

## **Feasibility Study**

### **US 70 from New Bern to the Proposed Havelock Bypass**

### **Craven and Jones Counties**

**Division 2  
FS-1202B**



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

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# **US 70 from New Bern to the Proposed Havelock Bypass**

## **Craven and Jones Counties Division 2 FS-1202B**

### **1.0 Introduction**

This feasibility study evaluates a new route for US 70 from US 17 Bypass west of New Bern to the proposed US 70 Havelock Bypass. The new route would improve the regional and statewide traffic operations along the US 70 corridor. It considers a bypass of New Bern and James City and would be approximately 21 miles long (see Figure 1 for study area location).

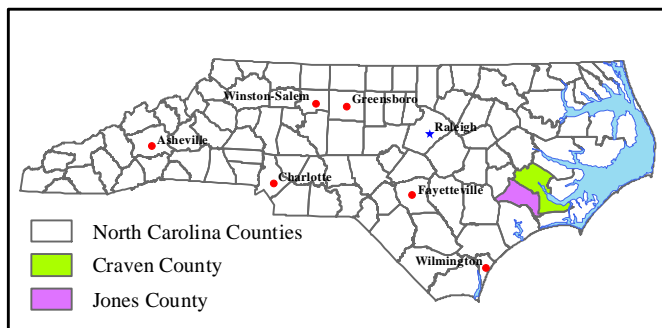
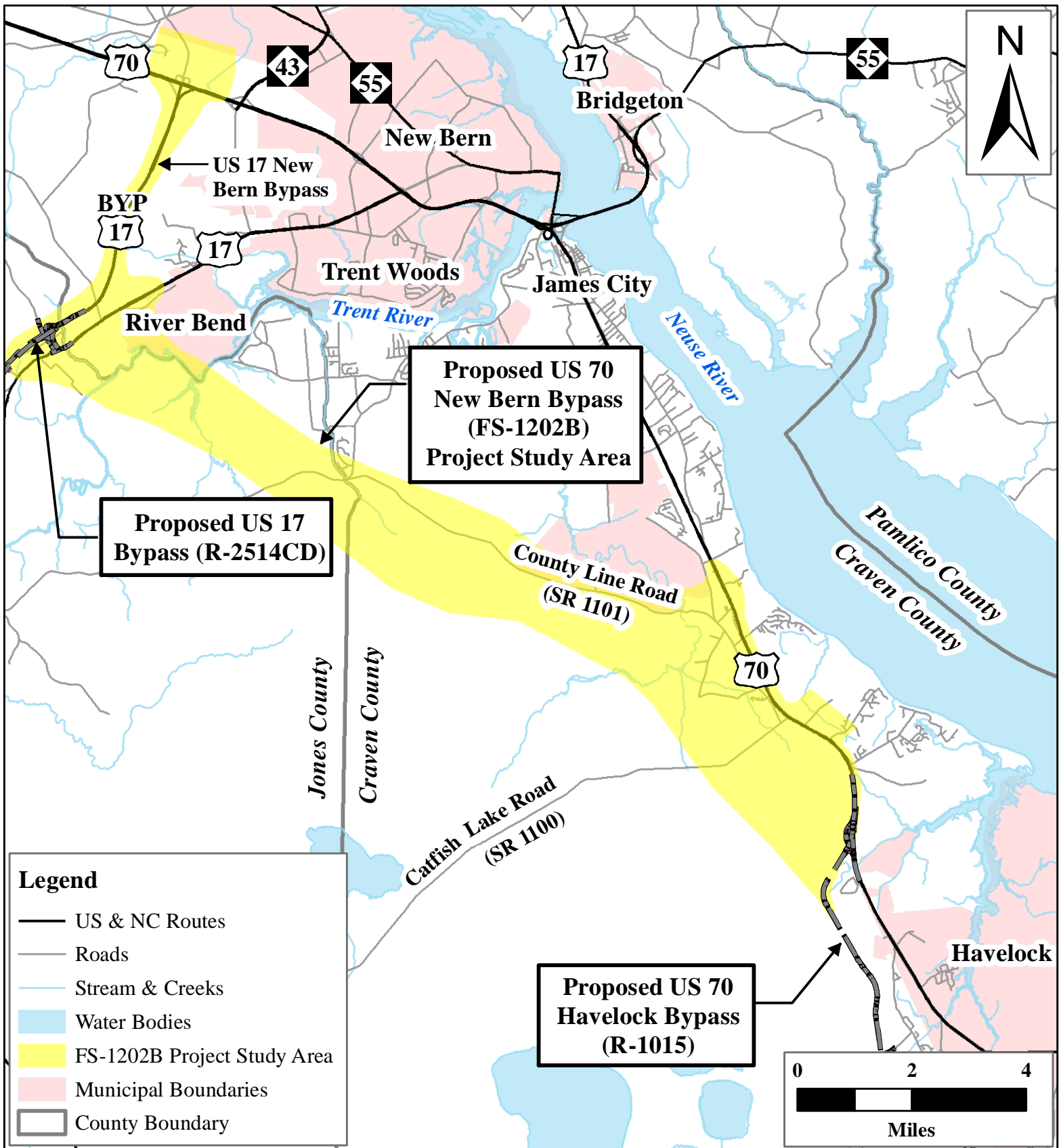
North Carolina Department of Transportation's (NCDOT's) Strategic Highway Corridors Plan recommends that US 70 ultimately function as a freeway between Raleigh and Morehead City. The US 70 Corridor Commission has a long range vision for freeway upgrades to enhance safety, mobility, and economic vitality. US 70 traffic volumes in the study area are highest in James City between the US 17/ NC 55 interchange and the Coastal Carolina Regional Airport. Traffic is expected to nearly double by the year 2035. This area has many intersections, extensive development, and is congested. Recent feasibility studies have considered improving US 70 through James City by replacing key intersections with interchanges to upgrade the segment to freeway standards.

This feasibility study identifies potential alignments within a corridor between existing US 17 Bypass and US 70 Havelock Bypass. The study area boundaries incorporate portions of existing US 70 near the project endpoints, and US 17 Bypass. 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. Its purpose is to describe the proposed project, including costs, and to identify potential problems that may require consideration in the future planning and design phase.

### **2.0 Purpose and Need**

The US 70 corridor is a vital transportation corridor in eastern North Carolina. It stretches from the Pisgah National Forest in Madison County to the Atlantic coast in Carteret County. US 70 between Raleigh and Morehead City is a major arterial link in the state's transportation system and is identified as Corridor 46 and a future freeway in the NCDOT Strategic Highway Corridor System.

The purpose of the project is to improve the regional and statewide traffic operations along the US 70 corridor and to enhance the ability of US 70 to serve the regional transportation function in accordance with the Strategic Highway Corridors Plan.



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**Figure 1 - Project Vicinity Map**  
**FS-1202B**  
**US 70 from New Bern to Havelock Bypass**  
**Craven and Jones Counties**

US 70 in the New Bern area is an important link between the State Capital in Raleigh and the State port in Morehead City. It is a Principal Arterial and designated as a National Highway System (NHS) corridor. It is a primary route to the coastal beaches in Carteret County and provides essential traffic service during hurricane evacuations. NCDOT's Strategic Highway Corridors Plan recommends that US 70 ultimately function as a freeway. Southeast of the US 17/ NC 55 interchange at the Neuse River, US 70 functions as an arterial with intersections at major road crossings. A US 70 Bypass would provide a means to avoid the traffic signals and the congestion along existing US 70 through James City.

Freeway improvements that have been completed or are being developed along US 70 between Raleigh and Morehead City include bypasses of Clayton, Goldsboro, Kinston, and Havelock. Feasibility studies have been completed for upgrading existing US 70 from James City to Havelock Bypass and for a Northern Carteret Bypass.

There are seven roadway projects in the *2012-2020 State Transportation Improvement Program* (STIP) near the study area. These include:

- **B-4737** – Replace Bridge No. 46, SR 1470 (New Liberty Road) bridge over Bachelor Creek.
- **R-4463** – NC 43 Connector, construct route on new location from NC 43/NC 55 to US 17 in New Bern with an interchange at US 70.
- **R-5516** – Construct Interchange at Slocum Road at Cherry Point Military Base.
- **R-1015** – Construct Havelock Bypass from north of Pine Grove to north of Carteret County Line, four lanes divided on new location.
- **B-4488** – SR 1763 (Miller Boulevard) Replace Bridge No. 176 over Slocum Creek.
- **R-2301** – US 17 New Bern Bypass, US 17 south of New Bern to US 17 north of New Bern, four lanes divided on new location.
- **R-2514** - Widen to multi-lanes from north of Jacksonville to New Bern Bypass, with bypasses of Belgrade, Maysville, and Pollocksville on new location.

### 3.0 Existing Conditions

The project begins west of New Bern at the US 70/ US 17 Bypass interchange, travels east across the Trent River, through James City, and ends at the proposed Havelock Bypass approximately 7 miles north of the Cherry Point Military Base. US 70 within these limits is a four-lane divided roadway with 12-foot travel lanes and a grassed median (see Table 1 for corridor details). Land use along the roadway consists of residential and agricultural uses from US 17 Bypass to US 17; commercial and residential from US 17 to the Trent River; commercial and light industrial from Trent River to Garner Road (SR 1124); and commercial and residential from Garner Road (SR 1124) to Carolina Pines Boulevard (SR 1176). Table 1 presents typical section and land use information for various portions of the project area.

US 70 within the project limits has full access control between US 17 Bypass and the Trent River with interchanges at NC 43, South Glenburnie Road (SR 1309), US 17, Country Club Road (SR 1200), and US 17/ NC 55. Between the Trent River and Carolina Pines Boulevard (SR 1176), US 70 has limited access control and is paralleled by frontage roads in most locations. There are 18 intersections in this area, most of which are controlled by stop signs.

Four intersections have traffic signals, and these include Williams Road (SR 1167), Airport Road (SR 1131), Taberna Way, and Thurman Road (SR 1116). Numerous access points exist within this section.

The North Carolina Railroad (NCRR) Company's EC-line between Goldsboro and Morehead City passes through downtown New Bern and occupies a corridor of approximately 200 feet in width (for railroad purposes). NCRR's rail yard is located along this line west of downtown New Bern. NCRR leases freight operations to the Norfolk Southern Railway (NS). The Norfolk Southern NB-line connects with the NCRR EC-line in downtown New Bern and extends northward to Bridgeton and Chocowinity. Several daily freight trains use these rail lines at maximum speeds reaching 40 mph, but passenger trains do not. West of New Bern, the NCRR corridor is located within the study area along the north side of US 70. East of New Bern, the NCRR corridor is located within the study area along the south side of US 70. Along US 17, the study area crosses a former CSX railroad line that at one time extended from New Bern to Wilmington, but has since been abandoned.

**Table 1: Existing US 70 Conditions**

Section of US 70	Typical Section	Speed Limit (mph)	Land Uses
US 17 Bypass to S. Glenburnie Road (SR 1309)	Four-lane divided with grass median	55-70	Agricultural/ Residential
S. Glenburnie Road (SR 1309) to Trent River	Four-lane divided with grass median	55	Commercial/ Residential
Trent River to Garner Road (SR 1124)	Four-lane divided with grass median and frontage roads	50	Commercial/ Light Industrial
Garner Road (SR 1124) to Carolina Pines Boulevard (SR 1176)	Four-lane divided with grass median	55	Commercial/ Residential

## 4.0 Description of Alternatives

A four-lane median divided freeway is proposed with 12-foot lanes, a 46-foot depressed grass median, and 10-foot paved shoulders in a 300-foot right of way. Interchanges are proposed for access to most major road crossings. Bridges have been considered over major river, stream, and wetland crossings. A 70 mile per hour (mph) roadway design speed is proposed. Bridges have been considered over major roads, rivers, streams, and wetlands.

Preliminary corridors were initially considered with three potential connections with US 70. These were refined to form Alternatives 1, 2, and 3 (refer to Figure 2). Based on a review of preliminary costs and environmental issues, Alternative 1 was eliminated from further evaluation due to the potential for substantial environmental impacts. Alternatives 2 and 3 have been evaluated in detail in this feasibility study. These alternatives are described below and in Table 2. The preliminary locations of bridges, interchanges and overpasses are presented in Table 3.

**Alternative 2** extends from the US 17 Bypass at existing US 70 west of New Bern to existing US 70 near Riverdale Road (SR 1108) and continues along US 70 to the Havelock Bypass (see Figures 3.1 and 3.2). It includes a 20.5-mile highway, nearly 13 miles of which are on new location. It is comprised of Segments A, B, C, E, F, and G. Alternative 2 follows existing US 17

Bypass from US 70 to US 17. It extends on new location to cross the Trent River, Island Creek Road (SR 1004), County Line Road (SR 1101), and joins US 70 near Riverdale Road (SR 1108). It extends freeway upgrades along US 70 to the Havelock Bypass, providing interchange and access road improvements in the vicinity of Stately Pines Road (SR 1106).

**Alternative 3** extends from the US 17 Bypass at existing US 70 west of New Bern to existing US 70 near Riverdale Road (SR 1108) and continues along US 70 to the Havelock Bypass (see Figures 3.1 and 3.2). It includes a 20.8-mile highway, 13 miles of which are on new location. Alternative 3 is comprised of Segments A, B, D, E, F, and G. Alternative 3 follows existing US 17 Bypass from US 70 to US 17. It extends on new location to cross the Trent River and diverges from Alternative 2 near the intersection of Island Creek Road (SR 1004) and County Line Road (SR 1101) along a southern route. It converges with Alternative 2 near the intersection of County Line Road (SR 1101) and Old Airport Road (SR 1111) and joins US 70 near Riverdale Road (SR 1108). It extends freeway upgrades along US 70 to the Havelock Bypass, providing interchange and access road improvements in the vicinity of Stately Pines Road (SR 1106).

**Table 2: Alternative Descriptions**

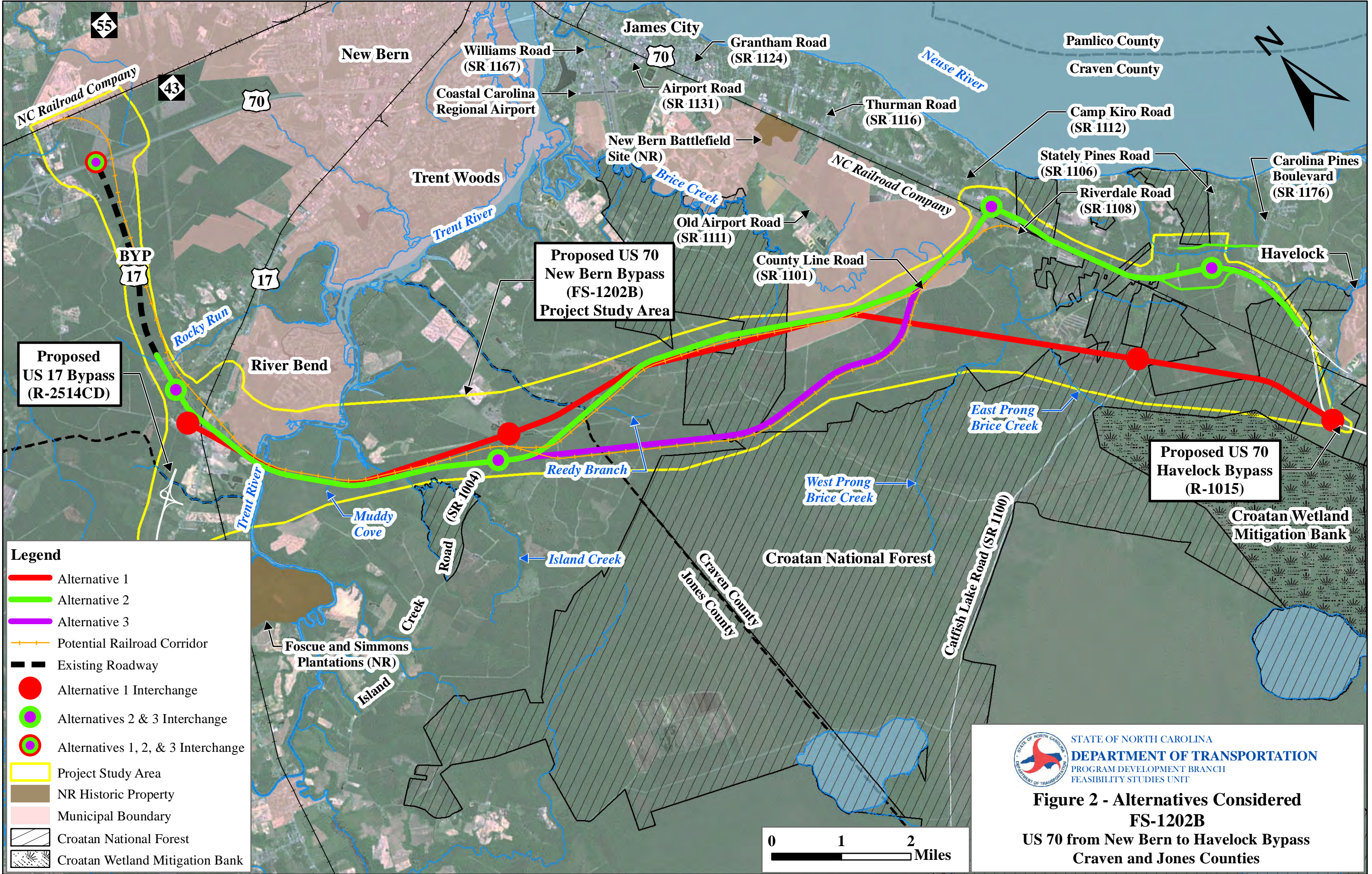
Segment	Segment Description	Alt. 2 Length (miles)	Alt. 3 Length (miles)
A	Follows existing US 17 Bypass from US 70 west of New Bern to the Trent River west of New Bern	5.1	5.1
B	Extends on new location from the Trent River west of New Bern to near the intersection of Island Creek Road (SR 1004) and County Line Road (SR 1101) southwest of New Bern	1.6	1.6
C (northern alignment)	Extends on new location from near the intersection of Island Creek Road (SR 1004) and County Line Road (SR 1101) to 1.2 miles west of US 70 southeast of New Bern	8.4	---
D (southern alignment)	Extends on new location from near the intersection of Island Creek Road (SR 1004) and County Line Road (SR 1101) to 1.2 miles west of US 70 southeast of New Bern	---	8.7
E	Extends on new location from 1.2 miles west of US 70 to US 70 near Riverdale Road (SR 1108) southeast of New Bern	2.0	2.0
F	Follows existing US 70 from near Riverdale Road (SR 1108) to 0.6 mile west of Stately Pines Road (SR 1106) northwest of Havelock	2.0	2.0
G	Follows existing US 70 from 0.6 mile west of Stately Pines Road (SR 1106) to the Proposed Havelock Bypass northwest of Havelock	1.5	1.5



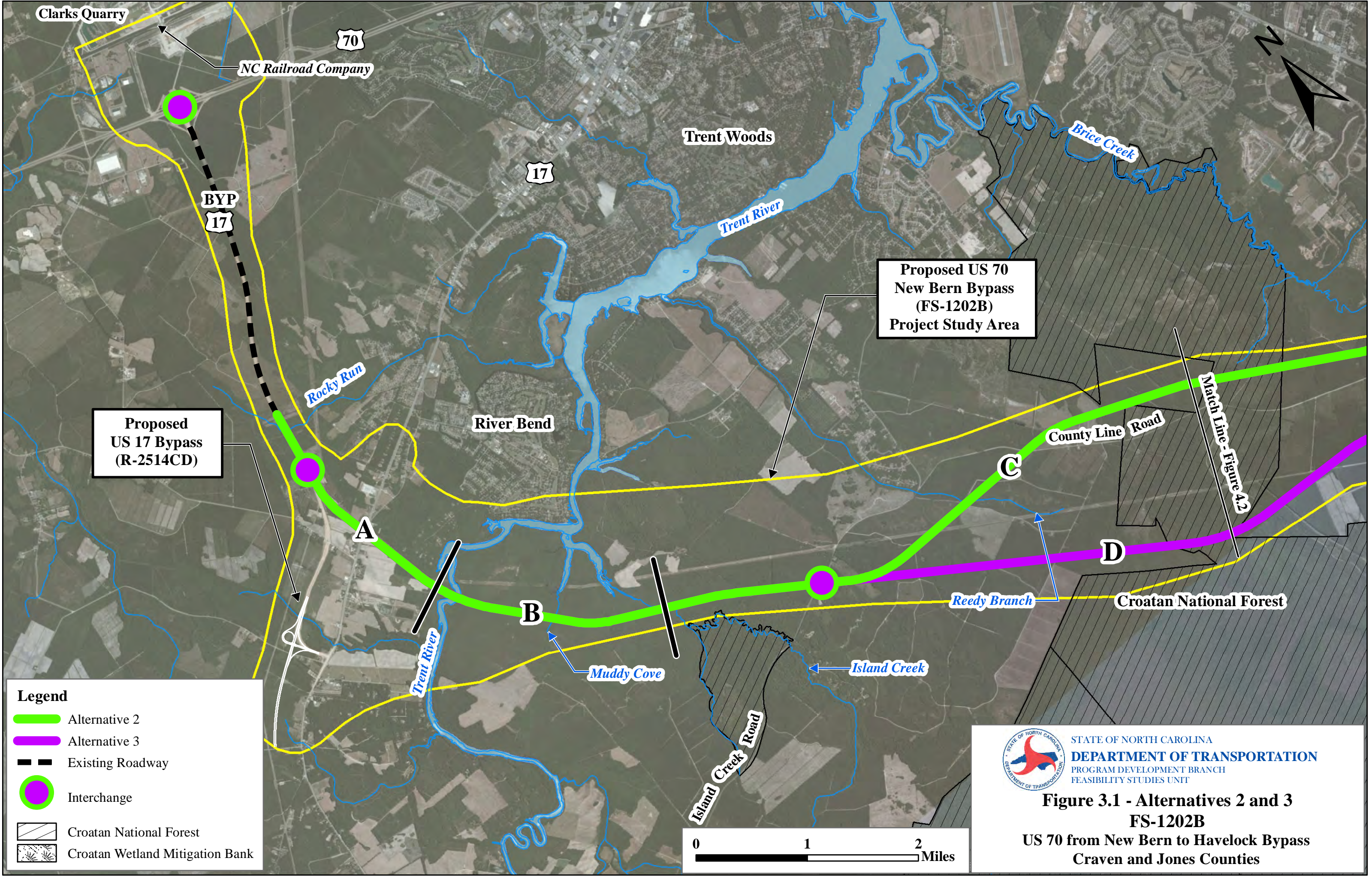
**Table 3: Interchanges, Bridges, and Overpasses (Alternatives 2 and 3)**

<b>Segment</b>	<b>Interchanges</b>	<b>Highway Bridges and Overpasses</b>
A	<ul style="list-style-type: none"><li>• US 70</li><li>• US 17 Bypass</li></ul>	<ul style="list-style-type: none"><li>• US 17</li></ul>
B/ C/ D	<ul style="list-style-type: none"><li>• Island Creek Road (SR 1101)</li></ul>	<ul style="list-style-type: none"><li>• Trent River</li><li>• Muddy Cove</li><li>• Island Creek Road (SR1004)</li><li>• County Line Rd (SR 1101)</li></ul>
F	<ul style="list-style-type: none"><li>• US 70 near Riverdale Road (SR 1108)</li></ul>	<ul style="list-style-type: none"><li>• Existing NCRR Corridor</li><li>• Old Airport Rd (SR 1111)</li></ul>
G	<ul style="list-style-type: none"><li>• Stately Pines Road (SR 1106) &amp; additional service roads</li></ul>	<ul style="list-style-type: none"><li>• None</li></ul>










**Legend**

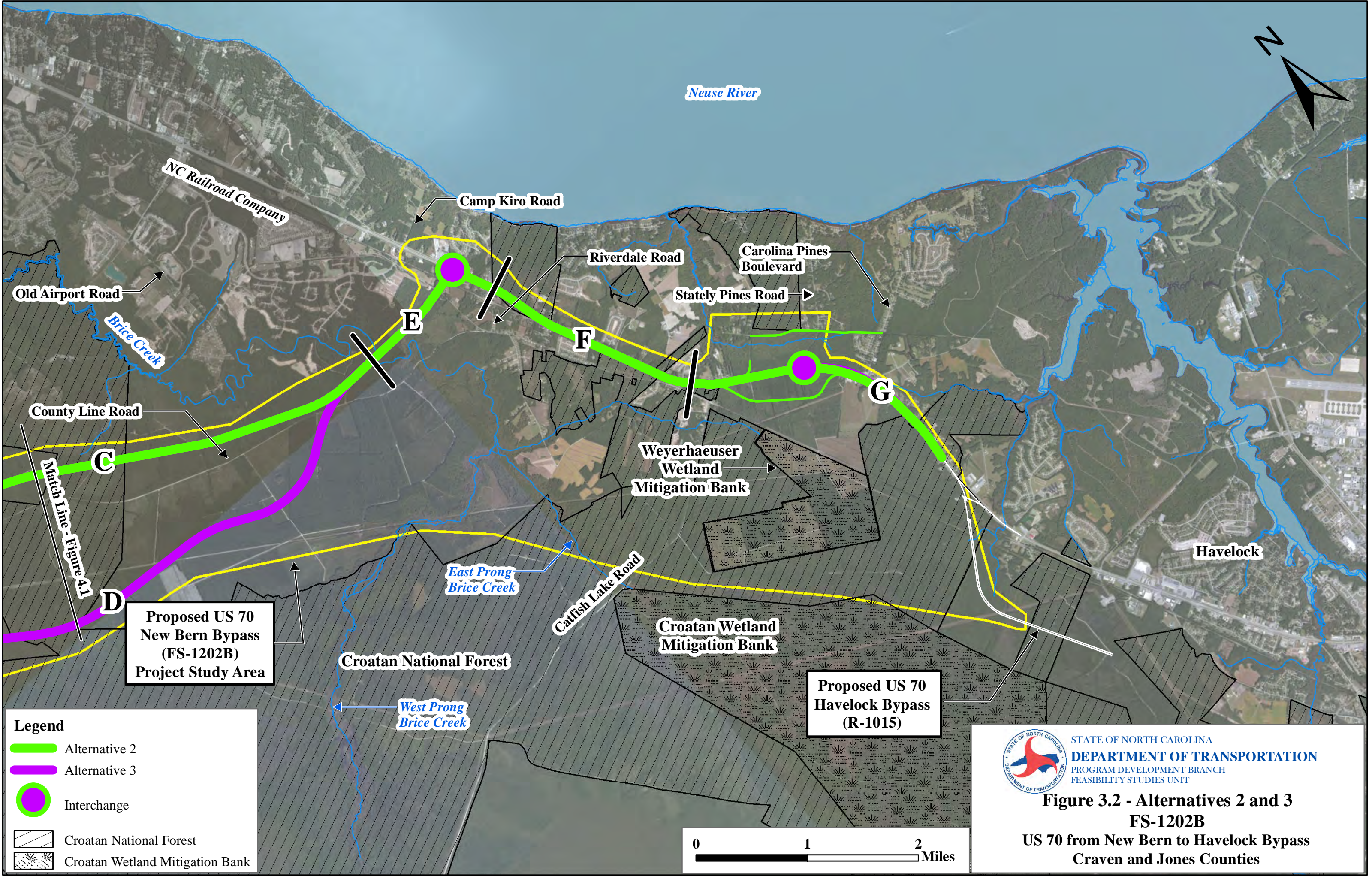
- Alternative 2
- Alternative 3
- Existing Roadway
- Interchange
- Croatan National Forest
- Croatan Wetland Mitigation Bank



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**Figure 3.1 - Alternatives 2 and 3**  
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**US 70 from New Bern to Havelock Bypass**  
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**Figure 3.2 - Alternatives 2 and 3**  
**FS-1202B**  
**US 70 from New Bern to Havelock Bypass**  
**Craven and Jones Counties**



## 5.0 Other Alternatives Considered

Alternative 1 is an initial alternative considered to extend mostly on new location to provide the most direct route to join the Havelock Bypass west of existing US 70. Alternative 1 is estimated to cost eight percent more than Alternative 2. It relocates nearly one-third of the number of residences as Alternative 2 but no businesses. It has five (5) interchanges and includes bridges over major roadways, river, and stream crossings. Approximately 80 percent of its length is on new location. The Alternative 1 highway corridor crosses seven (7) rivers or streams, 386 acres of wetlands, and 189 acres of Croatan National Forest lands.

Alternative 1 has the highest cost, requires the most construction on new location, and crosses the largest amount of wetlands and Croatan National Forest land. The east end of Alternative 1 would cross a large portion of the land within the Croatan National Forest and would bisect a recently approved Weyerhaeuser Mitigation Bank. It would also cross foraging habitat for several Red Cockaded Woodpecker colonies near its connection with the Havelock Bypass. For these reasons Alternative 1 has been eliminated from further consideration.

An intermediate connection with US 70 was considered between Riverdale Road (SR 1108) and Stately Pines Road (SR 1106) to avoid crossing sizeable portions of the National Forest and other environmental resources. Such a connection would be in close proximity to the proposed Stately Pines Road (SR 1106) interchange, would cross Croatan National Forest land west of US 70, and affect additional residential development. This intermediate connection with US 70 is not an advantageous location and was not considered in detail in the feasibility study.

A parallel corridor was considered for potential railroad use. This was in response to a community interest in an option to route railroad traffic around downtown New Bern. Also, members of the Down East Rural Planning Organization (RPO) and the New Bern Area Metropolitan Planning Organization (MPO) expressed interest in evaluating a multimodal transportation corridor around New Bern. A 200-foot wide corridor was considered adjacent to the US 70 Bypass alternatives, extending to the NCRR EC-line at each end of the study area. A railroad corridor adjacent to the US 70 Bypass study area would not address existing railroad operating needs. A relatively low volume of daily freight trains use the NCRR corridor in the study area. The US 70 Bypass study area is too far west to serve the NCRR's New Bern rail yard and the NS line between New Bern and Chocowinity. It would not readily access industries requiring rail service. In addition, railroad crossings of a quarry near Clarks Road and of US 70 would present problematic constructability issues.

Representatives from NCRR, Craven County, River Bend, the RPO, and NCDOT met on June 11, 2014 to discuss rail considerations in this feasibility study. Rail representatives described current railroad operating conditions in the area and believe that the needs for the US 70 corridor and the railroad corridor should be considered independently of each other and not limited to the same corridor. RPO and MPO representatives are interested in a comprehensive rail study that would help in submitting requests for prioritizing rail projects. The Mayor of River Bend is interested in a long-term vision for improving a rail system to the State Port in Morehead City. Outcomes of this meeting were to remove the rail corridor from further consideration in the US 70 Bypass feasibility study and to explore ways to initiate a comprehensive rail study for the New Bern area.

## **6.0 Traffic and Safety**

### **6.1 Average Daily Traffic**

Existing average daily traffic (ADT) on US 70 west of New Bern ranges from 16,700 to 19,000 vehicles per day (vpd). Existing US 70 traffic in James City ranges from 33,400 to 45,400 vpd. If no improvements are made, future 2035 year traffic is estimated to range from 29,200 to 33,600 vpd west of New Bern and 75,200 to 82,100 vpd in James City. If a US 70 Bypass is constructed, 2035 year traffic on US 70 is expected to reach 21,400 vpd west of New Bern and 65,800 vpd in James City. Estimated 2035 year traffic on a US 70 Bypass is expected to range from 17,300 to 28,200 vpd. Current and future year traffic volumes are shown in the Appendix in Table A1.

#### **Level of Service**

Traffic operating conditions are measured using levels of service (LOS) represented by a letter designation from A to F (see Table 4). LOS A represents the best operating conditions and LOS F the worst. LOS D is generally considered to be acceptable in urban areas. LOS E designates conditions in which a facility reaches its traffic carrying capacity, and LOS F represents a breakdown in traffic flow. Highway capacity analyses were performed for the years 2012 and 2035 to evaluate existing and future traffic operations along existing US 70 under the Build and No Build scenarios.

When signalized intersections are spaced at less than two-mile intervals, a facility is classified as an arterial. The signalized intersections generally control the LOS for the facility. Intersection LOS is defined as the average controlled delay of all approaches. Table 4 describes the traffic conditions for intersections generally associated with each LOS designation. The methodologies and procedures documented in the Highway Capacity Manual, Special Report 209, Third Edition, 2000, were used to calculate levels of service.

There are 18 intersections on US 70 between US 17/ NC 55 and the proposed Havelock Bypass. Four of these are controlled by traffic signals. The most congested conditions are between the Williams Road (SR 1167) and Airport Road (SR 1131) intersections. These intersections currently operate efficiently during peak hours. Conditions will continue to worsen over time and reach LOS F in 2035. A US 70 Bypass is expected to reduce future year traffic in James City by 25 to 30 percent. This reduction in future year traffic on US 70 would help alleviate traffic delays on US 70. However, a US 70 Bypass alone would not reduce future year traffic by a sufficient amount for traffic to operate at an acceptable level of service. To meaningfully address congestion in this area, US 70 freeway upgrades and other access management options considered in recent feasibility studies would still be needed.

**Table 4: Levels of Service Definitions for Signalized Intersections**

Level of Service	Delay	Characteristics
<b>A</b>	Very low delay ( $\leq 10$ sec. per vehicle). Most vehicles do not have to stop at all.	Free flow. Individuals are unaffected by others in traffic stream. Freedom to select speed and maneuver is extremely high.
<b>B</b>	$> 10$ & $\leq 20$ sec. per vehicle delay. Good progression and short cycle length.	Free flow, but the present of other vehicles begins to be noticeable. Slight decline in freedom to maneuver.
<b>C</b>	$> 20$ & $\leq 35$ sec. per vehicle delay. Fair progression and/or longer cycles. The number of vehicles stopping is significant.	Stable flow, but the beginning of the range in which the influence of traffic density on operations becomes marked. Maneuvering requires substantial vigilance. Average travel speed may begin to show some reduction.
<b>D</b>	$> 35$ & $\leq 55$ sec. per vehicle delay. Many vehicles stop. Individual cycle failures noticeable.	High density flow in which ability to maneuver is severely restricted by increasing volumes. Only minor traffic disruptions can be absorbed without effect.
<b>E</b>	$> 55$ & $\leq 80$ sec. per vehicle delay. The limit of acceptable delay.	Flow at or near capacity. Unstable. Most traffic disruptions will cause queues to form and service to deteriorate.
<b>F</b>	$> 80$ sec. per vehicle of delay. Considered unacceptable to most drivers.	Breakdown flow. Traffic exceeds capacity. Queues form behind such locations, which are characterized by extremely unstable stop and go waves.

Source: *Highway Capacity Manual, Special Report 209, Third Edition, 2000.*

Highway capacity analyses were performed for the years 2012 and 2035 to evaluate existing and future traffic operations along existing US 70 and along the US 70 Bypass. Level of service analysis results are presented in the Appendix.

A US 70 Bypass is expected to reduce future year traffic along US 70 in James City by 25 to 30 percent. With Alternatives 2 and 3, traffic on the proposed Bypass would operate at LOS D or better through the design year along the freeway segments and at interchanges. However a US 70 Bypass alone will not reduce future year traffic by a sufficient amount for traffic to operate at LOS D or better. Signalized intersections at Williams Road, Airport Road, and Taberna Way would operate at LOS E or F in the design year even with a bypass. Improvements considered under other recent feasibility studies along US 70 through James City would be needed for US 70 to operate at an acceptable LOS in the future.

### **Crash Analysis**

Between February 2008 and January 2013, 1073 accidents occurred along US 70 within the project limits. There were 772 property damage only accidents, 296 non-fatal injury accidents, and five (5) fatal accidents as a result of these incidents. Table 5 shows the accident rates per 100 million vehicle miles of travel (MVM) on US 70 from US 17 Bypass west of New Bern to Pine Grove Road (SR 1772) in Havelock and on US 17 Bypass from US 17 to US 70.

The highest accident rate occurs along US 70 between the Trent River and Camp Kiro Road (SR 1112). The total accident rate for this section is 139.31 crashes per 100 MVM, which is lower than the 2008-2010 statewide rate of 170.91 crashes per 100 MVM for four-lane divided rural US routes with limited control of access. The fatal accident rate for this section of US 70 is

0.45 crashes per 100 MVM, which is lower than the 2008-2010 statewide rate of 0.86 crashes per 100 MVM.

The critical crash rate is a statistically derived number that can be used as a tool to identify or screen for high accident locations. Locations with a crash rate higher than the critical rate may have safety and operational deficiencies. The crash rates within the project area are lower than the critical rates. NCDOT is in the process of developing a safety project at the intersection of US 70 and Carolina Pines Road.

**Table 5: Crash Statistics**

<b>Rate</b>	<b>Crashes <sup>1</sup></b>	<b>Crashes per 100 Million Vehicle Miles (MVM)</b>	<b>Statewide Rate</b>	<b>Critical Rate <sup>4</sup></b>
<b>US 70 from US 17 Bypass East of New Bern to the Trent River Bridge <sup>2</sup></b>				
<b>Total</b>	221	<b>72.10</b>	105.59	115.41
<b>Fatal</b>	0	<b>0.00</b>	0.46	1.26
<b>Non-Fatal Injury</b>	54	<b>17.62</b>	33.25	38.83
<b>Prop. Damage Only</b>	167	<b>202.46</b>	N/A	N/A
<b>US 70 from the Trent River Bridge to Camp Kiro Road (SR 1112) <sup>3</sup></b>				
<b>Total</b>	614	<b>139.31</b>	170.91	181.27
<b>Fatal</b>	2	<b>0.45</b>	0.86	1.71
<b>Non-Fatal Injury</b>	174	<b>39.48</b>	57.03	63.06
<b>Prop. Damage Only</b>	438	<b>527.94</b>	N/A	N/A
<b>US 70 from Camp Kiro Road (SR 1112) to Pine Grove Road (SR 1772) <sup>3</sup></b>				
<b>Total</b>	238	<b>72.88</b>	170.91	182.96
<b>Fatal</b>	3	<b>0.92</b>	0.86	1.86
<b>Non-Fatal Injury</b>	68	<b>20.82</b>	57.03	64.06
<b>Prop. Damage Only</b>	167	<b>401.32</b>	N/A	N/A
<b>US 17 Bypass from US 17 in Jones County to US 70 in Craven County <sup>2</sup></b>				
<b>Total</b>	8	<b>0.38</b>	105.59	109.3
<b>Fatal</b>	0	<b>0.00</b>	0.46	0.73
<b>Non-Fatal Injury</b>	0	<b>0.00</b>	33.25	35.34
<b>Prop. Damage Only</b>	8	<b>0.38</b>	N/A	N/A

<sup>1</sup> Represents crashes that occurred 2008-2013 except for US 17 Bypass from US 17 in Jones County to US 70 in Craven County. Crash totals for US 17 Bypass are from October 15, 2011 to January 31, 2013.

<sup>2</sup> 2008 – 2010 Statewide Crash rates are for four or more lanes divided with full control access, Urban United States (US) Routes.

<sup>3</sup> 2008 – 2010 Statewide Crash rates are for four or more lanes divided with partial control access, Urban United States (US) Routes.

<sup>4</sup> Based on the statewide crash rate (95% level of confidence).

N/A = Not Available



## 7.0 Evaluation of Alternatives

An evaluation of Alternatives 2 and 3, including costs, potential property effects, and environmental concerns is summarized below and in Tables 6 and 7.

**Table 6: Alternative Costs and Relocations**

	Construction Costs	Utility Relocation Costs	Right of Way Costs	Total Costs	Relocations			
					Residences	Businesses	Other	Total
<b>Alt. 2</b>	\$344,300,000	\$1,200,000	\$16,700,000	\$362,200,000	25	4	1	<b>30</b>
<b>Alt. 3</b>	\$348,800,000	\$1,100,000	\$16,400,000	\$366,300,000	15	4	1	<b>20</b>

**Table 7: Comparison of Alternatives**

Study Area Resource	Alternative 2	Alternative 3
	Roadway	Roadway
Length (miles)	20.5	20.8
Speed Limit (miles per hour)	65 - 70	65 - 70
Construction Costs	\$344,300,000	\$348,800,000
Utility Relocation Costs	\$1,200,000	\$1,100,000
Right of Way Costs	\$16,700,000	\$16,400,000
Total Estimated Cost	\$362,200,000	\$366,300,000
Relocated Residences (#)	25	15
Relocated Businesses (#)	4	4
Other Relocations (#)	1	1
Total Relocations (#)	30	20
Interchanges or Access Locations (#)	5	5
Major River/ Stream Crossings (#)	6	5
Area within Wetlands (acres)	226	256
Area within Croatan National Forest (acres)	30	25
Proposed Croatan & Mountains to Sea Trails (feet)	1,260	400

The bypass alternatives would consist of a four-lane median divided freeway with 12-foot lanes, a 46-foot depressed median, and 10-foot paved shoulders in a 300-foot corridor. Interchanges are proposed for access to most major road crossings. Bridges have been considered over major river, stream, and wetland crossings. A 70 mph roadway design speed is proposed.

Alternative 2 is estimated to cost \$344,300,000 for construction, \$1,200,000 for utility relocation, and \$16,700,000 for right of way acquisition. The total estimated cost is \$362,200,000. It would displace 25 residences, four (4) businesses, and one (1) cemetery for a total of 30 relocations. It would have five (5) interchanges and include bridges over major roadways, river, and stream crossings. Alternative 2 is estimated to cross six (6) major rivers or streams, 226 acres of wetlands, 30 acres of Croatan National Forest property, and 1,260 feet of proposed Croatan and Mountains to Sea Trails.

Alternative 3 is estimated to cost \$348,800,000 for construction, \$1,100,000 for utility relocation, and \$16,400,000 for right of way acquisition. The total estimated cost is \$366,300,000. It would displace 15 residences, four (4) businesses, and one (1) cemetery for a total of 20 relocations. It would have five (5) interchanges and include bridges over major roadways, river, and stream crossings. Alternative 3 is estimated to cross five (5) major rivers or streams, 256 acres of wetlands, 25 acres of Croatan National Forest property, and 400 feet of the proposed Mountains to Sea Trail.

Alternatives 2 and 3 address congestion but do not bring existing major US 70 intersections to acceptable levels of service. These alternatives would provide a bypass of the congested areas along US 70. Construction costs are highest in Segments B, C, and D from the Trent River to west of US 70. Higher costs are due to the lengths of the segments (approximately 10 miles), bridging, interchange improvements, and the amount of construction that would be required on new location. Impacts to wetlands are also highest in this segment. Right of way costs and relocations are highest in Segment E where the proposed Bypass connects existing US 70 near Riverdale Road (SR 1108).

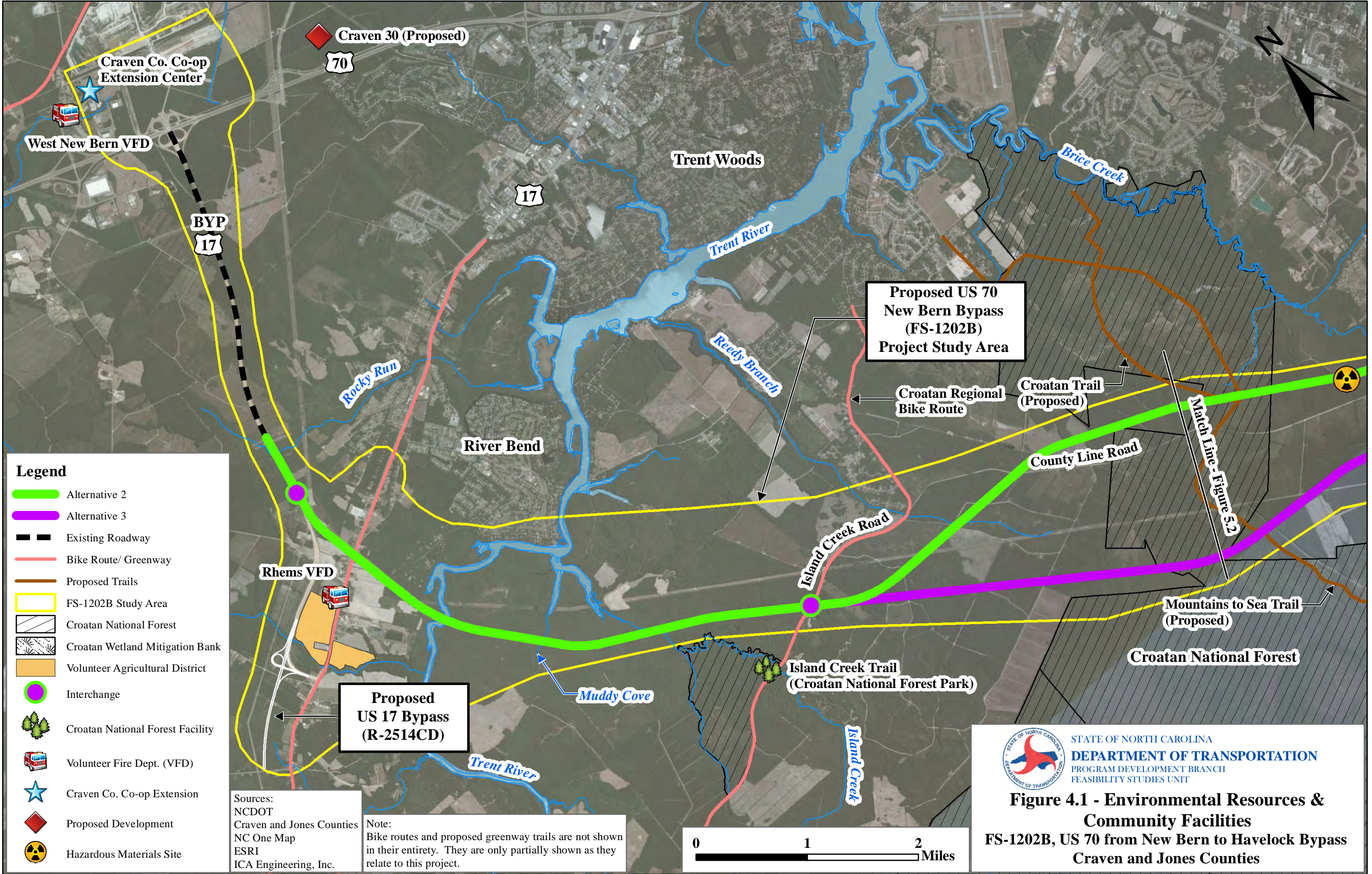
Alternative 2 crosses fewer wetlands and crosses a more isolated portion of the Croatan National Forest near County Line Road (SR 1001) compared to Alternative 3. Alternative 3 crosses less Croatan National Forest property and crosses only one proposed trail.

## **8.0 Human and Natural Environment Issues**

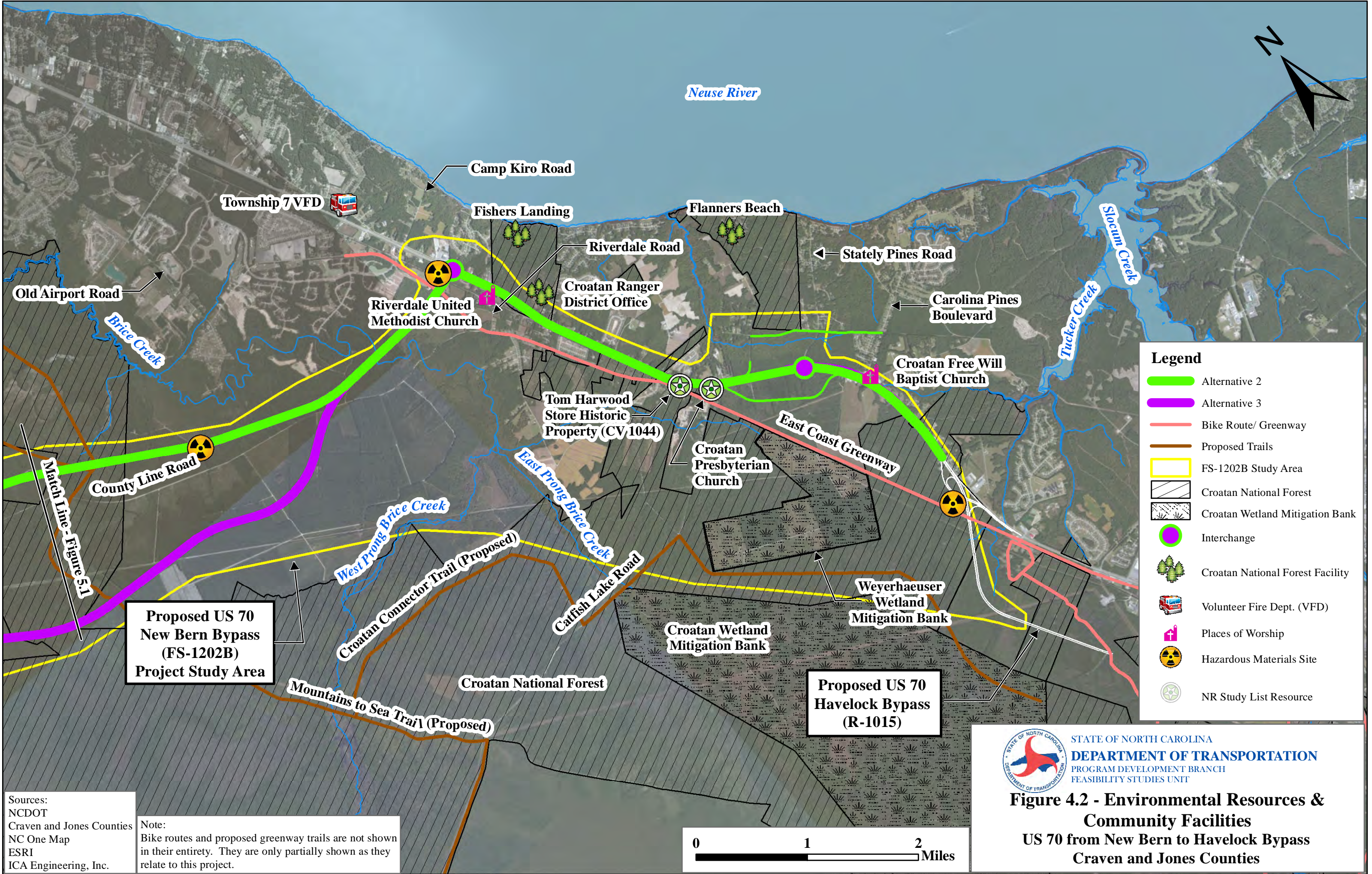
### **Human Environment Issues**

The study area is comprised of large areas of undeveloped land along the proposed bypass routes and commercial, residential, and light industrial development along US 70. The rural and largely undeveloped study area would have few potential impacts to community facilities along the proposed alignments. Exceptions are along US 70 north of Havelock where the project is proposed to tie in to US 70 and the area near where the new roadway will cross US 17. See Figures 4.1 and 4.2 for the locations of community facilities in the project study area.









Sources:  
NCDOT  
Craven and Jones Counties  
NC One Map  
ESRI  
ICA Engineering, Inc.

Note:  
Bike routes and proposed greenway trails are not shown in their entirety. They are only partially shown as they relate to this project.



STATE OF NORTH CAROLINA  
**DEPARTMENT OF TRANSPORTATION**  
PROGRAM DEVELOPMENT BRANCH  
FEASIBILITY STUDIES UNIT

**Figure 4.2 - Environmental Resources & Community Facilities**  
**US 70 from New Bern to Havelock Bypass**  
**Craven and Jones Counties**



The following community facilities are in or near the project study area:

- Riverdale United Methodist Church
- Croatan Free Will Baptist Church
- Croatan Presbyterian Church
- Craven County Cooperative Extension Center
- West New Bern Voluntary Fire Department (VFD)
- Rhems VFD
- Township 7 VFD
- Two Voluntary Agricultural Districts (VAD)
- Croatan National Forest, Island Creek Trail
- Croatan National Forest, Ranger District Office
- Croatan National Forest, Flanners Beach
- Croatan National Forest, Fishers Landing
- Various proposed bike routes, trails and greenways including the Croatan Regional Bike Route, the Mountains to Sea Trail, and the East Coast Greenway route
- The proposed Craven 30, a 550-acre mixed-use development with residential, commercial, and retail uses

During the public involvement phase for the US 17 Bypass project (R-2301A), NCDOT revised the US 17 Bypass alignment near Tuscarora-Rhems Road address residents' concerns with the visual and physical impact of the project to their properties. An interchange with US 17 Bypass and US 70 Bypass is proposed to the east to minimize impacts to this community and retain the existing bridges over Tuscarora-Rhems Road.

### **Natural Environment Issues**

A detailed environmental study has not been conducted for this feasibility study, however an environmental screening did find issues requiring further evaluation in later planning and design stages, including environmentally sensitive areas and portions of the Croatan National Forest. As of December 26, 2012 (USFWS 2012), the USFWS lists seven federally protected species for Craven and two for Jones County. Table 8 lists these species and their federal status.

**Table 8: Federally Protected Species Listed for Craven and Jones Counties**

Scientific Name	Common Name	Federal Status <sup>1</sup>	County
American alligator	<i>Alligator mississippiensis</i>	T(S/A)	Craven/ Jones
Atlantic Sturgeon	<i>Acipenser oxyrinchus oxyrinchus</i>	E	Craven
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E	Craven
Red-cockaded woodpecker	<i>Picoides borealis</i>	E	Craven/ Jones
West Indian Manatee	<i>Trichechus manatus</i>	E	Craven
Sensitive jointvetch	<i>Aeschynomene virginica</i>	T	Craven
Rough-leaved loosestrife	<i>Lysimachia asperulaefolia</i>	E	Craven

<sup>1</sup> E – Endangered; T – Threatened; T(S/A) – Threatened due to Similarity of Appearance

Based on a review of Geographic Information System (GIS) data, the following issues may require further evaluation in future project development studies (see Figures 5.1 and 5.2).

- *Rivers and Streams* – Major streams within the study area include Rocky Run, Trent River, Muddy Cove, Island Creek, Reedy Branch, Brice Creek, East Prong Brice Creek, and West Prong Brice Creek. All streams have a water quality classification of C Sw NSW. They are swamp and nutrient sensitive waters with uses that include secondary recreation, fishing, aquatic life, and agriculture. The Trent River has a water quality classification of SB Sw NSW. It is a tidal salt water swamp and nutrient sensitive water that includes primary recreational activities. None of these are designated as High Quality Waters, Outstanding Resource Waters, or water supply watersheds.
- Preliminary findings suggest Alternative 3 will impact nearly 1,200 linear feet more than Alternative 2.
- *Wetlands* – Potential wetland areas have been identified using the Coastal Region Evaluation of Wetland Significance (CREWS) mapping from the NC Division of Coastal Management. Alternatives 2 and 3 cross sizable potential wetland areas. Preliminary findings show Alternative 3 will affect 30 more acres than Alternative 2.
- *Croatan National Forest* – The lands contained within the boundaries of the Croatan National Forest are subject to its Land and Resource Management Plan. A US 70 Bypass of New Bern has not been considered in the Land and Resource Management Plan nor has it been addressed with the US Forest Service to assess potential impacts on wildlife habitat and recreational uses. Encroachments within Croatan National Forest land would require a special use permit. Preliminary findings indicate Alternative 2 will affect approximately five more acres of the Croatan National Forest than Alternative 3.
- *Croatan Wetland Mitigation Bank* - The Croatan Wetland Mitigation Bank (CWMB) is located on the southwest side of the study area between Catfish Lake Road (SR 1100) and the Havelock Bypass. It was created to provide compensatory mitigation for several NCDOT projects in the Neuse River Basin. Alternatives 2 and 3 avoid the property.
- *Neuse Riparian Buffer Rules* – Streams and rivers within the study area are within the Neuse River Basin and are subject to Neuse Riparian Buffer Rules. These protect the activities located within a buffer area adjacent to each stream.
- *Coastal Area Management Act (CAMA)* – Craven County is one of 20 coastal counties requiring compliance with CAMA. The project would need to be developed to insure it is consistent with the State's coastal management program.
- *Federally Protected and Rare Species* – As of December 2012, the U.S. Fish and Wildlife Service lists seven federally protected species for Craven County and two for Jones County (see Table 8). During the project development phase, more detailed environmental studies would evaluate these species, their federal and state status, and determine whether potential habitat exists in the project study area.
- *Hazardous Materials Sites, Superfund Sites, and Underground Storage Tanks* – There are two inactive hazardous materials sites and a landfill within the study area. Underground storage tanks are likely at some properties along existing US 70.
- *Cultural Resources and Section 106 of the National Historic Preservation Act of 1966* – There are no properties listed in the National Register of Historic Places (NRHP) within the project study area. The following NRHP Study List resources are in the project vicinity:
  - Croatan Presbyterian Church (CV 1385)

- Tom Harwood Store (CV 1044)
- *Public Parks and Recreation Areas* – There are no public parks in the study area. There are no public recreation properties aside from any recreational uses in Croatan National Forest. Croatan National Forest facilities in close proximity to the study area include:
  - Croatan Ranger District Office
  - Fishers Landing
  - Flanners Beach
  - Island Creek Trail
- *Natural Heritage Areas* - Through its Natural Heritage Program (NHP) the NC Department of Environment and Natural Resources (NCDENR) has identified 2,500 Significant Natural Heritage Areas within the state. According to NCDENR a Significant Natural Heritage Area is a site of special biodiversity significance. An area's significance may be due to the presence of rare species, exemplary or unique communities, important animal assemblages, or other ecological features. There are numerous significant protected lands and natural heritage areas in Craven and Jones Counties. The Counties are an environmentally rich area. Significant Natural Resource Heritage Areas bisected by the project study area include:
  - Gum Swamp Bottomland Hardwood Forest (US Forest Service)
  - Riverdale Goldenrod Roadsides (USFS, NCDOT)
  - Island Creek Natural Area (Private, USFS)
  - Trent River Aquatic Habitat (Public Waters)
  - Deep Gully (Private)

## 9.0 User Benefits

A user benefit analysis was performed using methods described in the AASHTO – User Benefit Analysis for Highway (Redbook – 2003) and updated Redbook Wizard created by NCDOT. This analysis is used to compare cost savings benefits for drivers with the capital and operation costs to the highway agency. The benefits are estimated in terms of reduced travel time, lower accident rates, and lower operating costs. Because the length of both Alternative 2 and 3 are nearly the same, user benefits were analyzed for one design concept that can be applied to a bypass alignment for either alternative. User benefits consider the value of time, operating costs, and accident reduction benefits. These benefits were compared using interest (or discount) rates of 7%, 3% and 0% to account for the effect of time costs on money. The total benefits were calculated using a base year of 2021, an opening year of 2025, and a design year of 2035. A benefit cost ratio was calculated to compare the total benefits to the cost of the project. As shown in Table 9 below both alternatives would have a benefit cost ratio of 5.8 (7%), 6.4 (3%) and 7.0 (0%).



**Table 9: User-Benefit Costs (Actual Accident Rates)**

Alternative	Benefit	7% Discount Rate*	3% Discount Rate**	0% Discount Rate***
Alternatives 2 and 3	User Value of Time Benefit	\$1.50 Mil.	\$1.98 Mil.	\$2.47 Mil.
	User Operating Costs Benefit	\$0.04 Mil.	\$0.05 Mil.	\$0.05 Mil.
	User Accident Reduction Benefits	\$1,760.31 Mil.	\$2,090.82 Mil.	\$2,413.26 Mil.
	Total Benefits	\$1,751.11 Mil.	\$2,081.25 Mil.	\$2,403.47 Mil.
	Cost	\$301.57 Mil.	\$325.45 Mil.	\$345.27 Mil.
	Net Benefits	\$1,449.54 Mil.	\$1,755.80 Mil.	\$2,058.20 Mil.
	Benefit Cost Ratio***	5.8	6.4	7.0

Note: \* Baseline using values indicated in the appendix and a recommended 7% discount rate.

\*\* Same as Baseline above except this option tests the sensitivity to a 3% discount rate.

\*\*\* Total Benefits divided by Cost and no discount rate or inflation added.

## 10.0 Recommendations

A US 70 Bypass would improve the regional and statewide traffic operations along the US 70 corridor and to enhance the ability of US 70 to serve the regional transportation function in accordance with the Strategic Highway Corridors Plan. US 70 intersections in James City currently operate efficiently but their traffic carrying capacity during peak hours and will continue to worsen over time. A US 70 Bypass is expected to reduce future year traffic along US 70 in James City by 25 to 30 percent. With Alternative 2 or Alternative 3, traffic on the proposed Bypass would operate at LOS D or better through the design year.

Both Alternatives 2 and 3 would improve regional and statewide operations on the US 70 corridor. Both alternatives have similar estimated costs and displacements of residences, businesses, and other properties. Alternative 2 has a total cost of \$362,200,000 and is estimated to require a total of 30 relocations. Alternative 2 crosses fewer wetlands and crosses a more isolated portion of the Croatan National Forest near County Line Road (SR 1001) compared to Alternative 3. Alternative 3 has a total cost of \$366,300,000 and is estimated to require a total of 20 relocations. Alternative 3 crosses less Croatan National Forest property and crosses only one proposed trail. Future environmental and design studies should address options to avoid and minimize impacts to properties, community resources, and environmental features.

## **APPENDIX**

**Table A1: Average Daily Traffic Volumes**

<b>Location</b>	<b>2012 Existing Traffic (vehicles/day)</b>	<b>2035 No Build Traffic (vehicles/day)</b>	<b>2035 Traffic US 70 Bypass Alternative 1 (vehicles/day)</b>	<b>2035 Traffic US 70 Bypass Alternative 2/ Alternative 3 (vehicles/day)</b>
<b>Existing US 70 Corridor</b>				
US 17 Bypass to US 17/ NC 55	16,700 - 19,000	29,200 - 33,600	18,800 - 21,400	18,800 - 21,400
US 17/ NC 55 to Williams Rd (SR 1167)	40,700 - 45,400	75,200 - 82,100	58,900 - 65,800	58,900 - 65,800
Williams Rd (SR 1167) to Grantham Rd (SR 1124)	33,400 - 38,300	61,500 - 71,300	43,600 - 51,400	43,600 - 51,400
Grantham Rd (SR 1124) to Thurman Rd (SR 1116)	28,400 - 32,600	51,700 - 58,700	34,400 - 41,400	34,400 - 41,400
Thurman Rd (SR 1116) to Riverdale Rd (SR 1108)	26,500 - 27,800	48,600 - 50,800	31,300 - 33,500	31,300 - 33,500
Riverdale Rd (SR1108) to Carolina Pines Blvd (SR 1176)	26,900 - 27,500	49,100 - 50,200	31,700 - 32,900	49,000 - 50,100
<b>US 70 Bypass Corridor</b>				
US 70/ US 17 Bypass to US 17	2,200	3,800	18,600 - 28,200	18,600 - 28,200
US 17 to Island Creek Rd (SR 1004)	N/A	N/A	17,300	17,300
Island Creek Rd (SR 1004) to US 70	N/A	N/A	20,400	20,400
US 70 Havelock Bypass	N/A	21,700	9,000 - 26,400	26,400

**Table A2: 2012 and 2035 LOS and Delays**

Intersection	2012	2035		
	No Build	No Build	Alternative 1	Alternative 2/ Alternative 3
	LOS/Delay	LOS/Delay	LOS/Delay	LOS/Delay
<b>US 70 Intersections</b>				
US 70 @ Elder St	C/21	F/176	F/57	F/57
US 70 @ SR 1149	C/19	F/239	F/67	F/67
Williams Rd @ SR 1153	C/18	F/117	D/33	D/33
US 70 @ Williams Rd	D/45	F/323	F/191	F/191
Williams Rd @ SR 1155	B/12	C/19	C/19	C/19
US 70 @ Pender St	C/24	F/213	E/50	E/50
Airport Rd @ SR 1153	B/12	C/17	C/17	C/17
US 70 @ Airport Rd	C/34	F/334	F/187	F/187
Airport Rd @ SR 1155	C/16	E/45	E/45	E/45
US 70 @ Grantham Rd	C/24	F/474	F/76	F/76
US 70 @ Garner Rd	F/169	F/>500	F/>500	F/>500
US 70 @ Taberna Way	C/26	F/140	E/59	E/59
US 70 @ Thurman Rd	B/16	F/83	C/32	C/32
<b>US 70 Bypass Intersections</b>				
US 70 / Clarks Road	---	---	B	B
US 70 / US 17 Bypass	---	---	B	B
US 70 Bypass / US 17 Bypass	---	---	B	B
US 70 Bypass / Island Creek Road	---	---	B	B
US 70 Bypass / Catfish Lake Road	---	---	B	B
US 70 Bypass / Havelock Bypass	---	---	B	B
US 70 / Havelock Bypass	---	---	C	---
US 70 / US 70 Bypass	---	---	---	D
US 70 / Camp Kiro Road	---	---	---	C
US 70 / Stately Pines Road	---	---	---	D
US 70 / Havelock Bypass	---	---	---	D

### LOS at Proposed Interchanges

Tables A3 to 6.7 below present results of LOS analysis for interchanges along the proposed alignments. At the Clarks Road / US 70 interchange, all roadway segments and ramps would operate at LOS A or B for the 2012 and 2035 Build scenarios.

<b>Table A3 - 2012 and 2035 LOS - US 70 / Clarks Road - Alternative 2/ Alternative 3</b>													
<b>US 70/ Clarks Road</b>		2012 AM Build			2012 PM Build			2035 AM Build			2035 PM Build		
		Mainline Volume	Ramp Volume	LOS	Mainline Volume	Ramp Volume	LOS	Mainline Volume	Ramp Volume	LOS	Mainline Volume	Ramp Volume	LOS
Freeway (US 70)	EB1	693	-	A	453	-	A	1178	-	B	770	-	A
	EB2	641	-	A	413	-	A	1097	-	B	709	-	A
	EB3	827	-	A	562	-	A	1388	-	A	944	-	A
	WB1	453	-	A	693	-	A	770	-	A	1178	-	B
	WB2	413	-	A	641	-	A	709	-	A	1097	-	B
	WB3	562	-	A	827	-	A	944	-	B	1388	-	B
Diverge	EB Off	693	52	A	453	39	A	1178	81	B	770	61	B
	WB Off	562	149	A	827	185	B	944	235	B	1388	292	B
Merge	WB On	413	39	A	641	52	A	709	61	B	1097	81	B
Weave	EB	-	-	A	-	-	A	-	-	B	-	-	B

At the US 70/US 17 Bypass interchange, all roadway segments and ramps would operate at an acceptable LOS under all Build scenarios. The worst movement would be LOS C.

<b>Table A4: 2012 and 2035 LOS - US 70 / US 17 Bypass - Alternative 2/ Alternative 3</b>													
<b>US 70/ US 17 Bypass</b>		2012 AM Build			2012 PM Build			2035 AM Build			2035 PM Build		
		Mainline Volume	Ramp Volume	LOS	Mainline Volume	Ramp Volume	LOS	Mainline Volume	Ramp Volume	LOS	Mainline Volume	Ramp Volume	LOS
Freeway (17 Byp)	NB	444	-	A	546	-	A	753	-	A	921	-	A
	SB	546	-	A	444	-	A	921	-	A	753	-	A
Freeway (US 70)	EB1	833	-	A	558	-	A	1402	-	A	934	-	A
	EB2	389	-	A	236	-	A	674	-	A	409	-	A
	EB3	510	-	A	338	-	A	902	-	A	602	-	A
	WB1	558	-	A	833	-	A	934	-	A	1402	-	B
	WB2	236	-	A	389	-	A	409	-	A	674	-	A
	WB3	338	-	A	510	-	A	602	-	A	902	-	A
Diverge	NB Off	444	122	A	546	102	A	753	228	A	921	192	B
Merge	EB On	389	122	A	236	102	A	674	228	B	409	192	A
Weave	WB	-	-	A	-	-	B	-	-	B	-	-	C

At the US 70 Bypass/ US 17 Bypass interchange, all roadway segments and ramps would operate at an acceptable LOS (LOS A or B).

<b>Table A5: 2012 and 2035 LOS - US 70 Bypass / US 17 Bypass - Alternative 2/ Alternative 3</b>													
<b>US 70 Bypass/ US 17 Bypass</b>		2012 AM Build			2012 PM Build			2035 AM Build			2035 PM Build		
		Mainline Volume	Ramp Volume	LOS	Mainline Volume	Ramp Volume	LOS	Mainline Volume	Ramp Volume	LOS	Mainline Volume	Ramp Volume	LOS
Freeway (US 70 Byp)	EB1	541	-	A	448	-	A	915	-	A	758	-	A
	EB2	488	-	A	395	-	A	824	-	A	667	-	A
	EB3	832	-	A	672	-	A	1405	-	B	1134	-	B
	WB1	448	-	A	541	-	A	758	-	A	915	-	A
	WB2	395	-	A	488	-	A	667	-	A	824	-	A
	WB3	672	-	A	832	-	A	1134	-	B	1405	-	B
Diverge	EB Off	541	53	A	448	53	A	915	91	B	758	91	A
	WB Off	672	277	A	832	344	A	1134	467	B	1405	582	B
Merge	EB On	488	344	B	395	277	A	824	582	B	667	467	B
	WB On	395	53	A	488	53	A	667	91	B	824	91	B

At the US 70 Bypass/ Island Creek Road interchange. This interchange would operate at an acceptable LOS (LOS A and B) for both alternatives.

<b>Table A6: 2012 and 2035 LOS - US 70 Bypass / Island Creek Road - Alternative 2/ Alternative 3</b>													
<b>US 70 Bypass/ Island Creek Rd</b>		2012 AM Build			2012 PM Build			2035 AM Build			2035 PM Build		
		Mainline Volume	Ramp Volume	LOS	Mainline Volume	Ramp Volume	LOS	Mainline Volume	Ramp Volume	LOS	Mainline Volume	Ramp Volume	LOS
Freeway (US 70 Byp)	EB1	478	-	A	402	-	A	844	-	A	711	-	A
	EB2	467	-	A	388	-	A	829	-	A	691	-	A
	EB3	587	-	A	467	-	A	1025	-	A	814	-	A
	WB1	403	-	A	478	-	A	711	-	A	844	-	A
	WB2	388	-	A	467	-	A	691	-	A	829	-	A
	WB3	467	-	A	587	-	A	814	-	A	1025	-	A
Diverge	EB Off	478	12	A	402	15	A	844	15	A	711	20	A
	WB Off	467	80	A	587	121	A	814	123	A	1025	196	B
Merge	EB On	467	121	A	388	80	A	829	195	B	691	123	B
	WB On	388	15	A	467	12	A	691	20	A	829	15	B

At the US 70/ US 70 Bypass interchange, all roadway segments and ramps would operate at an acceptable LOS (LOS D or better).

<b>Table A7: 2012 and 2035 LOS - US 70 / US 70 Bypass - Alternative 2/ Alternative 3</b>													
<b>US 70/ US 70 Bypass Alternative 2</b>		2012 AM Build			2012 PM Build			2035 AM Build			2035 PM Build		
		Mainline Volume	Ramp Volume	LOS	Mainline Volume	Ramp Volume	LOS	Mainline Volume	Ramp Volume	LOS	Mainline Volume	Ramp Volume	LOS
Freeway (70 Byp)	NB	587	-	A	467	-	A	1024	-	B	815	-	A
	SB	467	-	A	587	-	A	815	-	A	1024	-	B
Freeway (US 70)	EB1	1068	-	B	692	-	A	1807	-	C	1172	-	B
	EB2	1025	-	B	656	-	A	1722	-	C	1101	-	B
	EB3	1576	-	B	1081	-	B	2675	-	D	1832	-	C
	WB1	692	-	A	1068	-	B	1172	-	B	1806	-	C
	WB2	656	-	A	1025	-	B	1101	-	B	1722	-	C
	WB3	1081	-	B	1577	-	B	1832	-	C	2675	-	D
	EB Off	1068	43	B	692	36	A	1807	85	B	1172	70	B
Diverge	WB Off	1081	424	B	1577	552	B	1832	730	B	2675	953	D
Merge	EB On	1025	551	B	656	424	B	1722	953	D	1101	731	B
	WB On	656	36	A	1025	43	B	1101	71	B	1722	84	B

At the US 70/ Stately Pines Road interchange, all roadway segments and ramps operate at an acceptable LOS (LOS D or better).

<b>Table A8: 2012 and 2035 LOS - US 70 / Stately Pines Road - Alternative 2/ Alternative 3</b>													
<b>US 70/ Stately Pines Rd Alternative 2</b>		2012 AM Build			2012 PM Build			2035 AM Build			2035 PM Build		
		Mainline Volume	Ramp Volume	LOS	Mainline Volume	Ramp Volume	LOS	Mainline Volume	Ramp Volume	LOS	Mainline Volume	Ramp Volume	LOS
Freeway (US 70)	EB1	1565	-	B	1096	-	B	2651	-	D	1856	-	C
	EB2	1344	-	B	862	-	A	2289	-	C	1471	-	B
	EB3	1705	-	C	1082	-	B	2862	-	D	1817	-	C
	WB1	1096	-	B	1565	-	B	1856	-	C	2651	-	D
	WB2	862	-	A	1344	-	B	1471	-	B	2289	-	C
	WB3	1082	-	B	1705	-	C	1817	-	C	2862	-	D
Diverge	EB Off	1565	221	B	1096	234	B	2651	363	D	1856	385	B
	WB Off	1082	219	B	1705	361	B	1817	346	B	2862	572	D
Merge	EB On	1344	361	B	862	219	B	2289	572	D	1471	346	B
	WB On	862	234	B	1344	221	B	1471	385	B	2289	363	C



At the US 70/ Havelock Bypass interchange, all roadway segments and ramps would operate at LOS B or better.

<b>Table A9: 2012 and 2035 LOS - US 70 / Havelock Bypass - Alternative 2/ Alternative 3</b>													
<b>US 70/ Havelock Bypass Alternative 2</b>		2012 AM Build			2012 PM Build			2035 AM Build			2035 PM Build		
		Mainline Volume	Ramp Volume	LOS	Mainline Volume	Ramp Volume	LOS	Mainline Volume	Ramp Volume	LOS	Mainline Volume	Ramp Volume	LOS
Freeway (Hillock)	NB	607	-	A	764	-	A	1054	-	B	1325	-	B
	SB	764	-	A	607	-	A	1325	-	B	1054	-	B
Freeway (US 70)	EB1	1639	-	B	1126	-	B	2753	-	D	1888	-	C
	EB2	936	-	A	592	-	A	1548	-	B	977	-	A
	EB3	1009	-	A	653	-	A	1692	-	B	1097	-	B
	WB1	1126	-	B	1639	-	B	1888	-	C	2753	-	D
	WB2	592	-	A	936	-	A	977	-	A	1548	-	B
	WB3	653	-	A	1009	-	A	1097	-	B	1692	-	B
	EB Off	1639	703	B	1126	534	B	2753	1205	D	1888	911	C
Diverge	WB Off	653	61	A	1009	73	B	1097	120	B	1692	144	B
Merge	EB On	936	73	B	592	61	A	1548	144	B	977	120	B
	WB On	592	534	B	936	703	B	977	911	C	1548	1205	D

US 70 From New Bern to the Proposed Havelock Bypass, Craven and Jones Counties, FS-1202B

Table A 10: Construction and Right of Way Costs By Segment

	Segment	Description	Length (miles)	Construction Costs	Utility Relocation Costs	Relocations				Right of Way Costs	Total Costs
						Residences	Businesses	Other	Total		
Alternative 2	A	US 17 Bypass & US 70 Bypass from US 70 west of New Bern to the Trent River	5.1	\$45,300,000	\$100,000	2	0	0	2	\$2,100,000	\$47,500,000
	B	US 70 Bypass from the Trent River west of New Bern to near the intersection of Island Creek Road (SR 1004) and County Line Road (SR 1101)	1.6	\$80,700,000	\$100,000	0	0	0	0	\$1,600,000	\$82,400,000
	C	US 70 Bypass from near the intersection of Island Creek Road (SR 1004) and County Line Road (SR 1101) to 1.2 miles west of US 70	8.4	\$127,600,000	\$200,000	10	0	0	10	\$2,200,000	\$130,000,000
	E	US 70 Bypass from 1.2 miles west of existing US 70 to US 70 near Riverdale Road (SR 1108)	2.0	\$56,000,000	\$300,000	11	4	0	15	\$7,300,000	\$63,600,000
	F	US 70 Bypass from near Riverdale Road (SR 1108) to 0.6 mile west of Stately Pines Road (SR 1106)	2.0	\$1,600,000	\$300,000	0	0	0	0	\$0	\$1,900,000
	G	US 70 to freeway from 0.6 mile west of Stately Pines Road (SR 1106) to the Proposed Havelock Bypass (R-1015)	1.5	\$33,100,000	\$200,000	2	0	1	3	\$3,500,000	\$36,800,000
	Total A-G	Alternative 2 (Highway Segments A,B,C,E,F,G)	20.5	\$344,300,000	\$1,200,000	25	4	1	30	\$16,700,000	\$362,200,000
Alternative 3	A	US 17 Bypass & US 70 Bypass from US 70 west of New Bern to the Trent River	5.1	\$45,300,000	\$100,000	2	0	0	2	\$2,100,000	\$47,500,000
	B	US 70 Bypass from the Trent River west of New Bern to near the intersection of Island Creek Road (SR 1004) and County Line Road (SR 1101)	1.6	\$80,700,000	\$100,000	0	0	0	0	\$1,600,000	\$82,400,000
	D	US 70 Bypass from near the intersection of Island Creek Road (SR 1004) and County Line Road (SR 1101) to 1.2 miles west of US 70	8.7	\$132,100,000	\$100,000	0	0	0	0	\$1,900,000	\$134,100,000
	E	US 70 Bypass from 1.2 miles west of existing US 70 to US 70 near Riverdale Road (SR 1108)	2.0	\$56,000,000	\$300,000	11	4	0	15	\$7,300,000	\$63,600,000
	F	US 70 Bypass from near Riverdale Road (SR 1108) to 0.6 mile west of Stately Pines Road (SR 1106)	2.0	\$1,600,000	\$300,000	0	0	0	0	\$0	\$1,900,000
	G	US 70 to freeway from 0.6 mile west of Stately Pines Road (SR 1106) to the Proposed Havelock Bypass (R-1015)	1.5	\$33,100,000	\$200,000	2	0	1	3	\$3,500,000	\$36,800,000
	Total A-G	Alternative 3 (Highway Segments A,B,D,E,F,G)	20.8	\$348,800,000	\$1,100,000	15	4	1	20	\$16,400,000	\$366,300,000