STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

September 17, 2008

U. S. Army Corps of Engineers
Regional Field Office
3331 Heritage Trace Drive, Suite 105
Wake Forest, NC 27587

ATTN: Mr. Andy Williams
NCDOT Coordinator, Division 7

Subject: **Application for Section 404 Nationwide Permit 33** for the proposed widening of NC 86 (South Columbia Street) from SR 1906 (Purefoy Road) to SR 1902 (Manning Drive) in Orange County, Federal Aid Project No. STP-86(2); WBS No. 34762.1.1; State Project No. 8.1501801; Division 7; TIP No. U-0624

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to widen NC 86 (South Columbia Street) from SR 1906 (Purefoy Road) to SR 1902 (Manning Drive) in Chapel Hill. There will be 10 feet of temporary surface water impacts to an unnamed tributary to Morgan Creek. These impacts are for temporary stream access for bank stabilization. The bank stabilization will occur in a non-jurisdictional channel section upstream of the access reach, which is jurisdictional.

Please see the enclosed copies of the permit drawings, design plans, and Pre-Construction Notification (PCN) for the above-referenced project. The Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) were completed for this project in December 2005 and April 2007, respectively, and were distributed shortly thereafter. Additional copies are available upon request.

The Jurisdictional Determination (JD) for U-0624 was never requested to the U.S. Army Corps of Engineers (USACE) due to no jurisdictional features being located in the original study area. Upon request of the USACE and the North Carolina Division of Water Quality (NCDWQ), the stream that will be temporarily impacted will be evaluated during the permitting process. Attached are the USACE stream quality assessment form, NCDWQ stream identification form, and photograph copies of the impacted stream.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

TELEPHONE: 919-715-1334
FAX: 919-715-5501
WEBSITE: WWW.NCDOT.ORG

LOCATION:
2728 CAPITAL BLVD.
SUITE 240
RALEIGH NC 27604

This project calls for a letting date of July 21, 2009 and a review date of June 2, 2009. A copy of this permit application will be posted on the NCDOT Website at: http://www.ncdot.org/doh/preconstruct/pe/. If you have any questions or need additional information, please call Greg Price at (919) 715-5533.

Sincerely,

E. L. Luck

for Gregory J. Thorpe, Ph.D.
Environmental Management Director, PDEA

w/attachment
Mr. Brian Wrenn, NCDWQ (2 Copies)
w/o attachment (see permits website for attachments)
Dr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. Victor Barbour, P.E., Project Services Unit
Mr. Mark Staley, Roadside Environmental
Mr. J. M. Mills, P.E., Division 7 Engineer
Mr. Jerry Parker, Division 7 Environmental Officer
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Ms. Lisa Feller, PDEA Project Planning Engineer
Mr. Scott McLendon, USACE, Wilmington
Mr. Gary Jordan, USFWS
Mr. Travis Wilson, NCWRC

Office Use Only: Form Version March 05

USACE Action ID No. _____ **DWQ No.** _____

(If any particular item is not applicable to this project, please enter "Not Applicable" or "N/A".)

I. Processing

1. Check all of the approval(s) requested for this project:
   - ☒ Section 404 Permit
   - ☐ Section 10 Permit
   - ☐ 401 Water Quality Certification
   - ☐ Riparian or Watershed Buffer Rules
   - ☐ Isolated Wetland Permit from DWQ
   - ☐ Express 401 Water Quality Certification

2. Nationwide, Regional or General Permit Number(s) Requested: NW 33

3. If this notification is solely a courtesy copy because written approval for the 401 Certification is not required, check here: ☒

4. If payment into the North Carolina Ecosystem Enhancement Program (NCEEP) is proposed for mitigation of impacts, attach the acceptance letter from NCEEP, complete section VIII, and check here: ☐

5. If your project is located in any of North Carolina's twenty coastal counties (listed on page 4), and the project is within a North Carolina Division of Coastal Management Area of Environmental Concern (see the top of page 2 for further details), check here: ☐

II. Applicant Information

1. Owner/Applicant Information
   Name: North Carolina Department of Transportation
   Mailing Address: Gregory J. Thorpe, Ph.D., Manager
   Project Development and Environmental Analysis Branch
   1598 Mail Service Center
   Raleigh, NC 27699-1598
   Telephone Number: 919-733-3141 Fax Number: 919-733-9794
   E-mail Address: gthorpe@dot.state.nc.us

2. Agent/Consultant Information (A signed and dated copy of the Agent Authorization letter must be attached if the Agent has signatory authority for the owner/applicant.)
   Name: _____
   Company Affiliation: _____
   Mailing Address: _____
   _____
   _____
   _____
   Telephone Number: _____ Fax Number: _____
   E-mail Address: _____

III. Project Information

Attach a **vicinity map** clearly showing the location of the property with respect to local landmarks such as towns, rivers, and roads. Also provide a detailed **site plan** showing property boundaries and development plans in relation to surrounding properties. Both the vicinity map and site plan must include a scale and north arrow. The specific footprints of all buildings, impervious surfaces, or other facilities must be included. If possible, the maps and plans should include the appropriate USGS Topographic Quad Map and NRCS Soil Survey with the property boundaries outlined. Plan drawings, or other maps may be included at the applicant's discretion, so long as the property is clearly defined. For administrative and distribution purposes, the USACE requires information to be submitted on sheets no larger than 11 by 17-inch format; however, DWQ may accept paperwork of any size. DWQ prefers full-size construction drawings rather than a sequential sheet version of the full-size plans. If full-size plans are reduced to a small scale such that the final version is illegible, the applicant will be informed that the project has been placed on hold until decipherable maps are provided.

1. Name of project: Widen NC 86 from SR 1906 (Purefoy Rd.) to SR 1902 (Manning Dr.)

2. T.I.P. Project Number or State Project Number (NCDOT Only): U-0624

3. Property Identification Number (Tax PIN): N/A

4. Location
   County: Orange County Nearest Town: Chapel Hill, NC
   Subdivision name (include phase/lot number): N/A
   Directions to site (include road numbers/names, landmarks, etc.): NC 86 (South Columbia Street) from SR 1906 (Purefoy Rd.) to SR 1902 (Manning Dr.).

5. Site coordinates (For linear projects, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)
   Decimal Degrees (6 digits minimum): 79.057255 °N 35.898908 °W

6. Property size (acres): Please refer to attached drawings.

7. Name of nearest receiving body of water: UT to Morgan Creek

8. River Basin: Cape Fear (USGS 8-Digit HUC 03030002)
   (Note – this must be one of North Carolina's seventeen designated major river basins. The River Basin map is available at http://h2o.enr.state.nc.us/admin/maps/.)

9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: The local area surrounding the proposed project consists of gently rolling hills and land use is best described as residential and commercialdevelopment.

10. Describe the overall project in detail, including the type of equipment to be used: NCDOT proposes to widen NC 86 from SR 1906 to SR 1902. Heavy construction equipment such as cranes, excavators and dump trucks will be utilized during construction.

Explain the purpose of the proposed work: The purpose is to provide safer conditions for bicyclists and pedestrians along NC 86 in Chapel Hill.

IV. Prior Project History

If jurisdictional determinations and/or permits have been requested and/or obtained for this project (including all prior phases of the same subdivision) in the past, please explain. Include the USACE Action ID Number, DWQ Project Number, application date, and date permits and certifications were issued or withdrawn. Provide photocopies of previously issued permits, certifications or other useful information. Describe previously approved wetland, stream and buffer impacts, along with associated mitigation (where applicable). If this is a NCDOT project, list and describe permits issued for prior segments of the same T.I.P. project, along with construction schedules. No jurisdictional determination letter was issued due to no wetlands or streams within the original study area. The intermittent stream (outside of original study area) that will be temporarily impacted is being evaluated during permitting process.

V. Future Project Plans

Are any future permit requests anticipated for this project? If so, describe the anticipated work, and provide justification for the exclusion of this work from the current application.
N/A

VI. Proposed Impacts to Waters of the United States/Waters of the State

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to wetlands, open water, and stream channels associated with the project. Each impact must be listed separately in the tables below (e.g., culvert installation should be listed separately from riprap dissipater pads). Be sure to indicate if an impact is temporary. All proposed impacts, permanent and temporary, must be listed, and must be labeled and clearly identifiable on an accompanying site plan. All wetlands and waters, and all streams (intermittent and perennial) should be shown on a delineation map, whether or not impacts are proposed to these systems. Wetland and stream evaluation and delineation forms should be included as appropriate. Photographs may be included at the applicant's discretion. If this proposed impact is strictly for wetland or stream mitigation, list and describe the impact in Section VIII below. If additional space is needed for listing or description, please attach a separate sheet.

1. Provide a written description of the proposed impacts: Approximately 10 linear feet of warm perennial stream will be temporarily impacted for construction access.

2. Individually list wetland impacts. Types of impacts include, but are not limited to mechanized clearing, grading, fill, excavation, flooding, ditching/drainage, etc. For dams, separately list impacts due to both structure and flooding.

Wetland Impact Site Number (indicate on map)	Type of Impact	Type of Wetland (e.g., forested, marsh, herbaceous, bog, etc.)	Located within 100-year Floodplain (yes/no)	Distance to Nearest Stream (linear feet)	Area of Impact (acres)
Total Wetland Impact (acres)					

3. List the total acreage (estimated) of all existing wetlands on the property: N/A

4. Individually list all intermittent and perennial stream impacts. Be sure to identify temporary impacts. Stream impacts include, but are not limited to placement of fill or culverts, dam construction, flooding, relocation, stabilization activities (e.g., cement walls, rip-rap, crib walls, gabions, etc.), excavation, ditching/straightening, etc. If stream relocation is proposed, plans and profiles showing the linear footprint for both the original and relocated streams must be included. To calculate acreage, multiply length X width, then divide by 43,560.

Stream Impact Number (indicate on map)	Stream Name	Type of Impact	Perennial or Intermittent?	Average Stream Width Before Impact	Impact Length (linear feet)	Area of Impact (acres)
Site 1 (Temp)	UT to Morgan Creek	Temporary access for bank stabilization*	Intermittent	5 feet	10	<0.01
Total Stream Impact (by length and acreage)					10	<0.01

* Bank stabilization is being conducted in non-jurisdictional section of channel upstream of access area.

5. Individually list all open water impacts (including lakes, ponds, estuaries, sounds, Atlantic Ocean and any other water of the U.S.). Open water impacts include, but are not limited to fill, excavation, dredging, flooding, drainage, bulkheads, etc.

Open Water Impact Site Number (indicate on map)	Name of Waterbody (if applicable)	Type of Impact	Type of Waterbody (lake, pond, estuary, sound, bay, ocean, etc.)	Area of Impact (acres)
N/A				
Total Open Water Impact (acres)				0

6. List the cumulative impact to all Waters of the U.S. resulting from the project:

Stream Impact (acres):	<0.01
Wetland Impact (acres):	NA
Open Water Impact (acres):	NA
Total Impact to Waters of the U.S. (acres)	<0.01
Total Stream Impact (linear feet):	10

7. Isolated Waters
Do any isolated waters exist on the property? ☐ Yes ☒ No
Describe all impacts to isolated waters, and include the type of water (wetland or stream) and the size of the proposed impact (acres or linear feet). Please note that this section only applies to waters that have specifically been determined to be isolated by the USACE.
N/A

8. Pond Creation
If construction of a pond is proposed, associated wetland and stream impacts should be included above in the wetland and stream impact sections. Also, the proposed pond should be described here and illustrated on any maps included with this application.
Pond to be created in (check all that apply): ☐ uplands ☐ stream ☐ wetlands
Describe the method of construction (e.g., dam/embankment, excavation, installation of draw-down valve or spillway, etc.): N/A
Proposed use or purpose of pond (e.g., livestock watering, irrigation, aesthetic, trout pond, local stormwater requirement, etc.): N/A
Current land use in the vicinity of the pond: N/A
Size of watershed draining to pond: N/A Expected pond surface area: N/A

VII. Impact Justification (Avoidance and Minimization)

Specifically describe measures taken to avoid the proposed impacts. It may be useful to provide information related to site constraints such as topography, building ordinances, accessibility, and financial viability of the project. The applicant may attach drawings of alternative, lower-impact site layouts, and explain why these design options were not feasible. Also discuss how impacts were minimized once the desired site plan was developed. If applicable, discuss construction techniques to be followed during construction to reduce impacts.
Permanent impacts to stream have been avoided.

Mitigation

DWQ - In accordance with 15A NCAC 2H .0500, mitigation may be required by the NC Division of Water Quality for projects involving greater than or equal to one acre of impacts to freshwater wetlands or greater than or equal to 150 linear feet of total impacts to perennial streams.

USACE – In accordance with the Final Notice of Issuance and Modification of Nationwide Permits, published in the Federal Register on January 15, 2002, mitigation will be required when

necessary to ensure that adverse effects to the aquatic environment are minimal. Factors including size and type of proposed impact and function and relative value of the impacted aquatic resource will be considered in determining acceptability of appropriate and practicable mitigation as proposed. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland and/or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferable in the same watershed.

If mitigation is required for this project, a copy of the mitigation plan must be attached in order for USACE or DWQ to consider the application complete for processing. Any application lacking a required mitigation plan or NCEEP concurrence shall be placed on hold as incomplete. An applicant may also choose to review the current guidelines for stream restoration in DWQ's Draft Technical Guide for Stream Work in North Carolina, available at http://h2o.enr.state.nc.us/ncwetlands/strmgide.html.

1. Provide a brief description of the proposed mitigation plan. The description should provide as much information as possible, including, but not limited to: site location (attach directions and/or map, if offsite), affected stream and river basin, type and amount (acreage/linear feet) of mitigation proposed (restoration, enhancement, creation, or preservation), a plan view, preservation mechanism (e.g., deed restrictions, conservation easement, etc.), and a description of the current site conditions and proposed method of construction. Please attach a separate sheet if more space is needed.
   Compensatory mitigation for temporary stream impacts is not proposed (see cover letter).

2. Mitigation may also be made by payment into the North Carolina Ecosystem Enhancement Program (NCEEP). Please note it is the applicant's responsibility to contact the NCEEP at (919) 715-0476 to determine availability, and written approval from the NCEEP indicating that they are will to accept payment for the mitigation must be attached to this form. For additional information regarding the application process for the NCEEP, check the NCEEP website at http://h2o.enr.state.nc.us/wrp/index.htm. If use of the NCEEP is proposed, please check the appropriate box on page five and provide the following information:
   Amount of stream mitigation requested (linear feet):_____
   Amount of buffer mitigation requested (square feet):_____
   Amount of Riparian wetland mitigation requested (acres):_____
   Amount of Non-riparian wetland mitigation requested (acres):_____
   Amount of Coastal wetland mitigation requested (acres):_____

VIII. Environmental Documentation (required by DWQ)

1. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land? Yes ☒ No ☐

2. If yes, does the project require preparation of an environmental document pursuant to the requirements of the National or North Carolina Environmental Policy Act (NEPA/SEPA)?

Note: If you are not sure whether a NEPA/SEPA document is required, call the SEPA coordinator at (919) 733-5083 to review current thresholds for environmental documentation. Yes ☒ No ☐

3. If yes, has the document review been finalized by the State Clearinghouse? If so, please attach a copy of the NEPA or SEPA final approval letter. Yes ☒ No ☐

IX. Proposed Impacts on Riparian and Watershed Buffers (required by DWQ)

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to required state and local buffers associated with the project. The applicant must also provide justification for these impacts in Section VII above. All proposed impacts must be listed herein, and must be clearly identifiable on the accompanying site plan. All buffers must be shown on a map, whether or not impacts are proposed to the buffers. Correspondence from the DWQ Regional Office may be included as appropriate. Photographs may also be included at the applicant's discretion.

1. Will the project impact protected riparian buffers identified within 15A NCAC 2B .0233 (Neuse), 15A NCAC 2B .0259 (Tar-Pamlico), 15A NCAC 02B .0243 (Catawba) 15A NCAC 2B .0250 (Randleman Rules and Water Supply Buffer Requirements), or other (please identify_____)? Yes ☐ No ☒

2. If "yes", identify the square feet and acreage of impact to each zone of the riparian buffers. If buffer mitigation is required calculate the required amount of mitigation by applying the buffer multipliers.

Zone*	Impact (square feet)	Multiplier	Required Mitigation
1		3	
2		1.5	
Total			

* Zone 1 extends out 30 feet perpendicular from the top of the near bank of channel; Zone 2 extends an additional 20 feet from the edge of Zone 1.

If buffer mitigation is required, please discuss what type of mitigation is proposed (i.e., Donation of Property, Riparian Buffer Restoration / Enhancement, or Payment into the Riparian Buffer Restoration Fund). Please attach all appropriate information as identified within 15A NCAC 2B .0242 or .0244, or .0260._____

X. Stormwater (required by DWQ)

Describe impervious acreage (existing and proposed) versus total acreage on the site. Discuss stormwater controls proposed in order to protect surface waters and wetlands downstream from the property. If percent impervious surface exceeds 20%, please provide calculations demonstrating total proposed impervious level._____
N/A

XI. Sewage Disposal (required by DWQ)

Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility.
N/A

XII. Violations (required by DWQ)

Is this site in violation of DWQ Wetland Rules (15A NCAC 2H .0500) or any Buffer Rules?
Yes ☐ No ☒

Is this an after-the-fact permit application? Yes ☐ No ☒

XIII. Cumulative Impacts (required by DWQ)

Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? Yes ☐ No ☒
If yes, please submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent North Carolina Division of Water Quality policy posted on our website at http://h2o.enr.state.nc.us/ncwetlands. If no, please provide a short narrative description:
N/A

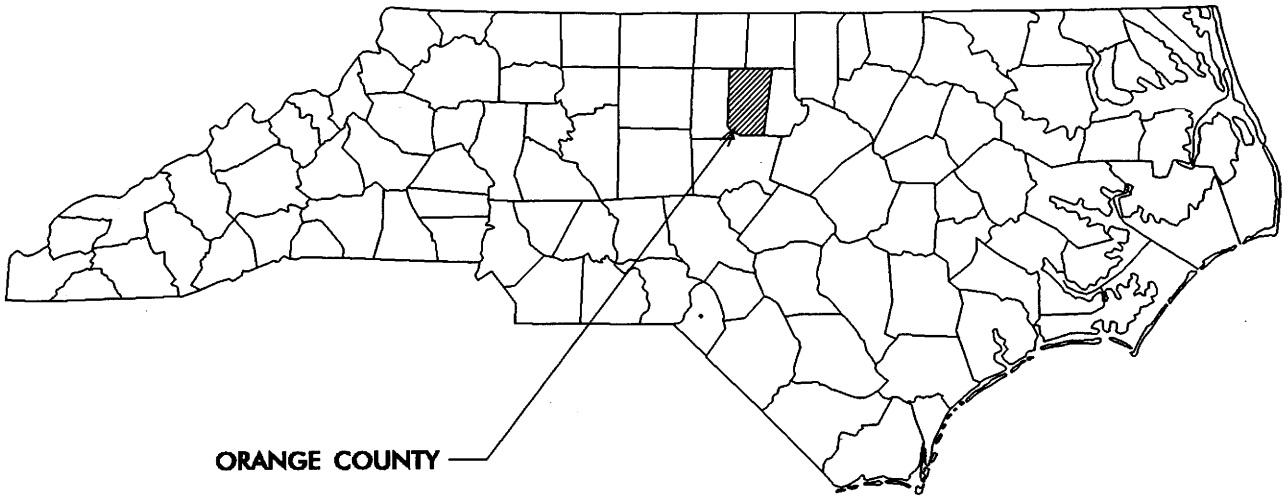
XIV. Other Circumstances (Optional):

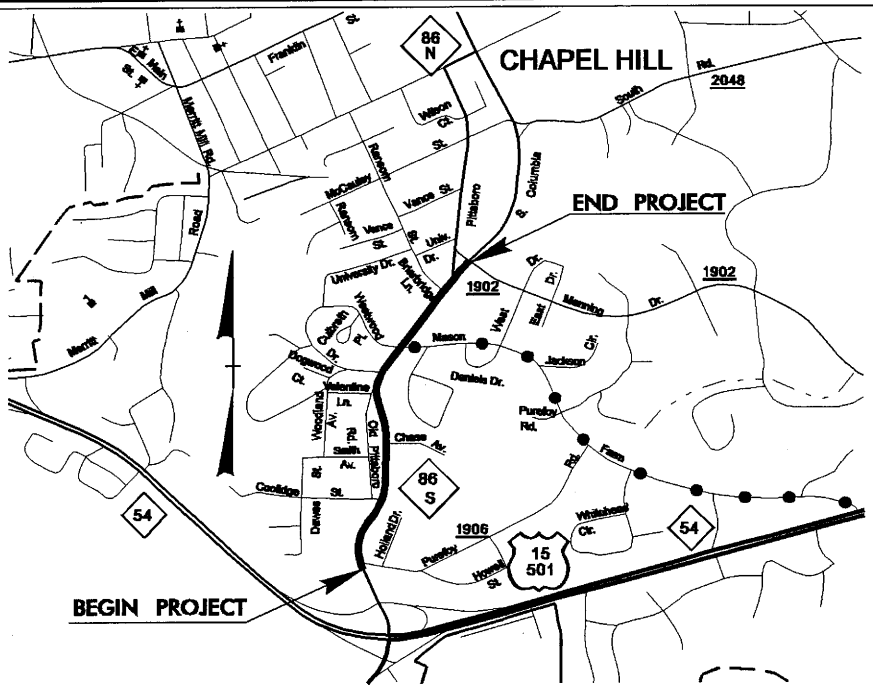
It is the applicant's responsibility to submit the application sufficiently in advance of desired construction dates to allow processing time for these permits. However, an applicant may choose to list constraints associated with construction or sequencing that may impose limits on work schedules (e.g., draw-down schedules for lakes, dates associated with Endangered and Threatened Species, accessibility problems, or other issues outside of the applicant's control).
N/A

E. L. Lush 9.17.08

Applicant/Agent's Signature **Date**
(Agent's signature is valid only if an authorization letter from the applicant is provided.)

NORTH CAROLINA





DETOUR SBL TRAFFIC

VICINITY MAPS

NCDOT

DIVISION OF HIGHWAYS
ORANGE COUNTY
PROJECT: 34762.1.1 (U-0624)
NC 86 (SOUTH COLUMBIA STREET)
FROM SR 1906 (PUREFOY ROAD)
TO SR 1902 (MANNING DRIVE)

SHEET 1 **OF** 8

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
19	J. GRAY McCALLISTER, III SUSAN M. McCALLISTER	P.O. BOX 431 CHAPEL HILL, NC 27514

NCDOT

DIVISION OF HIGHWAYS

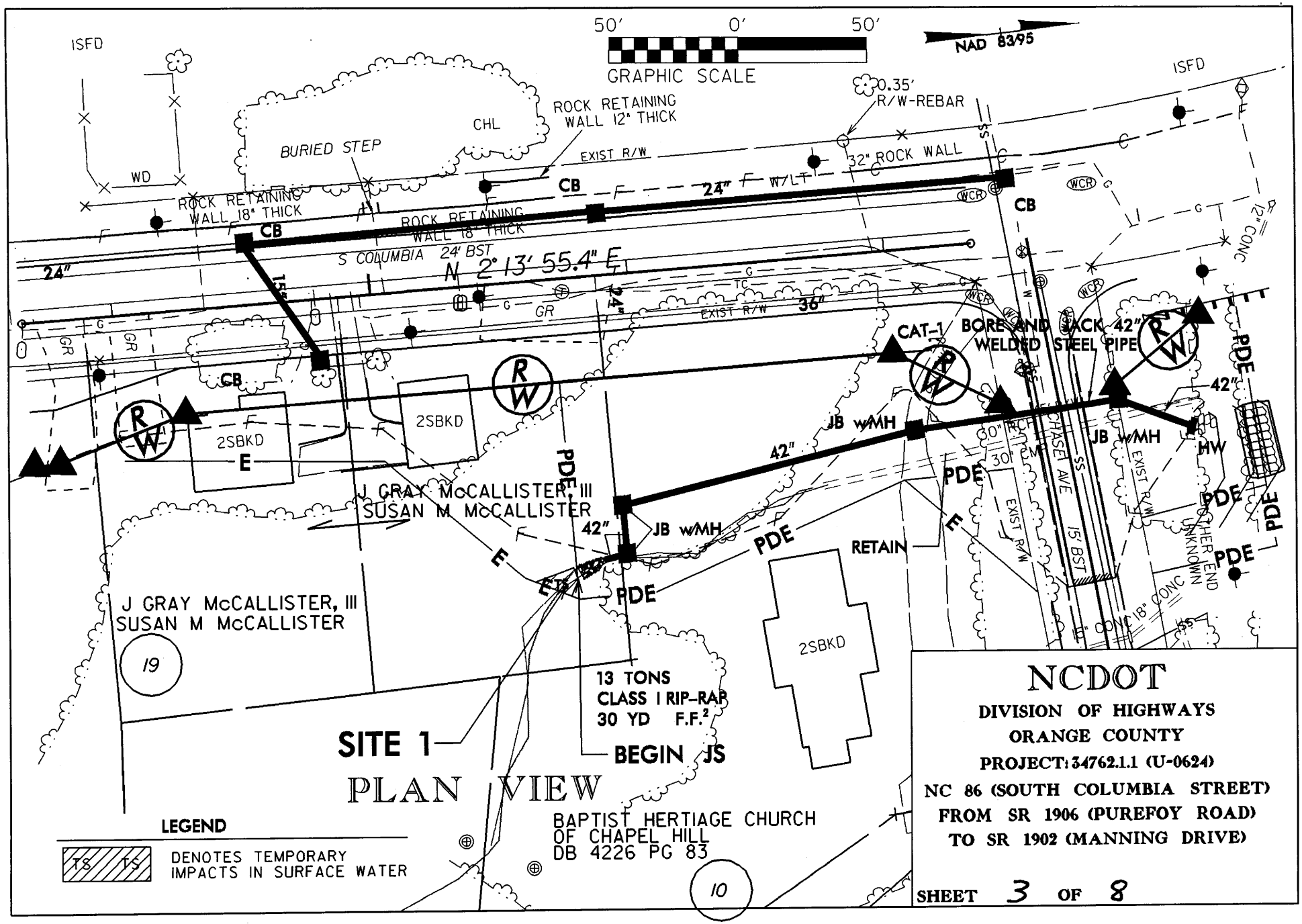
ORANGE COUNTY

PROJECT: 34762.1.1 (U-0624)

NC 86 (SOUTH COLUMBIA STREET)

FROM SR 1906 (PUREFOY ROAD)

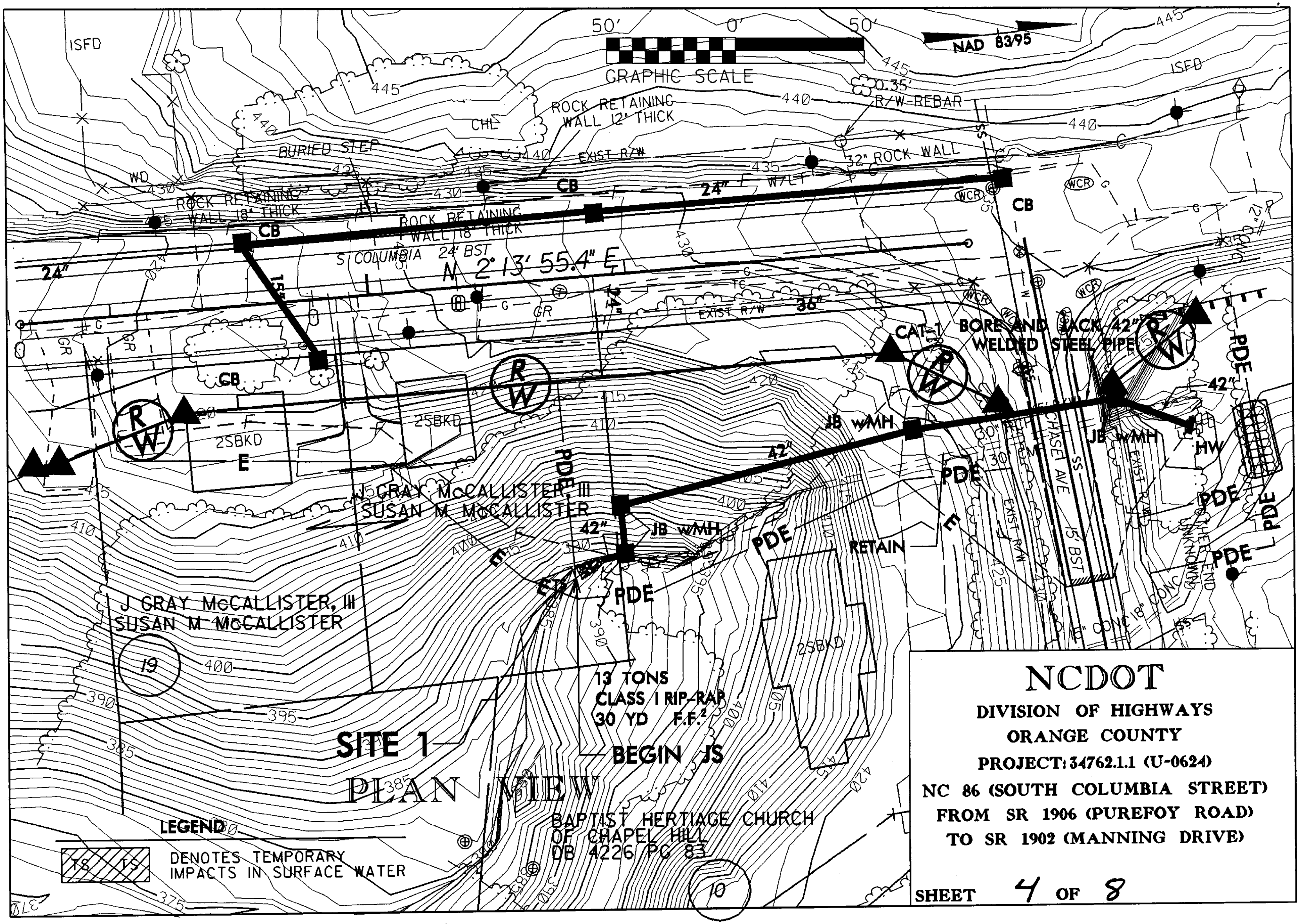
TO SR 1902 (MANNING DRIVE)



NCDOT

DIVISION OF HIGHWAYS
ORANGE COUNTY
PROJECT: 34762.1.1 (U-0624)
NC 86 (SOUTH COLUMBIA STREET)
FROM SR 1906 (PUREFOY ROAD)
TO SR 1902 (MANNING DRIVE)

SHEET 3 OF 8


50'
0'
50'
GRAPHIC SCALE
NAD 83/95
ISFD
0.35' R/W-REBAR
ROCK RETAINING WALL 12" THICK
32" ROCK WALL
BURIED STEP
EXIST R/W
ROCK RETAINING WALL 18" THICK
S COLUMBIA 24' BST
N 2° 13' 55.4" E
CB
24"
15"
36"
CAT-1
BORE AND JACK 42" WELDED STEEL PIPE
JB wMH
42"
HW
PDE
CHASE AVE
15' BST
OTHER END UNKNOWN
RETAIN
2SBKD
J GRAY McCALLISTER, III
SUSAN M McCALLISTER
13 TONS
CLASS I RIP-RAP
30 YD F.F.²
BEGIN JS
SITE 1
PLAN VIEW
BAPTIST HERTIAGE CHURCH
OF CHAPEL HILL
DB 4226 PG 83
LEGEND
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NCDOT

DIVISION OF HIGHWAYS
ORANGE COUNTY
PROJECT: 34762.1.1 (U-0624)
NC 86 (SOUTH COLUMBIA STREET)
FROM SR 1906 (PUREFOY ROAD)
TO SR 1902 (MANNING DRIVE)

SHEET 4 OF 8

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	25+50 -L- 118' RT.	BANK STABILIZATION							<0.01		10	
TOTALS:									<0.01		10	

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

ORANGE COUNTY
WBS - 34762.1.1 (U-0624)

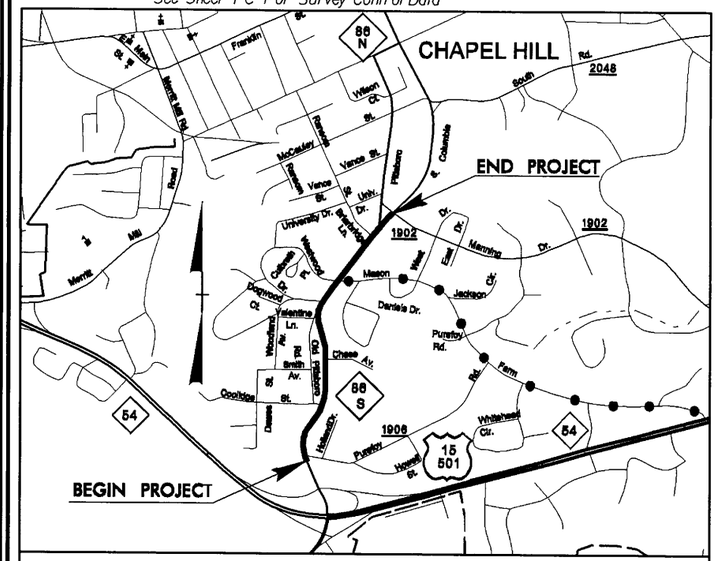
SHEET 5 of 8 9/4/2008

ATN Revised 3/31/05

09/08/99

TIP PROJECT: U-0624

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols
See Sheet 1-C For Survey Control Data



VICINITY MAP

DETOUR SBL TRAFFIC

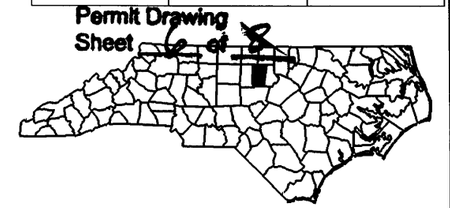
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ORANGE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-0624	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34762.1.1	STP-86(2)	PE
34762.2.2	STP-0086(2)	R/W & UTIL

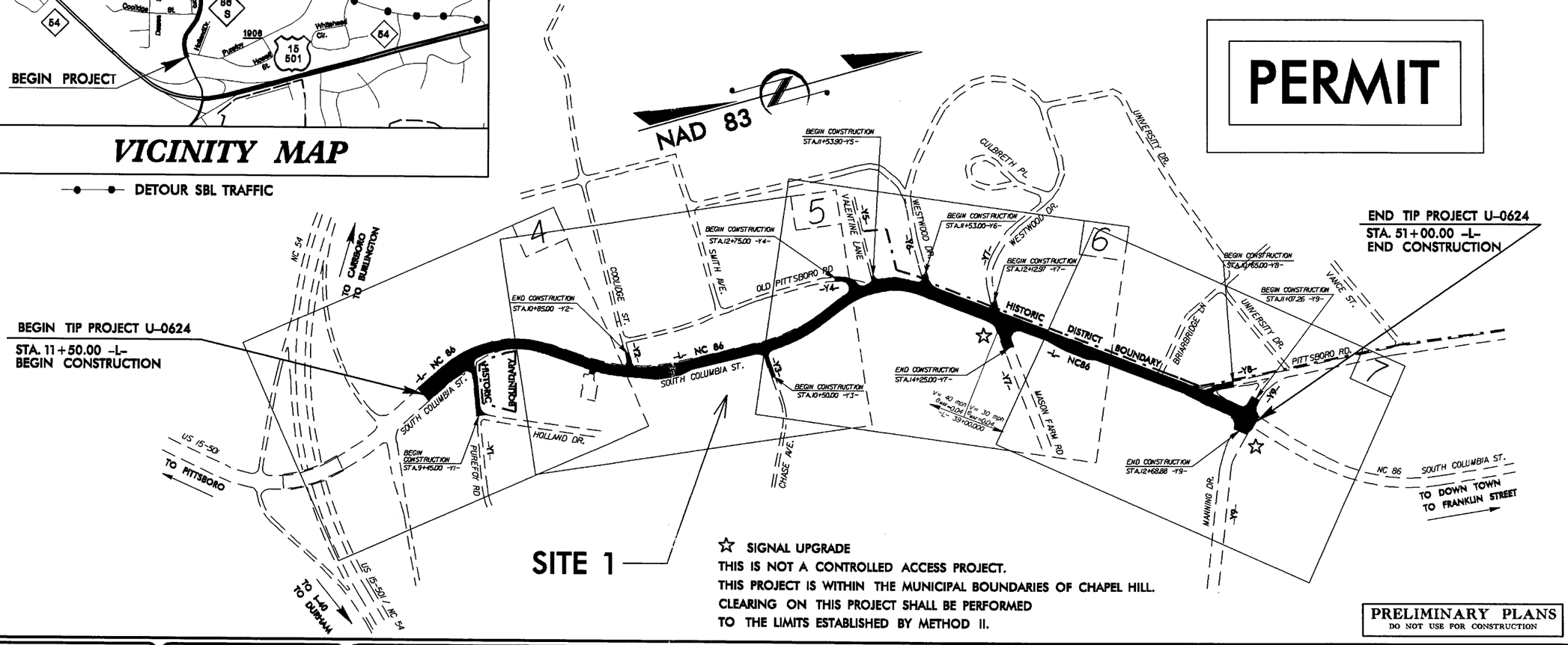
Permit Drawing Sheet 6 of 8



LOCATION: *NC 86 (SOUTH COLUMBIA STREET) FROM SR 1906 (PUREFOY ROAD) TO SR 1902 (MANNING DRIVE) IN CHAPEL HILL*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, CURB & GUTTER, AND SIGNALS*

PERMIT



SITE 1

☆ SIGNAL UPGRADE
THIS IS NOT A CONTROLLED ACCESS PROJECT.
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF CHAPEL HILL.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONTRACT:

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2005 = 19,200
ADT 2030 = 31,000
DHV = 10 %
D = 75 %
T = 5 % *
V = 40 /30 MPH
FUNC. CLASS = URBAN COLL
* TTST 1% DUAL 4%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-0624 = 0.763 MI
TOTAL LENGTH TIP PROJECT U-0624 = 0.763 MI

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: AUGUST 20, 2007

LETTING DATE: JULY 21, 2009

JASON MOORE, PE
PROJECT ENGINEER

KEVIN E. MOORE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

STATE HIGHWAY DESIGN ENGINEER P.E.

03-SEP-2008 14:58
r:\hydraulics\permits_environmental\drawings\u0624_hyd_prm_wet.dgn
ameddows
AT HY244562

8/17/99

REVISIONS

-L-	-L-
PI Sta 21+64.40	PI Sta 28+88.30
Δ = 32° 50' 56.8" (LT)	Δ = 24° 11' 40.4" (LT)
D = 7° 57' 27.9"	D = 7° 57' 27.9"
L = 412.79'	L = 304.04'
T = 212.24'	T = 154.32'
R = 720.00'	R = 720.00'
SE = .04	SE = .04
V = 40 mph	V = 40 mph

NAD 83/95

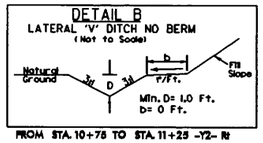
PROJECT REFERENCE NO.	SHEET NO.
U-0624	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing Sheet 7 of 8

DETAIL B
LATERAL 'V' DITCH NO BERM
(Not to Scale)



FROM STA. 10+75 TO STA. 11+25 -Y2- Rt

DETAIL E
SPECIAL DITCH
(Not to Scale)

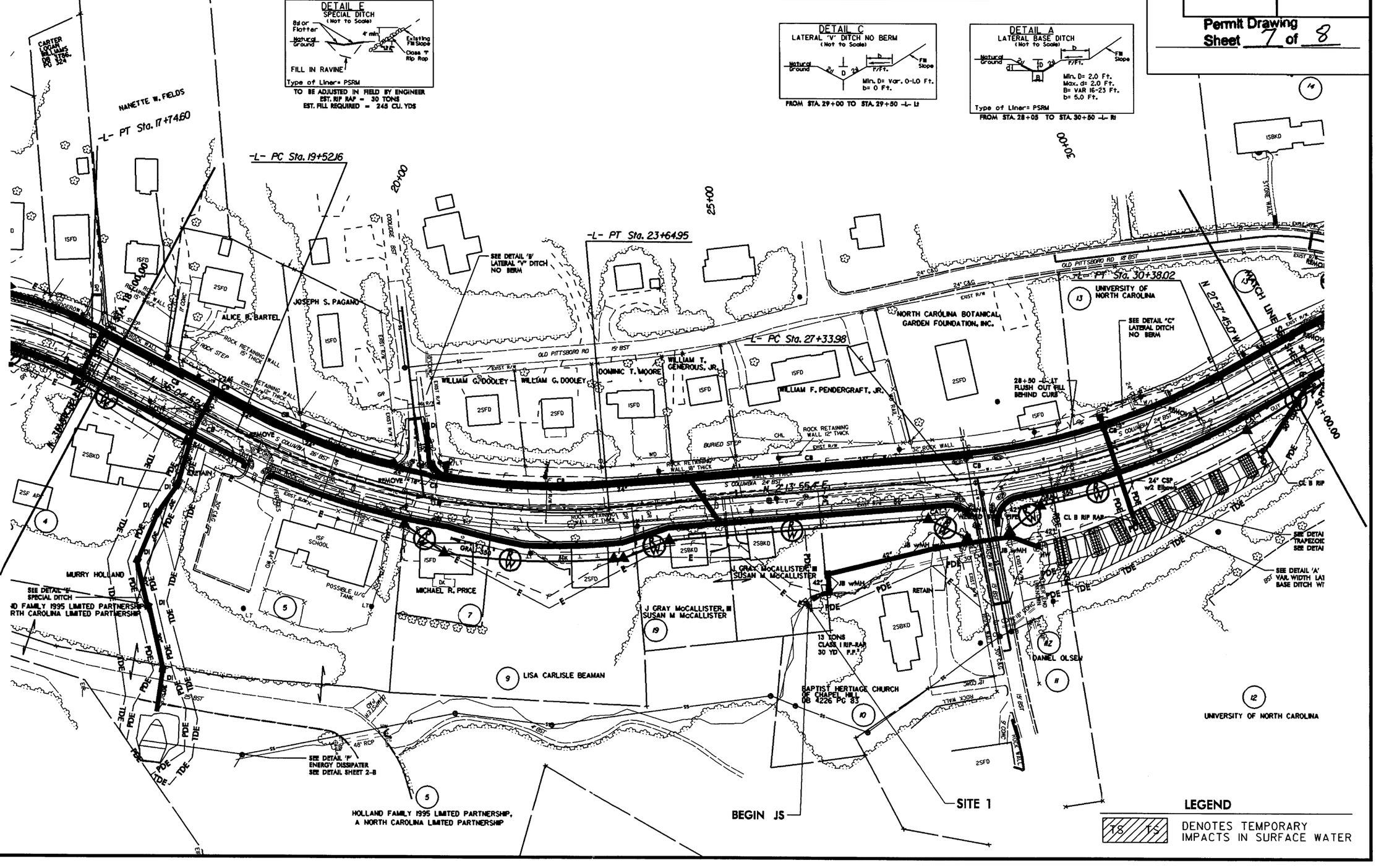
TO BE ADJUSTED IN FIELD BY ENGINEER
EST. RIP RAP = 30 TONS
EST. FILL REQUIRED = 245 CU. YDS

DETAIL C
LATERAL 'V' DITCH NO BERM
(Not to Scale)

FROM STA. 29+00 TO STA. 29+50 -L- Lt

DETAIL A
LATERAL BASE DITCH
(Not to Scale)

FROM STA. 28+05 TO STA. 30+50 -L- Rt



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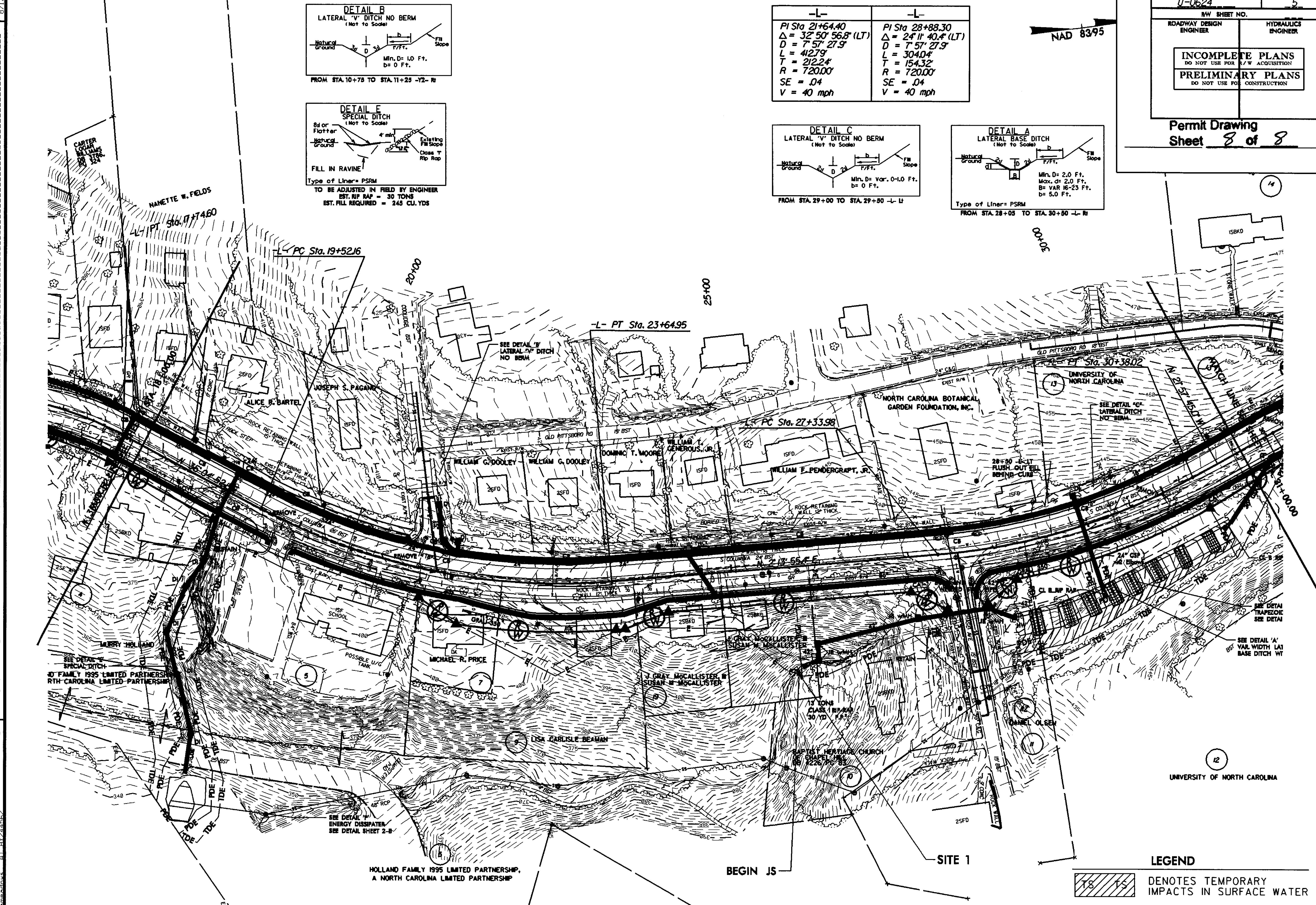
PROJECT REFERENCE NO.	SHEET NO.
U-0624	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 8 of 8

-L-	-L-
PI Sta 21+64.40	PI Sta 28+88.30
Δ = 32° 50' 56.8" (LT)	Δ = 24° 11' 40.4" (LT)
D = 7° 57' 27.9"	D = 7° 57' 27.9"
L = 412.79'	L = 304.04'
T = 212.24'	T = 154.32'
R = 720.00'	R = 720.00'
SE = .04	SE = .04
V = 40 mph	V = 40 mph



LEGEND

TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS

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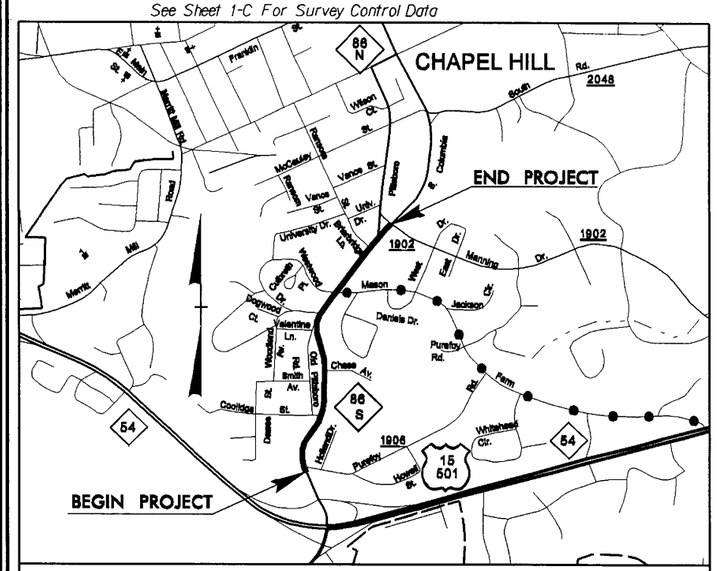
TIP PROJECT: U-0624

CONTRACT:

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols
See Sheet 1-C For Survey Control Data



VICINITY MAP

DETOUR SBL TRAFFIC

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

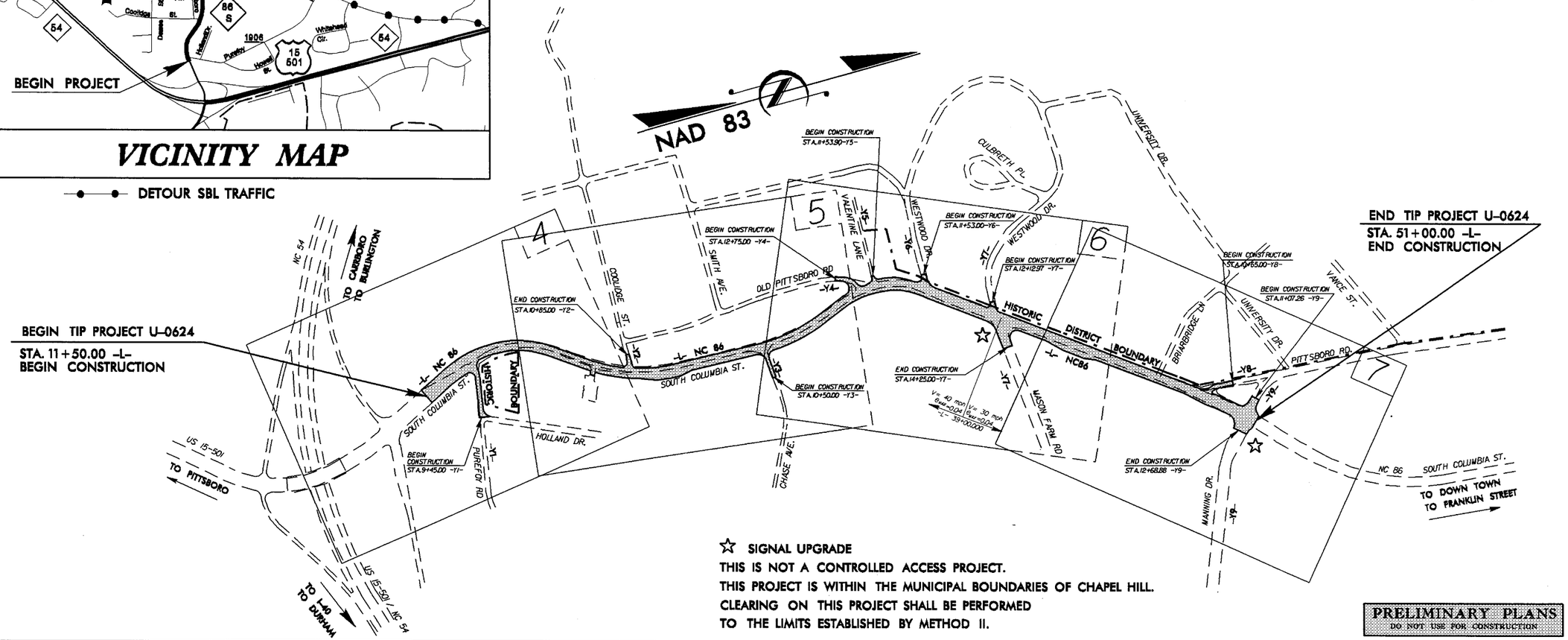
ORANGE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-0624	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34762.1.1	STP-86(2)	PE
34762.2.2	STP-0086(2)	R/W & UTIL

LOCATION: *NC 86 (SOUTH COLUMBIA STREET) FROM SR 1906 (PUREFOY ROAD) TO SR 1902 (MANNING DRIVE) IN CHAPEL HILL*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, CURB & GUTTER, AND SIGNALS*



☆ SIGNAL UPGRADE
THIS IS NOT A CONTROLLED ACCESS PROJECT.
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF CHAPEL HILL.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2005 = 19,200
ADT 2030 = 31,000
DHV = 10 %
D = 75 %
T = 5 % *
V = 40 /30 MPH
FUNC. CLASS = URBAN COLL.
* TTST 1% DUAL 4%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-0624 = 0.763 MI
TOTAL LENGTH TIP PROJECT U-0624 = 0.763 MI

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: AUGUST 20, 2007

LETTING DATE: JULY 21, 2009

JASON MOORE, PE
PROJECT ENGINEER

KEVIN E. MOORE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

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3/15/06

PROJECT REFERENCE NO.	SHEET NO.
U-0624	1-B

Note: Not to Scale

****S.U.E. = Subsurface Utility Engineering***

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line
- Proposed Right of Way Line with Iron Pin and Cap Marker
- Proposed Right of Way Line with Concrete or Granite Marker
- Existing Control of Access — CA
- Proposed Control of Access
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Utility Easement — PUE

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Wheel Chair Ramp — WCR
- Proposed Wheel Chair Ramp Curb Cut — WCC
- Curb Cut for Future Wheel Chair Ramp — CCFR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

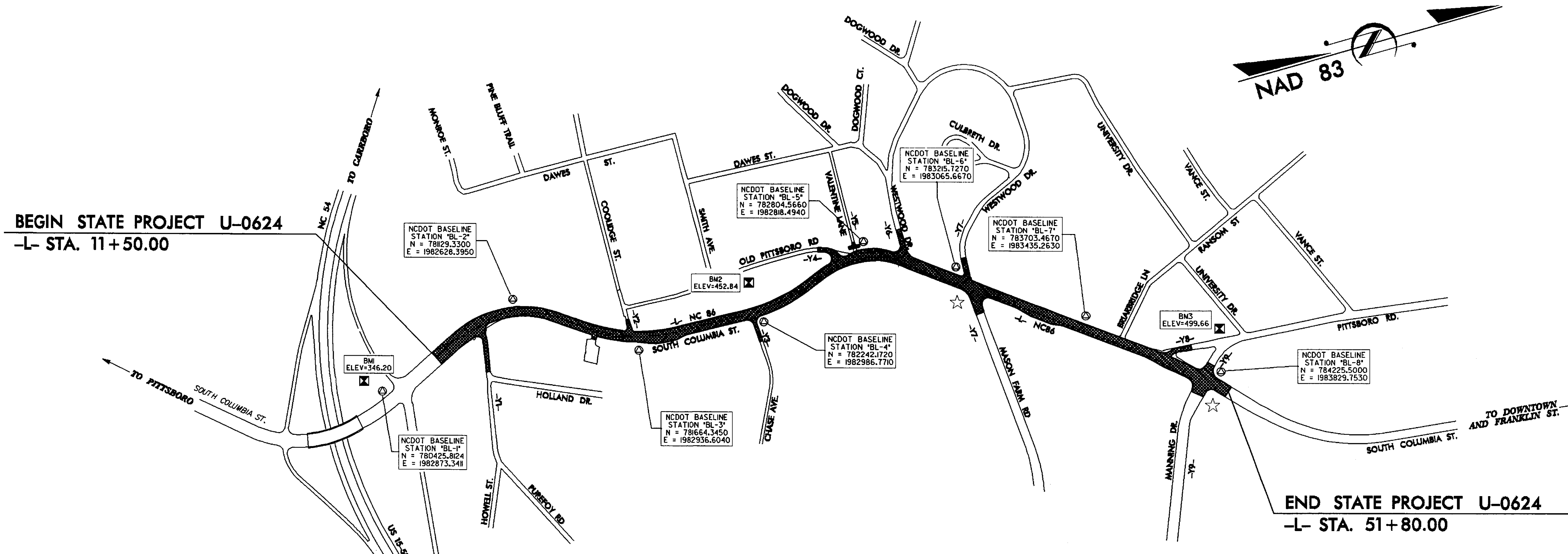
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?U/L
- U/G Tank; Water, Gas, Oil
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

PROJECT REFERENCE NO.	SHEET NO.
U-0624	1-C
Location and Surveys	

U-0624 SURVEY CONTROL SHEET



BENCHMARK DATA

BM1 ELEVATION - 346.20
N 780364 E 1982773
L STATION 9+92
S 18° 11' 04.0" W DIST 214.45
RR SPIKE IN 21 IN. WILLOW OAK

BM2 ELEVATION - 452.84
N 782240 E 1982830
L STATION 27+85 144 LEFT
RR SPIKE IN 24 IN. WILLOW OAK

BM3 ELEVATION - 499.66
N 784308 E 1983668
L STATION 50+35 223 LEFT
RR SPIKE IN 30 IN. RED OAK

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-3" WITH STATE PLANE GRID COORDINATES OF NORTHING: 781664.345(ft) EASTING: 1982936.603(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .99992132

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-3" TO -L- STATION 11+50.00 IS S 9° 52' 32.7" W, 968.83'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES

VERTICAL DATUM USED IS NGVD 88

BASELINE DATA

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	780425.8124	1982873.3411	349.22	OUTSIDE PROJECT LIMITS	
2	BL-2	781129.3300	1982628.3950	379.48	15+89.40	28.44 LT
3	BL-3	781664.3450	1982936.6040	409.17	22+02.37	2.36 RT
4	BL-4	782242.1720	1982986.7710	435.25	27+81.72	13.26 RT
5	BL-5	782804.5660	1982818.4940	464.34	33+57.97	37.40 LT
6	BL-6	783215.7270	1983065.6670	487.52	38+26.11	28.06 LT
7	BL-7	783703.4670	1983435.2630	514.82	44+38.06	26.70 LT
8	BL-8	784225.5000	1983829.7530	497.19	50+86.47	49.58 LT

NOTES

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:

HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

THE FILES TO BE FOUND ARE AS FOLLOWS:

U0624_LS_CONTROL_070110.TXT

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

⊚ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM FROM EXISTING NCGS MONUMENTATION.

NOTE: DRAWING NOT TO SCALE

12/01/2005

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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-0624	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

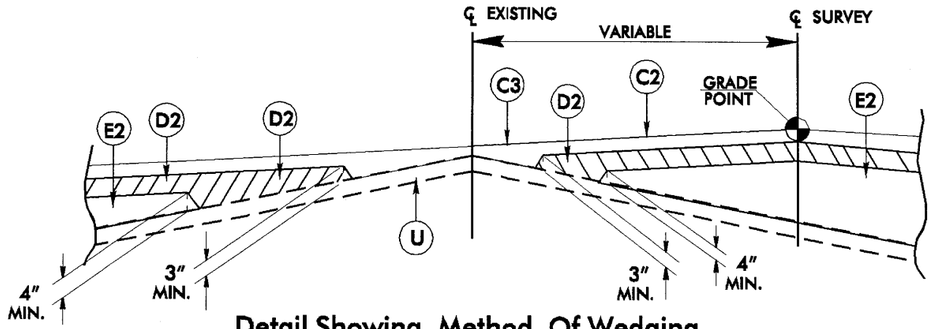
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

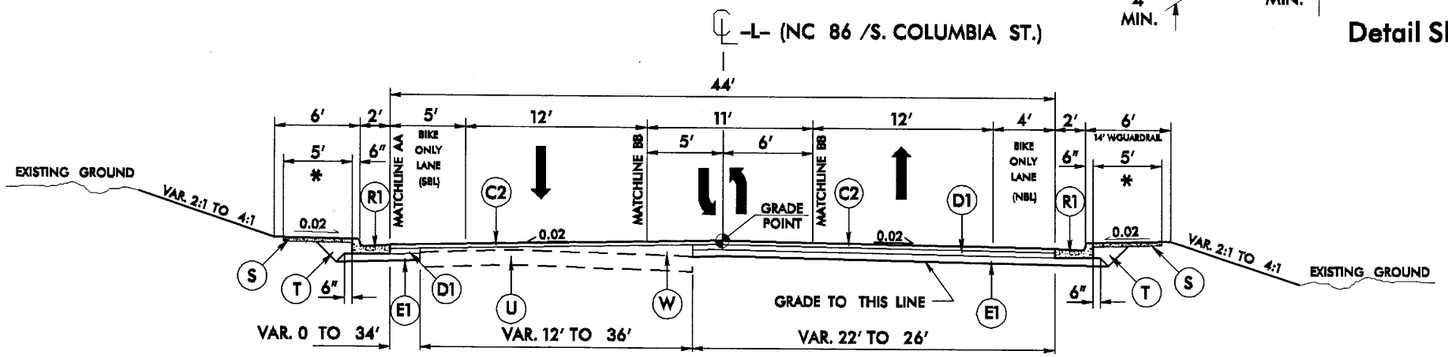
PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	R1	2' - 6" CONCRETE CURB AND GUTTER
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R2	5" MONOLITHIC CONCRETE ISLAND
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1.50" IN DEPTH.	S	4" CONCRETE / BRICK SIDEWALK
D1	PROP. APROX. 4" DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	T	EARTH MATERIAL
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.	U	EXISTING PAVEMENT
E1	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	V	MILLING BITUMINOUS PAVEMENT. VAR. DEPTH 0 - 2.50"
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.	W	SEE WEDGING DETAIL

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



Detail Showing Method Of Wedging



TYPICAL SECTION NO. 1

* SEE PLAN SHEETS FOR SIDEWALK LOCATION & TYPE

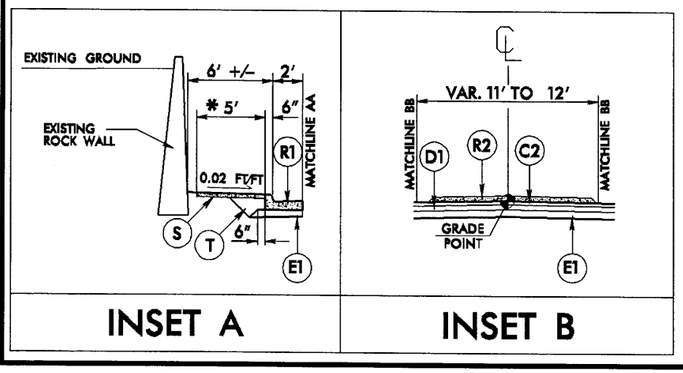
USE INSET A FOR -L- STA. 17+81.12 TO 18+44.58
18+77.76 TO 21+22.26
23+69.62 TO 25+00.56
25+06.59 TO 25+74.15
26+89.67 TO 27+51.43
35+38.64 TO 38+06.01
38+41.28 TO 42+14.11
42+59.69 TO 46+11.56

USE INSET B FOR -L- STA. 13+25.64 TO 13+81.83

USE TYPICAL SECTION NO. 1
-L- STA. 13+00.00 TO STA. 50+00.00

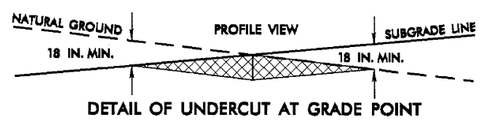
NOTE: REMOVE AND RESET BRICK FOR SIDEWALK
-L- STA. 39+64.45 TO 50+25.47 RT.

NOTE: USE DITCH DETAIL B IN CONJUNCTION WITH TS NO. 1 -L- STA. 29+00 TO 29+50 LT.

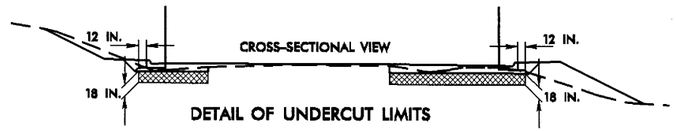


INSET A

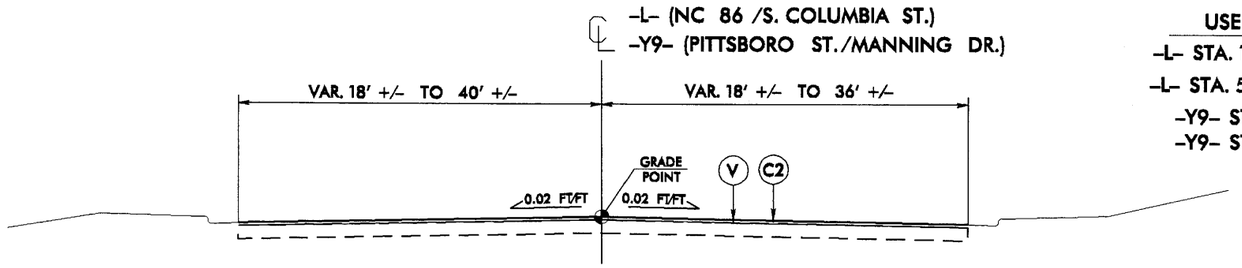
INSET B



DETAIL OF UNDERCUT AT GRADE POINT



DETAIL OF UNDERCUT LIMITS



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
-L- STA. 11+50.00 TO STA. 13+00.00
-L- STA. 50+00.00 TO STA. 51+00.00
-Y9- STA. 11+07.26 TO 11+68.60
-Y9- STA. 12+24.62 TO 12+68.88

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PROJECT REFERENCE NO.	SHEET NO.
U-0624	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

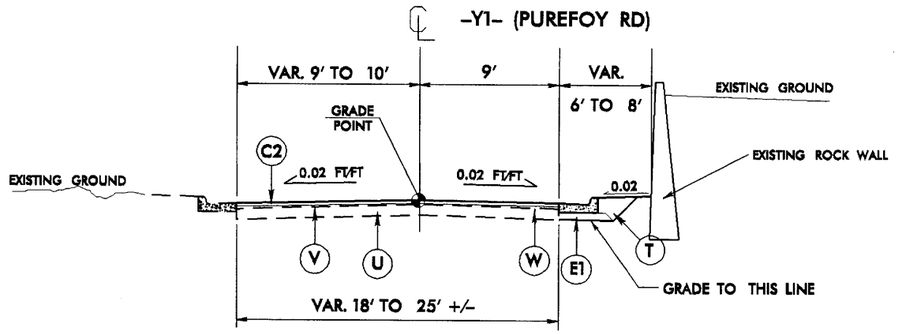
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PAVEMENT SCHEDULE	
C1	1.5" S9.5B,
C2	3" S9.5B
C3	VAR. S9.5B,
D1	4" I19.0B
D2	VAR. I19.0B
E1	5.5" B25.0B,
E2	VAR B25.0B,
R1	2' - 6" CONC. C&G
R1	6" MONO. CONC. ISLAND
S	4" CONC./BRICK SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	VAR. MILLING
W	WEDGING

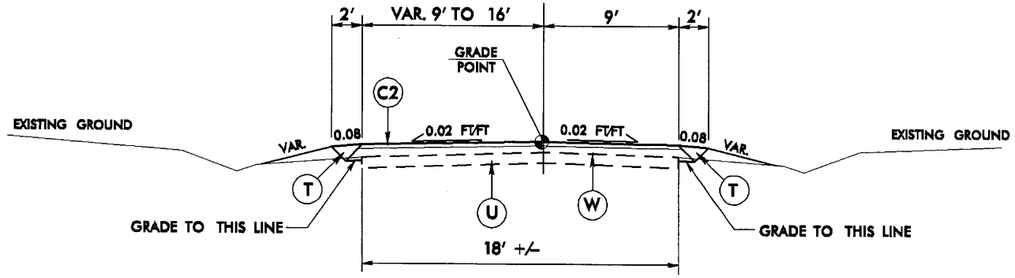
USE TYPICAL SECTION NO. 3

-Y1- STA. 9+75.00 TO STA. 11+53 +/-

NOTE: TRANSITION FROM EXPRESSWAY GUTTER TO 2' 6" C&G -Y1- STA. 9+61.25. SEE STD. 846.01



TYPICAL SECTION NO. 3



TYPICAL SECTION NO. 4

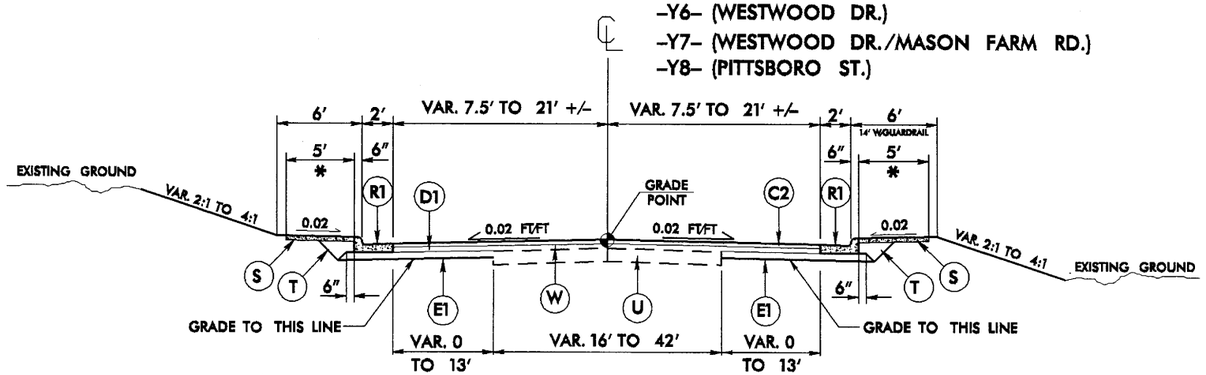
USE TYPICAL SECTION NO. 4

-Y2- STA. 10+60.00 TO STA. 10+85.00

USE TYPICAL SECTION NO. 5

-Y3- STA. 10+50.00 TO STA. 11+35.27
-Y4- STA. 12+75.00 TO STA. 13+84.00
-Y6- STA. 10+75.00 TO STA. 11+40.51
-Y7- STA. 11+50.00 TO STA. 12+19.10
-Y7- STA. 13+41.16 TO STA. 14+25.00
-Y8- STA. 10+65.00 +/- TO STA. 11+61.14

-Y3- (CHASE AVE.)
-Y4- (OLD PITTSBORO RD.)
-Y6- (WESTWOOD DR.)
-Y7- (WESTWOOD DR./MASON FARM RD.)
-Y8- (PITTSBORO ST.)



TYPICAL SECTION NO. 5

*SEE PLAN SHEETS FOR SIDEWALK LOCATION & TYPE

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PROJECT REFERENCE NO.	SHEET NO.
U-0624	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-	-Y1-
PI Sta 15+74.53	PI Sta 11+49.46
Δ = 61° 07' 48.2" (RT)	Δ = 25° 49' 40.0" (LT)
D = 13° 38' 30.7"	D = 35° 48' 35.5"
L = 448.11'	L = 72.12'
T = 248.04'	T = 36.69'
R = 420.00'	R = 160.00'
SE = .04	SE = .02
V = 35 mph	V = 30 mph

NAD 8395

-L- STA. 11+50.00
BEGIN STATE PROJECT U-624

-L- PC Sta. 13+26.49
-L- POC Sta. 14+05.00
-Y1- POT Sta. 12+10.38
-BL- POT Sta. 12+44.94 =
-L- POC Sta. 15+89.40 (28.44' LT.)

-BL- POT Sta. 5+00.00
-L- POT Sta. 9+91.98
-Y1- PT Sta. 11+84.90
-Y1- POT Sta. 9+00.00
-L- PT Sta. 17+74.60
-Y1- PC Sta. 11+12.77

DEPARTMENT OF TRANSPORTATION
DB 889, PG 437

C. H. HOTEL ASSOCIATES
DB 863, PG 144
DB 1087, PG 185

DAVID L. ROBERT
DB 1573, PG 628

RUBY HUNT MERRITT
DB 108 PG 462

CARTER LOGAN WILLIAMS
DB 1786, PG 324

NANETTE W. FIELDS
DB 238, PG 1734

THOMAS A. EAST
DB 1649, PG 424
DB 464, PG 81

THOMAS A. EAST, JR.
DB 1511, PG 245

GRAY MCALLISTER III
DB 654, PG 623

TERRE CURRIE
DB 2170, PG 473

MURRY HOLLAND
DB 238, PG 1734

BM# 1
ELEV. 346.20
OUTSIDE CHAIN BL

NC 86
S COLUMBIA 64' BST
TO PITTSBORO

S COLUMBIA 66' BST

HISTORIC BOUNDARY

RETAIN EXIST. CURB & GUTTER

PROP. 9'X18' CURB

END EXPRESSWAY GUTTER
BEG. EXPRESSWAY GUTTER

REMOVE

OTHER END UNKNOWN

BEG. CONST.

MATCH LINE SEE SHEET 5 STA. 18+00.00

2005 AADT			
2030 AADT			
S. COLUMBIA ST.			S. COLUMBIA ST.
NC 86	800 / 1100	400 / 500	NC 86
19,700 / 31,600	1200 / 1600		19,300 / 31,000
PUREFOY RD.			

FOR INTERSECTION DETAIL SEE SHEET 2-B

FOR -L- PROFILE, SEE SHEET 8
FOR -Y1- PROFILE, SEE SHEET 10

REVISIONS

8/17/99

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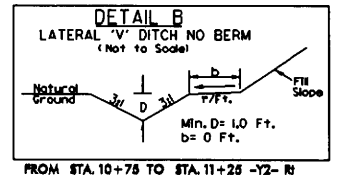
PROJECT REFERENCE NO.	SHEET NO.
U-0624	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

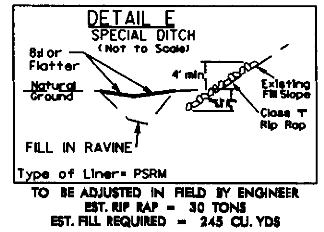
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

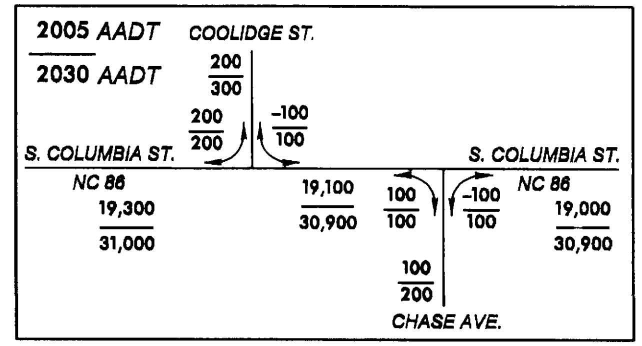
8/17/99

REVISIONS

ROW REVISION: REMOVED -PDE- AND -TDE- ON PARCEL NO'S 5,7, AND 9. ADDED -PDE- ON PARCEL NO'S 4 AND 5. ADDED -TDE- ON PARCEL NO'S 4,5,AND 12
REVISED -PDE- ON PARCEL NO 12. REVISED -TCE- ON PARCEL NO'S 4,5,7,AND 12. ADDED PARCEL 11Z FOR ADDITIONAL -PDE- ON PARCEL 11.trm 9/5/08

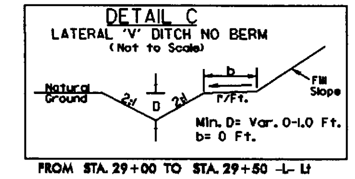


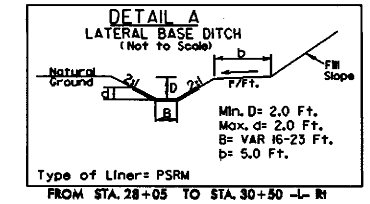


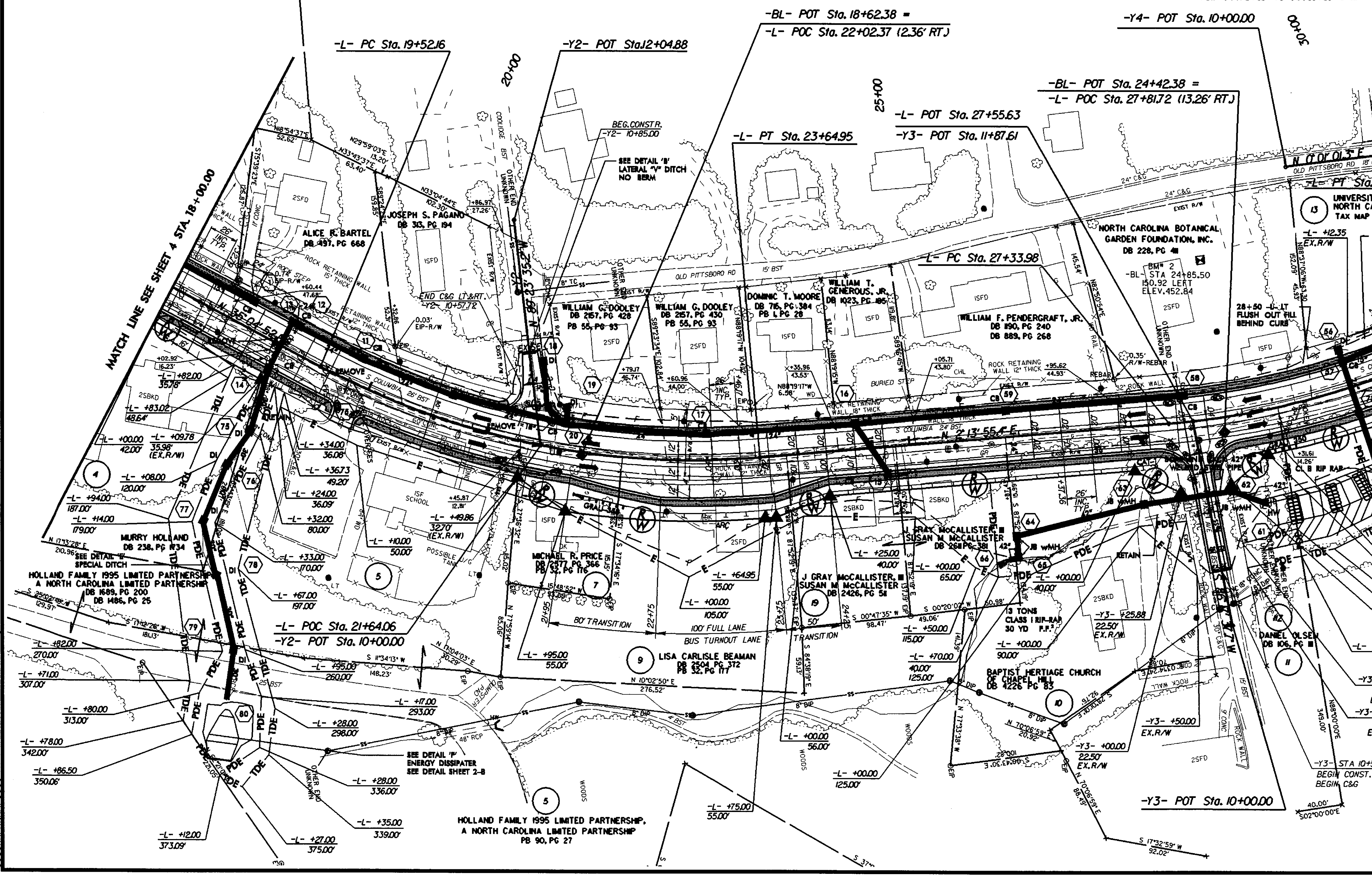


-L-	-L-
PI Sta 21+64.40	PI Sta 28+88.30
Δ = 32° 50' 56.8" (LT)	Δ = 24° 11' 40.4" (LT)
D = 7° 57' 27.9"	D = 7° 57' 27.9"
L = 412.79'	L = 304.04'
T = 212.24'	T = 154.32'
R = 720.00'	R = 720.00'
SE = .04	SE = .04
V = 40 mph	V = 40 mph

NAD 83/95







MATCH LINE SEE SHEET 4 STA. 18+00.00
MATCH LINE SEE SHEET 6 STA. 31+00.00
-L- PC Sta. 19+52.16
-Y2- POT Sta.12+04.88
-BL- POT Sta. 18+62.38 =
-L- POC Sta. 22+02.37 (2.36' RT)
-Y4- POT Sta. 10+00.00
-L- PT Sta. 23+64.95
-L- POT Sta. 27+55.63
-Y3- POT Sta. 11+87.61
-BL- POT Sta. 24+42.38 =
-L- POC Sta. 27+81.72 (13.26' RT)
-L- PC Sta. 27+33.98
-L- PT Sta. 30+38.02
-L- POC Sta. 21+64.06
-Y2- POT Sta. 10+00.00
-Y3- POT Sta. 10+00.00
ALICE R. BARTEL DB 457, PG 668
JOSEPH S. PAGANO DB 313, PG 194
WILLIAM G. DOOLEY DB 2157, PG 428 PB 55, PG 93
WILLIAM G. DOOLEY DB 2157, PG 430 PB 55, PG 93
DOMINIC T. MOORE DB 716, PG 384 PB L, PG 28
WILLIAM T. GENEROUS, JR. DB 1023, PG 186
NORTH CAROLINA BOTANICAL GARDEN FOUNDATION, INC. DB 226, PG 41
WILLIAM F. PENDERGRAFT, JR. DB 1190, PG 240 DB 889, PG 268
UNIVERSITY OF NORTH CAROLINA TAX MAP 7.73.1
MURRY HOLLAND DB 238, PG 434
HOLLAND FAMILY 1995 LIMITED PARTNERSHIP, A NORTH CAROLINA LIMITED PARTNERSHIP DB 1689, PG 200 DB 1486, PG 25
MICHAEL R. PRICE DB 2577, PG 366 PB 32, PG 117
LISA CARLISLE BEAMAN DB 2504, PG 372 PB 32, PG 117
J GRAY McCALLISTER, III SUSAN M. McCALLISTER DB 2426, PG 51
BAPTIST HERTIAGE CHURCH OF CHAPEL HILL DB 4226 PG 83
DANIEL OLSEN DB 106, PG 11
UNIVERSITY OF NORTH CAROLINA TAX MAP 7.73.1
HOLLAND FAMILY 1995 LIMITED PARTNERSHIP, A NORTH CAROLINA LIMITED PARTNERSHIP PB 90, PG 27
-BL- BM# 2 STA 24+85.50 150.92 LEFT ELEV.452.84
SEE DETAIL 'B' LATERAL 'V' DITCH NO BERM
SEE DETAIL "C" LATERAL DITCH NO BERM
SEE DETAIL 'D' TRAPEZOIDAL DITCH SEE DETAIL SHEET 2-B
SEE DETAIL 'A' VAR. WIDTH LATERAL BASE DITCH WITH PSRM
SEE DETAIL 'E' SPECIAL DITCH
SEE DETAIL 'F' ENERGY DISSIPATER SEE DETAIL SHEET 2-B
28+50 -L- LT FLUSH OUT FILL BEHIND CURB
13 TONS CLASS I RIP-RAP 30 YD F.F.
80' TRANSITION
100' FULL LANE
BUS TURNOUT LANE
BEG.CONSTR. -Y2- 10+85.00
-Y3- STA 10+50.00 BEGIN CONST. BEGIN C&G
OLD PITTSBORO RD
S. COLUMBIA

FOR INTERSECTION DETAIL SEE SHEET 2-C

FOR -L- PROFILE, SEE SHEET 8
FOR -Y2- PROFILE, SEE SHEET 10
FOR -Y3- PROFILE, SEE SHEET 10

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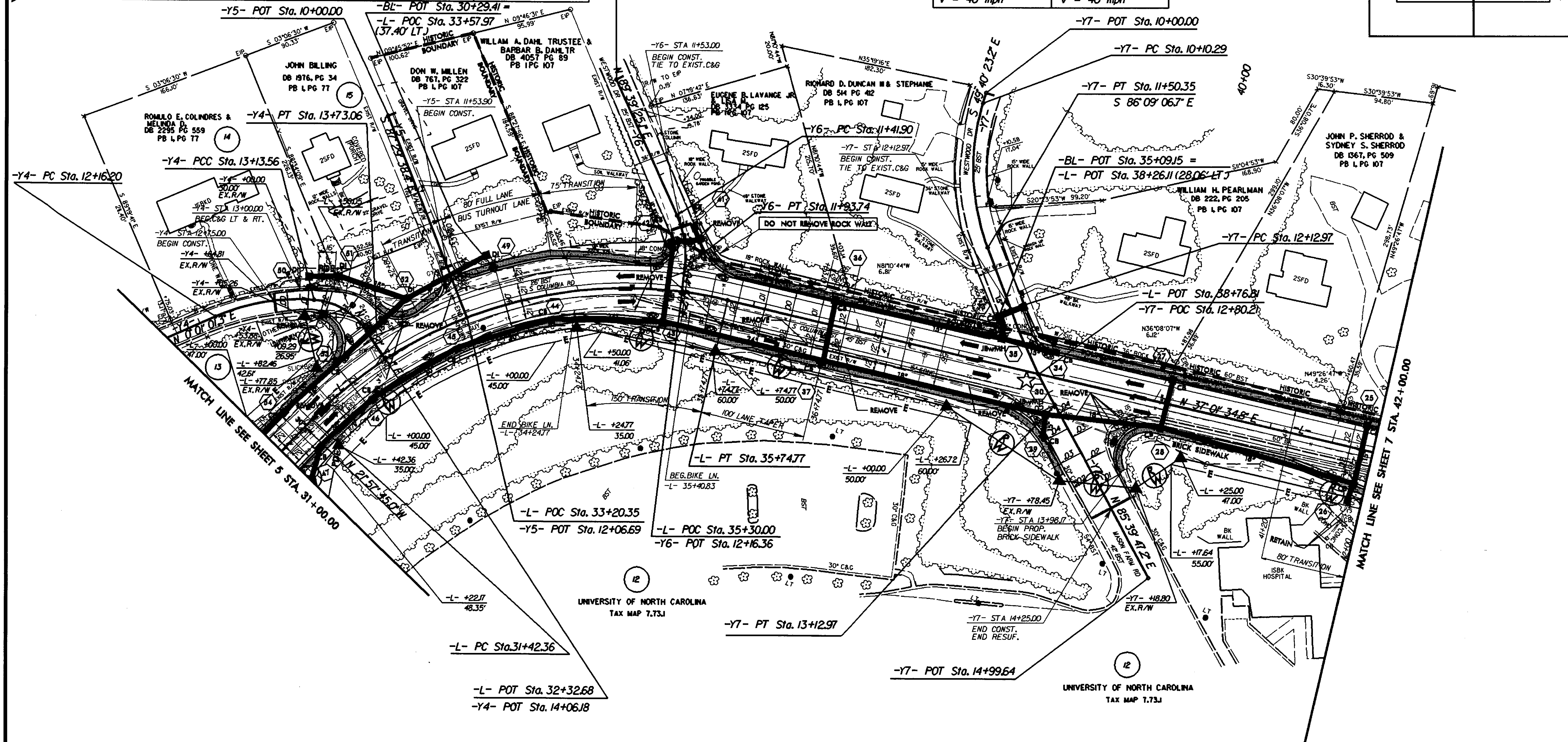
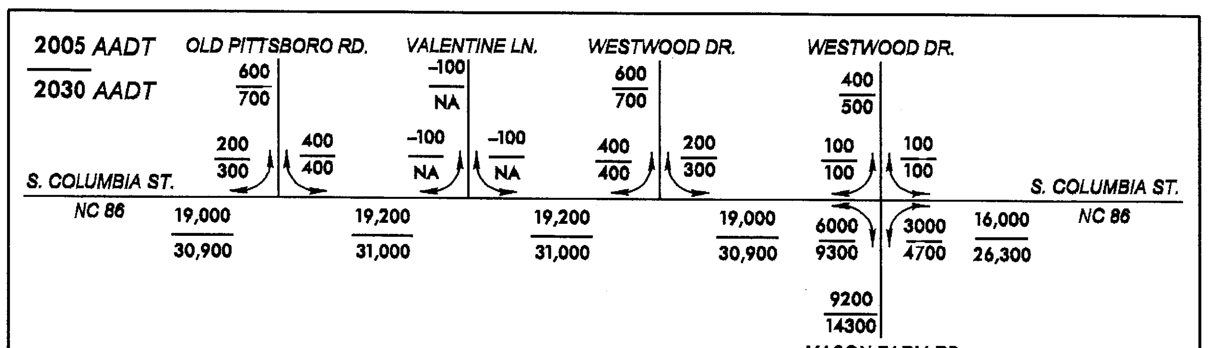
PROJECT REFERENCE NO.	SHEET NO.
U-0624	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-	-Y4-	-Y4-	-Y6-
PI Sta 33+79.93	PI Sta 12+65.86	PI Sta 13+45.58	PI Sta 11+68.48
Δ = 58° 59' 19.8" (RT)	Δ = 27° 53' 25.2" (RT)	Δ = 52° 27' 05.5" (RT)	Δ = 31° 15' 43.7" (RT)
D = 13° 38' 30.7"	D = 28° 38' 52.4"	D = 88° 08' 50.5"	D = 60° 18' 40.8"
L = 432.41'	L = 97.36'	L = 59.50'	L = 51.83'
T = 237.57'	T = 49.66'	T = 32.02'	T = 26.58'
R = 420.00'	R = 200.00'	R = 65.00'	R = 95.00'
SE = .04	SE = .04	SE = .04	SE = .04
V = 35 mph	V = 20 mph	V = 15 mph	V = 15 mph

-Y7-	-Y7-
PI Sta 10+82.78	PI Sta 12+63.05
Δ = 36° 28' 43.4" (LT)	Δ = 8° 11' 06.1" (LT)
D = 26° 02' 36.7"	D = 8° 11' 06.4"
L = 140.07'	L = 100.00'
T = 72.50'	T = 50.08'
R = 220.00'	R = 700.00'
SE = .04	SE = .04
V = 40 mph	V = 40 mph





☆ SIGNAL UPGRADE

FOR INTERSECTION DETAIL SEE SHEETS 2-D AND 2-E

FOR -L- PROFILE, SEE SHEET 8
FOR -Y4- PROFILE, SEE SHEET 10
FOR -Y5- PROFILE, SEE SHEET 10
FOR -Y6- PROFILE, SEE SHEET 10
FOR -Y7- PROFILE, SEE SHEET 11

REVISIONS
ROW REVISION: REVISED -PDE- AND -TCE- ON PARCEL NO.12. trm 9/5/08

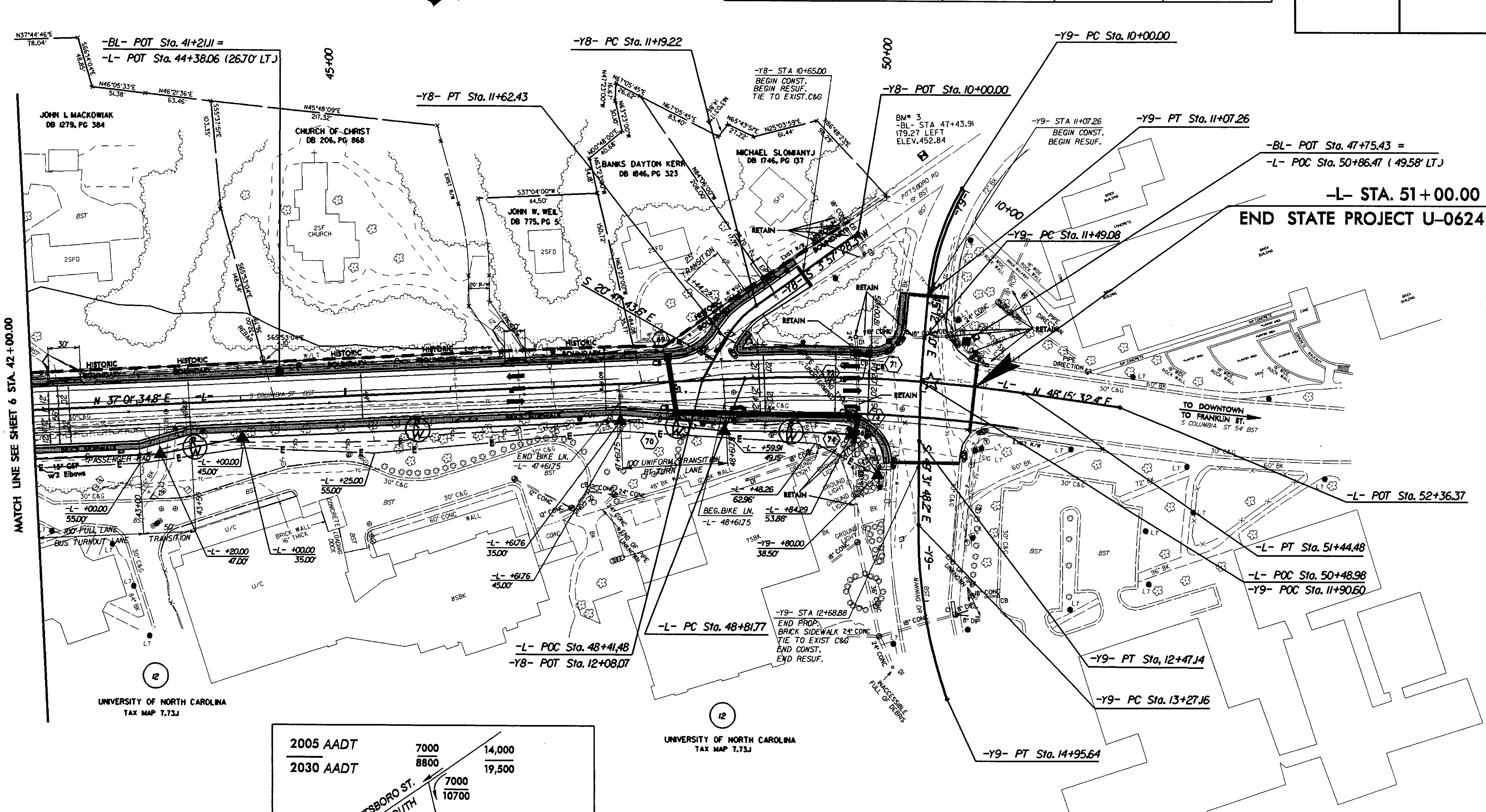
8/17/99

09-SEP-2008 14:45

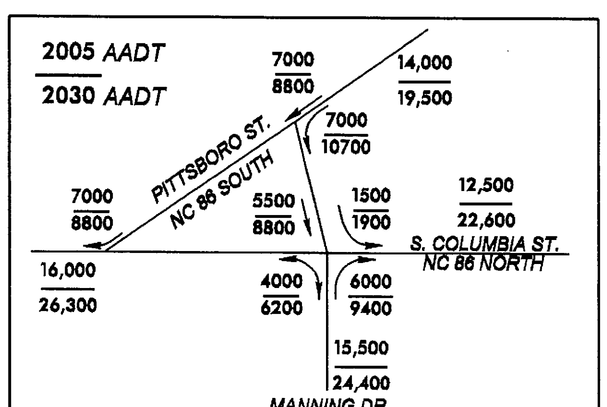
PROJECT REFERENCE NO.	SHEET NO.
U-0624	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-	-Y8-	-Y9-	-Y9-	-Y9-
PI Sta 50+13.55	PI Sta 11+41.17	PI Sta 10+54.47	PI Sta 11+98.13	PI Sta 14+12.21
Δ = 11° 13′ 57.6″ (RT)	Δ = 24° 45′ 11.9″ (LT)	Δ = 24° 34′ 59.6″ (LT)	Δ = 4° 19′ 17.2″ (LT)	Δ = 19° 18′ 21.8″ (LT)
D = 4° 16′ 32.9″	D = 57° 17′ 44.8″	D = 22° 55′ 05.9″	D = 4° 24′ 26.5″	D = 11° 27′ 33.0″
L = 262.70′	L = 43.20′	L = 107.26′	L = 98.05′	L = 168.48′
T = 131.77′	T = 21.94′	T = 54.47′	T = 49.05′	T = 85.04′
R = 1,340.00′	R = 100.00′	R = 250.00′	R = 1,300.00′	R = 500.00′
SE = NC	SE = NC			
V = 40 mph	V = 40 mph			



NAD 83/95
-BL- POT Sta. 41+21.11 =
-L- POT Sta. 44+38.06 (26.70′ LT.)
-Y8- PC Sta. 11+19.22
-Y8- PT Sta. 11+62.43
-Y8- STA 10+65.00 BEGIN CONST. BEGIN RESUF. TIE TO EXIST. C&G
-Y8- POT Sta. 10+00.00
-Y9- PC Sta. 10+00.00
-Y9- STA 11+07.26 BEGIN CONST. BEGIN RESUF.
-Y9- PT Sta. 11+07.26
BM# 3 -BL- STA 47+43.91 179.27 LEFT ELEV. 452.84
-BL- POT Sta. 47+75.43 =
-L- POC Sta. 50+86.47 (49.58′ LT.)
-L- STA. 51+00.00
END STATE PROJECT U-0624
-Y9- PC Sta. 11+49.08
JOHN L MACKOWIAK DB 1279, PG 384
CHURCH OF CHRIST DB 206, PG 868
BANKS DAYTON KERR DB 1846, PG 323
JOHN W. WEIL DB 775, PG 5
MICHAEL SLOMIANYJ DB 1746, PG 137
MATCH LINE SEE SHEET 6 STA. 42+00.00
N 37° 01′ 34.8″ E
-L- N 48° 15′ 32.4″ E
TO DOWNTOWN TO FRANKLIN ST.
-L- POT Sta. 52+36.37
-L- PT Sta. 51+44.48
-L- POC Sta. 50+48.98
-Y9- POC Sta. 11+90.60
-L- PC Sta. 48+81.77
-L- POC Sta. 48+41.48
-Y8- POT Sta. 12+08.07
-Y9- STA 12+68.88 END PROP. BRICK SIDEWALK 24′ CONC TIE TO EXIST C&G END CONST. END RESUF.
-Y9- PT Sta. 12+47.14
-Y9- PC Sta. 13+27.16
-Y9- PT Sta. 14+95.64
UNIVERSITY OF NORTH CAROLINA TAX MAP 7.73.J



☆ SIGNAL UPGRADE

FOR INTERSECTION DETAIL SEE SHEET 2-F

FOR -L- PROFILE, SEE SHEET 8
FOR -Y8- PROFILE, SEE SHEET 11
FOR -Y9- PROFILE, SEE SHEET 11

REVISIONS
ROW REVISION: TRM 6/16/08 - REVISED -TCE- AND ROW LABELS ON PARCEL NO.12.

8/17/99

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-0624	8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

-L-
NC 86 (S. COLUMBIA ST.)

BM# 1 ELEV. 346.20'
OUT SIDE CHAIN -L-

BEGIN GRADE
-L- STA. 12+50.00
EL. 364.00'

-L- STA. 14+00.00

-Y1- STA. 14+40.38

388.23

(+)6.000%

(+)4.800%

(+)5.356%

PI = 14+00.00
EL = 370.00'
VC = 160'
K = 333
$V_{DES.}$ = 40 MPH

PI = 16+50.00
EL = 381.20'
VC = 210'
K = 240
$V_{DES.}$ = 40 MPH

BEGIN CONST.
-L- STA. 11+50.00
BEGIN RESUF.

SEE SHEET 4 FOR PLANS

-L-
NC 86 (S. COLUMBIA ST.)

PI = 21+00.00
EL = 405.30'
VC = 200'
K = 474
$V_{DES.}$ = 40 MPH

-L- STA. 21+64.06

-Y2- STA. 20+50.00

369.23

(+)5.356%

(+)4.933%

-L- STA. 27+45.63

-Y3- STA. 28+05.91

450.52

END DITCH GRADE LT.
-L- STA. 29+50
EL = 438.80

(+)4.667%

(+)1.500%

(+)5.000%

BEG. DITCH GRADE LT.
-L- STA. 29+00
EL = 438.00

(+)4.200%

BEG. DITCH GRADE RT.
-L- STA. 28+05
EL = 420.00

(+)1.800%

(+)5.771%

END DITCH GRADE RT.
-L- STA. 30+50
EL = 437.20

PI = 28+50
EL = 421.70

PI = 29+00
EL = 426.10

PI = 29+50
EL = 431.90

PI = 25+50.00
EL = 427.50'
VC = 210'
K = 258
$V_{DES.}$ = 40 MPH

PI = 28+00.00
EL = 437.80'
VC = 200'
K = 4286
$V_{DES.}$ = 40 MPH

PI = 31+00.00
EL = 450.30'
VC = 200'
K = 225
$V_{DES.}$ = 40 MPH
GRADE AHEAD (+)5.0571%

LEFT DITCH

RIGHT DITCH

UNDERCUT EXCAVATION
-L- STA. 18+50 - 27+34 RT.
-L- STA. 27+66 - 31+00 RT.
-L- STA. 30+50 - 31+00 LT.
MAINTAIN EXIST. PAV'T.

BM# 2 -BL- STA. 25+85.50
150.92' LEFT ELEV. 452.84'

UNDERCUT EXCAVATION

SEE SHEET 5 FOR PLANS

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-0624	9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

-L-
NC 86 (S. COLUMBIA ST.)

PI = 31+00.00
EL = 450.30'
VC = 200'
K = 225
$V_{DES.}$ = 40 MPH
GRADE BACK (+)4.1667%

PI = 34+50.00
EL = 468.00'
VC = 190'
K = 455
$V_{DES.}$ = 40 MPH

PI = 38+50.00
EL = 489.90'
VC = 550'
K = 778
$V_{DES.}$ = 40 MPH

(+)5.1051%
(+)15.9750%
(+)4.7680%
450.24
-L- STA. 30+37.69
-Y4- STA. 4+06.18
-L- STA. 33+30.00
-PS- STA. 12+06.89
-L- STA. 33+30.00
-Y6- STA. 12+16.36
-L- STA. 38+76.91
-Y7- STA. 27+80.07
506.38

UNDERCUT EXCAVATION
-L- STA. 31+00 - 38+86 RT.
-L- STA. 31+00 - 32+38 LT.
-L- STA. 33+30 - 34+85 LT.
-L- STA. 39+50 - 42+00 RT.
MAINTAIN EXIST. PAV'T.

UNDERCUT EXCAVATION

SEE SHEET 6 FOR PLANS

-L-
NC 86 (S. COLUMBIA ST.)

PI = 49+43.00
EL = 496.52'
VC = 114'
K = 26
$V_{DES.}$ = 25 MPH

PI = 44+75.00
EL = 519.70'
VC = 320'
K = 33
$V_{DES.}$ = 35 MPH

PI = 47+25.00
EL = 507.30'
VC = 140'
K = 9625
$V_{DES.}$ = 40 MPH

(+)4.7680%
(-)4.8600%
(-)4.9450%
(-)0.5439%
509.59
-L- STA. 48+44.18
-Y8- STA. 29+80.07
-L- STA. 50+46.96
-Y9- STA. 11+90.50
END GRADE
-L- STA. 50+00.00
EL. 496.2'
501.96
END CONST.
-L- STA. 52+00.00
END RESUF.

UNDERCUT EXCAVATION
-L- STA. 42+00 - 48+50 RT.
MAINTAIN EXIST. PAV'T.

BM# 3 -BL- STA. 47+43.91
179.27' LEFT ELEV. 452.84'

UNDERCUT EXCAVATION

SEE SHEET 7 FOR PLANS

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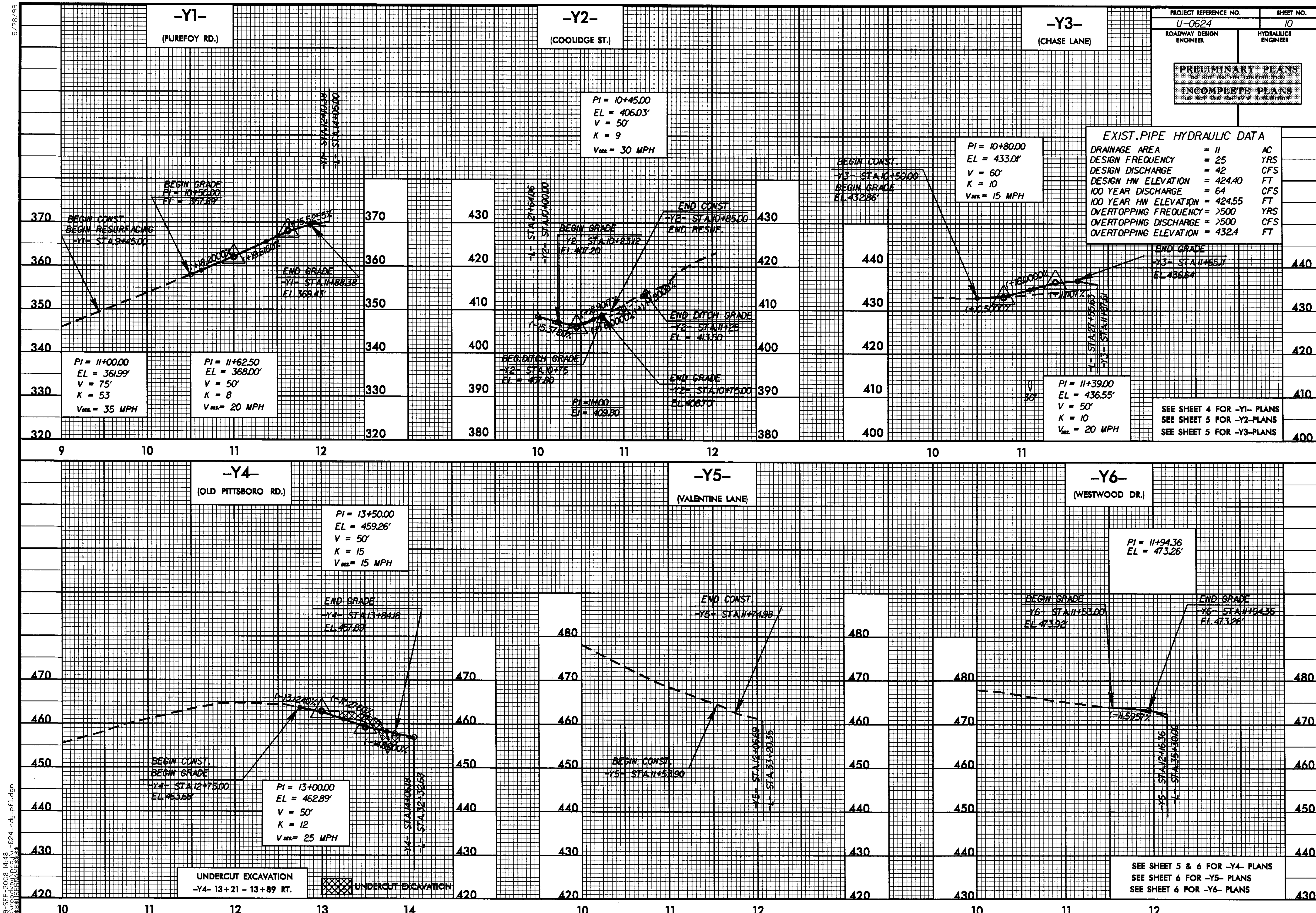

PROJECT REFERENCE NO. U-0624
SHEET NO. 10
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
-Y1- (PUREFOY RD.)
BEGIN CONST. BEGIN RESURFACING -Y1- STA.9+45.00
BEGIN GRADE PI= 10+50.00 EL = 357.89
END GRADE -Y1- STA.11+88.38 EL 369.43
PI= 11+00.00 EL = 361.99' V = 75' K = 53 Vdes.= 35 MPH
PI= 11+62.50 EL = 368.00' V = 50' K = 8 Vdes.= 20 MPH
-Y2- (COOLIDGE ST.)
PI= 10+45.00 EL = 406.03' V = 50' K = 9 Vdes.= 30 MPH
BEGIN GRADE -Y2- STA.10+23.12 EL 407.20
END CONST. -Y2- STA.10+85.00 END RESURF.
END DITCH GRADE -Y2- STA.11+25 EL = 413.50
BEG.DITCH GRADE -Y2- STA.10+75 EL = 407.80
END GRADE -Y2- STA.10+75.00 EL 408.70
PI=11+00 EL= 409.80
-Y3- (CHASE LANE)
BEGIN CONST. -Y3- STA.10+50.00 BEGIN GRADE EL.432.86'
PI= 10+80.00 EL = 433.01' V = 60' K = 10 Vdes.= 15 MPH
END GRADE -Y3- STA.11+65.11 EL.436.84
PI= 11+39.00 EL = 436.55' V = 50' K = 10 Vdes.= 20 MPH
EXIST. PIPE HYDRAULIC DATA
DRAINAGE AREA = 11 AC
DESIGN FREQUENCY = 25 YRS
DESIGN DISCHARGE = 42 CFS
DESIGN HW ELEVATION = 424.40 FT
100 YEAR DISCHARGE = 64 CFS
100 YEAR HW ELEVATION = 424.55 FT
OVERTOPPING FREQUENCY = >500 YRS
OVERTOPPING DISCHARGE = >500 CFS
OVERTOPPING ELEVATION = 432.4 FT
SEE SHEET 4 FOR -Y1- PLANS
SEE SHEET 5 FOR -Y2-PLANS
SEE SHEET 5 FOR -Y3-PLANS
-Y4- (OLD PITTSBORO RD.)
PI= 13+50.00 EL = 459.26' V = 50' K = 15 Vdes.= 15 MPH
END GRADE -Y4- STA.13+84.16 EL.457.89
BEGIN CONST. BEGIN GRADE -Y4- STA.12+75.00 EL.463.68
PI= 13+00.00 EL = 462.89' V = 50' K = 12 Vdes.= 25 MPH
UNDERCUT EXCAVATION -Y4- 13+21 - 13+89 RT.
UNDERCUT EXCAVATION
-Y5- (VALENTINE LANE)
END CONST. -Y5- STA.11+74.98
BEGIN CONST. -Y5- STA.11+53.90
-Y6- (WESTWOOD DR.)
PI= 11+94.36 EL = 473.26'
BEGIN GRADE -Y6- STA.11+53.00 EL.473.92
END GRADE -Y6- STA.11+94.36 EL.473.26'
SEE SHEET 5 & 6 FOR -Y4- PLANS
SEE SHEET 6 FOR -Y5- PLANS
SEE SHEET 6 FOR -Y6- PLANS

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-0624	11
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

-Y7-
(WESTWOOD DR.)/
(MASON FARM RD.)

BEGIN CONST.
BEGIN GRADE
-Y7- STA.12+12.97
EL.489.87'

END GRADE
-Y7- STA.12+52.45
EL.489.48'

-Y7- STA.12+80.22
-L- STA.38+76.81

PI = 12+38.00
EL = 489.05'
VC = 28'
K = 4
$V_{des.}$ = 15 MPH

-13.5057% (+)2.9950%

BEGIN GRADE
-Y7- STA.13+08.87
EL.491.27'

PI = 13+40.00
EL = 491.58'
VC = 60'
K = 18
$V_{des.}$ = 25 MPH

(+)0.9979%

END GRADE
-Y7- STA.13+75.00
EL.493.12'

END CONST.
-Y7- STA.14+25.00
END RESUF.

UNDERCUT EXCAVATION
-Y7- 13+53 - 13+93 LT.
MAINTAIN EXIST. PAV'T.

UNDERCUT EXCAVATION

SEE SHEET 6 FOR -Y7- PLANS

-Y8-
(PITTSBORO RD.)

BEGIN CONST.
-Y8- STA.10+65.00
BEGIN RESUF.

BEGIN GRADE
-Y8- STA.11+00.00
EL.496.19'

-Y8- STA.11+46.98
-L- STA.46+91.88

-16.5347%

(+)2.0000%

PI = 11+25.00
EL = 496.69'
VC = 50'
K = 11
$V_{des.}$ = 15 MPH

BEGIN GRADE
-Y8- STA.11+62.06
EL.500.42'

SEE SHEET 7 FOR -Y8- PLANS

-Y9-
(MANNING DR.)

BEGIN RESUF.
-Y9- STA.11+07.26

-Y9- STA.11+90.60
-L- STA.50+46.98

END RESURF
-Y9- STA.12+68.88

SEE SHEET 7 FOR -Y9- PLANS

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