PROJECT SPECIAL PROVISIONS
PERMITS

The Contractor's attention is directed to the following permits, which have been issued to the Department of Transportation by the authority granting the permit.

PERMIT	AUTHORITY GRANTING THE PERMIT
Dredge and Fill and/or Work in Navigable Waters (404)	U. S. Army Corps of Engineers
Water Quality (401)	Division of Environmental Management, DENR, State of North Carolina

The Contractor shall comply with all applicable permit conditions during construction of this project. Those conditions marked by * are the responsibility of the department and the Contractor has no responsibility in accomplishing those conditions.

Agents of the permitting authority will periodically inspect the project for adherence to the permits.

The Contractor's attention is also directed to Articles 107-10 and 107-14 of the Standard Specifications and the following:

Should the Contractor propose to utilize construction methods (such as temporary structures or fill in waters and/or wetlands for haul roads, work platforms, cofferdams, etc.) not specifically identified in the permit (individual, general, or nationwide) authorizing the project it shall be the Contractor's responsibility to coordinate with the Engineer to determine what, if any, additional permit action is required. The Contractor shall also be responsible for initiating the request for the authorization of such construction method by the permitting agency. The request shall be submitted through the Engineer. The Contractor shall not utilize the construction method until it is approved by the permitting agency. The request normally takes approximately 60 days to process; however, no extensions of time or additional compensation will be granted for delays resulting from the Contractor's request for approval of construction methods not specifically identified in the permit.

Where construction moratoriums are contained in a permit condition which restricts the Contractor's activities to certain times of the year, those moratoriums will apply only to the portions of the work taking place in the waters or wetlands provided that activities outside those areas is done in such a manner as to not affect the waters or wetlands.

Haney

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DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1890
WILMINGTON. NORTH CAROLINA 28402-1890

REPLY TO
ATTENTION OF:

September 23, 2004

Regulatory Division

Subject: Action ID No. 200201326, TIP No. R-2417BB, US 421/NC 87 Bypass from East of SR 1521 to East of NC 42, Lee County, North Carolina.

Dr. Gregory J. Thorpe, Ph.D.
Environmental Management Director
Project Development & Environmental Analysis
1548 Mail Service Center
Raleigh, N.C. 27699-1548

Dear Dr. Thorpe:

I am responding to your request dated August 9, 2004, and addendum to that request dated on September 1, 2004, for a modification to the existing Department of the Army (DA) permit issued for the above referenced project. The proposed project modifications are as follows:

REFINED STREAM RESTORATION ALIGNMENT

R-2417BB, permit drawing sheet 18 and 19 of 38, Station L 546+50-562+00, Site 6

The referenced Section 404 and 401 permits authorized 1,930 ft of natural stream design at this site. NCDOT Division 8 requested an alignment on this stream restoration. Therefore, the length has been modified to reflect the increase in precision. Originally the length was scaled on a computer, but now the stream is stationed, which increases the precision. The revised natural stream design is 1,924 ft. This resulted in a decrease of natural stream design of 6 ft.

REDUCTION OF GRADE

The Atlantic and Western Railway tracks have been abandoned. This will allow NCDOT to lower the grade approximately eight feet and maintain a 16 ft, 6 in vertical clearance over the roadway. This would result in a savings of around $900,000 total for the dual structures. The decrease in grade also decreases the wetland and stream impacts adjacent to the railroad.

R-2417BB, permit drawing sheet 31 and 34 of 38, Station L 572+50, Site 8

The impacts that were authorized at this site include: 1.92 ac fill in wetlands and 0.162 ac mechanized clearing in wetlands. The fill slopes at this site have been brought in to reflect the lowering of the grade. Due to the shape of the wetland, the slope stake line is now on a longer

part of the wetland. The width of the impact has not changed, but the length of the wetland has increased at the slope stake. The revised impacts include: 1.86 ac fill in wetlands and 0.173 ac mechanized clearing in wetlands. This resulted in a decrease of 0.06 ac fill in wetlands and an increase of 0.011 ac mechanized clearing in wetlands.

R-2417BB, permit drawing sheet 35 of 38, Station L 589+50, Site 9

The impacts that were authorized at this site include: 0.07 ac fill in wetlands, 0.0075 ac mechanized clearing in wetlands, and 430 ft of stream impacts. Due to lowering the grade, the revised impacts include: 0.06 ac fill in wetlands, 0.0074 ac mechanized clearing in wetlands, and 413 ft of stream impacts. This accounts for a decrease of 0.0101 ac in wetland impacts and 17 ft in stream impacts.

ADDITIONAL UTILITY IMPACTS

Dixie Pipeline will directional bore a new line from left of Station 574+00 to 582+00, crossing the L line at 582+25, continuing off NCDOT's right of way and tying back into their existing pipeline. Excavation will occur in wetlands at approximate Station 583+00. The trench in wetlands will be approximately 50 ft by 30 ft (0.03 ac).

CHANGE IN LOCATION OF PIPE

At Station L 550+00, the location of the 15 inch pipe has changed. Attached are a revised permit drawing and a half-size plan sheet showing the new location of the pipe. There will be no change in impacts from this new pipe location.

IMPACT SUMMARY

The total impacts after revising the grade and from utility impacts equal 7.16 ac of wetland impacts and 4,103 ft of stream impacts. The natural stream design now totals 1,924 ft. These revisions account for a decrease of 0.03 ac of wetland impacts, a decrease of 17 ft of stream impacts, and a decrease of 6 ft of natural stream design.

I have determined that the proposed project modifications described above are not contrary to the public interest and therefore, the DA permit is hereby modified to reflect the modified project as described in the information above and the drawings provided with the modification requests and Special Condition b of the DA permit is modified as follow

"*The permittee shall mitigate for 11.03 acres of unavoidable impacts to wetlands, and for 19,205 linear feet of impact to important streams, for the project, as described below (2.21 acres of wetland restoration at the Sandy Creek mitigation site, 11.05 acres of wetlands preservation, along with upland buffer and stream preservation, at the Blue Tract mitigation site, 2,078 linear feet of onsite stream relocation, 4,545 linear feet of stream restoration/enhancement at the*

Deaton mitigation site, and 25, 164 linear feet of stream mitigation and 17.1 acres of wetland mitigation through the North Carolina Wetlands Restoration Program (NCWRP), in the Middle Cape Fear basin (Cataloging Unit 030300004)."

Please note that a modified Water Quality Certification shall be obtained from NCDENR-DWQ. Furthermore, all unmodified terms and conditions of your original Department of the Army permit shall remain in effect and the original permit expiration date shall remain the same.

Should you have any questions, please contact Mr. Richard Spencer, Wilmington Field Office, Regulatory Division, at telephone (910) 251-4172.

Sincerely,

for Charles R. Alexander, Jr.
Colonel, U.S. Army
District Engineer

Enclosures

Copies Furnished (with enclosures):

Mr. David Cox
North Carolina Wildlife Resources Commission
512 N. Salisbury Street
Raleigh, North Carolina 27604-1188

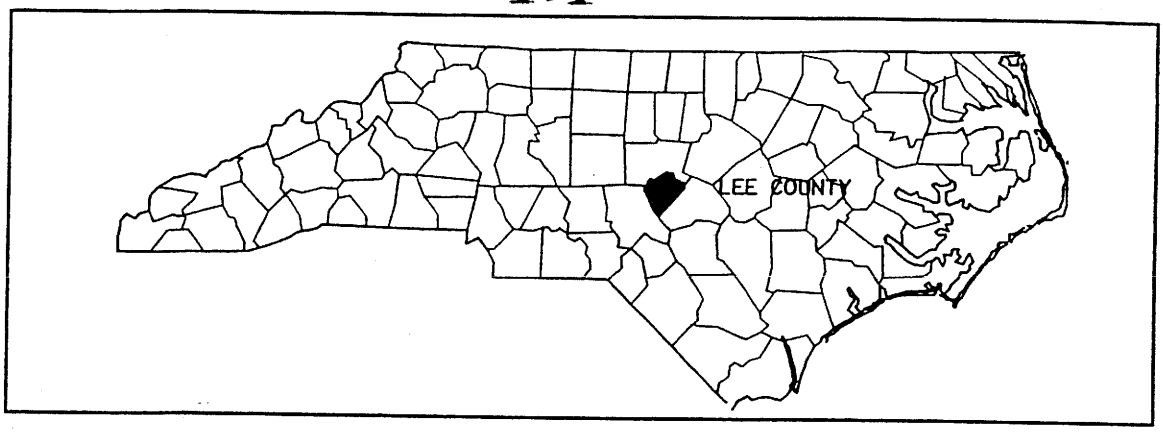
Mr. John Hennessy
NCDENR-DWQ
Wetlands Section
1650 Mail Service Center
Raleigh, NC 27699-1621

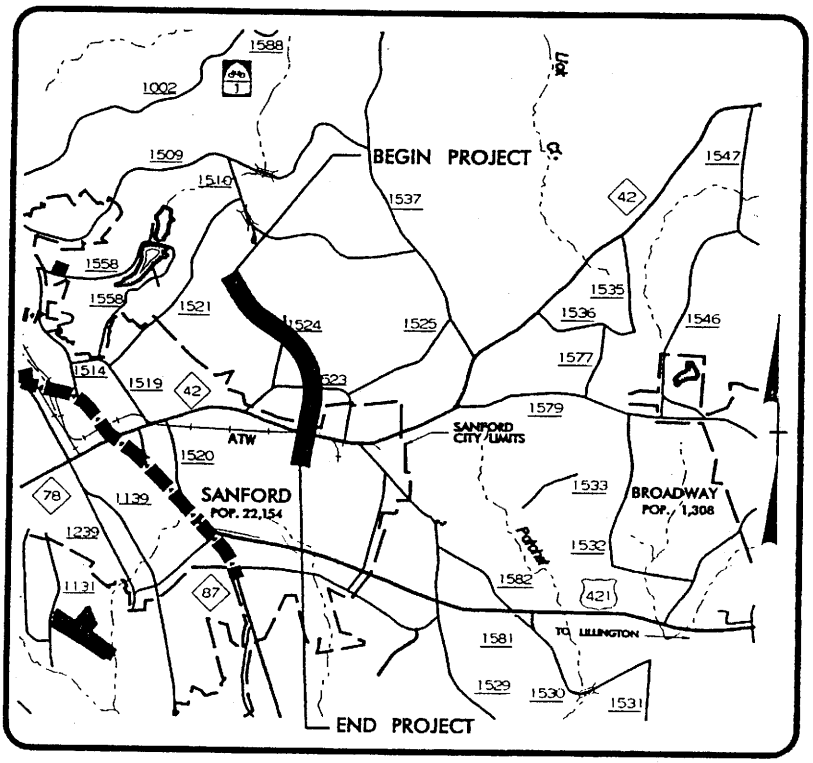
Mr. Howard Hall
U.S. Fish and Wildlife Service
Fish and Wildlife Enhancement
Post Office Box 33726
Raleigh, North Carolina 27636-3726

Mr. Chris Militcher
USEPA/Raleigh Office
Office of Environmental Assessment
310 New Bern Avenue, Room 206
Raleigh, NC 27601

Mr. Art King
Division Environmental Officer, Division 8
North Carolina Department of Transportation
P.O. Box 1067
Aberdeen, North Carolina 28315

Mr. James J. Rerko, PWS
Division Environmental Officer, Division 6
North Carolina Department of Transportation
P.O. Box 1150
Fayetteville, North Carolina 28302-1150

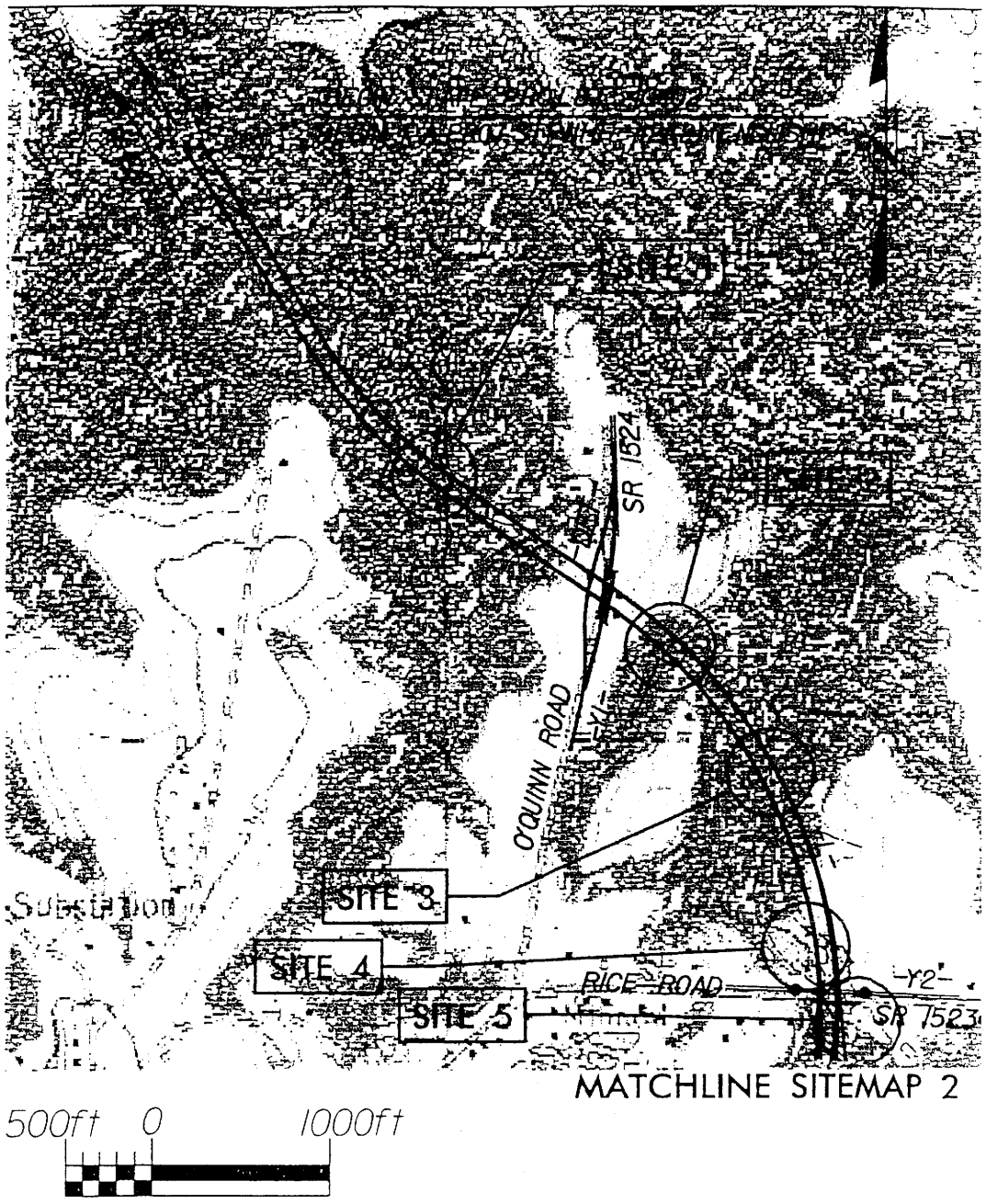




VICINITY MAPS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY
PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS
FROM EAST OF SR 1521
TO EAST OF NC 42

SHEET 1 OF 38 4/24/01



SITEMAP 1

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

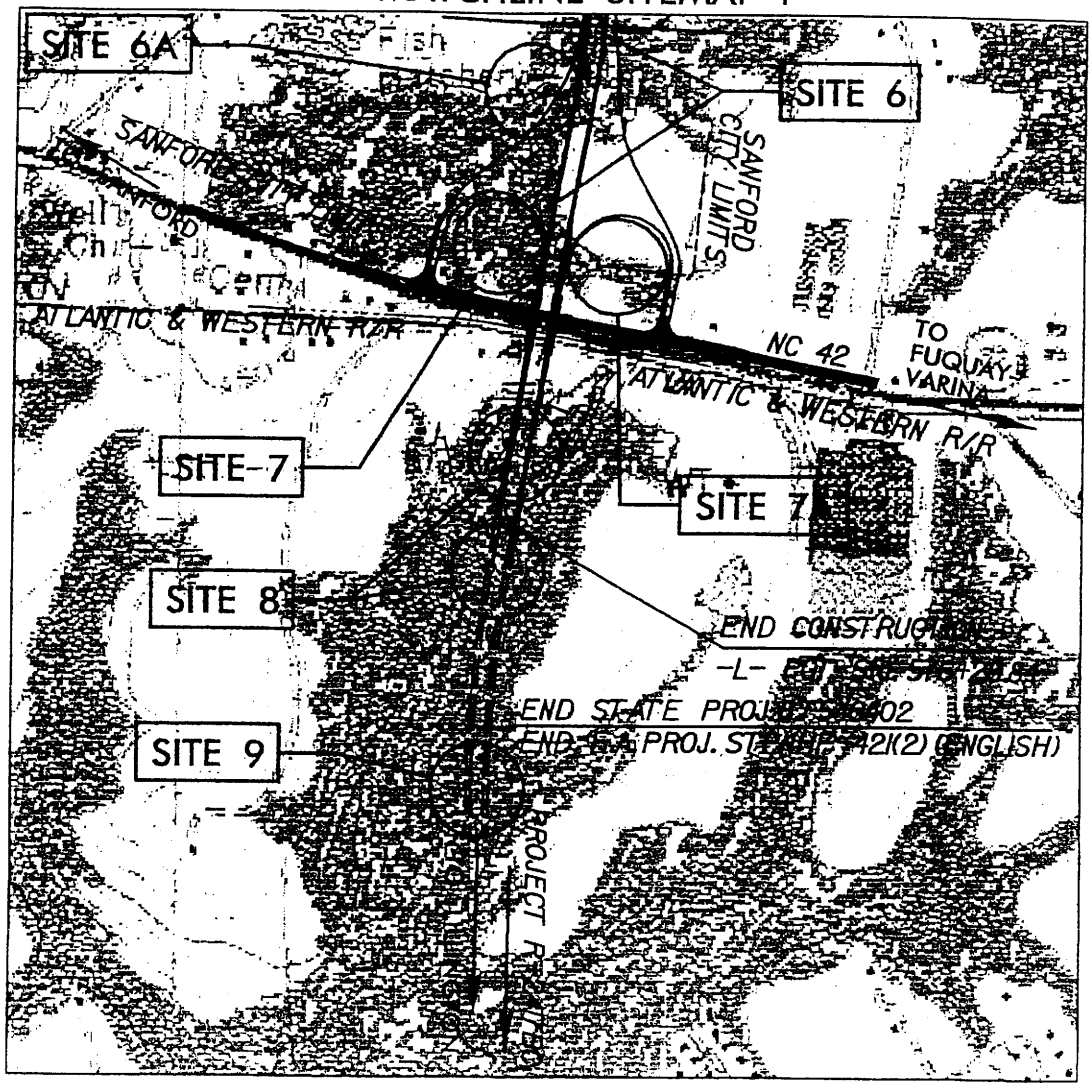
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 2 OF 24 4/24/01

MATCHLINE SITEMAP 1



500ft 0 1000ft

SITEMAP 2

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 3 OF 35 4/24/01

LEGEND

WLB — WETLAND BOUNDARY

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

COIR FIBER ROLLS

5 — ADJACENT PROPERTY OWNER OR PARCEL NUMBER

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

VANE

RIP RAP

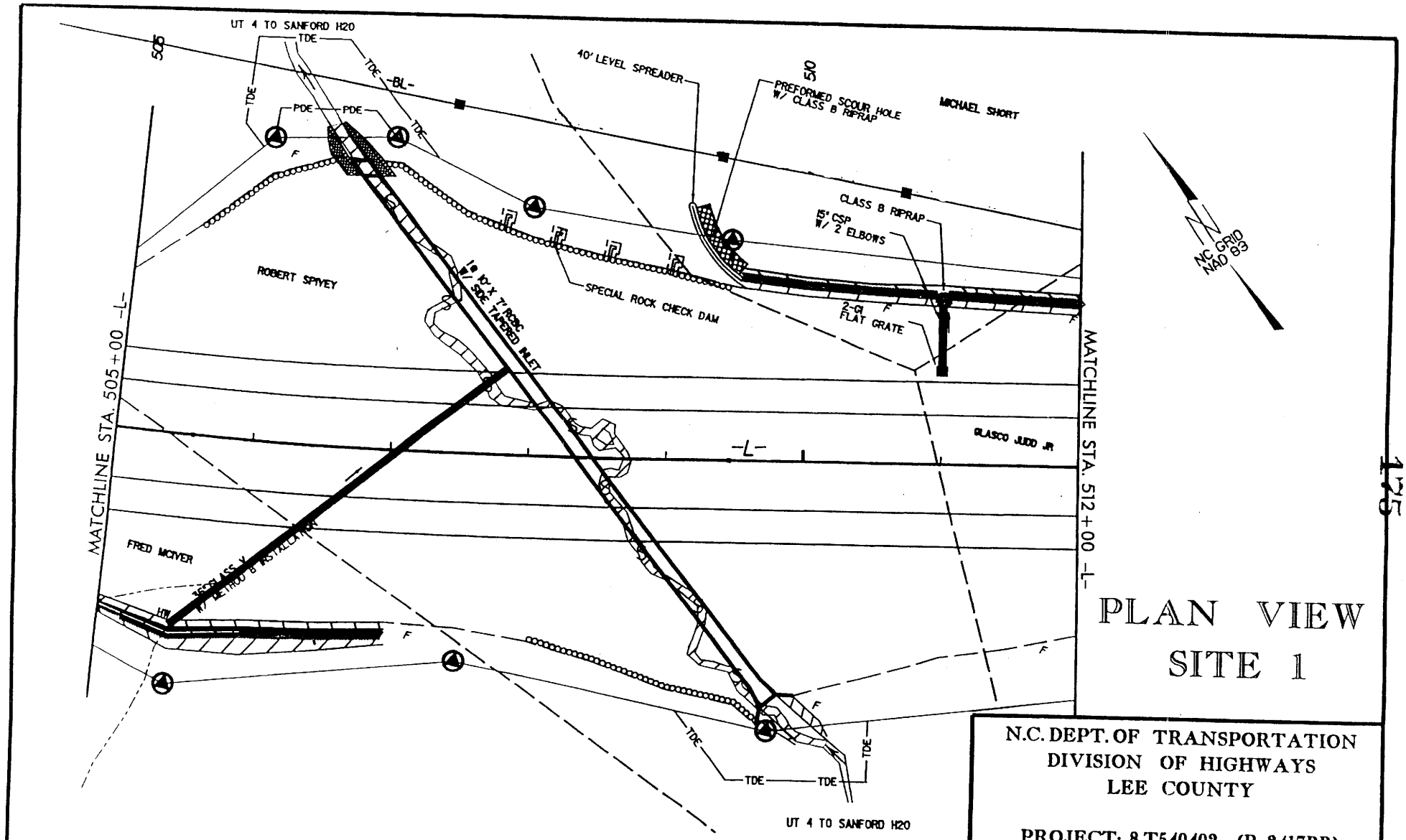
RIP RAP ENERGY DISSIPATOR BASIN

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM EAST OF SR 1521 TO EAST OF NC 42

SHEET 4 **OF** 38 4/24/01



PLAN VIEW
SITE 1

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 5 OF 38 REVISED 4/30/01

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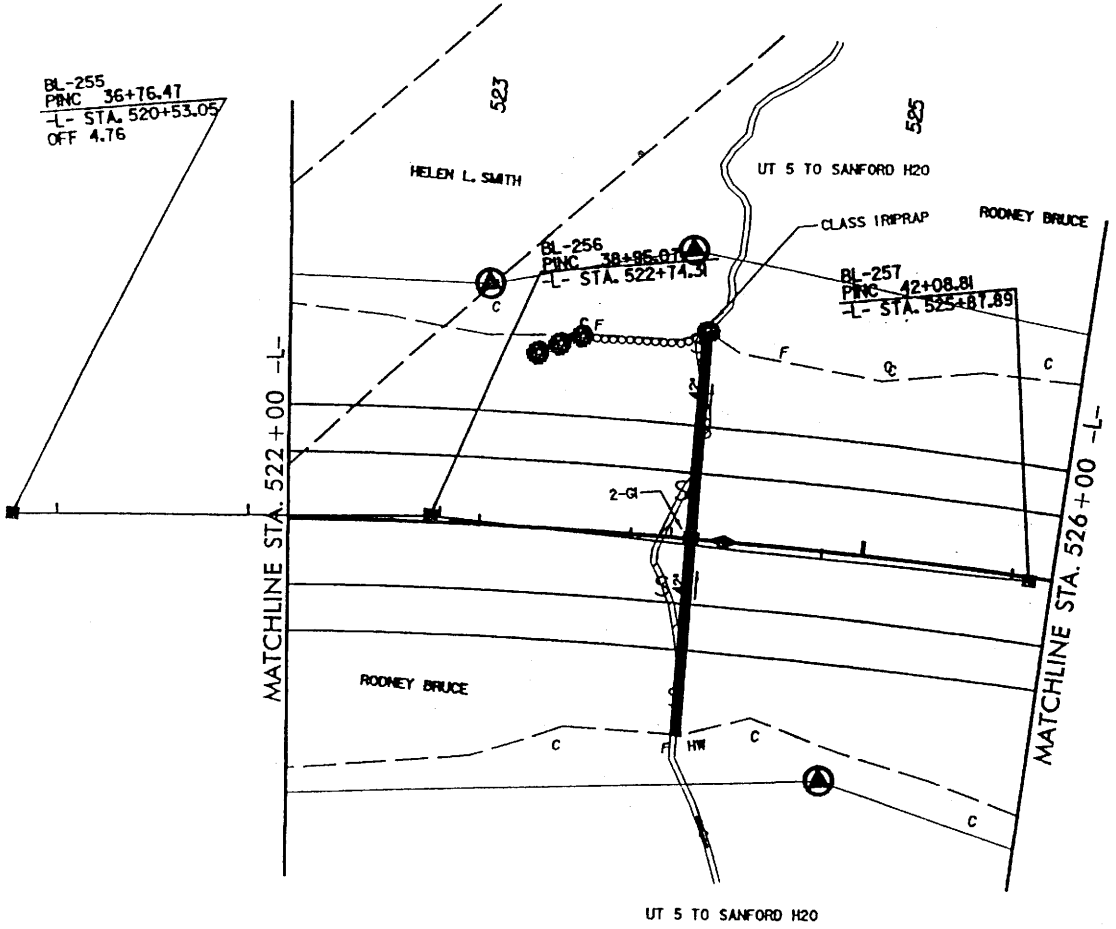

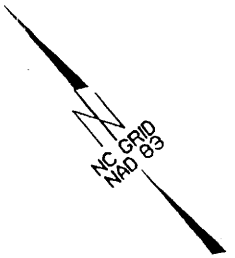

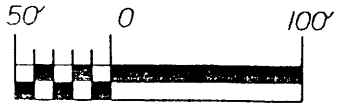

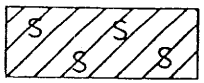

DENOTES FILL IN SURFACE WATERS

PLAN VIEW
SITE 2

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 6 OF 38 REVISED 1/30/01

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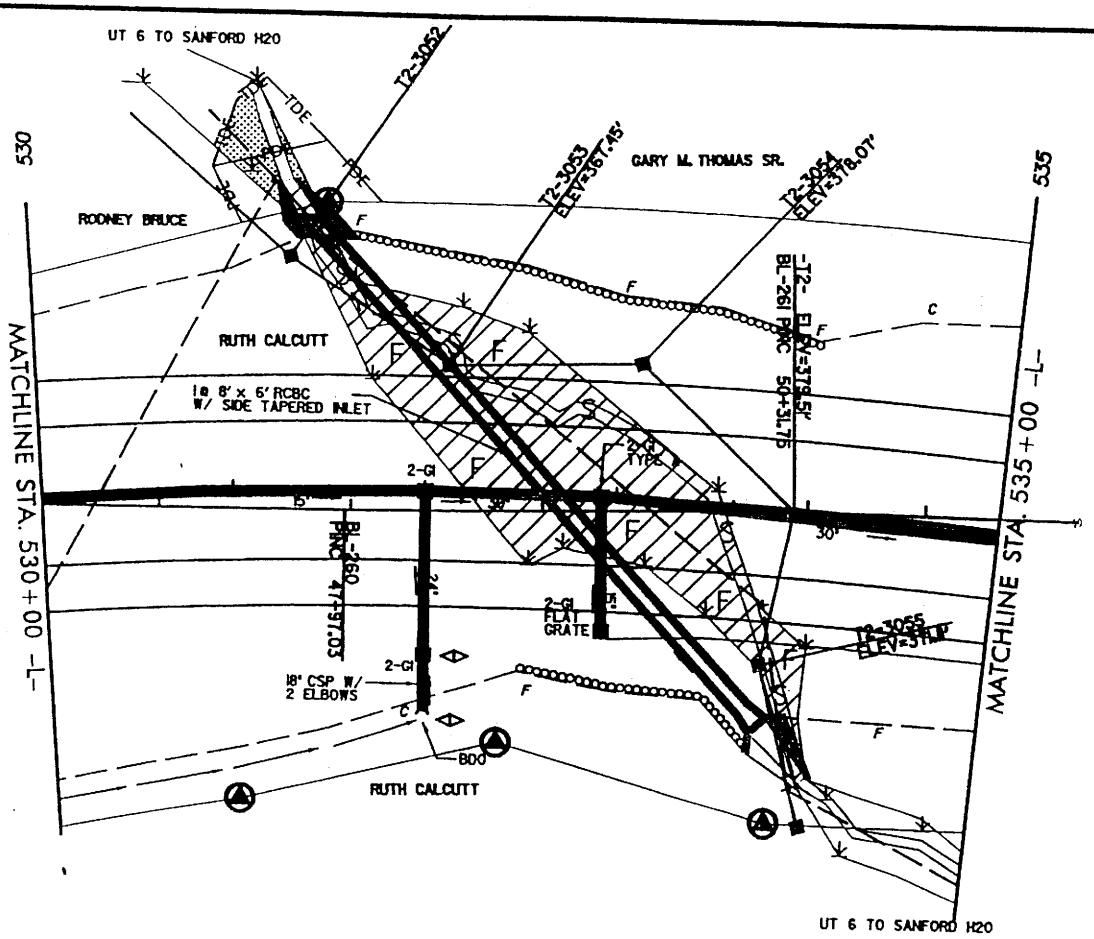

PLAN VIEW
SITE 3

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLANDS

DENOTES FILL IN SURFACE WATERS

50' 0 100'

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 7 OF 38 REVISED 4/30/01

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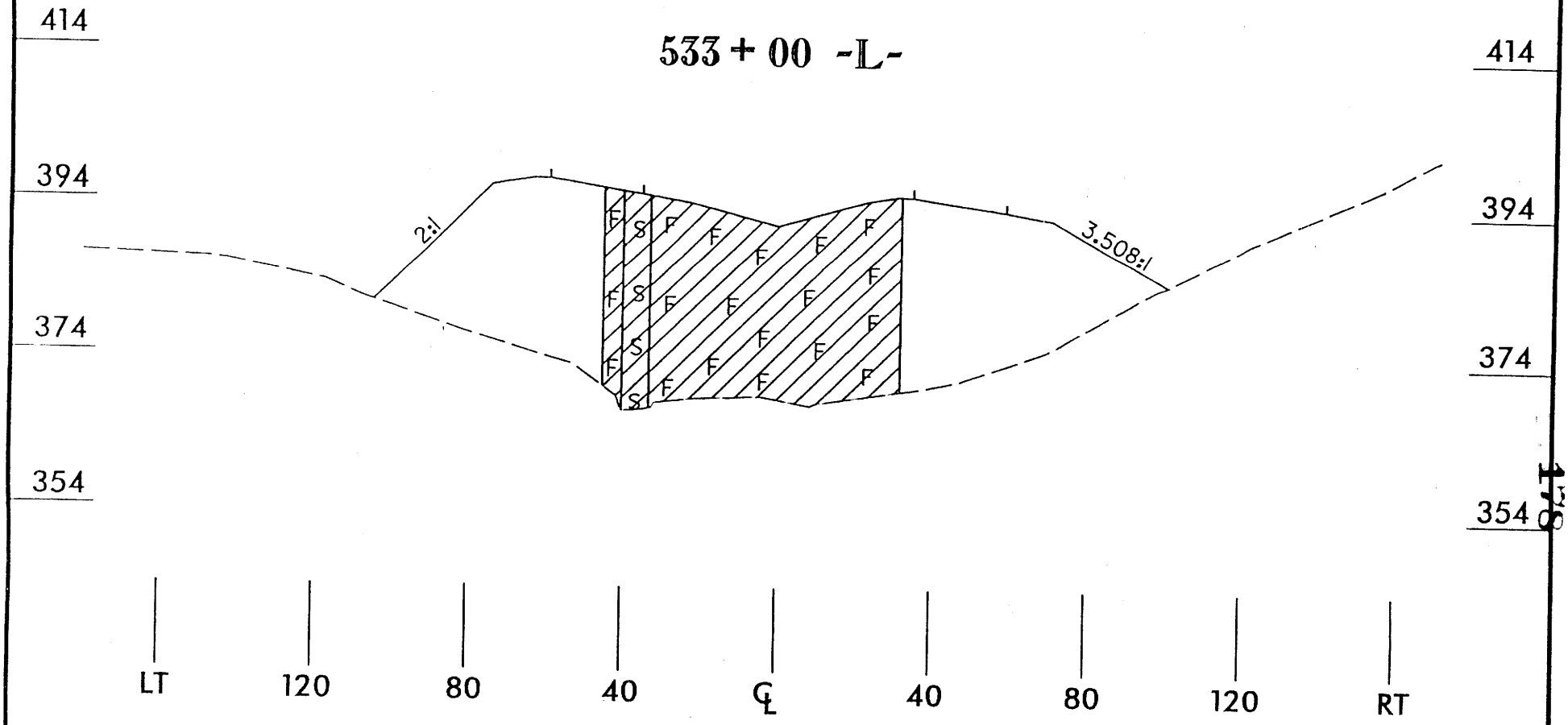


SITE 3
CROSS-SECTION

20ft 0 40ft
HORIZONTAL SCALE

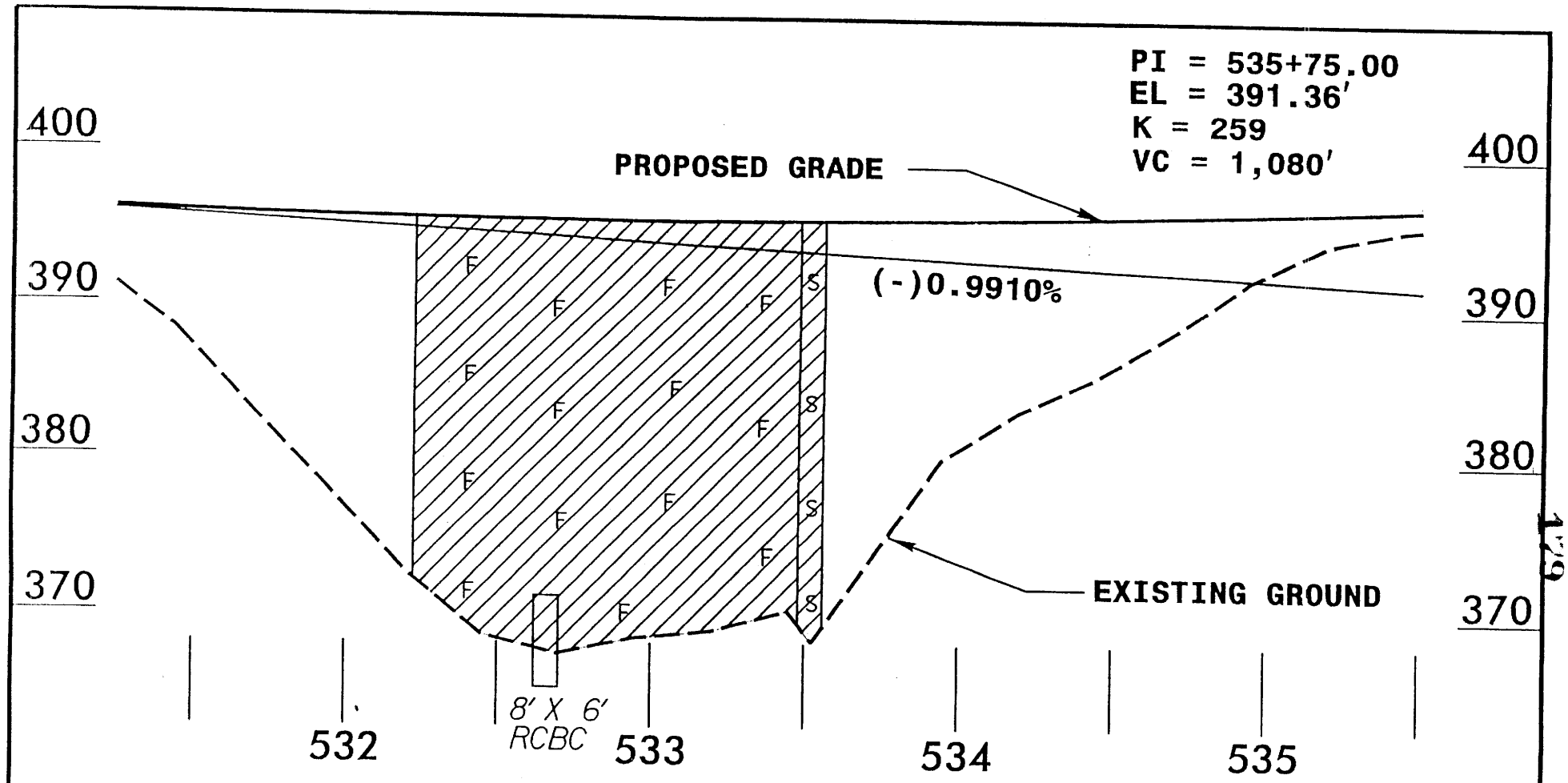
10ft 0 20ft
VERTICAL SCALE

F F F DENOTES FILL IN WETLANDS

S S S DENOTES FILL IN SURFACE WATERS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY
PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 8 OF 38 4/24/01



SITE 3
PROFILE

25ft 0 50ft
HORIZONTAL SCALE

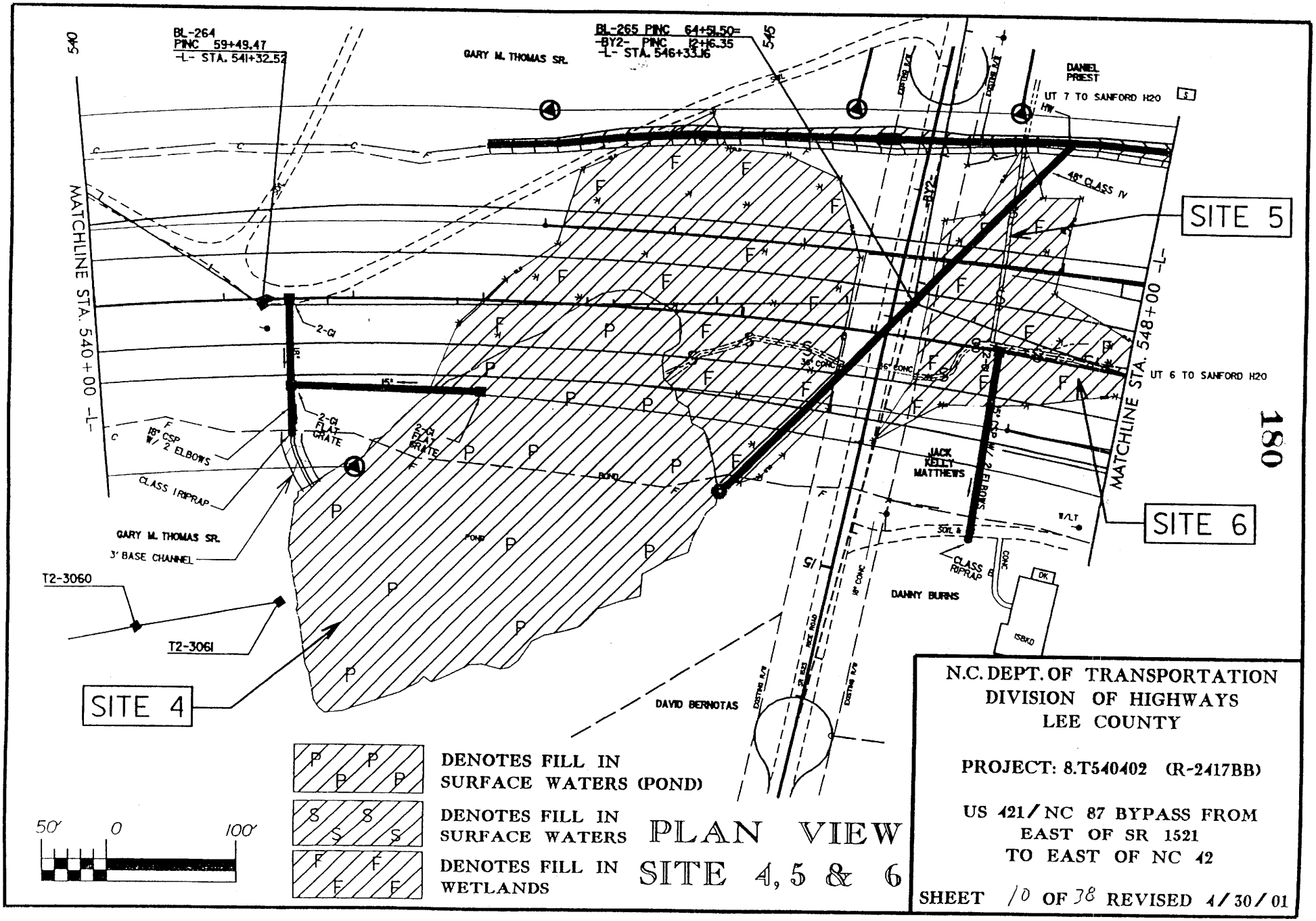
5ft 0 10ft
VERTICAL SCALE

DENOTES FILL IN SURFACE WATERS

DENOTES FILL IN WETLANDS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY
PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 9 OF 38 4/24/01



PLAN VIEW
SITE 4, 5 & 6

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 10 OF 38 REVISED 4/30/01

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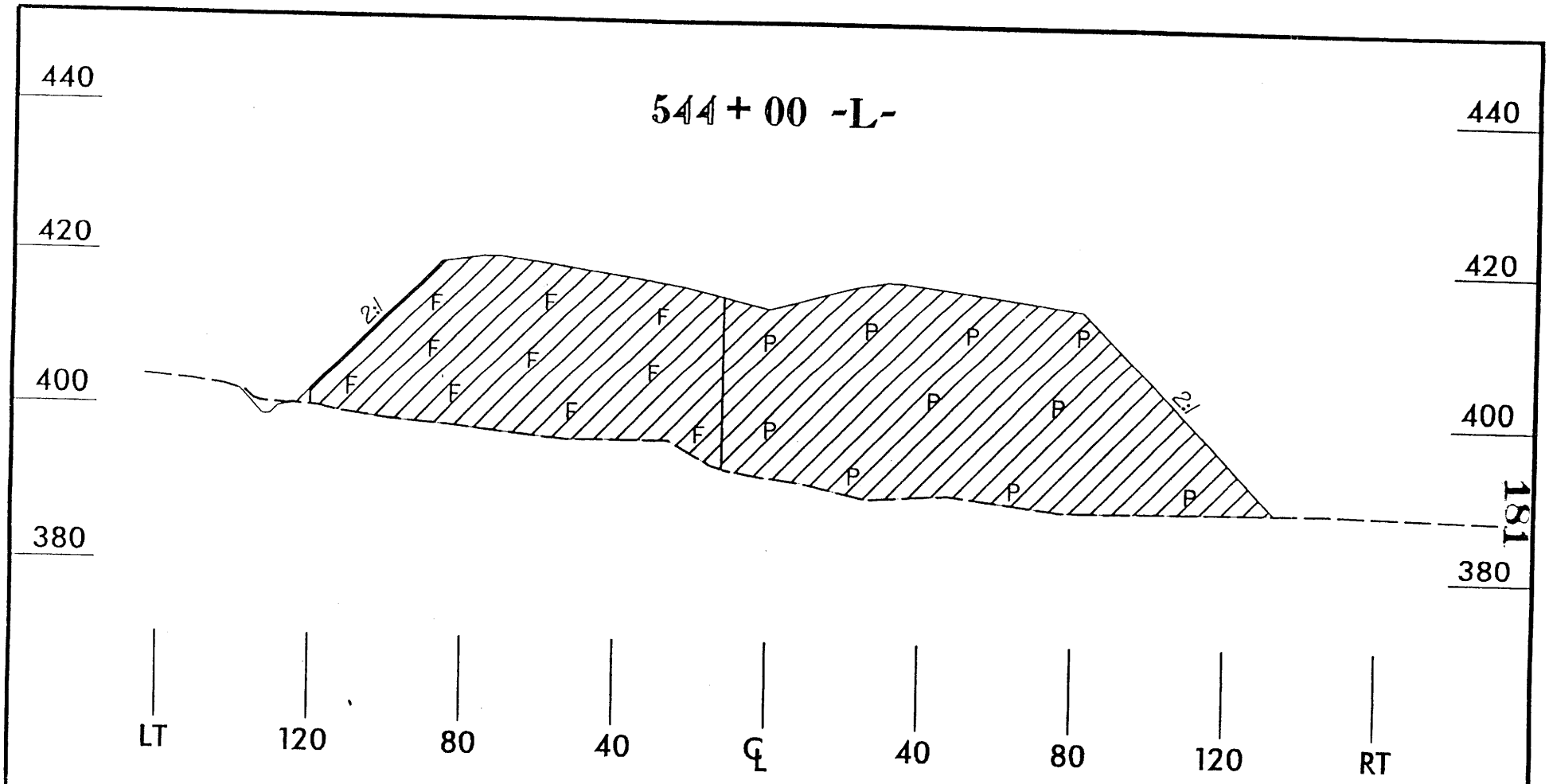


SITE 4
CROSS-SECTION

20ft 0 40ft
HORIZONTAL SCALE

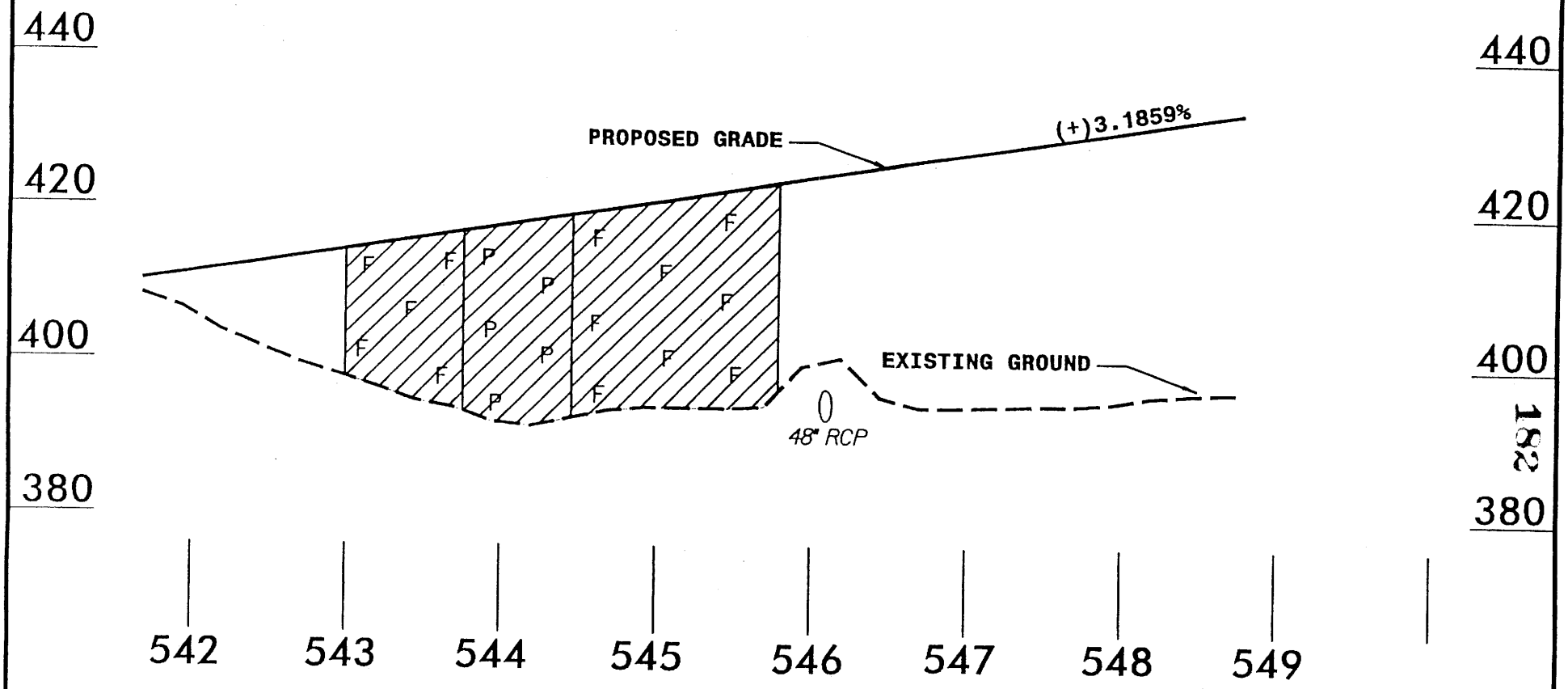
10ft 0 20ft
VERTICAL SCALE

F F F P — DENOTES FILL IN WETLANDS

P P P P — DENOTES FILL IN SURFACE WATERS (POND)

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY
PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 11 OF 38 4/24/01



182

50ft 0 100ft

HORIZONTAL SCALE

10ft 0 20ft

VERTICAL SCALE

SITE 4
PROFILE

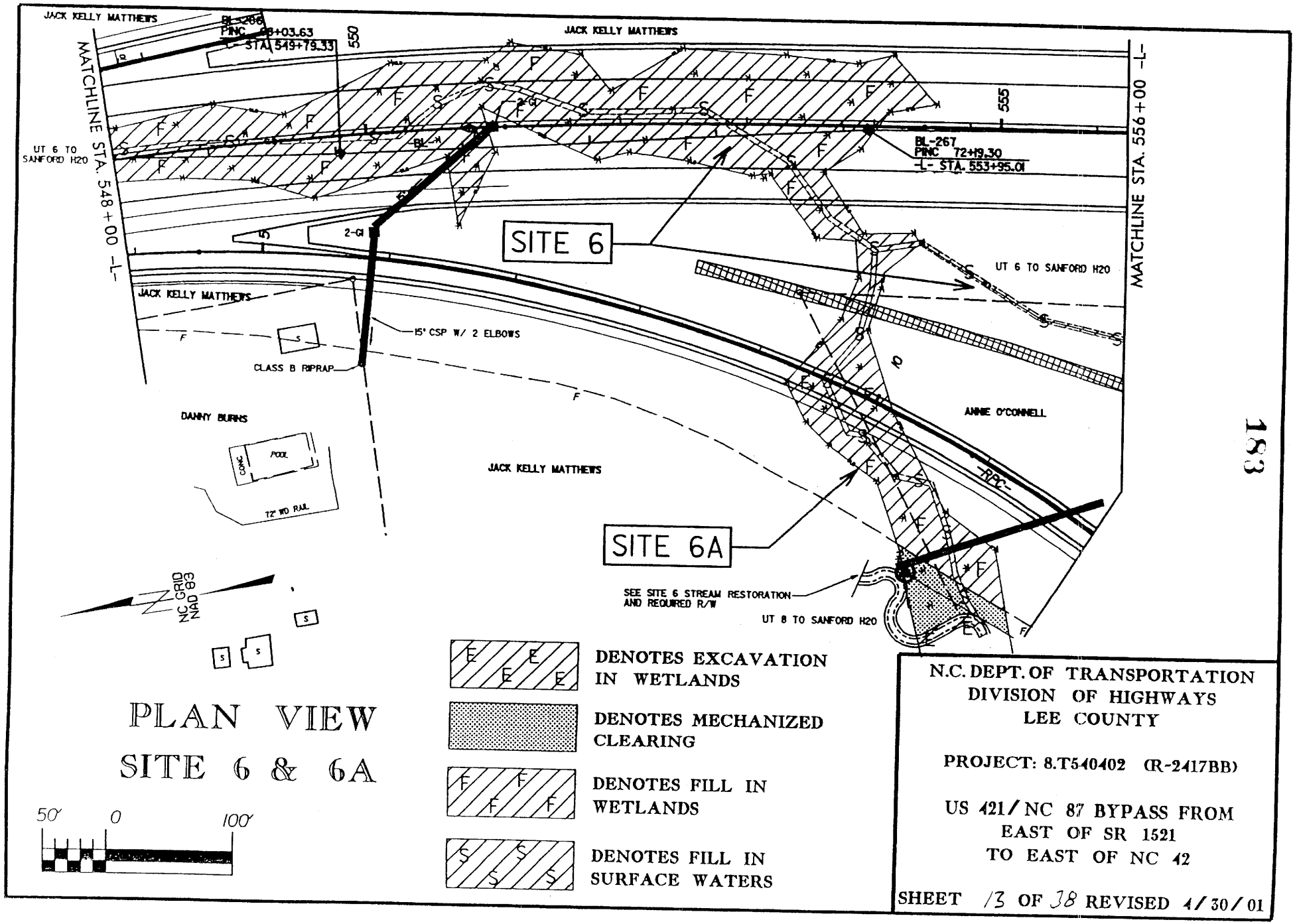
DENOTES FILL IN SURFACE WATERS (POND)

DENOTES FILL IN WETLANDS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY
PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 12 OF 38

4/24/01



PLAN VIEW
SITE 6 & 6A

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 13 OF 38 REVISED 4/30/01

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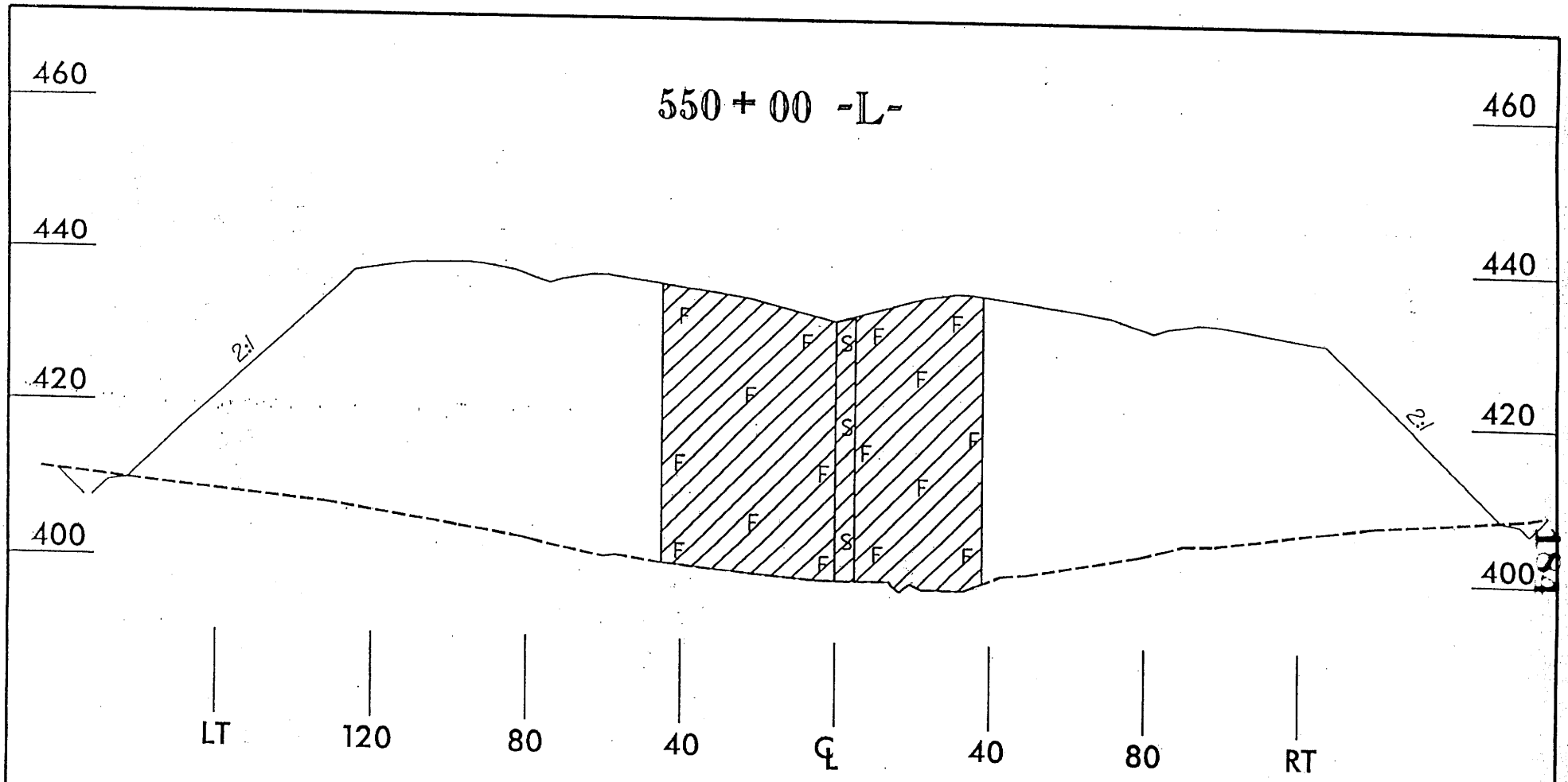


SITE 6
CROSS-SECTION

20ft 0 40ft
HORIZONTAL SCALE

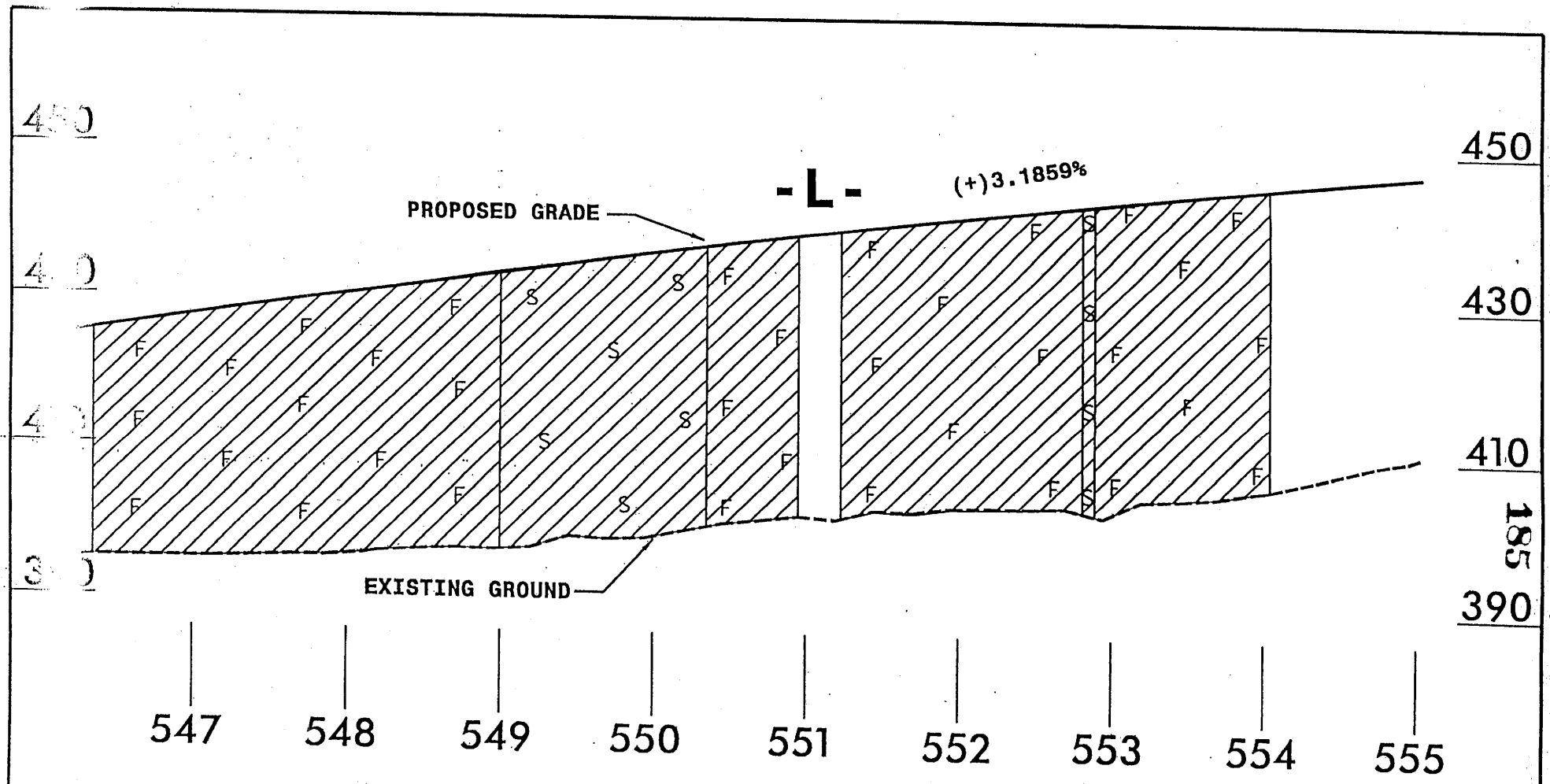
10ft 0 20ft
VERTICAL SCALE

F F F F DENOTES FILL IN WETLANDS

P P P P DENOTES FILL IN SURFACE WATERS (POND)

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY
PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 14 OF 38 REVISED 4/30/04



SITE 6
PROFILE

SHEET 1 OF 2

0 100ft
HORIZONTAL SCALE

0 20ft
VERTICAL SCALE

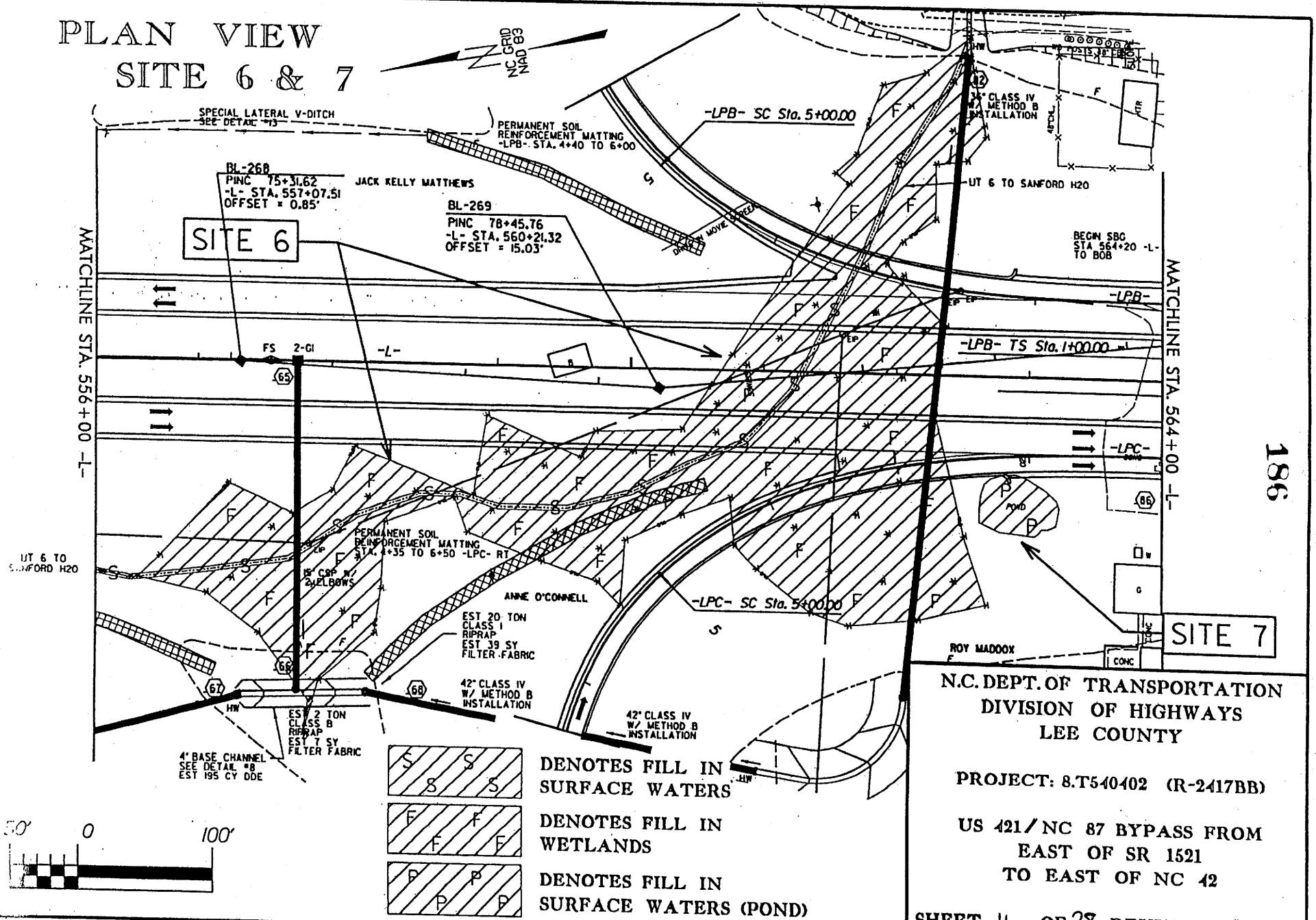
IN SURFACE WATERS

DENOTES FILL IN WETLANDS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY
PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 15 OF 38 REVISED 4/30/04

PLAN VIEW
SITE 6 & 7



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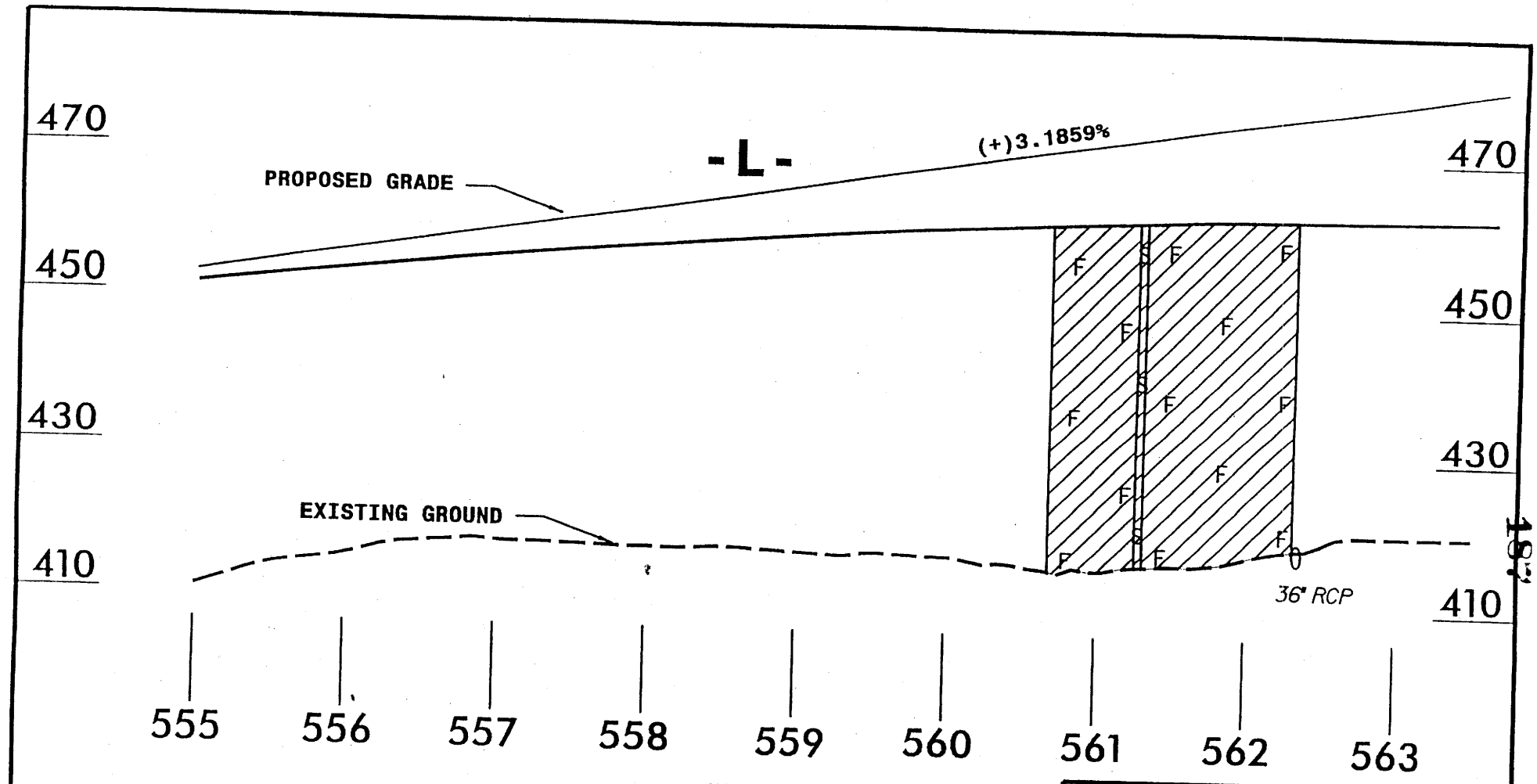
N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 16 OF 38 REVISED 4/30/04



SITE 6
PROFILE

SHEET 2 OF 2

50ft 0 100ft
HORIZONTAL SCALE

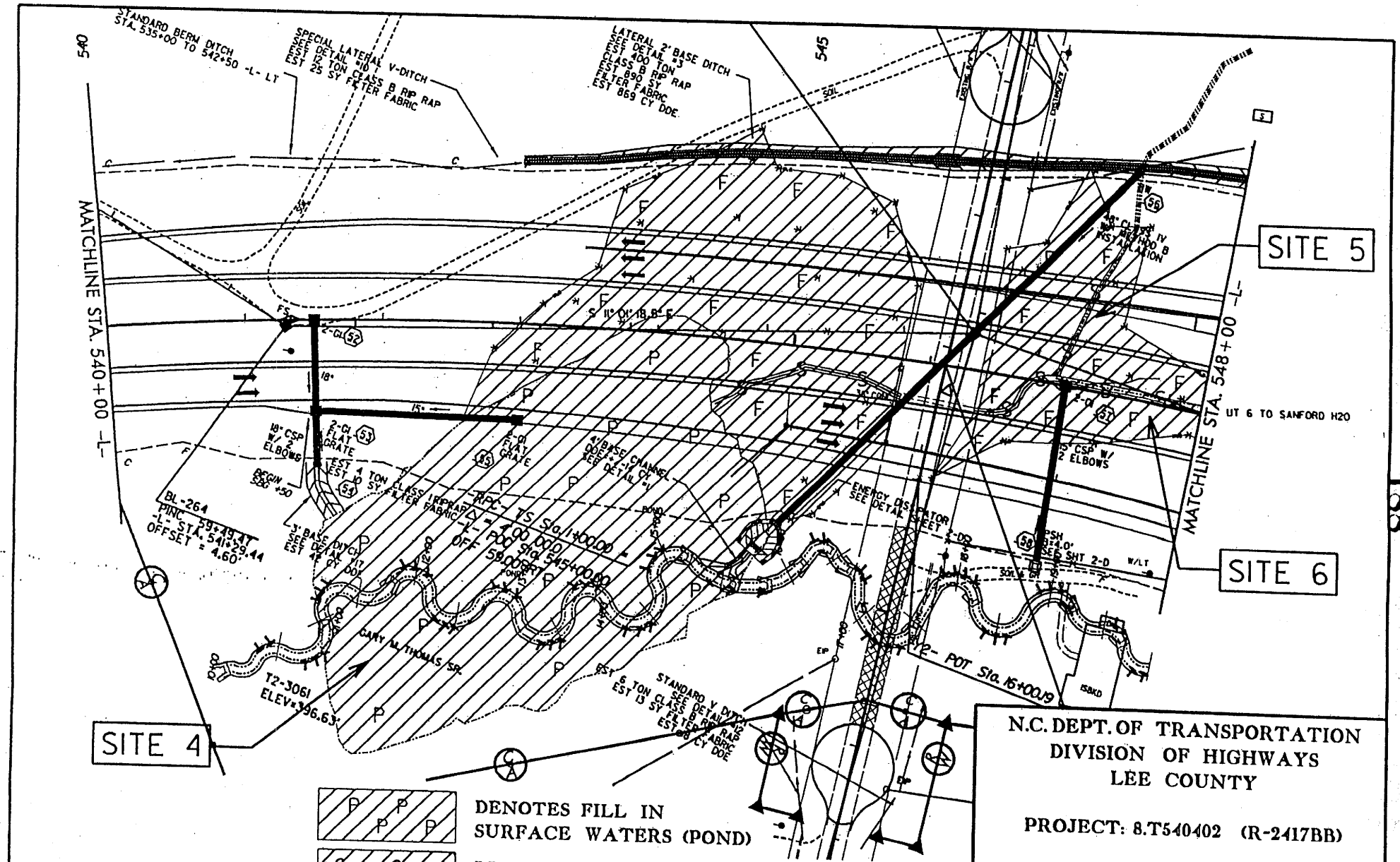
10ft 0 20ft
VERTICAL SCALE

DENOTES FILL IN SURFACE WATERS

DENOTES FILL IN WETLANDS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY
PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 17 OF 38 4/24/01

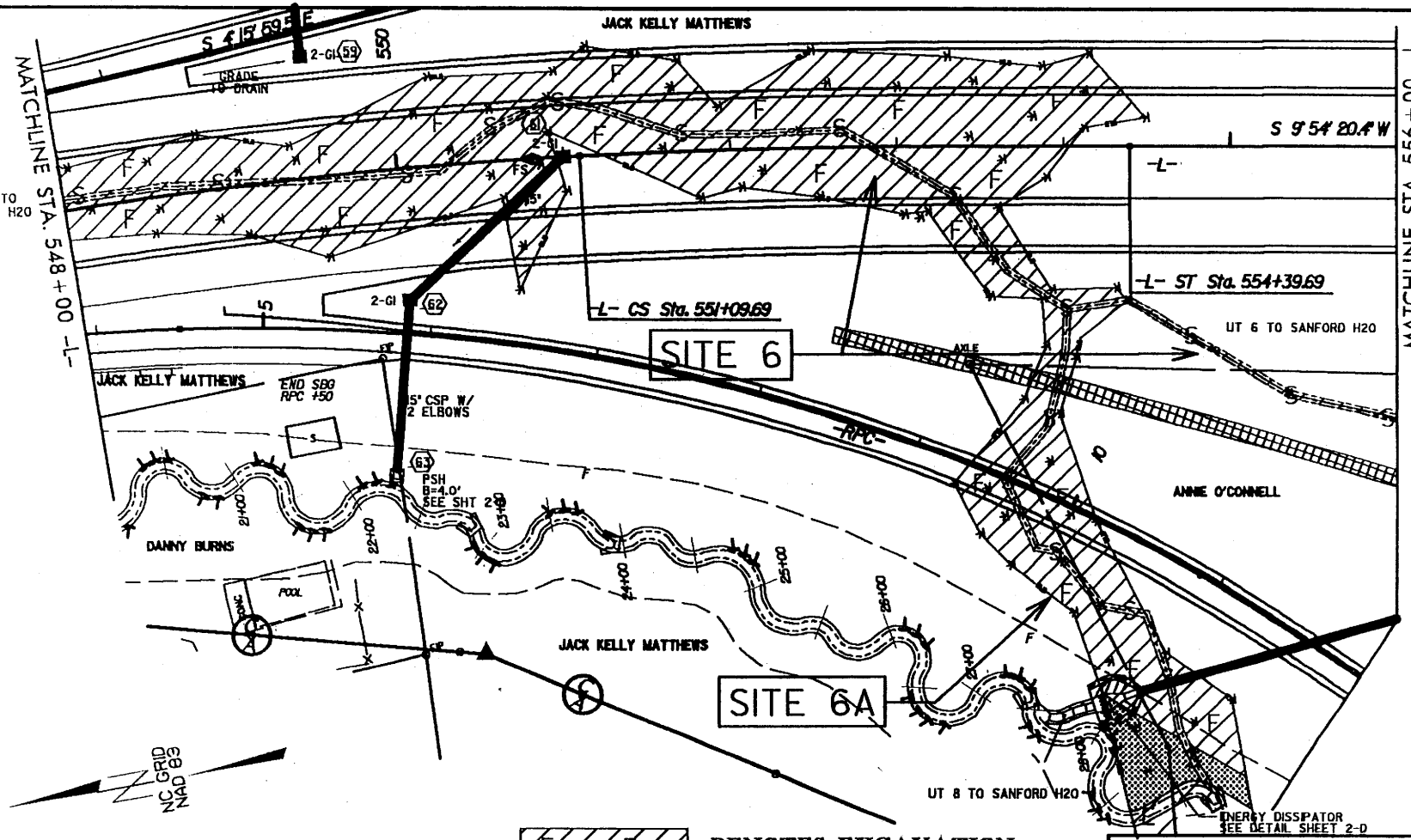


N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421/NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 18 OF 38 REVISED 4/30/04



DENOTES EXCAVATION IN WETLANDS

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLANDS

DENOTES FILL IN SURFACE WATERS

PLAN VIEW
SITE 6 & 6A

50' 0 100'

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 19 OF 38 REVISED 8/18/04

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NCDOT Project ID# R-2417BB
Lee County
US 421/NC 87 Sanford Bypass from East of SR 1521 to East of NC 42

Prepared by: Sungate Design Group, PA
915-A Jones Franklin Road
Raleigh, NC 27606

May 9, 2001

NATURAL CHANNEL DESIGN
RIGHT OF STA. 540+20 to 555+00 –L-

The proposed new location US 421/NC 87 will cause a shift in the existing stream at +/- 540+20 to 555+00 –L- right. The existing and proposed channels were classified according to principles proposed by Dave Rosgen.

The existing stream drains 113 acres of a residential/industrial area in the piedmont physiographic region. The first order perennial stream drains a hardwood forest at the point of relocation. The channel was found to be perennial with riffles, pools, and aquatic wildlife.

There are no hydraulic gage data available on this stream nor on nearby streams. Current discharges were estimated using NCDOT procedures for rural watersheds and calibrated to the field observed bankfull depth.

The existing channel is relatively stable in the bottomland hardwood forest and has pattern and dimension. The data gathered was used to classify the reach to be relocated as an E5 stream according to the Rosgen classification procedure.

Because of the development in the present climatic era, a reference reach of a **stable** stream in this area is unlikely. A portion adjacent to the site and at the site was used as a representative reach to reference pattern and dimension. The portion used for a reference was found to have characteristics of an E5b and C5 further downstream. The dimensions gathered in the field compared favorably to the regional curves developed by the North Carolina Stream Restoration Institute. Using these reference characteristics and the regional curves Sungate Design has recommended a natural stream design by replacing the existing E5b ~~and C5~~ channel with a stable E5 channel.

TEA 6/12/01

SITE 6

Serhn RB
2005 38

Bankfull mean depth was found to be 0.8' and 0.97'. With this information a proposed channel was designed to maintain a low width/depth ratio and a high entrenchment ratio. Sinuosity was increased slightly, as well as, the radius of curvature. These modifications will encourage a decrease of energy along the channel banks.

A pebble count was conducted in the pools and riffles. Velocities were obtained using standard engineering procedures. These velocities were compared to shear stresses predicted by the pebble count. The pebble count confirmed the channel hydraulics by qualifying the velocities that have moved bed form material. This material has been classified as a fine to medium sand. The proposed channel was designed to maintain velocities and appropriate shear stress that will transport this type of material at bankfull stage without aggrading or degrading the stream banks or bed.

The proposed channel utilizes cross vanes and root wads to direct flow away from the banks and help create pools and riffles to encouraged aquatic habitat. Finally, native woody vegetation will be used to stabilize the proposed flood plain and channel banks.

SITE 6

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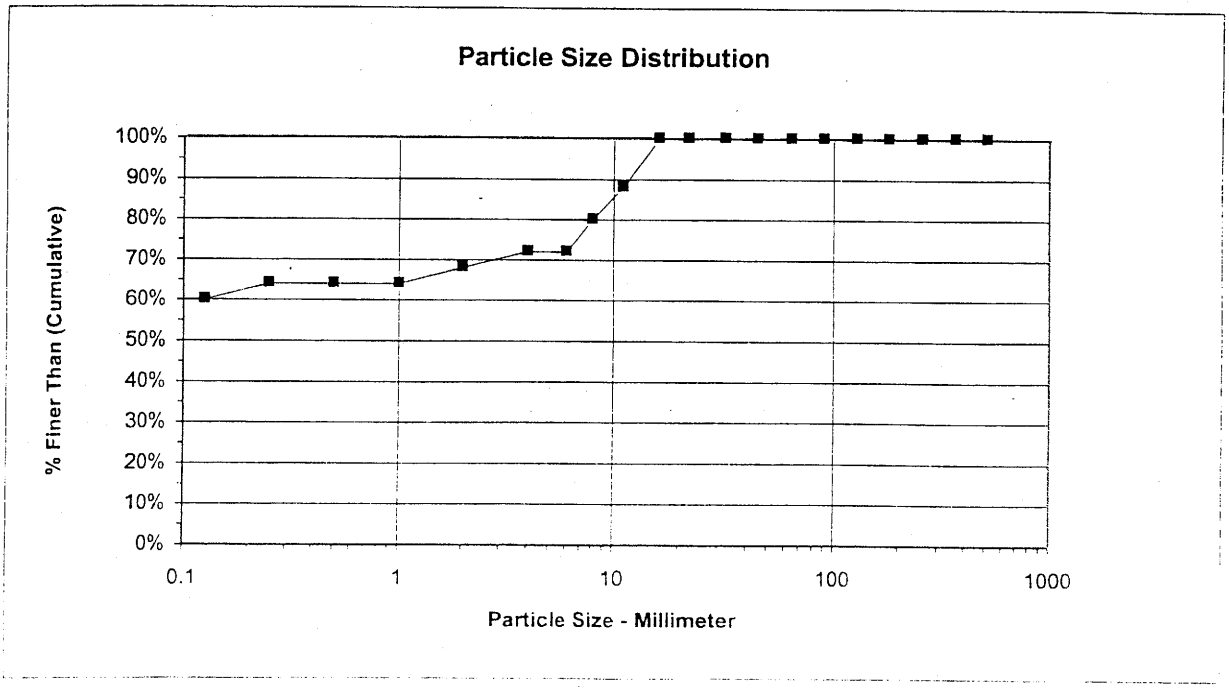
PEBBLE COUNT

Site: Trib. To Horsepen Crk. | Date: 4-18-01

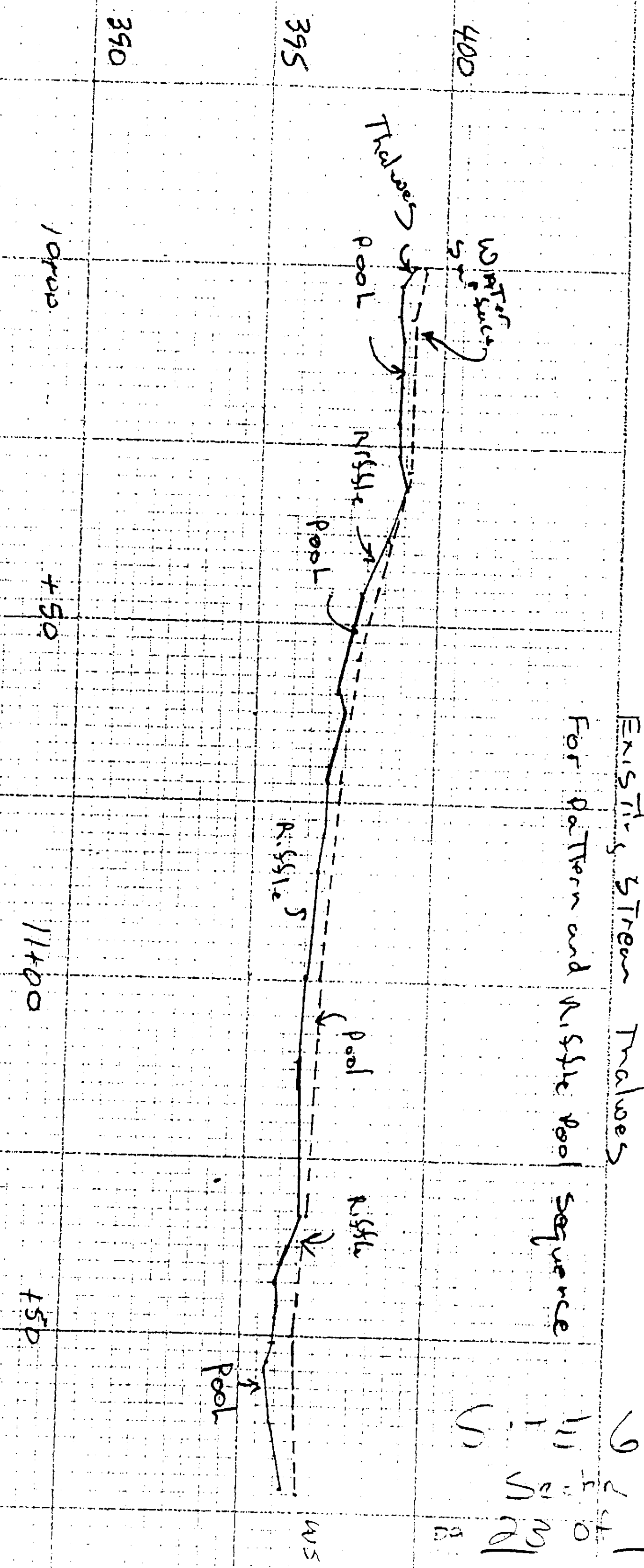
Party: FFF, WHW,RHK

Particle Counts

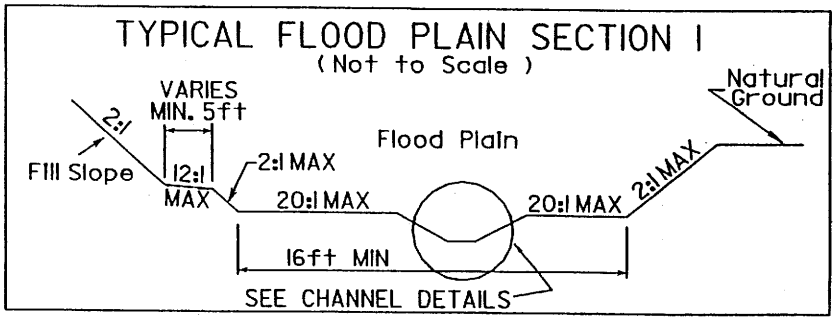
Inches	Particle	Millimeter		Riffles	Pools	Total No.	Item %	% Cumulative
	Silt/Clay	< 0.062	S/C	32	0	32	32%	32%
	Very Fine	.062 - .125	S	28	0	28	28%	60%
	Fine	.125 - .25	A	4	0	4	4%	64%
	Medium	.25 - .50	N	0	0	0	0%	64%
	Coarse	.50 - 1.0	D	0	0	0	0%	64%
.04 -.08	Very Coarse	1.0 - 2.0	S	4	0	4	4%	68%
.08 - .16	Very Fine	2.0 - 4.0		4	0	4	4%	72%
.16 - .22	Fine	4.0 - 5.7	G	0	0	0	0%	72%
.22 - .31	Fine	5.7 - 8.0	R	8	0	8	8%	80%
.31 - .44	Medium	8.0 - 11.3	A	8	0	8	8%	88%
.44 - .63	Medium	11.3 - 16.0	V	12	0	12	12%	100%
.63 - .89	Coarse	16.0 - 22.6	E	0	0	0	0%	100%
.89 - 1.26	Coarse	22.6 - 32.0	L	0	0	0	0%	100%
1.26 - 1.77	Very Coarse	32.0 - 45.0	S	0	0	0	0%	100%
1.77 - 2.5	Very Coarse	45.0 - 64.0		0	0	0	0%	100%
2.5 - 3.5	Small	64 - 90	C	0	0	0	0%	100%
3.5 - 5.0	Small	90 - 128	O	0	0	0	0%	100%
5.0 - 7.1	Large	128 - 180	B	0	0	0	0%	100%
7.1 - 10.1	Large	180 - 256	L	0	0	0	0%	100%
10.1 - 14.3	Small	256 - 362	B	0	0	0	0%	100%
14.3 - 20	Small	362 - 512	L	0	0	0	0%	100%
20 - 40	Medium	512 - 1024	D	0	0	0	0%	100%
40 - 80	Lrg- Very Lrg	1024 - 2048	R	0	0	0	0%	100%
	Bedrock		BDRK		0	0	0%	100%
			Totals	**100**	**0**	**100**	**100%**	**100%**

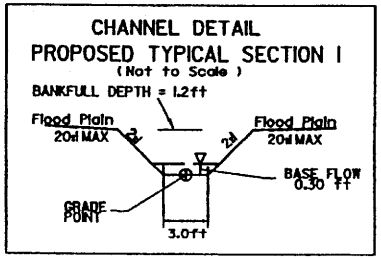


399.09	10+00
398.74	10+03.2
398.70	10+07.0
398.88	10+11.0
398.79	10+17.3
398.74	10+22.0
398.89	10+26.3
?98.98	10+31.4
398.55	10+38.3
397.89	10+45.6

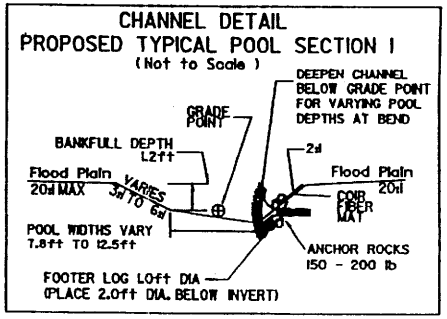


Site 6
Section BB
pg 23 of 38

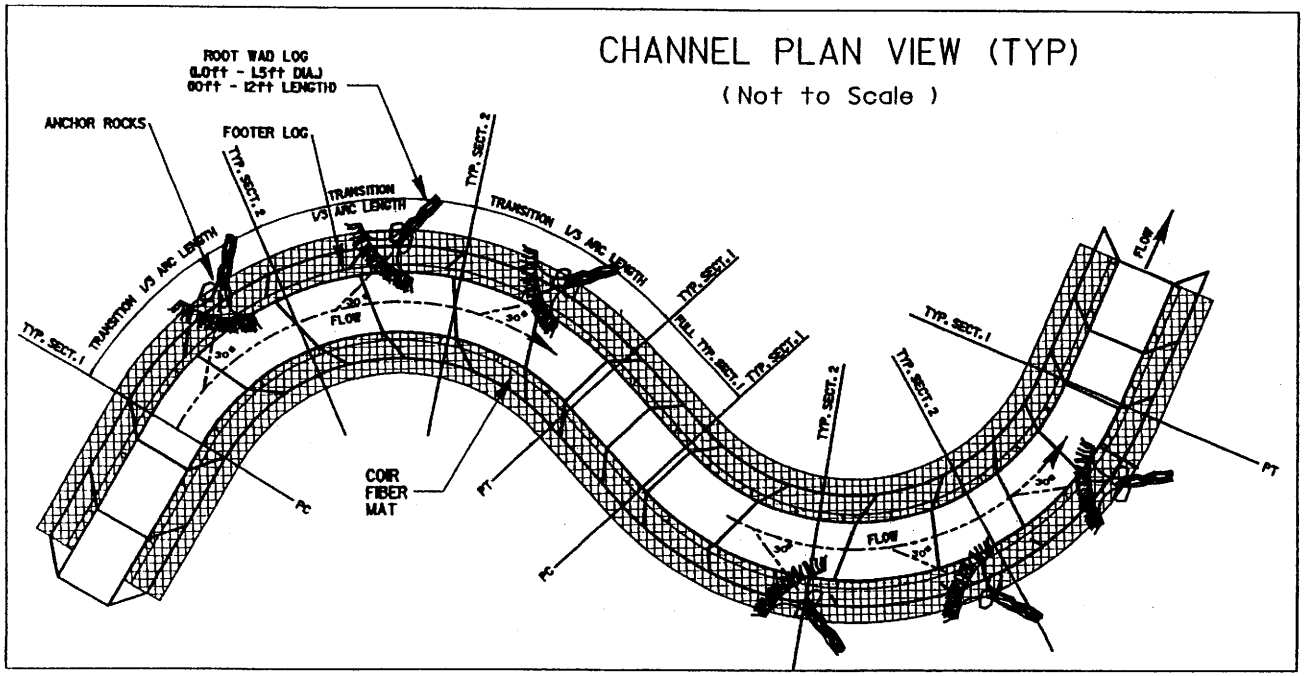




TYPICAL SECTION I BETWEEN BENDS



TYPICAL SECTION 2 AT BENDS



NOTES:

NUMBER OF ROOTWADS INSTALLED 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.

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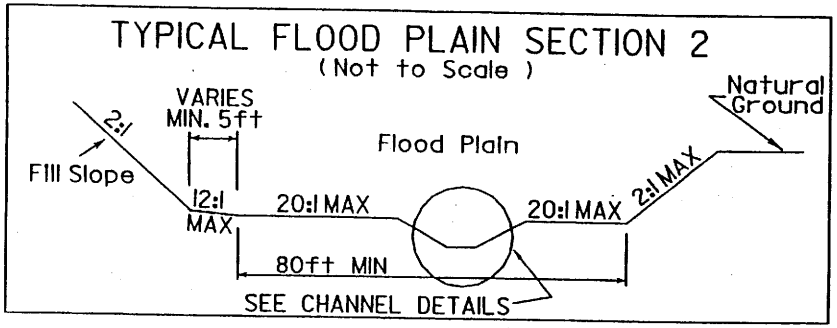
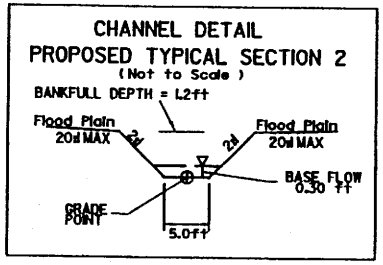
STREAM RESTORATION DETAILS
SITE 6 (SECTION #1) STATION 540+64 -L- TO 545+00 -L- RT.

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

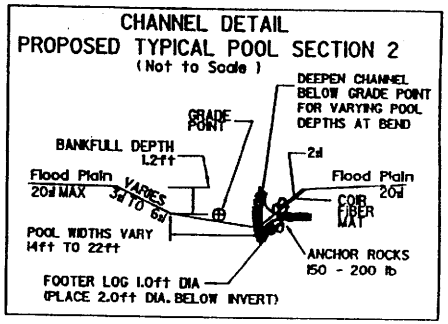
PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 24 OF 38 REVISED 5/09/01

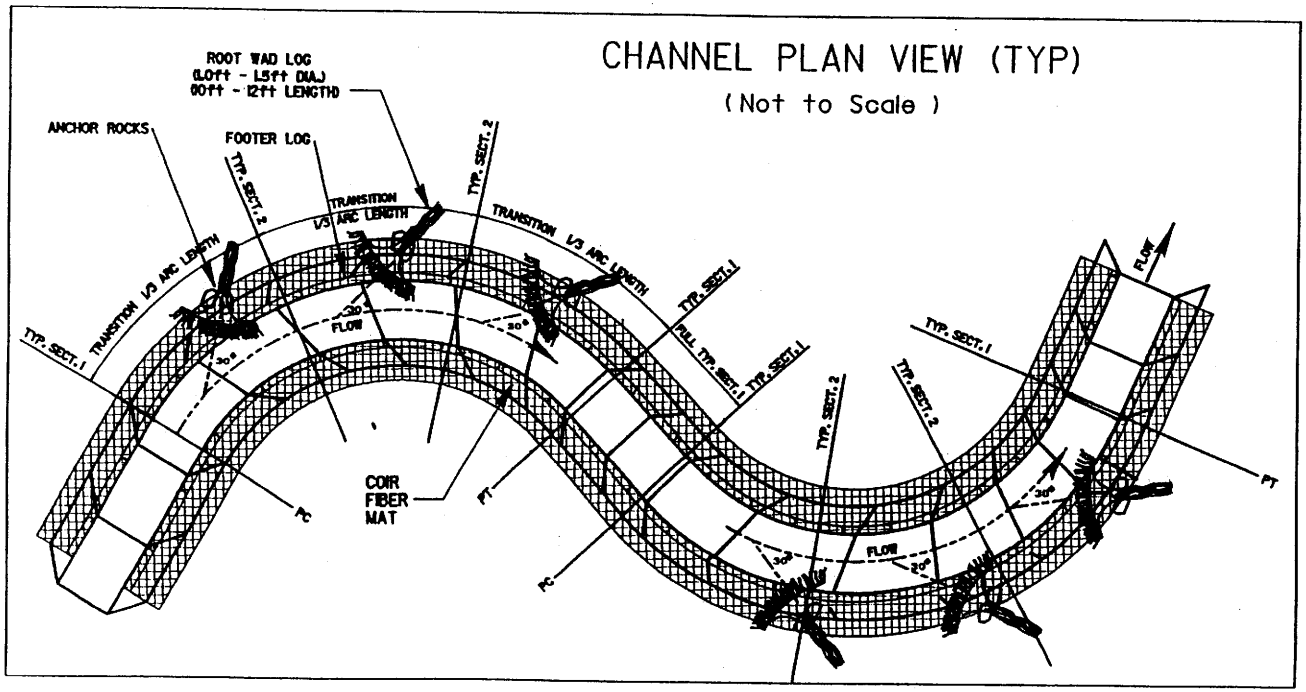




TYPICAL SECTION 1 BETWEEN BENDS



TYPICAL SECTION 2 AT BENDS



STREAM RESTORATION DETAILS
SITE 6 (SECTION #2) STATION 545 + 00 -L- TO 555 + 00 -L- RT.

NOTES:

NUMBER OF ROOTWADS INSTALLED 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.

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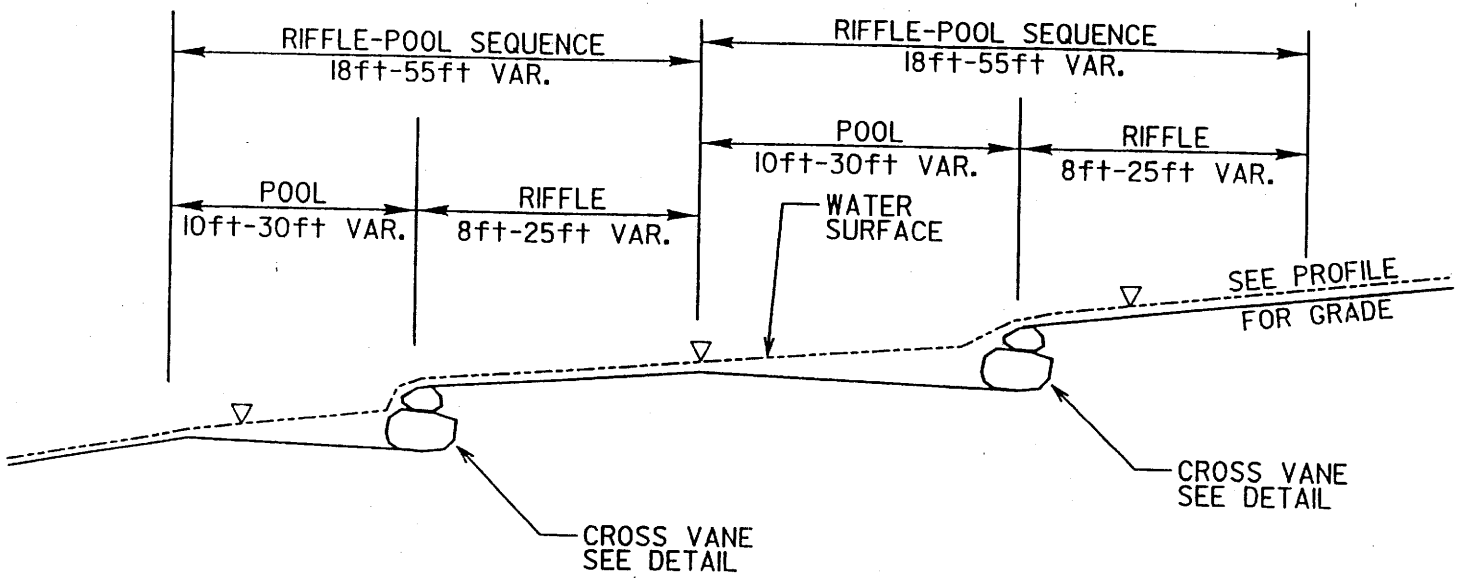
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 25 OF 38 REVISED 5/09/01



RIFFLE-POOL SPACING
SITE 6

NOT TO SCALE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
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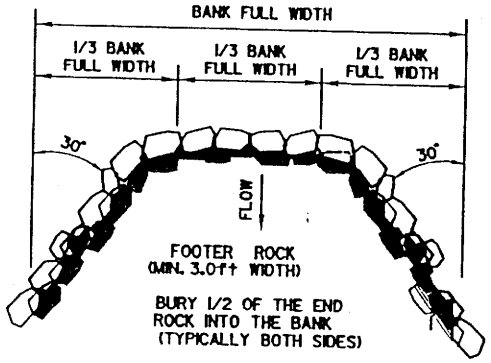
SHEET 26 OF 38 4/24/01

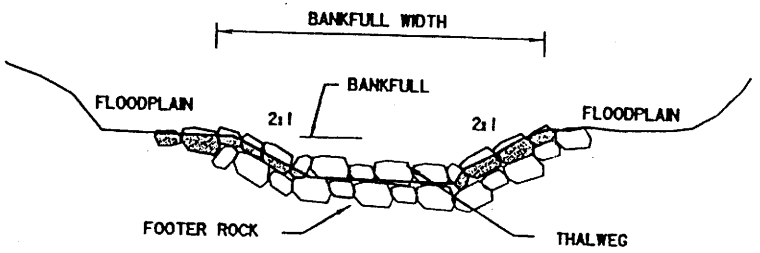
CROSS VANE DETAILS



TOP VIEW

1 CROSS VANE
NTS

1/3

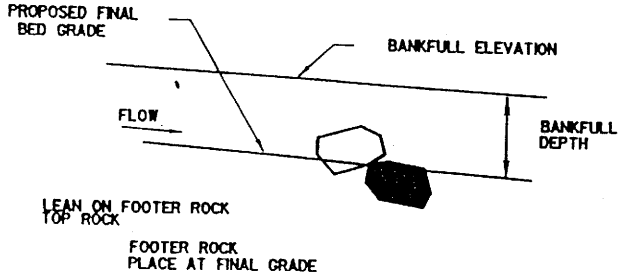


TYPICAL SECTION

NOTE: ALLOW THALWEG TO ALTERNATE BACK AND FORTH FROM CENTERLINE.

1 CROSS VANE
NTS

3/3



TYPICAL PROFILE

NOTES:
1. FOOTER AND TOP ROCKS SHOULD BE 150 TO 200 LB NATIVE ROCKS OR QUARRY ROCKS.

1 CROSS VANE
NTS

2/3

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)
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Morphological Measurement Table for R-2417BB

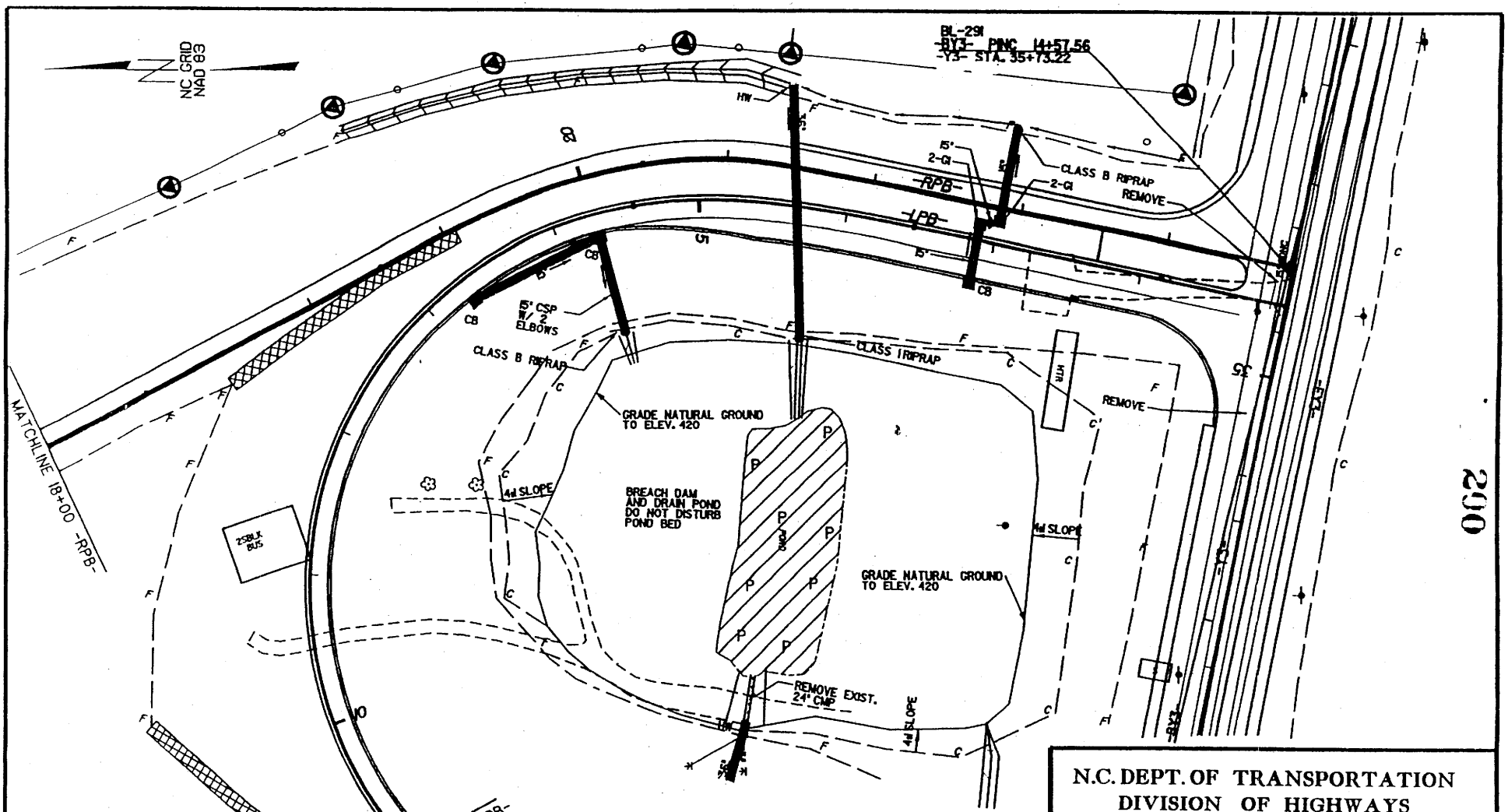
Site 6(SECTION#1) STATION 540+64-L- TO STATION 545+00 -L- RT.

Variables	Existing Channel	Proposed Reach	USGS Station	Reference Reach (NCSRI Reg. Curves)
1. Stream type(Rosgen Classification)	**E5**	**E5**	na	**E**
2. Drainage area (SqMi)	0.26	0.26	na	0.26
3. Bankfull width (ft)	5.1	9.8	na	6.7
4. Bankfull mean depth (ft)	1.04	0.91	na	0.97
5. Width/depth ratio	4.9	10.8	na	6.9
6. Bankfull cross-sectional area (ft^2)	5.3	8.9	na	8.6
7. Bankfull mean velocity (ft/s)	6.9	3.8	na	3.9
8. Bankfull discharge, cfs	34	34	na	34
9. Bankfull max depth (riffle)(ft)	1.5	1.2	na	1.2
10. Width of floodprone area (ft)	86	60	na	na
11. Entrenchment ratio	16.9	6.8	na	na
12. Meander length (ft)	24	50	na	43
13. Ratio of meander length to bankfull width	4.7	5.7	na	6.4
14. Radius of curvature (ft)	6.5	17	na	15
15. Ratio of radius of curvature to bankfull width	1.27	1.93	na	2.2
16. Belt width (ft)	11	14	na	16.5
17. Meander width ratio	2.2	1.6	na	2.5
18. Sinuosity (stream length/valley length)	1.4	1.43	na	1.2
19. Valley slope (ft/ft)	0.015	0.015	na	na
20. Average slope valley slope/sinuosity	0.0107	0.0105	na	na
21. Pool slope (ft/ft)	0.0003	0.0003	na	na
22. Ratio of pool slope to average slope	0.0286	0.0286	na	na
23. Maximum pool depth (ft)	1.25	1.7	na	1.97
24. Ratio of pool depth to average bankfull depth	1.29	1.93	na	2.03
25. Pool width(ft)	8.2-12.5	14.0-22	na	na
26. Ratio of pool width to bankfull width	1.6-2.45	1.6-2.45	na	na
27. Pool to pool spacing (ft)	25-40	25-40	na	24
28. Ratio of pool to pool spacing to bankfull width	4.9-7.8	2.8-4.5	na	3.6

Morphological Measurement Table for R-2417BB

Site 6 (SECTION #2) STATION 545+00 TO STATION 555+00 -L- RT.

Variables	Existing Channel	Proposed Reach	USGS Station	Reference Reach (NCSRI Reg. Curves)
1. Stream type(Rosgen Classification)	**E5b**	**E5**	na	**E**
2. Drainage area (SqMi)	0.18	0.18	na	0.18
3. Bankfull width (ft)	8.2	7.8	na	5.7
4. Bankfull mean depth (ft)	0.73	0.83	na	0.87
5. Width/depth ratio	11.2	9.4	na	6.7
6. Bankfull cross-sectional area (ft^3)	6	6.5	na	6.7
7. Bankfull mean velocity (ft/s)	4.3	4	na	3.9
8. Bankfull discharge, cfs	26	26	na	26
9. Bankfull max depth (riffle)(ft)	1.5	1.2	na	1.5
10. Width of floodprone area (ft)	70	20	na	na
11. Entrenchment ratio	8.5	2.56	na	na
12. Meander length (ft)	24	50	na	35
13. Ratio of meander length to bankfull width	2.93	6.4	na	6.1
14. Radius of curvature (ft)	6.5	17	na	13
15. Ratio of radius of curvature to bankfull width	0.79	2.1	na	2.3
16. Belt width (ft)	11	14	na	9
17. Meander width ratio	1.34	1.79	na	1.58
18. Sinuosity (stream length/valley length)	1.4	1.36	na	1.2
19. Valley slope (ft/ft)	0.038	0.005	na	na
20. Average slope valley slope/sinuosity	0.027	0.0038	na	na
21. Pool slope (ft/ft)	0.0003	0.0003	na	na
22. Ratio of pool slope to average slope	0.011	0.0789	na	na
23. Maximum pool depth (ft)	1.25	1.4	na	1.76
24. Ratio of pool depth to average bankfull depth	1.7	1.7	na	2.02
25. Pool width(ft)	8.2-12.5	7.8-12.5	na	na
26. Ratio of pool width to bankfull width	1.0-1.52	1.0-1.6	na	na
27. Pool to pool spacing (ft)	25-40	25-40	na	16.9
28. Ratio of pool to pool spacing to bankfull width	3.0-4.9	3.2-5.1	na	3



PLAN VIEW
SITE 7A

P P P P P P DENOTES FILL IN SURFACE WATERS (POND)

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

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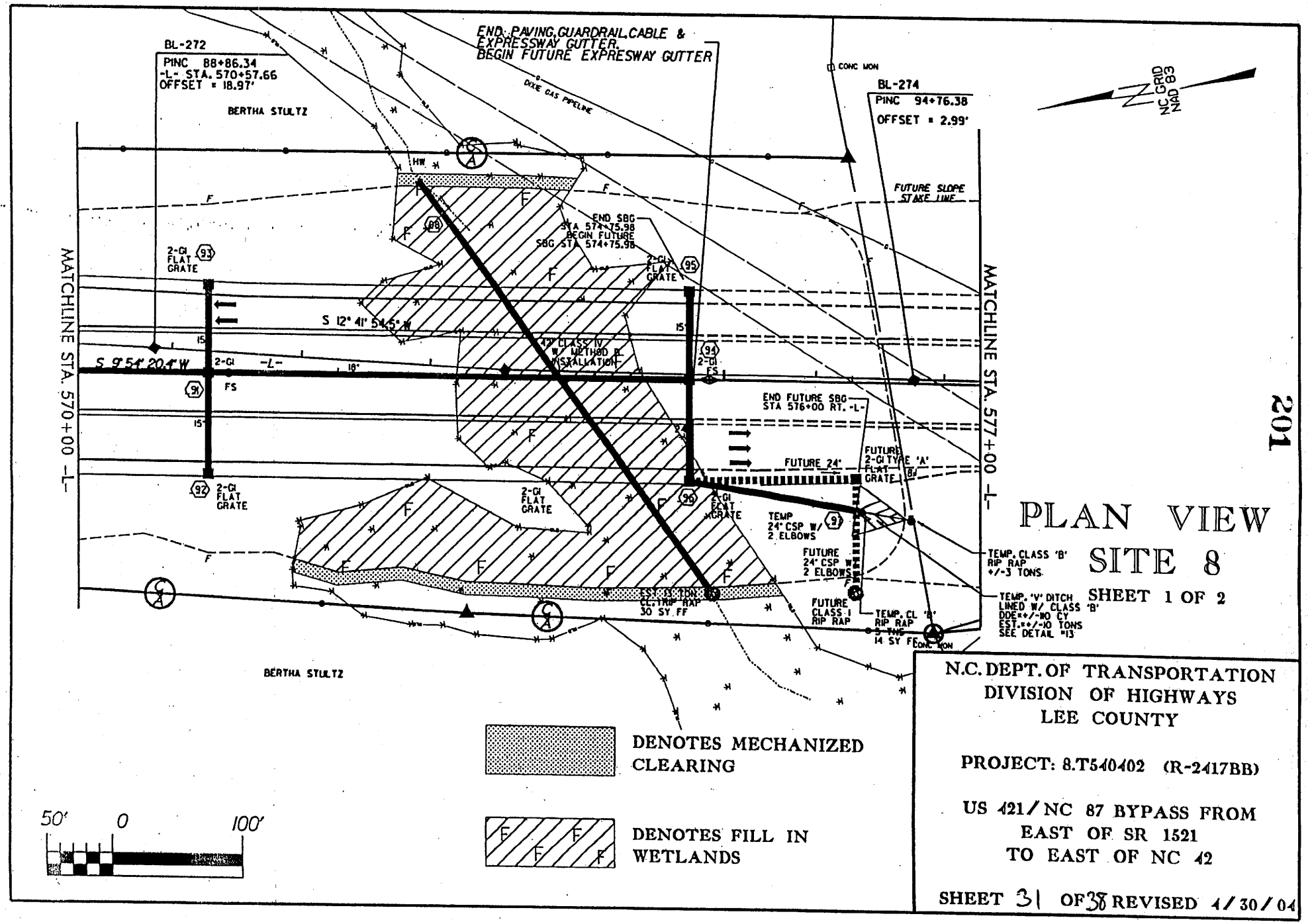

PLAN VIEW
SITE 8

SHEET 1 OF 2

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 31 OF 38 REVISED 4/30/04

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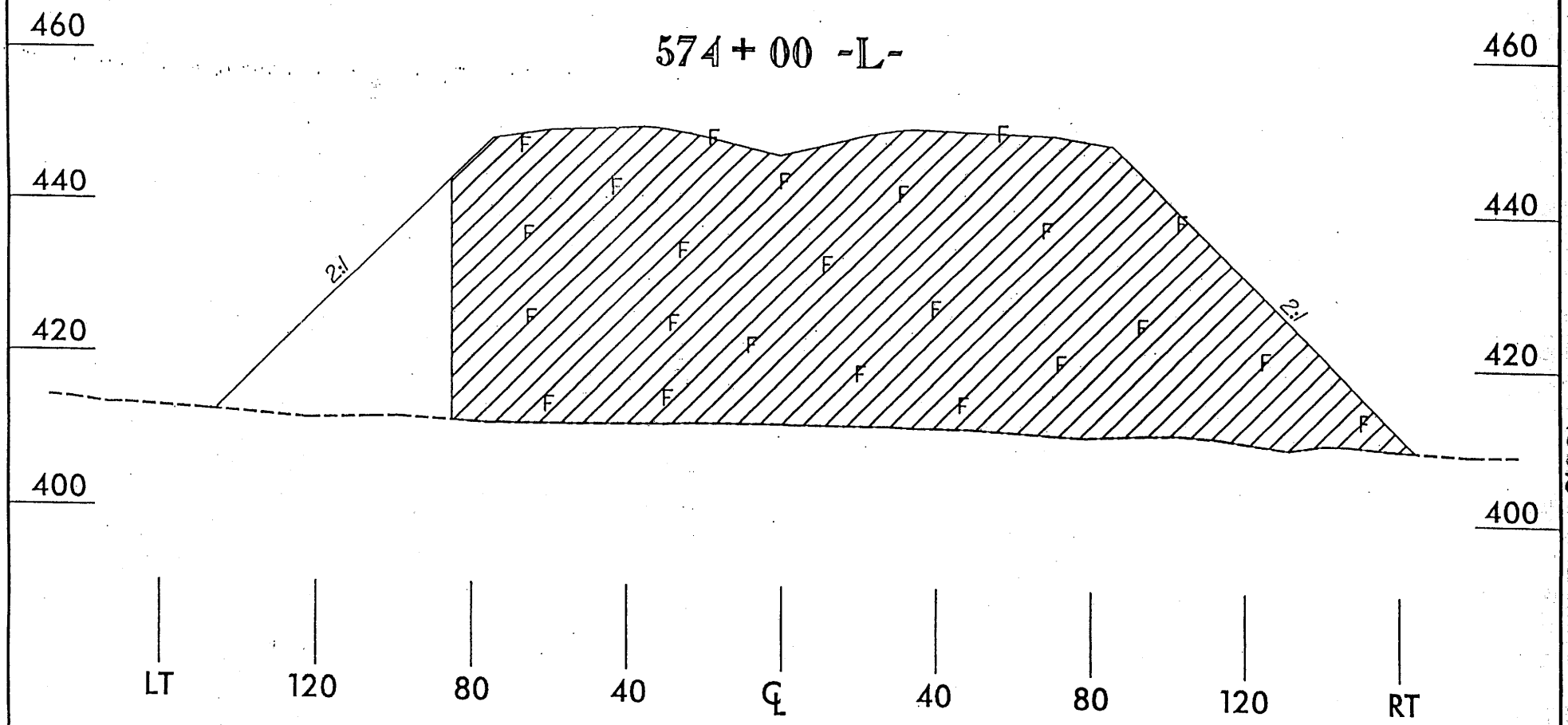

SITE 8
CROSS-SECTION

20ft 0 40ft
HORIZONTAL SCALE

10ft 0 20ft
VERTICAL SCALE

DENOTES FILL IN WETLANDS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY
PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
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TO EAST OF NC 42

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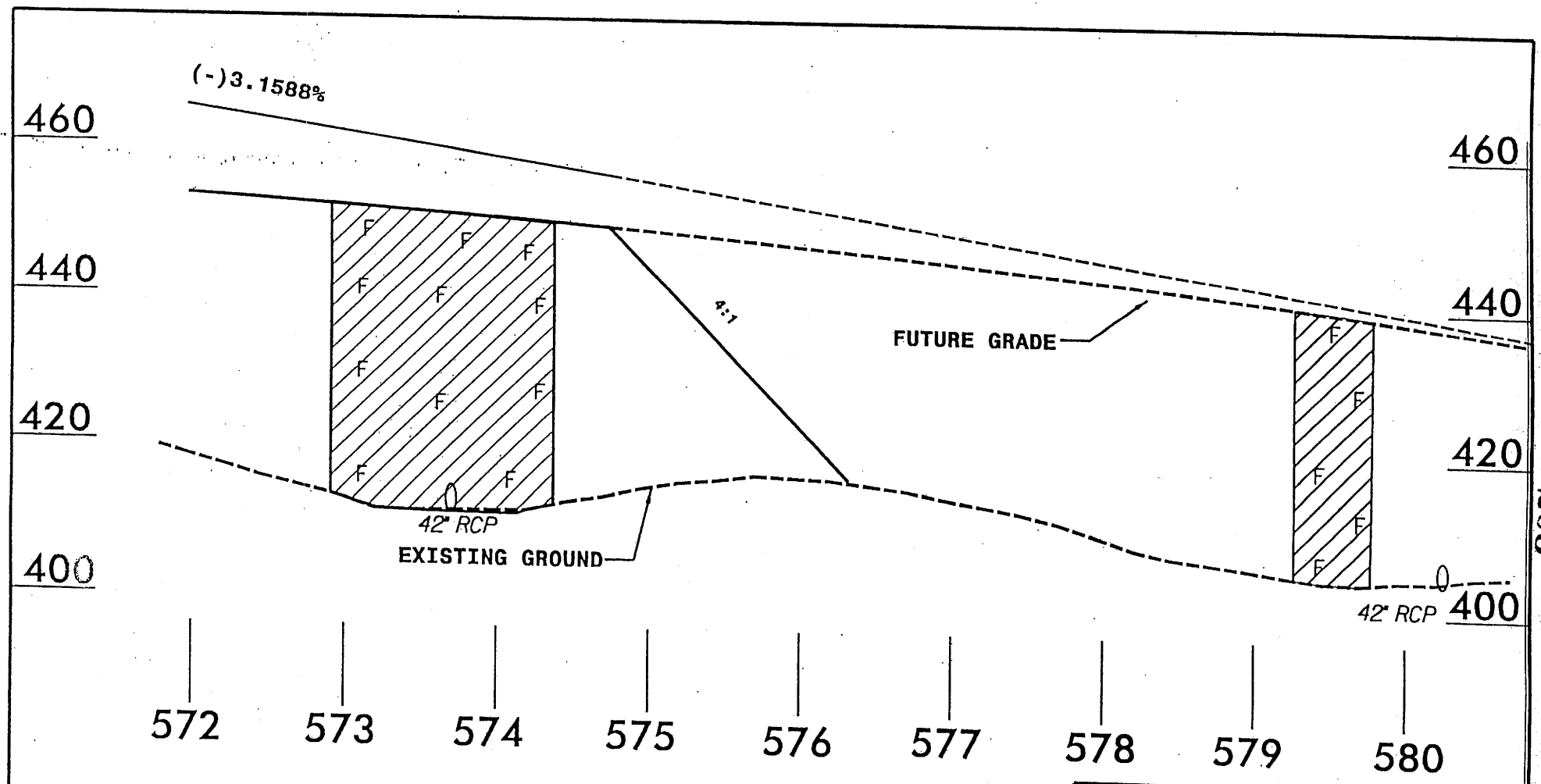

SITE 8 PROFILE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY
PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

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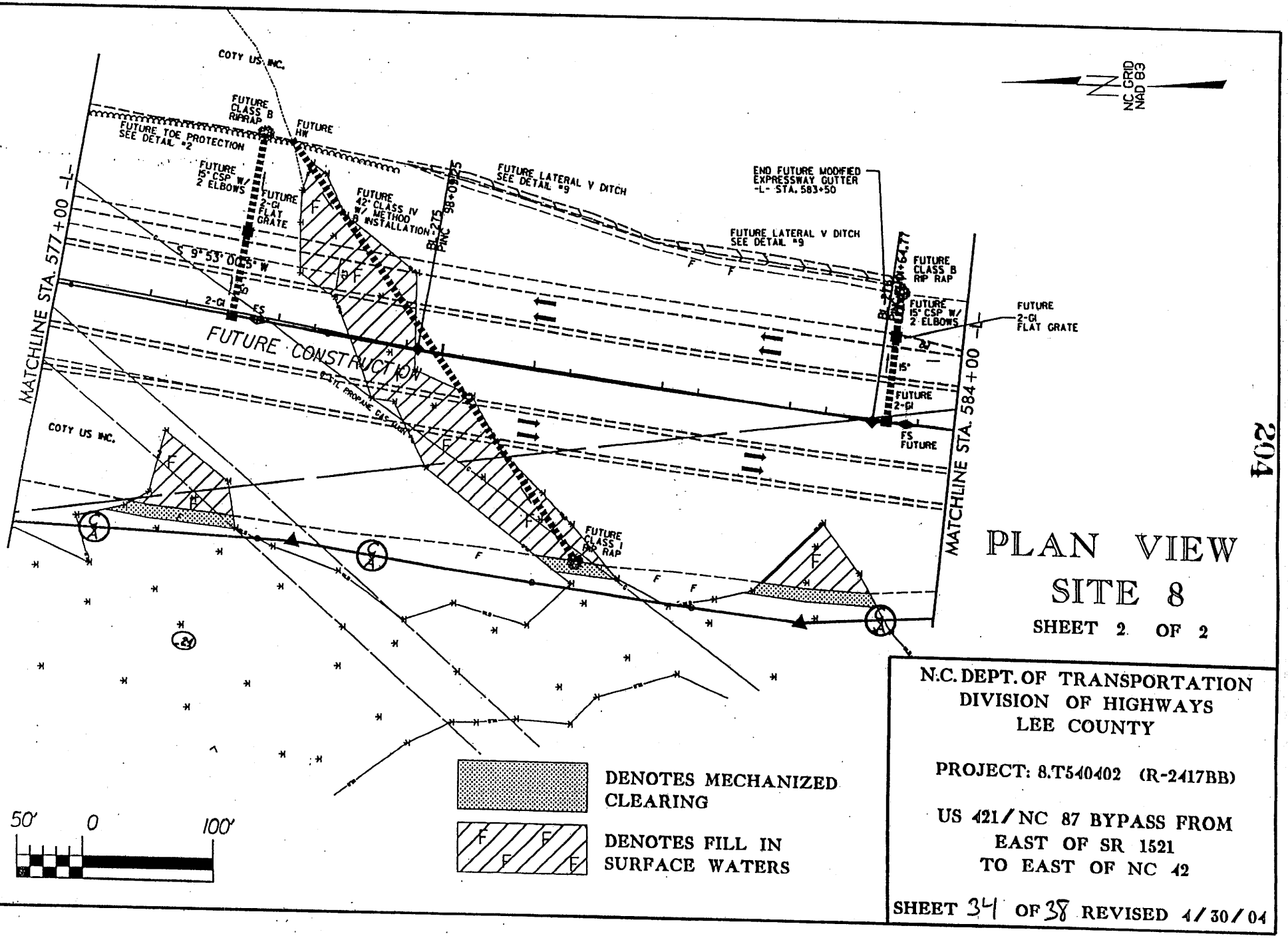

PLAN VIEW
SITE 8
SHEET 2 OF 2

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

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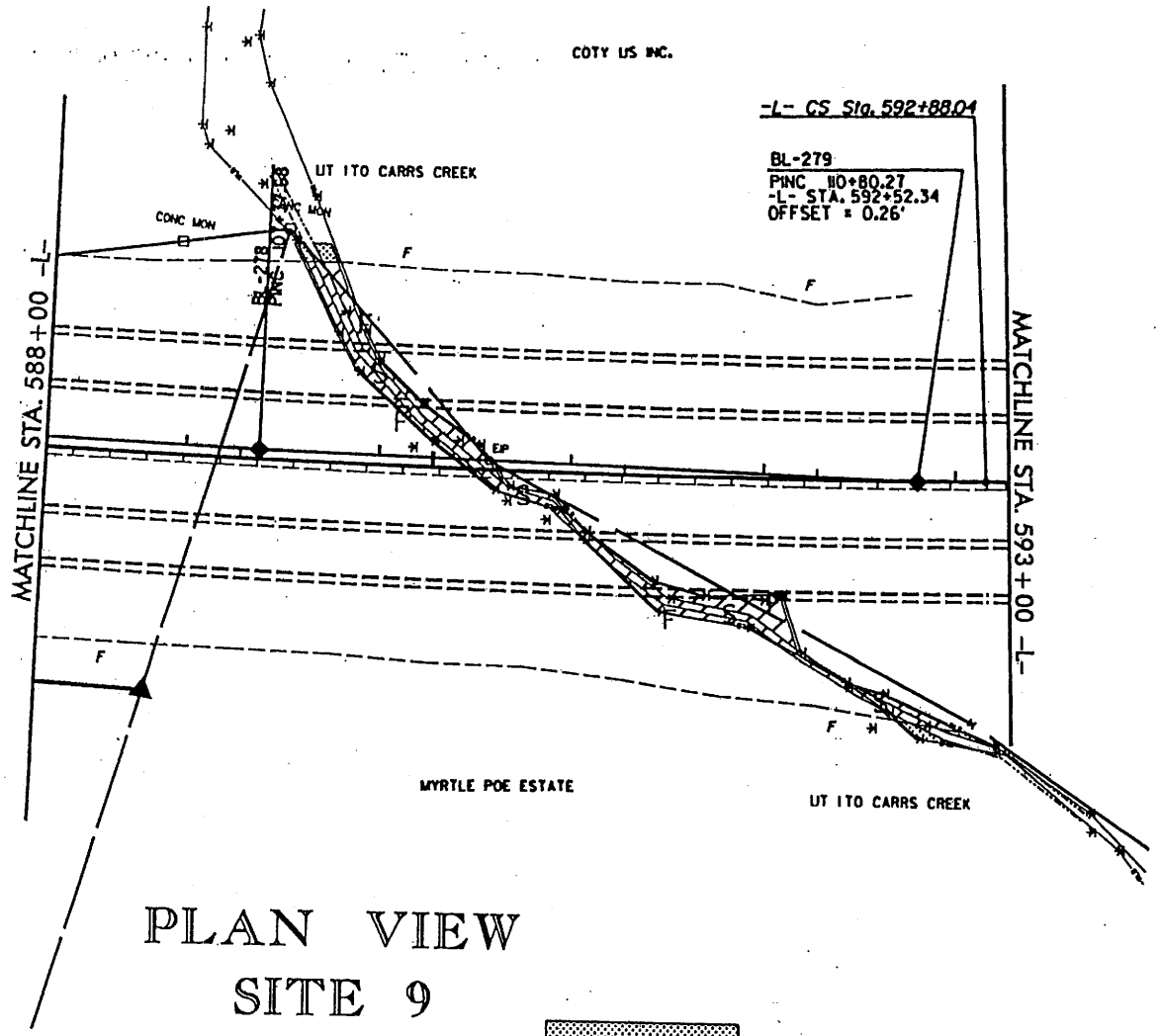

NC GRID NAD 83

PLAN VIEW
SITE 9

50' 0 100'

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLANDS

DENOTES FILL IN SURFACE WATERS

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

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IMPACT SUMMARY

			WETLAND IMPACTS				SURFACE WATER IMPACTS						BUFFER IMPACTS	
Site No. (P&E)	Station (English) (From/To)	Stream name and/or wetland # (FROM P&E)	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)	Relocated Channel (ft)	Enclosed Channel (ft)	Zone 1 (ha)	Zone 2 (ha)
1	508+50 -L-	UT 4 TO SANFORD H2O					0.09			595				
2	524+00 -L-	UT 5 TO SANFORD H2O					0.02			225				
3	533+00 -L-	UT 6 & WETLAND	0.36			0.025	0.07			455				
4	544+00 -L-	POND/WETLAND	1.00					1.51						
5	544+00 -L-	UT 7 TO SANFORD H20					0.01			160				
6	546+50-562+00	UT6 & WETLAND	3.61		0.012	0.0221	0.2			2070	1924			
6A	554+00 -L-	UT 8 TO SANFORD H2O					0.02			185				
7	563+00 -L-	POND						0.05						
7A	4+00 -LPB-	POND						0.27						
8	572+50 -L-	WETLAND	1.86			0.173								
9	589+50 -L-	UT1 TO CARRS CREEK & WETLAND	0.06			0.0074	0.037			413				
TOTALS:			6.89	0	0.012	0.2275	0.447	1.83	0	4103	1924	0	0	0

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

SHEET 36 OF 38

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PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	ROBERT SPIVEY	293 COUNTRY WAY SANFORD, NC 27330
2	RODNEY BRUCE	1341 O'QUINN RD SANFORD, NC 27330
3	RUTH CALCUTT	1417 O'QUINN RD SANFORD, NC 27330
4	GARY M. THOMAS	443 THOMAS RD SANFORD, NC 27330
5	DANNY BURNS	1944 RICE ROAD SANFORD, NC 27330
6	JACK K. MATTEWS	2016 RICE ROAD SANFORD, NC 27330
7	DANIEL PRIEST	2008 RICE ROAD SANFORD, NC 27330
8	ANNIE O'CONNEL	1251 BROADWAY RD SANFORD, NC 27330
9	ROY MADDOX	1305 BROADWAY RD SANFORD, NC 27330

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
EAST OF SR 1521 TO
EAST OF NC 42

SHEET 37 OF 38 4/24/01

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
10	COTY US INC.	PO BOX 1026 SANFORD, NC 27330
11	BERTHA STULTZ	38280-A HUNTINGREEN LN SANFORD, NC 27330
12	MYRTLE POE ESTATE	1127 BROADWAY RD SANFORD, NC 27330

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
EAST OF SR 1521 TO
EAST OF NC 42

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Mc Innis

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NCDENR

North Carolina Department of Environment and Natural Resources

Division of Water Quality

Michael F. Easley, Governor

William G. Ross, Jr., Secretary
Alan W. Klimek, P.E., Director

September 17, 2004

Mr. Gregory J. Thorpe, Ph.D., Environmental Director
NCDOT Planning and Environmental Branch
1548 Mail Service Center
Raleigh, NC, 27699-1548

Dear Dr. Thorpe:

Re: MODIFICATION TO Water Quality Certification Pursuant to §401 of the Federal Clean Water Act, US 421-NC 87 Bypass of Sanford from existing US 421 northwest of Sanford to existing NC 87 southeast of Sanford in Lee County.
TIP No. R-2417 BB;
Federal Aid No. STP-NHF-421(2), State Project No. 8.T540402, NCDOT Division 8;
WBS Element 34431.1.1.

Attached hereto is a copy of the Modification to Certification No. 3378 issued to The North Carolina Department of Transportation dated September 17, 2004. The project shall be constructed in accordance to your application for modification dated August 12, 2004. All of the authorized activities and conditions of certification associated with the original Water Quality Certification dated April 10, 2002, and all other corresponding modifications still apply except where superceded by this certification.

If we can be of further assistance, do not hesitate to contact us.

Sincerely,

John E. Hennessy

Alan W. Klimek, P.E.

Attachments

cc: Wilmington District Corps of Engineers
Richard Spencer, USACE Wilmington Field Office
NCDWQ Raleigh Regional Office
Christopher Militscher, US Environmental Protection Agency – Region IV
T. Johnson, PE, Division Engineer, NCDOT Division 8, PO Box 1067 Aberdeen, NC 28315
Central Files
File Copy

Transportation Permitting Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1650
2321 Crabtree Boulevard, Suite 250, Raleigh, North Carolina 27604
Phone: 919-733-1786 / FAX 919-733-6893 / Internet: http://h2o.enr.state.nc.us/ncwetlands

NORTH CAROLINA 401 WATER QUALITY CERTIFICATION

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (DWQ) Regulations in 15 NCAC 2H, Section .0500. The attached modification authorizes impacts to wetlands and streams as described herein. This modification is applicable only to the additional proposed activities. All the authorized activities and conditions of certification associated with the original Water Quality Certification dated April 10, 2002 and all other corresponding modifications still apply except where superceded by this certification.

The application provides adequate assurance that the discharge of fill material into the wetlands in conjunction with the proposed development will not result in a violation of applicable Water Quality Standards and discharge guidelines. Therefore, the State of North Carolina certifies that this activity will not violate the applicable portions of Sections 301, 302, 303, 306, 307 of PL 92-500 and PL 95-217 if conducted in accordance with the application and conditions hereinafter set forth.

This approval is only valid for the purpose and design that you submitted in your application, as described in the Public Notice. Should your project change, you are required to notify the DWQ and you may be required to submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion Control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire three years from the date of the cover letter from DWQ or on the same day as the expiration date of the corresponding Corps of Engineers Permit, whichever is sooner.

This Modification allows NCDOT and/or its authorized agent to perform the following:

Site	**Authorized Natural Stream Design (linear feet)**	**Alignment, Stream Stationed (linear feet)**	**Wetland fill impacts (acres)**	**Mechanized Clearing Wetland (acres)**	**Stream Impacts (linear feet)**
Site 6	1,930	1,924	---	---	---
Site 8	---	---	1.92	0.162	---
Revised impacts Site 8	---	---	1.86	0.173	---
Site 9	---	---	0.07	0.0075	430
Revised impacts Site 9	---	---	0.06	0.0074	413
Utility Impacts	---	---	0.03	---	---
TOTALS	1,924 (6 linear feet decrease)		0.03 acre decrease	0.011 acre increase	17 ft decrease

Condition(s) of Certification:

1. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards:
   a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual.*
   b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual.* The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
   c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual.*
   d. Any reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.

2. No waste, spoil, solids, or fill of any kind shall occur in wetlands, waters, or riparian areas beyond the footprint of the impacts depicted in the Application. All construction activities shall be performed so that no violations of state water quality standards, statutes, or rules occur.

3. Sediment and erosion control measures shall not be placed in wetlands or waters to the maximum extent practicable. If placement of sediment and erosion control devices in wetlands and waters is unavoidable, they shall be removed and the natural grade restored within 30 days after the project has been released.

4. Measures shall be taken to prevent live or fresh concrete from coming into contact with waters of the state until the concrete has hardened;

5. There shall be no excavation from or waste disposal into jurisdictional wetlands or waters associated with this permit without appropriate modification of this permit. Should waste or borrow sites be located in wetlands or stream, compensatory mitigation will be required since it is a direct impact from road construction activities;

6. No additional compensatory mitigation shall be done in accordance with this modification.

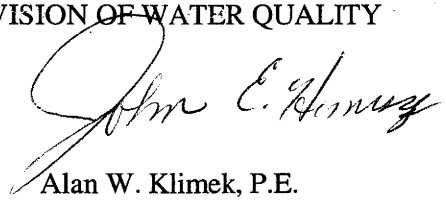
7. All other conditions written into previous Water Quality Certifications for this project still apply.

Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties. This Certification shall become null and void unless the above conditions are made conditions of the Federal 404 and/or Coastal Area Management Act Permit. This Certification shall expire upon the expiration of the 404 or CAMA permit.

If this Certification is unacceptable to you have the right to an adjudicatory hearing upon written request within sixty (60) days following receipt of this Certification. This request must be in the form of a written petition conforming to Chapter 150B of the North Carolina General Statutes and filed with the Office of Administrative Hearings, P.O. Box 27447, Raleigh, N.C. 27611-7447. If modifications are made to an original Certification, you have the right to an adjudicatory hearing on the modifications upon written request within sixty (60) days following receipt of the Certification. Unless such demands are made, this Certification shall be final and binding.

This the 17 th day of September 2004

DIVISION OF WATER QUALITY



Alan W. Klimek, P.E.
Director

Modification to WQC No. 3378

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Certificate of Completeness

DWQ Project No.: 001432 County: Lee county
Project Name: TIP R-2417 BB
Date of Issuance of 401 Water Quality Certification: September 17, 2004

Certificate of Completion

Upon completion of all work approved within the 401 Water Quality Certification or applicable Buffer Rules, and any subsequent modifications, the applicant is required to return this certificate to the Transportation Permitting Unit, North Carolina Division of Water Quality, 1650 Mail Service Center, Raleigh, NC, 27699-1621. This form may be returned to DWQ by the applicant, the applicant's authorized agent, or the Project Engineer. It is not necessary to send certificates from all of these.

Applicant's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature:_____ Date:_____

Agent's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature:_____
Date:_____

If this project was designed by a Certified Professional

I, _____, as a duly registered Professional _____ (i.e., Engineer, Landscape Architect, Surveyor, etc.) in the State of North Carolina, having been authorized to observe (periodically, weekly, full time) the construction of the project, for the Permittee hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature _____ Registration No._____

Date _____

SPECIAL CONDITIONS (Action ID. 2002-2-0899; NCDOT/TIP R-2417)

a. All work authorized by this permit must be prepared in strict compliance with the attached plans, which are a part of this permit.

b. The permittee shall mitigate for 11.06 acres of unavoidable impacts to wetlands, and for 19,222 linear feet of impact to important streams, for the project, as described below (2.21 acres of wetland restoration at the Sandy Creek mitigation site, 11.05 acres of wetlands preservation, along with upland buffer and stream preservation, at the Blue Tract mitigation site, 2,084 linear feet of onsite stream relocation, 4,545 linear feet of stream restoration/enhancement at the Deaton mitigation site, and 25,186 linear feet of stream mitigation and 17.7 acres of wetland mitigation through the North Carolina Wetlands Restoration Program (NCWRP), in the Middle Cape Fear basin (Cataloging Unit 03030004)).

SANDY CREEK WETLANDS RESTORATION

c. The permittee shall provide the restoration described in condition d. below through implementation of the compensatory wetland mitigation plan "Wetland Mitigation Plan – Sandy Creek Site", dated April, 1999.

d. The permittee shall mitigate for 1.105 acres of unavoidable impacts to wetlands associated with this project with 2.21 acres of wetland restoration at the Sandy Creek Mitigation Site.

e. NCDOT will do a boundary survey of the 2.21 acres of wetland restoration at the Sandy Creek Mitigation Site, and submit a copy of the survey to the District Engineer within 90 days after the permit is issued.

f. The permittee will monitor the site vegetation between June 1 and November 30, inclusively, of each year, and document plant mortality and stress. A minimum of three 0.05 acre sample plots will be used (placed randomly within representative positions in the restoration area). The permittee will continue monitoring of the planting areas annually until the respective performance criteria are met, as described below.

SANDY CREEK MITIGATION MONITORING

g. Performance criteria for tree planting areas will be met if sample plots demonstrate that for each of the first three complete years of monitoring, at least 320 target-species trees per acre have survived, such that at the end of three years, at least 320 three-year old target-species trees per acre have survived on the site, and, in years four and five, at least 288 and 260 trees per acre, respectively, have survived on the site, such that at the end of year five, at least 260 five-year old target-species trees per acre have survived on the site.

h. If for any monitoring year, vegetation survival is not favorable, as determined by the Corps of Engineers, any remedial action required by the Corps of Engineers will be performed, the required restoration areas will be replanted, and the five-year monitoring period will begin again with year one.

i. Hydrology in the restoration areas will be monitored through the use of monitoring gauges during each growing season for the first five years of the vegetative monitoring, or until performance criteria have been met, whichever occurs later. A minimum of six groundwater gauges will be used within the total wetland restoration area at Sandy Creek.

j. To meet the hydrology success criteria, the monitoring data must show that for each normal precipitation year within the monitoring period, the site has been inundated or saturated within the upper 12 inches of the soil for a minimum of 12.5% of the growing season (29 consecutive days for Randolph County). WETS tables for Randolph County will be utilized as appropriate to determine normal precipitation years.

k. If there are no normal precipitation years during the first five years of monitoring, to meet performance criteria, the permittee will continue to monitor hydrology on the site until it shows that the site has been inundated or saturated as described above during a normal precipitation year.

l. In the alternative, and at the Corps' discretion, a site may be found to meet the hydrology performance criteria on the basis of comparison of monitoring data taken from the site with monitoring data taken from an established jurisdictional mitigation reference site approved by the Corps. The Corps retains the discretion to find that the hydrology criteria are met if such monitoring data from the mitigation site and the reference site are substantially the same. This finding by the Corps may be made during years with or without normal rainfall.

m. In the event there are years of normal precipitation during the monitoring period, and the data for those years do not show that the site has been inundated or saturated within the upper 12 inches of the soil for a minimum of 12.5 % of the growing season (29 consecutive days) during a normal precipitation year, the Corps may require remedial action. The permittee shall perform such required remedial action, and continue to monitor hydrology on the site until it displays that the site has been inundated or saturated as described above, during a normal precipitation year. If the Corps determines that further remediation is not appropriate, other options will be considered, including use of a different site to mitigate for project impacts.

n. The permittee will submit yearly mitigation monitoring reports by the first day of February after each assessment period, for five years following final site manipulation. These reports will include, at a minimum, sample plot, well and rainfall data; number of individuals of each tree species within each sample plot; photographs, including a location key; and problems/resolution, and will be provided to both the Corps and the North Carolina Division of Water Quality.

BLUE TRACT WETLANDS PRESERVATION

o. The permittee shall implement the compensatory wetland mitigation plan entitled "Blue Tract Mitigation Planning Document", dated June 11, 2001, to provide the preservation described in condition p. below.

p. The permittee shall mitigate for 1.105 acres of unavoidable impacts to wetlands associated with this project with 11.05 acres of wetland preservation, and additional upland buffer and stream preservation, at the Blue Tract Mitigation Site.

q. NCDOT will submit a copy of a boundary survey of the 11.05 acres of wetland preservation at the Blue Tract Mitigation Site, to the District Engineer within 90 days after this permit is issued.

ONSITE STREAM RELOCATION

r. The permittee shall mitigate for 2,084 linear feet of unavoidable impacts to important stream channel associated with this project by completing 2,084 linear feet of onsite stream relocation, as described in the permit application. The stream relocation shall be constructed in accordance with the North Carolina Wildlife Resources Commission's (NCWRC) "Stream Relocation Guidelines", and with the attached permit drawings. NCDOT shall consult with NCWRC on all stream relocations and implement all practicable recommendations in the design of specific site requirements for re-establishment of bank vegetation, and placement of meanders and habitat structures. Vegetation shall be used to the maximum extent practicable to stabilize banks, and riprap and other man-made structural measures shall be minimized.

s. The permittee shall construct all channel relocations in a dry work area. The permittee shall stabilize the relocated channel before stream flows are turned into the new channel. Whenever possible, channel relocations shall be allowed to stabilize for an entire growing season. Vegetation used to stabilize banks shall be limited to native woody species, and should include establishment of a 30 foot wide wooded buffer and an adjacent 20 foot wide vegetated buffer on both sides of the relocated channel to the maximum extent practical.

t. The permittee shall visually monitor the vegetative plantings on all mitigation stream banks to assess and insure complete stabilization of the mitigation stream segments. This monitoring shall include adequate visual monitoring of planted vegetation quarterly for a minimum of two years after final planting, and appropriate remedial actions (e.g., replanting, streambank grading, etc.). If within any monitoring year, bank stabilization is not acceptable as determined by the Corps of Engineers, and remedial action required by the Corps of Engineers is performed, the two year monitoring of the affected portions of the stream will begin again. The permittee will coordinate

stream mitigation activities with the Corps of Engineers, Raleigh Regulatory Field Office Project Manager, and will report verbally on the status of the stream mitigation within thirty days of the quarterly monitoring. The permittee will submit a brief written report with representative photographs within 90 days after the monitoring year is completed.

DEATON SITE STREAM MITIGATION

u. The permittee shall mitigate for 4,545 linear feet of unavoidable impacts to stream channel associated with this project with 4,545 linear feet of stream restoration at the Deaton Mitigation Site, as described in the Deaton Site stream mitigation plan.

v. The permittee shall visually monitor the vegetative plantings on the mitigation stream banks to assess and insure complete stabilization of the mitigation stream segments. This monitoring shall include adequate visual monitoring of planted vegetation quarterly for a minimum of two years after final planting, and appropriate remedial actions (e.g., replanting, streambank grading, etc.). The permittee will coordinate with the Corps of Engineers, Raleigh Regulatory Field Office NCDOT Regulatory Project Manager, and will report verbally on the status of the stream mitigation, within thirty days of the quarterly monitoring. The permittee will submit a brief report with representative photographs within 90 days after the monitoring year is completed.

w. All site preparation activities at the Deaton Mitigation Site shall be completed before October 1, 2003. An "as built" plan, which describes the completed mitigation project, including variations from the original plan, final structure locations, and photographs, including a location key, shall be submitted to the District Engineer within 60 days of completion of the mitigation. NCDOT shall submit the first monitoring report to both the Corps and the North Carolina Division of Water Quality before February 1, 2003.

GENERAL MITIGATION

x. The permittee and/or current and subsequent property owners shall maintain the Sandy Creek, Blue Tract, and Deaton Mitigation Sites in their natural condition, as altered by work in the mitigation plans, in perpetuity. Prohibited activities within the mitigation sites specifically include, but are not limited to: the construction or placement of roads, walkways, buildings, signs, or structures of any kind (i.e., billboards, interior fences, etc.); filling, grading, excavation, leveling, or any other earth moving activity or activity that may alter the drainage patterns on the property; the cutting, mowing, destruction, removal, or other damage of any vegetation; disposal or storage of any debris, trash, garbage, or other waste material; except as may be authorized by the mitigation plans, or subsequent modifications that are approved by the Corps of Engineers. In addition, the permittee shall take no action, whether on or off the mitigation properties, which will adversely impact the wetlands or streams on the mitigation properties, except as specifically authorized by this permit, or subsequent modifications that are approved by the Corps of Engineers.

y. The permittee shall make every effort to convey the Sandy Creek, and Blue Tract Mitigation Site properties to a nonprofit conservation organization or a natural resource agency, which is willing to hold the areas in perpetuity for conservation purposes, and which is acceptable to the Corps of Engineers. The annual monitoring reports, as required, will include the status of the conveyance efforts.

z. The permittee shall not sell or otherwise convey any interest in the wetland mitigation properties used to satisfy mitigation requirements for this permit, to any third party, without written approval from the Wilmington Corps of Engineers.

aa. Any sale, lease, or other conveyance of the wetland mitigation site properties shall include restrictions on the use of the properties as described in condition y. above, which conditions shall be enforced by the North Carolina Department of Transportation. Such restrictions shall include language providing for third party enforcement rights in favor of the Corps of Engineers. Such restrictions must be approved by the Corps of Engineers prior to conveyance.

NCWRP WETLANDS MITIGATION

bb. The permittee shall mitigate for 8.85 acres of unavoidable impacts to wetlands associated with this project by payment to the North Carolina Wetlands Restoration Program (NCWRP) in an amount determined by the NCWRP sufficient to perform 17.7 acres of riparian, palustrine forested wetland mitigation in the middle Cape Fear River basin (Cataloging Unit 03030004). Construction within wetlands on the permitted highway project shall begin only after the permittee has made full payment to the NCWRP, and the NCWRP has made written confirmation to the District Engineer, that it agrees to accept responsibility for the mitigation work required, pursuant to Paragraph IV.D. of the Memorandum of Understanding between the North Carolina Department of Environment and Natural Resources and the U.S. Army Corps of Engineers, Wilmington District, dated November 4, 1998.

NCWRP STREAM MITIGATION

cc. The permittee shall mitigate for 12,593 linear feet of unavoidable impacts to important stream channel associated with this project by payment to the North Carolina Wetlands Restoration Program (NCWRP) in an amount determined by the NCWRP sufficient to perform 25,186 linear feet of warm water stream mitigation, or the equivalent water quality improvement projects, as approved by the Corps of Engineers, in the middle Cape Fear River basin (Cataloging Unit 03030004). Construction within streams on the permitted highway project shall begin only after the permittee has made full payment to the NCWRP, and the NCWRP has made written confirmation to the District Engineer, that it agrees to accept responsibility for the mitigation work required, pursuant to Paragraph IV.D. of the Memorandum of Understanding between the North Carolina Department of Environment and Natural Resources and the U.S. Army Corps of Engineers, Wilmington District, dated November 4, 1998.

GENERAL MITIGATION

dd. The permittee shall contact the Corps of Engineers, Raleigh Regulatory Field Office NCDOT Regulatory Project Manager for this project, to provide that individual with the opportunity to attend the yearly mitigation monitoring efforts.

ee. Failure to institute and carry out the details of special conditions a. - dd, above, will result in a directive to cease all ongoing and permitted work within waters and/or wetlands associated with the permitted project, or such other remedy as the District Engineer or his authorized representatives may seek.

OTHER CONDITIONS

ff. When final design plans are completed for Sections AA and C of TIP R-2417, any necessary permit modifications shall be submitted to the District Engineer and the North Carolina Division of Water Quality (NCDWQ). If necessary, a public notice will be circulated for review. Final designs shall reflect all appropriate avoidance, minimization, and a compensatory mitigation plan for additional impacts within streams and wetlands. Construction within streams and wetlands on TIP R-2417 shall begin only after approval by the District Engineer of the modified impacts.

gg. NCDOT shall use "High Quality Waters" sedimentation and erosion control measures for all portions of the project west of SR 1415.

hh. Prior to commencing construction within jurisdictional waters of the United States for any section, the permittee shall forward the latest version of project construction drawings for that section to the Corps of Engineers, Raleigh Regulatory Field Office NCDOT Regulatory Project Manager. Half-size drawings are acceptable.

ii. The permittee shall schedule a meeting between its representatives, the contractor's representatives, and the Corps of Engineers, Raleigh Regulatory Field Office NCDOT Regulatory Project Manager, prior to any work within jurisdictional waters and wetlands in each section, to ensure that there is a mutual understanding of all of the terms and conditions contained within this Department of the Army Permit. The permittee shall notify the Corps of Engineers Project Manager a minimum of thirty (30) days in advance of the scheduled meetings in order to provide that individual with ample opportunity to schedule and participate in the required meetings.

jj..The permittee and its contractors and/or agents shall not excavate, fill, or perform mechanized landclearing at any time in the construction or maintenance of this project within waters and/or wetlands, except as authorized by this permit, or any modification to this permit. There shall be no excavation from, or waste disposal into,

jurisdictional wetlands or waters associated with this permit without appropriate modification of this permit, including appropriate compensatory mitigation. This prohibition applies to all borrow and fill activities connected with this project.

kk. To ensure that all borrow and waste activities occur on high ground, except as authorized by this permit, the permittee shall require its contractors and/or agents to identify all areas to be used to borrow material, or to dispose of dredged, fill, or waste material. The permittee shall ensure that all such areas comply with the preceding condition (jj.) of this permit, and shall require and maintain documentation of the location and characteristics of all borrow and disposal sites associated with this project. This information will include data regarding soils, vegetation and hydrology sufficient to clearly demonstrate compliance with the preceding condition (jj.). All information will be available to the Corps of Engineers upon request.

ll. The permittee shall comply with the conditions specified in the water quality certification, No. 3378, issued by the North Carolina Division of Water Quality on April 10, 2002.

mm. The permittee shall place culverts and other structures in waters, streams, and wetlands below the elevation of the streambed to allow low flow passage of water and aquatic life, unless providing passage would be impractical. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to, or upstream and downstream of the structures.

nn. The permittee shall use appropriate sediment and erosion control practices which equal or exceed those outlined in the most recent version of the "North Carolina Sediment and Erosion Control Planning and Design Manual" to assure compliance with the appropriate turbidity water quality standard (50 NTU's in all streams and rivers, and 25 NTU's in all lakes).

oo. The permittee shall remove all sediment and erosion control measures placed in wetlands or waters, and shall restore natural grades in those areas, prior to project completion.

pp. The permittee shall take measures to prevent live or fresh concrete from coming into contact with any surface waters until the concrete has hardened.

qq. If the permittee discovers any previously unknown historic or archeological remains while accomplishing the authorized work, he will immediately notify the Wilmington District Engineer who will initiate the required State/Federal coordination.

rr. .No excavated or fill material will be placed at any time in waters or wetlands outside the permitted construction areas, nor will it be placed in any location or in any manner so as to impair surface water flow into or out of any wetland area.

ss. The permittee will maintain the authorized work in good condition and in conformance with the terms and conditions of this permit. The permittee is not relieved of this requirement if he abandons the permitted activity without transferring it to a third party.

tt. All fill material will be clean and free of any pollutants except in trace quantities. Metal products, organic materials, or unsightly debris will not be used.

uu. This Department of the Army permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.

vv. This permit does not grant any property rights or exclusive privileges.

ww. In issuing this permit, the Federal Government does not assume any liability for:

1. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

2. Damages to the permitted project or uses thereof as a result of current or future Federal activities initiated on behalf of the general public.

3. Damages to other permitted or unpermitted activities or structures caused by the authorized activity.

4. Design and construction deficiencies associated with the permitted work.

5. Damage claims associated with any future modification, suspension, or revocation of this permit.

State of North Carolina
Department of Environment
and Natural Resources
Division of Water Quality

Michael F. Easley, Governor
William G. Ross, Jr., Secretary
Gregory J. Thorpe, Ph.D., Acting Director

NCDENR
NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

APPROVAL OF 401 Water Quality Certification

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (DWQ) Regulations in 15A NCAC 2H. Section .0500, and 15A NCAC 2B .0233. You have our approval, in accordance with the attached conditions and those listed below, to place fill material in 11.06 acres of jurisdictional wetlands, 23,640 linear feet of streams, and 6.32 acres of other surface waters (ponds). In addition, 0.1 acres of temporary impacts to jurisdictional wetlands at Section BB Site 2 are authorized. The project shall be constructed in accordance with your application dated June 11, 2001, and the subsequent addendums dated June 22, 2001, August 31, 2001, and September 28, 2001. Any proposed site plans submitted in the June 11, 2001 application that have a subsequent revised site plan submitted in the June 22, 2001, August 31, 2001, or September 28, 2001 addendums are not authorized by this certification. Instead, for all impacts where a proposed site design as provided in the original June 11, 2001 application was revised and submitted in the the June 22, 2001, August 31, 2001, or September 28, 2001 addendums, the drawings with the latest date of revision are authorized. The purpose of the authorized impacts is the construction of the US 421-NC 87 Sanford Bypass from existing US 421 northwest of Sanford to existing NC 87 southeast of Sanford in Lee County (TIP R-2417).

The application provides adequate assurance that the discharges of fill material into the waters of the Cape Fear River Basin in conjunction with the proposed development will not result in a violation of applicable Water Quality Standards and discharge guidelines. Therefore, the State of North Carolina certifies that this activity will not violate the applicable portions of Sections 301, 302, 303, 306, 307 of PL 92-500 and PL 95-217 if conducted in accordance with the application and conditions hereinafter set forth.

This approval is only valid for the purpose and design that you submitted in your application, as described in the Public Notice. Should your project change, you are required to notify the DWQ and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. Any additional impacts to wetlands, streams, or buffers, for this project (now or in the future) will require additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7), and 15A NCAC 2B .0233. For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire three years from the date of the cover letter from DWQ or on the same day as the expiration date of the corresponding Corps of Engineers Permit, whichever is sooner.

Condition(s) of Certification:

1. Appropriate sediment and erosion control practices which equal or exceed those outlined in the most recent version of the "North Carolina Sediment and Erosion Control Planning and Design Manual" or the "North Carolina Surface Mining Manual" whichever is more appropriate (available from the Division of Land Resources (DLR) in the DENR Regional or Central Offices) shall be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to assure compliance with

State of North Carolina
Department of Environment
and Natural Resources
Division of Water Quality

Michael F. Easley, Governor
William G. Ross, Jr., Secretary
Gregory J. Thorpe, Ph.D., Acting Director

the appropriate turbidity water quality standard (50 NTUs in all fresh water streams and rivers not designated as trout waters; 25 NTUs in all lakes and reservoirs, and all saltwater classes; and 10 NTUs in trout waters);

2. Sediment and erosion control measures shall not be placed in wetlands or waters to the maximum extent practicable. If placement of sediment and erosion control devices in wetlands and waters is unavoidable, they shall be removed and the natural grade restored after the Division of Land Resources has released the project;

3. If an environmental document is required, this Certification is not valid until a FONSI or ROD is issued by the State Clearinghouse. All water quality-related conditions of the FONSI or ROD shall become conditions of this Certification;

4. Measures shall be taken to prevent live or fresh concrete from coming into contact with waters of the state until the concrete has hardened;

5. There shall be no excavation from or waste disposal into jurisdictional wetlands or waters associated with this permit without appropriate modification of this permit. Should waste or borrow sites be located in wetlands or stream, compensatory mitigation will be required since it is a direct impact from road construction activities.

6. All channel relocations will be constructed in a dry work area, and stabilized before stream flows are diverted. Channel relocations will be completed and stabilized prior to diverting water into the new channel. Whenever possible, channel relocations shall be allowed to stabilize for an entire growing season. Vegetation used for bank stabilization shall be limited to native woody species, and should include establishment of a 30 foot wide wooded and an adjacent 20 foot wide vegetated buffer on both sides of the relocated channel to the maximum extent practical. A transitional phase incorporating coir fiber and seedling establishment is allowable. Also, rip-rap may be allowed if it is necessary to maintain the physical integrity of the stream, but the applicant must provide written justification and any calculations used to determine the extent of rip-rap coverage requested.

7. Compensatory mitigation for impacts to streams shall be done for 17,138 linear feet of stream impact (4545 linear feet in Hydrologic Unit 03030003 and 12,593 linear feet in Hydrologic Unit 03030004) at a replacement ratio of 1:1. Compensatory mitigation for impacts to jurisdictional streams shall be provided by onsite stream relocations of 144 linear feet of streams on site (in Hydrologic Unit 03030004) as described in the June 11, 2001 application for Sites 14 and 22 in segment BA. In addition, compensatory mitigation for impacts to jurisdictional streams shall be provided by onsite stream relocations of 1930 linear feet of streams on site (in Hydrologic Unit 03030004) as described in the September 28, 2001 addendum for Site 6 in segment BB. All stream relocations shall have 50-foot wooded buffers planted on both sides of the stream. As-Builts for the completed streams shall be submitted to the North Carolina Division of Water Quality 401 Wetlands Unit within 30 days of the completion of the construction of the relocations. If the parameters of this condition are not met, then the NCDOT shall supply additional stream mitigation for the 2074 linear feet of impacts. In addition to the 2,074 linear

State of North Carolina
Department of Environment
and Natural Resources
Division of Water Quality

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Michael F. Easley, Governor
William G. Ross, Jr., Secretary
Gregory J. Thorpe, Ph.D., Acting Director

feet of on-site mitigation, compensatory mitigation for an additional 15,064 linear feet of streams is required as described below:

Mitigation Site	Linear Feet Debited from Site	Type of Mitigation	Replacement Ratio	Linear Feet of Mitigation Credited
Hydrologic Unit 03030003				
Deaton Mitigation Site	4,545	Restoration	1:1	4,545
Hydrologic Unit 03030004				
On-site	2,074	Restoration	1:1	2,074
WRP	10,519	Restoration	1:1	10,519
Total				17,138

We understand that you have chosen to perform compensatory mitigation for some of your impacts to streams through an in lieu payment to the North Carolina Wetland Restoration Program (NCWRP), and that the WRP has agreed to implement the mitigation for the project. Mitigation for unavoidable impacts to 10,519 linear feet of streams shall be provided through an in-lieu payment to the North Carolina Wetlands Restoration Program (NCWRP) at a rate of $125 per linear foot. Therefore, a total payment of $ 1,314,875 shall be submitted to the NCWRP to offset the impacts. No construction activities in jurisdictional streams shall begin until payment for stream mitigation is made and the Wetland Restoration Program receives and clears your check (made payable to DENR – Wetland Restoration Program). The payment to NCWRP shall be sent within two months of issuance of the 404 permit. If you have any questions concerning the Wetland Restoration Program please contact them at 919-733-5208.

8. Compensatory mitigation for impacts to wetlands shall be done for 11.06 acres of impacts (2.21 in Hydrologic Unit 03030003 and 8.85 in Hydrologic Unit 03030004). Applying a replacement ration of 2:1 total mitigation for 22.12 acres of riparian wetlands (4.42 in Hydrologic Unit 03030003 and 17.70 acres in Hydrologic Unit 03030004) shall be provided as described below.

State of North Carolina
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Division of Water Quality

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Michael F. Easley, Governor
William G. Ross, Jr., Secretary
Gregory J. Thorpe, Ph.D., Acting Director

NCDENR
NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

Mitigation Site	Acres of WL Debited from Site	Type of Mitigation	Replacement Ratio	Acres of Mitigation Credited
Hydrologic Unit 03030003				
Sandy Creek Mitigation Site	2.21	Restoration	1:1	2.21
Blue Mitigation Site	11.04	Preservation	5:1	2.21
Hydrologic Unit 03030004				
WRP	17.70	Restoration	1:1	17.70
Total				**22.12**

9. Upon completion of the project, the NCDOT shall complete and return the enclosed "Certification of Completion Form" to notify DWQ when all work included in the 401 Certification has been completed. The responsible party shall complete the attached form and return it to the 401/Wetlands Unit of the Division of Water Quality upon completion of the project.

10. Placement of culverts and other structures in waters, streams, and wetlands must be placed below the elevation of the streambed to allow low flow passage of water and aquatic life unless it can be shown to DWQ that providing passage would be impractical. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or stream beds or banks, adjacent to or upstream and down stream of the above structures. The applicant is required to provide evidence that the equilibrium shall be maintained if requested in writing by DWQ.

11. When final design plans are completed for Sections R-2417 AA, and R-2417 C, a modification to the 401 Water Quality Certification shall be submitted with seven copies and fees to the NC Division of Water Quality. Final designs shall reflect all appropriate avoidance, minimization, and mitigation for impacts to wetlands, streams, and other surface waters. Construction activities that impact any wetlands, streams, and other surface waters located in Sections R-2417 AA or Sections R-2417 C shall begin only after NCDOT applies for and receives a modified 401Water Quality Certification from the NC Division of Water Quality.

12. No construction activities are authorized in Section R-2417 AA or Section R-2417 AB until a final design is approved in writing by the NC Division of Water Quality 401 Wetlands Unit for the Deaton Mitigation Site.

Wetlands/401 Unit 1650 Mail Service Center Raleigh, North Carolina 27699-1621
Telephone 919-733-1786 FAX 733-6893

State of North Carolina
Department of Environment
and Natural Resources
Division of Water Quality

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Michael F. Easley, Governor
William G. Ross, Jr., Secretary
Gregory J. Thorpe, Ph.D., Acting Director

13. Given the multiple set of addendums to the original application, NCDOT shall provide to the NCDWQ a final of site drawings within 2 months of the date of issuance of the 401 Water Quality Certification that reflects the authorized impacts in this certification.

Violations of any condition herein set forth shall result in revocation of this Certification and may result in criminal and/or civil penalties. This Certification shall become null and void unless the above conditions are made conditions of the Federal 404 and/or Coastal Area Management Act Permit. This Certification shall expire upon the expiration of the 404 or CAMA permit.

If this Certification is unacceptable to you have the right to an adjudicatory hearing upon written request within sixty (60) days following receipt of this Certification. This request must be in the form of a written petition conforming to Chapter 150B of the North Carolina General Statutes and filed with the Office of Administrative Hearings, P.O. Box 27447, Raleigh, N.C. 27611-7447. If modifications are made to an original Certification, you have the right to an adjudicatory hearing on the modifications upon written request within sixty (60) days following receipt of the Certification. Unless such demands are made, this Certification shall be final and binding.

This the 10th day of April 2002

DIVISION OF WATER QUALITY

Gregory J. Thorpe, Ph.D.
Acting Director

WQC No. 3377

Wetlands/401 Unit 1650 Mail Service Center Raleigh, North Carolina 27699-1621
Telephone 919-733-1786 FAX 733-6893

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DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1890
WILMINGTON, NORTH CAROLINA 28402-1890

IN REPLY REFER TO

May 28, 2002

Regulatory Division

SUBJECT: Action ID 2002-2-0899, TIP No. R-2417

Mr. William D. Gilmore, P.E., Manager
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
Division of Highways
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Gilmore:

In accordance with your written request of June 11, 2001, subsequently modified on June 22, 2001, and September 28, 2001, and the resulting administrative record, enclosed are two copies of a Department of the Army permit to authorize the discharge of dredged and fill material into waters of the United States, for construction of the US 421-NC 87 Sanford Bypass (T.I.P. No. R-2417), in the Cape Fear River Basin, in Lee County, North Carolina.

You should acknowledge that you accept the terms and conditions of the enclosed permit by signing and dating each copy in the spaces provided ("Permittee" on page 3). Your signature, as permittee, shows that, as consideration for the issuance of this permit, you voluntarily accept and agree to comply with all of the terms and conditions of this permit. All pages of both copies of the signed permit with drawings should then be returned to this office for final authorization. A self-addressed envelope is enclosed for your convenience.

After the permit is authorized in this office, the original copy will be returned to you; the duplicate copy will be permanently retained in this office. Should you have questions, contact Mr. Eric Alsmeyer of my Raleigh Field Office regulatory staff at telephone (919) 876-8441, extension 23.

Sincerely,

E. David Franklin

E. David Franklin
Chief, NCDOT Team

Enclosures

Blind Copies Furnished:

CESAW-RG-R/Alsmeyer
CESAW-RG-R/Manuele
CESAW-RG-R/COMPLIANCE FILE (with Permit and Conditions)

SUSPENSE

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: NCDOT/TIP R-2417 (Sanford Bypass)	File Number: 2002-2-0899	Date: May 28, 2002
Attached is:		See Section below
X	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to change the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:
Mr. Eric C. Alsmeyer, Regulatory Project Manager
U.S. Army Corps of Engineers, Wilmington District
Raleigh Regulatory Field Office
6508 Falls of Neuse Road, Suite 120
Raleigh, North Carolina 27615-6814

If you only have questions regarding the appeal process you may also contact:
Mr. Arthur Middleton, Administrative Appeal Review Officer
CESAD-ET-CO-R
U.S. Army Corps of Engineers, South Atlantic Division
60 Forsyth Street, Room 9M15
Atlanta, Georgia 30303-8801

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.	Date:	Telephone number:

DIVISION ENGINEER:
Commander
U.S. Army Engineer Division, South Atlantic
60 Forsyth Street, Room 9M15
Atlanta, Georgia 30303-3490

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DEPARTMENT OF THE ARMY PERMIT

Permittee NC Department of Transportation

Permit No. 200220899

Issuing Office CESAW-RG-R

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description:

Place fill material impacting a total of 11.06 acres of wetlands, 23,640 linear feet of stream, and 6.32 acres of ponds, for construction of the US 421-NC 87 Sanford bypass (T.I.P. No. R-2417).

Project Location:

In the upper and middle Cape Fear River basins, from existing US 421 northwest of Sanford to existing NC 87, southeast of Sanford, in Lee County, North Carolina.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on December 31, 2009. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

See enclosed sheet.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

( ) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

William D. Gilmore — 28 May 2007

(PERMITTEE) — *(DATE)*

NC DEPARTMENT OF TRANSPORTATION

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

(DISTRICT ENGINEER) — *(DATE)*

JAMES W. DELONY, COLONEL

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE) — *(DATE)*

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DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1890
WILMINGTON, NORTH CAROLINA 28402-1890

IN REPLY REFER TO

May 28, 2002

Regulatory Division

SUBJECT: Action ID 2002-2-0899, TIP No. R-2417

Mr. William D. Gilmore, P.E., Manager
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
Division of Highways
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Gilmore:

In accordance with your written request of June 11, 2001, subsequently modified on June 22, 2001, and September 28, 2001, and the resulting administrative record, enclosed are two copies of a Department of the Army permit to authorize the discharge of dredged and fill material into waters of the United States, for construction of the US 421-NC 87 Sanford Bypass (T.I.P. No. R-2417), in the Cape Fear River Basin, in Lee County, North Carolina.

You should acknowledge that you accept the terms and conditions of the enclosed permit by signing and dating each copy in the spaces provided ("Permittee" on page 3). Your signature, as permittee, shows that, as consideration for the issuance of this permit, you voluntarily accept and agree to comply with all of the terms and conditions of this permit. All pages of both copies of the signed permit with drawings should then be returned to this office for final authorization. A self-addressed envelope is enclosed for your convenience.

After the permit is authorized in this office, the original copy will be returned to you; the duplicate copy will be permanently retained in this office. Should you have questions, contact Mr. Eric Alsmeyer of my Raleigh Field Office regulatory staff at telephone (919) 876-8441, extension 23.

Sincerely,

E. David Franklin

E. David Franklin
Chief, NCDOT Team

Enclosures

Blind Copies Furnished:

CESAW-RG-R/Alsmeyer
CESAW-RG-R/Manuele
CESAW-RG-R/COMPLIANCE FILE (with Permit and Conditions)

SUSPENSE

SPECIAL CONDITIONS (Action ID. 2002-2-0899; NCDOT/TIP R-2417)

a. All work authorized by this permit must be prepared in strict compliance with the attached plans, which are a part of this permit.

b. The permittee shall mitigate for 11.06 acres of unavoidable impacts to wetlands, and for 19,222 linear feet of impact to important streams, for the project, as described below (2.21 acres of wetland restoration at the Sandy Creek mitigation site, 11.05 acres of wetlands preservation, along with upland buffer and stream preservation, at the Blue Tract mitigation site, 2,084 linear feet of onsite stream relocation, 4,545 linear feet of stream restoration/enhancement at the Deaton mitigation site, and 25,186 linear feet of stream mitigation and 17.7 acres of wetland mitigation through the North Carolina Wetlands Restoration Program (NCWRP), in the Middle Cape Fear basin (Cataloging Unit 03030004)).

SANDY CREEK WETLANDS RESTORATION

c. The permittee shall provide the restoration described in condition d. below through implementation of the compensatory wetland mitigation plan "Wetland Mitigation Plan – Sandy Creek Site", dated April, 1999.

d. The permittee shall mitigate for 1.105 acres of unavoidable impacts to wetlands associated with this project with 2.21 acres of wetland restoration at the Sandy Creek Mitigation Site.

e. NCDOT will do a boundary survey of the 2.21 acres of wetland restoration at the Sandy Creek Mitigation Site, and submit a copy of the survey to the District Engineer within 90 days after the permit is issued.

f. The permittee will monitor the site vegetation between June 1 and November 30, inclusively, of each year, and document plant mortality and stress. A minimum of three 0.05 acre sample plots will be used (placed randomly within representative positions in the restoration area). The permittee will continue monitoring of the planting areas annually until the respective performance criteria are met, as described below.

SANDY CREEK MITIGATION MONITORING

g. Performance criteria for tree planting areas will be met if sample plots demonstrate that for each of the first three complete years of monitoring, at least 320 target-species trees per acre have survived, such that at the end of three years, at least 320 three-year old target-species trees per acre have survived on the site, and, in years four and five, at least 288 and 260 trees per acre, respectively, have survived on the site, such that at the end of year five, at least 260 five-year old target-species trees per acre have survived on the site.

h. If for any monitoring year, vegetation survival is not favorable, as determined by the Corps of Engineers, any remedial action required by the Corps of Engineers will be performed, the required restoration areas will be replanted, and the five-year monitoring period will begin again with year one.

i. Hydrology in the restoration areas will be monitored through the use of monitoring gauges during each growing season for the first five years of the vegetative monitoring, or until performance criteria have been met, whichever occurs later. A minimum of six groundwater gauges will be used within the total wetland restoration area at Sandy Creek.

j. To meet the hydrology success criteria, the monitoring data must show that for each normal precipitation year within the monitoring period, the site has been inundated or saturated within the upper 12 inches of the soil for a minimum of 12.5% of the growing season (29 consecutive days for Randolph County). WETS tables for Randolph County will be utilized as appropriate to determine normal precipitation years.

k. If there are no normal precipitation years during the first five years of monitoring, to meet performance criteria, the permittee will continue to monitor hydrology on the site until it shows that the site has been inundated or saturated as described above during a normal precipitation year.

l. In the alternative, and at the Corps' discretion, a site may be found to meet the hydrology performance criteria on the basis of comparison of monitoring data taken from the site with monitoring data taken from an established jurisdictional mitigation reference site approved by the Corps. The Corps retains the discretion to find that the hydrology criteria are met if such monitoring data from the mitigation site and the reference site are substantially the same. This finding by the Corps may be made during years with or without normal rainfall.

m. In the event there are years of normal precipitation during the monitoring period, and the data for those years do not show that the site has been inundated or saturated within the upper 12 inches of the soil for a minimum of 12.5 % of the growing season (29 consecutive days) during a normal precipitation year, the Corps may require remedial action. The permittee shall perform such required remedial action, and continue to monitor hydrology on the site until it displays that the site has been inundated or saturated as described above, during a normal precipitation year. If the Corps determines that further remediation is not appropriate, other options will be considered, including use of a different site to mitigate for project impacts.

n. The permittee will submit yearly mitigation monitoring reports by the first day of February after each assessment period, for five years following final site manipulation. These reports will include, at a minimum, sample plot, well and rainfall data; number of individuals of each tree species within each sample plot; photographs, including a location key; and problems/resolution, and will be provided to both the Corps and the North Carolina Division of Water Quality.

BLUE TRACT WETLANDS PRESERVATION

o. The permittee shall implement the compensatory wetland mitigation plan entitled "Blue Tract Mitigation Planning Document", dated June 11, 2001, to provide the preservation described in condition p. below.

p. The permittee shall mitigate for 1.105 acres of unavoidable impacts to wetlands associated with this project with 11.05 acres of wetland preservation, and additional upland buffer and stream preservation, at the Blue Tract Mitigation Site.

q. NCDOT will submit a copy of a boundary survey of the 11.05 acres of wetland preservation at the Blue Tract Mitigation Site, to the District Engineer within 90 days after this permit is issued.

ONSITE STREAM RELOCATION

r. The permittee shall mitigate for 2,084 linear feet of unavoidable impacts to important stream channel associated with this project by completing 2,084 linear feet of onsite stream relocation, as described in the permit application. The stream relocation shall be constructed in accordance with the North Carolina Wildlife Resources Commission's (NCWRC) "Stream Relocation Guidelines", and with the attached permit drawings. NCDOT shall consult with NCWRC on all stream relocations and implement all practicable recommendations in the design of specific site requirements for re-establishment of bank vegetation, and placement of meanders and habitat structures. Vegetation shall be used to the maximum extent practicable to stabilize banks, and riprap and other man-made structural measures shall be minimized.

s. The permittee shall construct all channel relocations in a dry work area. The permittee shall stabilize the relocated channel before stream flows are turned into the new channel. Whenever possible, channel relocations shall be allowed to stabilize for an entire growing season. Vegetation used to stabilize banks shall be limited to native woody species, and should include establishment of a 30 foot wide wooded buffer and an adjacent 20 foot wide vegetated buffer on both sides of the relocated channel to the maximum extent practical.

t. The permittee shall visually monitor the vegetative plantings on all mitigation stream banks to assess and insure complete stabilization of the mitigation stream segments. This monitoring shall include adequate visual monitoring of planted vegetation quarterly for a minimum of two years after final planting, and appropriate remedial actions (e.g., replanting, streambank grading, etc.). If within any monitoring year, bank stabilization is not acceptable as determined by the Corps of Engineers, and remedial action required by the Corps of Engineers is performed, the two year monitoring of the affected portions of the stream will begin again. The permittee will coordinate

stream mitigation activities with the Corps of Engineers, Raleigh Regulatory Field Office Project Manager, and will report verbally on the status of the stream mitigation within thirty days of the quarterly monitoring. The permittee will submit a brief written report with representative photographs within 90 days after the monitoring year is completed.

DEATON SITE STREAM MITIGATION

u. The permittee shall mitigate for 4,545 linear feet of unavoidable impacts to stream channel associated with this project with 4,545 linear feet of stream restoration at the Deaton Mitigation Site, as described in the Deaton Site stream mitigation plan.

v. The permittee shall visually monitor the vegetative plantings on the mitigation stream banks to assess and insure complete stabilization of the mitigation stream segments. This monitoring shall include adequate visual monitoring of planted vegetation quarterly for a minimum of two years after final planting, and appropriate remedial actions (e.g., replanting, streambank grading, etc.). The permittee will coordinate with the Corps of Engineers, Raleigh Regulatory Field Office NCDOT Regulatory Project Manager, and will report verbally on the status of the stream mitigation, within thirty days of the quarterly monitoring. The permittee will submit a brief report with representative photographs within 90 days after the monitoring year is completed.

w. All site preparation activities at the Deaton Mitigation Site shall be completed before October 1, 2003. An "as built" plan, which describes the completed mitigation project, including variations from the original plan, final structure locations, and photographs, including a location key, shall be submitted to the District Engineer within 60 days of completion of the mitigation. NCDOT shall submit the first monitoring report to both the Corps and the North Carolina Division of Water Quality before February 1, 2003.

GENERAL MITIGATION

x. The permittee and/or current and subsequent property owners shall maintain the Sandy Creek, Blue Tract, and Deaton Mitigation Sites in their natural condition, as altered by work in the mitigation plans, in perpetuity. Prohibited activities within the mitigation sites specifically include, but are not limited to: the construction or placement of roads, walkways, buildings, signs, or structures of any kind (i.e., billboards, interior fences, etc.); filling, grading, excavation, leveling, or any other earth moving activity or activity that may alter the drainage patterns on the property; the cutting, mowing, destruction, removal, or other damage of any vegetation; disposal or storage of any debris, trash, garbage, or other waste material; except as may be authorized by the mitigation plans, or subsequent modifications that are approved by the Corps of Engineers. In addition, the permittee shall take no action, whether on or off the mitigation properties, which will adversely impact the wetlands or streams on the mitigation properties, except as specifically authorized by this permit, or subsequent modifications that are approved by the Corps of Engineers.

y. The permittee shall make every effort to convey the Sandy Creek, and Blue Tract Mitigation Site properties to a nonprofit conservation organization or a natural resource agency, which is willing to hold the areas in perpetuity for conservation purposes, and which is acceptable to the Corps of Engineers. The annual monitoring reports, as required, will include the status of the conveyance efforts.

z. The permittee shall not sell or otherwise convey any interest in the wetland mitigation properties used to satisfy mitigation requirements for this permit, to any third party, without written approval from the Wilmington Corps of Engineers.

aa. Any sale, lease, or other conveyance of the wetland mitigation site properties shall include restrictions on the use of the properties as described in condition y. above, which conditions shall be enforced by the North Carolina Department of Transportation. Such restrictions shall include language providing for third party enforcement rights in favor of the Corps of Engineers. Such restrictions must be approved by the Corps of Engineers prior to conveyance.

NCWRP WETLANDS MITIGATION

bb. The permittee shall mitigate for 8.85 acres of unavoidable impacts to wetlands associated with this project by payment to the North Carolina Wetlands Restoration Program (NCWRP) in an amount determined by the NCWRP sufficient to perform 17.7 acres of riparian, palustrine forested wetland mitigation in the middle Cape Fear River basin (Cataloging Unit 03030004). Construction within wetlands on the permitted highway project shall begin only after the permittee has made full payment to the NCWRP, and the NCWRP has made written confirmation to the District Engineer, that it agrees to accept responsibility for the mitigation work required, pursuant to Paragraph IV.D. of the Memorandum of Understanding between the North Carolina Department of Environment and Natural Resources and the U.S. Army Corps of Engineers, Wilmington District, dated November 4, 1998.

NCWRP STREAM MITIGATION

cc. The permittee shall mitigate for 12,593 linear feet of unavoidable impacts to important stream channel associated with this project by payment to the North Carolina Wetlands Restoration Program (NCWRP) in an amount determined by the NCWRP sufficient to perform 25,186 linear feet of warm water stream mitigation, or the equivalent water quality improvement projects, as approved by the Corps of Engineers, in the middle Cape Fear River basin (Cataloging Unit 03030004). Construction within streams on the permitted highway project shall begin only after the permittee has made full payment to the NCWRP, and the NCWRP has made written confirmation to the District Engineer, that it agrees to accept responsibility for the mitigation work required, pursuant to Paragraph IV.D. of the Memorandum of Understanding between the North Carolina Department of Environment and Natural Resources and the U.S. Army Corps of Engineers, Wilmington District, dated November 4, 1998.

GENERAL MITIGATION

dd. The permittee shall contact the Corps of Engineers, Raleigh Regulatory Field Office NCDOT Regulatory Project Manager for this project, to provide that individual with the opportunity to attend the yearly mitigation monitoring efforts.

ee. Failure to institute and carry out the details of special conditions a. - dd, above, will result in a directive to cease all ongoing and permitted work within waters and/or wetlands associated with the permitted project, or such other remedy as the District Engineer or his authorized representatives may seek.

OTHER CONDITIONS

ff. When final design plans are completed for Sections AA and C of TIP R-2417, any necessary permit modifications shall be submitted to the District Engineer and the North Carolina Division of Water Quality (NCDWQ). If necessary, a public notice will be circulated for review. Final designs shall reflect all appropriate avoidance, minimization, and a compensatory mitigation plan for additional impacts within streams and wetlands. Construction within streams and wetlands on TIP R-2417 shall begin only after approval by the District Engineer of the modified impacts.

gg. NCDOT shall use "High Quality Waters" sedimentation and erosion control measures for all portions of the project west of SR 1415.

hh. Prior to commencing construction within jurisdictional waters of the United States for any section, the permittee shall forward the latest version of project construction drawings for that section to the Corps of Engineers, Raleigh Regulatory Field Office NCDOT Regulatory Project Manager. Half-size drawings are acceptable.

ii. The permittee shall schedule a meeting between its representatives, the contractor's representatives, and the Corps of Engineers, Raleigh Regulatory Field Office NCDOT Regulatory Project Manager, prior to any work within jurisdictional waters and wetlands in each section, to ensure that there is a mutual understanding of all of the terms and conditions contained within this Department of the Army Permit. The permittee shall notify the Corps of Engineers Project Manager a minimum of thirty (30) days in advance of the scheduled meetings in order to provide that individual with ample opportunity to schedule and participate in the required meetings.

jj..The permittee and its contractors and/or agents shall not excavate, fill, or perform mechanized landclearing at any time in the construction or maintenance of this project within waters and/or wetlands, except as authorized by this permit, or any modification to this permit. There shall be no excavation from, or waste disposal into,

jurisdictional wetlands or waters associated with this permit without appropriate modification of this permit, including appropriate compensatory mitigation. This prohibition applies to all borrow and fill activities connected with this project.

kk. To ensure that all borrow and waste activities occur on high ground, except as authorized by this permit, the permittee shall require its contractors and/or agents to identify all areas to be used to borrow material, or to dispose of dredged, fill, or waste material. The permittee shall ensure that all such areas comply with the preceding condition (jj.) of this permit, and shall require and maintain documentation of the location and characteristics of all borrow and disposal sites associated with this project. This information will include data regarding soils, vegetation and hydrology sufficient to clearly demonstrate compliance with the preceding condition (jj.). All information will be available to the Corps of Engineers upon request.

ll. The permittee shall comply with the conditions specified in the water quality certification, No. 3378, issued by the North Carolina Division of Water Quality on April 10, 2002.

mm. The permittee shall place culverts and other structures in waters, streams, and wetlands below the elevation of the streambed to allow low flow passage of water and aquatic life, unless providing passage would be impractical. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to, or upstream and downstream of the structures.

nn. The permittee shall use appropriate sediment and erosion control practices which equal or exceed those outlined in the most recent version of the "North Carolina Sediment and Erosion Control Planning and Design Manual" to assure compliance with the appropriate turbidity water quality standard (50 NTU's in all streams and rivers, and 25 NTU's in all lakes).

oo. The permittee shall remove all sediment and erosion control measures placed in wetlands or waters, and shall restore natural grades in those areas, prior to project completion.

pp. The permittee shall take measures to prevent live or fresh concrete from coming into contact with any surface waters until the concrete has hardened.

qq. If the permittee discovers any previously unknown historic or archeological remains while accomplishing the authorized work, he will immediately notify the Wilmington District Engineer who will initiate the required State/Federal coordination.

rr. .No excavated or fill material will be placed at any time in waters or wetlands outside the permitted construction areas, nor will it be placed in any location or in any manner so as to impair surface water flow into or out of any wetland area.

ss. The permittee will maintain the authorized work in good condition and in conformance with the terms and conditions of this permit. The permittee is not relieved of this requirement if he abandons the permitted activity without transferring it to a third party.

tt. All fill material will be clean and free of any pollutants except in trace quantities. Metal products, organic materials, or unsightly debris will not be used.

uu. This Department of the Army permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.

vv. This permit does not grant any property rights or exclusive privileges.

ww. In issuing this permit, the Federal Government does not assume any liability for:

1. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

2. Damages to the permitted project or uses thereof as a result of current or future Federal activities initiated on behalf of the general public.

3. Damages to other permitted or unpermitted activities or structures caused by the authorized activity.

4. Design and construction deficiencies associated with the permitted work.

5. Damage claims associated with any future modification, suspension, or revocation of this permit.

2002-2-0844

State of North Carolina
Department of Environment
and Natural Resources
Division of Water Quality

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NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES

Michael F. Easley, Governor
William G. Ross, Jr., Secretary
Gregory J. Thorpe, Ph.D., Acting Director

April 10, 2002

Mr. William D. Gilmore, P.E., Manager
Planning and Environmental Branch
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina, 27699-1548

Dear Mr. Gilmore:

Re: 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act, Proposed US 421-NC 87 Sanford Bypass from existing US 421 northwest of Sanford to existing NC 87 southeast of Sanford in Lee County (TIP R-2417).
WQC Project No. 001432

Attached hereto is a copy of Certification No. 3378 issued to The North Carolina Department of Transportation dated April 9, 2002. You have our approval, in accordance with the attached conditions and those listed below, to place fill material in 11.06 acres of jurisdictional wetlands, 23,640 linear feet of streams, and 6.32 acres of other surface waters (ponds). In addition, 0.1 acres of temporary impacts to jurisdictional wetlands at Section BB Site 2 are authorized. The project shall be constructed in accordance with your application dated June 11, 2001, and the subsequent addendums dated June 22, 2001, August 31, 2001, and September 28, 2001. Any proposed site plans submitted in the June 11, 2001 application that have a subsequent revised site plan submitted in the June 22, 2001, August 31, 2001, or September 28, 2001 addendums are not authorized by this certification. Instead, for all impacts where a proposed site design as provided in the original June 11, 2001 application was revised and submitted in the the June 22, 2001, August 31, 2001, or September 28, 2001 addendums, the drawings with the latest date of revision are authorized. The purpose of the authorized impacts is the construction of the US 421-NC 87 Sanford Bypass from existing US 421 northwest of Sanford to existing NC 87 southeast of Sanford in Lee County (TIP R-2417).

If we can be of further assistance, do not hesitate to contact us.

Sincerely,

Gregory J. Thorpe, Ph.D.
Acting Director

State of North Carolina
Department of Environment
and Natural Resources
Division of Water Quality

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Michael F. Easley, Governor
William G. Ross, Jr., Secretary
Gregory J. Thorpe, Ph.D., Acting Director

Attachments

cc: Wilmington District Corps of Engineers
Corps of Engineers Raleigh Field Office
DWQ Raleigh Regional Office
Ron Ferrell, Wetlands Restoration Program
Central Files
File Copy

Wetland/401 Unit 1650 Mail Service Center Raleigh, North Carolina 27699-1621
Telephone 919-733-1786 FAX 733-6893

State of North Carolina
Department of Environment
and Natural Resources
Division of Water Quality

Michael F. Easley, Governor
William G. Ross, Jr., Secretary
Gregory J. Thorpe, Ph.D., Acting Director

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NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

APPROVAL OF 401 Water Quality Certification

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (DWQ) Regulations in 15A NCAC 2H. Section .0500, and 15A NCAC 2B .0233. You have our approval, in accordance with the attached conditions and those listed below, to place fill material in 11.06 acres of jurisdictional wetlands, 23,640 linear feet of streams, and 6.32 acres of other surface waters (ponds). In addition, 0.1 acres of temporary impacts to jurisdictional wetlands at Section BB Site 2 are authorized. The project shall be constructed in accordance with your application dated June 11, 2001, and the subsequent addendums dated June 22, 2001, August 31, 2001, and September 28, 2001. Any proposed site plans submitted in the June 11, 2001 application that have a subsequent revised site plan submitted in the June 22, 2001, August 31, 2001, or September 28, 2001 addendums are not authorized by this certification. Instead, for all impacts where a proposed site design as provided in the original June 11, 2001 application was revised and submitted in the the June 22, 2001, August 31, 2001, or September 28, 2001 addendums, the drawings with the latest date of revision are authorized. The purpose of the authorized impacts is the construction of the US 421-NC 87 Sanford Bypass from existing US 421 northwest of Sanford to existing NC 87 southeast of Sanford in Lee County (TIP R-2417).

The application provides adequate assurance that the discharges of fill material into the waters of the Cape Fear River Basin in conjunction with the proposed development will not result in a violation of applicable Water Quality Standards and discharge guidelines. Therefore, the State of North Carolina certifies that this activity will not violate the applicable portions of Sections 301, 302, 303, 306, 307 of PL 92-500 and PL 95-217 if conducted in accordance with the application and conditions hereinafter set forth.

This approval is only valid for the purpose and design that you submitted in your application, as described in the Public Notice. Should your project change, you are required to notify the DWQ and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. Any additional impacts to wetlands, streams, or buffers, for this project (now or in the future) will require additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7), and 15A NCAC 2B .0233. For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire three years from the date of the cover letter from DWQ or on the same day as the expiration date of the corresponding Corps of Engineers Permit, whichever is sooner.

Condition(s) of Certification:

1. Appropriate sediment and erosion control practices which equal or exceed those outlined in the most recent version of the "North Carolina Sediment and Erosion Control Planning and Design Manual" or the "North Carolina Surface Mining Manual" whichever is more appropriate (available from the Division of Land Resources (DLR) in the DENR Regional or Central Offices) shall be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to insure compliance with

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Division of Water Quality

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the appropriate turbidity water quality standard (50 NTUs in all fresh water streams and rivers not designated as trout waters; 25 NTUs in all lakes and reservoirs, and all saltwater classes; and 10 NTUs in trout waters);

2. Sediment and erosion control measures shall not be placed in wetlands or waters to the maximum extent practicable. If placement of sediment and erosion control devices in wetlands and waters is unavoidable, they shall be removed and the natural grade restored after the Division of Land Resources has released the project;

3. If an environmental document is required, this Certification is not valid until a FONSI or ROD is issued by the State Clearinghouse. All water quality-related conditions of the FONSI or ROD shall become conditions of this Certification;

4. Measures shall be taken to prevent live or fresh concrete from coming into contact with waters of the state until the concrete has hardened;

5. There shall be no excavation from or waste disposal into jurisdictional wetlands or waters associated with this permit without appropriate modification of this permit. Should waste or borrow sites be located in wetlands or stream, compensatory mitigation will be required since it is a direct impact from road construction activities.

6. All channel relocations will be constructed in a dry work area, and stabilized before stream flows are diverted. Channel relocations will be completed and stabilized prior to diverting water into the new channel. Whenever possible, channel relocations shall be allowed to stabilize for an entire growing season. Vegetation used for bank stabilization shall be limited to native woody species, and should include establishment of a 30 foot wide wooded and an adjacent 20 foot wide vegetated buffer on both sides of the relocated channel to the maximum extent practical. A transitional phase incorporating coir fiber and seedling establishment is allowable. Also, rip-rap may be allowed if it is necessary to maintain the physical integrity of the stream, but the applicant must provide written justification and any calculations used to determine the extent of rip-rap coverage requested.

7. Compensatory mitigation for impacts to streams shall be done for 17,138 linear feet of stream impact (4545 linear feet in Hydrologic Unit 03030003 and 12,593 linear feet in Hydrologic Unit 03030004) at a replacement ratio of 1:1. Compensatory mitigation for impacts to jurisdictional streams shall be provided by onsite stream relocations of 144 linear feet of streams on site (in Hydrologic Unit 03030004) as described in the June 11, 2001 application for Sites 14 and 22 in segment BA. In addition, compensatory mitigation for impacts to jurisdictional streams shall be provided by onsite stream relocations of 1930 linear feet of streams on site (in Hydrologic Unit 03030004) as described in the September 28, 2001 addendum for Site 6 in segment BB. All stream relocations shall have 50-foot wooded buffers planted on both sides of the stream. As-Builts for the completed streams shall be submitted to the North Carolina Division of Water Quality 401 Wetlands Unit within 30 days of the completion of the construction of the relocations. If the parameters of this condition are not met, then the NCDOT shall supply additional stream mitigation for the 2074 linear feet of impacts. In addition to the 2,074 linear

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feet of on-site mitigation, compensatory mitigation for an additional 15,064 linear feet of streams is required as described below:

Mitigation Site	Linear Feet Debited from Site	Type of Mitigation	Replacement Ratio	Linear Feet of Mitigation Credited
Hydrologic Unit 03030003				
Deaton Mitigation Site	4,545	Restoration	1:1	4,545
Hydrologic Unit 03030004				
On-site	2,074	Restoration	1:1	2,074
WRP	10,519	Restoration	1:1	10,519
Total				17,138

We understand that you have chosen to perform compensatory mitigation for some of your impacts to streams through an in lieu payment to the North Carolina Wetland Restoration Program (NCWRP), and that the WRP has agreed to implement the mitigation for the project. Mitigation for unavoidable impacts to 10,519 linear feet of streams shall be provided through an in-lieu payment to the North Carolina Wetlands Restoration Program (NCWRP) at a rate of $125 per linear foot. Therefore, a total payment of $ 1,314,875 shall be submitted to the NCWRP to offset the impacts. No construction activities in jurisdictional streams shall begin until payment for stream mitigation is made and the Wetland Restoration Program receives and clears your check (made payable to DENR – Wetland Restoration Program). The payment to NCWRP shall be sent within two months of issuance of the 404 permit. If you have any questions concerning the Wetland Restoration Program please contact them at 919-733-5208.

8. Compensatory mitigation for impacts to wetlands shall be done for 11.06 acres of impacts (2.21 in Hydrologic Unit 03030003 and 8.85 in Hydrologic Unit 03030004). Applying a replacement ration of 2:1 total mitigation for 22.12 acres of riparian wetlands (4.42 in Hydrologic Unit 03030003 and 17.70 acres in Hydrologic Unit 03030004) shall be provided as described below.

State of North Carolina
Department of Environment
and Natural Resources
Division of Water Quality

NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES

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Gregory J. Thorpe, Ph.D., Acting Director

Mitigation Site	Acres of WL Debited from Site	Type of Mitigation	Replacement Ratio	Acres of Mitigation Credited
Hydrologic Unit 03030003				
Sandy Creek Mitigation Site	2.21	Restoration	1:1	2.21
Blue Mitigation Site	11.04	Preservation	5:1	2.21
Hydrologic Unit 03030004				
WRP	17.70	Restoration	1:1	17.70
Total				22.12

9. Upon completion of the project, the NCDOT shall complete and return the enclosed "Certification of Completion Form" to notify DWQ when all work included in the 401 Certification has been completed. The responsible party shall complete the attached form and return it to the 401/Wetlands Unit of the Division of Water Quality upon completion of the project.

10. Placement of culverts and other structures in waters, streams, and wetlands must be placed below the elevation of the streambed to allow low flow passage of water and aquatic life unless it can be shown to DWQ that providing passage would be impractical. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or stream beds or banks, adjacent to or upstream and down stream of the above structures. The applicant is required to provide evidence that the equilibrium shall be maintained if requested in writing by DWQ.

11. When final design plans are completed for Sections R-2417 AA, and R-2417 C, a modification to the 401 Water Quality Certification shall be submitted with seven copies and fees to the NC Division of Water Quality. Final designs shall reflect all appropriate avoidance, minimization, and mitigation for impacts to wetlands, streams, and other surface waters. Construction activities that impact any wetlands, streams, and other surface waters located in Sections R-2417 AA or Sections R-2417 C shall begin only after NCDOT applies for and receives a modified 401Water Quality Certification from the NC Division of Water Quality.

12. No construction activities are authorized in Section R-2417 AA or Section R-2417 AB until a final design is approved in writing by the NC Division of Water Quality 401 Wetlands Unit for the Deaton Mitigation Site.

State of North Carolina
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Division of Water Quality

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13. Given the multiple set of addendums to the original application, NCDOT shall provide to the NCDWQ a final of site drawings within 2 months of the date of issuance of the 401 Water Quality Certification that reflects the authorized impacts in this certification.

Violations of any condition herein set forth shall result in revocation of this Certification and may result in criminal and/or civil penalties. This Certification shall become null and void unless the above conditions are made conditions of the Federal 404 and/or Coastal Area Management Act Permit. This Certification shall expire upon the expiration of the 404 or CAMA permit.

If this Certification is unacceptable to you have the right to an adjudicatory hearing upon written request within sixty (60) days following receipt of this Certification. This request must be in the form of a written petition conforming to Chapter 150B of the North Carolina General Statutes and filed with the Office of Administrative Hearings, P.O. Box 27447, Raleigh, N.C. 27611-7447. If modifications are made to an original Certification, you have the right to an adjudicatory hearing on the modifications upon written request within sixty (60) days following receipt of the Certification. Unless such demands are made, this Certification shall be final and binding.

This the 10th day of April 2002

DIVISION OF WATER QUALITY

Gregory J. Thorpe, Ph.D.
Acting Director

WQC No. 3377

State of North Carolina
Department of Environment and Natural Resources
Division of Water Quality

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NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

Michael F. Easley, Governor
William G. Ross, Jr., Secretary
Gregory J. Thorpe, Ph.D., Acting Director

DWQ Project No.: _____ **County:** _____

Applicant: _____

Project Name: _____

Date of Issuance of 401 Water Quality Certification: _____

Certificate of Completion
Upon completion of all work approved within the 401 Water Quality Certification or applicable Buffer Rules, and any subsequent modifications, the applicant is required to return this certificate to the 401/Wetlands Unit, North Carolina Division of Water Quality, 1621 Mail Service Center, Raleigh, NC, 27699-1621. This form may be returned to DWQ by the applicant, the applicant's authorized agent, or the project engineer. It is not necessary to send certificates from all of these.

Applicant's Certification
I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature: _____ Date: _____

Agent's Certification
I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature: _____ Date: _____

Engineer's Certification
_____ Partial _____ Final
I, _____, as a duly registered Professional Engineer in the State of North Carolina, having been authorized to observe (periodically, weekly, full time) the construction of the project for the Permittee hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature _____ Registration No. _____

Date _____

Wetlands/401 Unit 1650 Mail Service Center Raleigh, North Carolina 27699-1621
Telephone 919-733-1786 FAX 733-6893

State of North Carolina
Department of Environment
and Natural Resources
Division of Water Quality

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Michael F. Easley, Governor
William G. Ross, Jr., Secretary
Gregory J. Thorpe, Ph.D., Acting Director

NORTH CAROLINA – DIVISION OF WATER QUALITY
401 WATER QUALITY CERTIFICATION
SUMMARY OF PERMITTED IMPACTS AND MITIGATION REQUIREMENTS

In accordance with 15A NCAC 2H.0500, the North Carolina Department of Transportation is authorized to impact the waters of the State of North Carolina as indicated below for the purpose of constructing the Proposed US 421-NC 87 Sanford Bypass from existing US 421 northwest of Sanford to existing NC 87 southeast of Sanford in Lee County (TIP R-2417, WQC Project No. 001432). All activities associated with these authorized impacts must be conducted in accordance with the conditions listed in the attached certification transmittal letter. **THIS CERTIFICATION IS NOT VALID WITHOUT THE ATTACHMENTS.**

COMPENSATORY MITIGATION REQUIREMENTS FOR WETLAND RESTORATION:

LOCATION:	US 421 Bypass of Sanford
COUNTY:	Lee
BASIN/SUBBASIN:	Cape Fear, Cataloging Unit 03030003 and 03030004
DWQ No.:	001432

As required by 15A NCAC 2H.0506, and the conditions of this certification, you are required to compensate for the above impacts through the restoration, creation, enhancement or preservation of wetlands and surface waters as outlined below prior to conducting any activities that impact or degrade waters of the state. Note: Acreage requirements proposed to be mitigated through the Wetland Restoration Program must be rounded to one-quarter increments according to 15A 2R.0503(b).

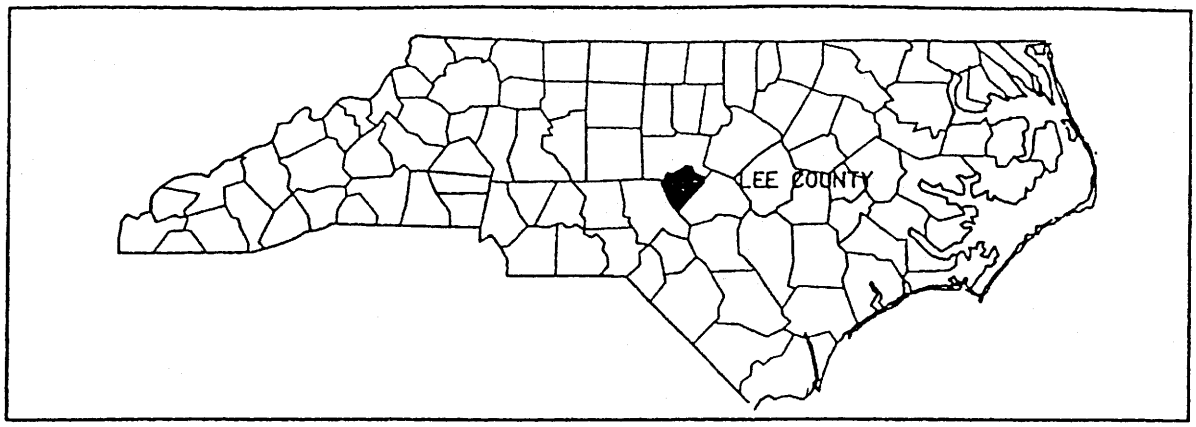
17.70 acres of Class WL wetlands
17.70 acres of riparian wetlands

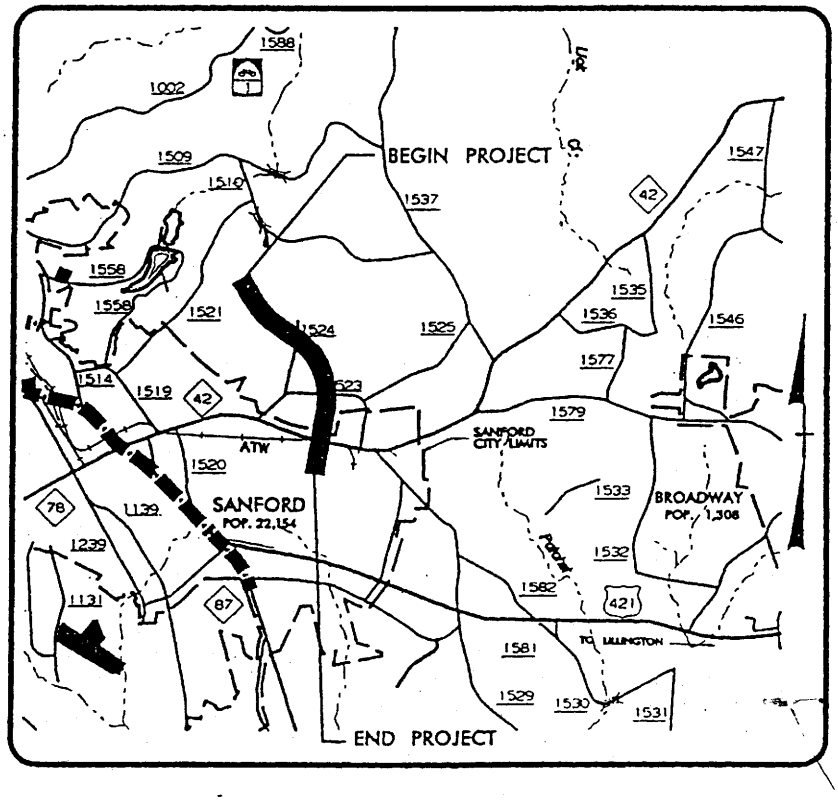
10,519 linear feet of stream channel

One of the options you have available to satisfy the compensatory mitigation requirements is through payment of a fee to the Wetland Restoration Fund per 15A NCAC 2R.0503. If you choose this option, please sign this form and mail it to the Wetlands Restoration Fund at the address listed below. An invoice for the appropriate amount of payment will be sent to you upon receipt of this form. PLEASE NOTE, THE ABOVE IMPACTS ARE NOT AUTHORIZED UNTIL YOU RECEIVE NOTIFICATION THAT YOUR PAYMENT HAS BEEN PROCESSED BY THE WETLANDS RESTORATION PROGRAM.

_____ _____
Signature Date

WETLANDS RESTORATION PROGRAM
DIVISION OF WATER QUALITY
P.O. BOX 29535
RALEIGH, NC, 27626-0535
(919) 733-5208





VICINITY MAPS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS
FROM EAST OF SR 1521
TO EAST OF NC 42

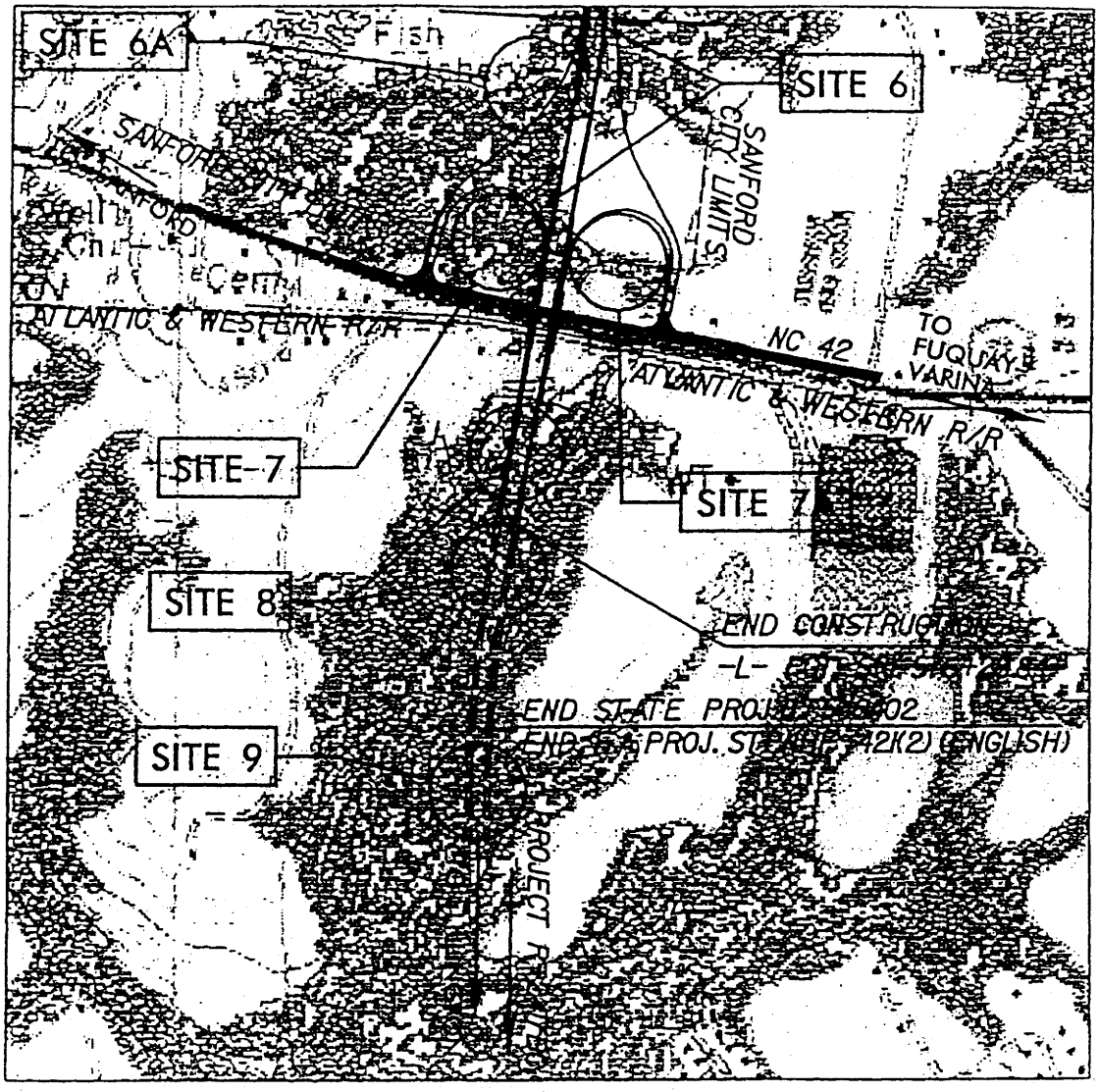
SHEET 1 OF 38 11/21/01

SITEMAP 1

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY
PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 2 OF 38 4/24/01

MATCHLINE SITEMAP 1



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SITEMAP 2

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY
PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 3 OF 38 4/24/01

LEGEND

WLB — WETLAND BOUNDARY

WETLAND

DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER

DENOTES FILL IN SURFACE WATER (POND)

DENOTES TEMPORARY FILL IN WETLAND

DENOTES EXCAVATION IN WETLAND

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

COIR FIBER ROLLS

5 — ADJACENT PROPERTY OWNER OR PARCEL NUMBER

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

VANE

RIP RAP

RIP RAP ENERGY DISSIPATOR BASIN

N. C. DEPT. OF TRANSPORTATION
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LEE COUNTY

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US 421 / NC 87 BYPASS FROM
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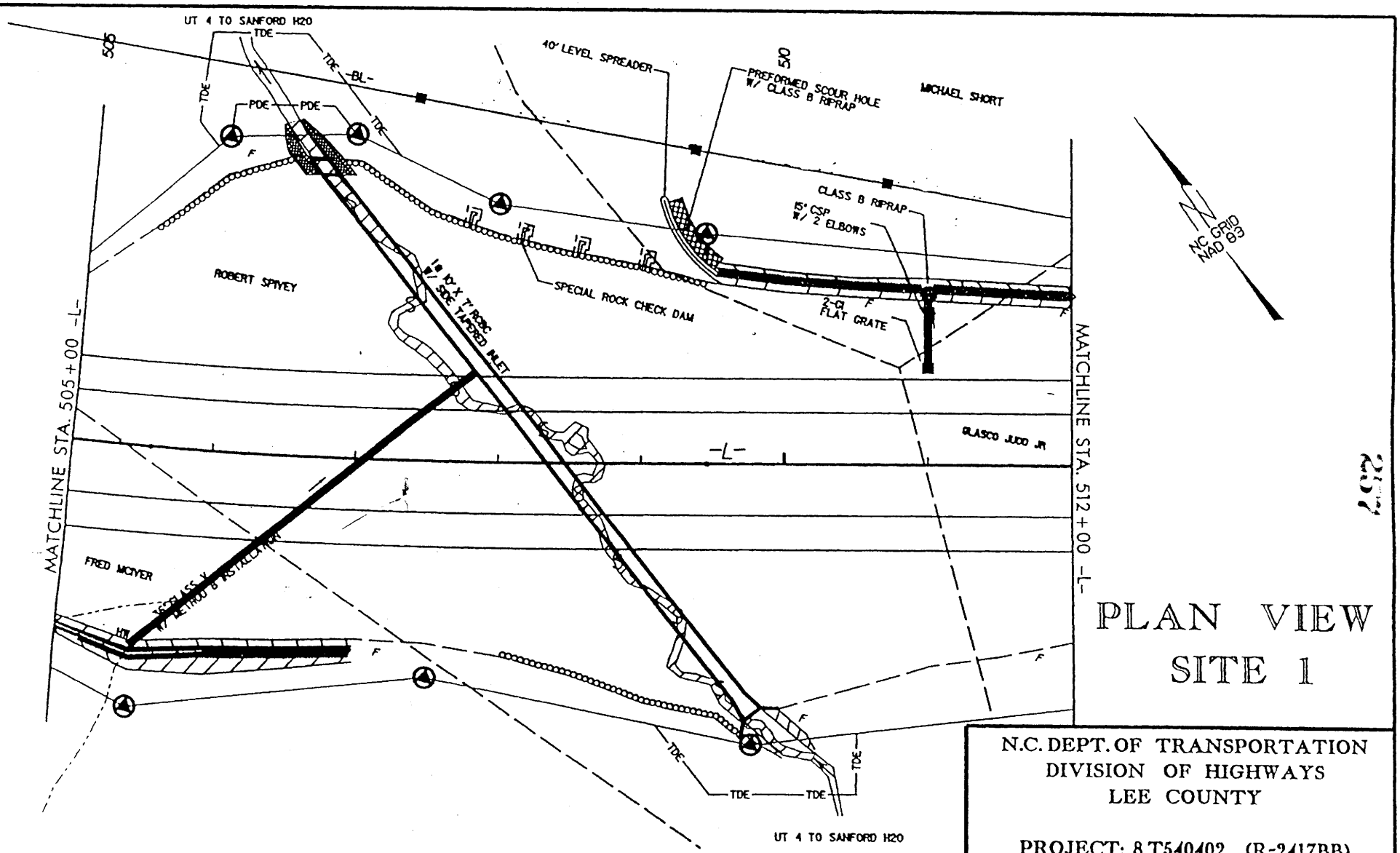
SHEET 4 OF 38 1/94/01



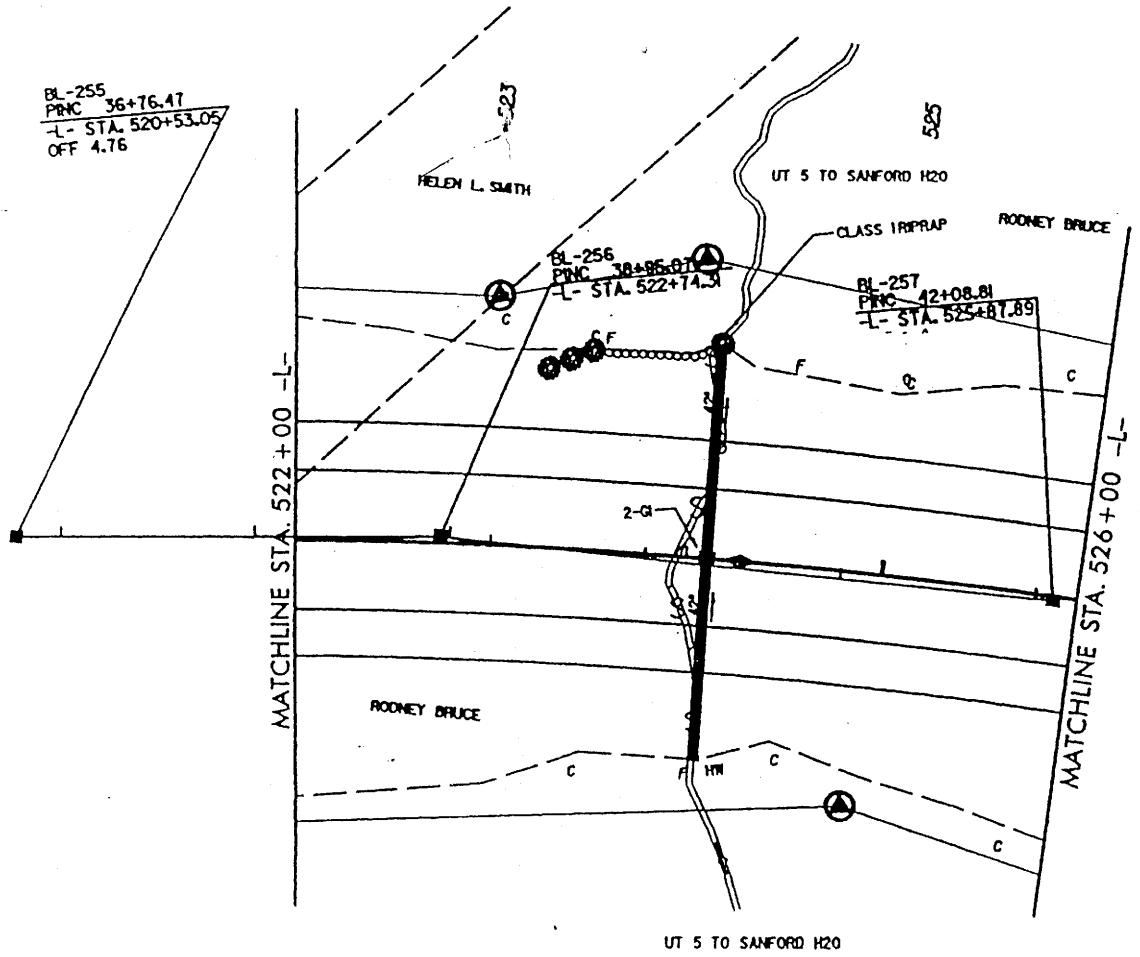
PLAN VIEW
SITE 1

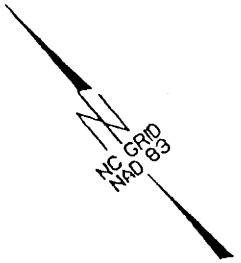
N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

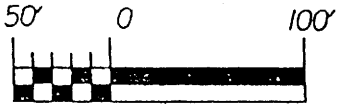
SHEET 5 OF 38 REVISED 4/30/01





8932

PLAN VIEW
SITE 2



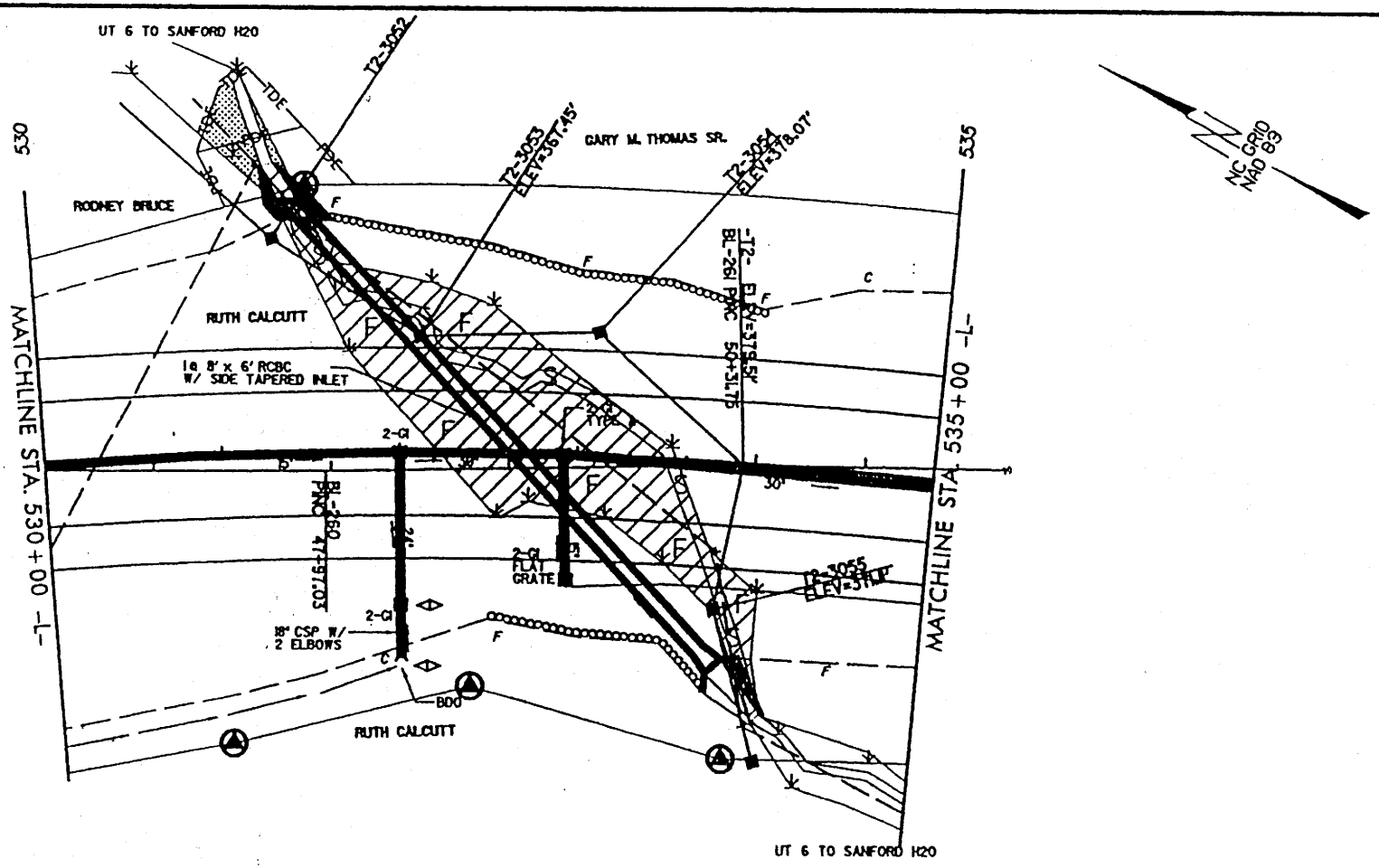
DENOTES FILL IN SURFACE WATERS

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 6 OF 38 REVISED 1/30/01



PLAN VIEW
SITE 3

50' 0 100'

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLANDS

DENOTES FILL IN SURFACE WATERS

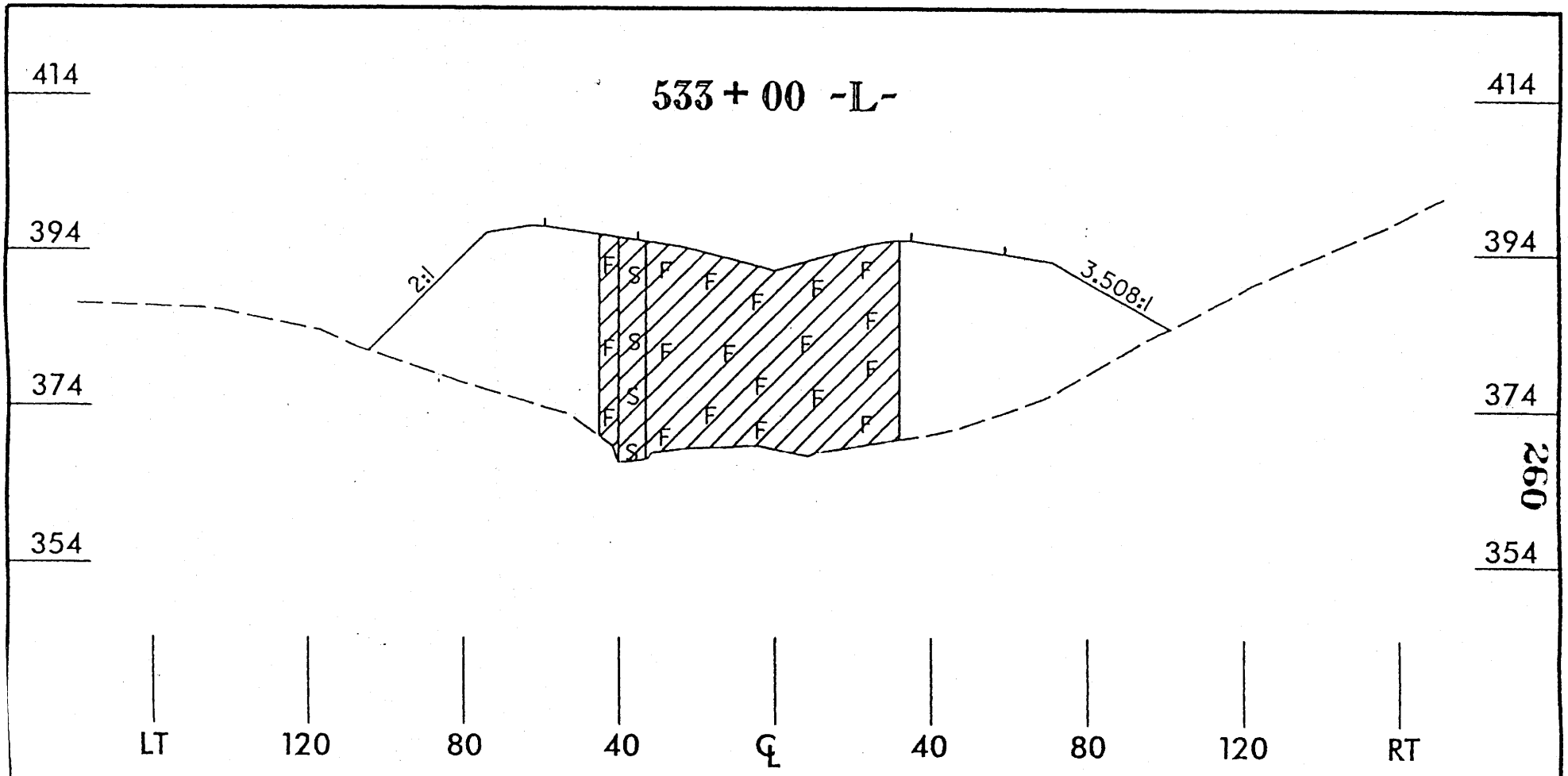
N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 7 OF 38 REVISED 4/30/01

259



260

SITE 3
CROSS-SECTION

20ft 0 40ft
HORIZONTAL SCALE

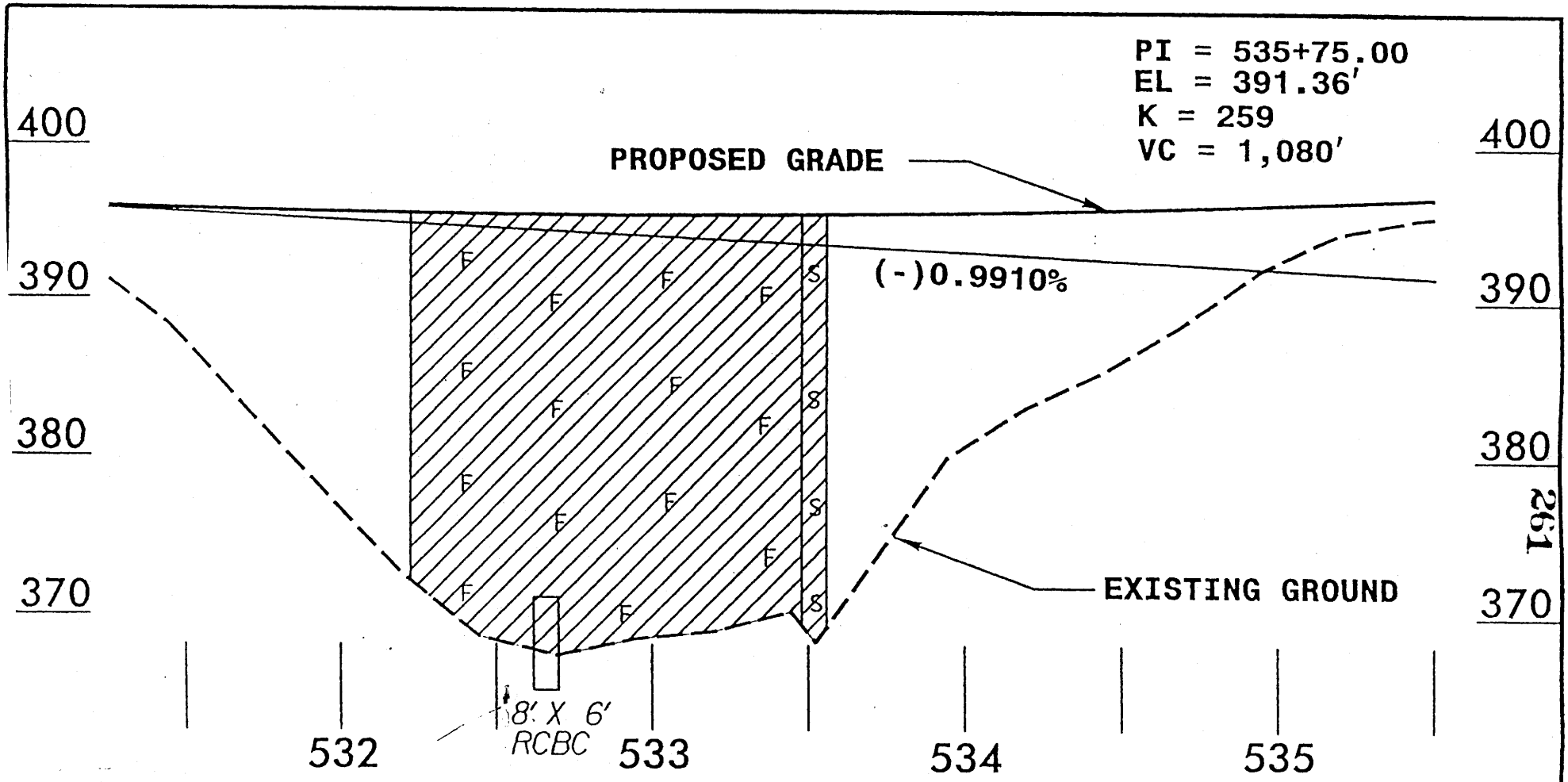
10ft 0 20ft
VERTICAL SCALE

DENOTES FILL IN WETLANDS

DENOTES FILL IN SURFACE WATERS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY
PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 8 OF 38 1/21/01



SITE 3
PROFILE

25ft 0 50ft
HORIZONTAL SCALE

5ft 0 10ft
VERTICAL SCALE

DENOTES FILL IN SURFACE WATERS

DENOTES FILL IN WETLANDS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY
PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
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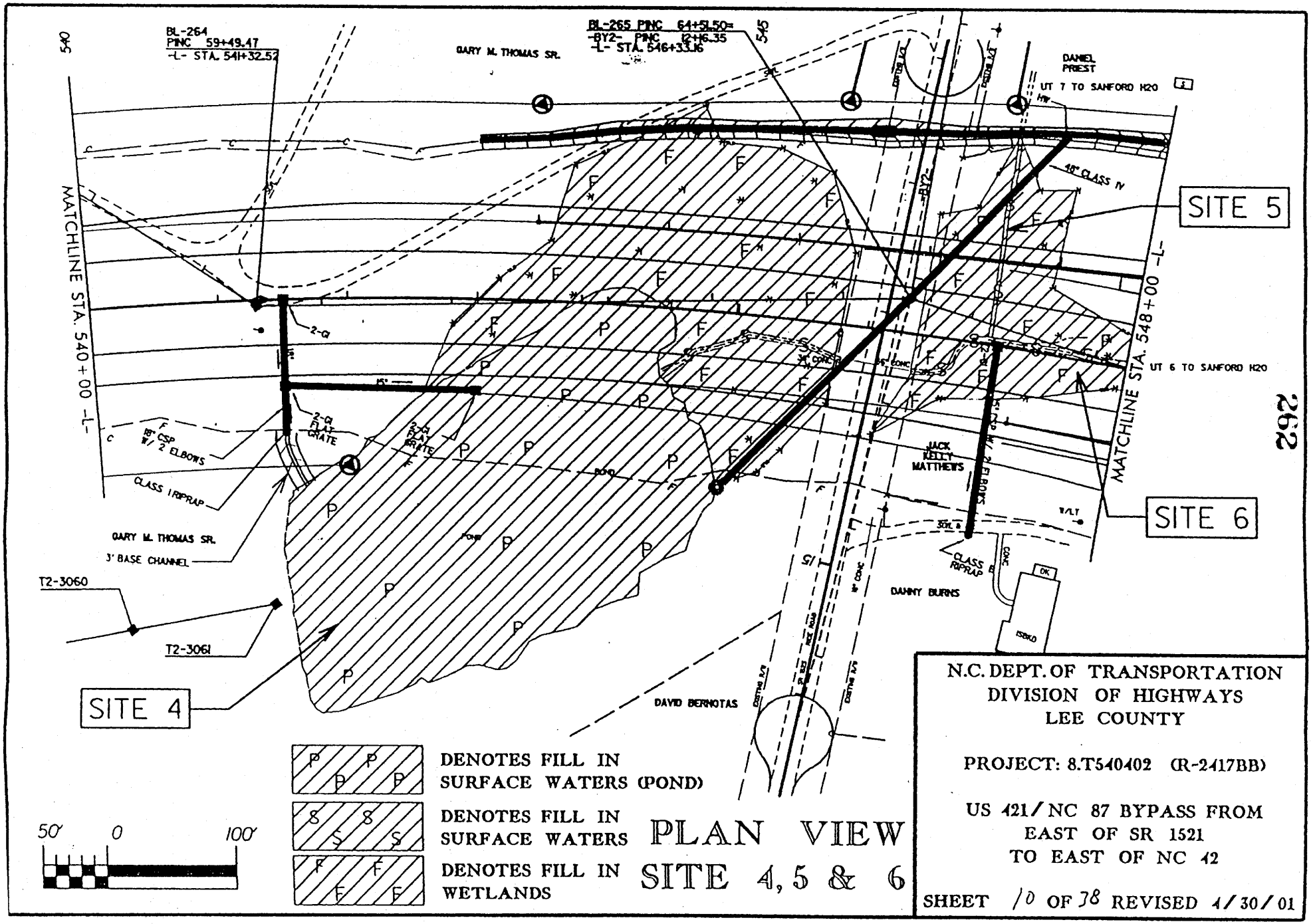
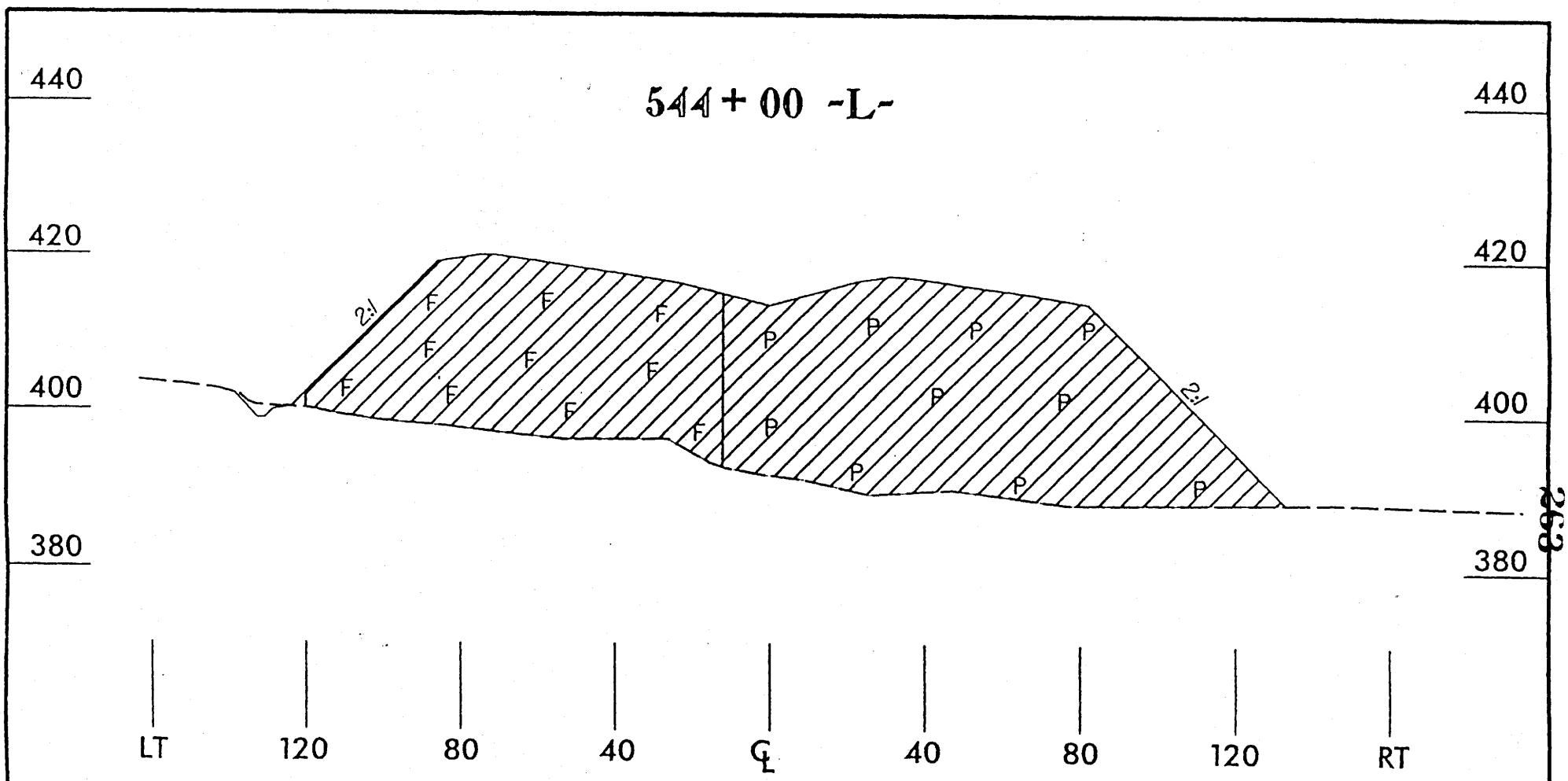
TO EAST OF NC 42

SHEET 9 OF 38 4/24/01


BL-264
PINC 59+49.47
-L- STA. 541+32.52
BL-265 PINC 64+51.50=
-BY2- PINC 12+16.35
-L- STA. 546+33.16
GARY M. THOMAS SR.
DANIEL PRIEST
UT 7 TO SANFORD H20
18" CLASS IV
SITE 5
MATCHLINE STA. 540+00 -L-
MATCHLINE STA. 548+00 -L-
UT 6 TO SANFORD H20
SITE 6
2-CI
2-CI FLAT GRATE
15" CSP W/ 2 ELBOWS
CLASS I RIPRAP
GARY M. THOMAS SR.
3' BASE CHANNEL
JACK KELLY MATTHEWS
CLASS I RIPRAP
DANNY BURNS
T2-3060
T2-3061
SITE 4
DAVID BERNOTAS
262
DENOTES FILL IN SURFACE WATERS (POND)
DENOTES FILL IN SURFACE WATERS
DENOTES FILL IN WETLANDS
50' 0 100'
PLAN VIEW
SITE 4, 5 & 6
N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY
PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42
SHEET 10 OF 78 REVISED 4/30/01



SITE 4
CROSS-SECTION

20ft 0 40ft

HORIZONTAL SCALE

10ft 0 20ft

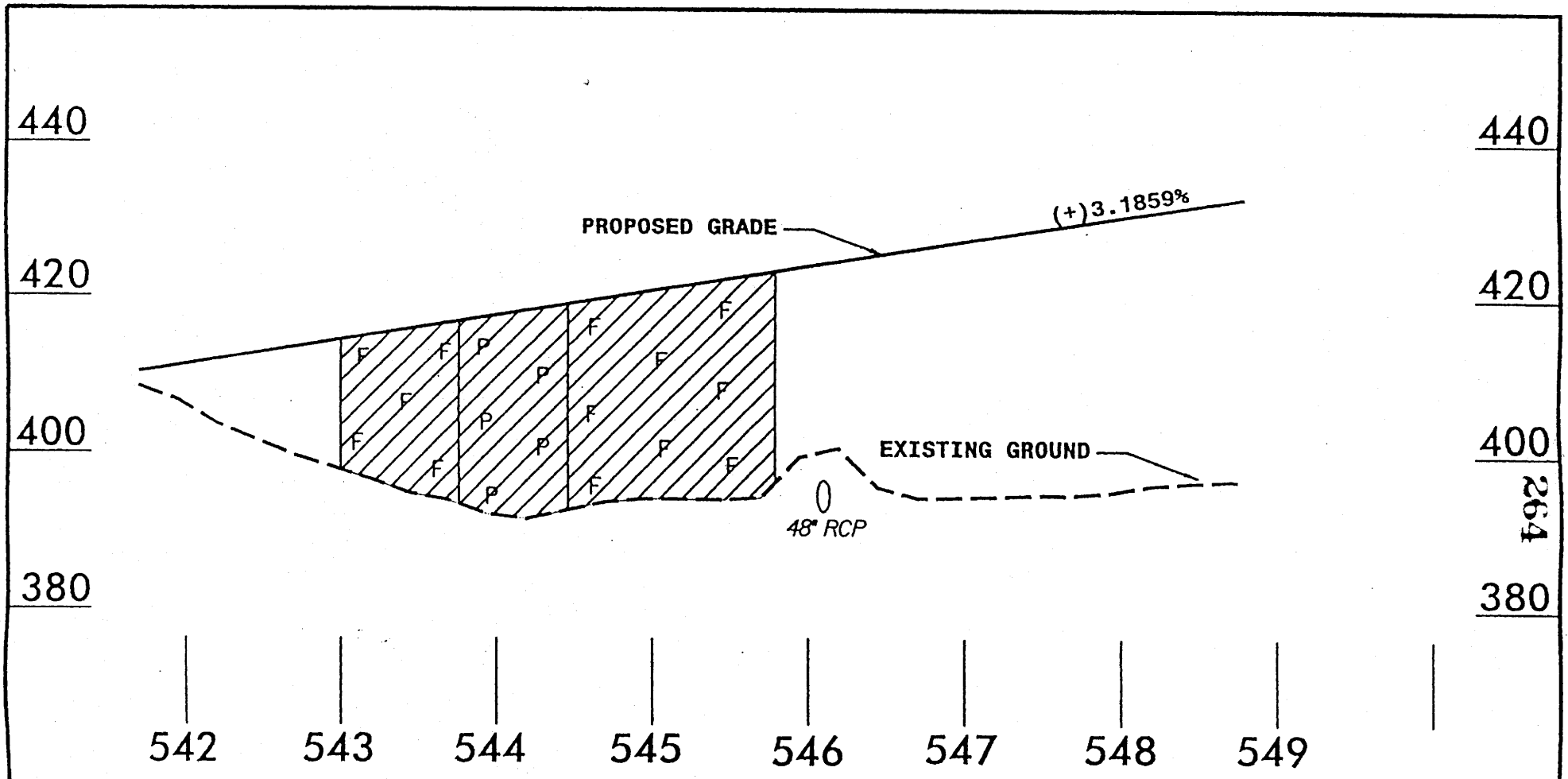
VERTICAL SCALE

F F F P — DENOTES FILL IN WETLANDS

P P P — DENOTES FILL IN SURFACE WATERS (POND)

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY
PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 11 OF 38 4/24/01



50ft 0 100ft

HORIZONTAL SCALE

10ft 0 20ft

VERTICAL SCALE

SITE 4 PROFILE

DENOTES FILL IN SURFACE WATERS (POND)

DENOTES FILL IN WETLANDS

N. C. DEPT. OF TRANSPORTATION

DIVISION OF HIGHWAYS

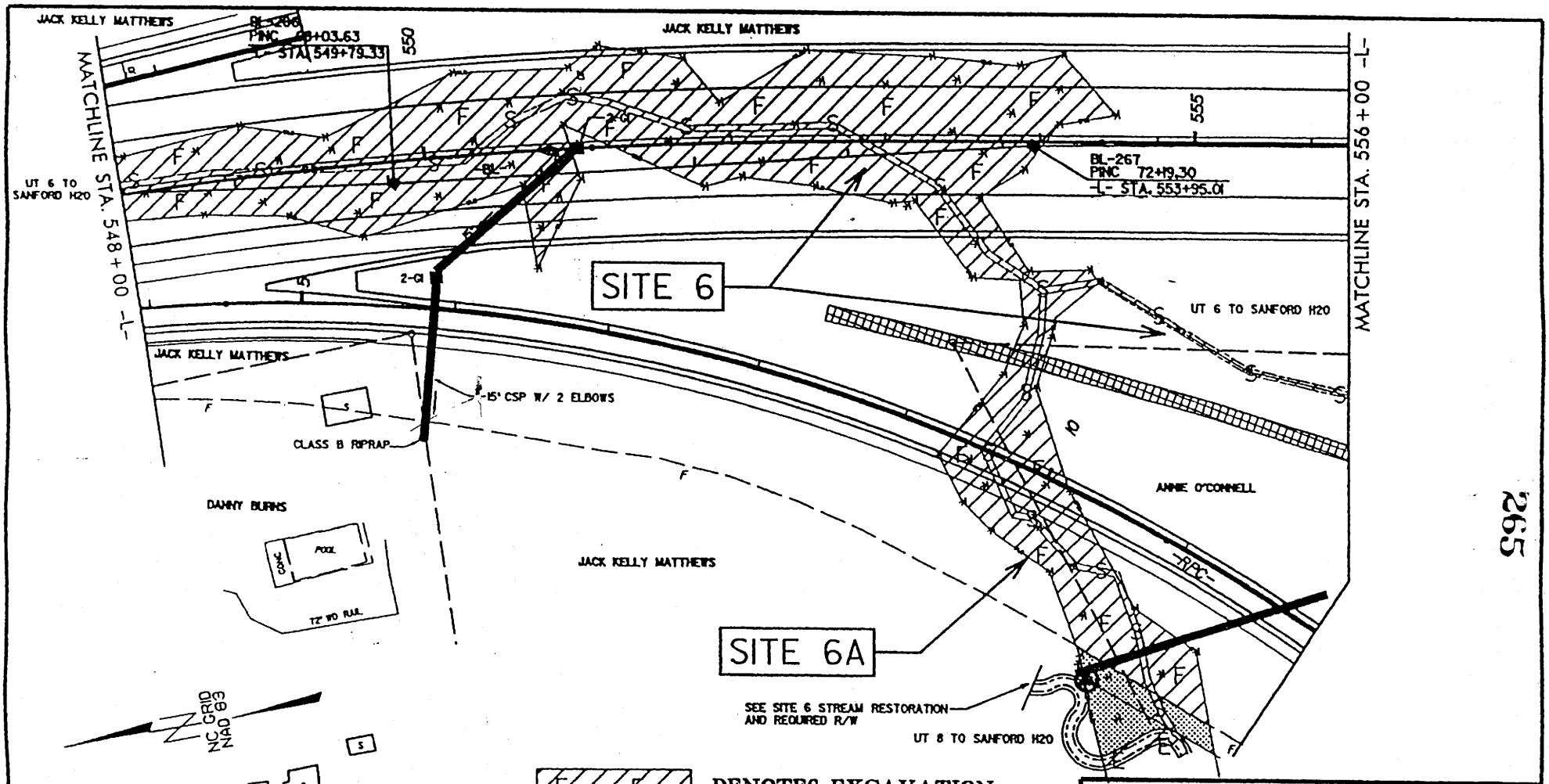
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM EAST OF SR 1521 TO EAST OF NC 42

SHEET 12 OF 38

4/24/01



PLAN VIEW
SITE 6 & 6A

DENOTES EXCAVATION IN WETLANDS

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLANDS

DENOTES FILL IN SURFACE WATERS

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM
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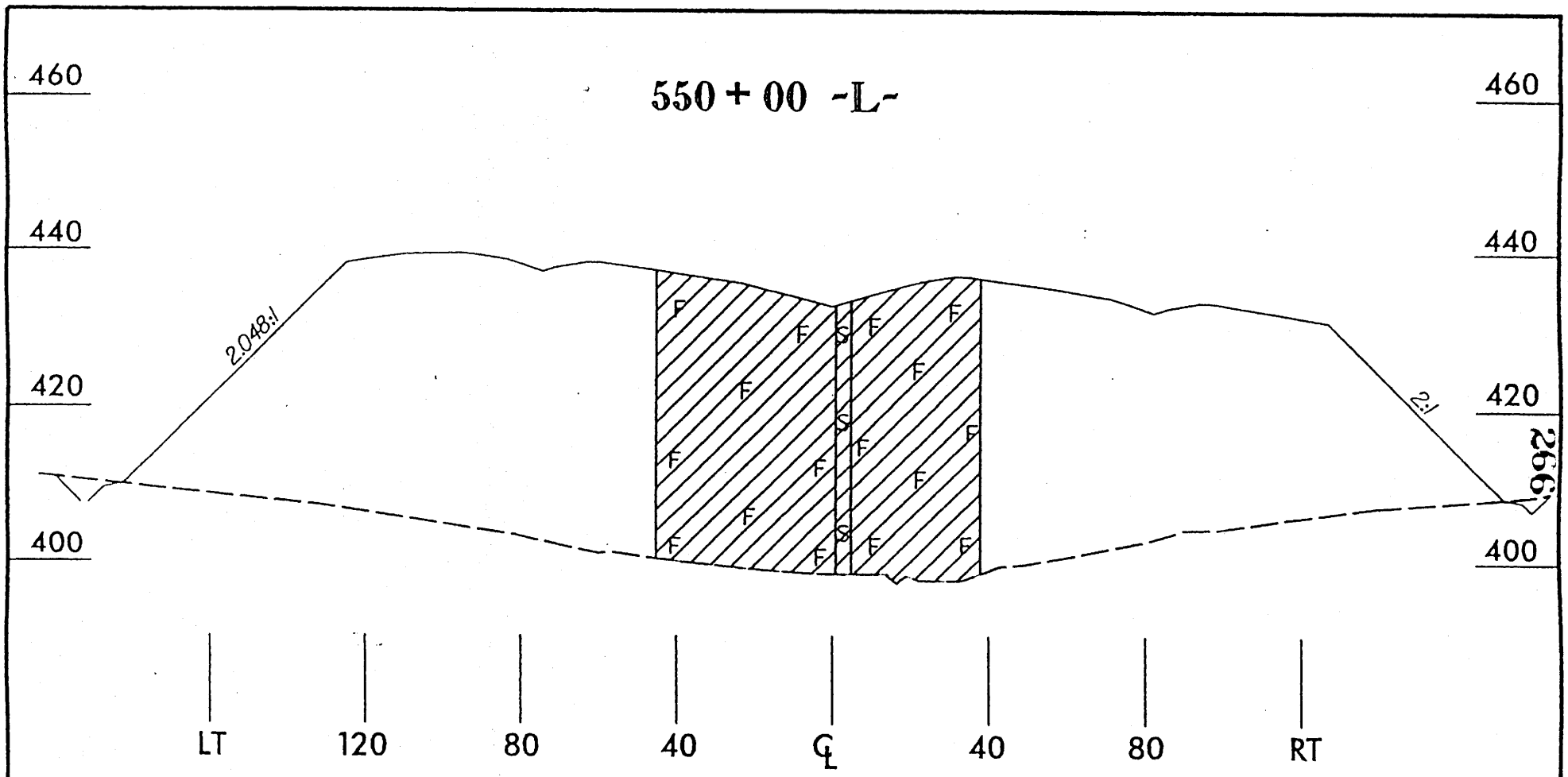
TO EAST OF NC 42

SHEET 13 OF 38 REVISED 4/30/01



SITE 6
CROSS-SECTION

20ft 0 40ft
HORIZONTAL SCALE

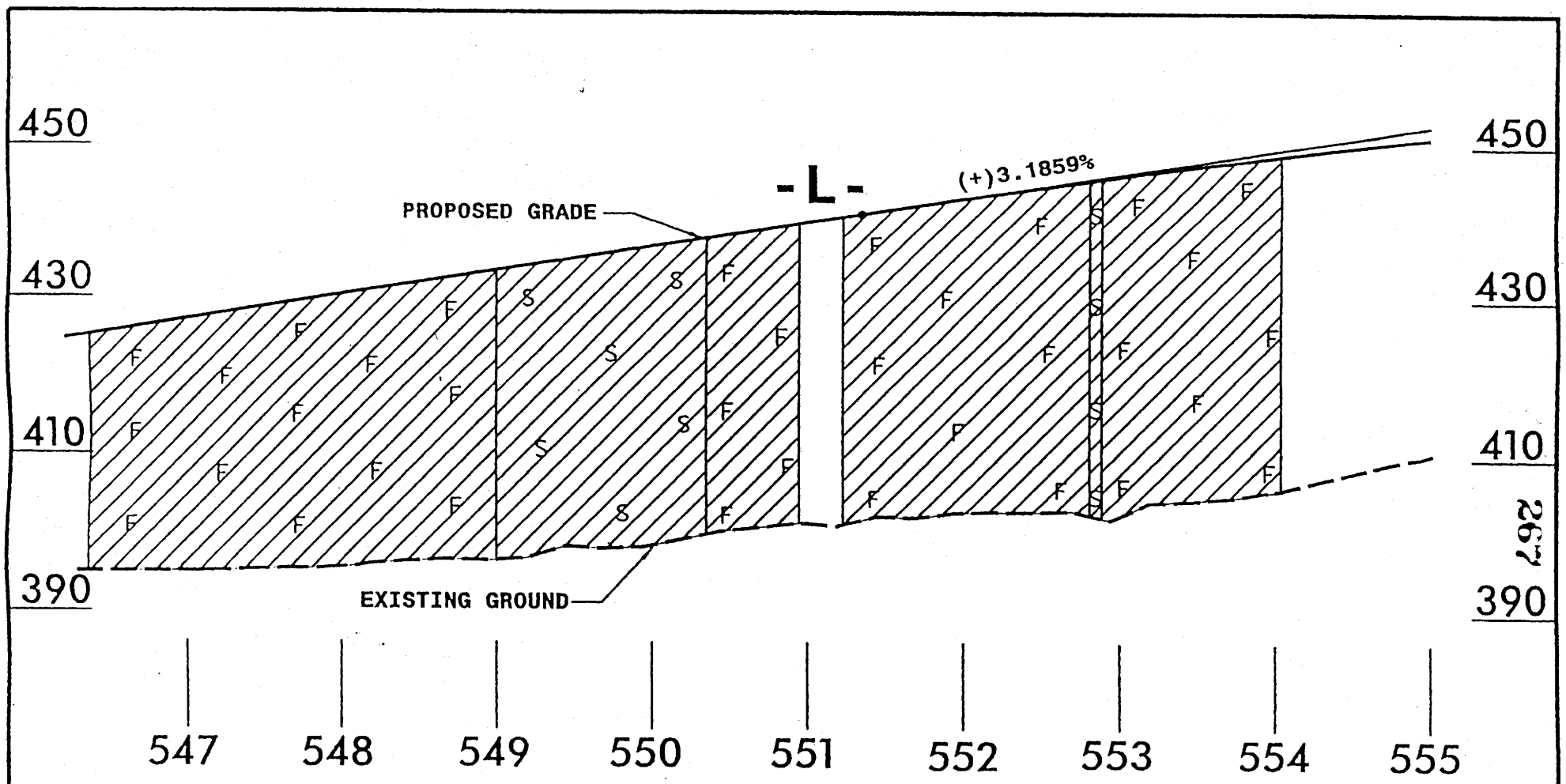
10ft 0 20ft
VERTICAL SCALE

DENOTES FILL IN WETLANDS

DENOTES FILL IN SURFACE WATERS (POND)

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY
PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 14 OF 38 1/24/01



SITE 6
PROFILE

SHEET 1 OF 2

50ft 0 100ft
HORIZONTAL SCALE

10ft 0 20ft
VERTICAL SCALE

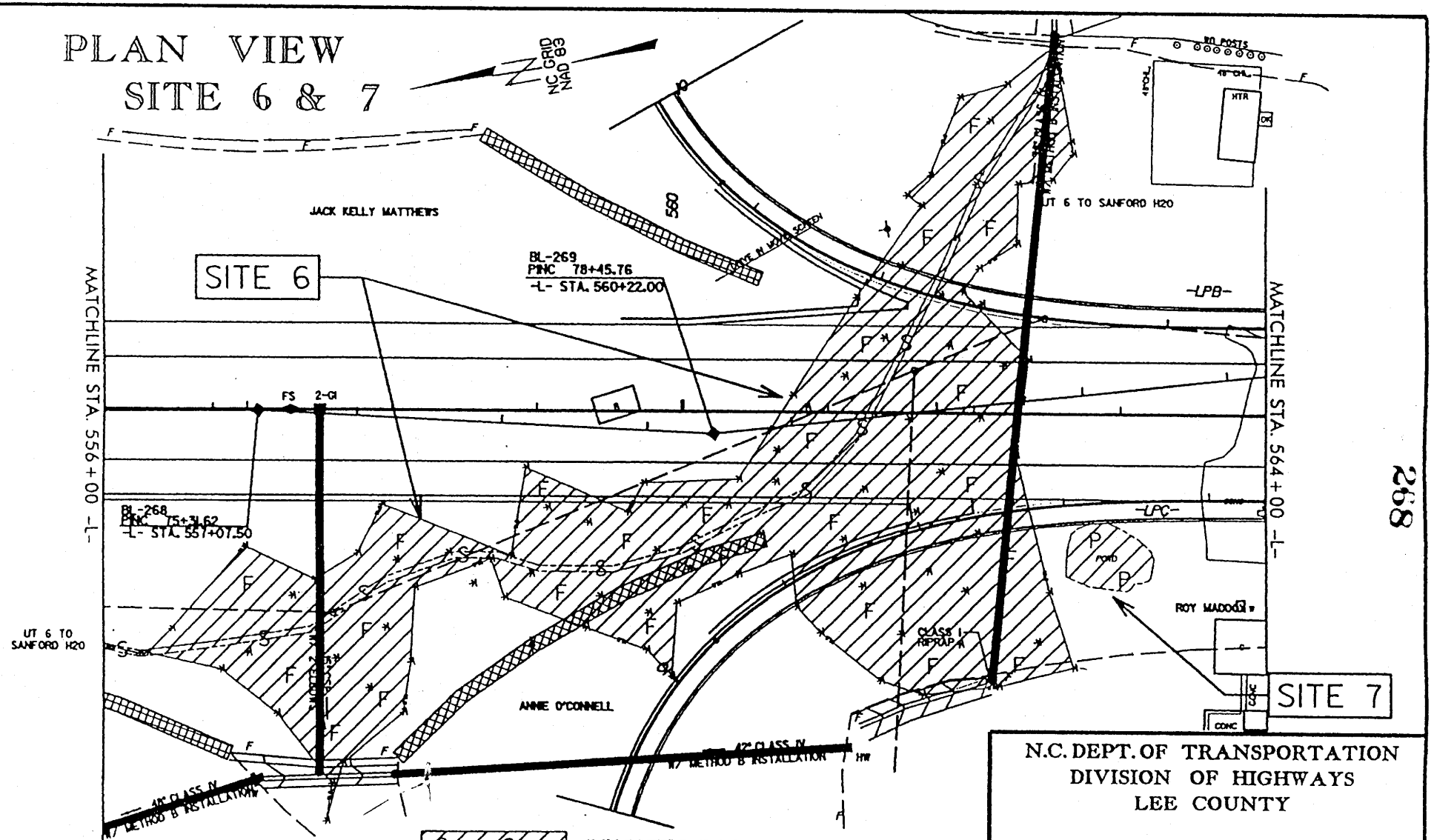
S S S S IN SURFACE WATERS

F F F F DENOTES FILL IN WETLANDS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY
PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 15 OF 38 4/24/01

PLAN VIEW
SITE 6 & 7



DENOTES FILL IN SURFACE WATERS

DENOTES FILL IN WETLANDS

DENOTES FILL IN SURFACE WATERS (POND)

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 16 OF 38 REVISED 4/30/01

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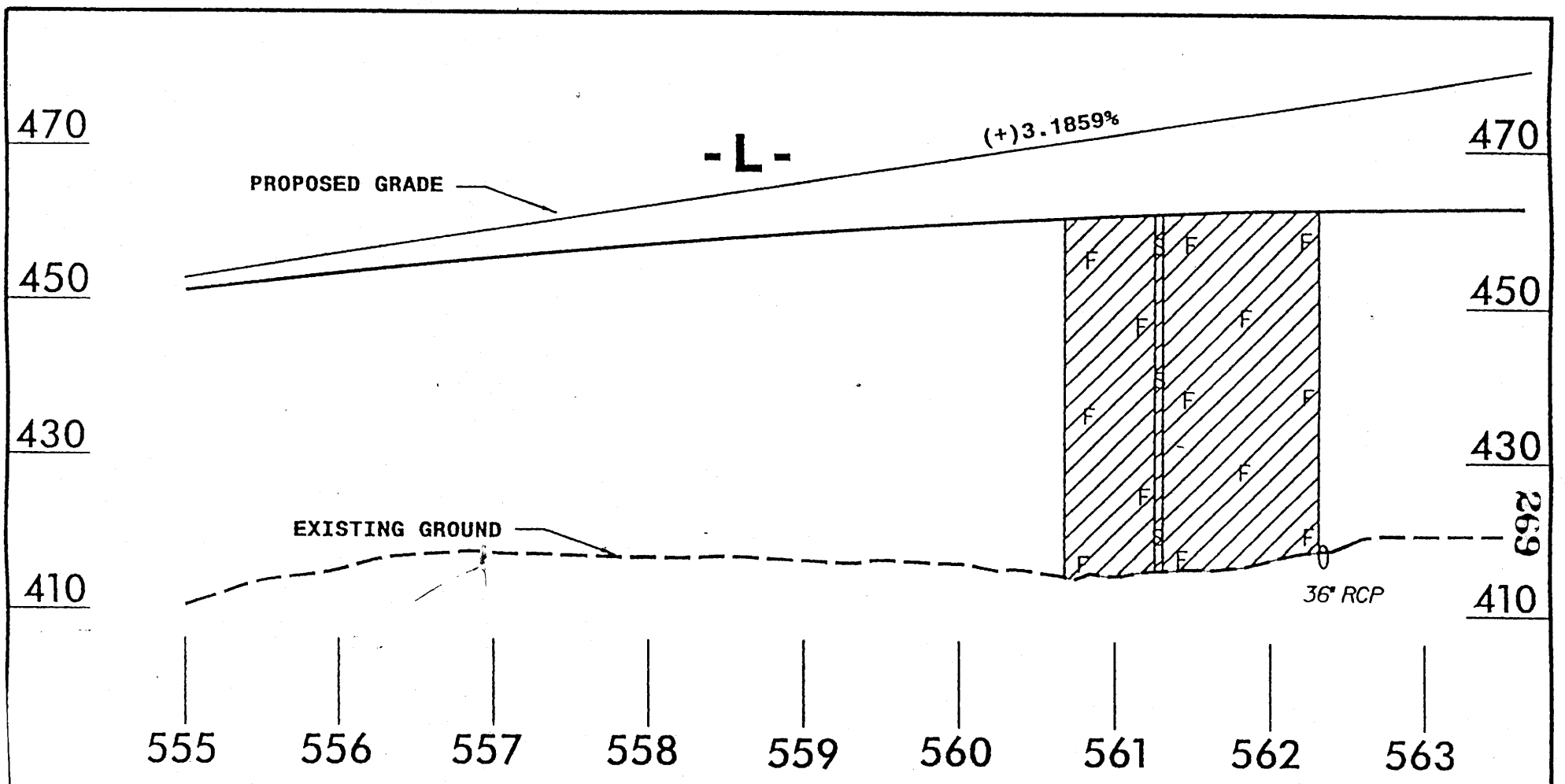


SITE 6
PROFILE

SHEET 2 OF 2

50ft 0 100ft
HORIZONTAL SCALE

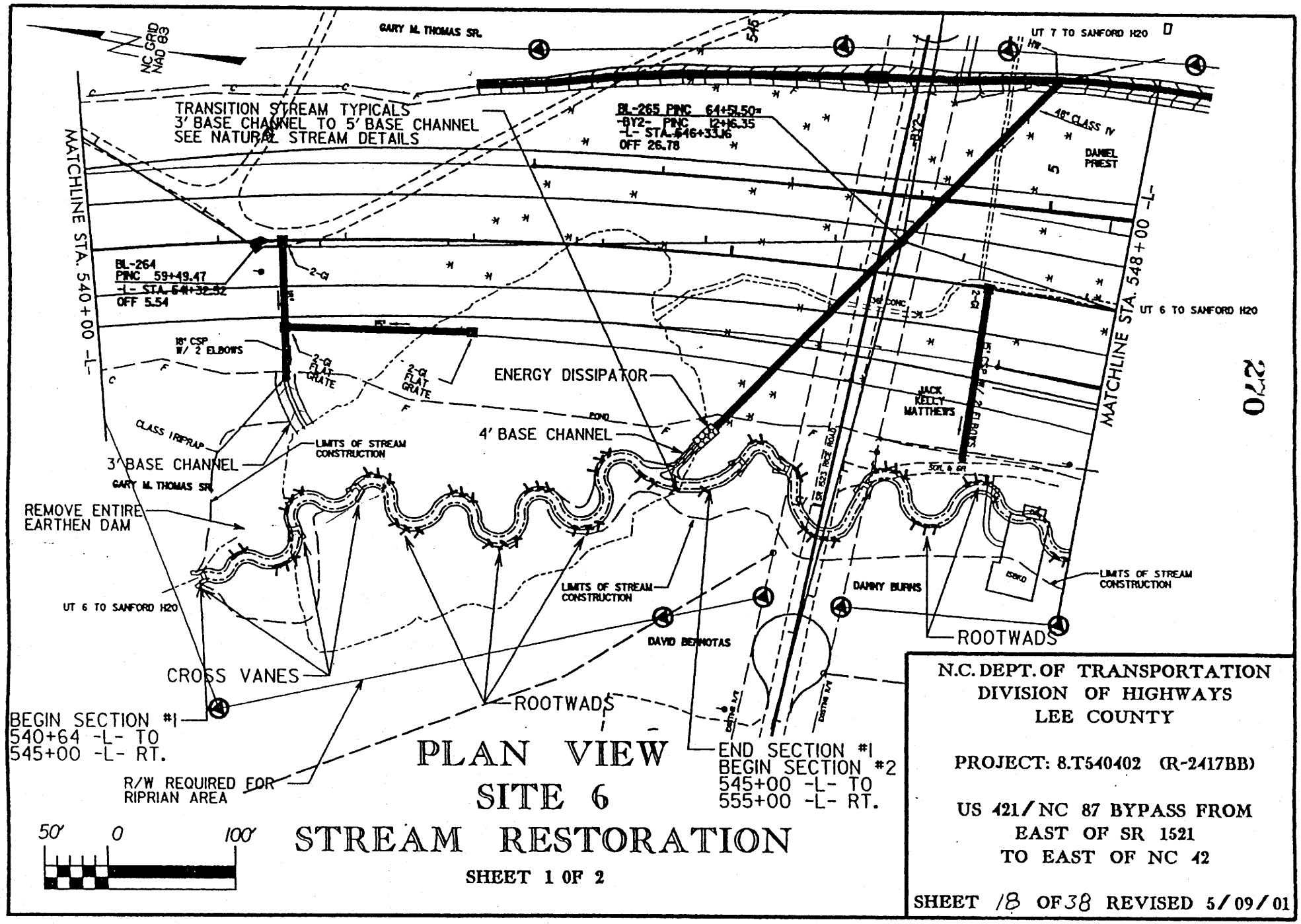
10ft 0 20ft
VERTICAL SCALE

DENOTES FILL IN SURFACE WATERS

DENOTES FILL IN WETLANDS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY
PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 17 OF 38 4/24/01



PLAN VIEW
SITE 6
STREAM RESTORATION

SHEET 1 OF 2

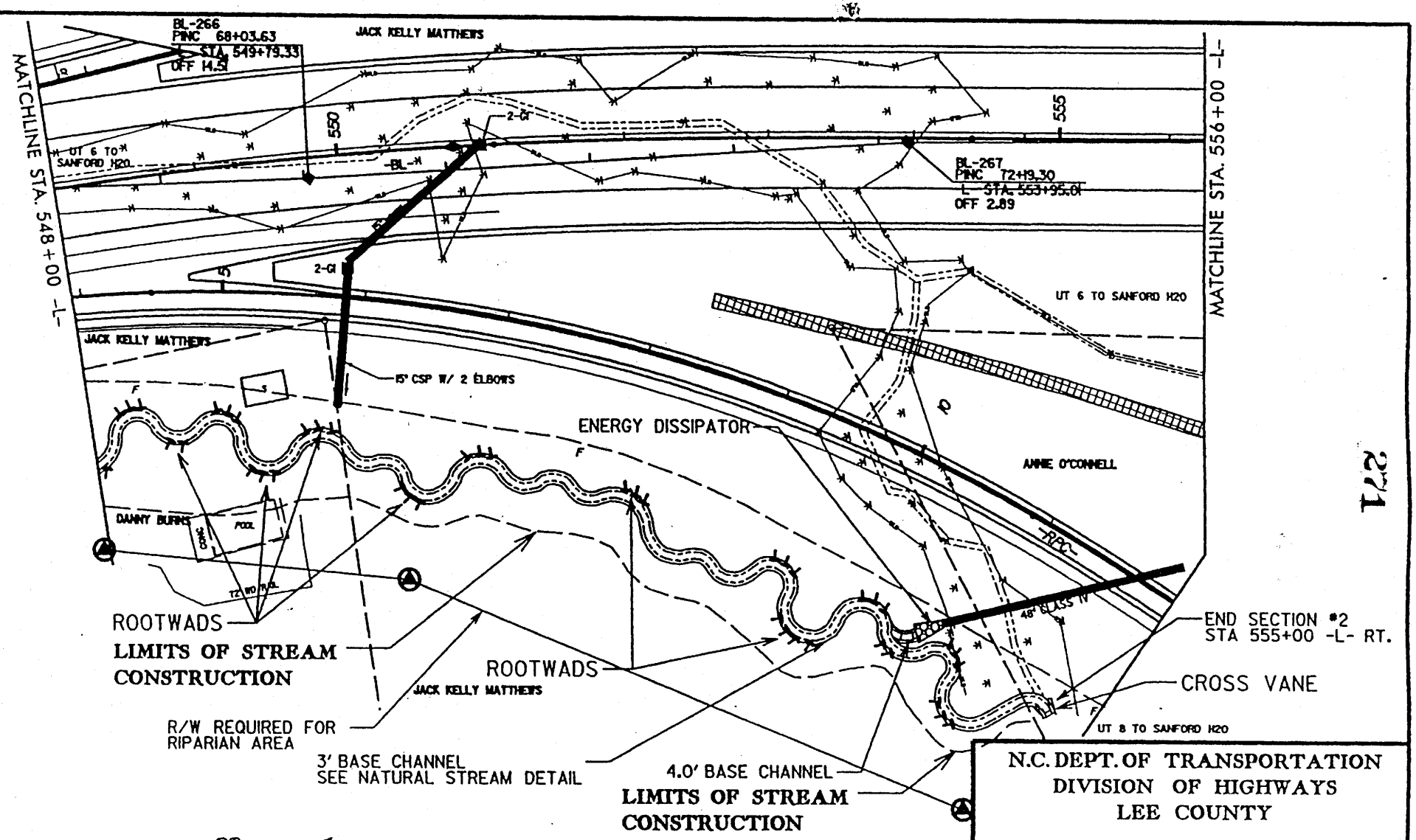
N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 18 OF 38 REVISED 5/09/01

270



PLAN VIEW
SITE 6
STREAM RESTORATION

SHEET 2 OF 2

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)

US 421 / NC 87 BYPASS FROM
EAST OF SR 1521
TO EAST OF NC 42

SHEET 19 OF 38 REVISED 5/09/01

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NCDOT Project ID# R-2417BB
Lee County
US 421/NC 87 Sanford Bypass from East of SR 1521 to East of NC 42

Prepared by: Sungate Design Group, PA
915-A Jones Franklin Road
Raleigh, NC 27606

May 9, 2001

NATURAL CHANNEL DESIGN
RIGHT OF STA. 540+20 to 555+00 –L-

The proposed new location US 421/NC 87 will cause a shift in the existing stream at +/- 540+20 to 555+00 –L- right. The existing and proposed channels were classified according to principles proposed by Dave Rosgen.

The existing stream drains 113 acres of a residential/industrial area in the piedmont physiographic region. The first order perennial stream drains a hardwood forest at the point of relocation. The channel was found to be perennial with riffles, pools, and aquatic wildlife.

There are no hydraulic gage data available on this stream nor on nearby streams. Current discharges were estimated using NCDOT procedures for rural watersheds and calibrated to the field observed bankfull depth.

The existing channel is relatively stable in the bottomland hardwood forest and has pattern and dimension. The data gathered was used to classify the reach to be relocated as an E5 stream according to the Rosgen classification procedure.

Because of the development in the present climatic era, a reference reach of a **stable** stream in this area is unlikely. A portion adjacent to the site and at the site was used as a representative reach to reference pattern and dimension. The portion used for a reference was found to have characteristics of an E5b and C5 further downstream. The dimensions gathered in the field compared favorably to the regional curves developed by the North Carolina Stream Restoration Institute. Using these reference characteristics and the regional curves Sungate Design has recommended a natural stream design by replacing the existing E5b ~~and C5~~ channel with a stable E5 channel.

TEB 6/12/01

SITE 6

Sechn BB

Bankfull mean depth was found to be 0.8' and 0.97'. With this information a proposed channel was designed to maintain a low width/depth ratio and a high entrenchment ratio. Sinuosity was increased slightly, as well as, the radius of curvature. These modifications will encourage a decrease of energy along the channel banks.

A pebble count was conducted in the pools and riffles. Velocities were obtained using standard engineering procedures. These velocities were compared to shear stresses predicted by the pebble count. The pebble count confirmed the channel hydraulics by qualifying the velocities that have moved bed form material. This material has been classified as a fine to medium sand. The proposed channel was designed to maintain velocities and appropriate shear stress that will transport this type of material at bankfull stage without aggrading or degrading the stream banks or bed.

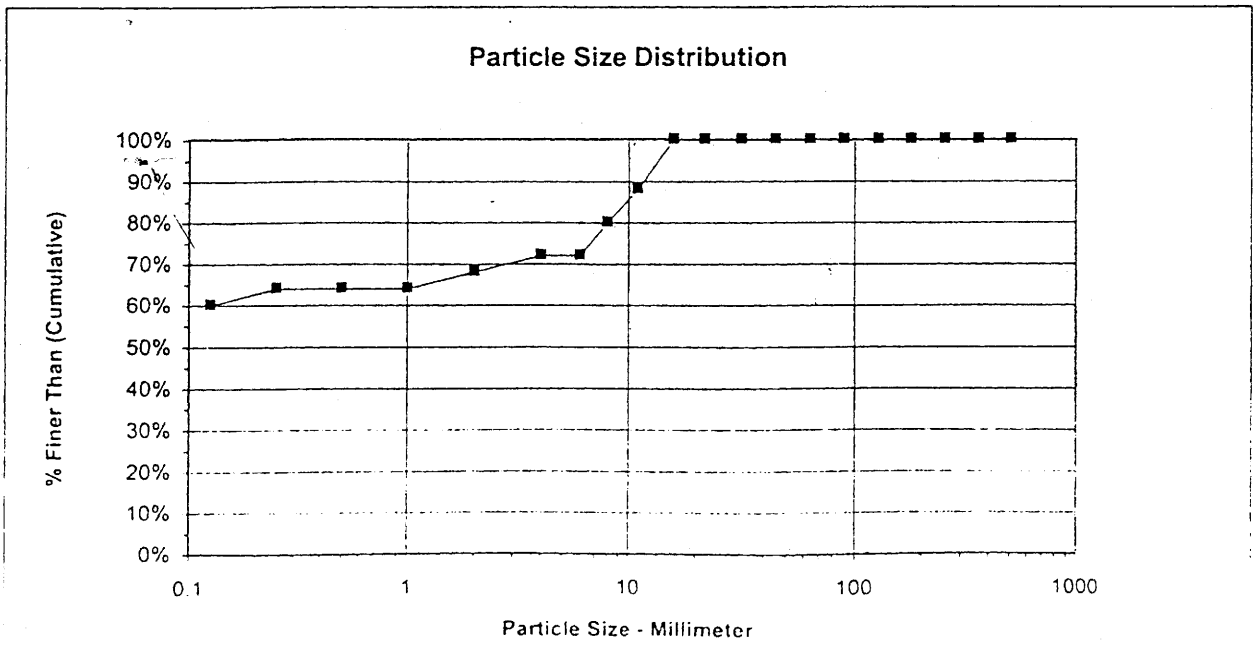
The proposed channel utilizes cross vanes and root wads to direct flow away from the banks and help create pools and riffles to encouraged aquatic habitat. Finally, native woody vegetation will be used to stabilize the proposed flood plain and channel banks.

Section BB

SITE 6

274

PEBBLE COUNT								
Site: ~~Trib. To Horsepen Crk.~~ Trib. to Sanford H2O						Date: 4-18-01		
Party: FFF, WHW,RHK								
Particle Counts								
Inches	Particle	Millimeter		Riffles	Pools	Total No.	Item %	% Cumulative
	Silt/Clay	< 0.062	S/C	32	0	32	32%	32%
	Very Fine	.062 - .125	S	28	0	28	28%	60%
	Fine	.125 - .25	A	4	0	4	4%	64%
	Medium	.25 - .50	N	0	0	0	0%	64%
	Coarse	.50 - 1.0	D	0	0	0	0%	64%
.04 -.08	Very Coarse	1.0 - 2.0	S	4	0	4	4%	68%
.08 - .16	Very Fine	2.0 - 4.0		4	0	4	4%	72%
.16 - .22	Fine	4.0 - 5.7	G	0	0	0	0%	72%
.22 - .31	Fine	5.7 - 8.0	R	8	0	8	8%	80%
.31 - .44	Medium	8.0 - 11.3	A	8	0	8	8%	88%
.44 - .63	Medium	11.3 - 16.0	V	12	0	12	12%	100%
.63 - .89	Coarse	16.0 - 22.6	E	0	0	0	0%	100%
.89 - 1.26	Coarse	22.6 - 32.0	L	0	0	0	0%	100%
1.26 - 1.77	Very Coarse	32.0 - 45.0	S	0	0	0	0%	100%
1.77 - 2.5	Very Coarse	45.0 - 64.0		0	0	0	0%	100%
2.5 - 3.5	Small	64 - 90	C	0	0	0	0%	100%
3.5 - 5.0	Small	90 - 128	O	0	0	0	0%	100%
5.0 - 7.1	Large	128 - 180	B	0	0	0	0%	100%
7.1 - 10.1	Large	180 - 256	L	0	0	0	0%	100%
10.1 - 14.3	Small	256 - 362	B	0	0	0	0%	100%
14.3 - 20	Small	362 - 512	L	0	0	0	0%	100%
20 - 40	Medium	512 - 1024	D	0	0	0	0%	100%
40 - 80	Lrg- Very Lrg	1024 - 2048	R	0	0	0	0%	100%
	Bedrock		BDRK		0	0	0%	100%
			Totals	**100**	**0**	**100**	**100%**	**100%**



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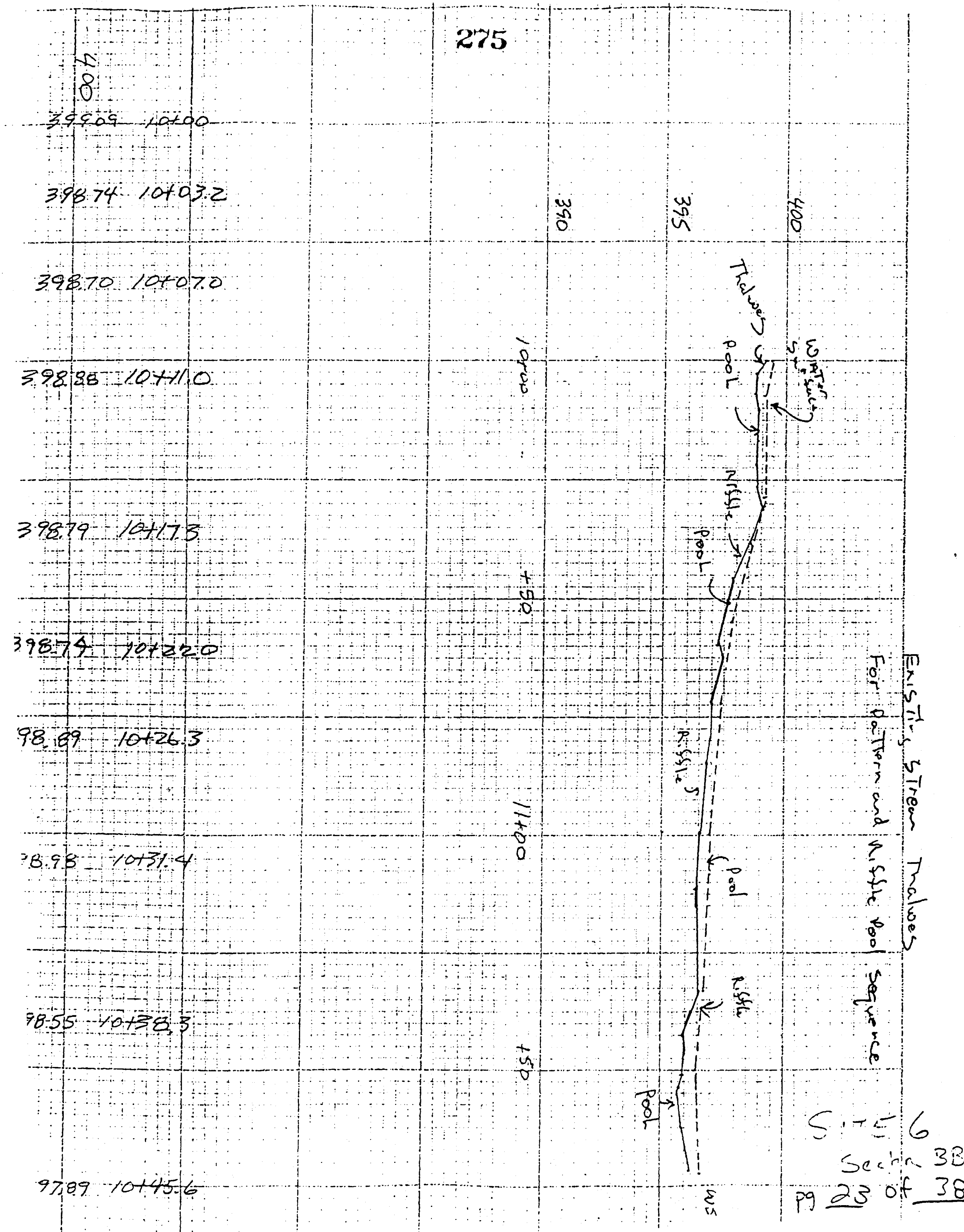
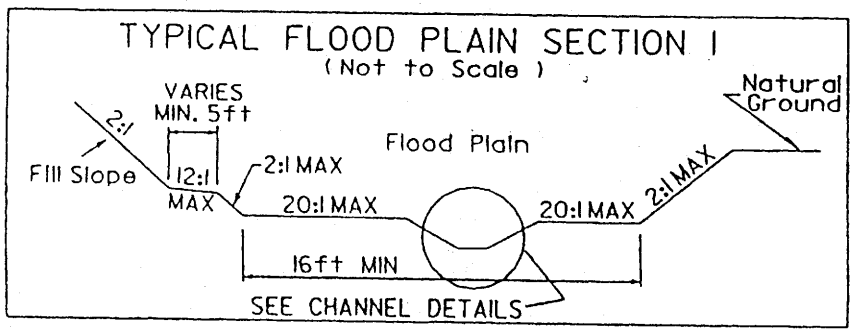
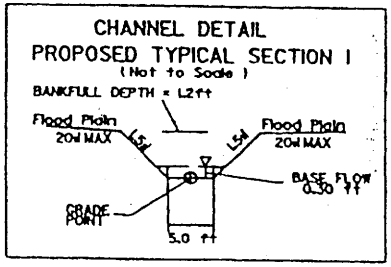
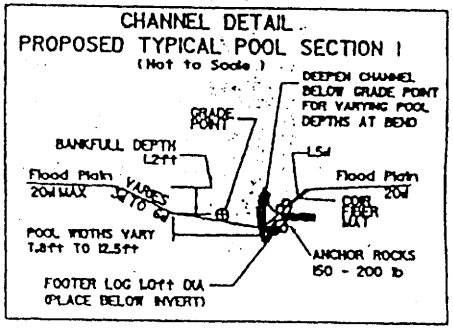

408
39909 10+00
398.74 10+03.2
398.70 10+07.0
398.88 10+11.0
398.79 10+17.3
398.74 10+22.0
98.89 10+26.3
98.98 10+31.4
98.55 10+38.3
97.89 10+45.6
390
395
400
10+00
+50
11+00
+50
Thalweg
Water Surface
Pool
Riffle
Pool
Riffle
Pool
Riffle
Pool
WS
Existing Stream Thalweg
For Pattern and Riffle Pool Sequence
Site 6
Section 3B

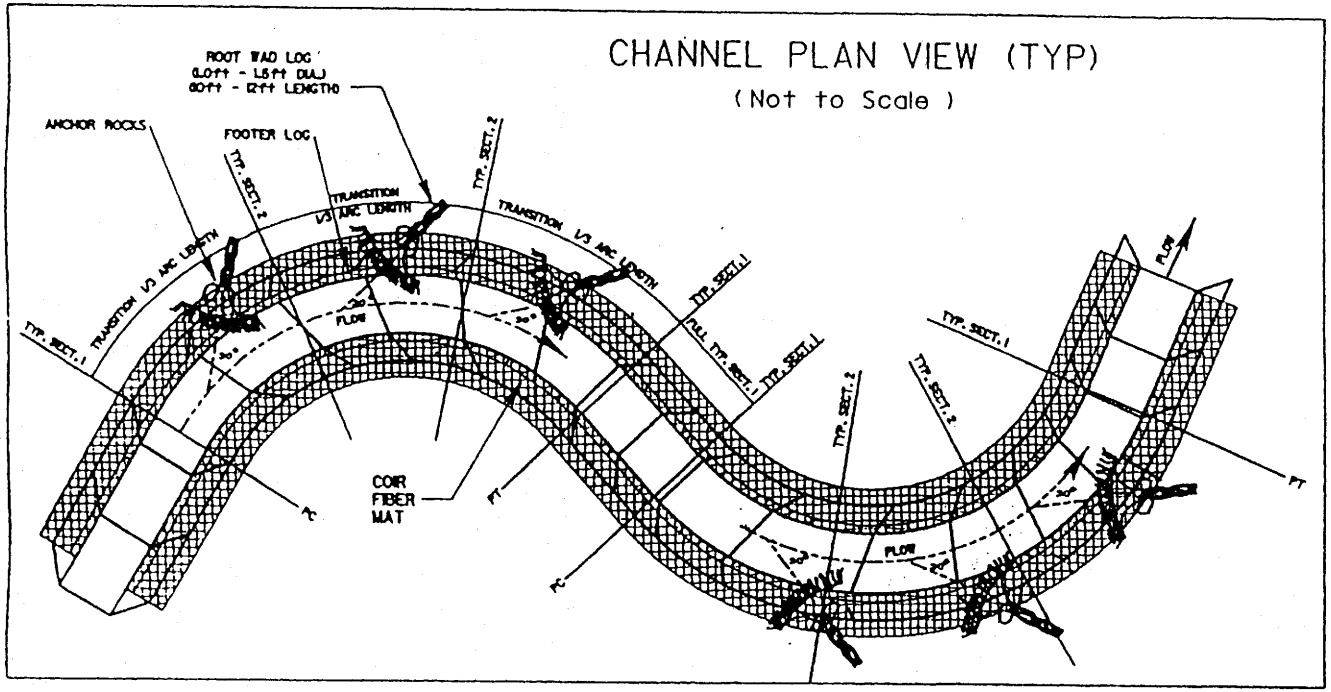




TYPICAL SECTION I BETWEEN BENDS



TYPICAL SECTION 2 AT BENDS



NOTES:

NUMBER OF ROOTWADS INSTALLED 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.

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STREAM RESTORATION DETAILS
SITE 6 (SECTION #1) STATION 540+64 -L- TO 545+00 -L- RT.

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
LEE COUNTY

PROJECT: 8.T540402 (R-2417BB)
US 421 / NC 87 BYPASS FROM
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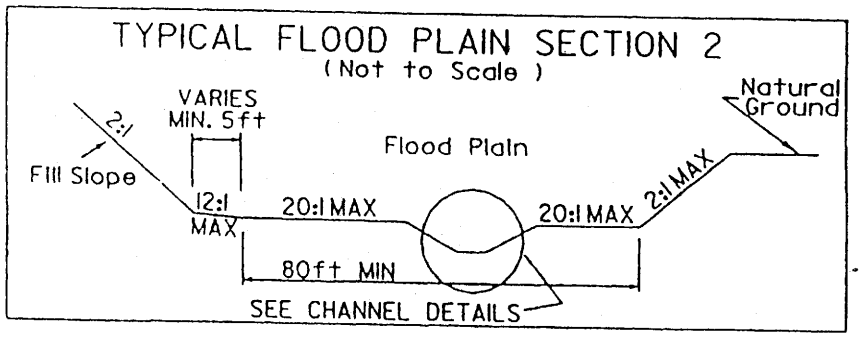
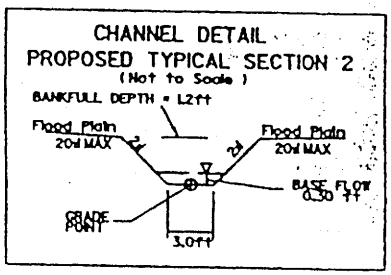
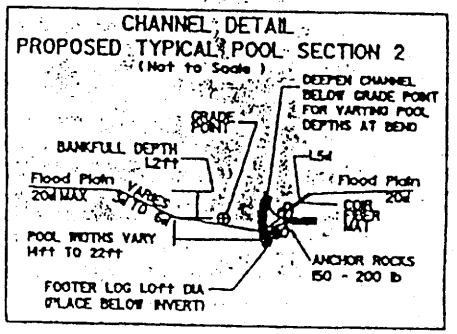
TO EAST OF NC 42

SHEET 21 OF 38 REVISED 9/12/01

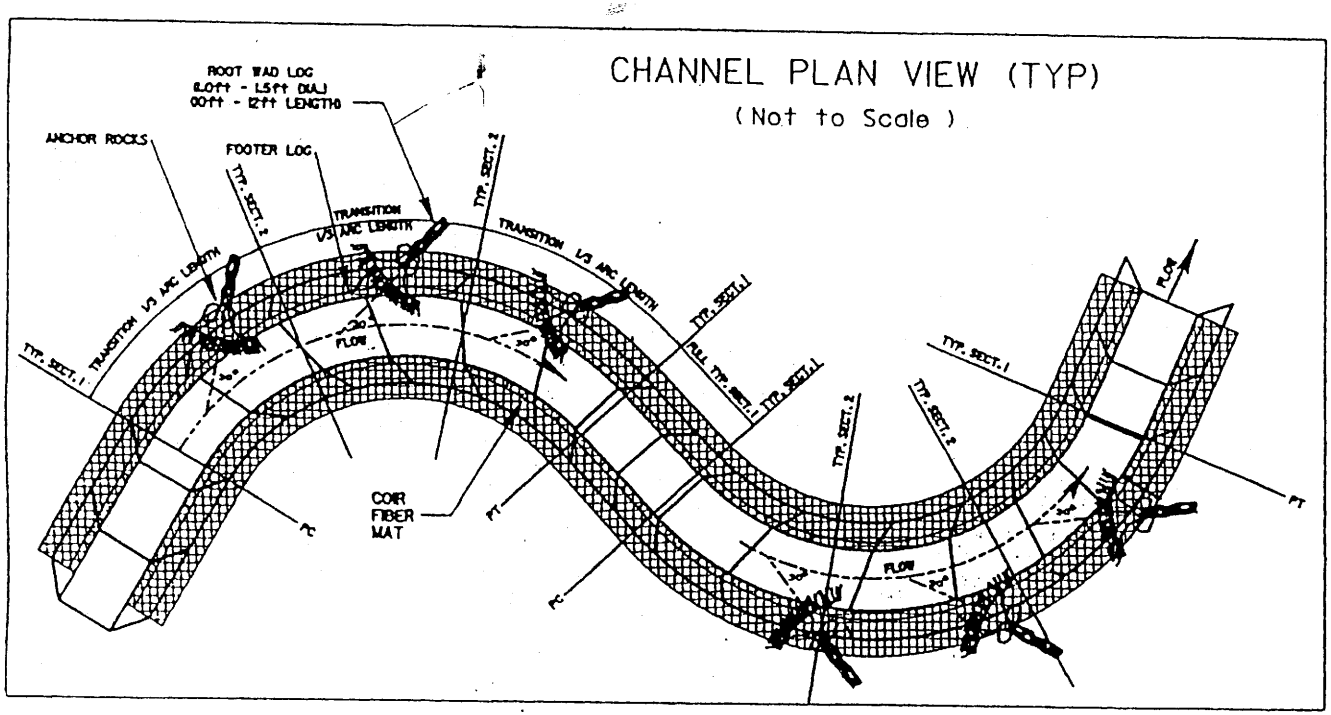




TYPICAL SECTION 1 BETWEEN BENDS



TYPICAL SECTION 2 AT BENDS



NOTES:

NUMBER OF ROOTWADS INSTALLED 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.

STREAM RESTORATION DETAILS
SITE 6 (SECTION #2) STATION 545+00 -L- TO 555+00 -L- RT.

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LEE COUNTY

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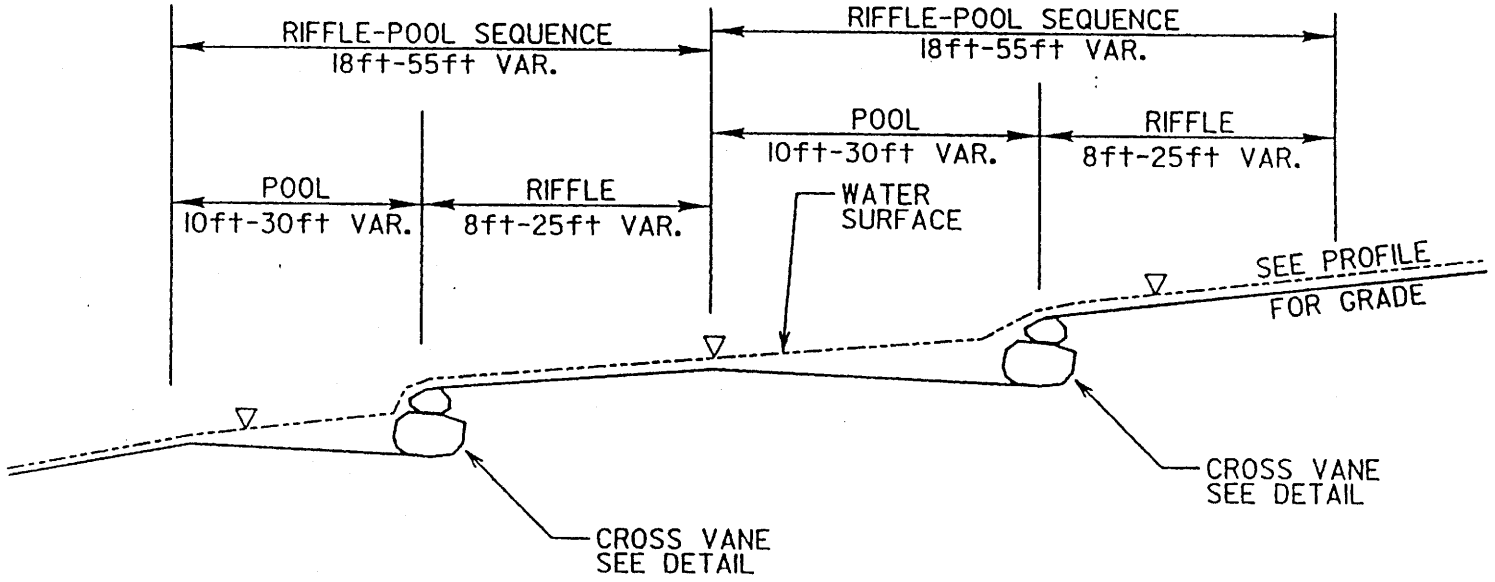

RIFFLE-POOL SPACING
SITE 6

NOT TO SCALE

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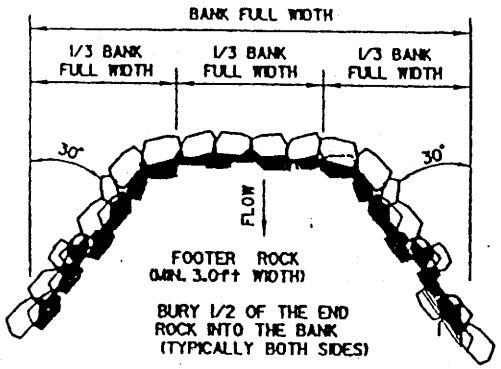
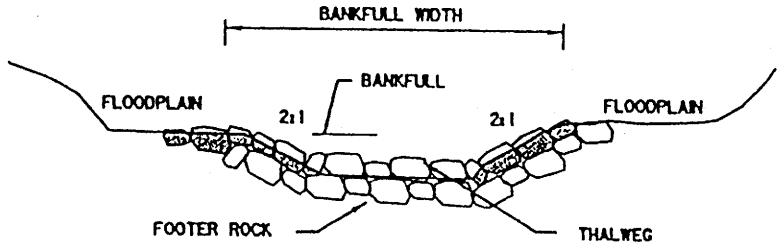
CROSS VANE DETAILS



TOP VIEW

1/3

1 CROSS VANE
NTS

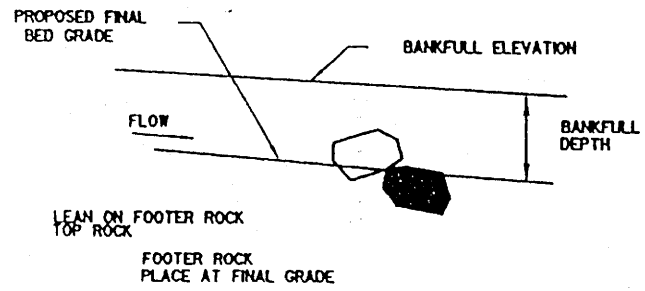


TYPICAL SECTION

NOTE: ALLOW THALWEG TO ALTERNATE BACK AND FORTH FROM CENTERLINE.

1 CROSS VANE
NTS

3/3



TYPICAL PROFILE

NOTES:
1. FOOTER AND TOP ROCKS SHOULD BE 150 TO 200 LB NATIVE ROCKS OR QUARRY ROCKS.

1 CROSS VANE
NTS

2/3

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Morphological Measurement Table for R-2417BB

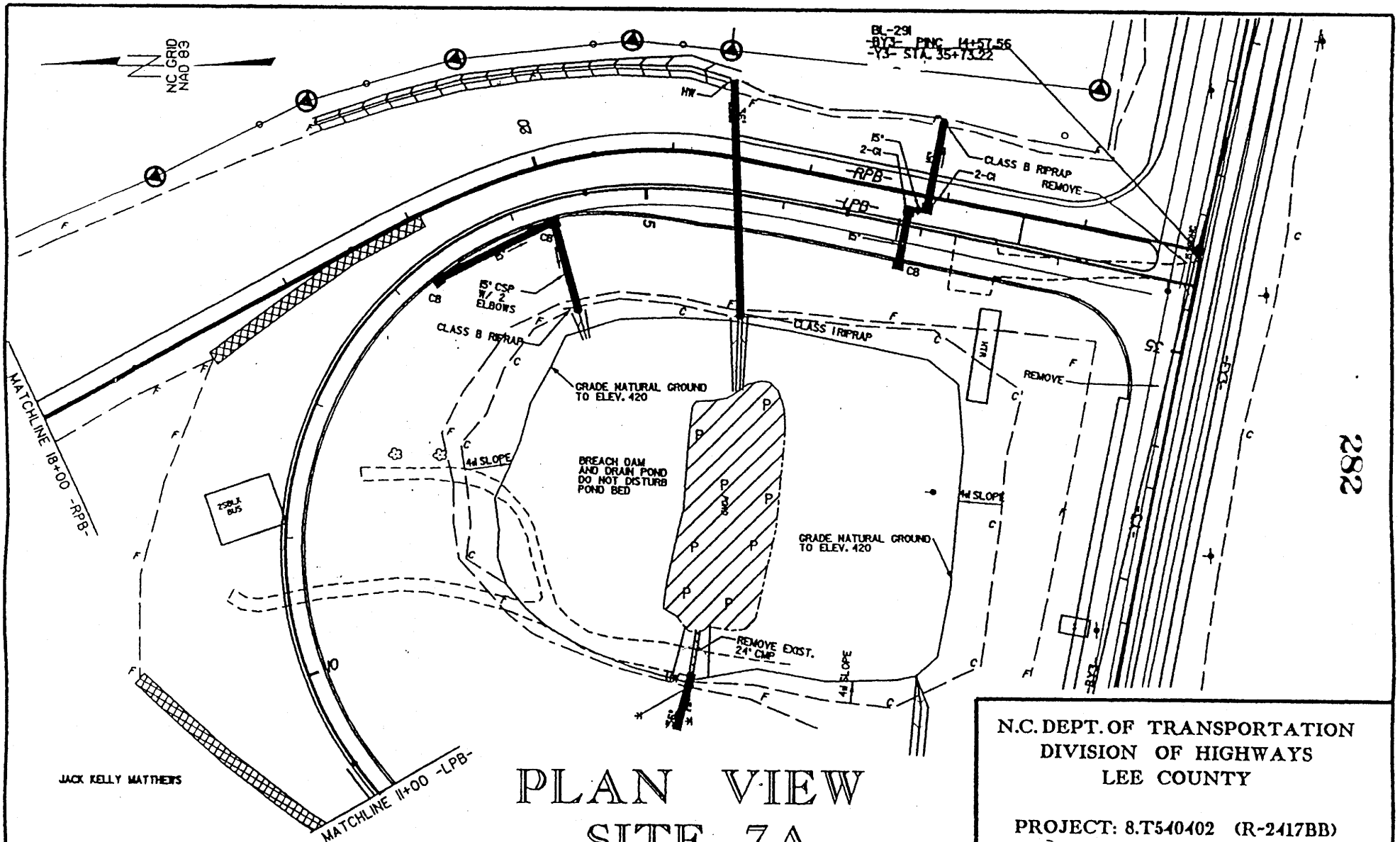
Site 6(SECTION#1) STATION 540+64-L- TO STATION 545+00 -L- RT.

Variables	Existing Channel 280	Proposed Reach	USGS Station	Reference Reach (NCSRI Reg. Curves)
1. Stream type(Rosgen Classification)	E5	E5	na	E
2. Drainage area (SqMi)	0.26	0.26	na	0.26
3. Bankfull width (ft)	5.1	8.6	na	6.7
4. Bankfull mean depth (ft)	1.04	0.97	na	0.97
5. Width/depth ratio	4.9	9.1	na	6.9
6. Bankfull cross-sectional area (ft^2)	5.3	8.2	na	8.6
7. Bankfull mean velocity (ft/s)	6.9	4.2	na	3.9
8. Bankfull discharge, cfs	34	34	na	34
9. Bankfull max depth (riffle)(ft)	1.5	1.2	na	1.2
10. Width of floodprone area (ft)	86	60	na	na
11. Entrenchment ratio	16.9	7.0	na	na
12. Meander length (ft)	24	50	na	43
13. Ratio of meander length to bankfull width	4.7	5.8	na	6.4
14. Radius of curvature (ft)	6.5	17	na	15
15. Ratio of radius of curvature to bankfull width	1.27	2	na	2.2
16. Belt width (ft)	11	14	na	16.5
17. Meander width ratio	2.2	1.6	na	2.5
18. Sinuosity (stream length/valley length)	1.4	1.43	na	1.2
19. Valley slope (ft/ft)	0.015	0.015	na	na
20. Average slope valley slope/sinuosity	0.0107	0.0105	na	na
21. Pool slope (ft/ft)	0.0003	0.0003	na	na
22. Ratio of pool slope to average slope	0.0286	0.0286	na	na
23. Maximum pool depth (ft)	1.25	1.7	na	1.97
24. Ratio of pool depth to average bankfull depth	1.29	1.75	na	2.03
25. Pool width(ft)	8.2-12.5	14.0-22	na	na
26. Ratio of pool width to bankfull width	1.6-2.45	1.6-2.55	na	na
27. Pool to pool spacing (ft)	25-40	25-40	na	24
28. Ratio of pool to pool spacing to bankfull width	4.9-7.8	2.9-4.7	na	3.6

Morphological Measurement Table for R-2417BB

Site 6 (SECTION #2) STATION 545+00 TO STATION 555+00 -L- RT.

Variables	Existing Channel	Proposed Reach	USGS Station	Reference Reach (NCSRI Reg. Curves)
1. Stream type(Rosgen Classification)	E5b	E5	na	E
2. Drainage area (SqMi)	0.18	0.18	na	0.18
3. Bankfull width (ft)	8.2	7.8	na	5.7
4. Bankfull mean depth (ft)	0.73	0.83	na	0.87
5. Width/depth ratio	11.2	9.4	na	6.7
6. Bankfull cross-sectional area (ft^3)	6	6.5	na	6.7
7. Bankfull mean velocity (ft/s)	4.3	4	na	3.9
8. Bankfull discharge, cfs	26	26	na	26
9. Bankfull max depth (riffle)(ft)	1.5	1.2	na	1.5
10. Width of floodprone area (ft)	70	20	na	na
11. Entrenchment ratio	8.5	2.56	na	na
12. Meander length (ft)	24	50	na	35
13. Ratio of meander length to bankfull width	2.93	6.4	na	6.1
14. Radius of curvature (ft)	6.5	17	na	13
15. Ratio of radius of curvature to bankfull width	0.79	2.1	na	2.3
16. Belt width (ft)	11	14	na	9
17. Meander width ratio	1.34	1.79	na	1.58
18. Sinuosity (stream length/valley length)	1.4	1.36	na	1.2
19. Valley slope (ft/ft)	0.038	0.005	na	na
20. Average slope valley slope/sinuosity	0.027	0.0038	na	na
21. Pool slope (ft/ft)	0.0003	0.0003	na	na
22. Ratio of pool slope to average slope	0.011	0.0789	na	na
23. Maximum pool depth (ft)	1.25	1.4	na	1.76
24. Ratio of pool depth to average bankfull depth	1.7	1.7	na	2.02
25. Pool width(ft)	8.2-12.5	7.8-12.5	na	na
26. Ratio of pool width to bankfull width	1.0-1.52	1.0-1.6	na	na
27. Pool to pool spacing (ft)	25-40	25-40	na	16.9
28. Ratio of pool to pool spacing to bankfull width	3.0-4.9	3.2-5.1	na	3



PLAN VIEW
SITE 7A

P P P
P P P
DENOTES FILL IN
SURFACE WATERS (POND)

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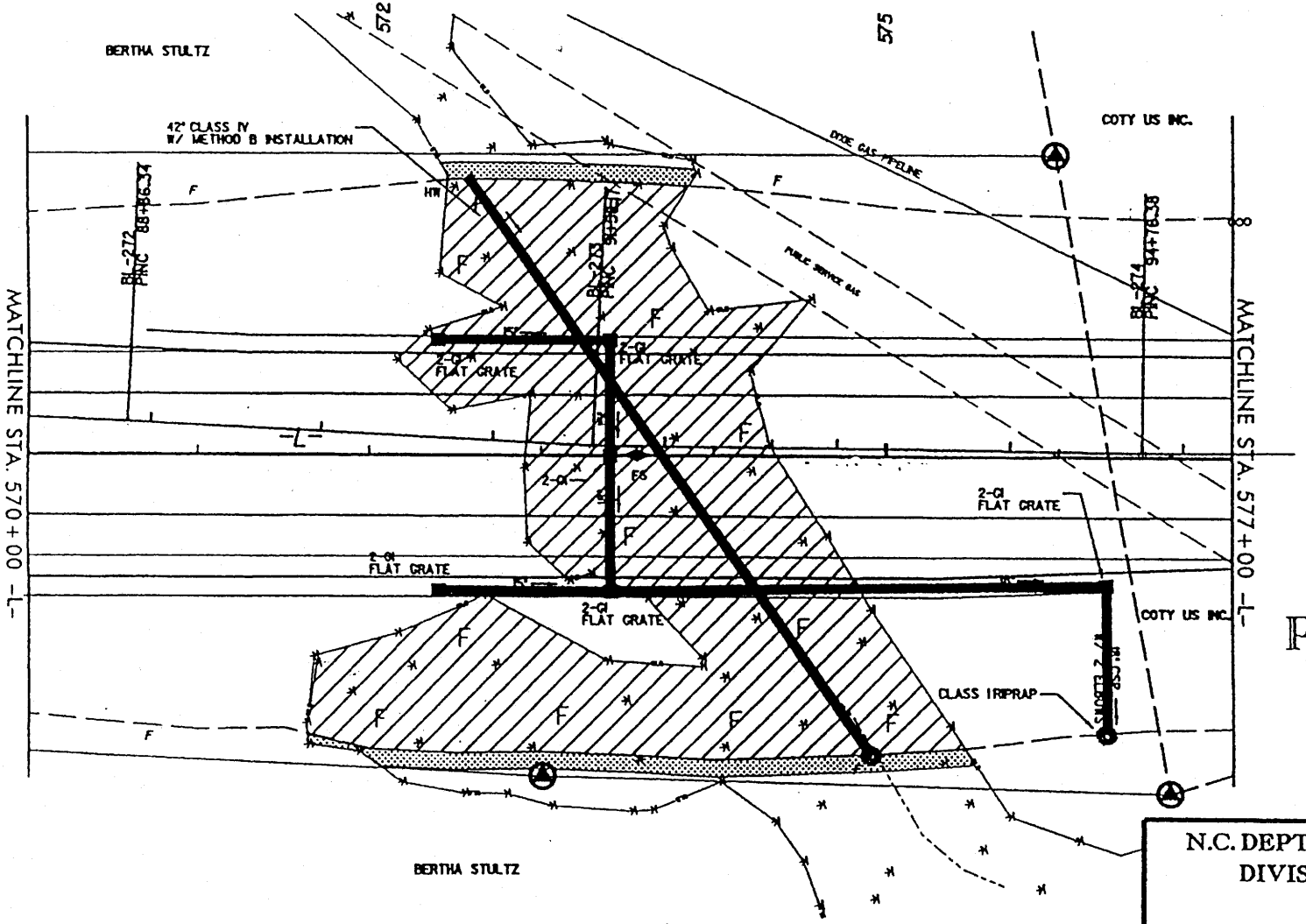

NC GRID
NAD 83

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PLAN VIEW
SITE 8
SHEET 1 OF 2

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLANDS

50' 0 100'

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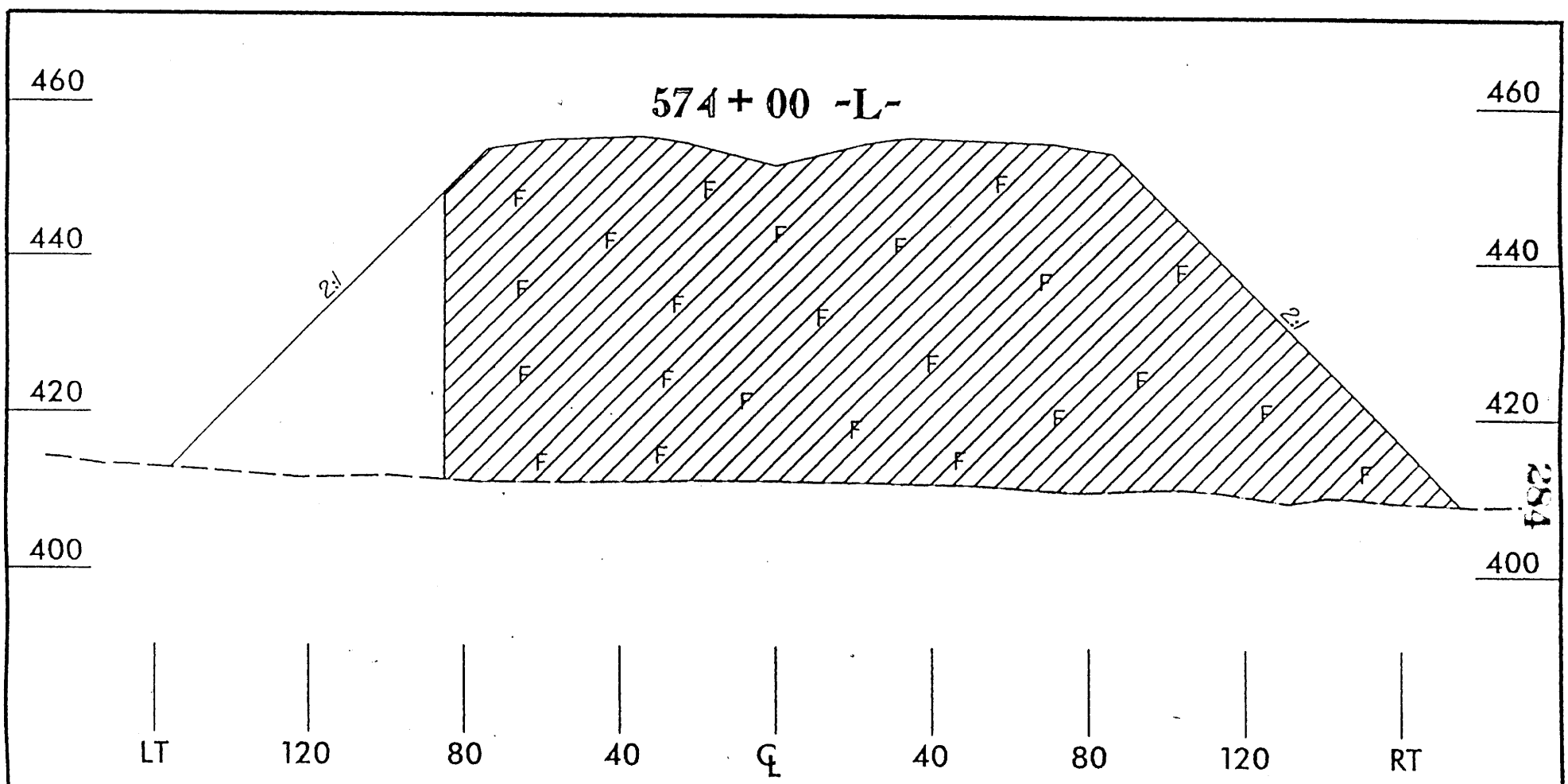

SITE 8
CROSS-SECTION

20ft 0 40ft

HORIZONTAL SCALE

10ft 0 20ft

VERTICAL SCALE

F F F F

DENOTES FILL IN WETLANDS

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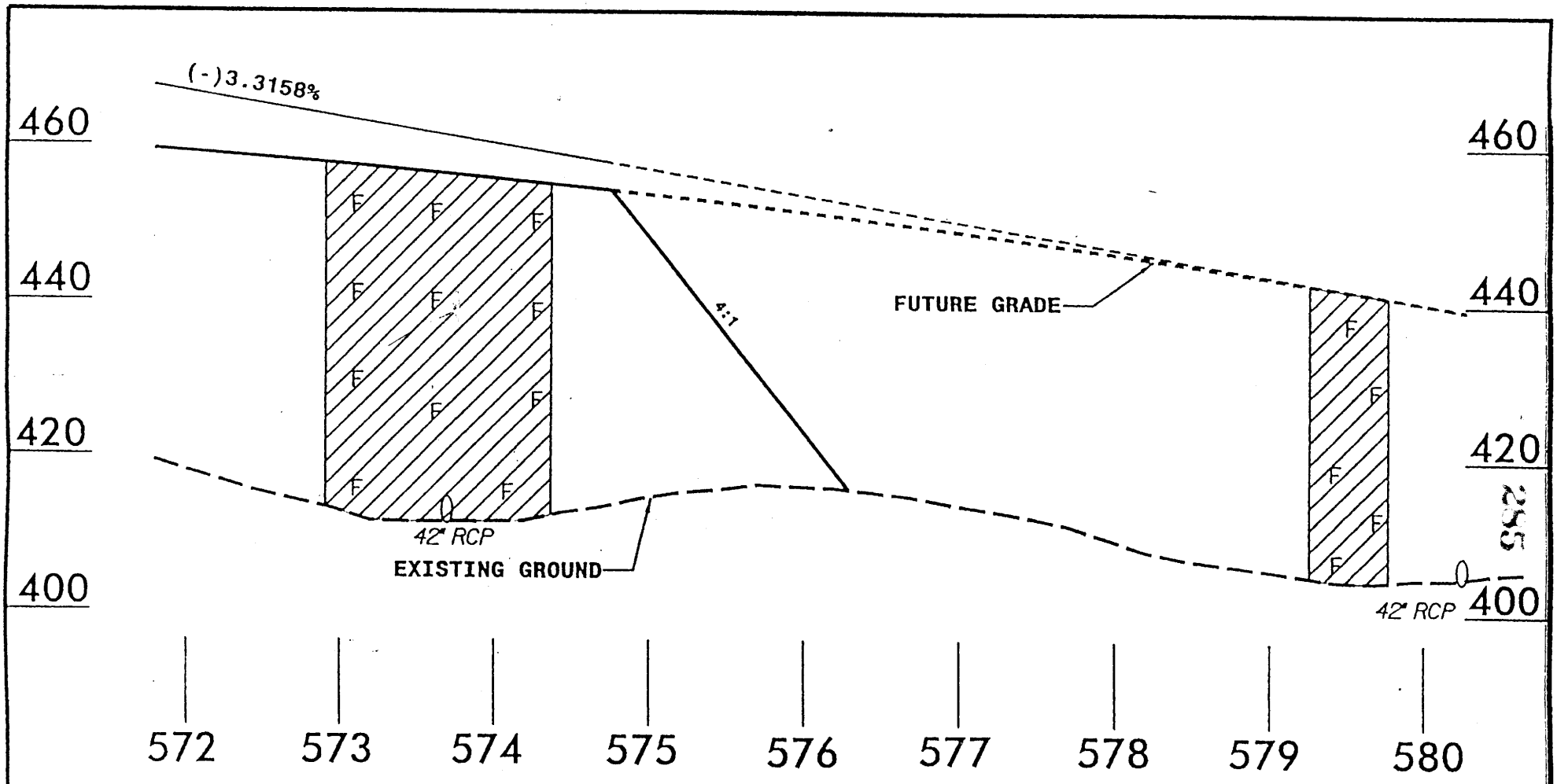

SITE 8
PROFILE

50ft 0 100ft
HORIZONTAL SCALE

10ft 0 20ft
VERTICAL SCALE

DENOTES FILL IN WETLANDS

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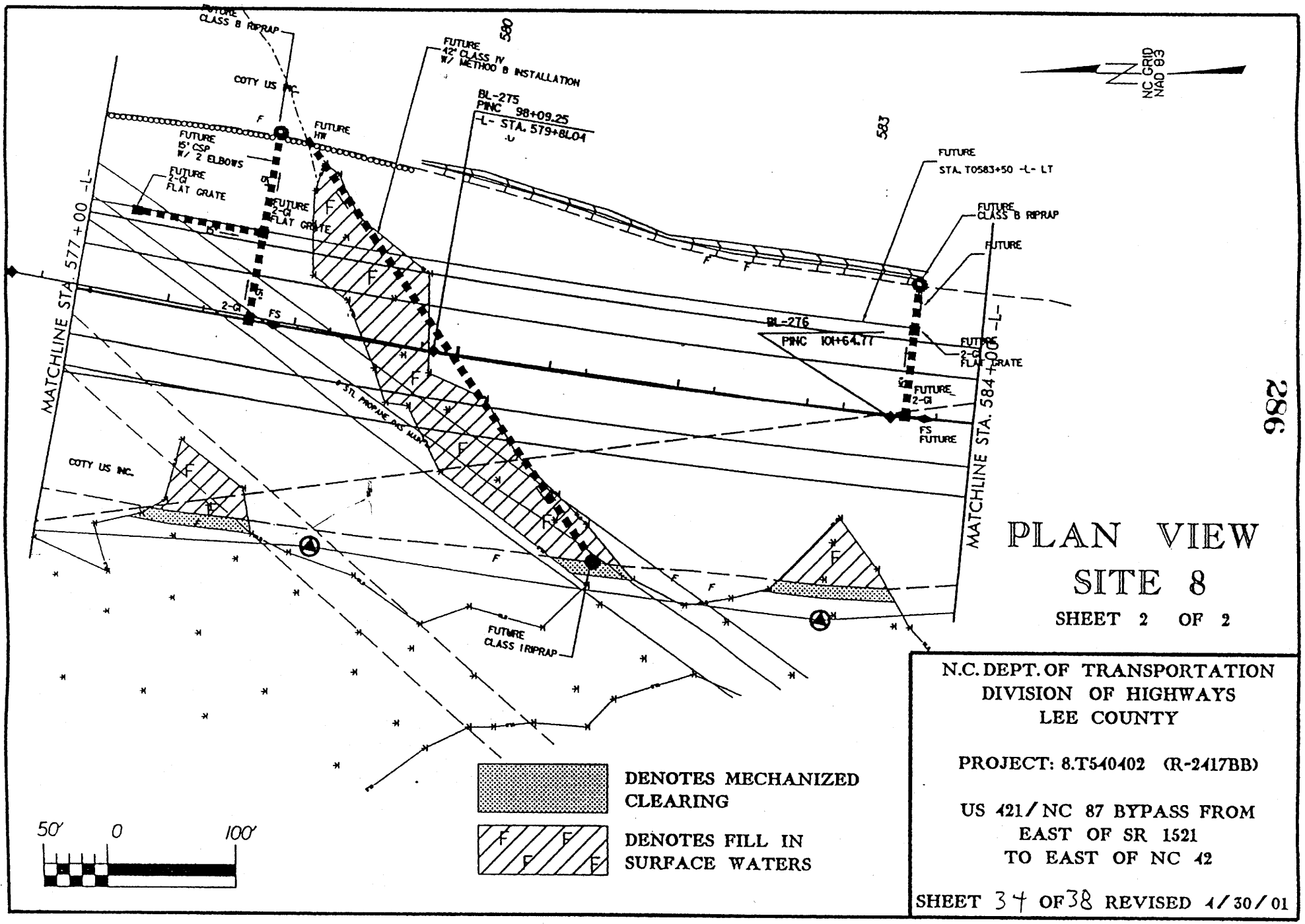

PLAN VIEW
SITE 8
SHEET 2 OF 2

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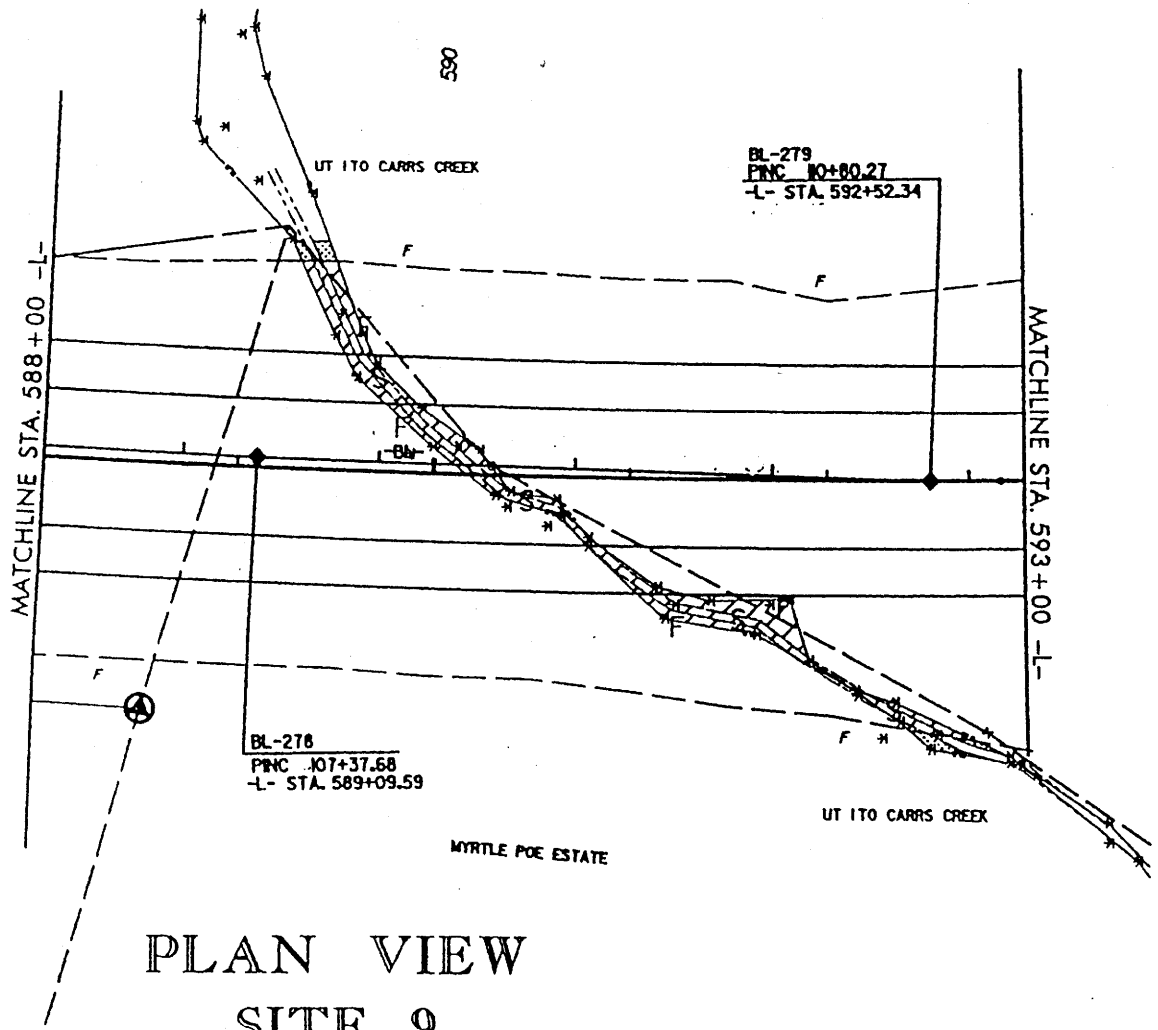

NC GRID NAD 83

PLAN VIEW
SITE 9

50' 0 100'

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLANDS

DENOTES FILL IN SURFACE WATERS

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IMPACT SUMMARY

Site No. (P&E)	Station (English) (From/To)	Stream name and/or wetland # (FROM P&E)	WETLAND IMPACTS				SURFACE WATER IMPACTS						BUFFER 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)	Relocated Channel (ft)	Enclosed Channel (ft)	Zone 1 (ha)	Zone 2 (ha)
1	508+50 -L-	UT 4 TO SANFORD H2O					0.09			595				
2	524+00 -L-	UT 5 TO SANFORD H2O					0.02			225				
3	533+00 -L-	UT 6 & WETLAND	0.35			0.025	0.07			455				
4	544+00 -L-	POND/WETLAND	1.00					1.51						
5	544+00 -L-	UT 7 TO SANFORD H20					0.01			160				
6	546+50-562+00	UT6 & WETLAND	3.61		0.012	0.0221	0.2			2070	1930			
6A	554+00 -L-	UT 8 TO SANFORD H2O					0.02			185				
7	563+00 -L-	POND						0.05						
7A	4+00 -LPB-	POND						0.27						
8	572+50 -L-	WETLAND	1.92			0.162								
9	589+50 -L-	UT1 TO CARRS CREEK &	0.07			0.0075	0.037			430				
		WETLAND												
TOTALS:			6.96	0	0.012	0.2166	0.447	1.83	0	4120	1930	0	0	0

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PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	ROBERT SPIVEY	293 COUNTRY WAY SANFORD, NC 27330
2	RODNEY BRUCE	1341 O'QUINN RD SANFORD, NC 27330
3	RUTH CALCUTT	1417 O'QUINN RD SANFORD, NC 27330
4	GARY M. THOMAS	443 THOMAS RD SANFORD, NC 27330
5	DANNY BURNS	1944 RICE ROAD SANFORD [illegible]
6	JACK K. MATTEWS	2016 [illegible] SANFORD, [illegible]
7	DANIEL PRIEST	2008 RICE ROAD SANFORD, NC 273[illegible]
8	ANNIE O'CONNEL	1251 BROADWAY RD SANFORD, NC 27330
9	ROY MADDOX	1305 BROADWAY RD SANFORD, NC 27330

N. C. [illegible] OF TRANSPORTATION
[illegible]VISION OF HIGHWAYS
LEE COUNTY

[illegible] 540402 (R-2417BB)
[illegible] 87 BYPASS [illegible]
[illegible] SR 15[illegible]
[illegible]

4/24/01

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PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
10	COTY US INC.	PO BOX 1026 SANFORD, NC 27330
11	BERTHA STULTZ	38280-A HUNTINGREEN LN SANFORD, NC 27330
12	MYRTLE POE ESTATE	1127 BROADWAY RD SANFORD, NC 27330

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