

U-4419



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

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GOVERNOR

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W. LYNDO TIPPETT
SECRETARY

February 5, 2001

MEMORANDUM TO: Mr. M. Durwood Stephenson, Member, Board of Transportation
Mr. Jim Trogdon, P.E., Division Engineer, Division 4
Mr. David D. King
Mr. C. W. Leggett, P.E.
Mr. J. M. Lynch, P.E. (3) Attention: Jim Dunlop, P.E.
Mr. J. B. Williamson
Mr. Bill Gilmore, P.E. (2)
Ms. D. M. Barbour, P.E.
Mr. J. E. Alford, P.E.
Mr. Blake Norwood, P.E.
Mr. A. L. Avant (2)
Mr. J. D. Lane
Mr. T. A. Peoples, P.E.
Mr. H. A. Tasaico, P.E.

FROM: Mr. H. Franklin Vick, P.E.
Feasibility Studies Unit Head

SUBJECT: Feasibility Study # FS-9904G, New Connector from Industrial
Park Drive (SR 2398) to Bright Leaf Boulevard (US 301),
Smithfield, Johnston County.

Our staff has completed a feasibility study for the subject proposed project. This brief analysis suggests improvements that would be logical if the project were to be funded. A copy of our report is attached for your information.

HFV/dl

Attachment

cc: Mr. R. L. Hill, P.E.
Mr. L. A. Sanderson, P.E.

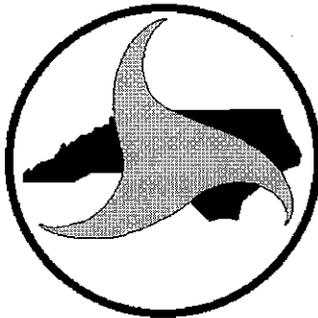
FEASIBILITY STUDY

Smithfield

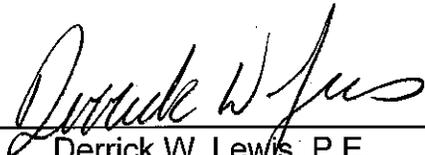
**New Connector
From Industrial Park Drive (SR 2398)
To Bright Leaf Boulevard (US 301)
Johnston County**

Division 4

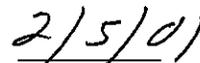
FS-9904G



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


Derrick W. Lewis, P.E.
Feasibility Studies Engineer


H. Franklin Vick, P.E.
Feasibility Studies Unit Head


Date

FS-9904D

Smithfield
New Connector
From Industrial Park Drive (SR 2398)
To Bright Leaf Boulevard (US 301)

Johnston County

Division 4

I. General Description

This feasibility study describes the construction of a new connector from Industrial Park Drive (SR 2398) to Bright Leaf Boulevard (US 301) in order to address traffic safety and operational concerns with the existing Peedin Road at-grade railroad crossing and the adjacent Bright Leaf Boulevard / Peedin Road / Canterbury Road offset intersection. This new connector includes closing the existing Peedin Road at-grade railroad crossing and relocating it to the new connector. This study evaluated three possible alignment alternatives for this proposed new connector (See Figure 1).

Under all the alternatives, the existing Peedin Road at-grade railroad crossing is removed. The recommended cross-section for this facility is a three-lane curb and gutter section, 40 feet (12.2 m) wide from face-to-face of curbs, with 10-foot (3.0-m) berms. The recommended right-of-way is 100 feet (30.5 m) with some additional right-of-way to contain the proposed fill sections of the railroad grade separations under Alternative 2 and 3. The three alternatives, along with their associated cost in right of way and construction are described below:

Alternatives	Cost
1. Construct an extension of Component Drive from the Peedin Road intersection to the Bright Leaf Boulevard (US 301) / Lowes' Driveway intersection, including a new at grade crossing of the CSX railroad.	\$ 2,430,000
2. Construct an extension of Component Drive from the Peedin Road intersection to the Bright Leaf Boulevard (US 301) / Ava Gardner Avenue intersection, including a new grade separation of the CSX Railroad.	\$ 7,940,000
3. Construct a new connector from Industrial Park Drive (SR 2398) to the Bright Leaf Boulevard (US 301) / Ava Gardner Avenue intersection, including a new grade separation of the CSX Railroad.	\$ 7,520,000 (Recommended)

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 this project is to improve the traffic safety and operations, for motorists, rail passengers and train crews by relocating the existing Peedin Road at-grade rail crossing onto a new connector between Industrial Park Drive and Bright Leaf Boulevard. In addition, this project should improve the traffic safety and operations of the adjacent Bright Leaf Boulevard / Peedin Road / Canterbury Road offset intersection by significantly reducing the volume of traffic on Peedin Road.

The Smithfield Selma Pine Level Thoroughfare Plan includes a proposed thoroughfare that connects Peedin Road to the Bright Leaf Boulevard / Booker Dairy Road (SR 1923) intersection. This thoroughfare is designated as a minor thoroughfare in the thoroughfare plan. The three alternatives proposed within this study provide a similar function to this proposed new thoroughfare. Bright Leaf Boulevard (US 301) is designated as a major thoroughfare in the Thoroughfare Plan and a principal arterial in the North Carolina Statewide Functional Classification System. Industrial Park Drive (SR 2398) is designated as a minor thoroughfare and a minor arterial. Booker Dairy Road (SR 1923) is designated as a major thoroughfare and a collector. Industrial Park Drive (SR 2398), Component Drive and Peedin Road are all two-lane shoulder section. Bright Leaf Boulevard (US 301) is a five-lane curb and gutter section.

TIP Project U-3334B proposes to relocate Booker Dairy Road (SR 1923) and intersect Bright Leaf Boulevard at the Ava Gardner Avenue intersection. It is currently scheduled for right-of-way acquisition in October 2006 and for construction in October 2007.

The CSXT Railroad operates a railway, which crosses the project. This railway carries approximately 36 trains per day. Based on the Policy and Procedure Manual, the exposure index for the existing Peedin Road crossing is 252,000 and the proposed relocated at-grade crossing under Alternative 1 is 370,000. Given this information, it would be very desirable to provide a railroad grade separation under this project (Alternative 2 and 3).

The estimated 2000 Average Daily Traffic (ADT) along the proposed new connector is 5,800 vehicles per day (vpd) for Alternative 1 and 6,000 vpd for both Alternative 2 and Alternative 3. For the design year 2020, the estimated traffic volumes on the proposed new connector is 10,300 vpd for Alternative 1 and 13,200 vpd for Alternatives 2 and 3. Utilizing the estimated traffic projections, the proposed new connector should operate at a Level of Service (LOS) C in the current year and at a LOS D in the 2020 design year.

During the period from November 11, 1996, through October 31, 1999, there were 22 accidents reported on Peedin Road from Component Drive to Bright Leaf Boulevard. This resulted in an accident rate of 112 accidents per 100 million vehicle miles (Acc/100 MVM), compared to a statewide average of 276 Acc/100 MVM for all urban secondary routes during the period from 1996 through 1998. There were no fatalities reported during the period, and 13 injuries reported as a result of the accidents. It should be noted that the majority of these accidents occurred at the Bright Leaf Boulevard intersection and the proposed improvements in this project should reduce the number of accidents by significantly reduction in traffic volumes on Peedin Road.

III. Recommendations / Description of Project

This feasibility study describes the construction of a new connector from Industrial Park Drive (SR 2398) to Bright Leaf Boulevard (US 301) in order to address traffic safety and operational concerns with the existing Peedin Road (SR 2378) railroad crossing and the adjacent Bright Leaf Boulevard / Peedin Road / Canterbury Road offset intersection. In order to address the traffic concerns of this area, we evaluated three alternatives for this proposed new connector (See Figure 1).

Under all three alternatives, we recommend that the existing Peedin Road at grade railroad crossing be removed. In addition, the recommended cross-section for this facility is a three-lane curb and gutter section, 40 feet (12.2 m) wide from face-to-face of curbs, with 10-foot (3.0-m) berms, and the recommended right-of-way is 100 feet (30.5 m) with some additional right-of-way to contain the proposed fill sections of the railroad grade separations, regardless of which alternative is implemented.

Alternative 1

The original feasibility study request was to provide an extension of Component Drive from the Peedin Road intersection to Bright Leaf Boulevard (US 301) / Lowes' Drive intersection. Under this alternative, the existing Peedin Road at-grade railroad crossing would be replaced with a new at-grade railroad crossing on this proposed extension. This alternative is not recommended because CSX will require the NCDOT to comment too extensive restrictions before allowing the relocated crossing (See attached memorandum), and the potential for train conflicts with motorist will still exist. It is anticipated that there will be no residences or businesses relocated due to this alternative. The total cost of the project, including construction and right-of-way, is estimated to be \$2,430,000.

Construction.....	\$ 1,700,000
Right-of-way.....	\$ 730,000
Total Cost.....	\$ 2,430,000

In order to address concerns over railroad traffic conflicts with motorists, we considered providing a railroad grade separation under Alternative 1. However, a grade separation along the Alternative 1 alignment is not considered feasible because of the anticipated impacts on development within this area. Therefore, we developed Alternatives 2 and 3, which provide a grade separation of the CSX railroad but connect with the Bright Leaf Boulevard / Ava Gardner Avenue intersection. It should be noted that this is also the terminal end of the relocated Booker Dairy Road (TIP Project U-3334).

Alternative 2

Alternative 2 proposes to connect Component Drive to Bright Leaf Boulevard at the Ava Gardner Avenue intersection by crossing behind the Channel Master Plant. It should be noted that the Channel Master Plant is an identified super fund site. It is anticipated that there will be no residences and two businesses relocated due to this alternative. The total cost of the project, including construction and right-of-way, is estimated to be \$7,940,000.

Construction	\$ 4,700,000
Right-of-way	\$ 3,240,000
Total Cost.....	\$ 7,940,000

Alternative 3
(Recommended)

Alternative 3 proposes to connect Industrial Park Drive to the Bright Leaf Boulevard / Ava Gardner Avenue intersection but avoids crossing the Channel Master Plant. However, this alternative will require the relocation of the northern Channel Master Driveway as well as an extension of the existing three-lane shoulder section on Industrial Park Drive. It is anticipated that there will be no residences and two businesses relocated due to this alternative. The total cost of the project, including construction and right-of-way, is estimated to be \$7,520,000.

Construction	\$ 4,200,000
Right-of-way	\$ 3,320,000
Total Cost.....	\$ 7,520,000

Based on our review, this alternative is preferred because it will address the railroad safety issues, provide a natural extension of the relocated Booker Dairy Road, and is not anticipated to impact the superfund site.

IV. Other Comments

A transportation benefit analysis was not conducted for this project because it is beyond the capabilities of the benefits analysis package developed by our Statewide Planning Branch. However, the proposed new connector will provide a positive safety and operation benefit because of the railroad grade separation and the significant reduction in traffic volumes at the existing Bright Leaf Boulevard / Peedin Road / Canterbury Road offset intersection.

An environmental screening was not conducted for this study. However, 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. In addition, we do not anticipate any historic properties will be impacted by this project.

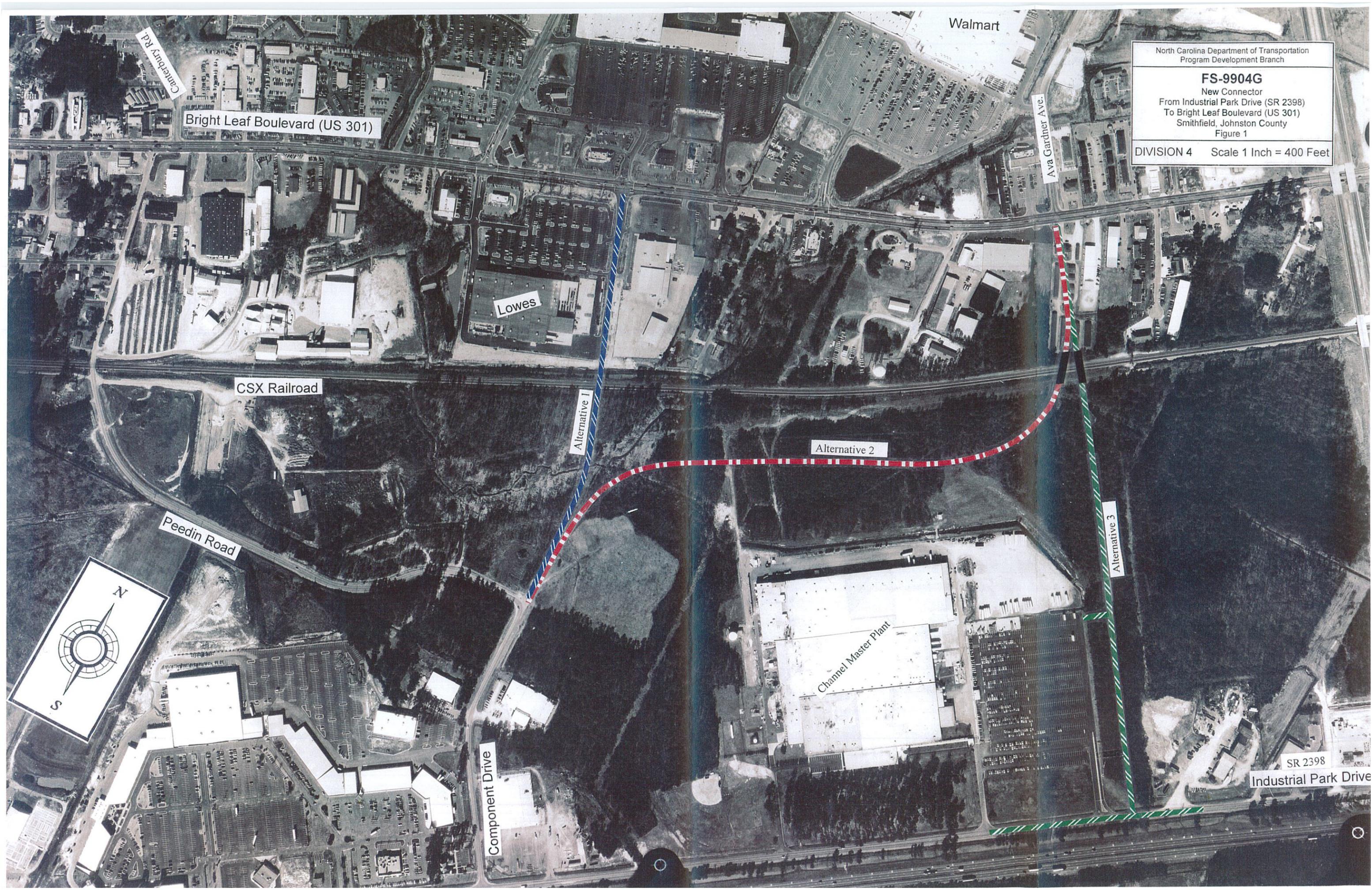
Due to the potential impacts on Buffalo Creek, wetland permits and mitigation may be required. The estimates included in this study do not include any costs for wetland mitigation.

No special accommodation for bicycles is recommended on this project.

North Carolina Department of Transportation
Program Development Branch

FS-9904G
New Connector
From Industrial Park Drive (SR 2398)
To Bright Leaf Boulevard (US 301)
Smithfield, Johnston County
Figure 1

DIVISION 4 Scale 1 Inch = 400 Feet



Walmart

Carterbury Rd.

Bright Leaf Boulevard (US 301)

Ava Gardner Ave.

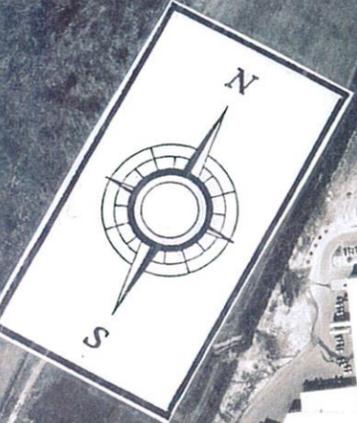
Lowes

CSX Railroad

Alternative 1

Alternative 2

Peedin Road



Alternative 3

Channel Master Plant

Component Drive

SR 2398
Industrial Park Drive