Transportation Study
1.0 Introduction and Background

The City of Cedartown (the City) contracted with JJG in November 2001 to conduct a transportation study of downtown Cedartown. The purpose of the study is to address safety and operational issues associated with 18 key intersections locations identified by the City. **Figure 1.1** depicts the study area location, which is an approximate area encompassing the eighteen (18) study intersections. **Table 1.1** presents a list of the 18 study area intersections.

Figure 1.0
Study Area Intersections

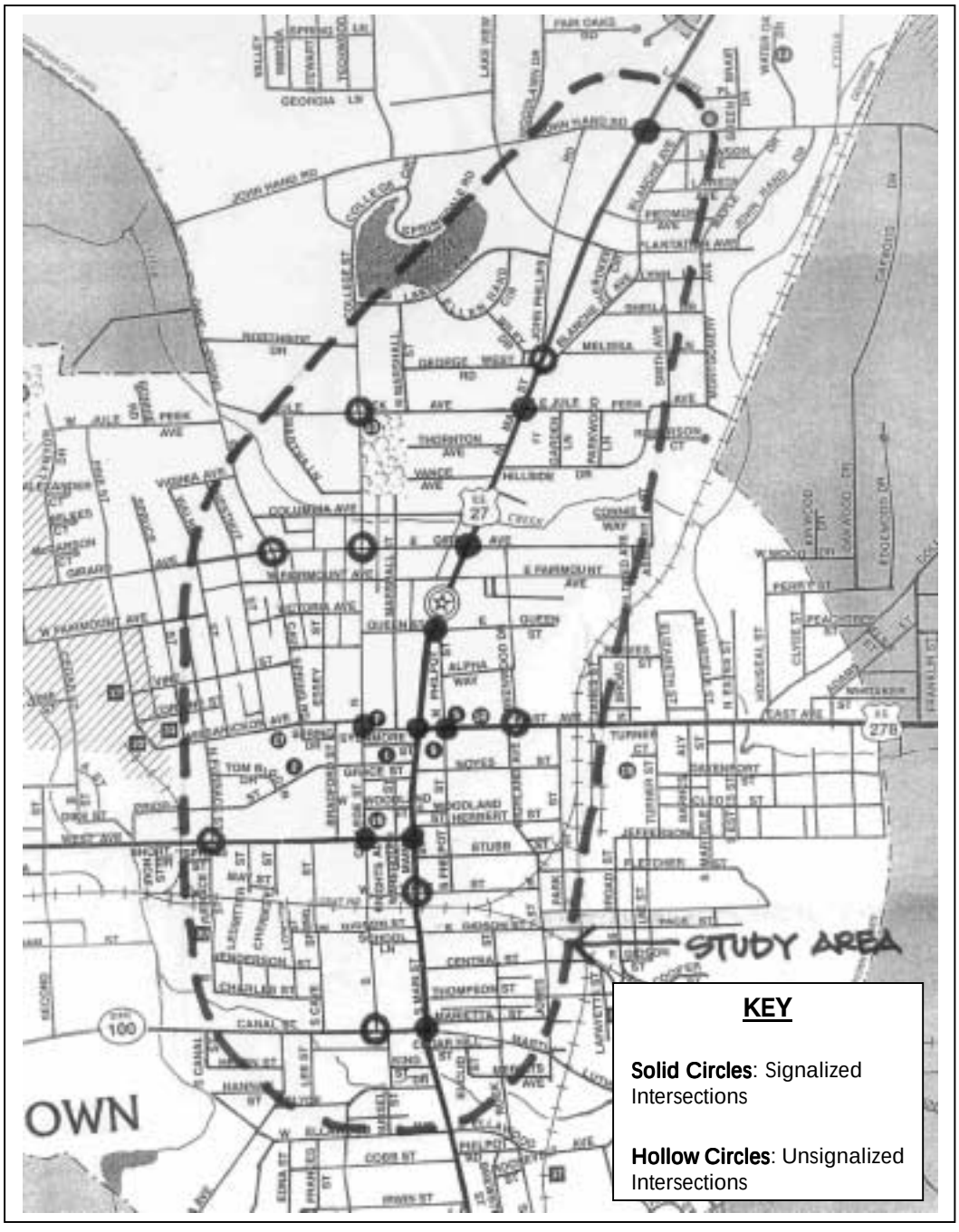


Table 1.1
List of Study Area Intersections

SIGNALIZED INTERSECTIONS
1) John Hand Road and Main Street 2) Jule Peek Avenue and Main Street 3) East Girard Avenue and Main Street 4) Queen Street and Main Street 5) East Avenue and Main Street 6) West Avenue and Main Street 7) Canal Street and Main Street 8) College Street, Wissahickon Avenue, and East Avenue 9) North/South Philpot Streets and East Avenue 10) College Street and West Avenue
UNSIGNALIZED INTERSECTIONS
11) George West Road / Wiley Drive / John Phillips Road / Blanche Avenue and Main Street 12) Jule Peek Avenue and College Street 13) Girard Avenue and College Street 14) Cave Spring Road and Girard Avenue 15) North Furnace Street and West Avenue 16) South College Street and Canal Street 17) Ware Street and Main Street 18) Highland Avenue/Greenwood Drive and East Avenue

1.1 Project Scope and Goals

As specified in JJG's proposal dated November 20, 2001, the primary projects goals for this study set forth by the City were to develop a list of transportation improvement projects for the 18 study intersections that, if implemented, would help improve safety, and reduce vehicular congestion while promoting pedestrian mobility within downtown Cedartown. These projects would be determined by review of accident data, traffic capacity data, signal timing plans, past studies, and field observations.

The following sections summarize the data collection activities, methodologies, analyses and project recommendations formulated for this project. Further, the proposed project list includes a draft implementation schedule, in addition to estimated project costs.

2.0 Analysis

Several elements were used as part of the analysis portion of this project. Planned and programmed projects were first identified to determine what current deficiencies throughout the study area are currently being addressed. Second, accident reports were obtained from the City fro the years 1999-2001 for the 18 study intersections, and analyzed to determine deficiencies. Further, traffic capacity analyses, including modeling for the 20-year future scenario was completed to determine future deficiencies. Field observations, coupled with input received from several public survey responses were also used to formulate transportation project recommendations. The following sub-sections detail the specific analyses used as part of this study.

2.1 Major Planned / Programmed Projects

As part of the review of planned and programmed projects, JJG staff contacted officials from the Georgia department of Transportation's (GDOT) district office in Cartersville, in addition to the downtown Atlanta main office. According to our contacts at GDOT, there are three main projects either on going, or currently planned for the study area. These projects are listed and described below in **Table 2.1**.

Table 2.1
Summary of Planned and Proposed Projects
Downtown Cedartown Transportation Study

Project Designation	Project Description
Project No. 1: **North Main Street Improvement Project**	GDOT project scheduled for a May 2002 letting. The project involves improving North Main Street (US 1 Business) from Vance Ave./Hillside Drive north to Frances Drive. Some major changes include adding a cul-de-sac at John Phillips Road, and realigning the intersection of Blanche Road with North Main Street. Pedestrian crosswalks and signals will be added along the project corridor, as well as curb-and-gutter and improved drainage. The traffic signals at Jule Peek and John Hand Road will also be replaced.
Project No. 2: **Main Street Traffic Signal Study**	URS, Inc. is in the process of completing a traffic signal retiming project for GDOT. This project includes the following intersections: • Queen Street / Philpot Street • Canal Street / Main Street (US 1) • West Ave / Main Street (US 1) • Wissahickson / Main Street (US 1) • East Ave / Philpot Street • Queen Street / Main Street (US 1) • Girard Street / Main Street (US 1) • Jule Peek / Main Street (US 1)

Project Designation	Project Description
Project No. 3: **GDOT Traffic Signal Replacement Project and Retiming Adjustments**	The project involves replacing old signals with new signals at the following intersections: • SR 1 Bus (Main Street) and Canal Street • SR 1 Bus (Main Street) and West Avenue • SR 1 Bus (Main Street) and East Avenue • SR 1 Bus (Main Street) and Queen Street/Philpot Street • SR 1 Bus (Main Street) and Girard Avenue • East Ave. and Philpot Street Additionally, the project includes installing interconnect cables (fiber optic), and will tie into the new traffic signals that are being installed at North Main Street and Jule Peek and John Hand Road (as part of the North Main Street project). The majority of the cable work will be aerial; the only underground portion is a small piece on West Ave.

2.2 Accident Analysis

Accident reports were obtained for each of the project intersection locations for the year 1999 – 2001. The accident reports were reviewed, and summarized by intersection. Specific descriptions include type of accident, road surface conditions (wet or dry), light conditions (daylight, dark/light, or dark/not light), and number of injuries and/or fatalities (if applicable).
The summaries for the study intersections for each of the three years that were evaluated are included in the Appendix.

Based upon our analysis, the intersections with the five (5) greatest numbers of average accidents per year between 1999-2001 are listed below.

1) Main Street and East Avenue **19 accidents/year**
2) Main Street and East Girard / Main Street and John Hand (tie) **9.7 accidents/year**
4) Philpot Street and East Avenue / Cave Spring and Girard Avenue (tie) **9.0 accidents/year**

Appendix A lists a summary of all the study intersections. The five intersections listed above are discussed in more detail below:

- Main Street and East Avenue: Review of the accident diagrams (1999-2001) for this intersection indicates that the majority of the accidents (namely 2000-2001) occurred in front of the Sav-a-ton service station. These accidents appear to be a combination of rear-end collisions in addition to angle collisions in the center turn lane. Several rear-end collisions are also apparent northbound on Main Street at East Avenue. Rear end collisions occur when the lead vehicle stops suddenly or unexpectedly, and/or when the following driver follows too closely for the prevailing speed and environmental conditions[1].

[1] Roess, Roger P., Traffic Engineering. Second Edition. 1998.

Tailgating by a following driver is not correctable by design or control, however other factors may be contributing. This high number of rear-end collisions may be attributed to one of several factors; in this case, it is likely the unusual number of driveways allowing access to and egress from the street near the intersection. Unexpected movements in and out of these driveways could cause mainline vehicles to stop suddenly. Copies of the accident diagrams are included in the Appendix.

- Main Street and Girard Avenue: Review of the accident diagrams (1999-2001) for this intersection indicate that the majority of the accidents at this intersection are rear-end type collisions on the two Main Street (northbound and southbound) approaches. As noted above, a high number of driveways within close proximity to the intersection is the likely cause for these rear-end accidents.

- Main Street and John Hand: Accident diagrams were not completed for this intersection, since it is being reconstructed as part of the North Main Street project.

- Philpot Street and East Avenue: Review of the accident diagrams (1999-2001) for this intersection indicates that the common accident types at this intersection are angle collisions. These may be caused by a too-short clearance interval, which results in vehicles being released into the intersection before vehicles from the competing direction have been cleared. Unreasonable signal timing will lead to vehicles jumping the green or otherwise disregarding it[2]. The signal timing of this intersection will be retimed as part of GDOT's signal replacement project; these issues need to be addressed as part of this project.

- Cave Spring and Girard Avenue: Review of the accident diagrams (1999-2001) for this intersection indicates that the prevailing accident types are angle collisions. Since this intersection is currently two-way stop controlled (Girard Avenue traffic has to stop), Cave Spring Road traffic does not have to stop. Several potential causes for these angle collisions include excessive speeds on Cave Springs Road, poor sight distances from the existing stop line locations on Girard Avenue, excessive vegetation blocking sight distance in locations, and driver expectancy (unfamiliar drivers think the intersection is a four-way stop).

2.3 Traffic Capacity/Operations Analysis

The following section details traffic capacity and operations analysis methodologies, and results for the existing conditions (Year 2002) and future year (Year 2022) scenarios.

2.3.1 Analysis Methodology

The analysis for this study was conducted for the two study scenarios (existing conditions and 20-year, 2022 scenario) using the criteria set forth in the Transportation Research Board's 2000 update of the Highway Capacity Manual (HCM). Highway Capacity Software, and Synchro© software were use to determine various performance measures for all roadway intersections. The following summarizes the specific methodologies applied for both unsignalized and signalized intersections.

[2] Roess, Roger P., Traffic Engineering. Second Edition. 1998.

Unsignalized Intersections

Unsignalized intersections include those controlled by stop signs (either one-way or all-way stop controlled). The means for evaluating traffic operations at unsignalized intersections include the Level of Service (LOS) for the intersection turning movements and the overall intersection LOS. For unsignalized intersections, LOS is determined by the average control delay for the intersection. At two-way stop-controlled and all-way stop-controlled intersections, control delay is the total elapsed time from a vehicle joining the queue until its departure from the stopped position at the head of the queue. The control delay also includes the time required to decelerate to a stop and to accelerate to the free-flow speed[3]. The controlled delay at unsignalized intersections can be affected by such factors as the availability and distribution of gaps in the conflicting traffic stream, critical gaps, and follow-up time for a vehicle in the queue.

LOS is assigned letter designations ranging from A (excellent free flow operations with minimal delay) to F (long delays and queues). **Table 2.2** presents a detailed summary of the various LOS letter designations. The LOS criteria for two-way stop-controlled intersections and all-way stop controlled (unsignalized) intersections are presented in **Table 2.3**.

Signalized Intersections

Two criteria (capacity and LOS) must be evaluated to analyze the operations of signalized intersections. The capacity for a signalized intersection is calculated for each lane group. Capacity is defined as "the maximum rate of flow for the subject lane group that may pass through the intersection under prevailing traffic, roadway, and signalized conditions."[4] Critical movements are those movements that require the maximum amount of time during each signal phase (e.g. highest volume movements). Capacity analysis involves computing volume-capacity ratios (v/c) for each intersection movement and for all the critical movements together.

LOS for signalized intersections is based upon control delay for the intersection. It should be noted that control delay for signalized intersections is the portion of the delay attributable to the control facility (e.g. initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay). Control delay for signalized intersections is not based upon geometric delay or incident delay. Based upon the methodology presented in the HCM (and used for this study), it is possible for an intersection to operate below its maximum capacity but still have an unacceptable delay. **Table 2.4** presents a summary of the LOS designations for signalized intersections.

[3] Transportation Research Board. Highway Capacity Manual, 2000 update.
[4] Lindburg, Michael. Civil Engineering Reference Manual. Seventh Edition. 1999.

Table 2.2
Level of Service Definitions

Levels of Service	*General Description*	**Roadways**	***Intersections***
A	***Traffic flows with very little delay and speeds are optimal. Most vehicles do not stop at all.***	Primarily free flow operations at average travel speeds (90% of free flow speed); vehicles seldom impeded in their ability to maneuver; minimal delay at signalized intersections.	Very low control delay per vehicle (up to 10 seconds per vehicle); vehicle progression is extremely favorable; very little stopping.
B	***Traffic flows with very little delay and speeds may be slightly reduced. Very infrequent and short waits at traffic signals. More vehicles stop at intersections than for LOS "A,"***	Generally unimpeded operations at average travel speeds (about 70% of free flow speed); ability to maneuver slightly restricted; infrequent delays at signalized intersections not bothersome.	Control delay per vehicle ranging between 10 and 20 seconds; good progression, short cycle lengths; more stopping with increasing levels of average delay.
C	***Traffic speeds continue to slow. Some vehicles may stop at this level, although many vehicles still pass through the intersection without stopping.***	Stable flow; ability to maneuver more restricted; lower average speeds (about 50% of free flow speed); longer queues likely to develop at many signalized intersections.	Control delay per vehicle ranging between 20 and 35 seconds; fair progression, longer cycle lengths; significant stopping of vehicles at this level; some individual cycles begin to fail.
D	***Congestion becomes more noticeable. Many vehicles stop, and the proportion of vehicles not stopping declines.***	Bordering unstable flow; still lower average speeds (about 40% of free flow speed); small increases in flow rate or adverse signal progression may cause significant increases in delay.	Control delay per vehicle ranging between 35 and 55 seconds; unfavorable progression or long signal cycles or high V/C ratios may result in ever increasing delays; many vehicles stop, and individual cycle failures are noticeable.
E	***Low speeds and traffic back ups at intersections. Often considered to be the limit of acceptable delay.***	Capacity – characterized by significant delay and low average speeds (about 33% of free flow speed); aggravated by poor signal progression and high signal density; extensive delays at key signalized locations.	Capacity - control delay per vehicle ranging between 55 and 80 seconds; often unfavorable progression or long signal cycles or high V/C ratios result in high delay values; and individual cycle failures are frequent occurrences.
F	***Very slow speeds and congestion. Long traffic backups. Very likely to wait for multiple greens to get through an intersection. This is considered to be unacceptable to most drivers.***	Congestion – arterial flow at extremely low speeds; frequent intersection congestion at most critical signalized intersections; with long delays and extensive queuing.	Congestion - control delay per vehicle exceeds 80 seconds; arrival rates exceed capacity; many cycle failures; long delays and extensive queuing.

Source: Transportation Research Board. Highway Capacity Manual, 2000 update.

Table 2.3

LOS Criteria for Unsignalized Intersections

LOS	Control Delay (seconds/vehicle)
A	0-10
B	> 10-15
C	> 15-25
D	> 25-35
E	> 35-50
F	> 50

Source: Transportation Research Board. Highway Capacity Manual, 2000 update.

Table 2.4

LOS Criteria for Signalized Intersections

LOS	Control Delay per Vehicle (second/veh)
A	< 10
B	> 10-20
C	> 20-35
D	> 35-55
E	> 55-80
F	> 80

Source: Transportation Research Board. Highway Capacity Manual, 2000 update.

2.3.2 Existing Conditions (Year 2002)

During the simulated morning peak hour model, very few problems were found. All signalized intersections operated with overall Levels of Service of A and B.

One noticeable area of congestion was East Ave between College Street and Main Streets. It is recommended in the near future to explore a three-lane cross section on this roadway. There is a high volume of left turning traffic from East Ave onto southbound College Street. The left turn queue exceeds the modeled length of the left turn lane for this movement. A three-lane section on East Avenue between College Street and Main Street also complements the recommendation for additional on-street parking recommended as part of the downtown Master Plan project.

2.3.3 Future Conditions (Year 2022)

The future year growth rate assumed a 2.5 percent per year increase in traffic volumes for all roads within the study area. Over a twenty-year period, this effectively doubles the amount of traffic in the future year scenario.

Using a model of this type with global growth rates forecasting traffic 20 years into the future is dependent upon many unknowns and uncertainties including future development patterns, socio-economic variables, demographic changes, and both financial and political factors. The global growth rate assumes that the basic traffic patterns that exist today will exist then. The uncertainty of the size, type, and location of future development in the area makes this process very subjective.

For both AM and PM peak hour models, new traffic signal timing plans were developed using Synchro. The cycle lengths for both periods are 20 seconds longer that those provided by URS as part of their ongoing project (see *Major Planned/Programmed Projects* section of this report). The time splits are also adjusted to reflected estimated future turning movements. This is reasonable due to the fact that the signal timing will be altered over time (including the upcoming GDOT traffic signal replacement/retiming project for Main Street that is described in the *Major Planned/Programmed Projects* section of this report.

Year 2022 - AM Peak Hour Specifics

As a general rule, most intersections on Main Street continue to perform well in the future year. However, there are a few congested spots such as the intersections of Main Street with Ware Street, George West Rd. and John Phillips Road. The remaining intersections on Main Street operated with a LOS of D or better, which is acceptable

East Ave, between Main and College Streets, is the most congested location. The volume to capacity ratio (v/c) for the eastbound through and right turn movements for the intersection at Main Street has a v/c slightly greater than one. The causes delays as vehicles begin to wait multiple traffic signal cycles to pass through the intersection. A possible solution to this problem is to create a small right turn lane for eastbound East Ave turning onto southbound Main Street. It removes enough vehicles from the through lane to reduce delays and congestion for the approach.

In the westbound direction of East Ave, there is a heavy left turn movement onto southbound College Street. A continuous two-way left turn lane on East Ave between College and Main Streets would provide adequate storage for the left turns at both intersections and anything in between.

The northbound approach of Main Street to MLK has some congestion. Overall the intersection operates at a LOC of C for this time period. Depending upon future development to the south of Cedartown, this may require attention at some point in the future.

The Blanche Ave. and George West Rd. intersections appear to have the most significant problems in the future scenario. Traffic volumes on Main Street could grow to a point that makes turning off of Blanche Ave difficult. With a future v/c ratio of over three (and assuming the 2.5% growth pattern comes to fruition), eventual signalization of this intersection is likely needed by 2022. Similarly, a signal at Ware Street and Main Street may likely be needed in 20 years assuming the growth patterns used in this analysis.

Year 2022 - PM Peak Hour Specifics

Again, most intersections on Main Street continue to perform well in the future year. There are a few congested spots such as the intersections of Main Street with East Ave and MLK. These intersections are estimated to operate with a LOS of D and C, respectively.

East Ave is showing minor congestion in the future model, especially in the westbound direction from Philpot Street to Main Street. Even with adjusted signal timing, both Main Street and East Ave

could have twice the volume of traffic in 2022. This intersection may be a bottleneck for both streets. A LOS of D is still acceptable for urban design; however, it is one of the most significant changes from the existing to the future network.

Similar to the AM peak hour, the Blanche Ave and George West intersections with Main Street again have considerable queues illustrated in the future model and would require a traffic signal to regulate traffic through the intersections if this scenario holds true.

College Street at Canal Street has an estimated 2022 stop-controlled LOS of F. Increased traffic on Canal Street could make the left turn from College Street difficult and dramatically increase delays. The queue length on this section of College Street is not of the magnitude of Blanche Ave. Traffic is congested, but still flows from College Street.

There are several other streets and intersection approaches that have noticeably higher traffic volumes when observing the animated simulation. While seemingly busier in the future year model, all roads are still operating below capacity, with the few exceptions noted above. Results of the intersection LOS analysis for the existing and future conditions for the study area signalized intersections are included on **Table 2.5**, and for the unsignalized intersections on **Table 2.6**.

Table 2.5
Signalized Intersection LOS Results

		AM Peak Hour		PM Peak Hour	
		Existing 2002	Future 2022	Existing 2002	Future 2022
Major Street	**Cross Street**	**LOS**	**LOS**	**LOS**	**LOS**
Main Street					
	Canal Street	B	C	C	C
	West Avenue	A	B	B	B
	East Avenue	B	D	B	D
	Queen Street	A	A	A	A
	Girard Avenue	A	B	A	B
	Jule Peek Avenue	A	B	A	B
	John Hand Road	A	B	A	B
College Street					
	East Avenue	A/B	B	A	A
	West Avenue	A	C	B	C
East Avenue					
	Philpot Street	B	C	E	C

Table 2.6
Unsignalized Intersection LOS Results

		AM Peak Hour		PM Peak Hour	
		Existing 2002	Future 2022	Existing 2002	Future 2022
Major Street	**Cross Street**	**LOS**	**LOS**	**LOS**	**LOS**
Main Street					
	Ware Street	B	F	C	F
	George West Rd	D/F	F	D/E	F
	John Phillips	B	F	B	F
College Street					
	Canal Street	C	E	C	F
	Girard Street	B	C	C	D
	Jule Peek Ave	B	B/C	B	C/D
Cave Springs					
	Wissahickon	A	B	A	B
	Girard Street	B	C	B	C
West Avenue					
	Furnace Street	B/C	D	B/C	C/D

2.4 Field Observations

The photo log on the following pages provide a photos and descriptions of deficiencies observed at each of the 18 study intersections. These deficiencies are also included in the proposed in **Section 4 – Recommendations**, as well as **Table 4.1 – Recommended Project List**.

Intersection	Observation 1	Observation 2
John Hand Road and Main Street *(Signalized intersection)*	 No protected (left-turn) phase signalization	 No crosswalks or sidewalks
Jule Peek Avenue and Main Street *(Signalized intersection)*	 Fading Stop Line and no crosswalks or pedestrian signalization	

Intersection	Observation 1	Observation 2
Girard Avenue and Main Street *(Signalized intersection)*	 Excessive driveways near intersection and deficient sidewalks	 Fading street markings, and no crosswalks
Queen Street/Philpot Street/Main Street *(Signalized intersection)*	 Intersection island utility box blocks sight distance and is aesthetically deficient	 Sidewalks are deficient and crosswalks not existing

Intersection	Observation 1	Observation 2
East Avenue and Main Street *(Signalized intersection))*	 Lanes shift, deficient lane markings, numerous driveways near intersection	 Sidewalks not traversable by physically challenged
West Avenue and Main Street *(Signalized intersection)*	 Sidewalk ramp needed for physically challenged	 Plastic poles should be replaced with landscaped bulb-outs

Intersection	Observation 1	Observation 2
Canal Street and Main Street *(Signalized intersection)*	 Better signage needed to prohibit large trucks downtown	 Signal timing to be re-evaluated by new GDOT project
College Street, Wissahickon Avenue, and East Avenue *(Signalized intersection)*	 Two-way lane should be a left-turn lane only	 Crosswalk/pedestrian signals needed across College Street

Intersection	Observation 1	Observation 2
North/South Philpot Streets and East Avenue *(Signalized intersection)*	 Right-turn lane recommended from WB East Ave. to NB Philpot Street	 Timing for left turn protective phasing seems excessive
College Street and West Avenue *(Signalized intersection)*	 US Post Office parking lot causing traffic congestion	 Close lot, replace with on street parking on College St.

Intersection	Observation 1	Observation 2
George West Road/Wiley Drive/John Phillips Road/Blanche Avenue and Main Street *(Unsignalized intersection)*	 Blanche Ave. intersection to be reconstructed by GDOT	 GDOT constructing cul-de-sac at John Philips Road
Jule Peek Avenue and College Street *(Unsignalized intersection)*	 Stop sign on Jule Peek too small and difficult to see	 Advise Jule Peek drivers that cross-traffic does not stop

Intersection	Observation 1	Observation 2
Girard Avenue and College Street *(Unsignalized intersection)*	 Road dip across College Street slows vehicle crossings	
Cave Spring Road and Girard Avenue *(Unsignalized intersection)*	 Stop line too far back to see oncoming traffic	 1) Stop sign too small, 2) advise Girard traffic that cross-traffic does not stop

Intersection	Observation 1	Observation 2
North Furnace Street and West Avenue *(Unsignalized intersection)*	 Curb radius too small for large trucks	 Stop sign too low, No stop line or center line
South College Street and Canal Street *(Unsignalized intersection)*	 Asphalt needs replacement	 Dip in road slows vehicles entering intersection, and causes ponding of water (no drain)

Intersection	Observation 1	Observation 2
Ware Street and Main Street *(Unsignalized intersection)*	 Difficult to see oncoming traffic	 Ware Street not designed for large trucks
Highland Avenue/Greenwood Drive and East Avenue *(Unsignalized intersection)*	 Crest of hill reduces vertical sight distance	 Crossing From Highland to Greenwood difficult

3.0 Public Involvement / Public Survey Responses

Public involvement for this project involved participation in a Charette (work shop) on May 4, 2002. This workshop was advertised in the local news media by the City, and was held in conjunction with the Master Plan project.

The primary means utilized to solicit public comment solicitation was in the form of a public comment survey (Shown in the Appendix) **Although the number of completed survey forms that were returned is by no means statistically representative of the Cedartown community as a whole**, the few responses that were received do provide valuable insight into the local citizen's viewpoint on transportation issues. The survey questions and most frequent responses received from the surveys are listed below (*note that the responses are not listed in any specific order).*

1) **Of the 18 study intersections, list the three most congested locations.**
   a) *East Ave and Main Street*
   b) *West Ave and Main Street*
   c) *College and West Avenue*

2) **Of the <u>18 study intersections</u> in the study area, list the three intersections that are perceived as the unsafe.**
   a) *Ware Street and Main Street*
   b) *Jule Peek and College*
   c) *East Ave and Main Street*

3) **What do you think are the three most important transportation projects that should be constructed <u>within the study area</u> to address vehicular congestion and/or safety problems in Cedartown?**
The responses varied between sidewalk projects (e.g. W. John Hand and N. College), to road extensions (North Furnace to Canal Street, South Philpot to MLK Blvd), to improving downtown parking, to slowing traffic on Main Street, and to finding alternative traffic routes to Main Street (i.e. Philpot Street).

4) **What are the top three projects that the City of Cedartown should complete in order to better improve conditions for pedestrians within the downtown area?**
   a) *Crosswalks/pedestrian signalization*
   b) *Improve sidewalks, and improve parking facilities behind buildings in downtown*
   c) *Streetscaping projects*

5) **Do you believe that there is ample parking within downtown Cedartown? If not, where is additional parking needed?**
   There is adequate parking, but it needs to be improved and needs better signage to direct drivers to the lots (mainly behind existing buildings).

6) **Are there specific transportation projects that are needed to support economic development within the study area? If so, list the three most important.**
   a) Complete Silver Comet Trail and Depot projects)
   b) Shift traffic burden from Main Street, complete Bypass west of town, Extend Furnace Streets
   c) Improve pedestrian connections and Greenspace/multi-use trails

7) **What do you believe are the three top perceived obstacles to obtaining an improved transportation system within Downtown Cedartown study area? Please be as specific as possible.**
    a) Money – increased funding needed
    b) Lack of willingness to change
    c) Better leadership from city and elected officials

4.0 Recommendations

Based upon analysis of planned projects, accident data, traffic modeling results, and public response, JJG has compiled a list of transportation recommendations for the City of Cedartown. Both intersection specific recommendations, and general "Citywide" recommendations have been formulated.

4.1 Intersection-Specific Recommendations

Recommendations for the 18 intersections included as part of this study have been generated, and are presented as **Table 4.1**. The table lists the deficiency, project recommendations, approximate cost, and priority rank for each project. The priority rank has been established using the following system:

- Priority 1 – Most critical projects to address safety concerns
- Priority 2 – Important projects
- Priority 3 – Beneficial projects

It should be noted that improvement projects have not been generated for intersections that are/will soon be redesigned or improved through other GDOT planned/programmed projects.

Table 4.1
Proposed Intersection Improvements
Cedartown Transportation Study

Intersection	Observed Deficiencies	Recommended Improvement	Estimated Cost	Priority Rank
John Hand Road and Main Street *(Signalized intersection)*	Potential Vertical Alignment/Sight Distance Problems	Intersection is included in North Main Street Project	N/A	N/A
	No protected/permitted phasing on signal for left-turn movements from Main Street onto John Hand road	New Signal with protected/permitted left-turn phasing to be installed as part of proposed Main Street Project.	N/A	N/A
	Striping at Intersection is faded	Re-striping of Intersection including in North main Street project.	N/A	N/A
	No Crosswalks/Pedestrian Signalization	Crosswalks and ped signals being added with North Main Street project.	N/A	N/A
Jule Peek Avenue and Main Street *(Signalized intersection)*	Sidewalk Ramp installed (ADA), but no cross-walks	Crosswalks and ped signals being added with North Main Street project.	N/A	N/A
Girard Avenue and Main Street *(Signalized intersection)*	Excessive curb cuts for vacant lot.	1) Upon redevelopment of the property on the south western corner, require developer to close one of the two existing driveways on Main Street, and making the other driveway a "right-in, right-out" only (primary exit driveway would be on Girard Avenue).	Responsibility of the next developer	N/A
	Poor sidewalks on south west corner of intersection.	Replace sidewalks	$7,500	2
	No Crosswalks/Pedestrian Signalization	Add crosswalks and ped signals	$6,500	2
Queen Street and Main Street *(Signalized intersection)*	Evaluate modifications to correct intersection geometry	Upon review of existing geometry, it appears the intersection operates sufficiently and without major accidents as is. Signalization should be further evaluated by GDOT as part of their signal replacement and retiming project).	N/A	N/A
	Pedestrian push buttons are present, but there are no pedestrian signals	Add pedestrian signalization	$10,000	2
	No Crosswalks	Add crosswalks	$500	1

Intersection	Observed Deficiencies	Recommended Improvement	Estimated Cost	Priority Rank
	Center Island not aesthetically pleasing	Move signal operation box and re-landscape island	$20,000	3
East Avenue and Main Street *(Signalized intersection)*	Left-turn signalization at this intersection does not appear to be warranted based upon review of available data.	GDOT needs to assess timing for left-turn protective phases, and possibility of eliminating phase if not required.	$3,000	2
	Through movement along East Ave not straight (lane shifts). This is confusing and dangerous to unfamiliar drivers	1) Remove grass mound protruding into traffic lane on southwest corner of intersection. 2) Restripe all lanes on East Ave, west of Main Street to produce two 12-foot lanes on eastbound East Ave (shift of four feet to the south). This will lessen the dramatic lane shift that currently exists along East Ave through Main Street. 3) Re-stripe with "chicken track" lines within center of intersection (dotted lines) to better mark remaining lane shift	$5,000	1
	Curb Radii too small for trucks – trucks turning right from Main Street to East have to use left turn lane (on East Ave traveling westbound) in order to maneuver turn.	Remove trucks from this route. *Note: Widening curb radii is not recommended because pedestrian crossing distance will be lengthened.*	N/A	N/A
	Numerous driveways close to intersection, high accident frequency in front of Sav-a-ton gas station.	Implement Access management techniques, particularly restricting left turn maneuvers exiting the Sav-a-ton traveling north on Main Street.	$5,750	2
	Intersection close to Philpot Street and traffic queues between the two intersections conflict with one another.	No cost effective recommendations at this time.	N/A	N/A
	No Crosswalks/Pedestrian Signalization/ADA ramps (pedestrian in wheelchair observed driving in road due to poor sidewalk conditions)	Improve sidewalks, add crosswalks and pedestrian signalization.	$18,500	1

Intersection	Observed Deficiencies	Recommended Improvement	Estimated Cost	Priority Rank
West Avenue and Main Street *(Signalized intersection)*	Plastic poles at intersection are not effective, or aesthetically pleasing in a downtown environment	Replace with landscaped bulb-outs	$3,000 Each	3
	Sidewalk ramp needed at crosswalk along eastern side of Main Street	Add ramp to existing sidewalk	$700 Each	1
Canal Street and Main Street *(Signalized intersection)*	Poor signage to prohibit trucks in downtown area (trucks are warned too late, and without acceptable places to turn around)	"Truck prohibited" signs need to be installed at the eastbound, westbound and northbound approaches to this intersections to avoid trucks from traveling within downtown on Main Street. The signs need to be at least 30-inches in size and placed on the signal mast arms and ALSO at mid-block before the intersection (to allow adequate warning).	$7,500	2
	Existing "No Trucks" sign on Main Street is too small	Replace with a 30-inch sign.	$200	2
College Street, Wissahickon Avenue, and East Avenue *(Signalized intersection)*	East Ave and Wissahickon Avenue are not aligned (through lanes shifts).	One potential option would be to straighten the curve; this would require taking much of the front yard of the Gammage Funeral Home on the northeast corner of this intersection. The resulting curve would still be difficult to navigate.	$45,000	3
	Two-way-left-turn lane on College Street (south of intersection with East Ave)	Re-mark as a left turn bay only (currently marked as a center two-way left-turn lane).	$2,250	1
	No pedestrian crosswalks or signalization	Add crosswalks and pedestrian signals across College Street, Wissahickon, and East Avenue	$15,000	2
North/South Philpot Streets and East Avenue *(Signalized intersection)*	Left-turn signalization at this intersection does not appear to be warranted based upon review of available data.	GDOT needs to assess timing for left-turn protective phases, and possibility of eliminating phase if not required.	$3,000	2
	Right turn movement high from East Ave to Philpot Street	Construct right turn lane (RIGHT-OF-WAY should not be an issue since this property affected is City Municipal complex. Existing drain box would remain.	$20,000	2
	Intersection very close to Main Street and East Avenue Intersection	GDOT will need to make sure the signal at this intersection and the East Ave. signal are coordinated as best as possible.	N/A	N/A

Intersection	Observed Deficiencies	Recommended Improvement	Estimated Cost	Priority Rank
College Street and West Avenue *(Signalized intersection)*	Congestion and queues at the US Post Office driveway on College Street, cause congestion and queuing at this intersection	1) Close off existing parking facility at Post Office 2) Restripe College Avenue (south of West Ave), with the following configuration: two 14-foot lanes, and one 8-foot parallel parking strip. This configuration will allow for the same number of parking spaces as currently exists in the lot.	$15,000	2
	No Crosswalks/Pedestrian Signalization/ADA ramps	Add ramps and ped cross-walks	$11,000	2
George West Road / Wiley Drive / John Phillips Road / Blanche Avenue and Main Street *(Unsignalized intersection)*	This intersection has several geometric deficiencies	Intersection is being redesigned as part of the North Main Street Project. May need a signal in the long-term future (by 2022), assuming current growth trends continue.	N/A	N/A
Jule Peek Avenue and College Street *(Unsignalized intersection)*	Stop signs are too small	Replace 24-inch sign with 30-inch or 36-inch signs.	$400	1
	There is a slight lane shift on Jule Peek	Restripe center line on East Jule Peek	$2,300	2
	Passing line (dashed center line) is not warranted on West Jule Peek	Restripe with SOLID yellow line.	$300	2
Girard Avenue and College Street *(Unsignalized intersection)*	Stop signs are too small	Replace 24-inch sign with 30-inch or 36-inch signs.	$400	1
	Stop sign on West Girard is difficult to see	Consider moving sign to utility pole (pole obstructs view of sign from a distance).	$200	2
	Dip in road (Girard crossing College) causes vehicles to slow so they do not scrape bottom of their vehicles.	Reconstruct draining along this intersection to allow a more gradual crown and better/safer vehicular movement.	$15,000	2
	High number of angle-type collisions at this intersection	To increase driver awareness of this intersection, add sign stating "Cross Traffic Does Not Stop" per MUTCD specifications.	$400	1
	Stop lines on N. Girard are too far from the intersection, and too thin.	Move stop lines and stop signs closer to the intersection to improve driver's line of sight. Also, stop lines need to be 24 inches wide (not 12 inches).	$500	1

Intersection	Observed Deficiencies	Recommended Improvement	Estimated Cost	Priority Rank
Cave Spring Road and Girard Avenue *(Unsignalized intersection)*	Stop signs are too small, and are not angled towards drivers	Replace 24-inch sign with 30-inch or 36-inch signs, and make sure they are angled perpendicular from to the roadway.	$400	1
	Horizontal sight distance problem on westbound Girard Avenue at intersection (bushes and trees looking southbound on Cave Spring Road obstruct view of oncoming traffic (which does not have to stop).	Tree trunks appear to be off of the right-of-way; however, brush hanging over road right-of-way should be trimmed where feasible.	$2,000	1
	Speeding vehicles on Cave Spring Road were also observed.	1) Increase enforcement of speed limit 2) Determine if intersection requires warrant four-way stop control	$5,000 Engineering Study	2
	Centerline on Girard Ave is very wide (16 feet) which may be causing excessive speeds.	Construct four-foot wide bike lane on either side to reduce lane widths on Girard Avenue to 11 feet. This would also improve pedestrian connectivity through Cedartown. However, with excessive asphalt drop-off near curb (from past re-paving layering), this may warrant the need for asphalt "smoothing" to reduce the likelihood of bicycle incidents.	$25,000	3
North Furnace Street and West Avenue *(Unsignalized intersection)*	Curb radii not large enough to accommodate truck traffic using intersection (turning between Furnace Street and West Avenue). Trucks observed to need two-way left-turn lane on West Ave. to maneuver turns	Redesign intersection to provide larger turning radius (50 to 100-feet) to allow trucks traveling westbound onto West Avenue from Furnace Street. This will require the relocation of at least one utility pole, and obtaining right-of-way from *Alejandras Super Market* property.	$35,000	3
	Stop sign on Furnace Street too low	Bottom of stop sign needs to be at least 7 feet above ground surface (per MUTCD).	$200	1
	No stop line on either side of Furnace Street	Paint stop lines on both sides of Furnace Street – lines need to be at least 24 inches wide	$500	1
	No center line markings on Furnace Street	Paint center line on Furnace Street	$500	2
	"No Trucks" sign is too small	Sign should be at least 30 inches in size to improve sign visibility.	$200	2
	No existing operational deficiencies observed.	Modeling results for the 20-year future scenario indicate that a signal may be warranted at this location by 2022.	N/A	N/A

Intersection	Observed Deficiencies	Recommended Improvement	Estimated Cost	Priority Rank
South College Street and Canal Street *(Unsignalized intersection)*	Asphalt condition poor on downhill slope approaching West Avenue.	Replace asphalt in select locations to bring up to satisfactory condition.	$10,000	2
	Standing water observed at bottom of hill (intersection of College Street at West Avenue). No drain observed in this location. Additionally, the dip at this location requires a slow approach by vehicles entering intersection (so they do not scrape the bottom of their vehicles).	To eliminate standing water and provide a "smoother" approach for vehicles, add asphalt patch at bottom of hill.	$10,000	2
	Future Traffic Operational Issues (by Year 2022)	May need a signal in the long-term future (by 2022), assuming current growth trends continue.	N/A	N/A
Ware Street and Main Street *(Unsignalized intersection)*	Curb radii not sufficient to handle truck traffic (truck observed having to use two-way left turn lane on Main Street to maneuver turn).	Better enforce truck traffic downtown. Encourage eastbound trucks on Ware Street turning north onto Main Street to use Philpot Street (through better signage).	N/A	N/A
	Difficult to make left turn onto NB Main from Ware Street (sight impaired and speeding traffic on Main Street)	Prohibit left turns from Ware Street onto northbound Main Street. Add "No Left Turn" sign, and also properly mark pavement on eastbound Ware Street. Vehicles will need to use West Avenue (or other intersections north) for left turn maneuvers onto Main Street.	$1,000	1
	Future Traffic Operational Issues (by Year 2022)	May need a signal in the long-term future (by 2022), assuming current growth trends continue.	N/A	N/A
Highland Avenue/Greenwood Drive and East Avenue *(Unsignalized intersection)*	Sight distance constraints due to crest of hill on East Ave (West of Greenwood Drive). Difficult for vehicles making left turn from Greenwood onto East Ave, and eastbound on East Ave, turning left onto Greenwood Drive.	Prohibit left turns from Greenwood Drive eastbound onto East Avenue.	$500	1
	No Crosswalks/Pedestrian Warning	Add crosswalks/overhead-flashing beacon.	$12,500	2
Main Street and Grace Street	Street in front of retail stores does not serve any purpose (except for providing a few extra parking spaces).	Close street, and expand park/green space in front of Court House. Additionally, the stop sign needs to be moved to the intersection of Main Street (for both cross-streets).	Transportation portion$12,500	3

4.2 Citywide Recommendations

In addition to the specific intersection recommendations, there are several general "Citywide" recommendations that are proposed to enhance the overall safety and efficiency of the transportation system within the downtown Cedartown area. The following subsections detail these recommendations.

4.2.1 General Traffic Operation Improvements

Throughout the study area, it was evident that there are numerous locations that have inadequate or deficient lane markings. Specifically, the lane markings are either faded, have been paved over and not replaced, or just not existing. This is especially dangerous in situations where lanes shift (e.g. East Avenue and Main Street).

Another marking noted that is not consistent with the Manual of Uniform Traffic Control Devices (MUTCD) is the use of yellow paint for pedestrian crosswalks; the MUTCD requires the use of white paint for such markings. Using yellow paint for pedestrian cross-walks goes against the MUTCD, is not consistent with other crosswalks, is difficult for drivers to see, causes confusion to drivers; thus, is not safe for pedestrians.

Another item that was observed, especially along the North Main Street corridor is the excessive number of driveways near many intersections. For example, many businesses have more than one entrance/exit along Main Street, most of which do not appear to be needed. As discussed in **Section 2.2, *Accident Analyses***, high numbers of rear-end collisions may be attributed to the unusual number of driveways allowing access to and egress from the street near the intersection. Unexpected movements in and out of these driveways could cause mainline vehicles to stop suddenly.

Better access management techniques (e.g. reducing the number of needed driveways or restricting left turn maneuvers from select driveways onto Main Street) would likely help to reduce the high number of rear-end collisions along this corridor.

Yellow Painted Crosswalk - College Street (north of Sterling Holloway Pl.)

Faded Stop Line and Center Line Marking at Furnace Street and West Avenue

One final observation noted is that many streets have excessive lane widths (e.g. Girard Avenue with 16-foot lanes). These wide lanes may be encouraging higher speeds of travel. In addition to better enforcement of

Wide Street Lanes – Girard Avenue Near North College Street

Excessive Number of Driveways – North Main Street at East Girard Avenue

the speed limits, one potential option would be to re-stripe select roads to allow for the addition of four foot bike lanes in each direction. This would improve pedestrian connectivity throughout Cedartown and allow for better use of the existing asphalt roadways. Should bike lanes not be a favored option, restriping to allow for one-side on-street parking would also be feasible.

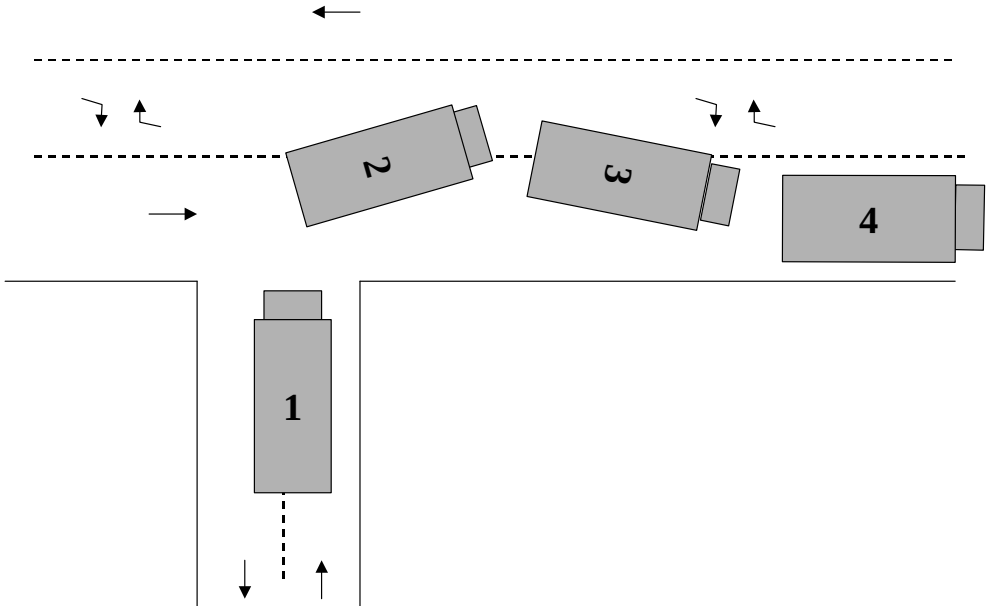
4.2.2 Truck Operation Improvements

Truck operations throughout Cedartown are a crucial element to commerce and business. However, safe operations of trucks should also be a part of the City's transportation system.
Several instances were witnessed during site visits to Cedartown where trucks were encroaching into other lanes of traffic, or traveling in locations where restricted (e.g. Main Street through downtown). Due to wide turning radii required for large trucks to safely maneuver turns (see **Figure 4.1**), it is recommended that Cedartown better enforce their restrictive truck policies and assess the truck-prohibited signage system

Truck traveling north on Main Street into Downtown

throughout the City. It was noted during the site visits to Cedartown that many trucks travel on roads where they are prohibited. Better advance signage (e.g. on the approaches to the intersection of Canal Street/MLK and Main Street) would likely reduce the number of such occurrences.

Figure 4.1
Illustration of Deficient Truck Operations Due to Large Turning Radii



4.2.3 Pedestrian Concerns

The state of the sidewalks throughout Cedartown are mixed. Certain areas have sidewalks, but many are in poor condition, or do not connect to needed pedestrian locations. As noted in the Master Plan, sidewalk improvements are recommended throughout the City. These improvements will not only provide a safer environment for pedestrians, but will ultimately improve vehicular operations and safety, as well.

Physically Challenged Citizen Choosing Road over Sidewalk Along East Avenue

4.2.4 Parking Facilities and Wayfinding

As detailed by the majority of the public survey responses, there appears to be ample parking in Downtown Cedartown; however, the perception is that there is not enough parking. The main reason for this apparently is the lack of awareness of the parking facilities behind many of the downtown businesses. It was recommended that better signage downtown, or a Wayfinding System, should be implemented to guide passerby's to designate parking facilities. The wayfinding system could also act as a guide for other places of interest (such as tourist attractions and historical locations) throughout Cedartown. Certain elements are needed before implementing a wayfinding system in a city, or location. The following list is taken from a recent article in the Institute of Transportation Engineers (ITE) Journal (April 2002), titled: *Principles of Urban Wayfinding Systems*. A copy of the complete article is included in the Appendix.

The 10 Steps to Developing an Urban Wayfinding System:

1) Devise a Mission Statement: Must be part of the City's image-building process
2) Form a Stakeholders Group: Should represent all entities
3) Criteria: Determine Destination criteria (ask where will people want to go, and where will they need to park?)
4) State Signage Agreement: The MUTCD mandates that every state have a policy for tourist-oriented signs – the Georgia Standards should be reviewed.
5) Design: The color and typeface should be readable for the audience (pedestrian or driver).
6) Fabrication: The signs should be pleasant from all angles – they are part of the "street furniture"
7) Installation: The signs should be installed so that they to do not endanger pedestrians, vehicles, or come into conflict with underground utilities.
8) Sign Routes: A "hierarchy" of urban elements should be used to direct the traveler from macro-to-micro scale (e.g. from the edge of the city, to the district edge, to inside the district, and then at the pedestrian level).

9) Sign Placement: Signs must be placed to avoid urban clutter while allowing the motorist enough time to make decisions.
10) Maintenance and Management System: Before any signs are installed, a maintenance and management system must be put in place that sustains the program in the long term.