



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

July 10, 2008

MEMORANDUM TO: Mr. J. Wally Bowman , PE
Division Five Engineer

FROM: Philip S. Harris, III, P.E., Unit Head *E. P. Harris*
Natural Environment Unit
Project Development and Environmental Analysis Branch

SUBJECT: Wake County, Davis Drive (SR 1613/SR 1999) from
Morrisville-Carpenter Road (SR 3014) in Wake County to
NC 54 in Durham County; T.I.P. Number U-4026; State
Project 9.8051713

Attached are the modifications to the U.S. Army Corps of Engineers Section 404 Individual Permit and the N.C. Division of Water Quality Section 401 Individual Water Quality Certification for the above referenced project. All environmental permits have been received for the construction of this project.

PSH/gyb

Attachment

Cc:

Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Jay Bennett, P.E., Roadway Design
Dr. David Chang, P.E., Hydraulics
Mr. Randy Garris, P.E. State Contract Officer
Mr. Art McMillan, P.E., Highway Design
Mr. Greg Perfetti, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. John F. Sullivan, FHWA
Ms. Beth Harmon, EEP
Mr. Eric Midkiff, P.E., PDEA Central Region Unit Head
Mr. Chris Murray, Division Environmental Officer

The Design Services Unit indicated the pedestrian crossings at McCrimmons Parkway and Parkside Valley Drive, requested by the Town of Morrisville, would be considered during final design if the crossings will connect to existing pedestrian accommodations.

Bus System Accommodations

Design Services Unit

Provisions for bus queue-jumper lanes and/or bus bay pull-outs will be provided at ten locations. These ten locations are in general agreement with the request made by the Triangle Transit Authority in their February 13, 2001 letter included in Appendix B (see Section 3.16 of the CE).

The Design Services Unit stated the bus system accommodations as described in the CE are included in the design for the project.

Additional Intersections Capacity Analysis

Traffic Engineering and Safety Systems Branch, Design Services Unit and PDEA Branch

All major driveways and intersecting roadways (including the five major intersections discussed in Section 2.3 of the CE and Parkside Valley Drive/Summer Sky Drive, the entrance to Delta Products and Biogen, Development Drive, and Park Knoll Road) will be analyzed using the Synchro/Sim Traffic software to establish a signal timing plan for the proposed project and to establish queue lengths for all turn lanes for the 95th percentile traffic volumes.

The Design Services Unit stated the major driveways and intersecting roadways listed above have been analyzed using Synchro/Sim Traffic software and that additional turn lanes at some intersections will be provided.

Hazardous Materials

Design Services Unit, Geotechnical Unit and Right of Way Branch

No hazardous waste problematic sites (underground storage tanks, regulated or unregulated landfills or dumpsites, or superfund sites) were identified along the project. If during the final design of the project any sites are discovered, preliminary site assessments will be performed as soon as possible so that the degree and extent of contamination can be assessed prior to right of way acquisition.

incorporated into the project as proposed. The Town of Cary has requested that sidewalks not be constructed along the section of Davis Drive from Morrisville-Carpenter Road north to Koppers Road/McCrimmons Parkway as a part of this project. Any existing sidewalks that are disturbed because of the project construction in this section of Davis Drive will not be replaced. Sidewalks are not proposed on the remaining sections of the Davis Drive project.

RTP has plans for a greenway (eight-foot [2.4-meters] wide off-road asphalt trail) on the west side of Davis Drive from RTP's boundary just south of George Watts Hill Drive north to RTP's boundary in the vicinity of the five-lane curb and gutter section south of Hopson Road. Portions of this greenway are already built. RTP plans to tie their greenway to the existing sidewalk along Davis Drive at the Keystone Development near Hopson Road. The RTP has a greenway on the west side of Davis Drive from NCD 54 south to the entrance to Northern Telecom. The RTP would like to extend this greenway south to Hopson Road but does not own the property in the area. Durham County may participate in the funding of this greenway section and will be contacted.

The Town of Morrisville has requested a multiuse asphalt trail along Davis Drive in their jurisdiction similar to the one in RTP. The Town of Morrisville will have to participate in 20 percent of the construction cost and 100 percent of any additional right of way cost necessary to contain any new sections of multiuse trail, and they must commit to all future maintenance costs. The Town of Morrisville has also requested pedestrian crossing at McCrimmons Parkway and Parkside Valley Drive. The locations of the multiuse trails along the project and pedestrian crossing will be designated during the final design phase of the project. An agreement that outlines the cost sharing and maintenance responsibilities for proposed multiuse trails will be required between NCDOT and the involved jurisdictions.

On June 10, 2002, letters were sent to the Town of Morrisville, the Town of Cary, Durham County and the Research Triangle Foundation with the approximate location and cost estimates for the above-mentioned pedestrian accommodations along the project. The Town of Cary responded in a June 14, 2002 letter indicating they are not interested in including pedestrian accommodations along the section of Davis Drive in Cary as part of this project. The Research Triangle Foundation responded in a September 26, 2002 letter requesting the multi-use trail along the west side of Davis Drive from Hopson Road to the existing trail at Nortel's entrance be included in this project; and they will participate in the cost for this section of the trail. The Research Triangle Foundation will donate the needed right of way along the frontage of the property it owns for the trail. The Town of Morrisville did not respond to the June 10, 2002 letter.

The Design Services Unit stated they will include the section of multi-use trail along the west side of Davis Drive from Hopson Road to the existing trail at Nortel's entrance as part of the project.

Neuse River Basin and associated with the project are shown on the USDA-SCS soil maps or shown as blue streams on the USGS Quad map; therefore, the buffer requirements do not apply. The project is outside the water protection area for Jordan Lake; therefore, hazardous spill basins will not be required for this project.

Other Special Commitments

Design Services Unit

Coordination with the Research Triangle Park (RTP) will be conducted to determine the status of the South Loop Road and whether a median cut with turn lanes should be included with this project.

The Design Services Unit stated there will be a break in the median at South Loop Road.

Design Services Unit, Hydraulics Unit and Highway Division 5

Coordination with TIP Project R-2000AB will be necessary since mitigation for System 6 is included in the R-2000AB project.

The Design Services Unit stated they are coordinating the efforts for this project with Roadway Design and Hydraulics and their efforts on the R-2000AB project.

R-2000AB is currently under construction (June 2006). Compensatory mitigation for impacts to 98 linear feet of stream was included as part of the permitting of R02000AB.

Bicycle Accommodations

Design Services Unit and Highway Division 5

The proposed cross sections will provide 14-foot (4.2 meter) outside through travel lanes to accommodate bicycles. The proposed cross sections are described in Section 3.3 and shown in Figures 3A-3C of the CE. The existing five-lane curb and gutter section from south of Hopson Road to just north of Hopson Road already has 14-foot (4.2 meter) outside through travel lanes to accommodate bicycles and will be retained.

The Design Service Unit stated the bicycle accommodations as described in the CE are included in the design for the project.

Sidewalk and Greenway Accommodations

PDEA Branch, Design Services Unit and Program Development Branch

According to NCDOT's Pedestrian Policy Guidelines, NCDOT will replace any existing sidewalk disturbed during project construction and participate in the funding of any new sidewalks provided the sidewalk is adjacent to the improvement project and can be

Onsite Compensatory Mitigation for Streams

NCDOT will relocate 261 linear feet of stream to fulfill onsite compensatory mitigation in accordance with the October 24, 2005 application. Stream relocations will have 50-foot wooded buffers planted on both sides of the stream.

PDEA Branch, Design Services Unit, Hydraulics Unit

The NCDOT will coordinate with the US Army Corps of Engineers (COE), US Fish and Wildlife Service (USFWS), Division of Water Quality (DWQ), and Wildlife Resources Commission (WRC) on stream restorations, relocations, and minimization. The NCDOT commits to (1) site 3A – not clearing the area adjacent to the stream and will indicate on the final design plans as an environmentally sensitive area; (2) site 12 – reconfigure this intermittent stream and plant stream banks with appropriate species where impacted by road widening, and (3) site 15 – investigate the possibility of moving the stream out of the fill slope for minimization and restoration of stream outside of fill for mitigation (see Figure 2 in the CE for site locations).

Site 3A

NCDOT commitment for avoidance of clearing in the adjacent area and denoting the area as environmentally sensitive was rescinded during the Concurrence Point 4B meeting. After a field review of the site by the Merger Team, WRC determined this commitment was not necessary.

Site 12

The design plans denote this area as Site 6 (Sheet 20). The original commitment has been superseded based on a field review by the Merger Team. The channel will be reconfigured per original commitment; however, the banks will be stabilized with Class B rip-rap. The design plans were reviewed during Concurrence Points 4B and 4C, and the project has been permitted with Class B rip-rap.

Site 15

The design plans denote this area as Site 9. The plans include stream relocation and mitigation per the original commitment.

Hydraulics Unit

Runoff from the proposed curb and gutter section will be treated in a reasonable and feasible fashion before directly entering streams.

The northern portion of the project is located within the Cape Fear River Basin. This basin has no established buffer requirements. The southern portion is located within the Neuse River Basin which does have buffer requirements. None of the creeks within the

Right of Way Branch

Hazardous waste sites or unrecorded Underground Storage Tanks (USTs) discovered during construction phase of the project will be assessed and remedied in accordance with the Environmental Protection Agency (EPA), the NC Department of Environment and Natural Resources, and local policies regarding cleanup procedures.

Highway Division 5 and Geotechnical Unit

The NCDOT and its contractors will not excavate, fill, or perform land clearing activities within Waters of the United States or any areas under the jurisdiction of the US Army Corps of Engineers (COE), except as authorized by the COE. To ensure that all borrow and waste activities occur on high ground, except as authorized by permit, the NCDOT shall require its contractors to identify all areas to be used to borrow material, or to dispose of dredged, fill, or waste material. Documentation of the location and characteristics of all borrow and disposal sites associated with the project will be available to the COE on request.

Special Environmental Commitments

PDEA Branch

The NCDOT will purchase any required wetland and stream mitigation from the North Carolina Department of Environment and Natural Resources' Wetland Restoration Program (WRP).

Offsite Compensatory Mitigation for Wetlands

NCDOT will provide compensatory mitigation for impacts to 0.22 acres of riverine wetlands through the Ecosystem Enhancement Program (EEP) as outlined in the letter dated October 3, 2005, and in accordance with the Memorandum of Agreement (MOA) between the State of North Carolina and the US Army Corps of Engineers signed on July 22, 2003.

Offsite Compensatory Mitigation for Streams

NCDOT will provide compensatory mitigation for 987 linear feet of stream applying a replacement ratio of 2:1 for a total of 1,974 linear feet of streams. This will be provided through the Ecosystem Enhancement Program (EEP) as outlined in the letter dated October 3, 2005, and in accordance with the Memorandum of Agreement (MOA) between the State of North Carolina and the US Army Corps of Engineers signed on July 22, 2003.

PROJECT COMMITMENTS

Davis Drive (SR 1613/SR 1999)
from Morrisville-Carpenter Road (SR 3014) in Wake County
to NC 54 in Durham County
State Project No. 9.8051713
TIP Project No. U-4026

LIST OF STANDARD AND SPECIAL ENVIRONMENTAL COMMITMENTS

All standard procedures and measures, including North Carolina Department of Transportation's (NCDOT) Best Management Practices for Protection of Surface Waters will be implemented, as applicable, to avoid or minimize environmental impacts.

Additional Special Project Commitments were identified in the Categorical Exclusion for this project; these commitments are listed below, along with their current status, changes, or additions to the list of commitments.

Please note that additional project commitments may be derived from the permitting process and are not listed in this consultation.

Standard Environmental Commitments

Project Development and Environmental Analysis Branch, Design Services Unit and Hydraulics Unit

Wetland impacts will be further minimized during the development of the roadway design plans during the final phase of the project, where practicable.

Highway Division 5

Geodetic control monuments impacted by the project will be relocated in consultation with the US Department of Commerce and National Geodetic Survey. The cost of relocating any impacted monument will be included in funding for the project.

Hydraulics Unit

NCDOT will minimize water quality impacts through the use of NCDOT "Best Management Practices (BMPs) for Protection of Surface Waters" (1991).

The Federal Emergency Management Agency (FEMA) will be contacted during final design to approve any floodway modifications required by construction of the proposed project.

Anticipated Design Exceptions

Design Services Unit

No design exceptions are anticipated as a part of the project. If during the final design process, any design exceptions are determined to be necessary, they will be addressed in accordance with the FHWA-NCDOT Design Exception Policy.

Individual Permit Conditions

Standard conditions are contained in the permit

No additional conditions are contained in the permit modification.



DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS

P.O. BOX 1890
WILMINGTON, NORTH CAROLINA 28402-1890

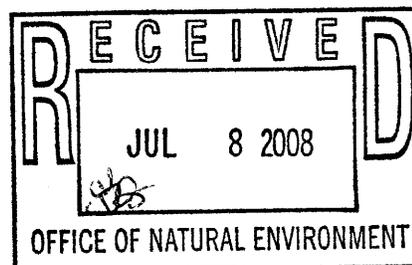
July 8, 2008

IN REPLY REFER TO

Regulatory Division

SUBJECT: Action ID 2008-02065; TIP No. U-4026

Gregory J. Thorpe, Ph.D.
Environmental Management Director, PDEA
N.C. Department of Transportation
1598 Mail Service Center
Raleigh, NC 27699-1598



Dear Dr. Thorpe:

Reference the Department of the Army (DA) permit issued on May 18, 2006, to authorize the discharge of fill material into the waters of United States, for construction of improvements to Davis Drive (SR1613/SR 1999; T.I.P. No. U-4026), crossing unnamed tributaries to Kit Creek and Burdens Creek, and adjacent wetlands, from Morrisville-Carpenter Road (SR 3014) in Wake County, to NC 54 in Durham County, North Carolina. Reference also your May 14, 2008 letter requesting modification of the permit to authorize the addition of riprap at Permit Site 4, and additional work within the permit footprint. The modification at Site 4 impacts an additional 0.01 acre (15 linear feet) of stream with placement of riprap on both banks. You also noted design modifications for several other sites that will not result in additional Section 404 impacts.

We have reviewed the proposed modifications, and determined that they are minor, that an additional public notice or compensatory mitigation will not be necessary, and that the extension request is reasonable. Therefore, the permit is hereby modified to include the work as shown on the enclosed revised permit sheets 5, 10, 16, 30, and 38 of 65. It is understood that all other conditions of the permit, including the permit expiration date of December 31, 2011, remain applicable.

If you have questions, please contact Eric Alsmeyer of the Raleigh Regulatory Field Office, at telephone (919) 554-4884, extension 23.

Sincerely,

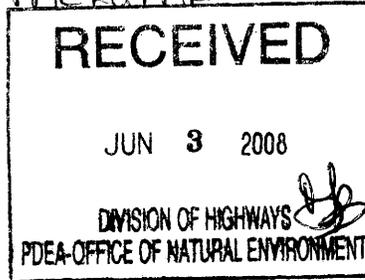
for John E. Pulliam, Jr.
Colonel, U.S. Army
District Commander

Enclosure



Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Coleen Sullins, Director
Division of Water Quality



May 29, 2008

Dr. Greg Thorpe, PhD., Manager
Planning and Environmental Branch
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina, 27699-1598

Subject: Modification to the 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with ADDITIONAL CONDITIONS for Proposed widening of SR 1613/SR 1999 in Wake and Durham Counties, State Project No. 98051713, TIP No. U-4026, DWQ Project No. 20051972 ver.3

Dear Dr. Thorpe:

Attached hereto is a modification of Certification No. 3557 issued to The North Carolina Department of Transportation dated January 26, 2006. 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 January 26, 2006 and subsequent modifications still apply except where superceded by this certification.

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

Sincerely,

Coleen Sullins,
Director

Attachment

cc: Eric Alsmeyer, US Army Corps of Engineers, Raleigh Field Office
Chris Murray, Division 5 Environmental Officer
Travis Wilson, NC Wildlife Resources Commission
Sara Easterly, NCDOT PDEA
File Copy



**Modification to the 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act
with ADDITIONAL CONDITIONS**

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 .0500. This certification modifications authorizes the NCDOT to impact an additional 15 linear feet of jurisdictional streams Wake and Durham Counties. The project shall be constructed pursuant to the modification dated received May 20, 2008. The additional authorized impacts are as described below:

New Stream Impacts in the Cape Fear River Basin

Site	Rip Rap to Perennial Stream (linear ft)	Total Stream Impact (linear ft)
4	15	15
Total	15	15

Total Additional Stream Impact for Project: 15 linear feet

The application provides adequate assurance that the discharge 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 modified application dated received May 20, 2008. All the authorized activities and conditions of certification associated with the original Water Quality Certification dated January 26, 2006 still apply except where superceded by this certification. 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 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 on the same day as the expiration date of the corresponding Corps of Engineers Permit.

Conditions of Certification:

1. All other conditions written into previous Water Quality Certifications and modifications for this project still apply.
2. The use of rip-rap above the Normal High Water Mark shall be minimized. Any rip-rap placed for stream stabilization shall be placed in stream channels in such a manner that it does not impede aquatic life passage.

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, 6714 Mail Service Center, Raleigh, N.C. 27699-6714. 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 29th day of May 2008

DIVISION OF WATER QUALITY

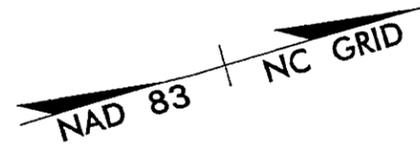
Coleen Sullins
Director

WQC No. 3557

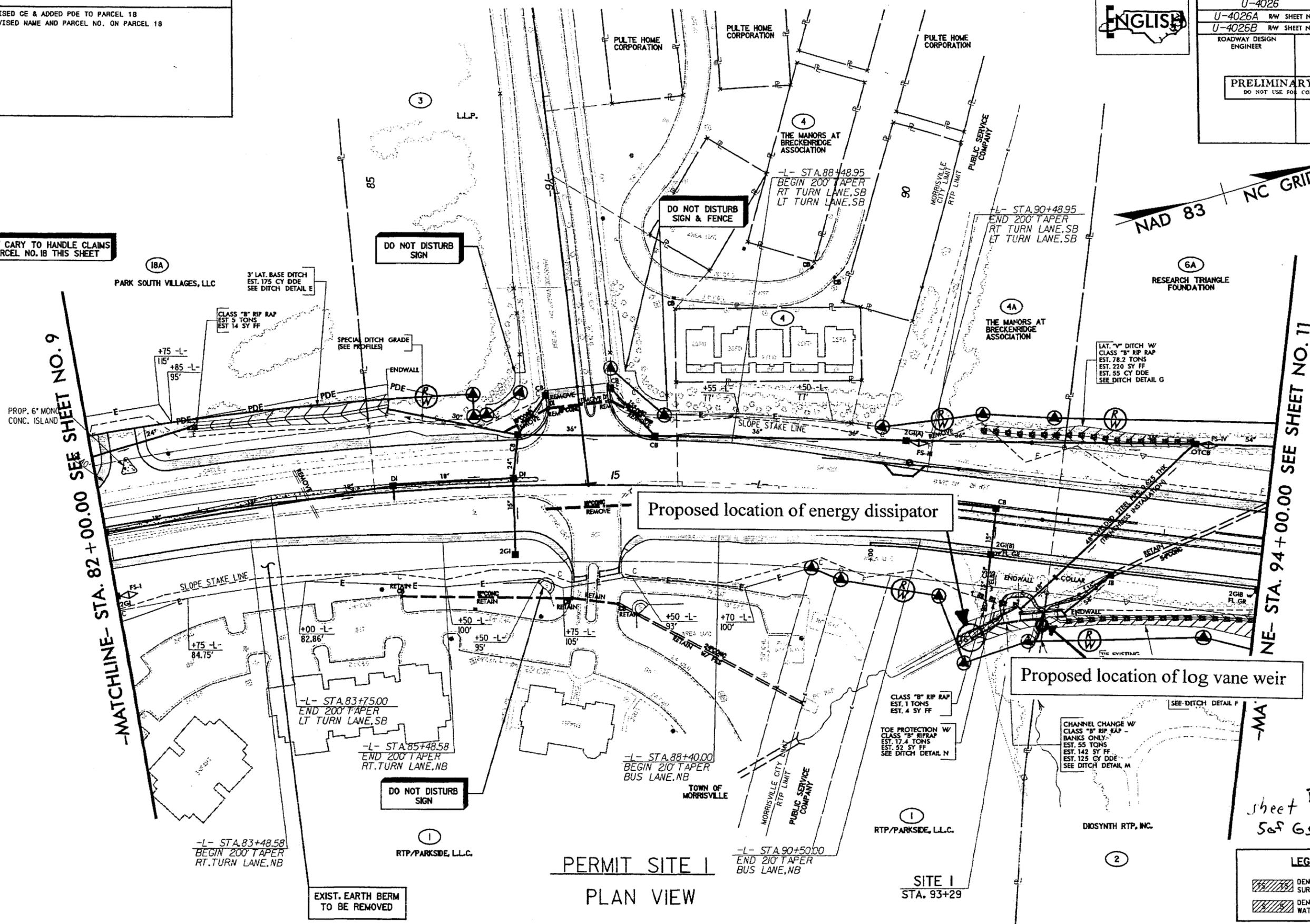
REVISIONS

7/18/03 REVISED CE & ADDED PDE TO PARCEL 18
 10/04/04 REVISED NAME AND PARCEL NO. ON PARCEL 18

PROJECT REFERENCE NO.	SHEET NO.
U-4026	10
U-4026A RW SHEET NO.	10
U-4026B RW SHEET NO.	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



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



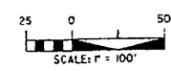
PERMIT SITE I
 PLAN VIEW

SITE I
 STA. 93+29

LEGEND

	DENOTES TEMPORARY SURFACE WATER LOSS
	DENOTES SURFACE WATER LOSS

sheet Rev. 4/1/08
 S&G 65



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

3/27/2005
 P:\1\4026-KO\N\dr\Permit\10.dgn\Permit\10.dgn - permit_10.dgn
 No. 2 Association, P.C.

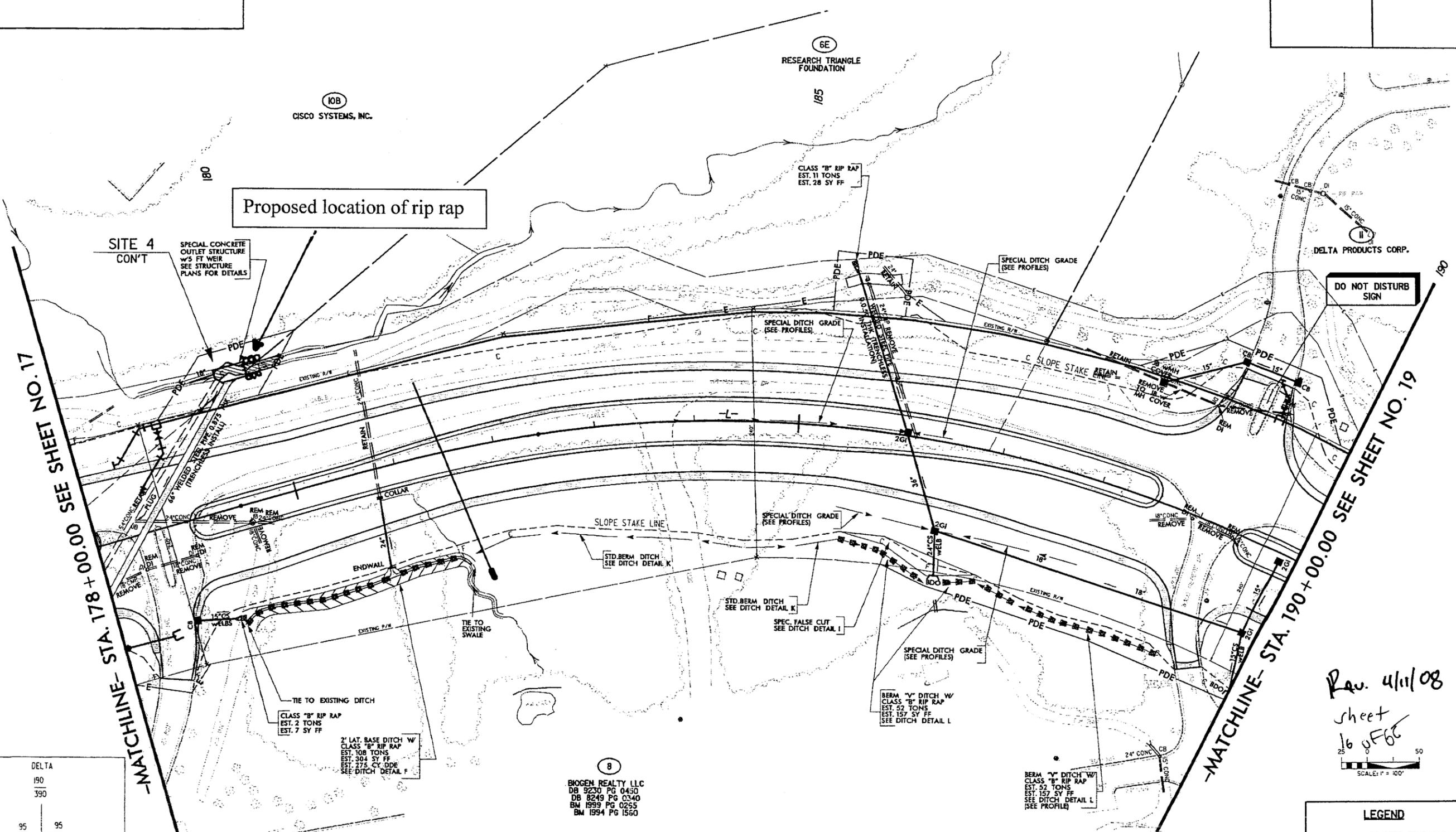
7/12/99
 3/27/03
 U-4026, ko & Associates, P.C.

REVISIONS

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



PROJECT REFERENCE NO. U-4026	SHEET NO. 18
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



DELTA		190		390	
21950	-L-	95	195	22245	
40950	DAVIS DRIVE	190	485	41345	
		390	785		
2004 ADT		675		2024 ADT	
2024 ADT		175			
WALLY GILBERT DRIVE					
PROJECTED TRAFFIC VOLUMES					

8
 BIOGEN REALTY LLC
 DB 9230 PG 0450
 DB 8249 PG 0340
 BM 1999 PG 0255
 BM 1994 PG 1560

Rev. 4/11/08
 sheet
 16 of 66
 SCALE: 1" = 100'

LEGEND

	DENOTES TEMPORARY SURFACE WATER LOSS
	DENOTES SURFACE WATER LOSS

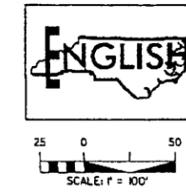
PERMIT SITE 4
PLAN VIEW

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

REVISIONS

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

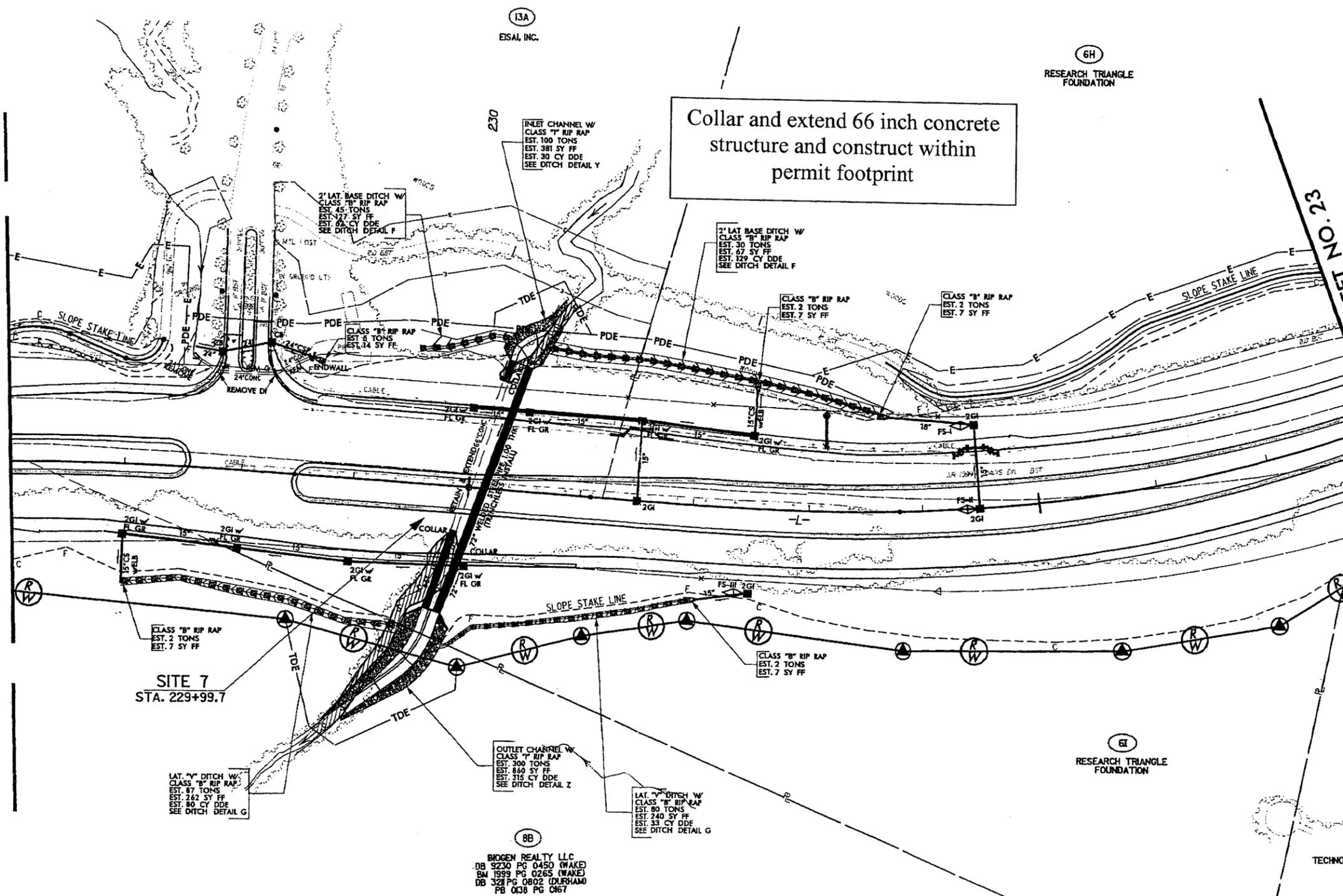
PROJECT REFERENCE NO. U-4026	SHEET NO. 22
U-4026B RW SHEET NO. 17	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



-MATCHLINE- STA. 226+00.00 SEE SHEET NO. 21

-MATCHLINE- STA. 232+00.00 SEE SHEET NO. 23

Collar and extend 66 inch concrete structure and construct within permit footprint



SITE 7
STA. 229+99.7

PERMIT SITE 7
PLAN VIEW

LEGEND DENOTES SURFACE WATER LOSS

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

3/23/2005
 P:\YIP\U-4026-ko\Hydr-e\Dgn\Permits\U4026-permit-22.dgn
 P.C. & Associates, P.C.

Rev 4/11/08
 TECHNOLOGY VI-IX, LLC sheet 20-65

BB
 BIOGEN REALTY LLC
 DB 9230 PG 0450 (WAKE)
 BM 1999 PG 0265 (WAKE)
 DB 321 PG 0802 (DURHAM)
 PB 0038 PG 0167

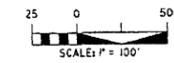
REVISIONS

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

PROJECT REFERENCE NO. U-4026	SHEET NO. 26
U-4026B RW SHEET NO. 21	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

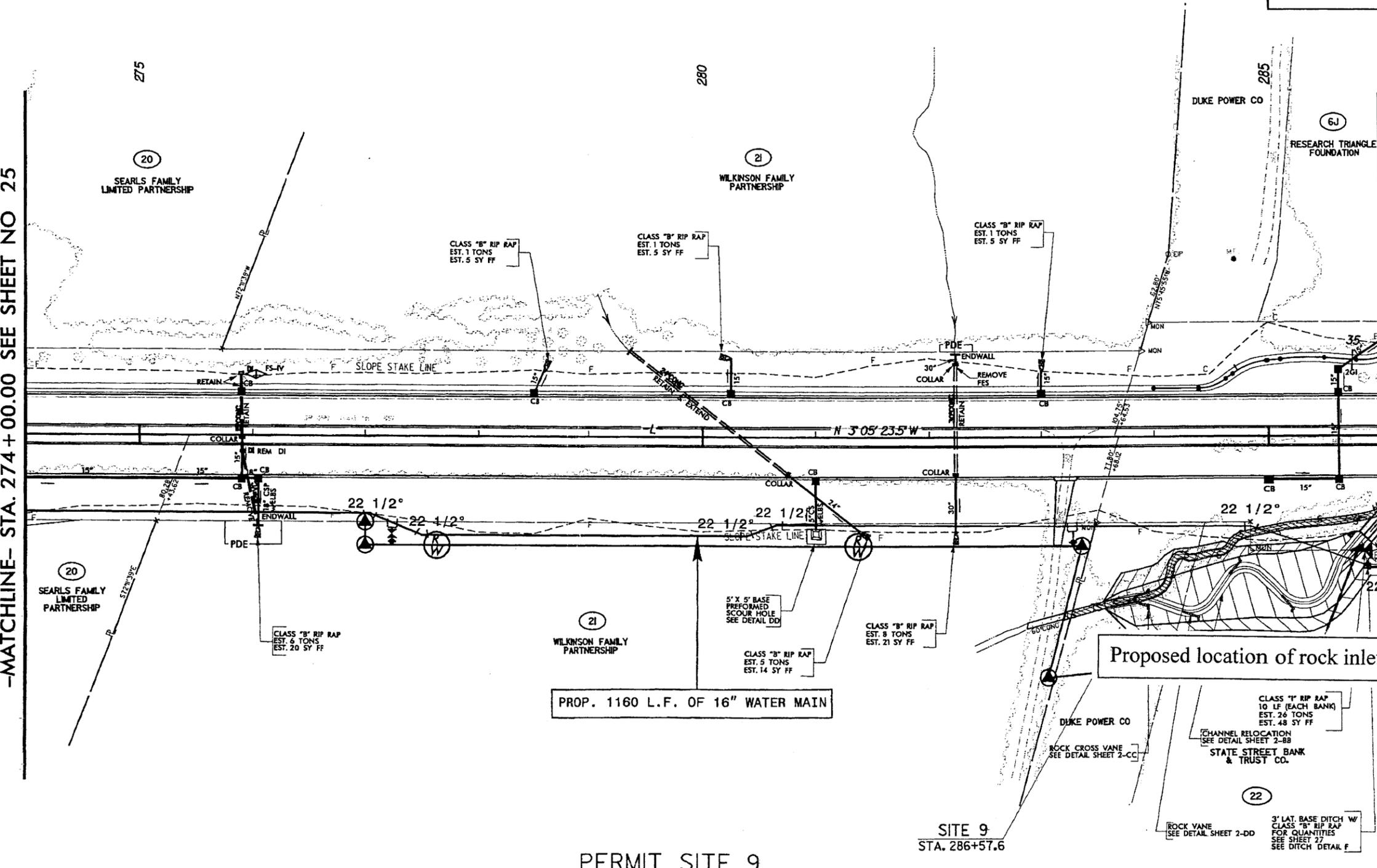


NAD 83 | NC GRID



-MATCHLINE- STA. 274+00.00 SEE SHEET NO 25

-MATCHLINE- STA. 286+00.00 SEE SHEET NO. 27



PROP. 1160 L.F. OF 16" WATER MAIN

Proposed location of rock inlet sill

PERMIT SITE 9
PLAN VIEW

SITE 9
STA. 286+57.6

Rev. 4/11/08

sheet 37 of 65

LEGEND

	DENOTES TEMPORARY SURFACE WATER LOSS
	DENOTES SURFACE WATER LOSS

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

3/22/2005
F:\Projects\4026\ko\high\orig\Permits\U4026\perm1_26.dgn
K & Associates, P.C.

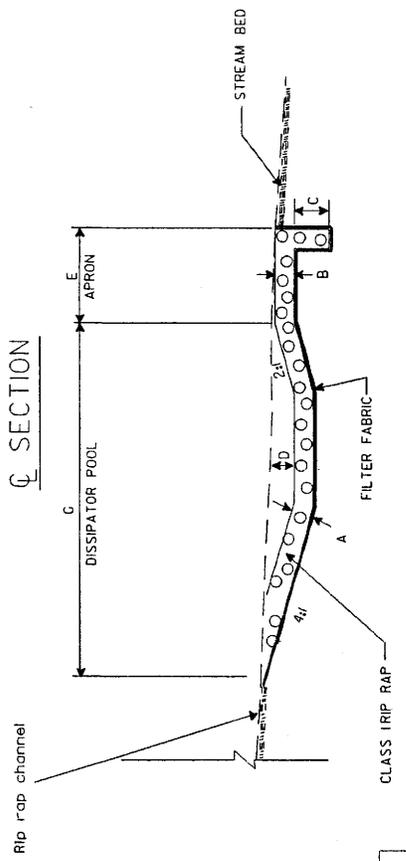
PROJECT REFERENCE NO. _____ SHEET NO. _____

ROADWAY DESIGN ENGINEER _____ HYDRAULICS ENGINEER _____

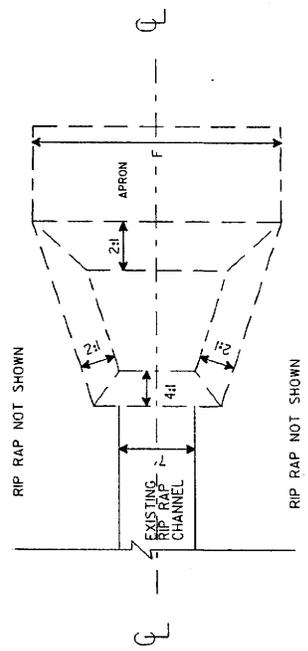
CONST. REV. _____ P/W REV. _____

METRIX

Q SECTION



HALF PLAN



DIM.	RIP RAP	BASIN #
A	2	
B	2	
C	2	
D	2	
E	4	
F	12	
G	28	

ALL DIMENSIONS APPROXIMATE
AND ORIGINATE FROM NCDOT ROW
•NO CONSTRUCTION IMPACTS >32 FT FROM ROW•

BASIN #	LOCATION (AT OUTLET)
1	Sta 91+00 -L- (RT)

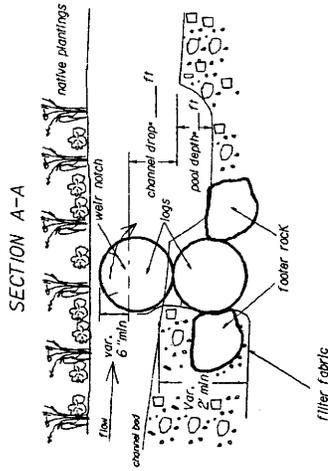
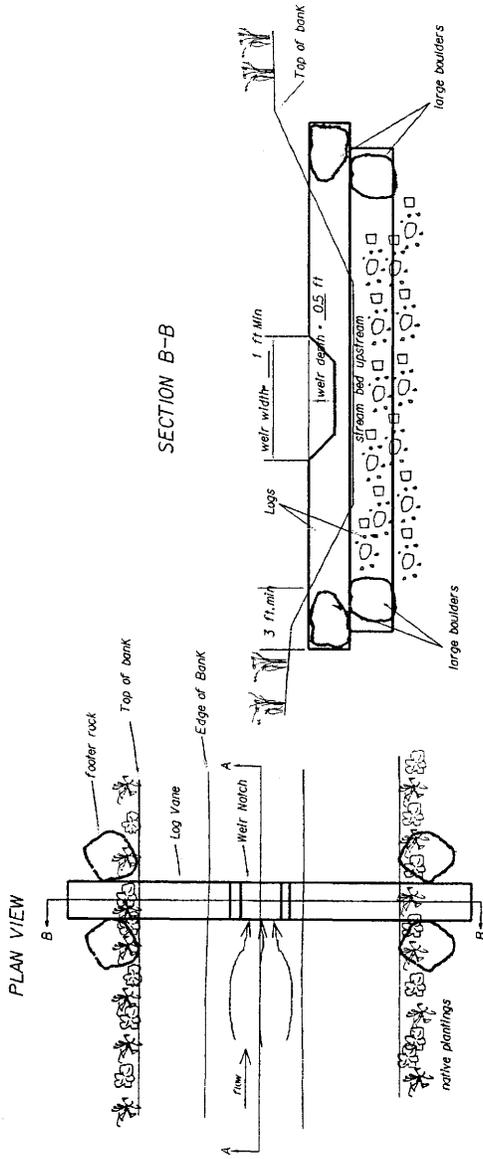
Quantities:
 90 Tons Class I Rip Rap
 80 Sq Yds FF
 40 Cu Yds Excav

DETAIL OF RIP-RAPPED OUTLET ENERGY DISSIPATOR BASIN

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

LOG VANE WEIR DETAIL

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
STATE PROJECT NO.	F. A. PROJ. NO.	DESCRIPTION
DATE		
DRAWN BY		
CHECKED BY		



NOTE:

Boulders should be native or locally shot rock, angular and oblong, preferably with flat sides with approximate dimensions of 2 ft x 1.5 ft x 1.5 ft. Large boulders should have approximate dimensions of 3 ft x 2 ft x 2 ft.

Rock should fit tightly with minimal spaces/voids.

Logs should have min diameter of 10".

Backfill behind vanes with ABC or larger stone to existing bed elevation just upstream.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR P.A. OR BIDDING