Feasibility Study

City of Statesville

Widen US 64/US 70 (Garner-Bagnal Boulevard) From I-40 to I-77

Iredell County

Division 12
FS-0212B

Feasibility Studies Unit
Program Development Branch
N.C. Department of Transportation

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Date

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I. General Description

This feasibility study addresses the proposed widening of Garner-Bagnal Boulevard from I-40 to I-77 in Statesville, Iredell County. Garner-Bagnal Boulevard is designated as US 64 from I-40 to Bristol Drive and as US 70 from Newton Drive to I-77. The project length is approximately 4.5 miles. The existing roadway is a two-lane facility; however, it has been constructed within a partially controlled-access right-of-way with sufficient width to add a 40-foot median and two additional lanes on the north side. The majority of the work to establish this right-of-way was done under Project No. U-517. Exhibit 1 shows the project vicinity.

This study is the initial step in the planning and design process for this project and is not the product of exhaustive environmental or design investigations. The purpose of this study is to describe the proposed project, including costs, and to identify potential problems that may require consideration in the planning and design phases.

II. Need for Project

The purpose of the project is to increase the traffic capacity and safety along Garner-Bagnal Boulevard in Statesville. Garner-Bagnal Boulevard is designated as a major thoroughfare in the Statesville Thoroughfare Plan and a principal arterial in the North Carolina Statewide Functional Classification System (Small Urban, Other Principal Arterial).

With the exception of relatively short four-lane segments at the west and east termini, the study section of Garner-Bagnal Boulevard is currently a two-lane shoulder facility. There are four unsignalized intersections and eight signalized intersections along the facility.

The signalized intersections along Garner-Bagnal Boulevard include: West Front Street/Bristol Street, Newton Drive, Oakland Avenue, Buffalo Shoals Road, Wilson Lee Boulevard, Shelton Avenue, Opal Street, and Wall Street. Garner-Bagnal Boulevard also has the following unsignalized intersections: Wooten Street, Miller Avenue, Cochran Street, and Rickert Street.

Land use along the corridor ranges from a mixture of residential and commercial properties at the east end, to mostly industrial sites at the west end. Right-of-way

currently exists for a planned widening to a four-lane divided facility. The existing right-of-way is partially-controlled access with access available only at intersections. No private or commercial driveways have direct access to this roadway.

Roadside lighting exists along the entire south side of the existing facility. This lighting was installed and paid for by the City of Statesville. It is assumed that once widened, lighting on the north side would also be provided by the City.

Garner-Bagnal Boulevard crosses the CSX railroad with grade separations over the tracks at two locations. The first location is 0.6 mile east of SR 1004 (Cochran Street). The existing bridge (Bridge No. 536) is 167 feet long with a 47.5-foot wide deck. The second grade separation is Bridge No. 515, located 200 feet east of US 21. This bridge is 138 feet long with a 45.5-foot deck width.

There are no programmed projects in the 2004-2010 TIP in the immediate vicinity of this project.

A safety analysis was conducted for Garner-Bagnal Boulevard from I-40 to I-77 for the period of March 1, 2000 through February 28, 2003. The results for this three year period included 139 reported crashes consisting of one fatal crash, 77 non-fatal injury crashes, and 61 property damage only crashes. The total crash rate for the studied section of roadway is 147.10 which is substantially lower than the 1999-2001 Statewide crash rate of 349.84 for two-lane urban U.S. Routes. It is likely this lower crash rate is due to the partially-controlled access along the facility. However, as traffic increases, higher accident rates may occur as a result of congestion at intersections, unless additional capacity is provided.

Although the overall rate is lower, the predominant crash types (majority rear-end, left turn, and angle crashes) highlight measures that should be considered in the proposed improvements. These potential measures include consideration of:

- Installing right and left turn lanes at all signalized intersections to reduce rear-end crashes.
- Increasing the capacity to reduce frequency of rear-end crashes.
- Evaluating the adequacy of the roadway lighting.
- Installing left turn lanes at Cochran Street.

III. Traffic Operations

The current year (2003) Average Daily Traffic (ADT) along Garner-Bagnal Boulevard is estimated to be between 8,800 vehicles per day (vpd) and 18,000 vpd. For the design year 2030, the estimated traffic volumes will range from 16,200 vpd to 29,200 vpd. Truck traffic is estimated to make up ten percent of daily traffic.

A traffic analysis was conducted for eight signalized intersections along the facility. For the existing (2003) conditions, all of the intersections operate at a LOS C or better

during the AM and PM peak hours. For the 2030 No-Build scenario, it is predicted that all of the analyzed intersections will operate at unacceptable levels (LOS E or F) in one or both of the peak hour periods. If Garner-Bagnal Boulevard is improved to a four-lane divided facility with exclusive right and left turn lanes constructed (where warranted at intersections), the projected design year 2030 operation at each of the studied intersections is a LOS D or better for both of the peak periods.

IV. Description of Recommended Alternative

Because the existing roadway has already been designed for a future widening on the north side, there is effectively only one reasonable alternative. The right-of-way has already been established based on the provision of a 40-foot median and two additional 12-foot lanes on the north side. In addition, the grading has been completed for the median and for the majority of the sub-grade, with the exception of some large fill areas that will require off-site borrow material. The median drainage structures are already in place.

Therefore, only one alternative, widening on the north side to a four-lane divided facility, was evaluated. Exhibit 2 shows the recommended typical cross-section. With this proposed alternative, it is anticipated there will be no residences and one (1) business relocated due to this project. The estimated cost for this project is $17,000,000. The cost breakdown is listed below:

Construction	$ 16,600,000
Right-of-way	$ 400,000
Total Cost	$ 17,000,000

V. Recommendations

As previously stated, the right-of-way has been established for a widening on the north side to a four-lane divided facility. Therefore a widening on the north side to a four-lane divided facility was the only alternative evaluated. It is recommended that Garner-Bagnal Boulevard between I-40 and I-77 be widened from an existing two-lane roadway to a four-lane divided facility with a 40-foot grassed median. The facility will provide two 12-foot lanes in each direction with eight-foot shoulders (two-foot paved) and ten-foot shoulders (two-foot paved) on the inside and outside, respectively.

The construction will begin at the easternmost ramps of the I-40 interchange with pavement resurfacing through the existing multi-lane section. Widening will begin just east of US 64 (West Front Street) and continue to just east of Wall Street. From this point, resurfacing will continue east to the westernmost I-77 ramps. This resurfacing will be applied to the existing multilane section approaching the interchange.

The posted speed limit should remain at 45 mph. The recommended improvements and associated cost estimate include:

- The extension of three existing major drainage structures (reinforced concrete box culverts). The culvert locations are: 2,000 feet east of the West Front Street/Bristol Drive intersection, 570 feet west of Miller Avenue, and 650 feet east of Miller Avenue.

- Exclusive right turn lanes on Garner-Bagnal Boulevard at each intersection. These turn lanes will be constructed within the proposed right-of-way. In addition, the proposed median width (40 feet) is sufficient to accommodate exclusive left turn lanes on Garner-Bagnal Boulevard at each intersection. The capacity analysis indicated that additional turn lanes will be needed at the intersections of Garner-Bagnal Boulevard with Buffalo Shoals Road, and Garner-Bagnal Boulevard with Shelton Avenue.

- A monolithic concrete island extending north from Garner-Bagnal Boulevard to prohibit left turns from East Allison Street from interfering with the southbound queue at the Garner-Bagnal Boulevard/Shelton Road intersection. The intersection of Garner-Bagnal Boulevard with Shelton Avenue will require this additional work on the side street because East Allison Street, which runs parallel to Garner-Bagnal Boulevard, intersects Shelton Avenue less than 150 feet from the proposed lanes.

- Two new bridges which will carry the proposed lanes over the CSX railroad corridor in two locations. The new bridge locations are approximately 1,100 feet east of Cochran Street and 350 feet east of Shelton Avenue. The existing roadway already crosses the railroad on bridges at these locations. The new structures will be constructed immediately adjacent to the existing bridges on the north side.

VI. Additional Comments

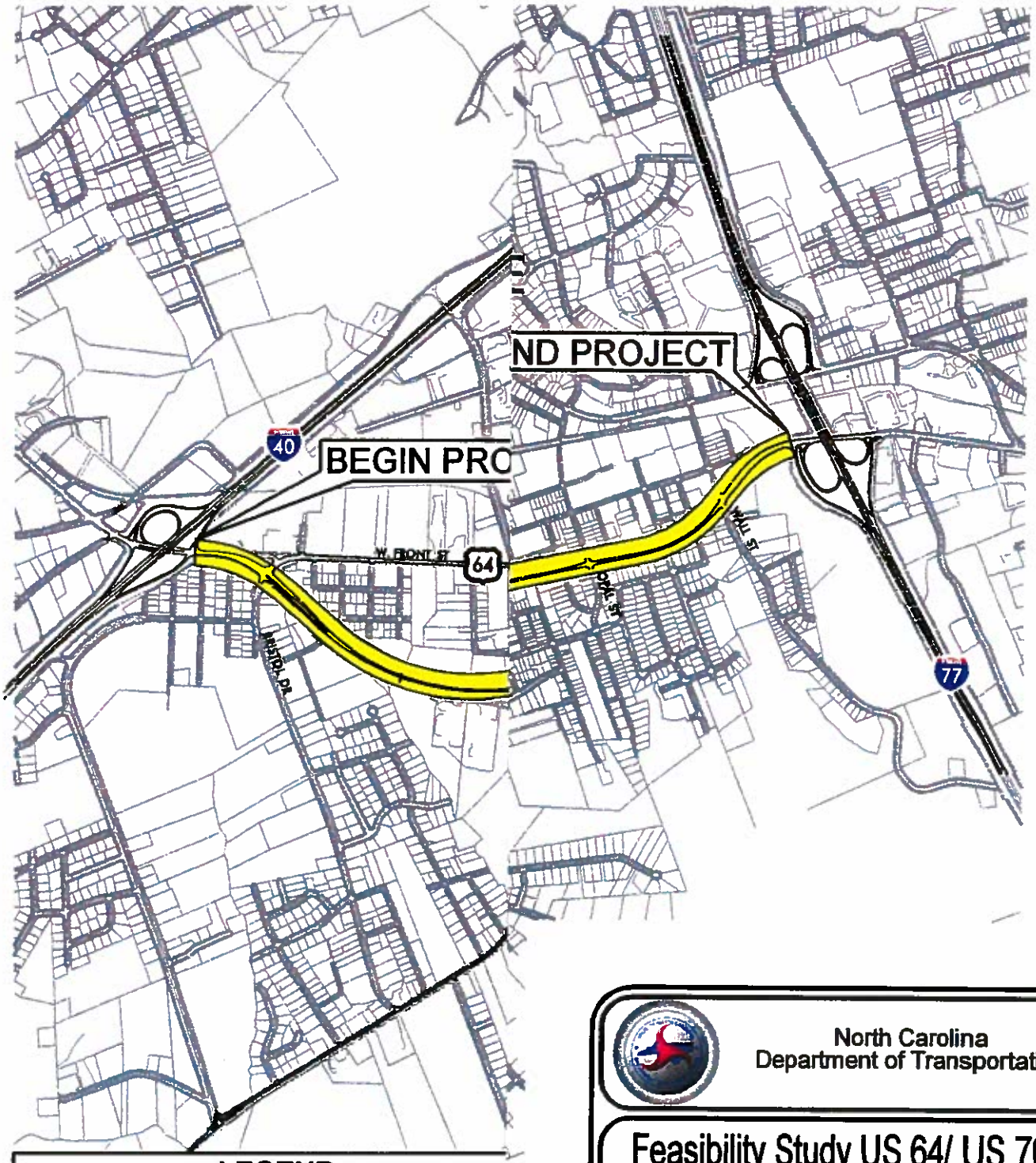
An exhaustive environmental screening was not conducted for this study. However, the following information summarizes conclusions about the project study area based on existing data.

There are no properties listed on the National Register of Historic Places within the immediate vicinity of the proposed improvements. There are also no known archaeological sites within the project study area.

Because the majority of right-of-way for the proposed improvements has already been established and some of the earthwork has been completed, no impacts to threatened or endangered species are anticipated.

According to the National Wetlands Inventory (NWI), there are no wetland areas in the immediate vicinity of the proposed improvements.

The proposed improvements include three stream crossings where major drainage structures will be required. Each of these locations is an existing crossing where the culvert will be extended to accommodate the two additional lanes.



LEGEND

PROPOSED STRUCTURE
PROPOSED PAVEMENT
EXISTING STRUCTURE
EXISTING PAVEMENT

NOTE: INTERSECTION CONFIGURATION SHOWN WHE

North Carolina
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Feasibility Study US 64/ US 70
Garner-Bagnal Blvd

I-40 to I-77

FS-0212B

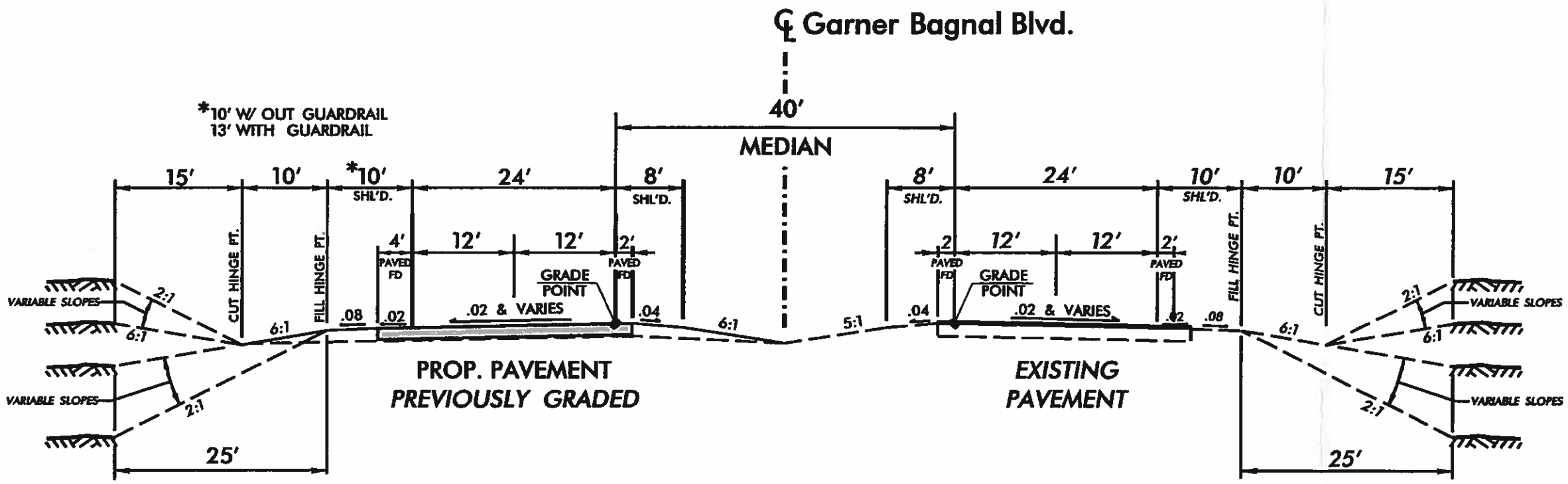
Statesville, North Carolina

Project Vicinity

December 2003

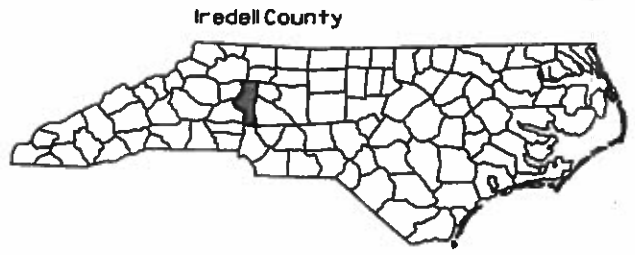
Exhibit 1

GARNER BAGNAL BLVD.
FEASIBILITY STUDY FS–0212B
I–40 to I–77 in Statesville, NC
IREDELL COUNTY



FOUR LANE DIVIDED SECTION

GARNER BAGNAL BLVD.
TYPICAL SECTION



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Typical Section

Scale: 1" = 300'

Exhibit 2