ATTACHMENT A

A RESOLUTION ON THE PROPOSED MODIFICATIONS TO SMITH LEVEL ROAD

Resolution No. 43/2002-03

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

WHEREAS, a public hearing on the proposed widening of Smith Level Road was held on October 25, 2001; and

WHEREAS, the Board of Aldermen has requested that NCDOT provide additional information on the project in response to citizen and Town comments; and

NOW, THEREFORE, BE IT RESOLVED by the Carrboro Board of Aldermen that the Board accepts the report and refers it to Town staff and the Transportation Advisory Board for a recommendation to the Board of Aldermen within 30 days.

This is the 15th day of October in the year 2002.

ATTACHMENT B

SMITH LEVEL ROAD (PROJECT U-2803)
CHRONOLOGY
1990 – 2002

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 as one of statewide significance, included within 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 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 justificaiton 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

ATTACHMENT C

Smith Level Road

State Road 1919

From Rock Haven Road to Bridge No. 88 over Morgan Creek

Public Hearing

Project No. 9.8070219
TIP No. U-2803
Carrboro, Orange County

Carrboro Elementary School

October 25, 2001

PURPOSE OF PROJECT

The purpose of the proposed project is to increase traffic carrying capacity for this section of Smith Level Road for current and future traffic volumes, while reducing accident potential in the area.

PURPOSE OF PUBLIC HEARING

Tonight's hearing is one step in the Department of Transportation's procedure for including the public as a part of the project's development process. The Department of Transportation is soliciting your views on the proposed widening of Smith Level Road from Rock Haven Road to Bridge No. 88 over Morgan Creek in Orange County.

The Department of Transportation's views of the above are set forth in the State Environmental Assessment/Finding of No Significant Impact. Copies of this report have been and are available at the Department of Transportation in Raleigh and at the Carrboro Town Hall located at 301 West Main Street.

YOUR PARTICIPATION

Now that the opportunity is here you are urged to participate by making your comments and/or questions a part of the Official Public Hearing Transcript. This may be done by having them recorded here tonight, writing them on the comment sheet and leaving it with a Department of Transportation representative here tonight or by submitting them in writing during the 15 day period following tonight's hearing to the following address:

Ms. Leigh B. Lane
Public Involvement and Community Studies Unit
Office of Human Environment
1583 Mail Service Center
Raleigh, NC 27699-1583

Everyone present is urged to participate in the proceedings. It is important, however, that **THE OPINIONS OF ALL INDIVIDUALS BE RESPECTED REGARDLESS OF HOW DIVERGENT THEY MAY BE FROM YOUR OWN.** Accordingly, debates, as such, are out of place at public hearings. Also, the public hearing is not to be used as a POPULAR REFERENDUM to determine the project design by a majority vote of those present.

PROJECT DESCRIPTION

The project proposes to widen Smith Level Road from just south of Rock Haven Road to Bridge No. 88 over Morgan Creek to a four-lane curb and gutter roadway divided by a 17.5-foot curbed median and includes five-foot sidewalks on both sides. Since this section of Smith Level Road is part of a designated NC Bicycling Highway, NC 2 mountains-to-sea, the proposed project provides for four-foot bike lanes on both sides of the roadway.

The proposed alignment referred to as "Best Fit" minimizes impacts to the project area by shifting the alignment as needed about the center of the existing roadway. This "Best Fit" alternative results in symmetrical widening from Rock Haven Road to Oak Spring Court. From Oak Spring Court to BPW Club Road (SR 1967), the widening will shift to the west of the centerline of the existing roadway. From BPW Club Road (SR 1967) to Bridge No. 88 over Morgan Creek, the widening is symmetrical about the centerline of the existing roadway.

PROJECT INFORMATION

Length: 0.6 miles

Typical Section: Four-lane divided with 17.5-foot median with curb and gutter including 5-foot sidewalks and 4-foot bike lanes on each side of the roadway.

Right of Way: 100 feet

Relocatees: Residences: 1 (potential)

Estimated Cost:

Right of Way:	$ 733,000
Construction:	2,400,000
	$ 3,133,000

Tentative Schedule:

Right of Way:	June, 2002
Construction:	October, 2003

WHAT IS DONE WITH THE INPUT?

A post hearing meeting will be held after the comment period has ended. This meeting will be attended by DOT staffs representing Planning, Design, Public Involvement and Community Studies, and others who play a role in the development of a project. When appropriate, representatives from local government and elected officials attend this meeting.

All spoken and written issues are discussed at this meeting. Most issues are resolved at the post-hearing meeting. The Department considers all issues including public comments, safety, service to traffic, costs, environmental impacts and social impacts in making decisions. Complex issues may require additional study and may be further reviewed by higher management, Board of Transportation members, and the Secretary of Transportation. Minutes of the post hearing meeting are prepared and made available to the public. You may request a copy of these minutes on the attached comment sheet.

FUNDING

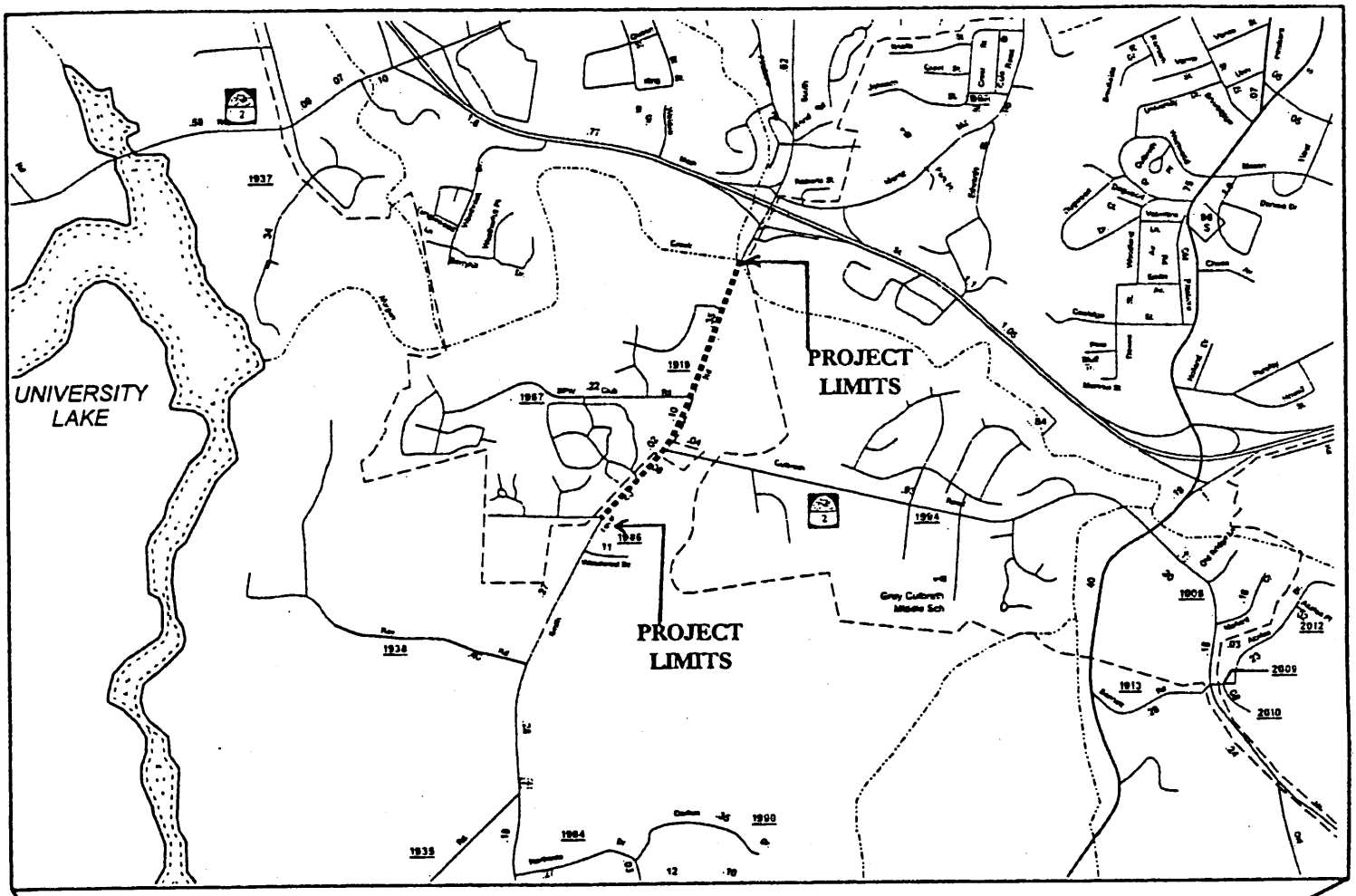
This is a proposed State Funded Project. Funding for this project will be 100% State. The Board of Transportation is responsible for the selection, scheduling, location, design, and construction of the project. The Board is responsible for 100% of the maintenance of the roadway after it is built.

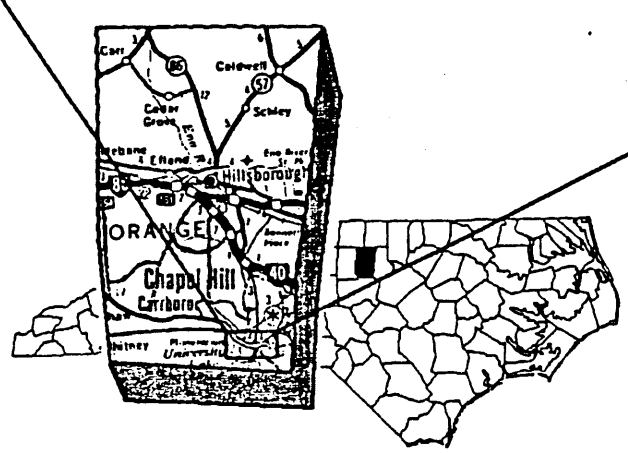
PROJECT NEED

The projected traffic volumes for Smith Level Road ranges from 13,000 vehicles per day (vpd) to 20,500 vpd for construction year 2004 and 17,200 vpd to 29,200 vpd for design year 2024. Truck traffic will comprise approximately four (4) percent of those volumes.

If Smith Level Road is not widened, the roadway will not be wide enough to carry the projected vpd without gridlock travel conditions. In addition, an analysis of accident data along Smith Level Road reveled that most accidents were rear end type. Widening Smith Level Road will help reduce the potential for this type of accident.

Smith Level Road is classified as a Major Thoroughfare on the Durham-Chapel Hill-Carrboro Urban Area Thoroughfare Plan. This project is one step toward implementation of long range transportation plans for the area.



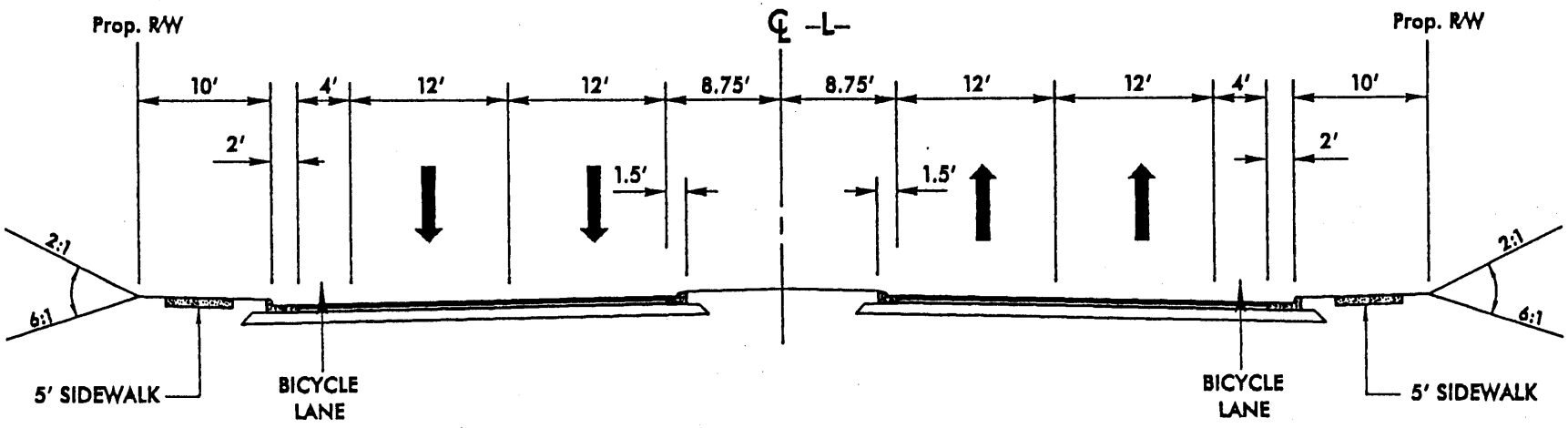


NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

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

C-4

COMMENT SHEET

Smith Level Road
From Rock Haven Road to Bridge No. 88 over Morgan Creek

Public Hearing

U-2803 Project 9.8070219 Orange County

October 25, 2001

NAME: _____

ADDRESS: _____

COMMENTS AND\OR QUESTIONS:

Comments may be mailed to:

Leigh B. Lane
Public Involvement and Community Studies Unit
Office of Human Environment
1583 Mail Service Center
Raleigh, NC 27699-1583 Phone: (919) 250-4092 Fax: (919) 250-4208
E-mail: llane@dot.state.nc.us

ADVANTAGES OF THE FOUR-LANE MEDIAN DIVIDED FACILITY

Fact Sheet

Safety Benefits

- In comparison to a 5-lane facility with a central two-way left-turn lane, the four-lane divided median facility separates opposing traffic and significantly reduces a wide range of common accidents, including rear-end, right angle, head-on, and left-turn. The median also reduces property damage, injuries and fatalities related to these accidents.

- By limiting motorist conflict points, medians eliminate potential conflicts such as: passing in the center-turn lane; accelerating in the center-turn lane; head-on collisions; mid-block U-turns/crossing maneuvers; and left-turns onto an arterial road.

- A median reduces driver confusion by concentrating maneuvers to an intersection where they are more expected and more effectively controlled via traffic control devices. In comparison, many drivers do not properly use center-turn lanes. Drivers who shadow, illegally pass, and accelerate in these lanes are typically looking for gaps and may not see another vehicle stopping or slowing immediately in front of them, for example. During peak periods, the two-way turn lane becomes congested and opposing vehicles attempting to turn left often rely on "courtesy gaps" and turn in front of slow moving and standing traffic and are then struck by oncoming traffic in parallel lanes that does not see these vehicles in time to properly react.

- As average daily traffic increases, the benefits of the four-lane divided median also increase in comparison to the 5-lane facility—especially at a volume of 24,000 or higher.

- When left-turns are opposed by high volumes, movement is safer at concentrated/well defined points as provided by median divided sections.

- When through traffic nears 28,000 vehicles a day, motorists desiring to turn left from a 5-lane section have difficulty finding a safe gap in oncoming traffic.

- A median section minimizes headlight glare from vehicles traveling in the opposing direction.

- A median section provides a refuge area for pedestrians (especially beneficial for elderly or handicap persons) wishing to cross the facility.

Accident Reduction Data

- NCDOT engineers studied similar facilities along U.S. 421, N.C 132 and U.S. 17/Market Street in Wilmington. From 1997 to 2000, the total accident rate of 4-lane divided facilities ranged from two to six times less than the 5-lane facilities. In addition, for every 100 million vehicle miles of travel the 4-lane median divided section will result in approximately $13.5 million dollars less in total cost due to accidents than the 5-lane section.
- Research by the Georgia Department of Transportation revealed that 4-lane divided have 15% fewer total accidents and 52% fewer fatal accidents than 5-lane sections.
- Michigan found they have 57% fewer accidents on 4-lane divided than 5-lane facilities and Florida found they have 25% fewer accidents on 4-lane divided than 5-lane facilities.

- A study performed in Oregon on U.S. 101 in Newport-Lincoln City found that when a median is provided the accident rates were relatively low even with a large number of access points. However in the non-divided sections of the same facility, the number of accidents parallels the number of access points.
- Replacement of a 5-lane section with a median divided section on Memorial Drive in Atlanta resulted in a 47% reduction in the total crash rate on this facility and a 23% reduction in injury rates.

Secondary Benefits

- Medians improve traffic flow, which results in less congestion, less emissions and less consumption of fuel.
- Medians help the facility to operate at intended traffic speeds.
- Median divided sections require less pavement, resulting in less runoff, and provides the potential for aesthetically pleasing landscaped areas.
- Medians maintain the integrity of the facility by encouraging quality development and promoting better local management of land use.
- Median divided sections help to preserve community character

Note: More information on the safety studies and statistics outlined are available by calling Nathan Phillips at (919) 250-4151.

ATTACHMENT D

TOWN OF CARRBORO

NORTH CAROLINA

November 14, 2001

Ms. Leigh B. Lane
Public Involvement and Community Studies Section
North Carolina Department of Transportation
1583 Mail Service Center
Raleigh, NC 27699-1583

Dear Ms. Lane:

The N.C. Department of Transportation held a "Pre-Hearing Open House and Formal Public Hearing" for the proposed widening of Smith Level Road (TIP Project U-2803) on October 25, 2001. The Town of Carrboro appreciates the courteous and professional manner in which this public meeting was conducted.

Approximately 50 persons attended the meeting. Most speakers expressed support for the bike lanes, sidewalks, and crosswalks to be provided as part of the proposed project. However, 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. To respond to these citizen concerns, the Carrboro Board of Aldermen requests additional information about the proposed design.

Number of Lanes

Many citizens are concerned that the widened roadway will remove existing buffers between Smith Level Road and adjacent residential properties. Citizens have suggested that a two-lane or three-lane facility, with sidewalks and bike lanes on both sides, would improve the safety and function of Smith Level Road while maintaining buffers along the roadway.

At its meeting on April 20, 1999, the Carrboro Board of Aldermen requested that a "two-lane curb and gutter facility with bike lanes and a sidewalk on both sides" be one of the three design alternatives for the roadway. However, in subsequent interagency staff discussions, NCDOT presented findings which deemed the two-lane option infeasible and the four-lane median option as the most likely alternative.

Due to citizen interest, the Carrboro Board of Aldermen asks that NCDOT re-evaluate its position by studying the benefits of a two-lane or three-lane cross-section with bike lanes and sidewalks on both sides. As part of this re-evaluation, the Board of Aldermen requests that

NCDOT evaluate alternative and innovative intersection designs that will produce operational improvements while reducing the necessity of constructing a four-lane roadway.

Traffic Projections

Citizens have questioned the traffic projections for Smith Level Road. The projected traffic volumes range from 13,240 to 21,110 vehicles per day (vpd) in the construction year 2004 and 17,634 to 30,120 vpd in the design year 2024.

Citizens are concerned that the proposed widening of Smith Level Road will attract additional traffic from outside the local area, and have noted that NCDOT is currently widening US 15-501 to four lanes from the NC 54 Bypass to the US 64 Pittsboro Bypass (TIP Project R-942). Citizens have stated that US 15-501, not Smith Level Road, should be the primary route for accommodating traffic between northern Chatham County and UNC and RTP.

Due to citizen interest, the Carrboro Board of Aldermen asks that NCDOT re-evaluate the projected traffic volumes on Smith Level Road, with a bias toward recognizing Smith Level Road as a route that primarily serves local traffic, and the widened US 15-501 as the primary travel route between northern Chatham County and UNC and RTP.

Existing Problems at Frank Porter Graham School and the NC 54 Bypass Interchange

Currently, Project U-2803 terminates at the south side of the Morgan Creek bridge on Smith Level Road. Citizens have stated that the primary traffic flow problems on Smith Level Road occur to the north of this termination point, at the entrance to Frank Porter Graham Elementary School and the NC 54 Bypass interchange.

Following the public hearing on October 25, Division Engineer Mike Mills requested that NCDOT's Congestion Management Section review the Frank Porter Graham site and determine if any recommendations could be made to improve the congestion and circulation problem. We appreciate Mr. Mills proactively responding to the concerns of Carrboro area residents.

Due to citizen interest, the Carrboro Board of Aldermen asks that NCDOT also review the NC 54 Bypass interchange with Smith Level Road and determine if any recommendations could be made to improve the congestion and traffic circulation problems at the interchange area.

Thank you for the opportunity to comment. The Town of Carrboro appreciates NCDOT's recognition of our need to work together in carefully reviewing the proposed design. Please don't hesitate to contact me should you have any questions or need additional information.

Sincerely,

Michael R. Nelson
SW

Michael R. Nelson
Mayor

xc: Board of Aldermen
Robert W. Morgan, Town Manager
Roy M. Williford, Planning Director
Mike Mills, Division Engineer, NCDOT, Division 7
Senator Eleanor Kinnaird
Senator Howard Lee
Representative Verla Insko
Representative Joe Hackney

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

MEMO TO: Post Hearing Meeting Attendees

FROM: John Alford, PE
State Roadway Design Engineer

DATE: January 28, 2002

SUBJECT: Project 9.8070219 (U-2803) Orange County
Carrboro - SR 1919 (Smith Level Road) from Rock Haven Road to Bridge No. 88 over Morgan Creek

Interim Post Public Hearing Response

A Combined Public Hearing was held on October 25, 2001 at Carrboro Elementary School in Carrboro. There was an open house from 5:00 p.m. to 7:00 p.m. and a formal hearing from 7:00 p.m. to 9:00 p.m. There were approximately 50 people in attendance. A wide variety of comments both written and oral were received at the hearing. The major concerns and comments made by the public are addressed below.

Comments made at the hearing:

Jim Schobel, Berry Hill Resident
Mr. Schobel stated the median opening at Willow Oak Lane must remain open for the residents of Berry Hill Subdivision. Does the traffic volumes reflect the widening of US 15-501 to a 4-lane divided facility? He stated the speed limit along Smith Level Road should be reduced from the existing 45 mph.

Greg Dito, Berry Hill Resident
Mr. Dito does not want the buffer of trees along Smith Level Road adjacent to the Berry Hill Subdivision to be disturbed. Closing the median at Willow Oak Lane would force traffic through the entire length of the subdivision creating safety problems for the children. This would also force all traffic through the signal at BPW Club Road. Mr. Dito agrees with sidewalks but would like the speed limit dropped to 35 mph.

Shawn Walsh, Berry Hill Resident
Mr. Walsh stated that a 3-lane section would serve the needs of the area. Access across the median must remain open at Willow Oak Lane. Signals must be timed at NC 54 and Smith Level Road to better facilitate traffic flow through the area. The main problem on Smith Level Road is the entrance and exit to Frank Porter Graham Elementary School. A study of the NC 54 interchange area may yield better traffic flow without adding lanes south of Morgan Creek Bridge.

David Bell, Smith Level Rd. Resident
Mr. Bell expressed concerns over the amount of U-turns that now will occur once the median is constructed.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN UNIT
1582 MAIL SERVICE CENTER
RALEIGH NC 27699-1582

TELEPHONE: 919-250-4016
FAX: 919-250-4036

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

LOCATION:
CENTURY CENTER COMPLEX
BUILDING A
1000 BIRCH RIDGE DRIVE
RALEIGH NC

Lynn Breaster, Dogwood Acres Resident
Mrs. Breaster stated that bicycle lanes are not needed on Smith Level Road. The Frank Porter School entrance and exit is the main problem during peak hours. All signals on Smith Level and NC 54 must be timed to improve traffic flow.

Sam O'Kane Donald S. Doody
Gary Gilleskie Ronna Nichamin
Jason Henning Lauren O'Neil
Berry Hill Subdivision residents listed above and two unknown residents spoke at the hearing. Their comments reflected the same items as the other residents with a general consensus that the project is not needed or the project should have a reduced typical section to 3- or 4- lane undivided. The citizens listed feel that the entrance to the school should be investigated for better bicycle, pedestrian and traffic flow at NC 54 and Smith Level Road.

Written comments from the hearing:

Micheal R. Nelson, Mayor, Town of Carrboro
Due to citizens requests, the Board of Alderman for the Town of Carrboro requests that NCDOT re-evaluate a 2- or 3- lane typical section including sidewalks and bike lanes. The evaluation should include innovative intersection design to improve operations and reduce the need for a four-lane divided section. The Board asks that NCDOT re-evaluate the projected traffic volumes to ensure that Smith Level Road is kept a route that serves local traffic and that the newly widened US 15-501 is the primary route for UNC-RTP traffic. NCDOT should review the NC 54 interchange area just north of the project termini to determine if any recommendations could be made to improve congestion within the interchange.

Blair Polloch, 5 Ellen Place
H. Coleman Day, 151 Dogwood Acres
The Morgan Creek Bridge should be widened to provide bicycle and pedestrian access to Frank Porter School and continue the same access north into town. All intersections including NC 54 should include sidewalks and crosswalks. Recycled materials should be used in all aspects of construction.

Lauren O'Neil, 208 Manor Ridge Dr.
Jane Schobel, 602 Manor Ridge Dr.
Thomas and Kim McCown, 603 Manor Ridge Dr.
Donald S. Doody, 605 Manor Ridge Dr.
Carol Baker, 702 Manor Ridge Dr.
Carol Gregg, 802 Manor Ridge Dr.
Linda and Ken Kastleman, 107 Oak Spring Ct.
The above residents of Berry Hill Subdivision sent comments in by mail that parallel the comments spoken at the hearing. A description of their concerns are listed below:

1) A median opening at Willow Oak Lane or a typical section reduced to 3- or 4-lane undivided for the entire project would suffice.
2) Citizens request to justify the traffic projections shown at the hearing before construction of a 4-lane facility.
3) Signal timing on Smith Level Road and the interchange with NC 54 must be investigated to move traffic efficiently during peak hours.
4) Improve the intersection at NC 54 and the entrance to Frank Porter Graham School to improve traffic, pedestrian and bicycle movements.
5) Design as shown at the public hearing does not reflect Carrboro's Vision 20/20 plan for future roads within Carrboro.
6) Removal of trees along Smith Level Road adjacent to Berry Hill Subdivision is unacceptable.
7) Bike lanes and sidewalks are acceptable but may not be needed on both sides of the proposed roadway.

Petition from Residents of Berry Hill Subdivision
A petition of approximately 100 names from the residents was submitted after the hearing. The items stated in the petition are reflected above in all the other comments made by residents either written or oral.

Augustus Neville, 100B Culbreth Road
Placement of the curb and gutter along Culbreth Road may affect his parking inside Teal Place. He would like to see Culbreth Road relocated to the north.

Virginia McKnight Carr, 100 Hunter Place
Ms. Carr feels the design as shown at the hearing will increase traffic to gridlock conditions. She has concerns of damage to her home during construction due to the close proximity of the proposed road.

Topics of Discussion - Post Hearing Meeting on U-2803

1) Reduce typical section to a 2, 3, or 4 lane with no median.

2) Revise design to provide median openings at Oak Spring Court and Willow Oak Lane.

3) Drop the speed limit to 35 mph to match the speed limit north of the Morgan Creek Bridge.

4) Coordinate signal timing at NC 54 and Smith Level Road to improve traffic flow.

5) Investigate how the entrance and exit to Frank Porter Graham Elementary School, north of the project termini, could be revised to improve traffic flow on Smith Level Road.

6) Investigate safe bicycle and pedestrian access across the bridge into Frank Porter Graham Elementary School.

7) Re-evaluate traffic forecast to confirm that US 15-501 widening projects were incorporated into the projections. Citizens feel the traffic volumes shown at the hearing seem to reflect a trend to move north-south traffic through Smith Level Road.

8) Investigate landscape plantings within the project limits where existing trees will be removed.

Interim Post Hearing Resolutions

A Post Hearing Meeting was held in the Roadway Design Conference Room on January 7, 2002. The public hearing comments were discussed among NCDOT staff and local officials. The resolutions to many of these issues will require additional information from a variety of sources. Final decisions will be delayed to a later date once all information is gathered.
An interim plan of action is outlined below:

1) **Issue:** Reduce typical section to two or three lane and provide median openings at Oak Spring Court and Willow Oak Lane.

   Action: Rhett Fussell (NCDOT, Statewide Planning) confirmed that the recent widening of US 15-501 was incorporated into the original traffic model. He will review all the original traffic counts and turning movements on Smith Level Road used for the public hearing. NCDOT will gather additional traffic counts from all access points to the Berryhill Subdivision and the Village Apartments. Projected traffic volumes will be remodeled using different design speeds and typical sections to determine the proposed improvements. DOT will then review the revised traffic counts and modeling with the Town of Carrboro.

2) **Issue:** Reduce the speed limit on Smith Level Road within the project limits to 35 mph.

   Action: Brad Wall (Division Construction Engineer) will contact the Division Traffic Engineer and discuss the possibilities of reducing the posted speed limit within the project limits.

3) **Issue:** Coordinate signal timing at NC 54 and Smith Level Road to improve traffic flow.

   Action: Tim Williams (NCDOT Signals Unit) stated the existing signals are presently synchronized from Culbreth Road through the NC 54 interchange. The Signals Unit will review the existing system and make recommendations for additional hardware and/or improving synchronization under this contract.

4) **Issue:** Investigate traffic patterns around Frank Porter Graham Elementary School to improve traffic flow and bike/pedestrian access.

   Action: Rhett Fussell (Statewide Planning) will collect traffic counts and turning movements at the Frank Porter Graham Elementary School. Joel Cranford (NCDOT Congestion Management) will contact the school and discuss their concerns and possible options. Once all information is collected, NCDOT design engineers will review and make recommendations.

5) **Issue:** Investigate landscape plantings within the project limits where existing trees will be removed.

   Action: Bob Kopetsky (NCDOT Landscape Design) will coordinate with the Town of Carrboro planners to discuss options for replacing existing trees removed during construction. Landscape funds available for projects are generally calculated at 0.75% of the total project costs.

The project schedule will be revised after the issues have been resolved. Leigh Lane will reply to all Public Hearing comments as needed, with assistance from Roadway Design. If anyone has any questions or comments regarding this information, please inform me or Art McMillan, Project Engineer, at (919) 250-4016.

JEA/grl

cc:
Art McMillan, PE
Deborah Barbour, PE
Len Hill, PE
Dewayne Sykes, PE
Van Argabright, PE
Jay Bennett, PE
Pate Hodges
Tim Williams, PE
Mike Mills, PE
Brad Wall, PE
Wesley Parham (MPO)
Elina Zlotchenko
Bob Kopetsky
Beverly Robinson
Robert Morgan (Carrboro)
Michael Nelson (Carrboro)
Patricia McGuire (Carrboro)
Dale McKeel (Carrboro)
Abe Zaffron (Carrboro)
Leigh Lane
Joel Cranford
John Grant, PE
Marshall Clawson, PE
Gene Tarascio
Rhett Fussell
Jay McInnis, PE

ATTACHMENT F

TOWN OF CARRBORO

NORTH CAROLINA

May 21, 2002

Mr. Jay Bennett, P.E.
State Roadway Design Engineer
North Carolina Department of Transportation
1582 Mail Service Center
Raleigh, NC 27699-1582

Dear Mr. Bennett:

The Town of Carrboro appreciates the opportunity to participate in the January 7, 2002 Post Hearing Meeting on the proposed widening of Smith Level Road (TIP Project U-2803).

Town staff have reviewed the "Interim Post Hearing Response," dated January 28, 2002. In reviewing this correspondence, we note that there were additional issues discussed during the Combined Public Hearing process and at the Post Hearing Meeting. Please also consider and evaluate the following issues:

1) **Issue:** At the Post Hearing Meeting, Carrboro officials stated that NCDOT and the Town need to be thinking proactively on ways to promote alternative modes of transportation as a means of accommodating additional trips from Chatham County to the UNC-Chapel Hill campus and Research Triangle Park. Carrboro officials asked that consideration be given to additional park-and-ride lots and express bus services in southern Orange County (perhaps near the Starpoint area).

2) **Issue:** At the Post Hearing Meeting, NCDOT and Town officials discussed the need to add bikelanes and sidewalks to the existing bridge over Morgan Creek on Smith Level Road.

3) **Issue:** At the Post Hearing Meeting, Carrboro officials asked NCDOT to use "context-sensitive design" principles on the Smith Level Road project. We understand that NCDOT staff have received training in context-sensitive design. We ask NCDOT to use flexibility in the design guidelines (including lower design speeds) and the design exception process (if necessary) to create a design that is minimally disruptive to adjacent properties and sensitive to the resources in the project area. We also encourage NCDOT to utilize the European concept of designing roadways so that speed limits are self-enforcing, as a means of promoting safety and reducing the need

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301 West Main Street, Carrboro, NC 27510 • (919) 918-7329 • FAX (919) 918-4454 • dmckeel@ci.carrboro.nc.us
AN EQUAL OPPORTUNITY EMPLOYER

for and cost of police enforcement. We would welcome the opportunity for this to be a pilot project for the use of context-sensitive design in North Carolina.

4) **Issue.** At the Post Hearing Meeting, it was noted that NCDOT is increasingly using visualization to allow residents and public officials to better assess the visual impacts of a project. Please consider the use of visualization for use in future meetings with Carrboro citizens and officials on this project.

5) **Issue:** In a November 13, 2001 letter, the Carrboro Board of Aldermen requested that NCDOT evaluate alternative and innovative intersection designs that will produce operational improvements while reducing the necessity of constructing a four-lane roadway. Town staff recently attended a presentation on modern roundabouts in which the "wide nodes and narrow roads" approach was discussed (Art McMillan was also in attendance). The Town asks NCDOT to investigate the "wide nodes and narrow roads" approach on Smith Level Road (see pages 225 and 226 of "Roundabouts: An Informational Guide" – attached). Note that the inclusion of roundabouts would facilitate U-turns at major intersections, a need that has been identified by citizens in reaction to the proposed median section.

6) **Issue:** At the Combined Public Hearing, a resident asked NCDOT to use recycled materials in all aspects of the project.

7) **Issue:** At a meeting in Raleigh on December 4, 2001 on this project, it was noted that the area along Smith Level Road is one of the most densely developed areas in North Carolina, has a large student population, and is served by a very successful bus route. Every effort must be made in the design of this project to create a safe and functional pedestrian environment along Smith Level Road.

Thank you for the opportunity to comment. The Town of Carrboro appreciates NCDOT's recognition of our need to work together in carefully reviewing the proposed design. Please don't hesitate to contact me should you have any questions or need additional information.

Sincerely,

Dale McKeel

Dale McKeel
Transportation Planner

cc: Deborah M. Barbour, PE, State Design Engineer
Art McMillan, PE, Roadway Design Unit
Gary Lovering, PE, Roadway Design Unit
Mike Mills, PE, Division Engineer, Division 7
Beverly Robinson, Project Development and Environmental Analysis
Ann Steedly, Public Involvement and Community Studies

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Another circumstance in which a roundabout may be advantageous is as an alternative to signal control at a critical signalized intersection within a coordinated network. Such intersections are the bottlenecks and usually determine the required cycle length, or are placed at a signal system boundary to operate in isolated actuated mode to minimize their effect on the rest of the surrounding system. If a roundabout can be designed to operate within its capacity, it may allow a lowering of the system cycle length with resultant benefits to delays and queues at other intersections.

Roundabouts as an access management tool.

Because roundabouts accommodate U-turns more easily than do signals, they may also be useful as an access management tool. Left-turn exits from driveways onto an arterial which may currently experience long delays and require two-stage left-turn movements could be replaced with a simpler right turn, followed by a U-turn at the next roundabout.

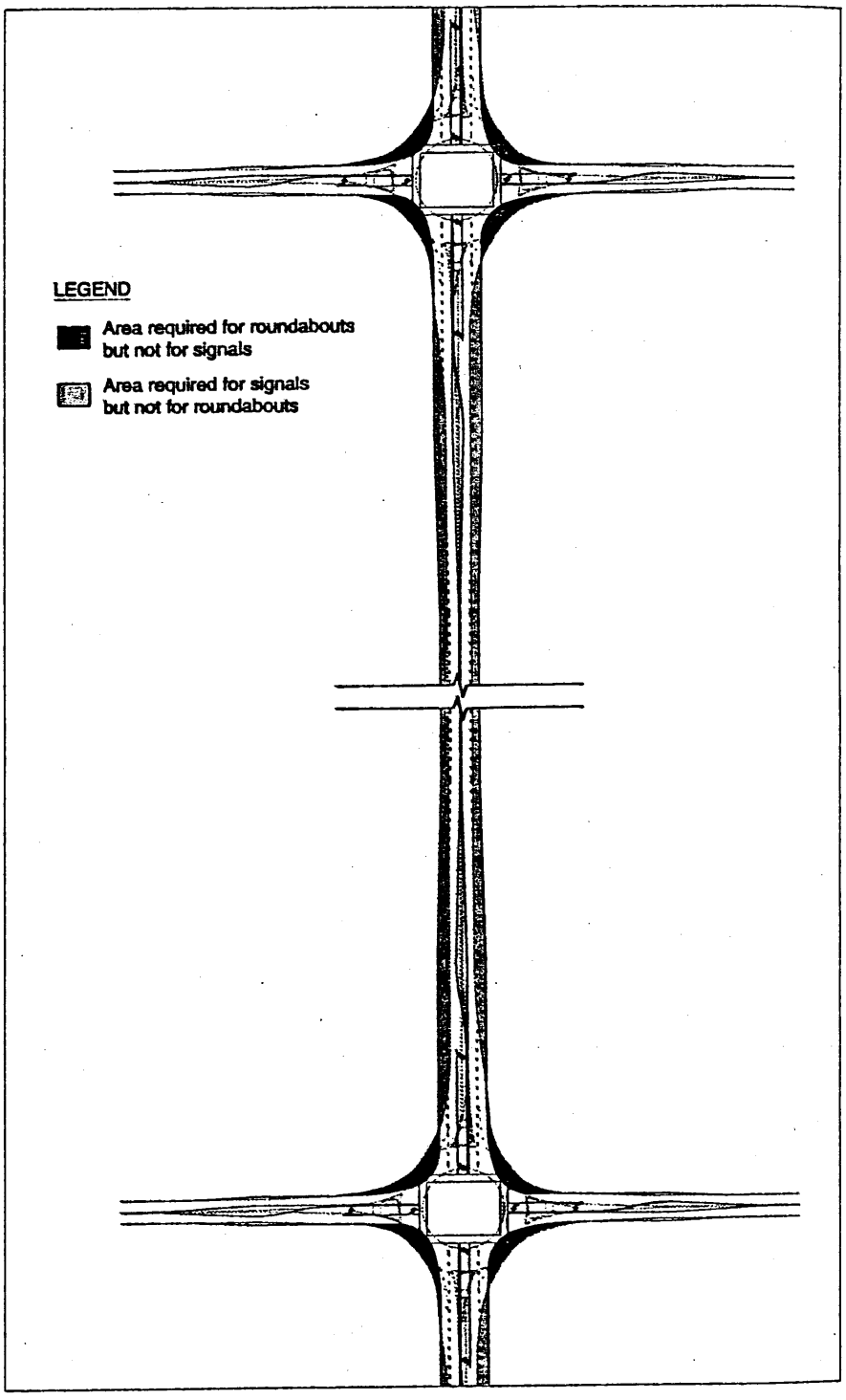
8.5.3 Wide nodes and narrow roads

Roundabouts may require more right-of-way at intersections, but may also allow fewer lanes (and less right-of-way) between intersections.

The ultimate manifestation of roundabouts in a system context is to use them in lieu of signalized intersections. Some European cities such as Nantes, France, and some Australian cities have implemented such a policy. It is generally recognized that intersections (or nodes), not road segments (or links), are typically the bottlenecks in urban roadway networks. A focus on maximizing intersection capacity rather than widening streets may therefore be appropriate. Efficient, signalized intersections, however, usually require that exclusive turn lanes be provided, with sufficient storage to avoid queue spillback into through lanes and adjacent intersections. In contrast, roundabouts may require more right-of-way at the nodes, but this may be offset by not requiring as many basic lanes on the approaches, relative to signalized arterials. This concept is demonstrated in Exhibit 8-10.

Analysis tools, such as those provided in Chapter 4, should be used to evaluate the arterial or network. These may be supplemented by appropriate use of microscopic simulation models as discussed next. Supplemental techniques to increase the capacity of critical approaches may be considered if necessary, such as bypass lanes, flaring of approaches and tapering of exits, and signalization of some roundabout approaches.

Exhibit 8-10. Wide nodes and narrow roads.



ATTACHMENT G

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

June 4, 2002

TO: Gary Lovering, P.E.
Project Design Engineer
Roadway Design Unit

FROM: Rhett Fussell
Statewide Planning Branch

SUBJECT: Traffic Forecast for U-2803, Smith Level Road in Carrboro, NC

The traffic forecast for the aforementioned project has been completed and is attached. It includes 2002 and 2025 estimated ADT's. Travel flows for selected intersections have been included. The 2002 numbers are based off of actual traffic counts taken in the Spring of 2002, as requested by the Roadway Design Branch and the Town of Carrboro. The 2025 estimates are based off of the Triangle Travel Demand Model version 5-2001 with some adjustments for the localized area. Truck percentages are included. This forecast assumes that US 15/501 project is complete and assumes the latest socio-economic projections for the Durham-Chapel Hill-Carrboro Area. It does not take into account the proposed rezoning and development of a large tract of land in Chatham County.

There are three scenarios included in the attached forecast. Scenario 1 is the project as it is conceived now, a 4/5 lane section. Scenario 2 is the 4/5 lane section with 35 mph speed limit set for the project length, as requested by the Town. Scenario 3 is to leave the 2 lane section that currently exists in place for the year 2025.

If traffic estimates for an interim year are needed, use straight-line interpolation between the given years. If you have any questions or need further clarification on any of the information provided, please contact me at 733-4705.

Attachments

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
STATEWIDE PLANNING
1554 MAIL SERVICE CENTER
RALEIGH NC 27699-1554

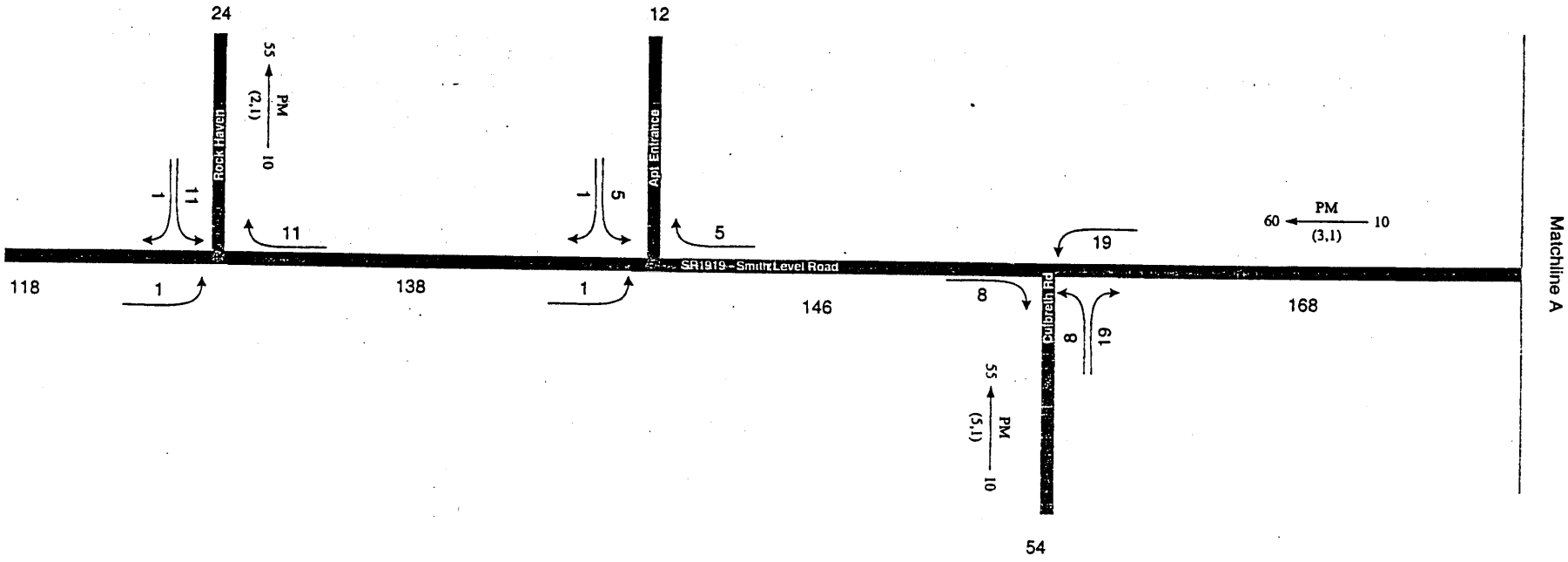
TELEPHONE: 919-733-4705
FAX: 919-733-2417

WEBSITE: WWW.NCDOT.ORG

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

2002 ADT's

(in 100's)



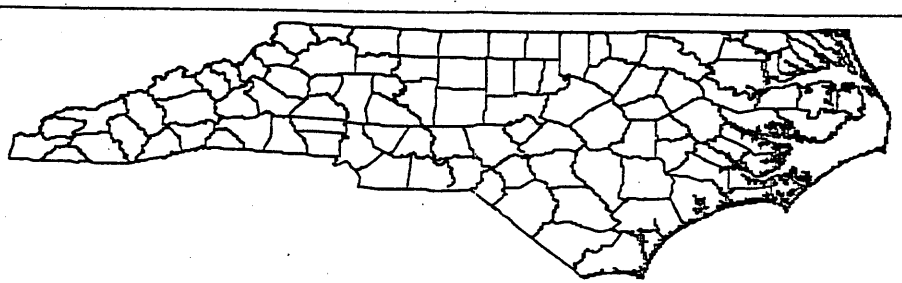
W

E

LEGEND

XXX	VPD–VEHICLES PER DAY
DHV	DESIGN HOURLY VOLUME (%)
D	DIRECTIONAL FLOW (%)
PM	PM PEAK PERIOD
(X,X)	DUALS, TTST (%)

NOTE: DHV ——→ D INDICATES THE DIRECTION D. REVERSE FLOW FOR AM PEAK.



Smith Level Road

Orange County | DIVISION 7

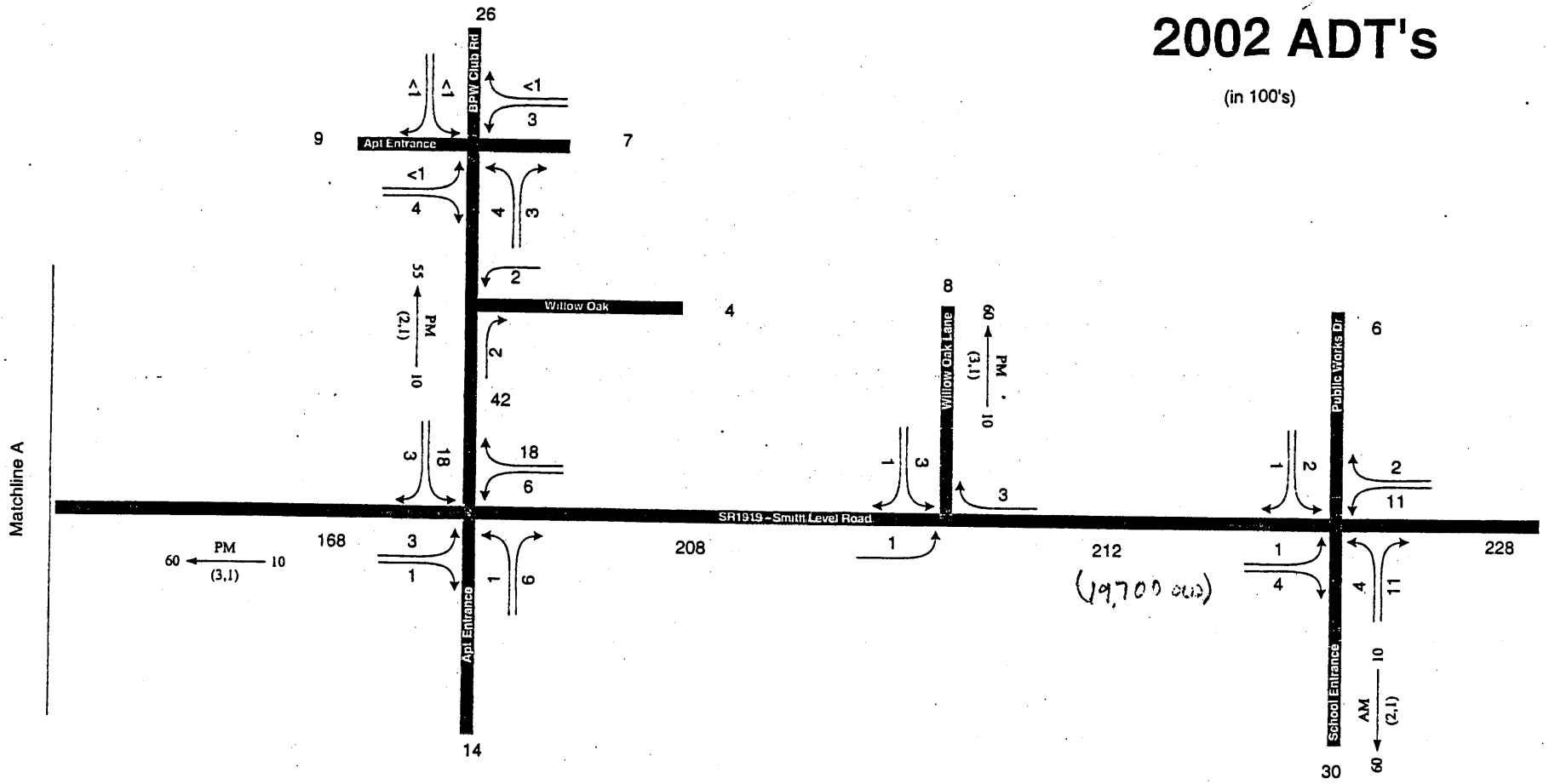
TIP # U-2803 | *May 2002*

WORK ORDER # 9.8070219

G-2

2002 ADT's

(in 100's)



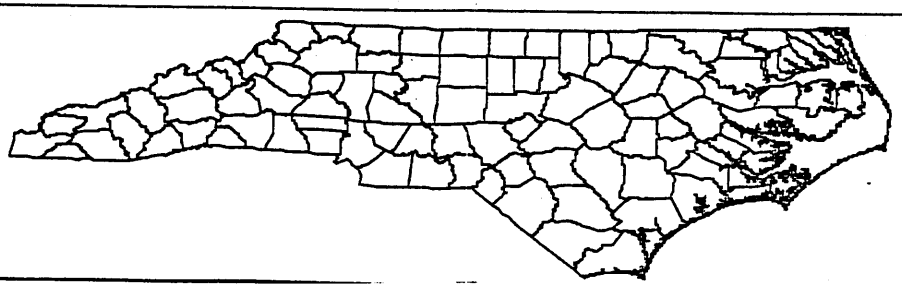
W

E

LEGEND

XXX	VPD--VEHICLES PER DAY
DHV	DESIGN HOURLY VOLUME (%)
D	DIRECTIONAL FLOW (%)
PM	PM PEAK PERIOD
(X,X)	DUALS, TTST (%)

NOTE: DHV ——→ D INDICATES THE DIRECTION D. REVERSE FLOW FOR AM PEAK



Smith Level Road

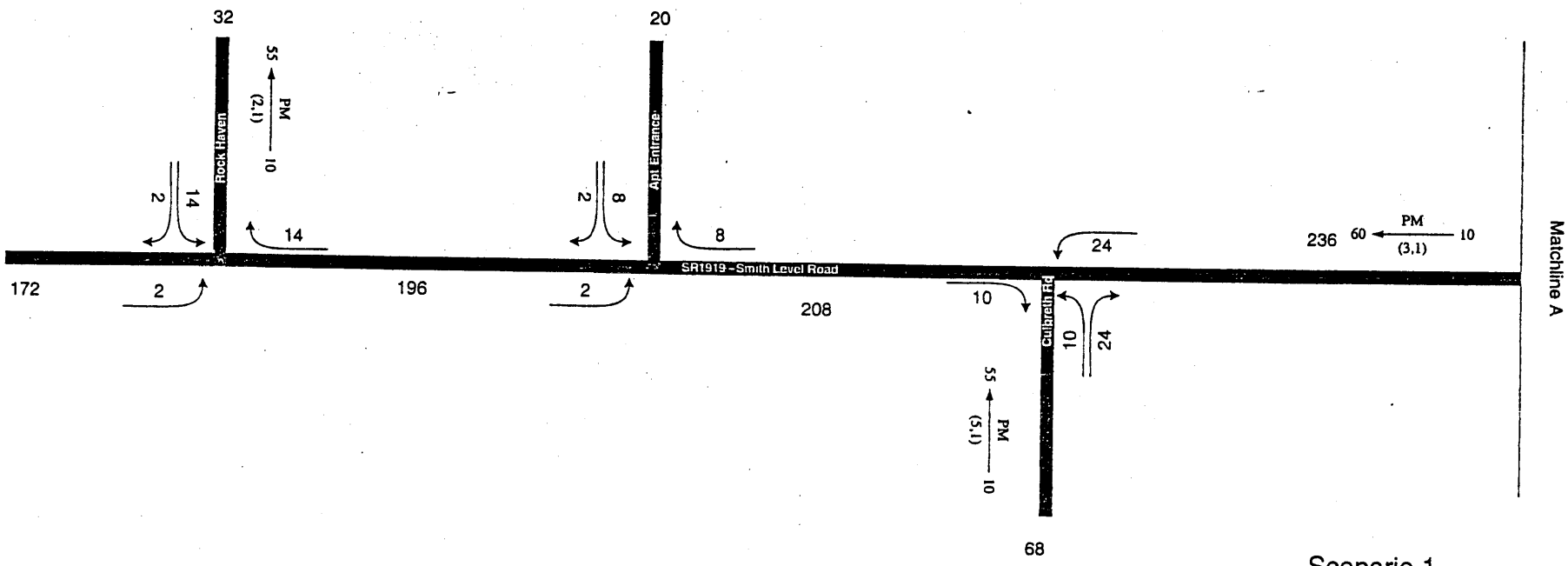
45 MPH

Orange County	DIVISION 7
TIP # U-2803	*May 2002*
WORK ORDER # 9.8070219	

G-13

2025 ADT's

(in 100's)



Scenario 1

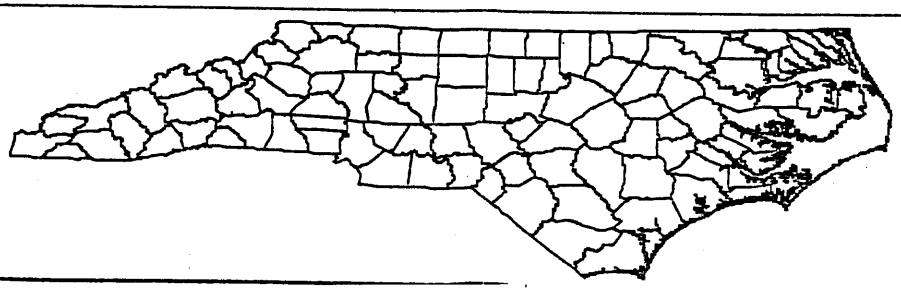
W

E

LEGEND

XXX	VPD--VEHICLES PER DAY
DHV	DESIGN HOURLY VOLUME (%)
D	DIRECTIONAL FLOW (%)
PM	PM PEAK PERIOD
(X,X)	DUALS, TTST (%)

NOTE: DHV ——→ D INDICATES THE DIRECTION D. REVERSE FLOW FOR AM PEAK



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

Smith Level Road

5Lane/4Lane Section

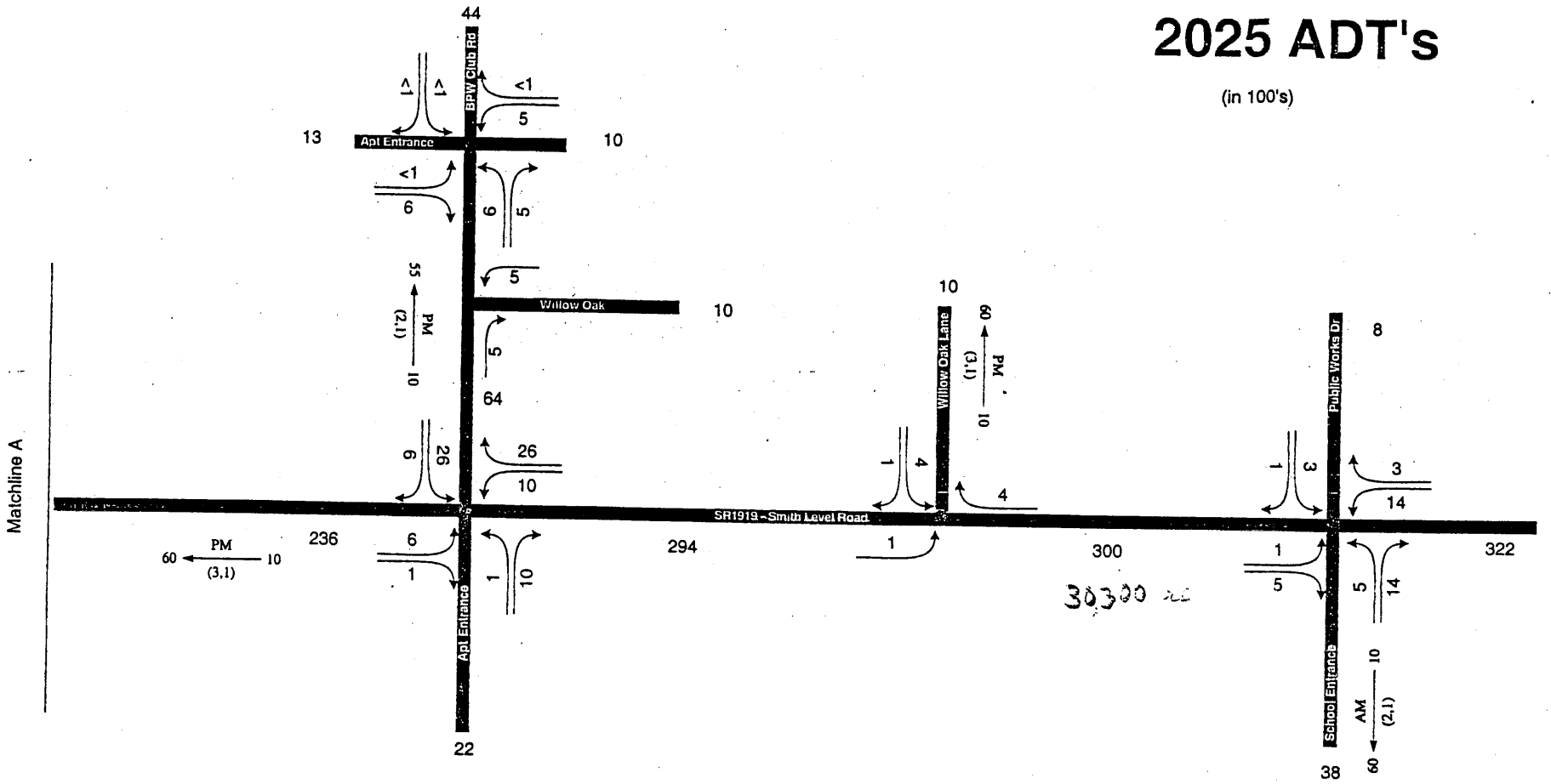
45 MPH

Orange County	DIVISION 7
TIP # U-2803	*May 2002*
WORK ORDER # 9.8070219	

6-4

2025 ADT's

(in 100's)



30,300 ADT

Scenario 1

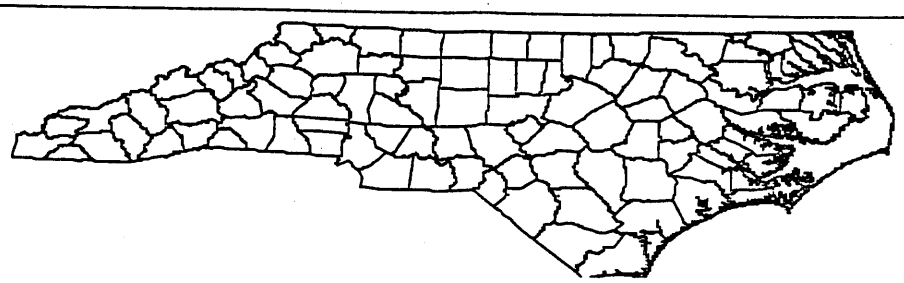
W

E

LEGEND

XXX	VPD--VEHICLES PER DAY
DHV	DESIGN HOURLY VOLUME (%)
D	DIRECTIONAL FLOW (%)
PM	PM PEAK PERIOD
(X,X)	DUALS, TTST (%)

NOTE: DHV ——→ D INDICATES THE DIRECTION D. REVERSE FLOW FOR AM PEAK.



Smith Level Road

5Lane/4Lane Section

95 MPH

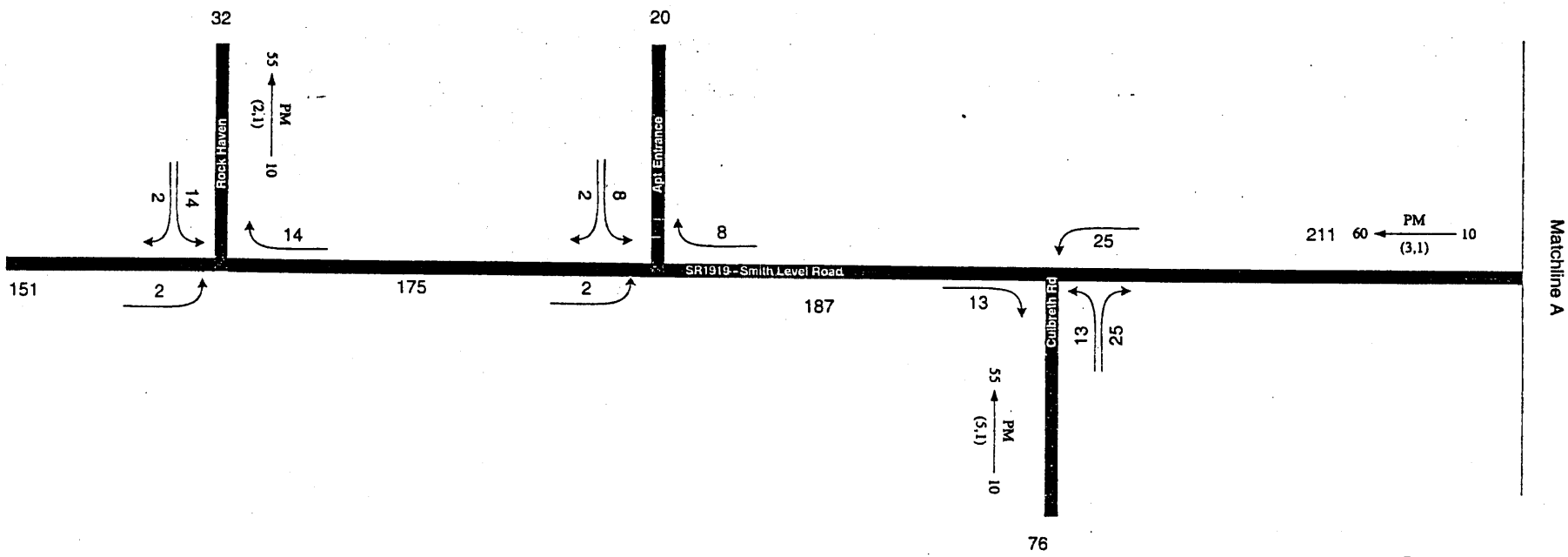
Orange County	DIVISION 7
TIP # U-2803	*May 2002*

WORK ORDER # 8.2070210

G-5

2025 ADT's

(in 100's)



Scenario 2

35 MPH PROJECT LIMITS

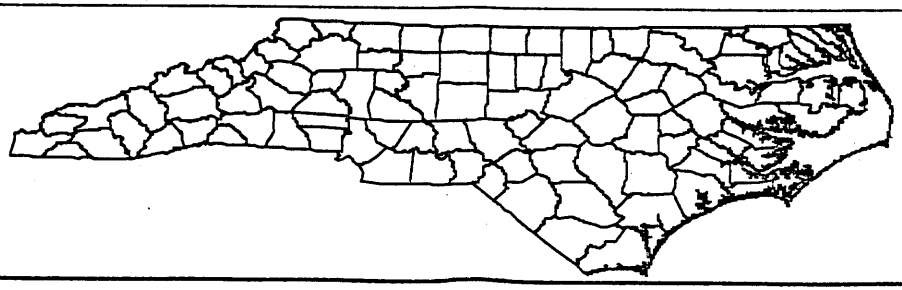
W

E

LEGEND

XXX	VPD–VEHICLES PER DAY
DHV	DESIGN HOURLY VOLUME (%)
D	DIRECTIONAL FLOW (%)
PM	PM PEAK PERIOD
(X,X)	DUALS, TTST (%)

NOTE: DHV ——→ D INDICATES THE DIRECTION D. REVERSE FLOW FOR AM PEAK.



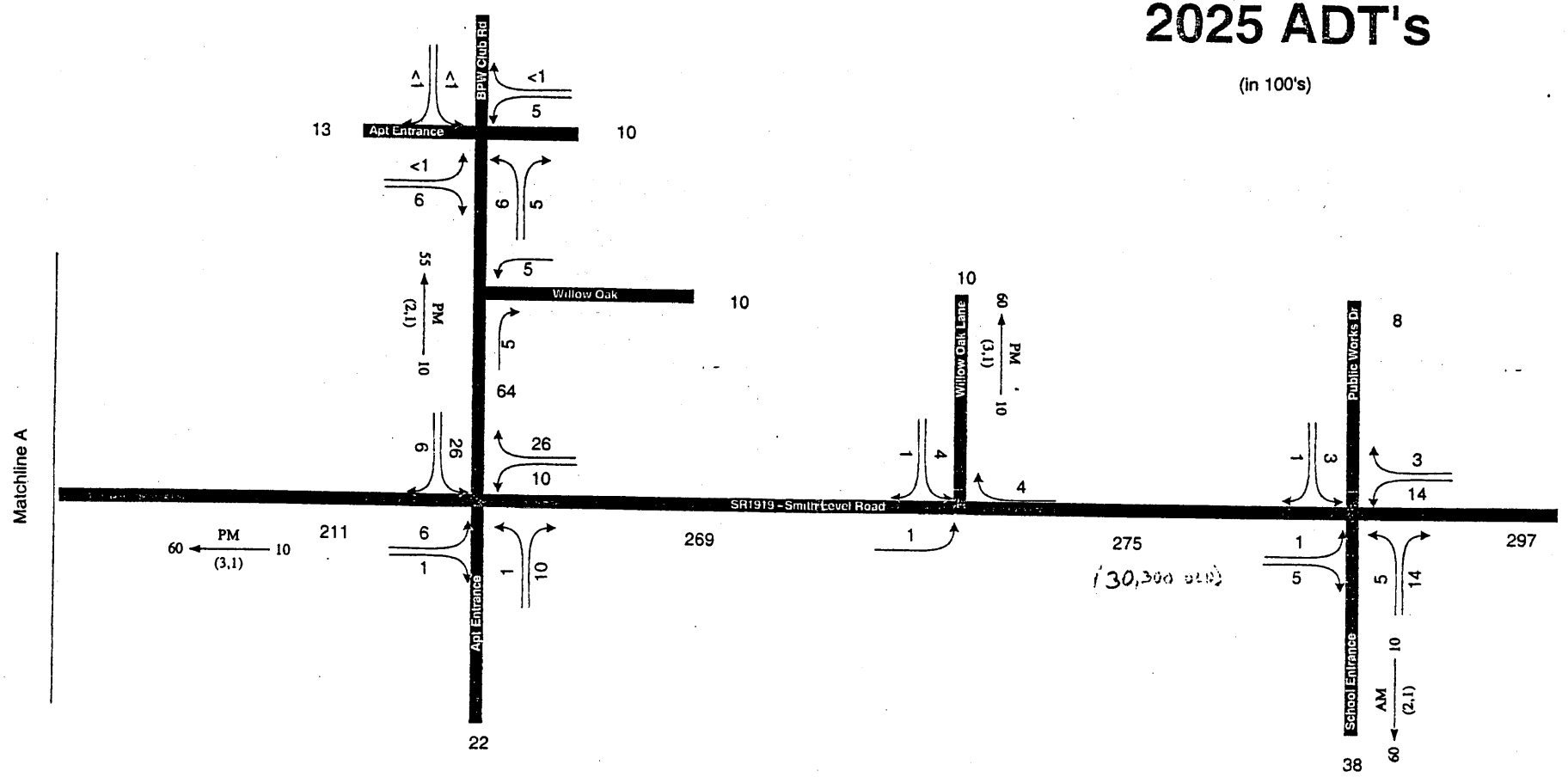
Smith Level Road
35 mph with 4/5 lane section near school

Orange County	DIVISION 7
TIP # U-2803	May 2002
WORK ORDER # 9.8070219	

9-6

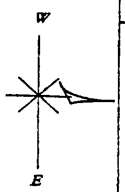
2025 ADT's

(in 100's)



Scenario 2

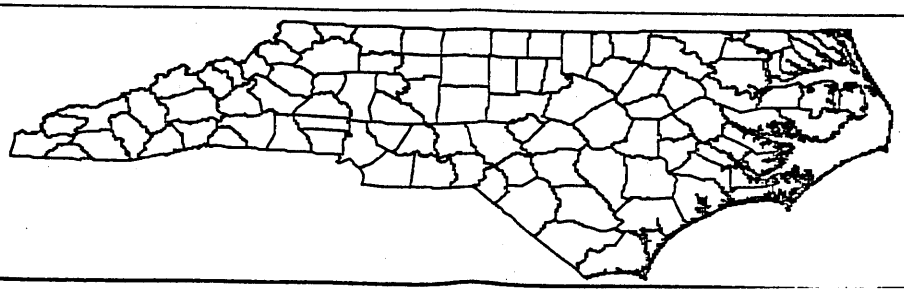
35 MPH PROJECT LIMITS ONLY



LEGEND

XXX	VPD--VEHICLES PER DAY
DHV	DESIGN HOURLY VOLUME (%)
D	DIRECTIONAL FLOW (%)
PM	PM PEAK PERIOD
(X,X)	DUALS, TTST (%)

NOTE: DHV ⟶ D INDICATES THE DIRECTION D. REVERSE FLOW FOR AM PEAK.



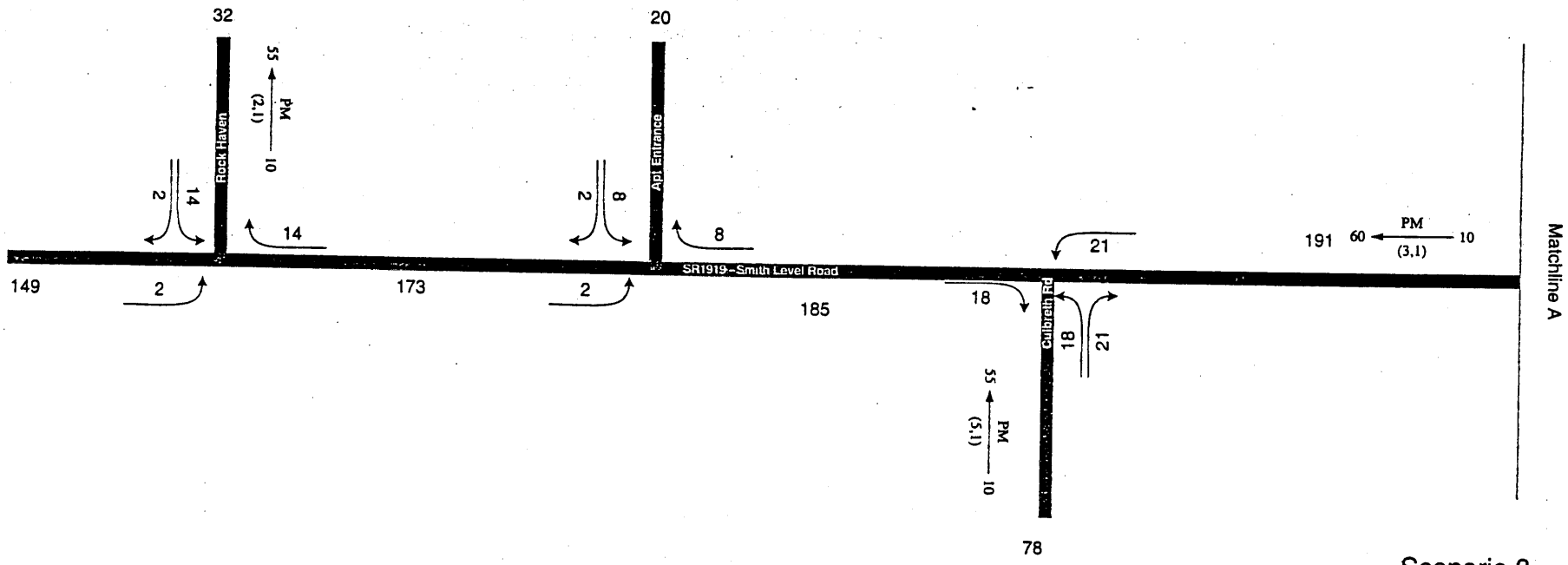
Smith Level Road

35 mph with 4/5 lane section near school

Orange County	DIVISION 7
TIP # U-2803	May 2002
WORK ORDER # 9.8070219	

2025 ADT's

(in 100's)



Scenario 3

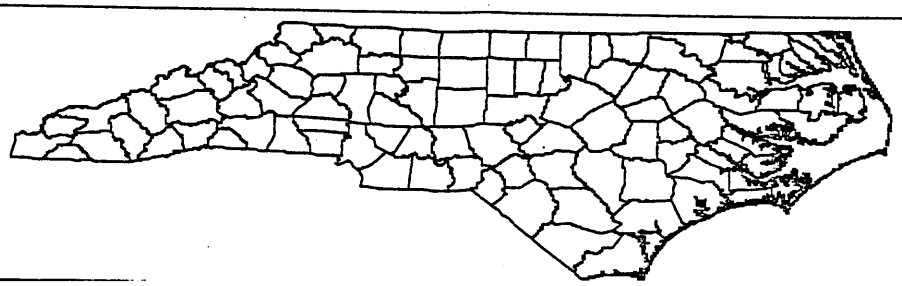
W

E

LEGEND

XXX	VPD–VEHICLES PER DAY
DHV	DESIGN HOURLY VOLUME (%)
D	DIRECTIONAL FLOW (%)
PM	PM PEAK PERIOD
(X,X)	DUALS, TTST (%)

NOTE: DHV ——→ D INDICATES THE DIRECTION D. REVERSE FLOW FOR AM PEAK.



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

Smith Level Road

2 OR 3 LANE

2 Lane Section

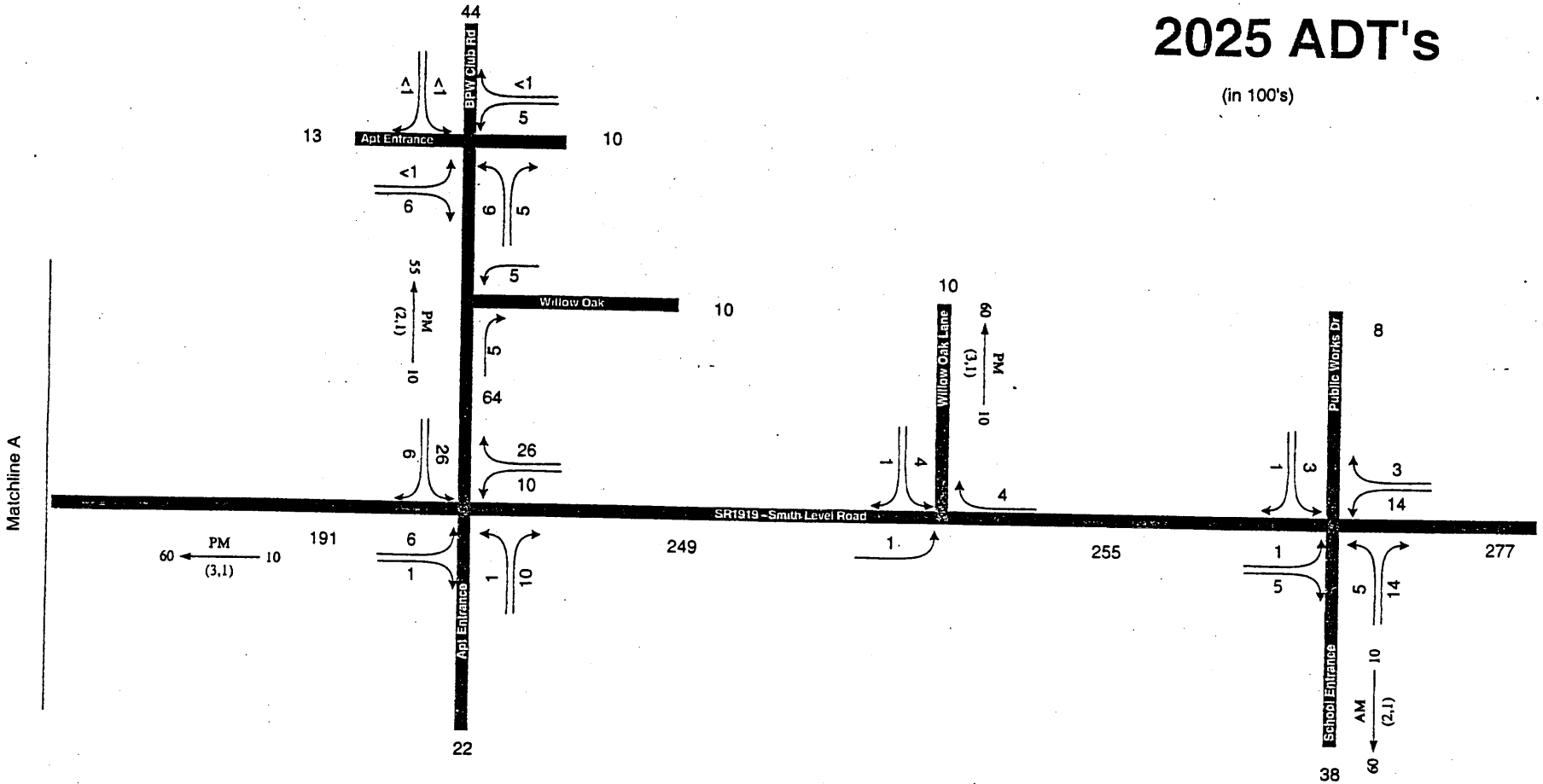
45 MPH

Orange County	DIVISION 7
TIP # U-2803	May 2002
WORK ORDER # 8.8070210	

6-8

2025 ADT's

(in 100's)



Scenario 3

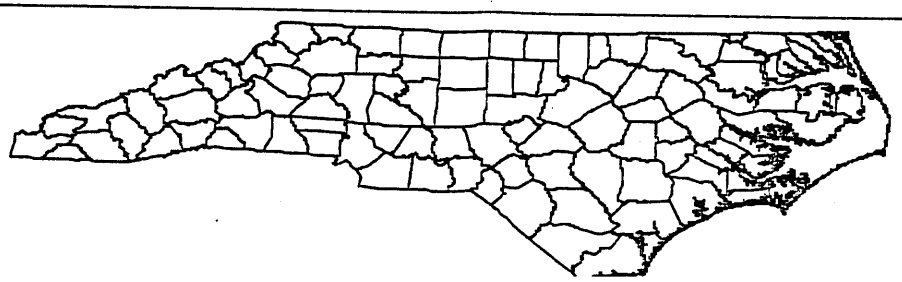
LEGEND

XXX	VPD–VEHICLES PER DAY
DHV	DESIGN HOURLY VOLUME (%)
D	DIRECTIONAL FLOW (%)
PM	PM PEAK PERIOD
(X,X)	DUALS, TTST (%)

NOTE: DHV → D INDICATES THE DIRECTION D. REVERSE FLOW FOR AM PEAK.

W

E



Smith Level Road

2 or 3 Lanes

2 Lane Section

45 MPH

Orange County	DIVISION 7
TIP # U-2803	*May 2002*

G-9

ATTACHMENT H

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

August 8, 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: J. A. Bennett, P.E., State Roadway Design Engineer
Roadway Design Unit
Attention: Art McMillan, P.E., Project Engineer

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

SUBJECT: Review of TIP Project with Revised Traffic Volumes

As requested the Plan Review Squad of the Traffic Engineering and Safety Systems Branch has completed a preliminary review of this project. As requested, we performed intersection analyses using the 2025 design year traffic projections provided by the Statewide Planning Branch to determine the levels of service (LOS). These analyses were based upon the following three scenarios:

- **Scenario 1** is the project as currently conceived, a multilane section with both four-lane divided and five-lane sections.
- **Scenario 2** is the same multilane section as Scenario 1 with a reduction in the posted speed within the project limits to 35 miles per hour.
- **Scenario 3** is to maintain the existing two-lane section.

Based on our analysis, we offer the following comments that should enhance the traffic safety and operation of this facility.

Scenario 1

Current design year (2025) traffic projections for **Scenario 1** indicate and Average Daily Traffic (ADT) ranging from 17,200 on the southern of the project to 32,200 on the northern section of the project. Volumes in this range require a multilane section to adequately service the projected traffic. With the provision of a raised island section along part of Smith Level Road, some vehicles will have to take indirect paths to reach their destinations or reroute their trip patterns. This is true for vehicles traveling northbound that wish to turn left onto Oak Spring Court as well as vehicles exiting this drive eastbound wishing to turn left to travel northbound on Smith Level Road. The other impacted Y-line is Willow Oak Lane. Vehicles wishing to turn left onto Willow Oak Lane from northbound Smith Level Road as well as those wishing to turn left from eastbound Willow Oak Lane to northbound Smith Level Road

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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

will have their current travel path impacted. For the purpose of this analysis, two options were evaluated. The first option consisted of these movements rerouting their trips to the full movement intersection of BPW Club Road and Smith Level Road, which would allow them to make direct left-turns, **Scenario 1a**. The second option evaluated these vehicles performing U-turns along Smith Level Road to reach their desired destinations, **Scenario 1b**. These U-turns were located at the intersections of Smith Level Road with Rock Haven Road, Culbreth Road, BPW Club Boulevard, and the Public Works Drive / School Entrance. Due to lack of a specific procedure to analyze U-turns they were treated as left-turns at unsignalized intersections but were analyzed as U-turns at signalized intersections with the aid of the traffic software, Synchro Professional.

Tables 1 and 2 present the results of the capacity analysis of these scenarios based on the laneage presented in the latest Roadway Design Plans.

Scenario 2

Scenario 2 presents the same design as **Scenario 1** with the exception that at the request of the Town of Carrboro, the speed limit along the corridor was reduced to 35 miles per hour within the project limits. Since this design also presents a median as with **Scenario 1**, there are two options of **Scenario 2**. These options consist of the redirected trips to BPW Club Boulevard, **Scenario 2a**, along with the U-turn option, **Scenario 2b**.

Tables 1 and 2 present the results of the capacity analysis of these scenarios based on the laneage presented in the latest Roadway Design Plans.

Scenario 3

As previously mentioned, **Scenario 3** presents maintaining the existing 2-lane design along Smith Level Road. **Tables 1 and 2** present the results of the capacity analysis of this scenario based on the laneage presented in the latest Roadway Design Plans.

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

	Scenario 1a		Scenario 1b		Scenario 2a		Scenario 2b		Scenario 3	
Intersection	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Rock Haven Rd										
NB L	A	B	A	B	A	B	A	B	A	B
SB L	NA	NA	B	A	NA	NA	B	A	NA	NA
EB L	D	E	F	F	D	D	E	E	F	E
EB R	B	B	B	B	B	B	B	B	B	C
Oak Spring Ct.										
NB L	NA	NA	NA	NA	NA	NA	NA	NA	A	B
EB L	NA	NA	NA	NA	NA	NA	NA	NA	F	F
EB R	B	B	B	C	B	B	B	C	B	C
Culbreth Rd.	B	B	B	B	B	B	B	B	D	B
BPW Club Rd.	C	B	C	C	B	B	C	C	E	F
Willow Oak Ln.										
NB L	NA	NA	NA	NA	NA	NA	NA	NA	B	B
EB L	NA	NA	NA	NA	NA	NA	NA	NA	F	F
EB R	B	B	B	B	B	B	B	B	C	E
Pub. Works / School	A	B	B	B	A	B	A	B	A	B

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

Scenario	AM	PM
Scenario 1	C	D
Scenario 2	C	D
Scenario 3	F	F

Summary

As shown in **Tables 1 and 2**, a multilane divided facility is required to adequately service the projected design year traffic. The reduction in projected design year traffic is not significant enough to allow the existing two-lane facility to adequately or safely service the design year traffic.

Also as requested by the Town of Carrboro, the feasibility of using roundabouts with **Scenario 3**, two-lane section, was considered. While roundabouts appear to adequately service design year traffic for the intersections of Smith Level Road with Rock Haven Road, Oak Spring Court, and Culbreth Road, they will not for the intersections with BPW Club Boulevard or Willow Oak Lane. Both of the aforementioned intersections are anticipated to have operational failures by the design year as two-lane roundabouts. Based on this information, we do not recommend a two-lane section with roundabout control be provided as part of this project. Due to the existing multilane section along Smith Level Road, the intersection of Smith Level Road and Public Works / Frank Porter Graham Elementary School Driveway was not analyzed under roundabout control.

By copy of this memorandum, we would like to raise our concern with the operations of the Smith Level Road and Public Works Drive / Frank Porter Graham Driveway intersection. Currently no improvements are planned for this intersection as part of this project. This intersection is approximately 200 feet from the existing signalized intersection of Smith Level Road and the NC 54 Eastbound Ramps. Unfortunately we do not have any information on the traffic projections for that intersection. Based upon the spacing of these intersections and the fact that only approximately 80 feet of storage is available for southbound left-turns at the Smith Level Road and Public Works Drive / Frank Porter Driveway intersection, we are concerned with the operations of these two intersections and the potential of traffic spillback between them.

We also recommend that a southbound right-turn lane be provided for the intersection of the Smith Level Road and Oak Spring Court. This recommendation is based on the number of right-turning and through vehicles.

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

NKP/

cc: J. M. Mills, P. E. (Attention: V. E. Barham)
J. H. Grant, P. E.
R. E. Mullinax, P.E.
T. M. Hopkins, P.E. (Attention: J. H. Dunlop, P.E.)
C. L. Evans (Attention: Jo Ann Oerter)
J. S. Bourne, P.E.
R. W. King, P.E.
J. C. Cranford

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: [redacted] Transportation Planner
Town of Carrboro, North Carolina

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

Nathan K. Phillips

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

	Additional Scenario	
Intersection	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:
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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

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.

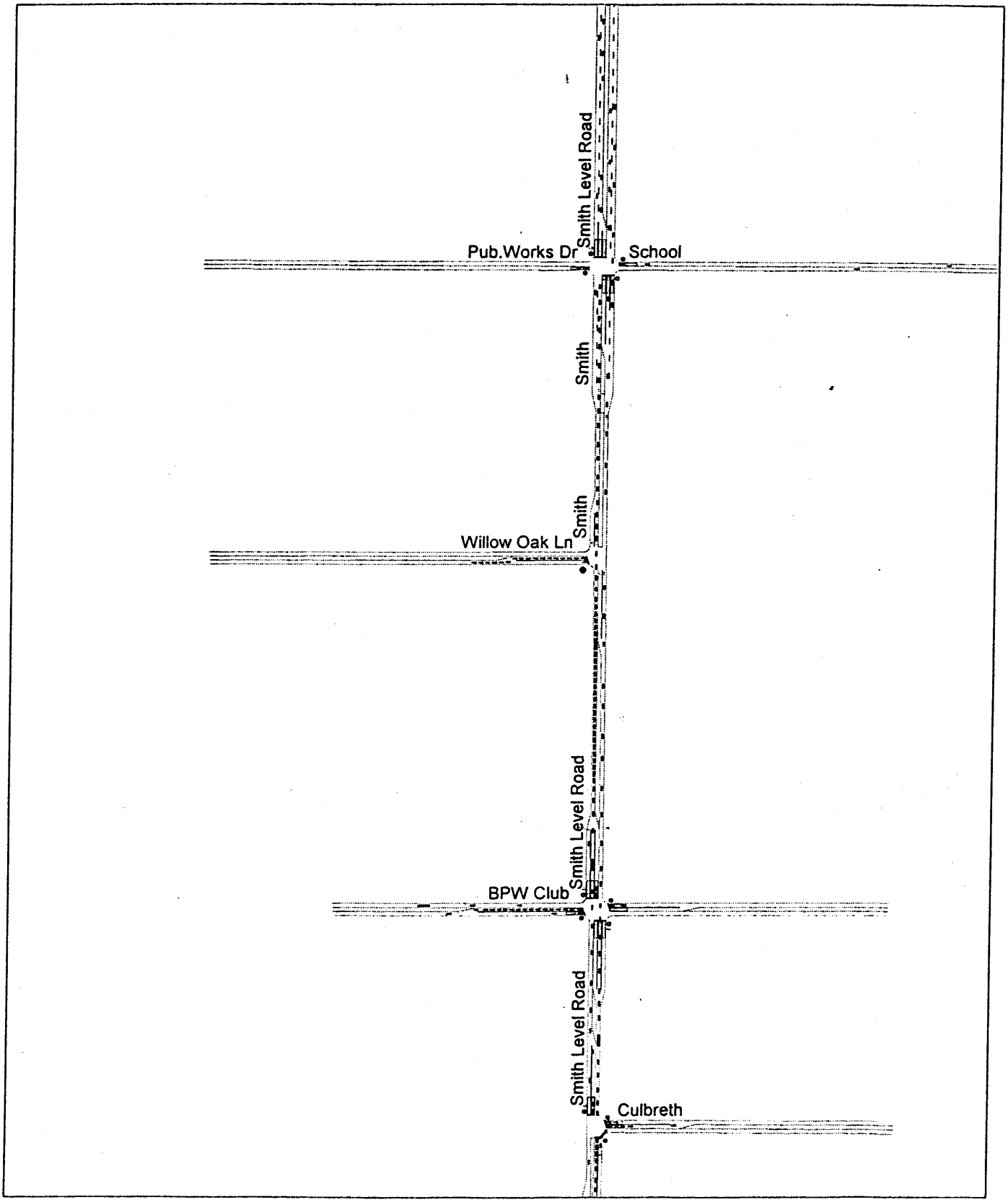
If you have any questions, please contact me or , James Dunlop P.E., Congestion Management Engineer at 250-4151.

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.

U-2803

2025 AM 2-Lane with reduced speed & improvements



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