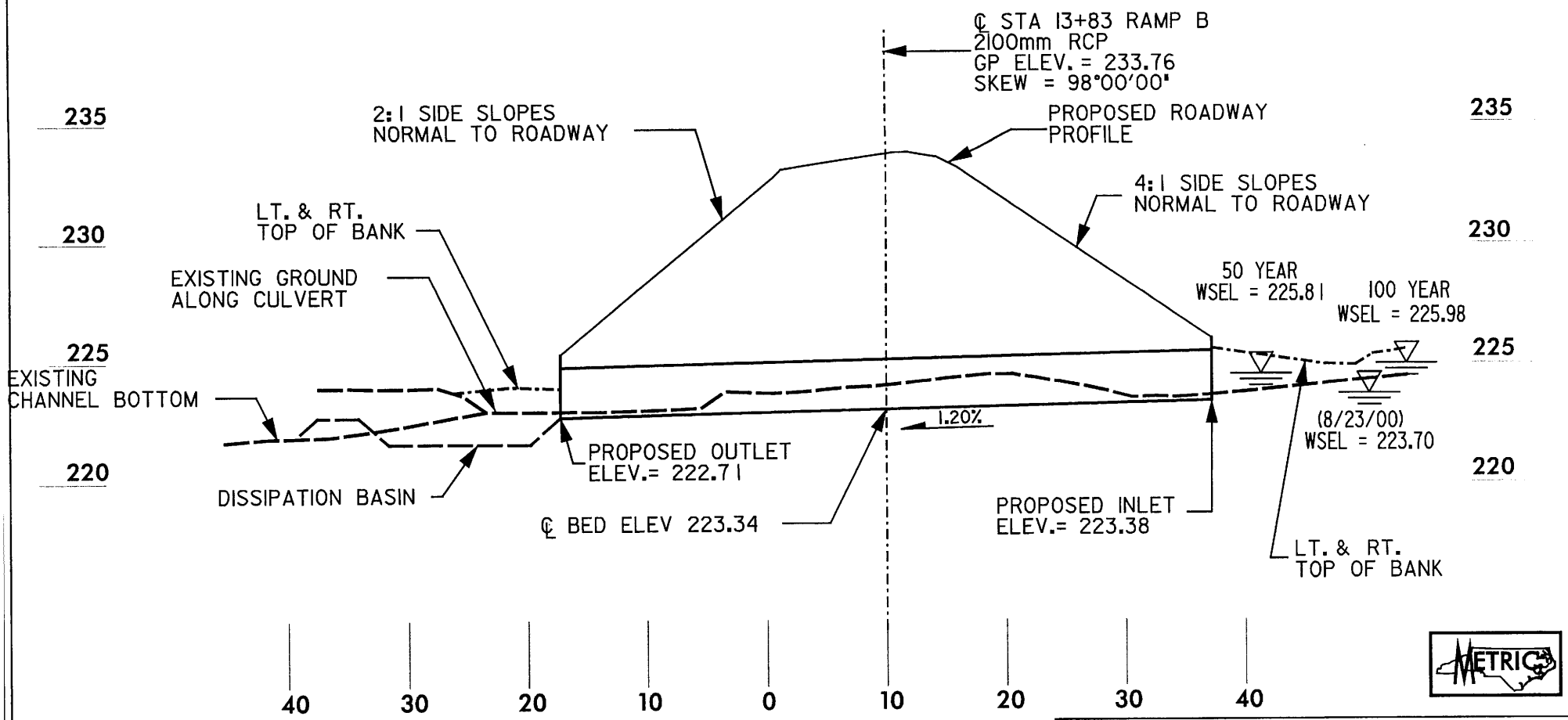
PROFILE
PERMIT SITE 8 (8B & 8C)
1800mm RCP

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 54 OF 92



SCALE:
1 = 500 HORIZONTAL
1 = 250 VERTICAL

PROFILE
PERMITE SITE 8 (8B & 8C)
2100mm RCP

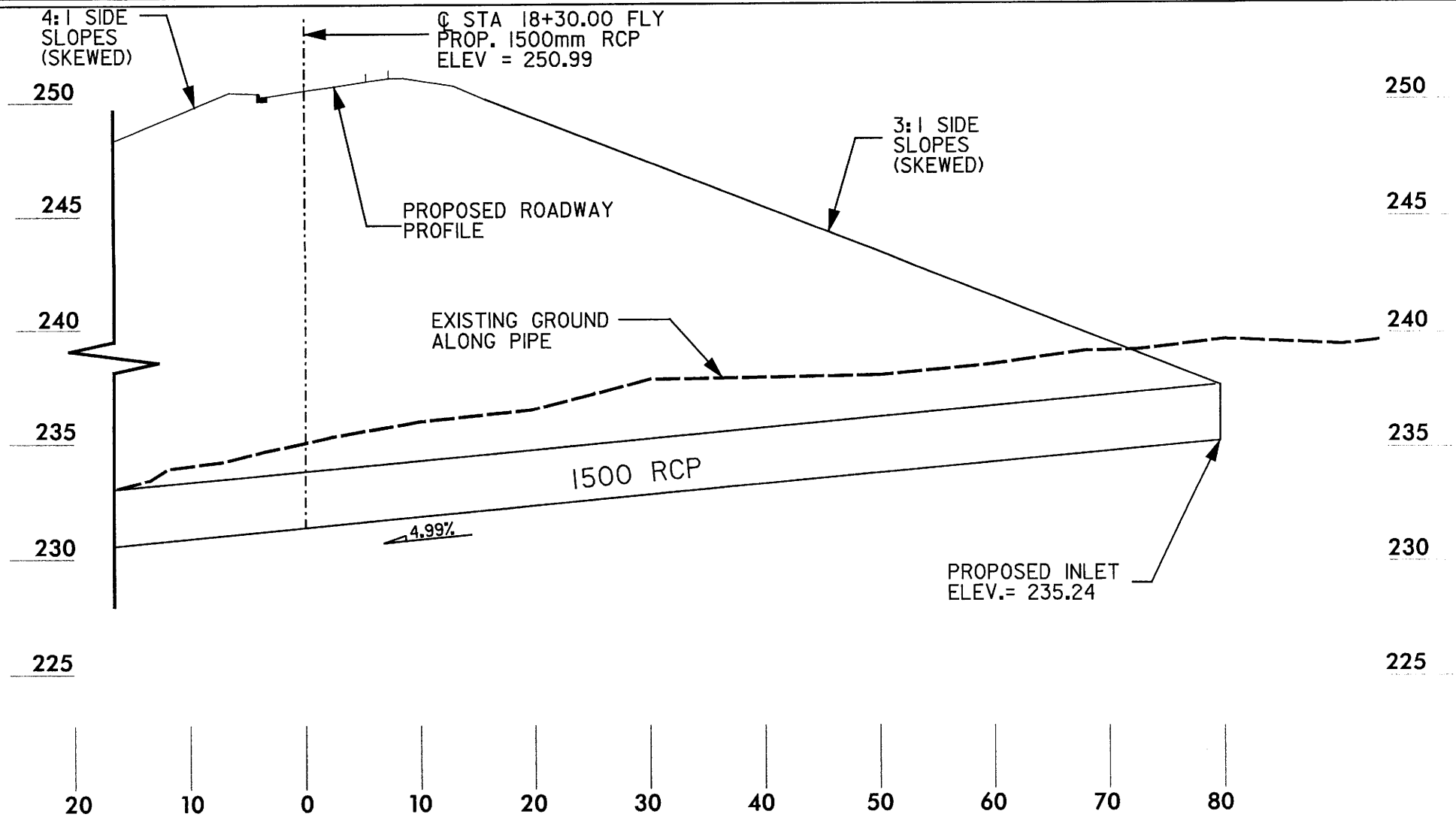
NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 55 OF 92

/12/2005
:52:05 PM
:\dgn\Roadway\proj\PERMITS\Buffer_Permits\R-6091A_prm_buf_pipepros.dgn



SCALE:
1 = 500 HORIZONTAL
1 = 250 VERTICAL

METRIC

PROFILE
PERMIT SITE 8 (8L)
1500mm RCP

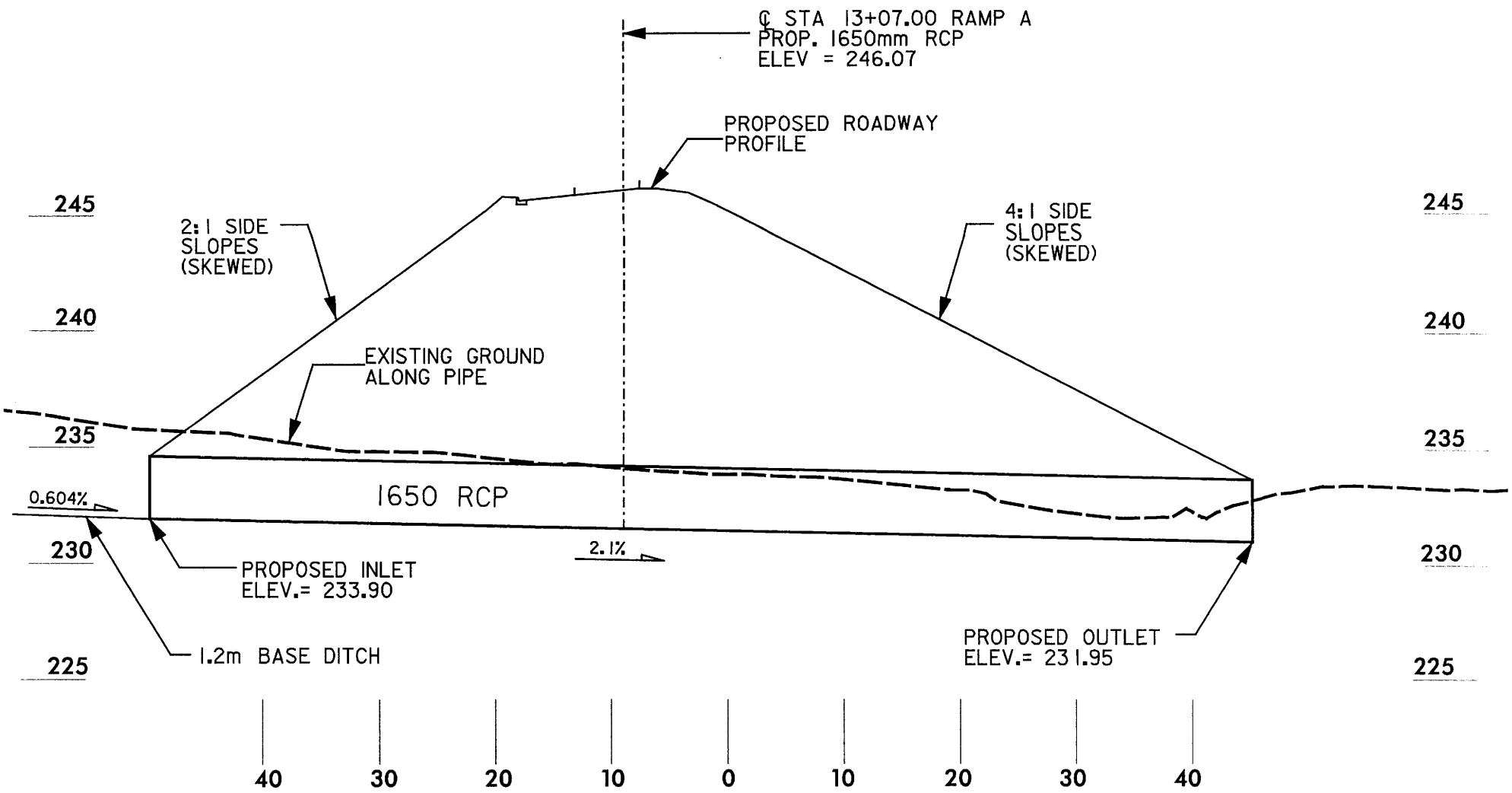
NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 55 OF 92

8/12/2005
3:51:50 PM
R:\dgn\Roadway\proj\PERMITS\Buffer_Permits\R-6091A_prm_buf_pipepros.dgn



SCALE:
1 = 500 HORIZONTAL
1 = 250 VERTICAL

METRIC

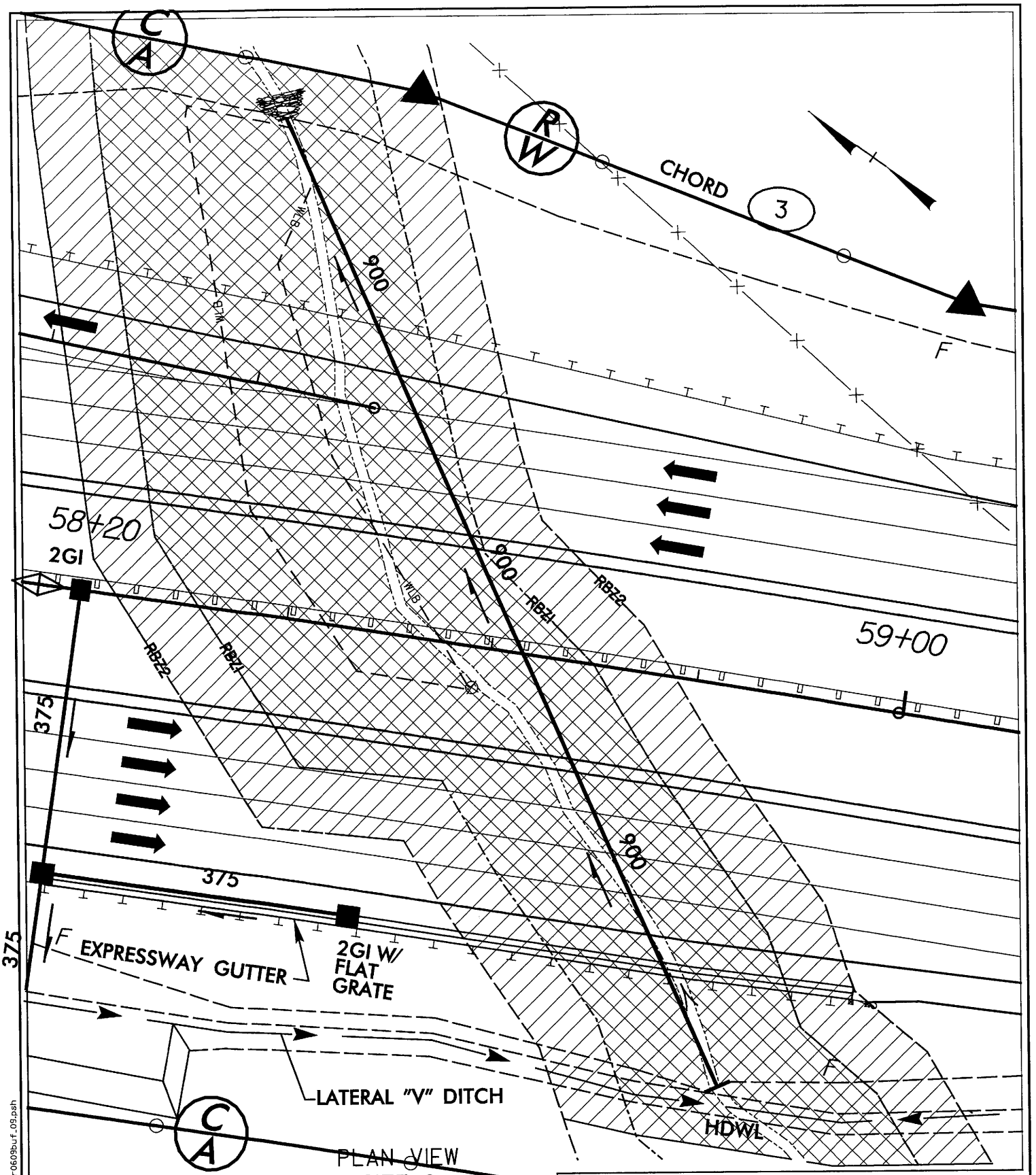
PROFILE
PERMIT SITE 8 (8S & 8T)
1650mm RCP

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 57 OF 92



PLAN VIEW
SITE 9

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1
RBZ2 RIPARIAN BUFFER - ZONE 2
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

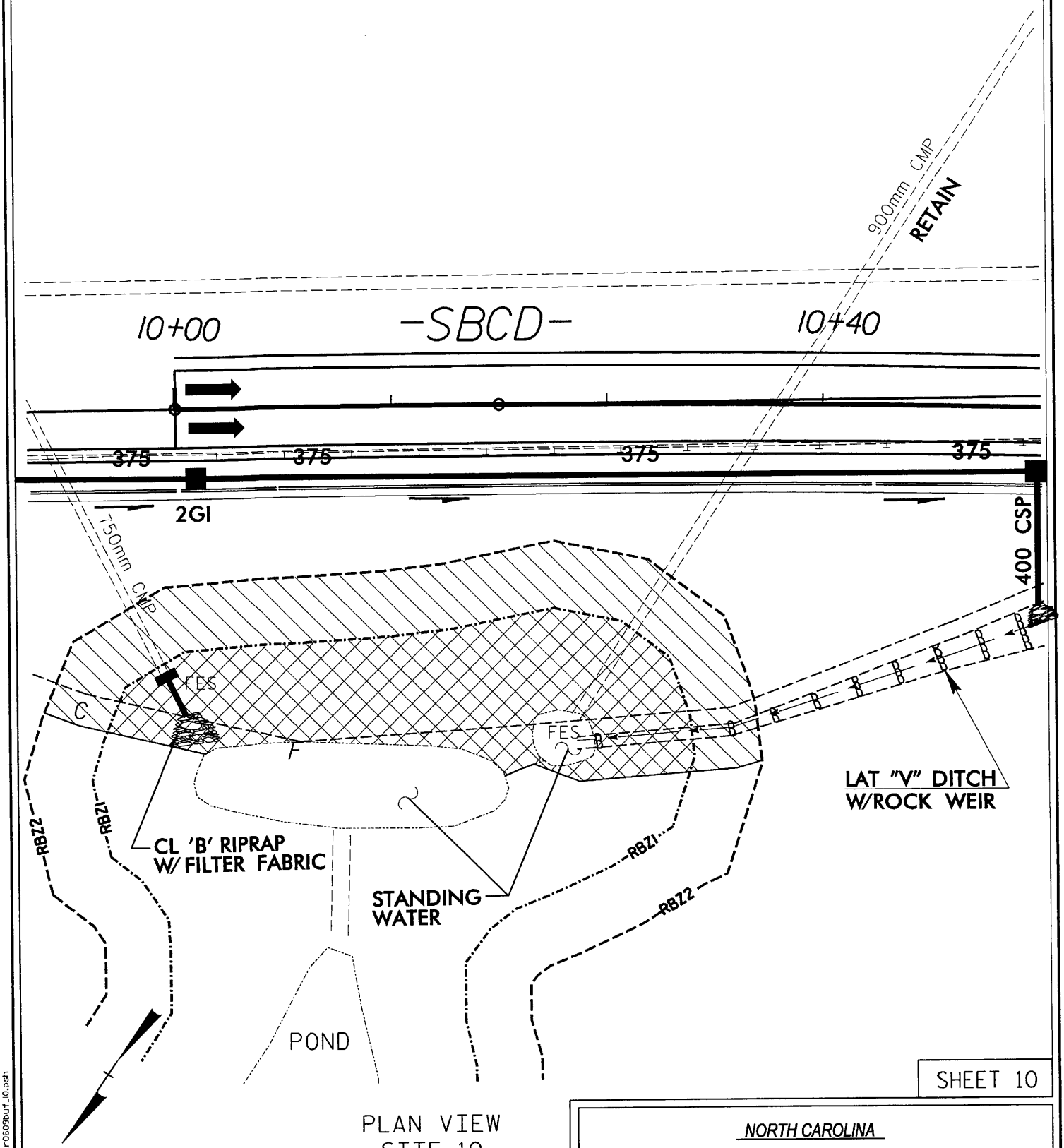
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 58 OF 92

2/2006
0449 PM
\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_09.psh



SHEET 10

PLAN VIEW
SITE 10

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

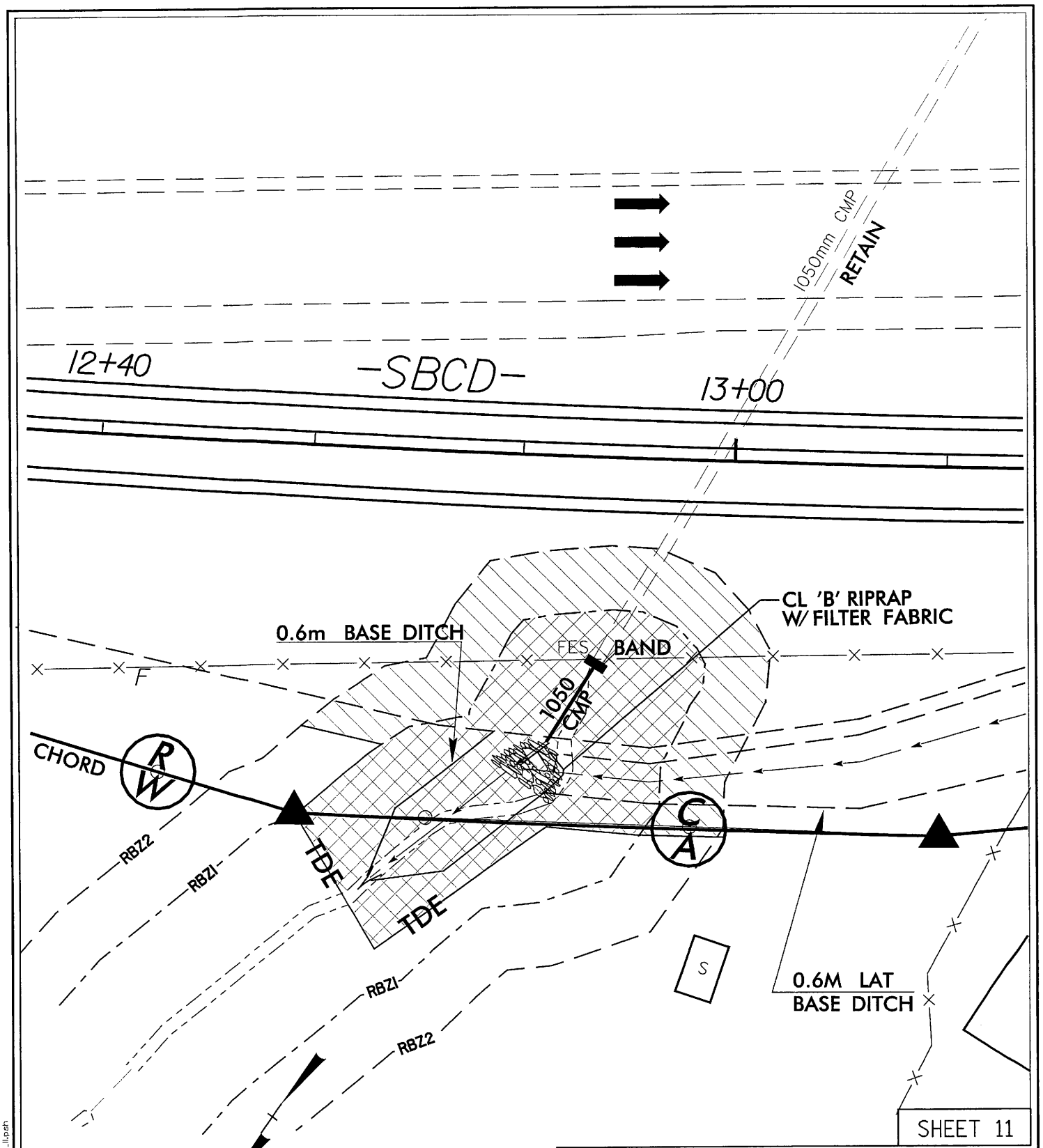
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 59 OF 92

/10/2005
:36:11 PM
\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_10.psh



PLAN VIEW
SITE 11

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

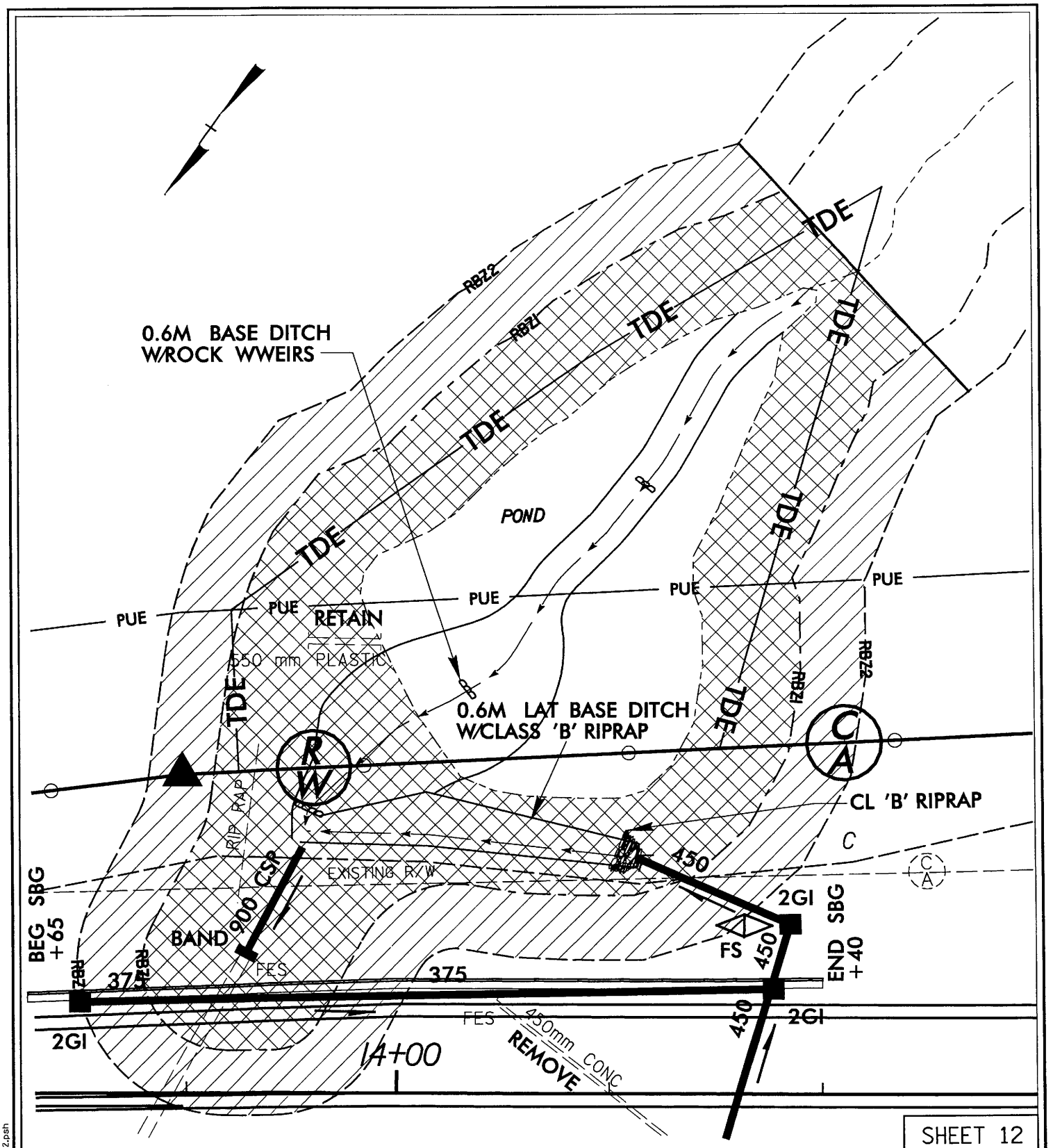
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 60 OF 92

01/09/2005
05:19:43 PM
r:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_11.psh



PLAN VIEW
SITE 12

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1
RBZ2 RIPARIAN BUFFER - ZONE 2
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

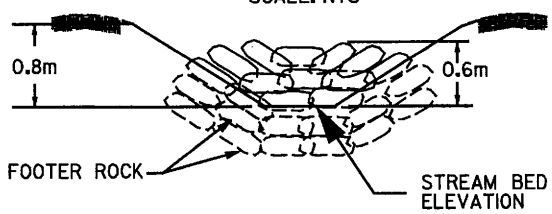
SCALE AS SHOWN

SHEET 61 OF 92

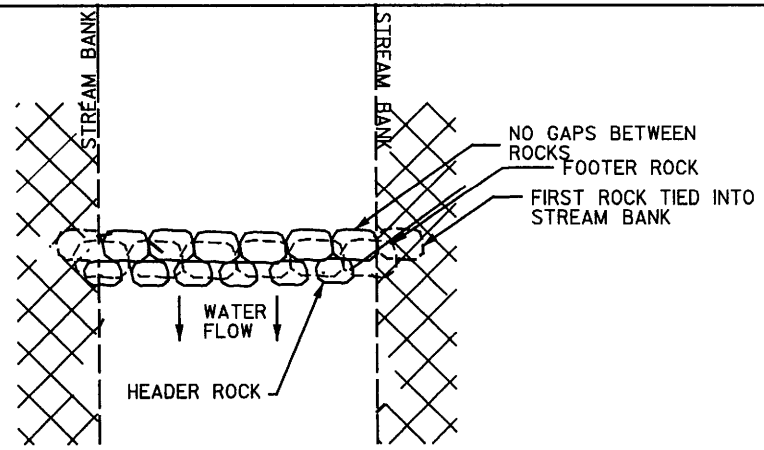
3/8/2005
0:33:45 AM
R:\dgn\Roadway\proj\PERMITS\Buffer_Permits\r0609buf_12.psh

ROCK WEIR

SCALE: NTS



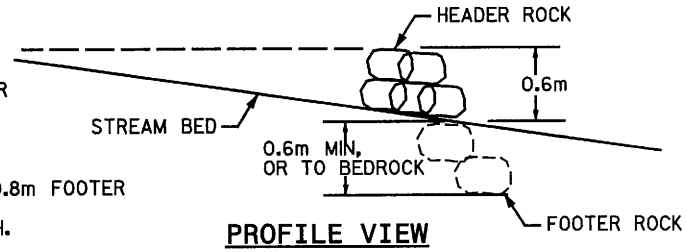
CROSS SECTION



PLAN VIEW

INSTALLATION OF ROCK WEIR

A TRENCH SHALL BE DUG IN SUCH A MANNER THAT THE FOOTER ROCKS ARE BURIED BENEATH THE BED SURFACE ELEVATION. AN EXCAVATOR, WITH A BUCKET THAT CONTAINS A HYDRAULIC THUMB, SHALL BE USED TO PLACE ROCKS WITH THE SUPERVISION OF THE RESIDENT ENGINEER. HEADER AND FOOTER ROCKS SHALL BE NO SMALLER THAN 0.5m X 0.5m X 0.8m FOOTER ROCKS SHALL BE PLACED IN THE TRENCH FIRST WITH HEADER ROCKS PLACED ON TOP PRIOR TO BACK FILLING OF THE TRENCH.



PROFILE VIEW

METRIC

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570801 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 62 OF 92

R-0609IA GUILFORD COUNTY Co. Level Spreaders

Date: 8/11/2005
Dsn. By: RKW
Check:

PLAN SHT.	Align	Station	Total D.A. Ha	Total D.A. (ac)	Ex Ground Slope (%)	Rational C	Q10 138 mm/hr	Q10 5.4 in/hr	Ground Cover None - Forested	Ground Cover Thick - Grass	Level Spreader Design for	Level Spreader Length Required in meters	REMARKS
13	L	40+10R	1.9	4.6	11	0.4	0.284	9.981	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
13	L	40+10L	0.2	0.4	11	0.4	0.023	0.801		X	13 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
13	L	40+15L	0.70	1.73	10	0.4	0.106	3.736		X	13 ft/cfs	**Too Steep for Level Spreader**	**Relocated Channel, No Treatment Required**
13	L	40+50L	1.58	3.90	20	0.7	0.420	14.758		X	13 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
15	L	45+20R	6.46	15.96	10	0.28	0.686	24.136	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
15	L	46+50R	3.02	7.46	11	0.45	0.516	18.134	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
16	RpB	14+50R	0.14	0.35	6	0.4	0.021	0.747	X		100 ft/cfs	**23**	**Flow previously treated in grass swale**
17	RpA	13+60R	34.56	85.40	7	0.2	2.623	92.230	X		100 ft/cfs	**Too Steep for Level Spreader**	**Relocated Channel, No Treatment Required**
17	L	58+70R	1.23	3.04	7	0.5	0.233	8.206	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
17	L	59+10R	0.30	0.74	10	0.6	0.068	2.402	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
PROJECT: 8.1570601 (R-609IA)

8/10/2005
SHEET 63 OF 92

R-0609IA GUILFORD COUNTY Co. Level Spreaders

Date: 8/11/2005
Dsn. By: RKW
Check:

PLAN SHT.	Align	Station	Total D.A. Ha	Total D.A. (ac)	Ex Ground Slope (%)	Rational C	Q10 138 mm/hr	Q10 5.4 in/hr	Ground Cover None - Forested	Ground Cover Thick - Grass	Level Spreader Design for	Level Spreader Length Required in meters	REMARKS
7	L	19+80L	2.7	6.6	14	0.4	0.407	14.304	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
7	L	20+20R	0.4	0.9	19	0.4	0.058	2.028	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
9	L	25+65R	1.58	3.90	10	0.7	0.420	14.758	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
10	L	28+20R	0.46	1.14	15	0.6	0.105	3.683	X		100 ft/cfs	**Too Steep for Level Spreader**	**Discharge point is inside of Zone 1 and previously treated**
10	Y2	14+30R	0.29	0.72	12	0.5	0.055	1.935	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
10	L	29+40R	2.32	5.73	15	0.36	0.317	11.144	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
11	L	33+40L	4.13	10.21	6	0.4	0.627	22.043		X	13 ft/cfs	**87**	**Level Spreader not utilized due to Basin and PSH**
11	L	33+40R	2.47	6.10	8	0.4	0.375	13.183		X	13 ft/cfs	**52**	**USE LEVEL SPREADER**
12	L	35+40L	2.71	6.70	12.5	0.45	0.463	16.272	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
PROJECT: 8.1570601 (R-609IA)

8/10/2005
SHEET 64 OF 92

R-609 IA Guilford Co. Affected Buffer Areas **Site #1**

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 10/1/2003
Dsn. By: HAH/SNR
Check: RKW

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
5	L		11+80L	GS	0.24	0.6	60.0	18	95	0.0035	6	YES	1.42	0.53	1.63	0.54	GS
5	L	2	12+75L	2GI	0.22	0.5	54.4	17	70	0.0035	6	YES	1.28	0.51	1.47	0.53	GS
5	L	6	13+45L	2GI	0.11	0.3	27.2	8	95	0.0275	3	YES	0.51	1.03	0.59	1.07	GS
5	L	9	13+80L	2GI	0.51	1.3	126.0	38	194	0.003	6	YES	2.67	0.58	3.08	0.60	GS
5	L	9	13+80L	SDG	0.03	0.1	7.4	2	20	0.0371	6	YES	0.24	1.53	0.28	1.58	GS
																	GS
5	L	8B	15+05M	2GI	0.21	0.5	51.9	16	69	0.0028	6	YES	1.35	0.89	1.55	0.92	GS
5	L	8	13+85ML	2GI	0.24	0.6	59.3	18	85	0.003	6	YES	1.79	0.98	2.06	1.01	GS
5	L	3	12+75ML	2GI	0.13	0.3	32.1	10	110	0.003	6	YES	0.67	0.76	0.77	0.79	GS
5	L		11+85ML	GS	0.09	0.2	22.2	7	90	0.008	6	YES	0.37	0.95	0.42	0.98	GS
5	L		11+80R	GS	0.31	0.8	77.2	24	145	0.0035	6	YES	2.37	0.60	2.72	0.62	GS
5	L		13+70R	SDG	0.09	0.2	22.2	7	30	0.0271	6	YES	0.52	1.64	0.60	1.70	GS
5	L	7	13+70R	2GI	0.40	1.0	98.8	30	194	0.0035	6	YES	2.33	0.59	2.68	0.62	GS
5	L		14+62R	BERM	0.30	0.7	72.9	22	237	0.07	3	YES	1.03	1.74	1.19	1.80	GS
5	Y1		11+83L	SDG	0.30	0.7	73.6	22	103	0.003	3	YES	1.39	0.58	1.60	0.60	GS
5	Y1	5	13+00L	2GI	0.11	0.3	28.2	9	20	0.0176	3	YES	0.66	0.93	0.76	0.96	GS
5	Y1		13+20L	SDG	0.11	0.3	28.2	9	20	0.0145	6	YES	0.66	1.38	0.76	1.43	GS
5	Y1		13+41L	GS	0.09	0.2	21.0	6	40	0.0298	6	YES	0.50	1.68	0.57	1.74	GS
5	Y1		14+04L	GS	0.02	0.1	5.1	2	20	0.0115	6	YES	0.12	0.82	0.14	0.85	GS
5	Y1		11+65R	SDG	0.13	0.3	30.9	9	86	0.003	3	YES	0.58	0.86	0.67	0.89	GS
5	Y1	4	13+09R	2GI	0.07	0.2	16.3	5	20	0.0184	3	YES	0.38	1.53	0.44	1.59	GS
5	Y1		13+20R	SDG	0.07	0.2	16.3	5	20	0.0145	6	YES	0.38	1.20	0.44	1.24	GS
5	Y1		13+41R	GS	0.04	0.1	10.6	3	40	0.0298	6	YES	0.25	1.41	0.29	1.46	GS
5	L	8A	13+85MR	2GI	0.12	0.3	29.7	9	115	0.004	6	YES	0.49	0.79	0.56	0.82	GS
5	L		11+85MR	GS	0.20	0.5	49.4	15	200	0.005	6	YES	0.82	0.97	0.94	1.01	GS
5	L	470	11+18M	2GI	0.13	0.3	32.1	10	67	0.01	6	YES	0.53	1.13	0.61	1.17	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

R-609 IA Guilford Co. Affected Buffer Areas Site #2

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	equired length for treatmen (ft.)	equired length for treatmen (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
6	L	10	17+60L	2G	0.45	1.1	111.2	34	187	0.024	6	**YES**	2.62	1.26	3.02	1.31	GS
6	L		18+00L	GS	0.05	0.1	12.8	4	40	0.024	6	**YES**	0.30	1.37	0.35	1.42	GS
6	L		18+60L	GS	0.05	0.1	12.8	4	40	0.024	6	**YES**	0.30	1.37	0.35	1.42	GS
6	L	12	17+60M	2GI	0.44	1.1	108.7	33	187	0.024	6	**YES**	1.54	1.10	1.77	1.14	GS
6	L	11	17+60R	2GI	0.51	1.3	126.0	38	187	0.024	6	**YES**	3.86	1.39	4.44	1.44	GS
6	L	13A	19+30R	2GI	0.37	0.9	91.4	28	180	0.024	6	**YES**	1.29	1.06	1.49	1.09	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

R-609 IA Guilford Co. Affected Buffer Areas **Site #3**

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
7	L		19+52L	LAT	0.86	2.1	212.5	65	83	0.0444	3	**YES**	4.01	1.86	4.61	1.94	PT
7	L	15	20+40L	2GI	0.16	0.4	39.5	12	55	0.044	3	**YES**	0.75	1.23	0.86	1.28	GS
7	L		21+22L	LAT	0.92	2.3	227.3	69	48	0.085	3	**NO**	4.29	2.87	4.93	2.98	PT
7	L	18	21+70L	2GI	0.31	0.8	76.6	23	48	0.08	3	**YES**	1.45	1.85	1.66	1.93	GS
7	L	13	19+20M	2GI	0.45	1.1	111.2	34	160	0.024	6	**YES**	1.84	1.15	2.11	1.19	GS
7	L	16	20+40M	2GI	0.34	0.8	84.0	26	120	0.024	6	**YES**	1.98	1.18	2.28	1.22	GS
7	L	19	21+80M	2GI	0.39	1.0	96.4	29	120	0.024	6	**YES**	2.27	1.22	2.61	1.26	GS
7	L	13A	19+30R	2GI	0.22	0.5	54.4	17	180	0.024	6	**YES**	1.03	1.85	1.18	1.92	GS
7	L		20+35R	LAT	0.37	0.9	91.4	28	95	0.1233	3	**NO**	1.72	2.45	1.98	2.53	PT

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

R-609 IA Guilford Co. Affected Buffer Areas **Site #4**

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
8	L	21	23+43L	2GI	0.96	2.4	237.2	72	163	0.024	6	**YES**	4.48	1.44	5.15	1.49	GS
8	L	26	25+60L	2GI	0.65	1.6	160.6	49	120	0.024	6	**YES**	3.03	1.31	3.48	1.35	GS
8	L	22	23+51M	2GI	0.48	1.2	118.6	36	171	0.024	6	**YES**	2.80	1.28	3.22	1.33	GS
8	L	27	25+45M	2GI	0.63	1.6	155.7	47	225	0.024	6	**YES**	3.67	1.37	4.22	1.42	GS
8	L		25+40R	GS	0.20	0.5	49.4	15	100	0.024	6	**YES**	1.17	1.03	1.34	1.07	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 68 OF 92

R-609 IA Guilford Co. Affected Buffer Areas Site #5
Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 10/1/2003
Dsn. By: HAH/SNR
Check: RKW

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
9	L		25+25L	TAIL D	0.98	2.4	242.2	74	45	0.0106	3	NO	5.14	1.30	5.91	1.34	PT
9	L	28	26+90L	2GI	0.77	1.9	190.3	58	160	0.01	6	YES	4.04	1.01	4.64	1.05	GS
9	L		27+60L	GS	0.20	0.5	49.4	15	60	0.01	6	YES	1.05	1.34	1.21	1.39	PT
9	L	31	28+00L	2GI	0.30	0.7	74.1	23	100	0.022	6	YES	1.40	1.04	1.61	1.08	GS
9	L		25+80R	TAIL D	2.26	5.6	558.4	170	15	0.003	3	NO	10.01	0.95	11.51	0.98	PT
9	L	33	28+10R	2GI	0.49	1.2	121.1	37	214	0.01	6	YES	3.43	0.97	3.94	1.01	GS
9	L	29	27+20M	2GI	0.44	1.1	108.7	33	210	0.01	6	YES	2.05	0.85	2.36	0.88	GS
9	L	29	27+20M	2GI	0.05	0.1	12.4	4	44	0.009	6	YES	0.23	0.89	0.27	0.92	GS
9	L	32A	28+55ML	2GI	0.12	0.3	29.7	9	91	0.01	6	YES	0.56	1.15	0.64	1.19	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

R-609 IA Guilford Co. Affected Buffer Areas Site #6
Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 10/1/2003
Dsn. By: HAH/SNR
Check: RKW

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
10	L	31	27+98L	SDG	0.15	0.4	38.1	12	100	0.003	6	YES	1.08	0.46	1.24	0.48	GS
10	L		28+50L	BASE BERM	3.80	9.4	939.0	286	50	0.016	3	NO	13.29	2.28	15.28	2.37	PT
10	L	33D	29+91L	2GI	0.36	0.9	89.0	27	111	0.01	6	YES	1.89	0.84	2.17	0.87	GS
10	L	34A	31+20L	2GI	0.45	1.1	111.2	34	130	0.01	6	YES	2.36	0.88	2.71	0.92	GS
10	L	33C	32+91LL	2GI	1.48	3.7	365.7	111	140	0.0031	3	YES	7.76	0.90	8.93	0.93	GS
10	L	37	32+00L	SDG	0.32	0.8	79.3	24	80	0.0035	6	YES	1.68	0.55	1.94	0.57	GS
10	L	33E	29+78ML	2GI	0.10	0.2	24.7	8	93	0.01	6	YES	0.47	1.10	0.54	1.14	GS
10	L		30+20M	GS	0.05	0.1	12.4	4	42	0.009	6	YES	0.23	0.89	0.27	0.92	GS
10	L	32	28+14MR	2GI	0.05	0.1	12.4	4	50	0.01	6	YES	0.23	0.92	0.27	0.95	GS
10	L	32B	28+55MR	2GI	0.05	0.1	12.4	4	42	0.01	6	YES	0.23	0.92	0.27	0.95	GS
10	L	33F	29+71MR	2GI	0.09	0.2	22.2	7	86	0.01	6	YES	0.42	1.07	0.48	1.11	GS
10	L		31+20M	GS	0.05	0.1	12.4	4	49	0.01	6	YES	0.23	0.92	0.27	0.95	GS
10	L	34B	31+20M	2GI	0.31	0.8	76.6	23	100	0.019	6	YES	1.45	1.00	1.66	1.03	GS
10	L		28+20R	SDG	0.50	1.2	123.6	38	20	0.074	6	NO	2.91	1.98	3.35	2.05	PT
10	L		28+37R	LAT	12.90	31.9	3187.6	972	17	0.003	3	NO	52.62	1.86	60.51	1.93	PT
10	L		29+55R	LAT	2.32	5.7	573.3	175	20	0.026	3	NO	9.73	2.53	11.19	2.62	PT
10	L	34	31+20R	2GI	0.42	1.0	103.8	32	160	0.01	6	YES	2.69	0.91	3.10	0.95	GS
10	Y2		14+52R	LAT	0.12	0.3	30.1	9	177	0.063	3	YES	0.57	1.44	0.65	1.49	GS
10	Y2		14+00R	LAT	0.33	0.8	81.5	25	52	0.063	3	YES	1.54	1.85	1.77	1.91	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT= PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 22 OF 92

R-609 IA Guilford Co. Affected Buffer Areas **Site #7**

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated ischarge	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
11	L		33+00L	LAT	3.19	7.9	788.2	240	80	0.0741	3	**NO**	14.87	4.62	17.10	4.80	PT
11	L		33+20L	LAT	4.13	10.2	1020.5	311	20	0.01	3	**NO**	11.55	1.76	13.28	1.82	PT
11	L	36	31+84M	2GI	0.51	1.3	126.0	38	231	0.0211	6	**YES**	2.38	1.17	2.73	1.21	GS
11	L	39	34+15M	2GI	0.43	1.1	106.3	32	155	0.0211	6	**YES**	2.51	1.19	2.88	1.23	GS
11	L		33+40R	LAT	2.47	6.1	610.3	186	60	0.095	3	**NO**	11.51	4.64	13.24	4.81	PT
11	L	40	34+15R	2GI	0.55	1.4	135.9	41	120	0.0211	6	**YES**	3.85	1.32	4.42	1.37	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

R-609 IA Guilford Co. Affected Buffer Areas **Site #8**

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
12	L		35+23L	LAT	6.76	16.7	1670.4	509	15	0.0226	3	**NO**	18.00	2.99	20.70	3.10	PT
12	L	48	37+50L	2GI	0.45	1.1	111.2	34	125	0.0211	6	**YES**	1.57	1.06	1.81	1.10	GS
12	L	42	35+70L	2GI	0.47	1.2	115.6	35	180	0.0211	6	**YES**	1.64	1.07	1.88	1.11	GS
12	L	41	35+70M	2GI	0.18	0.4	44.5	14	65	0.0211	6	**YES**	1.05	0.96	1.21	0.99	GS
12	L	43	36+35M	2GI	0.28	0.7	69.2	21	105	0.0211	6	**YES**	1.63	1.07	1.88	1.11	GS
12	L	46	37+40M	2GI	0.35	0.9	86.5	26	130	0.0211	6	**YES**	3.06	1.25	3.52	1.29	GS
12	L	44	36+35R	2GI	0.47	1.2	116.1	35	235	0.0211	6	**YES**	4.11	1.34	4.72	1.39	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

R-609 IA Guilford Co. Affected Buffer Areas **Site #9**

Date: 10/1/2003
Dsn. By: HAH/SNR
Check: RKW

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
13	L	49	38+75L	2GI	0.15	0.4	37.8	12	85	0.0211	6	YES	0.71	1.61	0.82	1.67	GS
13	L	49	38+75L	SDG	0.02	0.0	4.9	2	22	0.0368	6	YES	0.09	1.20	0.11	1.24	GS
13	L		40+10L	LAT	0.04	0.1	8.6	3	20	0.14	3	NO	0.20	2.80	0.23	2.90	PT
13	L		40+30L	LAT	0.04	0.1	8.6	3	20	0.07	3	NO	0.20	2.16	0.23	2.23	PT
13	L		40+30L	LAT	0.18	0.4	44.5	14	20	0.14	3	NO	1.26	2.37	1.45	2.46	PT
13	L		40+50L	LAT	0.18	0.4	44.5	14	20	0.09	3	YES	0.84	1.82	0.96	1.88	GS
13	L	49A	38+75ML	2GI	0.26	0.6	64.2	20	80	0.0029	6	YES	1.97	0.53	2.26	0.55	GS
13	L	51	38+75MR	2GI	0.13	0.3	32.1	10	80	0.003	6	YES	0.61	0.75	0.70	0.77	GS
13	L	51B	40+70M	2GI	0.44	1.1	108.7	33	80	0.0075	6	YES	2.05	0.77	2.36	0.79	GS
13	L	50	38+70R	2GI	0.25	0.6	62.3	19	90	0.0211	6	YES	1.17	0.98	1.35	1.02	GS
13	L	50	38+70R	SDG	0.03	0.1	7.4	2	20	0.0135	6	YES	0.17	0.96	0.20	0.99	GS
13	L		39+00R	LAT	1.12	2.8	276.8	84	40	0.0975	3	NO	7.83	3.55	9.01	3.70	PT
13	L		39+45R	LAT	1.12	2.8	276.8	84	45	0.077	3	NO	5.22	2.64	6.00	2.76	PT
13	L		40+25R	LAT	1.87	4.6	462.1	141	80	0.0562	3	NO	8.72	3.01	10.02	3.13	PT
13	L		39+95R	LAT	1.87	4.6	462.1	141	86	0.04	3	NO	8.72	2.62	10.02	2.73	PT
13	L		40+25R	LAT	1.87	4.6	462.1	141	66	0.0405	3	NO	8.72	2.64	10.02	2.75	PT
13	Y-3		11+75L	SDG	0.08	0.2	19.8	6	25	0.0512	6	YES	0.33	1.85	0.38	1.92	GS
13	Y-3		13+15L	SDG	0.03	0.1	7.4	2	20	0.0435	6	YES	0.10	1.31	0.12	1.36	GS
13	Y-3		13+15L	SDG	0.40	1.0	98.8	30	125	0.0385	3	YES	2.33	1.71	2.68	1.77	GS
13	Y-3		13+46L	GS	0.35	0.9	86.5	26	94	0.0145	6	YES	1.22	0.86	1.41	0.89	GS
13	Y-3		13+15R	SDG	0.02	0.0	4.9	2	22	0.0468	6	YES	0.07	1.22	0.08	1.26	GS
13	Y-3		13+15R	SDG	0.31	0.8	76.6	23	25	0.0404	3	YES	1.45	1.54	1.66	1.60	GS
13	Y-3		13+46R	GS	0.28	0.7	69.2	21	94	0.0042	6	YES	1.63	0.58	1.88	0.60	GS
13	Y-4		14+72L	LAT	0.85	2.1	210.0	64	30	0.0462	3	NO	3.96	2.13	4.56	2.22	PT
13	Y-4	53	13+73L	SDG	0.17	0.4	42.0	13	15	0.072	6	YES	0.99	1.49	1.14	1.55	GS
13	Y-4	52	13+95R	2GI	0.18	0.4	44.5	14	115	0.0077	6	YES	1.05	0.65	1.21	0.68	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

R-609 IA Guilford Co. Affected Buffer Areas **Site #10**

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
14	L	302	42+00M	2GI	0.55	1.4	135.9	41	198	0.00405	6	**YES**	3.85	0.71	4.42	0.74	GS
14	L	301	42+00L	2GI	0.20	0.5	49.4	15	100	0.00405	6	**YES**	0.82	0.90	0.94	0.93	GS
14	L	303	42+00R	2GI	0.64	1.6	158.1	48	140	0.00405	6	**YES**	2.98	0.67	3.43	0.69	GS
14	L	308	43+65M	2GI	0.51	1.3	126.4	39	165	0.00405	6	**YES**	3.28	0.68	3.77	0.71	GS
14	L	309	43+65L	2GI	0.49	1.2	121.1	37	165	0.00405	6	**YES**	2.00	0.60	2.30	0.63	GS
14	L	307	43+65R	2GI	0.83	2.0	203.9	62	165	0.00405	6	**YES**	5.29	0.77	6.08	0.80	GS
14	Y-4		13+40L	GS	0.10	0.2	23.5	7	75	0.0388	6	**YES**	0.33	1.67	0.38	1.73	GS
14	Y-4	53	13+73L	SDG	0.10	0.2	23.5	7	33	0.0341	6	**YES**	0.33	1.60	0.38	1.65	GS
14	Y-4	313	13+80R	2GI	0.10	0.2	24.7	8	33	0.0341	6	**YES**	0.52	1.79	0.60	1.85	GS
14	Y-4	52	14+00R	2GI	0.21	0.5	51.9	16	130	0.0388	6	**YES**	0.73	1.10	0.84	1.14	GS
14	Y-5	305	12+05L	2GI	0.22	0.6	55.1	17	84	0.0697	6	**YES**	0.78	1.39	0.90	1.44	GS
14	Y-5	304	12+00R	2GI	0.64	1.6	158.6	48	81	0.0697	6	**YES**	2.62	1.88	3.01	1.95	GS
14	Y-5		13+80R	GS	0.67	1.7	166.5	51	140	0.0481	6	**YES**	3.14	1.71	3.61	1.77	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

R-609 IA Guilford Co. Affected Buffer Areas Site #11
Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
15	L	310	45+20L	2GI	0.31	0.8	76.6	23	155	0.00405	6	**YES**	1.26	1.00	1.45	1.04	GS
15	L		48+40L	GS	0.60	1.5	148.3	45	200	0.0168	6	**YES**	2.80	1.12	3.22	1.16	GS
15	L	311	45+20M	2GI	0.49	1.2	121.1	37	155	0.00405	6	**YES**	2.28	0.63	2.63	0.65	GS
15	L	314	46+60M	2GI	0.46	1.1	113.7	35	140	0.00405	6	**YES**	2.14	0.62	2.47	0.64	GS
15	L		48+40M	GS	0.63	1.6	155.7	47	180	0.0168	6	**YES**	4.41	1.26	5.07	1.30	GS
15	L	315	46+60R	SDG	0.44	1.1	108.7	33	40	0.054	6	**YES**	2.05	1.61	2.36	1.66	GS
15	L	315	46+60R	2GI	0.40	1.0	98.8	30	160	0.00405	6	**YES**	2.33	0.63	2.68	0.65	GS
15	L		48+40R	GS	0.77	1.9	190.3	58	180	0.0169	6	**YES**	4.49	1.26	5.16	1.31	GS
15	Y5		15+30L	GS	0.54	1.3	133.4	41	217	0.0341	6	**YES**	3.15	1.51	3.62	1.56	GS
15	Y5		14+14R	GS	0.03	0.1	6.2	2	36	0.0481	6	**YES**	0.15	1.48	0.17	1.53	GS
15	Y5		14+30R	LAT	6.46	16.0	1596.3	487	30	0.003	3	**NO**	33.12	1.57	38.09	1.63	PT
15	Y5		14+90R	LAT	3.02	7.5	746.2	227	30	0.003	3	**NO**	15.84	1.18	18.21	1.22	PT
15	Y5		15+11R	GS	0.01	0.0	3.2	1	19	0.0568	6	**YES**	0.08	1.34	0.09	1.38	GS
15	Y5	317	15+30R	2GI	0.12	0.3	29.7	9	175	0.0568	6	**NO**	0.70	2.33	0.80	2.41	PT
15	FLY		13+93L	GS	0.40	1.0	98.8	30	175	0.0341	6	**YES**	1.86	1.32	2.14	1.37	GS
15	FLY		13+74R	GS	0.22	0.5	54.4	17	222	0.0568	6	**YES**	1.03	1.38	1.18	1.43	GS
15	FLY	312	12+17R	SDG	0.25	0.6	61.8	19	83	0.0036	6	**YES**	1.17	0.94	1.34	0.97	GS
15	FLY	316	13+54R	SDG	0.18	0.4	44.5	14	54	0.0091	6	**YES**	1.05	1.30	1.21	1.34	GS
15	FLY	316	13+54R	SDG	0.24	0.6	59.3	18	20	0.076	6	**YES**	1.12	1.57	1.29	1.63	GS
15	FLY	316	13+54R	SDG	0.60	1.5	148.3	45	176	0.094	6	**NO**	3.50	2.26	4.02	2.34	PT

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 15 OF 92

R-609 1A Guilford Co. Affected Buffer Areas **Site #12**

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
16	L	60	48+40L	2GI	0.60	1.5	148.3	45	180	0.0168	6	YES	3.50	1.19	4.81	1.28	GS
16	L	71	50+40L	2GI	0.27	0.7	66.7	20	120	0.0168	6	YES	1.57	0.97	2.16	1.05	GS
16																	
16	L	61	48+40M	2GI	0.63	1.6	155.7	47	180	0.0168	6	YES	2.94	1.14	4.04	1.23	GS
16	L	65	49+40M	2GI	0.28	0.7	69.2	21	100	0.0168	6	YES	1.63	0.98	2.24	1.06	GS
16	L		50+20M	GS	0.22	0.5	54.4	17	80	0.0168	6	YES	1.28	0.92	1.76	1.00	GS
16	L	72	50+40M	SDG	0.27	0.7	66.7	20	20	0.0194	6	YES	1.57	1.02	2.16	1.11	GS
16	L		50+70M	GS	0.21	0.5	51.9	16	55	0.0303	6	YES	1.22	1.14	1.68	1.23	GS
16	L	72	50+40M	SDG	0.29	0.7	71.7	22	30	0.003	6	YES	1.69	0.52	2.32	0.56	GS
16	L	82	51+15M	2GI	0.53	1.3	131.0	40	220	0.0276	6	YES	3.09	1.38	4.25	1.50	GS
16	L	98	53+35M	2GI	0.38	0.9	93.9	29	135	0.0276	6	YES	2.21	1.27	3.04	1.38	GS
16	L	109	54+70M	2GI	0.42	1.0	103.8	32	150	0.0276	6	YES	2.45	1.31	3.37	1.41	GS
16																	
16	L	62	48+40R	2GI	0.77	1.9	190.3	58	180	0.0169	6	YES	3.59	1.20	4.94	1.30	GS
16	L	66	49+40R	2GI	0.35	0.9	86.5	26	100	0.0168	6	YES	1.63	0.98	2.24	1.06	GS
16	L		50+20R	GS	0.32	0.8	79.1	24	80	0.0168	6	YES	1.49	0.96	2.05	1.04	GS
16	L	73	50+40R	SDG	0.31	0.8	76.6	23	30	0.003	6	YES	1.45	0.93	1.99	1.00	GS
16	L	73	50+40R	SDG	0.43	1.1	106.3	32	100	0.0443	6	YES	2.00	1.48	2.76	1.61	GS
16	L		50+70R	GS	0.21	0.5	51.9	16	30	0.0275	6	YES	0.98	1.04	1.35	1.12	GS
16	L	99	53+35R	SDG	0.11	0.3	27.2	8	30	0.003	6	YES	0.51	0.71	0.71	0.77	GS
16	L	101	53+72R	2GI	0.16	0.4	39.5	12	47	0.0276	6	YES	0.75	0.97	1.03	1.05	GS
16	L	99	53+35R	SDG	0.22	0.5	54.4	17	35	0.034	6	YES	1.03	1.14	1.41	1.23	GS
16	L	110	54+95R	2GI	0.30	0.7	74.1	23	205	0.0276	6	YES	1.40	1.14	1.92	1.23	GS
16	L		54+60R	SDG	0.12	0.3	29.7	9	30	0.0033	6	YES	0.56	0.76	0.77	0.82	GS
16	L	110	54+95R	SDG	0.32	0.8	79.1	24	35	0.0057	6	YES	1.49	0.64	2.05	0.69	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
NOTE 1: Actual Length includes distance of entire swale from the structure located upstream.
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

R-609 IA Guilford Co. Affected Buffer Areas **Site #12**

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/14/2002
Dsn. By: HAH
Check: RKW/SNR

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
16	Ramp B	75	12+70L	SDG	0.18	0.4	44.5	14	61	0.003	6	YES	0.84	0.81	1.15	0.88	GS
16	Ramp B	64	15+06L	2GI	0.10	0.2	24.7	8	81	0.016	6	YES	0.47	1.31	0.64	1.42	GS
16	Ramp B	64	15+06L	2GI	0.03	0.1	7.4	2	81	0.021	6	YES	0.14	1.07	0.19	1.16	GS
16	Ramp B	74	12+70R	2GI	0.29	0.7	71.7	22	130	0.0217	6	YES	1.35	1.03	1.86	1.11	GS
16	Ramp B		13+75R	LAT	3.09	7.6	763.5	233	30	0.0567	3	NO	14.40	4.16	19.81	4.51	PT
16	Ramp B	63	15+06R	2GI	0.40	1.0	98.8	30	101	0.0096	6	YES	1.86	0.82	2.56	0.89	GS
16	Ramp B	63	15+06R	2GI	0.18	0.4	44.5	14	59	0.0217	6	YES	0.84	1.70	1.15	1.84	GS
16	Ramp D		13+67L	2GI	0.44	1.1	108.7	33	220	0.0256	6	YES	2.05	1.22	2.82	1.32	GS
16	Ramp D	105	13+75L	SDG	0.01	0.0	3.2	1	8	0.003	6	YES	0.06	0.42	0.08	0.45	GS
16	Ramp D	110	14+10L	LAT	1.15	2.8	284.2	87	33	0.403	3	NO	5.36	6.72	7.37	7.28	PT
16	Ramp D																
16	Ramp D		13+67R	2GI	0.44	1.1	108.7	33	220	0.0256	6	YES	2.05	1.22	2.82	1.32	GS
16	Ramp D	106	13+75R	SDG	0.01	0.0	2.5	1	8	0.003	6	YES	0.05	0.39	0.06	0.43	GS
16	Ramp D	106	13+75R	SDG	0.03	0.1	7.4	2	17	0.0048	3	YES	0.14	0.72	0.19	0.78	GS
* 16	Loop A		11+35L	LAT	0.54	1.3	133.4	41	42	0.003	3	YES	2.52	0.67	3.46	0.72	GS
16	Loop A		11+07L	LAT	0.13	0.3	32.1	10	28	0.1133	3	YES	0.61	1.83	0.83	1.98	GS
16	Loop A		11+07L	LAT	0.64	1.6	158.1	48	15	0.074	3	NO	2.98	2.46	4.10	2.66	PT
16	Loop B		12+15L	LAT	0.34	0.8	84.0	26	50	0.01	3	YES	1.58	0.93	2.18	1.01	GS
16	Loop C	85	11+35L	2GI	0.18	0.4	44.5	14	55	0.1	4	YES	0.84	1.78	1.15	1.93	GS
16	Loop C		50+90R	GS	0.10	0.2	24.7	8	80	0.066	4	YES	0.47	1.31	0.64	1.42	GS
16	Ramp C	68	11+33L	2GI	0.06	0.1	14.3	4	26	0.0341	6	YES	0.27	1.52	0.37	1.64	GS
16	Ramp C		12+45L	SDG	0.16	0.4	39.5	12	40	0.0325	6	YES	0.75	1.03	1.03	1.12	GS
16	Ramp C	68	11+33L	2GI	0.10	0.2	24.7	8	57	0.0164	6	YES	0.47	1.32	0.64	1.43	GS
16	NBCD		19+98L	LAT	0.55	1.4	135.7	41	58	0.13	3	NO	3.20	3.27	4.40	3.54	PT
16	NBCD	92	22+20L	2GI	0.11	0.3	27.2	8	40	0.008	6	YES	0.64	1.09	0.88	1.18	GS
16	NBCD	94	23+30L	SDG	0.07	0.2	17.3	5	35	0.003	6	YES	0.41	0.68	0.56	0.73	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

* NOTE 1: Actual Length includes distance of entire swale from the structure located upstream.

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

R-609 IA Guilford Co. Affected Buffer Areas **Site #12**

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
16	Y6	162	25+20L	2GI	0.63	1.6	155.7	47	155	0.0107	6	**YES**	3.67	1.01	5.05	1.10	GS
16	Y6	91	28+07L	2GI	0.30	0.7	74.1	23	99	0.009	6	**YES**	1.75	0.79	2.40	0.85	GS
16	Y6	91	28+07L	SDG	0.14	0.3	34.6	11	47	0.0019	6	**YES**	0.82	0.68	1.12	0.73	GS
16																	
16	Y6	77	25+70R	2GI	0.28	0.7	69.2	21	100	0.0095	6	**YES**	1.63	0.79	2.24	0.86	GS
16	Y6	89	27+60R	2GI	0.48	1.2	118.6	36	170	0.0095	6	**YES**	2.80	0.91	3.85	0.98	GS
16	Y6	90	27+90M	SGD	0.24	0.6	59.3	18	40	0.003	6	**YES**	1.40	0.49	1.92	0.54	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 78 OF 97

R-609 IA Guilford Co. Affected Buffer Areas Site #13

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
17	L		56+40L	RDWY	0.30	0.7	74.1	23	80	0.0275	6	**YES**	1.75	1.20	2.01	1.24	GS
17	L	112	55+90M	2GI	0.79	1.9	194.7	59	250	0.0275	6	**YES**	5.51	1.60	6.34	1.65	GS
17	L	113	55+90R	SDG	1.05	2.6	259.5	79	110	0.0268	6	**YES**	5.51	1.58	6.33	1.64	GS
17	L		57+00R	SDG	0.84	2.1	207.6	63	40	0.003	4	**NO**	3.92	0.70	4.50	0.73	PT
17	L		57+40R	SDG	0.42	1.0	103.8	32	20	0.045	5	**NO**	1.96	1.55	2.25	1.60	PT
17	L		57+60R	SDG	0.16	0.4	39.5	12	40	0.0914	6	**YES**	0.84	1.57	0.96	1.62	GS
17	L		57+80R	GS	0.05	0.1	12.8	4	20	0.0275	6	**YES**	0.39	1.54	0.45	1.59	GS
17	L		58+40R	LAT	0.12	0.3	29.7	9	40	0.08	3	**YES**	0.84	1.74	0.96	1.80	GS
17	L		58+72R	LAT	1.23	3.0	303.9	93	32	0.031	3	**NO**	7.17	2.42	8.24	2.50	PT
17	A		12+80L	LAT	0.46	1.1	113.7	35	70	0.06	3	**YES**	2.14	1.88	2.47	1.95	GS
17	A		13+25L	LAT	0.70	1.7	173.0	53	45	0.0466	3	**NO**	3.26	1.95	3.75	2.03	PT
17	A		13+25L	LAT	34.56	85.4	8539.8	2603	75	0.006	3	**NO**	120.83	3.35	138.95	3.47	PT
17	D		14+70R	LAT	1.90	4.7	469.5	143	20	0.0511	3	**NO**	11.07	3.23	12.73	3.37	PT

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

R-609 IA Guilford Co. Affected Buffer Areas Site #14
Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
18	L		60+60L	LAT	2.16	5.3	533.7	163	40	0.05	3	**NO**	8.81	3.15	10.13	3.27	PT
18	L		61+00L	LAT	2.11	5.2	521.4	159	70	0.0333	3	**NO**	8.61	2.62	9.90	2.72	PT
18	L	116	58+40M	2GI	0.58	1.4	142.1	43	177	0.0275	6	**YES**	3.02	1.37	3.47	1.42	GS
18	L		61+00M	GS	0.17	0.4	42.0	13	95	0.0193	6	**YES**	0.65	1.53	0.75	1.58	GS
18	L		59+15R	LAT	0.18	0.4	44.5	14	45	0.066	3	**YES**	1.26	1.79	1.45	1.85	GS
18	L		59+40R	GS	0.30	0.7	74.1	23	65	0.0275	6	**YES**	2.10	1.26	2.41	1.30	GS
18	L		61+00R	GS	0.55	1.4	135.9	41	95	0.0193	6	**YES**	2.88	1.19	3.32	1.23	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

R-609 IA Guilford Co. Affected Buffer Areas Site #15

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
20	Y1		10+40L	GS	0.20	0.5	49.4	15	20	0.0298	6	**YES**	0.93	1.96	1.07	2.03	GS
20	Y1		10+80L	SDG	0.25	0.6	61.3	19	40	0.0656	3	**YES**	1.30	1.80	1.50	1.86	GS
20	Y1		10+97L	SDG	0.26	0.6	64.2	20	57	0.003	3	**YES**	1.36	0.57	1.57	0.59	GS
20	Y1		10+97L	SDG	0.15	0.4	36.3	11	23	0.0767	6	**NO**	0.77	2.67	0.89	2.76	PT
20	Y1		11+20L	GS	0.12	0.3	29.7	9	80	0.0114	6	**YES**	0.56	1.21	0.64	1.25	GS
20	Y1		10+60R	GS	0.10	0.2	23.5	7	40	0.0298	6	**YES**	0.50	1.68	0.57	1.74	GS
20	Y1		11+00R	SDG	0.32	0.8	79.8	24	40	0.0369	6	**YES**	1.51	1.29	1.73	1.34	GS
20	Y1		11+00R	LAT	0.35	0.9	85.7	26	240	0.0148	3	**YES**	1.62	1.09	1.86	1.13	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

R-609 IA Guilford Co. Affected Buffer Area Site #15

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
21	Y2		10+45L	GS	0.10	0.2	24.0	7	45	0.0523	6	**YES**	0.40	1.96	0.45	2.03	GS
21	Y2		10+77L	GS	0.23	0.6	56.8	17	32	0.0672	6	**YES**	1.07	1.48	1.23	1.54	GS
21	Y2		11+57L	GS	1.00	2.5	246.6	75	80	0.0493	6	**YES**	4.65	1.91	5.35	1.97	GS
21	Y2		12+20L	GS	1.15	2.8	284.2	87	67	0.00815	6	**NO**	5.36	1.01	6.16	1.04	PT
21	Y2		12+60L	LAT	1.22	3.0	301.5	92	40	0.093	3	**NO**	6.40	3.76	7.36	3.90	PT
21	Y2		13+00L	LAT	1.40	3.5	345.9	105	40	0.003	3	**NO**	7.34	0.87	8.44	0.90	PT
21	Y2		12+50R	GS	0.43	1.1	106.3	32	80	0.04	6	**YES**	2.00	1.43	2.31	1.48	GS
21	Y2		10+80R	GS	0.11	0.3	27.7	8	80	0.0672	6	**NO**	0.65	2.44	0.75	2.52	DGS
21	Y2		11+40R	SDG	0.16	0.4	38.8	12	20	0.0725	6	**NO**	0.73	2.58	0.84	2.67	DGS
21	Y2		11+20R	SDG	0.16	0.4	38.8	12	40	0.0725	6	**NO**	0.73	2.58	0.84	2.67	DGS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE
DGS=DOWNSTREAM GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 12 OF 12

R-609 IA Guilford Co. Affected Buffer Areas Site #15

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
22	Y2		16+00L	GS	0.04	0.1	9.9	3	56	0.00127	6	**YES**	0.19	0.40	0.21	0.42	GS
22	Y2		17+40L	GS	0.11	0.3	27.7	8	84	0.0224	6	**YES**	0.52	1.53	0.60	1.58	GS
22	Y2		14+00R	LAT	0.12	0.3	30.1	9	40	0.063	3	**NO**	0.78	2.90	0.90	3.00	PT
22	Y2		15+00R	GS	0.18	0.4	44.5	14	156	0.046	6	**NO**	0.63	2.09	0.72	2.17	PT
22	Y2		16+20R	GS	0.09	0.2	22.2	7	40	0.00127	6	**YES**	0.63	0.55	0.72	0.56	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

R-609 IA Guilford Co. Affected Buffer Areas Site # 12

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By:
Check:

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
31		166	23+40R	2GI	0.35	0.9	86.5	26	130	0.0087	6	**YES**	2.04	0.81	2.80	0.88	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER

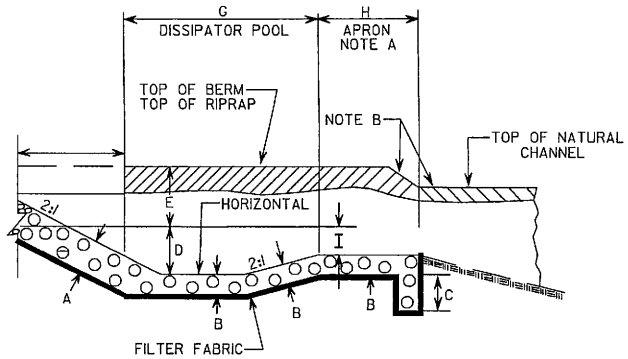
METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

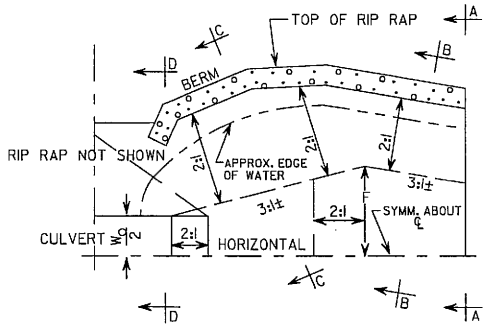
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

℄ SECTION

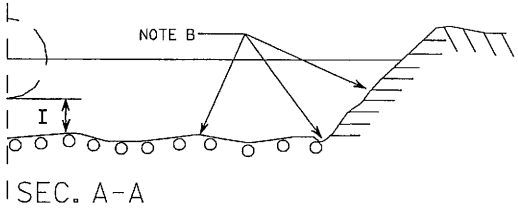


HALF PLAN

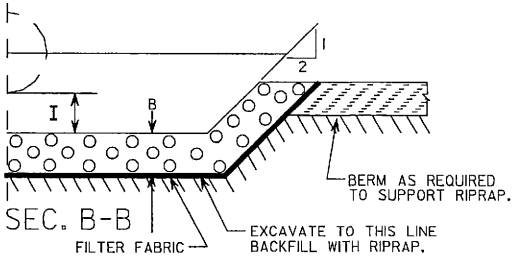


NOTE A IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A-A SUCH THAT Q des /(CROSS SECTION AREA AT SEC. A-A) = SPECIFIED EXIT VELOCITY.

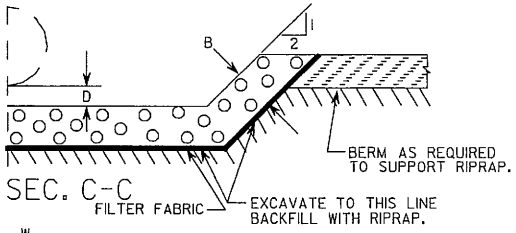
NOTE B WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIPRAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A-A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.



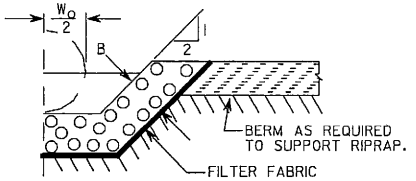
SEC. A-A



SEC. B-B



SEC. C-C



SEC. D-D

NOTE:
W_o = DIAMETER FOR PIPE CULVERT
W_o = BARREL WIDTH FOR BOX CULVERT
W_o = SPAN OF PIPE-ARCH CULVERT

DIM.	RIP RAP BASIN #							
	1	2	3	4	5	6	7	8
A	0.68							
B	0.68							
C	0							
D	1.19							
E	0.30							
F	7.95							
G	11.94							
H	5.97							
I	0.55							

ALL DIMENSIONS APPROXIMATE

BASIN #	LOCATION (AT OUTLET)
1	13+80 -RP B-
2	
3	
4	
5	
6	
7	
8	

DETAIL OF RIP-RAPPED ENERGY DISSIPATOR BASIN

METRIC

NORTH CAROLINA
DIVISION OF HIGHWAYS

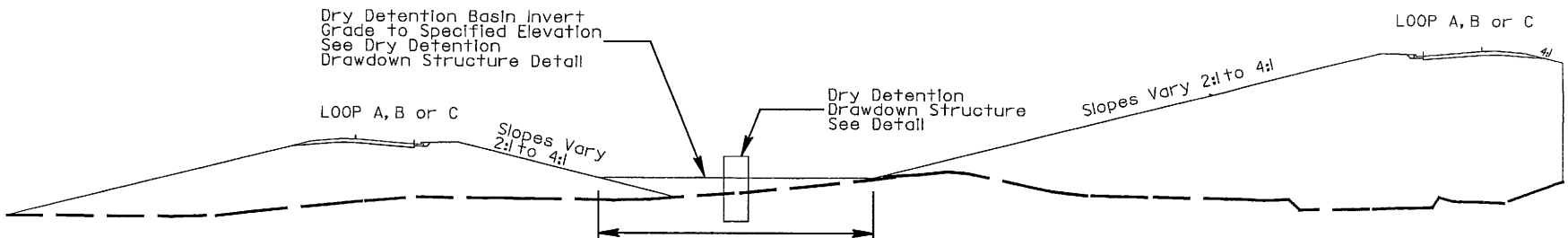
GUILFORD COUNTY
8.1570601 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET___OF___

01/09/2005
07:40:21PM
r:\dgn\Roadway\proj\PERMITS\r0609-details.dgn

DRY DETENTION BASIN GRADING DETAIL



BASIN INVERT DIAMETER
LOOP A 24M
LOOP B 8M
LOOP C 28M

NOTE:
BASIN NVERT ELEVATIONS HAVE BEEN SET TO PROVIDE 2-3 FEET OF FREEBOARD BETWEEN THE CONTROLLING ROADWAY CENTERLINE ELEVATION AND THE 50 YEAR EVENT. ADJUSTING THE BASIN INVERT OR DRAWDOWN STRUCTURE ELEVATIONS HIGHER THAN INDICATED IN PLANS MAY RESULT IN STORMWATER ENCROACHING INTO THE ROADWAY.

NORTH CAROLINA
DIVISION OF HIGHWAYS

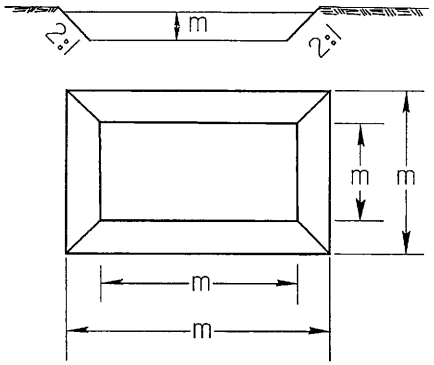
GUILFORD COUNTY
8.1570601 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 76 OF 92

DETAIL OF EMERGENCY SPILL BASIN

TOTAL CAPACITY REQUIRED : cu. m.
TOTAL CAPACITY PROVIDED : cu. m.



Ditch to be blocked with sandbags 1.0 m deep at outlet

STATION	REQ. VOL. (Cu. m.)	DEPTH (m)	BOTTOM LENGTH (m)	BOTTOM WIDTH (m)	TOP LENGTH (m)	TOP WIDTH (m)	PROVIDED VOL (Cu. m.)
FLY 16+20 L	78	1.0	9.0	5.0	13.0	9.0	81
-L- 34+00 R	104	1.0	10.0	7.0	14.0	11.0	112
-L- 35+60 L	158	1.0	11.0	10.0	15.0	14.0	160
-L- 39+90 L	78	1.0	7.0	7.0	11.0	11.0	85
-L- 40+70 L	103	1.0	8.0	8.0	12.0	12.0	104
-L- 50+40 L	396	1.0	20.0	16.0	24.0	20.0	400
-L- 56+00 L	50	1.0	5.0	5.0	9.0	9.0	53
-L- 58+20 R	77	1.0	11.0	4.0	15.0	8.0	82
-Y5- 14+00 R	275	1.0	17.0	13.0	21.0	17.0	289
-Y5- 15+20 R	178	1.0	14.0	9.0	18.0	13.0	180
RAMPB 12+90 R	174	1.0	14.0	9.0	18.0	13.0	180
RAMPD 15+20 R	127	1.0	12.0	7.0	16.0	11.0	130

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609A)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 87 OF 92

SUMMARY OF AFFECTED PROPERTY OWNERS

TRACT NO.	PROPERTY OWNER	ADDRESS	SITE NO.
1	WALTER S. DANIEL	1620 EASTCHESTER DIVE HIGH POINT, NC 27265	1
2	BEVERLY B. CAUDLE	1308 COX AVE HIGH POINT, NC 27263	1
3	NCDOT	P. O. BOX 14996 GEENSBORO, NC 27415	1,2,3,6,8,9
4	LAWSON INGRAM	1603 JACKSON LAKE RD HIGH POINT, NC 27263	3
5	CLIFFORD L. HILL	RT. 4 BOX 385 HIGH POINT, NC 27263	4
6	MARJORIE SURRETT	6802 DRESDEN RD HIGH POINT, NC 27263	5
7	FRANK MARTINEZ	1539 KESEY VALLEY RD HIGH POINT, NC 27263	6
8	BOBBY L. CECIL	1119 LIBERTY RD ARCHDALE, NC 27263	7,8
9	GLENN P. MORGAN	6027 CHECKER RD HIGH POINT, NC 27263	8
10	MR. FOSTER	6861 DRESDEN RD HIGH POINT, NC 27263	8
11	LAWRENCE E. MODLIN	6132 CHECKER RD HIGH POINT, NC 27263	8
12	CHARLES BOYD	1553 KESEY VALLEY RD HIGH POINT, NC 27263	6
13	ROBERT L. SLATE	7008 WINDCREEK CT HIGH POINT, NC 27263	8
14	JERRY W. LEWIS	7010 WINDCREEK CT HIGH POINT, NC 27263	8
15	LILLIE CRUTHERS	6027 CRUTHERS RD HIGH POINT, NC 27263	8
16	W. GERALD LEONARD	6801 JOPLIN DRIVE HIGH POINT, NC 27263	12

METRIC

SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 8892 OF

/2005
:57 PM
dgn\Roadway\proj\PERMITS\Buffer_Permits\r-0609buf_prop.sum

BUFFER IMPACTS SUMMARY

			IMPACT								BUFFER REPLACEMENT	
			TYPE		ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (m^2)	ZONE 2 (m^2)	TOTAL (m^2)	ZONE 1 (m^2)	ZONE 2 (m^2)	TOTAL (m^2)	ZONE 1 (m^2)	ZONE 2 (m^2)
1	1350mm	19+60 to 20+20	X					2655.0	1737.1	4392.1		
2	1350mm	25+55 to 25+90	X					2402.3	1371.2	3773.5		
3 (Trib)	900mm	27+95 to 28+35	X					1276.4	1024.6	2300.9		
3 (Main)	Bridge	28+60 to 29+00	X		800.7	788.5	1589.2					
4 (Trib 1)	Stream	32+00		X				643.7	290.5	934.3		
4 (Trib 2)	Stream	33+00		X				1753.3	722.3	2475.6		
4 (Main)	3@3.4m x 2.4m	31+60 to 33+80	X					5321.9	2955.0	8276.9	4042.6	2667.2
5	600mm	35+10 to 35+65	X					832.6	737.1	1569.8		
6	1050mm	40+00 to 40+40	X					3125.8	2003.2	5129.0		
7	1@3.8m x 3.8m	45+30 to 46+50	X					2645.2	1791.0	4436.3		
8 (Trib 1)	Interchange	48+85 to 50+75	X					3004.2	1917.6	4921.8		
8 (Trib 2)	Interchange	51+20	X					770.3	688.1	1458.4		
8 (Trib 3)	Interchange	50+20 to 51+60	X					9564.6	5999.9	15564.5		
8 (Trib 4)	Interchange	50+70 to 51+90	X					1972.7	1557.0	3529.7		
8 (Trib 5)	Interchange	53+00 to 56+75	X					7851.8	5525.0	13376.8		
8 (Trib 6)	Interchange	54+40 to 55+45	X					2284.1	1577.7	3861.8		
9	900mm	58+20 to 59+00	X					2779.3	1507.6	4286.9		
10	900mm	10+20 R -SBCD-	X		551.3	469.7	1021.0					
11	1050mm	12+80 R -SBCD-	X		587.6	398.9	986.5					
12	900mm	14+00 -NBCD-	X					2097.3	1426.5	3523.8	1538.0	1232.0
TOTAL:					1939.6	1657.1	3596.7	50980.6	32831.4	83812.0	5580.6	3899.2

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
PROJECT: 8.1570601 (R-6091A)

1/18/2006
SHEET 89 OF 92

BUFFER IMPACTS SUMMARY

			IMPACT								BUFFER REPLACEMENT	
			TYPE		ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	54 inch	19+60 to 20+20	X					28578	18697	47275		
2	54 inch	25+55 to 25+90	X					25858	14759	40617		
3 (Trib)	36 inch	27+95 to 28+35	X					13738	11028	24766		
3 (Main)	Bridge	28+60 to 29+00	X		8618	8487	17105					
4 (Trib 1)	Stream	32+00		X				6929	3127	10056		
4 (Trib 2)	Stream	33+00		X				18871	7775	26646		
4 (Main)	3@ 11.2 ft x 7.8 ft	31+60 to 33+80	X					57283	31807	89090	43513	28708
5	24 inch	35+10 to 35+65	X					8962	7934	16896		
6	42 inch	40+00 to 40+40	X					33645	21562	55207		
7	1@12.5 ft x 12.5 ft	45+30 to 46+50	X					28472	19278	47750		
8 (Trib 1)	Interchange	48+85 to 50+75	X					32336	20640	52976		
8 (Trib 2)	Interchange	51+20	X					8291	7406	15697		
8 (Trib 3)	Interchange	50+20 to 51+60	X					102950	64581	167531		
8 (Trib 4)	Interchange	50+70 to 51+90	X					21234	16759	37993		
8 (Trib 5)	Interchange	53+00 to 56+75	X					84514	59469	143983		
8 (Trib 6)	Interchange	54+40 to 55+45	X					24586	16981	41567		
9	36 inch	58+20 to 59+00	X					29915	16227	46142		
10	900mm	10+20 R -SBCD-	X		5935	5056	10991					
11	1050mm	12+80 R -SBCD-	X		6325	4294	10619					
12	900mm	14+00 -NBCD-	X					22575	15354	37929	16554	13261
TOTAL:					20878	17837	38715	548737	353384	902121	60067	41969

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
PROJECT: 8.1570601 (R-609IA)

1/18/2006
SHEET 90 OF 92

BUFFER IMPACTS SUMMARY

		WETLANDS IN BUFFER	
Site	Station	ZONE 1 (m^2)	ZONE 2 (m^2)
2	25+75 to 25+95	334.2	289.1
8 (Trib 5)	55+70 to 56+60	632.4	171.1
9	58+20 to 59+00	2780.6	0.0
		3747.2	460.2

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
PROJECT: 8.1570601 (R-609IA)

2/19/2004
SHEET 91 OF 92

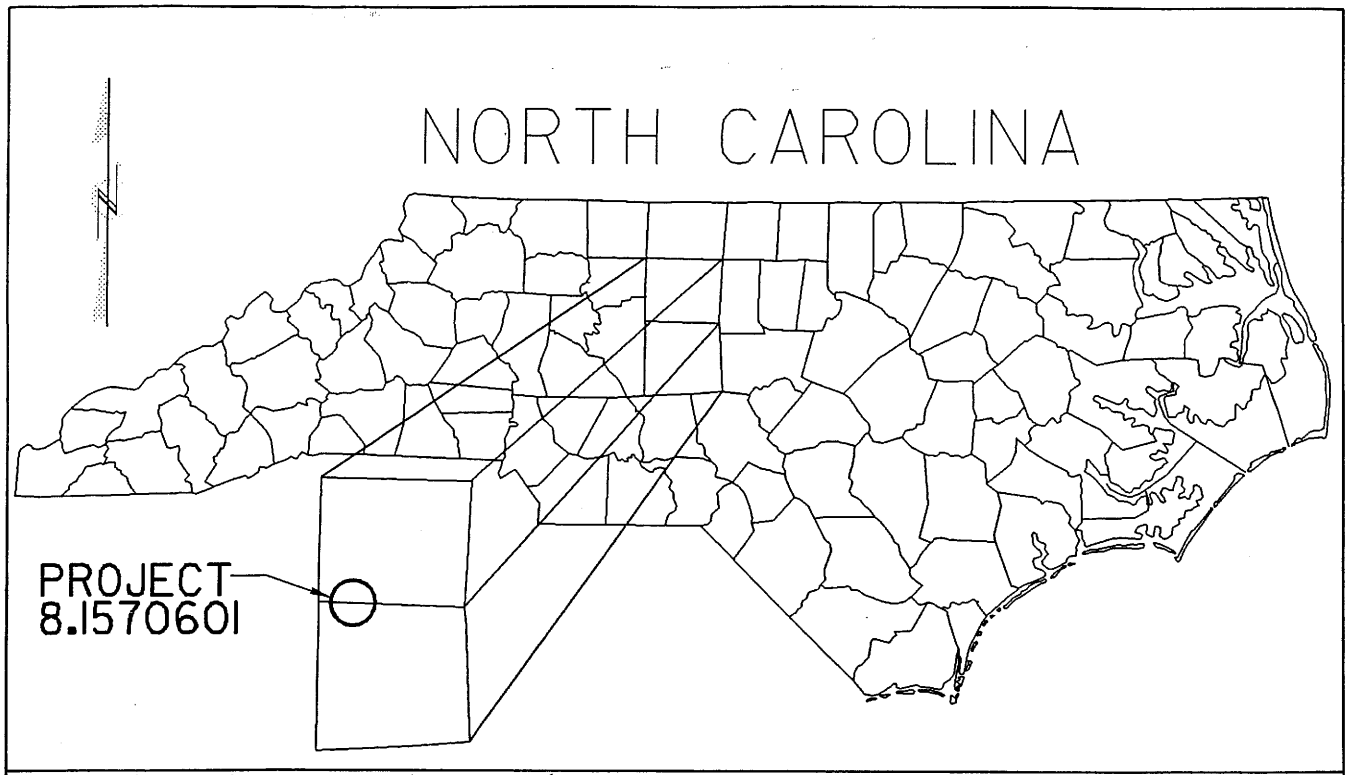
BUFFER IMPACTS SUMMARY

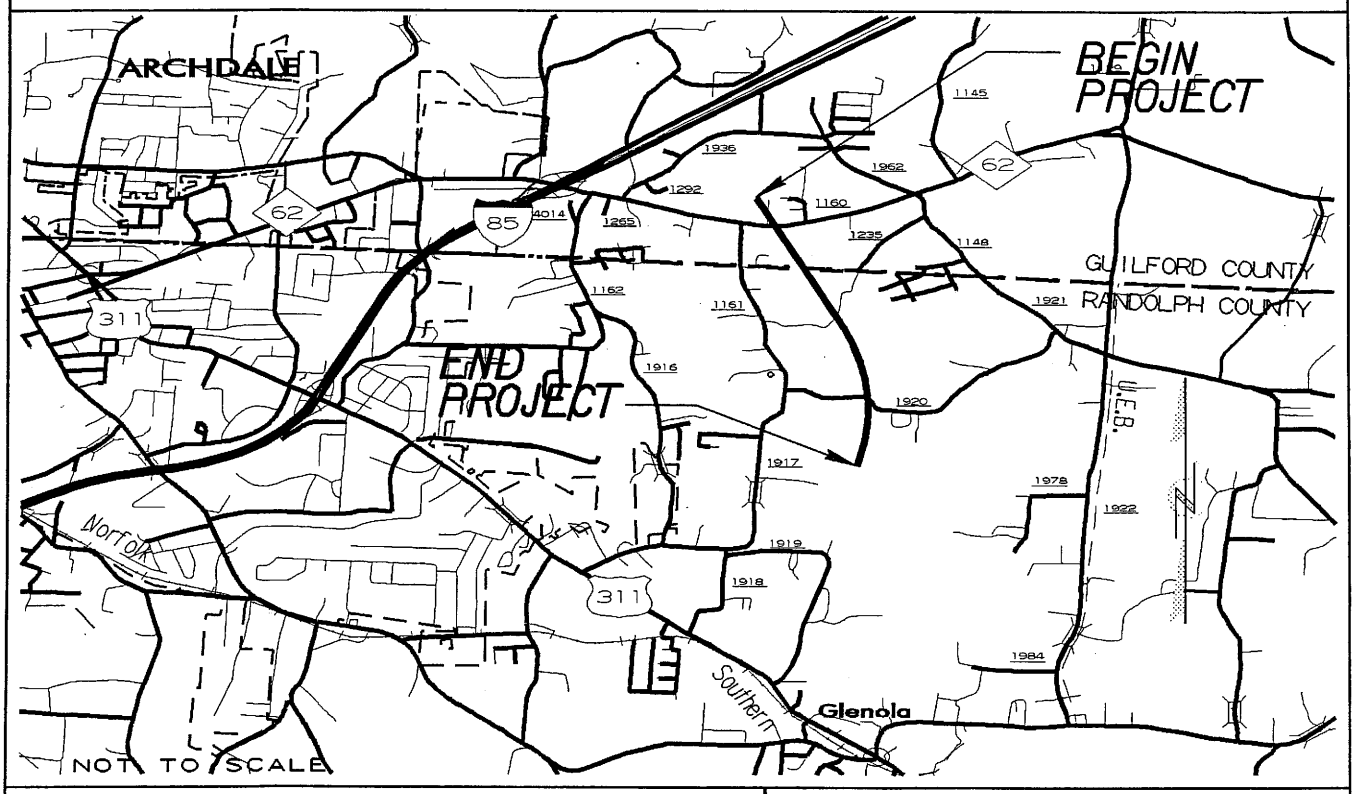
		WETLANDS IN BUFFER	
Site	Station	ZONE 1 (ft^2)	ZONE 2 (ft^2)
2	25+75 to 25+95	3597.2	3111.8
8 (Trib 5)	55+70 to 56+60	6806.9	1841.7
9	58+20 to 59+00	29930.1	0.0
		40334.3	4953.4

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
PROJECT: 8.1570601 (R-609IA)

2/19/2004
SHEET 92 OF 92





WETLAND AND STREAM IMPACTS VICINITY MAPS

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 1 OF 17 **9/27/04**

WETLAND LEGEND

WLB — WETLAND BOUNDARY

WLB WLB — WETLAND

F F — DENOTES FILL IN WETLAND

S S — DENOTES FILL IN SURFACE WATER

P P — DENOTES FILL IN SURFACE WATER (POND)

T T — DENOTES TEMPORARY FILL IN WETLAND

E E — DENOTES EXCAVATION IN WETLAND

TS TS — DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

FLOW DIRECTION

TB — TOP OF BANK

WE — EDGE OF WATER

C — PROP. LIMIT OF CUT

F — PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG — NATURAL GROUND

PL — PROPERTY LINE

TDE — TEMP. DRAINAGE EASEMENT

PDE — PERMANENT DRAINAGE EASEMENT

EAB — EXIST. ENDANGERED ANIMAL BOUNDARY

EPB — EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT

12"-48" PIPES

54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 — ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE

LEVEL SPREADER (LS)

DITCH / GRASS SWALE

NCDOT

DIVISION OF HIGHWAYS

GUILFORD / RANDOLPH COUNTY

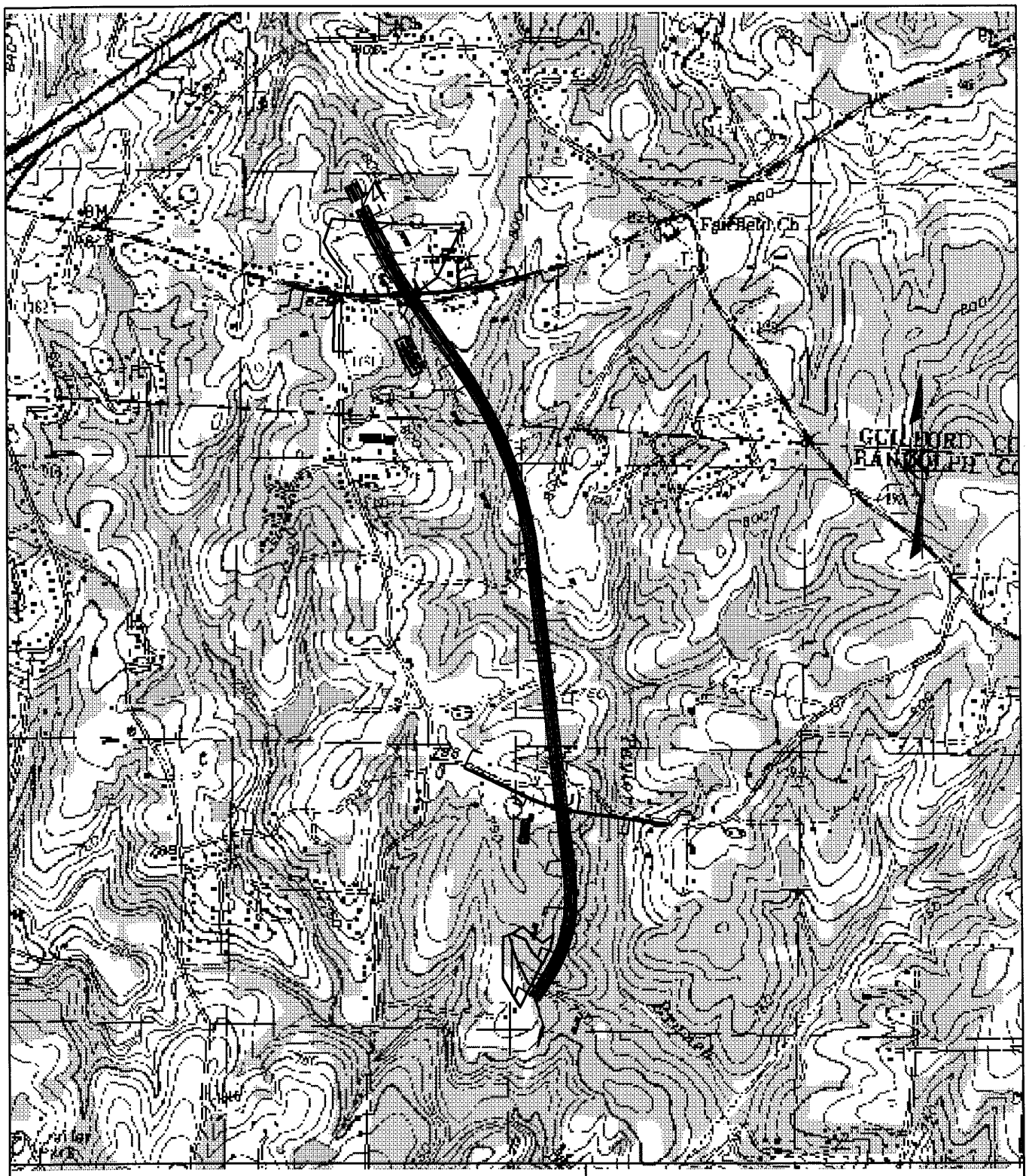
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 2 OF 17 **9 / 27 / 04**



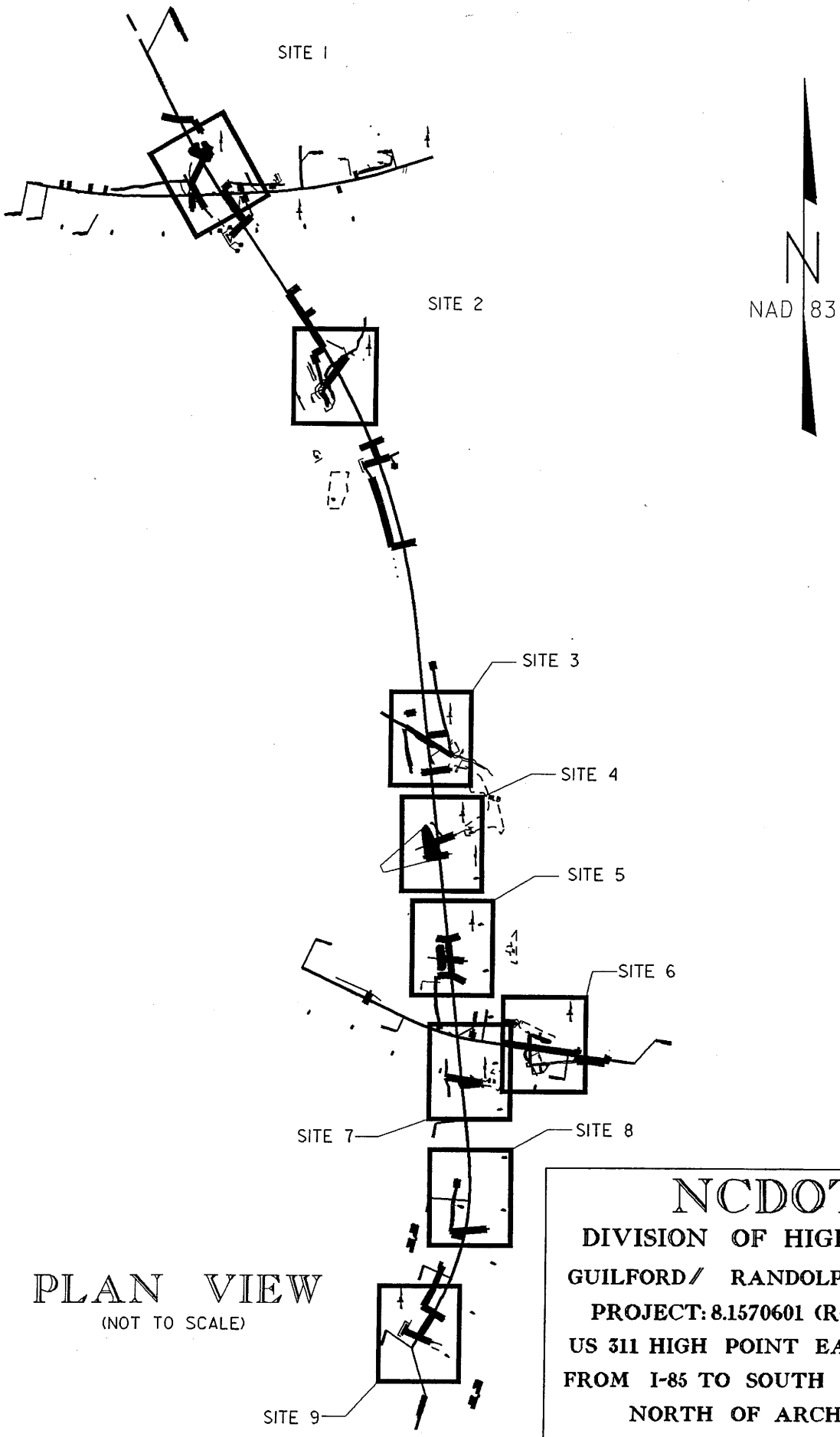
LOCATION MAPS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD / RANDOLPH COUNTIES

PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE

SHEET 3 OF 12 / 31 / 02



PLAN VIEW

(NOT TO SCALE)

NCDOT

DIVISION OF HIGHWAYS

GUILFORD / RANDOLPH COUNTY

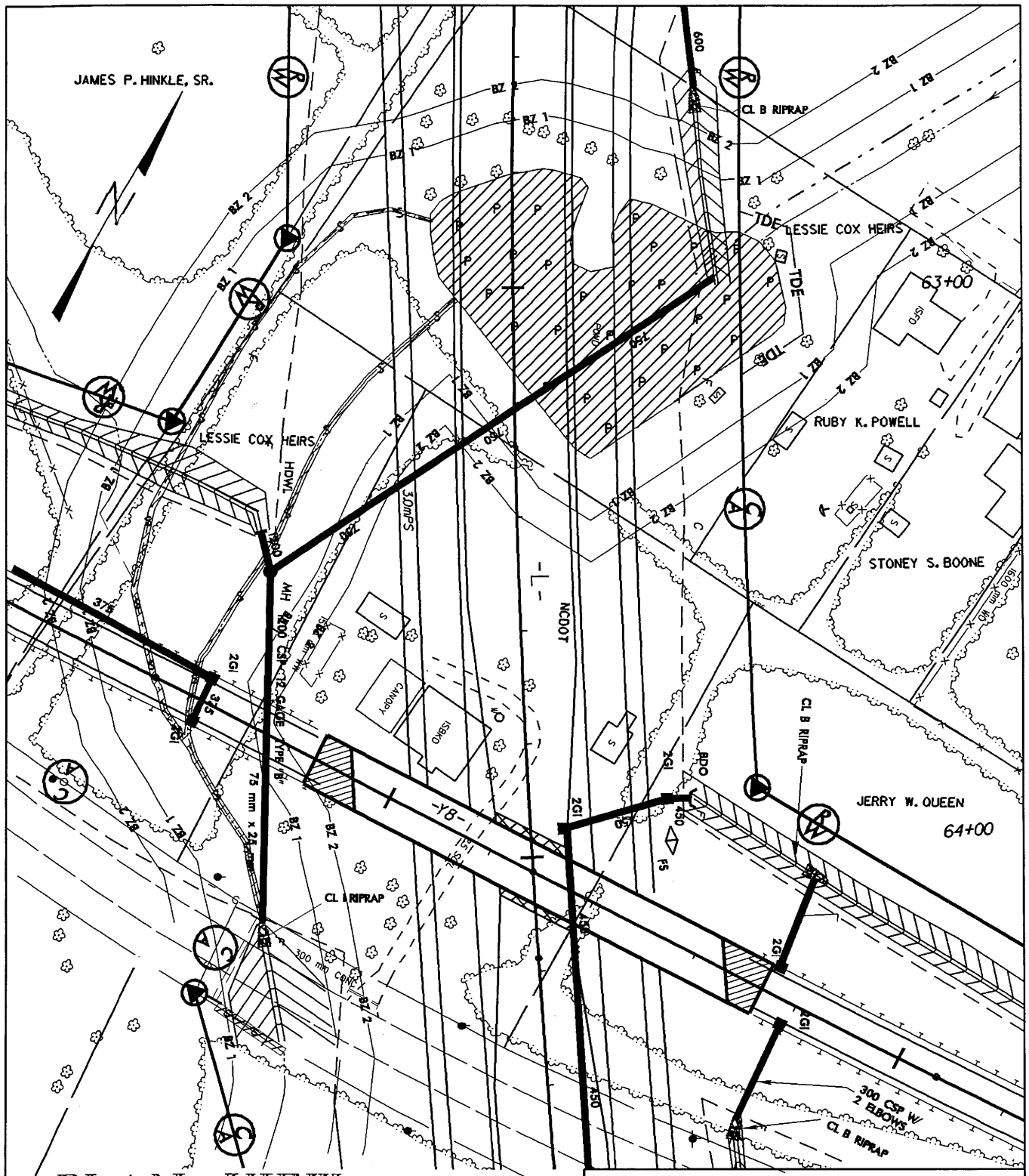
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 4 OF 17 **9 / 27 / 04**



PLAN VIEW
SITE 1

DENOTES FILL IN SURFACE WATER

DENOTES FILL IN SURFACE WATER (POND)

10m 20m HORIZONTAL SCALE

NCDOT
DIVISION OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTY

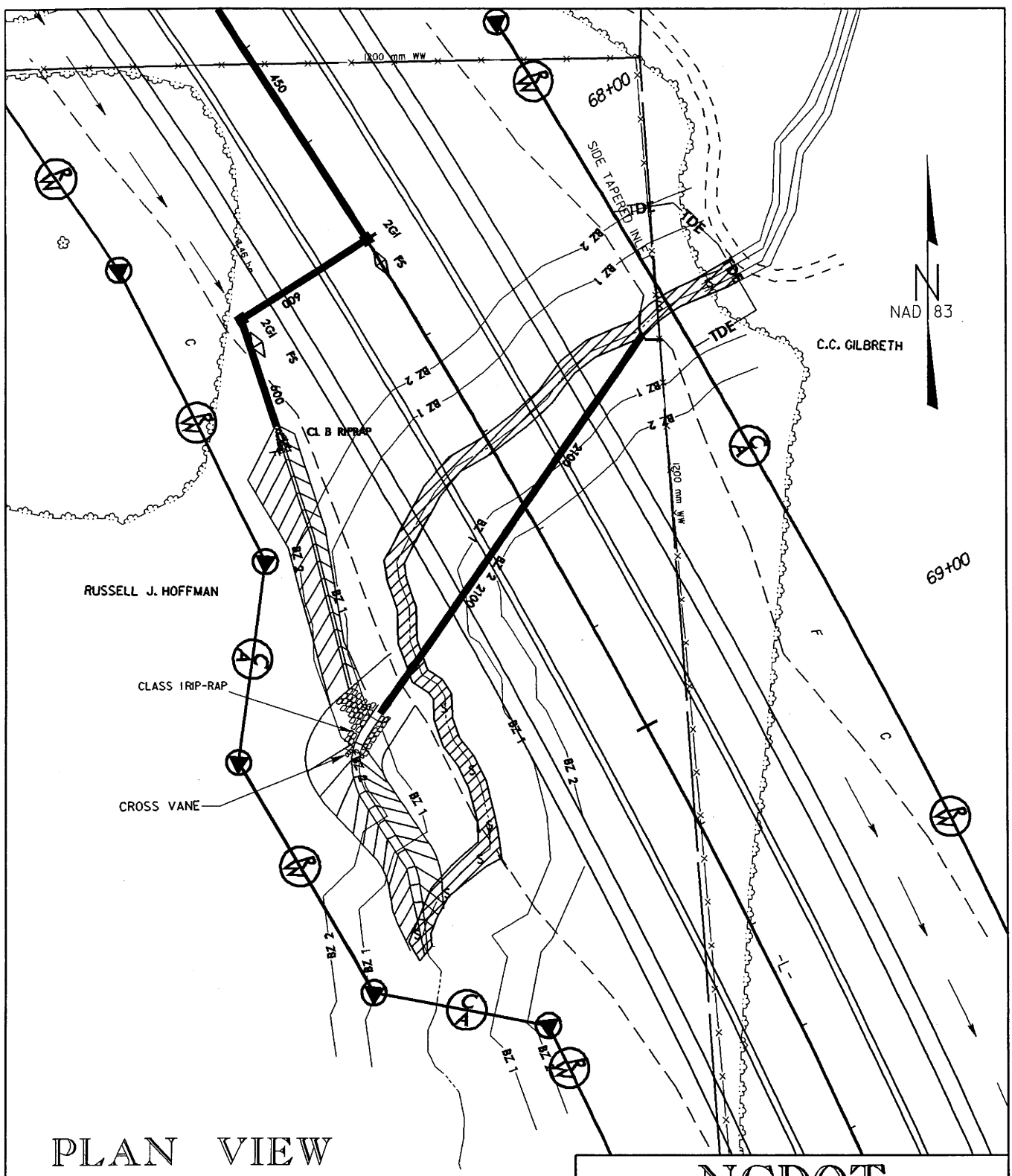
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 5 OF 17 11/12/04



PLAN VIEW
SITE 2

DENOTES FILL IN SURFACE WATER

10m 20m HORIZONTAL SCALE

NCDOT

DIVISION OF HIGHWAYS

GUILFORD / RANDOLPH COUNTY

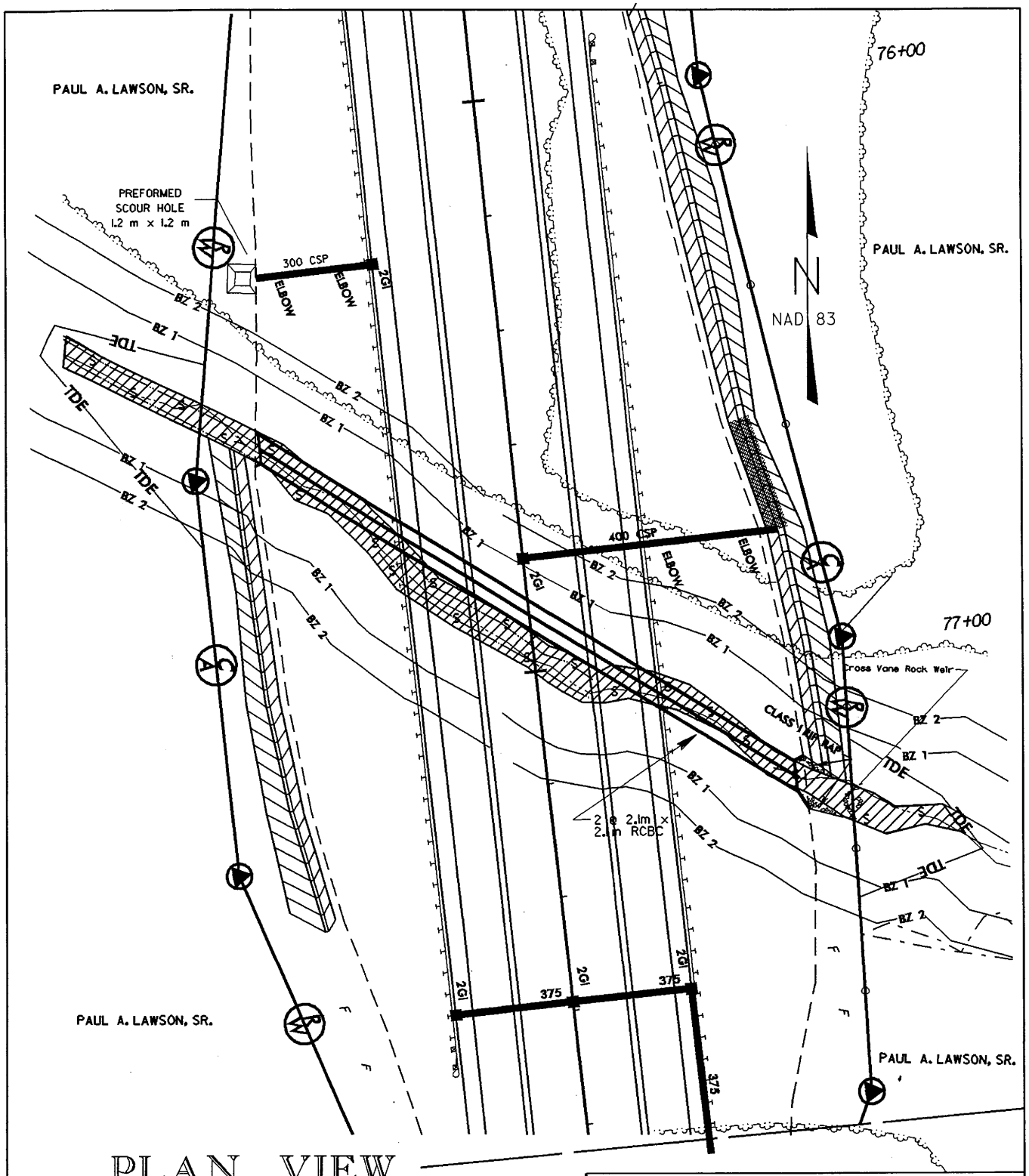
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 6 OF 17 **9 / 27 / 04**



PLAN VIEW
SITE 3

DENOTES FILL IN SURFACE WATER

10m 20m HORIZONTAL SCALE

NCDOT
DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

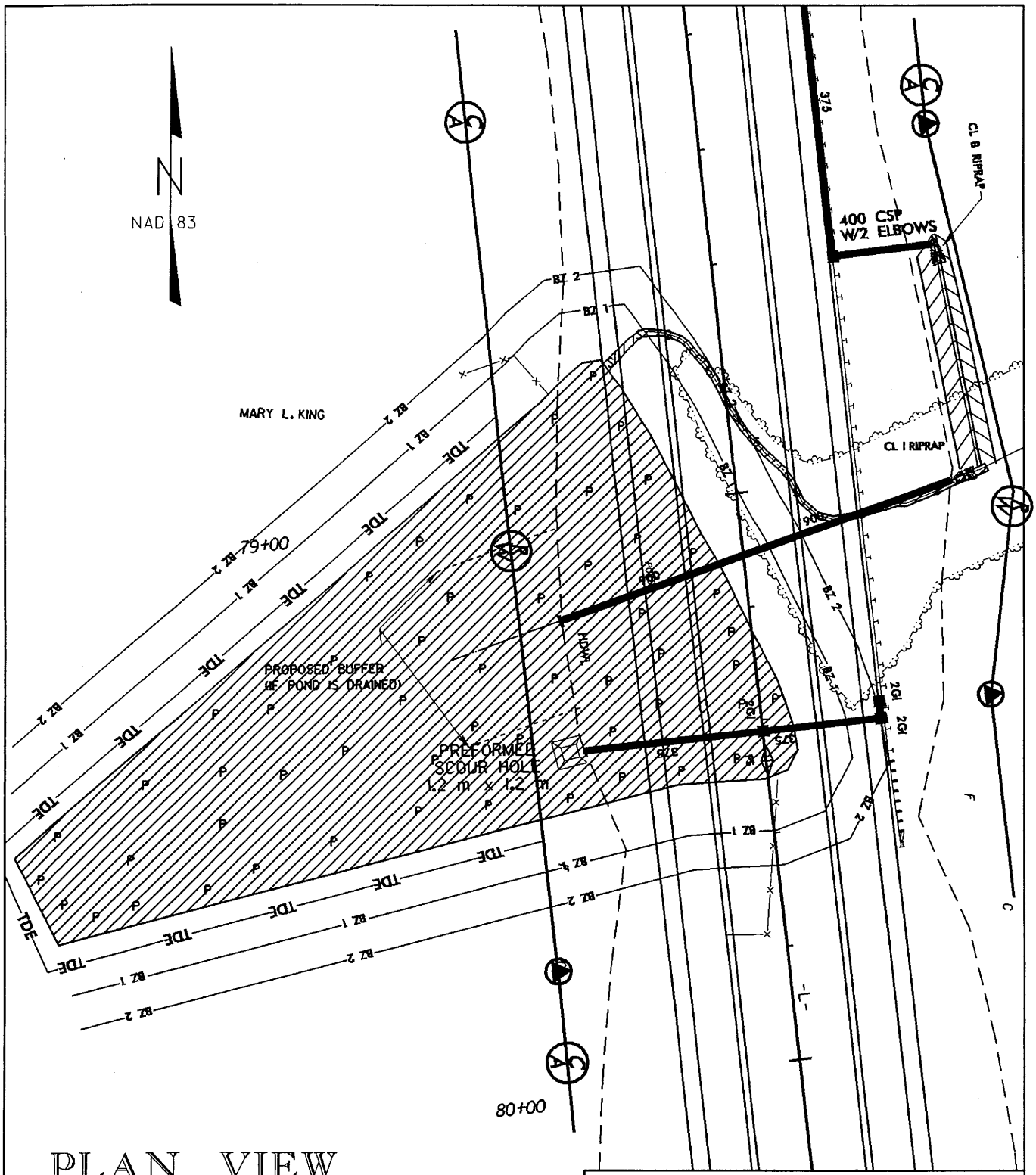
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 7 OF 17 **9/27/04**



PLAN VIEW
SITE 4

S S DENOTES FILL IN SURFACE WATER

P P DENOTES FILL IN SURFACE WATER (POND)

10m 20m HORIZONTAL SCALE

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

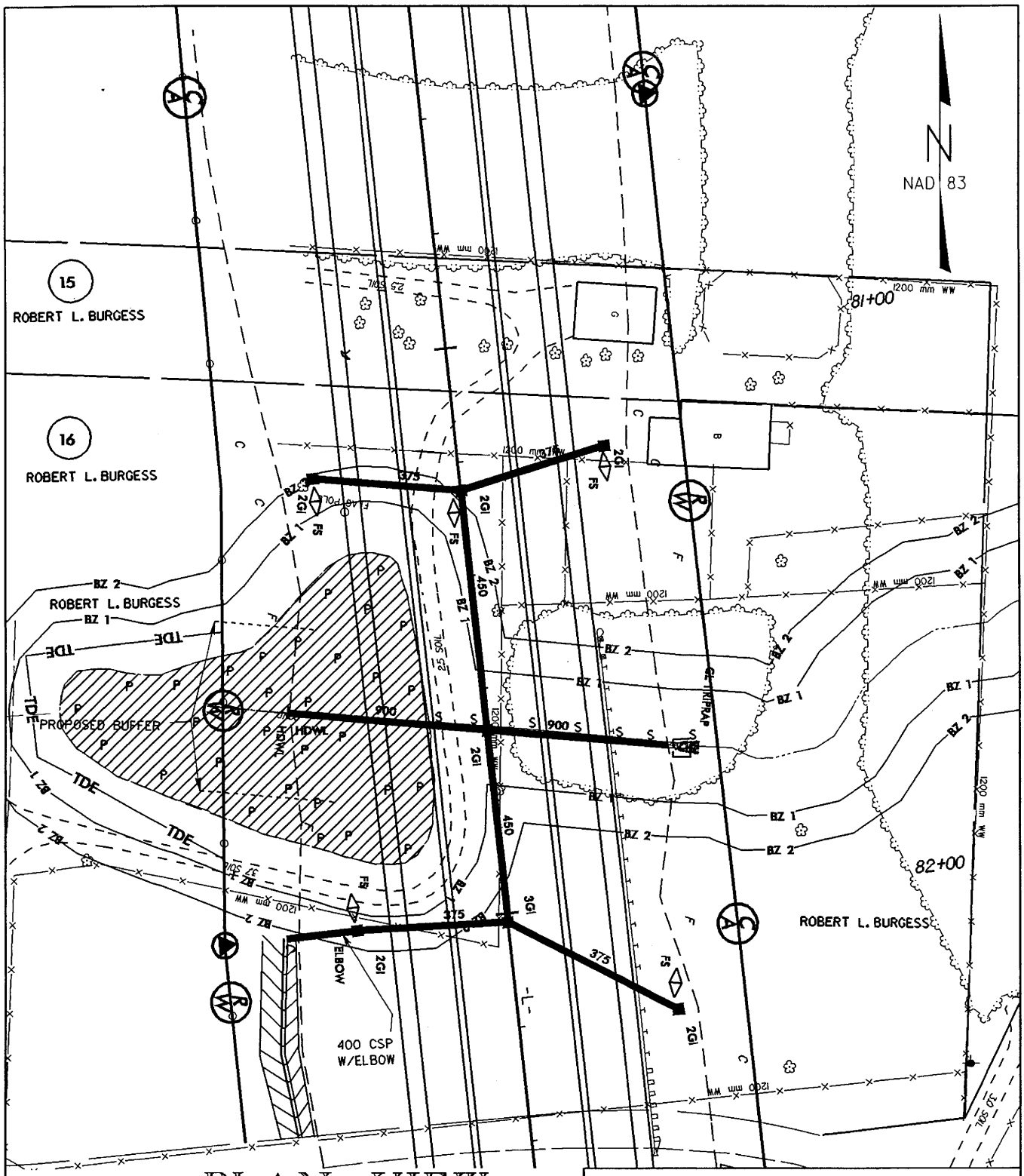
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 8 OF 17 **9/27/04**



PLAN VIEW
SITE 5

DENOTES FILL IN SURFACE WATER

DENOTES FILL IN SURFACE WATER (POND)

10m 20m HORIZONTAL SCALE

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

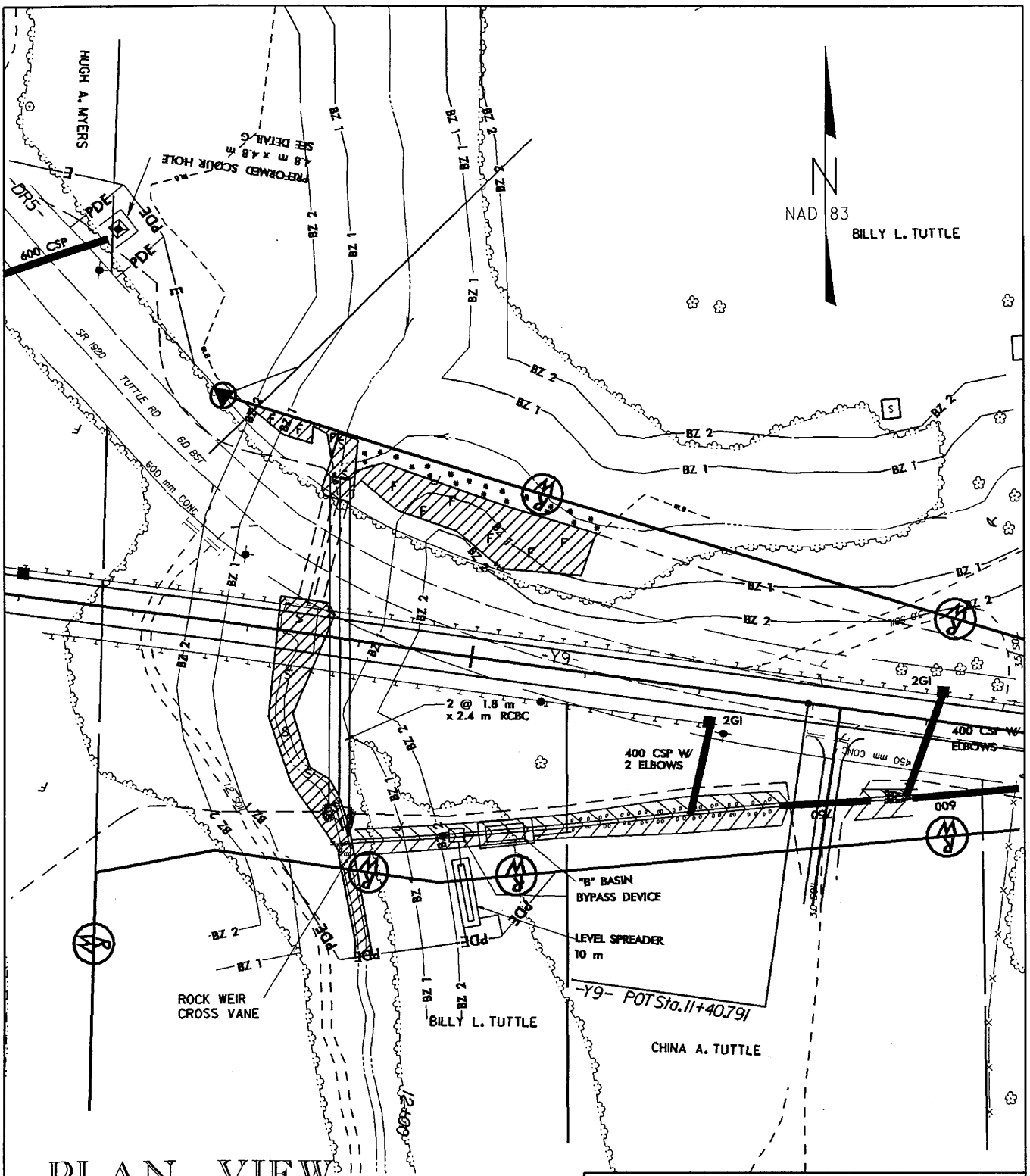
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 9 OF 17 **1/10/06**



PLAN VIEW
SITE 6

DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

10m 20m HORIZONTAL SCALE

NCDOT
DIVISION OF HIGHWAYS

GUILFORD / RANDOLPH COUNTY

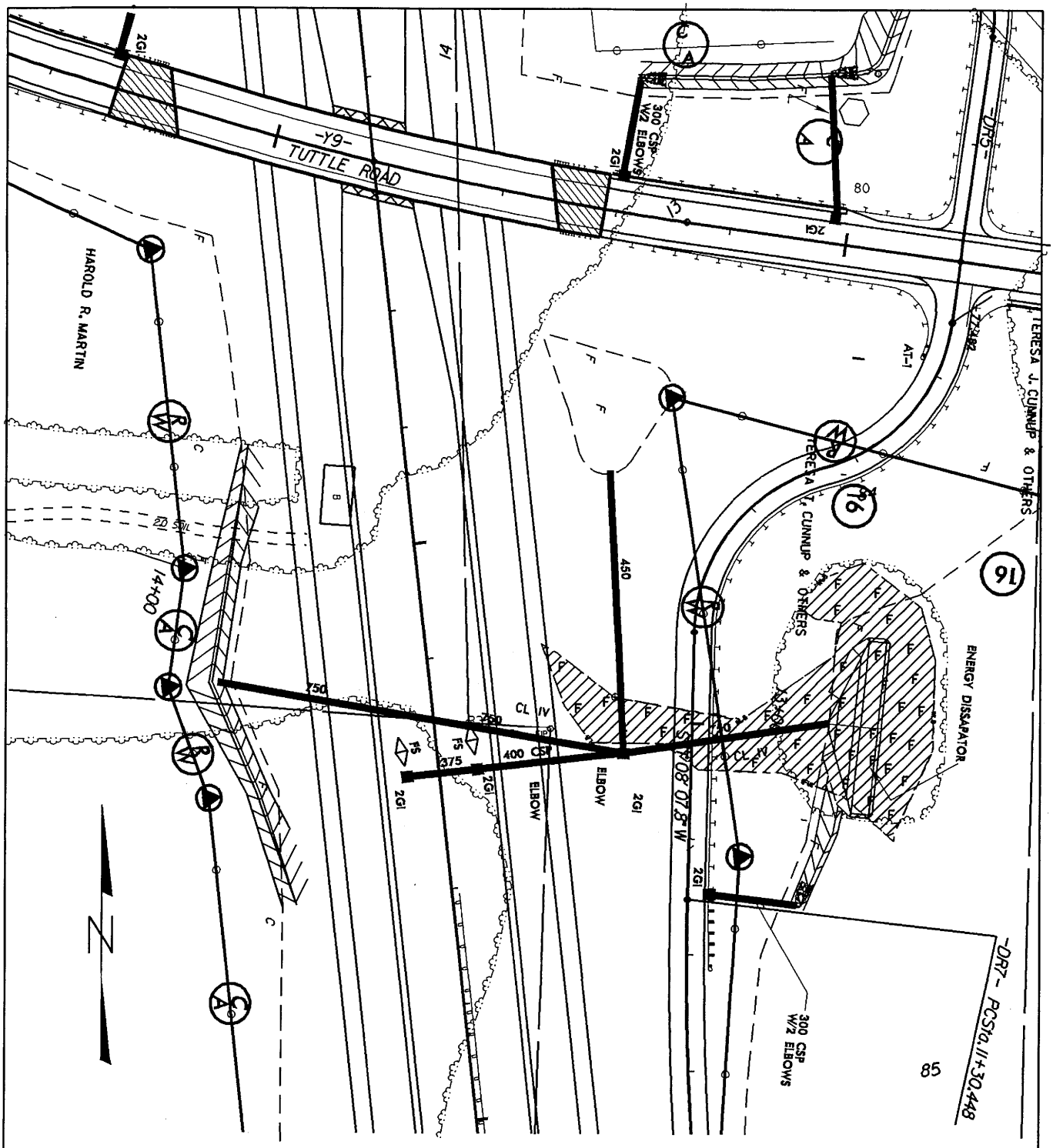
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 10 OF 17 **9 / 27 / 04**



PLAN VIEW
SITE 7

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

10m 20m

HORIZONTAL SCALE

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

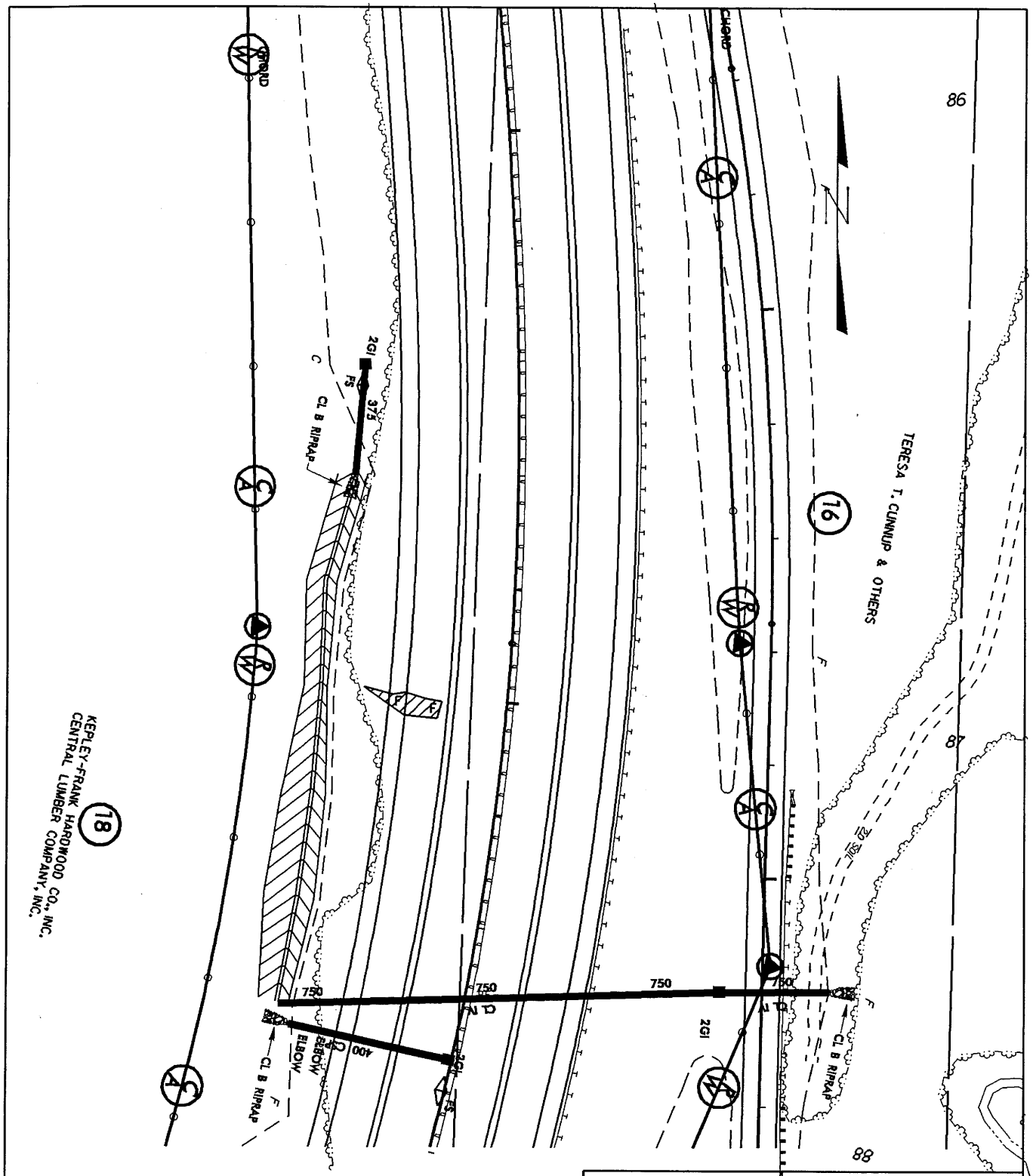
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 11 OF 17 **11/9/04**



PLAN VIEW
SITE 8

F F DENOTES FILL IN WETLAND

10m 20m HORIZONTAL SCALE

NCDOT
DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

PROJECT: 8.1570601 (R-0609IB)

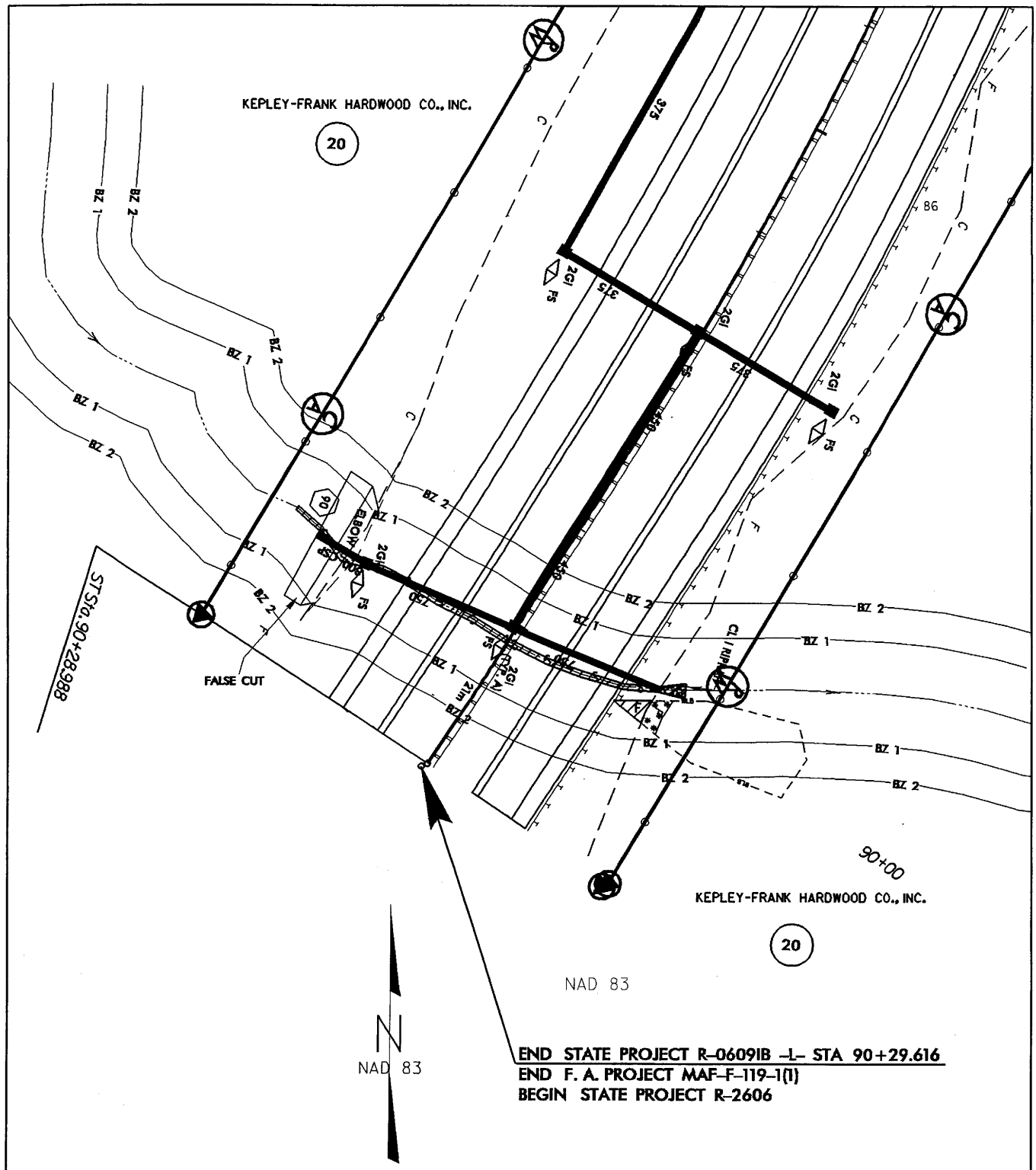
US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 12 OF 17 **11/12/04**

NAD 83



PLAN VIEW
SITE 9

F F DENOTES FILL IN WETLAND

S S DENOTES FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

10m 20m HORIZONTAL SCALE

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 13 OF 17 **1/10/06**

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
	Lessie Cox	5905 Hyde Park Drive High Point, N.C. 27263
	C. C. Gilbreth	Rt. 4 Box 252 High Point, N.C. 27260
	Margaret Haney	1625 NC 62 West High Point, N.C. 27263
	James Hinkle, Sr.	1515 Sheldon Ct High Point, N.C. 27263
	Russell J. Hoffman	P. O. Box 4250 Archdale, N.C. 27263
	Robert Burgess	P.O. Box 405 Dover Plains, NY 12522
	Kepley-Frank Hardwood Co	975 Conrad Mine Rd Lexington, N.C. 27292
	Mary King	6891 Suits Road Arcdale, N.C. 27263
	Paul Lawson, Sr.	7082 Suits Road Arcdale, N.C. 27263
	Harold Tuttle	921 West Sixth Street Siler City, N.C. 27344

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 14 OF 17 9/27/04

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
	Billy Tuttle	3180 Tuttle Road Archdale, N.C. 27263
	China Tuttle	3193 Tuttle Road Archale, N.C. 27263

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 15 OF 17 9/27/04

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS				SURFACE WATER IMPACTS				
			Fill In Wetlands (ha)	Temp. Fill In Wetlands (ha)	Excavation In Wetlands (ha)	Mechanized Clearing (Method III) (ha)	Fill In SW (Natural) (ha)	Fill In SW (Pond) (ha)	Temp. Fill In SW (ha)	Existing Channel Impacted (m)	Natural Stream Design (m)
1	63+20 -L- TO	750 RCP					0.022	0.18		259	
	64+00 -L-										
2	68+55 -L-	2100 RCP					0.055			160	
3	76+90 -L-	2@ 2.1m x 2.1m RCBC					0.09			179	
4	79+10 -L-	900 RCP					0.009	0.64		86	
5	81+67	900 RCP					0.005	0.22		46	
6	12+23 -Y9-	2@ 1.8m x 2.4m RCBC	0.037			0.02	0.038			78	
7	84+28 -L-	750 RCP	0.12								
8	87+00 -L-	ROADWAY FILL	0.003								
9	90+00 -L-	750 RCP	0.001			0.002	0.08			71	
TOTALS:			0.161	0	0	0.022	0.299	1.04	0	879	0

Form Revised 3/22/01

NCDOT

DIVISION OF HIGHWAYS
GUILFORD/RANDOLPH COUNTY
PROJECT 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE

11/22/2004

WETLAND PERMIT IMPACT SUMMARY

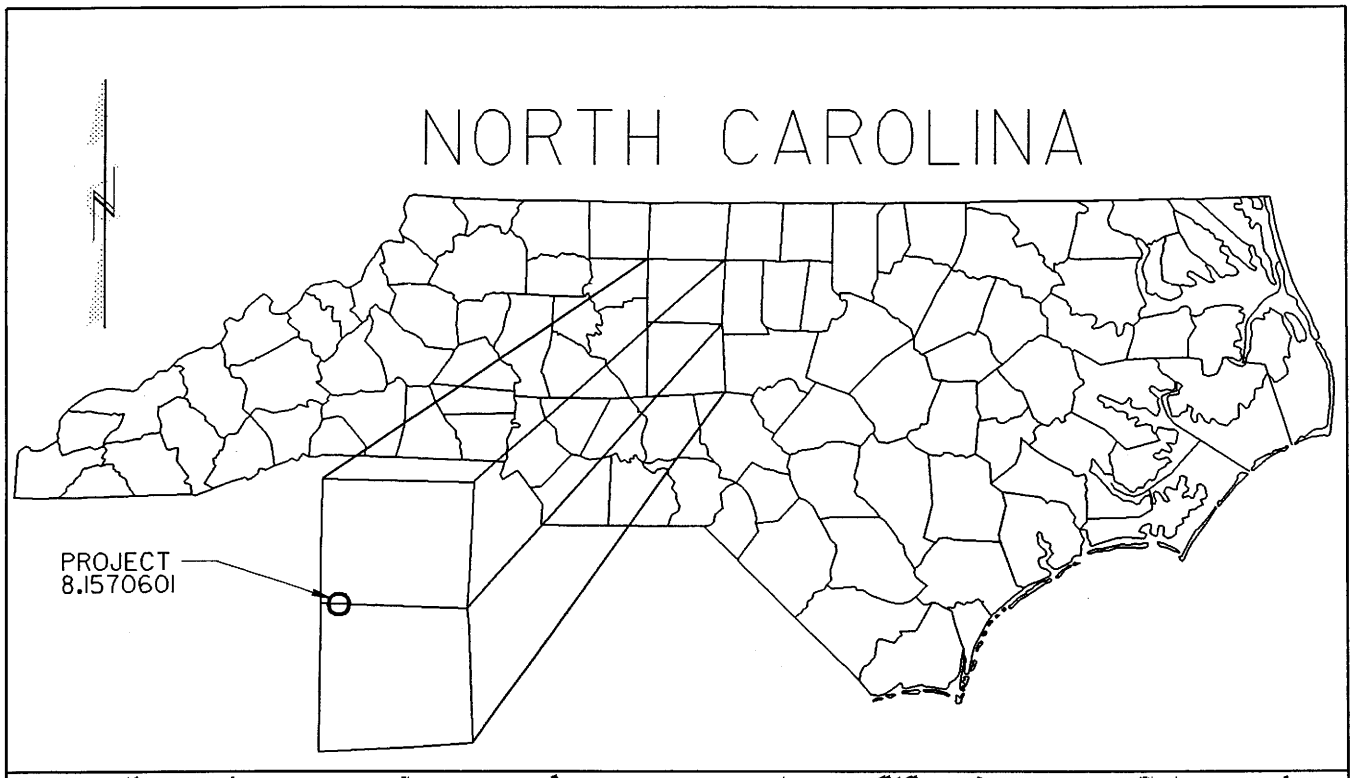
Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS				SURFACE WATER IMPACTS				
			Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
1	63+20 -L- TO	30" RCP					0.054	0.445		850	
	64+00 -L-										
2	68+55 -L-	84" RCP					0.136			525	
3	76+90 -L-	2@ 7 ft x 7 ft RCBC					0.222			587	
4	79+10 -L-	36" RCP					0.022	1.581		282	
5	81+67	36" RCP					0.012	0.543		151	
6	12+23 -Y9-	2@ 6 ft x 8 ft RCBC	0.091			0.049	0.094			256	
7	84+28 -L-	30" RCP	0.296								
8	87+00 -L-	ROADWAY FILL	0.007								
9	90+00 -L-	30" RCP	0.002			0.005	0.198			233	
TOTALS:			0.398	0	0	0.054	0.738	2.569	0	2884	0

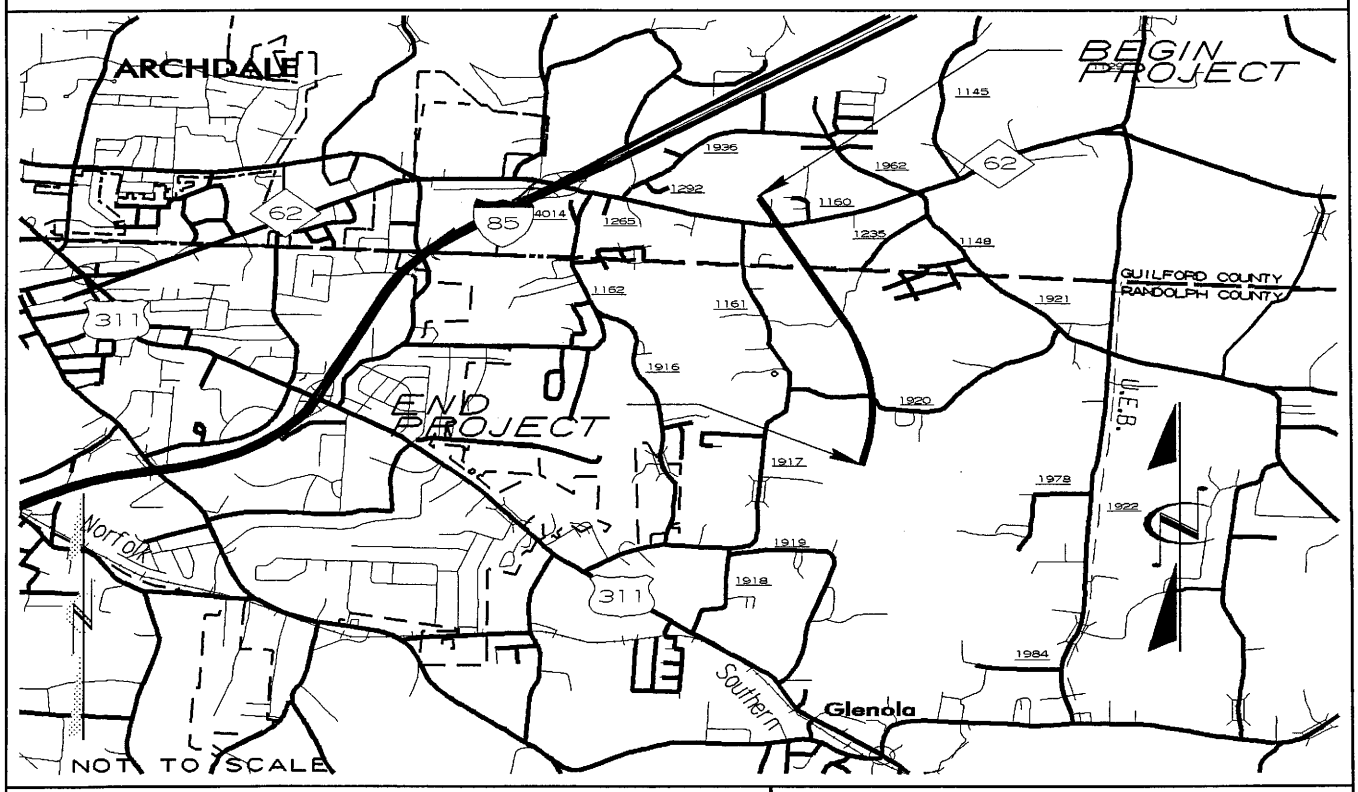
Form Revised 3/22/01

NCDOT

DIVISION OF HIGHWAYS
GUILFORD/RANDOLPH COUNTY
PROJECT 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE

 1/25/2005





BUFFER VICINITY MAPS

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 1 OF 18 10/15/03

BUFFER LEGEND

WLB — WETLAND BOUNDARY

WLB WLB — WETLAND

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

BZ — RIPARIAN BUFFER ZONE

BZ1 — RIPARIAN BUFFER ZONE 1
30 ft (9.2m)

BZ2 — RIPARIAN BUFFER ZONE 2
20 ft (6.1m)

FLOW DIRECTION

TB — TOP OF BANK

WE — EDGE OF WATER

C — PROP. LIMIT OF CUT

F — PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG — NATURAL GROUND

PL — PROPERTY LINE

TDE — TEMP. DRAINAGE EASEMENT

PDE — PERMANENT DRAINAGE EASEMENT

EAB — EXIST. ENDANGERED ANIMAL BOUNDARY

EPB — EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT
12"-48" PIPES
54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 — ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE (PSH)

LEVEL SPREADER (LS)

GRASS SWALE

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

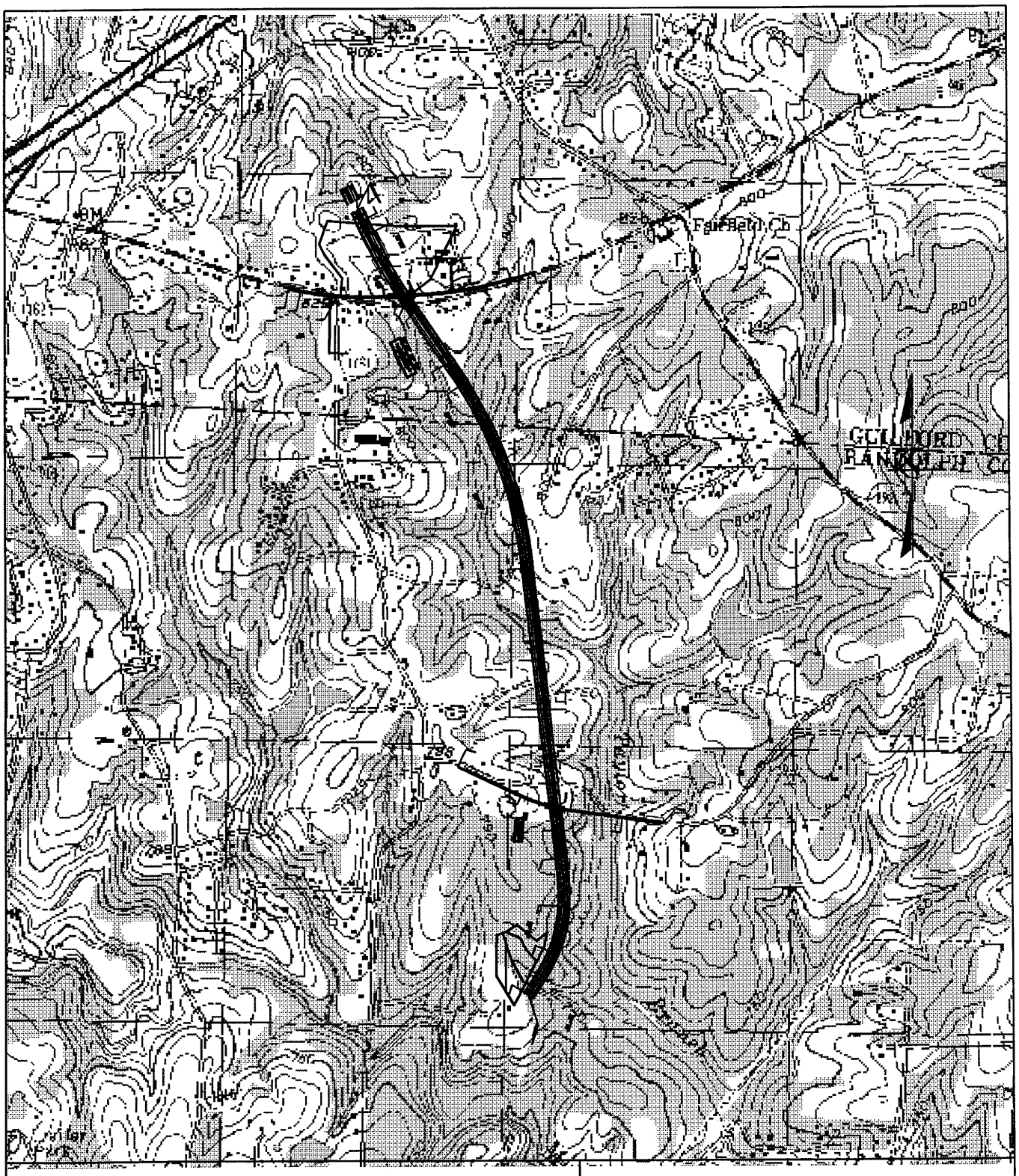
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 1 OF 18 10/15/03



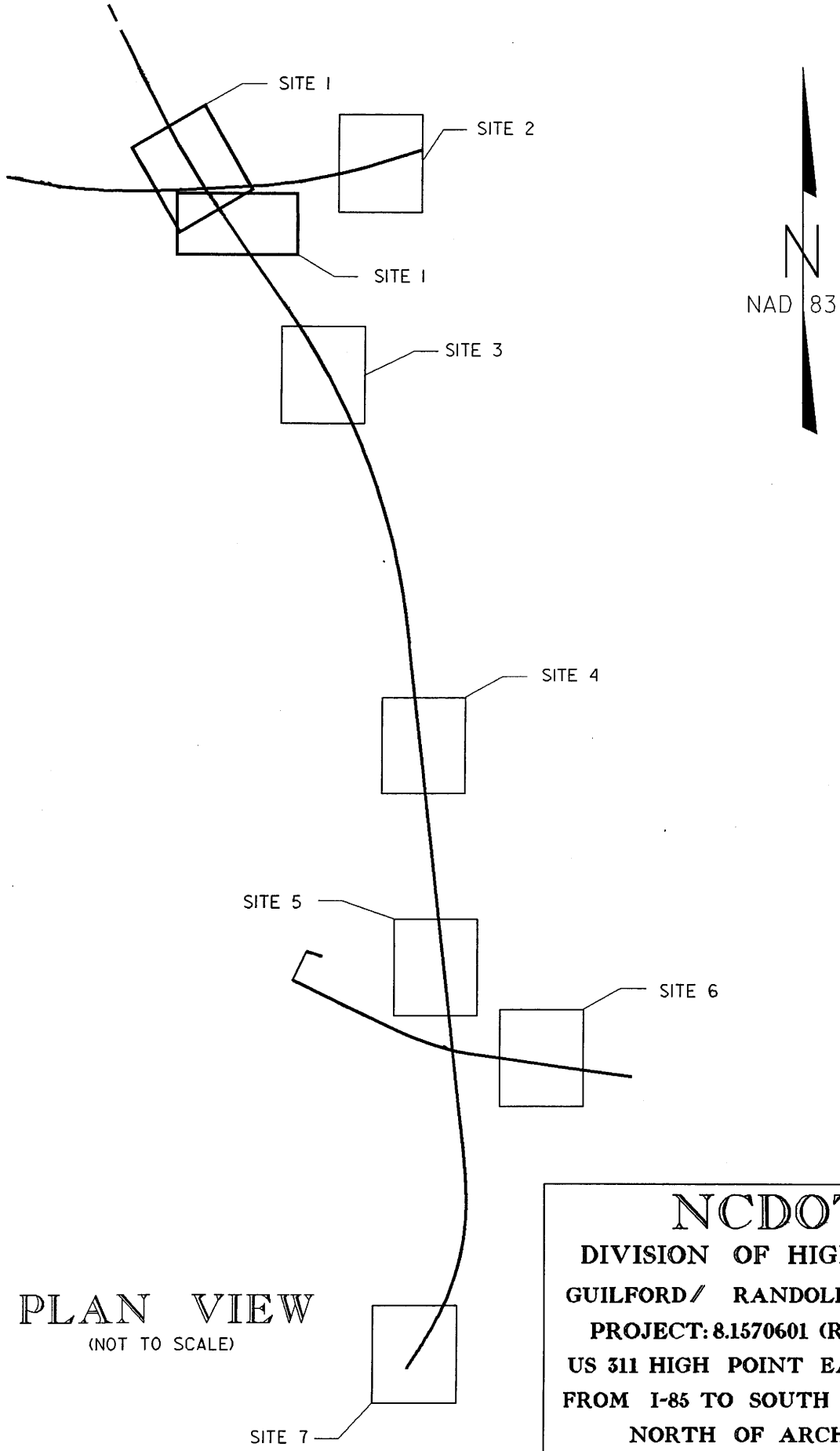
LOCATION MAPS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD / RANDOLPH COUNTIES

PROJECT: 8.1570601 (R-0609IB)

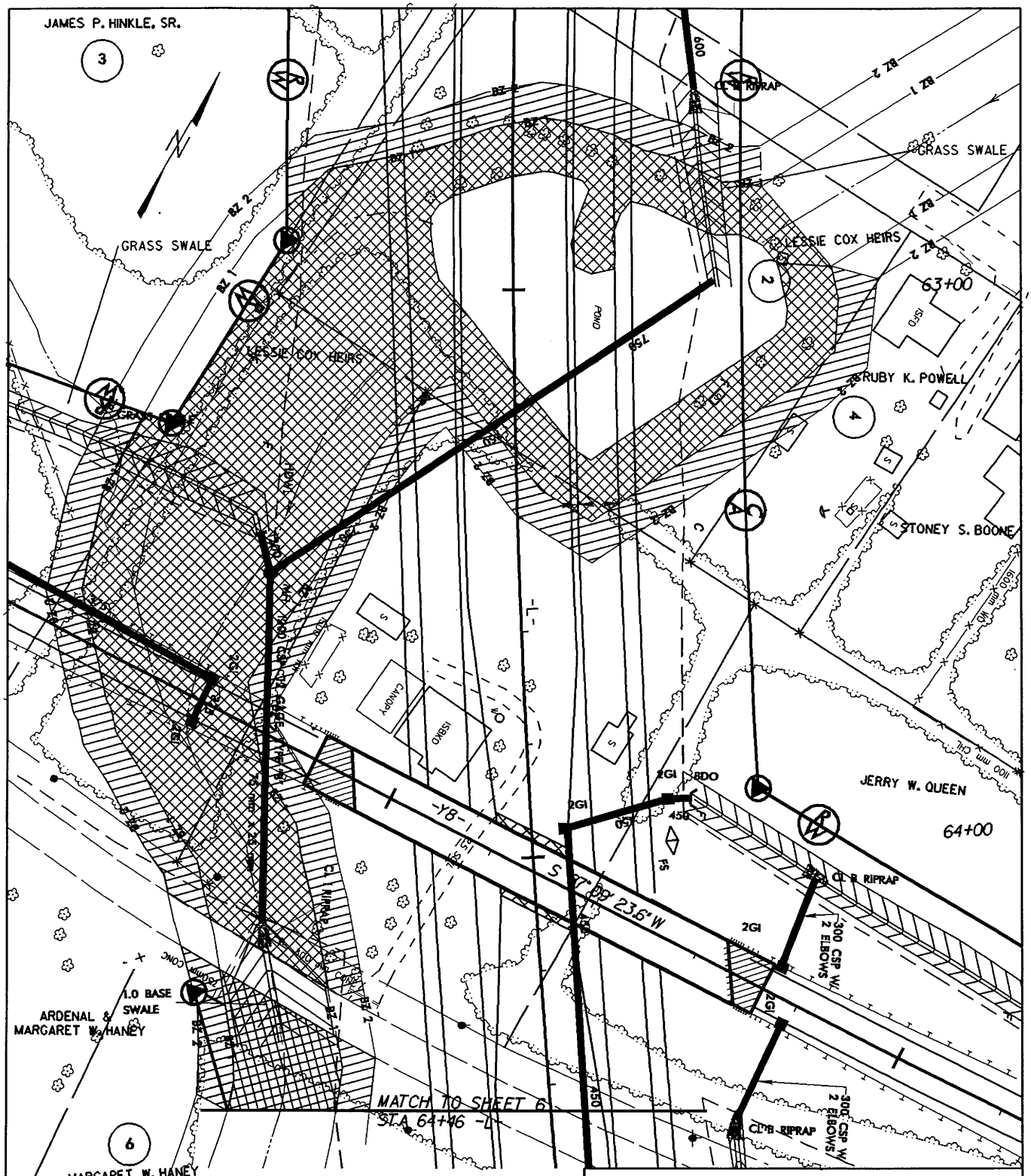
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE

SHEET 3 OF 18 12 / 31 / 02



PLAN VIEW
(NOT TO SCALE)

NCDOT
DIVISION OF HIGHWAYS
GUILFORD / RANDOLPH COUNTY
PROJECT: 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE
SHEET 4 OF 18 10/15/03



PLAN VIEW
SITE 1

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

10m 20m HORIZONTAL SCALE

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

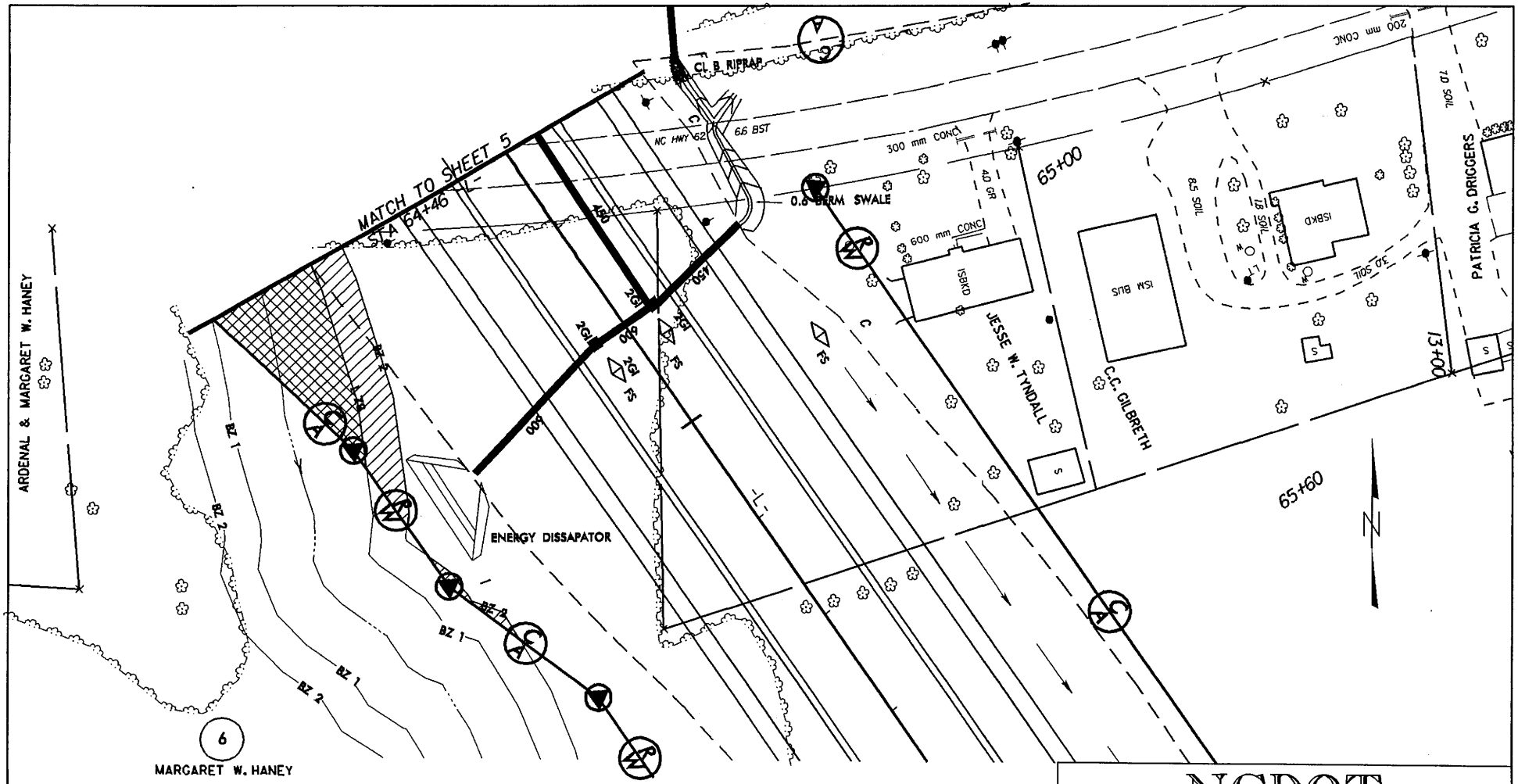
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 5 OF 18 7/8/2005



PLAN VIEW

SITE 1

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

10m 20m HORIZONTAL SCALE

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

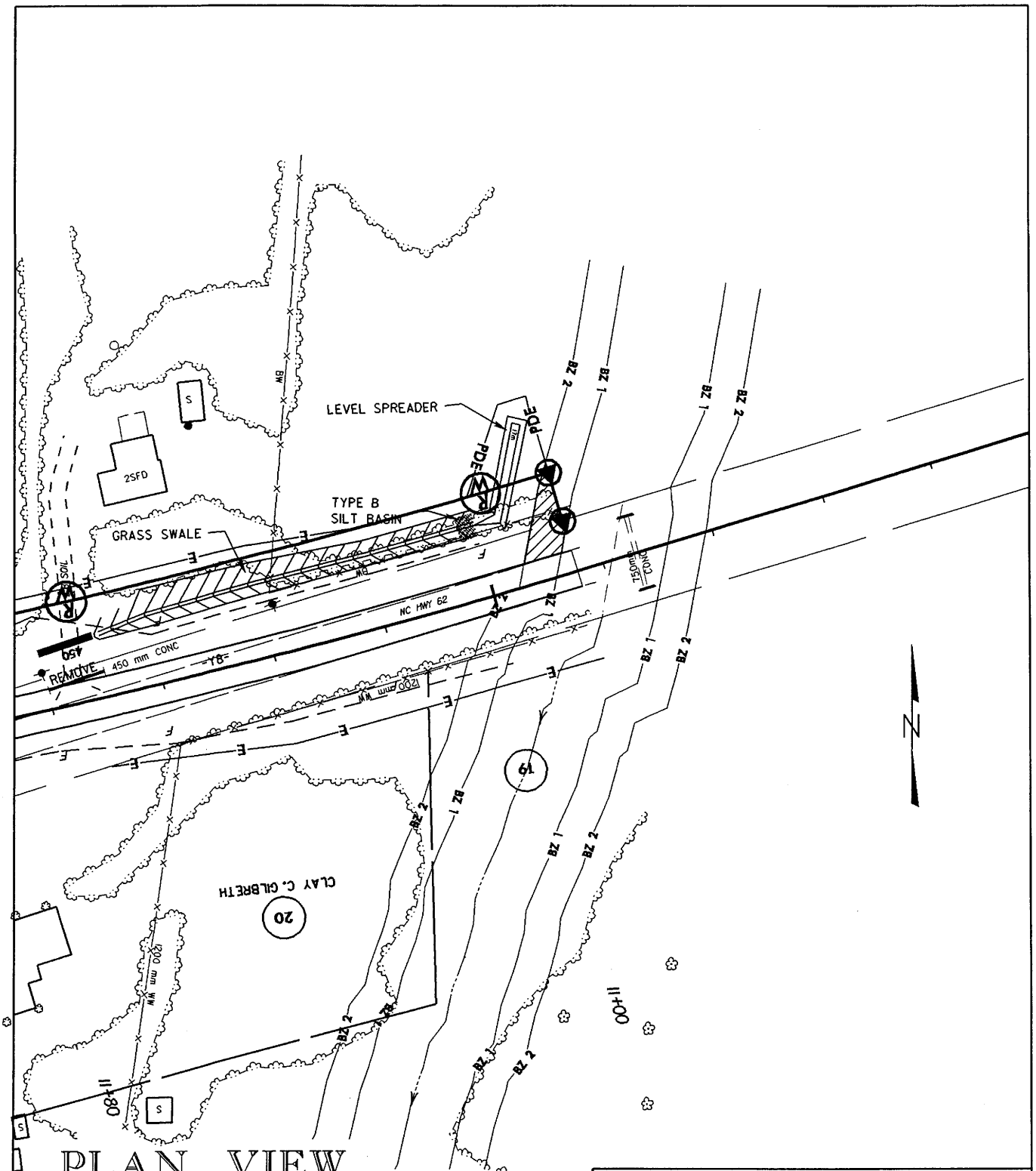
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 6 OF 8 10/15/03



PLAN VIEW
SITE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

10m 20m HORIZONTAL SCALE

NCDOT
DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

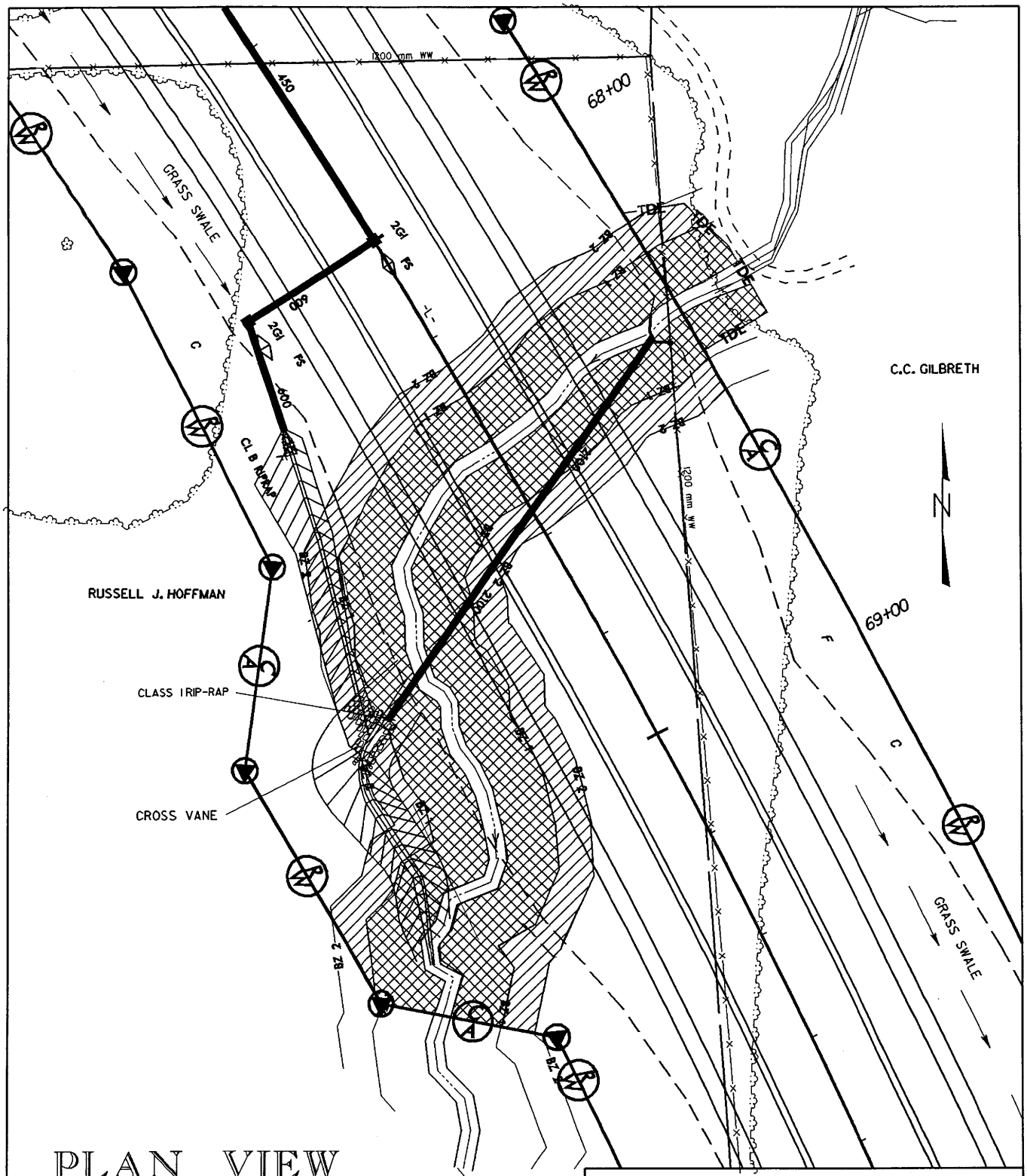
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 7 OF 18 10/15/03



PLAN VIEW
SITE 3

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

10m 20m HORIZONTAL SCALE

NCDOT

DIVISION OF HIGHWAYS

GUILFORD / RANDOLPH COUNTY

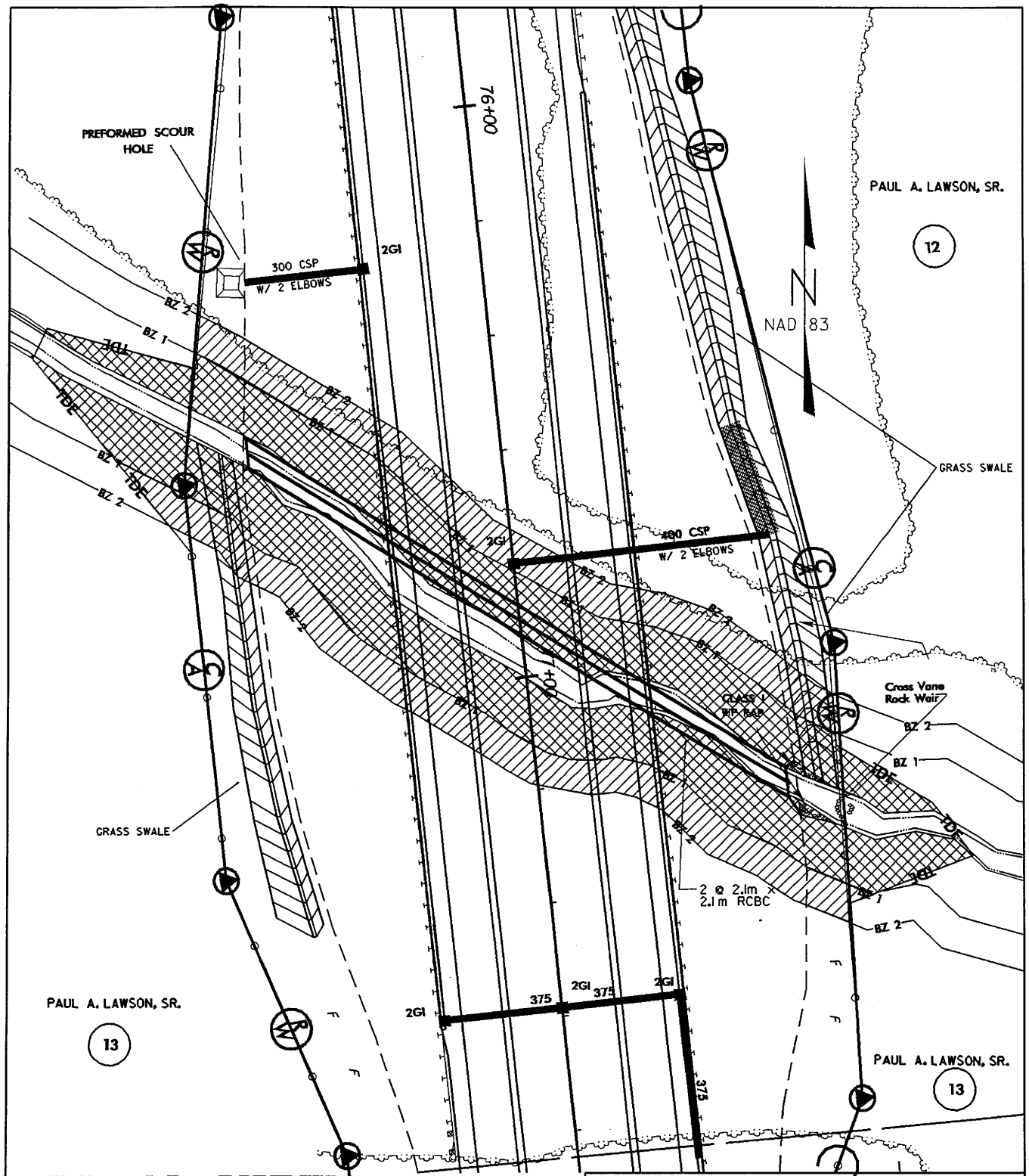
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 8 OF 18 10 / 15 / 03



PLAN VIEW
SITE 4

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

10m 20m HORIZONTAL SCALE

NCDOT
DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

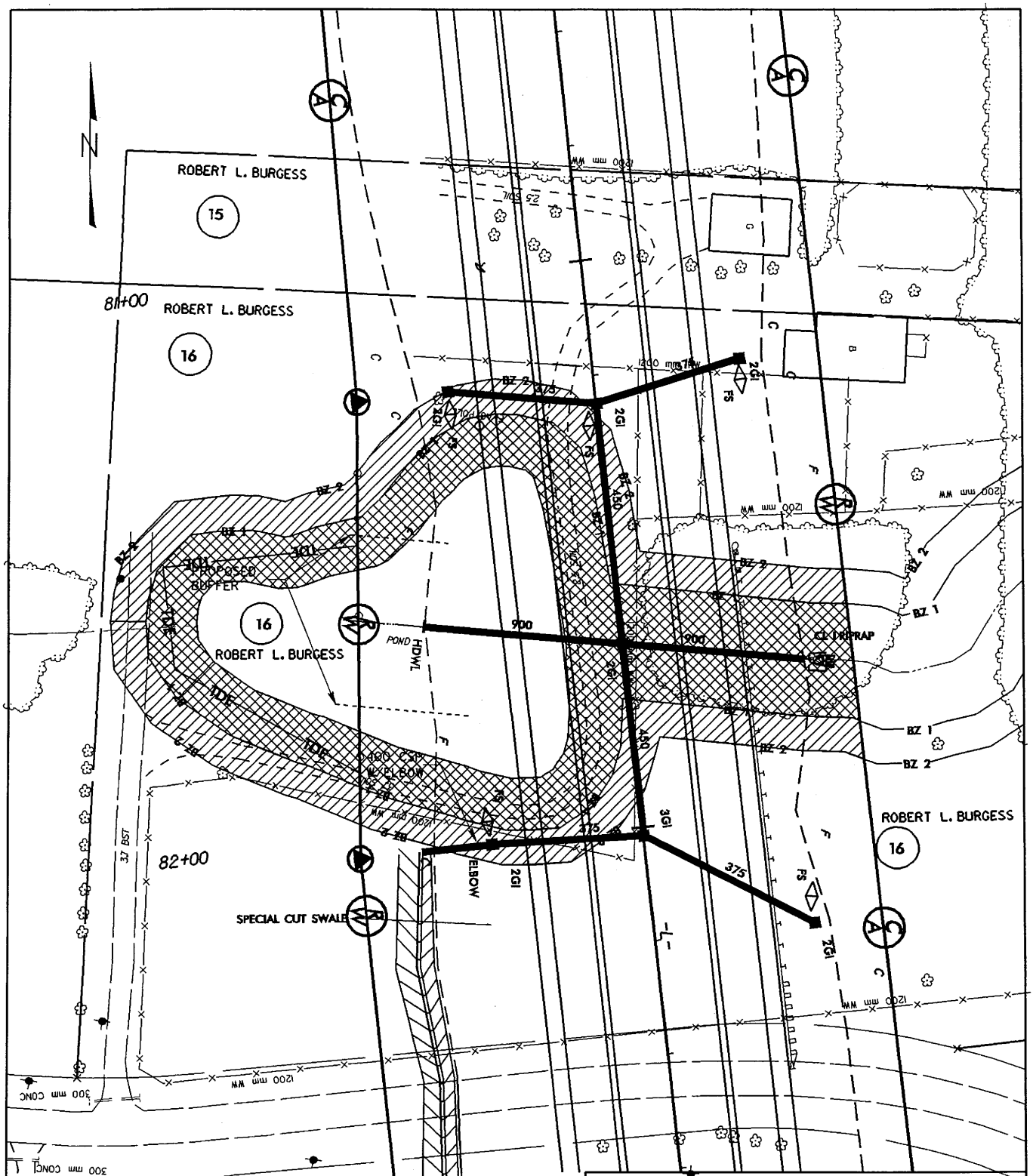
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 9 OF 18 **10/15/03**



PLAN VIEW
SITE 5

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

10m 20m HORIZONTAL SCALE

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

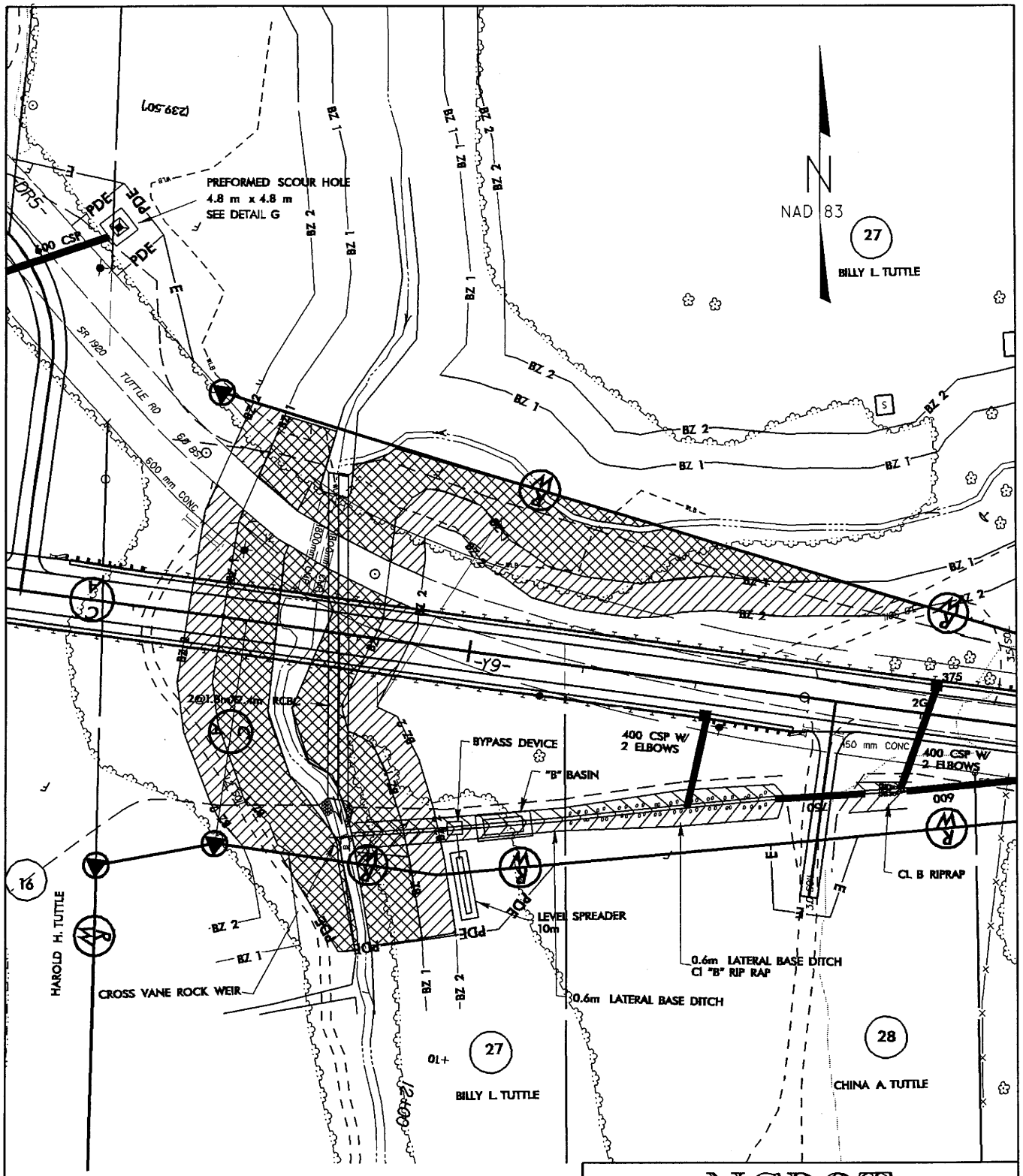
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 10 OF 18 3/14/05



PLAN VIEW
SITE 6

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

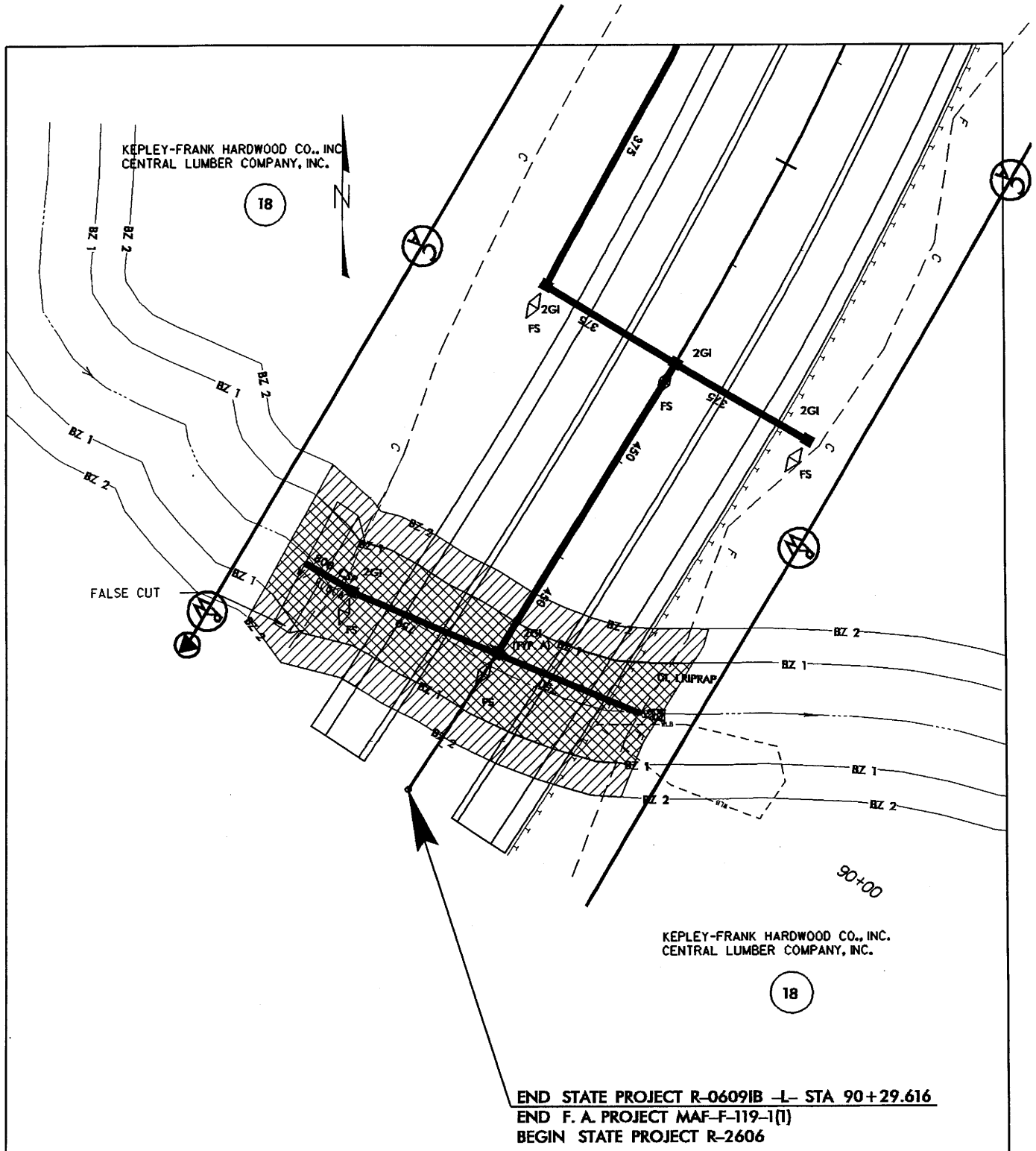
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 11 OF 18 3/14/05



END STATE PROJECT R-0609IB -L- STA 90+29.616
END F. A. PROJECT MAF-F-119-1(1)
BEGIN STATE PROJECT R-2606

PLAN VIEW
SITE 7

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NCDOT
DIVISION OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTY
PROJECT: 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE

SHEET 12 OF 18 3/14/05

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
	Lessie Cox	5905 Hyde Park Drive High Point, N.C. 27263
	C. C. Gilbreth	Rt. 4 Box 252 High Point, N.C. 27260
	Margaret Haney	1625 NC 62 West High Point, N.C. 27263
	James Hinkle, Sr.	1515 Sheldon Ct High Point, N.C. 27263
	Russell J. Hoffman	P. O. Box 4250 Archdale, N.C. 27263
	Robert Burgess	P.O. Box 405 Dover Plains, NY 12522
	Kepley-Frank Hardwood Co	975 Conrad Mine Rd Lexington, N.C. 27292
	Mary King	6891 Suits Road Arcdale, N.C. 27263
	Paul Lawson, Sr.	7082 Suits Road Arcdale, N.C. 27263
	Harold Tuttle	921 West Sixth Street Siler City, N.C. 27344

NCDOT

DIVISION OF HIGHWAYS

GUILFORD / RANDOLPH COUNTY

PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 13 OF 17 10/15/03

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
	Billy Tuttle	3180 Tuttle Road Archdale, N.C. 27263
	China Tuttle	3193 Tuttle Road Archale, N.C. 27263

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 14 OF 18 10/15/03

BUFFER IMPACTS SUMMARY

			IMPACT								BUFFER REPLACEMENT	
			TYPE		ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1			X					66177	31777	97954		
2			X					0	774	774		
3			X					33164	20425	53589		
4			X					32497	18178	50675		
6			X					31089	21466	52555		
7			X					22898	15749	38647		
8			X					14717	13868	28585		
TOTAL:					0	0	0	200542	122237	322779		

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD \ RANDOLPH
PROJECT: 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT FROM I-85 TO
SOUTH OF SR 1920 NORTH OF ARCHDALE
7/8/2005
SHEET 15 OF 18

R-0609IB Guilfrod/Randolph County

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 12/8/2004
Dsn. By: WHE
Check: MSP

SHT.	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided	Remarks
6	28	68+00 0-L-	2GI	0.36	0.9	89.0	27	120	0.015	6:1	**YES**	3.99	1.48	5.23	1.57	GS	
8	44	75+20 -L-	2GI	0.45	1.1	111.2	34	120	0.004	6:1	**YES**	3.46	0.89	4.53	0.92	GS	
8	46	76+26 -L-	2GI	0.15	0.4	37.1	11									PSH	
8	48	76+80 -L-	2GI	0.42	1.0	103.8	32	200	0.009	6:1	**YES**	3.23	1.12	4.23	1.15	GS	
9	55	79+39 -L-	2GI	0.22	0.5	54.4	17									PSH	
9	56	79+42 -L-	2GI	0.01	0.0	2.5	1									PSH	
9	57	79+42 -L-	2GI	0.39	1.0	96.4	29	180	0.012	6:1	**YES**	3.30	1.41	4.33	1.48	GS, PSH	
10	59	81+20 -L-	2GI	0.32	0.8	79.1	24	120	0.003	6:1	**YES**	3.46	0.82	3.22	0.89	GS	
10	60	81+25 -L-	2GI	0.49	1.2	121.1	37	120	0.004	6:1	**YES**	3.76	0.95	4.93	1.02	GS	
10	61	81+20 -L-	2GI	0.97	2.4	239.7	73	120	0.003	6:1	**YES**	7.45	1.08	9.76	1.15	GS	
10	62	81+68 -L-	2GI	0.17	0.4	42.0	13	75	0.001	6:1	**YES**	1.31	0.59	1.71	0.62	GS	
10	65	82+01 -L-	2GI	0.22	0.5	54.4	17	150	0.019	6:1	**YES**	3.69	1.71	4.83	1.84	GS	
10	66	82+20 -L-	2GI	0.48	1.2	118.6	36	120	0.003	6:1	**YES**	1.69	0.75	2.21	0.79	GS	
10	67	82+00 -L-	2GI	0.12	0.3	29.7	9	100	0.003	6:1	**YES**	0.92	0.69	1.21	0.72	GS	
10	68	82+00 -L-	BERM	0.82	2.0	202.6	62			6:1							See Note

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER

Note: The Berm Outlet picks up 0.77 Ha of offsite drainage and 0.05 Ha from structure 69. Structure 69 will be treated by a grass swale draining to structure 68.

NCDOT DIVISON OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTIES
PROJECT: 8.1570601 (R-0609IB0
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHADALE

SHEET 1 12/8/04

R-0609IB Guilfrod/Randolph County

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 12/8/2004
Dsn. By: WHE
Check: MSP

SHT.	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided	Remarks
10	69	14+30 -Y9-	2GI	0.05	0.1	12.4	4	40	0.005	3:1	YES	0.50	0.77	0.65	0.84	GS	
10	71	13+40 -Y9-	2GI	0.09	0.2	22.2	7									PSH AT	STR 114
10	113	13+00 -Y9-	2GI	0.04	0.1	9.9	3									PSH AT	STR 114
12	82	88+40 -L-	BERM	0.61	1.5	150.7	46										OFFSITE
12	83	88+40 -L-	2GI	0.10	0.2	24.7	8	40	0.016	6:1	YES	0.77	1.15	1.01	1.25	GS	
12	84	89+40 -L-	2GI	0.29	0.7	71.7	22	100	0.015	6:1	YES	2.23	1.48	2.92	1.54	GS	
12	85	89+40 -L-	2GI	0.39	1.0	96.4	29	100	0.021	6:1	YES	3.00	1.71	3.92	1.80	GS	
12	86	89+40 -L-	2GI	0.05	0.1	12.4	4	40	0.026	6:1	YES	0.38	1.21	0.50	1.25	GS	
12	87	90+00 -L-	2GI	0.16	0.4	39.5	12	67	0.03	6:1	YES	1.23	1.61	1.61	1.74	GS	
12	89	90+05 -L-	2GI	0.17	0.4	42.0	13	60	0.02	6:1	YES	1.31	1.48	1.71	1.57	GS	
12	90	90+06 -L-	BERM														OFFSITE
13		11+00 -Y8-	DITCH	0.42	1.0	103.8	32									LS	
13	93	13+60 -Y8-	2GI	0.06	0.1	14.8	5									Included	in Str 12
14		15+80 -Y8-	DITCH	0.48	1.2	118.6	36	40	0.04	3:1	YES	3.60	1.90	4.80	2.20	GS	See Note

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER

NOTE: This ditch treats the drainage areas for Structures 9, 10, 11, and 119.

NCDOT DIVISON OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTIES
PROJECT: 8.1570601 (R-0609IB0
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHADALE

SHEET 12/8/04

R-0609IB Guilfrod/Randolph County
Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 12/8/2004
Dsn. By: WHE
Check: MSP

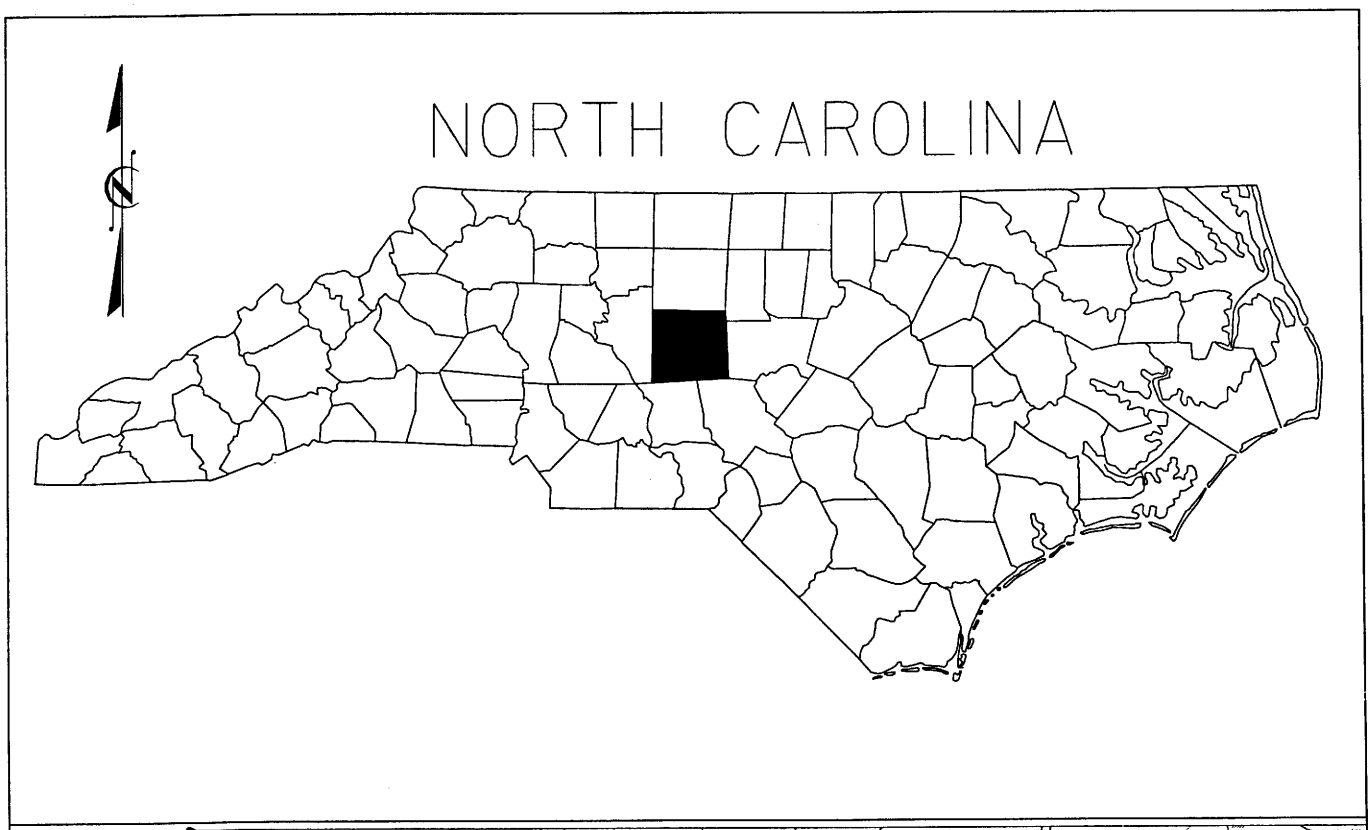
SHT.	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided	Remarks
14		17+20 -Y9-	DITCH	0.32	0.8	79.1	24	120	0.03	3:1	**YES**	2.50	1.90	3.20	2.00	GS	
14		17+30 -Y9-	DITCH	0.32	0.8	79.1	24	40	0.23	4:1	**YES**	2.38	1.97	3.12	2.07	GS	
15	103	10+56 -Y9-	2GI	0.29	0.7	71.7	22									LS	
15	104	10+60 -Y9-	2GI	1.20	3.0	296.5	90									LS	
15	105	10+95 -Y9-	2GI	0.10	0.2	24.7	8									LS	
15	108	11+57 -Y9-	2GI	0.09	0.2	22.2	7									LS	
15	110	11+18 -Y9-	2GI	0.06	0.1	14.8	5									LS	

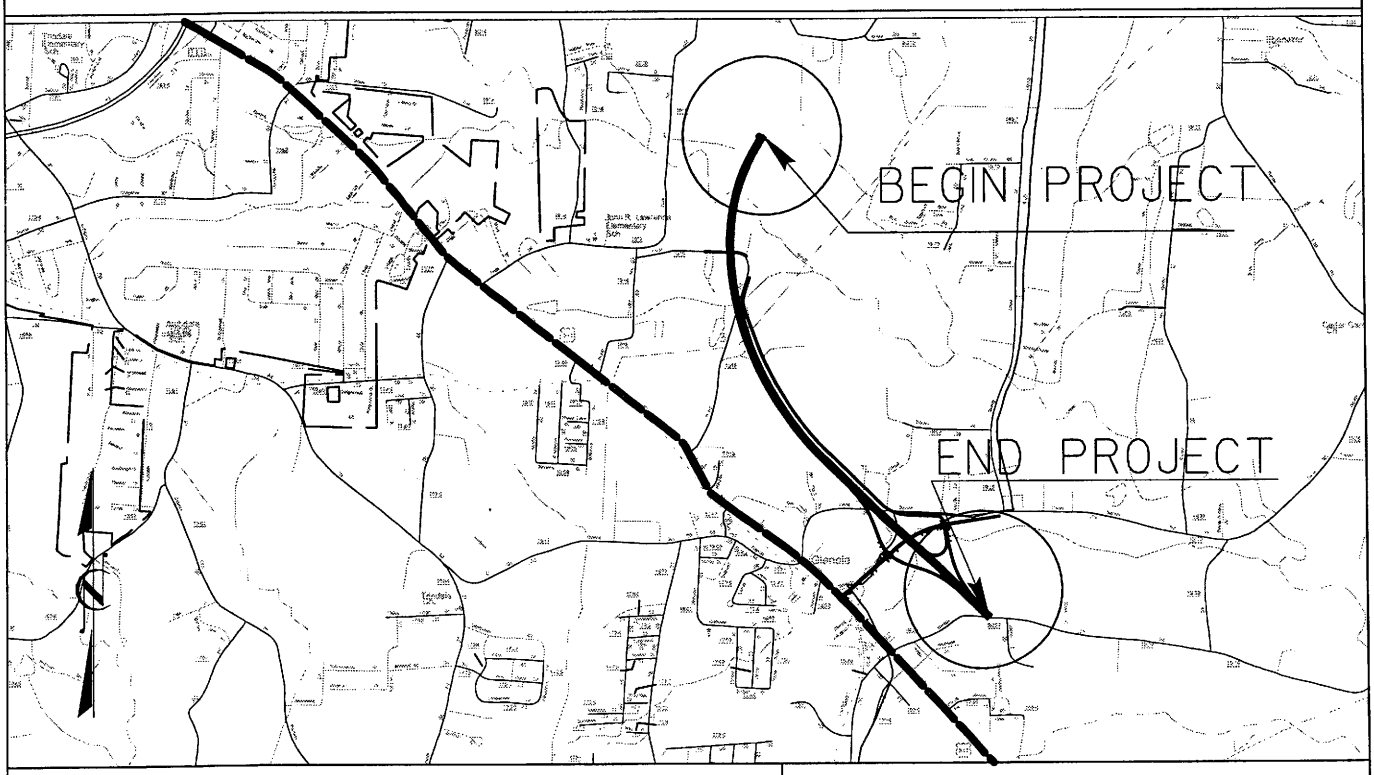
2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER

NCDOT DIVISON OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTIES
PROJECT: 8.1570601 (R-0609IB0
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHADALE

SHEET 12/8/04





VICINITY MAPS

NCDOT

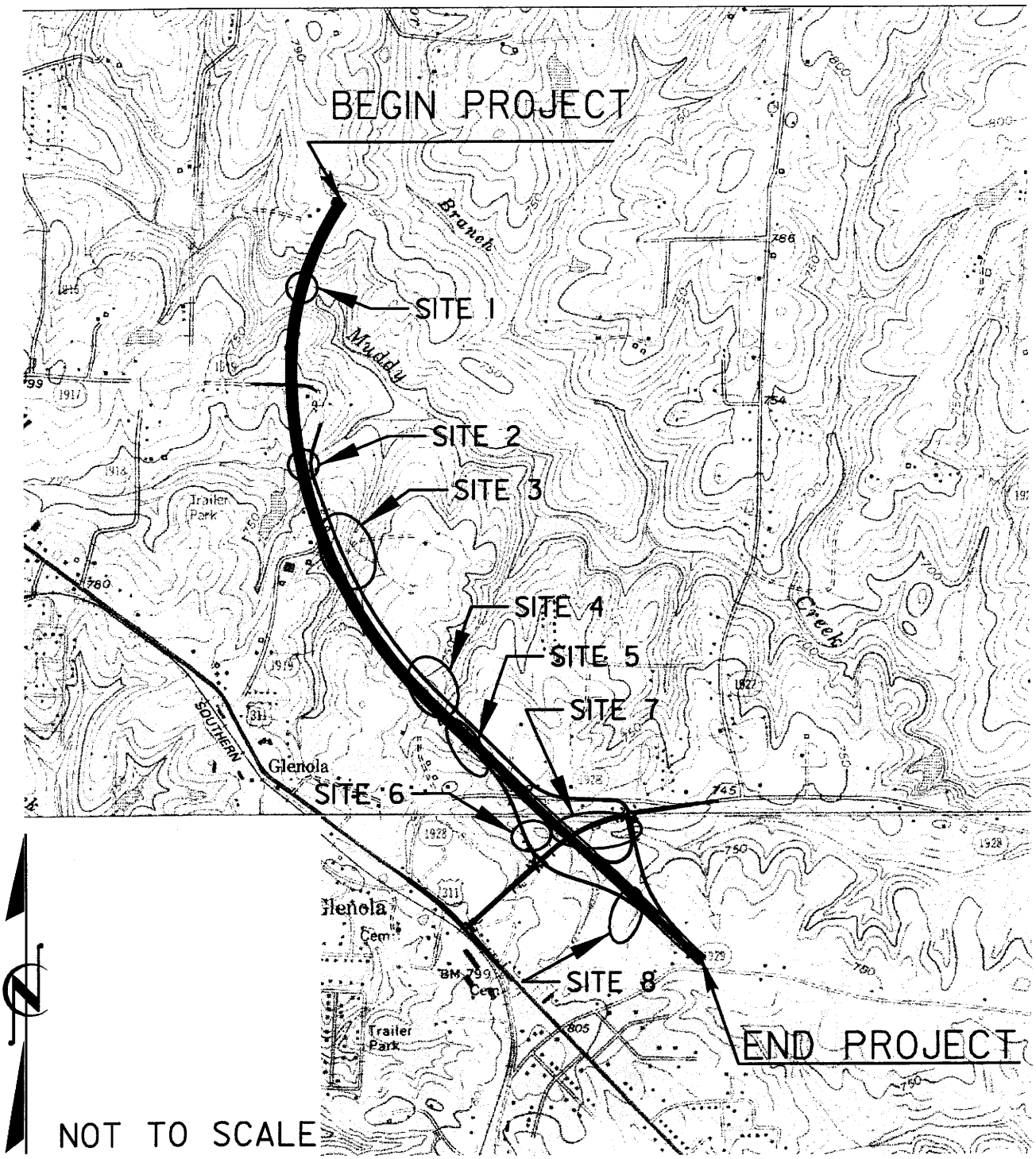
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 1 OF 46

USER: rremy
DGN: k:\4155\8\r2606a\hydraulics\VICINITY.WET
DATE: 07/14/2005

106



RANDLEMAN LAKE
WATER SUPPLY
SURFACE WATERS

LOCATION MAP

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 2 **OF** 46 1 / **2006**

USER: ej
DGN: k:\41558\r2606a\hydraulics\LOCWET
DATE: 1/30/2006

WETLAND LEGEND

WLB — WETLAND BOUNDARY

WLB WLB — WETLAND

F F — DENOTES FILL IN WETLAND

S S — DENOTES FILL IN SURFACE WATER

P P — DENOTES FILL IN SURFACE WATER (POND)

T T — DENOTES TEMPORARY FILL IN WETLAND

E E — DENOTES EXCAVATION IN WETLAND

TS TS — DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

FLOW DIRECTION

TB — TOP OF BANK

WE — EDGE OF WATER

C — PROP. LIMIT OF CUT

F — PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG — NATURAL GROUND

PL — PROPERTY LINE

TDE — TEMP. DRAINAGE EASEMENT

PDE — PERMANENT DRAINAGE EASEMENT

EAB — EXIST. ENDANGERED ANIMAL BOUNDARY

EPB — EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT

12"-48" PIPES

54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 — ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE (PSH)

LEVEL SPREADER (LS)

GRASS SWALE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 3 OF 46 1/06

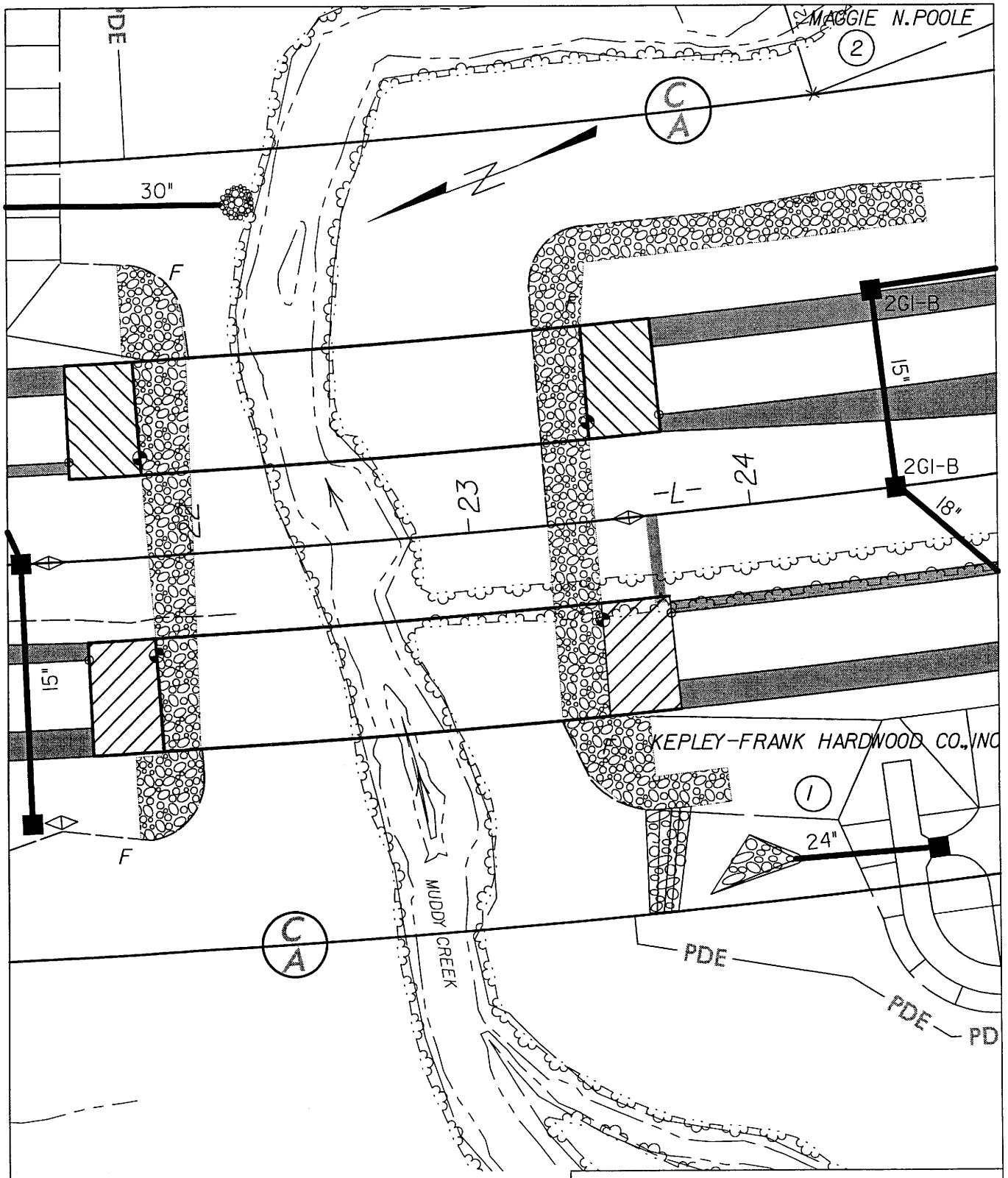
USER: rremy
DGN: k:\4\558\r-2606a\Hydraulics\new_legend1.dgn
DATE: 07/14/2005

R-2606A

HAZARDOUS SPILL BASINS

Location	Drainage Areas (Acres)	Basin Surface Area (SF)	Qp2 (cfs)
-L-Sta. 21+50 LT	8.15	13764	15.94
-L- Sta. 24+50 RT	3.96	10400	8.2
-L- Sta. 44+50 RT	11.63	10435	28.9
-L- Sta. 47+50 RT	7.01	3632	17.9
-L- Sta. 57+00 LT	13.23	10486	28.3
-L- Sta. 79+00 LT	13.08	21126	22.7
-L- Sta. 89+00 RT	15.4	9689	**(Qp5) 15.4**
-L- Sta. 111+34 RT	9.91	12878	16.5

Location	Qp2 Velocity (fps)	Treatment Provided	Comments
-L- Sta. 31+02 LT	**1.55**	Preformed Scour Hole	
-Y- Sta. 16+60 LT	Exempt due to existing drainage way		
-SR- Sta. 13+20 LT		Dissipator Basin	Exempt
-L- Sta. 59+44 LT			Cross Pipe/ Exempt
-L- Sta. 81+70 LT			Cross Pipe/ Exempt
-L- Sta. 81+78 LT			Cross Pipe/ Exempt
-SR-Sta. 56+57 LT to	Exempt due to existing drainage way		
-SR- Sta. 63+50 LT	Exempt due to existing drainage way		
-L- Sta 110+55 LT			Cross Pipe/Exempt
-L- Sta. 110+50 LT	No Buffer 6/12/2001 Field Inspection		
-L- Sta. 112+90 LT			Cross Pipe/Exempt
-L- Sta. 116+63 RT	**0.68**	Earth Berm W/ Level Spreader	
-Ramp A- Sta 10+44 RT		Dry Det. Basin	Exempt
'-Ramp A- Sta 13+88 RT	-		Cross Pipe/Exemp
'-Ramp A- Sta 14+55 RT	-		Cross Pipe/Exemp
-Y1- Sta. 37+96 RT	**3.01**	Exempt due to existing ditch	
-Y1- Sta. 38+56 RT	Exempt due to entering ditch before buffer		
-Loop A- Sta. 4+10 RT	Exempt due to existing drainage way		



0 50 ft 100 ft

PLAN VIEW SITE 1

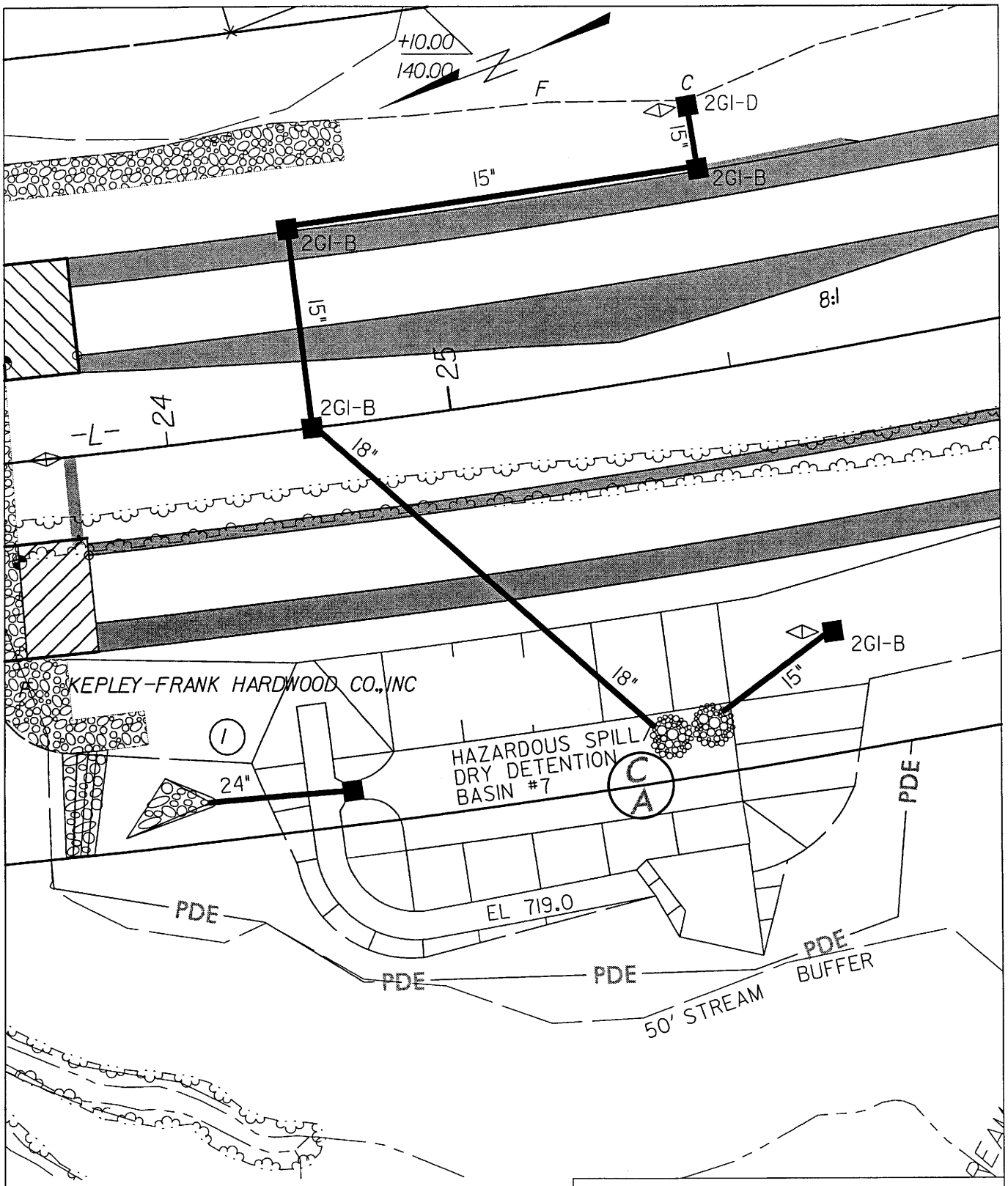
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 5 **OF** 46 1.106

USER: rrainy
DGN: KH1559V-2606aVHydraulicsVUNET
DATE: 07/14/2005



0 50 ft 100 ft

PLAN VIEW SITE 1

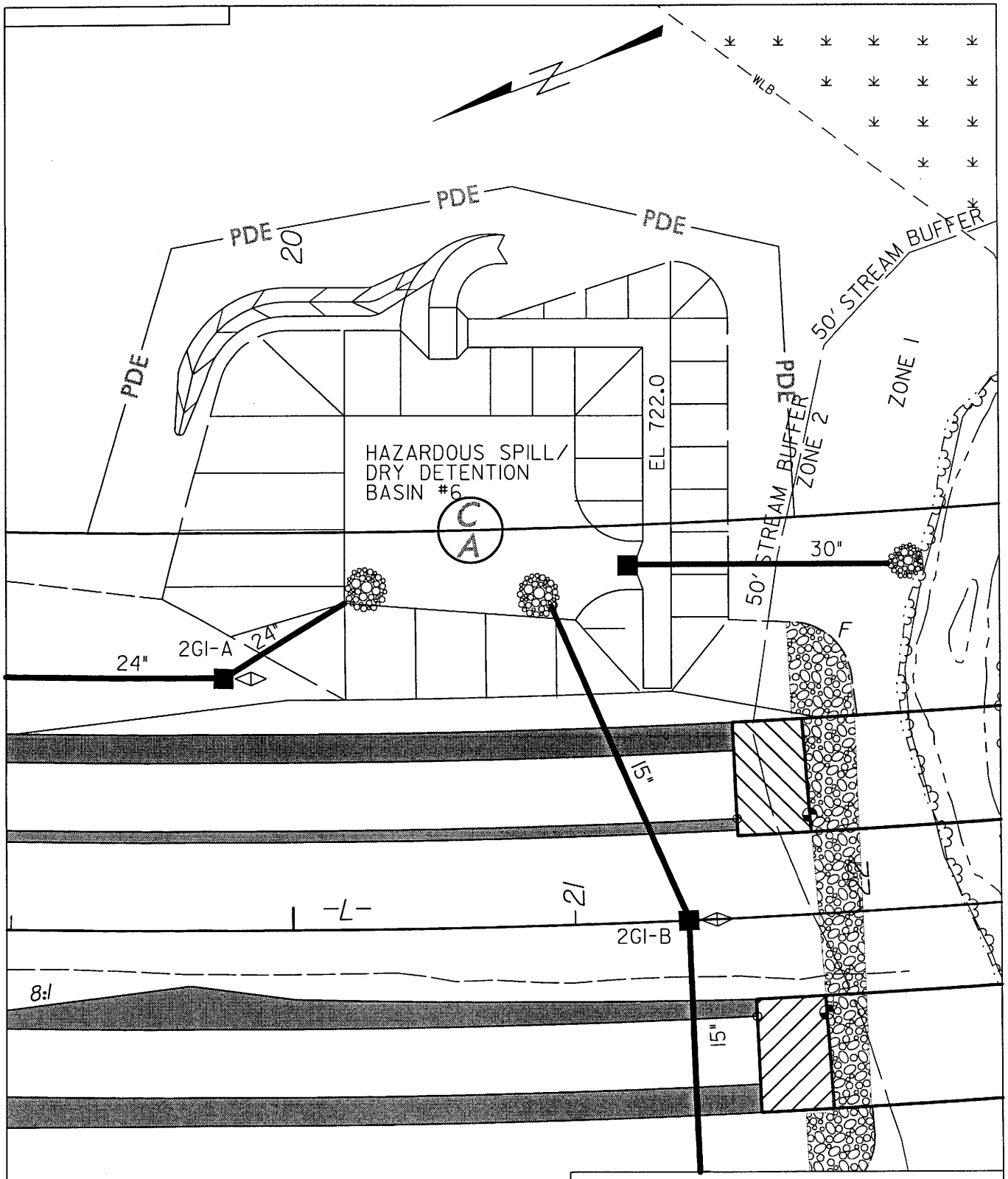
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 6 **OF** 46 1/06

USER: rwm
DGN: 6\8158\r2606\hydraulics\basin7_surfacewinterwet
DATE: 07/14/2005



0 50 ft 100 ft

PLAN VIEW SITE 1

NCDOT

DIVISION OF HIGHWAYS

RANDOLPH COUNTY

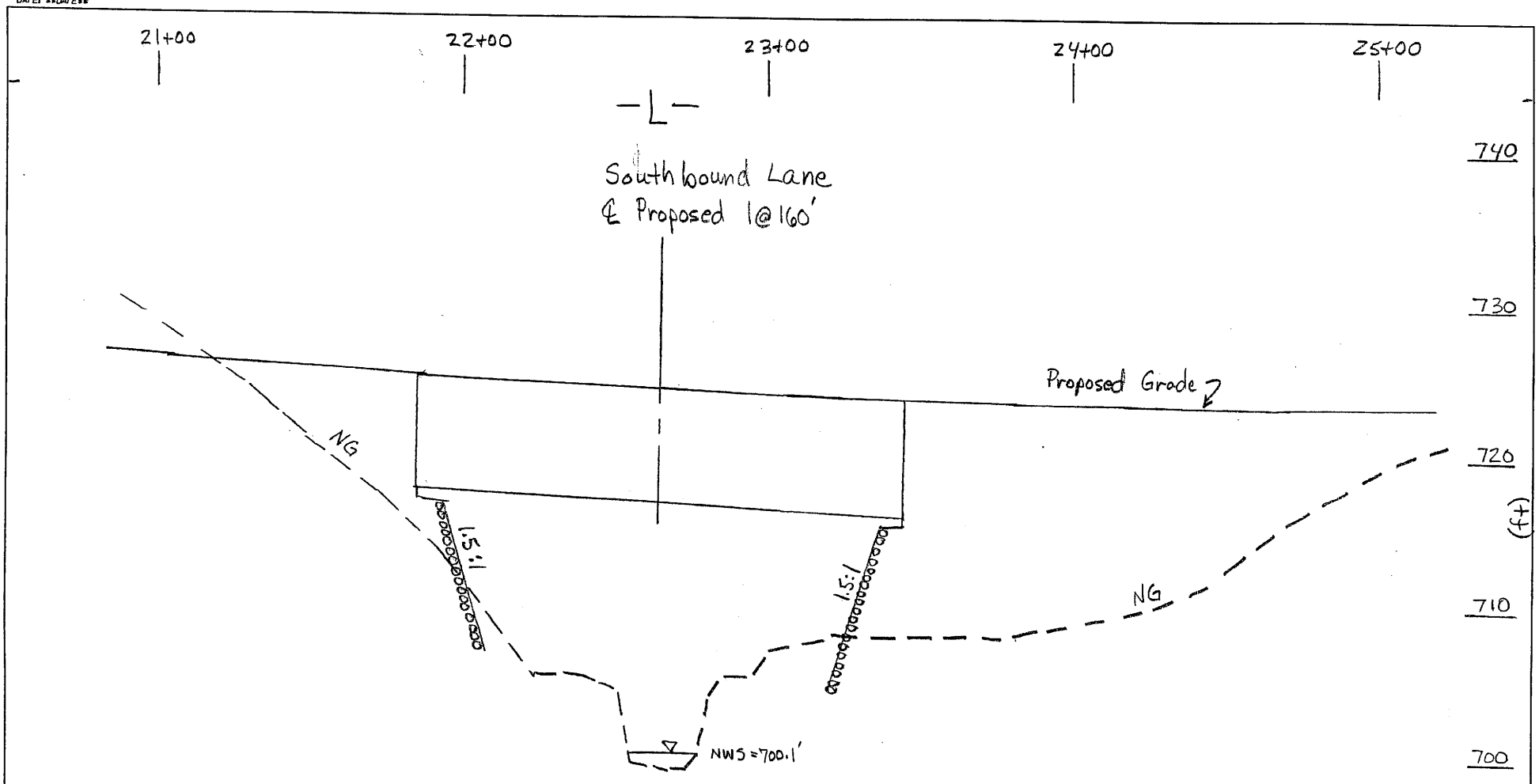
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1929

SHEET 7 OF 46 / 106

USER: rwm
DGN: 8.1571501_R2606A\hydraulics\basin6_surfacewater.wet
DATE: 07/14/2005

USER: $$USER$$
DGN: $$DGN$$
DATE: $$DATE$$



PROFILE VIEW
SITE 1

0 50 ft 100 ft HORIZ

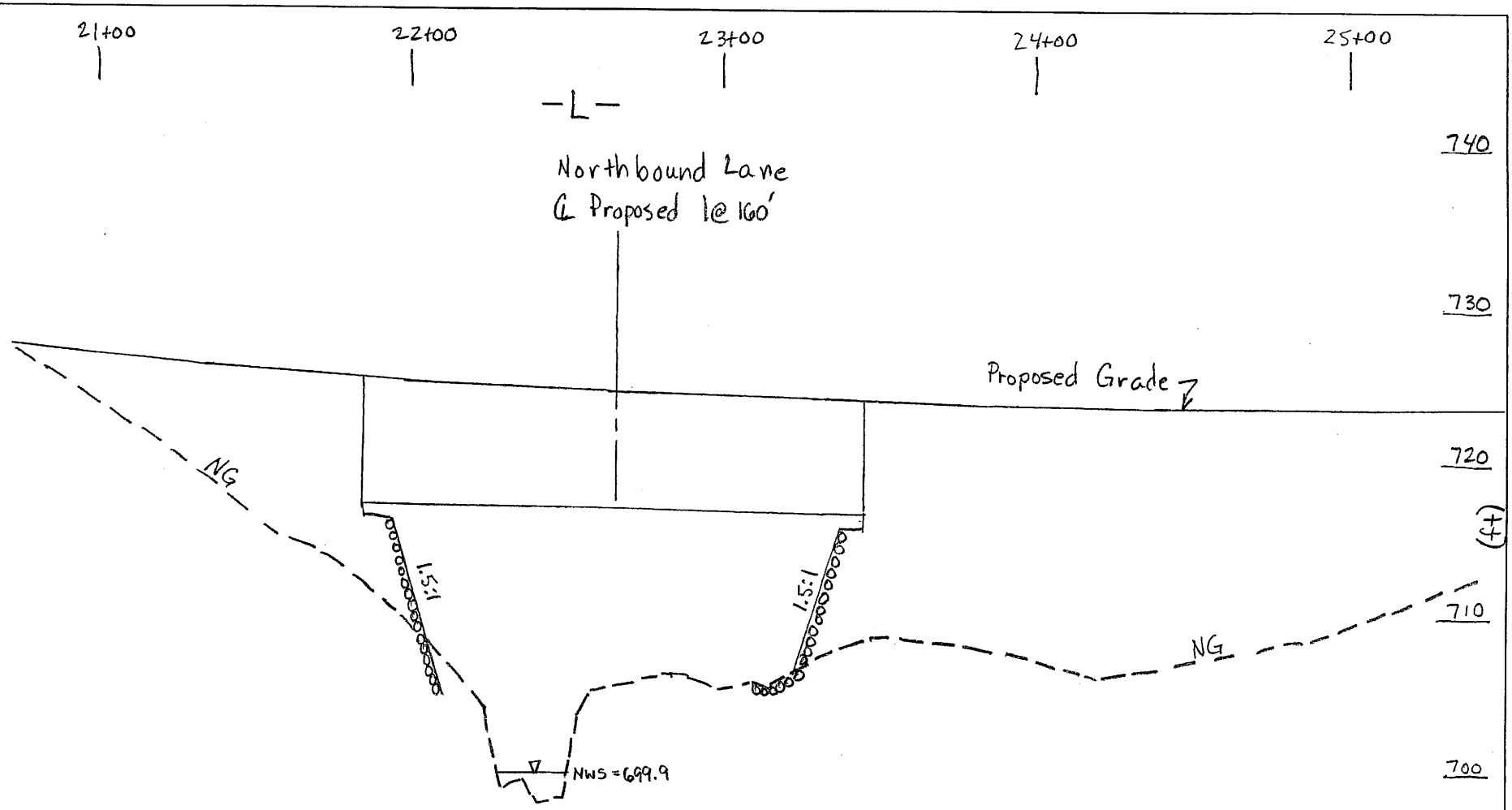
0 10 ft 20 ft VERT

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 8 **OF** 46 / 106

USER: $$USER$$
DGN: $$DGN$$
DATE: $$DATE$$



PROFILE VIEW
SITE 1

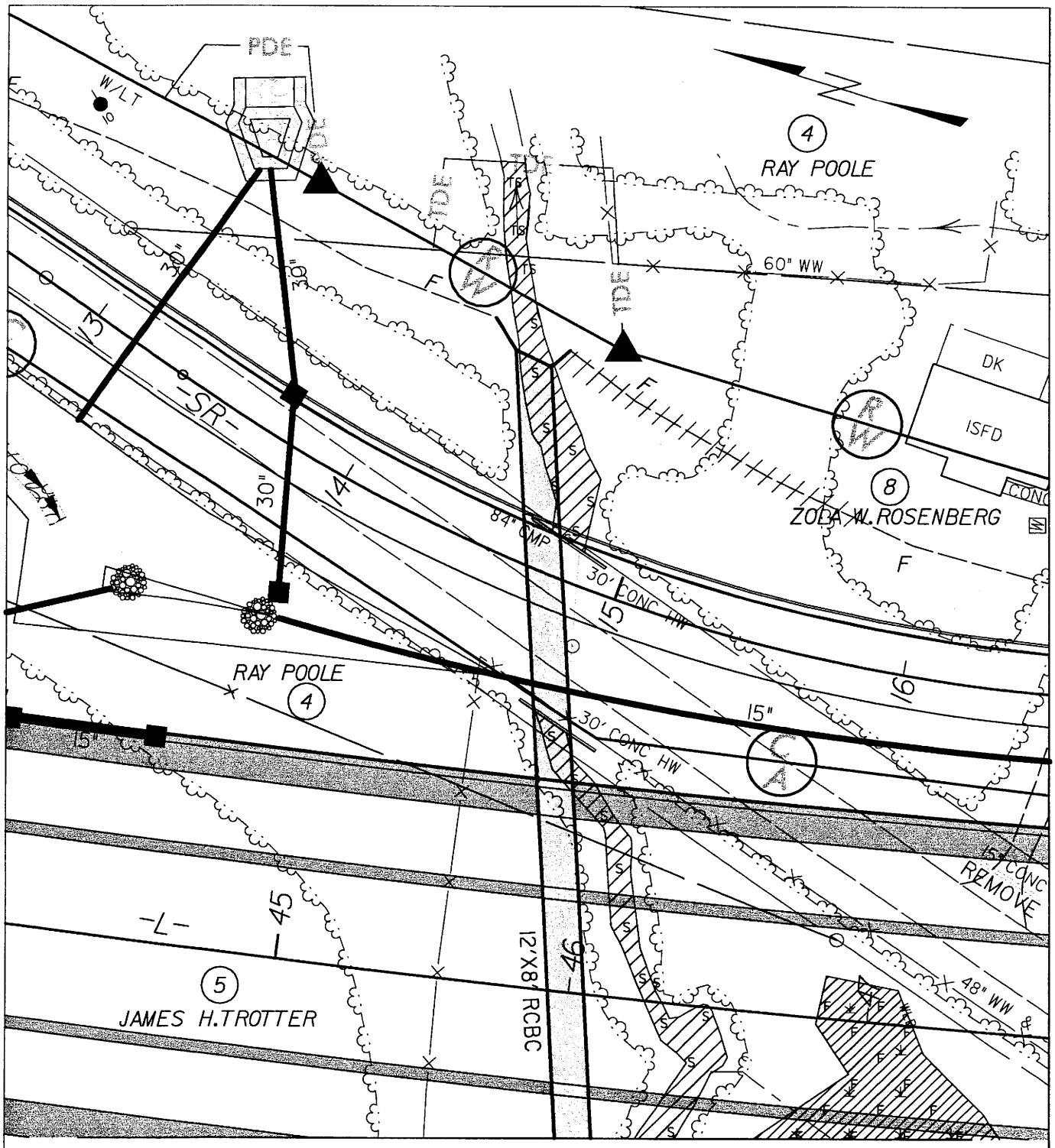
0 50 ft 100 ft HORIZ

0 10 ft 20 ft VERT

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 9 **OF** 46 / 106



MATCH LINE A

0 50 ft 100 ft

PLAN VIEW SITE 2

NCDOT

DIVISION OF HIGHWAYS

RANDOLPH COUNTY

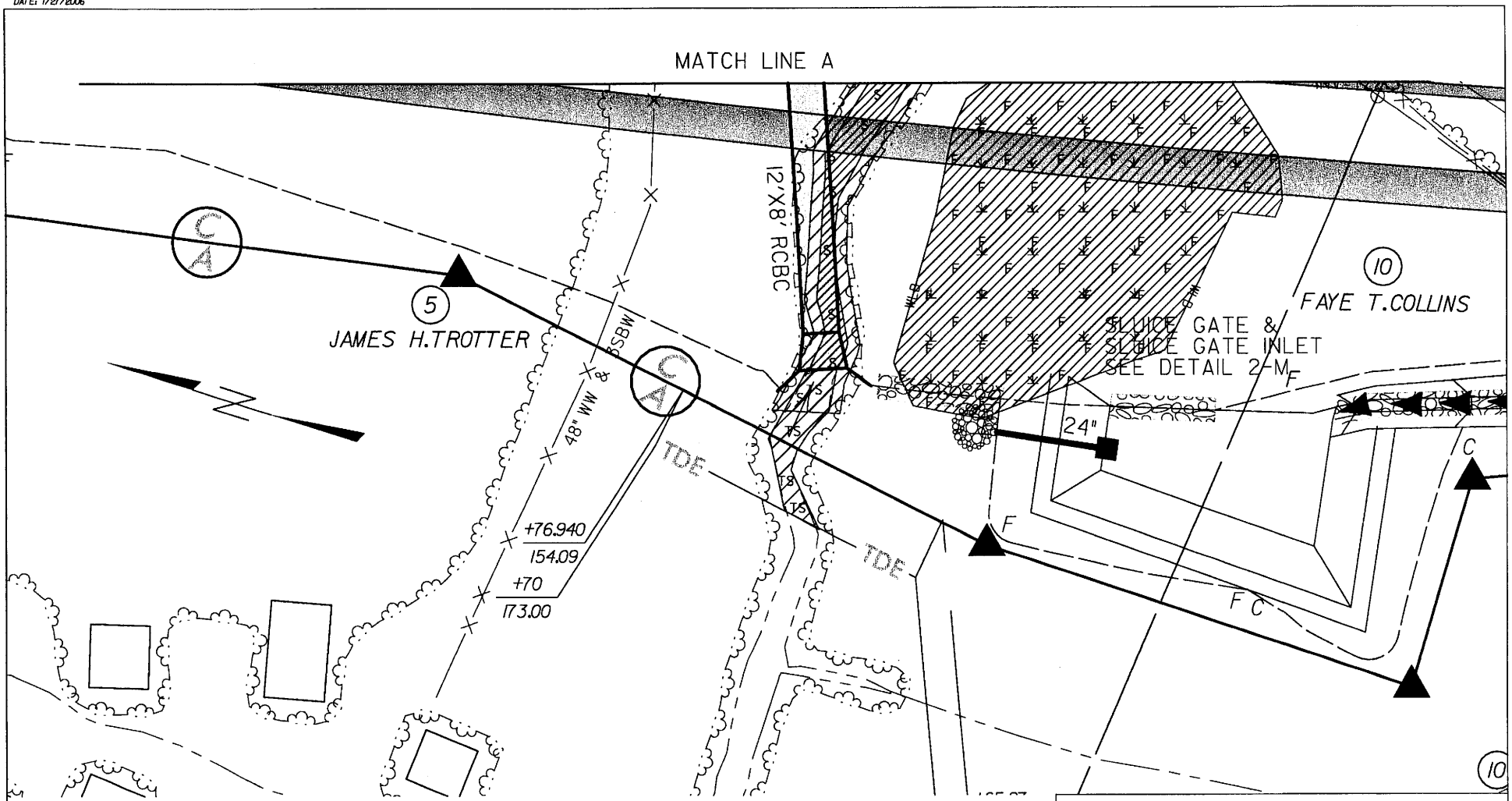
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1929

SHEET 10 **OF** 46 **/ 2006**

USER: ej
DGN: k:\r2606\r2606hydraulics\2pwr
DATE: 1/31/2006

USER: aj
DGN: h:\41558\r-2606d\hydraulics\2b.wrel
DATE: 1/27/2006



PLAN VIEW
SITE 2

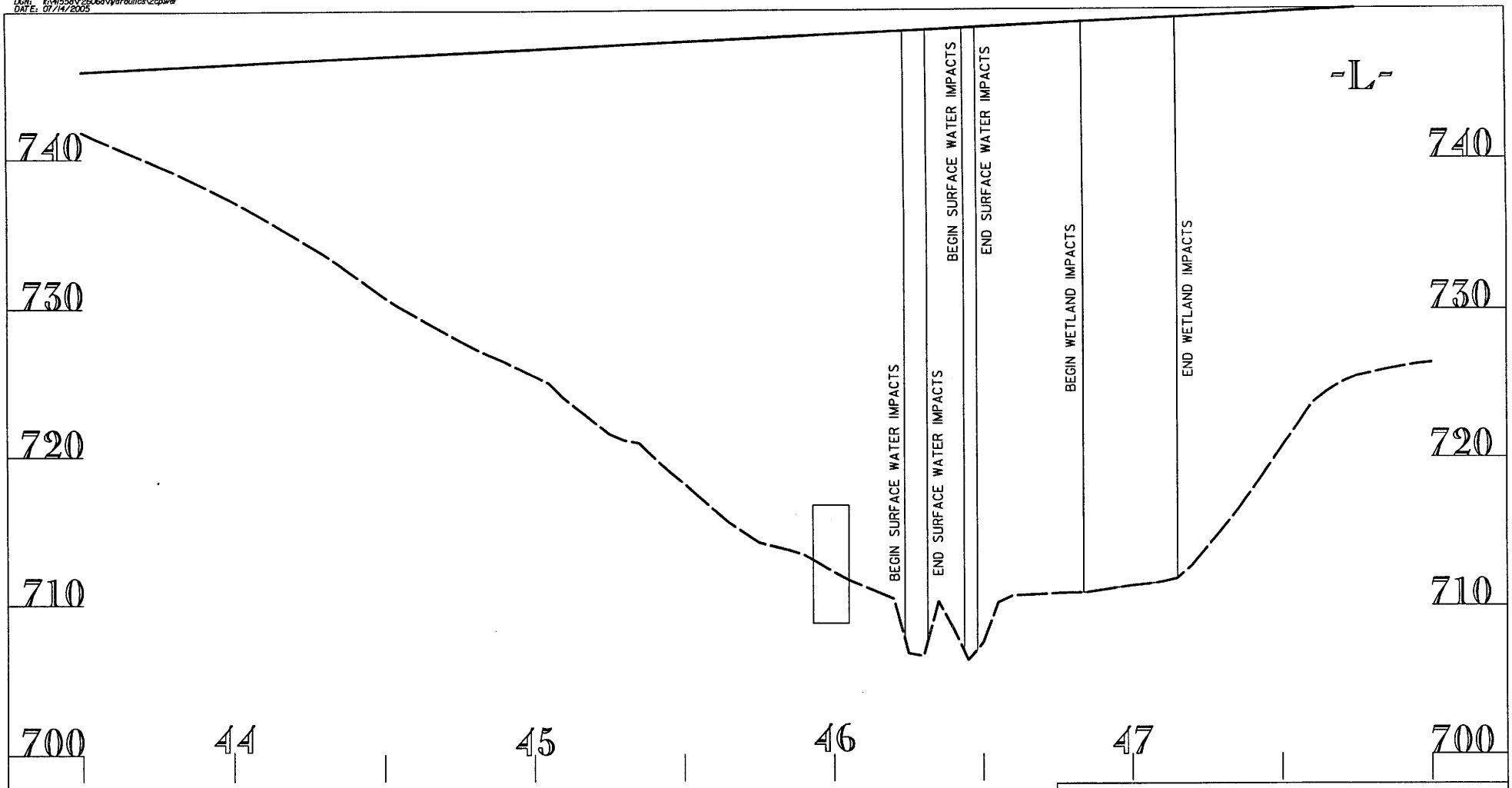
0 50 ft 100 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 11 **OF** 46 **/ 2006**

USER: rremy
DGN: k:\41558\r2606a\hydraulics\2cpwet
DATE: 07/14/2005



PROFILE VIEW
SITE 2

HORIZONTAL SCALE: 0 — 50 ft — 100 ft

VERTICAL SCALE: 0 — 10 ft — 20 ft

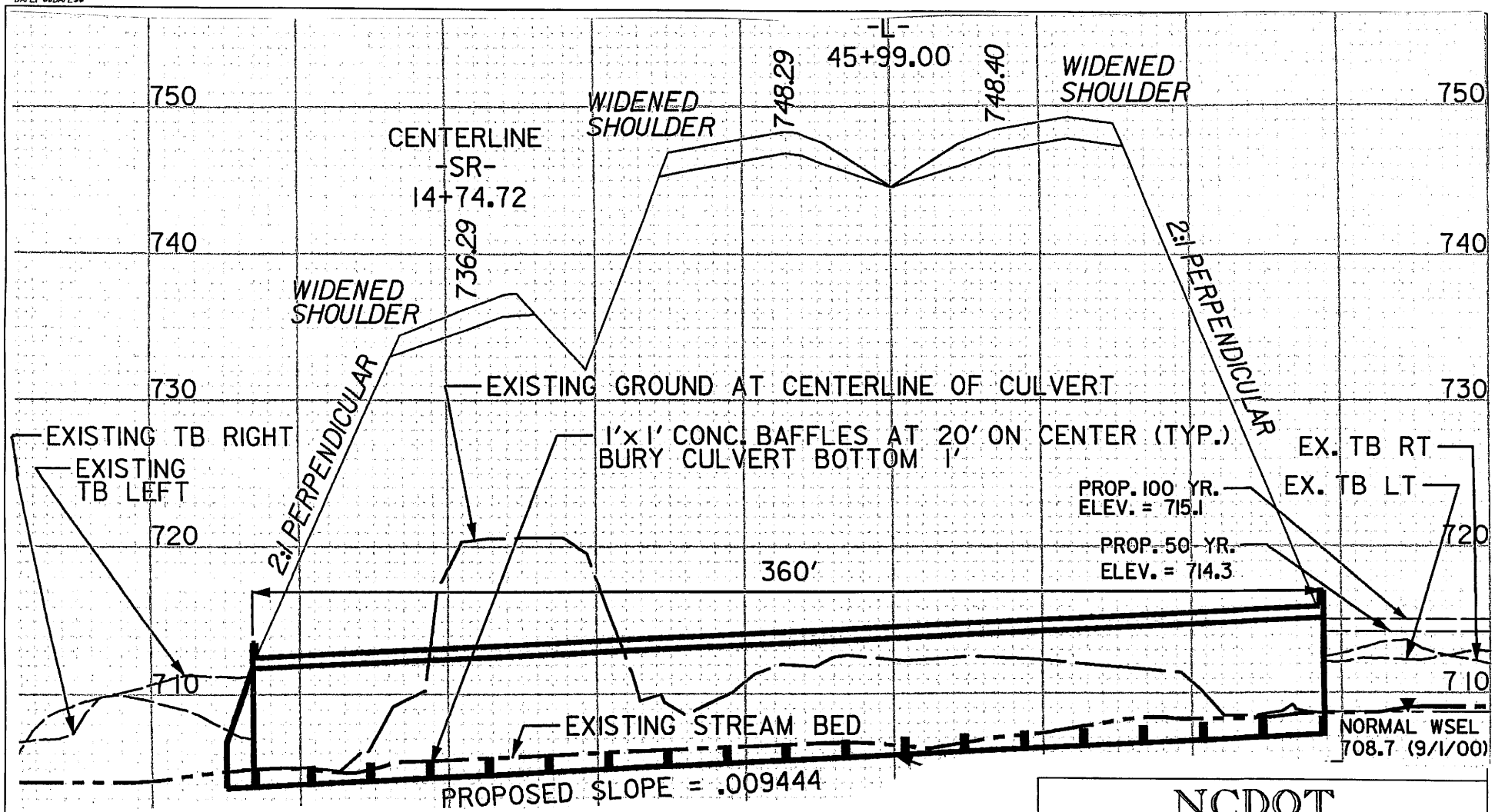
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 12 **OF** 46 1:06

USER: $$USER$$
DGN: $$DGN$$
DATE: $$DATE$$



0 50 ft 100 ft HORIZ

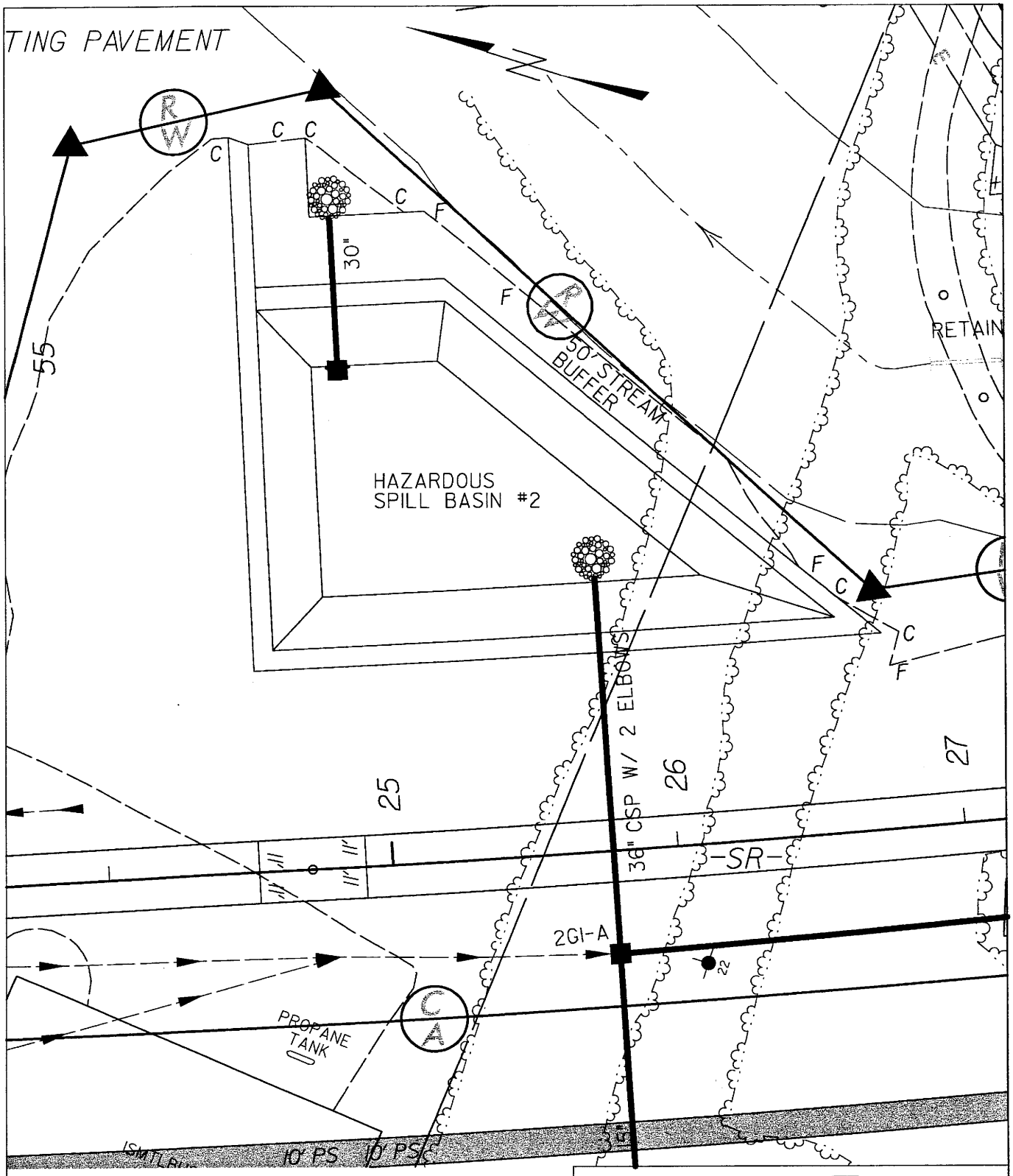
0 10 ft 20 ft VERT

PROFILE VIEW
SITE 2

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 13 OF 46 1/06



0 50 ft 100 ft

PLAN VIEW SITE 3

NCDOT

DIVISION OF HIGHWAYS

RANDOLPH COUNTY

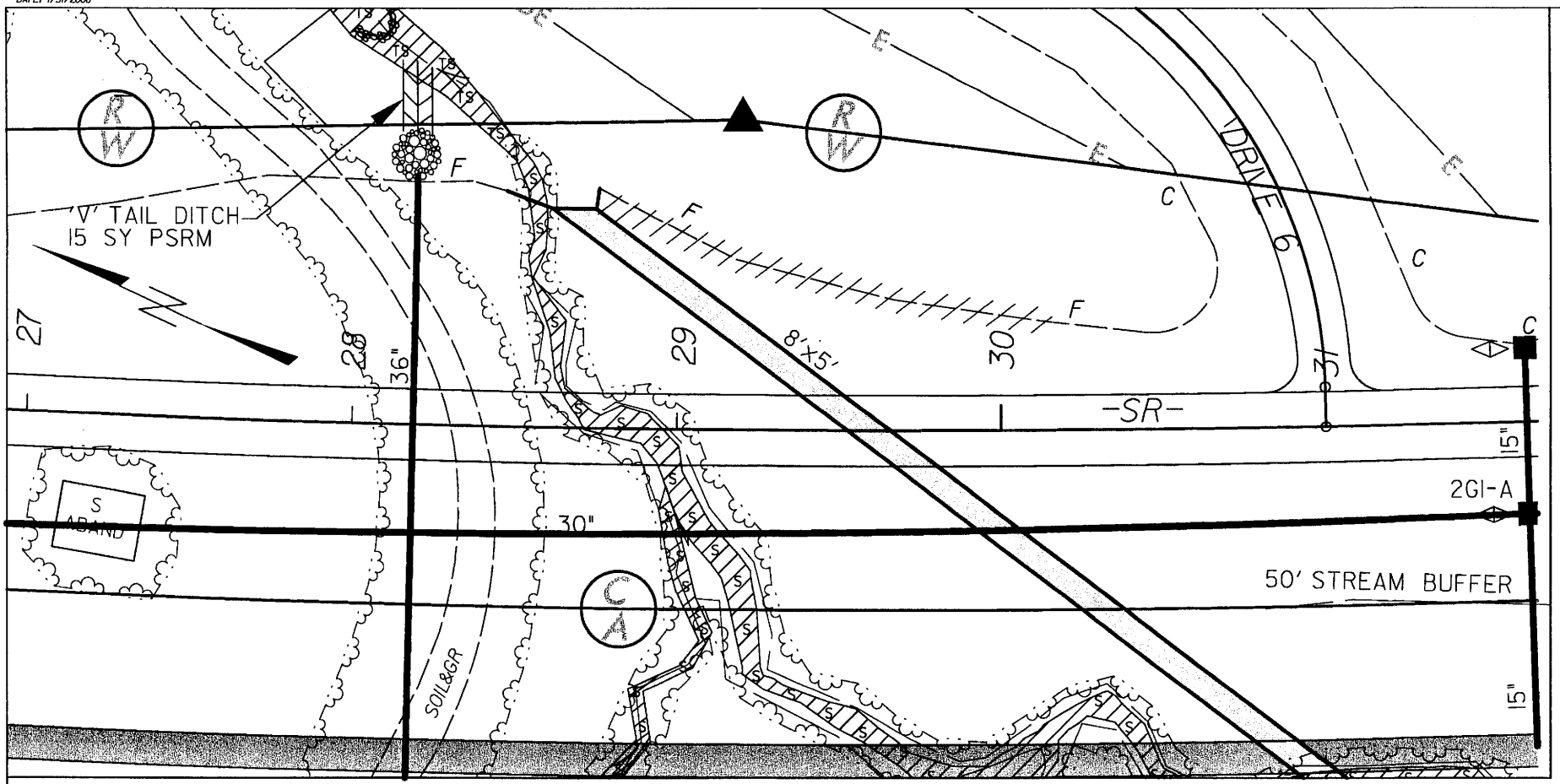
PROJECT: 8.1571501 (R-2606 A)

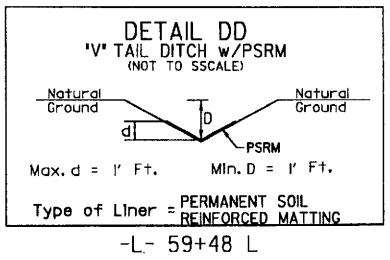
US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 14 **OF** 46 1 **/2006**

USER: al
DGN: R:\R2606\hydraulics\basin2_surfacewater.wet
DATE: 1/30/2006

USER: a)
DGN: h:\41558\r2606a\hydraulics\3a.wet
DATE: 1/31/2006





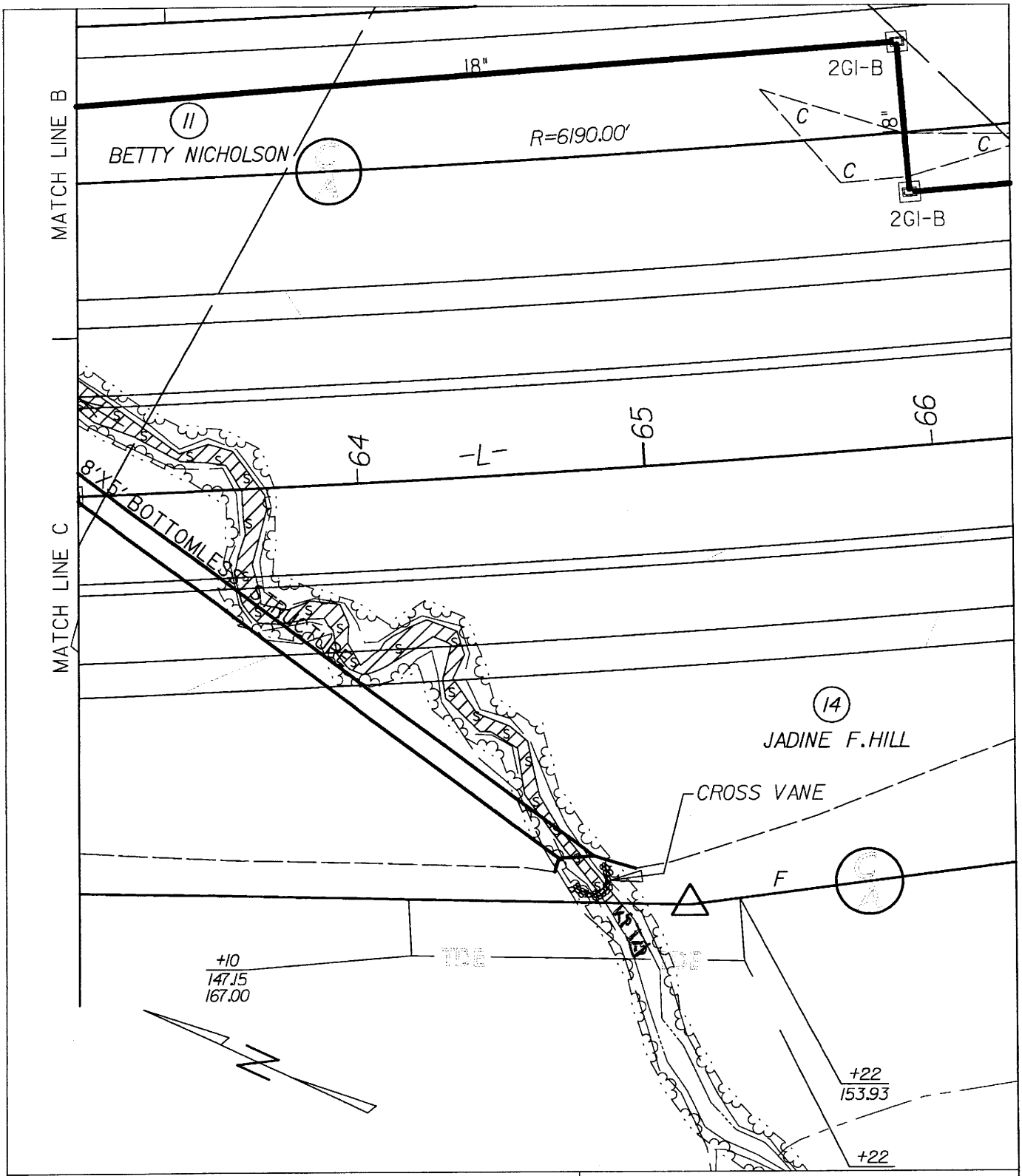
PLAN VIEW
SITE 3

0 50 ft 100 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 15 **OF** 46 / / **2006**



0 50 ft 100 ft

PLAN VIEW SITE 3

NCDOT

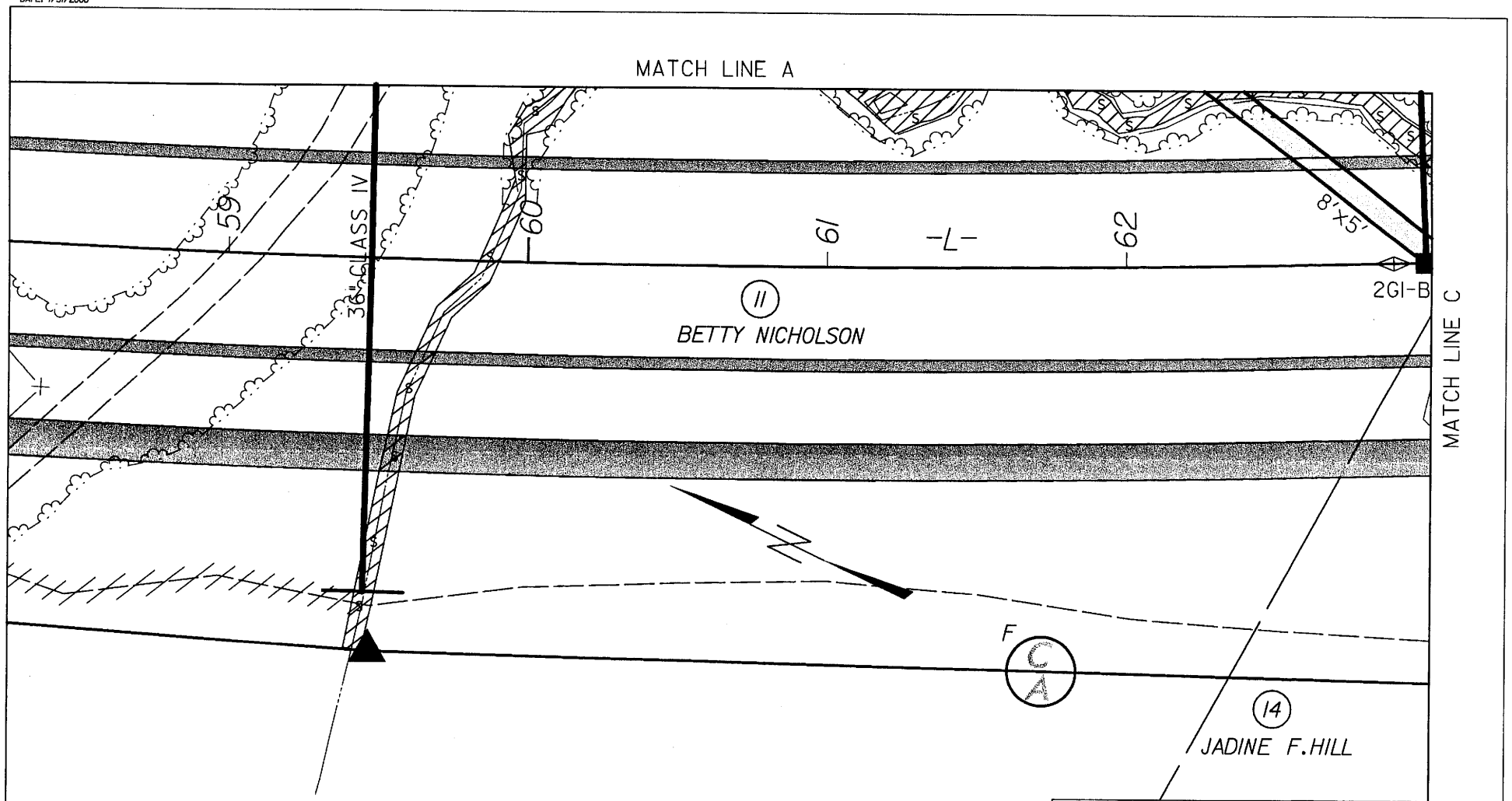
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 16 OF 46 / /2006

USER: ej
DGN: h:\4558\r2606\hydr\auf\ca\3.dgn
DATE: 1/27/2006

USER: al
DGN: h:\41558\r2606\hydraulics\3b.wet
DATE: 1/31/2006



PLAN VIEW
SITE 3

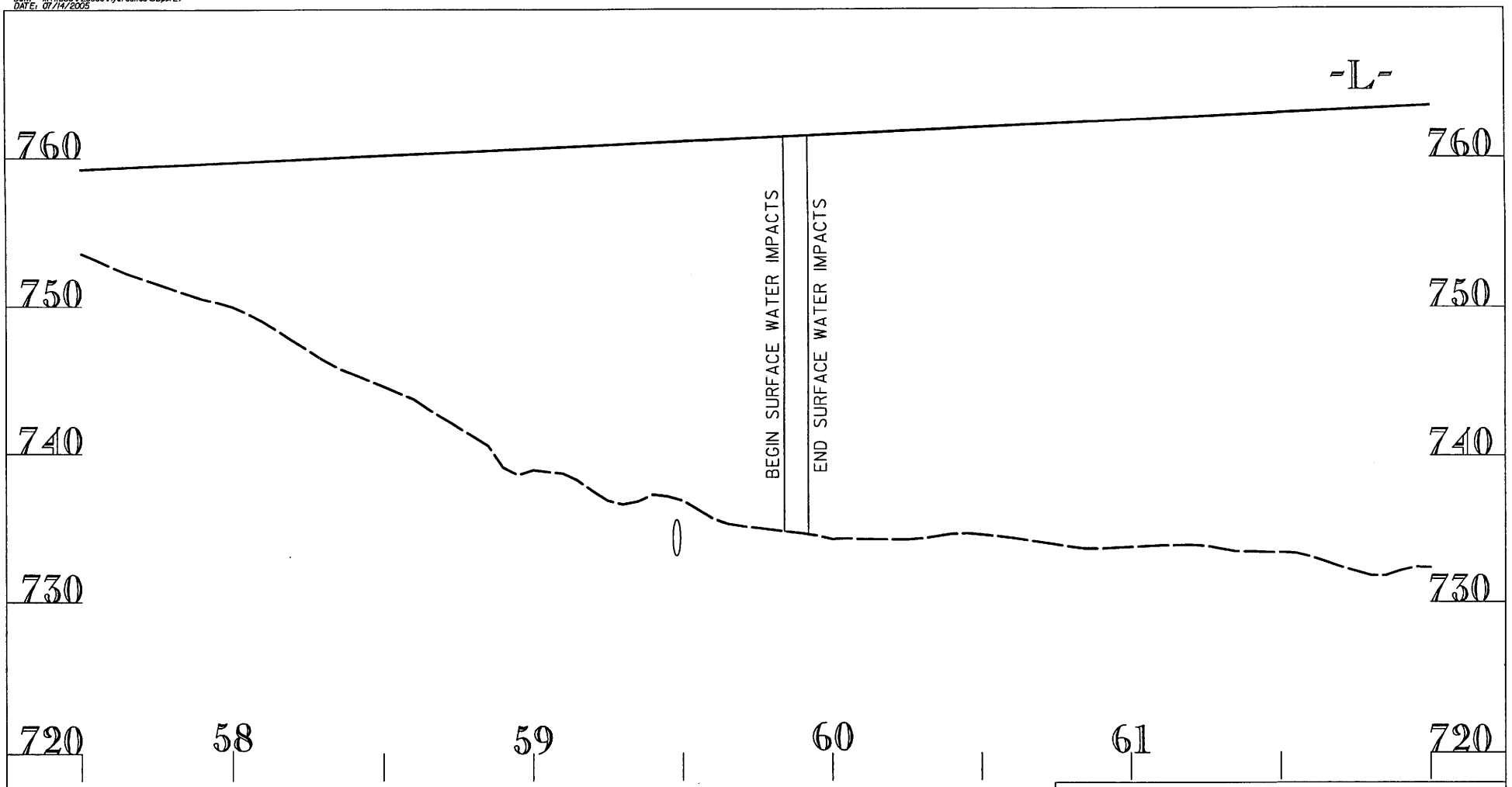
0 50 ft 100 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 17 **OF** 46 1 / **2006**

USER: rtemy
DGN: k:\41558\r2606d\Hydraulics\3DpWET
DATE: 07/14/2005



PROFILE VIEW
SITE 3

HORIZONTAL SCALE 0 50 ft 100 ft

VERTICAL SCALE 0 10 ft 20 ft

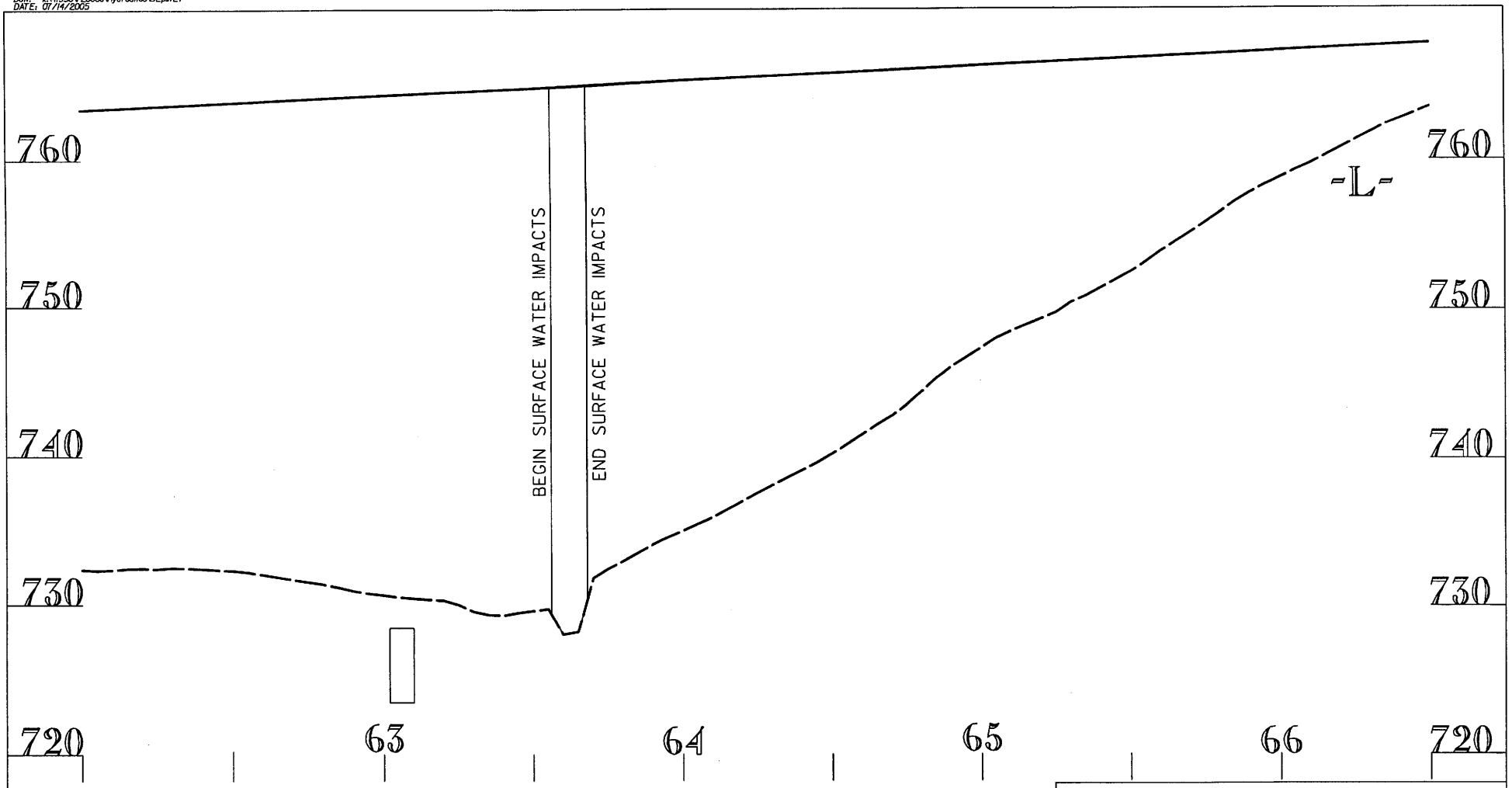
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 18 **OF** 46 1/108

USER: rremy
DGN: k:\4558\r2606a\Hydraulics\3Ep.WET
DATE: 07/14/2005



PROFILE VIEW
SITE 3

HORIZONTAL SCALE 0 50 ft 100 ft

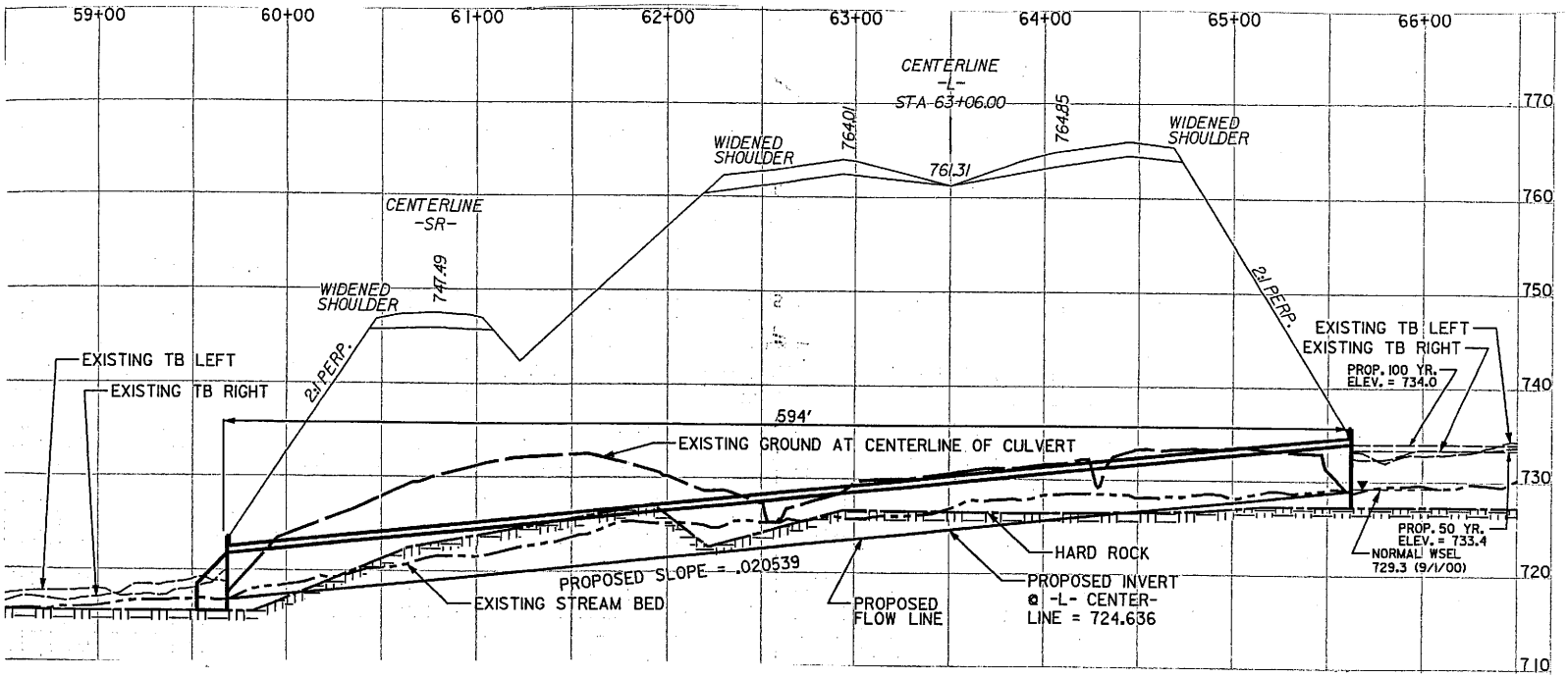
VERTICAL SCALE 0 10 ft 20 ft

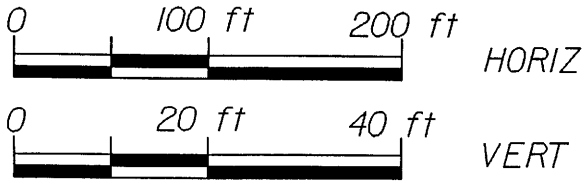
NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 19 **OF** 46 / 106

USER: $$USER$$
DGN: $$DGN$$
DATE: $$DATE$$





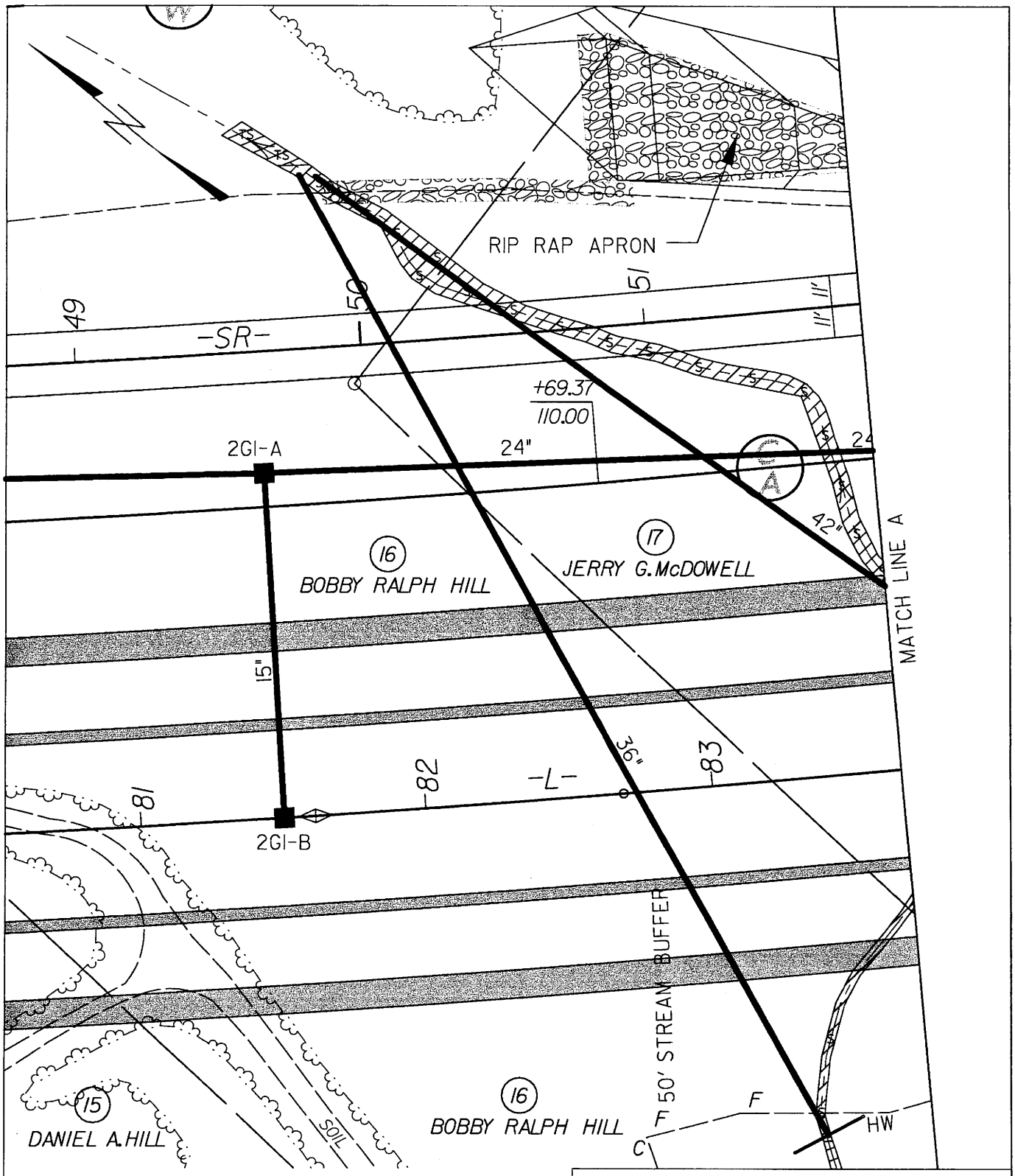
PROFILE VIEW
SITE 3

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 26 **OF** 46 1:106



0 50 ft 100 ft

PLAN VIEW SITE 4

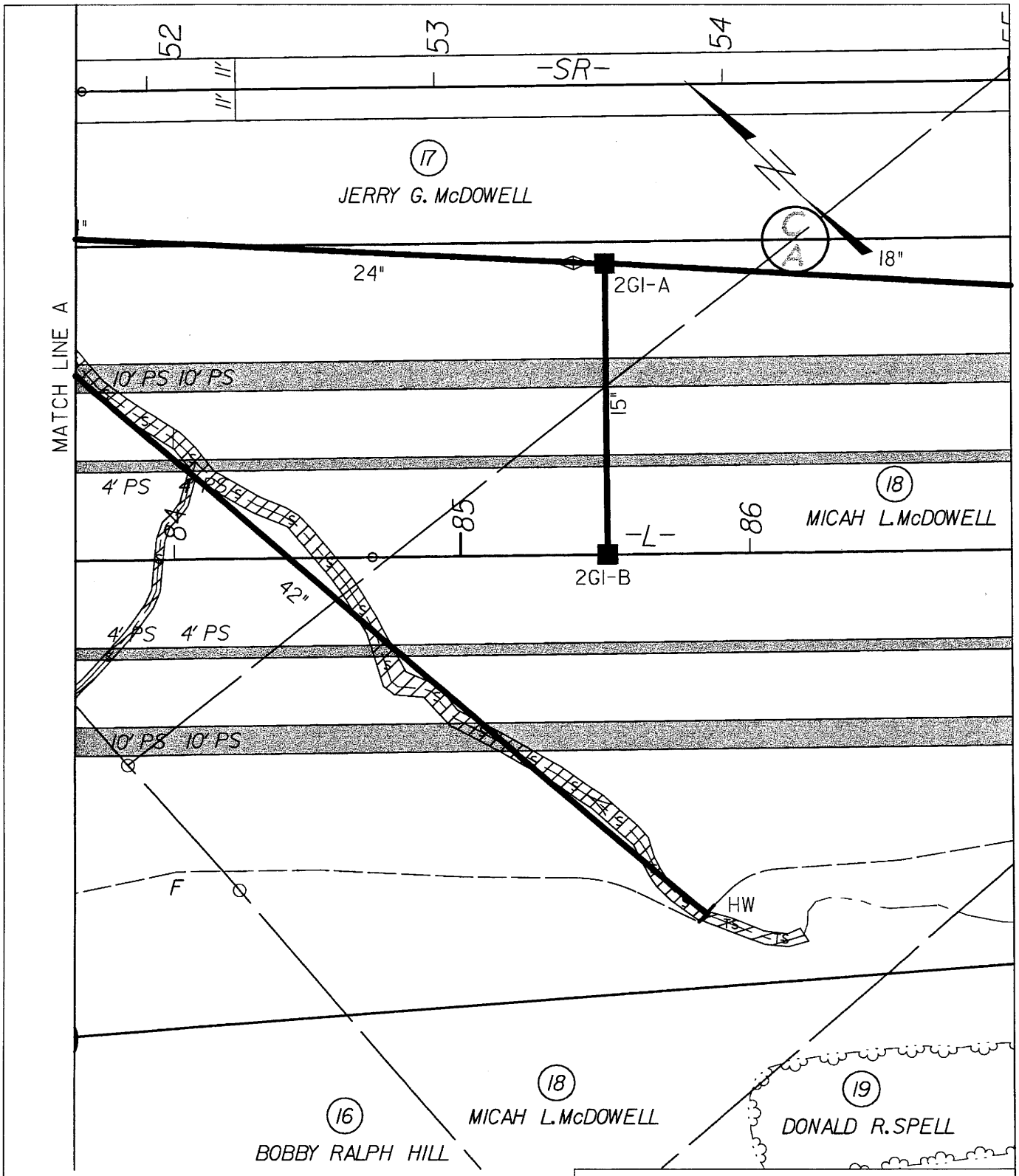
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 21 **OF** 46 / 1 / **2006**

USER: aj
DGN: N:\MSSR\r2606\hydraulics\4.dgn
DATE: 1/31/2006



0 50 ft 100 ft

PLAN VIEW SITE 4

NCDOT

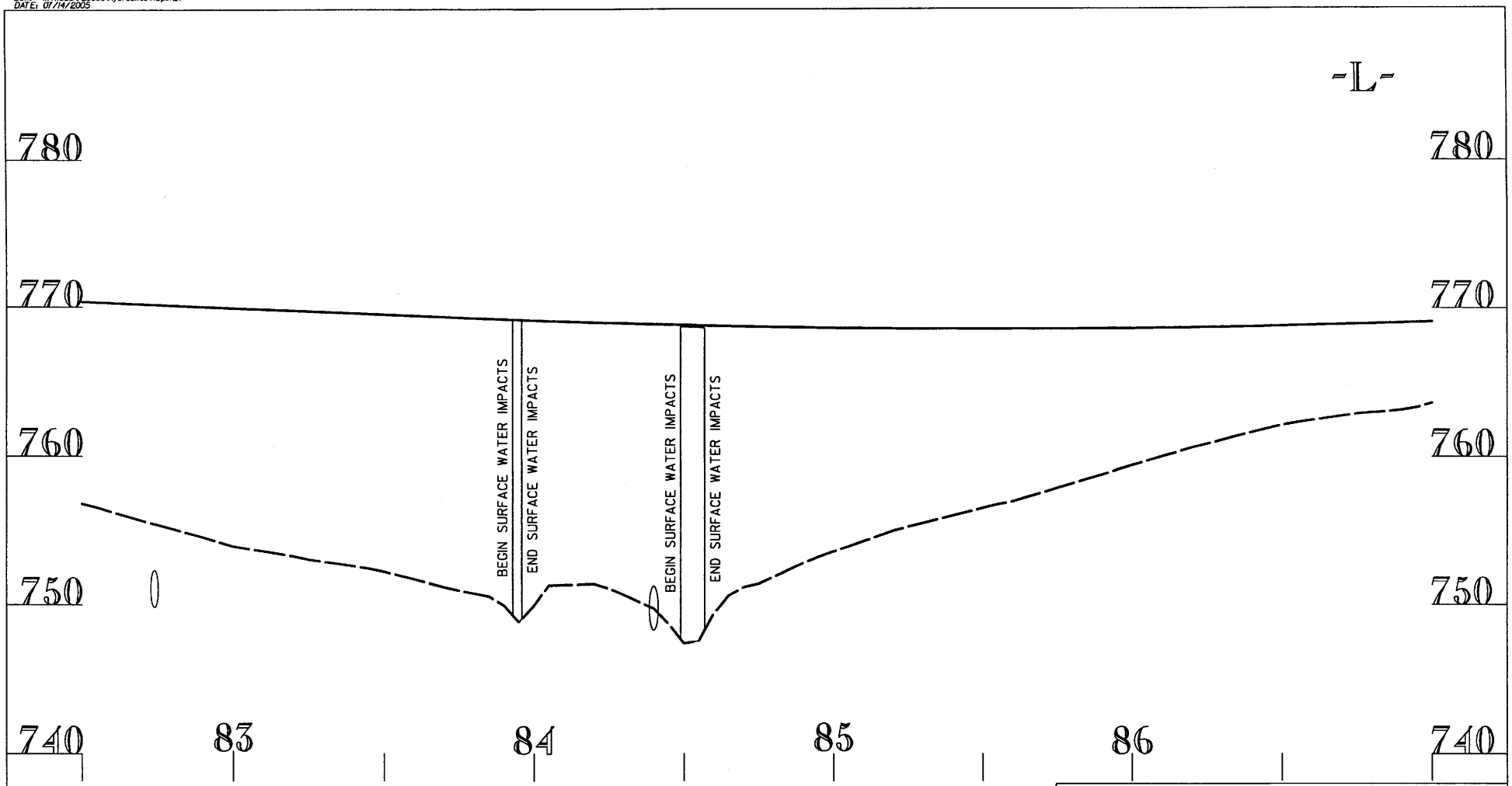
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 22 **OF** 46 / **/2006**

USER: el
DGN: R:\41571501\r2606a\hydraulics\4tower
DATE: 1/31/2006

USER: rrem
DGN: k:\4\558\r2606a\Hydraulics\4Dp.WET
DATE: 07/14/2005



PROFILE VIEW
SITE 4

HORIZONTAL SCALE: 0 — 50 ft — 100 ft

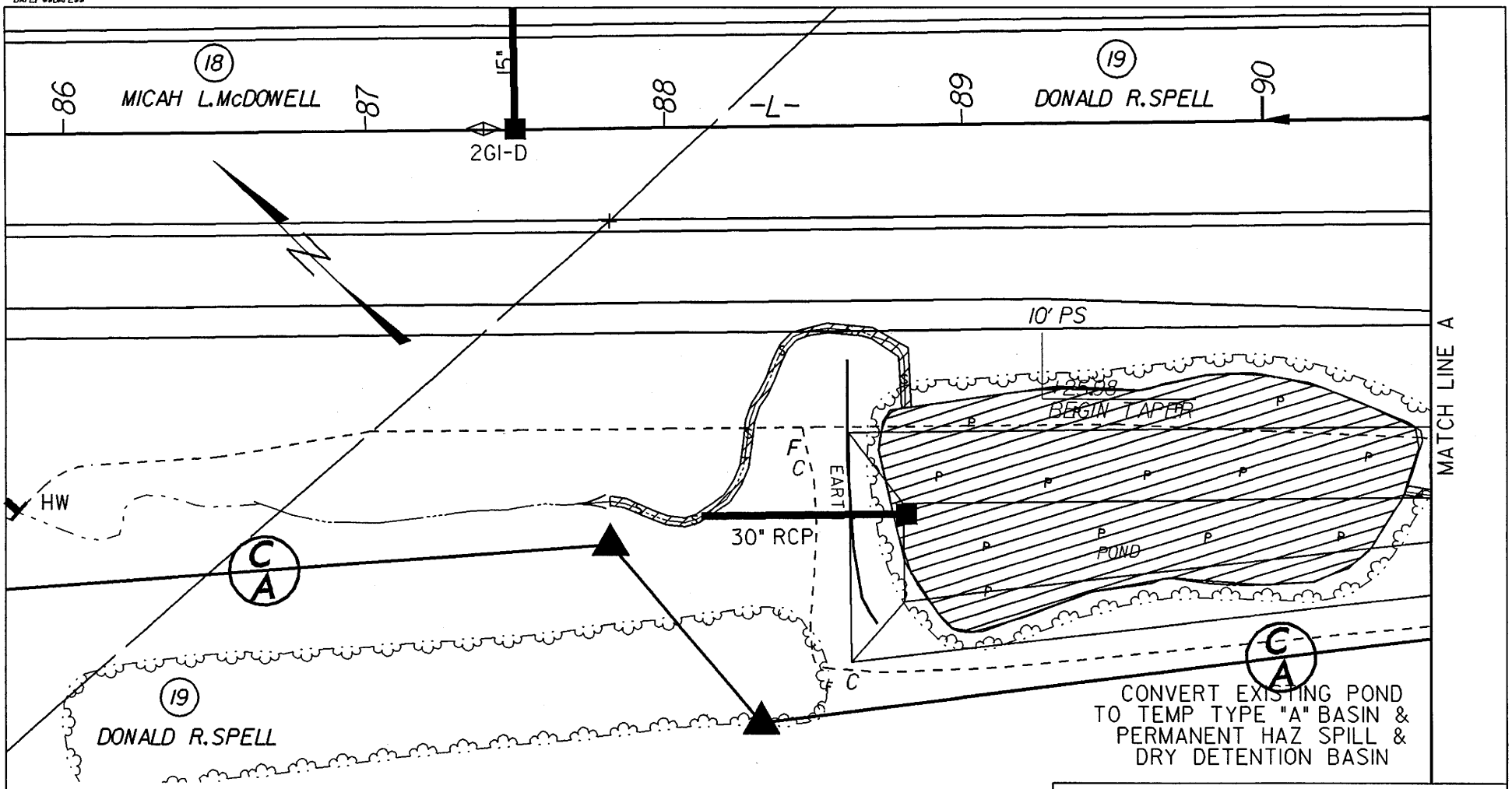
VERTICAL SCALE: 0 — 10 ft — 20 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 23 **OF** 46 / / **2005**

USER: $$USER$$
DGN: $$DGN$$
DATE: $$DATE$$



PLAN VIEW
SITE 5

0 100 ft 200 ft HORIZ

0 20 ft 40 ft VERT

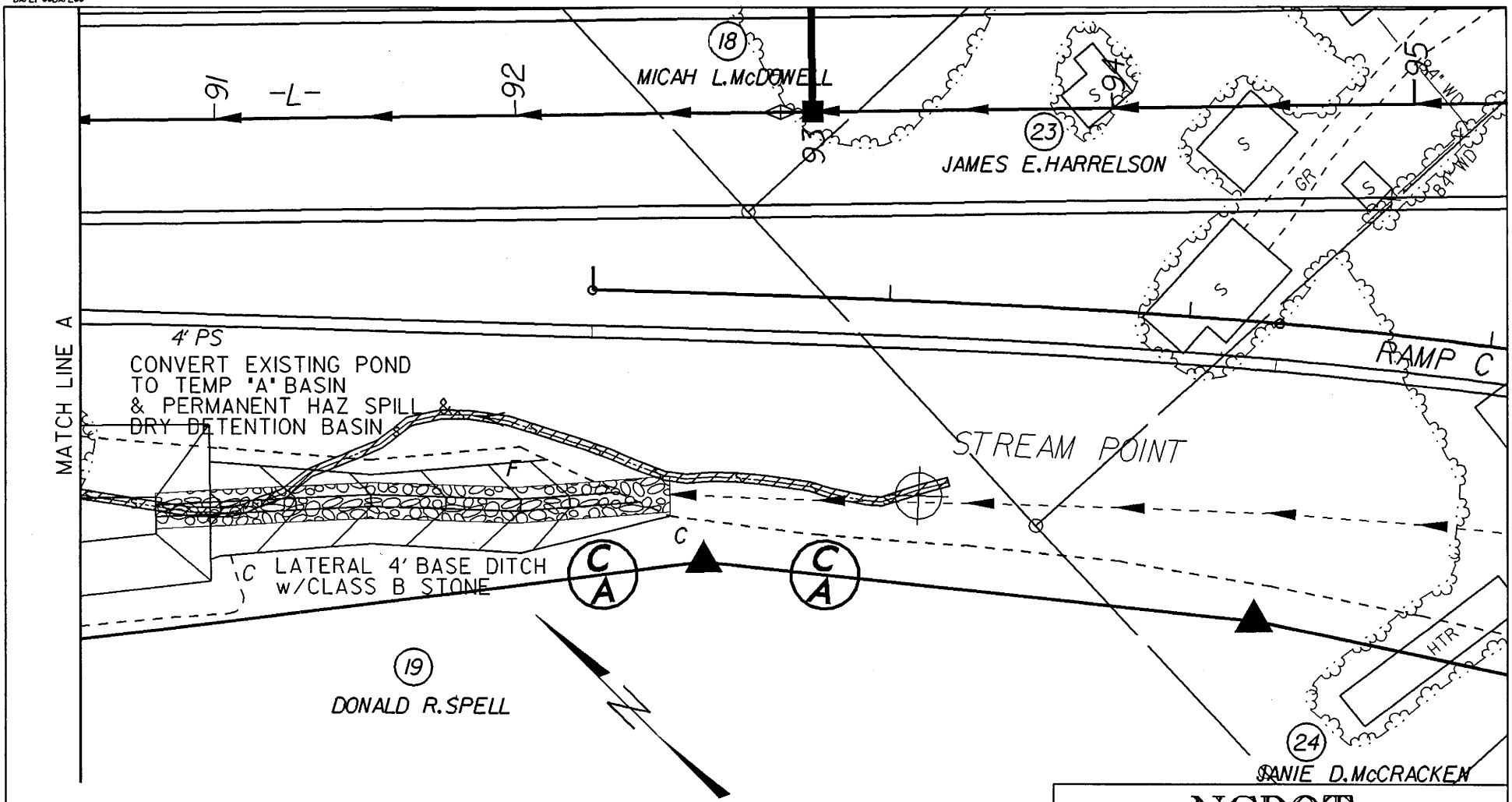
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 24 **OF** 46 1/02

USER: $$USER$$
CONC: $$CONC$$
DATE: $$DATE$$



PLAN VIEW
SITE 5

0 100 ft 200 ft HORIZ

0 20 ft 40 ft VERT

NCDOT

DIVISION OF HIGHWAYS

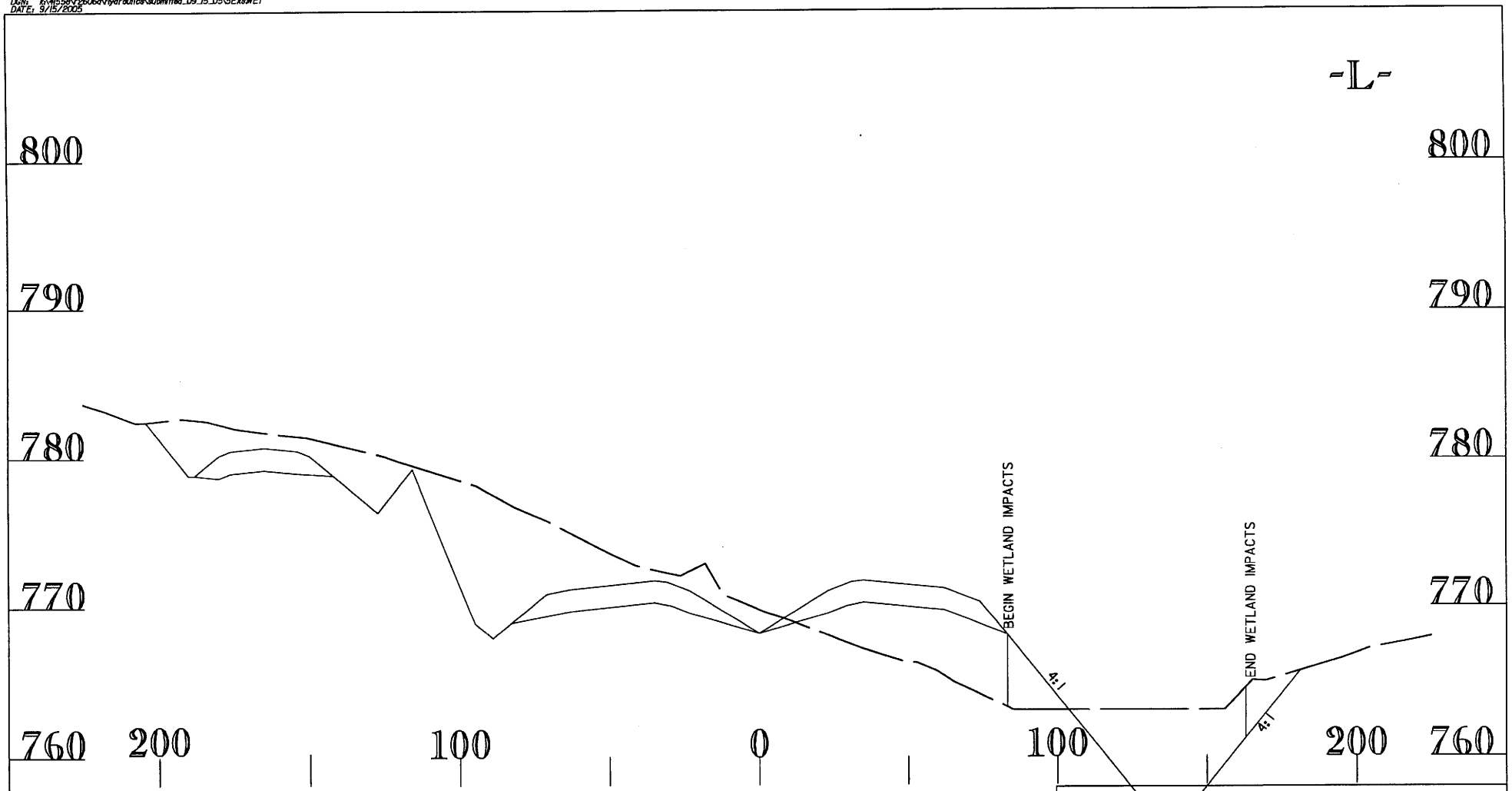
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 25 **OF** 46 1/06

USER: ej
DGN: h:\1558\r-2606d\hydraulics\submitted_09_15_05\5ExsWET
DATE: 9/15/2005



CROSS SECTION 90 + 00
SITE 5

HORIZONTAL SCALE 0 50 ft 100 ft

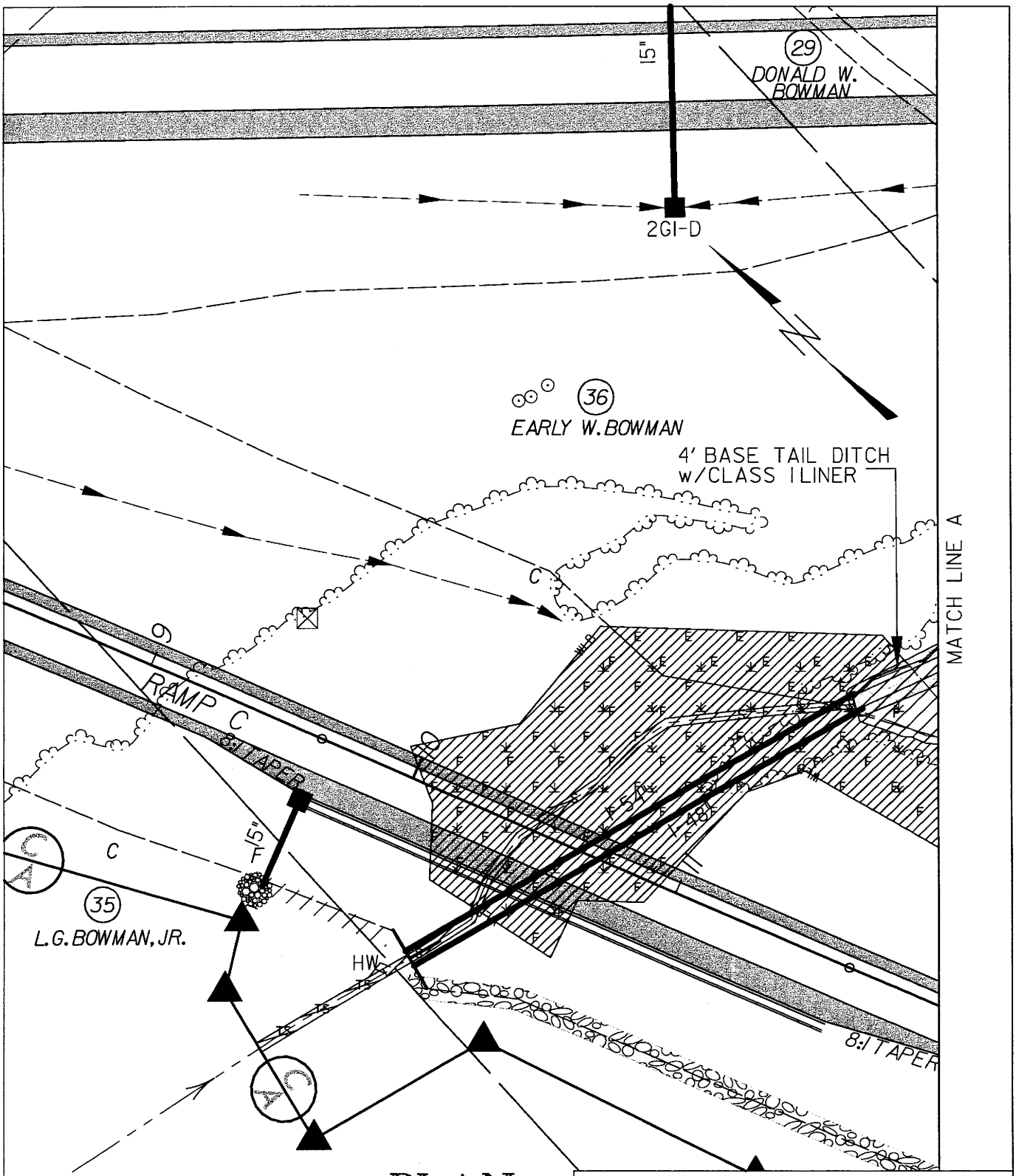
VERTICAL SCALE 0 10 ft 20 ft

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 26 OF 46 2006



PLAN VIEW SITE 6

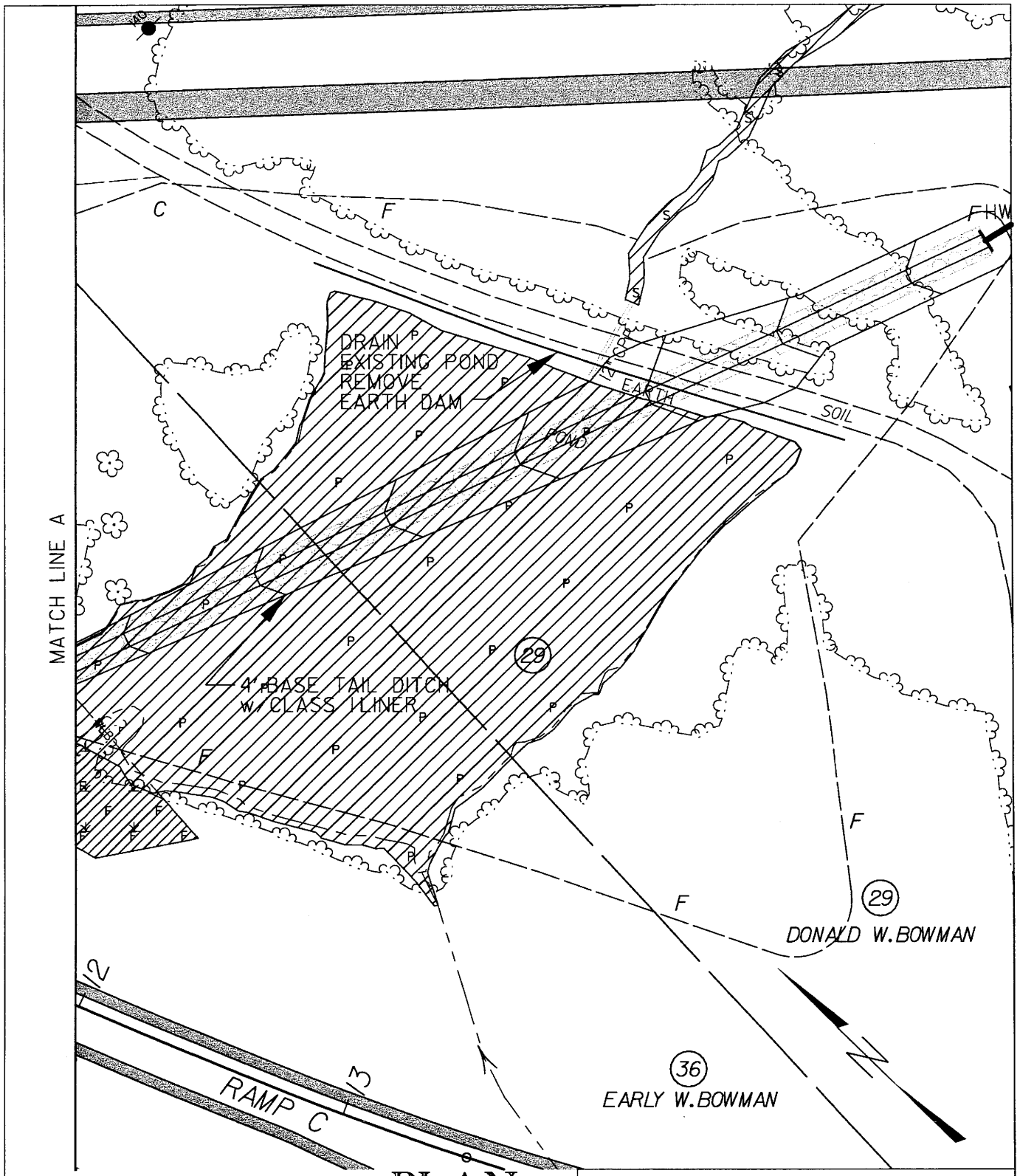
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 27 OF 46 / / 2006

USER: ej
DGN: 8.1571501r2606a\pdtraulis\Gsurvt
DATE: 1/31/2006



0 50 ft 100 ft

PLAN VIEW SITE 6

NCDOT

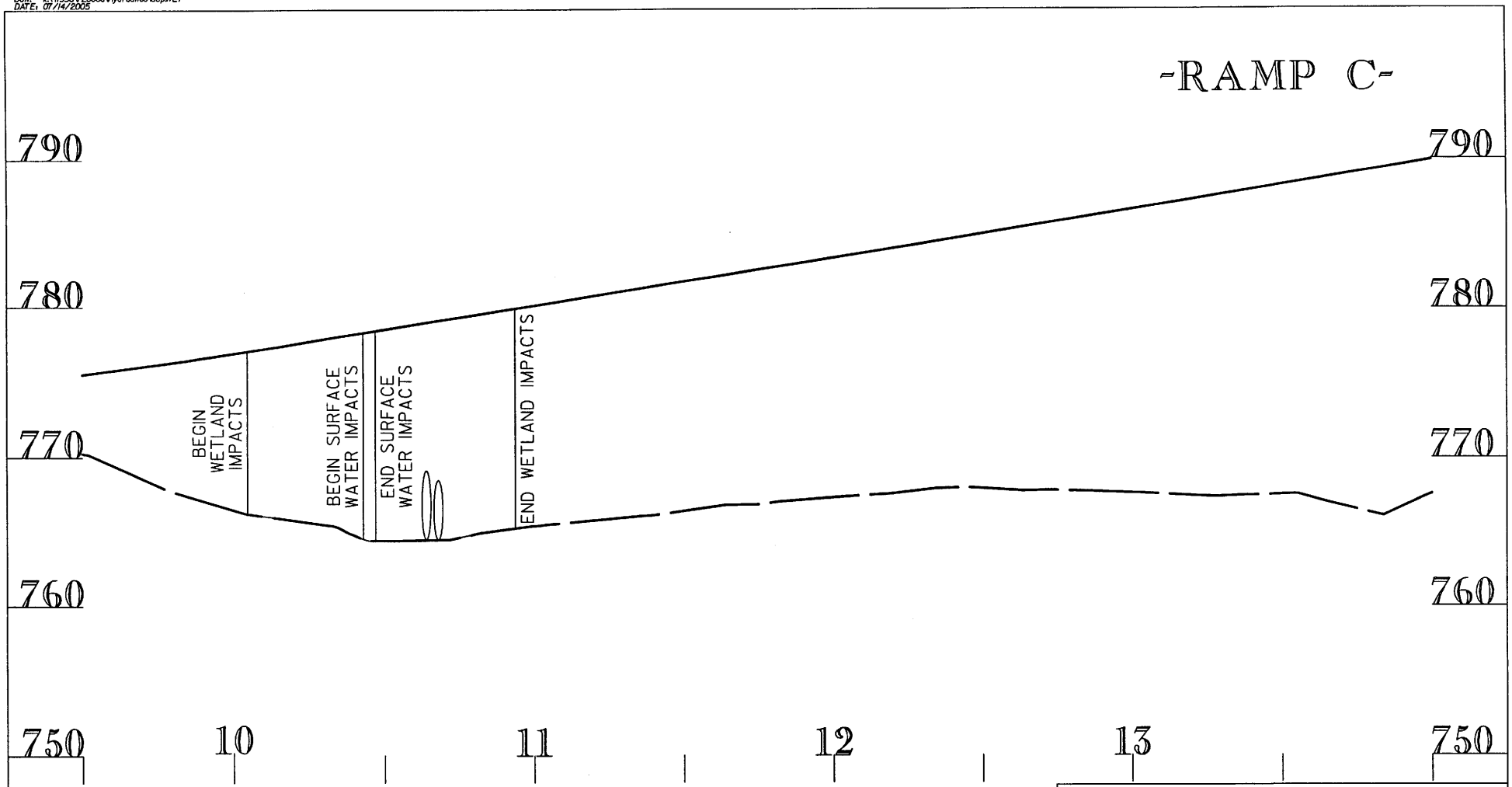
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 28 OF 46 1/2006

USER: ej
DGN: K:\4155\r2606\hydraulics\Sheet
DATE: 1/31/2006

USER: rramx
DGN: k:\4558\r2606a\Hydraulics\6CpWET
DATE: 07/14/2005



PROFILE VIEW
SITE 6

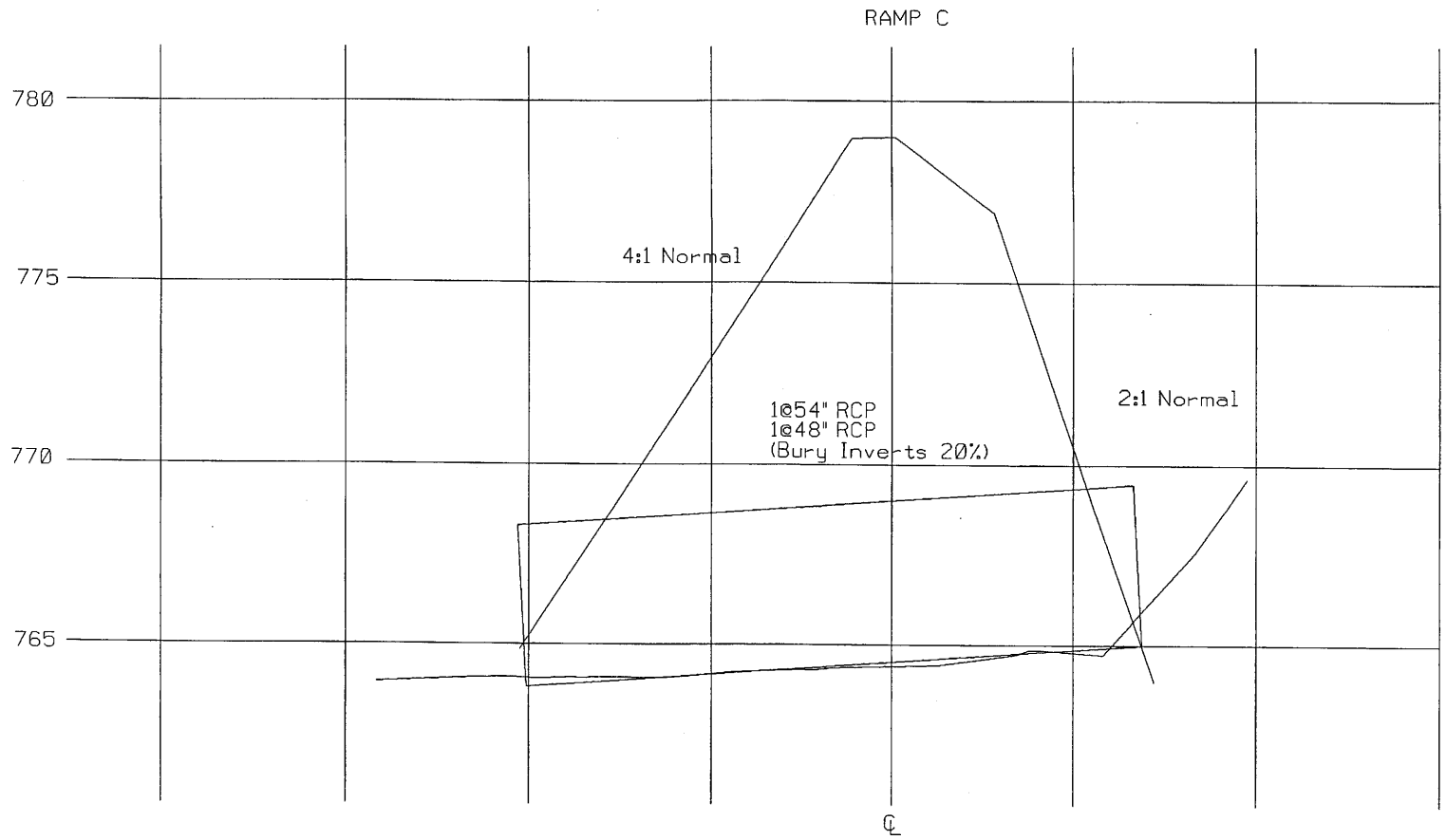
HORIZONTAL SCALE: 0 — 50 ft — 100 ft

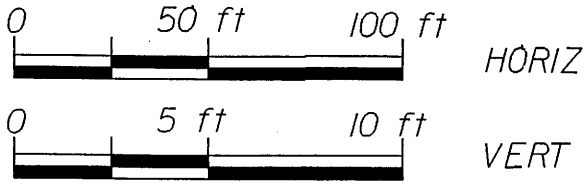
VERTICAL SCALE: 0 — 10 ft — 20 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 29 OF 46 1 / 2005





PROFILE VIEW
SITE 6

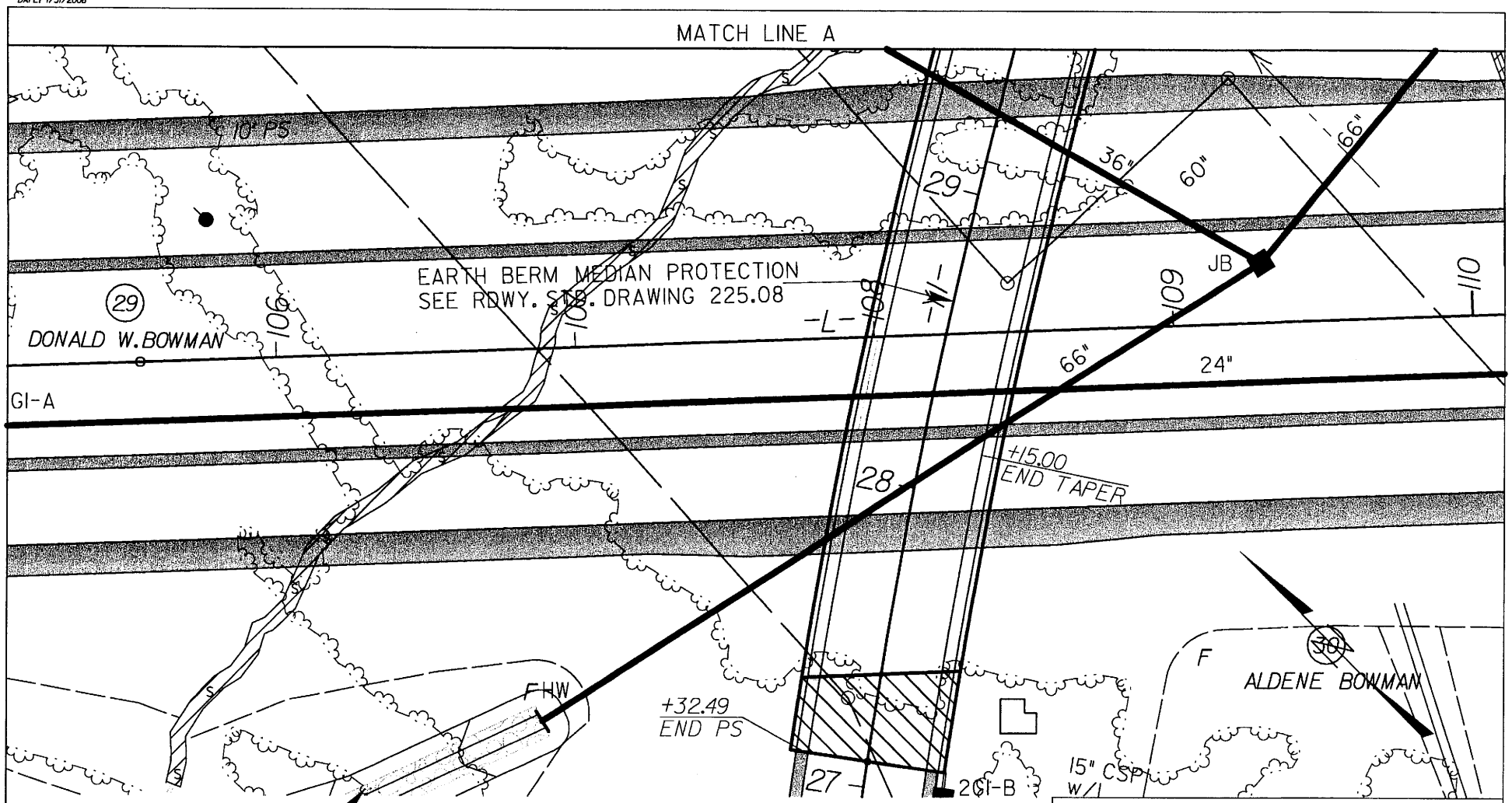
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 30 **OF** 46 1/06

USER: a)
DGN: h:\41558\r2606d\hydraulics7.dwg
DATE: 1/31/2006



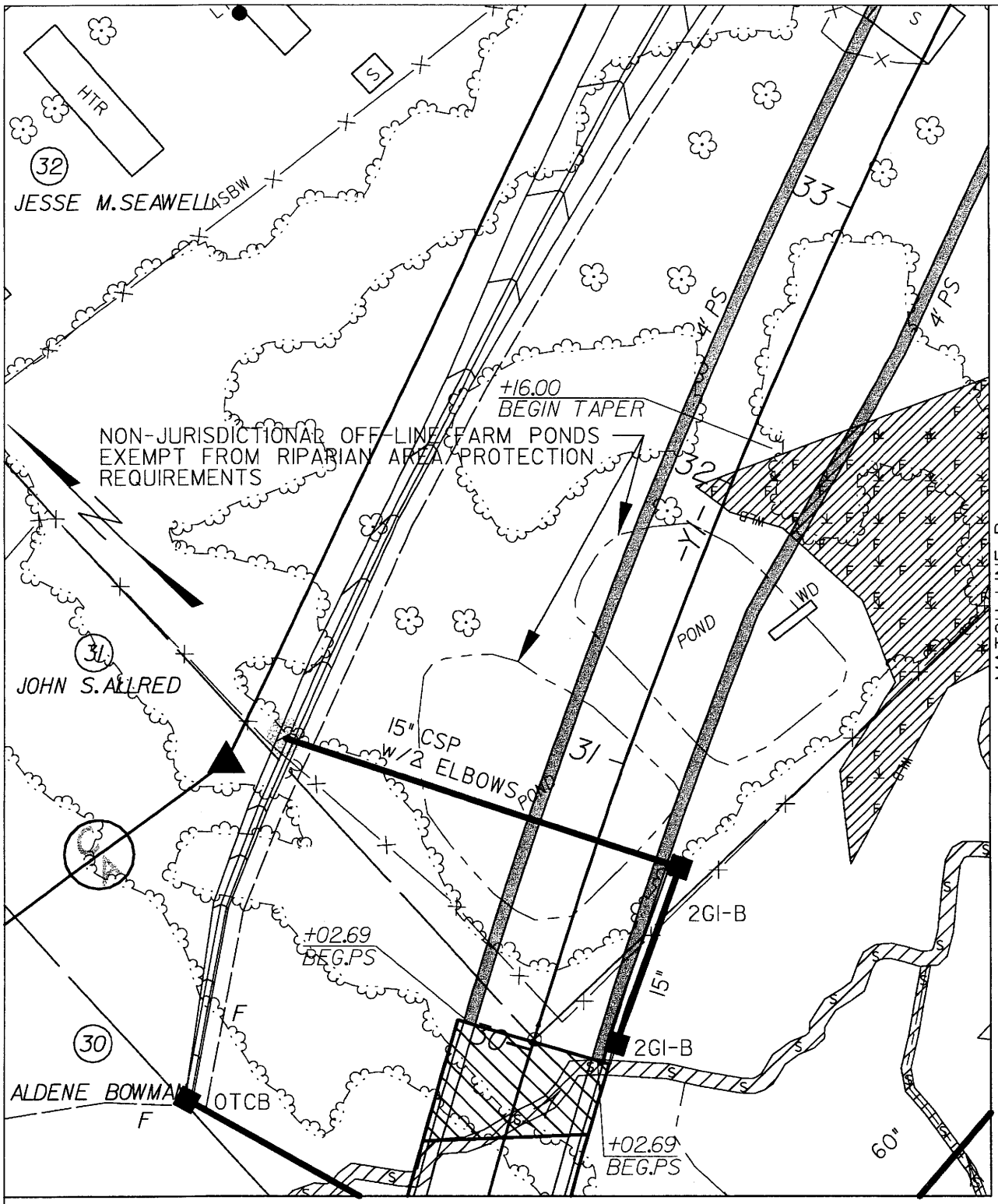
PLAN VIEW
SITE 7

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 31 **OF** 46 / / **2006**



0 50 ft 100 ft

PLAN VIEW SITE 7

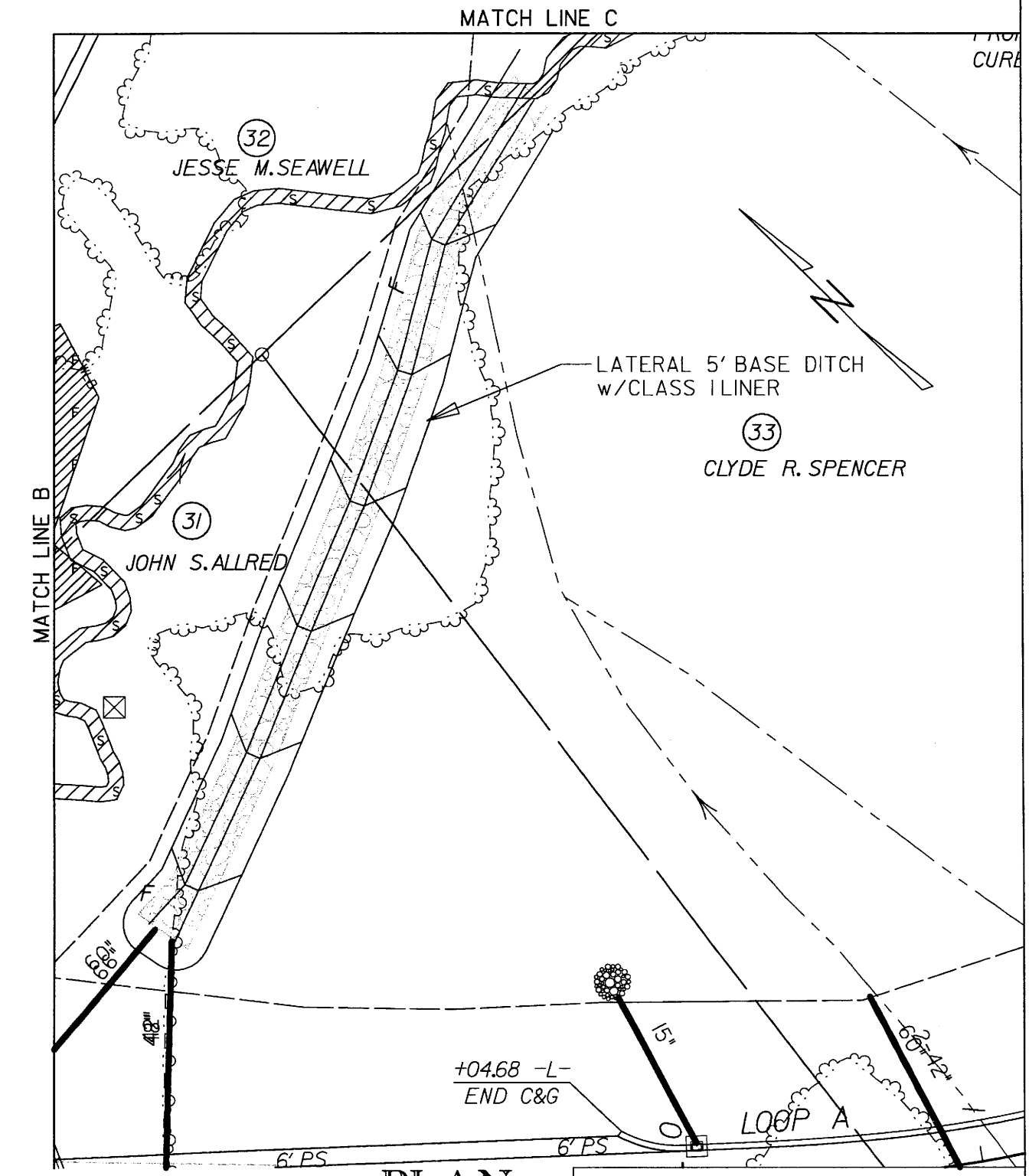
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 32 OF 46 1 /2006

USER: rj
DGN: N:\4153R\r2606a\petrau\tcs7.dwnt
DATE: 1/31/2006



0 50 ft 100 ft

PLAN VIEW SITE 7

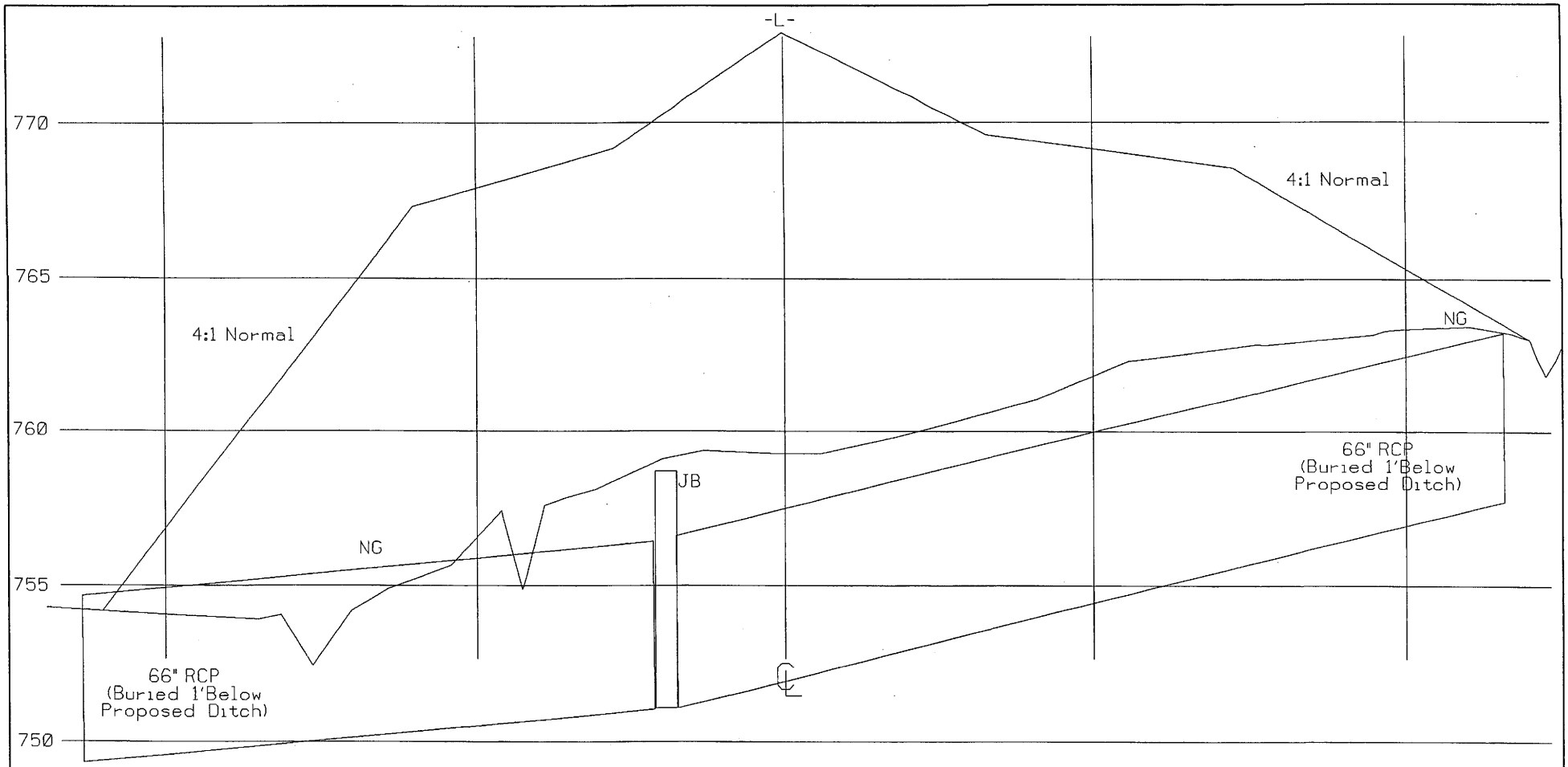
NCDOT

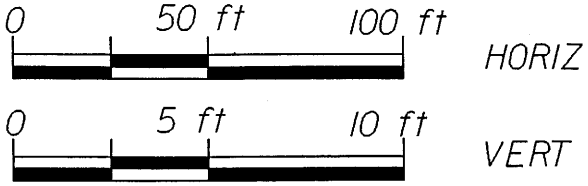
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 33 OF 46 1/2006

USER: aj
DGN: N:\R2606\Hydraulics\7.dwg
DATE: 1/31/2006





PROFILE VIEW
SITE 7

NCDOT

DIVISION OF HIGHWAYS

RANDOLPH COUNTY

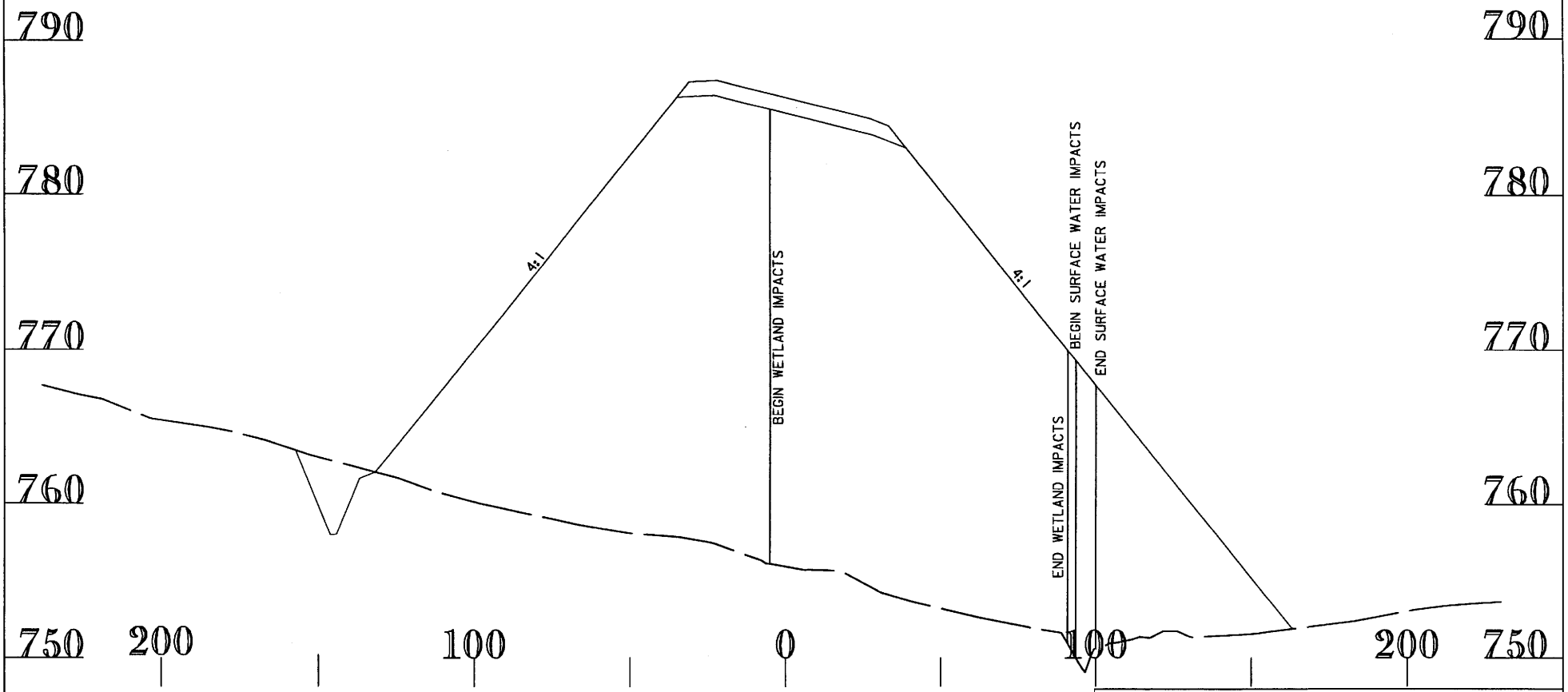
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 34 **OF** 46 12/05

USER: al
DGN: h:\41558\r2606d\hydraulics\submitted_09_15_05\7WxsWET
DATE: 9/15/2005

-Y1-



CROSS SECTION 32+00
SITE 7

HORIZONTAL SCALE 0 50 ft 100 ft

VERTICAL SCALE 0 10 ft 20 ft

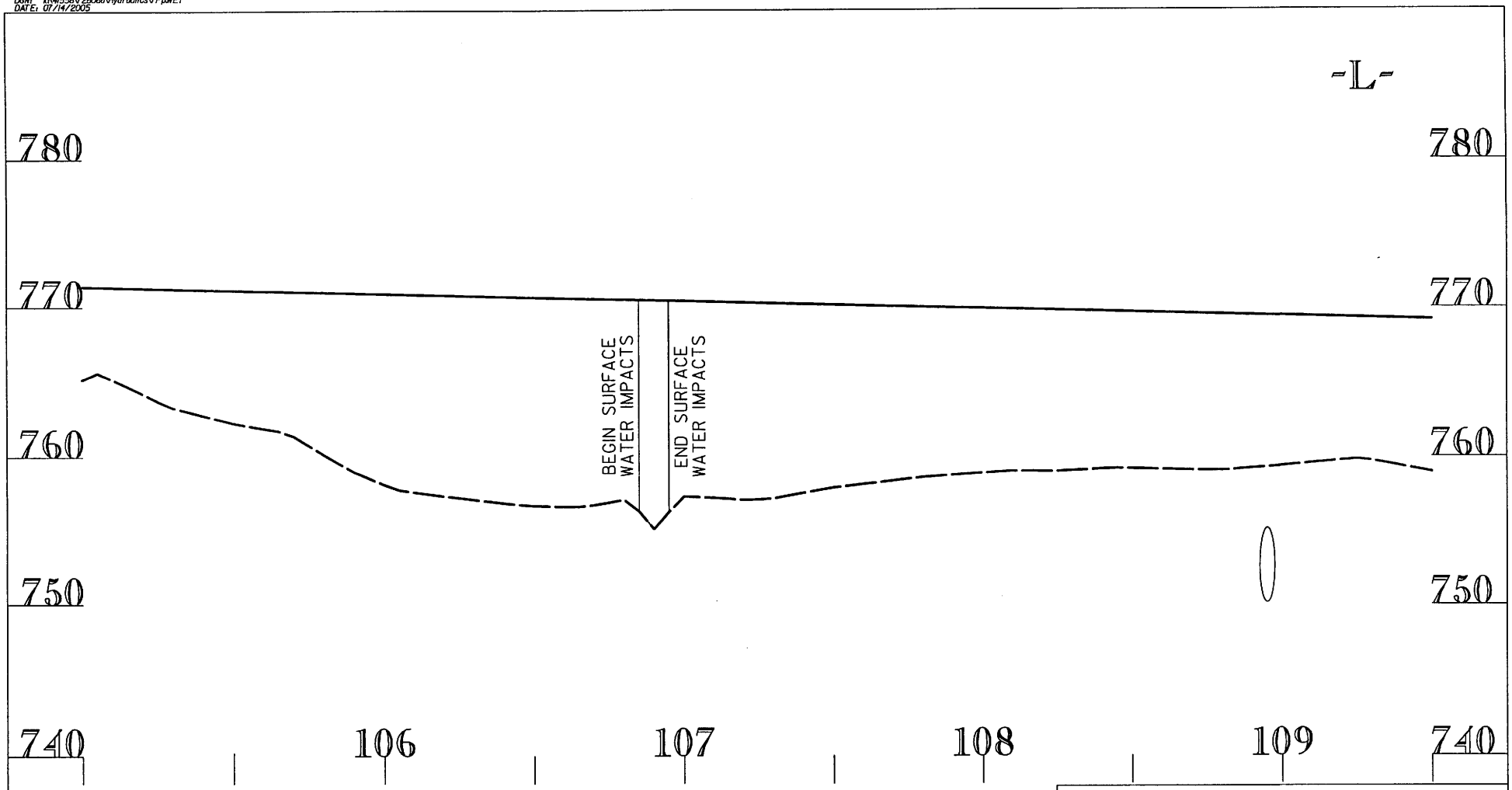
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 35 **OF** 46 / / 2006

USER: rremy
DGN: k:\4\558\v-2606a\Hydraulics\7Fp.WET
DATE: 07/14/2005



PROFILE VIEW
SITE 7

HORIZONTAL SCALE: 0 — 50 ft — 100 ft

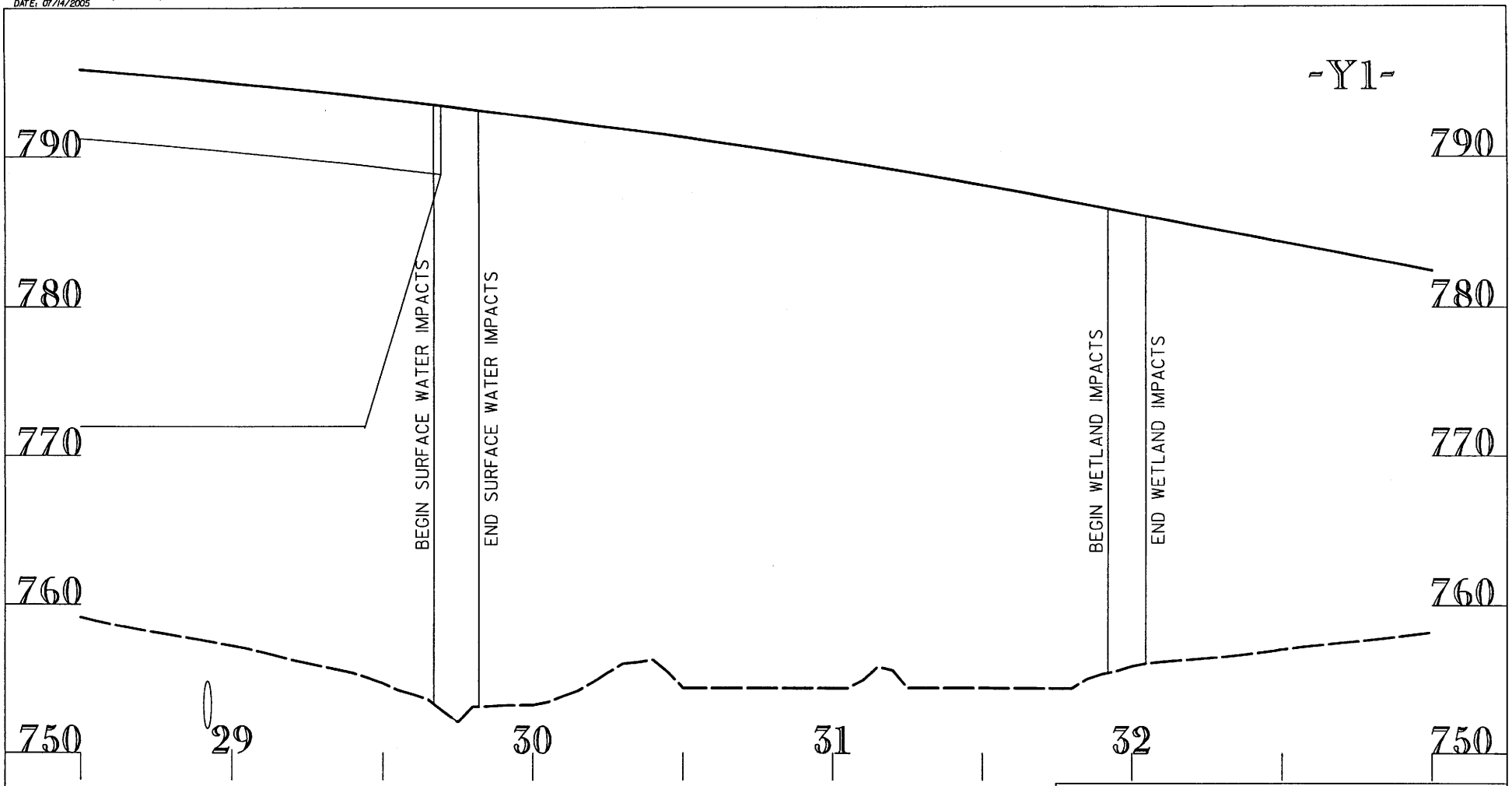
VERTICAL SCALE: 0 — 10 ft — 20 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 36 **OF** 46 / / 2006

USER: rremy
DGN: ...\R558\r2606a\Hydraulics\7GpWET
DATE: 07/14/2005



PROFILE VIEW
SITE 7

HORIZONTAL SCALE: 0 — 50 ft — 100 ft

VERTICAL SCALE: 0 — 10 ft — 20 ft

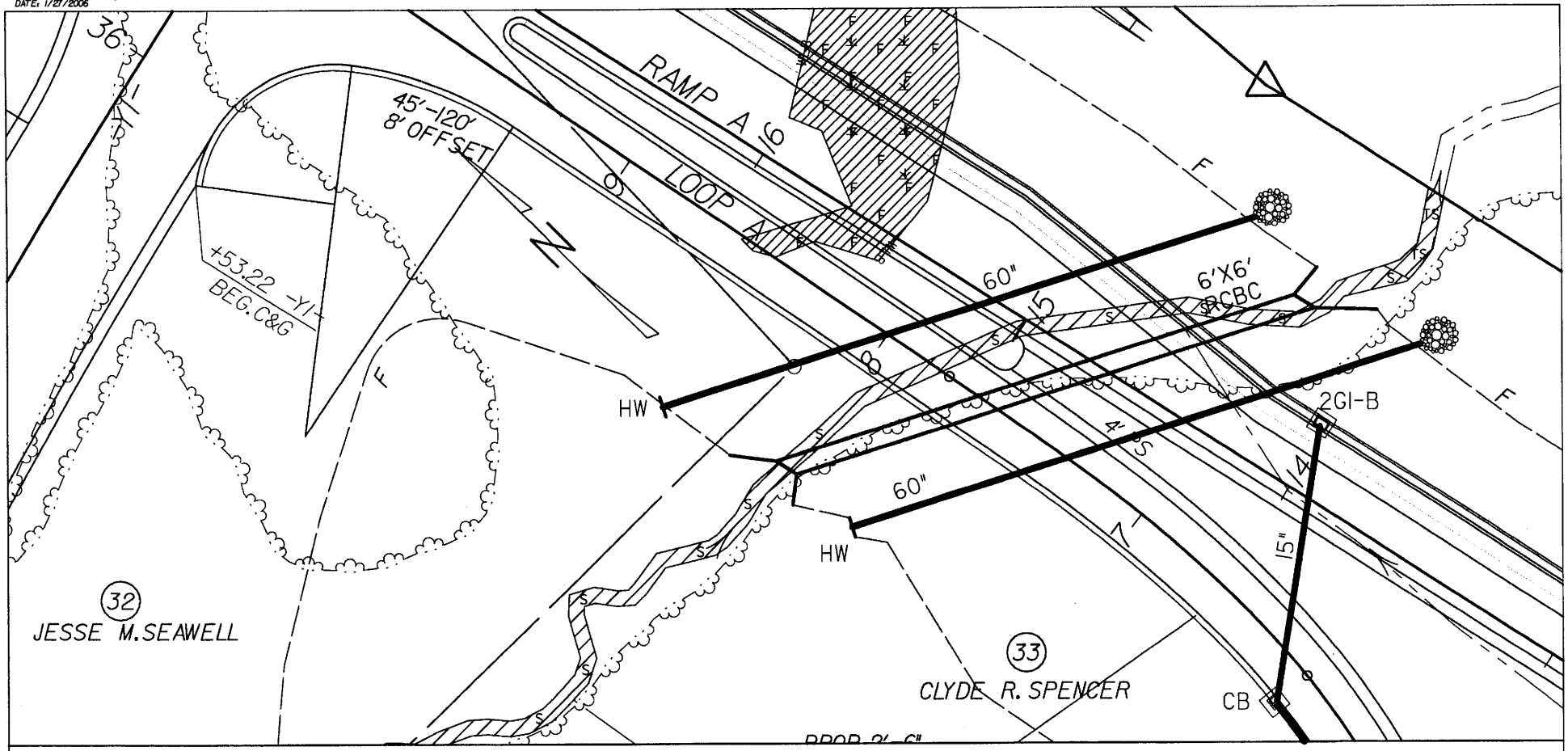
NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 37 **OF** 46 / / **2006**

USER: u
DGN: h:\41558\r2606d\hydraulics\7.dwg
DATE: 1/27/2006

MATCH LINE D



MATCH LINE C

PLAN VIEW
SITE 7

0 50 ft 100 ft

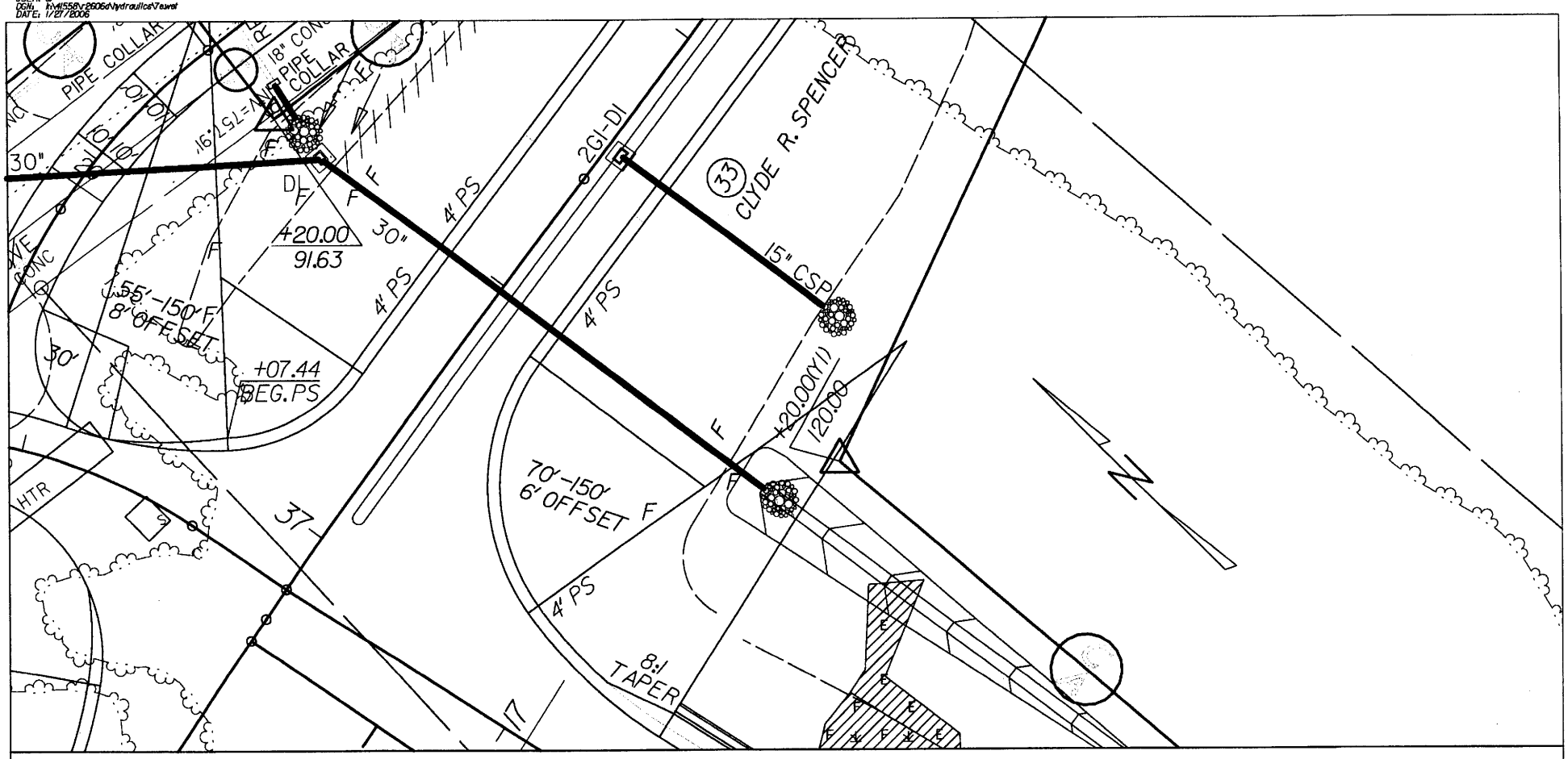
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 38 **OF** 46 / / **2006**

USER: ej
DGN: k:\41558\r2606d\hydraulics\7ewat
DATE: 1/27/2006



MATCH LINE D

PLAN VIEW
SITE 7

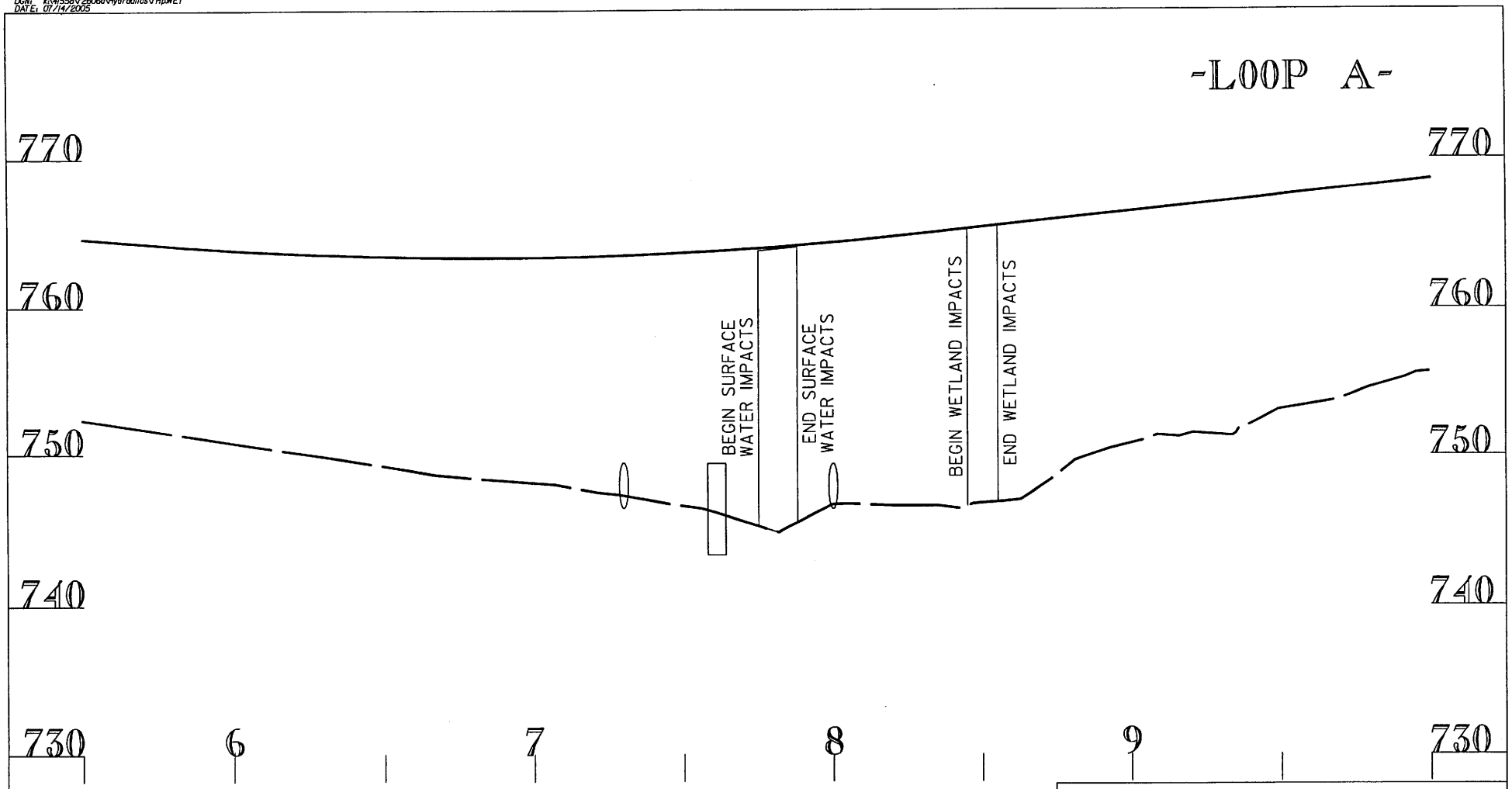
0 50 ft 100 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 39 **OF** 46 / / **2006**

USER: rrank
DGN: ev4558\r2606a\Hydraulics\7HpWET
DATE: 07/14/2005



PROFILE VIEW
SITE 7

HORIZONTAL SCALE: 0 — 50 ft — 100 ft

VERTICAL SCALE: 0 — 10 ft — 20 ft

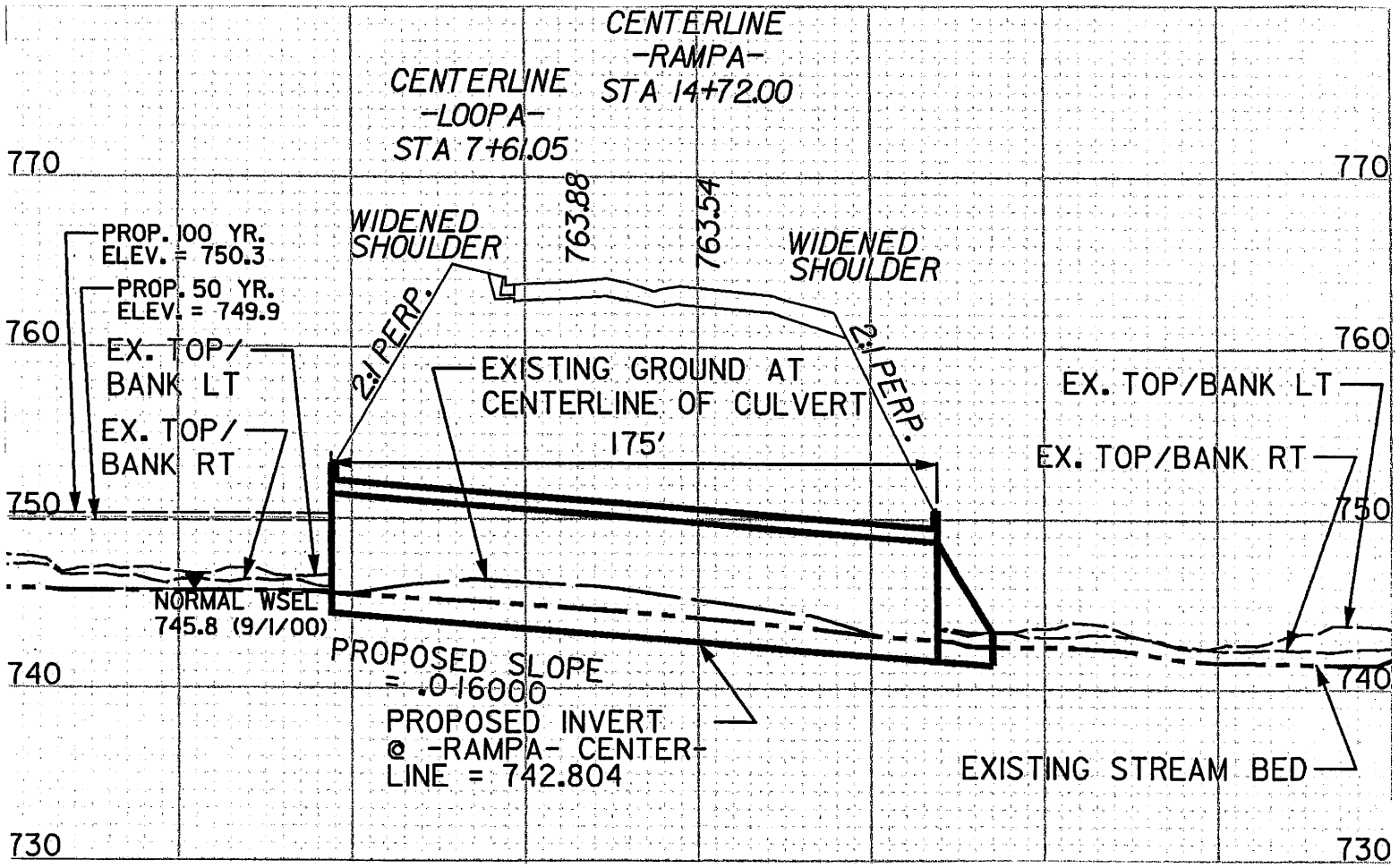
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 40 **OF** 46 **1/1/2006**

USER: $$USER$$
DGN: $$DGN$$
DATE: $$DATE$$



0 50 ft 100 ft HORIZ

0 10 ft 20 ft VERT

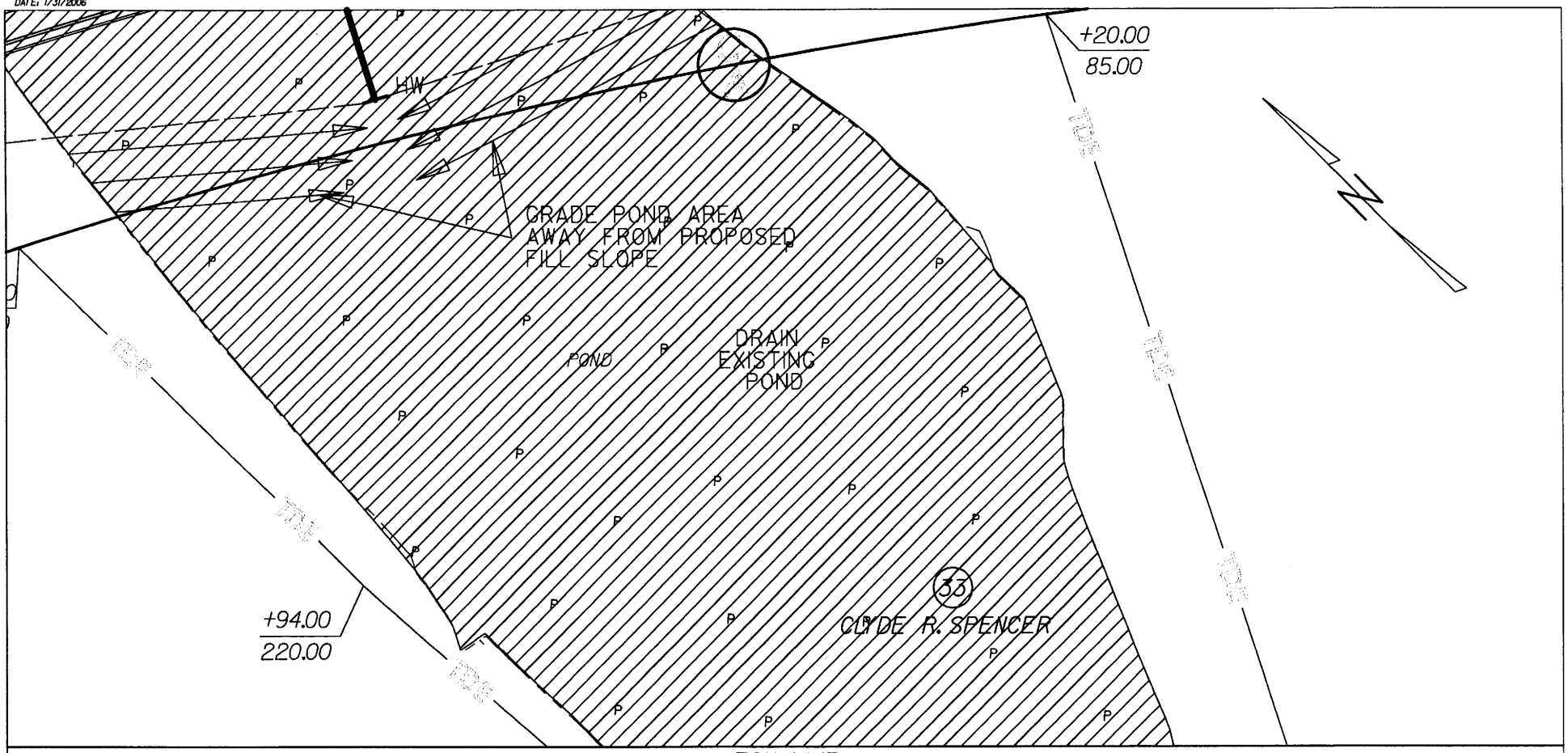
PROFILE VIEW
SITE 7

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 41 OF 46 1/06

USER: a)
DGN: h:\41558\r2606a\hydraulics\10a.wsf
DATE: 1/31/2006



MATCH LINE A

PLAN VIEW
SITE 8

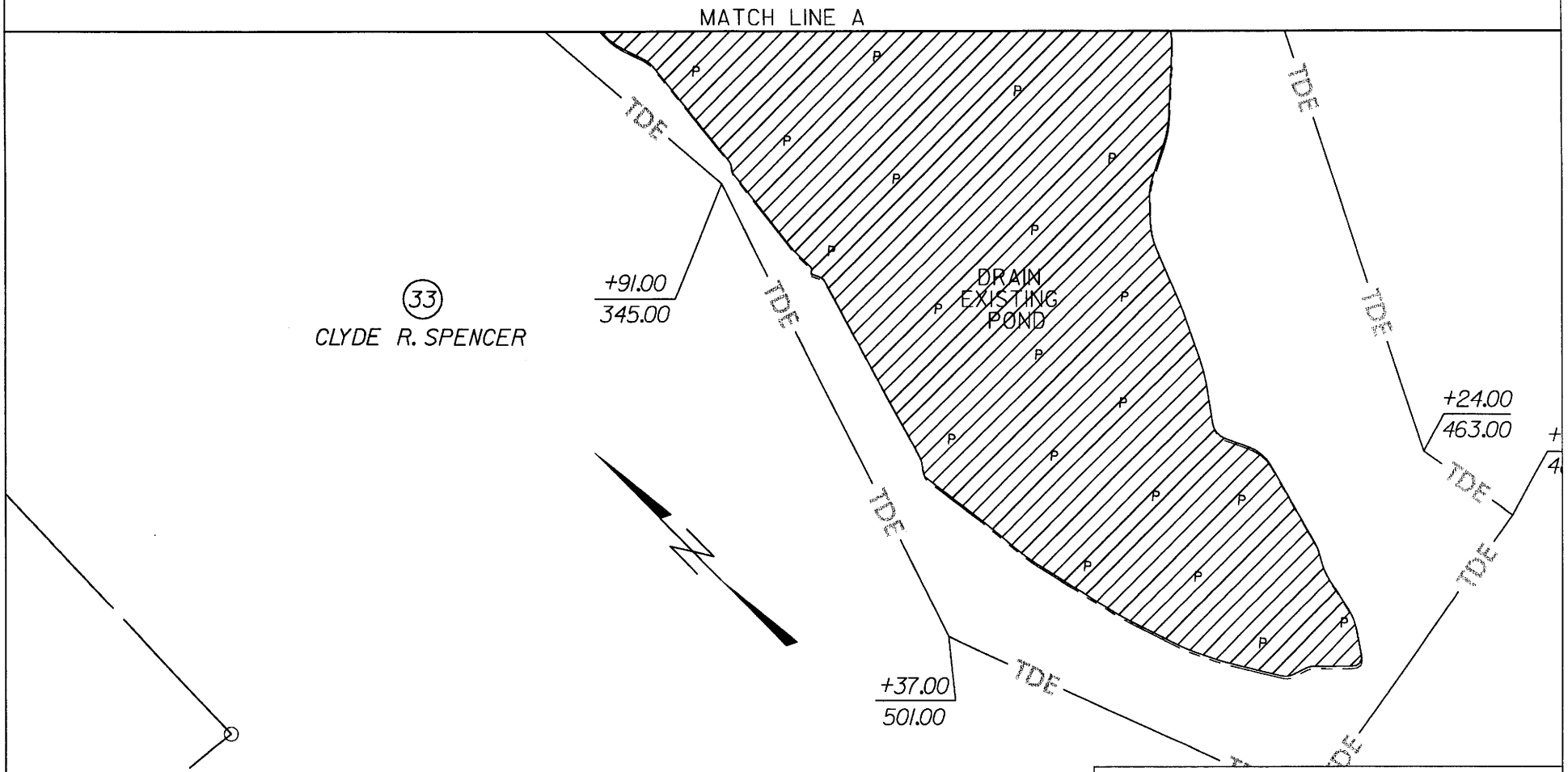
0 50 ft 100 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 42 **OF** 46 / / **2006**

USER: s)
DGN: k:\41558\r2606d\Hydraulics\10b.wat
DATE: 1/31/2006



PLAN VIEW
SITE 8

0 50 ft 100 ft

NCDOT

DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 43 OF 46 / / 2006

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	22+65 -L-	1@160' Dual Bridges										
2	45+99 -L-	1@12'x8' RCBC	0.277					0.079	0.020	350	100	
3	63+06 -L-	1@8'x5' Bottomless Struc						0.112	0.020	790	115	
	59+48 -L- **	36" RCP						0.037	0.002	310	20	
4	82+75 -L- **	36" RCP						0.013	0.002	185	20	
	84+40 -L-	42" RCP						0.084	0.006	580	65	
5	87+80-93+50 -L- Rt *	Perm. A Basin w/ 36" Riser						0.291		472		
6	10+50 -RAMPC-	1@54"; 1@ 48" RCP	0.241		0.040			0.648	0.004	200	50	
	12+50 -RAMPC- Lt *											
7	106+90 -L-	1@ 66" RCP	0.240		0.016			0.171	0.004	1490	32	
	14+72 -RAMPA-	1@6'x6' RCBC & 2@60" RCP										
8	5+45 -RAMPD- Rt *	Drain Pond						2.820				
TOTALS:			0.76	0.00	0.06	0.00	0.00	4.26	0.06	4377	402	0

** Impacts to Tributaties

* Includes Impact to Surface Water to Ponds (Site 5- 0.262 Ac, Site 6- 0.634 Ac; Site 8- 2.82 Ac)

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

RANDOLPH COUNTY
R-2606A

SHEET 44 of 46 ########

ATN Revised 3/31/05

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	KEPLEY-FRANK HARDWOOD CO., INC.	975 CONRAD HILL MINE ROAD LEXINGTON, NC 27292
2	MAGGIE N. POOLE	6020 POOLE ROAD ARCHDALE, NC 27263
4	RAY POOLE	P.O. BOX 14411 ARCHDALE, NC 27263
5	JAMES H. TROTTER	6191 POOLE ROAD ARCHDALE, NC 27263
7	TIMOTHY LARUE TROTTER	5930 POOLE ROAD ARCHDALE, NC 27263
8	ZOLA ROSENGERG	5930 POOLE ROAD ARCHDALE, NC 27263-7850
11	BETTY NICHOLSON	5848 POOLE ROAD ARCHDALE, NC 27263-7850
14	JADINE F. HILL	6461 LEWIS DAVID ROAD RANDLEMAN, NC 27317-7219
16	BOBBY RALPH HILL	3638 HOOVER HILL ROAD TRINITY, NC 27370
17	JERRY G. McDOWELL	5597 GODNICK LANE ARCHDALE, NC 27263
18	MICAH L. McDOWELL	3310 MOUNT OLIVE CHURCH ROAD SOPHIA, NC 27350
19	DONALD R. SPELL	214 ASHLAND STREET ARCHDALE, NC 27263
23	JAMES E. HARRELSON	5557 GODNICK LANE ARCHDALE, NC 27263
24	JANIE D. McCRACKEN	5547 GODNICK LANE ARCHDALE, NC 27263
29	DONALD W. BOWMAN	323 KENDALL MILL ROAD THOMASVILLE, NC 27360
30	ALDENE BOWMAN	ROUTE 2, BOX 264 TRINITY, NC 27370

NCDOT

DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 45 OF 46 1/06

USER: rremy
DGN: k:\4558\r2606a\Hydraulics\OWNER.WET
DATE: 07/14/2005

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
31	JOHN S. ALLRED	ROUTE 3, BOX 393 HIGH POINT, NC 27263
32	JESSE M. SEAWELL	ROUTE 3, BOX 392 HIGH POINT, NC 27263
33	CLYDE R. SPENCER	ROUTE 3, BOX 518 HIGH POINT, NC 27263
35	L. G. BOWMAN, JR.	5590 CEDAR SQUARE ROAD ARCHDALE, NC 27263-8222
36	EARLY W. BOWMAN	215 LINDA DRIVE ARCHDALE, NC 27263-3313

NCDOT

DIVISION OF HIGHWAYS

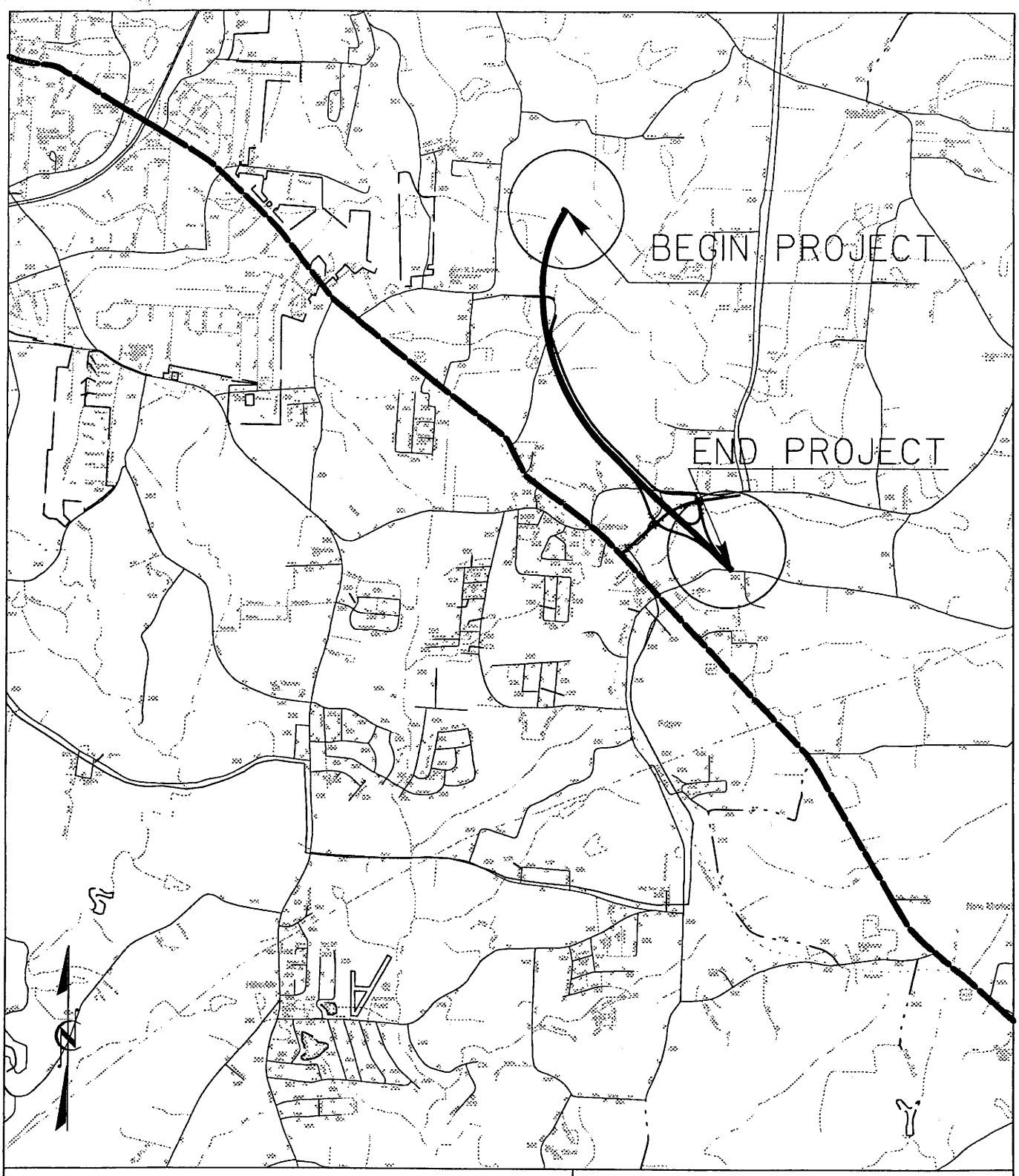
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 46 OF 46 1/06

USER: rremy
DGN: K:\4558\r-2606a\Hydraulics\OWNER.WET
DATE: 07/14/2005



RANDLEMAN LAKE
WATER SUPPLY
BUFFER

VICINITY MAP

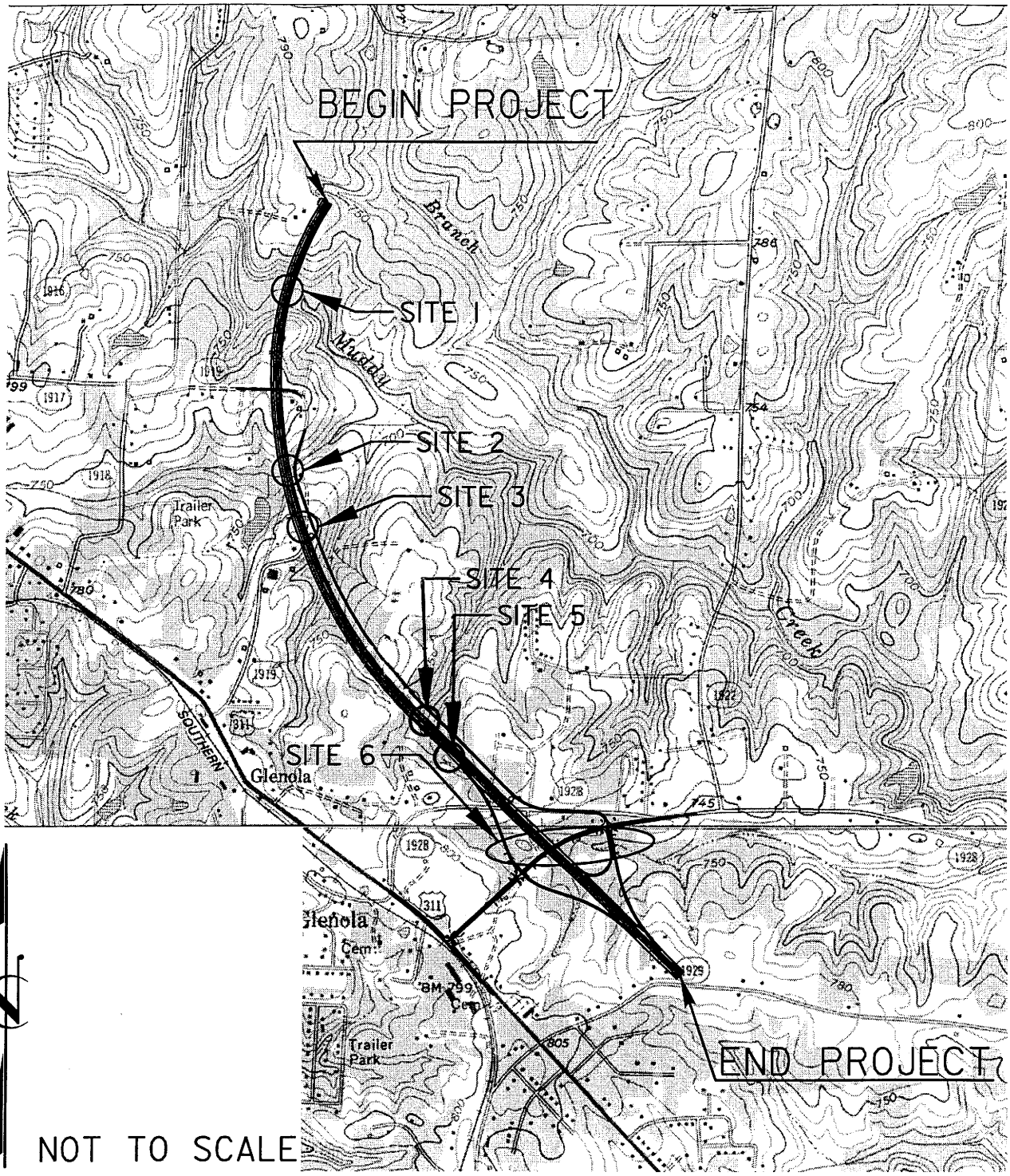
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 1 **OF** 26 - 1106

USER: a)
DGN: k:\4558\r2606a\hydraulics\BUFVICINITY.WET
DATE: 9/15/2005



RANDLEMAN LAKE WATER SUPPLY BUFFER

LOCATION MAP

NCDOT

DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1929

SHEET 2 **OF** 26 1/06

USER: rremy
DGN: k:\4558\r2606a\Hydraulics\BUFILOC.WET
DATE: 07/14/2005

BUFFER LEGEND

WLB — WETLAND BOUNDARY

WLB WLB — WETLAND

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

BZ — RIPARIAN BUFFER ZONE

BZ1 — RIPARIAN BUFFER ZONE 1
30 ft (9.2m)

BZ2 — RIPARIAN BUFFER ZONE 2
20 ft (6.1m)

FLOW DIRECTION

TB — TOP OF BANK

WE — EDGE OF WATER

C — PROP. LIMIT OF CUT

F — PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG — NATURAL GROUND

PL — PROPERTY LINE

TDE — TEMP. DRAINAGE EASEMENT

PDE — PERMANENT DRAINAGE EASEMENT

EAB — EXIST. ENDANGERED ANIMAL BOUNDARY

EPB — EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT
12"-48" PIPES
54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 — ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE (PSH)

LEVEL SPREADER (LS)

GRASS SWALE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1029

SHEET 3 OF 26 1/06

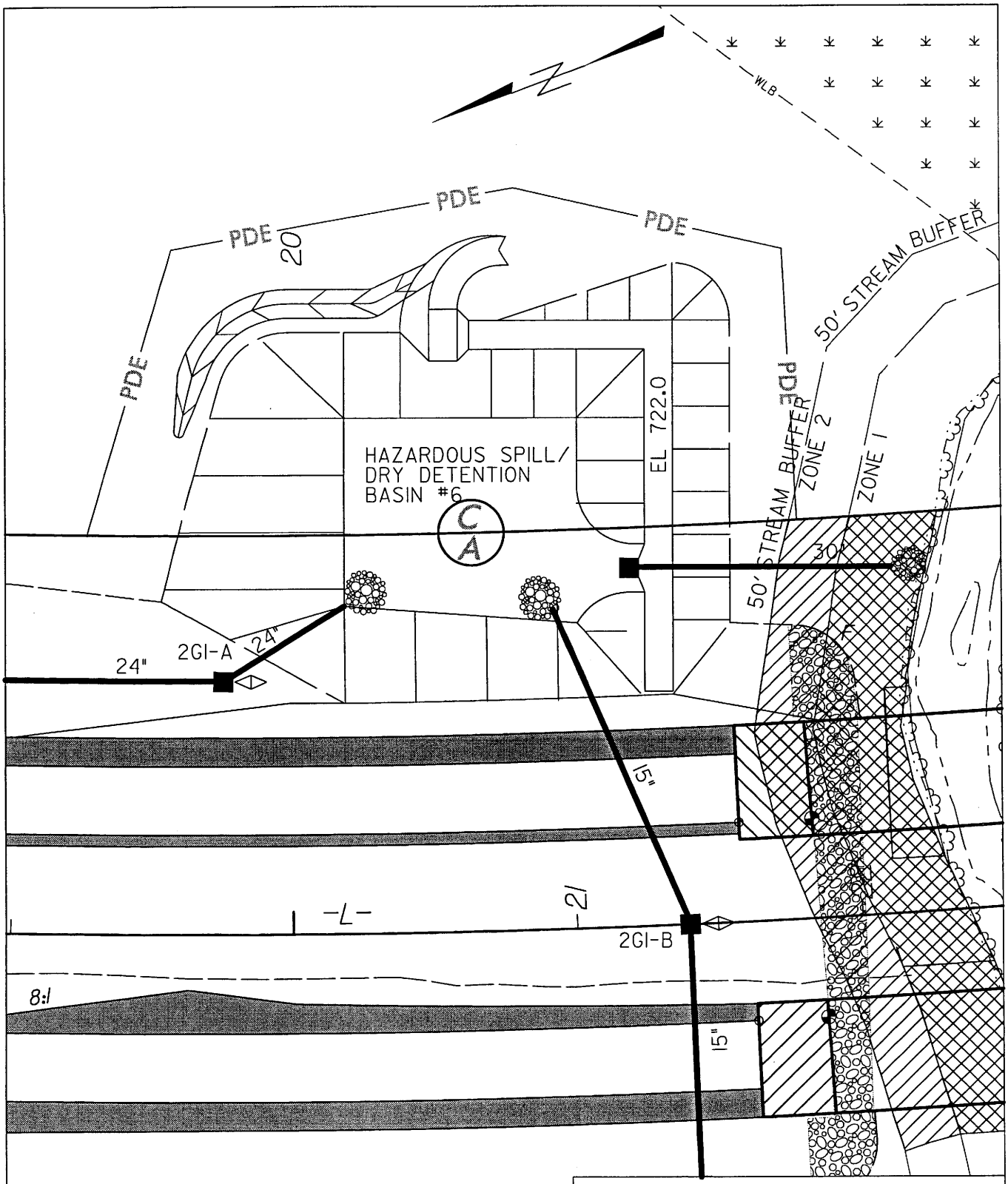
USER: rremy
DGN: k:\4155b\r2606a\Hydraulics\new_legend.dgn
DATE: 07/14/2005

R-2606A

HAZARDOUS SPILL BASINS

Location	Drainage Areas (Acres)	Basin Surface Area (SF)	Qp2 (cfs)
-L-Sta. 21+50 LT	8.15	13764	15.94
-L- Sta. 24+50 RT	3.96	10400	8.2
-L- Sta. 44+50 RT	11.63	10435	28.9
-L- Sta. 47+50 RT	7.01	3632	17.9
-L- Sta. 57+00 LT	13.23	10486	28.3
-L- Sta. 79+00 LT	13.08	21126	22.7
-L- Sta. 89+00 RT	15.4	9689	**(Qp5) 15.4**
-L- Sta. 111+34 RT	9.91	12878	16.5

Location	Qp2 Velocity (fps)	Treatment Provided	Comments
-L- Sta. 31+02 LT	**1.55**	Preformed Scour Hole	
-Y- Sta. 16+60 LT	Exempt due to existing drainage way		
-SR- Sta. 13+20 LT		Dissipator Basin	Exempt
-L- Sta. 59+44 LT			Cross Pipe/ Exempt
-L- Sta. 81+70 LT			Cross Pipe/ Exempt
-L- Sta. 81+78 LT			Cross Pipe/ Exempt
-SR-Sta. 56+57 LT to	Exempt due to existing drainage way		
-SR- Sta. 63+50 LT	Exempt due to existing drainage way		
-L- Sta 110+55 LT			Cross Pipe/Exempt
-L- Sta. 110+50 LT	No Buffer 6/12/2001 Field Inspection		
-L- Sta. 112+90 LT			Cross Pipe/Exempt
-L- Sta. 116+63 RT	**0.68**	Earth Berm W/ Level Spreader	
-Ramp A- Sta 10+44 RT		Dry Det. Basin	Exempt
'-Ramp A- Sta 13+88 RT	-		Cross Pipe/Exemp
'-Ramp A- Sta 14+55 RT	-		Cross Pipe/Exemp
-Y1- Sta. 37+96 RT	**3.01**	Exempt due to existing ditch	
-Y1- Sta. 38+56 RT	Exempt due to entering ditch before buffer		
-Loop A- Sta. 4+10 RT	Exempt due to existing drainage way		



0 50 ft 100 ft

PLAN VIEW SITE 1

NCDOT

DIVISION OF HIGHWAYS

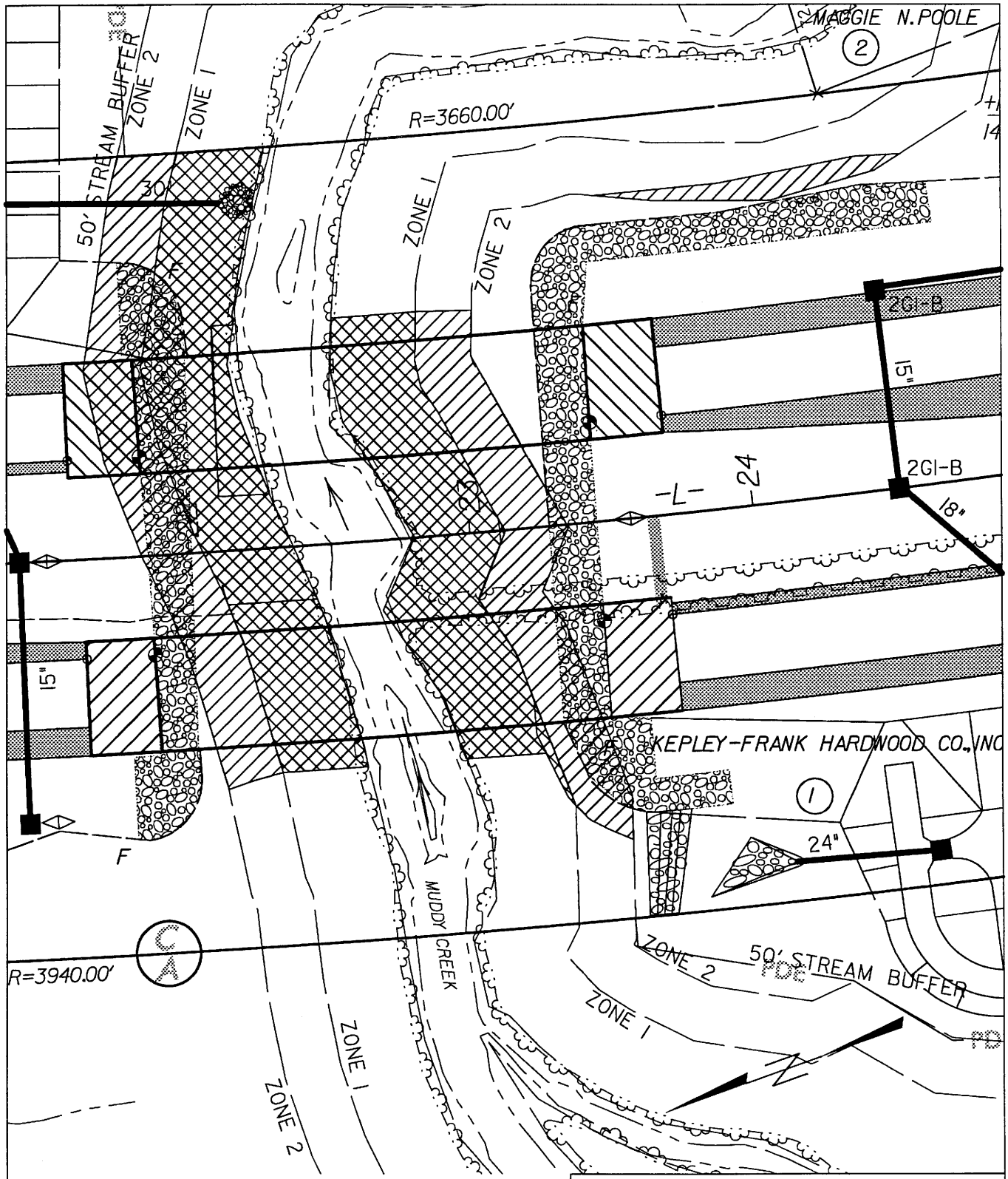
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1929

SHEET 5 OF 26 / 2006

USER: rsam
DGN: k:\4155\r-2606a\Hydraulics\bos1fig.dgn
DATE: 07/14/2005



0 50 ft 100 ft

PLAN VIEW SITE 1

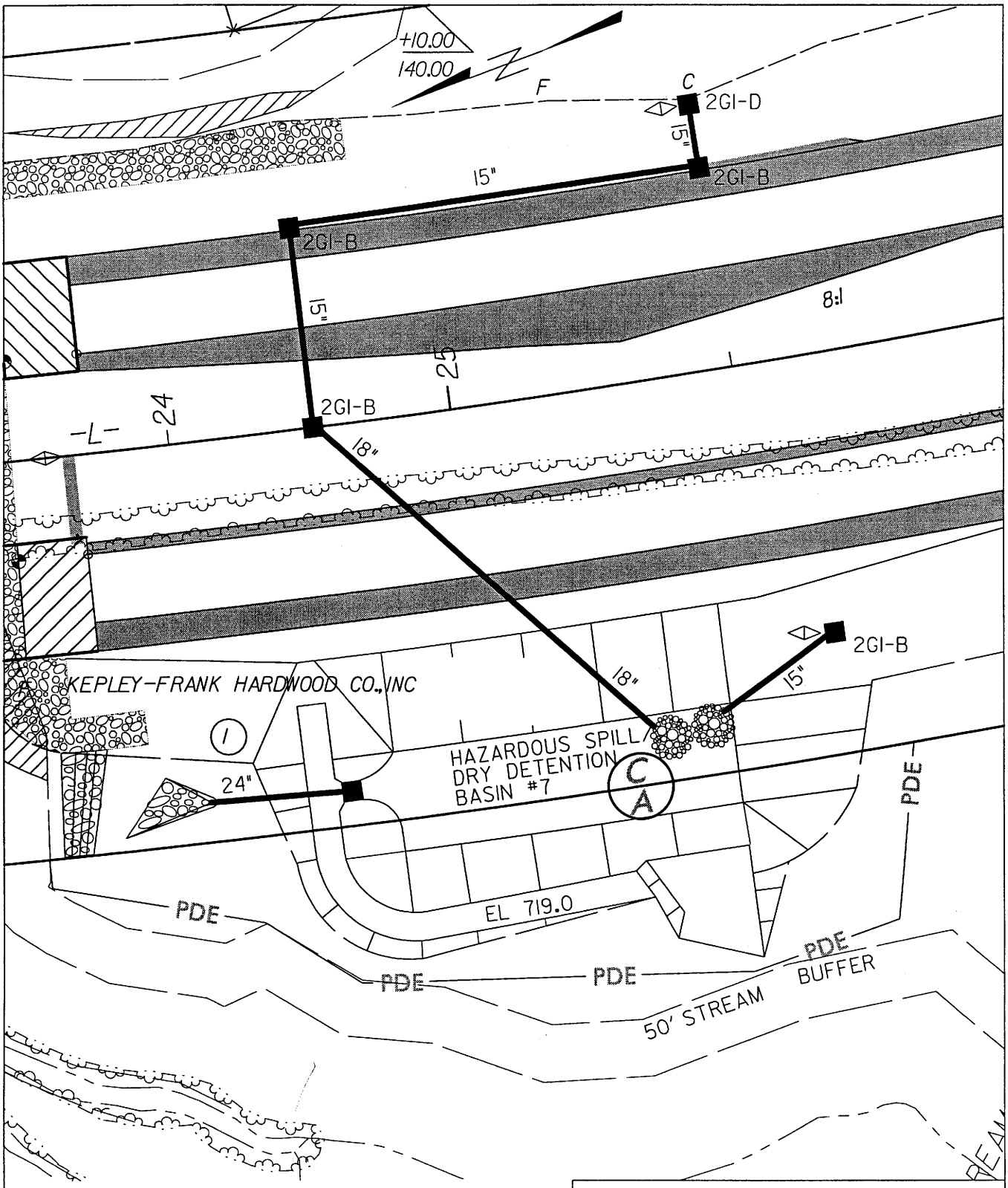
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 6 **OF** 26 / / **2006**

USER: el
DGN: R:\MISSR\2606A\Hydraulics\buffl.wnf
DATE: 9/15/2005



0 50 ft 100 ft

PLAN VIEW SITE 1

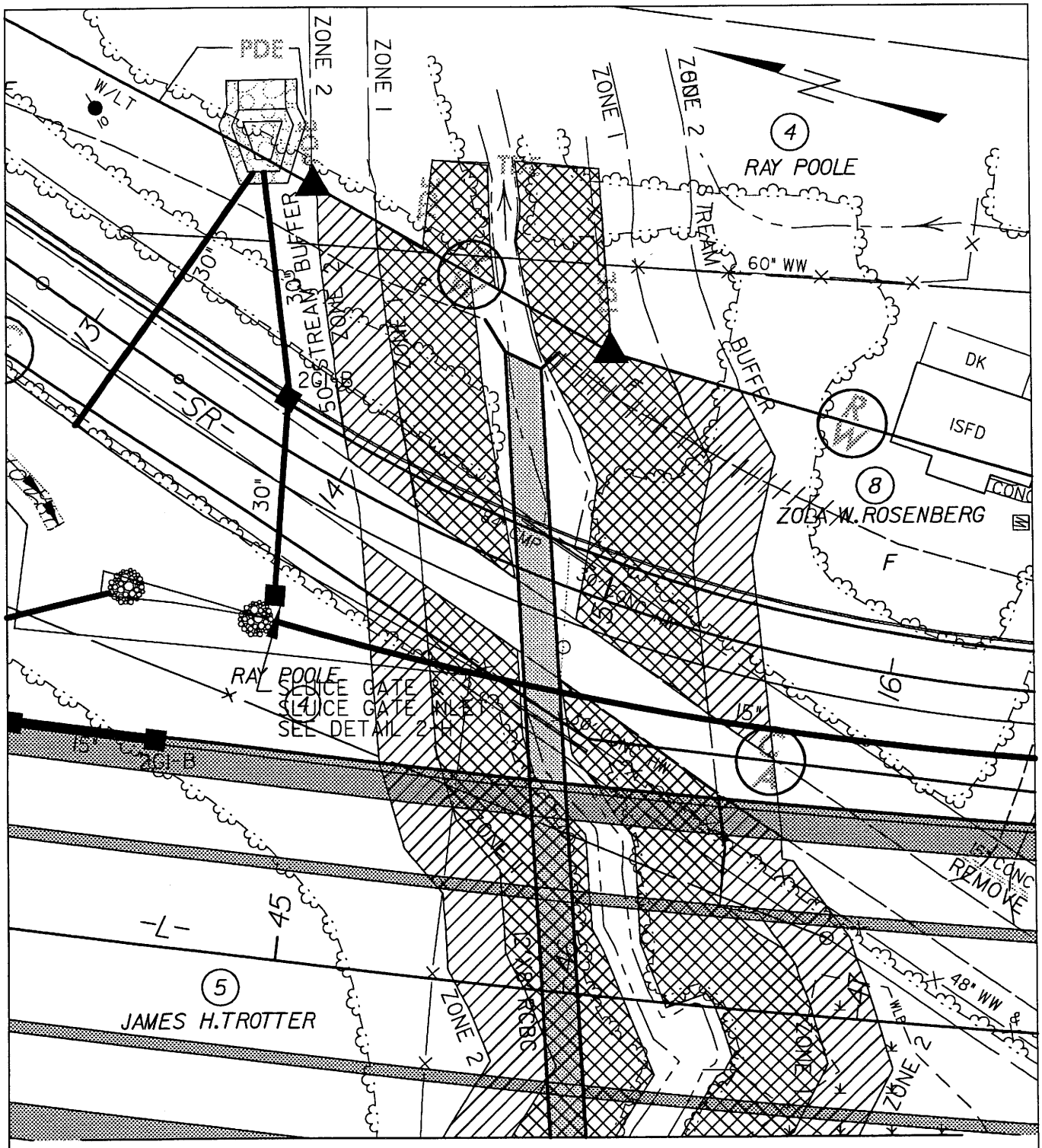
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 7 **OF** 26 1/1/2006

USER: rtsmy
DGN: b:\R2606\R-2606a\Hydraulics\basin7.wet
DATE: 07/14/2005



MATCH LINE A

0 50 ft 100 ft

PLAN VIEW SITE 2

NCDOT

DIVISION OF HIGHWAYS

RANDOLPH COUNTY

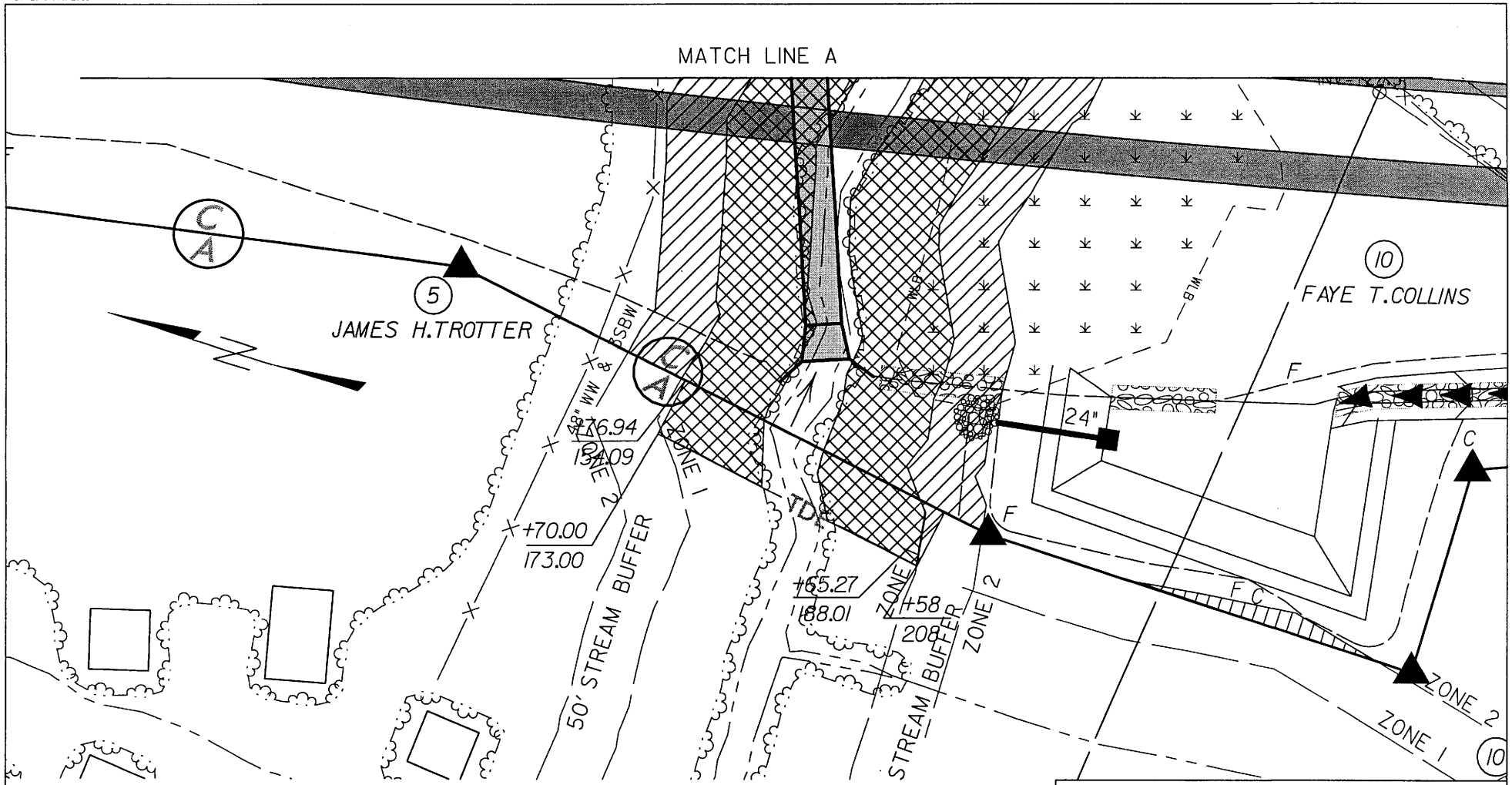
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1929

SHEET 8 **OF** 26 **/ 2006**

USER: ej
DGN: 8.1571501-2606A-Hydraulics-Not Sized.dgn
DATE: 9/15/2005

USER: rrem
DGN: k:\41558\r-2606a\Hydraulics\buf2b.wet
DATE: 07/14/2005



PLAN VIEW
SITE 2

0 50 ft 100 ft

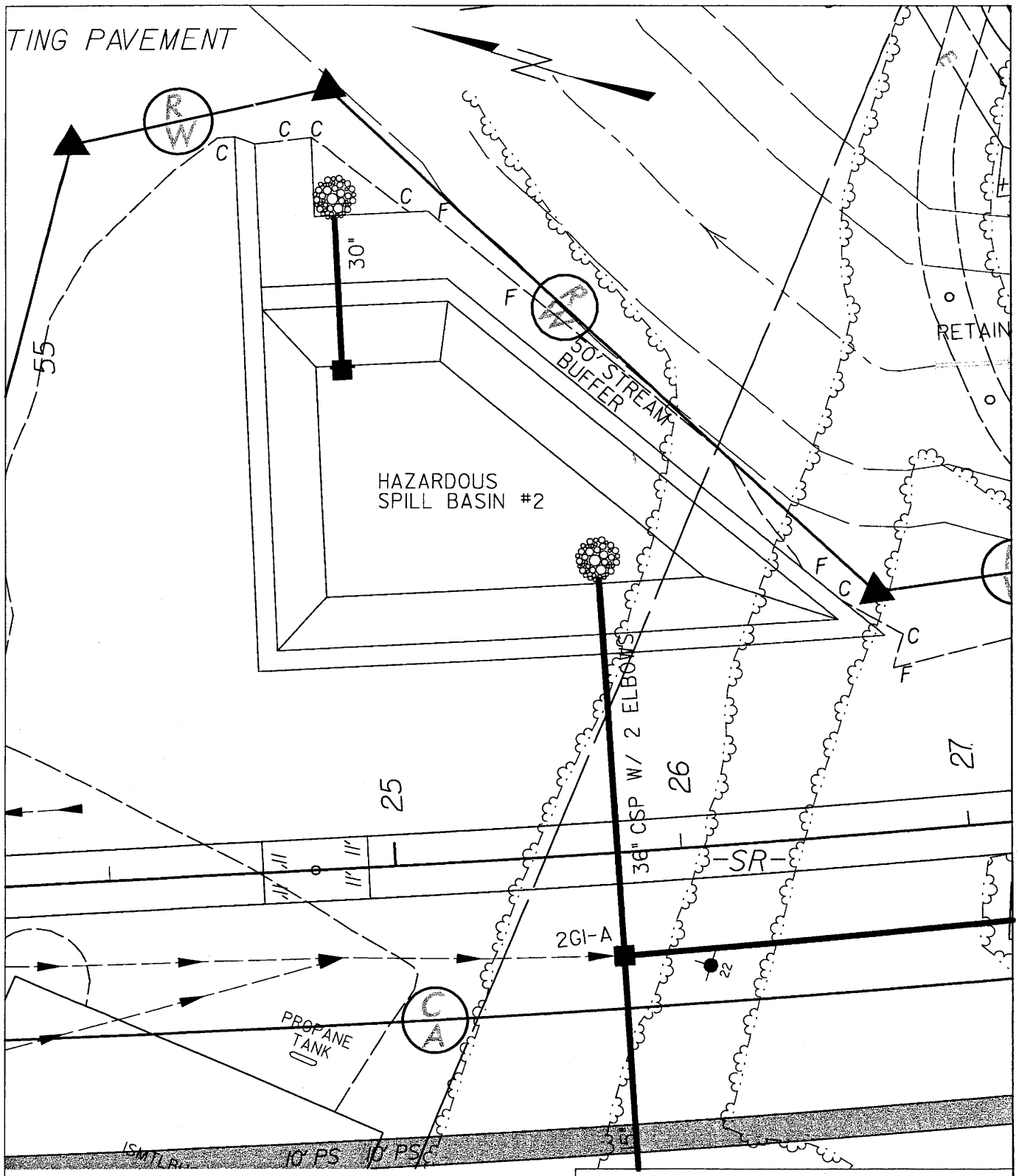
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 9 **OF** 26 **/ 2005**

90/1



0 50 ft 100 ft

PLAN VIEW SITE 3

NCDOT

DIVISION OF HIGHWAYS

RANDOLPH COUNTY

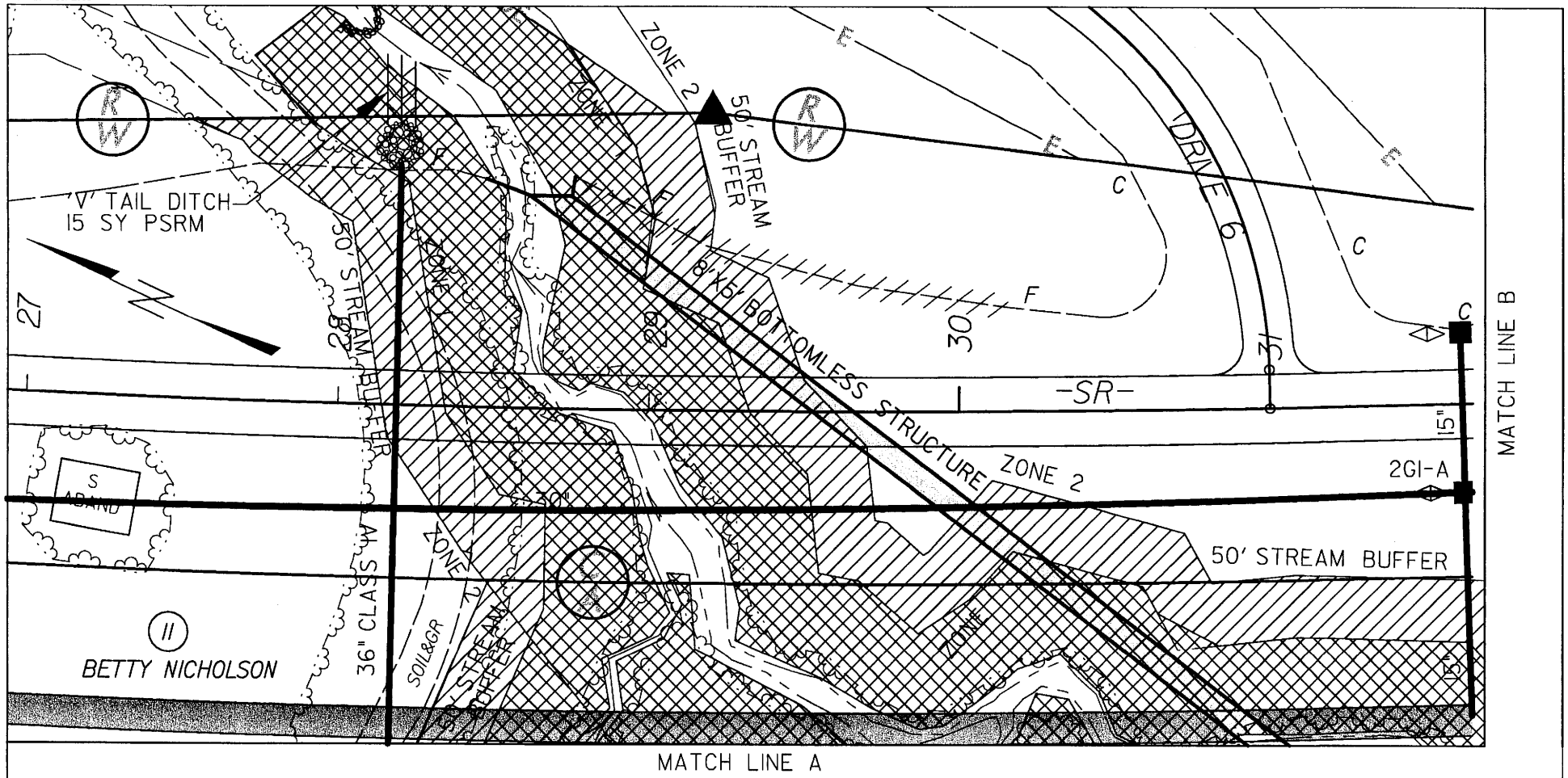
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1929

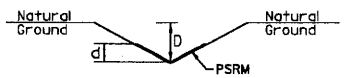
SHEET 10 **OF** 26 / / **2006**

USER: al
DGN: h:\4155\r-2606a\hydraulics\bos\h2.dgn
DATE: 1/30/2006

USER: al
DGN: N:\41558\r2606d\hydraulics\buf3a.wrel
DATE: 1/30/2006



DETAIL DD
'V' TAIL DITCH w/PSRM
(NOT TO SSCALE)



Max. d = 1' Ft. Min. D = 1' Ft.

Type of Liner = PERMANENT SOIL REINFORCED MATTING

-L- 59+48 L

PLAN VIEW
SITE 3

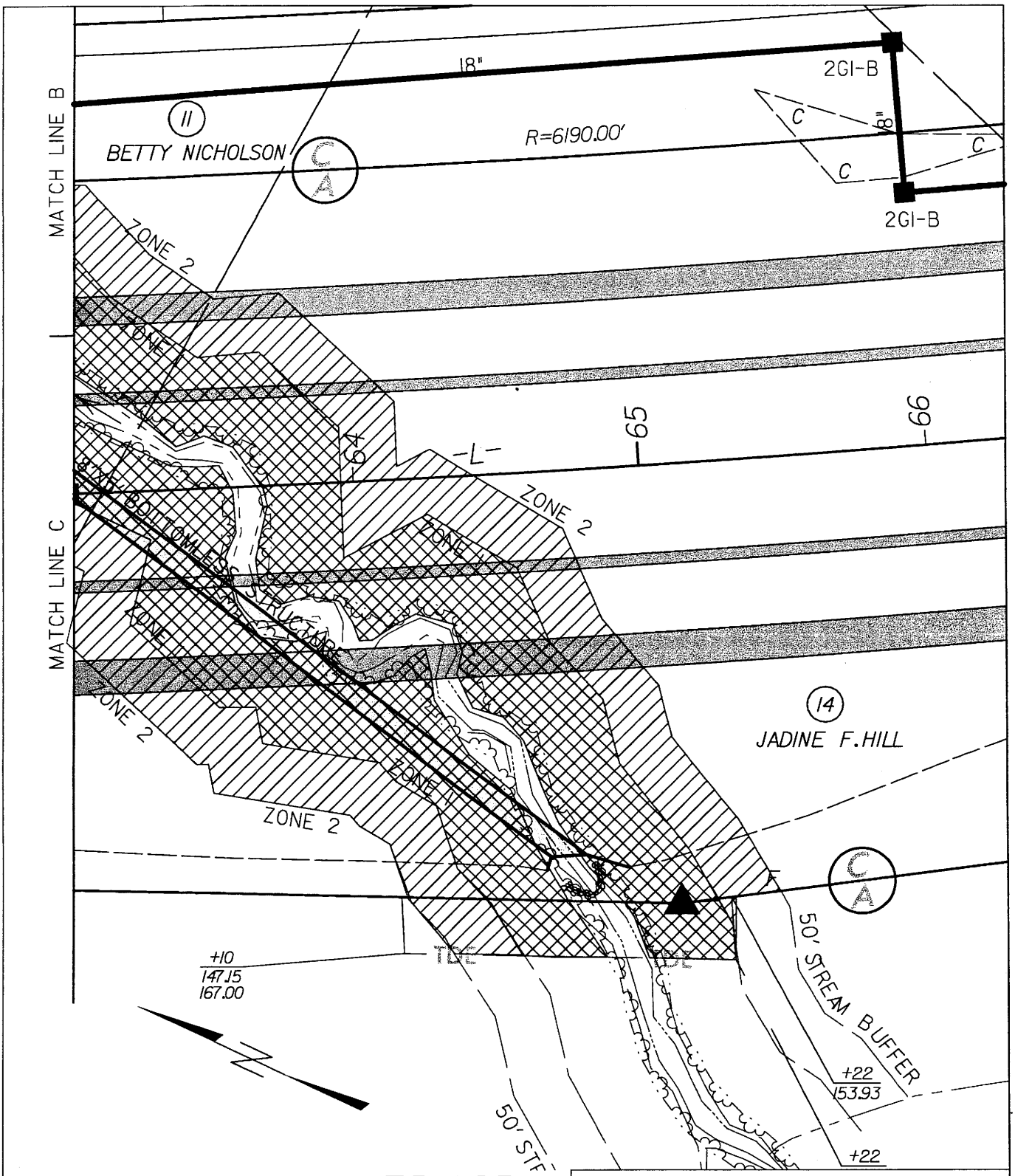
0 50 ft 100 ft

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 11 OF 26 1/1/2006



PLAN VIEW SITE 3

0 50 ft 100 ft

NCDOT

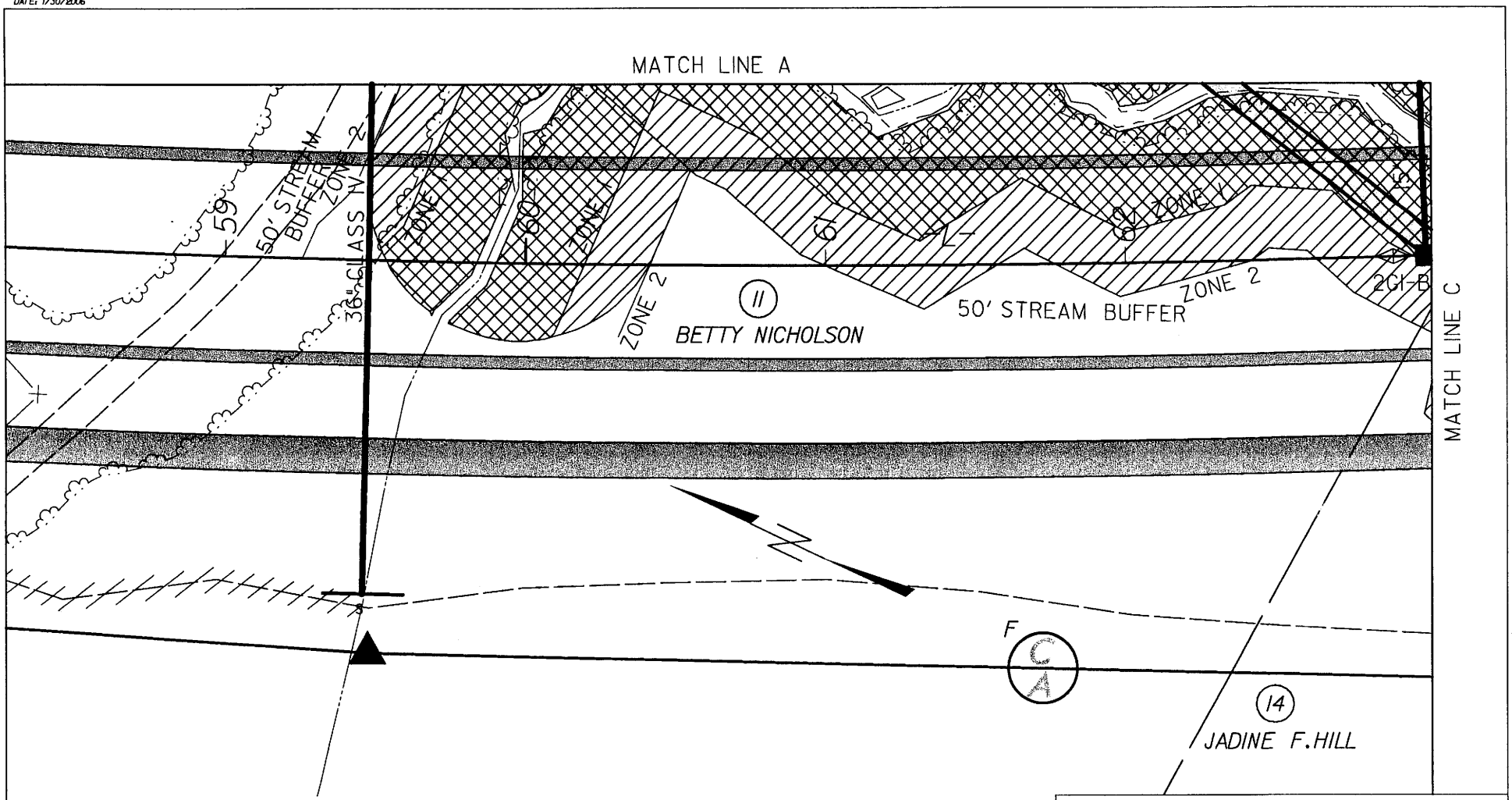
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 12 **OF** 26 **1 / 2006**

USER: RJ
FILE: M:\4155R-2606A\hydraulics\bur3.swf
DATE: 1/30/2006

USER: a)
DGN: h:\41558\r2606d\hydraulics\buf3.bwrd
DATE: 1/30/2006



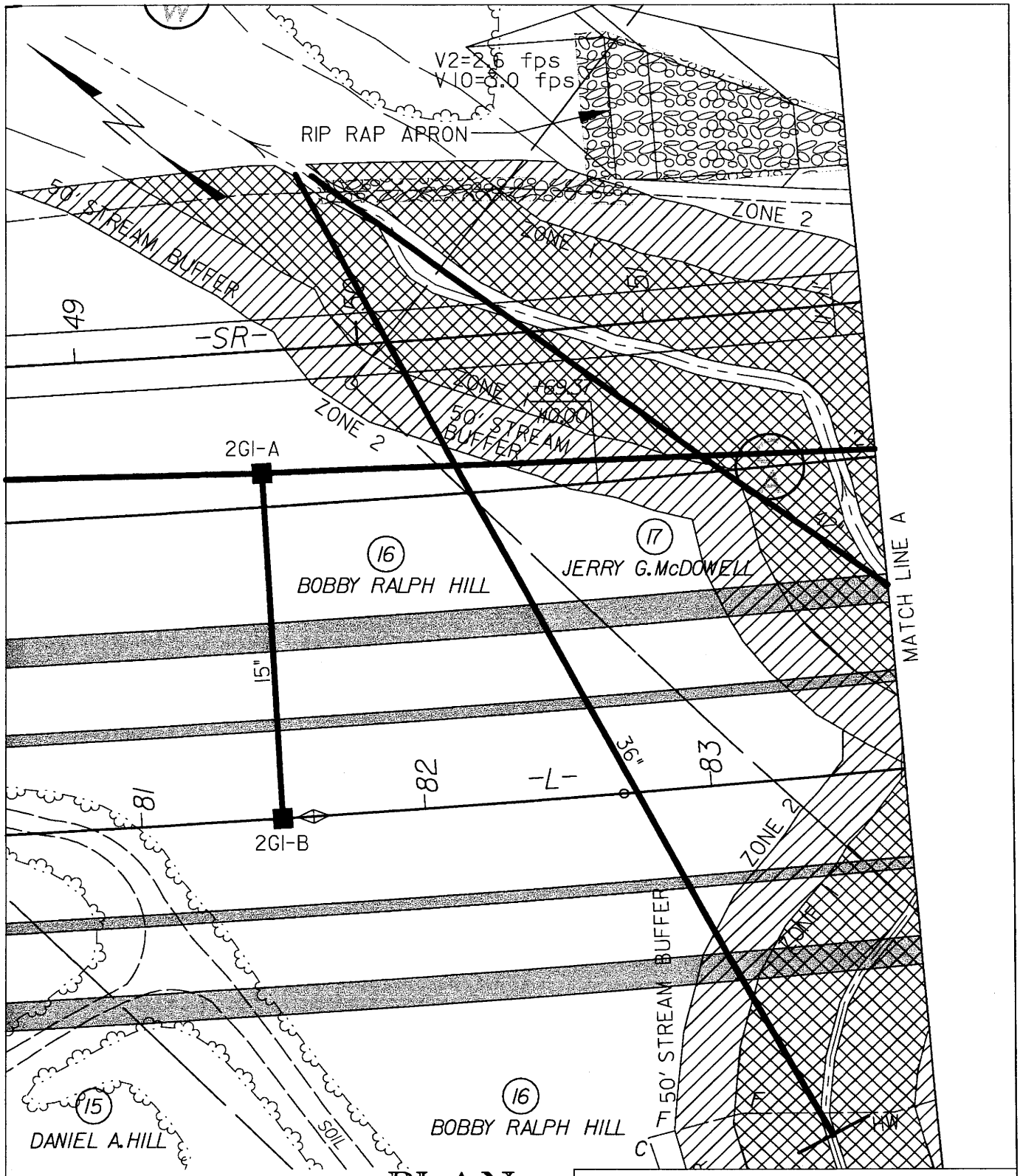
PLAN VIEW
SITE 3

0 50 ft 100 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 13 **OF** 28 / **2006**



0 50 ft 100 ft

PLAN VIEW SITE 4

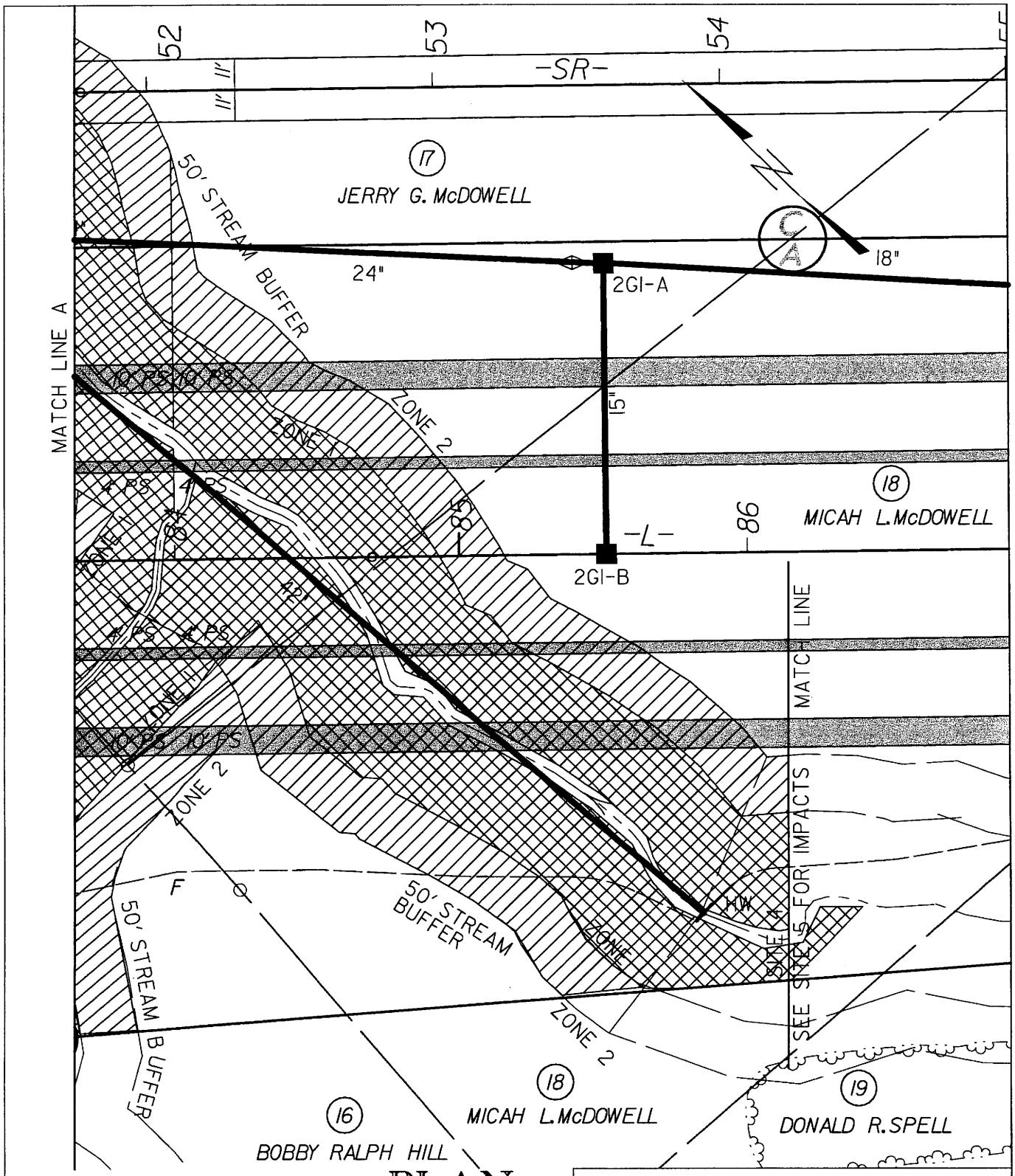
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 14 **OF** 26 **/ / 2006**

USER: ej
DGN: M158Ry2606Ahydraulicsbuffer.dgn
DATE: 1/31/2006



PLAN VIEW SITE 4

0 50 ft 100 ft

NCDOT

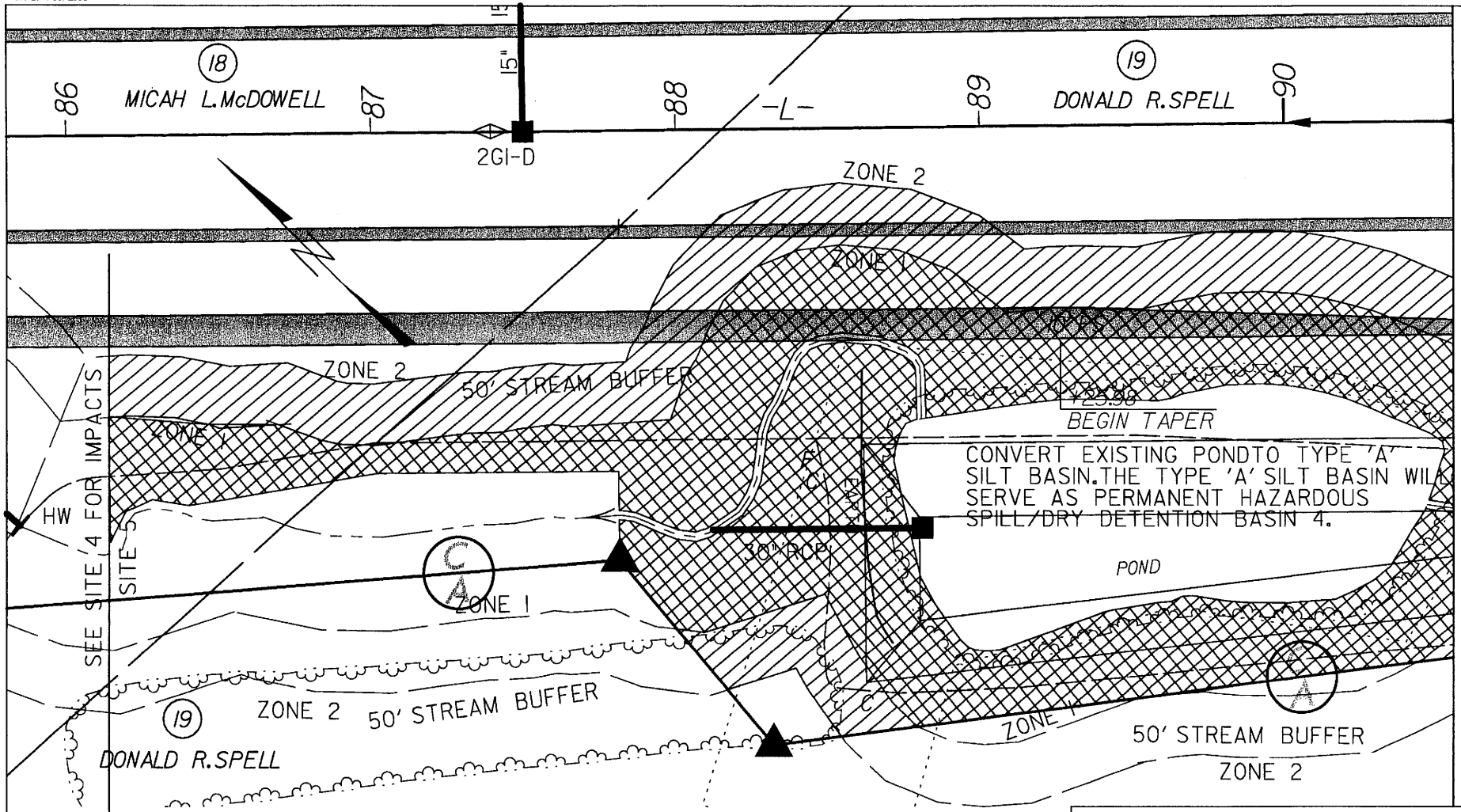
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 15 **OF** 26 **/ 2006**

USER: aj
DGN: N:\R2590-2606A\Hydraulics\Out-4bw.dgn
DATE: 1/30/2006

USER: ej
DGN: h:\41558\r2606a\hydraulics\buf5a.wet
DATE: 1/30/2006



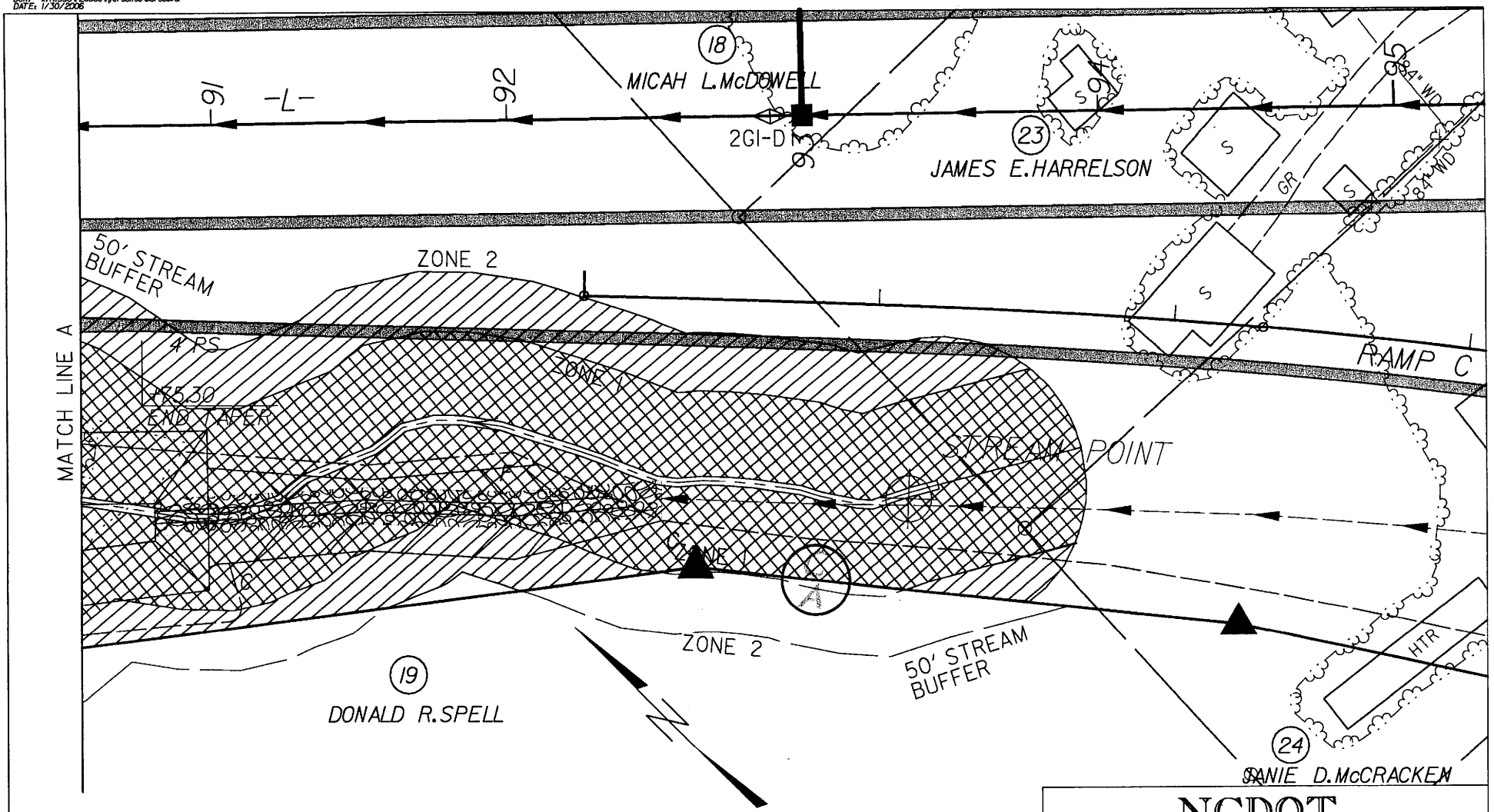
PLAN VIEW
SITE 5

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 16 **OF** 26 / **2006**

USER: e)
DGN: h:\41558\r2606a\hydraulics\buf5bwrat
DATE: 1/30/2006



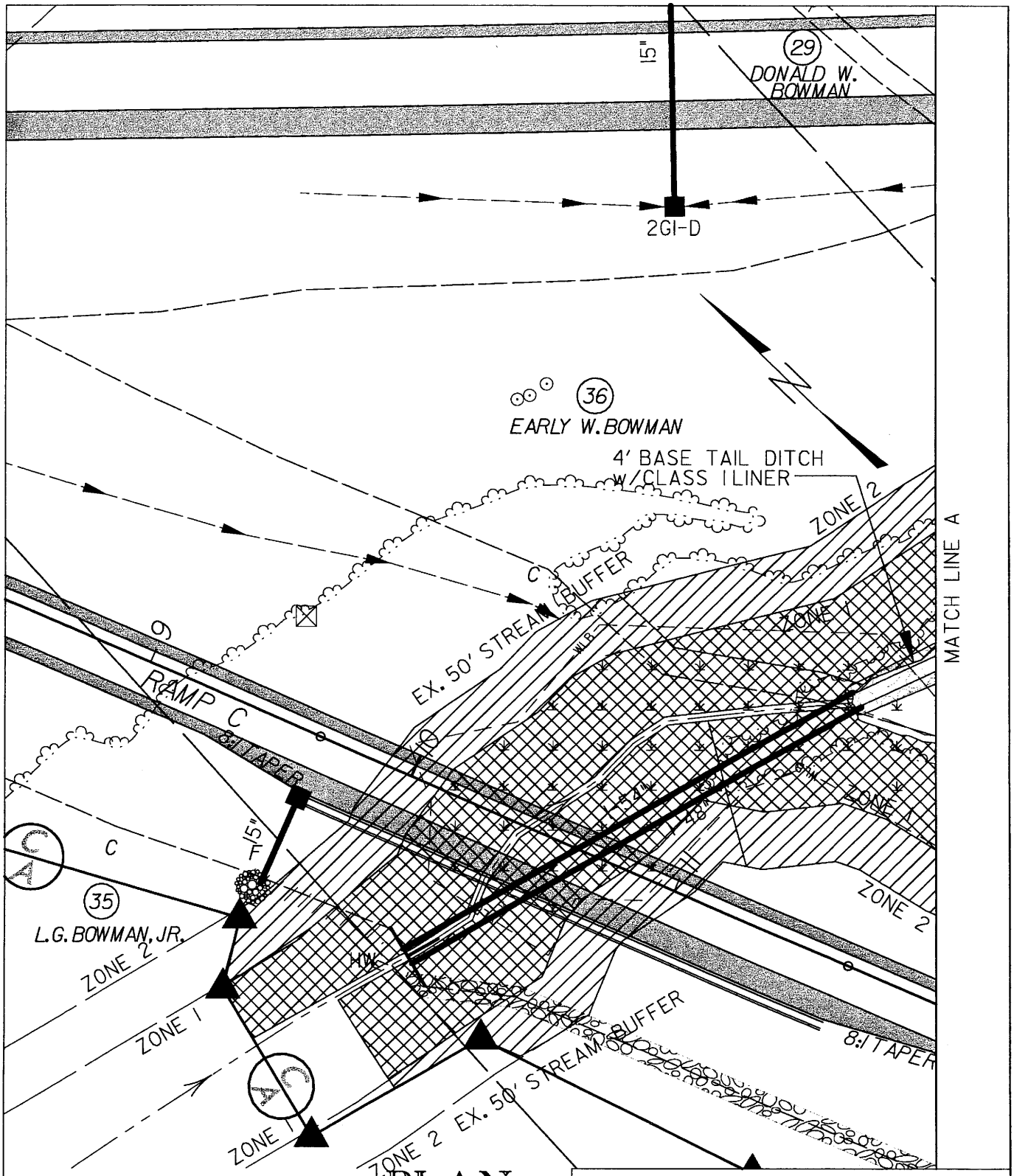
PLAN VIEW
SITE 5

0 50 ft 100 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 17 OF 28 1/ 2006



0 50 ft 100 ft

PLAN VIEW SITE 6

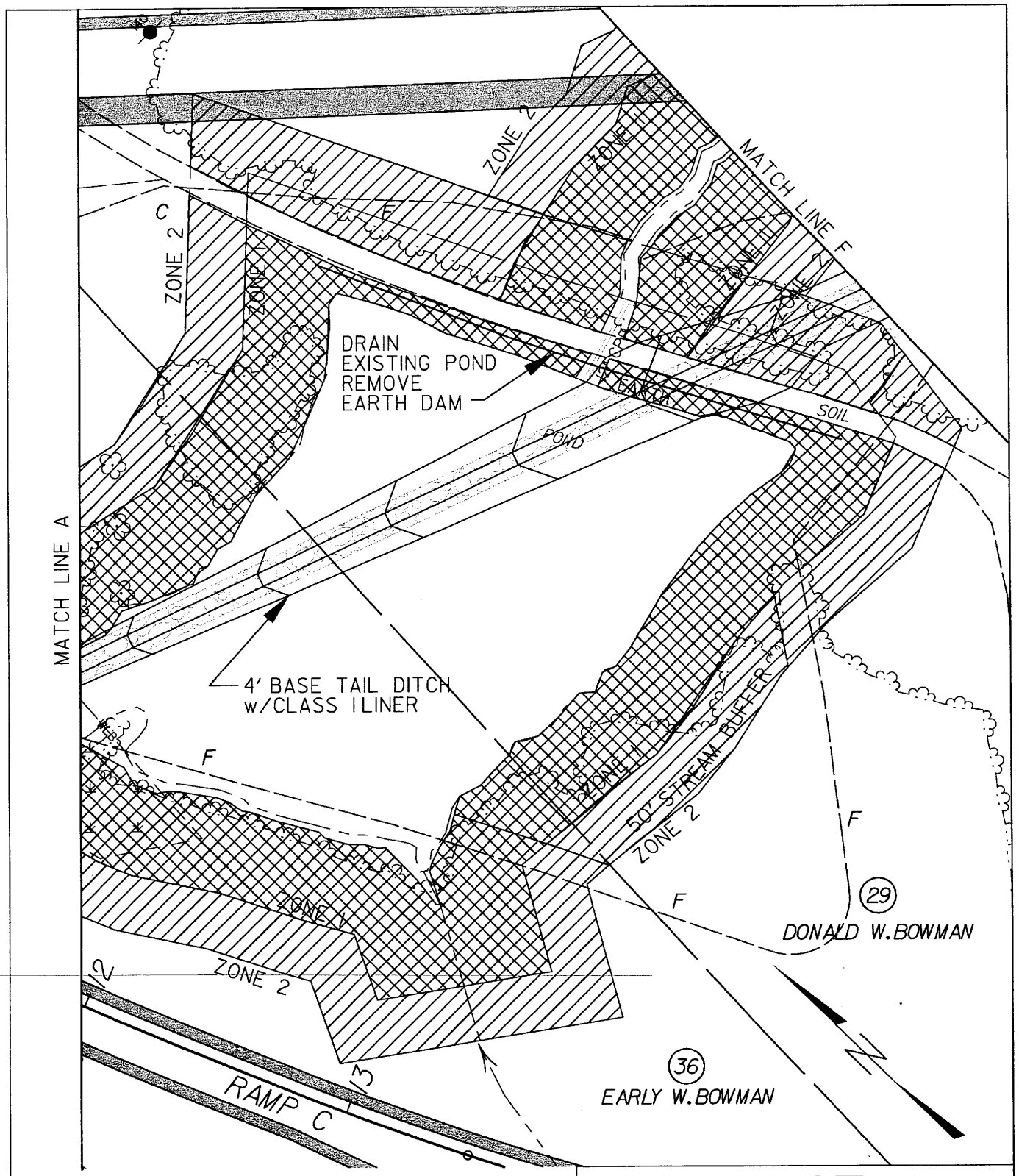
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 18 **OF** 26 1 / **2006**

USER: al
DGN: 8.1571501_R2606A_Hydraulics_Outfalls.dgn
DATE: 1/31/2006



0 50 ft 100 ft

PLAN VIEW SITE 6

NCDOT

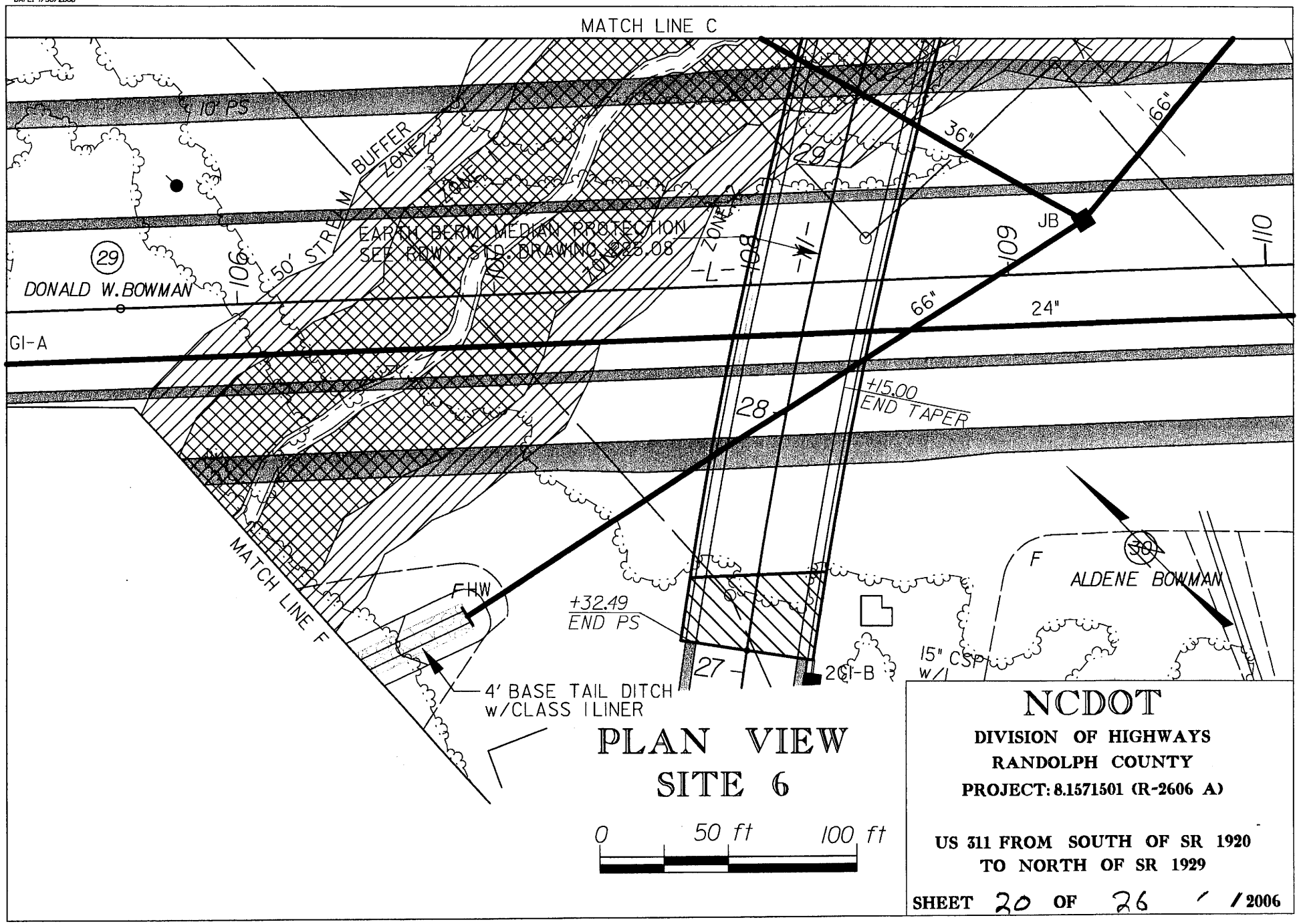
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 19 **OF** 26 1/31/2006

USER: aj
DGN: 41558\r2606\hydraulics\buf6bwet
DATE: 1/30/2006

USER: ej
DGN: h:\41558\r-2606a\hydraulics\buf7a.wet
DATE: 1/30/2006



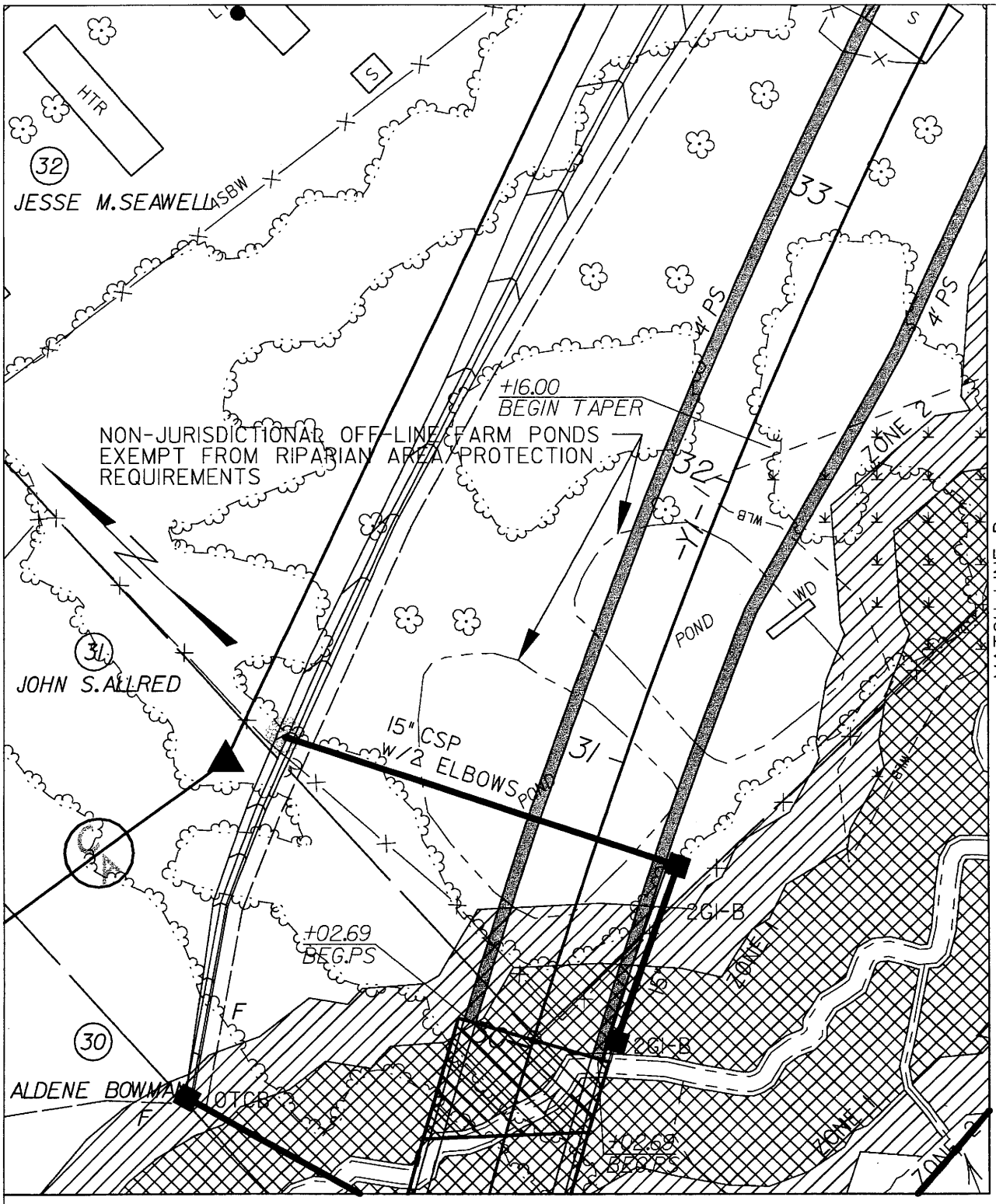
PLAN VIEW
SITE 6

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 20 **OF** 26 / **/2006**



MATCH LINE C

0 50 ft 100 ft

PLAN VIEW SITE 6

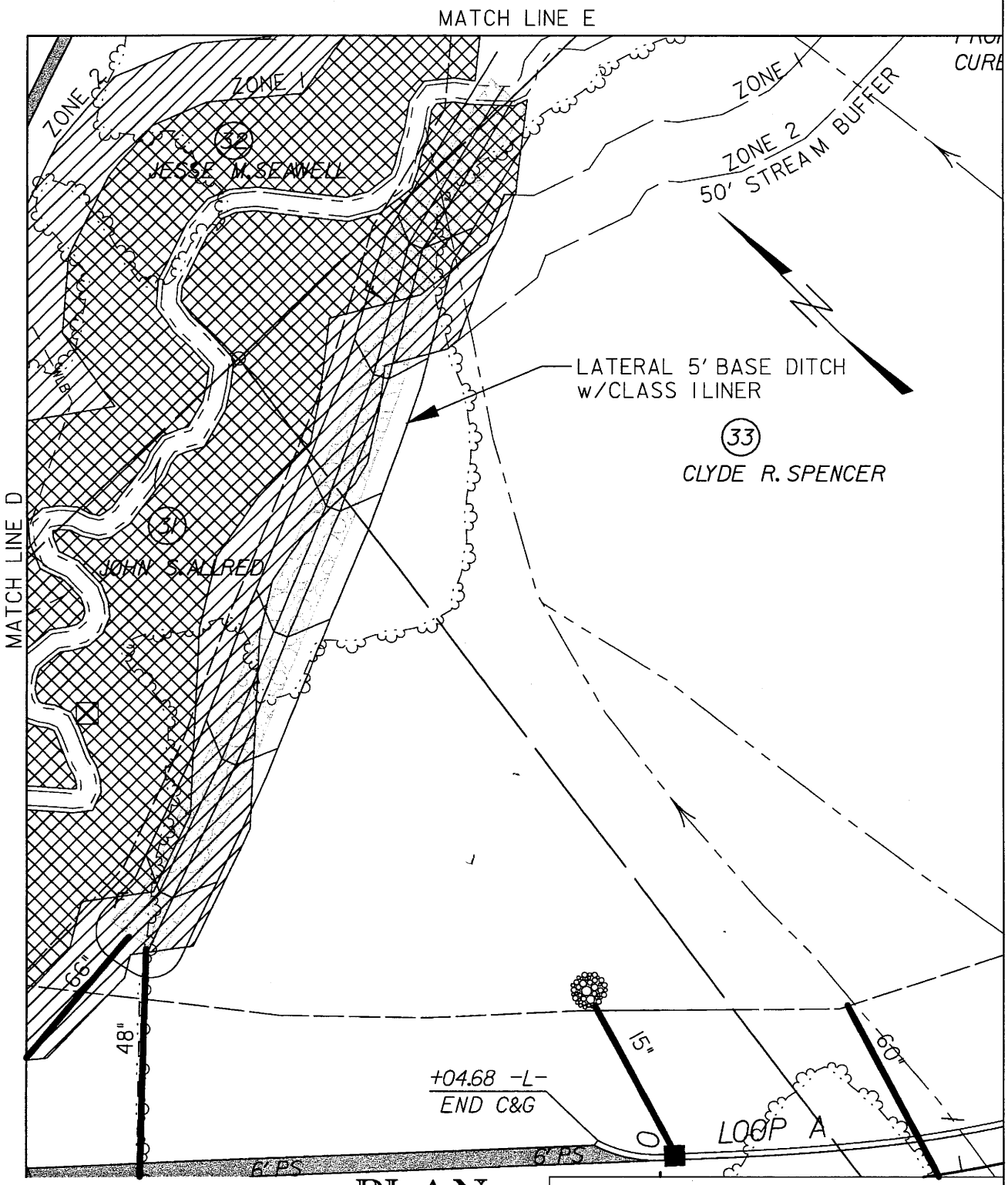
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 21 OF 26 / / **2006**

USER: rj
DGN: 41558-r2606a\hydraulics\bu17\bu17.dwl
DATE: 1/30/2006



0 50 ft 100 ft

PLAN VIEW SITE 6

NCDOT

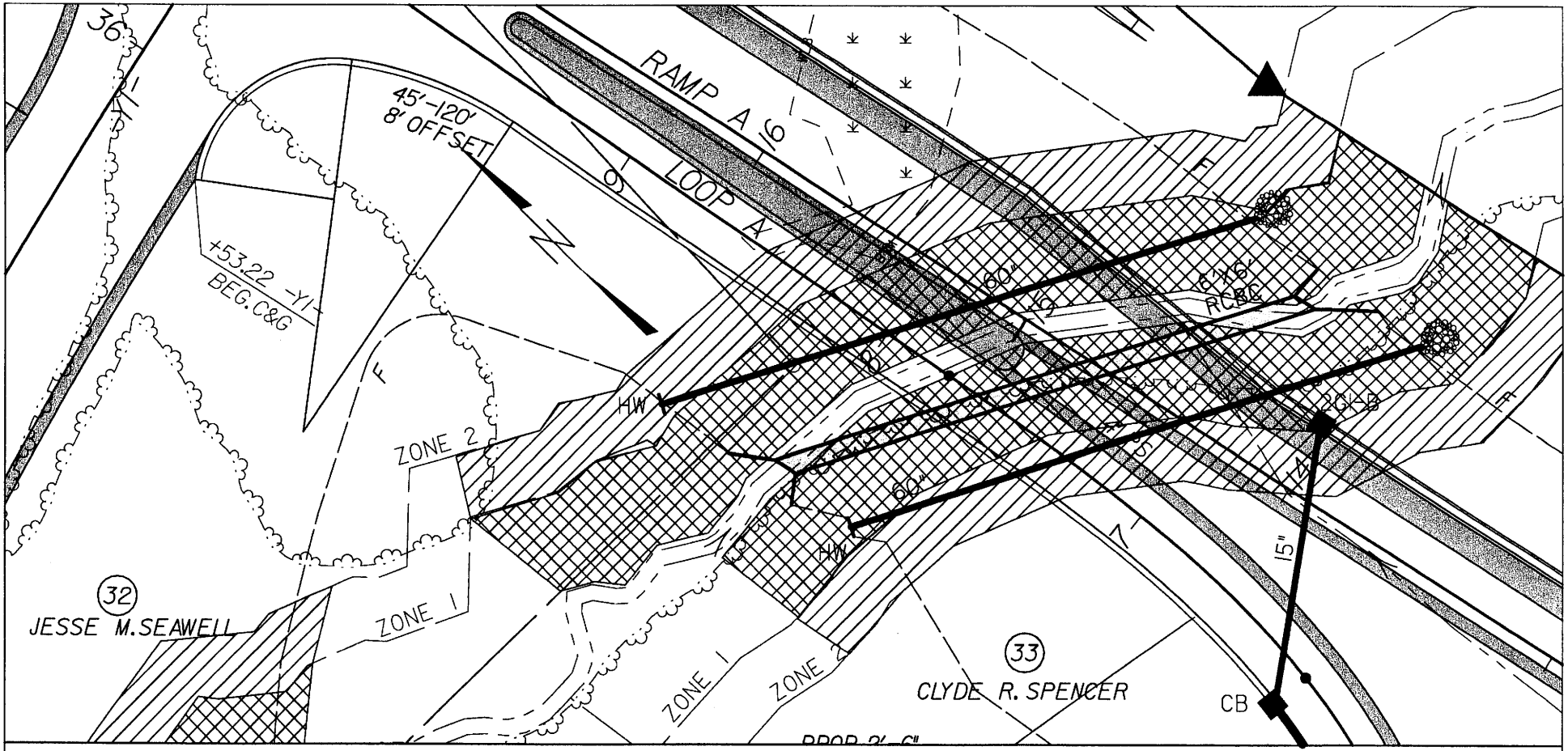
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 22 **OF** 26 / / **2006**

USER: ej
DGN: h:\8.1571501\r2606a\hydraulics\buffcurve
DATE: 11/30/2006

USER: aj
DGN: h:\41558\r-2606a\hydraulics\buff7d.wet
DATE: 1/30/2006



MATCH LINE E

PLAN VIEW
SITE 6

0 50 ft 100 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 23 OF 26 / / **2006**

BUFFER IMPACTS SUMMARY

			IMPACT								BUFFER REPLACEMENT	
			TYPE		ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (s.f.)	ZONE 2 (s.f.)	TOTAL (s.f.)	ZONE 1 (s.f.)	ZONE 2 (s.f.)	TOTAL (s.f.)	ZONE 1 (s.f.)	ZONE 2 (s.f.)
1	Bridge	-L- Sta 21+85	X		11935	9116	21051			0		
		TO 23+45					0			0		
							0			0		
2	1-12'x8' RCBC	-L- 45+99	X				0	29846	16473	46319		
	Note: 1250 sf (0.029ac) and 3560 sf (0.082 ac) of wetlands are within Zone1 and 2, respectively.						0			0		
							0			0		
3	1-8'x5' BOTTOMLESS STRUCTUR	-L- 63+06	X				0	55664	34704	90368		
	& 36" RCP						0			0		
4	1-36" RCP &	-L- 80+68	X				0	46952	28059	75011		
	1-42" RCP	TO 86+05					0			0		
5	30" RCP w/RISER	-L- 85+50	X				0	44530	21659	66189		
	IN PERM. A BASIN	TO 94+04					0			0		
							0			0		
							0			0		
6	1@54" RCP & 1@48" RCP	RAMP C 9+65	X				0	115059	76153	191212		
	66" RCP	-L- 106+90	X				0			0		
	1@6'x6' RCBC & 2@60" RCP	-RAMPA- 14+72	X				0			0		
							0			0		
	Note: 13723 sf (0.315 ac) and 3834 sf (0.088 ac) of wetlands are within Zone 1 and 2, respectively.						0			0		
TOTAL:					11935	9116	21051	292051	177048	469099	0	0

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

Jan-06

SHEET 24 OF 26

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	KEPLEY-FRANK HARDWOOD CO., INC.	975 CONRAD HILL MINE ROAD LEXINGTON, NC 27292
2	MAGGIE N. POOLE	6020 POOLE ROAD ARCHDALE, NC 27263
4	RAY POOLE	P.O. BOX 14411 ARCHDALE, NC 27263
5	JAMES H. TROTTER	6191 POOLE ROAD ARCHDALE, NC 27263
7	TIMOTHY LARUE TROTTER	5930 POOLE ROAD ARCHDALE, NC 27263
8	ZOLA ROSENGERG	5930 POOLE ROAD ARCHDALE, NC 27263-7850
11	BETTY NICHOLSON	5848 POOLE ROAD ARCHDALE, NC 27263-7850
14	JADINE F. HILL	6461 LEWIS DAVID ROAD RANDLEMAN, NC 27317-7219
16	BOBBY RALPH HILL	3638 HOOVER HILL ROAD TRINITY, NC 27370
17	JERRY G. McDOWELL	5597 GODNICK LANE ARCHDALE, NC 27263
18	MICAH L. McDOWELL	3310 MOUNT OLIVE CHURCH ROAD SOPHIA, NC 27350
19	DONALD R. SPELL	214 ASHLAND STREET ARCHDALE, NC 27263
23	JAMES E. HARRELSON	5557 GODNICK LANE ARCHDALE, NC 27263
24	JANIE D. McCRACKEN	5547 GODNICK LANE ARCHDALE, NC 27263
29	DONALD W. BOWMAN	323 KENDALL MILL ROAD THOMASVILLE, NC 27360
30	ALDENE BOWMAN	ROUTE 2, BOX 264 TRINITY, NC 27370

NCDOT

DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 25 OF 26 1/06

USER: rremy
DGN: k:\4558\r2606a\Hydraulics\OWNER.WET
DATE: 07/14/2005

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
31	JOHN S. ALLRED	ROUTE 3, BOX 393 HIGH POINT, NC 27263
32	JESSE M. SEAWELL	ROUTE 3, BOX 392 HIGH POINT, NC 27263
33	CLYDE R. SPENCER	ROUTE 3, BOX 518 HIGH POINT, NC 27263
35	L. G. BOWMAN, JR.	5590 CEDAR SQUARE ROAD ARCHDALE, NC 27263-8222
36	EARLY W. BOWMAN	215 LINDA DRIVE ARCHDALE, NC 27263-3313

NCDOT

DIVISION OF HIGHWAYS

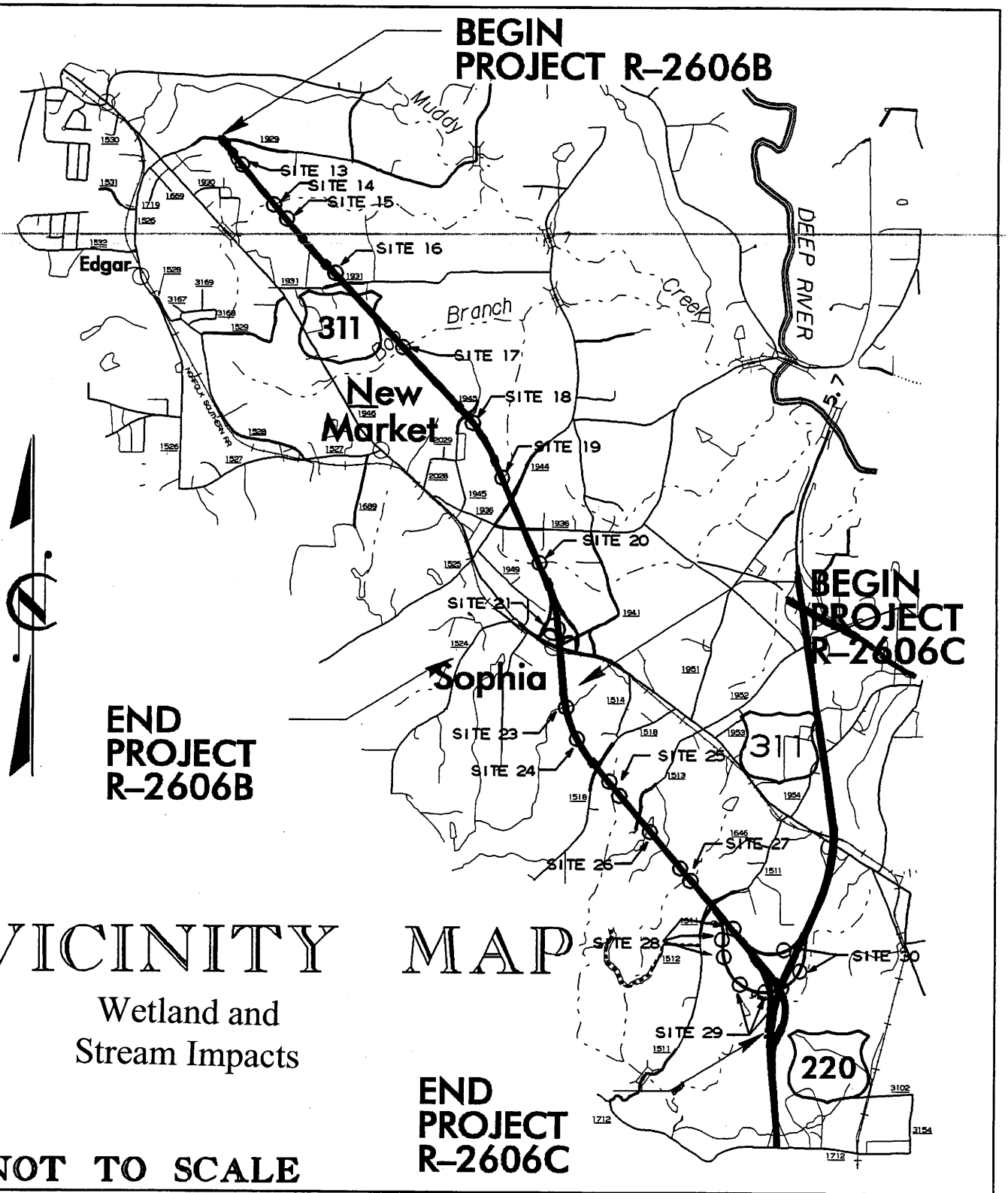
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 26 OF 26

USER: rremy
DGN: k:\4558\r2606a\Hydraulics\OWNER.WET
DATE: 07/14/2005

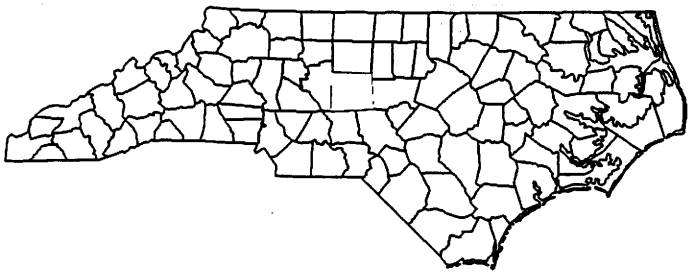


VICINITY MAP

Wetland and
Stream Impacts

NOT TO SCALE

NORTH CAROLINA



NCDOT

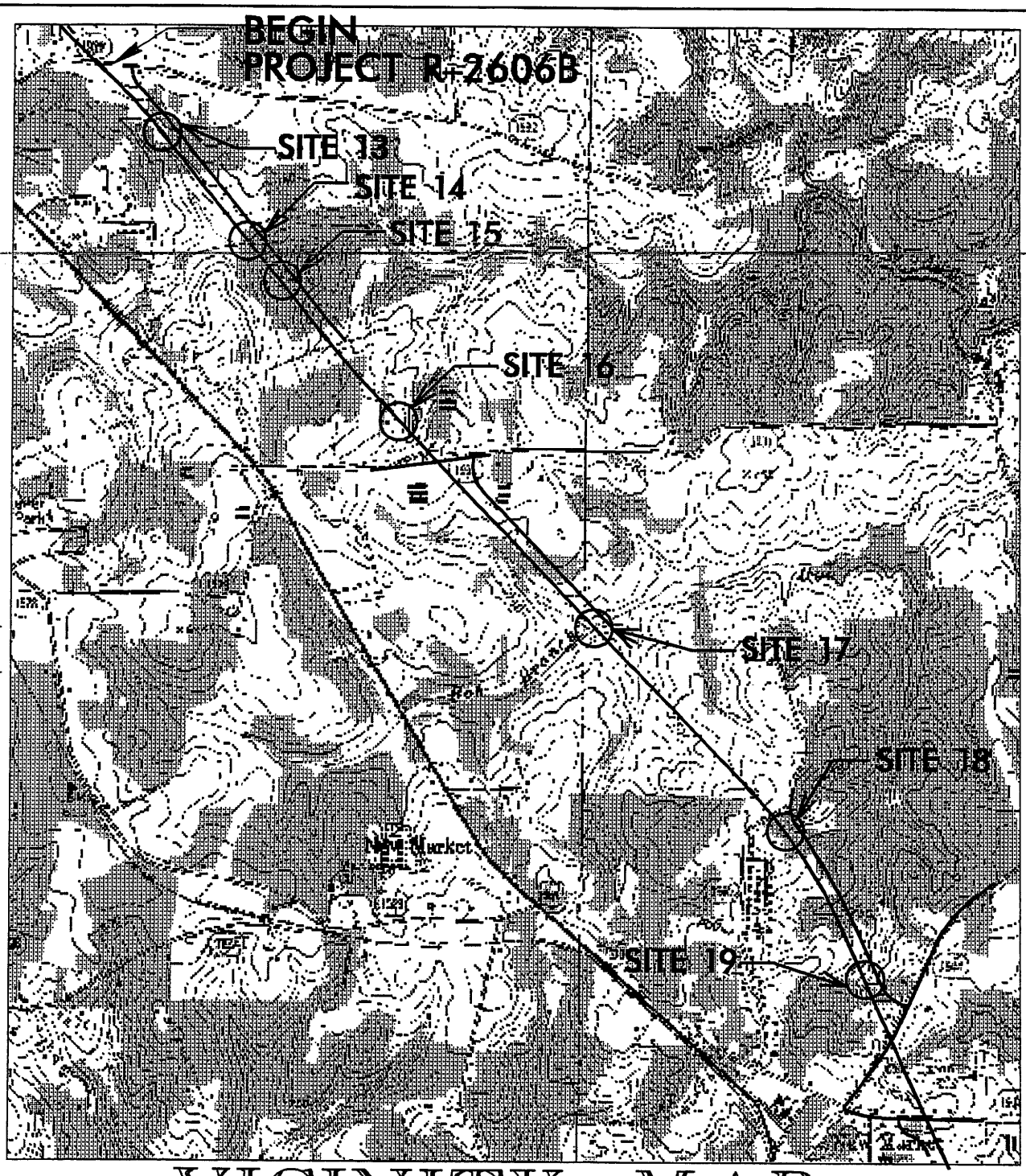
DIVISION OF HIGHWAYS
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B & C)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

REVISED APRIL 26, 2005

SHEET 1 OF 30 AUGUST 9, 2002

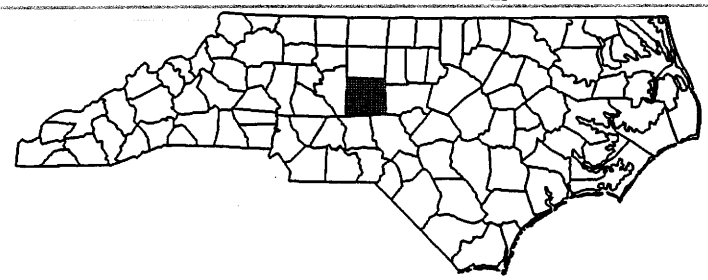


VICINITY MAP

0 1/2 1.0 mile

RANDLEMAN, NC QUAD MAP
GLENOLA, NC QUAD MAP

NORTH CAROLINA



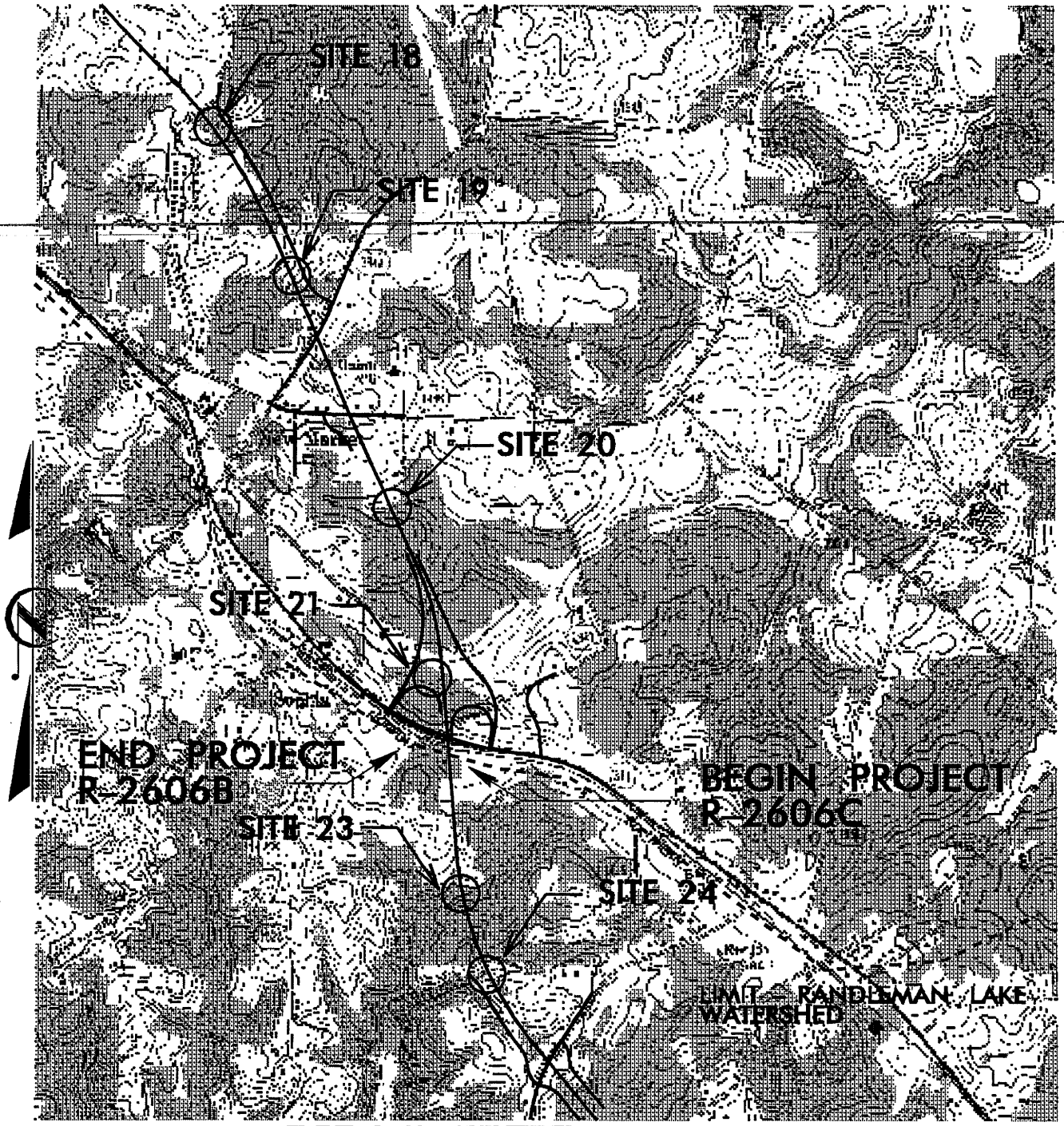
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B and C

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 2 OF 30 AUGUST 9, 2002

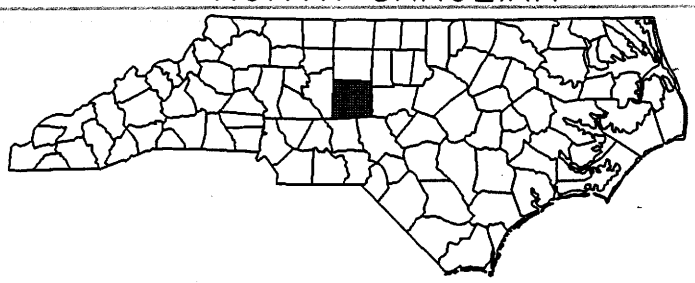


VICINITY MAP

0 ½ 1.0 mile

RANDLEMAN, NC QUAD MAP

NORTH CAROLINA



NCDOT

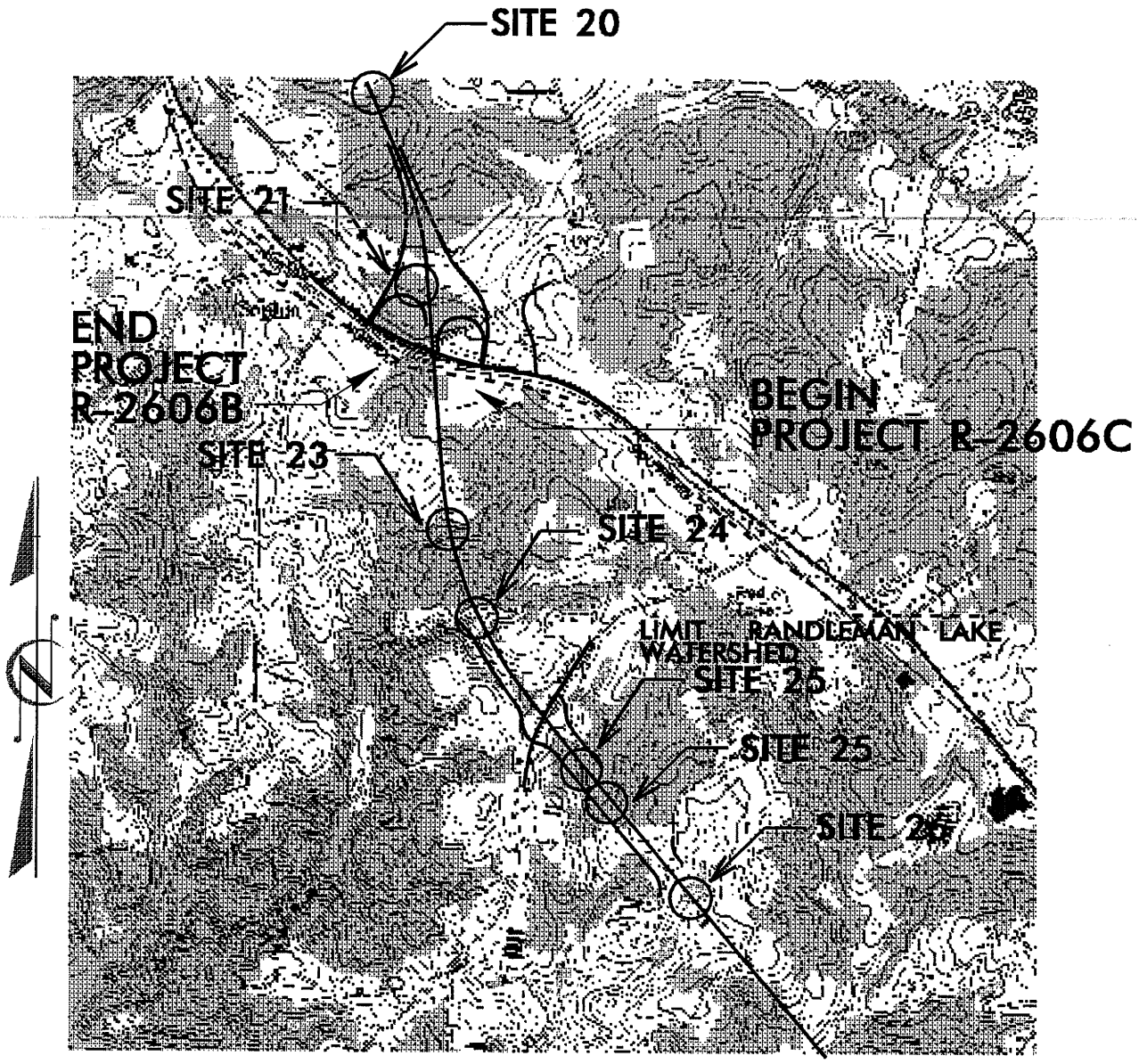
DIVISION OF HIGHWAYS
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B and C

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

REVISED APRIL 26, 2005

SHEET 3 OF 30 AUGUST 9, 2002

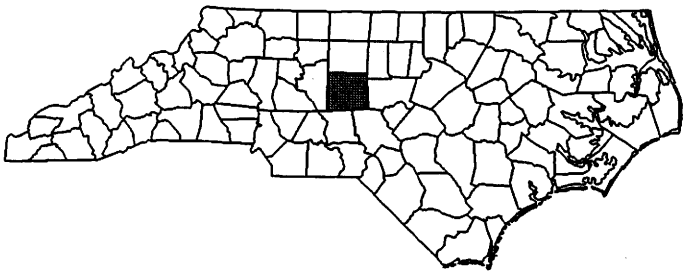


VICINITY MAP

0 ½ 1.0 mile

RANDLEMAN, NC QUAD MAP

NORTH CAROLINA



NCDOT

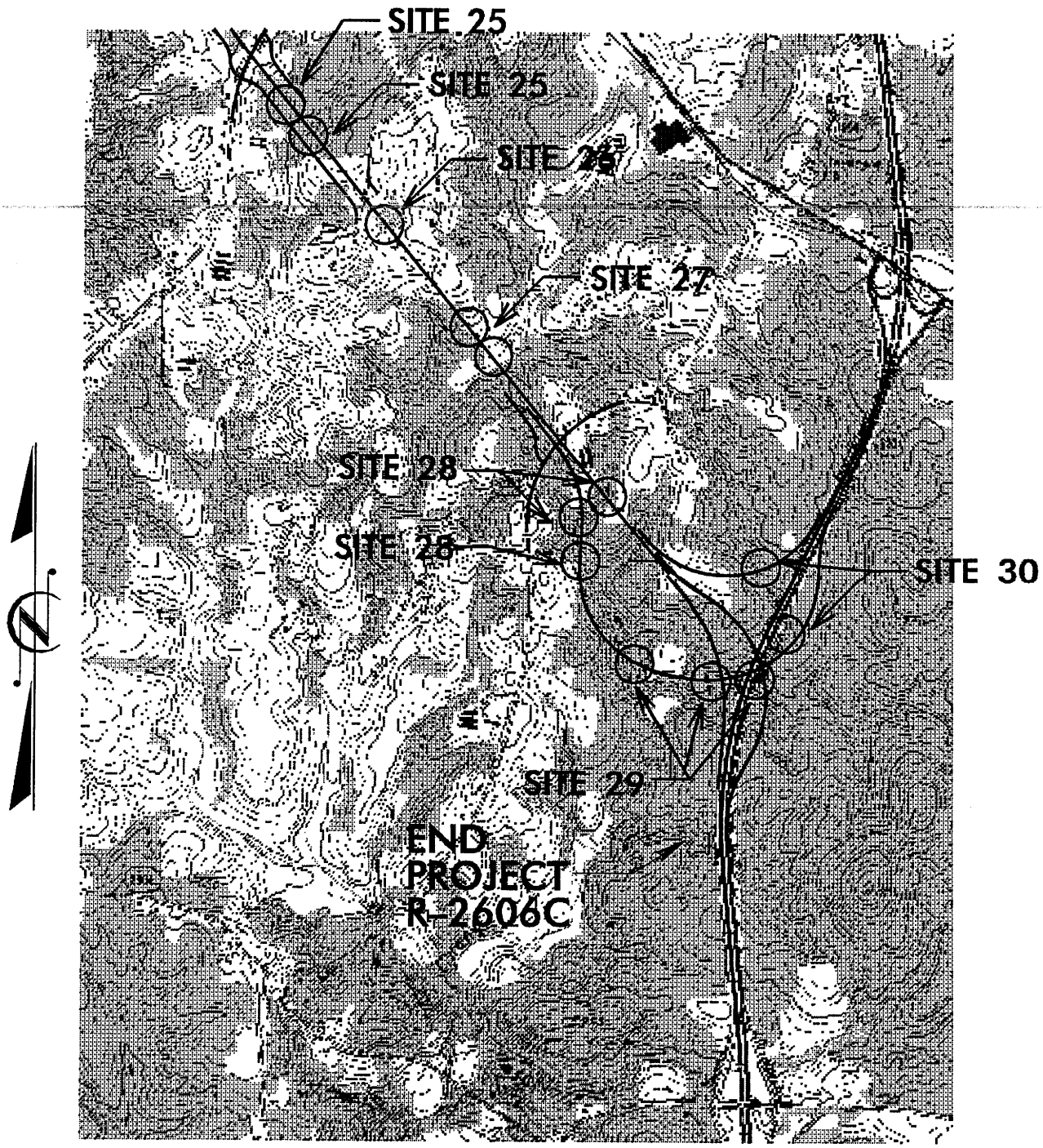
DIVISION OF HIGHWAYS
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B and C

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

REVISED APRIL 26, 2005

SHEET 4 OF 30 AUGUST 9, 2002

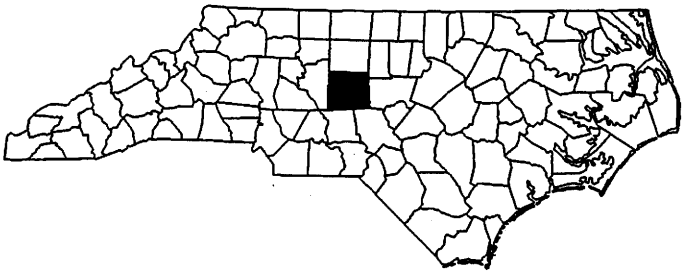


VICINITY MAP

0 ½ 1.0 mile

RANDLEMAN, NC QUAD MAP

NORTH CAROLINA



NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606C)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 5 OF 30 AUGUST 9, 2002

WETLAND LEGEND

WLB — WETLAND BOUNDARY

WLB WLB — WETLAND

F F — DENOTES FILL IN WETLAND

S S — DENOTES FILL IN SURFACE WATER

P P — DENOTES FILL IN SURFACE WATER (POND)

T T — DENOTES TEMPORARY FILL IN WETLAND

E E — DENOTES EXCAVATION IN WETLAND

TS TS — DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

FLOW DIRECTION

TB — TOP OF BANK

WE — EDGE OF WATER

C — PROP. LIMIT OF CUT

F — PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG — NATURAL GROUND

PL — PROPERTY LINE

TDE — TEMP. DRAINAGE EASEMENT

PDE — PERMANENT DRAINAGE EASEMENT

EAB — EXIST. ENDANGERED ANIMAL BOUNDARY

EPB — EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT
12"-48" PIPES
54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 — ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE

LEVEL SPREADER (LS)

DITCH / GRASS SWALE

NCDOT

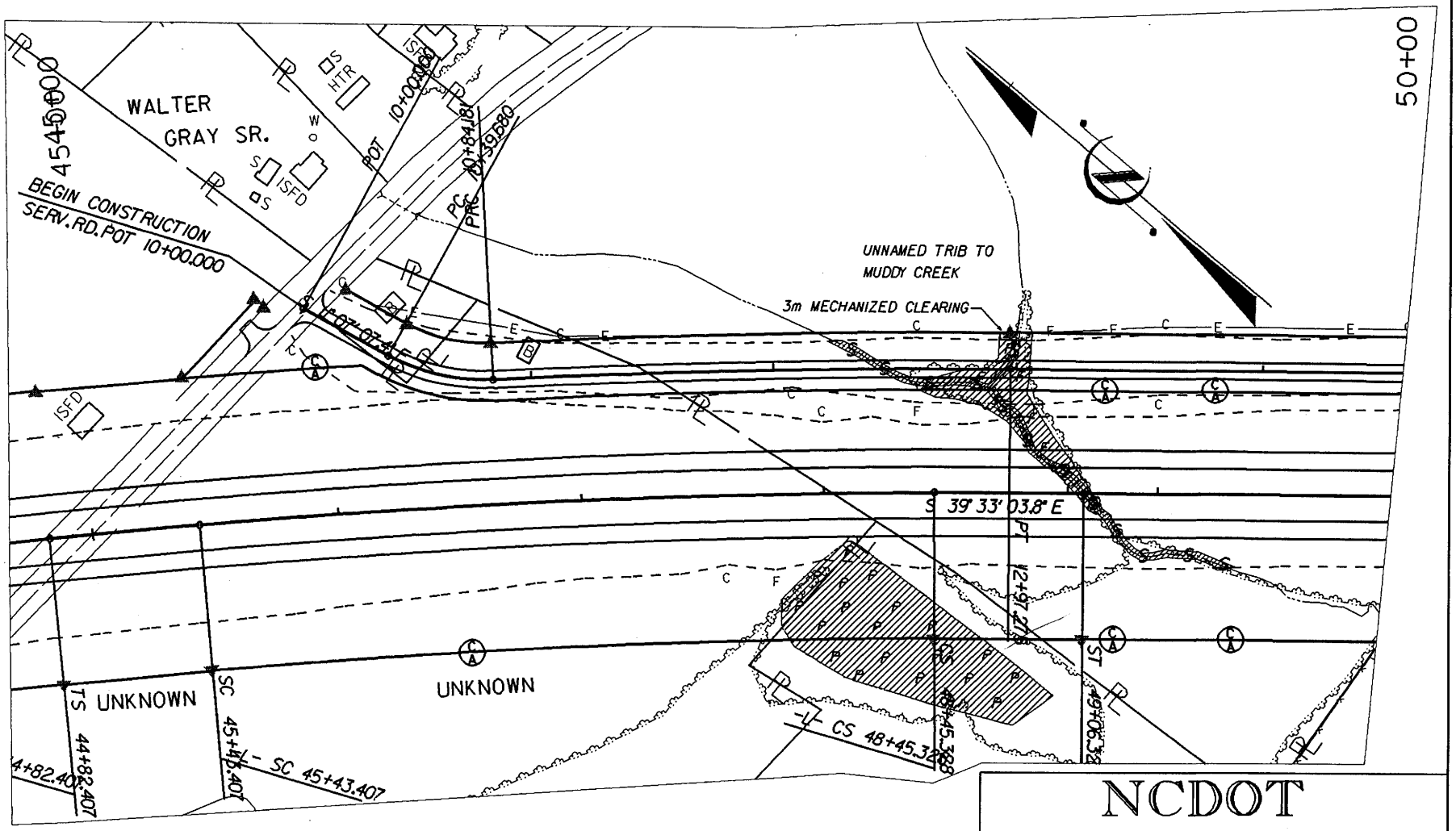
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 6 **OF** 30 **AUGUST 9, 2002**



SITE 13
PLAN VIEW

DENOTES MECHANIZED CLEARING

DENOTES FILL IN SURFACE WATER (POND)

DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER

25m 0 50m

SCALE

NCDOT

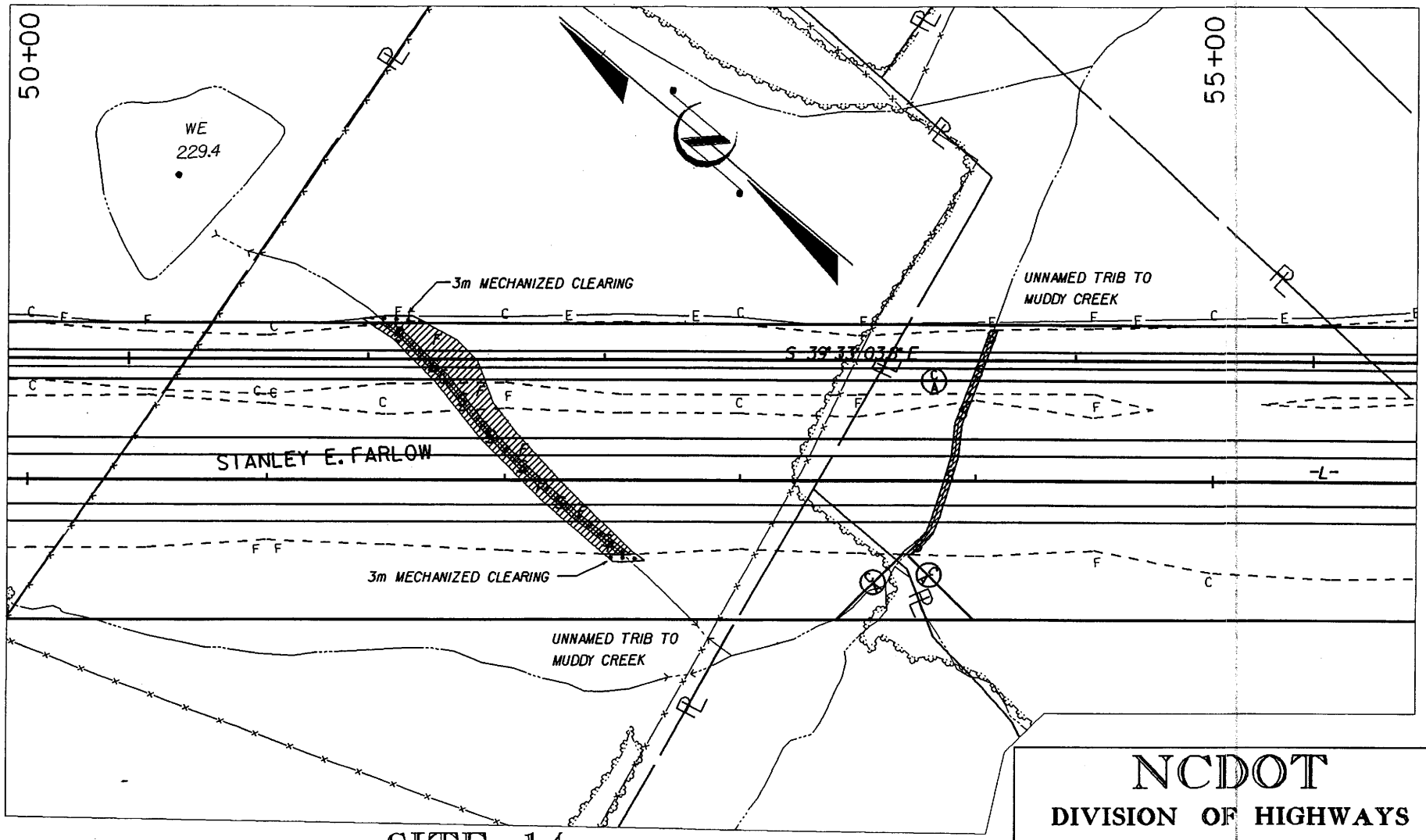
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606)B

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 7 OF 30 AUGUST 9, 2002



SITE 14

PLAN VIEW

DENOTES FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

25m 0 50m

SCALE

NCDOT

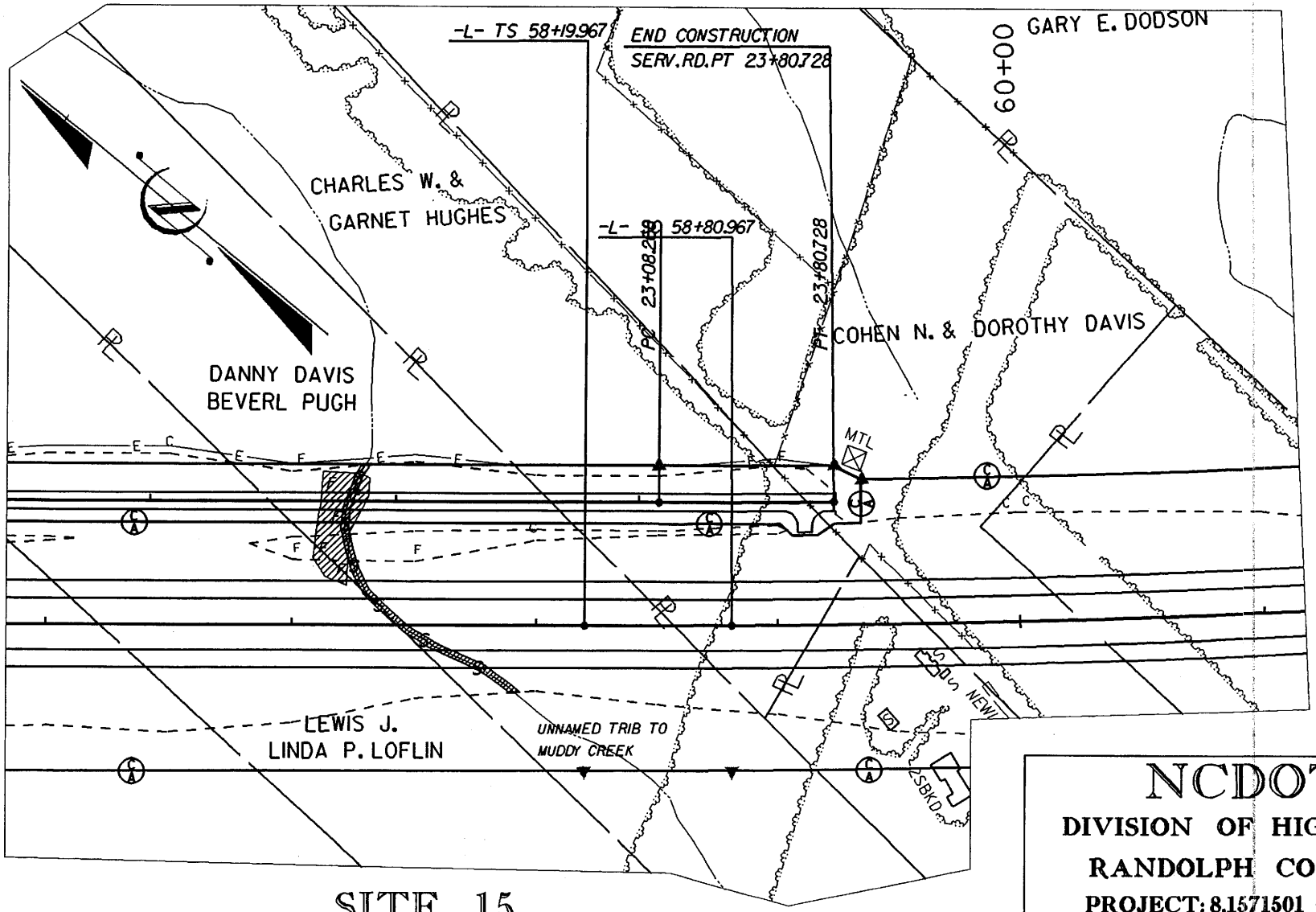
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 8 OF 30 AUGUST 9, 2002



SITE 15
PLAN VIEW

25m 0 50m SCALE

F F DENOTES FILL IN WETLAND

S S DENOTES FILL IN SURFACE WATER

NCDOT

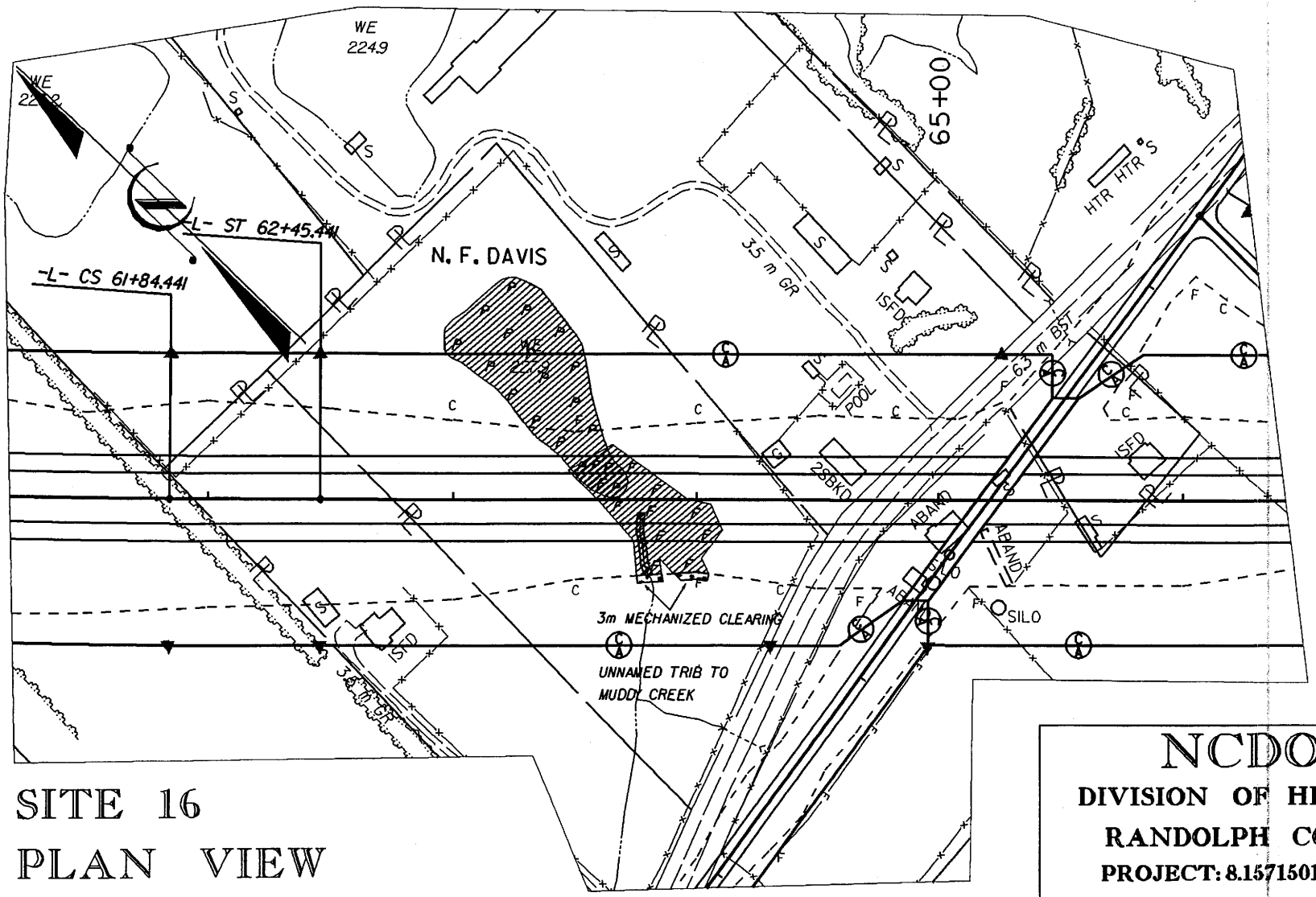
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 9 OF 30 AUGUST 9, 2002



SITE 16
PLAN VIEW

DENOTES MECHANIZED CLEARING

DENOTES FILL IN SURFACE WATER

DENOTES FILL IN SURFACE WATER (POND)

DENOTES FILL IN WETLAND

25m 0 50m

SCALE

NCDOT

DIVISION OF HIGHWAYS

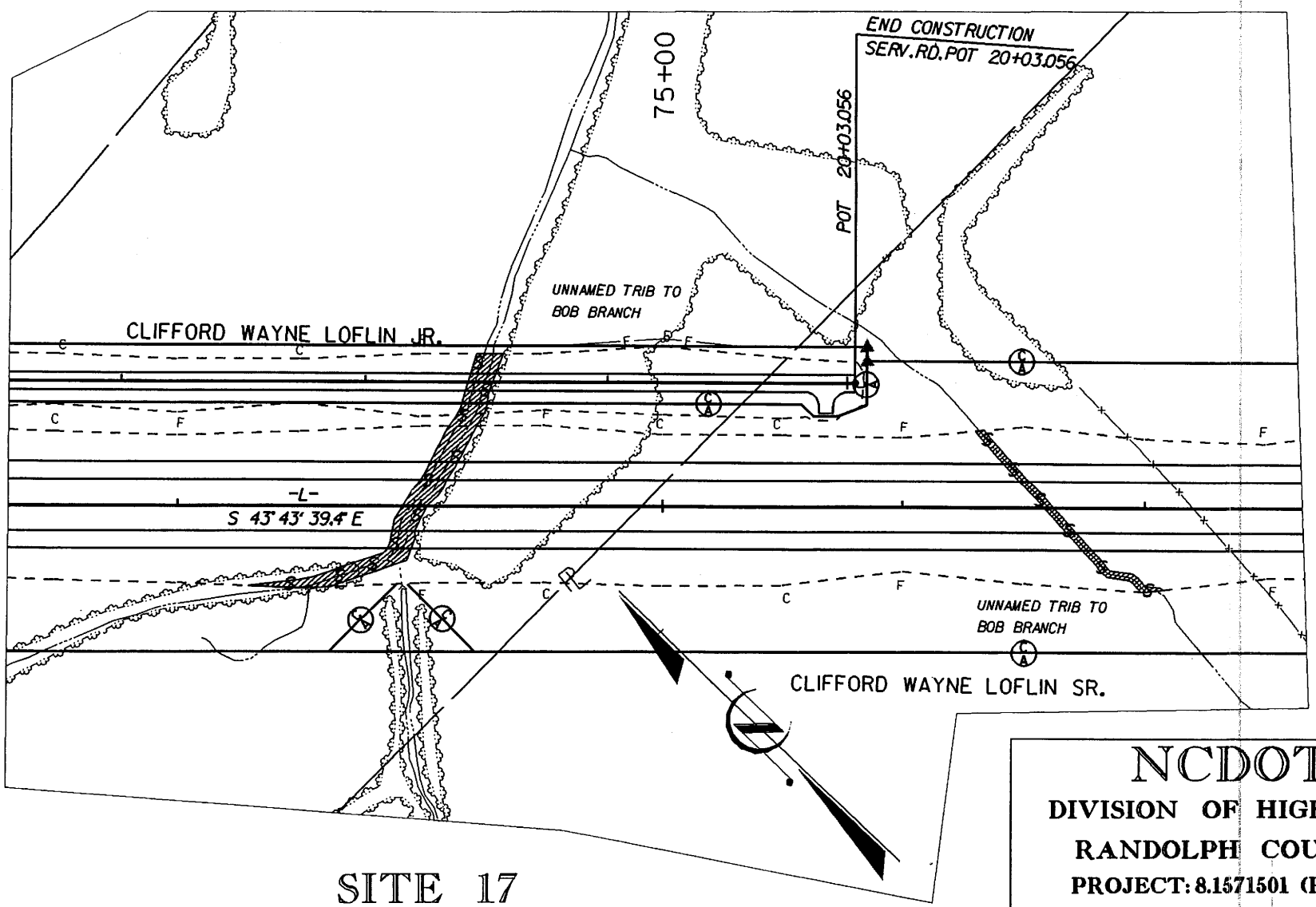
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

REVISED APRIL 26, 2001

SHEET 10 OF 30 AUGUST 9, 2002



SITE 17
PLAN VIEW

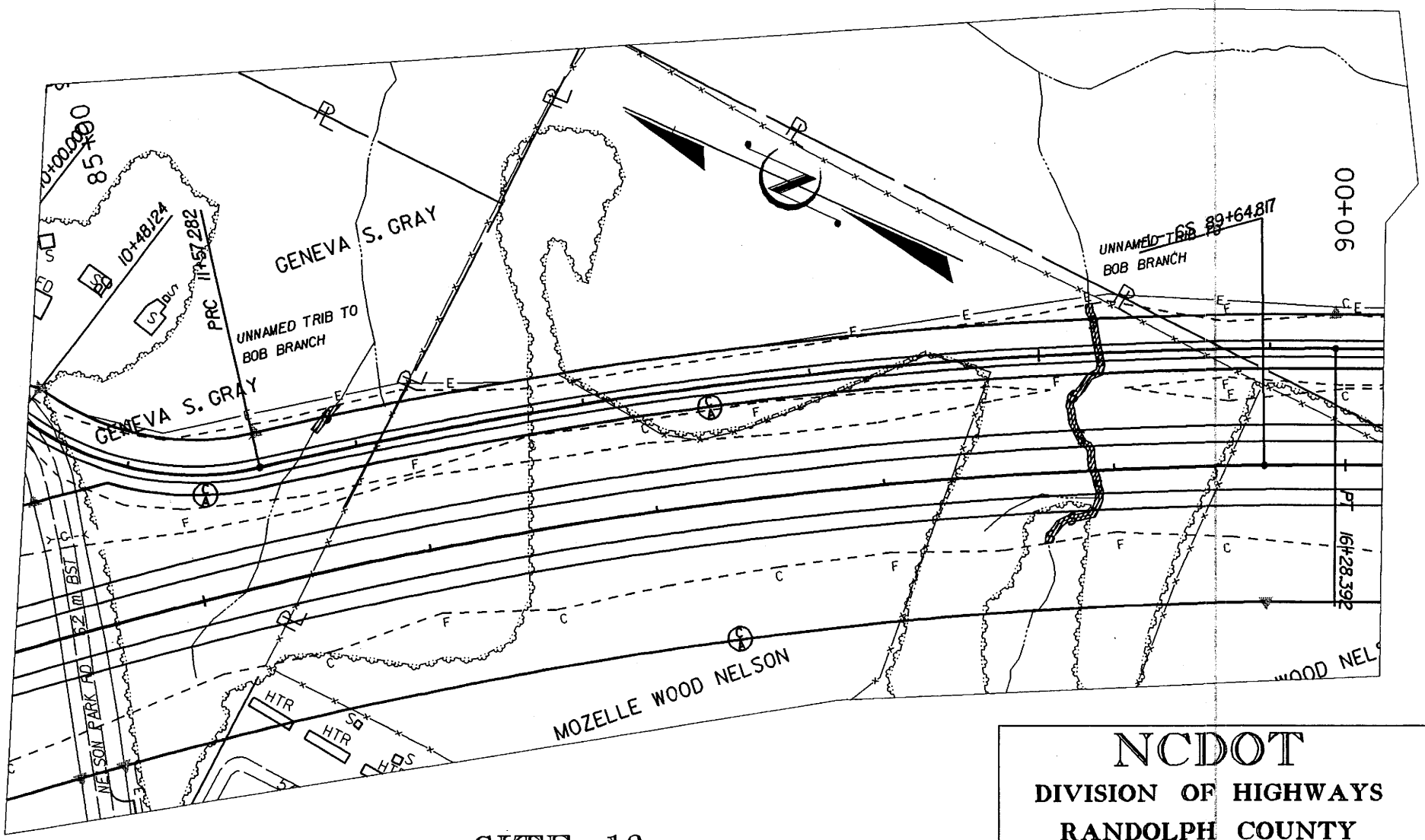
25m 0 50m
SCALE

DENOTES FILL IN SURFACE WATER

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 11 OF 30 AUGUST 9, 2002



SITE 18
PLAN VIEW

25m 0 50m
SCALE

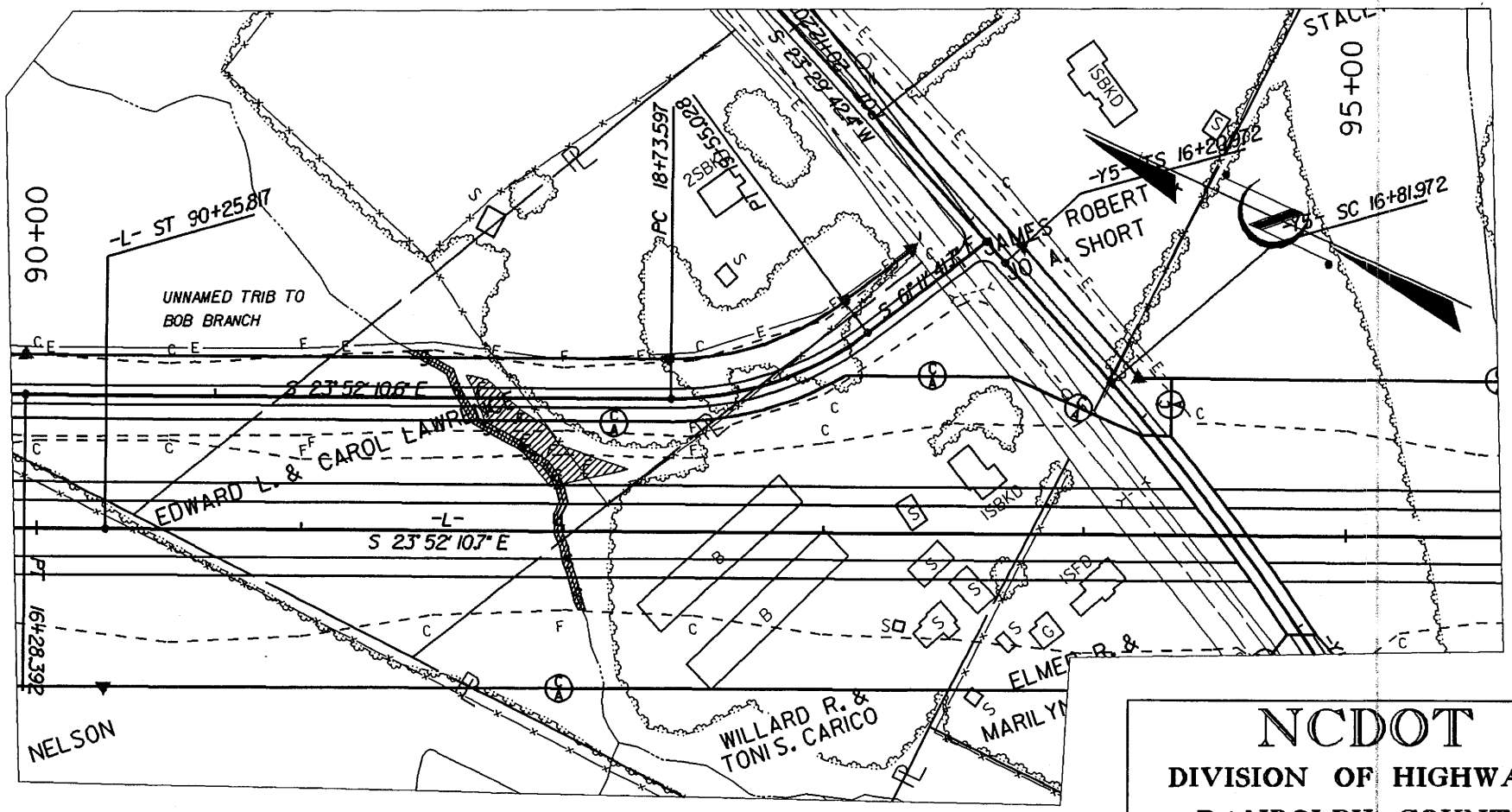
DENOTES FILL IN SURFACE WATER

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

REVISED APRIL 26,2006

SHEET 12 **OF** 30 **AUGUST 9, 2002**



SITE 19
PLAN VIEW

25m 0 50m SCALE

DENOTES FILL IN WETLAND

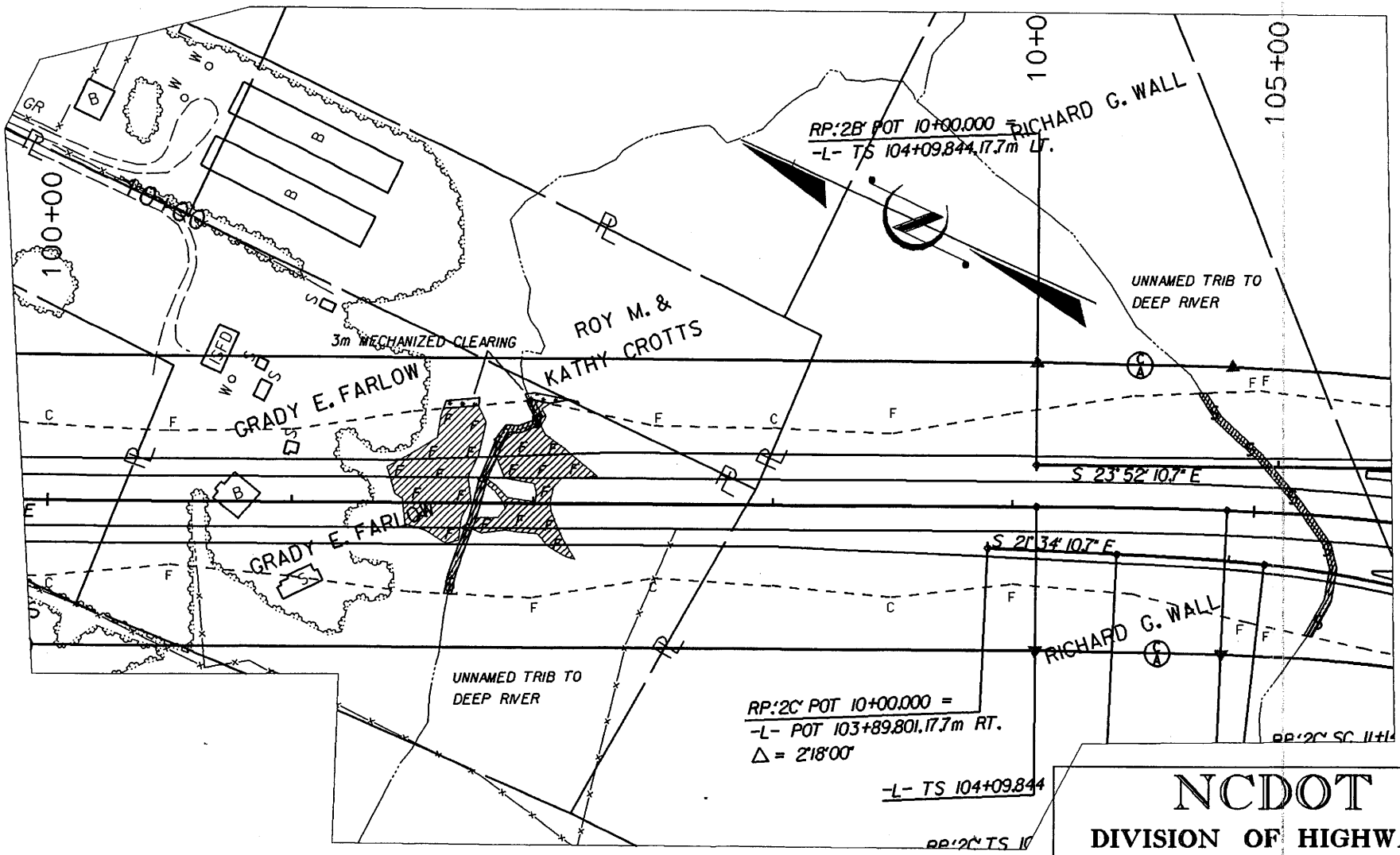
DENOTES FILL IN SURFACE WATER

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 13 OF 30 AUGUST 9, 2002



SITE 20
PLAN VIEW

DENOTES MECHANIZED CLEARING

25m 0 50m SCALE

DENOTES FILL IN SURFACE WATER

DENOTES FILL IN WETLAND

NCDOT

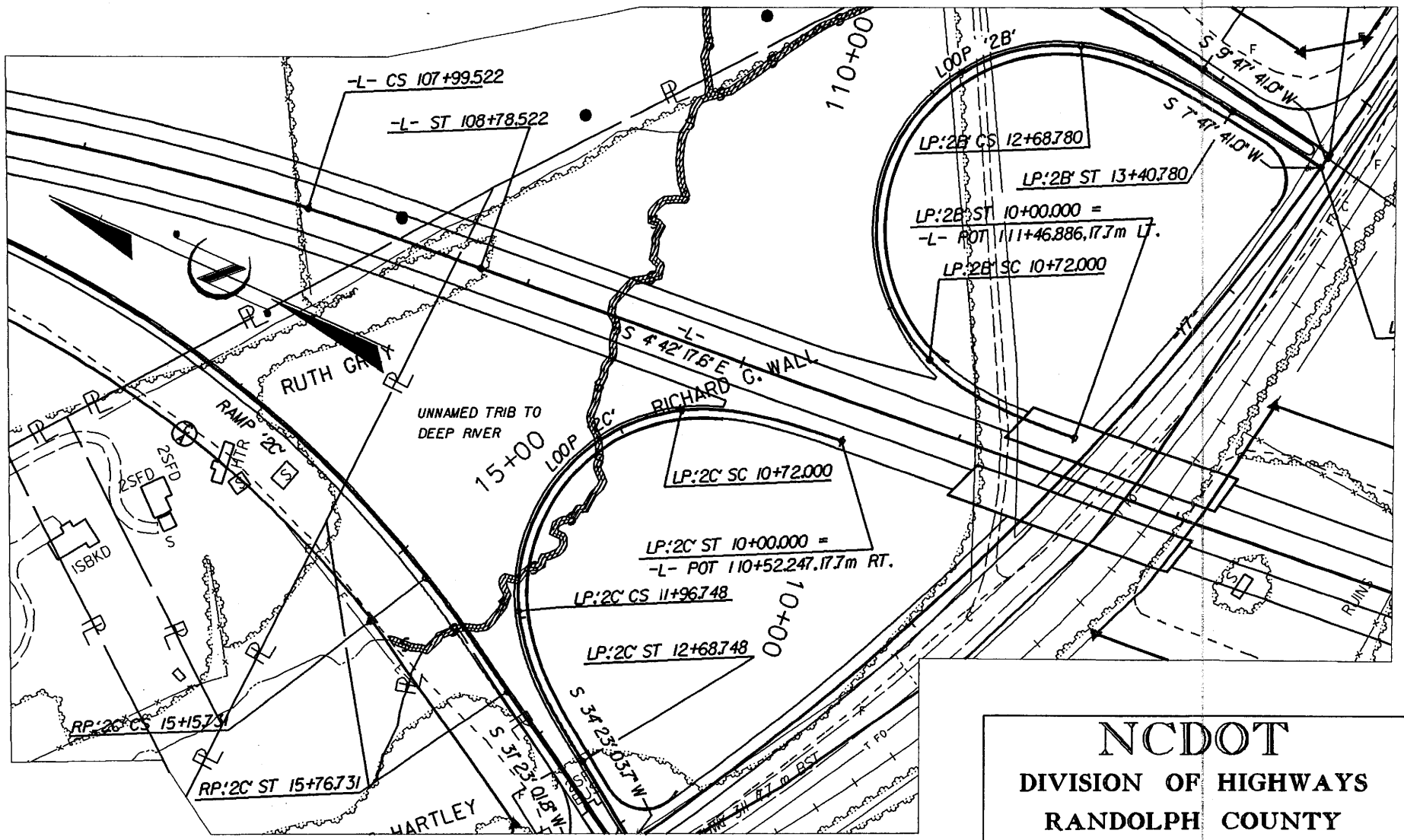
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 11 OF 30 AUGUST 9, 2002



SITE 21

PLAN VIEW

25m 0 50m

SCALE

DENOTES FILL IN SURFACE WATER

NCDOT

DIVISION OF HIGHWAYS

RANDOLPH COUNTY

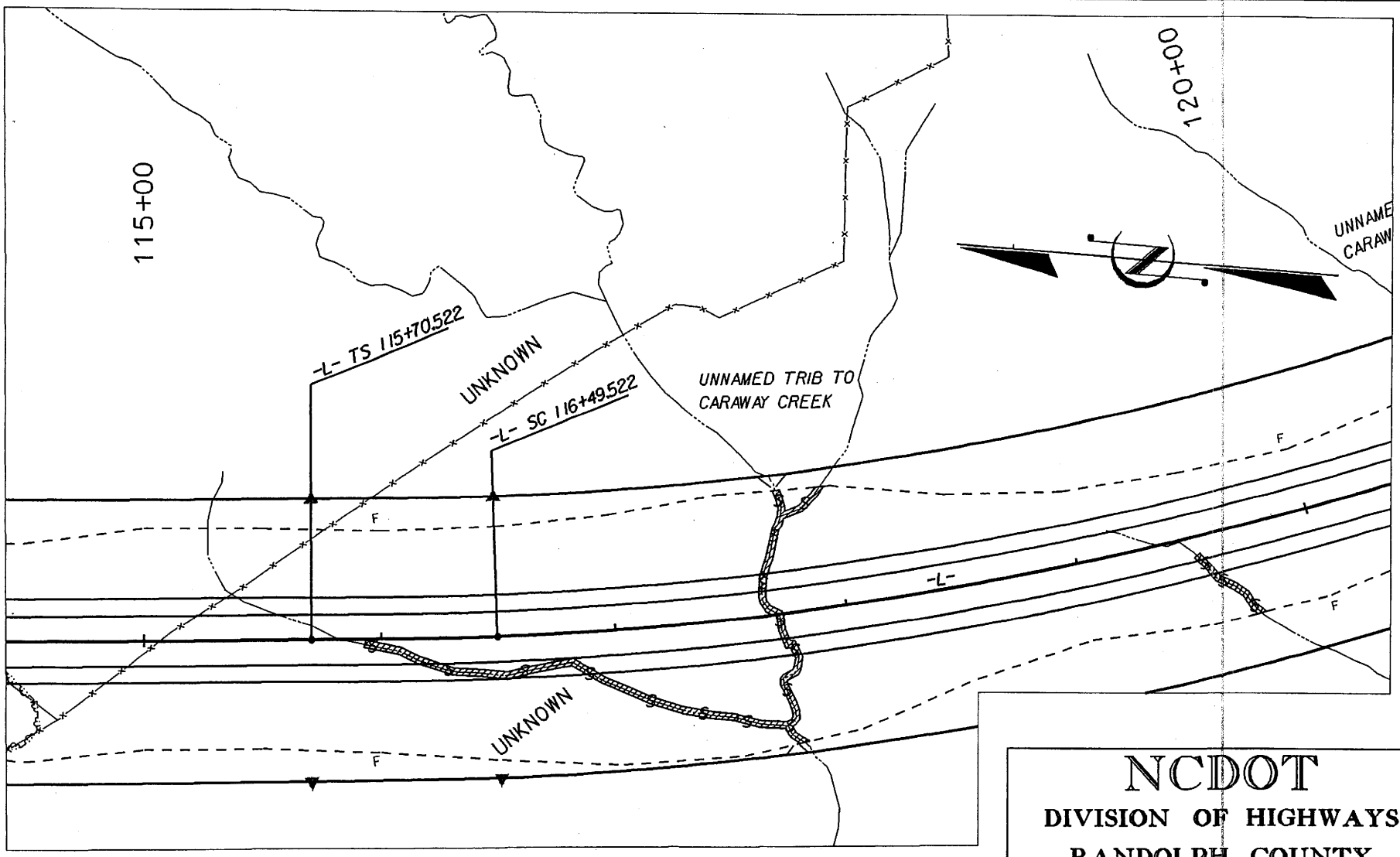
PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 15 OF 30

REVISED APRIL 26, 2005

AUGUST 9, 2002



SITE 23
PLAN VIEW

25m 0 50m SCALE

DENOTES FILL IN SURFACE WATER

NCDOT

DIVISION OF HIGHWAYS

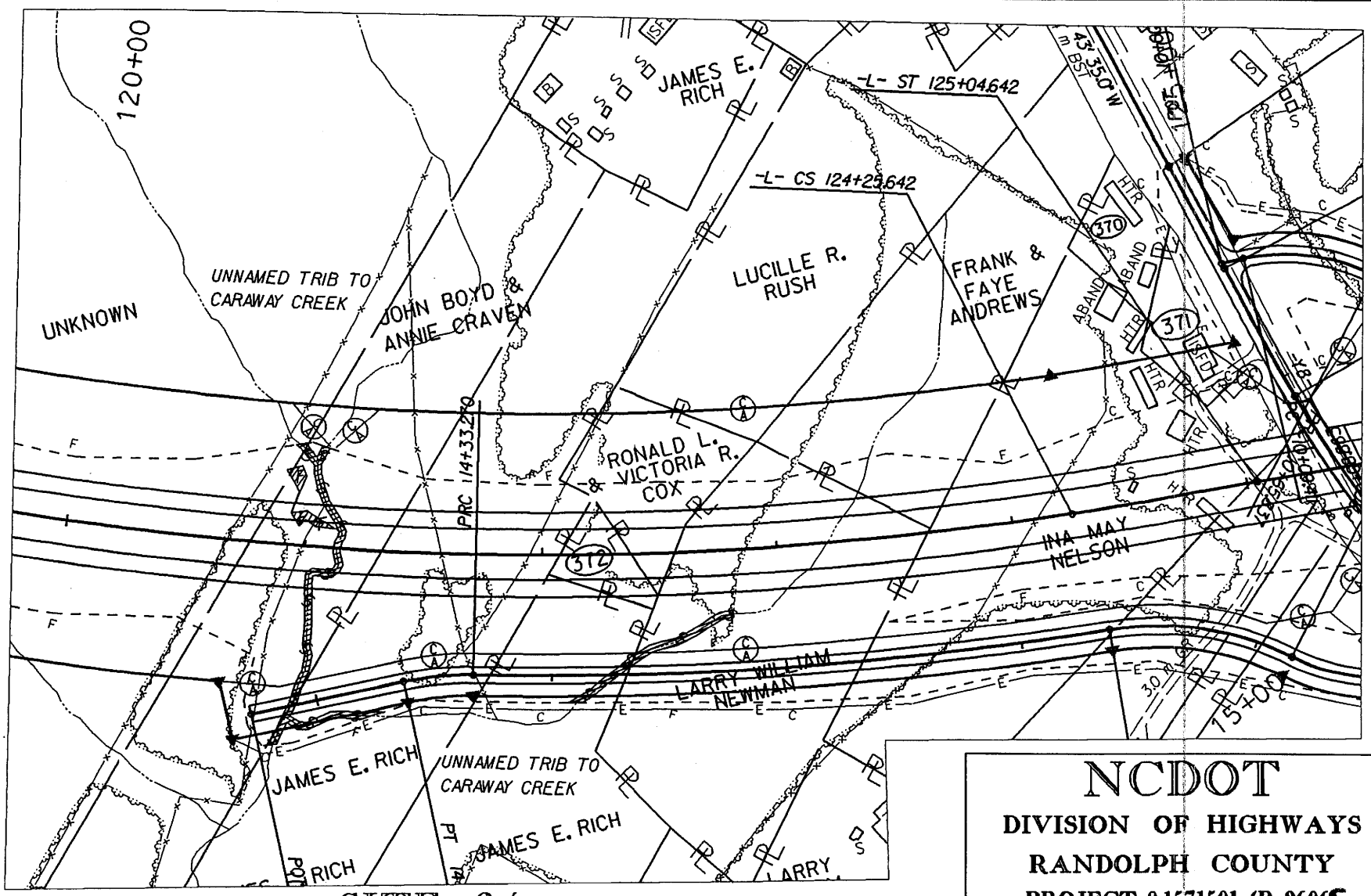
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606C)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

REVISED APRIL 24, 2006

SHEET 16 OF 30 AUGUST 9, 2002



SITE 24

PLAN VIEW

25m 0 50m SCALE

F F DENOTES FILL IN WETLAND

S S DENOTES FILL IN SURFACE WATER

NCDOT

DIVISION OF HIGHWAYS

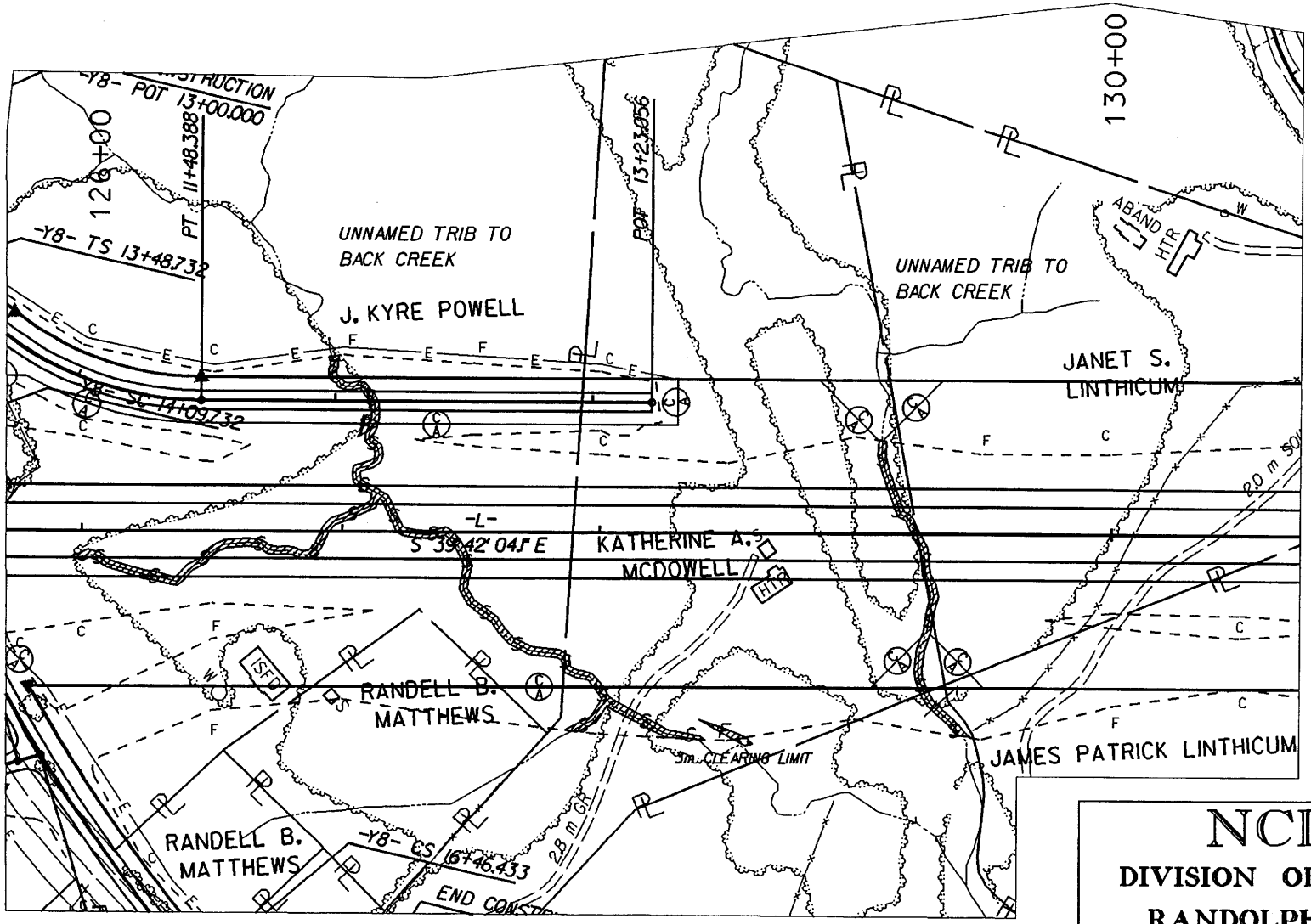
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606C)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

REVISED APRIL 26, 2005

SHEET 17 OF 30 AUGUST 9, 2002



SITE 25

PLAN VIEW

25m 0 50m SCALE

DENOTES FILL IN SURFACE WATER

NCDOT

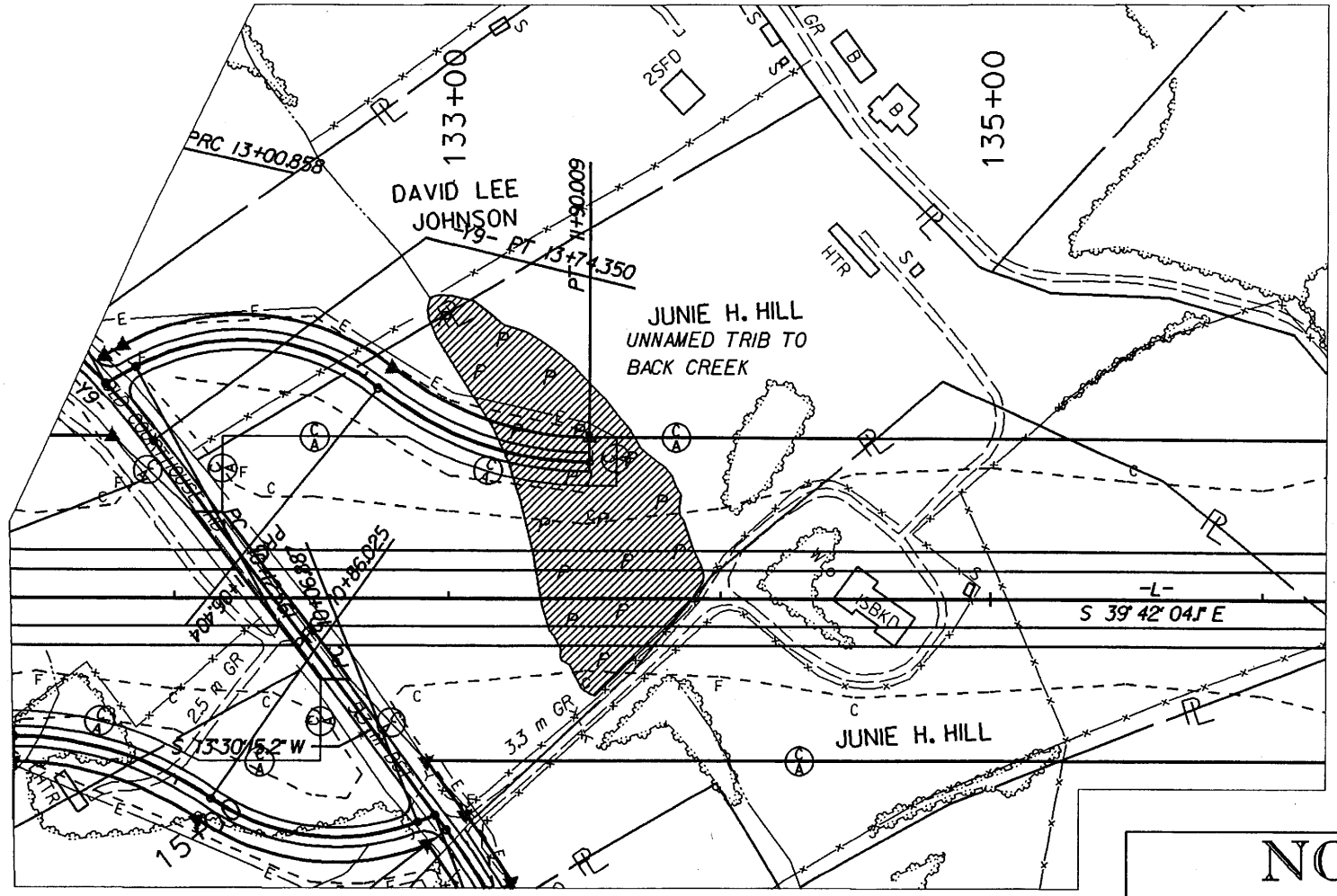
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606C)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 18 OF 30 AUGUST 9, 2002



SITE 26
PLAN VIEW

25m 0 50m
SCALE

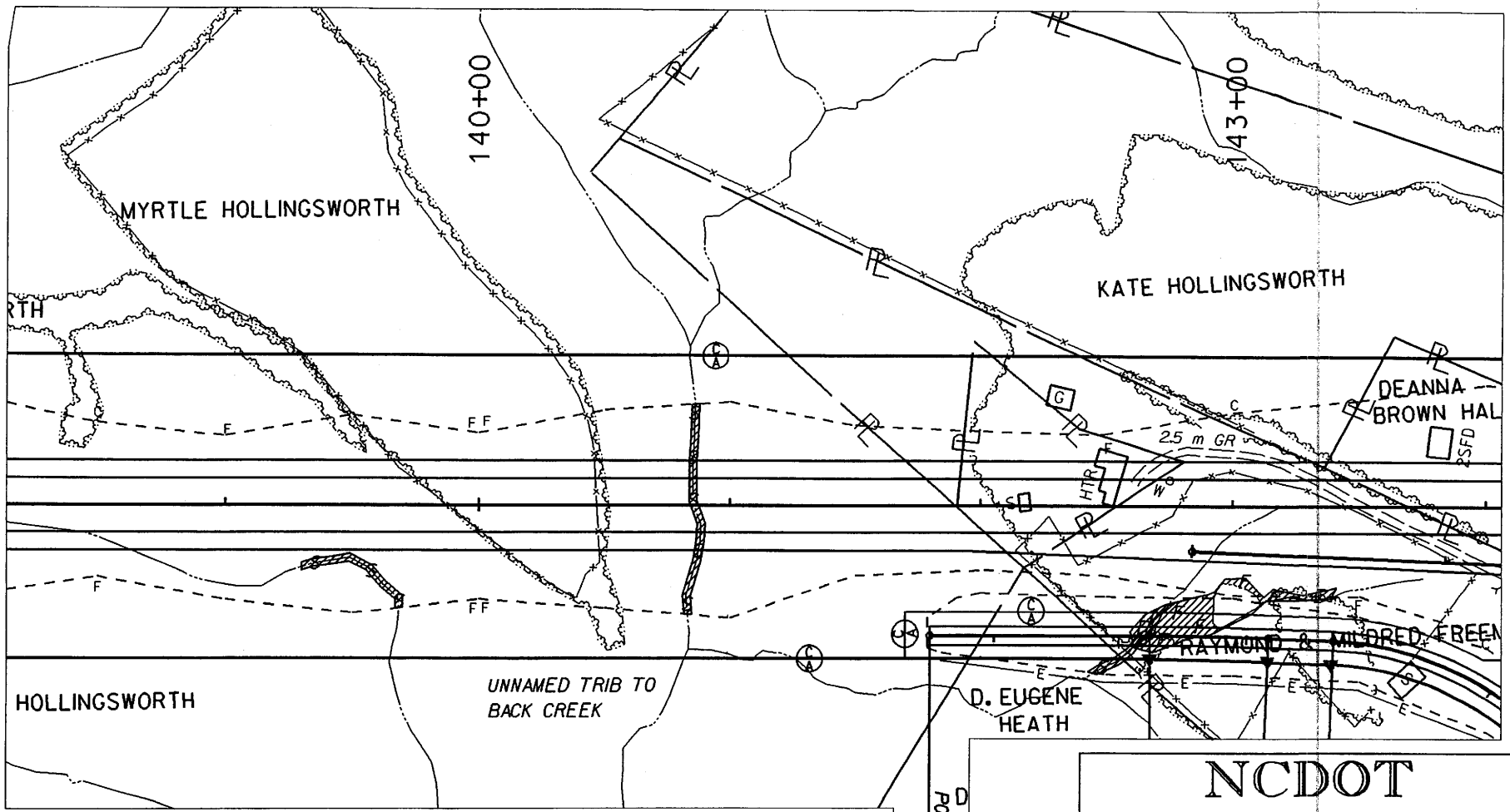
DENOTES FILL IN SURFACE WATER (POND)

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606L)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 19 OF 30 AUGUST 9, 2002



SITE 27
PLAN VIEW

25m 0 50m SCALE

F F DENOTES FILL IN WETLAND

S S DENOTES FILL IN SURFACE WATER

NCDOT

DIVISION OF HIGHWAYS

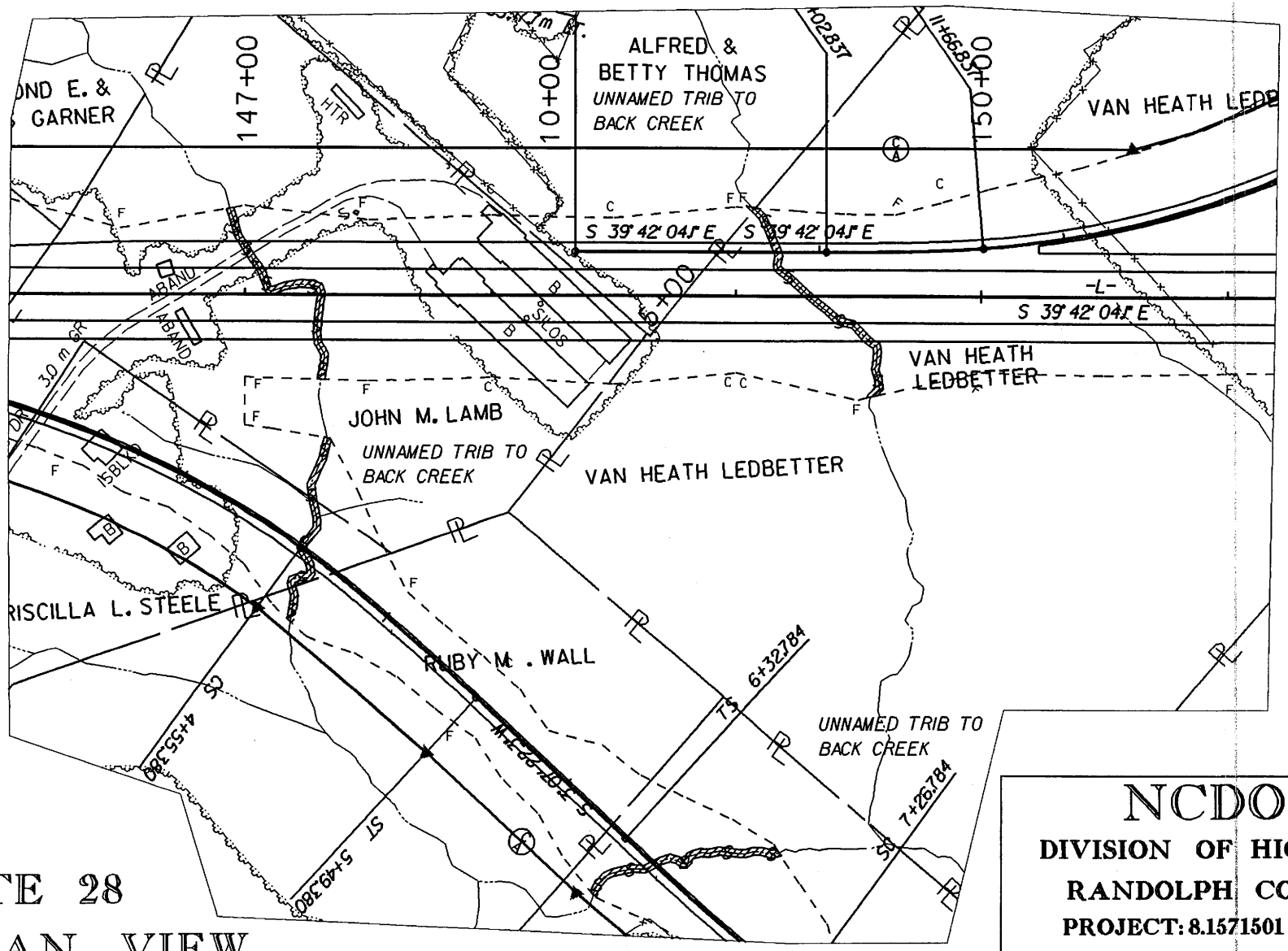
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 20 OF 30

REVISED APRIL 26, 2005
AUGUST 9, 2002



SITE 28
PLAN VIEW

25m 0 50m
SCALE

DENOTES FILL IN SURFACE WATER

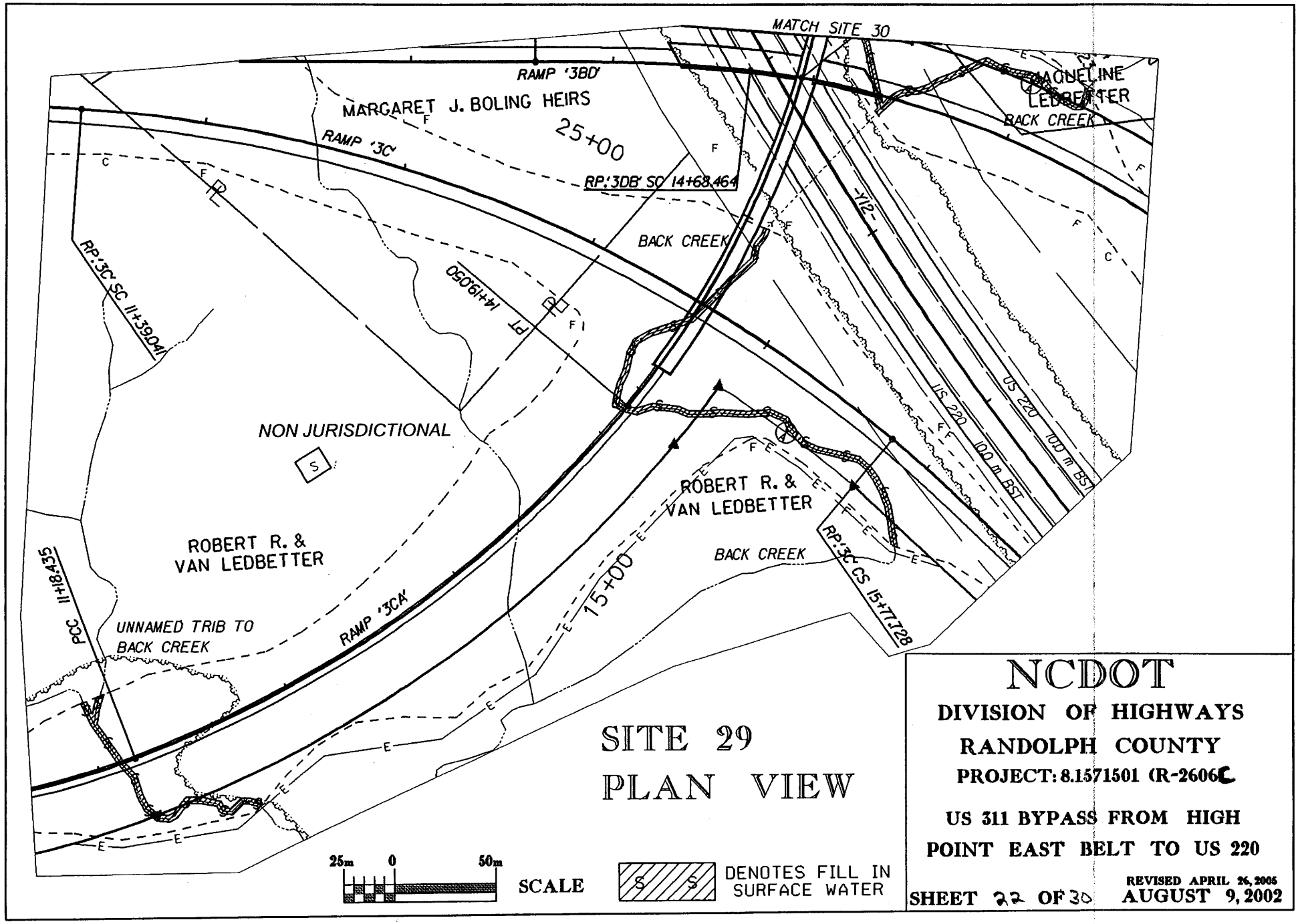
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606C)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 21 OF 30

REVISED APRIL 26, 2005
AUGUST 9, 2002



NCDOT

DIVISION OF HIGHWAYS

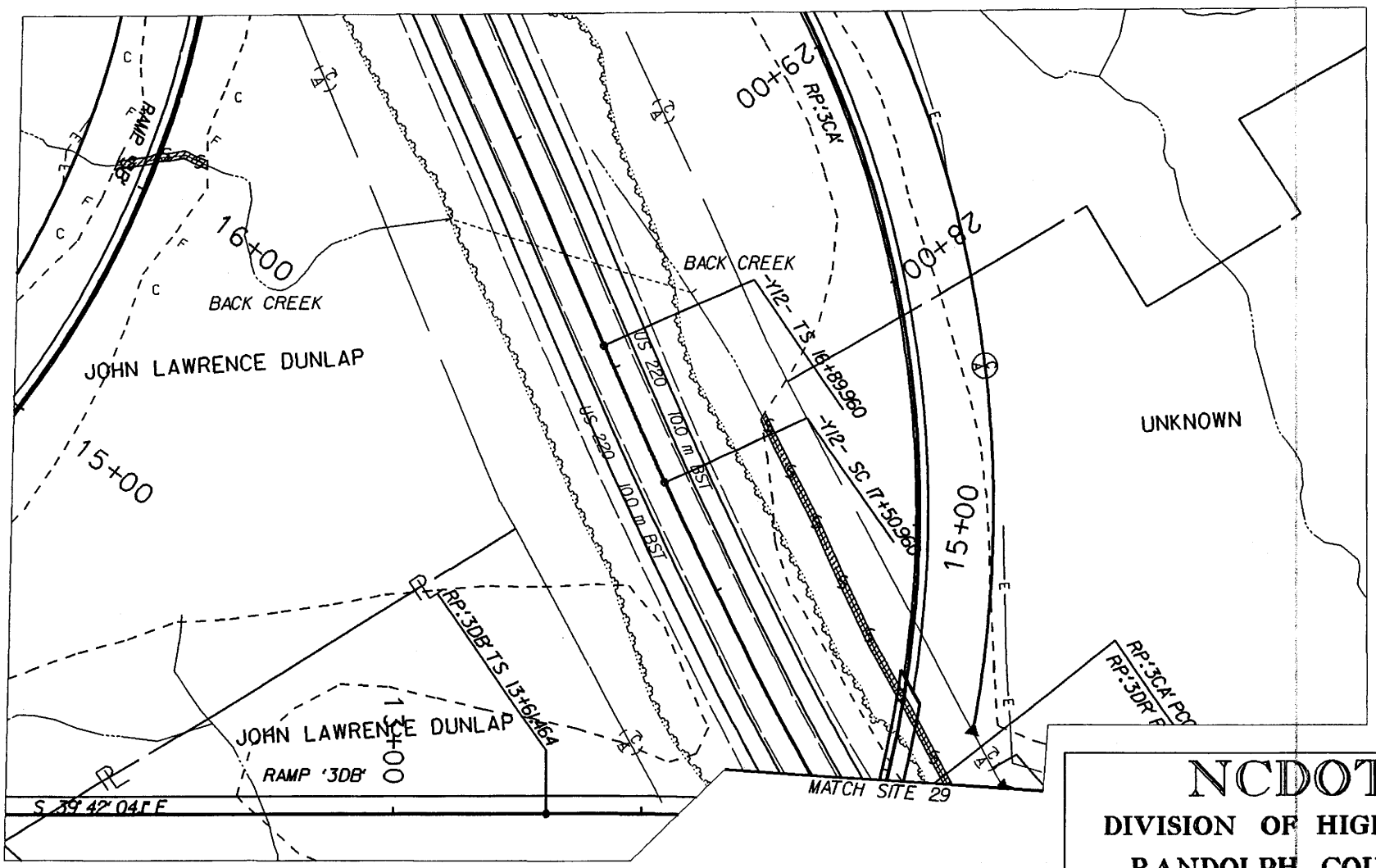
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606C)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 22 OF 30

REVISED APRIL 26, 2005
AUGUST 9, 2002



SITE 30
PLAN VIEW

25m 0 50m SCALE

DENOTES FILL IN SURFACE WATER

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606E

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 23 OF 30 AUGUST 9, 2002

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS				SURFACE WATER IMPACTS				
			Fill In Wetlands (ha)	Temp. Fill In Wetlands (ha)	Excavation In Wetlands (ha)	Mechanized Clearing (Method III) (ha)	Fill In SW (Natural) (ha)	Fill In SW (Pond) (ha)	Temp. Fill In SW (ha)	Existing Channel Impacted (m)	Natural Stream Design (m)
13	47+80 - 48+90 -L-							0.4095			
	48+00 - 49+70 -L-		0.1245			0.0039	0.0667			225	
14	51+50 - 52+60 -L-		0.1825			0.0170	0.0423			142	
	53+90 -L-						0.0314			103	
15	57+07 - 53+30 L-		0.0691								
	57+50 -L-						0.0390			131	
16	63+00 - 63+70 -L-							0.3049			
	63+50 - 64+10 -L-		0.1697			0.0070					
	63+80 -L-						0.0070			23	
17	74+00 -L-						0.1162			143	
	76+60 -L-						0.0301			105	
18	84+80 -L-						0.0042			15	
	88+90 -L-						0.0385			127	
19	92+00 -L-						0.0385			128	
	91+60 - 92+24 -L-		0.0720								
20	101+75 -L-						0.0289			96	
	105+20 -L-						0.0368			123	
	101+40 - 102+30 -L-		0.2541			0.0086					
21	109+40 -L-						0.1400			470	
TOTALS:			0.872	0	0	0.037	0.620	0.714	0	1831	0

Form Revised 3/22/01

NCDOT

DIVISION OF HIGHWAYS
RANDLOPH COUNTY
PROJECT 8.1571501 (R-2606B

US 311BYPASS FROM HIGH
POINT EAST BELT TO US 220

Revised 4/26/05
8/9/2002

SHEET 21 OF 30

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS				SURFACE WATER IMPACTS				
			Fill In Wetlands (ha)	Temp. Fill In Wetlands (ha)	Excavation In Wetlands (ha)	Mechanized Clearing (Method III) (ha)	Fill In SW (Natural) (ha)	Fill In SW (Pond) (ha)	Temp. Fill In SW (ha)	Existing Channel Impacted (m)	Natural Stream Design (m)
23	117+70 -L-						0.0432			132	
	119+50 -L-						0.0112			37	
	115+95 - 117+70 -L-						0.0565			188	
24	120+90 - 121+10 -L-		0.0111								
	121+15 -L-						0.0570			192	
	122+10 - 122+80 -L-						0.0235			78	
25	127+00 -L-						0.1207			395	
	128+40 - 128+60 -L-		0.0026								
	129+00 -L-						0.0383			130	
26	133+00 - 133+90 -L-							0.6626			
27	139+30 - 139+70 -L-						0.0145			50	
	140+85 -L-						0.0255			85	
	142+50 -L-						0.0123			41	
	142+60 - 143+40 -L-		0.0850								
28	147+30 -L-						0.0286			104	
	4+55 RP						0.0248			84	
	6+50 RP						0.0256			87	
	149+30 -L-						0.0307			128	
29	11+10 RP						0.0416			130	
	14+20 RP						0.0897			300	
	15+30 RP -'3DB'-						0.0472			167	
30	MATCH SHEET '3CA'						0.0505			168	
	MATCH SHEET '3CA'						0.0114			39	
TOTALS:			0.099	0	0	0.000	0.753	0.663	0	2535	0

Form Revised 3/22/01

NCDOT

DIVISION OF HIGHWAYS
RANDLOPH COUNTY
PROJECT 8.1571501 (R-2606C

US 311BYPASS FROM HIGH POINT EAST BELT TO US 220

Revised 4/26/05
8/9/2002

SHEET 25 OF 30

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS				SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
13	47+80 - 48+90 -L-							1.0119			
	48+00 - 49+70 -L-		0.3076			0.0096	0.1648			738	
14	51+50 - 52+60 -L-		0.4510			0.0420	0.1045			466	
	53+90 -L-						0.0776			338	
15	57+07 - 53+30 L-		0.1707								
	57+50 -L-						0.0964			430	
16	63+00 - 63+70 -L-							0.7534			
	63+50 - 64+10 -L-		0.4193			0.0173					
	63+80 -L-						0.0173			75	
17	74+00 -L-						0.2871			469	
	76+60 -L-						0.0744			344	
18	84+80 -L-						0.0104			49	
	88+90 -L-						0.0951			417	
19	92+00 -L-						0.0951			420	
	91+60 - 92+24 -L-		0.1779								
20	101+75 -L-						0.0714			315	
	105+20 -L-						0.0909			404	
	101+40 - 102+30 -L-		0.6279			0.0213					
21	109+40 -L-						0.3459			1542	
TOTALS:			2.155	0	0	0.090	1.531	1.765	0	6007	0

NCDOT

DIVISION OF HIGHWAYS
RANDLOPH COUNTY
PROJECT 8.1571501 (R-2606)C

US 311BYPASS FROM HIGH
POINT EAST BELT TO US 220

Revised 4/26/05
8/9/2002

SHEET 26 OF 30

Form Revised 3/22/01

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	SURFACE WATER IMPACTS: Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
23	117+70 -L-						0.1067			433	
	119+50 -L-						0.0277			121	
	115+95 - 117+70 -L-						0.1396			617	
24	120+90 - 121+10 -L-		0.0274								
	121+15 -L-						0.1408			630	
	122+10 - 122+80 -L-						0.0581			256	
25	127+00 -L-						0.2983			1296	
	128+40 - 128+60 -L-		0.0064								
	129+00 -L-						0.0946			427	
26	133+00 - 133+90 -L-							1.6373			
27	139+30 - 139+70 -L-						0.0000			0	
	140+85 -L-						0.0358			164	
	142+50 -L-						0.0304			135	
	142+60 - 143+40 -L-		0.2100								
28	147+30 -L-						0.0707			0	
	4+55 RP						0.0613			341	
	6+50 RP						0.0633			276	
	149+30 -L-						0.0759			285	
29	11+10 RP						0.1028			427	
	14+20 RP						0.2217			984	
	15+30 RP -'3DB'-						0.1166			548	
30	MATCH SHEET '3CA'						0.1248			551	
	MATCH SHEET '3CA'						0.0283			128	
TOTALS:			0.244	0	0	0.00	1.797	1.637	0	7618	0

No mitigation

NCDOT

DIVISION OF HIGHWAYS
RANDLOPH COUNTY
PROJECT 8.1571501 (R-2606C

US 311BYPASS FROM HIGH
POINT EAST BELT TO US 220

Revised 4/26/05
8/9/2002

SHEET 27 OF 30

Form Revised 3/22/01

Site No.	Property Owner Name	Property Owner Address
13	Clyde R. & Randall Spencer	N/A
14	Stanley E. Farlow	N/A
15	Danny Davis & Beverly Pugh	N/A
	Lewis J. & Linda P. Loflin	N/A
16	N. F. Davis	2709 Banner Withehead Rd., Sophia, NC 27350
17	Clifford Wayne Loflin, Jr.	2410 Loflin Dairy Rd., Sophia, NC 27350
	Clifford Wayne Loflin, Sr.	2410 Loflin Dairy Rd., Sophia, NC 27350
18	Geneva S. Gray	6590 US Hwy 311, Sophia, NC 27350
	Mozelle Wood Nelson	4570 Nelson Park Rd., Sophia, NC 27350
19	Edward L. & Carol Lawrence	4875 Branson Davis Rd., Sophia, NC 27350
	Willard R. & Toni S. Carico	4833 Branson Davis Rd., Sophia, NC 27350
20	Grady E. Farlow	5080 Walker Mill Rd., Sophia, NC 27350
21	Richard G. Wall	N/A
22	Richard G. Wall	N/A

List of Property Owners

NC Dept. of Transportation
Division of Highways
Randolph County
Project:8.1571501 (R-2606)

US 311 Bypass From High Point East Belt to US 220

Sheet 29 of 30 08/09/02

Site No.	Property Owner Name	Property Owner Address
23		
24	John Boyd & Annie Craven	4025 Old Way Rd., Sophia, NC 27350
	~~James E. Rich~~	~~1630 Tower View Ln., Sophia, NC 27350~~
	Ronald L. & Victoria Cox	2601 Pinecroft Rd., Greensboro, NC 27407
	Larry William Newman	4609 Plainfield Rd., Sophia, NC 27350
	Frank & Faye Andrews	1111 Mackie Ave, Asheboro, NC 27203
25	J. Kyre Powell	N/A
	Katherine A. McDowell	4534 Plainfield Rd., Sophia, NC 27350
	Janet S. Linthicum	102 Brittany Lane, Randleman, NC 27317
	James Patrick Linthicum	3779 Old Courthouse Rd., Sophia, NC 27350
26	David Lee Johnson	3739 Old Courthouse Rd., Sophia, NC 27350
	Junie H. Hill	3754 Old Courthouse Rd., Sophia, NC 27350
27	Myrtle Hollingsworth	N/A
	D. Eugene Heath	1350 Turner Dairy Rd., Randleman, NC 27317
	Raymond & Mildred Freeman	3833 Heath Dairy Rd., Randleman, NC 27317

List of Property Owners

NC Dept. of Transportation
Division of Highways
Randolph County
Project:8.1571501 (R-2606)

US 311 Bypass From High Point East Belt to US 220

Sheet 29 of 30 08/09/02

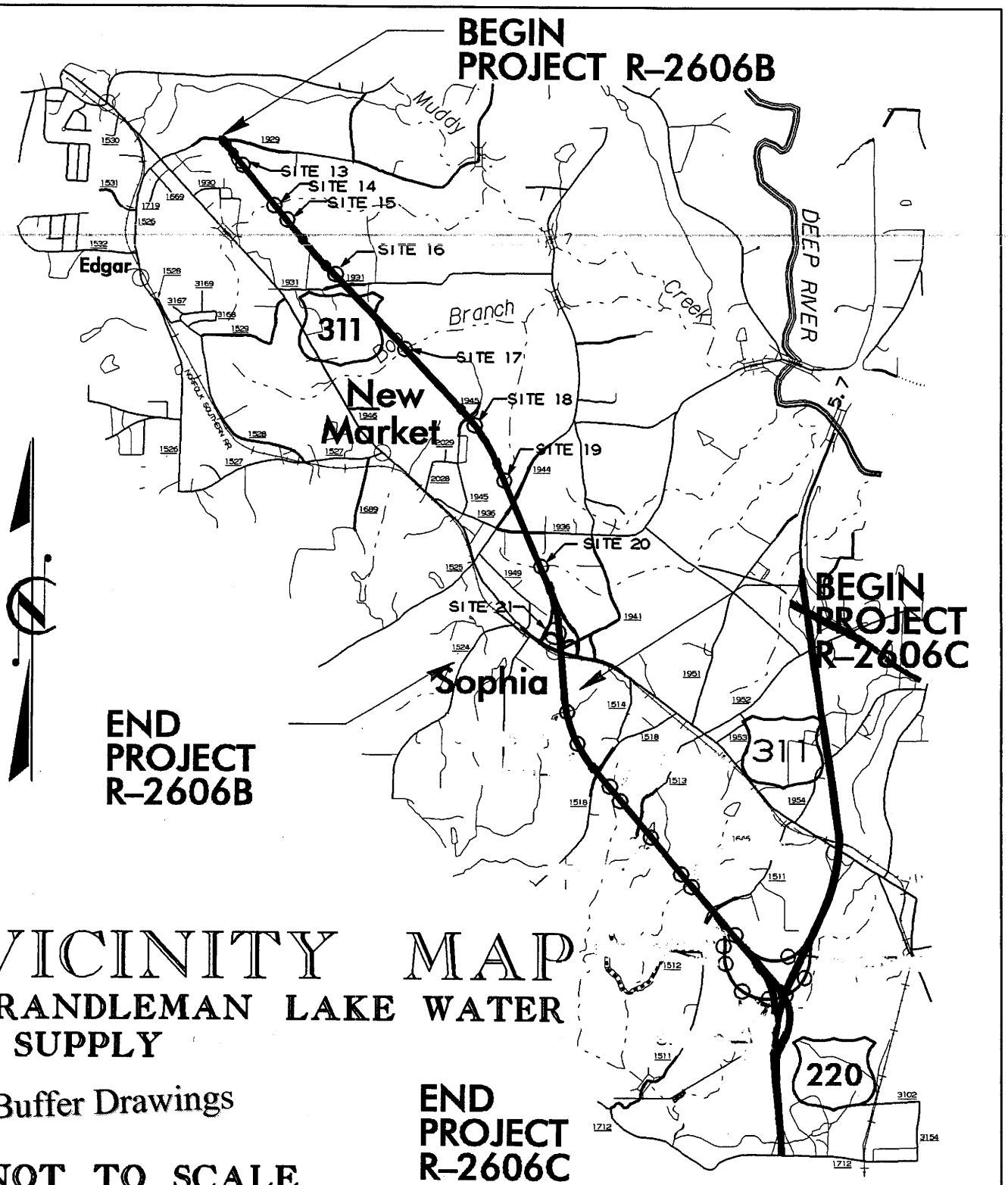
Site No.	Property Owner Name	Property Owner Address
28	John M. Lamb	849 Steele Lamb Dr., Randleman, NC 27317
	Ruby M. Wall	3757 Heath Dairy Rd., Randleman, NC 27317
	Van Heath Ledbetter	3221 Heath Dairy Rd., Randleman, NC 27317
	Alfred & Betty Thomas	3568 Dairy Breeze Dr., Randleman, NC 27317
29	Robert R. & Van Ledbetter	3337 Heath Dairy Rd., Randleman, NC 27317
	Jaqueline Ledbetter	5101 Hoover Hill Rd., Trinity, NC 27370
30	John Lawrence Dunlap	3800 Stanley Snow Camp Rd., Staley, NC 27355

List of Property Owners

NC Dept. of Transportation
Division of Highways
Davidson County
Project:8.1571501 (R-2606)

US 311 Bypass From High Point East Belt to US 220

Sheet 30 of 30 08/09/02



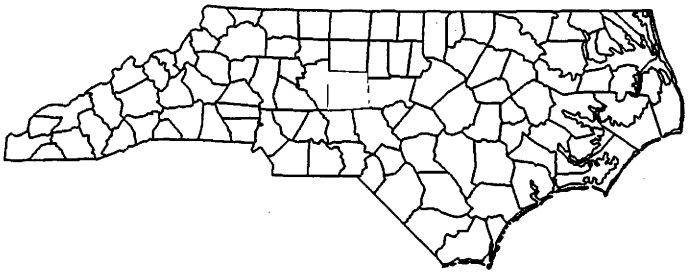
VICINITY MAP

RANDLEMAN LAKE WATER SUPPLY

Buffer Drawings

NOT TO SCALE

NORTH CAROLINA



NCDOT

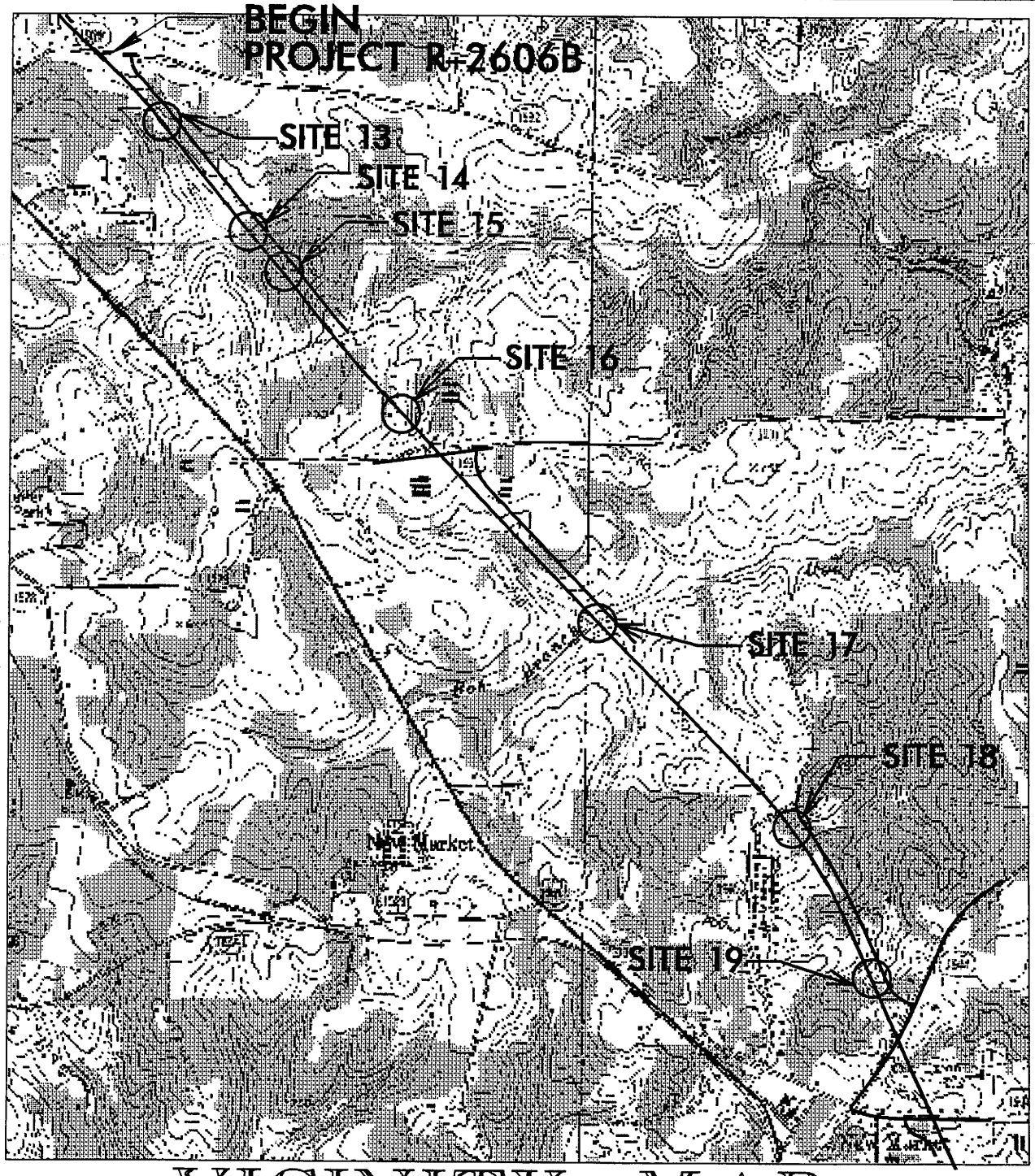
DIVISION OF HIGHWAYS
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

REVISED APRIL 26, 2005

SHEET 1 OF 16 AUGUST 9, 2002

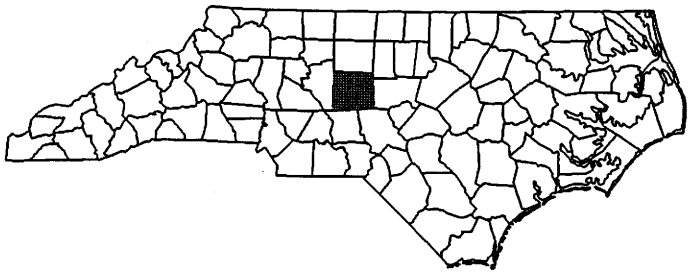


VICINITY MAP

0 ½ 1.0 mile

RANDLEMAN, NC QUAD MAP
GLENOLA, NC QUAD MAP

NORTH CAROLINA



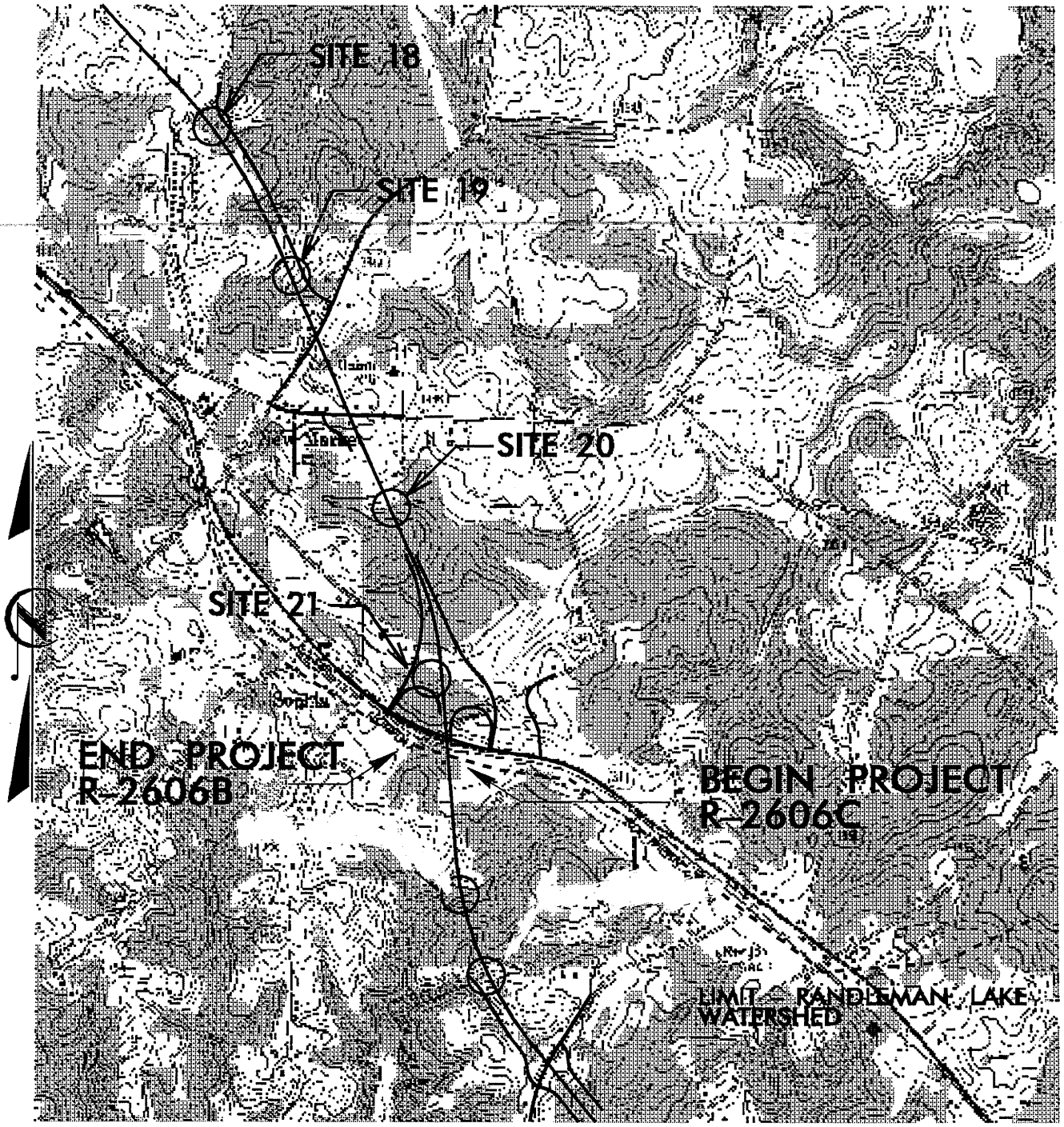
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 2 OF 16 AUGUST 9, 2002

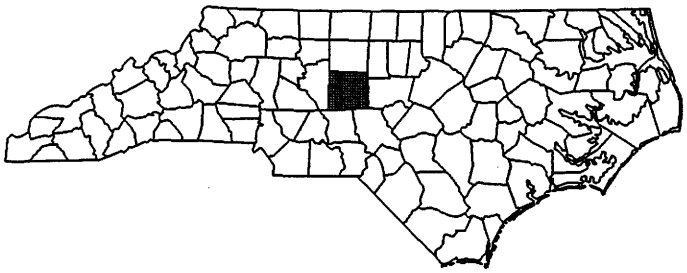


VICINITY MAP

0 ½ 1.0 mile

RANDLEMAN, NC QUAD MAP

NORTH CAROLINA



NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

REVISED APRIL 26, 2005

SHEET 3 OF 16 AUGUST 9, 2002

BUFFER LEGEND

WLB — WETLAND BOUNDARY

WLB — WETLAND

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

BZ — RIPARIAN BUFFER ZONE

BZ1 — RIPARIAN BUFFER ZONE 1
30 ft (9.2m)

BZ2 — RIPARIAN BUFFER ZONE 2
20 ft (6.1m)

FLOW DIRECTION

TB — TOP OF BANK

WE — EDGE OF WATER

C — PROP. LIMIT OF CUT

F — PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG — NATURAL GROUND

PL — PROPERTY LINE

TDE — TEMP. DRAINAGE EASEMENT

PDE — PERMANENT DRAINAGE EASEMENT

EAB — EXIST. ENDANGERED ANIMAL BOUNDARY

EPB — EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT
12"-48" PIPES
54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 — ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE (PSH)

LEVEL SPREADER (LS)

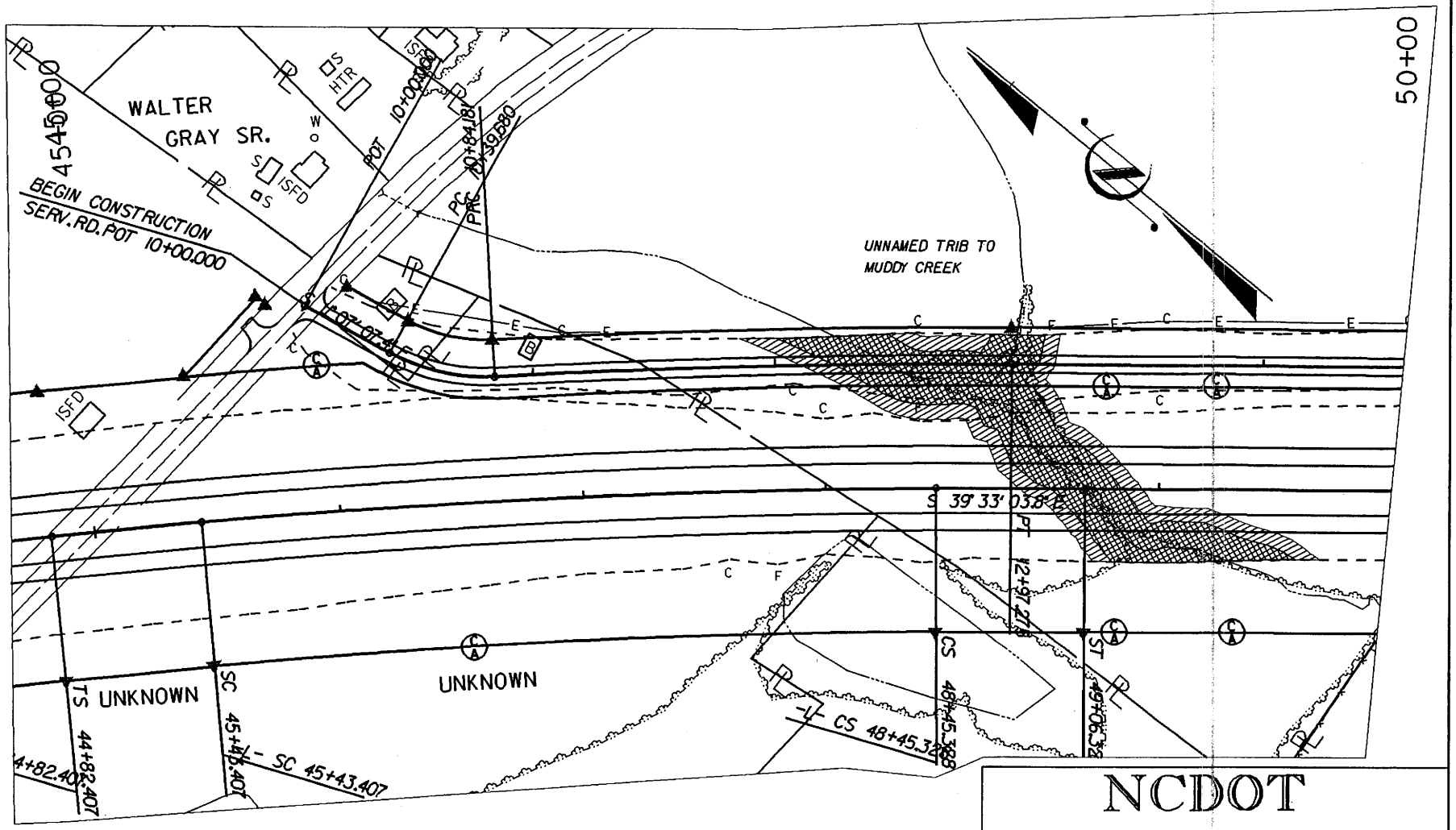
GRASS SWALE

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 4 OF 16 AUGUST 9, 2002



SITE 13
PLAN VIEW

25m 0 50m

SCALE

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NCDOT

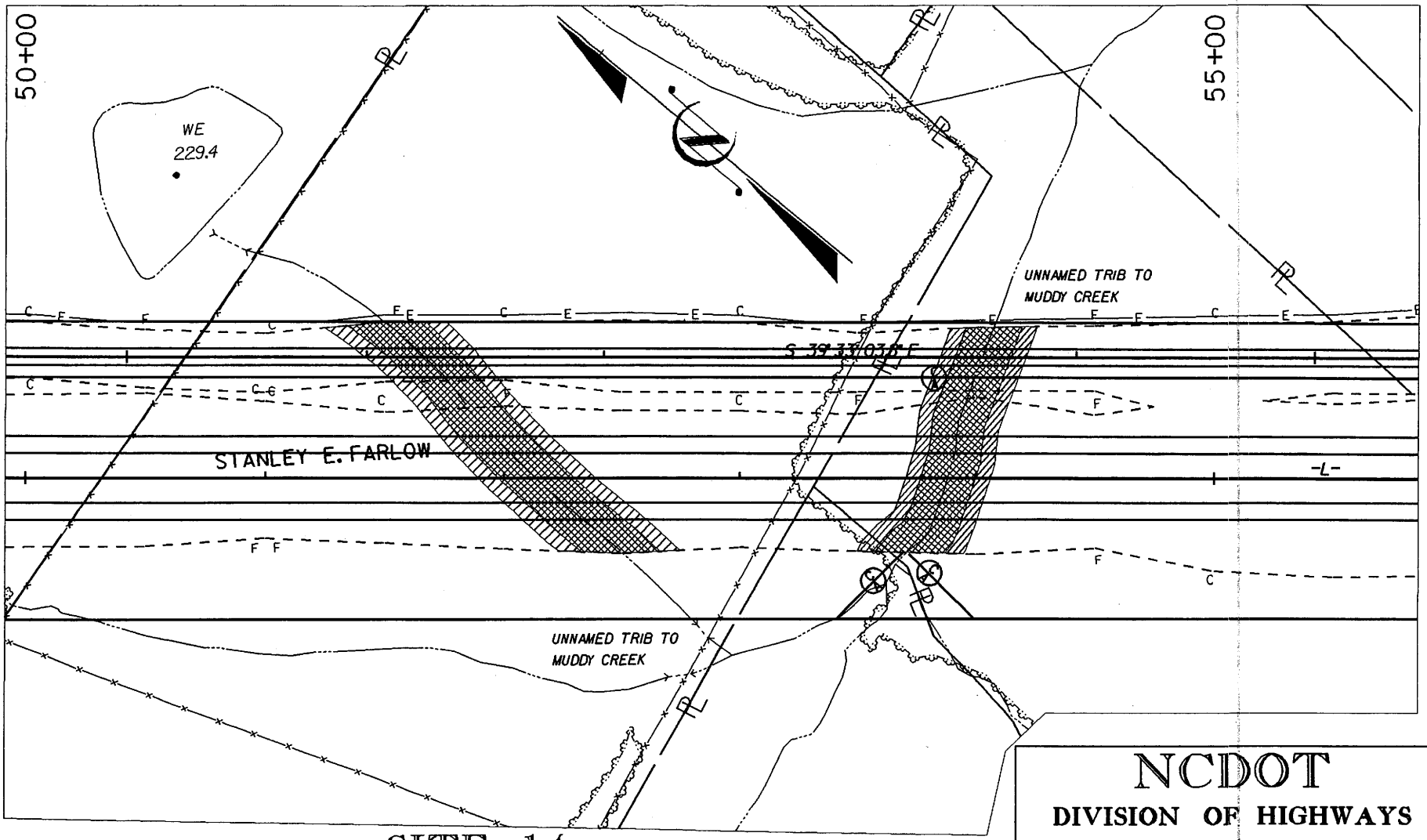
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 5 OF 16 AUGUST 9, 2002



SITE 14
PLAN VIEW

25m 0 50m SCALE

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NCDOT

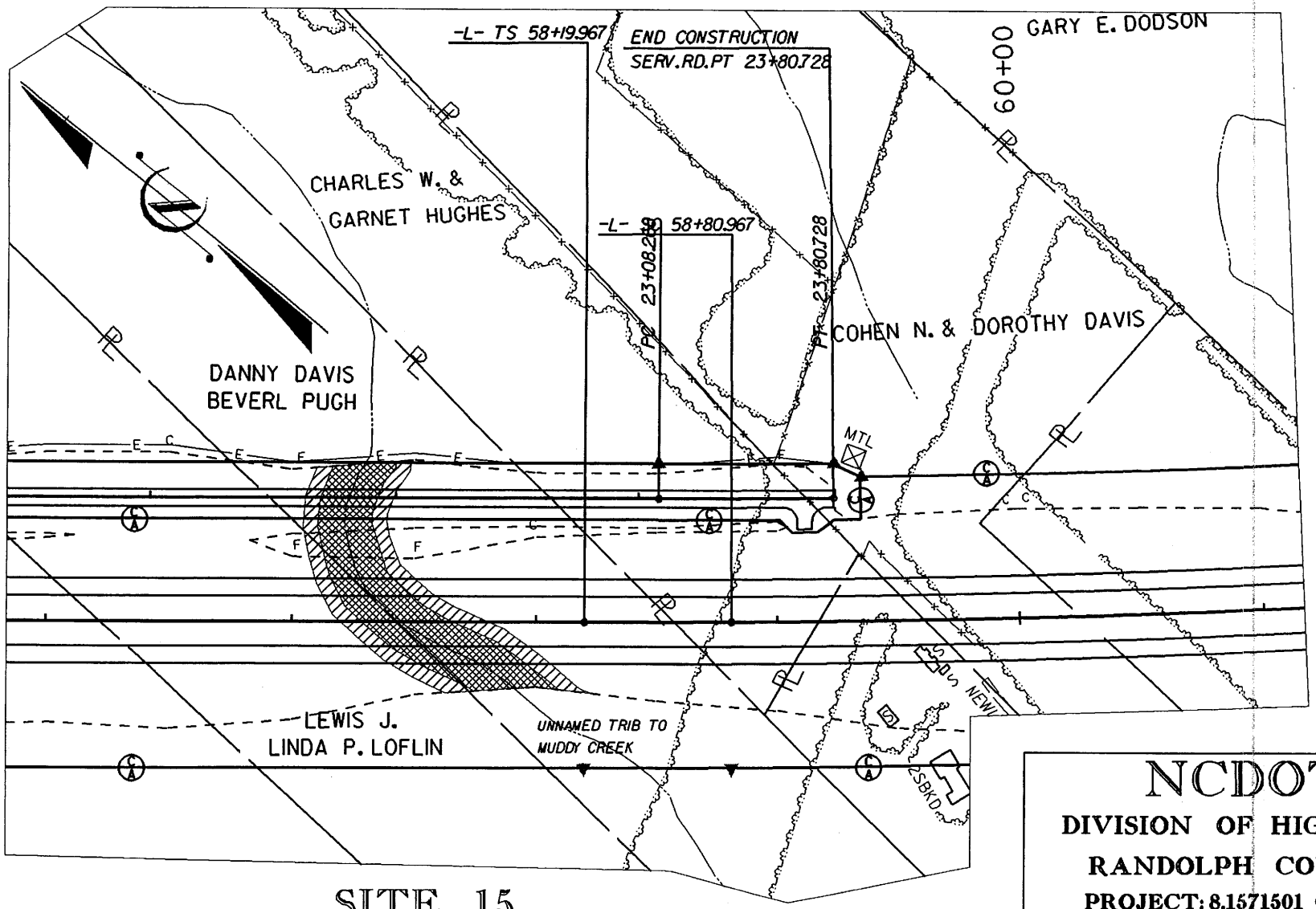
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 6 OF 16 AUGUST 9, 2002



SITE 15
PLAN VIEW

25m 0 50m SCALE

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NCDOT

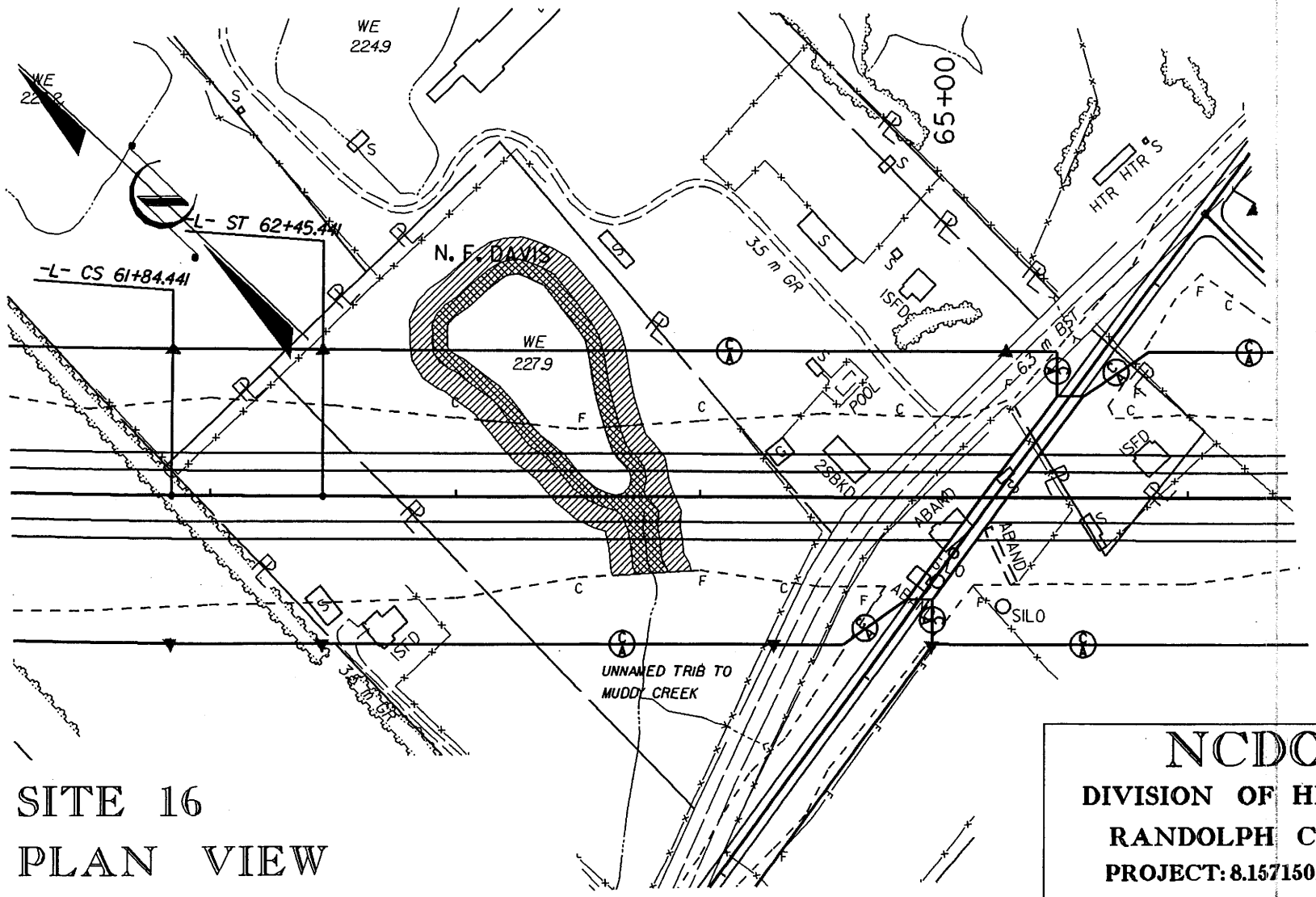
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 7 OF 16 AUGUST 9, 2002



SITE 16
PLAN VIEW

MITIGABLE IMPACTS ZONE 2

MITIGABLE IMPACTS ZONE 1

25m 0 50m

SCALE

NCDOT

DIVISION OF HIGHWAYS

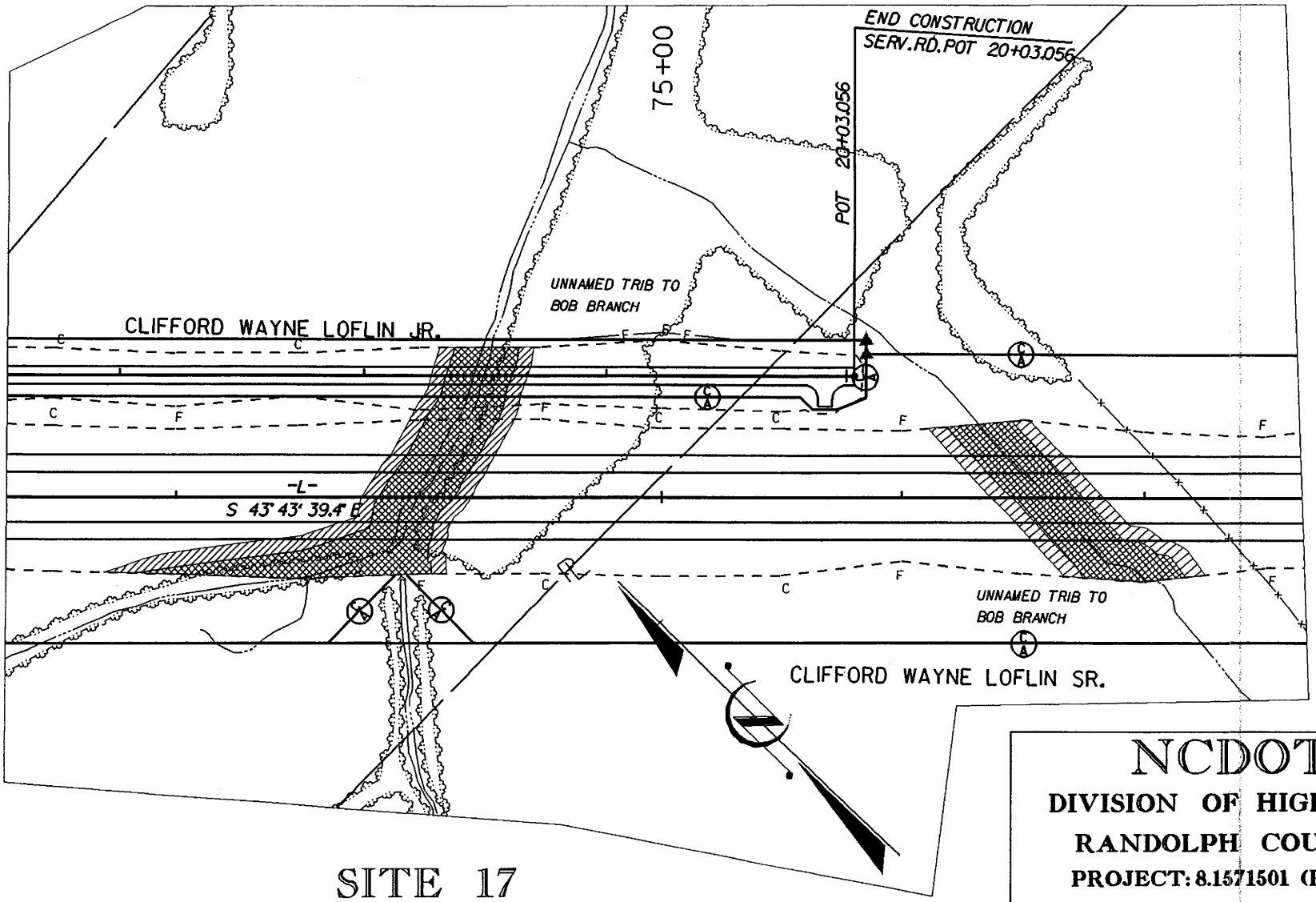
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

REVISED APRIL 26, 2006

SHEET 8 OF 16 **AUGUST 9, 2002**



SITE 17
PLAN VIEW

25m 0 50m

SCALE

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NCDOT

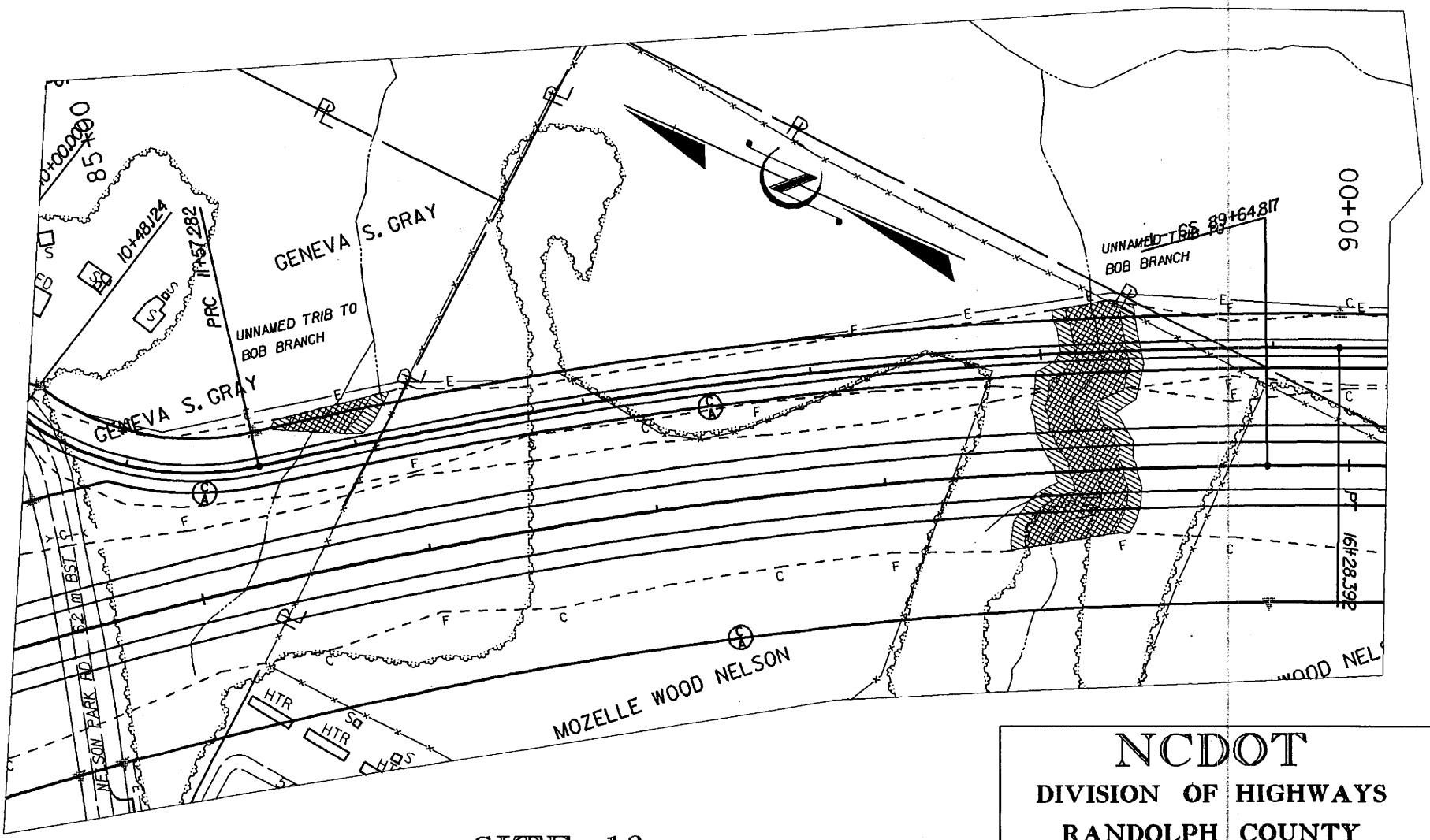
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 9 OF 16 AUGUST 9, 2002



SITE 18
PLAN VIEW

25m 0 50m SCALE

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NCDOT

DIVISION OF HIGHWAYS

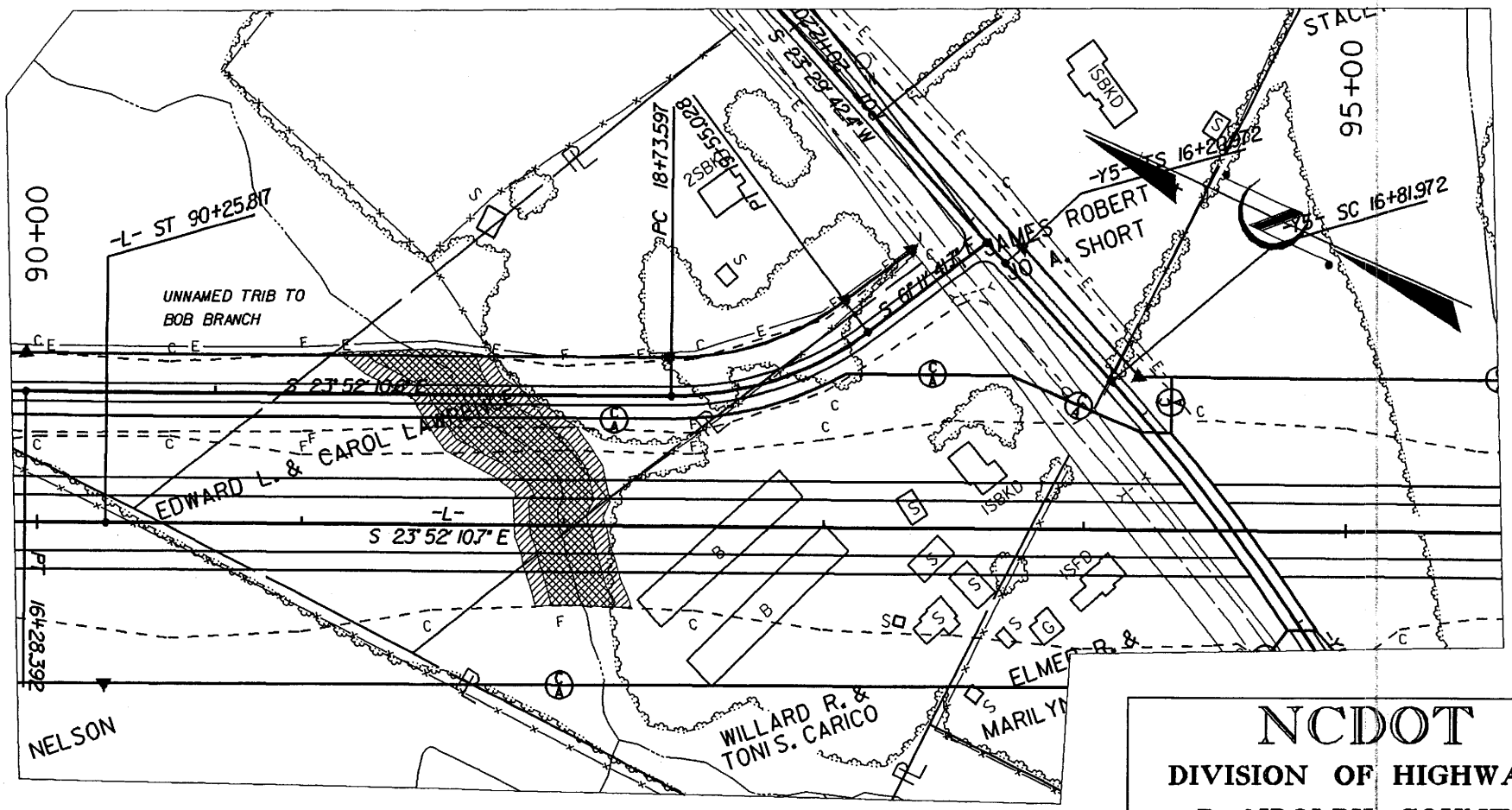
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

REVISED APRIL 26,2006

SHEET 10 OF 16 AUGUST 9, 2002



SITE 19
PLAN VIEW

25m 0 50m

SCALE

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NCDOT

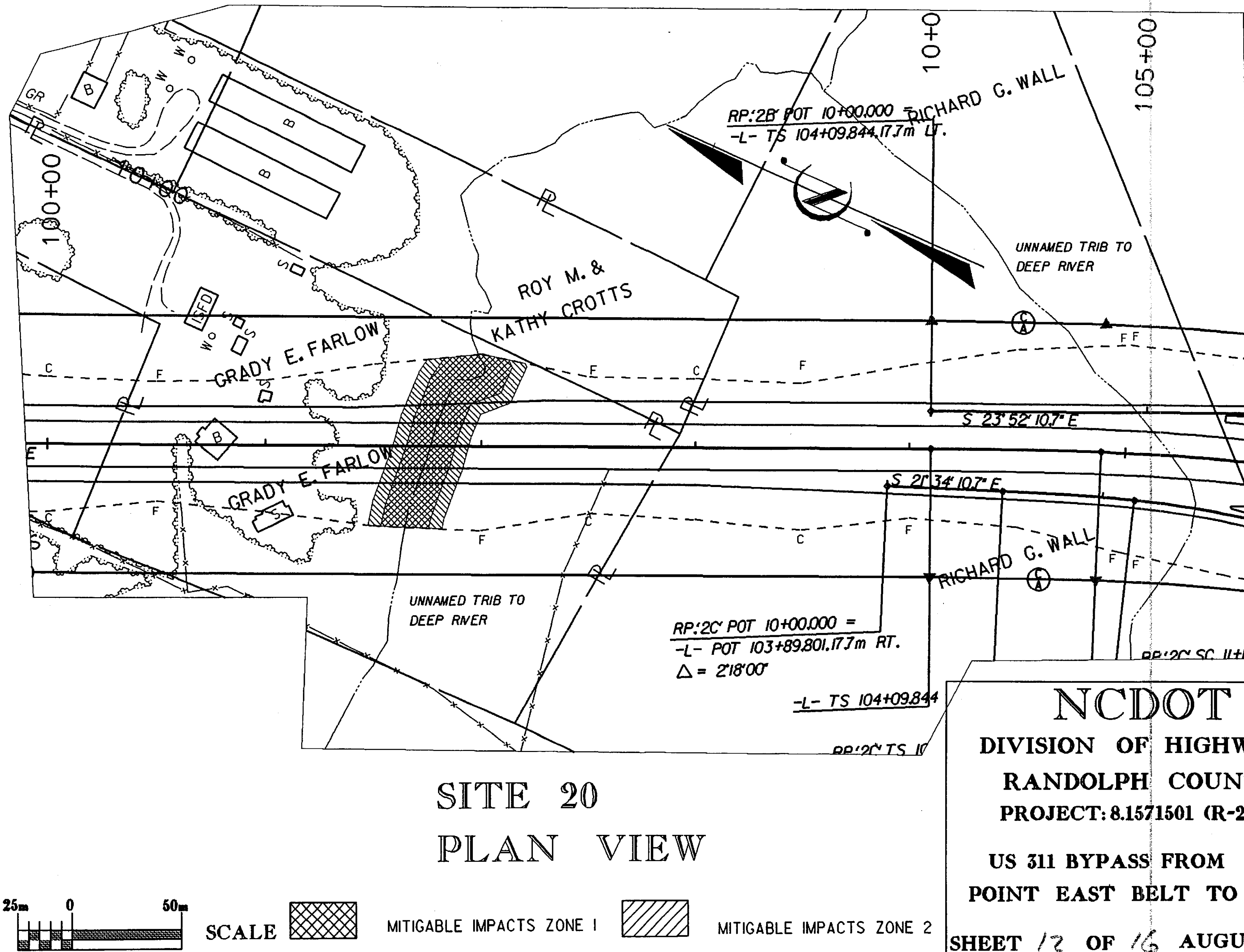
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 11 OF 16 AUGUST 9, 2002

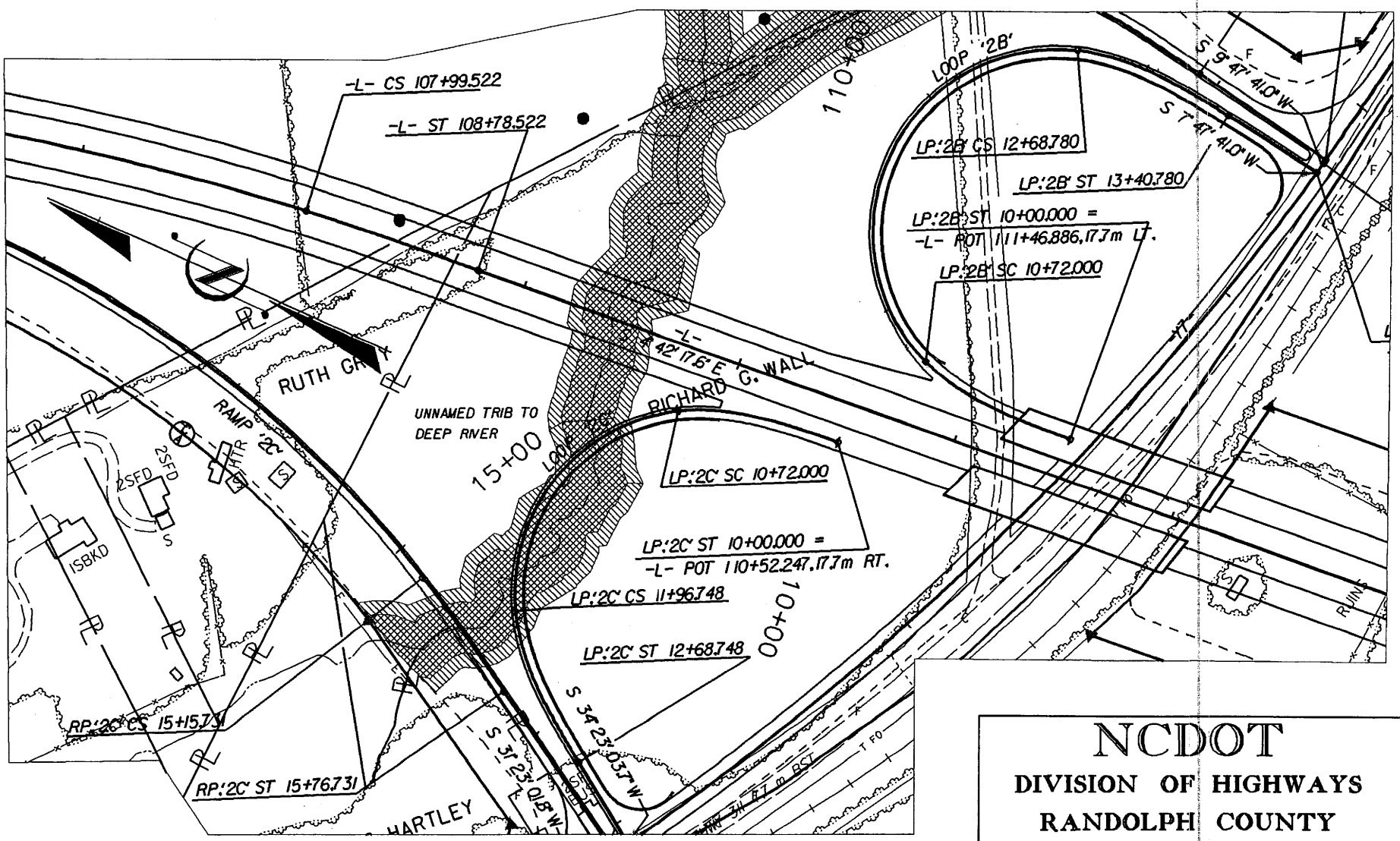


SITE 20
PLAN VIEW

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B

US 311 BYPASS FROM HIGH
POINT EAST BELT TO US 220

SHEET 12 OF 16 AUGUST 9, 2002



SITE 21
PLAN VIEW

25m 0 50m SCALE

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 13 OF 16

REVISED APRIL 26, 2005
AUGUST 9, 2002

BUFFER IMPACTS SUMMARY

			IMPACT								BUFFER REPLACEMENT	
			TYPE		ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (m^2)	ZONE 2 (m^2)	TOTAL (m^2)	ZONE 1 (m^2)	ZONE 2 (m^2)	TOTAL (m^2)	ZONE 1 (m^2)	ZONE 2 (m^2)
13		47+70 - 50+00 -L-	X					4602	2282	6884		
14		51+26 - 52+74 -L-	X					3075	1035	4110		
		53+50 - 54+26 -L-	X					2230	1244	3474		
15		57+05 - 58+20 -L-	X					2865	1566	4431		
16		62+85 - 63+90 -L-						2027	3221	5248		
17		72+70 - 74+45 -L-	X					3500	1711	5211		
		76+10 - 77+25 -L-	X					2127	1114	3241		
18		85+40 - 85+95 -L-	X					320	162	482		
		88+55 - 89+10 -L-	X					2776	1435	4211		
19		91+10 - 92+28-L-	X					2822	1630	4452		
20		101+50 - 102+20 -L-	X					2075	1057	3132		
21		109+50 -L-	X					9784	4857	14641		
TOTAL:								38203	21314	59517		

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B)

8/9/2002
SHEET 11 OF 14

Revised 4/26/05

BUFFER IMPACTS SUMMARY

			IMPACT								BUFFER REPLACEMENT	
			TYPE		ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
13		47+70 - 50+00 -L-	X					49535	24563	74099		
14		51+26 - 52+74 -L-	X					33099	11141	44240		
		53+50 - 54+26 -L-	X					24003	13390	37394		
15		57+05 - 58+20 -L-	X					30839	16856	47695		
16		62+85 - 63+90 -L-						21818	34671	56489		
17		72+70 - 74+45 -L-	X					37674	18417	56091		
		76+10 - 77+25 -L-	X					22895	11991	34886		
18		85+40 - 85+95 -L-	X					3444	1744	5188		
		88+55 - 89+10 -L-	X					29881	15446	45327		
19		91+10 - 92+28-L-	X					29881	15446	45327		
20		101+50 - 102+20 -L-	X					22335	11377	33713		
21		109+50 -L-	X					105314	52280	157594		
TOTAL:								410718	227323	638041		

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B)

8/9/2002
SHEET 15 OF 16

Revised 4/26/05

Site No.	Property Owner Name	Property Owner Address
13	Clyde R. & Randall Spencer	N/A
14	Stanley E. Farlow	N/A
15	Danny Davis & Beverly Pugh	N/A
	Lewis J. & Linda P. Loflin	N/A
16	N. F. Davis	2709 Banner Withehead Rd., Sophia, NC 27350
17	Clifford Wayne Loflin, Jr.	2410 Loflin Dairy Rd., Sophia, NC 27350
	Clifford Wayne Loflin, Sr.	2410 Loflin Dairy Rd., Sophia, NC 27350
18	Geneva S. Gray	6590 US Hwy 311, Sophia, NC 27350
	Mozelle Wood Nelson	4570 Nelson Park Rd., Sophia, NC 27350
19	Edward L. & Carol Lawrence	4875 Branson Davis Rd., Sophia, NC 27350
	Willard R. & Toni S. Carico	4833 Branson Davis Rd., Sophia, NC 27350
20	Grady E. Farlow	5080 Walker Mill Rd., Sophia, NC 27350
21	Richard G. Wall	N/A

List of Property Owners

NC Dept. of Transportation
Division of Highways

Randolph County
Project:8.1571501 (R-2606B

US 311 Bypass From High Point East Belt to US 220

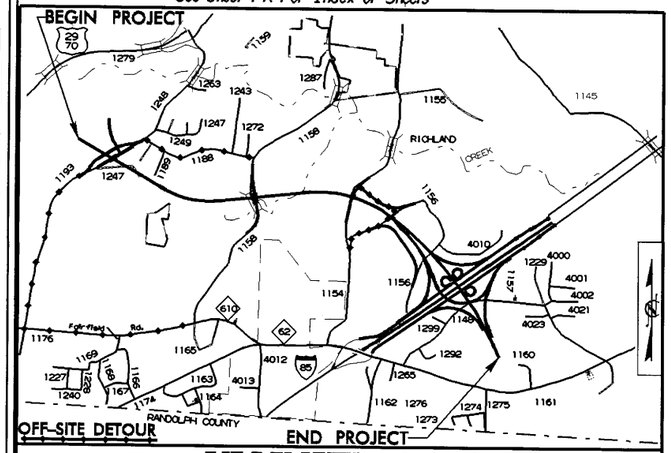
Sheet 16 of 16 08/09/02

9/09/06

TIP: R-0609IA

CONTRACT:

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

METRIC

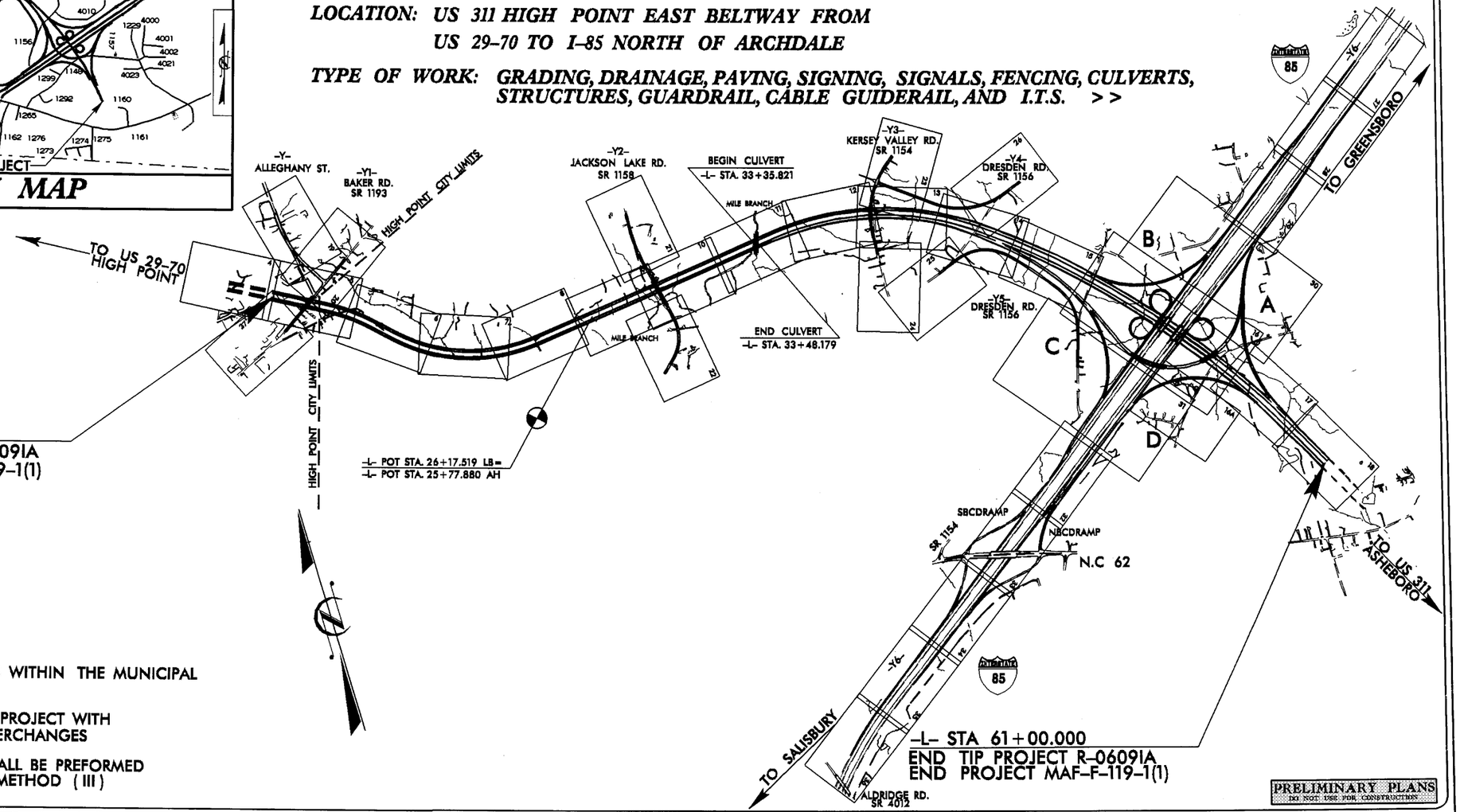
ALL DIMENSIONS IN THESE PLANS ARE IN METERS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-0609IA	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34345.1.1	MAF-F-119-1(1)	PE
34345.2.7	STP-NHF-119-1(11)	ROW & UTILITIES

LOCATION: US 311 HIGH POINT EAST BELTWAY FROM US 29-70 TO I-85 NORTH OF ARCHDALE

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNING, SIGNALS, FENCING, CULVERTS, STRUCTURES, GUARDRAIL, CABLE GUIDERAIL, AND I.T.S. >>



A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF HIGH POINT

THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES

CLEARING ON THIS PROJECT SHALL BE PREFORMED TO THE LIMITS ESTABLISHED BY METHOD (III)

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

5 0 10 PLANS

5 0 10 PROFILE (HORIZONTAL)

1 0 2 PROFILE (VERTICAL)

DESIGN DATA

ADT 2005 = 27,000
ADT 2025 = 39,000
DHV = 10 %
D = 60 %
T = 13 % *
V = 110 km/h
* TTST 7 % DUAL 6 %
FUNC CLASS - FREEWAY

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-0609IA = 4.929 KM
LENGTH STRUCTURE TIP PROJECT R-0609IA = 0.012 KM
TOTAL LENGTH TIP PROJECT R-0609IA = 4.941 KM

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh, NC 27610

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER, 2003

LETTING DATE: SEPTEMBER 19, 2006

JIMMY GOODNIGHT, PE
PROJECT ENGINEER

STEVE KENDALL
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

31-JAN-2006 13:35
r:\proj\0609ia.tsh
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0609A	2-M
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

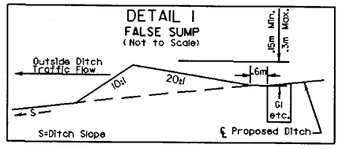
CONST. REV.

R/W REV.

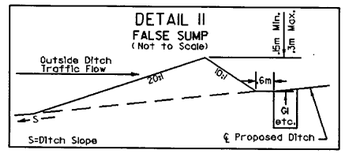
REVISIONS

8/17/99

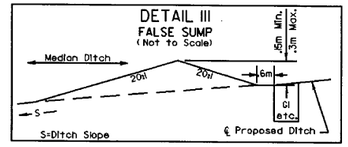
DETAIL I
FALSE SUMP
(Not To Scale)



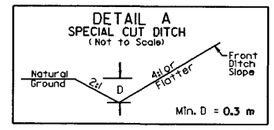
DETAIL II
FALSE SUMP
(Not To Scale)



DETAIL III
FALSE SUMP
(Not To Scale)

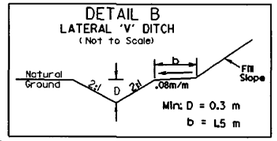


DETAIL A
SPECIAL CUT DITCH
(Not To Scale)



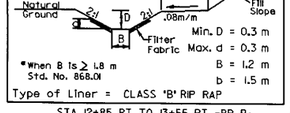
STA 13+40 RT TO 13+70 RT -L-
STA 13+09 RT TO 13+20 RT -L-
STA 13+00 LT TO 13+20 LT -L-
STA 45+60 RT TO 13+93 -L-
STA 27+60 LT TO 27+98 LT -L-
STA 21+98 LT TO 28+70 LT -L-
STA 34+20 LT TO 32+00 LT -L-
STA 38+50 RT TO 38+70 RT -L-
STA 50+20 M TO 50+40 M -L-
STA 50+20 RT TO 50+40 RT -L-
STA 50+40 RT TO 50+76.53 RT -L-
STA 50+40 RT TO 50+76.53 M -L-
STA 53+05 RT TO 53+35 RT -L-
STA 53+35 RT TO 53+80 RT -L-
STA 57+00 RT TO 57+80 RT -L-
STA 10+40 LT TO 11+20 -Y1-
STA 10+60 RT TO 11+00 RT -Y1-
STA 10+80 RT TO 11+40 RT -Y2-
STA 10+85 RT TO 11+00 RT -Y3-
STA 11+75 LT TO 12+00 LT -Y3-
STA 13+15 RT TO 13+40 RT -Y3-
STA 13+15 LT TO 13+40 LT -Y3-
STA 10+00 RT TO 10+60 RT -Y4-
STA 11+13.41LT TO 11+40 LT -Y4-
STA 13+58.50 RT TO 13+98.14 RT -Y5-
STA 15+10 LT TO 15+47 LT -Y5-
STA 17+45 RT TO 17+85 RT -Y5-
STA 17+70 LT TO 18+12 LT -Y5-
STA 27+50 RT TO 27+95 RT -Y6-
STA 27+60 LT TO 28+07 LT -Y6-
STA 32+00 LT TO 31+40 LT -Y6-
STA 36+20 LT TO 36+60 LT -Y6
STA 41+60 RT TO 41+77 RT -Y6-
STA 43+80 LT TO 44+23 LT -Y6-
STA 49+40 RT TO 49+84 RT -Y6-
STA 12+12 RT TO 13+74 RT -FLY-
STA 16+15 RT TO 16+40 RT -FLY-
STA 10+81RT TO 11+65 RT -DET-
STA 10+81LT TO 11+83 LT -DET-
STA 12+50 LT TO 13+45 LT -DET-
STA 13+00 LT TO 13+40 LT -DET2-
STA 13+00 RT TO 13+20 RT -DET2-
STA 12+68 LT TO 12+85 LT -DET3-
STA 17+00 LT TO 17+60 LT -NBCD-
STA 18+80 RT TO 19+40 RT -NBCD-
STA 13+67.05 LT TO 13+75 LT -RP D-
STA 13+67.05 RT TO 13+92.71RT -RP D-
STA 12+09.76 LT TO 12+70 LT -RP B-
STA 12+05 LT TO 12+45 LT -RP C-
STA 27+03 LT TO 27+42 LT -NBCD-
STA 14+10 LT TO 14+50.68 LT -RP D-
STA 21+83 LT TO 22+20 LT -NBCD-
STA 10+41.5 RT TO 10+61.5 RT -SBCDRP-

DETAIL B
LATERAL 'V' DITCH
(Not To Scale)



STA 28+20 RT TO 28+30 RT -L-
STA 58+00 RT TO 58+88 RT -L-
STA 11+00 RT TO 11+40 RT -Y1-
STA 14+05 RT TO 16+20 RT -Y2-
STA 40+70 LT TO 13+74 -Y4-
STA 13+80 LT TO 14+30 LT -Y4-
STA 16+25 RT TO 17+00 RT -Y6-
STA 17+65 RT TO 18+00 RT -Y6-
STA 36+00 RT TO 36+20 RT -Y6-
STA 11+35 LT TO 11+50 LT -LP A-
STA 11+80 LT TO 12+10 LT -LP B-
STA 14+34 RT TO 15+00 RT -RP C-

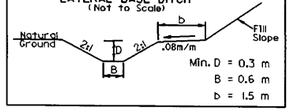
DETAIL C
LATERAL BASE DITCH
(Not To Scale)



Type of Liner = CLASS 'B' RIP RAP

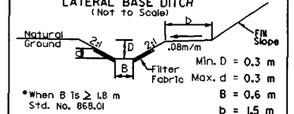
STA 12+85 RT TO 13+55 RT -RP B-
STA 24+45 RT TO 25+80 RT -NBCD-

DETAIL D
LATERAL BASE DITCH
(Not To Scale)



STA 19+40 RT TO 20+39 RT -L-
STA 21+22 LT TO 21+70 LT -L-
STA 39+90 LT TO 40+33 LT -L-
STA 58+88 RT TO 59+60 RT -L-
STA 60+60 LT TO 61+00 RT -L-
STA 14+72 LT TO 15+02 LT -Y4-
STA 13+85 RT TO 14+30 RT -Y5-
STA 14+90 RT TO 15+20 RT -Y5-
STA 12+10 LT TO 13+25 LT -RP A-
STA 24+00 LT TO 24+25 LT -FLY-
STA 25+20 LT -Y6 TO 11+07 LT -LP A-
STA 11+07 LT TO 11+35 LT -LP A-
STA 17+90 RT TO 18+40 RT -FLY-
STA 13+80 RT TO 14+12 RT -RP C-
STA 18+70 RT TO 19+53 RT -Y6-
STA 24+15 RT TO 24+32 RT -SBCD-

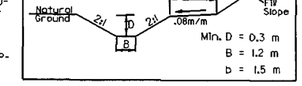
DETAIL E
LATERAL BASE DITCH
(Not To Scale)



Type of Liner = CLASS 'B' RIP RAP

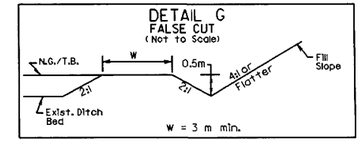
STA 32+20 LT TO 33+20 LT -L-
STA 33+40 RT TO 34+00 RT -L-
STA 40+33 LT TO 40+70 LT -L-
STA 14+70 RT TO 14+90 RT -RP D-
STA 19+65 LT TO 20+05 LT -Y6-
STA 35+26 LT TO 35+60 LT -L-

DETAIL F
LATERAL BASE DITCH
(Not To Scale)



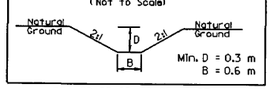
STA 19+50 LT TO 20+40 LT -L-
STA 38+60 RT TO 40+25 RT -L-
STA 13+77 LT TO 14+10 LT -RP D-
STA 13+76 LT TO 14+00 RT -RP A-
STA 14+70 RT TO 14+90 RT -RP D-
STA 12+20 LT TO 12+95 LT -Y2-
STA 23+40 RT TO 24+15 RT -SBCD-
STA 22+60 RT TO 22+70 RT -FLY-

DETAIL G
FALSE CUT
(Not To Scale)



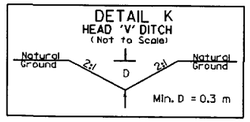
STA 34+20 RT TO 34+40 RT -Y6-

DETAIL J
TAIL BASE DITCH
(Not To Scale)



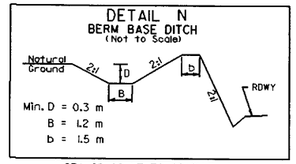
STA 29+35 RT TO 29+55 RT -L-
STA 12+80 RT -SBCD-

DETAIL K
HEAD 'V' DITCH
(Not To Scale)



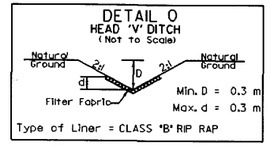
STA 11+40 RT -Y4-

DETAIL N
BERM BASE DITCH
(Not To Scale)



STA 28+90 LT TO 29+91LT -L-
STA 38+57 RT TO 39+45 RT -L-

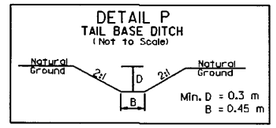
DETAIL O
HEAD 'V' DITCH
(Not To Scale)



Type of Liner = CLASS 'B' RIP RAP

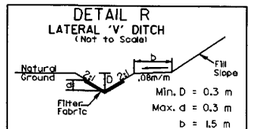
STA 25+85 LT TO 25+65 LT -NBCD-

DETAIL P
TAIL BASE DITCH
(Not To Scale)



STA 10+84 LT TO 10+97 LT

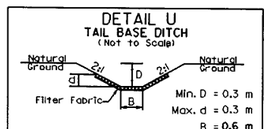
DETAIL R
LATERAL 'V' DITCH
(Not To Scale)



Type of Liner = CLASS 'B' RIP RAP

STA 25+55 RT TO 25+80 RT -L-

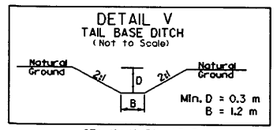
DETAIL U
TAIL BASE DITCH
(Not To Scale)



Type of Liner = CLASS 'B' RIP RAP

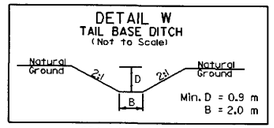
STA 21+30 LT TO BDOS -FLY-
STA 24+45 LT -NBCD-

DETAIL V
TAIL BASE DITCH
(Not To Scale)



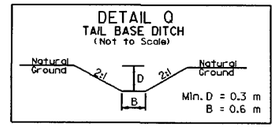
STA 10+40 RT -LP B-

DETAIL W
TAIL BASE DITCH
(Not To Scale)



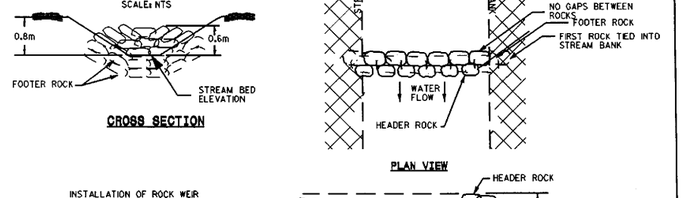
STA 50+70 LT -L-

DETAIL Q
TAIL BASE DITCH
(Not To Scale)



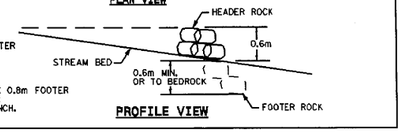
STA 25+28 LT TO 25+65 LT -L-
STA 21+30 LT TO OTCB -L-
STA 50+45 LT -L-
STA 13+90 LT TO 14+40 LT-NBCD-3:1 SIDE SLOPES

DETAIL H
ROCK WEIR
SCALE: NTS

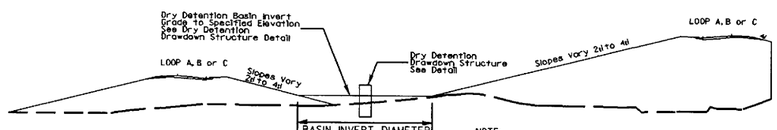


INSTALLATION OF ROCK WEIR

A TRENCH SHALL BE DUG IN SUCH A MANNER THAT THE FOOTER ROCKS ARE BURIED BENEATH THE BED SURFACE ELEVATION. AN EXCAVATOR, WITH A BUCKET THAT CONTAINS A HYDRAULIC THUMB, SHALL BE USED TO PLACE ROCKS WITH THE SUPERVISION OF THE RESIDENT ENGINEER. HEADER AND FOOTER ROCKS SHALL BE NO SMALLER THAN 0.5m X 0.5m X 0.8m FOOTER ROCKS SHALL BE PLACED IN THE TRENCH FIRST WITH HEADER ROCKS PLACED ON TOP PRIOR TO BACK FILLING OF THE TRENCH.

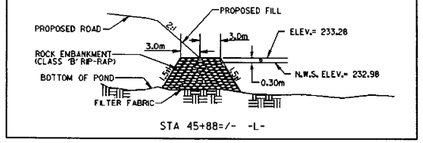


DRY DETENTION BASIN GRADING DETAIL



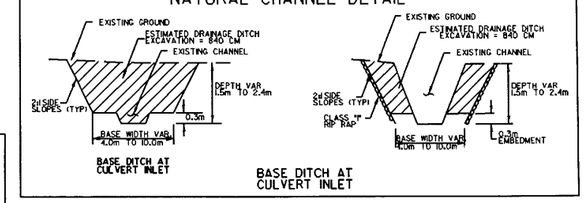
NOTE:
BASIN INVERT ELEVATIONS HAVE BEEN SET TO PROVIDE 2-3 FEET OF FREEBOARD BETWEEN THE CONTROLLING ROADWAY CENTERLINE ELEVATION AND THE 50 YEAR EVENT. ADJUSTING THE BASIN INVERT OR DRAWDOWN STRUCTURE ELEVATIONS HIGHER THAN INDICATED IN PLANS MAY RESULT IN STORMWATER ENCROACHING INTO THE ROADWAY.

DETAIL X
ROCK EMBANKMENT FOR POND PROTECTION



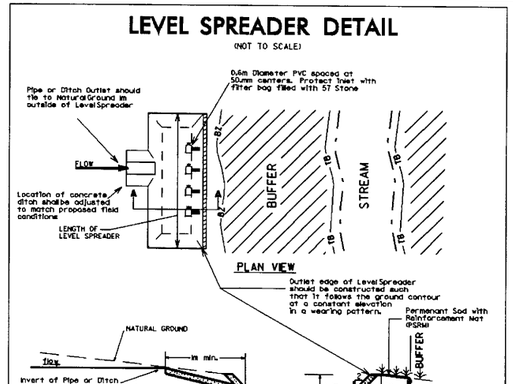
STA 45+88=/- -L-

NATURAL CHANNEL DETAIL



STA 31+41RT TO 33+25 RT -L-

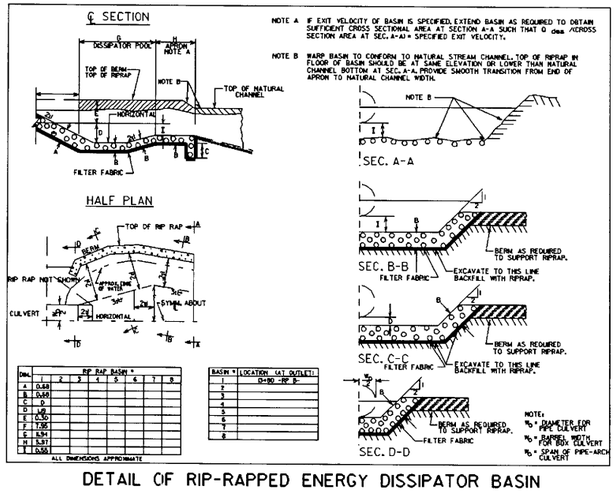
LEVEL SPREADER DETAIL
(NOT TO SCALE)



CONCRETE PAVED DITCH LEVEL SPREADER

STA 13+57 RT -RP B-
STA 33+40 RT -L-
STA 50+43 LT -L-

DETAIL OF RIP-RAPPED ENERGY DISSIPATOR BASIN



NOTE A IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A-A SUCH THAT Q des /ACROSS SECTION AREA AT SEC. A-A1= SPECIFIED EXIT VELOCITY.

NOTE B BUILD BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIPRAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A-A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.

NOTE:
*1 = DIAMETER FOR PIPE CULVERT
*2 = BARREL WIDTH FOR BOX CULVERT
*3 = SPAN OF PIPE-ARCH CULVERT

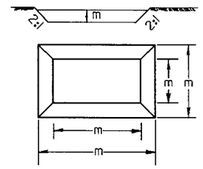
No.	RIP RAP BASIN * 2	3	4	5	6	7	8
1	0.68						
2	0.60						
3	0						
4	1.0						
5	0.50						
6	1.05						
7	0.5						
8	0.37						
9	0.50						

ALL DIMENSIONS APPROXIMATE

BASIN *	LOCATION (AT OUTLET)
1	Q=80 -RP B-
2	
3	
4	
5	
6	
7	
8	

DETAIL OF EMERGENCY SPILL BASIN

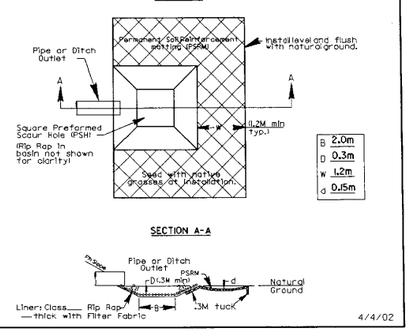
TOTAL CAPACITY REQUIRED : cu. m.
TOTAL CAPACITY PROVIDED : cu. m.



Ditch to be blocked with sandbags 1.0 m deep at outlet

STATION	REQ. VOL. (Cu. m.)	DEPTH (m)	BOTTOM LENGTH (m)	BOTTOM WIDTH (m)	TOP LENGTH (m)	TOP WIDTH (m)	PROVIDED VOL. (Cu. m.)
FLY 16+20 L	78	1.0	9.0	5.0	13.0	9.0	81
-L- 34+00 R	104	1.0	10.0	7.0	14.0	11.0	112
-L- 35+60 L	158	1.0	11.0	10.0	15.0	14.0	160
-L- 39+90 L	78	1.0	7.0	7.0	11.0	11.0	85
-L- 40+70 L	103	1.0	8.0	8.0	12.0	12.0	104
-L- 50+40 L	396	1.0	20.0	16.0	24.0	20.0	400
-L- 56+00 L	50	1.0	5.0	5.0	9.0	9.0	53
-L- 58+20 R	77	1.0	11.0	4.0	15.0	8.0	82
-Y5- 14+00 R	275	1.0	17.0	13.0	21.0	17.0	289
-Y5- 15+20 R	178	1.0	14.0	5.0	18.0	13.0	180
RAMP8 12+90 R	174	1.0	14.0	9.0	18.0	13.0	180
RAMP0 15+20 R	127	1.0	12.0	7.0	16.0	11.0	130

PREFORMED SCOUR HOLE



4/4/02

3-JAN-2006 9:45
R:\ROADWAY\PROJECTS\

PROJECT REFERENCE NO.	SHEET NO.
R6091A	2-N
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
[redacted]	

METRIC

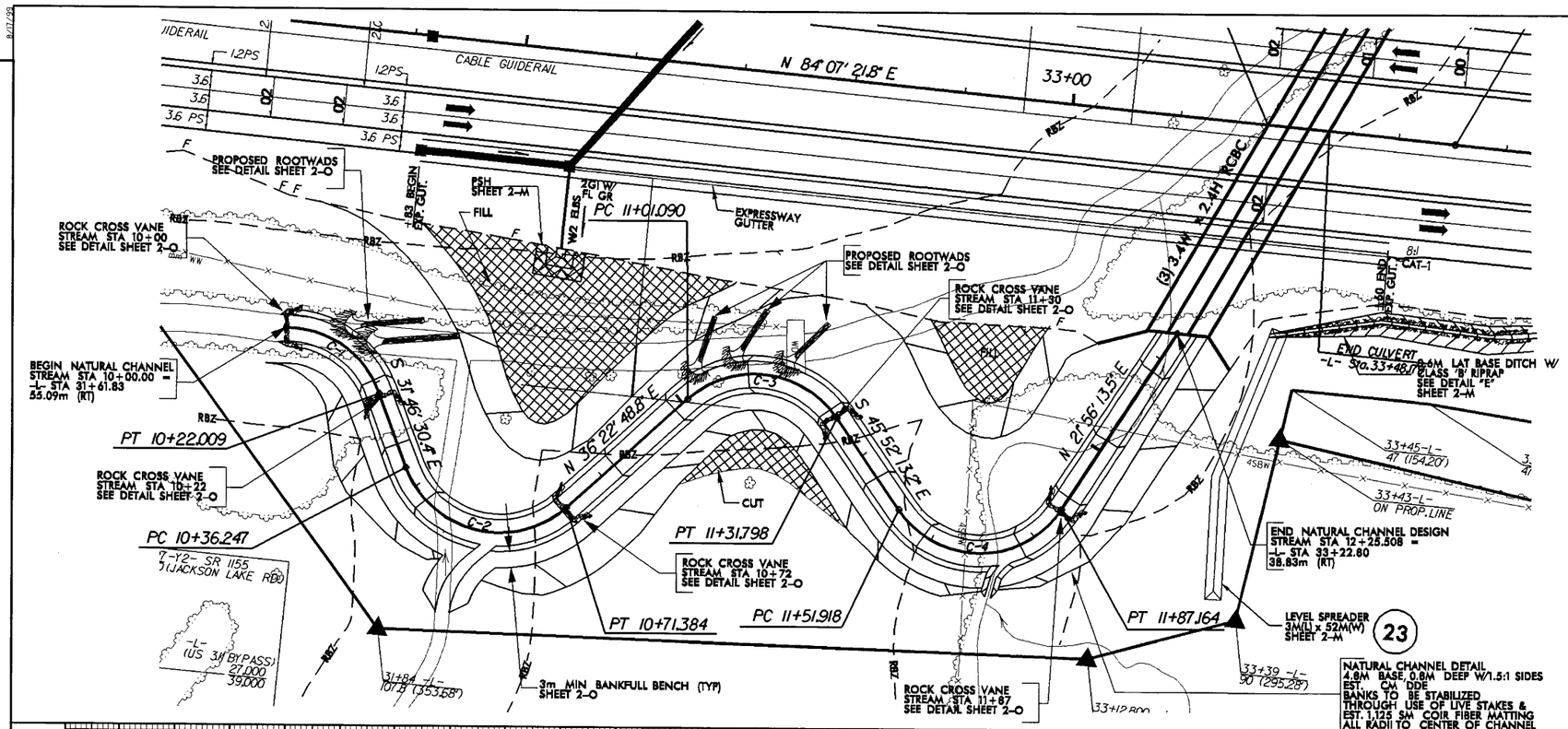
5 0 10

CONST.REV.

R/W REV.

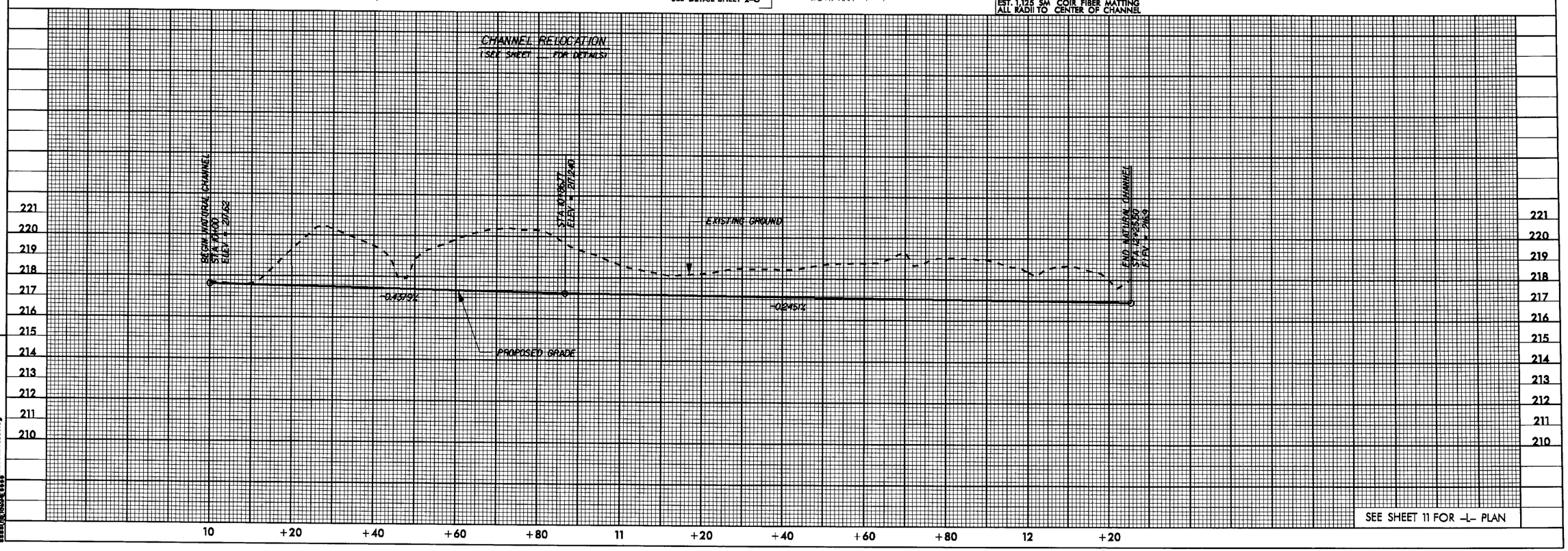
REVISIONS

8/17/99



C-1	C-2
PI Sta 10+12.617	PI Sta 10+62.855
Δ = 70° 03' 22.2" (RT)	Δ = 111° 50' 40.8" (LT)
L = 22.009	L = 35.137
T = 12.617	T = 26.608
R = 18.000	R = 18.000

C-3	C-4
PI Sta 11+21.705	PI Sta 11+78.701
Δ = 97° 44' 58.0" (RT)	Δ = 112° 11' 33.3" (LT)
L = 30.709	L = 35.246
T = 20.615	T = 26.783
R = 18.000	R = 18.000



SEE SHEET 11 FOR -L- PLAN

R-1041 ROBS. BRCD
RESEARCH TRIANGLE PARK

PROJECT REFERENCE NO.	SHEET NO.
R6091A	2-0
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
[redacted]	

NOT TO SCALE

CONST.REV.

R/W REV.

REVISIONS

8/17/99

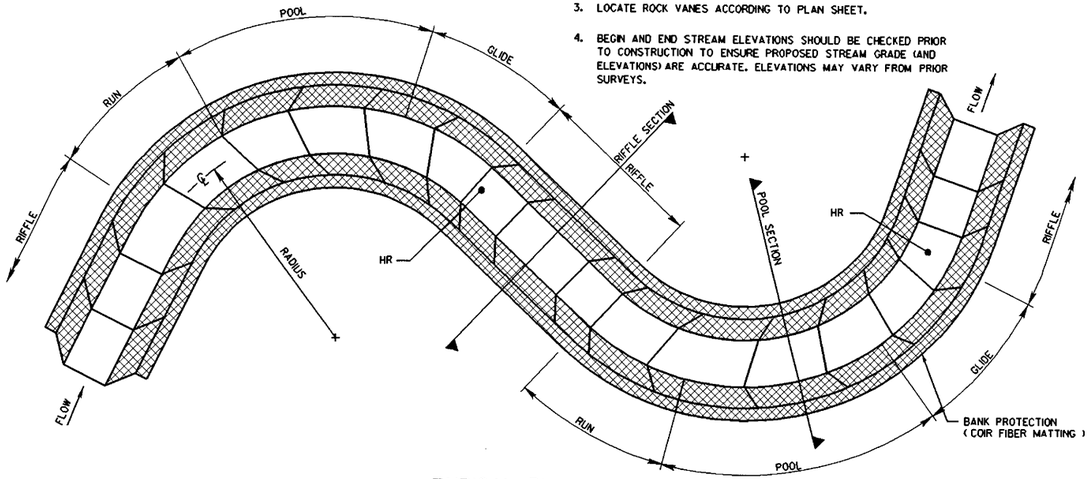
NOTES:

1. THE CONTRACTOR SHALL LAYOUT THE CHANNEL ALIGNMENT WHICH SHALL CONSIST OF STAKING OUT THE CENTER OF EACH RADIUS, SCRIBING THE CENTER LINE OF THE CHANNEL FOR EACH BEND USING THE INDICATED RADIUS, AND SCRIBING CENTERLINE OF THE TANGENT SECTIONS BY CONNECTING SUCCESSIVE BENDS WITH A STRAIGHT LINE. RI= +/-18m.

2. FIELD ADJUSTMENTS OF THE ALIGNMENT MAY BE REQUIRED TO AVOID CERTAIN OBSTACLES. APPROVAL BY THE ENGINEER OF THE STAKE-OUT ALIGNMENT SHALL BE REQUIRED PRIOR TO INITIATION OF THE CONSTRUCTION OF THE CHANNEL.

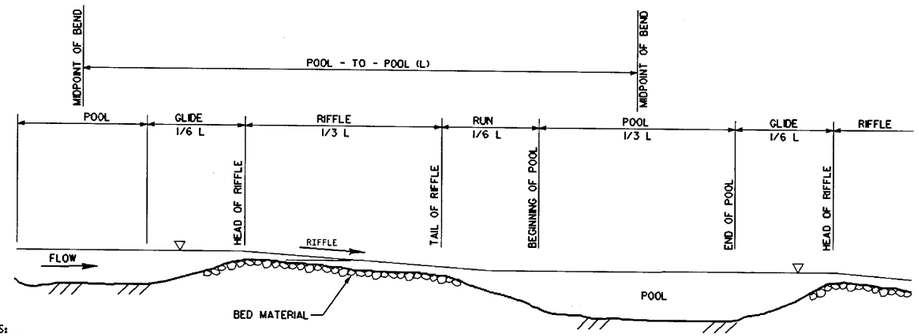
3. LOCATE ROCK VANES ACCORDING TO PLAN SHEET.

4. BEGIN AND END STREAM ELEVATIONS SHOULD BE CHECKED PRIOR TO CONSTRUCTION TO ENSURE PROPOSED STREAM GRADE (AND ELEVATIONS) ARE ACCURATE. ELEVATIONS MAY VARY FROM PRIOR SURVEYS.



TYPICAL PLAN

NOT TO SCALE



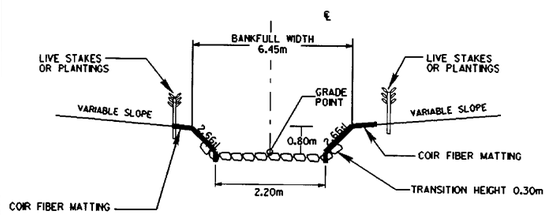
NOTES:

1. THE POOL TO POOL SPACING (L) SHALL BE MEASURED AS THE DISTANCE FROM THE MIDPOINT OF THE UPSTREAM BEND TO THE MIDPOINT OF THE DOWNSTREAM BEND.

2. REFER TO MORPHOLOGICAL MEASUREMENT TABLE AND PLAN SHEET FOR DIMENSIONS. NOTE THAT POOL TO POOL SPACING VARIES.

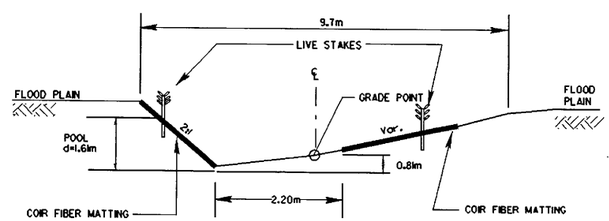
TYPICAL PROFILE

NOT TO SCALE



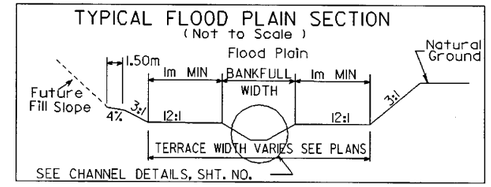
TYPICAL RIFFLE SECTION

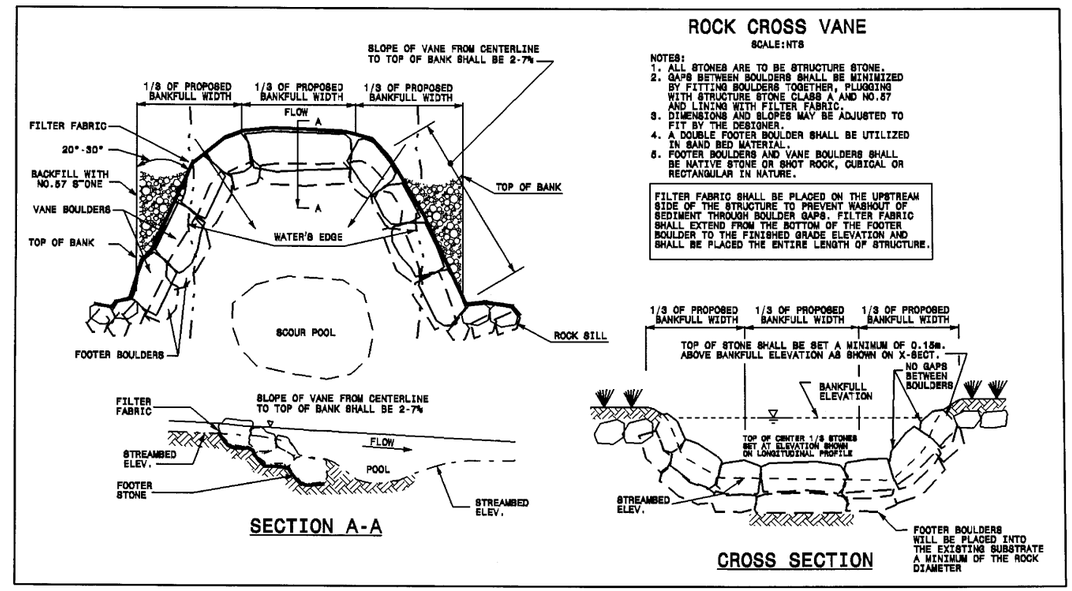
NOT TO SCALE

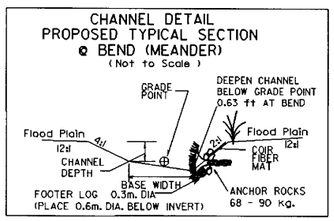


TYPICAL POOL SECTION

NOT TO SCALE







TYPICAL SECTION AT BENDS

NOTES:

NUMBER OF ROOTWADS INSTALLED TO BE DETERMINED ON SITE

NUMBER OF LOW STAGE CHECK DAMS TO BE DETERMINED ON SITE

ROOTWADS TO BE SPACED 4x DIAMETER OF ROOT BASE

FOOTER LOG ANCHOR ROCK TO BE PLACED ON THE DOWNSTREAM END OF EACH FOOTER LOG SO THAT IT IS LEANING AGAINST THE LOG ON THE SIDE AWAY FROM THE CHANNEL.

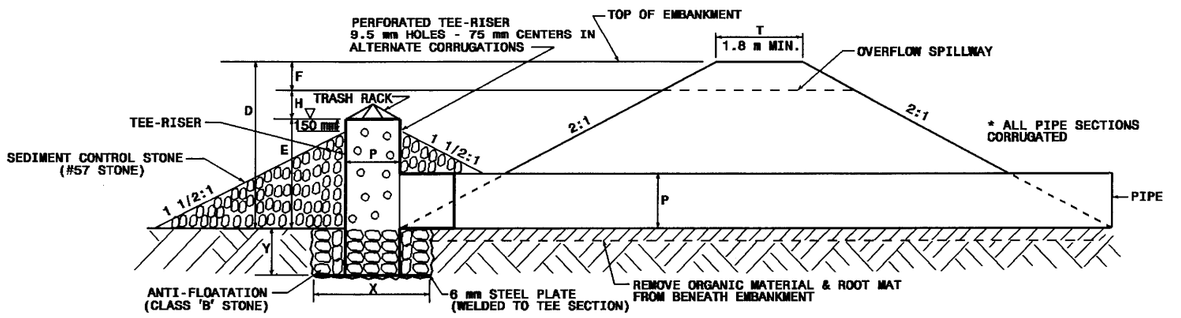
WHEN BACKFILLING OVER AND AROUND FOOTER LOGS, ROOTWAD LOGS AND ANCHOR ROCKS FIRMLY SECURE ALL COMPONENTS INCLUDING JOINTS, CONNECTIONS AND GAPS.

PLANTINGS SHOULD BE PLACED ABOVE BANKFULL DEPTH

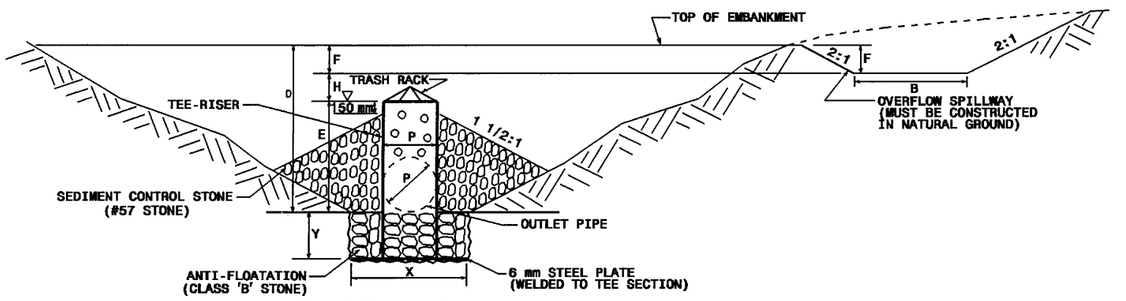
MORPHOLOGICAL MEASUREMENT TABLE

VARIABLES	EXISTING CHANNEL	PROPOSED REACH 1	REFERENCE REACH
1) STREAM TYPE	B4c	C4	C5
2) DRAINAGE AREA	58.03Ha	58.03Ha	162.69Ha
3) BANKFULL WIDTH	5.75m	6.45m	4.63m
4) BANKFULL MEAN DEPTH	0.92m	0.54m	0.46m
5) WIDTH/DEPTH RATIO	6.23	12.00	10.13
6) BANKFULL CROSS-SECTIONAL AREA	5.32sm	3.45sm	2.11sm
7) BANKFULL MEAN VELOCITY	1.15mps	1.77mps	0.86mps
8) BANKFULL DISCHARGE, cfs	6.09cm	6.10cm	1.81cm
9) BANKFULL MAX. DEPTH	1.37m	0.80m	0.49m
10) WIDTH OF FLOODPRONE AREA	42.40m	45.00m	39.62m
11) ENTRENCHMENT RATIO	7.37	6.98	8.55
12) MEANDER LENGTH	9.5m	75m	10 - 22m
13) RATIO OF MEANDER LENGTH TO BANKFULL WIDTH	1.65	12	2.2 - 4.7
14) RADIUS OF CURVATURE	10.0m	18m	2 - 3m
15) RATIO OF RADIUS OF CURVATURE TO BANKFULL WIDTH	1.7	2.8	0.4
16) BELT WIDTH	16.0	45.2	9.14
17) MEANDER WIDTH RATIO	2.8	7.0	2.0
18) SINUOSITY (STREAM LENGTH/VALLEY LENGTH	1.24	1.40	1.19
19) VALLEY SLOPE	0.004m/m	0.0034m/m	0.018m/m
20) AVERAGE SLOPE	0.003m/m	0.0024m/m	0.015 m/m
21) POOL SLOPE	0.005m/m	0.0005m/m	0.003 - 0.012m/m
22) RATIO OF POOL SLOPE TO AVERAGE SLOPE	1.78	0.20	0.19 - 0.83
23) MAXUMUM POOL DEPTH	1.86m	1.6im	0.58 - 2m
24) RATIO OF POOL DEPTH TO AVERAGE BANKFULL DEPTH	2.01	3.00	1.3 - 3.9
25) POOL WIDTH	10.98m	9.68m	9m
26) RATIO OF POOL WIDTH TO BANKFULL WIDTH	1.91	1.50	2.04
27) POOL TO POOL SPACING	30.00m	32.3m	5 -9m
28) RATIO OF POOL TO POOL SPACING TO BANKFULL WIDTH	5.21	5.0	1.2 - 2.0

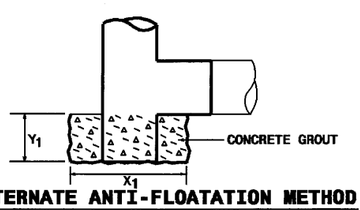
3-JUN-2004 15:15



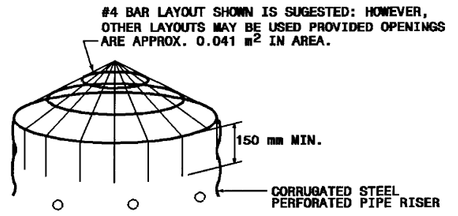
SECTIONAL VIEW



PROFILE VIEW



ALTERNATE ANTI-FLOATATION METHOD

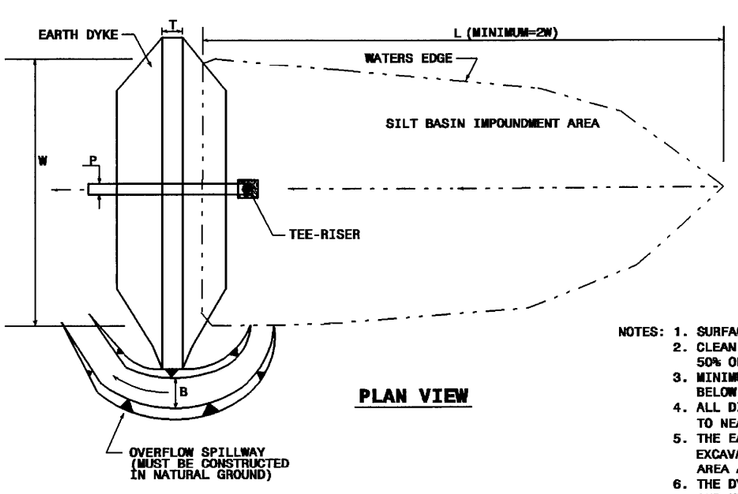


RISER DETAIL

SHEET 2 OF 2

SPECIAL DETAIL FOR TYPE "A" SILT BASIN

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
RALEIGH, N.C.



PLAN VIEW

NOTES:
1. SURFACE AREA AND VOLUME ARE TO BE SITE SPECIFIC.
2. CLEAN OUT SEDIMENT WHEN STORAGE VOLUME REACHES 50% OF MIN. STORAGE VOLUME.
3. MINIMUM SURFACE AREA AND MINIMUM VOLUME ARE MEASURED BELOW THE TOP OF PRINCIPLE SPILLWAY (TOP OF RISER).
4. ALL DIMENSIONS OF BASIN WILL NOT REQUIRE CONSTRUCTION TO NEAT LINES.
5. THE EARTH DYKE MAY BE CONSTRUCTED ALONG ONE OR MORE SIDES. EXCAVATION MAY BE REQUIRED TO PROVIDE MINIMUM SURFACE AREA AND/OR MINIMUM STORAGE VOLUME.
6. THE DYKE SHALL BE CONSTRUCTED OF MATERIAL SUITABLE FOR AND MEETING ROADWAY EMBANKMENT SPECIFICATIONS.
7. TO FACILITATE DETERMINATION OF MAINTENANCE CLEANOUT REQUIREMENT A MARKER SHOULD BE PLACED IN THE BASIN INDICATING THE 50% VOLUME LEVEL.

BASIN #	APPROX. STA.	P	H	T (min)	D*	E	F	B (min)	X (min)	Y (min)	X_1 (min)	Y_1 (min)	SURFACE AREA (min)	STORAGE VOLUME (min)
		mm	m	m	m	m	m	m	m	m	m	m	m^2	m^3
1	33+40 (LT)	600	0.3	1.8	2.11	1.20	0.61	1.81	1.2	0.45	1.1	0.45	332	370
2	35+30 (LT)	600	0.3	1.8	2.41	1.50	0.61	2.92	1.3	0.45	1.2	0.45	534	513

* SHALL NOT EXCEED 3.7 m

HYDRAULICS ENGINEER

P.K.
SIGNATURE

SHEET 1 OF 2

SPECIAL DETAIL FOR TYPE "A" SILT BASIN

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
RALEIGH, N.C.

PROJECT REFERENCE NO. R-0609 1A
SHEET NO. 20

PROJECT REFERENCE NO.	SHEET NO.
R-0690 1A	4
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

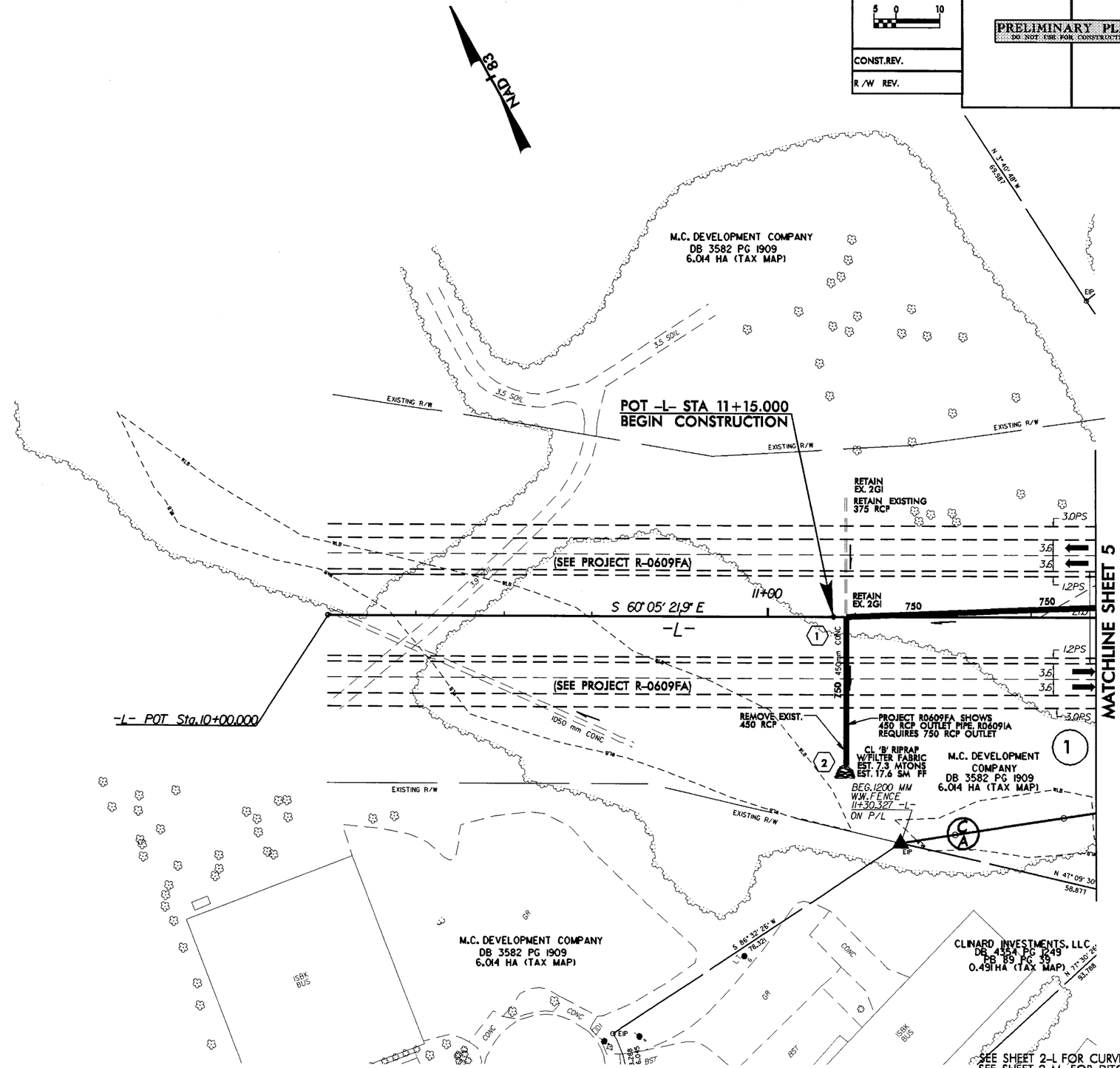
CONST.REV.

R /W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

RON REVISION.THIS REVISION CONSISTS OF ADDING EXISTING ROW TO PARCEL 1.
WPW 03-17-2005



SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 3B FOR -L- PROFILE

31-JAN-2006 11:35
r:\roadway\proj\r0690_rw_sht04.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

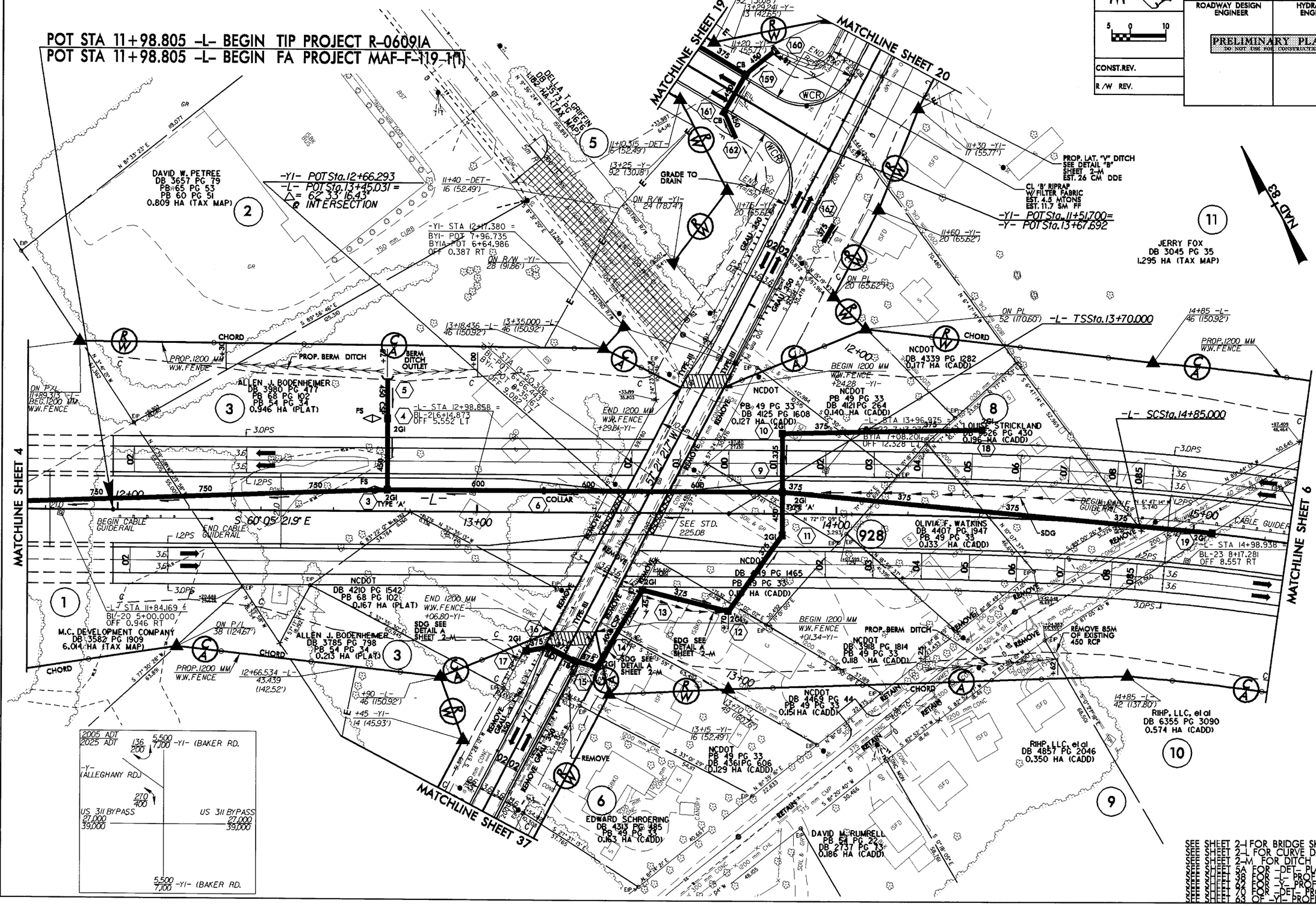
CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

POT STA 11+98.805 -L- BEGIN TIP PROJECT R-0609IA
POT STA 11+98.805 -L- BEGIN FA PROJECT MAF-F-119-1(1)



SEE SHEET 2-I FOR BRIDGE SKETCH
SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 5A FOR -DET- PLAN VIEW
SEE SHEET 38 FOR -L- PROFILE
SEE SHEET 39 FOR -Y- PROFILE
SEE SHEET 70 FOR -DET- PROFILE
SEE SHEET 63 OF -Y1- PROFILE

NOTE: SEE SHEET 5 FOR R/W AND EASEMENT LIMITS

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	5A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

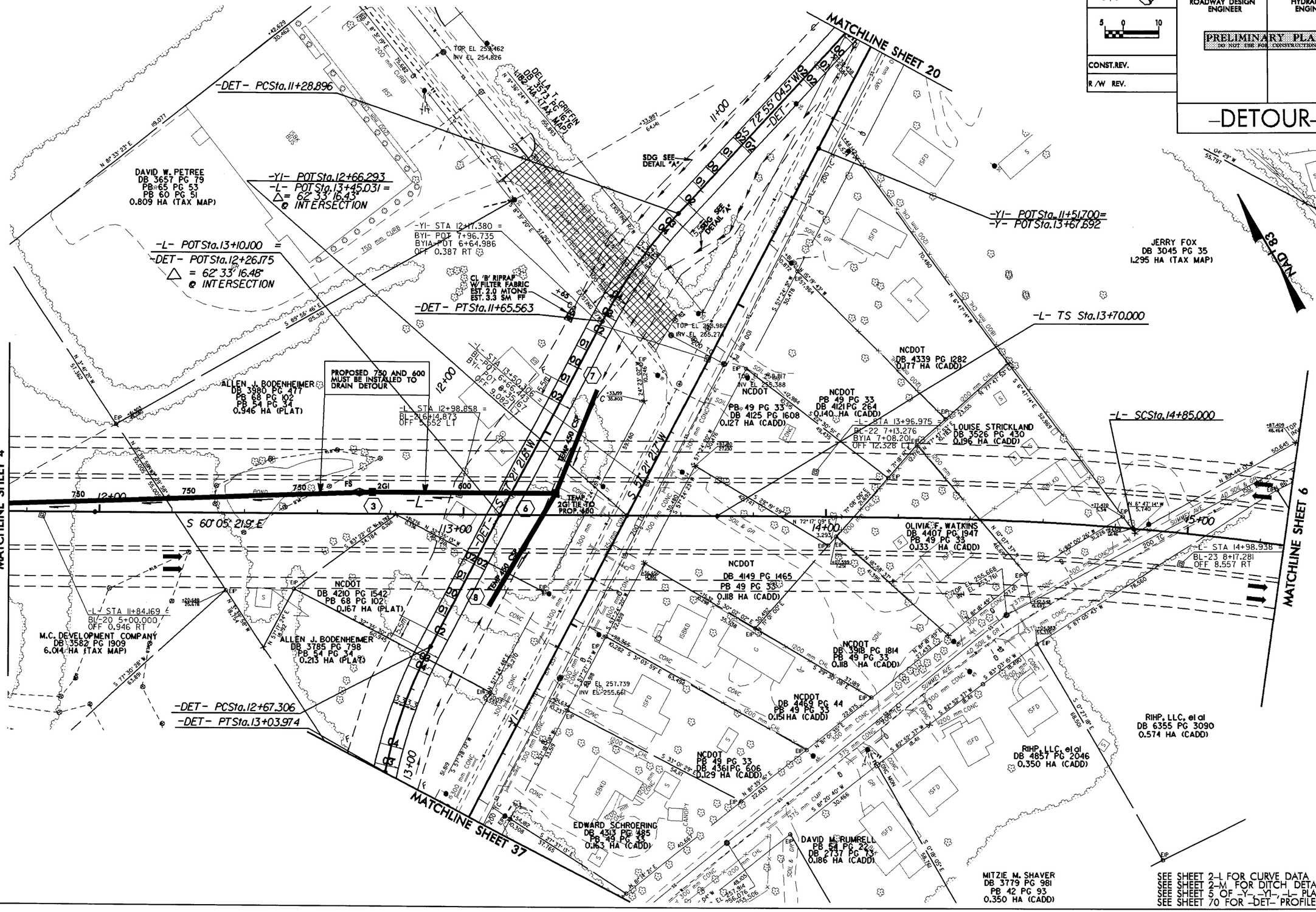
5 0 10

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.

-DETOUR-



SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 5 OF -Y-, -YI-, -L- PLAN VIEW
SEE SHEET 70 FOR -DET- PROFILE

REVISIONS

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

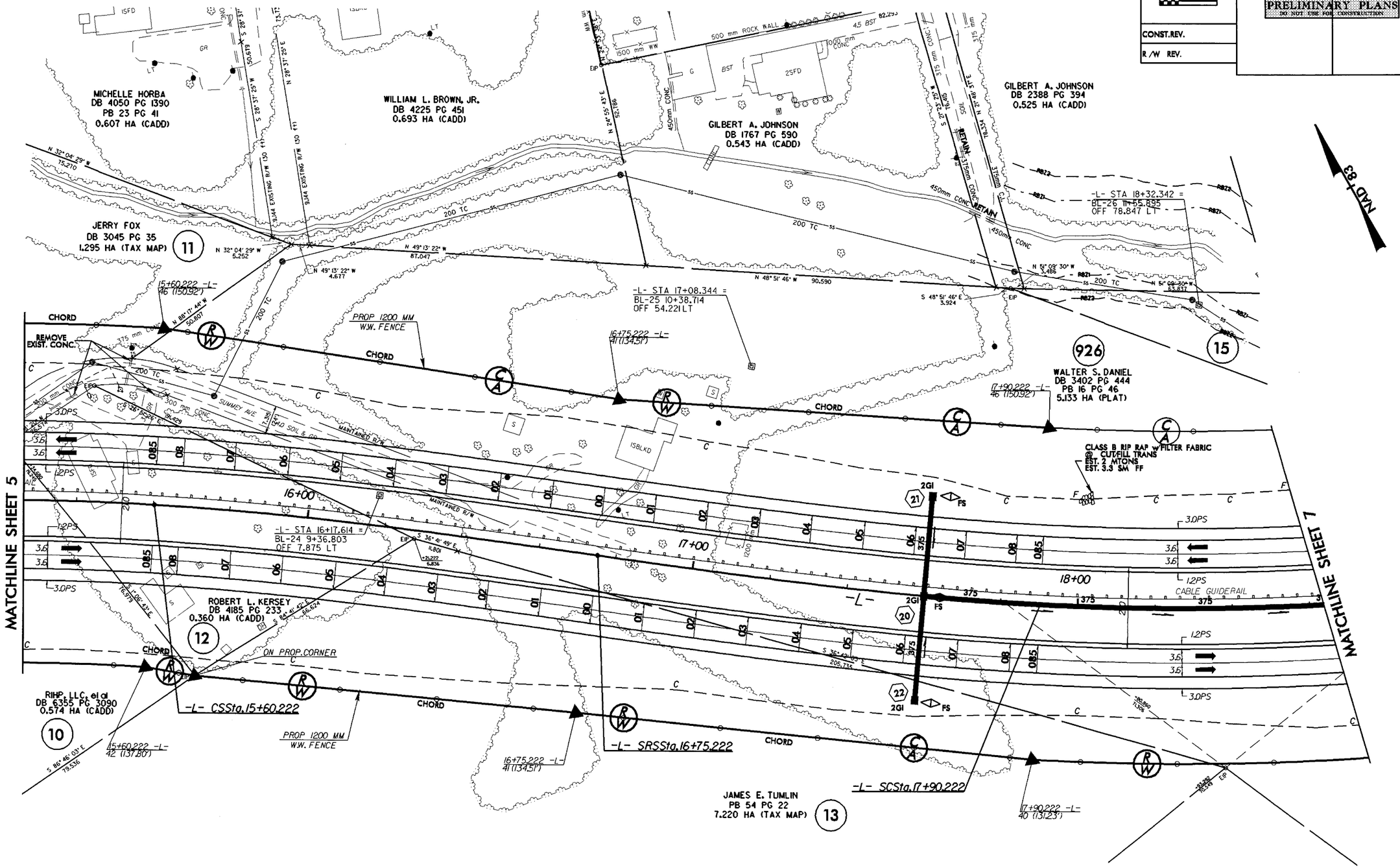
5 0 10

CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS



SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEETS 38, 39 FOR -L- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

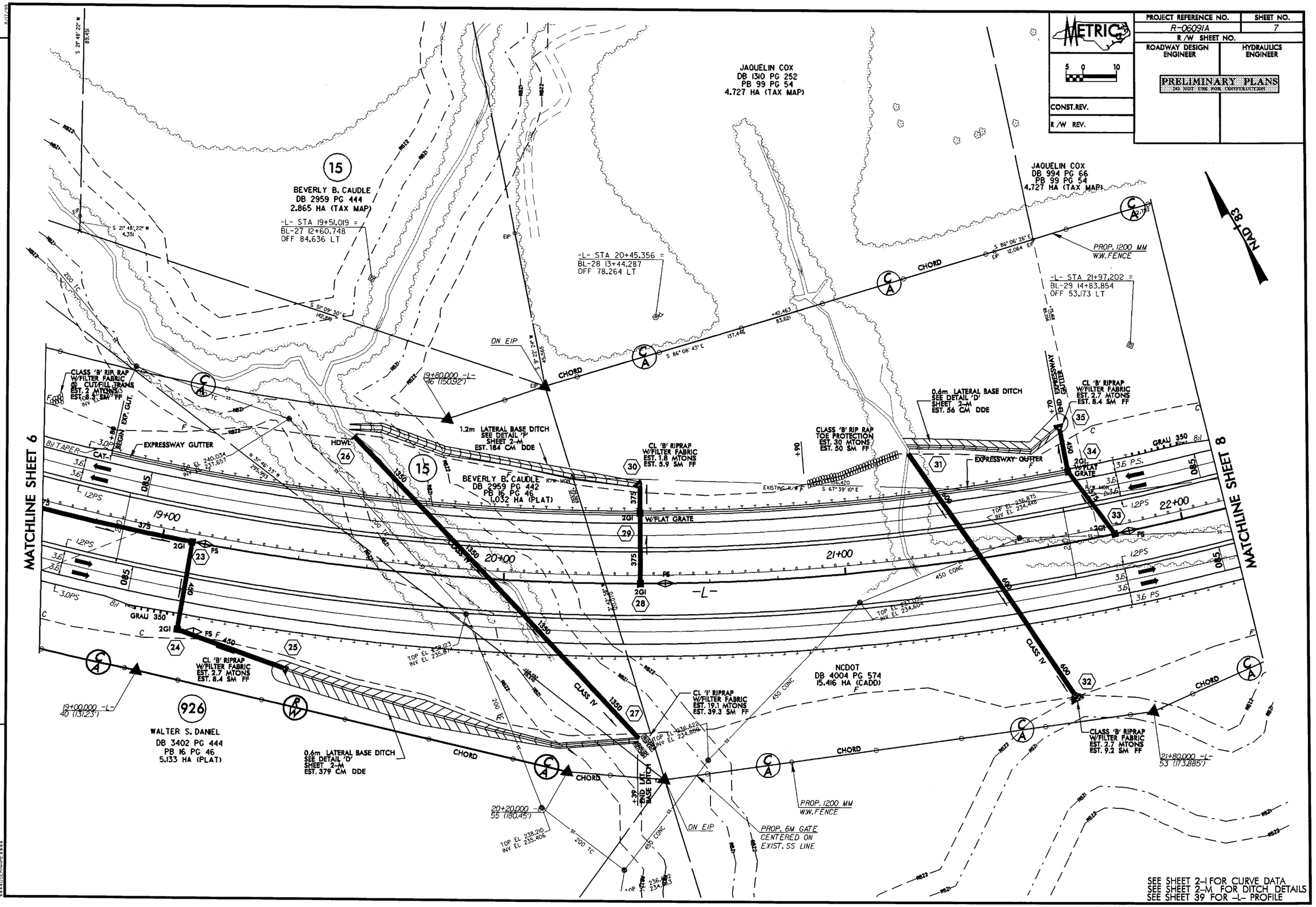
CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

RON REVISIONS, ADDED PARCEL #15, LETTER DATED, 10-05-2004
WPW 10-25-2004



31-JAN-2006 8:26
C:\pwworking\ddot\d0609ia\d0609ia_sht07.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

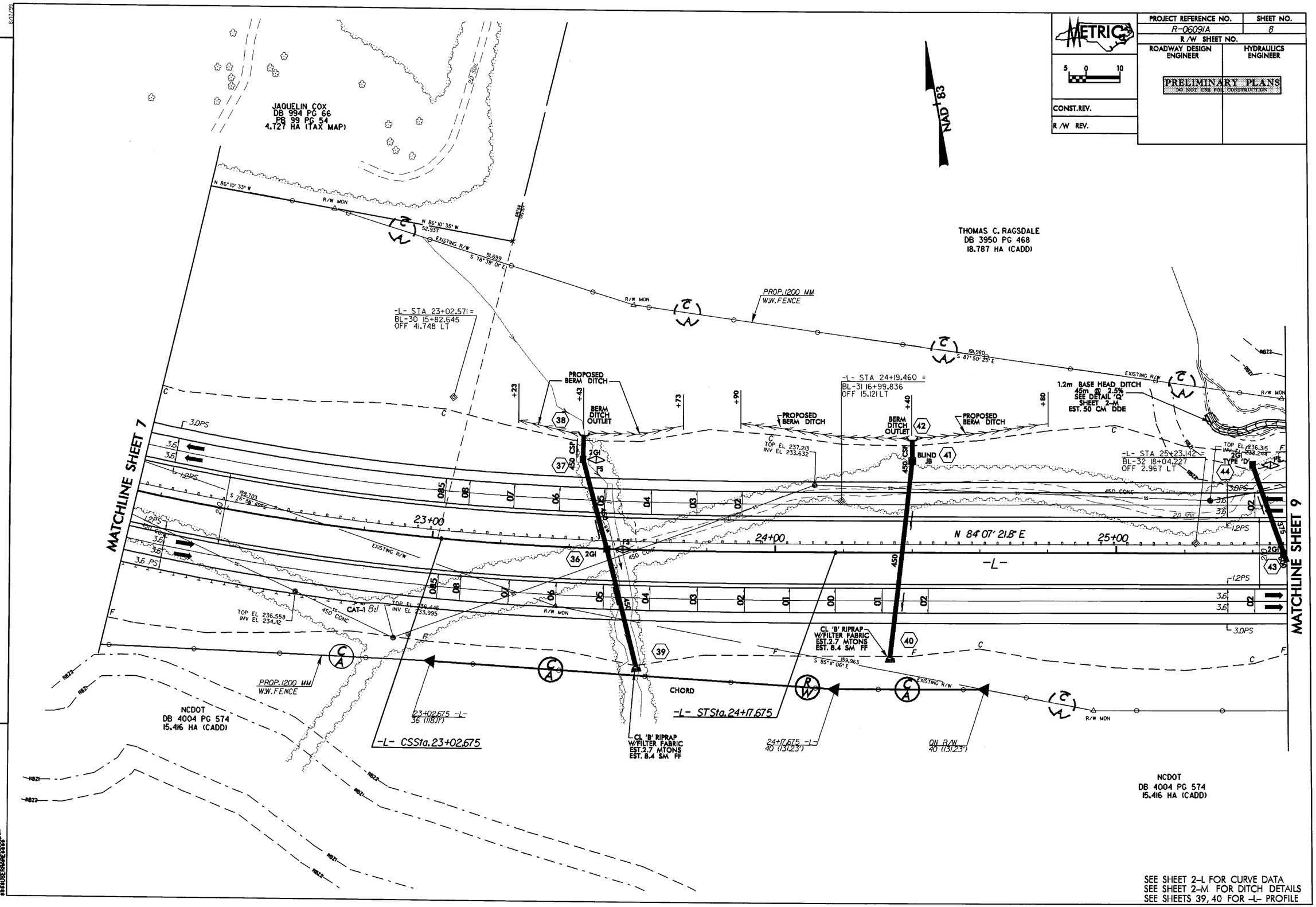
5 0 10

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.

REVISIONS



PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

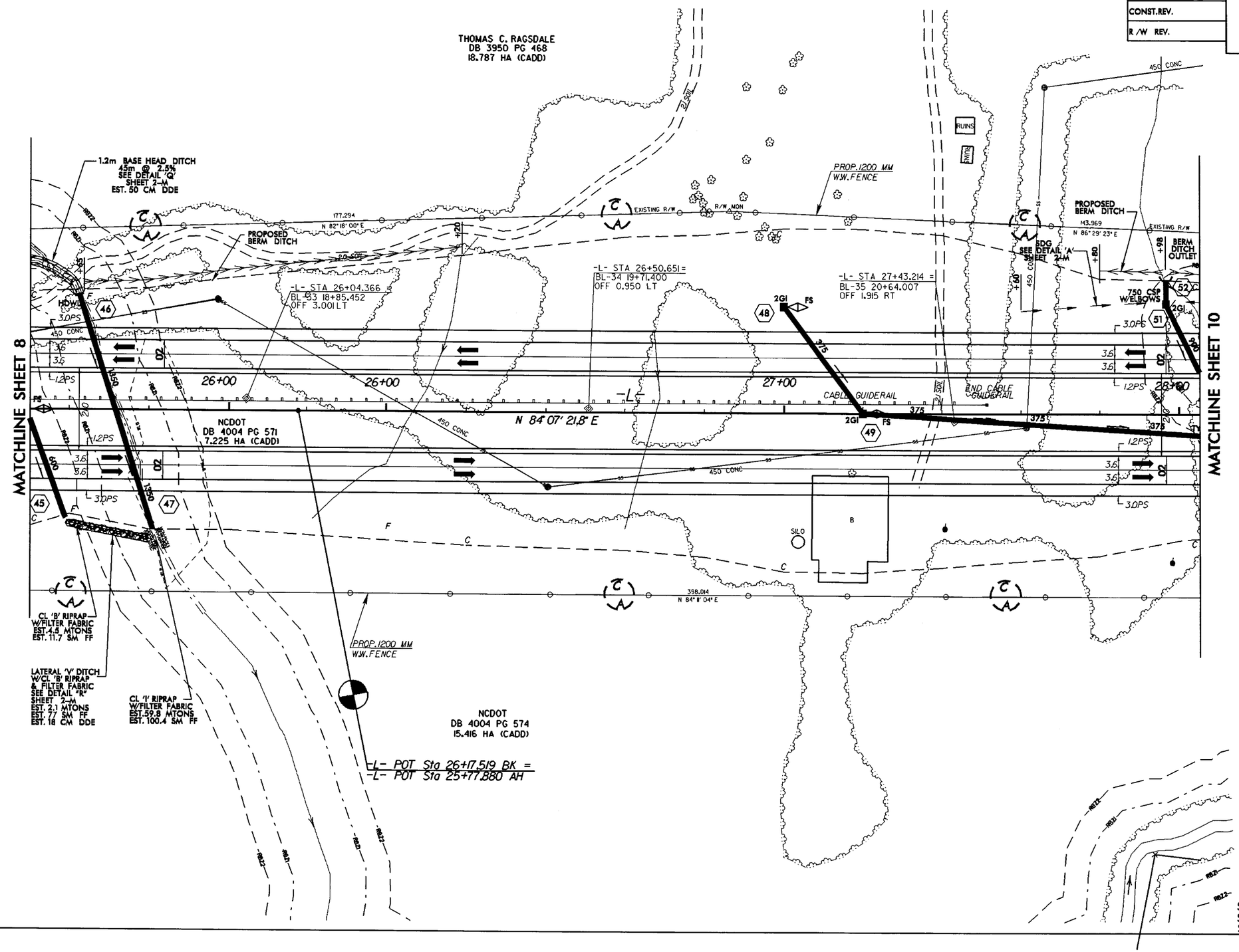
CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99



SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 40 FOR -L- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

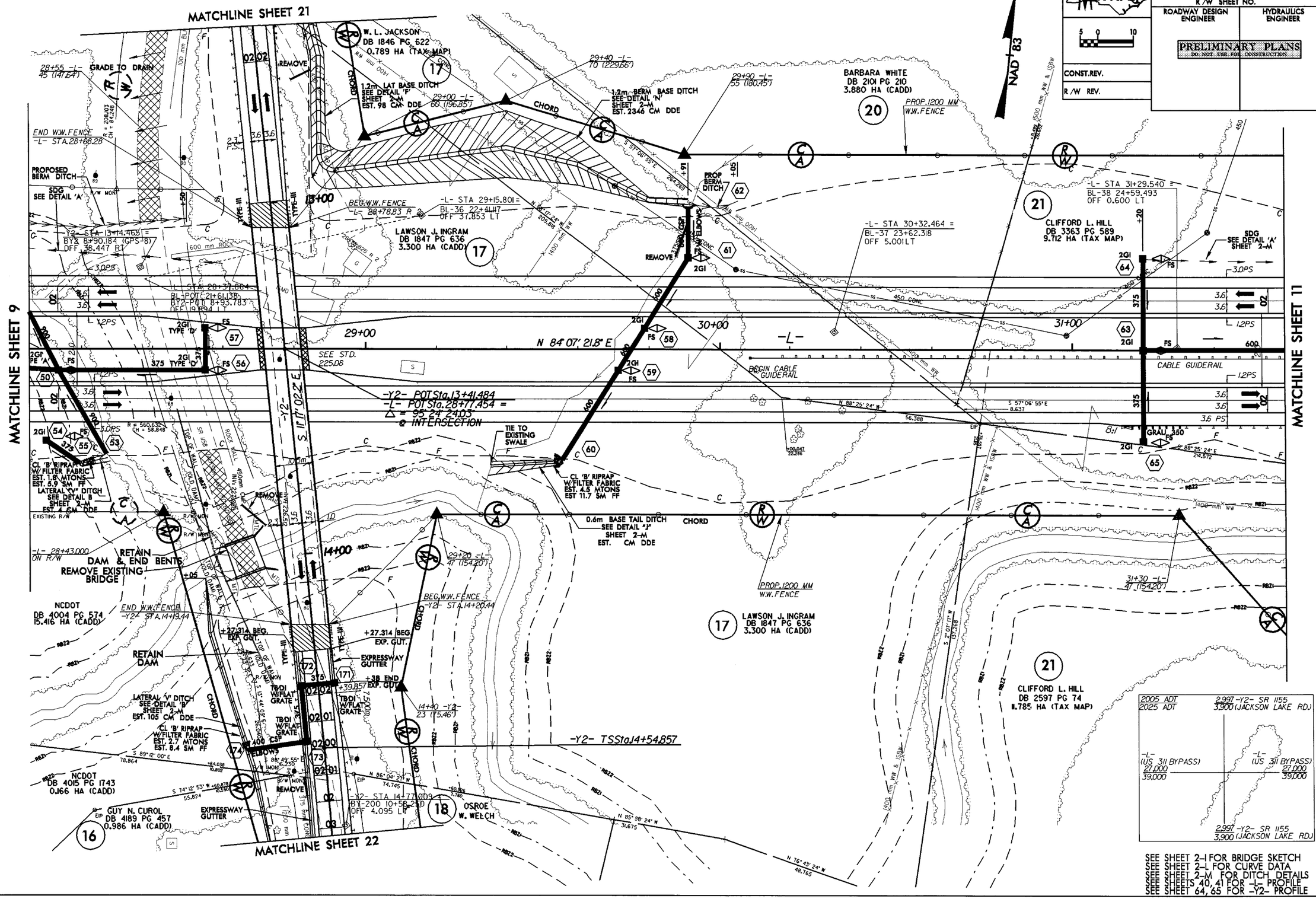
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.

REVISIONS

8/17/2012



SEE SHEET 2-I FOR BRIDGE SKETCH
SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEETS 40, 41 FOR -L- PROFILE
SEE SHEET 64, 65 FOR -Y2- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

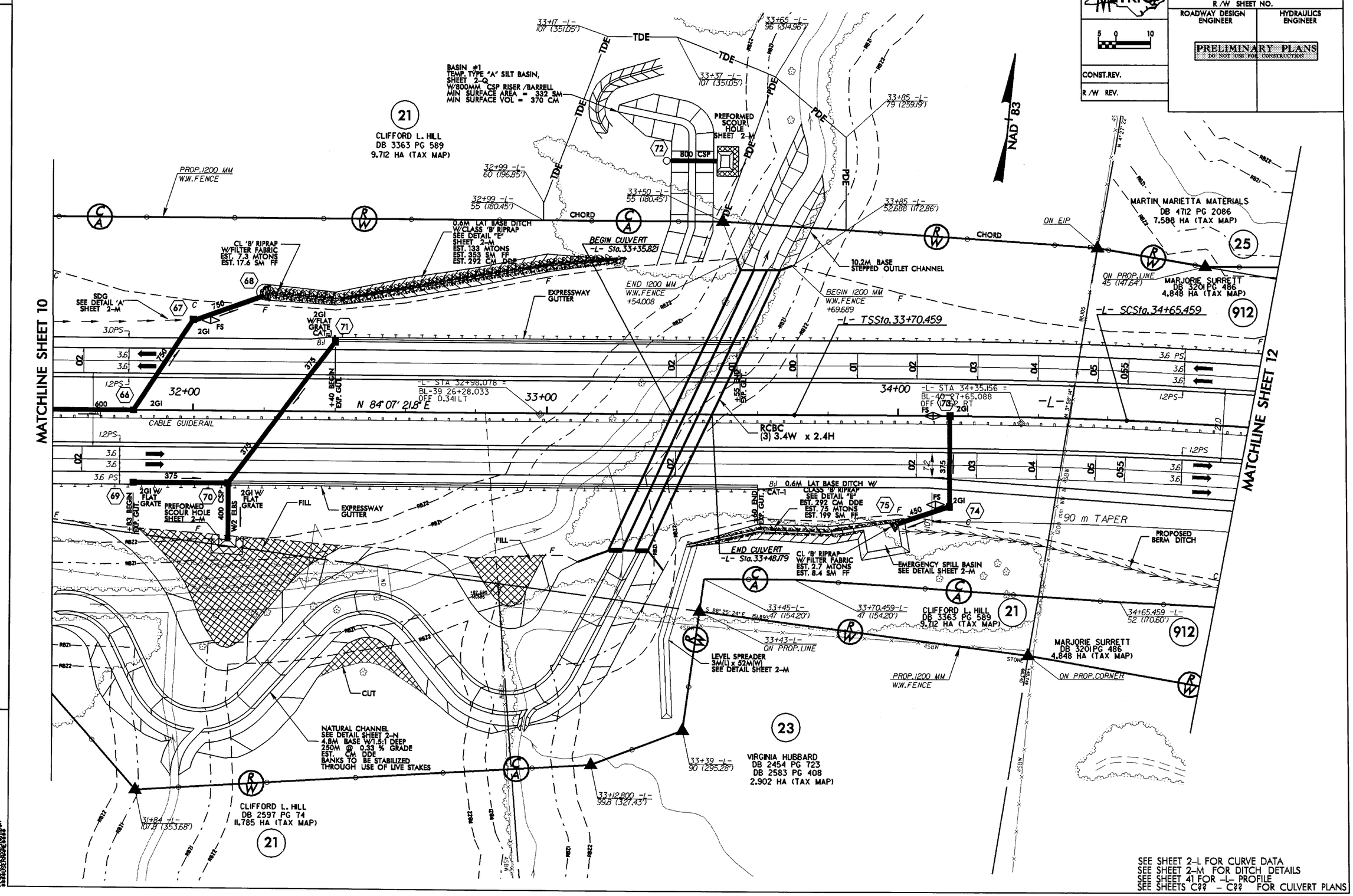
CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99



SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 41 FOR -L- PROFILE
SEE SHEETS C?? - C?? FOR CULVERT PLANS

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

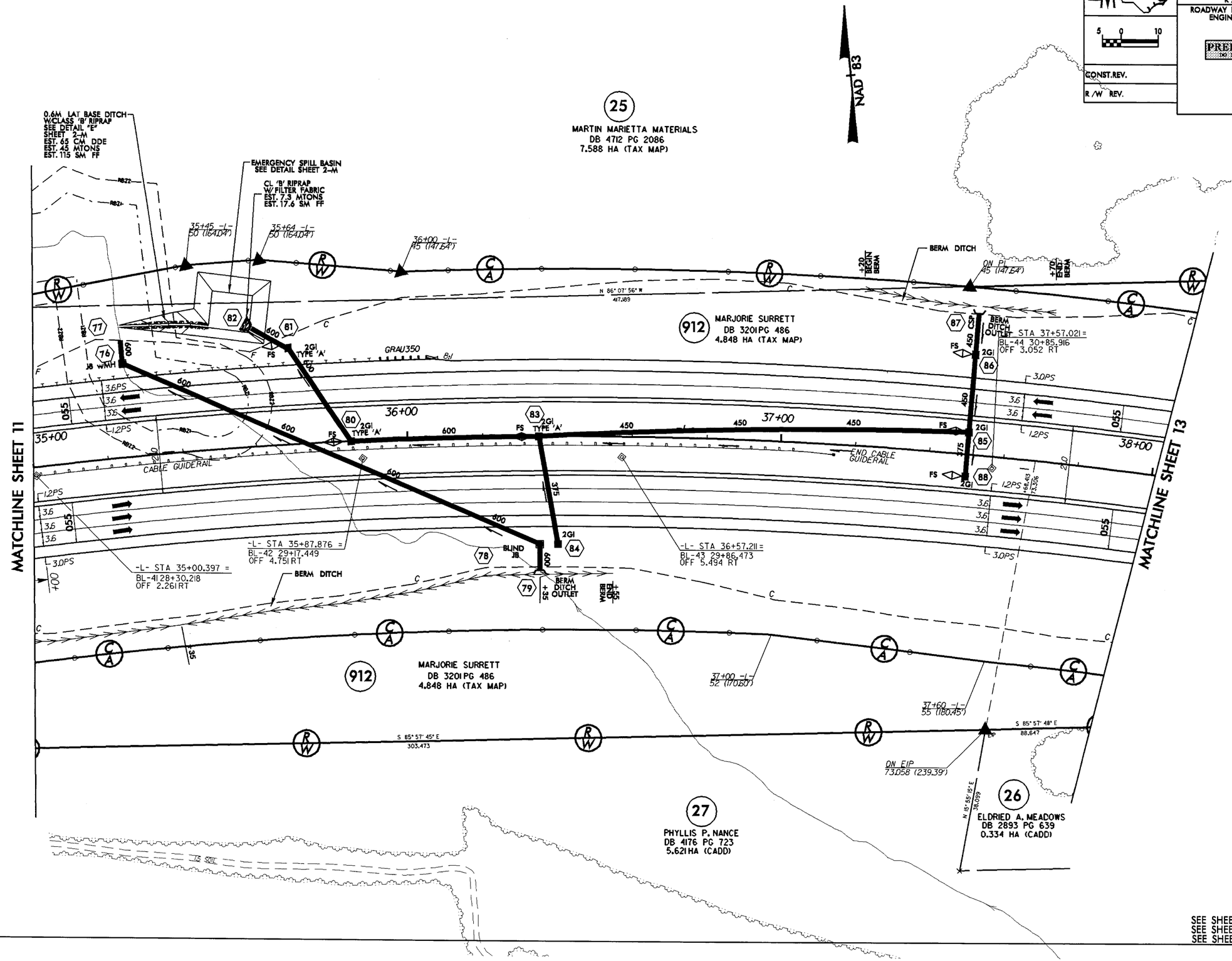
CONST.REV.

R/W REV.

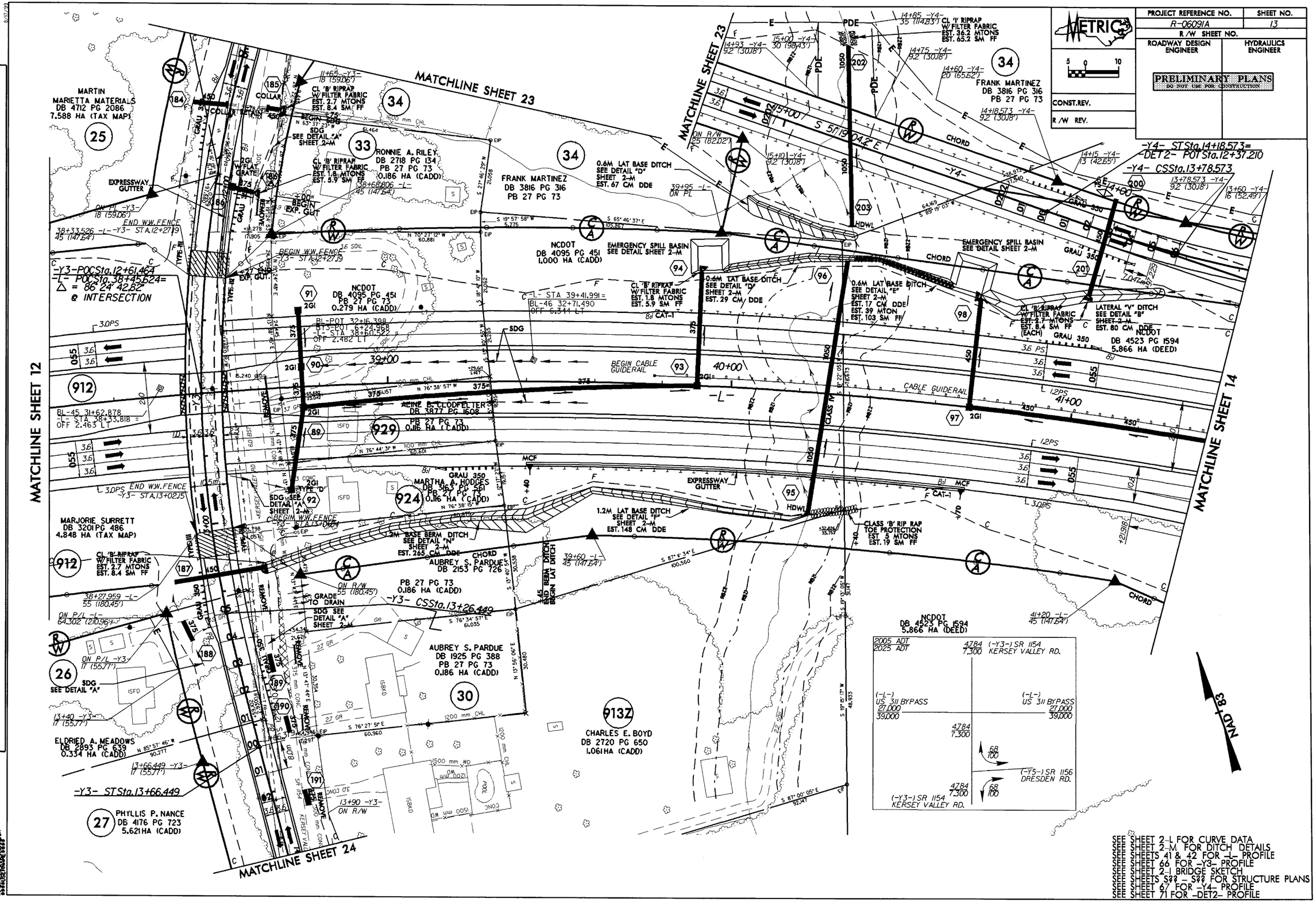
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

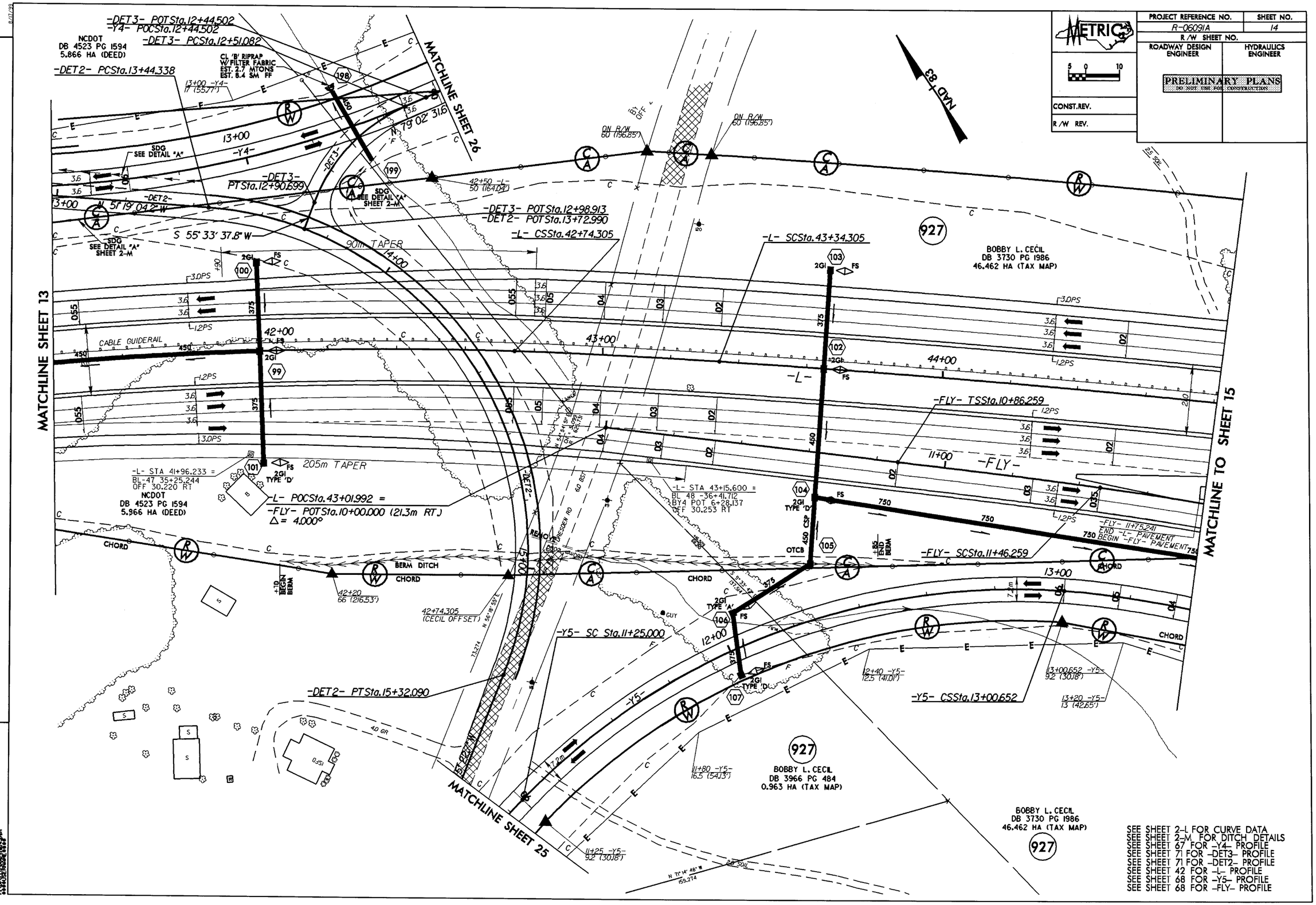
REVISIONS

8/17/99



SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 41 FOR -L- PROFILE

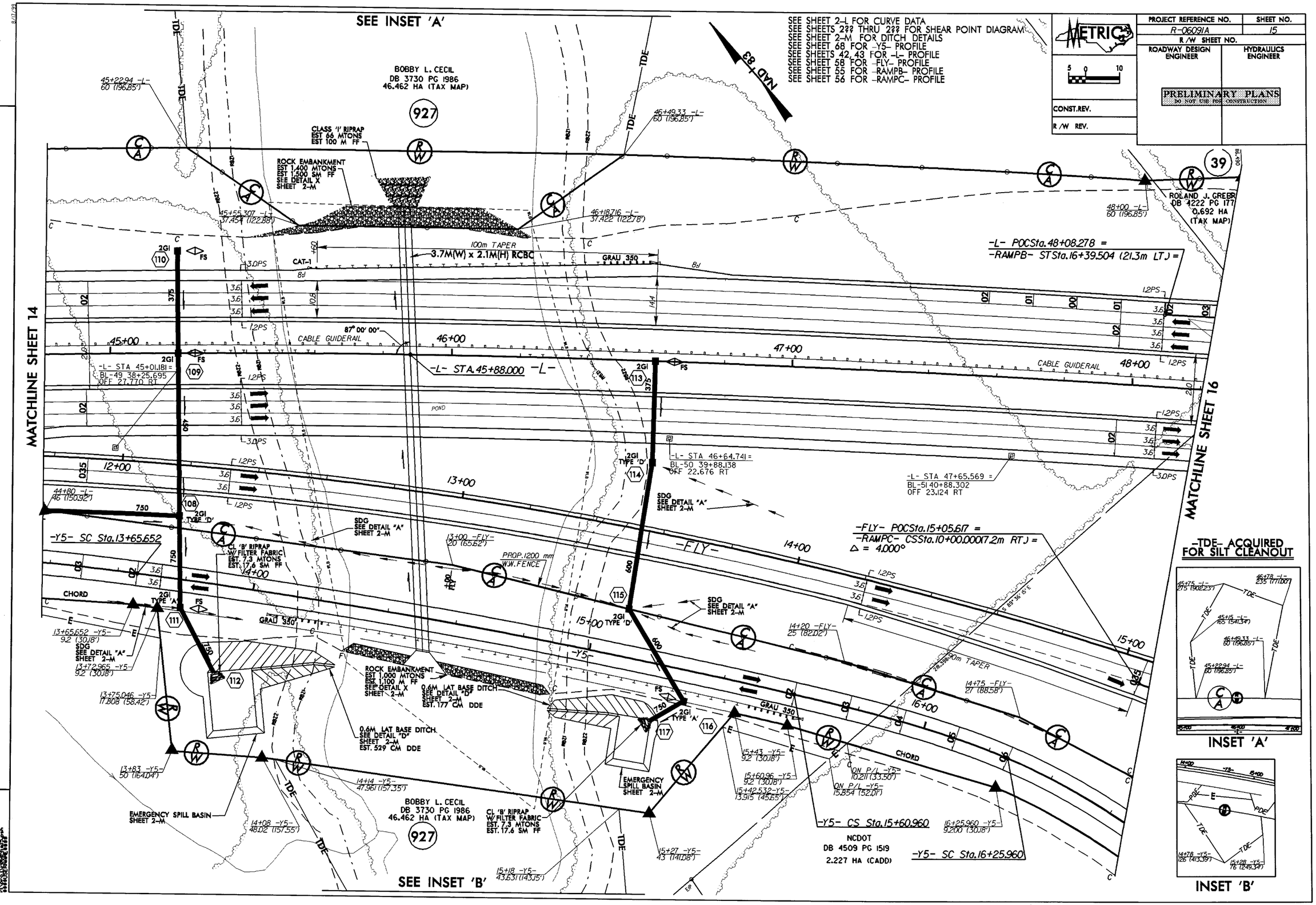

METRIC
PROJECT REFERENCE NO.
R-0609IA
SHEET NO.
13
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
REVISIONS
MATCHLINE SHEET 12
MATCHLINE SHEET 23
MATCHLINE SHEET 24
MATCHLINE SHEET 14
MARTIN MARETTA MATERIALS DB 4712 PG 2086 7.588 HA (TAX MAP)
RONNIE A. RILEY DB 2718 PG 134 PB 27 PG 73 0.186 HA (CADD)
FRANK MARTINEZ DB 3816 PG 316 PB 27 PG 73
NCDOT DB 4095 PG 451 1.000 HA (CADD)
NCDOT DB 4095 PG 451 PB 27 PG 73 0.279 HA (CADD)
ALINE B. CLODFELTER DB 3877 PG 1608 PB 27 PG 73 0.186 HA (CADD)
MARTHA A. HODGES DB 3653 PG 561 PB 27 PG 73 0.186 HA (CADD)
MARJORIE SURRETT DB 3201 PG 486 4.848 HA (TAX MAP)
AUBREY S. PARDUE DB 2153 PG 726 PB 27 PG 73 0.186 HA (CADD)
AUBREY S. PARDUE DB 1925 PG 388 PB 27 PG 73 0.186 HA (CADD)
ELDRIED A. MEADOWS DB 2893 PG 639 0.334 HA (CADD)
PHYLLIS P. NANCE DB 4176 PG 723 5.621HA (CADD)
CHARLES E. BOYD DB 2720 PG 650 1.061HA (CADD)
NCDOT DB 4523 PG 1594 5.866 HA (DEED)
-Y3-POCSta.12+61.464
-L- POCSta.38+45.624= △ = 86°24'42.82" @ INTERSECTION
-Y3- STSta.13+66.449
-Y3- CSSta.13+26.449
-Y4- STSta.14+18.573= -DET2- POTSta.12+37.210
-Y4- CSSta.13+78.573
EXPRESSWAY GUTTER
CLASS 'B' RIP RAP TOE PROTECTION EST. 5 MTONS EST. 19 SM FF
EMERGENCY SPILL BASIN SEE DETAIL SHEET 2-M
LATERAL "V" DITCH SEE DETAIL "B" SHEET 2-M EST. 80 CM DDE
2005 ADT 4784 (-Y3-) SR 1154
2025 ADT 7,300 KERSEY VALLEY RD.
(-L-) US 311 BYPASS 27,000 39,000
(-Y5-) SR 1156 DRESDEN RD.
(-Y3-) SR 1154 KERSEY VALLEY RD.
NAD 83
SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEETS 41 & 42 FOR -L- PROFILE
SEE SHEET 66 FOR -Y3- PROFILE
SEE SHEET 2-I BRIDGE SKETCH
SEE SHEETS S?? - S?? FOR STRUCTURE PLANS
SEE SHEET 67 FOR -Y4- PROFILE
SEE SHEET 71 FOR -DET2- PROFILE

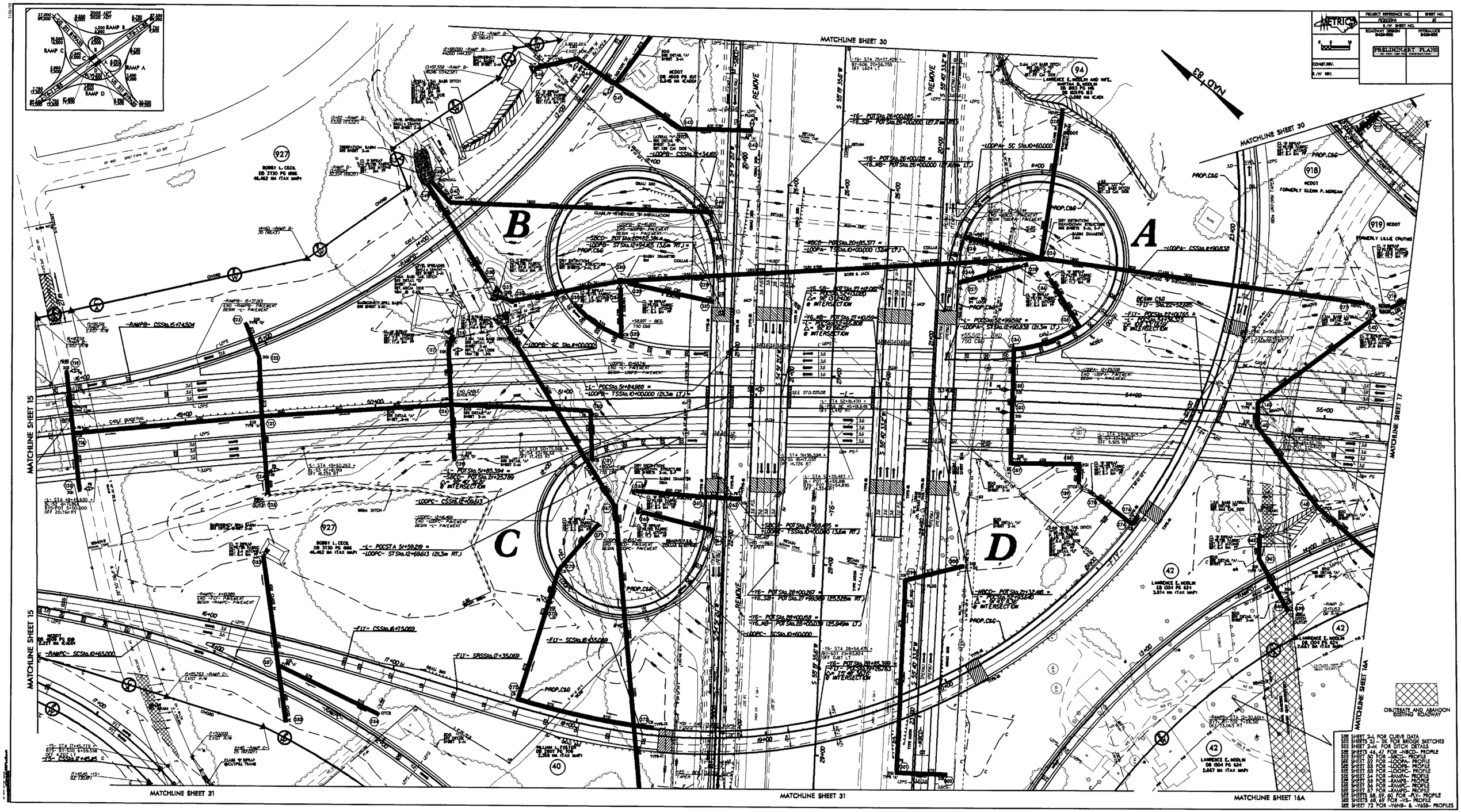


REVISIONS

ROW REVISIONS, PARCELS 37, 38, 73 COMBINED INTO PARCEL 927, LETTER DATED 3-2-2004
WPW 04-20-2004

8/07/98


SEE INSET 'A'
SEE INSET 'B'
MATCHLINE SHEET 14
MATCHLINE SHEET 16
NAD 83
METRIC
PROJECT REFERENCE NO.
R-0609IA
SHEET NO.
15
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
SEE SHEET 2-L FOR CURVE DATA
SEE SHEETS 2?? THRU 2?? FOR SHEAR POINT DIAGRAM
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 68 FOR -Y5- PROFILE
SEE SHEETS 42, 43 FOR -L- PROFILE
SEE SHEET 58 FOR -FLY- PROFILE
SEE SHEET 55 FOR -RAMPB- PROFILE
SEE SHEET 56 FOR -RAMPC- PROFILE
BOBBY L. CECIL
DB 3730 PG 1986
46.462 HA (TAX MAP)
927
CLASS 'I' RIPRAP
EST 66 MTONS
EST 100 M FF
ROCK EMBANKMENT
EST 1,400 MTONS
EST 1,500 SM FF
SEE DETAIL X
SHEET 2-M
ROLAND J. GREER
DB 4222 PG 177
0.692 HA
(TAX MAP)
39
-L- POCSta.48+08.278 =
-RAMPB- STSta.16+39.504 (21.3m LT) =
100m TAPER
3.7M(W) x 2.1M(H) RCBC
GRAU 350
CAT-1
CABLE GUIDERAIL
87° 00' 00"
-L- STA.45+88.000 -L-
-L- STA 45+01.181 =
BL-49 38+25.695
OFF 27.770 RT
-L- STA 46+64.741 =
BL-50 39+88.138
OFF 22.676 RT
-L- STA 47+65.569 =
BL-51 40+88.302
OFF 23.124 RT
POND
SDG
SEE DETAIL "A"
SHEET 2-M
-FLY- POCSta.15+05.617 =
-RAMPC- CSSta.10+00.000(7.2m RT) =
Δ = 4.000°
-FLY-
-Y5- SC Sta.13+65.652
-Y5-
CL 'B' RIPRAP
W/FILTER FABRIC
EST. 7.3 MTONS
EST. 17.6 SM FF
PROP. 1200 mm
W.W. FENCE
CHORD
GRAU 350
ROCK EMBANKMENT
EST 1,000 MTONS
EST. 1,100 M FF
SEE DETAIL X
SHEET 2-M
0.6M LAT BASE DITCH
SEE DETAIL "D"
SHEET 2-M
EST. 177 CM DDE
0.6M LAT BASE DITCH
SEE DETAIL "D"
SHEET 2-M
EST. 529 CM DDE
EMERGENCY SPILL BASIN
SHEET 2-M
-Y5- CS Sta.15+60.960
-Y5- SC Sta.16+25.960
NCDOT
DB 4509 PG 1519
2.227 HA (CADD)
-TDE- ACQUIRED
FOR SILT CLEANOUT
INSET 'A'
INSET 'B'
REVISIONS


MATCHLINE SHEET 30
MATCHLINE SHEET 15
MATCHLINE SHEET 17
MATCHLINE SHEET 31
MATCHLINE SHEET 16A
NAD 83
A
B
C
D
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
NOT FOR CONSTRUCTION
CONST.MIN.
R/W MIN.
OBLITERATE AND ABANDON EXISTING ROADWAY
SEE SHEET 2-J FOR CURVE DATA
SEE SHEETS 3J - 3K FOR BRIDGE SKETCHES
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEETS 46,47 FOR -NBCD- PROFILE
SEE SHEET 50 FOR -LOOPA- PROFILE
SEE SHEET 51 FOR -LOOPB- PROFILE
SEE SHEET 52 FOR -LOOPC- PROFILE
SEE SHEET 54 FOR -RAMPA- PROFILE
SEE SHEET 55 FOR -RAMPB- PROFILE
SEE SHEET 56 FOR -RAMPC- PROFILE
SEE SHEET 57 FOR -RAMPD- PROFILE
SEE SHEETS 68,69 FOR -FLY- PROFILE
SEE SHEETS 68,69 FOR -Y5- PROFILE
SEE SHEET 72 FOR -Y6NB- & -Y6SB- PROFILES

PROJECT REFERENCE NO.	SHEET NO.
R06091A	16A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

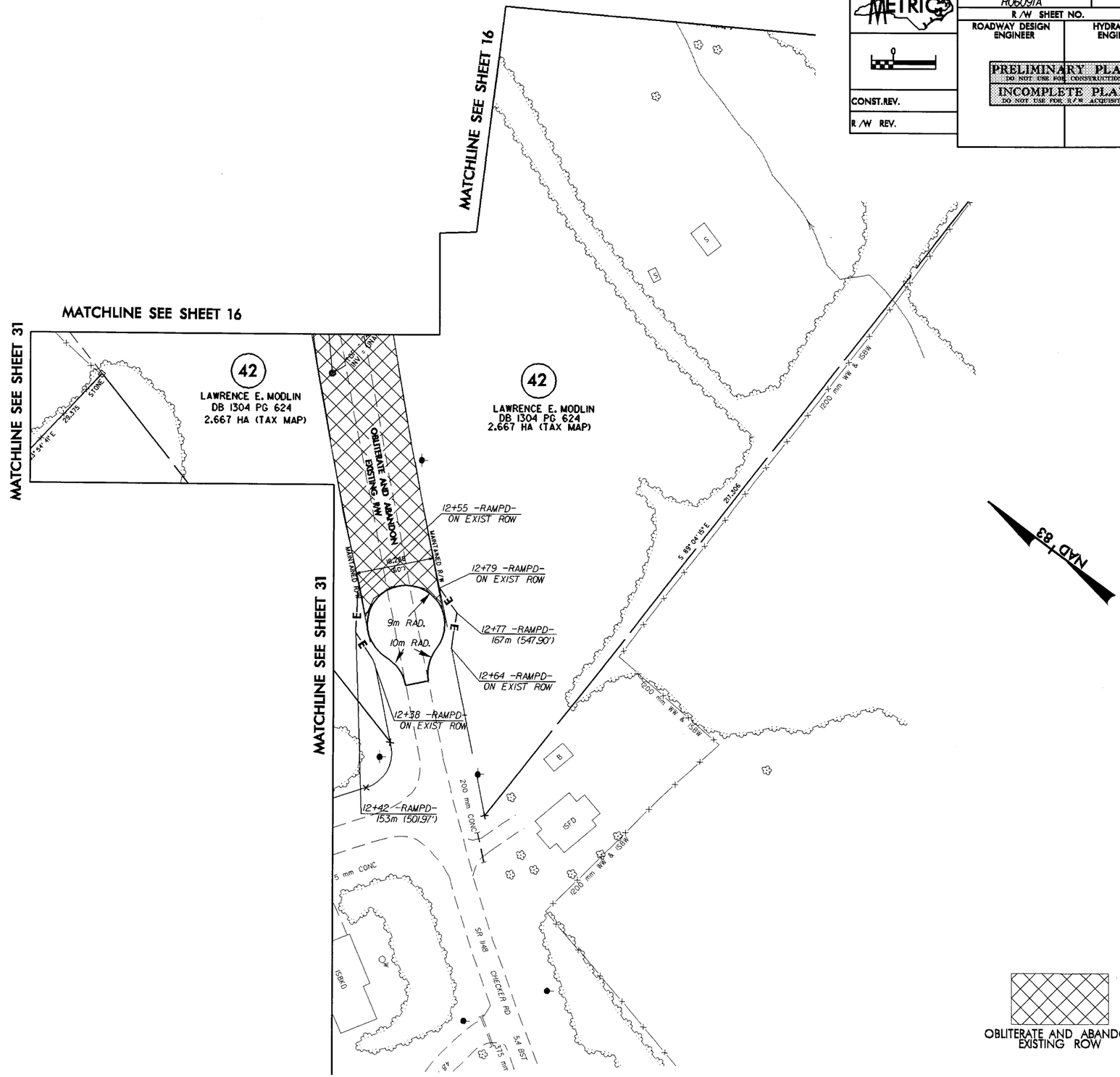
METRIC

CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION



REVISIONS

ROW REVISIONS-MOVED CUL-DE-SAC SOUTHWEST-ADDED EASEMENT-ADDED NOTES TO OBLITERATE AND ABANDON EXISTING ROW, COMBINED PARCELS 42 AND 43 AS PARCEL 42. LETTER DATED 3-2-2004
WPW 04-20-2004

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

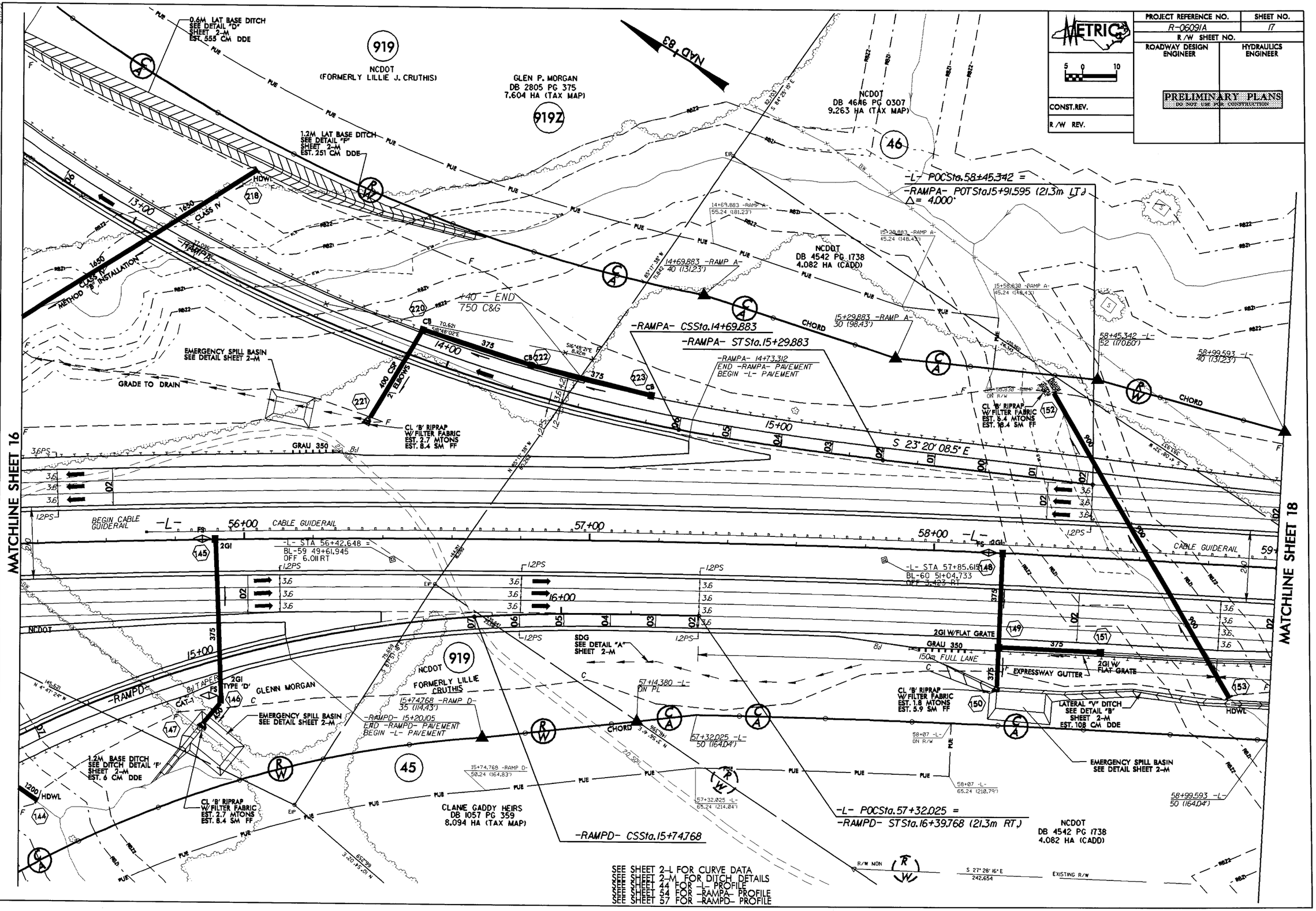
5 0 10

CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS



SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 44 & 45 FOR -L- PROFILE

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.
R/W REV.

REVISIONS
ROW REVISIONS, PARCEL 46 PROPERTY OWNER CHANGED, LETTER DATED 1-22-2004
WPW 04-20-2004

MATCHLINE SHEET 17

NAD 83

FAIRFIELD GOLF CLUB, INC.
DB 3345 PG 707
PB 5 PG 351
22.140 HA (TAX MAP)

NCDOT
DB 4646 PG 0307
9.263 HA (TAX MAP)

LESSIE COX HEIRS
DB 3345 PG 707
PB 5 PG 351
1.025 HA (CADD)

LESSIE COX HEIRS
DB 1523 PG 215
PB 45 PG 5
0.721 HA (CADD)

NCDOT
DB 4542 PG 1738
4.082 HA (CADD)

JAMES P. HINKLE, SR.
DB 4167 PG 590
DB 4167 PG 593
2.028 HA (TAX MAP)

POT STA. 61+00.000 -L- END TIP PROJECT R-0609IA
POT STA. 61+00.000 -L- END FA PROJECT MAF-F-119-1(1)
R-0609IA -L- STA. 61+00.000 (BK) = R-0609IB -L- STA. 60+59.109 (AH)

58+99.593 -L-
40 (131.23')
59+34.593 -L-
40 (131.23')
61+01.143 -L-
40 (131.23')
61+55.143 -L-
40 (131.23')
ON PL
40 (131.23')

TEMP. 0.6M LAT BASE DITCH
SEE DETAIL "D"
SHEET 2-M
EST. 26 CM DDE

CL 'B' RIPRAP
W/FILTER FABRIC
EST. 1.8 MTONS
EST. 5.9 SM FF

TSSta. 61+01.143
SCSta. 61+55.143
-L- CSSta. 58+99.593
-L- STSta. 59+34.593
-L- STA 59+63.544 =
BL-61 52+82.602
OFF 0.075 LT
-L- STA 60+52.472 =
BL-62 53+71.630
OFF 4.128 RT
BL-63 54+72.535
OFF 1.510 RT
BL-64 55+71.752
OFF 9.538 LT
S 25° 48' 31.0" E
60+00
61+00
62+00
CABLE GUIDERAIL
END CABLE GUIDERAIL
GRAU 350
SEE PROJECT R-0609IB
CHORD
CAT-B1
90m TAPER
0.6M LAT BASE DITCH
SEE DETAIL "D"
SHEET 2-M
EST. 79 CM DDE
POND
EXISTING R/W
R/W MON
S 27° 28' 16" E
242.654
S 25° 47' 00" E
48.914

-L- (R-0609IB)

PIs Sta 61+37.143	PI Sta 62+86.616
θs = 0° 46' 24.6"	Δ = 7° 31' 19.4" (LT)
Ls = 54.000	L = 262.569
LT = 36.000	T = 131.473
ST = 18.000	R = 2,000.000

PROJECT REFERENCE NO.	SHEET NO.
R06091A	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

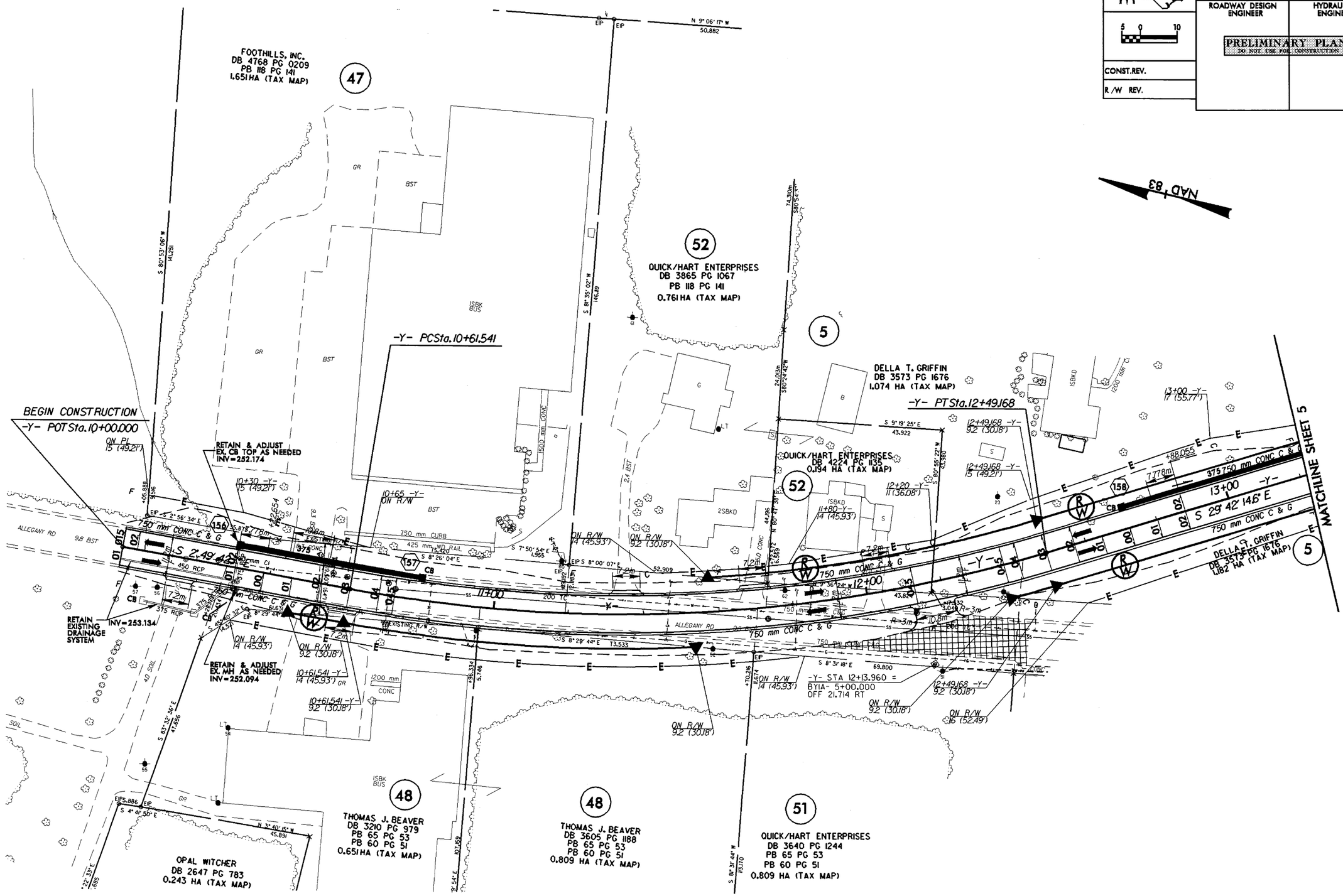
5 0 10

CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS



SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 62 FOR -Y- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

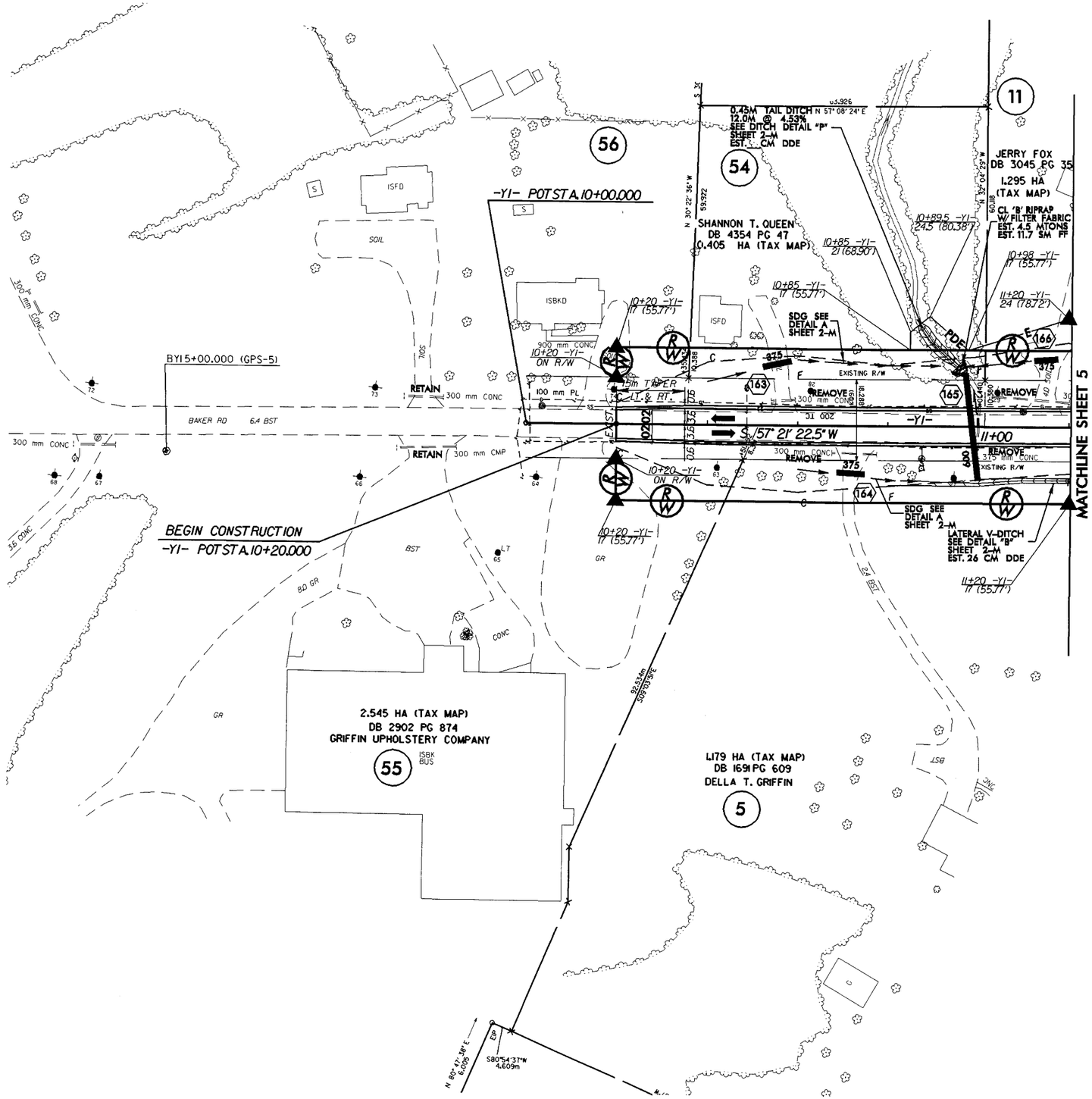
METRIC

5 0 10

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.



SEE SHEET 2-I FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 70 FOR -DET- PROFILE
SEE SHEET 63 FOR -Y1- PROFILE

REVISIONS

ROW REVISIONS, CHANGED PARCEL 56 OWNER INFORMATION, LETTER DATED 04-29-2004
WPW 08-31-2004

8/11/99

3-MAY-2006 13:36

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

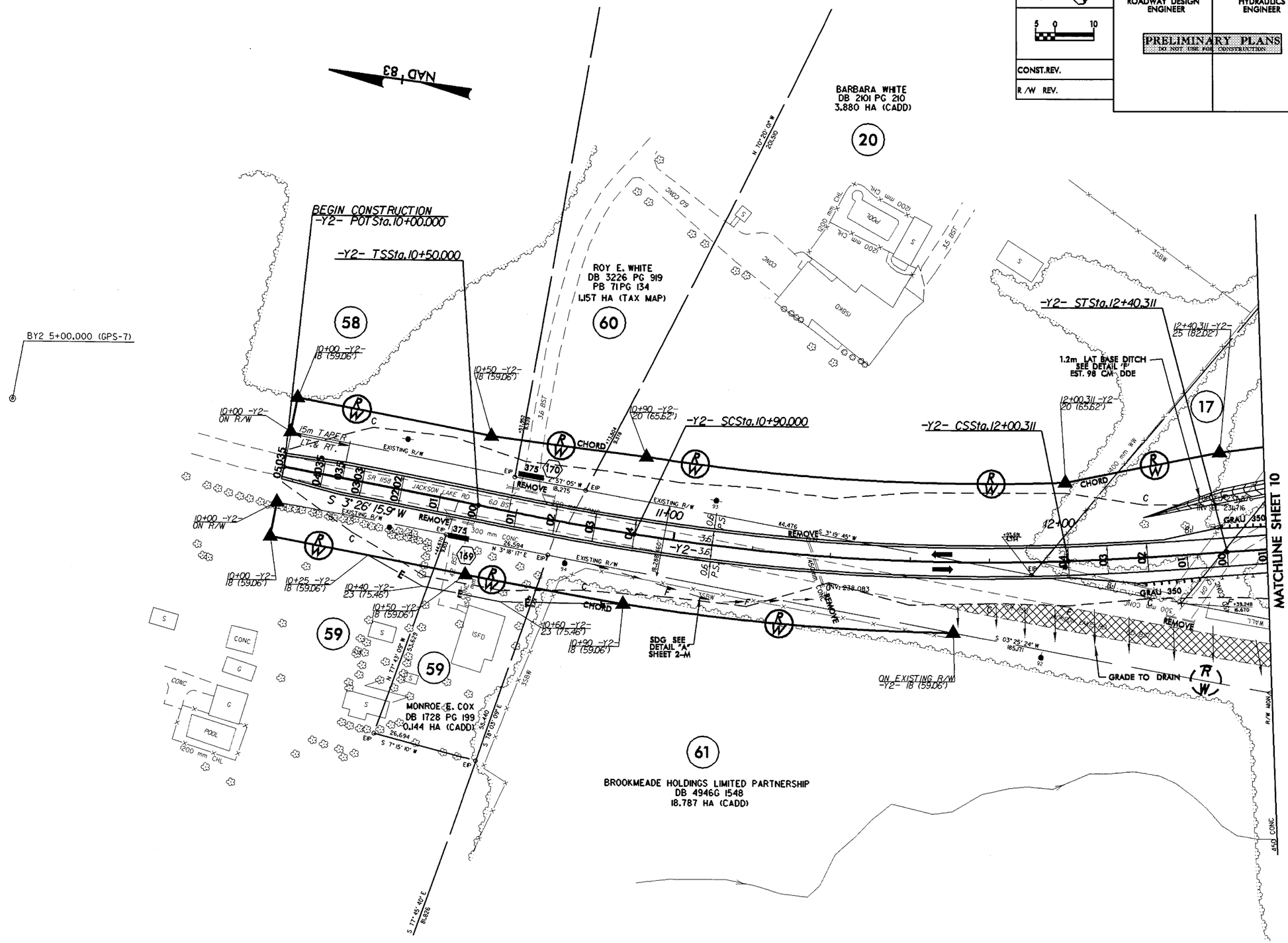
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.

REVISIONS

8/17/99



SEE SHEET 2-I FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 64 FOR -Y2- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

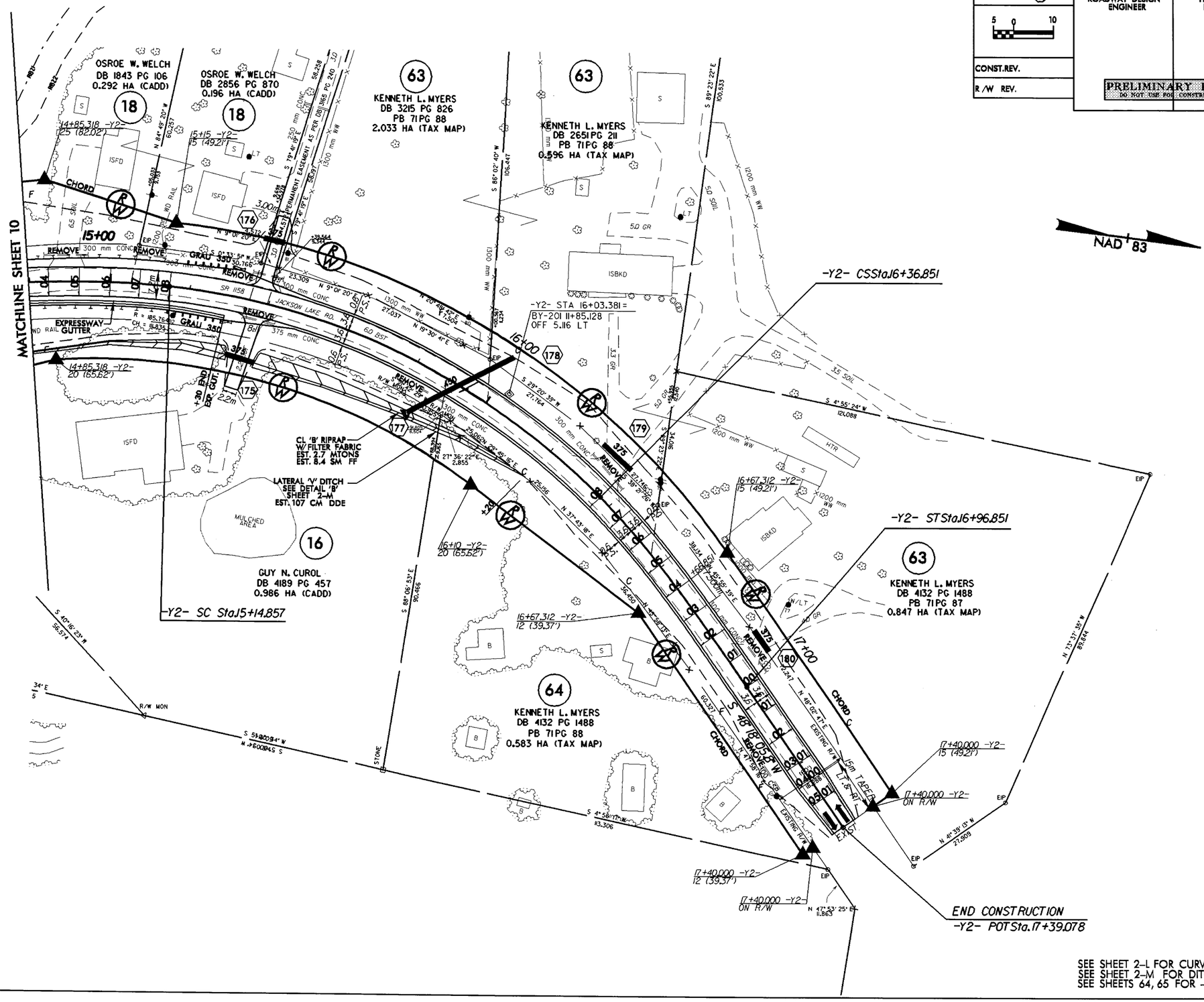
CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

ROW REVISIONS, PARCELS 18 AND 62 COMBINED, PARCELS 63,65, AND 66 COMBINED, LETTER DATED 1-22-2004
WPW 04-20-2004



SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEETS 64, 65 FOR -Y2- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

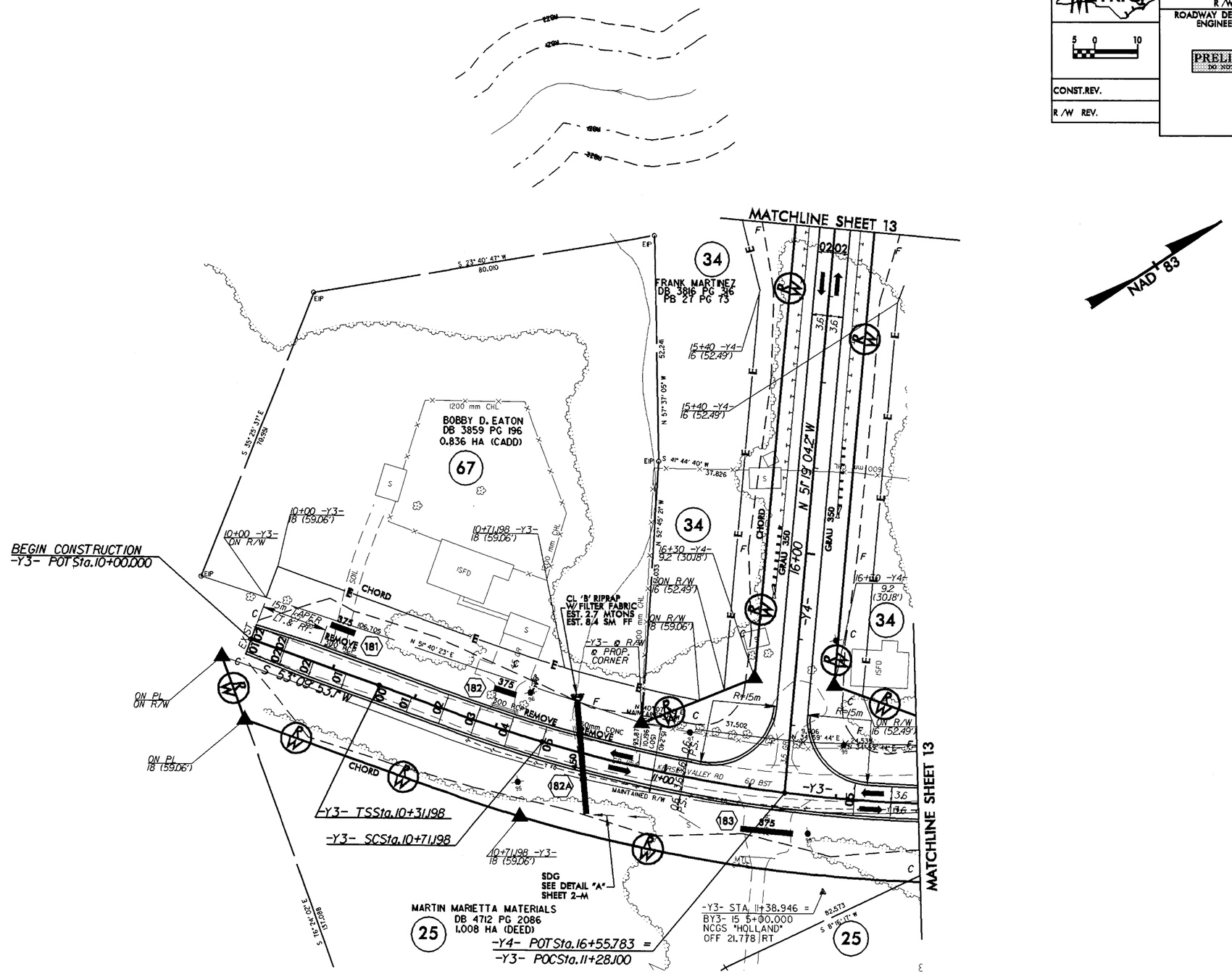
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.

REVISIONS

8/17/99



SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 66 FOR -Y3- PROFILE
SEE SHEET 67 FOR -Y4- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-6091A	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

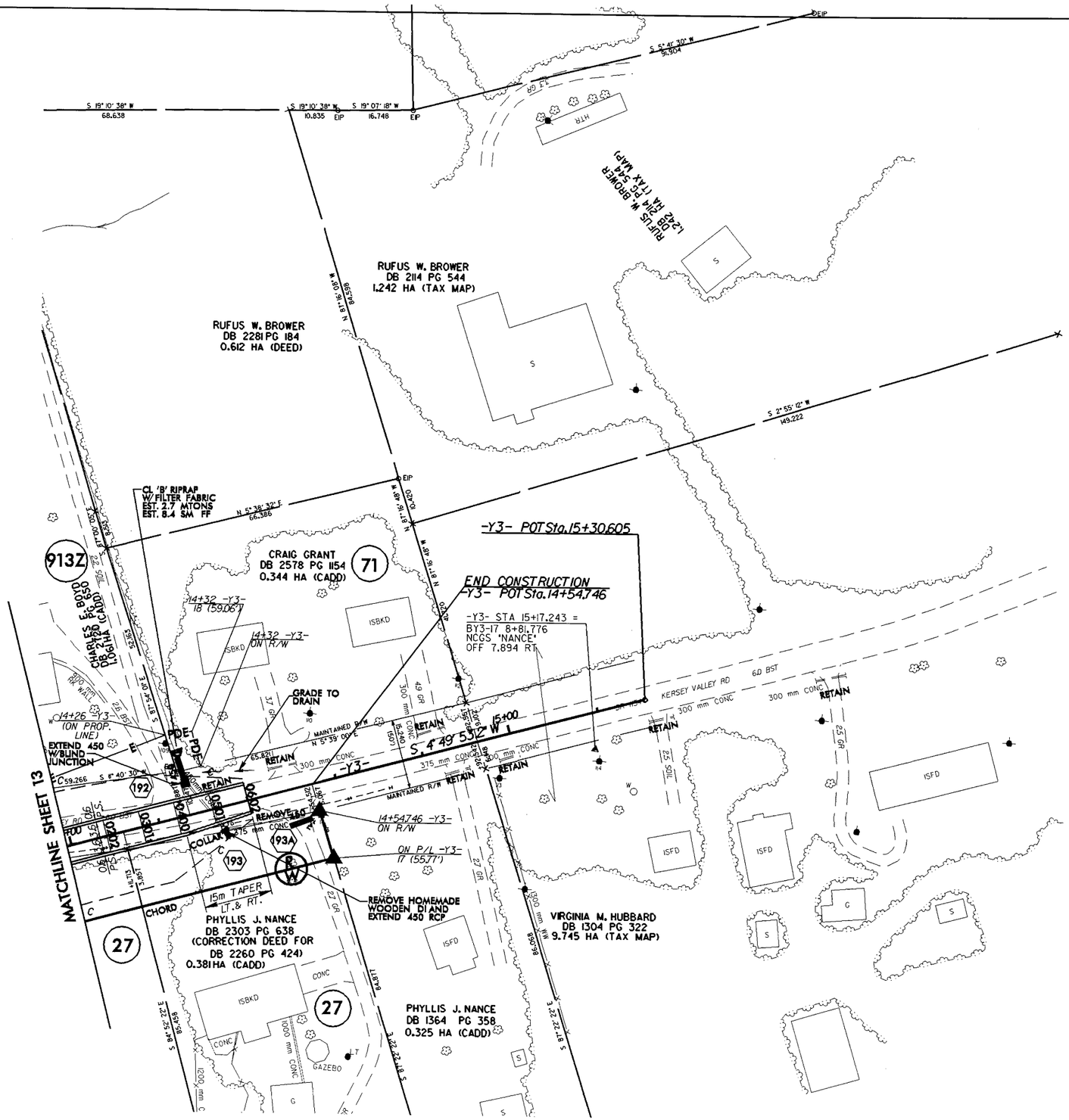
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.

REVISIONS

8/01/99



SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 66 FOR -Y3- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

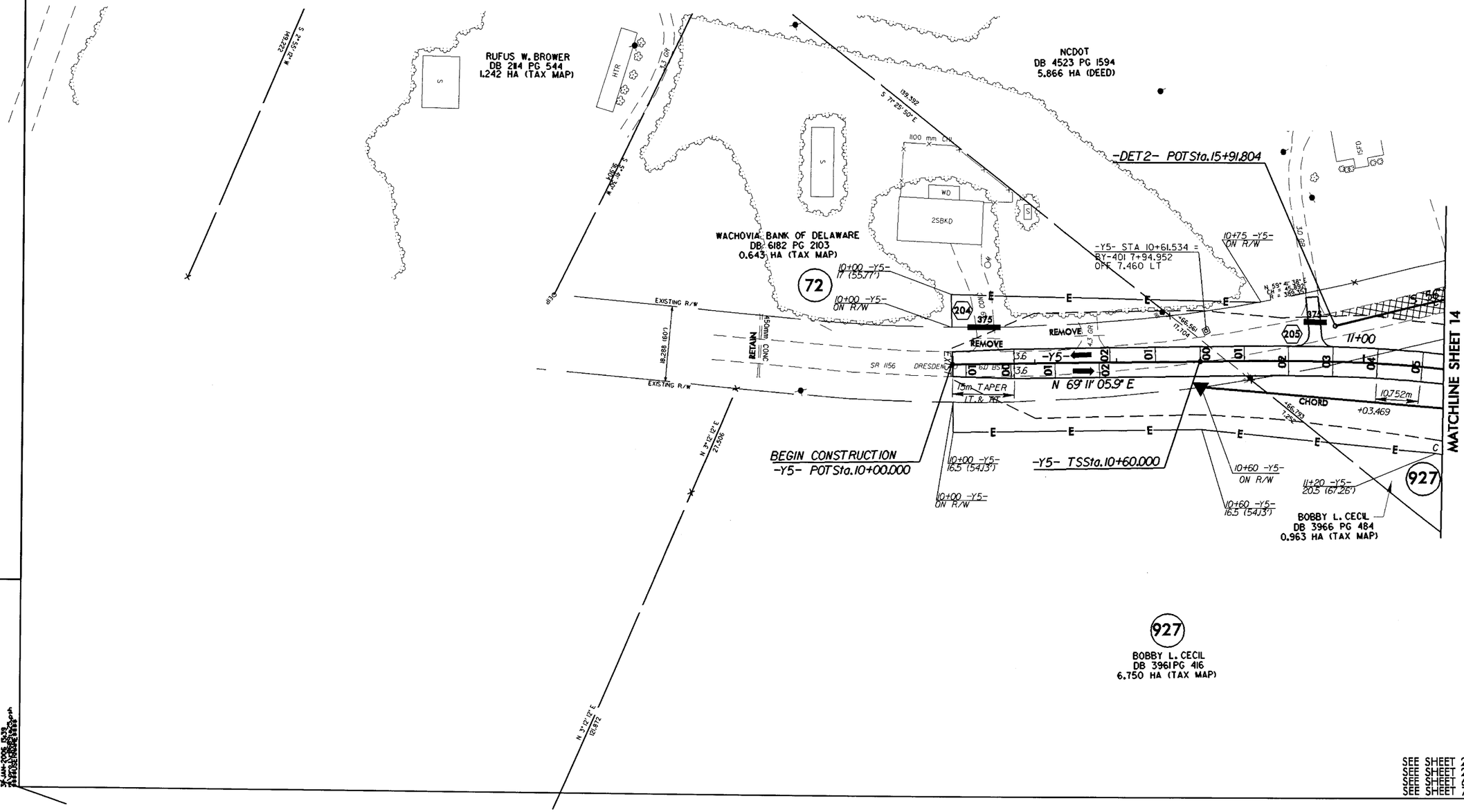
5 0 10

CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS



SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 68 FOR -Y5- PROFILE
SEE SHEET 70 FOR -DET- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

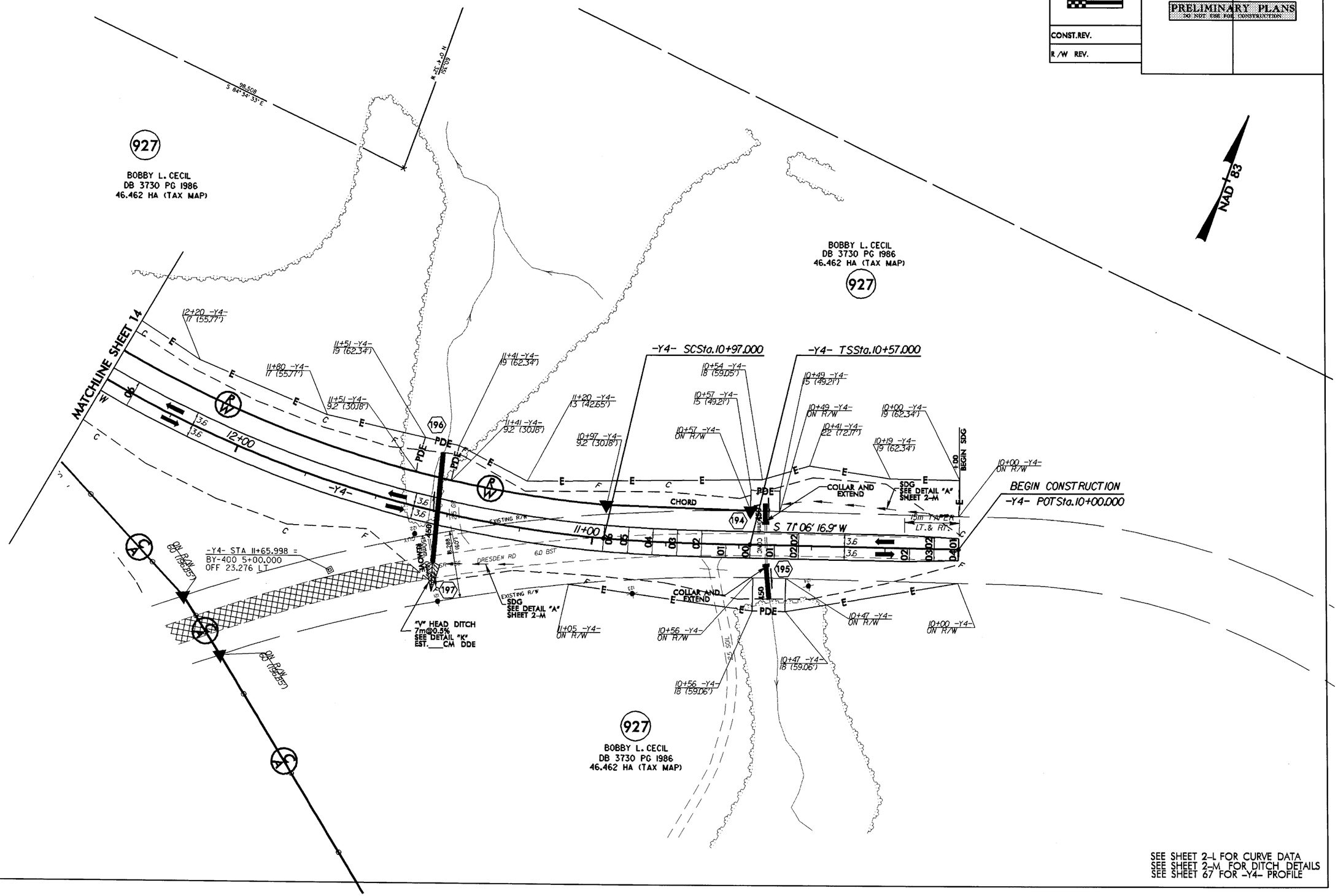
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.

REVISIONS

ROW REVISIONS.PARCELS 37,38,73,AND 927 COMBINED INTO PARCEL 927.LETTER DATED 3-24-2004
WPW 04-20-2004



PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

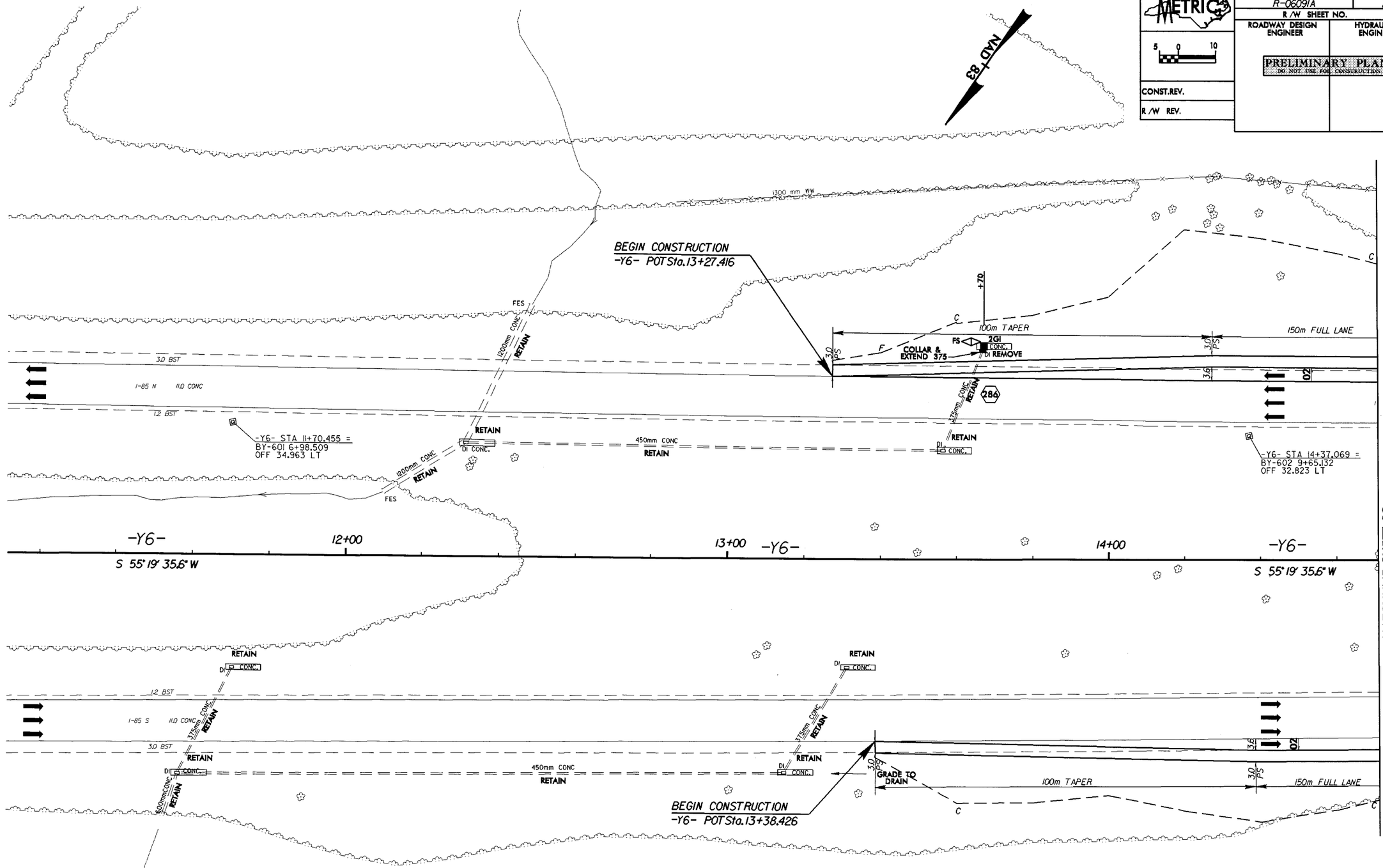
5 0 10

CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS



SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

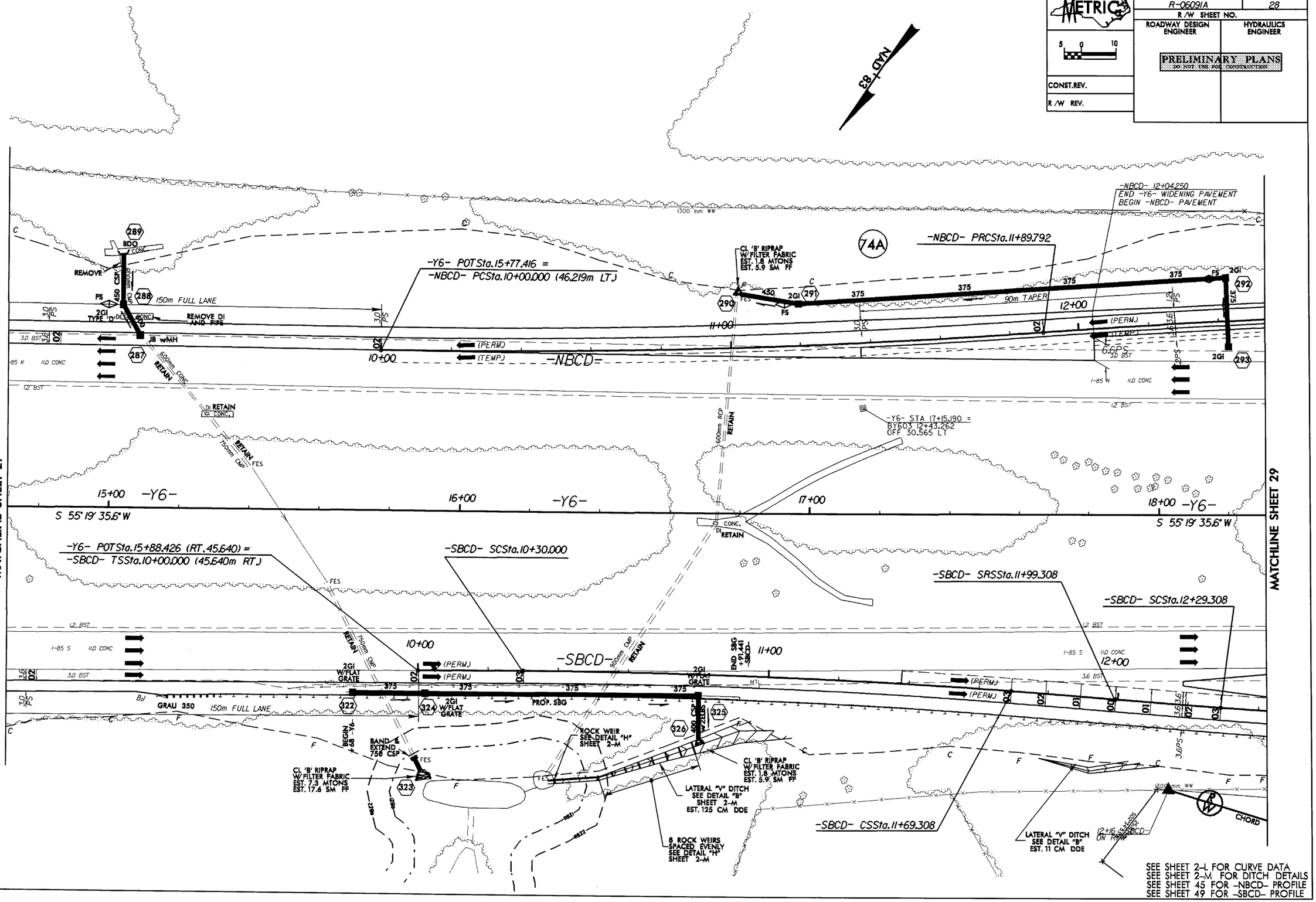
CONST.REV.

R/W REV.

REVISIONS

ROW REVISIONS, PROPOSED ROW ADJUSTED, PARCEL 76 PROPERTY LINES CHANGED, LETTER DATED 1-22-2004
W/PW 04-20-2004

8/17/99



SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEETS 45, 46 FOR -NBCD- PROFILE
SEE SHEET 49 FOR -SBCD- PROFILE
SEE SHEET 61 FOR -FLY- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R06091A	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC 5 0 10

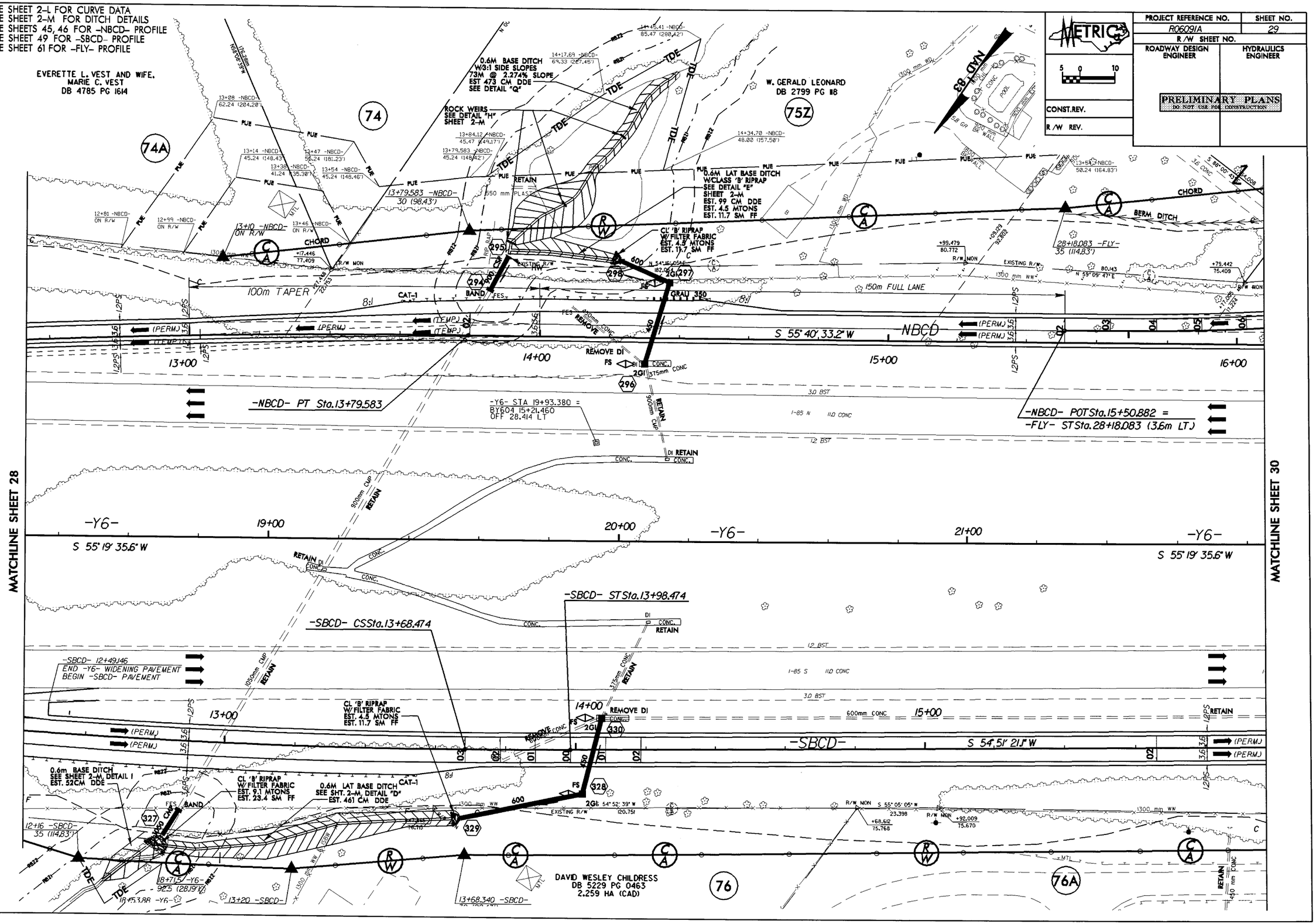
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

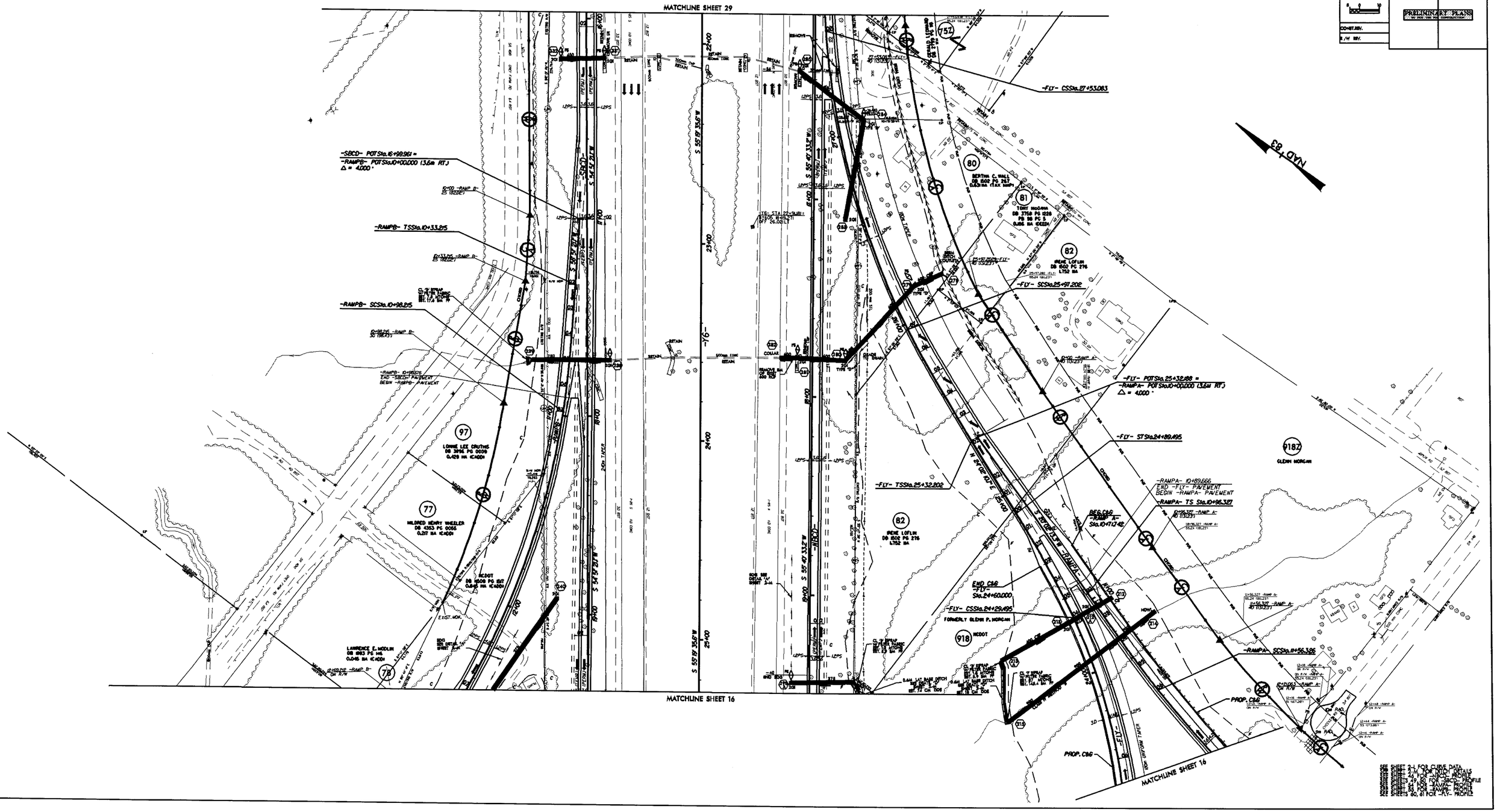
R/W REV.

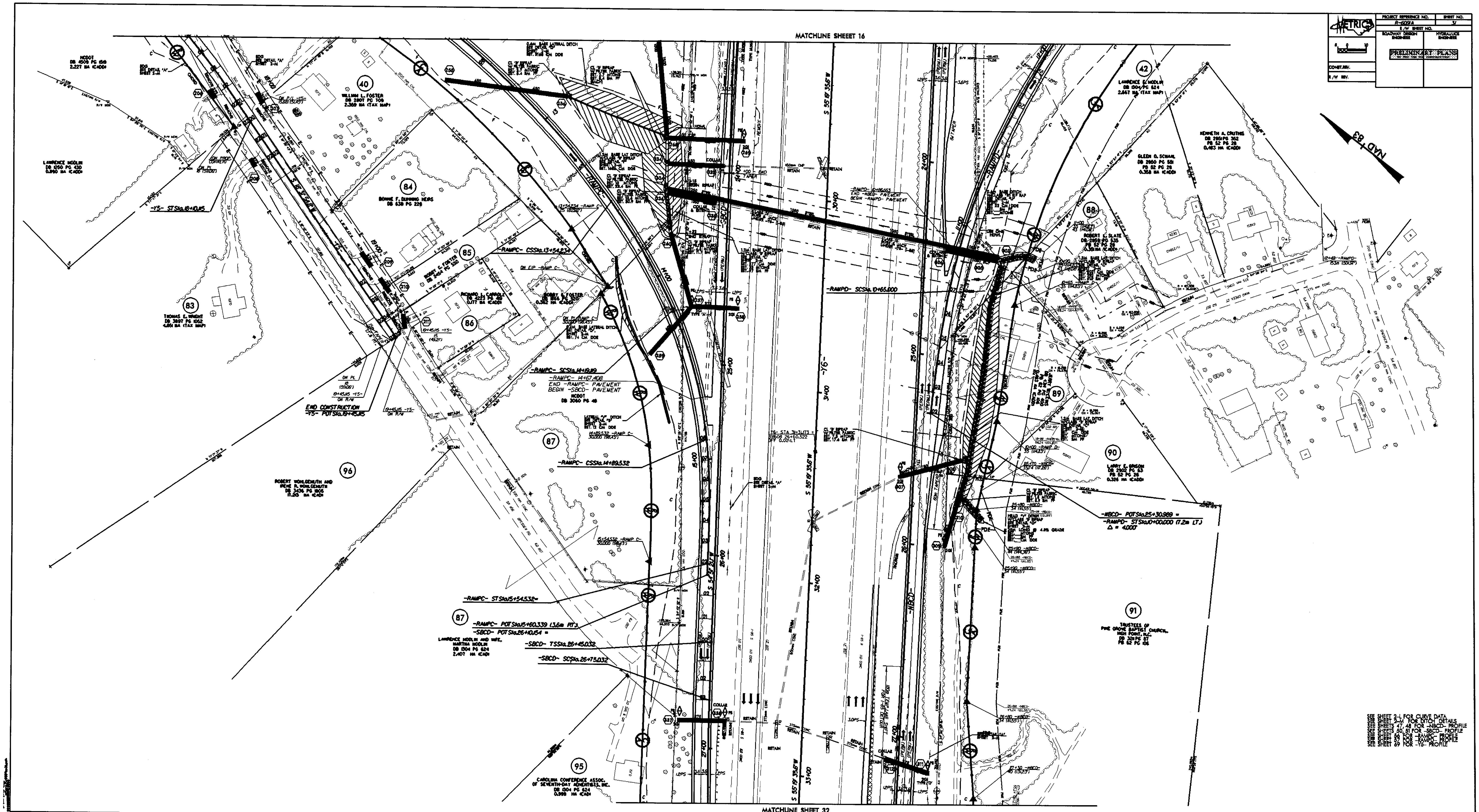
REVISIONS

ROW REVISIONS, ADDED TDE AND CHANGED PARCEL NUMBER TO 75Z. ELECTRONIC FILE FROM HYDROLOGY DATED. 09-15-2005.
WPW 09-22-2005



METRIC	PROJECT REFERENCE NO.	SHEET NO.
	R-4091A	30
	S.P. SHEET NO.	
	ROADWAY DESIGN BRADN-RISE	HYDRAULICS BRADN-RISE
	PRELIMINARY PLANS	
CONSTRN.		
R/W SRV.		




PROJECT REFERENCE NO.
R-609A
SHEET NO.
31
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
CONST.REV.
R/W REV.
MATCHLINE SHEET 16
MATCHLINE SHEET 32
NAD 83
-Y6-
S 55°19' 35.6" W
-RAMPC- CSSta.13+54.234
-RAMPC- SCSta.14+19.819
-RAMPC- 14+67.408
END -RAMPC- PAVEMENT
BEGIN -SBCD- PAVEMENT
NCDOT
DB 3060 PG 48
-RAMPC- CSSta.14+89.532
-RAMPC- STSta.15+54.532=
-RAMPC- POTSta.15+60.339 (3.6m RT.)
-SBCD- POTSta.26+10.154 =
-SBCD- TSSta.26+45.032
-SBCD- SCSta.26+75.032
-RAMPD- SCSta.10+65.000
-NBCD- POTSta.25+30.989 =
-RAMPD- STSta.10+00.000 (7.2m LT.)
Δ = 4.000°
-Y5- STSta.18+10.815
END CONSTRUCTION
-Y5- POTSta.19+45.115
40
WILLIAM L. FOSTER
DB 2807 PG 709
2.369 HA (TAX MAP)
42
LAWRENCE E. MODLIN
DB 1304 PG 624
2.667 HA (TAX MAP)
KENNETH A. CRUTHS
DB 2951 PG 352
PB 52 PG 26
0.463 HA (CADD)
GLEEN D. SCHAAL
DB 2860 PG 581
PB 52 PG 26
0.358 HA (CADD)
84
BONNIE F. DUNNING HEIRS
DB 638 PG 229
85
86
87
88
ROBERT E. SLATE
89
90
LARRY E. BRISON
DB 2902 PG 63
PB 52 PG 26
0.326 HA (CADD)
83
THOMAS E. WRIGHT
DB 3897 PG 1062
4.851 HA (TAX MAP)
LAWRENCE MODLIN
DB 1250 PG 430
0.960 HA (CADD)
NCDOT
DB 4508 PG 1518
2.227 HA (CADD)
96
ROBERT WOHLGEMUTH AND
IRENE R. WOHLGEMUTH
DB 3436 PG 1805
11.213 HA (CADD)
87
LAWRENCE MODLIN AND WIFE,
MARTHA MODLIN
DB 1304 PG 624
2.407 HA (CADD)
91
TRUSTEES OF
PINE GROVE BAPTIST CHURCH,
HIGH POINT, N.C.
DB 301 PG 87
PB 62 PG 106
95
CAROLINA CONFERENCE ASSOC.
OF SEVENTH-DAY ADVENTISTS, INC.
DB 1304 PG 624
0.989 HA (CADD)
-Y6- STA 34+31.173 =
-SBCD- 26+60.522
SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEETS 47, 48 FOR -NBCD- PROFILE
SEE SHEETS 50, 51 FOR -SBCD- PROFILE
SEE SHEET 56 FOR -RAMPC- PROFILE
SEE SHEET 57 FOR -RAMPD- PROFILE
SEE SHEET 69 FOR -Y5- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-0609 1A	32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

METRIC

CONST.REV.

R/W REV.

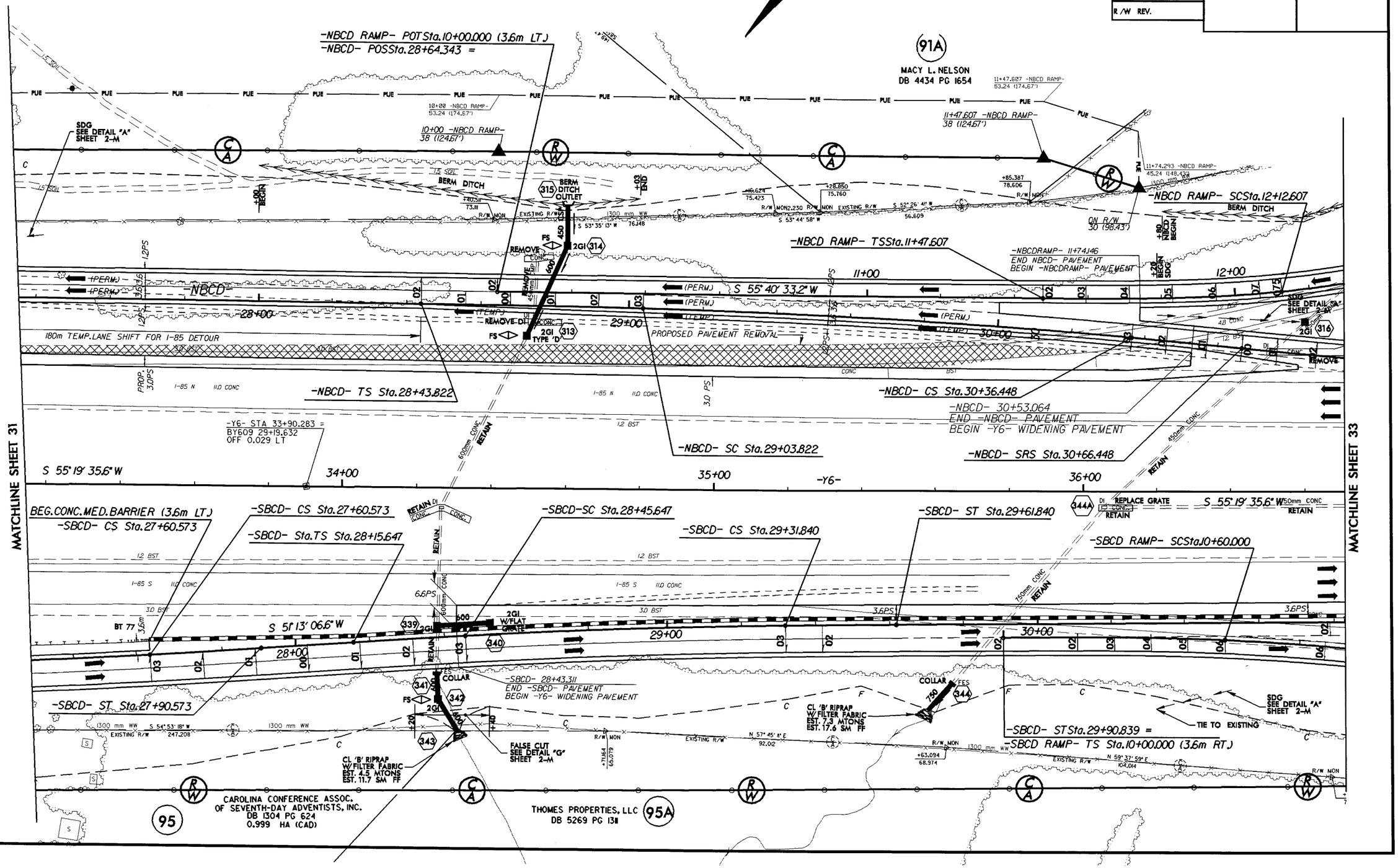
SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 48 FOR -NBCD- PROFILE
SEE SHEET 51 FOR -SBCD- PROFILE
SEE SHEET 52 FOR -NBCD RAMP- PROFILE

PAVEMENT REMOVAL

NAD 83

REVISIONS

R/W REVISIONS, ADDED PARCEL #91A, ADDED PARCEL #91B AND OWNER INFORMATION. LETTER DATED 10-05-2004
WPW 10-25-2004



PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

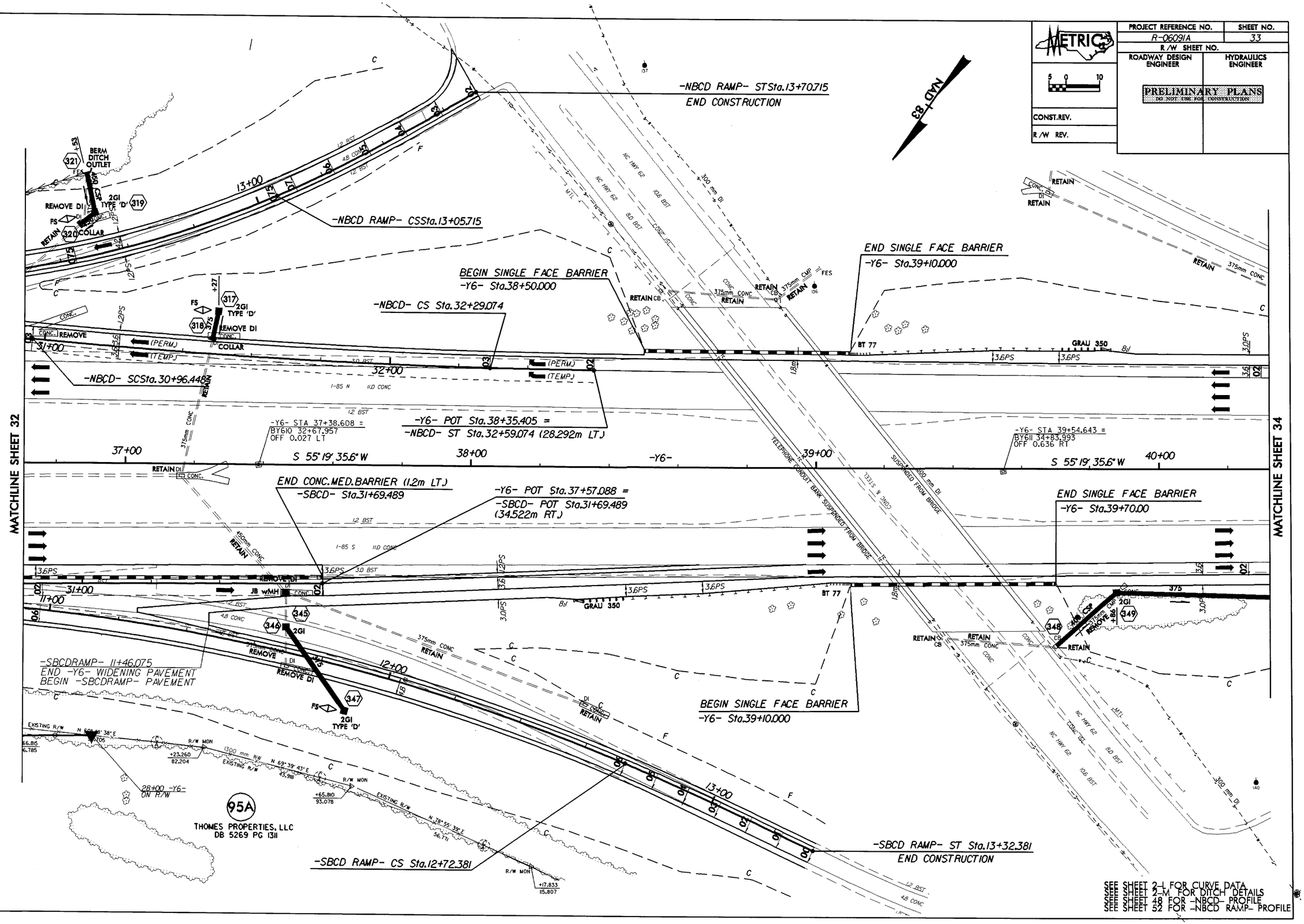
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.

REVISIONS

ROW REVISIONS, ADDED PARCEL 95A AND OWNER INFORMATION, LETTER DATED 07-22-2004
WPW 08-31-2004



SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 48 FOR -NBCD- PROFILE
SEE SHEET 52 FOR -NBCD RAMP- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

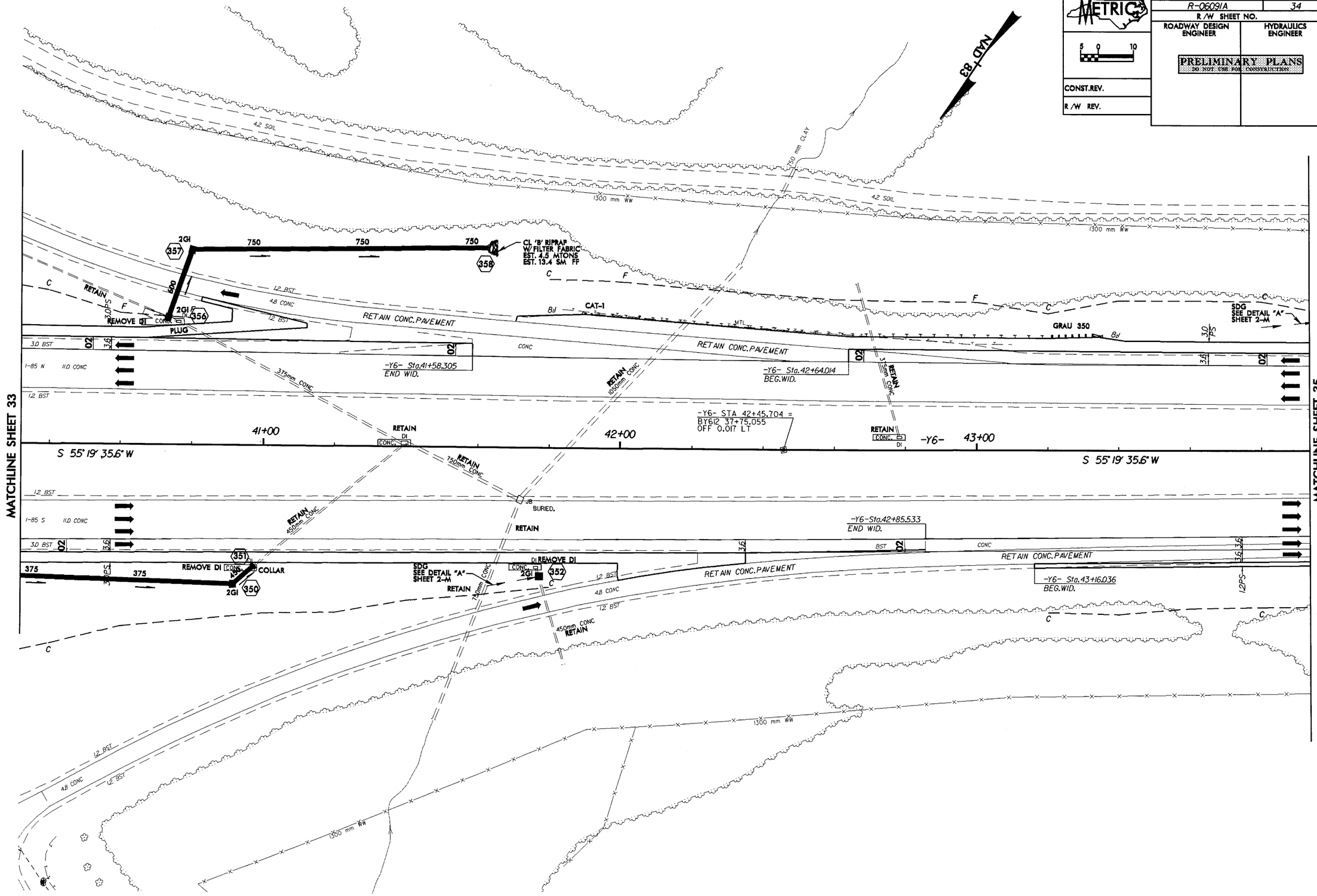
CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/27/99



SEE SHEET 2-J FOR CURVE DATA
SEE SHEET 2-K FOR DITCH DETAILS

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	35
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

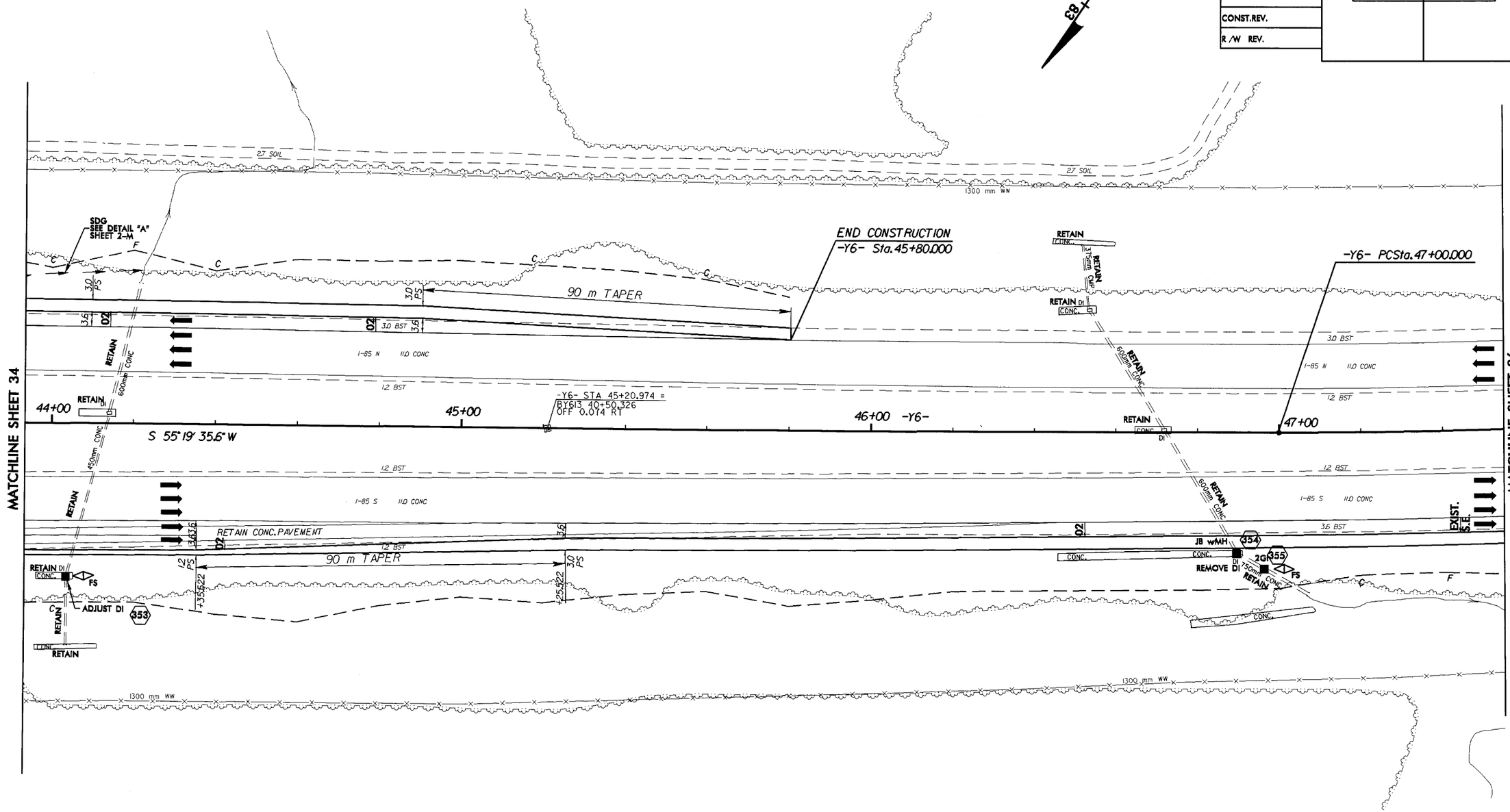
5 0 10

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.

REVISIONS



SEE SHEET 2-J FOR CURVE DATA
SEE SHEET 2-K FOR DITCH DETAILS

8/11/99

3-JAN-2006 DMD

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	36
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

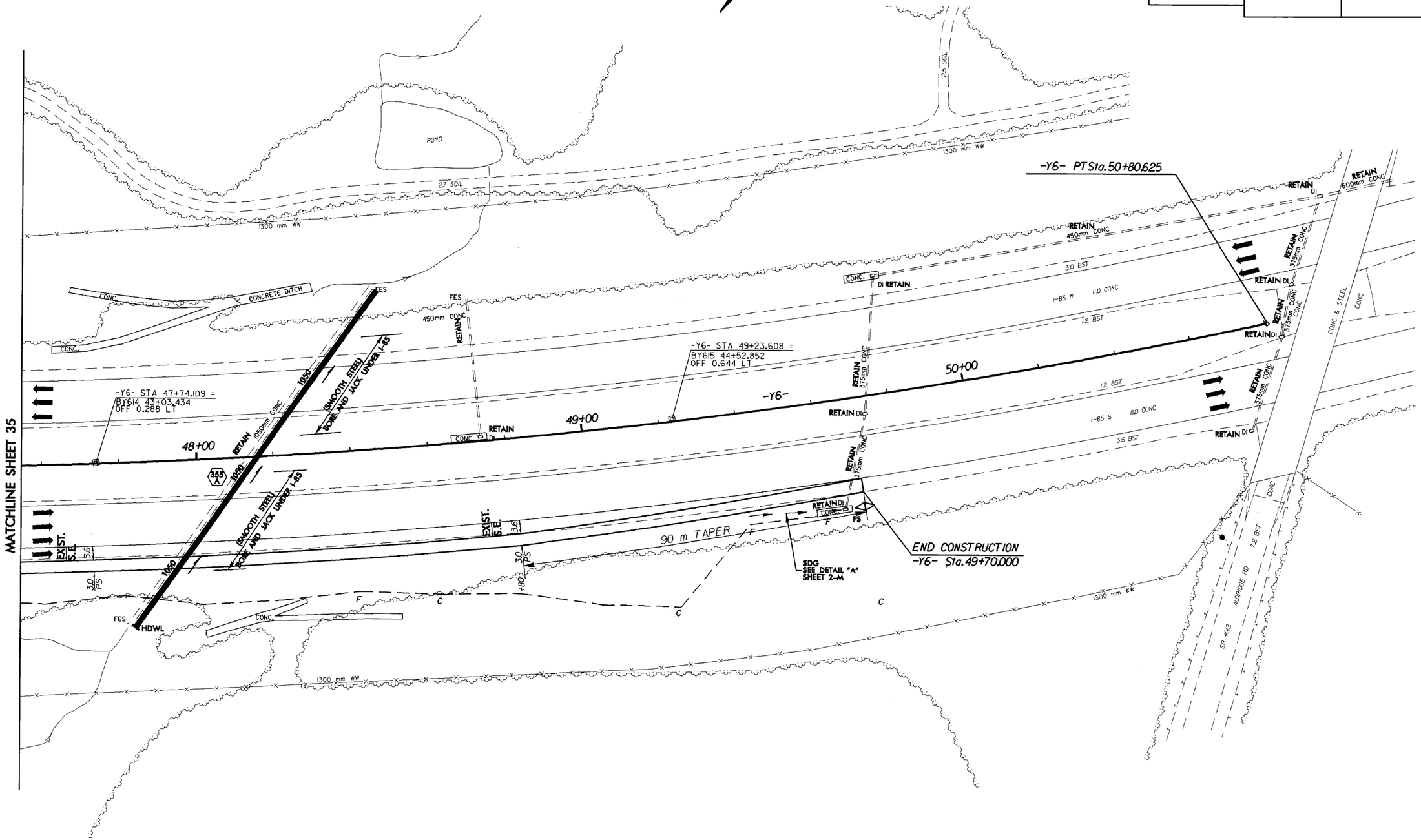
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.

REVISIONS

8/17/99



SEE SHEET 2-J FOR CURVE DATA
SEE SHEET 2-K FOR DITCH DETAILS

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	37
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC 5 0 10

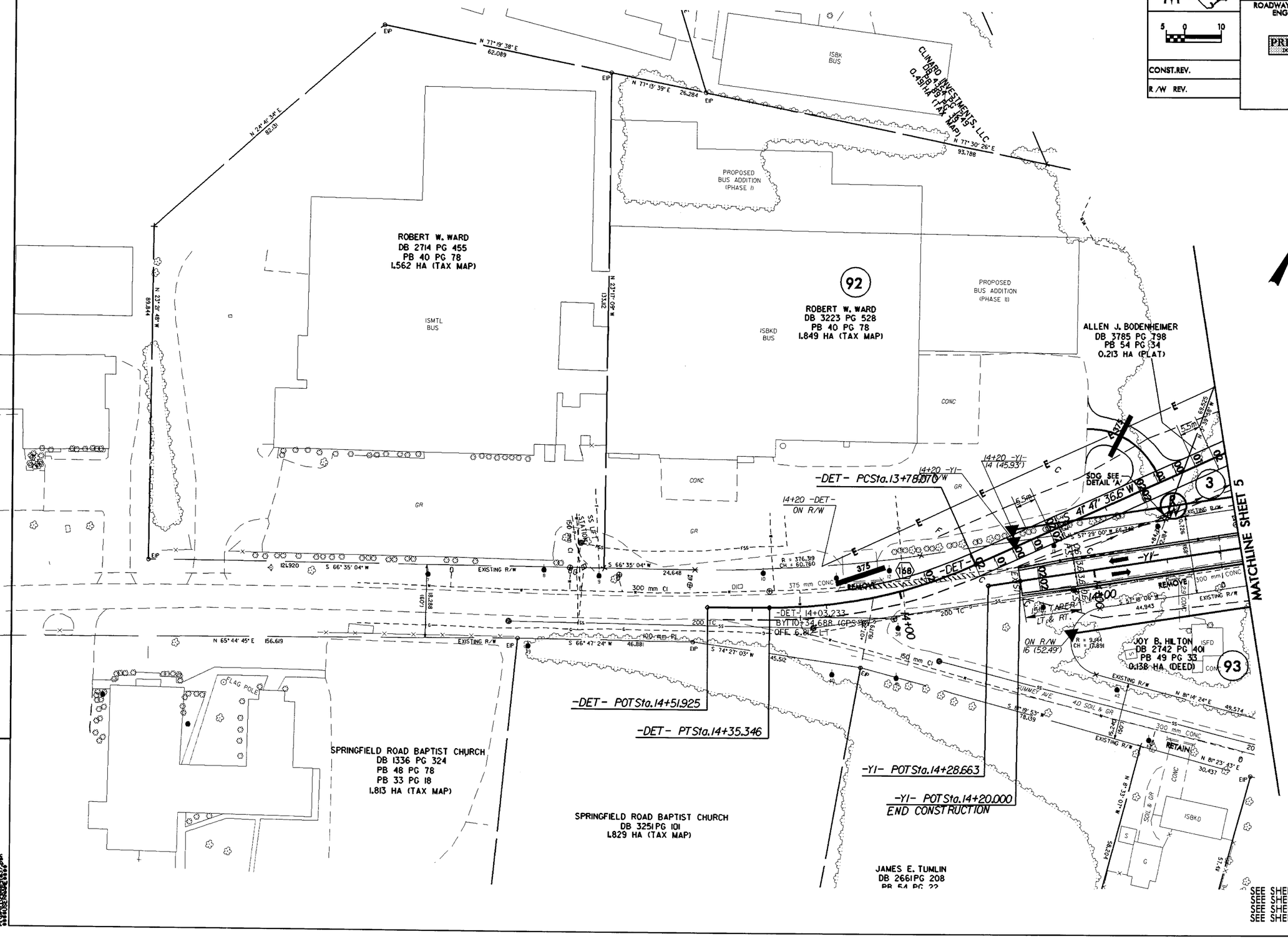
CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

ROW REVISIONS, CHANGED OWNER AND INFORMATION PARCEL #93, LETTER DATED 10-05-2004
WPW 10-25-2004



TIP: R-0609IB

CONTRACT: C201225

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD – RANDOLPH

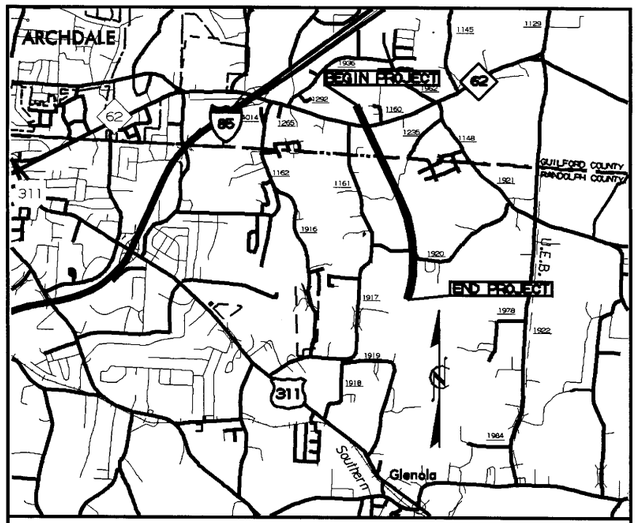
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-0609IB	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34345.1.1	MAF-F-119-(1)	PE
34345.2.8	NHF-119-1(12)	R/W, UTIL.

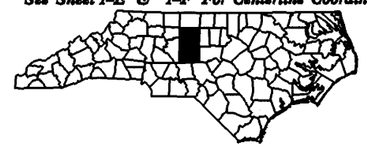
METRIC

ALL DIMENSIONS IN THESE PLANS ARE IN METERS

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols
See Sheet 1-C & 1-D For Survey Control Sheets
See Sheet 1-E & 1-F For Centerline Coordinate List

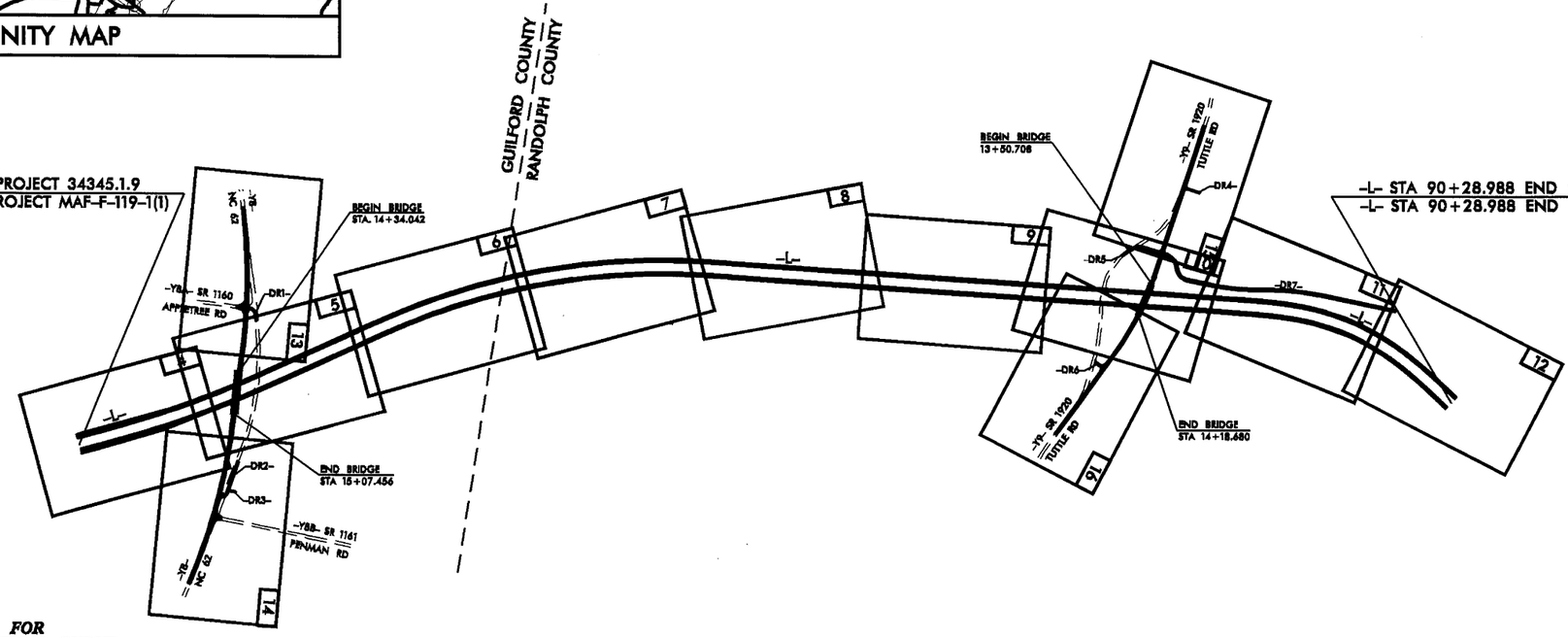


VICINITY MAP



LOCATION: US 311 HIGH POINT EAST BELT FROM I-85 TO SOUTH OF SR 1920 (TUTTLE RD) NORTH OF ARCHDALE

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNING, AND STRUCTURES



DESIGN EXCEPTION REQUIRED FOR BRIDGE WIDTH AND SAG VERTICAL CURVE ON SR 1920 TUTTLE ROAD (-Y9-)

THIS IS A CONTROLLED ACCESS PROJECT

GRAPHIC SCALES	DESIGN DATA	PROJECT LENGTH
5 0 10 PLANS	ADT 2000 = 18,000	LENGTH ROADWAY PROJECT R-0609IB = 2.970 Km
5 0 10 PROFILE (HORIZONTAL)	ADT 2025 = 29,000	TOTAL LENGTH ROADWAY PROJECT R-0609IB = 2.970 Km
1 0 2 PROFILE (VERTICAL)	DHV = 10 %	
	D = 60 %	
	T = 13 % *	
	V = 110 km/h	
	* TTST 7% DUAL 6%	
	FUNC CLASS – FREEWAY	

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh, NC 27610

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MAY 30, 2003

LETTING DATE: MAY 16, 2005

JIMMY GOODNIGHT, PE
PROJECT ENGINEER

STEVE KENDALL
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STANFORD GOODNIGHT, JR.

SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

09-FEB-2006 15:51
r:\proj\r0609ib.tsh
$$$$USERNAME$$$$

9/85/99

PROJECT REFERENCE NO.	SHEET NO.
R-0609B	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

METRIC

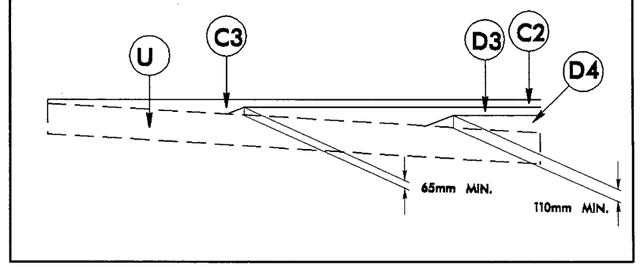
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER

PAVEMENT SCHEDULE

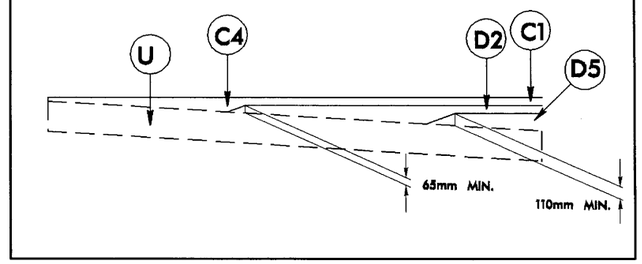
C1	PROP. APPROX. 50 mm ASPHALT CONC. SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 117.5 kg PER SQ. METER.	E2	PROP. VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 75 mm IN DEPTH OR GREATER THAN 140 mm IN DEPTH.
C2	PROP. APPROX. 80 mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 96 kg PER SQ. METER IN EACH OF TWO LAYERS.	J1	PROP. 250 mm AGGREGATE BASE COURSE.
C3	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 2.4 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 40 mm IN DEPTH OR GREATER THAN 50 mm IN DEPTH.	J2	PROP. 200 mm AGGREGATE BASE COURSE.
C4	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5A, AT AN AVERAGE RATE OF 2.4 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 40 mm IN DEPTH OR GREATER THAN 50 mm IN DEPTH.	J3	PROP. 150 mm AGGREGATE BASE COURSE.
D1	PROP. APPROX. 70 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 171.5 kg PER SQ. METER.	K	CEMENT STABILIZATION: 60% OF PROJECT; 30 kg/sm @ 180mm DEPTH. ALSO, 135 kg/sm OF ABC FOR 5% OF CEMENT AREA. LIME STABILIZATION (method-slurry): 40% OF PROJECT; 11kg/sm @ 200mm DEPTH.
D2	PROP. APPROX. 70 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 171.5 kg PER SQ. METER.	P	PRIME COAT; 1.58 LITERS PER SQUARE METER
D3	PROP. APPROX. 110 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 269.5 kg PER SQ. METER.	T	EARTH MATERIAL.
D4	PROP. VAR. DEPTH ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 65 mm OR GREATER THAN 110 mm IN DEPTH.	U	EXISTING PAVEMENT.
D5	PROP. VAR. DEPTH ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 65 mm OR GREATER THAN 110 mm IN DEPTH.	V	RUMBLE STRIPS
E1	PROP. APPROX. 80 mm ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 196 kg PER SQ. METER.	W	WEDGING

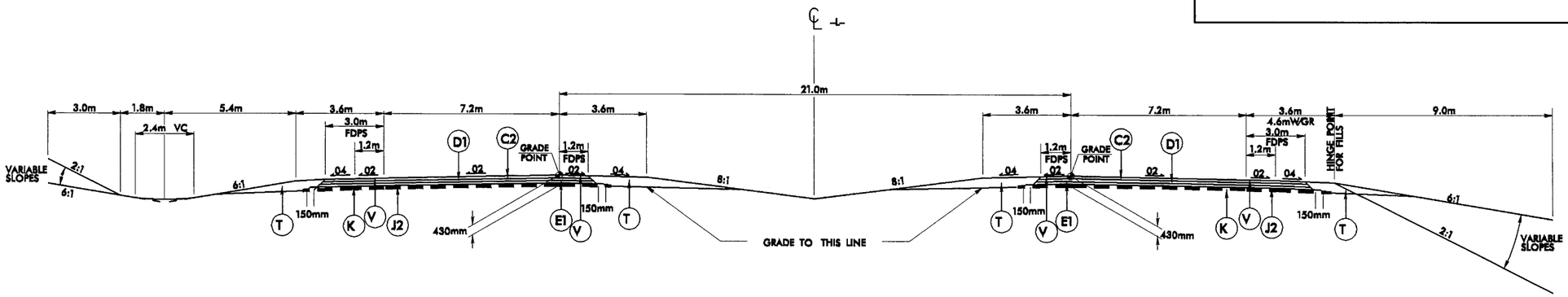
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

DETAIL FOR SHOWING METHOD OF WEDGING FOR -Y8-



DETAIL FOR SHOWING METHOD OF WEDGING FOR -Y9-





TYPICAL SECTION NO. 1

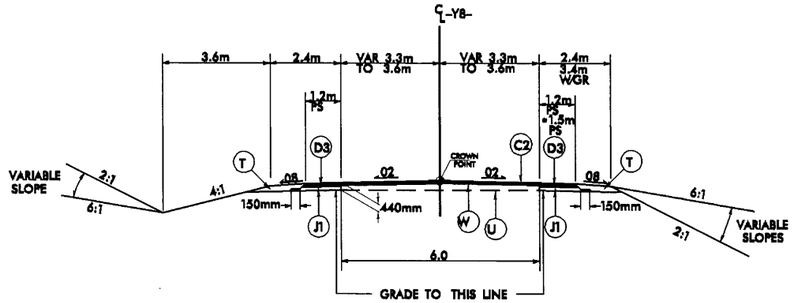
USE TYPICAL SECTION NO. 1 AS FOLLOWS:
-L- STA. 60+59.109 TO 90+28.988

09-FEB-2006 8:42

PROJECT REFERENCE NO.	SHEET NO.
R-0609B	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

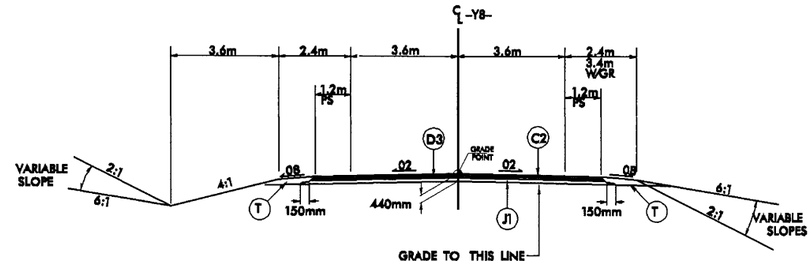
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STANFORD GOODNIGHT, JR.

PAVEMENT SCHEDULE		
C1	50 mm	SF9.5A
C2	80 mm	S9.5C
D2	70 mm	I19.0B
D3	110 mm	I19.0C
J1	250 mm	ABC
J2	200 mm	ABC
J3	150 mm	ABC
P	PRIME COAT	
W	WEDGING	
U	EXIST PAVEMENT	
T	EARTH MATERIAL	



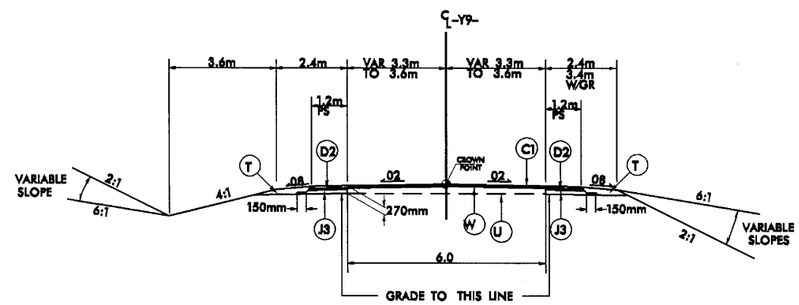
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AS FOLLOWS:
-Y8- STA 10+84.660 TO STA 11+99.545 (WIDENING & RESURFACING)
-Y8- STA 17+04.269 TO STA 18+82.197 (WIDENING & RESURFACING)
* -Y8- STA 17+00 TO STA 17+18 (RT.)



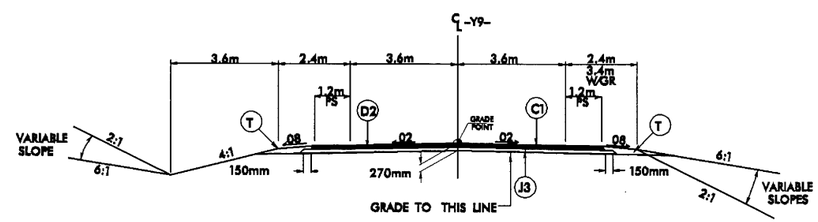
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 AS FOLLOWS:
-Y8- STA 11+99.545 TO 14+34.042 (BEG BRIDGE)
-Y8- STA 15+07.456 (END BRIDGE) TO 17+04.269



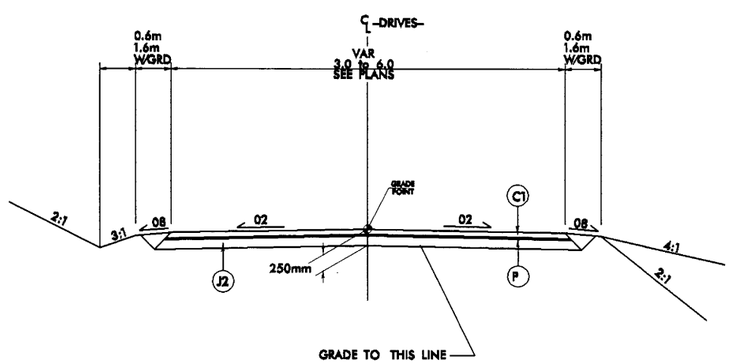
TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 AS FOLLOWS:
-Y9- STA 10+00 TO 10+62.134 (RESURFACING&WIDENING)
-Y9- STA 16+48.008 TO 17+20 (RESURFACING & WIDENING)



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5 AS FOLLOWS:
-Y9- STA 10+62.134 TO 13+50.708 (BEG BRIDGE)
-Y9- STA 14+18.680 (END BRIDGE) TO 16+48.008



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6 AS FOLLOWS:

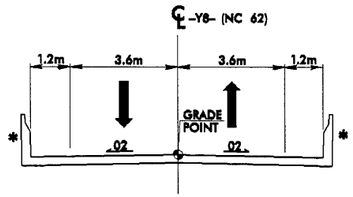
DRIVE -DR1-	STA 10+03.620	TO	10+40
DRIVE -DR2-	STA 10+03.600	TO	10+90
DRIVE -DR3-	STA 10+02.400	TO	10+17.035
DRIVE -DR4-	STA 10+03.300	TO	10+35
DRIVE -DR5-	STA 10+03.600	TO	10+90
DRIVE -DR6-	STA 10+03.600	TO	10+23.187
DRIVE -DR7-	STA 10+03.600	TO	15+23.485

09-FEB-2006 15:52
R:\Roadway\Proj\R0609B_SheetTS_2A.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-0609B	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

METRIC

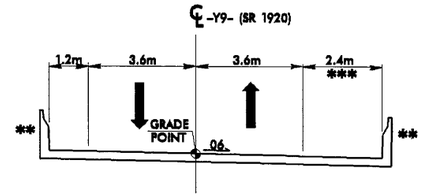
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER



TYPICAL SECTION ON STRUCTURE

*BRIDGE RAIL TO BE DETERMINED BY STRUCTURE DESIGN

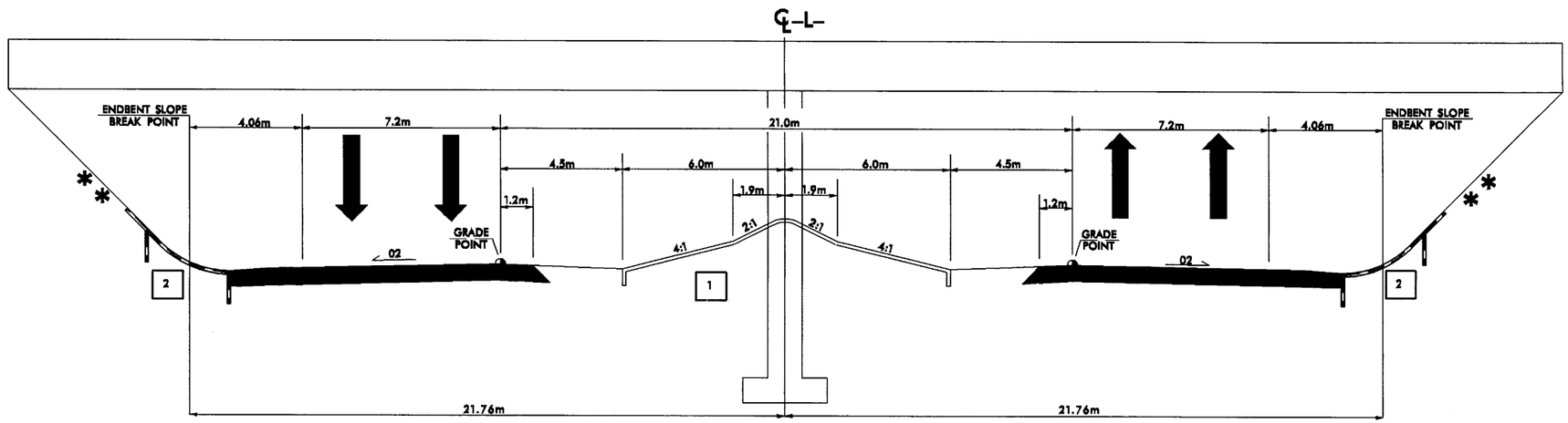
DESIGN DATA -Y8-
ADT 2000 = 10,600
ADT 2025 = 20,000
D = 60%
DHV = 10%
TTST = 5%
DUAL = 2%
V = 100 km/h
FUNC CLASS-COLLECTOR



TYPICAL SECTION ON STRUCTURE

**BICYCLE SAFE RAIL REQUIRED
***WIDEN FOR STOPPING SIGHT DISTANCE

DESIGN DATA -Y9-
ADT 2000 = 1,000
ADT 2025 = 2,700
D = 60%
DHV = 10%
TTST = 5%
DUAL = 2%
V = 100 km/h
FUNC CLASS-LOCAL



DETAIL OF TYPICAL SECTION UNDER STRUCTURE

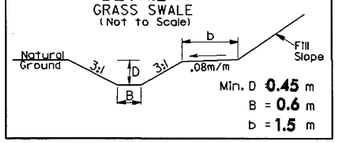
MINIMUM VERTICAL CLEARANCE = 5.2m
**SLOPES DETERMINED BY SOILS AND FOUNDATIONS UNIT

1	SEE STD. 225.08
2	SEE STD. 610.03

09-FEB-2006 15:05
s:\wpdot\structure\r0609b\r0609b_typ.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	2-C
R/W SHEET NO.	

DETAIL A
GRASS SWALE
(Not to Scale)



Min. D 0.45 m
B = 0.6 m
b = 1.5 m

STA. 62+60 TO 63+00 LT -L-
STA. 68+20 TO 68+70 RT. -L-
STA. 70+70 TO 70+90 LT. -L-
STA. 70+70 TO 71+00 RT. -L-
STA. 76+60 TO 77+40 RT. -L-
STA. 78+60 TO 79+00 LT. -L-
STA. 83+80 TO 84+60 RT. -L-
STA. 86+60 TO 87+60 RT. -L-
STA. 11+00 TO 11+60 RT -Y8-
STA. 13+20 TO 14+52 RT -Y8-
STA. 15+40 TO 17+00 RT -Y8-
STA. 11+80 TO 12+16 LT. -Y9-
STA. 13+00 TO 13+40 RT. -Y9-
STA. 10+30 TO 10+60 LT. -DR5-

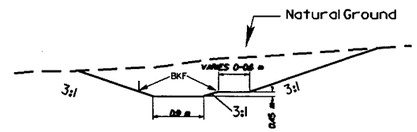
DETAIL B
TOE PROTECTION
(Not to Scale)

d = 0.6 m

Type of Liner = PSRM

STA. 68+40 TO 69+00 LT.
STA. 77+40 TO 78+00 RT.
STA. 78+80 TO 79+20 RT.

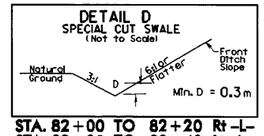
DETAIL C
PROPOSED CHANNEL



LOW FLOW CHANNEL SHOULD BE ON OUTSIDE OF BEND

STA. 68+76 TO 69+17 RT.

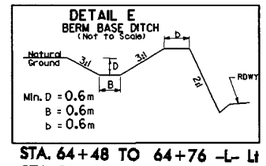
DETAIL D
SPECIAL CUT SWALE
(Not to Scale)



Min. D = 0.3 m

STA. 82+00 TO 82+20 Rt -L-
STA. 82+20 TO 82+40 Lt -L-
STA. 86+20 TO 86+40 RT. -L-
STA. 11+80 TO 12+00 RT. -Y8-
STA. 15+60 TO 16+60 LT. -Y9
STA. 16+00 TO 16+80 RT. -Y9-
STA. 17+20 TO 17+40 RT. -Y9-
STA. 17+00 TO 17+50 LT. -Y9-
USE THIS TYPICAL wPROPOSED PROFILE
STA. 17+20 TO 18+40 RT. -Y8-

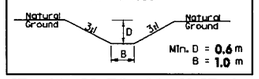
DETAIL E
BERM BASE DITCH
(Not to Scale)



Min. D = 0.6m
B = 0.6m
b = 0.6m

STA. 64+48 TO 64+76 -L- Lt
STA. 82+00 TO 83+00 -L- Rt
STA. 88+10 TO 89+00 -L- Rt

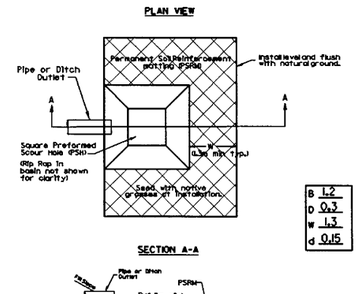
DETAIL F
STANDARD GRASS SWALE
(Not to Scale)



Min. D = 0.6 m
B = 1.0 m

STA. 64+08 TO 64+31 RT -L-

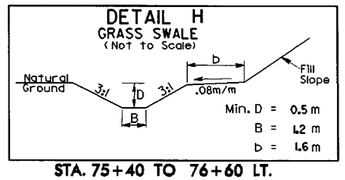
DETAIL G
PREFORMED SCOUR HOLE



B	1.2
D	0.3
W	1.3
d	0.15

STA. 10+57 LT. -DR5-
STA. 76+20 RT. -L-
STA. 79+42 RT. -L-

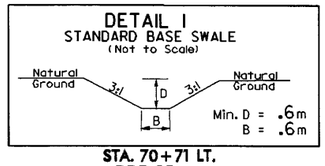
DETAIL H
GRASS SWALE
(Not to Scale)



Min. D = 0.5 m
B = 1.2 m
b = 1.6 m

STA. 75+40 TO 76+60 LT.
STA. 76+80 TO 77+20 LT.

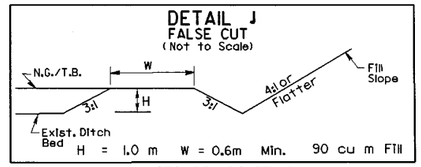
DETAIL I
STANDARD BASE SWALE
(Not to Scale)



Min. D = .6m
B = .6m

STA. 70+71 LT.
DDE 35 cm

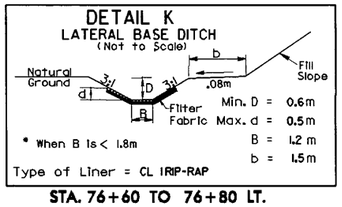
DETAIL J
FALSE CUT
(Not to Scale)



H = 1.0 m W = 0.6m Min. 90 cu m Fill

STA. 90+06 RT. -L-

DETAIL K
LATERAL BASE DITCH
(Not to Scale)



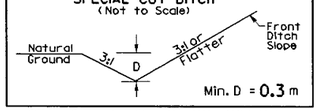
Min. D = 0.6m
Max. d = 0.5m
B = 1.2 m
b = 1.5m

* When B is < 1.8m

Type of Liner = CL IRIP-RAP

STA. 76+60 TO 76+80 LT.

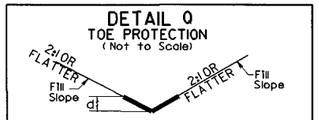
DETAIL P
SPECIAL CUT DITCH
(Not to Scale)



Min. D = 0.3 m

STA. 12+00 TO 13+80 DR7 RT.
STA. 14+60 TO 15+20 DR7 RT.

DETAIL Q
TOE PROTECTION
(Not to Scale)

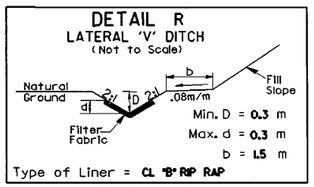


d = m

Type of Liner = 0.3 PSRM

STA. 83+90 TO 85+10 -L- LT.
STA. 13+80 TO 14+30 DR7 RT.

DETAIL R
LATERAL 'V' DITCH
(Not to Scale)

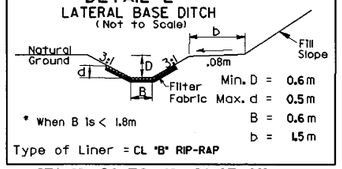


Min. D = 0.3 m
Max. d = 0.3 m
b = 1.5 m

Type of Liner = CL "B" RIP RAP

STA 11+12 TO 11+30 -DR7- LT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)



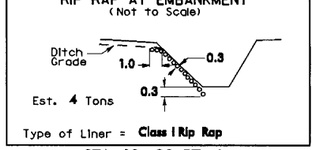
Min. D = 0.6m
Max. d = 0.5m
B = 0.6 m
b = 1.5m

* When B is < 1.8m

Type of Liner = CL "B" RIP-RAP

STA. 11+20 TO 11+80 LT -Y9-

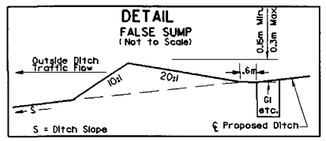
DETAIL M
RIP RAP AT EMBANKMENT
(Not to Scale)



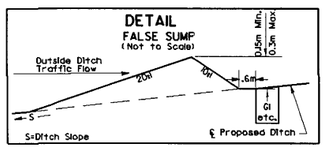
Type of Liner = Class I Rip Rap

STA. 68+80 RT. -L-

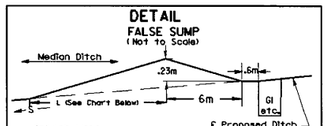
DETAIL
FALSE SUMP
(Not to Scale)



DETAIL
FALSE SUMP
(Not to Scale)



DETAIL
FALSE SUMP
(Not to Scale)

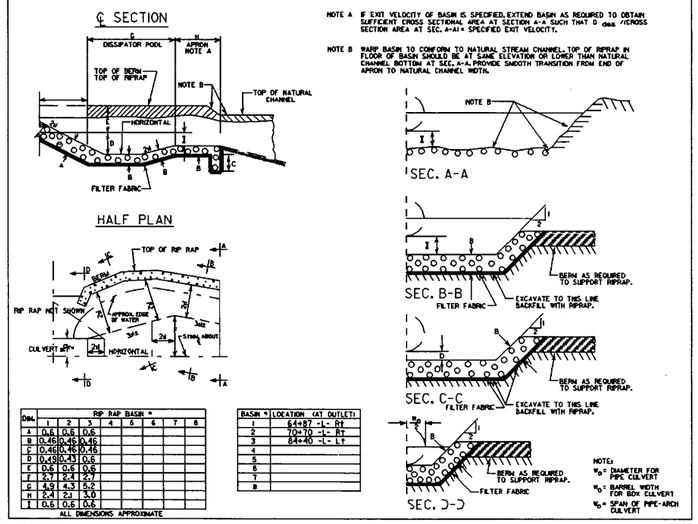


S=Ditch Slope		Ditch Grade	
Ditch Grade		Ditch Grade	
0.0% To 2.0%		Over 4.0% To 6.0%	
Over 2.0% To 4.0%		Over 6.0%	

DETAIL N
DETAIL OF RIP-RAPPED ENERGY DISSIPATOR BASIN

NOTE A IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A-A SUCH THAT D dss /CROSS SECTION AREA AT SEC. A-A1> SPECIFIED EXIT VELOCITY.

NOTE B WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIPRAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LONGER THAN NATURAL CHANNEL BOTTOM AT SEC. A-A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.



DIM.	RIP RAP BASIN *							
	1	2	3	4	5	6	7	8
A	0.6	0.6	0.6					
B	0.45	0.45	0.45					
C	0.45	0.45	0.45					
D	0.45	0.43	0.6					
E	0.6	0.6	0.6					
F	2.1	2.4	2.7					
G	4.3	4.3	5.5					
H	2.4	2.1	3.0					
I	0.6	0.6	0.6					

ALL DIMENSIONS APPROXIMATE

BASIN *	LOCATION (AT OUTLET)
1	64+87 -L- RT
2	70+70 -L- RT
3	84+40 -L- LT
4	
5	
6	
7	
8	

STA 64+87 -L-
FILTER FABRIC = 140 sq m
CL IRIP RAP = 105 mtons
DDE = 150 cu m

STA 70+70 -L-
FILTER FABRIC = 100 sq m
CL IRIP RAP = 65 mtons
DDE = 125 cu m

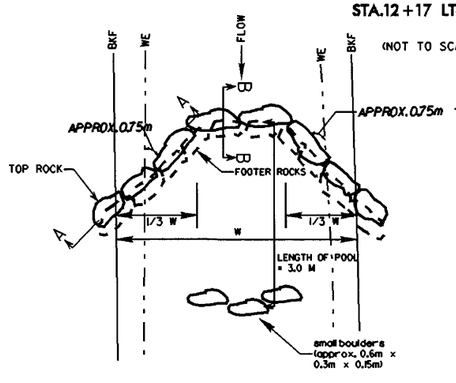
STA 84+40 -L-
FILTER FABRIC = 250 sq m
CL IRIP RAP = 195 mtons
DDE = 350 cu m

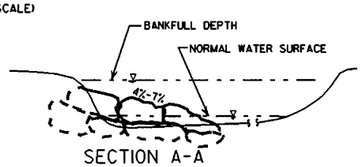
DETAIL O
CROSS VANE ROCK WEIR

STA. 68+80 RT. -L-
STA.77+25 LT. -L-
STA.12+17 LT-Y9-

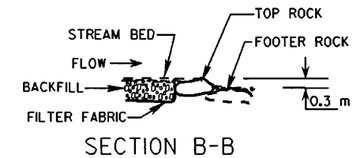
(CVRW)

(NOT TO SCALE)





NOTE:
TOP ROCK ELEVATION SHOULD BE 0.3 METERS ABOVE INVERT OF PIPE OR BOX



NOTE:
ROCKS SHOULD BE NATIVE STONE OR SHOT ROCK, ANGULAR AND OBLONG WITH AXIS APPROXIMATELY 1m IN LENGTH

STA 68+80 -L-
FILTER FABRIC = 18 sq m
LARGE BOULDERS = 15
SMALL BOULDERS = 3
TOTAL mtons = 46

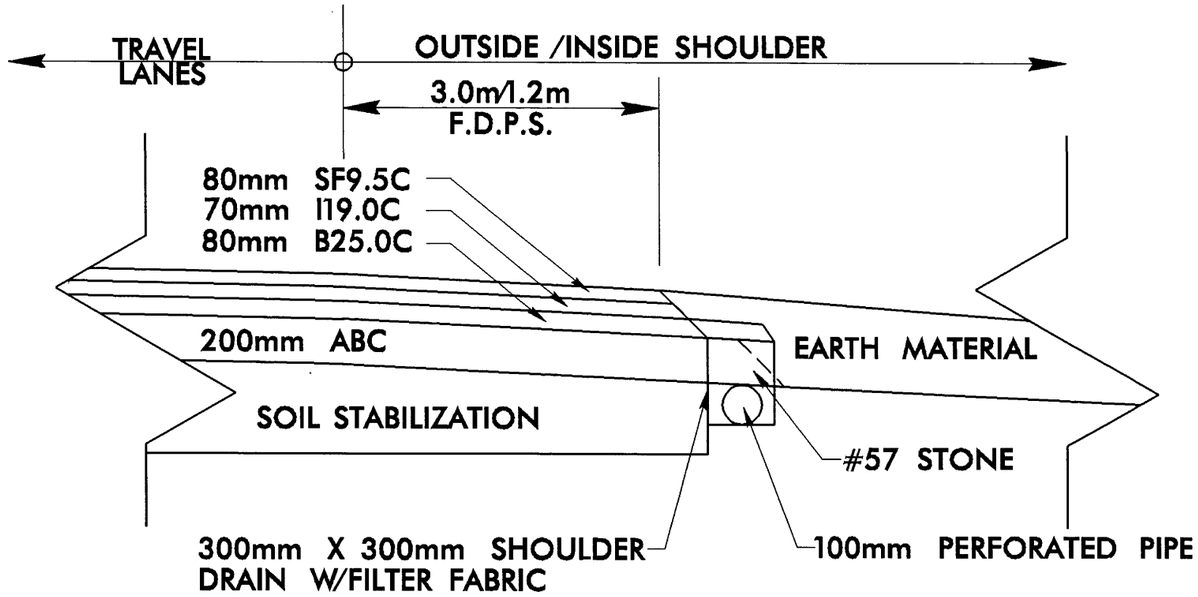
STA 77+25 -L-
FILTER FABRIC = 25 sq m
LARGE BOULDERS = 20
SMALL BOULDERS = 3
TOTAL mtons = 52

STA 12+17 -Y9-
FILTER FABRIC = 25 sq m
LARGE BOULDERS = 20
SMALL BOULDERS = 3
TOTAL mtons = 52

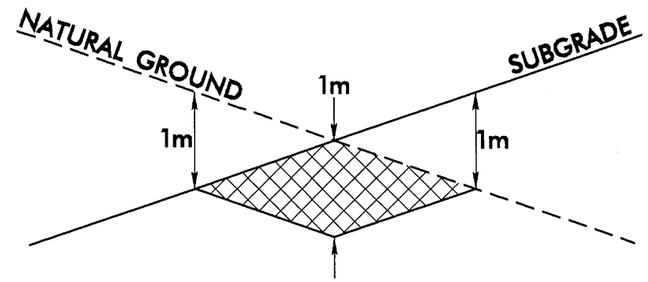
8/11/93

09-FEB-2006 8:42
S:\ACE\ROCK\R-0609 ip.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-0609/B	2-D
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER



DETAIL OF SHOULDER DRAIN PLACEMENT
FOR MEDIAN AND OUTSIDE PAVED SHOULDERS



DETAIL OF PROPOSED UNDERCUT AT GRADE POINT

RECOMMENDED SHOULDER DRAINS:

–L– STA. 67+60 TO 73+60 (RT., OUTSIDE)
OUTLETS: 68+60, 69+50, 70+31 +/–, 71+20, 72+60
(2GI) (2GI) (2GI)

–L– STA. 80+20 TO 83+00 (RT., OUTSIDE)
OUTLETS: 81+20, 82+00 +/–
(2GI) (2GI)

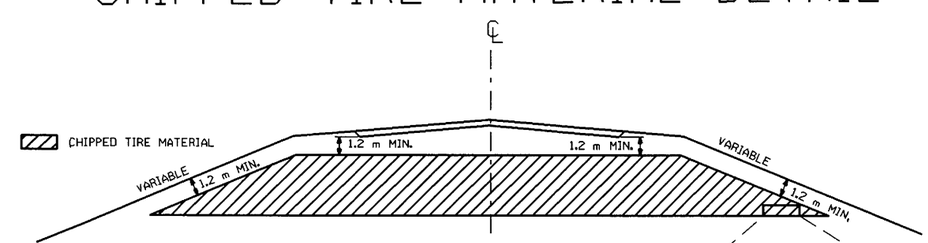
–L– STA. 85+50 TO 88+40 (RT., OUTSIDE)
OUTLETS: 86+40, 87+40, 88+40
(2GI) (2GI)

–L– STA. 69+30 TO 71+70 (LT., MEDIAN)
OUTLETS: 70+31 +/–, 70+70
(2GI) (2GI)

–L– STA. 80+20 TO 83+20 (LT., OUTSIDE)
OUTLETS: 81+20, 82+20 +/–
(2GI) (2GI)

NOTE:
STATION +/– : INDICATES VERTICAL SAG WHICH HAS TWO OUTLETS.
(EXAMPLE: –L– STA. 82+20 +/–)

CHIPPED TIRE MATERIAL DETAIL



CHIPPED TIRE MATERIAL NOT TO BE PLACED
BELOW AN ELEVATION OF 1.2m MIN. ABOVE THE
100 YR FLOOD ELEVATION AS INDICATED BY HYDRAULICS

ESTIMATED CHIP TIRE MATERIAL = 72,244 m^3

30-60% CHIPPED TIRE MATERIAL PER 250 mm LIFT
100% EMBANKMENT SOIL PER 250 mm LIFT
30-60% CHIPPED TIRE MATERIAL PER 250 mm LIFT
100% EMBANKMENT SOIL PER 250 mm LIFT

USE DETAIL AS FOLLOWS:

-Y8- 13+20 TO 14+18.802
-Y8- 15+22.282 TO 16+80
-Y9- 11+00 TO 13+35.468
-Y9- 14+33.920 TO 15+00

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

R/W REV.

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STANFORD GOODNIGHT, JR.

SEE SHEETS 17 & 18 FOR -L- PROFILE
SEE SHEET 2-C FOR DITCH DETAILS

NAD 83

FAIRFIELD GOLF CLUB, INC.
DB 3345 PG 707
PB 5 PG 351
22.140 HA (TAX MAP)

FAIRFIELD GOLF CLUB INC
DB 5077 PG 1190
PB 5 PG 351
1.025 HA (CADD)

FAIRFIELD GOLF CLUB INC
DB 5077 PG 1190
PB 45 PG 5
0.721 HA (CADD)

FAIRFIELD GOLF CLUB INC
DB 5077 PG 1190
PB 45 PG 5
0.598 HA (CADD)

RUBY K. POWELL
DB 4338 PG 1511
PB 45 PG 5
0.160 HA (CADD)

HAROLD G. COX
DB 4491 PG 841
PB 45 PG 5
0.341 HA (CADD)

JAMES P. HINKLE, SR.
DB 4167 PG 590
DB 4167 PG 593
2.028 HA (TAX MAP)

NCDOT
DB 4646 PG 307
9.263 HA (TAX MAP)

ROGER D. QUEEN
DB 4151 PG 2056
3.769 HA (CADD)

END STATE PROJECT R-0609IA -L- STA 61+00.000 =
BEGIN STATE PROJECT R-0609IB -L- STA 60+59.109
BEGIN F. A. PROJECT MAF-F-119-1(1)

BL-PINC 53+71.630
BL-62

TSSta. 61+01.43

BL-63
BL PINC 54+72.535 =
-L- POT Sta. 61+12.367
1.51m RT

SCSta. 61+55.143

BL-64
BL-PINC 55+71.752 =
-L- POC Sta. 62+11.315
7.7757m LT

BL-65
BL-PINC 56+74.315 =
-L- POC Sta. 63+12.847
6.066m RT

PL
40 (LT)
(131.23')
BEGIN FENCE

PL
40 (RT)
(131.23')
BEGIN FENCE

PL
40 (RT -L-)
(131.23')

CL B RIPRAP
4.5 m tons.
FF= 11.7 am

SEE DETAIL "A"
0.6 m LATERAL BASE SWALE
3:1 SIDE SLOPES

100m TAPER

Special Median Ditch
62+06.75 to 62+60

R-0609IA NBL

R-0609IA SBL

S 25° 48' 31.0" E

3.0mPS

1.2mPS

10.8m

21m

7.2m

+59.478

+63.143

+37.910

SEE SHEET 5

MATCHLINE -L- STA 63+20

-L-
PIs Sta 61+37.143 PI Sta 62+86.616
θs = 0° 46' 24.6" Δ = 7° 31' 19.4" (LT)
Ls = 54.000 L = 262.569
LT = 36.000 T = 131.473
ST = 18.000 R = 2,000.000

S 25° 47' 00" E
48.914
EXISTING R/W

R/W MON

09-FEB-2006 8:42

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-0609B	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

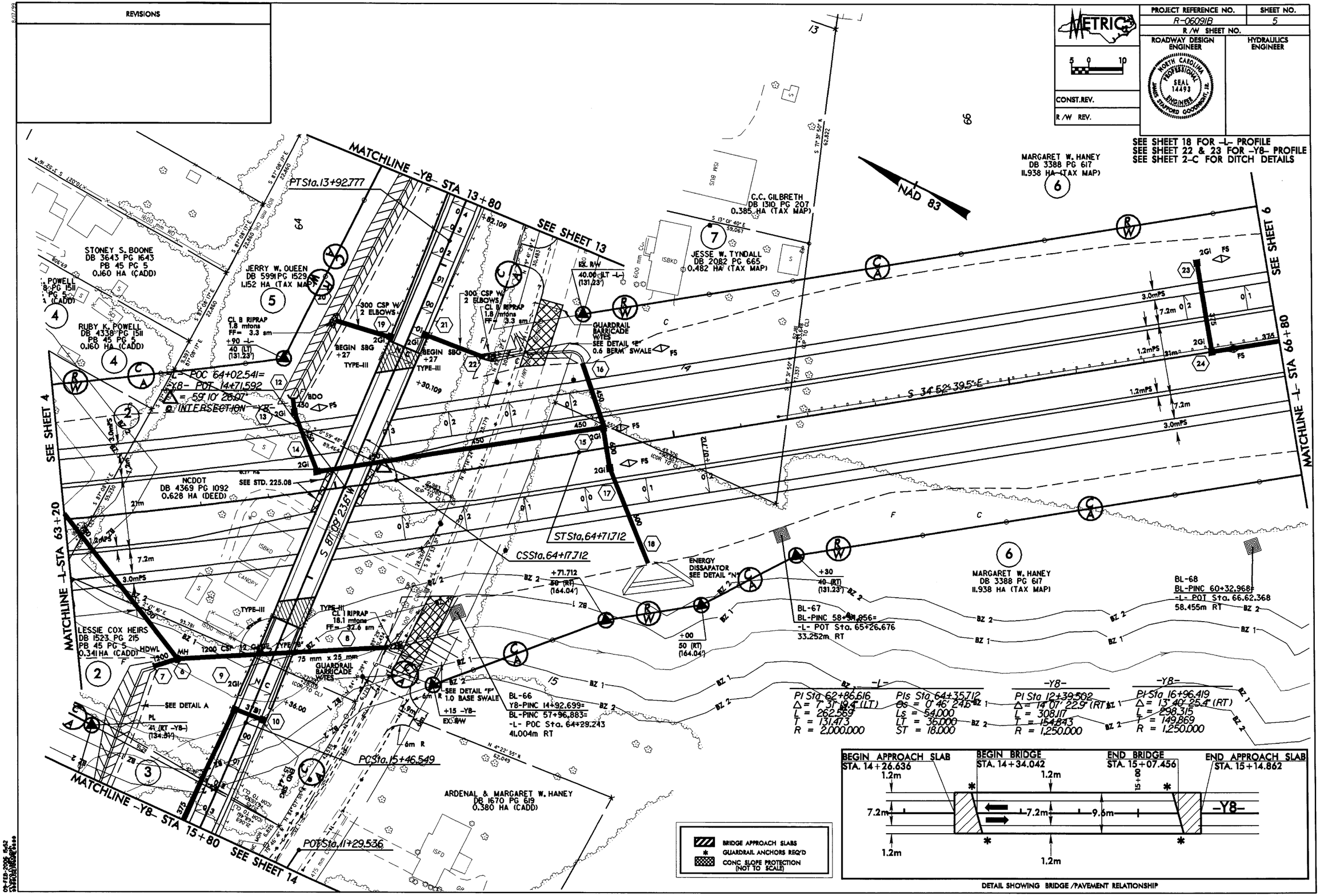
5 0 10

CONST. REV.

R/W REV.

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, JR.

SEE SHEET 18 FOR -L- PROFILE
SEE SHEET 22 & 23 FOR -Y8- PROFILE
SEE SHEET 2-C FOR DITCH DETAILS



DETAIL SHOWING BRIDGE/PAVEMENT RELATIONSHIP

REVISIONS

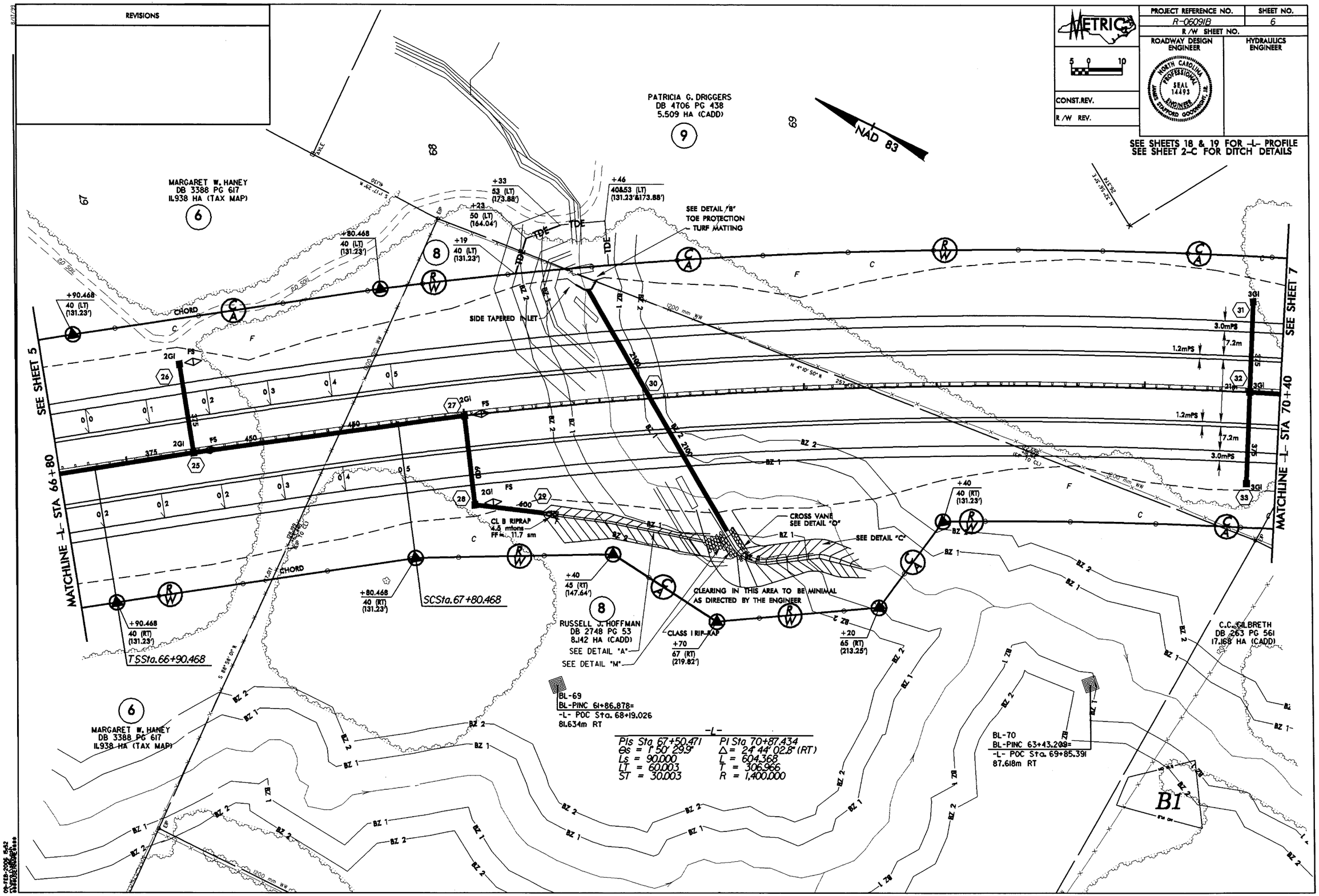
PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
CONST.REV.	
R/W REV.	

METRIC

5 0 10

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STANFORD GOODNIGHT, JR.

SEE SHEETS 18 & 19 FOR -L- PROFILE
SEE SHEET 2-C FOR DITCH DETAILS



REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

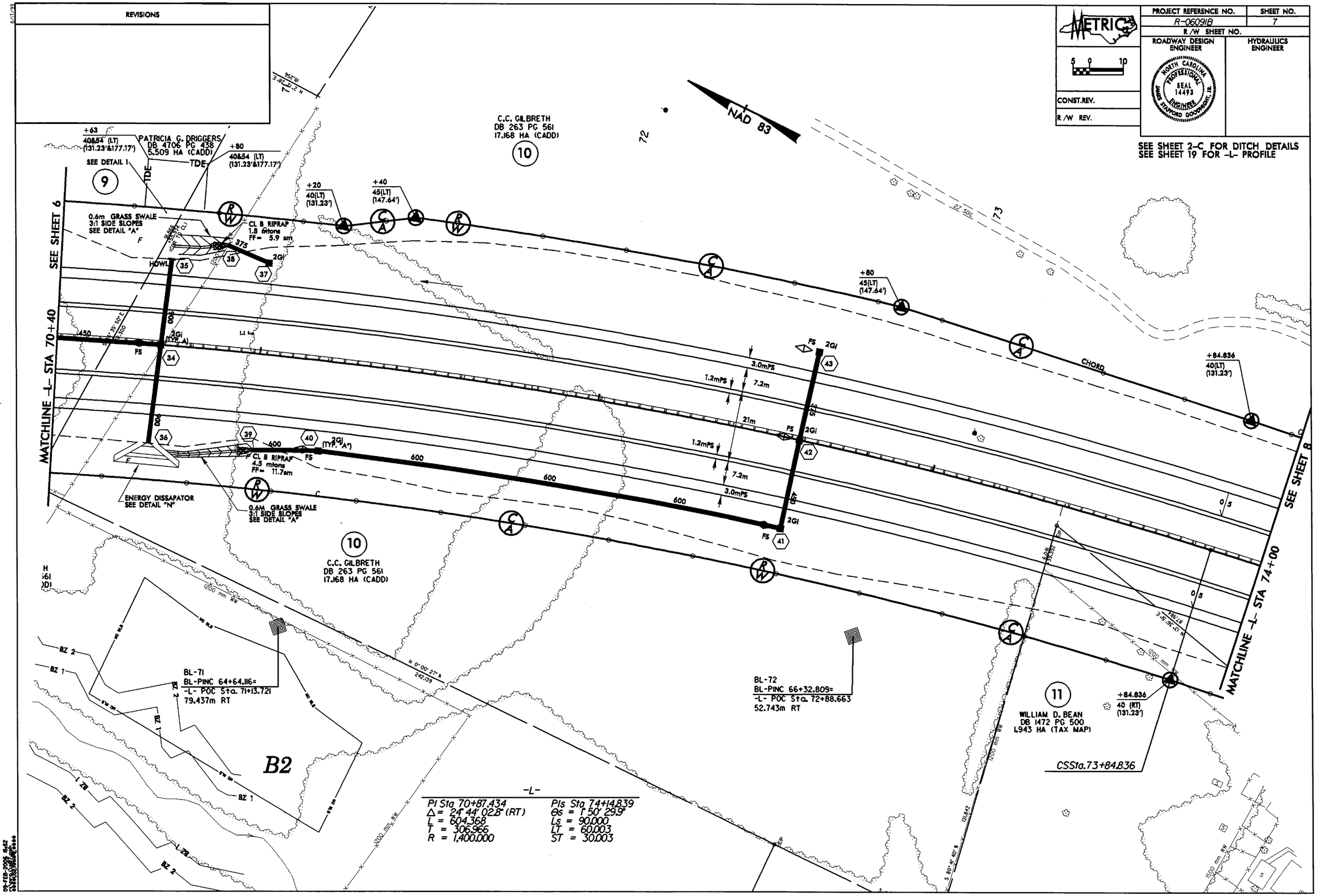
5 0 10

CONST.REV.

R/W REV.

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STANFORD GOODNIGHT, III

SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEET 19 FOR -L- PROFILE



REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-0609B	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

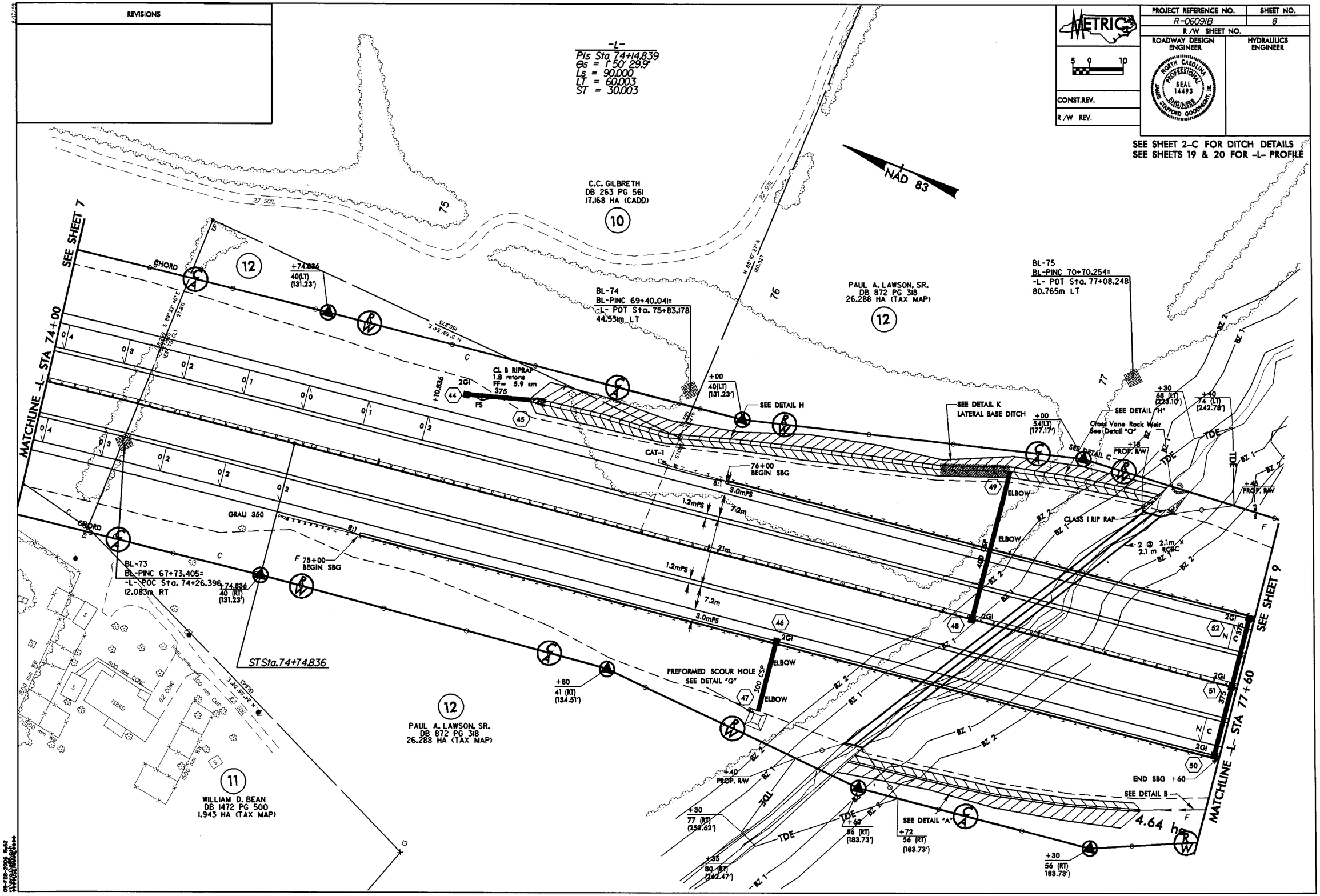
5 0 10

CONST. REV.

R/W REV.

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STANFORD GOODWIN, JR.

SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEETS 19 & 20 FOR -L- PROFILE



REVISIONS
ROW REVISION - PER SUBMITTAL OF 04-12-2005 CHANGED PARCEL 15 TO BE PARCEL 14 WPW 07-06-2005

PROJECT REFERENCE NO.	SHEET NO.
R-0609B	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

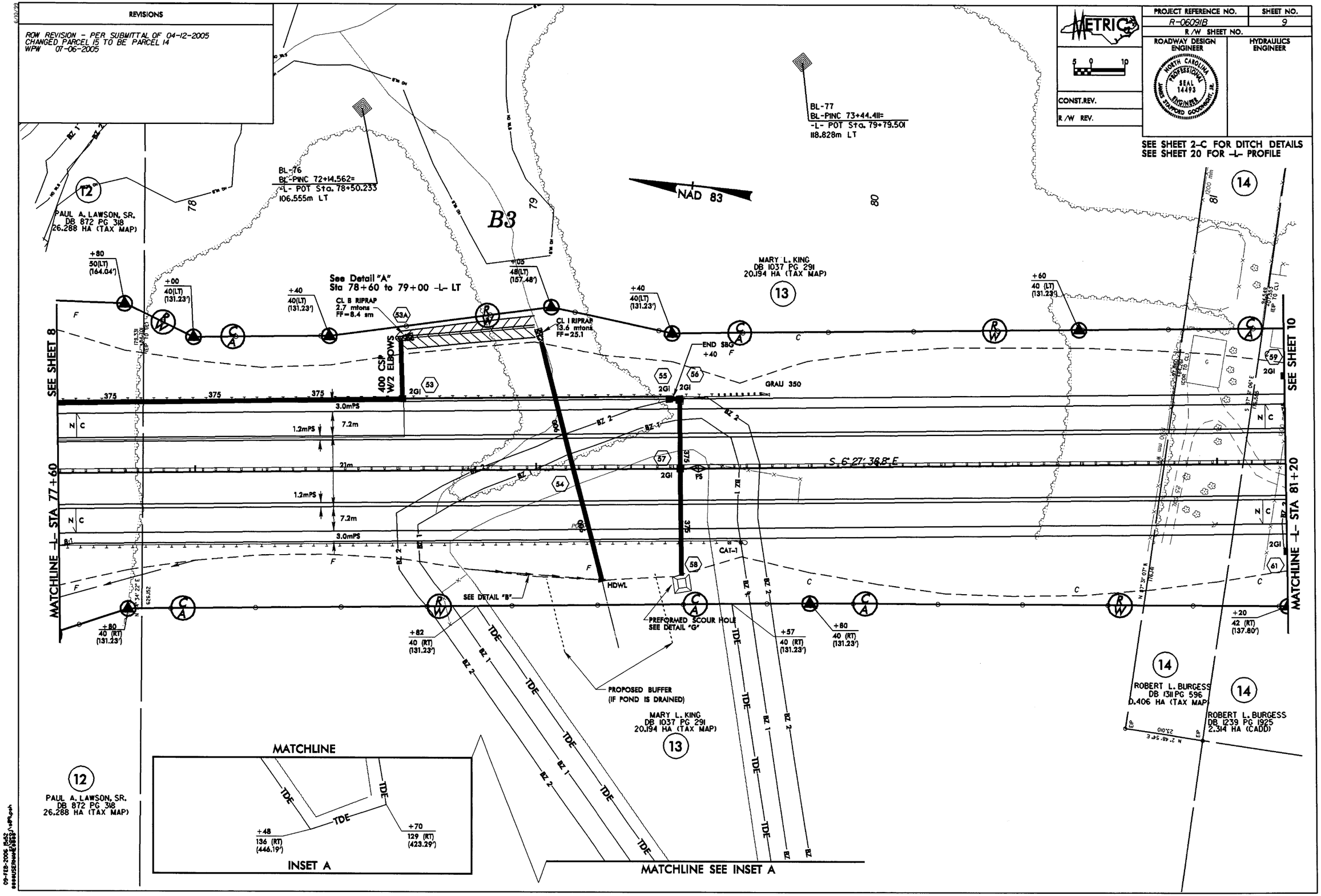
5 0 10

CONST.REV.

R/W REV.

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, III

SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEET 20 FOR -L- PROFILE



REVISIONS
ROW REVISIONS - PER SUBMITTAL OF 04-12-2005 CHANGED PARCEL 15 TO BE PARCEL 14 WPW 07-06-2005

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	10

MATCHLINE STA 12+70 -Y9- SEE SHEET 15

-DR5-
PI Sta 11+04.320
Δ = 31° 28' 47.5" (LT)
L = 65.931
T = 33.821
R = 120.000

PI Sta 10+52.506
Δ = 49° 47' 03.9" (LT)
L = 26.067
T = 13.921
R = 30.000

PRECAST PERFORMED SCOUR HOLE
4.8 m x 4.8 m
SEE DETAIL G

HUGH A. MYERS
DB 1130 PG 444
0.405 HA (TAX MAP)

PT Sta. 10+64.653
PC Sta. 10+70.499

BL-78
BL-PINC 74+82.249=
-L- POT Sta. 81+17.324
116.782m LT

BL-79
BL-PINC 76+33.655= END CONST. +90
BY9-PINC 84+86.176=
-Y9- PINC 13+27.040=
-L- POT Sta. 82+62.847
90.478m RT

BL-80
BL-PINC 77+19.337=
-L- POT Sta. 83+48.237
82.049m LT

-DR7-PC Sta. 10+10.550
-DR7-PRC Sta. 10+45.583
TERESA T. CUNNUP & OTHERS
DB 1667 PG 732
5.342 HA (TAX MAP)

ENERGY DISSAPATOR

BL-81
BL-PINC 77+96.298=
-L- POT Sta. 84+23.640
66.638m LT

-DR5-POT Sta. 10+00=
-Y9- POT Sta. 12+80
-DR7-POT Sta. 10+00.000

-Y9- PC Sta. 13+27.482

-DR7-PT Sta. 10+84.175

NAD 83

TERESA T. CUNNUP & OTHERS
DB 1667 PG 732
5.342 HA (TAX MAP)

ROBERT L. BURGESS
DB 1239 PG 1925
2.314 HA (CADD)

PT Sta. 11+36.430

-L- POT 83+34.392=
-Y9- POC 13+82.717
Δ = 70° 20' 04.35"
@ INTERSECTION -Y9- 83.872, -97.092 (COR TO CL)

SEE STD. 225.08

SEE DETAIL D
SPECIAL DITCH

SEE DETAIL "E"
BERM DITCH

SEE DETAIL "Q"

SEE DETAIL "A"

SEE DETAIL 2-W
DEPTH = 5.42

400 CSP W/2 ELBOWS
CL B RIPRAP
2.7 mtons
FF=8.4 sm

300 CSP W/2 ELBOWS
CL B RIPRAP
1.8 mtons
FF=3.3 sm

CL I RIPRAP
13.6 mtons
FF=25.1 sm

400 CSP W/ELBOW

GRAU 350

TYPE III

TUTTLE ROAD

SEE SHEET 9

SEE SHEET 11

MATCHLINE -L- STA 81+20

MATCHLINE -L- STA 84+60

MATCHLINE -Y9- 15+00

SEE SHEET 16

ARTHUR LEE LOMAX
DB 1893 PG 1961
PB 88 PG 42
2.850 HA (CADD)

KEPLEY-FRANK HARDWOOD CO., INC.
CENTRAL LUMBER COMPANY, INC
DB 1359 PG 155
18.384 HA

PROPOSED BUFFER

SPECIAL DITCH
SEE DETAIL D

GUARDRAIL BARRICADE W/TES

END SBG
14+80

END C/A AND FENCE +00
Lt. and Rt.

HDWL

0.63 ha

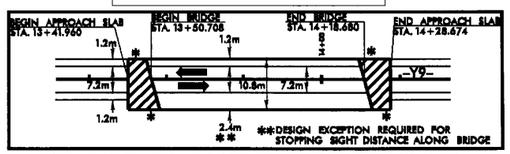
-Y9-
PI Sta 14+19.605
Δ = 17° 27' 28.4" (RT)
L = 182.818
T = 92.123
R = 600.000
SE = 0.06

-DR7-
PI Sta 10+30.372
Δ = 66° 54' 35.1" (RT)
L = 35.034
T = 19.823
R = 30.000

PI Sta 10+68.069
Δ = 73° 42' 16.2" (LT)
L = 38.582
T = 22.486
R = 30.000

SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEETS 20 & 21 FOR -L- PROFILE
SEE SHEETS 23 & 24 FOR -Y9- PROFILE
SEE SHEET 25 FOR -DR5- PROFILE
SEE SHEET 26 FOR -DR7- PROFILE

BRIDGE APPROACH SLABS
GUARDRAIL ANCHORS REQ'D
CONC SLOPE PROTECTION (NOT TO SCALE)



DETAIL SHOWING BRIDGE /PAVEMENT RELATIONSHIP

METRIC

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STANFORD GOODNIGHT, JR.

09-FEB-2006 8:53

REVISIONS

BILLY L. TUTTLE
DB 1200 PG 1950
9.380 HA (TAX MAP)

NAD 83

-DR7-
PI Sta 11+79.174 △= 11° 07' 55.1" (LT) L = 97.145 T = 48.726 R = 500.000
PI Sta 13+06.607 △= 11° 07' 55.6" (RT) L = 97.146 T = 48.726 R = 500.000

-DR7- PCSta.11+30.448
-DR7- PTSta.12+27.593
-DR7- PCSta.12+57.880
-DR7- PTSta.13+55.026

TERESA T. CUNNUP & OTHERS
DB 1667 PG 732
5.342 HA (TAX MAP)

16

BL-82
BL-PINC 78+75.260=
-L- POT Sta. 85+01.144
51.534m LT

BL-83
BL-PINC 79+55.277=
-L- POC Sta. 85+77.324
29.524m LT

BL-84
BL-PINC 80+45.182=
-L- POC Sta. 86+63.222
10.154m LT

BL-85
BL-PINC 81+35.140=
-L- POC Sta. 87+51.869
2.401m LT

S 9°59'41.3" E
S 1°08'08.4" W

SEE DETAIL "P"
SEE DETAIL "Q"
SEE DETAIL "R"
SEE DETAIL "A"
SEE DETAIL "D"
SPECIAL SWALE

CL I RIPRAP 5.4 mtons FF=14.2 sm
CL B RIPRAP 1.8 mtons FF=3.3 sm
CL B RIPRAP 1.8 mtons FF=5.9
CL B RIPRAP 2.7 mtons FF=8.4 sm
300 CSP W/2 ELBOWS
END SBG +30'
CAT-1
GRAU 350
ELBOW
FS
CHORD
3.0mPS
1.2mPS
7.2m
750
400
375
419.519
+89.480
45 (RT)
(147.64')
SCSta.86+89.480
+17.480
40 (RT)
(131.23')
TSSta.85+17.480

18

KEPLEY-FRANK HARDWOOD CO., INC.
CENTRAL LUMBER COMPANY, INC.
DB 1359 PG 155
118.384 HA

SEE SHEET 10
SEE SHEET 12
MATCHLINE -L- STA 84+60
MATCHLINE -L- STA 88+20

SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEET 21 FOR -L- PROFILE
SEE SHEET 26 FOR -DR7- PROFILE

-L-
PIs Sta 86+32.332 θs = 10° 03' 58.6" Ls = 172.000 LT = 114.953 ST = 57.502
PI Sta 87+74.061 △= 19° 36' 24.4" (RT) L = 167.508 T = 84.581 R = 489.500

METRIC	PROJECT REFERENCE NO.	SHEET NO.
	R-0609IB	11
	R/W SHEET NO.	
5 0 10	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
CONST.REV.	NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STANFORD GOODNIGHT, JR.	
R/W REV.		

09-FEB-2006 8:43

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

R/W REV.

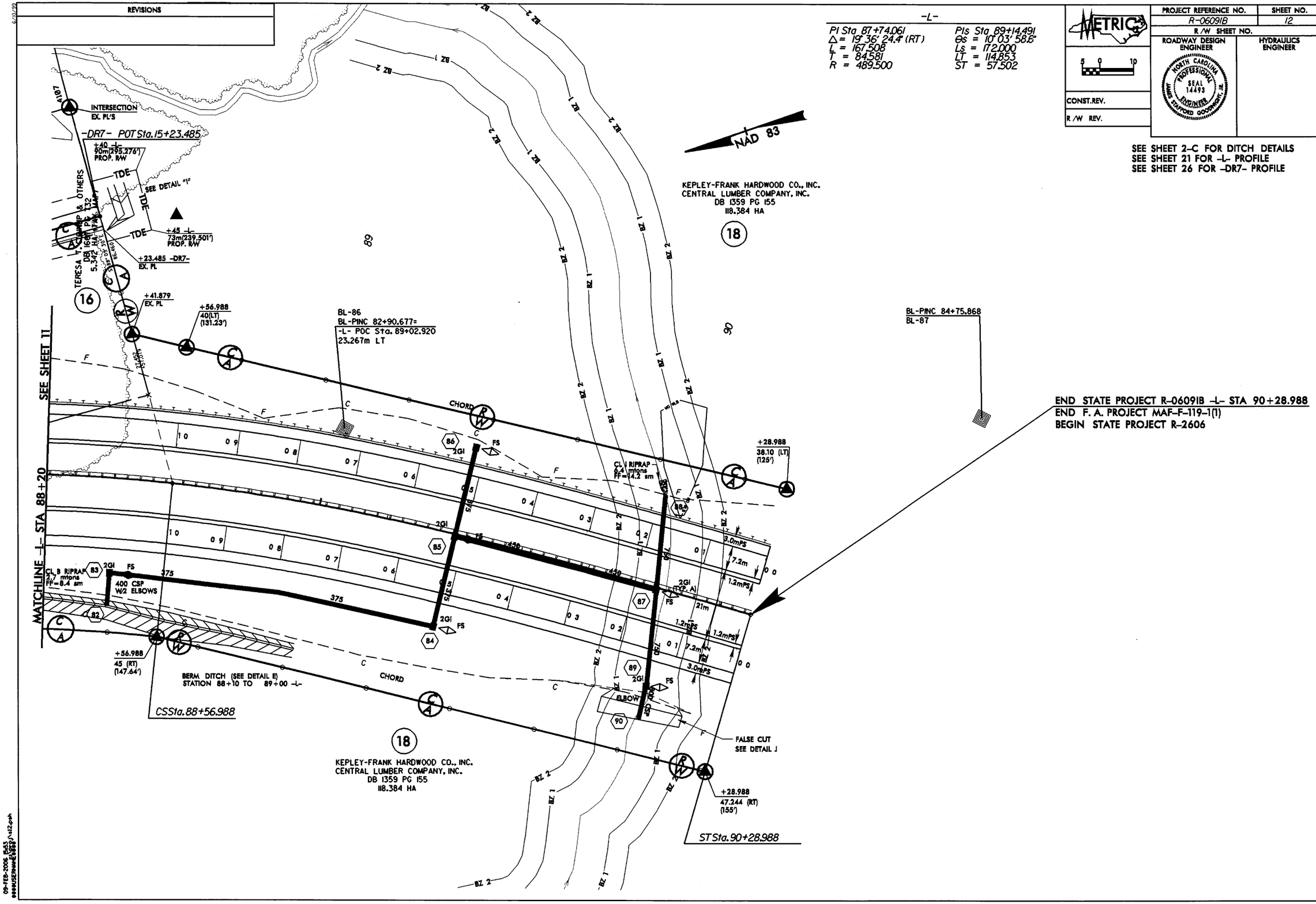
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODWYN, JR.

SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEET 21 FOR -L- PROFILE
SEE SHEET 26 FOR -DR7- PROFILE

-L-

PI Sta 87+74.061
Δ = 19° 36' 24.4" (RT)
L = 167.508
T = 84.581
R = 489.500

PIs Sta 89+14.491
Θs = 10° 03' 58.8"
Ls = 172.000
LT = 114.853
ST = 57.502



09-FEB-2006 15:43
$$$$USERNAME$$$$

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC 5 0 10

CONST. REV.

R/W REV.

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, III

SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEETS 22 & 23 FOR -Y8- PROFILE
SEE SHEET 25 FOR -DR1- PROFILE

-Y8A-
PI Sta 10+78.015
Δ = 10° 47' 43.6" (LT)
L = 43.5241
T = 21.8267
R = 231.0000

-Y8-
PI Sta 12+39.503
Δ = 14° 07' 23.0" (RT)
L = 308.117
T = 154.843
R = 1,250.000
SE = 0.04

DRIVE DR1
PI Sta 10+18.206
Δ = 7° 25' 06.8" (RT)
L = 19.483
T = 11.389
R = 15.000

NAD 83

19 BEGIN CONST. -Y8-
PCSta.10+84.660
HALLIE GILBREATH MYERS
DB 3604 PG 1869
PB 139 PG 61

21
CLAY C. GILBRETH
DB 2895 PG 420
0.854 HA (TAX MAP)

20
ROBERT L. KEARNS
DB 1766 PG 591

22
JOHNNY MORRIS FRYE
DB 3472 PG 1247

1
FAIRFIELD GOLF CLUB, INC.
DB 3345 PG 707
PB 5 PG 351
22.140 HA (TAX MAP)

6
PATRICIA G. DRIGGERS
DB 3114 PG 188
0.304 HA (TAX MAP)

5
JERRY W. QUEEN
DB 5991 PG 1529
1.152 HA (TAX MAP)

7
JESSE M. TYNDALL
PO BOX 2
0.482 HA (TAX MAP)

13
C.C. GILBRETH
DB 3134
0.382 HA (TAX MAP)

POT Sta.10+43.511
GPS-10
BY8-PINC 9+23.007=
-Y8- POC Sta. 13+42.821
32.603m LT

PT Sta.10+26.239

PCSta.10+06.816

DRI POT Sta.10+00 =
-Y8- POC Sta.12+94.657

-Y8- POCSta.12+94.657 =
-Y8A- POCSta.10+91.215

-Y8A- PCSta.10+56.188

-Y8A- POTSta.10+00.000

S 73° 02' 00.6" W

S 73° 01' 28.2" W

S 17° 48' 28.4" E

MATCHLINE -Y8- STA 13+80

SEE SHEET 5

END CONST +40

END FENCE

GRAU 350

da = .06 ha

2GI

CL B RIPRAP
1.8 mtons
FF= 3.3 MT

GRADE TO DRAIN

300 CSP W/
2 ELBOWS

SEE DETAIL A

SEE DETAIL D
SPECIAL DITCH

TYPE B
SILT BASIN

LEVEL SPREADER

48m TAPER

MAINTAINED R/W

EX. R/W

EXISTING R/W

R=15m

GOLF COURSE

APPLETREE CT

ISBKD

ISM BUS

CANOPY

CONC

ISFD

2SFD

09-FEB-2006 15:43
s:\design\r0609ib\v13.dgn

REVISIONS
R/W REVISIONS - PER SUBMITTAL OF 08-02-2005 ELIMINATED CLAIM ON PARCEL #27 BY MAINTAINING SLOPES WITHIN EXISTING R/W. BY WPW 08-29-2005

PROJECT REFERENCE NO.	SHEET NO.
R-0609B	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

R/W REV.

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER WILLIS STANFORD GOODWRIGHT, JR.

SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEETS 22 & 23 FOR -Y8- PROFILE
SEE SHEET 25 FOR -DR2- PROFILE
SEE SHEET 25 FOR -DR3- PROFILE

-Y8-	DRIVE
PI Sta 16+96.418	PI Sta 10+14.019
Δ = 13° 40' 25.4" (RT)	Δ = 85° 20' 55.5" (LT)
L = 298.314	L = 14.896
T = 149.869	T = 9.219
R = 1,250.000	R = 10.000

NAD 83

SEE SHEET 5

MATCHLINE -L- STA 15+80

CLARENCE E. MARSHALL
DB 2804 PG 284
0.344 HA (CADD)

POSEY E. MARSHALL
DB 3459 PG 1905
0.082 HA (CADD)

POSEY E. MARSHALL
DB 3722 PG 394
0.082 HA (CADD)

POSEY E. MARSHALL
DB 2137 PG 442
0.373 HA (CADD)

GARY R. HILL
DB 4037 PG 2012
0.149 HA (CADD)

JAMES P. HINKLE, SR.
DB 4167 PG 590
DB 4167 PG 593
2.028 HA (TAX MAP)

NCDOT
DB 4646 PG 307
9.263 HA (TAX MAP)

JEFFREY L. BOSWELL & WIFE
CATHY L. BOSWELL
DB 4920 PG 694
0.368 HA (TAX MAP)

ROGER D. QUEEN
DB 4151 PG 2066
3.769 HA (CADD)

(NO CLAIM)
JAMES RONALD GRAY
CHARLENE R. GRAY
DB 4681 PG 1581
PB 103 PG 87

WILLIAM LEON SPARKS
DB 3481 PG 860

PATRICK TODD RIDGE
ANGELA M. RIDGE
DB 4472 PG 1580

POT Sta.10+20.156
-DR3-POT Sta.10+00=
-DR2- POT Sta.10+26
PT Sta.10+19.696
PCSta.10+04.800
-DR2-POT Sta.10+00=
-Y8-POC Sta.16+98
BY-800
BY8-PINC 13+21.385=
-Y8- POC Sta.17+32.998
1.65m RT
-Y8-POC Sta.17+35.356=
-Y8B- POT Sta.9+95.138
PT Sta.18+44.863
END CONST
18+82.197
POT Sta.18+88.934

END CONST. +90
END FENCE +80
END PAVING
END FENCE ON PL
PROP. R/W
CL B RIPRAP 2.7 mtons FF= 8.4 sm
GRAU 350
PROP R/W
EX. R/W
ON PL
DOCK WALL
48m TAPER
N 79° 10' 11.0" W
S 87° 37' 00.7" E
S 15° 09' 09.5" W

REVISIONS

NAD 83

CHINA A. TUTTLE
DB 1200 PG 1946
0.815 HA (TAX MAP)
32

DONALD C. HENDERSON
DB 1411 PG 1206
0.896 HA (TAX MAP)
30

BILLY L. TUTTLE
DB 1200 PG 1950
9.380 HA (TAX MAP)
31

BILLY L. TUTTLE
DB 1200 PG 1950
6.180 HA (CADD)
31

TERESA J. CUNNIP & OTHERS
DB 1695 PG 732
3.42 HA (TAX MAP)
16

BY9-PINC 5+00.000
GPS-11

BEGIN CONST.
-Y9- POTSta. 10+00.000

POT Sta. 10+35.000
END CONST.

-DR4- POT Sta. 10+00
-Y9- POT Sta. 11+35.166

N. 82° 04' 09.7" W.

SR 1920 TUTTLE RD 6.0 BST

60m TAPER
BOTH SIDES

0.6m LATERAL BASE DITCH
STA 11+80 TO 12+16 LT -Y9-
SEE DETAIL "A"

0.6m LATERAL BASE DITCH
STA 11+20 TO 11+80 LT -Y9-
SEE DETAIL "L"

CL B RIPRAP
4.5 m/gms
1.7 sm

400 CSP W/
2 ELBOWS
GRAU 350 2GI

LEVEL SPREADER
10m

"B" BASIN

BYPASS DEVICE

2@1.8mX2.4m RCBC

CROSS VANE ROCK WEIR
SEE DETAIL O

GPS-12
BY9-PINC 7+69.043=
-Y9- POT Sta. 12+38.604
14.539m RT

DRIVE -DR5-
PI Sta 10+52.506
Δ = 49° 47' 03.9" (LT)
L = 26.067
T = 13.921
R = 30.000

SEE SHEET 10

MATCHLINE -Y9- STA 12+80

SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEETS 23 & 24 FOR -Y9- PROFILE
SEE SHEET 25 FOR -DR4- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-0609B	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STANFORD GOODWYN, JR.

09-FEB-2006 (w63)
$$$$USERNAME$$$$)-15.psh

REVISIONS
ROW REVISIONS- PER SUBMITTAL OF 04-12-2005 CHANGED PARCEL 15 TO BE PARCEL 14 WPW 07-06-2005

PROJECT REFERENCE NO.	SHEET NO.
R-0609B	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
CONST.REV.	
R/W REV.	

METRIC 5 0 10

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER STAFFORD GOODWRIGHT JR.

SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEETS 23 & 24 FOR -Y9- PROFILE
SEE SHEET 25 FOR -DR6- PROFILE

-Y9-
PI Sta 14+19.605
Δ = 17° 27' 28.4" (RT)
L = 182.818
T = 92.123
R = 600.000

NAD 83

15+00
16+00
17+00

MATCHLINE -Y9- STA 15+00
SEE SHEET 10

JOHN K. WRIGHT
DB 1479 PG 879
0.718 HA (CADD)
34

HAROLD R. MARTIN
DB 1003 PG 397
DB 966 PG 126
PB 88 PG 42
0.685 HA (CADD)
17

ARTHUR LEE LOMAX
DB 1893 PG 1961
PB 88 PG 42
17A

RONNIE G. STANLEY & WIFE
MONA L. STANLEY
DB 1541 PG 1310
2.332 HA (CADD)
38

ARTHUR L. LOMAX
DB 1149 PG 889
1.519 HA (CADD)
35

ARTHUR L. LOMAX
DB 1130 PG 445
1.178 HA (CADD)
37

ARTHUR L. LOMAX
DB 1095 PG 737
0.539 HA (CADD)

14

-Y9- PT Sta.15+10.300

-DR6- POT Sta.10+00 =
-Y9- POC Sta.15+50

POT Sta.10+30.000

BY-900
BY9-PINC 10+84.490=
-Y9- POT Sta. 15+39.331
34.168m RT

BY-901
BY9-PINC 12+22.376=
-Y9- POT Sta. 16+71.888
3.794m LT

-Y9- POT Sta.17+54.760

-Y9- STA. 17+20
END CONST

SEE DETAIL D
SPECIAL DITCH

SEE DETAIL D
SPECIAL DITCH

SEE DETAIL D
SPECIAL DITCH

+10.300
17 (LT)
(55.77')

+80
17 (LT)
(55.77')

+00
20 (LT)
(65.62')

+20
20 (LT)
(65.62')

+20
17 (LT)
(55.77')

+20
12 (LT)
(39.37')

+30
EX. R/W

PL
EX. R/W

PL
15 (RT)
(49.21')

EX. R/W
20 (RT)
(65.62')

+35
17 (RT)
(55.77')

+80
12 (RT)
(39.37')

+00
EX. R/W

+20
13 (RT)
(42.65')

+30
EX. R/W

END CONST.
+23.187

CL B RIPRAP

REMOVE

60m TAPER
BOTH SIDES

N 64° 36' 41.3" W

300 mm CONC

EXISTING R/W

SR 1920 TUTTLE RD 6D BST

37 BST

37 SOIL

HTR

ISBKD

ISBLKD

GRAU 350

N 22° 52' 14.6" E
135.504

S 2° 46' 57.1" E
129.564

S 2° 34' 57.1" E
86.468

S 87° 37' 03" E
108.204

09-FEB-2006 15:53
$$$$$USERNAME$$$$$ J:\16.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	18
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

R/W REV.

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, JR.

BM 7 RR SPIKE IN BASE OF 320mm HICKORY 90m LT OF BASELINE STA 57+97 ELEV. 247.151

PI = 63+23.110
EL = 248.700 m
VC = 200 m
K = 139

248.684 LT = 246.800
PI = 63+19.000 LT = 246.700
END DITCH GRADE LT STA 63+00 EL = 246.0
-0.9286%
-2.5716%
-1.14%
-1.5882%
750mm
BEG DITCH GRADE LT STA 64+25 EL = 246.0
END DITCH GRADE LT STA 64+80 EL = 245.614
-1.2174%
-1.22%
BEG DITCH GRADE RT STA 64+05 EL = 240.260
END DITCH GRADE RT STA 64+55 EL = 240.260
-L-

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.5

DRAINAGE AREA	= 4.0	HA
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 0.67	CMS
DESIGN HW ELEVATION	= 245.73	M
100 YEAR DISCHARGE	= 0.77	CMS
100 YEAR HW ELEVATION	= 245.8	M
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= N/A	CMS
OVERTOPPING ELEVATION	= 246.8	M

+80 63+00 +20 +40 +60 +80 64+00 +20 +40 +60 +80 65+00 +20 +40 +60 +80 66+00 +20 +40

-L-

PI = 69+50.000
EL = 233.631 m
VC = 560 m
K = 152

241.184
-1.5882%
-2.5716%
-1.2174%
-2.4882%
-1.2986%
-2.3716%
-1.5305%
200mm
BEG DITCH GRADE RT STA 68+20 EL = 234.800
PI = 68+40.000 LT = 233.800
PI = 68+40.000 RT = 233.800
END DITCH GRADE RT STA 69+05 EL = 231.80

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 7.67	CMS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 233.95	M
BASE DISCHARGE	= 9.01	CMS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 234.25	M
OVERTOPPING DISCHARGE	= N/A	CMS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 236.4	M

+40 +60 +80 67+00 +20 +40 +60 +80 68+00 +20 +40 +60 +80 69+00 +20 +40 +60 +80 70+00

09-FEB-2006 15:54
r:\proj\r0609ib_pfl.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0609A	17
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

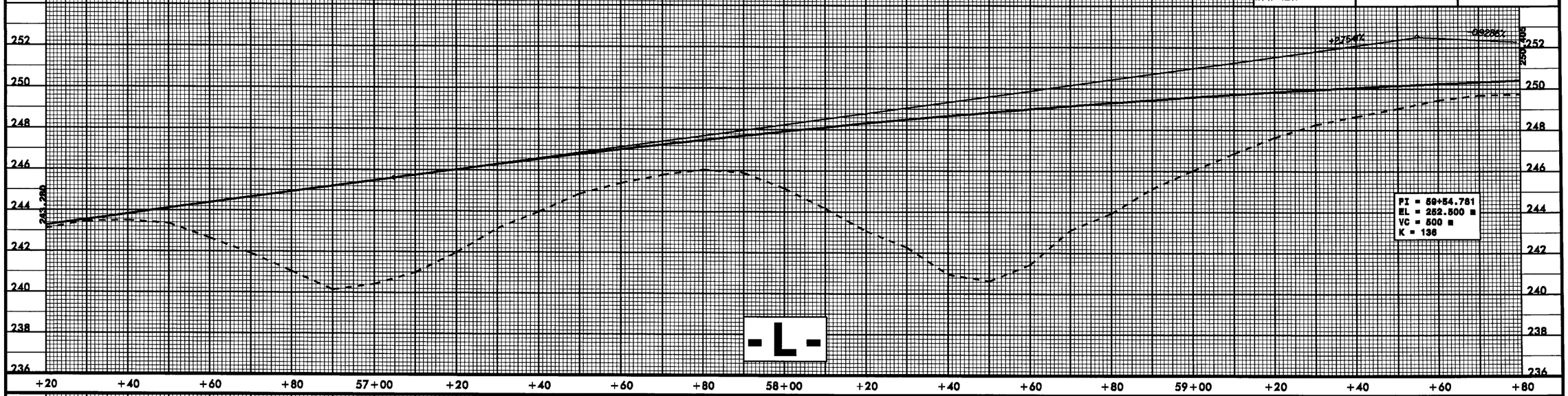
5 0 10

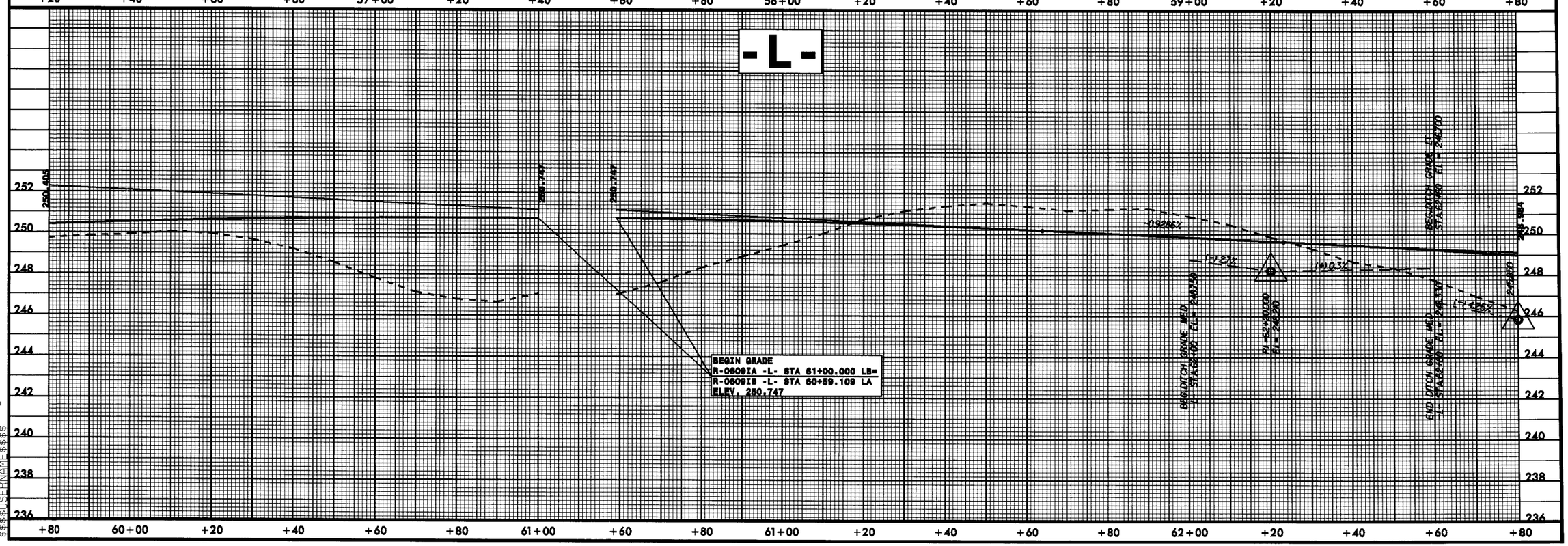
CONST.REV.

R/W REV.

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, JR.

BM 6 RR SPIKE IN BASE OF 470mm POPLAR
67m LT OF BASELINE STA 49+62
ELEV. 236.030





09-FEB-2006 15:54
r:\proj\r0609ia_pfl.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	19
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

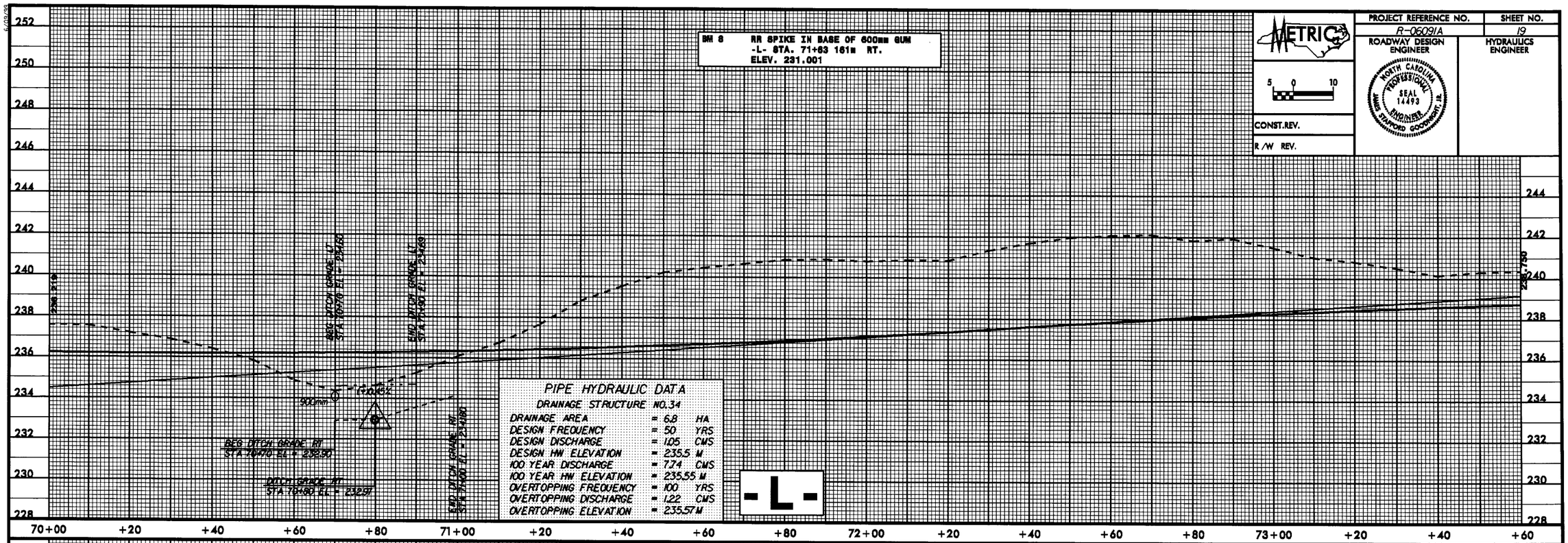
5 0 10

CONST.REV.

R/W REV.

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODWYN, JR.

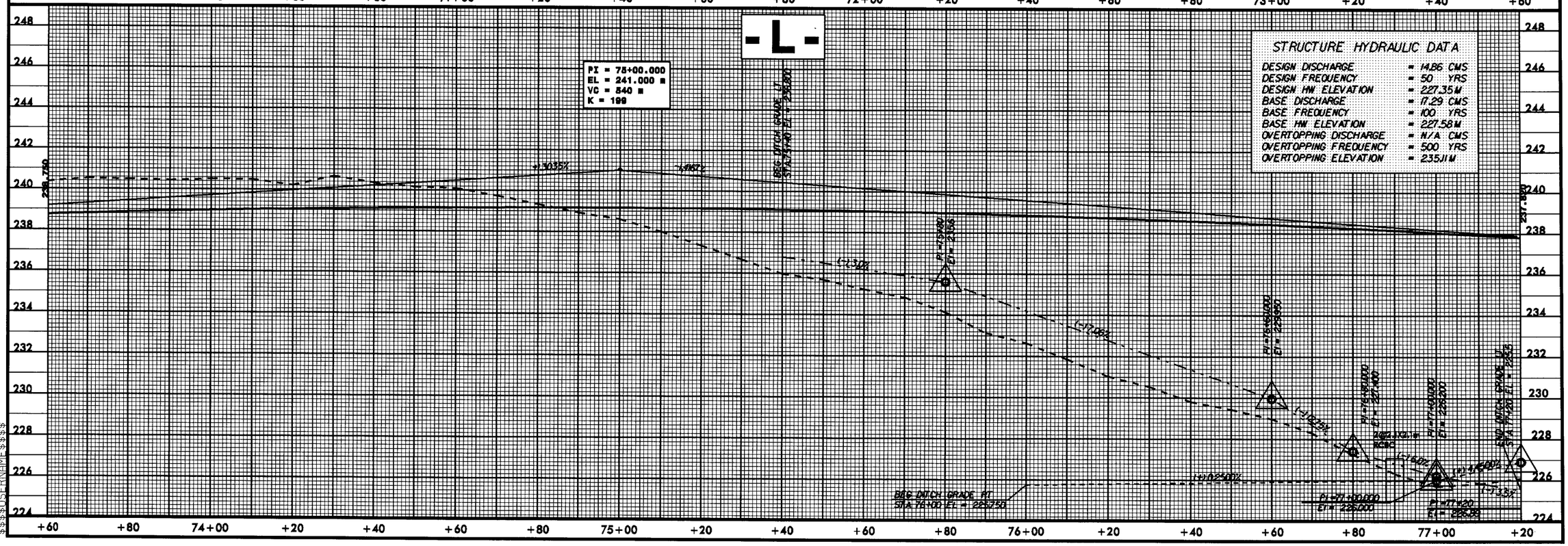
BM 8 RR SPIKE IN BASE OF 600mm GUM
-L- STA. 71+63 161m RT.
ELEV. 231.001



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 34

DRAINAGE AREA	= 6.8	HA
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 10.5	CMS
DESIGN HW ELEVATION	= 235.5	M
100 YEAR DISCHARGE	= 7.74	CMS
100 YEAR HW ELEVATION	= 235.55	M
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 1.22	CMS
OVERTOPPING ELEVATION	= 235.57	M



STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 14.86	CMS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 227.35	M
BASE DISCHARGE	= 17.29	CMS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 227.58	M
OVERTOPPING DISCHARGE	= N/A	CMS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 235.11	M

09-FEB-2006 15:54
r:\proj\r0609ib_pfl.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	20
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

R/W REV.

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STANFORD GOODNIGHT, JR.

BM 9 RR SPIKE IN BASE OF 600mm PIN OAK
-L- STA. 78+43 183m LT.
ELEV. 225.037

-L-

PI = 78+20.000
EL = 226.800

END DITCH GRADE RT
STA 77+40 EL = 229.500

BEG DITCH GRADE LT
STA 78+60 EL = 229.500

END DITCH GRADE LT
STA 79+60 EL = 229.500

(-1)20.0%
(-1.46)%
(-1.25)%
(-1.46)%
900mm

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 54

DRAINAGE AREA	=	7.0	HA
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	1.08	CMS
DESIGN HW ELEVATION	=	230.8	M
100 YEAR DISCHARGE	=	1.26	CMS
100 YEAR HW ELEVATION	=	230.87	M
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	2.1	CMS
OVERTOPPING ELEVATION	=	233.58	M

-L-

PI = 81+00.000
EL = 232.500 m
VC = 600 m

BEG DITCH GRADE RT
STA 80+20 EL = 232.500

END DITCH GRADE LT
STA 82+40 EL = 232.500

(-1)5.0%
(-1)8.0%
(-1)5.6%
(-1)8.0%
(-1)8.0%
(-1.46)%
(-0.89)%
(+0.55)%
(+0.85)%
(-1)7.0%
(-1)4.0%
(-1.46)%
900mm
900mm
750mm

BEG DITCH GRADE RT
STA 82+00 EL = 231.000

BEG DITCH GRADE RT
STA 82+20 EL = 232.200

END DITCH GRADE RT
STA 82+21 EL = 232.325

PI = 82+21.000
EL = 232.400

PI = 82+40.000
EL = 232.900

PI = 82+90.000
EL = 237.700

END DITCH GRADE RT
STA 83+00 EL = 237.500

BEG DITCH GRADE RT
STA 83+60 EL = 233.000

PI = 84+00.000
EL = 237.500

PI = 84+50.000
EL = 232.300

PI = 84+90.000
EL = 232.000

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 63

DRAINAGE AREA	=	5	HA
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	1.31	CMS
DESIGN HW ELEVATION	=	231.07	M
100 YEAR DISCHARGE	=	1.53	CMS
100 YEAR HW ELEVATION	=	231.23	M
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	N/A	CMS
OVERTOPPING ELEVATION	=	232.67	M

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 73

DRAINAGE AREA	=	5.0	HA
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	0.89	CMS
DESIGN HW ELEVATION	=	231.4	M
100 YEAR DISCHARGE	=	1.03	CMS
100 YEAR HW ELEVATION	=	231.57	M
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	1.29	CMS
OVERTOPPING ELEVATION	=	233.06	M

09-FEB-2006 15:54
r:\proj\r0609ia\pfl.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	21
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

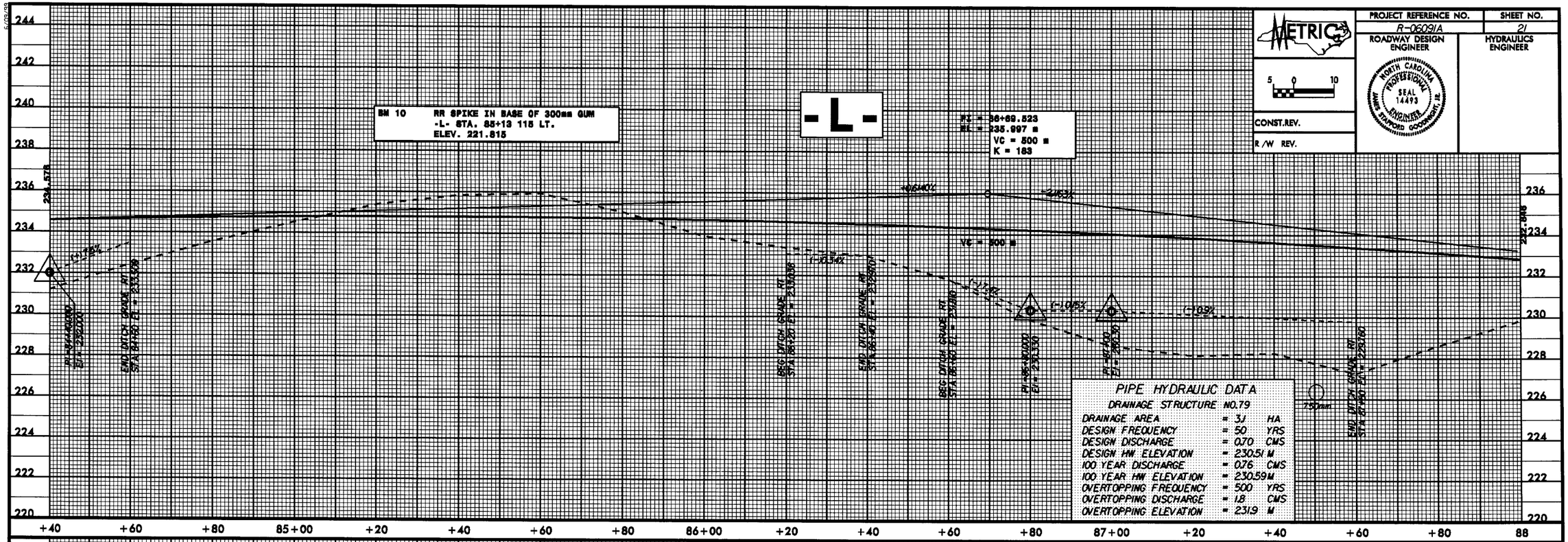
METRIC

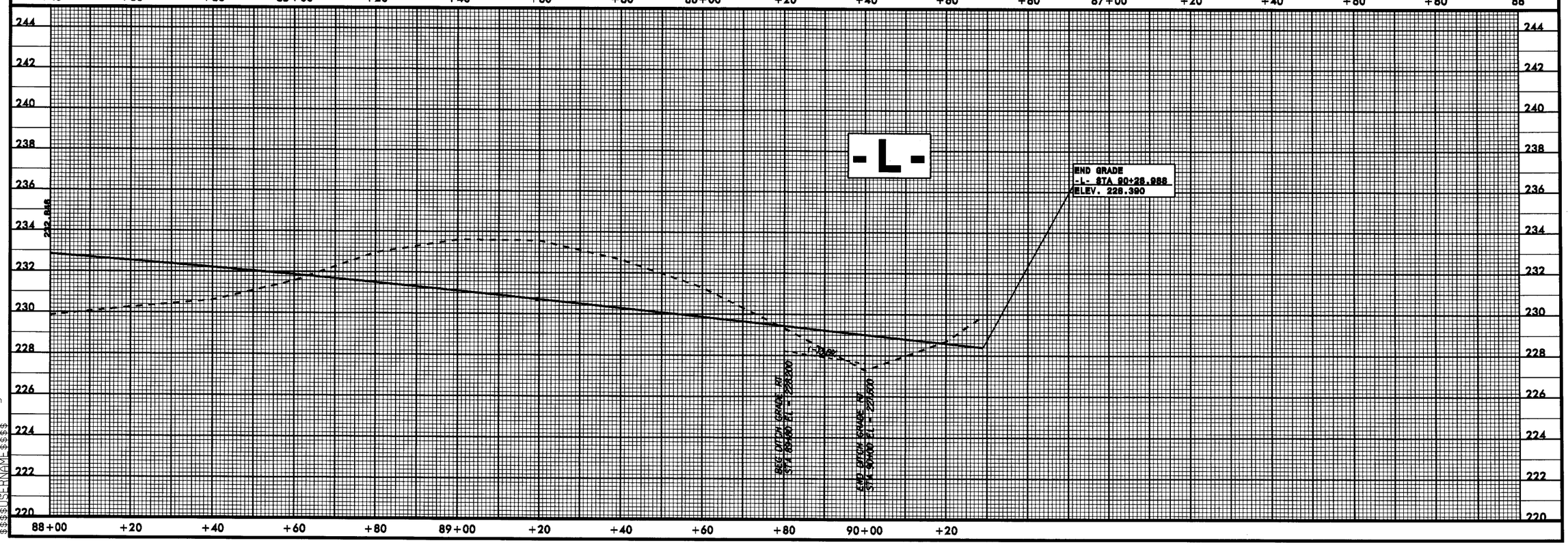
5 0 10

CONST.REV.

R/W REV.

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JOHN STAFFORD GOODNIGHT, JR.





09-FEB-2006 15:54
r:\proj\0609ib_pfl.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	22
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

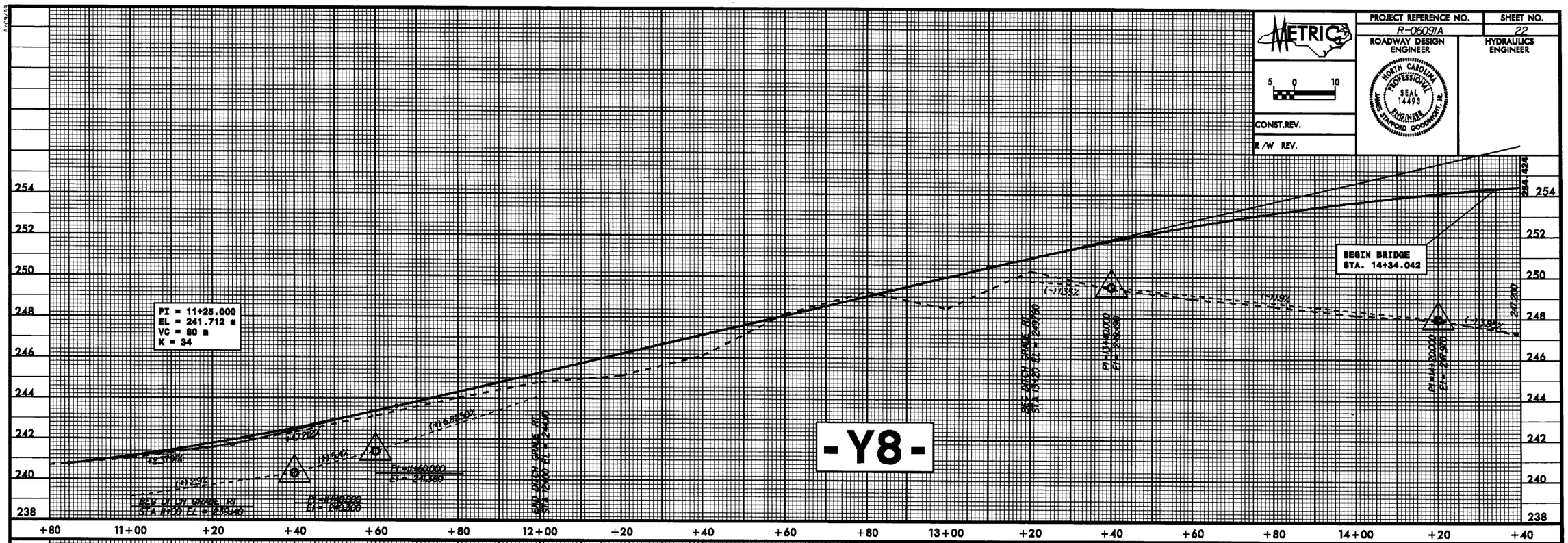
METRIC

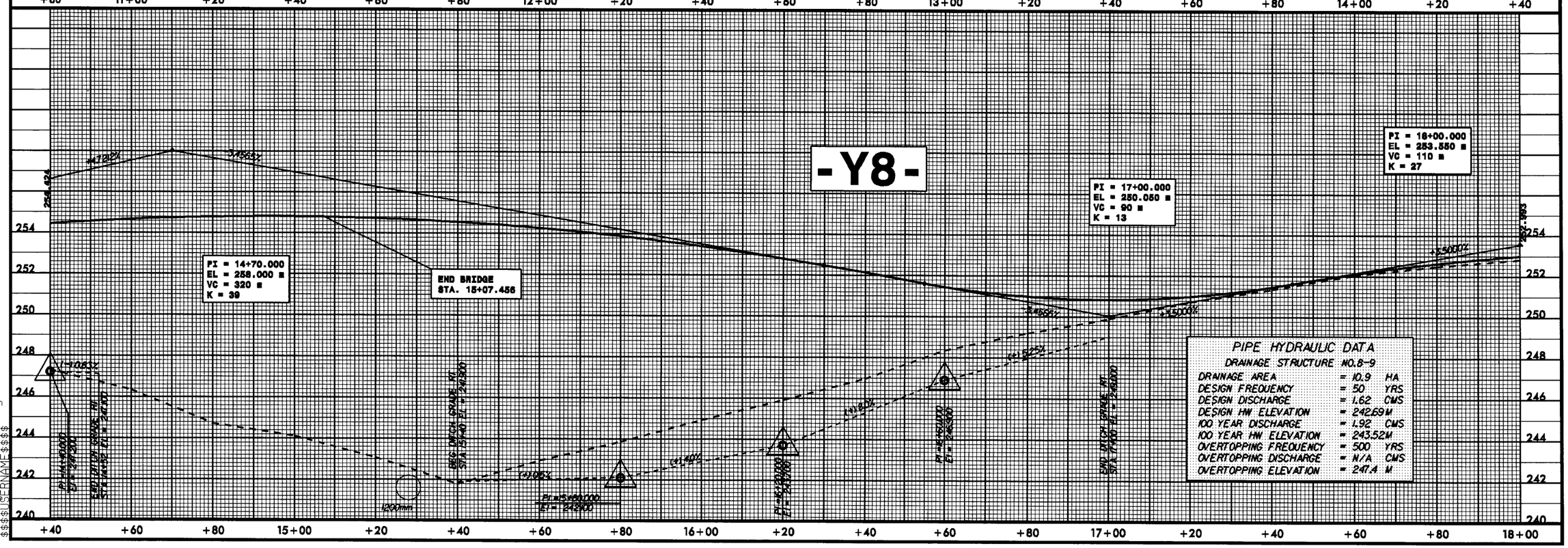
5 0 10

CONST.REV.

R/W REV.

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JERRY STAFFORD GOODNIGHT, JR.





PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.8-9

DRAINAGE AREA	= 10.9	HA
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 1.62	CMS
DESIGN HW ELEVATION	= 242.69	M
100 YEAR DISCHARGE	= 1.92	CMS
100 YEAR HW ELEVATION	= 243.52	M
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= N/A	CMS
OVERTOPPING ELEVATION	= 247.4	M

09-FEB-2006 15:54
r:\proj\0609ib_pfl.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	23
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

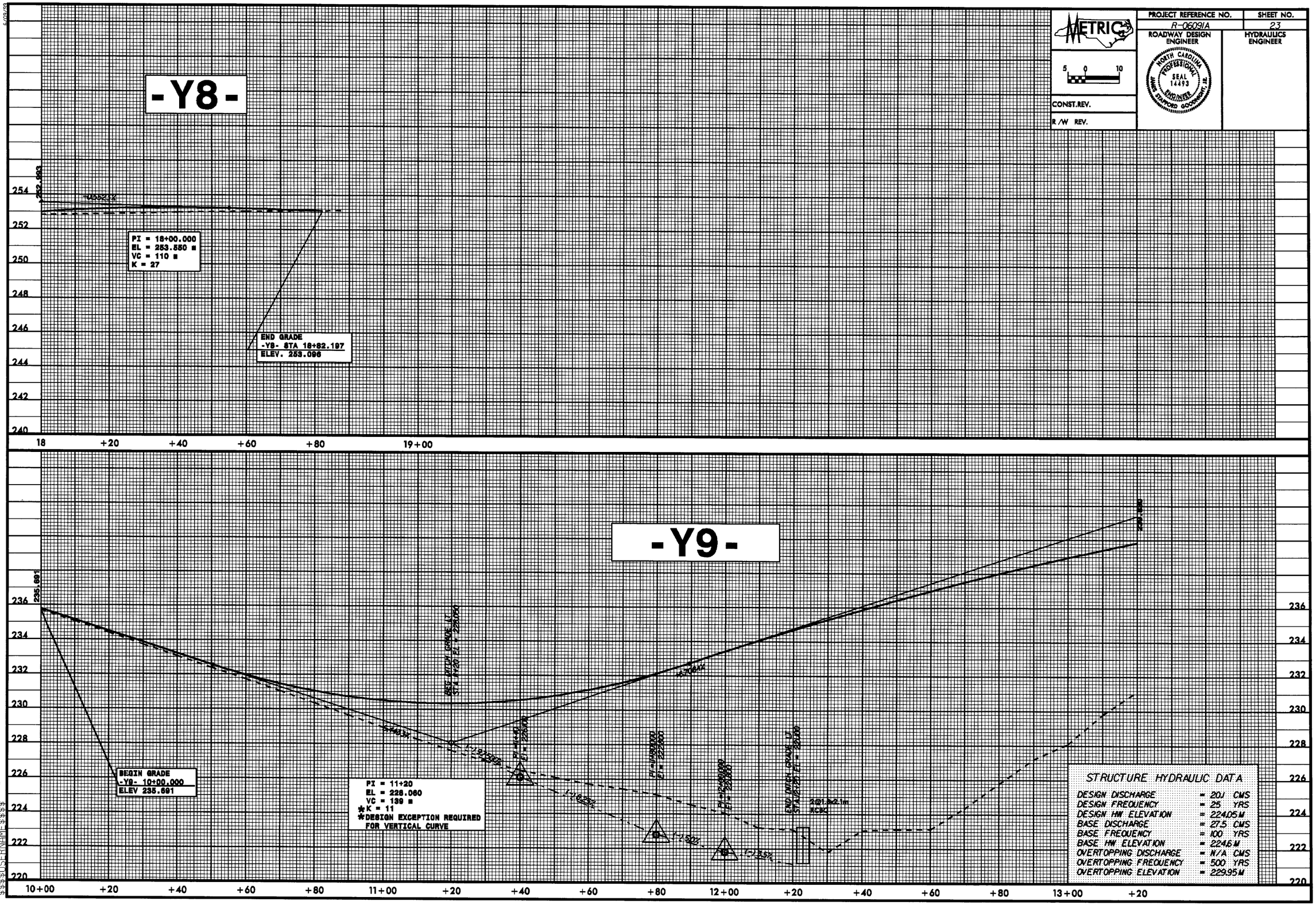
METRIC

5 0 10

CONST.REV.

R/W REV.

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODWIN, JR.



09-FEB-2006 15:54
r:\proj\r0609ia_pfl.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	24
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

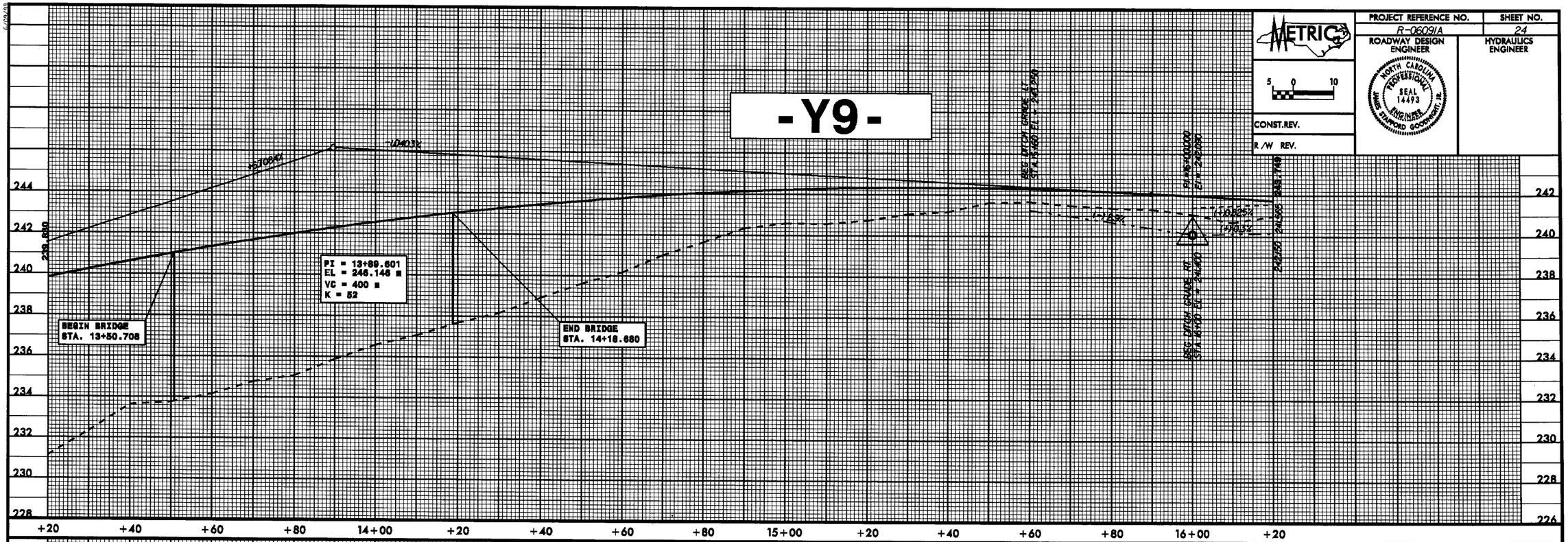
METRIC

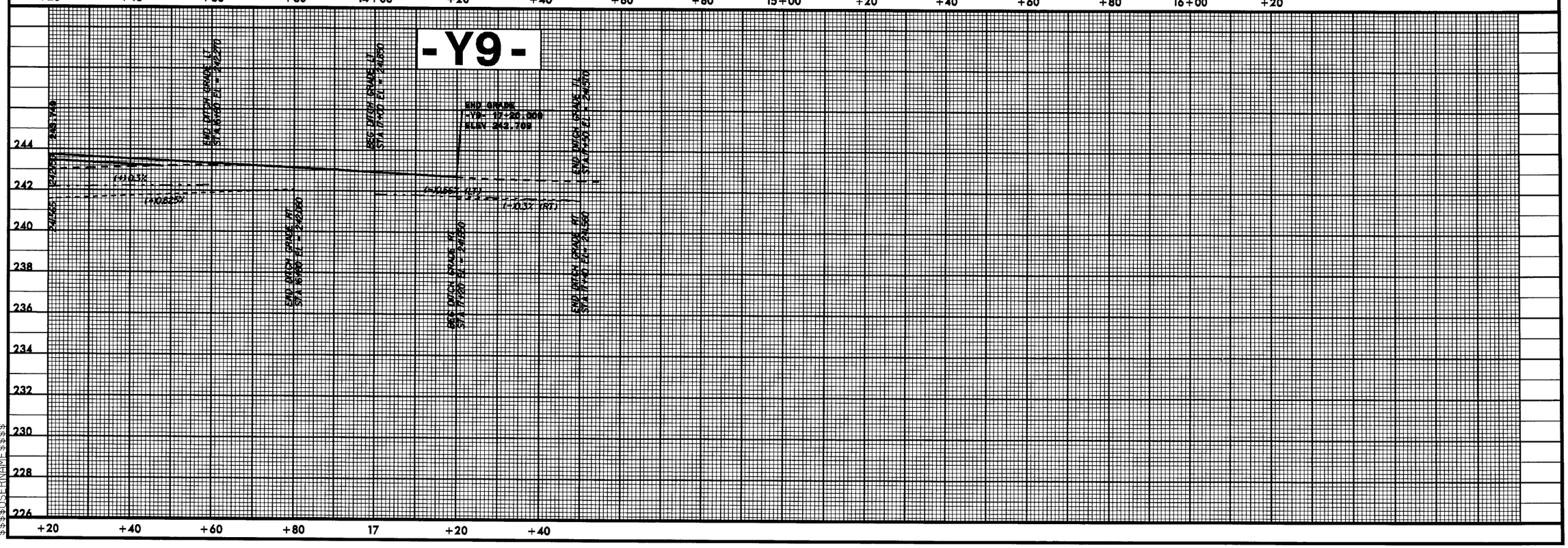
5 0 10

CONST.REV.

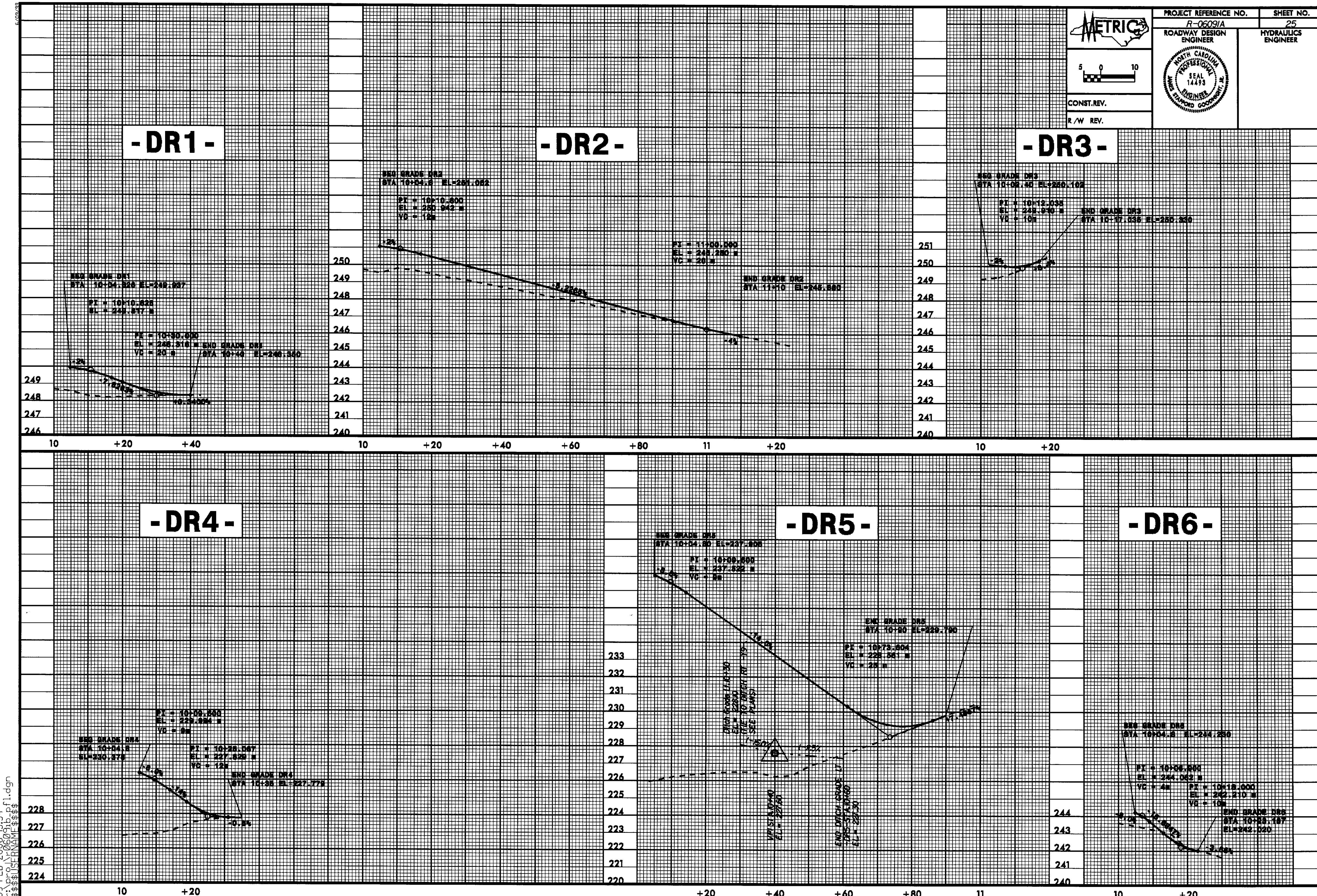
R /W REV.

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER STAFFORD GOODNIGHT III





09-FEB-2006 15:54
r:\proj\r0609ia_pfl.dgn
$$$$USERNAME$$$$


PROJECT REFERENCE NO. R-0609IA
SHEET NO. 25
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODNIGHT, JR.
METRIC
CONST.REV.
R/W REV.
-DR1-
BEG GRADE DR1
STA 10+04.826 EL=249.937
PI = 10+10.628
EL = 248.817 m
PI = 10+30.000
EL = 248.316 m
VC = 20 m
END GRADE DR1
STA 10+40 EL=248.350
-2%
-7.6283%
+0.3400%
-DR2-
BEG GRADE DR2
STA 10+04.6 EL=251.062
PI = 10+10.600
EL = 250.942 m
VC = 12m
PI = 11+00.000
EL = 246.280 m
VC = 20 m
END GRADE DR2
STA 11+10 EL=245.880
-2%
-5.2282%
-4%
-DR3-
BEG GRADE DR3
STA 10+08.40 EL=250.102
PI = 10+12.035
EL = 249.910 m
VC = 10m
END GRADE DR3
STA 10+17.035 EL=250.330
-2%
+8.0%
-DR4-
BEG GRADE DR4
STA 10+04.8
EL=230.378
PI = 10+09.600
EL = 229.994 m
VC = 8m
PI = 10+28.067
EL = 227.829 m
VC = 12m
END GRADE DR4
STA 10+38 EL=227.779
-8.0%
-11.7%
-0.5%
-DR5-
BEG GRADE DR5
STA 10+04.80 EL=237.806
PI = 10+09.600
EL = 237.822 m
VC = 8m
END GRADE DR5
STA 10+90 EL=229.790
PI = 10+73.604
EL = 228.561 m
VC = 25 m
-8.0%
-14.0%
+7.1867%
Ditch Grade Lt.10+30
EL = 228.0
(TIE TO DITCH RT -Y9-
SEE PLANS)
VP STA.10+40
EL = 227.60
END DITCH GRADE LT
-DR5- STA.10+60
EL = 227.30
-DR6-
BEG GRADE DR6
STA 10+04.8 EL=244.250
PI = 10+06.900
EL = 244.062 m
VC = 4m
PI = 10+18.000
EL = 242.210 m
VC = 10m
END GRADE DR6
STA 10+23.187
EL=242.020
-8.0%
-16.6842%
-3.66%
09-FEB-2006 15:54
r:\proj\r0609ib_pfl.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	26
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

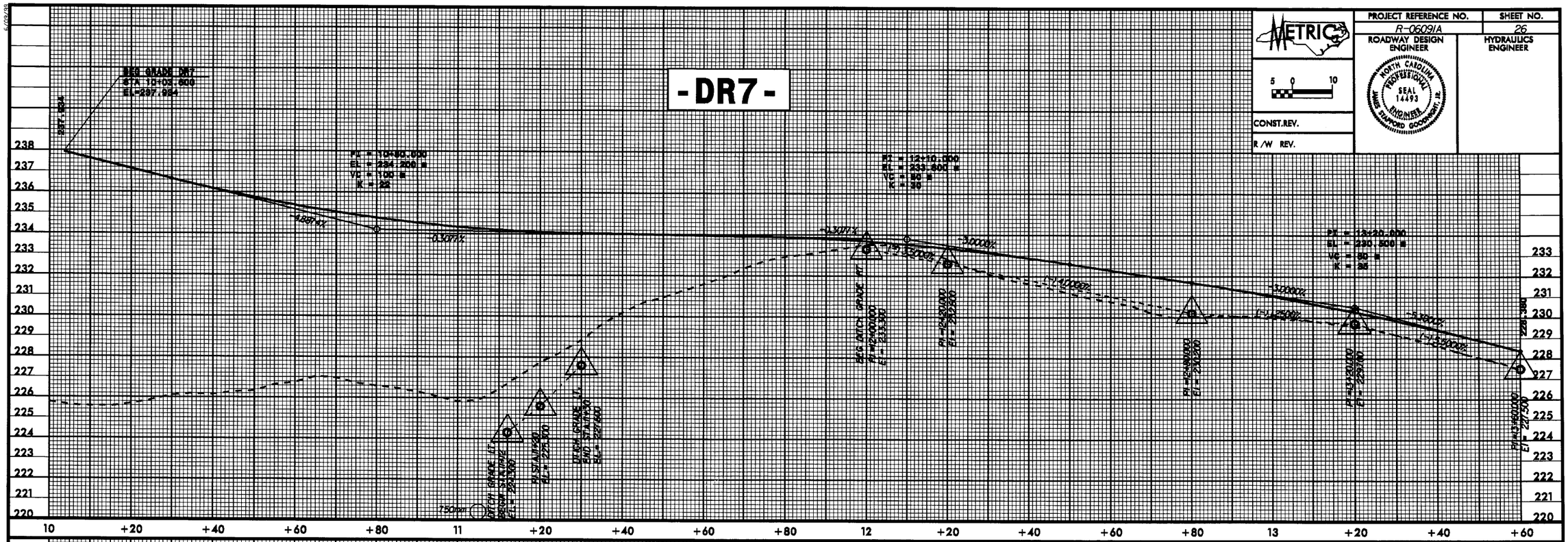
METRIC

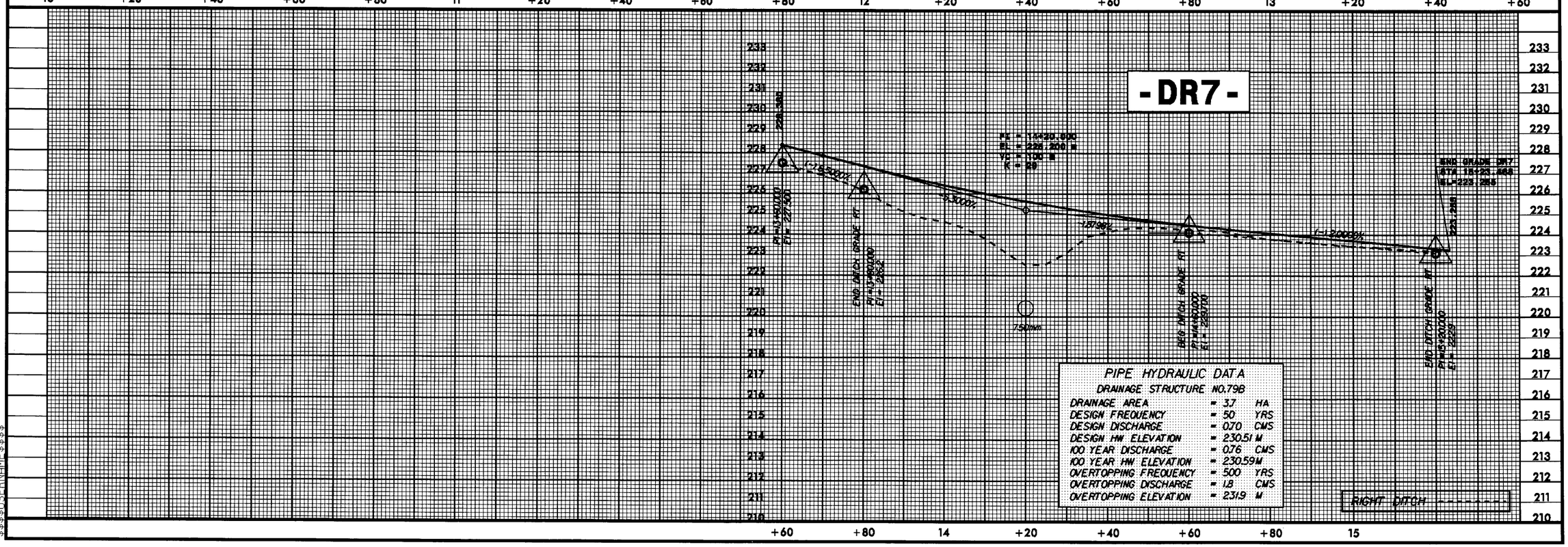
5 0 10

CONST.REV.

R /W REV.

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER MARK STANFORD GOODNIGHT, JR.





09-FEB-2006 15:54
R:\DESIGN\R-0609IA_fil.dgn
$$$$USERNAME$$$$

7/01/99

CONTRACT: C201296 TIP PROJECT: R-2606A

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2606A	1	

W.B.S. NO.	F.A. PROJ. NO.	DESCRIPTION
34480.1.1	STP-NHF-311(3)	PE
34480.2.2	NHF-311(17)	R /W, UTIL.
34480.3.2	NHF-311(18)	CONSTRUCTION

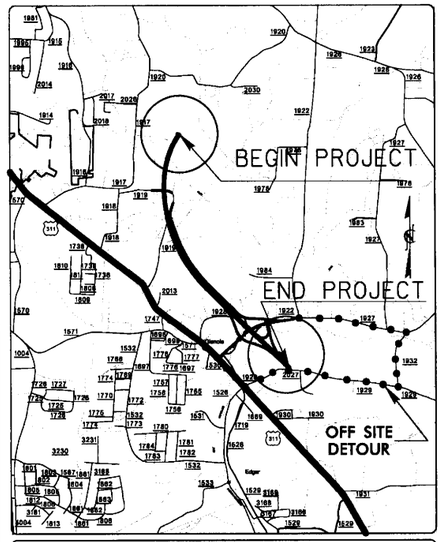
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN AND PROFILE OF PROPOSED STATE HIGHWAY

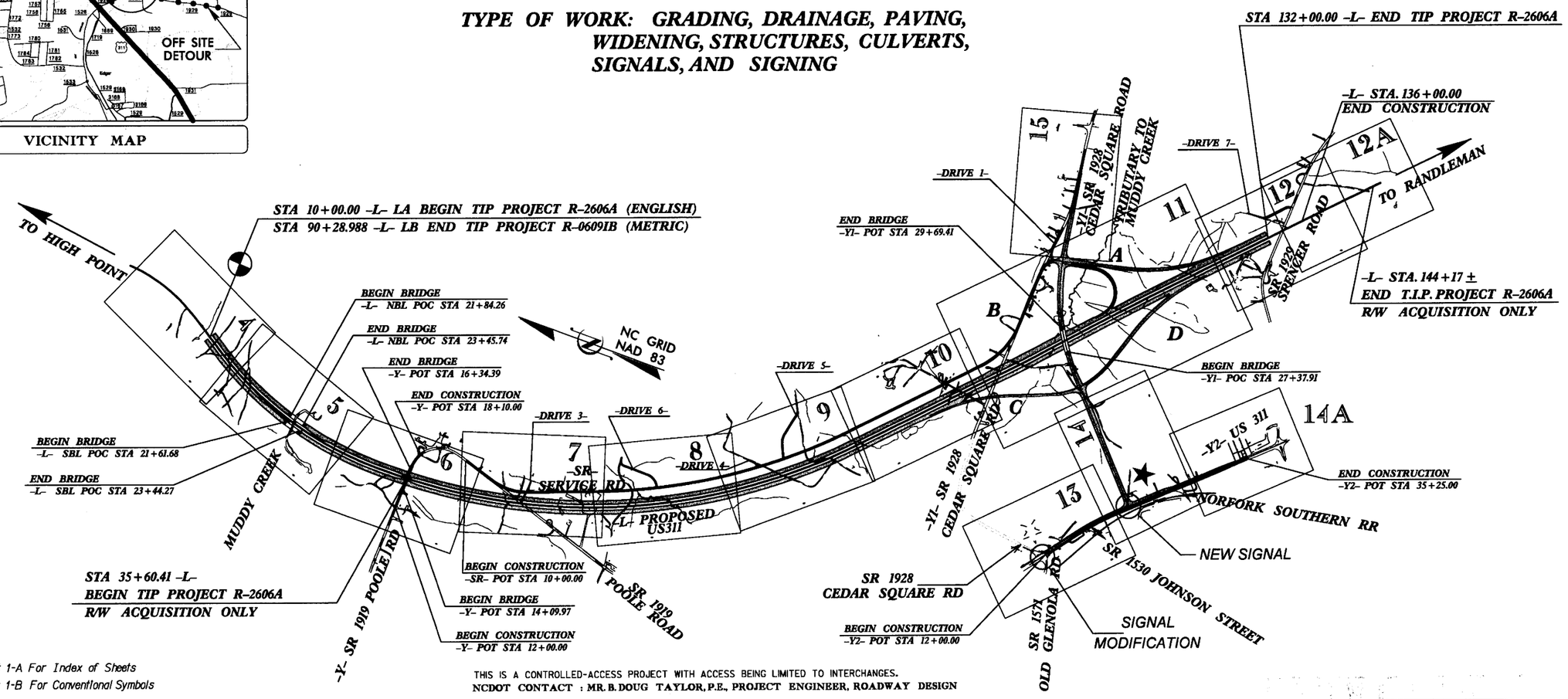
RANDOLPH COUNTY

LOCATION: US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1929

TYPE OF WORK: GRADING, DRAINAGE, PAVING, WIDENING, STRUCTURES, CULVERTS, SIGNALS, AND SIGNING



VICINITY MAP



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

THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
NCDOT CONTACT : MR. B. DOUG TAYLOR, P.E., PROJECT ENGINEER, ROADWAY DESIGN

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2006 = xxxxxx
ADT 2026 = xxxxxx
DHV = 10%
D = 60%
T = 20%
(TTST 6% & DUAL 14%)
V = 70 mph

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2606A = 2.281 MILES
LENGTH STRUCTURES TIP PROJECT R-2606A = 0.030 MILES*
TOTAL LENGTH TIP PROJECT R-2606A = 2.311 MILES
*LENGTH BASED ON NBL BRIDGE

2006 STANDARD SPECIFICATIONS

R/W DATE : August 4, 2003
LETTING DATE : September 16, 2006

TOM SHEARIN, P.E.
EARTH TECH PROJECT MANAGER

Prepared In the Office of:

EarthTech
A Tyco International Ltd. Company

FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
701 Corporate Center Drive
Suite 475
Raleigh, N.C. 27607
(919)-854-6200
FAX (919)-854-6259

HYDRAULICS ENGINEER

JOHN NICHOLS, P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

G. T. SHEARIN, P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

ART McMILLIAN, P.E.
STATE HIGHWAY DESIGN ENGINEER

USER: rmmmw
DATE: 07/12/06 3:56:59 PM
Dgn: k:\c201296\roadway\rmp\r2606a_rdy_bridge.dgn

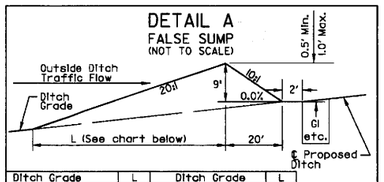
DRAINAGE DETAILS

PROJECT REFERENCE NO.	SHEET NO.
R-2606A	2-E
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech
A Tyco International Company
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

NOT TO SCALE

DETAIL A
FALSE SUMP
(NOT TO SCALE)

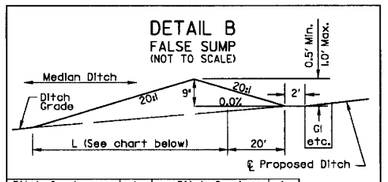


Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

-L- 16+14 L
-L- 21+19 L
-L- 25+16 R
-L- 29+86 R
-L- 29+86 R (BERM)
-Y- 14+00 L

-Y- 14+00 R
-Y- 16+56 R
-L- 54+36 R
-L- 79+14 L
-SR- 55+43.61 R
-L- 105+14 L

DETAIL B
FALSE SUMP
(NOT TO SCALE)



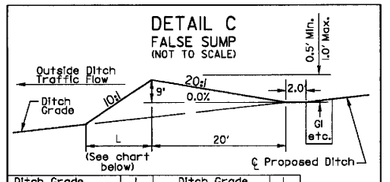
Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

-L- 16+24 M
-L- 21+64 M
-L- 23+57 M
-L- 29+76 M
-L- 43+26 M
-L- 47+76 M
-L- 54+26 M

-SR- 34+29.93 R
-L- 56+76 M
-L- 62+76 L
-L- 62+76 M
-L- 68+76 M
-L- 81+74 M
-DRIVE5- 10+45 R

-DRIVE5- 10+45 L
-L- 87+26 M
-L- 92+76 M
-L- 118+06 M
-L- 123+76 M

DETAIL C
FALSE SUMP
(NOT TO SCALE)

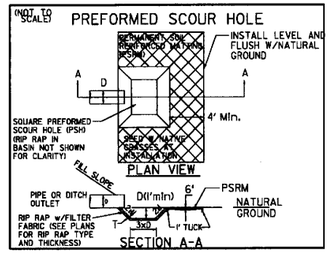


Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

-L- 16+24 R
-L- 21+64 R
-L- 25+76 L
-L- 29+76 L
-L- 31+26 L
-L- 37+36 L
-L- 40+56 L
-L- 43+26 L

-L- 47+76 L
-SR-31+37.78 L
-L- 65+76 L
-L- 68+76 L
-L- 85+27 L
-L- 87+26 L
-L- 92+76 L

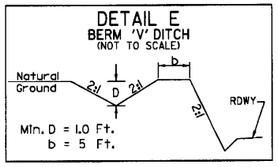
PREFORMED SCOUR HOLE
(NOT TO SCALE)



-L- 31+05 L
-L- 46+80 R
-L- 59+48 L
-L- 112+05 L
-SR- 48+00 L

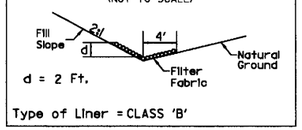
-SR- 24+90 L
-DRIVE5- 15+60 R
-DRIVE6- 13+63 L
-RAMPC- 9+67 R
-RAMPD- 14+00 R

DETAIL E
BERM 'V' DITCH
(NOT TO SCALE)



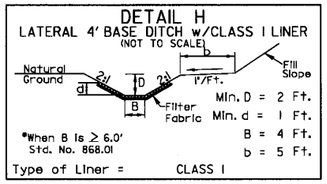
-L- 30+00 - 35+12 R
(DDE = 847 CY)

DETAIL F
TOE PROTECTION
(NOT TO SCALE)



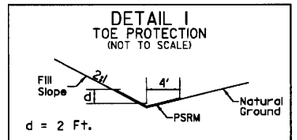
-L- 46+40 - 46+80 R
-L- 47+16 - 47+50 R
-L- 70+50 - 72+00 R
-SR- 49+90 - 51+00 L
-RAMPC- 10+25 - 15+00 R
-RAMPD- 14+28 - 14+80 L

DETAIL H
LATERAL 4' BASE DITCH w/CLASS I LINER
(NOT TO SCALE)



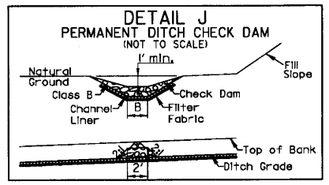
-L- 47+89 - 52+50 R
DDE = 458 CY

DETAIL I
TOE PROTECTION
(NOT TO SCALE)



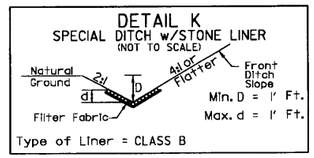
-SR- 14+45 - 15+75 L
-L- 58+10 - 59+48 R
-L- 60+00 - 61+50 L

DETAIL J
PERMANENT DITCH CHECK DAM
(NOT TO SCALE)



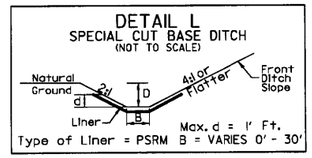
-L- 47+95 R
-L- 48+09 R
-L- 48+23 R
-L- 48+37 R

DETAIL K
SPECIAL DITCH w/STONE LINER
(NOT TO SCALE)



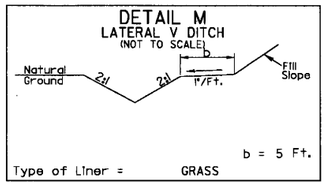
-SR- 10+00 - 11+85.62 R

DETAIL L
SPECIAL CUT BASE DITCH
(NOT TO SCALE)



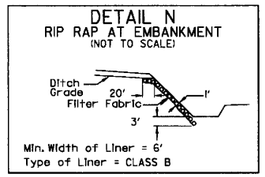
-SR- 11+85.62 - 13+30 R

DETAIL M
LATERAL V DITCH
(NOT TO SCALE)



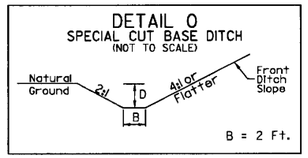
-L- 72+00 - 73+50 R (DDE = 31 CY)
-RAMPA- 3+30 - 7+90 R (DDE = 236 CY)
-DRIVE 6- 12+50 - 13+20 R (DDE = 22 CY)
-DRIVE 6- 12+50 - 13+60 L (DDE = 62 CY)

DETAIL N
RIP RAP AT EMBANKMENT
(NOT TO SCALE)



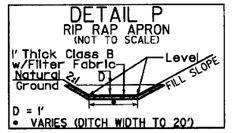
-SR- 45+60 - 46+30 L

DETAIL O
SPECIAL CUT BASE DITCH
(NOT TO SCALE)



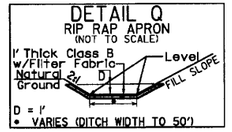
-L- 78+50 - 82+00 R

DETAIL P
RIP RAP APRON
(NOT TO SCALE)



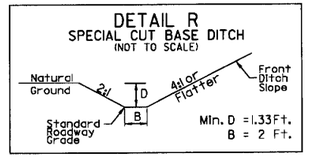
-L- 82+00 - 82+65 R

DETAIL Q
RIP RAP APRON
(NOT TO SCALE)



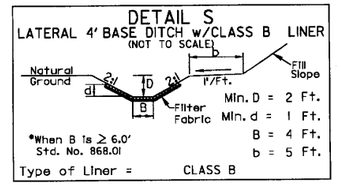
-SR- 50+95 - 52+00 L

DETAIL R
SPECIAL CUT BASE DITCH
(NOT TO SCALE)



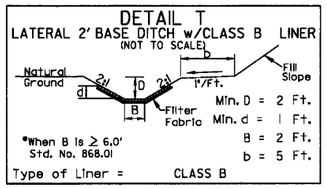
-SR- 76+50 - 77+80 L
-SR- 56+57.61 - 63+50 L
-SR- 69+50 - 76+50 L

DETAIL S
LATERAL 4' BASE DITCH w/CLASS B LINER
(NOT TO SCALE)



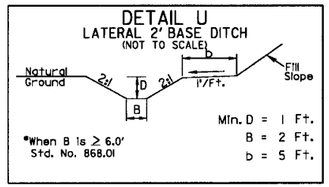
-L- 90+80 - 92+50 R (DDE = 408 CY)
-SR- 52+00 - 56+57.61 L (DDE = 1578 CY)

DETAIL T
LATERAL 2' BASE DITCH w/CLASS B LINER
(NOT TO SCALE)



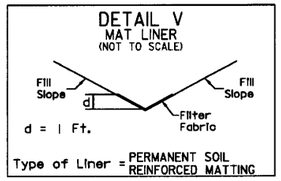
-RAMPD- 14+80 - 16+75 L (DDE = 56 CY)
-Y1- 19+50 - 22+93 R (DDE = 232 CY)

DETAIL U
LATERAL 2' BASE DITCH
(NOT TO SCALE)



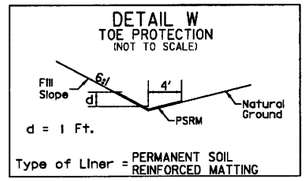
-Y1- 29+55 - 35+50 L (DDE = 1220 CY)
-DRIVE 6- 13+25 - 15+35 R (DDE = 110 CY)

DETAIL V
MAT LINER
(NOT TO SCALE)



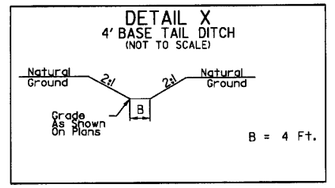
-L- 118+08 - 120+50 L
-L- 59+48 L

DETAIL W
TOE PROTECTION
(NOT TO SCALE)



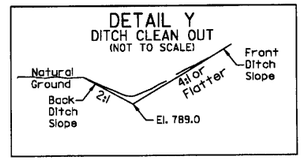
-L- 77+75 - 78+50 R
-RAMPC- 9+65 - 10+15 R
-RAMPD- 11+80 - 14+28 L
-SR- 77+80 - 80+20 L
-Y1- 18+75 - 22+80 L
-Y1- 38+00 - 39+10 L

DETAIL X
4' BASE TAIL DITCH
(NOT TO SCALE)



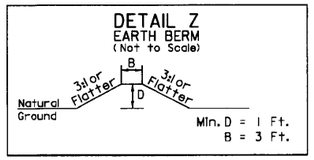
-Y1- 37+98 R
(DDE = 165 CY)

DETAIL Y
DITCH CLEAN OUT
(NOT TO SCALE)



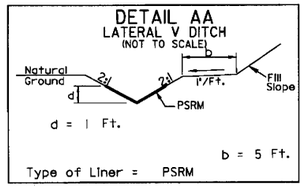
-Y2- 16+74 R
(2-24" RCP OUTLET INVERT TO RAILROAD R/W)

DETAIL Z
EARTH BERM
(Not to Scale)



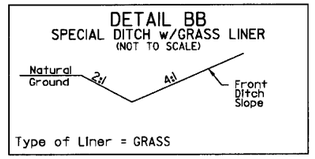
-L- 115+15 R
-Y1- 25+90 R
-Y1- 27+31 R

DETAIL AA
LATERAL V DITCH
(NOT TO SCALE)



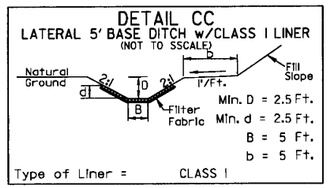
-Y2- 30+83 - 32+25 L
(DDE = 35 CY)

DETAIL BB
SPECIAL DITCH w/GRASS LINER
(NOT TO SCALE)



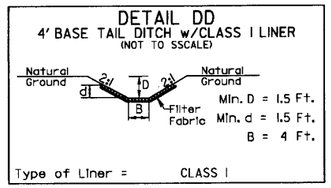
-Y2- 29+15 - 30+83 R
-Y2- 30+83 - 31+50 R
-Y2- 32+50 - 34+00 L

DETAIL CC
LATERAL 5' BASE DITCH w/CLASS I LINER
(NOT TO SSCALE)



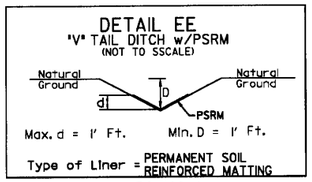
-Y1- 30+75 - 34+15 R
(DDE = 658 CY)

DETAIL DD
4' BASE TAIL DITCH w/CLASS I LINER
(NOT TO SSCALE)



-RAMP C- 10+67 L
(DDE = 434 CY)

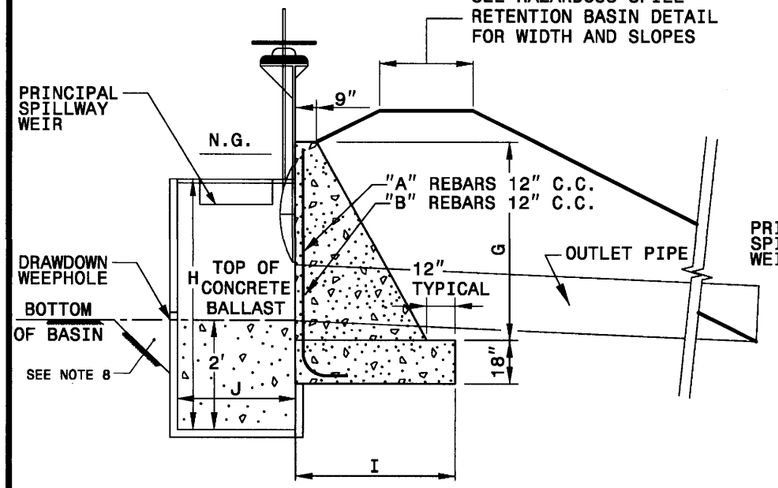
DETAIL EE
'V' TAIL DITCH w/PSRM
(NOT TO SSCALE)



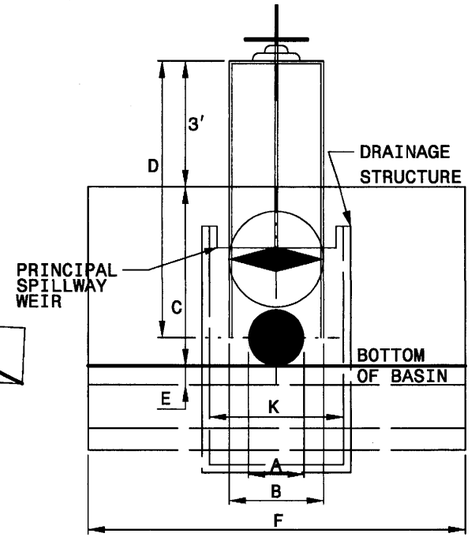
-L- 59+48 L
(DDE = 5 CY)

USER: sj
DGN: 2606a_DETAILS.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2606A	2-H
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



SECTION VIEW



ELEVATION VIEW

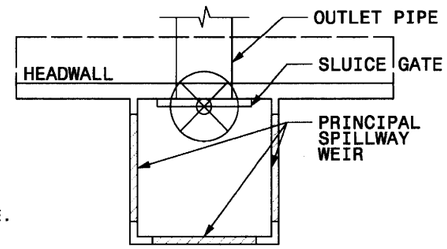
BASIN #		1	2
SLUICE GATE DIMENSIONS			
PIPE DIAMETER	A	30"	30"
GATE DIAMETER	B	36"	36"
HEADWALL HT.	C	8'-0"	7'-0"
FRAME HEIGHT	D	9'-9"	8'-9"
INVERT HEIGHT	E	7"	7"
HEADWALL WIDTH	F	9'-4"	9'-4"
HEADWALL DIMENSIONS			
PIPE DIAMETER	A	30"	30"
HEADWALL HT.	G	8'-7"	7'-7"
HEADWALL DEP.	I	5'-0"	4'-0"

DRAINAGE STRUC. DIMENSIONS			
DRAWDOWN DIA.		1 1/8"	1 3/4"
DRAWDOWN INV.		724.00	716.00
STRUCTURE INV.		722.00	714.00
STRUCTURE DEP.	H	9'-0"	7'-0"
STRUCTURE DIM.	J	5'-0"	5'-0"
STRUCTURE DIM.	K	5'-0"	5'-0"
PRINCIPAL SPILLWAY ELEV.		729.00	720.00
PRINCIPAL WEIR SPILLWAY WIDTH		9'	9'

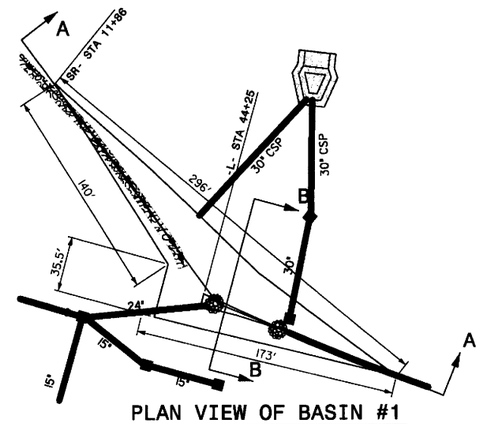
Prepared in the Office of: EarthTech
A Tyco International Company
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

GRAPHIC SCALE
50 25 0 50 100
PLANS

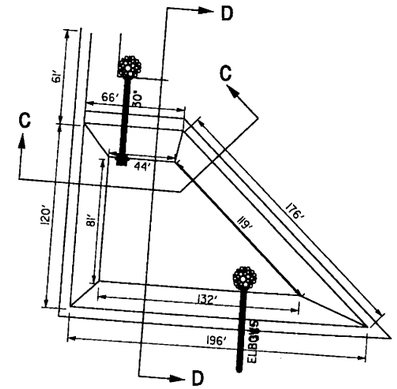
GENERAL NOTES:
1- REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO THE HEADWALL AND HEADWALL SHALL BE PAID FOR ON YD^3 BASIS.
2- CONCRETE SHALL BE CLASS "B" THROUGHOUT STRUCTURE.
3- DELETE REINFORCING STEEL WHEN BRICK ALTERNATE IS USED.
4- SEE PLAN SHEET FOR LOCATION OF OUTLET PIPE WITH SLUICE GATE.
5- INCORPORATE DRAINAGE STRUCTURE WALL INTO HEADWALL.
6- PAYMENT FOR DRAINAGE STRUCTURE IS TO BE PAID FOR AS "MASONRY DRAINAGE STRUCTURE FOR SLUICE GATE".
7- FOR BALLAST, FILL STRUCTURE WITH CONCRETE TO PIPE INVERT. HOWEVER, DO NOT OBSTRUCT SLUICE GATE FROM FULLY CLOSING OVER PIPE. CONRETE BALLAST SHALL BE INCIDENTAL TO MASONRY DRAINAGE STRUCTURE FOR SLUICE GATE.
8- TO AVOID CLOGGING OF THE DRAWDOWN WEEPHOLE, EXCAVATE 1' BELOW BASIN BOTTOM ELEVATION IN THE IMMEDIATE VICINITY OF THE SPILLWAY.
9- SEE STANDARD 838.02 FOR ADDITIONAL INFORMATION, INCLUDING REBAR SPECIFICATIONS.



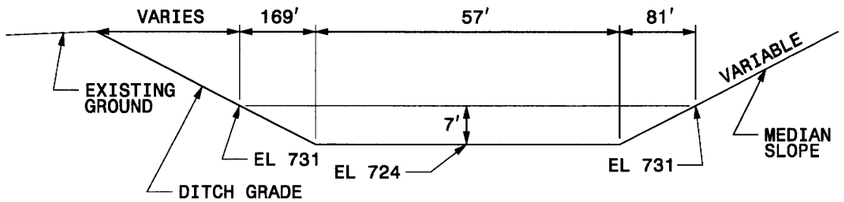
PLAN VIEW



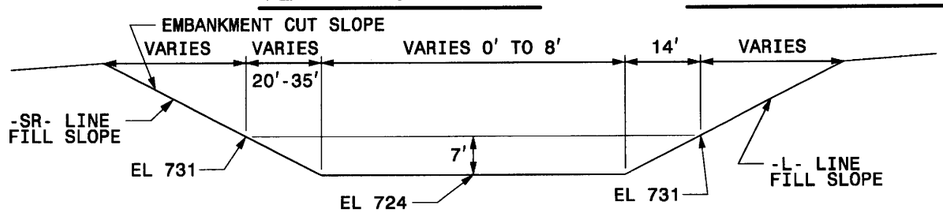
PLAN VIEW OF BASIN #1



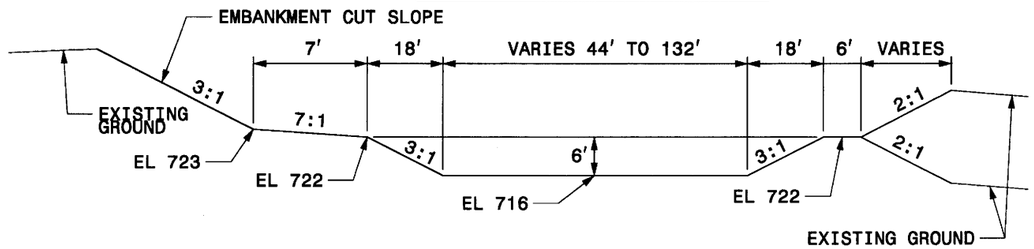
PLAN VIEW OF BASIN #2



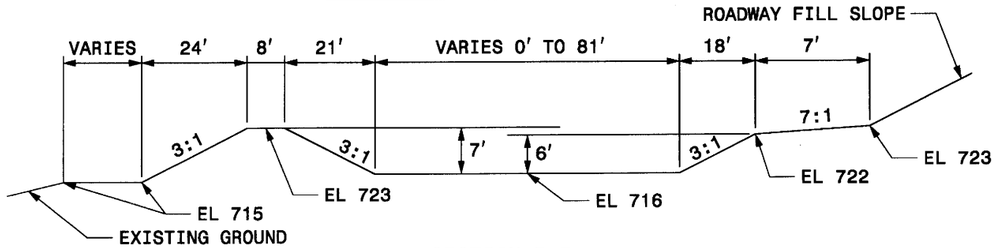
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

HAZARDOUS SPILL/DRY DETENTION BASIN							
BASIN #	PIPE SIZE	TOP ELEV.	BOTTOM ELEV.	D		CAPACITY	STATION
1	30"	731.00	724.00	7'		50264+ CF	-L- 44+50 LT
2	30"	722.00	716.00	6'		57934+ CF	-L- 57+00 LT

Hazardous Spill Retention Basins are provided at new and/or improved roadway sections to aid in containment and clean up of accidental spills by truck traffic. Basins are provided in particular locations including areas in proximity to sensitive waters and water supplies.

DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

HAZARDOUS SPILL/ DRY DETENTION BASIN

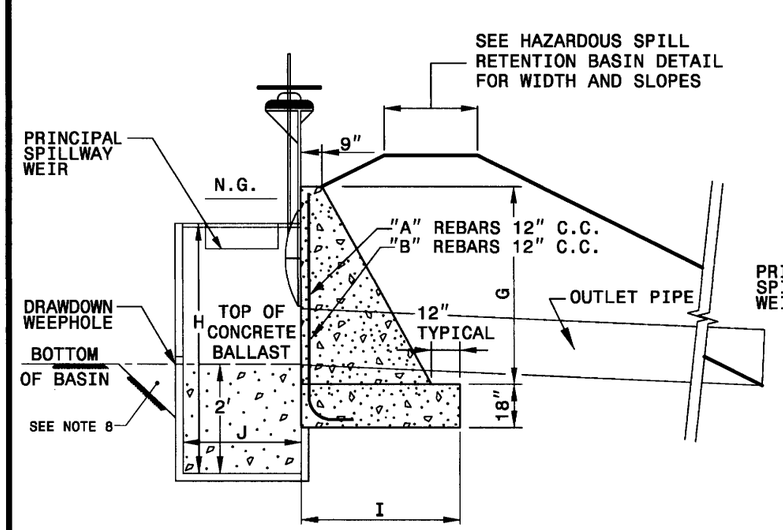
ORIGINAL BY: JDRN DATE: 2/21/01
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

USER: sl
DGN: R-2606a_rdy_sph_02b.dgn
DATE: 5/13/2002

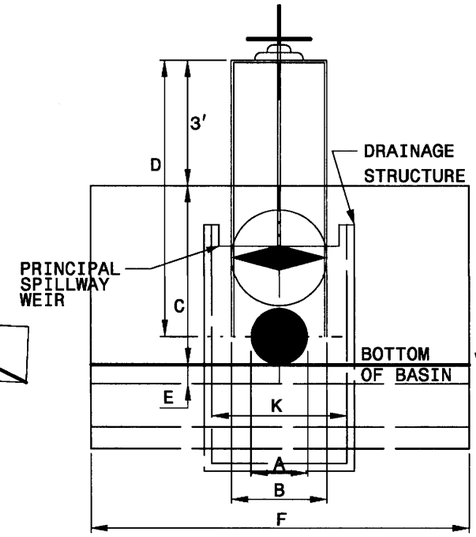
PROJECT REFERENCE NO.	SHEET NO.
R-2606A	2-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech
A Tyco International Company
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

GRAPHIC SCALE
50 25 0 50 100
PLANS



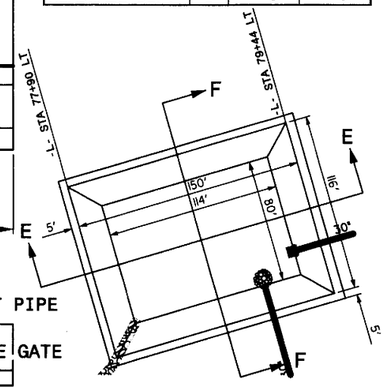
SECTION VIEW



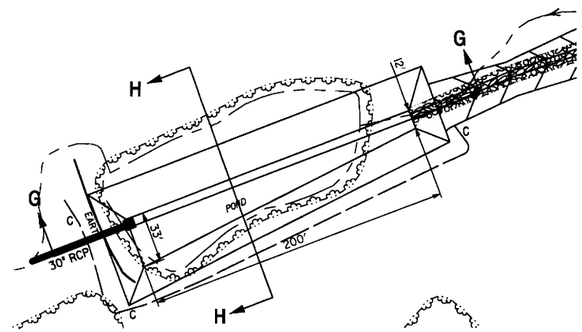
ELEVATION VIEW

BASIN #		3	4
SLUICE GATE DIMENSIONS			
PIPE DIAMETER	A	30"	30"
GATE DIAMETER	B	36"	36"
HEADWALL HT.	C	7'-0"	7'-0"
FRAME HEIGHT	D	8'-9"	8'-9"
INVERT HEIGHT	E	7"	7"
HEADWALL WIDTH	F	9'-4"	9'-4"
HEADWALL DIMENSIONS			
PIPE DIAMETER	A	30"	30"
HEADWALL HT.	G	7'-7"	7'-7"
HEADWALL DEP.	I	4'-0"	4'-0"

DRAINAGE STRUC. DIMENSIONS			
DRAWDOWN DIA.		2"	1 7/16"
DRAWDOWN INV.		750.00	756.50
STRUCTURE INV.		748.00	754.50
STRUCTURE DEP.	H	6'-6"	6'-6"
STRUCTURE DIM.	J	3'-0"	3'-0"
STRUCTURE DIM.	K	3'-0"	3'-0"
PRINCIPAL SPILLWAY ELEV.		753.50	760.00
PRINCIPAL WEIR SPILLWAY WIDTH		7'	5'

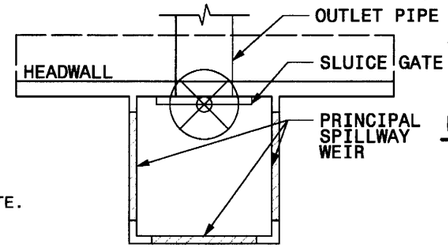


PLAN VIEW OF BASIN #3

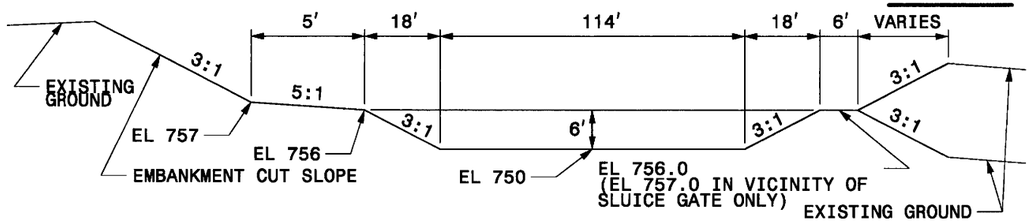


PLAN VIEW OF BASIN #4

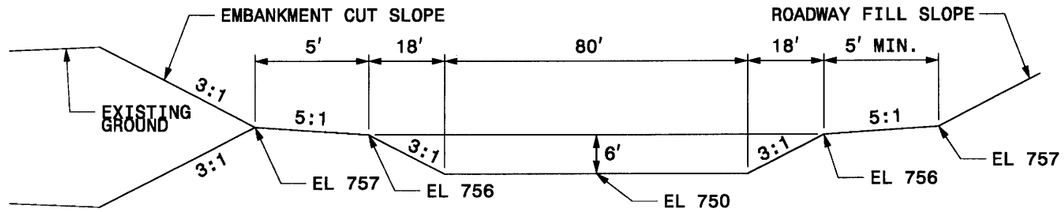
GENERAL NOTES:
1- REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO THE HEADWALL AND HEADWALL SHALL BE PAID FOR ON YD^3 BASIS.
2- CONCRETE SHALL BE CLASS "B" THROUGHOUT STRUCTURE.
3- DELETE REINFORCING STEEL WHEN BRICK ALTERNATE IS USED.
4- SEE PLAN SHEET FOR LOCATION OF OUTLET PIPE WITH SLUICE GATE.
5- INCORPORATE DRAINAGE STRUCTURE WALL INTO HEADWALL.
6- PAYMENT FOR DRAINAGE STRUCTURE IS TO BE PAID FOR AS "MASONRY DRAINAGE STRUCTURE FOR SLUICE GATE".
7- FOR BALLAST, FILL STRUCTURE WITH CONCRETE TO PIPE INVERT. HOWEVER, DO NOT OBSTRUCT SLUICE GATE FROM FULLY CLOSING OVER PIPE. CONRETE BALLAST SHALL BE INCIDENTAL TO MASONRY DRAINAGE STRUCTURE FOR SLUICE GATE.
8- TO AVOID CLOGGING OF THE DRAWDOWN WEEPHOLE, EXCAVATE 1' BELOW BASIN BOTTOM ELEVATION IN THE IMMEDIATE VICINITY OF THE SPILLWAY.
9- SEE STANDARD 838.02 FOR ADDITIONAL INFORMATION, INCLUDING REBAR SPECIFICATIONS.



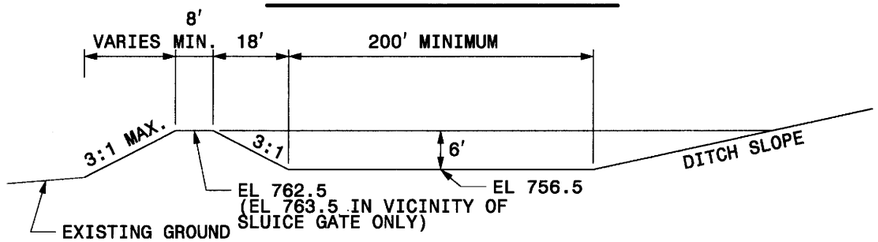
PLAN VIEW



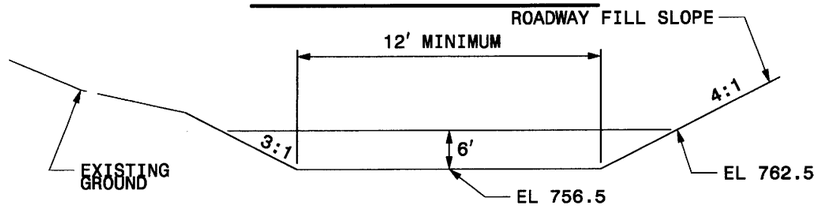
SECTION E-E



SECTION F-F



SECTION G-G



SECTION H-H

HAZARDOUS SPILL/DRY DETENTION BASIN							
BASIN #	PIPE SIZE	TOP ELEV.	BOTTOM ELEV.	D		CAPACITY	STATION
3	30"	756.00	750.00	6'		70968+ CF	-L- 79+00 LT
4	30"	762.5	756.5	6'		33500+ CF	-L- 89+00 RT

Hazardous Spill Retention Basins are provided at new and/or improved roadway sections to aid in containment and clean up of accidental spills by truck traffic. Basins are provided in particular locations including areas in proximity to sensitive waters and water supplies.

DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

HAZARDOUS SPILL/ DRY DETENTION BASIN

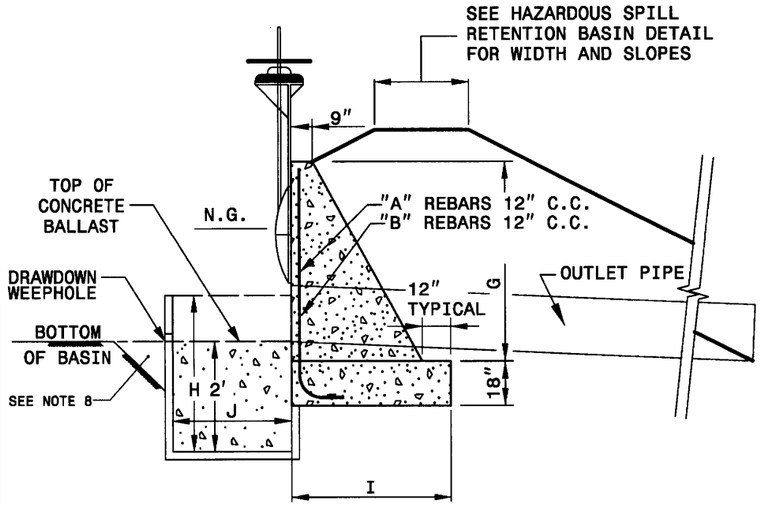
ORIGINAL BY: JDRN DATE: 2/21/01
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

USER: sd
DGN: 2606ss.dgn
DATE: 5/15/2006

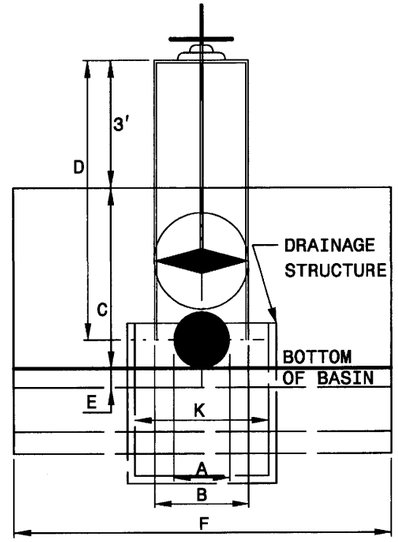
PROJECT REFERENCE NO.	SHEET NO.
R-2606A	2-J
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech
A Tetra Tech Company
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

GRAPHIC SCALE
50 25 0 50 100
PLANS

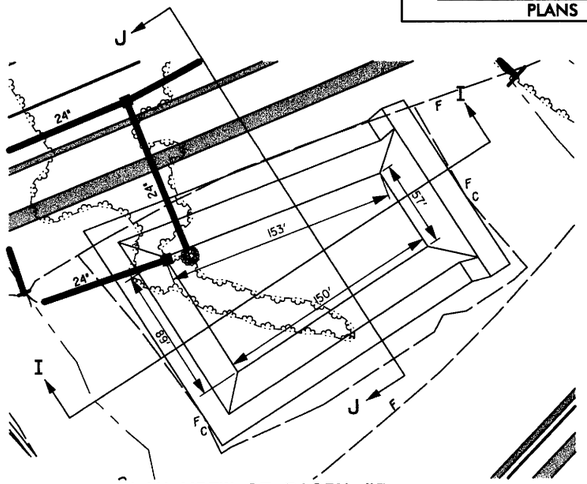


SECTION VIEW



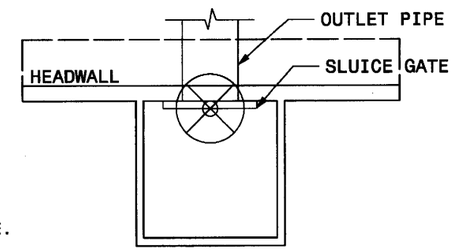
ELEVATION VIEW

BASIN #		5
SLUICE GATE DIMENSIONS		
PIPE DIAMETER	A	24"
GATE DIAMETER	B	30"
HEADWALL HT.	C	6'-0"
FRAME HEIGHT	D	8'-0"
INVERT HEIGHT	E	7"
HEADWALL WIDTH	F	8'-2"
HEADWALL DIMENSIONS		
PIPE DIAMETER	A	24"
HEADWALL HT.	G	6'-7"
HEADWALL DEP.	I	4'-0"
DRAINAGE STRUC. DIMENSIONS		
DRAWDOWN DIA.		1 ½"
DRAWDOWN INV.		758.00
STRUCTURE INV.		756.00
STRUCTURE DEP.	H	2'-6"
STRUCTURE DIM.	J	2'-0"
STRUCTURE DIM.	K	3'-0"

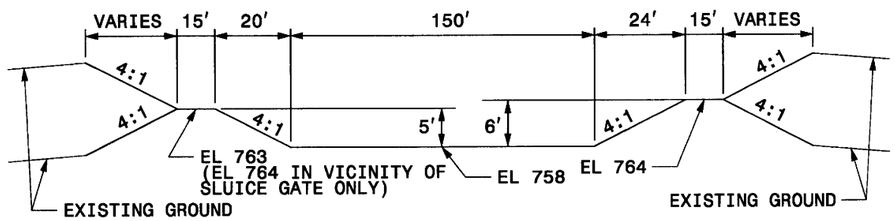


PLAN VIEW OF BASIN #5

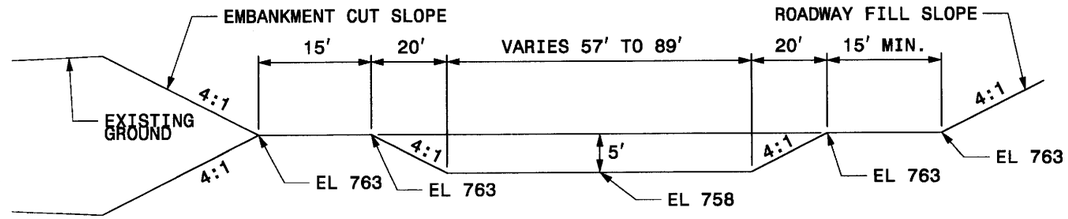
GENERAL NOTES:
1- REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO THE HEADWALL AND HEADWALL SHALL BE PAID FOR ON YD^3 BASIS.
2- CONCRETE SHALL BE CLASS "B" THROUGHOUT STRUCTURE.
3- DELETE REINFORCING STEEL WHEN BRICK ALTERNATE IS USED.
4- SEE PLAN SHEET FOR LOCATION OF OUTLET PIPE WITH SLUICE GATE.
5- INCORPORATE DRAINAGE STRUCTURE WALL INTO HEADWALL.
6- PAYMENT FOR DRAINAGE STRUCTURE IS TO BE PAID FOR AS "MASONRY DRAINAGE STRUCTURE FOR SLUICE GATE".
7- FOR BALLAST, FILL STRUCTURE WITH CONCRETE TO PIPE INVERT. HOWEVER, DO NOT OBSTRUCT SLUICE GATE FROM FULLY CLOSING OVER PIPE. CONRETE BALLAST SHALL BE INCIDENTAL TO MASONRY DRAINAGE STRUCTURE FOR SLUICE GATE.
8- TO AVOID CLOGGING OF THE DRAWDOWN WEEPHOLE, EXCAVATE 1' BELOW BASIN BOTTOM ELEVATION IN THE IMMEDIATE VICINITY OF THE SPILLWAY.
9- SEE STANDARD 838.02 FOR ADDITIONAL INFORMATION, INCLUDING REBAR SPECIFICATIONS.



PLAN VIEW



SECTION I-I



SECTION J-J

HAZARDOUS SPILL/DRY DETENTION BASIN							
BASIN #	PIPE SIZE	TOP ELEV.	BOTTOM ELEV.	D		CAPACITY	STATION
5	24"	763.0	758.0	5.0'		79730 CF	-L- 112+00 RT

Hazardous Spill Retention Basins are provided at new and/or improved roadway sections to aid in containment and clean up of accidental spills by truck traffic. Basins are provided in particular locations including areas in proximity to sensitive waters and water supplies.

DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

HAZARDOUS SPILL/
DRY DETENTION BASIN

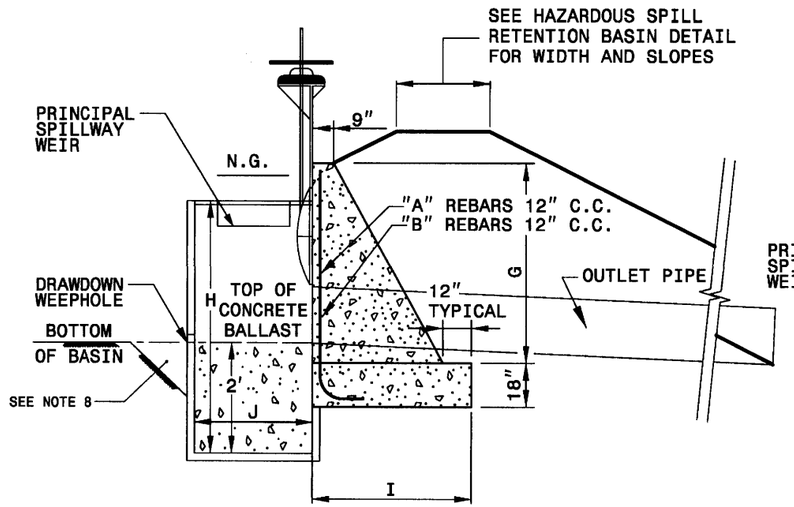
ORIGINAL BY: JDRN DATE: 2/21/01
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

USER: d
DGN: R:\R2606\R2606a\Roadway\Proj\r2606a_rdy_sht_02.dgn
DATE: 2/21/2008

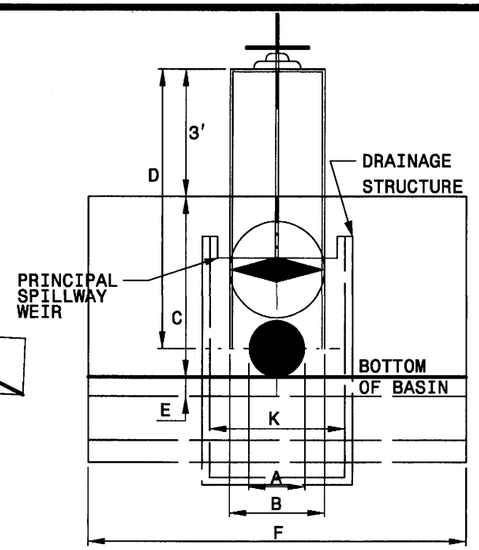
PROJECT REFERENCE NO.	SHEET NO.
R-2606A	2-K
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech
A Tyco International Company
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

GRAPHIC SCALE
50 25 0 50 100
PLANS



SECTION VIEW

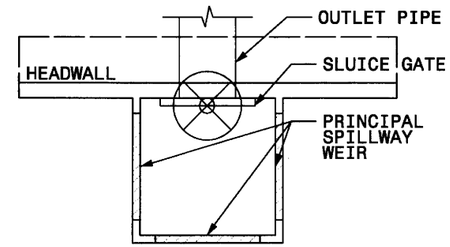


ELEVATION VIEW

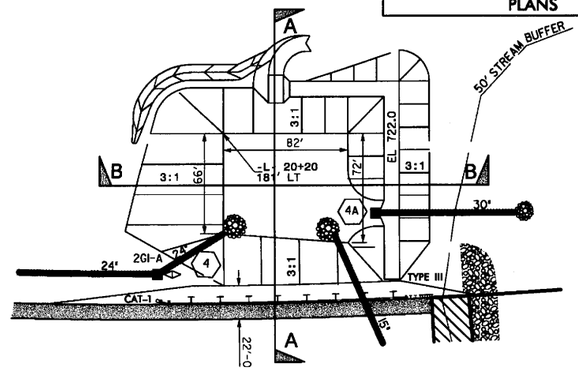
BASIN #		6	7
SLUICE GATE DIMENSIONS			
PIPE DIAMETER	A	30"	24"
GATE DIAMETER	B	36"	30"
HEADWALL HT.	C	8'-0"	5'-5"
FRAME HEIGHT	D	9'-9"	7'-6"
INVERT HEIGHT	E	7"	7"
HEADWALL WIDTH	F	9'-4"	8'-2"
HEADWALL DIMENSIONS			
PIPE DIAMETER	A	30"	24"
HEADWALL HT.	G	7'-7"	6'-1"
HEADWALL DEP.	I	5'-0"	4'-0"

DRAINAGE STRUC. DIMENSIONS			
DRAWDOWN DIA.		3"	2"
DRAWDOWN INV.		714.00	713.00
STRUCTURE INV.		712.00	711.00
STRUCTURE DEP.	H	9'-0"	7'-6"
STRUCTURE DIM.	J	5'-0"	5'-0"
STRUCTURE DIM.	K	5'-0"	5'-0"
PRINCIPAL SPILLWAY ELEV.		720.00	717.50
PRINCIPAL WEIR SPILLWAY WIDTH		10'	9'

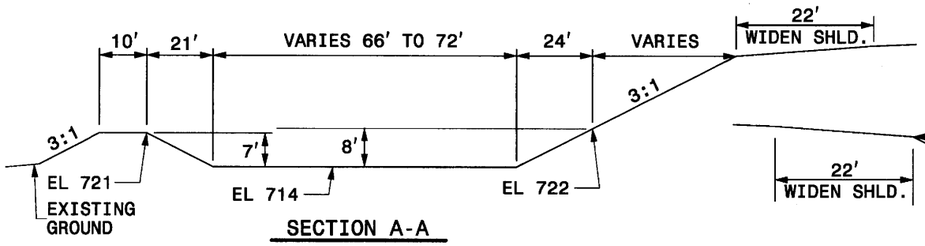
GENERAL NOTES:
1- REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO THE HEADWALL AND HEADWALL SHALL BE PAID FOR ON YD^3 BASIS.
2- CONCRETE SHALL BE CLASS "B" THROUGHOUT STRUCTURE.
3- DELETE REINFORCING STEEL WHEN BRICK ALTERNATE IS USED.
4- SEE PLAN SHEET FOR LOCATION OF OUTLET PIPE WITH SLUICE GATE.
5- INCORPORATE DRAINAGE STRUCTURE WALL INTO HEADWALL.
6- PAYMENT FOR DRAINAGE STRUCTURE IS TO BE PAID FOR AS "MASONRY DRAINAGE STRUCTURE FOR SLUICE GATE".
7- FOR BALLAST, FILL STRUCTURE WITH CONCRETE TO PIPE INVERT. HOWEVER, DO NOT OBSTRUCT SLUICE GATE FROM FULLY CLOSING OVER PIPE. CONRETE BALLAST SHALL BE INCIDENTAL TO MASONRY DRAINAGE STRUCTURE FOR SLUICE GATE.
8- TO AVOID CLOGGING OF THE DRAWDOWN WEEPHOLE, EXCAVATE 1' BELOW BASIN BOTTOM ELEVATION IN THE IMMEDIATE VICINITY OF THE SPILLWAY.
9- SEE STANDARD 838.02 FOR ADDITIONAL INFORMATION, INCLUDING REBAR SPECIFICATIONS.



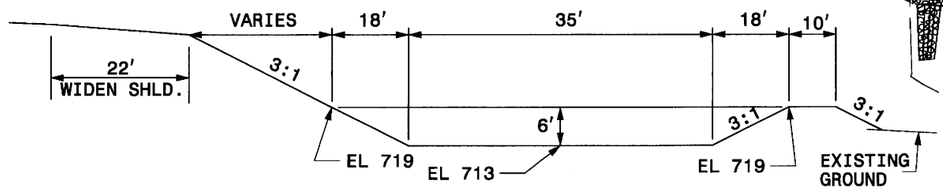
PLAN VIEW



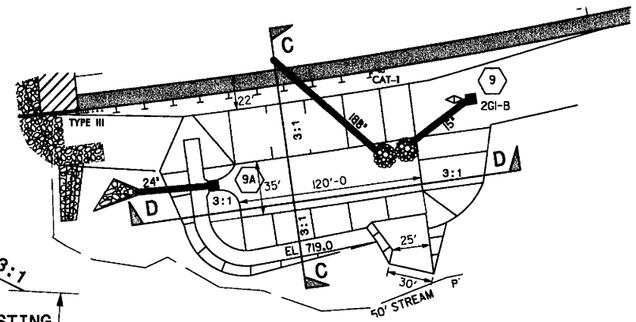
PLAN VIEW OF BASIN #6



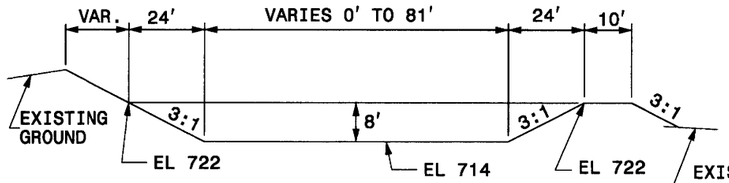
SECTION A-A



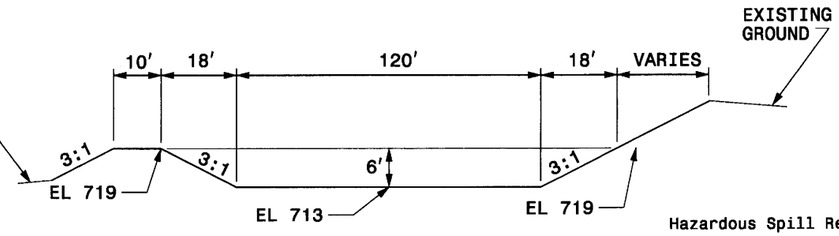
SECTION C-C



PLAN VIEW OF BASIN #7



SECTION B-B



SECTION D-D

HAZARDOUS SPILL/DRY DETENTION BASIN							
BASIN #	PIPE SIZE	SPILLOVER ELEV.	BOTTOM ELEV.	D		CAPACITY	STATION
6	30"	721.00	714.00	8'		66069+ CF	-L- 20+50 LT
7	24"	718.50	713.00	6'		36950+ CF	-L-25+00 RT

Hazardous Spill Retention Basins are provided at new and/or improved roadway sections to aid in containment and clean up of accidental spills by truck traffic. Basins are provided in particular locations including areas in proximity to sensitive waters and water supplies.

DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

HAZARDOUS SPILL/ DRY DETENTION BASIN

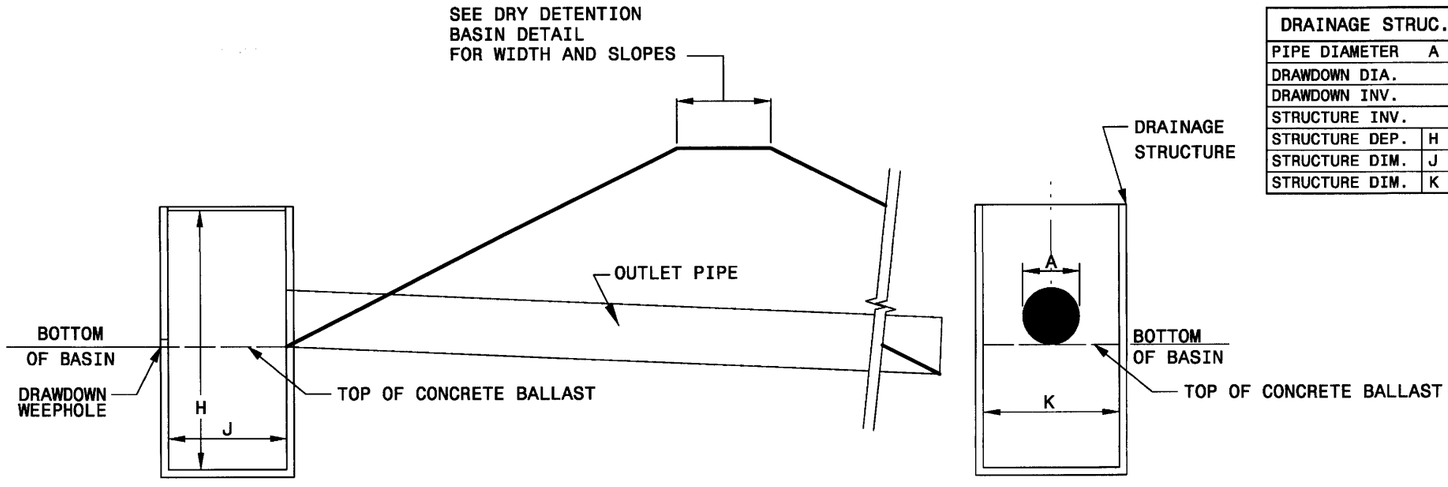
ORIGINAL BY: RWS DATE: 10/27/04
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

USER: a
DATE: 9/17/2025

PROJECT REFERENCE NO.	SHEET NO.
R-2606A	2-M
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech
A Tyco International Company
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

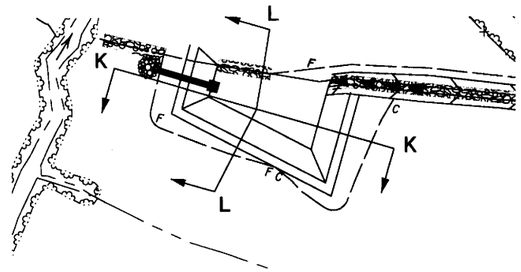
GRAPHIC SCALE
50 25 0 50 100
PLANS



SECTION VIEW

ELEVATION VIEW

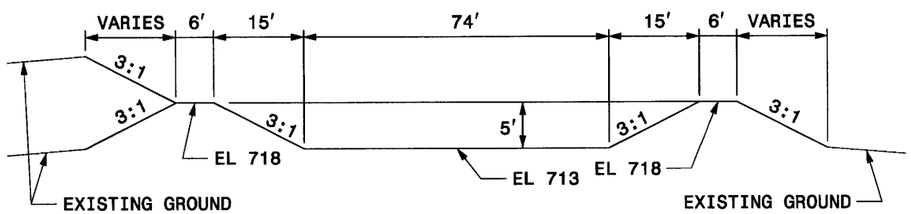
DRAINAGE STRUC. DIMENSIONS			
PIPE DIAMETER	A	24"	
DRAWDOWN DIA.		7/8"	
DRAWDOWN INV.		713.00	
STRUCTURE INV.		710.00	
STRUCTURE DEP.	H	7'-0"	
STRUCTURE DIM.	J	2'-0"	
STRUCTURE DIM.	K	3'-0"	



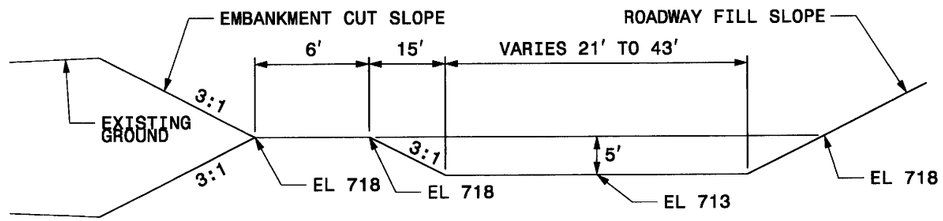
PLAN VIEW OF BASIN

GENERAL NOTES:

1- SEE PLAN SHEET FOR LOCATION OF OUTLET PIPE WITH DRAINAGE STRUCTURE.
2- PAYMENT FOR DRAINAGE STRUCTURES IS INCLUDED UNDER DRAINAGE STRUCTURES.
3- FOR BALLAST, FILL STRUCTURE WITH CONCRETE TO PIPE INVERT.
4- TO AVOID CLOGGING OF THE DRAWDOWN WEEPHOLE, EXCAVATE 1' BELOW BASIN BOTTOM ELEVATION IN THE IMMEDIATE VICINITY OF THE SPILLWAY.



SECTION K-K



SECTION L-L

DRY DETENTION BASIN						
PIPE SIZE	TOP ELEV.	BOTTOM ELEV.	D		CAPACITY	STATION
24"	718.0	713.0	5.0'		14818 CF	-L- 47+00 RT

Hazardous Spill Retention Basins are provided at new and/or improved roadway sections to aid in containment and clean up of accidental spills by truck traffic. Basins are provided in particular locations including areas in proximity to sensitive waters and water supplies.

DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

DRY DETENTION BASIN

ORIGINAL BY: JDRN DATE: 2/21/01
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

USER: el
DGN: $$$$USER$$$$
DATE: $$$$DATE$$$$

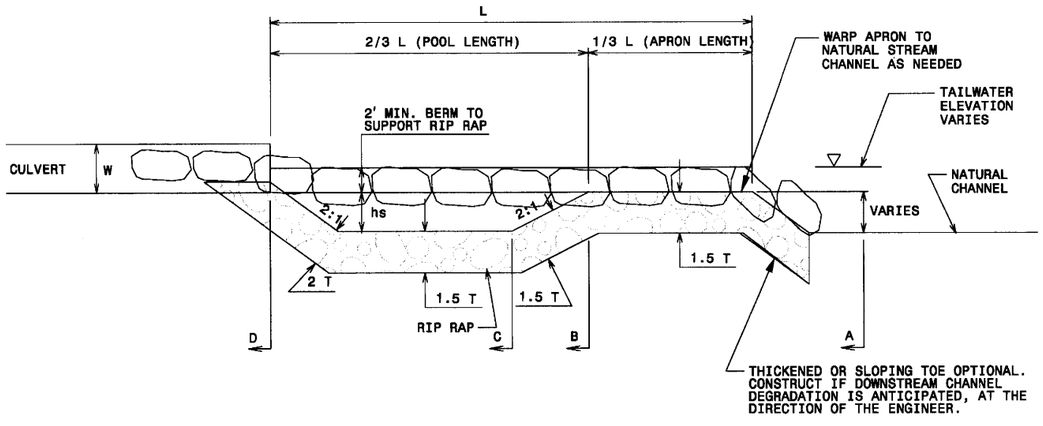
PROJECT REFERENCE NO.	SHEET NO.
R-2606A	2-N
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of:
EarthTech
A Tyco International Company
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

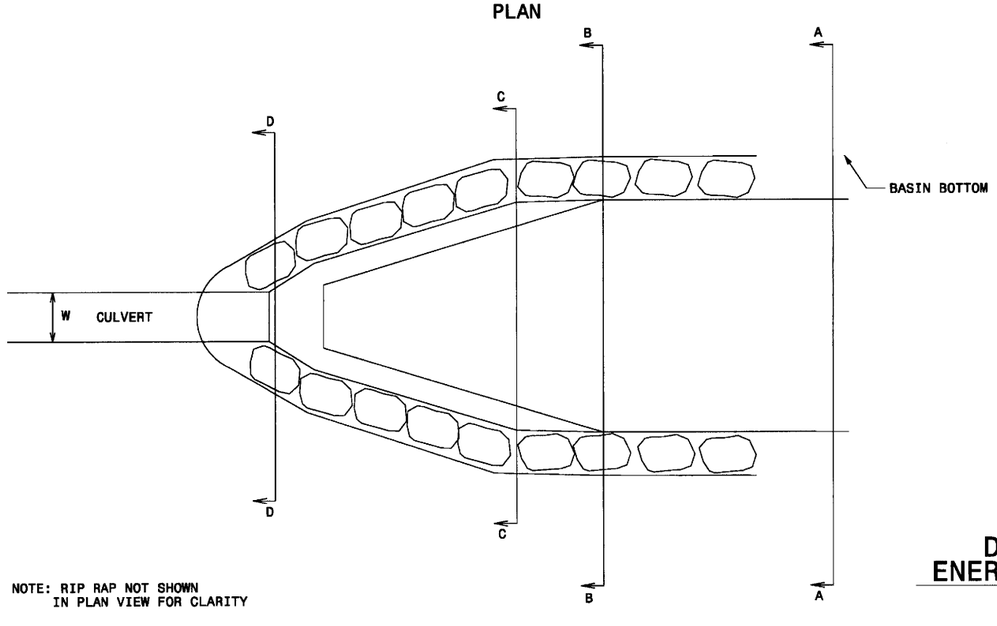
GRAPHIC SCALE
50 25 0 50 100
PLANS

RIP RAP BASIN	LOCATION	L (feet)	POOL LENGTH (feet)	APRON LENGTH (feet)	BASE WIDTH (feet)	APRON WIDTH (feet)	RIP RAP THICKNESS T (inches)	RIP RAP CLASS	DEPTH hs (feet)
#1	-SR- 13+11 LT	24	16	8	11	13	23	II	1.66

PROFILE

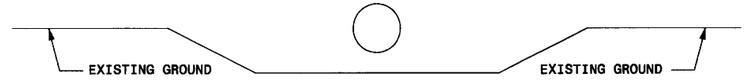


PLAN

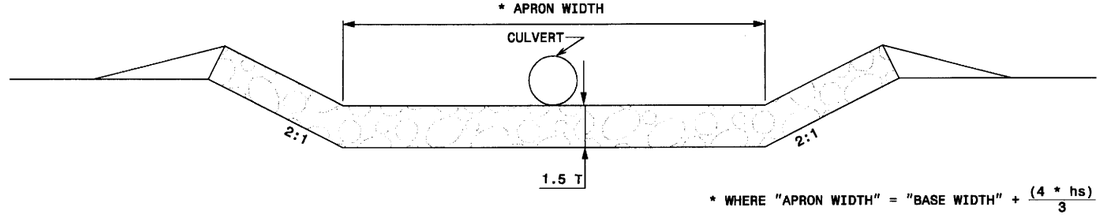


NOTE: RIP RAP NOT SHOWN IN PLAN VIEW FOR CLARITY

SECTION A-A

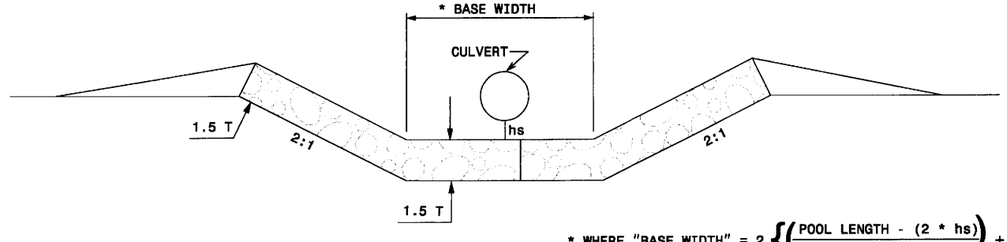


SECTION B-B



* WHERE "APRON WIDTH" = "BASE WIDTH" + $\frac{(4 * hs)}{3}$

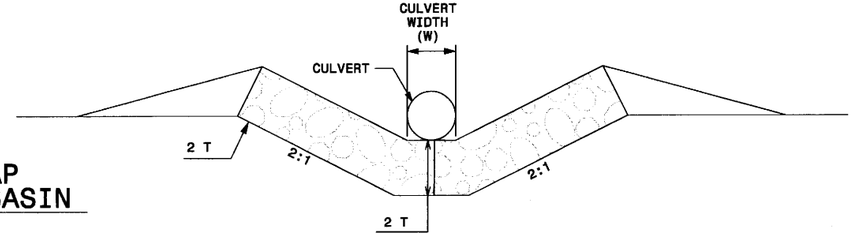
SECTION C-C



* WHERE "BASE WIDTH" = $2\left\{\left(\frac{\text{POOL LENGTH} - (2 * hs)}{3}\right) + \frac{W}{2}\right\}$

MINIMUM "BASE WIDTH" = 10'

SECTION D-D



DETAIL OF RIP RAP ENERGY DISSIPATOR BASIN

(NOT TO SCALE)

USER: el
FILE: g:\projects\r2606a\roadway\rnc\r2606a_rdy_sht12dtl.dgn
DATE: 5/15/2006

PROJECT REFERENCE NO.	SHEET NO.
R-2606A	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of:
EarthTech
A Tetra Tech Company
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

GRAPHIC SCALE
50 25 0 50 100
PLANS

NC GRID NAD 83

-U- R-0609 IB (METRIC)

PI Sta 87+73.063	PIs Sta 89+15.115	
Δ = 19° 48' 06.1" (RT)	Θs = 9° 58' 07.8"	
L = 170.827 m	Ls = 172 m	
T = 86.274 m	LT = 114.849 m	
R = 494.284 m	ST = 57.499 m	

-L-

PIs Sta 11+33.34	PI Sta 22+50.68
Θs = 1° 30' 28.0"	Δ = 30° 54' 42.0" (LT)
Ls = 200.00'	D = 1° 30' 28.0"
LT = 133.34'	L = 2,050.14
ST = 66.67'	T = 1,050.68'
	R = 3,800.00'
	SE = .055

BEGIN STATE PROJECT R-2606A
-L- TS Sta. 10+00.00 LA (ENGLISH)
N 782,770.4420 ft E 1,729,627.3072 ft (ENGLISH)
BEGIN CONSTRUCTION 10+00.00

END STATE PROJECT R-0609IB
-U- STS Sta 90+28.988 LB (METRIC)
N 238,588.9078 m E 527,191.4576 m (METRIC)

BY OTHERS

-U- CSSta. 88+57.616 (METRIC)

-U-

MATCH WIDTHS FOR PROJECT R-0609IB

BL-87
POT 5+00.00
-L- 11+64.22 OFF 241.51'

KEPLEY-FRANK HARDWOOD CO., INC
DB 1139 PG 155

BEG.FENCE TIE TO EXIST.
BEG.C/A
+00.00
125.00

PROP. W.W. FENCE

+00.00
165.00

+00.00
BEG.PS

GRAD. 350

-L- SCSta. 12+00.00

23.62'
3.94' PS
4' PS
68.87'
35'
24'
-L-

100' TAPER TO TYPICAL SECTION

BEG.C/A
+00.00
155.00
BEG.FENCE TIE TO EXIST.

+00.00
180.00

PROP. W.W. FENCE

MATCHLINE STA. 14+00 -L- SEE SHEET 5

KEPLEY-FRANK HARDWOOD CO., INC
DB 1139 PG 155

RIGHT OF WAY ON PARCELS 1 & 2 TO BE ACQUIRED UNDER ADJACENT PROJECT R-609 IB

PARCEL 1 ACCESS PROVIDED UNDER R-609IB

FOR -L- PROFILE SEE SHEET 16

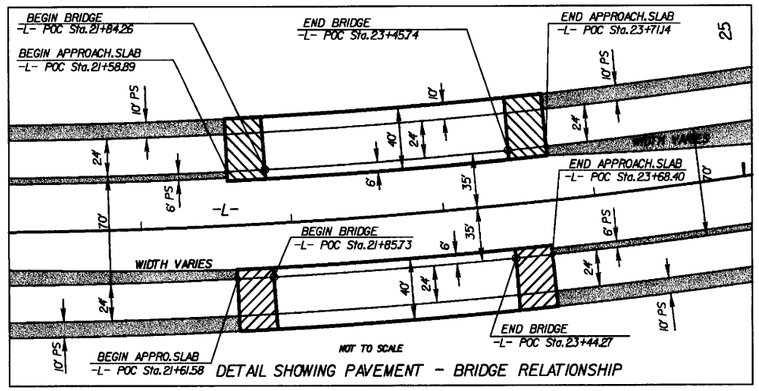
<> DENOTES FALSE SUMP SEE DETAIL SHEET 2-D

USER: rtanner
DGN: R2606A_R2606A\Roadway\Proj\R2606a_rdy_sch_04.dgn
DATE: 5/17/2006

PROJECT REFERENCE NO.	SHEET NO.
R-2606A	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech
A Tyco International Company
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

GRAPHIC SCALE
50 25 0 50 100
PLANS



DETAIL SHOWING PAVEMENT - BRIDGE RELATIONSHIP

-L-
PI Sta 22+50.68
Δ= 30° 54' 42.0" (LT)
D = 1° 30' 28.0"
L = 2,050.14
T = 1,050.68'
R = 3,800.00'
SE = .055

NC GRID NAD 83

KEPLEY-FRANK HARDWOOD CO., INC
DB 1139 PG 155

ROBER B. QUEEN
DB 1249 PG 2046

MAGGIE N. POOLE
DB 1100 PG 273

MATCHLINE STA. 14+00 -L- SEE SHEET 4

MATCHLINE STA. 28+00 -L- SEE SHEET 6

BEGIN BRIDGE
-L- POC Sta.21+84.26

BEGIN APPROACH.SLAB
-L- POC Sta.21+58.89

END BRIDGE
-L- POC Sta.23+45.74

END APPROACH.SLAB
-L- POC Sta.23+71.14

BL-500
PINC 8+76.59
-L- 14+62.79 OFF 7.81'

BL-501
PINC 12+41.46
-L- 18+22.42 OFF 14.35'

BL-502
PINC 15+38.41
-L- 21+18.18 OFF 19.85'

BL-503
PINC 17+59.99
-L- 23+38.78 OFF 26.52'
ELEV=708.47'

BL-504
PINC 20+78.20
-L- 26+52.48 OFF 36.66'

BEGIN APPRO.SLAB
-L- POC Sta.21+61.58

BEGIN BRIDGE
-L- POC Sta.21+85.73

END BRIDGE
-L- POC Sta.23+44.27

END APPROACH SLAB
-L- POC Sta.23+68.40

RIGHT OF WAY ON PARCELS 1 & 2 TO BE ACQUIRED UNDER ADJACENT PROJECT R-609 1B

PARCEL 1 ACCESS PROVIDED UNDER R-6091B

FOR -L- PROFILE SEE SHEET 16
FOR STRUCTURE PLANS SEE SHEETS S-XX THRU S-XX

◇ DENOTES FALSE SUMP
SEE DETAIL SHEET 2-D

USER: eJ
DGN: R:\R2606\R2606A\Roadway*ry\r2606a_rdy_sph_05.dgn
DATE: 5/17/2005

COMPUTED BY: DAP	DATE: 6/21/02
CHECKED BY: MDP	DATE: 11/22/02

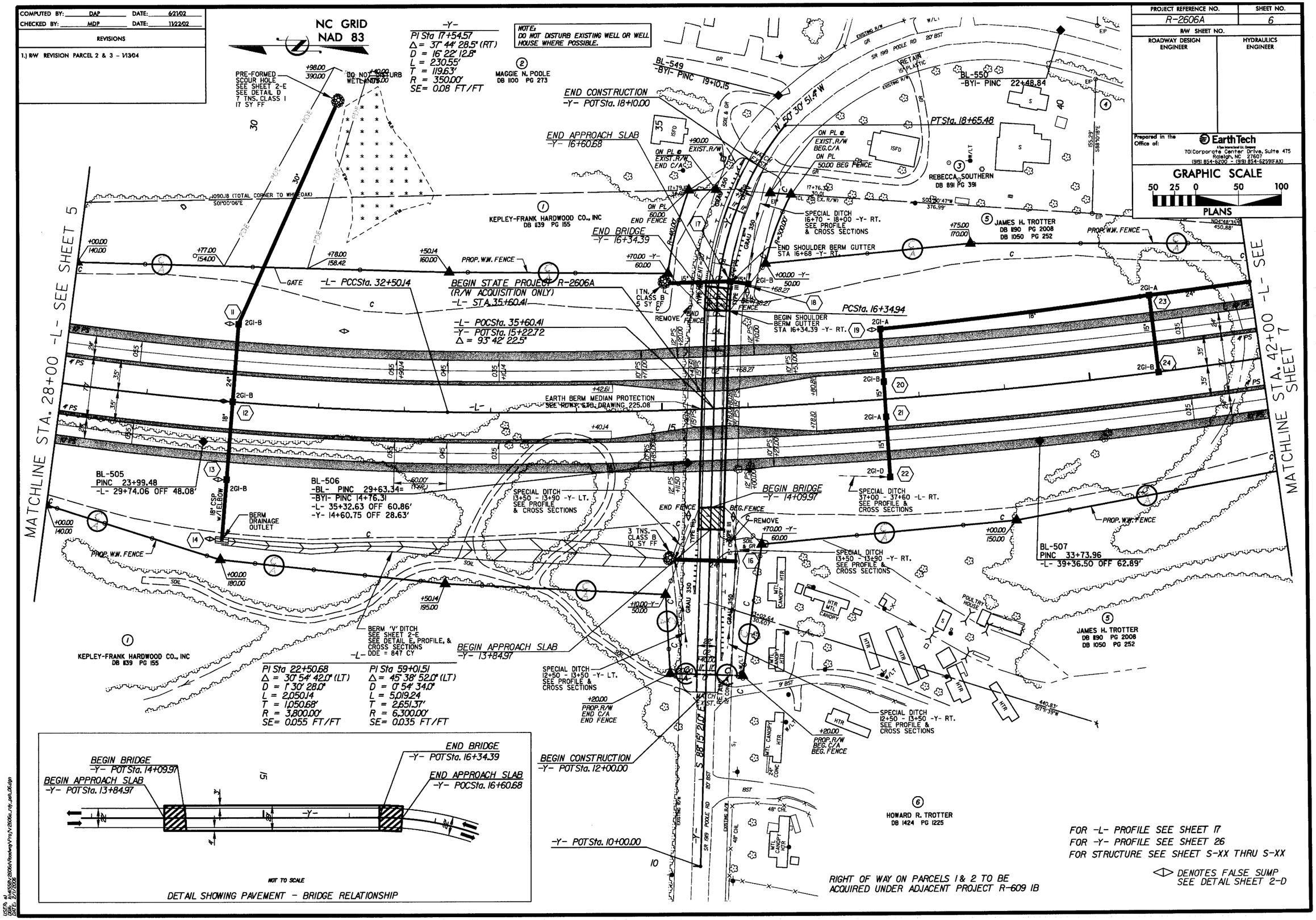
REVISIONS

1.) R/W REVISION PARCEL 2 & 3 - 1/13/04

PROJECT REFERENCE NO.	SHEET NO.
R-2606A	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech
The Investment Center
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 (919) 854-6259 (FAX)

GRAPHIC SCALE
50 25 0 50 100
PLANS



REVISIONS
R/W Revisions – Parcels 8, 8A, 8B, 8C, 9A – 09/29/04
R/W Revisions – Parcels 5 & 14 – 08/08/05
R/W Revisions – Parcels 5 (TDE required for temp. stream diversion – 08/08/05

PROJECT REFERENCE NO.	SHEET NO.
R-2606A	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 – (919) 854-6259(FAX)

GRAPHIC SCALE
50 25 0 50 100
PLANS

-L-
PI Sta 59+01.51
Δ = 45° 38' 52.0" (LT)
D = 0° 54' 34.0"
L = 5,019.24
T = 2,651.37'
R = 6,300.00'
SE= 0.035 FT/FT

-SR-
PI Sta 15+42.99
Δ = 38° 18' 02.7" (LT)
D = 9° 32' 57.5"
L = 401.08'
T = 208.36'
R = 600.00'
SE = .08 FT/FT

PI Sta 38+46.89
Δ = 25° 15' 58.2" (LT)
D = 0° 56' 02.1"
L = 2,705.40'
T = 1,375.06'
R = 6,135.00'
SE = NC

-DRIVE3-
PI Sta 10+60.77
Δ = 12° 42' 57.0" (RT)
D = 114° 35' 29.6"
L = 11.10'
T = 5.57'
R = 50.00'

NC GRID NAD 83

DENOTES FALSE SUMP SEE DETAIL SHEET 2-D

DENOTES REMOVAL OF EXISTING PAVEMENT

MATCHLINE STA. 42+00 -L- SEE SHEET 6

MATCHLINE STA. 56+00 -L- SEE SHEET 8

BEGIN CONSTRUCTION -SR- POT Sta. 10+00.00

-SR- PCSta. 13+34.63

-DRIVE3- POT Sta. 11+22.88

-DRIVE3- END CONST. Sta. 11+00.00

-DRIVE3- PT Sta. 10+66.29

-DRIVE3- PCSta. 10+55.20

-DRIVE3- POT Sta. 10+00.00
-SR- POT Sta. 17+40.00

-SR- PCSta. 24+71.83

-SR- PT Sta. 17+35.71

TIE EXISTING DITCH TO PROPOSED DITCH

FILL IN EXISTING DITCH AND GRADE TO DRAIN 9+70 - 10+00 -SR- LT.

BEGIN SHOULDER BERM GUTTER STA 11+50 -SR- LT.

RIP RAP ENERGY DISSIPATOR BASIN 1 SEE SHEET 2-N 142 TNS CLASS II 80 SY FF

30" CSP TYPE B (0.079") w/1 ELBOW

TOE PROTECTION SEE SHEET 2-E SEE DETAIL I 123 SY PSRM

SPEC. DITCH w/STONE LINER SEE SHEET 2-E SEE DETAIL K 77 TNS CLASS B 171 SY FF

SPEC. CUT BASE DITCH W/ LINER SEE SHEET 2-E SEE DETAIL L 96 SY PSRM

HAZARDOUS SPILL/DRY DETENTION BASIN 1 SEE DETAIL SHEET 2-H 3 TN CLASS I 11 SY FF

SLUICE GATE & SLUICE GATE INLET SEE DETAIL 2

BEGIN SHOULDER BERM GUTTER STA 44+02 -L- LT.

END SHOULDER BERM GUTTER STA 51+00

TIE PROPOSED DRIVEWAY DITCH TO EXISTING DRIVEWAY DITCH

TIE ROADSIDE DITCH INTO EXISTING DRAINAGE COURSE

HAZARDOUS SPILL/ DRY DETENTION BASIN 2 SEE DETAIL SHEET 2-H

SPECIAL DITCH 23+62 - 23+90 SR- LT SEE PROFILE & CROSS SECTIONS

SPECIAL DITCH 22+85.29 - 24+80.11 SR- RT. SEE PROFILE & CROSS SECTIONS

SPECIAL DITCH 54+00 - 56+00 -L- LT. SEE PROFILE & CROSS SECTIONS

PROP. W.W. FENCE

SEAL ABANDONED WELL

SIDE TAPERED INLET (16'x8' FACE)

PRE-FORMED SCOUR HOLE SEE SHEET 2-E SEE DETAIL D 3 TNS. CLASS I 11 SY FF

DRY DETENTION BASIN SEE DETAIL SHEET 2-M

PERMANENT DITCH CHECK DAMS SEE SHEET 2-E SEE DETAIL J

LATERAL 4' BASE DITCH w/CLASS I LINER SEE SHEET 2-E SEE DETAIL H, PROFILE, & CROSS SECTIONS 224 TNS CLASS I 362 SY FF EST. 458 CY DDE

TIE EXISTING ROADSIDE DITCH TO PROPOSED LATERAL 4' BASE DITCH MIN. 2:1 DITCH SLOPES (3:1 PREFERABLE)

ADJUST EXISTING DITCH AS NECESSARY TO ACCOMMODATE 4' SHOULDER MIN. 2:1 DITCH SLOPES (3:1 PREFERABLE)

TOE PROTECTION SEE SHEET 2-E SEE DETAIL F 36 TNS CLASS B 84 SY FF

50' STREAM BUFFER

BL-508
PINC 36+86.73
-L- 42+45.33 OFF 59.04'

BL-509
PINC 40+98.13
-L- 46+54.91 OFF 60.13'
ELEV=711.20'

BL-510
-BL- PINC 43+02.19
-BYI- PINC 31+87.23
-L- 48+52.34 OFF 54.01'

BL-512
PINC 48+87.85
-L- 54+37.90 OFF 57.79'

BL-511
PINC 46+55.35
-L- 52+05.56 OFF 50.57'

FOR -DR3- PROFILE SEE SHEET 29
FOR -L- PROFILE SEE SHEET 17
FOR -SR- PROFILE SEE SHEET 24
FOR CULVERT PLANS SEE SHEETS C-? TO C-?

TIMOTHY LARUE TROTTER DB 1570 PG 122 PB 39 PG 72

RAY POOLE DB 1598 PG 1330 PB 39 PG 72

TIMOTHY A. GREER DB 1694 PG 160 PB 67 PG 5

BRIAN K. PETERSON DB 1698 PG 203 PB 67 PG 5

ZOLA W. ROSENBERG DB 1774 PG 2220

CHARLES M. PENDLETON DB 1741 PG 856 PB 67 PG 5

JOHN FRANCIS REDDING DB 1234 PG 107 PB 12 PG 77

JAMES H. TROTTER DB 1190 PG 2008 DB 1050 PG 252

FAYE T. COLLINS DB 1150 PG 253 DB 1190 PG 202 DB 1584 PG 962 PB 50 PG 37

GARY M. REDDING DB 1740 PG 353 PB 71 PG 87

BETTY NICHOLSON DB 1171 PG 129

USER: dl
DGN: R-2606A-D200-Roadway(Pro)V2606a_rdy_plan07.dgn
DATE: 9/7/2006

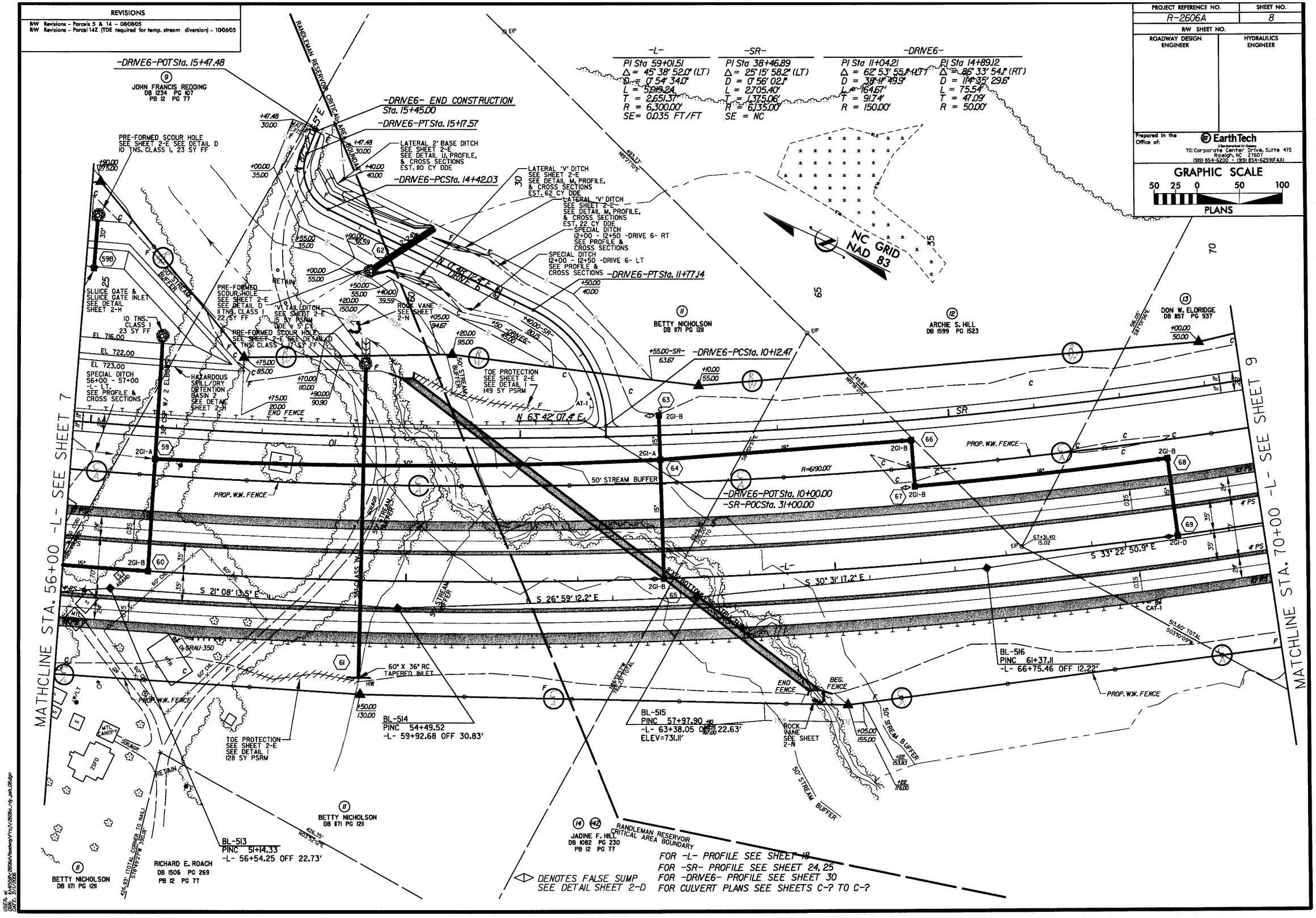
REVISIONS
R/W Revisions - Parcels 5 & 14 - 080805
R/W Revisions - Parcel 14Z (TDE required for temp. stream diversion) - 100605

PROJECT REFERENCE NO.	SHEET NO.
R-2606A	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech
A Member of the AECOM Family
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

GRAPHIC SCALE
50 25 0 50 100
PLANS

-L-	-SR-	-DRIVE6-	
PI Sta 59+01.51	PI Sta 38+46.89	PI Sta 11+04.21	PI Sta 14+89.12
Δ = 45° 38' 52.0" (LT)	Δ = 25° 15' 58.2" (LT)	Δ = 62° 53' 55.1" (LT)	Δ = 86° 33' 54.1" (RT)
D = 0° 54' 34.0"	D = 0° 56' 02.1"	D = 38° 11' 49.9"	D = 114° 35' 29.6"
L = 5,919.24'	L = 2,705.40'	L = 164.67'	L = 75.54'
T = 2,651.37'	T = 1,375.06'	T = 91.74'	T = 47.09'
R = 6,300.00'	R = 6,135.00'	R = 150.00'	R = 50.00'
SE = 0.035 FT/FT	SE = NC		



COMPUTED BY: WCB	DATE: 3/1004
CHECKED BY: GTS	DATE: 3/1004

REVISIONS

1.) PARCEL 15 & 16 ADDED PERMANENT R/W ON PARCEL 15, ADDED DRIVEWAY ON PARCEL 16 - 3/1004

2.) MOVED RIGHT OF WAY FOR SERVICE ROAD ALONG PARCEL 15 SOUTHERN PROPERTY LINE - 10/22/04

3.) MOVED CONSTRUCTION EASEMENT FOR SERVICE ROAD ALONG PARCEL 16 PROPERTY LINE - 10/22/04

PROJECT REFERENCE NO.	SHEET NO.
R-2606A	9

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech, A Tyco International Company, 701 Corporate Center Drive, Suite 475, Raleigh, NC 27607, (919) 854-6200 - (919) 854-6259(FAX)

GRAPHIC SCALE: 50 25 0 50 100

PLANS

NC GRID NAD 83

-L- ARCHIE S. HILL DB 1599 PG 1523

PI Sta 59+01.51
Δ = 45° 38' 52.0" (LT)
D = 0° 54' 34.0"
L = 5,019.24'
T = 2,651.37'
R = 6,300.00'
SE = 0.035 FT/FT

RIs Sta 83+36.04
Θs = 0° 54' 34.0"
Ls = 200.00'
LT = 133.33'
ST = 66.67'

-SR-
PI Sta 38+46.89
Δ = 25° 15' 56.2" (LT)
D = 0° 56' 02.1"
L = 2,705.40'
T = 1,375.06'
R = 6,135.00'
SE = NC

-DRIVE4-
PI Sta 10+45.64
Δ = 50° 27' 40.6" (LT)
D = 11° 35' 29.6"
L = 44.04'
T = 23.56'
R = 50.00'

-DRIVE5-
PI Sta 12+10.51
Δ = 36° 47' 14.9" (RT)
D = 28° 38' 52.4"
L = 128.41'
T = 66.51'
R = 200.00'

PI Sta 15+18.54
Δ = 40° 44' 03.9" (LT)
D = 57° 17' 44.8"
L = 71.10'
T = 37.12'
R = 100.00'

-DRIVE5- POT Sta. 15+94.28
-DRIVE5- END CONST. ST A.15+60.00
-DRIVE5- PT Sta. 15+52.51
-DRIVE5- PC Sta. 14+81.41
-DRIVE5- PT Sta. 12+72.41
-DRIVE4- POT Sta. 11+63.33
-DRIVE4- END CONST. Sta. 11+50.00
-DRIVE5- PC Sta. 11+44.00
-DRIVE4- PT Sta. 10+66.11
-DRIVE4- PC Sta. 10+22.08
-DRIVE5-POT Sta. 10+00.00
-SR-POC Sta. 44+50.00
-DRIVE4- POT Sta. 10+00.00
-SR- POC Sta 41+65.00
-SR- PT Sta. 51+77.23

N 61° 40' 49.0" E
S 77° 35' 07.1" E
N 65° 37' 38.0" E
N 53° 45' 21.1" E
S 45° 41' 51.2" E

MATCHLINE STA. 70+00 -L- SEE SHEET 8

MATCHLINE STA. 84+00 -L- SEE SHEET 10

DON W. ELDRIDGE DB 1157 PG 937

DANIEL A. HILL DB 1599 PG 1518

BOBBY RALPH HILL DB 1599 PG 1526

JERRY G. MCDOWELL DB 1552 PG 72

JADINE F. HILL DB 1082 PG 230 PB 12 PG 77

BL-517 PINC 65+10.50 -L- 70+49.01 OFF 3.16'

BL-518 PINC 69+78.03 -L- 75+16.95 OFF 20.40'

BL-519 PINC 74+63.81 -L- 80+04.29 OFF 36.16'

BL-520 PINC 77+86.58 -L- 83+29.62 OFF 46.81'

-L- CS Sta. 82+69.37

PROP. W.W. FENCE

SEAL ABANDONED WELL

DRAIN OBSCURED

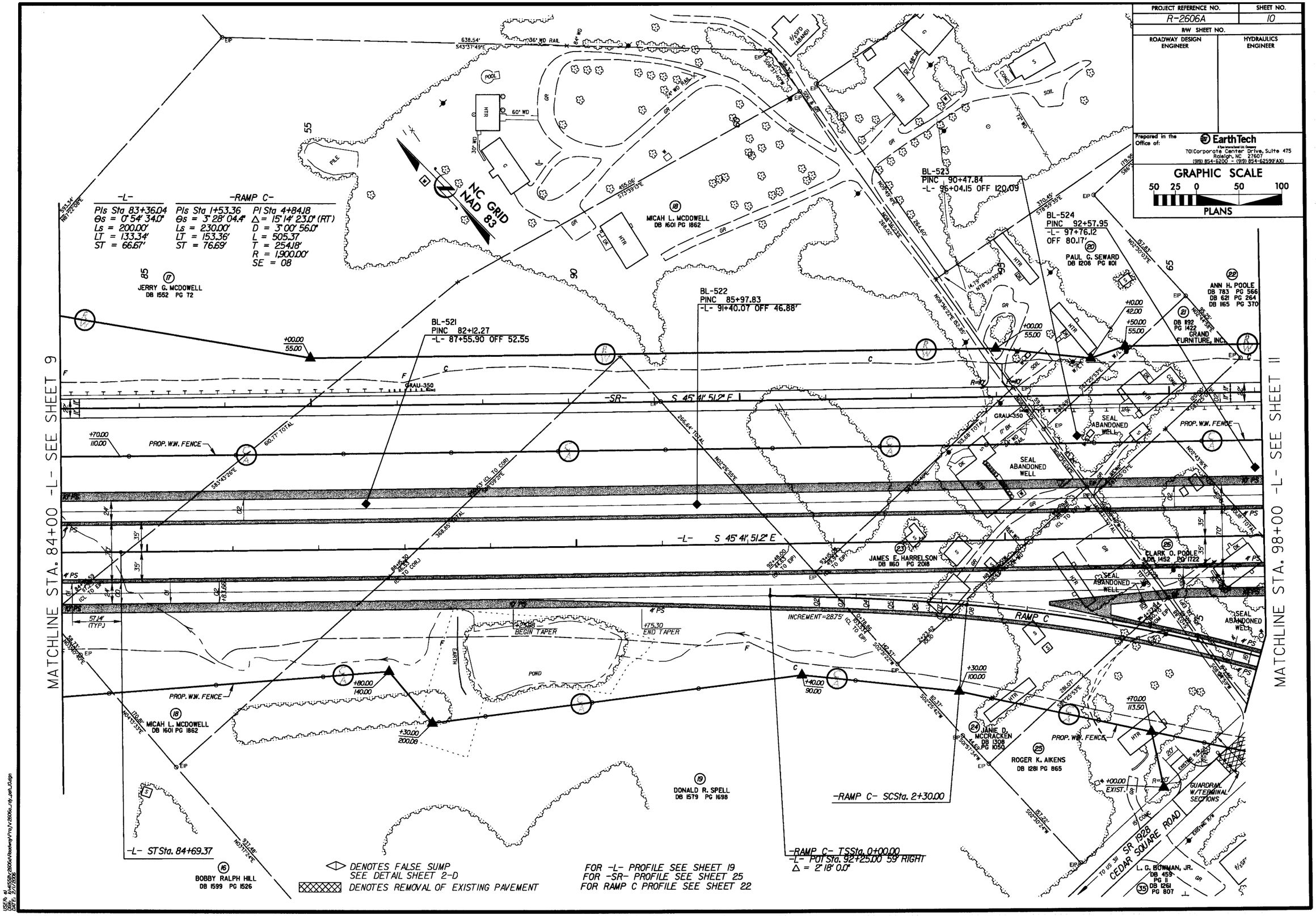
DENOTES FALSE SUMP SEE DETAIL SHEET 2-D

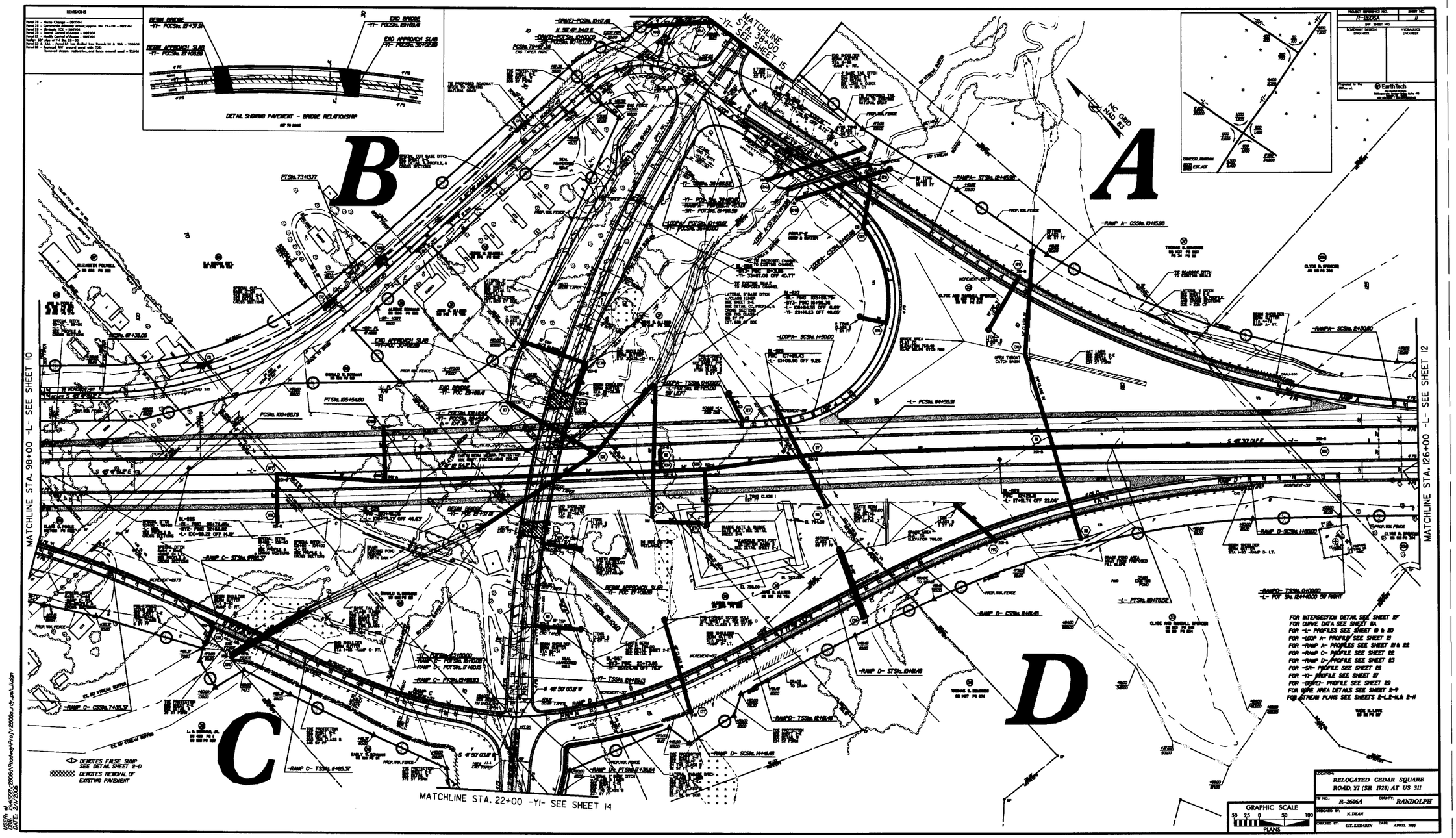
FOR -L- PROFILE SEE SHEET 18
FOR -SR- PROFILE SEE SHEET 25
FOR -DRIVE4- PROFILE SEE SHEET 29
FOR -DRIVE5- PROFILE SEE SHEET 30

PROJECT REFERENCE NO.	SHEET NO.
R-2606A	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech
A Member of the Earthtech Family
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259 (FAX)

GRAPHIC SCALE
50 25 0 50 100
PLANS



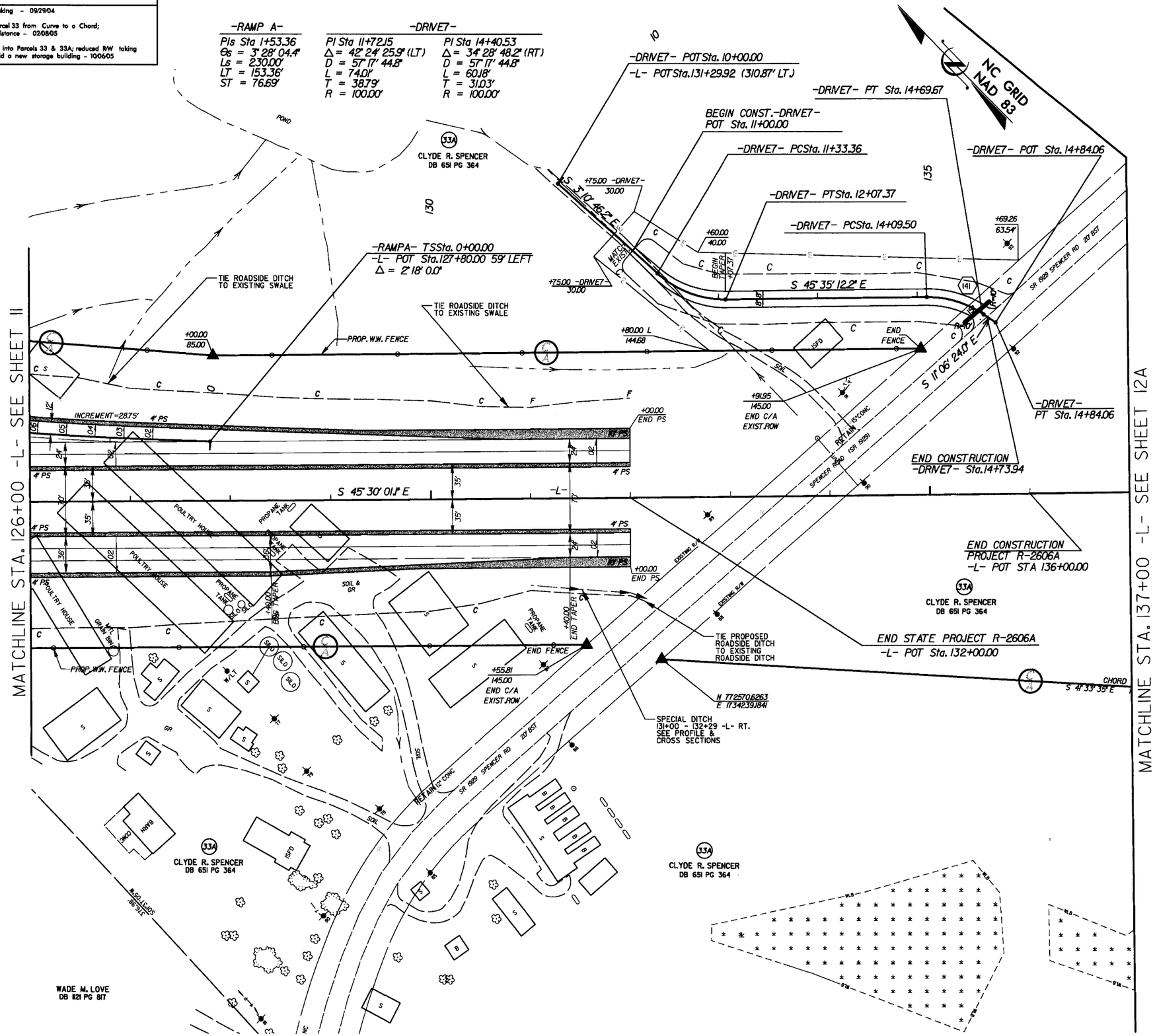

A
B
C
D
MATCHLINE STA. 98+00 -L- SEE SHEET 10
MATCHLINE STA. 126+00 -L- SEE SHEET 12
MATCHLINE STA. 22+00 -Y1- SEE SHEET 14
MATCHLINE -Y1- STA. 38+00 SEE SHEET 15
DETAIL SHOWING PAVEMENT - BRIDGE RELATIONSHIP
NC GRID NAD 83
FOR INTERSECTION DETAIL SEE SHEET 8F
FOR CURVE DATA SEE SHEET 8A
FOR -L- PROFILES SEE SHEET 8B & 8D
FOR -LOOP A- PROFILE SEE SHEET 8I
FOR -RAMP A- PROFILES SEE SHEET 8G & 8E
FOR -RAMP C- PROFILE SEE SHEET 8E
FOR -RAMP D- PROFILE SEE SHEET 8J
FOR -SR- PROFILE SEE SHEET 8B
FOR -Y1- PROFILE SEE SHEET 8F
FOR -DAW2- PROFILE SEE SHEET 8B
FOR SITE AREA DETAILS SEE SHEET E-7
FOR STREAM PLANS SEE SHEETS E-L,E-M,& E-N
DENOTES FALSE SUMP SEE DETAIL SHEET E-D
DENOTES REMOVAL OF EXISTING PAVEMENT
GRAPHIC SCALE
50 25 0 50 100
PLANS
LOCATION: RELOCATED CEDAR SQUARE ROAD, Y1 (SR 1928) AT US 311
TIP NO. R-2606A
COUNTY: RANDOLPH
DESIGNED BY: N. DEAN
CHECKED BY: G.T. KERSKIN
DATE: APRIL 2005
PROJECT REFERENCE NO. R-2606A
SHEET NO.
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Earth Tech
USER: sl
DGN: R-2606A_ROD_Alt1.dgn
DATE: 5/17/2006

REVISIONS
R/W Revision - Extended Parcel 33 taking - 09/29/04
R/W Revision - Changed R/W on Parcel 33 from Curve to a Chord; Added bearing and distance - 02/08/05
R/W Revision - Parcel 33 has divided into Parcels 33 & 33A; reduced R/W taking on Parcel 33A to avoid a new storage building - 10/06/05

PROJECT REFERENCE NO.	SHEET NO.
R-2606A	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech
A Member of the AECOM Family
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

GRAPHIC SCALE
50 25 0 50 100
PLANS



FOR RAMP A PROFILE SEE SHEET 21
FOR DRIVE 7 PROFILE SEE SHEET 30

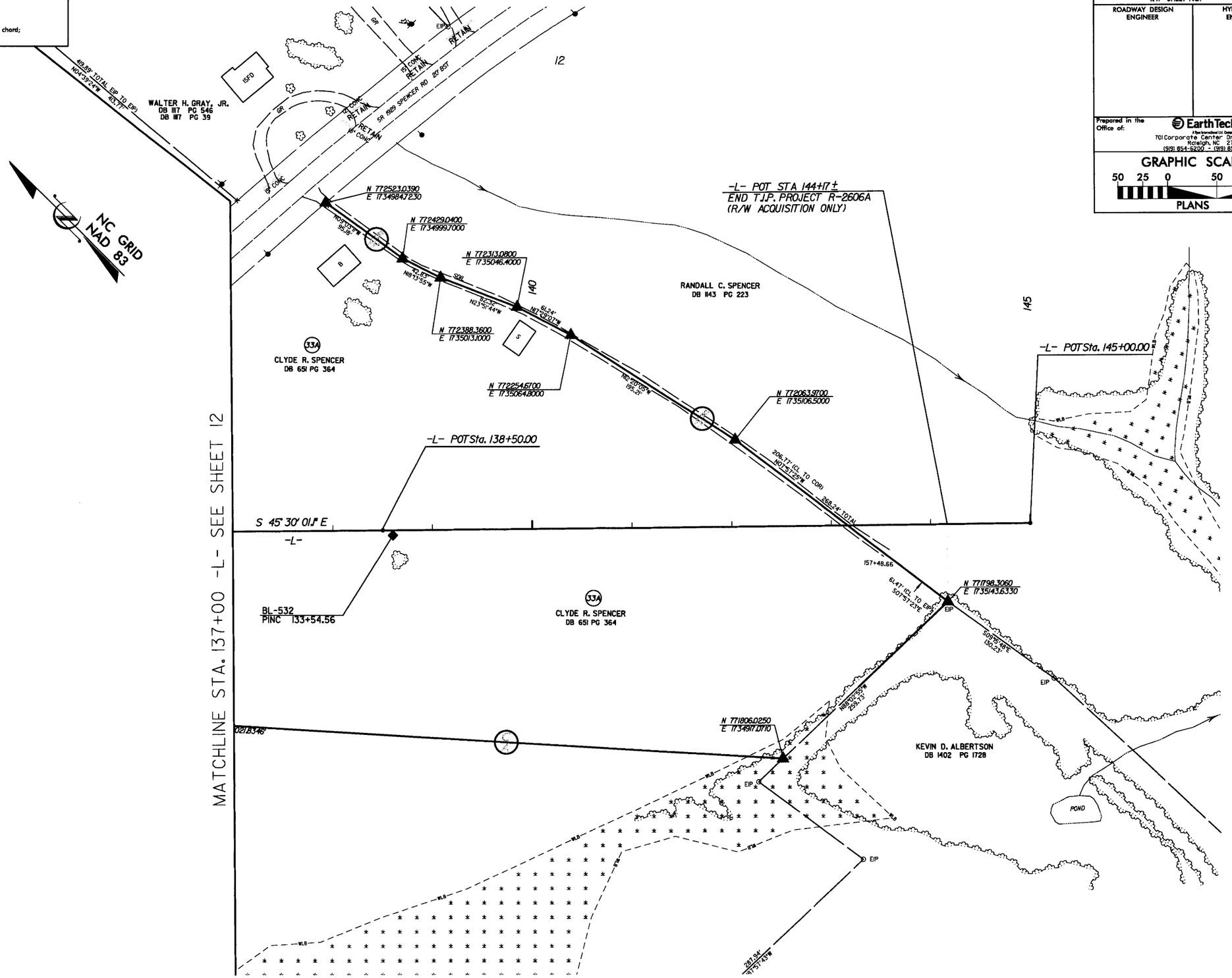
USER: al
DGN: R:\R2606\2606A\Roadway\Proj\r2606a_rdy_pth_12.dgn
DATE: 5/17/06

REVISIONS
R/W Revision – Parcel 33 has divided into parcels 33 & 33A; reduce R/W taking on Parcel 33 to avoid a new storage building – 100605
R/W Revision – Extended Parcel 33 taking – 09/29/04 Added Sheet 12A – 09/29/04
R/W Revision – Changed R/W on Spencer Parcel from curve to chord; Added bearing & distance – 02/08/05

PROJECT REFERENCE NO.	SHEET NO.
R-2606A	12A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech
A Tyco International Company
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

GRAPHIC SCALE
50 25 0 50 100
PLANS

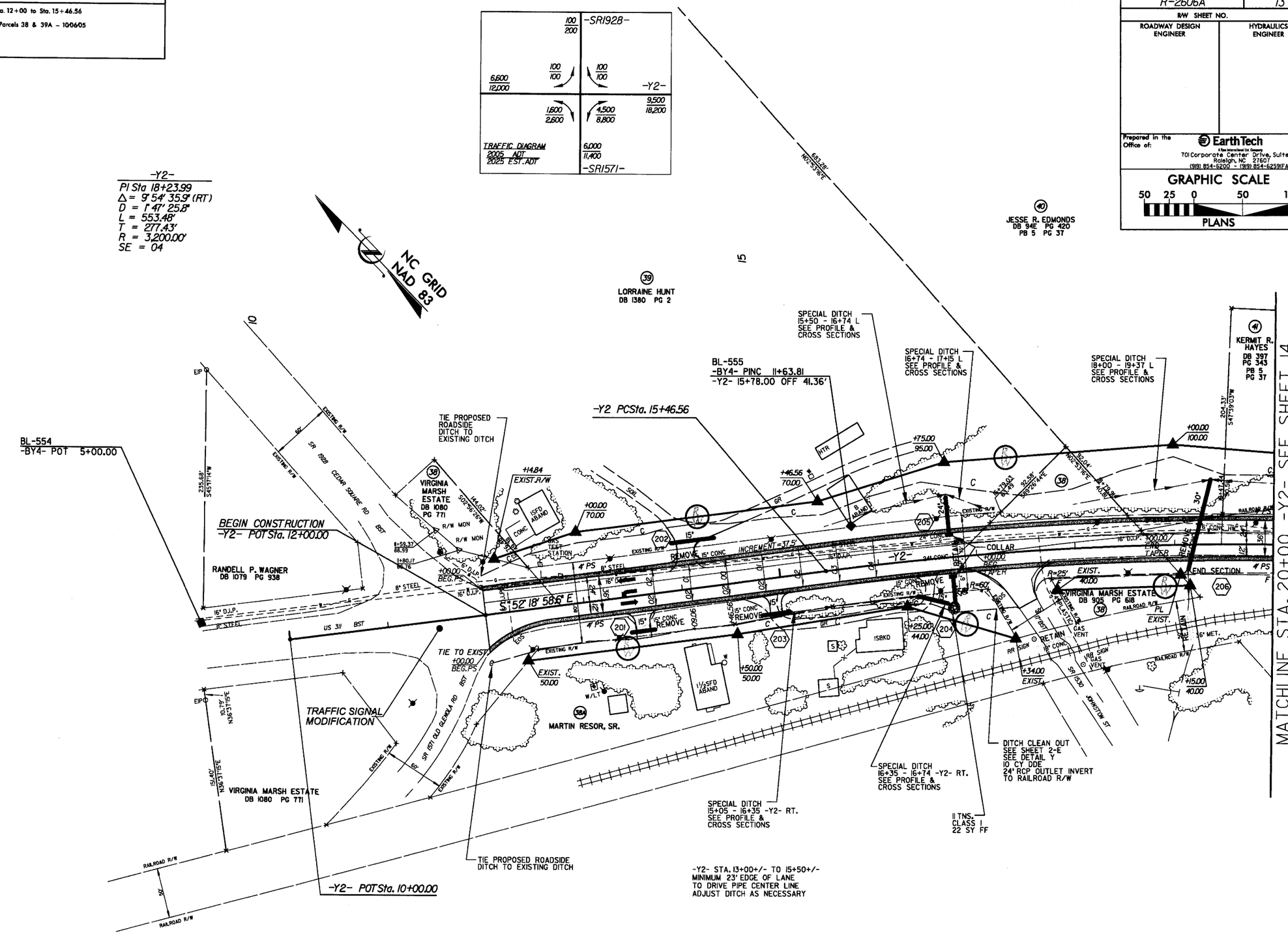


REVISIONS
Parcels 38 & 39 - Revised R/W, Lt. side, from Sta. 12+00 to Sta. 15+46.56
Parcels 38 & 39A - parcel 38 has divided into Parcels 38 & 39A - 100605

PROJECT REFERENCE NO.	SHEET NO.
R-2606A	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of:
EarthTech
A Tetra Tech Company
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

GRAPHIC SCALE
50 25 0 50 100
PLANS



◇ DENOTES FALSE SUMP SEE DETAIL SHEET 2-D

FOR -Y2- PROFILE SEE SHEET 28

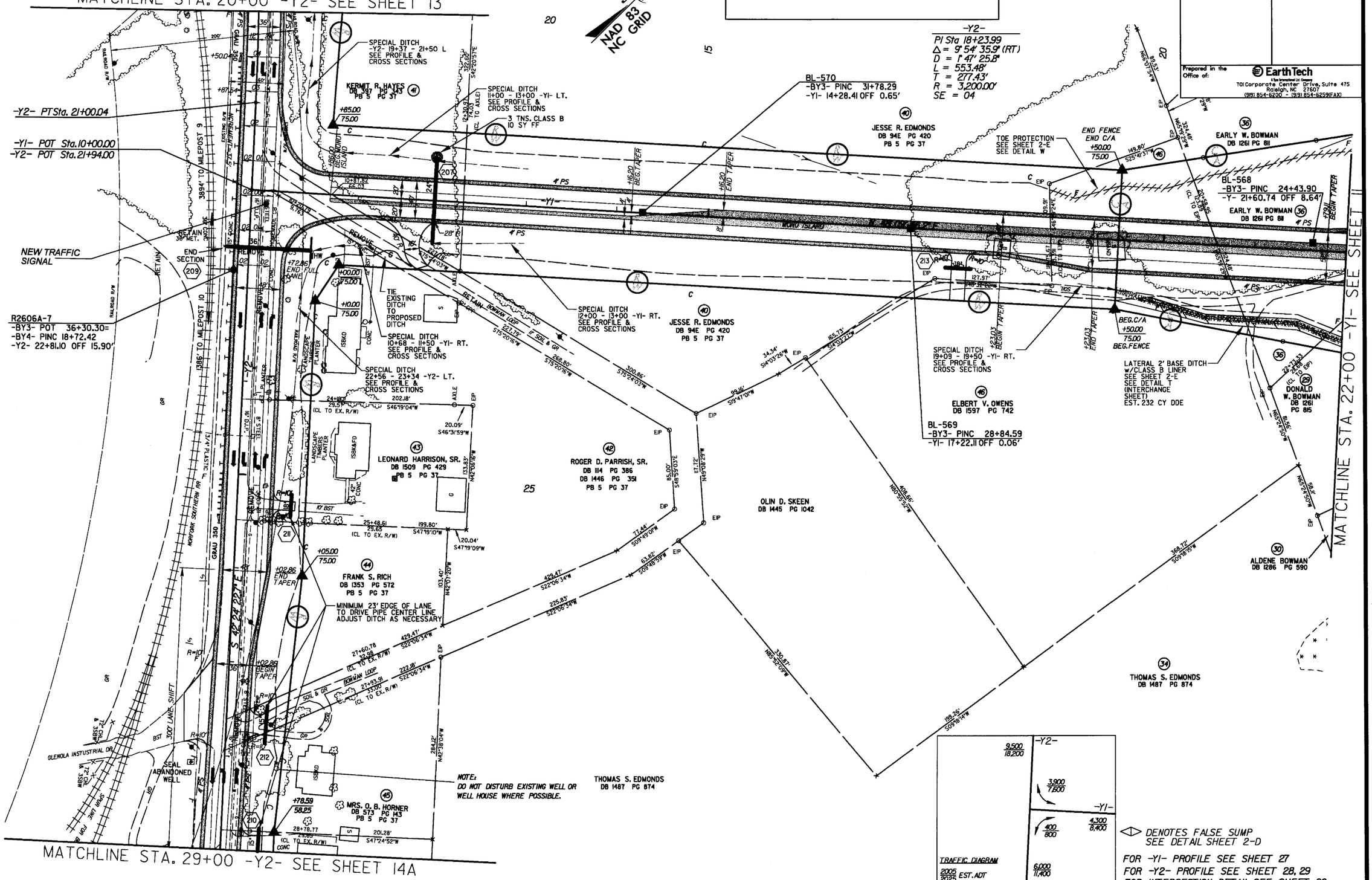
USER: a
DGN: R-2606A\R2606A\Roadway\Proj\r2606a_rdy_sht13.dgn
DATE: 9/1/2006

REVISIONS
PARCEL 46 – RESIDENTIAL DRIVEWAY ACCESS APPROX. SS 17+60 – 08/31/04
PARCEL 45 – EXTENDED R/W TO PROPERTY LINE – 09/29/04

GRAPHIC SCALE
50 25 0 50 100
PLANS

PROJECT REFERENCE NO.	SHEET NO.
R-2606A	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech
A Tetra Tech Company
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

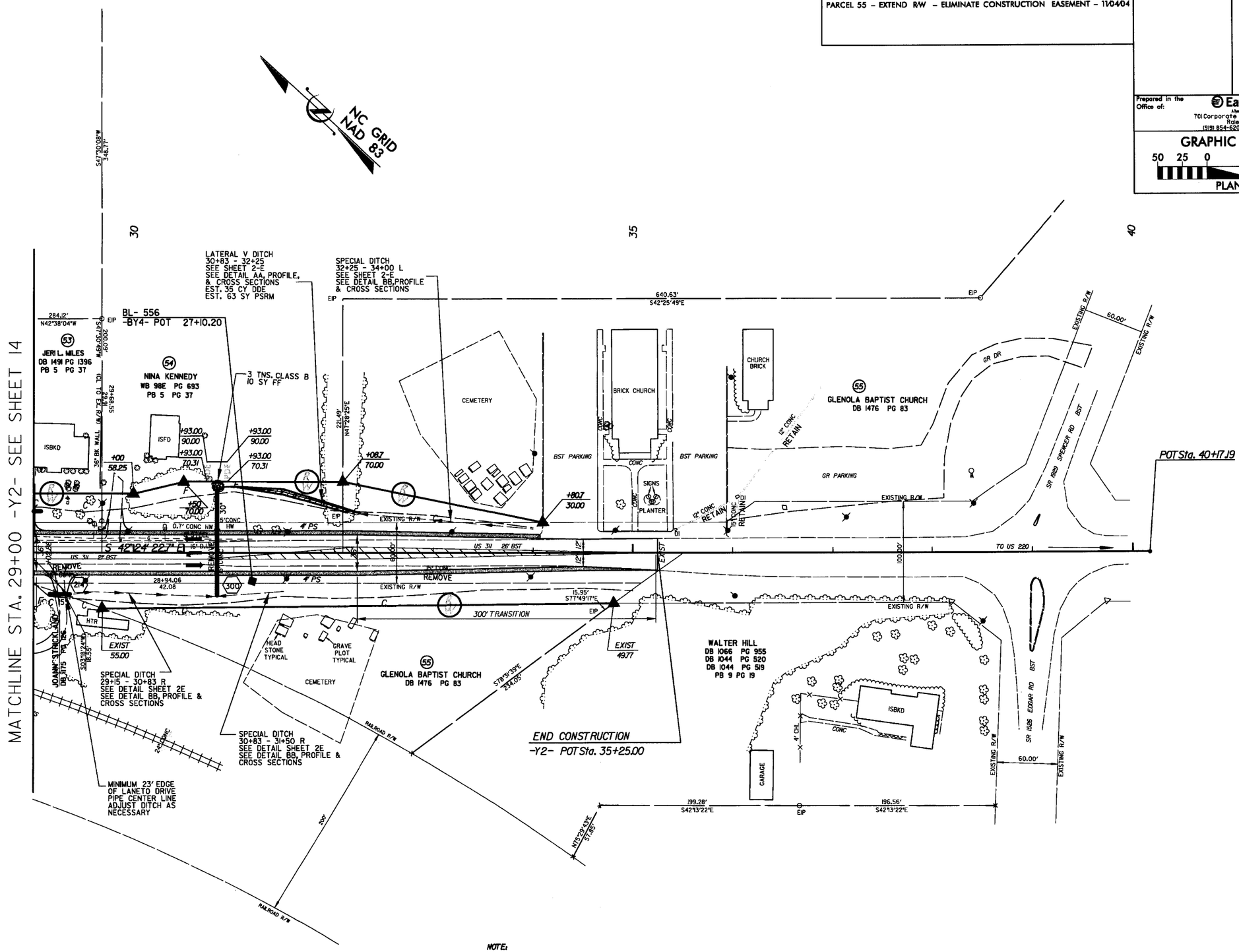


REVISIONS
PARCEL 46 - RESIDENTIAL DRIVEWAY ACCESS APPROX. SS 17+60 - 08/31/04
ADDED PARCEL 53, 54, 55 - 09/29/04
PARCEL 55 - EXTEND R/W - ELIMINATE CONSTRUCTION EASEMENT - 11/04/04

PROJECT REFERENCE NO.	SHEET NO.
R-2606A	14A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of:
EarthTech
A Tyco International Company
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

GRAPHIC SCALE
50 25 0 50 100
PLANS



NOTE:
DO NOT DISTURB EXISTING WELL OR WELL HOUSE WHERE POSSIBLE.

FOR -Y2- PROFILE SEE SHEET 29

USER: al
DATE: 5/17/2006
FILE: R:\R2606A\Roadway\Proj\r2606a_rdy_pet_14a.dgn

REVISIONS
PARCEL 28 - NAME CHANGE - 08/31/04
PARCEL 47 - EXTEND CONTROL OF ACCESS - 08/31/04
PARCEL 47 - ELIMINATE TCE - 08/31/04
PARCEL 33 - EXTEND CONTROL OF ACCESS - 08/31/04
PARCELS 47, 49, 50, 52 - 09/29/04

PROJECT REFERENCE NO.	SHEET NO.
R-2606A	15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech
A Tyco International Company
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-5200 - (919) 854-5259(FAX)

GRAPHIC SCALE
50 25 0 50 100
PLANS

-DRIVE1- PT Sta. 11+50.76

-Y1-
PIs Sta 37+26.86
Θs = 2° 23' 14.4"
Ls = 175.00'
LT = 116.68'
ST = 58.34'

-DRIVE1-
PI Sta 10+86.71
Δ = 38° 10' 40.0" (RT)
D = 28° 38' 52.4"
L = 133.27'
T = 69.21'
R = 200.00'

NAD 83
NC GRID

NOTE:
DO NOT DISTURB EXISTING WELL OR WELL HOUSE WHERE POSSIBLE.

-DRIVE1- POT Sta. 13+73.93

END CONSTRUCTION
-Y1- POT Sta. 46+00.00

-Y1-POT Sta. 48+49.97

MATCHLINE STA. 38+00 -Y1- SEE SHEET 11

-Y1- ST Sta. 38+43.52

R2606A
-4-BY2- PINC 15+37.96=
-BY3- POT 5+00.00
-Y1- 41+22.45 OFF 7.30

BL-552
-BY2- POT 5+00.00

R.J. BROWN EST.
DB 276 PG 532

ANGELA H. TACKETT
DB 1386 PG 593

DONALD L. LINGERFELT
DB 1044 PG 265
DB 1390 PG 752

TERRY A. DAY
DB 1294 PG 991

PATRICIA G. MOSLEY
DB 1139 PG 842

ARNOLD R. MOSLEY
DB 1139 PG 841

BARRY. BAXTER
DB 841 PG 590

ERIC MICHAEL DAVIS

MARTIN AYLLON
DB 1873 PG 501
PB 90 PG 9

DANIEL L. ELLINGTON
DB 1307 PG 1422

CLYDE AND RANDALL SPENCER
DB 1133 PG 649
DB 1119 PG 534

THOMAS S. EDMONDS
DB 1437 PG 1557
PB 34 PG 98

TOE PROTECTION
SEE SHEET 2-E
SEE DETAIL W
99 SY PSRM

DITCH AROUND CUL-DE-SAC

TIE PROPOSED ROADSIDE DITCH TO EXISTING DITCH

TIE PROPOSED ROADSIDE DITCH TO EXISTING DITCH

N 81° 58' 50.4" E1

DENOTES REMOVAL OF EXISTING PAVEMENT

DENOTES FALSE SUMP
SEE DETAIL SHEET 2-D

FOR DRIVE 1 SEE SHEET 29
FOR DRIVE 2 SEE SHEET 29
FOR -Y1- PROFILE SEE SHEET 28

USER: jb
DGN: R:\R2606\R2606a\Roadway\Y1\Y1R2606a_rdy_path_5.dgn
DATE: 9/7/2006

09/09/99

PROJECT: 8.1571501 R-2606

See Sheet 1-A For Index of Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

LOCATION: US 311 FROM N OF SR 1929 TO S OF US 311

METRIC

ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND/OR MILLIMETERS UNLESS OTHERWISE SHOWN

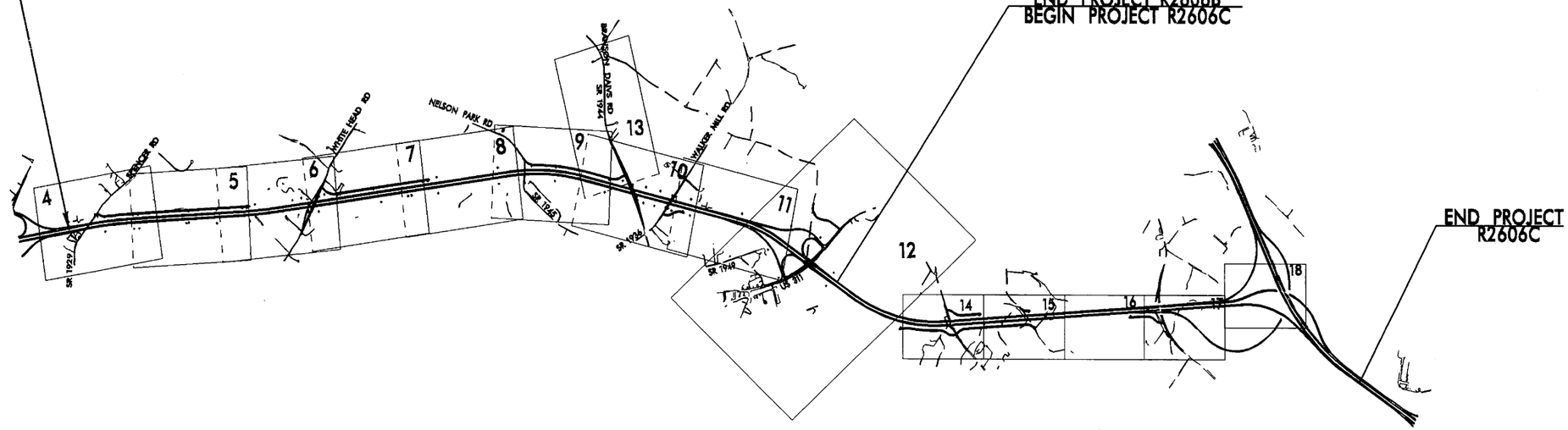
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	8.1571501	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
8.1571501	STP-NHF-311(3)	

BEGIN PROJECT R2606B

END PROJECT R2606B
BEGIN PROJECT R2606C

END PROJECT R2606C



RECEIVED
FEB 09 2006
DIVISION OF HIGHWAYS
HYDRAULICS UNIT

PRELIMINARY PLANS
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

GRAPHIC SCALES

PLANS 0

PROFILE (HORIZONTAL) 0

PROFILE (VERTICAL) 0

DESIGN DATA

ADT =
ADT =
DHV = %
D = %
T = % *
V = km/h

* TTST % DUAL %

PROJECT LENGTH

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh, NC 27610

1995 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

PROJECT ENGINEER

PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER
SIGNATURE: P.E.

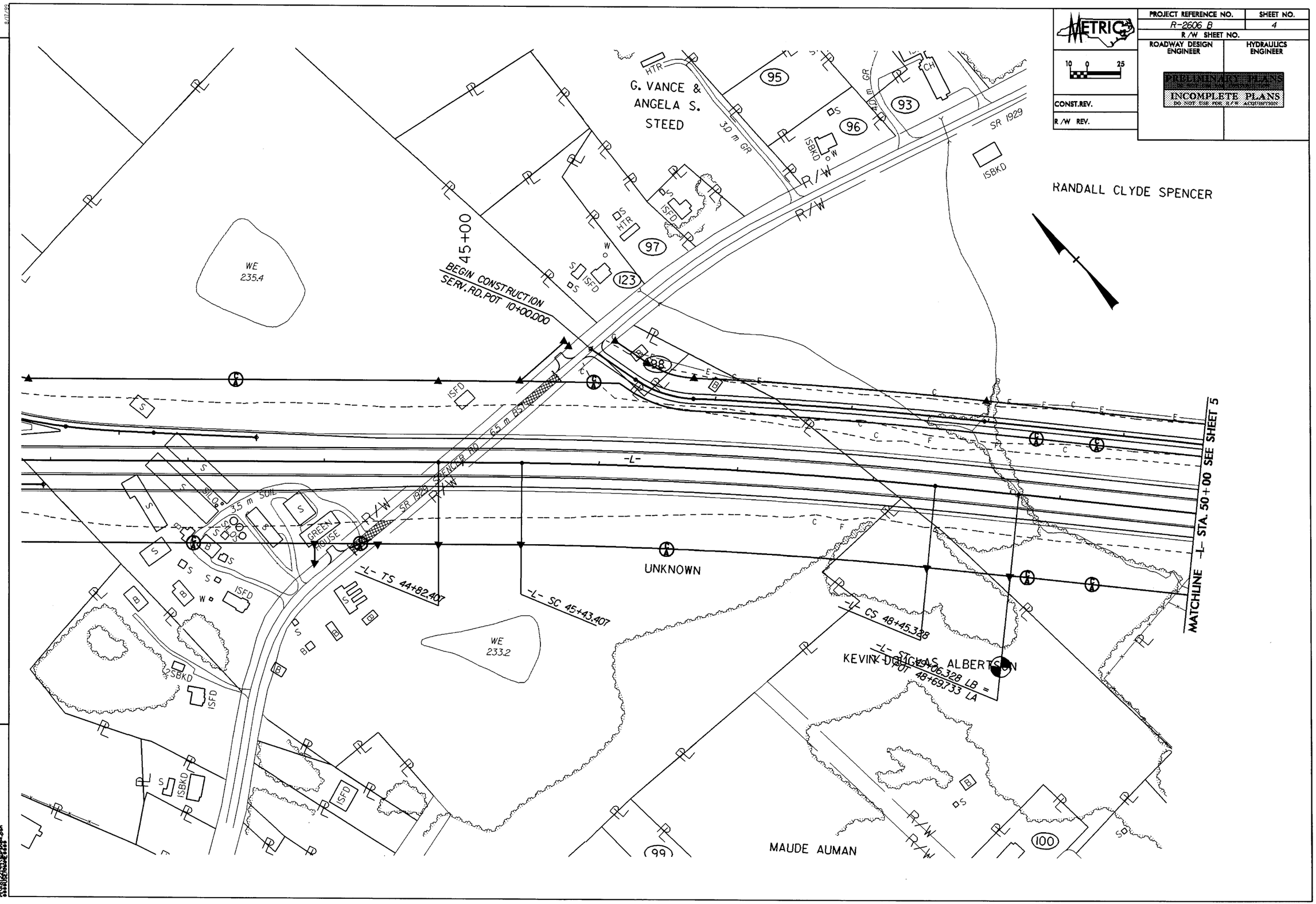
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

08-FEB-2006 09:00
c:\wsdot\2199_rc\hydr-o\20706\r-2606.tsh
$$$$USERNAME$$$$


METRIC
10 0 25
PROJECT REFERENCE NO.
R-2606 B
SHEET NO.
4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
CONST.REV.
R/W REV.
REVISIONS
8/17/99
G. VANCE & ANGELA S. STEED
RANDALL CLYDE SPENCER
KEVIN DOUGLAS ALBERTSON
MAUDE AUMAN
UNKNOWN
WE 235.4
WE 233.2
BEGIN CONSTRUCTION
SERV. RD. POT 10+00.000
45+00
SR 1929
SERVICE RD 6.5 m BS
-L- TS 44+82.407
-L- SC 45+43.407
-L- CS 48+45.338
-L- ST 49+06.328 LB =
POT 48+69.733 LA
-L- STA. 50+00 SEE SHEET 5
MATCHLINE
GREEN HOUSE
SILO
SOIL
35 m
30 m GR
40 m GR
HTR
ISBKD
ISFD
CH
R/W
-L-
95
96
93
97
123
98
99
100

PROJECT REFERENCE NO.	SHEET NO.
R-2606 B	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

10 0 25

CONST.REV.

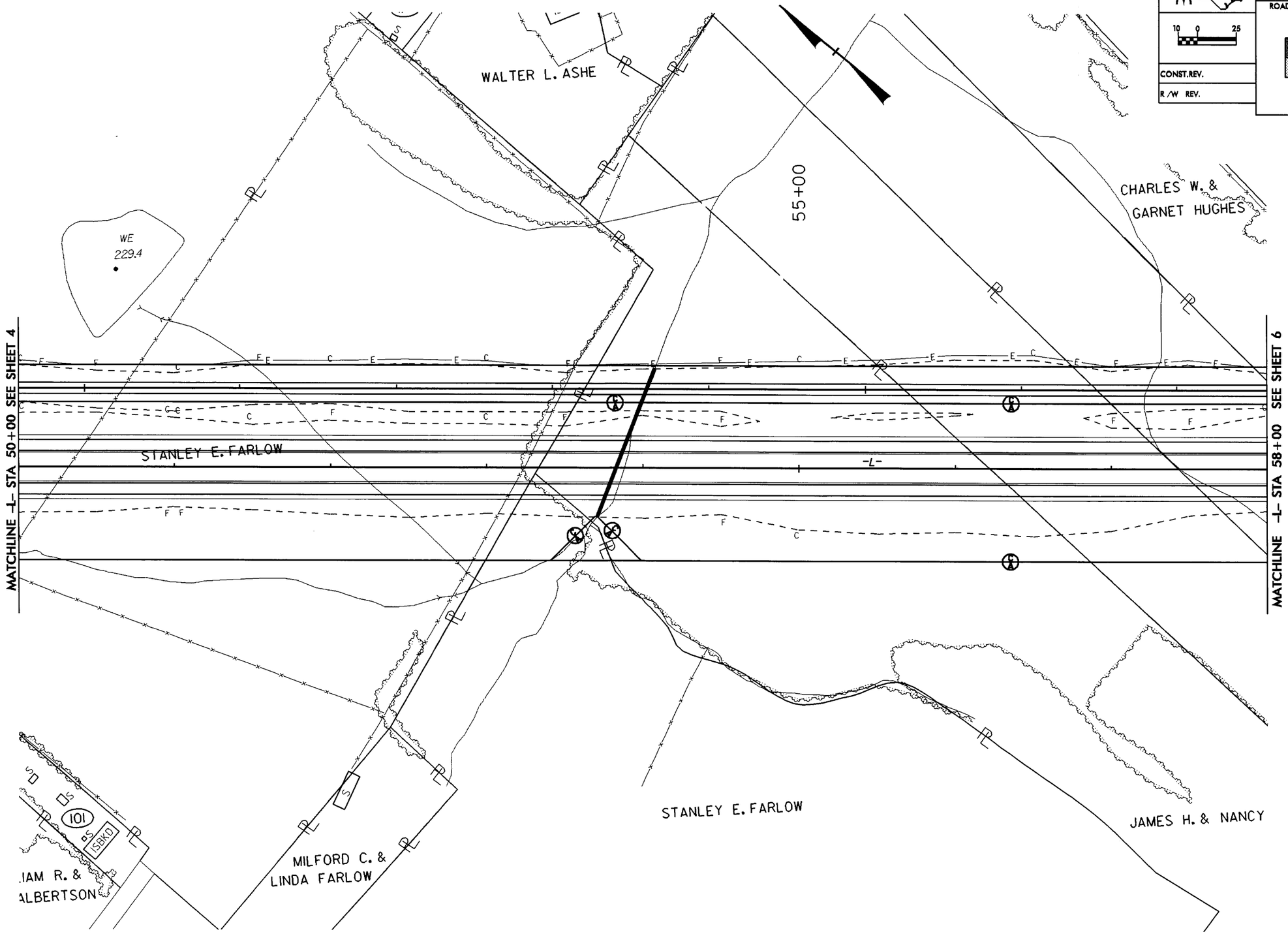
R/W REV.

PRELIMINARY PLANS

INCOMPLETE PLANS

DO NOT USE FOR R/W ACQUISITION

REVISIONS



PROJECT REFERENCE NO.	SHEET NO.
R-2606 B	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

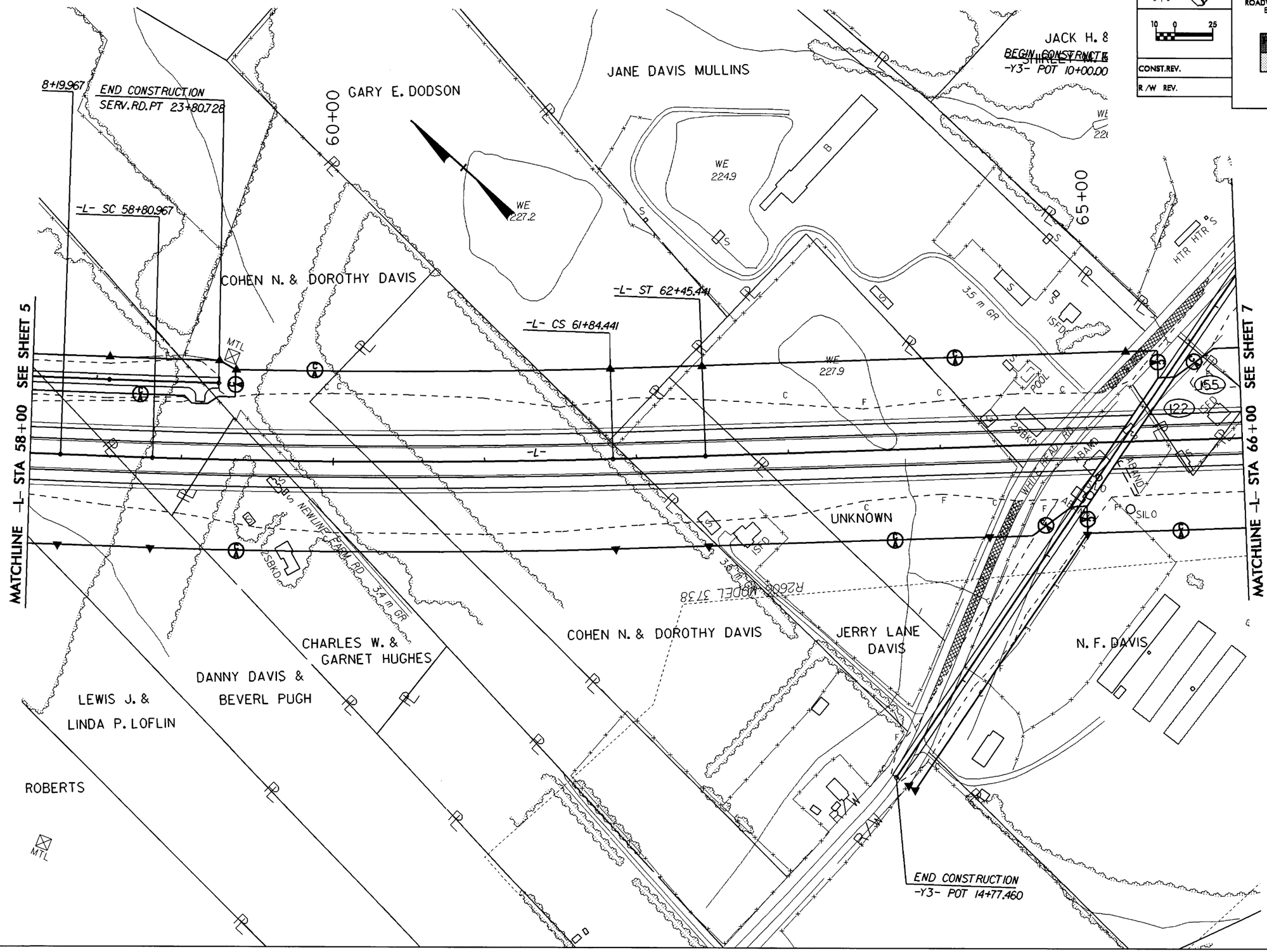
10 0 25

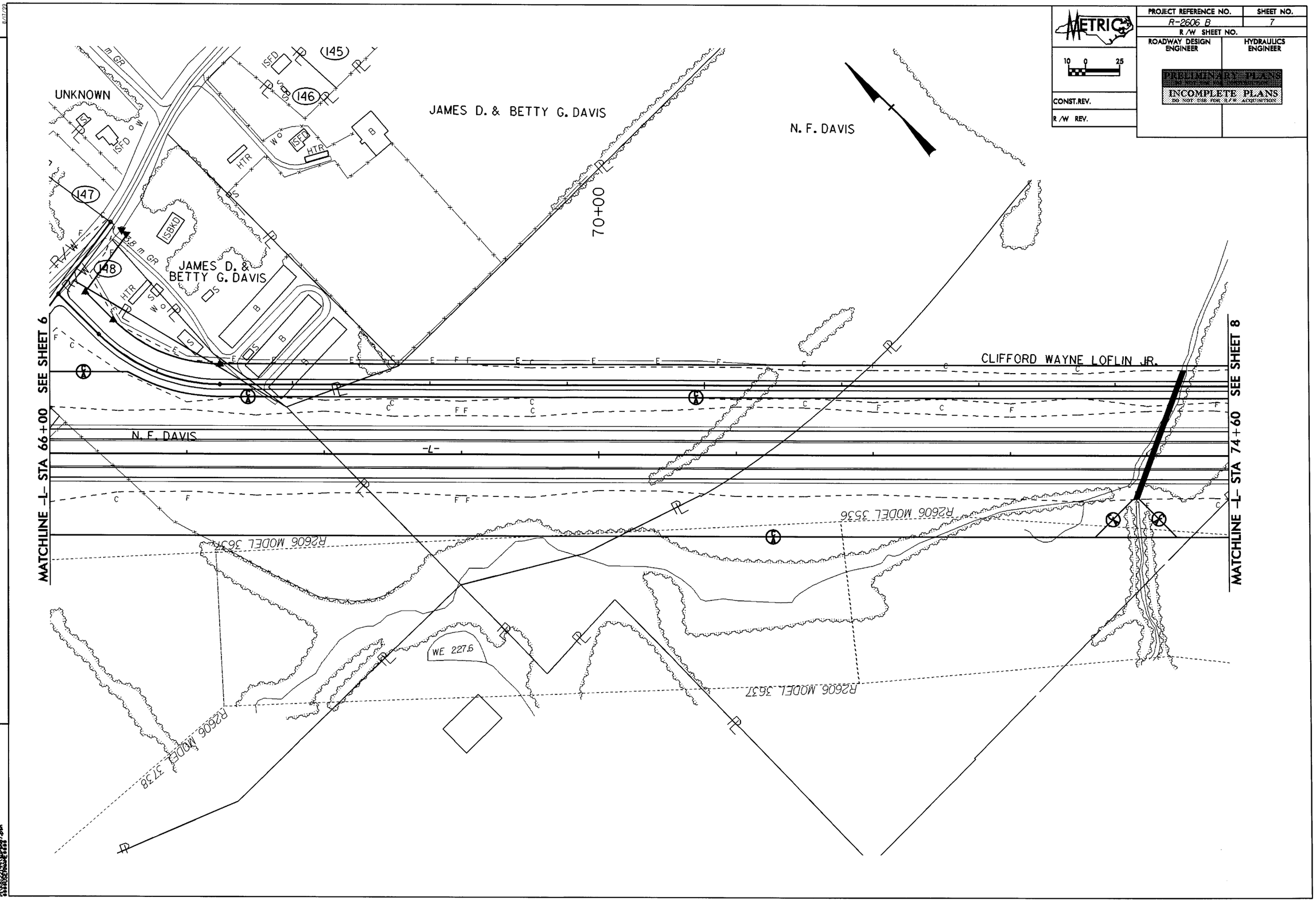
CONST.REV.

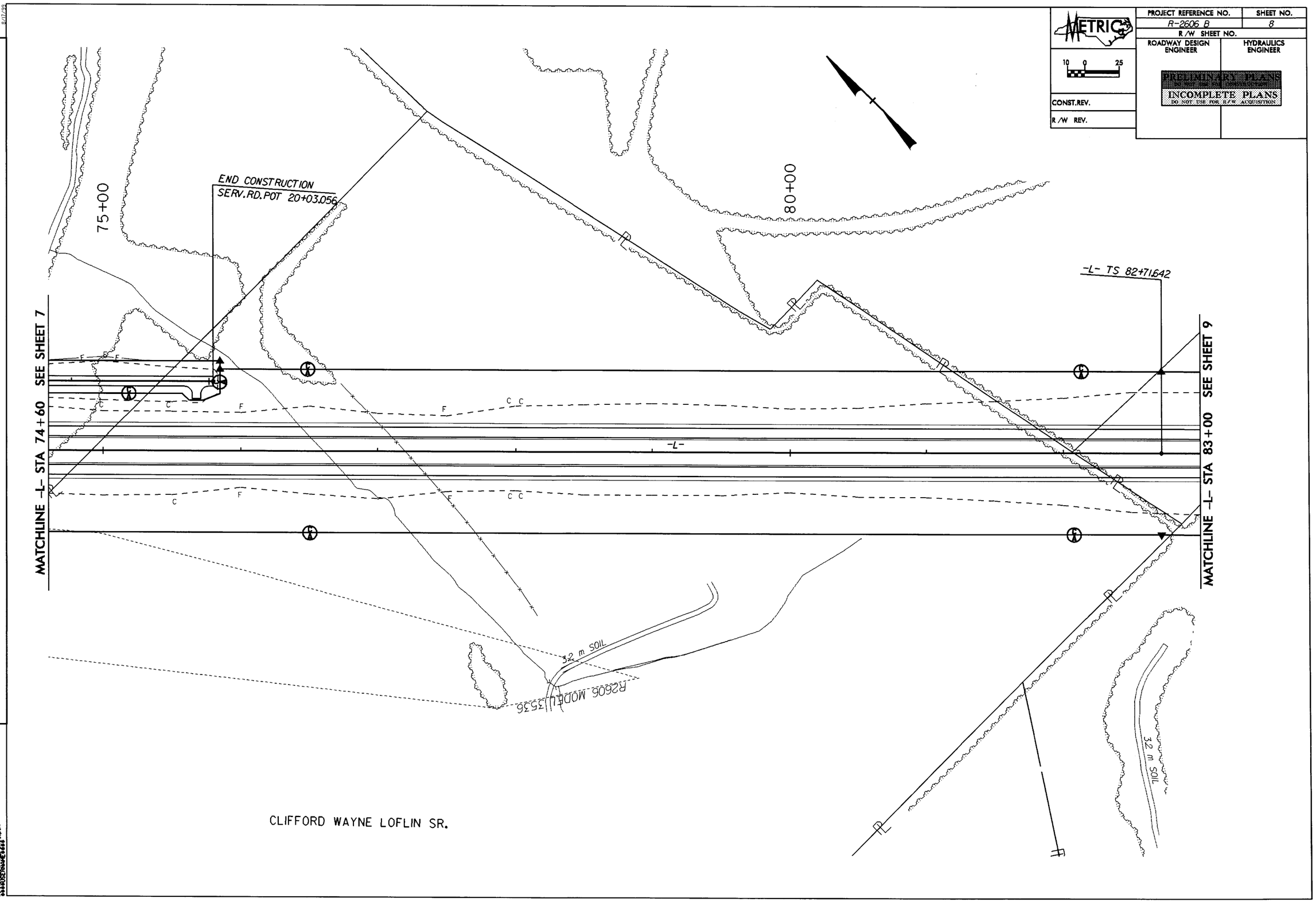
R/W REV.

PRELIMINARY PLANS
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

REVISIONS




METRIC
10 0 25
PROJECT REFERENCE NO.
R-2606 B
SHEET NO.
7
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
CONST.REV.
R/W REV.
REVISIONS
UNKNOWN
JAMES D. & BETTY G. DAVIS
N. F. DAVIS
JAMES D. & BETTY G. DAVIS
CLIFFORD WAYNE LOFLIN JR.
N. F. DAVIS
-L-
70+00
MATCHLINE -L- STA 66+00 SEE SHEET 6
MATCHLINE -L- STA 74+60 SEE SHEET 8
R2606 MODEL 3536
R2606 MODEL 3537
R2606 MODEL 3537
R2606 MODEL 3538
WE 227.6
145
146
147
148
ISFD
HTR
ISBKD
B
S
W O
E
F
C


METRIC
10 0 25
CONST.REV.
R/W REV.
PROJECT REFERENCE NO.
R-2606 B
SHEET NO.
8
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
REVISIONS
MATCHLINE -L- STA 74+60 SEE SHEET 7
MATCHLINE -L- STA 83+00 SEE SHEET 9
75+00
80+00
END CONSTRUCTION
SERV.RD.POT 20+03.056
-L- TS 82+71.642
-L-
3.2 m SOIL
R2606 MODEL 35.36
CLIFFORD WAYNE LOFLIN SR.

PROJECT REFERENCE NO.	SHEET NO.
R-2606 B	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

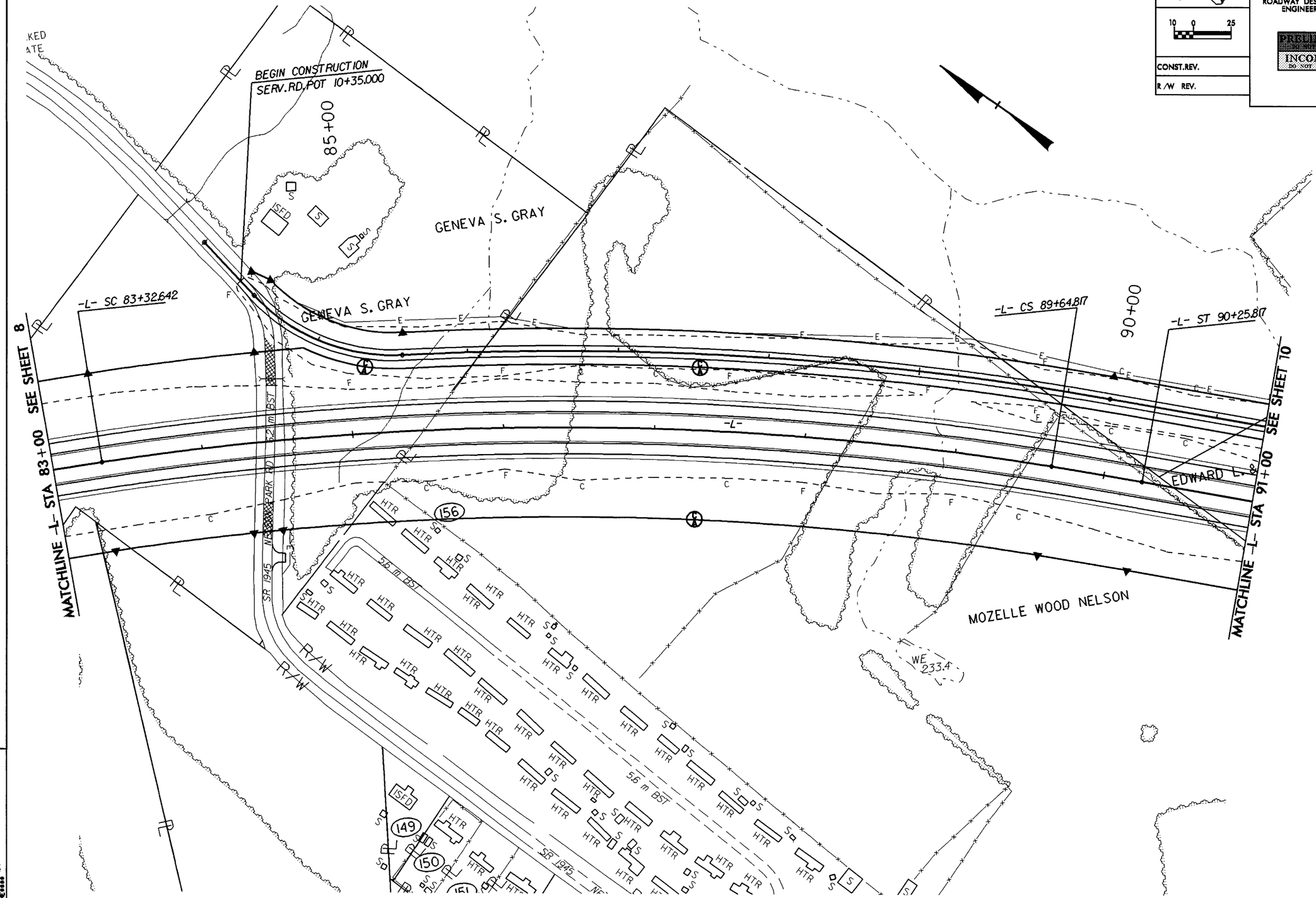
10 0 25

CONST. REV.

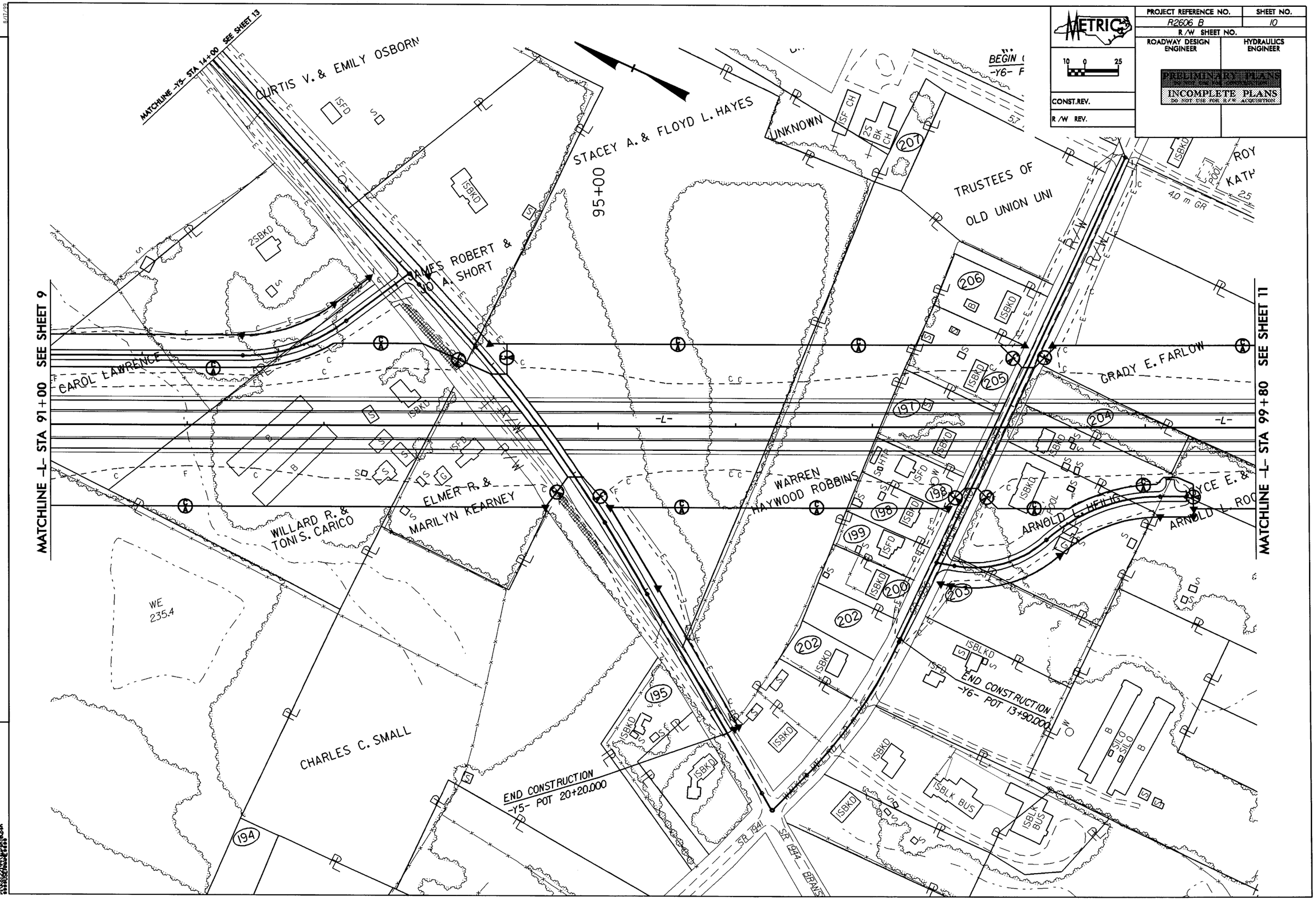
R/W REV.

PRELIMINARY PLANS
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

REVISIONS



09-FEB-2006 09:04
R:\Hydraulics\Mapping\Roadway\Sheets\


METRIC
10 0 25
CONST.REV.
R/W REV.
PROJECT REFERENCE NO.
R2606 B
SHEET NO.
10
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
REVISIONS
MATCHLINE -Y5- STA 14+00 SEE SHEET 13
MATCHLINE -L- STA 91+00 SEE SHEET 9
MATCHLINE -L- STA 99+80 SEE SHEET 11
CURTIS V. & EMILY OSBORN
STACEY A. & FLOYD L. HAYES
UNKNOWN
TRUSTEES OF
OLD UNION UNI
JAMES ROBERT &
JO A. SHORT
CAROL LAWRENCE
GRADY E. FARLOW
WARREN
HAYWOOD ROBBINS
ELMER R. &
MARILYN KEARNEY
WILLARD R. &
TONI S. CARICO
CHARLES C. SMALL
ARNOLD L. HEILIG
END CONSTRUCTION
-Y6- POT 13+90.000
END CONSTRUCTION
-Y5- POT 20+20.000
BEGIN
-Y6- F
95+00
-L-
-Y-
SR 1641
SR 1641 BRANCH
WE
235.4
40 m GR
ISBKD
2SBKD
ISFD
ISF CH
2S
BK
CH
ISBLKD
ISBLK BUS
SILO
SILO
B
POOL
ISFHTP
194
195
196
197
198
199
200
202
203
204
205
206
207

PROJECT REFERENCE NO.	SHEET NO.
R-2606 B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

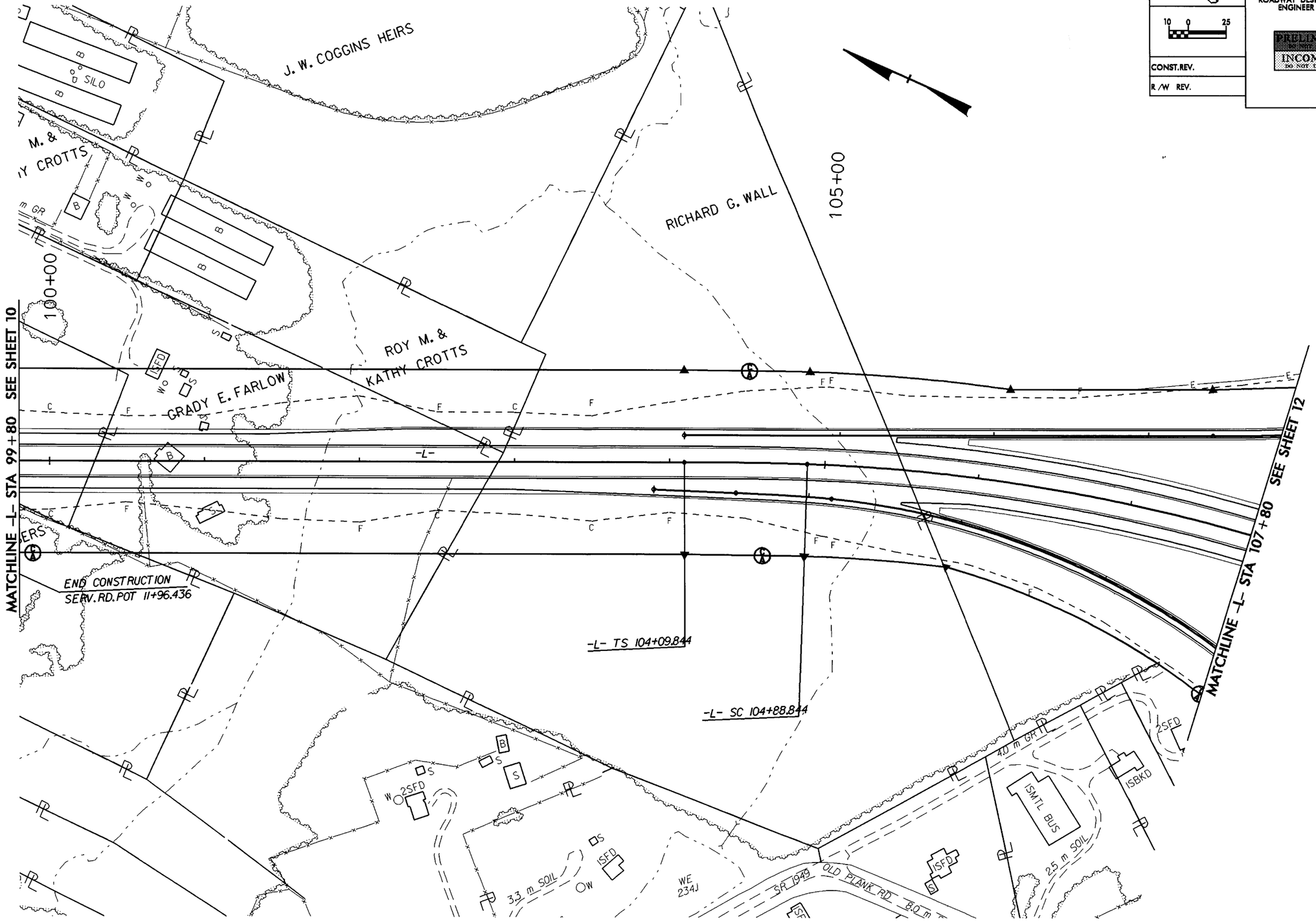
10 0 25

CONST.REV.

R/W REV.

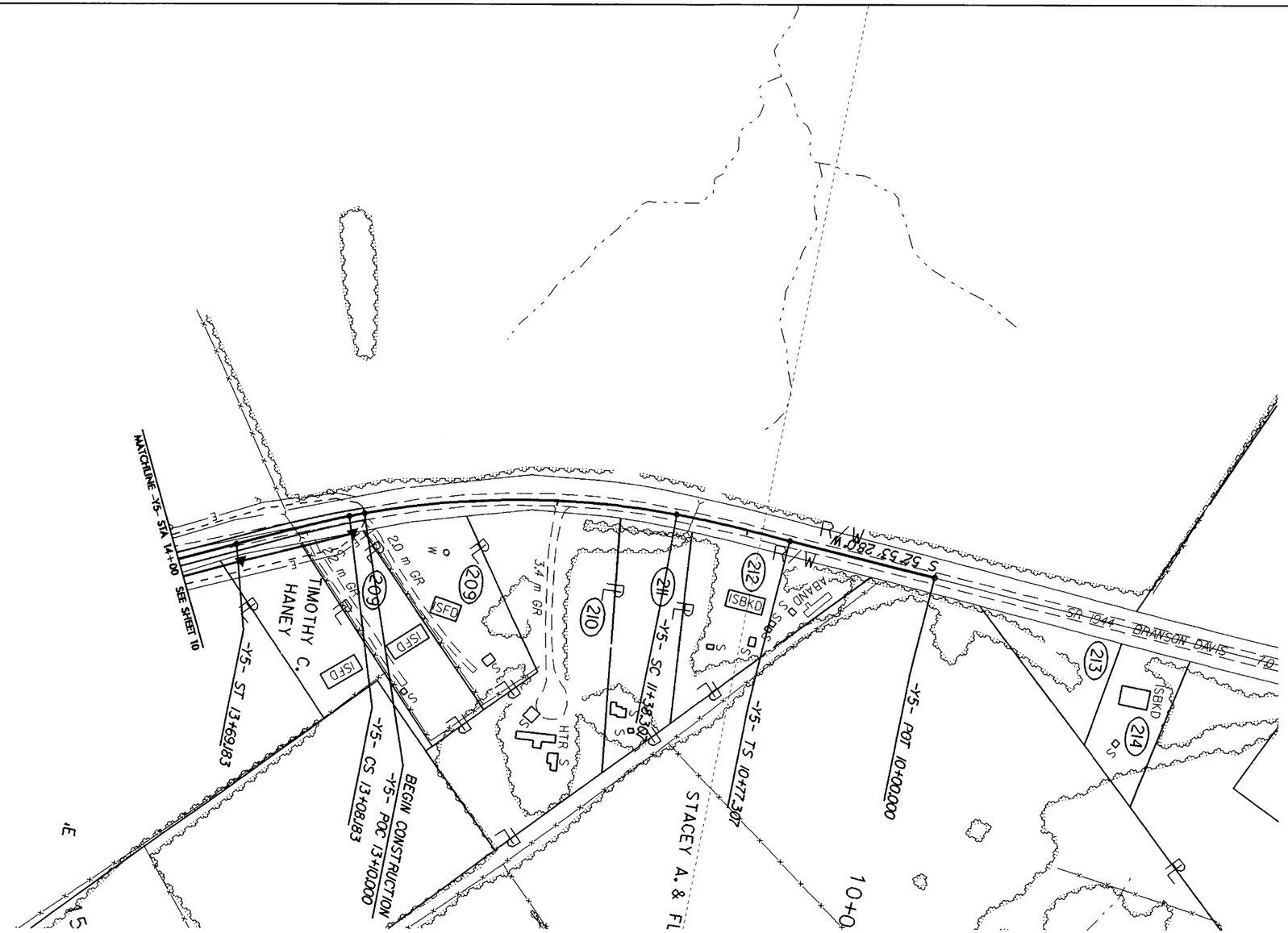
PRELIMINARY PLANS
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

REVISIONS



09-FEB-2006 09:06
C:\DOCUMENTS AND SETTINGS\

JAMES K. WALLS & OTHERS
ELENOR HARTLEY
SOPHIA BAPTIST CHURCH
R.A. JOHNSON HEIRS
RICHARD G. WALL
ARTHUR D. WAY
DUKE J. WAY
PERRY J. GARNER
UNKNOWN
CRAWFORD ROAD & NEAL COVE
MATCHLINE ℄ STA 107+80 SEE SHEET
20+00
15+00
10+00
110+00
115+00
R/W



PROJECT REFERENCE NO.	SHEET NO.
R-2606	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
NOT FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

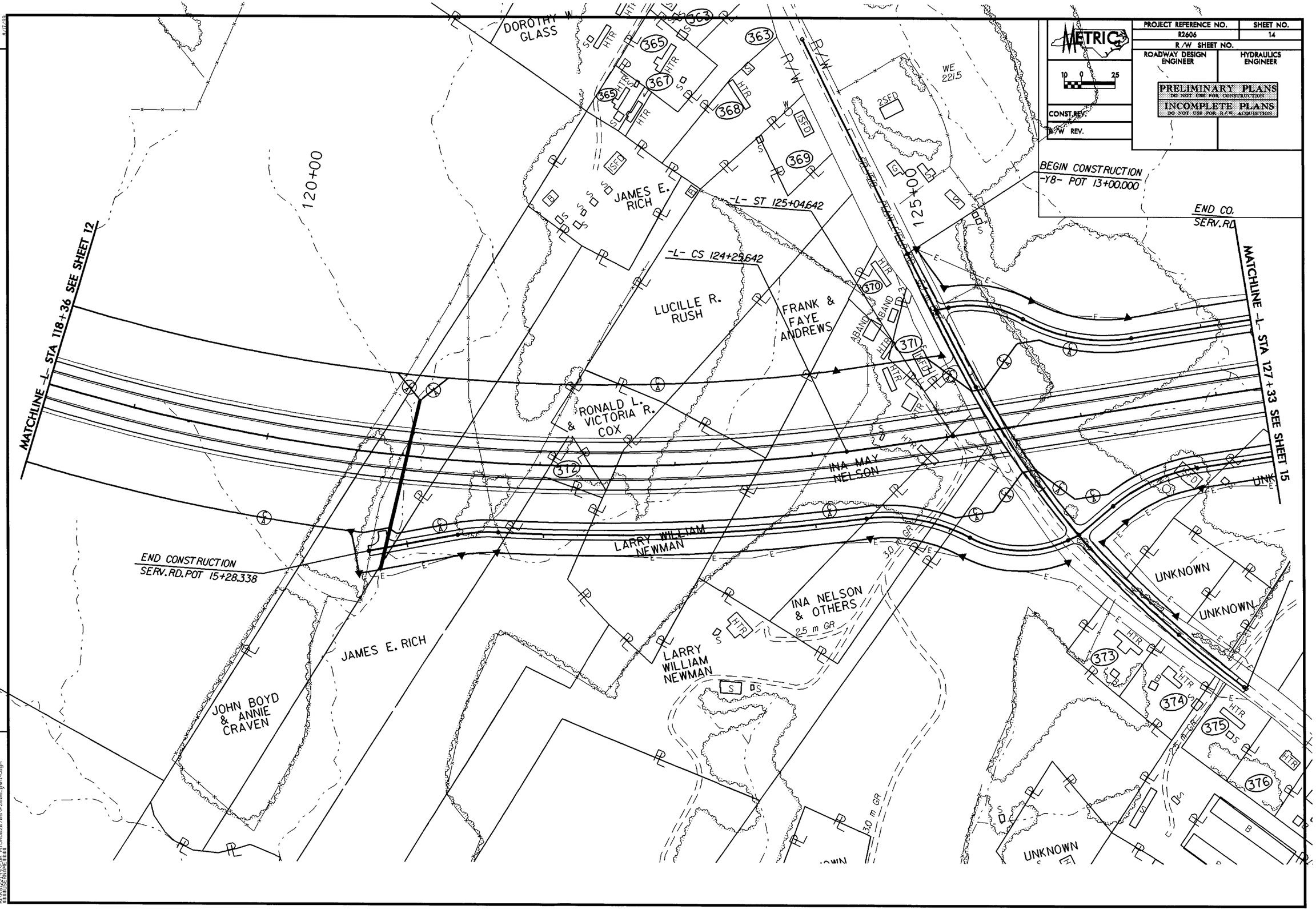
METRIC
10 0 25

CONST.REV.

R/W REV.

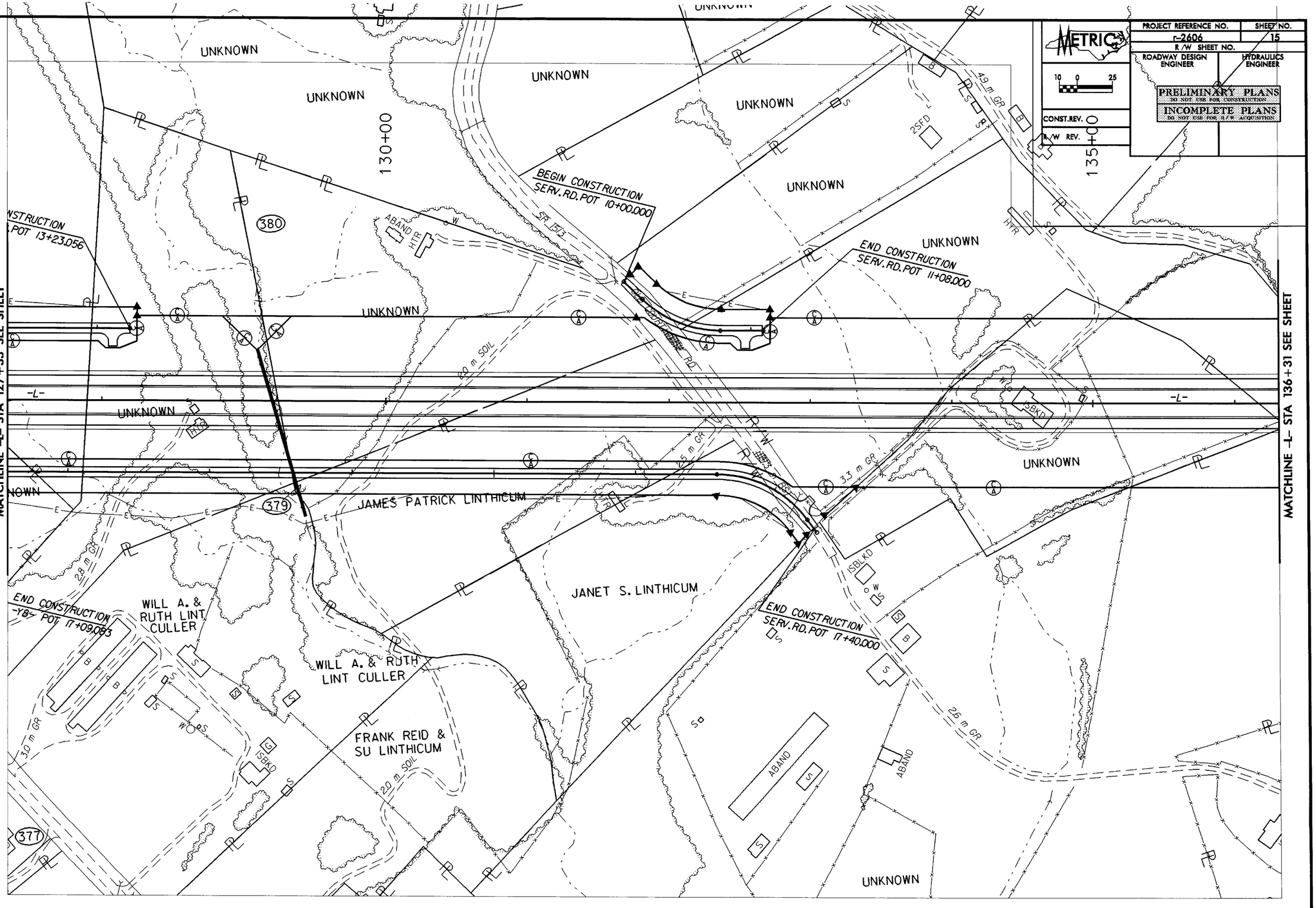
REVISIONS

06-FEB-2006 08:05



REVISIONS

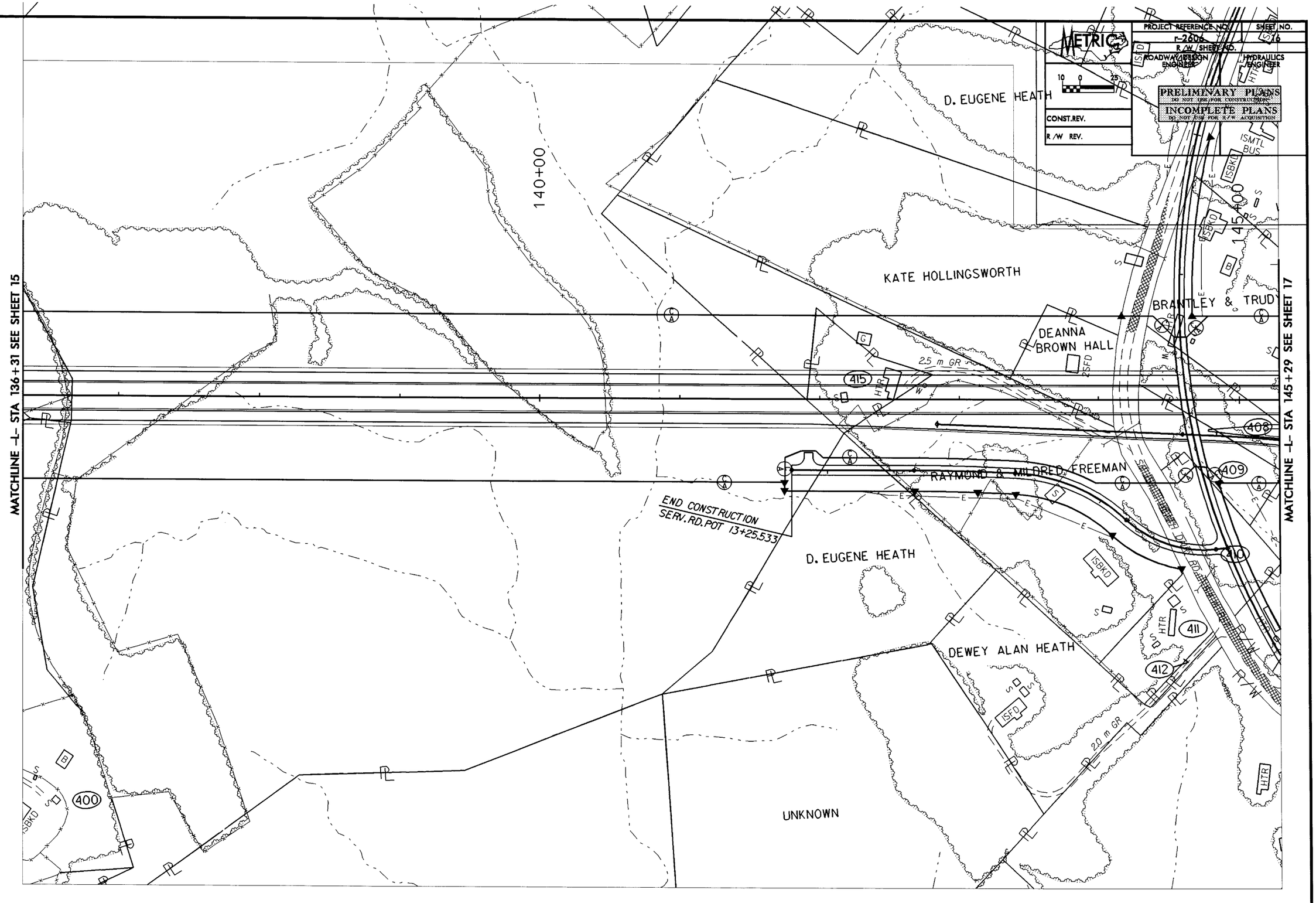
08-FEB-2006 08:21
R:\Roadway\Proj\R2606_sht14.dgn
$$$$USERNAME$$$$



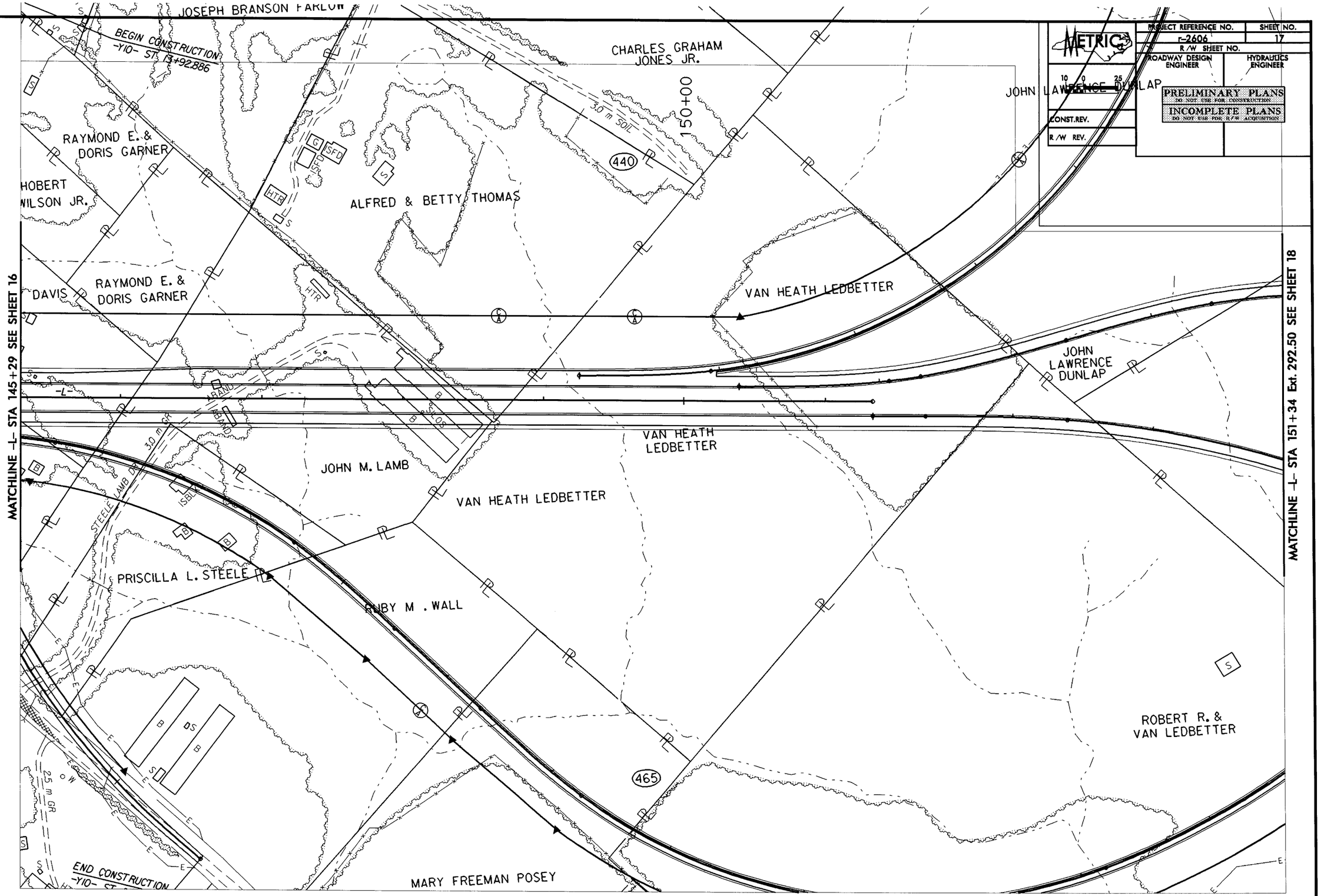
REVISIONS

8/17/99

08-FEB-2006 08:41
R-2606_PS15.dgn
R:\Hydro\Projects\R2606\PS15.dgn
$$$$USERNAME$$$$



08-FEB-2006 08:18
R:\Roadway\Proj\R2606_HYDRO\20206\R2606_PSH16.dgn
$$$$USERNAME$$$$



REVISIONS

08-FEB-2006 08:18
R:\Hydraulics\Proj\R2606_FSH17.dgn

MATCHLINE -L- STA 151+34 Ext. 292.50 SEE SHEET 17
MATCHLINE -L- STA 151+34 Ext. 1190.20
UNKNOWN
UNKNOWN
UNKNOWN
JAQUELINE LEDBETTER
MARGARET J. BOLING HEIRS
MARGARET J. BOLING HEIRS
470
R/W (a)
R/W (c)
R/W
US 220 100 m BST
US 220 100 m BST
US 220 100 m BST
US 220 100 m BST
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
CONST.REV.
R/W REV.
10 0 25
METRIC
PROJECT REFERENCE NO.
SHEET NO.
R-2606
18
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
REVISIONS
08-FEB-2006 08:18
R:\Roadway\Proj\R2606\Rr2606_psh18.dgn
$$$$USERNAME$$$$
4/17/98