

MEMORANDUM

To: Mayor Stevens and Hillsborough Town Board members
From: Margaret Hauth, Planning Director
Date: September 20, 2010

RE: Alternatives to Elizabeth Brady Road

Background:

The Hillsborough Town Board of Commissioners withdrew its support for TIP (Transportation Improvement Program) project U-3808 (Elizabeth Brady Road Extension), a \$33.9 million project, on December 14, 2009. After reviewing the environmental documents for the project, the Board realized the project yielded limited improvements in traffic congestion on Churton Street while posing significant impacts to the natural and social environment in the area of the project. During these discussions, Planning Department staff proposed a list of alternative projects that when taken in some combination may have similar or greater impacts on reducing Churton Street congestion.

At the time of their decision, the Town Board expressed concern that withdrawing their support may cause the Town to lose the funding assigned to The Elizabeth Brady Road Extension project. Prior to NCDOT's (North Carolina Department of Transportation) withdrawal of the project entirely, it was partially funded in the STIP (State Transportation Improvement Program). While NCDOT would not commit to "swapping funding," the door was left open to work within the TIP process to assign the funds to new priorities.

The DCHC-MPO (Durham Chapel Hill Carrboro-Metropolitan Planning Organization) has supported the concept of reassigning the funding to other Town projects that may achieve the goal of the Elizabeth Brady Road Extension project and assisted with the analysis of the substitute projects list to determine what combination of projects may be most effective. A copy of the DCHC-MPO report containing their analysis, The Churton Street Congestion Analysis Report, is attached. The purpose of this document is to provide a framework for understanding that report and suggesting action options.

Purpose of the Analysis:

To assist with the TIP process, it is desirable to have a locally supported "package" of projects analyzed in a model that can be held up as having an impact on Churton Street congestion. This is needed in order to help persuade NCDOT that it is reasonable to reassign funding for the Elizabeth Brady Road Extension project to this package of projects as they would address the same need. When the selected package is run in the model, the Town will pick the same measures of effectiveness that were used in the Elizabeth Brady Road Extension project's EIS (Environmental Impact Statement) so the alternative projects can be compared fairly. The package must consist of projects that can be constructed quickly, and can be shown to effectively alleviate traffic congestion on Churton Street in downtown Hillsborough.

Methodology:

The TRM (Triangle Regional Model)

DCHC-MPO staff used the TRM in performing their analysis. The TRM is a computer model built on SE (socio-economic) data for the communities within the DCHC-MPO and CAMPO (Capital Area Metropolitan Planning Organization). The model is most useful in analyzing regional impacts of large scale transportation and land use changes. Data is entered based on TAZs (Traffic Analysis Zones). TAZs are special areas delineated by state and/or local transportation officials for tabulating traffic-related data- especially journey-to-work and place-of-work statistics. A TAZ usually consists of one or more census blocks, block groups, or census tracts.

TRM Weaknesses

There are only 14 TAZs covering Hillsborough and the immediate vicinity (see map on page 3 of the DCHC-MPO report). This limits the effectiveness of using the TRM to analyze fine grain changes to the Hillsborough transportation network. For example, TAZ 1896 includes the area bounded by South Churton Street, I-85, I-40 and NC 86 South. This one TAZ includes all of the Waterstone, Hampton Pointe and Old Mill Business Park developments. This creates problems in predicting traffic flows to and from this TAZ because the route chosen depends on where within the TAZ you are going. Travel within a TAZ cannot be analyzed using the TRM.

Project Analysis

In November of 2009, Planning Department staff suggested 11 substitute projects be studied to determine if any one or more in combination would effectively reduce congestion on Churton Street in downtown Hillsborough. The projects that were able to be analyzed in the TRM are listed below with the alternative number that matches the DCHC-MPO report:

1. Update the **Feasibility Study for the widening of South Churton Street** (TIP project R-2825) to include an assessment of the recommendations in the Town's adopted Churton Street Corridor Strategic Plan and the potential impacts of the Waterstone development.
4. Conduct a **Feasibility Study for the construction of Orange Grove Road** extension to US 70 Business (US 70-A East).

What is SE Data and How Is It Used in the TRM?

SE (socio-economic) data includes the number of dwellings, number of residents, and number of jobs by type within each TAZ. The number of residents is extrapolated from the number of dwellings. Each jurisdiction within the MPO tracks this data within their jurisdiction and updates it with each plan update or more often depending on local preferences. Using the SE data and actual traffic counts, the model projects traffic on various routes to estimate traffic flows and possible congestion. The model is checked against reality and equations assigning traffic are adjusted until the model can closely predict future conditions.

5. Assess the viability of designating an alternate route as an **NC 86 Bypass** – including portions of I-40, I-85 and the US 70 Connector to I-85 west of the Town.
6. Provide additional **operational support funding for an in-town circulating bus route** (C-4932) for 5 additional years in a step-down manner to allow the Town and Orange County to absorb the cost and provide a quality service with short headways.
7. Install **enhanced signage** east, west, and north of Hillsborough to direct through traffic to use the US 70 Connector and Interstates rather than Churton Street. This includes signage in RTP (Research Triangle Park) to direct NC 86 North traffic to the Durham Freeway (NC 147), I-85, and US 70 Bypass, and includes the study of the improvement as well as installation of signage.

Other staff suggested improvements that could not be modeled are listed below. Alternative actions for each are listed in the “Recommendations and Next Steps” section of this report:

- A. Conduct a **downtown TDM (Traffic Demand Management) and efficiency assessment** to include analysis of signalization, dedicated left turn lanes, other turn lanes, parking and traffic calming to both improve the flow of traffic while maintaining community character in the Town’s historic downtown core.
- B. **Assess the impacts and viability of extending US 70-A** to the west to connect with Exchange Park Lane.
- C. Conduct a **community railroad crossing assessment**.
- D. **Assess the condition of the Eno River and railroad bridges** on South Churton Street to determine an appropriate replacement schedule and necessary design changes to accommodate bicycle and pedestrian improvements.
- E. **Conduct a Feasibility Study for the alignment of Eno Mountain Road and Mayo Street** (TIP U-3436).
- F. Update and modernization of **I-85 interchange #165** at NC 86 South (The widening and reconfiguration of Hillsborough’s two I-85 interchanges were included in the DCHC-MPO report as the baseline analysis).

Additional Projects Analyzed:

DCHC-MPO staff analyzed the following projects because they are existing projects in the DCHC-MPO 2035 LRTP (Long Range Transportation Plan) that may impact congestion along Churton Street:

- I-40 widening
- I-85 widening
- NC 86 South widening between US 70-A East and Old NC 10

- NC 86 North widening between US 70 Bypass and NC 57

In addition, DCHC-MPO staff modeled two additional projects to provide a parallel route to Churton Street: the Western Bypass and a western loop extending the Western Bypass south to the I-40/I-85 split west of Town. The latter would provide a direct connection to the Interstate. Planning Department staff notes that these two projects exceed the intended scope of the analysis, but show that a parallel route might have a greater impact on relieving congestion. This will be explored further in the “Recommendations and Next Steps” section of this report.

Model Results

The results shown in the table on Page 32 of the DCHC-MPO report show the impact to number of vehicles (volume), travel time (in minutes), and congestion (V/C-Volume/Capacity) for 9 of the alternatives analyzed as compared to a base analysis that includes the interstate widening projects. The table analyzes each alternative independently, not in combination.

As noted in the “Purpose of Analysis” section of this report, one of the primary outcomes sought by the Town is to be able to use the funding previously allocated for the Elizabeth Brady Road Extension project for a “package” of viable projects that can be constructed quickly and that will effectively alleviate congestion on Churton Street in downtown.

Projects 1, 2, and 3 in the table below (matching the DCHC-MPO report) offer some improvement and can move forward with the least additional review and design. Project #4 (Orange Grove Road extension) in the list is new road and will require significant time for planning, design, and permitting.

The impact of the intersection improvement created by the Eno Mountain Road/Mayo Street alignment cannot be reflected in the model because it adds no capacity and is located within a TAZ rather than as boundary points. However, this project is in a position to move forward more rapidly than others because of its inclusion in the DCHC-MPO 2035 LRTP. Additionally, this project improves a route that is parallel to Churton Street, which implies it may have a noticeable impact on Churton Street congestion.

Funding Comparisons:

In the Fiscal Year 2009-2015 STIP, \$33,994,000 was allocated for right-of-way, mitigation, and construction of the Elizabeth Brady Road Extension project beginning in FY 2010. Given the status of the project when Hillsborough withdrew support, the STIP schedule had already slipped by at least one year.

The table below provides information on each individual alternative project, including their cost and funding commitment level. The alternative numbering is based on the alternative listing in the DCHC-MPO report.

Alternative #	Project	Cost	Funding Commitment
*	I-85 Widening	\$212,582,000	Partial; beginning 2017 in draft FY11-20 TIP
*	I-40 Widening	\$128,452,000	Partial; beginning 2019 in draft FY11-20 TIP
1	South Churton Street Widening	\$22,750,000	None
2	NC 86 South Widening between US 70-A east and Old NC 10)	\$9,795,792	None; not identified in draft FY11-20 TIP
3	NC 86 North Widening between US 70 Bypass and NC 57	\$3,207,033	None; not identified in draft FY11-20 TIP
4	Orange Grove Road Extension to US 70-A East	\$30,000,000	None; not identified in draft FY11-20 TIP
6	Downtown Transit	\$0	The route modeled was a direct shuttle route, not the funded CMAQ ¹ circulator route. The circulator route will be analyzed when finalized.
8	Western Bypass	\$7,450,000	None; identified in FY11-20 TIP; not in DCHC-MPO 2035 LRTP
	Eno Mountain Road/Mayo Street Alignment	\$2,350,000	None; not identified in draft FY11-20 TIP; is in DCHC-MPO 2035 LRTP
* = Projects not considered alternatives but included in baseline scenarios due to their funding status and likelihood of being completed in the future.			
¹ CMAQ = Congestion Mitigation and Air Quality-a Federal grant program			

Recommendations and Next Steps:

First and foremost, the Town needs to determine which alternatives it wants to present as a package. The more similar the benefits of the package of alternatives are with the estimated benefit from the Elizabeth Brady Road Extension project, the stronger position the Town will be in to offer the package as a substitute. The Town must also be prepared to discuss detailed schedules and coordinate Interstate improvements with NCDOT to maximize the impact of any funded improvements. There also needs to be a frank discussion about whether there will be real dollar-for-dollar recognition for the Elizabeth Brady Road Extension project and, if so, what that dollar figure will be as the estimates for the Elizabeth Brady Road Extension project and other road projects vary from year to year.

In the longer term there are additional tasks the Town can undertake to support the projects that aren't well modeled, and to identify small projects that can be funded locally or outside of the TIP process. One of the first small projects could be undertaking a detailed downtown TDM study. The DCHC-MPO staff has contact some firms about undertaking this study. The estimated cost and timeframe for this study should be known by the Town Board workshop. This study could be funded by the Town or in cooperation with DCHC-MPO using planning funds the organization receives annually (20% local match required).

The suggested downtown TDM study would include the following components:

- Signals – synchronization, timing, and dedicated turns
- Turn lanes – right or left turn lanes at certain intersections
- On-street parking – the impact of removing on-street parking on Churton Street to create room for turn lanes and wider sidewalks
- Traffic calming
- Creation of loading zones
- Potential of redesigning off-street parking lots

The results of this study are likely to be small projects the Town could undertake itself or request discretionary funding from NCDOT rather than large scale TIP projects that require years of planning and preparation.

Other alternatives not modeled:

- **Assess the impacts and viability of extending US 70-A** to the west to connect with Exchange Park Lane.
- Conduct a **community railroad crossing assessment**.
- **Conduct a Feasibility Study for the alignment of Eno Mountain Road and Mayo Street** (TIP U-3436).

The items listed above that could not be evaluated using the TRM lend themselves to a different tool or methodology. Planning Department staff is considering the effectiveness of developing and maintaining a finer grained local model that could inform more local decisions, but contain the same database as the TRM. Staff cannot recommend this option yet because they don't know whether such a tool could be maintained with current staffing, or whether the benefits would outweigh any maintenance costs. Investigation of this option will continue.

If a local model proves untenable, a low technology sketch analysis can also be conducted using the same information a model would use, but skipping the equations and producing a more conceptual result.

The **community rail crossing assessment** was also recommended in the recently adopted Rail Station Small Area Plan as a necessary component in advance of any new rail crossings being requested or consideration of closing existing crossings. This analysis would include impacts of rerouting traffic, convenience of access, safety during emergencies, and many other factors.

The request to **assess the condition of the Eno River and railroad bridges** on South Churton Street to determine an appropriate replacement schedule can be made directly to the Bridge Division of NCDOT and should provide the Town with some advance warning of repair work for the bridges sufficient to integrate bicycle and pedestrian improvements.