This chapter explains how the alternatives were developed, evaluated, and the selection of the Preferred Alternative.

Chapter 2. Development of Alternatives

2.1 How were the alternatives evaluated?

Alternative Evaluation Categories were developed during the I-73 South Project and used to address the types and extent of potential impacts for I-73 North. The issues covered by the Alternative Evaluation Categories were evaluated at various levels of detail over the course of the process, beginning at a very broad level and ending with more detailed evaluations. The primary and secondary Needs of the project provided general guidelines for establishing the Alternative Evaluation Categories. Utilizing the categories ensured that alternatives were developed that satisfied the project Purpose and Need, while at the same time attempted to conserve the natural environment (including wetlands), community values, and cultural resources. This was accomplished by minimizing impacts to the natural and human environment. The Alternative Evaluation Categories are listed in Table 2.1 (refer to page 2-2) and the *Alternative Development Technical Memorandum.*

2.2 What is the Agency Coordination Team?

The Agency Coordination Team (ACT) consisted of representatives from FHWA, USACE, USEPA, NRCS, USFWS, NOAA Fisheries, SCDAH, SCDOC, SCDHEC, SCDNR, SCDOT, and SCPRT. All these agencies, with the exception of FHWA, the lead Federal agency, and SCDOT are cooperating agencies.

The purpose of the ACT was to help merge the NEPA and Section 404 (wetland) permitting process and to offer multiple opportunities for the agencies to be involved in the development of the alternatives. These opportunities were spread throughout the EIS development process and included agency participation in the determination of the project study area boundaries, Purpose and Need, analysis criteria, development of alternatives, selection of alternatives for further study, input on the Preferred Alternative, mitigation of unavoidable impacts, and project design features. For more detailed information about the ACT, refer to Chapter 4. Since the project includes approximately four miles in North Carolina, federal resource agencies in North Carolina agreed that their South Carolina counterparts would be the lead for their agencies. Separate interagency meetings were held with the North Carolina agencies and their specific issues were discussed (refer to Chapter 4).

Table 2.1
Alternative Evaluation Categories

Purpose and Need	**Environmental Factors**
Primary Needs	Natural Features
System Linkage	*Threatened and Endangered Species*
Economic Development	*Species of Concern*
Secondary Needs	*Wetlands*
Improved Access for Tourism	*Streams*
Increased Safety on Existing Roads	*Water Quality*
Multimodal Planning	*Habitat*
Engineering Criteria & Constructability	*Floodplains*
Economics	*Wild and Scenic Rivers*
Travel Efficiency	*Uplands*
Development Opportunities	Man-made Features
Existing and Future Development	*Hazardous Material Sites*
Indirect and Cumulative Impacts	*Parks & Wildlife Refuges (Sec. 4(f)/6(f))*
Current and Future Land Use	*Historic & Archaeological Sites (Sec. 106)*
Traffic	*Noise*
Construction Cost	*Farmlands*
Length	**Socio-economic Issues**
Bridges	Communities
Frontage Roads (length)	Relocations
Interchanges	*Residential*
Infrastructure	*Business*
Airports	Environmental Justice
Fire Stations	**Utility Impacts**
Schools	**Consideration of Existing Transportation Infrastructure**
Others	**Toll Feasibility/Financial Feasibility**

The agencies provided information pertinent to their particular areas of expertise throughout the EIS process. As discussed in further detail in Section 2.4 (refer to page 2-4), the ACT participated in the selection of the data layers used by the Corridor Analysis Tool (CAT). They also provided input on the features designated as constraints. ACT members assigned numerical values, on a scale of one to ten, to each feature in each data layer utilized by the CAT. They also set the weighting for each layer. The alternatives were then quantified using the CAT and the results provided to the ACT, along with the results from other segments generated by the CAT.

A field visit was conducted in September 2006 with the ACT to review areas of special interest to ACT members. Agency comments and data collected from the field visit were also used to modify the alternatives and to develop the indirect and cumulative impact analysis. As of May 2008, the ACT members have met a total of 14 times over 19 months. In addition, the North Carolina agencies were also involved through a series of five interagency meetings and a field visit on December 6, 2006.

Corridor Analysis Tool

The CAT is a series of GIS-based functions designed to route conceptual corridors among the identified human and natural environmental resources. The system determines the shortest route with the least amount of impacts.

Based upon the continuous involvement of the ACT, agency input on the project and the proposed alternatives has been possible from the onset. Due to this early and consistent coordination, the FHWA and SCDOT will be able to perform the detailed field work for only the Preferred Alternative for the Final EIS. The potential cost and time savings of completing the field work for one alternative versus all three reasonable Build Alternatives was attributable to the oversight of the ACT.

2.3 What are the conditions of the No-build Alternative?

The No-build Alternative would fail to satisfy the stated Purpose and not fulfill the primary and secondary Needs for the project. The Purpose of the proposed project is to provide an interstate link between proposed I-73, between I-95 and the Myrtle Beach Region, and the North Carolina I-73/I-74 Corridor. The primary Needs for the project are to provide system linkage and to enhance economic opportunities in the study area, while the secondary Needs are to improve access for tourism, improve safety of existing roadways, and provide multimodal planning.

The No-build Alternative would not provide:

- **A direct link between I-95 and the North Carolina I-73/I-74 Corridor to improve system linkage.** I-73 has been named as a High Priority Corridor (number five) by the U.S. Congress. This section of I-73 is needed to provide the connection between North Carolina and I-95. Without this link, the planned High Priority Corridor between Michigan and South Carolina would not be completed;
- **Opportunities for economic growth.** The interstate would provide economic opportunities to the project study area that would result from the connectivity to the interstate system. Marlboro and Dillon Counties in South Carolina are two of the most economically depressed counties in the state. They have high unemployment and low income levels. The trend in Marlboro County has been for negative population growth over the past 20 years. I-73 is seen locally as a key to improving the economic prospects within the study area;
- **Improved access for tourism.** The construction of the interstate would result in savings to the traveling public resulting from increased travel efficiency. This travel efficiency is reflected in reduced travel times. A key to maintaining and improving tourism is the ability of the tourist to

readily access destinations. The connection provided by I-73 would increase the travel efficiency for tourists traveling through South Carolina;

- **Improved safety on local roads.** The diversion of traffic to the interstate from the local road network that would result from the construction of the proposed interstate would improve safety on the local network by removing the through trips. This would take persons unfamiliar with the local roads off of that network and put them on the interstate, a more familiar situation for those traveling long distances. It would also remove truck traffic from the local network; or,
- **A future provision for a multimodal facility.** The I-73 Corridor includes within the proposed right-of-way the potential for two rail corridors that would allow for future passenger and/or freight rail. This has the potential for providing additional rail connectivity to northeastern South Carolina.

The No-build Alternative would not provide the interstate link between I-95 and the North Carolina I-73/I-74 Corridor. Failure to provide this link would lead to the loss of economic opportunities, the potential loss of tourism, no improvement in local traffic congestion, longer travel times, and the loss of the multimodal opportunities provided by the corridor.

The projected economic benefits from constructing I-73 are summarized further in Section 2.6.1.2 (refer to page 2-33). This analysis shows that the project study area would benefit in terms of the number of jobs and money flowing into the area from any of the reasonable Build Alternatives.

The No-build Alternative in 2030 provides the benchmark for impacts against which the Build Alternatives are measured. In all cases, the No-build Alternative was evaluated along with the Build Alternatives. For some categories of impacts the No-build Alternative may be more negative than the Build Alternatives. The economic scenario for Marlboro County is more negative with the No-build Alternative than it would be for the Build Alternatives. In other categories the No-build Alternative may have different impacts than the Build Alternatives that can be positive from one sense, but negative for another. For example, land uses will change by the Year 2030, even for the No-build Alternative. The projected land use changes for the No-build Alternative were lower, when compared against the Build Alternatives. This would be positive from a natural resource standpoint, but negative from an economic development viewpoint.

2.4 How were the preliminary Build Alternatives developed?

The No-build Alternative is one alternative under consideration in the NEPA process. As its name indicates, this alternative allows the evaluation of the project study area in its current and future condition without potential impacts related to construction and operation of the proposed project. The No-build Alternative establishes a baseline of environmental and socioeconomic conditions against which all Build Alternatives can be compared.

A computer model utilizing Geographic Information System (GIS) data was created to develop potential alignments. The CAT is a computer program that uses GIS data to generate potential corridors and to analyze the corridors in a short period of time. This allows more time to be spent on interpretation, refinement, and comparison of potential corridors.

In conjunction with I-73 South, multiple government agencies were identified as possible sources of GIS data and five information categories were identified that would be necessary to include in the CAT program. These categories were identified as environmental, demographic/socioeconomic, engineering, infrastructure, and physical/cultural. Reference materials were also obtained that verified the GIS data.

Numerous federal, state, and local agencies along with non-governmental organizations were contacted for their available GIS data (refer to Table 2.2, page 2-6). A detailed list of the data layers obtained in conjunction with the I-73 South Project can be found in the *GIS and Data Collection Activities Technical Memorandum* completed for the I-73 South Project. Information about the data layers includes the supplying agency, data coordinate system, date of publication, and date of receipt. Although many of the data layers collected for the I-73 South Project were utilized for I-73 North, approximately 67 additional GIS data layers and 635 additional aerial photos were collected. Data layers that were obtained specifically for I-73 North are detailed in the *Alternative Development Technical Memorandum*.

Approximately 53 GIS layers were determined to be complete and accurate for possible inclusion in the CAT program (refer to Table 2.3, page 2-7). Communities were identified within the project study area and approximate boundaries were established based on public input, aerial photography, and field visits. These communities were incorporated into the CAT program and given a high value (10) so the alternatives would avoid these communities.

The 53 potential data layers were organized into four categories entitled environmental, roadways, infrastructure, and demographic/socioeconomic. As part of the I-73 South Project, the data layers were presented to the ACT for review and comment. The ACT selected layers and assigned numerical values, on a scale of one to ten (ten representing the most valuable to avoid), to each feature within the 53 potential data layers utilized by the CAT (refer to Appendix B). For example, the environmental category included wetlands from the National Wetland Inventory (NWI) Mapping. Each wetland type in the NWI layer was assigned a numerical value in consultation with the ACT. All the numerical values assigned by the agencies for the I-73 South Project were utilized by the CAT for I-73 North, except the values for Evergreen Irregularly Flooded Uplands and Evergreen Forested Uplands, which were changed from a four to a value of one as agreed upon by the ACT. This modification was made because the majority of Evergreen Irregularly Flooded Uplands and Evergreen Forested Uplands within the project study area were found to be planted pine plantations. It was determined by the ACT that these areas would be better to impact by an alternative since they had been previously disturbed.

Table 2.2
Agencies Contacted Regarding GIS Data

LEVEL	AGENCY
National	
	Federal Emergency Management Agency (FEMA)
	U.S. Census Bureau
	U.S. Department of Agriculture, Natural Resource Conservation Service (S.C. and N.C. Offices)
	U.S. Environmental Protection Agency
	U.S. Geological Survey
	U.S. Fish and Wildlife Service
State	
	S.C. Budget and Control Board
	S.C. Department of Commerce
	S.C. Department of Health and Environmental Control
	S.C. Department of Natural Resources
	S.C. Department of Parks, Recreation, and Tourism
	S.C. Department of Transportation
	S.C. Emergency Management Division
	S.C. Geodetic Survey
	S.C. Institute of Archaeology and Anthropology
	S.C. State Historic Preservation Office
	N.C. Department of Transportation
	N.C. State Historic Preservation Office
	N.C. Department of Environment and Natural Resources
County	
	Dillon County, S.C.
	Marlboro County, S.C.
	Richmond County, N.C.
	Scotland County, N.C.
	Pee Dee Council of Governments
City	
	City of Bennettsville
	City of Dillon
Other	
	Pee Dee Resource Conservation and Development Council
	The Nature Conservancy
	University of South Carolina - Columbia

Table 2.3
Available GIS Layers for CAT Program

ENVIRONMENTAL
National Wetland Inventory Mapping (Wetlands and Uplands)
Little Pee Dee River in Dillon County
Soils
Mitigation Banks and Sites
Species of Concern
Federal and State Threatened and Endangered Species
Archaeology Sites
Historic Resources (Architectural)
National Historic Register Sites
Heritage Preserves
Parks (federal, state, and local)
Wildlife Refuges
Federal Lands (Over 640 acres)
Land Stewardship
Hazardous Sites
Landfills
NPDES Sites
Streams/Rivers/Lakes
Streams/Rivers/Lakes-Special Designation
Watersheds
Floodplain for Great Pee Dee River
Floodplains
Land cover
Mines/Geologic Features
ROADWAYS
Roads (Urban and Rural)
INFRASTRUCTURE
Railroads
Transmission Lines
Gas/Oil Pipelines
Bridges
Airports
Buildings (Industrial Vacant)
Dams (Hazardous)
Fire Stations
Administrative Buildings (Government)
Churches
Community Facilities
Health Facilities
Hospitals
Libraries
Mental Health Facilities
Schools
Cemeteries
Incorporated Areas
Municipalities
Sewer Infrastructure
Treatment Plants
Surface Withdrawal Locations
Storage Sites
DEMOGRAPHIC/SOCIOECONOMIC
Minority Areas/Density
Low Income Areas/Density
Population Density
Community Boundaries

The ACT also designated some of the GIS data as constraints, which resulted in the information within the layer being removed from consideration by the CAT when generating alternative corridors. A potential alignment could not pass through a feature designated as a constraint. The following layers were designated as constraints by the ACT:

- Intact Carolina bays;
- Mitigation Banks and Sites;
- Known Federal Threatened and Endangered Species Locations;
- Known State Threatened and Endangered Species Locations;
- Archaeology Sites Potentially Eligible, Eligible, or Listed on National Register of Historic Places;
- Historic Resources Potentially Eligible, Eligible, or Listed on National Register of Historic Places;
- SCDNR Heritage Preserves;
- Publicly owned Parks (Federal, State, and Local);
- Hazardous Sites on National and State Priority Lists;
- Landfills;
- Mines/Geologic Features;
- Airports;
- Schools;
- Cemeteries; and,
- Sandy Ridge Girl Scout Camp.

The four categories were given an overall importance value that totaled 100 for the CAT program. They were given a value based upon the relative importance given to each category; environmental (50), roadways (10), infrastructure (20), and demographics/socioeconomic (20). The criteria weighting and constraints were then programmed into the CAT and used to generate preliminary Build Alternatives.

The CAT developed corridors through weighting the values that were assigned through interagency coordination for environmental, socioeconomic, engineering, and infrastructure resources in the project study area and choosing the least impact routes.

The CAT used a grid- or cell-based format. The program found the corridor of least impact between the endpoints of each alignment (starting and ending points) and summarized the impacts for each alignment corridor. Endpoints were set along existing roads in North Carolina and starting points along I-95 in South Carolina. The program then developed a “least impact” line that connected the two points. Surrounding this line was a “suitability grid” that illustrates areas that are within a designated percentage (one to two percent) of the “least impact” line (refer to Figure 2-1). When the CAT was run for all of the starting and ending points there were two wide corridors developed by the suitability grids, one on the eastern side of the study area and one more centrally located (refer to Figure 2-1). A “waypoint”, or

RICHMOND COUNTY
SCOTLAND COUNTY
ROBESON COUNTY
ANSON COUNTY
CHESTERFIELD COUNTY
MARLBORO COUNTY
DILLON COUNTY
DARLINGTON COUNTY

Rockingham
Hamlet
Wallace
McColl
Tatum
Clio
Bennettsville
Blenheim
Little Rock
Dillon
Latta

NC1
NC2
NC3
NC3A
NC4

North Carolina
South Carolina

220
74B
74
177
38
1
79
385
83
381
57
9
7
8
6
34
501
95

Legend

- Corridor Endpoint
- 100% Suitable Corridor
- 99.75% - 99.99% Suitable Corridor
- 99.5% - 99.74% Suitable Corridor
- State Boundary
- I-73 Northern Project Study Area
- County Boundary
- Outside North Carolina Study Area
- Outside South Carolina Study Area

Suitability Surface Rank

- 1 (Most Favorable Area)
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 (Least Favorable Area)

0 3.5 7 Miles

N E W S

FIGURE 2-1
EXAMPLE OF SUITABILITY LAYER

point midway between the start points along I-95 and endpoints in North Carolina, was inserted west of Bennettsville. This resulted in a third corridor west of Bennettsville. This was partially in response to many of the public comments at the Public Scoping Meeting urging a western alignment and partially to provide a fuller range of alternatives for evaluation at this early stage of the alternative development. To ensure that the alignment would be functional as a roadway, the "least impact" line was adapted to accommodate a 75-mile per hour design speed using roadway design criteria.

To test the accuracy of the CAT program, evaluations were completed to verify that the CAT was selecting the path that minimized potential impacts to the environment. Three methods, suggested by the ACT, were evaluated for combining the CAT values, for detailed information refer to the *Alternative Development Technical Memorandum.* For each of the suggested methods, the CAT program was used and suitability grids were generated. The suitability grids were determined to be very similar for each method and would all be used to develop alternatives.

Overall, the CAT and the suitability grid analysis developed approximately 122 preliminary build segments that were combined to form 1,896 possible preliminary Build Alternatives (refer to Figure 2-2, page 2-12). The CAT-quantified impacts for each of the 1,896 preliminary Build Alternatives are summarized in the *Alternative Development Technical Memorandum*.

2.4.1 How was the public involved in developing the preliminary Build Alternatives?

The public had opportunities for commenting on the project through scoping and information meetings, a telephone hotline, and a project website. Community information meetings were held in various locations within the project study area and representatives of the Project Team attended meetings to generate interest and participation from minority groups. Comments and recommendations that were received during coordination with the Stakeholder Working Group and the public were reviewed and taken into consideration during alternative development. Please refer to Chapter 4 for a detailed discussion of the public involvement process.

Stakeholder Working Group

The Stakeholder Working Group enhanced project planning and coordination and created a forum for informing participants who became spokespersons for the project. This in turn created wider project interest.

Public Scoping Meetings were held at two locations at the initiation of the project. Each meeting was advertised on the project website and in the local newspaper before the meeting. The scoping meetings were an informal, drop-in style format that allowed citizens to ask questions and receive information on an individual basis. A survey of issues, a comment card, and an informational brochure were distributed to each attendee. The informational brochure included a brief description of the project, the official website address, and the toll-free hotline number. The comments received from the public were used to help develop the preliminary Build Alternatives.

Stakeholder Working Group

A Stakeholder Working Group was organized to create a forum for discussion with, transfer of information to, and to receive feedback from a diverse group of constituent representatives potentially impacted by the proposed project. Stakeholders were engaged during two meetings and provided perspectives that represented the diverse demographics of the project study area as well as various organizations and special interest groups (refer to Chapter 4).

A project website was developed and updated periodically with new information and upcoming meeting times and locations. In addition, a toll-free telephone hotline was established for citizens without internet access to receive project updates, find out about meeting times and locations, and ask questions. The website and telephone hotline also allowed citizens to provide comments via email or in a recorded format, respectively. Furthermore, a project newsletter was available on the project website.

2.4.2 How were the 1,896 preliminary Build Alternatives evaluated?

The Alternative Evaluation Categories were used to compare the 1,896 preliminary Build Alternatives (refer to Figure 2-2). The alternatives were screened using the Purpose and Need. The primary Needs, system linkage and economic development, were used as the first level of screening. For the project Need to be fulfilled, the Build Alternatives had to improve national and regional connectivity by providing a direct link between future I-73 and I-95 to the I-73/I-74 Corridor, as well as enhance economic opportunities in South Carolina. They all provided the linkage and the economic benefits were assumed to be equal at this stage of the evaluation. No preliminary Build Alternatives were eliminated due to failure to meet the primary Needs of the project.

It was determined that secondary Needs of the project would be met indirectly after completion of the project and when the primary Needs are fulfilled. The secondary Needs of the project were identified as improved access for tourism, increased safety on existing roads, and multimodal planning. The project would allow easy access to tourist destinations in the northeastern part of the state or from the northeast part of the country to the coast, improve safety on roads by moving a significant volume of traffic to an interstate designed to handle a higher volume of traffic, and allow planning for future provision of a multimodal (rail) facility within the Interstate Corridor. No preliminary Build Alternatives were eliminated due to failure to meet the secondary Needs of the project.

Once it was determined that the preliminary Build Alternatives met the Purpose and Need, they were screened against the potential impacts to the natural environment. At this early part of the

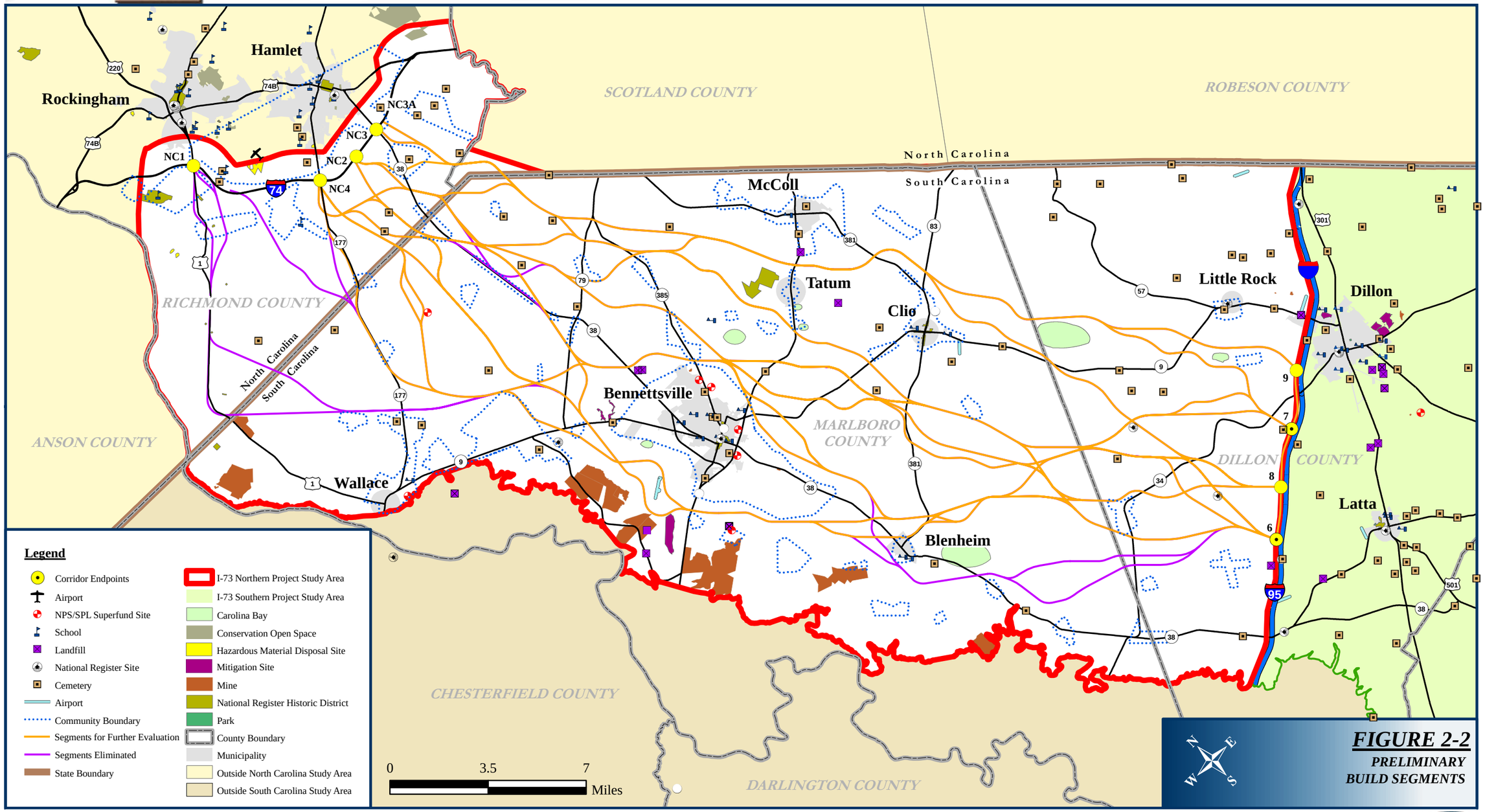

FIGURE 2-2
PRELIMINARY BUILD SEGMENTS

process, potential impacts from interchanges were accounted for by using a 500-foot corridor to quantify impacts. Data designated as constraints were not impacted by any of the 1,896 preliminary Build Alternatives developed by the CAT. Because there were a large number of preliminary Build Alternatives, many with high potential wetland impacts, all alternatives with wetland acreage impacts over 300 acres were eliminated to reduce the number of preliminary Build Alternatives. This resulted in 474 preliminary Build Alternatives to evaluate further (refer to Figure 2-2 on page 2-12).

Following the elimination of these preliminary Build Alternatives that would impact over 300 acres of wetlands, the locations of the proposed interchanges with I-74 in North Carolina were reviewed. Interchanges were initially proposed at:

- Endpoint NC 1, located where U.S. Route 1 and I-74 intersect;
- Endpoint NC 2, midway between existing interchanges with N.C. Route 177 and N.C. Route 38;
- Endpoint NC 3, located where N.C. Route 38 intersects I-74; and,
- Endpoint NC 4, located at the intersection of N.C. Route 177 and I-74.

The interchange at endpoint NC 1 was eliminated because the segments that connected at this point were longer and had high wetland impacts. The interchange at endpoint NC 2 was kept because it appeared to have sufficient distance between the two existing interchanges to allow a functional interchange. The interchange at endpoint NC 3 was shifted to the east to avoid being right on top of the N.C. Route 38/I-74 interchange, but not so far east as to interfere with the existing N.C. Route 381/I-74 interchange. The interchange at endpoint NC 4 was eliminated because of the difficulty of developing a new interchange on top of the existing one with N.C. Route 177. At this point in the development of the alternatives it was preferable to avoid putting a new interchange on top of an existing one to simplify design and keep potential costs lower. As a result, 269 alternatives were eliminated with endpoint NC 4, which left 205 preliminary Build Alternatives for further evaluation.

The following impacts were quantified by the CAT and compared in an effort to reduce the remaining 205 preliminary Build Alternatives:

- Wetland acreage (classified by previously impacted or not impacted);
- Wetland value (determined by ACT-assigned valuation and acreage impacted);
- Upland acreage (total acreage);
- Species of concern;
- Infrastructure (i.e. churches or fire stations); and,
- Corridor length (used to estimate potential cost).

During the evaluation of the 205 preliminary Build Alternatives, they were mapped and compared with the suitability grids. It was determined that all the alternatives were contained within the three corridors (refer to Figure 2-1 on page 2-9). Engineers used the suitability grids to review the alignments, taking into consideration constraints, wetland systems, and larger developed areas. Additional segments were developed and those that reduced impacts were incorporated into the overall preliminary Build Alternatives. Each of the three corridors was evaluated to determine the alternatives that had the lowest potential impact. Six preliminary Build Alternatives were selected from the three corridors and had the least potential impacts to the above referenced categories, as well as to communities (refer to Figure 2-3). The six preliminary Build Alternatives were presented to the ACT and after extensive discussion and analysis, the ACT reached consensus to further evaluate the six preliminary Build Alternatives.

2.5 How were the reasonable Build Alternatives developed?

The six preliminary Build Alternatives were presented for public input and subjected to more detailed design and evaluation. After consideration of the potential impacts associated with each alternative and in light of public comments, the reasonable Build Alternatives were identified.

2.5.1 How was the public involved in developing the reasonable Build Alternatives?

Following the designation of the six preliminary Build Alternatives by the ACT, the alternatives were presented to the public for review and comment. Each alternative was presented as an approximately 2,500-foot wide corridor. Two Public Information Meetings were held, the first in Bennettsville, South Carolina, and the other in Hamlet, North Carolina, to present the six preliminary Build Alternatives (refer to Chapter 4, Section 4.1.2, page 4-3, for a detailed discussion).

The first meeting was at Bennettsville Middle School on September 7, 2006. At this meeting, 417 people attended and 59 left comments during the meeting. On September 12, 2006, the second Public Information Meeting was held at the Cole Auditorium on the campus of Richmond County Community College in North Carolina where 73 people attended and seven left comments at the meeting.

A total of 116 comments were received as a result of the two Public Information Meetings and submitted by mail following the meetings. Each written comment was reviewed by the Project Team, as were the verbal comments heard at each of the public information meetings. The alternatives were then modified in response to these comments.

In addition to the public information meetings, representatives of the Project Team attended other meetings to generate interest and participation within the project study area (refer to Chapter 4, Section 4.3, page 4-7).

Rockingham
Hamlet
SCOTLAND COUNTY
ROBESON COUNTY
North Carolina
South Carolina
McColl
Tatum
Clio
Little Rock
Dillon
RICHMOND COUNTY
Bennettsville
MARLBORO COUNTY
DILLON COUNTY
Wallace
Blenheim
CHESTERFIELD COUNTY
DARLINGTON COUNTY
Latta
Mari
0 3.5 7 Miles

Legend

- Airport
- NPS/SPL Superfund Site
- School
- Landfill
- National Register Site
- Cemetery
- Airport
- Community Boundary
- State Boundary
- Preliminary Build Alternative
- I-73 Northern Project Study Area
- I-73 Southern Project Study Area
- Carolina Bay
- Conservation Open Space
- Hazardous Material Disposal Site
- Mitigation Site
- Mine
- National Register Historic District
- Park
- County Boundary
- Municipality
- Outside North Carolina Study Area
- Outside South Carolina Study Area

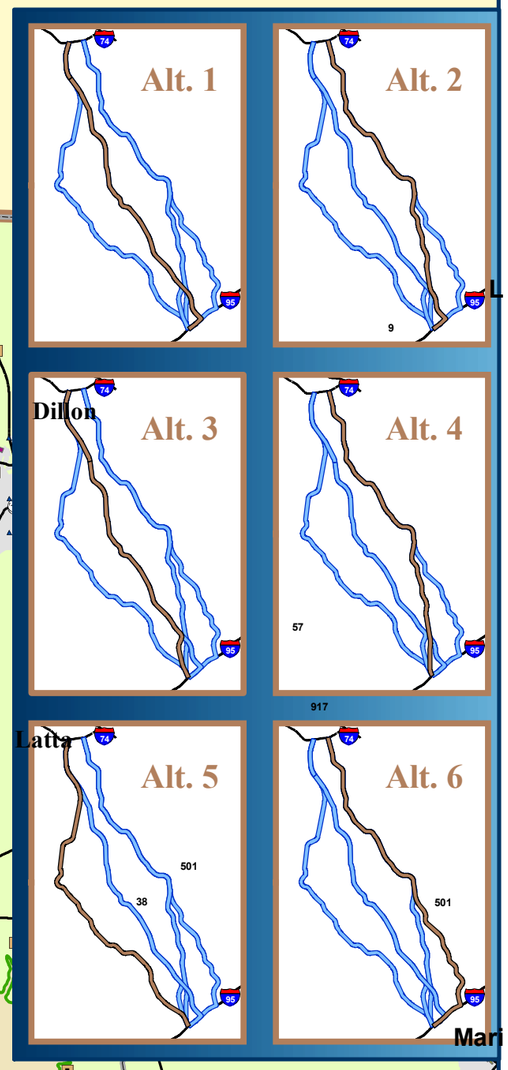

FIGURE 2-3
SIX PRELIMINARY BUILD ALTERNATIVES

Public comments were received regarding the use of existing S.C. Route 38, including intersecting with I-95 at the existing S.C. Route 38 interchange. The existing interchange at S.C. Route 38 and I-95 would have required expansion to accommodate a larger design of an interstate to interstate connection, I-73 to I-95. Four commercial establishments that provide approximately $7 million annually for Dillon County would have been impacted. The businesses could not be relocated at the same interchange, potentially losing this annual revenue for Dillon County, since both I-73 and I-95 would have fully controlled access. In addition, utilizing the existing S.C. Route 38 north of I-95 would have impacted the communities of Oak Grove, Brownsville, Bristow, Blenheim, and Monroe Crossroads before entering downtown Bennettsville. The potential impacts to the residences, churches, and cemeteries in these communities would have been much higher than those associated with the six preliminary Build Alternatives. Maximum use of existing S.C. Route 38 was attempted north of Bennettsville, but existing communities such as Brightsville, Aarons Temple, and Prevatts Chapel would have been severely impacted.

2.5.2 How were the Reasonable Build Alternatives designated?

The design of the six preliminary Build Alternatives was refined and the alternatives were then given greater scrutiny in the environmental evaluation. The evaluation categories were expanded. More specific data was reviewed for each alternative, including preliminary interchange locations along I-95, to provide a more accurate representation of potential impacts. The categories discussed previously were utilized, as well as the following resources to evaluate the six preliminary Build Alternatives in further detail:

- Streams (total crossings, perennial crossings, and intermittent crossings);
- Water Quality (Protected/Special Designation and 303(d) impaired waters);
- Floodplain Acreage;
- Parks and Wildlife Refuges;
- Historical Structures;
- Community Impacts;
- Relocations;
- Uplands;
- Farmland (Prime, Unique, and Statewide Important); and,
- Infrastructure.

Recent aerial photography (2004 and 2006 for South Carolina and 2005 for North Carolina) was used to update the NWI mapping for a more accurate representation of potential wetland boundaries. In areas where wetland boundaries could not be readily distinguished on the aerial photography, ground-truthing was performed. Due to the wetland value being dependent on the type and size of the wetland being impacted, these categories were also updated with the modified wetland information for each alternative.

The six preliminary Build Alternatives were presented to the ACT with details of potential impacts for a 500-foot wide corridor with interchanges at I-95 (refer to Table 2.4). The six preliminary Build Alternatives connected to I-95 at three different locations, which required three distinct interchange designs. Alternatives 1, 2, and 6 did not tie directly into the I-73 South Preferred Alternative. Each of these would require two interchanges with I-95, both of which would allow for traffic moving between the two interstates to travel at 70 miles per hour. This would require larger, more expensive interchanges than would be needed for Alternative 3, 4, and 5. The distance between where Alternatives 1 and 2 and where I-73 South would connect to I-95 was approximately 4,300 feet, which was not long enough to combine I-73 and I-95 into one facility. Attempting to drop a lane and introduce additional lanes would create a dangerous situation for drivers. Instead, Alternatives 1 and 2 were designed to be parallel facilities, with I-95 on the inside and I-73 on the outside, which would require more right-of-way (refer to Figure 2-4 on page 2-19).

Alternative 6 had a distance of approximately 12,800 feet between where it would intersect with I-95 and where the I-73 South Preferred Alternative would connect to I-95. This allowed for two interchanges with four lanes in each direction on I-95 to function and meet level of service demands (refer to Figure 2-5 on page 2-20). Alternatives 3, 4, and 5 tied directly into the I-73 Southern Preferred Alternative, which was the least complex and least costly interchange to construct (refer to Figure 2-6 on page 2-21). Alternatives 3, 4, and 5 did not require a second interchange along I-95 or additional lanes to be constructed along I-95, which resulted in lower costs and impacts to resources. In addition, Alternative 1 was very similar to Alternative 3, while Alternatives 2 and 6 were similar to Alternative 4. The major differences between Alternatives 1 and 3, as compared to Alternatives 2, 4, and 6, were where they connected to I-95.

After extensive discussion and evaluation, the ACT reached consensus on designating three of the six preliminary Build Alternatives, Alternatives 3, 4, and 5, as reasonable Build Alternatives for further study. Table 2.5 (refer to page 2-22) presents the six preliminary Build Alternatives and the reason for the elimination of three. Three of the six preliminary Build Alternatives, referred to as reasonable Build Alternatives, remained to be evaluated further in the DEIS.

As a result of the designation of Alternatives 3, 4, and 5 as reasonable Build Alternatives, the alternatives were renumbered as follows:

NAME	REVISED NAME
Alternative 3 (central alternative)	Alternative 2
Alternative 4 (eastern alternative)	Alternative 3
Alternative 5 (western alternative)	Alternative 1

Table 2.4
Six Preliminary Alternatives Matrix

	Category	Unit of Measure	Alternative 1	2	3	4	5	6
Purpose And Need	System Linkage		Yes	Yes	Yes	Yes	Yes	Yes
	Improved Access for Tourism		Yes	Yes	Yes	Yes	Yes	Yes
	Increased Safety on Existing Roads		Yes	Yes	Yes	Yes	Yes	Yes
	Multimodal Planning		Yes	Yes	Yes	Yes	Yes	Yes
Engineering Criteria	Length	Miles	38.8	39.0	37.6	37.8	41.3	41.0
	Constructability	Ranking	3	3	1	1	1	6
	Construction Cost	$ Millions	746	796	647	685	704	825
Natural Features	Threatened and Endangered Species	Yes (#) / No	No	No	No	No	No	No
	Wetlands	Acreage	294.4	291.7	229.0	256.5	280.7	289.2
	Wetland Quality	Value	1,858.7	1,933.8	1,330.9	1,675.9	1,651.9	1,674.2
	Streams							
	Total Crossings	# of Crossings (Linear Feet)	22(11,851)	38(23,743)	17(7,721)	39(22,467)	16(9,623)	52(27,058)
	Perennial	# (Linear Feet)	16(9,357)	16(10,135)	10(4,665)	17(8,859)	8(4,438)	24(10,364)
	Intermittent	# (Linear Feet)	6(2,494)	22(13,608)	7(3,056)	22(13,608)	8(5,185)	28(16,694)
	Water Quality							
	Outstanding Resource Water	# of Crossings	0	0	0	0	0	0
	303(d) Impaired (2006 Draft List)	# of Crossings	0	0	0	0	0	0
	Habitat	Unique	No	No	No	No	No	No
	Uplands	Acreage	2,604	2,621	2,336	2,311	2,519	2,646
	Floodplains	Acreage	78	59	67	58	112	52
Man-made Features	Hazardous Material Sites	#	INA	INA	INA	INA	INA	INA
	Parks and Wildlife Refuges	Yes (#) / No	No	No	No	No	No	No
	Historical Structures	Yes (#) / No	2 & 1V	4	2 & 1V	4	4	3 & 1V
	High Potential Area for Archaeological Sites	Acreage	INA	INA	INA	INA	INA	INA
	Noise (R= Residential, C= Church)	#	INA	INA	INA	INA	INA	INA
	Farmland	Acreage	2,432	2,455	2,128	2,133	2,374	2,488
	Prime	Acreage	1,357	1,497	1,125	1,261	1,102	1,486
	Unique	Acreage	0	0	0	0	0	0
	Statewide Important	Acreage	1,075	958	1,003	872	1,272	1,002
	Chicken Farm	#	0	2	0	2	0	2
	Hog Farm	#	0	0	0	0	0	1
Socioeconomic Issues	Community Impacts	#	1	2	1	2	3	1
	Total Relocations	#	49	45	49	42	52	40
	Residential Relocations	#	45	41	47	39	52	36
	Commercial Relocations	#	4	4	2	3	0	4
	Environmental Justice	Yes / No	INA	INA	INA	INA	INA	INA
Infrastructure	Airports	#	0	0	0	0	0	0
	Fire Stations	#	0	0	0	0	0	0
	Schools	#	0	0	0	0	0	0
	Churches	#	2	1	1	0	1	0
	Cemeteries	#	0	0	0	0	0	0
	Railroad Crossings	#	1	3	1	3	1	3
	Gas Line Crossings	#	1	1	1	1	2	1

Notes:
INA - Information Not Available at this time
V - potential Visual impact