



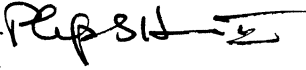
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

June 2, 2005

MEMORANDUM TO: Mr. Jon G. Nance, P.E.
Division 5 Engineer

FROM: Philip S. Harris, III, P.E., Manager 
Office of the Natural Environment
Project Development and
Environmental Analysis Branch

SUBJECT: Wake County; Division 5; Construction of the Northern Wake
Expressway (I-540) from US 1 to US 64; State Project No. 8.2401701;
TIP Project No. R-2000 F&G

Attached is the modification for the U.S. Army Corps of Engineers permit and the DWQ Water Quality Certification for the above referenced project.

PSH/gyb

Attachment

cc: Mr. Art McMillan, P.E.
Mr. Omar Sultan
Mr. Jay Bennett, P.E.
Mr. David Chang, P.E.
Mr. Randy Garriss, P.E.
Mr. Greg Perfetti, P.E.
Mr. Mark Staley
Mr. John F. Sullivan, III, FHWA
Mr. Chris Murray, Division 5 DEO
Ms. Cathy Houser, PE

PROJECT COMMITMENTS

Northern Wake Expressway (I-540) from US 1 to US 64
Wake County
State Project No. 8.2401701
Federal Aid Project No. F-123-1(1)
TIP No.: R-2000F&G

In addition to the standard Individual Section 404 and 401 Permit Conditions, State Consistency Conditions, NCDOT's Guidelines for Best Management Practices for Protection of Surface Waters, the following special commitments have been agreed to by NCDOT:

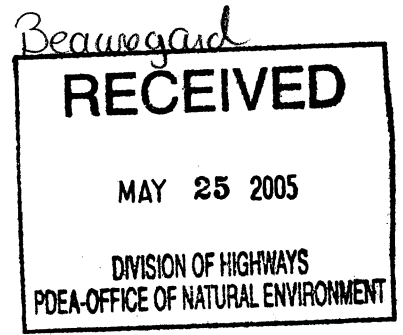
Commitments Developed through Permit Modifications

No new special permit conditions are stated in the attached permits. All standard permit conditions apply to this project and all other conditions written into previous Section 404 permits, Section 401 Water Quality Certifications and Neuse River Riparian Buffer Certifications for this project still apply.



REPLY TO
ATTENTION OF:

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

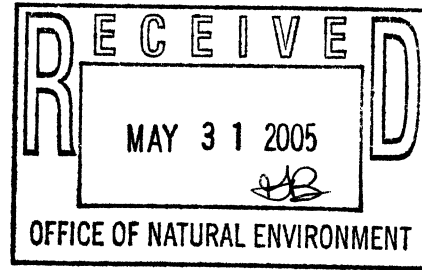


May 25, 2005

Regulatory Division

Action ID. 199920387

Gregory J. Thorpe, Ph.D.
Environmental Management Director, PDEA
N.C. Department of Transportation
1548 Mail Service Center
Raleigh, NC 27699-1548



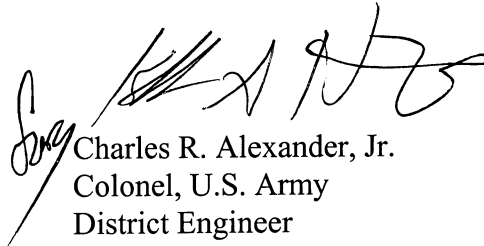
Dear Dr. Thorpe:

Reference the permit that the Department of the Army issued on October 10, 1996, for the discharge of dredged and fill material in waters of the United States, including wetlands, to facilitate construction of the Northern Wake Expressway (T.I.P. No. R-2000), Sections A, CA, CB, D, E, F and G, crossing Kit Creek, Lower Bartons Creek, Perry Creek, the Neuse River, Beaverdam Creek, unnamed tributaries, and adjacent wetlands, generally northwest and northeast of Raleigh, in Wake and Durham Counties, North Carolina (Action ID. 199601917). Reference also the June 2, 2003 and December 1, 2004 modifications to that permit for the final design for Sections F and G, and your written request of May 10, 2005, for additional permit modification for several changes of impacts to waters, from necessary construction modifications. The revisions result in a change from hand clearing to temporary fill in 0.412 acre of wetlands at Site 8 in Section F, a change from mechanized clearing to riprap toe slope protection in 0.09 acre of wetlands at Site 10 in Section G, and a change from mechanized clearing to riprap toe slope protection in 0.04 acre of wetlands at Site 10 in Section G.

The permit is hereby modified to include the work as shown on the enclosed revised drawings. It is understood that all conditions of the original permit remain applicable and that the expiration date is unchanged. The change in stormwater treatment at Site 3 in Section F does not require a permit modification.

If you have questions, please contact Eric Alsmeyer of the Raleigh Regulatory Field Office, at telephone (919) 876-8441, extension 23.

Sincerely,



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

Enclosure

Copies Furnished with enclosure:

Mr. John Hennessy
Division of Water Quality, Wetlands Unit
North Carolina Department of Environment
and Natural Resources
1650 Mail Services Center
Raleigh, North, Carolina 27699-1650

Mr. Jon Nance
Division Engineer
NCDOT
2612 North Duke St
Durham, NC 27704

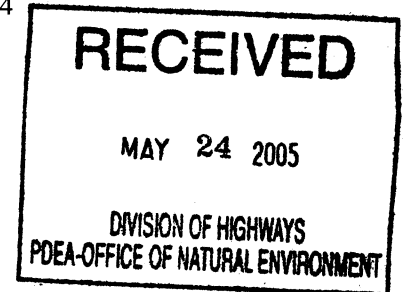
Mr. Chris Murray
Division Environmental Officer
NCDOT
2612 North Duke St
Durham, NC 27704



May 17, 2005
Wake County
DWQ Project No. 030114
TIP No. R-2000 F&G

Beauregard

Dr. Gregory J. Thorpe, PhD., Manager
Planning & Environmental Branch
N.C. Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina, 27699-1548



Dear Dr. Thorpe:

Re: Certification Pursuant to Section 401 of the Federal Clean Water Act,
Modification to the construction of Northern Wake Expressway (I-540) from US 1 to US 64, Division 5, TIP
No. R-2000 F&G, Federal Aid Project No. F-123-1(1), WQC Project No. 030114, Wake County.

Attached hereto is a modification to Certification No. 3081 issued to the North Carolina Department of Transportation on September 27, 1996. The attached modification authorizes NCDOT to change the level spreader on Section F, Site 3, Station 369+93 to 370+64, to a 1.2m (4.0ft) base ditch with permanent rock checks which will step the channel down at 1.0 foot increments. The base ditch will be lined with Permanent Soil Reinforcement Mat between the rock checks except below the last check. From the edge of the wetland up to the toe of the last permanent rock check, Class I Rip Rap will be utilized. NCDOT is also authorized to extend the temporary work bridge on Section F, Site 8, Station 396+00, a total of 9.1m (30.0 ft) in order to ramp off with stone while maintaining the ramp within the permitted footprint. Stumps will be cut off at ground level and already approved timber mats, will be placed within the footprint on the permit drawing. Filter fabric and a 3.0m (10.0 ft) border of Class A stone will be placed on top of the mats. The stone is not to exceed the edge of the timber mats. At Section G, Site 10, Station 461+10 to 462+50L and Site 14, Station 473+90 to 475+00 R NCDOT is authorized to place Rip rap in the wetlands and streams, which have already been approved as mechanized clearing areas, in order to stabilize the fill slope. No additional jurisdictional or buffer impacts will occur as a result of this modification. 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 September 27, 1996 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,

Alan W. Klimek, P.E.
Director

Attachments

Modification to WQC No. 3081

cc: Mr. Eric Alsmeyer, US Army Corps of Engineers, Raleigh Field Office
Mr. John Nance, Division 5 Engineer, 2612 N. Duke Street, Durham, NC 27704
Mr. Chris Murray, Division 5 Environmental Officer, 2612 N. Duke Street, Durham, NC 27704
Ms. Rachelle Beauregard, ONE, 2728-168 Capital Blvd, Parker Lincoln Bldg, Raleigh, NC 27604
NC DWQ Raleigh Regional Office
Central Files
File Copy

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 NCDOT to change the level spreader on Section F, Site 3, Station 369+93 to 370+64, to a 1.2m (4.0ft) base ditch with permanent rock checks that will step the channel down at 1.0-foot increments. The base ditch will be lined with Permanent Soil Reinforcement Mat between the rock checks except below the last check. From the edge of the wetland up to the toe of the last permanent rock check, Class I Rip Rap will be utilized. NCDOT is also authorized to extend the temporary work bridge on Section F, Site 8, Station 396+00, a total of 9.1m (30.0 ft) in order to ramp off with stone while maintaining the ramp within the permitted footprint. Stumps will be cut off at ground level and already approved timber mats, will be placed within the footprint on the permit drawing. Filter fabric and a 3.0m (10.0 ft) border of Class A stone will be placed on top of the mats. The stone is not to exceed the edge of the timber mats. At Section G, Site 10, Station 461+10 to 462+50L and Site 14, Station 473+90 to 475+00 R NCDOT is authorized to place Rip rap in the wetlands and streams, which have already been approved as mechanized clearing areas, in order to stabilize the fill slope. 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 September 27, 1996 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 proposed 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 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 total wetland fills for this project (now or in the future exceed one acre, 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.

Condition(s) of Certification:

1. Construction will be conducted in such a manner as to prevent a significant increase in turbidity outside the area of construction or construction-related discharge. 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 assure compliance with the appropriate turbidity water quality standard.
 - a. The erosion and sediment control measures for the project must equal or exceed the proper design, installation, operation and maintenance outlined in the most recent version of the North Carolina Sediment and Erosion Control Planning and Design Manual. These 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.
 - b. For borrow pit sites, the erosion and sediment control measures must equal or exceed the proper design, installation, operation and maintenance outlined in the most recent version of the North Carolina Surface Mining Manual. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.
2. 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;

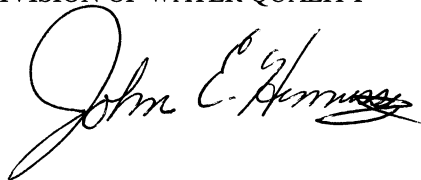
3. No live or fresh concrete shall come into contact with waters of the state until the concrete has hardened.
4. All sediment and erosion control measures shall not be placed in wetlands or waters to the maximum extent practicable. If placement of sediment and erosion control devices in wetlands and waters is unavoidable, they shall be removed and the natural grade restored after the Division of Land Resources has released the project;
5. No additional compensatory mitigation is required as a result of this certification.
6. All stormwater runoff shall be directed to sheetflow through stream buffers at nonerosive velocities, unless approved otherwise by this certification.
7. During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S., or protected riparian buffers.
8. No changes to the horizontal or vertical placement of the stormwater outfall locations, the horizontal or vertical placement of the culverts, the horizontal or vertical placement of bridges, the horizontal or vertical placement of grassed swales, or the horizontal or vertical placement of open ditches is permitted without written approval from the NC Division of Water Quality 401 Wetlands Unit. In addition, no changes to the flow spreader locations or designs, preformed scour hole locations or designs are permitted without written approval from the NC Division of Water Quality 401 Wetlands Unit. Any request for changes to the referenced items above will require submittal of a modification request, with seven copies, and corresponding fees will need to be submitted to the North Carolina Division of Water Quality.
9. Riparian vegetation must be reestablished within the construction limits of the project by the end of the growing season following completion of construction.
10. The dimension, pattern and profile of the stream above and below the crossing should not be modified by widening the stream channel or reducing the depth of the stream. Disturbed floodplains and streams should be restored to natural geomorphic conditions.
11. Any riprap used must not interfere with thalweg performance and aquatic life passage during low flow conditions.
12. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials.
13. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited.
14. Pursuant to NCAC15A 2B.0233(6), sediment and erosion control devices shall not be placed in Zone 1 of any Neuse Buffer without prior approval by the NCDWQ. At this time, the NCDWQ has approved no sediment and erosion control devices in Zone 1 anywhere on this project. Moreover, sediment and erosion control devices shall be allowed in Zone 2 of the buffers provided that Zone 1 is not compromised and that discharge is released as diffuse flow.
15. The outside buffer, wetland or water boundary located within the construction corridor approved by this authorization shall be clearly marked by orange fabric fencing prior to any land disturbing activities. Impacts to areas within the fencing are prohibited unless otherwise authorized by this certification.

16. NCDOT, and its authorized agents, shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any other appropriate requirements of State law and Federal law. If DWQ determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, DWQ may reevaluate and modify this certification to include conditions appropriate to assure compliance with such standards and requirements in accordance with 15A NCAC 2H.0507(d). Before modifying the certification, DWQ shall notify NCDOT and the US Army Corps of Engineers, provide public notice in accordance with 15A NCAC 2H.0503 and provide opportunity for public hearing in accordance with 15A NCAC 2H.0504. Any new or revised conditions shall be provided to NCDOT in writing, shall be provided to the United States Army Corps of Engineers for reference in any permit issued pursuant to Section 404 of the Clean Water Act, and shall also become conditions of the 404 Permit for the project.
17. A copy of this Water Quality Certification shall be posted on the construction site at all times. In addition, the Water Quality Certification (and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager.
18. All other conditions written into previous Water Quality Certifications and Neuse River Riparian Buffer Certifications for this project still apply.

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 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.

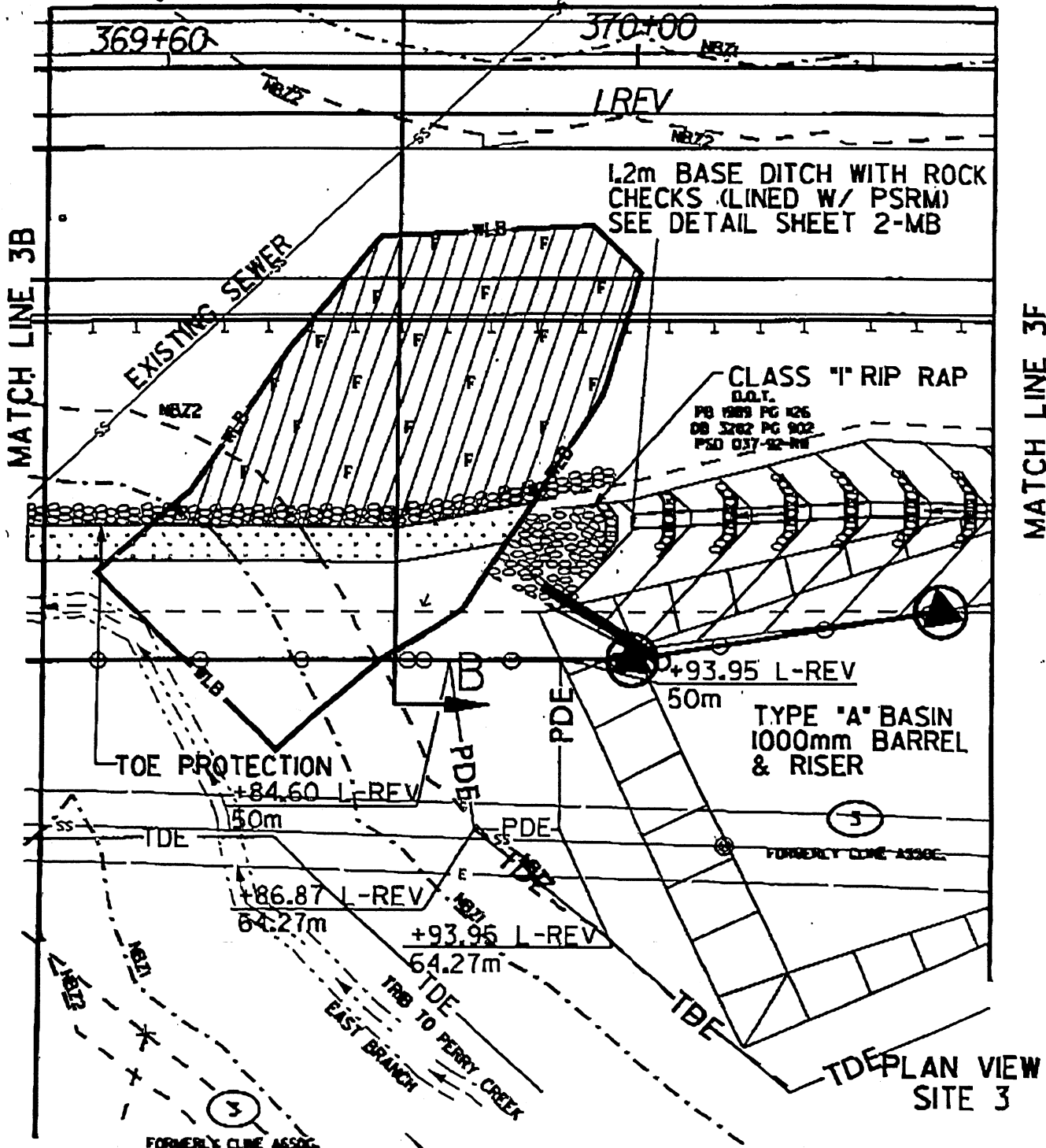
This the 17th day of May 2005
DIVISION OF WATER QUALITY



Alan W. Klimek, P.E.
Director

Modification to WQC No. 3081

MATCH LINE 3D



MATCH LINE 3B

MATCH LINE 3F

TDE PLAN VIEW
SITE 3

LEGEND

- WLB WETLAND
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- NBZ1 NEUSE BUFFER - ZONE 1
- NBZ2 NEUSE BUFFER - ZONE 2



**NORTH CAROLINA
DEPARTMENT OF HIGHWAYS**

WAKE COUNTY
8.U481727 (R-2000F)
NORTH RALEIGH OUTER LOOP

REV.05/10/05

SHEET 12 OF 90

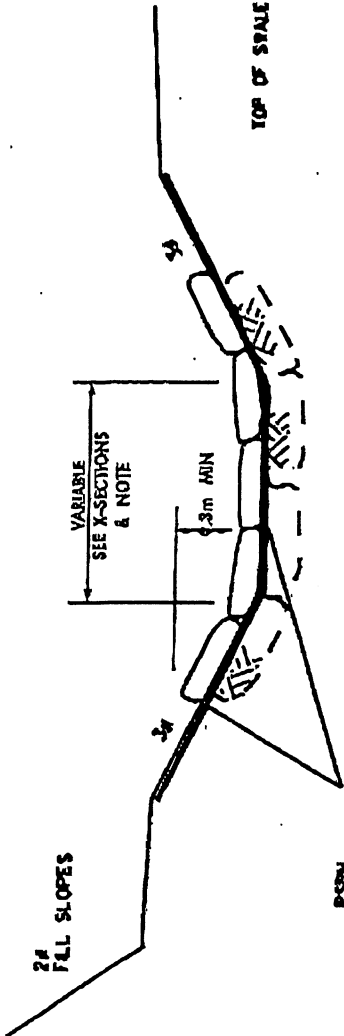
SCALE AS SHOWN

BYTIONS

sheet 2-MB

LATERAL SWALEDITCH W/ROCK CHECKS STA 369+93 TO 370+64 -LREV- RT

#4233 P.004/008



2# FILL SLOPES

VARIABLE
SEE X-SECTIONS
& NOTE

3m MIN

TOP OF SWALE BANK

TOP OF DITCH BANK

PLAN VIEW

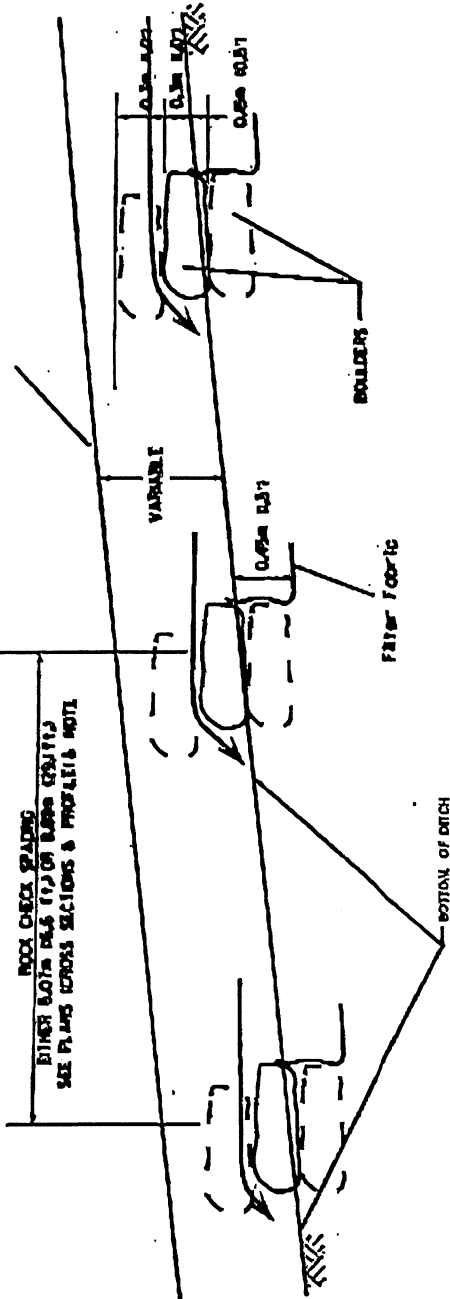
NOT TO SCALE

NOTES:
PSRM OPERUMENT SOL REINFORCEMENT MAT!

TYPICAL CROSS SECTION

NOT TO SCALE

PLEASE UTILIZE CLASS 7' RP RAP W/
FILTER FABRIC IN LUED OF PSRM FROM
STA. 369+98.07 TO THE EDGE OF THE
EXISTING METLAND BOUNDARY WITHIN
R/W LIMITS. SEE PLANS & X-SECTIONS.



ROCK CHECK SPACING
EITHER 0.5m PLUS 1/2 OF BANK CRACKS!
SEE PLANS CROSS SECTIONS & PROFILES NOTE

VARIABLE

0.5m MAX

0.5m MAX

0.5m MAX

0.5m MAX

FILTER FABRIC

BOULDERS

BOTTOM OF DITCH
W/PSRM

PROFILE

NOT TO SCALE

NOTES:

BOULDERS SHOULD BE ANGULAR AND OBLONG WITH
APPROXIMATE DIMENSIONS OF 0.5m x 0.45m x 0.45m
(2' x 1.5' x 1.5'). ROCK SHOULD FIT TIGHTLY TOGETHER
WITH MINORIAL VOIDS.

ROCK CHECK SPACING IS DEPENDENT ON DITCH
GRADES AT 1' DROP INTERVALS.

DITCH WIDTHS VARY, WIDEN TO EXTENT PRACTICAL
WITHIN R/W LIMITS, SEE X-SECTIONS.

USACE RAL RBG

MAY.23'2005 14:50 919 876 5823

R-2000P Wake Co. Affected Buffer Areas

Site #3

Date: 5/11/2005
 Dsn. By: HAH
 Check: RKW

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

| HT. | Structure | Station | Type | Total D.A. | | Required length for treatment | | Actual Length (m) | Channel Slope (m/m) | Side Slopes | Treated Discharge? | Q2 cfs | Q2 vel. fps | Q10 cfs | Q10 vel. fps | Treatment Provided | Remarks |
|-----|-----------|-----------|-------|------------|-----|-------------------------------|------|-------------------|---------------------|-------------|--------------------|--------|-------------|---------|--------------|--------------------|---------|
| | | | | ha | ac | (ft.) | (m.) | | | | | | | | | | |
| 5 | | 13+70 LT | SBG | 2.10 | 5.2 | 518.9 | 158 | 80 | 0.05 | 2 | NO | 22.03 | 4.07 | 30.29 | 4.43 | DDB, LS | |
| 5 | | 364+14 RR | BDOS | 2.82 | 7.0 | 696.8 | 212 | 185 | 0.05 | 2 | NO | 13.15 | 5.61 | 18.08 | 6.10 | DDB, LS | |
| 5 | | 364+14 R | 2GI | 0.27 | 0.7 | 66.7 | 20 | 75 | 0.0082 | 6 | YES | 1.57 | 1.38 | 2.16 | 1.51 | GS, DDB, LS | |
| 5 | | 364+20 M | 2GI | 0.30 | 0.7 | 74.1 | 23 | 100 | 0.0082 | 6 | YES | 2.45 | 1.54 | 3.37 | 1.67 | GS, DDB, LS | |
| 6 | | 365+80 M | 2GI | 0.48 | 1.2 | 118.6 | 36 | 160 | 0.0082 | 6 | YES | 3.92 | 1.74 | 5.38 | 1.87 | GS, DDB, LS | |
| 6 | | 365+80 L | 2GI | 0.21 | 0.5 | 51.9 | 16 | 140 | 0.0082 | 6 | YES | 0.98 | 1.21 | 1.35 | 1.31 | GS, DDB, LS | |
| 6 | | 365+80 RT | 2GI | 0.58 | 1.4 | 143.3 | 44 | 166 | 0.0082 | 6 | YES | 3.38 | 1.67 | 4.65 | 1.80 | GS, DDB, LS | |
| 6 | | 367+41 RR | 2GI/A | 0.48 | 1.2 | 118.6 | 36 | 160 | 0.0082 | 6 | YES | 3.36 | 1.67 | 4.61 | 1.80 | GS, DDB, LS | |
| 6 | | 367+90 RT | SBG | 0.18 | 0.4 | 44.5 | 14 | 0 | 0.0082 | 0 | NO | 1.89 | N/A | 2.60 | N/A | DDB, LS | |
| 6 | SAGR | 367+41 RT | SBG | 0.08 | 0.2 | 19.8 | 6 | 0 | 0.0082 | 0 | NO | 0.84 | N/A | 1.15 | N/A | DDB, LS | |
| 6 | SAGR | 367+41 M | 2GI | 0.40 | 1.0 | 98.8 | 30 | 165 | 0.014 | 6 | NO | 3.26 | 2.03 | 4.49 | 2.20 | DDB, LS | |
| 6 | SAGL | 367+41 M | 2GI | 0.45 | 1.1 | 111.2 | 34 | 160 | 0.0082 | 6 | YES | 3.15 | 1.64 | 4.33 | 1.77 | GS, DDB, LS | |
| 6 | | 367+41 L | SBG | 0.08 | 0.2 | 19.8 | 6 | 0 | 0.0082 | 0 | NO | 0.56 | N/A | 0.77 | N/A | DDB, LS | |
| 6 | | 367+25 L | SBG | 0.01 | 0.0 | 2.5 | 1 | 0 | 0.0082 | 0 | NO | 0.10 | N/A | 0.14 | N/A | DDB, LS | |
| 6 | | 367+20 L | 2GI | 0.21 | 0.5 | 51.9 | 16 | 140 | 0.015 | 6 | YES | 0.98 | 1.54 | 1.35 | 1.67 | GS, DDB, LS | |
| 6 | | 369+10 RT | SBG | 0.15 | 0.4 | 37.1 | 11 | 0 | 0.014 | 0 | NO | 1.57 | N/A | 2.16 | N/A | DDB, LS | |
| 6 | | 369+05 M | 2GI | 0.43 | 1.1 | 106.3 | 32 | 205 | 0.014 | 6 | NO | 3.51 | 2.07 | 4.82 | 2.23 | DDB, LS | |
| 6 | | 368+98 L | SBG | 0.56 | 1.4 | 138.4 | 42 | 0 | 0.014 | 0 | NO | 5.87 | N/A | 8.08 | N/A | DDB, LS | |
| 6 | | 368+80 L | SBG | 0.03 | 0.1 | 7.4 | 2 | 0 | 0.014 | 0 | NO | 0.31 | N/A | 0.43 | N/A | DDB, LS | |
| 6 | | 367+80 L | SBG | 0.14 | 0.3 | 34.6 | 11 | 0 | 0.014 | 0 | NO | 1.47 | N/A | 2.02 | N/A | DDB, LS | |
| 7 | | 371+20 L | 2GI | 0.64 | 1.6 | 158.1 | 48 | 200 | 0.014 | 6 | YES | 4.48 | 1.08 | 6.15 | 1.22 | GS | |
| 7 | | 371+10 M | 2GI | 0.57 | 1.4 | 140.8 | 43 | 270 | 0.014 | 6 | YES | 4.65 | 1.09 | 6.39 | 1.23 | GS | |
| 7 | | 371+00 RT | 2GI | 0.88 | 2.2 | 217.4 | 66 | 290 | 0.0129 | 6 | YES | 5.64 | 1.17 | 7.76 | 1.34 | GS | |

2GI = 2 GRATED INLET
 SBG = SHOULDER BERM GUTTER
 CB = CATCH BASIN
 DDB = DRY DETENTION BASIN
 B = BASIN
 GS = GRASS SWALE
 BDOS = BERM DRAINAGE OUTLET STRUCTURE
 OTCB = OPEN THROAT CATCH BASIN
 OPEN = OPEN END PIPE
 PSH = PRB FORMED SCOUR HOLE
 LS = LEVEL SPREADER

Sheet 80 of 90

7
ALLEN BROTHERS TIMBER CO., INC
08 507 PG 07
PSD 001-95-R/W

END BRIDGE
STA 397+20.285 -L-

BENCH CLASS 10 RIP RAP
Structure Pay Item

TEMPORARY
WOOD BRIDGE

TIMBER MATS

Class A Slope
Placed at TOP
OF TIMBER MATS
WITH FABRIC
SEPARATION

*Note: Installation
of stone will not
exceed location of
timber mats.



PLAN VIEW SITE 8

- LEGEND**
- CLASS A SLOPE WITH FABRIC
 - DENOTES MECHANIZED CLEARING
 - NBZ1 NEUSE BUFFER - ZONE 1
 - NBZ2 NEUSE BUFFER - ZONE 2
 - TIMBER MATS

PROPOSED
STONE WALL
8' - 1.22m (4' 0")
6' - 1.83m (4' 11")
4' - 1.22m (4' 0")

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

WAKE COUNTY

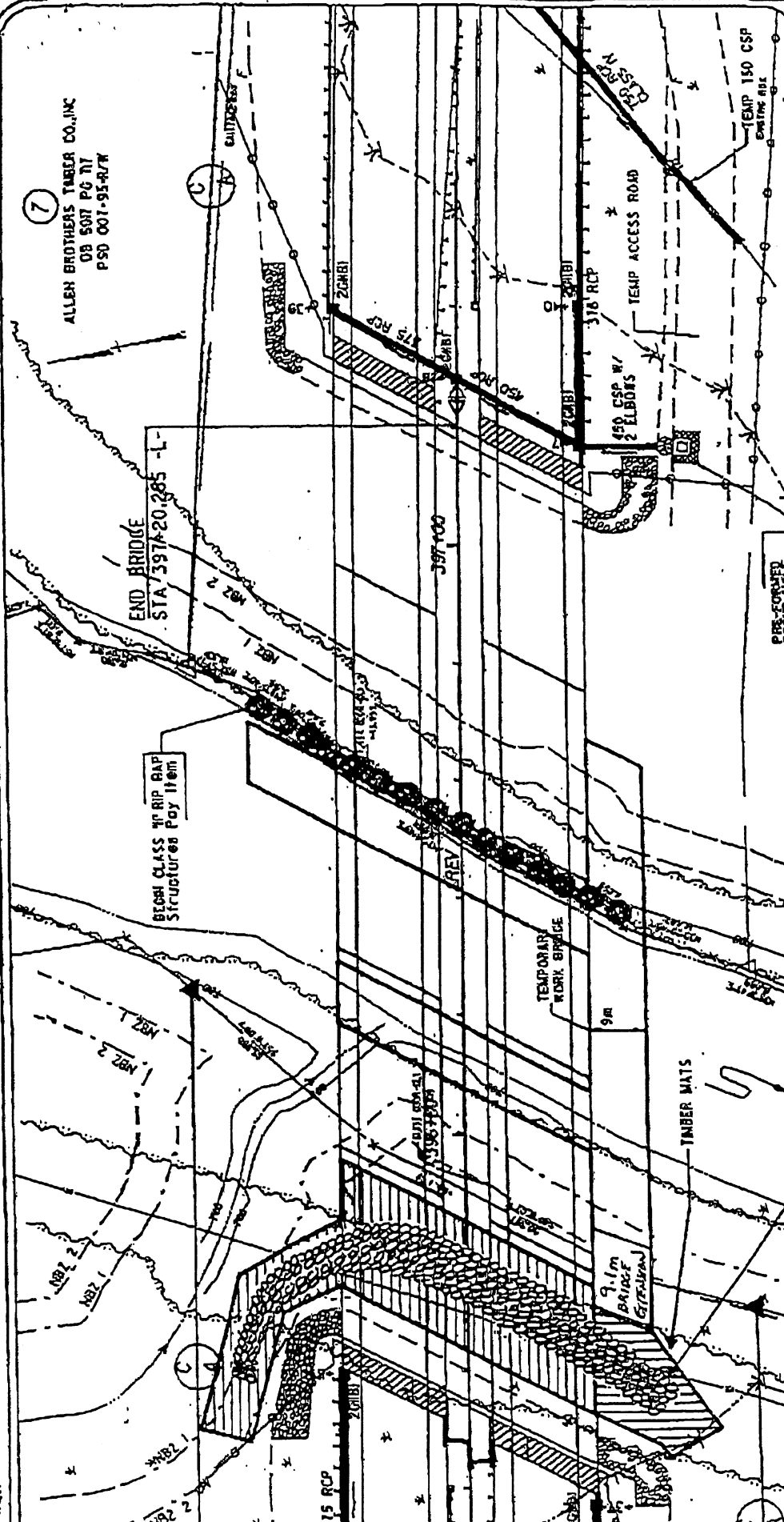
8, U401727 (R-2000F)

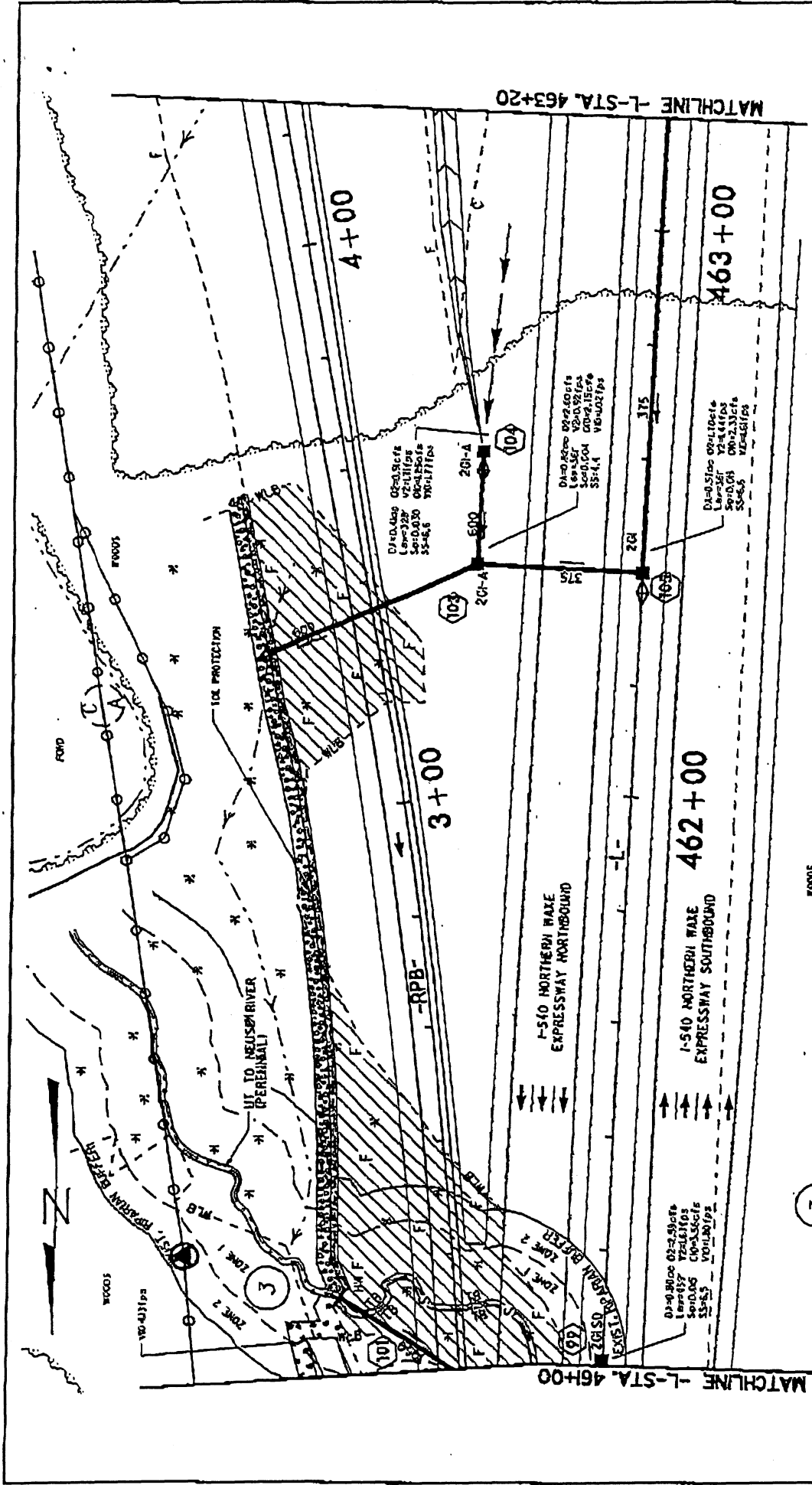
NORTH RALEIGH OUTER LOOP

REV. 5/25/04 Rev. 5/9/05

SHEET 47 OF 70

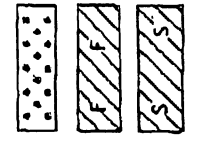
SCALE AS SHOWN



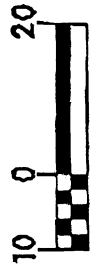


N.C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 WAKE COUNTY
 PROJECT: 8,U401712 (R-2000G)
 I-540 NORTHERN WAKE EXPRESSWAY
 REV 10/29/03
 REV 1/14/04
 REV 04/29/05

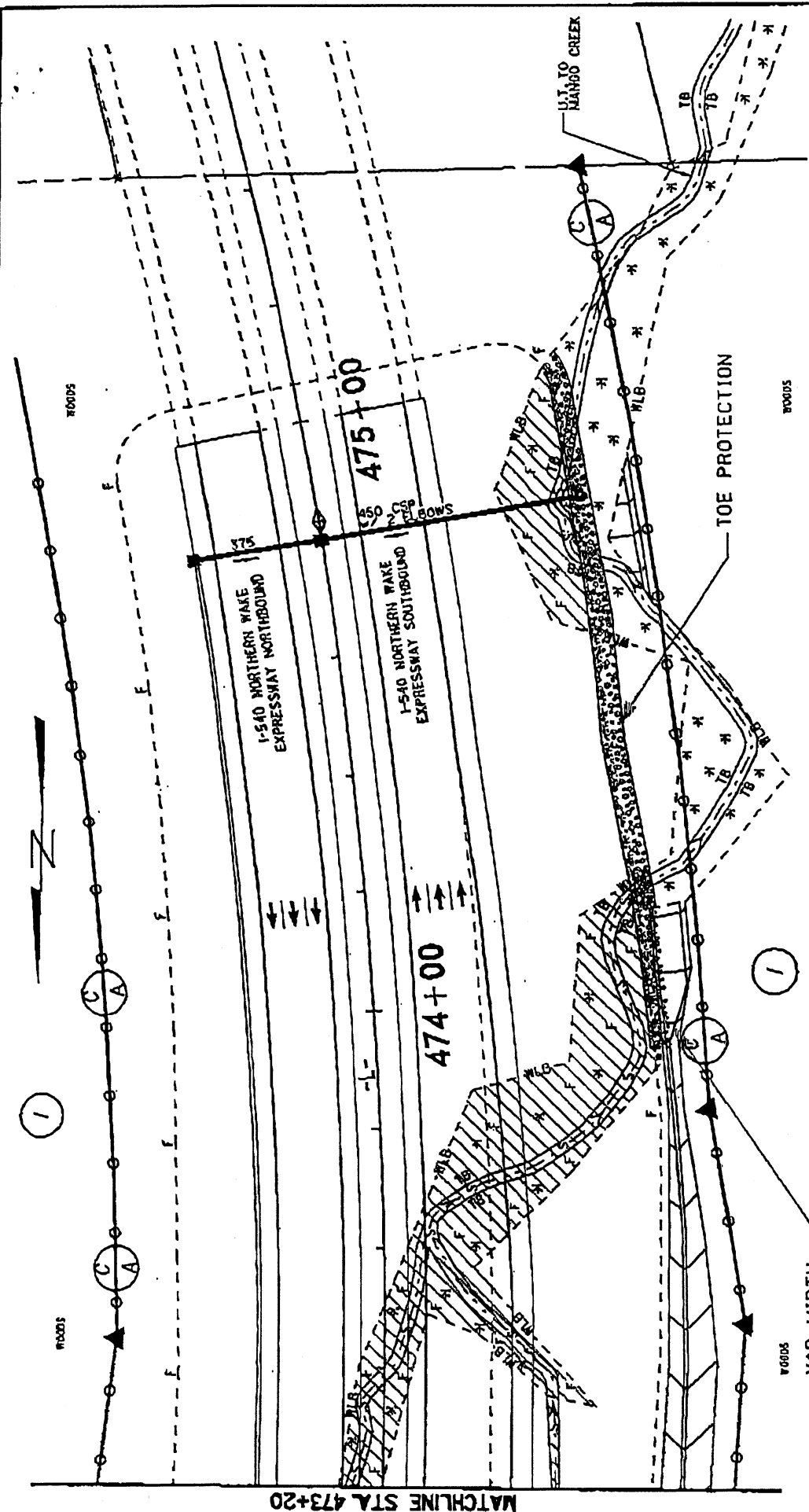
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PLAN VIEW
 SITE 10






3



VAR WIDTH BASE LATERAL DITCH
PLAN VIEW
SITE 14

NOTE: LATERAL BASE DITCH RIGHT OF
 -L- TO BE LINED WITH PERMANENT
 SOIL REINFORCEMENT MATTING (PSRM)



-  DENOTES MECHANIZED CLEARING
-  DENOTES FILL ON WETLANDS
-  DENOTES FILL IN SURFACE WATERS

N.C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS

WAKE COUNTY
 PROJECT: 8.U4D1712 (R-2000G)
 I-540 NORTHERN WAKE EXPRESSWAY
 7/8/05
 REVISED 10/26/04
 REVISED 05/10/05

SHEET 396 OF 50