



public works

Memorandum

To: The Mayor and Board of Alderman

From: Mike McCollum, Public Works Director

Date: October 11, 2016

Re: Transportation Plan Update

We request the Mayor and Board of Alderman approve the attached above referenced Update to the Current 2012 Transportation Plan. Waggoner Engineers (at our request) removed any reference to extending Lake Harbour Drive from Highland Colony Parkway down Brame Road to Old Agency Road.

Thank you for your consideration in this matter. Please contact me if you have any questions.

JMM/

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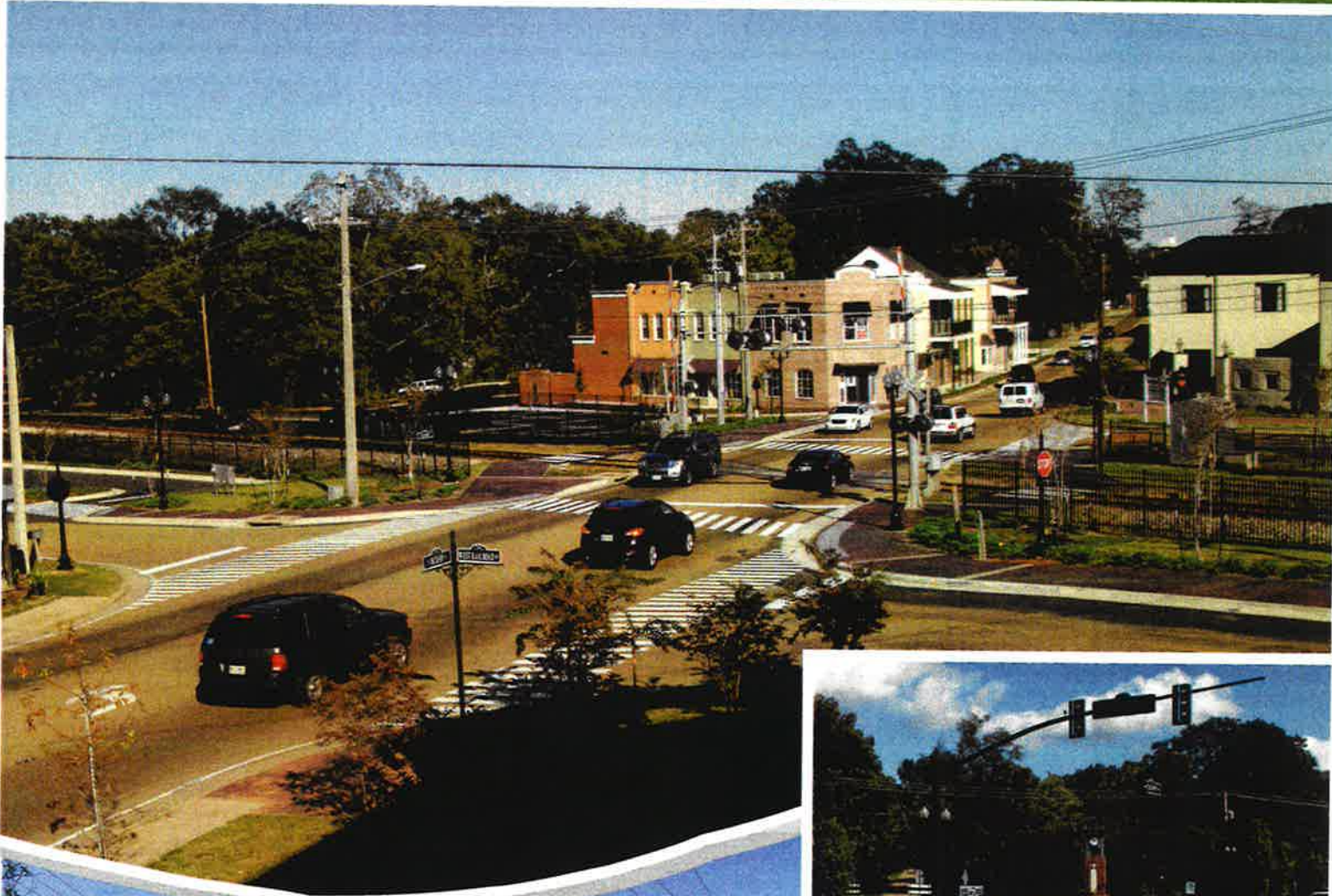
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the city of RIDGELAND



Transportation Plan Update



October 2012
Revised 10/6/2016



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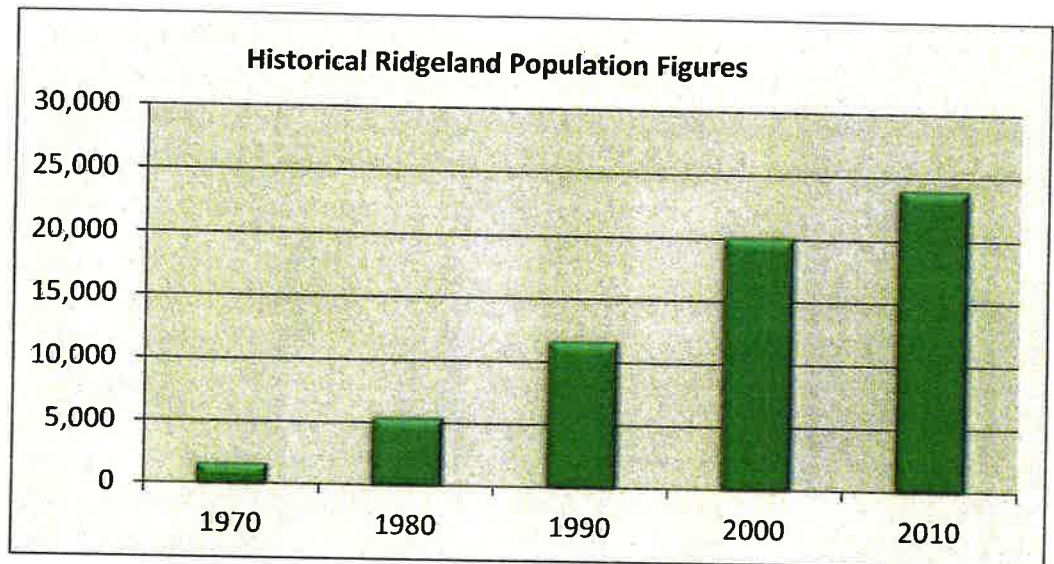
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EXECUTIVE SUMMARY

BACKGROUND, PURPOSE AND SCOPE

The City of Ridgeland has experienced tremendous growth during the last four decades. The population has increased steadily from 1,650 to 24,047 between years 1970 and 2010; and the population has increased approximately twenty percent since the last Transportation Plan Update in 2003. Significant development has also taken place since the last Transportation Plan Update, resulting in subsequent traffic growth on the City's roadway network and increasing traffic congestion throughout the area.



The City's leadership has once again taken a proactive approach to managing the burden that such growth and development places on its transportation system. The purpose of the 2012 Transportation Plan Update is to evaluate the City's current transportation network, assess progress made in implementing elements of the previously adopted capital improvements program, and make recommendations in light of current and newly-projected conditions.

This plan documents the development of the Transportation Plan for the City of Ridgeland, Mississippi. The Transportation plan will serve as a city wide guide to transportation needs (new and improved streets), give the City the ability to require right-of-way reservation in undeveloped areas, identify



streets that will be used to move primary traffic, establish a street classification system and establish access spacing based on street classifications. The Transportation Plan is intended as a tool to assist the City in assessing the effectiveness of the existing street system, developing a street improvement plan that will mitigate current and future street deficiencies, increasing mobility, creating a safe and efficient street system, for the City and establishing priorities for implementation of the plan.

The Scope of the present update was to make adjustments resulting from changing conditions since completion of the 2003 Transportation Plan Update. The present scope therefore included the following two primary areas of focus:

1. Updating of the improvements program recommended in the previous (2003) plan based on updated traffic volumes and level-of-service analyses; and
2. Development of a transportation network model to evaluate alternatives for transportation system enhancement through the planning period (year 2035).

An additional objective of the Plan was to evaluate the transportation network not merely with respect to automotive mobility, but to the pedestrian environment as well.

Objectives of Transportation Plan Update

Update the 2003 recommended improvements plan based on updated traffic volumes and level-of-service analyses

Develop a transportation network model to evaluate alternatives for transportation system enhancement

Evaluate the transportation network for automotive and pedestrian motility



RECOMMENDED IMPROVEMENTS

Through a process of transportation network modeling and matrix-type impacts analysis, a system of recommended improvements was developed to address deficiencies in the City's road network through the planning period. This resulted in a prioritized program of capital improvements for implementation in the short-term (0-5 years), mid-term (6-10 years) and long-term (10 years and beyond).

It is highly recommended that the City take steps to reserve right-of-way along potential new corridors.

The short-term recommendations, addressing those areas of most immediate need, are presented in the following table. It is highly recommended that the City take steps to reserve right-of-way along potential new corridors within the city limits and the planning area. This is primarily a concern in the western portion of the City where large tracts of undeveloped land still exist. As mentioned throughout the plan, a network of interconnected local, collector, and arterial streets can replace the need for widening arterial roadways in the future, which is typically expensive and disruptive to both businesses and residents.

Short Term Recommendations

Rank	Project	Cost
1	Lake Harbour Drive Extension - Highland Colony Parkway to U.S. 51	\$ 20,000,000
2	Colony Park Boulevard - Sunnybrook Road to U.S. 51	\$ 13,600,000
3	Ridgeland Avenue - Frontage Rd to U.S. 51	\$ 4,000,000
4	Ridgewood Road Widening - Centre Street to U.S. 51	\$ 5,200,000
5	Sunnybrook Road Widening – West Jackson St. to Lake Castle	\$ 14,000,000
6	Steed Road Extension - Sunnybrook Road to North Wheatley Street	\$ 2,500,000
7	City Center Master Plan - School St, Moon St, Madison Dr.	\$ 1,800,000
8	Southeast Ridgeland Master Plan – William Blvd. and Pine Knoll Dr.	\$ 5,000,000



*Committed
Short Term
Priority
Projects are
Lake Harbour
Dr. Extension,
and Colony
Park Boulevard*

The top two priority projects in the Short-Term Plan are both “committed” projects. The extension of Lake Harbour Dr. to Highland Colony Parkway is another high priority project with substantial benefits. Extending Lake Harbour Dr. across the interstate will create a much needed east-west corridor for the City, reducing traffic congestion at the Jackson Street/Old Agency Road interchange. The City of Ridgeland is committed to this project and has already completed the Environmental Assessment and received a FONSI (Finding of No Significant Impacts) from FHWA.

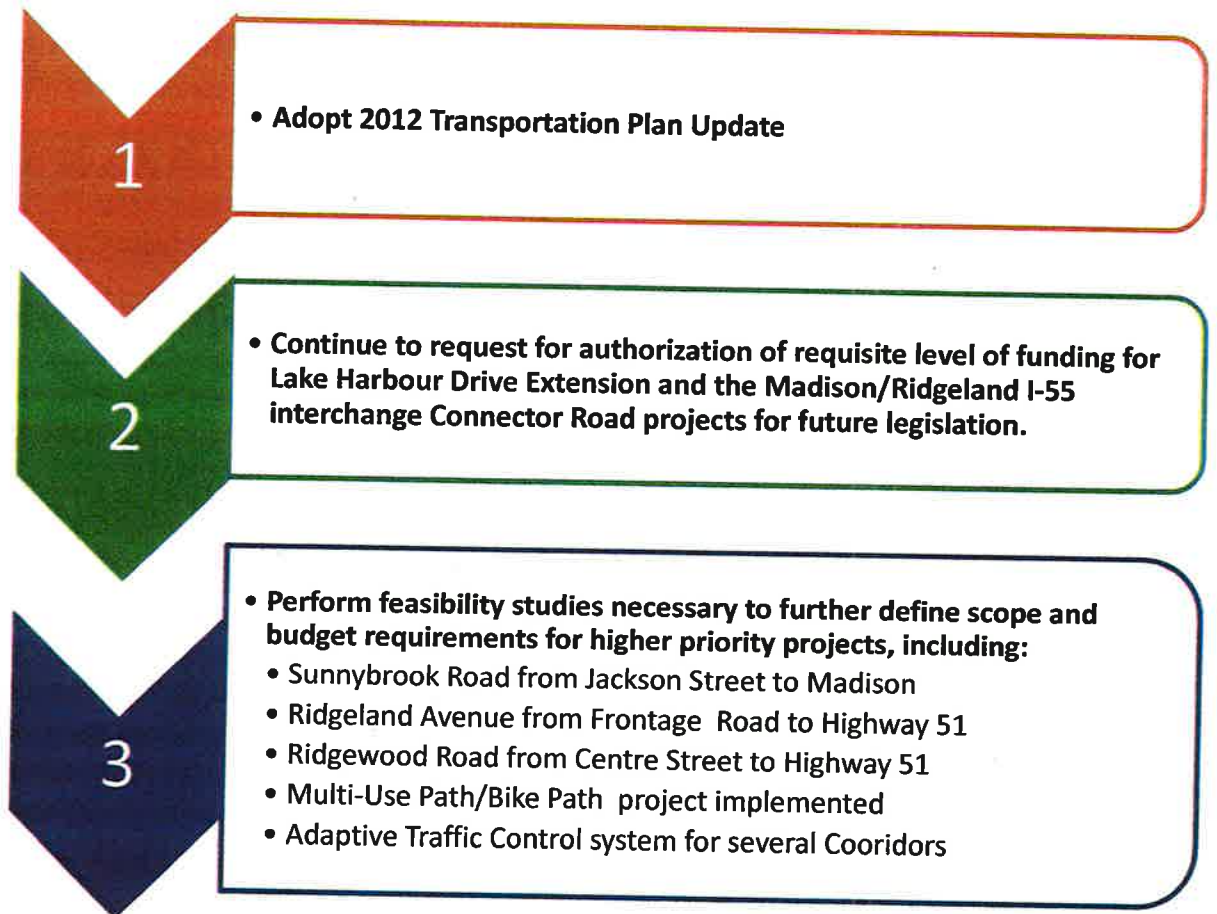
The new I-55 interchange at the corporate limits of Madison and Ridgeland is currently under construction, but does not include the connector roads. The main collector road that lies within the City is an extension of McClellan Dr., now called Colony Park Boulevard, will connect Highway 51 to Highland Colony Parkway. The design was completed by MDOT and the City of Ridgeland is initiating the Right of Way Phase for this project.

The entire program of recommended improvements, including short-, mid- and long-term, is presented in Section 5, along with issues for further consideration.



ACTION ITEMS

The City's transportation planning process is intended to provide guidance into the foreseeable future that will allow leadership to remain both prudent and proactive in meeting the demand for an efficient and safe transportation network. It is recommended that City leaders consider the following action items, in order to implement the program of improvements recommended in the Transportation Plan:



INTRODUCTION

BACKGROUND

Over the past several decades, the City of Ridgeland has experienced significant growth in both population and employment, resulting in subsequent traffic growth on the City's roadway network and increasing traffic congestion throughout the area. The City of Ridgeland historically has taken a proactive approach to managing the burden that



such growth and development places on its transportation system. In 1992 the City authorized preparation of a city-wide transportation plan, followed by an update in 1996 and again in 2003. The City of Ridgeland has approximately 24,000 inhabitants and is located north of Jackson and adjacent to the Ross Barnett Reservoir.

OBJECTIVE

The purpose of the 2012 Transportation Plan Update is similar to that of earlier plans which is to reevaluate the previous program of short- and long-term improvements and make recommendations in light of current and newly-projected conditions. The objective is further to include recommendations not only concerning automotive mobility, but also the pedestrian/multi-use path environment.

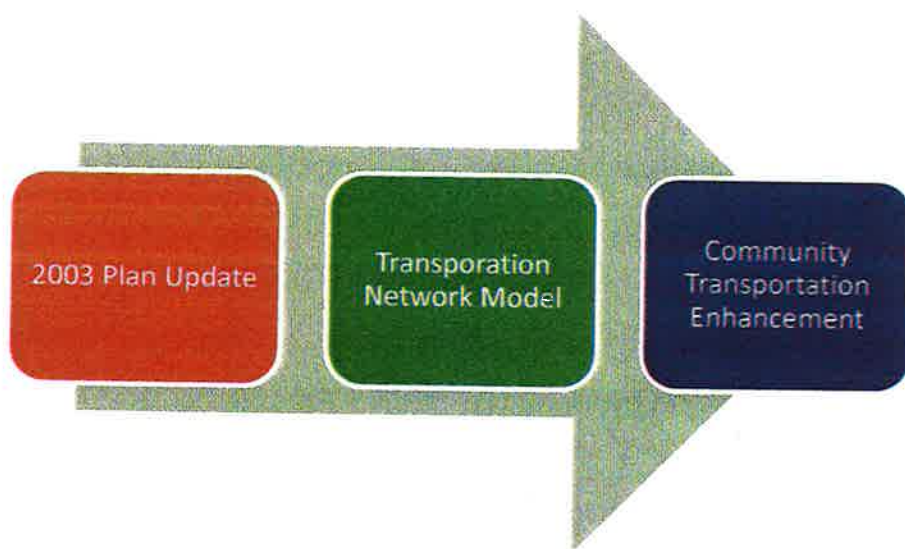
SCOPE

The first primary area of focus involved the updating of the improvements program recommended in the previous (2003) plan based on updated traffic volumes and level-of-service analyses. The first major element of the update included a Reconnaissance Level Evaluation of existing conditions. This



preliminary evaluation was performed in order to assess the status of ongoing transportation improvement projects in the City, as well as other metro area projects that may influence traffic conditions in the Ridgeland study area. The second element included the actual transportation plan update, which considered current levels of service on selected corridors and turning movements at key intersections.

The second primary area of focus of the Plan involved development of a transportation network model to evaluate alternatives for transportation system enhancement. The modeling effort was to evaluate existing conditions and a “no-build” alternative to determine the future impacts to the planning area if no further improvements are implemented. The modeling further allowed evaluation of alternative solutions to address existing conditions and plan for improvement of the future environment.



Concurrent with the standard engineering evaluations based on average daily traffic counts (ADT), existing level-of-service on selected roads, and road network modeling, were evaluations of current and emerging technologies and practices that promote livable, sustainable

community environments. For example, the Plan looked at future expansion of the highly successful multi-purpose trail, as well as the potential utilization of intelligent transportation system (ITS) technology and other more holistic approaches to community transportation enhancement.

The desired outcome of the combination of these separable yet interdependent areas of focus was a recommended short-term and target-year build-out plan that could be incorporated into the City’s overall budgeting and capital improvements planning process.



PLANNING AREA DESCRIPTION

The planning area includes the current corporate boundaries of the City of Ridgeland, expanded west beyond Livingston Road, and consists of approximately 22 square miles. The study area boundary was established for this project to incorporate those areas which directly and indirectly affect traffic flow in the City of Ridgeland. The study area boundary was established using a three step process. First, the study area boundary was drawn to encompass the city limits of the City of Ridgeland. Second, the study area boundary was expanded to encompass the traffic analysis zones (TAZ) developed in the regional long range transportation planning process which contained any part of the City of Ridgeland. Third, streets external to the study area boundary were added to the network to provide appropriate paths for traffic movement from various areas of the City of Ridgeland to the regional street system. The planning area is illustrated on Exhibit 1.1.

The street network of Ridgeland is made up of interstate highways, arterials, collectors and local streets. These streets vary in cross section from two to six lanes. Signalized traffic control at intersections along the City's street system is prevalent throughout the City. Each street and roadway classification provides separate and distinct traffic service functions. Each classification varies in its ability to accommodate particular travel and property access demands. The design criterion for each street classification varies in accordance with the characteristics of traffic to be served by the street. The following is a brief description of each street type.

Interstate – controlled access facilities with four or more lanes that provide fast and efficient movement of large volumes of traffic over a considerable distance by prohibiting access (ingress and egress) except at controlled intervals.



Principal Arterial - a facility that serves as a primary artery of the city intended to mainly carry through traffic and to connect major activity centers in the City and its planning jurisdiction. Its function is to move intra-city and intercity traffic. Service to abutting lands is subordinate to travel service to major



traffic movements. Principal arterials should not be bordered by uncontrolled strip development. Access to these facilities shall be carefully managed to ensure the capacity of the facility is not compromised by driveways. Principal arterials vary in width, and parking on-street is prohibited.

Collector - a street whose primary function is to collect traffic from an area and move it to the arterial street system while also providing substantial service to abutting land uses. A collector roadway will generally have lower design speeds than arterial roadways but higher than local streets.

Local Street - A street intended mainly to provide access to adjoining property and uses, providing access from individual lots to collector streets.



TRANSPORTATION PLAN UPDATE

The 2003 Transportation Plan included a list of projects recommended for implementation over a twenty-five year period, ranked according to priorities identified by the City of Ridgeland. These projects were further classified as short-, mid- or long-term priorities, and opinions of cost were developed for their implementation. The scope of the present Transportation Plan Update included review of the status of these projects since adoption of the 2003 Plan. This review is presented in Sections 2.2 and 2.3.

2003 SHORT-TERM RECOMMENDATIONS

The 2003 Transportation Plan included a list of projects targeted for “short-term” implementation (0 to 5 years) and ranked them according to priorities identified by the City of Ridgeland. These projects are listed in Table 2.1 along with their implementation status as of July 2012.

Table 2.1 - 2003 Short Term Recommendations

Rank	Project	Status
1	McClellan Drive Ext. - Old Canton Rd to Hwy 51	Complete
2	Lake Harbour Drive Ext. - U.S. Highway 51 Connection (ROW)	F.O.N.S.I. Approved Under Design
3	Northpark Northwest Corridor (ROW)	No Activity
4	Lake Harbour Drive - Pear Orchard to Northpark Drive	Construction has begun 2012
5	Lake Harbour Drive - Hwy 51 to Pear Orchard (ROW)	Construction has begun 2012
6	Pine Knoll Extension - Old Canton Road to Northpark Dr.	No Activity

2003 MID-TERM AND LONG-TERM RECOMMENDATIONS

In addition to the prioritized list of improvements recommended for implementation over a 0-5 year period, the 2003 Transportation Plan included a list of projects targeted for “mid-term” implementation (5 to 10 years) and “long-term” implementation (10 to 25 years). These projects were prioritized according to a list of fourteen (14) criteria, including such objective measurements as traffic



volume and level-of-service changes between 1996 and 2020 no-build conditions, as well as more subjective measurements such as neighborhood impacts, multi-jurisdictional support and feasibility. These projects are listed in Table 2.2 along with their implementation status as of February 2012.

Table 2.2 - 2003 Mid Term Recommendations

Rank	Project	Status
1	Northpark Northwest Corridor Connection (Construction)	No Activity
2	Ridgewood Road - Centre Street to US Hwy 51	Intersections with US Hwy 51 and with Centre St complete
3	Sunnybrook Road - Jackson Street to Lake Castle	Realignment of intersection of Jackson St in 2012
4	Lake Harbour - Hwy 51 to North Park Dr (Construction)	Construction has begun 2012
5	Livingston Road Connector Highland Colony to Livingston Road (ROW)	No Activity
6	Watkins Dr. Extension - W. County Line Rd to Old Agency Rd (ROW)	No Activity
7	Wheatley Street – Lake Harbour to Nolan Circle	No Activity
8	Steed Road Extension - Sunnybrook Rd to N. Wheatley St	Signal installed at Sunnybrook. Conceptual layout complete
9	Rice Road - Old Canton Road to Pear Orchard	No Activity
10	Rice Road - Harbor Drive to Old Canton Road	No Activity
11	Rice Road - Pear Orchard to Hwy 51	No Activity
12	Pear Orchard - Northpark Drive to Lake Harbour Road	No Activity
13	Arbor Dr. - Town Center to Ring Road	No Activity
14	County Line - N Frontage to Ridgewood Road	No Activity
15	Ridgeland Avenue - Sunnybrook to U.S. 51	Improvements at Wheatley Intersection



Table 2.2 - 2003 Long Term Recommendations

Rank	Project	Status
1	Harbor Drive - Lake Harbour to Rice Road	Portion of roadway relocated and widened in 2007
2	Frontage Road Extension - Frontage Road to Trunnell Road	No Activity
3	Dinsmor Crossing Extension - Highland Colony to Frontage Rd	No Activity
4	Livingston Road Connector Highland Colony to Livingston Road	No Activity
5	Watkins Dr. Extension - W. County Line Rd to Old Agency Rd	No Activity
6	Rice Road - Harbor Dr. to City Limits	No Activity
7	Livingston Realignment - Lake Castle to Cavalier Road	No Activity
8	N. Wheatley St. Extension to Madison	No Activity
9	Lake Castle Extension - Livingston Rd to Cavalier Rd	No Activity
10	Pear Orchard Widening - Lake Harbour Dr. to Rice Road	No Activity
11	Avery Road Extension - Town Center to Avery Rd	No Activity

REVIEW OF AREA PROJECTS WITH TRANSPORTATION IMPACTS

Projects were identified in the 2003 Plan that were anticipated to impact the Ridgeland transportation planning process to varying degrees. The current status of each of these projects is summarized in the following paragraphs. In addition to these transportation projects, other developments such as schools, commercial complexes and residential developments have either been constructed during the past eight years or are in various stages of planning or development.



I-55 Interchange at Ridgeland/Madison Corporate Limits

As discussed in the 1996 and 2003 Plans, an interlocal agreement (South Madison County Municipal Transportation Commission) was entered into by and between the City of Madison and the City of Ridgeland for implementation of an interchange and connecting roadways at the Ridgeland/Madison corporate limits. Initial construction began in 2008 of the west side frontage road from Steed Road to Old Agency Road. Construction of the



split-diamond interchange at I-55 and segments of the connector roads providing access to both Madison and Ridgeland have also begun. The remaining segments of the two main connector roads, Madison Avenue to the north and Colony Park Boulevard to the south will be constructed through local participation by the Cities of Madison and Ridgeland, with each responsible for the Right of Way for their respective road as well as 20% construction cost.

County Line Road/Highway 51 Coordinated Traffic Signal System

The City of Jackson has coordinated the signals from the West Frontage Rd. to Wheatley Street. The traffic signals have been connected to the City of Ridgeland's Traffic Management Center (TMC).



Schools on Sunnybrook Road

Since the opening of Olde Town Middle School and Ridgeland High School, significant impacts to traffic conditions have occurred. Grade improvements and widening of Sunnybrook Road at the entrance to Ridgeland High School, and geometric modifications and a signal at the intersection of Sunnybrook Road and Ridgeland Avenue have been constructed. Currently adjustments to the intersection of Sunnybrook and Jackson Street are part of the I-55 Interchange project.



Old Canton Road Widening – Lake Harbour Drive to Natchez Trace Parkway

The widening of Old Canton Road from Lake Harbour Drive to the Natchez Trace Parkway was constructed in 2005. The project widened the roadway to five lanes. The National Park Service also continued the widening to the City Limits as well as replaced the Natchez Trace Parkway bridge

north into Madison.

U.S. Highway 51 Widening by MDOT

MDOT completed construction of the widening of U.S. Highway 51 in 2006. The roadway was widened to five lanes from the Natchez Trace Parkway north to Hoy Road in Madison.



Multi-Use Path Implementation

The City of Ridgeland has received a Bronze Medal from the League of American Bicyclists, the City of Ridgeland and other agencies have constructed multi-use paths and bike lanes throughout the City. Listed below are projects that were constructed or are under construction since the last Transportation Plan Update:

- Multi-Use Path along Natchez Trace Parkway from Highland Colony Parkway to Hwy 51
- Connection to Jackson Street
- Multi-Use Path along Natchez Trace Parkway from Highland Colony Parkway to Livingston Road (NTP)
- Multi-Use Path along Natchez Trace Parkway from Livingston Road to West City Limits. (Under construction).
- Multi-Use Path along Natchez Trace Parkway from Old Canton Road to the Overlook
- Pearl River Valley Post Oak Road through Old Trace Park
- Overpass over Old Canton Road
- Bike lanes striped along William Boulevard, Centre Street & Woodlands Parkway

Traffic Signal Installations

Several critical intersections within the City of Ridgeland have improved with traffic signal installation. Each one of the following projects warranted the need for a signal and has seen great improvements in its level of service.

- Pear Orchard Road and Rice Road
- Center Street and Ridgewood Road
- Highland Colony Parkway and Steed Road
- Highland Colony Parkway and entrance to Renaissance
- Steed Road and Sunnybrook Road



West County Line Road

The City of Jackson has plans to improve the West County Line Rd. corridor in the Tougaloo area. This project will re-align County Line Rd. east of the Tougaloo campus, connecting the U.S. Highway 51 intersection with East County Line Rd. The project will widen West County Line Rd. to five lanes from Hanging Moss Road to U.S. Highway 51. The modification could potentially increase traffic on the eastern portion of County Line Rd. (east of I-55), especially if development continues along the corridor. An initial phase, the realignment of West County Line Rd to the end of the overall project just west of the existing railroad, has been constructed.



Colony Park (Township and Renaissance)

The Renaissance and Township developments have greatly increased traffic on Highland Colony Parkway, Sunnybrook Road, and Jackson Street. Four signals have been added, along with a bike trail. In addition a frontage road on the west side of I-55 was constructed from Steed Road to Old Agency Road to serve this development.





Development of Olde Towne

With the recent development of the Olde Towne district, Jackson Street now acts as a Collector Road for I-55. In addition, studies of the signal at Perkins Street indicate that once the split diamond interchange and Colony Park Boulevard are constructed, Jackson Street will see much needed relief.

East County Line Road Widening

The widening of East County Line Road from Pear Orchard Road to Old Canton Road was completed in 2007. The five million dollar project widened the roadway to five lanes. The project also included a sidewalk on the north side as well as signal improvements at Pear Orchard and Avery Boulevard.

East County Line Rehabilitation

The purpose of this project was to eliminate the two-way turn lane with a median to produce a safer more pleasant driving environment. Traffic accident data suggested that the center turn lane was to blame for East County Line Road's poor performance. The Ridgeland Police Department reported a 52 percent reduction in severe traffic collisions and a 22 percent reduction in overall accidents along the one-mile length of County Line Road during the 12 month period after the project was completed in November, 2005.

Proposed Redesign of I-55/I-220 Interchange and Frontage

In 2011 MDOT completed a study and the environmental assessment for the redesign of the I-55/I-220 interchange. The proposed project includes relocation of the I-220 overpass to accommodate additional lanes for I-55, additional frontage roads and realignment of the ramps for the Natchez Trace Parkway. The project received a F.O.N.S.I.(Finding of No Significant Impact) in 2011.



LEVEL-OF-SERVICE ANALYSIS UPDATE

Level of Service

Level of Service A - is defined as relatively free traffic flow with traffic volumes that are between 0% and 35% of capacity;

Level of Service B - is defined as stable traffic flow with traffic volumes that are between 35% and 50% of capacity;

Level of Service C - is also defined as stable traffic flow with traffic volumes that are between 50% and 62% of capacity;

Level of Service D - is defined as high-density stable traffic flow with traffic volumes that range from 62% to 75% of capacity;

Level of Service E - is defined as capacity level with traffic volumes that range from 75% to 100% of capacity; and

Level of Service F - is defined as the level of service where traffic is forced and there exist frequent breakdowns in traffic flow. Traffic volumes generally exceed 100% of a roadway's capacity

The main intent behind a transportation plan is to identify and remediate both existing and future deficiencies in the transportation system and road network. The primary method of determining deficiencies in a transportation system is through a level-of-service (LOS) analysis. The LOS analysis is beneficial in understanding the overall comfort and ease of travel on a given section of road as well as helping to prioritize areas of greatest need. The LOS classification is organized into six different categories, based on an A through F designation, with A being the most pleasant driving experience and F being the worst. In general, at an LOS of D or higher drivers begin to experience unfavorable driving conditions.

The present section discusses the LOS for roadways and critical intersections. The network of streets evaluated in this Transportation Plan typically excluded residential areas except for residential streets that have either changed in character (i.e., Lake Harbour Dr.) or are used as collectors.



ROADWAYS

The LOS for a roadway is based on its overall capacity and the amount of capacity consumed by vehicles. Basically, the more cars there are on the road the lower the LOS rating will be. The classification is based on the type of road (freeway, arterial, collector, etc.) and the number of lanes. The data used for classifying a given street type and volume are summarized in Table 2.3. The LOS classification system was obtained from the local MPO (Central Mississippi Planning and Development District).

Table 2.3 - Average Daily Traffic Volumes for Generalized Roadways

Facility Type	Level of Service					
	A	B	C	D	E	F
Freeway						
4 Lane	23,800	34,000	42,160	51,000	68,000	>68,000
6 Lane	35,700	51,000	63,420	76,500	102,000	>102,000
Arterial						
2 Lane w/o Left Turn Lane	3,850	5,500	6,820	8,250	11,000	>11,000
2 Lane w/ Left Turn Lane	5,250	7,500	9,300	11,250	15,000	>15,000
4 Lane Undivided	8,050	11,500	14,260	17,250	23,000	>23,000
4 Lane Divided	9,450	13,500	16,740	20,250	27,000	>27,000
6 Lane Divided	13,650	19,500	24,180	29,250	39,000	>39,000
8 Lane Divided	17,850	25,500	31,620	38,250	51,000	>51,000
Collector						
2 Lane w/o Left Turn Lane	3,500	5,000	6,200	7,500	10,000	>10,000
2 Lane w/ Left Turn Lane	4,200	6,000	7,440	9,000	12,000	>12,000
4 Lane Undivided	7,000	10,000	12,400	15,000	20,000	>20,000
4 Lane Divided	8,400	12,000	14,880	18,000	24,000	>24,000



EXISTING CONDITIONS

ROADWAYS

The findings of the current condition LOS analysis were compared with the corresponding data from the 2003 analysis, where direct comparison was achievable. This comparison allowed the determination of which roadway segments and interchanges have experienced the most significant changes in capacity during recent years. The comparative analysis is shown in Table 2.4, and existing conditions are illustrated on Exhibit 2.1.

While most of the roads in Ridgeland operate under acceptable conditions, several of the major arterials are operating at undesirable levels. The corridors that are currently operating at LOS D or lower are shown below.

LOS D OR LOWER CORRIDORS		
County Line Road	Harbor Drive	Rice Road
Old Canton Road	Lake Harbour Dr./Spillway Rd.	Pear Orchard Drive
Wheatley Street	North Park Drive	Ridgewood Road
US Hwy 51	Jackson Street (Ave.)	



**Table 2.4
Existing Conditions**

Roadway Segment	2003 Analysis		2012 Analysis		% Change in ADT
	ADT	LOS	ADT	LOS	
COUNTY LINE ROAD					
I-55 to Ridgewood Road	33,000	F	40,000	F	21.2%
Ridgewood Road to Wheatley Street	31,000	F	28,000	F	-9.7%
Wheatley Street to Pear Orchard	29,300	F	28,000	F	-4.4%
Pear Orchard Road to Old Canton Road	18,000	F	17,000	D	-5.6%
OLD CANTON ROAD					
County Line Road to Lake Harbour Drive	17,000	D	18,000	D	5.9%
Lake Harbour Drive to Natchez Trace Parkway	16,700	F	25,000	E	49.7%
Natchez Trace Parkway to Northern City Limits	11,000	F	13,000	B	18.2%
SPILLWAY ROAD					
Spillway Dam to Harbor Dr	21,000	E	28,000	F	33.3%
LAKE HARBOUR DRIVE					
Hwy 51 to Wheatley Street	14,000	E	15,000	F	7.1%
Wheatley Street to Pear Orchard	11,000	E	13,000	E	18.2%
Pear Orchard to Old Canton Road	13,000	F	19,000	E	46.2%
Harbor Drive to Old Canton Road	25,200	E	38,000	F	50.8%
HARBOR DRIVE					
Spillway Road to Rice Road	8,600	E			
RICE ROAD					
Hwy 51 to Pear Orchard Road	9,600	E			
Pear Orchard Road to Old Canton Road	10,500	F	9,000	E	-14.3%
Old Canton Road to Harbor Drive	12,400	E	17,000	F	37.1%
Harbor Drive to Post Oak Road	7,100	F			
SCHOOL STREET					
Hwy 51 to Wheatley Street	4,500	B			
Wheatley Street to Pear Orchard	5,400	C			
PEAR ORCHARD DRIVE					
County Line Road to North Park Drive	11,000	B	11,000	B	0.0%
North Park Drive to Lake Harbour Drive	9,600	E	11,000	C	14.6%
Lake Harbour Drive to Rice Road	6,000	C	11,000	C	83.3%
NORTH PARK DRIVE					
Pear Orchard Road to Lake Harbour Drive	6,900	D	7,000	D	1.4%
SOUTH WHEATLEY STREET					
County Line Road to Mall Entrance	8,400	D	7,000	C	-16.7%
Mall Entrance to Lake Harbor Drive	8,600	D	7,000	E	-18.6%
Lake Harbour Drive to School Street	5,200	C	7,000	E	34.6%

**Table 2.4
Existing Conditions**

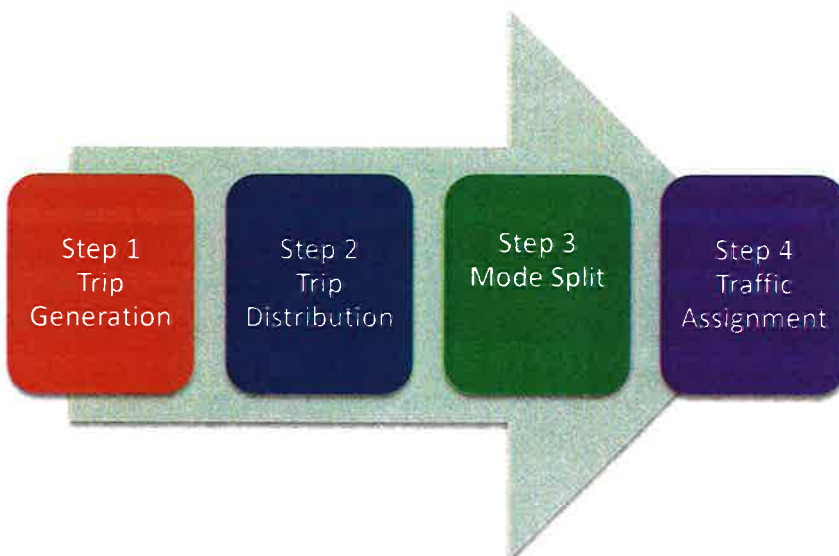
Roadway Segment	2003 Analysis		2012 Analysis		% Change in ADT
	ADT	LOS	ADT	LOS	
RIDGEWOOD ROAD					
County Line Road to Centre Street	7,500	C	7,000	A	-6.7%
Centre Street to U.S. Hwy 51	8,800	E	7,000	C	-20.5%
U.S. HIGHWAY 51					
I-55 to Ridgewood Road	16,000	C	16,000	C	0.0%
Ridgewood Road to Lake Harbour Drive	24,300	E	30,000	E	23.5%
Lake Harbour Drive to Jackson Street	21,300	F	28,000	F	31.5%
Jackson Street to City Limits	19,600	F	18,000		-8.2%
JACKSON STREET					
I-55 to Sunnybrook	14,000	E	24,000	F	71.4%
Sunnybrook to Perkins Street	12,000	E	18,000	F	50.0%
Madison Drive to U.S. Hwy 51	13,000	E			
U.S. Hwy 51 to end of Jackson Street	2,100	A	2,200	A	4.8%
RIDGELAND AVENUE					
Sunnybrook Drive to Wheatley Street	5,500	C			
SUNNYBROOK ROAD					
Jackson Street to Ridgeland Avenue	4,400	B	8,600	E	95.5%
Ridgeland Avenue to Corporate Limits	3,600	A			
STEED ROAD					
Richardson Road to Highland Colony Parkway	4,400	B			
HIGHLAND COLONY PARKWAY					
Corporate Limits to Steed Road	6,500	A			
Steed Road to Old Agency Road	6,200	A	10,000	B	61.3%
Old Agency Road to Dinsmor Crossing	4,800	A	7,900	A	64.6%
Dinsmor Crossing to Corporate Limits	6,600	A			
OLD AGENCY PARKWAY					
Highland Colony Parkway to Dinsmor Crossing	4,900	B	5,500	C	12.2%
Dinsmor Crossing to Corporate Limits	4,700	B			
INTERSTATE 55					
Southbound from Natchez Trace Parkway ramp to I-220	21,100	A	96,000	F	355.0%
Northbound from I-220 to Natchez Trace Parkway ramp	21,100	A			
I-220 to Corporate Limits (South Bound)	42,000	C	68,000	D	61.9%
Corporate Limits to I-220 (North Bound)	42,000	C			

TRANSPORTATION NETWORK MODELING

Travel demand models are developed to predict future traffic on the street and highway system within an area. The models are initially developed using existing land uses to duplicate travel for the base year. How well the model duplicates base year conditions is considered as an indication of how well it will predict future travel. If the model cannot produce traffic volumes similar to those observed on existing streets and highways, then the model is reevaluated and adjustments are made. This adjustment or calibration process continues until the model is adequately simulating base year traffic conditions. After the model is calibrated, projections of future land uses are used as input into the model to predict future travel demand.

TRAVEL DEMAND MODELING PROCESS

Street travel demand in the Ridgeland area was analyzed using a standard travel demand modeling process. The standard modeling process is defined by a four-step analysis procedure:



As the standard transportation demand modeling process in the State of Mississippi deals only with private transportation, (i.e., not public transit), Step #3, mode split, is ignored.

The Mississippi Department of Transportation has adopted a transportation demand modeling package known as TransCAD, developed by the Caliper

Corporation. TransCAD performs the various steps required in the modeling process. The following sections address the modeling process in more detail.



STREET NETWORK

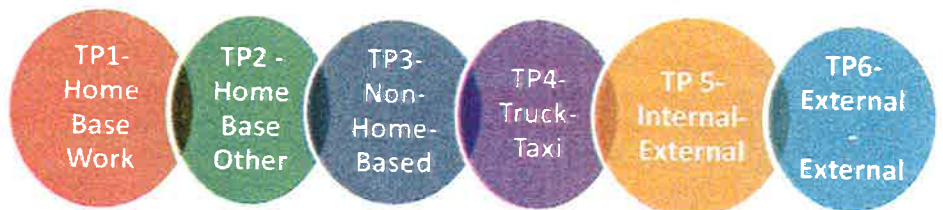
The network file is an abstract, computerized representation of the actual street network. The network file is created by transferring a street map to a form that can be processed by the computer program. The street network includes all streets that are classified as a collector or higher grade. At each intersection, node numbers are assigned. These node numbers are used to define individual links in the street network. The length, carrying capacity, and average speed of each link in the network is coded as part of the street network description. TAZ's are connected to the street network by imaginary lines through which the trips produced in or attracted to each TAZ may gain access to the street system. This entire abstract description of the actual street network is coded, entered into the computer, and becomes the network file for the study area.

TRIP GENERATION

The trip generation model translates land use data into numbers of trips. Given the land uses for a particular TAZ, the trip generation model predicts the number of trips that will be produced by that TAZ and the number of trips that will be attracted to that TAZ from all other TAZ's in the study area.

To perform trip generation, the relationships between observed travel and land use are defined through the use of mathematical equations and ratios. To determine the total number of trips that a

TRIP PURPOSES



TAZ may produce or attract, the number of dwelling units, developed commercial acres and developed industrial acres within that TAZ are multiplied by the appropriate trip generation rate. Using this process productions and attractions are produced for each TAZ. The trip generation model produces production and attraction data files for six trip purposes.

TRIP DISTRIBUTION



After trip generation has been completed, the productions and attractions for each TAZ are calculated. Trip distribution is the process by which the trips originating in one TAZ are distributed to other TAZ's throughout the study area. The output from trip distribution is a set of tables called trip tables that show travel flow between each pair of zones.

The method used to distribute trips throughout the Ridgeland study area was the gravity model. In the gravity model, the number of trips between two areas is directly proportional to the amount of activity in the areas and inversely proportional to the separation between the areas (represented as a function of travel time). In other words, the areas farther from each other will tend to exchange fewer trips. The generalized formula for the gravity model relates the desire for travel to three factors: 1) trip productions; 2) trip attractions; and 3) friction factors. The formula is:

$$\text{Trips} = \frac{\text{Prods}_i(\text{Attr}_j)(\text{FF}_j)}{(\text{Attr}_i)(\text{FF}_i)}$$

Where: Prods_i = productions at origin zone i

Attr_j = attractions at destination zone j

FF_j = friction factor between origin zone i and destination zone j

The effect of travel time on the exchange of trips between two zones is represented by a friction factor. Simply stated, a friction factor represents the level of accessibility, between each zone with higher value meaning "greater accessibility" and lower travel time. Each trip purpose must have a set of friction factors. The maximum time value of friction factors used in the Ridgeland model was 60 minutes.

TRAFFIC ASSIGNMENT

In trip generation, the number of trips by zone was forecast. Those forecast trips were then given destinations by trip distribution. Assigning these trips to specific routes and establishing traffic volumes is the last phase of the forecasting process. In the assignment process the existing trip tables that are produced in the trip distribution step of the modeling process are used to assign base year trips to the base year network. Trips between any two zones will generally follow the path (street links) between



zones that require the least amount of travel time. In determining time to go from one zone to another, delays due to congestion are taken into consideration.

The equilibrium assignment process, which was used in this study, considers demand in relation to capacity. The equilibrium assignment technique consists of a series of “all or nothing” loadings with an adjustment of travel time according to delays encountered in the associated iteration. The assignment from each iteration is combined with the assignment for the previous iteration in such a way as to minimize the travel time of each trip. As a result of these time adjustments, the loadings of different iterations may be assigned to different paths. By combining information from various iterations, the number of iterations required to reach equilibrium is reduced. Equilibrium occurs when no trip can be made by an alternate path without increasing the total travel time of all trips on the network.

MODEL CALIBRATION

Trips cannot be merely assigned to the street network. The model has to be calibrated to assure that it is replicating existing traffic volumes as closely as possible. Travel demand models are run to predict link volumes, which are then compared to actual traffic counts at selected locations along screenlines and cutlines. Screenlines are imaginary lines established to intercept traffic flows through a study area and are usually located along physical barriers such as rivers or railroads. Cutlines are shorter than screenlines; they measure traffic volumes in a corridor. The base year model assignment was compared to actual traffic volumes crossing the screenlines, and adjustments were made to the input model data set until assigned traffic volumes approximated actual screenline traffic volumes. When all of the reasonable adjustments and factors were included in the model, a final assignment was made. The final assignment was compared to performance measures based on national averages from studies of other urbanized areas. The total of the ground counts compared to the total of the model assignments for all of the screenlines should not be more than five percent. The percent error for the Ridgeland model was less than three percent.

FUTURE PRODUCTIONS AND ATTRACTIONS

The trip generation model was used to calculate future productions and attractions in the same manner as base year productions and attractions were calculated. The future land use data, presented



in an earlier section of this report, were used to calculate the future year productions and attractions. Internal-external productions and external productions and attractions were calculated using historical traffic growth patterns at the external boundaries of the study area.

FUTURE YEAR TRIP TABLE

Future productions and attractions were distributed using the gravity model according to the methodology used to distribute the existing year productions and attractions. Resultant trip tables for each of the six trip purposes for the future were produced. These trip tables were added and then converted to origin-destination format.



No-BUILD CONDITIONS (2035)

The purpose of the No-Build model is to project levels of services and deficiencies with forecasted traffic volumes to help determine problem areas if no additional improvements are made. The travel demand generated by the land use plan is assigned to the existing street network. The model results give planners and policy makers a basis for making infrastructure recommendations and decisions based on the foreseen deficiencies. The results are also used to guide the planning process and demonstrate where future problems might occur. The focus of the No-Build model is primarily to reveal the most immediate needs in the area anticipating that these needs will be addressed prior to undesirable traffic conditions. The No-Build model consists of the existing street network and projects under construction modeled against the future build-out scenario. The future build-out conditions are based on socio-economic data along with the type and density of development assumed to occur within the planning area. The information used in the No-Build model was created from census data, the future land use map for the City of Ridgeland, and input from the City and stakeholders (Table 3.1). The results of the No-Build model are tabulated on Table 3.2 and can be seen in graphical form on Exhibit 3.2.

In the No-Build scenario there are few roadways that remain at an acceptable level-of-service. It is important to note that while widening roads may improve the conditions on some roads, many of the main arterials will remain at a LOS of F. Therefore, new roads that parallel these congested corridors should be considered in order to maintain acceptable levels of service throughout the transportation system.



Table 3.1 - Socio-Economic Data (2010-2035)

2010 SOCIO-ECONOMIC DATA RIDGELAND, MISSISSIPPI										2035 SOCIO-ECONOMIC DATA RIDGELAND, MISSISSIPPI					
ZONE	POPULATION	TOTAL HOUSING UNITS	OCCUPIED HOUSING UNITS	TOTAL EMPLOYMENT	RETAIL EMPLOYMENT	SCHOOL ENROLLMENT	ZONE	POPULATION	TOTAL HOUSING UNITS	OCCUPIED HOUSING UNITS	TOTAL EMPLOYMENT	RETAIL EMPLOYMENT	SCHOOL ENROLLMENT		
1	536	245	230	0	0	0	1	613	280	264	0	0	0		
2	1558	534	528	26	12	0	2	3035	1041	1029	42	25	0		
3	514	434	398	71	60	0	3	588	0	455	140	127	0		
4	1028	692	627	221	207	0	4	1176	792	718	327	310	0		
5	1087	575	534	320	157	0	5	1749	926	860	636	318	0		
6	1079	714	652	506	339	0	6	1235	817	745	638	447	0		
7	0	0	0	207	115	0	7	0	0	0	383	219	0		
8	550	289	258	1175	40	0	8	629	330	295	1338	81	0		
9	0	0	0	237	90	0	9	0	0	0	419	103	0		
10	1256	886	831	607	111	0	10	1437	1007	951	1272	212	0		
11	89	104	85	2992	2502	0	11	102	119	97	3806	3246	0		
12	511	284	273	106	92	0	12	607	337	324	121	105	0		
13	744	413	399	488	150	0	13	915	508	491	612	231	0		
14	1441	551	532	37	3	0	14	1803	689	666	43	4	0		
15	447	171	168	8	0	0	15	511	196	192	9	0	0		
16	182	87	87	322	168	0	16	270	129	129	428	251	0		
17	885	322	310	345	83	0	17	604	223	212	657	151	0		
18	0	0	0	749	408	0	18	0	0	0	887	496	0		
19	1936	684	587	284	106	407	19	4134	1459	1251	484	227	848		
20	1950	1038	860	285	204	0	20	3992	1805	1496	424	371	0		
21	254	135	112	198	199	0	21	512	272	226	424	382	0		
22	804	439	386	251	217	0	22	1075	573	516	405	366	0		
23	85	45	41	300	271	0	23	97	52	47	491	428	0		
24	24	20	19	220	106	0	24	54	23	21	310	180	0		
25	19	8	7	379	123	0	25	21	9	8	636	207	0		
26	0	0	0	168	138	0	26	0	0	0	360	297	0		
27	430	230	197	115	50	1028	27	689	363	324	212	106	2205		
28	273	115	111	136	53	0	28	555	231	226	212	106	0		
29	15	9	7	132	59	0	29	18	10	8	269	126	0		
30	18	10	8	346	49	0	30	30	11	9	690	106	0		
31	1101	394	378	0	0	0	31	2361	844	811	0	0	0		
32	2063	1156	1156	286	44	604	32	3725	2088	2088	424	50	1260		
33	233	63	62	41	15	0	33	266	71	71	62	32	0		
34	53	14	14	167	60	0	34	61	16	16	206	83	0		
35	8	2	2	36	15	0	35	9	3	3	56	32	0		
36	1332	475	457	188	0	0	36	1805	643	619	1545	727	0		
37	367	131	126	140	86	0	37	787	281	270	247	62	0		
38	1588	566	545	219	21	0	38	2477	883	850	265	39	0		
39	85	42	30	2075	148	434	39	97	48	34	2712	318	636		
40	2628	1296	919	247	99	0	40	5631	2778	1969	530	212	0		
41	928	458	324	372	29	0	41	1956	965	884	742	212	0		
42	1264	619	460	618	29	0	42	2698	1331	944	1324	63	0		
43	0	0	0	706	118	0	43	0	0	0	1514	252	0		
44	351	123	114	1776	1063	0	44	738	259	238	3808	2281	0		
45	1068	374	346	994	203	0	45	2147	752	695	2120	424	0		
46	318	111	103	179	49	924	46	666	233	216	318	106	1261		
47	592	307	192	11	11	0	47	1181	414	382	13	13	0		
48	1032	361	333	483	0	415	48	2021	708	653	0	0	504		
49	0	0	0	0	414	0	49	0	0	0	612	0	0		
50	0	0	0	352	94	0	50	0	0	0	418	122	0		
51	229	108	103	40	26	0	51	262	124	117	61	44	0		
52	73	20	18	284	189	0	52	83	23	20	339	231	0		
53	0	0	0	555	179	0	53	0	0	0	753	323	0		
54	0	0	0	0	0	0	54	0	0	0	0	0	0		
TOTAL	33051	15568	13929	21806	9486	3812	TOTAL	54812	25164	22240	35118	15386	6714		

Table 3.1 - Socio-Economic Data (2010 - 2035)

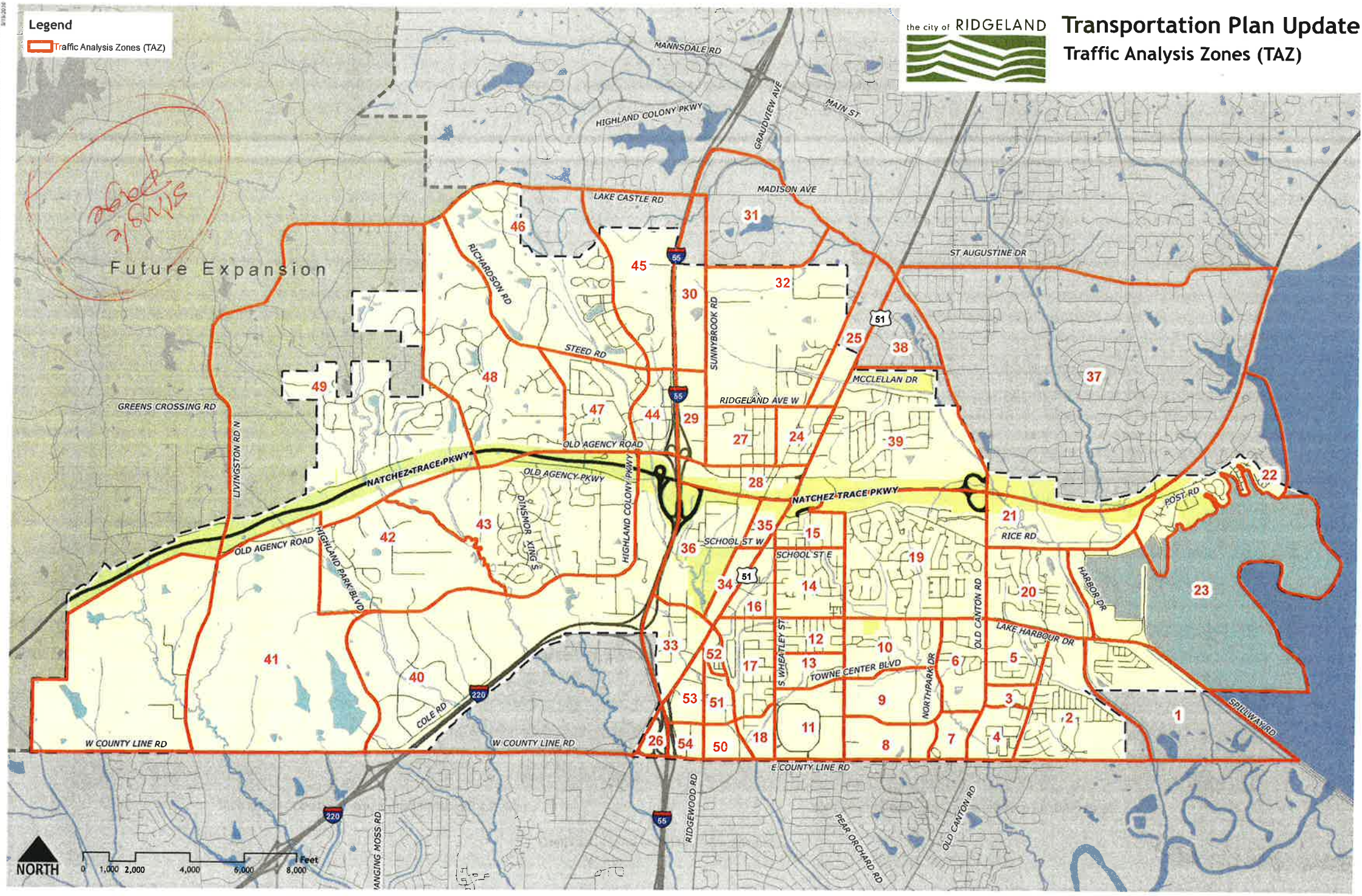
Share/pose

#Ridgeland_City_0110100000 - Formulation - Plan/Map/Display of Ridgeland Transportation Map 2024-2028
3/11/2018

Legend
Traffic Analysis Zones (TAZ)



Transportation Plan Update Traffic Analysis Zones (TAZ)



**Table 3.2
Comparative Analysis of 2011 to 2035 (No-Build Model)**

Roadway Segment	2003 Analysis		2012 Analysis		% Change in ADT	2035 Analysis		% Change in ADT
	ADT	LOS	ADT	LOS		ADT	LOS	
COUNTY LINE ROAD								
I-55 to Ridgewood Road	33,000	F	40,000	F	21.2%	58,000	F	45.0%
Ridgewood Road to Wheatley Street	31,000	F	28,000	F	-9.7%	48,000	F	71.4%
Wheatley Street to Pear Orchard	29,300	F	28,000	F	-4.4%	48,000	F	71.4%
Pear Orchard Road to Old Canton Road	18,000	F	17,000	D	-5.6%	26,000	F	52.9%
OLD CANTON ROAD								
County Line Road to Lake Harbour Drive	17,000	D	18,000	D	5.9%	25,000	E	38.9%
Lake Harbour Drive to Natchez Trace Parkway	16,700	F	25,000	E	49.7%	31,000	F	24.0%
Natchez Trace Parkway to Northern City Limits	11,000	F	13,000	B	18.2%	18,000	E	38.5%
SPILLWAY ROAD								
Spillway Dam to Harbor Dr	21,000	E	28,000	F	33.3%	53,000	F	89.3%
LAKE HARBOUR DRIVE								
Hwy 51 to Wheatley Street	14,000	E	15,000	F	7.1%	28,000	F	86.7%
Wheatley Street to Pear Orchard	11,000	E	13,000	E	18.2%	22,000	F	69.2%
Pear Orchard to Old Canton Road	13,000	F	19,000	E	46.2%	34,000	F	78.9%
Harbor Drive to Old Canton Road	25,200	E	38,000	F	50.8%	64,000	F	68.4%
HARBOR DRIVE								
Spillway Road to Rice Road	8,600	E					F	
RICE ROAD								
Hwy 51 to Pear Orchard Road	9,600	E				13,000	F	
Pear Orchard Road to Old Canton Road	10,500	F	9,000	E	-14.3%	18,000	F	100.0%
Old Canton Road to Harbor Drive	12,400	E	17,000	F	37.1%	32,000	F	88.2%
Harbor Drive to Post Oak Road	7,100	F				17,000	F	
SCHOOL STREET								
Hwy 51 to Wheatley Street	4,500	B						
Wheatley Street to Pear Orchard	5,400	C						
PEAR ORCHARD DRIVE								
County Line Road to North Park Drive	11,000	B	11,000	B	0.0%	16,000	E	45.5%
North Park Drive to Lake Harbour Drive	9,600	E	11,000	C	14.6%	16,000	F	45.5%
Lake Harbour Drive to Rice Road	6,000	C	11,000	C	83.3%	16,000	F	45.5%
NORTH PARK DRIVE								
Pear Orchard Road to Lake Harbour Drive	6,900	D	7,000	D	1.4%	12,000	E	71.4%
SOUTH WHEATLEY STREET								
County Line Road to Mall Entrance	8,400	D	7,000	C	-16.7%	19,000	F	171.4%
Mall Entrance to Lake Harbor Drive	8,600	D	7,000	E	-18.6%	14,000	F	100.0%
Lake Harbour Drive to School Street	5,200	C	7,000	E	34.6%	11,000	E	57.1%
RIDGEWOOD ROAD								
County Line Road to Centre Street	7,500	C	7,000	A	-6.7%	13,000	C	85.7%
Centre Street to U.S. Hwy 51	8,800	E	7,000	C	-20.5%	11,000	E	57.1%
U.S. HIGHWAY 51								
I-55 to Ridgewood Road	16,000	C	16,000	C	0.0%	33,000	F	106.3%
Ridgewood Road to Lake Harbour Drive	24,300	E	30,000	E	23.5%	54,000	F	80.0%
Lake Harbour Drive to Jackson Street	21,300	F	28,000	F	31.5%	52,000	F	85.7%
Jackson Street to City Limits	19,600	F	18,000		132888	36,000	F	100.0%
JACKSON STREET								

**Table 3.2
Comparative Analysis of 2011 to 2035 (No-Build Model)**

**Table 3.2
Comparative Analysis of 2011 to 2035 (No-Build Model)**

Roadway Segment	2003 Analysis		2012 Analysis		% Change in ADT	2035 Analysis		% Change in ADT
	ADT	LOS	ADT	LOS		ADT	LOS	
I-55 to Sunnybrook	14,000	E	24,000	F	71.4%	39,000	F	62.5%
Sunnybrook to Perkins Street	12,000	E	18,000	F	50.0%	29,000	F	61.1%
U.S. Hwy 51 to end of Jackson Street	2,100	A	2,200	A	4.8%	3,500	B	59.1%
RIDGELAND AVENUE								
Sunnybrook Drive to Wheatley Street	5,500	C				19,000	F	
SUNNYBROOK ROAD								
Jackson Street to Ridgeland Avenue	4,400	B	8,600	E	95.5%	18,000	F	109.3%
Ridgeland Avenue to Corporate Limits	3,600	A				15,000	E	
STEED ROAD								
Richardson Road to Highland Colony Parkway	4,400	B				5,000	B	
HIGHLAND COLONY PARKWAY								
Corporate Limits to Steed Road	6,500	A					D	
Steed Road to Old Agency Road	6,200	A	10,000	B	61.3%	24,000	E	140.0%
Old Agency Road to Dinsmor Crossing	4,800	A	7,900	A	64.6%	23,000	E	191.1%
Dinsmor Crossing to Corporate Limits	6,600	A					E	
OLD AGENCY PARKWAY								
Highland Colony Parkway to Dinsmor Crossing	4,900	B	5,500	C	12.2%	6,000	D	9.1%
Dinsmor Crossing to Corporate Limits	4,700	B				4,000	B	
INTERSTATE 55								
Southbound from Natchez Trace Parkway ramp to I-220	21,100	A	96,000	F	355.0%	140,000	F	45.8%
Northbound from I-220 to Natchez Trace Parkway ramp	21,100	A					F	
I-220 to Corporate Limits (South Bound)	42,000	C	68,000	D	61.9%	68,000	D	0.0%
Corporate Limits to I-220 (North Bound)	42,000	C					F	

**Table 3.2
Comparative Analysis of 2011 to 2035 (No-Build Model)**

ALTERNATIVES ANALYSIS

After the No-Build model has been created and evaluated, an alternatives analysis process is used to determine the most beneficial additions to the existing street system. Each alternative, which includes several new streets and widening projects, is tested against the No-Build model conditions and results in a new network of streets with different traffic conditions. The results are tested against each other to determine the alternative that provides the greatest increase in mobility and economic development potential as well as overall decreases in traffic congestion at the lowest possible cost. The basic philosophy used throughout the alternatives analysis process is that new roads are preferred to widening of existing roads, but all scenarios were considered. In general, new roads increase development potential, limit neighborhood and business impacts, provide a “network” of streets, and limit construction related traffic congestion often experienced during road widening projects.

TRANSPORTATION SYSTEM IMPROVEMENT PLAN

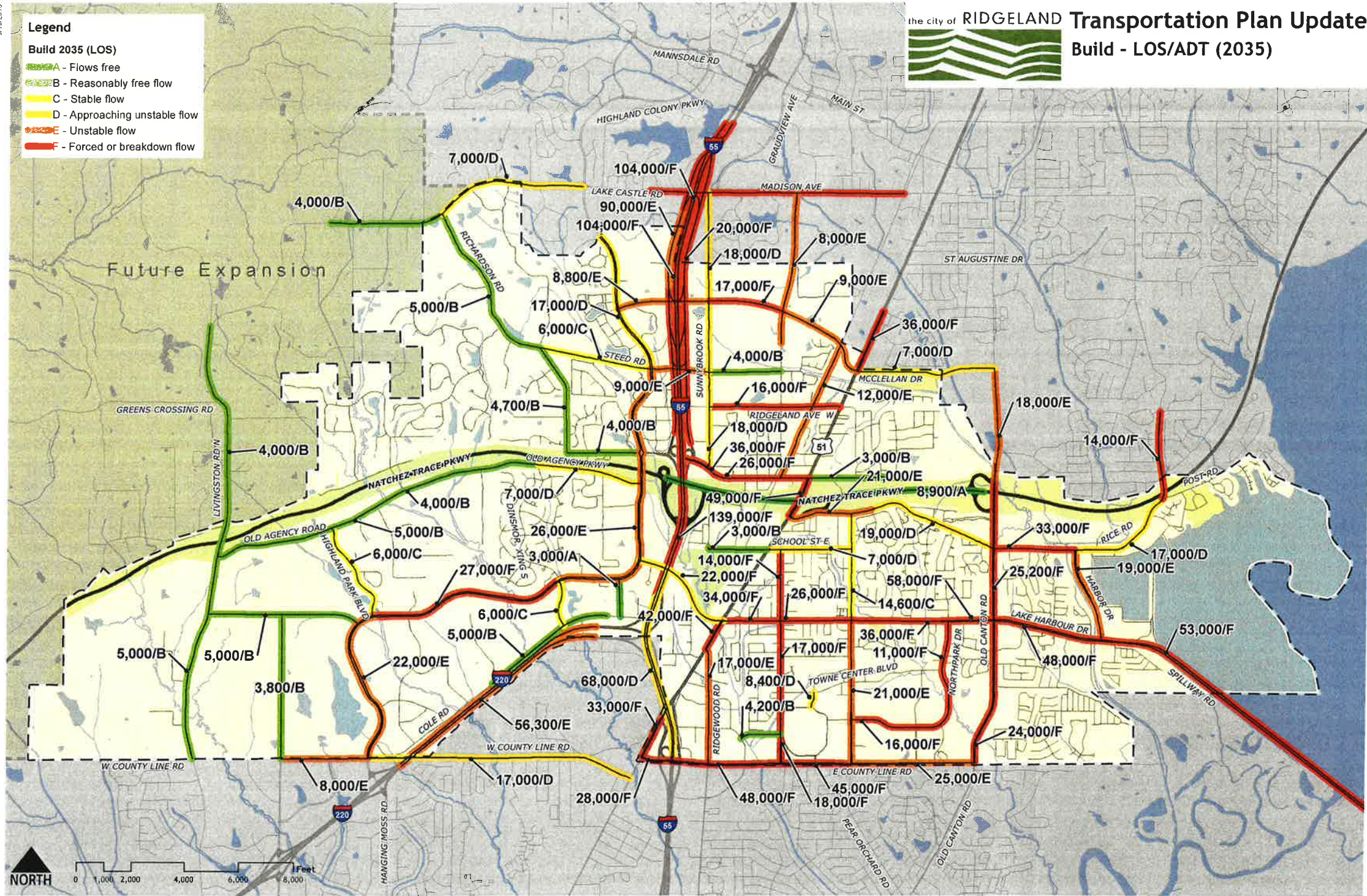
The recommendations in the improved plan were included based on modeling results, recommendations from the “Ridgeland Area Master Plan 2008” (RAMP), and other City input. The improvements in the plan included adding travel lanes to existing streets, extensions of current streets and the construction of new streets. The modeling results from the recommended plan are illustrated in Exhibit 3.3. The comparative impact of these improvements can be seen in Table 3.3, the “2035 Build/No Build Comparison”.



Legend

Build 2035 (LOS)

- A - Flows free
- B - Reasonably free flow
- C - Stable flow
- D - Approaching unstable flow
- E - Unstable flow
- F - Forced or breakdown flow



**Table 3.3
Comparative Analysis of 2011 to 2035 (No-Build Model)**

Roadway Segment	2012 Analysis			% Change in ADT	2035 Analysis		% Change in ADT	Build 2035 Analysis		% Change in ADT
	ADT	LOS			ADT	LOS		ADT	LOS	
COUNTY LINE ROAD										
I-55 to Ridgewood Road	40,000	F	21.2%	58,000	F	45.0%	48,000	F	-20.8%	
Ridgewood Road to Wheatley Street	28,000	F	-9.7%	48,000	F	71.4%	48,000	F	0.0%	
Wheatley Street to Pear Orchard	28,000	F	-4.4%	48,000	F	71.4%	45,000	F	-6.7%	
Pear Orchard Road to Old Canton Road	17,000	D	-5.6%	26,000	F	52.9%	25,000	F	-4.0%	
OLD CANTON ROAD										
County Line Road to Lake Harbour Drive	18,000	D	5.9%	25,000	E	38.9%	24,000	F	-4.2%	
Lake Harbour Drive to Natchez Trace Parkway	25,000	E	49.7%	31,000	F	24.0%	25,200	F	-23.0%	
Natchez Trace Parkway to Northern City Limits	13,000	B	18.2%	18,000	E	38.5%	18,000	E	0.0%	
SPILLWAY ROAD										
Spillway Dam to Harbor Dr	28,000	F	33.3%	53,000	F	89.3%	48,000	F	-10.4%	
LAKE HARBOUR DRIVE										
Hwy 51 to Wheatley Street	15,000	F	7.1%	28,000	F	86.7%	34,000	F	17.6%	
Wheatley Street to Pear Orchard	13,000	E	18.2%	22,000	F	69.2%	26,000	F	15.4%	
Pear Orchard to Old Canton Road	19,000	E	46.2%	34,000	F	78.9%	36,000	F		
Hwy 51 to Highland Colony Parkway							22,000	E		
Harbor Drive to Old Canton Road	38,000	F	50.8%	64,000	F	68.4%	53,000	F	-20.8%	
HARBOR DRIVE										
Spillway Road to Rice Road				18,000	E		19,000	E		
RICE ROAD										
Hwy 51 to Pear Orchard Road				13,000	F		21,000	E	38.1%	
Pear Orchard Road to Old Canton Road	9,000	E	-14.3%	18,000	F	100.0%	19,000	D	5.3%	
Old Canton Road to Harbor Drive	17,000	F	37.1%	32,000	F	88.2%	33,000	F	3.0%	
Harbor Drive to Post Oak Road				17,000	F		17,000	D		
SCHOOL STREET										
Freedom Ridge to Wheatley Street							3,000	B		
Wheatley Street to Pear Orchard							7,000	D		
PEAR ORCHARD DRIVE										
County Line Road to North Park Drive	11,000	B	0.0%	16,000	E	45.5%	21,000	E	23.8%	
North Park Drive to Lake Harbour Drive	11,000	C	14.6%	16,000	F	45.5%	21,000	E	23.8%	
Lake Harbour Drive to Rice Road	11,000	C	83.3%	16,000	F	45.5%	14,600	C	-9.6%	
NORTH PARK DRIVE										
Pear Orchard Road to Lake Harbour Drive	7,000	D	1.4%	12,000	E	71.4%	16,000	F	25.0%	
SOUTH WHEATLEY STREET										
County Line Road to Mall Entrance	7,000	C	-16.7%	19,000	F	171.4%	18,000	F	-5.6%	
Mall Entrance to Lake Harbor Drive	7,000	E	-18.6%	14,000	F	100.0%	17,000	F	17.6%	
Lake Harbour Drive to School Street	7,000	E	34.6%	11,000	E	57.1%	14,000	F	21.4%	
RIDGEWOOD ROAD										
County Line Road to Centre Street	7,000	A	-6.7%	13,000	C	85.7%	17,000	E	23.5%	
Centre Street to U.S. Hwy 51	7,000	C	-20.5%	11,000	E	57.1%	17,000	E	35.3%	
U.S. HIGHWAY 51										
I-55 to Ridgewood Road	16,000	C	0.0%	33,000	F	106.3%	33,000	F	0.0%	
Ridgewood Road to Lake Harbour Drive	30,000	E	23.5%	54,000	F	80.0%	42,000	F	-28.6%	

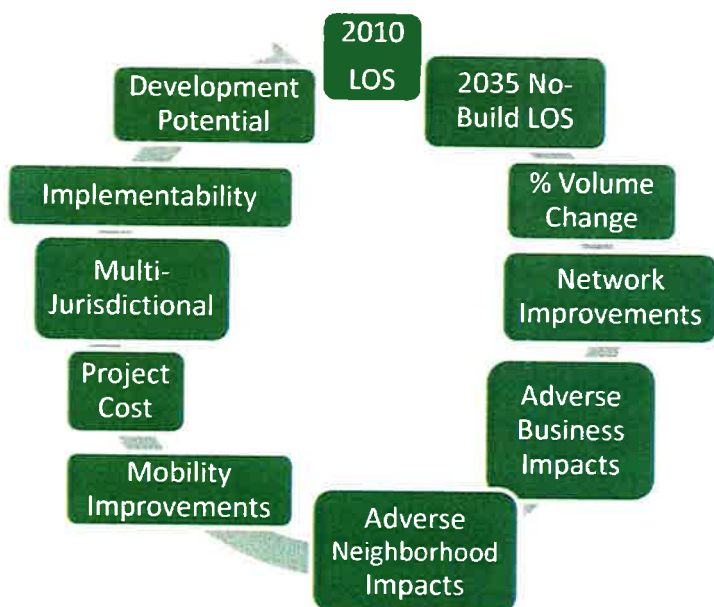
**Table 3.3
Comparative Analysis of 2011 to 2035 (No-Build Model)**

**Table 3.3
Comparative Analysis of 2011 to 2035 (No-Build Model)**

Roadway Segment	2012 Analysis			2035 Analysis			Build 2035 Analysis		
	ADT	LOS	% Change in ADT	ADT	LOS	% Change in ADT	ADT	LOS	% Change in ADT
Lake Harbour Drive to Jackson Street	28,000	F	31.5%	52,000	F	85.7%	49,000	F	-6.1%
Jackson Street to City Limits	18,000		-8.2%	36,000	F	100.0%	36,000	F	0.0%
JACKSON STREET									
I-55 to Sunnybrook	24,000	F	71.4%	39,000	F	62.5%	36,000	F	-8.3%
Sunnybrook to Perkins Street	18,000	F	50.0%	29,000	F	61.1%	26,000	F	-11.5%
U.S. Hwy 51 to end of Jackson Street	2,200	A	4.8%	3,500	B	59.1%	3,000	F	-16.7%
RIDGELAND AVENUE									
Sunnybrook Drive to Wheatley Street				19,000	F		16,000	F	-18.8%
SUNNYBROOK ROAD									
Jackson Street to Ridgeland Avenue	8,600	E	95.5%	18,000	F	109.3%	18,000	D	0.0%
Ridgeland Avenue to Corporate Limits				15,000	E		18,000	D	16.7%
STEED ROAD									
Richardson Road to Highland Colony Parkway				5,000	B		6,000	C	16.7%
HIGHLAND COLONY PARKWAY									
Corporate Limits to Steed Road					D		17,000	D	
Steed Road to Old Agency Road	10,000	B	61.3%	24,000	E	140.0%	26,000	E	7.7%
Old Agency Road to Dinsmor Crossing	7,900	A	64.6%	23,000	E	191.1%	26,000	E	11.5%
Dinsmor Crossing to Corporate Limits					E		27,000	F	
OLD AGENCY PARKWAY									
Highland Colony Parkway to Dinsmor Crossing	5,500	C	12.2%	6,000	D	9.1%	7,000	D	14.3%
Dinsmor Crossing to Corporate Limits				4,000	B		4,000	B	0.0%
INTERSTATE 55									
Southbound from Natchez Trace Parkway ramp to I-220	96,000	F	355.0%	140,000	F	45.8%	139,000		-0.7%
Northbound from I-220 to Natchez Trace Parkway ramp					F				
I-220 to Corporate Limits (South Bound)	68,000	D	61.9%	68,000	D	0.0%	68,000		0.0%
Corporate Limits to I-220 (North Bound)					F				
COLONY PARK BOULEVARD									
Sunnybrook Road to Wheatley Street							17,000	D	
Wheatley Street to Hwy 51							9,000	B	

**Table 3.3
Comparative Analysis of 2011 to 2035 (No-Build Model)**

PROJECT IMPACT ANALYSIS



In order to prioritize the recommended roadways, an objective analysis was performed for each suggested improvement. There were several different criteria used to grade each project, with each category having a maximum grade of six and a minimum grade of zero. In general, it is difficult to assess the importance of new roads versus the widening of existing roads, but

the criteria used to grade each project reflect the additional mobility and network connectivity provided by new roadways. The list below describes how each category was graded.

Existing Level-of-Service (LOS) – The existing streets were scored based on their level of service with a “LOS A” receiving 1 and “LOS F” receiving 6.

No-Build 2035 LOS – The No-Build model was used to score roadways based on their increase in traffic relative to existing conditions. If a roadway saw a LOS F in the model it was given a score of 6, similarly if the roadway saw a LOS A it was given 1.

Percent Change in Traffic Volume – The percent increase in traffic volume from 2002 to 2035 No-Build model was used to account for those areas of greatest future growth. The percentage of increase in traffic volume for each road was graphed and a scale was created based on the distribution of points on the graph. The following grading scale was created: <50% - 1, <75% - 2, <100% - 3, <125% - 4, <150% - 5, and >150% - 6.

LOS No-Build vs. Build – Each roadway was scored based on the change in LOS from the No-Build model to the Build scenario. If the LOS for a roadway did not change it received a score of 1 and each improvement added an additional point. For example, if a roadway went from a LOS F to D, it received 3 points.



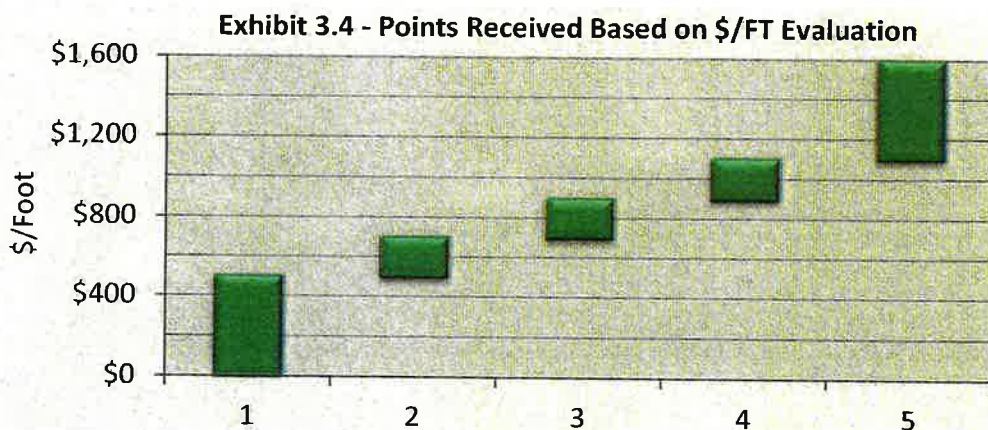
Network Improvements – Improvements to the street network were assessed based on the general importance of the street to the overall transportation system. For example, new roads received a higher score than existing roads recommended for widening, because new roads provide alternate routes.

Adverse Business Impacts – Roads that could detract or hinder business development were given a low score while roads with high development potential received a high score. The same 1 to 6 point scale was used during the evaluation.

Adverse Neighborhood Impacts – In general, any road widening recommendation adjacent to a neighborhood and new roads that required demolition received low scores.

Mobility Improvements - While road widening projects can enhance mobility, new roads were given higher scores. New roads provide greater mobility enhancements and allow for current traffic flows to continue unabated.

Cost per Foot – Since the cost of a project has a profound influence on the feasibility of a project, the cost of roadway projects was closely considered. Exhibit 3.4 shows how the evaluation system was created. The cost of each individual project was graphed and the distribution was separated into six zones. Each zone was associated with a value used to rank the project. The points assigned to each zone were used in the overall decision matrix process.



Multi-Jurisdictional Support – If any other city, district, or agency is required to perform a given project, it was given a lower score than a project that requires no outside assistance. For example, the extension of Lake Harbor Drive over I-55 requires coordination with the U.S. DOT, MDOT, and the railroad company (Canadian National / Illinois Central).

Implement ability – Each project varies in the difficulty of implementation, therefore they were scored according to the perceived ease of implementation. This category is in part a combination of several of the above items.



Development Potential – Roadways that are inclined to encourage development or open up new land for development were given high scores.

The resulting project impact list can be seen on Table 3.4. The results tend to favor work on existing roadways rather than investment in new roads, which are not evaluated in four of the twelve categories. While the project impact list helps objectively evaluate projects, it is most effectively used as a tool for creating short-term, mid-term, and long-term recommendations. The recommendations found in section five of this report may not directly follow the project impact lists.



Table 3.4 - Project Impact Analysis

Roadway Segment	2012 LOS	No-Build 2035 LOS	% Volume Change (2012-2035)	LOS (No-Build to 2035 Build)	Network Improvements	Adverse Business Impacts	Adverse Neighborhood Impacts	Mobility Improvements/Access to Major Generators	Cost	Multi-Jurisdictional	Implementability	Development Potential	Score
Lake Harbour Drive Extension					5	6	1	6	1	2	5	6	32
Colony Park Boulevard					5	6	1	6	1	2	5	6	32
Sunnybrook Road	5	6	3	3	2	4	3	5	3	2	5	4	45
Ridgeland Avenue	3	6	4	1	3	5	2	1	6	6	5	3	45
Ridgewood Road	5	5	5	1	1	2	5	5	4	6	4	2	45
Steed Road Extension					5	6	4	5	5	6	5	2	38
SE Ridgeland Master Plan					3	6	1	2	3	3	1	6	25
City Center Master Plan					1	6	6	1	3	3	5	6	31
Town Center Boulevard					6	6	1	6	1	2	1	6	29
Wheatley Street Improvements	3	6	5	1	1	3	1	2	6	5	4	0	37
Pear Orchard - Northpark to Lake Harbour	3	5	1	3	1	4	1	5	3	6	4	0	36
Arbor Drive					4	3	5	6	5	5	4	1	33
Rice Road - Harbor Drive to Old Canton Road	6	6	3	1	1	5	2	3	2	3	4	2	38
Pear Orchard - Harbor Dr to Rice Road	3	6	1	3	1	2	1	5	3	6	3	0	34
County Line Road - North Frontage to Ridgewood Road	6	6	2	1	1	2	6	6	3	1	3	0	37
Harbor Drive - EOP to Lake Harbour	3	5	3	1	3	6	3	3	4	3	4	3	41
Carl Avenue - Highland Colony to New Frontage Road					5	6	5	3	5	5	5	4	38
Frontage Road Extension					5	6	5	3	5	4	4	6	38
Dinsmor Crossing Extension					5	6	5	3	5	5	5	4	38
Watkins Drive Extension					5	6	5	3	6	3	4	6	38
Rice Road - Old Canton Rd to Hwy 51	5	6	3	3	1	4	2	5	3	6	5	0	43
N Wheatley St Extension					5	6	4	5	5	1	5	4	35
Avery Road Extension					3	5	5	2	5	6	4	3	33

Table 3.4 - Project Impact Analysis

TRANSPORTATION SOLUTIONS

ACCESS MANAGEMENT

The success of the Transportation Plan relies on the City's ability to protect current and future capacities of the street network. Access management can benefit roadside properties throughout the City of Ridgeland by promoting safety and improving street capacities. If approached properly, access management can enhance property values while safeguarding



past and future public investments in the infrastructure. In summary the following strategies to retrofit current street corridors and in planning new projects should include as a minimum:

- Separate conflict points - distance between major intersections and driveways should be regulated. As a general rule, driveways should not be located within the area of influence of intersections.
- Restrict turning movements at unsignalized driveways and intersections the use of full directional unsignalized streets and driveways should be limited. Full movement intersections should serve multiple developments through joint use driveways or cross access easements. If frontage roads area available, all driveways should access the frontage roads. Access to the main line should only be permitted at intersections of public streets.
- Establish design standards - design standards that address access spacing, the length of turn lanes and tapers and driveway dimensions should be developed for application throughout the corridor.
- Traffic signal spacing - signals should only be installed when appropriate studies indicate their spacing and interconnection can be accomplished without significant impacts on the corridor capacity.



The costs associated with these projects are illustrated on Table 4.2. The funding periods below are separated into short-, mid-, and long-term recommendations with the short- and mid-term recommendations at six years per each. The funding periods were established based on common planning practice and funding cycles.

While many of these projects seem to indicate a need for multi-use paths in areas that are not currently congested and dangerous for mixed pedestrian and automotive use, future conditions on nearly all roads within the current and proposed city limits of Ridgeland will be problematic. Therefore, roadways that are currently low volume routes are not considered for additional facilities until much later in the planning period or 12 to 30 years out.

In addition to the projects mentioned above, it is recommended that community facilities be considered to support and further enhance the recreational opportunities provided by the multi-use path. For example, rest areas with picnic tables, lockers, bike racks, playground equipment, and restrooms could encourage additional use. Also the City of Ridgeland can work with local jurisdictions to encourage the extension of the planned "Museum to Market" trail to the City of Ridgeland, which would become the "Museum to Ridgeland" trail.



The City of Ridgeland can benefit from ITS solutions without cooperation from others, but the most efficient and productive system is a seamless one. Corridors with potential benefits from ITS solutions include: County Line Road; Lake Harbour Drive; U.S. Highway 51; Old Canton Road; Ridgewood Road; and Wheatley Street.

MULTI-USE PATH UPDATE

The 2003 Transportation Plan included a multi-purpose path that is broken into several projects. The current path is generally consistent with the 2003 plan. To date, the City has over 13 miles of multi-use trails. Since the 2003 Plan, the projects below were constructed or are under design/construction.

- Multi-Use Path along Natchez Trace Parkway from Highland Colony Parkway to Hwy 51
- Connection to Jackson Street
- Multi-Use Path along Natchez Trace Parkway from Highland Colony Parkway to Livingston Road (NTP)
- Multi-Use Path along Natchez Trace Parkway from Livingston Road to West City Limits. (Under construction).
- Multi-Use Path along Natchez Trace Parkway from Old Canton Road to the Overlook
- Pearl River Valley Post Road through Old Trace Park
- Overpass over Old Canton Road
- Bike lanes striped along William Boulevard, Centre Street & Woodlands Parkway
- Bike Trail Along Highland Colony Parkway and Parkway Place (Design)

While most of the 2003 plan remains relevant to the 2012 Transportation Plan Update, there are a few modifications and additions to the plan. In addition, many advanced/intermediate level riders use county roads as bike routes. Safe access to county roads could provide additional recreational opportunities. Exhibit 4.1 shows the current bike lanes, designated bike routes, existing multi-use trails, future bike lanes, future bike route, and future multi-use trails.



After evaluating the existing path and projects near construction, the following projects are proposed to complete a “loop” or otherwise interconnect the multi-use path system. The projects were entered into a decision matrix in order to prioritize the project list and help create feasible funding periods. The decision matrix (Table 4.1) used seven different categories with each category using similar procedures for ranking the projects. Below is a list of each category and a description of how they were used:



Neighborhood Connection – A score from 1 to 5 is given based on the projects connections to or access to neighborhoods. Projects that traverse only residential areas receive a score of five while those in commercial/industrial areas only receive one credit.

Existing Path Connection – Since projects that link existing portions of the multi-use path together are more beneficial than stand-alone projects, a score of 5 is given to projects that link existing paths together (i.e., Northpark Dr. to Friendship Park). Paths that provide no existing or anticipated connections to the existing or proposed path system receive one credit.

Destination Connection – Projects connecting to high traffic areas, such as the Northpark Mall and other commercial areas, receive high marks (up to 5) while projects serving no substantial destination received low marks.

Project Cost – Each project is evaluated on a cost per foot basis. Lower costs/foot receive higher scores.

Right-of-Way Restrictions – Based on the perceived ROW requirements and restrictions each project is ranked on a scale of 1 to 5 with five indicating virtually no ROW issues and one representing substantial issues.

Review Requirements – Many of the proposed routes utilize easements or right-of-way not controlled by the City of Ridgeland. There are four main entities that have review and approval jurisdiction: MDOT, Entergy, CN/IC Railroad, and the Natchez Trace Parkway. The review requirements category ranking is based on the number of agencies that are required to review the project. If no agency approval is required, the project receives a ranking of four. The ranking for a particular project drops in



conjunction with an increase in the number of agencies involved with a maximum rank of four and a minimum of zero.

Roadway Project – Projects that could potentially be constructed with roadway projects are ranked based on the source of possible funding. Roadway improvements and widening projects often provide opportunities for pedestrian related amenities to be funded through the roadway construction project, a more cost effective solution than constructing standalone projects. Projects that have the potential to receive federal funds are ranked the highest with state and the City of Ridgeland following. The projects are ranked from 0 to 3 with a zero going to those projects that are not likely to be constructed in conjunction with roadway construction and a three going to those projects that could receive federal money. Projects capable of receiving state money are given two credits and city funded projects are given one credit.



- Turn lanes - left and right turn lanes should be required for all public streets and major access points to adjacent land uses.
- Shared driveways/inter-parcel access - joint use driveways should be required to reduce the proliferation of driveways and to preserve the capacity of the corridor.
- Pedestrian/bicycle planning - specific needs of pedestrian and bicyclist movements should be addressed. Traffic signals should be designed and timed to accommodate pedestrians in those areas of significant activity.

INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

ITS solutions to transportation management have advanced rapidly in recent years. They include a broad range of technologies and applications. Transportation management goals are to improve the safety of the transportation system, improve the use of the system's capacity, and provide predictable transportation services. On the local level system management is evaluated primarily by collecting data at traffic signals (loops) and through system detectors, which are located away from intersections to avoid the acceleration zones and standing queues. The system detectors are designed to provide data useful in estimating demand on the system. In addition to traffic flow management, ITS solutions can be used to assist emergency vehicle dispatch and coordination. For instance, cameras can be used to detect accidents, and signals can be prioritized during emergency situations to decrease response time.

The potential for ITS in Ridgeland is highly dependent on coordination with the local governments in the area and the Mississippi Department of Transportation (MDOT). The MDOT has begun to use a higher order of traffic control in some areas of Mississippi, referred to as "Adaptive Control", County Line Road, Lake Harbour Road and Old Canton Road could be ideal locations for this advanced type of traffic control. Ridgeland should consider moving toward this higher order of traffic control. The benefits of ITS are primarily in a regional context. MDOT is currently planning infrastructure improvements along U.S. Highway 51 that will benefit the City of Ridgeland and create the starting point for the cities ITS program.





Legend

- Bike Lane, Existing
- - - Bike Lane, Future
- Designated Bike Route, Existing
- - - Designated Bike Route, Future
- Multi-Use Trail, Existing
- - - Multi-Use Trail, Future

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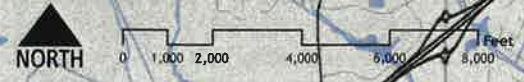
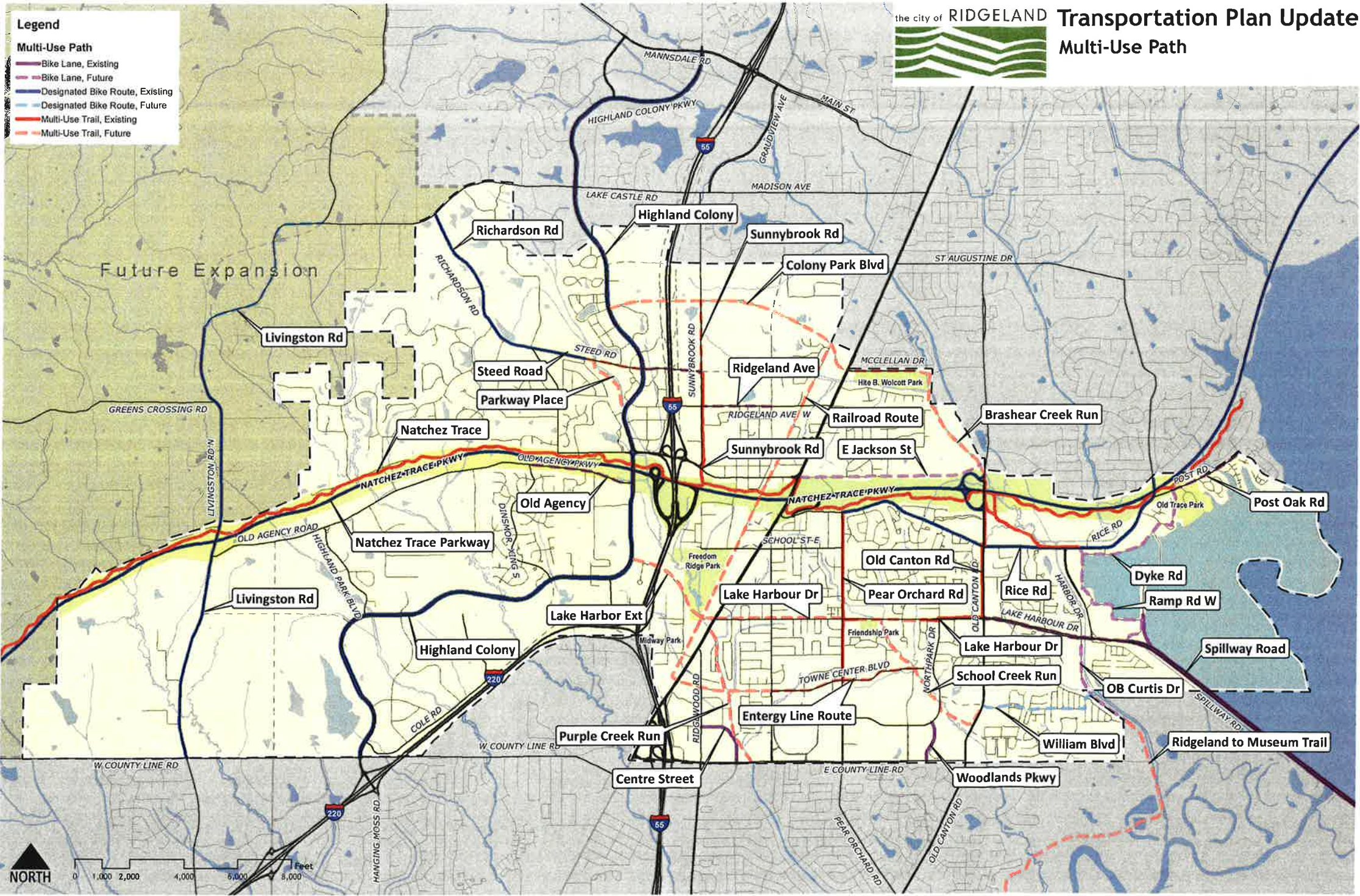


Table 4.2 – Multi-Use Path Recommendations

Project	Length	Description	ROW Cost	Construction Cost	Total Cost
Lake Harbour Drive Extension	4200	10' path along roadway	\$1,000,000	\$800,000	\$1,800,000
Highland Colony Parkway	8500	10' path along roadway	\$250,000	\$1,500,000	\$1,750,000
Colony Park Boulevard	4100	10' path along roadway	\$500,000	\$1,500,000	\$2,000,000
Old Agency – Highland Colony to Dinsmor	4800	10' path along roadway	\$50,000	\$580,000	\$630,000
Jackson St - Hwy 51 to Trace Ridge	1600	10' path along roadway	\$25,000	\$240,000	\$265,000
Ridgeland Ave – Sunnybrook to N Central Ave	2300	10' path along roadway		\$340,000	\$340,000
Steed Road – Sunnybrook to Red Eagle Circle	3300	10' path along roadway	\$320,000	\$540,000	\$860,000
Purple Creek – Hwy 51 to E County Line	5800	10' path along creek	\$550,000	\$1,800,000	\$2,350,000
Brashear Creek Run	7000	10' path along creek	\$200,000	\$890,000	\$1,090,000
Parkway Place PID	2800	10' Path along pond	\$200,000	\$450,000	\$650,000
William Blvd	4500	Designated Bike Route		\$150,000	\$150,000
School Creek Run	6700	10' path along creek	\$200,000	\$905,000	\$1,105,000
Entergy Line Route	9100	10' path along Entergy easement		\$1,365,000	\$1,365,000
OB Curtis Drive	2000	Future Bike Lane		\$350,000	\$350,000
Railroad Route	14,000	10' path along existing RR bed		\$2,800,000	\$2,800,000
Lake Harbour Drive Old Canton to Breakers	5,300	10' path or lanes along roadway	\$200,000	\$1,800,000	\$2,000,000



BICYCLE FACILITIES

As a Bronze Medal Winner from the League of American Bicyclists, Ridgeland has a proven record of the value placed on alternative transportation methods. This section provides information on the various types of bicycle facilities, the classification of riders, methods for evaluating the facilities, and methods for increasing bicycle use. Ridgeland does not currently have crowding problems on their bike paths, but as the City's density and population increases the level-of-service of various segments may need attention.



While the classification system for different types of bike paths has not changed since the 1996 plan, there has been an additional classification system established for types of cyclists. Figure 4.2 illustrates the most common types of bike paths or routes, and is followed by a brief description of each type and recommended user type.



Class I – Bike Path A route completely separated from automotive traffic and intended to be separated from pedestrian traffic. It is typically the safest type of facility for all types of riders.

Class II – Bike Lane

A route that is separated from automotive traffic primarily through striping, but occasionally through the use of physical barriers such as concrete curbs. Lanes that are protected are identified by primary lanes (Fig. 4.6) and those that are “unprotected” are considered secondary lanes.



Class III – Bike Route

A bike route is a route that shares the roadway with automotive traffic. It is indicated by signage only and is a cost effective solution if bicycle routes need designation.

While classification of bicycle facilities is important in understanding the design and placement of the facilities, it is equally important in the design process to understand the type of cyclist the facility best accommodates. There are three main levels of riders that are classified in the Transportation Planning Handbook.

Group A – advanced adult bicyclists: Group A cyclists are experienced riders and generally use their bicycles as they would a motorized vehicle. They tend to avoid high traffic areas but prefer areas that allow high speeds and direct access to destinations with minimum delay. This group is most comfortable using a low volume road designed for speeds in excess of 30 mph. They are the group most willing to accept a bike route. This group might be best exemplified by those cyclists frequently found on the Natchez Trace or Highland Colony Parkways.

Group B – basic adult riders: Group B cyclists generally avoid interaction with automotive traffic, but often use their bicycles for transportation purposes as well as recreational uses. This group generally represents the largest group of riders. This group is probably the least common to Ridgeland.

Group C – child riders: While parents normally monitor child cyclists, children also require facilities that allow safe travel within a community. Children typically progress from a Group C to Group B cyclist by the age of twelve. Residential streets with low vehicle speeds (may require traffic calming), linked with multi-use paths and busier streets with well-defined separation between bicycles and motor vehicles are the most appropriate for Group C.

In general, bicycle lanes, paths, and shared roadways should be considered in future roadway projects. Bicycle facilities can be integrated into widening projects and new roads. Even existing roads can receive federal funding for bicycle and other pedestrian facilities. The following recommendations



should be considered in the future planning and design of multi-use/bike path projects in the City of Ridgeland:

- The design of new roadways and the widening of existing roads should consider the use of bicycle lanes (i.e., Lake Harbor Dr., Ridgeland/Madison Interchange connector roads, etc.), which provide alternatives to automotive travel and facilities specifically for Group A and B riders.
- Bicycle facilities such as rest stops with picnic areas, storage space, locker rooms/restrooms, and vending machines should be considered (i.e., along Harbor Dr.).

PEDESTRIAN FACILITIES

Since the advent of the automobile, sidewalks and other pedestrian facilities have become a rarity. In the modern suburban era, sidewalks are often viewed as a luxury rather than a necessity, and as a result are usually not constructed along roadways. This is in part due to the assumption that all people will drive and the dispersal of land uses in suburban areas, which makes walking impractical. As a result, there are few opportunities to walk without automotive traffic being a safety concern. Even recreational trips are problematic; hence the development of drive-to parks with walking trails.

Abundant sidewalks and other pedestrian paths, such as Ridgeland's multi-use path, are typically associated with a high quality living environment. Ridgeland has encouraged and in some cases required sidewalks along streets, particularly in residential areas. For example, the sidewalk required along Jackson Ave., while expensive, is an attractive feature and similar efforts in other locations would encourage additional pedestrian activity. While sidewalks encourage pedestrian activity, the facilities alone do not garnish the maximum possible usage. An individual's decision to walk is as much a factor of security, safety, and convenience as it is the perceived quality of the experience. In other words, an individual is more likely to walk in an environment that is pleasant than one that is hostile, such as a parking lot.

Below is a list of design considerations and functional issues that should be considered in sidewalk planning and design:



Sufficient Width – Sidewalks should accommodate the pedestrian traffic generated by adjacent land uses and should allow two adults to walk abreast (5 feet).

Protection From Traffic – High-speed and high-volume (35 mph or above) traffic creates dangerous and uncomfortable conditions for pedestrians. There are several ways to achieve an enhanced level of security: provide a planting strip preferably with trees, a raised planter, bicycle lanes, on-street parking, short intersection crossings, and median refuge islands. The planting strip should be a minimum of 3 feet wide (residential areas) with 5 feet being preferable. A 10' wide planting strip should be considered along busy roadways with high speeds, particularly if no on-street parking is provided.

Street Trees – Mature street trees, which enhance the walking environment, provide a sense of closure for pedestrians. In general, trees are an essential part of the walking experience, providing shade and physical separation from adjacent traffic (Fig. 4.10). The sense of closure recommended for pedestrian environments can also be provided by on-street parking and urban design requirements (i.e., buildings that front the street). While these alternatives are effective, they do not represent the most desirable form. In fact, the combination of shade trees, on-street parking, and urban design guidelines can create the ideal pedestrian experience. A 5' planting strip is the minimum recommended width when larger diameter shade trees are to be installed between the sidewalk and the roadway.

Pedestrian Scale Design – Signs and street lighting should be designed for the pedestrian, not automotive travel. Street furniture, landmarks, and otherwise aesthetically appealing decorations should be provided.

Continuity – The sidewalks should be continuous and provide easy access to adjacent land uses.

Clearance – Vertical clearance may vary, but typically trees should allow 8 feet of vertical clearance, 9 feet for awnings, and 12 feet for structures that cover the entire sidewalk.

Conformance with National Standards – The Americans with Disabilities Act has established standards that should be applied to all facilities.

Functional design of pedestrian facilities should reflect the above considerations. There are several pedestrian related road designs that influence the pedestrian environment as well. Listed below are several such considerations:

On-street parking should be considered if a pedestrian-oriented environment is desired.

Corner curb radii should be kept to a minimum and design-specific to the intended use of the road segment. Excessive curb radii make pedestrian crossings at intersections longer and as a result more dangerous due to faster right-hand turning movements and extended exposure to on-coming traffic.

Curb extensions should be provided where on-street parking is allowed, in addition to smaller curb radii. Curb extensions and smaller curb radii make crossing the street easier and safer.

Medians and refuge areas are useful in high traffic, large intersection situations. Refuge areas allow pedestrians to maneuver against one direction of traffic at a time, while also allowing slower pedestrians an opportunity to wait for the next sequence.



Mid-block crossings should be avoided, especially in high traffic corridors. A mid-block cross may be justified under one of the following conditions: the location is already a source of substantial mid-block crossings, land use is such that a pedestrian crossing at an intersection is unlikely, spacing between adjacent signals exceeds 600 feet, safety and capacity at a nearby intersection is problematic, or other lesser measures to encourage intersection crossings have been unsuccessful. Traffic calming is an effective way to decrease speeds on roadways and improve the pedestrian environment.

Pedestrian linkages, which were briefly discussed in the land use section above, are an important part of mobility on a pedestrian scale. "Cut-through" and other pedestrian paths should be provided where an open grid street network is not possible or where other forms are already constructed.

PEDESTRIAN FACILITIES RECOMMENDATIONS

The City of Ridgeland should consider the following recommendations in future planning efforts:

Provide sidewalks/multi-use paths along new roadways and along existing roadways when widened with planting strip widths suggested above.

Right-of-way purchases should consider the "ideal" pedestrian facilities and the corresponding street width requirements.

RECOMMENDATIONS

This section is the culmination of the modeling process, project impact analysis, and cost estimates for the recommended plan presented in Section Three. Table 5.1 shows the entire list of projects with associated conceptual opinions of development cost. The list is further broken down into short-term



(0 to 5 year), mid-term (5 to 10 year), and long-term (10 to 30 year) recommendations in the remaining portions of this section. In addition, a list of suggested action items has been prepared to assist in the implementation process.

SHORT-TERM RECOMMENDATIONS

The short-term recommendations, addressing those areas of most immediate need, are presented in the following table. It is highly recommended that the City take steps to reserve right-of-way along potential new corridors within the city limits and the planning area. This is primarily a concern in the western portion of the City where large tracts of undeveloped land still exist. As mentioned throughout the plan, a network of interconnected local, collector, and arterial streets can replace the need for widening arterial roadways in the future, which is typically expensive and disruptive to both businesses and residents.

The top two priority projects in the Short-Term Plan are both “committed” projects. The extension of Lake Harbour Dr. to Highland Colony Parkway is another high priority project with substantial benefits. Extending Lake Harbour Dr. across the interstate will create a much needed east-west corridor for the City, reducing traffic congestion at the Jackson Street/Old Agency Road interchange. The City of Ridgeland is committed to this project and has already completed the Environmental Assessment and received a FONSI (Finding of No Significant Impacts) from FHWA.

The new I-55 interchange at the corporate limits of Madison and Ridgeland is currently under construction, but does not include the connector roads. The main collector road that lies within the City is an extension of McClellan Dr., now called Colony Park Boulevard, will connect Highway 51 to Highland Colony Parkway. The design was completed by MDOT and the City of Ridgeland is initiating the Right of Way Phase for this project.



Table 5.2 - Short Term Recommendations (0-5 Years)

Project	Length	Description	ROW Cost	Construction Cost	Total Cost
Lake Harbour Drive Extension - Highland Colony Parkway to U.S. 51	4100	New Construction 4 lane boulevard	\$9,500,000	\$10,500,000	\$20,000,000
Colony Park Boulevard - Sunnybrook Road to U.S. 51	6500	New Construction 4 lane boulevard	\$5,000,000	\$8,600,000	\$13,600,000
Ridgeland Avenue – Frontage Rd. to U.S. 51	5000	Widen from 2 to 3 lanes	\$1,000,000	\$3,000,000	\$4,000,000
Ridgewood Road Widening - Centre Street to U.S. 51	2900	Widen from 2 to 5 lanes	\$2,000,000	\$3,200,000	\$5,200,000
Sunnybrook Road Widening - West Jackson St. to Lake Castle	10500	Widen from 2 to 5 lanes	\$2,000,000	\$12,000,000	\$14,000,000
Steed Road Extension - Sunnybrook Road to Wheatley Street	2700	New Construction 3 lanes and/or boulevard	\$500,000	\$2,000,000	\$2,500,000
City Center Master Plan - School St, Moon St, Madison Dr.	3400	New Construction - Varies		\$1,800,000	\$1,800,000
Southeast Ridgeland Master Plan - William Blvd and Pine Knoll Dr.	3200	New Construction - Varies	\$3,000,000	\$2,000,000	\$5,000,000

MID-TERM RECOMMENDATIONS

Table 5.3 lists the projects and their associated opinions of cost that are recommended for implementation in the five to ten year time frame. As stated above, many of these projects require right-of-way acquisition and attention to other issues of due diligence, which are important to the future feasibility of the projects.



Table 5.3 - Mid Term Recommendations (5-10 Years)

Project	Length	Description	ROW Cost	Construction Cost	Total Cost
Town Center Boulevard - Highway 51 to Wheatley Street	3700	New Construction 3 lanes and/or boulevard	\$2,000,000	\$3,400,000	\$5,400,000
Wheatley Street Improvements	2600	Widen from 2 to 3 lanes	\$150,000	\$1,700,000	\$1,850,000
Pear Orchard Widening - Northpark Drive to Lake Harbour Drive	3500	Widen from 2 to 3 lanes	\$650,000	\$2,300,000	\$2,950,000
Arbor Drive - Town Center to Ring Road	800	New Construction 2 lanes	\$250,000	\$350,000	\$600,000
Rice Road - Harbor Drive to Old Canton Road	3200	Widen from 2 to 5 lanes	\$500,000	\$3,200,000	\$3,700,000
Pear Orchard Road Widening - Lake Harbour Drive to Rice Road	4000	Roadway improvements	\$500,000	\$2,600,000	\$3,100,000
County Line Road - N. Frontage Rd to Ridgewood Road	1100	Widen from 5 to 7 lanes	\$350,000	\$1,500,000	\$1,850,000
Harbor Drive - End of previous project to Spillway Road	1700	Widen from 2 to 4 lane boulevard	\$200,000	\$1,600,000	\$1,800,000
Carl Avenue - Highland Colony Parkway to New Frontage Road	2000	New Construction 2 lanes	\$500,000	\$2,000,000	\$2,500,000

LONG-TERM RECOMMENDATIONS

The projects included in Table 5.4 should be considered based on future needs that arise. The long-term recommendations are often difficult to prioritize, due to the dynamic nature of local conditions beyond the ten-year horizon. While the order given to the projects is a direct result of the project impacts analysis, future conditions may change any number of the variables factored into the planning process. Therefore, future priorities may differ significantly from those included here.



In addition to the projects listed, attention should be given to the County Line Rd. interchange at I-55. There are no specific projects included in the plan that call for interchange modifications or a new interchange, but such projects should be pursued.

Table 5.4 - Long Term Recommendations (10-30 Years)

Project	Length	Description	ROW Cost	Construction Cost	Total Cost
Frontage Road Extension- Frontage Road to Trunnell Road	6000	New Construction 3 lanes	\$1,000,000	\$3,500,000	\$4,500,000
Dinsmor Crossing Extension - Highland Colony Parkway to Frontage Road	1600	New Construction 2 lanes	\$250,000	\$700,000	\$950,000
Watkins Drive Extension - W. County Line Road to Livingston Road Connector	8200	New Construction 2 lanes	\$500,000	\$3,500,000	\$4,000,000
Livingston Rd Connector - Livingston Road to	5500	New Construction 2 lanes	\$400,000	\$2,300,000	\$2,700,000
N. Wheatley Street Extension to Madison	2800	New Construction 2 lanes	\$750,000	\$1,200,000	\$1,950,000

IMPLEMENTATION

The list of initiatives listed below represents the first steps toward completion of the improvements programmed for short-term implementation. In general, the initiatives described include detailed evaluation of the projects associated with the short-term recommendations (Table 5.2). Such evaluations will provide a more precise definition of project scope, budget and resource commitments required to make each improvement a reality. The initiatives addressed include the following.



SHORT TERM RECOMMENDATIONS INITIATIVES

Lake Harbour Drive Extension to Highland Colony Parkway (Committed)

Colony Park Boulevard – Purchase Right of Way

Environmental Study for Sunnybrook Road/Ridgeland Avenue/Ridgewood Road

Continue to apply for TE Funds for future Multi-Use/Bike Trails projects

Continue to analyze County Line Road Corridor

Northpark Northwest Corridor Feasibility Analysis

City Center Roadway Modifications

Steed Road Extension

Southwest Northpark Mall Entrance Modification/Relocation Analysis

Intersection Study of Perkins Street and Jackson Street

LAKE HARBOUR DRIVE EXTENSION TO HIGHLAND COLONY PARKWAY

Extending Lake Harbour Dr. across I-55 would give the City a much needed east/west connection. The project has received its FONSI (Finding of no Significant Impact) from FHWA. The design phase has been initiated, which means purchasing Right-of-Way is the next step. Additional funding should be secured and innovative financing measures considered for the \$20 million project.

COLONY PARK BOULEVARD

Currently the I-55 Interchange is under construction with completion due in 2014. The City of Ridgeland has agreed to purchase the Right of Way required for the connector road as well as participate in construction funding. The project is similar in magnitude to the extension of Lake Harbour Dr. in that it provides additional east/west mobility as well as access to the interstate system. This project also should provide much needed relief for Jackson Street.

ENVIRONMENTAL STUDY FOR SUNNYBROOK ROAD/RIDGELAND AVENUE/RIDGEWOOD ROAD

These three projects are the most likely candidates for Capacity Improvement Projects selected by CMPDD once funds are made available to the MPO. Even though Sunnybrook Road and Ridgeland Avenue were part of the Environmental Assessment for the I-55 Split Diamond Interchange, there is a good chance FHWA will require an independent study for each project. The City of Ridgeland has continuously requested Federal funding for these projects and should continue their efforts. Once construction of the Interchange is complete, it is projected that there will be a need for capacity



improvement in this area. Sunnybrook Road and Ridgeland Avenue are key components of the Sunnybrook Focus area in the City's RAMP plan and can have a great impact on economic growth in this area.

Widening of Ridgewood Road is also an excellent candidate for a Capacity Improvement Project. With signal installments at Highway 51 and Centre Street, the City of Ridgeland has already improved Ridgewood Road's level of service.

This project is an integral part of the SE Redevelopment plan in the City's RAMP plan.

CONTINUE TO APPLY FOR TE FUNDS FOR FUTURE MULTI-USE/BIKE TRAILS PROJECTS

As previously mentioned, the City of Ridgeland has over 13 miles of multi-use trails. This plan has addressed several proposed projects for the City to consider. Transportation Enhancement funds are derived from a set-aside from the State's Surface Transportation Program apportionment, usually around ten percent. Federal share for these funds is 80 percent, and the funds are eligible for special match credit. All costs, including engineering and Right of Way can be included, which is not the case for other STP projects.

CONTINUE TO ANALYZE COUNTY LINE ROAD CORRIDOR

Although improved over the last few years, traffic congestion continues along County Line Road. Traffic signal timing, and other congestion-causing factors including, the physical condition of the roadway should always be evaluated and recommendations for improvements determined. A model should be created for both current and future year conditions, which assists with the alternatives analysis process. The MDOT has begun to use a higher order of traffic control in some areas of Mississippi; referred to as "Adaptive Control", County Line Road could be an ideal location for this advanced type of traffic control. Ridgeland should consider moving toward this higher order of traffic control. The current coordinated system should be expanded from Highway 51 to Pear Orchard Road which will add three additional intersections to the system. In general, the corridor should be evaluated for further improvements such as optimum timing for traffic signals, and other non-traditional traffic relief measures.



NORTHPARK NORTHWEST CORRIDOR FEASIBILITY ANALYSIS

The lack of alternative routes to the mall area has increased the need for a roadway that connects Highway 51 to Wheatley Street and the mall entrances. There are several challenges in developing a new roadway through a highly developed area. The right-of-way costs, displacement concerns, and other neighborhood impacts are highly sensitive issues. The costs associated with such a project needs to be evaluated and weighed against the benefits. Among these elements a feasibility analysis also would include probable acquisition costs and alignment alternatives.

CITY CENTER ROADWAY MODIFICATIONS

One of the most exciting aspects of the RAMP plan was the potential development of the City Center. Relocation and enhancements of School Street, and Madison Drive as well as improvements to Moon Street are important components of the City Center development. Another key component will be the connection to the intersection of Rice Road and Highway 51 requiring close coordination with Natchez Trace Parkway and MDOT. A traffic impact study could possibly be required by MDOT. The project should also include the development of multi-use trails to the Natchez Trace trail system.

STEED ROAD EXTENSION

A major component of the Sunnybrook Focus Area in the RAMP plan is the Steed Road Extension from Sunnybrook Road to Wheatley Street. This project will be a three lane roadway with possible median placement in strategic areas. According the City's RAMP plan this project has the "potential impact of integrating roadway infrastructure, drainage, connectivity and education to create a high value environment for new business and community interaction." A pedestrian/multi-use link between Holmes Community College, Ridgeland High School and the new business development will be included. Connections to surrounding neighborhoods will also allow for pedestrian and bike travel to the schools.

SOUTHWEST ENTRANCE MODIFICATION/RELOCATION ANALYSIS

The signalized southwest mall entrance on Wheatley St. has functional problems due to its location and geometric design. The intersection created by the mall entrance, Wheatley St., and the shopping



area to the west is too close to the Wheatley St. and County Line Rd. intersection. Frequently, there is not enough storage area available at the Wheatley St./County Line Rd. intersection, causing traffic to back up into the intersection. As a result, the left turn out of the southwest entrance is often impossible to make. The analysis would detail problems with the existing configuration and provide suggested modifications as well as evaluate the potential for relocating the entrance.

INTERSECTION STUDY FOR PERKINS STREET AND JACKSON STREET

In 2010 the City of Ridgeland conducted an evaluation of the intersection of Perkins Street and Jackson Street. Although the signal was warranted, it would not function at an acceptable Level of Service due to extensive east west traffic experienced on Jackson Street during the peak hours. Once the new I-55 interchange is constructed, along with Colony Park Boulevard it is assumed traffic will decrease on Jackson Street. Once it is evident that traffic has decreased, the intersection study should be updated with new traffic counts. This will help improve the Level of Service of Jackson Street which is a key link the West Jackson Street Overlay District and the Sunnybrook Focus Area in the City's RAMP plan. The RAMP plan also included the proposed City Center, as mentioned previously, which could possibly affect the intersection.

QUALITY OF LIFE INITIATIVES

The City has several local area initiatives in the concept phase that have developed recently, some of which are included in the RAMP.

HIGHWAY 51 REDEVELOPMENT AND GATEWAYS

The City has long considered ways to enhance the Highway 51 corridor that paves through the heart of downtown. The RAMP envisioned terminal gateway at strategic locations and enhancements such as median islands. Transportation Enhancement funds could be used for this type of construction.



PLAN DEVELOPMENT FOR FREEDOM RIDGE PARK EXPANSION

A significant component of the RAMP included recommendations for expansion of Freedom Ridge Park. This would necessitate an expanded internal roadway network and supporting improvements

PARKING AREA FOR BIKE TRAIL ACCESS ON HIGHLAND COLONY PARKWAY

Bicycle traffic has greatly increased on Highland Colony Parkway with completion of area multi-use paths. The City might want to consider creation of centralized vehicle parking areas for cyclists.

MUSEUM TO RIDGELAND TRAIL

Although not part of Ridgeland's Master plan, this project would be an extension of the "Museum to Market" trail proposed by the City of Jackson.

JACKSON STREET IMPROVEMENT AREA

As shown in Ridgeland's RAMP plan, Jackson Street Improvement area depicts many recommendations for improvements for pedestrian features. Some of the recommendations in RAMP include the addition of on-street parking and image enhancements. Transportation Enhancement funds could be applied for these types of construction.



ACTION ITEMS

The City's transportation planning process is intended to provide guidance into the foreseeable future that will allow leadership to remain both prudent and proactive in meeting the demand for an efficient and safe transportation network. It is recommended that City leaders consider the following action items, in order to implement the program of improvements recommended in the Transportation Plan:

