

MISSISSIPPI'S UNIFIED LONG-RANGE TRANSPORTATION INFRASTRUCTURE PLAN



2035



MISSISSIPPI DEPARTMENT OF TRANSPORTATION

FINAL REPORT

APPENDIX I: BICYCLE AND PEDESTRIAN NEEDS ASSESSMENT

MAY 2011

Table of Contents

1. Introduction.....	1
2. Federal Guidance	1
3. Current Efforts	2
3.1 Bicycle and Pedestrian Coordinator	2
3.2 Safe Routes to School	2
3.3 Complete Streets	2
4. Existing Levels of Bicycling and Walking, Routes and Plans.....	3
4.1 Commute-to-Work Data	3
4.2 Existing Facilities	4
4.2.1 National Routes.....	4
4.2.2 Adventure Cycling National Touring Routes	4
4.2.3 Natchez Trace Parkway	6
4.2.4 Rails to Trails Conversions	6
4.3 Existing Plans	6
4.4 Advisory Committees and Advocacy Groups	7
5. Bicycle And Pedestrian Conditions	7
5.1 Barriers.....	7
5.2 Existing Development and Design Guidelines and Policies.....	8
5.3 Bicycle Accommodation in the Mississippi Design Guide	8
5.4 Recent National Guidance	10
5.4.1 2010 Highway Capacity Manual	10
5.4.2 FHWA Policy on Integrating Bicycling and Walking into Transportation Infrastructure.....	10
5.5 Legal Framework.....	12
5.6 Policy Framework.....	12
6. Bicycle And Pedestrian Project Funding	12
6.1 Funding Sources	12
6.2 Federal/State Matching Requirements.....	13
6.3 Key Needs.....	13
7. Bicycle And Pedestrian Safety.....	15
8. Successful Implementation Examples In Mississippi.....	17
8.1 City of Hernando	17
8.2 Hurricane Katrina Recovery	17
9. Conclusion	17

List of Tables

Table 4-1: Commuters Who Bike or Walk to Work, Selected Mississippi Counties..... 3
 Table 6-1: Estimated Unconstrained Needs..... 14
 Table 7-1: Bicycle and Pedestrian Crash Percentages 15
 Table 7-2: Bicycle and Pedestrian Crash Severity..... 15
 Table 7-3: Worst Five Counties for Pedestrian Crashes in 2009..... 15
 Table 7-4: Worst Five Counties for Bicycle Crashes in 2009 16
 Table 7-5: Mississippi Pedestrian Crash Rates per 100,000 Population 16
 Table 7-6: Mississippi Bicycle Crash Rates per Million Population..... 16

List of Figures

Figure 4-1: Mississippi Bicycling Map..... 5

1. INTRODUCTION

Bicycling and walking are cost-effective and energy-efficient forms of transportation, which can also improve health, lower stress and reduce air pollution, traffic congestion and energy consumption. Generally, walking is practical for trips of less than two miles, while bicycling is practical for trips less than ten miles, and either mode can be combined with transit (in urban areas) or automobiles for longer trip purposes. With 40 percent of all trips made in the US being two miles or less,¹ there is a great untapped potential to capture some of these automobile trips and save precious funds mitigating congestion and air quality.

According to a June 2010 report from the Trust for America's Health and the Robert Wood Johnson Foundation, Mississippi ranked as the worst state in the country for obesity for both adults and children. There is a clear need for encouraging physical activity for Mississippi residents at every available opportunity to help alleviate this health threatening condition. Utilizing walking and bicycling for everyday trips is an ideal way to combine fitness with transportation.

2. FEDERAL GUIDANCE

FHWA released a policy statement in March of 2010 that reemphasized some of the following points:

- “that transportation agencies and local communities should go beyond minimum design standards and requirements to create safe, attractive, sustainable, accessible, and convenient bicycling and walking networks.”
- “Because of the benefits they provide, transportation agencies should give the same priority to walking and bicycling as is given to other transportation modes. Walking and bicycling should not be an afterthought in roadway design.”
- “Many transportation agencies spend most of their transportation funding on maintenance rather than on constructing new facilities. Transportation agencies should find ways to make facility improvements for pedestrians and bicyclists during resurfacing and other maintenance projects.”

In light of this guidance as well as to reduce congestion and promote healthy choices, MDOT and its partners should consider ways to strengthen their commitment to nonmotorized transportation.

¹ League of American Bicyclists press release, January 8, 2010 based on American Community Survey, 2009.

3. CURRENT EFFORTS

3.1 Bicycle and Pedestrian Coordinator

Since 1992, MDOT has had a Bicycle and Pedestrian Coordinator. The coordinator is part of the Planning Division and is charged with promoting and facilitating the increased use of non-motorized transportation, including developing facilities for the use of pedestrians and bicyclists and public educational, promotional, and safety programs for using such facilities. The coordinator provides technical reviews and serves as a contact with federal, state and local agencies and individuals on matters related to bicycles and pedestrians.

3.2 Safe Routes to School

In addition, MDOT has hired a Safe Routes to School (SRTS) Coordinator to administer the SRTS program. There are 72 schools in 23 communities within the state that have implemented the SRTS program in both urban and rural locations. The program consists of school based education programs emphasizing the health benefits of walking and cycling to school. In addition to providing training to teachers, crossing guards and administrators, it offers a competitive grant program through MDOT to fix infrastructure deficiencies that are barriers to safe walking and cycling to school.

To ensure strong local support, SRTS staff toured and held press conferences with partners in all of the state's media markets to get the word out. Programs are also supported by the Mississippi Departments of Health and Education. Over 50,000 Mississippi students participated in the 2009 Walk to School Day Challenge. To continue building on this success, the first statewide Safe Routes to School Conference was held in January of 2011, where best practices and program specifics were shared among partners.

Future plans call for providing guidance to school districts in the siting of new schools and the renovation of existing neighborhood schools to promote walking and bicycling. By locating schools with good walking and bicycling access to neighborhoods, many motor vehicle and school bus trips, which can make up 25 percent of morning peak traffic, can be reduced.

3.3 Complete Streets

In communities, MPOs, and states across the country, a movement is growing to complete the streets. States, cities and towns are asking their planners and engineers to build road networks that are safer, more livable, and welcoming to everyone. Instituting a complete streets policy ensures that transportation planners and engineers consistently design and operate the entire roadway with all users in mind - including bicyclists, public transportation vehicles and riders, and pedestrians of all ages and abilities.

Currently the cities of Columbus, Hernando, Pascagoula, and Tupelo have Complete Streets policies in place, however there is no statewide policy. In light of the March 2010 FHWA guidance, this concept should be considered by MDOT for roadways in urban areas. As counties and local governments look to MDOT for guidance, it would be beneficial to have an accepted statewide policy model to turn to for reference.

4. EXISTING LEVELS OF BICYCLING AND WALKING, ROUTES AND PLANS

4.1 Commute-to-Work Data

The 2009 American Community Survey data from the US Census Bureau Commute-to-Work data were reviewed to assess the current number of Mississippians who bike or walk to work. It found that overall Mississippians walk to work more than the national average and bicycle to work less than the national average. The statewide estimate for the number of workers who commuted by bicycle to work was 1,925 (0.16 %), while 21,279 (1.78 %) workers walked to work. **Table 4-1** illustrates the amount of bicycle and pedestrian commuting for the counties with the highest number of commuters, highest percentage of walk commuters and highest percentage of bicycle commuters. Some highlights are:

Table 4-1: Commuters Who Bike or Walk to Work, Selected Mississippi Counties

	Total Workers	Total Bike Commuters	Total Walk Commuters	% Bike Commuters	% Walk Commuters
Mississippi	108,5836	1,925	21,279	0.18%	1.96%
Mississippi; Urban	513,720	1,498	12,096	0.29%	2.35%
Mississippi; Rural	572,116	427	9,183	0.07%	1.61%
U.S. Average			3,291,401 ⁽¹⁾	0.55% ⁽²⁾	2.47% ⁽¹⁾
Hinds County	107,425	168	1,686	0.16%	1.57%
Harrison County	79,679	160	2,657	0.20%	3.33%
Desoto County,	72,581	44	361	0.06%	0.50%
Rankin County	66,182	60	388	0.09%	0.59%
Jackson County	56,269	122	680	0.22%	1.21%
Sharkey County	2,063	0	186	0.00%	9.02%
Humphreys County	3,727	0	239	0.00%	6.41%
Lawrence County	4,788	0	234	0.00%	4.89%
Noxubee County	3,634	0	173	0.00%	4.76%
Quitman County	2,785	0	127	0.00%	4.56%
Tate County	12,121	280	477	2.31%	3.94%
Oktibbeha County	18,722	320	699	1.71%	3.73%
Coahoma County	9,411	101	207	1.07%	2.20%
Bolivar County	13,514	141	598	1.04%	4.43%
Lafayette County,	18,301	89	699	0.49%	3.82%

Notes: (1) 2005

(2) 2008

Source: 2009 American Community Survey – Journey to Work

- The four counties with the highest percentage of bike commuters exceeded the average US rate of .55%
- Most urbanized counties had a higher walk commute rate than the national average of about 2.5%.
- Counties with an average percentage of bicycle commuters above the statewide urban average of .27% are: Tate, Oktibbeha, Coahoma, Bolivar, Lafayette, Forrest and Montgomery Counties.
- Thirty counties had an average percentage of walking commuters above the national average of 2.47. The top five of these are: Sharkey, Humphreys, Lawrence, Noxubee and Quitman counties.

4.2 Existing Facilities

Bicyclists and pedestrians utilize both state and local facilities. Bicyclists normally use travel lanes, road and street shoulders, dedicated bike lanes and off-road paths and trails. However, many bicyclists ride in regular travel lanes because many roads (predominantly in rural areas) do not provide paved shoulders. Many of the rural two-lane facilities have low traffic volumes to the point that safe bicycle travel may be possible. Pedestrians use sidewalks and off-road trails. Bicycles are allowed on all federal, state and county highways, except interstates.

MDOT has developed a Mississippi Bicycling Brochure, which identifies major bicycle routes, major trails, and resource contact information. The map portion of the brochure is shown in **Figure 4-1**.

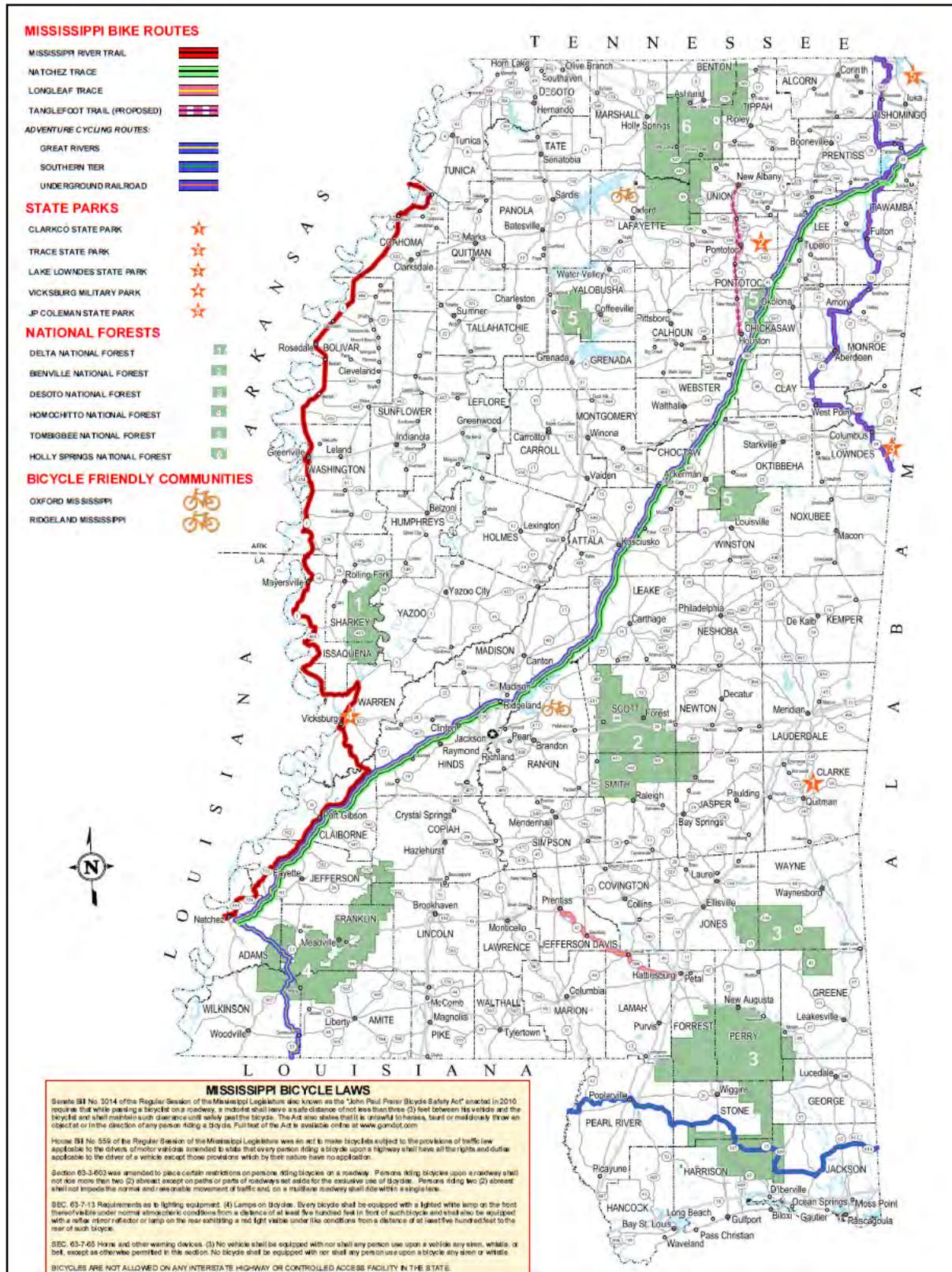
4.2.1 National Routes

The Mississippi River Trail is a national route, which has 300 miles in the state. It follows along the Mississippi River between the Mississippi/Arkansas U.S. Highway 49 Bridge at Helena and the U.S. Highway 84 bridge at Natchez. The route is signed along state, county and municipal roadways and is also along a portion of the Natchez Trace south of Vicksburg to north of Natchez.

4.2.2 Adventure Cycling National Touring Routes

Adventure Cycling Association has three national bicycle routes through Mississippi. The first is the **Great Rivers South Route**, which enters Mississippi from Alabama at the Natchez Trace Parkway through to Tupelo, and continues along the Natchez Trace Parkway from Tupelo to Natchez, and then on through Centreville to the Louisiana state line. The second route is Section 6 of the **Southern Tier**, which enters Mississippi near Bogalusa, Louisiana, crossing the Pearl River, and on through Pearl River, Stone, Harrison and Jackson counties before exiting the state north of Grand Bay, Alabama. The third route is the **Underground Railroad Bicycle Route** which runs from the Deep South to Canada memorializing the network of clandestine routes by

Figure 4-1: Mississippi Bicycling Map



which African freedom seekers attempted to escape for many years before and during the Civil War. In Mississippi, it runs along the eastern border of the state from Lowndes to Tishomingo Counties.

4.2.3 Natchez Trace Parkway

The oldest and best known touring route in Mississippi is The Natchez Trace Parkway. Over 300 miles of the 444-mile long Natchez Trace are in Mississippi. This historic roadway has relatively low motorized traffic, no shoulders, a speed limit of 50 and trucks are not allowed.

4.2.4 Rails to Trails Conversions

The **Longleaf Trace** is Mississippi's longest rail trail with over 40 miles of 10-foot wide asphalt. It starts on the campus of The University of Southern Mississippi in Hattiesburg and goes through Sumrall, Bassfield, and Carson before finally ending in Prentiss. Other trails include

- Tanglefoot Trail: 43 miles from New Albany to Houston – programmed for construction
- Catherine "Kitty" Bryan Dill Memorial Parkway: 3.75 miles concrete trail in the City of West Point
- Columbus Riverwalk: 1.2 miles with expansion planned – City of Columbus
- Thacker Mountain Rail-Trail: 2.79 miles and is part of a network of trails, bike lanes and sidewalks that connect the community of Oxford.
- Crosstie Walk: .6 mile downtown Cleveland walking trail

4.3 Existing Plans

The Gulf Coast Regional Planning Commission has included bicycle and pedestrian plan with their 2035 long range transportation plan. It includes approximately 400 miles of needed bicycle and pedestrian facilities by 2035. There are currently 54 miles of bicycle facilities.

Pathways for Progress in the Hattiesburg area has coordinated a planning effort for the City of Hattiesburg, Forrest and Lamar Counties by developing an integrated network of sidewalks, bicycle lanes, routes, and multi-use trails. The plan provides a 20 year blueprint to transform the area into a vibrant livable community. This planning effort has been incorporated in the planning district's 2035 LRTP.

The Central Mississippi Planning and Development District (CMPDD) has included a bicycle pedestrian plan for the Jackson urbanized area in their 2035 LRTP. This plan recommends nearly 100 projects between 2010 and 2015, 25 projects between 2016 and 2025, and 50 projects between 2026 and 2035. CMPDD has also worked with the City of Jackson and the Pearl River Valley Water Supply District (management agency for the Barnett Reservoir area) on various bicycle plans. After the proposed paths have been constructed and combined with the existing trails, the facility will cover more than 18 total miles in the Ross Barnett Reservoir area.

There was no cost breakdown performed within the MPO 2035 long range transportation plans as these facilities have been typically paid for from competitive non-recurring funding sources.

4.4 Advisory Committees and Advocacy Groups

Currently, there is no advisory committee within MDOT to specifically address bicycle and pedestrian issues. However, Bike Walk Mississippi (BWM) reviews and recommends Transportation Enhancement projects to MDOT. BWM is a statewide bicycle and pedestrian advocacy group with the objective of increasing public awareness of and facilitating non-motorized transportation. It also assists the SRTS program and is a state level clearinghouse for bicycle educational information, activities, and resources.

5. BICYCLE AND PEDESTRIAN CONDITIONS

5.1 Barriers

The majority of Mississippi's roads in rural areas are two-lane, with many having no paved shoulders. This presents access and safety issues on roadways with short sight distances and high traffic volumes, particularly trucks.

Further compounding this problem is the state's consistent use of ground in rumble strips on rural shoulders to alert drivers when they are beginning to leave the roadway. Rumble strips are an important countermeasure as single vehicle road departure crashes are the cause of the greatest number of the state's rural roadway fatalities. Unfortunately, bicycles cannot be controlled while riding over the state specified ground in rumble strips, thus they are forced into the travel lane or the adjacent ditch by heavy traffic and trucks. This policy, while solving automobile crashes, has negative impacts on the cycling community. This unintentional impact threatens the use of state roadways for national and state cycling routes and the economic benefit they provide.

It is recommended that the state adopt a different standard for audible vibratory markings to serve both purposes. Alternative approaches are specified in federal guidance and are being tested and used in other states. Florida and Georgia are testing a thermoplastic edge line with raised ribs to warn drivers of lane departures. Another reported advantage is increased visibility of the edge line in rain. FHWA and AASHTO guidance state that if rumble strips are deemed necessary, they should be designed to have the least negative impact on cyclists. There should be a minimum 4 feet of clear shoulder and if rumbles are between the edge line and the clear shoulder, there should be smooth pavement gaps of 12 feet between every 40 to 60 feet of rumble strips.

The I-20 Mississippi River Bridge in Warren County presents a barrier as the state does not allow bicycles on Interstates. Yet federal design guidance dictates that when a highway bridge on which cycling is permitted or may operate is being replaced or rehabilitated with federal funding, safe accommodation for bicycles is required, unless determined by the U.S. Secretary of

Transportation that it would be cost prohibitive to do so. Similarly, when improvements to at-grade rail crossings are under consideration, bicycle safety must be taken into account as well.

5.2 Existing Development and Design Guidelines and Policies

The MDOT's *2001 Design Guide* provides direction on designing and developing bicycle and pedestrian facilities throughout the State. For the design criteria of bicycle facilities, MDOT refers to the *AASHTO Guide for the Development of Bicycle Facilities*. The *Guide* contains criteria on the design of bicycle facilities that includes, for example, railroad crossings, intersections, criteria for horizontal/vertical alignment, pavements, traffic control devices, etc. Specifically for the widths of bicycle facilities, the *Guide* recommends the following:

- Bicycle Lanes – The minimum width is 4 feet; the desirable width is 5 feet.
- Bicycle Paths – The minimum width for a one-directional path is 5 feet. For a two-directional path, the minimum width is 10 feet with 8 feet allowed for short connector trails.

5.3 Bicycle Accommodation in the Mississippi Design Guide

The Design Guide currently states that the majority of bicycling needs will be met on public roads with little dedicated space for bicyclists. In rural areas, bicycling space will typically be the roadway shoulder. In urban areas, bicycling space may be provided by a shared roadway with wide curb lanes or dedicated space, such as designated bicycle lanes. Separate bicycle facilities may be considered where bicyclists would become involved with high traffic volume roadways. For pedestrian safety, sidewalks should not be considered as bicycle facilities, except for child bicyclists along low-volume residential streets.

The following definitions apply to bikeway classifications:

- Bikeway - Any road, path or way that in some manner is specifically designated as being open to bicycle travel.
- Shared Roadway - Any roadway upon which a bicycle lane is not designated and that may be legally used by bicycles.
- Bicycle Lane - A portion of a roadway designated by striping, signing and pavement markings to distinguish it from the travel portion of the roadway, for the preferential or exclusive use of bicyclists.
- Bicycle Path - A bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way. Bicycle paths may be two-directional or, where the path parallels a roadway, a single lane on both sides of the road.

The following guidelines assist in making decisions on bikeway facility selection. Each route is unique and must be evaluated individually.

Shared Roadway - There are conditions where a shared roadway is the only practical method of establishing a bikeway. Because a shared roadway is designated only by bikeway signs, it is implied that the roadway provides safe conditions for both cyclists and motorists. Where some type of bikeway is warranted, shared roadways should be allowed only where existing conditions either do not justify the greater expense of a higher type facility or prevent their installation.

Bicycle Lanes - The occupation of a portion of a roadway by a bicycle lane implies a reasonable degree of safety for the cyclist. Conditions are generally less severe than those that suggest a bicycle path. A painted stripe on the roadway surface must be employed to delineate the bicycle portion of the roadway.

The cost of installing a bicycle lane is normally much less than that of a separate bicycle path. Another advantage of bicycle lanes is the relatively minor space requirements. They can be installed in many areas where the construction of paths would be impractical. In practice, bicycle lanes are often the most practical means of developing bikeways.

Bicycle Paths - Bicycle paths are normally constructed explicitly for use by bicycles and pedestrians. The cyclist is provided with a clear-cut route and is protected from many hazardous conflicts. However, bicycle paths can be expensive to provide due to right-of-way and construction costs.

Sidewalks - Sidewalks are considered integral parts of the urban environment. The *2001 Design Guide* states that sidewalks should be strongly considered in the design of all projects on urban streets and the following applies:

Warrants (Roadway) – Where sidewalks currently exist, they will be replaced if affected by the project. Where they do not currently exist, the need for sidewalks will be determined on a case-by-case basis. In general, the designer should consider providing sidewalks along any street where pedestrians normally move or would be expected to move if they had a sidewalk available (i.e., a latent demand exists). Streets leading to schools or libraries should have sidewalks on at least one side of the street, regardless of the pedestrian demand during the remainder of the day.

Warrants (Bridges) – If a bridge is within the limits of a new construction or reconstruction project and if its bridge deck will be rehabilitated as part of the project, sidewalks will be provided on the bridge if provided on the approach roadway. Even if not provided on the approach roadway, sidewalks may still be warranted on the rehabilitated bridge deck if judged to be necessary to protect public safety. If the bridge deck will not be rehabilitated as part of the reconstruction project, it will rarely be warranted to perform this work solely to provide sidewalks on the bridge.

Sidewalk Width and Accessibility Criteria – The width of a sidewalk should be related to the street type and frequency of its use. The minimum width is 5 ft; 8 ft is desirable. In Central Business District (CBD) areas, sidewalks are often paved from the back of the curb to the front

edge of the buildings. Several design elements for sidewalks may be required to meet the criteria of the Americans with Disabilities Act. These include curb-cut ramps, clear width area and longitudinal slopes.

5.4 Recent National Guidance

5.4.1 2010 Highway Capacity Manual

Research leading up to the 2010 Highway Capacity Manual shows that pedestrian level of service is improved when a buffer exists between the roadway and sidewalk. This is further improved when a barrier effect is created in that buffer by closely spaced trees, utility poles, fencing etc. Other scientifically developed performance measures are included in the manual. **It is recommended that MDOT consider setting minimum level of service standards for pedestrians and bicyclists on key roadways.**

It should also be noted that many new techniques for accommodating pedestrians and bicycles have come into standard usage since the 1991 AASHTO Bicycle Facilities Guide was published. A new version is currently being reviewed and embodies many of these techniques. These new techniques are also not addressed in the 2001 Design Guide, however some of them are part of the latest Manual on Uniform Traffic Control Devices.

It is recommended that either the Mississippi Design Manual be updated or amended to include some of these features or the latest national documents be referenced in statewide guidance. Two important examples include:

Shared Use Lane markings or “Sharrows” are pavement markings that show a bicycle and a directional arrow, which indicate the lane is to be shared between motorists and cyclists when there is insufficient space for a bike lane.

Countdown Pedestrian Signals are an upgrade from the “Walk – Don’t Walk” pedestrian signal heads at crosswalks. These devices let the pedestrians know how many seconds remain in their crossing cycle.

5.4.2 FHWA Policy on Integrating Bicycling and Walking into Transportation Infrastructure

The Policy Statement, from which aspects relevant to Mississippi are highlighted below, was developed through collaborative input of FHWA, AASHTO, ITE, bicycle and pedestrian user groups, state and local agencies, the U.S. Access Board, and representatives of disability organizations. The following design guidance recommendations, drawn from a national best practices analysis, have been extracted from the *U.S. DOT Policy Statement on Integrating Bicycling and Walking into Transportation Infrastructure*:

“Bicycle and pedestrian ways shall be established in new construction and reconstruction projects in all urbanized areas, unless one or more of three conditions are met:

- *Bicyclists and pedestrians are prohibited by law from using the roadway;*
- *The cost of establishing bikeways or walkways would be excessively disproportionate to the need or probable use; and*
- *Where scarcity of population or other factors indicate an absence of need.*

In rural areas, paved shoulders should be included in all new construction and reconstruction projects on roadways used by more than 1,000 vehicles per day. Rumble strips are not recommended where shoulders are used by bicyclists unless there is a minimum clear path of four feet in which a bicycle may safely operate.

Sidewalks, shared use paths, street crossings (including over and under crossings), pedestrian signals, signs, street furniture, transit stops and facilities, and all connecting pathways shall be designed, constructed, operated and maintained so that all pedestrians, including people with disabilities, can travel safely and independently.

The design and development of the transportation infrastructure shall improve conditions for bicycling and walking through the following additional steps:

- *Planning projects for the long-term;*
- *Addressing the need for bicyclists and pedestrians to cross corridors, as well as travel along them; and*
- *Designing facilities to the best currently available standards and guidelines.*

State and local governments should encourage the application of the range of available treatments, while exercising local judgment, with the following as examples:

- *Collector and arterial streets shall typically have a minimum of a four-foot wide striped bicycle lane; however, wider lanes are often necessary in locations with parking, curb and gutter, and heavier and/or faster traffic.*
- *Collector and arterial streets shall typically have a minimum of a five-foot wide sidewalk on both sides of the street; however, wider sidewalks and landscaped buffers are necessary in locations with higher pedestrian or traffic volumes, and/or higher vehicle speeds. At intersections, sidewalks may need to be wider to accommodate accessible curb ramps.*
- *Rural arterials shall typically have a minimum of a four-foot paved shoulder; however, wider shoulders (or marked bike lanes) and accessible sidewalks and crosswalks are necessary within rural communities and where traffic volumes and speeds increase.”*

5.5 Legal Framework

In 2010, the Mississippi legislature passed Senate Bill. No. 3014 "John Paul Frerer Bicycle Safety Act." This legislation establishes that bicycles are vehicles on the state's roadways and are held to the same laws as motor vehicles. It also establishes a minimum safe passing distance of three feet when motorists pass bicyclists.

5.6 Policy Framework

In recognition of the federal guidance described in 5.4 above, the Mississippi Transportation Commission adopted a New Bicycle/Pedestrian Resolution for Implementing Multipurpose Trails. It states that MDOT will implement and execute a policy of considering the development of multipurpose trails and/or wide-paved shoulders during the environmental and planning phases of all new highways and the re-construction of existing highways in or near communities with areas of high demand for recreational facilities.

With this resolution in place, it is now possible to include the costs for these facilities as part of the roadway project. This will allow these facilities to be planned and built in a predictable manner and not be subject to a competitive grant process for funding.

6. BICYCLE AND PEDESTRIAN PROJECT FUNDING

6.1 Funding Sources

Bicycle and pedestrian projects are broadly eligible for funding from almost all the major Federal-aid highway, transit, safety and other programs. Bicycle projects must be designed and located pursuant to the transportation plans required of states and Metropolitan Planning Organizations. Existing or potential sources of federal funding for bicycle and pedestrian projects are:

- Federal-aid Highway Program
- National Highway System (NHS)
- Surface Transportation Program (STP)
- Transportation Enhancement Activities (TEAs)
- Hazard Elimination and Railway-Highway Crossing Program
- Safe Routes to School Program
- Congestion Mitigation and Air Quality Improvement (CMAQ)
- Recreational Trails
- Federal Lands Highway Program National Scenic Byways
- Job Access and Reverse Commute
- Federal Transit Program
- Urbanized Area Formula Grants, Capital Investment Grants and Loans, and Formula Program for Other Than Urbanized Area

- Highway Safety Programs
- State and Community Highway Safety Grants (Section 402)
- Highway Safety Research and Development (Section 403) Program
- Sustainable Communities and TIGER programs

6.2 Federal/State Matching Requirements

In general, the federal share of the costs of transportation projects is 80 percent with a 20 percent state or local match. However, there are a number of exceptions to this rule.

The state and/or local funds used to match Federal-aid Highway Projects may include in-kind contributions (such as donations). Funds from other federal programs may also be used to match Transportation Enhancement, Scenic Byways, and Recreational Trails program funds.

MDOT assists local governments with Enhancement projects. Currently \$36,668,557 is committed or obligated out of \$95,155,478 dedicated to bicycle/pedestrian projects since the program was created in ISTEA in the early 1990's.

MDOT receives Transportation Enhancement project applications from local governments. An appointed committee reviews and recommends projects for funding. Bicycle/pedestrian projects receive no priority over other eligible Enhancement project categories. However, bicycle/pedestrian projects that are part of regional or local plans are given priority over other similar projects selected for Enhancement funding. While there have been Transportation Enhancement (TE) projects along the coast with respect to on-street bike lanes, in most cases TE projects have been off-street, or trail facilities.

In recognition of the Mississippi Transportation Commission's April 2011 resolution for implementing multipurpose trails described in 5.6 above, MDOT now has the ability to routinely accommodate and fund bicycle and pedestrian facilities. In light of this, historical levels of funding for pedestrian bicycle facilities, may not be indicative of the state's future dedication to these modes.

6.3 Key Needs

The Tanglefoot Trail is the largest trail project planned in the state. MDOT has committed \$9,600,000 of TE funds towards the purchase and development of the 43 mile abandoned rail corridor. According to the Rail Corridor Alliance which coordinates the three county effort to complete the trail, projections for the direct economic benefit to the community are estimated at \$3 to \$4 million annually. Trails of this length can attract multi-day visitors to rural areas. Combined with its close proximity to the Natchez Trace, there is great potential for a needed economic boost to the area.

In an urban setting, the City of Oxford has leveraged \$3.5 million in TE funds to improve the connectivity of its bicycle pedestrian network. Studies show as non-motorized network

connectivity increases, so does walking and bicycling. With this higher level of walking and bicycling, less strain is placed on the capacity of the roadway network, possibly averting the need for expensive expansion projects. This commitment has also contributed to the city’s designation by the League of American Bicyclists as a Bicycle Friendly Community. This distinction is publicized nationally and also entitles the city to technical support to further its efforts.

With only \$95 million in TE funds spent over 20 years on bicycle pedestrian, improvements the state has seen tangible benefits. If that amount were just doubled and applied strategically to well planned projects, the state could not only improve mobility for its poorest, youngest and oldest citizens, it could also provide incentives for healthier lifestyles and a reduction of its high obesity and morbidity rate.

Table 6-1 provides very rough estimates of costs for unconstrained bicycle and pedestrian needs as identified in MPO LRTPs and associated bicycle/pedestrian supplements and committed and obligated Transportation Enhancements . These costs are estimated for materials and installation only.

Table 6-1: Estimated Unconstrained Needs

Bicycle and Pedestrian Need	Location	2010-2015 TIP (In millions)	Estimated Total Cost¹ through 2035 (In millions)
Statewide Enhancements & other regional projects	Tanglefoot Trail	\$9.6	\$30
	Non-MPO Bike/Ped enhancements	\$14	\$95
	I-20 Mississippi River Bridge crossing		\$10
400 miles of sidewalk, pathway and bicycle facilities	Gulf Coast	\$4.7	\$140
200 miles of sidewalk, pathway and bicycle facilities	CMPDD	\$7	\$70
150 miles sidewalk, pathway and bicycle facilities	Hattiesburg MPO	\$1.5	\$52
Totals		\$13.20	\$262.00

Notes:

- 1) Estimated Costs from GCATS 2030 LRTP Ped/Bike Supplement:
 - \$696,000/mile sidewalk or shared path
 - \$9000/mile Bike Lane striping

7. BICYCLE AND PEDESTRIAN SAFETY

Though Mississippi has relatively low numbers of pedestrian and bicycle crashes in relation to automobile crashes, the state has a pedestrian injury and fatality rate one third higher than the U.S. average. The bicycle crash rate is one third of the national average. Due to the state’s low number of fatalities and their yearly variation it can be misleading to make comparisons using bicycle fatalities only. **Tables 7-1** and **7-2** provide a more in depth analysis of crashes involving pedestrians and cyclists.

Tables 7-3 and **7-4** illustrate the counties with the highest number of crashes involving pedestrians and bicyclists. As would be anticipated, each of these counties are in the largest urbanized areas in the state. As the state transitions to standardized electronic and GIS linked crash reporting, it will be easier to map and target high bicycle and pedestrian locations and develop appropriate countermeasures. **Tables 7-5** and **7-6** illustrate pedestrian and bicycle crash rates over time and compare them to the national average.

Table 7-1: Bicycle and Pedestrian Crash Percentages

Type of Crash	2007	2008	2009	3-Yr Total	Average
Involving a Pedestrian	537	539	467	1,543	514
% of Total Crashes	0.69%	0.73%	0.69%	0.70%	0.70%
Involving a Bicyclist	177	171	153	501	167
% of Total Crashes	0.23%	0.23%	0.23%	0.23%	0.23%
Total Crashes	77,398	73,891	67,670	218,959	72,986

Table 7-2: Bicycle and Pedestrian Crash Severity

Severity	Mississippi											National	
	2007			2008			2009					2009	
	Ped	Bike	Total	Ped	Bike	Total	Ped	% of Nation	Bike	% of Nation	Total	Ped	Bike
Fatality	58	6	684/ 884*	50	4	605/ 783*	58	1.4%	8	1.3%	496/ 700*	4,092	630
Injury	412	144	21,112	418	138	19,225	364	0.6%	113	0.2%	17,582	59,000	51,000
PDO	66	27	55,602	73	29	54,061	56	--	32	--	49,592	--	--

Sources: NHTSA, Traffic Safety Facts 2009 and SAMS database

Notes: (1) Number of crashes with a fatality/Number of fatalities

(2) PDO – Property Damage Only

Table 7-3: Worst Five Counties for Pedestrian Crashes in 2009

Location by County	2007	2008	2009
	Pedestrians	Pedestrians	Pedestrians
Hinds [25]	95	90	70
Harrison [24]	66	65	48
Forrest [18]	23	27	29
Jackson [30]	30	43	27
Desoto [17]	26	31	25

Table 7-4: Worst Five Counties for Bicycle Crashes in 2009

Location by County	2007	2008	2009
	Bicyclists	Bicyclists	Bicyclists
Hinds [25]	14	12	24
Harrison [24]	20	27	23
Jackson [30]	26	20	14
Rankin [61]	3	3	10
Forrest [18]	14	9	8

Table 7-5: Mississippi Pedestrian Crash Rates per 100,000 Population

Year	Mississippi Population (thousands)	Mississippi Pedestrian Fatalities	Mississippi Pedestrian Fatality Rate ¹	Pedestrian Fatality Rate ¹ (National Average)	National Rank	Mississippi Pedestrian Injuries	Mississippi Injury Rate ¹	Pedestrian Injury Rate ¹ (National Average)
2005	2,900	72	2.48	1.65	8	--	--	22
2006	2,897	56	1.93	1.60	12	--	--	20
2007	2,922	58	1.99	1.54	10	511	17	23
2008	2,940	50	1.70	1.44	11	488	17	23
2009	2,952	58	1.96	--	5	430	15	--

1) Per 100,000 Population

Table 7-6: Mississippi Bicycle Crash Rates per Million Population

Year	Mississippi Population (thousands)	Mississippi Bicyclist Fatalities	Mississippi Bicyclist Fatality Rate ²	Bicyclist Fatality Rate ¹ (National Average)	National Rank	Mississippi Bicyclist Injuries	Mississippi Injury Rate ²	Bicyclist Injury Rate ² (National Average)
2005	2,900	5	1.71	2.64	33	--	--	153
2006	2,897	3	2.76	2.58	44	--	--	147
2007	2,922	8	2.74	2.31	11	153	52	144
2008	2,940	4	1.36	2.35	39	151	51	172
2009	2,952	8	2.71	--	--	126	43	--

1) Per Million Population

8. SUCCESSFUL IMPLEMENTATION EXAMPLES IN MISSISSIPPI

In order to get Mississippians to be attracted to cycling and walking it takes a coordinated effort between MDOT, local government departments, schools, and community organizations.

8.1 City of Hernando

A recent success story is the city of Hernando, which got the attention of the White House for their contributions in providing a healthier environment for children in their town. It started with electing a mayor and board of aldermen who were committed to addressing the problem of obesity in the town. In addition to doing things differently than in the past, they were willing to adequately fund these new initiatives. They created a parks department, added a new park to the system and upgraded all of the parks. They put in walking trails and striped bike lanes. They enforced their 2001 law requiring that all new development have sidewalks. So, during their big building boom, miles of sidewalks were built at the developer's expense, not at taxpayer expense. Next they put new programs in place, exercise programs, senior's exercise programs and safe routes to schools programs. They created a farmers market and a community garden so that fresh local fruits and vegetables were readily available. Schools began serving healthy meals and limiting unhealthy snack choices. Though on their own each one of these seem like a small thing, a synergy began to occur creating a culture of a healthy lifestyle being built in their town.

8.2 Hurricane Katrina Recovery

Another successful example of integrating bicycle and pedestrian features in the roadway environment is in the recovery from Hurricane Katrina along the Gulf. Since then, two bridges have been rebuilt and upgraded for all users: the Bay St. Louis bridge over St. Louis Bay and the Biloxi Bay bridge connecting Biloxi and Ocean Springs on the east side of Biloxi Bay. Each is about 1.5 miles long, and they have an added area for walking and bicycling on the south side of each bridge. Many people park at the foot and exercise across and back. There is also dedicated parking on the Biloxi and Ocean Springs sides of one bridge. The 26 miles from the west of the Bay St. Louis Bridge to the east of the Biloxi Bay Bridge in Ocean Springs on the Gulf are now being retrofitted with sidewalks along the beach. Though official counts have not been taken, anecdotally these sidewalks are getting a great deal of use.

9. CONCLUSION

Until recently, with the exception of select urban and university areas, there has not been sufficient use or demand in Mississippi to justify the consistent development of bicycle and pedestrian facilities, due in part to Mississippi's rural nature and lack of significant urban congestion.

In light of new national policies and guidance, economic development opportunities, and the obesity epidemic, there is a strong case for dedicating more resources to these modes particularly in tandem with other road projects.

