



Mississippi Gulf Coast
Metropolitan Planning Organization
Gulf Regional Planning Commission



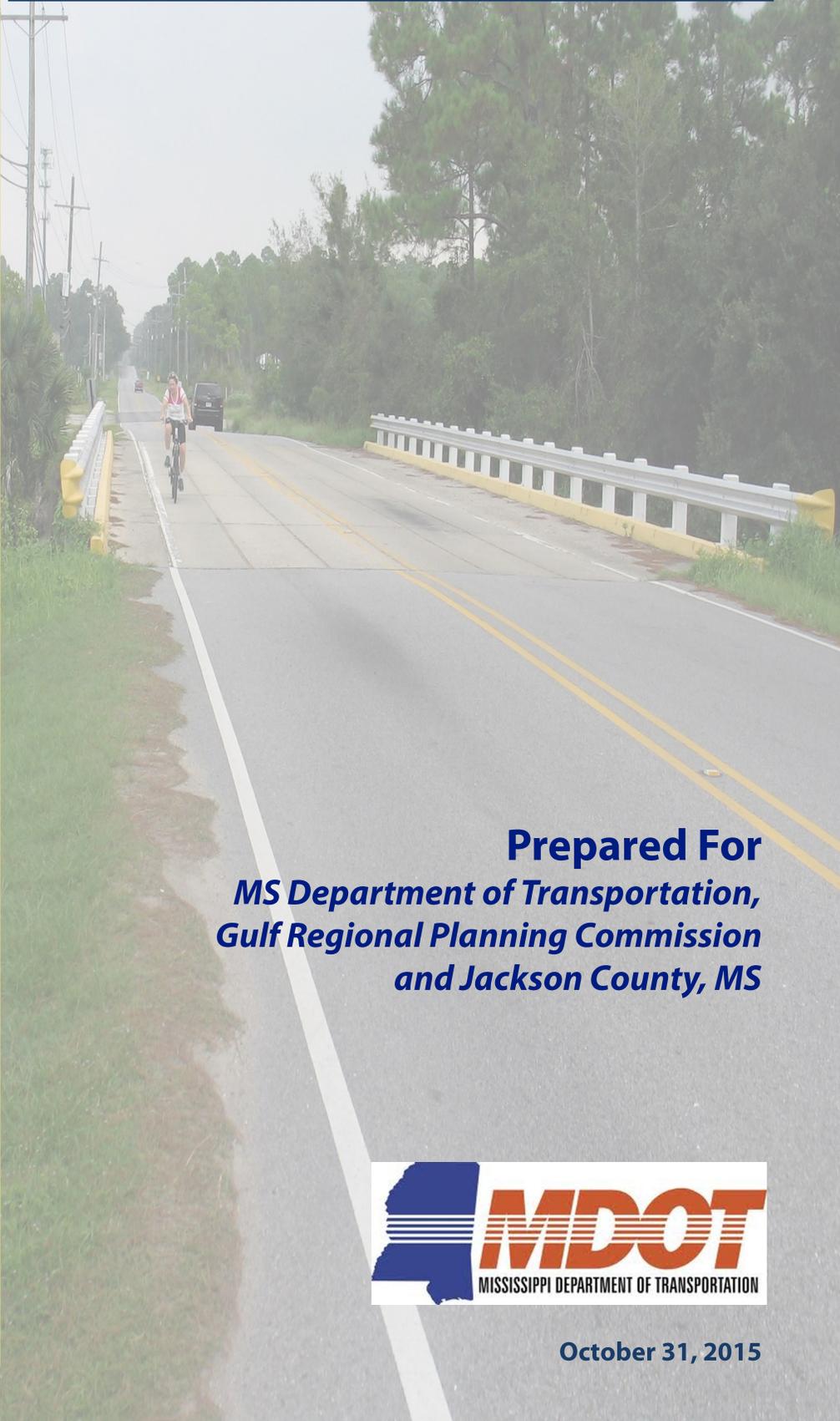
Beachview Drive Traffic Study

Old Spanish Trail to Lake Mars Avenue

Project No. 106821-101000



BKI



Prepared For
*MS Department of Transportation,
Gulf Regional Planning Commission
and Jackson County, MS*



October 31, 2015

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Project Description and Purpose

BKI, as assigned by the Gulf Regional Planning Commission (GRPC) in partnership with Jackson County, MS, has conducted a study of traffic operations along Beachview Drive, a collector, located within the Gulf Park Estates area of unincorporated Jackson County (See Figure 1). The corridor, which is approximately 2.0 miles long, is located approximately 5.0 miles east of downtown Ocean Springs.



Beachview Dr, looking south toward Palmetto St

Corridor Description

Beachview Drive is 2-lanes, with no shoulders along its length. The posted speed limit is 35 miles per hour for the length of the corridor. There are no sidewalks, although side-paths appear at intermittent locations in the grassy areas along the corridor between the edge of the current road surface and open ditch drainage. The area has no traffic controls (all-way stops or traffic signals) except at the ends of the corridor. A traffic signal is at the northern intersection with Old Spanish Trail and a stop sign at the southern end of the corridor at Neptune Drive.

Pedestrians and cyclists are in evidence along the corridor, as observed during field visits to the corridor. As there are no facilities to accommodate these user groups, their options for using the corridor included sharing space in the travel lanes with passing traffic or using off road areas between the edge of pavement and the adjacent drainage ditches.

An initial project start meeting held with the community on September 18, 2014 (See Summary of *Community Comments/Input*) identified several needs for the area which should be considerations in looking at improvements along Beachview Drive:

- Cycling traffic – several residents indicated that they regularly cycle along the corridor to access nearby businesses and community facilities. During the field review, several cyclists traveled along the western edge of Beachview Drive, using a combination of existing pavement and off-road areas. *Future improvements will need to support area travel patterns, as well as offer opportunities to connect to Old Spanish Trail.*
- Pedestrian patterns – several residents indicated that they regularly walk the neighborhood for exercise, with the majority of these movements occurring on the streets surrounding Beachview Drive. *Future improvements will need to support creation of a safer walking environment in the area.*
- School bus pickups/drop-offs – buses transporting students to the nearby Ocean Springs School District facilities (Oak Park Elementary, Ocean Springs Middle School and Ocean Springs High School) regularly circulate the area. Students meet these buses at designated stop locations which are interspersed around the neighborhood. *Future improvements will need to incorporate these locations in the planning for improvements to the pedestrian infrastructure in the area.*
- Speed of traffic - residents reported that vehicles traveling along Beachview Drive appear to be moving at higher rate of speed than the posted limit. Compounding their concerns about this condition are the road's width, lack of shoulders and lighting and the area's topography which creates rises and falls in the corridor between its start and end. *Future improvements will need to offer flexibility in order to address calming of traffic speeds, should further investigation indicate a problem.*



Beachview Dr, looking north over Simmons Bayou bridge

- *Lack of street lighting* – residents reported that the lack of lighting along Beachview Drive (and within the surrounding neighborhood) creates pockets of darkness that make walking or cycling not a safe choice during early morning or evening hours. *Future improvements will work within existing county policies and practices in order to outline a method to improve lighting in the general area.*

A final public information meeting (August 27, 2015) and 21-day public review and comment period for the plan (ending on September 21, 2015) provided additional comments and suggestions for potential refinements to the recommended

improvement alternatives from the community.

Project Purpose

The purpose of this project will be to recommend a series of funded improvements for Beachview Drive and the surrounding area implemented through the GRPC's Transportation Improvement Program (TIP) process. Projects considered for funding through this process must meet with the established criteria for project development outlined in the GRPC's Transportation Improvement Program handbook as well as the region's overall goals for system development, outlined in the call-out box to the right.

In addition, the definition of project alternatives occurred in such a manner as to be consistent with the MDOT Local Public Agencies (LPA) process. This includes a general screening of the area of the project using several environmental indicators as means to identify early items which require additional coordination or consideration as part of the future design and project development process.

MPO Project Goals

The goals identified by the MPO incorporates the input of residents from the Gulf Coast and its jurisdictions. The MPO's transportation program requires all planning and proposed projects achieve the following overall goals as part of its objective.

- Goal 1.0** Enhance Transportation System Mobility, Accessibility and Quality for All Roadway Users and Modes
- Goal 2.0** Enhance Regional Connectivity and Economic Viability
- Goal 3.0** Enhance Public Safety and Security
- Goal 4.0** Preserve and Protect Environmental Quality
- Goal 5.0** Support Regional Sustainability and Local Values
- Goal 6.0** Preserve Existing Community Resources

- From the *Mississippi Gulf Coast Metropolitan Planning Organization (MPO) Transportation Improvement Program Handbook*, GRPC, June 2011

Existing Conditions/Environmental Checklist

Route Beachview Dr City/County: Unincorporated, Jackson County, MS
 Begin Old Spanish Trail End Lake Mars Ave Length +/- 2.00 miles

A. Project Description (general description including boundaries of checklist review)

The project consists of a proposed improvement along Beachview Drive, located in the Gulf Park Estates community adjacent to the City of Ocean Springs. This checklist represents the portion of the corridor between Old Spanish Trail and Lake Mars Avenue, a distance of approximately +/- 2.0 miles.* This project does not include lane capacity improvements for Beachview Drive. Information on this checklist covers only Beachview Drive and not conditions observed on any parallel or intersecting streets unless noted. Figure 2 contains locations of key facilities and features identified in the checklist.

B. Project Concept (Please See Initial Project Alternatives Section for more details)

- Description of existing facility (functional class, existing ADT with source, number of lanes, etc) Beachview Drive has an ADT of 5,000 (GRPC, 2011) and is classified as a Major Collector. It has 2- 11 ft travel lanes, no shoulders, no turn lanes, no sidewalks and open ditches for drainage (both sides). The posted speed limit is 35 MPH. There are no speed zones along the corridor for schools or crosswalks. The corridor has an estimated right-of-way (utility pole to utility pole) of 50 feet, based upon right-of-way measurements taken in the field. The width of apparent width of the roadway sides (pavement to edge of ditch/swale) appears to vary between 13-15 feet, depending on corridor location. There is one signalized intersection on Beachview Drive at Old Spanish Trail. Traffic signal includes pedestrian count-down timer oriented to crosswalks across 2 of the 3 approaches. All corners have ADA cushions.
- Major Design Features/Criteria of the proposed facility Proposed improvement will create dedicated facility for pedestrian and cyclists to use to travel along Beachview Boulevard from Old Spanish Tr to Lake Mars Av. Improvements will connect with existing crosswalks along Old Spanish Tr at the Beachview Dr intersection.
- Results from Technical Analyses Please see attached report. Review of stop sign warrants at one intersection completed. Recommendations accommodate pedestrian movements as documented through review of land use, conversation with community and review corridor traffic and crash data as supplied by GRPC.
- Construction Traffic Management/Property Access Considerations Recommendations include option to construct improvements on one side of the Beachview Dr corridor to minimize impact to existing residences, overhead and underground utilities, driveways and mailboxes. Area of project is residential – options for on-street or side-street parking of vehicles limited. Design will require identification of staging areas and maintenance plan for driveway access and continuity of utility and public services.

C. Initial Order of Magnitude Cost Estimate (Sum of all improvements on Beachview Dr outlined in Figures 8-10), rounded to closest \$100

Category	OPT 1: Separated Shared Use Path	OPT 2: Sidewalk with Bikeable Shoulders	OPT 3: Complete Street
Construction Costs ¹	\$3,285,200	\$3,950,200	\$6,795,400
Construction Engineering (5% of Cost)	\$164,000	\$197,600	\$339,900
Testing (5% of Cost)	\$164,400	\$197,600	\$339,900
Contingency (5% of Cost)	\$164,400	\$197,600	\$339,900
Total Project Cost Estimate	\$3,778,400	\$4,543,000	\$7,815,100

Notes: * Project initiation meeting held between representatives of GRPC, Jackson County, MDOT District LPA coordinator, and BKL in July, 2014. 1) See detailed itemized cost table in Appendix for more information about project cost by phase of implementation; 2) All improvements will take place within the public right-of-way and therefore ROW costs assumed to be negligible.



What is the adjacent land use pattern? Residential with some commercial activities located at the Old Spanish Trail intersection. The commercial uses consist of three retail developments, 2 strip centers and a retail store. There is some vacant property along the corridor, along with a recreation facility (Gulf Park Estates Boat Landing), marina and private assembly facility.

Any property owned by a Native American Tribe? (Y or N or Unknown) If so, which Tribe? Unknown, none observed as marked in the corridor.

Any property enrolled into the Wetland Reserve Program? (Y or N or Unknown) If so, give the location. Unknown, none observed as marked in the corridor.

Are there any other known wetlands in the area? (Y or N) If so, give the location. Unknown - National Wetlands Index (NWI) identified potential wetlands at three locations along corridor. Land areas identified mostly vacant residential lots or residential lots with dense landscaping/trees. Majority of landscaped areas along road are grass, scrub or brush, or a combination of these with vines, small shrubs or trees.

COMMUNITY ELEMENTS: Is the project impacting or adjacent to any (if the answer is yes, list names and locations):

- (Y or N) Cemeteries: NO
- (Y or N) Churches NO
- (Y or N) Schools NO
- (Y or N) Public Facilities (i.e., fire station, library, etc.) NO. Closest fire station located at S. 13th St and E Simmons Bayou Dr. (2300 E Simmons Bayou Dr.), approximately +/- 0.5 mi east of Beachview Drive.
- (Y or N) Community water well/supply NO. Elevated water tank approximately +/- 0.2 mi east of Beachview Drive. Five homes along Beachview Drive have individual well houses located in their front yards outside of the apparent right-of-way of Beachview Drive. Of these, two are not accessible from the right-of-way as they are behind fences or inside areas of landscaping.

SECTION 4(F) ISSUE: Is the project impacting or adjacent to any (if the answer is yes, list names and locations):

- (Y or N) Public recreation areas +/- 35 slip marina west of Beachview Drive and Gulf Park Estates Boat Ramp located at 2277 Beachview Drive.
- (Y or N) Public parks NO, there are no county parks in this area as per the county's website: <http://www.co.jackson.ms.us/departments/recreation/index.php> or the City of Ocean Springs website: <http://ci.ocean-springs.ms.us/parks-leisure/>.
- (Y or N) Wildlife Refuges NO, as per the US Fish and Wildlife Service website: <http://www.fws.gov/refuges/profiles/ByState.cfm?state=MS>
- (Y or N) Historic Sites NO, as per the Mississippi Department of Archives and History (<http://www.apps.mdah.ms.gov/Public/search.aspx>)

Is the project impacting, or adjacent to, a property listed on the National Register of Historic Places? Is the project within a historic district or a national landmark district? (Y or N) If the answer is yes to either question, list names and locations below: NO –checked Historic Resources Inventory Database of Mississippi Landmarks and National Register of Historic Places listings at the Mississippi Department of Archives and History (<http://www.apps.mdah.ms.gov/Public/search.aspx>).

Do you know of any threatened or endangered species or critical habitat in the area? (Y or N) If so, list species and location. NO

Does the project impact or adjacent to a stream identified as a scenic river or stream? (Y or N) If yes, name the river/stream. NO

Are there any significant or protected trees within proposed ROW? (Y or N) *If so, where?* Vegetation adjacent to road in current right-of-way mostly maintained grasses and similar landscaping, scrub grasses, and small brush. Two large trees on private property adjacent to Beachview Drive identified: one near the intersection of Beachview Drive and W. Simmons Circle and another at intersection of Beachview Drive with Pointe Aux Chenes Road.

Does this project include a bridge? (Y or N) What year was the existing bridge built? Yes, Beachview Drive includes a +/- 30ft wide bridge over Simmons Bayou. The bridge is striped for two travel lanes, a 2 foot shoulder on its west side and a 6 foot shoulder on its east side. The exact year of construction is unknown – there are no specific construction dates stamped on the bridge.

Are any waterways impacted by the project considered navigable? (Y, N or Unknown) *If unknown, state so, list the waterways:* Unknown, Simmons Bayou west of Beachview appears to be used for recreational boating. Timber piles and low clearance at the Simmons Bayou bridge on Beachview Drive appears to preclude navigation in the bayou east of this point.

HAZARDOUS MATERIALS: Have you checked the following MDEQ and EPA databases for potential problems? *If the answer is yes, list names and locations.*

- (Y or N) Leaking Underground Storage Tanks Yes, database checked and no records/occurrences identified (Munster.deq.state.ms.us)
- (Y or N) CERCLIS Yes, database checked and no records/occurrences identified (www.epa.gov/superfund/sites/cursites)
- (Y or N) ERNS Yes, database of 2014 reports checked and no records/occurrences identified (www.nrc.uscg.mil)
- (Y or N) Enforcement and Compliance History Yes, databased checked and no records/occurrences identified (echo.epa.gov)

Underground Storage Tanks (UST): Are there any Gasoline Stations or other facilities that may have UST on or adjacent to the project? (Y or N) *If so, give the name and location:* Remnants of a former gas station and store are located east of the corridor at approximately 30°22'31.75"N and 88°45'35.31"W adjacent to the Gulf Park Estates Boat Landing. A review of the MDEQ underground storage tank information located at munster.deq.state.ms.us did not result in any information on the status of tanks (i.e. whether any are still in existence) as of the date of this search (September 10, 2014).

Any chemical plants, refineries or landfills adjacent to the project? (Y or N) NO

Any large manufacturing facilities adjacent to the project? (Y or N) NO

Dry Cleaners? (Y or N) *If yes to any, give names and locations:* NO

Oil/Gas wells: Have you checked the appropriate database for registered oil and gas wells? (Y or N) *List the type and location of wells being impacted by the project.* YES – a review of the Mississippi Oil and Gas Board on-line viewer (gis.ogb.state.ms.us) indicated no registered oil and gas wells adjacent to the corridor.

Are there any possible residential or commercial relocations/displacements? (Y or N) How many? NO – project would occur totally within existing right-of-way along the length of the corridor. The project anticipates some modification to driveway aprons along the corridor within the limits of the project to accommodate the proposed sidewalk addition. Should survey indicate utilities or parking spaces at commercial establishments are within the dedicated right-of-way for Beachview Drive, these may require modification, relocation or removal at the time of construction.

In addition, residential mailboxes adjacent to the street, within the right-of-way may, may require relocation as part of this project should an alternative which enhances the shoulder area be implemented. These installations include a mixture of mailbox on single wooden or metal posts, or within brick columns. The number of residential mailboxes potentially relocated is approximately 34 to 45, depending on route chosen. None of the mail boxes identified are centralized letter boxes used by the USPS for centralizing mail collection.

Do you know of any sensitive community or cultural issues related to the project? (Y or N) *If so, explain* Community concerns to date regard lack of safe bicycling and walking facilities along Beachview Drive. Observations made on the corridor indicate that motorists traveling the area appear to be near or over the speed limit. A lack of shoulders and sidewalks on Beachview Drive and surrounding streets to allow safe refuge and passage areas for pedestrians and cyclists away from passing motorists has been reported in the local media (newspaper and news broadcasts) and an initial public meeting held by the County Supervisor for this area (John McKay) uncovered the depth of concerns and problem areas. Project incorporates these into the overall planning and design for the project's alternative improvement scenarios.

Is the project area population minority or low income? (Y or N) Yes, there is evidence, according to the 2010 Census data, (NEPAssist Enviromapper, located at nepassisttool.epa.gov) that the total minority within the block groups adjacent to Beachview Drive is approximately 10-20% of the total. According to the same, the total population which is below poverty is between 0-10% of the total. No individual or household income interviews took place along Beachview Drive.

What type of detour/closures could be used on the job? Access might be limited at some driveways and parking areas during construction. Project will not include detours or closures, at this point, to accommodate these actions. During construction driveway access remains maintained to the extent possible, with any closure plans developed with the input of adjacent property owners regarding notification, time of loss of access and provisions for temporary access in instances where changes constitute a hardship. Several vacant and under-utilized hard surfaced lots along the corridor may be used as part of the general staging of equipment, materials and staff, using all best practices to address site runoff and security.

General location and type of utilities in area. If so, location of any markers or installations in area with photos

Please see photo inventory in Appendix C

- (Y or N) Powerlines/Substation Yes, overhead power lines are along both sides of Beachview Drive. There are no substations along the corridor.
- (Y or N) Gas Yes, underground gas service anticipated – no meters or markers found to denote high pressure line or pipeline crossing the corridor.
- (Y or N) Water Yes, water lines along the corridor, as well as pump houses for individual wells (see previous checklist question). Elevated water tank facility located +/- 0.2 mi east of Beachview Drive.
- (Y or N) Sewer Yes, lift stations can found along the corridor as well as in areas adjacent Beachview Drive. A forced sewer main was found along Palmetto Drive, leading to Pump Station 27, located at 8800 Palmetto Drive (marked as owned by the Jackson County Utility Authority). Another is owned by Utility Services, located at in the 8800 block of Edgewater Drive. Other facilities observed along Beachview Drive or within close proximity include lift/pump stations at 2109 Beachview Drive, 2493 Beachview Drive and 9012 Edgewater Boulevard. There is a facility located outside of the project area at the intersection of Beachview Drive and Neptune Avenue and a possible abandoned facility located at 2421 Beachview Drive.
- (Y or N) Fiber Optic/Communications Yes, AT&T markers can found along the east side of Beachview Drive between Old Spanish Trail and Edgewater Boulevard. There are also above ground boxes/vaults along Beachview Drive near some of these markers. A cellular tower is also located east of Beachview Drive near its intersection with Edgewater Drive, just north of the Elks Lodge facility.

Other: None

Did you notice anything of environmental concern during your site/windshield survey of the area? If so, explain below. A barricaded roadway, approximately 0.17 miles south of the Simmons Bayou bridge, leads to the former Gulf Park Estates Golf Course. This golf course appears, based upon review of Google Earth photography, closed. It is not clear that this facility was open to general public use, or the types of facilities provided on the site, such as clubhouse, maintenance and grounds keeping facility, etc. Review of existing databases did not identify the site as containing any hazardous materials. The site appears to have three homes on the site, although occupancy information is unknown.

Ditches near Edgewater Boulevard appear to be sloped to drain toward Simmons Bayou. Some of these ditch areas appear to have standing water which connected to water bodies formed by the inlets to Simmons Bayou. There is one culvert crossing under Beachview Drive near Edgewater Boulevard which allows for flow of water to Simmons Bayou. It is also close to a sewer lift station located at the intersection of Edgewater Blvd and Beachview Drive. The culvert also appears fed by a drain coming from under the parking lot of the Harbor Landing Condominiums, located at 2421 Beachview Drive.

No other specific items identified. Review will include information on accidents, and traffic speeds using data collected/compiled and mapped by GRPC. This review is within the traffic analysis section.

Burk-Kleinpeter, Inc., Edwin E. Elam, AICP, PTP

Completed by/Point of Contact

504/486-5901 xt. 281

Phone Number

August 15, 2015

Date

List of databases/sources consulted: **Please see individual questions for database information.**

Review of Traffic Operations

The traffic operational analysis consisted of a review of network characteristics, traffic speeds on Beachview Drive, a review of accident information to determine potential safety issues and an evaluation of warrant demand for a four-way stop at the mid-point of the corridor at Edgewater Boulevard. Within each section, a summary of data includes specific results provided with supporting details following in the appendix.

Network Characteristics

Traffic Circulation and Flow

All of these roads are two-way, local, 2-lane roads with a posted speed limit of generally between 20-25 miles per hour. All have open ditch drainage, no sidewalks (with the exception of Hanshaw Road) or side paths, asphalt surfacing with numerous intersecting driveways. All streets in the area have two-way directional flow.

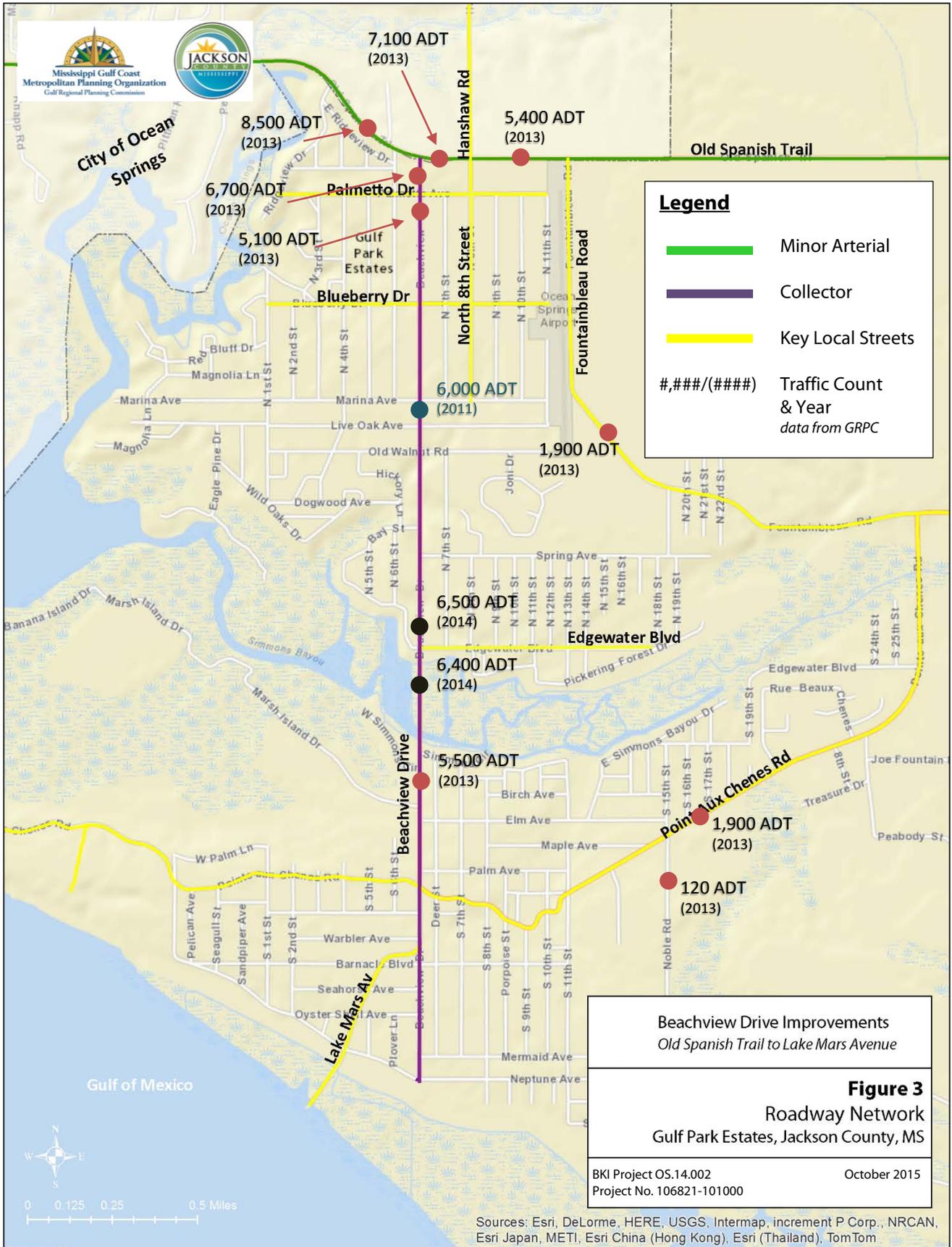
There are no school zones in the study area as the zone around Ocean Springs Middle School applies to Old Spanish Trail and Hanshaw Road in front of the campus. As observed, traffic queuing for the school dismissal does use a combination of Palmetto Drive, Hanshaw Road and North 8th Street. These queues begin up to 30 minutes before scheduled dismissal.

Existing Street Conditions

A series of field visits conducted in the area allowed for documentation of the existing conditions and roadway design/geometric assumptions. This visit resulted in the identification of several key roadways. A map of these locations (*Figure 3*) illustrates their location in reference to Beachview Drive.

As noted in the figure, the local roadway network in Gulf Park Estates is comprised of an extended grid pattern. This grid remains interrupted by streets oriented to the local topography. Areas east of Beachview Drive include individual isolated subdivisions developed along small blocks, looping roadways, cul-de-sac streets or internal street networks.

1. Palmetto Drive – Palmetto Drive intersects with Beachview Drive approximately 0.10 mile south of the Old Spanish Trail intersection. Fronting land use includes vacant and residential lots/structures. There is some commercial development at the intersection of North 8th Street which includes a mini storage facility and dentist/orthodontist office.
2. Blueberry Drive – Blueberry Drive intersects with Beachview Drive approximately 0.40 mile south of the Old Spanish Trail intersection. Fronting land uses include residential lots/structures and some vacant lots. This road also leads the terminal facilities of the Ocean Springs Airport, located on the eastern edge of Gulf Park Estates.
3. North 8th Street/Hanshaw Road – North 8th Street and Hanshaw Road are both two lane roadways which run parallel to Beachview Drive. Fronting land uses along North 8th Street include a mixture of residential, with commercial and vacant tracts north of Palmetto Drive along Hanshaw Road. A recently completed Safe Routes to School project has resulted in the construction of sidewalks along Hanshaw Road between Palmetto Drive and Old Spanish Trail. This corridor intersects with Old Spanish Trail at a signalized intersection with pedestrian actuated crosswalk signals approximately 0.13 mile east of Beachview Drive.
4. Fountainbleau Road – Fountainbleau Road is a 2-lane road which is generally parallel to Beachview Drive. It connects Old Spanish Trail to Belle Fontaine Boulevard. The speed limit is 30 MPH for most of its length. Fronting land uses include a mixture of vacant, wooded property, with some houses and institutional/church buildings.



Beachview Drive Improvements
Old Spanish Trail to Lake Mars Avenue

Figure 3
Roadway Network
Gulf Park Estates, Jackson County, MS

BKI Project OS.14.002
Project No. 106821-101000
October 2015

Sources: Esri, DeLorme, HERE, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom



5. Edgewater Boulevard – Edgewater Boulevard intersects with Beachview Drive approximately 1.25 miles south of the Old Spanish Trail intersection. Fronting land uses include wooded tracts, vacant properties and residential lots/structures. The offices of Utility Services, the local utility company, along with a water tower and lift plant are along this road also.
6. Point Aux Chenes Road – Point Aux Chenes Road intersects with Beachview Drive approximately 1.85 miles south of the Old Spanish Trail intersection. Fronting land uses include mostly wooded tracts with occasional vacant properties and residential lots/structures. This road extends east to Fountainbleau Road, which provides another access point out of Gulf Park Estates area to US Highway 90 corridor via Mississippi Highway 57/Belle Fontaine Road.
7. Lake Mars Avenue - Lake Mars Avenue, the southern-most point of the corridor study, intersects with Beachview Drive approximately 2.0 miles south of the Old Spanish Trail intersection. Fronting land uses include mostly residential lots/structures north of Oyster Shell Avenue. South of this point, the land is mostly wooded and vacant. The road ends at the Lake Mars Boat Launch and Fishing Pier.

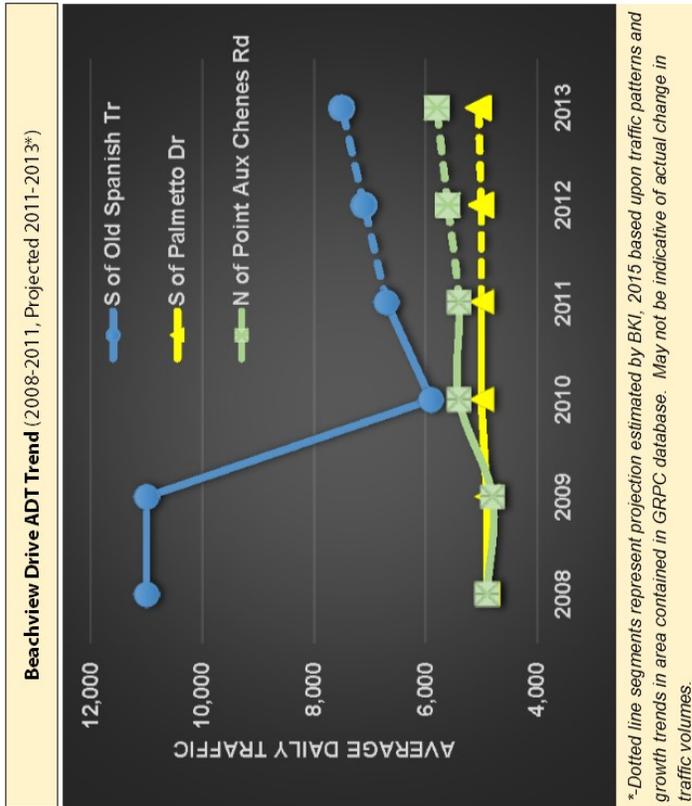
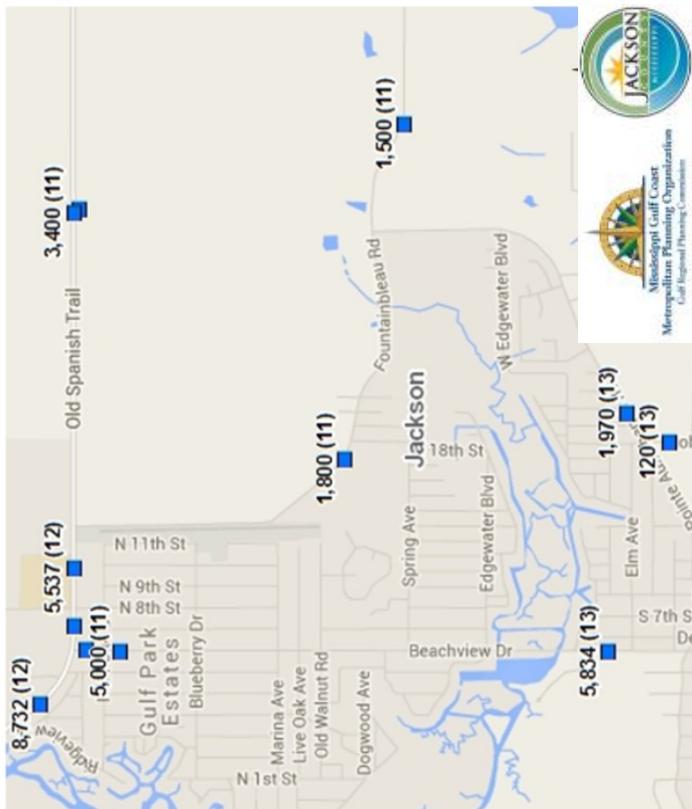
Observed Land Use Occupancy (2014)

The area of the study is mostly developed. Some scattered lots remain in the Gulf Park Estates subdivision, particularly along waterways and some streets where demolition of pre-existing structures damaged by Hurricane Katrina occurred. The largest clusters of these sites apparently ready for development are within a ¼ mile of the Neptune Avenue and Beachview Drive intersection, as well as near Bayou Simmons and west of the Beachview Drive in the former Gulf Park Estates Golf Course.

Changes in land use along Government Street/Old Spanish Trail near Beachview Drive have occurred within the past 5 years resulting in more commercial activity in this section of the corridor. Buildings occupy the two southern quadrants of the existing intersection as well as reaching down North 8th Street south of Old Spanish Trail. These facilities have their main entrances and buildings mostly oriented to Government Street/Old Spanish Trail to take advantage of the visibility offered by the corridor's higher traffic volumes. The merchants occupying these structures are of a size and scale that typically would serve adjacent neighborhoods, rather than attracting a regional or super-regional market. Some traffic from other areas in Ocean Springs and Jackson County could be drawn to the area as well, but the likelihood is low as these types of storefronts and activities can be found within a defined proximity east and west of this general area, where similar node style development has occurred to serve other neighborhood areas oriented to the Government Street/Old Spanish Trail corridor.

Traffic Volumes and Distribution

As noted on Figure 3, average daily traffic volumes on Beachview Drive are approximately 5,000 to 7,000 vehicles per day depending on your location along the corridor. Through their Transportation Data Management System (TDMS), GRPC provides historical data for count stations along the corridor as well as in the general vicinity for key locations along major streets. This information, as contained in Figure 4, indicates that traffic volumes have experienced some decreases, the greatest of which occurred on Beachview Drive and Old Spanish Trail. Traffic volume changes remain influenced by factors such as adjustments in population, development patterns, construction, opening of alternative routes or improved corridors, all of which occurred in this corridor and general area. Generally, even with the losses in traffic volumes identified in the area, patterns and distribution can be seen as remaining fairly stable with little growth and change since 2010.



*Dotted line segments represent projection estimated by BKJ, 2015 based upon traffic patterns and growth trends in area contained in GRPC database. May not be indicative of actual change in traffic volumes.

Location	2013	2012	2011	2010	2009	2008	Est. Annual Growth
Old Spanish Trail, E of Hanshaw Rd	---	5,540	4,400	4,400	4,300	4,400	5%
Old Spanish Trail, W of Hanshaw Rd	---	---	7,000	8,000	9,500	9,700	-13%
Old Spanish Trail, E of Fountainsbleau Rd	---	---	---	---	3,100	3,200	-3%
Beachview Drive, S of Old Spanish Tr	---	---	6,700	5,900	11,000	11,000	-21%
Beachview Drive, S of Palmetto Dr	---	---	5,000	5,000	4,900	4,900	1%
Beachview Drive, N of Point Aux Chenes Rd	5,800	---	5,400	5,400	4,800	4,900	3%
Point Aux Chenes Rd, S of Fountainsbleau Rd	1,970	---	2,100	2,100	2,300	2,300	-3%
Fountainsbleau Rd, S of Old Spanish Tr	---	---	1,800	1,800	1,800	1,800	0%
Fountainsbleau Rd, W of Hammill Farm Rd	---	---	1,500	1,700	1,700	1,700	-4%

Data source: Gulf Regional Planning Commission, 2015.

Beachview Drive Improvements
Old Spanish Trail to Lake Mars Avenue

Figure 5
Traffic Volume Review (2008-2013)
Beachview Drive and Vicinity

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October 2015

Roadway Connectivity and Walkability¹

Walkability is a term which recognizes an area’s general ability to support and encourage pedestrian movements. It also describes the quality and coverage of pedestrian facilities, roadway conditions, land use patterns, community support, security and comfort for walking. Measuring it requires using a variety of variables. At the level of the local street block, individual decisions to walk (instead of drive) remain affected by the quality and availability of pathways, sidewalks and related facilities. At a general neighborhood level, it affected by the existence and connectivity of sidewalks and crosswalks, and adjacent roadway conditions (road widths, traffic volumes and speeds).

From a facilities perspective, the Gulf Park Estates neighborhood is not walkable to a majority of area residents. The only sidewalks located in the area are along Old Spanish Trail between Beachview Drive and Hanshaw Road, a one-block long segment along Hanshaw Road leading to Palmetto Drive and along the streets internal to the Walnut Park Subdivision, located south of Old Walnut Road near the Ocean Springs Airport. Residents participating in project-related meetings report using a combination of local streets for passive recreation activities, cycling, or to walk their children to school or neighborhood bus stops.

Obviously, due to the amount of activity reported in the area, the lack of facilities does not keep the population from walking or cycling through the area. To determine how the existing street network supports walking in the area, the team completed a review of roadway connectivity. The objective is to measure the density of intersections within the neighborhood, looking for a result which indicates that a high number of intersections existing, thus providing multiple opportunities and directions for walking between homes and nearby commercial structures and community facilities. Table 1 presents the results of this analysis using the existing Simmons Bayou bridge as the point of reference. As noted in the table, the relative density of intersections south of Simmons Bayou is higher within a half mile walking radius. Moving the analysis east/west to the ½ mile area increases the footprint for both areas, but includes more developed areas than found south of the bridge.

Higher intersection densities correlate highly with more walkable areas, providing pedestrians and cyclists with more abundant and efficient routing options, sometimes swaying the decision to walk versus drive. Walkable areas have intersection densities higher than 90 intersections/square mile within ½ mile radius of a road segment. The presence of certain land uses (i.e. nearby retail or commuter destinations) along with presence of route safety and available infrastructure impact walkability.²

Table 1: Observed Intersection Density
Gulf Park Estates Neighborhood, Ocean Springs, MS

Walking Distance	Area	# of Intersections	Square Miles	Acres	Intersection Density	
					Per Sq Mi	Per Acre
1/4 Mile	North of Simmons Bayou	69	0.81	516	85.60	0.13
	South of Simmons Bayou	54	0.39	284	139.36	0.22
½ Mile	North of Simmons Bayou	151	1.47	637	102.72	0.24
	South of Simmons Bayou	107	1.00	942	107.54	0.11

Analysis completed by BKI using Jackson County Roads shapefile and GIS tools, 2014.

¹ Section developed using *Walkability Improvements, Strategies to Make Walking Convenient, Safe and Pleasant*, TDM Encyclopedia, Victoria Transport Policy Institute, updated 10 September 2014, <http://www.vtpi.org/tdm/tdm92.htm>.

² Ewing, Reid and Cervero, Robert. *Travel and the Built Environment*. Journal of the American Planning Association, first published on 11 May 2010.

Speed of Traffic

One of the issues identified by community members at the initial public meeting was the perception that the majority of traffic passing on Beachview Drive was traveling at or above the posted speed limit. GRPC established a counting station on Beachview Drive north of Marina Drive to determine the distribution of speeds within traffic passing on the corridor. The results from the data seem to indicate that the majority of travelers on the corridor operate within the speed limit, although some speeding is occurring. Review of the data, as summarized in Table 2, indicates:

- The majority of traffic passing on the corridor consists of passenger cars and trucks.
- Within this stream, only 43.6% of the traffic passing on the corridor was above the posted speed limit of 35 MPH.
- The average 85th percentile speed (i.e. the speed at which 85% of the traffic is at or below) was 38.7 MPH, only 3.7 MPH above the posted limit.

Table 2: Observed Vehicle Operating Speeds
Beachview Drive, North of Marina Drive

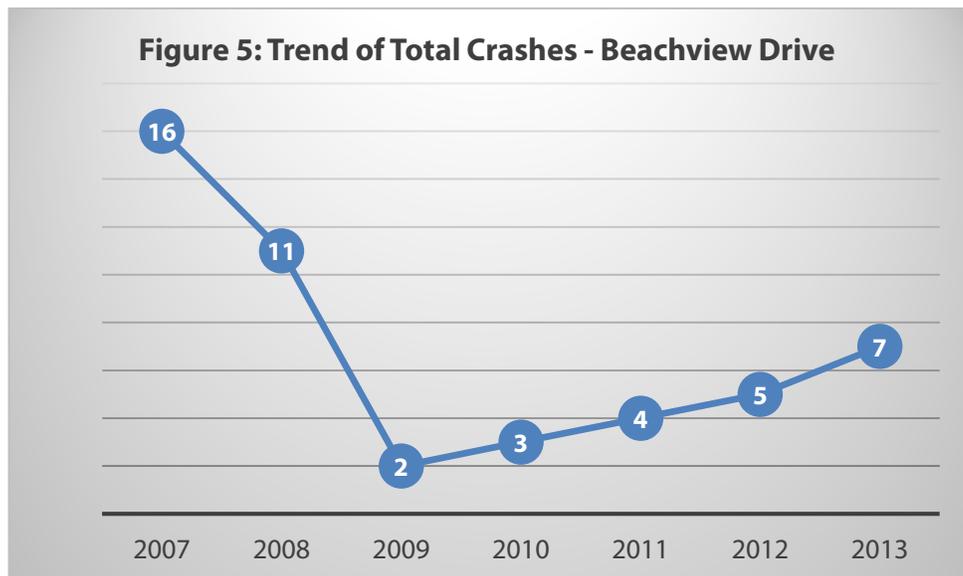


	0-15 MPH	16 – 25 MPH	26-35 MPH	>35-40 MPH	>40 MPH
% of Total traffic	0.3%	2.9%	53.2%	33.8%	9.8%

Collection period: typical weekday and non-holiday weekend period - Tuesday, September 9, 2014 through Monday, September 15, 2014. Data Source: Gulf Regional Planning Commission, 2014. Traffic stream contribution: 85.8% passenger cars and trucks; 12.2% school buses; 1.6% multi-axle vehicles (trucks with trailers, service vehicles); 0.4% motorcycles

Crash Review

A review of crash data made available from MDOT through GRPC indicates a total of 48 crashes have occurred along the Beachview Drive corridor between 2007 and 2013 (See Figure 5 and Tables 3 and 4). As shown in Figure 4, the total number of crashes along the corridor has decreased over the past six years, with the total number of reported incidents reduced by 56% since 2007.



Crash data contains information on the location of the accident based upon a set of latitude and longitude coordinates, along with a summary of parties involved, cause and conditions. Maps of the corridor have been prepared to document the general location and orientation of the crashes reported in this database. A summary, as presented in the following tables, reflects the general location/concentration of events, along with the common types.

As noted in the tables, Beachview Drive near Palmetto Drive recorded the highest number of total crashes between 2007 and 2013, with 9 occurring during that period. The most common accidents by type are rear-end slow or stop, with the majority of these occurring in the segment of the Beachview Drive between Old Spanish Trail and Palmetto Drive. During the reporting period, four pedestrians were involved in crashes at the intersections of Blueberry Drive, Live Oak Drive and Old Walnut Road.

Table 3: Study Area Crashes by Location, 2007-2013
Beachview Drive, Old Spanish Trail to Lake Mars Avenue

Intersection/Segment ¹	Total Crashes by Year							Total Crashes by Location
	2007	2008	2009	2010	2011	2012	2013	
Old Spanish Trail	3				1		1	5
Palmetto Drive	2	2	1		2	1	1	9
Blueberry Drive	1	2	1			1		5
Marina Drive	2			1		1		4
Live Oak Avenue	2	2					1	5
Old Walnut Road	4	1		1				6
Spring Avenue	1					1	1	3
W. Edgewater Boulevard		2					1	3
E Simmons Circle				1			1	2
Elm Avenue	1				1			2
Palm Avenue		1						1
Meadowlark Avenue		1				1		2
Warble Avenue								
Lake Mars Avenue							1	1
Total	16	11	2	3	4	5	7	48

Table 4: Study Area Crashes by Type, 2007-2013
Beachview Drive, Old Spanish Trail to Lake Mars Avenue

Intersection/Segment ¹	Types of Crashes						
	Angle	Head-on	Left-turn same roadway	Pedestrian	Rear-end slow or stop	Run-off Road: Left	Run-off Road: Right
Old Spanish Trail					4		1
Palmetto Drive	4				5		
Blueberry Drive	1			1	2		1
Marina Drive	1				3		
Live Oak Avenue	2			2	1		
Old Walnut Road				1	4		1

Table 4: Study Area Crashes by Type, 2007-2013 (*continued*)
 Beachview Drive, Old Spanish Trail to Lake Mars Avenue

Intersection/Segment ¹	Types of Crashes						
	Angle	Head-on	Left-turn same roadway	Pedestrian	Rear-end slow or stop	Run-off Road: Left	Run-off Road: Right
Spring Avenue					2		1
W. Edgewater Boulevard					3		
E Simmons Circle						1	1
Elm Avenue		1	1				
Palm Avenue	1						
Meadowlark Avenue			1		1		
Warble Avenue							
Lake Mars Avenue	1						
Total	10	1	2	4	25	1	5

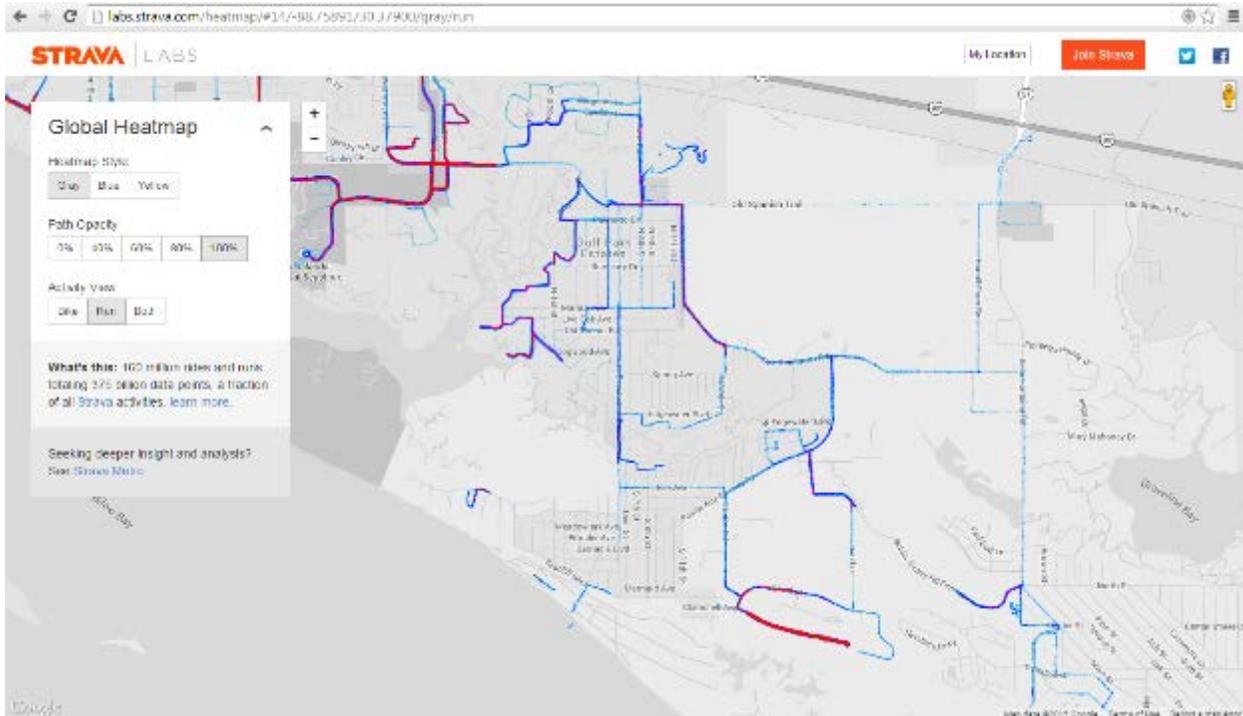
Data source for both tables and Figure: Crash records, Mississippi Department of Transportation through Gulf Regional Planning Commission, 2007-2013.

Documented Travel Demand – Cycling and Walking

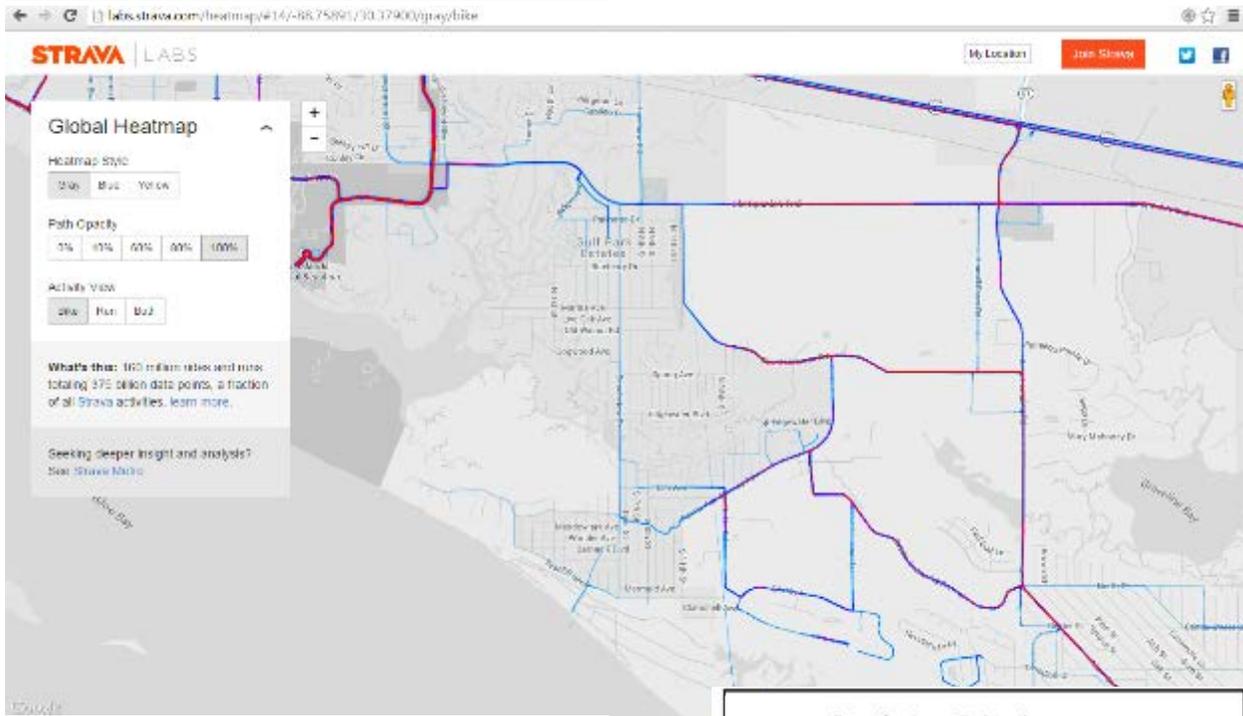
A combination of worn grass/dirt paths along the shoulders of Beachview Drive, along with several informal paths across private property, are indications that residents of Gulf Park Estates partake in these activities within the general area. During the field observations, cyclists shared the travel lanes on Beachview Drive with motorists, moving to shoulder areas where flat ground was available and obstructions minimal. To determine the general patterns for these types of activities in the area, citizens participating in project meetings documented their use patterns with this information tracked on flip charts and maps. Generally, what came of this review was not substantiated data to identify corridors or preferential paths. Rather, observations that current facilities are lacking and those who chose to walk or cycle for exercise or pleasure are doing so in the travel lanes of local streets or along the shoulders of Beachview Drive.

In order to qualify these observations and to provide a map of demand-based data, STRAVA³, a third party application which tracks user paths for cycling and running, provided its user supplied data in the Ocean Springs and Gulf Park Estates Area. This data, which is available from runners and cyclists using the STRAVA app, indicates several choice routes in the area appear used by these population groups (See Figure 6). This data is basic and available through public domain, and does not provide insight into the general frequency or time of use (i.e. daily, weekly, etc.). However, it does show strong demand oriented to east-west movements along Government Street/Old Spanish Trail, as well as within the campus of the Gulf Islands National Seashore facility located adjacent to Gulf Park Estates.

³ Strava is a third party application which can track and report user-supplied activities. For more information, please see <http://www.strava.com/>. For the complete Strava Heat Map which indicates bike, run or both activities on the MS Gulf Coast, <http://labs.strava.com/heatmap/#10/-89.17423/30.47298/blue/bike>.



Running Routes of Choice Gulf Park Estates and Vicinity



Cycling Routes of Choice Gulf Park Estates and Vicinity

Beachview Drive Improvements
Old Spanish Trail to Lake Mars Avenue

Figure 6
STRAVA Data for Cyclists and Runners
Beachview Drive and Vicinity

BKI Project OS.14.002
 Project No. 106821-101000

October 2015



Warrant for All-Way Stop Control

As part of the traffic study, opportunities to install a four-way stop (also known as all-way stop control) was considered at the intersection of Beachview Drive with Edgewater Boulevard, approximately 1.25 miles south of Old Spanish Trail intersection. The suggestion for improvement came from by members of the community based upon their knowledge of the area and the relative traffic circulation patterns in the neighborhood. According to the *Manual for Uniform Traffic Control Devices*⁴, consideration of a multiway or all-way stop control occurs in the following circumstances based upon the outcome of an engineering study:

- A. Where traffic control signal are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.
- B. Five or more reported crashes in a 12 month period that are susceptible to correction by a multi-way stop installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions.
- C. Minimum volumes:
 - 1. *The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day; and*
 - 2. *The combined vehicular, pedestrian and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor street vehicular traffic of at least 30 seconds per vehicle during the highest hour;*
 - 3. *But if the 85th percentile approach speed of the major street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the values provided in Items 1 and 2.*
- D. Where no single criterion is satisfied, but where Criteria B, C.1 and C.2 are all satisfied to 80 percent of the minimum values. Criterion C.3 is excluded from this condition.

Other criteria that may need to be considered in an engineering study include:

- A. The need to control left-turn conflicts;
- B. The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes;
- C. Locations where a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required, to stop; and
- D. An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where multi-way stop control would improve traffic operational characteristics of the intersection.

In order to determine if this location meets with the warrants found in the MUTCD, a review was undertaken using traffic volume data collected at the intersection of Beachview Drive at the Edgewater Boulevard by the Gulf Regional Planning Commission, along with accident data from the Mississippi Department of Transportation and speed data shown in Table 2. **As noted by the results shown in Figure 7, this location does not appear to meet the established warrants A-D for installation of an all-way stop control.**

⁴2009 Manual of Uniform Traffic Control Devices, with Revisions 1 and 2, May 2012, available from <http://mutcd.fhwa.dot.gov/> Section 2B.07, Multi-Way Stop Applications, pg. 52

Transportation Improvement Program and Long Range Plan

For the purposes of the future, improvements in the neighborhood need to incorporate connections to projects previously approved and within the MPO's long-range transportation plan process. Although ongoing updates are likely to change project staging or definition in some instances, the focus has been to review the current 2035 plan update for projects suggested for immediate area around Beachview Drive. In addition, the review also examined the TIP, which provides the timing/staging for implementation of projects from the long range plan. Table 5 provides an outline of the projects proposed for the corridor or immediate area within the 2035 Long Range Transportation Plan, while Table 6 provides the same for projects in the TIP.

Table 5: Proposed Long Range Transportation Plan Improvements

Proposed for Roadways/Locations within ¼ mile vicinity of Beachview Drive

Route	Proposed Improvement	Plan Tier
Hanshaw Road to Beachview Drive	Construct 2-lane connector between Hanshaw Rd and Old Spanish Trail at Beachview Drive	Stage 1 (2011-2015)
Government Street	Reconstruct with center turn lane, Ocean Springs Road to Beachview Drive	Stage 2 (2016-2025)
Beachview Drive	Reconstruct with center turn lane, Ocean Springs Road to Spring Avenue	Stage 2 (2016-2025)
Old Spanish Trail	Proposed as a bicycle route	Not specified

Data Source: Mississippi Gulf Coast Area Transportation Study 2035 Long Range Transportation Plan, March 2011.

Table 6: Adopted Transportation Improvement Plan Projects

Proposed for Roadways/Locations within ¼ mile vicinity of Beachview Drive

Route	Proposed Improvement	Phase/Year	Cost
Government Street	Reconstruction, 2.5 miles, improved sidewalks and pedestrian bridge over bayou	FY 2015	\$1,112,679

Data Source: Mississippi Gulf Coast Metropolitan Planning Organization Transportation Improvement Program, FY 2014-2018, adopted March 2014.

Initial Project Alternatives

Given the combination of existing low traffic volumes, with relatively steady demand associated with cyclists and pedestrians along the corridor, the team identified a total of three alternative concept types for the Beachview Drive corridor: Separated Shared Use Path, Sidewalk with Bikeable Shoulders, or Complete Street. To address community concerns about visibility of crossing areas, the project incorporates High-intensity Activated Crosswalk Beacons (HAWK) at the proposed crosswalk locations, while addressing community concerns regarding speeding with the introduction of variable speed signs.

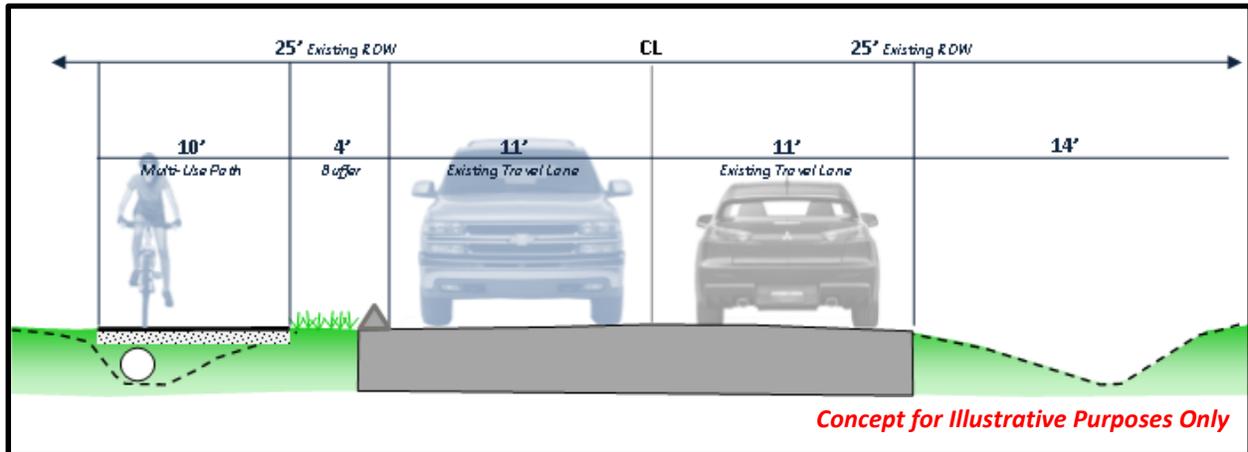
Initial alternatives included options to connect the recommended Beachview corridor improvements east to North 8th Street. This would have connected the proposed alternatives with the existing Safe Route to Schools project completed in the area. These options would have been pursued as individual projects in the future, address community comments regarding walkability and having a comprehensive system of pedestrian facilities connecting Gulf Park Estates and Ocean Springs Middle School. However, in response to a community information survey process, these improvements to neighborhood streets near Beachview Dr will not be pursued. Those responding to the survey revealed that residents do not desire this bicycle and/or pedestrian improvement solution at this time.

The design standards/guidelines used to guide development of these alternatives include:

- *Manual for Uniform Traffic Control Devices (MUTCD) 2009 edition, Part 2, Signs, Part 9, Traffic Control for Bicycle, Section 2B.07 Multiway Stop Applications;*
- *MDOT 2001 Roadway Design Manual, Chapter 14, Geometric Design for Streets, pages 14-1 through 14-31;*
- *A Policy for Geometric Design of Highways and Streets, 2011 Edition, AASHTO, Chapter 4, Cross Section Elements;*
- *Complete Streets Policy, as applied to LPA projects, MS Gulf Coast MPO, adopted September 24, 2015.*

Initial order of magnitude cost estimates for the phased construction for these alternatives follow the descriptions of each alternative in Table 7. Recommendations reflect modifications required to address provisions of the GRPC Complete Streets Policy, adopted September 24, 2015 by the MPO Transportation Policy Committee. In addition, the recommendations reflect the comments received outcome of community review and comments received during the final public review meeting, as well as the post meeting 21-day comment period managed through GRPC. GRPC received no comments from the community during the review period.

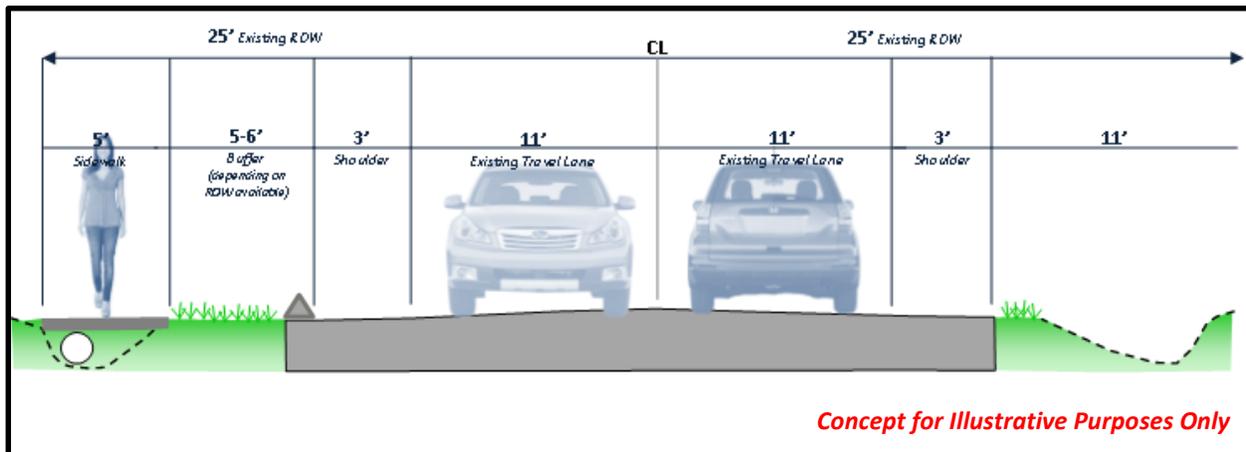
Concept Definition #1 – Separated Shared Use Path



General Description	Pros
<ul style="list-style-type: none"> • 50 feet of right-of-way (back of swale to back of swale) assumed • Maintain 2 existing travel lanes • 10 ft asphalt shared-use path 4 feet from edge of pavement • Slotted curb on edge of roadway • Enclosed drainage ditch/swale with inlets placed at regular intervals to accommodate drainage • Drainage pipe to be sized according to area needs • 4 ft from path to edge of travel lane • Shared-use path can be placed on either side of roadway • Posted speed limit 35 MPH 	<ul style="list-style-type: none"> • Provides a dedicated facility for pedestrians and cyclists • Maintains improvement within existing corridor right-of-way
	Cons
	<ul style="list-style-type: none"> • Will require some earthwork/re-grading of existing drainage ditch
	Conceptual Project Location/Limits (Figure 8)
	<ul style="list-style-type: none"> • +/- 2.04 miles of multi-use path within the following limits <ul style="list-style-type: none"> ○ Old Spanish Tr to Edgewater Blvd, west side of street ○ Edgewater Blvd to Point Aux Chenes Dr, east side of street ○ Beachview Dr, Point Aux Chenes Dr to Lake Mars Av, west side of street • New crosswalks at Palmetto Dr, Blueberry Dr, Edgewater Blvd, Point Aux Chenes Dr and Lake Mars Av • As identified in the GRPC Unified Planning Work Program (Task B.1.3), a Safety Management Program could accompany improvements to educate regional drivers about bicycle and pedestrian safety.



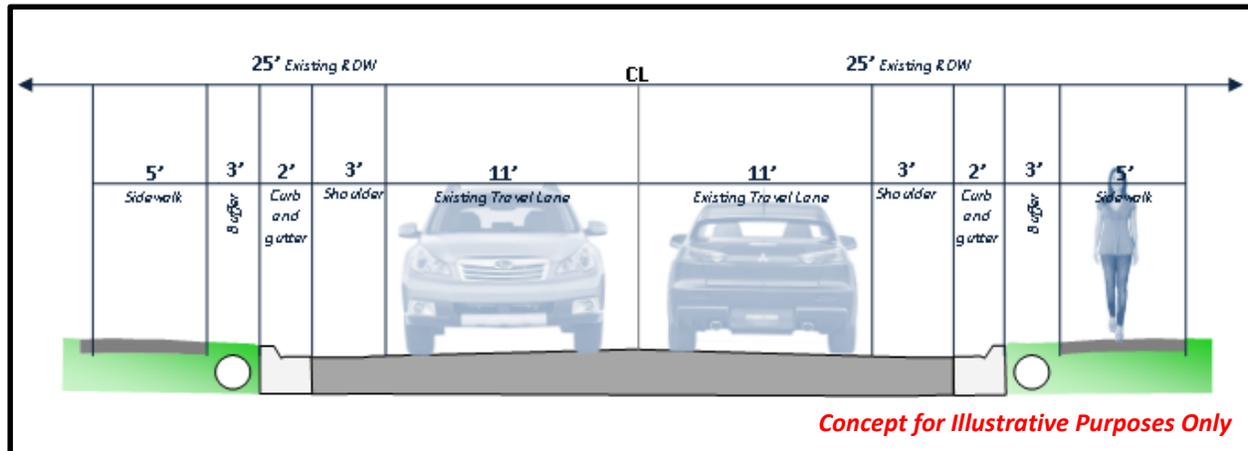
Concept Definition #2 – Sidewalk with Bikeable Shoulders



General Description	Pros
<ul style="list-style-type: none"> • 50 feet of right-of-way (back of swale to back of swale) assumed • Maintain 2 existing travel lanes • 5 ft concrete sidewalk on one-side of corridor • 3 ft paved shoulder adjacent to both travel lanes provides some on-street space for cyclists • 5-6 ft grass buffer with slotted curb between sidewalk and bikeable shoulder • Enclosed drainage ditch/swale with inlets placed at regular intervals to accommodate drainage • Drainage pipe to be sized according to area needs • 8-9 feet from sidewalk to edge of travel lane • Completely utilizes right-of-way on one side of the corridor, while leaving the other side untouched • Posted speed limit 35 MPH 	<ul style="list-style-type: none"> • Provides a dedicated facility for pedestrians • Maintains improvement within existing right-of-way • Driveway slopes would be updated to meet ADA guidelines
	Cons
	<ul style="list-style-type: none"> • Concept does not fully address community will for dedicated facility for cyclists away from existing traffic stream
	Conceptual Project Limits (Figure 9)
	<ul style="list-style-type: none"> • +/- 2.04 miles of sidewalk along one side of Beachview Dr within the following sections <ul style="list-style-type: none"> ○ Old Spanish Tr to Edgewater Blvd, west side of street ○ Edgewater Blvd to Point Aux Chenes Dr, east side of street ○ Beachview Dr, Point Aux Chenes Dr to Lake Mars Av, west side of street • New crosswalks at Palmetto Dr, Blueberry Dr, Edgewater Blvd, Point Aux Chenes Dr and Lake Mars Av • As identified in the GRPC Unified Planning Work Program (Task B.1.3), a Safety Management Program could accompany improvements to educate regional drivers about bicycle and pedestrian safety.



Concept Definition #3 – Complete Street Option



General Description	Pros
<ul style="list-style-type: none"> • 50 feet of right-of-way (back of swale to back of swale) assumed • Maintain 2 existing travel lanes • 5 ft concrete sidewalk with 3 ft grass buffer along both sides of corridor • 2 ft curb and gutter with intermittent drainage grates between travel lane and grass buffer • 3 ft paved shoulder adjacent to both travel lanes provides on-street space for cyclists • Subsurface drainage along both sides of roadway • Edge of right-of-way sloped toward roadway surface to facilitate drainage collection • 8 feet from sidewalk to edge of travel lane • Completely utilizes assumed right-of-way • Posted speed limit 35 MPH 	Cons
	<ul style="list-style-type: none"> • Provides a dedicated facility for pedestrians • Maintains improvement within existing corridor right-of-way <ul style="list-style-type: none"> • Concept would fully engage corridor during construction process • Mailboxes and driveways along corridor would need to be moved and replaced • Existing overhead utilities may be impacted depending on final location of improvements. • Coordination with existing utilities required (telecommunication, water, sewer) to determine locations of existing underground items in reference to proposed pipe and sidewalks
Conceptual Project Limits (Figure 10)	
<ul style="list-style-type: none"> • +/- 2.04 miles of complete street improvement on Beachview Drive, Old Spanish Tr to Lake Mars Av • New crosswalks at Palmetto Dr, Blueberry Dr, Edgewater Blvd, Point Aux Chenes Dr and Lake Mars Av • As identified in the GRPC Unified Planning Work Program (Task B.1.3), a Safety Management Program could accompany improvements to educate regional drivers about bicycle and pedestrian safety. 	



Order of Magnitude Cost Estimate

Using unit costs as a guide, a general order of magnitude cost estimate for each alternative appears in Table 7 below. Details for each cost appear within Appendix E.

Table 7: Initial Order of Magnitude Cost Estimates

Beachview Drive (Old Spanish Tr to Lake Mars Av), By Project Phase, rounded to closest \$100

Project Phasing Description/Length	Option #1 Separated Shared Use Path	Option #2 Sidewalk with Bikeable Shoulders	Option #3 Complete Street
<u>Phase I: Beachview Drive, west side, 3,890 LF</u> Old Spanish Trail to Old Walnut Road	\$1,399,200	\$1,690,400	\$2,906,200
<u>Phase II: Beachview Drive, west to east side, 3,660 LF</u> Old Walnut Road to Simmons Bayou Bridge	\$1,324,000	\$1,578,500	\$2,751,800
<u>Phase III: Beachview Drive, west to east side, 2,795 LF</u> Simmons Bayou Bridge to Point Aux Chenes Road, Point Aux Chenes Road to Lake Mars Avenue	\$1,055,200	\$1,274,100	\$2,157,100
<u>Total (10,345LF)</u>	\$3,778,400 \$366 per lf	\$4,543,000 \$440 per lf	\$7,815,100 \$760 per lf

Notes:

1. Table and costs organized by potential sequence of construction within defined corridor sections.
 2. Please see appendix for more details on individual unit costs and quantities assumed.
 3. Order of Magnitude costs shown for initial planning purposes only - additional refinement of design attributes or alternative will have an impact on cost.
 4. Unit pricing for materials utilized to develop corridor costs based upon comparable costs of similar MDOT and County projects.
 5. Information for utilities on corridor identified during initial and follow-up field review with GRPC and/or Jackson County or during follow-up interviews with local utility providers.
 6. Assumes project constructed totally within existing right-of-way, fully defined as a result of a survey completed along the corridor as part of the final design.
 7. Drainage improvements assume completion of a hydraulic analysis as part of final project design. Pipe sizes based upon standard rule of thumb for comparable projects. Review and completion of detailed hydraulic analysis will also finalize locations of inlets.
 8. Project totals include \$195,000 in estimated cost for individual HAWK installation at the following locations on Beachview Dr.: Blueberry Dr., Edgewater Blvd., and Point Aux Chenes Rd. Cost shown is for equipment is \$65,000 per location, not including mobilization and installation, based upon the engineers estimate for the Government Street improvement project. Adjusting equipment choices or installation type will change project cost estimates accordingly.
 9. Project totals include \$6,000 in estimated cost for two post-mounted Variable Speed Limit Signs installed. Location for signs to be determined during final design. These wireless solar flashing LED speed warn drivers of excessive speed.
- Compiled by Burk-Kleinpeter, Inc., 2015.

Lighting District Coordination

At the September 14, 2014 public meeting, many of the area residents noted a lack of lighting along area roadways formed an impediment to maintain a safe walking environment. Such appeared more readily during periods of limited daylight, particularly early mornings and late evenings when pedestrian traffic increased in response to school bus traffic patterns and as area residents walked for pleasure and exercise. One of the options presented to the community was for them to consider creating a lighting district, like other neighborhood areas in Jackson County. Such is as an activity within a designated Public Improvement District (PID), as outlined under Title 19, Chapter 31 of the Mississippi Code of 1972.⁵ PIDs can agree to create funding through millage or bonds to finance all stages of development (i.e. survey, design, and construction) for specifically chartered improvements. The range of activities supported within the PID includes improvements to local utilities networks and systems, lighting, drainage, fire protection, parks and recreation facilities. It requires specific identification of these functions as part of the organization of the district.⁶ To encourage and connect a maximum number of walking points (origins and destinations), the boundaries of such a district should consider including populated areas within Gulf Park Estates east of the City of Ocean Springs to Fontainebleau Drive, south of Old Spanish Trail to Neptune Avenue.

Pedestrian Crosswalk Visibility

Review of crash/incident data from MDOT supplied by GRPC indicates four pedestrian/cyclist incidents have occurred on the corridor at the intersections of Live Oak Avenue, Old Walnut Road and Blueberry Drive between 2007 and 2013. The corridor improvement recommendations includes installing marked pedestrian crossings at one of these locations, in addition to several others, which may become high-use locations in the future. This considers current land use and trip generator locations, along with a general review of the area's walking and circulation patterns with community residents at the project's initial September 14, 2014 meeting.



Rectangular Rapid Flashing Beacon (RRFB) with MUTCD Non Vehicular Warning Sign W11-2

As there is no system of crosswalks currently in place along Beachview Drive south of Old Spanish Trail, the recommendation includes reflective pavement markings accompanied with MUTCD non-vehicular warning signage for pedestrians (W11-2) with distance markers or arrows on the approaches to these locations. In addition, concerns about visibility and speed require consideration of a heightened approach/warning signage installation which is consistent with the needs of this low volume corridor. Review of FHWA's Manual of Uniform Traffic Control Devices (MUTCD) identifies both a rectangular rapid flashing beacon (RRFB) and a High-Intensity Activated Crosswalk or Pedestrian Hybrid Beacon (HAWK) as potential measures for employment. The RRPB would be similar in size and installation as the current school zone speed signage on Old Spanish Trail at the North 8th Street/Hanshaw Road intersection. A HAWK installation remains within the Government Street improvements in Ocean Springs occurring near the intersection of Tara Lane⁷. As this project develops, a review of options with the community will take place with a suggestion that initial application of the RRFB take place on Beachview Drive, with a

⁵ Title 19, Counties and County Officers, Chapter 31, Public Improvement Districts, Mississippi Code of 1972, as reviewed within Lexis Nexis through courts.ms.gov.

⁶Please see 19-31-5, Definitions, Chapter 31 Public Improvement Districts, Title 19 Counties and County Officers, Mississippi Code of 1972.

⁷FY 2015, MS Gulf Coast MPO Transportation Improvement Program, pg. 13.

transition to the HAWK signal at intersections in the future if and as warranted by the future volume of passing vehicles and crossing pedestrians.

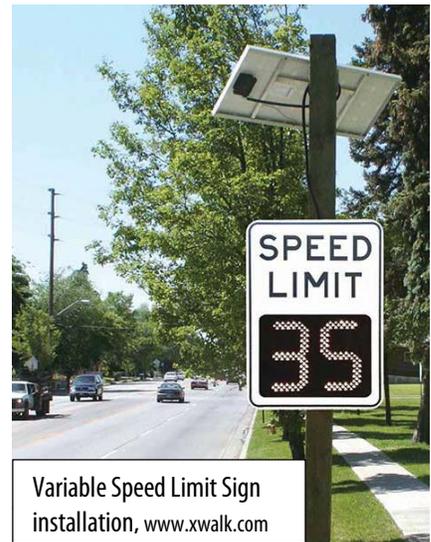
Variable Speed Limit Signs

As described in the review of traffic operations above and as described by residents along the corridor, excessive speeding remains a perceived problem on the corridor. While data collected by GRPC indicates the 85th percentile speed is only 3.5 mph over the posted limit, 10% of cars in this sample travel in excess of 40 mph on this narrow, two lane road. One low-cost solution to providing more information on travel speed in the corridor is a real-time variable speed limit sign. These wireless, solar-powered LED signs display the passing speed of vehicles based upon radar measurements. These electronic signs flash travel speeds in excess of the posted speed and can stop displaying speeds when a vehicle travels extremely fast.⁸ Additionally, the embedded electronics collect speed data from passing vehicles for analysis and observation.

Installation locations, determined during final design, should reflect the findings of the crash data presented in Tables 3 and 4. This data indicates the section of the corridor between Live Oak Avenue and Old Walnut Road has the large share of vehicle accidents recorded within the analysis.



High-Intensity Activated CrossWalk or Pedestrian Hybrid Beacon or HAWK installation, www.achdidaho.org



Variable Speed Limit Sign installation, www.xwalk.com



Project starts with a public meeting held and hosted by Supervisor John McKay at the Elks Lodge on Beachview Drive at Edgewater Boulevard, 9/14/14

Summary of Community Input

Initial Public Information Meeting

An initial public information meeting held on September 14, 2014, provided input to the overall project objective and definition. Community members present participated in a general discussion of pedestrian and cycling access issues in the general area facilitated by representative of GRPC, Jackson County and BKI. Results from this meeting, appearing in Appendix D, provided input on observed patterns for both of these traffic streams, along with identification of issues and opportunities. Coming from this meeting, the project

⁸ This last feature is available to counteract observed trends at some installations where drivers intentionally drive excessively fast to obtain the highest number on the sign.

incorporated results of the STRAVA modeling to help define overall patterns found within the area, as well as identification of potential choice routes for cyclists. In addition, the commentary provided input to refining overall improvement options, including identification of known obstacles for implementation. Individuals also shared their experiences in the area either as pedestrians, cyclists or motorists – all of which the team used to help flesh out the options presented in Figures 8 through 10.

Community Opinion Survey

As a follow-up to this initial meeting, a survey of the Gulf Park Estates neighborhood east of Beachview Drive focused on testing community response and support for lower-cost and easily implementable options for addressing circulation and access needs. Measures identified looked to provide improved facilities for cyclists along neighborhood streets combined with circulation changes which would not inhibit vehicle mobility or access to property. In addition, survey participants had the option to provide an indication of their support for other ideas, including sidewalks, sidewalk with bicycle lane or other respondent-defined option. The survey, as administered during the July 2015, started with a door-to-door canvassing of 250 homes, seeking resident input and comments on a striped in-street alternative or addition of bicycle “sharrow” pavement markings to existing streets.

Residents had the option to respond to the survey in-person at the time of administration or to follow through via an on-line survey linked through the GRPC website. The survey experienced a response rate of 14%, which meets with a surveying best practice for statistical validity. Of responses received through both survey methods:

- 29% of the neighborhood supports the idea of making changes as defined in the survey (one-way circulation with on-street bicycle lanes);
- Some portion of the residents support installing sidewalks along the edge of the roadway;
- 52% indicated they and/or their children bike/walk in the area at-least once a month. *Some individuals reported a much more frequent incidence of these activities at the time of the initial September 2014 meeting.*

A technical report outlining the survey methodology and results appears in Appendix F.

Final Public Information Meeting

A final public meeting, held on August 27, 2015, allowed interested community residents to review the outcome of the study and provide input to the final project recommendation. The GRPC provided a legal notice for the meeting through the local newspaper of record (*The Sun Herald*). In addition, notification for the meeting went to the community through the office of Supervisor John McKay, Jackson County. Participants reviewed the options and cost estimates outlined previously, along with a summary of the apparent environmental constraints and outcomes of the previously described community opinion survey. Appendix D contains a summary from this meeting, as well as a copy of the legal notice advertising.

During this meeting, GRPC received the following general comments on the plan and initial recommendations from the public:



Project ends with a public information meeting to present options and collect community input to a recommendation, held and hosted by Supervisor John McKay at the Fontainebleau Community Center, 8/27/2015

Date	Comment	Response
8/27/15	<ol style="list-style-type: none"> I like the wider bike path (Option #1), but my suggestion is to have the drainage closer to the road with greenery on top to act as a barrier between the road and the bikepath. I would like to see a raised curb on both sides of the street. 	<p>Project team looked at potential adjustments including a lane delineator between the travel lane and shoulder.</p> <p>Team will examine ideas presented for feasibility as part of a general review of the cross section for Option #1 (and #2) in order to move the pedestrian and bicycle facilities further away from the travel lane.</p>
8/27/15	<ol style="list-style-type: none"> Like the wider bike path (Option #1) option, but traffic moves too fast, in my opinion, on the corridor for these to be as close as shown in the drawing 	<p>Team will examine ideas presented for feasibility as part of a general review of the cross section for Option #1 (and #2) in order to move the pedestrian and bicycle facilities further away from the travel lane.</p>

21-Day Public Review Period

Following the public meeting, a final draft of this plan appeared on-line at www.grpc.com before the public between September 1 and September 21, 2015 for a 21-day open comment period, as per the guideline for planning studies administered through GRPC. GRPC provided notification of the document’s availability and invited comments with a legal notice in the local newspaper of record (*The Sun Herald*) and an email blast to community stakeholders and MPO members. Copies of the legal notice and responses to the same are within the public participation files of the GRPC. GRPC received no comments from the public during the 21-day comment period.

Recommendation

The recommendation for the initial phase of implementation for the Beachview Drive Improvement project (*Project No. 106821-101000 • Jackson County, MS*), between Old Spanish Trail and Edgewater Boulevard/Simmons Bayou is to program a phased implementation for the separated sidewalk with enhanced shoulders (Option #2). Continuing the project south of Edgewater Boulevard to the terminus at Lake Mars Avenue and the Lake Mars Boat Launch could be accomplished either using the recommended cross section, or conversion to the Shared Use Path concept (Option #1).

This concept remains flexible providing the public and community with a walking area, which can provide 8 to 9 feet of buffer space between the sidewalk and street. In addition, the shoulder remains available for use by experienced cyclists. An education campaign managed through the GRPC will aid in the education of the community on how to use the improved street. Radar speed limit signs, combined with routine enforcement, help to address concerns about speed on the corridor.

Community comments initially identified street side lighting as an element which needs improvement in the area. Accomplishing this installation through the County and a local lighting district (see page 31) should continue on a parallel track to this project’s development. Development of a specific lighting strategy and plan for installation occurs through Jackson County.

Project implementation funds come from a combination of 80% federal funds allocated through the Surface Transportation Program >200K (STP >200K) and Transportation Enhancement (ENH) programs, with a 20% match of local funds from a project sponsor, i.e. Jackson County.

NON-DISCRIMINATION NOTIFICATION:

GRPC prohibits discrimination in all of its programs, services and activities. Public participation is solicited without regard to race, color, national origin, age, sex, religion, disability, or other protected status. Persons who require assistance under the Americans with Disabilities Act should contact the MPO at least five (5) business days prior to the any scheduled meeting, event or the end of a public review and comment period. Contact Stephanie Plancich at 228-864-1167 or by email to contactus@grpc.com with any requests, questions or comments.

NOTATION OF FINANCIAL ASSISTANCE:

This document was prepared and published by Gulf Regional Planning Commission, the Mississippi Gulf Coast Metropolitan Planning Organization (MPO), in cooperation with or with financial assistance from the United States Department of Transportation (USDOT), the Federal Transit Administration (FTA), the Federal Highway Administration (FHWA) and the Mississippi Department of Transportation (MDOT). Assistance notwithstanding, the contents of this document do not necessarily reflect the official view or policies of the funding agencies.

NOTICE OF PUBLIC REVIEW:

In compliance with federal regulation 23 CFR 450, the Mississippi Gulf Coast Metropolitan Planning Organization (MPO) sought public input on this traffic study between September 1, 2015 and September 21, 2015. This public comment period also satisfies the FTA public participation requirements of Section 5307 POP notice. A summary of comments received appears on page 34 of this report. Contact Stephanie Plancich, Public Involvement/Title VI Coordinator with any questions or comments.



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