



Major Thoroughfare Plan

Notebook of Deliverables

Prepared by:



**6801 Governors Lake Parkway
Building 200
Norcross, GA 30071**

October 2007



GEORGIA

Major Thoroughfare Plan

Executive Summary	Section 1
Baseline Conditions Report	Section 2
Needs Assessment Report	Section 3
Alternatives Analysis Report and Recommendations	Section 4
Access Management Draft Regulations	Appendix A
Street Connectivity Draft Regulations	Appendix B
Traffic Calming Draft Ordinance	Appendix C
Traffic Impact Analysis Draft Ordinance	Appendix D
3-Lane Typical Section for New Proposed Roads at The Triangle	Appendix E



Executive Summary of City of Madison Major Thoroughfare Plan

Prepared by:



**6801 Governors Lake Parkway
Building 200
Norcross, GA 30071**

August 2007

Executive Summary

Recognizing that an increase in population and development creates pressure on the existing transportation network, the City of Madison initiated a city-wide Major Thoroughfares Plan to document current and future transportation needs and opportunities. The plan assesses short-term and long-term needs and recommends projects to meet the city's transportation needs. It also charts a direction and offers specific actions to be taken to achieve the city's long-term vision and quality of life goals.

The context of the plan includes an understanding of social, economic and land use characteristics, regulatory requirements of thoroughfares planning and the process for implementing elements of the plan. The resulting plan is based on a combination of technical merit, public and agency involvement and financial funding responsibilities.

Purpose of Major Thoroughfare Plan

The overall purpose of the City of Madison Major Thoroughfares Plan is to support the guidelines outlined in the previous major planning efforts involving the city and carry them to the next level of development. One specific purpose of the plan is to achieve a prioritized list of efficient and effective transportation systems improvements that will accommodate current and future local travel demands. To address this purpose, the plan centers around three objectives.

- To develop a city-wide Thoroughfare Plan and document
- To give more definitive direction to certain transportation projects which have been discussed for many years
- To identify immediate actions for specific transportation projects

Identified Needs

In the *Needs Assessment Report* a series of needs for the city was developed by analyzing the data collected in the *Baseline Conditions Report*. These needs covered several different categories relating to transportation system performance in the city. This list of needs was comprehensive including specific network improvements, accident mitigation, context sensitive design for streetscapes, parking, truck routing, transit, bicycle and pedestrian facilities, environmental concerns, coordination with other plans, and land use-transportation policies.

Goals and Objectives

The identified transportation needs were used to develop a series of goals and objectives for the study. These goals and objectives in turn were used to create the building blocks for crafting the recommendations for improving the city's transportation network. Thus the study needs as well as the study goals guided the development of individual projects and policies. The three overarching goals were:

- Maintain and improve transportation system performance and safety
 - Maintain the unique identity of the City of Madison by protecting important public assets such as natural, cultural and historic resources.
-

- Designate a hierarchy of corridors based not only on their functional classification but on their physical context and historical significance and which are consistent with local aspirations.

Recommendations

The recommendations in the *Major Thoroughfares Plan* addresses the transportation needs identified through several avenues including:

- Review of existing conditions and deficiencies;
- Input from citizens, elected officials, local staff and other agencies;
- Estimates of future travel demand; and
- Consideration of land use policies and development goals.

The resulting plan adheres to the following principles:

- Major thoroughfares should connect the major development nodes;
- A roadway's physical components should be suitable for the adjacent land uses and intended travel purposes;
- A network of alternate roadways is preferred over a limited set of arterials;
- A hierarchy of roadway types is desirable; and
- The maximum desirable number of lanes on any major thoroughfare should be three lanes inside the historic district and three lanes inside the bypass or within the one mile circular city limit boundary.

The resulting Major Thoroughfare Plan is illustrated in **Figure 1**, identifies the improvements to the major travel corridors and nodes throughout the city by types and location. All projects are coded on the map by their ID number. The plan also recommends several projects to address safety and traffic operations issues. Some key policy and procedural guidelines are also recommended for traffic calming, streetscape standards, and right-of-way preservation. **Table 1** below summarizes the projects and their characteristics.

The Thoroughfare Plan also includes studies and policy recommendations. Studies will be necessary to verify certain "hot spots" identified by stakeholders and to refine the recommendations into constructible projects. The policy recommendations include access management along the major commercial corridors to separate local and through traffic to maintain the functionality of these arterials and traffic calming on local streets where needed and in the downtown at crosswalks. The Proposed Local Street Master Plan is the most ambitious policy recommendation which aspires to create a well-connected network of streets that supports local trip patterns to all the major nodes within the city rather than forcing all traffic to depend on a few arterial roadways.

Table 1 – Recommended Projects

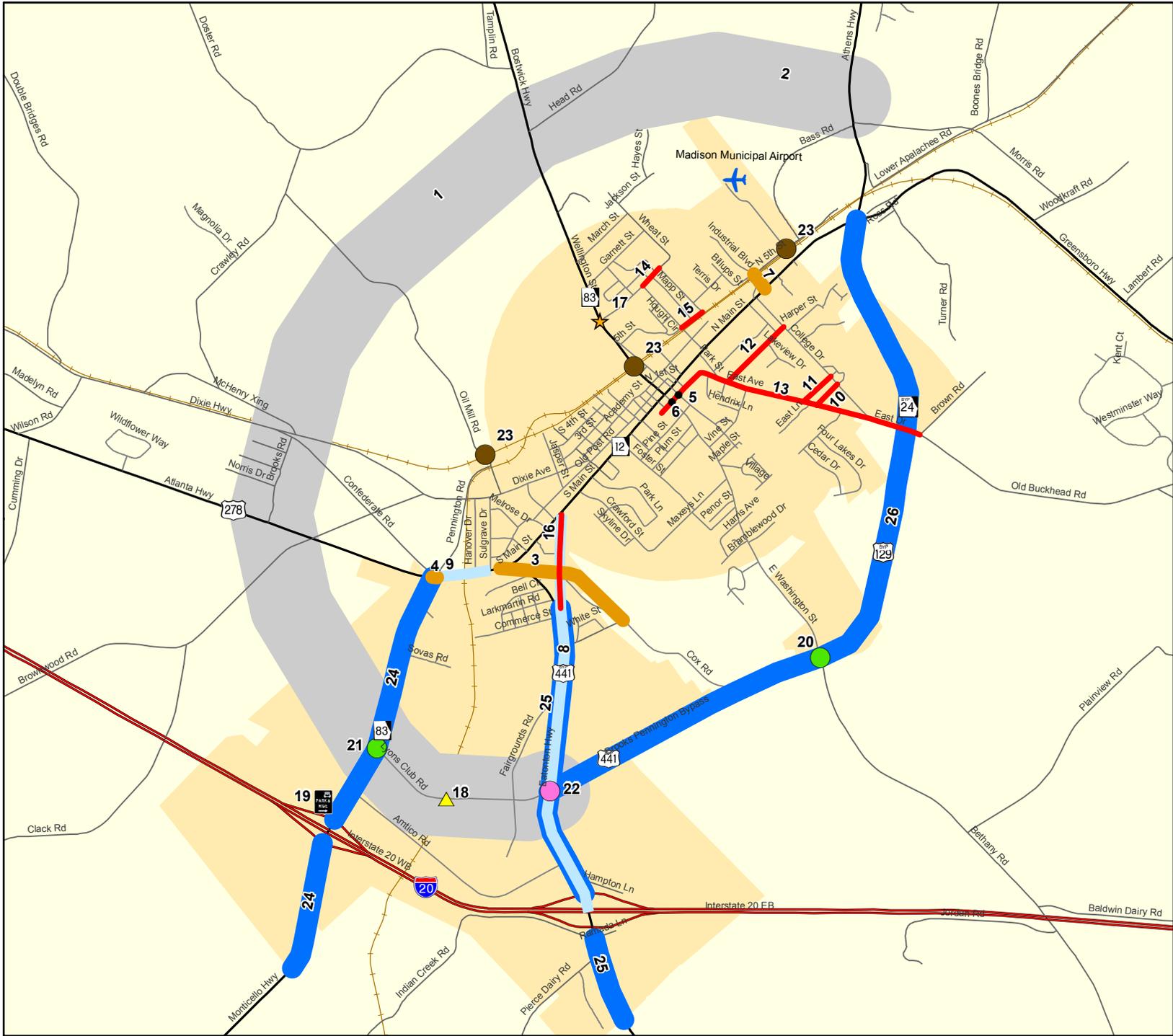
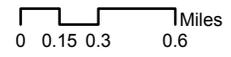
ID	Project Location	From	To	Implementation			Estimated Cost	Potential Funding Source		
				Near	Mid	Long		Fed	State	Local
New Roadways										
1	SR 83 Bypass	SR 83 N	US 441 Eatonton Hwy			X	\$55,200,000	X	X	X
2	SR 83 US 441 Connector	SR 83 N	US 441 N			X	\$22,080,000	X	X	X
Intersection Realignments/Improvements										
3	US 278, SR 24 Spur, and US 441	NA	NA		X		\$11,322,400	X	X	X
4	SR 83 and US 278	NA	NA		X		\$3,373,600	X	X	X
5	Hancock and Jefferson	2-way stop	4-way stop	X			\$800			X
6	Hancock and Washington	2-way stop	4-way stop	X			\$800			X
7	Industrial Blvd and N. Main Street	NA	NA		X		\$493,020	X	X	X
Bike and Pedestrian Improvements										
8	Bike Lanes on US 441 Eatonton Hwy	US 278	I-20	X			\$330,000	X	X	X
9	Bike Lanes on US 278 Atlanta Hwy	Confederate Rd	Sulgrave Street	X			\$45,000	X	X	X
10	Sidewalks on Moreland Ave	East Avenue	College Drive	X			\$30,400	X		X
11	Sidewalks on College Avenue	East Avenue	College Drive	X			\$38,000	X		X
12	Sidewalks on Harris Street	East Avenue	College Drive	X			\$79,800	X		X
13	Sidewalks on East Ave	End of pavement	Brown Lane	X			\$292,600	X		X
14	Sidewalks on Pearl Street	Whitehall Street	Burney Street	X			\$24,700			X
15	Sidewalks on Fifth Street	Whitehall Street	Burney Street	X			\$26,600			X
16	Sidewalks on US 441 Eatonton Hwy	Main Street	Ward Street	X			\$95,000			X

ID	Project Location	From	To	Implementation			Estimated Cost	Potential Funding Source		
				Near	Mid	Long		Fed	State	Local
17	Crosswalk at US 83 and Pearl Street	NA	NA	X			\$2,000			
Rail Crossing Improvements										
18	Lion's Club crossing as part of bypass project	NA	NA			X	NA	X	X	X
Transit Improvements										
19	Park and Ride Lot at SR 83 and I-20	NA	NA		X		\$50,000	X	X	X
Studies										
20	Traffic signal Warrant Study at East Washington Road and US 441 Bypass	NA	NA	X			\$20,000			X
21	Traffic signal Warrant Study at Lyons Club Road and US 83	NA	NA	X			\$20,000			X
22	Intersection Improvement Study at Lion's club Road and US 441 Bypass	NA	NA	X			\$20,000			X
23	Multi-Modal Station Location Study	NA	NA	X			\$30,000			X
Policy Recommendations										
24	Access management along SR 83 S	US 278 Atlanta hwy	Southern City Limits	X			NA	NA	NA	NA
25	Access management along US 441 S	Ward Street	Southern City Limits	X			NA	NA	NA	NA
26	Access management along US 441 bypass	N Main Street	US 441 Eatonton hwy	X			NA	NA	NA	NA
27	Street Grid ROW preservation/extension	NA	NA	X	X	X	NA	NA	NA	NA
28	Traffic Calming where warranted	NA	NA	X	X	X	\$1,000- per			X
29	Traffic calming with crosswalks in downtown	NA	NA	X	X	X	\$5,000- \$10,000 per			X

Source: ARC Costing Tool Note right of way costs not included

Figure 1: Recommended Transportation Improvements

- Project Type**
- Upgrade to 4-way stop control
 - Intersection Improvement Study
 - Traffic Signal Warrant Study
 - Multi-Modal Station Location Study
 - Park & Ride Lot
 - ★ Crosswalk
 - ▲ Rail Crossing Improvement
 - ▬ Sidewalk
 - ▬ Bike Lane
 - ▬ Intersection Redesign
 - ▬ Access Management
 - ▬ Proposed Bypass



Major Projects

Main Street Triangle-SR 83/US 278/US 441

It is recommended that this entire triangle intersection complex be reconfigured to overcome safety issues at all three intersections. The current US 278 would be brought to US 441 at a right angle and Cox Rd would be realigned to meet it. This new intersection would be signalized. South Main Street would be closed at the north end of the triangle and Ward Street (SR 24 Spur) would also be closed. The fragments of these two roads would be brought together at a signalized intersection near the center of the current triangle. All new roads would be three lane sections with appropriate right turn lanes at the signals. This project is a mid-range project and a sample concept design is depicted in **Figure 2**.

SR 83/US 278 Intersection

The study recommends that this five-way intersection also be reconfigured to overcome safety issues. The current SR 83 Monticello Highway would bend slightly to the east before being brought into US 278 at a right angle. Pennington Road would be brought westward before making a right angle intersection opposite SR 83. Confederate Road would be rerouted to intersect Pennington 200 feet to the north of the intersection. This is a mid-range project and a sample concept design is depicted in **Figure 3**.

Industrial Boulevard and North Main Street Intersection

The study recommends that this four-way angled intersection also be reconfigured to overcome safety and sight distance issues. The current Industrial Boulevard would be routed slightly to the east before being brought into North Main Street at a right angle. The existing roadbed would be kept but have a stop sign placed at its intersection with the new roadway. This is a mid-range project because of variable right-of-way acquisition options and therefore no sample concept design for the intersection is depicted at this time.

US 441 Relief (SR 83N Connector & SR 83/US 441 Bypass)

Providing relief to the most congested roadway segment in the City of Madison is, and will be, a continuing priority for transportation planning efforts. The congestion on US 441 (South Main Street segment) is from a combination of traffic growth, limited parallel routing options, physical constraints such as the railroad, environmental constraints such as the historic district, high levels of truck traffic, and the high accident locations mentioned above. It is the finding of this report that ultimately an alternative to this route will have to be constructed on the edge of the city connecting SR 83N to both the bypass and SR 83S. Although the priority segment is from SR 83 N to US 441/Eatonton Rd somewhere in the vicinity of *Lions Club Road*, this will probably be preceded by the second priority segment is from SR 83N/Bostwick Highway to US 441N/Athens Highway because of costs and complexity of right-of-way acquisition. Both of these projects will have to be pushed to long-range because of the significant costs involved. Because of these funding issues a four point phased approach is recommended in tackling this problem over time as more resources become available. The first short-range approach is to explore using signage to begin to route some of the traffic to US 441 north of town via either Apalachee Road or Sandy Creek Road. The second short-to-mid-range

approach would be to get one of these two roads designated as an official truck route by GDOT. The third long-range approach would be to construct the SR 83N Connector between SR 83N/Bostwick Highway and US 441N/Athens Highway. The final long-range recommendation is to construct the bypass from SR 83N/Bostwick Highway to US 441S/Eatonton Highway. See **Figure 1** for tentative locations.

Minor Projects

Several minor projects are also included in the recommendations. These are short to mid range projects with mostly local funds being used to leverage specific federal monies. See **Figure 1** for tentative locations. They include:

- Stop signs at Hancock Street and East Jefferson and East Washington Streets
- Sidewalks connecting the major gaps near schools, parks, activity centers, and downtown as well as crosswalks improving safe passage at significant crossings;
- Sidewalks connecting the major gaps along state routes and extending such;
- Sidewalks connecting the major gaps between the existing sidewalk system and multi-family housing, public housing, and existing neighborhoods;
- Crosswalk on SR 83 N (Bostwick Highway) at Pearl Street
- Bike Lanes on major routes designated in the regional plan
- Transit for future commuter bus service to Atlanta

Figure 2 Sample Concept Design for Main Street Triangle- SR 83/US 278/US 441



Figure 3 Sample Concept Design for SR 83/US 278 Intersection

Policy Recommendations

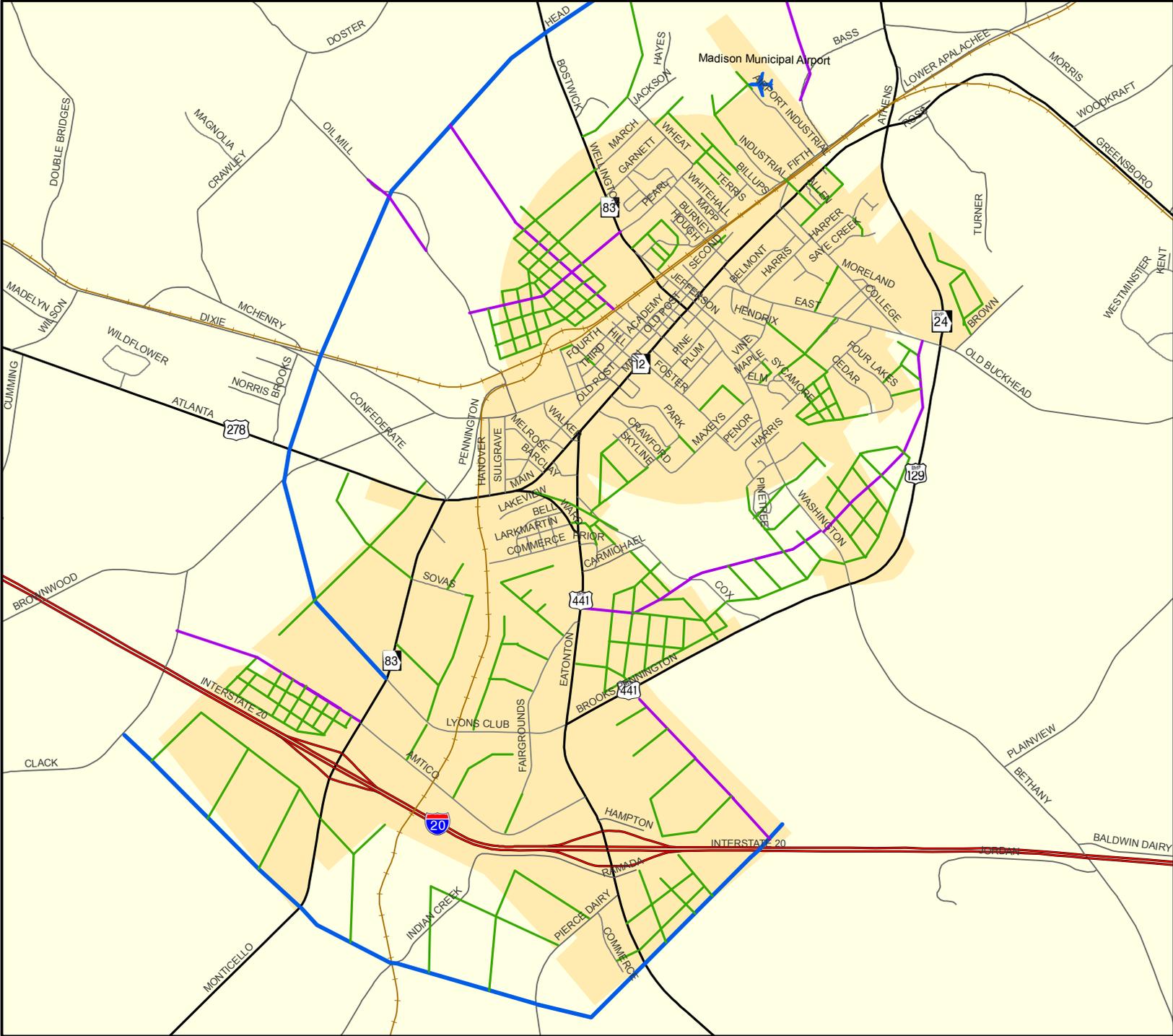
Access Management

The study proposes access management along SR 83 Monticello Highway from its intersection with US 278 to I-20 and beyond to the city limits, along US 441 Eatonton Highway from its intersection with US 278 to I-20 and beyond to the city limits, and along US 441 Bypass from its intersection with North Main Street-US 278 to Lion's Club Road. Commercial land uses anticipated along this corridor would be required per zoning to share access drives, have continuous access to adjacent parking lots, provide easements to the city for front and/or rear access drives that parallel the corridor allowing for the separation of local and through traffic. Curb cuts to the major highway would have to be across form drives on the opposite side thus allowing for a reduction in future signals. See **Figure 4** for a tentative street plan.

Proposed Street Grid Master Plan

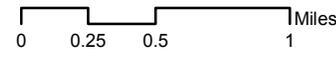
As per the existing Comprehensive Land Use Plan and also in tandem with the zoning ordinance and the access management proposals above, there is a need to set aside transportation rights-of-way to handle future growth throughout the city. Residential growth is anticipated near the historic downtown and industrial and commercial growth is anticipated on the southern periphery near I-20. This street grid master plan (see **Figure 4**) proposes to extend the historic grid pattern and dimensions in the one mile radius of downtown and allows for a larger street grid near I-20 to handle larger industrial warehousing traffic. This policy recommendation seeks to demand of developers that they include street connectivity and grid extension plans in their zoning applications. They would be required to show how they are planning to extend the existing street grid to maintain multiple routing options. This will help to avoid the need for widenings on major arterials. All development will be required to give easements to the city to allow for later development to have multiple tie-ins to the street network.

Figure 4: Proposed Local Street Master Plan



Proposed Road Network

- Local Street
- Collector
- Connector
- Road
- Rail Line
- ✦ Airport
- City of Madison Limits
- Morgan County



Update of City Standards

The City's current zoning ordinance can be updated to include sections relative to access management requirements, traffic impact study requirements with due references to the future street grid master plan, traffic calming ordinances, and parking requirements and design guidelines.

Review of Land Development Recommendations

It is recommended that the City establish a Traffic Impact Methodology that analyzes the impacts of proposed new developments. Precedent has been established in other nearby cities to require these studies in cases where the peak trips equal or exceed 100 vehicle trip ends, or where the daily trip ends exceeds 750 trips. In residential terms, this equates approximately to 100 dwelling units. In retail terms, this equates approximately to 5,000 square feet, and in office terms, it equates roughly to 50,000-60,000 square feet.

Traffic Calming Procedures

The City should consider adoption of a Traffic Calming Ordinance. This ordinance would outline the following:

- Methods of traffic calming appropriate to different parts of the City
- Method for prioritizing traffic calming device requests
- Methods of payment for traffic calming devices
- Procedures to request removal of installed devices

Parking Plan

The City should work with property owners to provide off-street parking just outside of the historic core area and explore the possibilities for shared parking. These parking areas should be connected to the sidewalk network to facilitate non-motorized transportation to and within the core. For major public events distance lots, such as the park and ride lot near the interstate, could be used in tandem with transit connections to alleviate pressures on the downtown. Furthermore, long-term solutions include the selection of potential sites for a future decks and design guidelines for these decks to make them "read" architecturally as buildings similar to the historic ones surrounding them. Ways this could be done include:

- Requiring ground level retail shops
 - Requiring exterior fenestration patterns
 - Landscaping to conceal concrete walls
 - Exterior materials such as brick
 - Rooftop treatments such as cornices, public belvederes, and shops
 - Locating decks in topographically lower areas to reduce silhouette dimensions and visual impact
-

Implementation Plan

The recommended implementation plan is also outlined in **Table 1**. The table summarizes plan costs by responsible agency and time period. In general it is assumed that project costs that are not purely local in nature will be funded according to an 80/20 split with state and federal monies requiring 20% match from the local governments. This arrangement is subject to change however as project costs are rising and federal funds are becoming more limited. Near-term, Mid-term, and Long-term are defined respectively as 1-5 years, 6-19 years and 20 plus years. It should be noted that these planning level cost estimates are appropriate for system-wide planning, but should not be used on a specific project-by-project basis. Additionally there are five steps that will be required to implement these projects as described below:

1. Refine the concepts for the projects including project limits, typical section and cost;
2. Coordinate with state and regional agencies as necessary to ensure funding and compliance with regulations;
3. Conduct required environmental impact analyses;
4. Design the project including right-of-way plans, drainage and roadway; and
5. Construct the facility

The development of local funding for these projects will be an important step in project development and in implementation of the plan. Methods for raising transportation funds that have been used in other communities in Georgia to finance projects include impact fees and Special Purpose Local Option Sales Taxes (SPLOST). An impact fee study is underway at this time and it is a recommendation of this report that transportation impact fees be utilized wherever possible to supply the required local match to leverage other state and federal funds. To implement a SPLOST, voter approval would be required. The most promising potential new funding source is the proposal introduced in the Georgia Legislature in 2007, HB 434, which would allow counties to levy a regional 1% sales tax to implement key transportation projects. The participants of the recent *GDOT East Georgia Multi-County Study* would be prime candidates for exploring this option should it pass in next year's legislative session.



Major Thoroughfare Plan

Baseline Conditions Report

Prepared by:



**6801 Governors Lake Parkway
Building 200
Norcross, GA 30071**

November 2006

TABLE OF CONTENTS

1.0 Introduction	1-1
1.1 Community Profile	1-1
1.2 Purpose of Report.....	1-2
1.3 Report Organization.....	1-4
1.4 Related Plans and/or Studies.....	1-4
1.4.1 Morgan County Joint Comprehensive Plan	1-4
1.4.2 Morgan County Green Print Plan 2003	1-7
1.4.3 GDOT Statewide Transportation Plan.....	1-7
1.4.4 East Georgia Multi-County Transportation Study	1-8
1.5 Data Sources	1-9
2.0 Roadway Characteristics	2-1
2.1 Roadway Network Profile	2-1
2.1.1 Functional Classifications	2-1
2.1.2 Number of Lanes	2-5
2.1.3 Signalized Intersections.....	2-5
2.2 Bridges.....	2-5
2.3 Traffic Volumes	2-6
2.3.1 Segment Volumes	2-6
2.4 System Performance	2-8
2.4.1 Roadway Link Level of Service	2-8
2.4.2 Intersection Level of Service	2-10
2.5 Accident Information	2-12
2.5.1 High Accident Locations	2-12
2.5.2 Accident Rates.....	2-16
2.6 Future Roadway Improvements.....	2-17
2.7 Connectivity	2-17
2.8 Traffic Calming.....	2-17
2.9 Parking.....	2-19
3.0 Alternative Modes	3-1
3.1 Bicycle and Pedestrian Facilities	3-1
3.2 Transit Services	3-1
4.0 Transportation and Land Use	4-1
4.1 Existing Land Use.....	4-1
4.2 Future Land Use.....	4-4
4.2.1 City of Madison	4-4

4.2.2 Morgan County 4-7

4.3 Transportation and Land Use Interaction 4-7

5.0 Environmental Constraints..... 5-1

Appendix

LIST OF TABLES

Table 1.1 – Baseline Conditions Data Sources..... 1-9

Table 2.1 – Roadway Functional Classification..... 2-2

Table 2.2 – Bridge Inventory 2-5

Table 2.3 – GDOT Traffic Counts – 2000-2005 2-6

Table 2.4 – Roadway Link Level of Service 2-10

Table 2.5 - Intersection Level-of-Service Criteria 2-11

Table 2.6 - Summary of Existing Intersection Capacity Analysis 2-12

Table 2.7 – Accident Locations along State Roadways – 2003-2005..... 2-13

Table 2.8 – Accident Comparison to Statewide Average (2003-2004) ... 2-16

Table 2.9 – Traffic Calming Device Locations 2-19

Table 4.1 – Existing Land Use Distribution..... 4-1

Table 4.2 – Future Land Use Distribution 4-4

Table 4.3 – Comparison of Existing and Future Land Uses 4-6

LIST OF FIGURES

Figure 2.1 – 2005 Daily Traffic Counts 2-7

Figure 2.3 – Traffic Calming Locations 2-21

Figure 3.1 – Bicycle and Pedestrian Network..... 3-3

Figure 4.2 – Future Land Uses – 2030..... 4-5

Figure 4.3 – Future Land Uses for Vacant and Agricultural Land..... 4-8

Figure 5.1 – Environmental Features 5-1

1.0 Introduction

1.1 Community Profile

With a 2000 census population of 3,636, the City of Madison is a small city located approximately 60 miles east of Atlanta along I-20 in Morgan County, Georgia. Incorporated in 1809, the city can accurately be described as a historical community that has served as the traditional cultural and business center for a predominantly rural Morgan County.



Since 1980, growth in the City of Madison has occurred at a slower pace than both Morgan County and the state of Georgia as a whole. While the city has experienced a 14% growth in population from 1980 to 2000, this percentage only represents a total of 463 new residents during this timeframe.

In recent years, proximity to the rapidly expanding Atlanta metropolitan region in conjunction with easy accessibility to I-20 has increased development pressures in and around the city. As such, Madison is transforming from a rural community to one that serves needs beyond Morgan County that are more regional in scope. It is for this reason that city officials have recognized the need to evaluate its transportation network and its role in shaping the overall future of the city as these trends continue.



A base map of the City of Madison and its roadway characteristics is shown in **Figure 1.1**.

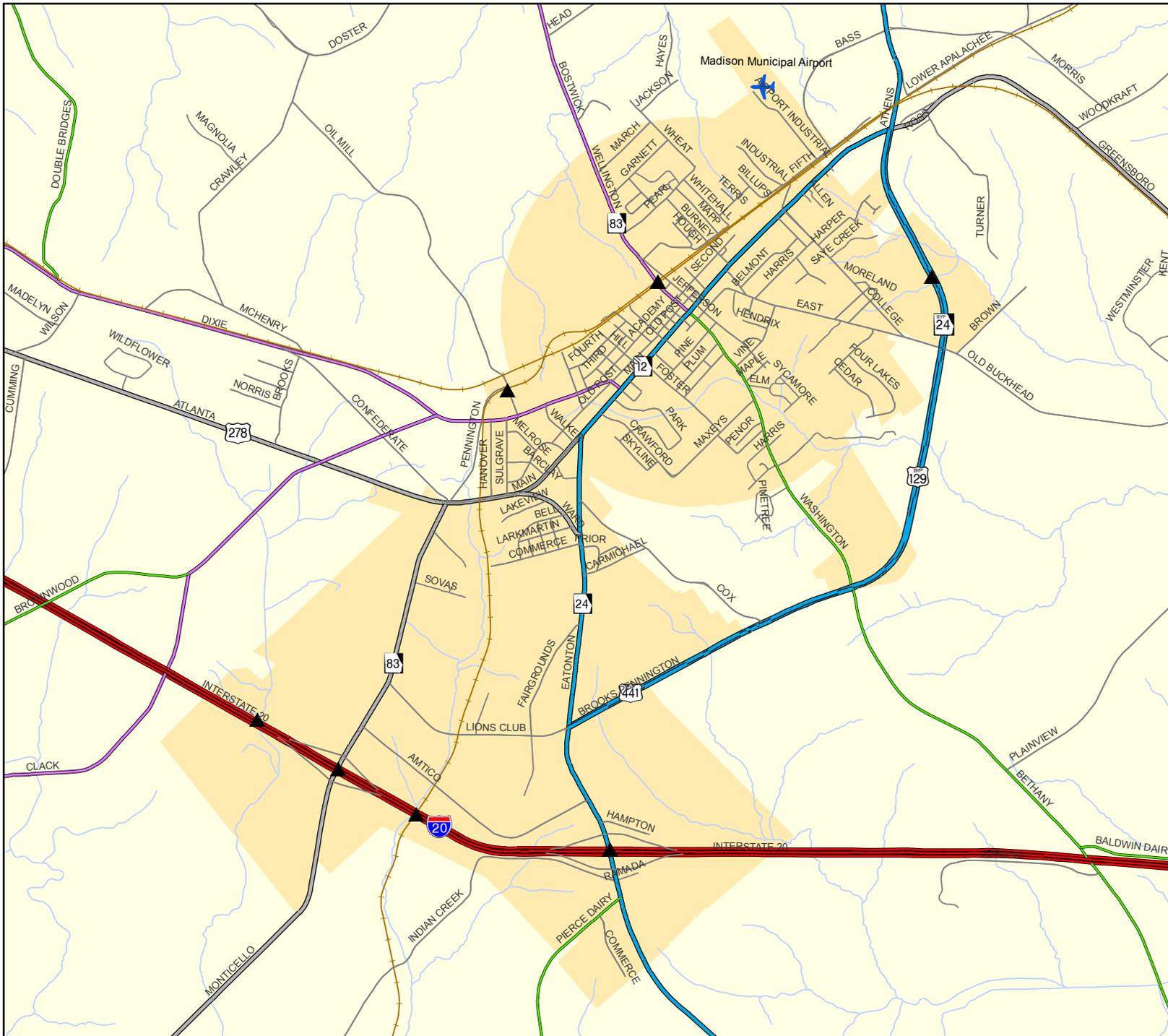
1.2 Purpose of Report

This document serves as the first technical memorandum in the completion of the City of Madison Major Thoroughfare Plan (Plan). The Plan shall evaluate the city's transportation system, functional classification, level of traffic congestion, existing transportation alternatives, related land use patterns and environmental issues within major corridors. The overall objective is to enhance local traffic flow and connectivity within the City of Madison and surrounding areas. The end result of this study will be a Major Thoroughfare Plan for the City of Madison to guide the development of capital improvements including a listing of short-term and long-term transportation projects that meet the current and future needs of the city. The transportation improvements recommended in this plan will consider alternative transportation and land development strategies to relieve traffic congestion (i.e., context sensitive design and access management) in order to best achieve local and regional priorities.

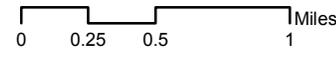
The purpose of this report is to inventory and evaluate the baseline conditions of the city's transportation network and the factors that impact its performance, such as land use, parking and other community characteristics.



**Figure 1.1:
Base Map**



-  Interstate Highway
-  Principal Arterial
-  Minor Arterial
-  Major Collector
-  Minor Collector
-  Local Road
-  Rail Line
-  River
-  Bridge
-  Airport
-  City of Madison Limits
-  Morgan County



1.3 Report Organization

The organization of this report is as follows:

- Section 1 provides an overview of the overall framework for the inventorying of baseline transportation conditions within the city;
- Section 2 provides an overall profile of the city's roadway network, including its overall function and operational characteristics;
- Section 3 provides an overview of alternative mode travel within the city;
- Section 4 provides an overview of land use trends within the city and its overall interrelation with the transportation system; and
- Section 5 contains an overview of environmental constraints that need to be factored into considerations for future transportation improvements.

1.4 Related Plans and/or Studies

In order to accurately plan for the future transportation needs of Madison, it is important to develop the Plan in the context of other related plans and/or studies that influence transportation policy in and around the city. The efforts most relevant to the development of policy within the city are as follows:

- Morgan County Joint Comprehensive Plan
- Morgan County Green Print 2003
- GDOT Statewide Transportation Plan
- East Georgia Multi-County Transportation Plan

1.4.1 Morgan County Joint Comprehensive Plan

In 2002-2004 Morgan County in conjunction with the Cities of Madison, Rutledge, Bostwick and the Town of Buckhead, conducted a joint comprehensive plan as part of their official planning duties per Georgia Department of Community Affairs guidelines. The horizon year for the plan was 2025 and it included a section on transportation issues for the entire county and its municipalities as well as in the Short Term Work Program sections for 2004-2008 and the Short Term Work Program status updates for the then current year of 2003. The plan included a general inventory of transportation facilities including bridges, guardrails, signage, signals, sidewalks, railroads, public transportation, and the airport. The plan also included a discussion of transportation goals including resurfacing projects, paving prioritization lists, and traffic calming in Madison.

There were several projects mentioned in the Short Term Work Program that are relevant to this study. Many of these improvements are a component of the Morgan County Green Print Plan, which is discussed in greater detail in Section 1.4.2. They are:

City of Madison Short Term Work Program Status Report (1999-2003)

- Continue making improvements to the US 441/129 corridor to include lighting, sidewalks, and landscaping
- Make improvements to Wellington Park to include walking trails, parking, and recreational facilities
- Conduct preservation/economic study for parcel land use/building potential alternatives in downtown area and possible funding sources
- Conduct a landscape design study for the downtown

City of Madison Short Term Work Program (2004-2008)

- Work with the county and other municipalities to develop a county-wide transportation plan
- Work with county to formally designate important corridors within and gateways to the county as identified in the Green Print Plan
- Work with the county to develop a county-wide greenway to link important greenspaces in the county
- In conjunction with the county, develop or revise existing ordinances to require direct pedestrian and where appropriate, vehicular access, between new adjacent residential, institutional, office/professional, and commercial developments
- In conjunction with the county, develop or revise existing regulations and ordinances to require when appropriate that all new developments tie into existing adjacent public roadways and be designed to provide access points to all planned public roadways
- In conjunction with the county and other municipalities, develop or revise existing regulations and ordinances to allow for reduced street widths and right-of-ways for streets in new developments when the streets are designed with a distributed network (grid system).
- In conjunction with the county, develop or revise existing regulations and ordinances to limit the number of access points and curb cuts on major thoroughfares, arterials and major collector roads by requiring new developments provide for shared driveways, larger frontages, frontage roads, and other appropriate means in order to maintain efficient traffic flow on the roadways
- In conjunction with the county, develop or revise existing regulations and ordinances to set consistent standards for the width of landscaping and sidewalk setbacks
- In conjunction with the county, develop or revise existing regulations and ordinances to establish appropriate setback requirements for new development along roadways that have a high potential of being widened in the future
- In conjunction with the county, develop or revise existing regulations and ordinances to protect viewsheds along important corridors and gateways to the City as identified in the Green Print Plan
- In conjunction with the county and other municipalities, develop incentives to encourage those who wish to permanently protect view-sheds along scenic roads
- Work to acquire fee simple title or development rights to key gateways into the city as a means of protection for view-sheds
- In conjunction with the county, develop or revise existing regulations and ordinances to establish appropriate setbacks, landscaping, tree-removal and

curb cut requirements for the important corridors and gateways as identified in the Green Print Plan

Morgan County Short Term Work Program Status Report (1999-2003 and ongoing)

- Continue resurfacing roads to maintain quality infrastructure by using traffic counts to determine need for improvements
- Continue repairing and upgrading cross drains, culverts, & bridges

Morgan County Short Term Work Program (2004-2008 ongoing)

- Incorporate bike paths into the County Transportation Plan to aid in tourism, recreation, and transportation
- Continue bridge/culvert improvement and upgrade program to meet modern load requirements
- Develop and implement procedures to ensure that all changes to the county road network are recorded and updated network maps are provided to all affected agencies and GDOT
- Formally designate scenic routes as identified in the Green Print Plan and the Land Use element of the Comprehensive Plan and incorporate into tourism marketing
- Continue to improve roadway signage in Morgan County
- Hire additional road maintenance staff as funding allows
- Develop a county-wide transportation plan
- Formally designate important gateways and scenic roads in the county as identified in the Green Print Plan and develop and adopt standards and guidelines for setbacks, landscaping, tree removal, curb cuts, etc.
- Develop a county-wide greenway to link important greenspaces in the county and provide habitats for native flora and fauna
- Develop or revise existing ordinances to require direct pedestrian, and where appropriate, vehicular access between new adjacent residential, institutional, office, professional, and commercial developments
- Develop or revise existing ordinances to require where appropriate that all new developments tie into existing adjacent public roadways and be designed as to provide access points to all planned public roadways
- Develop or revise existing regulations and ordinances to allow for reduced street widths and right-of-ways for streets in new developments when the streets are designed with a distributed network (grid system)
- Develop or revise existing regulations and ordinances to limit the number of access points and curb cuts on major thoroughfares, arterials and major collector roads by requiring new developments provide for shared driveways, larger frontages, frontage roads, and other appropriate means in order to maintain efficient traffic flow on the roadways
- Develop or revise existing regulations and ordinances to set consistent standards for the width of landscaping and sidewalk setbacks
- Develop or revise existing regulations and ordinances to establish parking design standards and appropriate limits on the number of spaces
- Develop or revise existing regulations and ordinances to establish appropriate setback requirements for new development along roadways that have a high potential of being widened in the future

- Formally designate important gateways and scenic roads in the county as identified in the Green Print Plan
- In conjunction with the other municipalities, develop or revise existing regulations and ordinances to protect viewsheds along important corridors and gateways to the county as identified in the Green Print Plan
- In conjunction with the other municipalities, develop incentives to encourage those who wish to permanently protect view-sheds along scenic roads
- Work to acquire fee simple title or development rights to key gateways into the county as a means of protection for view-sheds
- In conjunction with the other municipalities, develop or revise existing regulations and ordinances to establish appropriate setbacks, landscaping, tree-removal and curb cut requirements for the important corridors and gateways within the county and its cities as identified in the Green Print Plan
- Develop or revise existing regulations and ordinances to allow or require as appropriate new developments to be developed with distributed road networks (grid pattern)

1.4.2 Morgan County Green Print Plan 2003

In 2004, Morgan County adopted the Morgan County Green Print Plan to identify areas in need of environmental preservation. As Morgan County and the municipalities of Madison, Bostwick, Buckhead, and Rutledge were in the process of preparing a major update to the Morgan County Joint Comprehensive Plan, it was decided that the Green Print planning process should be coordinated with the Comprehensive Plan Update process.

The Morgan County Green Print Plan serves as a long-term strategy for the preservation of features that are valuable to Morgan County residents and landowners: the rural landscape, open spaces, agriculture lands, forests, environmentally sensitive resources, historic properties and structures, and a general quality of life. The plan recognizes the inevitability and desirability of growth and economic expansion, seeking to balance allowance for growth with strategies to achieve significant preservation goals.

While not directly related to transportation, public input received from the Green Print planning process did yield recommendations that should be considered during the development of the Plan. They include:

- The establishment of scenic corridors along Monticello Highway (SR 83), Main Street (US 278), Old Dixie Highway and US 441/129;
- Scenic gateways to the City from I-20 along Monticello Highway (SR 83) and Eatonton Highway (US 441/129); and
- A proposed multi-use trail to be located along Little Indian Creek connecting to Mason Lake.

1.4.3 GDOT Statewide Transportation Plan

Initiated in 1994, the Georgia Department of Transportation (GDOT) Office of Planning recently updated its GDOT Statewide Transportation Plan (SWTP). The current SWTP was adopted and approved by the State Transportation Board on January 19, 2006. The

SWTP assesses the current and future performance of all major transportation modes in the state – highways, transit, air, water, bicycle and pedestrian. It also examines the linkages between these different modes. Incorporating all existing regional and modal plans, the SWTP defines financially constrained and unconstrained statewide transportation programs, estimates the cost of these programs, and forecasts available and potential funding through the year 2035.

While the SWTP focuses on transportation issues at a statewide level, specific trends identified within the SWTP could potentially apply to Madison. They include:

- Travel along rural roadways is projected to increase by 1.9 percent annually. All of the roadways in Morgan County and, therefore, the City of Madison are classified as rural roadways.
- Truck travel along state roads is projected to increase at a greater rate than general traffic with a rate of 2.9 percent annually.
- There is an expected \$74 billion shortfall in projected revenues when compared to the costs of needed improvements throughout the State.

In other long range planning efforts at GDOT, the proposed passenger rail system for metro Atlanta would have an end of the line station at Madison. It is projected to serve 800,000 commuters per year in 2030 at a cost of \$173.9 million in capital. However, long range funding sources for this project have not been identified.

From a local perspective, these trends imply a funding shortfall for needed improvements to the State highway system within the City and a significant increase in truck traffic along the City's roadway network – particularly along US 441/129 and SR 83.

1.4.4 East Georgia Multi-County Transportation Study

In August 2006, in cooperation with the Counties of Morgan, Greene, Jasper, and Putnam Counties, GDOT began to develop a transportation plan for these counties to identify future roadway needs through the year 2030. The project will entail developing a travel demand model for the four-county study area based on traffic characteristics, establishing transportation goals for the region, and identifying and prioritizing future roadway needs based on model results in relation to the goals established for the Plan. The end result of the project will be a more detailed model for the four-county region and individual transportation plans for each of the counties within the study area. The project is scheduled for completion in March 2007. As such, the Madison Thoroughfare Plan will be developed in coordination with this effort to ensure its development is consistent with the overall needs of the region.

1.5 Data Sources

The following sources were utilized in compiling the data utilized for this report.

Table 1.1 – Baseline Conditions Data Sources

Thoroughfare	Existing Classification
Roadway Functional Classifications	GDOT
Roadway Number of Lanes	GDOT*
Signalized Intersections	City of Madison*
Bridge Inventory	GDOT, National Bridge Inventory
Traffic Volumes	GDOT
Accident Data, 2003-2005	GDOT
Future Roadway Improvements	GDOT Morgan Joint Comprehensive Plan
Sidewalk Inventory	City of Madison
Transit	Morgan County Transit Web Site
Existing Land Uses Map	City of Madison
Future Land Uses Map	City of Madison
Traffic Calming Locations	City of Madison
Parking Inventory	Field Surveys
Environmental Constraints	City of Madison Morgan County

* Verified through field surveys

2.0 Roadway Characteristics

Roadway characteristics typically refer to the major attributes of roadways that determine how that facility functions within the context of the entire road network. These attributes include items such as:

- facility definitions or functional classifications, which describe the purposes for which roadways are designated;
- major infrastructure elements such as bridges, which can limit design alternatives;
- traffic volumes, which serve as a good indication of how often the roads are actually being used

Other aspects such as accident data, connectivity analysis, and planned improvements further describe the relationship between existing utilization and future modifications to the system that will occur or will be needed in the future.



2.1 Roadway Network Profile

The roadway network profile is the starting point for an inventory and analysis of roadway characteristics. The profile includes functional classifications, number of lanes, and signalized intersection locations.

2.1.1 Functional Classifications

Functional classification is the process by which streets and highways are grouped into classes, according to the character of service that they are intended to provide.

GDOT, with cooperation from responsible local officials, has the primary responsibility for developing and updating a statewide highway functional classification in rural and urban areas to determine functional usage of the existing roads and streets. Because Morgan County is defined as a rural area, all of the roadways within the County and, therefore, the City of Madison are classified as rural roadways. The functional classifications of the roadways within the City of Madison are presented in **Table 2.1** and shown graphically in **Figure 1.1**.

Table 2.1 – Roadway Functional Classification

Thoroughfare	Existing Classification
I-20	Interstate Highway
Main Street (US 278)	Principal Arterial
Eatonton Highway/Road (US 441/129)	Principal Arterial
US 441/129 Bypass	Principal Arterial
Ward Rd (SR 24 Spur)	Minor Arterial
Atlanta Highway (US 278)	Minor Arterial
Monticello Highway (SR 83)	Minor Arterial
Bostwick Road / Wellington Street / West Washington Street (SR 83)	Major Collector
Dixie Highway / Dixie Avenue	Major Collector
East Washington Street / Bethany Road	Minor Collector
Pierce Dairy Road	Minor Collector
All Other Roads	Local Road

Source: Georgia Department of Transportation

Pursuant to the Federal Highway Administration, the following characteristics define the functional classification of the roadways within the City of Madison:

Interstate Highway (I-20)

- All routes designated on the Federal Interstate System typically provide travel for interstate and intercounty travel.

Principal Arterials (Main Street, Eatonton Highway, US 441/129 Bypass)

- Have trip length and travel density characteristics indicative of substantial statewide or interstate travel.
- Serve a large majority of the population within a specific area.
- Provide an integrated network with continual connections.



Minor Arterials (Atlanta Highway, Monticello Highway, and Ward Street)

- Link cities and larger towns and form an integrated network providing interstate and intercounty service.
- Are spaced at such intervals so that all developed areas are within a reasonable distance of an arterial highway.
- Provide service to corridors with trip lengths and travel density greater than those predominantly served by rural collector or local systems. Minor arterials therefore constitute routes whose design should be expected to provide for relatively high overall travel speeds for through movements.



Major Collectors (Bostwick Road/ Wellington Street/West Washington Street, Dixie Avenue/Dixie Highway)

- Provide links to nearby larger towns or cities, or with routes of higher classification; and
- Serve the more important regional and local travel corridors.



Minor Collectors (East Washington Street/Bethany Road, Pierce Dairy Road)

- Are spaced at intervals, consistent with population density, to collect traffic from local roads and bring all developed areas within a reasonable distance of a collector road
- Provide service to the remaining smaller communities; and
- Link the locally important traffic generators with their rural areas.

Local Roads (All Remaining Roads)

- Serve primarily to provide access to adjacent land; and
- Provide service to travel over relatively short distances as compared to collectors or other higher systems.

2.1.2 Number of Lanes

The number of lanes reflects the capacity of a given roadway and is, therefore, an important characteristic in determining potential operational deficiencies given the level of traffic being carried by a specific roadway.

Nearly all of the roadways within the City of Madison are two lane roadways. I-20, which traverses the southernmost portion of the City, is a four-lane fully controlled access interstate facility. Other exceptions are Eatonton Highway (US 441/129), the US 441/129 Bypass, and a small segment of Athens Highway (US 441/129) just past the intersection with Greensboro Highway (US 278). These segments are typically serviced with four lane lanes and a continuous ‘suicide’ turn lane in the center of the roadway, with additional turn lanes at various intersection approaches.

2.1.3 Signalized Intersections

Identifying signalized locations generally identifies intersections with higher traffic volumes and/or the need to reduce potential conflicts along certain roadways. A list of signalized intersections within the City of Madison is provided below.

- Main Street (US 278) and Washington Street
- Main Street (US 278) and Jefferson Street
- US 441/129 Bypass/Athens Highway and Greensboro Highway (US 278)
- US 441/129 Bypass and East Avenue/Buckhead Road
- US 441/129 Bypass / Lions Club Road and Eatonton Highway (US 441/129)
- US 441/129 and I-20 (Both EB and WB)

City officials have also been notified that a signal may be placed at Eatonton Highway (US 441/129) and Pierce Dairy Road in the near future.

2.2 Bridges

While not significant features in the overall context of the transportation network, the location of bridges warrants consideration when contemplating potential improvements to the City’s transportation network. According to the National Bridge Inventory, there are seven bridges located within the City limits of Madison. These bridges are as follows:

Table 2.2 – Bridge Inventory

Roadway	Intersecting Feature
I-20	Little Indian Creek
I-20	SR 83 (Monticello Highway)
I-20	Norfolk Southern RR
I-20	US 129/441(Eatonton Highway)
US 129/441 Bypass	Horse Creek
SR 83 (Bostwick Highway)	CSX and Norfolk Southern RR
Oil Mill Road	Norfolk Southern RR

Source: GDOT, National Bridge Inventory, 2003

As shown in **Table 2.2**, most of the bridges within the City are along I-20. The remainder of bridges includes two railroad crossings and one stream crossing. These bridges are shown in **Figure 1.1**.

2.3 Traffic Volumes

2.3.1 Segment Volumes

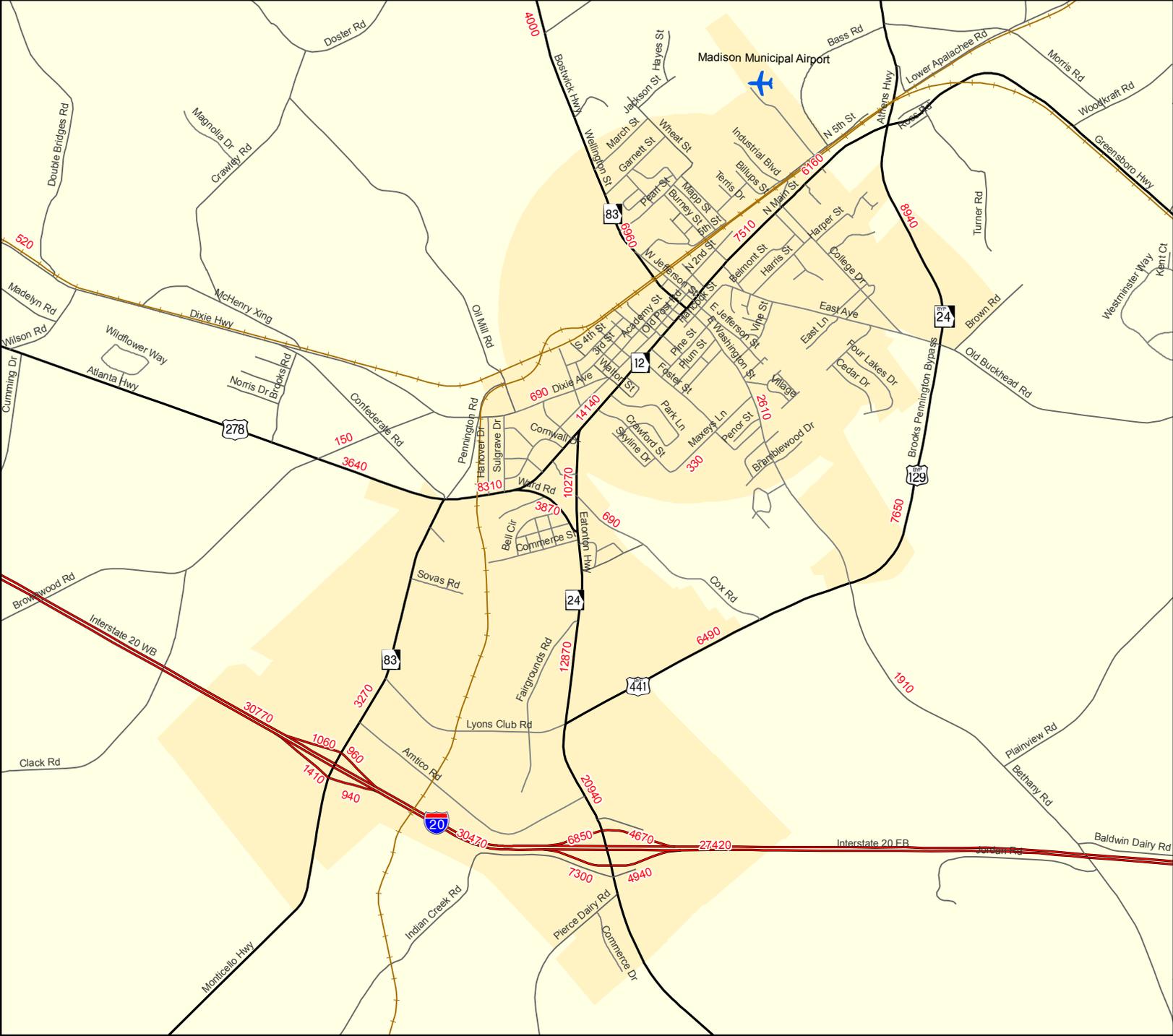
GDOT has maintained approximately 18 traffic count locations within the Madison city limits from 2000 to 2005. The traffic counts locations and values in the latest 2005 survey are shown in **Figure 2.1**. All of the count totals from 2000 to 2005 are provided in **Table 2.3**.

Table 2.3 – GDOT Traffic Counts – 2000-2005

Route Name	Traffic Count Location	AADT					
		2005	2004	2003	2002	2001	2000
US 278/Main Street	114	3,640	4,521	4,196	4,114	4,002	3,620
	116	8,310	7,914	8,385	8,207	8,283	6,760
	118	14,140	14,780	16,084	13,989	15,500	13,147
	121	14,090	16,638	14,985	17,367	14,418	13,088
	123	7,510	8,498	9,300	8,858	7,418	7,529
	125	6,160	7,211	7,459	7,705	8,036	7,800
	127	5,800	6,304	6,754	6,836	6,806	6,120
US 441/129 Intown	141	20,940	20,801	18,988	20,171	20,120	16,640
	142*	12,870*	11,693	11,509	10,887	12,894	13,500
	143	10,270	10,787	10,503	9,471	9,400	9,104
US 441/129 Bypass	318	6,490	9,525	8,795	8,832	8,400	8,089
	321	7,650	8,623	7,825	8,410	7,784	7,140
	323	8,940	6,890	7,544	6,929	6,446	6,171
Washington Street	278	2,610	3,038	2,787	2,894	2,114	2,548
	165	6,960	8,705	8,098	8,341	6,249	6,120
Monticello Highway (SR 83)	163	3,270	3,609	3,627	3,465	3,136	2,983
Ward Road	154	3,870	4,478	4,161	4,161	3,804	3,686
Maxey Lane	8019	330	N/A	375	368	329	N/A
Sulgrave Drive	8021	N/A	N/A	536	535	N/A	N/A
Dixie Ave	243	690	1,063	968	1,010	850	925
Cox Rd	8007	690	N/A	387	373	N/A	331
I-20	201	30,470	31,360	28,226	29,003	29,910	29,614

* Truck percentage at this traffic count location for the year 2005 is 8.9%
Source: GDOT, 2000-2005

**Figure 2.1:
2005 Daily Traffic Counts**



- XXX 2005 Traffic Counts
- Road
- Major Road
- Interstate
- Rail Line
- ✈ Airport
- City of Madison Limits
- Morgan County

Source: GDOT count data



As shown in **Table 2.3**, the most heavily traveled roadway in the City of Madison is I-20, with an annual average daily traffic (AADT) of approximately 30,000. However, most of the traffic on I-20 is comprised of through trips that do not impact the City's surface street network. Of the City's local network, the portion of Eatonton Highway (US 441/129) between US 441/129 Bypass and I-20 carries the highest amount of traffic volumes with roughly 20,000 AADT. Main Street (US 278) also carries significant volumes through downtown with an AADT of approximately 14,000.

As **Table 2.3** reflects, volumes throughout the entire traffic network have been fairly consistent and have deviated very little from 2000 to 2005. In 2006-2007 the consultant team and the City of Madison Police Department performed additional counts in order to better capture truck percentages on the major corridors. As noted before, Eatonton Hwy has 8.9% of trucks near its intersection with the US 441 Bypass. SR 83, Monticello Hwy, between Lion's Club Road and Amtico Road had even higher truck percentages at 9.2%. SR 83 north of downtown showed truck percentages of 6.2% and North Main Street had 6.0% truck volumes. Oddly, South Main Street at Central Avenue only has 3.7% truck volumes, indicating significant numbers of trucks are dispersing onto North main and East Washington. The bypass itself has the highest truck percentages with 14.9% in the southbound direction and 15.4% in the northbound direction, indicating its effectiveness in routing freight traffic around the downtown.

2.4 System Performance

The concept of levels of service uses qualitative measures that characterize operational conditions within a traffic stream and perception of these conditions by motorists and passengers. The description of individual levels of service characterize these conditions in terms of factors such as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

Level of service (LOS) is a letter designation used to describe traffic operating conditions, on a declining scale from A to F. LOS A represents free-flow traffic conditions and LOS F represents extreme delays with stopped traffic conditions. Service flow at LOS E is the value that corresponds to the maximum flow rate, or capacity, on the facility. For most design and planning purposes, service flow rates of LOS D or C are generally considered as acceptable levels of service, as they ensure a more acceptable quality of service to facility users.

2.4.1 Roadway Link Level of Service

GDOT does not currently have standards to examine link volume level of service. Therefore, in order to examine the functionality of the City's roadway network, standards developed by the Florida Department of Transportation (FDOT) were used.

For the segment LOS analysis, HIGHPLAN software developed by University of Florida is used. This software analyzes multilane and two-lane highway level of service analysis based on 2000 Highway Capacity Manual. For this analysis, area type for City of Madison is assumed as, "Rural developed area with less than 5000 population". Default values were used for K factor, D factor, and Peak Hour Factor (PHF). An eight percent (8%) share of heavy vehicles was assumed used in the analysis. **Table 2.4** shows the

segments, AADT volumes, number of lanes, and the LOS derived through this methodology.

As shown in **Table 2.4**, the overall performance of the City's roadway network is relatively good. The poorest functioning roadway is Main Street (US 278), which operates at LOS D through the downtown area of the City. Eatonton Road (US 441/129) is also operating at LOS C between Main Street (US 278) and the US 441/129 Bypass. Through interviews with City officials, the City has indicated a desire to have all of its roadways function at LOS C or better.

Table 2.4 – Roadway Link Level of Service

Route Name	From	To	Traffic Count Locations	AADT (2005)	No. of Lanes	LOS
Main Street (US 278)	Brownwood Road	Confederate Road	114	3,640	2	B
	Confederate Road	Ward Road	116	8,310	2	C
	Crawford Street	US 441	118	14,140	2	D
	First Street	Reese Street	121	14,090	2	D
	Billups Road	Park Street	123	7,510	2	C
	Bowman Street	Allen Street	125	6,160	2	C
	US 441/129 Bypass	Bowman Street	127	5,800	2	C
Eatonton Road (US 441/129)	Industrial Boulevard	I-20	141	20,940	4	B
	Lions Club Road	Fairgrounds Road	142*	12,870*	2	C
	Cox Road	Main Street (US 278)	143	10,270	2	C
US 441/129 Bypass	Cox Road	North Main Street (US 441/129)	318	6,490	4	A
	East Avenue	E Washington Street	321	7,650	4	A
	US 278 (Main Street)	East Avenue	323	8,940	4	A
Washington Street	Vine Street	US 441/129 Bypass	278	2,610	2	B
	Garnett Street	Pearl Street	165	6,960	2	C
Monticello Road (SR 83)	Industrial Road	Lions Club Road	163	3,270	2	B
Ward Road	Bell Street	Lakeview Street	154	3,870	2	B
Maxey Lane	Crawford Street	Cook Hill Street	8019	330	2	B
Dixie Ave	Walker Street	Oil Mill Road	243	690	2	B
Cox Rd	US 441/129 Bypass	Carmichael Road	8007	690	2	B
I-20	Monticello Road (SR 83)	Eatonton Road (US 441/129)	201	30,470	4	B

Source: GDOT Traffic Counts, 2005; FDOT Level of Service Handbook, 2002

2.4.2 Intersection Level of Service

While roadway link volume LOS is a good indicator on the overall functionality of a roadway, intersection LOS is a better indicator of specific 'hot-spots' or intersections that contribute to this overall functionality. Therefore, in order to supplement the traffic count data from GDOT, intersection turn movement counts were taken at various locations throughout the City. The capacity analysis for this study was conducted using the turning movement data collected at the following intersections during September 2006:

- Main Street (US 278) and US 441 Bypass
- Main Street (US 278) and Washington Street
- Main Street (US 278) and Jefferson Street
- US 441/129 Bypass and Bethany Road
- US 441/129 Bypass and Buckhead Road
- Main Street (US 278) and Eatonton Road (US 441/129)

- Eatonton Road (US 441/129) and Ward Street (SR 24 Spur)
- Atlanta Highway (US 278) and Ward Street (SR 24 Spur)
- Atlanta Highway (US 278) and Monticello Highway (SR 83)
- US 441/129 Bypass and Eatonton Highway (US 441/129)
- Lions Club Road and Monticello Highway (SR 83)

The Highway Capacity Manual (2000) and AASHTO-Geometric Design of Highways and Streets ("Green Book") list the following levels of service:

- A = Free flow – best operating conditions; users unaffected by the presence of other vehicles.
- B = Reasonably free flow – some influence by other vehicles.
- C = Stable flow – constrained but constant flow below speed limits; additional attention required by drivers to maintain safe operations.
- D = Approaching unstable flow – high passing demand, limited passing capacity; an acceptable condition for arterial and collector roadways in urban areas.
- E = Unstable flow near capacity – can quickly change to LOS = F because of disturbances in the traffic flow.
- F = Forced or breakdown flow – worst conditions with heavily congested flow; traffic demand exceeding capacity; poor travel time; low comfort and convenience.

To evaluate the operating conditions of the study area intersections, a commonly-used software application called SYNCHRO was used. SYNCHRO has the ability to analyze signalized and unsignalized intersections as well as produce an animated simulation of their operational characteristics. The analytical methodologies used by the software reflect those in the Highway Capacity Manual, 2000 Update. **Table 2.5** below indicates the relationship between intersection delay and level of service for unsignalized and signalized intersections, respectively. The results of this analysis are shown below in **Table 2.6** for the AM and PM peak hours respectively.

Table 2.5 - Intersection Level-of-Service Criteria

Level of Service	Unsignalized Intersections	Signalized Intersections
	Control Delay (seconds/vehicle)	Control Delay (seconds/vehicle)
A	0-10	0-10
B	>10-15	>10-20
C	>15-25	>20-35
D	>25-35	>35-55
E	>35-50	>55-80
F	>50	>80

Table 2.6 - Summary of Existing Intersection Capacity Analysis

Intersection	Type	2005 Existing	
		AM Peak	PM Peak
N. Main Street (US 278) and US 441 Bypass	Signalized	19.1 (B)	20.5 (C)
Main Street (US 278) and Washington Street	Signalized	14.5 (B)	14.3 (B)
Main Street (US 278) and Jefferson Street	Signalized	11.3 (B)	8.4 (A)
US 441/129 Bypass and Bethany Road	Unsignalized*	8.8 (A)	9.3 (A)
US 441/129 Bypass and East Avenue	Signalized	14.5 (B)	15.1 (B)
Main Street (US 278) and Eatonton Road (US 441/129)	Unsignalized*	51.6 (F)	155.5 (F)
Eatonton Road (US 441/129) and Ward Road (SR 24 Spur)	Unsignalized*	15.9 (C)	22.1 (C)
Atlanta Highway (US 278) and Ward Road (SR 24 Spur)	Unsignalized*	10.2 (B)	18.1 (C)
Atlanta Highway (US 278) and Monticello Road (SR 83)	Unsignalized*	26.9 (D)	17.1 (C)
US 441/129 Bypass and Eatonton Road (US 441/129)	Signalized	17.0 (B)	18.8 (B)
Lions Club Road and Monticello Road (SR 83)	Unsignalized*	11.6 (B)	13.7 (B)

Note*: Results for unsignalized intersections are reported in terms of side street LOS.

As shown in **Table 2.6**, all intersections are operating at good and satisfactory levels of service for both AM and PM peak hour traffic conditions with the exception of the unsignalized intersection at Main Street (US 278) and Eatonton Road (US 441/129). The stopped controlled approach at this intersection has a failing LOS F for both AM and PM peak conditions. This is primarily due to delay resulting from traffic from Atlanta Highway (US 278), which has to wait to find gaps in the traffic through movement as Eatonton Road merges with Main Street.

2.5 Accident Information

2.5.1 High Accident Locations

High accident locations represent intersections that are potentially in need of operational improvements to improve safety along the City's network. Information regarding accident locations along roadways on the state roadway network was provided by GDOT for the years 2003-2005. These accidents are shown graphically on **Figure 2.2** and presented in **Table 2.7**.

Table 2.7 – Accident Locations along State Roadways – 2003-2005

Route	Intersecting Route	# of Accidents
Atlanta Highway (US 278)	Monticello Highway SR 83)	11
Main Street (US 278)	Eatonton Road (US 441/129)	11
Main Street (US 278)	Washington Street (SR 83)	8
Main Street (US 278)	Burnett Street	8
Main Street (US 278)	Walker Court	6
Main Street (US 278)	Jefferson Street	5
Main Street (US 278)	Walker Circle	4
Main Street (US 278)	Crawford Street	4
Main Street (US 278)	US 441/129 Bypass	4
Main Street (US 278)	Central Avenue	3
Main Street (US 278)	Park Street	3
Main Street (US 278)	College Drive	2
Main Street (US 278)	Jones Alley	2
Main Street (US 278)	Park Lane	2
Atlanta Highway (US 278)	Ward Street (SR 24 Spur)	1
Eatonton Highway (US 441/129)	US 441/129 Bypass	20
Eatonton Highway (US 441/129)	Pierce Dairy Road	6
Eatonton Highway (US 441/129)	Indian Creek Road	5
Eatonton Road (US 441/129)	Ward Street (SR 24 Spur)	2
Eatonton Road (US 441/129)	Fairgrounds Road	2
Washington Street (SR 83)	Second Street	4
Wellington Street (SR 83)	Pearl Street	3
Washington Street (SR 83)	First Street	3
Monticello Highway SR 83)	Lions Club Road	1

Source: GDOT Accident Data, 2003-2005

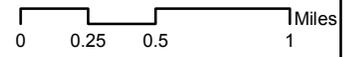
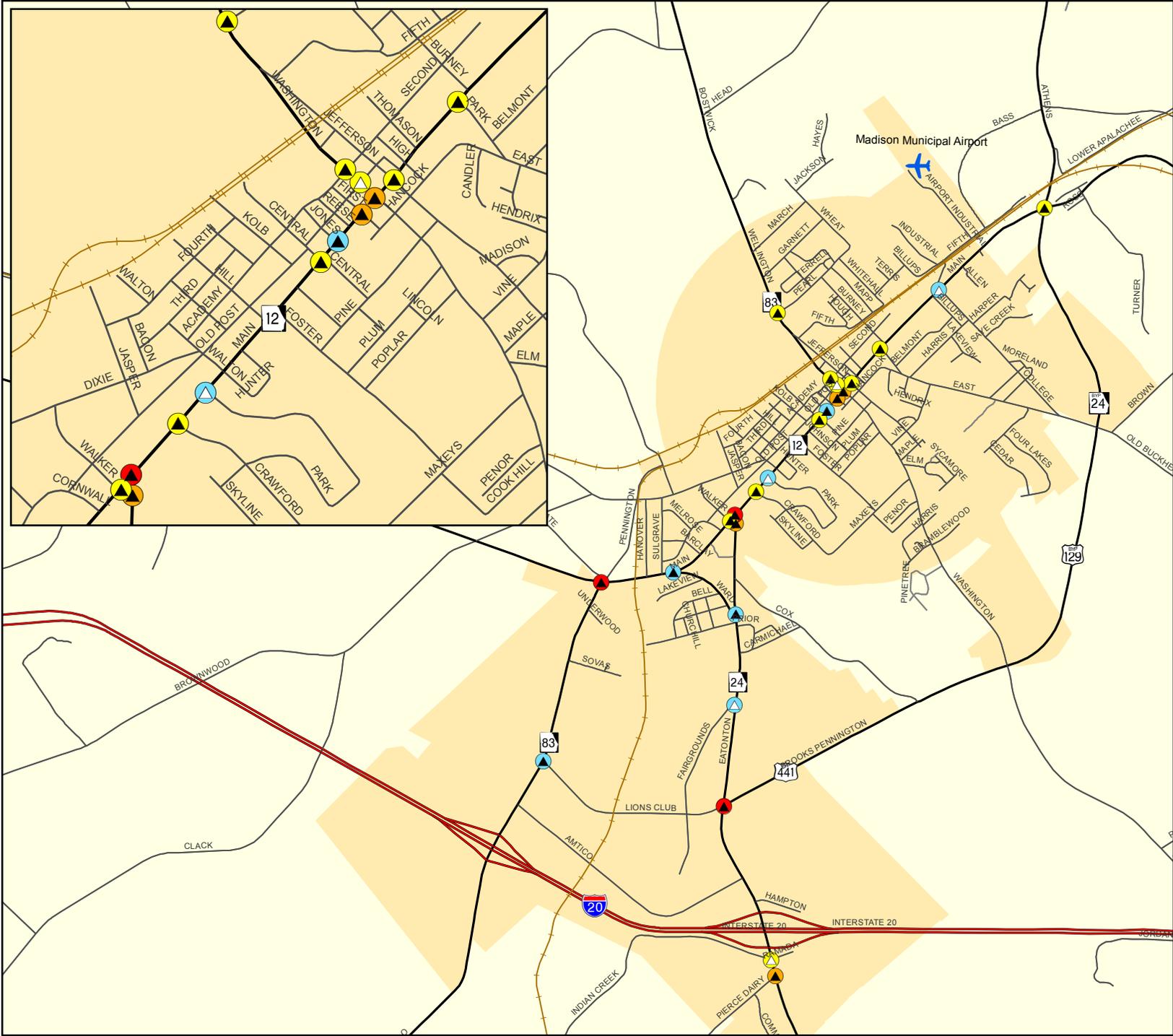


S. Main Street @ Eatonton Road "The Triangle"



Eatonton Rd (US441/129) @ US 441/129 Bypass

**Figure 2.2:
High Accident Locations
(2003-2005)**



As shown in **Table 2.7**, the highest number of accidents within the city occurs along Main Street (US 278) between Eatonton Road (US 441/129) and Washington Street (SR 83). This section of Main Street is a 2-lane roadway that generally lacks turn lanes and other intersection safety features. However, the location with the highest number of accidents over this time frame was outside of this area at the intersection of US 441/129 Bypass and Eatonton Highway (US 441/129), which had a total of 20 accidents during this period. Other intersections with high numbers of accidents include Main Street and Eatonton Road, and Atlanta Highway and Monticello Highway.

2.5.2 Accident Rates

As a function of human error, it is reasonable to assume that accidents will occur to some degree along the city’s state roadway network. In order to gauge the safety of the city’s network, the accident rates for city roads were compared to statewide averages on the basis of facility type. Accident information by facility type was provided by GDOT for the years 2003 and 2004 (tabulations for 2005 were not available at the time of the initial draft of this report and neither were City of Madison Fire Department records of automobile accident calls). The results of this comparison are shown in **Table 2.8**.

Table 2.8 – Accident Comparison to Statewide Average (2003-2004)

Route	Average Annual Accidents	Avg. Accident Rate (per 100 million vehicle-miles)		Average Annual Injuries	Avg. Injury Rate (per 100 million vehicle-miles (MVM))	
		Road Segment	Statewide Average		Road Segment	Statewide Average
SR 83 N*	14	165	211	10	120	110
SR 83 S*	3	51	228	3	50	124
US 441/129*	59	368	160	27	173	93
US 441/129 Bypass	12	106	157	7	63	93
US 278	55	541	156	20	200	90

* - Notes:

SR 83 N = Washington Street and Wellington Street north of Main Street (US 278) to City limits

SR 83 S = Monticello Highway from Atlanta Highway (US 278) to City limits south of I-20

US 441/129 = Eatonton Road/Eatonton Highway from Main Street (US 278) to City limits south of I-20

As shown in **Table 2.8**, the roadway with the highest number of accidents, Main Street (US 278), is well above the state average for roadways of similar functional classifications throughout the state. Eatonton Road and Eatonton Highway (US 441/129) also had an accident rate twice as high as the statewide average. Conversely, accident rates for Monticello Highway (SR 83 S), Washington Street/Wellington Street (SR 83 N), and the US 441/129 Bypass were lower than the statewide averages for similar facility types. Additional City of Madison Fire Department records are included in the appendix.

2.6 Future Roadway Improvements

There were three transportation improvement projects identified in the GDOT Statewide Transportation Improvement Plan (STIP) for the 2003-2008 planning period and the Joint Comprehensive Plan that would impact on the City of Madison. They are:

- Widening: SR 24/US 441 from the Putnam CL to north of Pierce Dairy Road/CR 121 (STIP)
- Widening: SR 24 / US 441 from Madison Bypass to just north of Apalachee River/Oconee (STIP)
- The SR 83 Bypass for Madison, the Morgan County Board of Commissioners intends to construct a bypass around Madison for SR 83 to eliminate the truck traffic which currently adversely impacts the City of Madison. (Joint Plan page 167)

All of the projects listed above would serve needs that are more regional in nature. However, the SR 83 project has the potential to divert large traffic flows, particularly truck traffic, away from the historic district in downtown Madison.

2.7 Connectivity

Street connectivity is a measure that is critical to analyzing the possibility of re-routing traffic to relieve pressures on severely overburdened facilities. In its most basic form, street connectivity is a measure of the number of parallel facilities in an area that allow for multiple routing options. To determine street connectivity within the city, an inventory of streets with more than one end point was taken.

Overall, Madison has good connectivity in specific sectors of the city, notably the central sector within a half-mile radius of the city's downtown square. However, the peripheral areas, particularly to the north beyond the railroad tracks, have severe limitations in this regard. Furthermore, the newly developed residential areas in the east and south offer virtually no through routes due to their cul-de-sac network pattern. As a proportion of the street network, roughly 20% of the streets in Madison do not offer connectivity, which contributes to through traffic being funneled onto the city's main thoroughfares.

2.8 Traffic Calming



An unfortunate result of the well connected roadway network present in the city is an abundance of through traffic, often traveling at higher rates of speed than localized traffic, on the city's local roads that mainly function to serve their immediate neighborhoods. In response, a number of traffic calming devices have been installed throughout the city over the past few years to increase neighborhood safety. The locations of the traffic calming devices are given in **Table 2.9**. As shown, the locations of these facilities are fairly evenly distributed in all the city's residential areas. The most common technique employed by the city has been the speed table, which are long raised speed humps with a flat section in the middle and ramps on the ends. In addition, two traffic circles have also been deployed in a demonstration project on Harris Street between East Avenue and Lakeview Street. Traffic circles, often called roundabouts, are large barriers placed in the middle of an intersection that direct all traffic in the same direction. Furthermore, three speed tables are being installed on East Washington Street. A map depicting the locations of the traffic calming devices throughout the city is provided in **Figure 2.3**. Some typical traffic calming devices that are considered acceptable in the City of Madison are depicted below.



Table 2.9 – Traffic Calming Device Locations

Street Name	Type of Device	Location
Harris Street	Traffic Circles	Between East Avenue and Lakeview Street
Harris Street	Speed Table	Intersection of Lakeview Street
MLK Drive	Speed Table	Between Whitehall Street and Billups Road
Commerce Street	Speed Table	Between Churchill Avenue and Bell Circle
Commerce Street	Speed Table	Between Highland Avenue and Hodges Avenue
Maple Street	Speed Table	Near intersection with Jefferson Street
Crawford Street	Speed Table	Near Skyline Drive
Crawford Street	Speed Table	Near William Street
Dixie Avenue	Speed Table	Between Bacon Street and Jasper Street
Dixie Avenue	Speed Table	Between Walker Court and Oil Mill Road
College Drive	Speed Table	Before Harris Street
College Drive	Speed Table	At Colleges Avenue Intersection
College Drive	Speed Table	At East Avenue Intersection
Pearl Street	Speed Table	Before Elize Morris Street
Pearl Street	Speed Table	Between Burney Street and Mapp Street

2.9 Parking

Parking issues within Madison are limited primarily to the downtown area of the city. Parking in the downtown commercial area is a combination of on-street parking (angular, parallel, and perpendicular) and off-street parking (private and public lots) to the sides and rears of commercial and institutional land uses.

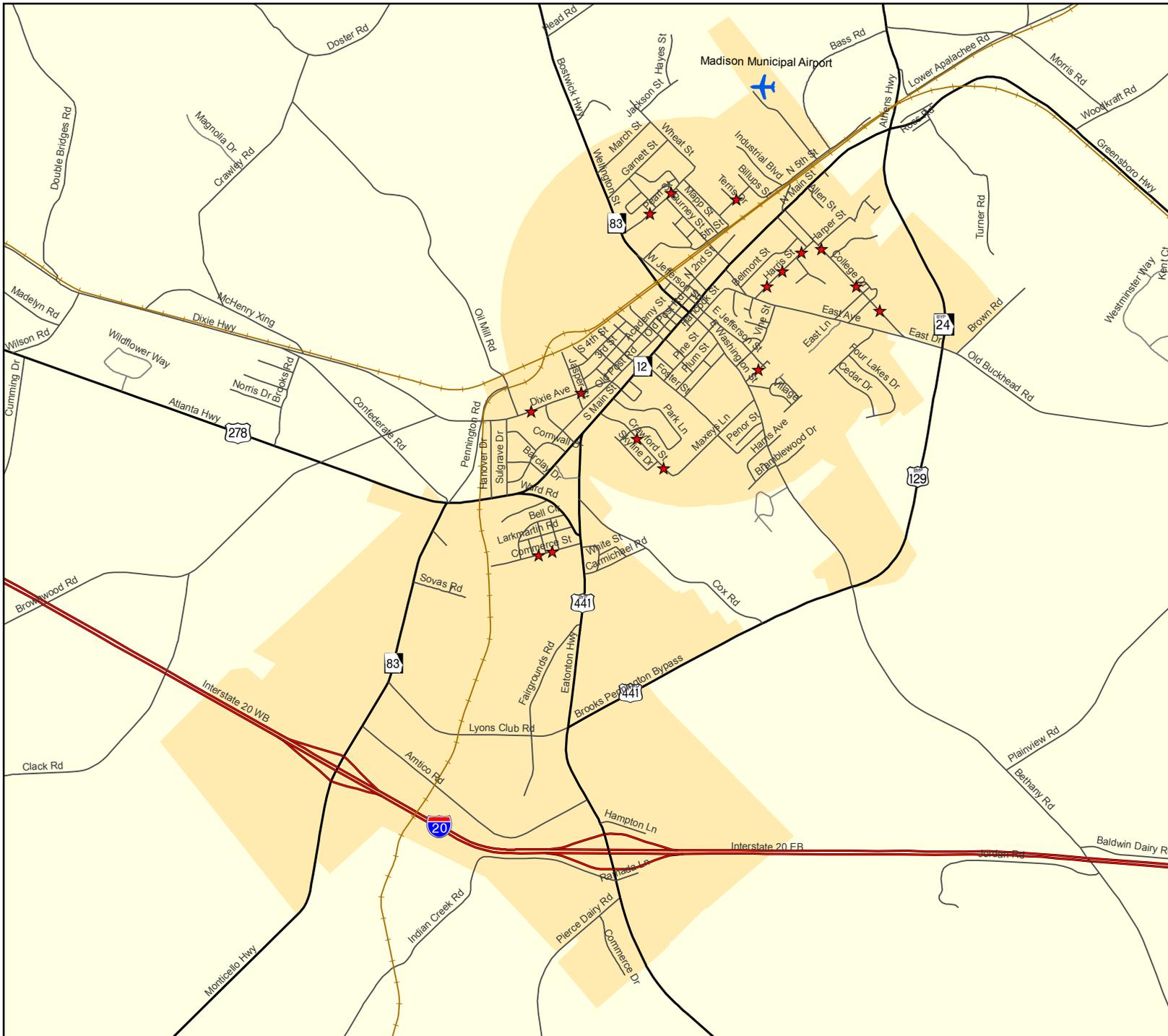


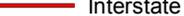
Outside of the downtown area, parking is plentiful. Commercial establishments along the Eatonton Road/US 441/129 corridor and areas of similar use are typically served by large parking lots for their developments. Industrial enterprises along the Monticello Road/SR 83 corridor and areas of similar use are generally served by modest parking lots in front of the development and expanses of pavement to the side or rear for parking/loading/unloading of heavy trucks. Two rows of parking screened by vegetated berms in front of an industry is the predominant development pattern. Residential areas are almost all endowed with ample off-street parking. Institutional parking within residential areas is currently limited, pocketed, and partially screened.

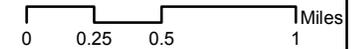
In the downtown area, the recent Downtown Parking Study inventoried a total of 863 spaces in the immediate downtown area (essentially Hancock Street to the CSX/NS Railroad tracks bounded by Burnett and High streets). Of the total, 36% are provided by private enterprise and 64% are subsidized by government. The City of Madison

provides nearly 400 spaces alone. A breakdown of public parking reveals the provision of spaces for customers/clients (short-term parking users) and the provision of spaces for employers/employees (long-term parking users) to be essentially equal – 251 on-street and 247 off-street spaces respectively. The majority of on-street parking is timed, and all public lots are free to the public at this time. All private parking is located in lots, of which two are reserved pay-lots.

**Figure 2.3:
Traffic Calming Locations**



-  Traffic Calming Location
-  Road
-  Major Road
-  Interstate
-  Rail Line
-  Airport
-  City of Madison Limits
-  Morgan County



3.0 Alternative Modes

3.1 *Bicycle and Pedestrian Facilities*

There is only one recently constructed multi-use trail in the City of Madison. It is located between the cemetery and the new commercial district development along Wellington Street. Therefore, bicycle facilities are almost exclusively limited to roadways and pedestrian facilities are limited to mostly sidewalks. A map of existing bicycle and pedestrian facilities is provided in **Figure 3.1**.

Of the roadways in the city, the only designated bicycle routes are US 441/129 (Eatonton Highway), the SR 24 Spur (Ward Street), and US 278 west of the SR 24 Spur (Atlanta Highway). However, most of the local roads within the city are also suitable for bicycle travel.



Sidewalks are generally found along the more established neighborhoods near the city's downtown. The primary pedestrian way in the city is Main Street (US 278), which has sidewalks on both sides of the roadway from Walker Court to the intersection with the US 441/129 Bypass. The city's downtown can also be characterized as a pedestrian-friendly environment. The historic district is the most well endowed section of the city in terms of sidewalks. In addition, significant areas to the north and east of the district also have the beginnings of a complete network.



3.2 *Transit Services*

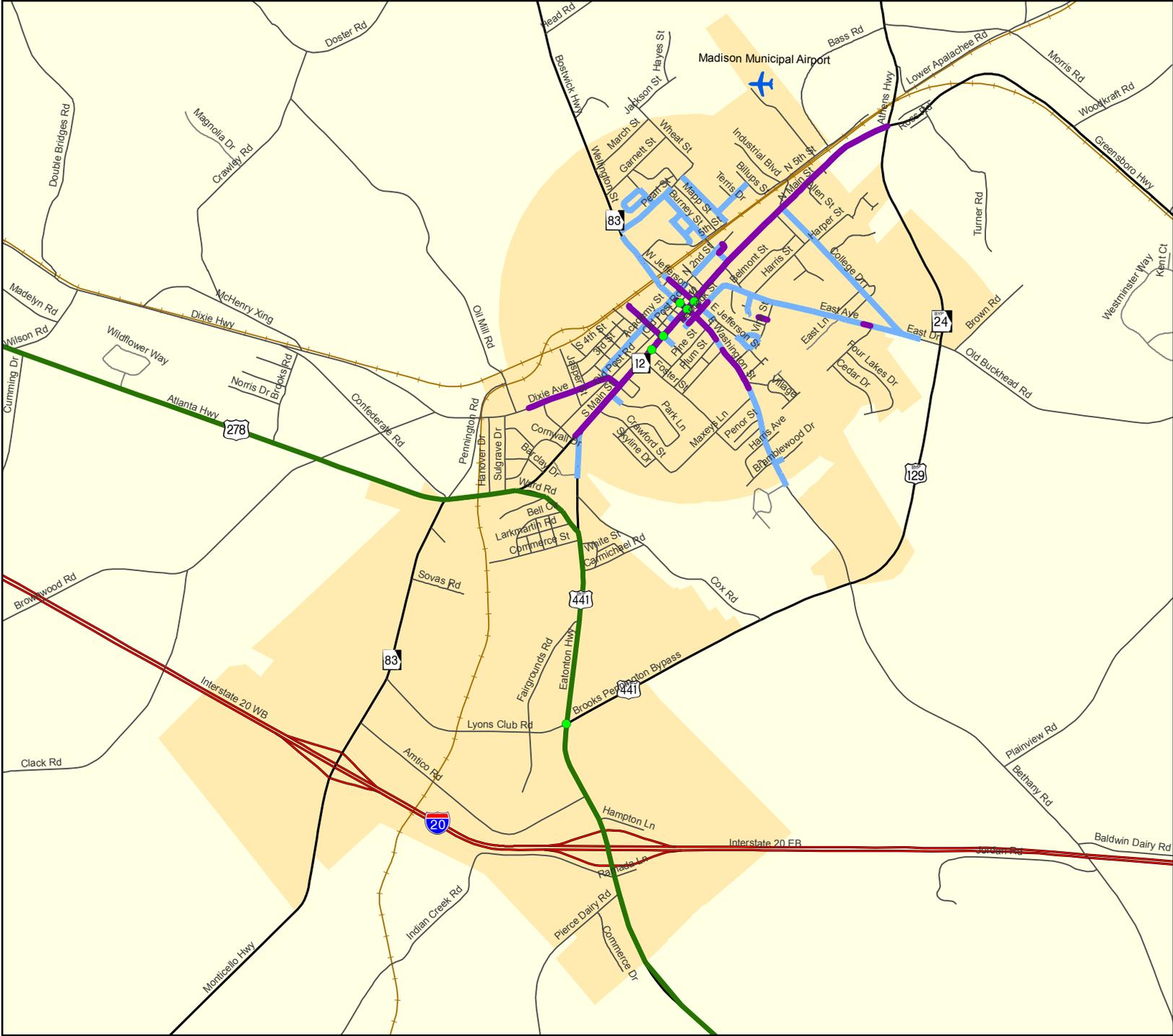
As would be expected in a community of its size, transit service in Madison is limited to on-demand services that are typical to non-urbanized areas. Public transportation is provided by the Morgan County Transit System with vans that can be reserved by

anyone in the county over eighteen years of age for cost of \$1.25 for trips within the city limits and \$1.50 for trips outside the city limits. The purpose of this service is to enable citizens in Morgan County who do not have transportation access to the grocery store, place of employment, doctor visits, etc. Funding for the system is provided through the Rural Public Transportation Program, or 5311 Program, which is administered via a contract with the Northeast Georgia Regional Development Center (NEGRDC).



Pursuant to the Joint Comprehensive Plan, Morgan County has identified a need to provide better transportation options for school-aged individuals to and from recreational facilities and other programs. However, these services will not be provided under the 5311 Program, and their provision is based upon the availability of funding.

**Figure 3.1:
Bicycle and Pedestrian
Network**



- Crosswalk
- Bike Route
- Sidewalk on One Side
- Sidewalk on Both Sides
- Road
- Major Road
- Interstate
- Rail Line
- ✈ Airport
- City of Madison Limits
- Morgan County



4.0 Transportation and Land Use

Transportation and land use are closely related components of any corridor level planning effort. Although this study focuses on the transportation characteristics of the City of Madison, land use patterns have a direct impact on traffic generation along the city's thoroughfares and, thus, the overall performance of the roadway network in meeting the city's travel demand needs.

4.1 Existing Land Use

The distribution of existing land uses within the City of Madison is provided in **Table 4.1** and shown in **Figure 4.1**. As shown, a significant amount of the city's acreage is used for agricultural and/or low density residential purposes. In conjunction, these land uses, which generally produce lower travel demand than other land use types, account for approximately 58 percent of the developed acreage within the city. Most of the single-family uses are located in the sections of the city near downtown while agricultural uses are located on the periphery of the city limits.

Table 4.1 – Existing Land Use Distribution

Existing Land Use		Acres	% in City
Single Family Residential	SFR	1,159.54	20.64
Multi-Family Residential	MFR	70.43	1.25
Commercial	COM	368.15	6.55
Office Professional	OP	0.97	0.02
Industrial	IND	366.53	6.52
Public/Institutional	PI	393.16	7.00
Park/Recreation/Conservation	PRC	32.32	0.58
Right-of-Way	ROW	534.36	9.51
Transportation/Communication/Utilities	TCU	100.85	1.80
Agricultural	AG	1,474.33	26.26
Forest	FOR	102.37	1.82
Vacant/Undeveloped	VAC	1,014.02	18.05
Total		5,617.04	100.00

Source: City of Madison, 2006 Existing Land Use Map

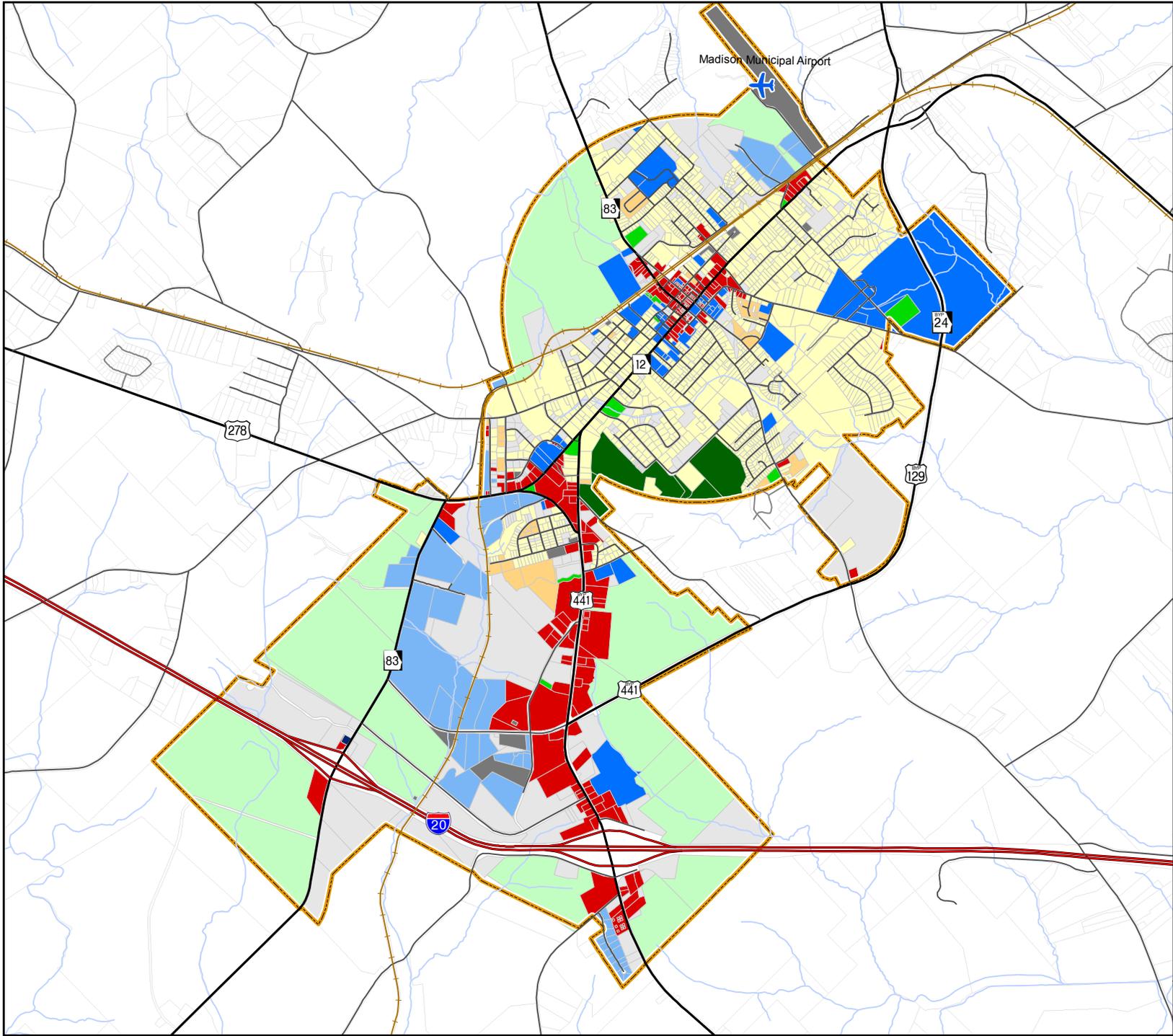




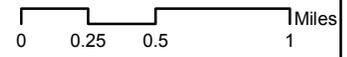
Commercial uses, which typically generate much higher rates of travel demand, are concentrated in two main areas of the city: Downtown along Main Street, Washington Street, and Jefferson Street; and along the US 441/129 corridor from Ward Street to south of I-20. Other than a small concentration located near the Madison Airport, industrial uses are concentrated along the Monticello Highway, Lions Club Road, and Amtico Road corridors.



**Figure 4.1:
Existing Land Uses**



- Single Family Residential
- Multi-Family Residential
- Commercial
- Office Professional
- Industrial
- Public/Institutional
- Park/Recreation/Conservation
- Agricultural
- Forest
- Transportation/
Communication/Utilities
- Vacant/Undeveloped
- Road
- Rail Line
- River
- Airport
- City of Madison Limits
- Morgan County



It should also be noted that over 18 percent of the city’s acreage remains vacant. Much of the vacant land in the city is comprised of smaller lots surrounded by single-family residential uses in the older section of the city or larger tracts located near I-20 and along the Norfolk Southern rail corridor in the southern portion of the city.

4.2 Future Land Use

In terms of future land use, the biggest changes anticipated for next 25 years are associated with the development of agricultural property on the periphery of the current city limits and the infill of vacant parcels in the southern portion of the city near I-20. As such, it is important to take into account not only planned future land uses within the city boundaries, but also those in unincorporated Morgan County that surround Madison. The future land use map for the city of Madison was developed during the Joint Comprehensive Plan as a subset of that developed for the County as a whole for the year 2030. A map of the future land uses within and around the City of Madison is provided in **Figure 4.2**.

4.2.1 City of Madison

Planned future land uses within the City of Madison are fairly consistent with those that currently exist with the exception of the portion of the city near I-20. The distribution of future land uses within the City of Madison is provided in **Table 4.2** below.

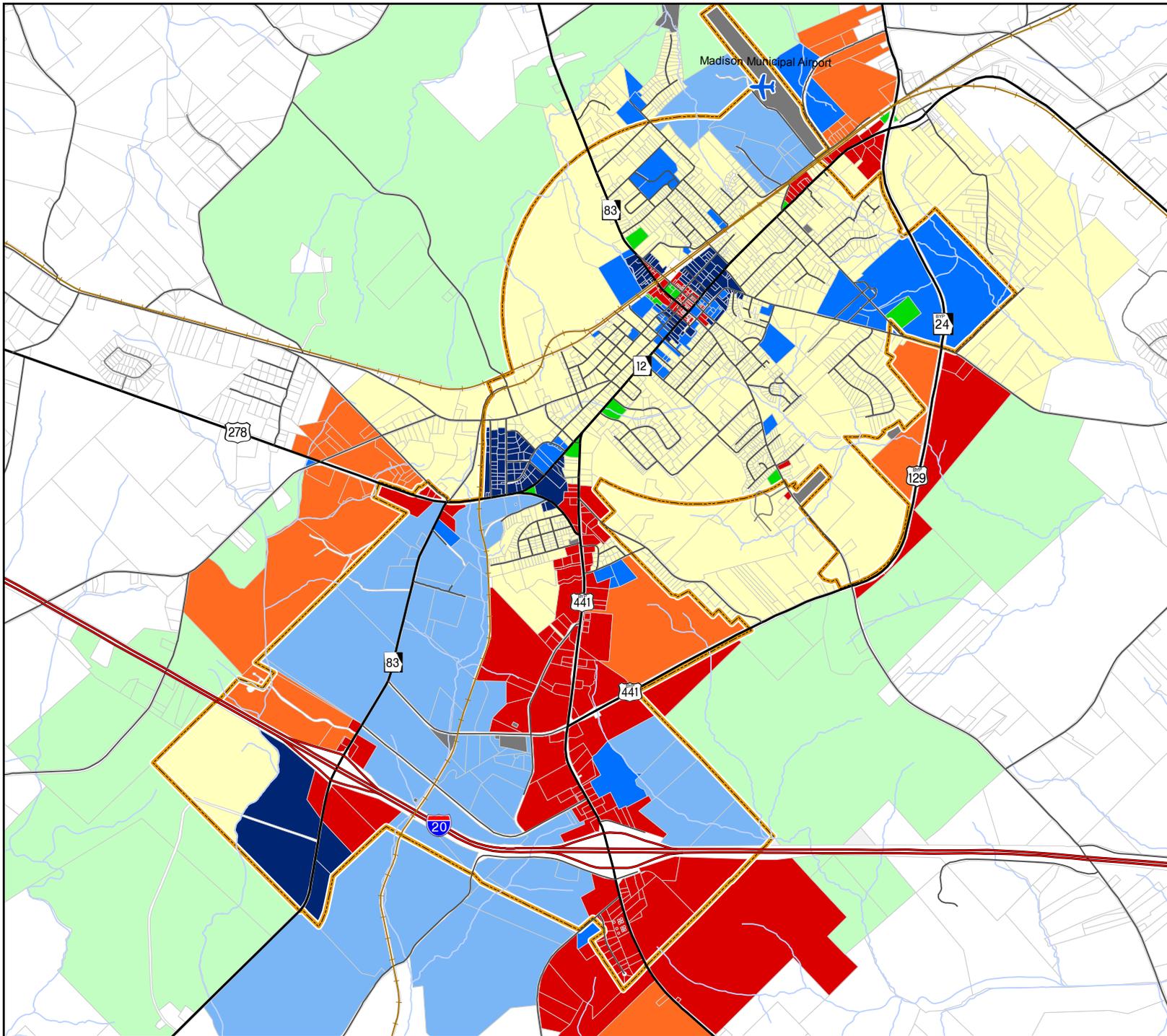
Table 4.2 – Future Land Use Distribution

Future Land Use		Acres	% in City
Traditional Neighborhood Development	TND	2,080.71	37.04
Commercial	COM	749.94	13.36
Office Professional	OP	291.84	5.19
Mixed Use	MX	242.42	4.32
Industrial	IND	1,108.63	19.73
Industrial - Mega Site	INDM	112.26	2.00
Public/Institutional	PI	385.54	6.86
Park/Recreation/Conservation	PRC	31.50	0.56
Right-of-Way	ROW	534.92	9.52
Transportation/Communication/Utilities	TCU	79.28	1.41
Agricultural	AG	0.00	0.00
Total		5,617.04	100.00

Source: City of Madison, 2006 Future Land Use Map

In the context of assessing the potential impacts on transportation facilities, it is important to compare the planned uses of the future to those that currently exist. A table comparing the distribution of existing and future land uses within the current city limits is provided in **Table 4.3**.

**Figure 4.2:
Future Land Uses - 2030**



- Traditional Neighborhood Development
- Mixed Use
- Commercial
- Office Professional
- Industrial
- Public/Institutional
- Park/Recreation/Conservation
- Agricultural
- Transportation/Communication/Utilities
- Road
- Rail Line
- River
- Airport
- City of Madison Limits
- Morgan County

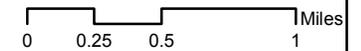


Table 4.3 – Comparison of Existing and Future Land Uses

Existing Land Use Map - 2006	Acres	Future Land Use Map - 2030	Acres	Change
All Residential	1,229.97		2,250.40	1,020.43
Single Family Residential	1,159.54	Traditional Neigh. Dev.	2,080.71	
Multi-Family Residential	70.43	Mixed Use - Residential*	169.69	
All Commercial	368.15		822.67	454.52
Commercial	368.15	Commercial	749.94	
		Mixed Use - Commercial*	72.73	
All Office Professional	0.97		291.84	290.87
Office Professional	0.97	Office Professional	291.84	
All Industrial	366.53		1,220.89	854.36
Industrial	366.53	Industrial	1,108.63	
		Industrial - Mega Site	112.26	
All Agricultural	1,576.70		0.00	-1,576.70
Agricultural	1,474.33	Agricultural	0.00	
Forest	102.37			
All Other	425.48		417.04	-8.44
Public/Institutional	393.16	Public/Institutional	385.54	
Park/Recreation/Cons	32.32	Park/Recreation/Conservation	31.5	
Right-of-Way	534.36	Right-of-Way	534.92	
Trans/Comm/Utilities	100.85	Trans/Comm/Utilities	79.28	
Vacant/Undeveloped	1,014.02			N/A
Total Existing Land Use	5,617.04	Total Future Land Use	5,617.04	

* Assumes a 70/30 split between residential and commercial development on the 242.42 acres designated for Mixed Use

Source: City of Madison GIS, 2006

As **Table 4.3** indicates, land uses planned for the city will occur through the infill development of land that is currently vacant or being used for agricultural purposes. More specifically:

- Residential development is planned to occur primarily through the infill of vacant lots located in the older section of the city and the development of agricultural land on the periphery of the city along the US 441/129 Bypass and south of I-20. The amount of residential acreage planned within the City of Madison is nearly double that which currently exists.

- The amount of commercial acreage planned within the city is substantially higher than what exists today. Commercial development is planned to occur through the infill of vacant parcels along US 441/129 and the development of agricultural and vacant parcels US 441/129 Bypass and the interchanges of I-20 with Eatonton Highway (US 441/129) and Monticello Highway (SR 83).
- There is a significant amount of acreage planned for industrial uses along the Monticello Highway (SR 83) corridor and near I-20. Much of this development would occur through the development of large vacant tracts and, to a lesser degree, the conversion of land from agricultural uses in these areas.

These trends are depicted graphically on **Figure 4.3**, which displays the planned future land uses on parcels which are currently vacant or used for agricultural purposes.

4.2.2 Morgan County

Much of the land adjacent to the city limits of Madison is designated for agricultural uses in the 2030 Future Land Use Map for Morgan County. However, there are some notable exceptions, which include:

- A significant amount of land designated for industrial development south of I-20;
- A concentration of commercial development near the I-20 interchange with Eatonton Highway (US 441/129); and
- A significant amount of planned residential uses along Atlanta Highway (US 278) west of the city.

Future land use designations for parcels in proximity to the city are provided in **Figure 4.2**.

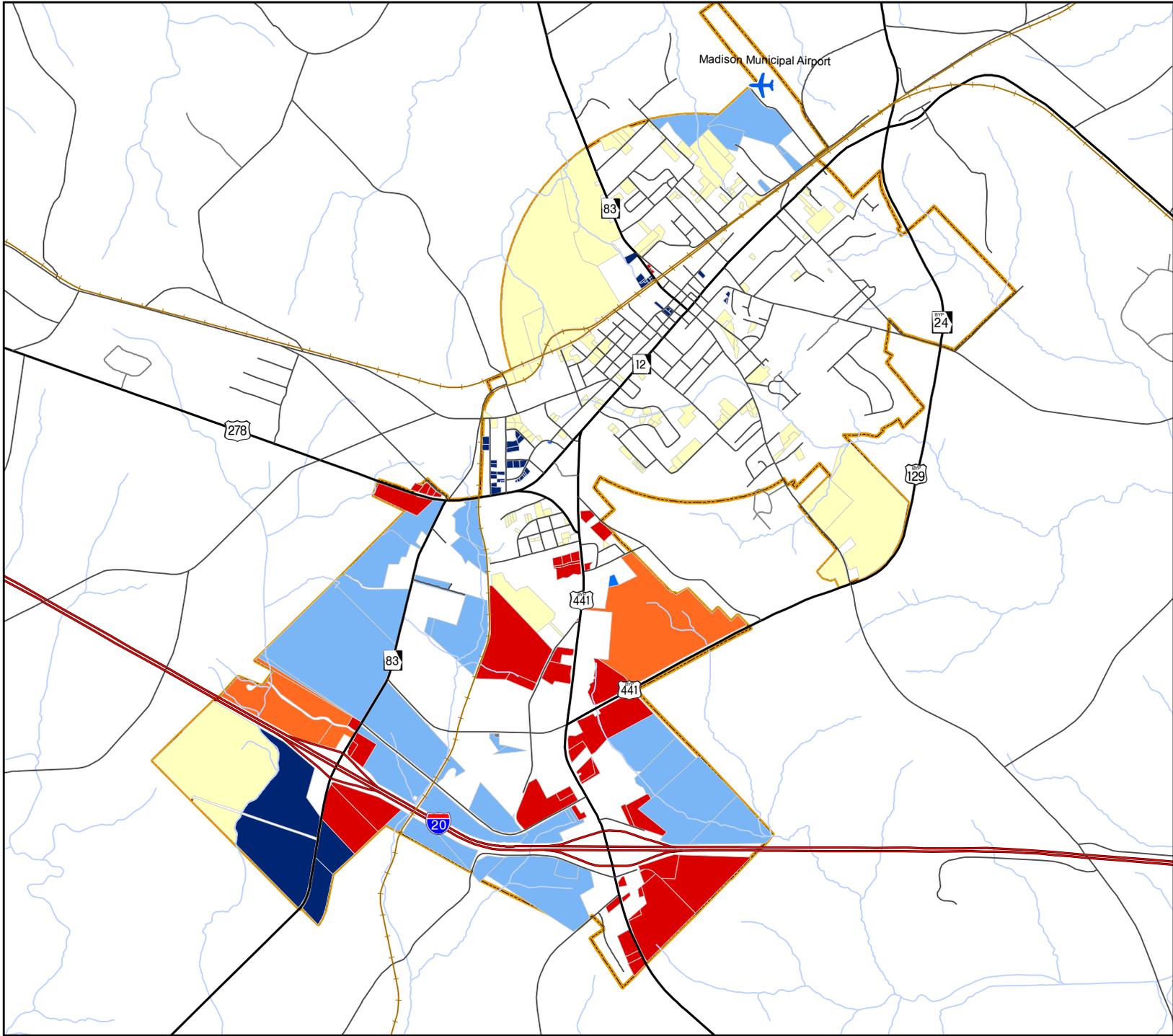
4.3 *Transportation and Land Use Interaction*

As development increases on the vacant and underdeveloped land in and around the City of Madison, so too will traffic on the city's street network generated by this development. Given the land uses planned in these areas, the following conclusions can be made with regard to their potential impact on the existing transportation network:

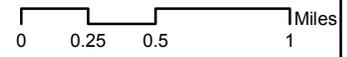
- The significant amount of commercial development, which typically generates high levels of travel demand, will directly impact the LOS of Eatonton Highway (US 441/129).
- The amount of industrial development planned within the southern portion of the city will directly impact the operational characteristics along Monticello Highway (SR 83), Lions Club Road, Amtico Road, Eatonton Highway (US 441/129) and, to a lesser degree, Main Street (US 278) through downtown due to the amount of additional truck traffic to be generated by these uses.
- Commercial, industrial, and residential development planned throughout the city will also increase travel demand on US 441/US 129 Bypass.

A more detailed discussion of the potential impacts of future land uses to the transportation network will be provided in the Needs Assessment Report.

**Figure 4.3:
Future Land Uses for
Vacant and Agricultural Land**



- Traditional Neighborhood Development
- Mixed Use
- Commercial
- Office Professional
- Industrial
- Public/Institutional
- Transportation/
Communication/Utilities
- Road
- Rail Line
- River
- Airport
- City of Madison Limits
- Morgan County



5.0 Environmental Constraints

The identification of environmental features identifies potential fatal flaws in implementing needed roadway improvements. Environmental features not only include natural features such as wetlands and streams, but also cultural and community features such as parks and historical resources. A map of the environmental features within the City of Madison is provided in **Figure 5.1**.

There are relatively few wetland areas and water features in the city limits of Madison. Most of these are located on the periphery of the City. The largest wetland areas are located on Horse Branch just north of Washington Street, on Fourmile Branch just west of the railroad tracks between Commerce Drive and Amtico Road, on North Sugar Creek just east of the US 441/129 Bypass, and on South Sugar Creek and Little Indian Creek near I-20.



The bulk of the cultural and community facilities are located in the City's historic district. The historic district itself is the single largest contiguous cultural resource in the City and stretches almost two miles along Main Street (US 278) from Eatonton Highway (US 441/129) to Allen Street and two miles along Wellington Street and Washington Street (SR 83) from March Street to Maple Street. Existing land uses also confirm this with most of the public/institutional land uses concentrated in the downtown with the exception of the Morgan County High School complex, located near the intersection of Old Buckhead Road and the US 441 Bypass.

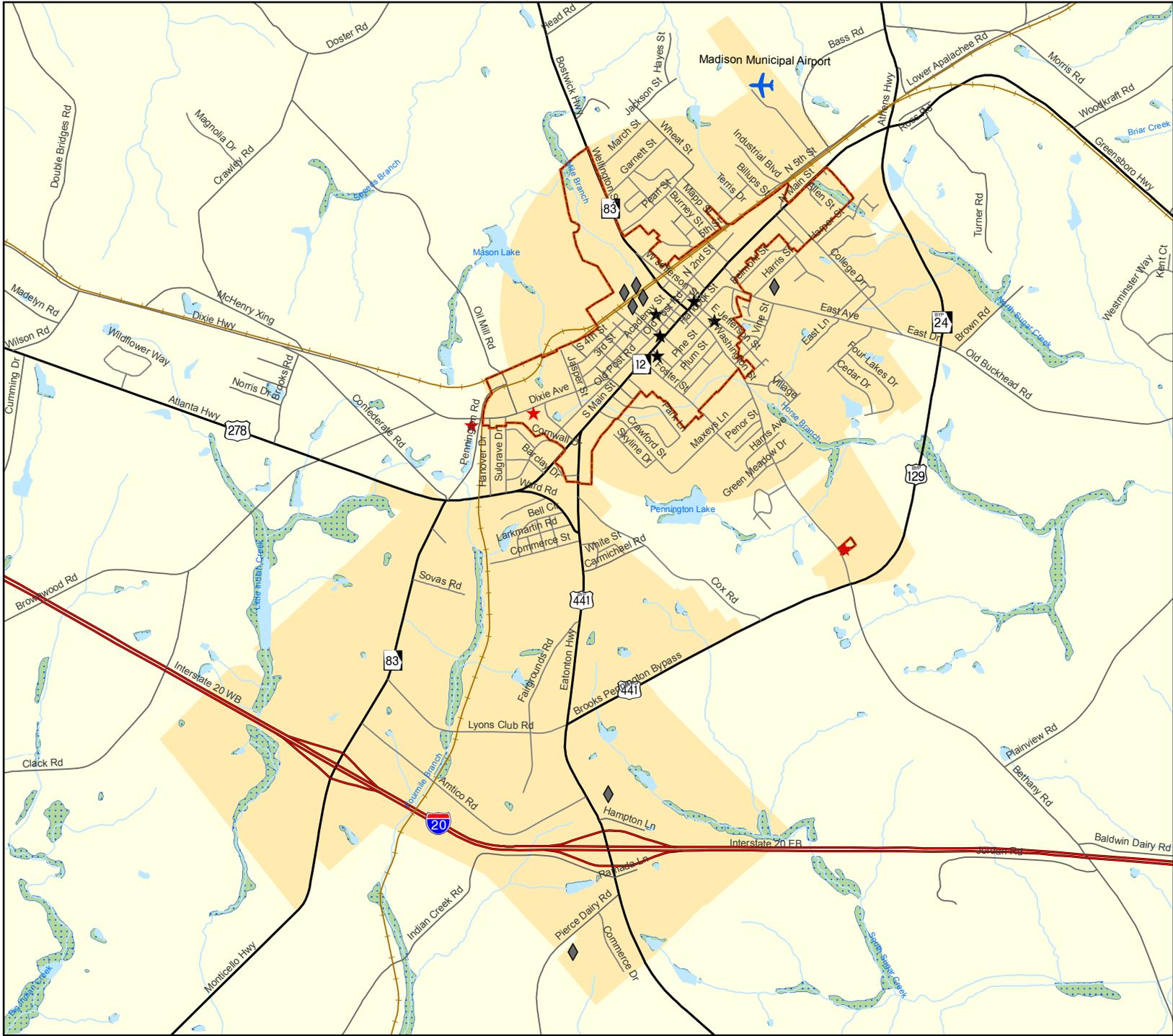
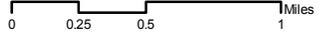


In relation to the major thoroughfare network, the only significant environmental barriers to potential roadway improvements are related to the City's historic district. Recognized by the community as a valuable resource to the City, the historic nature and aesthetic value of the Main Street (US 278) corridor in and around downtown make capacity improvements, such as widening and the addition of turn lanes, somewhat prohibitive.

This is particularly relevant to the intersection of Main Street and North Washington Street (SR 83), which is a regularly used route for truck traffic to and from points north of the City. Other than those within in the historic district, environmental features have minimal presence along the remainder of the City's thoroughfare network.

**Figure 5.1:
Environmental Features**

- ◆ Cemetery
- ★ Historic Attraction
- ★ Historic Resource
- ▭ Historic District/Property
- Lake
- ▨ Wetland
- River
- Road
- Major Road
- Interstate
- Rail Line
- ✈ Airport
- City of Madison Limits
- Morgan County



Appendix

Data Tables

City of Madison Fire Department Traffic Related Accident Matrix

INCIDENT TYPE NUMBER	INCIDENT TYPE	2003 12 mos	2004 Jan- Sept	2005 12 mos	2006 12 mos	2007 YTD
130	Mobile property vehicle fire, other	0	0	0	0	0
131	Passenger vehicle fire	11	4	9	2	1
132	Road freight of transport vehicle fire	2	2	3	2	0
381	Rescue or EMS standby (AUTO ACCIDENT)	5	3	0	11	4
352	Extricated victim from vehicle	0	1	3	0	0
442	Overheated motor	0	2	0	0	0
460	Accident, potential accident, other	0	2	1	0	0
463	Vehicle accident, general cleanup	0	2	1	2	1
611	Dispatched & cancelled en route (GHOST CALLS)	12	10	7	7	9
900	Special type incident (OTHER)	5	5	1	1	0
	TOTAL NUMBER OF INCIDENTS	35	31	25	25	15



Major Thoroughfare Plan Needs Assessment Report

Prepared by:



**6801 Governors Lake Parkway
Building 200
Norcross, GA 30071**

June 2007

TABLE OF CONTENTS

1.0 Introduction	1-1
2.0 Needs Identified in Other Studies	2-1
3.0 Traffic Congestion Assessment.....	3-3
3.1 Assessment of Current Capacity.....	3-3
Current Roadway LOS.....	3-3
Current Intersection LOS	3-7
3.2 Assessment of Future Capacity	3-9
Future Intersection Level of Service.....	3-11
3.3 Safety Needs Based on Accident Information.....	3-13
3.3.1 Other Safety Needs	3-13
3.4 Analysis of Major Planned Transportation Projects	3-14
3.5 Analysis of Importance of Street Grid Connectivity Needs.....	3-14
3.6 Traffic Calming Needs	3-15
3.7 Parking Needs	3-1
3.8 Corridor Transportation Needs Identified in the Analysis of Existing and Future Network Conditions.....	3-1
4.0 Alternative Mode Needs	4-1
4.1 Bicycle and Pedestrian Facilities	4-1
4.2 Transit Services	4-1
4.3 Corridor Transportation Needs Identified in the Analysis of Alternative Modes	4-2
5.0 Transportation and Land Use Needs	5-1
5.1 Future Transportation and Land Use Interaction.....	5-1
5.2 Corridor Transportation Needs Identified in the Analysis of Anticipated Land Use Changes	5-2
6.0 Environmental Needs	6-1
6.1 Corridor Transportation Needs Identified in the Analysis of environmental Factors.....	6-2
7.0 Summary of Corridor Transportation Needs	7-1
8.0 Goals and Objectives	8-1

LIST OF TABLES

Table 2.1 – Madison Area Recommendations from <i>East Georgia Multi-County Transportation Study</i>	2-1
Table 3.1 – Year 2030 Roadway Link Level of Service.....	3-9
Table 3.2 - Summary of Future Intersection Capacity Analysis	3-11
Table 8.1 – Draft Major Thoroughfares Plan Goals and Objectives.....	8-1

LIST OF FIGURES

Figure 3.1 – Current Roadway LOS.....	3-5
Figure 3.2 – Truck Volumes 2007.....	3-6
Figure 3.3 – Current Intersection LOS.....	3-8
Figure 3.4 – Future Roadway LOS.....	3-10
Figure 3.5 – Future Intersection LOS	3-12

1.0 Introduction

This report is the second in a series of technical memoranda developed as part of the Madison Major Thoroughfare Plan. The purpose of this report is to articulate key issues and identify transportation needs and priorities for the major corridors in the City of Madison and potential future corridors.

Discussed in this report are major issues impacting transportation from technical concerns such as capacity and level of service to contextual factors such as land use and environmental constraints. Using the information gathered in this report, the study team will identify transportation projects and programs as well as management strategies to effectively support the continued development of Madison over the next 25 years.

The City of Madison has historically done well in keeping its transportation infrastructure in harmony with its growth patterns. The recent surge in growth, not only in Morgan County, but even more so in neighboring counties, has placed intense pressures on the main thoroughfares in the city. Due to the radial arterial plan of Madison and Morgan County most through traffic, and in particular truck traffic, must funnel in to the heart of downtown and through the historic district to access the interstate. The economic generator of the city is its historic district and a thorough assessment of its needs in terms of all types of transportation issues from roadway capacity and parking to traffic calming and alternative transport modes must be considered in any long range plan to support the continued vitality of Madison and its anticipated growth.

These issues as well as additional study area needs are further discussed in the upcoming chapters of this report. Data used to develop the report findings were initially assembled as part of the *Baseline Conditions Report*. The conclusions drawn from the data have been organized into major need trends summarized at the end of each chapter and as a group at the end of the report. The report concludes with a series of goals and objectives to guide the development of transportation projects and recommendations in the next technical report, the *Alternatives Analysis and Recommendations*.

2.0 Needs Identified in Other Studies

In the *Baseline Conditions Report* the major transportation related recommendations of the most recent comprehensive county plans were listed in chapter one. These recommendations were very general in their scope and addressed global county-wide needs that were occasionally applicable to the City of Madison. Most of these recommendations were framed as policy changes and did not entail specific transportation projects. While the *Baseline Conditions Report* was being finalized another plan specifically dealing with transportation issues was being conducted by GDOT for the counties of Morgan, Greene, Jasper, and Putnam. The *East Georgia Multi-County Transportation Study* was not available to be included in the baseline analysis but its recommendations for the City of Madison are included here to give an outline of the needs identified in that effort. **Table 2.1** below will be used to ensure that the needs identified in the *Madison Major Thoroughfare Plan* are consistent with GDOT recommendations.

Table 2.1 – Madison Area Recommendations from *East Georgia Multi-County Transportation Study*

New Facility/Project	From	To	Existing Configuration	Improved Configuration
SR 83 W Bypass	SR 83 (N)	SR 83 (S)	NA	4-lanes
SR 83/US 441 Bypass	SR 83 (N)	US 441 (N)	NA	4-lanes
SR 83	US 278	I-20	2-lanes	4-lanes
SR 83	I-20	Jasper County	2-lanes	4-lanes
Minor Widening	From	To	Existing Configuration	Improved Configuration
Bethany Rd	US 441 Bypass	Bethany Church Rd	2-lanes	Add shoulders
Pierce Dairy Rd	US 441	Seven Island Rd	2-lanes	Add shoulders
Brownwood Rd	Spears Rd	Old Dixie Hwy	2-lanes	Add shoulders
Intersection/ Geometric Improvements	At			
US 441	US 278			
US 441	SR 24 Spur			
Lion's Club Rd	US 441			
Pierce Dairy Rd	US 441			
US 278	SR 24 Spur			
US 278	SR 83 (Pennington Rd)			
US 278	SR 83 (E Washington St)			
US 441 Bypass	Bethany Rd			
US 441 Bypass	Old Buckhead Rd			

Bridge Improvements	At			
Oil Mill Rd	Norfolk Southern Railroad			
Bicycle and Pedestrian Improvements	From	To	Existing Configuration	Improved Configuration
E Main St Sidewalks	Hawkins St	Fairplay St	Deficient	Repaired
W Main St Sidewalks	Fairplay St	New Subdivision	Deficient	Repaired
SR 83 Sidewalks	2 nd St	Callaway St	NA	Both Sides
Wellington Rd Sidewalks	Ruark Ln	SR 83	NA	Both Sides
Garnett St Sidewalks	SR 83	Wheat Rd	NA	Both Sides
East Ave Sidewalks	Harris St	Morgan county Library	Missing on north side	Add to north side
Rail Improvements	At		Improved Configuration	
Lion's Club Rd	CSX		Warning Lights	
Jefferson St	CSX		Upgrade Crossing	
Transit Improvements	At			
Park and Ride Lot	I-20 and SR 83			
Park and Ride Lot	I-20 and US 441			
Airport Improvements	Existing Configuration		Improved Configuration	
Extend Runway	3,800 feet x 75 feet		4,500 feet x 75 feet	

3.0 Traffic Congestion Assessment

This portion of the report will look specifically at those factors which affect congestion levels on the road network. It will begin with current level of service (LOS) in the City of Madison both for roadway segments and intersections. It will then examine future LOS in both categories to determine the impact of growth on the existing network. The next topic analyzed is accident rates and locations to impact of these on intersection functionality. Planned improvements, street grid connectivity, traffic calming issues, and parking needs round out the analysis categories in this chapter.

3.1 Assessment of Current Capacity

Current Roadway LOS

Roadway links Level of Service (LOS) was calculated in the *Baseline Conditions Report* for all of the major and minor roads in the city limits where traffic counts were available. These counts were verified and augmented by additional counts with truck percentages performed by the city between January and June 2007. Roadway LOS was ranked on a descending scale from A to F. This LOS analysis was conducted using the standards developed by the Florida Department of Transportation (FDOT) due to the lack of GDOT standards and the availability of HIGHPLAN software from the University of Florida. By in large the overall performance of the city's roadway network is relatively good in 2005. Three links, all along the bypass, received grades of A. Nine links received grades of B, four of which were along minor local roads including Ward Street, Maxey Lane, Dixie Avenue, and Cox Road. Five of the links with scores of B were along major facilities including Main Street (between Brownwood Road and Confederate Road), Eatonton Road (between Industrial Boulevard and I-20), Washington Street (between Vine Street and the US 441/129 bypass), Monticello Highway (between Industrial Road and Lions Club Road), and I-20 (between the two Madison interchanges). Seven links received a grade of C, **which is the city's current minimum for LOS** including four segments of Main Street (between Confederate Road and Ward Street, between Billups Road and Park Street, between Bowman Street and Allen Street, and between the US 441/129 Bypass and Bowman Street). Eatonton Highway has two segments currently at LOS C (between Lions Club Road and Fairgrounds Road and between and Cox Road and Main Street). Washington Street had the last segment with an LOS C status between Garnett Street and Pearl Street. Two segments of Main Street received an LOS D rating and are the worst performing parts of the current network (between Crawford Street and US 441 and between First Street and Reese Street). All of these current LOS levels are depicted in **Figure 3.1** below. Thus in terms of current needs, the city's network is functioning at an acceptable LOS except for Main Street which has the only links with unacceptable levels of service.

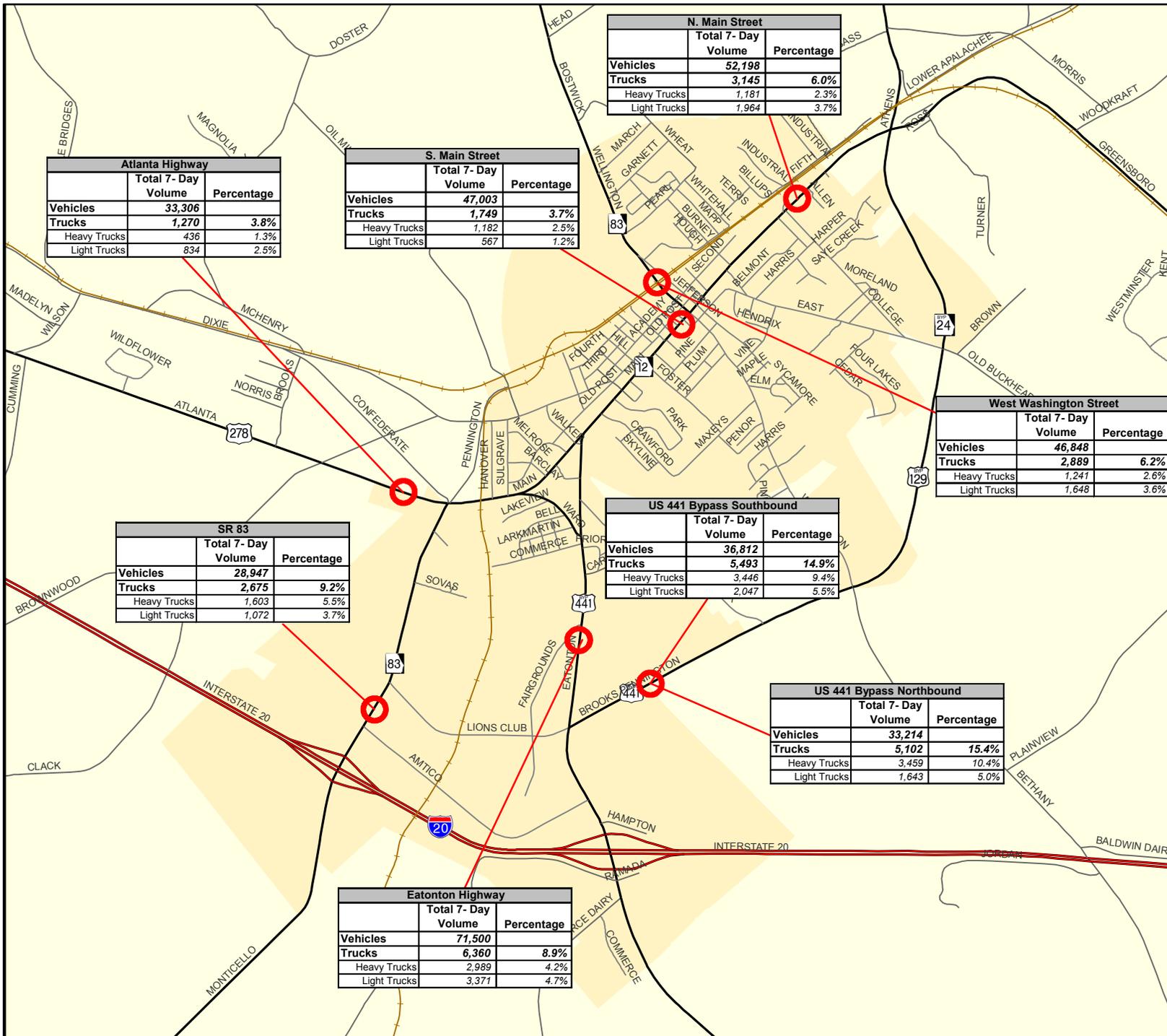
Freight Issues

As noted in the Baseline Conditions Report there is a significant amount of truck traffic passing through the downtown area and this is exacerbating the deteriorating level of service for the South main Street Corridor. SR 83 north of downtown showed truck percentages of 6.2% and North Main Street had 6.0% truck volumes. Oddly, South Main Street at Central Avenue only has 3.7% truck volumes, indicating significant numbers of trucks are dispersing onto North main and East Washington. It should be kept in mind that this 3.7% on South Main actually represents 1,749 trucks every three days, or

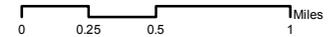
almost 600 per day. The most severe impact of this traffic is at the intersection of South Main and Washington Street where the majority of vehicles must make a sharp turn either left or right.



Figure 3.2 - 2007 Truck Volume



- Truck Count Location
- Road
- Major Road
- Interstate
- Rail Line
- Airport
- City of Madison Limits
- Morgan County



Current Intersection LOS

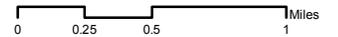
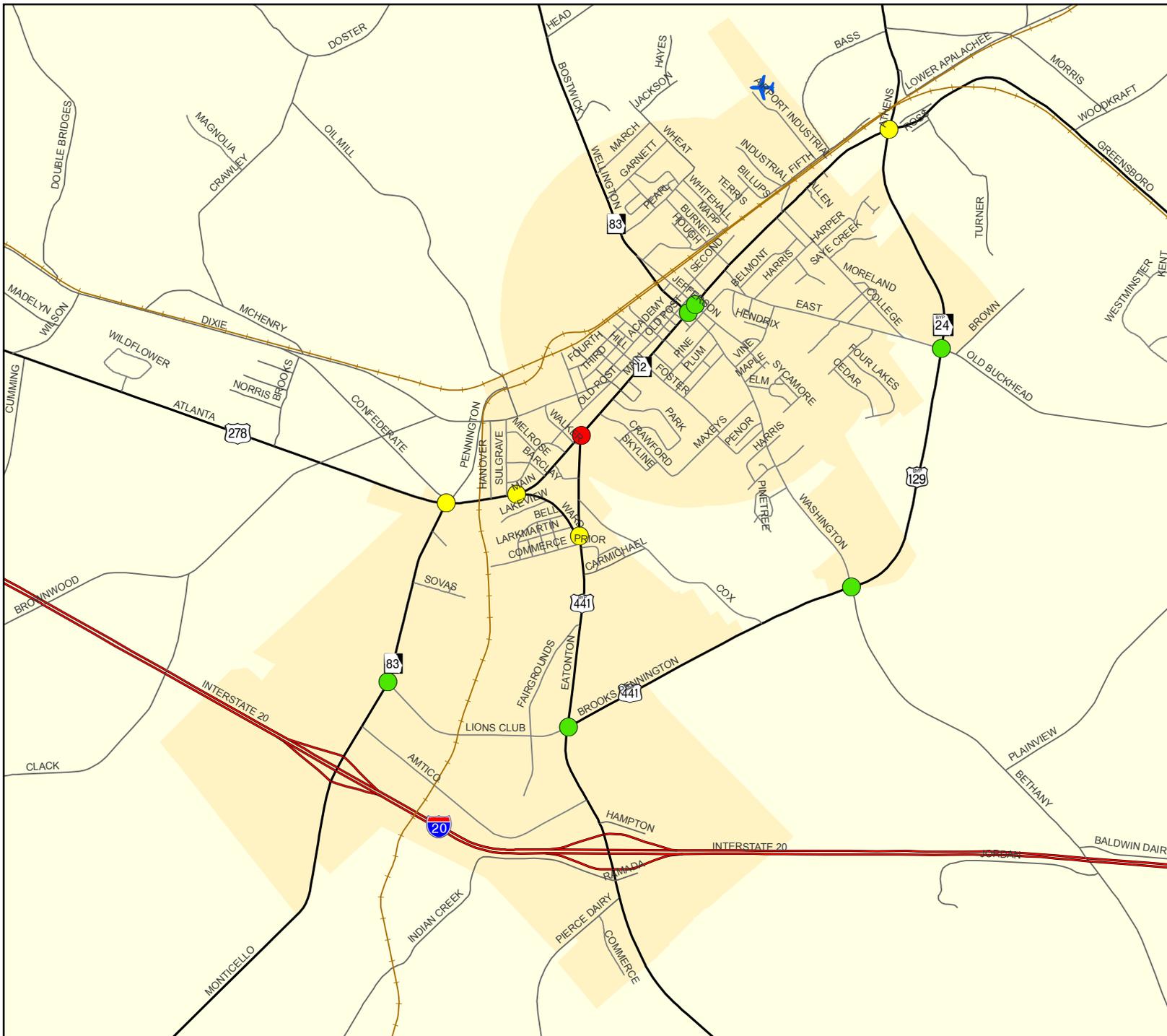
Intersection LOS was also calculated in the *Baseline Conditions Report* for the major intersections in the city limits along Main Street, the US 441/129 Bypass, Eatonton Road, Atlanta Highway (US 278) and Monticello Highway (SR 83) using intersection turning movement counts. Intersection LOS was also ranked on a descending scale from A to F. This LOS analysis was conducted using SYNCHRO software and the methodologies in the Highway Capacity Manual. By in large the overall performance of the city's principal intersections on its main corridors is relatively good in 2005. Of these eleven key intersections, nine receive ranking of C or above in both the AM and PM peak.

There are two intersections with unacceptable LOS. The first is Atlanta Highway (US 278) and Monticello Highway (SR 83) which has LOS D in the AM peak and LOS C in the PM peak. The second is Main Street and Eatonton Road (US 441/129) has the worst intersection LOS of all receiving an F in both peaks. All of these current intersection LOS levels are depicted in figure 3.2 below. Thus in terms of current needs, the city's network intersections are functioning at an acceptable LOS except for Main Street and Eatonton Road in both peaks, and Atlanta Highway and Monticello Highway in the AM peak.

**Figure 3.3 -
2006 Intersection LOS
PM Peak**

2006 PM Peak LOS

- A/B
- C
- D
- E/F
- Road
- Major Road
- Interstate
- Rail Line
- ✈ Airport
- City of Madison Limits
- Morgan County



3.2 Assessment of Future Capacity

Future Roadway Capacity

For the 2030 future year roadway LOS analysis, 2005 AADT traffic volumes are grown by 1.9% as annual growth. In the analysis, a 3-15% rate for trucks is used based on updated local truck counts at various locations. This is much higher than the GDOT default truck growth rate of 2.9% per year.

Table 3.1 – Year 2030 Roadway Link Level of Service

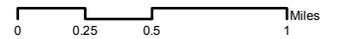
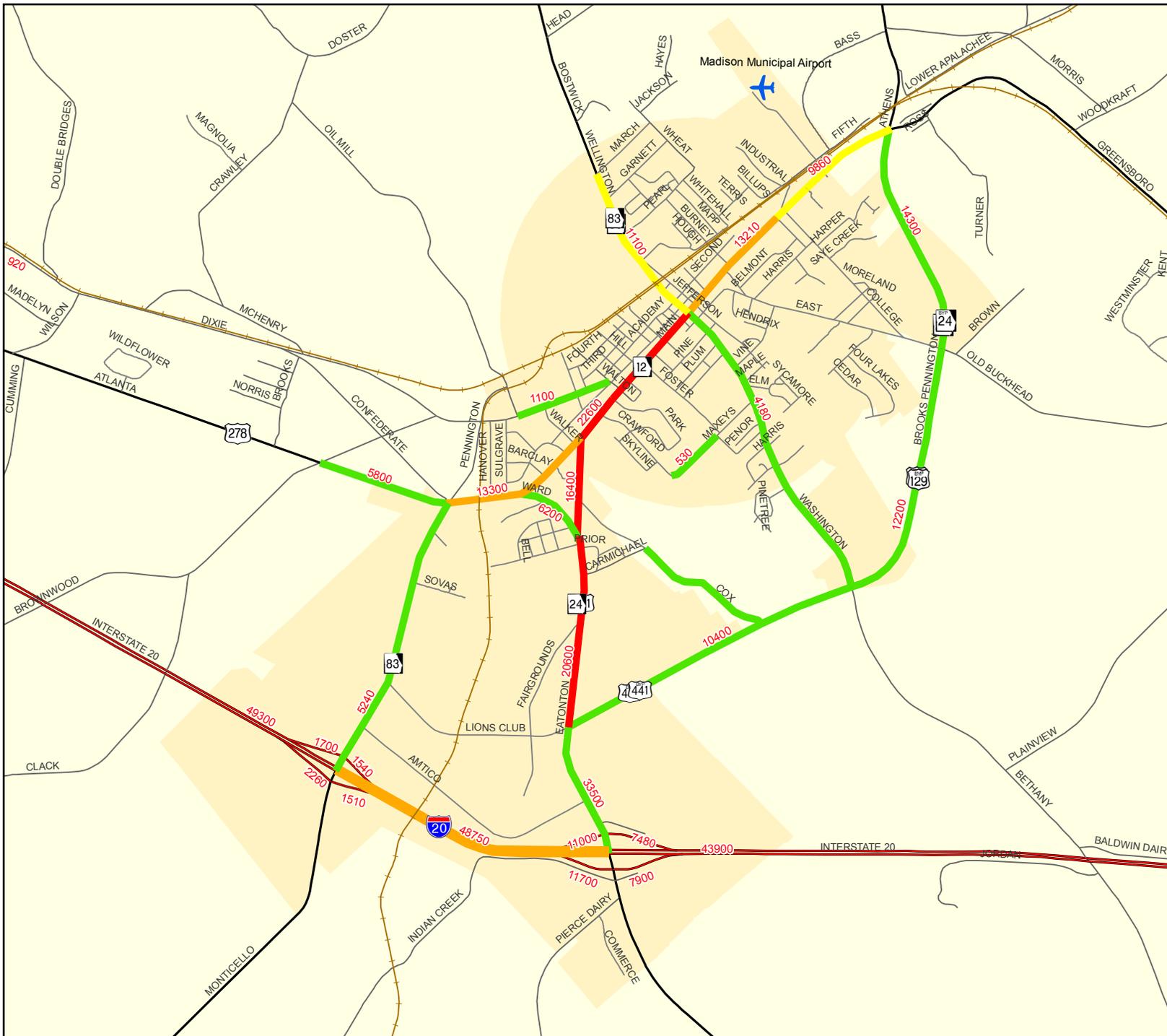
Route Name	From	To	Traffic Count Locations	AADT (2030)	No. of Lanes	LOS
Main Street (US 278)	Brownwood Road	Confederate Road	114	5,825	2	B
	Confederate Road	Ward Road	116	13,300	2	D
	Crawford Street	US 441	118	22,630	2	F
	First Street	Reese Street	121	22,550	2	F
	Billups Road	Park Street	123	12,020	2	D
	Bowman Street	Allen Street	125	9,900	2	C
	US 441/129 Bypass	Bowman Street	127	9,300	2	C
Eatonton Road/ Eatonton Highway (US 441/129)	Amtico Rd	I-20	141	33,510	4	B
	Lions Club Road	Fairgrounds Road	142*	20,600	2	F
	Cox Road	Main Street (US 278)	143	16,440	2	E
US 441/129 Bypass	Cox Road	US 441/129	318	10,390	4	A
	East Avenue	E Washington Street	321	12,240	4	A
	US 278 (N. Main Street)	East Avenue	323	14,310	4	A
Washington Street	Vine Street	US 441/129 Bypass	278	4,180	2	B
	Garnett Street	Pearl Street	165	11,140	2	C
Monticello Road (SR 83)	Amtico Road	Lions Club Road	163	5,240	2	B
Ward Road	Bell Street	Lakeview Street	154	6,200	2	B
Maxey Lane	Crawford Street	Cook Hill Road	8019	530	2	A
Dixie Ave	Walker Street	Oil Mill Road	243	1,110	2	A
Cox Rd	US 441/129 Bypass	Carmichael Road	8007	1,110	2	A
I-20	Monticello Road (SR 83)	Eatonton Road (US 441/129)	201	48,750	4	D

Source: FDOT Level of Service Handbook, 2002

Figure 3.4 - 2030 Daily Level of Service (LOS)

2030 Daily LOS

- █ A/B
- █ C
- █ D
- █ E/F
- XXX 2030 Traffic Counts
- Road
- Major Road
- Interstate
- Rail Line
-  Airport
- City of Madison Limits
- Morgan County



As shown in **Figure 3.3** above, for the future year 2030, Main Street is operating at a LOS D and worse between Confederate Road and Ward Street, Crawford Street and US 441, First Street and Reese Street, and Billups Road and Park Street. Eatonton Road is operating at a failing LOS F and LOS E respectively between Lions Club Road and Fairgrounds Road and between Cox Road and Main Street (US 278). I-20 is operating at a LOS D between Monticello Highway (SR 83) and Eatonton Highway (US 441/129).

Future Intersection Level of Service

While roadway link volume LOS is a good indicator on the overall functionality of a roadway, intersection LOS is a better indicator of specific 'hot-spots' or intersections that contribute to this overall functionality. For the 2030 future year capacity analysis, existing traffic volumes are derived by using 1.9% as the annual growth rate. In the analyses, the heavy vehicle percentage of 3-15% is used to reflect actual conditions in Madison. These results were updated when latest truck data was made available in the month of August 2007. The results of the 2030 year capacity analysis are shown below in **Table 3-2** for the AM and PM peak hours respectively.

Table 3.2 - Summary of Future Intersection Capacity Analysis

Intersection	Type	2030 Future Control Delay (LOS)	
		AM Peak	PM Peak
Main Street and US 441 Bypass	Signalized	19.4 (B)	23.0 (C)
Washington Street and N. Main Street	Signalized	49.0 (D)	73.7 (E)
Jefferson Street and US 441	Signalized	12.4 (B)	12.0 (B)
Bethany Road and US 441 Bypass	Unsignalized*	40.5 (E)	226.7 (F)
Buckhead Road & US 441 Bypass	Signalized	16.0 (B)	16.3 (B)
US 278 and US 441	Unsignalized*	727.0 (F)	>700 (F)
US 441 and Ward Road	Unsignalized*	87.4 (F)	384.4 (F)
SR 83 and Ward Road	Unsignalized*	11.7 (B)	117.2 (F)
Atlanta Highway and SR 83	Unsignalized*	254.4 (F)	40.1 (E)
Lions Club Drive and US 441	Signalized	36.3 (D)	59.2 (E)
Lions Club Drive and SR 83	Unsignalized*	16.4 (C)	32.7 (D)

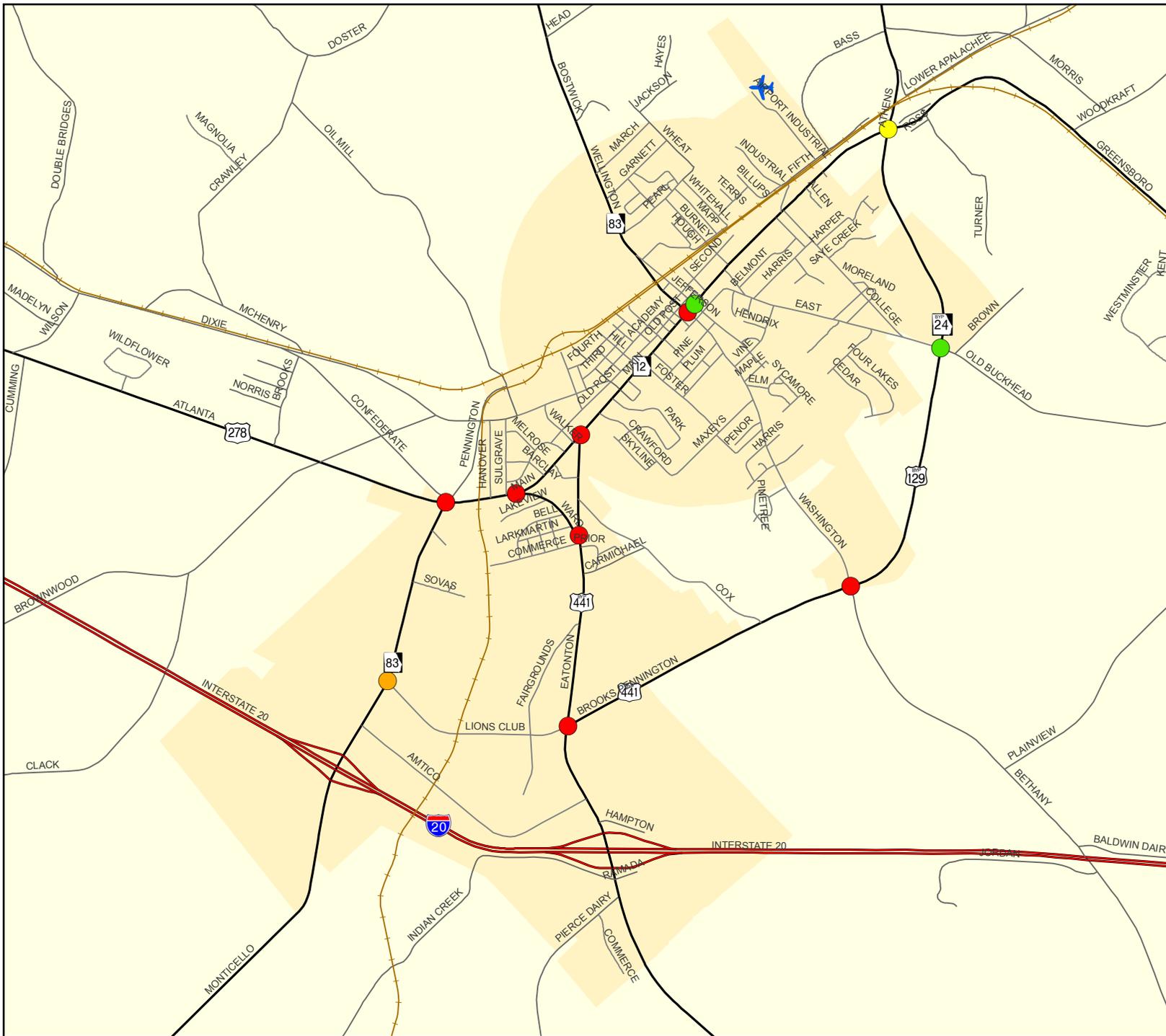
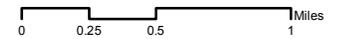
Note*: Results for unsignalized intersections are reported in terms of side street LOS.

**Figure 3.5 -
2030 Intersection LOS
PM Peak**

2030 PM Peak LOS

- A/B
- C
- D
- E/F

- Road
- Major Road
- Interstate
- Rail Line
- Airport
- City of Madison Limits
- Morgan County



It can be seen from **Figure 3.4** and **Table 3.2**, most intersections are operating at a failing level of service for both AM and PM peak hour 2030 traffic conditions except for some of the signalized intersections such as Main Street (US 278) and US 441, Jefferson Street and US 441, and Buckhead Highway and US 441 Bypass. It can also be seen that all unsignalized intersections have a failing level of service. This is primarily due to minor street delays, which forces vehicles to wait to find gaps in the traffic through movement in order to enter the main flows.

3.3 Safety Needs Based on Accident Information

Needs analysis based on accident data is usually performed by comparing the accident rate at a particular location to the statewide accident rate for similar roadway facility types and functional classifications. This process is accomplished by converting the number of accidents at a particular site into a rate per 100 million vehicle miles. If this number is higher than the state average then the collision types are examined to determine what changes are necessary. At present the City of Madison has two road segments where accidents stand out above state averages for comparable facilities. These are in descending order of accident rates:

- Main Street (from US 441/129 Bypass to Monticello Highway SR 83)
- Eatonton Highway US 441/129 (from Main Street to I-20)

These two road segments have three individual accident locations which are particularly high and in need of improvement. They are Main Street at the intersection of US 278 and US 441, Monticello Highway at the intersection with US 278, and Eatonton Highway at the intersection with Lion's Club Road. The first two of these intersections are unsignalized and have known geometric design flaws in their layout. The last intersection is simply a very high volume intersection, and as high growth is anticipated in this sector of Madison, it will need micro-level further study to determine future upgrades needed.

3.3.1 Other Safety Needs

Railroad crossings were identified as areas of potential safety concern in the *East Georgia Multi-County Transportation Study* and several in Madison were identified for upgrades. Most of the upgrades were crossing signs, stop and yield signs, flashing light signals, cantilever flashing light signals, automatic gates, and other active warning signs and barrier devices. The areas in need of upgrades were:

- Jefferson Street Crossing
- Lions Club Road

This study confirms the need to put in flashing signals to attempt to improve safety at these two crossings. Two other rail crossings in need of upgrades were identified in this study:

- Oil Mill Road
- Industrial Boulevard

The Oil Mill Road crossing has been closed for years and the city has initiated talks with GDOT to determine its eligibility for a reconstructed overpass. Industrial Boulevard was identified as an accident location at the rail crossing and its skewed approach to North Main Street contributes to the poor sight distances when navigating the rails.

3.4 Analysis of Major Planned Transportation Projects

There were three transportation improvement projects identified in the GDOT Statewide Transportation Improvement Plan (STIP) for the 2003-2008 planning period and the Joint Comprehensive Plan that would impact on the City of Madison. They are:

- Widening: SR 24/US 441 from the Putnam CL to north of Pierce Dairy Road/CR 121 (STIP)
- Widening: SR 24 / US 441 from Madison Bypass to just north of Apalachee River/Oconee (STIP)
- The SR 83 Bypass for Madison, the Morgan County Board of Commissioners intends to construct a bypass around Madison for SR 83 to eliminate the truck traffic which currently adversely impacts the City of Madison. (Joint Plan)
- Installation of traffic signal at Pierce Dairy Road and US 441

All of the projects listed above would serve needs that are more regional in nature. However, the SR 83 project has the potential to divert large traffic flows, particularly truck traffic, away from the historic district in downtown Madison, and would thus dovetail smoothly with the need findings in several other sections of this report.

3.5 Analysis of Importance of Street Grid Connectivity Needs

Street connectivity is a critical issue in analyzing the possibility of re-routing traffic to relieve pressures on severely overburdened facilities. Street connectivity is a measure of the number of parallel facilities in an area that allow for multiple routing options. To determine street connectivity within the City, an inventory of streets with more than one end point was taken.

Madison has good connectivity in the historic downtown area and has good connectivity to the south and east in its historic neighborhoods and radial suburbs along Dixie Highway, Atlanta Highway (US 278), Monticello Road (SR 83), Eatonton Road (US 441/129), East Washington Street and East Avenue. As a proportion of the street network, roughly 80% of the streets in Madison offer connectivity, which is excellent in comparison to other towns in Georgia. However, the peripheral areas of town in all directions often end in cul-de-sac residential areas and have severe limitations in this regard resulting in increased dependency on arterials and collectors. The most severe limitation in the city's network is the lack of alternate routes for traffic entering the city from the north along Wellington Street (SR 83) due to the lack of railroad crossings from that vector. This is a contributing factor to high traffic volumes on Main Street and Eatonton Road which are the only direct routes from Wellington Road (SR 83) and I-20. There is a critical need to augment the number of routing options from the north end of the county to I-20 that effectively navigate the barrier of the railroads.

3.6 Traffic Calming Needs

An unfortunate result of the radial roadway network of the county converging in the center of Madison is an abundance of through traffic. This through traffic often travels at higher rates of speed than local traffic and the City's roads were designed to mainly serve their immediate neighborhoods. As a result, traffic calming devices have been installed throughout the City's residential areas over the past few years to increase neighborhood safety and discourage through traffic from all streets except a few major corridors. The unfortunate consequence of discouraging traffic on residential streets is the further overburdening of Main Street and Eatonton Highway by funneling more vehicles on them and the main arteries which feed them. There is a need to develop alternates to these routes in order to preserve their functionality as well as protect neighborhood streets from fast moving through traffic. The City should consider adoption of a Traffic Calming Ordinance. This ordinance would outline the following:

- Methods of traffic calming appropriate to different parts of the City
- Method for prioritizing traffic calming device requests
- Methods of payment for traffic calming devices
- Procedures to request removal of installed devices

3.7 Parking Needs

Parking issues within Madison are limited primarily to the downtown area of the city. Parking in the downtown commercial area is a combination of on-street parking (angular, parallel, and perpendicular) and off-street parking (private and public lots) to the sides and rears of commercial and institutional land uses.

As described in the Baseline Conditions Report, there is a combination of on-street and off-street downtown parking opportunities primarily supplied by City of Madison. As redevelopment extends westward beyond the original 12-block area to encompass the 9-block Town Park area, additional parking will become necessary. This new area includes Madison's oldest industry, Godfrey's, which is a significant employer, as well as new economic development ventures (i.e. Madison Markets, IceHouse, James Madison Inn, and Jefferson Square Parkside.) New parking should follow the traditional development pattern, where parking is developed in a context-sensitive manner and remains subordinate to streetscape design. Building footprints should define the street edges with on-street parking in the front and on side alleys. On-street parking should be established wherever streetscape permits, should be reevaluated during city-enhancement projects, and should be sought if possible where private and public partnerships permit. Small off-street parking lots should be located in the rear of buildings, avoiding covering all property and demolition/relocation of buildings. Parking decks should be considered for beneath new structures, in locations of extraordinarily low visibility (e.g. Avado Brands Parking Deck), and in areas with limited visibility when designed to simulate Downtown's historic buildings in appearance. As both local governments remain committed to being in downtown and as the community grows, additional parking will be needed. A joint city-county deck should be considered as a potential SPLOST project, perhaps taking advantage of the historic Morgan County Courthouse, Jail, and Rogers House/Rose Cottage for streetside screening. Shared surface lots and decks should be evaluated for disparate land uses.

For residential areas, on-street parking appears to be more prevalent in higher density development – multi-family, dual-family, and planned developments. City regulations need be reviewed and updated to address adequacy of off-street parking for multi-family and dual-family developments and internal circulation where parking pads are permitted. Waiver of standard street design for subdivisions and planned developments should be scrutinized for the consequences of off-street parking in these areas, including residential access complaints and emergency vehicle concerns. Non-standard street designs should be limited to areas where more than adequate off-street parking is dedicated, acknowledging that density, small lots, and tight streets in combination have a deleterious affect upon the transportation facility.

3.8 Corridor Transportation Needs Identified in the Analysis of Existing and Future Network Conditions

In terms of corridor transportation needs, the analysis of network conditions suggests the following:

- There is a need to ensure consistency with the findings/recommendations of the *East Georgia Multi-County Transportation Study*

- There is a need to relieve current congestion on the segments of Main Street with unacceptable LOS:
 - between Crawford Street and US 441,
 - between First Street and Reese Street.
- There is a need to relieve current congestion on the intersections with the worst LOS;
 - Atlanta Highway (US 278) and Ward Street in the PM peak,
 - Atlanta Highway (US 278) and Monticello Highway (SR 83) in both peaks,
 - Main Street and Eatonton Road (US 441/129) in both peaks.
- There is a need to relieve future congestion on segments of Main Street with unacceptable LOS:
 - between Confederate Road and Ward Street,
 - between Crawford Street and US 441,
 - between First Street and Reese Street,
 - between Billups Road and Park Street.
- There is a need to relieve future congestion on segments of Eatonton Road with unacceptable LOS:
 - between Lions Club Road and Fairgrounds Road,
 - between Cox Road and Main Street (US 278).
- There is a need to relieve future congestion on intersections with unacceptable LOS;
 - Washington Street and main Street
 - Bethany Road and UD 441 Bypass
 - US 278 and US 441
 - US 441 and Ward Street
 - SR 83 and Ward Street
 - Atlanta Highway and SR 83
 - Lion's Club Drive and US 441
 - Lion's Club Drive and SR 83
- There is a need to continue to monitor high accident locations to see if they change in proportion to statewide averages significantly enough to warrant intervention;
- There is a need for design improvements for the following intersections:
 - Main Street at the intersection of US 278 and US 441,
 - Monticello Highway at the intersection with US 278,
 - Eatonton Highway at the intersection with Lion's Club Road.
- There is a need to promote the proposed SR 83 truck bypass and tie its design to other needs for that quadrant of town identified in this report such as connectivity, accessibility, Main Street preservation, and mobility for future development areas;
- There is a critical need to augment overall street connectivity by increasing the number of routing options from the north to I-20 that effectively navigate the barrier of the railroads;
- There is a need to develop routing alternatives to Main Street and Eatonton Highway in order to accommodate the through traffic which is funneled onto them by traffic calming devices in surrounding residential neighborhoods;
- There is a need to provide adequate parking for the downtown areas in a context sensitive manner that serves the historic district without creating structures that impact the visual appearance of the district.

4.0 Alternative Mode Needs

In this chapter the needs identified in the analysis of bicycle and pedestrian and transit facilities will be reviewed. This section relies heavily on the work done in other studies to inform this discussion.

4.1 Bicycle and Pedestrian Facilities

As noted before in the *Baseline Conditions Report*, the City of Madison is well-endowed with sidewalks and streets which are conducive to biking in the downtown areas and historic district. The main focus in terms of needs are to continue to augment the existing network by building linkages between the major gaps in the sidewalk network and designating new bike lanes on streets or on new multi-use trails whenever such opportunities arise. By continuing to flesh out the existing systems as the city grows, the city will both maintain its attractiveness and functionality as a pedestrian scaled tourist center and the viability of its two primary alternative modes. Sidewalks are fairly comprehensive along the Main Street corridor from the Eatonton highway split to its junction with the US 441 bypass and radiate out fairly evenly along Wellington Street, East Washington Street, East Avenue, College Street, and Dixie Highway. Only US 278 west of town (Covington Highway) and US 441 south of town (Eatonton Highway) are officially designated bike routes.

In terms of sidewalk improvements, the *East Georgia Multi-County Transportation Study* identified five locations to prioritize and these are listed in chapter 2 (see **Table 2.1**). It is assumed by this report that those improvements will be completed so only new locations are listed here. In terms of current plans for expanding the bicycle system, the major source is the *Northeast Georgia Regional Bicycle and Pedestrian Plan* of April 2005. This plan was developed by the Northeast Georgia Regional Development Center to form the basis for a regional bicycle and pedestrian system that would connect the major hubs of all the counties in its jurisdiction. Inside and near the City of Madison, the plan envisions adding separate bike lanes and sidewalks along both US 278 and Eatonton Highway to upgrade the current bike route designation to an actual dedicated facility. Furthermore, this plan calls for dedicated bike lanes alongside the principal sidewalks which are already in place, along Main Street, SR 83 (Wellington Street), and Greensboro Highway with further such bike/sidewalk additions along Brownwood Road and Clack Road just outside the city limits to the southwest. All of these in town facilities will link up to major cross-county bike and pedestrian facilities along the major corridors in Morgan County and potentially along the abandoned railroad tracks to the Oconee County line. The Morgan County *Greenprints Plan* of 2003 did not give specific locations of future facilities but did identify a potential multi-use trail along the water features of Little Indian Creek, Mason Lake, and the lake's main tributary. This trail would just skirt the city limits of Madison to the northwest and could easily tie into many of these other proposed bike/pedestrian facilities.

In terms of pedestrian needs, the most logical place to start augmenting the system would be to identify the current gaps in the existing sidewalk system and continue connecting all of the sidewalks. Most of the gaps are between Academy Street/Dixie Ave and Main Street in the center of town, between College Drive and East Avenue on the northeastern edge of town, between Whitehall Street and Burney Street on the northern edge of town and between Main Street and Eatonton Road near the intersection with Ward Road. In addition to filling these gaps, all new additions to the

road network system, both residential subdivisions and commercial/industrial developments, are required by city regulations to construct new sidewalks. Regulations should be updated to require extensions as necessary to connect with the nearest existing sidewalk. A great opportunity to expand bicycle facilities exists in the roads parallel to the main east-west train tracks. Dixie Highway, Lower Apalachee Road, and Greensboro Highway all offer excellent level topography for bicycle facilities which would help tie together the trails envisioned in the two documents mentioned above and tie Madison to other major hubs and towns in the county by alternative means. However the *East Georgia Multi-County Transportation Study* identified constraints related to some of these corridors due to railroad right-of-way issues that prevent adding a full bike lane to those routes at this time.

4.2 Transit Services

Again, as noted before in the *Baseline Conditions Report*, the City of Madison does not have any extensive transit service and is not capable of reaching the required population and employment densities to support such service in the immediate future. As the growth along the I-20 East corridor continues, this situation will need to be continually reexamined to determine if conditions warrant additional transit service. The most common pattern for transit expansion in the metro Atlanta area is for rural counties with 5311 rural transit service funds to upgrade to 5309 urbanized service funds once their populations reach the urban threshold. These developing counties then begin to create commuter bus systems that tie into the metro region via neighboring transfer hubs such as MARTA rail stations. It is likely that I-20 will be the only viable transit corridor for Morgan County in the near to long range and a location at either of the Madison exits (SR 83 or US 441) will be the preferred location for a park and ride facility. It would be prudent for the City of Madison and Morgan County to select and purchase a site near one of these two exits to reserve for a future park and ride lot, or to trade for a more advantageous transit hub site later on. The northwest corner of the SR83 exit would be the first choice of lot locations for commuter bus service to Atlanta.

4.3 Corridor Transportation Needs Identified in the Analysis of Alternative Modes

In terms of corridor transportation needs, the analysis of alternative modes suggests the following:

- There is a need to ensure consistency with the findings/recommendations of the *East Georgia Multi-County Transportation Study*
- There is a need to implement bike lanes in accordance with the regional bike plan on:
 - US 441 Eatonton Hwy from US 278 to I-20
 - US 278 Atlanta Hwy from Confederate Avenue to Sulgrave Street
- There is a need to fill in the major gaps in the existing sidewalk network:
 - between College Drive and East Avenue along Moreland College and Harris Streets on the northeastern edge of town,
 - along East Avenue/Old Buckhead Road from the end of pavement to the end of Brown Lane

- between Whitehall Street and Burney Street along Pearl and 5th Streets on the northern edge of town and,
- between Main Street and Ward Street along Eatonton Highway.

- There is a need to update city development regulations to require extensions and infill construction of sidewalks as necessary to provide connection to the nearest existing sidewalks, in addition to requiring all new residential subdivisions and commercial/industrial developments to construct new sidewalks within and as part of their development.
- There is a need to look for opportunities to expand bicycle facilities to connect Madison to other major hubs and towns in the county, particularly along favorable topography such as that which exists on the roads parallel to the main east-west train tracks such as Dixie Highway, Lower Apalachee Road, and Greensboro Road.
- There is a need to look for opportunities to expand bicycle facilities to tie Madison to other major hubs and towns in the county, particularly along favorable topography such as that which exists on the roads parallel to the main east-west train tracks such as Old Dixie Highway, Lower Apalachee Road, and Greensboro Road.
- There is a need to look for opportunities to tie together the trails and alternative mode facilities envisioned in various planning efforts completed for the City of Madison and Morgan County.
- There is a need to continually reexamine conditions along the I-20 corridor to see if growth warrants new commuter transit service and to select and purchase a favorable location at either Madison exit (SR 83 or US 441) for a future park and ride facility.

5.0 Transportation and Land Use Needs

As discussed briefly in the *Baseline Conditions Report* the City of Madison expects a large amount of change in its land uses over the next 25 years. The future land use map foresees a general build out within the current city limits over that time period. At present there are approximately 2600 acres of land inside the city limits which are designated agricultural or vacant. By 2030 this land is anticipated to be converted to approximately 1,000 acres of new residential uses (mostly low-density), 750 acres of commercial and/or office uses, and 850 acres of industrial uses. At the same time transportation right-of-way is expected to remain almost unchanged over the next 25 years. The impact of these changes and their relative locations to the existing transportation network will have a major role in determining what infrastructure investments will be needed.

5.1 Future Transportation and Land Use Interaction

As development increases on the vacant and underdeveloped land in and around the City of Madison, so too will traffic on the City's street network generated by this development. In general, commercial uses generate the most traffic of these three major land uses mentioned above. On average commercial uses generate 40 trips per 1,000 square feet of retail space followed by 9 trips generated per residential housing unit, and lastly 3 trips per 1,000 square feet of enclosed industrial space.

The commercial development is planned to occur through the infill of vacant parcels along US 441/129 Bypass and the interchanges of I-20 with Eatonton Highway (US 441/129) and Monticello Highway (SR 83).

Other than infill in the current residential areas, new residential uses are mostly planned in the northwest quadrant of the city directly adjacent to the historic district and in the southeast quadrant near the intersection of East Washington Road and the US 441/129 Bypass. Due to the proximity of this first new residential area to the historic district, it will be necessary to not only manage additional traffic flows through the district, but to create a transitional street network that will blend the historic district's original street grid network to the modern day suburban periphery of the city as seamlessly as possible. Original street alignments, widths, setbacks, alleys, sidewalk patterns, street tree plantings, and curb cut spacing should be followed as much as possible while allowing for the safe and efficient movements of local traffic and emergency vehicles.

Industrial uses are planned along the Monticello Highway (SR 83) corridor and near I-20. A recent petition to the City for a rezoning in this area asked for 2 million square feet distribution center and 200 single family homes nearby. This project alone would add 7,800 trips to the area near I-20. Given the land uses planned in these areas, the following conclusions can be made with regard to their potential impact on the existing transportation network:

- The significant amount of commercial development, which typically generates high levels of travel demand, will directly impact the LOS of Eatonton Highway (US 441/129).
- Residential development in the northwest quadrant of the city will place significant further strain on the Main Street corridor as this will continue to be the

- only way to access the major local job centers near I-20 due to the barrier presented by the railroad.
- Due to the large size and proximity of residential development to the historic district on the north side of town, this new residential area will require special historic design features to be included in the street network to allow for a seamless transition from the historic grid to the edge of the city.
 - Residential development along the bypass will also diminish the LOS at its intersection with East Washington Road.
 - The amount of industrial development planned within the southern portion of the City will directly impact the operational characteristics along Monticello Highway (SR 83), Lions Club Road, Amtico Road, Eatonton Highway (US 441/129) and, to a lesser degree, Main Street through downtown due to the amount of additional truck traffic generated by these uses.
 - Commercial, industrial, and residential development planned throughout the City will also increase travel demand on US 441/US 129 Bypass.

5.2 Corridor Transportation Needs Identified in the Analysis of Anticipated Land Use Changes

In terms of corridor transportation needs, these land use factors suggest the following:

- There is a need to apply access management techniques to preserve corridor mobility by separating local from through traffic along Eatonton Highway due to the significant amount of commercial development along this corridor.
- There is a need to apply access management techniques to preserve corridor mobility by separating local from through traffic along the US 441/US 129 Bypass due to the significant amount of planned residential development at its intersection with East Washington Street.
- There is a need to apply access management techniques to preserve corridor mobility by separating local from through traffic along the Monticello Highway (SR 83) corridor due to the significant amount of planned industrial development and to provide a major alternative route to the northwestern quadrant of the city from the area near I-20 to relieve pressure on the Main Street corridor.
- There is a need to provide a major alternative route from the northwestern quadrant of the city to the area near I-20 to relieve pressure on the Main Street corridor due to the planned residential development in that area and the restrictions placed on overall network connectivity due to the Georgia Railroad.
- There is a need to develop special transportation network design guidelines in those newly developing residential areas north of the railroad which are immediately adjacent to the historic district.
- Upgrades to Lions Club Road and Amtico Road, particularly signals at railroad crossings and perhaps bridges will be needed as the adjacent land uses are fully converted to industrial uses and the bypass project proceeds.

6.0 Environmental Needs

In the *Baseline Conditions Report* three major types of environmental constraints were identified which will have a significant impact on any transportation improvements which may be undertaken in the future. These three constraints were wetland areas and water features, historic and cultural resources, and community facilities.

The city is relatively free of wetland and water resources and the steep sloping topography which typically accompanies such features. The major constraints in this category are located between East Washington Street and East Avenue (Horse Branch) and just along the western edge of the railroad tracks on the south side of town between Monticello Highway and Eatonton Highway crossing Lion's Club Road and Amtico Road (Fourmile Branch). Although they are not completely within the city limits, and were thus not called out in the *Baseline Conditions Report*, the water features and wetlands along Little Indian Creek and Mile Branch/Mason Lake will have a significant impact on any new connector or bypass facility for the northern and western quadrants of the city.

The historic district of Madison was recognized as the major environmental constraint in the *Baseline Conditions Report* due to its vast size and critical economic value to the community. This district, being centrally located and containing many of the major trip generators and attractions of the city, make it imperative that transportation investments and land use development in and around the city pay special attention to the inevitable impacts to the transportation system in this district. Developing viable alternatives for local and through traffic that avoid this district is a critical need for the city.

In addition to managing traffic capacity through the historic district, it is also imperative that future land use development of those vacant and agricultural areas in and adjacent to the historic district be complemented by a transportation street network that blends as seamlessly as possible with the original street grid of the city. The areas to the north of the railroad will be the main focus of this need to create a transitional street network that will blend the historic district's network to the modern day periphery of the city. Original street alignments, widths, setbacks, alleys, sidewalk patterns, street tree plantings, and curb cut spacing should be followed as much as possible while allowing for the safe and efficient movements of local traffic and emergency vehicles. A survey and inventory of historic street typologies which identify their design specifications will be needed. This effort will recognize the contributing role the historic street network plays in creating the identity of the historic district and the image of Madison as a tourist destination.

The last category of environmental constraints is community facilities. The only major community facility outside the historic district that was identified in the *Baseline Conditions Report* was the School/County Library/Ball Parks Complex located near the intersection of Old Buckhead Road and the US 441 Bypass. At present no major conflict between traffic operations and this facility is noticeable except for minor delays at school arrival and departure times which is typical. As enrollments increase, this situation will need to be monitored to see if access control and further signalization and/or police traffic direction is needed. The main recommendation near this facility in the *East Georgia Multi-County Transportation Study* was to add sidewalks to the north side of East Street from Harris Street to the Morgan County library. It would be advisable to go on and add sidewalks to both sides of College Street and Old Buckhead Road all the

way to the city limits due to the adjacent location of several schools, parks and other community facilities.

6.1 Corridor Transportation Needs Identified in the Analysis of environmental Factors

In terms of corridor transportation needs, these environmental factors suggest the following:

- There is a need to protect historic structures, districts, as well as natural resources such as wetlands and water features by steering development and transportation infrastructure away from these areas.
- There is a need for all development and transportation infrastructure planned near water and wetland features to consider how they can support the recommendations of the *Greenprints Plan* when being reviewed for approval.
- There is a need to create a viable travel alternative to the historic district for local and through traffic traversing the city from the north to I-20.
- There is a need to develop special transportation network design guidelines in those newly developing residential areas north of the railroad which are immediately adjacent to the historic district.
- There is a need continued monitoring of the impact of school traffic on the US 441 Bypass and local streets to maintain system functionality at school arrival and departure times.
- There is a need to ensure consistency with the findings/recommendations of the *East Georgia Multi-County Transportation Study*
- There is a need to add sidewalks to both sides of College Street and Old Buckhead Road all the way to the city limits due to the adjacent location of several schools, parks and other community facilities.

7.0 Summary of Corridor Transportation Needs

Policy Needs

- There is a need to ensure consistency with the findings/recommendations of all other recent and relevant transportation plans in the Madison area.

Existing and Future Network Conditions Needs:

- There is a need to relieve current congestion on the segments of main Street with the worst LOS:
 - between Crawford Street and US 441,
 - between First Street and Reese Street,
- There is a need to relieve current congestion on the intersections with the worst LOS;
 - Atlanta Highway (US 278) and Ward Street in the PM peak,
 - Atlanta Highway (US 278) and Monticello Highway (SR83) in both peaks,
 - Main Street and Eatonton Road (US 441/129) in both peaks.
- There is a need to relieve future congestion on segments of Main Street with unacceptable LOS:
 - between Confederate Road and Ward Street,
 - between Crawford Street and US 441,
 - between First Street and Reese Street,
 - between Billups Road and Park Street.
- There is a need to relieve future congestion on segments of Eatonton Road with unacceptable LOS:
 - between Lions Club Road and Fairgrounds Road,
 - between Cox Road and Main Street (US 278).
- There is a need to relieve future congestion on intersections with unacceptable LOS;
 - Washington Street and main Street
 - Bethany Road and UD 441 Bypass
 - US 278 and US 441
 - US 441 and Ward Street
 - SR 83 and Ward Street
 - Atlanta Highway and SR 83
 - Lion's Club Drive and US 441
 - Lion's Club Drive and SR 83
- There is a need to continue to monitor high accident locations to see if they change in proportion to statewide averages significantly enough to warrant intervention;
- There is a need to promote the proposed SR 83 truck bypass and tie its design to other needs for that quadrant of town identified in this report such as connectivity, accessibility, historic preservation, and mobility for future development areas;
- There is a critical need to augment overall street connectivity by increasing the number of routing options from the north to I-20 that effectively navigate the barrier of the railroads;

- There is a need to develop routing alternatives to Main Street and Eatonton Highway in order to accommodate the through traffic which is funneled onto them by traffic calming devices in surrounding residential neighborhoods;
- There is a need to provide adequate parking for the downtown areas in a context sensitive manner that serves the historic district without creating structures that impact the visual appearance of the district.

Alternative Modes Needs:

- There is a need to ensure consistency with the findings and recommendations of the *East Georgia Multi-County Transportation Study*;
- There is a need to implement bike lanes in accordance with the regional bike plan on:
 - US 441 / Eatonton Hwy from US 278 to I-20
 - US 278 Atlanta Hwy from Confederate Avenue to Sulgrave Street;
- There is a need to fill in the major gaps in the existing sidewalk network:
 - between College Drive and East Avenue along Moreland College and Harris Streets on the northeastern edge of town,
 - along East Avenue/Old Buckhead Road from the end of pavement to the end of Brown Lane
 - between Whitehall Street and Burney Street along Pearl and 5th Streets on the northern edge of town and,
 - between Main Street and *Ward Road* along Eatonton Highway;
- There is a need to update city development regulations to require extensions and infill construction of sidewalks as necessary to provide connection to the nearest existing sidewalks, in addition to requiring all new residential subdivisions and commercial/industrial developments to construct new sidewalks within and as part of their development;
- There is a need to look for opportunities to expand bicycle facilities to connect Madison to other major hubs and towns in the county, particularly along favorable topography such as that which exists on the roads parallel to the main east-west train tracks such as Dixie Highway, Lower Apalachee Road, and Greensboro Road;
- There is a need to look for opportunities to connect the trails and alternative mode facilities envisioned in various planning efforts completed for the City of Madison and Morgan County;
- There is a need to continually re-examine conditions along the I-20 corridor to determine if growth warrants new commuter transit service and to identify and acquire a favorable location at either Madison exit (SR 83 or US 441) for a future park-and-ride facility.

Land Use Transportation Coordination Needs:

- There is a need to apply access management techniques to preserve corridor mobility by separating local from through traffic along Eatonton Highway due to the significant amount of commercial development along this corridor.
- There is a need to provide a major alternative route from the northwestern quadrant of the city to the area near I-20 to relieve pressure on the Main Street corridor due to the planned residential development in that area and the restrictions placed on overall network connectivity due to the Georgia Railroad.

- There is a need to develop special transportation network design guidelines in those newly developing residential areas north of the railroad which are immediately adjacent to the historic district.
- There is a need to apply access management techniques to preserve corridor mobility by separating local from through traffic along the US 441/US 129 Bypass due to the significant amount of planned residential development at the intersection with East Washington Street.
- There is a need to apply access management techniques to preserve corridor mobility and to by separating local from through traffic along the Monticello Highway (SR 83) corridor due to the significant amount of planned industrial development and to provide a major alternative route to the northwestern quadrant of the city from the area near I-20 to relieve pressure on the Main Street corridor.
- Upgrades to Lions Club Road and Amtico Road, particularly signals at railroad crossings and perhaps bridges will be needed as the adjacent land uses are fully converted to industrial uses.

Environmental Needs:

- There is a need to protect natural resources such as wetlands and water features by steering development and transportation infrastructure away from these areas.
- There is a need for all development and transportation infrastructure planned near water and wetland features to consider how they can support the recommendations of the *Greenprints Plan* when being reviewed for approval.
- There is a need to create a viable travel alternative to the historic district for local and through traffic traversing the city from the north to I-20.
- There is a need to develop special transportation network design guidelines in those newly developing residential areas north of the railroad which are immediately adjacent to the historic district.
- There is a need for continued monitoring of the impact of school traffic on the US 441 Bypass and local streets to maintain system functionality at school arrival and departure times.
- There is a need to add sidewalks to both sides of College Street and Old Buckhead Road all the way to the city limits due to the adjacent location of several schools, parks and other community facilities.

8.0 Goals and Objectives

This needs assessment has identified the overarching transportation and land use factors facing the City of Madison. These various needs do not exhaust the possible range of land use and transportation strategies that the alternatives analysis can address, but rather provides the foundation and starting point in establishing specific goals and objectives. Furthermore, the goals and objectives create the building blocks for crafting the recommendations for improving the city’s transportation network. Thus the study needs as well as the study goals will guide the development of individual projects and policies and provide guidance in answering key questions that capture the needs discussed in this report. Some of the key questions are:

- How much future growth can be concentrated in the city limits?
- How much future growth can be accommodated by the existing system?
- What land use strategies might preserve the overall functionality of the transportation system?
- How can alternative modes of transportation to car trips be supported?
- How can safety of motorists and pedestrian be improved?
- What will be needed to create a sustainable transportation network for the city?

Proposed Goals and Objectives

The table below gives proposed goals and objectives based on the needs identified in the preceding sections.

Table 8.1 – Draft Major Thoroughfares Plan Goals and Objectives

Goal 1.0 Maintain and improve transportation system performance and safety

Objective 1.1 Reduce the number of accidents on the transportation network below statewide averages.

Objective 1.2 Prioritize system management strategies such as access management ahead of additional system capacity

Objective 1.3 Maintain and expand a system based on the principle of multiple parallel routes.

Objective 1.4 Introduce new transit options to the area.

Objective 1.5 Create walkable environments that support alternative travel modes.

Goal 2.0 Maintain the unique identity of the City of Madison by protecting important public assets such as natural, cultural and historic resources.

Objective 2.1 Improve connections to important public spaces and sites with a variety of multi-modal options including transit and bike/pedestrian facilities.

Objective 2.2 Designate environmentally sensitive lands that should be avoided for development and transportation infrastructure.

Objective 2.3 Promote projects and policies that protect and preserve historic sites, areas, and structures.

Objective 2.4 Mitigate thru-traffic for the historic downtown.

Objective 2.5 Require new developments within the city to be follow the traditional development pattern demonstrated by the existing road network or on a comparable parallel road system.

Goal 3.0 Designate a hierarchy of corridors based not only on their functional classification but on their physical and historic context and which are consistent with local aspirations.

Objective 3.1 Develop design guidelines for roadways and access management along major corridors.

Objective 3.2 Focus transportation investments in key corridors but also plan for future redundant routes.

Objective 3.3 Encourage appropriately scaled development along the various types of corridors.



Major Thoroughfare Plan

**Alternatives Analysis Report
and Recommendations**

Prepared by:



**6801 Governors Lake Parkway
Building 200
Norcross, GA 30071**

August 2007

TABLE OF CONTENTS

1.0 Introduction	1-1
2.0 Plan Summary	2-1
3.0 Summary of Identified Transportation Needs.....	3-1
4.0 Goals and Objectives	4-1
5.0 Alternatives Analysis.....	5-1
5.1 Main Street-SR 83/US 278/US 441.....	5-1
5.2 S. Main Street Triangle-SR 83/US 278/US 441	5-1
5.3 SR 83/US 278 Intersection at Confederate Rd/Pennington Rd.....	5-1
5.4 SR 83 (South)/ Monticello Road.....	5-2
5.5 US 441/Eatonton Road.....	5-2
5.6 US 441 Relief (SR 83N Connector & SR 83/US 441 Bypass)	5-2
6.0 Plan Recommendations	6-1
6.1 Major Projects	6-5
6.2 S. Main Street Triangle-SR 83/US 278/US 441	6-5
6.3 SR 83/US 278 Intersection.....	6-5
6.4 Industrial Boulevard and North Main Street Intersection.....	6-5
6.5 US 441 Relief (SR 83N Connector & SR 83/US 441 Bypass)	6-7
6.6 Minor Projects	6-8
6.7 Policy Recommendations	6-8
6.7.1 Access Management	6-8
6.7.2 Proposed Local Street Master Plan.....	6-9
6.7.3 Update of City Standards.....	6-11
7.0 Implementation Plan.....	7-1
7.1 Financial Assessment	7-1
8.0 Conclusion.....	8-1
Appendix A.....	8-1

LIST OF TABLES

Table 4.1 – Draft Major Thoroughfare Plan Goals and Objectives..... 4-1
Table 6.1 – Recommended Projects..... 6-2
Table 7-1. Funding Needs by Phase..... 7-3

LIST OF FIGURES

Figure 6-1 – Recommended Transportation Improvements..... 6-4
Figure 6-2 Sample Concept Design for Main Street Triangle 6-6
Figure 6-3 Sample Concept Design for SR 83/US 278 Intersection 6-7
Figure 6-4 Proposed Local Street Master Plan..... 6-10

1.0 Introduction

This report is the third in a series of technical memoranda developed as part of the *Madison Major Thoroughfare Plan*. The purpose of this report is to present the project proposals and policy recommendations responding to the key transportation needs and priorities for the major corridors in the City of Madison and potential future corridors. The findings of this report are based on computer modeling, field surveys, and stakeholder input.

Transportation shapes our communities and because its effects are so pervasive, transportation policy and programs should be designed to produce benefits across a broad set of values. This can be achieved if planning for improvements reflects those values and the relationships of transportation to other aspects of the community and the surrounding region. The *City of Madison Major Thoroughfare Plan* supports the city's short-term and long-term goals through the identification of transportation policies and programs, developed with careful consideration given to the overall social, economic, environmental, and land use effects of transportation decisions.

The *Alternatives Analysis Report and Recommendations* examines the relationship of land use to travel patterns and travel demands and addresses the planning, evaluation, and programming of transportation facilities, including roadways, pedestrian facilities, bicycle facilities, and safety improvements. The data gathered and reviewed for this report includes traffic operations, travel patterns, traffic design, demographic information and comprehensive planning. This plan assesses short-term and long-term needs and recommends projects and policies to meet the city's transportation goals.

2.0 Plan Summary

Recognizing that an increase in population and development creates pressure on the existing transportation network, the City of Madison initiated a city-wide *Major Thoroughfare Plan* to document current and future transportation needs and opportunities. The plan assesses both short-term and long-term needs and recommends projects to meet the city's transportation needs. It also charts a direction and offers specific actions to be taken to achieve the city's long-term vision and quality of life goals set forth in the *Comprehensive Plan (2004)*.

The context of the plan includes an understanding of social, economic, and land use characteristics; regulatory requirements of thoroughfare planning; and the process for implementing elements of the plan. The resulting plan is based on a combination of technical merit, public and agency involvement, and financial funding responsibilities.

Purpose of Major Thoroughfare Plan

The overall purpose of the City of Madison *Major Thoroughfare Plan* is to support the guidelines outlined in the previous major planning efforts involving the city and to carry them to the next level of development. One specific purpose of the plan is to achieve a prioritized list of efficient and effective transportation systems' improvements that will accommodate current and future local travel demands. To address this purpose, the plan centers around three objectives.

- To develop a city-wide thoroughfare plan and document
- To give more definitive direction to certain transportation projects which have been discussed for many years
- To identify immediate actions for specific transportation projects

Study Methodology

The City of Madison's transportation needs were assessed through an analysis of existing conditions, study of specific issues, and projection of future growth. Transportation issues were identified through each of the study tasks: review of needs and goals and objectives, data collection, field investigation, and public participation. Each identified issue was reviewed during analysis and development of the *Major Thoroughfare Plan*. Specific location issues related to critical intersections, development patterns, current operational issues, programmed improvements and previously identified improvements.

The consultant spoke with city staff, GDOT personnel, and local residents as well as elected representatives in order to obtain insight from various perspectives on the major transportation concerns and potential resolutions in Madison. Public input was also solicited through a public open house meeting in July 2007 and public comments during a Madison City Council work session in August 2007 (**See Appendix A**). These meetings are conducted to collect valuable local knowledge and an understanding of local transportation desires.

Existing conditions data, input from the public and local stakeholders, growth projections and identified transportation needs were all important in developing a series of

transportation recommendations for the City of Madison. The *Major Thoroughfares Plan* is based directly on the *Comprehensive Plan* and the adopted *Future Land Use Plan* that supports the city's short-term and long-term goals.

Existing Conditions

The existing transportation system in Madison includes a network of roads and sidewalks, three rail lines, and a municipal airport. The roadway network, composed of a system of arterial, collectors, and local streets, is the central focus of Morgan County's network and is the main transfer hub for cross-county traffic. US 441 (Eatonton Hwy), US 278 (Atlanta Hwy) and SR 83 (Monticello Hwy) all converge in the Downtown Madison and form Main Street.

Recent increases in vehicular traffic in the city have been unexpectedly high. The population of Morgan County alone increased by nearly 33% in the 1990's and that level of growth is continuing in neighboring counties as well. Using standard GDOT traffic growth rates, traffic is expected to nearly double on all the main routes through downtown. Furthermore, truck traffic is expected to grow at an even faster rate than vehicular traffic.

3.0 Summary of Identified Transportation Needs

In the *Needs Assessment Report*, a series of needs for the city was developed by analyzing the data collected in the *Baseline Conditions Report*. These needs covered several different categories relating to transportation system performance in the city. This list of needs was comprehensive including specific network improvements, accident mitigation, context-sensitive design for streetscapes, parking, truck routing, transit, bicycle and pedestrian facilities, environmental concerns, coordination with other plans, and land use-transportation policies.

Policy Needs

- There is a need to ensure consistency with the findings/recommendations of all other recent and relevant transportation plans in the Madison area.

Existing and Future Network Conditions Needs:

- There is a need to relieve current congestion on the segments of Main Street with unacceptable LOS:
 - between Crawford Street and US 441,
 - between First Street and Reese Street.
 - There is a need to relieve current congestion on the intersections with the worst LOS;
 - Atlanta Highway (US 278) and Ward Road in the PM peak,
 - Atlanta Highway (US 278) and Monticello Road (SR 83) in both peaks,
 - Main Street and Eatonton Road (US 441/129) in both peaks.
 - There is a need to relieve future congestion on segments of Main Street with unacceptable LOS:
 - between Confederate Road and Ward Road,
 - between Crawford Street and US 441,
 - between First Street and Reese Street,
 - between Billups Road and Park Street.
 - There is a need to relieve future congestion on segments of Eatonton Road with unacceptable LOS:
 - between Lions Club Road and Fairgrounds Road,
 - between Cox Road and S. Main Street (US 278).
 - There is a need to relieve future congestion on intersections with unacceptable LOS;
 - Washington Street and Main Street
 - Bethany Road and US 441 Bypass
 - US 278 and US 441
 - US 441 and Ward Road
 - SR 83 and Ward Road
 - Atlanta Highway and SR 83
 - Lions Club Drive and US 441
 - Lions Club Drive and SR 83
 - There is a need to continue to monitor high accident locations to see if accident rates change in proportion to statewide averages significantly enough to warrant intervention;
 - There is a need for design improvements for the following intersections:
-

- Main Street at the intersection of US 278 and US 441,
 - Monticello Road at the intersection with US 278,
 - Eatonton Road at the intersection with Lions Club Road.
- There is a need to pursue the proposed SR 83 truck bypass and coordinate its design with other needs for that quadrant of the city identified in this report for connectivity, accessibility, Main Street preservation, and mobility for future development areas;
- There is a critical need to augment overall street connectivity by increasing the number of routing options from the north to I-20 that effectively navigate the barrier of the railroads;
- There is a need to develop routing alternatives to Main Street and Eatonton Road in order to accommodate the thru-traffic, which is funneled onto the arterials by traffic calming devices in surrounding residential neighborhoods;
- There is a need to provide adequate parking for the downtown area in a context-sensitive manner that serves the historic downtown without creating structures that impact the visual character and development pattern.

Alternative Modes Needs:

- There is a need to ensure consistency with the findings and recommendations of the *East Georgia Multi-County Transportation Study*
 - There is a need to implement bike lanes in accordance with the regional bike plan on:
 - US 441 / Eatonton Hwy from US 278 to I-20
 - US 278 Atlanta Hwy from Confederate Avenue to Sulgrave Street
 - There is a need to fill in the major gaps in the existing sidewalk network:
 - between College Drive and East Avenue along Moreland College and Harris Streets on the northeastern edge of town,
 - along East Avenue/Old Buckhead Road from the end of pavement to the end of Brown Lane
 - between Whitehall Street and Burney Street along Pearl and 5th Streets on the northern edge of town and,
 - between Main Street and Ward Road along Eatonton Highway.
 - There is a need to update city development regulations to require extensions and infill construction of sidewalks as necessary to provide connection to the nearest existing sidewalks, in addition to requiring all new residential subdivisions and commercial/industrial developments to construct new sidewalks within and as part of their development.
 - There is a need to look for opportunities to expand bicycle facilities to connect Madison to other major hubs and towns in the county, particularly along favorable topography such as that which exists on the roads parallel to the main east-west train tracks such as Dixie Highway, Lower Apalachee Road, and Greensboro Road.
 - There is a need to look for opportunities to connect the trails and alternative mode facilities envisioned in various planning efforts completed for the City of Madison and Morgan County.
 - There is a need to continually re-examine conditions along the I-20 corridor to determine if growth warrants new commuter transit service and to identify and acquire a favorable location at either Madison exit (SR 83 or US 441) for a future park-and-ride facility.
-

Land Use Transportation Coordination Needs:

- There is a need to apply access management techniques to preserve corridor mobility by separating local local traffic from thru-traffic along Eatonton Road due to the significant amount of commercial development along this corridor.
- There is a need to apply access management techniques to preserve corridor mobility by separating local traffic from thru-traffic along the US 441/US 129 Bypass due to the significant amount of planned developments at its intersecting streets and along its length.
- There is a need to apply access management techniques to preserve corridor mobility by separating local traffic from thru-traffic along the Monticello Road (SR 83) corridor due to the significant amount of planned industrial development and to provide a major alternative route to the northwestern quadrant of the city from the area near I-20 to relieve pressure on the Main Street corridor.
- There is a need to provide a major alternative route from the northwestern quadrant of the city to the area near I-20 to relieve pressure on the Main Street corridor due to the planned residential development in that area and the restrictions placed on overall network connectivity due to the Norfolk Southern / CSX railroads.
- There is a need to develop additional transportation network construction and design standard details for new residential development north of the railroad which are immediately abutting the Madison Historic District.
- Upgrades to Lions Club Road and Amtico Road, particularly signals at railroad crossings and possibly bridges, will be needed as the adjacent land uses are fully converted to industrial uses and the 83N Bypass project proceeds.

Environmental Needs:

- There is a need to protect historic structures, districts, as well as natural resources such as wetlands and water features by steering development and transportation infrastructure away from these areas.
 - There is a need for all development and transportation infrastructure planned near water and wetland features to follow the recommendations of the *Greenprints Plan* while being reviewed for approval.
 - There is a need to create a viable alternative to the historic district for local and thru-traffic traversing the city from the north to I-20.
 - There is a need to develop special transportation network design guidelines in newly developing residential areas north of the railroad which are immediately adjacent to the historic district.
 - There is a need for continued monitoring of school traffic around the US 441 Bypass and on local streets to maintain system functionality at school arrival and departure times.
 - There is a need to ensure consistency with the findings/recommendations of the *East Georgia Multi-County Transportation Study*
-

There is a need to add sidewalks to both sides of College Drive and East Avenue all the way to the city limits due to the proximity of several significant and high-volume community facilities.

4.0 Goals and Objectives

The identified needs were used to develop a series of goals and objectives for the study. These goals and objectives were in turn used to create the building blocks for crafting the recommendations for improving the city's transportation network. Thus the study needs as well as the study goals guided the development of individual projects and policies. These various needs do not exhaust the possible range of land use and transportation strategies that the alternatives analysis can address, but rather provides the foundation and starting point in establishing specific goals and objectives.

Proposed Goals and Objectives

The table below gives proposed goals and objectives based on the needs identified in the preceding sections.

Table 4.1 – Draft Major Thoroughfare Plan Goals and Objectives

Goal 1.0 Maintain and improve transportation system performance and safety

Objective 1.1 Reduce the number of accidents on the transportation network below statewide averages.

Objective 1.2 Prioritize system management strategies such as access management ahead of additional system capacity

Objective 1.3 Maintain and expand a system based on the principle of multiple parallel routes.

Objective 1.4 Introduce new transit options to the area.

Objective 1.5 Create walkable environments that support alternative travel modes.

Goal 2.0 Maintain the unique identity of the City of Madison by protecting important public assets such as natural, cultural and historic resources.

Objective 2.1 Improve connections to important public spaces and sites with a variety of multi-modal options including transit and bike/pedestrian facilities.

Objective 2.2 Designate environmentally sensitive lands that should be avoided for development and transportation infrastructure.

Objective 2.3 Promote projects and policies that protect and preserve historic sites, areas, and structures.

Objective 2.4 Mitigate thru-traffic for the historic downtown.

Objective 2.5 Require new developments within the city to be follow the traditional development pattern demonstrated by the existing road network or on a comparable parallel road system.

Goal 3.0 Designate a hierarchy of corridors based not only on their functional classification but on their physical and historic context and which are consistent with local aspirations.

Objective 3.1 Develop design guidelines for roadways and access management along major corridors.

Objective 3.2 Focus transportation investments in key corridors but also plan for future redundant routes.

Objective 3.3 Encourage appropriately scaled development along the various types of corridors.

5.0 Alternatives Analysis

This section looks at the main issues on each major corridor and the conceptual ideas behind the solutions proposed for them. Various alternative solutions were considered and those holding the most promise in meeting the goals of the previous chapter were selected. This list, and the resulting recommendations, are meant to be a starting point for further discussion and do not represent the only solutions possible.

5.1 Main Street-SR 83/US 278/US 441

Several issues confront the S. Main Street corridor into the downtown. First, from the intersection of US 278/Atlanta Highway and US 441/S. Main Street to the intersection of West Washington and S. Main Street, this entire segment of roadway is projected to be at level of service F by 2030. In order to mitigate this severely congested condition, capacity must be added to this corridor or an alternative identified. The entire length of this corridor is in the Madison Historic District, and widening beyond its current 3 lane section is impossible without compromising the entire district and undoubtedly proving to be a significant adverse effect if evaluated in accordance with Section 106 Environmental Review. Second, the current high volumes and tight turning radii lead to many accidents on this stretch of roadway. Eleven of a total of 24 crash sites identified in the city are on Main Street. Truck traffic and volumes are compounded due to the funneling of all SR 83N / Wellington Road / W. Washington Street through the downtown. A proposal to remove a few on-street parking spaces to alleviate truck traffic turning speeds would still not solve the great delays caused by large vehicles operating in a small, dense downtown. Furthermore, this proposal is a non-starter because it would harm the historic value and economic potential of the district, undermine all businesses in the downtown, and only heighten the hazard for pedestrian crosswalks. Therefore, solutions to Main Street issues will have to be addressed by finding alternative parallel routes for vehicle and truck traffic. Another key issue is railroad crossing parallel to N. Main Street. There are limited opportunities to cross these tracks and many of them are in poor condition. The one most in need of reconfiguration is the Industrial Boulevard crossing and W. Jefferson Street remains increasingly hazardous increasing adjacent development and an unsignalized crossing as well.

5.2 S. Main Street Triangle-SR 83/US 278/US 441

The entire triangle intersection complex is subject to safety issues at all three intersections. The current US 278/Atlanta Highway and US 441/ Eatonton Road intersection is one of the most dangerous sites in Madison due to the skewed angle of its intersection. The other angle intersections of the triangle also show some accident activity, which is likely to increase over time with increases in traffic volumes. There are several ways these intersections could be redesigned but major concerns in any change are:

- the presence of the Madison Historic District in the northern half of the triangle, and,
- the need to disrupt as few properties as possible and maintain driveways to all impacted owners that remain.

5.3 SR 83/US 278 Intersection at Confederate Rd/Pennington Rd

This five-way intersection is also a major safety issue location because of the confusing nature of the crossroads. There is no signalization and it is difficult for drivers to

remember the order of precedence once several cars have waited for a truck to pass along US 278/Atlanta Highway. Furthermore, the angles are skewed apart so it is difficult to perceive all driveways with ease. There are several ways this intersection could be reconfigured to overcome safety issues, but the major concerns in any change are:

- the presence of water features to the north,
- the need to align roads at right-angle intersections, if possible,
- the need to subordinate one of the two minor roads (Confederate or Pennington), and,
- the need to disrupt as few properties as possible and maintain driveways to all impacted owners that remain.

5.4 SR 83 (South)/ Monticello Road

This corridor was seen as operating in poor condition in the future according to the East Georgia Multi-County Plan and a widening was recommended in that study. According to this study analysis, Monticello Road will be level of service A/B in 2030, and as such, the facility does not need widening for quite some time although deceleration lanes remain essential for the adjacent industries. Currently, it is still largely undeveloped and handles all traffic easily. However, developmental pressures could quickly change this as the *Future Land Use Plan* envisions industrial development along this corridor, and a pending planned development is proposed as a high-volume, trucking-based facility of such a size to constitute a development of regional impact. Access management principles are essential.

5.5 US 441/Eatonton Road

This is one of the most heavily traveled corridors in the city and also has some of the highest truck volumes of any arterial. In 2030, Eatonton Road too is projected to be at level of service F from the intersection of Ward Street (SR 24 Spur) to the intersection with the Bypass. The bulk of recent commercial development has been along this segment, presenting the challenge of implementing some form of access management to separate local traffic from thru-traffic and maintaining travel speeds. The proposed bypass would also give some relief to this corridor as thru-traffic could be diverted around downtown, but this corridor will probably continue to see the most intensive development of any location in Madison. Widening is still possible but not compatible with streetscape dimensions and more than a decade of dedicated corridor management by local ordinance and as expressed by stakeholders and in the *Comprehensive Plan*.

5.6 US 441 Relief (SR 83N Connector & SR 83/US 441 Bypass)

This bypass is one of the busiest corridors in the city and it handles the bulk of the truck traffic in the area. Fortunately, development has not begun on the bypass to a large degree, which is partially limited access, and it remains possible to enact access management controls on developments that are sure to come in the next 10 years. The bypass will need to extend in length to accommodate more traffic in the county that is increasingly funneled into downtown due to the currently roadway configuration. Bypass extensions to SR 83 north of town from the east and west will be necessary in the long term as new county lands open up to development and the city's downtown network reaches its carrying capacity.

6.0 Plan Recommendations

The recommended *Major Thoroughfare Plan* addresses the needs identified through several avenues, including:

- Review of existing conditions and deficiencies;
- Input from citizens, elected officials, local staff and other agencies;
- Estimates of future travel demand; and
- Consideration of land use policies and development goals.

The resulting plan adheres to the following principles:

- Major thoroughfares should connect the major development nodes;
- A roadway's physical components should be suitable for the adjacent land uses and intended travel purposes;
- A network of alternate roadways is preferred over a limited set of arterials;
- A hierarchy of roadway types is desirable; and
- The maximum desirable number of lanes on any major thoroughfare should be three lanes inside the historic district and three lanes inside the bypass or within the one-mile circular original city limit boundary.

The resulting *Major Thoroughfare Plan* as illustrated in **Figure 6.1** identifies the improvements to the major travel corridors and nodes throughout the city by types and location. All projects are coded on the map by an ID number. The plan also recommends several projects to address safety and traffic operations' issues. Key policy and procedural guidelines are also recommended for traffic calming, streetscape standards, and right-of-way preservation. **Table 6.1** summarizes the projects and their characteristics.

The *Major Thoroughfare Plan* also includes studies and policy recommendations. Studies will be necessary to verify certain "hot spots" identified by stakeholders and to refine the recommendations into viable projects. The policy recommendations include 1) access management along the major commercial corridors to separate local and through traffic in order to maintain the functionality of these arterials and 2) traffic calming on local streets and in the downtown. The Proposed Local Street Master Plan is the most ambitious policy recommendation which aspires to create a well-connected network of streets that supports local trip patterns to all the major nodes within the city rather than forcing all traffic to depend on a few arterial roadways (i.e., Main Street, Wellington Road, Eatonton Road, and Atlanta Highway).

Table 6.1 – Recommended Projects

ID	Project Location	From	To	Implementation			Estimated Cost	Potential Funding Source		
				Near	Mid	Long		Fed	State	Local
New Roadways										
1	SR 83 Bypass	SR 83 N	US 441 Eatonton Hwy			X	\$55,200,000	X	X	X
2	SR 83 US 441 Connector	SR 83 N	US 441 N			X	\$22,080,000	X	X	X
Intersection Realignments/Improvements										
3	US 278, SR 24 Spur, and US 441	NA	NA		X		\$11,322,400	X	X	X
4	SR 83 and US 278	NA	NA		X		\$3,373,600	X	X	X
5	Hancock and Jefferson	2-way stop	4-way stop	X			\$800			X
6	Hancock and Washington	2-way stop	4-way stop	X			\$800			X
7	Industrial Blvd and N. Main Street	NA	NA		X		\$493,020	X	X	X
Bike and Pedestrian Improvements										
8	Bike Lanes on US 441 Eatonton Hwy	US 278	I-20	X			\$330,000	X	X	X
9	Bike Lanes on US 278 Atlanta Hwy	Confederate Rd	Sulgrave Street	X			\$45,000	X	X	X
10	Sidewalks on Moreland Ave	East Avenue	College Drive	X			\$30,400	X		X
11	Sidewalks on College Avenue	East Avenue	College Drive	X			\$38,000	X		X
12	Sidewalks on Harris Street	East Avenue	College Drive	X			\$79,800	X		X
13	Sidewalks on East Ave	End of pavement	Brown Lane	X			\$292,600	X		X
14	Sidewalks on Pearl Street	Whitehall Street	Burney Street	X			\$24,700			X
15	Sidewalks on Fifth Street	Whitehall Street	Burney Street	X			\$26,600			X
16	Sidewalks on US 441 Eatonton Hwy	Main Street	Ward Street	X			\$95,000			X

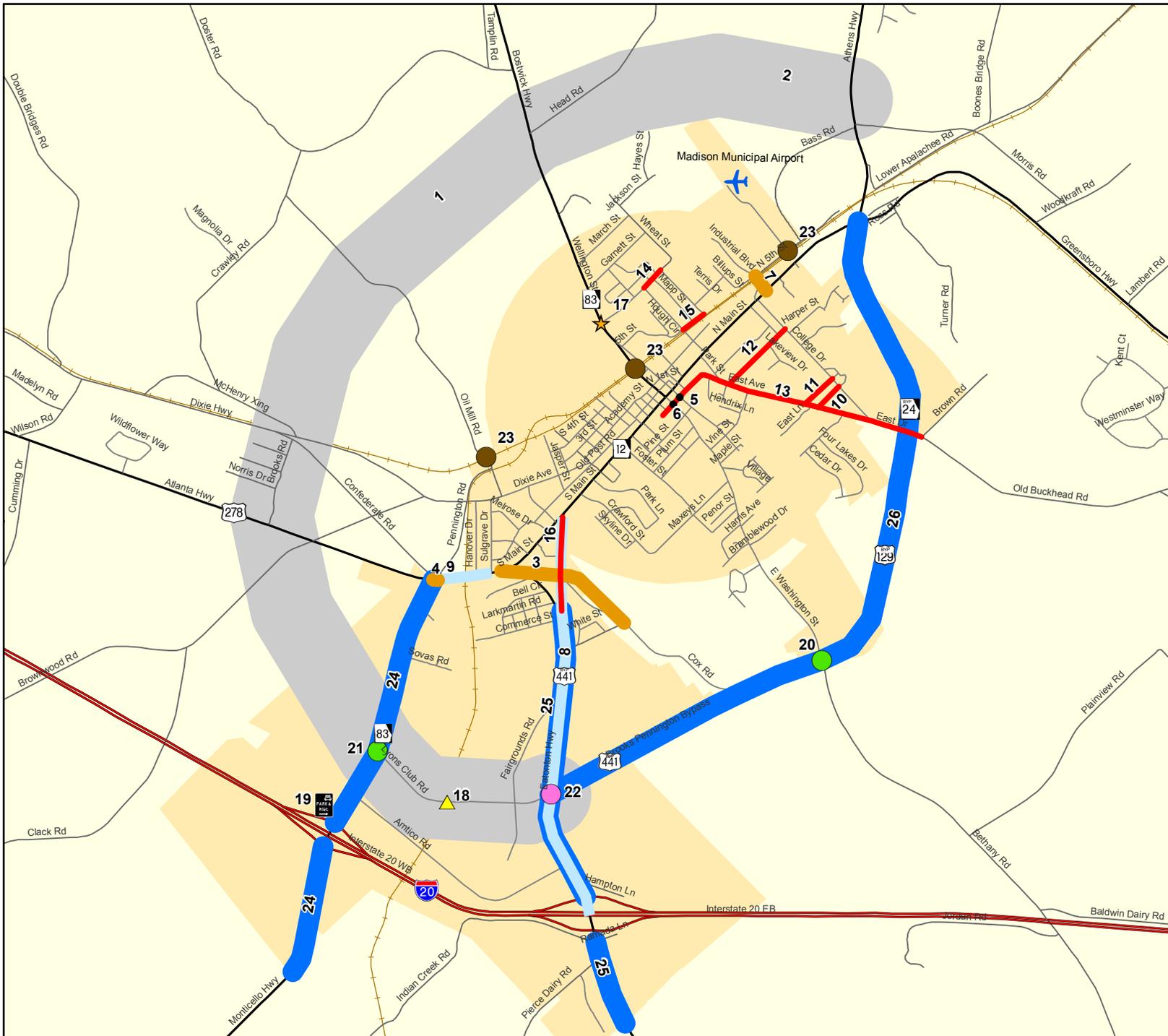
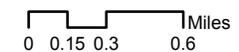
ID	Project Location	From	To	Implementation			Estimated Cost	Potential Funding Source		
				Near	Mid	Long		Fed	State	Local
17	Crosswalk at US 83 and Pearl Street	NA	NA	X			\$2,000			
Rail Crossing Improvements										
18	Lion's Club crossing as part of bypass project	NA	NA			X	NA	X	X	X
Transit Improvements										
19	Park and Ride Lot at SR 83 and I-20	NA	NA		X		\$50,000	X	X	X
Studies										
20	Traffic signal Warrant Study at East Washington Road and US 441 Bypass	NA	NA	X			\$20,000			X
21	Traffic signal Warrant Study at Lyons Club Road and US 83	NA	NA	X			\$20,000			X
22	Intersection Improvement Study at Lion's club Road and US 441 Bypass	NA	NA	X			\$20,000			X
23	Multi-Modal Station Location Study	NA	NA	X			\$30,000			X
Policy Recommendations										
24	Access management along SR 83 S	US 278 Atlanta hwy	Southern City Limits	X			NA	NA	NA	NA
25	Access management along US 441 S	Ward Street	Southern City Limits	X			NA	NA	NA	NA
26	Access management along US 441 bypass	N Main Street	US 441 Eatonton hwy	X			NA	NA	NA	NA
27	Street Grid ROW preservation/extension	NA	NA	X	X	X	NA	NA	NA	NA
28	Traffic Calming where warranted	NA	NA	X	X	X	\$1,000- per			X
29	Traffic calming with crosswalks in downtown	NA	NA	X	X	X	\$5,000-\$10,000 per			X

Source: ARC Costing Tool Note right of way costs not included

Figure 6.1: Recommended Transportation Improvements

Project Type

-  Upgrade to 4-way stop control
-  Intersection Improvement Study
-  Traffic Signal Warrant Study
-  Multi-Modal Station Location Study
-  Park & Ride Lot
-  Crosswalk
-  Rail Crossing Improvement
-  Sidewalk
-  Bike Lane
-  Intersection Redesign
-  Access Management
-  Proposed Bypass



6.1 Major Projects

6.2 S. Main Street Triangle-SR 83/US 278/US 441

It is recommended that this entire triangle intersection complex be reconfigured to overcome safety issues at all three intersections. The current US 278 would be brought to US 441 at a right angle, and Cox Rd would be realigned to meet it. This new intersection would be signalized. South Main Street would be closed at the north end of the triangle and Ward Road (SR 24 Spur) would also be closed. The fragments of these two roads would be brought together at a signalized intersection near the center of the current triangle. All new roads would be three-lane sections with appropriate right-turn lanes at the signals. This project is a mid-range project, and a sample concept design is depicted in **Figure 6- 2**.

6.3 SR 83/US 278 Intersection

The study recommends that this five-way intersection also be reconfigured to overcome safety issues. The current SR 83 / Monticello Highway would bend slightly to the east before being brought into US 278/Atlanta Highway at a right angle. Pennington Road would be brought westward before making a right angle intersection opposite SR 83. Confederate Road would be rerouted to intersect Pennington Road at approximately 200 feet to the north of the current intersection. This is a mid-range project, and a sample concept design is depicted in **Figure 6-3**.

6.4 Industrial Boulevard and North Main Street Intersection

The study recommends that this four-way angled intersection also be reconfigured to overcome safety and sight distance issues. The current Industrial Boulevard would be routed slightly to the east before being brought into North Main Street at a right angle. The existing roadbed would be kept but have a stop sign placed at its intersection with the new roadway. This is a mid-range project because of variable right-of-way acquisition options and therefore no sample concept design for the intersection is depicted at this time.

**Figure 6-2 Sample Concept Design for Main Street Triangle
SR 83/US 278/US 441**



**Figure 6-3 Sample Concept Design for SR 83/US 278 Intersection
at Confederate Road and Pennington Road**



6.5 US 441 Relief (SR 83N Connector & SR 83/US 441 Bypass)

Providing relief to the most congested roadway segment in the City of Madison is, and will be, a continuing priority for transportation planning efforts. The congestion on US 441 (South Main Street segment) is from a combination of traffic growth, limited parallel routing options, physical constraints such as the railroad, environmental constraints such as the historic district, high levels of truck traffic, and the high accident locations mentioned above. It is the finding of this report that ultimately an alternative to this route will have to be constructed on the edge of the city connecting SR 83N to both the bypass and SR 83S. Although the priority segment is from SR 83N to US 441/Eatonton Rd somewhere in the vicinity of *Lions Club Road*, this will probably be preceded by the second priority segment is from SR 83N/Bostwick Highway to US 441N/Athens Highway because of costs and complexity of right-of-way acquisition. Both of these projects will have to be pushed to long-range because of the significant costs involved. Because of these funding issues a four point phased approach is recommended in tackling this problem over time as more resources become available. They are:

1. Use signage to begin to route some of the traffic to US 441 north of town via either Apalachee Road or Sandy Creek Road (short-range).
2. Designate either Apalachee Road or Sandy Creek Road as an official truck route (short-mid-range).
3. Construct the SR 83N Connector between SR 83N/Bostwick Highway and US 441N/Athens Highway (long-range).
4. Construct the bypass from SR 83N/Bostwick Highway to US 441S/Eatonton Highway (long-range).

See **Figure 6-1** for tentative locations of the last two items.

6.6 Minor Projects

Several minor projects are also included in the recommendations. These are short to mid-range projects with mostly local funds being used to leverage specific federal monies. See **Figure 6-1** for tentative locations. They include:

- Stop signs at Hancock Street and East Jefferson and East Washington Streets;
- Sidewalks connecting the major gaps near schools, parks, activity centers, and downtown as well as crosswalks improving safe passage at significant crossings;
- Sidewalks connecting the major gaps along state routes and extending such;
- Sidewalks connecting the major gaps between the existing sidewalk system and multi-family housing, public housing, and existing neighborhoods;
- Crosswalk on SR 83 N (Bostwick Highway) at Pearl Street;
- Bike lanes on major routes designated in the regional plan; and
- Transit for future commuter service to Atlanta.

6.7 Policy Recommendations

6.7.1 Access Management

SR 83/Monticello Road

The study proposes access management along SR 83/Monticello Road from its intersection with US 278 to I-20 and beyond to the city limits. Industrial land uses anticipated along this corridor would be required per zoning to share access drives, separate heavy truck and passenger vehicle parking areas, design for intensive internal circulation for heavy trucks and loading/unloading areas, install deceleration lanes, and provide easements to the city for front and/or rear access drives that parallel the corridor allowing for the separation of heavy truck and vehicular traffic. Curb cuts to the major highway would have to be across from drives on the opposite side thus allowing for a reduction in future signals. See **Figure 6-4** for a tentative street plan.

US 441/Eatonton Road

The study proposes access management along US 441/Eatonton Road from its intersection with US 278 to I-20 and beyond to the city limits. Commercial land uses anticipated along this corridor would be required per zoning to share access drives, have continuous access to adjacent parking lots, provide easements to the city for front and/or rear access drives that parallel the corridor allowing for the separation of local traffic and thru-traffic. Curb cuts to the major highway would have to be across from drives on the

opposite side thus allowing for a reduction in future signals. See **Figure 6-4** for a tentative street plan.

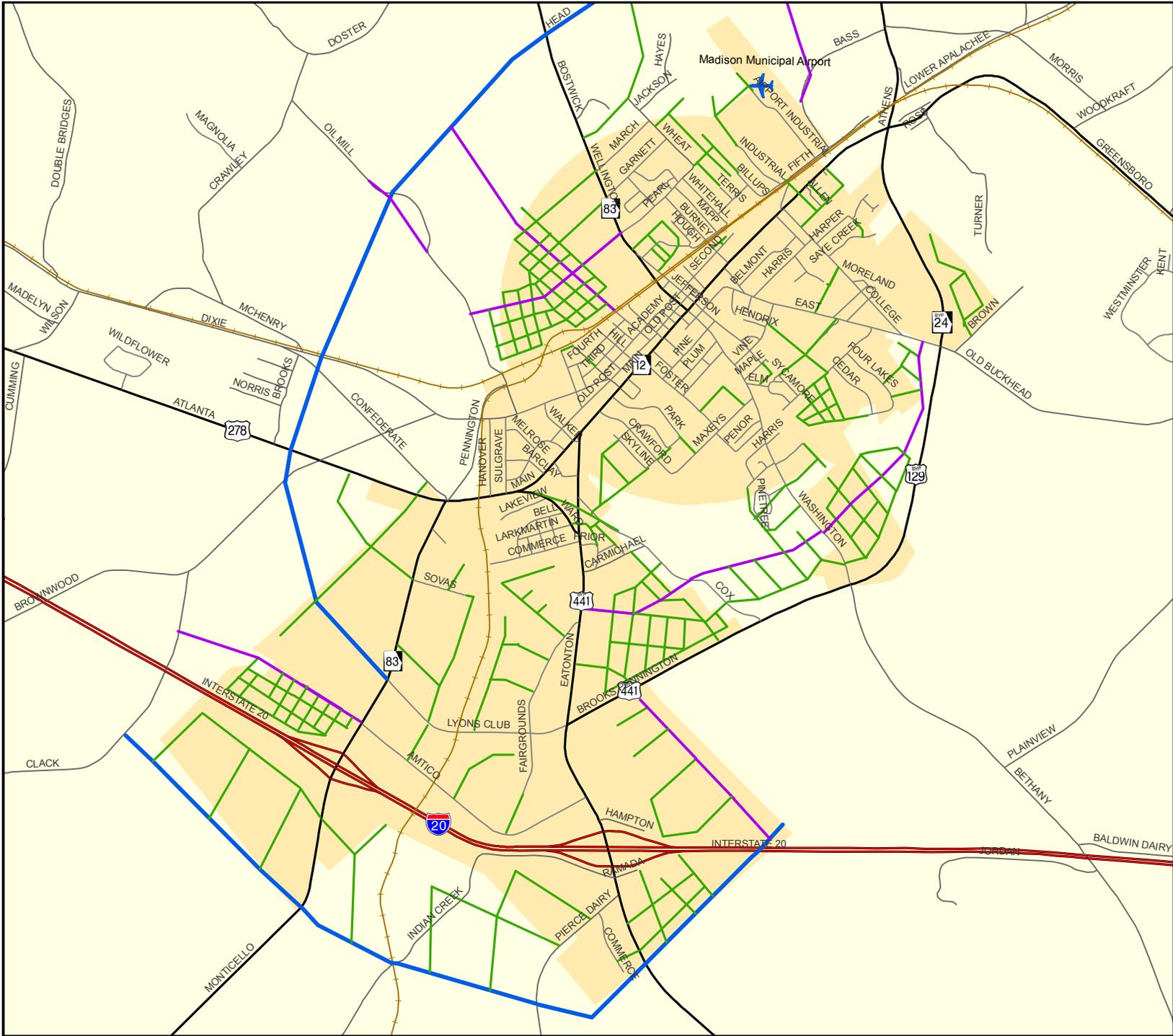
US 441 Bypass

The study proposes access management along US 441 Bypass from its intersection with North Main Street-US 278 to Lion's Club Road. All sections which are limited access should remain so, and no new access points should be permitted. Commercial and residential land uses anticipated along this corridor would be required per zoning to share access drives, have inter-parcel connectivity as to allow for internal trip capture, create new local streets circumventing large acreage as to accommodate internal circulation without access to the Bypass and maximum separation of local traffic and high speed thru-traffic along the Bypass. New road intersections with the the major highway would have to be across from new roads on the opposite side thus allowing for a reduction in future signals. See **Figure 6-4** for a tentative street plan.

6.7.2 Proposed Local Street Master Plan

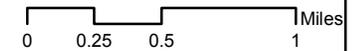
As per the existing *Comprehensive Plan* and municipal zoning and the access management proposals in this document, there is a need to identify transportation rights-of-way to handle future growth throughout the city. Residential growth is anticipated near the historic downtown, while industrial and commercial growth is anticipated on the southern periphery near I-20. This Proposed Local Street Master Plan (see **Figure 6-4**) proposes to extend the historic grid pattern and dimensions as per the *Comprehensive Plan* and municipal zoning in the one-mile radius of downtown and allows for a larger street grid pattern near I-20 to handle increased industrial warehousing traffic. This policy recommendation seeks to require developers to address street connectivity and grid extension plans in their zoning applications. They would be required to show how they are planning to extend the existing street grid to maintain multiple routing options. This is imperative to avoid the need for unlimited widening of major arterials. All development will be required to give easements to the city to allow for later development to have multiple access points to the existing street network. All development will be required to give easements to the city to allow for later development to have multiple access points to the existing street network. This grid network would be followed as closely as possible, but it is understood that deviations will be necessary to accommodate topography, water features, and historic resources. This network is designed primarily to enforce and protect network connectivity between all adjacent parcels as Madison is built out on a parcel-by-parcel basis.

Figure 6.4: Proposed Local Street Master Plan



Proposed Road Network

- Local Street
- Collector
- Connector
- Road
- Rail Line
- ✈ Airport
- City of Madison Limits
- Morgan County



6.7.3 Update of City Standards

A review of existing City's current code and development regulations was one of the tasks in the scope of work. In light of the analysis conducted during this study, there are several areas where City's current code and development regulations may require updates.

The City's current zoning ordinance can be updated to include a section relative to Traffic Impact Study Requirements, or a new ordinance can be developed and referenced by the zoning ordinance. The Traffic Impact Analysis Requirements section needs to establish the following:

- Requirements for study,
- Level of Service performance thresholds,
- Study procedures,
- Mitigation Strategies development,
- Review framework, and,
- Parking / Shared Parking analysis.

In addition to Traffic Impact Study Requirements, the City may revise the Access Management sections of the zoning ordinance, or adopt a new Access management ordinance, which would include the following:

- Shared driveway requirements;
- Driveway spacing requirements;
- Requirement to align new development driveways with existing roads, streets, or driveways which exist on the other side of major facilities; and,
- Requirement to provide a left-turn storage lane and/or right turn deceleration lane into proposed developments in areas outside of the downtown core.

The City should also consider adoption of a Traffic Calming Ordinance. This ordinance would outline the following:

- Methods of traffic calming appropriate to different parts of the city,
 - Method for prioritizing traffic calming device requests,
 - Methods of payment for traffic calming devices, and
 - Procedures to request removal of installed devices.
-

6.7.3.1 Review of Land Development Recommendations

Increasing development activity in the City of Madison is beginning to have congestive effects on the roadways and transportation network of the City. In response, city officials are considering requirements for submittal of a traffic impact study of proposed developments in the City and a method whereby the impacts determined from this study are mitigated by cooperative efforts of the public and private sectors. This document provides a policy review of the traffic impact study requirements other municipalities have enacted and provides factors that the City of Madison may want to consider in enacting its own procedures.

Many municipalities have found that transportation capacity is a commodity that has a value to the overall community and should be maintained to certain minimum level of service standards. Traffic impact studies are the first step to an overall growth management system that establishes criteria for study analysis, impact mitigation, financial exaction procedures such as impact fees, and development of a capital improvement program, if necessary. According to the Georgia Department of Community Affairs, traffic impact studies, in general, should include the following tasks:

- Forecast additional traffic associated with new development, based on accepted practices;
- Determine the improvements necessary to accommodate the new development;
- Allow the local government to assess the impacts that a proposed development may have and assist the local government in making decisions regarding development proposals;
- Help to ensure safe and reasonable traffic conditions on streets after the development is complete;
- Reduce the negative impacts created by developments by helping to ensure that the transportation network can accommodate the development;
- Protect the substantial investment in the street system; and,
- Provide the information relevant to comprehensive planning, transportation planning, transit planning, and the provision of programs and facilities for traffic safety, road improvements, transportation demand management, pedestrian access, and other transportation system considerations.

Requirements of Traffic Impact Studies

Most jurisdictions with a growth management system require some form of traffic impact study for all multi-unit development proposals. In most cases, certain thresholds are established to determine to what level of study is required. As a close-by example, the City of Roswell requires that all proposed land developments conduct a determination of applicability to check if the proposed development's trip generation will meet minimum thresholds. In the City of Roswell, minimum thresholds for a complete traffic impact study are 100 new trips during the a.m. or p.m. peak hours or 750 new trips in an average weekday. In the City of Roswell, the Zoning Director conducts this determination of applicability; however other jurisdictions require the applicant to conduct this study.

Other developments of regional impact (DRI) that are of such a large size that will attract trips from other nearby jurisdictions (in Georgia nearby counties) may require a more detailed and comprehensive analysis. Thresholds and procedures for DRI traffic impact studies are established by the Georgia Department of Community Affairs and differ for metropolitan counties (greater than 50,000 population) and non-metropolitan counties. DRI studies typically require regional cooperation agreements since growth management policies may differ.

Traffic impact studies typically are conducted in a systematic procedure with each step supporting the following step. They typically consist of the following steps:

1. Introduction / trip generation analysis,
2. Existing conditions traffic analysis and assessment,
3. No Build conditions traffic analysis and assessment,
4. Project traffic distribution and assignment,
5. Build conditions traffic analysis and assessment,
6. Mitigation measures and recommendations ,
7. Improved Build conditions traffic analysis and assessment, and,
8. Conclusion.

Estimates of trip generation are typically prepared using the Institute of *Transportation Engineers (ITE) Trip Generation Manual*. Most jurisdictions allow for trip discounting of trip generation estimates due to pass-by trips and internal trips in mixed-use developments. Software requirements for all traffic analyses are applications associated with the *Highway Capacity Manual* although other software applications are accepted in certain cases. LOS standards are established for the overall jurisdiction or according to the roadway classification (major arterial, minor arterial, collector) or maintaining agency (state road, county road). Study area size requirements can be based on number of daily trips generated or ratios of project traffic to overall capacity of the adjacent roadways.

Types of Traffic Impact Studies

In addition to measuring impacts of new developments, some jurisdictions require traffic impact studies for a number of other development or planning policy proposals. These include applications for comprehensive plan amendment, zoning district change, planned unit developments, subdivision plat proposals, and final planned development land use types and sizes that differ from approved plans. As with traffic impact studies for new development proposals, all these alternative types of traffic impact studies have their own minimum thresholds and procedures.

The purpose of a traffic impact study for zoning district change applications and comprehensive plan amendments are to analyze the capacity of the existing transportation system to accommodate build-out development potential with the proposed land use change in the absence of mitigation measures. This will be done by comparing the typical and maximum potential trip generation of representative uses permitted under the requested land use category to what is permitted under the existing land use category.

Traffic Impact Mitigation Procedures

The major objective of a traffic impact study is determine what, if any, mitigation measures are required due to development impacts. Most jurisdictions require improvement mitigation for all roadways that do not meet the minimum established level of service standards under Build traffic conditions. Mitigation alternatives can include a number of alternatives including the following:

- Roadway improvements – including signal additions or modifications, turn lanes, new roadways, or new interchanges;
- Access management improvements – increasing driveway spacing, relocating driveways, or establishing shared access agreements;
- Operational improvements – modifying signal timing or improving signal progression; and,
- Site plan / land use improvements – reducing project size, modifying project phasing, revising internal circulation and external connections.

Certain roadway improvements that are included on an area's Transportation Improvement Program (TIP) can be considered part of the future background roadway network and typically can be used to mitigate a development's impacts at no costs to the applicant. Beyond that, any improvements that are required can be required according to two procedures: project improvements or system improvements.

Project improvements are site improvements and facilities that are planned to provide service for a particular development project and that are necessary for the use and convenience of the occupants or users of the project and not system improvements. System improvements are privately-funded capital improvements that are public facilities and are designed to provide service for the community-at-large. Since these improvements can be used by all nearby developments, there needs to be a procedure to fund these improvements in some manner comparable to how other developments would impact the improved roadways. This procedure is typically referred to as a proportionate share agreement, and it allocates improvement cost responsibility based on the ratio of project trips to the roadway capacity increase that will result from the improvement.

Establishing a roadway service area order for a proportionate share system is necessary for a proportionate share agreement framework. A roadway service area is a geographic area in which a defined set of public facilities are provided to development within an area. An entire jurisdiction may be defined as a single service area for a category of capital improvement, or it may be sub-divided into several distinct service areas. The state of Georgia requires that any proportionate-funding share framework be within an established roadway service area.

Policy Recommendations

It is recommended that the City establish a Traffic Impact Methodology that analyzes the impacts of proposed new developments. Precedent has been established in other nearby cities to require these studies in cases where the peak trips equal or exceed 100 vehicle trip ends, or where the daily trip ends exceeds 750 trips. In residential terms, this equates approximately to 100 dwelling units. In retail terms, this equates

approximately to 5,000 square feet, and in office terms, it equates roughly to 50,000-60,000 square feet.

Policy Implications

Requiring traffic impact studies will have some policy impacts on the City, as follows:

- Minimum Acceptable Level of Service Criteria will need to be established;
- City staff and engineers will be required to review the studies;
- An ordinance will need to be passed specifying the exact requirements and analysis techniques to be used. Alternatively, an ordinance can reference the latest Traffic Study Guidelines and Procedures, and such a Procedure can be developed for the City;
- City staff will need to work more closely with the development community to monitor projects, impacts, and potential mitigation strategies; and,
- Adoption of a transportation impact fee ordinance may be required in order to compel improvements from proposed development projects.

6.7.3.2 Traffic Calming Procedures

The City of Madison has become concerned that increased traffic on its roadways is having a negative influence on the quality of life of its residents, business owners, and visitors. To alleviate these negative influences, city officials are considering the implementation of traffic calming measures that will either serve to slow or reduce traffic flow on the City's roadways through residential neighborhoods. This document provides a policy review of the traffic calming procedures other municipalities have enacted and provides factors that the City should consider in enacting its own procedures.

Traffic calming is an integrated approach to traffic planning that seeks to create a more livable urban environment by reducing the undesirable impacts that traffic can have on neighborhoods and other urban areas. Traffic calming devices are not the proper approach to alleviate all cases of cut-through, excessive speed, or excessive volume circumstances. Proper procedures must be in place to review their need, applicability, support in the community, and funding resources to ensure they will be effective. In addition, traffic calming procedures will differ from neighborhood roadways that serve mostly local traffic, to business districts and other areas that have roadways that serve a much larger population. Also, traffic calming procedures would differ between established neighborhoods and new neighborhoods, where community support is not as much of a requirement.

Traffic calming solutions may be warranted where there is a demonstrated need for traffic calming, and where solutions can be identified that will address the need. The needs to manage traffic through traffic calming devices might include the following:

- Reduce neighborhood cut through traffic,
- Reduce traffic speeds through neighborhoods,
- Accentuate pedestrian or bicycle use, and,
- Control intersection traffic flow.

Not only must the needs be perceived by the neighborhood, but they must also be documented to be substantive. In order for traffic calming strategies to be effective,

traffic data collection and analysis must validate that calming needs are legitimate. These traffic studies may include:

- Speed studies,
- Vehicle and pedestrian counts,
- Through-traffic surveys,
- Accident records, and,
- Intersection capacity analysis.

Effective solutions for valid needs also require that the selected traffic calming strategy be appropriate for the need, e.g., a strategy to reduce traffic speed and not to divert traffic should be used if the documented problem is excessive speed.

Once an effective strategy for traffic calming has been selected, it should be properly designed in accordance with the relevant design parameters. These should include consideration of:

- Traffic volume,
- Design speed,
- Americans with Disabilities Act (ADA) compliance, and,
- Design vehicle characteristics.

Although warranted and properly designed traffic calming strategies can have the desired benefits of managing traffic, they also can create disadvantages to adjacent streets and neighborhoods and to the traveling public-at-large. Traffic calming has the potential of shifting an existing traffic problem to another street or neighborhood. Traffic calming may also increase delay for emergency response vehicles and can increase long-term maintenance costs for the City. Because of the controversy and potential disadvantages, traffic calming should be implemented only by majority consent of those directly impacted.

Types of Traffic Calming Measures

The City of Roswell is one Metro-Atlanta municipality that has created a thru-traffic calming program and this program has been cited in this section since they were enacted under the laws and regulations of the State of Georgia and under the rules and policies of the Georgia Department of Transportation. The City of Roswell classifies traffic calming measures into two categories: Stage One and Stage Two.

In general, the Stage One measures are easier to implement, easier to reverse, cost less, and should have prior consideration to a Stage Two measure. Other jurisdictions use a similar approach called the Three “E”s - which are Education, Enforcement, and Engineering - approach prior to implementing traffic calming measures. This is a sequential procedure with Education measures including meetings and workshops, Enforcement including mobile radar displays and / or police monitoring, and the final step involving Engineering, the addition of signage, signals, marking, and/or landscaping to calm traffic. If the Three “E”s prove unsuccessful to calm traffic, then the next step is implementing traffic calming measures.

City of Roswell’s Stage One Measures

The City of Roswell uses this interim step of attempting Stage One measures prior to the implementation of the more impactful, permanent, and expensive Stage Two measures of physical changes to the roadway. These measures include designating an area a residential zone, initiating a neighborhood traffic safety program, installing traffic signing

and pavement markings, enforcement of traffic laws, use of mobile radar displays, and installing landscaping adjacent to the curb to give the appearance of a narrower corridor.

City of Roswell's Stage Two measures

Following attempts at using the above described Stage One measures, if problems with traffic still appear the City will consider "hard" physical modifications intended to control traffic speeds. Several physical control devices are available to reduce vehicular speeds, eliminate cut-thru traffic, improve walking / bicycling conditions, and reduce truck traffic. Each situation should be evaluated independently to determine which measure will work the best.

Devices to reduce excessive speeds include speed humps or tables; traffic circles; and chicanes, chokers, and curb extensions. A speed hump is a permanent section of pavement 12 feet wide, parabolic in shape, rising to a maximum height of 3 to 4 inches in the center. Speed humps should be placed between 200 feet and 750 feet apart depending on the roadway's speed limit, sight distance, and intersection or curb cut locations. It should be noted that the Georgia Department of Transportation has made a policy decision that it will not approve any federal or state money for resurfacing a street that has speed humps. Therefore, before any speed hump project is implemented, the street should be thoroughly examined for pavement deficiencies.

Traffic circles are raised circular islands in the middle of a residential neighborhood intersection. They obstruct direct straight-thru movements by causing traffic to move right around the circle. The intersection approaches are normally controlled by yield signs and landscaping is commonly used in the island to increase its presence to approaching drivers. Chicanes, chokers, and curb extensions are methods of narrowing the roadway by extending raised curbs into the street. These can be done at street entries and exits, and the narrower street provides pedestrians with shorter crossing distances.

Devices used to reduce cut-thru traffic and excessive truck traffic include half closures, semi-diverters, forced-turn channelization, and diagonal dividers. Half closures and semi-diverters are permanent barriers that obstruct traffic in one direction but allow it in the other. Semi-diverters have the advantage of providing minimal impediment to emergency vehicles and allowing two-way traffic once past the restriction. Forced-turn channelization barriers limit certain traffic movements at an intersection and are intended to make travel through a neighborhood difficult but not restrict it entirely.

Review of Practices in Other Jurisdictions

Although the use of traffic calming dates back decades in North America, Europe, and other international jurisdictions, the use and understanding of traffic calming has only become mainstream in the past 10 to 15 years. In many municipalities in North America, traffic calming is still a relatively new or unfamiliar concept. This section provides a summary glance at traffic calming guidelines in other jurisdictions in Georgia and Florida.

Traffic Calming Trends

There have been a number of trends that have been emerging over time in the realm of traffic calming. Each of these progressions is outlined below:

- From spot speed or volume improvements to area wide traffic management plans – In most cases, physical or operational changes made to one route or corridor will invariably impact those of neighboring routes. In assessing the need for traffic calming on one street or a group of other streets, it is prudent to determine how this will affect other areas of the community, possibly through spill-off traffic. Jurisdictions are moving towards the development of traffic management/traffic calming plans for entire neighborhoods to reduce the potential of “moving the problem” from one area or street to the next.
- From restrictive techniques to more passive devices to modify driver behavior – Past initiatives have demonstrated that severely restricting access to a community or placing all-way stop control and speed humps at unreasonable intervals, penalize the thru-traffic, as well as, the local residents that must use the roadways on a daily basis. The use of passive traffic calming methods to address concerns may provide a balance between remedying the traffic speed, volume or safety problem while meeting the mobility needs of the residential community.
- From engineering-based to community-based plans – In the past, there have been a number of cases where effective traffic calming plans have been produced and implemented only to be removed due to community opposition regarding the process followed, aesthetics, or lack of involvement. Experts in traffic calming agree that for a traffic calming plan to be successful, the community must be actively involved in all aspects of the study, from problem definition to design details, such as materials and plantings.
- From retrofit to new development implementation – To date, the greater part of the traffic calming implemented in North America has been to remedy existing speed, volume, or road-user safety concerns in established neighborhoods. Recognizing the cost and resource demands of retrofitting existing roadways with traffic calming features, a number of jurisdictions are beginning to review traffic calming applications and plans during the development of new community areas. Similarly, road design standards in many communities are being revisited to produce “naturally calm” street environments. These approaches may require alternative road standards, but can have significant cost savings and reduced environmental impacts.

Review of Traffic Calming Practices in Other Jurisdictions

Recent surveys by the University of California at Berkeley cited approximately 350 U.S. cities and counties that have engaged in some form of engineered or non-engineered traffic calming measures. The following is summary of traffic calming programs in Roswell; Atlanta; Hillsborough County, FL; Collier County, FL; and St. Petersburg, FL.

Roswell, Georgia – The City of Roswell’s Traffic Calming Program is a neighborhood-based program whose primary purpose is to reduce cut-thru traffic in neighborhoods. Therefore, it is applicable only to local / residential roadways with a posted speed limit of 25 mph. The established implementation process is that a request is made through a neighborhood group reporting a speeding or cut-through traffic problem to the Roswell Department of Transportation (DOT), which will make a field review and determine which studies will be conducted. If the DOT indicates a problem, solutions will be developed and reviewed first with the police and fire department for their approval. If approved, the DOT will require a petition signed by at least 65% of the affected residents. Once the

petition is received, the DOT will determine an implementation cost and present to the Mayor and City Council for approval. The neighborhood group and City must share in the cost of implementation. All standard traffic calming measures will be considered and can be applied.

Atlanta, Georgia – The City of Atlanta’s Speed Hump / Traffic Calming Program is a neighborhood-based program whose primary purpose is to slow excessive speeds on neighborhood streets. It is applicable only to local / residential roadways with a posted speed limit of 25 mph, street width of less than 40 feet, and having a street grade / slope of less than 8%. The established implementation process is through a neighborhood group reporting a speeding problem to the City of Atlanta Public Works Department, which will add it to their evaluation list. If the speed hump is found to be warranted, the City will require a petition signed by at least 75% of the roadway’s service area residents. If the petition is approved, the City will add to the project to its speed hump installation list and implement in the order in which it was added. Only speed humps are used in this program.

Hillsborough County (Tampa), Florida – Hillsborough County’s Neighborhood Traffic Calming Program applies to both local and collector streets. The established implementation process is that a request is made by residents (minimum 10 within a neighborhood), neighborhood association, or special tax district to the County Public Works Department, who will determine its eligibility and priority. If a problem is found, an initial public meeting will be conducted and a Hearing Master will conduct a traffic analysis and other studies to determine roadway conditions on it and other nearby roadways that could be affected by spill-off traffic. A follow-up meeting with the neighborhood association will be made where the Hearing Master will make recommendations for the roadway. If the neighborhood association accepts the recommendations, the Public Works Department requires approval by at least 60% of the affected residents and 50% of the Board of County Commissioners. If approved, the project is given a prioritization ranking based on a point gradient system that is determined from the roadway’s traffic conditions (speed, access rating, crash history, and volume), presence of pedestrian trip generators, absence of pedestrian facilities, and funding participation commitment of the neighborhood association. All standard traffic calming measures can be applied. The program is funded by an annual budget that is created exclusively for the program and projects are implemented based on its priority ranking until the budget is exhausted.

Collier County (Naples), Florida – Collier County’s Neighborhood Traffic Management Program applies to both local and collector streets. The established implementation process is that a request is made by residents or a neighborhood association, along with a petition signed by at least 10% of the households along the roadway, to the County Transportation Planning Department who will conduct a traffic study to determine its eligibility. In order to be eligible, the project must meet one of the following requirements: (1) there must be a minimum traffic volume of 4,000 vehicles per day (vpd) or 400 vehicles per hour (vph) for collector streets or 2,000 vpd or 200 vph for residential streets, (2) the 85th percentile speed of vehicles exceeds 10 mph for collector streets or 5 mph for local streets, or (3) a pedestrian / bicycle LOS of “C” or worse. If a proposal is found to be eligible, the County holds a meeting with the neighborhood association to report on the study results. If the neighborhood association accepts the recommendations, the County will conduct a mail-in survey of the neighborhood, which requires 51% response and approval to be accepted. If approved, the project is given a

prioritization ranking based on a point gradient system that is determined from the roadway's traffic conditions (including speed, bike/pedestrian LOS, crash history, and volume), neighborhood demographics (including number of children, number of houses facing the subject roadway, nearby schools and public facilities), and a funding participation commitment of the neighborhood association. All standard traffic calming measures can be applied. The program is funded by annual grants that are based on its priority ranking.

City of St. Petersburg, Florida – The City of St. Petersburg's Neighborhood Transportation Management Program applies to neighborhood streets only. The established implementation process is that a request is made by residents or a neighborhood association to the City's Department of Transportation and Parking. City staff will hold a preliminary meeting with the requestors to determine issues and conduct a field visit to observe the problem and collect data. The City will conduct a study to determine eligibility and report back to the neighborhood association where the project must be approved by 67% of attendees. If approved, the project is given a prioritization ranking based on the subject roadway's (1) volume, (2) 85th percentile speed, (3) number of crashes over a 3-year period, and (4) number of adjacent pedestrian-generating facilities (e.g. parks, schools, shopping centers). All standard traffic calming measures can be applied. The program is funded by the City's general budget and no special assessments are made on any properties to fund the program.

Policy Option Issues

Based on the review of existing traffic calming policies in other jurisdictions and comments from City of Madison officials and citizens, a discussion regarding the policy option issues have been developed for existing neighborhoods and new development areas.

City of Madison Officials' Comments

As part of the *Major Thoroughfares Plan*, a meeting was held with city leaders and local citizens in July, 2007 to discuss a number of transportation planning issues, including traffic calming. The comments received from these leaders regarding traffic calming policies and locations where measures are needed are as follows:

- Possible traffic circle locations include Hancock Street @ Washington Street and Hancock Street @ Jefferson Street. Note: no right-of-way is available for these circles and it would have to be a bolt-down installation rather than a more permanent installation.
 - Half closures should be considered on some non-state roadways, such as Old Post Road. The half closures would convert the roadways to one-way roadways with the restricted lane being used as a bike/pedestrian lane for use in tours of the City.
 - Neck downs or other street narrowing measures should be used in the area of the U.S. Post Office.
 - The city wants to foster a grid network of interconnecting streets within a one-mile radius of the Downtown.
 - A standard should be established that sets a certain threshold for the number of access points required for new developments.
-

- The City's *Subdivision Regulations* and *Construction and Design Standard Details Manual* should be tied together to establish streetscape requirements for new developments.
- Speed tables and speed humps are the only traffic calming measures that should be used in the historic areas of the City, avoiding distinctive pavement markings that draw driver's attention from the streetscape.

Citizen Comments

As part of the *Major Thoroughfares Plan*, a meeting was held with city leaders and local citizens in July 2007 to discuss a number of transportation planning issues, including traffic calming. The comments below were received from citizens regarding traffic calming policies and issues for existing neighborhoods are as follows:

- The City of Madison currently does not have a standardized traffic calming program.
- The primary complaints from citizens (and as a result the City's interest in considering a traffic calming program) are speeding, cut-thru traffic in neighborhoods, pedestrian safety in the downtown area due to excessive traffic volume and increased truck traffic, and the lack of safe routes for bicycling and walking.
- A current challenge for the City is establishing a traffic calming program that meets and satisfies the requests of proponents, while minimizing the number of opponents who will surely complain once the measures are implemented.

Steps Needed to Enact Traffic Calming for Existing Neighborhoods

The first step to developing a successful traffic calming program is identifying from whom these requests may originate from, which are:

- Formal request by the Mayor or City Council member
- Recommendation from City staff member,
- Petition or complaints from business owners, or,
- Petition or complaints from residents and/or other stakeholders.

The next step is identifying the key components to determining the need and justification for traffic calming in an existing neighborhood. The following is a list of general questions that should be addressed in determining the appropriate response:

- Is there a demonstrated problem?
- Are traffic calming devices one of the primary remedial measures for addressing the problem or do education, enforcement, engineering, or traffic control measures represent better options?
- Is this a corridor specific or neighborhood wide issue? Do potential changes have the potential to produce area-wide impacts?
- Is the location a priority concern when compared to other locations in the City?

Any traffic calming program that is enacted in the City of Madison must recognize two limiting realities. First, the City has limited staff resources to undertake traffic management plans or corridor studies. Second, the City has fiscal constraints to implement all traffic calming measures once it is deemed necessary. Ideally, the City would implement all traffic calming projects were there is a demonstrated need. When

this is not possible, the City may have to decide where and when it is most appropriate to “constrain” the process of traffic calming implementation, to a level that is attainable with the City’s resources. There are two approaches for achieving this:

1. Project Approval – In a priority sequence, complete corridor and area traffic management studies for only those that can be reasonably implemented within one fiscal year.
2. Funding Approval – Complete corridor and area traffic management studies as staff resources permit and prioritize funding of the completed plan.

The next decision point in the formal approval process is a Council decision to support physical and operations improvements from a corridor or area-wide traffic management plan. Traffic calming plans have the potential to improve the quality of life and road user safety; however, in doing so, they could possibly limit mobility and access of residents, visitors, and emergency services. Given these potential impacts, the recommendations will typically not be supported wholeheartedly by all stakeholders. Therefore, it is important that the City create a mechanism to judge community and/or stakeholder support prior to implementation. Possible mechanisms include:

- Petitions – Typically signatures are collected from the local homeowners, resident’s association or business entity at a formal meeting.
- Ballot process – Surveys of residents can be collected through ballots at meetings or better yet, a mail-in survey sent to each home within the project’s survey area.
- Private funding – With a combination of the above approval mechanisms, a private group would fund the improvements if the traffic concerns in the neighborhood do not place it at the top of the City’s priority ranking list.

The final decision in the approval process is how the project will be funded and implemented, which may take two forms:

- Queue Ranking – This process recognizes that all traffic calming projects are important and thus implements them in order of when they were added to the implementation list.
- Priority Ranking – This process permits the City an additional decision point to identify differences in priority between competing projects and allows the City to implement in order of this priority ranking.

Traffic Calming for New Developments

It is the responsibility of the City to review and approve all new development proposals. This approval process offers the City to plan for and implement traffic calming features in the design of the internal roadways, rather than retrofitting once built and serving traffic. The advantages of this “passive” means of implementing traffic calming measures is that it is proactive, less costly, requires no maintenance-of-traffic (MOT) considerations, and typically does not receive the same opposition from residents.

Based on comments from officials and citizens, the City is interested in establishing standardized procedures for determining the need for and type of traffic calming measures. Adjusting the City’s *Subdivision Regulations* and *Construction and Design Standard Details Manual* to require certain streetscape measures that allow for or promote traffic calming are an appropriate place to begin to avoid future problems in new

developments. The following discussion provides examples of procedures the City may want to consider in incorporating these types of standards in their development codes.

A number of jurisdictions have made it a stipulation in the development approval process for the applicant to prepare a traffic management plan for all proposed internal roads or road networks. The main advantages of this is that it reduces the burden on City staff to later incorporate traffic calming aspects in the design during their review and allows the developers to incorporate traffic calming aspects in a way that fits their needs and desires. This approach would have the City requesting a traffic management plan be prepared at the Secondary Plan stage and the required components would be carried through the subsequent approval stages, including the subdivision plan.

A number of jurisdictions are looking at “passive” forms of traffic calming devices and “slow points” in their road networks, recognizing that regardless of how well a transportation system is planned, there are locations where slower speeds and increased road user attention is important. These locations include intersections, school areas, pedestrian or bicycle facility interfaces with roadways, etc. Other examples of passive forms of traffic calming include:

- Reduced roadway width standards;
- Textured pavement or pressed concrete at key conflict areas;
- Curb extensions or median islands to reduce the crossing distances and exposure time at primary pedestrian routes;
- Traffic circles/roundabouts instead of all-way stops and traffic signals;
- Bicycle lanes; and/or,
- On-street parking during off-peak periods to slow traffic.

Recommended Policies

It is recommended that the City establish a Traffic Calming Evaluation Methodology that analyzes the need for traffic calming along various roadways. Precedent has been established in other cities and mentioned above regarding petition origination, measurement methods, implementation guidelines, and removal procedures. It is recommended that the city review these options and chose standards which are most applicable and expedient for the needs of their particular situation.

Impacts of Policy Options

Formalizing traffic calming procedures will have some policy impacts on the City, as follows:

- Maximum acceptable roadway volume and speed, and safety criteria will need to be established;
 - City staff will be required to review the applications;
 - An ordinance will need to be passed specifying the exact requirements and analysis techniques to be used. Alternatively, an ordinance can reference the latest Traffic Calming Guidelines and Procedures, and such a Procedure can be developed for the City;
 - City staff will need to work more closely with the neighborhoods to monitor road conditions and potential interim mitigation strategies.
-

6.7.3.3 Parking Plan

Parking issues within Madison are limited primarily to the downtown area of the city. Parking in the downtown commercial area is a combination of on-street parking (angular, parallel, and perpendicular) and off-street parking (private and public lots) to the sides and rears of commercial and institutional land uses. On-street parking surrounds the Town Square and extends along Main Street and its two main intersecting roadways, W. Washington and W. Jefferson streets. Parking lots are located around the periphery of the historic downtown core, pocketed into the professional area where zero-lot line commercial development transitions to historic residential neighborhoods.

Outside of the downtown area, parking is plentiful. Commercial establishments along the Eatonton Road/US 441/129 corridor and areas of similar use are typically served by large parking lots for their developments, reflecting the development regulation limiting establishments to one row of parking in front yards and relegating all other parking needs to side and rear lots. Planned developments with big-box shopping centers are the exception, accommodating oversized lots with mitigating provisions including observing deeper setbacks, screening outparcels, and landscaping perimeter berms. In these areas, shared parking is permitted and encouraged, and parking reductions as a result of the design review process are the norm.

Industrial enterprises along the Monticello Road/SR 83 corridor and areas of similar use are generally served by modest parking lots in front of the development and expanses of pavement to the side or rear for parking/loading/unloading of heavy trucks. This division of parking for vehicular traffic by employees and visitors from service areas for heavy trucks is also reflected in the development patterns of truck stops located in the more commercial areas of the community. Two rows of parking screened by vegetated berms in front of an industry is the predominant development pattern as well as the current regulation.

Residential areas are almost all endowed with ample off-street parking. Single-family and dual-family residences are exempt from paving requirements, and in most instances, off-street parking is adequate. Traditional neighborhoods and modern subdivisions do experience occasional on-street parking. However, of note, on-street parking appears to be more prevalent in higher density development – multi-family, dual-family, and planned developments. City regulations no longer allow the development of on-street parking along dedicated municipal streets (which necessitates vehicles backing into public rights-of-way) but continue to allow it along private driveways for such developments. Currently, subdivisions and planned developments utilizing minimal residential acreage in combination with non-standard street designs are experiencing more than occasional on-street parking because of inadequate off-street parking areas, creating both residential complaints and emergency vehicle concerns. Institutional parking within residential areas is currently limited, pocketed, and partially screened.

Parking Considerations & Infrastructure Improvements

In 1999, Planning Department completed a preliminary survey of parking in vicinity of the Town Square as well as an informative review of nearby cities' parking management programs for publicly-owned parking facilities. The Downtown Development Authority of Madison (DDA) identified additional parking as a high priority downtown objective.

Thereafter, each development project considered by the DDA was evaluated for parking potential or a parking component, and staff began identifying future parking development opportunities, both surface parking lots and parking decks.

The DDA identified short-range, mid-range, and long-range parking opportunities for the downtown commercial area. Low-visibility small pocket lots and architecturally-sensitive parking decks were highlighted as the most desirable to insert new facilities while avoiding eroding and compromising the community's character and tourism generator – the Madison Historic District and its historic downtown core. Additionally, the DDA prioritized working with owners of currently private facilities to develop shared parking arrangements as the quickest and most economical opportunity.

During planning for substantial redevelopment along of E. Jefferson Street in 2003, the DDA planned for a new off-street parking lot. The DDA sold zero-lot lines parcels for development while reserving land for an adjacent, obscured parking lot. The land was deeded back to the City, who developed a surface lot in accordance with the plan. Eleven of the nearly 50 spaces were set aside to encourage residential loft occupancies; however, the remainder of the lot became open to the public post-construction.

In 2004, the City leased a rear yard from for the construction of another off-street parking lot on Hancock Street. These 21 spaces were opened to the public for long-term employee parking in proximity to many local government facilities. The DDA also opened negotiations with two large property owners to share existing or new parking facilities. The DDA proposed to Avado Brands, Inc. - owner of the only downtown deck – that the City of Madison lease a portion of their underutilized facility. Madison opened the 147 spaces of the Upper Deck to the public in August of 2007 and plans to convert the 34 on-street parking spaces in the immediate vicinity to additional timed parking.

Concurrent with the acquisition and development of Town Park (scheduled to commence in Fall 2007), the DDA also planned to wrap the conjoined two-block acreage with on-street parking, reflecting the historic development pattern of Town Square. Along Jefferson and Washington streets, the park grounds were specifically constrained to allow for on-street parking. Final plans as well as an ISTE A grant application are under review by the Georgia Department of Transportation. If approved, the Town Park perimeter will host another 56 on-street parking spaces for the downtown community.

Additionally, the city has made short-range improvements to on-street parking during the completion of streetscape enhancement projects (i.e., Hancock Street, W. Washington Street, Burnett Street) gaining an additional 10 spaces. The city continues to implement small changes that enhance downtown parking at little or no cost during improvements.

Downtown Parking Study

With the assistance of the Main Street Advisory Board (MSAB), the Planning Department initiated a formal Downtown Parking Study in 2006. The study area was defined as the historic downtown core (essentially Hancock Street to the CSX/NS Railroad tracks bounded by Burnett and High streets), as less than a dozen publicly-owned on-street spaces are extant outside of this boundary. Typically, this area is visually characterized by expanded brick sidewalks and significantly higher levels of

pedestrian traffic. Historically a 12-block area, the study area did specifically encompass the redeveloping 9-block Town Park area.

The Phase I - Parking Inventory documented 863 spaces in the immediate downtown: 36% provided by private enterprise and 64% subsidized by government. In addition to a base count, the inventory further itemized parking in terms of providers; location (on-street, off-street); duration (15 minutes, 1 hour, 2 hour, untimed); design (angular, parallel, and perpendicular); and, limitations (compact, reserved, handicap).

Evaluating the parking in terms of ownership and maintenance, overwhelming the City of Madison is the largest service provider with nearly 400 spaces (46% of the downtown parking) of which all are currently open to the public. Morgan County, Madison Markets, and Bank of Madison are the next largest providers, and combined with two private pay-lots, nearly equal the city's commitment.

A breakdown of public parking reveals the provision of spaces for customers/clients (short-term parking users) and the provision of spaces for employers/employees (long-term parking users) to be essentially equal – 251 on-street and 247 off-street spaces respectively. Part of the genesis of the study was to quantify and evaluate a perceived shortage in on-street parking; however, comparatively on-street parking in Downtown Madison does not appear to be inordinately low (e.g. Downtown Valdosta has 342 on-street spaces.)

To encourage turnover and allow for all businesses' customers/clients to obtain parking more readily, almost all on-street parking is timed. The last bulk of untimed on-street parking along Hancock Street is being converted now to treat all on-street parking consistently and to better serve the increased public traffic, garnered by the new County headquarters in the Creamery Building and new uses pending in the immediate vicinity. Of the timed spaces, the great majority (84%) are 2-hr spaces with a dozen 15-min spaces designated either in front of the U.S. Post Office or beside City Hall and about two dozen 1-hr spaces sprinkled along Main Street.

Angular spaces, giving the great ease of access and egress, are the predominant design for on-street parking. Main Street is the exception and features the bulk of parallel options. Less than 25 on-street spaces have special limitations – compact cars only, reserved parking, and designated handicap. Only two city-owned on-street spaces are marked reserved (located in front of the Morgan County Courthouse). Although best suited to parking lots, handicap spaces are still too few in downtown with only nine on-street spaces for the 21-block area.

The inventory of off-street parking revealed that Morgan County has the largest parking lot, while the City provides an equal number of spaces in lots distributed throughout the downtown area. Roughly 300 spaces are provided in private parking lots with one-third of those located in pay-lots (approximately \$20 a month/\$200 per annum). Another 50 odd spaces are city-designated or private-used spaces in alleys. All off-street spaces offer long-term use and the public lots are free to the public at this time.

The Phase II - Parking Occupancy purpose is to measure availability of on-street parking spaces by determining peak hours, turnover, and areas prone to persistent violations. The study area will be counted periodically – Thursday, Friday, and Saturday; 8:00 a.m. – 7:00 p.m.; on the hour every hour; city block by city block. Each block will be further

divided into four sides or block faces. Off-street parking lots will be classified each hour as follows: full, half-full, or few.

To date, Main Street volunteers have conducted two of the three counts intended (once during school intersession, once during summer, and a final count planned for late fall). Data quickly revealed that no block or space is experiencing 100% occupancy. At any given hour, there is a space available within a 2-block radius (approximately 500 ft.) of the Main Street block between Washington and Jefferson streets (Amici's block face).

The data was further studied to examine high occupancy conditions. In terms of location, moderate parking was recorded in seven areas (block faces of Post Office front, Post Office left, Simmons, Gussie's, Sally's, Scoops, and Jefferson Square) and heavy parking was documented in only one area (Amelia's block face). All other areas experienced light parking. [Moderate parking means that the parking row in front of the business was on average half-full, whereas heavy parking means that, on average, the parking row was at least two-thirds full.]

The busiest hours are 10:00 a.m. to 4:00 p.m. Of particular note, long-term parking lots did demonstrate consistent use; pay-lots were rarely if ever half-full. This early data provides a snapshot of parking in Downtown Madison and creates a baseline for further study. As noted previously, additional counts are planned. Use of the newly acquired public parking in the Avado Upper Deck will also be tracked in future counts as an addendum, as the parking deck lies outside of the study area.

Policy Recommendations

To alleviate congestion while respecting the historic downtown core - as identified in the Downtown Parking Study and currently zoned C-1 (Downtown Commercial District) - it is recommended that the City work with property owners to provide private, public, and/or shared off-street parking lots just outside of the core area (i.e. in the area currently zoned P-2 (Professional / Limited Commercial District). These parking areas should be connected to the sidewalk network to facilitate non-motorized transportation to and within the downtown core. For major public events, distance lots (such as the park-and-ride lot near Interstate 20) could be used in tandem with transit connections to alleviate pressures on the downtown area for special event parking.

Furthermore, long-term solutions include the selection of potential sites for a future decks as well as design criteria for these decks to make them "read" architecturally as buildings similar to the historic ones surrounding them. Methods for this may include:

- Requiring ground level retail shops;
- Requiring exterior fenestration patterns;
- Requiring painting and landscaping to conceal concrete walls;
- Requiring better and more compatible exterior materials (i.e. brick);
- Requiring rooftop treatments, such as parapets, cornices, public belvederes; and,
- Locating decks in topographically lower areas to reduce silhouette dimensions and visual impact.

Another avenue to explore is shared parking with respect to new development. The concept of shared parking recognizes that different land use types require different parking needs at different times of the day. The major benefit of shared parking is maximum of parking spaces provided in terms of hours and days, which lessens the total

amount of land area required to be dedicated to parking. Less parking area can then result in more open space available to help contribute to the City's aesthetic character, additional buildings contributing to the tax base, and reduced environmental impacts of additional pavement. The Urban Land Institute and the Institute of Transportation Engineers have published manuals detailing the hour-by-hour usage of parking by land use type, which are instructive in determining the appropriateness of shared parking, and the reduction in overall parking spaces to be provided, given the mix of adjacent land uses. This shared parking analysis can become an element of the Traffic Impact Analysis.

Design review criteria for commercial and industrial areas should continue to limit large lots, shift heavy parking to side and rear yards, and break up large lots by introduction of vegetative cover. In these areas, shared parking and parking reductions should be the norm. Berms should be utilized to further mitigate larger lots and obscure pavement serving service areas. Parking regulations need to be updated for modern uses and modern parking demands for traditional uses. Institutional uses should be encouraged to use parking decks and shared use lots where such can be camouflaged.

Regulations for higher density development – multi-family, dual-family, and planned developments need to be updated. Rezoning actions for higher density should address parking in order to prevent additional residential complaints and emergency vehicle concerns. Non-standard street designs should be avoided until such time as parking regulations have been addressed.

7.0 Implementation Plan

The recommended implementation plan is also outlined in **Table 6-1**. The table summarizes plan costs by responsible agency and time period. In general, it is assumed that project costs that are not purely local in nature will be funded according to an 80/20 split with state and federal monies, requiring 20% match from the local governments. This arrangement is subject to change, however, as project costs are rising and federal funds are becoming more limited. Near-term, Mid-term, and Long-term are defined respectively as 1-5 years, 6-19 years, and 20 plus years. It should be noted that these planning level cost estimates are appropriate for system-wide planning, but should not be used on a specific project-by-project basis. Additionally, there are five steps that will be required to implement these projects as described below:

1. Refine the concepts for the projects, including project limits, typical section and cost;
2. Coordinate with state and regional agencies as necessary to ensure funding and compliance with regulations;
3. Conduct required environmental impact analyses;
4. Design the project, including right-of-way plans, drainage, and roadway; and,
5. Construct the facility.

The development of local funding for these projects will be an important step in project development and in implementation of the plan. Methods used in other communities in Georgia for raising transportation funds to finance projects include impact fees and Special Purpose Local Option Sales Taxes (SPLOST). An *Impact Fee Program Study* is underway at this time. To implement a SPLOST, voter approval would be required. The most promising potential new funding source is the proposal introduced in the Georgia Legislature in 2007, HB 434, which would allow counties to levy a regional 1% sales tax to implement key transportation projects. The participants of the recent *GDOT East Georgia Multi-County Study* would be prime candidates for exploring this option should it pass in next year's legislative session.

7.1 Financial Assessment

The identification of funding needs, together with the identification of potential funding sources, is critical to the success of the *Major Thoroughfare Plan*. Increased competition for local, state, private, and federal funds has made early strategic planning a critical component of any major U.S. transportation project. In the greater Atlanta metro area, competition is particularly stiff due to the increased need caused by a growing population and employment base, coupled with the continuing need to maintain and update existing transportation infrastructure.

All potential new funding sources, including federal, state, local, private, and regional opportunities were explored, to assess various funding mechanisms that may be beneficial to the City of Madison. A survey of alternative, non-traditional funding mechanisms throughout the country, as well as abroad, was conducted. The principal options are:

Local Funding: According to the *East Georgia Multi-County Transportation Study* Morgan County has own source amounts (property, sales, excise, special use taxes and service charges/fees) of \$736 per capita. For the City of Madison this translates to \$2.7 million which could be leveraged as a local match for many of the higher ticket items on the list. Although it would not cover the whole expense, it could be used to expedite the earlier, less costly phases such as preliminary engineering and environmental screening.

State Funding: A major component of Georgia's *Statewide Transportation Plan* is the Governor's Road Improvement Program (GRIP) which offers accelerated road upgrade schedules for the purpose of spurring economic development by constructing highway infrastructure throughout the state. US 441 is currently on the GRIP list and an expansion to its bypass may also be eligible for consideration under this program.

Federal Funding: The *Safe and Efficient Transportation Equity Act – a Legacy for Users* (SAFETEA-LU), the current federal transportation funding bill, will expire in 2009. A new federal program will need to be created and authorized at that time. Most of the high cost mid and long-range projects will depend on these types of funds

Real Estate Tax: An increase in real estate taxes could generate substantial new revenue for the City of Madison. Tax rates are set annually by county commissioners and the school board. The average county and municipal millage rate in 2007 was 30 mils; and state millage rate in each county was 0.25 mils (Georgia Department of Revenue, 2007). Municipalities also assess property taxes. Property in Georgia is generally assessed at 40% of the fair market value.

Motor Vehicle Registration Fees: Georgia vehicle registration fees average \$20 per car and \$25 per truck, lower than many peer states. Title registrations average \$18.

Motor Vehicle Ad Valorem Tax: Georgia's vehicle tax rates are the same rates set by local governments applied to real estate and personal property. One mil produces \$1.00 tax for every \$1,000 worth of property value.

Income Tax: A local income tax could potentially generate new substantial new revenue for the City of Madison. Enabling legislation would be needed however.

Sales and Use Tax: Sales and use tax rates vary among counties. Some Georgia examples are: Local Option Tax, Educational Local Option Tax, Special Purpose Local Option Tax, Homestead Local Option Tax, or MARTA tax. The maximum allowable sales and use tax in Georgia is 8%. A similar regional sales tax concept for two or more counties has been proposed in the State legislature. Three State bills were introduced in the 2007 Georgia Legislative Session, but have not been enacted:

- HB 434 allowing counties to form regions for list of transportation projects and a 1-cent sales tax to fund them;
- HB 4442: proposing a 1-cent statewide sales tax to fund transportation; and
- HB 4442: proposing a 1-cent state transportation sales tax.

Impact Fee Program: A relatively new funding source in Georgia is the concept of impact fees. Impact fees are usually assessed on new construction based on the types of demands they place on existing infrastructure and the upgrades to capacity they will require. The most well known are water, sewer, and school impact fees but

transportation impact fees are also underway in the state. Cherokee County has been the demonstration site for testing this concept and the City of Madison should consider using the data in this study to develop a rational basis for the development of a transportation impact fee. An impact fee study is underway at this time and it is a recommendation of this report that transportation impact fees be utilized wherever possible to supply the required local match to leverage other state and federal funds.

Gas Tax: An increased state motor fuel tax, or local fuel tax, could generate significant revenue for the transportation projects. Fuel tax is a user tax, with an obvious direct linkage to the new transportation projects envisioned in the plan. Legislative action would be required by Georgia to enable a local option. Georgia’s gas taxes are low compared to other U.S. states. The most recent data in Georgia suggest that on average 25% of gas tax revenues are from out-of-jurisdiction purchasers. This may be higher in Madison due to its position as the major fueling station on the eastern edge of the Atlanta metro region.

Some other innovative strategies are available to build future revenue streams but their applicability to the City of Madison is questionable due to the small size of the population and relatively low traffic numbers when compared to metropolitan areas in Georgia where these proposals originated. These include:

- Toll Revenue/Public-Private Initiatives
- Community Improvement Districts
- Tax Allocation Districts
- Cordon Tax

Potential Project Phases

Due to the small number of projects proposed, there was no formal need to prioritize projects other than using cost and safety as the two main factors. Smaller cost projects are assumed to be mostly locally funded, and therefore, more likely to be implemented in the short term. All high-cost projects will require federal monies and county cooperation and are assumed to be either mid- to long-range. The most significant safety projects are the reconstruction of the triangle intersection of US 278/US 441/and SR 24 Spur and the reconstruction of the intersection of US 278 and SR 83 S (Monticello Road). The reconstruction of Industrial Boulevard is complicated only by the right-of-way acquisitions necessary but will probably be mid-term. The 83 Bypass and the 83/441 Connector projects are definitely priorities for congestion relief, freight rerouting, and pedestrian safety but due to their high cost they will have to remain long-term. The general financing phases are given in Table 6-2 below.

Table 7-1. Funding Needs by Phase

Near Term 2008-2015	Midterm 2016-2025	Long Term 2026-2035
Funds	Funds	Funds
\$938,000	\$14.5M	\$77M

8.0 Conclusion

Intense growth in the I-20 east corridor will continue to increase travel demand throughout the region and will particularly affect the City of Madison, which is the central transportation hub of all the state routes in Morgan County. The effectiveness of the transportation network in the entire county depends on maintaining and expanding Madison's traffic capacity while the economic vitality of the county depends on preserving the physical character of the city, which supports a vibrant tourism based economy. This plan seeks to accommodate both of these goals.

Ultimately, the success of the *Madison Major Thoroughfares Plan* depends on the management of land development to follow the future land use plan. The recommendations of this study are based on the assumption that the future land use plan will be used as a guide to manage future development activities. Currently, the plan envisions Madison becoming a more walkable community with development focused in key areas. This strategy creates smaller demands on the transportation system from automobile users than the sprawling development pattern found in many growing areas of Georgia.

In future updates to the land use plan it is critical that the county consider the recommendations in the *Major Thoroughfares Plan* as input to the land use planning process. Additionally, if the land use plan changes significantly some of the recommendations in this plan may need to be updated to reflect new travel patterns.

Appendix A

SUMMARY OF COMMENT CARD INFORMATION OBTAINED AT PUBLIC HEARING JULY 12, 2007

8/6/2007

Note: 12 comment cards were returned. Not everyone answered every question while some folks mentioned more than three intersections that concerned them.

What 3 Intersections do you think need the most work in Madison?

78 / 83 / 441 / S. Main Street merge	10
Main Street @ Washington	8
Main Street @ Jefferson	1
Main Street @ College	1
Bypass @ 441/Eatonton Rd	1
Eatonton Rd / 441 @ Bypass	3
Bypass @ E. Washington	2
Hancock @ Washington Street	2
Eatonton Rd @ Ward Rd	1
Ward Rd @ S. Main	1
Jefferson @ Hancock	3
Washington @ Hancock	3

YES / NO QUESTIONS	YES	NO	Sometimes	No Answer
Would like to see designated bicycle lanes on our roads	8	2	---	2
Would like access to trails for bikes,,walkers & runners	11	1	---	---
Use crosswalks in downtown	11	1	---	---
Feel safe when using existing crosswalks	3	5	3	1
Perceives a speeding problem in their neighborhood?	7	5	---	---

OTHER THOUGHTS:

- enforce speed limits
- enforce crosswalks
- Understand growth potential of trees when planting i.e. Thomas @ Hwy 83 a magnolia & Hunger Circle 2 bush dogwoods
- encourage more bicycle downtown to ease traffic and parking
- Main Street is too fast
- keep 18 wheelers off E. Washington
- reduce & enforce speed limits on E. Washington Street
- speed bump would solve both problems
- E. Washington is a residential street that needs help
- speed reduction devices on E. Washington & Pine Street
- keep all trucks other than those making local deliveries off Main Street
- too many people moving to Madison too quick and Madison is getting too high class. What happened to #1 small town?
- enforce speed limit E. Washington
- restrict 18 wheelers for residential streets or install speed bumps to deter them.
- require 18 wheelers to use Bypass unless making in-town deliveries
- Main Street crosswalks are scary!
- secondary access to cemetery needs to be built north of RR to Hwy 83 to allow people to exit the cemetery when trains park

Section XXX

Access Management.

(a) Applicability.

Except for development projects consisting of single-family dwelling units or industrial development, land subdivision and development that takes its primary access from a state or federal highway or a thoroughfare classified as a collector, principal arterial or minor arterial in the latest City of Madison Functional Classification System shall comply with these standards. These standards shall apply unless a more restrictive standard is required by the GDOT. These standards shall not apply in the historic district. These standards are applicable as a mitigation procedure as required by the Traffic Impact Analysis ordinance.

(b) Joint and Cross Access.

- (1) Adjacent commercial or office properties on collector, principal arterial or minor arterials shall provide a cross access drive and pedestrian access to allow circulation between sites.
- (2) Joint driveways and cross access easements shall be established for multi-parcel commercial, office or industrial development, wherever feasible, along collector, principal arterial or minor arterial corridors. The building site shall incorporate the following:
 - a. Continuous service drives or cross access corridor connecting adjacent parcels along the thoroughfare.
 - b. A design speed of 15 mph and a two-way travel aisle width of 24 ft. to accommodate automobiles, service vehicles and loading vehicles.
 - c. Driveway aprons, stub-outs and other design features to allow abutting properties to be connected and provide cross access via a service drive.
- (3) The City engineer may reduce the required separation distance of access points where they prove impractical, provided all of the following requirements are met:
 - a. Joint access driveways and cross access easements are provided wherever feasible in accordance with this section.
 - b. The site plan incorporates a unified access and circulation system for vehicles and pedestrians in accordance with this section.

(c) Minimum Driveway Setbacks from Street Intersections.

- (1) Driveway connections shall not be permitted within the functional area of the intersection, of two public streets. The functional area includes the longitudinal limits of auxiliary or turning lanes.

(2) Minimum Standards.

No driveway access shall be allowed within 150 ft. of the centerline of an intersecting major collector or arterial street, or within 100 ft. of any minor

collector street. The **City engineer** may reduce these required distances where they prove impractical due to lot frontages of less than 100 ft.

(d) Minimum Access Requirements.(This section may need to go in street connectivity as well)

- (1) All developments shall have one or more driveways or entrances to a public right-of-way.
- (2) The number of such access points shall be as shown in “Table of Minimum Number of Access Points.”

Table of Minimum Number of Access Points

Type of Development	Minimum Number of Driveway Access Points	Type of Primary Access
Residential, less than 100 units	1	Local Street or Collector Street
Residential, 101 -200 units	2	Local Street or Collector Street
Residential, more than 200 units	3	Collector
Non-Residential, less than 50 required parking spaces	1	Collector
Non-Residential, 50-300 required parking spaces	2	Collector
Non-Residential, 301 – 1,000 required parking spaces	3	Minor Arterial
Non-Residential, more than 1,000 required parking spaces	4 or more	Principal Arterial

(e) Separation of Access Points.

- (1) Subdivisions located along existing City roads shall be required to provide reverse frontage lots or parallel frontage roads where feasible. All other lots must comply with the following:
 - a. Along state or federal highways, no more than **one** point of vehicular access from a property shall be permitted for each **300 ft.** of lot frontage, or fraction thereof, although requirements of the GDOT shall apply whenever more restrictive.
 - b. Along arterial or collector roads other than state or federal highways, no more than **two** points of vehicular access from a property to each abutting public street shall be permitted for each **300 ft.** of lot frontage, or fraction thereof; provided, however, that lots with less than 200 ft. of frontage shall have no more than one point of access to any one public street. The **City engineer** shall determine whether the points of access may be unrestricted or will have to be designed for right-in, right-out traffic flow. To make this determination the **City engineer** may require a traffic impact analysis to be performed by the owner.

- (2) No point of access shall be allowed within 35 ft. of the right-of-way line of any street intersections for single-family and two-family residential lots and within 50 ft. for multi-family and non-residential properties.
- (3) Corner lot access shall be located as far from the intersection as reasonably possible to reduce turning movement conflicts and to promote proper traffic circulation.
- (4) The separation of access points on any street or road shall be determined by the established speed limit of the street or road, with the following minimum spacing requirements as provided in “Table of Minimum Driveway Spacing.”

Table of Minimum Driveway Spacing*

Speed Limit	Minimum Driveway Spacing
25	125 ft.
30	125 ft.
35	150 ft.
40	185 ft.
45	230 ft.
50	275 ft.
55	350 ft.
60	450 ft.
65	550 ft.

*The City engineer may reduce the minimum spacing when the required distance is impractical due to lot frontages of less than 125ft.

- (5) The distance between access points shall be measured from the centerline of the proposed driveway to the centerline of the nearest adjacent driveway or roadway.
- (6) Driveways shall be located so that the radius return is a minimum of 4 ft. from a property line that intersects the right-of-way line.
- (7) The requirements of this Section are not intended to eliminate all access to a parcel of land that was legally subdivided prior to the enactment of this Section.

(f) Emergency Access.

All public streets, private and residential drives shall be designed and maintained so as to provide safe and convenient access for emergency vehicles, as required by the City of Madison Fire Marshal. New developments with restricted access, such as gated subdivisions, must receive a variance from this requirement based on review and approval of the City of Madison Police Department.

Section XXX Driveway Design Standards.

(a) Permits Required.

No driveway shall be constructed abutting a City-maintained road or street until all applicable driveway permits have been approved and issued by the Department. For

driveways that abut a state or federal highway, all applicable permits shall be obtained from the GDOT prior to construction.

(b) General Requirements.

- (1) Joint access driveways are permitted in order to achieve minimum driveway spacing requirements.
- (2) No property may have a curb cut in excess of 50 ft. in width without approval of the City engineer.
- (3) If a non-residential driveway design is one-way in or one-way out, then the driveway shall be a minimum width of 16 ft. and shall have appropriate signage designating the driveway as a one-way connection.
- (4) For two-way, non-residential access, each travel lane shall have a minimum width of 11 ft. When more than two lanes are proposed, a specific driveway design must be approved by the City engineer.
- (5) Driveways that enter an arterial or collector street at traffic signals must have at least two outbound lanes of at least 11 ft. in width and one inbound lane with a maximum width of 12 ft.
- (6) Except for single-family and two-family residences, driveway grades shall conform to the requirements of the Georgia Department of Transportation Design Standards.
- (7) Driveways shall intersect roads or streets with no more than a 10 degree skew from a 90 degree angle.
- (8) Driveway aprons shall slope from the right-of-way to the edge of pavement or gutter flow line. For all non-single-family driveways and entrances, a storm sewer inlet or grade break shall be provided at the right-of-way line to prevent discharge of stormwater onto the public right-of-way.
- (9) Driveways shall comply with the minimum requirements of the City of Madison Subdivision Regulations, based on projected use and classification.
- (10) Driveways serving single-family detached or duplex residences may be no less than 10 ft. wide at the right-of-way line and shall provide a radius to the back of the curb or edge of the pavement of the roadway of no less than 5 ft. All other driveway curb cuts on public streets shall conform to the standards shown on the driveway details contained in the City of Madison Subdivision Regulations.
- (11) All driveways and driveway curb cuts on state highways shall conform to GDOT Standards.

(c) Driveway Construction Standards.

- (1) Sidewalks and curbs adjacent to driveways shall meet requirements of the Americans with Disabilities Act.
- (2) Portions of driveways within the public rights-of-way shall be 6 inches thick, 4000 psi fiber-reinforced concrete.

- (3) Driveways shall be no closer than 3 ft., at the closest point, to an at-grade utility structure, including, but not limited to, curb inlets, drainage structures, streetlights, telephone and electrical poles, boxes and transformers, manholes, handholes and fire hydrants.
- (4) Driveways shall be no closer than 10 ft. from a street tree or fire hydrant.
- (5) Water and sewer lines shall be located outside of driveways, except for generally perpendicular crossings.
- (6) Commercial driveways shall provide a 35-ft. minimum radius at intersection with a public street. If designed for tractor-trailer trucks, the minimum radius shall be 75 ft.

(d) Auxiliary Lanes.

- (1) Along any arterial or major collector street, a deceleration lane, acceleration lane, larger turning radius, traffic islands or other devices or designs may be required to avoid specific traffic hazards that, otherwise, would be created by the proposed driveway location.
- (2) Deceleration lanes shall be required by the City of Madison at each access point on roads classified as arterials or collectors when the posted speed limit is 30 mph or higher and otherwise where considered necessary by the City engineer based on traffic volumes. Deceleration lanes are required on City roads classified as arterial and major collector streets when the posted speed limit is 30 mph or higher. Minimum deceleration lengths are specified in the “Table of Deceleration Lane Requirements.” The City engineer may vary length requirements based upon a consideration of available sight distance and traffic volumes.

Table of Deceleration Lane Requirements

Operating Speed	Min. Length of Lane
30 mph	75' + 50' taper
35 mph	100' + 50' taper
40 mph	150' + 50' taper
45 mph	175' + 100' taper
55 mph	250' + 100' taper
60 mph	300' + 100' taper
65 mph	350' + 100' taper

- (3) When a new deceleration lane required by this Section is proposed to begin or end within 50 ft. of an existing deceleration lane, driveway or street intersection, then the new deceleration lane shall be extended as needed to provide a safe, continuous connection with adjacent or nearby deceleration lanes, driveways and intersections.

(e) Sight Distance.

All roads, streets, and driveways shall provide adequate sight distance as shown in the Table of Intersection Sight Distance Requirements. See also **City of Madison Subdivision Regulations**.

Table of Intersection Sight Distance Requirements

Design Speed	Sight Distance, Feet				
	2 lanes	3 and 4 lanes		5 and 6 lanes	
	SDL=SDR	SDL	SDR	SDL	SDR
25 mph	280	290	315	335	350
30 mph	335	350	375	400	420
35 mph	390	410	440	465	490
40 mph	445	470	500	530	560
45 mph	500	530	560	595	630
50 mph	555	590	625	660	700
55 mph	610	650	685	730	770
60 mph	665	705	750	795	840
65 mph	720	765	810	860	910

SDR means Sight Distance required for vehicle approaching from right side of driveway.

SDL means Sight Distance required for vehicle approaching from left side of driveway.

Section XXX Requirements for New Streets and Roadways.

- (a) All new streets proposed to be constructed in a subdivision or other development shall be designed and constructed to the minimum standards contained in this Article, in accordance with the classification of streets. (Maybe need to reference street connectivity regulations)
- (b) If a new street or thoroughfare is proposed by the City of Madison or the State of Georgia to traverse the property, the proposed road shall be designed and constructed in accordance with the street classification as shown in the latest City of Madison **Functional Classification System** and contained in this Article or as shown on plans and/or policies proposed by the City or State of Georgia such as **the Major Thoroughfares Plan** or the STIP. The specific vertical and horizontal alignment of the proposed roadway shall be as established or approved by the City of Madison and/or the State of Georgia, as applicable.
- (c) Substandard Streets.
 - (1) If a substandard street (dirt or gravel road or inadequate width of pavement or right-of-way) provides a means of access to a major subdivision or non-residential development, the street shall be upgraded to the street classification standard required by the **City of Madison Functional Classification System** and in accordance with this Article. These improvements shall extend from the entrance of the development to the nearest standard paved road of an equivalent or higher classification, along the route of primary access.

- (2) All right-of-way required for these off-site improvements shall be acquired at the expense of the developer. Additional requirements may be mandated by the City.

(d) Improvements along State Highways.

For any development that abuts a state or federal highway, improvements to the roadway and the location and design of any street or driveway providing access from the state highway shall comply with the standards and requirements of GDOT and this Article. A permit for the proposed access or improvements shall be required to have been approved by GDOT and incorporated into the construction drawings for the project prior to issuance of a development permit by the Department.

(e) Permanent Dead-end Streets.

- (1) New streets shall connect at both ends to existing streets unless the City engineer determines that unique parcel configuration or terrain make a fully connected street pattern infeasible or unsafe.
- (2) When necessary, streets designed to have one end permanently closed shall provide a cul-de-sac turnaround and may be no more than 800 ft. in length, unless otherwise approved by the City engineer.
- (3) The length of a cul-de-sac street shall be measured from the center of the cul-de-sac to the center of the intersection with another street.
- (4) Cul-de-sacs shall conform to design requirements of the City of Madison Standard Design and Construction Details.

(f) Temporary Dead-end Streets.

- (1) A temporary dead-end street shall be provided to the boundary of a subdivision to provide access to abutting property for planned continuity of future circulation, improved access for public safety vehicles or for the extension of public water or other utilities to neighboring properties. Such dead-end streets shall be designed to meet the requirements of this Article and to allow their reasonable extension and shall be located so as to be reasonably incorporated into a street design for the neighboring property. A temporary vehicular turnaround shall be provided.
- (2) Existing dead-end streets on abutting property shall be extended into a proposed subdivision and incorporated into the street design of the development.
- (3) Paragraphs (1) and (2) of this subsection may be modified by the City engineer in cases of serious topographical hardship or unacceptable land use conflicts between the two developments. This modification may be conditioned on the provision of easements necessary for the extension of public utilities, the provision of a cul-de-sac or other permanent turnaround on the dead-end street or the removal of the dead-end street back to its nearest intersection.
- (4) Where a dead-end street (other than a cul-de-sac) serves four or more lots in a multi-phase subdivision and such street is to be extended later, the developer shall be required to provide a temporary vehicular turnaround. This requirement

may be waived if extension of the dead-end street is approved and under construction prior to its inclusion in a final plat.

(g) Access Roads.

Where a development borders on or contains a railroad right-of-way, major utility easement, limited access highway right-of-way or a major thoroughfare; a public street may be required to be constructed and dedicated within the development approximately parallel to and on each side of such right-of-way. Locations of such service roads shall be aligned with similar service roads on adjacent properties.

(h) Construction access drives are required for vehicles with gross weight of 10,000 lbs. or more.

- (1) On multi-phase developments, the developer shall be required to dedicate, install, maintain and remove temporary construction access drives for the ingress and egress of construction vehicles, personnel and equipment.
- (2) Temporary construction access drives shall be shown on the concept plan and preliminary plat and shall access an existing City road where possible. Construction access drives shall be permitted through the Department, and shall comply with sight distance requirements. Temporary construction access drives shall be utilized as the sole means of ingress and egress during the construction of subsequent phases of the development, to prevent the flow of construction and heavy vehicular traffic on newly constructed streets completed under earlier phases.
- (3) If the **City engineer** determines that a temporary construction access drive cannot be provided, due to site-specific restrictions, then the Developer shall provide a maintenance bond for those portions of the newly constructed roadway utilized for construction access. The maintenance bond shall provide surety for roadway repairs and resurfacing. The required bond amount per linear foot shall be the current amount established by the City Council. The maintenance bond shall be provided to the City prior to the start of construction, and shall not expire for a period of 24 months following the completion of all construction activities.

(i) Half Streets.

Both the construction of new half streets and the extension of access to existing half streets shall be prohibited. Whenever a street is planned adjacent to the proposed subdivision tract boundary, the entire street right-of-way shall be platted within the proposed subdivision.

(j) Reserve Strips. (Critical for street connectivity regulations)

Land in private ownership adjacent to public rights-of-way, which could control or is intended to control access to streets, alleys or public lands, shall not be permitted unless control is given to the City under ownership, dedication or easement conditions approved by the City Attorney or acceptable to the **City engineer**. No **development shall be designed so as to deny access to abutting properties.**

(k) Alleys.

Alleys are to be constructed to the following standards:

- (1) Minimum width of right-of-way or easement: 20 feet.

- (2) Minimum 14-foot wide paved travel lane.
- (3) 24-inch rolled curb and gutter.
- (4) Minimum 4-foot building setback from the edge of the pavement. No obstructions are permitted in this clear zone.
- (5) Utility easements as required by the **City engineer**.
- (6) Maximum length, 1,200 feet with a minimum of two points of access/egress to a local street or higher classification. No dead end alleys may be longer than 200 feet.
- (7) Maximum grade of 8 percent.
- (8) Paving and base must be constructed to standards of public streets.
- (9) Alleys shall be signed, "Fire Lanes – No Parking."

(1) Street Jogs.

- (10) Local streets shall either directly align or have offsets of a minimum of 125 ft. for residential subdivision streets and a minimum of 200 ft. for non-residential subdivision streets, as measured between the centerlines.
- (11) Where it is not feasible to align new streets or entrances with an existing street intersecting nearby on the opposite side of a collector or arterial street, then the new street intersection shall be no less than 600 ft. from the intersection of the existing street, as measured between centerlines of the two opposing streets.

-Street Connectivity Regulations

Street Design and Purpose

Streets should be designed to suit their function. Many streets, especially local ones, have purposes other than vehicular traffic. The main alternative purpose is to function as an inviting public space whose design is integral to the social and economic activities which define the character of a community. Madison's Historic district is a prime example of local and arterial streets performing these dual functions. A hierarchical street network should have a rich variety of types including, bicycle, pedestrian, and transit routes. All streets should connect to help create a comprehensive network of public areas to allow free movement of automobiles, bicyclists, and pedestrians. In order for this street network to be safe for motorists and pedestrians, all design elements must consistently be applied to calm automobile traffic.

To do this streets shall:

Interconnect within a development and with adjoining development. Cul-de-sacs shall only be allowed where topographical and/or lot line configurations offer no practical alternatives for connections or through traffic. Street stubs shall be provided within development adjacent to open land to provide for future connections. The local street grid master plan map should be reviewed to locate potential connections in new neighborhoods.

Be designed as the most ubiquitous public space of the town and thus scaled to the pedestrian.

Be bordered by sidewalks on both sides, with the exception of rural roads, lanes, alleys, and the undeveloped edge of neighborhood parkways. Sidewalks on one side of the road may be permitted in rural zones as an incentive to protect water quality.

Be lined with street trees on both sides, with the exception of rural zones, lanes, alleys, and the undeveloped edge of neighborhood parkways.

Be public. Private streets are not permitted in any new development. Alleys will be classified as public or private depending on function.

Be the focus of buildings. Generally all buildings will front on public streets.

Intersections

Segments of straight streets should be interrupted by intersections designed to:

Disperse traffic flow and reduce speeds, thereby eliminating the creation of de facto collector streets with high speed, high volume traffic, in need of traffic calming.

Terminate vistas with a significant natural feature, building, small park, or other public space.

Other traffic calming measures such as humps, tables, neckdowns, chicanes, mid-block diverters, intersection diverters, curb bulbs, and related devices will be considered on a case-by-case basis, based on safety and appropriateness in the proposed location (and according to traffic calming ordinances adopted by the city).

Blocks

Street blocks defined by public streets are the fundamental design elements of traditional neighborhoods. In urban conditions, any dimension of a block may range from 250 to 500 linear feet but should closely approximate the dimensions and axiality of the existing street blocks in the historic district. In major subdivisions the dimensions of blocks may not exceed 800 linear feet between cross streets. Within large-lot subdivisions blocks may be up to 1500 feet. In the industrial areas near the interstate blocks of larger dimensions may be permitted by the city council to accommodate large vehicle movements. The block pattern should continue to establish the grid development pattern of the town all the way to the project edges, allowing for future expansions and connections. Where longer blocks will reduce the number of railroad crossings, major stream crossings, or where longer blocks will result in an arrangement of street connections, lots, and public spaces more consistent with the overall intent of the local street grid master plan and improve connectivity, the city council may authorize greater block lengths at the time of subdivision sketch plan review and approval.

Subdivision Design Regulations related to Connectivity

Much of the new network proposed in this plan is intended to occur through private development. This city-wide local street master plan is a valuable first step in its implementation, however; stronger development and transportation policies, subdivision regulations, and design standards will be needed to support connectivity standards in private development. Some of these regulations should address the following:

The city will support connectivity by continuing to create new connections both through new development and by identifying and implementing connectivity opportunities.

The city will require street or subdivision designs that provide for public access, ingress, and egress by interconnecting streets, bike paths, and walkways within and between developments based on the cumulative total number of residential units or cumulative total of parking spaces required. This would count pre-existing units and spaces as well.

The city will require that the proposed street system will be designed to provide for an interconnected network of streets to facilitate the most advantageous development of all lands within the city, not just the advantageous development of individual parcels as isolated developments.

The city will consider requiring connectivity mitigation as a condition of rezoning.

The city will ask for connectivity plans for new developments describing how new travel patterns will be accommodated between new residences and nearby schools, community

centers, transit stops, parks, bikeways, commercial land uses, and remaining developable lands.

DIVISION X. TRAFFIC-CALMING MEASURES

Sec. 1. Definitions.

For purposes of this article, certain terms and words are defined. Where words have not been defined, but are defined in a subsequent sub-section of this article, those words shall have the meaning as defined therein. The following words, terms and phrases when used in this article shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

AASHTO means the American Association of State Highway and Transportation Officials.

Affected area means a geographic portion of a neighborhood consisting of all property owners whose quality of life as a resident in the neighborhood, and not necessarily as a traveler through the neighborhood, is being directly impacted by the speeding traffic **or cut through traffic (Recommend deleting this)** problem being addressed. The affected area will include all lots from which residents must traverse the traffic calming measure. The affected area will also include all lots from which residents may have an alternate route without traffic calming measures but whose lots have driveways that access the residential street for which traffic calming measures are sought.

Department means the **planning (public works or engineering) department**.

Eligible petitioner means the person whose name is recorded as a property owner in the tax records maintained by the city's tax commissioner and board of tax assessors for the address listed on the petition that falls within the affected area.

Initiator is a real property owner who has requested an initial interest petition form and/or has assumed a primary role in circulating the initial interest petition and the subsequent traffic-calming petition and undertakes to serve as the city's sole contact with respect to the progress of the initial interest petition and any subsequent traffic study and traffic-calming petition.

I. T. E. means the Institute of Transportation Engineers.

MUTCD means the Manual on Uniform Traffic Control Devices.

Real property owners means homeowners or other real property owners as indicated in the tax records maintained by the city's tax commissioner and board of tax assessors. Reference number means the number assigned to a completed initial interest petition which meets the city's criteria for a study that will be used to determine the order in which traffic studies will be conducted.

Residential street means a street classified and defined as "residential" in the records of the City of Madison **Planning Department**.

Traffic-calming measures means those methods and processes, prescribed by "AASHTO" or other nationally recognized organizations, that the city may use to reduce aggressive driving behavior that impairs the quality of life of its citizens in any neighborhood in which the posted speed limit is no greater than **thirty (30) miles** per hour. Such measures include, but are not limited to, speed humps, bicycle lanes, center traffic islands, splitter islands, and striping and turn restriction lanes.

Traffic-calming program guidelines mean the guidelines for the design and application of speed humps and alternative traffic-calming measures adopted by the city with the traffic-calming program in **August 2007**.

Traffic study means the process by which data pertinent to the flow, rate of speed and density of traffic, collected over a defined period of time, is measured and analyzed to determine its impact on the safety of citizens within a neighborhood or affected area.

Sec. 2. Application.

The provisions of this division shall govern in the event that there is any conflict between the provisions of this division and the provisions in other City ordinances. All initial interest petitions and traffic studies pending as of the effective date of the ordinance adopting this division shall be required to comply with and shall be subject to the provisions of this division.

Sec. 3. Procedure for requesting a traffic calming study.

- (a) The city shall require the filing of the initial interest petition on a form promulgated by the department director or designee.
- (b) Any person(s) interested in pursuing the installation of traffic-calming measures on a residential street, upon request to the department, will be provided with an initial interest petition for the department to perform a traffic calming study. The initial interest petition must be marked with the date on which it is required to be returned to the department, hereinafter referred to as the return date. Such return date shall be **forty-five (45) days** after the date the department issues the initial interest petition. The initial interest petition will allow for persons to sign in favor of requesting a traffic study or to register their opposition to the conduct of a traffic study.
- (c) All persons signing an initial interest petition to request that the department carry out a traffic study shall hereinafter be referred to as applicants. All persons opposed shall hereinafter be referred to as opponents.
- (d) All applicants and opponents must be either real property owners or rental occupants.

Sec. 4. Initial interest petition.

- (a) The department will not consider an initial interest petition unless it is complete, as that term is defined herein, and unless at least **twenty (20) percent** of the real property owners or rental occupants on the residential street are in favor of the traffic study.

(b) The completed initial interest petition shall be filed with the department by the return date as provided for in section 3(b) or it shall be deemed abandoned and any further action by the city will require a new initial interest petition.

(c) In order to be considered complete, the initial interest petition shall include all of the following:

(1) The full name, signature, home address, and daytime telephone number of each person that signed the initial interest petition.

(2) The date upon which each person signed the initial interest petition.

(3) A description of the precise area for which the traffic study is requested by reference to the name of the subdivision or popular name of the neighborhood, or the bridges, streets, roads and where appropriate with house numbers that identify the area where a perceived speeding or cut-through problem exists.

(4) The name, address and telephone number of an initiator.

(d) Only one (1) real property owner or renter for each street address may sign the initial interest petition.

Sec. 5. Evaluating the initial interest petition and informing the initiator.

(a) Upon receipt of a completed initial interest petition, the department will make a determination as to whether at least **twenty (20) percent** of the real property owners or rental occupants on the residential street are in favor of the traffic study.

(b) After the department has received the complete initial interest petition, no signature will be withdrawn from an initial interest petition unless the department is notified in writing **within thirty (30) days**, that there is reasonable proof that fraud or other impropriety occurred regarding the obtaining of the petitioner's signature.

(c) **Within sixty (60) days**, the initiator of the initial interest petition will be notified in writing by the department as to whether the initial interest petition meets the criteria for a traffic study. In the event that the department decides to conduct a traffic study, the written notification to the initiator will include a reference number assigned to the initial interest petition for the conduct of the study.

(d) In the event that the initiator moves away or is otherwise no longer a point of contact for the department and a new initiator's name or address has not been provided to the department, the department shall consider the initial interest petition abandoned and shall cease all work on processing of the initial interest petition and any subsequent traffic study.

Sec. 6. Traffic study to comply with national standards.

National standards promulgated by the American Association of State Highway and Transportation Officials, the Institute of Transportation and other national standards shall govern the execution of traffic studies and the design and installation of traffic-calming measures.

Sec. 7. Priority for the conduct of traffic studies.

(a) The department will conduct traffic studies based on the reference number assigned to the completed initial interest petition.

(b) The department reserves the right to change the order in which a traffic study is conducted where the department determines that there is an initial interest petition further

down the waiting list for an area that may relate to, or be affected by, another traffic study to be conducted on a neighboring street or in a neighboring area.

Sec. 8. The affected area and the traffic-calming plan.

(a) Where a traffic study is warranted it will be conducted at a time to be determined by, and within the sole discretion of, the department.

(b) Upon completion of a traffic study, the department shall make a determination as to whether the results clearly demonstrate that the installation of traffic-calming measures are warranted based upon the criteria established in the traffic-calming program guidelines. TBD (recommend speed only criteria i.e. 15% of vehicles are going 11 miles over the speed limit A.K.A. the 85th percentile rule)

(c) When considering traffic-calming program guidelines relating to speeding, the determination regarding whether the established criteria for traffic-calming measures have been met will be based on a comparison of actual study speeds obtained to the posted speed limit. When considering the criteria in traffic-calming program guidelines that relate to cut-through, the determination will include a comparison of cut-through traffic volumes obtained in a study to allowable volumes of cut-through traffic established in those guidelines. (Recommend deleting this)

Sec. 9. Notification that traffic-calming measures are not warranted.

Following the completion of the study, if the department director or designee determines that no traffic-calming measures are warranted, then the department director or designee shall notify the initiator of that conclusion in writing.

Sec. 10. Notification to initiator for commencement of traffic-calming conceptual design and presentation of the traffic-calming plan for public hearing.

(a) Where traffic-calming measures are warranted the department shall, within a reasonable time following the completion of the traffic study, not to exceed twelve (12) months, prepare a traffic-calming conceptual plan and notify the initiator in writing about the traffic-calming conceptual plan.

(b) The traffic-calming conceptual plan must identify the affected area and include a recommendation for a specific traffic-calming measure or a combination of such measures that the department has determined to provide the most effective solution to the speeding and/or cut-through problems identified in the traffic study for installation in the affected area, having regard to the pavement width, grades, the physical features of the proposed location for the installation measures and any structures that facilitate drainage. The plan may also include alternative measures that could be installed to provide some relief to the speeding and/or cut-through problems identified in the traffic study for installation in the affected area, having regard to the pavement width, grades, the physical features of the proposed location for the installation measures, and any structures that facilitate drainage.

(c) A public comment period, not to exceed twelve (12) months, shall commence on the date that the letter of notification is sent to the initiator pursuant to subsection (a). During that public comment period, department staff assigned to work on the traffic-calming conceptual plan shall meet with the initiator(s) and other interested persons for neighborhood input and public comment on the traffic-calming conceptual plan.

- (d) The department shall, **within 60 days** of the completion of the public comment period present the traffic-calming conceptual plan to the city council for a public hearing at a regularly scheduled meeting, of the city council.
- (e) The date, time, place and purpose of the public hearing must be advertised in the city's legal organ **at least once within three (3) weeks prior** to the hearing. The department shall also post signs within the affected area informing residents of the date, time and place of the public hearing and its purpose.
- (f) The city council may vote to accept or reject the department's recommendation for installation of the most effective traffic-calming measures, or to accept any alternative measures provided by the department. Additionally, the city council may vote to defer the item for **up to sixty (60) days** for additional review by staff with respect to the traffic-calming measures recommended and the affected area to which the proposed measures would apply.

Sec. 11. Traffic-calming petition; choice of measures.

- (a) Following the public hearing at which the city council accepts the recommended or alternative measures, the department director or designee shall provide the initiator with a traffic-calming petition form to be used for recording all of the signatures. The petition must set forth the traffic-calming measures approved by the board of the commissioner that shall be the subject of the vote and the eligible petitioners will thereby have the opportunity to vote in favor or in opposition to the approved measures. No other measure may be included on the petition.
- (b) The initiator is responsible for circulating the traffic-calming petition to all eligible petitioners in the affected area.
- (c) A traffic-calming petition must be returned to the department **within ninety (90) days** of the city council's decision allowing the installation of traffic-calming measures or it will be deemed abandoned and no further action shall be taken on the traffic calming petition or the initial interest petition from which it arose.
- (d) The traffic-calming petition shall indicate the full name, signature, home address date, and daytime telephone number for each person signing the selection petition.
- (e) The tax records maintained by the city's tax commissioner and board of tax assessors shall control in determining whether a signatory to the petition is a real property owner and thus an eligible petitioner.
- (f) In the event that the city council votes to reject the department's recommendation no further action shall be taken with respect to traffic calming measures **for at least twelve (12) months.**

Sec. 12. Creation of a special tax district and assessment of costs associated with the maintenance of the traffic-calming measure.

- (a) In order to be eligible for the creation of special tax district the petition must secure signatures in favor of the installation of traffic-calming measures from eligible petitioners representing **sixty-five (65) percent** of properties in the affected area, **as determined by city staff.**
- (b) In the event that the petition secures the requisite percentage of signatures in favor of the approved traffic-calming measure or combination of traffic calming measures, the director of the department shall present a resolution to the city council at a regularly

scheduled meeting and the city council shall thereafter by said resolution approve the creation of a special tax district. Advertising for said meeting must comply with section 10(e).

(c) The special tax district shall be created to include all of real property in the affected area for which the traffic-calming measure was approved. An annual maintenance charge in an amount to be determined by the city council shall be assessed to and collected from property owners within the affected area as part of their annual property tax assessment for the maintenance of the traffic-calming measures installed pursuant to the creation of the special tax district. (\$25.00)

Sec. 13. Removal of traffic-calming measures.

(a) Upon presentation of a petition from eligible petitioners representing sixty-five (65) percent of the properties in the affected area, traffic-calming measures previously installed may be removed. No such petition shall be presented earlier than twelve (12) months after initial installation of the traffic-calming measure(s).

(b) A removal petition may be obtained from the department director or the director's designee.

(c) The removal petition shall be returned and filed with the department within ninety (90) days of the date on which it was provided pursuant to a request or it shall be deemed abandoned and any further action by the city shall require a new removal petition.

(d) The removal petition shall be presented to the city council at a public hearing within sixty (60) days of the receipt of the petition. The date, time, place and purpose of the public hearing must be advertised in the city's legal organ at least once within three (3) weeks of the hearing. The department shall also post signs within the affected area informing residents of the date, time and place of the public hearing and its purpose.

Section XXX Traffic Impact Analysis

Sec XXX Purpose and Intent

The purpose and intent of this section is to protect the health, safety, and welfare of the citizens and visitors of the City of Madison by ensuring the provision of safe and adequate roadway facilities. The provisions of this section establish requirements for transportation studies that provide information on traffic projected to be generated by proposed developments. It is the further intent of this section to establish requirements for the identification of any potential traffic operational problems or concerns, as well as potential solutions to such problems or concerns.

Sec XXX When Required

A Transportation Impact Analysis (TIA) study shall be required for all subdivisions or developments when the following project threshold levels are met or exceeded. In the event that alternative threshold levels are specified (i.e. units vs. square footage) the more restrictive shall prevail.

Subdivision/Development Type	Threshold
Single-Family Residential	50 Units
Multi-Family Residential	5 acres or 50 Units
Office	3 acres or 50,000 square feet
Commercial/Institutional	2 acres or 75,000 square feet
Industrial	8 acres or 100,000 square feet
Commercial Outlets with drive through service	No threshold (Applies to all)

In the case that a development does not meet or exceed the threshold level defined above, a transportation impact analysis may still be deemed necessary by the City engineer under one or more of the following conditions:

- There are currently high traffic volumes on surrounding roads that may affect movement to and from the proposed development.
- The development will be located in an area that is currently undergoing substantial growth, or
- The development will be located in an area that is currently experiencing extreme problems with traffic congestion.

Expansion of an existing project may also be subject to a traffic study. When determining whether the project meets the threshold, trips from the existing land use shall be included in the trips that are considered “produced” by the project.

The City has the right in the administrative review process to require mitigation efforts by the applicant. However, a formal TIA may not be required. The applicant shall meet all applicable requirements found in the City’s Zoning Ordinance/Subdivision Regulations.

Additionally, the City has the right to request additional improvements or ingress/egress points above the current City standards.

Sec XXX Procedures

If a TIA is required for a project pursuant to the provisions of this section, the City of Madison shall approve of a registered professional engineer or an AICP certified planner with experience in traffic engineering to prepare the TIA in accordance with these regulations. The applicant shall be responsible to bear the cost of hiring said engineer or planner in accordance with local fee rates. The TIA shall be submitted at the time of submission of the tentative plat application. In the event that a TIA is required and no subdivision application is required, the TIA shall be submitted at the time of the filing for a building permit. In no case shall a building permit be issued for a development that is subject to the TIA requirements of this section prior to the submission and approval of the TIA. For each TIA submitted, the **City engineer** will assess the project and make the decision as to whether a traffic model of the study area will be required. If a proposed development is located in an area for which the City has an existing base traffic model, then the traffic model shall be updated to show the impacts of the project. For other projects, the City may choose to generate a model for the critical intersections in the study area. This model will allow the City to make recommendations for improvements needed in order to mitigate the impacts of the development. These recommendations may be in addition to the recommendations made by the TIA and will be in accordance with standard engineering practice. In order for the **City engineer** to model the effects of the new development (or update an existing base model), the following information shall also be provided at the time of submission of the tentative plat application:

- (1) Existing Average Daily Traffic Counts at all intersections (identified by the **City Engineer**) as well as peak-hour counts (for all turning movements at each intersection). These counts shall be less than 1 year old. The applicant shall contact the **City engineer** to check availability of most recent applicable counts. If current data is not available, the applicant will be required to perform the counts. Peak hours shall be determined by the **City engineer** for each project, as peak hours will vary depending on the study area. **Traffic counts will be conducted only during weeks that do not contain a major school holiday and that are during the school year (September through May).**
- (2) Projected Average Daily Traffic Counts (and peak hour counts) upon completion of project at same intersections, as well as any proposed site access driveways.
- (3) Suggested timing/phasing plans for any proposed traffic signals, and/or proposed changes to existing timing/phasing plans.
- (4) Any other recommendations or mitigation efforts that are proposed by the applicant.
- (5) Any additional information deemed necessary by the **City engineer** in order to complete or update a traffic model of the project area.

A review fee will be assessed to every applicant that is required to submit a TIA for this service. This fee shall consist of a **\$50 submittal fee + \$50/mile of roadway to be studied**

(pro-rated per mile) + \$50/intersection in the study area + \$50/proposed development in the study area that have submitted a tentative plat or conditional use application. For example, a 3-mile long project study area consisting of 10 intersections along a stretch of highway that has 8 other proposed developments would have a fee of \$1100.00 (\$50 submittal fee + \$150 for 3 miles of roadway + \$500 for 10 intersections + \$400 for 8 other developments in the study area.)

A building permit or work order will not be issued unless the traffic model with all proposed improvements shows little or no impact on existing traffic conditions. Mitigation measures shall be in place prior to the initial phase of construction. Mitigation shall also be in coordination with the most the most recent Comprehensive Plan, Major Thoroughfare Plan, or infrastructure work plan proposed to benefit the area affected. Prior to approval, the developer must verify with the **Department of Engineering** whether the policies and goals in the relevant local plans mentioned above contain any proposed routes, improvements, or recommendations that will affect the subject property. If so, access through the property along with any right-of-way needed shall be provided to the City as part of the applicant's mitigation efforts. The most recent maps outlining the Comprehensive Plan, the Major Thoroughfares Plan, and any infrastructure work plans is on file with the **planning department**. Copies can also be obtained from the **City engineer**.

Sec **XXX** Documentation

The TIA shall be prepared documenting the study, the data used, the findings, and the recommendations of the study. The TIA shall be prepared and signed by a registered professional engineer or an AICP certified planner with experience in traffic engineering and approved by the City of Madison to be responsible for the supervision of the study and preparation of the TIA. The applicant will be responsible for the cost of the TIA. The TIA will be reviewed by both the **City Engineer** and the Planning Department. If the **City engineer** or the Planning Department determines that the TIA is inadequate or not in accordance with this section, the applicant shall be required to supplement the TIA to address any deficiencies.

Sec **XXX** TIA Contents and Format

The contents of a TIA, as well as the TIA study radius shall vary depending on the site and prevailing conditions. Content requirements, including the study area radius, shall be established by the **City engineer** prior to the submission of the TIA. Such requirements shall address site, project, and corridor level traffic and transportation issues. Each TIA submitted must take into account all other proposed developments in the study area (all developments for which a tentative application has been submitted). This information shall be obtained from the **City engineer**.

The TIA study shall be prepared in the following format:

- (1) Description of TIA study area, specifying boundary of study area and count and analysis sites. A site location map shall be provided. The map shall include roadways that allow access to the site, and are included in the study area. The **City engineer** prior to initiation of the study shall determine the radius for the TIA.
- (2) Description of the project. This description shall include the size of the parcel, general terrain features, access to the site, anticipated completion date, and the existing and proposed uses of the site (including phasing). In addition, the square footage of each use or number and size of units proposed shall be specified. A figure (Site Plan) that shows the site development as proposed shall also be included in the report.
- (3) Existing conditions. The existing conditions in the vicinity of the project shall be discussed, including a description of the area to be affected by the development. A field inventory of the site and study area shall be conducted. Existing traffic volumes, traffic controls, and geometrics (number of lanes, intersection configurations, etc.) shall be described in detail. These data shall be depicted graphically.
- (4) Existing traffic volumes within the TIA study area. Average daily traffic counts shall be current (less than 1 year old). The applicant shall contact the **City engineer** to **obtain current available counts**. If current data is not available, the applicant will be required to perform the counts. Peak hour counts shall be conducted at study area intersections during peak hours to be determined by the **City engineer**. These counts shall show all turning movements. **The counts shall be conducted during the school year (September through May) and during weeks that have no major school holidays.** (These holidays shall include, but not be exclusive to: Thanksgiving, Christmas, Spring Break, Labor Day, and Exam weeks.) The **city engineer** may be contacted for approval of the planned count dates.
- (5) Trip generation estimates and design hour traffic volumes. Traffic volumes expected to be generated by the proposed development shall be estimated using the **latest edition** of the Institute of Transportation Engineers' (ITE) *Trip Generation* manual. The calculation of traffic volumes used to determine impacts of the development shall be based on the maximum land use intensity allowed under the existing (or proposed) Zoning Ordinance.
- (6) Trip distribution and traffic assignments. Traffic generated by the site must be distributed and assigned to the roadway network in order to determine the project's impacts. The direction a vehicle will take to access or leave the project site is known as a trip distribution. Traffic assignment refers to the actual routes taken by project traffic to and from the site. The methodology and assumption which are used in the determination of trip distribution and traffic assignments shall be described. In the case of projects with several phases to take place over several years, the trip distribution and traffic assignment shall be estimated for the completion of each project phase.

- (7) Projected traffic volumes within the TIA study area. Project generated and distributed traffic shall be estimated for all intersections in the study area, including any proposed site access driveways. The projected counts will represent the same peak hours that were used for the existing traffic volume counts, and will show all turning movements. The trip generations from all other proposed developments in the study area shall also be taken into account. This information shall be obtained by the **City engineer**. The growth rate percentage to be used for the study area shall also be established by the **City engineer**.
- (8) Capacity analysis. Capacity analyses provide an indication of how well the study area intersections serve existing and future traffic demands. A description of the methodology and Level of Service (LOS) definitions shall be included within the TIA. For existing and future conditions, LOS at all study intersections, inclusive of the project driveway(s), shall be calculated for signalized and unsignalized intersections. Again, the other proposed developments in the study area shall also be taken into account. **An overall LOS "C" shall be considered acceptable for signalized intersections within the City. For unsignalized intersections, the LOS for the critical movement shall be at LOS "C" or above.** In the case where existing Level of Service (LOS) is below "C", the mitigation efforts shall improve the **LOS to "C" or above**. Additionally, volume to capacity (V/C) and average stopped delay must also be presented for both signalized and unsignalized intersections. To assess the quality of flow, roadway capacity analyses are required under the following conditions: Existing, No Build (per project phase), Build (per project phase), and Build (Total Build Out).
- (9) Traffic accidents. **Three years of the most current accident data shall be obtained for intersections within the study area. This data shall be depicted in tabular form along with a brief description at each critical location.** The applicant may contact the **City engineer** to obtain contact information for the purpose of collecting this data.
- (10) Traffic Improvements. Unsignalized intersections experiencing significant deficiencies (delays) shall be evaluated for potential signalization. Results of these analyses shall be discussed and recommendations presented. Any planned roadway improvements to be completed within the study area shall be identified and discussed.
- (11) Conclusions. This section of the traffic study shall summarize the required improvements and the proposed mitigation measures. This shall include, but not be excluded to, the following: Existing and future LOS results, Recommended Roadway Improvements, and Resultant LOS with proposed improvements in place.
- (12) Summary and findings and recommendations. Mitigation measures shall be discussed in this section. This includes identifying the improvement measures necessary to minimize the impact of the project/development on the transportation system. The study area intersections shall be mitigated at a minimum to operate better than or equal to the "No Build" case, based

on the calculated V/C and average stopped delay. In the case where the existing Level of Service (LOS) is below “C”, the mitigation efforts shall improve the LOS to “C” or above. Mitigation measures shall be in place prior to the initial phase of construction.

Sec. **XXX** Trip Generation Rates

For the purpose of determining whether the requirements of this section are applicable to the proposed project and for the purpose of preparing required transportation impact analyses, applicants shall use the trip rates contained in the **most recent** edition of the Institute of transportation Engineers (ITE) *Trip Generation* manual.

Sec. **XXX** Actions Based on TIA

A proposed development which is subject to the TIA requirements of this section shall be disapproved when the results of the required TIA demonstrate that the proposed project will overburden the roadway system or cause a reduction in service of affected roadways below the adopted **Level of Service (LOS) “C”**. In the case where the existing **Level of Service (LOS) is below “C”**, the mitigation efforts shall improve the **LOS to “C” or above**. An applicant, in coordination with the **City engineer**, may modify the development proposal to minimize the identified traffic-related impacts. Modifications to applications for projects may include, but shall not be limited to:

- (1) Dedication of additional right of way;
- (2) Rerouting of traffic and proposed access points serving the proposed project;
- (3) Participation in funding transportation facilities, including signals and intersection improvements;
- (4) Traffic signal timing and/or phasing adjustments (with coordination and approval from the owner of the signal);
- (5) Restriping or reconfiguration of the intersection;
- (6) Adding additional intersection through or turn lanes;
- (7) Installation of a signal; or
- (8) Any other recommendation by the **City engineer** upon review and analysis of the traffic model.

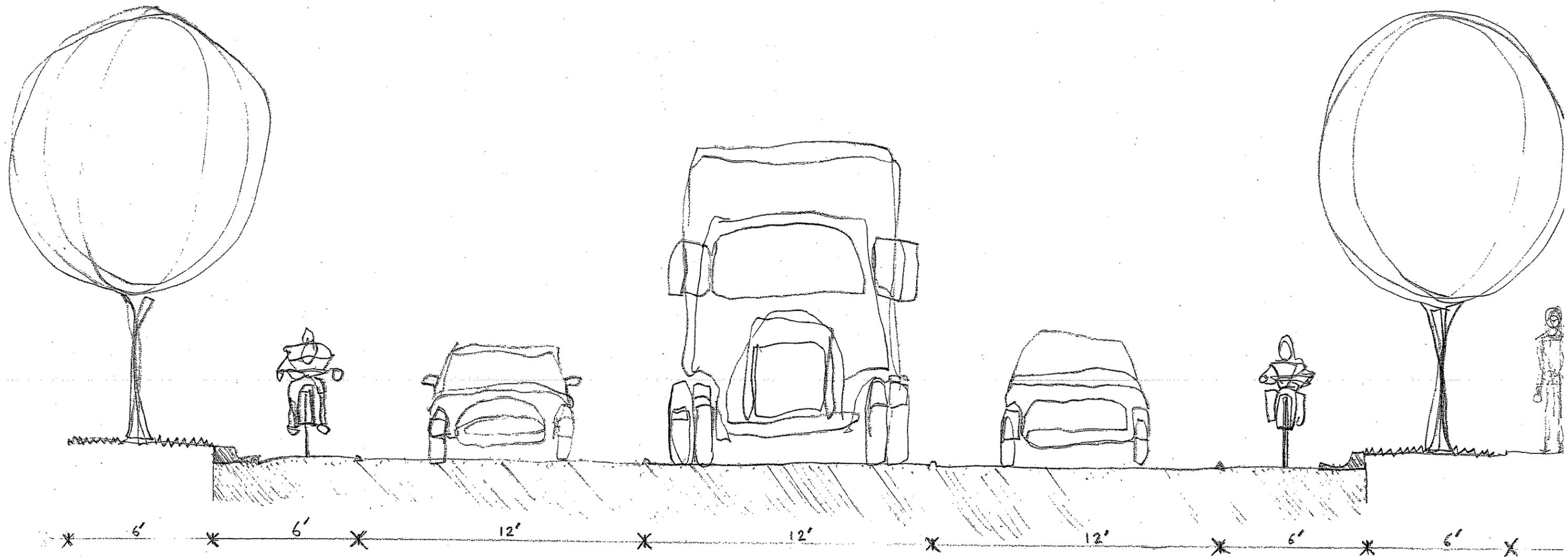
Applicants will be responsible for the cost and implementation of identified improvement(s) which mitigates the traffic impact of their proposed development, unless funding can be provided through any grant mechanism.

If a traffic mitigation is part of an approved Transportation Impact Study, all approved traffic improvements must be implemented prior to the receipt of an occupancy or Final Plat approval, whichever is appropriate, unless otherwise provided for as part of the approved transportation Impact Study and coordinated with the City of Madison.

Mitigation shall also be in coordination with the most recent Comprehensive Land Use Plan, Major Thoroughfare Plan, Zoning Ordinance, Subdivision Regulations, and any other relevant planning documents pertaining to the City and are to benefit the area affected. Prior to approval, the developer must verify with the Department of Planning whether the relevant planning documents proposed improvements, design standards, guidelines, or regulations that would affect the subject property. If so, access through the property along any right of way needed shall be provided to the City as part of the applicant's mitigation efforts. The most recent map outlining the local street master plan is on file with the planning department. A copy of the Short term work program can also be obtained from the Department of Planning.

Sec. XXX Waiver of/Exemption from TIA Requirements

The Planning Department may not waive the transportation impact analysis-submittal requirements of this section.



TYPICAL STREET SECTION
SOUTH MAIN/ATLANTA HWY/US 441
THREE LANES WITH BIKE LANES