FEASIBILITY STUDY

China Grove

Proposed Interchange Revisions
I-85, US 601, US 29 and NC 152

Rowan County

Division 9

I-3610 and B-3039

Prepared by
Program Development Branch
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I. GENERAL DESCRIPTION

This feasibility study investigates the revision/reconstruction of the existing cloverleaf interchange at NC 152 and US 29 and the addition of a northbound on-ramp and a southbound off-ramp at the existing half diamond interchange at US 152 and I-85 (See Figures 1 and 2). The reconstruction of the NC 152 / US 29 interchange would consist of reconstructing Bridge Number 34 immediately south of the existing structure and converting the interchange to a half diamond with ramps in the southeast and southwest quadrants. The reconstructed ramps should be 14 feet (4.3 m) wide with 12-foot (3.7-m) inside and 14-foot (4.3-m) outside shoulders. Structure Number 34 should be replaced with a new structure approximately 200 feet (61 m) long with a 72-foot (22.0-m) clear roadway width.

This study considers removing the existing raised median through the I-85 interchange area and utilizing the existing pavement to the extent possible. The desired cross section on NC 152 is a 5-lane shoulder section, from just east of the interchange area to the Southern Railway bridge (Structure Number 21) where the pavement would taper to a 4-lane section to match the existing clear roadway across that structure. At the existing I-85 interchange, the ramps added to the north side should be 16 feet (4.9 m) wide with 12-foot (3.7-m) inside and 14-foot (4.3-m) outside shoulders.

This study combines the I-3610 and B-3039 projects into a single project resulting in improved traffic flow with a significant cost savings as a result of combining the two proposed projects. The estimated cost of the combined project is $ 7,300,000, ($ 1,700,000 for right-of-way and $ 5,600,000 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 Numbers 34 and 68 carry NC 152 over I-85, US 29 and US 601. Bridge Number 34 has a 40-foot (12.2-m) horizontal clearance and is 195 feet (59.5 m) long. The minimum vertical clearance under the structure is 14.5 feet (4.4 m) and the sufficiency rating is 43.5 points (out of a possible 100). Bridge Policy requires a minimum vertical clearance of 16.5 feet (5.0 m) for this location. Replacement of this structure was identified in the 1997-2003 TIP as B-3039. The addition of ramps to complete the NC 152 / I-85 interchange will allow the revision of the NC 152 and US 29 interchange, a substandard cloverleaf, to eliminate all the loops and the ramps on the north side. The ramps on the south side would be rebuilt creating a half diamond interchange. Myrtle Goodnight Road (SR 2588) would be connected to NC 152 opposite the southbound onramp.

The existing interchange at NC 152 and 1-85 is a half diamond interchange. It is desirable to add ramps to the north side of the interchange to complete all the movements. Bridge Number 68 has a 74-foot (22.6-m) horizontal clearance and is 267 feet (81.4 m) long. The minimum vertical clearance is 16.75 feet (5.1 m) and the sufficiency rating is 87.0. Removal of the existing raised median is the only work recommended on this structure.

This project is supported by the Kanlacon TAC and TCC, Rowan County and the Towns of China Grove and Landis.

I-85 is classified as an Interstate; US 29, an Other Principal Arterial; and NC 152, a Major Collector on the North Carolina State Functional Classification System. On the Concord-Kannapolis-Landis-China Grove Thoroughfare Plan, I-85 is classified a freeway and US 29 and NC 152 are classified Major Thoroughfares.

TIP Project I-2511 begins at the US 29-601 Connector (Exit 68) immediately north of the studied project and continues northward to SR 2114. This project is scheduled for construction in FY 97 and will rehabilitate existing structures and widen I-85 to eight lanes.

Existing I-85 is a 4-lane median divided, controlled access facility. Existing NC 152 is generally a 5-lane shoulder section with a variable width raised concrete median throughout the project area. The existing land use in the project vicinity is residential and light commercial.

Considering the proposed improvements the estimated 1995 Average Daily Traffic (ADT) along NC 152 varies from 5,900 to 12,300 vehicles per day (vpd). For the design year 2020, the estimated traffic volumes range from 9,700 to 21,000 vpd. Truck traffic is estimated to make up 13% of the daily traffic.

Currently NC 152 in the project vicinity is operating at Level of Service (LOS) B and would operate at LOS C in the design year 2020. However, the existing interchanges at I-85 and especially at US 29 create indirect traffic movements which work to diminish the real operating LOS. Recommended improvements will help to preserve the LOS offered by a 5-lane cross section.

There were 9 accidents reported between May, 1993, and May, 1996, in the vicinity of this interchange. The accident rate is 155.3 accidents per 100 million vehicle miles of travel. The most prevalent accident type was Rearend Slow or Stop, 50%. Recommended improvements are expected to reduce the number of accidents.

III. RECOMMENDATIONS

This feasibility study investigates the revision/reconstruction of the existing cloverleaf interchange at NC 152 and US 29 and the addition of a northbound on-ramp and a southbound off-ramp at the existing half diamond interchange at US 152 and I-85 (See Figure 2). The reconstruction of the NC 152 / US 29 interchange would consist of reconstructing Bridge Number 34 immediately south of the existing structure and converting the interchange to a half diamond with ramps in the southeast and southwest quadrants. The reconstructed ramps on the south side of the existing US 29 interchange should be 14 feet (4.3 m) wide with 12-foot (3.7-m) inside and 14-foot (4.3-m) outside shoulders.

Structure Number 34 should be replaced immediately south of the existing with a new structure approximately 200 feet (61 m) long with a 72-foot (22.0-m) clear roadway width. The ramps on the south side would be rebuilt creating a half diamond interchange. Myrtle Goodnight Road (SR 2588) would be connected to NC 152 opposite the southbound onramp.

It is anticipated to remove the existing raised median through the I-85 interchange area and to utilize the existing pavement to the extent possible. The desired cross section is a 5-lane shoulder section, 60 feet (18.3 m) of pavement with 4-foot (1.2-m) full depth paved shoulders, from just east of the interchange area to the Southern Railway bridge (Structure Number 21) where the pavement would taper to a 4-lane section to match the existing clear roadway across that structure. At the existing I-85 interchange, the ramps added to the north side should be 16 feet (4.9 m) wide with 12-foot (3.7-m) inside and 14-foot (4.3-m) outside shoulders.

During construction, it is anticipated that traffic will be maintained on the existing roadway.

Low 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	$ 5,600,000
Right-of-Way	1,700,000
Project Total	$ 7,300,000

IV. OTHER COMMENTS AND CONCERNS

It is estimated that this project would require the relocation of 6 residences and 1 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.

Cold Water Creek runs parallel to and west of I-85. The stream class is WS-IV. Based on a GIS screening, the project area is within a water supply watershed.

Based on maps at the Department of Environment, Health & Natural Resources - Natural Heritage Section, no threatened or endangered species were identified in the project corridor.