

A RESOLUTION ON THE PROPOSED MODIFICATIONS
TO SMITH LEVEL ROAD
Resolution No. 80/2004-05

WHEREAS, the N.C. Department of Transportation (NCDOT) has proposed to widen a portion of Smith Level Road, TIP Project U-2803; and

WHEREAS, on March 18, 2003, the Board of Aldermen adopted a resolution requesting that the N.C. Department of Transportation consider an alternative design for the proposed modifications to Smith Level Road between Morgan Creek and Rock Haven Road.

WHEREAS, on January 18, 2005, the Board of Aldermen requested additional information regarding the amount of right-of-way needed for the alternative and the cost of acquiring this right-of-way.

NOW, THEREFORE, BE IT RESOLVED by the Carrboro Board of Aldermen that the Board receives the staff report providing an update on the Smith Level Road project.

This is the 8th day of February in the year 2005.



TOWN OF CARRBORO

NORTH CAROLINA

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The following resolution was introduced by Alderman Joal Hall Broun and duly seconded by Alderman Alex Zaffron.

**A RESOLUTION REQUESTING THAT THE N.C. DEPARTMENT OF TRANSPORTATION
CONSIDER AN ALTERNATIVE DESIGN FOR THE PROPOSED MODIFICATIONS
TO SMITH LEVEL ROAD BETWEEN MORGAN CREEK AND ROCK HAVEN ROAD
Resolution No. 123/2003-04**

WHEREAS, the N.C. Department of Transportation (NCDOT) has proposed to widen a portion of Smith Level Road, from the Morgan Creek Bridge to Rock Haven Road (TIP Project U-2803); and

WHEREAS, it is the Board's desire to modify Smith Level Road to the extent that it can safely and effectively accommodate existing and future pedestrian, bicycle, and vehicular traffic; and

WHEREAS, it is important to the Board that such modifications be designed and constructed to minimize disturbance of adjacent properties and maximize the mobility, safety, and access of transit users, pedestrians, and bicyclists; and

WHEREAS, the Board believes that the principles and procedures of Context-Sensitive Design should be incorporated into the development of the project; and

WHEREAS, the Board believes that the principles of Transportation Demand Management should be utilized to reduce the amount of traffic on Smith Level Road; and

WHEREAS, the project proposed by the N.C. Department of Transportation (NCDOT) includes construction of a four-lane, median-divided roadway with two travel lanes in each direction, a raised center median, curb and gutter, bike lanes, sidewalks, and bus pull-offs; and

WHEREAS, the Board believes that a more modest project design could meet the objectives of the Town and the State with regard to Smith Level Road, at a lower cost than the State's proposed option, and with less disturbance of adjacent properties;

NOW, THEREFORE, BE IT RESOLVED by the Carrboro Board of Aldermen that the Board proposes a project design for Smith Level Road that would consist of two travel lanes (one lane in each direction) with intersection improvements, turn lanes, pedestrian crosswalks, and bus pull-offs where necessary; that sidewalks, bike lanes, and curb and gutter be provided on both sides of the roadway; and that a median on portions of the project could provide aesthetic and safety benefits and should be considered.

BE IT FURTHER RESOLVED that the Board understands that the State acquire right-of-way on the basis of a four-lane median divided cross-section to facilitate the design and construction of the project.

BE IT FURTHER RESOLVED that the Board requests that the State reallocate any surplus project funds, which may accrue as a result of a more modest project design to additional pedestrian, bicycle, and vehicular safety and efficiency improvements in the vicinity of Smith Level Road.

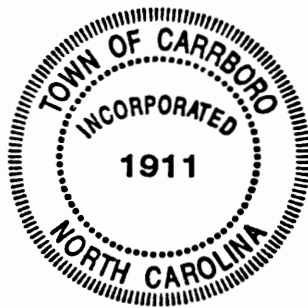
The foregoing resolution having been submitted to a vote, received the following vote and was duly adopted this 18th day of March, 2003:

Ayes: Joal Hall Broun, Jacquelyn Gist, John Herrera, Michael Nelson, Alex Zaffron

Noes: None

Absent or Excused: Mark Dorosin, Diana McDuffee

I, Sarah C. Williamson, Town Clerk of the Town of Carrboro, do hereby certify that the foregoing is a true and correct copy of a resolution adopted by the Carrboro Board of Aldermen at its meeting on March 18, 2003.



Sarah C. Williamson
Town Clerk

SMITH LEVEL ROAD (PROJECT U-2803)
 CHRONOLOGY
 1985 – 2005

DATE	ACTION
1985	NCDOT's Chapel Hill-Carrboro Thoroughfare Plan lists Smith Level Road as a primary arterial in need of widening. The Plan recommends widening the road to a four-lane cross section with a median.
March 13, 1990	Carrboro Board of Aldermen held a public hearing, and adopted the 1990-1991 Municipal TIP as recommended by the TAB. The second priority among "urban" projects that were requested was to "widen Smith Level Road to five lanes from NC 54 to Rock Haven Road with bikelanes and grade for sidewalks."
Winter 1990	Durham-Chapel Hill-Carrboro MPO listed the project as one of regional significance in the regional 1990-1992 TIP.
April 2, 1991	Carrboro Board of Aldermen held a public hearing, and adopted the 1991-1992 Municipal TIP as recommended by the TAB and continued to include the Smith Level widening as a second priority.
March 3, 1992	The Carrboro Board of Aldermen held a public hearing, and adopted the 1992-1993 Municipal TIP with Smith Level Road listed as the number two priority.
June 1992	North Carolina Board of Transportation included the project in the 1993-1999 TIP, and designated the project U-2803.
October 27, 1992	The Carrboro Board of Aldermen held a public hearing, and adopted the 1993-1994 Carrboro Transportation Improvement Program as recommended by the TAB, with Smith Level Road listed as the number two priority. The widening would be done in accordance with the previously stated requests.
December 11, 1992	NCDOT presented the results of a feasibility study for the Smith Level Road project (U-2803). The study looked at widening the road from the county line to the Morgan Creek Bridge.
April 8, 1993	Town officials met with NCDOT to discuss feasibility study and to reject the proposal that widening should extend to county line/intersection with US 15-501.
April 23, 1993	NCDOT presented an addendum to the feasibility study that clarified that the project, as studied, did not match the town's request. NCDOT,

in evaluating projected traffic volumes, had recommended expanding the scope to the county line.

- November 23, 1993 The Board of Aldermen held a public hearing, and adopted the 1994-1995 Municipal TIP as recommended by the TAB. The 1994-1995 TIP lists widening Smith Level Road as the number two priority.
- December 14, 1993 Mayor Eleanor G. Kinnaird wrote a letter to Mr. Whitmel Webb of NCDOT requesting that the agency combine the project proposal for Hillsborough Road to include the widening of Old Fayetteville Road from NC 54 northwards to Hillsborough Road.
- June 26, 1995 Governing boards of Chapel Hill and Carrboro jointly adopted a resolution for protecting entranceways, Smith Level among them, and requires each community to exercise plans and policies that will protect the visual character of the road.
- December 4, 1995 NCDOT submitted a letter to the town that presented its finding regarding existing right-of-way along Smith Level Road. The letter also stated that surveys for U-2803 would not be authorized until October 1997 and that completed plans for right-of-way acquisition would be expected in 1999.
- July 7, 1997 A scoping meeting was held on U-2803, which called for widening Smith Level Road to a multi-lane facility between the Morgan Creek Bridge and Rock Haven Road. NCDOT proposed a five-lane section with curb and gutter, accommodations for bicycles and grading for sidewalks. With the exception of Kenneth Withrow, Carrboro Transportation Planner, all attendees supported extending the project to Damascus Church Road and relocating that road's intersection with Smith Level Road in order to allow for better transition.
- January 30, 1998 Representatives of Chapel Hill and Carrboro met with NCDOT representatives to discuss the status of TIP projects. The town representatives noted that the proposal to extend the project beyond Rock Haven Road was incompatible with the rural buffer and joint planning plan/agreement.
- February 2, 1998 Alderman Alex Zaffron submitted a letter to NCDOT Traffic Engineer, J.W. Watkins, reiterating the outcome of the January 30th meeting. Agreement was reached between Orange County officials and NCDOT staff that "(1) Smith Level Road would be designed as a five-lane facility from the Morgan Creek bridge to its intersection with Rock Haven Road, and (2) south of Rock Haven Road intersection, Smith Level Road would be reduced to no more than three lanes and tapered down to two lanes prior to its entrance into the University Lake

watershed area (i.e. the intersection of Smith Level Road and Ray Road).

- February 13, 1998 J. W. Watkins replied to Alderman Zaffron's correspondence and stated that "it is our understanding that the plan for improvements...will be a five lane, curb and gutter section from Morgan Creek Bridge to Rock Haven Road. South of Rock Haven Road, a three lane section will taper into the existing two lane road in the shortest distance possible for a safe transition."
- February 13, 1998 Mayor Mike Nelson submitted a letter to Governor Jim Hunt requesting his support for Orange County's request, as expressed in Alderman Zaffron's letter of February 3rd. A copy of that letter was attached.
- March 17, 1998 NCDOT submitted a request for information as part of its research on the proposed improvements. The memo also noted that the project was included in the 1998-2004 TIP and that it was scheduled for r/w acquisition in 2000 and construction in 2002.
- July 2, 1998 Town staff met with NCDOT staff to discuss the project scope and to recommend that a four-lane, median divided highway was preferable to a five lane section.
- August 11, 1998 Town staff submitted a letter to NCDOT providing justification for the four-lane request. NCDOT staff informed the town that until the town adopts a design and defines the width of the road project, NCDOT would not proceed.
- November 3, 1998 Transportation Advisory Board met to review possible road designs.
- February 25, 1999 Robert W. Morgan, Town Manager, presented a status report to the Board of Aldermen on U-2803.
- April 25, 1999 The Board of Aldermen, during their April 20, 1999 meeting directed staff to, "in cooperation with NCDOT staff, schedule a public meeting to create and present three design alternatives for Smith Level Road's widening. The three design alternatives proposed for Smith Level Road are: (1) a two-lane curb and gutter facility with bikelanes and a sidewalk on both sides, (2) a five-lane curb and gutter facility with bikelanes and a sidewalk on both sides, and (3) a four-lane, median divided facility with curb and gutter, bikelanes, and a sidewalk on both sides." A request to schedule this public meeting was forwarded to NCDOT.

- January 6, 2000 Meeting between town officials and NCDOT staff to decide on typical sections that would be presented during a Citizens Informational Workshop. Due to projected traffic volumes, NCDOT did not consider the two-lane option reasonable. The four-lane and five-lane options would be presented at the citizens workshop.
- April 19, 2000 NCDOT presented a Citizens Information Workshop in Room 110 at the Carrboro Town Hall from 4:00 p.m. to 7:00 p.m. Fifteen citizens attended the workshop. Most of the attendees preferred the four-lane section, appreciated the bike/ped facilities and were pleased that the project limits did not continue south of Rock Haven Road.
- May 19, 2000 NCDOT sent a letter to the Town requesting any additional comments on the proposed sections.
- October 25, 2001 The N.C. Department of Transportation held a Pre-Hearing Open House and Formal Public Hearing from 5:00 p.m. to 9:00 p.m. Approximately 50 persons attended the meeting. Most speakers expressed support for the bike/ped facilities, but many speakers questioned the need for the project, expressed concern about impacts of the proposed four-lane roadway, and stated that the project did not address existing problems on Smith Level Road.
- November 13, 2001 The Board of Aldermen during their meeting heard from citizens regarding concerns about the proposed road design. The Board of Aldermen authorized Mayor Nelson to forward a letter to NCDOT and the Town's legislative delegation requesting additional information and reconsideration of the widening project.
- December 4, 2001 Town officials met with State officials in Raleigh to discuss the project. Those in attendance included Mayor Mike Nelson, Senator Eleanor Kinnaird, Board of Transportation member Doug Galyon, Town Manager Robert Morgan, Deputy State Highway Administrator Len Hill, and Division Engineer Mike Mills. At the close of the meeting, Mr. Galyon said that the State recognizes that Orange County is different and unique and would try to accommodate local desires in every way possible as long as good, safe transportation practices will continue.
- January 7, 2002 Meeting between town officials and NCDOT staff to discuss the comments from the October 25 public hearing and to determine additional actions to be taken by NCDOT staff. Attendees included Mayor Mike Nelson, Alderman Alex Zaffron, Town Manager Robert Morgan, Deputy State Highway Administrator Len Hill, and Division Engineer Mike Mills. It was determined that additional information was needed to address many of the issues and an interim plan of action

was developed. The State prepared a written summary of this meeting, entitled the Interim Post Hearing Response

- May 21, 2002, Town staff sent a follow-up letter to the State, noting several additional issues that were discussed at the Post Public Hearing Meeting but were not referenced in the Interim Post Hearing Response.
- August 15, 2002 Meeting between town officials and NCDOT staff to review revised traffic projections and analysis of level of service for intersections and the road corridor.
- August 20, 2002 The Carrboro Town Manager, Police Chief, Fire Chief, Deputy Fire Chief and representatives from the Planning Department meet to discuss the emergency response and public safety issues related to Smith Level Road.
- October 15, 2002 A joint worksession was held with the Transportation Advisory Board (TAB) to meet with NCDOT staff and review the information that has been compiled. Following the joint worksession, the Board of Aldermen adopted a resolution accepting the report and referring it to Town staff and the TAB for a recommendation within 30 days.
- November 21, 2002 The Transportation Advisory Board adopted a resolution which recommends that the Board of Aldermen reject NCDOT's proposal for widening Smith Level Road to four lanes and also provides additional comments on the project.
- February 11, 2003 The Board of Aldermen discussed the proposed widening of Smith Level Road and reviewed three options identified by Town staff. The Board adopted a resolution indicating that the Town will propose an alternative to the four-lane design proposed by NCDOT.
- March 18, 2003 The Board of Aldermen adopted a resolution requesting that the N.C. Department of Transportation consider an alternative design for the proposed modifications to Smith Level Road between Morgan Creek and Rock Haven Road.
- June 28, 2004 Meeting between town and county officials, NCDOT staff, and Board Member Doug Galyon to discuss the project. Mr. Galyon requested that NCDOT staff prepare revised traffic projections and analysis of level of service for intersections and the road corridor.
- January 5, 2005 Meeting between town officials, NCDOT staff, and Board Member Doug Galyon to review revised traffic projections and analysis of level of service for intersections and the road corridor. NCDOT proposes an alternative to the four-lane, median divided design.



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

August 16, 2004

Memorandum

TO: Brenda Moore, P.E.
Roadway Design Unit

FROM: Laura Cove, P.E. *LAC*
Transportation Planning Branch

RE: Traffic Forecast for Project U-2803 (Smith Level Road) *Orange*

RECEIVED

AUG 18 2004

NC Dept. of Transportation
Division of Highways-7th Div.

We have received your Project Level Traffic Forecast Request dated June 28, 2004 for the subject project. We understand that the Town of Carrboro has expressed a concern over the projected volumes identified in the existing traffic forecast dated June 4, 2002. Because of these concerns we have agreed to reevaluate the existing traffic forecast and take into account updated information, including 2030 land use projections that will be used in the updated travel demand model. The 2030 land use projections supplied by the Town of Carrboro to the MPO for use in the updated Triangle Regional Model include changing high-density residential land to employment (new high school) in a large tract adjacent to the project.

As per your request, we evaluated two different scenarios. The first scenario is a proposed two-lane median divided roadway and the second scenario is a proposed four-lane median divided roadway. Both of these scenarios were evaluated with a speed limit of 35 mph.

Based on our analysis under the conditions that you proposed, namely the 35 mph speed limit, we found that there was no substantial difference in the projected 2030 volumes for either a two-lane median divided roadway or a four-lane median divided roadway. We have attached an updated traffic forecast which should be used for either scenario.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
TRANSPORTATION PLANNING
1554 MAIL SERVICE CENTER
RALEIGH NC 27688-1554

TELEPHONE: 919-733-4705
FAX: 919-733-2417
WEBSITE: WWW.DOT.STATE.NC.US

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

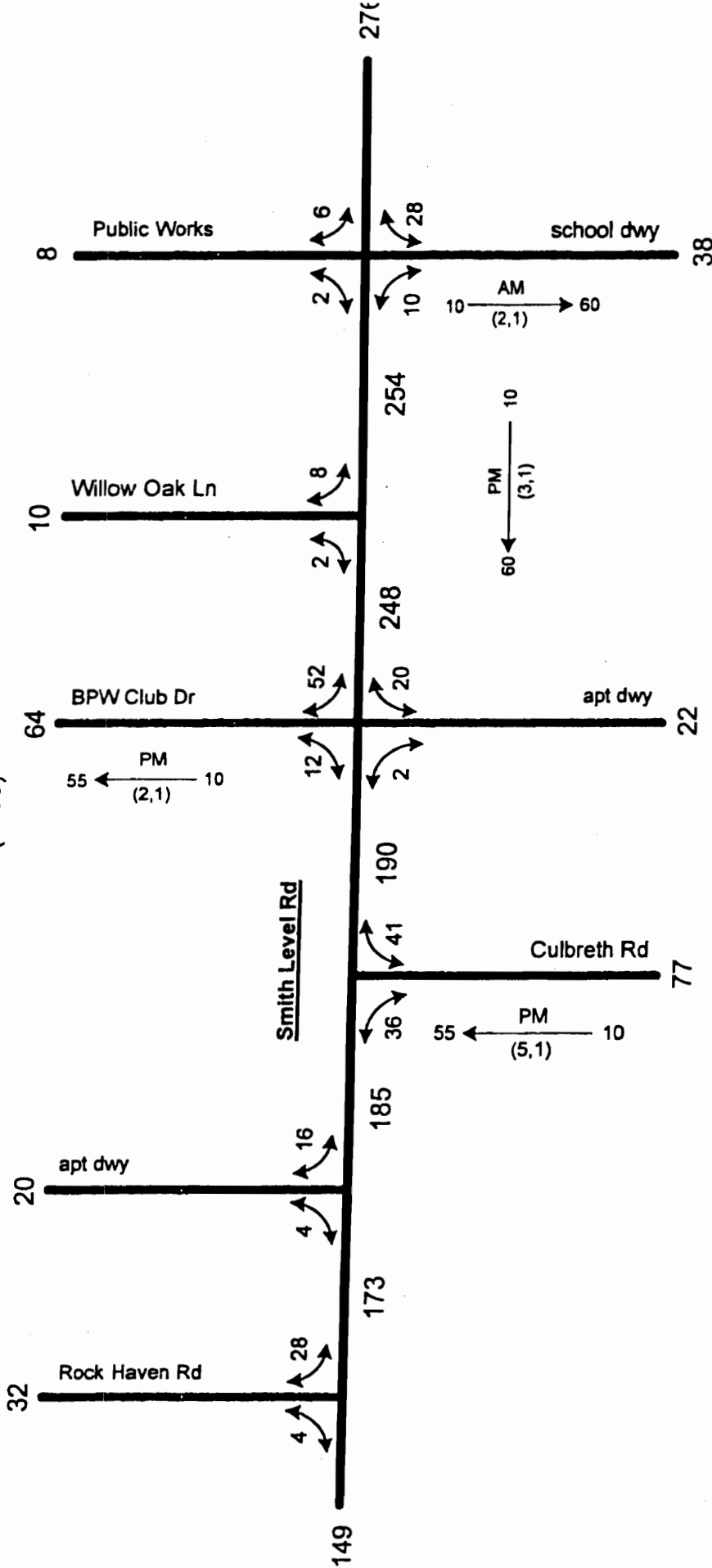
We support your efforts to design a context sensitive solution as the Town of Carrboro has requested as long as safety remains a priority. Smith Level Road is functionally classified as a minor arterial *not* of regional or statewide significance. Regional travel into and out of Carrboro and Chapel Hill would be better served on US 15-501. From a planning perspective, limiting the number of lanes for use by automobiles is more consistent with the Town's walkable community goals. We have attached a March 18, 2003, resolution from the Town of Carrboro which describes their goals in more detail. However, we also recommend that NCDOT receive assurance from the Town of Carrboro that the Town will accept a context sensitive solution which may not meet the long term vehicular mobility needs in the area. NCDOT should also challenge the Town to implement planned travel demand management measures in the corridor as a means to limit growth of automobile trips on Smith Level Road, with a focus on reducing automobile trips to the elementary school. A system of bicycle facilities that provide continuous routes to the UNC campus, sidewalks along neighborhood roadways which connect to Smith Level Road, and convenient transit stops should be constructed by the Town of Carrboro within five years. The Town's land use plan should also allow neighborhood-scale commercial development along Smith Level Road to offer convenient services within walking and biking distance of surrounding residential areas.

If you have any questions, please do not hesitate to contact me or Mike Orr at (919) 733-4705.

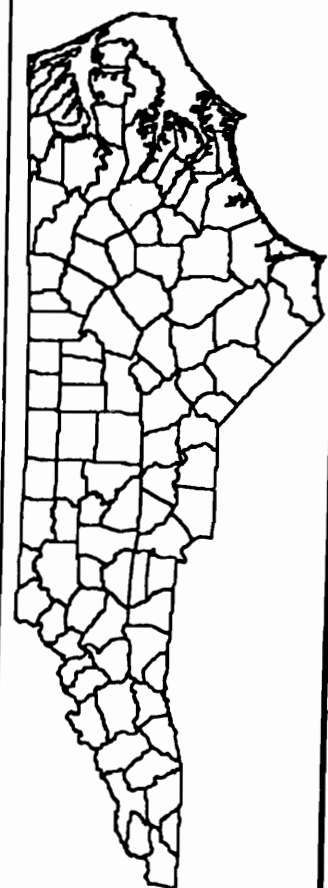
- cc: Doug Galyon, Chairman, Board of Transportation
- Nathan Phillips, P.E., Traffic Engineering
- Jay Bennett, P.E., Roadway Design
- Jay McInnis, P.E., PDEA
- Scott Walston, P.E., TPB
- Michael Orr, A.I.C.P., TPB
- Rhett Fussell, P.E., TPB
- Tim Padgett, P.E., TPB
- FILE (U-2803 Orange County)

2030 Estimated AADTs

(x100)



Drawing Not to Scale



LEGEND

XXX VPD-VEHICLES PER DAY
 DHH DESIGN HOURLY VOLUME (%)
 D DIRECTIONAL FLOW (%)
 PM PM PEAK PERIOD
 (A,B) DUALS, TST (%)
 NOTE: DHH → D INDICATES THE DIRECTION D.
 REVERSE FLOW FOR AM PEAK.



Smith Level Road
 2-lane or 4-lane
 35 MPH

Orange County Division 7
 TIP # U-2803 August 200
 WBS# 34860.1.1 prepared by M.

Post-It® Fax Note	7671	Date: 11/15/04	# of Pages: 2
To: Dale McKeel	From: Brenda Moore		
City/Dept: Town of Carrboro	Co: NCDOT		
Phone #	Phone #: 919-250-4016		
Fax #: 919-918-4454	Fax #		



NORTH CAROLINA
TRANSPORTATION

NOV 15 2004
ATTACHMENT E

LYNDO TIPPETT
SECRETARY

GOVERNOR

November 4, 2004

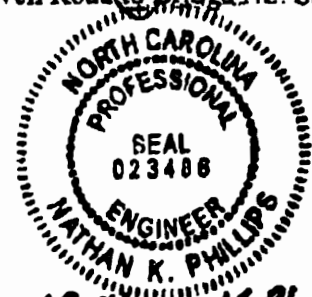
TIP Project: U-2803
 County: Orange
 Description: SR 1919 (Smith Level Road), Widening from Rock Haven Road to Bridge No. 88 Over Morgan Creek

MEMORANDUM

TO: Art McMillan, P.E.
 State Highway Design Engineer

FROM: Nathan K. Phillips, P.E., Plan Review Engineer
 Congestion Management Section

SUBJECT: Supplemental Review of TIP Project U-2803



Nathan K Phillips
11-4-04

As requested the Plan Review Group of the Traffic Engineering and Safety Systems Branch has completed a supplemental review of the aforementioned project to determine the impact of the revised traffic forecast. Our Transportation Planning Branch completed the revised forecasts in August of 2004. This review investigated the recommended typical section for the project and the feasibility of maintaining a roundabout at the intersection of Smith Level Road and Rock Haven Road. Based upon this review, we have the following comments.

The traffic volumes decreased by 100 vehicles a day from the previous two-lane scenario traffic forecast, which corresponds to approximately ten vehicles in the design hour. This decrease is not significant and does not alter the recommendations presented in our memorandum dated August 28, 2002 to Mr. Dale McKeel. Based upon these volumes, a two-lane facility will not adequately service design year traffic along Smith Level Road. Therefore we still recommend a four-lane divided roadway as the typical section for this project.

Due to the recent proposal of the new Chapel Hill-Carrboro High School in the project area, specifically off Rock Haven Road and BPW Club Road, we revisited the proposed roundabout at the intersection of Rock Haven Road and Smith Level Road. Based upon the submitted Traffic Impact Analysis provided by Ramey Kemp and Associates, Inc, dated June 2004 and the review provided by our Access Management Group, we have concerns with the proposed roundabout. Based on the volumes presented in the TIA and the access pattern recommended by Access Review, the roundabout will fail to service design year volumes. The estimated traffic growth for Smith Level Road is approximately one percent per year based upon the provided traffic forecast. Using this growth rate and the projected traffic associated with the school, we estimated the service life for the roundabout. With a high school population of 800 students and the addition of a northbound bypass lane to improve operations at the roundabout, the roundabout is anticipated to adequately service traffic until 2012. After this time, the roundabout is expected to experience operational problems, which will be exacerbated if the school's student population increases to 1,300 in 2013 as planned. At this time, improvements would need to be incorporated to the

MAILING ADDRESS:
 TRAFFIC ENGINEERING AND SAFETY SYSTEMS BRANCH
 1592 MAIL SERVICE CENTER
 RALEIGH, NORTH CAROLINA 27599-1592

TELEPHONE: 919-250-4151
 FAX: 919-250-4195

WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
 CENTURY CENTER COMPLEX BUILDING B
 1020 BRICH RIDGE DRIVE
 RALEIGH, NORTH CAROLINA 27610

11/04/04

E-6

roundabout which potentially could include signalization. As a result, we do not recommend a roundabout at this location. Our Access Management Group will make specific recommendations for this intersection as part of their review of the school site.

If you have any questions, please contact me or James Dunlop at 250-4151.

NKP/

cc: J. M. Mills, P. E. (Attention: V. E. Barham, P.E.)
T. M. Hopkins, P.E. (Attention: A. D. Wyatt, P.E.)
J. A. Bennett, P.E. (Attention: Brenda Moore, P.E.)
V. L. Embry
J. H. Dunlop, P.E.



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

August 28, 2002

TIP Project: U-2803
County: Orange
Description: SR 1919 (Smith Level Road), Widening from Rock Haven Road to Bridge No. 88 Over Morgan Creek

MEMORANDUM

TO: Dale McKeel, Transportation Planner
Town of Carrboro, North Carolina

FROM: Nathan K. Phillips, P.E., Plan Review Engineer
Congestion Management Section

SUBJECT: Summation of Supplemental Review of TIP Project

As requested the Plan Review Squad of the Traffic Engineering and Safety Systems Branch has completed a summation of the additional review of this project completed at your request. This additional review included performed intersection and arterial analyses for a two-lane facility with improvements and a reduced travel speed. The 2025 design year traffic projections provided by the Statewide Planning Branch were used to determine the levels of service (LOS) for these analyses.

As previously mentioned, the additional analyzed scenario presents maintaining a 2-lane section along Smith Level Road with reduced speed and intersection improvements. **Tables 1 and 2** present the results of the capacity analysis of this scenario based on these conditions.

Table 1: 2025 Intersection Levels of Service Along Smith Level Road

Intersection	Additional Scenario	
	AM	PM
Rock Haven Rd		
NB L	A	B
EB L	F	E
EB R	B	C
Apt. Entrance		
NB LT	A	B
EB L	F	F
EB R	B	C
Culbreth Rd.	C	B

MAILING ADDRESS:
TRAFFIC ENGINEERING AND SAFETY SYSTEMS BRANCH
1592 MAIL SERVICE CENTER
RALEIGH, NORTH CAROLINA 27599-1592

TELEPHONE: 919-250-4151
FAX: 919-250-4195

WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
CENTURY CENTER COMPLEX BUILDING B
1020 BIRCH RIDGE DRIVE
RALEIGH, NORTH CAROLINA 27610

29

BPW Club Rd.	E	D
Willow Oak Ln. NB L EB L EB R	B F C	B F E
Pub. Works / School	B	B

Table 2: 2025 Mainline Levels of Service Along Smith Level Road in the Project Area

Scenario	AM	PM
Additional Scenario	E	E

Summary

As shown in **Tables 1 and 2**, several movements, an intersection, and the arterial as a whole are anticipated to operate at unacceptable levels of service in the design year for this scenario.

To further investigate the future operations of this facility as a two-lane section with reduced speed and intersection improvements, we simulated Smith Level Road using the software package, SimTraffic. This analysis was based upon the optimized signal timings developed using the traffic software package, Synchro Professional. The SimTraffic analysis showed, as we demonstrated at the August 15, 2002 meeting held in the NCDOT Roadway Design Conference Room, that queues along Smith Level Road become excessive and spillback into adjacent intersections. This analysis helps to show the operational problems associated with this design that may go unnoticed with using just Synchro and Highway Capacity Software analyses. I have attached a still shot of the simulation to this report to help better illustrate our concerns.

As we had informed you in the previously mentioned meeting, a single lane roundabout is expected to adequately service design year traffic for the intersection of Smith Level Road and Rock Haven Road and we would not object to one being installed at this location as part of this project.

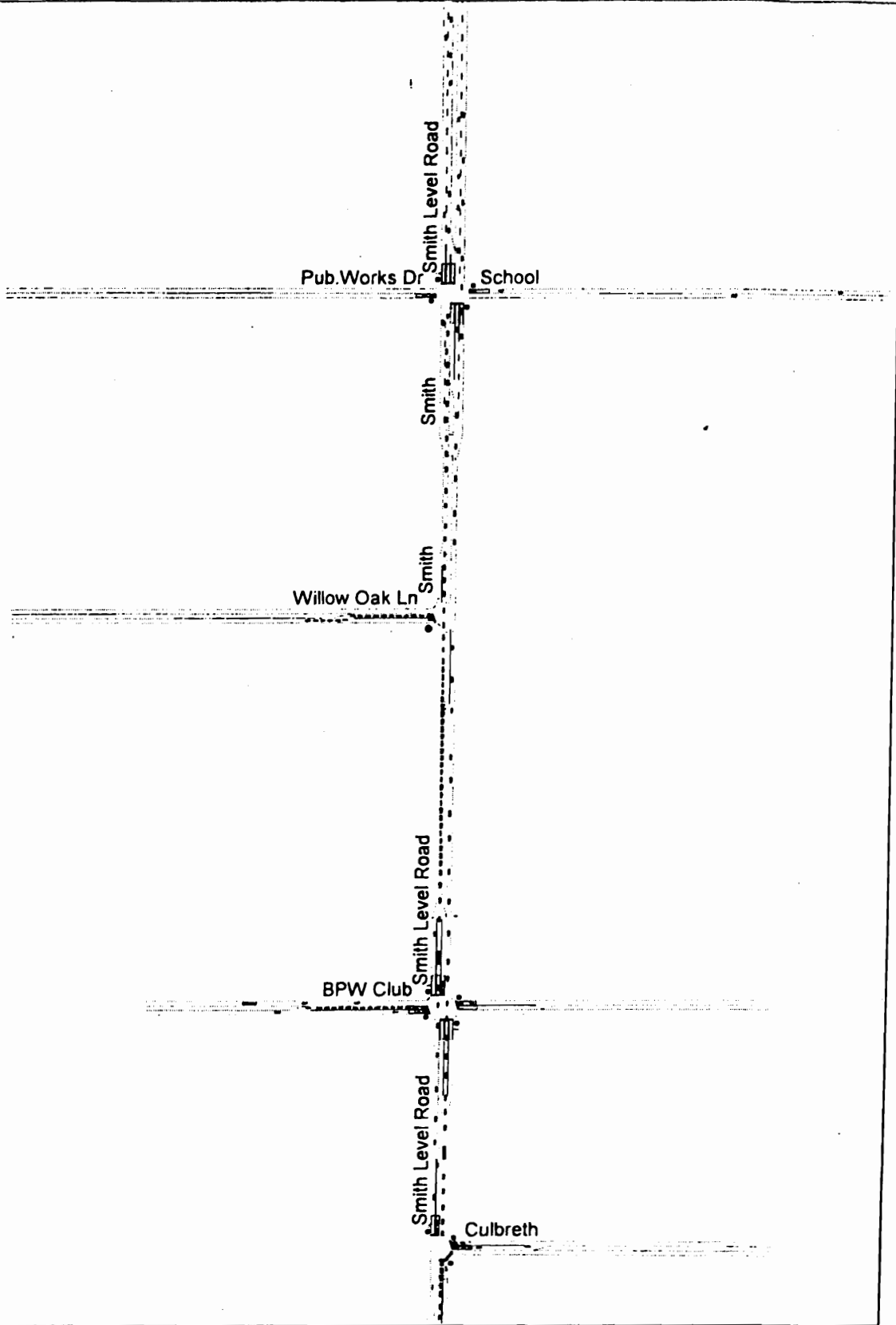
Also as requested by the Town of Carrboro, we contacted Mr. Leif Ourston with Ourston Roundabout Engineering to discuss potential issues and concerns with providing roundabout design along a facility with a seven percent grade. The FHWA publication of *Roundabouts: An Informational Guide*, suggest designers avoid locating roundabouts where grades through the intersection are greater than four percent. Mr. Ourston confirmed this and stated it could be a visibility concern. To alleviate this situation, Mr. Ourston stated that through the use of a crest vertical curve the grade would need to be reduced to at least four percent through the roundabout. He also reiterated his earlier comment that dual lane roundabouts would be needed in this section to adequately serve design year traffic. At this time, the Department is not in favor of installing multilane roundabouts until we have more information on their operations and ability to service traffic volumes in these ranges.

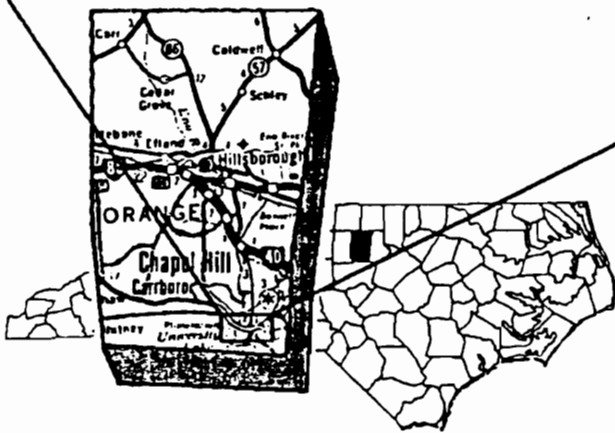
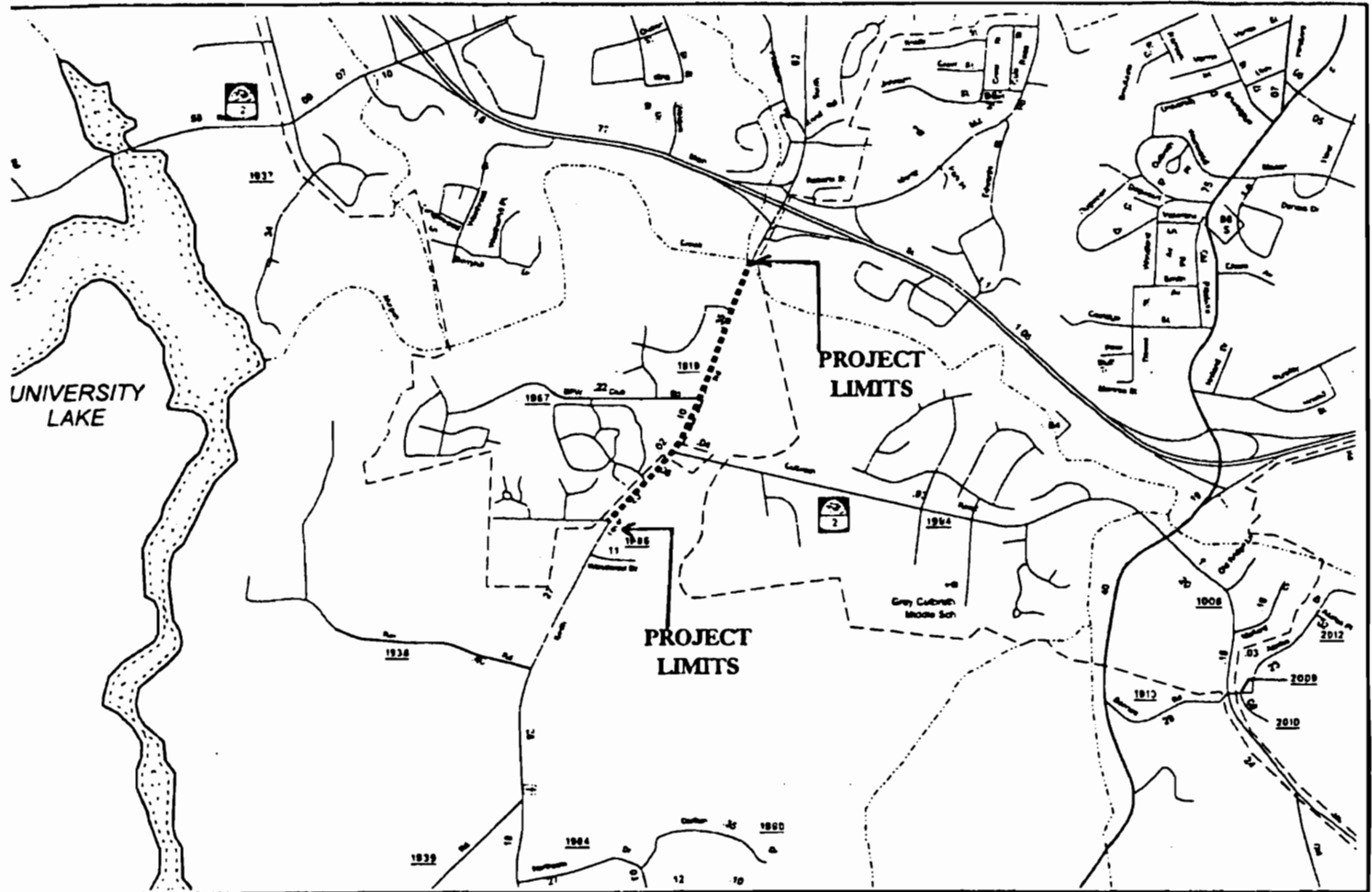
If you have any questions, please contact me or , James Dunlop P.E., Congestion Management Engineer at 250-4151.

NKP/
 Att

cc: J. M. Mills, P. E. (Attention: V. E. Barham)
 T. M. Hopkins, P.E. (Attention: J. H. Dunlop, P.E.)
 J. A. Bennett, P.E. (Attention: Art McMillan, P.E.)

J. H. Grant, P. E.
 R. E. Mullinax, P.E.
 R. L. Hill, P.E.





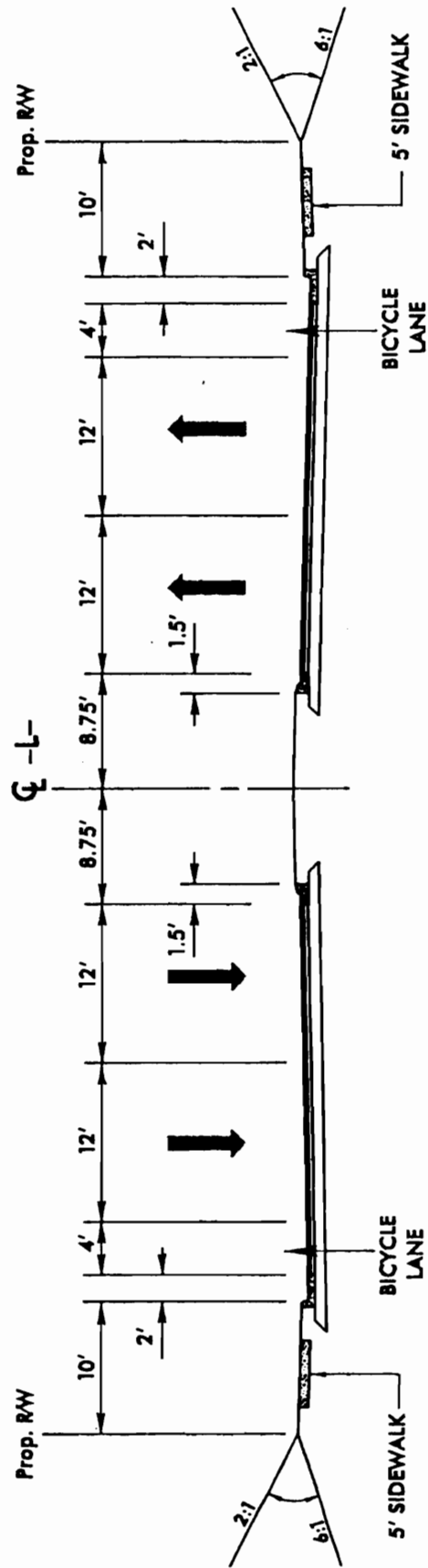
NORTH CAROLINA DEPARTMENT OF
TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS BRANCH

SR 1919 (SMITH LEVEL ROAD)
FROM ROCK HAVEN ROAD
TO BRIDGE 88 OVER MORGAN CREEK
CARRBORO, ORANGE COUNTY
U-2803

NOT TO SCALE

FIGURE 1

PROPOSED TYPICAL SECTION

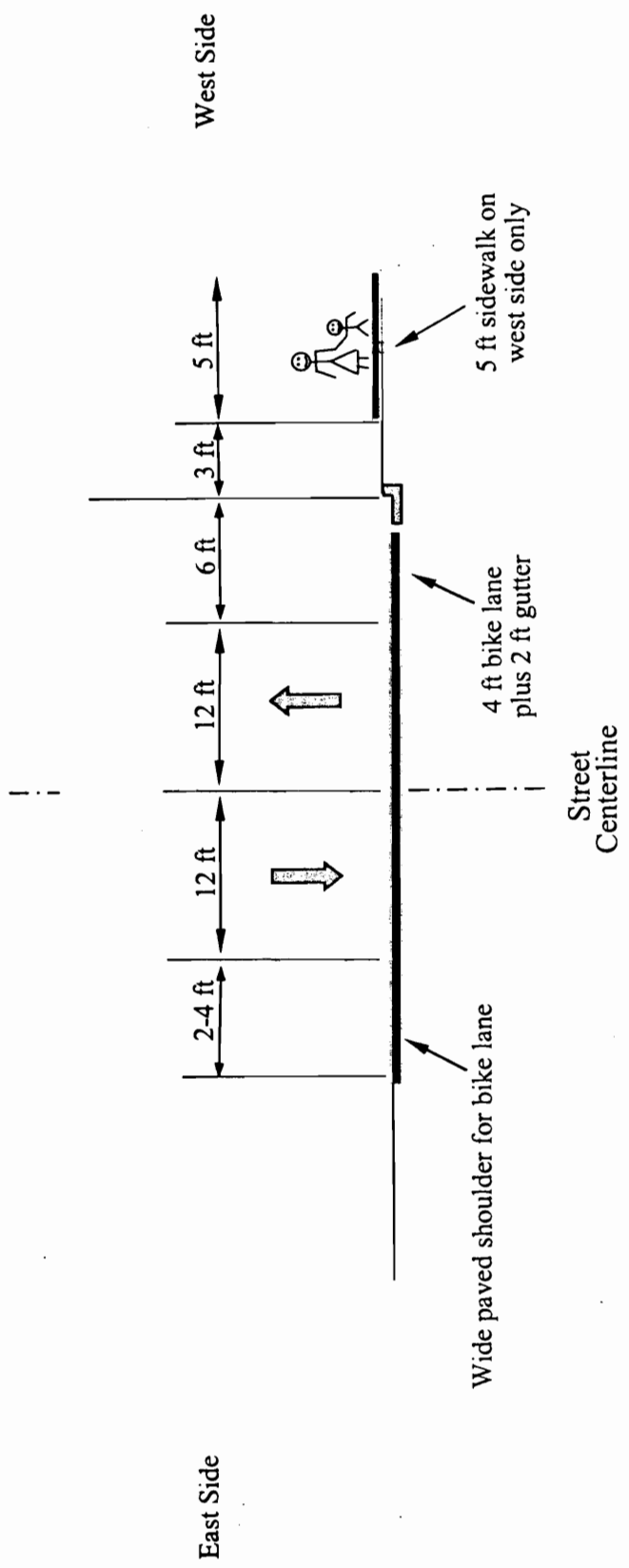


TYPICAL SECTION 4-LANE DIVIDED

Alternative Proposal for Smith Level Road Improvements

Cross-Section With Bike Lanes on Both Sides and Curb and Gutter on One Side

Proposed by the N.C. Department of Transportation - January 5, 2005



NOT TO SCALE

