

FEASIBILITY STUDY

City of Jacksonville

**Proposed Connector (Northwest Corridor)
from US 258/NC 24 to US 17**

Onslow County

Division 3

FS-0303C



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

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I. General Description

This feasibility study describes the proposed connector from US 258/NC 24 to US 17 utilizing sections of existing SR 2133 (Northwest Corridor Boulevard), SR 1470 (Western Boulevard), SR 1326 (Drummer Kellum Road), and SR 1324 (Ramsey Road), with the remainder on new location, a distance of approximately 9.9 miles. The project location is shown on Figure 1. As part of the study, a four-lane divided shoulder section on 200' right-of-way for each alternative was investigated.

This 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 cost, and to identify potential problems that may require consideration in the planning and design phases.

II. Background

The purpose of this project is to provide a new connector from US 258/NC 24 to US 17 as an alternative route to reduce traffic congestion along US 17. Onslow County supports this project.

SR 2133 (Northwest Corridor Boulevard) is designated as a rural local route in the North Carolina Statewide Functional Classification System and as a major thoroughfare in the 2001 Jacksonville Thoroughfare Plan. SR 2133 is currently a four-lane divided shoulder section with a 20 foot depressed grass median from US 258/NC 24 to Ormond Barbee Court and a two-lane shoulder section from Ormond Barbee Court to the end of construction. SR 2133 has a pavement width that varies from 26 to 60 feet from edge of pavement to edge of pavement. There is no development along SR 2133.

SR 1470 (Western Boulevard) is designated as an urban minor arterial in the North Carolina Statewide Functional Classification System and as a major thoroughfare in the 2001 Jacksonville Thoroughfare Plan. SR 1470 is currently a four-lane divided shoulder section with a 46 foot depressed grass median and a pavement width of 104 feet from edge of pavement to edge of pavement. The development along SR 1470 is predominately commercial.

SR 1324 (Ramsey Road) is designated as a rural local route in the North Carolina Statewide Functional Classification System and as a major thoroughfare in the 2001 Jacksonville Thoroughfare Plan. SR 1324 is currently a two-lane shoulder section with a pavement width of 20 feet from edge of pavement to edge of pavement. The development along SR 1324 is predominately rural residential.

SR 1326 (Drummer Kellum Road) is designated as a rural local route in the North Carolina Statewide Functional Classification System and as a major thoroughfare in the 2001 Jacksonville Thoroughfare Plan. SR 1326 is currently a two-lane shoulder section with a pavement width of 20 feet from edge of pavement to edge of pavement. The development along SR 1326 is predominately rural residential.

Transportation Improvement Program (TIP) project U-4904 is within the proposed project corridor. This project entails upgrading SR 1324 (Ramsey Road) from SR 1308 (Gum Branch Road) to SR 1327 (Kellum Loop Road). U-4904 is scheduled for right-of-way acquisition in 2009.

TIP project U-4007 is also within the of the proposed project corridor. This project entails widening US 17 to a freeway/expressway from the Jacksonville Bypass to SR 1326 (Drummer Kellum Road).

It is anticipated that TIP project U-2107 will impact the traffic volumes of the proposed connector. This project entails constructing the Jacksonville Bypass from US 17 South to US 17 North.

III. Traffic and Safety

The existing traffic signal at the intersection of SR 1308 (Gum Branch Road) and SR 1470 (Western Boulevard) will need to be modified or replaced with an interchange to accommodate the proposed improvements.

The estimated current year Average Daily Traffic (ADT) along the proposed connector ranges between 2,500 to 20,700 vehicles per day (vpd). For the design year 2035, the traffic volume along the proposed connector is estimated to range between 8,300 to 31,700 vpd. Truck traffic is estimated to make up approximately 3 to 9 percent of the daily traffic. In the 2035 design year, the preferred configuration of the connector will operate at a Level of Service (LOS) D or better.

Between 2004 and 2006, 72 crashes were reported along SR 1470 (Western Boulevard) from SR 1308 (Gum Branch Road) to SR 1336 (Henderson Drive). The crash rate for SR 1470 is 234.20 crashes per 100 million vehicle miles (crashes/100MVM) traveled. This rate is lower than the statewide rate of 307.14 crashes/100MVM for four-lane divided with partial control access urban secondary routes. There were 23 non-fatal injury crashes, 47 property damage only crashes, and

2 fatal crashes. The most prevalent types of crashes were Rear End (43%), Left Turn (20%), Angle (14%), Animal (10%), and Fixed Object (10%).

Between 2004 and 2006, 27 crashes were reported along SR 1324 (Ramsey Road) from Carolina Forest Boulevard to SR 1327 (Kellum Loop Road). The crash rate for SR 1324 is 458.75 crashes/100MVM traveled. This rate is higher than the statewide rate of 370.44 crashes/100MVM for two-lane undivided rural secondary routes. There were 11 non-fatal injury crashes, 16 property damage only crashes, and no fatal crashes. The most prevalent types of crashes were Fixed Object (48%), Left Turn (19%), and Animal (11%). These kinds of crashes are indicative of a narrow roadway with poor alignment and narrow shoulders. With the proposed widening, the likelihood of these types of crashes should be significantly reduced.

Between 2004 and 2006, 22 crashes were reported along SR 1326 (Drummer Kellum Road) from SR 1324 (Ramsey Road) to US 17. The crash rate for SR 1326 is 431.68 crashes/100MVM traveled. This rate is higher than the statewide rate of 370.44 crashes/100MVM for two-lane undivided rural secondary routes. There were 9 non-fatal injury crashes, 11 property damage only crashes, and 2 fatal crashes. The most prevalent types of crashes were Fixed Object (45%), Left Turn (14%), and Rear End (14%). These kinds of crashes are indicative of a narrow roadway with poor alignment and narrow shoulders. With the proposed widening, the likelihood of these types of crashes should be significantly reduced.

IV. Description of Alternatives

It is proposed to construct a new connector from US 258/NC 24 to US 17 utilizing existing sections of SR 2133 (Northwest Corridor Boulevard), SR 1470 (Western Boulevard), SR 1326 (Drummer Kellum Road), and SR 1324 (Ramsey Road), a distance of approximately 9.9 miles. The project alternatives are shown on Figure 1. For evaluation purposes the project was divided into two segments. The details of each are below:

SECTION 1: This segment along the proposed connector is from US 258/NC 24 to SR 1336 (Henderson Drive), a distance of approximately 6.0 miles. This segment utilizes the existing SR 2133 (Northwest Corridor Boulevard) and SR 1470 (Western Boulevard) with the remainder on new location. All options under Section 1 include a new bridge over the New River, the costs of which are included in all options below.

Cross-section: Four-lane divided shoulder section, 102' from edge of pavement to edge of pavement, with 12' lanes, a 46' depressed grass median, and 8' shoulders (4' of which are paved) on 200' right-of-way.

Option A: This option proposes an at-grade intersection of SR 1308 (Gum Branch Road) and SR 1470 (Western Boulevard).

With this proposed cross-section, it is anticipated that there will be zero (0) residences and zero (0) businesses relocated due to this project. The total cost of this alternative, including construction and right-of-way, is estimated to be \$60,300,000.

Right-of-way.....	\$1,100,000
<u>Construction.....</u>	<u>\$59,200,000</u>
Total Cost (Section 1, Option A).....	\$60,300,000

In addition to the construction of the proposed connector, the following intersection improvements are recommended and are included in the costs above:

- US 258/NC 24 and SR 2133 (Northwest Corridor Boulevard)
 - addition of southbound dual left turn lanes on US 258/NC 24
 - addition of westbound dual right turn lanes on SR 2133

- SR 1308 (Gum Branch Road) and SR 1470 (Western Boulevard)
 - addition of northbound left turn lane on SR 1308
 - addition of southbound dual left turn lanes and a single right turn lane on SR 1308
 - addition of westbound dual right turn lanes on SR 1470

Option B: This option proposes a diamond interchange with a loop in the southwest quadrant at the intersection of SR 1308 (Gum Branch Road) and SR 1470 (Western Boulevard).

With this proposed cross-section, it is anticipated that there will be zero (0) residences and eight (8) businesses relocated due to this project. The total cost of this alternative, including construction and right-of-way, is estimated to be \$99,200,000.

Right-of-way.....	\$26,800,000
<u>Construction.....</u>	<u>\$72,400,000</u>
Total Cost (Section 1, Option B).....	\$99,200,000

In addition to the construction of the proposed connector, the following roadway realignment is recommended and included in the costs above:

- Williamsburg Parkway
 - The new cross-section is a two-lane shoulder section with 12' lanes and 8' shoulders (4' of which are paved) on 100' right-of-way for a distance of approximately 0.9 miles.

The following intersection improvements are recommended and included in the costs shown above:

- US 258/NC 24 and SR 2133 (Northwest Corridor Boulevard)
 - addition of southbound dual left turn lanes on US 258/NC 24
 - addition of westbound dual right turn lanes on SR 2133

- SR 1470 (Western Boulevard) and proposed Williamsburg Parkway realignment
 - addition of a westbound left turn lane on SR 1470

SECTION 2: This segment along the proposed connector is from SR 1470 (Western Boulevard) to US 17.

Cross-section: Four-lane divided shoulder section, 79' from edge of pavement to edge of pavement, with 12' lanes, a 23' raised grass median, and 8' shoulders (4' of which are paved) on 200' right-of-way.

Option A: This option along the proposed connector is from SR 1470 to US 17, a distance of approximately 3.9 miles. This option utilizes the existing SR 1324 (Ramsey Road) with the remainder on new location.

With this proposed cross-section, it is anticipated that there will be thirty-eight (38) residences and three (3) businesses relocated due to this project. The total cost of this alternative, including construction and right-of-way, is estimated to be \$36,100,000.

Right-of-way.....	\$14,100,000
Construction.....	\$22,000,000
Total Cost (Section 2, Option A).....	\$36,100,000

In addition to the construction of the proposed connector, the following roadway realignments are recommended and included in the costs shown above:

- SR 1324 (Ramsey Road)
 - The new cross-section will be a two-lane shoulder section with 12' lanes and 8' shoulders (4' of which are paved) on 100' right-of-way for approximately 0.1 miles.

- SR 1327 (Kellum Loop Road)
 - The new cross-section will be a two-lane shoulder section with 12' lanes and 8' shoulders (4' of which are paved) on 100' right-of-way for approximately 0.2 miles.

The following intersection improvements are recommended and included in the costs shown above:

- SR 1336 (Henderson Drive) and SR 1470 (Western Boulevard)
 - addition of northbound dual right turn lanes on SR 1336
 - addition of southbound dual right turn lanes on the proposed connector
 - addition of eastbound dual left turn lanes on SR 1470
 - addition of westbound dual left turn lanes on SR 1470
- Proposed connector and the proposed realigned SR 1324 (Ramsey Road)
 - addition of an eastbound left turn lane on SR 1470
- SR 1326 (Drummer Kellum Road) and SR 1324
 - addition of a westbound left turn lane on SR 1324
- Catino Farms Lane and SR 1324
 - addition of an eastbound left turn lane on SR 1324
- Webster Lane and SR 1324
 - addition of a westbound left turn lane on SR 1324
- Proposed realigned SR 1327 (Kellum Loop Road) and SR 1324
 - addition of an eastbound left turn lane on SR 1324
- US 17 and SR 1324
 - addition of a northbound left turn lane on US 17
 - addition of a southbound right turn lane on US 17

Option B: This option along the proposed connector is from SR 1470 to SR 1324 (Ramsey Road), a distance of approximately 3.9 miles. This option utilizes the existing SR 1324 (Ramsey Road) with the remainder on new location.

With this proposed cross-section, it is anticipated that there will be thirty-eight (38) residences and four (4) businesses relocated due to this project. The total cost of this alternative, including construction and right-of-way, is estimated to be \$46,000,000.

Right-of-way.....	\$24,000,000
<u>Construction.....</u>	<u>\$22,000,000</u>
Total Cost (Section 2, Option B).....	\$46,000,000

In addition to the construction of the proposed connector, the following roadway realignments are recommended and included in the costs shown above:

- SR 1324 (Ramsey Road)
The new cross-section will be a two-lane shoulder section with 12' lanes and 8' shoulders (4' of which are paved) on 100' right-of-way for approximately 0.1 miles.

- SR 1327 (Kellum Loop Road)
The new cross-section will be a two-lane shoulder section with 12' lanes and 8' shoulders (4' of which are paved) on 100' right-of-way for approximately 0.7 miles.

The following intersection improvements are recommended and included in the costs shown above:

- SR 1470 (Western Boulevard) and the proposed connector
 - addition of an eastbound left turn lane on SR 1470

- Proposed connector and the proposed realigned SR 1324 (Ramsey Road)
 - addition of a northbound left turn lane on the proposed connector

- SR 1326 (Drummer Kellum Road) and SR 1324
 - addition of a westbound left turn lane on SR 1324

- Catino Farms Lane and SR 1324
 - addition of an eastbound left turn lane on SR 1324

- Webster Lane and SR 1324
 - addition of a westbound left turn lane on SR 1324

- The proposed realigned SR 1327 (Kellum Loop Road) and SR 1324
 - addition of an eastbound left turn lane on SR 1324

- US 17 and the proposed connector
 - addition of a northbound left turn lane on US 17
 - addition of a southbound right turn lane on US 17

Option C: This option along the proposed connector is from SR 1470 (Western Boulevard) to the terminus of TIP# U-4007, a distance of approximately 2.8 miles. This option utilizes the existing SR 1326 (Drummer Kellum Road) with the remainder on new location.

With this proposed cross-section, it is anticipated that there will be twenty (20) residences and four (4) businesses relocated due to this project. The total cost of this alternative, including construction and right-of-way, is estimated to be \$33,900,000.

Right-of-way.....	\$19,800,000
<u>Construction.....</u>	<u>\$14,100,000</u>
Total Cost (Section 2, Option C).....	\$33,900,000

In addition to the construction of the proposed connector, the following roadway realignment is recommended and included in the costs shown above:

- SR 1326 (Drummer Kellum Road)
The new cross-section will be a two-lane shoulder section with 12' lanes and 8' shoulders (4' of which are paved) on 100' right-of-way for approximately 0.1 miles.

The following intersection improvements are recommended and included in the costs shown above:

- SR 1470 (Western Boulevard) and the proposed connector
 - addition of an eastbound left turn lane on SR 1470
- SR 1326 (Drummer Kellum Road) and the proposed connector
 - addition of an eastbound left turn lane on the proposed connector
- SR 1326 (Drummer Kellum Road) and Osage
 - addition of an eastbound left turn lane on SR 1326

The following roadway extension is optional and is not included in the costs above:

Proposed Western Parkway Extension: This proposed roadway extension is from SR 1470 (Western Boulevard) to the proposed connector, a distance of approximately 0.9 miles.

Cross-section: Four-lane divided shoulder section, 79' from edge of pavement to edge of pavement, with 12' lanes, a 23' raised grass median, and 8' shoulders (4' of which are paved) on 200' right-of-way.

Right-of-way.....	\$5,000,000
<u>Construction.....</u>	<u>\$5,500,000</u>
Total Cost (Proposed Western Parkway Extension).....	\$10,500,000

In addition to the construction of the proposed Western Parkway Extension, the following roadway realignment is recommended and included in the costs shown above:

- Gateway North Drive
The new cross-section will be a two-lane shoulder section with 12' lanes and 8' shoulders (4' of which are paved) on 100' right-of-way for approximately 0.2 miles.

V. Community Issues

A detailed community impact investigation was not conducted for this feasibility study, however possible impacts to Jacksonville Commons Elementary School and Onslow County Wetlands Restoration Program land are anticipated.

Maps at the Survey and Planning Branch of the North Carolina State Historic Preservation Office were used to determine if any historic properties on the National Register of Historic Places (NRHP) or state study lists exist within the proposed project corridor. The Nick Burton House is located in the vicinity of the intersection SR 1212 (Pony Farm Road) and US 258/NC 24 at the project beginning. No impacts are anticipated with this project.

VI. Natural Environment Issues

The following is a preliminary review of environmental issues that might have a potential impact to the project. The information obtained for the environmental screening is from a Geographic Information System (GIS) database. The purpose of the environmental screening is to identify potential environmental issues early in the process.

Stream Classification

The proposed project corridor is located in the White Oak River Basin. The project corridor crosses the New River and Wolf Creek, which have a stream classification of C NSW. These water bodies will likely need to be surveyed and have the appropriate coordination with the North Carolina Department of Environment and Natural Resources (NCDENR) and the U.S. Army Corps of Engineers (USACE) during any environmental document study.

Wetlands

The proposed project crosses wetlands associated with the New River and Wolf Creek and several jurisdictional wetland areas. Permitting with the U.S. Army Corps of Engineers (USACE) will likely need to be obtained before construction of the project, and appropriate mitigation measures should be taken if deemed necessary.

Threatened and Endangered Species

The American alligator, shellfish strata, and anadromous fish spawn area were identified in the project corridor. It is anticipated that the New River Swamps and Marshes, a significant Natural Heritage Area, will be impacted.

VII. Recommendations

SECTION 1 – OPTION A: It was found that the four-lane divided shoulder section with an at-grade intersection at SR 1308 (Gum Branch Road) and SR 1470 (Western Boulevard) would not be able to accommodate design year 2035 traffic volumes with an acceptable level of service. If this alternative were built as an interim improvement for the interchange, it would provide acceptable operations through year 2030.

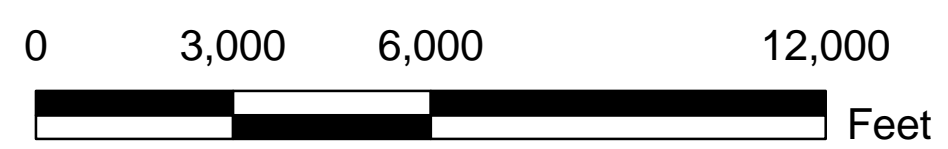
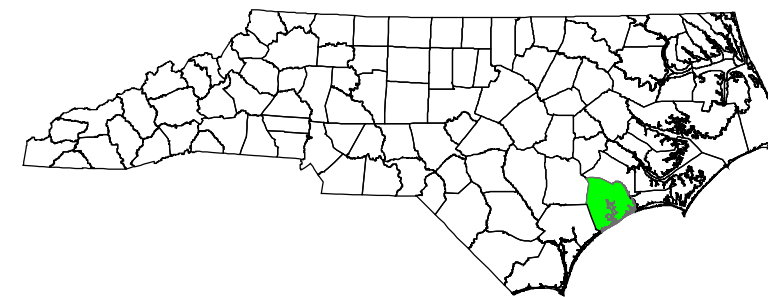
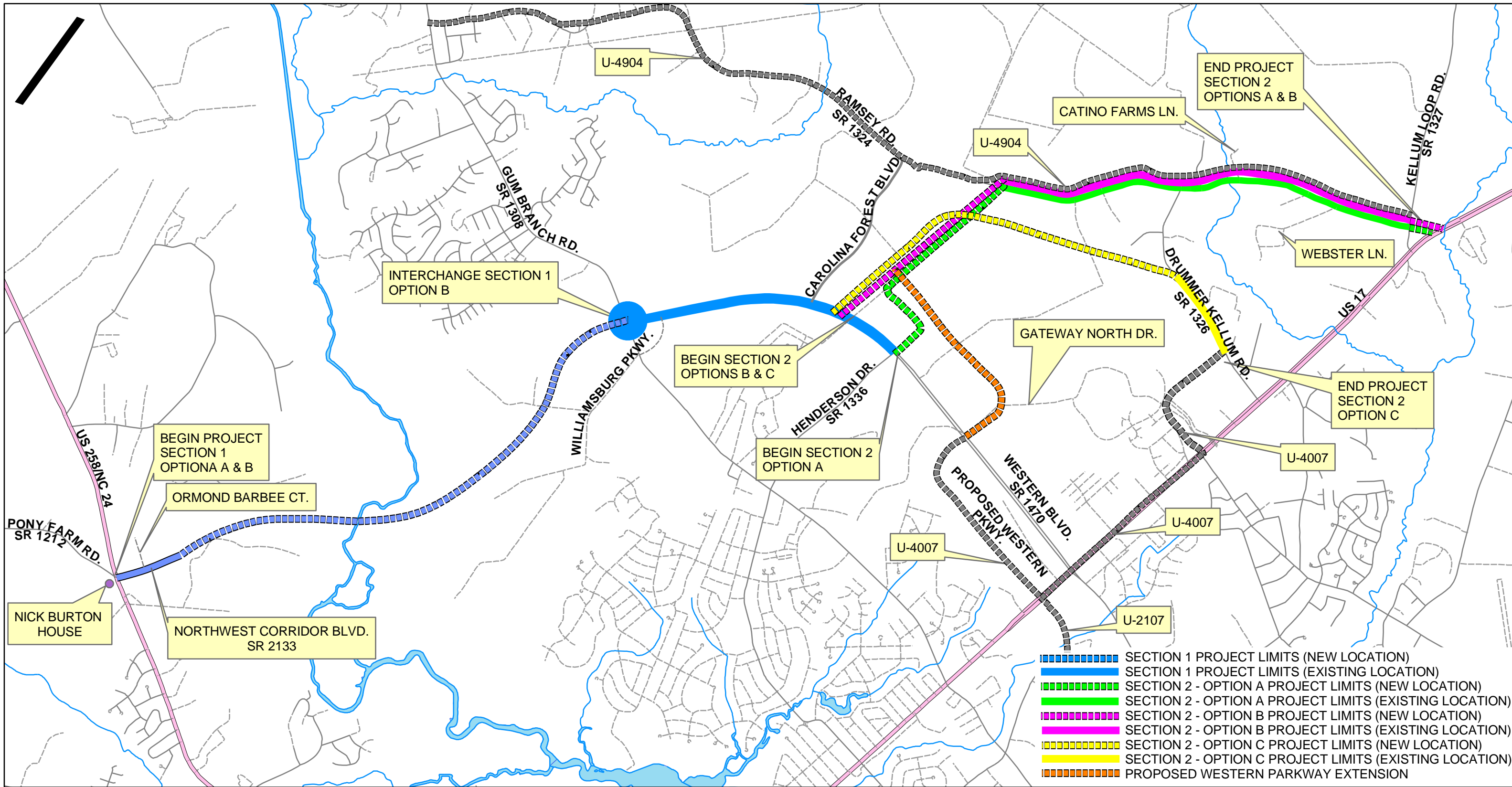
SECTION 1 – OPTION B: It was found that the four-lane divided shoulder section with a diamond interchange with a loop in the southwest quadrant at the intersection of SR 1308 (Gum Branch Road) and SR 1470 (Western Boulevard) would be able to accommodate design year 2035 traffic volumes with an acceptable level of service. **Because of this factor listed above, Option B would be the preferred option for Section 1.**

SECTION 2 – OPTIONS A, B, & C: It was found that the four-lane divided shoulder section (Options A, B, & C) would be able to accommodate design year 2035 traffic volumes with an acceptable level of service. **At this time, Option B would be the preferred option for Section 2.** A final decision regarding the actual alignment can be made during later planning and design stages.

The total combined estimated cost for the preferred alternatives in Section 1 (Option B), Section 2 (Option B), a new bridge over the New River, and all recommended Y-line improvements is \$145,200,000. It is anticipated that a total of thirty-eight (38) residences and twelve (12) businesses will be relocated along the proposed connector. Please see Table 1 for a comprehensive breakdown of these alternatives and costs.

Section/Alternative	Right-of-way Cost	Construction Cost	Total Cost	Residences Relocated	Businesses Relocated
Section 1					
Option A	\$1,100,000	\$59,200,000	\$60,300,000	0	0
Option B	\$26,800,000	\$72,400,000	\$99,200,000	0	8
Section 2					
Option A	\$14,100,000	\$22,000,000	\$36,100,000	38	3
Option B	\$24,000,000	\$22,000,000	\$46,000,000	38	4
Option C	\$19,800,000	\$14,100,000	\$33,900,000	20	4
Western Parkway Extension	\$5,000,000	\$5,500,000	\$10,500,000	0	0
Total Project (preferred alternatives) Sect. 1-Opt. B, Sect. 2-Opt. B	\$50,800,000	\$94,400,000	\$145,200,000	38	12

Table 1: Project Cost



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 PROGRAM DEVELOPMENT BRANCH

FS-0303C

PROPOSED CONNECTOR (NORTHWEST CORRIDOR)
 FROM US 258-NC 24 TO US 17

JACKSONVILLE, ONSLOW COUNTY

DIVISION 3

FIGURE 1

- SECTION 1 PROJECT LIMITS (NEW LOCATION)
- SECTION 1 PROJECT LIMITS (EXISTING LOCATION)
- SECTION 2 - OPTION A PROJECT LIMITS (NEW LOCATION)
- SECTION 2 - OPTION A PROJECT LIMITS (EXISTING LOCATION)
- SECTION 2 - OPTION B PROJECT LIMITS (NEW LOCATION)
- SECTION 2 - OPTION B PROJECT LIMITS (EXISTING LOCATION)
- SECTION 2 - OPTION C PROJECT LIMITS (NEW LOCATION)
- SECTION 2 - OPTION C PROJECT LIMITS (EXISTING LOCATION)
- PROPOSED WESTERN PARKWAY EXTENSION