

FEASIBILITY STUDY

Lexington

**Interchange Revision
at NC 8 and I-85 Business / US 29-52-64-70**

Davidson County

Division 9

B-3159

**Prepared by
Program Development Branch
Division of Highways
N. C. Department of Transportation**



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I. GENERAL DESCRIPTION

This feasibility study investigates the reconstruction of the existing cloverleaf interchange at NC 8 and I-85 Business / US 29-52-64-70 in Lexington (See Figure 1). This reconstruction would consist of raising and reconstructing Bridge Number 27, and converting the interchange to a single-point urban interchange (SPUI) layout. The estimated cost of the project is \$ 10,600,000 (\$ 3,900,000 for right-of-way and \$ 6,700,000 for construction).

This study is not a detailed planning/environmental investigation. A feasibility study presents studied cross-sections for improvements, general corridors of improvements, and estimated costs of construction and right-of-way. This study attempts to identify any potential environmental, permitting, or other observed issues that deserve consideration in the planning and construction stages.

II. NEED FOR PROJECT

Bridge Number 27, which carries NC 8 over I-85 Business / US 29-52-64-70, has a substandard vertical clearance of approximately 14.1 feet (4.3 m). The NCDOT Bridge Policy requires a minimum vertical clearance of 15.5 feet (4.7 m) for this location. Also, the following problems were identified at this interchange:

- No weaving area for the loop traffic.
- Inadequate acceleration and deceleration lengths on ramps and loops
- High accident area
- Service roads connecting to ramps

The City of Lexington supports a single-point urban interchange as a replacement for the existing cloverleaf interchange.

I-85 Business / US 29-52-64-70 is a four-lane, divided roadway with a 24-foot (7.3-m) wide median. NC 8 is mainly a three-lane, 32-foot (9.8-m) roadway with 8-foot (2.4-m)) shoulders. Land use in this area is residential and commercial.

Bridge Number 27 has a sufficiency rating of 30.9 out of 100. The existing bridge is 176 feet (53.7 m) long with a deck width of approximately 47 feet (14.3 m). The three-lane bridge roadway width is approximately 37 feet (11.3 m) wide.

There were 132 accidents reported between February, 1993, and January, 1996, in the vicinity of this interchange. Recommended improvements are expected to reduce the number of accidents.

The following table is a summary of the traffic analysis for the studied corridor:

Route/Description	Estimated ADT		Level of Service	
	1996	2016	1996	2016
I-85 Business (4-lane)	30,580	51,760	B	D
I-85 Business (6-lane)	30,580	51,760	A	C
NC 8 (3-lane)	21,580	29,870	E	F
NC 8 (5-lane)	21,580	29,870	B	D
Ramps				

III. RECOMMENDATIONS

It is recommended that the existing cloverleaf interchange be converted to a single-point urban interchange. Bridge Number 27 would be reconstructed to a deck width of approximately 70 feet (21.3 m) wide. The cost estimate anticipates a typical 6-lane cross section under the bridge. The bridge profile would be raised approximately 4 feet (1.2 m) to allow for at least a 15.5-foot (4.7-m) vertical clearance. NC 8 would be widened to a five-lane, 64-foot (19.5-m) face-to-face, curb and gutter section with 10-foot (3.1-m) berms and sidewalks on both sides between 5th Street and 9th Street.

Improvements to NC 8 are anticipated between Fair Street and 9th Street. Southbound NC 8 would become one-way to Fair Street. The northbound leg of Salem Street would be connected to NC 8 just south of the existing wye intersection with a tee-intersection. Childers Court would be closed at NC 8 and a new, short connector to Childers Court would be provided by extending Hege Drive.

That portion of 7th Street between the westbound on-ramp and Hames Street would be eliminated. The service road at the eastbound on-ramp would be eliminated and local traffic would utilize Fair Street for access to NC 8. Adjustments would be made to Piedmont Drive which would remain connected to White Street.

During construction traffic will be rerouted to other roads. An on-site detour will not be provided due to the nature of the work required.

The recommended interchange reconstruction would increase safety and reduce congestion through this interchange.

High utility conflicts are expected.

New right-of-way in the interchange proper area would be full control of access.

The estimated project costs are as follows:

Construction	\$ 6,700,000
<u>Right-of-way</u>	<u>\$ 3,900,000</u>
Project Total	\$ 10,600,000

IV. OTHER ALTERNATES STUDIED

A compressed diamond interchange layout was studied. This alternate is not recommended, because it did not perform as well as the SPUI in the traffic analysis. Also, the compressed diamond interchange will require more right-of-way than the SPUI, will require a wider bridge than the SPUI, and will require more approach work since the compressed diamond will need an additional approach lane.

V. OTHER COMMENTS AND CONCERNS

It is estimated that this project would require the relocation of 17 residences and 9 businesses.

No historical or architecturally significant sites have been identified in the project corridor. It is not anticipated that this project will require any environmental permits.

Replacing Bridge No. 27 will require the removal of the pedestrian bridge over I-85 / US 29-52-64-70 just east of the existing interchange. The City of Lexington has asked that the pedestrian bridge be replaced. The estimated cost is \$ 250,000.