



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE  
GOVERNOR

EUGENE A. CONTI, JR.  
SECRETARY

February 13, 2009

Mr. Kumar Neppalli, E.I.T.  
Engineering Services Manager  
Town of Chapel Hill  
405 Martin Luther King Jr. Blvd.  
Chapel Hill, NC 27514 – 5705

**SUBJECT:** Request Nighttime Phase I construction of South Columbia Street from Purefoy Road to Mason Farm Road

**T. I. P. NO.:** U-0624  
**WBS Number:** 34762.1.1  
**F. A . Project:** STP-86(2)  
**County:** ORANGE  
**Description:** CHAPEL HILL - NC 86 (S COLUMBIA ST) FROM SR 1906 (PUREFOY RD) TO SR 1902 (MANNING DR)

Mr. Neppalli:

The North Carolina Department of Transportation and HNTB have worked together to develop a construction sequence for South Columbia Street to best address the required construction and the stakeholders impacted by this project.

The sequence requires the construction from Mason Farm Road to Manning Drive to be completed during the day using lane closures and flaggers. This portion of the project has a wider existing roadway typical to accommodate motorists and pedestrians while using flaggers to construct the proposed roadway typical. However, the existing roadway typical from Purefoy Road to Mason Farm Road is not wide enough to maintain two-way traffic and pedestrians while constructing the proposed roadway typical. The use of a one-way detour from Purefoy Road to Mason Farm Road will allow movement for Northbound South Columbia Street while Southbound Columbia Street will use Manning Drive to US 15/501. The benefits for using a one-way detour include:

- Traffic flow is toward the hospital
- Emergency responders can alter routes in advance of construction to be prepared
- The traffic operations are predictable so transit can adjust schedules as needed for the changes to bus routes prior to construction.

**MAILING ADDRESS:**  
WORK ZONE TRAFFIC CONTROL UNIT  
1580 MAIL SERVICE CENTER  
RALEIGH, NORTH CAROLINA 27699-1580

**TELEPHONE:** 919-250-4094  
**FAX:** 919-250-4098

**WEBSITE:** [WWW.NCDOT.ORG/~WZTC](http://WWW.NCDOT.ORG/~WZTC)

**LOCATION:**  
CENTURY CENTER COMPLEX BUILDING B  
1020 BIRCH RIDGE DRIVE  
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U-0624  
2/13/2009  
Page 2

- Using the one-way detour instead of flaggers for the entire length of the project will reduce the construction duration by at least 6 months. The construction duration using the one-way detour with construction occurring from 9am to 9pm is anticipated to be approximately seven (7) months.

Once motorists are placed in this one-way pattern, it will remain in place until Phase I construction is completed. The roadway will not be reopened to a two-way pattern during the night time hours. We are requesting the Town of Chapel Hill allow work to be conducted at anytime during a 24 hour period instead of 9am to 9pm for the construction of South Columbia Street from Purefoy Road to Mason Farm Road. This will allow more flexibility during construction and potentially reduce the anticipated duration traffic will be in this one-way pattern.

Specific information on the construction options are described below to provide you further details to support the decision to use a one-way detour:

Three construction options were considered in determining the best method for building this proposed roadway:

- 1.) Use temporary pavement to maintain two-way traffic during construction.
- 2.) Flaggers and lane closures for all proposed work.
- 3.) One-way detour route as currently proposed.

### **Option 1**

Using temporary pavement and traffic shifts to maintain two-way traffic was determined unfeasible due to the historic and constructability constraints for this project.

The final pavement recommendations require a three foot asphalt section on both sides of the existing roadway be removed. In addition, the existing pavement design has a concrete sub-structure which has to be removed given various conditions during construction. This allows a maximum 21' of usable existing pavement to maintain traffic. A minimum 28' of pavement is needed to accommodate 2 lanes of travel plus the barrier needed to protect the work area. Therefore, a minimum 7' of temporary pavement is needed. There is no room on the west side of South Columbia Street to put the temporary pavement due to the location of the historic rock wall. In addition, the use of temporary pavement makes maintaining positive drainage throughout the work zone difficult.

If a temporary shift were possible, flaggers and lane closure operation would still be utilized for some construction operations such as wedging South Columbia Street, most intersection construction, and drainage installations.

### **Option 2**

The construction of this project would require one lane of travel and flaggers be used most of the project duration. Using flaggers and lane closures for all proposed work will extend the construction duration a minimum of 6 months verses the use of the one-way detour route option.

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U-0624  
2/13/2009  
Page 2

The final pavement recommendations require a three foot asphalt section on both sides of the existing roadway be removed. In addition, the existing pavement design has a concrete sub-structure which has to be removed given various conditions during construction. Removing the existing pavement and substructure would create a deficient available lane width to open the road up to two-way traffic at the end of the restricted work day. Also, undercut of the existing soil subbase required through most of the project would result in an 18" - 30" drop off at the edge of the closed travel lane making it difficult to complete the work required to open the road up to two-way traffic at the end of the restricted work day.

Maintaining pedestrian access safely throughout the work zone would be difficult, especially because the portion of roadway being constructed first is where much of the worn pedestrian path is located.

This option is not feasible due to the slow progress a contractor would make daily because of the pavement removal and work hour restraints provided. The significant drop off and pedestrian access also makes this not a viable option.

### **Option 3**

Using a one-way detour route from Purefoy Rd. to Mason Farm Rd would allow room for the needed construction operations, the maintenance of Northbound traffic toward the University and Hospital, and the maintenance of pedestrians. All work from Mason Farm Rd. to Manning Dr. will be done utilizing flaggers and lane closures with traffic in the existing pattern.

Once the right side of the proposed road is completed in the area from Purefoy Road to Mason Farm Road, traffic will be opened to a two-way pattern on the new pavement. The left side of the proposed roadway can be constructed using barrier protection. There will still be some flagging operations to conduct other work along the project.

Using a one-way detour route will reduce the construction duration. If allowed to conduct work at night as well, it could further reduce the duration the traffic will be in the one-way pattern.

I hope this information provides you the details needed to allow the requested portion of this project be constructed with more flexible hours. If you find further information is needed, please advise.

Sincerely,

Jessica Kuse, PE  
Work Zone Traffic Control

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U-0624  
2/13/2009  
Page 2

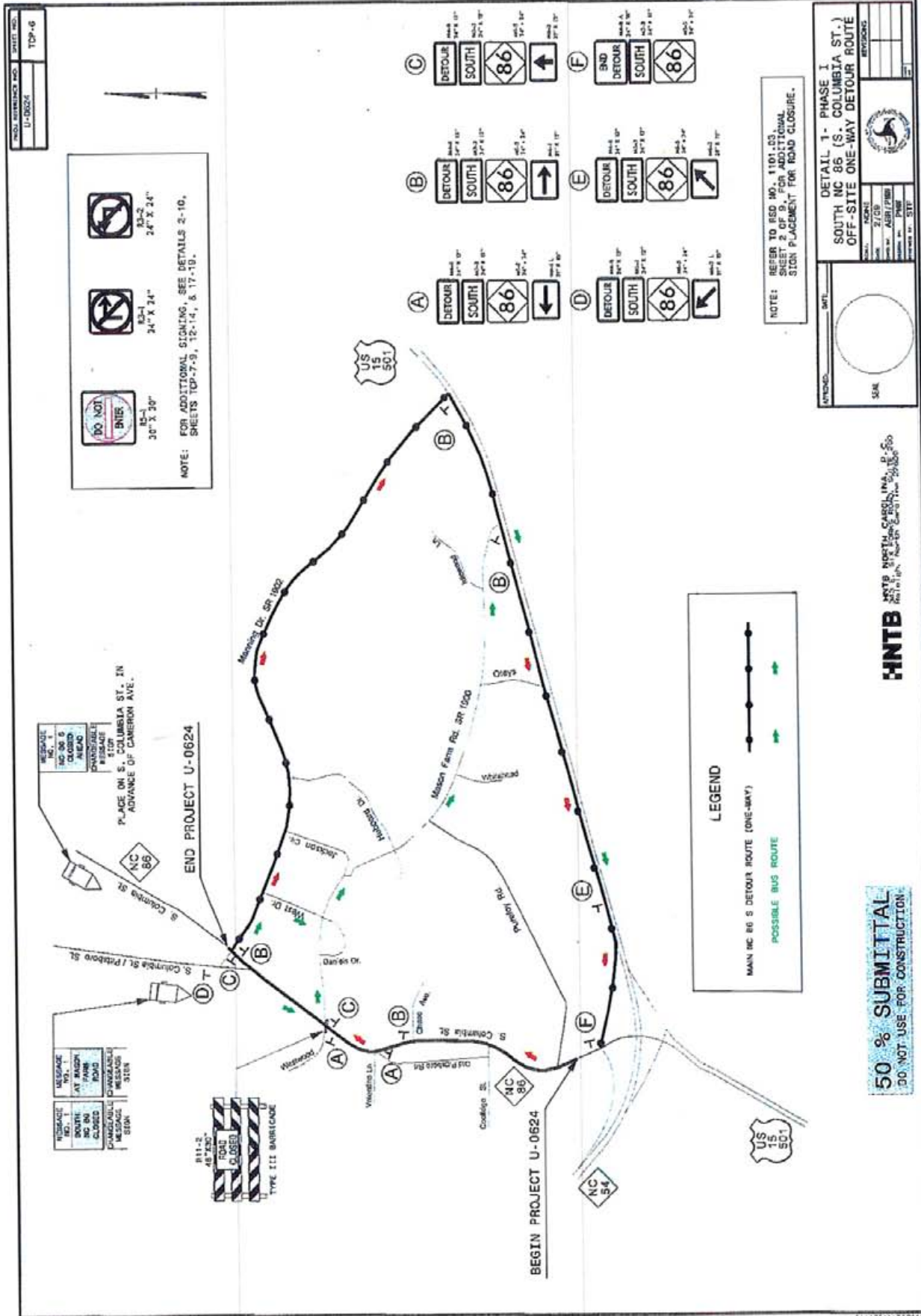
Enclosure

**cc:** Project File  
Mike Mills, PE, Division 7 Engineer  
Attn: Patty Eason, PE, Division 7 Construction Engineer  
Michelle Ward, HNTB

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PROJECT NO. U-0624  
SHEET NO. TOP-6

**DO NOT ENTER**  
30" x 30"

**DETOUR SOUTH 86**  
24" x 24"

**END DETOUR SOUTH 86**  
24" x 24"

NOTE: FOR ADDITIONAL SIGNING, SEE DETAILS 2-10, SHEETS TOP-7-9, 12-14, & 17-19.

**(A)** DETOUR SOUTH 86  
24" x 24"

**(B)** DETOUR SOUTH 86  
24" x 24"

**(C)** DETOUR SOUTH 86  
24" x 24"

**(D)** DETOUR SOUTH 86  
24" x 24"

**(E)** DETOUR SOUTH 86  
24" x 24"

**(F)** END DETOUR SOUTH 86  
24" x 24"

**LEGEND**

MAIN NC 86 S DETOUR ROUTE (ONE-WAY)

POSSIBLE BUS ROUTE

NOTE: REFER TO RSD NO. 1101.03, SHEET 2 OF 9, FOR ADDITIONAL SIGN PLACEMENT FOR ROAD CLOSURE.

DETAIL 1 - PHASE I  
SOUTH NC 86 (S. COLUMBIA ST.)  
OFF-SITE ONE-WAY DETOUR ROUTE

DATE: 11/11/11  
SCALE: AS SHOWN

DESIGNED BY: [Signature]  
CHECKED BY: [Signature]

**HNTB**  
HNTB NORTH CAROLINA, INC.  
10000 W. WOODHOLLOW DRIVE, SUITE 200  
RANDOLPH, NC 28134

**50% SUBMITTAL**  
DO NOT USE FOR CONSTRUCTION