

FEASIBILITY STUDY

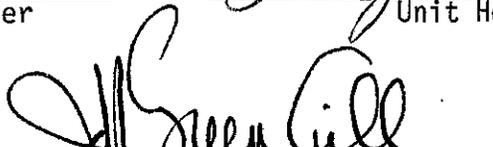
East Side Thoroughfare  
US 64-70 to NC 127  
Hickory, Catawba County  
U-2307

Prepared by  
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7-19-08  
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The right of way estimate is expected around the second week of August, 1988. When received, the estimate will be forwarded to Mr. Calvin Leggett.

The Planning and Research Branch and Roadway Design Unit have studied the feasibility of constructing the East Side Thoroughfare in Hickory. The 6.6 mile project involves widening existing facilities and construction on new location. Our findings and recommendations are detailed in this report.

The City of Hickory and Division Engineer, Division 12, were consulted in preparing this report.

## I. PURPOSE

The East Side Thoroughfare will function as a major loop for the Hickory area by linking the NC 127 corridor with the US 64-70 corridor (see Fig. 1 for a location sketch). The project will facilitate travel between the major residential, industrial, and commercial areas of Hickory. It will link the northeast residential area to the eastern industrial area and to the development along the US 64-70 corridor. This loop will provide for travel between nine major corridors serving the area.

## II. EXISTING CONDITIONS

### Roadway Conditions

Roughly half of this project involves widening existing facilities (SR 1404 and SR 1402). Pavement width on these roadways varies from 19 feet to 23 feet. Setback distances for utility poles range from 15 feet to 30 feet from the roadway centerline.

The existing facilities maintain a speed limit of 45 mph except near NC 127 and Springs Road. Speed limits are reduced to 35 mph near these intersections.

### Structures

Two structures are located along these roadways. A 101-foot long steel and timber bridge over Falling Creek (B 34) lies approximately 0.6 mile east of the NC 127 intersection. It is scheduled to be replaced in fiscal year 93-94 under project B-2011.

A 96" x 72" two barrel pipe culvert (P 293) lies approximately 0.8 mile north of the Springs Road intersection.

## III. NEED FOR IMPROVEMENTS

### General

The East Side Thoroughfare is planned to serve as a major traffic mover in Hickory's overall transportation scheme. Without its construction, traffic will continue to be routed through the center of Hickory causing existing routes to become increasingly congested.

This facility is designated as a major thoroughfare in the mutually adopted Hickory Thoroughfare Plan.

### Traffic Volumes

It is estimated that the East Side Thoroughfare would serve volumes of traffic in 1988 ranging from a low of 7800 vehicles per day (vpd) to a high of 15,000 vpd. Volumes for the years 2008 are projected to range from a low of 12,500 vpd to a high of 24,200 vpd. See Figure 3 for a diagram of traffic projections for this facility.

### Accident Experience

Portions of SR 1402 and SR 1404 serve as the northern segment of this project. Based on an analysis of a 3 year period, these routes experienced an accident rate of 675 accidents per million vehicle-miles (acc/mvm) which exceeds the statewide average of 280 acc/mvm for similar routes. The proposed improvements will improve the safety features of these facilities.

This project will have a secondary benefit to accident rates on other facilities in Hickory by routing traffic around the city, thus reducing their potential congestion.

## V. STUDIED IMPROVEMENTS

### Alignment

To allow the subject project to serve its intended loop function, it must have junctions with NC 127 and with US 64-70. The existing routes, SR 1402 and SR 1404, are logical for carrying the northern section of this loop. Construction on new location is necessary to allow the project to tie-in with US 64-70. The City of Hickory, with review from the NCDOT Statewide Planning Unit, has developed a functional alignment for the new location section of this project. The construction and right of way estimates contained in this report are based on the alignment prepared by Hickory. Figures 1 and 2 show the location of this alignment.

### Design (Northern Segment)

From Springs Road to NC 127, it is recommended that existing SR 1402 and SR 1404 (29th Avenue N.W.) be widened to a five lane facility with curb and gutter, 64-feet from face to face of curbs. The length of this section is 3.1 miles.

Approximately 90 feet of right of way is proposed with additional permanent or temporary easements.

This section includes extending the existing pipe arch culvert approximately 25 feet to each side.

The bridge over Falling Creek located along this section is scheduled to be replaced in fiscal year 93-94. It is anticipated this bridge will be replaced as a two lane structure with provisions made for

widening at a later date. Costs for widening this bridge are included in the construction cost estimates.

### Design (New Location)

From US 64-70 to Springs Road, 3.5 miles, a new four lane divided facility with a 46-foot median, 12-foot lanes, 2-foot paved shoulders, and 10-foot useable shoulders is proposed. The construction and right of way cost estimates are based on this design (see Section VIII).

Proposed right of way is 300 feet with some temporary or permanent easements required.

This section includes at-grade intersections with SR 1441, SR 1468, SR 1692, and US 64-70. An interchange is proposed at I-40.

Dual bridges approximately 260 feet long and 38 feet wide are proposed over the Southern and Carolina rail line and SR 1007. The railway serves high volumes of train traffic with approximately 12 through-movements per day at a maximum speed of 60 mph.

At the City of Hickory's request, a design for an at-grade intersection with SR 1007 and an underpass of the railway was examined. This was determined to be infeasible due to excessive damage to businesses and residences.

A diamond type interchange with dual bridges approximately 210 feet long and 38 feet wide is proposed at I-40.

Drainage designs indicate that a 400-foot long 10' x 11' double barrel box culvert is required for the crossing of Clark Creek near I-40.

A large amount of borrow material is required for this segment of the project. This is reflected in its high cost per mile of construction.

## VI. ALTERNATIVES

It is beyond the scope of this feasibility study to analyse alternate designs in detail. However, two alternatives to the studied improvements have been identified.

The studied improvements recommend 300 feet of right of way along the new location segment of the project. The following alternatives could reduce this right of way width and therefore reduce potential damage to businesses and residences along the corridor.

- 1) Reduce median width
- 2) Alter design to five lane facility with curb and gutter

The five lane alternative could reduce right of way to approximately 100 feet. However, additional easements approximately 50 feet to each side of the right of way would be required due to the hilly terrain involved throughout this section. This design would allow for a uniform cross section along the entire project length.

All alternatives for this project will be examined in detail during the project planning phase if it is funded. It is anticipated that an Environmental Impact Statement (EIS) will be required as part of this phase. Final decisions on project design cannot be made until the EIS is complete.

#### VII. POTENTIAL IMPACTS

The subject project will cause the relocation of approximately 25 residences and 5 businesses. The exact number of relocatees will depend on the amount of development that takes place within the project corridor and on the final cross section and alignment that is chosen.

A potential for Section 4-f involvement exists near the intersection of SR 1463 (Springs Road) and SR 1402. The project design should avoid impacting St. Stevens Elementary School which is located near this intersection and could involve Section 4-f property.

No other significant environmental impacts were identified.

VIII. COST ESTIMATES

<u>Items</u>	<u>Northern Segment</u>	<u>New Location</u>	<u>Total</u>
Roadway Costs	2,322,000	11,117,000	\$ 13,439,000
Culvert Costs	-0-	780,000	780,000
Bridge Costs	355,000	1,678,000	2,033,000
Diamond Interchange at I-40	N/A	1,300,000	1,300,000
Engineering and Contingencies	<u>403,000</u>	<u>2,245,000</u>	<u>2,648,000</u>
Total Construction Cost	\$3,080,000	17,120,000	\$ 20,200,000
Right of Way Costs			\$
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Total Project Cost			\$

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