

4. NEEDS ASSESSMENT

The process of assessing the needs of Sandy Springs' transportation network began with the identification of issues and opportunities. These topics were considered along with technical data provided by the travel demand model to identify needs for the various modes of transportation. The following section describes the analyses performed as well as the needs identified for each mode of travel.

Issues and Opportunities

The list of top ten issues and opportunities below was determined based on input from the CAC transportation subcommittee and City staff. Potential improvements to address the identified issues will be considered in the community agenda portion of the Comprehensive Plan. In addition to these issues and opportunities related to mobility, safety, connectivity, and availability of various travel modes, preservation of the existing infrastructure is a critical challenge to be faced by the City of Sandy Springs.

Reducing Traffic Congestion at "Hot Spots"

Traffic congestion along arterials typically occurs where two major roads cross, limiting the available green time for each road. Reducing congestion at these "hot spots" can reduce overall travel time.

Providing Mobility for Trips Through, To/From, and Within the City

People travel along the streets of Sandy Springs for a variety of trip purposes. Local trips satisfy needs within communities and between neighborhoods and commercial areas. Trips to and from Sandy Springs are made by those who work elsewhere and/or those who choose to satisfy a portion of their shopping and recreation outside the city. Longer distance trips through Sandy Springs are made by those who live and work beyond the city. The transportation system must provide mobility for all of these trip purposes.

Enhancing Traffic Signal Operations and Safety

Traffic signal operations control movements at intersections, where through movement capacity is most limited. An optimally timed and coordinated signal system can significantly reduce travel delay and stops along a corridor. Intersection safety is also important, as intersections typically have more conflict points and experience more crashes than roadway segments. Improvements to reduce conflicts and enhance driver expectancy can reduce crash frequency and severity.

Establishing a Grid Network to Provide Options for Travel

Connectivity of the roadway network can provide additional options for travel in congested areas. A well developed grid allows dispersion of traffic over several roads. Over time, the various routes tend towards providing similar travel time. In a less comprehensive fashion, additional roadway connections can provide multiple paths for travelers to use in accessing the main roadway, reducing congestion at critical intersections. It can also provide an alternative to travel on congested arterials for those making local trips to destinations along a busy arterial corridor.

Improving Availability of Transit Service

Transit is a key component to providing travel alternatives to the automobile. Frequent local transit service can provide an extension to the walking environment for travel

within activity areas. Local transit trips can feed activity areas so that users can avoid activity center parking and congestion. Longer distance transit trips can provide higher speed access to nearby and distant activity areas. Transit availability and frequency of service are two important factors in attracting riders as an alternative to automobile travel.

Incorporating BRT and Other Premium Transit in Sandy Springs

Transit along local streets is subject to the same traffic delays as automobiles, limiting its potential effectiveness in saving time for travelers. Incorporation of Bus Rapid Transit (BRT) or other premium transit options in Sandy Springs can provide travel time advantages along key routes. These travel time savings are critical to encouraging people to park their cars and utilize transit.

Satisfying Parking Needs in Activity Centers

As activity centers grow, satisfying parking needs is important to maintain the viability and attractiveness of the activity centers. Excess parking can lead activity center users to make frequent short trips via automobile within the activity center, limiting the effectiveness of pedestrian, bicycle, and transit modes. Parking shortages can cause increases in traffic congestion, as drivers must circle the area multiple times to find a place to park. Satisfying parking needs should take both ends of the spectrum into account.

Calming Traffic to Enhance Safety While Maintaining Connectivity

The residential neighborhoods were identified as one of the city's primary assets in discussions with the CAC. Preserving the integrity and safety within the neighborhoods is critical to the future of Sandy Springs. Traffic calming has been used effectively in many areas of the Atlanta region to enhance safety along residential streets. Although many potential traffic calming techniques have been employed throughout the United States, speed humps are the most common element employed in the Atlanta area for residential speed control. The advantage of traffic calming is that it can provide control of speeds without reducing connectivity, as would be the case with a road closure.

Providing Sidewalk and Bicycle Lanes for Travel to/from Destinations and Access to Transit

Sidewalks and bicycle lanes are critical transportation infrastructure elements necessary for providing alternative travel options to the automobile. Providing connectivity to existing community facilities (such as schools, libraries, and parks) is an important use of the pedestrian and bicycle network. Providing additional connectivity to key transit facilities/routes and activity centers is another critical area to reduce the need for automobile travel.

Managing Access Points Along Corridors

Providing access to adjacent properties is one of the primary purposes of a road. However, when the road is a congested urban arterial such as Roswell Road, frequent parcel by parcel access can degrade operations due to the friction of turning vehicles and can provide extra conflict points, increasing crash potential. Effective management of access points can preserve through capacity along arterials. However, careful planning of access for key areas is critical to avoid impacts to properties.

Regional Travel Demand Model

The Sandy Springs Transportation Master Plan needs and future improvements were developed based on an examination of travel demand in year 2030. ARC maintains the Regional Travel Demand Model for use in determining future year traffic forecasts based on approved population and employment information. The ARC Travel Demand Model was used to examine year 2030 transportation system needs with committed projects in place. The remaining deficiencies define the roadway capacity needs to be addressed in the Transportation Master Plan.

In addition, the ARC Travel Demand Model was applied with modified population and employment data to provide information to the City on the potential traffic implications of additional growth (beyond that included in the Comprehensive Plan). This was performed as a test case to examine the impact of intensified development in the Sandy Springs Town Center. The options tested included additional growth that could occur if redeveloping areas in and around the Sandy Springs Town Center were to build out with additional zoning overlays applied. This sensitivity analysis was helpful to insure the Transportation Master Plan includes multimodal solutions to address potential activity centers.

A third use of the ARC Travel Demand Model was for quantifying the number of new trips occurring due to future development, as well as the overall City-wide volume/capacity (v/c) ratio experienced for use in establishing an impact fee for Sandy Springs. Chapter 7 of the Sandy Springs Comprehensive Plan, Community Agenda describes the application of the travel demand model in determining future year traffic for use in establishing a transportation impact fee.

Roadway Network Needs Assessment

Automobiles are the most frequently used mode of travel in the City of Sandy Springs, as they are in the overall Atlanta Region. In addition, other modes of travel directly or indirectly use the roadway network. For example, transit buses travel on the roads with automobiles and pedestrians and bicycles often use facilities immediately adjacent to roads. Therefore, roadway capacity and operations are critical to defining transportation needs. In addition to mobility, safety is another key factor related to the roadway network. Crashes provide a large drain on community resources and frequently result in incident related traffic congestion. The following pages describe the results of the roadway capacity and safety related needs.

Roadway Jurisdiction and Functional Classification

Sandy Springs has 394 centerline miles of existing roadway network with 19 roadway bridges. Most of the roadways in Sandy Springs are city streets. Four roadways in the City of Sandy Springs are under State of Georgia jurisdiction: I-285, SR 400, SR 9 (Roswell Road), and Abernathy Road/Johnson Ferry Road between Cobb County and GA 400. City streets comprise 71 percent of the road miles, while State Roads comprise 29 percent.

Roads are classified by function for purposes of analysis and evaluation of the roadway's effectiveness within the system. Roadways classification is based on the facility's accessibility and mobility. Streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide. Basic to this process is the recognition that individual roads and streets do not serve travel independently in any major way, rather the network functions together to facilitate access. Functional

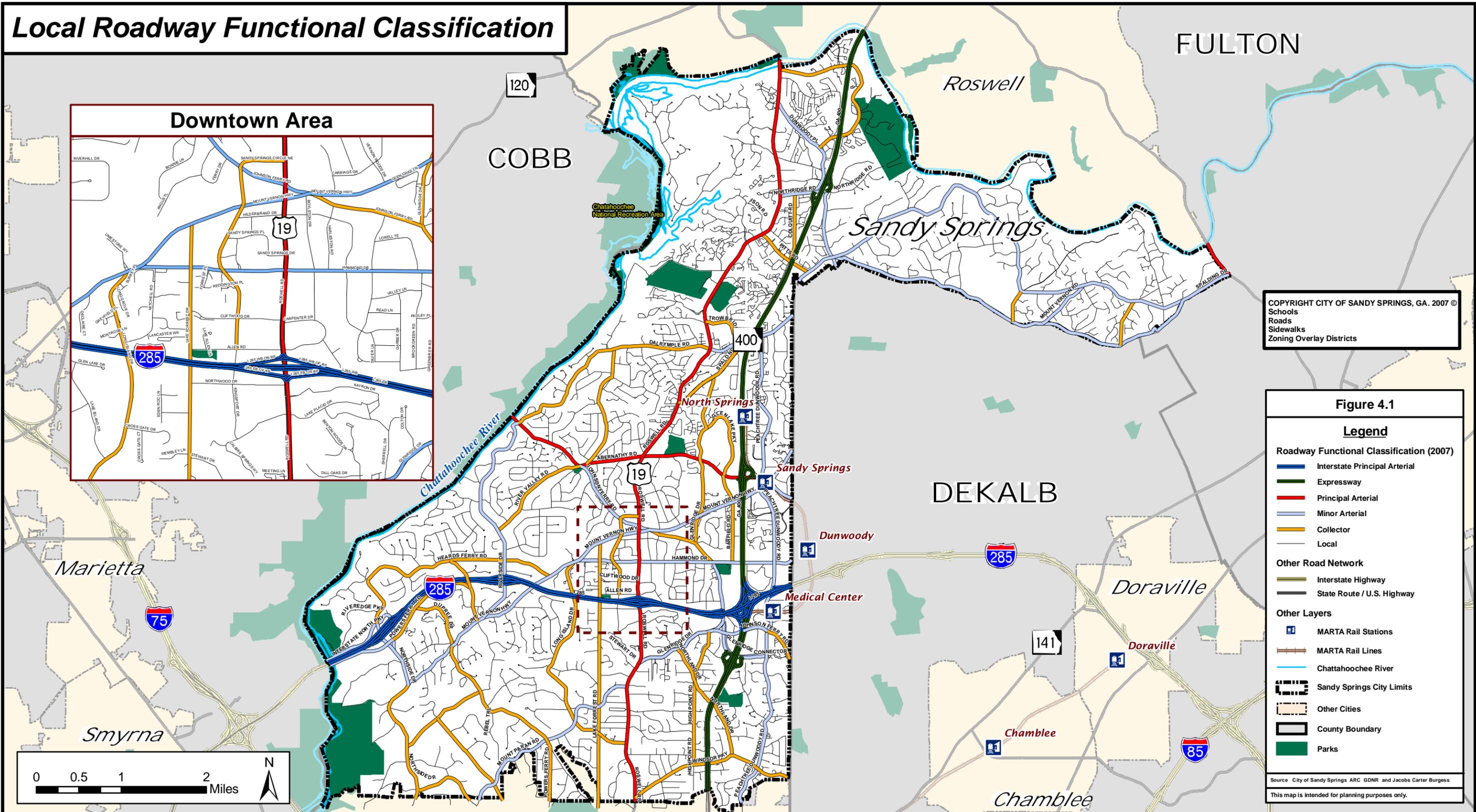
classification defines the nature of a facility's operation in serving the flow of trips through a highway network.

On one end of the spectrum are expressways/interstates, which provide the greatest mobility with controlled access. On the other end are local roads, which provide the greatest accessibility and feed traffic into higher capacity roads. A description of the system's major functional classifications is presented below and is shown in Figure 4.1.

- **Interstates and Expressways**– Interstates and expressways provide the greatest level of mobility, with access limited to interchanges. I-285 is the only interstate facility and SR 400 is the only expressway within Sandy Springs. These facilities comprise 43 miles (10 percent) of the total roadway network.
- **Principal Arterials** – A principal arterial is a street or road whose primary function is to carry through traffic over relatively long distances between major areas of the county. The arterial system in the city comprises 13 miles, or 3 percent of the total roadway network. Specific major arterial facilities are Abernathy Road from Johnson Ferry Road to Peachtree Dunwoody Road, Johnson Ferry Road from Cobb County to Abernathy Road and Roswell Road.
- **Minor Arterials** – A minor arterial is a street or road whose primary function is to carry through traffic over moderate distances between principal arterial streets and/or activity centers. The minor arterial system in Sandy Springs comprises 45 miles (10 percent) of the total roadway network, and includes Dunwoody Place, portions of Glenridge Drive, Glenridge Connector, Hammond Drive, Mount Paran Road, Mount Vernon Highway, Northridge Road, Northside Drive from Mount Vernon Highway to Interstate Parkway North, Peachtree Dunwoody Road and Riverside Drive.
- **Collectors** – A collector is a street or road whose primary function is to carry through traffic over minor distances from local streets and subdivisions to an activity center or higher classification street. The minor collector system in Sandy Springs comprises 43 miles (9 percent) of the total roadway network. Long Island Drive, River Valley Road, and Dalrymple Road are examples of such roadways.
- **Local Streets** – Local streets feed the collector system from low volume residential and commercial areas. In Sandy Springs, local streets comprise 306 miles (68 percent) of the total roadway network.

The City of Sandy Springs is considering modifications to the functional classification system to reflect local and community roadway use.

Local Roadway Functional Classification



Roadway Analysis Criteria

The level of system performance varies by type of transportation facility, geographic location, time of day, and other characteristics. Each roadway in the network has a theoretical capacity based on its functional classification and characteristics. When roadways are operating in free-flow conditions, capacity constraints are not apparent. However, as traffic volumes increase, available capacity is restricted and roadway congestion results. Federal regulations define traffic congestion as the level at which transportation system performance is no longer acceptable.

Capacity needs are identified using measures such as daily volume to capacity (v/c). The v/c ratio of a specific roadway is an indicator of the level of service (LOS) that can be expected on that roadway. A v/c ratio of less than 1.0 indicates that a road can handle additional volume and remain within capacity. A v/c ratio of 1.0 indicates that a road has reached its capacity and additional traffic volume will result in a less than acceptable LOS. A v/c ratio of more than 1.0 indicates that a road's traffic volume exceeds its capacity to handle that traffic, resulting in an unacceptable LOS. The computation and analysis of roadway v/c allows system-wide analysis of the transportation network, providing an approximation of the LOS of roadways or corridors based on information such as lane configuration, observed roadway speed, and traffic volumes.

V/C ratios are linked to LOS to provide an easier way to communicate roadway operations. LOS is a user-based assessment of conditions whereby roadways are given a letter designation, with A representing the best operating conditions and F representing the worst. The 2000 *Highway Capacity Manual* provides the following LOS guidelines:

- LOS A, B and C indicate conditions where traffic can move relatively freely.
- LOS D describes vehicle speed beginning to decline slightly due to increasing flows. Speed and freedom of movement are severely restricted.
- LOS E describes conditions where traffic volumes are at or close to capacity, resulting in serious delays.
- LOS F describes breakdown in vehicular flow. This condition exists when the flow rate exceeds roadway capacity. LOS F describes traffic downstream from the bottleneck or breakdown.

Throughout the City of Sandy Springs Transportation Master Plan, the following LOS criteria are used to determine congestion levels on roadway segments:

- LOS A through C is equivalent to a v/c of 0.7 or less.
- LOS D is equivalent to a v/c of 0.701 to 0.85.
- LOS E is equivalent to a v/c of 0.851 to 1.00.
- LOS F is equivalent to a v/c greater than 1.00.

Roadway Characteristics

Available roadway network capacity is determined by functional classification, number of lanes, traffic controls, and utilization. The number of lanes and traffic signal locations within the City of Sandy Springs are shown in Figure 4.2. Most of the local residential streets have two lanes, but several large facilities also traverse the city, providing capacity for higher volumes of through traffic along collector and arterial routes. The City of Sandy Springs maintains over 120 signalized intersections within its borders.

An important component to effective operation of the signal system is the ability to control traffic signals remotely, to change coordinated signal timing and identify vehicle detection problems. These functions provide assistance in maintaining the signals at peak performance. When traffic surveillance cameras are added to this remote communications capability, it allows traffic engineers to be much more proactive in operating the signal system. Recurring congestion patterns can be examined from several vantage points to allow the engineers to plan intersection operations and signal improvements on a systemwide basis. It also allows traffic engineers to detect and respond to non-recurring congestion, caused by incidents, bad weather, or special events. The communications systems, monitoring equipment, and control center are referred to as an Advanced Traffic Management System (ATMS). The City of Sandy Springs has a phased ATMS plan, indicated in Figures 4.3A and 4.3B. These figures show the type of signal controller, existing and proposed camera locations and existing and proposed fiber optic cable runs for phases I and II, respectively.

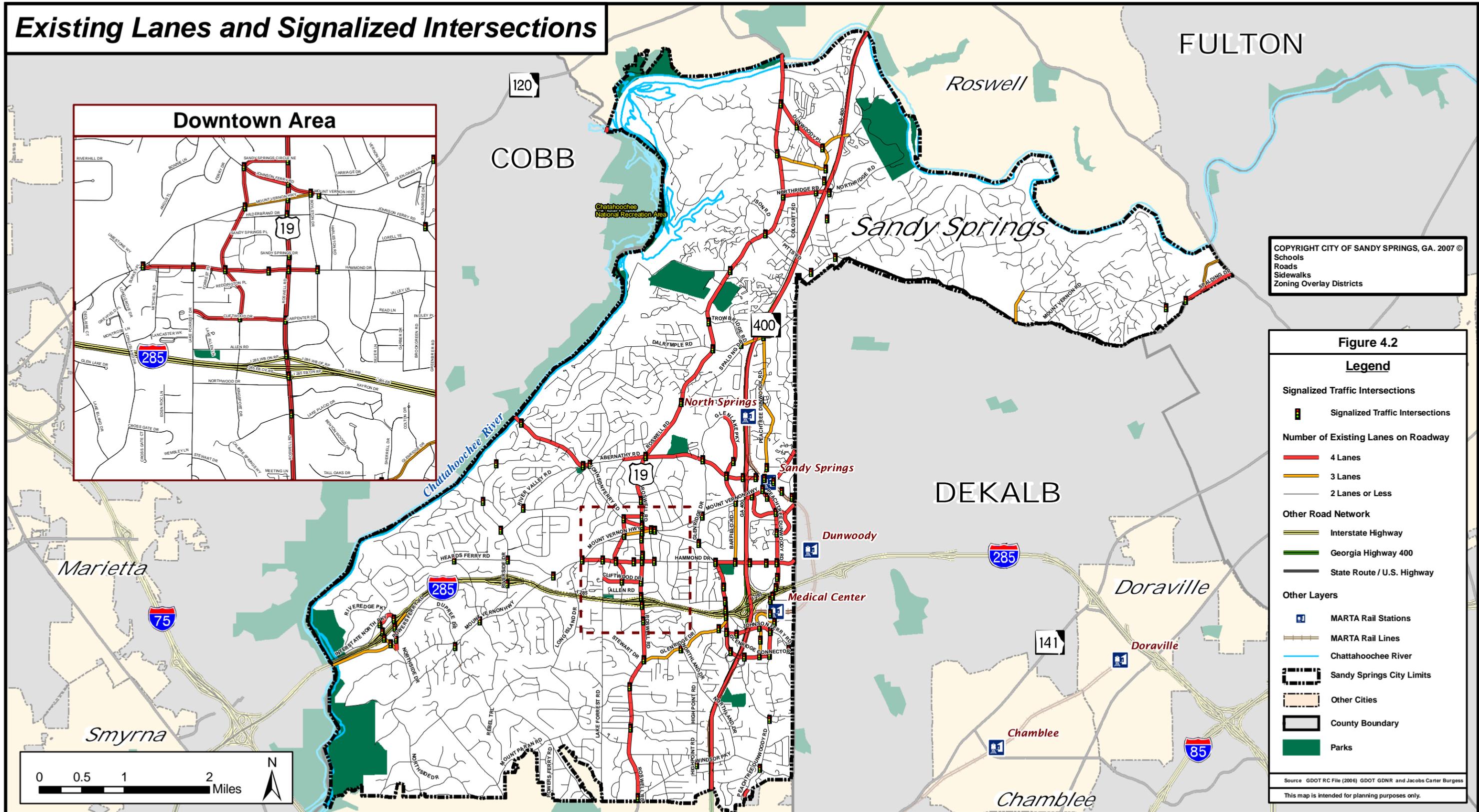
Signalized intersections limit capacity along a corridor due to the sharing of green time among competing movements. In addition, capacity is reduced at unsignalized intersections where traffic on the main road slows to allow for turning traffic to accelerate or decelerate. Although the overall reduction in capacity at an individual unsignalized access point is less than at a traffic signal, the cumulative effects of multiple access points can significantly reduce traffic speeds along the main road. In addition, these access points provide locations of potential vehicle conflicts, increasing the potential for crashes. Figure 4.4 shows the number of access points per mile along key corridors in Sandy Springs. As this figure shows, the highest concentration of access points is along Roswell Road between I-285 and Abernathy Road. Along this section, the tight curb radii for many of the driveways reduces turning speed, resulting in more significant speed reductions in this area. Abernathy Road between Johnson Ferry Road and Roswell Road has the second highest number of access points per mile; however, as primarily residential driveways, which are used less frequently than the commercial driveways along Roswell Road, they have less effect on travel speed.

Access to the freeway system is an important part of regional travel for trips to, from and through Sandy Springs. Freeway Access is provided via eight interchanges (including one for access to the North Springs MARTA station), as shown in Figure 4.5. In addition, 15 freeway crossings are present along I-285 and SR 400 that do not have interchanges. The longest gaps in freeway access occur north of Abernathy Road, where the five-mile section is served by one full access interchange and one MARTA station access interchange.

In addition to roadway capacity and access, the physical condition of the road is a key component to planning future needs. If roadway conditions require extensive repaving and maintenance, the amount of local money available for system expansion and upgrades is reduced. Figure 4.6 shows the PACES¹ rating for roads within Sandy Springs. As this figure shows, few of the roads are in poor or very poor condition. However, the majority of roads are in fair condition, which indicates the need for resurfacing in the near future. This will be an important maintenance issue, as roads that deteriorate to poor or very poor conditions often need reconstruction work, which is much more costly than resurfacing. The Transportation Master Plan addresses strategies for preservation of roadway infrastructure.

¹ GDOT rating system for pavement condition.

Existing Lanes and Signalized Intersections



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Schools
Roads
Sidewalks
Zoning Overlay Districts

Figure 4.2
Legend

Incorporated December 1, 2005

ATMS Fiber and Signal Plan Phase II

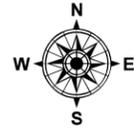
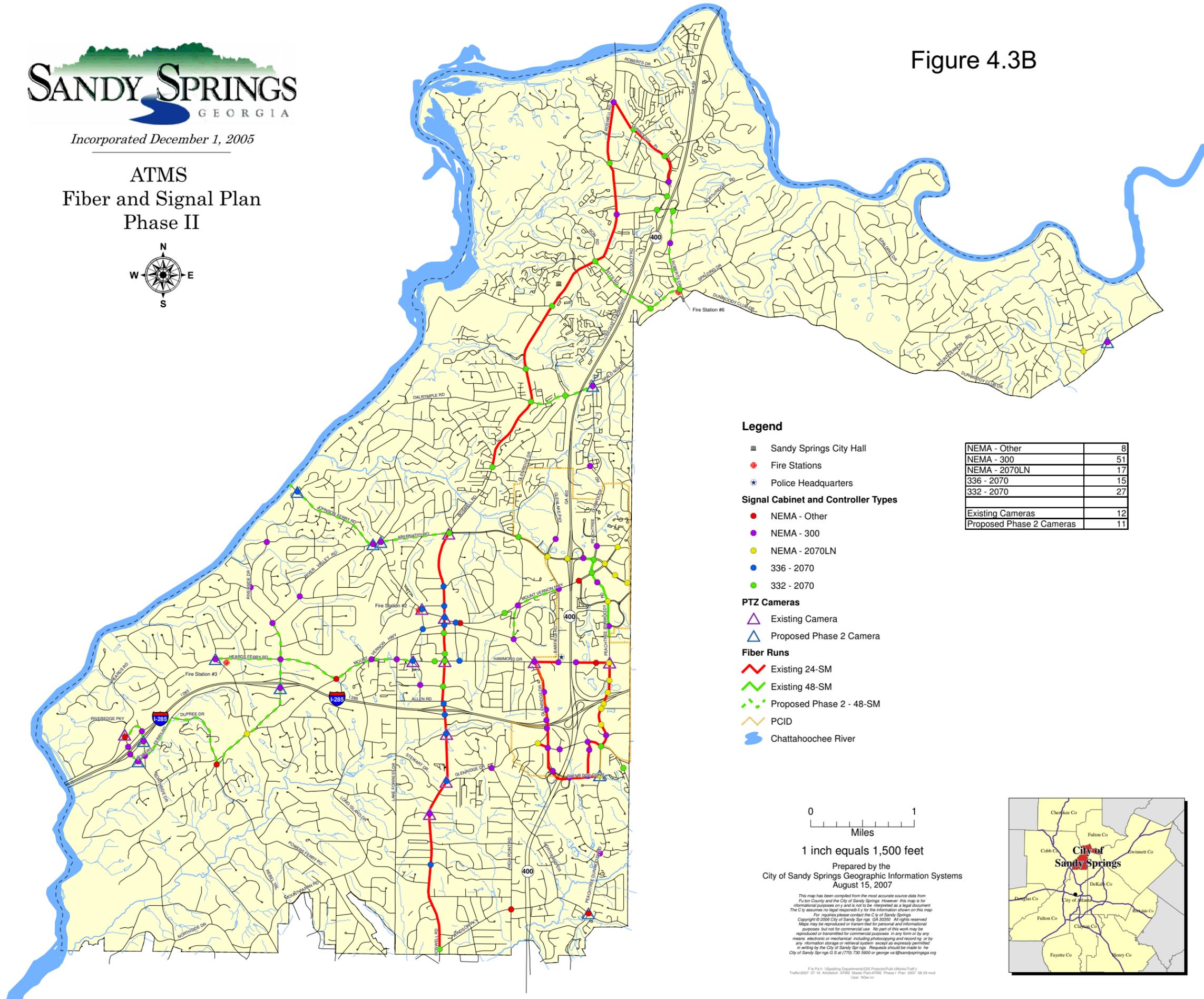


Figure 4.3B



Legend

- Sandy Springs City Hall
- Fire Stations
- ★ Police Headquarters

Signal Cabinet and Controller Types

- NEMA - Other
- NEMA - 300
- NEMA - 2070LN
- 336 - 2070
- 332 - 2070

PTZ Cameras

- △ Existing Camera
- △ Proposed Phase 2 Camera

Fiber Runs

- Existing 24-SM
- Existing 48-SM
- Proposed Phase 2 - 48-SM
- PCID
- Chattahoochee River

NEMA - Other	8
NEMA - 300	51
NEMA - 2070LN	17
336 - 2070	15
332 - 2070	27
Existing Cameras	12
Proposed Phase 2 Cameras	11



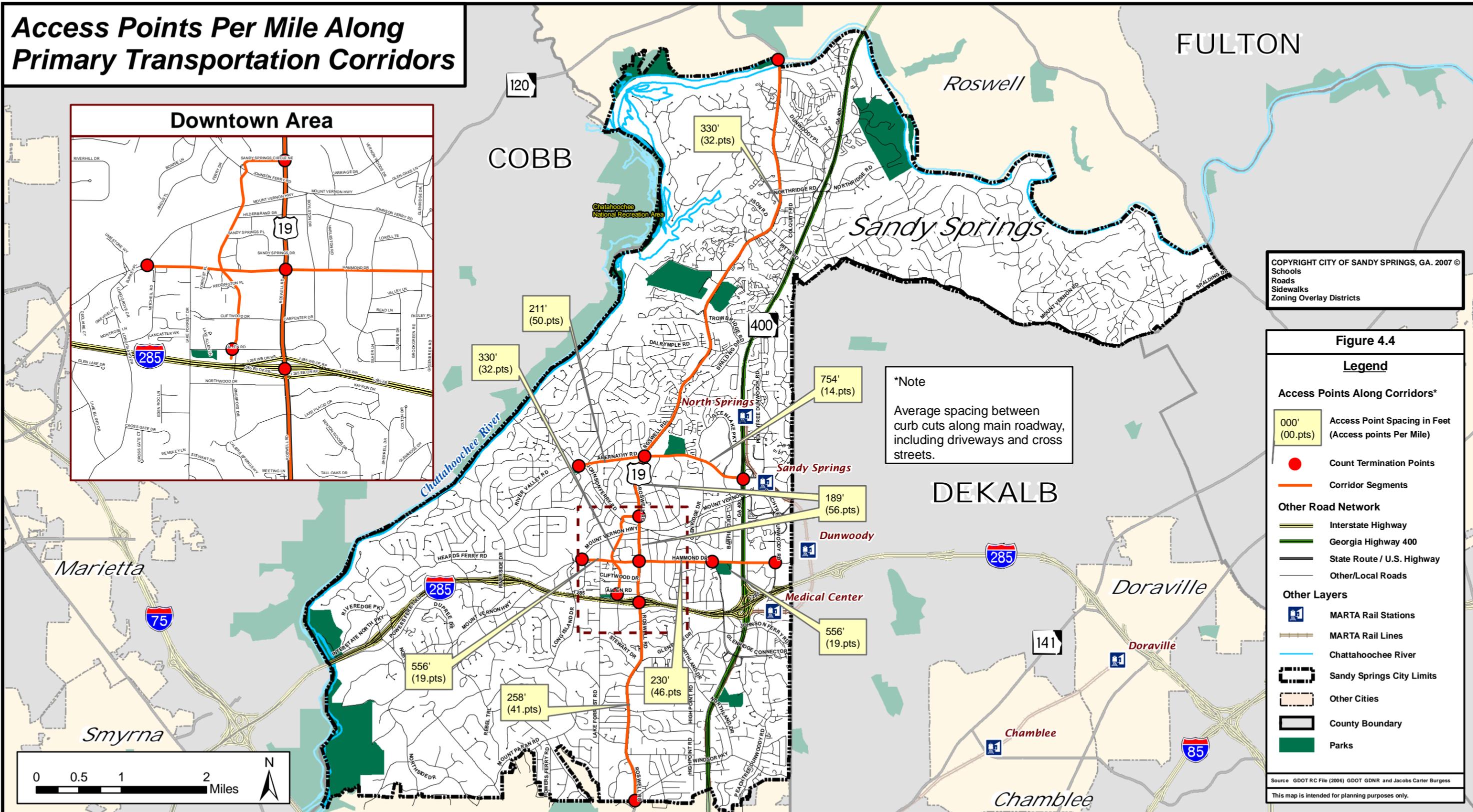
1 inch equals 1,500 feet

Prepared by the
City of Sandy Springs Geographic Information Systems
August 15, 2007

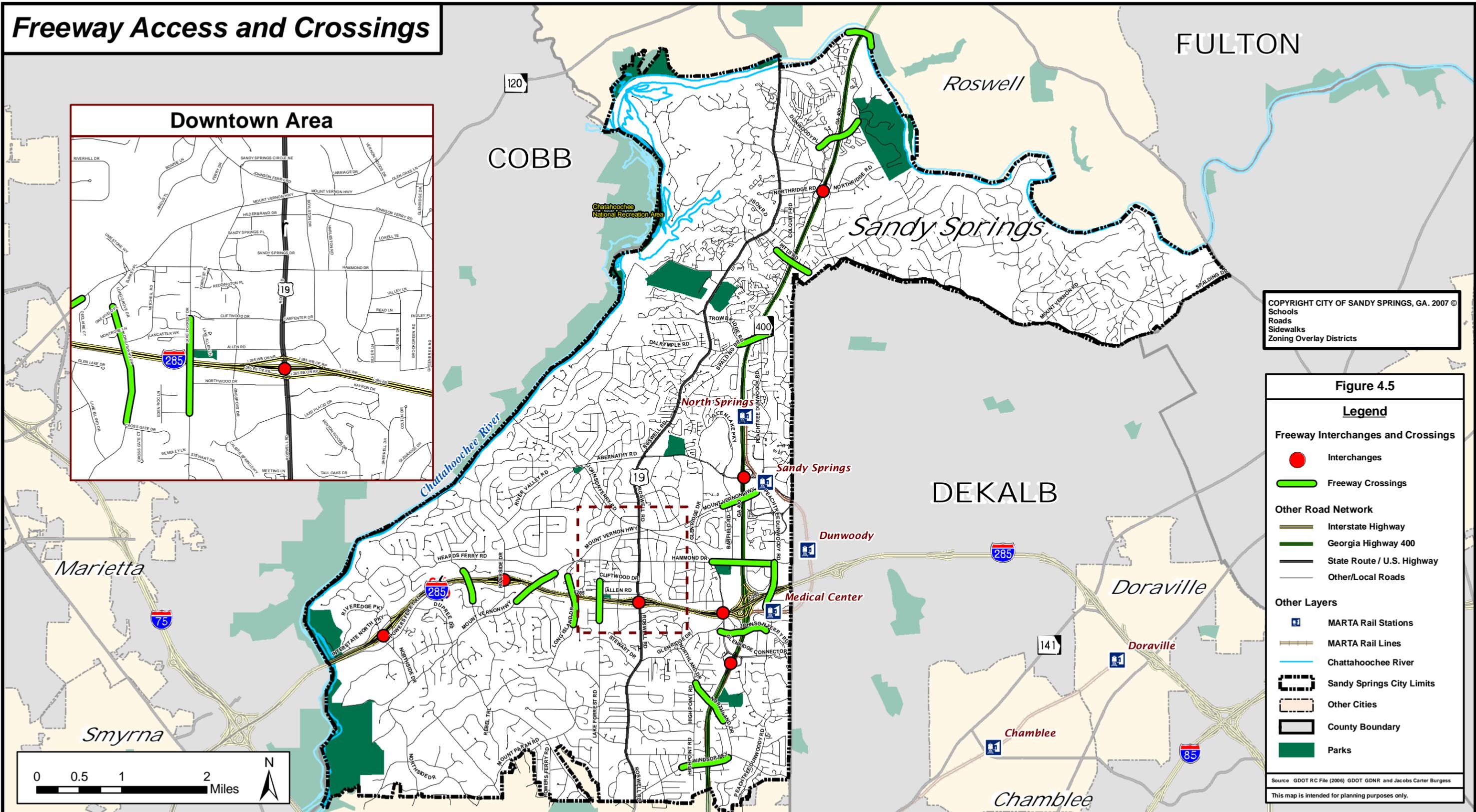
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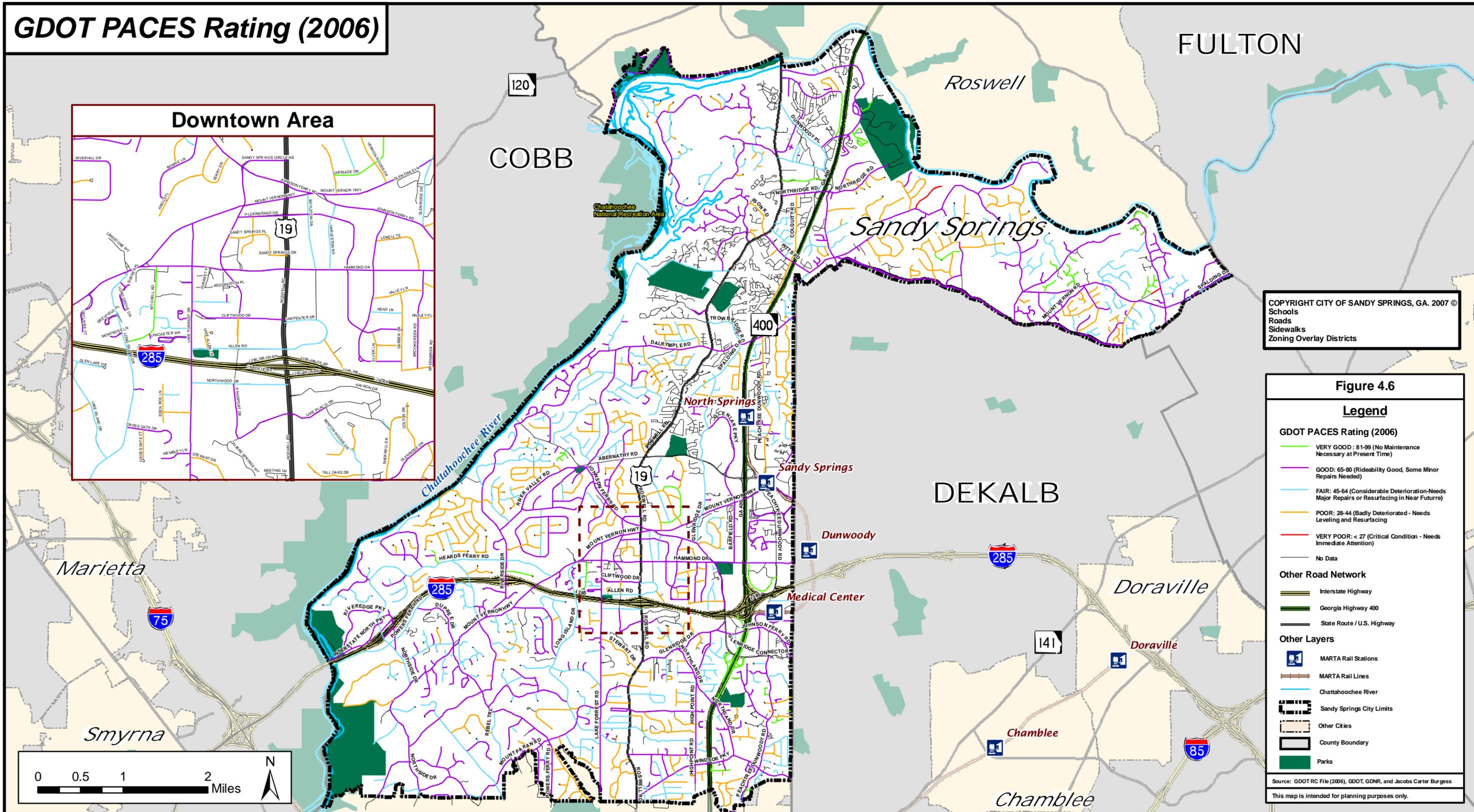
Access Points Per Mile Along Primary Transportation Corridors



Freeway Access and Crossings



GDOT PACES Rating (2006)



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 Schools
 Roads
 Sidewalks
 Zoning Overlay Districts

Figure 4.6

Legend

GDOT PACES Rating (2006)

- VERY GOOD: 81-99 (No Maintenance Necessary at Present Time)
- GOOD: 65-80 (Rideability Good, Some Minor Repairs Needed)
- FAIR: 45-64 (Considerable Deterioration-Needs Major Repairs or Resurfacing in Near Future)
- POOR: 28-44 (Badly Deteriorated - Needs Levelling and Resurfacing)
- VERY POOR: < 27 (Critical Condition - Needs Immediate Attention)
- No Data

Other Road Network

- Interstate Highway
- Georgia Highway 400
- State Route / U.S. Highway

Other Layers

- MARTA Rail Stations
- MARTA Rail Lines
- Chattahoochee River
- Sandy Springs City Limits
- Other Cities
- County Boundary
- Parks

Source: GDOT RC File (2006), GDOT, GDNR, and Jacobs Carter Burgess
 This map is intended for planning purposes only.

Roadway Operational Needs

In order to determine which facilities in Sandy Springs are congested, ARC’s region-wide transportation plan and travel demand model was used. Model results for the 2005 and 2030 networks were evaluated. It is important to note that the model network reflects the network of regionally significant roads and therefore some local roads are not included on the network. In addition to the travel demand model data, 2006 daily traffic volume data was obtained from the GDOT roadway characteristics (RC) datafiles. Figure 4.7 shows these daily traffic volumes. As this figure shows, roads such as Roswell Road, Johnson Ferry Road, Abernathy Road, and Hammond Drive experience daily traffic volumes between 20,000 and 40,000 vehicles per day, spanning the range of capacity for a four to five-lane road.

Congestion Management System

As required by federal law and regulations, ARC has developed a Congestion Management System (CMS) for the Atlanta region. Within the CMS, roadways are identified for congestion monitoring, evaluation, and identification of improvements to alleviate congestion. Figure 4.8 shows the roads included in the Congestion Monitoring Network (potentially congested) as well as those indicated as congested in the CMS. Eleven roadways in Sandy Springs are included in the Congestion Monitoring Network (see Table 4.1).

The 2005 ARC RTP and model results support the findings in the CMS. Figure 4.9 shows 2005 levels of congestion based on daily traffic volumes derived from the travel demand model. Figure 4.10 shows 2005 levels of congestion based on the PM peak period. These figures indicate similar congestion patterns when based on daily and PM peak period congestion.

Table 4.1: ARC Congestion Management System Facilities

Roadway	Segment
Roswell Road	Entire length in Sandy Springs
SR-400	Entire length in Sandy Springs
Peachtree Dunwoody Road	Atlanta City Limits to Spalding Drive
Glenridge Drive	Roswell Road to Johnson Ferry Road
Johnson Ferry Road	DeKalb County to Glenridge Drive and Glenridge Drive to Cobb County
Northside Drive	Atlanta City Limits to Mount Vernon Highway
Mount Vernon Highway	Northside Drive to DeKalb County and DeKalb County Line to Gwinnett County (northeast Sandy Springs)
Riverside Drive	Mount Vernon Highway to Dalrymple Road
Dalrymple Road	Riverside Drive to Roswell Road
Hammond Drive	Mount Vernon Highway to DeKalb County
Abernathy Road	Johnson Ferry Road to Mount Vernon Highway

Source: Atlanta Regional Commission, Congestion Management System, 2004

Annual Average Daily Traffic

