

**REPORT TO CONGRESS**  
**ON THE**  
**14<sup>TH</sup> AMENDMENT HIGHWAY CORRIDOR**

*A Report to Congress as directed by Section 1927 of the “Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).”*

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## **EXECUTIVE SUMMARY**

This Report to Congress presents the major findings associated with the estimated costs and steps necessary to designate and construct a continuous route for the 14<sup>th</sup> Amendment Highway Corridor, linking Natchez, Mississippi; Montgomery, Alabama; and Columbus, Macon and Augusta, Georgia, and is submitted pursuant to Section 1927 of Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

The 14<sup>th</sup> Amendment Highway, as defined by the above listed cities that constitute the statutorily designated service points, is over 600 miles long and passes through predominantly rural sections of Mississippi, Alabama, and Georgia. Although several major Interstate highways pass through the corridor, they are all generally oriented in a north-south direction; there is no single designated east-west Interstate or other major highway that directly connects all five cities.

Five different conceptual corridor alignment/design alternatives were evaluated for the 14<sup>th</sup> Amendment Highway, ranging from one that would utilize existing highways to the maximum extent feasible to one that would be composed of roads built to Interstate design standards involving substantial amounts of new location roadway construction on new rights of way. The alternatives are defined along two dimensions – highway design level and route alignment. An alternative may utilize more than one design level for different parts of its alignment. Conversely, two alternatives may follow the same route alignment, but have different costs because their design levels differ.

In identifying alternative conceptual alignments for the 14<sup>th</sup> Amendment Highway, priority consideration was given to utilizing existing highways to the maximum extent possible. The study identified several significant highway projects located in the Corridor that are currently either under construction or designated in specific State Transportation Improvement Programs (STIP). All planning and construction costs associated with these projects were excluded from the cost estimates. These highway projects include:

- I-85 Extension in Alabama,
- Montgomery Outer Loop in Alabama,
- Gordon Bypass (Fall Line Freeway) in Georgia,
- Milledgeville Bypass (Fall Line Freeway) in Georgia, and
- Widening of SR 243 between the Gordon and Milledgeville Bypasses in Georgia

Figure 1 illustrates the general alignments for the five alternatives.



Figure 1. 14<sup>th</sup> Amendment Highway - Alternative Alignments

Alternative 1 represents the all Interstate design. It would require upgrading approximately 97 miles of existing roads to full Interstate design standards, and the construction of over 178 miles of additional four-lane limited access highways built to Interstate design standards on new rights-of-way (ROW). This would require a total of approximately 275 miles of new construction or the upgrading of existing routes, with the remaining 325 miles of the corridor representing the use of existing Interstate highway facilities.

Alternative 2 utilizes existing highways to the maximum extent feasible. It would require no significant amounts of new ROW acquisition, but would upgrade approximately 17 miles of existing two-lane rural roads to provide a basic four-lane highway cross section. Some sections of this alternative, primarily through small urban areas, would remain as urban arterials with no access control and the use of a center, two-way left-turn lane instead of a raised traffic median.

Alternative 3 would upgrade existing roads to current State department of transportation (DOT) and American Association of State Highway and Transportation Officials highway design standards where practical, with a minimum of two travel lanes in each direction, a variable width center median, and grade-separated interchanges at all intersections with the United States (U.S.) and State numbered routes. It would require construction of approximately 4 miles of new highway bypass routes on new ROW, and would upgrade approximately 18 miles of existing two-lane roads to provide a basic four-lane highway cross section.

Alternatives 4 and 5 represent two different conceptual corridor alignments between Natchez, Mississippi, and Montgomery, Alabama. Both options would follow the same alignment as Alternative 3 from Montgomery to Augusta, Georgia. The alignment of Alternative 4 would follow US 84 from Natchez to its intersection with I-65 near Evergreen, Alabama. It would require construction of approximately 4 miles of new highway on new ROW, and would upgrade approximately 118 miles of existing two-lane roads, primarily along portions of US 84 in Alabama. Alternative 5 also follows US 84 from Natchez to near Grove Hill, Alabama, but then would construct a new highway on its own ROW between Grove Hill and I-65, near Greenville, Alabama. This alternative would require construction of approximately 69 miles of new highway and would upgrade 65 miles of existing two-lane roads.

Costs for each alternative were calculated using standard Federal Highway Administration (FHWA) cost estimating procedures and a consistent set of assumptions with respect to ROW requirements, design specifications, and construction techniques. Table 1 presents the resulting estimated cost range for each of these conceptual corridor level alternatives.

**Table 1. Total Project Costs by Alternative**

<b>Alternative</b>	<b>Total Estimated Cost (\$ Million)</b>
Alternative 1 (All Interstate)	\$6,612 - \$7,656
Alternative 2 (Maximum Use of Existing Highways)	\$296 - \$343
Alternative 3 (Highway Utilizing US 84 to I-59 at Laurel, MS)	\$1,402 - \$1,623
Alternative 4 (Highway Utilizing US 84 to I-65 at Evergreen, AL)*	\$2,999 - \$3,473
Alternative 5 (Highway Utilizing US 84 to I-65 at Greenville, AL)*	\$3,322 - \$3,847

Note: Alternatives 4 and 5 follow the same alignment as Alternative 3 from Montgomery to Augusta.

Alternative 1, which would construct the entire 14<sup>th</sup> Amendment Highway Corridor to full Interstate highway design standards, is estimated to cost between \$6.6 - \$7.6 billion, more than double the cost of the next most expensive alternative. By contrast, Alternative 2, which would utilize existing highways to the maximum extent practical, is estimated to cost between \$296 - \$343 million, or about 5 percent of the cost of an all Interstate design. Alternative 2 would still require upgrades to some existing two-lane sections of rural roads, but would leave some sections through urban areas as four-lane urban arterials. Alternatives 3, 4, and 5 would provide additional improvements to existing highways, including grade-separated interchanges on rural sections, and construction of bypass routes around some urban areas. Estimated costs for these improvements range from \$1.4 - \$3.8 billion.

The steps required to construct any of the alternatives for the 14<sup>th</sup> Amendment Highway are similar. Alternatives could (and most likely would) be broken out into smaller projects such as new roadway alignments, new interchanges, widening of existing roadways, or intersection improvements. Any project involving the potential expenditure of Federal-aid highway funds in

association with its planning, design, or construction would need to be included in each State's long-range transportation plan (LRTP) and STIP. Projects which pass through any of the eight metropolitan planning organization (MPO) planning areas along the corridor would also have to be included in the respective MPO's long-range metropolitan transportation plan and transportation improvement program (TIP).

Each project would have to obtain a variety of required Federal, State and local approvals. The number and complexity of the approval process would vary with each project, depending on such factors as the amount and location of new ROW; proximity of the highway improvements to environmentally sensitive areas such as wetlands, parklands, other protected areas, historic and cultural sites, and navigable waterways; and potential impacts of the highway improvements on traffic volumes, noise levels, mobile source air quality, etc. Approved projects would be designed, engineered, and constructed to Federal Standards and according to the contractual procedures established by each State DOT.

This study was conducted to conform to the specific requirements of the statute which focused on the definition of cost estimation and identifying those general steps required to complete construction of a single continuous route to link the specified communities. If this project were to move forward, additional studies including travel demand forecasts, analyses of economic development impacts, environmental impacts (where new ROW is involved or major physical changes to the existing facilities are required), safety improvements, and benefit/cost analyses would be required to support the approval processes described above. The additional studies are discussed in a separate report to FHWA on recommendations for selected sub-studies for the 14<sup>th</sup> Amendment Highway.

Stakeholder outreach for this study was conducted primarily through an Expert Working Group (EWG) which consisted of 21 representatives from interested public agencies in the corridors including State DOTs, MPOs, and Federal transportation and resource agencies. The EWG met four times during the course of the study and reviewed and commented on all study material. Briefings were conducted by the study team at meetings held in each of the five designated study cities, plus the Auburn-Opelika urbanized area in Alabama, and a publicly available Webcast was conducted on June 8, 2011.

Seven technical memoranda were produced in support of the study. They can be found at the project Web site at [http://www.fhwa.dot.gov/planning/section\\_1927/14th\\_amendment\\_highway/](http://www.fhwa.dot.gov/planning/section_1927/14th_amendment_highway/).

Section 1927 also authorized a second study to describe the steps and estimated funding necessary to designate and construct a route for the proposed 3<sup>rd</sup> Infantry Division Highway from Savannah, Georgia to Knoxville, Tennessee, by way of Augusta, Georgia. This second study is the subject of a separate Report to Congress.

## **CHAPTER 1: BACKGROUND**

### **Congressional Request**

Section 1927 of SAFETEA-LU<sup>1</sup> authorized funding and directed the Secretary of Transportation to carry out a study and submit to the appropriate committees in Congress a report that describes the steps and estimated funding necessary to construct a route for the proposed 14<sup>th</sup> Amendment Highway, linking Augusta, Macon, and Columbus, Georgia; Montgomery, Alabama; and Natchez, Mississippi. No additional direction or information was provided, either in Section 1927 or in congressional committee reports pertaining to SAFETEA-LU, except to note that in Georgia, the 14<sup>th</sup> Amendment Highway had been formerly designated as the Fall Line Freeway.

Section 1927 of SAFETEA-LU also authorized a second study to describe the steps and estimated funding necessary to designate and construct a route for the proposed 3<sup>rd</sup> Infantry Division Highway from Savannah, Georgia, to Knoxville, Tennessee, by way of Augusta, Georgia. This second study is the subject of a separate Report to Congress.

### **Study Objectives**

In June 2010, the FHWA awarded a contract to a team of consultants led by Cambridge Systematics, Inc. to study and produce a Report to Congress on the steps and estimated funding necessary to designate and construct a route for the 14<sup>th</sup> Amendment Highway. The Statement of Work (SOW) specified several intermediate tasks to ensure that the cost estimates reflected a reasonable range of alternative route alignments and design levels, and that Federal, State and local stakeholders within the study area had sufficient opportunity to provide input throughout the course of the study. In particular, the SOW called for:

- Establishment and population of a public Web site, maintained by FHWA, to post information about the status of the study, serve as a repository for technical reports and other material related to the study, and provides a mechanism for public comment.<sup>2</sup>
- The establishment and subsequent maintenance of an EWG<sup>3</sup> comprised of representatives from Federal and non-Federal transportation planning and resource agencies located within the study area, to provide local insight and review of key intermediate products. It was anticipated that the expert working group would meet approximately once every 3 months throughout the duration of the study.

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<sup>1</sup> P.L. 109-59, §1927 – August 10, 2005

<sup>2</sup> [http://www.fhwa.dot.gov/planning/section\\_1927/14th\\_amendment\\_highway/](http://www.fhwa.dot.gov/planning/section_1927/14th_amendment_highway/)

<sup>3</sup> EWG members along with minutes and presentation material from each of the EWG meetings are posted at: [http://www.fhwa.dot.gov/planning/section\\_1927/14th\\_amendment\\_highway/expert\\_working\\_group/](http://www.fhwa.dot.gov/planning/section_1927/14th_amendment_highway/expert_working_group/).

- Development and implementation of a Public Involvement Plan,<sup>4</sup> to provide outreach to the general public and other stakeholder groups within the study area, and to solicit feedback from the stakeholder community regarding alternative highway alignments, design levels, and other local factors that might impact cost estimates.

The 14<sup>th</sup> Amendment Highway Corridor was initially divided into four segments, where each segment represented that portion of the corridor connecting two of the five cities explicitly identified in the statutory language. Segments were identified by their endpoint cities, specifically: Natchez – Montgomery, Montgomery – Columbus, Columbus – Macon, and Macon – Augusta.

To ensure that the cost estimates for the 14<sup>th</sup> Amendment Highway reflected a reasonable range of potential highway design alternatives, the SOW specified that at least four alternative alignment/design levels should be investigated. Among those alternatives, at least one alignment/design level should be constructed to Interstate Highway System design standards, and at least one alignment/design level should use existing highways to the maximum extent possible.

The SOW further specified that the cost estimates for each highway alignment should be based on FHWA's Cost Estimating Guidance<sup>5</sup> for major projects, and should be validated based on supplemental information from the appropriate transportation agencies in the three States through which the 14<sup>th</sup> Amendment Highway Corridor passes. Additionally, the costs for each alternative alignment/design level should include estimates for each of the following major components:

- a. Environmental Documentation
- b. Preliminary Engineering
- c. ROW Acquisition
- d. Mainline Construction
- e. Structures
- f. Interchanges and Intersections
- g. Environmental Mitigation, Erosion Control, Wetland Management, Landscaping
- h. Traffic Control during Construction
- i. Intelligent Transportation Systems (ITS)
- j. Utility Work
- k. Other

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<sup>4</sup> [\*14<sup>th</sup> Amendment Highway Study – Task 6: Public Involvement Recommendations\*](#), Technical Memorandum, prepared by Cambridge Systematics, Inc., January 2011.

<sup>5</sup> [\*Major Project Program Cost Estimating Guidance\*](#), FHWA, January 2007.

## **Report Scope and Content**

This Report to Congress presents findings on the estimated costs and steps necessary to designate and construct a route for the 14<sup>th</sup> Amendment Highway Corridor, linking Natchez, Mississippi; Montgomery, Alabama; and Columbus, Macon and Augusta, Georgia, and is submitted pursuant to Section 1927, Subsection (1) of SAFETEA-LU. Chapter 2 presents a general description of the corridor study area, including geographic, topographic, and environmental features, the socio-demographic and economic characteristics of the population, and identification of the State and local agencies with responsibility for transportation planning and project development within the corridor. Chapter 3 presents key assumptions used in the study to define alternative highway alignment and design levels and to estimate their costs. Chapter 4 describes each of the alternative alignments/design levels identified for each segment and presents a summary of the estimated costs for each alternative. Chapter 5 presents cost estimates for the entire corridor by combining specific segment alternatives, and includes descriptions of the necessary steps and the approximate amount of time that might be required to plan and construct each alternative. Chapter 6 describes the stakeholder and public outreach activities conducted in support of the study.

## CHAPTER 2: CHARACTERISTICS OF THE CORRIDOR

### Study Area Definition

The 14<sup>th</sup> Amendment Highway Corridor, as designated in Section 1927 of SAFETEA-LU, passes through three States – Mississippi, Alabama, and Georgia, and connects five major cities – Natchez, Mississippi; Montgomery, Alabama; and Columbus, Macon, and Augusta, Georgia. Figure 2 shows the Corridor and the major cities it passes through or near.

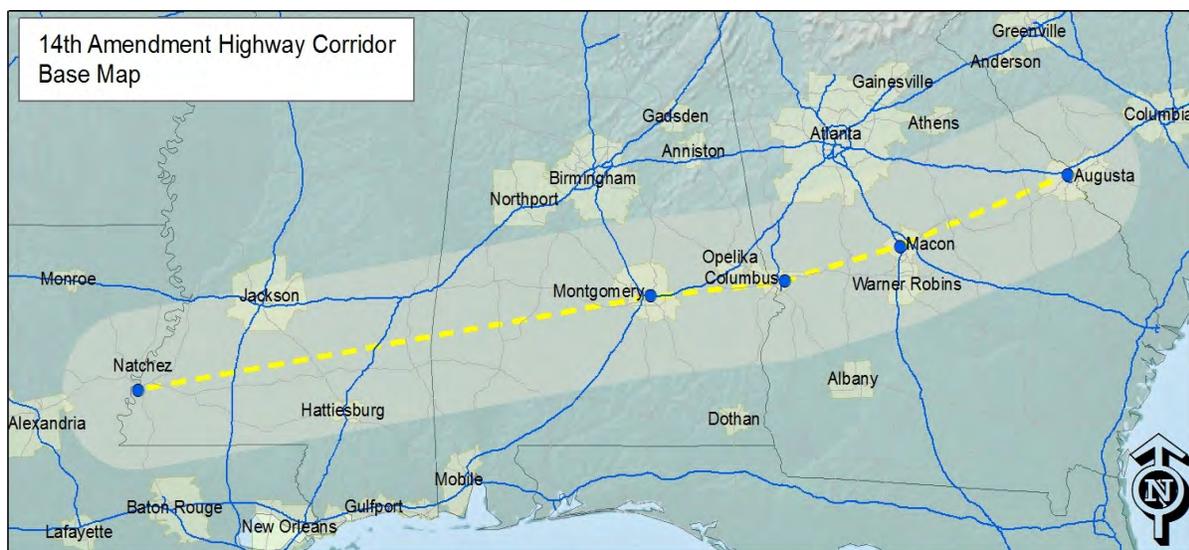


Figure 2. 14<sup>th</sup> Amendment Highway Corridor Study Area

The minimum, straight line distance connecting all five specified cities, as shown in Figure 2, is approximately 560 miles. The current shortest route between the five cities using existing highways is approximately 660 miles, and requires approximately 11 hours driving time at currently posted speed limits.

The study area for the 14<sup>th</sup> Amendment Highway Corridor was defined so as to allow potential route alignments to be considered within 50 miles on either side of the minimum distance, straight lines connecting the five specified cities. This defined study area encompasses nearly 64,000 square miles.

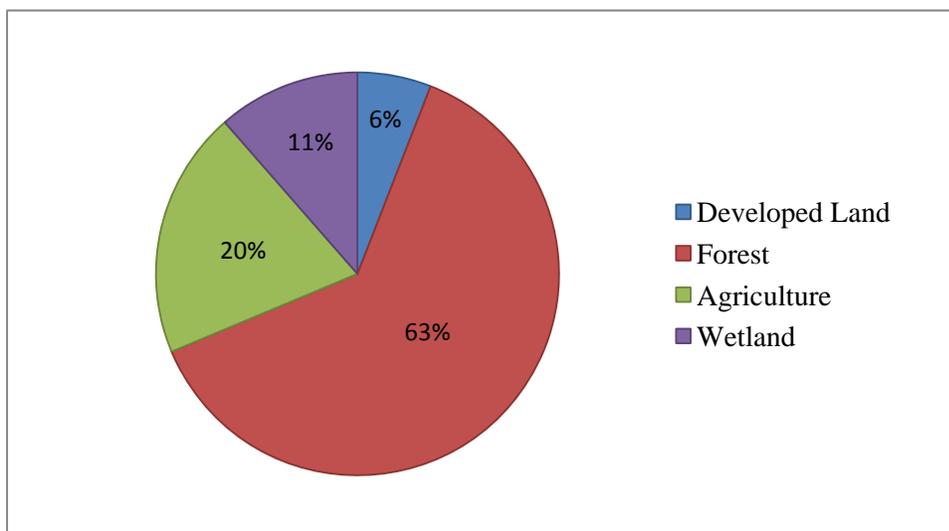
In addition to the five cities identified in Section 1927, the study area includes four other urbanized areas – Jackson, Mississippi; Hattiesburg, Mississippi; Auburn-Opelika, Alabama; and Warner-Robins, Georgia. While no special consideration was given to ensuring that alternative alignments pass through or near these other cities, several of the alignments would in fact service these cities and their surrounding regions.

### Topography and Natural Features

The entire study area for the 14<sup>th</sup> Amendment Highway Corridor lies within the South Atlantic and Gulf Coastal Plains. The Coastal Plain is characterized by flat or gently rolling terrain, significant areas of wetland, and rich, fertile soil suitable for agriculture. The mean elevation across the study area is 340 feet, and nearly 60 percent of the study area is less than 500 feet above sea level.

The study area is crossed by numerous streams and rivers, all of which flow predominantly north to south. Major rivers that cross the entire width of the corridor include the Pearl, Leaf and Chickasawhay Rivers in Mississippi; the Tombigbee and Alabama Rivers in Alabama; and the Chattahoochee, Flint, Ocmulgee, Oconee, and Ogeechee Rivers in Georgia. The Mississippi River, which forms the boundary between Louisiana and Mississippi at Natchez effectively, defines the western edge of the study area.

Figure 3 shows the distribution of land cover in the 14<sup>th</sup> Amendment Highway Corridor, based



**Figure 3. Land Cover Distribution in the 14<sup>th</sup> Amendment Highway Corridor**

on imagery data from the National Land Cover Database (NLCD).<sup>6</sup> Only 6 percent of the land cover in the study area is categorized as developed land, which includes residential, commercial and industrial buildings, paved roads, parking areas, etc. Nearly two-thirds of the study area is forested, and another 20 percent is in agriculture. Slightly over 10 percent of the study area land mass is categorized as wetland.

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<sup>6</sup> For additional information about the NLCD, refer to the Multi-Resolution Land Characteristics Consortium Web site at <http://www.mrlc.gov>.

## Protected Lands

Protected lands comprise about 15 percent of the total acreage within the study area. These lands include National and State forests, National and State Parks, Historic sites, National Wildlife Refuges, State recreational areas, and military installations. Although most of the protected lands are associated with forest or wetland land cover, some protected lands such as parts of military installations and historic sites may be categorized as developed land. Figure 4 maps the distribution of protected lands within the study area.

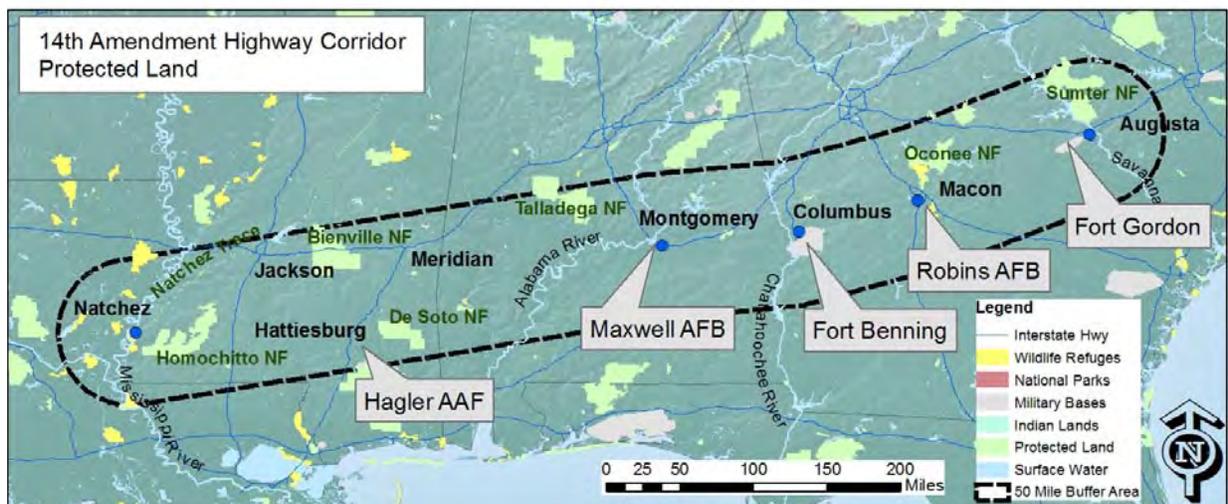


Figure 4. 14<sup>th</sup> Amendment Highway Corridor Protected Land

While any specific alternative alignments for the 14<sup>th</sup> Amendment Highway would attempt to avoid crossing these protected lands if at all practical, several areas may be either too large or too close to one of the five designated cities to be avoided completely. These areas include the Homochitto, Bienville, DeSoto, Talladega, and Oconee National Forests; the Natchez Trace Parkway, the Ocmulgee National Monument, the Bond Swamp National Wildlife Refuge; and the Fort Benning, Fort Gordon, and Robins Air Force Base military installations.

## Demographics and Economics

According to the 2010 decennial Census, the total population living within the study area is just under 3.9 million people, with approximately one-third of them living in one of the eight defined urbanized areas. The population density outside of the urbanized areas averages less than 50 people per square mile. Figure 5 maps the distribution of population across the study area.

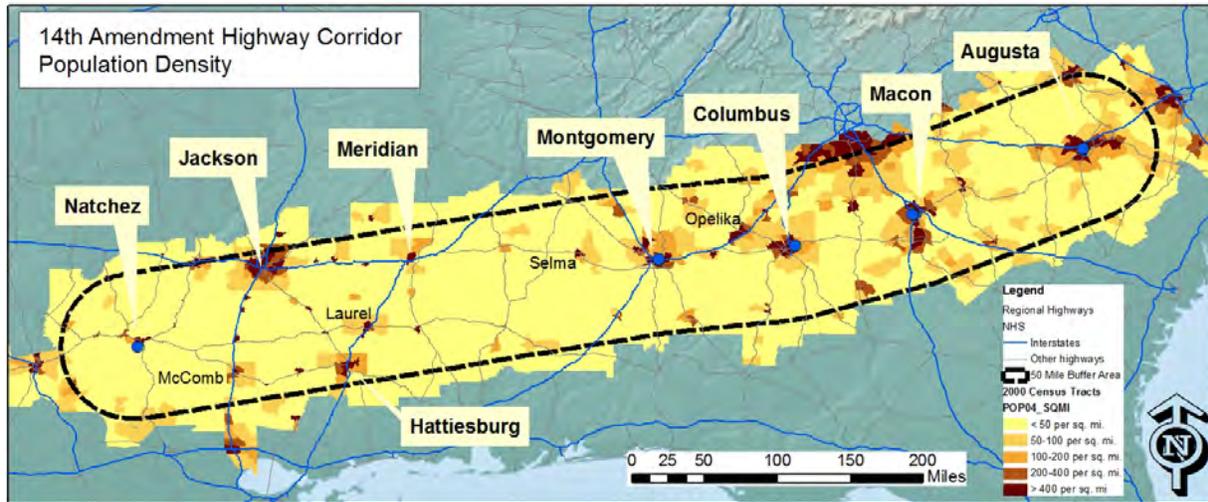


Figure 5. 14<sup>th</sup> Amendment Highway Corridor Population Density

Approximately 54 percent of the total population in the study area is non-Hispanic white, 43 percent is African American, and the remaining 3 percent is comprised of other races and ethnicities. Figure 6 maps the distribution of non-white population in the study area.

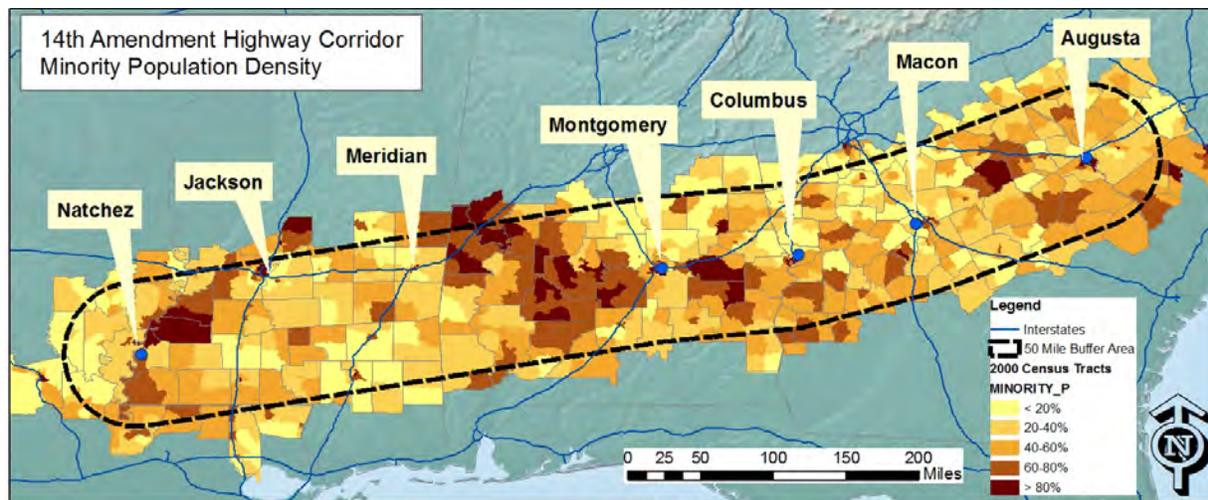


Figure 6. 14<sup>th</sup> Amendment Highway Corridor Minority Population Density

The median household income within the study area (based on the 2009 Census estimates<sup>7</sup>) is \$38,658 – approximately 22 percent below the national median household income. On a State by State comparison, the median household income within the study area is approximately 11 percent below the statewide median household income in Georgia, 3 percent below the statewide median income in Alabama, but 10 percent above the statewide median household income in Mississippi.

Similarly, the share of population within the study area living below the poverty level<sup>8</sup> is estimated to be approximately 19.7 percent, about 37 percent higher than the nationwide average for 2009. On a State by State comparison, the share of population living below the poverty level in the study area is lower than the statewide average in Mississippi (21.8 percent), but greater than the statewide average in Alabama (17.5 percent) and Georgia (16.6 percent).

### Planning Agencies

Each of the eight defined urbanized areas located in the study area is served by an MPO. The MPO has primary responsibility for transportation planning and selection of transportation improvement projects within its own metropolitan planning area boundary. Each of the three State DOTs is responsible for transportation planning and project selection outside of the metropolitan planning areas, generally in coordination with regional councils or planning and development districts which provide various planning services for member counties. Figure 7 shows the locations of all MPOs and planning districts serving the study area.

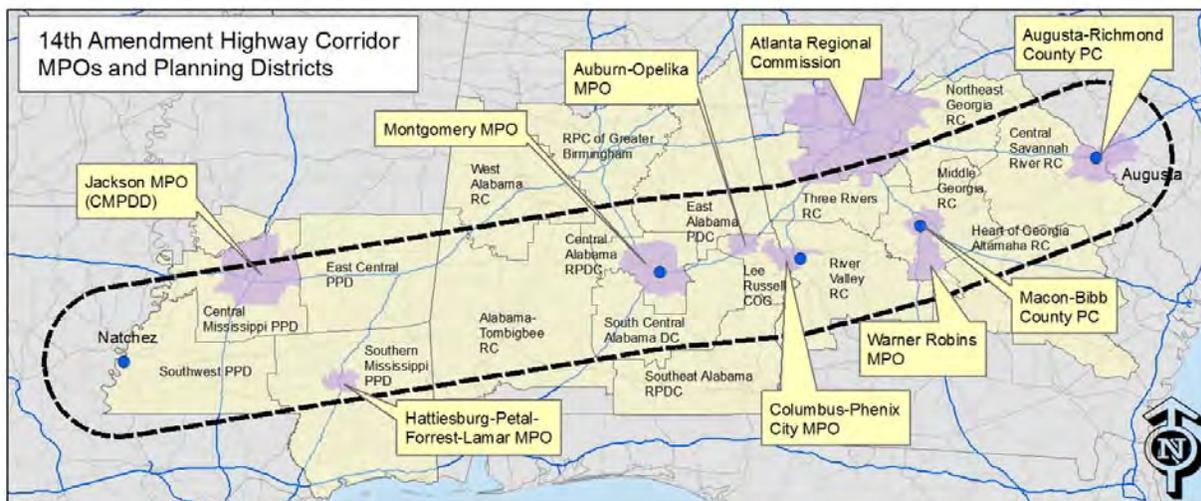


Figure 7. 14<sup>th</sup> Amendment Highway Corridor MPOs and Planning Districts

<sup>7</sup> 2009 is the most recent year for which demographic data, other than population and race/ethnicity, is currently available.

<sup>8</sup> Defined as \$22,050 annual income for a family of four in 2009.

## CHAPTER 3: HIGHWAY DESIGN AND COST ASSUMPTIONS

Alternatives for each segment of the 14<sup>th</sup> Amendment Highway are defined along two dimensions – highway design level and route alignment. An alternative may utilize more than one design level for different parts of its alignment. Additionally, two alternatives may follow the same route alignment, but have different costs because their design levels differ.

### Highway Design Levels

Four highway design levels were defined for the 14<sup>th</sup> Amendment Highway. These design levels are described below, and are specifically referenced in the descriptions of each highway alternative presented in Chapter 4. It is important to note that the standards discussed below apply to both rural and urban areas. In urban areas, design variances may be necessary where required by cost, ROW, engineering or environmental constraints, and/or public perception/input.

#### *Interstate Standard Design Level*

This design level would utilize existing Interstate routes located within the Corridor, and either upgrade existing U.S. and State routes or construct new roadways built to Interstate design standards on separate ROW in order to create the 14<sup>th</sup> Amendment Highway. Each new or upgraded roadway would meet the specified minimum design standard for an Interstate highway facility. In Mississippi, the typical minimum standard consists of two 12-foot travel lanes in each direction with a minimum 40-foot median, 8-foot inside shoulders and 10-foot outside shoulders. In Alabama, the typical minimum standard consists of two 12-foot travel lanes in each direction with a concrete barrier median, 14-foot, 10-inch inside shoulders and 14-foot outside shoulders. In Georgia, the minimum standard would be two 12-foot travel lanes in each direction with a concrete barrier median, 12-foot inside shoulders and 14-foot outside shoulders.<sup>9</sup> New rural Interstate routes in Alabama and Georgia would typically have a wide grass median area separating the two parallel travel ways. All new or upgraded Interstate routes would have full access control with grade-separated interchanges or grade-separated overpasses for all intersecting roadways.

#### *Expressway Standard Design Level*

This design level would utilize existing expressways located within the corridor, and either upgrade existing U.S. and State routes or construct new roadways on their own ROW to expressway design standards. The minimum design standard for an expressway in each of the three States would be a four-lane divided roadway with a variable width median, full access

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<sup>9</sup> Typical cross-sections for Interstate design standards in each of the three States, as well as four-lane divided highways are included in the Task 7 Technical Memo, [Determination of Study Alignments and Design Levels](#).

control, and grade separated intersections. However, expressways need not meet the specified minimum Interstate standards for lane, median, and shoulder widths.

### ***Highway Standard Design Level***

This design level would utilize or upgrade existing U.S. and State routes within the Corridor, or construct new roadways on their own ROW to highway design standards. The minimum design standard for a highway would be a four-lane divided roadway with a variable width median and partial access control. Existing intersections with U.S. and State routes or at-grade railroad crossings would be grade separated where practicable (based on projected traffic volumes, cost, ROW, engineering constraints, environmental constraints, and/or public perception/-input). Existing at-grade intersections with local roads would either be left unchanged or improved with traffic signalization, and existing driveways would be consolidated as much as possible to reduce the number of potential conflict locations.

### ***Arterial Standard Design Level***

This design level would utilize existing U.S. and State routes within the Corridor, some of which would require improvements to meet the minimum arterial design standard employed by each State DOT. The minimum design standard for an arterial would typically be a four-lane divided roadway with at-grade intersections, no access control, and a variable width median. The median for roadways meeting arterial design standards may consist of a center two-way left-turn lane instead of an unpaved, raised, or otherwise impassable barrier.

These highway design standards were used in conjunction with specific alignments and unit costs to estimate the likely costs of each alternative. It should be noted that in some areas, exceptions to the above standards may be required to minimize or avoid impacts to sensitive environmental or cultural features or to address local community concerns.

## **Use of Existing and Committed Highways**

In developing alternative alignments for the 14<sup>th</sup> Amendment Highway, priority consideration was given to utilizing existing highway corridors to the maximum extent possible. The study identified the potential use of several highway projects that are currently either under construction or specifically included in STIP. These highway projects include:

- I-85 Extension in Alabama
- Montgomery Outer Loop in Alabama
- Gordon Bypass (Fall Line Freeway) in Georgia
- Milledgeville Bypass (Fall Line Freeway) in Georgia
- Widening of SR 243 between the Gordon and Milledgeville Bypasses in Georgia

Because these highway projects are anticipated to be constructed independently of any decision concerning the 14<sup>th</sup> Amendment Highway, they were treated as “existing highways” for the

purposes of this study, and any planning and construction costs associated with these projects were excluded from the cost estimates.

### **Cost Calculations and Assumptions**

Cost estimates were developed for each alternative and broken out by the following components:

1. Construction of new/upgraded mainline roadway (including demolition of existing facilities, relocation of utilities, surface preparation and drainage, landscaping, traffic control, erosion control, mobilization, contingencies);
2. ROW acquisition;
3. Interchanges and intersections (including ramps, merge and turn lanes, and traffic signal improvements);
4. Structures (mainline bridges and approaches at interchanges, major rivers and railroads; crossroad overpasses where there is no interchange);
5. Engineering, administration, and legal costs (including preliminary and final engineering; construction engineering and inspection; environmental assessment, public outreach and involvement, administration and legal expenses);
6. Environmental mitigation costs (including wetland, noise, historical and archeological).

The FHWA's Cost Estimating Guidance (January 2007) was used to determine the project costs. Additional information was obtained from the DOT in Mississippi, Alabama, and Georgia. It should be noted that no costs were included for deployment of ITS technologies due to the general rural nature of the corridor, and the absence of sufficient information on traffic volumes, crashes, and congestion throughout the corridor to assess the potential benefits of this potential action.

Cost estimates were based on the following assumptions:

- Highway Construction Assumptions
  - Contracting method would be traditional design/bid/build.
  - Individual projects would be let for each segment, or portions of each segment.
  - No specialized design or technologies would likely be employed.
  - Mainline roadway embankment depth = 5 feet (average over the length of the corridor segment in question).
  - Unless otherwise noted, all interchanges were assumed to be of a rural diamond configuration with the mainline route passing over the intersecting crossroad.
  - All mainline bridges over crossroads (including interchanges), railroads, and rivers are included in the 'Bridges' category.
  - Ramp bridges required for directional interchanges are included in the interchange cost.
  - Crossroads which pass over the proposed 14<sup>th</sup> Amendment Highway include new bridges plus reconstruction of the approach roadway.
- ROW Width Assumptions
  - New Interstate roadways = 300 feet

- New highway/arterial roadways = 250 feet
- Upgrade existing two-lane roadways = additional 100 feet
- Upgrade existing five-lane urban arterial roadways = no additional ROW

Because of the high uncertainty of when, or even if, construction would begin on any highway segment, all costs are calculated and presented using undiscounted 2011 dollars, with no cost escalation included to reflect multiyear project design and construction schedules.

Due to the high level, conceptual nature of the 14<sup>th</sup> Amendment Highway alignments, some costs were determined based on a percentage of another cost. Table 2 provides an overview of how specific estimated costs were determined.

**Table 2. Factors Used in Estimating Specific Cost Components**

<b>Cost Component</b>	<b>Factor</b>
Construction Engineering and Inspection (CE&I)	15 percent of Construction Cost
Preliminary/Final Engineering (PE/FE)	8 percent of Construction + CE&I Cost
Administrative and Legal	2 percent of Construction + CE&I Cost
Environmental Documentation	\$30,000/mile of new or upgraded roadway
Public Outreach/Involvement	30 percent of Environmental Documentation Cost
ROW (ROW) Acquisition	\$80,000/acre
Environmental Mitigation	1 percent of Construction Cost + 5 percent of ROW Cost

The CE&I and the PE/FE assumptions are based on industry standards and were verified with the three State DOTs.

The Environmental Documentation cost factor was originally presented to the EWG at \$15,000/mile. However, members of the EWG felt this cost factor might be too conservative and would more likely vary greatly depending on the limits of each project. Therefore, this cost factor was increased to \$30,000/mile and correlates with the costs of past projects of a similar nature undertaken by each of the State DOTs. The Public Outreach/Involvement cost factor is directly related to the Environmental Documentation cost and correlates to the cost of past large scale, potentially controversial projects undertaken by the State DOTs.

Environmental Mitigation costs will vary greatly depending on the scope of the undertaking and the amount of ROW required. Therefore, this cost was determined based on a combined percentage of the construction cost and the ROW costs. Originally, the factors were set at 0.5 percent of construction cost plus 1 percent (1.0 percent) of the estimated ROW cost; however, feedback from members of the EWG suggested that these costs were too low, even for construction in predominantly rural areas. In response to these concerns, Environmental Mitigation costs were increased to 1 percent (1.0 percent) of construction cost and 5 percent (5.0 percent) of the estimated ROW cost.

The ROW cost estimate factor is based on an average of past project costs for a representative sample of recent rural and urban highway improvements obtained from each of the State DOTs.

## CHAPTER 4: HIGHWAY ALTERNATIVES AND ESTIMATED COSTS BY SEGMENT

In this Chapter, alternative alignments for the 14<sup>th</sup> Amendment highway are organized and presented by segment, where each segment extends between two of the five major cities named in the authorizing legislation. The segments are:

- Natchez, Mississippi to Montgomery, Alabama
- Montgomery, Alabama to Columbus, Georgia
- Columbus, Georgia to Macon, Georgia
- Macon, Georgia to Augusta, Georgia

Additionally, because of the complexity and controversy associated with previous efforts to construct an east-to-west highway bypass around Macon, Georgia, a fifth segment was included to present alternative routes through or around the Macon area.

A minimum of three alternative alignments and/or highway design levels were developed for each segment. In each case, **Alternative 1** represents the Interstate design alternative, while **Alternative 2** utilizes existing highways to the maximum extent possible, consistent with the minimum design criteria (i.e., arterial design level) specified for the 14<sup>th</sup> Amendment Highway. **Alternative 3** typically represents an upgrade of existing highways to highway design standards, which consists of a four-lane divided roadway, a variable width median and grade-separated interchanges at all intersections with U.S. and State numbered routes. For some segments, additional alternatives are presented, which may include alternative alignments or bypasses around specific cities.

### **Segment 1: Natchez, Mississippi to Montgomery, Alabama**

This segment comprises over 50 percent of the total length (335 miles) of the 14<sup>th</sup> Amendment Highway Corridor. For the purposes of this study, the segment begins at the intersection of US 61 and US 84, east of the city of Natchez, and ends at the intersection of the proposed I-85 extension, the proposed Montgomery Outer Loop, and I-65, south of Montgomery. Six alternatives were identified for this segment. Each alternative is described below, including its estimated total cost of construction. Table 3 summarizes the key characteristics of each alternative. Figures 8 and 9 map each of the alternatives for Segment 1.

#### ***Alternative 1***

Alternative 1 represents the all Interstate design level. It would follow US 61 from Natchez to approximately 1 mile southwest of Fayette, Mississippi, where it would turn east on a new alignment for approximately 1 mile. This new alignment would create a direct connection between US 61 and Mississippi State Route 28 (SR 28). Alternative 1 would then follow the

**Table 3. Segment 1 Alternatives - Natchez, MS to Montgomery, AL**

<b>Alternative</b>	<b>Design Standard</b>	<b>Total Length</b>	<b>Miles of New Alignment</b>	<b>Miles of Major Upgrade</b>	<b>Brief Description</b>
Alternative 1	Interstate	333 miles	1.3 miles	61 miles	US 61 from Natchez to Fayette, MS. East on new alignment to SR 28. SR 28 to I-55. I-55 to I-20. I-20 to I-85 Extension. I-85 Extension to Montgomery Outer Loop.
Alternative 2	Highway Interstate	347 miles	N/A	N/A	US 84 from Natchez to I-55 in Brookhaven. I-55 to I-20. I-20 to I-85 Extension. I-85 Extension to Montgomery Outer Loop.
Alternative 3	Highway Interstate Arterial	346 miles	N/A	N/A	US 84 from Natchez to Laurel. SR 15 to I-59. I-59 to I-20. I-20 to I-85 Extension. I-85 Extension to Montgomery Outer Loop.
Alternative 3A	Interstate Highway	346 miles	2 miles	N/A	US 84 from Natchez to Laurel. Construct new bypass around Laurel from US 84 to I-59. I-59 to I-20. I-20 to I-85 Extension. I-85 Extension to Montgomery Outer Loop.
Alternative 4	Interstate Highway Arterial	350 miles	N/A	100 miles	US 84 from Natchez to I-65 in Evergreen, AL. I-65 to I-20. I-20 to I-85 Extension. I-85 Extension to Montgomery Outer Loop.
Alternative 5	Interstate Highway Arterial	328 miles	65 miles	47 miles	US 84 to Grove Hill, AL. Construction of new alignment section from Grove Hill to I-65 near Greenville, AL. I-65 to I-20. I-20 to I-85 Extension. I-85 Extension to Montgomery Outer Loop.

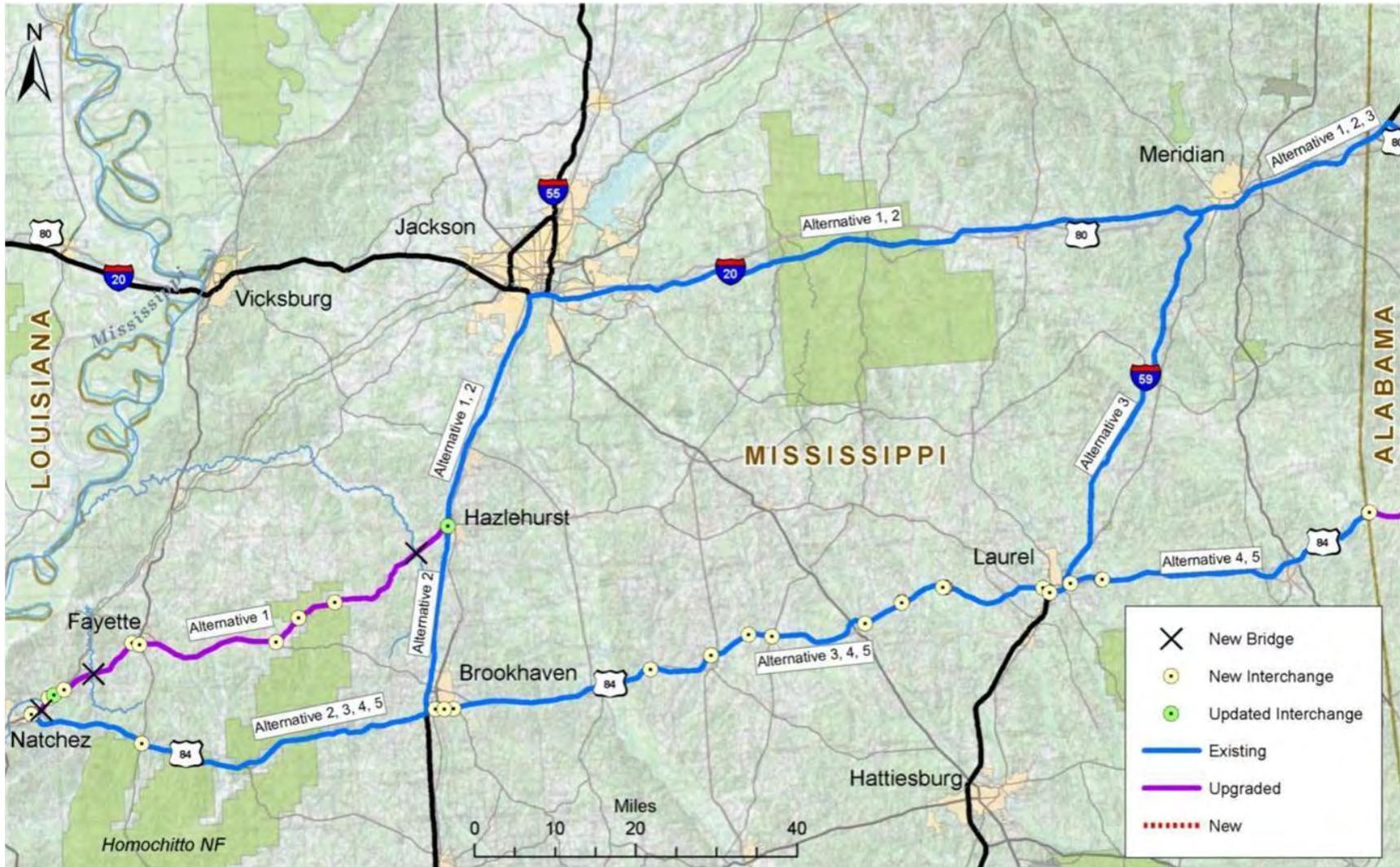


Figure 8. Segment 1 Alternative - Natchez, MS to MS/AL State Line

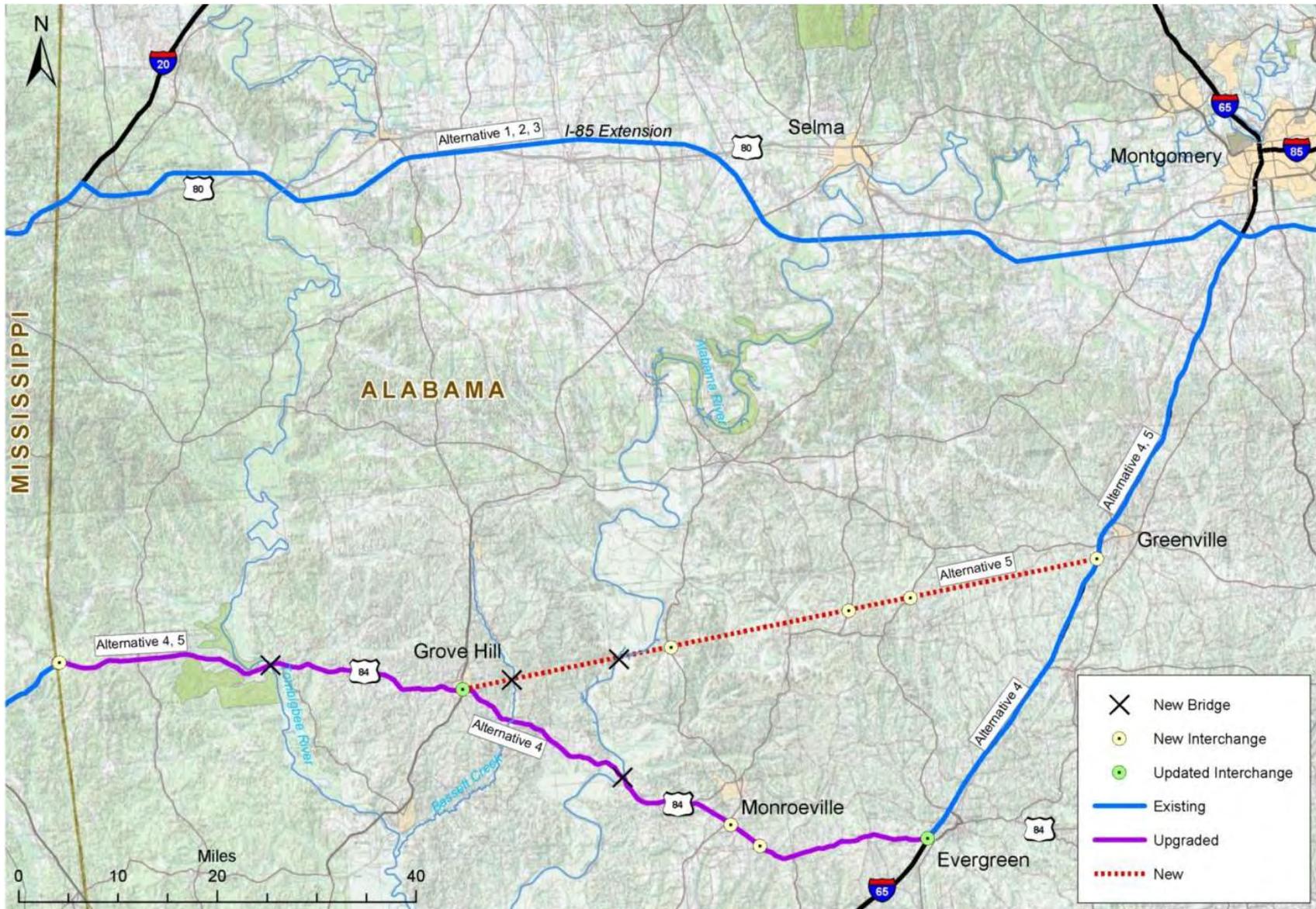


Figure 9. Segment 1 Alternative - MS/AL State Line to Montgomery, AL

existing alignment of SR 28 through Union Church, Mississippi, and continue northeast along SR 28 to its existing intersection with I-55 (exit 61). It would follow I-55 north to I-20 and continue on I-20 to the Mississippi/Alabama State line and on to the proposed interchange of I-20 and the I-85 extension near Cuba, Alabama. It would then follow the proposed I-85 extension to its interchange with I-65 and the proposed Montgomery Outer Loop. It should be noted that the Final Environmental Impact Statement for the I-85 extension is under review by FHWA and the environmental document for the Montgomery Outer Loop has been approved. Should any changes in alignment occur to the proposed I-85 extension, the recommended alignment of Alternative 1 under this study would be modified accordingly. Right-of-way for the proposed Montgomery Outer Loop has been purchased and no alignment shifts are anticipated.

Alternative 1 would upgrade US 61 from Natchez to Fayette to Interstate design standards, construct a new connector roadway (to Interstate standards) from US 61 to SR 28, and upgrade SR 28 to Interstate standards from SR 33 to I-55. The US 61 is currently a four-lane divided highway with a center median and some grade separated interchanges. The SR 28 is currently a two-lane rural road with at-grade intersections. The remaining sections of this alternative would follow existing Interstate Highways. The following improvements would be made as part of this Alternative:

- New grade-separated interchanges would be constructed at US 84, SR 554, SR 553, SR 28 Connector, SR 33, SR 550, SR 552 and SR 547;
- The existing grade-separated interchanges at the Natchez Trace Parkway and I-55 would be upgraded;
- New mainline bridges would be constructed at two river crossings (Coles Creek and Bayou Pierre);
- Overpasses would be constructed for seven secondary road crossings; and
- Frontage roads would be constructed along US 61 and SR 28 to maintain access.

The estimated project costs for Alternative 1 are summarized in Table 4.

**Table 4. Natchez to Montgomery: Alternative 1 Project Costs**

<b>Cost Components</b>	<b>Cost (\$)</b>
Construction/Upgrade of Mainline Roadway	\$995,700,000
Interchanges and Intersections	\$68,100,000
Structures	\$89,000,000
Engineering, Administrative and Legal	\$307,000,000
ROW Acquisition	\$104,700,000
Environmental Mitigation Costs	\$16,800,000
<b>Total Project Costs</b>	<b>\$1,581,000,000</b>

**Alternative 2**

Alternative 2 would make maximum use of existing roadways between Natchez and Montgomery. It would follow US 84 from Natchez to its intersection with I-55 (Exit 38) near Brookhaven, Mississippi, and would continue north along I-55 to I-20. Alternative 2 would then follow the same alignment as Alternative 1 utilizing I-20, and the proposed I-85 extension to its interchange with I-65 and the proposed Montgomery Outer Loop.

The US 84 between Natchez and I-55 is currently a four-lane divided highway, and would not require any widening or reconstruction of the basic mainline roadway itself. New grade-separated interchanges would be constructed at US 61 and SR 33 in order to meet highway level design standards. The estimated project costs for Alternative 2 are summarized in Table 5.

**Table 5. Natchez to Montgomery: Alternative 2 Project Costs**

<b>Cost Components</b>	<b>Cost (\$)</b>
Construction/Upgrade of Mainline Roadway	\$19,900,000
Interchanges and Intersections	\$12,600,000
Structures	\$9,600,000
Engineering, Administrative and Legal	\$11,300,000
ROW Acquisition	\$9,400,000
Environmental Mitigation Costs	\$900,000
<b>Total Project Costs</b>	<b>\$63,600,000</b>

**Alternative 3**

Alternative 3 would follow US 84 from Natchez to Laurel, Mississippi. Within the Laurel city limits, Alternative 3 would follow US 84 east to SR 15, and continue south on SR 15 to its intersection with I-59 (Exit 95). Alternative 3 would follow I-59 north to I-20 near Meridian, Mississippi, and then follow the same alignment as Alternatives 1 and 2, utilizing I-20 and the proposed I-85 extension to its interchange with I-65 and the proposed Montgomery Outer Loop.

The US 84 between Natchez and Laurel is currently a four-lane divided highway, and would not require any widening or reconstruction of the basic mainline roadway itself. Within the Laurel city limits, both US 84 and SR 15 are currently four-lane urban arterials with a two-way left turn lane in lieu of a center median. This meets arterial level design standards, and no additional widening or reconstruction of the mainline roadway would be conducted under this alternative. The following improvements would be made as part of this Alternative:

- New grade separated interchanges would be constructed at US 61, SR 33, US 51, SR 583 (two locations), SR 43, SR 42, SR 541, SR 35, SR 588, SR 37 and SR 529.
- Traffic signal improvements would be made at the US 84/SR 15 intersection in Laurel.

The estimated project costs for Alternative 3 are summarized in Table 6.

**Table 6. Natchez to Montgomery: Alternative 3 Project Costs**

<b>Cost Components</b>	<b>Cost (\$)</b>
Construction/Upgrade of Mainline Roadway	\$172,500,000
Interchanges and Intersections	\$71,300,000
Structures	\$57,700,000
Engineering, Administrative and Legal	\$81,000,000
ROW Acquisition	\$33,300,000
Environmental Mitigation Costs	\$4,700,000
<b>Total Project Costs</b>	<b>\$420,400,000</b>

*Alternative 3A*

Alternative 3A follows the same general alignment as Alternative 3, but includes the construction of a four-lane divided highway bypass route from US 84 to I-59 at Laurel, Mississippi. The most direct bypass route, as shown in Figure 10, intersects US 84 west of the Laurel city limits and follows a new alignment to the southeast for approximately 2 miles, connecting with I-59 at or near Exit 95.



**Figure 10. Alternative 3A Alignment**

The following improvements would be made as part of this Alternative:

- Upgraded interchange of US 84 and I-59 (Exit 95)

- New grade separated interchanges would be constructed at US 61, SR 33, US 51, SR 583 (2 locations), SR 43, SR 42, SR 541, SR 35, SR 588, SR 37 and SR 529.

The estimated project costs for Alternative 3A are summarized in Table 7.

**Table 7. Natchez to Montgomery: Alternative 3A Project Costs**

<b>Cost Components</b>	<b>Cost (\$)</b>
Construction/Upgrade of Mainline Roadway	\$193,300,000
Interchanges and Intersections	\$81,800,000
Structures	\$68,800,000
Engineering, Administrative and Legal	\$91,200,000
ROW Acquisition	\$41,600,000
Environmental Mitigation Costs	\$5,500,000
<b>Total Project Costs</b>	<b>\$482,200,000</b>

#### *Alternative 4*

Alternative 4 would follow the same alignment as Alternative 3 from Natchez to I-59 (Exit 95) in Laurel, Mississippi, and would continue north on I-59 for approximately 2.3 miles to its intersection with US 84 East (Exit 97). It would then follow US 84 east to its intersection with I-65 (Exit 93) near Evergreen, Alabama. Alternative 4 would continue northeast on I-65 to its interchange with the proposed Montgomery Outer Loop.

This alternative would require improvements to upgrade US 84 from its existing two-lane undivided roadway cross section to a four-lane divided highway from the Mississippi/Alabama State line to Evergreen. The following additional improvements would be made as part of this Alternative:

- New grade-separated interchanges would be constructed at US 61, SR 33, US 51, SR 583 (two locations), SR 43, SR 42, SR 541, SR 35, SR 588, SR 37, SR 529, SR 184 (two locations), SR 510, SR 136 (two locations), SR 47, and I-65.
- New mainline bridges would be constructed at two river crossings (Tombigbee and Alabama Rivers) and three railroad crossings.
- Traffic signal improvements would be made at 24 intersections, primarily in Alabama.

The estimated project costs for Alternative 4 are summarized in Table 8.

**Table 8. Natchez to Montgomery: Alternative 4 Project Costs**

<b>Cost Components</b>	<b>Cost (\$)</b>
Construction/Upgrade of Mainline Roadway	\$1,283,300,000
Interchanges and Intersections	\$105,400,000
Structures	\$132,500,000
Engineering, Administrative and Legal	\$405,000,000
ROW Acquisition	\$153,000,000
Environmental Mitigation Costs	\$22,900,000
<b>Total Project Costs</b>	<b>\$2,102,100,000</b>

*Alternative 5*

Alternative 5 would follow the same alignment as Alternative 4 along US 84 from Natchez to Grove Hill, Alabama. It would follow a new alignment for approximately 65 miles from Grove Hill to I-65 (Exit 128) near Greenville, Alabama. Alternative 5 would then continue northeast on I-65 to its interchange with the proposed Montgomery Outer Loop.

This alternative would require improvements to upgrade US 84 from a two-lane rural road to a four-lane divided highway from the Mississippi/Alabama State line to Grove Hill, a distance of approximately 47 miles. Additionally, it would require the construction of a new four-lane divided highway on a new alignment between Grove Hill and I-65 near Greenville, a distance of about 65 miles. The following additional improvements would be made as part of this Alternative:

- New interchanges would be constructed at US 61, SR 33, US 51, SR 583 (2 locations), SR 43, SR 42, SR 541, SR 35, SR 588, SR 37, SR 529, SR 510, SR 184 (2 locations), SR 41, SR 21, SR 47 and I-65.
- New mainline bridges would be constructed at two river crossings (Tombigbee and Alabama Rivers) and three railroad crossings.
- Overpasses would be constructed at four secondary road crossings.
- Traffic signal improvements would be made at eight intersections, primarily in Alabama.

The estimated project costs for Alternative 5 are summarized in Table 9.

**Table 9. Natchez to Montgomery: Alternative 5 Project Costs**

<b>Cost Components</b>	<b>Cost (\$)</b>
Construction/Upgrade of Mainline Roadway	\$1,436,800,000
Interchanges and Intersections	\$109,400,000
Structures	\$145,100,000
Engineering, Administrative and Legal	\$450,300,000
ROW Acquisition	\$269,600,000
Environmental Mitigation Costs	\$30,400,000
<b>Total Project Costs</b>	<b>\$2,441,600,000</b>

## **Segment 2: Montgomery, Alabama to Columbus, Georgia**

This segment is approximately 100 miles long or about 15 percent of the total length of the 14<sup>th</sup> Amendment Highway. The segment begins at the intersection of I-65 and the proposed Montgomery Outer Loop south of Montgomery, Alabama, and ends at the intersection of US 80 (JR Allen Parkway) and I-185, north of Columbus. Three alternatives were identified for this segment. Each alternative is discussed below, including its estimated total cost of construction. Table 10 summarizes the key characteristics of each alternative. Figure 11 maps each of the alternatives for Segment 2.

### *Alternative 1*

Alternative 1 (the all-Interstate design) would begin at the intersection of I-65 and the proposed Montgomery Outer Loop, and would follow the Montgomery Outer Loop alignment to its intersection with I-85 east of Montgomery. Alternative 1 would continue east on existing I-85 to its intersection with US 280/431 (Exit 62) near Opelika, Alabama. It would then follow the current alignment of US 280/431 to US 80 (JR Allen Parkway), and continue east along US 80, crossing the Alabama/Georgia State line into Columbus, Georgia.

This alternative would require upgrading approximately 26 miles of the existing US 280/431 highway facility to Interstate design standards, including overpasses at all intersecting roadways, and the construction of upgraded interchanges at the intersection of I-85 and US 280/431 and at the intersection of US 280/431 and US 80 in Phenix City, Alabama. The US 280/431 is currently a four-lane divided highway with some at-grade intersections.

Except for its interchange with 280/431, US 80 (JR Allen Parkway) is currently built as a four-lane limited access highway with grade-separated interchanges. The scale of improvements needed to upgrade this section of existing highway to full Interstate design standards are thus expected to be relatively minor.

The following additional improvements would be made:

**Table 10. Segment 2 Alternatives – Montgomery, AL to Columbus, GA**

<b>Alternative</b>	<b>Design Standard</b>	<b>Total Length</b>	<b>Miles New Alignment</b>	<b>Miles Major Upgrade</b>	<b>Brief Description</b>
Alternative 1	Interstate	105 miles	N/A	26 miles	Montgomery Outer Loop to I-85. I-85 to US 280/431 near Opelika. The US 280/431 to US 80. East along US 80 to Columbus, GA.
Alternatives 2 & 3	Interstate Highway	105 miles	N/A	N/A	Montgomery Outer Loop to I-85. I-85 to US 280/431. The US 280/431 to US 80. East along The 80 to Columbus, GA.*
Alternative 3B	Interstate Highway Arterial	101 miles	N/A	37 miles	Montgomery Outer Loop to I-85. I-85 to SR 186 near Tuskegee. SR 186 to US 80. East along US 80 to Columbus, GA.

\* Alternatives 1 and 2 follow the same alignment, but Alternative 1 would upgrade US 280/431 to Interstate standards while Alternative 2 would utilize the existing design typical of US 280/431.

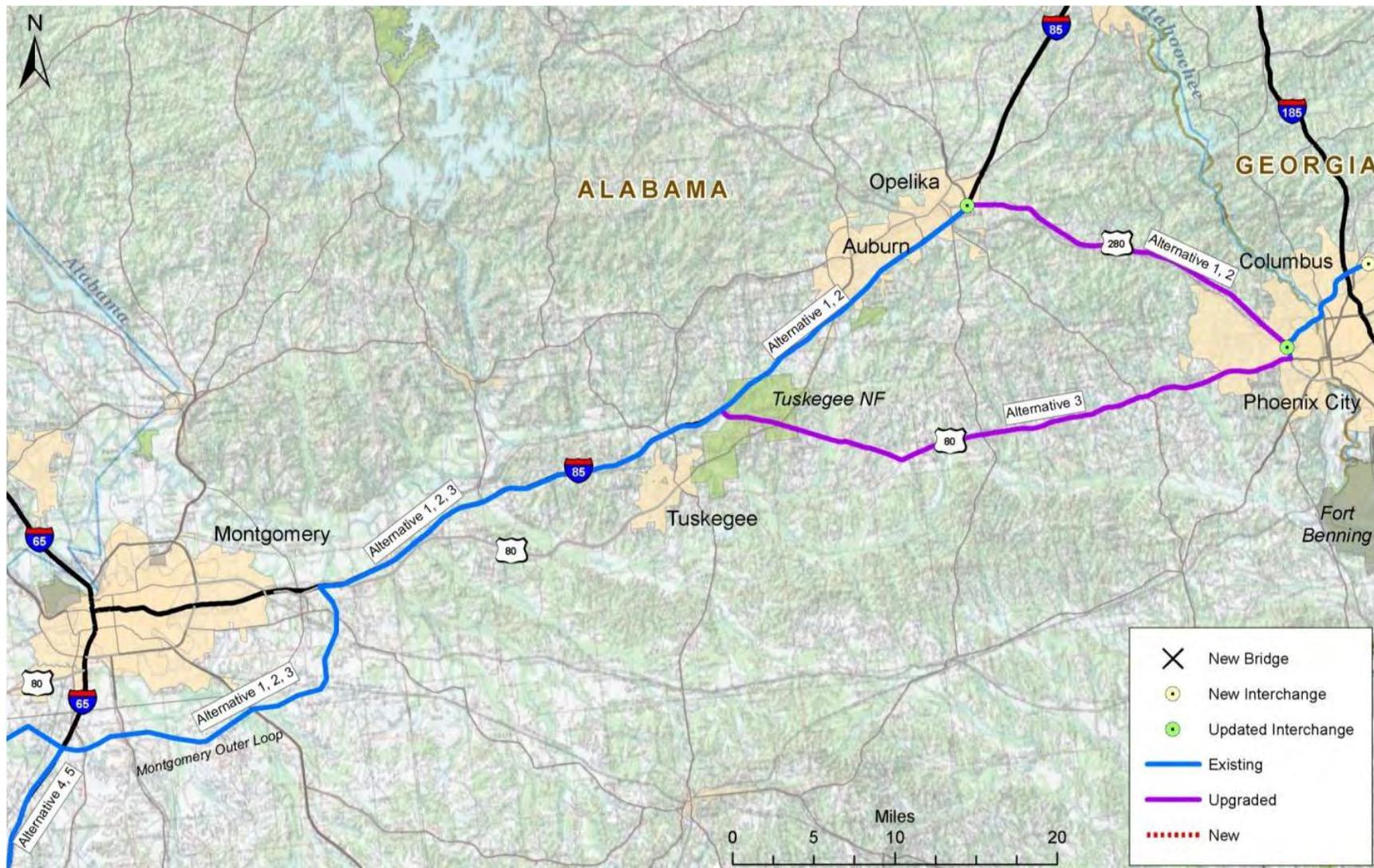


Figure 11. Segment 2 Alternatives - Montgomery, AL to Columbus, GA

- Existing US 280/431 interchanges at I-85 and US 80 would be upgraded.
- A new mainline bridge would be constructed at one railroad crossing.
- Overpasses would be constructed at nine secondary road crossings.
- Frontage roads would be constructed along US 280/431 to maintain local access.

The estimated project costs for Alternative 1 are summarized in Table 11.

**Table 11. Montgomery to Columbus: Alternative 1 Project Costs**

<b>Cost Components</b>	<b>Cost (\$)</b>
Construction/Upgrade of Mainline Roadway	\$408,300,000
Interchanges and Intersections	\$41,600,000
Structures	\$46,500,000
Engineering, Administrative and Legal	\$132,000,000
ROW Acquisition	\$62,800,000
Environmental Mitigation Costs	\$8,100,000
<b>Total Project Costs</b>	<b>\$699,300,000</b>

*Alternatives 2 & 3*

Alternatives 2 & 3 would make maximum use of existing roadways. It would follow the same route as Alternative 1 but would use a mixture of the highway and Interstate standards. This alternative would only require that the existing at-grade intersection of US 280/431 and US 80 be upgraded to a grade-separated, freeway-to-freeway type interchange.

The estimated project costs for Alternatives 2 & 3 are summarized in Table 12.

**Table 12. Montgomery to Columbus: Alternative 2 & 3 Project Costs**

<b>Cost Components</b>	<b>Cost (\$)</b>
Construction/Upgrade of Mainline Roadway	\$8,800,000
Interchanges and Intersections	\$7,100,000
Structures	\$4,800,000
Engineering, Administrative and Legal	\$5,500,000
ROW Acquisition	\$0
Environmental Mitigation Costs	\$200,000
<b>Total Project Costs</b>	<b>\$26,400,000</b>

**Alternative 3B**

Alternative 3B would begin at the intersection of I-65 and the proposed Montgomery Outer Loop and would follow the Montgomery Outer Loop to its intersection with I-85 east of Montgomery, Alabama. It would continue east on I-85 to SR 186 (Exit 42) near Tuskegee, Alabama. Alternative 3B would then follow SR 186 east to its intersection with US 80, and continue east on US 80 to its intersection with US 280/431 in Phenix City, Alabama. It would follow US 280/431 north to US 80 (JR Allen Parkway), and continue east along US 80, crossing the Alabama/Georgia State line into Columbus, Georgia.

This alternative would require upgrading approximately 37 miles of SR 186 and US 80 from two-lane rural roads to four-lane divided highways with a center median and some grade separated interchanges. The following additional improvements would be made:

- Existing interchanges at I-85 and SR 186, and at US 280/431 and US 80 (JR Allen Parkway) would be upgraded.
- New interchanges would be constructed along US 80 at SR 51 and SR 169 (2 locations).
- Traffic signal improvements would be made at the intersection of US 80 (Crawford Rd) and US 280/431 in Phenix City.

The estimated project costs for Alternative 3B are summarized in Table 13.

**Table 13. Montgomery to Columbus: Alternative 3B Project Costs**

<b>Cost Components</b>	<b>Cost (\$)</b>
Construction/Upgrade of Mainline Roadway	\$392,600,000
Interchanges and Intersections	\$44,900,000
Structures	\$26,300,000
Engineering, Administrative and Legal	\$123,500,000
ROW Acquisition	\$51,300,000
Environmental Mitigation Costs	\$7,200,000
<b>Total Project Costs</b>	<b>\$645,800,000</b>

**Segment 3: Columbus, Georgia to Macon, Georgia**

This segment is approximately 80 miles long or about 12 percent of the total length of the 14<sup>th</sup> Amendment Highway. The segment begins at the intersection of US 80 (JR Allen Parkway) and I-185, north of Columbus, and ends at the intersection of Georgia SR 49 and I-75 in Byron, Georgia, southwest of Macon. Three alternatives were identified for this segment. Each alternative is discussed below, including its estimated total cost of construction. Table 14 summarizes the key characteristics of each alternative. Figure 12 maps each of the alternatives for Segment 3.

**Table 14. Segment 3 Alternatives – Columbus, GA to Macon, GA**

<b>Alternative</b>	<b>Design Standard</b>	<b>Total Length</b>	<b>Miles of New Alignment</b>	<b>Miles of Major Upgrade</b>	<b>Brief Description</b>
Alternative 1	Interstate	80 miles	70 miles	10 miles	Follow US 80 (JR Allen Pkwy) to US 27 (Manchester Expressway). The US 27 to County Line Road Construct new alignment from US 27 to I-75 in Byron.
Alternative 2	Expressway Highway Arterial	80 miles	N/A	N/A	Follow Fall Line Freeway between Columbus and Macon. The US 80 from Columbus to SR 96 near Geneva. SR 96 to SR 49C near Fort Valley. SR 49C to SR 49 near Byron. SR 49 to I-75.
Alternative 3	Expressway Highway Arterial	80 miles	N/A	0.5 miles	Follow Fall Line Freeway between Columbus and Macon. The US 80 from Columbus to SR 96 near Geneva. SR 96 to SR 49C near Fort Valley. SR 49C to SR 49 near Byron. SR 49 to I-75.

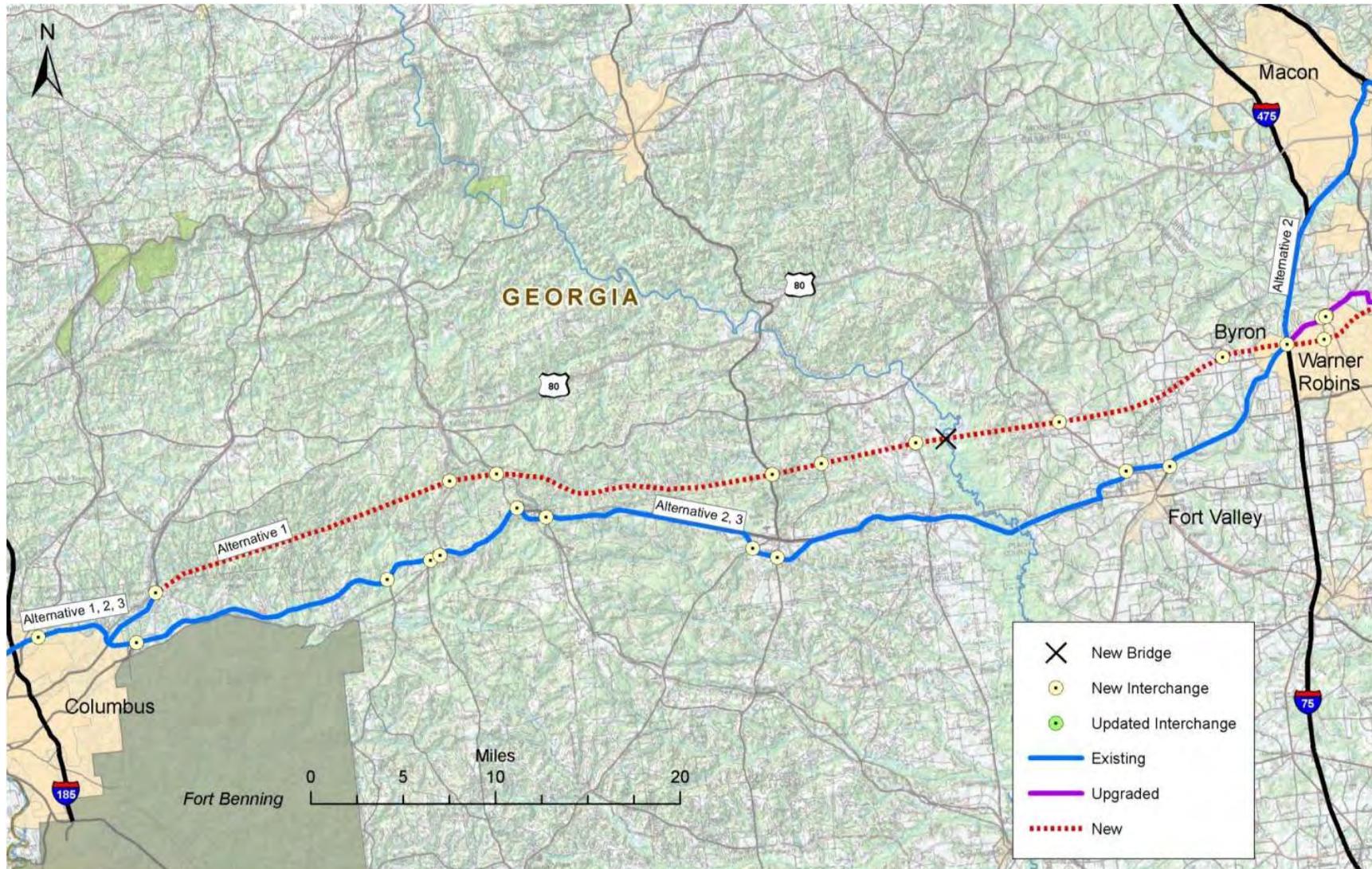


Figure 12. Segment 3 Alternatives - Columbus, GA to Macon, GA

**Alternative 1**

Alternative 1 the all Interstate design, would follow US 80 (JR Allen Parkway) from its intersection with I-185 east to its intersection with US 27 (Columbus-Manchester Expressway). It would then follow US 27 northeast for approximately 4 miles to its intersection with County Line Road. Alternative 1 would then follow an alignment on a new ROW north of, and generally parallel to, the existing US 80 and SR 96 corridors for approximately 70 miles to the intersection of I-75 and SR 49 (Exit 149) in Byron.

This alternative would require construction of approximately 70 miles of new four-lane divided highway, built to Interstate design standards on a new ROW. Existing sections of US 80 and US 27 would be upgraded to full Interstate design standards for approximately 10 miles. Both US 80 (JR Allen Parkway) and US 27 (Columbus-Manchester Expressway) are currently four-lane limited access highways with grade-separated interchanges. The scale of improvements needed to upgrade these sections of existing highway to full Interstate design standards are thus expected to be relatively minor.

The following additional improvements would be made:

- New interchanges would be constructed at the intersection of US 27 and County Line Road, and along the new highway alignment at SR 90, US 19, SR 137, SR 128, US 341, SR 42 and I-75.
- The existing interchange between US 80 and US 27 would be upgraded.
- Overpasses would be constructed at 10 secondary road crossings
- New mainline bridges would be constructed over three railroads and the Flint River.

The estimated project costs for Alternative 1 are summarized in Table 15.

**Table 15. Columbus to Macon: Alternative 1 Project Costs**

<b>Cost Components</b>	<b>Cost (\$)</b>
Construction/Upgrade of Mainline Roadway	\$951,200,000
Interchanges and Intersections	\$104,400,000
Structures	\$121,000,000
Engineering, Administrative and Legal	\$313,200,000
ROW Acquisition	\$266,900,000
Environmental Mitigation Costs	\$25,100,000
<b>Total Project Costs</b>	<b>\$1,781,800,000</b>

**Alternative 2**

Alternative 2 makes maximum use of existing roadways. It would follow the current Fall Line Freeway between Columbus and Macon. It would follow US 80 (JR Allen Parkway) from its intersection with I-185 east to SR 96 near Geneva, Georgia. Alternative 2 would then follow SR 96 to SR 49C (Fort Valley Bypass) to SR 49 (Peach Parkway) to its intersection with I-75 (exit 149) in Byron.

This alternative utilizes the existing four-lane divided highway sections of US 80, SR 96 and SR 49C and would leave those sections of the roadway that are currently five lanes (i.e., four travel lanes with a two-way left-turn lane) unchanged in order to minimize impacts.

**No physical improvements are anticipated to be required to the existing roadways for this alternative. As a result, the estimated construction costs associated with this alternative for this segment of the corridor would be at no cost.**

**Alternative 3**

Alternative 3 would follow the same alignment as Alternative 2, but would upgrade a 0.5 mile long section of the Fall Line Freeway to Interstate design standards, with a continuous median or raised center barrier and grade-separated interchanges where practical. The existing five lane, urban arterial street cross section through the community of Byron would not be upgraded. Additional improvements would include:

- New interchanges to replace existing at-grade intersections would be constructed along the Fall Line Freeway at SR 22, SR 355, SR 41, SR 96, SR 90 (2 locations), SR 137, US19/SR 3, US 341/SR 7, and SR 49.

The estimated project costs for Alternative 3 are summarized in Table 16.

**Table 16. Columbus to Macon: Alternative 3 Project Costs**

<b>Cost Components</b>	<b>Cost (\$)</b>
Construction/Upgrade of Mainline Roadway	\$125,200,000
Interchanges and Intersections	\$60,600,000
Structures	\$43,600,000
Engineering, Administrative and Legal	\$60,800,000
ROW Acquisition	\$9,000,000
Environmental Mitigation Costs	\$2,700,000
<b>Total Project Costs</b>	<b>\$301,900,000</b>

**Segment 4: Macon, Georgia**

This segment is approximately 25 miles long or about 4 percent of the total length of the 14<sup>th</sup> Amendment Highway. The segment begins at the intersection of Georgia SR 49 and I-75 in Byron, and ends at the intersection of SR 57 and Ridge Road east of Macon. Three alternatives were identified for this segment. Each alternative is discussed below, including its estimated total cost of construction. Table 17 summarizes the major characteristics of each alternative. Figure 13 maps each of the alternatives for Segment 4.

**Table 17. Segment 4 Alternatives – Routes in the vicinity of Macon, GA**

<b>Alternative</b>	<b>Design Standard</b>	<b>Total Length</b>	<b>Miles New Alignment</b>	<b>Miles Major Upgrade</b>	<b>Brief Description</b>
Alternative 1*	Interstate	24 miles	24 miles	N/A	Construct a new Interstate from I-75 (Byron) to SR 57. I-75 east to SR 247. SR-247 east to I-16 (Sgoda Road). I-16 northeast to SR-57 (Ridge Road).
Alternatives 2 & 3	Interstate Highway Arterial	26 miles	N/A	N/A	Follow existing Fall Line Freeway through Macon, Georgia. I-75 north to I-16. I-16 east to US 80/129. US 80 north to SR 57.
Alternative 3C	Highway	23 miles	12 miles	11.2 miles	SR 49 east from I-75 to Avondale Mill Road. East along Avondale Mill Road to US 129/SR247. Construct Sgoda Road Extension from SR 247 to I-16. Follow existing Sgoda Road east of I-16. Construct new roadway from existing Sgoda Road terminus to SR 57.

**Alternative 1**

Alternative 1, the all Interstate design, would follow a new alignment for about 24 miles from I-75 (Exit 149) in Byron to I-16 (Exit 12) near Sgoda Road. The new roadway would then continue north and east to intersect SR 57 near Ridge Road. This alternative would require construction of approximately 24 miles of a new four-lane divided highway on new ROW, built to Interstate design standards, along with the following improvements:

- New interchanges would be constructed at US 41/SR 11, US 129/SR 147, US 23/SR 87, I-16, US 80, and SR 57.
- New mainline bridges would be constructed over two river crossings (Echeconnee Creek and the Ocmulgee River) and two railroad crossings.
- Overpasses would be constructed at five secondary road crossings.

The estimated project costs for Alternative 1 are summarized in Table 18.

**Table 18. Macon: Alternative 1 Project Costs**

<b>Alternative 1</b>	<b>Cost (\$)</b>
Construction/Upgrade of Mainline Roadway	\$401,800,000
Interchanges and Intersections	\$82,300,000
Structures	\$87,800,000
Engineering, Administrative and Legal	\$152,000,000
ROW Acquisition	\$111,000,000
Environmental Mitigation Costs	\$11,300,000
<b>Total Project Costs</b>	<b>\$846,200,000</b>

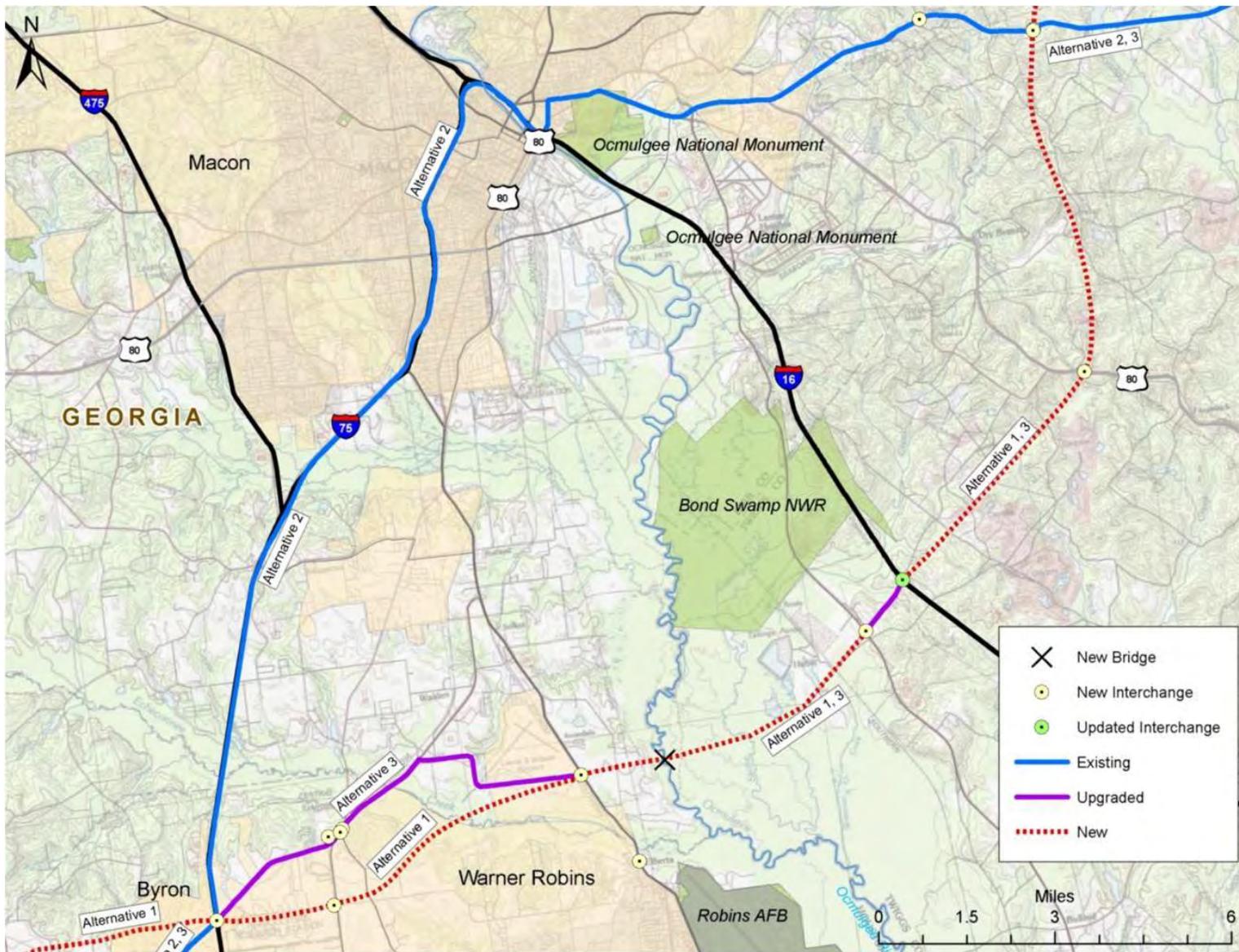


Figure 13. Segment 4 Alternatives - Routes in the Vicinity of Macon, GA

### ***Alternatives 2 & 3***

Alternatives 2 & 3 would make maximum use of existing roadways. It would follow the current alignment of the Fall Line Freeway, proceeding north along I-75 from its interchange with SR 49 (Exit 46) to the interchange with I-16, and then continue eastbound on I-16 to its interchange with US 80/129 (Exit 2). It would then follow US 80 north and east to its intersection with SR 57 (Irvington Road), and east on SR 57 to its intersection with Ridge Road. Over most of this section, US 80 currently is either a four-lane divided highway or a five-lane arterial roadway (i.e., four lanes with a TWLTL) with at-grade intersections.

**No improvements would be required to the existing roadway for this alternative. As a result, the estimated construction costs associated with this alternative for this segment of the corridor would be at no cost.**

### ***Alternative 3C***

Alternative 3C would begin at the intersection of SR 49 and I-75 in Byron and would continue along SR 49 to Avondale Mill Road. It would then continue east along Avondale Mill Road to its intersection with US 129/SR 247. From there, the alternative would continue east along the proposed Sgoda Road Extension to I-16. East of I-16, it would follow a new alignment to intersect with SR 57 at or near Ridge Road.

Alternative 3C would require construction of a new four-lane divided highway on a new ROW between SR 247 and the existing Sgoda Road just west of I-16 (Sgoda Road Extension). Much of this new alignment would have to be built on structure where it crosses over wetlands and the Ocmulgee River. This alternative would also require construction of a new four-lane divided highway on a new ROW from the intersection of Sgoda Road and I-16 (Exit 12) to SR 57 near its intersection with Ridge Road. The total length of the new highway sections would be approximately 12 miles. Additionally, major sections of SR 49, Avondale Mill Road and the existing Sgoda Road west of I-16, totaling about 11.2 miles, would need to be upgraded from a two-lane undivided rural road to a four-lane, divided highway.

Additional improvements include:

- New interchanges would be constructed at US 41/SR 11, SR 247, US 129/SR 87, US 80/SR 19 and SR 57.
- New mainline bridges would be constructed over one railroad and the Ocmulgee River.
- Intersection improvements would be made at five secondary road crossings.

The estimated project costs for Alternative 3C are summarized in Table 19.

**Table 19. Macon: Alternative 3C Project Costs**

<b>Cost Components</b>	<b>Cost (\$)</b>
Construction/Upgrade of Mainline Roadway	\$235,200,000
Interchanges and Intersections	\$28,500,000
Structures	\$53,000,000
Engineering, Administrative and Legal	\$84,400,000
ROW Acquisition	\$50,200,000
Environmental Mitigation Costs	\$5,700,000
<b>Total Project Costs</b>	<b>\$456,900,000</b>

**Segment 5: Macon, Georgia to Augusta, Georgia**

This segment is approximately 100 miles long or about 15 percent of the total length of the 14<sup>th</sup> Amendment Highway Corridor. The segment begins at the intersection of SR 57 and Ridge Road, east of Macon, and ends at I-520 on the outskirts of Augusta. Three alternatives were identified for this segment. Each alternative is discussed below, including its estimated total cost of construction. Table 20 summarizes the key characteristics of each alternative. Figure 14 maps each of the alternatives for Segment 5.

*Alternative 1*

Alternative 1 (the all Interstate design) would follow a new alignment from SR 57 to I-20 near US 221 (Exit 183). The alternative would then follow existing I-20 into Augusta. This alternative would require construction of approximately 83 miles of new four-lane divided highway on new ROW built to Interstate design standards, along with the following additional improvements:

- New interchanges would be constructed at SR 18, SR 243, US 441, SR 112, SR 24, SR 15, SR 24B, SR 123, SR 171, SR 80, SR 17, US 78, SR 223 and I-20.
- New mainline bridges would be constructed over two river crossings (Oconee and Ogeechee Rivers) and four railroad crossings.
- Overpasses would be constructed at 16 secondary road crossings.

Table 20. Segment 5 Alternatives – Macon, Georgia to Augusta, Georgia

Alternative	Design Standard	Total Length	Miles of New Alignment	Miles of Major Upgrade	Brief Description
Alternative 1	Interstate	99 miles	83 miles	N/A	Construction of new alignment roadway from SR 57 (Ridge Road) to I-20 near US 221. I-20 to Augusta, GA.
Alternative 2	Highway Arterial	106 miles	N/A	16.7 miles	Follow existing Fall Line Freeway between Macon and Augusta, GA. SR 57 to the Gordon Bypass. Gordon Bypass to SR 243. SR 243 to proposed Milledgeville Bypass. Proposed Milledgeville Bypass to SR 24. SR 24 to SR 68. SR 68 to Sandersville Bypass. Sandersville Bypass to SR 88. SR 88 to US 1/221. US 1 to I-520.
Alternative 3	Highway	106 miles	3.5 miles	17.9 miles	Same as Alternative 2 but would construct a bypass around the city of Wrens, GA between SR 88 and US 1.

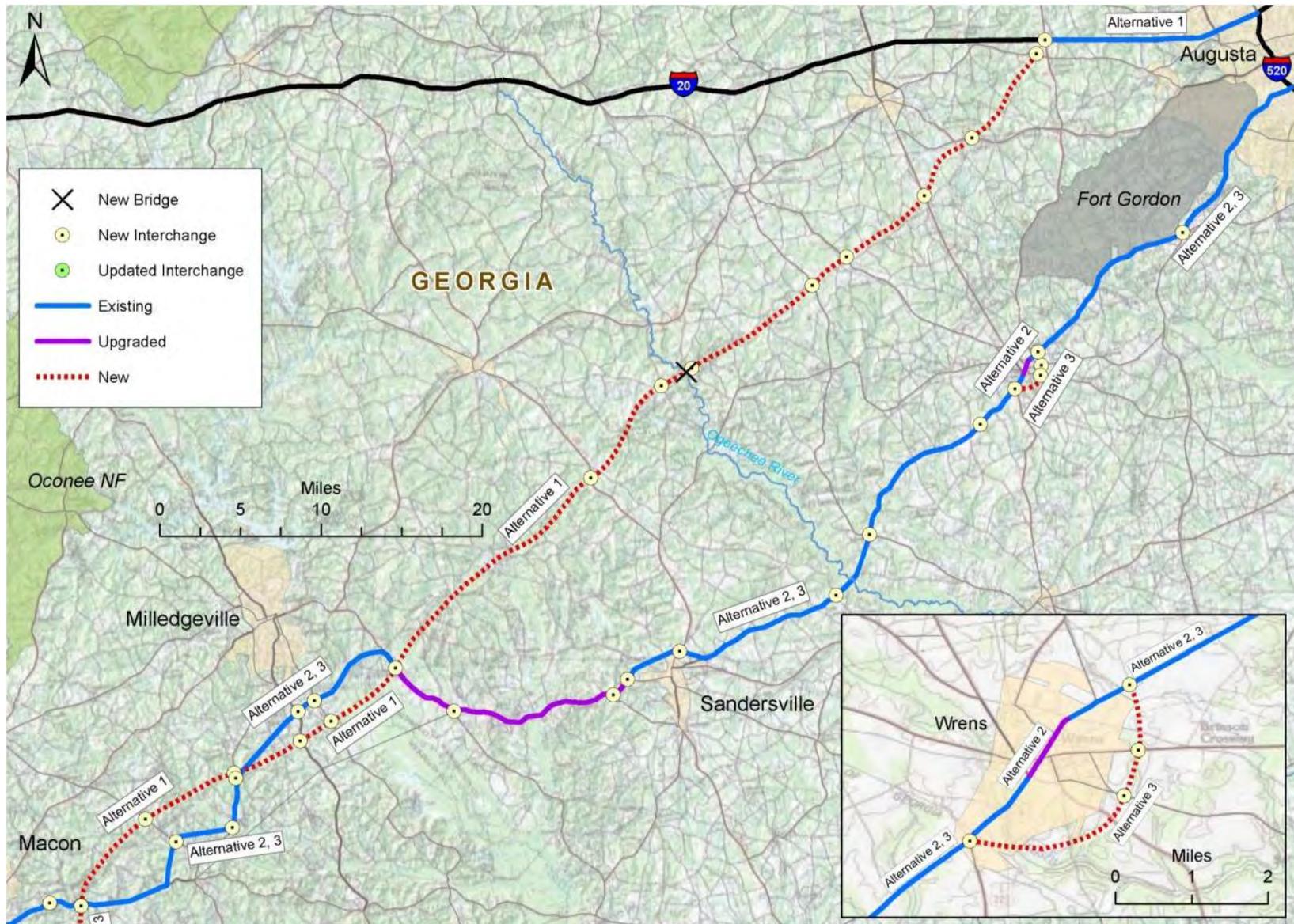


Figure 14. Segment 5 Alternatives - Macon, GA to Augusta, GA

The estimated project costs for Alternative 1 are summarized in Table 21.

**Table 21. Macon to Augusta: Alternative 1 Project Costs**

<b>Cost Components</b>	<b>Cost (\$)</b>
Construction/Upgrade of Mainline Roadway	\$1,099,400,000
Interchanges and Intersections	\$92,500,000
Structures	\$163,500,000
Engineering, Administrative and Legal	\$360,800,000
ROW Acquisition	\$306,500,000
Environmental Mitigation Costs	\$28,900,000
<b>Total Project Costs</b>	<b>\$2,051,600,000</b>

*Alternative 2*

Alternative 2 would make maximum use of existing roadways. It would follow the existing Fall Line Freeway from SR 57 at Ridge Road to I-520 in Augusta, GA. Most sections of this route have been, or are currently being upgraded to a four-lane divided highway. The existing two-lane undivided section of SR 24 would be upgraded to a four-lane divided highway, and US 1 through Wrens would be upgraded to a five-lane arterial. These two section improvements total about 16.7 miles. The existing at-grade railroad crossing south of Wrens would be retained.

Additional improvements would include:

- New interchanges would be constructed along SR 24 at SR 272 and SR 68.

The estimated project costs for Alternative 2 are summarized in Table 22.

**Table 22. Macon to Augusta: Alternative 2 Project Costs**

<b>Cost Components</b>	<b>Cost (\$)</b>
Construction/Upgrade of Mainline Roadway	\$136,100,000
Interchanges and Intersections	\$11,900,000
Structures	\$8,700,000
Engineering, Administrative and Legal	\$41,900,000
ROW Acquisition	\$20,300,000
Environmental Mitigation Costs	\$2,600,000
<b>Total Project Costs</b>	<b>\$221,500,000</b>

**Alternative 3**

Alternative 3 follows the same general alignment as Alternative 2, except that it would upgrade all remaining two-lane sections of the Fall Line Freeway between Macon and Augusta, and would construct a bypass around downtown Wrens. Approximately 18 miles of two-lane rural roadway along SR 24 between Milledgeville and Sandersville would be upgraded to a four-lane divided highway design, and grade-separated interchanges would be constructed at all remaining at-grade intersections with U.S. and State numbered routes.

The Wrens bypass route would be a 3.5 mile long, four-lane divided highway built on a new alignment to the south and east sides of the downtown area. This bypass facility would begin near the intersection of SR 88 and US 1/221 and rejoin US 1 north of the US 221 split.

Additional improvements would include:

- New interchanges would be constructed at SR 18, SR 243 (2 locations), US 441, SR 112, SR 24, SR 272, SR 68 (2 locations), SR 15, SR 231, SR 171, SR 296, US 1 (2 locations), US 80 and SR 88(2 locations).
- A new mainline bridge would be constructed over one existing railroad.

The estimated project costs for Alternative 3 are summarized in Table 23.

**Table 23. Macon to Augusta: Alternative 3 Project Costs**

<b>Alternative 1</b>	<b>Cost (\$)</b>
Construction/Upgrade of Mainline Roadway	\$341,700,000
Interchanges and Intersections	\$106,500,000
Structures	\$84,600,000
Engineering, Administrative and Legal	\$141,600,000
ROW Acquisition	\$45,000,000
Environmental Mitigation Costs	\$7,600,000
<b>Total Project Costs</b>	<b>\$726,900,000</b>

## **CHAPTER 5: TOTAL COSTS BY ALTERNATIVE AND STEPS TO COMPLETE**

### **Total Estimated Costs by Alternative**

Table 24 presents the estimated costs for the five alternative alignments/design levels for the 14<sup>th</sup> Amendment Highway over their entire length from Natchez, Mississippi, to Augusta, Georgia. Table 25 presents the estimated costs for three variations of Alternative 3 that were also investigated in this study. Each table includes the overall length for each alternative and a range for the estimated costs, varying from 5 percent below to 10 percent above the calculated costs for each alternative.

Alternative 1 (the all Interstate design) is by far the most costly alternative, with an estimated cost ranging from **\$6.6 to \$7.6 billion**, nearly double the cost of the next highest alternative. Alternative 1 requires the construction of over 178 miles of new roadway on new ROW, and about 97 miles of upgrades to existing highways to meet Interstate design standards.

Alternative 2, which utilizes existing roads to the maximum extent practical, is the least costly alternative, with an estimated cost ranging from **\$296 to \$343 million**, which is less than 20 percent of the cost of the next lowest cost alternative, and less than 5 percent of the cost for Alternative 1. Alternative 2 requires no new roadway mileage, and only about 17 miles of upgrades to convert existing two-lane roads to four-lane divided highways. Most of the costs associated with Alternative 2 involve upgrading existing at-grade intersections with U.S. and State numbered routes to grade-separated interchanges. Some of these upgrades may ultimately be determined to be unnecessary, depending on existing and forecasted traffic volumes, in which case the costs for this alternative could be reduced further.

Alternatives 3, 4, and 5 represent different route alignments, primarily through the Mississippi and Alabama portions of the three-State study corridor. Each of these conceptual alignment alternatives would widen and/or reconstruct all existing two-lane rural roads to four-lane divided highways and would construct grade-separated interchanges at all existing at-grade intersections with U.S. and State numbered routes. Alternatives 4 and 5 follow the same basic route alignment as Alternative 3 from Montgomery, Alabama to Augusta, Georgia. Total costs for these alternatives range from **\$1.4 to \$3.8 billion**.

The alternative alignments vary in length by only about 26 miles, or approximately 4 percent of the total mileage for the 14<sup>th</sup> Amendment Highway. Alternative 1 currently represents the shortest distance route at approximately 641 miles, but the total route mileage for this alternative is likely to ultimately increase at future stages of project development due to alignment changes caused by ROW acquisition and environmental mitigation issues. Alternative 4 is currently the longest defined option at 667 miles.

The three alternatives presented in Table 25 represent variations to Alternative 3 designed to address specific alignment issues encountered in the course of this study. Alternative 3A

represents a four-lane divided highway bypass for US 84 around Laurel, Mississippi, in lieu of an alignment through downtown Laurel on existing urban arterial streets with no access control. The incremental cost for this alternative is \$60 to \$70 million, or about a 4 percent increase in the total cost of Alternative 3, which assumes the use of an urban arterial street routing through the community of Laurel, Mississippi.

Alternative 3B represents an alternative alignment from Montgomery to Columbus along existing US 80 instead of I-85 and US 280/431 through Opelika. This alternative would require upgrading approximately 37 miles of existing two-lane roadway along the US 80 corridor to a four-lane divided highway. The incremental additional cost for this alternative is \$589 to \$681 million, or about a 42 percent increase in comparison to the total cost associated with the basic Alternative 3.

Alternative 3C represents an alternative to the current alignment of the Fall Line Freeway through the Macon, Georgia urbanized area. This alignment, which would construct a new bypass route between Macon and Warner-Robins, has been endorsed by the mayor of Macon and the Middle Georgia Regional Council. The incremental cost for this alternative is in the range of \$434 to \$503 million, or about a 31 percent increase in comparison to the total cost of the basic Alternative 3.

**Table 24. Total Estimated Costs by Alternative**

ALTERNATIVE / SEGMENT	LENGTH (Miles)	LOW RANGE	HIGH RANGE
<b>ALTERNATIVE 1</b>	<b>641</b>	<b>\$6,611,890,000</b>	<b>\$7,655,870,000</b>
NATCHEZ, MS TO MONTGOMERY, AL	333	\$1,501,950,000	\$1,739,100,000
MONTGOMERY, AL TO COLUMBUS, GA	105	\$664,290,000	\$769,180,000
COLUMBUS, GA TO MACON, GA	80	\$1,692,730,000	\$1,960,000,000
MACON, GA	24	\$803,900,000	\$930,830,000
MACON, GA TO AUGUSTA, GA	99	\$1,949,020,000	\$2,256,760,000
<b>ALTERNATIVE 2</b>	<b>664</b>	<b>\$295,900,000</b>	<b>\$342,630,000</b>
NATCHEZ, MS TO MONTGOMERY, AL	347	\$60,420,000	\$69,960,000
MONTGOMERY, AL TO COLUMBUS, GA	105	\$25,050,000	\$29,010,000
COLUMBUS, GA TO MACON, GA	80	\$0	\$0
MACON, GA	26	\$0	\$0
MACON, GA TO AUGUSTA, GA	106	\$210,430,000	\$243,660,000
<b>ALTERNATIVE 3</b>	<b>663</b>	<b>\$1,401,840,000</b>	<b>\$1,623,190,000</b>
NATCHEZ, MS TO MONTGOMERY, AL	346	\$399,370,000	\$462,430,000
MONTGOMERY, AL TO COLUMBUS, GA	105	\$25,050,000	\$29,010,000
COLUMBUS, GA TO MACON, GA	80	\$286,840,000	\$332,140,000
MACON, GA	26	\$0	\$0
MACON, GA TO AUGUSTA, GA	106	\$690,580,000	\$799,610,000
<b>ALTERNATIVE 4</b>	<b>667</b>	<b>\$2,999,470,000</b>	<b>\$3,473,070,000</b>
NATCHEZ, MS TO MONTGOMERY, AL	350	\$1,997,000,000	\$2,312,310,000
MONTGOMERY, AL TO COLUMBUS, GA	105	\$25,050,000	\$29,010,000
COLUMBUS, GA TO MACON, GA	80	\$286,840,000	\$332,140,000
MACON, GA	26	\$0	\$0
MACON, GA TO AUGUSTA, GA	106	\$690,580,000	\$799,610,000
<b>ALTERNATIVE 5</b>	<b>645</b>	<b>\$3,322,000,000</b>	<b>\$3,846,530,000</b>
NATCHEZ, MS TO MONTGOMERY, AL	328	\$2,319,530,000	\$2,685,770,000
MONTGOMERY, AL TO COLUMBUS, GA	105	\$25,050,000	\$29,010,000
COLUMBUS, GA TO MACON, GA	80	\$286,840,000	\$332,140,000
MACON, GA	26	\$0	\$0
MACON, GA TO AUGUSTA, GA	106	\$690,580,000	\$799,610,000

**Table 25. Total Estimated Costs for Alternative 3 Options**

<b>ALTERNATIVE / SEGMENT</b>	<b>LENGTH (Miles)</b>	<b>LOW RANGE</b>	<b>HIGH RANGE</b>
<b>ALTERNATIVE 3</b>	<b>663</b>	<b>\$1,401,840,000</b>	<b>\$1,623,190,000</b>
NATCHEZ, MS TO MONTGOMERY, AL	346	\$399,370,000	\$462,430,000
MONTGOMERY, AL TO COLUMBUS, GA	105	\$25,050,000	\$29,010,000
COLUMBUS, GA TO MACON, GA	80	\$286,840,000	\$332,140,000
MACON, GA	26	\$0	\$0
MACON, GA TO AUGUSTA, GA	106	\$690,580,000	\$799,610,000
<b>ALTERNATIVE 3A (Laurel Bypass)</b>	<b>663</b>	<b>\$1,460,560,000</b>	<b>\$1,691,180,000</b>
NATCHEZ, MS TO MONTGOMERY, AL	346	\$458,090,000	\$530,420,000
MONTGOMERY, AL TO COLUMBUS, GA	105	\$25,050,000	\$29,010,000
COLUMBUS, GA TO MACON, GA	80	\$286,840,000	\$332,140,000
MACON, GA	26	\$0	\$0
MACON, GA TO AUGUSTA, GA	106	\$690,580,000	\$799,610,000
<b>ALTERNATIVE 3B (US 80 via Tuskegee, AL)</b>	<b>659</b>	<b>\$1,990,350,000</b>	<b>\$2,304,610,000</b>
NATCHEZ, MS TO MONTGOMERY, AL	346	\$399,370,000	\$462,430,000
MONTGOMERY, AL TO COLUMBUS, GA	101	\$613,560,000	\$710,430,000
COLUMBUS, GA TO MACON, GA	80	\$286,840,000	\$332,140,000
MACON, GA	26	\$0	\$0
MACON, GA TO AUGUSTA, GA	106	\$690,580,000	\$799,610,000
<b>ALTERNATIVE 3C (Sgoda Road Extension, Macon)</b>	<b>660</b>	<b>\$1,835,890,000</b>	<b>\$2,125,770,000</b>
NATCHEZ, MS TO MONTGOMERY, AL	346	\$399,370,000	\$462,430,000
MONTGOMERY, AL TO COLUMBUS, GA	105	\$25,050,000	\$29,010,000
COLUMBUS, GA TO MACON, GA	80	\$286,840,000	\$332,140,000
MACON, GA	23	\$434,050,000	\$502,580,000
MACON, GA TO AUGUSTA, GA	106	\$690,580,000	\$799,610,000

## **Steps Required to Construct/Designate the 14<sup>th</sup> Amendment Highway**

### ***Federal Transportation Planning Requirements***

Before further detailed planning, design, or construction activities can begin on any alternative, the component projects that comprise each segment of the alternative need to be incorporated into the LRTP and the STIP/TIP of the respective State(s) and MPOs where the project would be located. Component projects include not only new roadway construction on new ROW, but also widening of existing roadways, grade-separated interchanges, overpasses/underpasses, intersection improvements, and mainline bridges over wetlands, waterways and railroads.

To be included in an LRTP and the associated STIP/TIP, each project must be approved by the designated planning organization with opportunity for, and consideration of, input from stakeholders and the general public. Additionally, the State DOT/MPO-level LRTPs must contain a financial plan that identifies the reasonably anticipated sources of funding for each newly included project. In addition to their incorporation into the LRTPs and STIP/TIPs, all new transportation projects in Georgia require the preparation and approval of a Concept Report for each project. This requirement would apply to all projects in Segments 3, 4, and 5 of the total multistate corridor.

### ***National Environmental Protection Act (NEPA) Requirements***

Component potential projects that progress into each of the three respective State DOT project development cycles will require the conduct of various environmental studies and obtaining a number of approvals. The number and complexity of the environmental analyses and documentation depends on the specific project and its potential impacts on the human and natural environment.

- Projects that do not require acquisition of new ROW or that are forecast to not significantly impact traffic volumes within the corridor may require the issuance of only a finding of no significant impact upon the completion of an environmental assessment study.
- Projects that do require acquisition of new ROW, that involve major construction, or that significantly impact traffic volumes either during construction or upon completion, will most likely require a more substantive environmental impact study (EIS), which includes analysis of all potential environmental and traffic impacts, and a comparative evaluation of alternatives. Associated with any such EIS preparation would be the development and acceptance of a clearly defined project purpose and need statement.
- Projects that impact wetlands, including new alignments and construction of bridges and structures that cross wetland areas will require Section 404 permits. Projects that specifically fill or remove designated wetland areas would require additional actions, such as acquisition of additional land to replace removed wetlands, or payment into a State wetlands mitigation fund. Required actions may vary by State.

- Projects that require acquisition of new ROW that impact public parks, recreation areas, wildlife refuges, or public and private historical sites will require the preparation of Section 4(f) documentation and the approval and acceptance of the proposed action by the appropriate Federal, State, and local government agencies.
- Projects that cross navigable waterways will require additional permits from the U.S. Army Corps of Engineers, which has responsibility for all navigable inland waterways.
- Projects that impact highway traffic volumes located in National Ambient Air Quality Standards nonattainment areas (e.g., Macon, GA), will require an air quality Conformity analysis.
- Construction projects involving new or changed drainage patterns will also require a National Pollutant Discharge Elimination System permit from the U.S. Environmental Protection Agency (EPA).
- Projects located in the State of Georgia will also require the issuance of a State vegetative buffer variance.

### ***Legal Actions***

Projects requiring acquisition of additional property, either for new project ROW, grade-separated interchanges, or intersection improvements may require eminent domain actions if the transportation agency and the current owners of the effected property cannot reach agreement on the fair market value for the property. At a minimum, separate negotiations will be required for each acquired property.

### ***Construction Contracts***

For each approved project, one or more contracts would need to be awarded for the associated engineering design and construction activities. These contracts would be awarded based on the individual State DOT contracting procedures.

## CHAPTER 6: PUBLIC AND COMMUNITY OUTREACH

The primary method of public and community outreach followed during the course of the study was through the use of a EWG. As directed by FHWA management, the EWG membership consisted of 9 representatives from non-Federal agencies in the 14<sup>th</sup> Amendment Highway, and 12 representatives from Federal transportation and resource agencies with likely jurisdiction over some aspects of project implementation. The membership of the EWG is shown in Table 26.

**Table 26. Expert Working Group Membership**

<b>Member</b>	<b>Organization</b>
Carey Kelly	Alabama Department of Transportation
Michelle Caldwell	Georgia Department of Transportation
Keith Purvis	Mississippi Department of Transportation
Paul DeCamp	Augusta-Richmond County Planning Commission
Keith Bryan	Auburn-Opelika Metropolitan Planning Organization
Rick Jones	Columbus Consolidated Government
Don Tussing	Macon-Bibb County Planning and Zoning Commission
Robert Smith	Montgomery Metropolitan Planning Organization
William M. (Mitch) Stennett	Southern Economic Development Council
Christopher (Shaun) Capps	FHWA Alabama Division
Bill Farr	FHWA Georgia Division
Claiborne Barnwell	FHWA Mississippi Division
Lewis Grimm	FHWA Eastern Federal Lands Highway Division
Sarah Kennedy	Centers for Disease Control and Prevention
Bill Triplett	Delta Regional Authority
Edward Johnson	U.S. Army Corps of Engineers, South Atlantic Division
Jennifer Simpson	U.S. Army Fort Benning
Stacy Jones	U.S. Army Fort Gordon
Randy L. Warbington	USDA Forest Service Southern Region
Ntale Kajumba	EPA Region 4
Jerry Ziewitz	U.S. Fish and Wildlife Service Southeast Region

As directed by FHWA, the EWG met four times during the course of the 1-year study. The meetings were held at the FHWA Division Office in Atlanta, Georgia, and video cast to FHWA Division Offices in Montgomery, Alabama, and Jackson, Mississippi. The meetings were managed by the project consultant team and attended by the FHWA Project Manager. The EWG provided significant guidance on selection of alignments, design levels, and costing assumptions, several of which are referenced in the report text.

At the recommendation of the EWG, broader stakeholder outreach was handled primarily by means of presentations to engaged stakeholders within each of the five designated cities, plus the Auburn-Opelika MPO in Alabama. Presentations were made by project consultant staff at the following locations and dates:

- March 17, 2011 – Montgomery MPO, Montgomery, AL (23 participants)
- March 29, 2011 – Columbus-Phenix City MPO, Columbus, GA (11 participants)
- April 13, 2011 – Augusta-Richmond County Planning Commission, Augusta, GA (22 participants)
- April 14, 2011 – Macon-Bibb County Planning Commission, Macon, GA (49 participants)
- April 25, 2011 – Natchez, Inc., Natchez, MS (8 participants)
- May 25, 2011 – Lee-Russell Council of Governments, Opelika, AL (5 participants)

Finally, a publicly accessible project Webcast was conducted on June 8, 2011. Invitations were distributed by means of the stakeholder lists and Web sites provided by each of the six cities, plus the State DOTs. A total of 17 individuals (including study team and EWG members) participated.

Project presentations are available on the FHWA Web site at:

[www.fhwa.dot.gov/planning/section\\_1927/14th\\_amendment\\_highway/expert\\_working\\_group/](http://www.fhwa.dot.gov/planning/section_1927/14th_amendment_highway/expert_working_group/)