

# **AMENDMENT TO APPLICATION**

**to the South Carolina State  
Transportation Infrastructure Bank Board  
for Completion of the Mark Clark Expressway (I-526)**



**CHARLESTON  
COUNTY  
SOUTH CAROLINA**

*Submitted by: Charleston County  
May 2011*



## EXECUTIVE SUMMARY

As part of its responsibility in representing the interests of the citizens of Charleston County, Charleston County Council respectfully submits this amended application to the South Carolina State Transportation Infrastructure Bank Board relating to the previously approved \$420 million of funding for the completion of the Mark Clark Expressway (I-526). As was the case in the originally approved application, the projects included as part of this amended application will benefit over 300,000 residents of Charleston County in addition to the 4.5 million tourists that visit the Charleston area annually.

The project as initially envisioned is described in the following section, and details of this amended application are contained in subsequent sections. This amended application is submitted with the belief of Charleston County that the same fundamental objectives to be met by the original project will be addressed by the amended proposal.

### CHARLESTON COUNTY'S PROPOSED ACTION

The action proposed under this Amended Application is consistent with the County's responsibilities under Article 5.5 of the Intergovernmental Agreement. The estimated cost for the completion of the Mark Clark Expressway has increased from \$420 million to \$489 million. The County has determined that it does not have the ability to obtain or provide additional funding for the difference as called for in this Article. Therefore, as per the IGA, the County proposes to reduce the project scope, while continuing to meet the fundamental intent of the original project.

In accordance with Article 3.1 of the Intergovernmental Agreement, the County will credit the Bank the amount of \$161.11 million, the difference between the \$420 million funding requested in the original application and the \$258.89 million funding requested in this amended application. The County believes that this significant reduction in scope and cost can therefore be put to the benefit of other projects in the state which have been found eligible for funding by the Bank, but for which funds have been previously unavailable.

Charleston County Council believes that many citizens are uncomfortable with the Mark Clark Expressway solution developed during the EIS process, and that the preferred alternative may not enjoy sufficient public support to proceed forward. However, the Council recognizes the critical importance of the fundamental purpose for the project. The County wishes to address the transportation issues in this area in an effective manner that also satisfies the concerns of a majority of the County's residents.

The amended roster of improvements presented here meets the same fundamental objectives of the completion of the Mark Clark Expressway, by focusing on improving existing roadway facilities. In the aggregate these projects will improve the capacity, safety, and mobility of the West Ashley, James Island, and Johns Island area in an environmentally sensitive manner.

As with the completion of the Mark Clark Expressway, the County has developed this list of roadway enhancements that would provide numerous benefits. The most significant of these would be the increase in mobility and safety for the Charleston area, particularly the south islands area. Enhancements to mobility and safety are discussed, as appropriate, as part of the project descriptions for each project. The reduced project scope elements have been carefully selected based on a comprehensive review of area traffic choke points, and together with current Charleston County Transportation Sales Tax projects (such as Bees Ferry Road widening, Folly Road and Camp Road intersection improvements,



etc), are expected to provide improvements comparable to the original scope but with a lower cost. The proposed improvements include:

- I-526 / Glenn McConnell Interchange
- US Route 17/Main Road Grade Separation
- Widening Main Road from Bees Ferry Road to Maybank Highway
- SC Route 61 / SC Route 7 Intersections
- Intersection Safety Improvements
- Passing Lanes on Bohicket Road

### STATE HIGHWAY SYSTEM LOCALLY FUNDED PROJECTS

An additional significant component of the County’s amended application is the proposal to significantly increase the local match funding from the contractually agreed amount of \$117 million, to an amount of \$198.6 million. These funds are intended to be expended on improvements to roads in the State Highway System, and include local sales tax revenues and guideshares contributions. This change represents an increase from the original application of \$81.6 million dollars, which is an increase in match from 27.8% to 43%.

### FINANCIAL PLAN

#### Total Cost of the Projects

Project	Estimated Cost of Project	Funding Provided	
		SIB	County
I-526 / Glenn McConnell Interchange	\$117.1 million	X	
US Route 17 / Main Road Grade Separation	\$31.9 million	X	
Widening Main Road from Bees Ferry Road to Maybank Highway	\$64.1 million	X	
SC Route 61 / SC Route 7 Intersection	\$35.25 million	X	
Intersection Safety Improvements	\$4.29 million	X	
Passing Lanes on Bohicket Road	\$6.25 million	X	
Locally Financed U.S. and State Roads	\$198.6 million		X
<b>Total</b>	<b>\$457.49 million</b>	<b>Local Match</b>	<b>43%</b>



The total cost for design and construction of all projects in the program is \$457.49 million. This program includes the six projects listed in this revised application and a local contribution in the form of locally financed roads for the Federal and State Highway System.

### Local Contribution

The local contribution is comprised of **\$198.6 million** in projects approved by referendum for bond expenditure, including:

- **\$84 million:** US 17 Johnnie Dodds Boulevard
- **\$7 million:** Glenn McConnell Parkway/Bees Ferry Road Improvements (“West Ashley Traffic Circle”)
- **\$18 million:** Harbor View Road
- **\$4.2 million:** Folly Road/Maybank Highway Intersection
- **\$15.4 million:** Camp Road/Folly Road Intersection
- **\$4.5 million:** U.S. Highway 17/SC Route 61 Improvements
- **\$28 million:** Bees Ferry Road Widening
- **\$30 million:** Maybank Highway Improvements
- **\$7.5 million:** Glenn McConnell Parkway/I-526 Improvements

### Amount of Assistance Requested

Charleston County respectfully requests \$258.89 million for the projects listed in this amended application. The local contribution of \$198.6 million will comprise over 43 percent of the total \$457.49 million program. This request is supported by our engineer’s estimate. We have requested a letter of confirmation from SCDOT.



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## INTRODUCTION

As part of its responsibility in representing the interests of the citizens of Charleston County, Charleston County Council respectfully submits this amended application to the South Carolina State Transportation Infrastructure Bank Board relating to the previously approved \$420 million of funding for the completion of the Mark Clark Expressway (I-526). As was the case in the originally approved application, the projects included as part of this amended application will benefit over 300,000 residents of Charleston County in addition to the 4.5 million tourists that visit the Charleston area annually.

The project as initially envisioned is described in the following section, and details of this amended application are contained in subsequent sections. This amended application is submitted with the belief of Charleston County that the same fundamental objectives to be met by the original project will be addressed by the amended proposal.

## PROJECT HISTORY

Charleston County submitted an Application to the South Carolina State Transportation Infrastructure Bank Board on December 5, 2005. As mentioned above, the Application included the completion of the Mark Clark Expressway (I-526), and also included direct access from I-26 to Seaport Terminal Facilities at the Navy Base terminal (also known as the Port Access Road). The benefit of the Mark Clark project as outlined by the County involved enhancing safety, reducing congestion, improving hurricane evacuation mobility, and encouraging economic development through job creation and user cost reductions. As they do today, the community held these benefits in the utmost importance in regards to their standard of living in the area. As a result, the plan to address these issues was broadly supported by:

- Charleston County Council
- Charleston County Legislative Delegation
- Charleston City Council
- City of North Charleston
- Town of Seabrook Island
- CHATS (Charleston Area Transportation Study-Policy Committee)
- Charleston Metro Chamber of Commerce

On December 15, 2005, a delegation representing Charleston County made a presentation to the Board to provide additional details regarding the requested projects. This presentation highlighted that Charleston County:

- Is home to three of the four largest municipalities in South Carolina
- Places a high level of importance on hurricane evacuation facilities
- Has committed to a large proportion of matching funds through its Transportation Sales Tax

As a result of the application and presentation, the Bank's Evaluation Committee found the project to be eligible and recommended the Board approve the project. At the Board's June 30, 2006 meeting,



the Board approved the project and granted an initial amount of \$99 million for engineering and environmental work and the acquisition of rights of way, with a subsequent amount of \$321 million for the completion of the project, for a total estimated cost of \$420 million. This was to be matched by a local contribution of \$117 million.

In late 2007, the South Carolina Department of Transportation formally notified the Federal Highway Administration of their intent to initiate the Environmental Impact Statement process for this project. Project scoping meetings with the public, resource and regulatory agencies, and stakeholders were conducted in early 2008 and work on the Draft Environmental Impact Statement (DEIS) began immediately after these meetings. A Purpose and Need Statement was developed in the Summer of 2008, and stated that ***"The purpose of the project is to increase the capacity of the regional transportation system, to improve safety, and enhance mobility to and from West Ashley, James Island and Johns Island in an environmentally-sensitive manner."***

A series of Public Information Meetings were held in the Fall of 2008 and again in the Spring of 2009, coinciding with the development of the DEIS. Following these meetings, work progressed on the development of the recommended Preferred Alternative which culminated with a series of Public Hearings in the summer of 2010.

The studies confirmed that regional mobility was extremely important, with the projected growth in traffic from 2003 and 2035 between West Ashley and Johns Island of 77%, and between West Ashley and North Charleston of 94%.

## COMMUNITY INPUT

Comments were received from the public regarding the recommended preferred alternative over the course of four Public Hearings conducted during the Summer of 2010. A total of 2,170 comments were received from 1,657 individuals. A tabulation of the comments indicated that 62 percent of the respondents were opposed to the completion or a build option, while only 32 percent were in support of the project. Included among the reasons for opposition to the project given were the high cost of the project and the increase in traffic congestion in certain areas. In addition, project development concerned some citizens due to the sensitive areas and communities impacted by the project footprint. However, many of those that opposed the project suggested and supported consideration for making improvements to existing roads instead of completing the Mark Clark Expressway.

The public input process is a vital part of the National Environmental Policy Act. Charleston County Council, while always very mindful in acting in the best interests of its citizens, is further bound by law to make decisions that reflect the wishes of the majority of the constituency it represents.

## CHARLESTON COUNTY'S PROPOSED ACTION

The action proposed under this Amended Application is consistent with the County's responsibilities under Article 5.5 of the Intergovernmental Agreement. The estimated cost for the completion of the Mark Clark Expressway has increased from \$420 million to \$489 million. The County has determined that it does not have the ability to obtain or provide additional funding for the difference as called for in this Article. Therefore, as per the IGA, the County proposes to reduce the project scope, while continuing to meet the fundamental intent of the original project.

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original application and the \$258.89 million funding requested in this amended application. The County believes that this significant reduction in scope and cost can therefore be put to the benefit of other projects in the state which have been found eligible for funding by the Bank, but for which funds have been previously unavailable.

Charleston County Council believes that many citizens are uncomfortable with the Mark Clark Expressway solution developed during the EIS process, and that the preferred alternative may not enjoy sufficient public support to proceed forward. However, the Council recognizes the critical importance of the fundamental purpose for the project. The County wishes to address the transportation issues in this area in an effective manner that also satisfies the concerns of a majority of the County's residents.

The amended roster of improvements presented here meets the same fundamental objectives of the completion of the Mark Clark Expressway, by focusing on improving existing roadway facilities. In the aggregate these projects will improve the capacity, safety, and mobility of the West Ashley, James Island, and Johns Island area in an environmentally sensitive manner.

As with the completion of the Mark Clark Expressway, the County has developed this list of roadway enhancements that would provide numerous benefits. The most significant of these would be the increase in mobility and safety for the Charleston area, particularly the south islands area. Discussions of enhancements to mobility and safety are discussed, as appropriate, as part of the project descriptions for each project. The reduced project scope elements have been carefully selected based on a comprehensive review of area traffic choke points, and together with current Charleston County Transportation Sales Tax projects (such as Bees Ferry Road widening, Folly Road and Camp Road intersection improvements, etc), are expected to provide improvements comparable to the original scope but with a lower cost. The proposed improvements include:

- I-526 / Glenn McConnell Interchange
- US Route 17/Main Road Grade Separation
- Widening Main Road from Bees Ferry Road to Maybank Highway
- SC Route 61 / SC Route 7 Intersections
- Intersection Safety Improvements
- Passing Lanes on Bohicket Road



## DESCRIPTION OF PROJECT

### INTERCHANGE IMPROVEMENTS

#### I-526/Glen McConnell Interchange

Based on the large amount of residential and commercial development that has occurred in and around the West Ashley area over recent years, traffic operations on the local/regional infrastructure have suffered. This degradation in operations has become very evident along the Glenn McConnell Parkway, which serves as a major carrier of traffic between the West Ashley region and the Mark Clark Expressway/Charleston area. This project will include improvements to several intersections within the area to improve safety and traffic operations in the corridor. The intersections of Magwood Drive and Tobias Gadson with Glenn McConnell Parkway and Ashley River Road will have additional turn lanes and traffic signal timing improvements. The Glenn McConnell Parkway at Frontage Road intersection will be fully closed due to safety constraint created by the upstream interchange merge/weave conflicts. An at-grade centralized signalized SPU will be constructed for the Glenn McConnell Parkway and I-526 interchange and additional through lanes will be added to Glenn McConnell Parkway.



The preferred interchange layout is chosen to be Hybrid Single Point Urban Interchange (SPUI) with a single directional flyover ramp due to less significant impact to the surrounding area in terms of Right-of-Way requirements, environment impacts, access constraints, and merge/weave conflicts.

The 2030 operational analysis results show that I-526 expressway will operate at **LOS E** and LOS C at north (projected 2030 AADT 143,900 vpd) and south (AADT 72,500 vpd) of Glen McConnell Parkway, respectively. Glen McConnell Parkway will also operate at **LOS E/F** between I-526 to west of Magwood Road (AADT 87,000 vpd) and LOS C from I-526 to east of Tobias Gadson Boulevard (average AADT 36,600 vpd) in the design year. The design year ramp analysis results show that all on-ramp and off-ramp junctions at the proposed interchange will operate at an acceptable LOS C or better except three locations. The on-ramps from eastbound and westbound Glen McConnell to northbound I-526 will operate at an unacceptable **LOS E/F**. In the reverse direction, the southbound to westbound off-ramp will also operate at **LOS F**. The 2030 design hour volumes show significantly higher volumes of eastbound to northbound (3,150 vph), westbound to northbound (1,130 vph) and southbound to westbound (3,210 vph).

	Design	ROW	Construction	Total
Estimated Cost	\$21,500,000	\$2,800,000	\$92,800,000	\$117,100,000

## U.S. Highway 17/Main Road Grade Separation

The project involves the construction of an urban diamond interchange to replace the existing heavily congested at-grade intersection of Main Road at US 17. As presently envisioned; US 17 would bridge over Main Road to provide smooth traffic flow and eliminate signal delay for traffic and cargo going towards Charleston. The grade separation would also separate the heavy left turn movement for traffic going towards John’s Island from through traffic thereby reducing congestion and increasing safety.



This intersection currently operates at **LOS F** (delay 147.6 sec/veh) and **LOS E** (delay 60.9 sec/veh) during the morning and afternoon peak hours, respectively. If the I-526 completion is not constructed and regional development continues as planned, the intersection operation will continue to deteriorate to **LOS F** (delay 257.2 sec/veh) and **LOS F** (delay 124.5 sec/veh) during morning and afternoon peak hours, respectively.

The future design year traffic projections show that both US 17 and Main Road arterials must accommodate most of the traffic growth in the area of Charleston County, if no other additional north-south and east-west regional roadway improvements were implemented and/or added to the roadway network. Currently US 17 serves as the only major east-west route and Main Road as the only north-south route onto Johns Island, this intersection will serve as a regional bottleneck without significant improvement in the design year.

To accommodate the design year traffic a grade separated intersection configuration is recommended where the four-lane US 17 arterial will travel over Main Road. The delays along US 17 (eastbound delay of 309 sec/veh in the morning and westbound delay of 145 sec/veh in the afternoon) will be eliminated with the construction of the overpass. Additionally the delays along north and southbound Main Road will also be significantly reduced with this proposed geometric configuration.

Table 3  
Cost Estimate for Interchange Improvements at U.S. 17 and Main Road

	Design	ROW	Construction	Total
Estimated Cost	\$3,700,000	\$5,400,000	\$22,800,000	\$31,900,000

## INTERSECTION IMPROVEMENTS

### S.C. Route 61/S.C. Route 7 Intersections

This project involves widening S.C. 7 (Sam Rittenberg Boulevard) and S.C. 61 (Ashley River Road) to three lanes in each direction within the project limits. The project limits encompass approximately four thousand feet of S.C. 7 and approximately five thousand feet of S.C. 61. This project will also involve constructing dual left-turn lanes on all approaches of the intersection along with optimizing the traffic signal timings. These improvements will greatly increase capacity and improve the delay that vehicles currently experience.

The proposed design year (2030) geometric improvements will improve the intersection delay during both peak hours at an acceptable condition to LOS D (delay 36.1 sec/veh) and LOS D (delay 53.9 sec/veh) during the morning and afternoon peak hours, respectively. All approaches will continue to operate at an acceptable

LOS during both peak hours with an exception to westbound and southbound. The westbound and southbound approaches will operate at capacity, **LOS E**, with delays 57.9 sec/veh and 58.6 sec/veh, respectively, during the afternoon peak hour. However, the average afternoon peak hour queue length will be significantly reduced from approximately 1,900 feet (76 cars) to 765 feet (31 cars) and 900 feet (36 cars) to 475 feet (19 cars) along west and southbound approaches, respectively.



Table 4

Cost Estimate for Intersection Improvements at S.C. Route 61 and S.C. Route 7

	Design	ROW	Construction	Total
Estimated Cost	\$2,850,000	\$20,800,000	\$11,600,000	\$35,250,000

### Main Road at Chisolm Road

This project involves safety and operational improvements to the intersection of Main Road at Chisolm Road located adjacent to St. Johns High School. The proposed project would provide dedicated left-turn lanes at the intersection and include a three lane section along the high school frontage thereby separating the heavy high school bound traffic from morning commuting traffic. The addition of a center two-way left-turn lane will also serve to improve safety by reducing the likelihood of rear end collisions caused by vehicles stopping to turn into the high school.

The intersection currently operates at LOS B (delay 10.1 sec/veh) and LOS B (delay 15.3 sec/veh) during morning and afternoon peak hours, respectively. The operating condition will deteriorate to LOS B (delay 16.6 sec/veh) and **LOS F** (delay 91.0 sec/veh) in the design year 2035 if the project is not completed. The widening of the Main Road arterial to a four-lane facility (between US 17 and Maybank Highway) will be required to accommodate the future traffic growth.

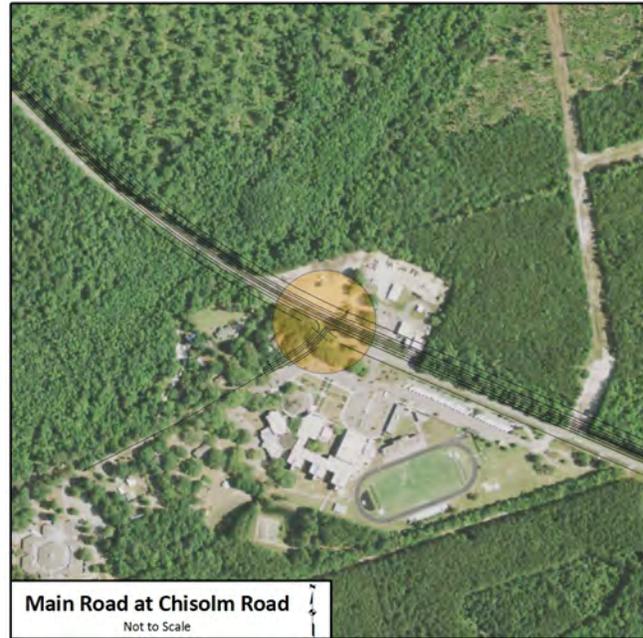


Table 5  
Cost Estimate for Intersection Improvements at Main Road and Chisholm Road

	Design	ROW	Construction	Total
Estimated Cost	\$340,000	\$275,000	\$2,315,000	\$2,930,000

### Maybank Highway at River Road

This project involves safety and operational improvements to the intersection of Maybank Highway at River Road through the construction of a westbound right-turn lane and traffic signal timing improvements. The intersection serves as one of the major entry/exit points between Johns Island region and Charleston, SC. The existing morning and afternoon peak period operating conditions are LOS D (delay 48.0 sec/veh) and LOS C (delay 32.0), respectively. In the design year 2035 the operating condition deteriorates to **LOS F** (delay 334.4 sec/veh) and **LOS F** (delay 290.2 sec/veh) if no geometric improvements are implemented. Dual left turn lanes at westbound and dual right turn lanes at northbound approaches will be required. The proposed geometric



improvements will improve the operating condition significantly to LOS C (delay 27.1 sec/veh) and LOS D (delay 39.2 sec/veh) during the morning and afternoon peak hours, respectively.

**Table 6**  
Cost Estimate for Intersection Improvements at Maybank Road and River Road

	Design	ROW	Construction	Total
Estimated Cost	\$130,000	\$95,000	\$120,000	\$345,000

### River Road at Murraywood Road

This project involves safety and operational improvements to the intersection of Murraywood Road and River Road through the construction of a northbound left-turn lane. The construction will also require replacing an existing 30 foot bridge that is within the project limits.

The existing operational condition shows LOS B (delay 10.1 sec/veh) and LOS B (delay 12.4 sec/veh) during morning and afternoon peak hours, respectively. If no improvements are proposed in the design year 2035 the operating condition for morning and afternoon peaks will deteriorate to LOS C (delay 20.9 sec/veh) and **LOS F** (delay 1,171.5 sec/veh). Dual northbound left turn lanes, a new traffic signal and widening of both River Road (between Plow Ground and Murraywood Road)



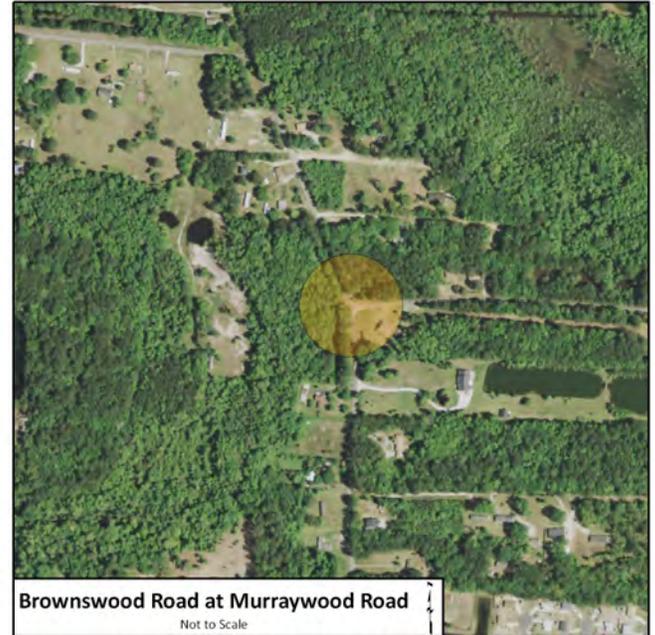
and the entire Murraywood Road to a four-lane facility will be required to accommodate the future traffic projections. The proposed geometric modification will improve the afternoon peak hour operating condition to LOS C (delay 21.6 sec/veh).

**Table 7**  
Cost Estimate for Intersection Improvements at River Road and Murraywood Road

	Design	ROW	Construction	Total
Estimated Cost	\$160,000	\$185,000	\$490,000	\$835,000

## Brownswood Road at Murraywood Road

This project involves the construction of a northbound and westbound right-turn lane to improve traffic flow at the intersection of Brownswood Road and Murraywood Road. The existing traffic operational analysis results show that this intersection will operate at LOS A (delay 9.1 sec/veh) and LOS B (delay 10.1 sec/veh). Based on the 2035 design year traffic projections, the same intersection would operate at LOS C (delay 21.6 sec/veh) and **LOS F** (delay 76.9) during morning and afternoon peak hours, if no geometric improvements are implemented. The intersection delay will increase over 661 percent during the afternoon peak hour. Dual left turn lanes from westbound Murraywood Road to southbound Brownswood Road and a new traffic signal will be warranted to accommodate the design year traffic volume. The proposed geometric improvement will improve the afternoon operating condition to LOS B (delay 12.2 sec/veh)



	Design	ROW	Construction	Total
Estimated Cost	\$40,000	\$35,000	\$105,000	\$180,000

## WIDENING IMPROVEMENTS

### Widening Main Road (Bees Ferry Road to Maybank Highway)

The project involves widening Main Road from Bees Ferry Road to Maybank Highway, a distance of approximately seven miles, to a five lane section. This project will greatly increase capacity along Main Road which is currently a two lane road of the most part. Also, the addition of a center two-way left-turn lane will serve to improve safety by reducing the likelihood of rear end collisions caused by vehicles stopping to turn into businesses and residential areas. This improvement does not replace the existing bridge over the Stono River.

The existing operational condition shows that the segment of Main Road between Bees Ferry Road to River Road and River Road to Maybank Highway currently operates at a congested traffic condition during both morning and afternoon peak hours. The northbound Main Road arterial between Maybank Highway and Bees Ferry Road experiences heavy congestion during the morning peak hour. The opposite southbound direction observes slightly higher congestion during the afternoon peak hour. Northbound and southbound directions of Main Road between Bees Ferry Road and Maybank Highway currently operate at **LOS E/F** during the morning and afternoon



peak hours, respectively. The operating condition will deteriorate significantly in the design year (2035) traffic condition to **LOS F** if geometric improvements are not implemented. Widening of Main Road from current two-lane to a four-lane facility between Bees Ferry Road to Maybank Highway is recommended to accommodate the design year traffic. The proposed widening of the Main Road will significantly improve the overall design year arterial operating condition to LOS B or better during both peak hours.

Table 9 Cost Estimate for the Widening of Main Road from Bees Ferry Road to Maybank Highway				
	Design	ROW	Construction	Total
Estimated Cost	\$3,450,000	\$11,400,000	\$49,250,000	\$64,100,000

### Passing Lanes on Bohicket Road

The project involves the construction of passing lanes on Bohicket Road to provide an opportunity for drivers to pass slow moving or large vehicles traveling on Bohicket Road between Betsy Kerrison Parkway and Maybank Highway. The passing lanes would be located just south of the Hoopstick Creek Bridge and extend to North Edenvale Road, a distance of approximately four thousand feet. The passing lanes would be created by widening Bohicket Road from a two lane section to a four lane section. The location of the proposed passing lanes would be planned carefully to minimize impacts to grand trees and cultural resources along the project corridor.

Table 10 Cost Estimate for Passing Lanes on Bohicket Road				
	Design	ROW	Construction	Total
Estimated Cost	\$650,000	\$900,000	\$4,700,000	\$6,250,000



# PUBLIC BENEFITS



## 1. PUBLIC BENEFITS

Although Charleston County expects to realize numerous benefits from the reduced project scope through these roadway enhancements, the most significant benefit will be the increase in mobility and safety for the Charleston area, particularly the south islands area. In addition to enhanced mobility and safety, the proposed roadway enhancements are expected to improve the quality of life and general welfare of the public, as well as enhance economic development. As requested, the public benefits that are expected from the completion of the selected improvements are ranked in order of significance as follows:

1. Enhancement of Mobility and Safety
2. Increase in the Quality of Life and General Welfare of the Public
3. Promotion of Economic Development

The following discussion focuses on population and traffic increases in the Berkeley-Charleston-Dorchester (BCD) region and gives the State Infrastructure Bank Board members the opportunity to become familiar with the background data required to analyze the need for the Mark Clark Expressway completion.

### 1.1 ENHANCEMENT OF MOBILITY AND SAFETY

Table 1 shows the increase in population and in total vehicle miles traveled (VMT) per day on publicly maintained roads in the Berkeley-Charleston-Dorchester (BCD) region from 1990 to 2000. VMT includes trips made by residents, commercial vehicles, and visitors, as well as travelers just passing through the region. As shown in Table 1, there is a noticeable difference in the population and VMT growth rates. While the total population for the region increased around 8% from 1990 to 2000, the VMT during the same time period increased 27%. In each of the three counties, the VMT growth rate was at least double that of the population growth rate.

County	1990		2000		VMT Change	Population Change
	VMT	Population	VMT	Population		
Berkeley	2,313,128	128,776	3,649,134	142,651	58%	11%
Charleston	7,319,577	295,039	8,445,289	309,969	15%	5%
Dorchester	1,971,686	83,060	2,670,361	96,413	35%	16%
Region	11,604,391	506,875	15,764,784	549,033	27%	8%

Source: SCDOT, US Census

As illustrated in Table 2, three-quarters of all VMT were on interstates, freeway, and arterials, which are the region's major highways.

**Table 12**  
Daily VMT by Functional Class, BCD Region

	1990		2000		1990-2000 Percent Change
	VMT	Percent	VMT	Percent	
Interstate/ Freeway	2,913,058	25%	4,446,494	30%	53%
Arterial	5,847,946	50%	6,982,879	47%	19%
Collector	2,231,296	19%	2,276,396	15%	2%
Local	612,091	5%	1,059,015	7%	73%
Total	11,604,391	100%	14,764,784	100%	27%

Source: SCDOT

Major roads bear a disproportionate amount of the region’s traffic. ***Although interstates/ freeways account for only 4% of total lane miles, they carry about 30% of total VMT.***

Table 3 shows average travel time to work for these areas, as well as several other MSA’s. Travel time in Charleston-North Charleston, on average, is higher than that of Columbia, Greenville, and the State of South Carolina in general. This is not surprising, since this region is not only one of the state’s largest metropolitan areas, but its coastal location does not allow for development in an even, symmetrical pattern about the urban core, as is possible for inland communities. This eliminates the possibility of a significant percentage of development within a small radius of the region’s center, as compared to an area like Columbia.

**Table 13**  
Average Travel Time to Work in Minutes

Augusta-Aiken MSA	21.9
Charleston-North Charleston MSA	23.1
Columbia MSA	21.8
Greenville-Spartanburg-Anderson MSA	20.7
South Carolina	21.9
Atlanta, GA MSA	29.6
Charlotte Mecklenberg, NC	22.9
Miami, FL, PMSA	28.5
New York City, NY, PMSA	38.1
Raleigh-Durham, NC, MSA	23.3
Washington, DC	28.5
United States	24.3

Source: Census 2000 Supplementary Survey



## 1.2 URGENCY OF THE PROJECT

While the South Carolina coastal region, unlike the Gulf coast, has been spared the disastrous effects of a major hurricane in recent years, it is inevitable that a major storm will impact the Charleston area sometime in the future. The completion of this project will add capacity to evacuation routes from Seabrook, Kiawah, Johns, and James Islands. Evacuation due to a hurricane is never a quick process, but completing the project will relieve some of the gridlock on U.S. Highway 17 and will allow faster flow to I-26 and other alternative routes away from the coast.

## 1.3 LOCAL GOVERNMENT SUPPORT

The original application to the SIB enjoyed the unanimous support of local governments, councils, and organizations because the problems and purposes addressed by the projects touch lives across Charleston County and the state. While the way these issues will be addressed may have changed, the dedication to fixing traffic and safety concerns in Charleston County is permanently engraved on the hearts of citizens and governing officials alike. Charleston County will pursue the passage of a resolution finding that the project is essential to economic development in the area.

## 1.4 INCREASE IN THE QUALITY OF LIFE AND GENERAL WELFARE OF THE PUBLIC

### 1.4.1. Reduction in Pollution

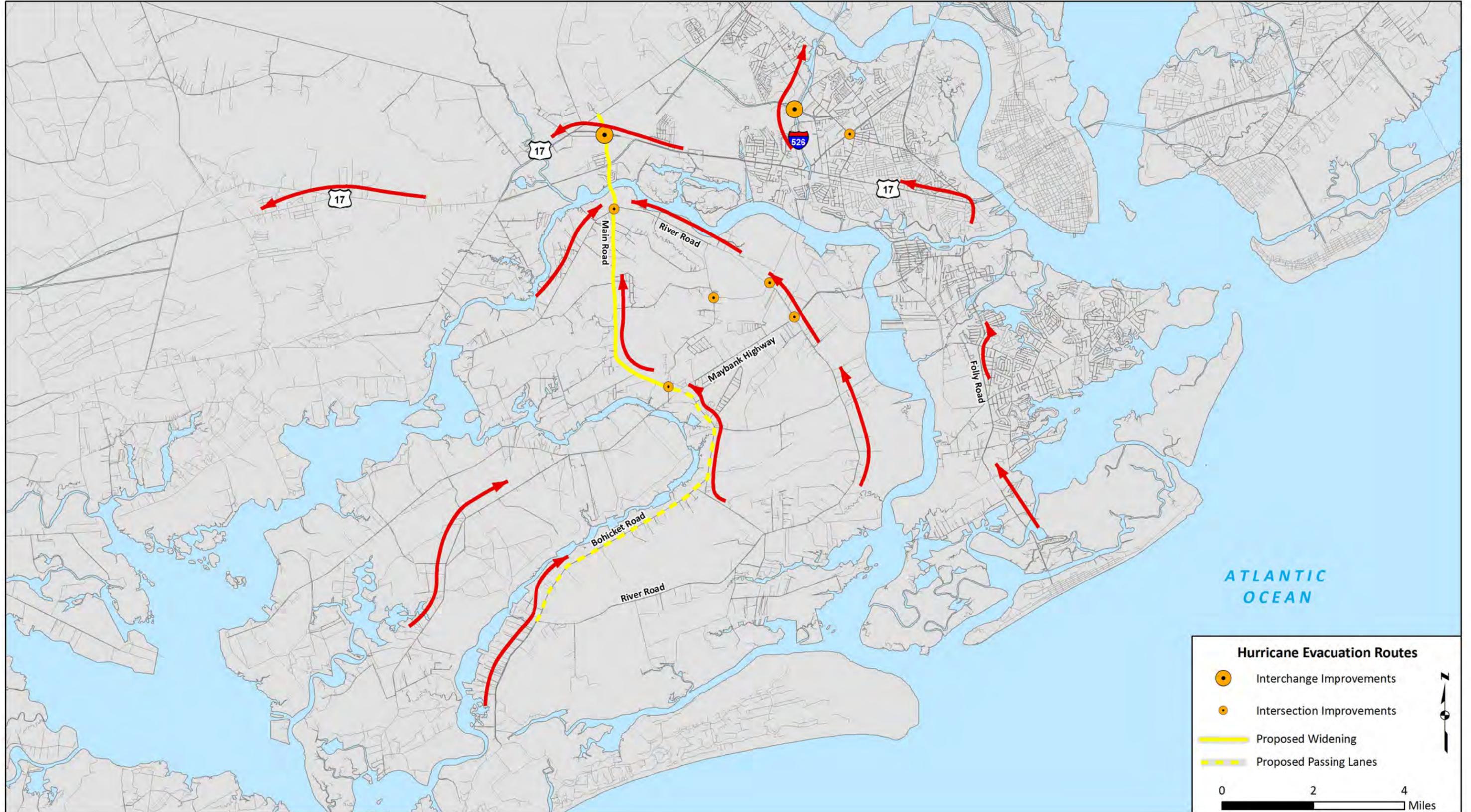
Cars and trucks emit pollutants while idling in congested areas. Reducing congestion, and thus the time that people spend while their automobiles engines are idling as a result of accidents and other traffic problems, can achieve significant environmental benefits. By reducing these occurrences through increased capacity and increased functionality, pollution is reduced to levels less than would otherwise exist given the growing traffic volumes.

Air quality is expected to improve as a result of this project. Although Charleston County is in attainment for the National Ambient Air Quality Standards (NAAQS), it is participating in the Berkeley-Charleston-Dorchester County Early Action Compact. This is a voluntary program to implement measures to reduce the 8-hour ozone levels, and this project supports these goals.

### 1.4.2. Homeland Security

Charleston is home to the US Naval Weapons Station, and US Air Force Base 437th Airlift Wing and 317 Airlift Wing (Reserve). Charleston AFB has more than 7,800 active duty and Air Reserve Component military and civilian personnel. They include approximately 3,700 active duty, 2,700 reservists, and 1,300 civilians. About 16,700 military retirees make their home in the Charleston area. Charleston is home to 54, C-17 Globemaster III aircraft. A C-17 crew consists of pilot, co-pilot, and loadmaster.

Naval Weapons Station (Charleston) is the largest single employer in the Charleston area. The Station encompasses more than 17,000 acres of land with 10,000 acres of forest and wetlands, 16-plus miles of waterfront, four (4) deepwater piers, and 35 miles of railroad. With its integrated railhead, surge mobilization capability, and the only unencumbered explosives arcs in the continental U.S., Naval Weapons Station (Charleston) is truly a unique national defense asset.



**Hurricane Evacuation Routes**

- Interchange Improvements
- Intersection Improvements
- Proposed Widening
- Proposed Passing Lanes

0 2 4 Miles

During these new times in our country since the tragedy of 9/11, our military branches will need to be more mobile than ever. The roadway enhancements provided will improve congestion throughout the area and thus allows the military's logistical network to utilize the improved facilities for personnel and equipment and improves their overall readiness and their ability to respond in the event of an emergency.

### 1.4.3. User Benefits

#### 1.4.3.1 Vehicle Operating Costs (VOC)

Reduction in congestion in the area as a result of the proposed improvements will result in major savings in the cost of operating a vehicle traveling to and from the eastern Charleston County area. These savings would come from reduced consumption of:

- motor fuels and oil; and,
- reduced wear and tear on the vehicle itself.

This is intuitively understandable for those vehicles, which divert from the stop-and-go conditions on the exiting congested roadways to improved flow conditions afforded by this comprehensive project plan.

#### 1.4.3.2 Travel Time Savings

The FHWA's *Procedural Guidelines for Highway Feasibility Studies* emphasizes the importance of the benefit of time savings to transportation users. This benefit is determined by how much time motorists would expect to save as a result of constructing this project. Each of the proposed enhancements has a net reduction in delay that saves each individual on our roadway system time, and in effect money.

#### 1.4.3.3 Accident Savings

In order to consider the safety benefits to society resulting from the construction of the project, costs must be assigned to the various types of accidents that may occur on the existing routes and the proposed routes. Three types of accident costs are typically studied to determine the monetary value of accidents, injuries, and fatalities. These include costs per incident for fatal, injury, and property damage only accidents (PDO). Each proposed enhancement has been studied to examine traffic operation and cause of accidents. The improvements at each location are specifically focused on reducing the number of crashes by reducing congestion, reducing delays, and improving roadway and intersection capacity.

### 1.4.4 Economic Feasibility Analysis

To determine whether highway investment is economically feasible, the costs of building and operating the highway improvements are compared with the economic benefits estimated to be attributable to the highway improvements. This cost and benefit comparison yields three indicators of "economic feasibility."

The original application for the project that included just the completion of Mark Clark Expressway determined that the entire project will be a very attractive and economically feasible undertaking



with over \$1,135 Million in discounted benefits, against a discounted cost of \$366 Million. This resulted in a Gross Benefit / Cost ratio of 3.347 with over \$797 Million of Net Present Value.

Although this same analysis has not been completed, the reduced project scope elements have been carefully selected based on a comprehensive review of area traffic choke points. Together with current Charleston County Transportation Sales Tax projects, it is expected that a comparable benefit-cost ratio will be achieved.

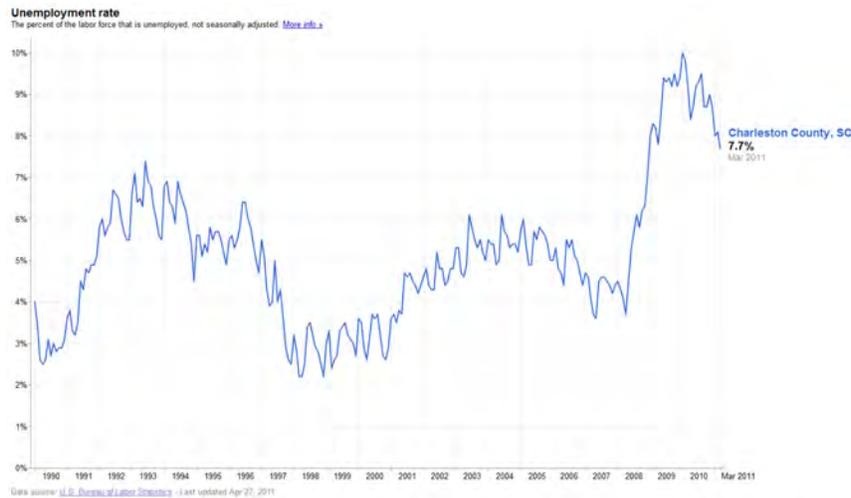
#### **1.4.4.1 Promotion of Economic Development**

The US Department of Transportation (USDOT) study calculates that every \$1 billion dollars of highway spending by the federal government will lead to what USDOT analysts describe as “employment benefits” totaling 47,576 person-years. Using these figures, the investment of \$250 million on the roadway enhancements will have the following effects:

- First-round effects total 5,069 person-years, comprised of 3,224 jobs in the highway construction sector and 1,846 jobs in industries supplying equipment and materials (e.g., stone, concrete, rebar, and fuel).
- Second-round effects total 1,797 person-years of indirect employment caused by additional production demands in industries that supply highway construction materials (e.g., iron and steel, financing, insurance, repair, and chemicals).
- Third-round effects of 5,450 person-years result from spending by the workers employed in the first two rounds on consumer goods (e.g., DVDs, Big Macs, baseball caps, hockey tickets, bourbon, socks, magazines, and home repair).
- As the \$258.89 million dollars of highway spending works its way through the economy, this input/output (I/O) analysis contends that the money will produce the equivalent of 12,317 jobs for one year. We also anticipate that the improvements will help enhance tourism opportunities by reducing frustrating delays and accidents. Tourists visit the Charleston area for many reasons: cultural performances, the Atlantic Ocean, beaches, golf, fishing, and other sport recreations. Improved roadway conditions will give travelers better options for reaching these sites in a safe and efficient manner. It is also anticipated that by making the road safer and reducing congestion, commerce along the corridor will be more efficient, thus resulting in significant savings to the motorists. The cumulative impact of congestion in this corridor costs the region billions of dollars a year.

## **1.5 CURRENT AND FIVE-YEAR HISTORY OF UNEMPLOYMENT DATA FOR CHARLESTON COUNTY**

At the time of the original application, U.S. Bureau of Labor Statistics data available for Charleston County indicated that the unemployment rate was 5.4 percent. By early 2010, this figure nearly doubled. Currently unemployment in the County is 7.7%, underscoring the need to implement these projects to improve economic conditions in the area.



## 1.6 LOCAL SUPPORT FOR THE PROJECT

As previously discussed, the citizens in the area came out in large numbers to express support for enhancing existing roadway facilities to achieve the stated purpose and need of the original project. While community members may not always have agreed on how to address the traffic and safety concerns discussed in this application, the opinion was nearly unanimous that change must be made and steps forward must be taken. Proving that Charleston County residents are dedicated to improving their infrastructure, Charleston County voters agreed in Fall 2004 to add a half-cent sales tax on purchases made in the county for 25 years or a total investment of \$1.3 billion. The sales tax is being spent on two priorities - green space acquisition and transportation projects including mass transit. Collections of sales tax funds began in May of 2005. Voters passed a second bond referendum in November, 2006, which approved an additional issuance of up to \$205 million that may be used on additional roadway projects.

This significant investment by the citizens of Charleston County has provided a stable and reliable financial commitment to roadway improvements throughout Charleston County. The County has responded to this local support and demonstrated its ability to manage the funding, environmental compliance, engineering, and scheduling of this considerable program for the past six years, and is committed to bringing the same level of stewardship to the completion of these proposed roadway enhancements.

## 1.7 RESOLUTIONS

As previously discussed, the original application to the SIB received the unanimous support of local governments, councils, and organizations because the problems and purposes addressed by the projects touch lives across Charleston County and the state. Local and regional officials remain committed to solving the traffic and safety problems in Charleston County and have improved their solutions. Charleston County will pursue the passage of resolutions from municipalities, county councils, advisory groups, Metropolitan Planning Organizations and Councils of Government to demonstrate support for the amended project.



## 1.8 REGIONAL AND STATEWIDE SIGNIFICANCE OF THE IMPROVEMENTS

Construction of these enhancements is important to the region as a support to commuters, an improved hurricane evacuation system, and a tourist route for access to/from James, Johns, Kiawah, and Seabrook Islands. The Project will add significant capacity during the normal tourist seasons, facilitate the daily commute of residents, and add much needed capacity in the event of disasters and emergencies.

- Significant benefits to the affected communities, the region, and to the state itself include:
- Promoting hurricane evacuation from James Island and Johns Island;
- Reducing congestion along US 17;
- Improvement to the transportation system as a whole by offering more options to commuters and freight carriers;
- Facilitation for the movement of military personnel and equipment; and,
- Improved regional air quality, which offers environmental benefits.

Although the entire State of South Carolina and the South Carolina Department of Transportation will benefit greatly by having a more effective and efficient transportation and highway system, the primary benefactors of this project are the commuters in the greater Charleston area.

### 1.8.1 Benefits to the State's Economic Condition

An efficient, safe, congestion free transportation system is critical to maintaining and enhancing a region's economic vitality. A sub-standard highway system results in an area becoming less attractive for economic development. The improvements will support the continued economic vitality of communities throughout the corridor and increase accessibility for those who use it for work, shopping, or visiting tourist attractions. The Project will also have spin-off benefits for the entire region. Not only will the actual construction create thousands of new jobs for the entire construction period, but the project will make the region more attractive to new and expanding businesses by addressing safety and congestion issues.



# AMENDED FINANCIAL PLAN



## 2. AMENDED FINANCIAL PLAN

### 2.1 TOTAL COST OF THE PROJECTS

The total cost for design and construction of all projects in the program is \$457.49 million. This program includes the six projects listed in this revised application and a local contribution in the form of **locally financed roads for the Federal and State Highway System**.

Project	Estimated Cost of Project	Funding Provided	
		SIB	County
I-526 / Glenn McConnell Interchange	\$117.1 million	X	
US Route 17 / Main Road Grade Separation	\$31.9 million	X	
Widening Main Road from Bees Ferry Road to Maybank Highway	\$64.1 million	X	
SC Route 61 / SC Route 7 Intersection	\$35.25 million	X	
Intersection Safety Improvements	\$4.29 million	X	
Passing Lanes on Bohicket Road	\$6.25 million	X	
Locally Financed U.S. and State Roads	\$198.6 million		X
<b>Total</b>	<b>\$457.49 million</b>	<b>Local Match</b>	<b>43%</b>

#### 2.1.1 Source of Cost Estimates

The cost estimates for the projects listed above were determined using conceptual designs, where available, as well as historic costs of similar projects where on the smaller intersection improvement projects. The estimates were developed using recent bridge, interchange, and roadway projects and the costs were updated to reflect price escalations for various work items.

#### 2.1.2 Confirmation Letter from SCDOT

During the development of this funding application, SCDOT was provided the documentation for the cost estimates, schedules, and the anticipated draw schedules. SCDOT will review this documentation and a formal letter of acceptance will be forwarded to SIB upon receipt.



## 2.2 LOCAL CONTRIBUTION

### 2.2.1 Amount of Local Contribution and Percentage of Total Project Cost

Charleston County's local contribution of **\$198.6 million**, as described below, is the combined contribution for the completion of the projects requested in this amended application. This represents over **43%** of the total project cost.

## 2.3 SOURCE OF LOCAL CONTRIBUTION

The local contribution is comprised of **\$198.6 million** in projects approved by referendum for bond expenditure, including:

- **\$84 million:** US 17 Johnnie Dodds Boulevard
- **\$7 million:** Glenn McConnell Parkway/Bees Ferry Road Improvements ("West Ashley Traffic Circle")
- **\$18 million:** Harbor View Road
- **\$4.2 million:** Folly Road/Maybank Highway Intersection
- **\$15.4 million:** Camp Road/Folly Road Intersection
- **\$4.5 million:** U.S. Highway 17/SC Route 61 Improvements
- **\$28 million:** Bees Ferry Road Widening
- **\$30 million:** Maybank Highway Improvements
- **\$7.5 million:** Glenn McConnell Parkway/I-526 Improvements

## 2.4 AMOUNT OF ASSISTANCE REQUESTED

Charleston County respectfully requests \$258.89 million for the projects listed in this amended application. The local contribution of \$198.6 million will comprise over 43 percent of the total \$457.49 million program. This request is supported by our engineer's estimate. We have requested a letter of confirmation from SCDOT.

## 2.5 FORM OF ASSISTANCE REQUESTED

Charleston County Council respectfully requests that this \$258.89 million be provided in the form of a grant to the County.

## 2.6 OTHER PROPOSED SOURCES OF FUNDS

No additional sources of funds have currently been identified for these projects.



## 2.7 ANTICIPATED DISBURSEMENT SCHEDULE

### 2.7.1 Cash Flow Diagram

An anticipated disbursement schedule for the projects included in this amended application is included in Table 18.

Project	Amount	7/1/11 to 6/30/12	7/1/12 to 6/30/13	7/1/13 to 6/30/14	7/1/14 to 6/30/15	7/1/15 to 6/30/16	7/1/16 to 6/30/17
		FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
<i>I-526/Glenn McConnell Parkway Interchange</i>							
Design	\$21,500,000	\$10,750,000	\$10,750,000				
Right of Way	\$2,800,000		\$1,596,000	\$1,204,000			
Construction	\$92,800,000			\$9,280,000	\$37,120,000	\$37,120,000	\$9,280,000
<i>U.S. Route 17/Main Road Grade Separation</i>							
Design	\$3,700,000	\$1,850,000	\$1,850,000				
Right of Way	\$5,400,000		\$3,078,000	\$2,322,000			
Construction	\$22,800,000			\$2,280,000	\$9,120,000	\$9,120,000	\$2,280,000
<i>Widening Main Road from Bees Ferry Road to Maybank Highway</i>							
Design	\$3,450,000	\$1,725,000	\$1,725,000				
Right of Way	\$11,400,000		\$6,498,000	\$4,902,000			
Construction	\$49,250,000			\$4,925,000	\$19,700,000	\$19,700,000	\$4,925,000
<i>S.C. Route 61/S.C. Route 7 Intersection</i>							
Design	\$2,850,000	\$1,425,000	\$1,425,000				
Right of Way	\$20,800,000		\$11,856,000	\$8,944,000			
Construction	\$11,600,000			\$1,160,000	\$4,640,000	\$4,640,000	\$1,160,000
<i>Intersection Safety Improvements</i>							
Design	\$670,000	\$670,000					
Right of Way	\$590,000		\$590,000				
Construction	\$3,030,000		\$909,000	\$2,121,000			
<i>Passing Lanes on Bohicket Road</i>							
Design	\$650,000	\$650,000					
Right of Way	\$900,000		\$900,000				
Construction	\$4,700,000		\$1,410,000	\$3,290,000			
<b>Totals</b>	<b>\$258,890,000</b>	<b>\$17,070,000</b>	<b>\$42,587,000</b>	<b>\$40,428,000</b>	<b>\$70,580,000</b>	<b>\$70,580,000</b>	<b>\$17,645,000</b>

### 2.7.2 Confirmation Letter from SCDOT

Charleston County's request for confirmation is will be provided to the Board as soon as it is received.



## 2.8 PROJECTED REVENUES

Revenues that will be used to fund Charleston County’s local match will be generated through the Half-Cent Transportation Tax.

### 2.8.1 Revenue Schedule

Year	FY	Receipts	Roads
1	2005	5.870	3.812
2	2006	37.116	23.291
3	2007	39.521	24.931
4	2008	40.097	25.723
5	2009	37.470	23.682
6	2010	36.293	22.495
7	2011	35.000	21.655
8	2012	35.700	23.295
9	2013	36.414	23.719
10	2014	37.506	24.481
11	2015	38.631	25.268
12	2016	39.790	26.084
13	2017	40.984	26.924
14	2018	42.214	27.792
15	2019	43.480	28.690
16	2020	44.784	29.615
17	2021	46.128	30.574
18	2022	47.512	31.564
19	2023	48.937	32.586
20	2024	50.405	33.641
21	2025	51.917	34.732
22	2026	53.475	35.861
23	2027	55.079	36.262
24	2028	56.731	36.875
25	2029	58.433	37.981
26	2030	50.155	32.601
<b>Total</b>		<b>\$1,109.64</b>	<b>\$ 724.13</b>



## 2.8.2 Assumptions of Risks for Local Revenues

The revenues from the Half-Cent Transportation Sales Tax are projected to increase at a rate of slightly less than one percent per annum for FY 2011, increase at a rate of two percent for FY 2012 through 2014, and then at three percent from FY 2015 through FY 2030, at which time the tax initiative expires. If this projected increase in the sales tax revenue is less than expected, then the collections will not reach the maximum amount of \$1.303 billion. On the other hand, if the revenues from the sales tax collections are greater than expected, then it is possible that the tax collections will cease earlier than year 2030, meaning the maximum amount would be collected earlier, thus giving the program the dollars to complete projects ahead of schedule. In any event, the County is pledging to extend \$198.6 million as local match. This figure is far less than the total \$1.1 billion expected to be collected. Thus, the risk of the County not fulfilling its pledge is exceedingly small.

## 2.8.3 Determination of Projected Revenues

For budget projections, the County used local option sales tax collections for the entire County (including municipalities and before the five percent reallocation to other counties), divided in half, and added growth rates of between one and three percent per year. An adjustment was made for the collection costs to the State, which is higher for the Transportation Sales Tax than for the Local Option Sales Tax.

## 2.9 USEFUL LIFE OF THE PROJECT

### 2.9.1 Method of Determination

The useful life determination was calculated using the best evidence available from SCDOT and FHWA experience. We estimate the useful life of roads topped with concrete pavement to be approximately 30 years and the useful life of the bridges to be 75 years.

### 2.9.2 Confirmation Letter from SCDOT

Charleston County has requested confirmation of the useful life of the projects from SCDOT.

## 2.10 FUTURE MAINTENANCE REQUIREMENTS

### 2.10.1 SCDOT Projection of Future Maintenance Costs

Charleston County will transmit a letter to SCDOT requesting a projection for future maintenance costs for the projects.

### 2.10.2 SCDOT Commitment for Future Maintenance Costs

Charleston County will subsequently a letter to SCDOT asking for the Department's commitment for future maintenance costs.

Charleston County will spend \$198.6 million in local funds improving SCDOT roads, thereby relieving SCDOT of the responsibility of maintenance for those roads involved in the improvements. This effort will more than offset the maintenance costs associated with the projects for which funding is requested in this application.



## 2.11 PROJECT PRIORITY LIST

The projects included in this amended application consist of six separate projects. While, in the aggregate, these improvements to existing roadways have been developed to meet the same objectives for the completion of the Mark Clark Expressway, it would be possible to stage the design and construction of these projects in order to meet available funding.

### 2.11.1 Contingency Plan

Should the SIB Board grant less than the amount requested for all projects, it is our intention to move forward on the projects in the priority order listed below:

<u>Priority</u>	<u>Project</u>
1	I-526 / Glenn McConnell Interchange
2	US Route 17 / Main Road Grade Separation
3	Widening Main Road from Bees Ferry Road to Maybank Highway
4	SC Route 61 / SC Route 7 Intersection
5	Intersection Safety Improvements
6	Passing Lanes on Bohicket Road

## 2.12 ADOPTION OF IMPACT FEES

Charleston County has not adopted the use of impact fees to assist in financing these projects. Charleston County has instead adopted the use of a half cent sales tax to fund their Transportation Sales Tax Program.

## 2.13 ADOPTION OF LOCAL ACCOMMODATIONS TAX

Charleston County has not adopted the use of a local accommodations tax to assist in financing these projects. Charleston County has instead adopted the use of a half cent sales tax to fund their Transportation Sales Tax Program.

## 2.14 ADOPTION OF HOSPITALITY TAX

Charleston County has not adopted the use of a hospitality tax to assist in financing these projects. Charleston County has instead adopted the use of a half cent sales tax to fund their Transportation Sales Tax Program.

## 2.15 ADOPTION OF LOCAL SALES TAX

Charleston County has adopted the use of a half cent sales tax to fund their Transportation Sales Tax Program.



## 2.16 ADOPTION OF SALES TAX OR TOLLS

Charleston County has not adopted the use of sales tax or tolls to assist in financing these projects. Charleston County has instead adopted the use of a half cent sales tax to fund their Transportation Sales Tax Program.

## 2.17 ADOPTION OF USER FEES

Charleston County has not adopted the use of user fees to assist in financing these projects. Charleston County has instead adopted the use of a half cent sales tax to fund their Transportation Sales Tax Program.

## 2.18 IMPLEMENTATION OF TAX INCREMENT FINANCING DISTRICTS

Charleston County has not adopted the use of Tax Increment Financing Districts to assist in financing these projects. Charleston County has instead adopted the use of a half cent sales tax to fund their Transportation Sales Tax Program.

## 2.19 IMPLEMENTATION OF AN ASSESSMENT PROGRAM

Charleston County has not adopted the use of an assessment program to assist in financing these projects. Charleston County has instead adopted the use of a half cent sales tax to fund their Transportation Sales Tax Program.

## 2.20 ESTABLISHMENT OF DEVELOPMENT AGREEMENT PROGRAM

Charleston County has not adopted the use of a development agreement program to assist in financing these projects. Charleston County has instead adopted the use of a half cent sales tax to fund their Transportation Sales Tax Program.

## 2.21 ESTABLISHMENT OF ZONING OR OTHER LAND USE CONTROLS

Charleston County adopted the 10-year update of the County's Comprehensive Plan on November 18, 2008.

## 2.22 DISCOUNT TO PRESENT VALUE ALL CASH FLOWS

### 2.22.1 The value of applicant's future payments/contributions

The source of funding to be provided by Charleston County for projects referenced in this amended application is the County's Half-Cent Transportation Sales Tax. Projects are paid for with funds available from this account.

### 2.22.2 The value of any non-SIB third-party payments

Charleston County does not currently anticipate any non-SIB third-party payments.



### 2.22.3 The value of future expenditures

The majority of the projects listed in Section 2.3 has either been completed, are currently under construction, or will be let for construction in the next few months, with the exceptions of Bees Ferry Road Widening and the Maybank Highway Improvements. The present value of all of these projects, discounting to the midpoint of construction the two projects mentioned above at a rate of five percent, is \$192 million.

### 2.23 ASSUMED INFLATION RATE

The inflation rate assumed in the cost estimates contained herein is 4%.

### 2.24 CONDEMNATION AUTHORITY

Charleston County will serve as the named party in any necessary condemnation proceedings.

### 2.25 OTHER SOURCES OF FUNDING SOUGHT

Charleston County pursued additional funding for the Johnnie Dodds Boulevard project under the Transportation Investment Generating Economic Recovery (TIGER) and the TIGER II Discretionary Grant programs. Both applications were not successful in obtaining funding.



### 3. PROJECT APPROACH

#### 3.1 PROJECT PHASES

##### 3.1.1 Time Table Bar Chart (Project Delivery Schedule)

Program Phase	2011				2012				2013				2014				2015				2016																
	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J
Planning & Environmental																																					
Design & Engineering																																					
Right-of-Way Acquisition																																					
Environmental Permitting																																					
Construction Bidding																																					
Construction																																					

##### 3.1.2 Critical Path Items

Critical path items are so indicated on the project delivery schedule.

##### 3.1.3 Status of Critical Path Items

All critical path items are pending funding and commencement of the project.

##### 3.1.4 Confirmation Letter from SCDOT

Charleston County’s will be seeking consent from SCDOT

#### 3.2 DESCRIPTION OF CURRENT PROJECT STATUS

Various studies and analyses have been performed simultaneously to the Mark Clark Expressway completion environmental impact studies. This work has been performed to assess the impacted of the proposed construction on existing facilities. These studies included evaluating improvements both with and without the Completion so that the other alternatives could readily be considered pending the outcome of public involvement activities. The following provides a brief summary of the work to date.

##### 3.2.1 Studies, Analysis, and Design

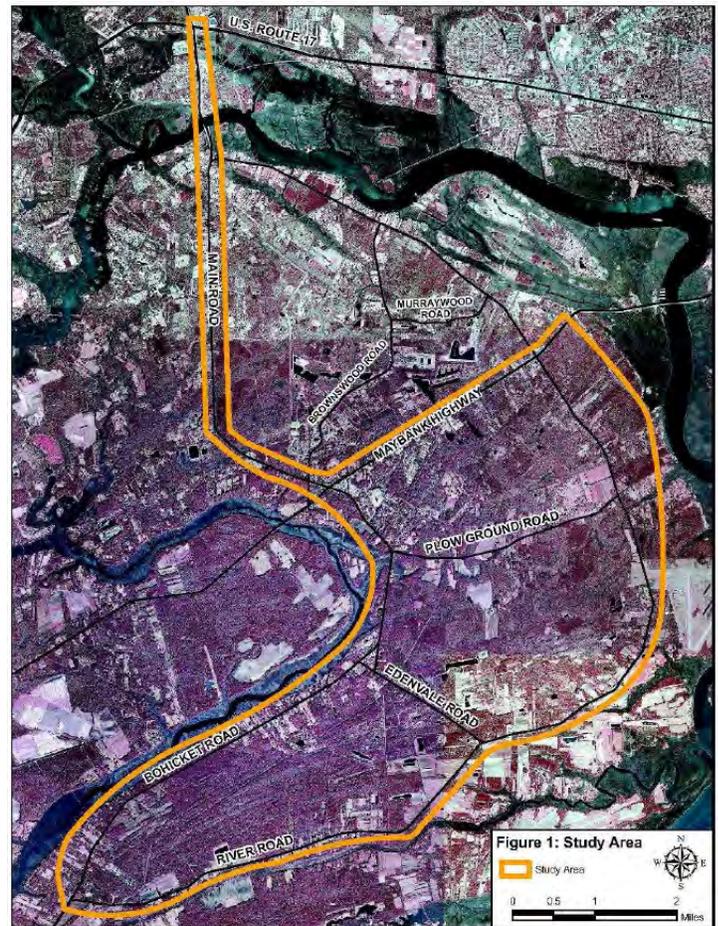
A Planning and Concept Design Study was conducted to assess roadway enhancements throughout Johns Island. Concluded in May 2010, the Study evaluated conditions with and without the proposed I-526 (Mark Clark Expressway) Completion for the study area shown here which includes Main Road, Maybank Highway, Bohicket Road, portions of Betsy Kerrison Parkway, and River Road. The Environmental Overview portion of the Study began with a public workshop conducted at the Johns Island Regional Library on December 7, 2009. 255 persons attended this workshop, and a total of 550 comment forms and one petition with 2,928 signatures were received during the meeting and until the end of the comment period on January 11, 2010.

The Alternatives Analysis involved a study of widening existing roads (including Bohicket Road/ Main Road, Bohicket Road and Maybank Highway, and River Road from Betsy Kerrison Parkway to Maybank Highway) as well as a road on new alignment (Sea Islands Greenway). To provide an analysis of each of these options, an Environmental Inventory was conducted within the Study Area. This work provides a basis to objectively analyze potential environmental concerns that may be impacted by the various alternatives being proposed and developed. This analysis considered land

use, socioeconomics and environmental justice, farmlands, hazardous materials and waste sites, cultural resources, Section 4(f) and Section 6(f) resources, upland habitats, wetlands and other jurisdictional waters of the United States, floodplains, federally protected species, essential fish habitat, and permits and certifications.

The Project Study Team made special efforts to be thorough and accurate in the collection of all traffic data. By understanding prevailing traffic patterns, the traffic staff could assist the roadway engineers in developing strategies for optimizing the efficiency of traffic operations. For this project, turning movement data was collected at the following intersections:

- i. River Road and Maybank Highway;
- ii. River Road and Bohicket Road/ Betsy Kerrison Parkway;
- iii. River Road and Main Road;
- iv. Chisholm Road and Main Road;
- v. Brownswood Road and Main Road;
- vi. Maybank Highway and Main Road;
- vii. Plow Ground Road and Bohicket Road;
- viii. Edenvale Road and Bohicket Road.



To further supplement the study, 24-hour traffic counts were collected in the field at key roadway segments in the Study Area. These counts are beneficial towards understanding traffic volume growth throughout the area by comparing to existing data. Data was collected in the field in the following areas:

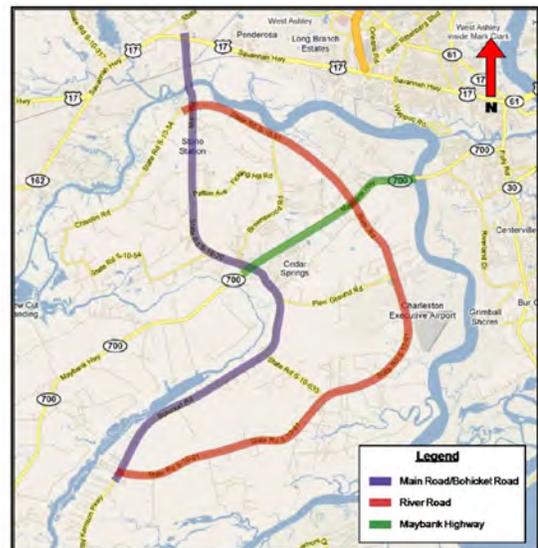
- i. Maybank Highway, west of Stono River;
- ii. River Road, east of Main Road;
- iii. Chisholm Road, west of Main Road (at River Road);
- iv. Chisholm Road, west of Main Road (near school);

- v. Brownswood Road, north of Main Road;
- vi. Plow Ground Road, west of River Road;
- vii. Plow Ground Road, east of Bohicket Road;
- viii. Edenvale Road, west of River Road;
- ix. Edenvale Road, east of River Road;
- x. Main Road, south of US 17;
- xi. Main Road, north of River Road;
- xii. Main Road, south of River Road;
- xiii. Main Road, north of Maybank Highway;
- xiv. Bohicket Road, south of Maybank Highway;
- xv. Bohicket Road, north of River Road;
- xvi. Betsy Kerrison Parkway, south of River Road

The project team also reviewed historical SCDOT traffic volume data for the five year period of 2004 through 2008 and SCDOT and City of Charleston traffic signal timings, and they conducted a field visit to observe conditions, traffic behavior, land use, lane configurations, and other critical roadway features.

In order to properly study current and future traffic on Johns Island as part of this project, the Charleston Area Transportation Study (CHATS) Regional Travel Demand Model Network as prepared for the 2008 Johns Island Traffic/Corridor Study was revised to accommodate several significant changes. These changes include a two-lane Maybank Highway (instead of a four-lane/five lane section), the proposed “Pitch Fork” Roads Network east of River Road, and a lower speed I-526 (Boulevard Design) without an intersection with Maybank Highway. After consulting with the Charleston County and city of Charleston Planning Departments, it was agreed that some other potential changes in land use on the island (such as the proposed Kiawah River Plantation and Johns Island Junction developments) would not be included in the traffic model because they have not yet been approved by CHATS.

A Crash/Safety Analysis for the years 2006 through 2008 was performed for Main Road/Bohicket Road, River Road, and Maybank Highway. The study area map is shown here. This analysis included a crash history evaluation,





an actual crash rate (ACR) analysis, crash statistics, fatal crash incidents, contributing factors, economic loss analysis, and recommendations.

A brief summary of the crash statistics for the three year period is as follows:

- Main Road/Bohicket Road
  - A total of 496 crashes
  - 39.5% due to distracted/failure to yield right of way
  - 13.7% due to following too closely
  - 9.5% due to too fast for conditions
  - Total economic loss of \$22.79 million
- River Road
  - A total of 222 crashes
  - 21.2% due to distracted/failure to yield right of way
  - 12.2% each due to driving too fast for conditions and animal in road
  - Total economic loss of \$17.37 million
- Maybank Highway
  - A total of 250 crashes
  - 41.2% due to distracted/failure to yield right of way
  - 22.8% due to following too closely
  - Total economic loss of \$9.14 million

Other analyses and studies performed to date that encompass proposed improvements include:

- January 2007 Transportation Planning Study for the Mark Clark Expressway (Interstate I-526) and Glenn McConnell Parkway (SC 61 Expressway) Interchange Area
- June 2007 Intersection Study for SC 7 and SC 61
- November 2009 Traffic Study for US 17 at Main Road
- June 2010 Updated Intersection Study for SC 7 and SC 61



### 3.3 POTENTIAL OBSTACLES

#### 3.3.1 Description

As in the original application, a potential obstacle that may impact these roadway enhancements is the opposition from local interests groups for particular components. However, significant and vocal support has been growing for improving existing facilities.

#### 3.3.2 Methods to Manage/Avoid Obstacles

Opposition from local interest groups: The most effective way to overcome opposition is through education. As planning for the project advances, the project team will hold public information meetings. Through these meetings and other outlets, such as presentations to the Chamber of Commerce, town meetings, contacts with the local media, etc., the benefits of the project can be thoroughly explained.

### 3.4 RESPONSIBLE ENTITIES

#### 3.4.1 Environmental Studies

An Environmental Overview, including a public workshop conducted at the Johns Island Regional Library on December 7, 2009, was concluded in May of 2010.

A Categorical Exclusion (CE) was approved for work currently underway at Mark Clark Expressway and Glenn McConnell Parkway Interchange on December 11, 2009. An update would be required to include the ultimate interchange design for this project.

An Environmental Assessment was approved for work to be performed on Bees Ferry Road on July 22, 2009. This work will be a valuable resource for consideration of environmental studies to be conducted for the Main Road widening element of the project.

A Draft Environmental Overview was prepared for Maybank Highway in January 2008.

A Categorical Exclusion was approved for intersections improvements at S.C. Route 17 and S.C. Route 61 on December 7, 2009.

#### 3.4.2 Project Design

Charleston County

#### 3.4.3 Right-of-Way Acquisition

Charleston County

#### 3.4.4 Construction Letting

Charleston County

#### 3.4.5 Construction Management

Charleston County



### 3.4.6 Operation/Maintenance

SCDOT

### 3.4.7 Tort Liability and Ownership

SCDOT

### 3.4.8 Law Enforcement

Charleston County and SCDPS

### 3.4.9 Marketing

SCDOT and Charleston County

### Appendix A

**Crash Summary:** The total number of crashes, number of fatalities and injuries for the most recent five year period (2002-2006) are summarized in Table 1. The crash data that we received only includes the High Collision Intersections (i.e. the intersections where nine or more crashes occurred in any of the five study years.) There, are four intersections with less than nine yearly crashes shown in Table 1.

**Table 1: Crash Summary**

Intersection Name	Total Collisions	Person Killed	Person Injured	Total Economic Loss
	2002-2006			2011 \$\$
US 17 and Main Road	87	1	52	\$9,452,800
Brownswood and Murraywood	Less than 9 crashes/year	-	-	-
Main Road and Brownswood	11	0	13	\$863,200
Plowground and Bohicket	Less than 9 crashes/year	-	-	-
River Road and Murraywood	Less than 9 crashes/year	-	-	-
Maybank Highway and River Road	34	1	12	\$6,796,800
Plowground and River Road	Less than 9 crashes/year	-	-	-
Main Road and Chisolm Road	11	0	3	\$199,200
SC 61 and SC 7	179	0	100	\$6,640,000
			<b>Total</b>	<b>\$23,952,000</b>

**Operational Analysis Summary:** The existing and future year operational analyses at various intersections and the proposed design year geometric improvements are discussed in this section.

1. **US 17 and Main Road Intersection:** The existing geometric configuration at this intersection consists of separate left and right turn lanes along both the eastbound and westbound approaches of US 17. The northbound Main Road approach currently provides separate left, through and right turn lanes. The southbound Main Road approach currently provides an exclusive left turn lane and a shared through-right turn lane. The dominant traffic movement along US 17 is along the eastbound direction in the morning peak hour, switching to the westbound direction during the afternoon peak hour. Both the existing and future year traffic projections show a significantly higher northbound Main Road to eastbound US 17 right turn volume during the morning peak hour and the reverse movement (i.e. the westbound US 17 to southbound Main Road left turn movement) during the afternoon peak hour.

This intersection currently operates at **LOS F** (147.6 sec/veh of delay) and **LOS E** (60.9 sec/veh) during the morning and afternoon peak hours respectively. The future design year (2035) traffic operations were analyzed for the scenario where the I-526 extension is not built, but the area-wide development will occur. The intersection will operate significantly worse at **LOS F** (257.2 sec/veh) and **LOS F** (124.5 sec/veh) during morning and afternoon peak hours respectively. The future design year traffic projections show that both US 17 and Main Road must accommodate most of the traffic growth in this area of Charleston County if no other additional north-south and

east-west regional roadway improvements are constructed. Without significant improvement by the design year, the intersection of US 17 and Main Road will serve as a regional bottleneck.

To accommodate the design year traffic, a grade separated intersection configuration is under consideration. In this concept, the four-lanes of US 17 will travel over Main Road. The projected no-build delay along US 17 (eastbound delay of 309 sec/veh in the morning and westbound delay of 145 sec/veh in the afternoon) will be eliminated with the construction of the overpass. Additionally the delays along northbound and southbound Main Road will also be significantly reduced with this proposed geometric configuration. The estimated cost of this project is \$25.0 million.

2. *Brownswood Road (S-1442) and Murraywood Road (S-1441) Intersection:* Brownswood Road runs north-south. Murraywood Road intersects Brownswood Road from the east, creating a T-intersection. All approaches currently have a single lane to accommodate both through and turning movements. The existing traffic operational analysis results show that this intersection operates at LOS A (9.1 sec/veh of delay) and LOS B (10.1 sec/veh).

Based on the 2035 design year traffic projections, the same intersection would operate at LOS C (21.6 sec/veh) and **LOS F** (76.9 sec/veh) during morning and afternoon peak hours if no geometric improvements are implemented. The intersection delay will increase about 660 percent during the afternoon peak hour. Dual left turn lanes from westbound Murraywood Road to southbound Brownswood Road and a new traffic signal will be needed to accommodate the design year traffic volume. Widening Murraywood Road and Brownswood Road to a four-lane facility will also be required. The proposed geometric improvements will improve the afternoon (critical among two peaks) operating condition to LOS B (12.2 sec/veh of delay).

3. *Main Road and Brownswood Road Intersection:* The existing intersection is controlled by a traffic signal. Main Road travels in the northwest-southeast direction and currently provides a separate left turn lane and a shared through-right turn lane along both of its approaches to the intersection. Brownswood Road has a single shared left turn-through-right turn lane on both approaches. The analysis of existing traffic conditions shows that this intersection operates at LOS A with 8.5 sec/veh and 9.2 sec/veh of delay during the morning and afternoon peak hours respectively. If no geometric improvements are implemented, the 2035 intersection operating condition would deteriorate significantly to **LOS E** (60.5 sec/veh of delay) and LOS D (51.4 sec/veh) during morning and afternoon peak hours respectively. Widening Main Road to a four-lane facility between US 17 and Maybank Highway will be required to accommodate the future traffic growth. The proposed geometric improvement will improve the operating condition during the morning peak hour (critical among two peaks) to LOS D (delay 42.5 sec/veh).
4. *Plow Ground and Bohicket Road Intersection:* This T-intersection currently operates under STOP control for the westbound Plow Ground Road approach. Bohicket Road runs north-south without traffic control. A single lane is currently provided on all approaches to accommodate both turning and through movements. The existing analysis results show this intersection operates at LOS C (20.1 sec/veh of delay) and LOS C (21.8 sec/veh) during morning and afternoon peak hours respectively. If no geometric improvements are implemented by 2035, the operating condition will deteriorate to **LOS F** with 964.5 sec/veh and 755.8 sec/veh of delay during the morning and afternoon peak hours respectively. Widening Bohicket Road to a four-lane facility between Maybank Highway and Betsy Kerrison Parkway and installing a new traffic signal will be required



by the design year. The proposed geometric improvements will improve the operating condition significantly to LOS B (16.5 sec/veh of delay) and LOS A (6.9 sec/veh) during the morning and afternoon peak hours respectively.

5. *River Road and Murraywood Road Intersection:* Murraywood Road creates a T-intersection with River Road. River Road runs in the northwest-southeast direction. Murraywood Road intersects River Road from the west and is controlled by a stop sign. A single lane is currently provided on all the intersection approaches. The existing analysis shows the intersection operates at LOS B with 10.1 sec/veh and 12.4 sec/veh of delay during the morning and afternoon peak hours respectively. If no improvements are completed by 2035, the morning and afternoon peak hour operation will deteriorate to LOS C (20.9 sec/veh of delay) and **LOS F** (1,171.5 sec/veh). Dual northbound left turn lanes, a new traffic signal and widening of River Road (between Plow Ground and Murraywood Road) and the entire length of Murraywood Road to a four-lane facility will be required to accommodate the future traffic projections. The proposed geometric modification will improve the afternoon peak hour operating condition to LOS C (21.6 sec/veh of delay).
6. *Maybank Road and River Road intersection:* This intersection serves as one of the major entry/exit points between Johns Island and the City of Charleston. The existing intersection configuration provides an exclusive left turn lane along with a single shared through-right turn lane on all four approaches. The existing morning and afternoon peak hours operate at LOS D (48.0 sec/veh of delay) and LOS C (32.0 sec/veh), respectively. In 2035, the operating condition deteriorates to **LOS F** with 334.4 sec/veh and 290.2 sec/veh of delay during the morning and afternoon peak hours if no geometric improvements are implemented. Dual left turn lanes on the westbound approach and dual right turn lanes on the northbound approach will be required. Additionally, widening Maybank Highway (between Fenwick Hall Alee and Main Road) and River Road (between Plow Ground and Murraywood Road) to a four-lane facility will be warranted to accommodate the future traffic growth. The proposed geometric improvements will improve the operating condition significantly to LOS C (27.1 sec/veh) and LOS D (39.2 sec/veh) during the morning and afternoon peak hours respectively.
7. *Plow Ground Road and River Road Intersection:* River Road runs north-south and Plow Ground Road intersects from the east and west. The existing intersection provides a single lane on each approach. The Plow Ground Road approaches are currently controlled by STOP signs while River Road operates without control. The existing operational analysis results are LOS B with 12.6 sec/veh and 11.3 sec/veh of delay in the morning and afternoon peak hours. In 2035, the intersection operation will deteriorate to LOS C with 18.0 sec/veh and 20.2 sec/veh of delay during the morning and afternoon peak hours respectively. No additional geometric improvements will be required other than the previously mentioned widening of River Road to a four-lane facility to this intersection. The outside of the two southbound through lanes on River Road will be dropped as an exclusive right turn lane at Plow Ground Road. A second northbound through lane on River Road will begin beginning at this intersection.
8. *Main Road and Chisholm Road Intersection:* Main Road runs north-south and intersects Chisholm Road, which runs in a northeast-southwest direction. This intersection is currently controlled by a traffic signal. A single exclusive left turn lane and a shared through-right turn lane is provided along both approaches of Main Road. A shared left turn-through lane and an exclusive right turn lane are provided on both approaches of Chisholm Road. The intersection currently operates at LOS B with 10.1 sec/veh and 15.3 sec/veh of delay during the morning and afternoon peak hours respectively. In 2035, the intersection operation will deteriorate to LOS B (16.6 sec/veh) and **LOS**

**F** (delay 91.0 sec/veh) during the morning and afternoon peak hours. Widening Main Road to a four-lane facility between US 17 and Maybank Highway will be warranted to accommodate the projected future traffic growth.

9. *SC 61 (Ashley River Road) and SC 7 (Sam Rittenberg Boulevard) Intersection:* An intersection study for SC 7 and SC 61 was prepared by Wilbur Smith Associates in June 2007. SC 7 and SC 61 currently intersect and form a four-leg signalized intersection in the West Ashley section of Charleston, SC. SC 7 travels northeast-southwest and SC 61 travels in the northwest-southeast direction. SC 7 is a seven lane undivided roadway south of SC 61 and a five-lane undivided roadway north of it. SC 61 is a five-lane undivided roadway. The northbound and southbound approaches of SC 7 currently have separate left turn and right turn lanes and two through lanes. SC 61 has a separate left turn lane, a through lane and a shared through-right turn lane. Based on 2005 SCDOT average daily traffic (ADT) count data, SC 7 carries approximately 27,700 vehicles per day (vpd) to the south of SC 61 and 23,100 vpd to the north of SC 61. SC 61 carries 36,300 vpd to the north of SC 7 and 32,600 vpd to the south of SC 7.

The analysis of existing conditions indicate the intersection operates at LOS D (51.4 sec/veh of delay) and **LOS F** (312.1 sec/veh) during the morning and afternoon peak hours; respectively. The westbound SC 61 approach currently fails during both peak hours and operate at **LOS E** (75.4 sec/) and **LOS F** (473.5 sec/veh) during the morning and afternoon peak hours. Additionally, during the afternoon peak hour, the eastbound (**LOS F**, 427.7 sec/veh) and northbound (**LOS F**, 284.1 sec/veh) approaches also fail to operate at an acceptable LOS. Based on micro-simulation results, the westbound SC 61 through lanes currently experience severe congestion and shows an approximate queue length of 1,600 feet (65 cars) during both peak hours. The estimated queue lengths along the eastbound and northbound through lanes are approximately 900 feet (36 cars) and 1,900 feet (76 cars); respectively. If no geometric improvements are implemented by 2030, the study intersection will operate at a much worse condition during both peak hours.

The proposed design year geometric improvements include the addition of a second left turn lane along eastbound and westbound SC 61 and southbound SC 7 approaches, the addition of another through lane along both SC 61 and SC 7 and optimizing the signal phasing and timing operations. Access management modifications to the driveways near the study intersection will also be implemented.

The 2030 geometric improvements will reduce intersection delay during both peak hours, operating at LOS D with 36.1 sec/veh and 53.9 sec/veh of delay during the morning and afternoon peak hours; respectively. The westbound and southbound approaches will operate at **LOS E**, with delays of 57.9 sec/veh and 58.6 sec/veh; respectively; during the afternoon peak hour. However, the average afternoon peak hour queue length will be significantly reduced to approximately 765 feet (31 cars) and 475 feet (19 cars) along the westbound and southbound approaches; respectively.

10. *The ultimate Improvement for the Glenn McConnell Parkway and I-526 Interchange:* The current I-526 interchange creates a Partial Cloverleaf (type B) with Glen McConnell Parkway. The two loop off-ramps from I-526 are located on the northeast and southwest quadrants.

Based on the large amount of residential and commercial development that has occurred in and around the West Ashley area over recent years, traffic operations on the local/regional infrastructure has suffered. This degradation in operations has become very evident along Glenn McConnell Parkway, which serves as a major carrier of traffic between the West Ashley region and

the Mark Clark Expressway/Charleston area. The Mark Clark Expressway (I-526) is currently a four-lane divided facility and is recommended to be widened to an eight-lane and six-lane facilities in the design year 2030 to the north and south of Glen McConnell Parkway, respectively.

Glen McConnell Parkway currently is a four-lane divided facility with center turn lanes. By 2030, it is recommended to be widened to a six-lane facility west of Magwood Road and between I-526 and Tobias Gadson Boulevard. The segment between Magwood Road and I-526 is recommended to be widened to an eight-lane facility. No future widening is recommended east of Tobias Gadson Boulevard.

In the design year 2030, both Magwood Road and Tobias Gibson Boulevard are expected to be widened to five-lane and three-lane urban facilities respectively between Glen McConnell Parkway and Ashley River Road.

Based on information provided by local SCDOT staff, the potential widening of Ashley River Road is not likely to occur due to primarily environmental/historical constraints and public opposition. As such, no large-scale widening of Ashley River Road has been accounted for when developing the Preferred Design Alternative. It remains as its existing two-lane undivided cross-section except for spot intersection improvements at the Magwood Road and Tobias Gadson Boulevard intersections.

The preferred interchange layout is chosen to be Hybrid Single Point Urban Interchange (SPUI) with a single directional flyover ramp due to less significant impact to the surrounding area in terms of Right-of-Way requirements, environment impacts, access constraints, and merge/weave conflicts.

The 2030 operational analysis results show that I-526 expressway will operate at **LOS E** and LOS C north (projected 2030 AADT 143,900 vpd) and south (AADT 72,500 vpd) of Glen McConnell Parkway respectively. Glen McConnell Parkway will also operate at **LOS E/F** between I-526 to west of Magwood Road (AADT 87,000 vpd) and LOS C from I-526 to east of Tobias Gadson Boulevard (average AADT 36,600 vpd) in the design year. The design year study intersections along Glenn McConnell Parkway at Magwood Road, the I-526 centralized SPUI at-grade intersection and Tobias Gadson Boulevard will operate at **LOS E** (39.7 sec/veh of delay), LOS B (13.6 sec/veh) and LOS D (26.0 sec/veh) respectively. The other two study intersections along Ashley River Road at Magwood Road and Tobias Gadson Boulevard will operate at LOS B (13.9 sec/veh) and LOS C (23.6 sec/veh) respectively. The design year ramp analysis results show that all on-ramp and off-ramp junctions at the proposed interchange will operate at an acceptable LOS C or better except three locations. The on-ramps from eastbound and westbound Glen McConnell to northbound I-526 will operate at **LOS E/F**. In the reverse direction, the southbound to westbound off-ramp will also operate at **LOS F**. The 2030 design hour volumes show significantly higher volumes of eastbound to northbound (3,150 vph), westbound to northbound (1,130 vph) and southbound to westbound (3,210 vph) traffic.

11. *Widening (4-Lane) of Main Road from Bees Ferry Road to River Road and from River Road to Maybank Highway:*

Main Road is currently a two lane undivided roadway and runs in the north-south direction. The segment of Main Road between Bees Ferry Road and River Road and from River Road to Maybank Highway is currently congested during both the morning and afternoon peak hours. Northbound Main Road between Maybank Highway and Bees Ferry Road experiences heavy congestion during the morning peak hour. Southbound Main Road experiences slightly higher congestion during the

afternoon peak hour. The northbound and southbound directions of Main Road between Bees Ferry Road and Maybank Highway currently operate at **LOS E/F** during the morning and afternoon peak hours respectively. The operating condition will deteriorate significantly by 2035 to **LOS F** if no geometric improvements are implemented. Widening Main Road from a two-lane to a four-lane facility between Bees Ferry Road and Maybank Highway is needed to accommodate design year traffic. The proposed widening of the Main Road will significantly improve the overall design year arterial operating condition to LOS B or better during both peak hours.

12. *Passing Lanes on Main and Bohicket Road*: The construction of passing lanes at key locations along Main Road and Bohicket Road will not provide spot improvements for through traffic wanting to bypass turning traffic, but will not provide a significant operational improvement to warrant their inclusion in this assessment.

**Cost Estimate**

The itemized costs (in 2007 dollars) for Construction, Right-of-Way, Engineering and CEI and Contingency for the four different project combinations are extracted from *Transportation Planning Study, Phase 2 (2015-design year) and Phase 3 (2030-design year), January 2007, prepared by SRS Engineering, LLC* and provided in Table 2.

**Table 2: Cost Estimates**

Improvement Project Project # and Description	Construction Costs	Right-of-Way Costs	Engineering & CEI Costs	Project Subtotal	15% Contingency	Project Total
<b>Project #1</b> Immediate Needs Project Widening & Improvements to Glenn McConnell Parkway	\$2,912,676	\$190,000	\$710,000	\$3,812,676	\$571,902	\$4,384,578
<b>Project #2</b> Improvements to Magwood Road and Ashley River Road	\$2,898,000	\$467,000	\$753,500	\$4,118,500	\$617,775	\$4,736,275
<b>Project #3</b> Improvements to Orleans Road, Tobias Gadson Boulevard and Ashley River Road	\$1,228,000	\$122,500	\$319,300	\$1,669,800	\$250,470	\$1,920,270
<b>Project #4</b> Improvements to Mark Clark Expressway and Glenn McConnell Parkway to include New Interchange	\$54,839,700	\$1,325,000	\$14,258,400	\$70,423,100	\$10,563,465	\$80,986,565
<b>SUM</b>	<b>\$61,878,376</b>	<b>\$2,104,500</b>	<b>\$16,041,200</b>	<b>\$80,024,076</b>	<b>\$12,003,612</b>	<b>\$92,027,688</b>

**Construction Project Staging Options**

**Option 1 - Project #1 Only = \$4,384,578**

**Option 2 - Project #1, #2 & #3 = \$11,041,123**

**Option 3 - Preferred Design Alternative (Project #1-#4) = \$92,027,688**

The evaluation of required improvement measures to the Mark Clark Expressway/Glenn McConnell Parkway interchange area consisted of three (3) phases/time horizons for improving traffic operations and safety. Phase 1 evaluated immediate transportation alternative improvements that could provide small to moderate improvements in traffic operations. Project #1, as presented in Table 2, provides the estimated cost for the completion of these improvements under Phase 1. Project #1 includes improvements along the Glenn McConnell Parkway from Tobias Gadson Boulevard to 2,400 feet west of Magwood Road.

After the completion of the Phase 1 (immediate needs) improvements, traffic operations were evaluated for the 2015 & 2030 design year scenarios. These evaluations resulted in the conclusion that the greatest need for reducing traffic congestion and improving safety in the study area was to reconstruct the Mark



Clark Expressway/Glenn McConnell Parkway interchange and to improve Magwood Road and Tobias Gadson Boulevard between Glenn McConnell Parkway and Ashley River Road. The evaluation of the Phase 2 and 3 analyses showed that comparable improvement measures for each were required to provide improved traffic operations and to enhance safety in the study area. Therefore, the decision was made to develop a single Preferred Design Alternative and separate the recommended improvement components into three separate projects to allow for the possibility of staging the construction based on available or limited funding. The improvement of Magwood Road (to include termini intersections) was designated as Project #2 and the improvement of Tobias Gadson Boulevard (to include termini intersections) was designated as Project #3. The major construction project is anticipated to be the proposed improvements of the Mark Clark Expressway/Glenn McConnell Parkway interchange, including improvements to upstream/downstream sections of the Mark Clark Expressway and Glenn McConnell Parkway and was designated as Project #4. The estimated costs projected for Projects #2 and #3 are respectively \$4.7 and \$1.9 million. The cost projected for the major interchange reconstruction project (Project #4) is \$81 million. Therefore, several options were developed to provide for the possibility of the staged completion of the recommended improvements as funding becomes available.

Completion of Project #1 would provide for the temporary relief of traffic congestion and could be combined with Projects #2 and #3 to provide improvements for the intermediate future. Work proposed under Project #1 along Glenn McConnell Parkway would be compatible with work proposed under Projects #2, #3 and #4. A small portion of the work included in Project # 1 would be abandoned or modified in the completion of Project #4.