City of Charleston | CHARLESTON, SC

US17 Septima Clark Transportation and Drainage Improvements

Application for Financial Assistance
South Carolina Transportation Infrastructure Bank

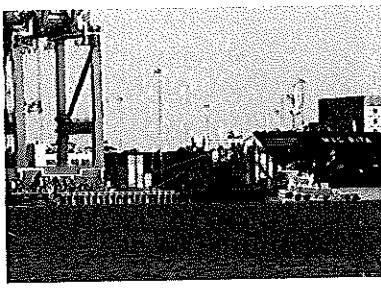


TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

EXECUTIVE SUMMARY

The City of Charleston is submitting this application for financial assistance to construct the US17 Septima Clark Transportation and Drainage Improvements project for correcting deficiencies, repairing existing infrastructure, and supporting the advancement and sustainability of transportation along the highway US 17 Corridor through peninsular Charleston. **The project is an investment to alleviate the hazards, damages, and disruptions caused by the frequent flooding of US17, a vital coastal route that runs through the center of downtown Charleston, South Carolina and serves as a designated national defense highway and evacuation route for tropical events.** The hazards associated with flooding within the drainage basin served by this project directly affects roughly 20% of the Charleston peninsula, with further reaching impacts to regional transportation that is essential for providing safety, commerce, economic development, and community livability. The project is listed on the Berkeley Charleston Dorchester Council of Governments (BCDCOG) Transportation Improvement Program List (TIP) and the South Carolina Statewide Transportation Improvement Plan (STIP) report.

Two key statewide economic engines are directly impacted by the hazards associated with the existing conditions on this Federal route that is maintained by the South Carolina Department of Transportation (SCDOT). The South Carolina State Ports Authority (SPA) and the Medical University of South Carolina (MUSC). The SPA's Charleston Port Facility provides an estimated 260,800 jobs paying $11.8 billion in wages to South Carolinians. In all, trade pumps nearly $45 billion in the state economy and generates $1.5 billion in state and local taxes. US17 is the main roadway infrastructure linking Charleston's Port to the East and Southeast regions of the United States. The SPA's Passenger Cruise Ship Terminal in downtown Charleston provides the State's only passenger cruise ship terminal providing direct tourism revenue for the State. In 2010, the cruise ship industry supported more than 400 jobs, $16 million in wages and $3.5 million in tax revenues for a total economic impact of $37 million. The SPA has also committed $25 million towards an improved passenger cruise terminal.

MUSC is the largest non federal employer in the Charleston Metropolitan Statistical Area (MSA) with over 11,000 employees. In fiscal year 2007, MUSC's economic impact to the State was over $2.3 billion and 29,567 jobs were credited to the presence of the academic university, hospital and University Medical Associates with a combined payroll of over $ 1 billion. US17 is the primary route for employees, students and patients to access the MUSC facilities from all areas of the region.

The US17 Septima Clark Transportation and Drainage Improvements project will mitigate the existing hazards associated with flooding, including improving the reliability of this critical transportation asset and supporting the sustainability and continued economic viability for operations of the SPA and MUSC. In fact, **the cumulative economic impact of this project is estimated to be a present value of $2.52 billion.**

To date the City of Charleston has invested $8 million into the project through studies, survey, design, and permitting. **The US17 Septima Clark Transportation and Drainage Improvements Project is currently fully designed and permitted.** The total project cost is estimated at $154 million. The City of Charleston was awarded a $10 million TIGER Grant from USDOT and is currently under contract for construction of a portion of the project through improvements along Septima Clark Parkway. Completing the remainder of the project will require financial assistance.

The City of Charleston requests $88 million in funding from the State Infrastructure Bank. As more fully outlined in the Financial Plan (Section 2) of this application, the City has also committed an additional $12,000,000 of funds available to it for a total City commitment thus far of $20,000,000. The SIB funds combined in hybrid format with the City's grant of its own moneys as well as those it has received through competitive grant making processes together with the other sources outlined in the financial plan herein will allow this project to be completed.

CONTACT PERSON

The Honorable Joseph P. Riley, Jr.
Mayor
City of Charleston
50 Broad Street
Charleston, South Carolina 29401

Phone: (843) 577-6970
Fax: (843) 720-3827
Email: rileyj@charleston-sc.gov

DESCRIPTION OF PROJECT

The Spring / Fishburne US17 Drainage Basin encompasses approximately 500 acres or about twenty percent (20%) of peninsular Charleston (**See Figure 1**). The project to improve drainage within this basin has been identified as a high priority in the City's effective Master Drainage Plan. Centered about the basin and area of improvement is US17, an at grade route between bridges crossing the Cooper and Ashley rivers and serving the eastern terminus of I-26.

Septima Clark Parkway, a portion of US17 also previously referred to as the Crosstown, was constructed in 1968. The Federal Highway Administration acquired by condemnation a 100 foot wide and 3200 foot long swath of land in the middle of a residential neighborhood in the upper peninsula of the City of Charleston to build the six-lane highway connecting U.S. Highway 17 North to U.S. Highway 17 South. The newly constructed road ran from the old Cooper River Bridge on the east to the Ashley River Bridge on the west. Because it cut through the heart of the City from one river to the other, it quickly became known as the Crosstown.

The work undertaken by the Federal Highway Administration in the 1960's did not take into account the consequences we now understand of paving with impervious asphalt a 100 foot wide parcel of land in the middle of a drainage basin formed by the natural topography of the land between two rivers. The route severed the existing road and drainage network and did not provide the area with an adequate drainage system to address the impact of the increase in impervious area or the impact to the existing drainage basin and collection system network. As a six-lane Federal highway running north-south and connecting the Cooper River and Ashley River bridge crossings, it provides a travel route for over 61,500 vehicles per day. This route also serves as the lifeline for emergency service vehicles associated with three major hospitals, the only level one trauma center in the Lowcountry, and the City of Charleston's Police Department. As a designated evacuation route serving the region during hurricane season, its reliability and use immediately preceding and during the onset of tropical events is critical. This Federal route is maintained by SCDOT.

US 17 is currently flooded and rendered impassable by moderate to severe storm events and / or shallow coastal inundation as depicted in the photographs included in the following sections. Like much of the Charleston peninsula, this route traverses land challenged with flat grades, continuing ground subsidence, and elevations that are low and impacted by tides within the surrounding rivers. Today, flooding is experienced to some degree with most rainfall events, and summertime thunderstorms frequently have rainfall intensities that force closure of multiple lanes of travel, bringing traffic to a stand-still. Such occurrences also result in flood damages to vehicles and neighboring structures, with the largest potential hazard being the loss of life due to delayed response times for emergency service vehicles traveling to the region's only level one trauma center or any of the three area hospitals (note EMS delay due to flooding related congestion on cover photo). This risk and consequence is easily magnified during the evacuation, rescue, response, and early recovery phases of a tropical event.

The City has carefully studied the flooding and transportation impacts over the years. In 2004, a Preliminary Engineering Report (PER) was commissioned that outlined recommended drainage improvements for alleviating frequent stormwater flooding. Recommendations were supported by hydrologic and hydraulic considerations and a conceptual design development for improvements. The long term solution to this flooding is the construction of a series of deep stormwater conveyance tunnels, a large stormwater pumping station at the edge of the Ashley River and a number of local neighborhood stormwater drainage improvements.

The PER led to the implementation of the Detailed Design which further defined the project requirements and developed detailed technical memoranda to document the design approach for each component of the project and ensure that the proposed improvements are technically feasible for construction. This Detailed Design provided the City with an estimated construction cost and scheduling strategy for construction of these improvements. All drawings and specifications are complete and ready for contractor and materials solicitation. All required regulatory permits and approvals have been received, to include but not limited to the US Army Corps of Engineers 404 Permit, the South Carolina Department of Health and Environmental Control (SCDHEC) NPDES Permit, the SCDHEC Office of Ocean and Coastal Resource Management (OCRM) Critical Area and 401 Water Quality Certification and OCRM Coastal Zone Consistency Certification, the SCDOT Encroachment Permit and all local permitting and approvals.

The Septima Clark US17 Transportation and Drainage Improvements Project (project) incorporates the following transportation infrastructure improvements:

- Tunnels and Shafts: New sub-surface stormwater conveyance system to include 5,360 LF of twelve (12) foot diameter tunnel and 2,075 LF of ten (10) foot diameter tunnel located one hundred and forty (140) feet below the surface. This system also includes four (4) working/reception shafts varying in diameter from twenty (20) to thirty (30) feet and nine (9) stormwater collection shafts.
- Pump Station Wetwell and Outfall: A concrete pump station wetwell with tunnel drain pumps to receive the drainage from the tunnel and deliver to the new outfall. The Outfall will consist of three (3) 10-foot by 12-foot concrete box culverts for discharge into the Ashley River with tidal check valves to prevent backflow from the river into the system.
- Transportation and Collection System Improvements: Re-engineering and improvements to the conventional stormwater drainage system to more efficiently direct flows off roadways, including construction of 10,520 LF of reinforced concrete drainage pipe varying in diameter from 15-inches through 48-inches and installing 208 drainage structures. Improvements to approximately one (1) mile of roadway to increase highway accessibility, traffic efficiency and safety to vehicular and pedestrian traffic. Introduction of Intelligent Transportation Systems (ITS) for more efficient traffic flow.
- Pump Station Building and Mechanical: New pump station for the safe and environmentally responsible discharge of stormwater runoff. The pump station

will include three (3) 120,000 gallon per minute (gpm) pumps, mechanical screens, silt removal pumps, electronic control and emergency generator power all contained within a building structure designed to minimize air and noise impacts and providing an aesthetically pleasing structure fitting the character of the neighborhood.

The project components are depicted in **Figure 2.**

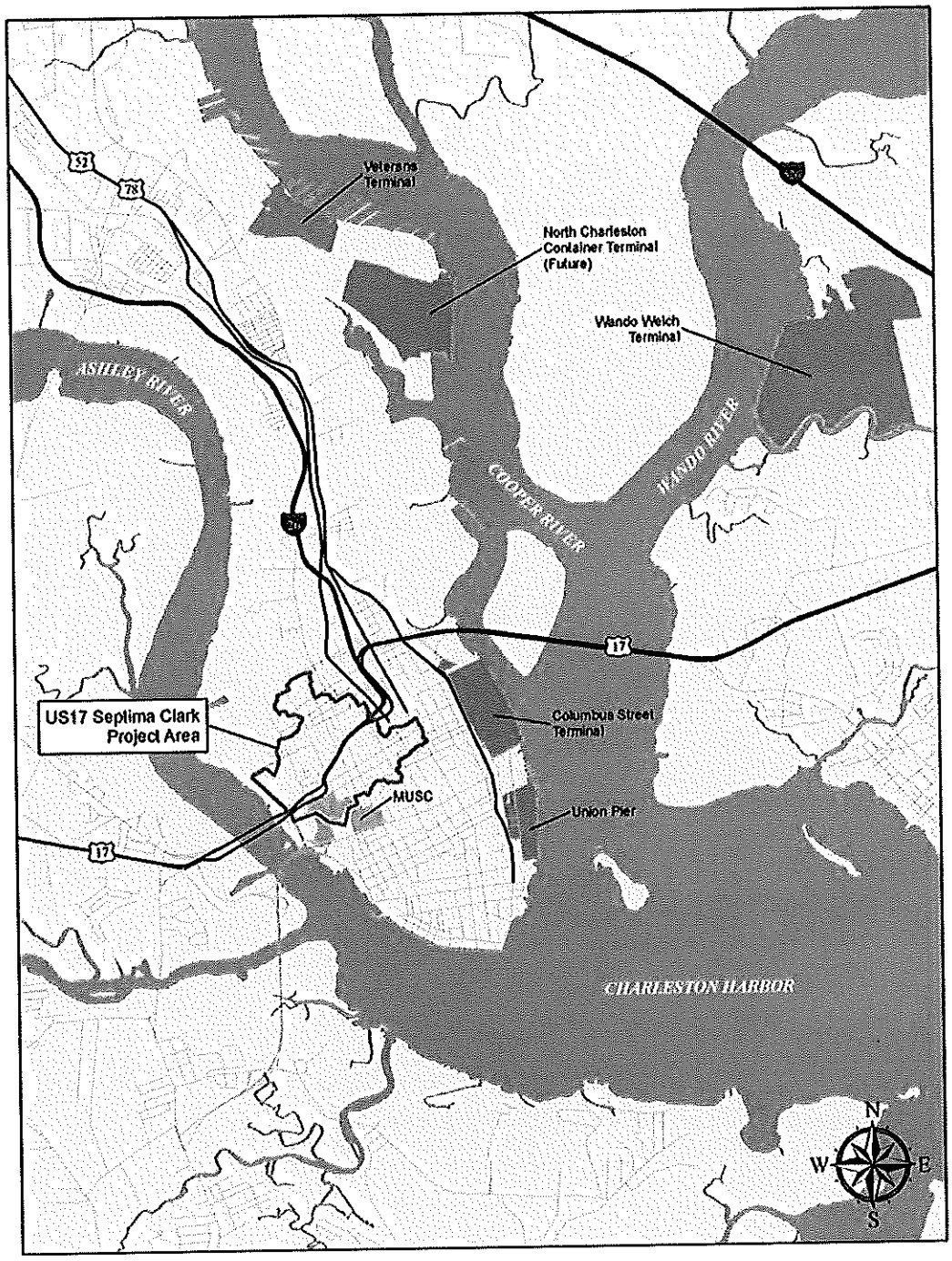


Figure 1
US17 Septima Clark Transportation and Drainage Improvements
Project Location

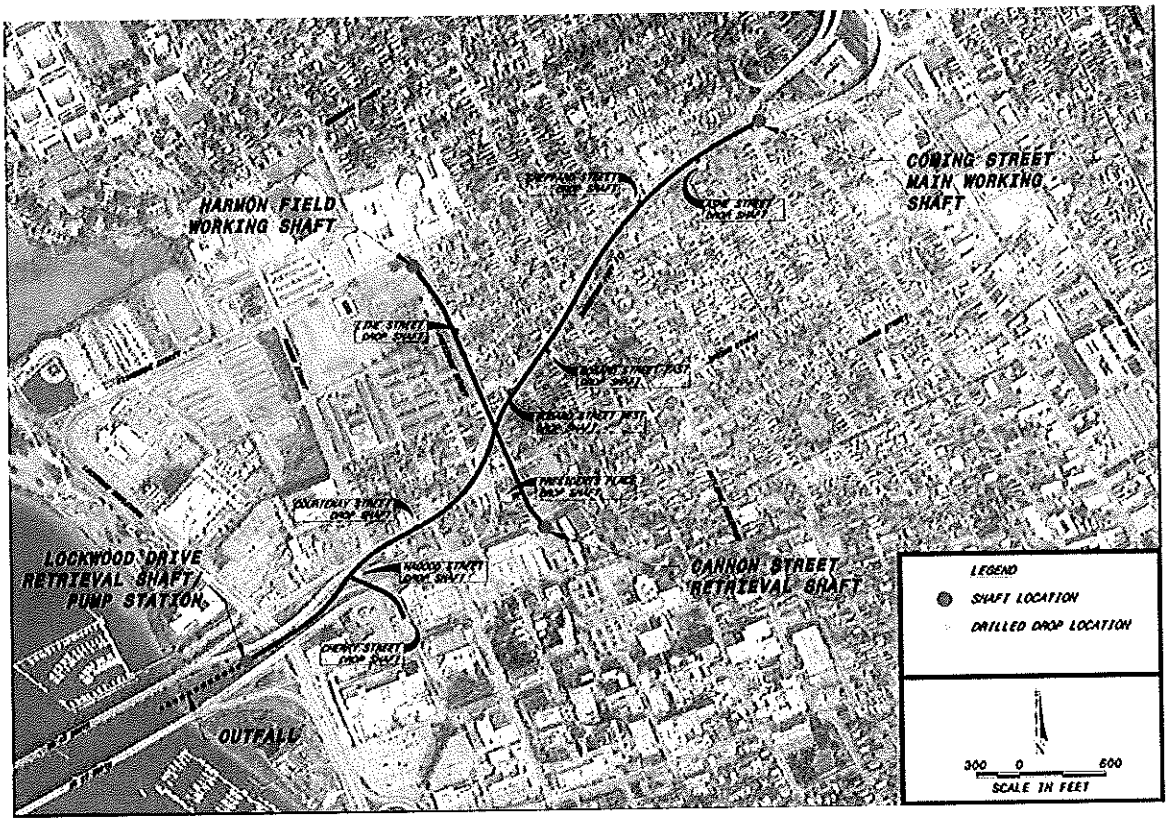


Figure 2
Project Components

The City of Charleston submitted an application for a $146 million grant from the U.S. Department of Transportation under the 2009 American Recovery and Reinvestment Act (ARRA) – Transportation Improvements Generating Economic Recovery (TIGER) program to complete this project. The City was awarded a $10 million grant under this program (one of the fifty one projects selected out the over fourteen hundred applications submitted to the USDOT) to proceed with a portion of the collection system component of the project. The City elected to install drainage improvements and transportation safety enhancements for US 17 (Septima Clark Parkway) from Coming Street to Spring Street (approximately 0.6 miles) and along side streets that intersect this section of US17. The funded project currently under way is generally described as follows:

- Approximately 5,550 linear feet of storm drain piping varying in size from 15-inch reinforced concrete to 48-inch reinforced concrete and associated drainage structures. Existing 2,000 linear feet of storm drain systems will be cleaned and inspected.
- Milling, demolitions and removal of existing pavement and installation of new pavement and associated striping and signage and street lighting for the six lane section of US 17 Septima Clark Parkway from the Coming Street intersection to the Spring Street intersection (approximately 0.6 Miles).
- A concrete median wall (approx, 2,500 linear feet), curbing (approx, 9,300 linear feet) and 4-inch concrete sidewalk.

- An Intelligent Transportation System will be installed to monitor and manage traffic along this route.

This project was advertised, bid and awarded in accordance with Federal, State and Local procurement regulations. Figure 3 depicts the TIGER Grant Collection System project limits.

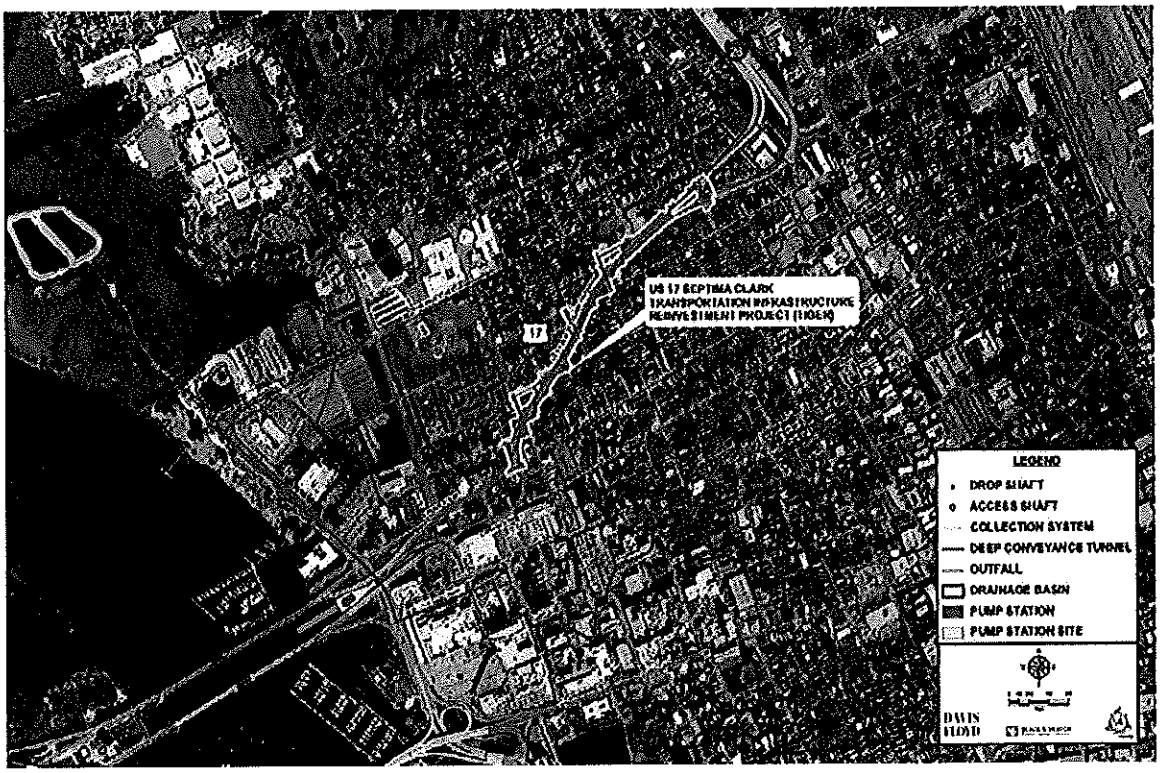


Figure 3
TIGER Grant Collection System Project Limits

The City of Charleston has taken the lead in exploring solutions to the problems caused by such construction in an environmentally sensitive area. As a result, a plan has now been developed which will complete with distinction a project begun more than 40 years ago. The City is pleased to submit this proposed partnership among our Federal, State and municipal governments to address vital concerns of public health, safety and quality of life to each and every one of the citizens we serve.

1. PUBLIC BENEFITS

This Project presents a significant number of public benefits. These benefits will be discussed as they pertain to the following areas; promotion of economic development, enhancement of mobility and safety and increase in the quality of life and general welfare of the public.

A. Promotion of Economic Development

A detailed Benefit Cost analysis, titled "The US 17 Septima Clark Parkway Transportation Infrastructure Reinvestment Project Benefit Cost Analysis Report" was completed in September 2009 for this project and is included in **Appendix A-1**. Values quoted in the following paragraphs are supported by this report.

1) SPA Terminal Connectivity – US 17 is a vital coastal north-south link and provides connectivity between the various port facilities in the area with Interstates 26 and 526 allowing for distribution of goods from the port terminals to the rest of the State and Nation. The area port facilities provide over 260,000 jobs and are a significant resource in the over $45 billion in trade that is generated in the State Economy. Recurring flooding and/or traffic accidents significantly reduces the capacity of US17 and occasionally brings traffic along the route to a standstill. Due to US17's connectivity with the other major routes in the area, these capacity reductions extend onto Interstate 26, the Arthur C. Ravenel Bridge (US17) connecting Charleston with Mount Pleasant and US17 South across the Ashley River. As motorists seek alternate routes to avoid the congestion, Interstate 526 becomes the primary alternate route and it experiences congestion related delays. Inability of port related traffic to arrive and depart the port facilities greatly impacts the efficiency of port operations, making the Charleston port facilities a less attractive alternative to other Southeastern U.S. port facilities such as Norfolk, VA and Savannah, GA. The transportation and drainage improvements associated with this Project will ensure that these capacity reductions and interruptions are minimized to allow for the efficient movement of port related goods throughout the region.

The SPA is investing $25 million into a new passenger terminal to support a growing cruise ship industry presence for the State of South Carolina. This terminal is currently the only cruise ship terminal in the State and provides access to vacation and tourism locations throughout the State. In 2010, the cruise ship industry supported more than 400 jobs, $16 million in wages and $3.5 million in tax revenues for a total economic impact of $37 million.

2) Maintaining the MUSC - The MUSC has expressed an interest in moving its facility to an area without the repetitive threat of floods. If this facility moves, it will likely decrease access to health care and have a negative impact on the immediate area's economy. The Project provides multiple long-term benefits to the Charleston Metropolitan Statistical Area (MSA). The City is well on its way to becoming a premier biotechnology and medical hub. In March 2009, MUSC's Hollings Institute received a prestigious National Cancer Center designation is the only one in the state of State of South Carolina and is the 64th such designated center in the US. As part of this recognition, the Hollings

Institute received and award of $7.3 million (over a 5-year period) to help support its efforts. This award is anticipated to benefit the Charleston MSA by generating an additional $31 million of local economic activity through economic multiplier effects. In addition to the National Cancer Center, MUSC recently completed Phase 1 of its Vision 2020 plan, the Ashley River Tower Complex. With the completion of Vision 2020, MUSC hopes to further build upon its reputation as the leading medical facility in the Tri-County (Berkeley, Charleston, and Dorchester) area. As part of analysis for the expansion, MUSC noted the need for transportation improvements to US Highway 17 to address drainage and accessibility issues. If the City does not address these drainage and accessibility issues, the probability of Phase 2 and 3 proceeding is diminished.

The MUSC is an integral part of the region's medical care and also represents a substantial part of the region's economic activity. The MUSC has indicated a willingness to remain in its current location dependent on the ability to remedy the flooding problem. If the facility moves, it will likely decrease access to health care and have a negative impact on the immediate area's economy.

3) The MUSC Biomedical Research Horizon Area Redevelopment Project ("Horizon Project") - The Horizon Project is a research park that will further develop MUSC's reputation as a biomedical research hub and provide over 4.8 million square feet of commercial space. The planned redevelopment includes office space, lodging, retail space, and parking structures. The Horizon Project will serve as a national model for urban infill development as it incorporates all the necessary elements to support a knowledge-based economy. Upon completion, the local economy will realize an estimated benefit of $121.6 million.

4) Increased Business Activity - The Project produces a measurable amount of increased business activity in Charleston.

Commercial Properties – The primary consequence of flooding to commercial properties is the loss of business. A thorough analysis was completed to quantify the anticipated increase in business activity once the project is finished and flooding is remediated. Over the 50 year evaluation period, in present value dollars, the increase in business activity is $126.4 million.

Medical Centers – The U.S. 17 Septima Clark Parkway area is served by three medical facilities: MUSC, Roper St. Francis, and the Veterans Administration Hospital. These institutions currently employ over 15,500 people and provide beds to over 1,200 patients. During flood events access to each of the facilities and hospital business activity is negatively impacted. According to self-reported annual statistics, the hospitals admit more than 54,400 patients and serve more than 1,600,000 outpatients annually. A reduction in the number of patients seen and/or admitted to a medical facility represents a loss in revenue. Once the Project is completed and flooding is mitigated, an increase of $77.5 million in business activity is expected as a result of access to these medical facilities over the 50 year evaluation period, in present value dollars.

5) Tourism – Charleston consistently appears on national publications' lists of best U.S. cities to visit. The City's Visitor's Center reported almost 903,000 people passing through the center in 2008. Area attractions reported more than 1.5 million visitors in 2008, and the average person visiting Charleston spends about $212 per day. Using this data, we estimated the impact that different flooding events have on the area's tourism trade. Looking only at the project area, it is assumed that from 35 percent to 100 percent of the businesses are impacted, with a most probable value of 75 percent. For regional tourist spots, it is assumed that between 15 to 30 percent of attractions are impacted with a most probable value of 20 percent. This results in a commercial business loss of $1,145 per hour to the City's economy and $12,613/hr for regional tourism. Total cost associated with loss of the tourism activity is about $1,981,152 per year.

In summary, the economic impact of this Project can best be described by the cumulative present value of benefits for the Project being estimated to be $2.52 billion

B. Enhancement of Mobility and Safety

1) Increased Pedestrian Safety - US17 currently presents a series of safety hazards to pedestrians. The route as originally constructed, bisected the community's historic street grid and has small, ineffective raised medians separating the directional travel lanes, lacking ample preventative management for crossing pedestrians attempting to continue movement along the original and adjacent street grid. As such, many pedestrians cross US17 dangerously. The Project includes enhancements which are mindful of pedestrian use, including larger raised medians, enhanced traffic signaling, enhanced pedestrian markings, and improved lighting. The improvements to the drainage system, the construction of a raised/landscaped center median, the construction of new sidewalks with landscaping, along with high visibility crosswalks, and the use of intelligent transportation systems, represent a substantial cumulative safety improvement for the traveling public and for the local community.

2) Increased Vehicular Safety - It is anticipated that the Project will also reduce the number of vehicular accidents on US17 due to sudden stops for flooding. Accident history for the US 17 Septima Clark Parkway reported 174 vehicular and pedestrian accidents for the period of January 2006 to June 2009. The predominate cause of accidents was rear-end collisions, caused by sudden stops due to flooding of the US 17 corridor. This was aggravated by high traffic volume increasing the incidence of rear-end accidents along the facility. The Project improvements will make the US 17 Septima Clark Parkway safer for the motorists by alleviating roadway and intersection flooding.

The US 17 Septima Clark Parkway connects directly into the terminus of I-26. Vehicles traveling into Charleston (from I-26) often encounter the impassible road conditions resulting from flooding at the intersection of Coming Street. During poor visibility and nighttime conditions, this presents a significant hazard. As vehicles begin to stop and stall while entering the US 17 Septima Clark Parkway facility, additional traffic begins to accumulate onto the interstate, creating back-ups that extend to a sharp curve of I-26. When these conditions occur, it is extremely dangerous for the interstate traffic traveling

into Charleston. By improving accessibility to and along US 17 through drainage improvements, the traffic flowing from and to the interstate would not face the hazardous conditions created today by flooding. Additionally, when flooding conditions occur, the pavement markings such as lane marking designations, intersections markings, and crosswalks are difficult to see. This can create sideswipe conditions as drivers become confused on lane position and roadway directions. Pedestrians who attempt to cross the U.S. 17 Septima Clark Parkway during flooding conditions where drivers are not able to clearly identify the crossing and stopping points designated by pavement markings create additional confusion and increasing hazards.

The retiming of traffic signals, the use of intelligent transportation systems, and the use of advanced communication systems and traffic signal controllers, will form a network of advanced technologies that seek to improve the operational efficiency of the US 17 Septima Clark Parkway. The synchronization of the traffic signals will minimize rear-end accident conditions. The use of intelligent transportation systems such as variable message signs will alert motorists to traffic conditions in the transportation system and allow for drivers to better adjust to those conditions.

3) Uninterrupted Access to Emergency Facilities, Medical Care and Level 1 Trauma Center – The South Carolina National Guard Readiness Center, District U.S. Army Corps of Engineers Headquarters, the City of Charleston Police Headquarters, as well as two fire stations are located within or adjacent to the flooded areas, and are often inaccessible during storm events. Each of these disaster response teams utilizes US17 for maneuvering about the region and requires access in any conditions, particularly during or following storm events. The stormwater drainage improvements will serve to protect and maintain this level of access.

US17 provides access to medical facilities including the Lowcountry's only Level 1 trauma center. During times of flooding, access is blocked to these vital facilities. Other Level 1 Trauma Centers in South Carolina are located in Columbia (over 103 miles away), Spartanburg (over 183 miles away), and Greenville (over 197 miles away). For a person requiring trauma care, traveling to another trauma center located over 100 miles away may have an impact on their chance of survival.

CHERRY STREET (at MUSC and VA HOSPITALS)

BEE STREET (at MUSC)

US 17 NORTH (HURRICANE EVACUATION ROUTE)

4) Uninterrupted Access to Evacuation Routes - Another significant risk to public safety is the unreliability of hurricane evacuations during flood events on US17 as it serves as a local evacuation route and direct conduit to Interstate 26, a primary hurricane evacuation route. A flooding event which coincides with a hurricane evacuation order significantly increases risk to which the region and traveling public are exposed.

5) Public Transportation - The City provides public bus service under the Charleston Area Regional Transit Authority ("CARTA"). Currently the bus fleet is approximately 100 vehicles, of which approximately 50 percent have routes traversing the area impacted by frequent flooding. The bus fleet is encouraged to avoid crossing flooded streets as water infiltrating engines can cost $20,000 to $30,000 to repair. As such, a bus that encounters flooded roadways is often idled. A bus costs the city $60 per hour to operate by contract rate, regardless of whether the bus is running its route or idled due to flooding.

C. Increase in the Quality of Life and General Welfare of the Public.

1) Reduced Residential and Commercial Damage -As a result of completing the Project, there will be a reduction in recurring damage to residential and commercial buildings in the affected area. A thorough study of flood damage in the area along with damage cost estimates from the Federal Emergency Management Agency (FEMA) showed that the project will save residential and commercial flood damages over the 50 year evaluation

period, stated in present dollars of $252 million for major flooding events, and nearly $42 million for minor flooding events.

2) Safe and Reliable Routes to School – Five public schools are located in the area affected by flooding along US17: Burke Middle School and Burke High School (the City's only inner city public high school), Mitchell Elementary School, Charleston Development Academy (the only chartered elementary school in a federally-subsidized housing project in the US), C-E Middle School, and Buist Academy. A number of private schools in the area are affected as well. School attendance has been linked to graduation rates and higher incomes over the life of the graduate. Completion of the project and remediation of the flooding will facilitate safer and more reliable routes to school, supporting school attendance.

3) Reduced Flood Debris – Significant amounts of storm debris are created during flood events. Structural debris, garbage, tree limbs, vegetation and road waste are swept into the environment as well as the sewer system. This creates both direct hazards to those attempting to traverse the area, as well as damage to the storm sewer system and conveyance of pollutants into the outfalls (rivers). Mechanical screenings, sedimentation basin, and the resultant flood alleviation from the Project will minimize storm debris.

PRESIDENT STREET SOUTH OF CANNON STREET (through MUSC)

FISHBURNE STREET (ACCESS ROUTE to BURKE HIGH SCHOOL)

4) Improved Community Revitalization and Rehabilitation - The area of the Charleston peninsula accessed by US17 is a diverse combination of demographics, land-uses and architecture, and is in the heart of the Martin Luther King Jr. District. As previously stated, alleviating flooding in the area will improve revitalization and rehabilitation in this important community. Eliminating residential damage from floods, providing economic stability for the commercial entities in the area, and providing access for citizens to vital healthcare is integral to a thriving urban community. The Project provides these benefits while maintaining or improving the character of the existing neighborhoods.

5) Enhanced Alternative Transportation Opportunities - In the year 2000, Hillary Rodham Clinton and then Secretary of Transportation Rodney Slater designated the Greenway adjacent to the U.S. 17 Septima Clark Parkway as one of our nation's 16 National Millennium Trails. The Millennium Trails initiative was part of the White House Millennium Council's efforts to stimulate national and local activities to "honor the past and imagine the future." The public/private partnership was led by the Department of Transportation, Rails-to-Trails Conservancy, and a collaboration of other agencies and organizations. A key element of this partnership was the construction of a bridge and adjacent pedestrian and bicycle lanes. These important alternative transportation lanes are inaccessible during storm events during flooding. Completion of the Project and remediation of the flooding will open these lanes and support the Millennial Trails initiative.

6) Improved Accessibility to Public Transportation for Economically Disadvantaged Populations - During times of flooding, non-drivers and Senior Citizens in the affected areas have no access to public transportation or the ability to utilize pedestrian sidewalks and walkways. By eliminating flooding and the associated hazards, the Project will create improved accessibility for the economically disadvantaged population within the area.

7) Improved Water Quality - During flooding, sediment, debris, and contaminants are swept from the flooded areas via stormwater runoff through the sewer system, into the Ashley River. Flooding conditions along roadways inundate the chassis of crossing vehicles and in some occasions lead to the stalling and eventual flooding of vehicles, causing the transfer of oils and fuels into the runoff. Flooding conditions within private property increases the chances of domesticated animal waste being contacted and directly transported by runoff. Completing the Project and alleviating frequent flooding within the basin, will limit the contact or contact time with contaminated surfaces, and pollutants currently transported to the Ashley River experienced will be eliminated or greatly reduced.

1.1 Traffic Studies/Traffic Volumes/Accident Data

US17 between the Cooper River and Ashley River carries 61,500 vehicles per day. Approximately 5,099 travel during the peak afternoon rush hour, 4,346 vehicles travel during the peak morning hour. Additionally about 1,939 vehicles travel per hour during other non-peak times of day.

According to City of Charleston Police accident reports for the period of January 2007 through June 2009, 174 accidents were reported in the project corridor. The predominate cause of accidents was rear-end collisions, caused by sudden stops due to flooding of US17. This was aggravated by high traffic volume increasing the incidence of rear-end accidents along the facility.

1.2 Urgency of this Project

The ongoing negative impact to mobility and safety, quality of life and general welfare of the public and to economic stability and development noted in the above paragraphs demonstrate the urgency in completing this Project as soon as possible. The drainage problems that this project proposes to remedy will only worsen over time as already over burdened drainage systems continue to age. This will result in continued significant reductions in access to evacuation routes, emergency response facilities, port traffic routes and other damages recurring with flooding conditions.

1.3 Resolution from Local Governing Body

City of Charleston Resolution dated September 2009 is included in **Appendix A-2.** A Concurrent Resolution from the General Assembly of the State of South Carolina dated May 19, 2009 is also included in **Appendix A-3.**

1.4 Advisory Coordinating Council for Economic Development of the Department of Commerce Certificate

The City has submitted the project to the Advisory Council for review. Certification for the project will be decided at the Council's December 2011 meeting.

1.5 Current and Five Year History of Unemployment Data

The historical unemployment data for the Charleston-North Charleston-Summerville, SC Metropolitan Statistical Area from January 2001 through February 2011 is included **Appendix A-4.** Source of the data is the US Department of Labor Bureau of Labor Statistics.

1.6 Letters of Support

The US Department of Transportation awarded the City of Charleston a $10 million 2009 ARRA TIGER grant for this project, indicating their support for this Project.

Letters and resolutions of support for this Project from the following entities are provided in **Appendix A-5:**

1) South Carolina State Ports Authority
2) South Carolina Department of Transportation
3) Berkley-Charleston-Dorchester Council of Governments (BCD COG)
4) City of Charleston Fire Department
5) City of Charleston Police Department
6) Housing Authority of the City of Charleston
7) Charleston Water System
8) Roper St. Francis Healthcare
9) Medical University of South Carolina (MUSC)
10) The Citadel
11) Charleston County School District
12) Cannonborough Elliotborough Neighborhood Association
13) Lake Frances Properties Neighborhood Council
14) Westside Neighborhood Association
15) Nichol Chapel AME Church
16) Area Residents

1.7 State and Local Planning (MPO's)

The Project is listed in the following planning lists, copies of which are located in Appendix A-6:

1) Charleston County Hazard Mitigation Plan

2) Berkeley Charleston Dorchester Council of Governments Transportation Improvement Project List (BCDCOG TIP)

3) South Carolina Statewide Transportation Improvement Plan (STIP) Report

1.8 Regional and State wide Significance

1) Interstate Commerce - It is estimated that the Charleston Port Facility provides 260,800 jobs paying $11.8 billion in wages to South Carolinians. In all, trade pumps nearly $45 billion in the state economy and generates $1.5 billion in state and local taxes. US17 is the main roadway infrastructure linking Charleston's Port to the East and Southeast regions of the United States. US17 is the primary north – south route for the coastal counties of Horry, Georgetown, Charleston, Colleton and Beaufort Counties and links the popular recreational and tourist areas of Hilton Head Island, Beaufort, Charleston and Myrtle Beach.

2) Uninterrupted Access to Evacuation Routes – Also noted under Enhancement of Mobility and Safety, the unreliability of hurricane evacuations during flood events on the US17 is of regional significance. US17 serves as a local evacuation route and direct conduit to Interstate 26, a primary hurricane evacuation route. A flooding event which coincides with a hurricane evacuation order significantly increases risk to which the region is exposed.

3) Uninterrupted Access to Medical Care and Level 1 Trauma Center – As previously stated under Enhancement of Mobility and Safety, US17 and adjacent City streets provide access to medical facilities including the Lowcountry's only Level 1 trauma center. During times of flooding, access is blocked to these vital facilities. Other Level 1 Trauma Centers in South Carolina are located in Columbia (over 103 miles away), Spartanburg (over 183 miles away), and Greenville (over 197 miles away). For a person requiring trauma care, traveling to another trauma center located over 100 miles away may have an impact on their chance of survival.

2. FINANCIAL PLAN

2.1 Cost of Project

The total cost of the Project is estimated to be $154 million. The source of this estimate includes

1) Actual engineering costs incurred for master planning, preliminary and final design and permitting ($8 million).
2) Construction costs using recent competitive bid results and RS Means Construction Cost Data ($146 million). A copy of the Estimate of Construction Cost is included in the **Appendix A-7**.

2.2 & 2.3 Local Funding Sources and Amounts

The City of Charleston has already provided over $8 million (approximately 5.2% of the total Project costs) in funding for *master planning, preliminary and detailed design, and permitting* activities for this Project. The City has also committed to provide $2 million (approximately 1.5% of the total Project costs) for construction and construction engineering and inspection (CEI) in addition to the $10 million 2009 ARRA TIGER Grant that has been received from the US Department of Transportation to construct the first phase of the Project. Therefore, the City has expended or committed to 6.7% of the total Project costs. The source of these City funds is from two revenue sources.

1) An annual budgetary line item for ongoing City wide stormwater management and operations. In 2009, the portion of the City's ad valorem tax levy for this purpose was $1,708,597.
2) The second is a stormwater utility fee on City wide sewer and water bills associated with the user's property area and use. In 2009, this stormwater utility fund generated $5,811,222. The 2009 expenses were $3,179,821 (City wide stormwater management, repair and operations costs) therefore $2,631,401 was set aside for long term maintenance, capital improvements and design services/permitting for the stormwater system.

2.4 & 2.5 Amount and Form of Assistance Required from the SIB

The City of Charleston requests $88 million in funding from the State Infrastructure Bank. This assistance would be used with the City's financial contribution to the Project and other funding described in **Table 1** and **Figure 4** below to meet the total cost of $154 million.

The City understands that SIB financial support is often funded from proceeds of SIB revenue bonds. Due to the significant municipal and other funding sources for this Project, the requested SIB contribution could be made over a four-year period should the Board decide to fund the Project from sources other than bond proceeds. In such event, the City would suggest the Board consider funding this Project from revenues which

remain available to the SIB after all payments required by the SIB revenue bond documents. Such an approach would allow the SIB contribution to the Project to be made out of cash flow on a pay as you go basis in annual amounts as displayed in Table 3 on page 25 of this application. Should this approach be taken, the City requests that the first such payment be made in the fiscal year commencing July 1, 2015 from revenues available as of the fiscal year ending June 30, 2015.

2.6 Other Proposed Sources of Funds

The City of Charleston has currently obligated over $10 million and is prepared to provide up to an additional $28 million to complete the project. Other sources of project funding include the USDOT TIGER I (2009) grant of $10 million that has been awarded to the City and $12.5 million anticipated to be obtained from the SCDOT Fiscal Year 2012 Federal Match Program. The City continues to work with the USACE, The U.S. Department of Homeland Security and other federal agencies to provide funding assistance.

The amount of assistance requested from the State Infrastructure Bank and the balance required for the Project is summarized in **Table 1 and Figure 4.**

Table 1
Funding Sources
(Amounts in Millions)

Source	Amount ($millions)	Percent
City & USDOT	$20	13%
City & SCDOT	$25	16%
State Infrastructure Bank	$88	57%
City & Other Federal	$21	14%
Total	**$154**	**100%**
City Bond Anticipation Note (BAN) Interest	$1.4	

As evidenced by the contribution of Funding Sources shown in the above table, the City is not asking for a complete grant to pay the cost of the project. Neither is the City asking for a loan from the State Infrastructure Bank. Rather, the City is requesting a hybrid between a grant and a loan in proposing that the State Infrastructure Bank join the City, the South Carolina Department of Transportation, the United States Department of Transportation and other Federal agencies in partnership to accomplish this infrastructure improvement so vitally important to our City, Region, State and Country. The level of support requested from the State Infrastructure Bank is 57% of the total project cost. Thus, the requested support is not a grant but rather represents a hybrid of funding sources from local to State to Federal governments and agencies.

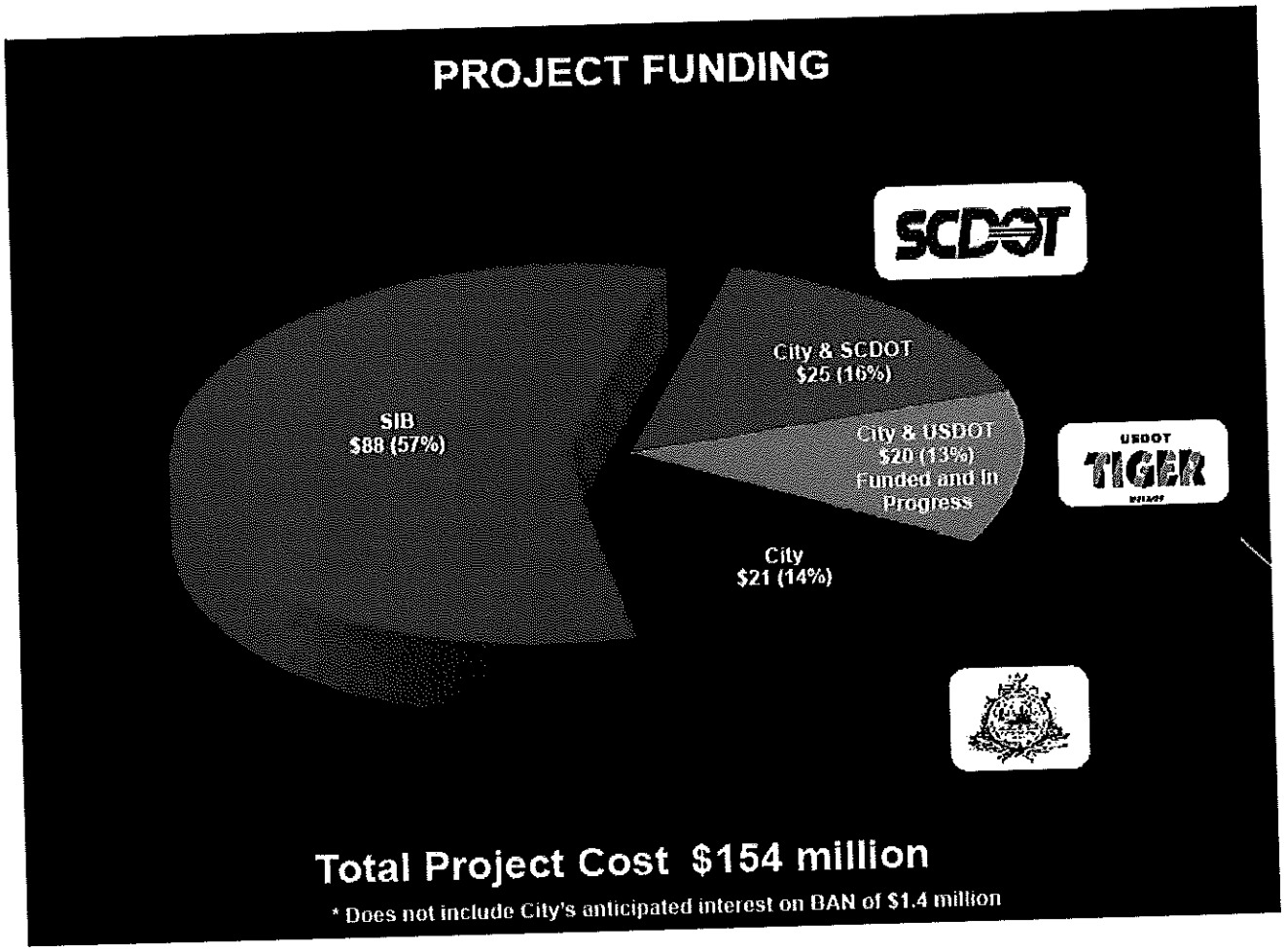


Figure 4
Sources of Project Funds

2.7 Schedule of Anticipated Cash Flow Requirements

The City of Charleston to date has expended $8 million towards the Project. These costs were incurred from 2004 through 2010 as indicated in **Table 2** below. The $12 million Phase I construction project awarded in 2011 will be complete in late 2012 and these costs are included in the below totals for 2011 and 2012. The City anticipates approval to participate in the SCDOT Fiscal Year 2012 Federal Match Program which will enable the completion of the remainder of the collection system component of the project in 2012 and 2013, the tunnel and shafts component of the project will be completed from 2014 through 2015, the pump station wetwell and outfall component will be completed from 2017 through 2018 and the pump station mechanical component will be completed from 2019 through 2020. The above corresponding cash flow requirements are noted in Table 2. Project completion is anticipated in 2020.

Table 2
Anticipated Cash Flow Requirements
(Amounts in Millions)

Project Component	2004-2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Component Total
Tunnels and Shafts	2.0				15.0	25.0	10.00					52.0
Pump Station Wetwell and Outfall	2.0							12.0	22.0			36.0
Collection System	2.0	5.0	17.0	15.0								39.0
Pump Station Mechanical	2.0									15.0	10.0	27.0
Annual Total	**8.0**	**5.0**	**17.0**	**15.0**	**15.0**	**25.0**	**10.0**	**12.0**	**22.0**	**15.0**	**10.0**	**154.0**

2.8 Schedule of Project Revenues

Table 3 below summarizes the anticipated revenues for the Project. As noted in 2.7 above, the City anticipates participation in the SCDOT Fiscal Year 2012 Federal Match Program and will receive $12.5 million over the two year period 2012 through 2013 to match the City's $12.5 million contribution to complete the collection system component of the project. It is assumed that funding from the SIB will be provided in annual installments from its revenues available after net debt service starting in 2016. In an effort to continue construction of this project without a lapse in progress towards completion, the City anticipates building cash through general fund transfers beginning in 2012 to cover principal and interest on a Bond Anticipation Note (BAN) to cover the

cash flow requirements to complete the tunnel and shafts component of the project in 2014 and 2015. SIB funding in 2016 will provide the funding to finish the tunnels and shafts component with remaining 2016 SIB funding and part of the 2017 SIB funding being used to reimburse the City for the principal only on the BAN. The City will continue paying interest on the BAN through 2018. The remaining SIB funding will be used to complete the pump station wetwell and outfall from 2017 through 2018 and begin the final component of the project, the pump station mechanical in 2019. The remaining required funding will be provided by the City and/or other federal funding sources available in 2019 through 2020 to complete the pump station mechanical component and achieve final project completion in 2020.

Table 3
Schedule of Project Revenues
(Amounts in Millions)

Funding Source	2004-2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
City & USDOT	8.00	5.00	7.00									20.00
City & SCDOT			10.00	15.00								25.00
City General Fund Transfer			0.50	0.50	0.50	0.3		0.40	0.60	0.60	0.60	4.00
City Bond Anticipation Note					13.50	24.80	(21.00)	(17.30)				0.00
SIB							31.00	31.00	21.00	5.00		88.00
City and Other Federal										7.00	10.00	17.00
Annual Total	**8.00**	**5.00**	**17.50**	**15.50**	**14.00**	**24.80**	**10.00**	**13.70**	**21.30**	**13.60**	**10.60**	**154.00**
City BAN Interest (Assumes 2% Interest)						0.27	0.77	0.35				1.39

2.9 Project Useful Life

The useful life of the Project is anticipated to be 50 years based upon the materials and equipment specified for inclusion in the project. This useful life assumes adequate maintenance of all electrical and mechanical equipment as well as periodic resurfacing of pavements and cleaning of surface collection system components.

2.10 Project Maintenance

The City of Charleston will assume maintenance responsibility for the pump station, outfall, tunnels and shafts. Upon final approval and acceptance of the Project, SCDOT will assume maintenance of the streets and surface drainage collection system within their right-of-way. The SCDOT currently has maintenance responsibilities for the streets and drainage systems within their right-of-way as the City received an Encroachment Permit from SCDOT for improvements within the right-of-way. No additional maintenance costs to SCDOT are anticipated as a result of this Project.

2.11. Project Priorities

There are four (4) primary components of this Project to include:

1) Tunnels and Shafts
2) Outfall
3) Collection System
4) Pump Station

All four components are required to significantly reduce the flooding impacts noted in this application. The tunnel and shafts, outfall and collection system (collective construction estimate of $121 million) are designed in a manner that will permit operation as a gravity (non-pressurized) drainage system such that benefits will be realized without the pump station (construction estimate for the pump station is $25 million). However, the most dramatic flooding occurs at high tide during storm events for which pump station would be required to provide the design level of service.

2.12 through 2.17 & 2.19 City Adoption of Local Taxes, User Fees, Assessments. Impact Fees, and Tolls to assist in Financing the Project

The City has adopted a property tax levy and a stormwater utility fee for stormwater management and operation as noted above. The City has a long history of funding its Stormwater Utility System. At an election held November 3, 1987, the voters of the City approved $9,500,000 general obligation bonds to construct City drainage improvements. The proceeds of those bonds were used to construct stormwater improvements at the intersection of Calhoun and East Bay and also in West Ashley. In connection with those bonds and continuing to present day, City Council has imposed on an annual basis ad valorem property tax millage to defray debt service/stormwater costs. Pursuant to the Stormwater Management and Sediment Reduction Act adopted by the South Carolina General Assembly in 1991, which, among other things, authorizes local governments to establish stormwater utility systems and to fund their operations through a fee or tax, City Council established the City's Stormwater Management Utility System which, pursuant to that State law, imposed a Stormwater Utility Fee. The South Carolina Attorney General challenged the City's imposition of the fee on State properties arguing that the State is exempt from all provisions of the 1991 legislation. The South Carolina Supreme Court unanimously rejected that argument and ruled in favor of the City of Charleston in a

decision dated February 16, 1999. Pursuant to the State law and the South Carolina Supreme Court, the City continues to impose its Stormwater Utility Fee. The City's record of applying budgeted tax moneys as well as funds generated by the Stormwater Utility Fee and its anticipated future commitment of those funds to Stormwater Management is not only eminently reasonable but also justification for funding support from State and Federal sources to meet the cost of the project.

2.18, 2.20 & 2.21 City Establishment of Tax Increment Financing Districts, Development Agreements or Land Use Control to assist in Financing the Project

In 1984, the South Carolina General Assembly adopted the Tax Increment Finance Law which, among other things, permits municipalities to establish Redevelopment Project Areas for purpose of constructing public infrastructure improvements. Pursuant to this legislation, City Council established the King Street Gateway Redevelopment Project Area in 1993. Public infrastructure improvements authorized by that Ordinance include drainage throughout this Tax Increment Finance District. The City anticipates using certain of the TIF revenues generated by the District to defray the cost of the project.

2.22 Project Cost Estimate Inflation Rate

A cost estimate inflation rate of 3% per year has been assumed for this Project.

2.23 Condemnation Named Party Responsibility

Twenty four (24) property acquisition transactions have been identified for this Project. Nine (9) of these requirements are on City or SCDOT properties and nine (9) of the requirements are for subsurface easements for the tunnel 140 feet below the surface. While condemnation is not anticipated, the City of Charleston will serve as the named party if a condemnation is required.

2.24 Other Sources of Funding Sought

The City of Charleston has attempted to obtain funding for the Project from the following resources:

1) Application for a 2009 ARRA TIGER (TIGER I) grant to fund the $146 million construction Project. The City received a grant award in the amount of $10 million which is being utilized for construction of the first phase of the Project as previously noted.
2) Application for a 2010 ARRA TIGER (TIGER II) grant in the amount of $25 million to fund the remaining surface collection system portion of the Project. Two $12.5 million each projects were identified. The City was not awarded a grant.
3) The City has approached the US Army Corps of Engineers (USACE) to provide funding as a Federal Flood Control Investment Project. The City and USACE are continuing these discussions.

4) The City has approached the US Department of Homeland Security for funding assistance and is continuing these discussions.
5) The City is submitting an application for $25 million to participate in the SCDOT Federal Match Program for 2012, such that the City would receive $12.5 million in funding from the program. This will allow the City to complete the remainder of the collection system component division of the project.

To finance this Project locally, it would cost the City approximately $8 million per year for 20 years. The City would have to increase stormwater revenue by over 250% which is unreasonable.

3. PROJECT APPROACH

3.1 Project Schedule

The estimated time frame for completion of each major activity for the project is shown in **Figure 5.**

3.2 Current Status of the Project

1) Design: The construction drawings and specifications have been completed.
2) Regulatory Permits and Approvals: All required regulatory permits have been received including the following permits and approvals for which copies are located in **Appendix A-8**:
    i. National Environmental Policy Act Certification: FHWA Categorical Exclusion (CE-C) Issued: 8/26/09
    ii. Army Corps of Engineers Permit Issued 9/14/09; Permit Number: SAC-2007-00591-2IN. Provision requires approval on a Mitigation Plan for wetland impacts that will be prepared and submitted for approval upon receiving construction funding.
    iii. South Carolina Department of Health and Environmental Control
        1. National Pollutant Discharge Elimination System (NPDES) Permit Issued: 8/27/09; Coverage number: SCR10L439
        2. Office of Ocean and Coastal Resource Management
            a. Critical Area and Water Quality Certification Permit. Permit Issued: 08/12/09 Permit Number 2007-00591-2IN(09)
            b. Coastal Zone Consistency Certification Certificate Issued: 08/25/09; Certificate ID – 67541
    iv. State Historic Preservation Office Certification Issued: 08/10/09
    v. City of Charleston: Municipal Separate Storm Sewer System (MS4) Review: Letter of Approval Issued: 08/26/09
    vi. South Carolina Department of Natural Resources: Letter of Approval Issued: 9/12/2009
    vii. National Oceanic and Atmospheric Administration – National Marine Fisheries Service Letter of Approval Issued: 09/8/09
3) Easement Acquisition
    i. Twenty four (24) easements have been identified and appraised for the Project.
        1. Nine (9) easements are subsurface easements for the tunnel route.
        2. Nine (9) easements are on property owned by SCDOT or the City of Charleston.
        3. Two (2) easements are temporary construction easements only.

ii. A public information meeting has been conducted to inform property Owners of the details of the Project and the need for easements on their property.
iii. The City has identified all necessary easements and obtained several critical easements at this time and awaits funding to proceed with obtaining the remaining easements.
iv. There will be no taking of residences or businesses during the property acquisition process.

4) TIGER Construction Project: (Phase I of this project)
   i. Advertised for Construction on 12/21/2010.
   ii. Bid Opening Conducted on 2/8/2011
   iii. City of Charleston Council Approval on 2/22/2011. FHWA Approval on 3/21/2011.
   iv. Preconstruction Meeting conducted on 3/29/2011.
   v. Notice to proceed to be issued in April 2011. 18 month construction duration for completion in October 2012.

Figure 5
Anticipated Project Schedule

3.3 Potential Obstacles

Given the current status of the Project to include design completion, having obtained all regulatory permits and having conducted several public meetings which demonstrate overwhelming support from the Project areas businesses, residents and traveling general public, there are only two potential obstacles to completion of this Project:

1) Funding: The $146 million construction estimate is a significant obstacle as noted in the Funding section of this application. The US Department of Transportation has provided a $10 million ARRA TIGER Grant for construction of a phase of the project to which the City will provide $2 million. This is in addition to the over $8 million in project design costs that the City has funded. However, identification of the funds required to complete the Project remains the most significant obstacle.
2) Property Acquisition: Obtaining the easements necessary for the project is listed only because the majority have not been obtained as the City made the decision to postpone this process until Project funding appeared likely. Given that the easements have been identified, surveyed, appraised and the popularity of the Project with the property owners (public and private) in the area, significant property acquisition issues are not anticipated. The City is adhering to the requirements of the Uniform Relocation Act (URA), 49 CFR Part 24.

3.4 Responsible Entity

The City of Charleston will be responsible for all aspects of the planning, design, right-of-way acquisition, and construction of the Project. The City of Charleston will assume maintenance responsibility for the pump station, outfall, tunnels and shafts. Upon final approval and acceptance of the Project, SCDOT will assume maintenance of the streets and surface drainage collection system within their right-of-way.

APPENDICES

A-1 The US 17 Septima Clark Parkway Transportation Infrastructure Reinvestment Project Benefit Cost Analysis Report dated September 2009

A-2 City of Charleston Resolution dated September 2009

A-3 A Concurrent Resolution from the General Assembly of the State of South Carolina dated May 19, 2009

A-4 Current and Five Year History of Unemployment Data

A-5 Letters and Resolutions of Support

A-6 State and Local Planning Lists and Plans

A-7 Regulatory Permits and Approvals

A-8 Estimate of Construction Cost

US 17 Septima Clark Transportation and Drainage Improvements

Application for Financial Assistance
South Carolina Transportation Infrastructure Bank

APPENDIX A-1

THE US 17 SEPTIMA CLARK PARKWAY TRANSPORTATION INFRASTRUCTURE REINVESTMENT PROJECT BENEFIT COST ANALYSIS REPORT DATED SEPTEMBER 2009

BUILDING A WORLD OF DIFFERENCE®

The City of Charleston, SC

The US 17 Septima Clark Parkway Transportation Infrastructure Reinvestment Project Benefit Cost Analysis Report FINAL

Black & Veatch Project: 147137
Black & Veatch File No.: 36.0000

September 2009
Revision 3

BLACK & VEATCH
Building a world of difference®

TABLE OF CONTENTS

LIST OF TABLES

TABLE OF FIGURES

1.0 INTRODUCTION

1.1 Background

In 1964, US Highway 17 Expressway became an integral part of the historic city of Charleston, South Carolina ("City"). Though US Highway 17 serves as an important transportation corridor for the area, it is also physically dividing neighborhoods, greatly exacerbating drainage problems and creating a visual blight. Over time, the consequences of this highway being constructed without sufficiently attending to the storm water implications has had an impact on the health and safety, livability, and economics of the City. During times of heavy rainfall and especially when combined with high tide, this vital transportation link becomes flooded and effectively stops all activity. Safe access to hospitals, including the Veterans Administration ("VA") Hospital and regional Level 1 Trauma Center at Memorial University of South Carolina ("MUSC") are impacted and present a real and critical concern. The flooding creates difficulties in travel across the peninsula, access to businesses and homes in the area and emergency rescue access to anywhere in the area, particularly, the Crosstown region. Even getting children to and from the schools in the area is impacted. In order to address the short comings of this major federal highway, the City of Charleston is proposing an innovative infrastructure reinvestment: the US 17 Septima Clark Parkway Transportation Infrastructure Reinvestment Project for the Advancement of Mobility, Efficiency, Emergency Preparedness, and Community Livability ("Project"). This Project will facilitate critical disaster response and improve the safety of traveling on US Highway 17.

Since Hurricane Katrina, there has been a national awakening and awareness of investment in infrastructure. The deficit of safe and sound infrastructure has been implicated as a major contributor to loss of life and property in a crisis or disaster. Today, US Highway 17 is a dangerously dysfunctional primary transportation route. The necessary reinvestment in US Highway 17 requires the commitment and participation of all levels of government in order to fully transform a crucial commerce route within Charleston's regional transportation and emergency management infrastructure. The negative impacts on the surrounding community have been significant - disconnected neighborhoods, speeding traffic, dangerous pedestrian conditions, noise and pollution, and a general blight - but deemed the price to pay in 1964 for seamless flow of US Highway 17 traffic across the peninsula and up and down the East Coast. The American Recovery and Reinvestment Act ("ARRA") provides the opportunity for all these issues to be addressed and in the process provide substantial enhancements to a circa-1960's highway that certainly would not be built in this manner today. This project will make US Highway 17 - now Septima Clark Parkway - functional and beautiful, insuring that whether it is a thunderstorm or an approaching hurricane, this highway is passable, its adjacent emergency response and critical medical facilities accessible, and the surrounding community repaired.

> *"I urge you to consider the importance of this project. With this infrastructure reinvestment the obsolete US Highway 17 will be made a functionally efficient, environmentally responsive and aesthetically-pleasing US Highway 17/Septima Clark Parkway, and will represent a state of the art investment in transportation that all governmental jurisdictions will take pride in."*
>
> Mayor Joseph P. Riley, City of Charleston

1.2 Some Methodological Caveats

Founded on solid welfare theoretical grounds, public good projects decisions now rely on socio-economic investment analysis. The simplest and most frequently used methodology is the Benefit/Cost Analysis or Cost-Benefit Analysis ("BCA"). This type of investment analysis is based on resource use and resource savings. In fact, this type of analysis is so widely accepted that currently, the Federal Government requires such analyses before allocating resources to any public project.

As noted by E.J. Mishan, "*But why bother with cost-benefit analyses at all? What is wrong with deciding whether or not to undertake any specific investment, or to choose among a number of specific investment opportunities, guided simply by proper accounting practices and, therefore, guided ultimately by reference to profitability? The answer is provided by the familiar thesis that what counts as a benefit or a loss to some part of the economy – to one or more persons or groups – does not necessarily counts as a benefit or loss to the economy as a whole. And in cost-benefit analysis we are concerned with the economy as a whole, with the welfare of a defined society, and not any smaller part of it.*"[1]

Thus, in the current case, the benefits or loss is to the economy of the United States.

In the same sense, employment, taxes and consumer goods sales, frequently treated as benefits, are not economic benefits in the resource sense mentioned above. Employment is a resource use and thus, if at all applicable, a cost. Taxes are economic transfers between actors in the economy – in reality a zero sum game - and consumer good sales are consumption. Taxing one group of citizens and giving it to another would certainly increase the consumption of the receiving group, but there are no guarantees that this represents a gain to the larger economic unit.

1.3 Disclaimer

In performing the economic analyses described in this document, Black & Veatch assisted the City in evaluating data, as well as collecting data and supporting materials for the City's use to apply for funding through program(s) offered under the American Recovery and Reinvestment Act of 2009 (the "ARRA") and any subsequent amendments thereto. The City understands that Black & Veatch does not monitor nor report on any current or future actions, costs or restrictions imposed upon or taken by any Local, State or Federal governmental or quasi-governmental entity and/or (other) agency, directly or indirectly affiliated with or that may supervise, administrate or be granted authority over the ARRA in any way. Therefore, the City agrees and acknowledges that Black & Veatch shall not be liable for consequences of any kind resulting from acceptance of or use of funds offered through the ARRA.

[1] E. J. Mishan, Cost-Benefit Analysis, Praeger Publishers, NY 1988 Foreword.

2.0 METHODOLOGY

The benefit of a publicly funded transportation project is the resource savings or transportation cost savings that accrue from the project. The costs of the project will normally emanate from engineering planning or feasibility studies. Although the costs of a project may occur over a period of several years, the dollar amounts are normally available to the applicant for public funds only in the fiscal year for which the funds were appropriated. If the funding and construction period stretches over more than one fiscal period, care must be taken in the benefit/cost calculations to properly discount future capital outlays as well as future benefits. These aspects will be discussed in further in Section 3.0.

Whereas the economic cost components of a project, like the current one, can easily be adopted from the engineering costs data, the socio-economic benefits of the same project are much more difficult to assess. The identification of these benefits is essentially a process of finding out how the production of a common good requires more resources of differing kinds if the project is not undertaken. Sometimes, various common goods will be, positively or negatively, affected by a project. In the absence of the current project the identifiable economic loss to society is defined as shown in Table 1. As identified in Table 1, a distinction has been made between variables that have been quantitatively assessed in this BCA, and variables that have been qualitatively addressed.

Table 1
Identified Economic Assets and Services Affected by the Project

Affected Public Goods/Services	Definition
Quantitatively Assessed Variables	
Residential Buildings	Damage caused by flooding to residential structures within the impacted area
Commercial Buildings	Damage caused by flooding to residential structures within the impacted area
Road Maintenance	Increased cost of roadway maintenance caused by frequent flooding
Traffic	Cost of vehicles and employees idling during flood events
Traffic Flow	Benefits arising from traffic improvements aimed at enhancing mobility.
Medical Center	Impact to hospitals serving the area due to flooding events that limit access
School Attendance	Benefit of improved school utilization during flood events
Tourism	Costs associated with lost tourism dollars due to inaccessibility to businesses and tourist sites.
Bus Services	Cost associated with idled mass transit vehicles
Police Events	Cost associated with police resources during flooding events, and associated vehicle damage
Accidents	Costs associated with vehicular accidents in the Project Area arising from flooding events and congestion.
MUSC	Costs associated with MUSC expansion not occurring
Horizon Area Redevelopment Project	Costs associated with the Horizon Area Redevelopment not occurring.
Qualitatively Assessed Variables	
Water Quality	Benefit of improved quality of water runoff into the watershed during rain events
Maintaining Level 1 Trauma Center	Benefit of keeping the medical center at its present location
Tourism Vehicles	Cost associated with idled tourism vehicles

2.1 Costs, Time Profile and Discounting

As indicated above the investment costs of the project were estimated by Davis & Floyd which undertook a detailed analysis of each of the cost components of the project. Their estimation and projections are shown in full in Appendix A. Table 2 shows a summary of the nominal costs and the time profile of the construction period.

Table 2
Original Time Profile of Investments at Inflated Prices

Cost Component	Date of Activity (Calendar Year)	Estimated Cost
Division I (Tunnels and Shafts)	2010	$53,452,418
Division II (Pump Station Structure and Outfall)	2010	$36,902,186
Division III (Collection System)	2011	$21,810,442
Division III (US 17 Corridor Improvements)	2011	$11,281,509
Division IV (Pump Station Mechanical and Architectural)	2011	$22,778,892
Total Estimated Construction Cost		**$146,225,447**

These numbers will be adjusted to clearly reflect the actual cost in the year of construction wherever necessary to conform to the Present Value ("PV") calculations. The base year is set to mid-year 2009 to which the PV of all future costs and benefits are calculated. Based on the Total Estimated Nominal Construction Cost, the 2012 annual operating costs for the facility will be approximately $445,000.

The use of nominal prices instead of constant dollar prices, e.g., using 2009 calendar year ("CY") prices for each of the expenditure years, implies that the PV calculations have to be done with a nominal discount rate. Consistent with the approach endorsed by the Office of Management and Budget ("OMB"), and in accordance with the requirements outlined for the Transportation Investment Generating Economic Recovery ("TIGER") grant, the BCA analysis uses a discount rate of 7.0 percent and an alternative analysis, as allowed in the Federal Acquisition Register ("FAR") of June 17, 2009, using a 3.0 percent discount rate is presented in Appendix A. Consistent with econometric analysis methods, the calculated benefits will also be in nominal prices. The time horizon for the PV calculations will be set to 50 years which correlates to the relatively long-lived assets constructed for the Project, and is more than sufficient as the PV of the future benefits beyond this point will quickly approach zero.

2.2 PV Cost & Benefit Calculations

In the calculation of the future benefits and costs an inflation rate of 3 percent is used. Compared to a discount rate of 7 percent, this means that an approximate "real" discount rate of 4 percent is used. That is, the "real" interest rate is simply the nominal interest rate less inflation. For the sensitivity analysis, both the discount and inflation rates are set at 3 percent.

The PV calculation of both the benefit stream and the cost stream will use the following PV formula:

[Eq. III.1] PV of Benefits: $B = \sum_{i=0}^{50} \frac{B_i}{(1+r)^i}$

[Eq. III.2] PV of Costs: $C = \sum_{i=0}^{50} \frac{C_i}{(1+r)^i}$ where B_i and C_i are the nominal benefits and costs in year (i).

The analytical process of the outcomes of these calculations is to assure that the ratio between the PV of the benefits and the costs, i.e., $\frac{B}{C} \geq 1.0$. That assures that for each dollar that is invested in the project the monetary worth of the benefits as measured is either equal to $1 or larger. Various other measures such as Net Benefit Value[2] (B-C)>0 and Net Benefit Cost Ratio $\frac{B-C}{C} > 0$ are frequently also used.

The Internal Rate of Return ("IRR") which is frequently used in financial analyses is not applicable in BCA. The simple reason for this is that in the IRR calculation there is an implicit assumption that each year's interest portion will be reinvested in same yielding assets. In BCA this is an unnecessary strict and unrealistic assumption. Consequently the IRR concept is not applied in these calculations.

2.3 The Data Collection Process

In the development of a project BCA that addresses flooding issues, both the US Army Corps of Engineers ("USACE") and the Federal Emergency Management Agency ("FEMA") have established procedures using geographic information system ("GIS") based mapping and data to establish the damage associated with flooding events. For instance, FEMA uses the Hazards US Multi-Hazard ("HAZUS-MH") tool to estimate losses associated with disasters, including flooding. Tools such as HAZUS-MH are sophisticated in their ability to relate topographical data with building elevations and disaster events to determine the annual costs of damage. These annual costs are avoided upon project completion and therefore are treated as benefits of the project in the BCA analysis. The project team on this engagement pursued the use of such tools in the quantification of benefits associated with the project. However, this methodology did not provide a suitable basis for use in this assessment due to the lack of sufficient mapping and data associated with the current "as-is" state. Additionally, the frequency of flooding in the affected area is much higher than the 100-, 50-, and 10-year flood events captured by the HAZUS-MH tool. Damage and decreased productivity of a number of assets is observed multiple times per year during periods of heavy rains, particularly when the rain events coincide with high tide.

As a result of limited applicability and data, an alternative approach to these more familiar methods has been used to quantify the benefits or avoided costs associated with the assets and services outlined in Table 2. Under this approach, for each asset or service, a determination of the frequency of flood events and the affect on the asset or service for each event is made.

2.4 Sensitivity Analysis

Details associated with the quantification of benefits are discussed in Section 3.0. It should be noted that assumptions required to determine the benefit are at times based on limited information. In an effort to reduce the potential for bias and improve the ability to draw conclusions from incomplete data, a Monte Carlo simulation was performed on the Excel-based model created to assess the BCA. Essentially, the Monte Carlo method is an analytical technique that generates a distribution of probable outcomes by running a large number of model simulations that change quantities for uncertain variables. Black & Veatch uses this method to help ascertain the robustness of assumption made in conducting the BCA and provide information on the likelihood of the benefits incurred by the Project. The BCA results presented herein represent the results of 100,000 Monte Carlo simulations for each identified benefit. Appendix B presents a full discussion of the statistical technique and the results of the sensitivity analyses.

[2] Which can, of course, also be calculated as $\sum_{i=0}^{50} \frac{(B_i - C_i)}{(1+r)^i}$

3.0 BENEFIT/COST MEASUREMENT AND ANALYSIS

Investments in transportation facilities, whether in equipment, structures, or infrastructure, should only be undertaken if resource savings will result from the investments. In the private sector, rational expansion and investment decisions are made based on bottom-line criteria. If an outlay generates long-term contributions larger than the current expenses, the investment will be made if funds are available. Evaluations of the feasible investment and operational options normally are based on cash-flow analyses, discounted by the firm's costs of capital. The investing firm normally will be on solid ground as long as its forecasts and pricing scenarios are based on the best available information. Business risks are normally considered both explicitly and implicitly – explicitly through market intelligence and implicitly by using the market cost of capital as the discounting factor (market interest rates) in cash-flow analyses. An interesting corollary is that in the absence of severe market distortions, private sector investment decisions undertaken based on such analysis, will save resources, thus furthering aims similar to those of the public sector as discussed below.

The private sector makes decisions based on maximizing long-term profits. For the public sector, however, the analysis is not always straightforward. Frequently there are no market prices available, particularly for investment decisions involving clean air or the environment. The long-term demand is difficult to assess and the cost of capital (tax revenues) difficult to assess/agree upon. Bond funding seemingly solves this issue. As shown below, however, the cost of capital of public funds is much more complex. The aim of public investments should be to improve the general welfare of the population. Investments should only be undertaken if the expected outcome will generate greater resources for everyone, and not just a subgroup of the economic unit (nation, state or local area) that is funding the investment. If a small subgroup of society is the only benefactor from a public investment, the question of economic transfers must be answered. If there is a general agreement in the economic unit that the transfer is appropriate, the investment may still be undertaken. However, economic transfers from the general population to a select group generally will not be accepted. A way around this dilemma has been developed over the last 50 to 75 years. If the benefit of a publicly funded investment focuses on the ability to save resources, the increased availability of these resources for public usage will show a direct increase in benefit for the general welfare of the population.

The methodology currently used to ensure resource savings by national, state and local investments has its basis in modern economic welfare theory. The benefits of an investment are the resource savings that will result from a public investment. The costs are the outlay of funds necessary to achieve the benefits. Publicly funded project should generally not be undertaken unless benefits and costs (the "B/C-ratio") is larger than one. A simple explanation of this theory is: for each $1 invested, at least a $1 return on investment should be realized. For example, a B/C-ratio of 2.0 indicates that for each dollar expended, society will receive benefits totaling $2.

3.1 Flooding Events

For the purpose of this analysis, flooding events are stratified into two general categories: significant and minor. For the purposes of this analysis, a significant flood event is defined as one which is reportable by national agencies, such as the National Weather Service ("NWS"), the National Oceanic and Atmospheric Administration ("NOAA") and FEMA. It is estimated that the region affected by this project floods in a substantial way approximately 3 times per year.[3] The impact of such events is expected to last about 8 hours in duration. A minor flood is defined as those that occur during heavy rainfall or when rain events and high tide conditions coincide. Based on interviews with local residents and review of local media reports, minor

[3] Charleston Hazard Mitigation Plan 2005/2006 (pg 56); flooding events in 2002-2004.

flooding event are estimated to occur approximately 10 times per year[4]. Minor flood events are expected to last 2 hours in duration[5].

3.2 Residential and Commercial Buildings

As noted in Table 1, one of the benefits associated with this Project is a reduction in recurring damage to residential and commercial buildings in the affected area. Benefits are identified for both significant as well as minor flooding events.

3.2.1 Significant Flooding Events

The City has indicated through study of the area that 2,557 properties are located there, with 82 percent of the properties being residential, 13 percent commercial, and the remainder representing civic and institutional properties[6]. This information indicates there are 2,097 and 332 residential and commercial properties in the area, respectively. It is assumed, in any given significant flood event, that some properties will be damaged while others will not. In the absence of better information, we have assumed 75 percent of residential properties incur structural damage in significant flood events, while 35 percent of commercial structures incur damage. Furthermore, it is assumed damages incurred per structure per event amount to $7,800 for residential structures and $7,800 for commercial structures. Values available from FEMA indicate that the typical homeowner's cost is $7,800 to repair the damage inflicted by 2-inches of flood waters.[7] For commercial damages, the damage value was rationalized based on an assumption that if damage substantially higher than this amount were realized, insurance claims would be filed.[8]

Additionally, for commercial properties, the damage also includes an assumed loss of business. The impact to businesses assumes that 15 to 45 percent of businesses in the area are impacted, with 30 percent being the most likely outcome. Of the impacted businesses, we assumed that a range of 15 to 75 percent of workers (with 50 percent being the most likely outcome) would not be able to report to work. Wages lost due to closed businesses were calculated using a range of $6/hr to $18/hr. This calculation only looks at the impact to hourly wage earners and as such, is a conservative estimate of the impact to businesses.

Finally, after any flooding event, the City expends resources to cleanup the storm debris. The City estimates that the additional costs (labor and equipment) for storm cleanup are almost $2,000 per crew per minor event. For significant flooding events, our assumptions include: deployment of 4 to 12 crews, additional man-hours, and costs for garbage / trash personnel.

Using this set of data and assumptions, in conjunction with the frequency of flooding events as noted earlier in this section, estimates of annual damage realized due to significant flooding events can be created. Damages are determined to be $12,415,723 in 2009 dollars per year. However, construction of the improvements is expected to enable benefits to first be realized beginning in 2012. As such, the damage estimate is inflated at 3.0 percent per year to $13,566,996 in 2012. Over a 50-year period, the resulting total gross damage and lost of wages totals over $1.53 billion. Using a 7 percent discount factor, the present value of the damage over the 50 year period is estimated to be $252,159,666.

[4] http://mesonet.agron.iastate.edu/GIS/apps/rview/warnings_cat.phtml

[5] http://www.city-data.com/forum/charleston-area/171731-james-island-street-flooding.html

[6] Crosstown Brochure, pg 20 of 35

[7] http://www.floodsmart.gov/floodsmart/pages/flooding_flood_risks/the_cost_of_flooding.jsp

[8] Conversations with the State Insurance Office and local insurance firms confirmed the assumption that few insurance claims are filed when minor flooding events occur. The frequency of these flood events coupled with the cost of flood insurance results in individuals to paying expenses out of pocket rather than incur increased insurance premiums.

3.2.2 Minor Flooding Events

The approach to determining the potential benefit of reducing damages from minor flooding events has been structured consistent with the process to estimate major flood damage.

In the absence of recorded (via insurance claims) information, we have assumed 90 percent of the residential properties are in the downtown area, which is the Project area that is impacted by heavy rains and high tides the most. This 90 percent estimate is consistent with the US Census data reported for tracts 9 through 13. Furthermore, we have assumed that of these residential properties, 20 percent would incur structural damage in minor flood events, while 15 percent of commercial structures incur damage. It is assumed damages incurred per structure per event amount to $250 for residential structures and $1,500 for commercial structures. These damage values were rationalized for residential properties based on an assumption that if damage substantially higher than this amount were realized, insurance claims would be filed.

In addition to structural damage, an allowance was estimated for business losses. Using data from the US Census 2000 analysis (escalated to 2008 figures using the Census Bureau's growth percentages), the daytime population in Charleston was estimated to be about 144,078.[9] Of this population, the number of residents is about 107,800 leaving 36,278 commuters entering the City. To estimate the business lost from people not able to access the downtown businesses, we assumed that 10 percent of the businesses would be impacted and that 10 percent of the people working in the City would be impacted. An average hourly rate of $12.00 was used to generate an estimate for impacted dollars. Using this approach, we estimated approximately $36,000 in lost business per day.

To address the cleanup costs incurred by the City following a minor flooding event, City personnel provided average labor costs, time, and equipment usage rates for street sweeping, vacuum trucks, and curb / inlet cleaning activities. On a per event basis, the City estimates that it spends approximately $1,600 for post-event cleaning activities.

Using this set of data and assumptions, in conjunction with the frequency of flooding events as noted earlier in this section, estimates of annual damage realized due to minor flooding events can be created. Damages are determined to be $2,065,977 in 2009 dollars per year. However, construction of the improvements is expected to enable benefits to first be realized beginning in 2012. As such, the damage estimate is inflated at 3.0 percent per year to $2,257,549 in 2012. Over the evaluation period, the total gross damages and impact on lost business is $254.6 million. Using a 7 percent discount factor, the present value of the damage over the 50 year period is estimated to be $41,959,389.

3.3 Road Maintenance

In 2008, approximately 1 mile of US Highway 17 was resurfaced for a cost of about $1.63 million dollars and the cost for resurfacing secondary roads was $720,000 per mile.[10]. Engineering estimates indicate that under current conditions, the impacted US Highway 17 corridor requires repairs every 5 years, while the impacted secondary roads see repaving efforts every 7 years. Implementation of the Project is expected to extend the lifecycle of both the US Highway and secondary roads to 15 years.

Over the 50-year evaluation period, the present value of repairs on US Highway 17 is estimated be $7.1 million. For the secondary roads, the PV is $15.6 million. After implementation of the Project, the frequency

[9] http://www.sccommunityprofiles.org/index.php. South Carolina Daytime Population for Places.htm

[10] Data from City of Charleston Department of Public Works.

of maintenance significantly decreased and the PV cost of these repairs for both US Highway 17 and the secondary roads is $7.8 million. The PV total lifecycle cost savings is then $14.8 million.

3.4 Traffic

The road infrastructure in the area carries a significant amount of traffic. It has been noted that US Highway 17 between the Cooper River and Ashley River alone carries approximately 54,000 vehicles per day. Disruption of this traffic route caused by frequent flooding is significant, both in terms of its impact on idled vehicles as well as the lost productivity of the vehicle's occupants.

Estimating the amount of resources wasted through congested traffic as a result of flood events is a function of the number and duration of flood events, the amount of traffic, and the cost per hour of idle time of the resources involved. For the purpose of this analysis, we have limited the number of flood events to the quantity of minor flood events as noted in earlier in this document. That is not to say that major flood events do not have an impact on resources, however, we have assumed that during a major flooding event, all impacted areas would be shut down, and as such, traffic idling would be difficult to reliably quantify.

As noted earlier in this document, minor floods are anticipated to occur 10 times per year and last for approximately 2 hours per event. While US Highway 17 carries 53,720 vehicles per day, approximately 5,099 travel during the peak afternoon rush hour, 4,346 vehicles travel during the peak morning hour, and about 1,939 vehicles travel per hour on other non-peak times of day[11]. In this analysis we have assumed flooding events happen 70 percent of the time during evening peak, 20 percent of the time during morning peak, and 10 percent of the time during other times of day. An average cost per hour of $15.47 was used to represent the cost of vehicles as well as occupants[12]. Under these parameters, the cost associated with traffic disruptions amounts to $1,358,792. Inflated at 3 percent per year over 50 years provides a total resource cost of over $167.5 million dollars. Using a 7 percent discount factor, the present value over a 50 year term is $27,596,664.

3.5 Traffic Flow Benefits

The analysis above considers the costs that would be saved should the Project be constructed and the flooding events are mitigated. In addition to these benefits, the Project also involves the installation of light-emitting diode ("LED") traffic signaling devices that will improve traffic flow along various points of the transportation corridor. The introduction of LED technology will enhance traffic signal and pedestrian signal visibility for both drivers and pedestrians. At the same time, improved signaling will increase reliability of the signalization, increasing the safety element for the corridor. The retiming of traffic signals, the use of intelligent transportation systems, and the use of advanced communication systems and traffic signal controllers, together will form a network of advanced technologies that seek to improve the operational efficiency of the US 17 corridor. The synchronization of the traffic signals is anticipated to minimize the accident conditions.

Based on the detailed analysis contained in the October 2008, *City of Charleston Traffic Signal Timing Project: Downtown and West Ashley Signal Timing Effectiveness Study* ("Timing Effectiveness Study"), performed by Carter and Burgess, the estimated cost savings in the Crosstown area from delays, stopping, and fuel consumption is approximately $655,178. In addition to this, the Timing Effectiveness Study also simulated the pounds of pollutants that would not be generated through the implementation of the Project. Using estimates provided in the National Highway Traffic Safety Administration "(NHTSA") guidance

[11] Traffic data modeled by City of Charleston and also reported in *City of Charleston Traffic Signal Timing Project: Downtown and West Ashley Signal Timing Effectiveness Study*, by Carter and Burgess, October 2008

[12] http://ostpxweb.dot.gov (Table 3, adjusted for local economic conditions.)

documents, a benefit of $33/metric ton for carbon dioxide emissions is used in the analysis presented herein. The ratio of carbon dioxide to carbon is 3.67 and this generates a benefit of $121/metric ton for hydrocarbon emissions.[13] Finally, the guidance document provides an estimate of $4,000/US ton for reductions in nitrous oxides. The Timing Effectiveness Study estimated that about 1,775 lbs of hydrocarbons, 493 lbs of carbon dioxide, and 27,210 lbs of nitrous oxides would be saved if the Project is constructed. This generates a total annualized savings of $54,525. For the period of analysis and using a 7 percent discount factor, the impact of not building the Project on the area's traffic flows was calculated to be $14,413,851.

3.6 *Medical Centers*

The Crosstown area of the Project serves three medical centers: MUSC, Roper St. Francis, and the VA Hospital. Collectively, these three medical facilities employ over 15,500 people[14] and provide beds to over 1,200 patients[15]. These medical facilities are impacted by both major and minor flooding events and access to the facilities during flood events can be very difficult. The situation is further compounded by the fact that MUSC is the LowCounty's only Level 1 Trauma Center which provides critical medical care for trauma victims. The other Level 1 Trauma Centers in South Carolina are located in Columbia (over 103 miles away), Spartanburg (over 183 miles away), and Greenville (over 197 miles away)[16]. For a person requiring trauma care, traveling to another trauma center located over 100 miles away may have an impact on their chance of survival. A 2007 Study of triage patients in Detroit found that destination is important: severely injured patients have a 25 percent lower risk of death if they are treated at a Level 1 Trauma Center versus a non-trauma center[17] It should be noted that this analysis does not examine the impact on mortality rates that delayed access to medical facilities may have. As such, the benefits of constructing the Project may be understated.

According to their reported annual statistics, the hospitals in the impacted Project area admit more than 54,400 patients on an annual basis, and service more than 1,600,000 outpatients. Using the MUSC 2008 budget as a proxy for all the hospitals (and excluding MUSC's University Associates expenditures), an average of $1,314 per visit was assumed for the purposes of this analysis. Based on MUSC's 2008 annual report, when private donations are excluded from revenue sources, the medical facility recovers approximately 87 percent of costs from hospital billings and state appropriations.[18] Thus, a reduction in the number of patients seen and/or admitted to a medical facility represents a potential loss in revenue for the hospital – it cannot recover its costs because it cannot bill for services. During times of natural disasters, arguments can be made that the number of visits to emergency rooms would increase. While this observation may be true, we were not able to find any quantitative reports to verify this claim. Studies by the American Hospital Association of the hospital systems show that the use of emergency room services by uninsured patients is higher than the national average and increases with downturns in the economy.[19] The analysis presented herein assumes that the either the number of patients seen during flooding events decreases or the ability for cost recovery through insurance billings is reduced if the number of uninsured patients increases. The former instance is easier to model than the latter and has been used to represent both occurrences.

[13] http://www.nhtsa.dot.gov/portal/site/nhtsa/menuitem.d0b5a45b55bfbe582f57529cdba046a0/
[14] US Highway 17 Transportation Infrastructure Reinvestment Project, Informational Booklet, Page 16.
[15] www.memorialhealth.com, www.ropersaintfrancis.com; and www.charleston.va.gov
[16] http://www.scdhec.gov/health/ems/trauma.htm
[17] *The Revised Field Triage Criteria: How will they New Changes Affect What You Do?*, Stewart C. Wang, Ph.D, MD., Director of Program for Injury Research and Education, University of Michigan. 2007
[18] MUSC 2008 Annual Report.
[19] *The Economic Downturn and Its Impact on Hospitals*, American Hospital Association, January 2009.

Recognizing that these medical facilities must remain open 24 hours a day, seven days a week, we have assumed that during major flooding events, a 25 percent decrease in hourly visits will be realized and during minor flooding events, the number of hourly visits decreases by 7.5 percent. For the period of analysis and using a 7 percent discount factor, the impact of not building the Project on regional medical centers was calculated to be $77,473,956.

3.7 School Attendance

During periods of flooding, there are five public schools that are heavily impacted: Burke Middle and High School (the City's only inner city public high school), Mitchell Elementary School, Charleston Development Academy (the only chartered elementary school in a federally-subsidized housing project in the US), C-E Middle School, and Buist Academy. There are also a number of private schools in the area; however, because they do not receive state funding, the economic impact of lowered attendance at these schools has not been included in this analysis.

Using data from the South Carolina Department of Education Report Cards for each school, an average dollar per student per day was calculated.[20] The average dollar/student/day ranged from $38.64 at C-E Middle School to $67.35 at Burke Middle and High School. There are many studies in the academic arena that show that attending school improves the likelihood of graduation.[21] There are also numerous studies that illustrate the relationship between potential income earnings with and without a high school degree.[22] The data from the US Department of Education's National Center for Educational Statistics show that in 2006 dollars, white students graduating from high school earned about $5,000 more than white students who did not earn a high school diploma. The earnings gap between those with high school degrees compared to those without increases for other minority races, with the highest gap being seen by African-American students ($7,000). Escalating these earning gaps into 2008 dollars, we evaluated the impact of missing school would have on students attending the five impacted schools.

It should be noted that the higher incident of flood watches (as reported by the NWS) was used in the calculations because of the reported behavior that parents will often keep children at home if the potential for flooding exists. Conversations with administrators at three of the five schools confirmed that this pattern did exist and that the attendance rate when flood watches are in effect may drop as much as 0.5 percent[23] In addition, a study conducted in 2007 showed that when students miss more than 10 days of school, their on-time graduation rate decreases.[24] Extrapolating from the data in the study, we used the statistic that for every additional day in attendance, the graduation rate would increase by 0.7 percent. Combining this number with the earnings gap averages, and the number of flooding events (major and minor), we calculated that the present value impact to the City's youth of not building the Project would be $10,370,032 over a 50-year period.

3.8 Bus Services

The City provides public bus service under the Charleston Area Regional Transit Authority ("CARTA"). Currently the bus fleet is approximately 100 vehicles, of which approximately 50 percent of the vehicles have routes traversing the area impacted by frequent flooding. The bus fleet is encouraged to avoid crossing flooded streets, as water infiltrating engines can cost $20,000 to $30,000 to repair. As such, a bus that

[20] http://ed.sc.gov/topics/researchandstats/schoolreportcard/

[21] http://www.nber.org/reporter/2008number1/heckman.html, *The Declining American High School Graduation Rate: Evidence, Sources, and Consequences.*

[22] http://nces.ed.gov/programs/coe/2008/section2/table.asp?tableID=895

[23] Conversations with school administrators at Burke Middle and High School, Charleston Development Academy, and Mitchell Elementary.

[24] http://www.heritage.edu/library/mastersprojects/Anderson_Andrea_2007.pdf

encounters flooded roadways is often idled. A bus costs CARTA $60 per hour to operate by contract rate, regardless of whether the bus is running its route or idled due to flood[25].

Estimating the value of bus service impacted by flood events is a function of the number and duration of flood events, the number of buses, and the cost per hour of idle time of the resources involved. For the purpose of this analysis, we have limited the number of flood events to the quantity of minor flood events as noted in earlier in this document. That is not to say that major flood events do not have an impact on resources, however such assumptions have not yet been defined.

As noted earlier in this document, minor floods are anticipated to occur 10 times per year and last for approximately 2 hours per event. With 50 buses having routes through the flood prone area, and a rate of $60 per hour per bus, the total annual cost is $60,000. To incorporate the opportunity cost of idling passengers, we used an average hourly wage of $12 and used CARTA's estimate that busses often carry up to 30 passengers. Inflated at 3 percent over a 50 year timeframe, the total avoided cost that will benefit from this project is about $51.8 million. Using a 7 percent discount factor, the present value over a 50 year term is $8,530,076.

3.9 Police Events

Frequent flooding in the Project area consumes City resources that could otherwise be directed to other activities. It appears logical that departments that provide emergency services would be impacted by flood events. Estimates for services provided by the Police Department due to flood events are included in this section as a benefit under the assumption that if the repetitive flooding events ceased, Police resources assigned to manage these events could be redirected and the value of the resource would therefore be enhanced.

3.9.1 Significant Flooding Events

The City's Police Department provided estimates of labor and vehicle resources consumed in a recent flood event. Labor costs, excluding Command Staff Officers that supported the event, were approximately $13,694[26]. Fuel and other vehicle costs of the 85 vehicles involved in this flood event were estimated at $3,400.[27] Assuming this event is a reasonable proxy for similar significant flooding events, and using the assumption of 3 significant flooding events in a year, an annual cost for significant flood events can be determined.

City Police also indicated that during a major flood event it is common for cars to become stranded in flood water, requiring assistance to be towed or pushed out of the flood. These are not auto accidents but rather are flooded vehicles. Based on the last 12 months the Police estimated about 5 to 10 stranded cars per event was common, and results up to 20 cars or more is possible depending on the severity of the event. For the purposes of this analysis, we have assumed 10 cars are "rescued" per significant event, and that each of these vehicles sustains approximately $400 in damage caused by flood infiltration.

Based on these assumptions an annual cost of $53,082 (in 2009 dollars) for major flood events has been determined.

[25] Information regarding bus service was provided by the Transit Administrator with Charleston Area Regional Transportation Authority (CARTA) via phone conversation.

[26] July 29, 2009 Letter from Police Department to City Director of Public Services

[27] July 30, 2009 E-Mail from Police Department to City Director of Public Services

3.9.2 Minor Flooding Events

For this analysis we have assumed a minor event requires approximately 10 percent of the effort as a significant flood event. We have also assumed 3 cars are rescued from flood waters in a minor flood event. Based on these assumptions, an annual cost of $66,776 (in 2009 dollars) for minor flood events has been determined.

3.9.3 Total Police Results

Total costs associated police resources and damaged or "rescued" vehicles is about $119,858 per year. Inflated at 3 percent over a 50 year timeframe, the total avoided cost that will benefit from this project is about $14.8 million. Using a 7 percent discount rate, the present value over a 50 year term is $2,434,281.

3.10 Tourism

According to Condé Nast, the City of Charleston is "number 2 on their list of best US cities to visit for 2008."[28] Moreover, Condé Nast has ranked the City on its Top 10 List consistently over the last 12 years. This distinction serves to only confirm that Charleston, South Carolina, is considered among the most beautiful, historic and livable cities along the east coast. The City is situated only a few miles from surrounding beaches and sea coast islands, along the intra-coastal waterway, a short drive from world-class golf links, and within minutes of Charleston International and several executive airports. In the downtown area, promenades like the City's waterfront High Battery feature, on one side, a panoramic view of historic Fort Sumter and Charleston Harbor, and, on the other, a row of statuesque Italianate and Greek Revival mansions.

The City's Visitor's Center reported almost 903,000 people passing through the center in 2008.[29] Area attractions reported more than 1.5 million visitors in 2008 and the average person visiting Charleston spends about $212 per day.[30] Using this data, we estimated the impact that different flooding events may have on the area's tourism trade. Looking only at the Crosstown area, we assumed that from 35 percent to 100 percent of the businesses would be impacted, with a most probable value of 75 percent. For regional tourist spots, the BCA assumes that between 15 to 30 percent of attractions would be impacted with a most probable value of 20 percent. Based on the $212/day/person average reported by the College of Charleston analysis, this results in a commercial business lost of $1,145 per hour for the City's tourism business and $12,613/hr for regional tourism.

Total costs with the lost of tourism activity is about $1,981,152 per year. Inflated at 3 percent over a 50 year timeframe, the total additional business generated from this Project is about $244.2 million. Using a 7 percent discount factor, the present value over a 50 year term is $40,236,624.

3.11 Accidents

Anyone caught in a heavy rain storm understands the danger of hydroplaning. According to the City, police department and accident reports, from January 2006 to June 2009, 174 traffic-related accidents were reported along the Project corridor. Clearly, decreasing the frequency of flooded roads in the Project Area will not only decrease vehicle damage, but may also increase passenger safety. In deriving a cost for this element, we used an average insurance deductible of $500 per vehicle as a proxy for how much damage is sustained per accident. Based on this, and using an average of 48 vehicular accidents per year we calculated a vehicle accident safety cost of $24,000 in 2009 dollars.

[28] http://blog.rehava.com/charleston-named-2-best-us-city-to-visit

[29] "Estimation of Tourism Economic Impact in the Charleston Area 2008", 2009 Office of Tourism Analysis, College of Charleston.

[30] Ibid.

In addition to vehicular accidents, the Project Area also sees bike and pedestrian accidents. For the latter, the City's police department reports an average of 1 pedestrian accident/yr. For the number of bike-related accidents, we used the values reported by the NHTSA and the statistic that 20 percent of bike accidents involve cars. This provided an estimate of 8 bike accidents/year.

Besides incurred structural damage, there are also the societal benefits associated with preventing accidents and fatalities. Using the NHTSA guidance on the Economic Value of a Statistical Life ("VSL"), the average VSL for a fatality is $5.8 million.[31] In the analyses conducted herein, we have assumed that for vehicular accidents, 90 percent minor (VSL factor of 0.0020), 9.5 percent moderate (VSL factor of 0.0155), and the remaining 0.5 percent are severe (VSL factor of 0.0575). For accidents involving bicycles, injuries can be more severe so the BCA assumes an accident profile of 25 percent minor, 30 percent moderate, and 45 percent severe. Finally, accidents involving pedestrians pose the greatest level of bodily injury. According, the BCA assumes an accident profile for pedestrian-related accidents of 5 percent minor, 30 percent moderate and 65 percent severe.

The BCA uses the above conditions to establish the "as-is" or pre-Project conditions. With the construction of the Project, traffic improvements should lead to fewer accidents and fatalities. For the purposes of the BCA, we have assumed that post-Project conditions will decrease car fatalities by 25 percent, bicycle accidents by 30 percent, and reduce pedestrian accidents by 50%.

Data reported by the NHTSA for Charleston County shows that in 2008, there were 17.53 vehicle fatalities per every 100,000 population, of which 3.16 were pedestrian-related and 0.86 were bicycle-related. Prorating this statistic to the Charleston area and assuming that only 15 percent of the people are in vehicles at any given time, we estimated 1 fatality in traffic-related accidents per year. In a similar manner, the number of fatalities resulting from a bike/car accident was estimated to be 0.2 occurrences per year, and 0.1 pedestrian fatalities per year.

The total benefit of the Project on preventing accidents and fatalities is estimated to be $10,296,923. Inflated at 3 percent over a 50 year timeframe, the total avoided costs generated from this project is about $1.3 billion. Using a 7 percent discount factor, the present value over a 50 year term is $209,127,379.

3.12 Maintaining the MUSC

The MUSC has expressed an interest in moving its facility to an area without the repetitive threat of floods. The MUSC is an integral part of the region's medical care and also represents a substantial part of the region's economic activity. The MUSC recently indicated its willingness to stay in its current location, dependent on the ability to remedy the flooding problem. If this facility moves, it will likely decrease access to health care and have a negative impact on the immediate area's economy.

The Project provides long-term benefits to the Charleston MSA on a number of fronts. First, as has been mentioned previously, the City of Charleston is well on it's way to becoming a premier biotechnology and medical hub. In March 2009, MUSC's Hollings Institute received a prestigious National Cancer Center designation. This designation is the only one in the state of South Carolina and is the 64th such designated center in the US. The Hollings Institute joins other National Cancer Centers, such as the Mayo Clinic, the Stanford (University) Cancer Center, and Albert Einstein Cancer Research Center, as a research facility that is characterized by scientific excellence. As part of the recognition, the Hollings Institute received an award of $7.3 million (over a 5-year period) to help support its efforts. This award is anticipated to benefit the

[31] *Treatment of the Economic Value of a Statistical Life in Departmental Analyses – 2009 Annual Revision*, Assistant Secretary for Transportation Policy, March 18, 2009

Charleston MSA by generating an additional $31 million of local economic activity through economic multiplier effects.[32]

In addition to the National Cancer Center, MUSC recently completed Phase 1 of its Vision 2020 plan, the Ashley River Tower Complex. With the completion of Vision 2020, MUSC hopes to further build upon its reputation as the leading medical facility in the Tri-County (Berkeley, Charleston, and Dorchester) area. As part of analysis for the MUSC Expansion, MUSC noted the need for transportation improvements to US Highway 17 to address drainage and accessibility issues. If the City does not address the drainage issues and accessibility concerns, the probability of Phase 2 and 3 proceeding is diminished. The City faces the risk that MUSC may construct Phases 2 and 3 in another part of the Tri-County region or another part of the State. Should this occur, the City faces a small possibility that eventually, MUSC will move all its facilities to the new location.

The MUSC has expressed an interest in moving its facility to an area without the repetitive threat of floods. The MUSC is an integral part of the region's medical care and also represents a substantial part of the region's economic activity. The MUSC recently indicated its willingness to stay in its current location, dependent on the ability to remedy the flooding problem. If this facility moves, it will likely decrease access to health care and have a negative impact on the immediate area's economy. For the BCA, the inherent assumption is that while Phases 2 and 3 may not occur in the Charleston MSA, the existing facilities will remain.

To evaluate the benefit cost impact of such an action by MUSC, the BCA incorporated the economic benefits provided by Phases 2 and 3 of the Vision 2020 plan. Discussions with MUSC indicate that the economic benefits of these Phases are of the same magnitude as those realized by Phase I (Phases 2 and 3 are of similar size as Phase I). Using the *2007 Economic Impact of the Medical University of South Carolina* Report[33] prepared for MUSC by the Dr. Helfner, the BCA assumes that the payroll increase seen by each new phase is 2 percent of the existing Phase I payroll. Furthermore, these figures are then multiplied by the probability that MUSC will not expand in the Charleston MSA (probable value of 10 percent)..

In 2014 dollars (the first year of loss), the potential loss to the region as a result of MUSC not expanding in the Project area is $987,566,776 million. Over the course of 50 years, this amount grows to $3.3 billion. Using a 7 percent discount factor, the present value over a 50 year term is $1,443,703,919.

3.13 Horizon Area Redevelopment Project

The Horizon Area Redevelopment Project ("Horizon Project") is a major urban revitalization effort that supports the City's desire to advance the knowledge-based sector of the region's economy. The Horizon Project is a research park project that will provide over 4.8 million square feet of space. The planned redevelopment includes not only office space, but also includes construction of accommodations, retail space, parking and structures. The intent is to have the Horizon Project serve as a national model for urban infill development because the project incorporates all the necessary elements to support a knowledge-based economy. At the completion of the Horizon Project in 2018, the local economy is expected to realize an estimated benefit of $121.6 million.[34]

[32] http://www.charlestonbusiness.com/news/27456-musc-cancer-center-designation-means-boost-to-economy?rss=0

[33] *The Economic Impact of the Medical University of South Carolina*, by Dr. Frank Helfner, College of Charleston, December 2007.

[34] *DRAFT Report - Project Horizon: An Urban Research Park/MXD Project*, by Basile Baumann Prost Cole & Associates, Inc., July 2009.

To evaluate the benefits that the Horizon Redevelopment Project generates, we assumed the following for the BCA:

- The incremental benefit from Phase I is $55.5 million. This value represents the difference between the 2008 condition and the 2013 state as described in the Horizon Redevelopment Project feasibility study.
- The incremental benefit from Phase II is $121.6 million.
- The likelihood of the Horizon Redevelopment Project going forward ranges from 25 percent to 100 percent, with 50 percent as the most probable occurrence.
- The percent of dollars lost of the Horizon Redevelopment Project does not occur ranges from 20 percent to 70 percent, with the most probable value of 40 percent. The implied assumption here is that not all benefits accrued from the project are lost. While the number of jobs that the Horizon Redevelopment Project may remain the same, the quality of the jobs (white collar versus blue collar) and the wage earnings potential will be impacted if a research development park is not created.

Using the assumptions listed above, a total 50-year benefit from the Horizon Area Redevelopment Project is estimated to be in excess of $2.5 billion. Using a 7 percent discount rate, the present value of this stream of benefits is $377,891,796 should the Project be implemented.

3.14 Other Benefits

Other benefits are expected to be generated by the Project, but for a variety of reasons have not been quantified in the BCA. These benefits are noted below.

3.14.1 Water Quality

Roadways, vehicles, and structures subjected to flood water provide sources of contamination that is deposited into the region's waterways, damaging the environment and its inhabitants. Contamination is a function of both contact occurrences as well as contact time. The design parameters for this project are intended to accommodate up to a 10-year flood, which should substantially reduce or eliminate both the frequency and the intensity of flood events, providing an opportunity to improve the region's watershed.

3.14.2 Public Safety

Efforts to quantify some of the benefit on Public Safety have been made in the BCA in earlier sections of this report. However it is important to note that the impact of flooding events on the fire, police, and other emergency response providers is significant in this area. Beyond the implications associated with flooding around the region's only Level 1 Trauma Center, and the consumption of the City's public safety resources to manage flood events, US Highway 17 serves as a hurricane evacuation route. It is conceivable that a flooding event could coincide with a hurricane evacuation order, increasing significantly the amount of risk to which the region is exposed.

3.14.3 Interstate Commerce

US Highway 17 serves as a major corridor for interstate commerce. The South Carolina State Ports Authority ("SPA") estimates that the Charleston port facility "provides 260,800 jobs paying $11.8 billion in wages to South Carolinians. In all, trade pumps nearly $45 billion in the state economy and generates $1.5 billion in state and local taxes."[35] US Highway 17 is the main roadway infrastructure linking Charleston's port to the East and Southeast regions of the United States. Reduced flooding will help improve the productivity of this critical road infrastructure.

[35] Crosstown Brochure, page 15

3.15 Long-Term Benefits and Job Creation

Eventually, implementation of the Project will create a ripple effect through the local economy as dollars that were "lost" pre-Project are saved and redirected into productive economic activities. This section summarizes the long-term benefits and jobs created from the above identified benefit areas using the methodology described in the Economic Impact Analysis Report.[36]

Table 3 presents the long-term benefits and jobs created as a result of the Project. The jobs created in the long-term do not include the construction jobs that will arise from the MUSC expansion or the Horizon Area Redevelopment Project. Additionally, not every benefit dollar generated results in job creation. As discussed in Section 3.12, a probability is associated with the likelihood that the MUSC expansion will not occur in the Charleston MSA. Thus, the argument can be made that the MUSC "benefit" would result regardless of whether the Project is implemented or not, because long-term benefits would be seen in the State of South Carolina. To assess the impact to the Charleston MSA, the weighted probability of the MUSC event is used in Table 3.

For all benefits, the PV of the 50-year cashflow stream are used as the starting point for the analysis. These values are then deflated down to 2006 dollars so that the appropriate RIMS II Input/Output (I/O) multipliers can be used. Where possible, a distribution of industries benefiting from the increased economic activity is used to help identify the quality of jobs created. Where such an assumption is not made, the analysis considers the impact to household discretionary income.

The benefits provided by the Project to the US in whole cannot be determined during the RIMS II I/O model. The BEA discontinued generating national I/O multipliers in 2007 and provides the following warning on its website:

> "Note: Regional input-output multipliers such as the RIMS II multipliers attempt to estimate how much a one-time or sustained increase in economic activity in a particular region will be supplied by industries located in the region. RIMS II multipliers differ from macro-economic multipliers used to assess the effects of fiscal stimulus on gross national product. Differences in industry-specific regional multipliers are not meaningful or appropriate for use in a national context."[37]

As a result, in order to estimate the national benefits gained, Black & Veatch used the following approach: Estimates of personal income levels, regional Gross Domestic Product (GDP), and employment were generated using data generated by the BEA. From here, an estimate of the additional income provided via benefits from the Project is made and then extrapolated to a long-term jobs figure. It should be noted that is provides approach provides a general idea of the national benefits and jobs gained. Romer and Bernstein's 2009 report on the job impact generated through the ARRA is often cited by the US Government as a means of estimating the impact of projects on a national-basis.[38] The rule of thumb cited, that a one percent increase in GDP produces about 1,000,000 jobs was used to serve as an upper bound on the estimate. Economic theory says that it is the addition of jobs that creates the increase in personal income and GDP levels, not vice versa.. Moreover, the authors themselves note that the results of their analysis are based on historic trends versus economic theory. However, for the purposes of serving as an upper bound to an estimate, this rule of thumb suffices. The resulting calculations using these assumptions and caveats shows that the Project generates about $563 million in long-term benefits and produces another 14,600 jobs nationally.

---

[36] *The US 17 Septima Clark Parkway Transportation Infrastructure Reinvestment Project, Economic Impact of Construction Activities and Ongoing Operations Report*, Black & Veatch, September 2009.

[37] https://www.bea.gov/regional/rims/rimsii/

[38] "*The Job Impact of the American Recovery and Reinvestment Plan*", Christina Romer and Jared Bernstein, January 9, 2009, Office of the Vice President-Elect.

Table 3
Long-Term Benefits and Jobs Created

Benefit	Industry	Earnings (2006$)		Earnings (2009$)		Jobs	
		South Carolina	Charleston MSA	South Carolina	Charleston MSA	South Carolina	Charleston MSA
		$ millions	$ millions	$ millions	$ millions	Jobs	Jobs
Flooding Events							
Major Flood Event	Food services and drinking places	20.65	22.82	21.86	24.17	1,241	1,290
	Professional, scientific, and technical services	4.30	4.43	4.56	4.69	116	119
	Retail trade	39.38	41.84	41.70	44.30	1,651	1,700
	Households	39.85	45.43	42.19	48.10		
Minor Flood Event	Food services and drinking places	1.25	1.38	1.32	1.46	75	78
	Professional, scientific, and technical services	0.26	0.27	0.28	0.28	7	7
	Retail trade	2.38	2.52	2.52	2.67	100	103
	Households	10.88	12.40	11.52	13.13		
Subtotal Flooding Events		**$ 108.06**	**$ 118.69**	**$ 114.42**	**$ 125.67**	**3,189**	**3,296**
Improved Traffic	Households	$ 8.74	$ 9.97	$ 9.26	$ 10.56		
LED Improvements	Households	$ 4.57	$ 5.21	$ 4.84	$ 5.51		
Reduced Road Maintenance	Households	$ 4.69	$ 5.35	$ 4.97	$ 5.66		
Medical Centers	Households	$ 24.55	$ 27.99	$ 25.99	$ 29.63		
Tourism	Performing arts, museums, and related activities	2.88	2.29	3.05	2.42	116	107
	Amusements, gambling, and recreation	1.66	1.46	1.76	1.55	71	72
	Accommodation	1.56	1.38	1.65	1.47	55	56
	Food services and drinking places	2.03	1.90	2.15	2.01	103	108
	Retail trade	2.26	2.03	2.40	2.15	80	83
	Households	0.69	0.67	0.73	0.71		
Subtotal Increased Tourism		**$ 10.39**	**$ 9.07**	**$ 11.01**	**$ 9.60**	**426**	**425**
MUSC Phase 2 & 3 [*]	University, Hospital Authority & UMA	254.79	223.50	269.77	236.64	7,160	6,630
Subtotal MUSC Expansions		**$ 254.79**	**$ 223.50**	**$ 269.77**	**$ 236.64**	**7,160**	**7,160**
Horizon Area Redevelopment	Professional, scientific, and technical services	64.34	264.79	68.12	280.36	748	2,201
	Accommodation	13.03	136.52	13.79	144.54	2,649	219
	Retail trade	18.01	189.05	19.07	200.17	2,468	4,245
	Educational services	44.09	194.94	46.68	206.40	609	2,826
Subtotal Horizon Area Redevelopment		**$ 139.47**	**$ 785.30**	**$ 147.67**	**$ 831.48**	**6,473**	**9,491**
School Attendance	Households	3.29	3.75	$ 3.48	$ 3.97		
Accident Prevention	Households	66.27	75.55	$ 70.16	$ 79.99		
Bus Service	Households	2.70	3.08	$ 2.86	$ 3.26		
Police Events	Households	0.77	0.88	$ 0.82	$ 0.93		
TOTAL PROJECT		**$ 628.29**	**$ 1,268.33**	**$ 665.24**	**$ 1,342.91**	**17,249**	**20,372**

[*] If the Project is not constructed, there is a chance that MUSC Phases 2 & 3 would be constructed elsewhere in the State. In that case, jobs and long-term benefits would not be lost to the State, just the Charleston MSA.

4.0 SUMMARY

Benefits/Cost analysis is a relative analysis. From an analytical point of view, the "do nothing" project, i.e., the absence of the contemplated project, is just as important as the project itself. It provides a basis for testing the viability of a project from a public-funding point of view. However, the private sector investment analysis, normally undertaken as a cashflow analysis, does not need a relative viewpoint. Here the foundation of the analysis rests upon marketing, market intelligence, competition and private commitments. For public funding of projects that might have serious private sector competitive implications, it is necessary to ensure that changes to market infrastructure and the competitive environment, will imply a benefit to society. Real savings in transportation costs must be evident.

Table 4 shows the aggregate benefits created by the Project. The benefits are indicated in each column, with a summary column and a present value calculation noted in the last two columns of the table. With every benefit except Reduced Road Maintenance, the dollars represented in this table are the benefit of executing this Project. These benefits reflect the savings incurred through decreased damages and increased productivity of the resources in the Project area. These amounts are intended to represent the realized impact of repetitive flooding in the area today. Under the "do nothing" scenario, such costs would continue to be invested to deal with the flooding problem. Because the design parameters of the new infrastructure can withstand the impact of a 10-year flood, it is believed all demonstrated costs can be avoided upon completion of the Project.

The cumulative PV of benefits for the Project is estimated to be $2.52 billion. Using the costs summarized in Table 2, of $133.08 million, this produces a B/C-ratio of 18.33. The Monte Carlo simulations generated a range of benefit values from $1.251 billion to $9.425 billion, which subsequently produces a range of B/C-ratios of 9.4 to 70.23. The average B/C-ratio generated through the analysis was 27.03 with a median B/C-ratio of 25.82. Our calculated B/C-ratio, based on our most probable assessments is slightly below the average and median values, and supports a conservative approach to this analysis. Appendix B presents the full details on the statistical analysis conducted.

It should be noted that using a higher discount rate produces a lower PV value. Thus if a project yields a B/C-ratio larger than 1.0 with a high interest rate, it will yield a higher B/C-ratio if a lower interest rate is used. Thus, by using a 7 percent discount rate, essentially a 4 percent "risk premium" has been added to the analysis which covers some of the uncertainties that are inherent in forecasts and benefit estimates. Appendix A presents the details of the alternative analysis using a 3 percent discount rate. Table 5 compares the BCA results for both discount rates and also illustrates the impact that the MUSC benefit has on the analysis. The results shown on Table 5 support the conclusion that regardless of what discount rate is used and whether or not the MUSC expansion benefit is included, investment in the Project produces a clear benefit to the economy.

Table 4
Summary of Present Value Results for the Project (in $millions)

Annual Benefits	Avoided Flood Damage - Major Event	Avoided Flood Damage - Minor Event	Improved Traffic	LED Benefits	Medical Center Impacts	Tourism	Improved School Attendance	Reduced Road Maintenance	Bus Svc Delays	Police Events	Accident Prevention	Loss of MUSC & Phase 2/3	Loss of Horizon Development	Total	Present Value
2009	Construction Period														-
2010															-
2011															-
2012	13.57	2.26	1.48	0.78	4.17	2.16	0.56	-	0.46	0.13	11.25	-	12.14	48.96	39.96
2013	13.97	2.33	1.53	0.80	4.29	2.23	0.57	1.89	0.47	0.13	11.59	-	12.50	52.32	39.92
2014	14.39	2.40	1.58	0.82	4.42	2.30	0.59	-	0.49	0.14	11.94	987.57	12.88	1,039.51	741.15
2015	14.83	2.47	1.62	0.85	4.55	2.37	0.61	6.47	0.50	0.14	12.30	5.92	13.27	65.89	43.90
2016	15.27	2.54	1.67	0.87	4.69	2.44	0.63	-	0.52	0.15	12.66	6.10	13.66	61.20	38.11
2017	15.73	2.62	1.72	0.90	4.83	2.51	0.65	-	0.53	0.15	13.04	6.28	14.07	63.04	36.69
2018	16.20	2.70	1.77	0.93	4.98	2.58	0.67	2.20	0.55	0.16	13.44	6.47	27.37	80.00	43.51
2019	16.69	2.78	1.83	0.95	5.13	2.66	0.69	-	0.56	0.16	13.84	1,151.53	28.19	1,225.00	622.73
2020	17.19	2.86	1.88	0.98	5.28	2.74	0.71	-	0.58	0.17	14.25	13.73	29.03	89.40	42.48
2021	17.70	2.95	1.94	1.01	5.44	2.82	0.73	-	0.60	0.17	14.68	14.14	29.91	92.09	40.89
2022	18.23	3.03	2.00	1.04	5.60	2.91	0.75	7.95	0.62	0.18	15.12	14.57	30.80	102.80	42.66
2023	18.78	3.12	2.06	1.07	5.77	3.00	0.77	(8.19)	0.64	0.18	15.58	15.00	31.73	89.51	34.71
2024	19.34	3.22	2.12	1.11	5.94	3.09	0.80	-	0.65	0.19	16.04	15.45	32.68	100.63	36.47
2025	19.92	3.32	2.18	1.14	6.12	3.18	0.82	-	0.67	0.19	16.52	15.92	33.66	103.64	35.11
2026	20.52	3.41	2.25	1.17	6.30	3.27	0.84	-	0.69	0.20	17.02	16.40	34.67	106.75	33.80
2027	21.14	3.52	2.31	1.21	6.49	3.37	0.87	-	0.72	0.20	17.53	16.89	35.71	109.96	32.53
2028	21.77	3.62	2.38	1.24	6.69	3.47	0.90	2.95	0.74	0.21	18.06	17.39	36.78	116.21	32.13
2029	22.42	3.73	2.45	1.28	6.89	3.58	0.92	9.78	0.76	0.22	18.60	17.92	37.88	126.43	32.67
2030	23.10	3.84	2.53	1.32	7.10	3.69	0.95	-	0.78	0.22	19.16	18.45	39.02	120.15	29.02
2031	23.79	3.96	2.60	1.36	7.31	3.80	0.98	-	0.80	0.23	19.73	19.01	40.19	123.76	27.93

Table 4 (continued)
Summary of Present Value Results for the Project (in $millions)

Annual Benefits	Avoided Flood Damage - Major Event	Avoided Flood Damage - Minor Event	Improved Traffic	LED Benefits	Medical Center Impacts	Tourism	Improved School Attendance	Reduced Road Maintenance	Bus Svc Delays	Police Events	Accident Prevention	Loss of MUSC & Phase 2/3	Loss of Horizon Development	Total	Present Value
2032	24.50	4.08	2.68	1.40	7.53	3.91	1.01	-	0.83	0.24	20.32	19.58	41.40	127.47	26.89
2033	25.24	4.20	2.76	1.44	7.75	4.03	1.04	3.42	0.85	0.24	20.93	20.17	42.64	134.72	26.56
2034	26.00	4.33	2.85	1.49	7.99	4.15	1.07	-	0.88	0.25	21.56	20.77	43.92	135.23	24.92
2035	26.78	4.46	2.93	1.53	8.23	4.27	1.10	-	0.91	0.26	22.21	21.39	45.23	139.29	23.99
2036	27.58	4.59	3.02	1.58	8.47	4.40	1.13	12.03	0.93	0.27	22.87	22.03	46.59	155.50	25.02
2037	28.41	4.73	3.11	1.62	8.73	4.53	1.17	-	0.96	0.27	23.56	22.70	47.99	147.77	22.23
2038	29.26	4.87	3.20	1.67	8.99	4.67	1.20	(12.76)	0.99	0.28	24.27	23.38	49.43	139.45	19.60
2039	30.14	5.01	3.30	1.72	9.26	4.81	1.24	-	1.02	0.29	24.99	24.08	50.91	156.77	20.59
2040	31.04	5.17	3.40	1.77	9.54	4.95	1.28	-	1.05	0.30	25.74	24.80	52.44	161.48	19.82
2041	31.97	5.32	3.50	1.83	9.82	5.10	1.31	-	1.08	0.31	26.52	25.54	54.01	166.32	19.08
2042	32.93	5.48	3.60	1.88	10.12	5.25	1.35	-	1.11	0.32	27.31	26.31	55.63	171.31	18.37
2043	33.92	5.64	3.71	1.94	10.42	5.41	1.39	19.39	1.15	0.33	28.13	27.10	57.30	195.84	19.63
2044	34.94	5.81	3.82	2.00	10.73	5.57	1.44	-	1.18	0.34	28.97	27.91	59.02	181.74	17.02
2045	35.98	5.99	3.94	2.06	11.06	5.74	1.48	-	1.22	0.35	29.84	28.75	60.79	187.19	16.39
2046	37.06	6.17	4.06	2.12	11.39	5.91	1.52	-	1.25	0.36	30.74	29.61	62.61	192.81	15.77
2047	38.18	6.35	4.18	2.18	11.73	6.09	1.57	-	1.29	0.37	31.66	30.50	64.49	198.59	15.18
2048	39.32	6.54	4.30	2.25	12.08	6.27	1.62	5.33	1.33	0.38	32.61	31.42	66.43	209.88	15.00
2049	40.50	6.74	4.43	2.32	12.44	6.46	1.67	-	1.37	0.39	33.59	32.36	68.42	210.69	14.07
2050	41.72	6.94	4.57	2.38	12.82	6.66	1.72	18.19	1.41	0.40	34.60	33.33	70.47	235.20	14.68
2051	42.97	7.15	4.70	2.46	13.20	6.86	1.77	-	1.45	0.41	35.63	34.33	72.59	223.52	13.04
2052	44.26	7.36	4.84	2.53	13.60	7.06	1.82	-	1.50	0.43	36.70	35.36	74.77	230.23	12.55
2053	45.58	7.59	4.99	2.61	14.01	7.27	1.87	(19.88)	1.54	0.44	37.80	36.42	77.01	217.25	11.07
2054	46.95	7.81	5.14	2.68	14.43	7.49	1.93	-	1.59	0.45	38.94	37.51	79.32	244.25	11.63
2055	48.36	8.05	5.29	2.76	14.86	7.72	1.99	-	1.64	0.47	40.11	38.64	81.70	251.57	11.19
2056	49.81	8.29	5.45	2.85	15.30	7.95	2.05	-	1.68	0.48	41.31	39.80	84.15	259.12	10.78
2057	51.30	8.54	5.61	2.93	15.76	8.19	2.11	22.37	1.74	0.50	42.55	40.99	86.67	289.27	11.24
2058	52.84	8.79	5.79	3.02	16.24	8.43	2.17	7.16	1.79	0.51	43.83	42.22	89.27	282.07	10.25
2059	54.43	9.06	5.96	3.11	16.72	8.69	2.24	-	1.84	0.53	45.14	43.49	91.95	283.15	9.61
2060	56.06	9.33	6.14	3.20	17.22	8.95	2.31	-	1.90	0.54	46.49	44.79	94.71	291.64	9.25
2061	57.74	9.61	6.32	3.30	17.74	9.21	2.37	-	1.95	0.56	47.89	46.14	97.55	300.39	8.91
2062	59.48	9.90	6.51	3.40	18.27	9.49	2.45	-	2.01	0.57	49.33	47.52	100.48	309.40	8.57
50 Year	1,530.31	254.64	167.48	87.48	470.18	244.19	62.93	78.31	51.77	14.77	1,269.16	3,290.16	2,515.55	10,036.94	2,520.71

Table 5
Comparison of BCA Results

Criteria Benefit	7% Discount Rate ($millions)	3% Discount Rate ($millions)
Police Events	2.43	5.99
Bus Service	8.53	21.00
School Attendance/Safety	10.37	25.53
Traffic Flow (LED Benefits)	14.41	35.49
US 17/Road Maintenance	14.81	33.44
Traffic	27.60	67.94
Tourism	40.24	99.06
Flooding – Minor	41.96	103.30
Medical Centers	77.47	190.73
Accident Prevention	209.13	514.85
Flooding – Major	252.16	620.79
Loss of Horizon Area Redevelopment	377.89	989.55
MUSC Expansion	1,443.70	2,145.20
Total PV of Benefits	**$2,520.71**	**$4,852.86**
Mean PV of Benefit and 95% Confidence Interval s	**$2,741.89 ± $462.47**	**$5,411.37 ± $1,193.69**
PV Benefits Range	$1,868.55 - $4,167.09	$3,323.09 - $8,954.71
Total PV of Project Costs	$133.84	$146.10
B/C Ratio – w/ MUSC	**18.83**	**33.22**
B/C Ratio – w/o MUSC	**8.05**	**18.53**
Statistical Min / Max Range for B/C Ratio w/ MUSC	**13.96 – 31.13**	**22.74 – 61.29**
Statistical Min / Max Range for B/C Ratio w/o MUSC	**4.00 – 19.62**	**8.38 – 45.78**

APPENDIX A
ALTERNATIVE ANALYSIS: 3% DISCOUNT RATE

ALTERNATIVE ANALYSIS: 3% DISCOUNT RATE

As noted in the final rule for the TIGER grant, an alternative analysis of the Project is allowed using a 3 percent discount rate. Using the same assumptions as described in the report, we performed the BCA using a 3 percent discount rate and subjecting each input variable to the Monte Carlo simulation process. The table shown on the following page summarizes the results of the analyses and the sensitivity analyses generated via the Monte Carlo process are summarized in Appendix B.

Present Value Cashflow Streams for 3% Discount Rate Alternative (In $millions)

Annual Benefits	Avoided Flood Damage - Major Event	Avoided Flood Damage - Minor Event	Improved Traffic	LED Benefits	Medical Center Impacts	Tourism	Improved School Attendance	Reduced Road Maintenance	Bus Svc Delays	Police Events	Accident Prevention	Loss of MUSC & Phase 2/3	Loss of Horizon Development	Total	Present Value
2009	Construction Period													-	-
2010														-	-
2011														-	-
2012	13.57	2.26	1.48	0.78	4.17	2.16	0.56	-	0.46	0.13	11.25	-	12.14	48.96	44.80
2013	13.97	2.33	1.53	0.80	4.29	2.23	0.57	1.89	0.47	0.13	11.59	-	12.50	52.32	46.49
2014	14.39	2.40	1.58	0.82	4.42	2.30	0.59	-	0.49	0.14	11.94	987.57	12.88	1,039.51	896.69
2015	14.83	2.47	1.62	0.85	4.55	2.37	0.61	6.47	0.50	0.14	12.30	5.92	13.27	65.89	55.18
2016	15.27	2.54	1.67	0.87	4.69	2.44	0.63	-	0.52	0.15	12.66	6.10	13.66	61.20	49.76
2017	15.73	2.62	1.72	0.90	4.83	2.51	0.65	-	0.53	0.15	13.04	6.28	14.07	63.04	49.76
2018	16.20	2.70	1.77	0.93	4.98	2.58	0.67	2.20	0.55	0.16	13.44	6.47	27.37	80.00	61.31
2019	16.69	2.78	1.83	0.95	5.13	2.66	0.69	-	0.56	0.16	13.84	1,151.53	28.19	1,225.00	911.51
2020	17.19	2.86	1.88	0.98	5.28	2.74	0.71	-	0.58	0.17	14.25	13.73	29.03	89.40	64.59
2021	17.70	2.95	1.94	1.01	5.44	2.82	0.73	-	0.60	0.17	14.68	14.14	29.91	92.09	64.59
2022	18.23	3.03	2.00	1.04	5.60	2.91	0.75	7.95	0.62	0.18	15.12	14.57	30.80	102.80	70.00
2023	18.78	3.12	2.06	1.07	5.77	3.00	0.77	(8.19)	0.64	0.18	15.58	15.00	31.73	89.51	59.17
2024	19.34	3.22	2.12	1.11	5.94	3.09	0.80	-	0.65	0.19	16.04	15.45	32.68	100.63	64.59
2025	19.92	3.32	2.18	1.14	6.12	3.18	0.82	-	0.67	0.19	16.52	15.92	33.66	103.64	64.59
2026	20.52	3.41	2.25	1.17	6.30	3.27	0.84	-	0.69	0.20	17.02	16.40	34.67	106.75	64.59
2027	21.14	3.52	2.31	1.21	6.49	3.37	0.87	-	0.72	0.20	17.53	16.89	35.71	109.96	64.59
2028	21.77	3.62	2.38	1.24	6.69	3.47	0.90	2.95	0.74	0.21	18.06	17.39	36.78	116.21	65.27
2029	22.42	3.73	2.45	1.28	6.89	3.58	0.92	9.78	0.76	0.22	18.60	17.92	37.88	126.43	70.00
2030	23.10	3.84	2.53	1.32	7.10	3.69	0.95	-	0.78	0.22	19.16	18.45	39.02	120.15	64.59
2031	23.79	3.96	2.60	1.36	7.31	3.80	0.98	-	0.80	0.23	19.73	19.01	40.19	123.76	64.59

Present Value Cashflow Streams for 3% Discount Rate Alternative (in $millions) (cont'd)

Annual Benefits	Avoided Flood Damage - Major Event	Avoided Flood Damage - Minor Event	Improved Traffic	LED Benefits	Medical Center Impacts	Tourism	Improved School Attendance	Reduced Road Maintenance	Bus Svc Delays	Police Events	Accident Prevention	Loss of MUSC & Phase 2/3	Loss of Horizon Development	Total	Present Value
2032	24.50	4.08	2.68	1.40	7.53	3.91	1.01	-	0.83	0.24	20.32	19.58	41.40	127.47	64.59
2033	25.24	4.20	2.76	1.44	7.75	4.03	1.04	3.42	0.85	0.24	20.93	20.17	42.64	134.72	66.27
2034	26.00	4.33	2.85	1.49	7.99	4.15	1.07	-	0.88	0.25	21.56	20.77	43.92	135.23	64.59
2035	26.78	4.46	2.93	1.53	8.23	4.27	1.10	-	0.91	0.26	22.21	21.39	45.23	139.29	64.59
2036	27.58	4.59	3.02	1.58	8.47	4.40	1.13	12.03	0.93	0.27	22.87	22.03	46.59	155.50	70.00
2037	28.41	4.73	3.11	1.62	8.73	4.53	1.17	-	0.96	0.27	23.56	22.70	47.99	147.77	64.59
2038	29.26	4.87	3.20	1.67	8.99	4.67	1.20	(12.76)	0.99	0.28	24.27	23.38	49.43	139.45	59.17
2039	30.14	5.01	3.30	1.72	9.26	4.81	1.24	-	1.02	0.29	24.99	24.08	50.91	156.77	64.59
2040	31.04	5.17	3.40	1.77	9.54	4.95	1.28	-	1.05	0.30	25.74	24.80	52.44	161.48	64.59
2041	31.97	5.32	3.50	1.83	9.82	5.10	1.31	-	1.08	0.31	26.52	25.54	54.01	166.32	64.59
2042	32.93	5.48	3.60	1.88	10.12	5.25	1.35	-	1.11	0.32	27.31	26.31	55.63	171.31	64.59
2043	33.92	5.64	3.71	1.94	10.42	5.41	1.39	19.39	1.15	0.33	28.13	27.10	57.30	195.84	71.69
2044	34.94	5.81	3.82	2.00	10.73	5.57	1.44	-	1.18	0.34	28.97	27.91	59.02	181.74	64.59
2045	35.98	5.99	3.94	2.06	11.06	5.74	1.48	-	1.22	0.35	29.84	28.75	60.79	187.19	64.59
2046	37.06	6.17	4.06	2.12	11.39	5.91	1.52	-	1.25	0.36	30.74	29.61	62.61	192.81	64.59
2047	38.18	6.35	4.18	2.18	11.73	6.09	1.57	-	1.29	0.37	31.66	30.50	64.49	198.59	64.59
2048	39.32	6.54	4.30	2.25	12.08	6.27	1.62	5.33	1.33	0.38	32.61	31.42	66.43	209.88	66.27
2049	40.50	6.74	4.43	2.32	12.44	6.46	1.67	-	1.37	0.39	33.59	32.36	68.42	210.69	64.59
2050	41.72	6.94	4.57	2.38	12.82	6.66	1.72	18.19	1.41	0.40	34.60	33.33	70.47	235.20	70.00
2051	42.97	7.15	4.70	2.46	13.20	6.86	1.77	-	1.45	0.41	35.63	34.33	72.59	223.52	64.59
2052	44.26	7.36	4.84	2.53	13.60	7.06	1.82	-	1.50	0.43	36.70	35.36	74.77	230.23	64.59
2053	45.58	7.59	4.99	2.61	14.01	7.27	1.87	(19.88)	1.54	0.44	37.80	36.42	77.01	217.25	59.17
2054	46.95	7.81	5.14	2.68	14.43	7.49	1.93	-	1.59	0.45	38.94	37.51	79.32	244.25	64.59
2055	48.36	8.05	5.29	2.76	14.86	7.72	1.99	-	1.64	0.47	40.11	38.64	81.70	251.57	64.59
2056	49.81	8.29	5.45	2.85	15.30	7.95	2.05	-	1.68	0.48	41.31	39.80	84.15	259.12	64.59
2057	51.30	8.54	5.61	2.93	15.76	8.19	2.11	22.37	1.74	0.50	42.55	40.99	86.67	289.27	70.00
2058	52.84	8.79	5.78	3.02	16.24	8.43	2.17	7.16	1.79	0.51	43.83	42.22	89.27	282.07	66.27
2059	54.43	9.06	5.96	3.11	16.72	8.69	2.24	-	1.84	0.53	45.14	43.49	91.96	283.15	64.59
2060	56.06	9.33	6.14	3.20	17.22	8.95	2.31	-	1.90	0.54	46.49	44.79	94.71	291.64	64.59
2061	57.74	9.61	6.32	3.30	17.74	9.21	2.37	-	1.95	0.56	47.89	46.14	97.55	300.39	64.59
2062	59.48	9.90	6.51	3.40	18.27	9.49	2.45	-	2.01	0.57	49.33	47.52	100.48	309.40	64.59
50 Year	1,530.31	254.64	167.48	87.48	470.18	244.19	62.93	78.31	51.77	14.77	1,269.16	3,290.16	2,515.55	10,036.94	4,852.86

APPENDIX B
STATISTICAL ANALYSIS

STATISTICAL ANALYSIS

Statistical significance is a mathematical term that is used to denote whether the outcome of a model (experiment) is the result of a relationship between specific factors or due to chance. The statistical analysis of the data will produce a number that is statistically significant if it falls below 5%, which is called the confidence level. In other words, if the likelihood of an event is statistically significant, the researcher can be 95 percent confident that the result did not happen by chance.

As noted in this report, there is a high degree of variability associated with a number of assumptions made in the BCA presented herein. In order to determine the impact of these assumptions on the sensitivity of the results, we subjected the input assumptions to a statistical analysis, a Monte Carlo simulation. This appendix discusses the methodology behind the Monte Carlo method and presents the results of the statistical analysis performed.

The Monte Carlo Method

The Monte Carlo method is an analytical technique that involves using repeated random sampling and probability to solve problems. Monte Carlo methods tend to be used when it is impossible or unpractical to run calculations via a deterministic algorithm. It is also the preferred method for modeling systems that have a high degree of uncertainty associated with inputs, such as in the assessment of risk in businesses. In general, Monte Carlo methods use the following steps to execute its analysis:

1. Define the input domain.
2. Generate random inputs using a specified probability distribution.
3. Calculate the result using the randomly generated input.
4. Compile the individual results into an aggregated final result.

Monte Carlo Method versus What-If Scenarios

A frequently employed technique used in sensitivity analyses is commonly referred to as the "What-if" scenario. As the name implies, under this method, a single input assumption is changed (worst case, best case, most likely case), the calculation is run, and then the result is compared to the result of the most likely case. This technique is adequate when there is limited uncertainty associated with the input variables and the scenario results are all essentially of equal weighting.

With a Monte Carlo method, the random sampling of input values following a probability distribution function allows the generation of thousands of possible outcomes instead of the discrete number produced via a "What-if" analysis. The result of a Monte Carlo simulation is a probability of different outcomes occurring. Thus, based on changes in inputs, output results have different weightings.

Monte Carlo Method and BCA Analysis

In any statistical analysis, sample size is an important criterion that impacts the interpretation of statistical significance. In general, the larger the sample size, the smaller the likely error and the smaller the standard deviation from the mean. For the Monte Carlo analyses conducted herein, a total of 100,000 trials were run for each input variable to minimize the standard error of the mean. This statistical measure is used to help calculate the range of the confidence intervals as follows:

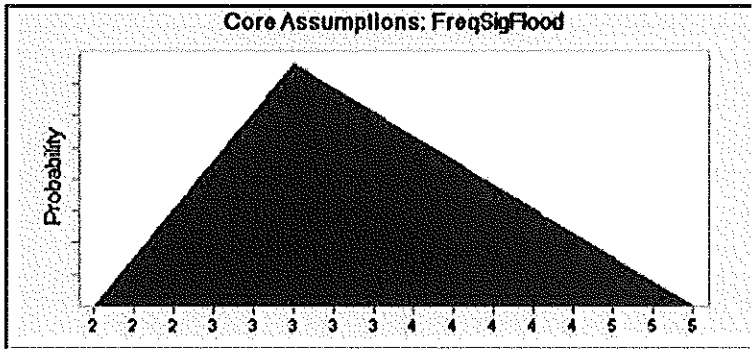
- 95% confidence interval = Mean ± 1.96*(Standard error of the mean or Standard Deviation)
- 99% confidence interval = Mean ± 2.58*(Standard error of the mean or Standard Deviation)

The range of variation is described through the standard deviation. Generally speaking, the more data examined, the more extreme the highs and lows. The larger the standard deviation, the more widespread the data points are from the mean.

Flooding Events

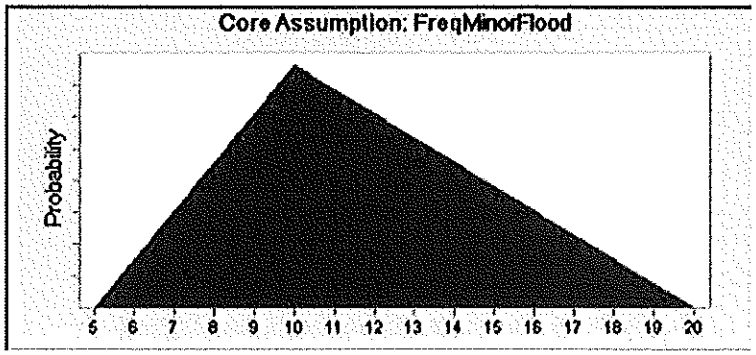
As noted in the report, we segregated flooding events into significant and minor categories. In any given year the number of flooding events is expected to vary depending on the timing and intensity of rain events. To recognize the potential variability in the flood event assumptions, and to support the Monte Carlo analysis, a range of events was assumed for both significant and minor floods. For significant floods, a range of 2 to 5 events per year was established, with 3 events identified as the most likely outcome, as shown in Figure 1. We assumed that the distribution of flooding events were discrete occurrences, thus, fractional outcomes (such as 0.5 flood events) were not considered.

Figure 1
Frequency of Significant Flood Events



For minor floods, a range of 5 to 25 events per year was established, with 10 events identified as the most likely outcome, as shown in the graph below. In both assumption sets, a triangular distribution (with discrete events) was assumed.

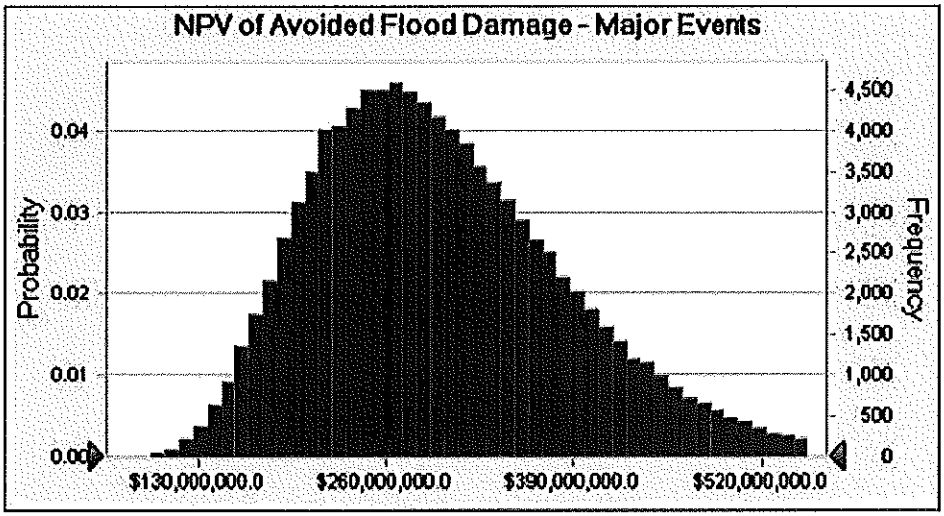
Figure 2
Frequency of Minor Flood Events



Residential and Commercial Damage

A Monte Carlo simulation was performed on the damage estimates for residential and commercial structures incurred during a significant flooding event. The number of properties in the Project area was allowed to flex 25 percent higher and lower than the most likely estimate of 2,557. The percent of structures damaged in flood events was allowed to flex above and below the most likely result by 40 percentage points and 30 percentage points, respectively. The amount of damage for residential and commercial damage was allowed to range from $3,900 to $15,600 was allowed to range from $750 to $2,250. Under these parameters, the following results were achieved as noted in Figure 3.

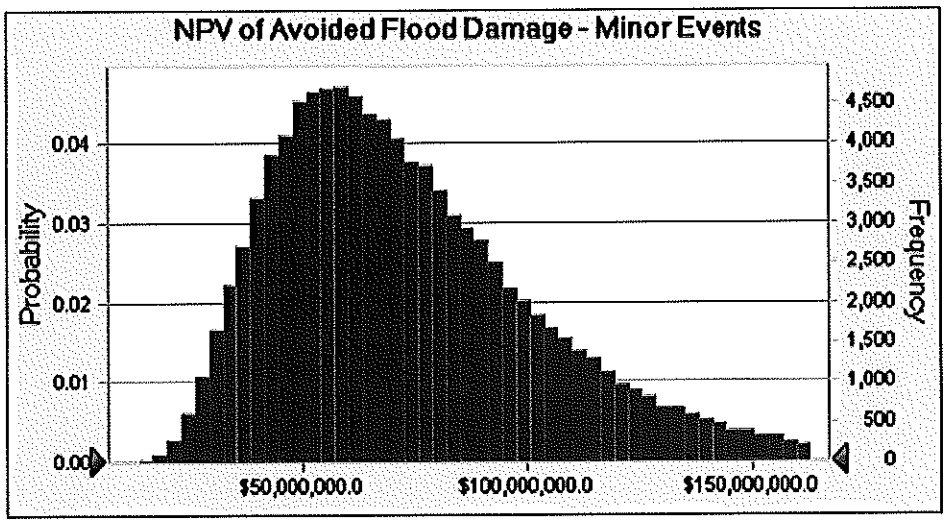
Figure 3
PV for Avoided Flood Damage for a Major Event



Statistic	Forecast Values
Trials	100,000
Mean	$299,005,724
Median	$287,083,073
Standard Deviation	$90,222,473
Mean Standard Error	$285,309
95% Confidence Interval for PV = $299,005,724 ± $176,836,048	

Similarly, for a minor flooding event, a Monte Carlo simulation was performed on the damage estimates for residential and commercial structures. The percent of residential structures damaged in flood events was allowed to flex from 10 percent to 75 percent (assuming a most likely value of 20 percent impacted), while the percent of commercial structures damaged was allowed to flex from 5 percent to 25 percent. The amount of damage for residential damage was allowed to range from $100 to $500 (assuming a most likely value of $250 for minor flooding events), while the amount of commercial damage was allowed to range from $750 to $2,250. Under these parameters, the following results were achieved as noted in the Figure 4.

Figure 4
PV for Avoided Flood Damage for a Minor Event

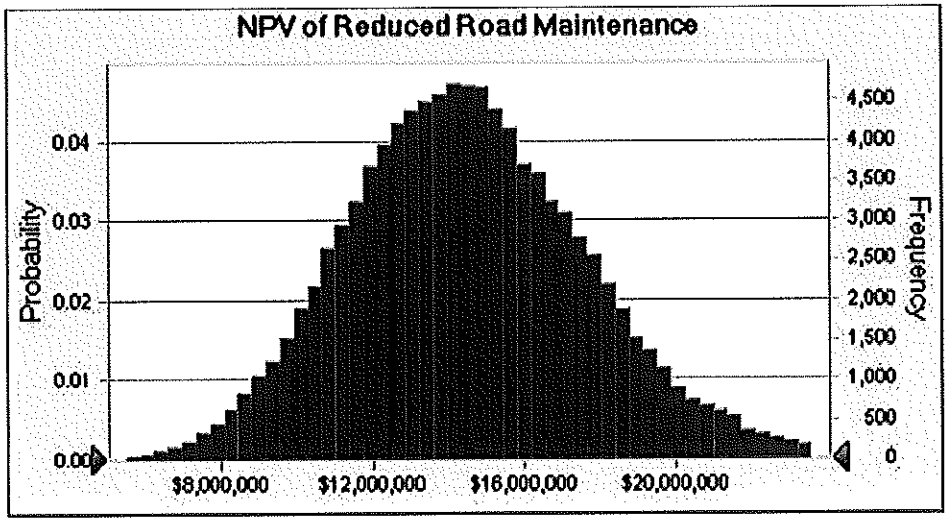


Statistic	Forecast Values
Trials	100,000
Mean	$74,195,450
Median	$68,202,081
Standard Deviation	$31,734,430
Mean Standard Error	$100,353
95% Confidence Interval for PV = $74,195,450 ± $62,199,483	

Road Maintenance

Under the parameters described in the report, the following road maintenance results were achieved as noted in Figure 5. It is likely that the impact to the liability for road maintenance caused by flooding has been substantially understated in our analysis, as the benefit capture is for a limited stretch of roadway and does not likely represent the total amount of road infrastructure that will benefit from this Project.

Figure 5
PV for Reduced Road Maintenance

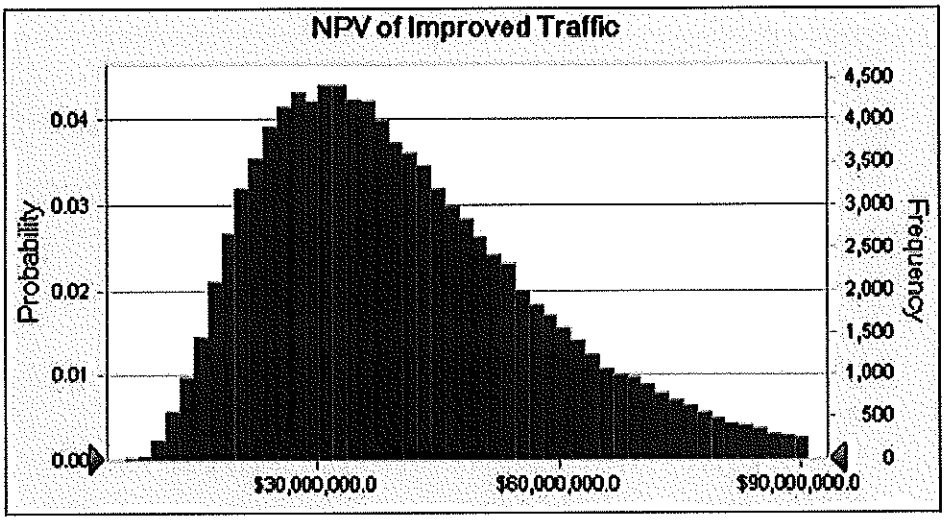


Statistic	Forecast Values
Trials	100,000
Mean	$14,511,619
Median	$14,360,099
Standard Deviation	$3,224,294
Mean Standard Error	$10,196
95% Confidence Interval for PV = $14,511,619 ± $6,319,616	

Traffic

Monte Carlo simulation was performed on the traffic cost assumptions. The cost per hour of an idle vehicle was allowed to range from $12 to $18 per hour. Results were achieved as noted in Figure 6.

Figure 6
PV for Improved Traffic Conditions

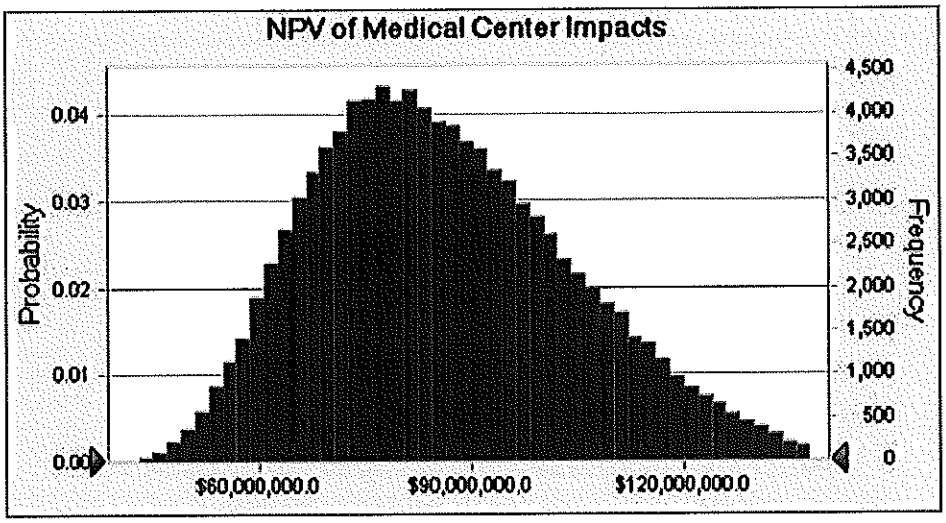


Statistic	Forecast Values
Trials	100,000
Mean	$41,021,704
Median	$37,811,032
Standard Deviation	$17,801,919
Mean Standard Error	$56,295
95% Confidence Interval for PV = $41,9021,7048 ± $34,891,762	

Medical Centers

The sensitivity of the assumptions described in Section 3.6 was tested via the Monte Carlo simulation and the results are presented in Figure 7.

Figure 7
PV for Improved Access to Medical Centers

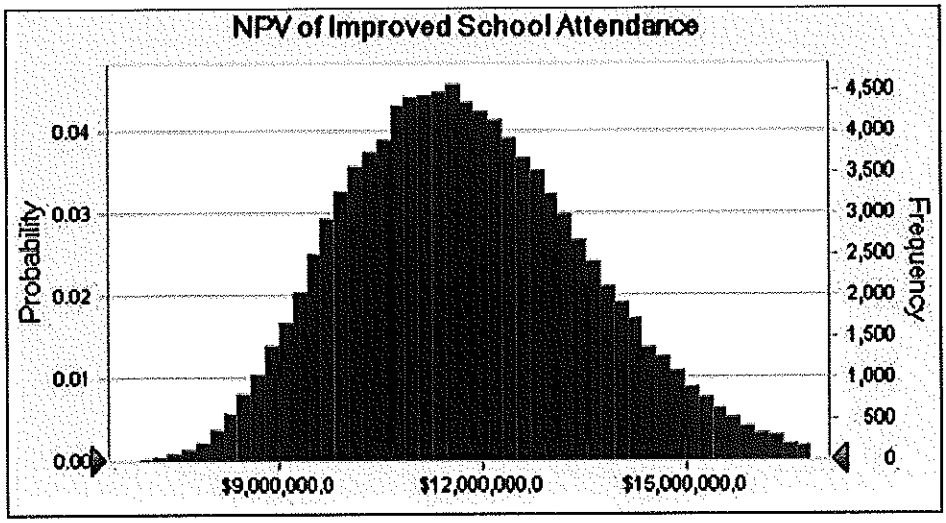


Statistic	Forecast Values
Trials	100,000
Mean	$86,158,580
Median	$84,263,190
Standard Deviation	$18,378,068
Mean Standard Error	$58,117
95% Confidence Interval for PV = $86,158,580 ± $36,021,013	

Improved School Attendance

Section 3.7 of the BCA Report addresses the impact of improved school attendance (as a result of improved access to the schools) on public school funding, high school dropout rates, and wage earnings potential. A Monte Carlo simulation was performed on the school attendance assumptions and the results achieved are noted in Figure 8.

Figure 8
PV for Improved School Attendance and Earning Potential

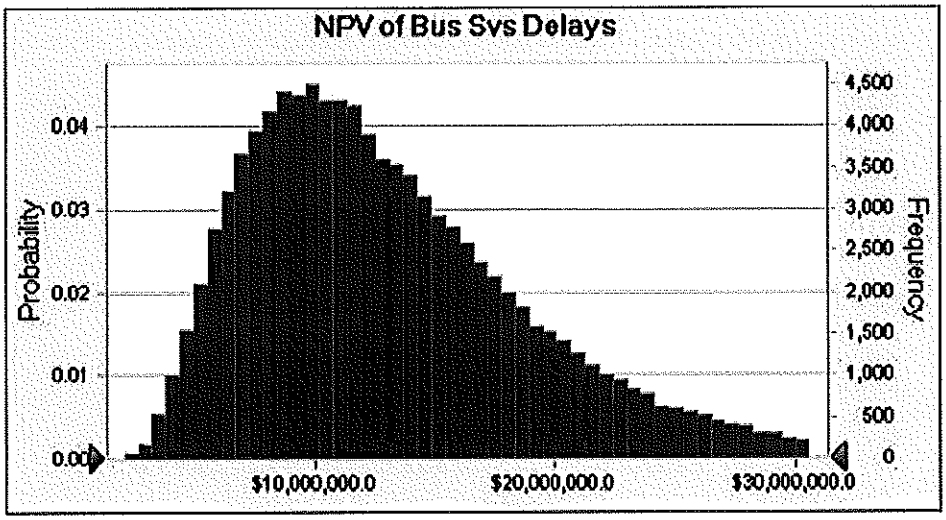


Statistic	Forecast Values
Trials	100,000
Mean	$11,776,074
Median	$11,651,265
Standard Deviation	$1,806,762
Mean Standard Error	$5,714
95% Confidence Interval for PV = $11,776,074 ± $3,541,254	

Bus Service Delays

Monte Carlo simulation was performed on bus cost assumptions, allowing the percent of buses which traverse flood prone areas to range from 45 percent to 55 percent. Results were achieved as noted in Figure 9.

Figure 9
PV for Improved Bus Services

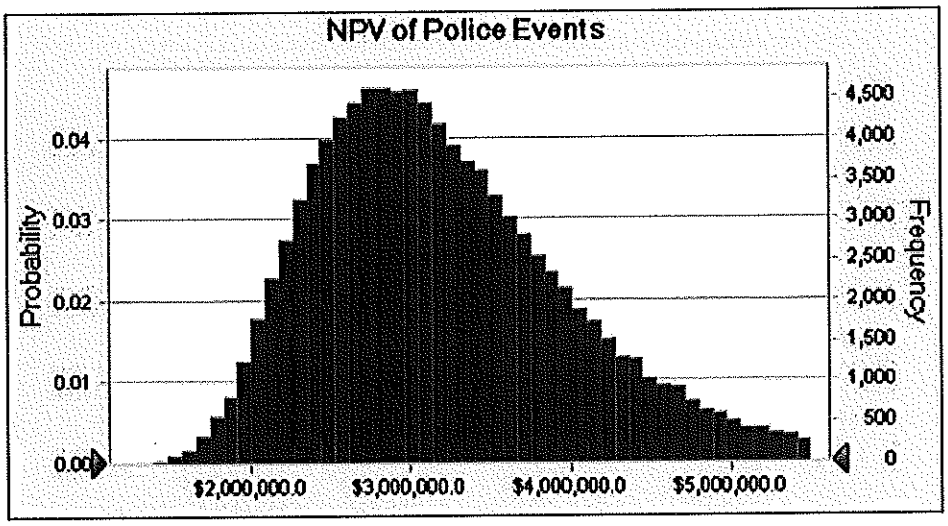


Statistic	Forecast Values
Trials	100,000
Mean	$13,252,462
Median	$12,057,045
Standard Deviation	$6,188,552
Mean Standard Error	$19,570
95% Confidence Interval for PV = $13,252,462 ± $12,129,562	

Police Events

Assumptions associated with the potential cost savings for the City's Police Department were subjected to a Monte Carlo simulation. The results of the modeling are presented in Figure 10 and summarized in the table.

Figure 10
PV for Police Events

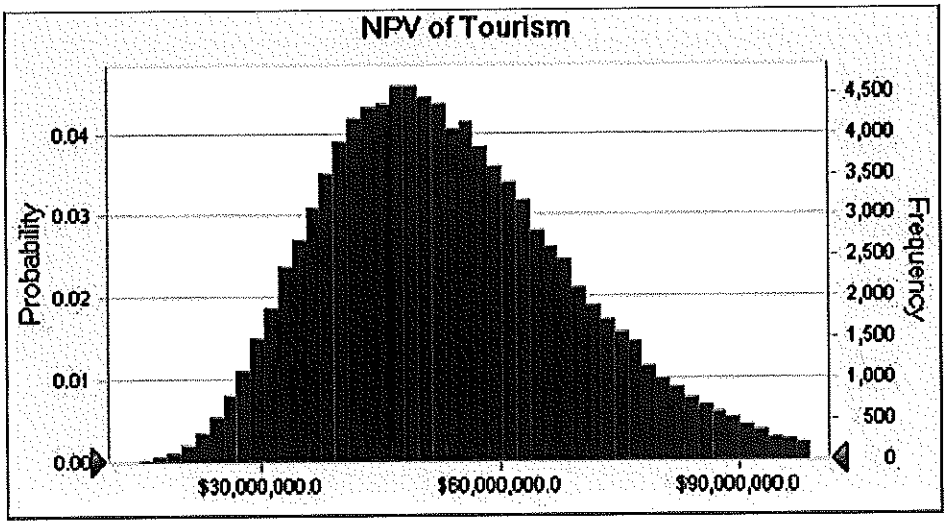


Statistic	Forecast Values
Trials	100,000
Mean	$3,210,825
Median	$3,092,218
Standard Deviation	$816,797
Mean Standard Error	$2,583
95% Confidence Interval for PV = $3,210,825 ± $1,600,922	

Tourism

Section 3.10 describes the different assumptions used to calculate the benefits to the Tourism Industry in Charleston. Subjecting these input variables to the Monte Carlo simulation results in the PV outcomes illustrated in Figure 11 and summarized in the table.

Figure 11
PV for Tourism Impacts

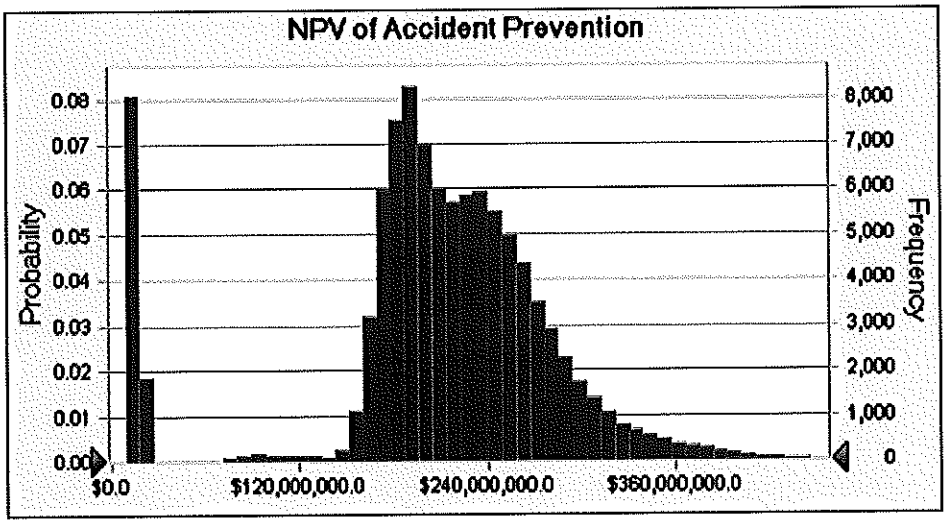


Statistic	Forecast Values
Trials	100,000
Mean	$53,790,130
Median	$51,976,224
Standard Deviation	$16,047,262
Mean Standard Error	$50,746
95% Confidence Interval for PV = $53,790,130 ± $31,452,634	

Accident Prevention

Section 3.11 describes the different assumptions used to calculate the impacts on the number of accidents and fatalities pre- and post-Project. Subjecting these input variables to the Monte Carlo simulation results in the PV outcomes illustrated in Figure 12 and summarized in the table.

Figure 12
PV for Accident Prevention

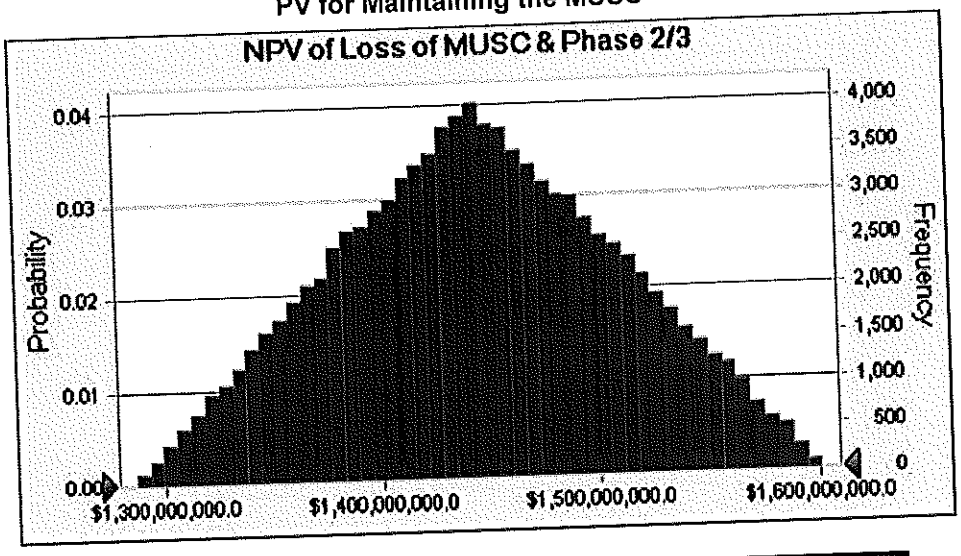


Statistic	Forecast Values
Trials	100,000
Mean	$208,994,034
Median	$213,801,973
Standard Deviation	$84,533,564
Mean Standard Error	$267,319
95% Confidence Interval for PV = $208,994,034 ± $165,685,785	

Maintaining the MUSC

MUSC's impact on the local economy is large – over $2.3 billion in 2007 alone. Because this criterion represents the single largest variable in the BCA, the sensitivity analysis conducted examines the resulting B/C ratio with and without Phases 2 and 3 of the expansion. Using the assumptions outlined in Section 3.12 of the report, the Monte Carlo simulation results are presented in Figure 13 and the associated table.

Figure 13
PV for Maintaining the MUSC

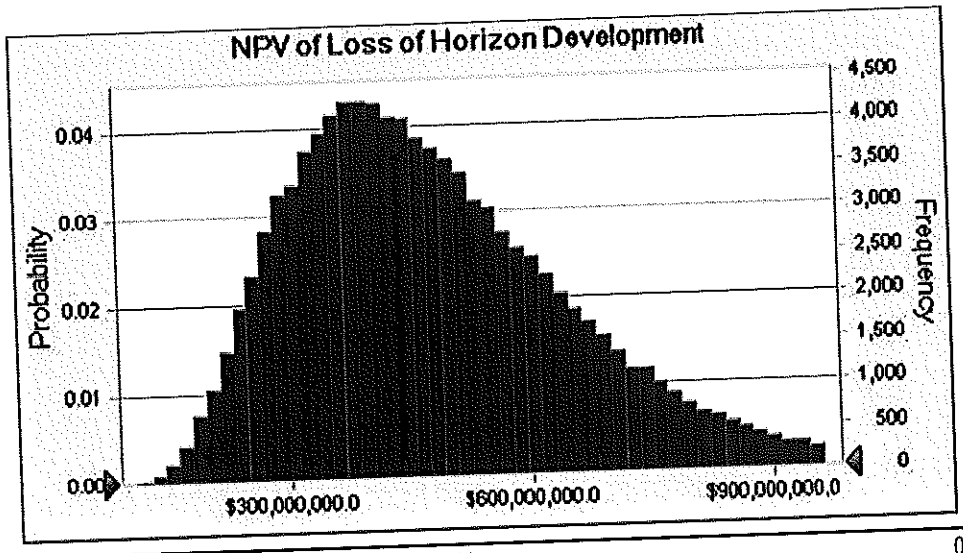


Statistic	Forecast Values
Trials	100,000
Mean	$1,443,866,757
Median	$1,443,752,024
Standard Deviation	$64,504,796
Mean Standard Error	$203,982
95% Confidence Interval for PV = $1,443,866,757 ± $126,429,400	

Loss of Horizon Area Redevelopment Project

Unlike the case for MUSC, the loss of the Horizon Area Redevelopment project would represent a definite loss to the Charleston MSA. While MUSC's expansion would likely still take place (it would just move out of the area), cancellation of the Horizon Area project would the end of the project. Subjecting the assumptions described in Section 3.13 to a Monte Carlo simulation results in the PV outcomes illustrated in Figure 14 and the associated table.

Figure 14
PV for Horizon Area Redevelopment Project



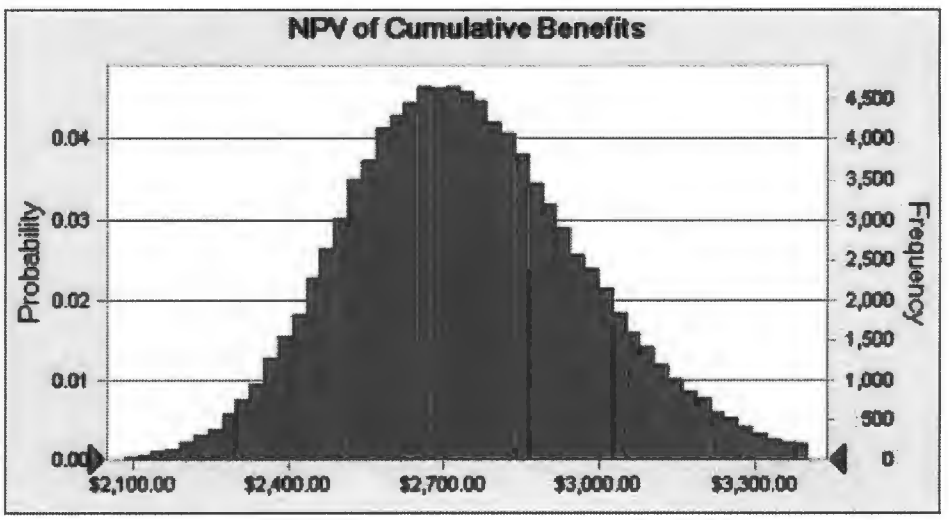
Statistic	Forecast Values
Trials	100,000
Mean	$477,691,976
Median	$452,810,441
Standard Deviation	$172,875,292
Mean Standard Error	$546,680
95% Confidence Interval for PV = $477,691,976 ± $338,835,573	

Summary

The individual calculations of PV over the 50-year period resulted in values that were within one standard deviation of the mean for each benefit considered.

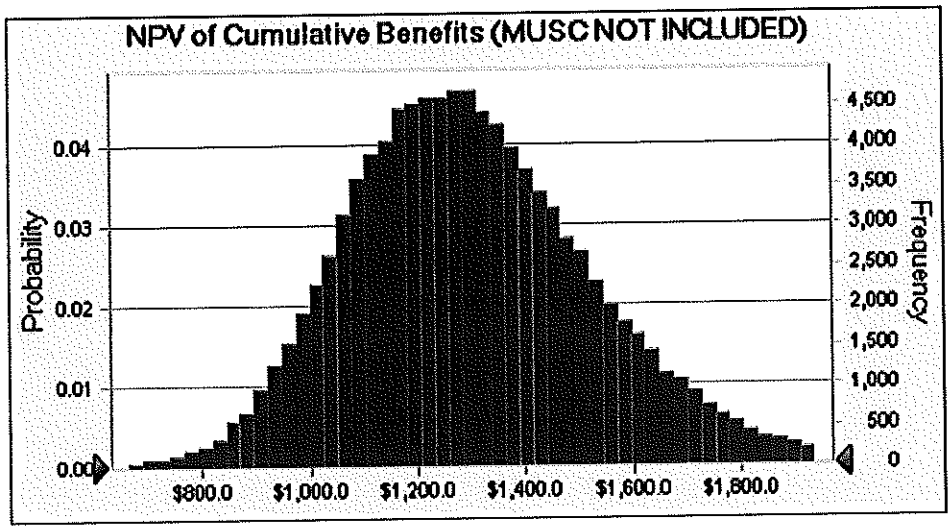
As a final test on the possible interdependency of input variables, we performed a Monte Carlo simulation on all considered benefits together (with and without the MUSC Expansion). The results of this simulation are illustrated in Figures 15 and 16 and the associated tables below each figure.

Figure 15
PV for Entire Project



Statistic	Forecast Values
Trials	100,000
Mean	$2,741.89 million
Median	$2,726.84 million
Standard Deviation	$235.95 million
Mean Standard Error	$0.75million
95% Confidence Interval for PV = $2,741,889,229 ± $462,470,795	

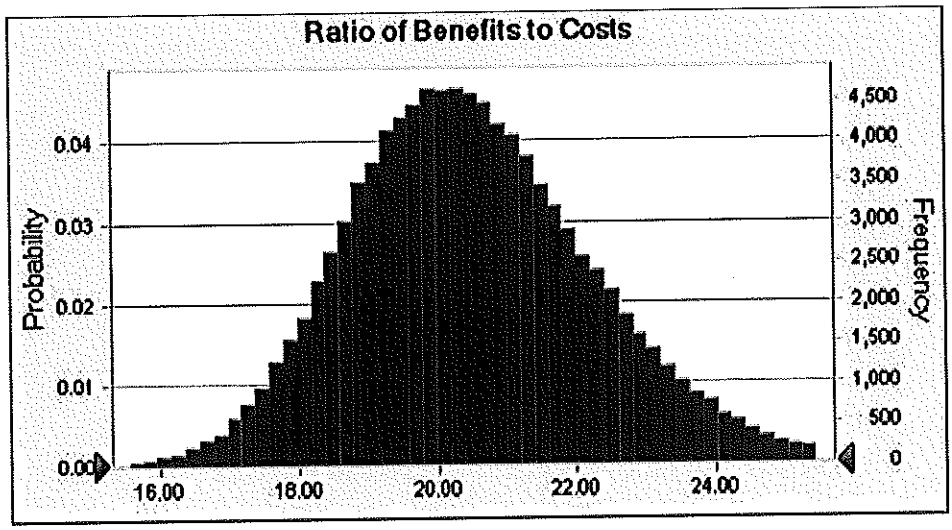
Figure 16
PV for Entire Project without MUSC



Statistic	Forecast Values
Trials	100,000
Mean	$1,298.0 million
Median	$1,282.2 million
Standard Deviation	$227.1 million
Mean Standard Error	$0.70million
95% Confidence Interval for PV = $1,298,022,473 ± $445,061,196	

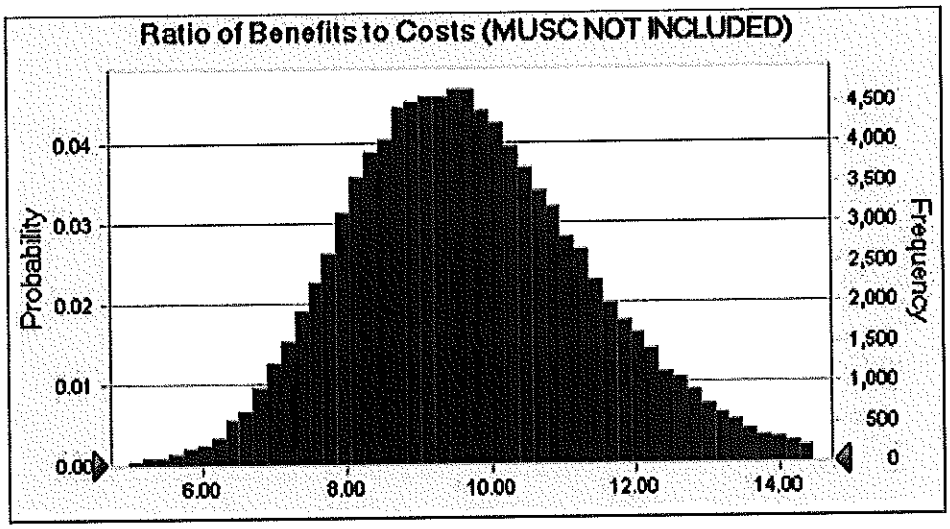
Rerunning the Monte Carlo simulation to calculate a B/C ratio produces the distributions illustrated in Figures 17 and 18 (with and without MUSC).

Figure 17
B/C Ratios for Project (7% Discount Rate)



Discount Rate	B/C Ratio
Mean @ 7%	20.49 ± 3.46
Min - Max Range @ 7%	13.96 – 31.13
Mean @ 3%	37.04 ± 8.17
Min – Max Range @ 3%	22.74 – 61.29

Figure 18
B/C Ratios for Project (without MUSC, 7% Discount Rate)



Discount Rate	B/C Ratio
Mean @ 7%	9.70 ± 3.33
Min - Max Range @ 7%	4.00 – 19.62
Mean @ 3%	22.36 ± 7.80
Min – Max Range @ 3%	8.38 – 45.78

From the above summarized results, it is clear that regardless of the discount rate used; with or without consideration of the MUSC scenario; and even if consideration is only given to the lowest PV values, construction of the Project produces a B/C ratio that supports public investment.

US 17 Septima Clark Transportation and Drainage Improvements

Application for Financial Assistance
South Carolina Transportation Infrastructure Bank

APPENDIX A-2

CITY OF CHARLESTON RESOLUTION DATED SEPTEMBER 2009

A RESOLUTION

WHEREAS, U.S. 17 is a vital federal highway that serves a portion of the United States east coast and is a major North-South corridor along the South Carolina Coast; and

WHEREAS, a section of U.S. 17 that traverses the City of Charleston Peninsula is named the Septima Clark Parkway and is a vital emergency and hurricane evacuation route for the Charleston Region; and

WHEREAS, U.S. 17 – Septima Clark Parkway experiences operational deficiencies, hazards, and disruption to traffic flow caused by frequent flooding directly affecting 20% of the Charleston Peninsula; and

WHEREAS, U.S. 17 – Septima Clark Parkway is a dangerous and dysfunctional primary transportation route in need of reconstruction to address a series of negative impacts on the surrounding communities; and

WHEREAS, major and critical infrastructure investments are needed to mitigate the serious effects of frequent and disruptive flooding of U.S. 17 – Septima Clark Parkway which negatively impacts the highway, residents, visitors, businesses, schools, hospitals and local, state, and federal facilities; and

WHEREAS, U.S. 17 –Septima Clark Parkway has been designated as a portion of the National Highway Systems (NHS) for national security and connectivity, as a Strategic Highway Network (STRAHNET) route, as a federally designated Surface Transportation Assistance Act (STAA) route for freight connectivity, and the South Carolina Department of Transportation (SCDOT) has identified it in its Strategic Corridor Plan as a designated state evacuation route; and

WHEREAS, the U.S. 17 – Septima Clark Transportation Improvement Project has been adopted by the Charleston Area Transportation Study Policy Committee (the Regions Metropolitan Planning Organization – MPO) in the Region's Transportation Improvement Plan (TIP) and the Project is included in the Statewide Transportation Improvement Program (STIP) for South Carolina; and

WHEREAS, U.S. 17 – Septima Clark Parkway is a major component of the strategic highway system in South Carolina that provides the needed connectivity that

allows South Carolina to maintain and enhance its economic vitality and provides access to the Interstate system in the Region (I-26), the Port of Charleston and other local, state and federal facilities; and

WHEREAS, the City of Charleston has determined that the cost to repair U.S. 17 – Septima Clark Parkway and its drainage infrastructure deficiencies, to include the construction of collection, conveyance and discharge systems to adequately serve the U.S. 17 – Septima Clark Corridor, has been estimated at $146.3 Million Dollars; and

WHEREAS, the City of Charleston is critically in need of federal funds to construct the U.S. 17 – Septima Clark Transportation Infrastructure Reinvestment Project for Advancement of Mobility, Efficiency, Emergency Preparedness, and Community Livability; and

WHEREAS, the U.S. 17 – Septima Clark Transportation Infrastructure Reinvestment Project for Advancement of Mobility, Efficiency, Emergency Preparedness, and Community Livability is a viable project expected to generate substantial economic recovery for the Charleston region, the State of South Carolina and the United States and is a project that is considered "shovel – ready" because the City is in a position to announce bids for the Project immediately upon receipt of federal grant funding; and

WHEREAS, the City of Charleston seeks $146.3 Million Dollars from the U.S. Department of Transportation's (USDOT) Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant Program to construct the U.S. 17 – Septima Clark Transportation Infrastructure Reinvestment Project for Advancement of Mobility, Efficiency, Emergency Preparedness, and Community Livability; and

WHEREAS, the U.S. 17 – Septima Clark Transportation Infrastructure Reinvestment Project for Advancement of Mobility, Efficiency, Emergency Preparedness, and Community Livability has strong support from local and state entities as well as from the residents and businesses from the affected areas.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND CITY COUNCIL OF THE CITY OF CHARLESTON, IN COUNCIL ASSEMBLED, THAT THE CITY OF CHARLESTON ENDORSES AND SUPPORTS THE U.S. 17 – SEPTIMA CLARK TRANSPORTATION INFRASTRUCTURE REINVESTMENT PROJECT FOR ADVANCEMENT OF MOBILITY, EFFICIENCY, EMERGENCY PREPAREDNESS AND COMMUNITY LIVABILITY.

NOW, THEREFORE, BE IT FURTHER RESOLVED THAT THE CITY OF CHARLESTON IS PREPARED TO IMMEDIATELY BEGIN THE CONSTRUCTION OF THE U.S. 17 – SEPTIMA CLARK TRANSPORTATION INFRASTRUCTURE REINVESTMENT PROJECT FOR ADVANCE OF MOBILITY, EFFICIENCY, EMERGENCY PREPAREDNESS AND COMMUNITY LIVABILITY WITH THE SUPPORT AND FUNDING OF $146.3 MILLION DOLLARS IN GRANT FUNDS

FROM THE U.S. DEPARTMENT OF TRANSPORTATION THROUGH ITS USDOT TRANSPORTATION INVESTMENT GENERATING ECONOMIC RECOVERY (TIGER) DISCRETIONARY GRANT PROGRAM TO CONSTRUCT THE U.S. 17 – SEPTIMA CLARK TRANSPORTATION INFRASTRUCTURE REINVESTMENT PROJECT FOR ADVANCEMENT OF MOBILITY, EFFICIENCY, EMERGENCY PREPAREDNESS AND COMMUNITY LIVABILITY FOR THE BENEFIT OF THE RESIDENTS OF THE CITY OF CHARLESTON, THE STATE OF SOUTH CAROLINA AND THE UNITED STATES OF AMERICA.

The above Resolution shall become effective immediately upon its adoption by City Council.

Done this 8th day of September 2009.

Joseph P. Riley, Jr., Mayor
City of Charleston

ATTEST:

Vanessa Turner-Maybank
Clerk of Council

US 17 Septima Clark Transportation and Drainage Improvements

Application for Financial Assistance
South Carolina Transportation Infrastructure Bank

APPENDIX A-3

A CONCURRENT RESOLUTION FROM THE GENERAL ASSEMBLY OF THE STATE OF SOUTH CAROLINA DATED MAY 19, 2009

H. 3274.
Introduced by Representatives Gilliard, Alexander, Brantley, Clyburn, Cobb-Hunter, Forrester, Govan, Gunn, Hosey, Howard, Hutto, Jefferson, Kirsh, Mack, Miller, Sottile, Stavrinakis, Whipper and R.L. Brown.

A CONCURRENT RESOLUTION

TO MEMORIALIZE THE UNITED STATES CONGRESS TO APPROPRIATE THE FUNDS NECESSARY TO ALLOW THE STATE OF SOUTH CAROLINA AND THE CITY OF CHARLESTON TO COMPLETE THE SPRING STREET/FISHBURNE STREET/UNITED STATES HIGHWAY 17 DRAINAGE BASIN IMPROVEMENTS PROJECT LOCATED IN THE CITY OF CHARLESTON, SOUTH CAROLINA.

WHEREAS, the Spring Street/Fishburne Street/United States Highway 17 drainage basin encompasses approximately five hundred acres, or about twenty percent of the City of Charleston, South Carolina peninsula; and

WHEREAS, the area drained by this basin is of local, state, and national concerns as it serves businesses, schools, hospitals, and neighborhoods as well as United States Highway 17, a major hurricane evacuation route; and

WHEREAS, existing drainage facilities which discharge into the Ashley River provide less than six percent of the required capacity, and as such, these facilities are not adequate to manage the collection, conveyance, and drainage of storm water runoff; and

WHEREAS, critical improvements are needed to mitigate the serious effects of frequent and disruptive flooding to the residents, businesses, schools, and services in this area; and

WHEREAS, the City of Charleston has developed a Master Drainage and Floodplain Management Plan, and has determined that the Spring Street/Fishburne Street/United States Highway 17 Drainage Basin improvements have the highest priority of any unstarted project in this plan; and

WHEREAS, the City of Charleston has determined that the cost of constructing a collection, conveyance, and discharge system that will adequately serve this area will total approximately one hundred thirty million dollars; and

WHEREAS, the City of Charleston critically needs federal and state funding to assist in matching city funds for the construction of this project.

NOW, THEREFORE,

BE IT RESOLVED by the House of Representatives, the Senate concurring:

THAT the members of the General Assembly of the State of South Carolina memorialize the United States Congress to appropriate the funds necessary to allow the State of South Carolina and the City of Charleston to complete the Spring Street/Fishburne Street/United States Highway 17 Drainage Basin Improvements Project located in the City of Charleston, South Carolina.

BE IT FURTHER RESOLVED that a copy of this resolution be forwarded to the President of the United States Senate, the Speaker of the United States House of Representatives, and each member of the South Carolina Congressional Delegation.

State of South Carolina
In the House of Representatives
Columbia, South Carolina
May 19, 2009

I hereby certify that the foregoing is a true and correct copy of a resolution passed in the House of Representatives and concurred in by the Senate.

Robert W. Harrell, Jr.
Speaker

Charles F. Reid
Clerk of the House

US 17 Septima Clark Transportation and Drainage Improvements

Application for Financial Assistance
South Carolina Transportation Infrastructure Bank

APPENDIX A-4

CURRENT AND FIVE YEAR HISTORY OF UNEMPLOYMENT DATA

Local Area Unemployment Statistics
Original Data Value

Series Id: LAUMT45167003,LAUMT45167004,LAUMT45167005,LAUMT45167006
Not Seasonally Adjusted
Area: Charleston-North Charleston-Summerville, SC Metropolitan Statistical Area
Area Type: Metropolitan areas
State/Region/Division: South Carolina
Years: 2001 to 2011

Year	Period	labor force	employment	unemployment	unemployment rate
2001	Jan	262074	252555	9519	3.6
2001	Feb	261014	251135	9879	3.8
2001	Mar	261971	252709	9262	3.5
2001	Apr	257912	248394	9518	3.7
2001	May	258114	248444	9670	3.7
2001	Jun	261796	249161	12635	4.8
2001	Jul	265882	253613	12269	4.6
2001	Aug	258487	246010	12477	4.8
2001	Sep	257278	245555	11723	4.6
2001	Oct	258558	246909	11649	4.5
2001	Nov	256411	245576	10835	4.2
2001	Dec	256980	245607	11373	4.4
2001	Annual	259707	248806	10901	4.2
2002	Jan	257561	245595	11966	4.6
2002	Feb	261873	249293	12580	4.8
2002	Mar	262712	251311	11401	4.3
2002	Apr	262806	251589	11217	4.3
2002	May	266115	254766	11349	4.3
2002	Jun	268678	255076	13602	5.1
2002	Jul	274832	261971	12861	4.7
2002	Aug	270556	258099	12457	4.6
2002	Sep	268656	257277	11379	4.2
2002	Oct	268651	256989	11662	4.3
2002	Nov	266617	254181	12436	4.7
2002	Dec	266693	254118	12575	4.7

2002	**Annual**	266313	254189	12124	4.6
2003	**Jan**	269193	255108	14085	5.2
2003	**Feb**	272076	257623	14453	5.3
2003	**Mar**	272512	259604	12908	4.7
2003	**Apr**	276018	263356	12662	4.6
2003	**May**	277980	264228	13752	4.9
2003	**Jun**	282162	264854	17308	6.1
2003	**Jul**	283890	267498	16392	5.8
2003	**Aug**	279987	264587	15400	5.5
2003	**Sep**	276517	261685	14832	5.4
2003	**Oct**	278281	263044	15237	5.5
2003	**Nov**	277819	263419	14400	5.2
2003	**Dec**	278221	264496	13725	4.9
2003	**Annual**	277055	262459	14596	5.3
2004	**Jan**	279156	263931	15225	5.5
2004	**Feb**	281801	266811	14990	5.3
2004	**Mar**	283804	268774	15030	5.3
2004	**Apr**	284652	270940	13712	4.8
2004	**May**	287803	273462	14341	5.0
2004	**Jun**	291433	274078	17355	6.0
2004	**Jul**	294052	277346	16706	5.7
2004	**Aug**	290020	273749	16271	5.6
2004	**Sep**	286586	271195	15391	5.4
2004	**Oct**	288931	273285	15646	5.4
2004	**Nov**	289166	273728	15438	5.3
2004	**Dec**	286858	271942	14916	5.2
2004	**Annual**	287021	271603	15418	5.4
2005	**Jan**	285902	269719	16183	5.7
2005	**Feb**	288131	271102	17029	5.9
2005	**Mar**	289164	273896	15268	5.3
2005	**Apr**	292568	278455	14113	4.8
2005	**May**	295233	281216	14017	4.7
2005	**Jun**	298259	281458	16801	5.6
2005	**Jul**	302280	285899	16381	5.4
2005	**Aug**	299216	282262	16954	5.7
2005	**Sep**	296335	279288	17047	5.8
2005	**Oct**	298559	281662	16897	5.7

2005	**Nov**	296949	280836	16113	5.4
2005	**Dec**	294421	279732	14689	5.0
2005	**Annual**	294752	278794	15958	5.4
2006	**Jan**	293087	278017	15070	5.1
2006	**Feb**	296158	280001	16157	5.5
2006	**Mar**	297164	282206	14958	5.0
2006	**Apr**	301181	286625	14556	4.8
2006	**May**	302470	288400	14070	4.7
2006	**Jun**	305254	288254	17000	5.6
2006	**Jul**	308671	292191	16480	5.3
2006	**Aug**	305890	288740	17150	5.6
2006	**Sep**	303468	287514	15954	5.3
2006	**Oct**	306979	291444	15535	5.1
2006	**Nov**	306402	291526	14876	4.9
2006	**Dec**	305830	292233	13597	4.4
2006	**Annual**	302713	287263	15450	5.1
2007	**Jan**	307113	292105	15008	4.9
2007	**Feb**	307368	292601	14767	4.8
2007	**Mar**	309156	296031	13125	4.2
2007	**Apr**	310268	298249	12019	3.9
2007	**May**	311865	300194	11671	3.7
2007	**Jun**	317035	302532	14503	4.6
2007	**Jul**	320289	305388	14901	4.7
2007	**Aug**	313689	299003	14686	4.7
2007	**Sep**	311742	297407	14335	4.6
2007	**Oct**	313448	299363	14085	4.5
2007	**Nov**	311347	297999	13348	4.3
2007	**Dec**	310140	296232	13908	4.5
2007	**Annual**	311955	298092	13863	4.4
2008	**Jan**	310762	296495	14267	4.6
2008	**Feb**	309616	295481	14135	4.6
2008	**Mar**	312026	298186	13840	4.4
2008	**Apr**	316121	303089	13032	4.1
2008	**May**	318833	303725	15108	4.7
2008	**Jun**	323912	305872	18040	5.6
2008	**Jul**	327616	307974	19642	6.0
2008	**Aug**	321607	300819	20788	6.5

2008	**Sep**	317553	297807	19746	6.2
2008	**Oct**	319553	298539	21014	6.6
2008	**Nov**	318260	296732	21528	6.8
2008	**Dec**	317981	294187	23794	7.5
2008	**Annual**	317820	299909	17911	5.6
2009	**Jan**	317803	290278	27525	8.7
2009	**Feb**	317959	288896	29063	9.1
2009	**Mar**	319274	290465	28809	9.0
2009	**Apr**	322424	294399	28025	8.7
2009	**May**	325370	294834	30536	9.4
2009	**Jun**	329380	295602	33778	10.3
2009	**Jul**	332740	298996	33744	10.1
2009	**Aug**	324910	291458	33452	10.3
2009	**Sep**	319139	286613	32526	10.2
2009	**Oct**	319845	286498	33347	10.4
2009	**Nov**	320953	288246	32707	10.2
2009	**Dec**	317898	285284	32614	10.3
2009	**Annual**	322308	290964	31344	9.7
2010	**Jan**	319513	285247	34266	10.7
2010	**Feb**	319506	286164	33342	10.4
2010	**Mar**	319653	288862	30791	9.6
2010	**Apr**	321206	294304	26902	8.4
2010	**May**	323988	295686	28302	8.7
2010	**Jun**	329006	298309	30697	9.3
2010	**Jul**	329103	298272	30831	9.4
2010	**Aug**	327237	294478	32759	10.0
2010	**Sep**	322145	293428	28717	8.9
2010	**Oct**	322167	294114	28053	8.7
2010	**Nov**	321642	292561	29081	9.0
2010	**Dec**	322206	293164	29042	9.0
2011	**Jan**	317862	291601	26261	8.3
2011	**Feb**	318230	291157	27073	8.5

US 17 Septima Clark Transportation and Drainage Improvements

Application for Financial Assistance
South Carolina Transportation Infrastructure Bank

APPENDIX A-5

LETTERS AND RESOLUTIONS OF SUPPORT

South Carolina State **PORTS AUTHORITY**

JAMES I. NEWSOME, III
President and Chief Executive Officer

P.O. BOX 22287
CHARLESTON, S.C. 29413-2287 USA
(843) 577-8600
FAX: (843) 577-8626

May 20, 2011

The Honorable Joseph P. Riley, Jr.
Mayor, City of Charleston
P. O. Box 652
Charleston, SC 29402-0652

Dear Mayor Riley:

I write to you today on behalf of the South Carolina Ports Authority to express our support for the City of Charleston's application to the State Infrastructure Bank for the U.S. 17 Septima Clark Transportation and Drainage Improvement Project. The U.S. 17 Septima Clark Parkway is a vital transportation facility that provides access to Charleston's main interstate, I-26, which is the primary access highway to the Port of Charleston. During times of heavy rainfall, the U.S. 17 Highway is rendered impassable creating access issues to and from downtown port terminals. Additionally, U.S. 17 is an important thoroughfare for cargo travelling south. Any interruption in this traffic is detrimental to port operations and freight mobility.

The Port of Charleston represents the main economic engine for the State of South Carolina and the continued and unimpeded access to the Port by way of highways in the Charleston area is paramount to the continued success of our operations. Repairing the drainage deficiencies on U.S. 17 Septima Clark Parkway is critical for the continued movement of people and goods in our area.

We support the City of Charleston in their application to the State Infrastructure Bank for funding to invest in infrastructure that will find the ultimate solution to the drainage problems on Highway 17. Having unfettered access to Highway 17 in our region will enhance mobility and transportation contributing to better access to the Port of Charleston which in turn strengthens economic development for our State, region and nation.

Sincerely,

James I. Newsome, III

Secretary of Transportation
South Carolina Department of Transportation

August 1, 2009

The Honorable Ray LaHood, Secretary
United States Department of Transportation
1200 New Jersey Ave, SE
Washington, DC 20590

Dear Secretary LaHood:

I write to you today on behalf of the South Carolina Department of Transportation (SCDOT) to express our full support for the TIGER Grant application being submitted by the City of Charleston for the "U.S. 17 - Septima Clark Transportation Infrastructure Reinvestment Project for Advancement of Mobility, Efficiency, Emergency Preparedness and Community Livability". We believe that this project meets all of the requirements as set by the TIGER Grant Program criteria and most importantly, the funding of this grant application will immediately and successfully create jobs within an economically disadvantaged area, further stimulating the local, regional, and national economy.

The U.S. 17 - Septima Clark Parkway is a vital transportation facility that provides access to Charleston's main interstate highway (I-26), access to the Port of Charleston, and hospitals such as the Veterans Administration Hospital, the Medical University of South Carolina Hospital and its Level I regional trauma center. During times of rainfall and high tide, the U.S. 17 Highway is rendered impassable, thus preventing access to Interstate 26, area hospitals, to five schools, the Port of Charleston, and other businesses and homes within the Charleston Community. In order to address the shortcomings of this major federal highway (U.S. 17), the City of Charleston, in partnership with SCDOT, is proposing an innovative infrastructure reinvestment project that will improve transportation efficiency and safety for the region and facilitate critical disaster response. The U.S. 17 Highway is today a dangerously and dysfunctional primary transportation route in need of reconstruction to address a series of negative impacts on the surrounding a community. The project is expected to create growth in employment, production, and high-value economic activity, improve community livability and energy efficiency.

955 Park St (29201), PO Box 191, Columbia, SC 29202-0191
Phone: (803) 737-1302, Fax: (803) 737-2038

Any funds awarded for this project will be used in a manner consistent with state and federal law, and any request or commitment for supplemental funding is subject to approval by the SCDOT Commission.

We thank you and the U.S. Department of Transportation Tiger Grant Program evaluation team for the opportunity to consider the U.S. 17 - Septima Clark project for a TIGER discretionary grant.

Sincerely,

H. B. Limehouse Jr.
Secretary of Transportation

BCDC G

Berkeley-Charleston-Dorchester Council of Governments

Charleston Area Transportation Study
Policy Committee

CHAIRMAN: Larry Hargett
VICE CHAIRMAN: Michael J. Heitzler
EXECUTIVE DIRECTOR: Ronald E. Mitchum

July 14, 2009

Secretary LaHood
U.S. Department of Transportation
1200 New Jersey Ave, SE
Washington, DC 20590

Re: US 17 (Crosstown) Improvements in Charleston, SC

Dear Secretary LaHood:

As Executive Director of BCDCOG and the CHATS MPO, I hereby support the improvements to US 17, the 'Crosstown,' as proposed by the City of Charleston, South Carolina. The Crosstown serves as a vital transportation facility in the Charleston area, as well the major north-south corridor along the South Carolina coast. This section of US 17, from the end of I-26 to the Ashley River Bridges, experiences operational deficiencies in most weather events.

This corridor has been designated as a portion of the National Highway System (NHS) for national security connectivity, as a Strategic Highway Network (STRAHNET) route, and as a federally designated Surface Transportation Assistance Act (STAA) route for freight connectivity. The South Carolina Department of Transportation identified the corridor in its Strategic Corridors Plan, as it serves as a designated state evacuation route for the coastal region.

The CHATS Policy Committee has included this project in the Long Range Transportation Plan (LRTP) and the Transportation Improvement Program (MTIP), as a project of regional significance. The project has been included in the Statewide Transportation Improvement Program (STIP) and public review and comment periods have been provided with each action.

US 17 is a component of the strategic highway system in South Carolina providing the needed connectivity that will allow South Carolina to maintain and enhance its economic vitality. Thank you for your time and support of this important project. If you have any questions or need any additional information, please don't hesitate to call me at (843) 529-0400.

Sincerely,

Ronald E. Mitchum

Ronald E. Mitchum
Executive Director

1362 McMillan Avenue, Suite 100 • North Charleston, SC 29405
Tel: (843) 529-0400 • Fax: (843) 529-0305
www.bcdcog.com

BCDC G

Berkeley-Charleston-Dorchester
Council of Governments

Charleston Area Transportation Study
Policy Committee

CHAIRMAN: Larry Hargett
VICE CHAIRMAN: Michael J. Heitzler
EXECUTIVE DIRECTOR: Ronald E. Mitchum

July 14, 2009

Secretary LaHood
U.S. Department of Transportation
1200 New Jersey Ave, SE
Washington, DC 20590

Re: US 17 (Crosstown) Improvements in Charleston, SC

Dear Secretary LaHood:

As Executive Director of BCDCOG and the CHATS MPO, I hereby support the improvements to US 17, the 'Crosstown,' as proposed by the City of Charleston, South Carolina. The Crosstown serves as a vital transportation facility in the Charleston area, as well the major north-south corridor along the South Carolina coast. This section of US 17, from the end of I-26 to the Ashley River Bridges, experiences operational deficiencies in most weather events.

This corridor has been designated as a portion of the National Highway System (NHS) for national security connectivity, as a Strategic Highway Network (STRAHNET) route, and as a federally designated Surface Transportation Assistance Act (STAA) route for freight connectivity. The South Carolina Department of Transportation identified the corridor in its Strategic Corridors Plan, as it serves as a designated state evacuation route for the coastal region.

The CHATS Policy Committee has included this project in the Long Range Transportation Plan (LRTP) and the Transportation Improvement Program (MTIP), as a project of regional significance. The project has been included in the Statewide Transportation Improvement Program (STIP) and public review and comment periods have been provided with each action.

US 17 is a component of the strategic highway system in South Carolina providing the needed connectivity that will allow South Carolina to maintain and enhance its economic vitality. Thank you for your time and support of this important project. If you have any questions or need any additional information, please don't hesitate to call me at (843) 529-0400.

Sincerely,

Ronald E. Mitchum

Ronald E. Mitchum
Executive Director

1362 McMillan Avenue, Suite 100 • North Charleston, SC 29405
Tel: (843) 529-0400 • Fax: (843) 529-0305
www.bcdcog.com

BCDCOG Berkeley-Charleston-Dorchester Council of Governments

CHAIRMAN: R. Keith Summey • VICE CHAIRMAN: Larry Hargett • SECRETARY: Michael J. Heltzler • TREASURER: Mary R. Miller • EXECUTIVE DIRECTOR: Ronald E. Mitchum

May 4, 2009

The Honorable Henry E. Brown, Jr.
U.S. House of Representatives
103 Cannon House Office Building
Washington, DC 20515

Re: US 17 (Crosstown) Improvements in Charleston, SC

Dear Congressman Brown:

As Executive Director of BCDCOG and the CHATS MPO, I hereby support the improvements to US 17, the 'Crosstown,' as proposed by the City of Charleston, South Carolina. The Crosstown serves as a vital transportation facility in the Charleston area, as well the major north-south corridor along the South Carolina coast. This section of US 17, from the end of I-26 to the Ashley River Bridges, experiences operational deficiencies in most weather events. Moreover, this corridor has been identified in the South Carolina Department of Transportation's Strategic Corridors Plan. The CHATS Policy Committee has included this project in the Long Range Transportation Plan (LRTP) and the Transportation Improvement Program (TIP), as project of regional significance.

US 17 is a component of the strategic highway system in South Carolina providing the needed connectivity that will allow South Carolina to maintain and enhance its economic vitality. Thank you for your time and support of this important project. If you have any questions or need any additional information, please don't hesitate to call me at (843) 529-0400.

Sincerely,

Ronald E. Mitchum

Ronald Mitchum
Executive Director

1362 McMillan Avenue, Suite 100 • North Charleston, SC 29405
Tel: (843) 529-0400 • Fax: (843) 529-0305
www.bcdcog.com

CHARLESTON METRO
CHAMBER OF COMMERCE

P.O. Box 975
Charleston, SC 29402-0975
843.577.2510
843.723.4853
www.charlestonchamber.net

September 9, 2011

The Honorable Joseph Riley, Jr.
Mayor, City of Charleston
PO Box 652
Charleston SC 29402

Dear Mayor Riley:

The Charleston Metro Chamber of Commerce supports the City of Charleston's application to the State Infrastructure Bank for the US 17 Septima Clark Transportation and Drainage Improvement project.

The US 17 Septima Clark Parkway is a transportation artery that provides access to downtown Charleston and many of the employment centers and economic engines of our region. It is through this route that both healthcare workers and patients access the medical center complex downtown, workers and customers access the Port terminals and the millions of visitors that come to our community each year access the cultural attractions, hotels, restaurants and shops on the Peninsula.

During periods of heavy rainfall and high tides, this artery is flooded and impassable by all those who need it. Just two weeks ago, heavy flooding and high tides from Irene resulted in lost business on the Peninsula as businesses were forced to close early in order to get their workforce safely off the Peninsula. We desperately need to solve the draining problems on US 17.

We support the City in their application to the State Infrastructure Bank for funding to invest in solving the drainage problems on US 17 Septima Clark.

Sincerely,

Mary Graham

Mary Graham, CCR, IOM, CCE
Senior Vice President
Business Advocacy

JOSEPH P. RILEY, JR.
MAYOR

THOMAS CARR, JR.
CHIEF

City of Charleston

South Carolina

Fire Department

August 27, 2009

Dear Mayor Riley:

I would like to provide my support for the City of Charleston's plans to seek direct federal assistance for the US17 Septima Clark Transportation Infrastructure Reinvestment Project for Advancement of Mobility, Efficiency, and Emergency Preparedness. I understand that the City is actively pursuing TIGER grant money through the American Recovery and Reinvestment Act (ARRA) to fund this project. I would like to be on record as being in full support of your request and to give you some of the reasons this project is most worthy of receipt of federal funds.

When the federal government and the SC Department of Transportation built US Hwy 17 (known as the Septima Clark Expressway, or simply the Crosstown) across the peninsula, it created an indelible scar that divided neighborhoods, separated friends and families, and created a tear in the fabric of the City of Charleston. The six-lane highway, while designed to quickly move vehicles from one side of the peninsula to the other, is daunting and dangerous to pedestrians as the crossings are outdated, outmoded, and inadequate in number. Additionally, little if any consideration was given to the effect of the project on an area rife with drainage challenges. The impervious area that was added with an extra six lanes of asphalt contributes voluminous amounts of stormwater runoff to an already overburdened, undersized stormwater collection and conveyance system. As such, with each heavy rain, or even a moderate rain at high tide, the Crosstown becomes impassable to vehicles, oftentimes for many hours, until the water can drain away and traffic can again safely pass.

The project has been in development since the early 1980s and the time for action is now. With each pedestrian who crosses the expressway life and limb are risked, sometimes with deadly results. With each flooding event additional private, city, state and federal infrastructure is subject to water damage and potential washout of supporting soils. The region's largest and most significant health care facilities become inaccessible to citizens and emergency response vehicles during these flooding events. While the flooding has occurred for years, its cumulative effects are taking its toll on neighborhoods and the area's regional and national infrastructure. Because of ongoing changes to Charleston's coastal environment, the flooding and its impacts have worsened. In the end, the loss of one of the City's most important evacuation routes (US 17) cannot be allowed to continue.

I understand that the city has invested millions of local dollars in the planning and design of the ultimate solution. That solution includes numerous improvements to traffic such as safer lanes for vehicular traffic, improved intersections for safe pedestrian crossings and efficient traffic

46 ½ WENTWORTH STREET, CHARLESTON, SOUTH CAROLINA 29401 • PHONE (843) 720-1981• FAX (843) 720-3991

flow, intelligent traffic systems (ITS), and energy-efficient traffic lights. To alleviate the significant flooding problem, the solution includes the construction of a series of deep stormwater collection tunnels, a large stormwater pumping station at the edge of the Ashley River with a specially designed outfall, and a number of local neighborhood drainage improvements.

We are all struggling during these changing economic times to manage our resources responsibly while maintaining our communities. We concur with the City that because of this project's benefit to regional and national interests and because of the overall public safety issues involved, this project only becomes affordable with the combination of local, state, and federal resources.

On behalf of all the citizens in our area, we thank you for your past support and consideration for this request.

Sincerely,

Tom Carr
Fire Chief

JOSEPH P. RILEY, JR.
Mayor

City of Charleston
SOUTH CAROLINA

GREGORY G. MULLEN
Chief of Police

POLICE DEPARTMENT

TO: Major Joseph P. Riley, Jr

FROM: Chief Gregory G. Mullen

DATE: 31 August 2009

REF: Crosstown Flooding Issues

As the City of Charleston continues its efforts to obtain funding to improve the US Highway 17 corridor that transverses the city between Interstate 26 and the Ashley River Bridges, I would like to take this opportunity to furnish you with information that may assist.

Historically, the "Cross-town Corridor" has been one susceptible to flooding when inclement weather occurs. When we experience a weather event consisting of even moderate rainfall, it makes US Highway 17 and nearby streets impossible to travel. Whenever the Charleston area experiences flooding, it requires a significant amount of law enforcement resources to address the situation. We are not only required to deploy high profile vehicles so that officers can respond to routine calls for service, but also provide staffing and manpower to block intersections, divert traffic, clear roadways, and conduct rescues of stranded motorists. When even moderate rainfall occurs, it is not uncommon for roadways and neighborhoods to become impassible to vehicle traffic in the area, which includes those routes to many of the downtown hospitals.

As you know, this is not an infrequent event, but one that occurs on a regular basis. The situation is compounded when the elements of wind, water and tidal conditions combine to create a scenario where it is difficult for the water to recede. While the police department is ready and poised to respond to these situations, it becomes very disruptive when officers are pulled from their normal duties for extended periods of time simply because of this drainage issue. As a result of this constant scenario which plays out regularly in Charleston, officers are pulled away from their primary patrol zones and duties and prevented from executing their normal law enforcement activities.

The present situation places a tremendous burden on our resources and creates a dangerous driving condition for passing motorists who often become stranded in the rising waters. In addition, this constant flooding places an unnecessary hardship on the businesses and residents that are located within this area. Furthermore, without correction, this situation will impact our response during natural emergencies. Highway 17 and the Cross-town Corridor are major roadway systems that are depended upon during evacuations and other major events which impact the City. Currently, once the roadway is flooded, it is effectively crossed and, therefore, adds another impediment to the orderly management of residents and traffic flow.

As you know, I fully support the effort to obtain funding to upgrade and improve the drainage situation found near the "Cross-town Corridor." Not only will this be a welcome relief to the residents, visitors, and businesses that live or operate in this area, but it will have a significant impact on public safety in general. Primarily, it will enhance roadway safety and protect those who find themselves trapped in the flood waters so often. Additionally, yet just as important, it will allow law enforcement resources to focus on their community crime intervention and prevention strategies and not spend valuable time and effort addressing flooding that can be solved through engineering and road improvements. Finally, this improvement will assist us in our response to emergencies which require large volumes of people and vehicles to move through the area.

If I can be of further assistance or provide additional information to assist with this effort, please do not hesitate to contact me.

Warm regards,

G. Mullen

Gregory G. Mullen
Chief of Police

HOUSING AUTHORITY OF THE CITY OF CHARLESTON

550 MEETING STREET, CHARLESTON, SOUTH CAROLINA 29403

TELEPHONE (843) 720-3970 FAX # (843) 720-3977 TDD (843) 720-3685

Donald J. Cameron, SPHM - Chief Executive Officer

August 27, 2009

2000
HOUSING ACHIEVEMENT AWARD
S.C. STATE HOUSING FINANCE
AND DEVELOPMENT AUTHORITY

1999
SECRETARY'S COMMENDATION
U.S. DEPARTMENT OF HOUSING AND
URBAN DEVELOPMENT

1991-98
CERTIFICATE OF EXCELLENCE
IN MANAGEMENT OPERATIONS
U.S. DEPARTMENT OF HOUSING AND
URBAN DEVELOPMENT

1997
FOUNDERS AWARD
HISTORIC CHARLESTON FOUNDATION

1994
SUSTAINED PERFORMANCE AWARD
U.S. DEPARTMENT OF HOUSING AND
URBAN DEVELOPMENT

1989, 1990, 1997
CAROLOPOLIS AWARD
PRESERVATION SOCIETY
OF CHARLESTON

1991
SPECIFIC ACTIVITY AWARD
U.S. DEPARTMENT OF HOUSING AND
URBAN DEVELOPMENT

1991
HONOR AWARD
AMERICAN INSTITUTE OF ARCHITECTS

1988
AWARD FOR
NATIONAL EXCELLENCE
U.S. DEPARTMENT OF HOUSING AND
URBAN DEVELOPMENT

1986
HONOR AWARD
AMERICAN INSTITUTE OF ARCHITECTS

1985
AWARD FOR
DESIGN EXCELLENCE
PRESIDENT RONALD REAGAN

1985
HONOR AWARD
NATIONAL ASSOCIATION OF HOUSING
AND REDEVELOPMENT OFFICIALS

1981
FEDERAL DESIGN
ACHIEVEMENT AWARD
NATIONAL ENDOWMENT
FOR THE ARTS

The Honorable Joseph P. Riley, Jr.
Mayor, City of Charleston
P. O. Box 652
Charleston, SC 29402

Re: Septima Clark Transportation Infrastructure

Dear Mayor Riley:

I would like to provide my support for the City of Charleston's plans to seek direct federal assistance for the US17 Septima Clark Transportation Infrastructure Reinvestment Project for Advancement of Mobility, Efficiency, and Emergency Preparedness. I understand that the City is actively pursuing TIGER grant money through the American Recovery and Reinvestment Act (ARRA) to fund this project. I would like to be on record as being in full support of your request and to give you some of the reasons this project is most worthy of receipt of federal funds.

When the federal government and the SC Department of Transportation built US Hwy 17 (known as the Septima Clark Expressway, or simply the Crosstown) across the peninsula, it created an indelible scar that divided neighborhoods, separated friends and families, and created a tear in the fabric of the City of Charleston. The six-lane highway, while designed to quickly move vehicles from one side of the peninsula to the other, is daunting and dangerous to pedestrians as the crossings are outdated, outmoded, and inadequate in number. Additionally, little if any consideration was given to the effect of the project on an area rife with drainage challenges. The impervious area that was added with an extra six lanes of asphalt contributes voluminous amounts of storm water runoff to an already overburdened, undersized storm water collection and conveyance system. As such, with each heavy rain, or even a moderate rain at high tide, the Crosstown becomes impassable to vehicles, oftentimes for many hours, until the water can drain away and traffic can again safely pass.

EQUAL HOUSING OPPORTUNITY

The project has been in development since the early 1980s and the time for action is now. With each pedestrian who crosses the expressway life and limb are risked, sometimes with deadly results. With each flooding event additional private, city, state and federal infrastructure is subject to water damage and potential washout of supporting soils. The region's largest and most significant health care facilities become inaccessible to citizens and emergency response vehicles during these flooding events. While the flooding has occurred for years, its cumulative effects are taking its toll on neighborhoods and the area's regional and national infrastructure. Because of ongoing changes to Charleston's coastal environment, the flooding and its impacts have worsened. In the end, the loss of one of the City's most important evacuation routes (US 17) cannot be allowed to continue.

I understand that the city has invested millions of local dollars in the planning and design of the ultimate solution. That solution includes numerous improvements to traffic such as safer lanes for vehicular traffic, improved intersections for safe pedestrian crossings and efficient traffic flow, intelligent traffic systems (ITS), and energy-efficient traffic lights. To alleviate the significant flooding problem, the solution includes the construction of a series of deep storm water collection tunnels, a large storm water pumping station at the edge of the Ashley River with a specially designed outfall, and a number of local neighborhood drainage improvements.

We are all struggling during these changing economic times to manage our resources responsibly while maintaining our communities. We concur with the City that because of this project's benefit to regional and national interests and because of the overall public safety issues involved, this project only becomes affordable with the combination of local, state, and federal resources.

On behalf of all the citizens in our area, we thank you for your past support and consideration for this request.

Sincerely,

Donald J. Cameron
President & CEO

DJC:ss

Charleston Water System

P.O. Box B
Charleston, SC 29402
103 St. Philip Street (29403)
(843) 727-6800
www.charlestonwater.com

August 21, 2009

Mayor Joseph P. Riley, Jr.
P.O. Box 652
Charleston, SC 29402

Dear Mayor Riley:

The Charleston Water System would like to provide support for the City of Charleston's plans to seek direct federal assistance for the US 17 Septima Clark Transportation Infrastructure Reinvestment Project for Advancement of Mobility, Efficiency and Emergency Preparedness. The City is actively pursuing TIGER grant money through the American Recovery and Reinvestment Act (ARRA) to fund this project. Charleston Water System would like to be on the record as being in full support of the City's request and to give you some of the reasons this project is most worthy of receipt of federal funds.

When the federal government and the SC Department of Transportation built US Hwy 17 (known as the Septima Clark Expressway, or simply the Crosstown) across the peninsula, it created an indelible scar that divided neighborhoods, separated friends and families, and produced a tear in the fabric of the City of Charleston. The six-lane highway, while designed to quickly move vehicles from one side of the peninsula to the other, is daunting and dangerous to pedestrians as the crossing are outdated, outmoded, and inadequate in number. Additionally, little if any consideration was given to the effect of the project on an area rife with drainage challenges. The impervious area that was added with an extra six lanes of asphalt contributes voluminous amounts of stormwater runoff to an already overburdened, undersized stormwater collection and conveyance system. As such, with each heavy rain, or even a moderate rain at high tide, the Crosstown becomes impassable to vehicles, oftentimes for many hours, until the water can drain away and traffic can again safely pass. Accidents often occur with vehicles damaged and occupants injured when drivers unaware of the situation drive into the high flood waters.

These occurrences also cause impact to Crosstown businesses. Local customers are flooded in or flooded out and decide to avoid the area in the future taking their business elsewhere. Employees of area businesses have difficulty accessing their workplaces by foot, bike or vehicle and miss work with a resulting lost of productivity and profit to the business. Travelers traumatized by these flooding events decide to push on to find food, gas or lodging. Businesses often sustain physical damage to their properties forcing temporary closure until cleanup occurs and repairs are made. These additional risks and costs discourage retail/commercial growth.

The project to update the drainage system and make much needed renovations to the Crosstown has been in development since the early 1980s. And, the time for action is now. With each pedestrian who crosses the expressway life and limb are risked, sometimes with deadly results. With each flooding event additional private, city, state and federal infrastructure is subject to water damage and potential washout of supporting soils. The region's largest and most significant health care facilities become inaccessible to

citizens and emergency response vehicles during these flooding events. While the flooding has occurred for years, its cumulative effects are taking its toll on neighborhoods and the area's regional and national infrastructure. Because of ongoing changes to Charleston's coastal environment, the flooding and its impacts have worsened. In the end, the loss of one of the City's most important evacuation routes (US 17) cannot be allowed to continue.

The city has invested millions of local dollars in the planning and design of the ultimate solution. That solution includes numerous improvements to traffic such as safer lanes for vehicular traffic, improved intersection for safe pedestrian crossing and efficient traffic flow, intelligent traffic systems (ITS), and energy-efficient traffic lights. To alleviate the significant flooding problem, the solution includes the construction of a series of deep stormwater collection tunnels, a large stormwater pumping station at the edge of the Ashley River with a specially designed outfall, and a number of local neighborhood drainage improvements.

All municipalities and utilities are struggling during these changing economic times to manage our resources responsibly while maintaining our communities. We concur with the City that because of this project's benefit to regional and national interests and because of the overall public safety issues involved, this project only becomes affordable with the combination of local, state, and federal resources.

On behalf of the Charleston Water System, located at 103 St. Philip Street, in downtown Charleston, thank you very much for your support and hard work in making this critical and urgent project a reality.

Sincerely,

Kin Hill, PE
Chief Executive Officer

msp

xc: Thomas Pritchard, Chair, CWS, Mark Cline, PE, CPO, CWS, Lucas Padgett, Esq.

ROPER
ST FRANCIS
HEALTHCARE

125 Doughty Street
Suite 760
Charleston, SC 29403
(843) 724-2910
(843) 720-8355

July 15, 2009

The Honorable Joseph P. Riley, Jr.
Mayor, The City of Charleston
80 Broad Street
Charleston, SC 29401

Dear Mayor Riley:

We would like to provide our support for the City of Charleston's plans to seek direct federal assistance for the US17 Septima Clark Transportation Infrastructure Reinvestment Project for Advancement of Mobility, Efficiency, and Emergency Preparedness. We are encouraged that the City is actively pursuing TIGER grant money through the American Recovery and Reinvestment Act (ARRA) to fund this project. In the meantime, we would like to be on record as being in full support of the request and to give you some of the reasons this project is most worthy of receipt of federal funds.

When the federal government and the SC Department of Transportation built US Hwy 17 (known as the Septima Clark Expressway, or simply the Crosstown) across the peninsula, it created an indelible scar that divided neighborhoods, separated friends and families, and created a tear in the fabric of the City of Charleston. The six-lane highway, while designed to quickly move vehicles from one side of the peninsula to the other, is daunting and dangerous to pedestrians as the crossings are outdated, outmoded, and inadequate in number. Additionally, little, if any, consideration was given to the effect of the project on an area rife with drainage challenges. The impervious area that was added with an extra six lanes of asphalt contributes voluminous amounts of storm water runoff to an already overburdened, undersized storm water collection and conveyance system. As such, with each heavy rain, or even a moderate rain at high tide, the Crosstown becomes impassable to vehicles, oftentimes for many hours, until the water can drain away and traffic can again safely pass. This greatly affects our patients and employees.

The project has been in development since the early 1980's, and the time for action is now. With each pedestrian who crosses the expressway, life and limb are risked, sometimes with deadly results. With each flooding event additional private, city, state and federal infrastructure is subject to water damage and potential washout of supporting soils. The region's largest and most significant health care facilities become inaccessible to citizens and emergency response vehicles during these flooding events. While the flooding has occurred for years, its cumulative effects are taking its toll on neighborhoods and the area's regional and national infrastructure. Because of ongoing changes to Charleston's coastal environment, the flooding and its impacts have worsened. In the end, the loss of one of the City's most important evacuation routes (US 17) cannot be allowed to continue.

We understand that the city has invested millions of local dollars in the planning and design of the ultimate solution. That solution includes numerous improvements to traffic such as safer lanes for vehicular traffic, improved intersections for safe pedestrian crossings and efficient traffic flow, intelligent traffic systems (ITS), and energy-efficient traffic lights. To alleviate the significant flooding problem, the solution includes the construction of a series of deep storm water collection tunnels, a large storm water pumping station at the edge of the Ashley River with a specially designed outfall, and a number of local neighborhood drainage improvements.

We are all struggling during these changing economic times to manage our resources responsibly while maintaining our communities. We concur with the City that because of this project's benefit to regional and national interests and because of the overall public safety issues involved, this project only becomes affordable with the combination of local, state, and federal resources.

Thank you for your consideration.

Sincerely,

David L. Dunlap, FACHE
President and Chief Executive Officer

Bcc: Jane Baker

MUSC
MEDICAL UNIVERSITY
of SOUTH CAROLINA

Office of the President
Colcock Hall
179 Ashley Avenue
MSC 001
Charleston SC 29425-0010
Tel 843 792 2211
Fax 843 792 1097
www.musc.edu

July 14, 2009

The Honorable Joseph P. Riley, Jr.
The City of Charleston
80 Broad Street
Charleston, SC 29401

Dear Mayor Riley:

We would like to provide our support for the City of Charleston's plans to seek direct federal assistance for the US17 Septima Clark Transportation Infrastructure Reinvestment Project for Advancement of Mobility, Efficiency, and Emergency Preparedness. We are encouraged that the City is actively pursuing TIGER grant money through the American Recovery and Reinvestment Act (ARRA) to fund this project. In the meantime, we would like to be on record as being in full support of the request and to give you some of the reasons this project is most worthy of receipt of federal funds.

When the federal government and the SC Department of Transportation built US Hwy 17 (known as the Septima Clark Expressway, or simply the Crosstown) across the peninsula, it divided neighborhoods, separated friends and families, and created a tear in the fabric of the City of Charleston. The six-lane highway is daunting and dangerous to pedestrians as the crossings are outdated, outmoded, and inadequate in number. Additionally, little if any consideration was given to the effect of the project on an area with considerable drainage challenges. The impervious area that was added with an extra six lanes of asphalt contributes large amounts of stormwater runoff to an already overburdened, undersized stormwater collection and conveyance system. With even a moderate rain at high tide, the Crosstown becomes impassable to vehicles, oftentimes for many hours, until the water can drain away and traffic can again safely pass. This adversely affects our patients and employees, and can deter access to essential medical care.

The project has been in development since the early 1980s and the time for action is now. With each pedestrian who crosses the expressway life and limb are risked, sometimes with deadly results. With each flooding event additional private, city, state and federal infrastructure is subject to water damage and potential washout of supporting soils. The region's largest and most significant health care facilities become inaccessible to citizens and emergency response vehicles during these flooding events. While the flooding has occurred for years, its cumulative effects are taking its toll on neighborhoods and the area's regional and national infrastructure. Because of ongoing changes to Charleston's coastal environment, the flooding and its impacts have worsened. In the end, the loss of one of the City's most important evacuation routes (US 17) cannot be allowed to continue.

We understand that the city has invested millions of local dollars in the planning and design of the ultimate solution. That solution includes numerous improvements to traffic such as safer lanes for vehicular traffic, improved intersections for safe pedestrian crossings and efficient traffic flow, intelligent traffic systems (ITS), and energy-efficient traffic lights. To alleviate the significant flooding problem, the solution includes the construction of a series of deep stormwater collection tunnels, a large stormwater pumping station at the edge of the Ashley River with a specially designed outfall, and a number of local neighborhood drainage improvements.

We strongly endorse the City's project's benefit to regional and national interests and because of the overall public safety issues involved, this project only becomes affordable with the combination of local, state, and federal resources.

Thank you for your consideration.

Sincerely,

Raymond S. Greenberg, MD, PhD
President

Charleston County SCHOOL DISTRICT
excellence is our standard

August 27, 2009

Mayor Joseph P. Riley, Jr.
P.O. Box 652
Charleston, SC 29402

Dr. Nancy J. McGinley
Superintendent of Schools

Dear Mayor Riley:

I hope this finds you well. As Superintendent of the Charleston County Public Schools, I am writing in support of the City of Charleston's plans to seek direct federal assistance for the US-17 Septima Clark Transportation Infrastructure Reinvestment Project for Advancement of Mobility, Efficiency and Emergency Preparedness. The City is actively pursuing TIGER grant money through the American Recovery and Reinvestment Act (ARRA) to fund this project. The Charleston County School District would like to be on the record as being in full support of the City's request, and to give you some of the reasons this project is worthy of receipt of federal funds.

When the federal government and the SC Department of Transportation built US Hwy 17 (known as the Septima Clark Expressway, or simply the Crosstown) across the peninsula, it divided neighborhoods and separated friends and families in the City of Charleston. Little if any consideration was given to the effect of the project on an area rife with drainage challenges. The impervious area that was added with an extra six lanes of asphalt contributes voluminous amounts of storm water runoff to an already overburdened, undersized storm water collection and conveyance system. As such, with each heavy rain—or even a moderate rain at high tide—the Crosstown area and connecting streets in downtown Charleston become impassable to vehicles, often for many hours, until the water can drain away and traffic can again safely pass.

This flooding has a direct, negative and significant impact on our downtown schools. It prohibits busses from transporting students, resulting in delays and lost instructional time. It prevents parents and students from walking to and from school—robbing them of safe passage and rare opportunities for exercise and family time. It renders pedestrian, bike and car routes to school unsafe or impassable for staff and students. And it impacts the infrastructure of schools and school grounds, making them more subject to water damage.

The city has invested millions of local dollars in the planning and design of the ultimate solution. That solution addresses traffic, safety and flooding issues. In order to alleviate the significant flooding problem, the solution includes the construction of a series of deep storm water collection tunnels, a large storm water pumping station at the edge of the Ashley River with a specially designed outfall, and a number of local neighborhood drainage improvements.

We are all struggling during these changing economic times to manage our resources responsibly while maintaining our communities. We concur with the City that because of this project's benefit to regional and national interests—in particular, our public schools—and because of the overall public safety issues involved, this project only becomes affordable with the combination of local, state, and federal resources.

On behalf of the Charleston County School District, I thank you very much for your support and hard work in making this critical and urgent project a reality.

Sincerely,

Nancy J. McGinley, Ed.D.

NJM:rsk

THE CITADEL
THE MILITARY COLLEGE OF SOUTH CAROLINA
Office of the President

10 August 2009

The Honorable Joseph P. Riley, Jr.
The Mayor of the City of Charleston
80 Broad Street
Charleston, SC 29401

Dear Mayor Riley:

The Citadel supports the City of Charleston's plans to seek direct federal assistance for the US 17 Septima Clark Transportation Infrastructure Reinvestment Project for Advancement of Mobility, Efficiency, and Emergency Preparedness. We are encouraged that the City is actively pursuing TIGER grant money through the American Recovery and Reinvestment Act (ARRA) to fund this project. In the meantime, we would like to be on record as being in full support of the request.

US Hwy 17 (known as the Septima Clark Expressway, or simply the Crosstown) quickly moves vehicles from one side of the peninsula to the other, but presents limited crossings for pedestrians. Additionally, the current stormwater collection and conveyance system is insufficient for the runoff from the highway. A heavy rain, or even a moderate rain at high tide, can render the Crosstown impassable for many hours until the water can drain away.

The region's largest and most significant health care facilities can become inaccessible to citizens and emergency response vehicles are seriously hampered during flooding events. Because of ongoing changes to Charleston's coastal environment, the flooding and its impacts have worsened. The loss of one of the City's most important evacuation routes (US 17) cannot be allowed to continue.

We commend the City of Charleston for investing millions of local dollars in the planning and design of a sustainable solution. The planned projects will significantly enhance the quality of life at The Citadel and the neighborhoods surrounding it by improving the region's capacity to operate safely during weather emergencies.

We concur with the City that because of this project's benefit to regional and national interests and because of the overall public safety issues involved, this project warrants a combination of local, state, and federal resources.

With gratitude for your service to the citizens of the Lowcountry,

Sincerely,

John W. Rosa
Lieutenant General, USAF (Retired)
President

JWR:jp

171 Moultrie Street, Charleston, SC 29409-6480
(843) 953-5012 Fax: (843) 953-5287 www.citadel.edu

CANNONBOROUGH
ELLIOTBOROUGH
NEIGHBORHOOD ASSOCIATION

July 30, 2009

Dear Mayor Riley –

I am writing on behalf of the Cannonborough Elliotborough Neighborhood Association in support for the City of Charleston's plans to seek direct federal assistance for the US 17 Septima Clark Transportation Infrastructure Reinvestment Project for Advancement of Mobility, Efficiency, and Emergency Preparedness. I understand that the City is pursuing TIGER grant money through the ARRA to fund this project. The Cannonborough Elliotborough Neighborhood Association strongly supports your request for funding for this desperately needed project.

US Hwy 17 (hereinafter "the Crosstown") is the northern boundary of our neighborhood, and most of our residents travel upon and / or need to cross this road area every day of their lives. Several of our residents' homes are immediately adjacent to the Crosstown. The flooding on the expressway makes it very difficult and sometimes impossible for residents to get to and from their homes, creating significant safety problems and causing property damage. Some residents simply cannot leave their homes when flooding occurs, and many are afraid to do so. I have had new residents in the neighborhood call me from their cell phones, panicked and scared, on the other side of the flooding in pouring rain, unable to navigate to their homes.

From a livability standpoint, the Crosstown is a significant hazard for pedestrians, bicyclists, and especially our neighborhood's children who must cross this six lane highway in order to reach the public schools. The Crosstown desperately needs improvements for pedestrian safety such as better timed lights, multiple proper crosswalks and pedestrian signals, and a decent sized pedestrian friendly median where it would be safe to stand if one was not able to make it all the way across the highway in time (at the present time there is only a very narrow, high concrete divider between the two way traffic).

In addition, our neighborhood would welcome any improvements to the extremely unpleasant streetscape of the Crosstown. It is a concrete and chain link fence jungle. Pedestrians are blocked from most of the area by rusted chain link fence (which is in disrepair and cut in many areas, and which serves no purpose in many areas, such as the median and partial panels in odd areas). The current aesthetic of the Crosstown discourages any human activity while it only *encourages* speeding traffic by creating a concrete-only pathway for cars to speed through.

Our neighborhood has been asking the City for years to make improvements to the terrible flooding, traffic, safety, pedestrian, and streetscape problems of the Crosstown, but funding has always been an impediment to addressing these issues that the City is well aware of. Improvements to the Crosstown in these areas would have immediate tangible benefits for the residents of our large and diverse neighborhood.

CANNONBOROUGH
ELLIOTBOROUGH
NEIGHBORHOOD ASSOCIATION

Please let me know if our neighborhood can do anything to help in your efforts to obtain this funding.

Sincerely,

Claire Xidis – President
Cannonborough Elliotborough Neighborhood Association
36 Bogard St.
Charleston, SC 29403
943-834-4747
clairexidis@gmail.com

Dear Mayor Riley: July 14, 2009

I would like to provide my support for the City of Charleston's plans to seek direct federal assistance for the US17 Septima Clark Transportation Infrastructure Reinvestment Project for Advancement of Mobility, Efficiency, and Emergency Preparedness. I understand that the City is actively pursuing TIGER grant money through the American Recovery and Reinvestment Act (ARRA) to fund this project. I would like to be on record as being in full support of your request and to give you some of the reasons this project is most worthy of receipt of federal funds.

When the federal government and the SC Department of Transportation built US Hwy 17 (known as the Septima Clark Expressway, or simply the Crosstown) across the peninsula, it created an indelible scar that divided neighborhoods, separated friends and families, and created a tear in the fabric of the City of Charleston. The six-lane highway, while designed to quickly move vehicles from one side of the peninsula to the other, is daunting and dangerous to pedestrians as the crossings are outdated, outmoded, and inadequate in number. Additionally, little if any consideration was given to the effect of the project on an area rife with drainage challenges. The impervious area that was added with an extra six lanes of asphalt contributes voluminous amounts of stormwater runoff to an already overburdened, undersized stormwater collection and conveyance system. As such, with each heavy rain, or even a moderate rain at high tide, the Crosstown becomes impassable to vehicles, oftentimes for many hours, until the water can drain away and traffic can again safely pass.

The project has been in development since the early 1980s and the time for action is now. With each pedestrian who crosses the expressway life and limb are risked, sometimes with deadly results. With each flooding event additional private, city, state and federal infrastructure is subject to water damage and potential washout of supporting soils. The region's largest and most significant health care facilities become inaccessible to citizens and emergency response vehicles during these flooding events. While the flooding has occurred for years, its cumulative effects are taking its toll on neighborhoods and the area's regional and national infrastructure. Because of ongoing changes to Charleston's coastal environment, the flooding and its impacts have worsened. In the end, the loss of one of the City's most important evacuation routes (US 17) cannot be allowed to continue.

I understand that the city has invested millions of local dollars in the planning and design of the ultimate solution. That solution includes numerous improvements to traffic such as safer lanes for vehicular traffic, improved intersections for safe pedestrian crossings and efficient traffic flow, intelligent traffic systems (ITS), and energy-efficient traffic lights. To alleviate the significant flooding problem, the solution includes the construction of a series of deep stormwater collection tunnels, a large stormwater pumping station at the edge of the Ashley River with a specially designed outfall, and a number of local neighborhood drainage improvements.

We are all struggling during these changing economic times to manage our resources responsibly while maintaining our communities. We concur with the City that because of this project's benefit to regional and national interests and because of the overall public safety issues involved, this project only becomes affordable with the combination of local, state, and federal resources.

On behalf of all the citizens in our area, we thank you for your past support and consideration for this request.

Sincerely,

Gary Keull

Gary Keull
President, Lake Frances Properties Neighborhood Council
James Island

Westside Neighborhood Association
P. O. Box 22851
Charleston, SC 29413
Arthur P. Lawrence, President

July 14, 2009

Dear Mayor Riley:

I would like to provide my support for the City of Charleston's plans to seek direct federal assistance for the US17 Septima Clark Transportation Infrastructure Reinvestment Project for Advancement of Mobility, Efficiency, and Emergency Preparedness. I understand that the City is actively pursuing TIGER grant money through the American Recovery and Reinvestment Act (ARRA) to fund this project. I would like to be on record as being in full support of your request and to give you some of the reasons this project is most worthy of receipt of federal funds.

When the federal government and the SC Department of Transportation built US Hwy 17 (known as the Septima Clark Expressway, or simply the Crosstown) across the peninsula, it created an indelible scar that divided neighborhoods, separated friends and families, and created a tear in the fabric of the City of Charleston. The six-lane highway, while designed to quickly move vehicles form one side of the peninsula to the other, is daunting and dangerous to pedestrians as the crossings are outdated, outmoded, and inadequate in number. Additionally, little if any consideration was given to the effect of the project on an area rife with drainage challenges. The impervious area that was added with an extra six lanes of asphalt contributes voluminous amounts of stormwater runoff to an already overburdened, undersized stormwater collection and conveyance system. As such, with each heavy rain, or even a moderate rain at high tide, the Crosstown becomes impassable to vehicles, oftentimes for many hours, until the water can drain away and traffic can again safely pass.

The project has been in development since the early 1980s and the time for action is now. With each pedestrian who crosses the expressway life and limb are risked, sometimes with deadly results. With each flooding event additional private, city, state and federal infrastructure is subject to water damage and potential washout of supporting soils. The region's largest and most significant health care facilities become inaccessible to citizens and emergency response vehicles during these flooding events. While the flooding has occurred for years, its cumulative effects are taking its toll on neighborhoods and the area's regional and national infrastructure. Because of ongoing changes to Charleston's coastal environment, the flooding and its impacts have worsened. In the end, the loss of one of the City's most important evacuation routes (US 17) cannot be allowed to continue.

I understand that the city has invested millions of local dollars in the planning and design of the ultimate solution. That solution includes numerous improvements to traffic such as safer lanes for vehicular traffic, improved intersections for safe pedestrian crossings and efficient traffic flow, intelligent traffic systems (ITS), and energy-efficient traffic lights. To alleviate the significant flooding problem, the solution includes the construction of a series of deep stormwater collection tunnels, a large stormwater pumping station at the edge of the Ashley River with a specially designed outfall, and a number of local neighborhood drainage improvements.

We are all struggling during these changing economic times to manage our resources responsibly while maintaining our communities. We concur with the City that because of this project's benefit to regional and national interests and because of the overall public safety issues involved, this project only becomes affordable with the combination of local, state and federal resources.

On behalf of all the citizens in our area, we thank you for your past support and consideration for this request.

Sincerely,

Arthur Lawrence

Address: 210 Fishburne St

US 17 Septima Clark Transportation and Drainage Improvements

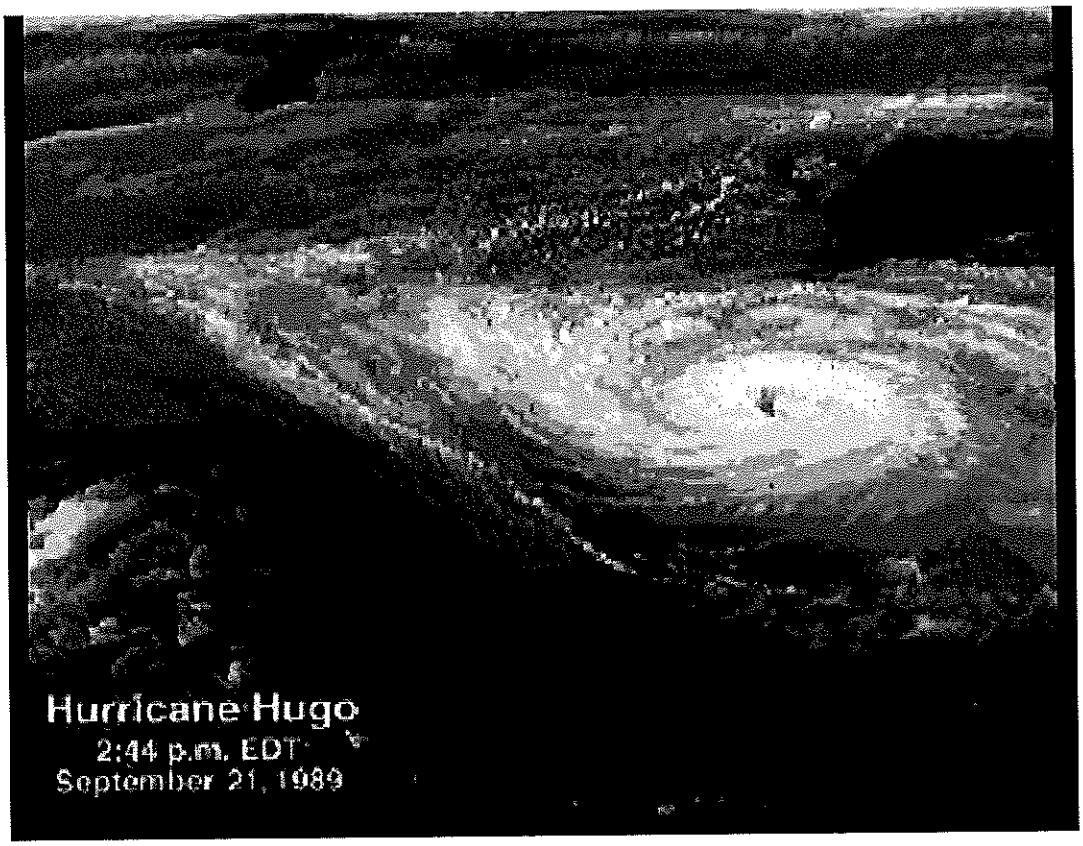
Application for Financial Assistance
South Carolina Transportation Infrastructure Bank

APPENDIX A-6

STATE AND LOCAL PLANNING LISTS AND PLANS

CHARLESTON REGIONAL HAZARD MITIGATION PLAN

2005 to 2006 Edition



VI. POSSIBLE ACTIVITIES

ATTACHMENT VI-C

Following is a list of the major drainage improvement projects or studies in process or recently undertaken within the Charleston County area. This list is referenced in the Structural Projects section of the plan in the table of on-going projects. There are additional smaller projects and studies that have also been conducted which are not included here in the interest of conserving space. Anyone interested in the entire list of drainage improvement projects conducted within the area is encouraged to contact the Public Works or Engineering Department for the jurisdiction of interest for additional information.

DRAINAGE IMPROVEMENT PROJECTS

Market Street Drainage Project (City of Charleston)

Design is being finalized for the tunnel system that will tie into the East Bay/Calhoun Tunnel and pump station. This will dramatically reduce the level of flooding now experienced in the Market area.

Byrnes Down Drainage Project (City of Charleston)

The City has retained B.P. Barber and Assoc, Inc. to design the recommend improvements as detailed in the *Storm Drainage Study of the Byrnes Downs Drainage Basin*, dated January 2001. Construction was scheduled to begin in January, 2005.

Spring/Fishburne Drainage Project (City of Charleston)

Preliminary engineering is underway for this project, which will alleviate the flooding in this combined drainage basin, which is the largest on the Peninsula of Charleston.

St. Andrews/Forest Acres Drainage Project (City of Charleston)

This project includes the St. Andrews, the Forest Acres and a portion of the 5th Avenue Drainage Basins. The City is considering engineering proposals to design the recommended improvements as detailed in the *Hydrological and Hydraulic Analysis of the Forest Acres/Fifth Avenue and St. Andrews Drainage Basins*, dated May 2001. The recommended improvements consist of upgrading the existing channelized/piped drainage collection system, pump station and outfall in the Forest Acres basin, and providing system-wide improvements in the St. Andrews basin.

Calhoun/Concord Street Deep Tunnel Connection (City of Charleston)

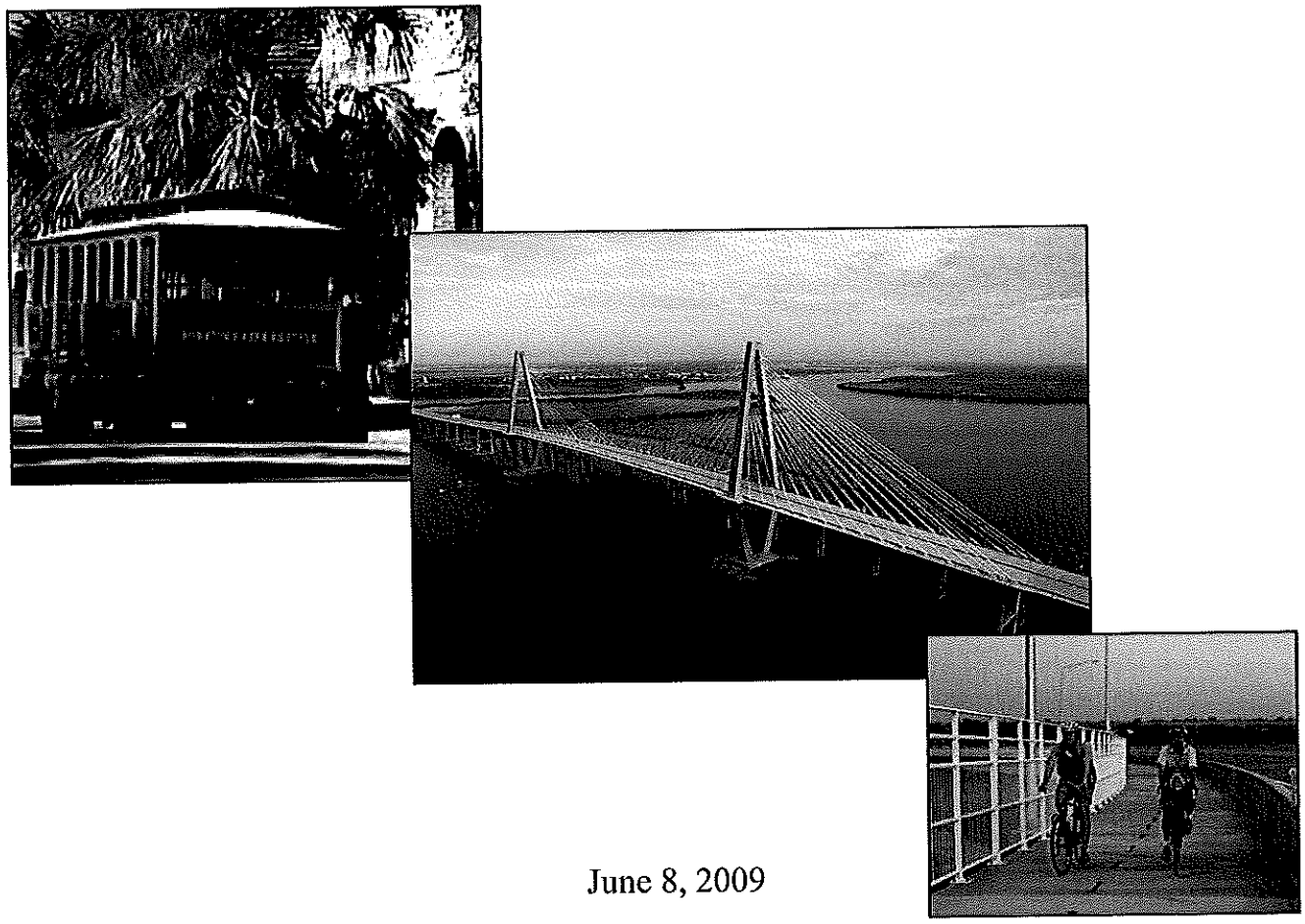
This project will connect Calhoun Street east of the railroad track at Washington and Concord Street (from Charlotte Street to Calhoun Street) to the East Bay/Calhoun Street Drainage Tunnel and Pump Station that was completed in 2000, thereby alleviating flooding in these areas.

East Bay Street Brick Arch Evaluation (City of Charleston)

Charleston Area Transportation Study (CHATS)
Metropolitan Planning Organization

FY 2010 - 2015

Transportation Improvement Program



June 8, 2009

BCDC G
BERKELEY-CHARLESTON-DORCHESTER
COUNCIL OF GOVERNMENTS
1362 McMillan Avenue, Suite 100
North Charleston, South Carolina 29405
(843) 529-0400 Fax (843) 529-0305

TRANSPORTATION IMPROVEMENT PROGRAM

FOR THE

CHARLESTON AREA TRANSPORTATION STUDY

Locally Funded Projects

Charleston Area Transportation Study
Transportation Improvement Program
FY 2010 - 2015
Locally Funded Transportation Projects

CHATS ID: -	**CHATS Priority:** NA	**PIN:** -
Project: US 17 (Septima Clark Pkwy)		**Planning Ref #:**

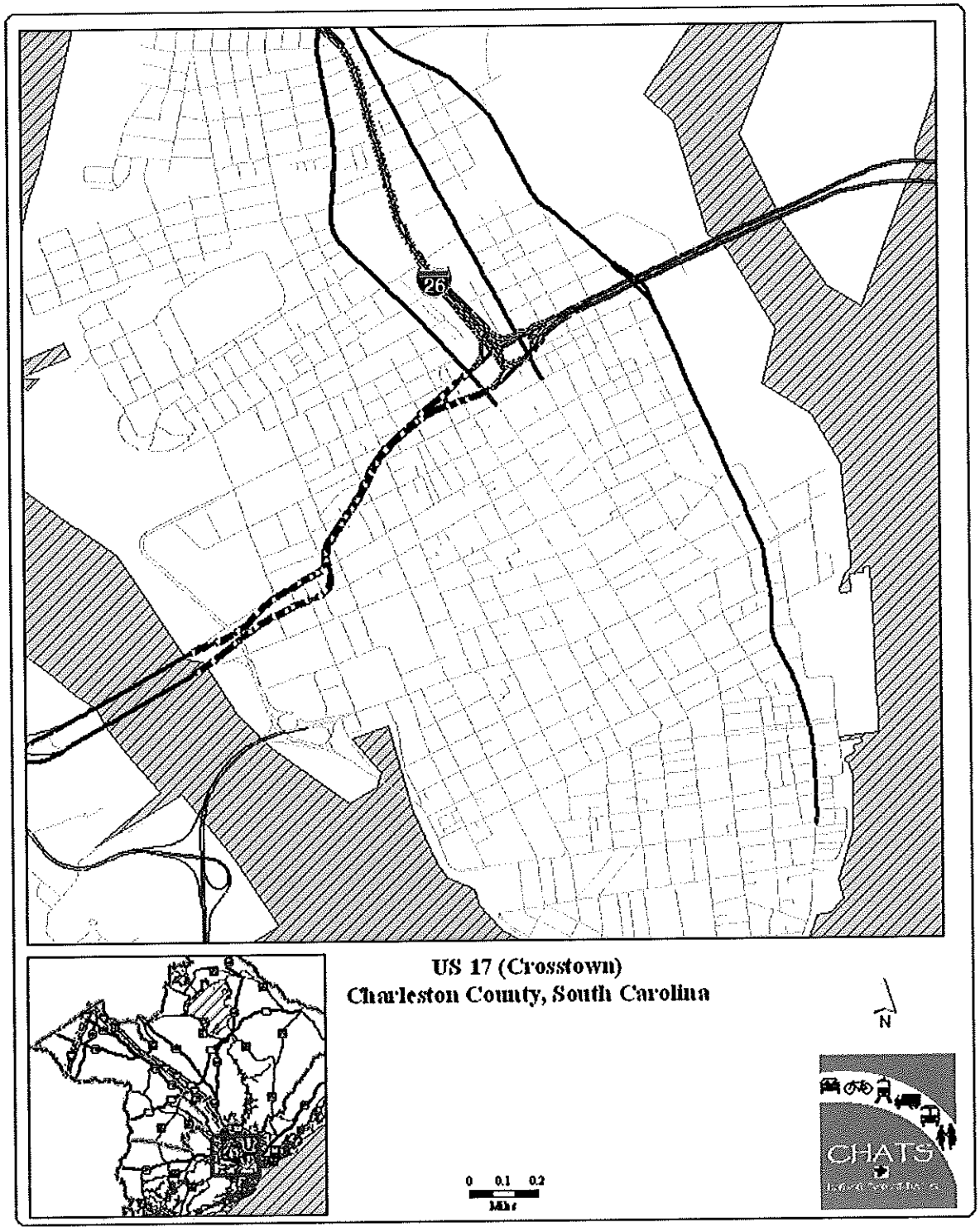
Description: Project seeks to improve safety and operations of the facility, including drainage improvements.

From:	End of I-26	**Length (Miles):**	0.92
To:	Ashley River Bridges	**Length (km):**	1.48
County:	Charleston County	**Program type:**	
Funding:	TIGER Application	**Funding Type:**	

Comments / Status:

Estimated Obligated Cost (in Thousands)

	Prior Year	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Total TIP
PE									$0
ROW									$0
Const				$156,300					$156,300
Total	**$0**	**$0**	**$0**	**$156,300**	**$0**	**$0**	**$0**	**$0**	**$156,300**


26
US 17 (Crosstown)
Charleston County, South Carolina
N
0 0.1 0.2
CHATS

CHATS FINANCIAL STATEMENT

(COST IN THOUSANDS)

	PIN #	PRIORITY	GUIDESHARE PROJECTS	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	TIP COST (2010-2015)	REMAINING CHATS COST (2016+)	FUNDING
Cost-Share Projects	23349	13	BERLIN MYERS PARKWAY - LAST PHASE (SC 165 TO US 17A)	800 PE	0 C	1,500 PE 0 C	0 C	7,331 ** 7,200 C	7,331 ** 5,000 C		13,700		CHATS Guideshare and Dorchester Co. Sales Tax
		Cost-Share Projects	HARBORVIEW RD			2,000 C	3,000 C	1,000 C			6,000	To Be Determined	CHATS Guideshare
			(SC 30 TO FORT JOHNSON RD)		165 P 2,175 R	14,150 C					16,510		Charleston Co. Sales Tax
		Cost-Share Projects	BACON'S BRIDGE RD (CURRENT 4 LANE TO JUST PAST HWY 61)				2500 C	2,500 C	2,500 C	C	7,500	To Be Determined	CHATS Guideshare and Dorchester Co. Sales Tax
		Cost-Share Projects	US 78 (BERLIN MYERS PKWY TO CHATS BOUNDARY)								-	To Be Determined	CHATS Guideshare and Dorchester Co. Sales Tax
	40255	Cost-Share Projects	BEES FERRY RD (US 17 TO ASHLEY RIVER RD)			2000 C	3,000 C	4,000	3,000 C	3,000 C	15,000	To Be Determined	CHATS Guideshare
						7,000 C					7,000		SCDOT Federal Match Program
			LOCAL FUNDING		4,250 R	12900 C	7,825 C				24,975		Charleston Co. Sales Tax
		Cost-Share Project	COLLEGE PARK ROAD (FROM US HWY 17 ALT TO CORPORATE PKWY)						2,300 C		2,300	To Be	CHATS Guideshare- $2,300
			LOCAL FUNDING		235 PL 3,000 R	2000 R 4,600 C	9,165 C				19,000		Berkeley County Sales Tax- $17000
	24058		CONGESTION MANAGEMENT	25 PL	25 PL	56 PL	25 PL	25 PL	25 PL	25 PL	181		STP
	40439		SIGNAL SYSTEM IMPROVEMENT			163 PL 1,000 C					1,000		
			LONG RANGE PLAN	24 PL	0 PL	50 PL	25 PL	25 PL	25 PL	25 PL	150		STP
	23418		INTERSECTION IMPROVEMENTS MURRAY DR. @ HANAHAN RD. (CITY OF HANAHAN)	300 C	220 R 2,088 C						2,308		NHS/STP/CMAQ Berkeley Co. Transpo. Sales Tax-
			LOCAL FUNDING		800 C						800		$800,000
	23460		INTERSECTION IMPROVEMENTS EMBASSY AT OLD ORANGEBURG		100 PE 21 R	979 C					1,100		NHS/STP/CMAQ
			COMMUTER RAIL STUDY			1,403 PL					1,403		STP
	39668		US HWY 52 / US HWY 78 BICYCLE FACILITY		98 C	600 C					698		STP
			I-26 ANALYSIS			1,026 PL					1,026		STP
			COMPLETE STREETS		0	2,000	1,000	1,000	1,000	1,000	6,000		STP
	39666		REGIONAL LAND USE PLAN		1,000 PL						1,000		STP - Federal Funding 80% State Funding 20%
			NECK AREA MASTER PLAN			1,000 PL					1,000		
			TRANSPORTATION MODELING/SIMULATION SYSTEM IMPROVEMENTS			50 PL				47 PL	97		
			DEBT SERVICE	6,594	6,251	7,219	6,954	6,183	6,110	6,037	38,754		
			GUIDESHARE SUBTOTALS	$7,743	$9,803	$21,045	$16,504	$21,933	$19,960	$19,134	$99,216	$99,379	
			GUIDESHARE ALLOCATION	13,993	13,993	18,953	16,953	16,953	16,953	16,953	$96,758		
			NON ARRA FUNDS		14,682						$14,682		
			CARRYOVER AVAILABLE	3,280	10,100	14,289	10,197	10,646	5,666	2,659	$53,557		
			BOND PROCEEDS										
			GUIDESHARE SUBTOTALS	7,743	9,803	21,045	16,504	21,933	19,960	10,134	$99,379	$99,379	
			BALANCE	9,530	14,289	10,197	10,646	5,666	2,659	9,478	67,596		

*Cost-Share Projects-Funding is to be shared by county sales tax revenues and CHATS Guideshare funding (either NTS or STP). Funding will be approximately $2.5 million a year for Dorchester Co. projects and $3 million a year for Charleston Co. projects that are active during the current MTIP years.

**Non ARRA Funds

CHATS FINANCIAL STATEMENT

(COST IN THOUSANDS)

	PROJECTS EXEMPT FROM GUIDESHARE										
	BRIDGE REPLACEMENT & REHAB PROJECTS SC 171 SC 703 SC 171 S-20 SC 174 US 78 SC 174 S-379 S-86 SC 174 SC 7 S-32 S-91 S-20 S-967	47,054 PC	1,790 PE 6,459 R 36,533 PC	559 R 65,525 PC	30,910 C	15,430 C			$157,206		FEDERAL AID BRIDGE PROGRAM
	PAVEMENT PROJECTS		LISTED UNDER ARRA PROJECTS SECTION								
	INTERSECTION SAFETY PROJECTS S-37 @ S-33 SC 41 @ S-50 S-535 @ S-1258 S-28 @ S-53 S-53 @ S-67 S-28 @ S-95 S-51 @ S-504 SC 61 @ S-504 S-13 @ S-58		250 PL 4,700 C	500 R 3,500 C					$8,950		FEDERAL AID SAFETY PROJECTS
	PAVEMENT SIGNING & MARKING		WAITING FOR SCDOT UPDATES								
	ITS (INTERSTATE)		WAITING FOR SCDOT UPDATES								
	INCIDENT RESPONSE PROGRAM		WAITING FOR SCDOT UPDATES								
	APPROPRIATION EARMARKS		SEE STIP APPROPRIATION EARMARKS								
22306	I-26 / REMOUNT ROAD INTERCHANGE - EXIT 212 & I-26 / AVIATION AVE INTERCHANGE - EXIT 211 (I-26 WIDENING FROM I-526 TO A POINT NEAR MIDLAND PARK RD / S-1187)	28,600 C	38,000 C	5,000 C					$43,000		NHS/IM
	I-526 (WIDENING FROM I-26 TO SC 7)		2,500 PE		2,500 PE				$5,000		NHS / IM
	I-526 (INTERSTATE REHAB - MM 17 TO NEAR MM 20)		150 P 6,500 C						$6,650		FEDERAL AID - IM
BR-12	SC 41 BRIDGE REPLACEMENT (OVER WANDO RIVER)			10,000 C	22,500 C	22,500 C			$55,000		FEDERAL AID - BRIDGE PROGRAM
	WAMBAW CYCLE TRAIL HARDENING		195 C						$195		FEDERAL LANDS - REC. TRAILS
	WANNAMAKER NATURE TRAILS		75 C						$75		FEDERAL LANDS - REC. TRAILS
	WEST ASHLEY GREENWAY - 3 PIPES BRIDGE REPLACEMENT		121 C						$121		FEDERAL LANDS - REC. TRAILS
FOSU 10(1); 900(1)	FORT MOULTRIE VISTOR CENTER RESURFACE ENTRANCE ROAD & PARKING AREA		564 C						$564		PARK ROADS & PARKWAYS
SC FH 204(1)	STEED CREEK RD (S-1032/S-133) (US 17 to BERKELEY CO. LINE) RESURFACING & SAFETY IMPROVEMENTS	244 C	3,000 C						$3,000		PUBLIC LANDS HIGHWAY- FOREST HIGHWAY ARRA FUNDS - $244,000
	PROJECTS EXEMPT FROM GUIDESHARE SUBTOTAL	$73,898	$100,837	$85,084	$55,910	$37,930			$279,761		276,001
	HIGH PRIORITY PROJECTS										
	HIGH PRIORITY PROJECTS TOTAL										
	STATE INFRASTRUCTURE BANK PROJECTS										
27488	BRIDGE AT COOPER RIVER (DEMOLITION PROJECT)	20,000									OTHER
	SIB SUBTOTAL	$20,000									

KEY: P - PRELIMINARY ENGINEERING, R - RIGHT OF WAY, C - CONSTRUCTION, PL - PLANNING

\# - SAFETEA-LU EARMARK FUNDS HAVE BEEN IDENTIFIED TO FUND THE BERLIN MYERS PARKWAY PROJECT FOR ROW, BEGINNING IN FY 2007. ONCE THOSE FUNDS ARE EXPENDED, CHATS GUIDESHARES (A MAXIMUM OF $4,489 MILLION) WILL BE USED TO SUPPLEMENT THE EARMARKS FOR ROW AND ANY REMAINING GUIDESHARE FUNDS WILL GO TOWARDS CONSTRUCTION

CHATS FINANCIAL STATEMENT

(COST IN THOUSANDS)

PIN #	AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 PROJECTS	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	TIP COST (2010-2015)	REMAINING CHATS COST (2016+)	FUNDING
	BRIDGE REPLACEMENT & REHAB PROJECTS BRICKYARD ROAD (S-1958)	1,100 C									ARRA FUNDS - $990,000 FEDERAL AID BRIDGE- $110,000
	PAVEMENT RESURFACING PROJECTS S-6 (FROM S-243 TO US 52) S-791 (FROM S-1142 TO US 52) S-1958 (FROM S-361 TO S-35) US 52 (FROM S-539 TO S-276) S-35 (FROM S-107 TO S-113) S-20 (FROM S-54 TO S-2143) S-894 (FROM SC 7 TO N. CHAS CITY LIMIT) S-233 (FROM SC 27 TO DEAD END) S-58 (FROM S-22 TO S-13) US 17 ALT (FROM SUMMERVILLE TOWN LIMIT TO S-211) US 176 (0.07 mi N of S-993 to 0.88 mi S of S-993) S-29 (S-503 TO A POINT NEAR S-136) S-20 (S-2134 to SC 700) S-1025 (US Naval Gate to 0.05 mi S of S-1217) US 52 (SC 642 to Railroad Crossing) US 52 (SC 642 to Near S-291) SC 642 (S-62 to Chas. Co. Line)	10,026 C									ARRA FEDERAL AID PAVEMENT MAN.
	INTERSTATE ITS I-526 FIBER OPTIC CABLE	900* C									ARRA
	PAVEMENT SIGNING & MARKING I-526 MARKING PROJECT	385 C									ARRA
	INTERSTATE MAINTENANCE I-26 EAST BOUND MM 209- MM 217 I-26 WEST BOUND MM 209 - MM 219	12,000 C									ARRA
	INTERSTATE 26 REHABILITATION I-26 MILE MARKER 212-219	14,662 C	15,829 C						$15,829		CHATS TMA ARRA ALLOCATION $14,662 M & IM- $1,167 M
	ARRA TRANSIT PROJECTS										
	CARTA CAPITAL PROGRAM BUS SHELTERS (SYSTEM-WIDE) FACILITY REHAB / RENOVATION VEHICLE REPLACEMENT	6,479 725 1,000 4,754 C									AMERICAN RECOVERY & REINVESTMENT ACT OF 2009
	2009 ECONOMIC STIMULUS BILL PROJECTS SUBTOTAL	$45,562	$15,829						$15,829		
	LOCALLY FUNDED PROJECTS										
	JOHNNIE DODDS BOULEVARD (CAPACITY IMPROVEMENTS FROM ARTHUR RAVENEL, JR. BRIDGE TO I-526 INTERCHANGE)	2,707 P	638 P 5,000 R 18,500 C	2,000 R 25,375 C	14,875 C				$66,388		CHARLESTON COUNTY TRANSPORTATION SALES TAX
	MUSC ROAD IMPROVEMENTS (INFRASTRUCTURE IMPROVEMENTS TO ROADWAYS SURROUNDING THE MUSC CAMPUS)	282 P 400 R	5,500 C						$5,500		CHARLESTON COUNTY TRANSPORTATION SALES TAX
	MAYBANK HIGHWAY (BOHICKET RD TO STONO RIVER)									To Be Determined	CHATS Guideshare and Charleston Co. Sales Tax
	LOCAL FUNDING		589 P 5,500 R	2852 C	10,000 C	9,848 C			$28,789		
	JEDBURG RD. INTERCHANGE, I-26 WIDENING, I-26 FRONTAGE ROADS, SHEEP ISLAND PKWY, & SHEEP ISLAND RD. INTERCHANGE AT I-26	3,000 P 29,800 R	6,900 P 1,400 R 20,000 C	68,300 C					$95,700		BERKELEY COUNTY TRANSPORTATION IMPACT FEE
	SC 642 (DORCHESTER RD)			8080 C					$8,080		SCDOT Federal Match Program - 50%
	(US 17A TO TROLLEY RD)										Dorchester Co. Sales Tax
	U.S. 17 SEPTIMA CLARK PARKWAY (FROM END OF I-26 TO ASHLEY RIVER BRIDGES)			10,000 C					$10,000		CITY OF CHARLESTON LOCALLY FUNDED PROJECT W/ FEDERAL
				146,300 C					$146,300		FUNDING VIA THE USDOT TIGER PROGRAM - CITY PROVIDING $2.5 M MATCHING FUNDS

CHATS FINANCIAL STATEMENT

(COST IN THOUSANDS)

	LOCALLY FUNDED PROJECTS										
	HENRY BROWN BLVD. EXTENSION- PHASE I (FROM LIBERTY HALL RD TO RED BANK ROAD) SYSTEM CAPACITY IMPROVEMENT					5,974 C 21,150 C			$5,974 $23,000		FEDERAL EARMARK BERKELEY COUNTY LOCALLY FUNDED TRANSPO. SALES TAX
			190 PL	160 P	1,500 R						
	HENRY BROWN BLVD. EXTENSION- PHASE II (FROM LIBERTY HALL RD TO US 52) CONTEXT- SENSITIVE CAPACITY IMPROVEMENT			2,000 P					$2,000		BERKELEY COUNTY LOCALLY FUNDED TRANSPORTATION SALES TAX PROJECT
	CLEMENTS FERRY ROAD - PHASE I (FROM I-526 to JACK PRIMUS RD) CONTEXT- SENSITIVE CAPACITY IMPROVEMENT		125 PL	160 P 250 R C	465 R 2,400 C	4,600 C			$8,000		BERKELEY COUNTY LOCALLY FUNDED TRANSPORTATION SALES TAX PROJECT
	CLEMENTS FERRY ROAD - PHASE II (FROM JACK PRIMUS RD TO SC 41) CONTEXT- SENSITIVE CAPACITY IMPROVEMENT		125 PL	125 P		750 R 3,800 C	7,200 C		$12,000		BERKELEY COUNTY LOCALLY FUNDED TRANSPORTATION SALES TAX PROJECT
	LOCALLY FUNDED PROGRAM SUBTOTAL	$35,989	$63,567	$265,692	$29,249	$48,122	$7,200		$411,731		

* = Funding amount includes improvements in multiple areas of the state

PIN #	FEDERAL TRANSIT ADMINISTRATION	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	TIP COST (2010-2015)	REMAINING CHATS COST (2016+)	FUNDING
	CARTA (RECIPIENT FOR REGION) CAPITAL AND PREVENTIVE MAINTENANCE	4,879	4,769 C	5,008 C	5,258 C	5,521 C	5,797 C	6,087 C	$32,440		FTA SECTION 5307 FTA SECTION 5340
	CARTA (RECIPIENT FOR REGION) INTERMODAL CENTER	475		6,020 C					$6,020		FTA SECTION 5309 STATE OF GOOD REPAIR PROGRAM
	CARTA CAPITAL -STATEWIDE VEHICLE ACQUISITION FUND			2,412 VA							FTA SECTION 5309 STATEWIDE TRANSIT FACILITY PROG
	BERK-CHARL-DORCH COUNCIL OF GOVERNMENTS ALTERNATIVES ANALYSIS										FTA SECTION 5339
	BERK-CHARL-DORCH COUNCIL OF GOVERNMENTS JOB ACCESS & REVERSE COMMUTE	318	294 OP	563 OP					$856		FTA SECTION 5316
	BERK-CHARL-DORCH COUNCIL OF GOVERNMENTS NEW FREEDOM PROGRAM	185	162 OP	317 OP					$479		FTA SECTION 5317
	FTA SUBTOTAL	$5,857	$5,225	$14,329	$5,258	$5,521	$5,797	$6,087	$39,796		

	SAFETEA-LU EARMARK PROJECTS										
	RAILROAD AVENUE EXTENSION (BERKELEY COUNTY) SAFETEA-LU # 416		1706 C 0	4000 C					$9,706 $4,000		BERKELEY CO SALES TAX- $4,000,000 FEDERAL -$ 1,600,000 SCDOT MATCH - $ 341,384
	BERLIN MYERS INTERCHANGE EXTENSION ✓ ✓ SAFETEA-LU # 441 *	1088									SPENDING LIMITATION FEDERAL -$ 6,400,000 MATCH - $ 1,365,536
	MUSC ROADWAY ENHANCEMENTS SAFETEA-LU # 995 *		$9,100 C						$9,100		MATCHING AGENCY - LOCAL FEDERAL -$ 3,600,000 LOCAL - $5,500,000
	US 17 / BOWMAN RD. INTERCHANGE SAFETEA-LU # 1238 (MATCHING AGENCY - TOWN OF MT. PLEASANT)	816	3704 R	3612 C					$7,316		MATCHING AGENCY - LOCAL 04 & 05 APPROPRIATIONS
	PORT ACCESS ROAD (Connecting to I-26) ✓ ✓ ✓ SAFETEA-LU # 4872 *	10,000 P 15456 R				151544 C			$151,544		MATCHING AGENCY - LOCAL FEDERAL -$ 10,000,000 MATCH - $ 2,133,650
	DEMOLITION OF THE OLD COOPER RIVER BRIDGES (CHARLESTON COUNTY) SAFETEA-LU # 4851 *	850									SPENDING LIMITATION FEDERAL -$ 5,000,000 MATCH - $ 1,096,825
	US HIGHWAY 17 (WIDENING FROM ISLE OF PALMS CONNECTOR TO A POINT NEAR DARRELL CREEK TRAIL & HUNGREYNECK INTERCHANGE PROJECT) SAFETEA-LU # 4891 SC* & TCSP #09SC007 MATCH TO BE PROVIDED BY TOWN OF MT. PLEASANT & CHAS CO.			3,820 C 10,000 C					$3,820 $10,000		SAFETEA-LU EARMARK & TCSP GRANT SCDOT FEDERAL MATCH PROGRAM
			2,916 P 950 R		0 R 20000 C	0 R 20000 C	18000 C	3855 C	$65,721		FUNDS FROM CHAS. CO. TRANSPO. SALES TAX MATCHING AGENCY - LOCAL
	SAFETEA-LU EARMARK TOTAL	$28,218	$14,519	$21,432		$151,544			$191,486		

CHATS FINANCIAL STATEMENT

(COST IN THOUSANDS)

	ENHANCEMENT PROJECTS											
1	SAWMILL HIKER / BIKER - TRAIL SCHOOLHOUSE (TOWN OF SUMMERVILLE) (FY '04)	$72									STP	$71,690
											TOTAL -	$89,613
											MATCH -	$17,923
4	AVONDALE STREETSCAPING (CITY OF CHARLESTON) (FY '04) *$200,000 transferred from FY01 Rail ROW Project	354									STP	$283,200
											TOTAL -	$354,000
											MATCH -	$70,800
5	LINCOLNVILLE AVE. PARKWAY - PHASE II (TOWN OF LINCOLNVILLE) (FY '04)	109									STP	$108,779
											TOTAL -	$135,973
											MATCH -	$27,195
	ENHANCEMENT PROGRAM SUBTOTAL	$534										

KEY: P - PRELIMINARY ENGINEERING R - RIGHT OF WAY C - CONSTRUCTION CA - CAPITAL PURCHASE OP - OPERATING

✔ INCLUDES CARRYOVER FUNDS: ✔ ✔ - FUNDS WILL SUBSTITUTE CHATS GUIDESHARE FOR THIS PROJECT IN 06/07

✔ ✔ ✔ - MATCH PROVIDED BY SOFT MATCH FROM PREVIOUSLY COMPLETED PROJECT DESIGN CONTRACTS, AND ANTICIPATED SC GENERAL FUND APPROPRIATION

* - FEDERAL AMOUNT SHOWN IS THE MAXIMUM AMOUNT IN SAFETEA-LU THAT MAYBE DISTRIBUTED OVER 5 YEARS (FY 2005 - 2009). ACTUAL FUNDING CURRENTLY AVAILABLE RESULTING

	ENHANCEMENT PROJECTS	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	TIP COST (2010-2015)	REMAINING CHATS COST (2016+)	FUNDING	
6B	COLEMAN BLVD (TOWN OF MT. PLEASANT) (FY '04)	$305									STP	$305,000
											TOTAL -	$381,250
											MATCH -	$76,250
1	LINCOLN AVENUE IMPROVEMENT- PHASE III (TOWN OF LINCOLNVILLE) (FY '05)	160									STP	$160,103
											TOTAL -	$200,129
											MATCH -	$40,026
3	GAHAGAN PLANTATION CONNECTOR TRAIL (TOWN OF SUMMERVILLE) (FY '05)	78									STP	$77,804
											TOTAL -	$97,255
											MATCH -	$19,451
4	FT JOHNSON ROAD BIKEWAY & MULTI-USE TRAIL (CHARLESTON COUNTY) (FY '05)	85									STP	$85,266
											TOTAL -	$106,583
											MATCH -	$21,317
5	JOHNNIE DODDS BLVD PEDESTRIAN ACCESS (TOWN OF MT. PLEASANT) (FY '05)	112									STP	$112,155
											TOTAL -	$140,195
											MATCH -	$28,039
7	BRIDGE VIEW DRIVE SIDEWALK (CHARLESTON COUNTY) (FY '05)	182									STP	$182,000
											TOTAL -	$227,500
											MATCH -	$45,500
1A	EAGLE-CHANDLER BRIDGE CREEK TRAIL (DORCHESTER COUNTY) (FY06 & FY08)	381									STP	$381,000
											TOTAL -	$476,251
											MATCH -	$95,250
4	HIGHWAY 78 TREE PLANTING (CITY OF NORTH CHARLESTON) (FY '06)	40									STP -	$40,000
											TOTAL -	$50,000
											MATCH -	$10,000
1	SAWMILL BRANCH TRAIL-PHASE V & VI (TOWN OF SUMMERVILLE) (FY07 & FY08)	240									STP -	$240,488
											TOTAL -	$300,610
											MATCH -	$60,122
2	MUNICIPAL CENTER HIKER-BIKER TRAIL (TOWN OF GOOSE CREEK) (FY07 & FY08)	232									STP	$231,807
											TOTAL -	$309,903
											MATCH -	$78,096
3	COLEMAN BLVD. LANDSCAPING / PEDESTRIAN PHASE III-E (TOWN OF MT. PLEASANT) (FY07 & FY08)	205									STP	$204,755
											TOTAL -	$255,943
											MATCH -	$51,189
4	SIDEWALK PROJECT PHASE IV-OLD FORT RD. (DORCHESTER COUNTY) (FY '07)	219									STP	$219,201
											TOTAL -	$274,076
											MATCH -	$54,815
5	ST. ANDREWS BLVD ON-STREET BICYCLE FACILITY (City of Charleston, Admin. by Charleston County) (FY08)			200 C					$200		STP	$0
											TOTAL -	$0
											MATCH -	$0

CHATS FINANCIAL STATEMENT

(COST IN THOUSANDS)

6	DORCHESTER ROAD Multi-Use Path (City of North Charleston) (FY08)	106									STP TOTAL - MATCH -	$106,393 $132,991 $26,598
5	STATION MARKER POSTS (Town of Sullivan's Island) (FY08)	19									STP TOTAL - MATCH -	$18,920 $23,650 $4,730
	RIVERS VILLAGE @ NOISETTE CREEK (City of North Charleston) (FY02)	131									STP TOTAL - MATCH -	$130,974 $163,718 $32,744
	NORTH THIRD STREET PED FACILITY (Town of Summerville) (FY03)	51									STP TOTAL - MATCH -	$51,227 $64,034 $12,807
	WEST 9th STREET PED. FACILITY (Town of Summerville) (FY06)	48									STP TOTAL - MATCH -	$47,822 $59,778 $11,956
	COLEMAN BLVD. LANDSCAPING PHASE III-D (Town of Mount Pleasant) (FY06)	144									STP TOTAL - MATCH -	$144,022 $180,028 $36,006
	ENHANCEMENT PROGRAM SUBTOTAL	$2,739		$200					$200			

KEY: P - PRELIMINARY ENGINEERING R - RIGHT OF WAY C - CONSTRUCTION

	ENHANCEMENT PROJECTS	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	TIP COST (2010-2015)	REMAINING CHATS COST (2016+)	FUNDING	
	PATRIOT BLVD. BIKEWAY (City of North Charleston) From Appian Way to Club Course Dr (FY07)	140									STP TOTAL - MATCH -	$140,000 $175,000 $35,000
	BOONEHILL RD. SIDEWALK (Town of Summerville) From Carolina St. to Luden Rd. along Boonehill Rd. (FY06)	165									STP TOTAL - MATCH -	$165,200 $206,500 $41,300
	BEN SAWYER BLVD. CAUSEWAY BIKE/PED FACILITY (Towns of Mt. Pleasant & Sullivans Island) From Center St. (M.P.) to Middle St. (S.I.) (FY10)			308					$308		STP TOTAL - MATCH -	$308,000 $385,000 $77,000
	WEST ASHLEY GREENWAY MUTLI-USE FACILITY - PHASE IV (City of Charleston) From Folly Road (SC 171) to Campbell Drive (FY10)			188					$166		STP TOTAL - MATCH -	$188,000 $235,000 $47,000
	PLANTATION NORTH HIKER/BIKER - PHASE II (City of Goose Creek) From Indigo Place to Oak Creek along Plantation North Blvd. (FY10)			231					$231		STP TOTAL - MATCH -	$231,173 $288,966 $57,793
	SAWMILL BRANCH CANAL MULTI-USE FACILITY - PHASE VI (Town of Summerville) Extension of the Sawmill Branch Trail from US-78 to Marymeade Drive (FY10)			71					$71		STP TOTAL - MATCH -	$71,316 $89,146 $17,830
	OLD FORT DRIVE HIKER/BIKER FACILITY (Dorchester County) From Wal-Mart driveway to Commencement Blvd. along Old Fort Dr. (FY10)			313					$313		STP TOTAL - MATCH -	$312,800 $391,000 $78,200
	APPIAN WAY SIDEWALK (Dorchester County) From Landing Pkwy to Athens Way along Appian Way (FY10)			22					$22		STP TOTAL - MATCH -	$21,966 $27,456 $5,492
	RIVERS AVENUE SIDEWALK - PHASE I (City of North Charleston) From Ashley Phosphate Rd to Aviation Ave. along Rivers Ave. (FY10)			367					$367		STP TOTAL - MATCH -	$366,502 $458,128 $91,626
	OLD ORANGEBURG ROAD SIDEWALK (Dorchester County) From Butternut Rd. to Central Ave. along Old Orangeburg Rd. (FY10)			86					$86		STP TOTAL - MATCH -	$86,240 $107,800 $21,560
	ENHANCEMENT PROGRAM SUBTOTAL	$6,488		$3,797					$10,285			
	CHATS ENHANCEMENT PROGRAM TOTAL	$9,761	$1,278	$3,997					$15,936			

CHATS FINANCIAL STATEMENT

(COST IN THOUSANDS)

	SAFE ROUTES TO SCHOOL PROGRAM (SR2S)	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	TIP COST (2010-2015)	REMAINING CHATS COST (2016+)	FUNDING	
1	ALSTON MIDDLE SCHOOL (Dorchester Co. School District) (FY07)	200									STP - TOTAL - MATCH -	$200,000 $200,000 $0
2	COLLEGE PARK ELEMENTARY SCHOOL (Berkeley Co. School District) (FY07)	200									STP - TOTAL - MATCH -	$200,000 $200,000 $0
3	COLLEGE PARK MIDDLE SCHOOL (Berkeley Co. School District) (FY07)	200									STP - TOTAL - MATCH -	$200,000 $200,000 $0
4	HUNLEY PARK ELEMENTARY SCHOOL (Charleston Co. School District) (FY07)	200									STP - TOTAL - MATCH -	$200,000 $200,000 $0
5	STONO PARK ELEMENTARY SCHOOL (Charleston Co. School District) (FY07)	200									STP - TOTAL - MATCH -	$200,000 $200,000 $0
1	BOULDER BLUFF ELEMENTARY SCHOOL (Berkeley Co. School District) (FY08)	200									STP - TOTAL - MATCH -	$200,000 $200,000 $0
2	MIDLAND PARK ELEMENTARY SCHOOL (City of North Charleston) (FY08)	200									STP TOTAL - MATCH -	$200,000 $200,000 $0
3	BEECH HILL ELEMENTARY SCHOOL (Dorchester Co. School District) (FY08)	200									STP - TOTAL - MATCH -	$200,000 $200,000 $0
4	STILES POINT ELEMENTARY SCHOOL (Charleston Co. School District) (FY08)	200									STP TOTAL - MATCH -	$200,000 $200,000 $0
	SAFE ROUTES TO SCHOOL PROGRAM SUBTOTAL	$1,800							$1,800			
	GRAND TOTAL	$192,822	$130,376	$145,878	$77,672	$216,928	$25,757	$16,221	$622,544	$99,379		

KEY: P - PRELIMINARY ENGINEERING R - RIGHT OF WAY C - CONSTRUCTION

Demographic and Transportation Trends in South Carolina

With positive growth trends in population, employment and travel demand, as well as significant road maintenance requirements, there are many challenges to providing a safe and efficient transportation system in South Carolina. South Carolina as a whole grew by just over 6 percent between 2000 and 2005 with certain regions growing by as much as 17%. By 2030, the state's population is expected reach nearly 5.5 million people, about a 27% increase from 2005. Even with recent fluctuations in gas prices, the historical growth trend in vehicle miles of travel (VMT) is about twice as fast as population. VMT is a measure of travel activity that considers traffic volume in relation to the length of the highway system.

As a result of these trends, the amount of time lost due to congestion increases. While South Carolina is fortunate to not have the extreme congestion problems of more populated states, delay is becoming more prevalent in metropolitan areas. Based on the annual hours of delay and the average hourly rates of individuals and commercial operators, in 2005 over $345 million was lost to congestion and the magnitude of this economic impact is occurring every year.

The state-maintained highway system consists of interstate routes, primary routes (SC and US routes), and secondary routes, totaling approximately 41,500 miles. The state maintains 8,338 bridges and at any given time approximately 25 percent of the bridges are categorized as structurally deficient, functionally obsolete, post for weight restrictions or closed. The size of the road system in South Carolina translates into the fourth largest state-maintained system in the country while the state was just 15th largest in terms of population.

Public Transit is an important component to South Carolina's transportation network. Most counties have public transit service in at least a portion of their county, which translates into over 9 million passenger trips annually statewide. Establishing, financing, and sustaining effective publicly-operated transit service in both urban and rural areas continues to be a major challenge.

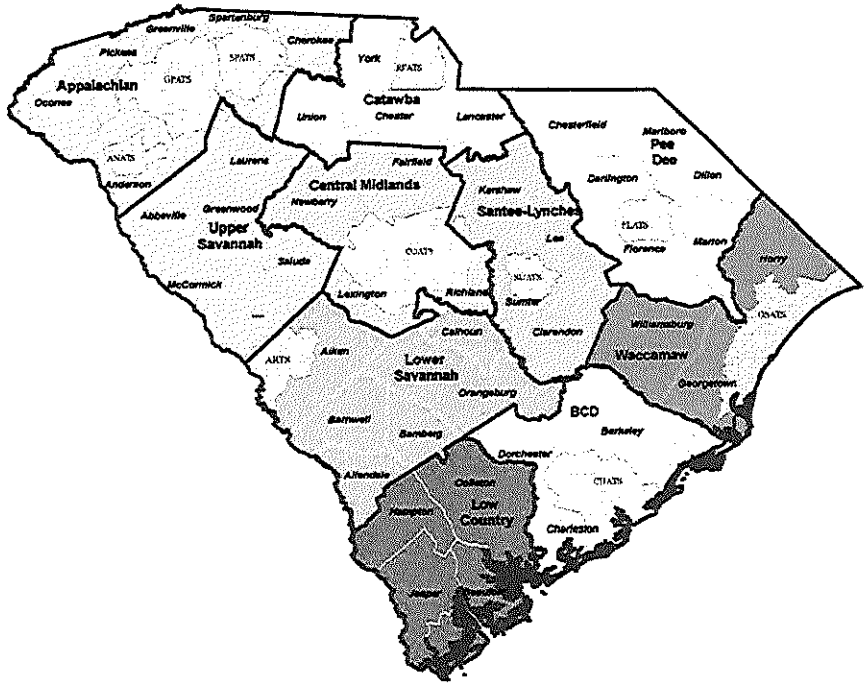
Finally, South Carolina has one of the highest mileage death rates in the country, relies extensively on the highway system to move the majority of freight, and has emerging air quality concerns as a result of more stringent federal standards, and it becomes clear the funding objectives and projects identified in the STIP are critical to providing mobility and accessibility for people, goods, and services.

Transportation Partners

Federal transportation laws require the establishment of a Metropolitan Planning Organization (MPO) in every urbanized area of the United States with a population over 50,000. In South Carolina, there are ten Metropolitan Planning Organizations that were created in order to ensure that existing and future expenditures for transportation projects and programs were based on a comprehensive, cooperative, and continuing (3-C) planning process. The role of the MPO includes: establishing a local forum for transportation decision making; evaluating transportation alternatives; developing and updating a long-range transportation plan; developing a Transportation Improvement Program (TIP); and getting the public involved as early as possible.

There are ten Councils of Governments (COGs) in South Carolina that assist SCDOT in transportation planning for areas outside of designated MPOs. COGs serve county and municipal governments from a regional perspective and offer a wide variety of planning, economic development and social service coordination. Each COG produces a regional long-range transportation plan and a rural Transportation Improvement Program (TIP).

The SCDOT coordinates with all ten MPOs and COGs to facilitate an ongoing transportation planning process that defines both urban and regional transportation priorities. Projects that originate from the MPO and COG programs are reflected in the STIP District Tables



Metropolitan Planning Organizations (MPO) and Councils of Government (COG) in South Carolina

STIP Facts

The STIP identifies all transportation programs and projects that are funded with federal funding, as well as other significant projects funded by the state or local governments, including the State Transportation Infrastructure Bank and local option sales tax programs.

The STIP is a project scheduling and funding program document; it is not a plan. The projects listed in the STIP evolve from SCDOT planning processes, the Statewide Multimodal Transportation Plan, and MPO and COG long-range plans. All projects listed in the STIP have been evaluated for consistency with state and federal law.

The STIP only includes projects for which there is committed funding available and therefore is fiscally constrained. Projects listed in the STIP may include highway and bridge construction or repairs, transit service improvements and capital purchases, safety projects, and operational improvements, such as Intelligent Traffic Systems (ITS), incident management, or traffic signal system projects. The funding for these projects is primarily federal funding, with the required state matching funds and in many cases the federal funding is only eligible for specific categories of improvements. For example, interstate maintenance funds can only be used for improvements to the existing interstate system and may not be used solely for adding additional capacity or be used on any non-interstate facility. The various programs and categories of projects are the building blocks of the STIP.

By approving the STIP, the SCDOT Commission allocates appropriated federal funding to specific projects. When preparing the STIP, SCDOT consults and coordinates with MPOs and COGs, transportation interest groups, and other affected local jurisdictions. Projects are approved and scheduled in consideration of their priority, available funding, and status.

Projects are initially placed in the STIP with cost and scheduling information based on planning level analysis. As the project is developed, the project scope, termini, cost estimate, and schedule may be modified as the project matures, or the project may be removed completely if it is no longer deemed feasible. Depending on the project sponsor, these changes may be subject to approval of the MPO, COG, SCDOT Commission, FHWA, and FTA. Projects may also be modified as a result of input received during the public review process.

This document is the 2010–2015 STIP. The document and process of developing the STIP meets the requirement of the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU). SAFETEA-LU was enacted August 10, 2005, and provides federal funds for transportation projects. The STIP was developed in accordance with the rules and regulations outlined in 23 CFR Part 450, Subpart B – Statewide Transportation Planning and Programming. In addition, the project selection and prioritization process used to develop the STIP was completed in accordance with South Carolina General Assembly Act 114 enacted on June 2007.

ACT 114

In June 2007, state legislation was passed in South Carolina to restructure and reform SCDOT. Among the numerous provisions, Section 57-1-370 addresses the STIP development in an effort to establish a consistent process for identifying highway improvement projects. Subsection (B) (8) of this section states, "the commission shall establish a priority list of projects to the extent permitted by federal laws or regulations, taking into consideration at least the following criteria: (1) financial viability including a life cycle analysis of estimated maintenance and repair costs over the expected life of the project; (2) public safety; (3) potential for economic development; (4) traffic volume and congestion; (5) truck traffic; (6) the pavement quality index; (7) environmental impact; (8) alternative transportation solutions; and (9) consistency with local land use plans." The SCDOT Commission ensures that priorities from each plan consider the nine criteria prior to solicitation for public comment.

Document Overview

The STIP includes information about federally-funded projects, including project of regional significance regardless of funding source, for the 2010-2015 timeframe. The program covers the six-year period beginning October 1, 2009, which is the beginning of the 2010 federal fiscal year, and ends September 30, 2015 which is the end of the 2015 federal fiscal year. Amendments to this document may occur that alter the scope, schedule, and number of approved projects in the STIP. To see the latest version of the complete STIP document or a complete listing of the individual amendments, go to: http://www.scdot.org/inside/stip.shtml

District 6
Charleston

Revision 21 (Correction) - May 19, 2011

Project Description	Length	Rank	MPO / COG	STIP Category	Federal Program	Previous STIP(s)	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	2010-2015 Project Cost	Remaining Cost
S-1958 Tidal Creek		NA	CHATS	Bridge	ARRA Bridge	990 C 110 C								
SC 171 Folly River		BR-2	BCD / CHATS	Bridge (Federal-Aid)	Bridge STP	500 P	93 R	407 R 19,200 C					$19,700	
SC 703 Intracoastal Waterway (Ben Sawyer Bridge)		BR-3	BCD / CHATS	Bridge (Federal-Aid)	Bridge NHS STP	37,643 PC								
SC 171 Sol Legare (Folly) Creek		BR-4	BCD / CHATS	Bridge (Federal-Aid)	Bridge NHS	400 P	22 R	18,800 C					$18,822	
S-20 Bohicket Creek		BR-7	BCD / CHATS	Bridge	Bridge STP	3,641 PC								
SC 174 Store Creek		BR-14	BCD / CHATS	Bridge (Federal-Aid)	Bridge STP		45 R	3,935 C					$3,980	
US 78 CSX RR & S-39		BR-23	BCD / CHATS	Bridge (Federal-Aid)	Bridge STP	1,800 P	1,549 R	579 R	12,500 C				$14,628	
SC 174 Sand Creek		BR-31	BCD / CHATS	Bridge (Federal-Aid)	Bridge STP		12 R	5,843 C					$5,855	
S-379 Noisette Creek		BR-35	BCD / CHATS	Bridge (Federal-Aid)	Bridge STP		20 R		4,300 C				$4,320	
S-86 CSX RR (L-9999)		BR-45	BCD / CHATS	Bridge (Federal-Aid)	Bridge STP	770 P		30 R	7,700 C				$7,730	
SC 174 Russell Creek		BR-47	BCD / CHATS	Bridge (Federal-Aid)	Bridge STP		30 R	5,910 C					$5,940	
SC 7 CSX & Northfolk Southern RR & S-39		BR-48	BCD / CHATS	Bridge (Federal-Aid)	Bridge NHS	2,300 P		2,660 R	14,000 C	11,600 C			$28,260	
S-32 Noisette Creek		BR-63	BCD / CHATS	Bridge (Federal-Aid)	Bridge STP			790 P	300 R	7,110 C			$8,200	
S-91 Tidal Stream		BR-89	BCD / CHATS	Bridge (Federal-Aid)	Bridge STP		250 P		150 R	2,250 C			$2,650	
S-20 Tidal Stream (Hoopstick)		BR-93	BCD / CHATS	Bridge (Federal-Aid)	Bridge STP			250 P	300 R	2,250 C			$2,800	
Port Access Road (Connecting to I-26) (Matching Agency - Other)			CHATS	Earmark (SAFETEA-LU)	Earmark	10,000 P							$151,544	
				SC Ports Authority (General Assembly)		15,456 R				151,544 C				
				SCDOT (General Assembly)		2,000 P 3,000 R								
Note: SCDOT is managing this project on behalf of the SC Ports Authority through an intergovernmental agreement. Two funding allocations have been made by the SC General Assembly ($5.0 million to SCDOT and $167.0 million + interest to SCSPA).														
Bowman Road Phase II (US 17 to Rifle Range Road)			CHATS	Earmark (2004 Appropriation)	Earmark		2,966 R						$7,316	
				Earmark (2005 Appropriation)	Earmark		738 R							
				Earmark (SAFETEA-LU) (Matching Agency - Town of Mount Pleasant)	Earmark			3,612 C						
Widening of US 17 (Isle of Palms Connector to a point at or near Darrell Creek Trail			CHATS	Earmark (Appropriation) (Matching Agency - Town of Mount Pleasant)	Earmark	445 C							$34,555	
				Earmark (SAFETEA-LU) (Matching Agency - Town of Mt Pleasant)	Earmark			3,375 C						
				Federal Match	NHS			10,000 C						
				Local Match	Local			10,000 C						
				Local	Local			11,180 C						
This project is combined with the Town of Mount Pleasant's Hungryneck Interchange Project and was let as one project. Local funding is provided by the Town of Mount Pleasant.														
MUSC Roadway Enhancements/Improvements Courtenay St and Bees St			CHATS	Earmark (SAFETEA-LU)	Earmark		3,600 C						$9,100	
				Local	Local		5,500 C							
US 17 Septima Clark Parkway			CHATS	Earmark (Tiger Grant)	Earmark		10,000 C						$12,500	
				Local	Local		2,500 C							

Revision 21 (Correction) - May 19, 2011

District 6
Charleston

Project Description	Length	Rank	MPO / COG	STIP Category	Federal Program	Previous STIP(s)	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	2010-2015 Project Cost	Remaining Cost
FOSU 10(1), 900(1) (Resuface Fort Moultrie visitor center entrance road and the visitor center parking area. (Owner Agency - National Park Service, Kings Mountain National Military Park)			BCD / CHATS	Federal Lands	Federal Lands		564 C						$564	
SC FH 204(1) S-1032/S-133 from US 17 to Charleston/Berkeley County line. Resurfacing and safety improvements (Owner Agency - State of South Carolina)			BCD / CHATS	Federal Lands	Federal Lands		3,000 C						$3,000	
Wannamaker Nature Trails This project was awarded with the 2008 Recreational Trails program Agency - Charleston County Park & Recreation Commission			CHATS	Federal Lands	Recreational Trails		75						$75	
West Ashley Greenway 3 Pipes Bridge Replacement This project was awarded with the 2009 Recreational Trails program Agency - City of Charleston			CHATS	Federal Lands	Recreational Trails		121						$121	
ABS 100(1) Refuge Perimeter Road (Route 100) Agency - U.S. Fish and Wildlife Service, Ace Basin National Wildlife Refuge			BCD / CHATS	Federal Lands	Recreational Trails						1,026		$1,026	
Sewee Visitor & Environmental Education Center Boardwalk This project was awarded with the 2010 Recreational Trail program Agency - Cape Romain National Wildlife Refuge			BCD / CHATS	Federal Lands	Recreational Trails		47						$47	
Ashley River Road: Byway Coordinator (Awarded FY 2008 funding) (The amount shown includes $13,500 of local match)			CHATS	Federal Lands	Scenic Byways		38						$38	
I-26 (Near MM 212 to Near MM 219) (Westbound) (Near MM 212 to Near MM 217) (Eastbound) CHATS TMA ARRA allocation will be utilized	6.70 4.50	IM-35 IM-38 IM-44	CHATS	Interstate (Rehab)	ARRA IM		14,661 C 1,167 C						$15,828	
I-526 (Near MM 17 to Near MM 20) (Westbound)	3.00	IM-43	CHATS	Interstate (Rehab)	IM		150 P 6,500 C						$6,650	
I-26 @ S-13 (Remount Rd) Exit 212		IU-1	CHATS	Interstate (Widening / Interchange)	IM NHS	51,680 C 12,920 C		4,000 C 1,000 C					$5,000	
I-526 (I-26 to SC 7) (Widen to 6 lanes) (Funding identified in the Interstate Long Range Plan for Design Plans only		IU-3	CHATS	Interstate (Widening)	IM NHS		2,000 P 500 P		2,000 P 500 P				$5,000	
Johnnie Dodds Boulevard (Arthur Ravenel Jr Bridge to the I-526 Overpass)	4.23		CHATS	Local	Local		638 P 5,000 R 18,500 C	2,000 R 25,375 C	14,875 C				$66,388	
Mark Clark Expressway Extension (US 17 to James Island Expressway) Note: All project funding has been allocated by the State Infrastructure Bank (SIB) through a three party agreement between the SIB, SCDOT, and Charleston County. SCDOT is managing this project on behalf of Charleston County as a "Local Project".			CHATS	Local	Local SIB	12,000 P 7,671 R			79,329 C				$79,329	
Charleston County Resurfacing S-20 (Near S-54 to S-2143) S-894 (SC 7 to Near N.Char.City limit) S-20 (S-2143 to SC 700) S-894 (S-475 to 0.3 mi E of S-1217) S-1025 (US Naval Gate to 0.05 mi S of S-1386) US 52 (SC 642 to Railroad Crossing) US 52 (SC 642 to Near S-291)			BCD / CHATS	Resurfacing	ARRA Pave/Reconst	4,329 C 213 C								

District 6
Charleston

Revision 17 (Correction) - January 20, 2011

Project Description	Length	Rank	MPO / COG	STIP Category	Federal Program	Previous STIP(s)	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	2010-2015 Project Cost	Remaining Cost
I-526 (Fiber optic cable to connect existing cameras and CMC signs) (This project includes activities in Lexington County)			CHATS	Safety	ARRA Safety	810 C 90 C								
I-526 Interstate pavement remarking project			CHATS	Safety	ARRA Safety	347 C 38 C								
Harborview Road (North Shore Drive to Fort Johnson Rd)	3.70	CHATS-9	CHATS	System Upgrade	Local		185 P 2,175 R 3,300 C	10,850 C					$22,510	
					STP			2,000 C	3,000 C	1,000 C				
Bees Ferry Road Widenings (Savannah Hwy to Ashley River Road)	4.50	CHATS-6	CHATS	System Upgrade	Local		4,250 R	5,900 C	7,825 C				$46,975	
					STP			2,000 C	3,000 C	4,000 C	3,000 C	3,000 C		
					Federal Match			7,000 C						
					Local Match			7,000 C						
The amount to each project will be based on half of the construction shortfall at the time the contract is awarded. Any further adjustments to the project's Federal Match Program construction allocation can be made up to the matched share approved by the Commission.														
Maybank Highway Widening (Stono River Bridge to Main Road)	3.80	CHATS-5	CHATS	System Upgrade	Local		589 P 5,500 R	2,852 C	10,000 C	9,848 C			$28,789	
					STP									
US Hwy 52 / US Hwy 78 Bicycle Facility		NA	CHATS	System Upgrade	STP		98 P	600 C					$698	

District 6
Charleston

Project Description	MPO / COG	STIP Category	Federal Program	Previous STIP(s)	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	2010-2015 Project Cost	Remaining Cost
CARTA Capital	CHATS/ BCD	Mass Transit	5307	4,637 CA	4,869 CA	5,112 CA	5,368 CA				$15,349	
CARTA Capital - Facility Construction Intermodal Center Vehicle Acquisition	CHATS/ BCD	Mass Transit	5309	475 FC	403 VA	6,020 FC 1,412 VA					$7,835	
CARTA Operations, Vehicle Acquisition	CHATS/ BCD	Mass Transit	5316- Large Urban	498 OP		256 VA					$256	
BCD COG Admin.	CHATS/ BCD	Mass Transit	5316 - Large Urban	12 AD		3 AD					$3	
BCD COG Operations	CHATS/ BCD	Mass Transit	5316 - Large Urban			563 OP					$563	
CARTA Operations	CHATS/ BCD	Mass Transit	5317- Large Urban	255 OP		144 OP					$144	
BCD COG Admin., Operations	CHATS/ BCD	Mass Transit	5317- Large Urban	12 AD		3 AD 317 OP					$320	
CARTA Capital - Vehicle Acquisition, Facility Rehab., Bus Shelters, ITS	CHATS/ BCD	Mass Transit	ARRA - Urban	1,725 CA 4,753 VA								

US 17 Septima Clark Transportation and Drainage Improvements

Application for Financial Assistance
South Carolina Transportation Infrastructure Bank

APPENDIX A-7

ESTIMATE OF CONSTRUCTION COST

US17 SEPTIMA CLARK TRANSPORTATION AND DRAINAGE IMPROVEMENTS PROJECT
ESTIMATE OF CONSTRUCTION COST

Division I (Tunnels and Shafts)	
Wetland Mitigation (Allowance for Critical Area Permit for Construction)	$164,674
Working Tunnel Shaft / Coming St.	$1,901,980
Working Tunnel Shaft / Harmon Field	$2,445,403
Reception Tunnel Shaft / Cannon	$2,445,403
Reception Tunnel Shaft / Pump Station Shaft	$3,738,420
Miscellaneous Site Preparation	$199,392
Pump Station Drilled Shaft Piling	$1,875,854
Deep Conveyance Tunnel - Mainline	$11,169,810
Deep Conveyance Tunnel - President Street	$4,986,866
Deep Lateral Tunnels	$2,907,806
Large Collection Shafts	$2,881,788
Small Collection Shafts	$2,085,866
Drop Shaft Covers	$741,031
Sub Total: Tunnels and Shafts	$37,544,293
Contractor General Conditions - Licenses, Bonds, Mobilization, Etc.(5%)	$1,877,215
Construction Services -Engineering and Inspection (10%)	$3,942,151
Project Contingency (10%)	$4,336,366
Property Acquisition (Allowance for Purchases or Easements)	$2,163,200
Total: Tunnels and Shafts	**$49,863,224**

Division II (Pump Station Wetwell and Outfall)	
Site Preparation	$1,052,392
Temporary Cofferdam Construction	$7,691,312
Outfall Bedding Preparation	$490,087
Outfall Structure (Box Culverts)	$3,453,108
Discharge Structure	$158,831
Wet Well/Headbox Structure/Drain Pump Sump	$9,816,993
Discharge Piping	$191,171
Instruments and Instrumentation	$340,271
Tunnel Drain Pumping System	$1,176,163
Silt Removal System	$733,749
Floor Hatches	$50,113
Utilities	$98,988
Interim MCC Building	$86,775
Electrical	$1,385,832
Sub Total: Pump Station Wetwell and Outfall	$26,725,786
Contractor General Conditions - Licenses, Bonds, Mobilization, Etc.(5%)	$1,336,289
Construction Services -Engineering and Inspection (10%)	$2,806,207
Project Contingency (10%)	$3,086,828
Total: Outfall	**$33,955,111**

Division III (Collection System)	
Drainage Structures	$5,072,226
Piping	$7,166,694
Variable Milling and Asphalt Overlay	$2,719,165
Existing System Alterations (Allowance for Tie-Ins, Plugging, Etc.)	$1,003,739
Demolition and Removal	$983,882
Traffic Control and Temporary Signage	$1,473,210
Pavement and Striping	$3,309,045
Sidewalk, Wall and Curbing	$5,231,050
Permanent Signage, Signals and Lighting	$683,605
Landscaping	$1,115,042
Sub Total: Collection System	$28,757,658
Contractor General Conditions - Licenses, Bonds, Mobilization, Etc.(5%)	$1,437,883
Construction Services -Engineering and Inspection (10%)	$3,019,554
Project Contingency (10%)	$3,321,509
Property Acquisition (Allowance for Purchases or Easements)	$500,000
Total: Collection System	**$37,036,604**

Division IV (Pump Station Mechanical)	
Building Structure w/ Architectural Finishes & Features	$2,081,128
Miscellaneous Site Preparation and Finishing	$1,577,344
Stormwater Pumps and Drives	$11,793,678
Instruments and Instrumentation	$426,121
Fuel Supply System	$404,087
Auxiliary Power Generator	$126,774
Mechanical Screens	$2,785,722
Sump Pump	$62,167
Bridge Crane, Miscellaneous	$794,796
Electrical	$383,199
Sub Total: Pump Station Mechanical	$20,435,018
Contractor General Conditions - Licenses, Bonds, Mobilization, Etc.(5%)	$1,022,321
Construction Services -Engineering and Inspection (7%)	$1,502,689
Project Contingency (10%)	$2,296,459
Total: Pump Station	**$25,256,487**

Total Estimated Construction Cost	**$146,111,426**

US 17 Septima Clark Transportation and Drainage Improvements

Application for Financial Assistance
South Carolina Transportation Infrastructure Bank

APPENDIX A-8

REGULATORY PERMITS AND APPROVALS

SCDOT

File No.
Pin No.
Project No.
Route: US 17

CATEGORICAL EXCLUSION
Type C

County: Charleston
Date: August 26, 2009

To: Federal Highway Administration

From: Environmental Manager

Description: Spring/Fishburne US 17 Route Drainage Improvements

(SEE ATTACHED SHEET)

The Department's environmental assessment has determined the effects of this project are as described in the "General Support for Categorical Exclusion Determination" dated April 22, 1985, and is in compliance with the required findings reflected below. The project has been assessed for possible effects on the human and natural environment with a determination that no significant environmental impact will occur. The class of action and impact determination documented by this statement would qualify this project as a categorical exclusion under 23 CFR 771, Section 115(b).

A determination has been made that the project will not likely adversely affect federally-listed threatened and endangered species nor destroy or adversely modify critical habitat. Therefore, no further investigation under Section 7 of the Endangered Species Act is necessary.

In consultation with the SHPO, the project was determined to have no adverse effect upon historic properties.

The EFH assessment was submitted to NOAA-National Marine Fisheries Service and they concluded that the proposed project would have a substantial adverse impact on EFH. Section 305(b)(4)(A) of the Magnuson-Stevens Act requires the agency to provide EFH conservation recommendations when an activity is expected to adversely impact EFH. Based on this requirement, the following recommendations would be incorporated into the project:

1. The mitigation credits proposed for enhancing the 5.4 acres of Gadsden Creek shall be revised to reflect only a partial enhancement.

2. Permanent impacts to wetlands shall be compensated by a 2:1 mitigation ratio since the proposed creation sites within the Gadsden Creek drainage would continue to receive stormwater runoff and be of lower quality than at the project impact site.

3. The mitigation calculations shall include offsetting the impacts from the improvements to Lockwood Boulevard (permit number 94-1A-109-P) since this mitigation would be nullified by the proposed action.

4. Best management practices shall be used in construction of the drainage system minimizing the affects of construction by controlling sedimentation and turbidity adjacent to the project site.

5. The final mitigation plan shall identify the baseline conditions of the impact and mitigation sites and the location of an appropriate reference site for determining success criteria. Pre- and post-construction monitoring reports shall be provided to the NOAA-National Marine Fisheries Service

8-26-09
Date

Environmental Manager

9-4-09
Date

Federal Highway Administration

DEPARTMENT OF THE ARMY PERMIT

Permittee: City of Charleston
Laura Cabiness

75 Calhoun Street, 3rd Floor
Charleston, SC 29401

Permit No: SAC-2007-00591-2IN

Issuing Office: CHARLESTON DISTRICT

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description:
The work consists of the placement of fill material in waters of the United States to construct a deep tunnel and pumped outfall stormwater management system within the Spring Street and Fishburne Street drainage basins of the City of Charleston in accordance with the attached drawings entitled: Applicant: City of Charleston; Project Title: Spring/Fishburne, US 17 Drainage Improvements; Project Location: Charleston County. Sheets 1 thru 10 of 11 dated November 2008 and Sheet 11 of 11 dated August 2009.

Project Location:
This project is located on the Ashley River between the existing US Highway 17 bridges in Charleston County, South Carolina.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **31 December 2019.** If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

SEE PAGE 4-7.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

☒ Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

☒ Section 404 of the Clean Water Act (33 U.S.C. 1344).

☐ Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

Joseph P. Riley Jr. — 9-14-09

(PERMITTEE) (DATE)

CITY OF CHARLESTON

LAURA CABINESS

PRINT NAME

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

Jason A Kirk — 14 SEP 2009

(DISTRICT ENGINEER) (DATE)

Jason A. Kirk, P.E.

Lieutenant Colonel, U.S. Army

or his Designee

Tina B. Hadden

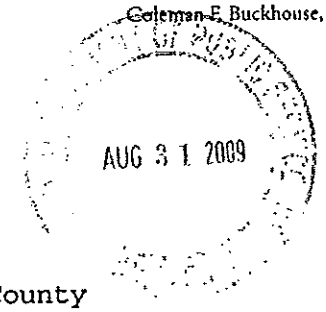
Chief, Regulatory Division

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE) (DATE)

D H E C

PROMOTE PROTECT PROSPER



August 27, 2009

LAURA S CABINESS
CITY OF CHARLESTON
75 CALHOUN ST
CHARLESTON SC 29401

RE: SPRING/FISHBURNE US 17 DRAINAGE IMPROVEMENTS, Charleston County
File number: 10-09-07-08

Dear Laura S Cabiness:

The Department of Health and Environmental Control (Department or DHEC) has received approval of and the Notice of Intent for the above-referenced project from **City of Charleston MS4**. Based on your submission of the Notice of Intent (NOI) and in accordance with the NPDES General Permit for Storm Water Discharges from Large and Small Construction Activities SCR100000 (2006 CGP), this project was granted coverage under the 2006 CGP on **August 27, 2009**. This project's general permit coverage number is **SCR10L439**. The total disturbed area for this site is **26.8 acres**. This NPDES coverage expires on **08/27/2014**, 5 years from the date of issuance.

See attached DHEC Office of Ocean and Coastal Resource Management (DHEC-OCRM) certification approved 08/25/2009 for additional conditions related to the Coastal Zone Consistency determination.

Be advised that this approval is granted under the following conditions:

1) **All contractors, sub-contractors, or persons performing land-disturbing activity on-site are responsible for appropriate handling and disposal of soil and groundwater in accordance with state and federal standards.**
2) **A co-permittee agreement must be read and signed by all persons responsible for land-disturbing activities prior to the pre-construction meeting.**
3) **A pre-construction meeting will be held on-site involving all site contractors and the Department for full discussion of the importance of appropriate handling and disposal of soil and groundwater.**
4) **During construction activities, please refer to plan sheet CS-G102 and sections 02500, 02576 and 02578 of the specifications manual for procedures on handling and disposal of soil and groundwater.**

Monthly reports must be submitted to the Department for the above-referenced site. Please refer to SCR100000, mainly Section 3.10, for information about requirements for inspections and monthly reporting. Your first monthly report is due on or before October 28, 2009.

Because this project disturbs 10 or more acres, a pre-construction meeting must be held onsite with all co-permittees and contractors who are not co-permittees (contractors) prior to that co-permittee or contractor performing construction related work intended to disturb soils at the above-referenced site. Please refer to SCR100000, mainly Section 3.2, for information about requirements for pre-construction meetings and certification of those meetings.

The inspections for this site must be performed by qualified personnel who meets the requirements list in Section 3.10.D of the 2006 CGP. Qualified personnel must be one of the following:

1. SWPPP preparer
2. Person under direct supervision of SWPPP preparer
3. Person who has been certified through a Construction Site Inspector Certification Course that has been approved by DHEC (see our website for a list of approved courses)
4. Person with registration equivalent of SWPPP preparer
5. Person under direct supervision of person with registration equivalent to SWPPP preparer

An as-built survey(s), signed and sealed by a S.C. Licensed Land Surveyor, should be submitted to **City of Charleston MS4** for all detention structure(s) on this site. The survey(s) should show grades, contours, and depths for all structure(s) and should include the elevations and dimensions of all outlet structures, including but not limited to pipes, orifices, risers, weirs, and emergency spillways. A statement signed by the project's S.C. Registered Engineer indicating that the structure(s) was installed and is operating as shown on approved plans and in approved calculations is required. If the elevations or dimensions of the structures listed above do not match those used in the approved plans, provide a certification statement signed by the project's S.C. Registered Engineer indicating that the structure, as built, will function as shown in approved calculations. A new analysis of the structure (routing) may be necessary. The as-built survey and/ or analysis must be accepted by **City of Charleston MS4** before a Notice of Termination (NOT) can be submitted to the Department.

The 2006 CGP can be downloaded at the following website: http://www.scdhec.gov/environment/water/docs/finalcgp.pdf or you may request a copy from us via email (stormwatercgp@dhec.sc.gov). You are responsible for ensuring your contractor(s) complies with the approved SWPPP and the minimum requirements of the 2006 CGP. Also, you are responsible for overall compliance with the Storm Water Management and Sediment Reduction Act of 1991 (1991 Act) and the Federal Clean Water Act (CWA).

You must notify this DHEC-OCRM Office prior to starting any land-disturbing activity. The address and telephone number of the DHEC-OCRM office are as follows:

S.C. DHEC-OCRM
1362 McMillan Avenue, Suite 400
Charleston, SC 29405
843-953-0200

You should be aware that this approval is only applicable for the Stormwater Pollution Prevention Plan (SWPPP) that was submitted for this project. Any additional construction or land disturbing activity beyond the scope of the approved plans is not authorized. Any future work for this project not shown on the stamped, approved plans will require that you submit another site plan for review and approval. All major modifications require review and approval by **City of Charleston MS4**; the Department must be notified in writing by **City of Charleston MS4** of the approval of major modifications if the disturbed area changes. Minor modifications to the approved SWPPP may be made by the SWPPP preparer and do not require review and approval by the Department; these changes should be signed and dated by the SWPPP preparer. If you have a question about

whether a modification is major or minor, contact the Stormwater Permitting Section at (843) 953-0200.

A copy of the stamped, approved SWPPP (including a copy the 2006 CGP and signed co-permittee and contractor certifications), NOI, and CGP coverage letter from DHEC must be retained at the construction site (or accessible within 30 minutes during normal business hours) from the date of commencement of construction activities to the date of final stabilization. A copy of the stamped, approved SWPPP must be available at a central location on-site for the use of all those identified as having responsibilities under the SWPPP whenever they are on the construction site. If an on-site location is unavailable to store the SWPPP when no personnel are present, notice of the plan's location must be posted near the main entrance at the construction site.

All contractors who will conduct land-disturbing activities at the site must sign a certification statement as a co-permittee or as a contractor who is not a co-permittee. You are responsible for any contractor who is not a permittee. You are also responsible for listing all contractors in the SWPPP and for holding a pre-construction conference with each co-permittee and contractor who is not a co-permittee before they can conduct land-disturbing activity at the site.

The Department may conduct periodic inspections of your site. Any violations found during these inspections may result in enforcement action. Failure to comply with the approved SWPPP or the minimum requirements of the 2006 CGP, 1991 Act, or CWA may subject you to applicable penalties.

This NPDES coverage should be terminated by the permittee when one of the conditions listed in Section 5.1 of the 2006 CGP has been met. You must submit a Notice of Termination (NOT) to cancel your NPDES coverage under the 2006 CGP. Please see section 5.1 of the 2006 CGP for more information about termination of coverage.

You are responsible for obtaining any other federal, state, or local permit that may be required for this project. Please note we have not sent a copy of this letter to any county or city building official. You must send a copy of this letter to these agencies, if necessary.

Please see the enclosed "Notice of Appeal Procedure" document for information about the procedures for appealing this NPDES coverage. Also, see the enclosed document from the S.C. DHEC Compliance Assurance Division detailing some of the compliance requirements of the 2006 CGP.

If you have any questions or cannot access the referenced websites, please call Richard V Geer at 843-953-0238.

Sincerely,

Richard V Geer, Engineer Associate
Regulatory Programs Division

CC: Michael V Horton–DAVIS & FLOYD INC
Region 7, Charleston EQC Office
Fowler Del Porto-City of Charleston MS4

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

August 12, 2009

City of Charleston
Attn: Laura Cabiness, PE
75 Calhoun Street, 3rd Floor
Charleston, SC 29401

Re: 2007-00591-2IN(09)
City of Charleston

Dear Ms. Cabiness:

The SCDHEC Office of Ocean and Coastal Resource Management has reviewed your application to construct a pump station in the marshes located between the US highway 17 Ashley River bridges to alleviate stormwater in conjunction with the overall Spring/Fishburne drainage improvements, Charleston, Charleston County, South Carolina and has issued a permit for this work. You should carefully read the description of the authorized project and any special conditions that have been placed on the permit, as these conditions may modify the permitted activity. In addition, there are a series of general conditions that should be reviewed. The original and one photocopy of the permit, as issued, are enclosed. After carefully reading the permit, if you wish to accept the permit as issued, sign and date in the signature block entitled "PERMITTEE" on the original version of the permit **and return it to this Department. Keep the photocopy for your records.**

PLEASE READ CAREFULLY: You are required to sign and return the original version of your permit to this Department. If this permit is not signed and returned within thirty (30) days of issuance, *OR* appealed within 15 days as described on the enclosed "Notice of Appeal Procedure", the Department reserves the right to cancel this permit. Please carefully review the enclosed "Notice of Appeal Procedure" for information and deadlines for appealing this permit.

We have also enclosed a "request for a construction placard" card. You must send in this card before the time you wish to start construction. At that time a construction placard will be sent to you to post at the construction site.

PLEASE NOTE: You are not authorized to commence work under the permit until we have received the original version of the entire permit signed and accepted by you, and a construction placard has been issued and posted at the construction site. The receipt of this permit does not relieve you of the responsibility of acquiring any other federal or local permits that may be required.

Sincerely,

SEE SPECIAL CONDITIONS(S)

Tess Rodgers
Wetland Section Coordinator

Enclosure
CC: Blair Williams, Section Manager
Tidewater Environmental Services
Richard Geer, OCRM

C. Earl Hunter, Commissioner
Promoting and protecting the health of the public and the environment.

August 25, 2009

MICHAEL V HORTON
DAVIS & FLOYD INC
P O BOX 61599
CHARLESTON SC 29419-1599

Re: SPRING/FISHBURNE US 17 DRAINAGE IMPROVEMENTS, CHARLESTON County
Certification ID # 67541

Dear MICHAEL V HORTON:

The Department of Health and Environmental Control's Office of Ocean and Coastal Resource Management has completed the Coastal Zone Consistency review for the plans dated July 22, 2009 on August 25, 2009. Upon receipt of a copy of the MS4 approval letter, a copy of the final Notice of Intent and the $125 NPDES fee, your application will be considered administratively complete. This document is for notification purposes, but it does not constitute final approval.

Please feel free to contact me if you have any questions at 843-953-0238.

Sincerely,

RICHARD V GEER
Stormwater Project Manager
Regulatory Programs Division

ec: Laura Cabiness (cabinessl@ci.charleston.sc.us)
Fowler Del Porto (delportof@ci.charleston.sc.us)
Tammy Huggins (thuggins@davisfloyd.com)

JOSEPH P. RILEY, JR.
Mayor

City of Charleston
South Carolina
Department of Public Service

LAURA S. CABINESS, P.E.
Director

August 26, 2009

Michael V. Horton
Davis and Floyd Inc.
P.O. Box 61599
Charleston, SC 29419-1599

Re: **Spring/Fishburne US 17 Drainage Improvements**
Project # 30295.00

Mr. Horton,

The City of Charleston's Engineer or an appointed designee has reviewed the civil construction drawings and stormwater management plan for the above referenced project located within the City of Charleston's MS4 jurisdiction. The proposed construction project has been found to be in compliance with the City of Charleston's minimum standards and Stormwater Management Ordinance. Please note that the City by reviewing and providing an opinion on compliance does not assume any liability as a result of providing such review and opinion. This letter shall not alleviate the designer engineer, owner's, and/or developer's duty, responsibility, or liability for any Federal, State or City laws or regulations.

This approval does not constitute, in any way, the right to start construction. After receipt of this letter the Office of Ocean and Coastal Resource Management (OCRM) will issue final approval of the Notice of Intent (NOI) and will certify coverage under the National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP). No construction can commence until DHEC-OCRM has certified coverage and the City issues an approved construction application. Any construction started before full permitting is received shall be subject to a stop work order and other penalties prescribed by law.

If you have any questions or comments regarding this approval, please contact a member of our engineering staff at (843) 724-3757.

Sincerely,

Fowler B. Del Porto

Fowler B. Del Porto, P.E.
Engineer

cc: Christine Koczera (DHEC-OCRM)

South Carolina
Department of Transportation

April 30, 2010

City of Charleston
75 Calhoun Street
Charleston, SC 29401

RE: Permit #: 84608 – US 17 (Septima Clark Expressway) – Spring/Fishburne Drainage and Roadway Improvement Project

Dear Permittee:

The attached permit has been approved with the following stipulations:

1. The South Carolina Department of Transportation (SCDOT) shall be given the opportunity to attend any pre-construction conferences.

2. A pre-construction meeting shall be held prior to construction activities commencing within South Carolina Department of Transportation (SCDOT) right-of-way. At a minimum, SCDOT shall be given *2 weeks* notice before holding a pre-construction conference in order to give ample time for Construction Inspection coordination. Return a completed copy of the attached Permit Construction Notification form.

3. Materials that are approved and required by the City of Charleston (including brick pavers, granite curb, specialty construction materials, etc.) may be placed in the right-of-way for driveways and sidewalk in the Downtown Peninsula area. The maintenance of these materials and all associated problems caused by these materials will be the responsibility of the City of Charleston for the life of the improvement. The SCDOT will not be held liable for any damages to the driveway, sidewalk, or roadway as a result of these materials. All areas of maintenance required by SCDOT forces will be repaired using concrete, asphalt or other SCDOT approved materials.

4. In the event of a hurricane evacuation, either voluntary or mandated, all operations shall cease and all equipment shall be removed from the SCDOT right of way. Work may resume at this location once the State Government has given an all-clear to return to the affected areas.

Also, please note all provisions attached to or written on the approved permit, as well as the requirements outlined on the back of the permit. *Failure to comply with any of these provisions may result in stoppage of work, the permit being revoked, and removal of all materials placed within the right-of-way at full expense of the permittee.* I ask for your full cooperation in this matter so that we may avoid costly corrections and maintain the integrity of our transportation infrastructure.

Respectfully,

Richard Turner
Resident Maintenance Engineer

Charleston Maintenance
2401 Maintenance Way
North Charleston, South Carolina 29406

Phone: (843) 740-1665
Fax: (843) 740-1648

S.C. Department of Transportation
Form 637 (Rev 4/2008)

Application for Encroachment Permit

ReqId: 2967

Permit Nbr: 9A608

Applicant: City of Charleston
Street: 75 Calhoun Street
City: Charleston
State: SC Zip: 29401
Phone: 843-724-3754
Fax: 843-973-7261
Contact: Laura Cabiness

County: Charleston

	Cnty/Route:	Road Name:
1.	Multiple Sites	See Attached Drawing
2.		
3.		
4.		
5.		

1. Type of Encroachment:

Roadway and Drainage: Surface Collection system improvements in various locations Roadway, drainage and transportation enhancements on US 17 Septima Clark Parkway from the Coming Street intersection through the Lockwood Boulevard intersection.

2. Description of Location:

Reference attached drawings for Limits of Encroachment indicating location/limits of proposed construction. The area of improvements is bounded by the Ashley River (west), Moultrie Street (north), Meeting Street (east) and Ratcliffe Street (sout

(Attach sketch indicating roadway features such as: pavement width, shoulder width, sidewalk and curb and gutter location, significant drainage structure, north arrow, right width, and location of the proposed encroachment with respect to the roadway centerline and the nearest intersecting road on the State system.)

3. The undersigned applicant hereby requests the SCDOT to permit encroachment on the SCDOT right of way as described herein. It is e understood that the encroachment, if and when constructed, shall be installed in accordance with the sketch attached hereto and made a hereof.

The applicant agrees to comply with and be bound by the SCDOT's "A Policy for Accommodating Utilities on Highways Right way", "Standard Specifications for Highway Construction", the "General Provisions" and "Special Provisions", attached here made a part hereof by reference, during the installation, operation and maintenance of said encroachment within the SCDOT's of Way.

DISCHARGES OF STORM WATER AND NON-STORM WATER: Work within State Highway right-of-way shall be conduc compliance with all applicable requirements of the National Pollutant Discharge Elimination System (NPDES) permit(s) issued Department of Transportation (Department), to govern the discharge of storm water and non-storm water from its properties. shall also be in compliance with all other applicable Federal, State and Local laws and regulations, and with the Department's Encroachment Permits Manual and encroachment permit. The encroachment permit will not be issued until the applicant has an NPDES construction permit from SC Department of Health and Environmental Control.

The applicant agrees to comply with all current SCDOT Standards Specifications for Highway Construction including all Supplementa Technical Specifications. The applicant hereby further agrees, and binds his/her/its heirs, personal representatives, successors, assigns, assume any and all liability for accidents or injuries to persons, or damage to property, including the highway, that may be caused by t construction, maintenance, use, moving or removing of the physical appurtenances contemplated herein, and the applicant agrees to inc and hold SCDOT harmless from and against any and all claims for personal injury and/or property damage which may be sustained by person by reason of the construction, maintenance or existence of said encroachment on the SCDOT's right of way.

Applicant's Name: Laura S. Cabiness, PE (Please print or type) Date: 4/22/2010

Applicant's Sig: Laura S. Cabiness Title: Director, Dept. Public Servic

In accordance with your request and subject to all the provisions, terms, conditions, and restrictions stated in the application and the ge special provisions attached hereto, the SCDOT hereby approves your application for an encroachment permit. This permit shall becom and void unless the work contemplated herein shall have been completed prior to: April 29, 2017

☒ See Attached Special Provisions and/or Permit Requirements NPDES Permit Nbr: SCR10LA39

(Date received by Res. Maint. Engr.) (SCDOT Approval) 4/30/10 (Date)

See all attached Special provisions

☒ Resident Maintenance Engineer
☐ District Engineering Administrator
☐ Deputy Secretary for Engineering
☐ District Maint./Constr. Engineer

Application for Encroachment Permit
General Provisions

Permit Nbr: 84608

1. DEFINITIONS: The word "Permittee" used herein shall mean the name of the person, firm, or corporation to whom this permit is addressed, his, her, its, heirs, personal representatives, successors and assigns. The word "DEPARTMENT" shall mean the South Carolina Department of Transportation.

2. NOTICE PRIOR TO STARTING WORK: Before starting the work contemplated herein within the limits of the highway right of way, the Department's Resident Maintenance Engineer in the county in which the proposed work is located shall be notified 24 hours in advance so that he may be present while the work is under way.

3. PERMIT SUBJECT TO INSPECTION: This permit shall be kept at the site of the work at all times while said work is under way and must be shown to any representative of the Department or law enforcement officer on demand.

4. PROTECTION OF HIGHWAY TRAFFIC: The applicant shall be responsible for the protection of the highway traffic at all times during the construction, mainten removing or moving of the encroachment permitted herein. Detours, barricades, warning signs and flagmen, as necessary, shall be provided by and at the expense of the Pe and shall be in accordance with the "Manual on Uniform Traffic Control Devices" (MUTCD). The work shall be planned and carried out so that there will be the least poss inconvenience to the motoring public. The Permittee agrees to observe all rules and regulations of the Department while carrying on the work contemplated herein and take other precautions that circumstances warrant.

5. STANDARDS OF CONSTRUCTION: All work shall conform to the Department's standards of construction and shall be performed in a workman-like manner. T applicant shall make adequate provisions for maintaining the proper drainage of the highway as it may be affected by the encroachment permitted herein. All work shall be to the supervision and satisfaction of the Department.

6. FUTURE MOVING OF PHYSICAL APPURTENANCES: If, in the opinion of the State Highway Engineer, it should ever become necessary to move or remove physical appurtenances, or any part thereof contemplated herein, on account of change in location of the highway, widening of the highway, or for any other sufficient reas such moving shall be done on demand of the Department at the expense of the Permittee.

7. RESTORATION OF HIGHWAY FACILITIES UPON MOVING OR REMOVING OF PHYSICAL APPURTENANCES: If, and when, the physical appurtenances contemplated herein shall be moved or removed, either on the demand of the Department or at the option of the Permittee, the highway and facilities shall immediately be restored to their original condition at the expense of the Permittee.

8. COSTS: All work in connection with the construction, maintenance, moving or removing of the physical appurtenances contemplated herein shall be done by and at expense of the permittee.

9. ADDITIONAL PERMISSIONS:

(a) It is distinctly understood that this permit does not in any way grant or release any rights lawfully possessed by the abutting property owners. The Permittee shal any such rights, as necessary, from said abutting property owners.

(b) The Permittee shall be responsible for obtaining all other approvals or permits necessary for installation of the encroachment from other government entities.

(c) There shall be no excavation of soil nearer than two feet to any public utility line or appurtenant facility except with the consent of the owner thereof, or except special permission of this Department after an opportunity to be heard is given the owner of such line or appurtenant facility.

10. ADDITIONAL WORK PERFORMANCE:

(a) All crossings over the highway shall be constructed in accordance with "Specifications for Overhead Crossings of Light and Power Transmission Lines and Tel Lines over each other and over Highway Rights of Way in South Carolina," as approved by the Public Service Commission of South Carolina and effective as o this permit.

(b) All tunneling, boring, or jacking shall be done in such a way as not to disturb the highway surfacing.

(c) No pavement shall be cut unless specifically authorized herein.

(d) No excavation shall be nearer than three feet to the edge of pavement unless specifically authorized herein.

(e) Underground facilities will be located at minimum depths as defined in the "Utility Accommodations Manual" for the transmittant, generally as follows: 4 feet minimum for hazardous or dangerous transmittant, 3 feet minimum for other lines. The Department may approve shallower depths if adequate protection is prov Such approval must be obtained in writing.

(f) Service and other small diameter pipes shall be jacked, driven, or otherwise forced underneath the pavements on any surfaced road without disturbing the paven The section under the highway pavement and within a distance of three (3) feet on either side shall be continuous without joints.

11. ACCESS:

(a) Permittee is responsible for maintaining reasonable access to private driveways during construction.

(b) It is expressly provided that, with respect to any limited access highway, the Permittee shall not have or gain access from the main traveled way of the highway, on or off ramps to such facility, except upon approval by the Department.

12. DRIVEWAYS:

(a) The existing crown of the highway shall be continued to the outside shoulder line of the highway.

(b) If the driveway or approach is concrete pavement, the pavement shall be constructed at least 6 inches thick and with a minimum of class 2500 concrete. There sl bituminous expansion joint, not less than 3/4 inches in thickness, placed between the highway paving and the paving of the approach for the full width of the ap

13. BEAUTIFICATION:

(a) All trees, plants, flowers, etc. shall be placed in accordance with the provisions specifically stipulated herein.

(b) All trees, plants, flowers, etc. shall be maintained by, and at the expense of, the Permittee and the provisions of this permit shall become null and void, if and wi Permittee ceases to maintain said trees, plants, flowers, etc.

14. AS-BUILT PLANS:

(a) The applicant shall provide the Department with survey-quality as-built plans in accordance with the requirements set forth in the Department's "A Policy for Accommodating Utilities on Highway Rights of Way".

South Carolina
Department of Transportation

Additional Standard Provisions – Permit # 84608

The following are general requirements that this permitted project will need to comply with:

- No work can begin until the District 6 Office approves the construction staging plan, detour plan, and lane closures.
- The City of Charleston is responsible for maintenance and repair of granite curb, specialty construction materials, and non-standard features of this project.
- This permit expires 7 years after the date of permit authorization.
- Tolerance for the movement of bridge structures shall be 0.25 inches of vertical movement, 0.25 inches lateral traverse movement, and 0.25 inches of lateral longitudinal movement. This shall supersede tolerances given in Section 3 of Technical Memorandum: GL-11.
- All mitigation measures for scour and deposition shall be subject to SCDOT approval prior to implementation. Reference Technical Memorandum OF-5 Section 4 Mitigation.
- The Department considers this project to be in two phases. The first phase of the project is the roadway enhancement improvements along US-17. The second phase is the remainder of the work which includes the pump station, drainage shaft, tunnels, etc. If the second phase of the project is segmented into smaller individual projects, subsequent authorizations from the Department are required for each phase.
- If federal funding is administered by SCDOT, the City shall apply for Local Public Agency (LPA) certification and comply with all Procedures for LPA Project Administration.
- This permit includes the following:
    - Signed Permit Application
    - Special Provisions
    - Signed and Sealed Plans
    - Technical Memorandum CS-12
    - Technical Memorandum CS-13
    - Technical Memorandum CS-14

Charleston Maintenance
2401 Maintenance Way
North Charleston, South Carolina 29406

Phone: (843) 740-1655
Fax: (843) 740 1648

- Technical Memorandum GL-11
- Technical Memorandum OF-5
- Three Signed Design Exceptions

- Construction shall meet the regulations of the current SCDOT Standard Drawings for Road Construction, SCDOT Standard Specifications for Highway Construction, and Supplemental Specifications at the time of construction.

- All "Permanent" pavement markings will be replaced with thermoplastic materials meeting the requirements of the current SCDOT Standard Specifications.

- Permittee will provide competent project management staff and SCDOT certified inspection staff that have authority to make decisions on site during construction.

- Permittee will provide competent CEPSCI certified inspector to perform weekly Erosion Control Inspections.

- The permittee will follow the latest SCDOT materials testing and sampling requirements as set forth in the SCDOT Construction Manual and provide SCDOT staff with copies of all testing and inspection reports during construction.

- The permittee will submit traffic and erosion control plans prior to commencing work.

- Permittee will have certified traffic control supervisor on site during traffic control operations.

- Work will be performed by a SCDOT pre-qualified contractor.

- Prior to commencement of work, the permittee will have a pre-construction conference with all appropriate parties to discuss the project requirements.

- The permittee will schedule a final inspection upon completion of the project.

- The SCDOT will provide competent staff to frequently monitor projects and review testing and inspection reports as necessary to confirm reasonable compliance.

- Permittee is required to follow all SCDOT Department Safety Standards and Guidelines when working on State Roads.

Charleston Maintenance
2401 Maintenance Way
North Charleston, South Carolina 29406

Phone: (843) 740-1655
Fax: (843) 740-1648

- Permanent construction signs are to be placed for all construction activities on State routes unless otherwise approved by SCDOT and shall be placed in accordance with appropriate traffic control plan of the current SCDOT Standard Drawings for Road Design.

- Once work commences and/or construction signs are placed on the road, the Permittee and/or Permittee's contractor is responsible for all road maintenance and liability.

Charleston Maintenance
2401 Maintenance Way
North Charleston, South Carolina 29406

Phone: (843) 740-1655
Fax: (843) 740-1548

SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION
HIGHWAY MAINTENANCE MANAGEMENT SYSTEM
Encroachment Permit

Permit No: 84608
Permit Decision Date: April 30, 2010
Expiration Date: April 29, 2017

Type Permit

DRAINAGE LANDSCAPING OTHER

Location

District	Work County	Type	Route	Aux	Begin MP	End MP
6	CHARLESTON	US	17	00	29.95	30.93

Contact Information

Applicant: CITY OF CHARLESTON
Contact: LAURA CABINESS Phone: (843) 724-3754
Address: 75 CALHOUN STREET Phone:
City: CHARLESTON State: SC Zip: 29401

Comments

SPRING & FISHBURNE DRAINAGE AND ROADWAY ENHANCEMENTS US-17 (SEPTIMA CLARK EXP), LOCKWOOD BLVD AND SIDE STREETS ALONG US-17.
SEE ALL ATTACHED SPECIAL PROVISIONS.

Special Provisions

101 - SHOULDER SOD DESTROYED BY THIS INSTALLATION TO BE REPLACED FOR THE ENTIRE AREA. THE AREA SHALL BE RE-SHAPED AND ROLLED TO THE CROSS SECTION EXISTING PRIOR TO THIS WORK.

104 - ALL VALVES AND MANHOLES SHALL CONFORM TO THE EXISTING ELEVATION OF THE ROADWAY OR SHOULDER AND CONFORM TO THE ACCEPTED STANDARD. THE VALVES WILL BE LOCATED OUT OF THE PAVEMENT. THEY SHALL NOT BE PLACED IN A DITCH FLOW LINE.

105 - ALL EXCAVATED MATERIAL SHALL BE PLACED ON THE SIDE OF THE TRENCH AWAY FROM THE TRAVELED ROADWAY, AND SHALL BE NO CLOSER THAN FIFTEEN (15) FEET TO THE EDGE OF PAVEMENT.

117 - OPEN TRENCHES SHALL BE COVERED WITH METAL PLATES WHEN THE PAVEMENT CANNOT BE RESTORED THE SAME DAY. PLATES SHALL BE MONITORED PERIODICALLY TO ENSURE THAT THE TRENCH IS PROPERLY COVERED.

123 - ALL WORK PERFORMED IN CONNECTION WITH THIS PERMIT SHALL CONFORM TO THE SCDOT "A POLICY FOR ACCOMODATING UTILITIES ON HIGHWAY RIGHT-OF-WAY", DATED AUGUST 2005.

2 - ALL REPAVING IS TO CONFORM TO STANDARD DEPARTMENT SPECIFICATIONS. THE ROAD, AT DROP INLETS, SHALL BE MILLED TO MAKE A SMOOTH TRANSITION WHEN PAVED. PAVEMENT WITH CURB AND/OR SIDEWALK WILL BE PAVED FULL DEPTH FROM OUTER EDGE TO GUTTER EDGE.

SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION
HIGHWAY MAINTENANCE MANAGEMENT SYSTEM
Encroachment Permit

Permit No: 84608
Permit Decision Date: April 30, 2010
Expiration Date: April 29, 2017

Special Provisions

204 - SIDEWALK OR CURB AND GUTTER REMOVAL SHALL BE REPLACED FROM JOINT TO JOINT.

209 - DISTURBED VEGETATION SHALL BE RESEEDED ACCORDING TO THE SPECIFICAION FOR HIGHWAY CONSTRUCTION.

302 - NO EXCAVATION SHALL BE LEFT OPEN ALONG HIGHWAY.

304 - PAVEMENT MARKINGS ALTERED DURING THIS INSTALLATION SHALL BE RESTORED BY THE APPLICANT.

305 - FLASHING ARROW BOARDS SHALL BE USED FOR ALL LANE CLOSURES ON PRIMARY ROUTES AND/OR ROADS WITH HIGH TRAFFIC VOLUMES.

306 - TRAFFIC CONTROL, LIGHTS, SIGNS AND FLAG-MEN WILL BE FURNISHED BY APPLICANT AND WILL CONFORM TO PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

310 - FIELD CHANGES, IF NECESSARY, MUST BE APPROVED IN WRITING BEFORE ACTUAL CONSTRUCTION OF PROPOSED CHANGES.

311 - SEDIMENT AND EROSION CONTROL DEVICES SHALL BE USED TO MINIMIZE THE MOVEMENT OF SEDIMENT.

312 - THE PERMITTEE SHALL HOLD THE DEPARTMENT HARMLESS FOR DAMAGES TO BOTH UPSTREAM AND DOWNSTREAM PROPERTIES.

317 - THE APPLICANT IS TO PROVIDE ALL THE NECESSARY MAINTENANCE TO THE AREA BEAUTIFIED.

318 - THE APPLICANT SHALL BE RESPONSIBLE FOR IMMEDIATE REMOVAL OF SUCH TRAFFIC HAZARDS AS MUD, DEBRIS, LOOSE STONE, AND TRASH AS MAY BE WASHED OR SPILLED ON THE TRAVELED ROADWAY AS A RESULT OF THE PROPOSED WORK.

319 - ALL VEGETATION WITHIN SITE AREA SHALL NOT EXCEED 30 INCHES, TREE LIMBS SHALL NOT BE PERMITTED BELOW 4' 9" FROM GROUND.

4 - SCDOT SHALL BE NOTIFIED WHEN WORK DEFINED IN THE PERMIT STARTS AS WELL AS WHEN THE WORK IS COMPLETED. REFERENCE SHALL BE MADE BY PERMIT NUMBER.

5 - APPLICANT SHALL PROVIDE TO THE DEPARTMENT THE OPPORTUNITY OF ATTENDING ANY PRE-CONSTRUCTION MEETING PRIOR TO THE BEGINNING OF WORK.

125 - ALL CROSSLINE PIPES ARE TO BE LOCATED AND FLAGGED PRIOR TO BEGINNING OPERATION.

South Carolina
Department of Transportation

Permit Construction Notification
Fax - Back

Fax To: SCDOT Charleston Encroachment Permit Office
(843) 740-6169

This fax is to inform the Department of the following permitted work:

Permit #:_____

Road Name/No.:_____

Project Name:_____

Name of Permittee:_____

Contact Name & Phone No.:_____

Proposed Preconstruction Date:_____
(Date will be confirmed with Resident Construction Engineer)

Estimated Project Completion Time:_____

NOTES:

- ***This notice must be sent at least 2 WEEKS PRIOR to holding a Preconstruction Conference in order to coordinate with assigned SCDOT Resident Construction Engineer's Office.***

cc: District Construction Engineer
File/Charleston Maintenance

Charleston Maintenance
2401 Maintenance Way
North Charleston, South Carolina 29406

Phone: (843) 740-1656
Fax: (843) 740-1648