FEASIBILITY STUDY

Pembroke

NC 711
From Redmond Road (SR 1557)
To Odom Street/Philadelphus Road (SR 1340)

Robeson County

Division 6

FS-9906E

Prepared by the
Programming and TIP Branch
Division of Highways
N. C. Department of Transportation

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Date

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I. General Description

This feasibility study describes the widening of NC 711 from Redmond Road (SR 1557) to Odom Street / Philadelphus Road (SR 1340), a distance of 1.0 miles (1.6 km). The project location is shown in Figure 1. The recommended cross-section is a five-lane curb and gutter section, 64 feet (19.5 m) wide face to face of curbs, with 10-foot (3.0 m) berms. The recommended right-of-way width is 100 feet (30.5 m) with no access control. It should be noted that, Philadelphus Road and SR 1556 are only 300 feet (91.4 m) apart and form an existing offset intersection. In order to improve the traffic safety and operations of this area, SR 1556 should be relocated into the Philadelphus Road intersection as shown in Figure 1. It is anticipated that there will be 22 residences and 6 businesses relocated due to this project. The total cost of the project, including construction and right-of-way, is estimated to be $8,500,000.

Construction	$ 3,800,000
Right-of-Way	$ 4,700,000
Total Cost	$ 8,500,000

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 increase the traffic carrying capacity and safety of NC 711 near the University of North Carolina at Pembroke. This project is supported by the Town of Pembroke.

NC 711 is designated as a major collector in the North Carolina Statewide Functional Classification System.

NC 711 is an existing two-lane shoulder section, 27 feet (8.2 m) of pavement width, from Redmond Road (SR 1557) to just east of SR 1561. From just east of SR 1561 to Philadelphus Road, NC 711 is an existing undivided four-lane curb and gutter facility, 44 feet (13.4 m) wide face to face of curbs. The development along this corridor is a combination of institutional (college) and vacant land on the north side of NC 711 with residential, commercial, retail and vacant farmland on the south side of NC 711.

The CSX Railroad operates a railway adjacent to the project along the north side of the roadway. This railway carries 10 trains per day at an average speed of 45-mph (72.4 k/hr).

There is one existing traffic signal at the intersection with Philadelphus Road (SR 1340).

The 1999 Average Daily Traffic (ADT) along NC 711 varies from 7080 to 13030 vehicles per day (vpd). For the design year 2025, the estimated traffic volumes on NC 711 will range between 11900 and 21700 vpd. Truck traffic is estimated to make up four percent of daily traffic.

Currently NC 711 is operating at Level of Service (LOS) C. If no improvements are made, it is projected that the facility will operate at a LOS F in the design year 2025. If NC 711 is widened to a five-lane curb and gutter section and the recommended improvements are provided, this facility should operate at LOS D or better in the design year 2025. However, the "D" LOS may not be realized until NC 711 is widened sufficiently to the east of Philadelphus Road. This is because projected traffic volumes east of Philadelphus Road are significantly heavier than the volumes west of Philadelphus Road.

During the three-year period from September 1995 to August 1998, there were 32 accidents reported on NC 711 within the project limits. There were 34 injuries reported as a result of these accidents with no fatalities. The accident rate along NC 711 within the project limits is 226.63 accidents per 100 million vehicle miles (acc/100mvm). This compares with the 1996 statewide rate of 259.84 acc/100mvm for an Urban North Carolina Route.

III. Recommendations / Description of Project

It is recommended to widen NC 711 from Redmond Road (SR 1557) to east of Odom Street/ Philadelphus Road (SR 1340), a distance of 1.0 mile (1.6 km). The project location is shown on Figure 1. The recommended cross-section is a five-lane, curb and gutter section, 64 feet (19.5 m) wide from face-to-face of curbs, with 10-foot (3.0-m) berms. The recommended right-of-way width is 100 feet (30.5 m) with no access control. It should be noted that the CSX railroad "SE branch" line runs parallel to NC 711. In addition, several streets

including Philadelphus Road (SR 1340), a UNC Pembroke driveway, SR 1561, and Redmond Road (SR 1557) cross this railroad line in order to intersect NC 711. Therefore, it is recommended that the widening of NC 711 be asymmetrically to the south from Philadelphus Road to west of SR 1561.

Currently, the Philadelphus Road and SR 1556 intersections with NC 711 are only 300 feet (91.4 m) apart forming an undesirable offset intersection condition. In order to improve the traffic safety and operations of this area, it is recommended that SR 1556 be relocated into the Philadelphus Road intersection as shown in Figure 1. The recommended cross-section for the relocated SR 1556 be a three-lane, curb and gutter section, 40 feet (12.2 m) wide face to face of curbs with 10-foot (3.0-m) berms. The recommended right-of-way width for this relocation is 100 feet (30.5 m), with no control of access.

Based on our analysis, it appears that the NC 711/Philadelphus Road intersection will function poorly in the 2025 design year unless NC 711 east of Philadelphus Road is also widened to a multilane section. Since the widening of this section of NC 711 is beyond the scope of this project, we recommend that NC 711, east of Philadelphus Road, be widened for approximately 800 feet (243 m) in order to provide two outbound lanes for a short distance. Although we do not expect full lane utilization, this additional lane will provide some operational improvement for this intersection.

It is anticipated that there will be 22 residences and 6 businesses relocated due to this project. The total cost of the project, including construction and right-of-way, is estimated to be $8,500,000.

Construction	$ 3,800,000
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Total Cost	$ 8,500,000

A transportation benefit analysis was also completed for this project. For the period between the current year and the 2025 design year, it is estimated that the total transportation benefits for the project are $840,000, which is an average of $33,600.00 per year. The total benefits include accident cost savings, time cost savings, and operating cost savings.

IV. Other Alternates Considered

Due to the significant right-of-way impacts expected with asymmetrical widening to the southern side of NC 711, we also considered widening both symmetrically around the centerline and asymmetrically towards the railroad. However, this would require the removal of the SR 1561 and UNC Pembroke drive at-grade railroad crossings. Since the traffic volumes currently utilizing SR 1561 would probably be shifted to Philadelphus Road, the closing of these two crossings has the potential to degrade traffic operations on Philadelphus

Road including the NC 711 intersection. Therefore, this alternate was not studied in detail in this feasibility study.

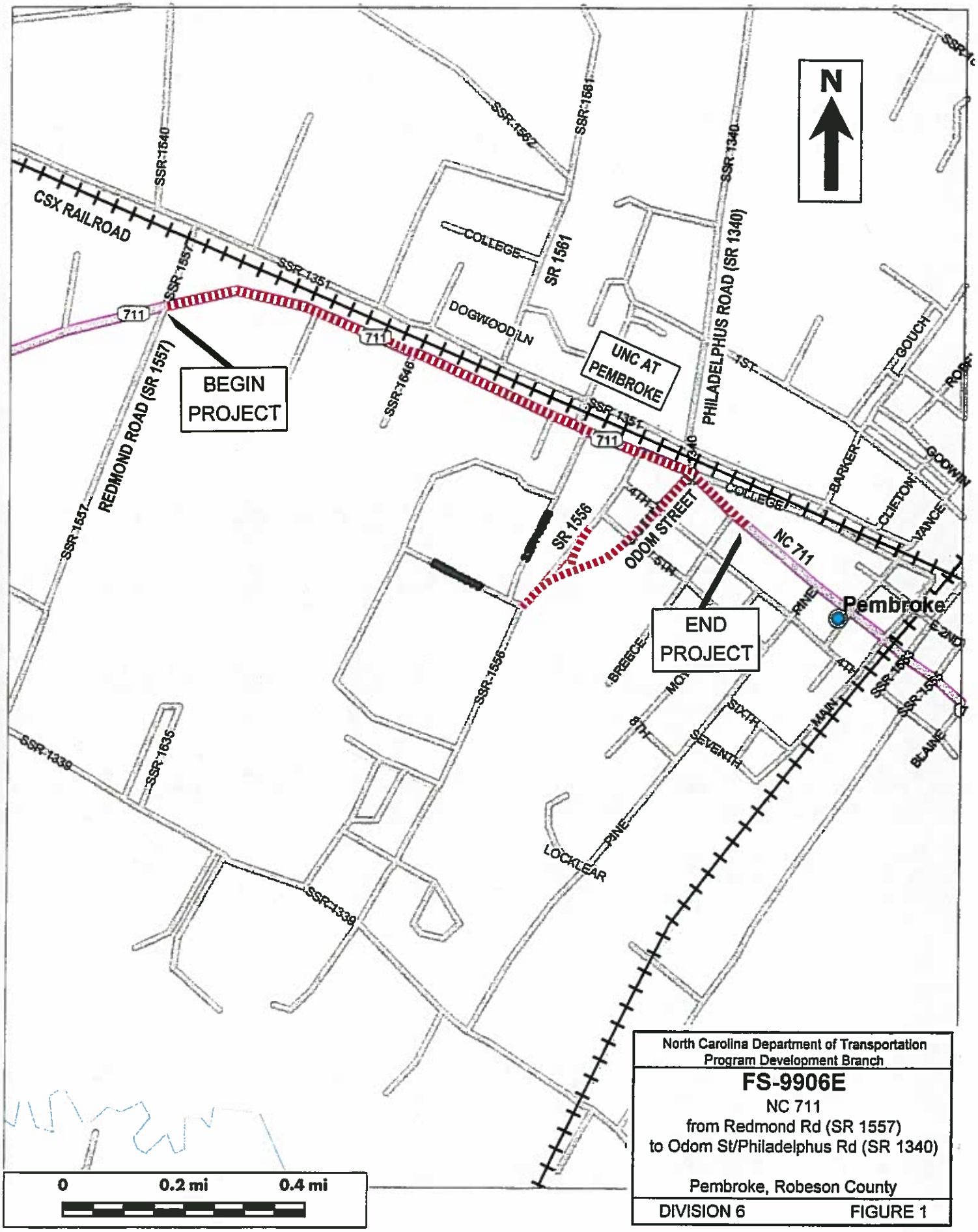
V. Additional Comments

An environmental screening was not conducted for this study. However, no impacts to historic properties or wetlands are anticipated.

There are properties within the project limits listed on the National Register of Historic Places. The Pembroke State University (UNC Pembroke) historic district (NR# 322) is located in the northwest quadrant of the NC 711 / Philadelphus Road intersection. It should also be noted that there is a public playground in the northeast quadrant of the Philadelphus Road / NC 711 intersection. In order to minimize the impacts to this district, all widening in this area should be to the south.

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.

No special accommodation for bicycles is recommended on this project.



North Carolina Department of Transportation
Program Development Branch

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NC 711
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Pembroke, Robeson County

DIVISION 6 FIGURE 1