

BOARD OF ALDERMEN

ITEM NO. E(1)

AGENDA ITEM ABSTRACT

MEETING DATE: October 15, 2002

TITLE: Joint Worksession with Transportation Advisory Board on Smith Level Road Design Alternatives

DEPARTMENT: PLANNING	PUBLIC HEARING: YES ___ NO ___ X ___
ATTACHMENTS: <ul style="list-style-type: none">A. ResolutionB. ChronologyC. 10-21-01 Public Hearing HandoutD. 11-13-01 Letter by Mayor NelsonE. 1-28-02 Interim Post Hearing ResponseF. 5-21-02 Letter from Town StaffG. Revised Traffic ForecastsH. Level-of-Service AnalysesI. Additional Level-of-Service AnalysesJ. Citizen Comments	FOR INFORMATION CONTACT: Dale McKeel – 918-7329

PURPOSE

The N.C. Department of Transportation (NCDOT) held a public hearing on the proposed widening of Smith Level Road on October 25, 2001. In response to citizen and Town comments, NCDOT has prepared additional information on the project. A joint worksession has been scheduled so that the Board of Aldermen and the Transportation Advisory Board can more efficiently meet with NCDOT staff and review the information that has been compiled. A resolution is provided for the Board's adoption (Attachment A).

INFORMATION

Smith Level Road runs from NC 54 Bypass to US 15-501 near the Chatham County line. The Town of Carrboro has requested modifications to Smith Level Road since 1990. The request was added to the state Transportation Improvement Program as project U-2803 in 1993.

In the early 1990s the State studied widening the entire length of Smith Level Road from NC 54 to US 15-501, including the section that passes through the University Lake watershed. In recognition of the permissible uses and density in the watershed, the Town of Carrboro and the State agreed to limit the scope of the project to a 0.6 mile section from the Morgan Creek bridge to Rock Haven Road. A chronology of the project has been prepared (Attachment B).

In 2001, the State published an Environmental Assessment/Finding of No Significant Impact (EA/FONSI) for the project. This document states that “the purpose of the proposed project is to increase the traffic carrying capacity of this section of Smith Level Road for current and future traffic volumes, while reducing the accident potential in the area.”

On October 25, 2001, NCDOT held an open house and public hearing for the proposed widening of Smith Level Road (Attachment C). The plan reviewed by the public showed Smith Level Road being widened to four lanes with a 17.5 foot median, curb and gutter, and bike lanes and sidewalks on each side of the roadway. Construction cost was estimated to be \$3.1 million (\$733,000 for right of way and \$2.4 million for construction). Right-of-way acquisition was to begin in June 2002 and construction in October 2003.

Approximately 50 persons attended the open house and public hearing. 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. A collection of citizen comments submitted during and after this meeting are attached (Attachment J).

During its November 13, 2001 meeting, the Board of Aldermen 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. A copy of the Mayor’s letter is attached (Attachment D).

On 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.

On January 7, 2002, Town officials met with State officials in Raleigh at the “Post Public Hearing Meeting” to review comments received during and following the October 25, 2001 Public Hearing. 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 (Attachment E).

On 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 (Attachment F).

On August 15, 2002, Town officials met with State officials in Raleigh to review additional information that was requested at the January 7 meeting. This included revised traffic forecasts (Attachment G), level-of-service analyses (Attachment H), and the traffic operations study at

Frank Porter Graham Elementary School (presented to the Board of Aldermen in May). These documents are discussed in more detail below.

On August 20, 2002, the Carrboro Town Manager, Police Chief, Fire Chief, Deputy Fire Chief and representatives from the Planning Department met to discuss the emergency response and public safety issues related to Smith Level Road. Both departments feel that the Town should support improvements to enhance the road system to ensure timely responses to emergencies.

POPULATION AND COMMUNITY CHARACTERISTICS

Land use along Smith Level Road is predominately residential. The area where the widening is proposed is one of the more densely developed areas in the region. This is not immediately evident to motorists on Smith Level Road because a dense buffer of trees and other vegetation has been maintained along the roadway, partially blocking the view of adjacent buildings.

Much of the development along Smith Level Road consists of multi-unit apartment buildings, many of which serve as housing for the University community. Because of the limited amount of parking on campus, transit ridership in the Smith Level Road corridor is high. On the other hand, vehicle trips are generated for shopping and other services as there is not a convenient center for these activities nearby.

The J Route is the primary Chapel Hill Transit route serving the apartment complexes in central and south Carrboro and has consistently been the system's most popular off-campus route. Generally, the J Route has enjoyed consistent and high levels of ridership from year to year. The route recorded a total of 399,052 passengers in Fiscal Year 2001. To alleviate overcrowding, both the C and D routes were purposely redesigned in the mid 1990s to overlap segments of the J route.

Since Chapel Hill Transit has become fare-free, ridership has seen growth ranging from a 40 percent increase the first few months to a 50 percent increase since the start of the 2002-2003 academic year. In addition, because of limited on-campus parking, University officials are working closely with Chapel Hill and Carrboro to encourage use of alternate forms of transportation and additional park and ride lots.

The 2000 Census provides a picture of the residents in the vicinity of Smith Level Road. In the census block group bounded by Smith Level Road, NC 54 Bypass, Jones Ferry Road, University Lake, and Damascus Church Road, there are 3070 residents. Of the 1,642 housing units in the block group, 1,390 were renter occupied. Of the 1,964 workers 16 years and over, 356 (18.1 percent) used public transportation to travel to work.

Much of the undeveloped property in the vicinity of the project is in the University Lake Watershed, which is zoned for large lots and lower density development. The EA/FONSI document prepared by the State, notes the following:

Due to the presence of this restricted zoning, there are not expected to [be] substantial changes to the land use or level of development along this portion of Smith Level Road.

However, there is one large undeveloped tract (approximately 50 acres) in Carrboro's jurisdiction near Smith Level Road that is outside the water-supply watershed. This tract is currently zoned R-10, which could allow about 215 units on the property (this number could be less based on the environmental constraints of the property). Development of 215 housing units on this property could generate roughly 2,150 additional trips per day. It is also anticipated that when this property is developed, a collector road between BPW Club Road and Rock Haven Road, as shown in the Connector Roads Policy, will be built.

TRAFFIC FORECAST

As requested by the Town of Carrboro and discussed at the January 7 meeting, the State prepared revised 2025 traffic estimates (Attachment G). To prepare this forecast, actual traffic counts were taken along Smith Level Road in the Spring of 2002.

The 2025 traffic estimates were prepared using the Triangle Travel Demand Model version 5-2001. The model assumes that the US 15-501 widening project is complete, and also assumes that the 50-acre parcel between BPW Club Road and Rock Haven Road has been developed.

2025 Estimates were provided for three different scenarios:

- Scenario 1 – a four/five lane highway with a 45 mph speed limit
- Scenario 2 – a four/five lane highway with a 35 mph speed limit
- Scenario 3 – the current two-lane highway with a 45 mph speed limit (no-build/current condition)

The following table shows the estimated 2025 traffic volumes under each scenario, and the percentage increase in traffic over the 2002 volumes.

<i>Segment of Smith Level</i>	<i>2002 Actual (vpd)</i>	<i>Scenario 1 (vpd)</i>	<i>% Increase over 2002</i>	<i>Scenario 2 (vpd)</i>	<i>% Increase over 2002</i>	<i>Scenario 3 (vpd)</i>	<i>% Increase over 2002</i>
N. of Public Works	22.8	32.2	41.23%	29.7	30.26%	27.7	21.49%
Public Works to Willow Oak	21.2	30	41.51%	27.5	29.72%	25.5	20.28%
Willow Oak to BPW Club	20.8	29.4	41.35%	26.9	29.33%	24.9	19.71%
BPW Club to Culbreth	16.8	23.6	40.48%	21.1	25.60%	19.1	13.69%
Culbreth to Villages Entrance	14.6	20.8	42.47%	18.7	28.08%	18.5	26.71%
Villages to Rock Haven	13.8	19.6	42.03%	17.5	26.81%	17.3	25.36%
S. of Rock Haven	11.8	17.2	45.76%	15.1	27.97%	14.9	26.27%

Note: The traffic volumes in each column are in thousands. vpd = vehicles per day

Under both current conditions and in 2025, the number of vehicles per day on Smith Level Road increases moving northward from Rock Haven Road toward NC 54 Bypass. Under Scenario 1 (45 mph four-lane), the model estimates that 2025 traffic volumes will be 40 to 46 percent greater than current conditions. Under Scenario 2 (35 mph four-lane), the increase is 25 to 30 percent, and under Scenario 3 (no change), the increase ranges from 13 to 27 percent.

The State also estimated the number of vehicles per day on roads that intersect Smith Level Road. Traffic on these roads is expected to increase 25 to 67 percent over current conditions, as

shown in the following table. With the exception of Culbreth Road, the percentage increase in traffic is the same for all roads under the three scenarios.

<i>Intersecting Road</i>	<i>2002 Actual (vpd)</i>	<i>Scenario 1 (vpd)</i>	<i>% Increase over 2002</i>	<i>Scenario 2 (vpd)</i>	<i>% Increase over 2002</i>	<i>Scenario 3 (vpd)</i>	<i>% Increase over 2002</i>
Frank Porter Graham Entry	3000	3800	26.67%	3800	26.67%	3800	26.67%
Public Works Drive	600	800	33.33%	800	33.33%	800	33.33%
Willow Oak Lane	800	1000	25.00%	1000	25.00%	1000	25.00%
BPW Club Rd	4200	6400	52.38%	6400	52.38%	6400	52.38%
Culbreth Rd	5400	6800	25.93%	7600	40.74%	7800	44.44%
Villages Entrance	1200	2000	66.67%	2000	66.67%	2000	66.67%
Rock Haven Rd	2400	3200	33.33%	3200	33.33%	3200	33.33%

vpd = vehicles per day

STAFF OBSERVATIONS: TRAFFIC FORECAST

- Traffic Impact of 50-Acre Tract. As discussed above, development of the 50-acre tract could generate an estimated 2,150 trips per day. The model estimated that there would be an additional 3800 trips in 2025 on BPW Club Road, the Villages Entrance, and Rock Haven Road. Because little additional land is available for development adjacent to these roads—other than the 50-acre tract—it appears that the model may have over-estimated the number of additional trips on these roads.
- Diversion from US 15-501. The 2002 traffic counts were taken during the time that US 15-501 South (from NC 54 Bypass to US 64) is under construction. In addition, this section of US 15-501 has been overcapacity and congested for several years. Anecdotal evidence from residents suggests that some drivers use Smith Level Road as an alternative to US 15-501 during congested periods. However, it should also be pointed out that the model assumes that the US 15-501 widening project is complete in 2025.
- Transit / Park and Ride. The model used to prepare the 2025 estimates includes transit services along Smith Level Road that are not substantially different than those that were in place in the Spring of 2001. The model assumes that the Jones Ferry Park and Ride lot (now under construction) is in operation. The model does not take into account fare free transit, transportation demand management strategies, or additional park and ride lots in southern Orange and/or northern Chatham counties.
- Collector Road. The model does not include the collector road between BPW Club Road and Rock Haven Road, as shown in the Connector Roads Policy. This connection will offer an alternative access for residents that currently have only one access to Smith Level Road. It could also reduce the number of trips on BPW Club and Rock Haven (for instance, transit buses must now enter, turn around, and exit both roads).

LEVEL OF SERVICE ANALYSES

As requested by the Town of Carrboro and discussed at the January 7 meeting, the State used the revised 2025 traffic estimates to prepare new level-of-service (LOS) analyses (Attachment G).

The purpose of the level-of-service analyses is to study how the roadway will perform with the estimated amount of traffic in the year 2025.

Level of service (LOS) is a measure of the operating conditions on a stretch of highway, based on conditions such as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Six levels of service are defined. They are given letter designations from A to F with LOS A representing the best operating conditions and LOS F the worst. LOS E is the value that corresponds to the maximum flow rate, or capacity, of a facility.

The three scenarios discussed previously were analyzed. In addition, the Town of Carrboro requested additional analyses of the two-lane scenario with intersection improvements, and an additional report was prepared (Attachment H). The State reported the following levels-of-service for Smith Level Road in the project area:

<i>Scenario</i>	<i>2025 AM Level of Service(LOS)</i>	<i>2025 PM Level of Service (LOS)</i>
1 – four-lane with 45 mph speed limit	C	D
2 – four-lane with 35 mph speed limit	C	D
3 – current two-lane highway	F	F
4 – two-lane highway with some intersection improvements	E	E

The State's report concludes that the estimated traffic volumes require a multi-lane section (that is, four lanes) to adequately service the projected traffic and that the existing two-lane facility cannot adequately or safely service the design year traffic. State engineers have said that they generally recommend a four-lane roadway when daily traffic volumes exceed a certain number, such as 18,000 vehicles per day.

STAFF OBSERVATIONS: LEVEL OF SERVICE ANALYSIS

- Need for Four Lanes. As noted previously, State engineers have said that they generally recommend a four-lane roadway when daily traffic volumes exceed a certain number, such as 18,000 vehicles per day. However, in reviewing information on the subject, there are examples of two-lane and three-lane roads that are carrying 20,000 to 25,000 and even 30,000 vehicles per day (for instance, see Dan Burden's publication *Road Diets*). A feasibility study of the Hillsborough Street reconstruction in Raleigh states that the two-lane roadway with median (reduced from four lanes) is expected to carry 30,000 vehicles per day. It may be useful to determine the factors that account for the high capacity of these facilities, and whether these factors are applicable to the Smith Level Road corridor.

OTHER ISSUES

At the August 15, 2002 meeting, State officials remarked that they are comfortable with a four-lane roadway between Morgan Creek and Culbreth Road, with a two-lane roadway south of Culbreth Road. In response to discussions at that meeting, the State has also determined that a single-lane roundabout at the intersection of Smith Level and Rock Haven Road would adequately handle projected 2025 traffic volumes.

In order to explore various possibilities for handling the projected traffic while reducing the need to widen the road to four-lanes, it should also be noted that the Town of Carrboro asked Leif Ourston, P.E. of Ourston Roundabout Engineering to prepare a complimentary assessment of roundabout site suitability. Ourston's analysis using the projected 2024 traffic flows from the public hearing map found that multi-lane roundabouts at the two busiest intersections on the corridor—BPW Club Road and Culbreth Road--would operate at LOS A during both peak hours and that general widening of Smith Level Road to four-lanes would not be required. However, the State does not support the use of multi-lane roundabouts at this time (although the State is building one in Winston-Salem) and the steep grades on Smith Level Road at the BPW Club Road and Culbreth Road intersections may make these locations unsuitable for roundabouts.

The primary focus of the Smith Level Road project over the past year has been on whether the four-lane roadway is necessary. It should be noted that there are several other issues that were raised at the Public Hearing and by Town Officials in meetings with the State. When the final decision about the cross-section has been made, careful consideration of these issues will be needed. The following is a list of some of these issues:

- Determine whether to provide a median opening at the intersection of Smith Level Road and Willow Oak Lane.
- Add bikelanes and sidewalks to the east side of the existing bridge over Morgan Creek on Smith Level Road and other bicycle and pedestrian improvements in the vicinity of NC 54.
- Incorporate context-sensitive design and traffic calming principles into the design of the project.
- Ensure that emergency response and public safety needs are addressed in the design.
- Use recycled materials in all aspects of the project.
- Review the design to ensure a safe and functional pedestrian environment along Smith Level Road.
- Incorporate recommendations from the traffic operations study at the Frank Porter Graham site.
- Coordinate signal timing on Smith Level Road.
- Reduce the speed limit to 35 mph / consider reduction in design speed.
- Incorporate additional landscape plantings into the project.
- Replacement of fencing removed by the project.

FISCAL IMPACT

A fiscal impact of moving forward with this project is the cost of sidewalk construction. Under NCDOT policies, Carrboro will be responsible for paying 30 percent of the construction cost for new sidewalks constructed within the town limits or extra-territorial jurisdiction area. NCDOT

will pay 100 percent of the cost of replacing any existing sidewalk that is removed by the project.

RECOMMENDATION

The Administration recommends that the Board of Aldermen adopt the attached resolution accepting the report and referring it to the town staff and Transportation Advisory Board for a recommendation to the Board of Aldermen within 30 days.