A4. Transportation Memorandum

Phase III Truman Parkway Focus Area Report

Victory Drive Corridor Study

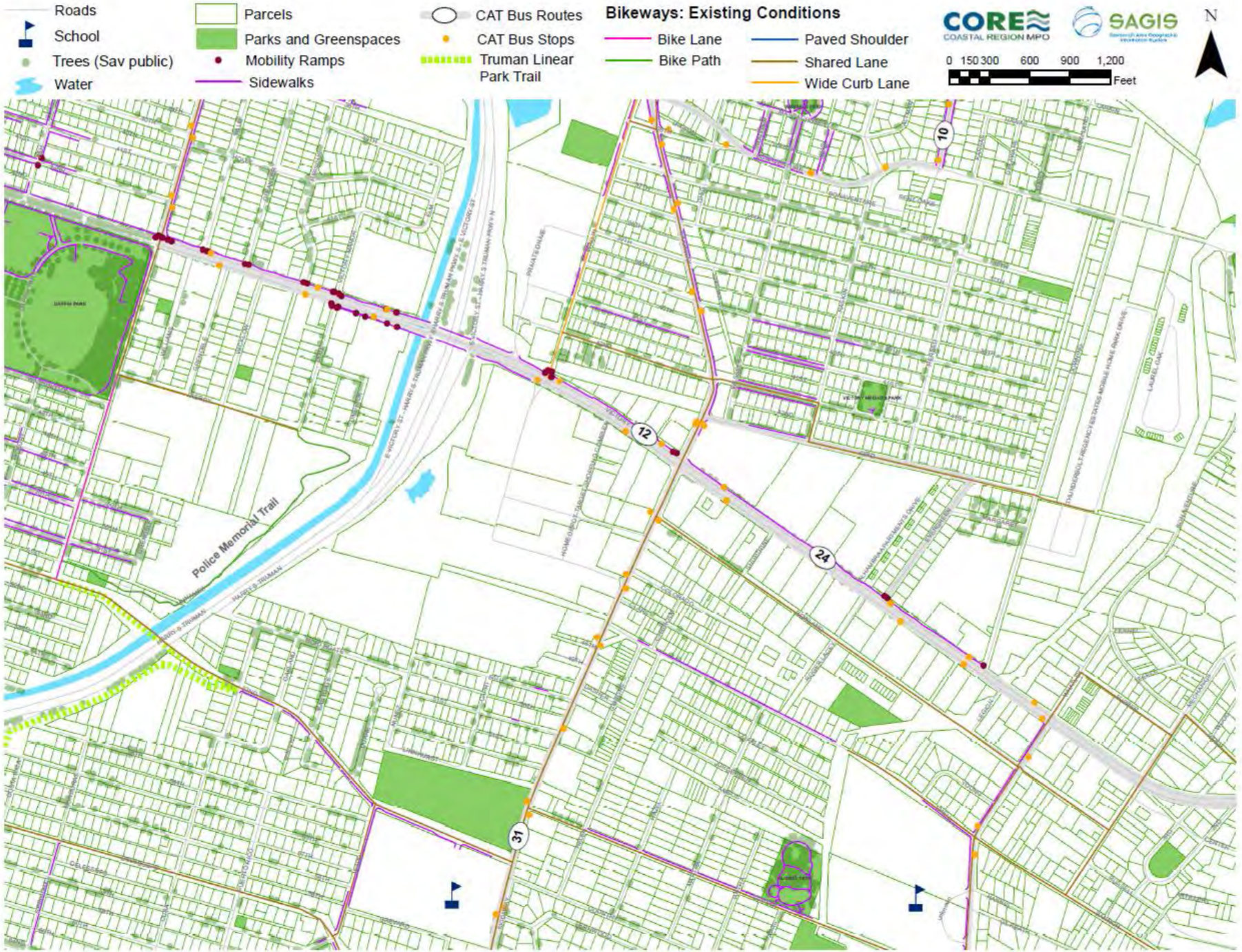
December 14, 2016

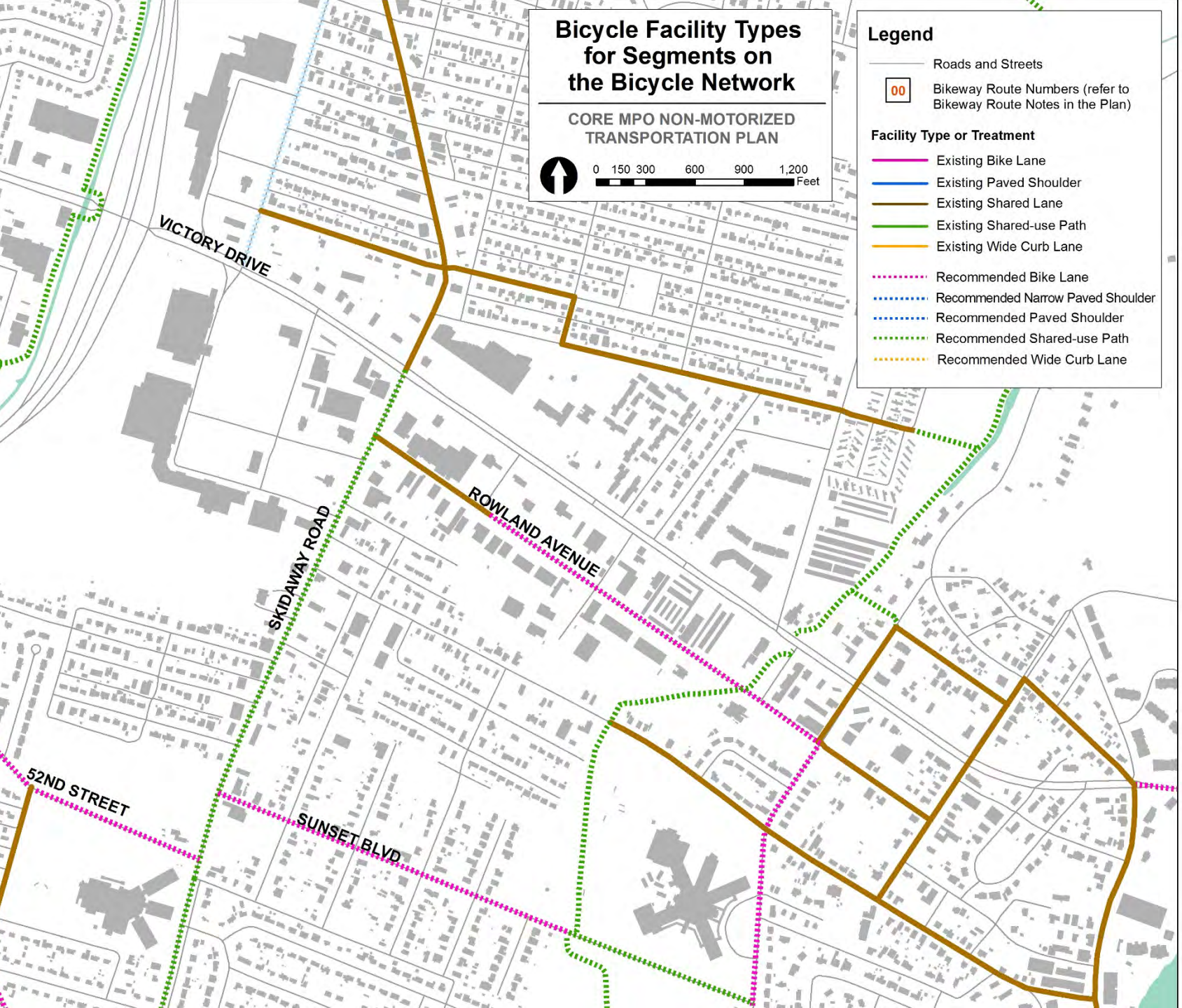
Victory Drive Corridor Study Transportation Existing Conditions

Bee Rd to Shuptrine Ave Study Area (Phase III)

Presented Aug 25, 2016


Mobility Ramps (Sav)
Pavements
School
Buildings (2013)
Parks and Greenspaces
Water
Intersections: Signal Type (Sav)
Stop
Traffic
Yield
Flashing Crosswalk
None
CORE
COASTAL REGION MPO
SAGIS
N
0 150 300 600 900 1,200
Feet


Roads
School
Trees (Sav public)
Water
Parcels
Parks and Greenspaces
Mobility Ramps
Sidewalks
CAT Bus Routes
CAT Bus Stops
Truman Linear Park Trail
Bikeways: Existing Conditions
Bike Lane
Bike Path
Paved Shoulder
Shared Lane
Wide Curb Lane
CORE COASTAL REGION MPO
SAGIS
0 150 300 600 900 1,200
Feet
N
Police Memorial Trail
10
12
24
31



DEFINITIONS OF BIKEWAY FACILITY TYPES

Bike Lane -- A portion of roadway that has been designated for preferential or exclusive use by bicyclists, by lane stripes, symbols, and, if used, signs. It is intended for one-way travel, usually in the same direction as the adjacent traffic lane, unless designed as a contra-flow lane.

Cycle Track -- A type of bikeway that is physically protected from the adjacent motor vehicle traffic by some kind of barrier, such as a parking lane, tubular markers within a buffer area, raised or mountable curbs, or low vegetation. Cycle tracks may be one-way (like an extra-protected, conventional bicycle lane) or two-way.

Narrow Paved Shoulder -- Within this plan, this is a shoulder in which the pavement outside the line (and free of longitudinal joints and rumble strips) has width = or > 3 feet but < 4 feet (unless on a road segment having posted speed limit > 45 mph, in which case widths < 5 feet are also considered "narrow").

Paved Shoulder -- A paved portion of roadway contiguous with the traveled way that accommodates stopped vehicles and emergency use, and which may be used by bicyclists and pedestrians. Within this plan, the paved area must have at least 4 feet free of longitudinal joints or rumble strips (unless on segments having speed limit > 45 mph, in which case it must have at least 5 feet).

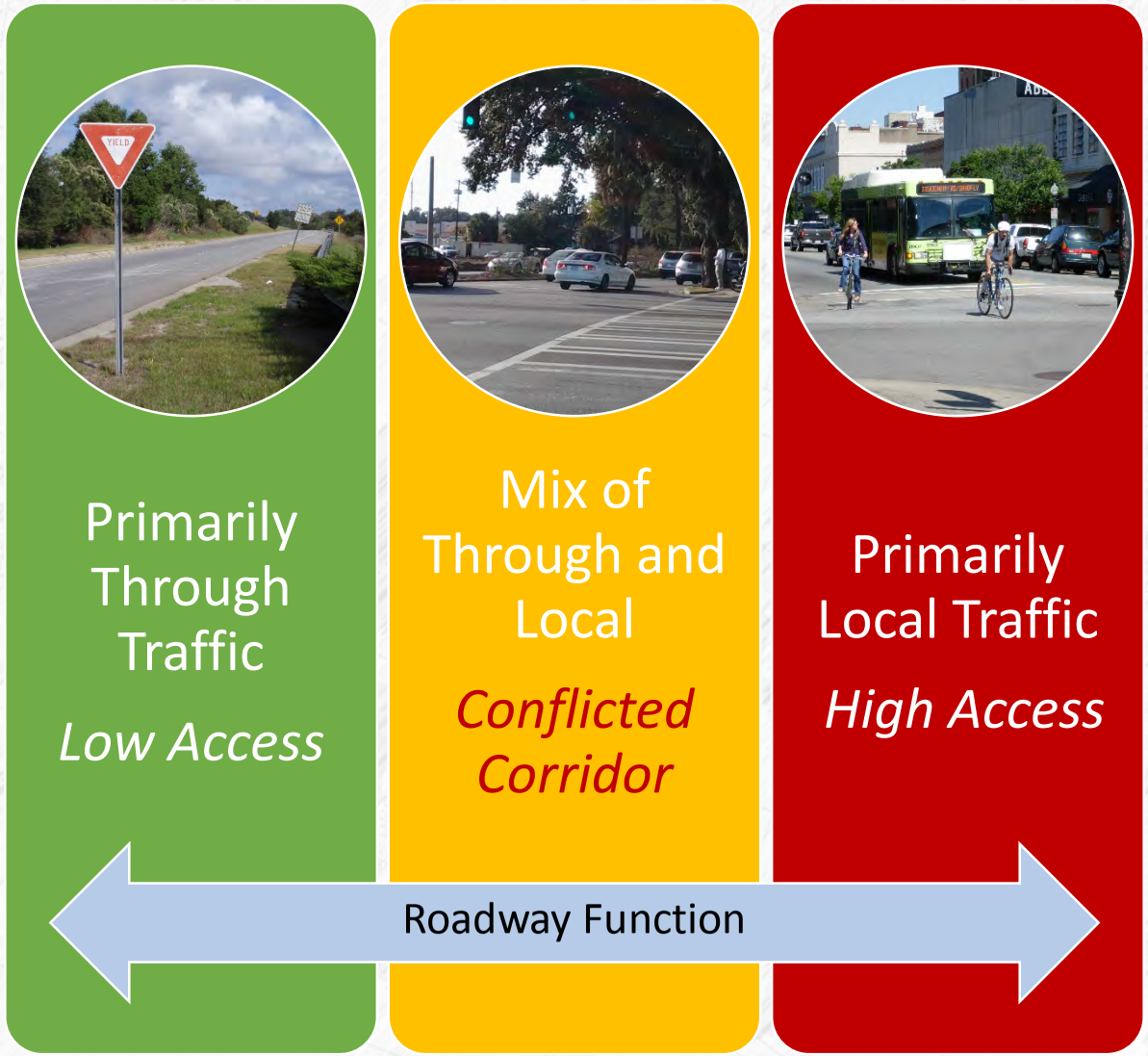
Shared Lane -- A lane of a traveled way that is open to bicycle and motor vehicle travel.

Shared-use Path -- A bikeway that is shared with other users, such as pedestrians, skaters, and runners, and that is physically separated from the motor vehicle traffic by an open space or barrier. Such a path may be within the highway right-of-way (i.e. a Sidepath) or within an independent right-of-way.

Wide Curb Lane -- A wide travel lane, next to curb or edge of traveled way, which is at least 14 feet wide, not counting the gutter pan or the area used by on-street parking.

See a separate map for enlargement of Downtown Savannah bikeways.

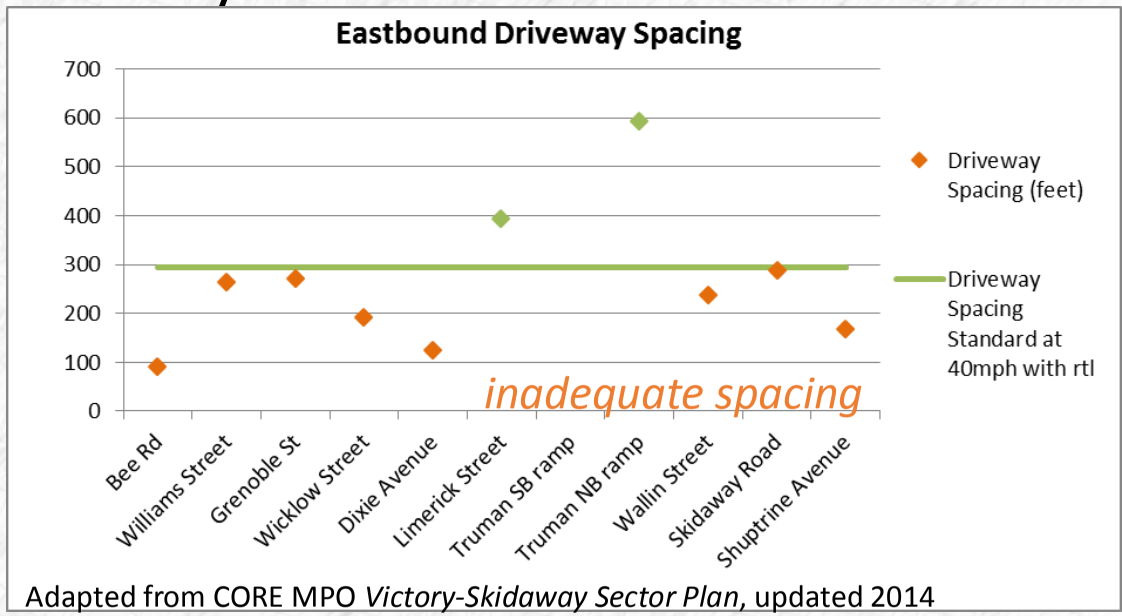
Roadway Function



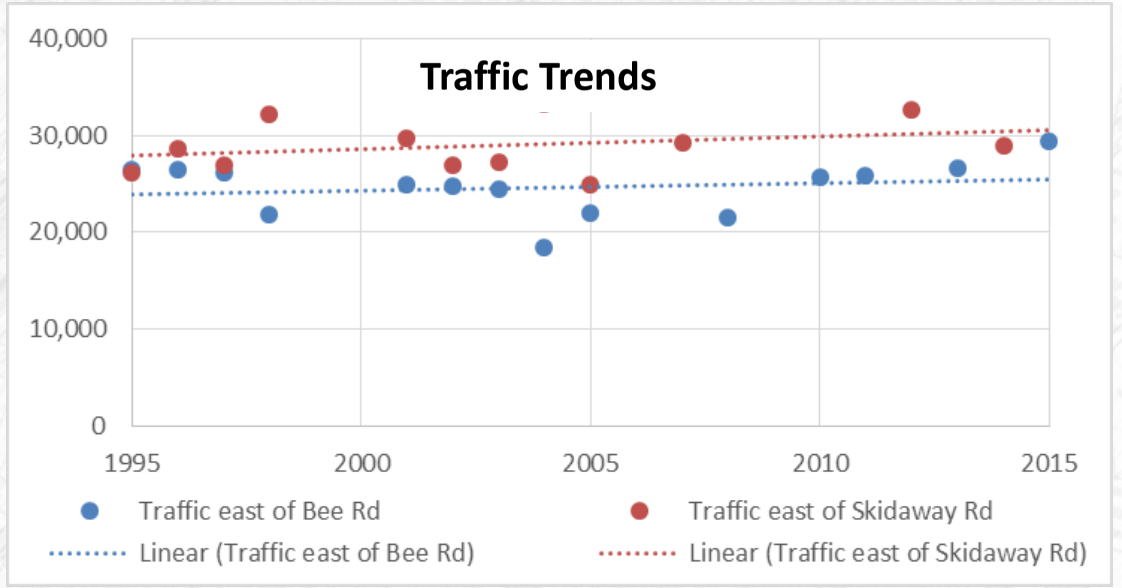
Adapted from Atlanta Regional Commission, *Management and Design Guidelines for the Regional Thoroughfare Network*

Victory Drive Corridor – Phase III Study Area

- Transportation existing conditions:
  - Hurricane Evacuation Route on US 80/SR 26
  - Traffic
    - About 3% traffic growth per year
    - Bottlenecks at closely spaced traffic signals; queues backup into downstream intersection areas.
  - Hazards for people walking, biking, using wheelchairs
- Issues
  - Lack of Alternate Routes or Connectivity
  - Access Point spacing is below standard
    - Signal and Intersection Spacing
    - Driveway spacing
- Prior Studies / Key Recommendations
  - Corridor improvements are limited due to Amenity Corridor designation and need to preserve the canopy and gateway character
  - Access management to include driveway spacing



Adapted from CORE MPO *Victory-Skidaway Sector Plan*, updated 2014

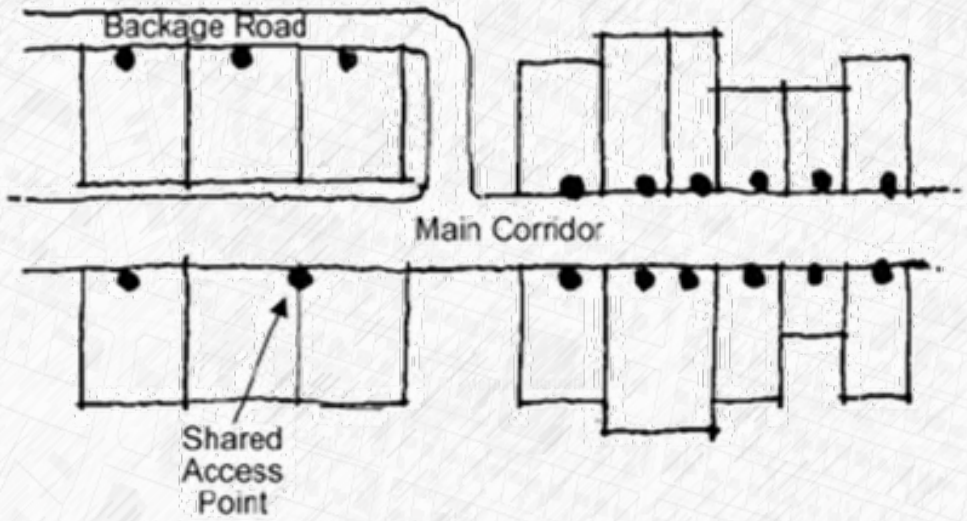


Source: GDOT GEOCOUNTS

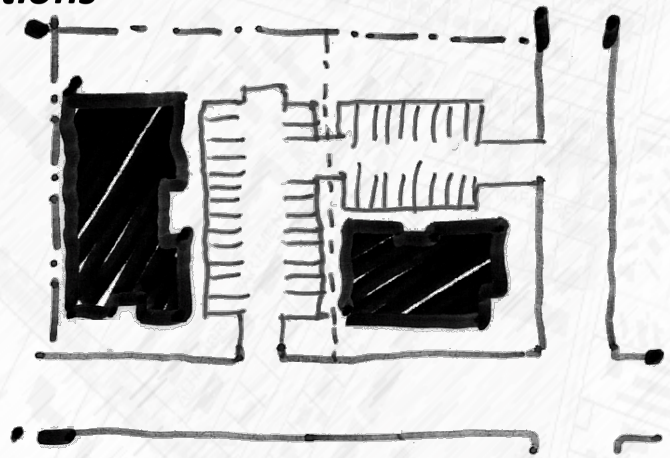
Victory Drive Corridor – Phase III Study Area

- Transportation Strategies:
  - Policy framework
    - Fair and transparent expectation for jurisdictions, developers, and land owners
    - Support community vision for land use and character of area
    - Preserve safe and efficient travel for all users
    - As the area redevelops, coordinate transportation network, land use, and landscape
  - Access management
    - Improve roadway capacity and safety
    - Enhance access to businesses on Victory Drive
- Potential strategies:
  - Service (local) roads and inter-parcel connections
  - Intersection and signal spacing
  - Driveway spacing and design
  - Turn lanes
  - Median treatments
  - Parking layout and amount
  - Traffic calming

Adequate ***Inadequate***



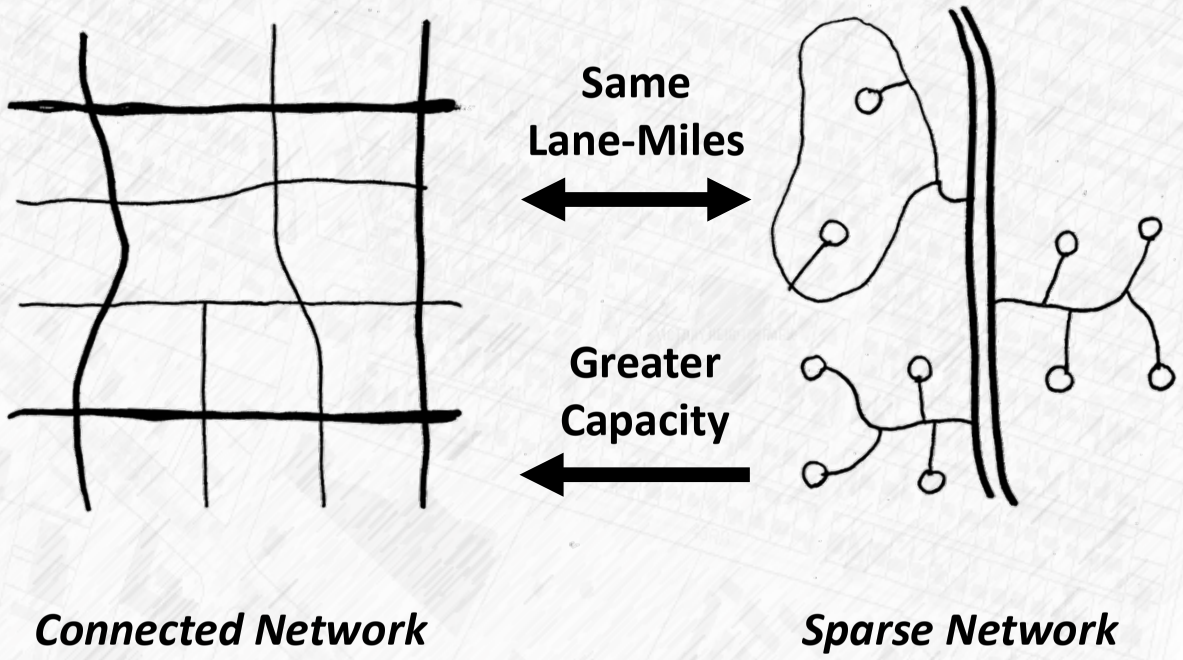
Connectivity Options



Adapted from Center for Transportation Research and Education, and Iowa DOT

Access Management Benefits

- Improved flow of traffic, higher volumes and speeds, reduced delay
- Improved air quality
- Reduced fuel consumption
- Reduced crash rates
- Pedestrian and bicycle safety and access
- Transportation network supports community goals for the corridor



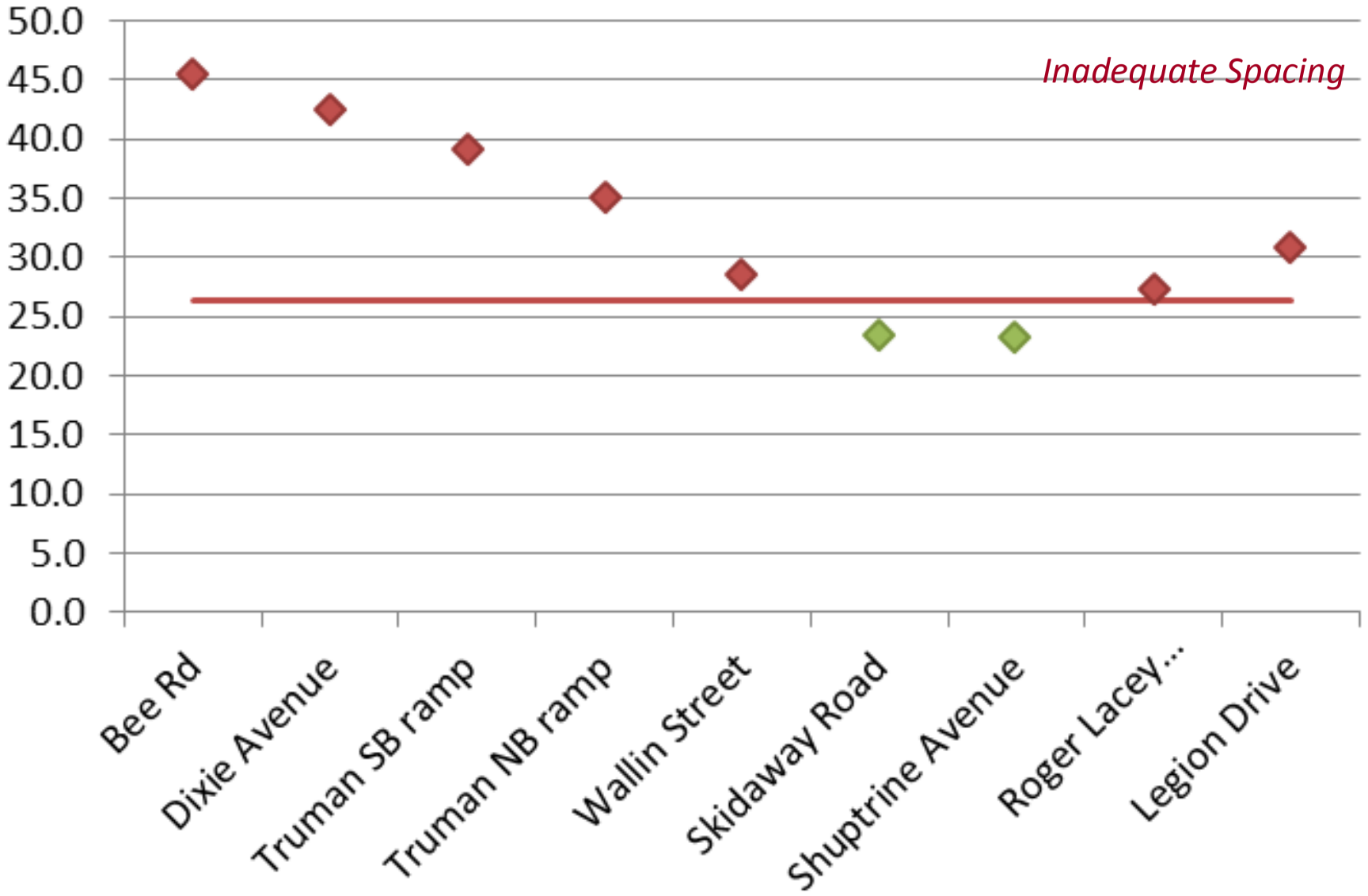
Adapted from Center for Transportation Research and Education, and Iowa DOT

Previous Recommendations

- Implement a dual left turn lane configuration for the westbound traffic exiting the shopping center at the Victory Drive intersection with Wallin Street.
- Reconfigure Rowland Avenue at Skidaway Road to align with the entrance into the shopping center. (Chatham County SPLOST)
- Install a signal at the new Rowland Avenue/Shopping Center entrance intersection identified in Recommendation #2 above.
- Work with the shopping center property owners to close off the northernmost entrance bay in the parking lot by the Wallin Street entrance. This is required to allow enough vehicle storage in the dual left turn-lane bays.
- Improve Bee Rd intersection for pedestrian access. [Per Phase 1.]
- Reconfigure Sunset Blvd to align with 52nd Street. (Chatham County SPLOST)
- Install sidewalks and curbs on Skidaway Rd. Manage driveway spacing. (Chatham County SPLOST)

Victory Drive Corridor – Previous Studies

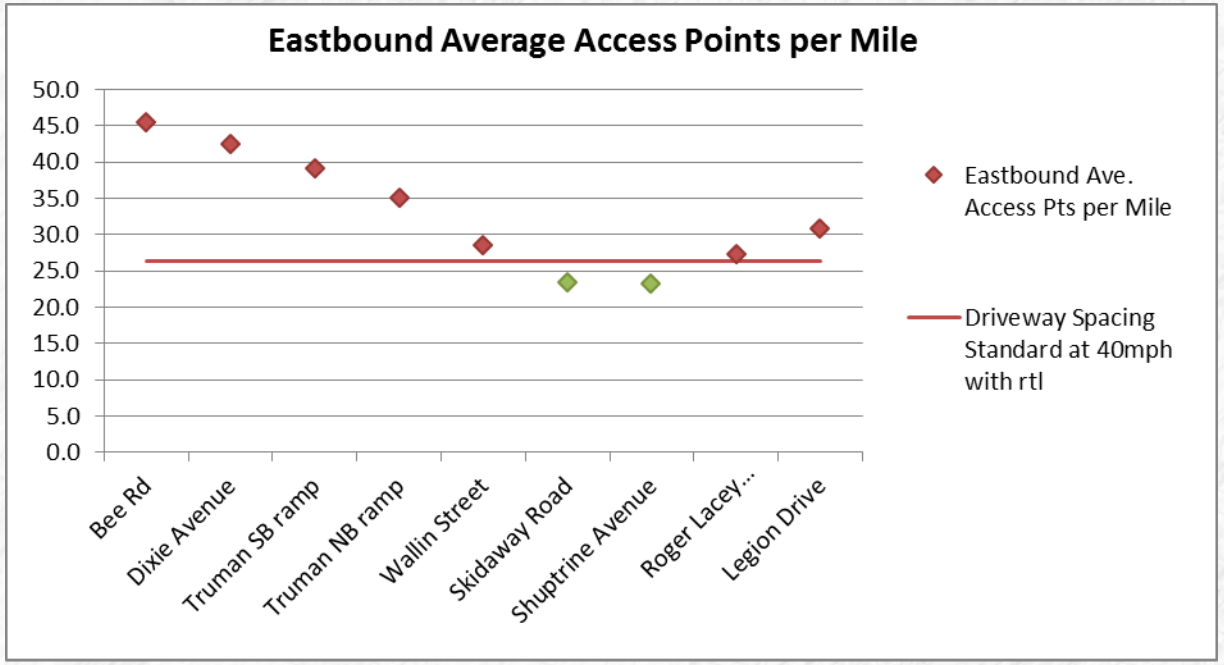
Eastbound Average Access Points per Mile



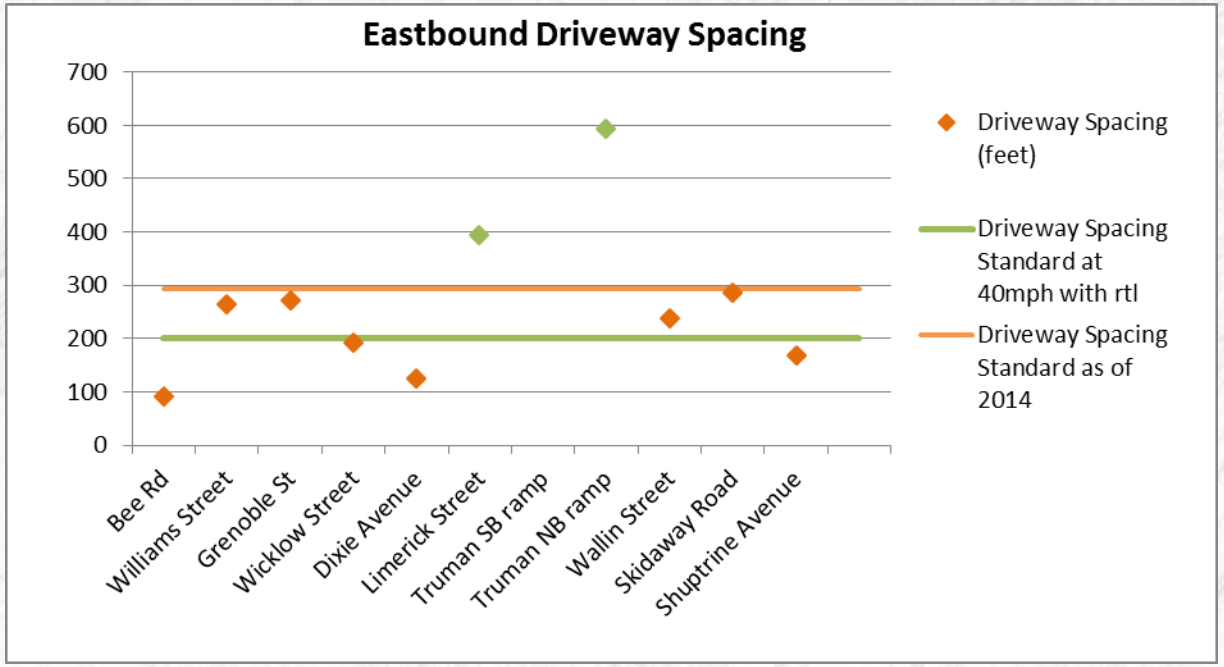
The majority of the corridor does not meet current access point spacing standards to preserve safe and efficient travel.

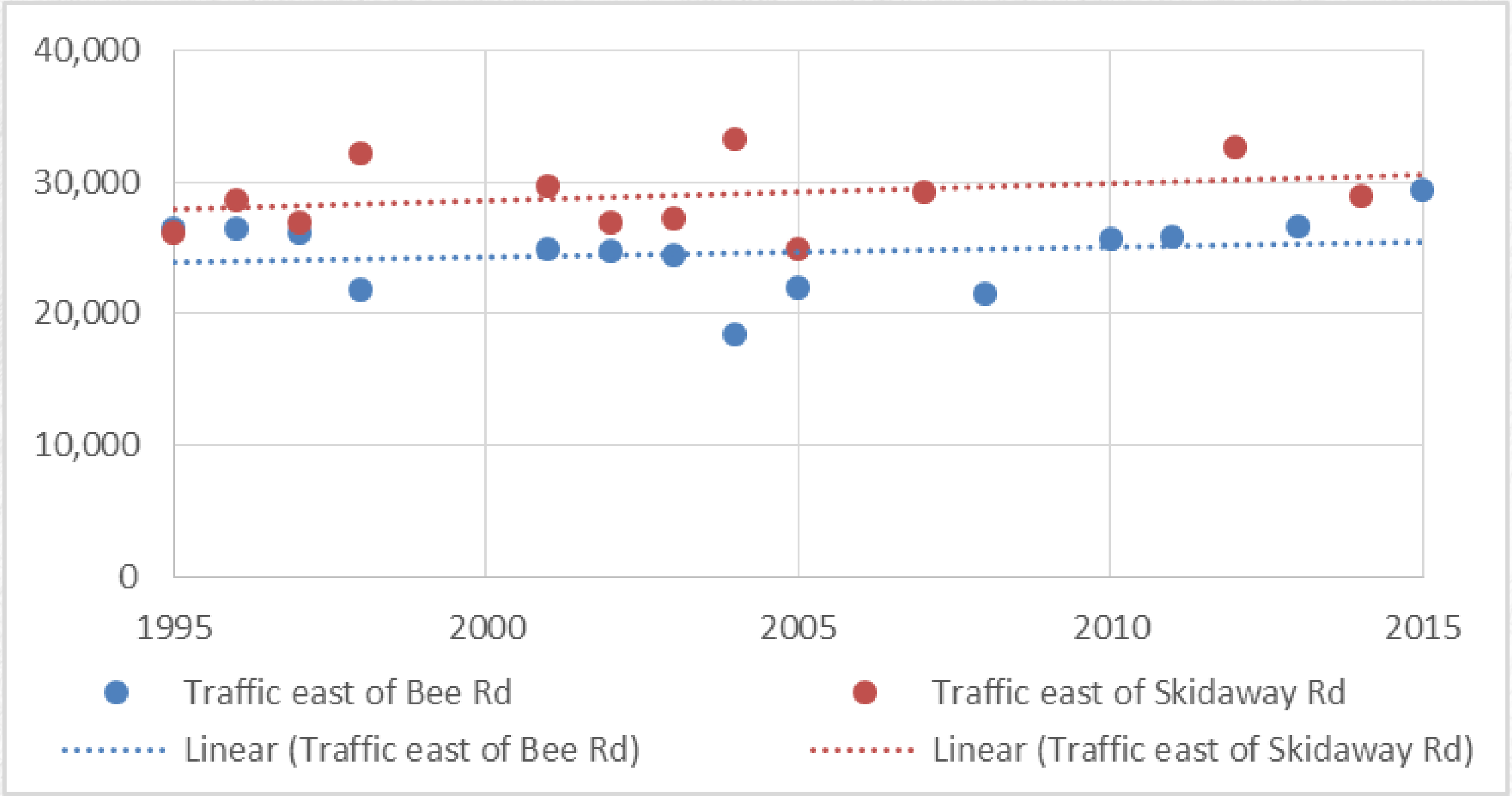
Source: Regulations for Driveway and Encroachment Control, GDOT, 2016; Transport Studio, LLC

- 2016 GDOT standard
  - This standard is equivalent to 200 feet between access points, which is the minimum distance to accommodate right-turn lane deceleration. The standard is applied to preserve operations and safety across the state.
  - However, guidance varies on driveway spacing recommendations. Transportation Research Board recommends 300 feet in order to reduce conflicts and therefore crash rates. (TRB refers to this as the Minimum Distance based on Collision Avoidance.)



- 2014 Victory-Skidaway Sector Plan
  - The lower value shown reflects the current GDOT standard of 200 feet based on roads with right turn lanes.
  - Note the Driveway Spacing Standard as of 2014 was the prior GDOT standard for arterials with 40mph speed limits and right-turn lanes.





Source: GDOT GEOCOUNTS. *Note that some counts are estimated based on prior years.*

geocounts.com/gdot/

Help

Traffic Counts in Georgia

geocounts

List Counting Stations

County 001: Appling Search

Route Search

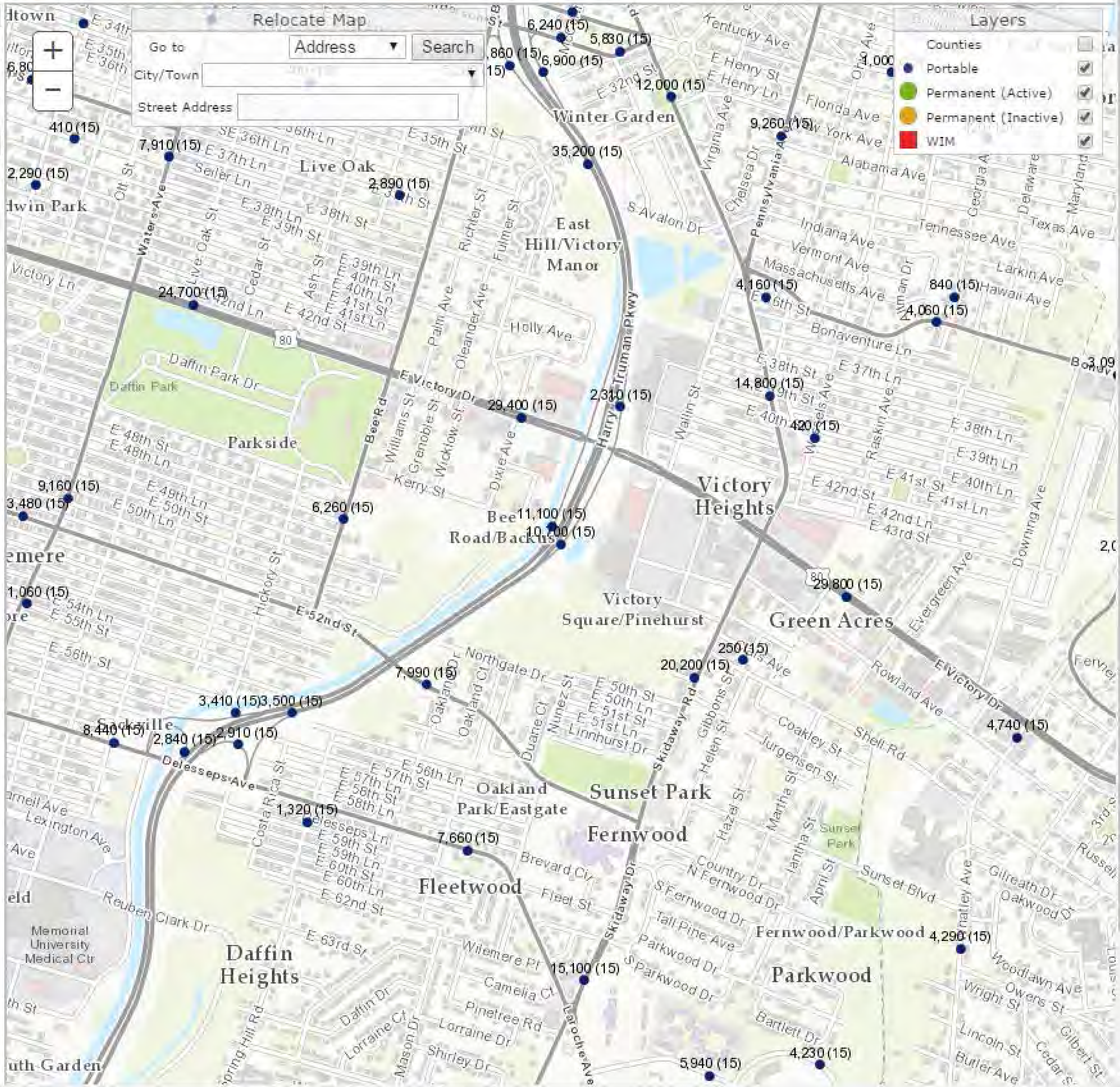
Station ID Search

Study Location

More...

Stations Found

Station ID	Route	Description



Memo

To: John Fish, Project Manager
From: Whitney Shephard, PE, LEED AP
Cc:
Date: Nov 13, 2016
Re: Transportation Recommendations

Vision

The Truman Parkway Focus Area of Victory Drive will be a beautiful commemorative landscape, an important Community Gateway and Canopy Road corridor, while also functioning as a modern major boulevard.

Goal Statement

The project aims to restore Victory Drive to its former grandeur by establishing a landscape consistent with the corridor's historic framework and by improving the safety and function for all users through context-sensitive strategies. These strategies include: promoting corridor safety and mobility for all users; balancing regional mobility with improved access to commercial development; enhancing the character of the landscape and historic tree canopy, community gateway, and memorial boulevard.

Supporting Plans and Studies

Amenities Corridor Resolutions and Designations

In recognition of the value of canopy trees, landscaping, sidewalks, bike paths, and other amenities, the CUTS MPO (now CORE MPO), City of Savannah, and Chatham County adopted resolutions in support of standards to preserve roadway amenities and canopy trees in 2003.

The 2030 *Long Range Transportation Plan*, described below, classifies a range of amenity corridors, including Victory Drive. The figure below shows the Amenity Corridor designations in the study area.

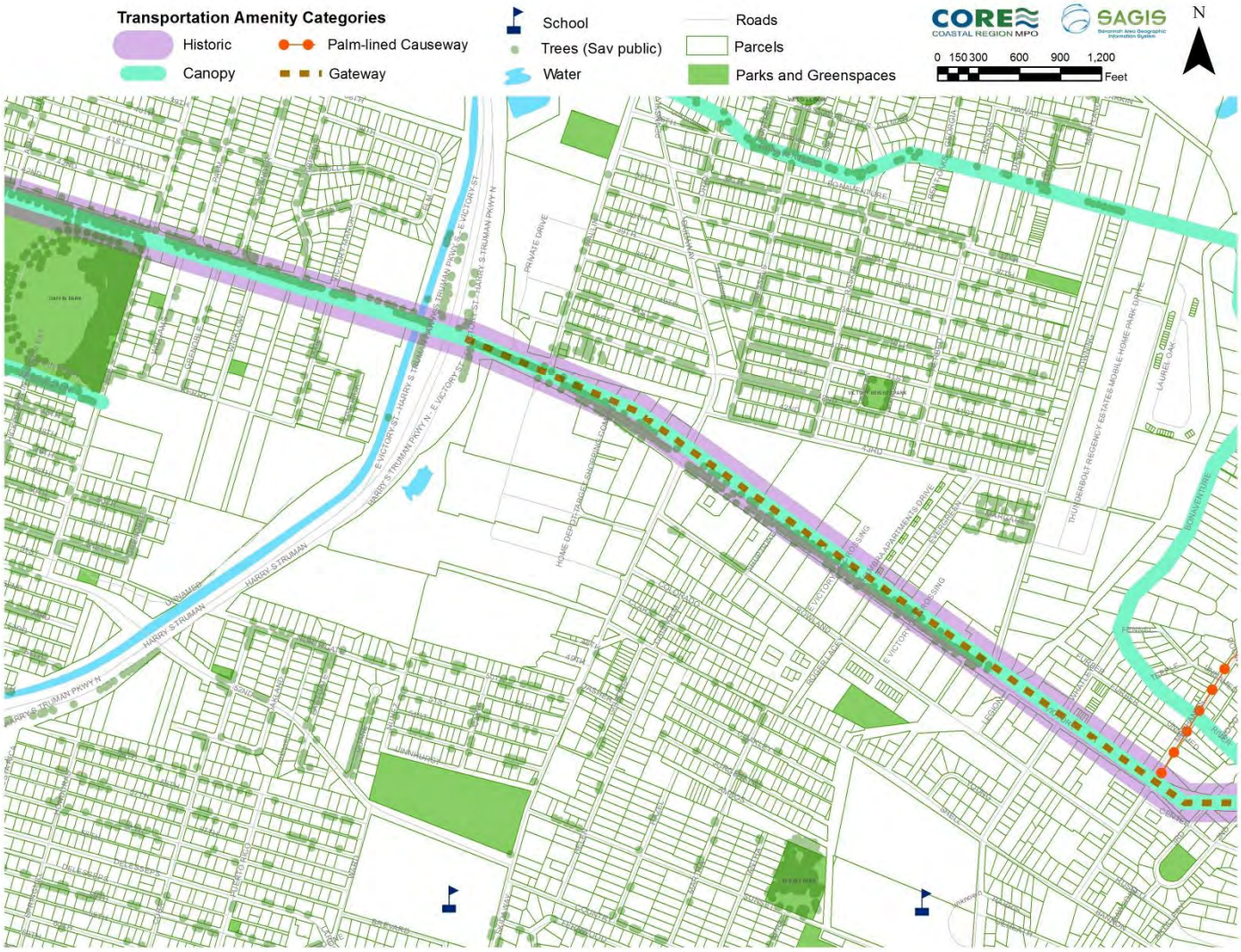


Figure 1Transportation Amenity Corridors

2030 Long Range Transportation Plan, 2004

The *2030 Long Range Transportation Plan* (LRTP), adopted in 2004, documented regional Transportation Amenity Corridors and classified them as Canopy Roads, Replanting Areas for Lost Canopy, Palm Lined Causeways, Historic Road Segments, and Scenic Vistas to be preserved. Victory Drive was classified as an Amenity Corridor under several corridor types.

"As a result of this designation, improvements to these existing amenity corridors, if congested, will be limited to management strategies such as signal retiming, signal coordination, access management, turn lanes, intersection geometry improvements, and the like. Strategies which would be destructive to the tree canopy or other historic resources, such as road widening, will be avoided."

The 2030 LRTP stated, "One percent of the anticipated road construction funds identified in the LRTP have been set aside to fund transportation amenities. It shall be the policy of the MPO that all road

projects contain transportation amenities equal to or greater than one percent of the roadway construction cost."

Tricentennial Plan, 2006

The Roadway Amenities discussed above are included in the *Tricentennial Plan*. The plan states that Chatham County has many roadway corridors that feature unique amenities that should be preserved for future generations and constrained from redevelopment that would jeopardize their unique qualities. There are six types of amenity corridors in Chatham County:

- Canopy roadways and roadways with replanting opportunities
- Palm lined causeways
- Historic road segments
- Community gateways
- Scenic corridors and vistas
- Landscaping and enhancement of new and recently completed roads

The Community Agenda also includes several goals and objectives that are applicable to the Victory Drive corridor. Goal C of the Community Agenda is to "Develop a road system that maintains and preserves unique characteristics of neighborhoods and of the coastal area." The objectives and strategies for Goal C include the following:

- Objective 1. Tailor road building activities to the characteristics of the area where the road is located.
    - Strategy A. Require that all private and public road designs include a tree protection and restoration plan, a landscape plan, an accessible pedestrian plan, a bicycle plan, and an accessible public transportation plan.
    - Strategy B. Consider traffic calming as a major component in the design of new functional class collectors and local roads and provide procedures for retrofitting existing neighborhoods with traffic calming measures.
    - Strategy C. Establish a procedure for identifying and constructing traffic calming measures in existing neighborhoods.
    - Strategy D. Develop urban design guidelines that relate to sidewalk width and materials, lighting, signage, landscaping, way finding, crosswalks, curb ramps, refuge islands, corner radii, and signals.
- Objective 2. Consider the impacts of transportation systems on the physical and economic health of residents, specifically related to rising energy costs.
    - Strategy A. Design an off-street comprehensive multi-use trail system within a ¼ to ½ mile of all residential areas that connects to commercial, recreational, and industrial areas.
    - Strategy B. Identify and consider utility and canal right-of-ways as transportation corridors.
- Objective 3. Consider the impact of sea-level rise (SLR) on proposed transportation systems, particularly relating to improvements of existing roads and bridges.
    - Strategy A. Consider SLR using the most current, scientifically sound, existing and new data and analysis in development of the Long Range Transportation Plan. This will ensure that proposed transportation projects will not be threatened by SLR.

Goal D is "Work toward a regional public transportation system that provides all residents, regardless of their age, income, or special needs access to employment centers, institutions, commercial areas,

recreational facilities, and other destinations." Goals and strategies associated with this goal include the following:

- Objective 1. Provide convenient pedestrian and bicycle access from public transportation termini to employment centers, institutions, commercial areas, schools, and recreational facilities.
    - Strategy A. Identify employment centers, institutions, commercial areas, schools, and recreational facilities as well as all bus stops and evaluate the level of service of public transportation systems to the areas and the level of pedestrian and bicycle access from the drop-off point to the entrance to the facilities.
    - Strategy B. Identify costs and potential funding sources to improve pedestrian and bicycle access to and within the sites.
    - Strategy c. Encourage company-sponsored van service to and from public transportation termini.
- Objective 2. Wherever pedestrians are permitted on the public right-of-way, also provide space for the disabled to travel.
    - Strategy A. Provide crosswalks with visible and audible signals.
    - Strategy B. Identify sources of funds to improve accessibility to and within the sites.

Congestion Management Process, 2004

Victory Drive is identified as a constrained corridor due to its canopy of large, old trees. Yet Victory Drive is noted as an area of active commercial redevelopment.

Context Sensitive Design Manual, 2007

Victory Drive is a case study in the *CSD Manual*. Issues cited include the removal of palm trees during a reconstruction project, conflicting roles of the road, and the need to preserve the corridor. Potential strategies include an expanded supporting local road network, providing access from parallel or cross streets, creating a finer-grained road network within the corridor, maintaining Victory Drive's status as a constrained corridor, and a need for additional access across the Truman Parkway.

CORE Connections Framework Mobility Plan (2035 LRTP), 2009

The LRTP adopted in 2009 includes an operational improvement project for the Victory Drive/Truman Parkway interchange area. The general project location is shown between Target and Home Depot, crossing the Truman Parkway. The recommended project is significant in that it recognizes US 80 as a constrained corridor warranting operational improvements consistent with the Amenity Corridor designations. It is worth noting that the 2035 LRTP excluded a planned widening project on US 80 from Bull River to Lazaretto Creek from the 2030 LRTP; this area is outside of the Phase III study area.

Congestion Management Process, 2009 [1]

The Congestion Management Process (CMP) restated that Victory Drive is a constrained corridor as referenced in the *Tricentennial Plan* (2003), Congestion Management Process (2004), and the 2030 LRTP. Consistent with the Amenities Corridor Resolutions and 2030 LRTP designations, Victory Drive was designated as a Canopy Road from Ogeechee Road east to Thunderbolt. It was designated a Community Gateway at Ogeechee Road, from Truman Parkway to Thunderbolt. The historic significance of Victory Drive as a memorial to veterans of World War I was also noted.

The CMP analyzed the area immediately surrounding the Home Depot/Target/Staples shopping center, including the Truman Parkway interchange.

Transportation issues documented include:

- Existing congestion
- Poor operations
- Vehicle and pedestrian safety; crash frequency
- Transit service (Victory Drive is an existing fixed bus route)
- Evacuation route
- Lack of east-west alternative
- Traffic mix includes commuters, local, and "signature route" (tourists traveling to Tybee Island)
- Truman Trail is an opportunity for bicycle and pedestrian travel

The CMP update recommended four short term improvements:

- Implement a dual left turn lane configuration for the westbound traffic exiting the shopping center at the Victory Drive intersection with Wallin Street.
- Reconfigure Rowland Avenue at Skidaway Road to align with the entrance into the shopping center.
- Install a signal at the new Rowland Avenue shopping center entrance intersection identified in Recommendation #2 above. Four of eight signal warrants were met in 2007.
- Work with the shopping center property owners to close off the northern-most entrance bay in the parking lot by the Wallin Street entrance. This is required to allow enough vehicle storage in the dual left turn-lane bays.

There was one long term improvement recommended:

- Implement a frontage road system on the south side of Victory Drive.

Total Mobility Plan (2040 LRTP), and Thoroughfare Plan, 2014

Victory Drive in the study area is classified as a major arterial - urban. Specific improvement projects in the study area include

- US 80/Victory Drive improvements/ Congestion Mitigation – at the Home Depot/Target shopping center – PE/RW/CST 2031-2040
- Add paths on Skidaway Road from DeRenne Avenue to Victory Drive - in Vision Plan
- Add sidewalks, bike lanes, or path on Sunset Blvd from Victory Drive to Whatley Avenue – in Vision Plan
- Add sidewalks and stripe paved shoulders on Wallin Street from Victory Drive to 38th Street– in Vision Plan
- Note that projects in the Vision Plan are not funded in the LRTP

State Guidance

Existing ordinances or regulations that affect the corridor also include GDOT policies and guidance, in particular *Regulations for Driveway and Encroachment Control.* [2]

Capital Improvements

Note that network recommendations such as alternate routes, major capital improvements, and significant operational improvements such as traffic signal coordination are beyond the scope of this study. However, this study's findings fully support previously recommended improvements including the extension of 52nd St to Sunset Blvd and the extension of Rowland Ave to align with the shopping center entrance. These improvements were previously programmed as a Chatham County SPLOST project and have since been removed from the program. The team recommends that the City of Savannah fund these improvements as soon as possible, to include sidewalks on Skidaway Road.

Recommendations

The recommendations below include a range of implementation options available to policy makers. These options should be discussed with stakeholders and staff to determine the policy framework that both meets the community's needs and can be effectively administered. Recommendations are shown in bold print and options are listed within each section.

Coordination and Timeline

Implementing access management on Victory Drive will require significant coordination between the City, MPC, GDOT, and a range of stakeholders. Standards for interparcel connections and local road connectivity, access point spacing and design, median opening spacing, signal spacing, and active transportation modes should be applied across the study area. These strategies will be implemented as redevelopment occurs and as public funding is available for capital improvements. The phasing of improvements will depend upon both future development proposals and corridor improvement projects sponsored by the state or city. Access management is necessary to ensure that Victory Drive can continue to carry both through and local traffic while serving as a regional commercial corridor.

Alternate Routes

Interparcel and Local Road Connectivity

Interparcel access involves the creation of easements for defined on-site facilities for motor vehicle, pedestrian, and bicycle circulation between adjacent developed properties. An overlay district is one tool for implementing interparcel access. [3] Given the restricted right-of-way on Victory Drive, interparcel access requirements will be necessary to accommodate multimodal travel in the corridor. Interparcel access should be applied to multifamily housing and commercial uses including, but not limited to, retail and office development, and redevelopment. Advantages of interparcel access include

a. Customers, delivery vehicles, and service vehicles are able to move between individual properties without entering the adjacent public roadway.
b. The frequency of conflicts attributable to turning vehicles is reduced.
c. Congestion is reduced by the provision of an alternative for movement between adjoining properties.

d. Safety is improved.
e. Travel by delivery and service vehicles is reduced. [3]

To achieve interparcel connectivity, coordination of site plans for adjoining developments is required; the city of Savannah and the MPC must take an active role in the coordination. Potential implementation mechanisms include:

a. Option - Require shared access from Victory Drive in order to reduce conflict points. Require interparcel (or cross) access and internal access to outparcels. This includes cross-access easements and joint-parking circulators. Require phased development plans or sites under the same ownership or consolidated for development to be considered one property in application of access management guidelines. [3] [4] Require commercial properties to develop a **unified access and circulation plan**. "…local governments can achieve joint-use driveways and cross access among individual parcels as a condition of development in accordance with the joint-use and cross-access policies in the land development code." [3]
b. Option – Incentivize shared access and joint parking. Reduce minimum lot size and frontage requirement as well as required number of parking spaces up to a certain percentage for property owners that agree to establish a common driveway. [3]

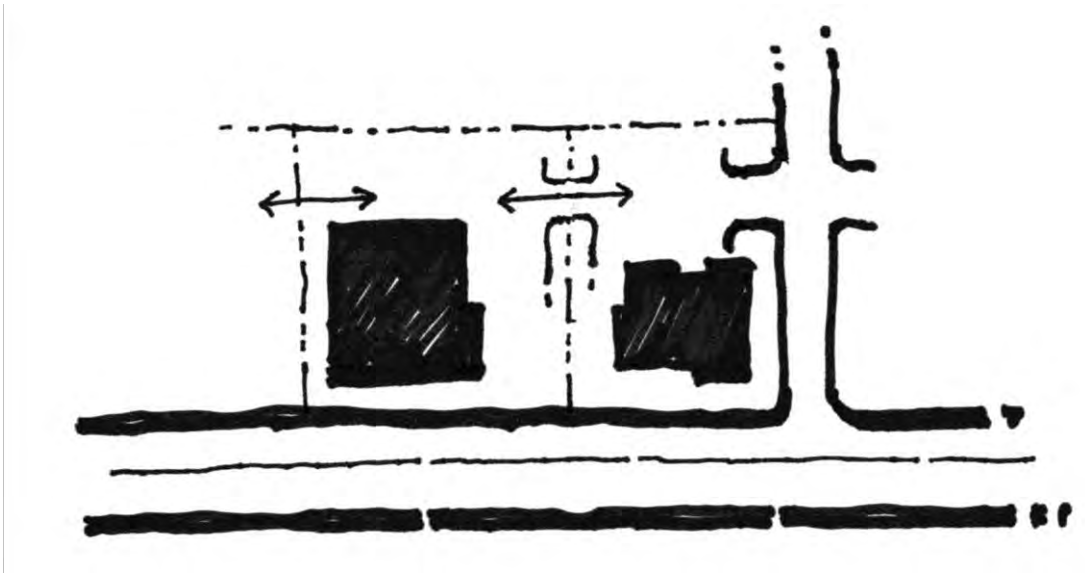


Figure 2 Interparcel Connectivity achieved from Small-scale Redevelopment; adapted from Iowa DOT

Local Road Network

Local or collector roads, including service, frontage, or backage roads adjacent to small commercial tracts, provide alternative access to commercial tracts along a major roadway. Local road connectivity provides access to abutting properties separating local land service traffic from through traffic.

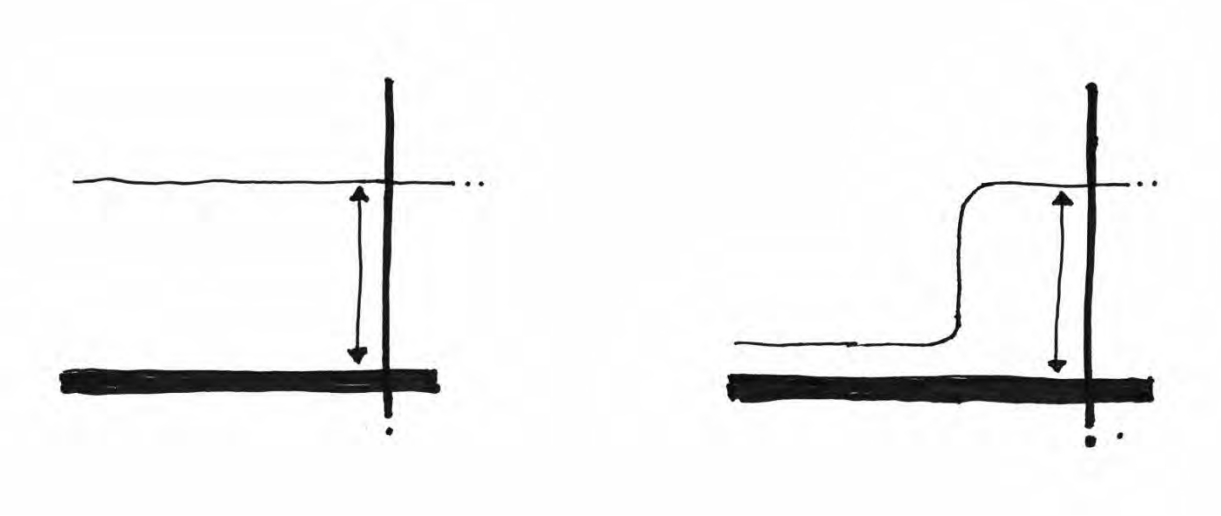


Figure 3 Local Road Connectivity with Adequate Spacing; adapted from Iowa DOT

Recommendation - Effective regulations for service roads require right-of-way preservation as a condition of development approval to achieve connectivity and street spacing standards. [3] Proposed developments should continue the existing collector and local street system.

Local roads allow access to, and maintain visibility for, businesses from Victory Drive while managing direct access from Victory Drive. Development and redevelopment proposals should include a local road parallel to Victory Drive, at minimum one lot deep to provide adequate spacing at cross road intersections. One-way operation should be considered on high volume local roads to minimize operational issues at intersections. To provide for adequate spacing from Victory Drive while serving effectively as an alternate route, the local road should be placed between 200 ft and 660 ft from Victory Drive. This minimum spacing reflects GDOT guidance as adequate to reduce conflicts between turning vehicles entering and exiting the development and vehicles traveling on the local road, while also reflecting TRB and CUTR guidance to provide adequate access to adjacent land uses. [2], [3], [5]

Several implementation mechanisms exist to establish greater local road connectivity and provide for more efficient traffic flow on Victory Drive as described below.

a. Option – Require a setback and easement for a service or local road. Local or state government can fund all or a portion of the road, or require the developer to construct the road. [3] The city may need to grant conditional access to Victory Drive until a local or service road can be connected to new development. The frontage on the local road needs to be treated intentionally.
b. Option – Establish outparcel requirements to foster on-site circulation systems, and restrict driveways. Do not allow maximum allowable access points based on driveway spacing standards alone. Outparcel regulations may include standards governing the number of outparcels, minimum lot frontage, access, unified parking and circulation, landscaping and pedestrian amenities, and setback requirements. [3]

c. Option – Establish a connectivity index. The number of roadway links divided by the number of nodes or link ends is greater than or equal to 1.4 for the local network. [6]

d. Recommendation – Adopt Model Regulations for Street Network Design, based on those shown in TRB Exhibit 9-9 [3] and CUTR [5]. Specific approval requirements include:

i. General requirements promote overall connectivity including multiple, direct multimodal connections; modified grid systems; compliance with the local street network connectivity index

ii. Street network design requirements for development plans including continuance of all sub-arterial streets, future connections, maximum block length of 660 feet, internal vehicle connections within commercial development sites and to each adjacent site

iii. Regulations should meet or go beyond GDOT and local general requirements.

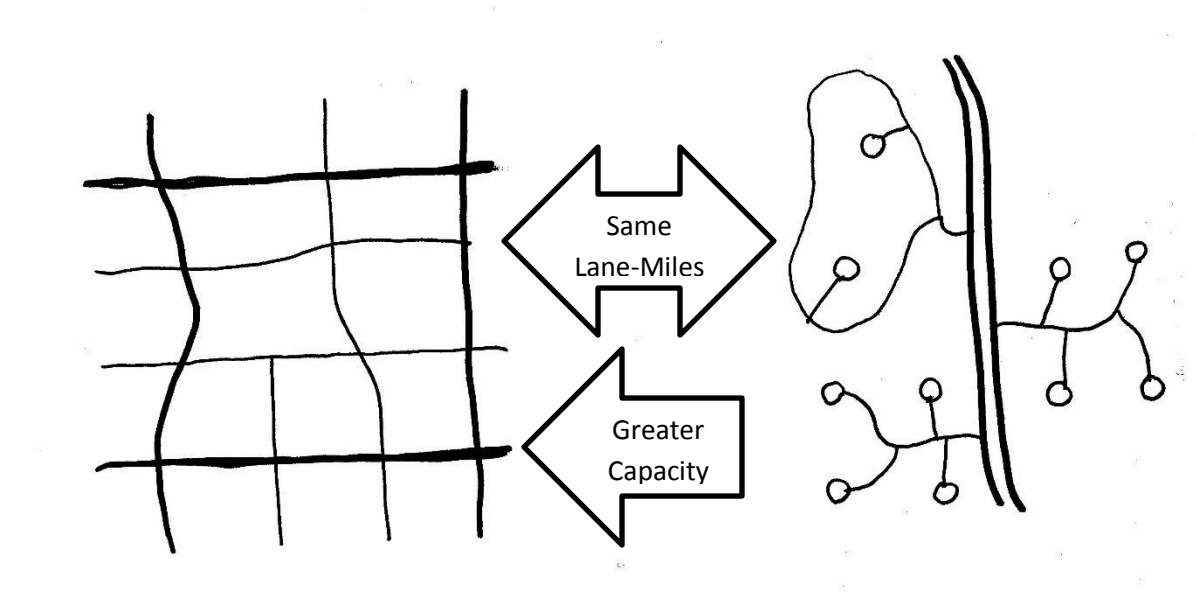


Figure 4 Road network connectivity determines the capacity of the network; adapted from Iowa DOT

Access from Victory Drive

Adequately spaced connections result in separation between functional areas at each connection, which is essential for safe and efficient operation of major arterials. [3] GDOT states that "Spacing of driveways should be at least equal to the distance traveled, at the posted speed limit, during the normal perception and reaction time plus the distance traveled as the vehicle decelerates to a stop. Each driveway or intersection also requires storage space for vehicles waiting to enter. The distance between intersections should be great enough to provide this storage, allowing each intersection to have its functional boundary separated from those of the next intersection. Crash data also indicate that as the number of driveways along a roadway increases so do accident rates." GDOT's minimum driveway spacing for roads with a 40 mph posted speed is 185 feet without consideration of the distance needed to accommodate queuing distance for turning vehicles. This is therefore a minimum. [2]

TRB recommends that strategic arterials such as Victory Drive restrict or deny direct property access, and permit right turns only to and from access connections. [3] (See Exhibit 13-2.) No access should be

provided within the functional area of intersections. “Ideal Downstream Functional Distance” based on acceleration for a 40 mph speed is 580 ft. (Exhibit 14-11) [3], [7] Ideal downstream functional distance based on decision sight distance to stop for a 40 mph travel on an urban road is 690 ft. (Exhibit 14-12) [3] Note that the speed refers to travel speed, not speed limit. So, these are minimal distances with the understanding that traffic generally will travel higher than the posted speed. Further, “The larger of the distances— acceleration distance versus decision sight distance—should be used to determine the downstream functional distance.” [3] Minimum access connection spacing based on passenger car intersection sight distance for 40 mph traffic making a right turn is 385 ft, again based on travel speed not speed limit. **A more practical distance may be based on 45 mph traffic, which is 430 ft for right turn intersection sight distance.** (See Exhibit 15-20) [3] For additional detail, see Transportation Research Circular 456. [8]

Table 1 Access Spacing Recommendations

Source	Basis	Spacing
GDOT Table 3-1 [1]	Minimum Spacing without Right Turn Lane	185 ft (40 mph posted speed)
GDOT Table 3-1 (Prior to 2016)	Minimum Spacing with Right Turn Lane	294 ft (40 mph posted speed)
GDOT Table 3-4	Intersection Sight Distance (assuming 2 lane applies where US 80 is divided) Intersection Sight Distance (assuming 4 lane applies where median opening occurs)	445 ft >= 500 ft (500 ft is not applicable due to median width. Additional distance will vary to account for median width.)
GDOT Table 4-8	Minimum Right Turn Deceleration Lengths	200 ft (40 mph travel speed) 275 ft (45 mph travel speed)
TRB Exhibit 14-11	Ideal Downstream Functional Distance Based on Acceleration	580 (40 mph speed) 740 (45 mph speed)
TRB Exhibit 14-12	Decision Sight Distance to Stop	690 ft (40 mph travel speed) 800 ft (45 mph travel speed)
TRB Exhibit 15-13	Unsignalized Access Spacing Based on Adjacent and Independent Connections	820 ft (40 mph posted speed)
TRB Exhibit 15-15	Ideal Spacing Based on Upstream Intersection Functional Distance	345 ft Impact Method 360 ft Deceleration method (40 mph posted speed)
TRB Exhibit 15-19	Stopping Sight Distance for Unsignalized Access Connection	305 ft (40 mph travel speed) 360 ft (45 mph travel speed) *On level grade*
TRB Exhibit 15-20	Minimum Unsignalized Access Spacing Based on Intersection Sight Distance for Passenger Cars for Right Turns	385 ft (40 mph travel speed) 430 ft (45 mph travel speed)
TRB Exhibit 15-25	Minimum Distance based on Collision Avoidance	300 ft

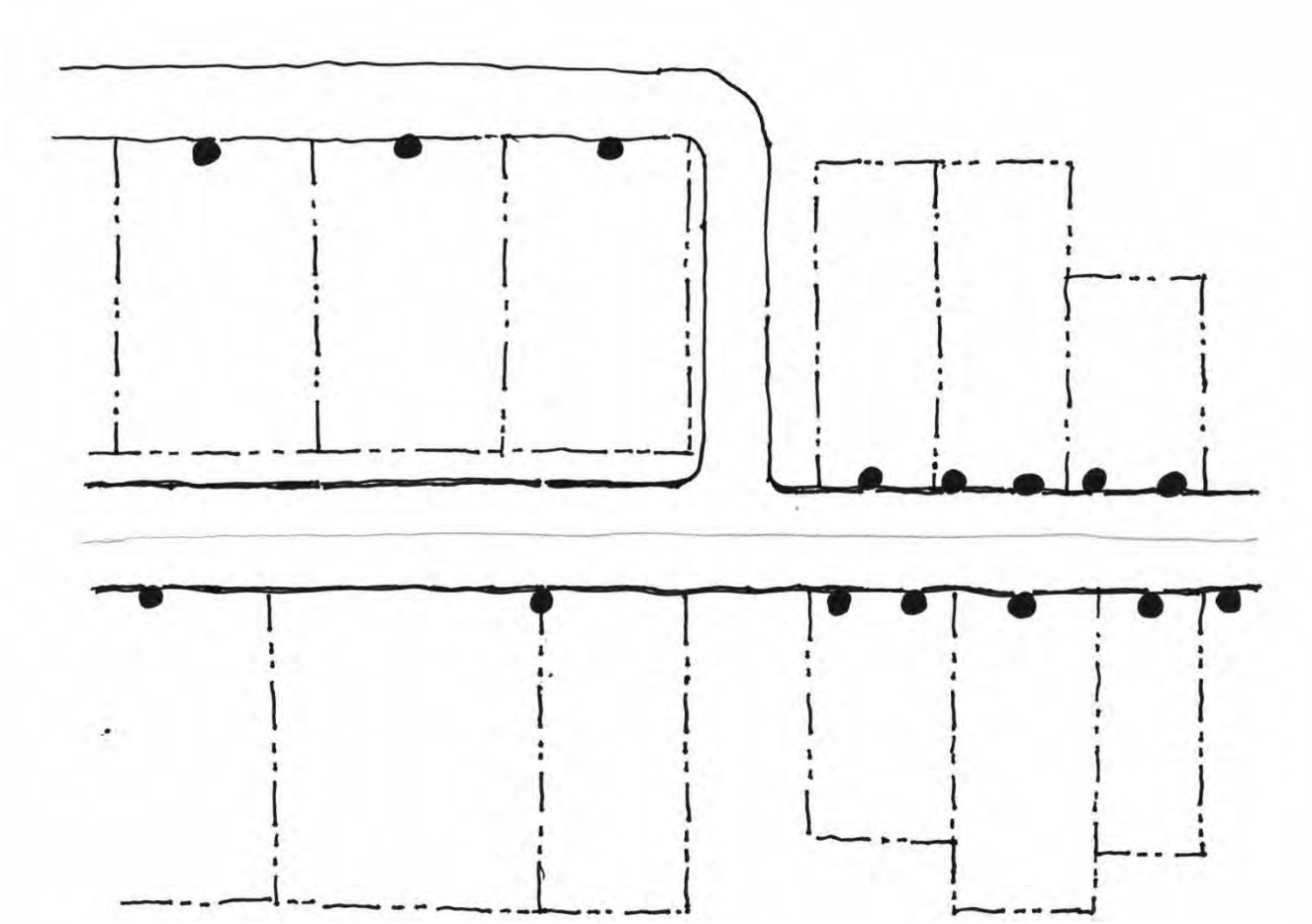
1. Per GDOT, “Requirements for the length of right and left turn lanes will dictate driveway spacing as shown in Table 4-8

and Table 4-9, and may increase the minimum allowable spacing shown in Table 3-1." [2]

Recommendation - New land use regulations should require shared access and shared parking for new developments, expansions, or redevelopments. The City and GDOT should review access points when developments are proposed. Site circulation should provide access to Victory Drive via secondary roads rather than directly on the roadway for all major developments; access from local roads (rather than from Victory Drive) should be provided for small developments where possible. Temporary access may need to be granted for individual redevelopments, but should be removed once adjacent parcels develop and shared access can be accommodated. Minimum access spacing on Victory Drive should be 300 ft based on collision avoidance [3] **and accommodation of right turn lane lengths** [2]**.**

Implementation mechanisms include:

a. Option – Prohibit direct access to Victory Drive unless no other access to the site can be provided. Allow temporary driveways when necessary, but require an access plan that indicates future removal of the temporary driveway and construction of new access via service or local roads. [3]
b. Option - Specify connection spacing, encompassing driveways and local streets; Limit new access points as discussed in TRB Chapter 15. For example, Clarksville, TN allows only one driveway or street intersection for every 660 linear feet. [3]
c. Option – Limit use on nonconforming properties to limit traffic volumes on connections that fail to meet connection spacing standards. [3]
d. Option – Require lot width-to-depth ratio of 1:3 [3] to prevent frontage of small lots with no alternative access. Narrow lots result in closely spaced driveways unless cross access is provided. Shallow lots can result in short driveway throat lengths that cause safety and operational issues.
e. Option – Require minimum frontage paired with an incentive to reduce the minimum if shared access is provided. [3]



Adequate Connection Spacing **Inadequate Connection Spacing**

Figure 5 Adequat

f. Option – Require corner clearance from an intersection of a road with Victory Drive to the nearest access point. Where no feasible alternative exists, limit driveways within corner clearance to right-in right-out driveways. [3] [7] Calculation of corner clearance values depends upon the intersection service rate or queue distance and will require further study or site specific analysis. Upstream corner clearance can be applied to all signalized access connections and major unsignalized intersections. [3] See TRB's *Access Management Manual* Section 20.2.6 and AASHTO for additional information. [7] Florida DOT recommends 230 feet as a minimum side street driveway spacing from intersections. [10]

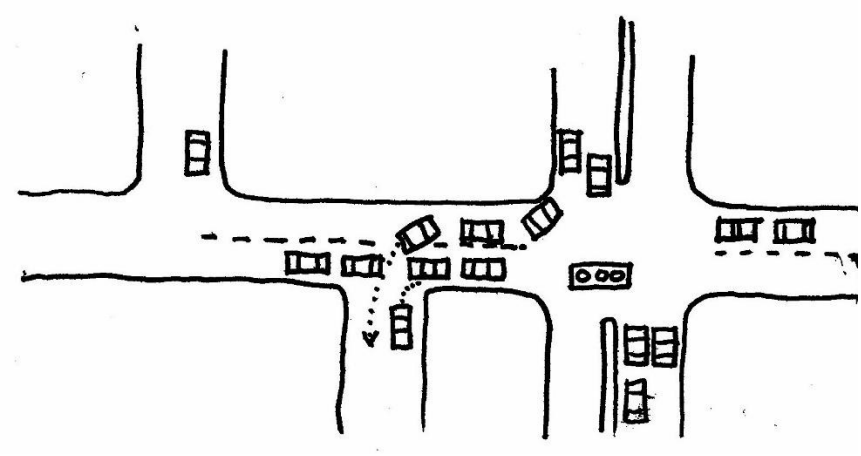


Figure 6 Prohibit driveways within intersection functional areas to reduce conflicts shown at the bottom of the diagram. Adapted from Iowa DOT [9]

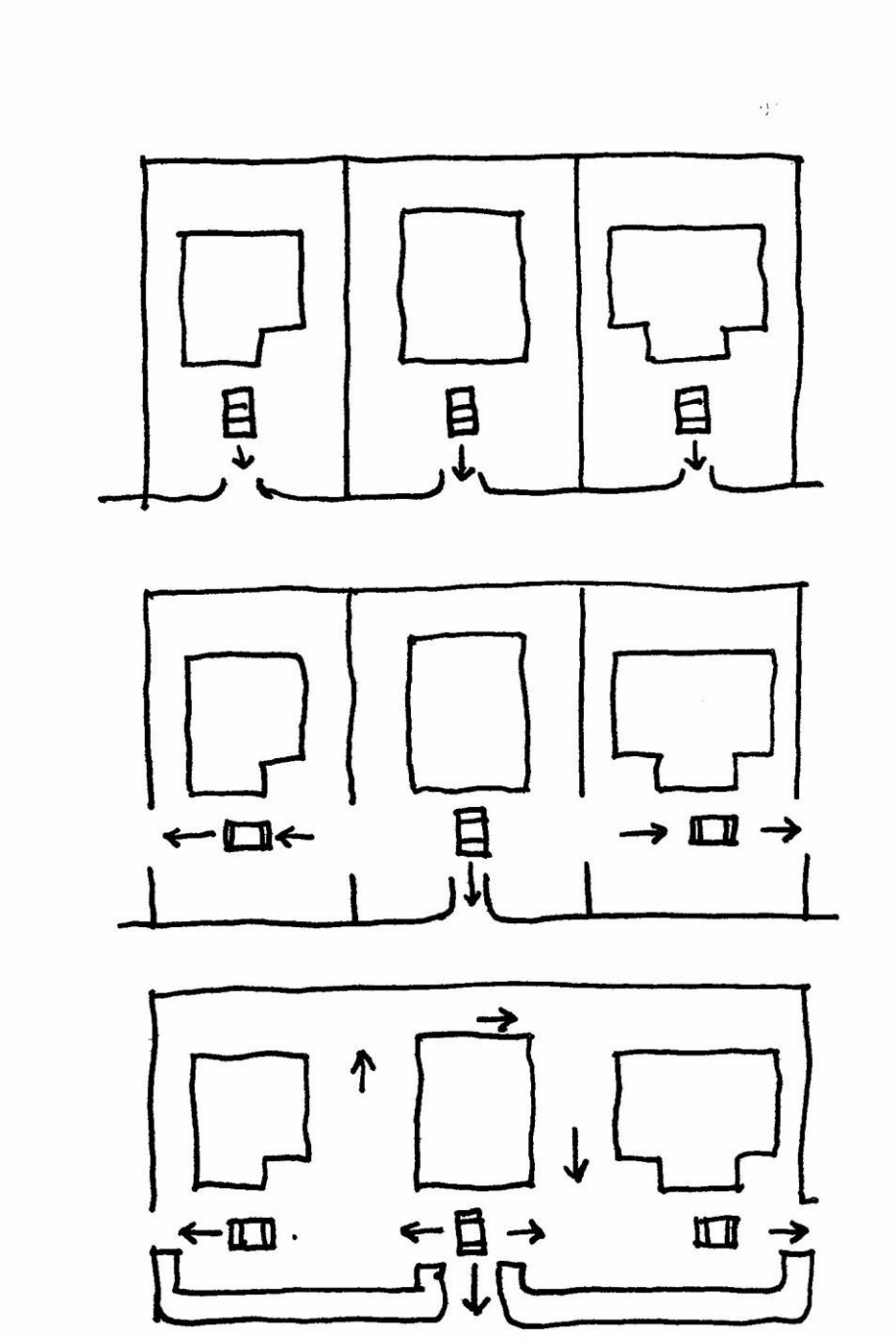


Figure 7 Avoid single driveways; Promote shared driveways. Adapted from Iowa DOT [9]

g. Option – Incentivize shared access via a higher trip allowance (and therefore a higher intensity use) where shared access is provided to adjacent properties, alternative access is obtained, or lots are consolidated to increase highway frontage. [3] This incentive should be coordinated with traffic impact study requirements. The access permit should explore if vehicular use limits exceed the initial trip allowance.
h. Option – Specify driveway throat length design. Detailed design standards are beyond the scope of this study, but adequate sight distance, curb radii, and profiles must be provided at all access

points. GDOT specifies that “The distance between the roadway traffic and the first internal movement shall be a minimum of 200 feet... Lots less than 500 [*sic*] deep should maintain, a minimum distance of 100 feet. The distance required should be maintained or increased so as to avoid interference with the mainline traffic flow for large sites with high volumes, heavy truck traffic, and on high volume roadways.” [2]

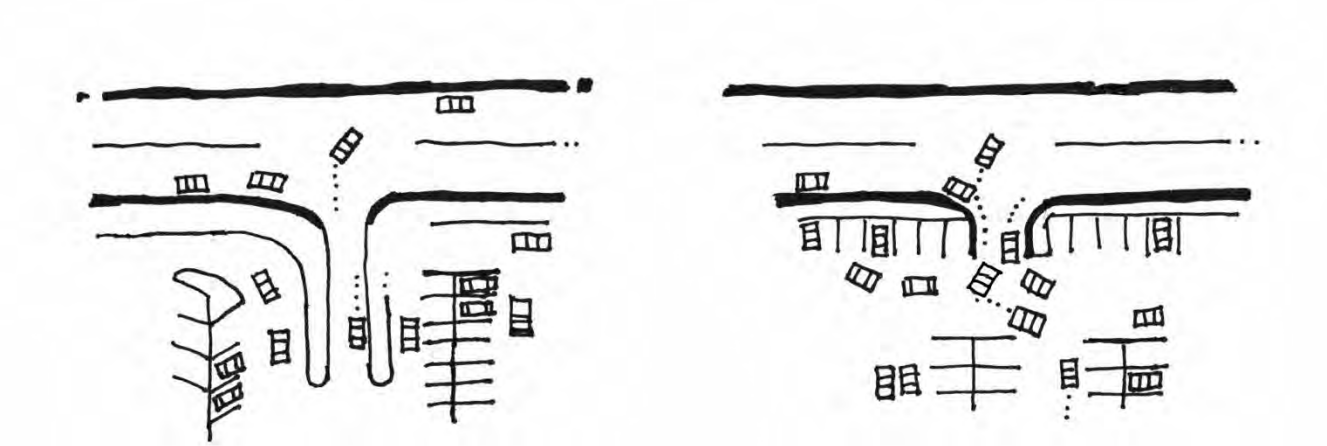


Figure 8 Adequate and Inadequate Driveway Length. Adapted from Iowa DOT [9]

Note that recommendations for warrants and design of auxiliary lanes (right-and left-turn lanes) are beyond the scope of this study. However, minimum access point spacing should accommodate deceleration lane (right-turn lane) lengths where proposed development is projected to meet warrants for right-turn lanes, or where development (including land use and scale) is permitted that may generate traffic meeting warrants in the future. See Transportation Research Board [3] Section 16.7 for justification for prohibiting access within a right-turn lane.

Median Openings

GDOT recommends median opening, or crossover, spacing of 1,320 feet on urban principal arterials, including Victory Drive, with a minimum specified of 1,000 feet. [2]

TRB recommends that full median openings should be limited to the following situations:

a. Signalized intersections,
b. Intersections that conform to the adopted signal spacing interval,
c. Divided roadways on which the traffic volume provides numerous opportunities for left turns and crossing maneuvers from the intersecting access connection to be made with little or no delay, and
d. Locations at which the decision sight distance is sufficient for drivers (a) to observe activity at the median opening and proceed without decelerating if the median opening is unoccupied and (b) to make a left turn into the roadway without interfering with traffic on the roadway. (Section 17.3.4) [3]

"A full median opening that is located where signalization will interfere with efficient traffic progression may need to be closed or reconstructed as a directional opening." (Section 17.4) [3]

Signalized Intersections

Ideal signal spacing on Victory Drive should be not less than ½-mile in order to allow for efficient traffic progression and improved safety. [3] Furthermore, TRB states that agencies should consider signalized access spacing criteria when location a full movement, four-way intersection. [3]

GDOT requires a minimum signal spacing of 1,320 feet in urban areas. [2]

Both AASHTO's *A Policy on Geometric Design of Highways and Streets* and TRB's *Access Management Manual* exceed the GDOT regulation, stating that traffic signals, especially on arterials, should be spaced at no less than ½ mile. The effect of signal spacing on average crash rates in urban and suburban areas has been documented. [7] TRB states that closely spaced signals on arterial roadways result in frequent stops, unnecessary delay, increased fuel consumption, excessive vehicular emissions, and high crash rates. [3], [11] Half-mile signal spacing also provides efficient two-way traffic flow under a variety of conditions. Selecting long and uniform signalized intersection spacing, therefore, is an essential element in establishing access spacing standards. [12] [11] [3] Further, "the crash rate increases as the number of access points (on both sides of the roadway) increases and that the increase in crash rate for traffic signal densities of 2.1 to 4.0 signals per mile is much greater than for locations with a signal density of 2.0 or less per mile." (See TRB Exhibit 15-3.) [3] [7]

In addition to the safety benefits described above, other benefits of uniform signal spacing consistent with the ½ mile recommendation cited by TRB include the following:

a. Travel time may be decreased by as much as 40% and delay decreased by as much as 50% when compared to closely spaced signals. [7] [13] [12]
b. Fuel consumption is greatly reduced.
c. Vehicular emissions are minimized.
d. More efficient traffic flow is achieved than with closely or irregularly spaced signalized intersections. Stop and go operations are substantially reduced. [3]

When signals are spaced at the ½ mile standard, road network spacing should be consistent, with major arterials spaced at one mile and minor arterials in between corresponding to the ½ mile signalized intersection spacing. TRB's *Access Management Manual* states that "Local governments may need to take a more active role to ensure that a logical supporting street system is developed to support the desired signal spacing." [3]

Recommendation - Specify minimum median opening spacing and design. "Full median openings should only be provided at intersections that are appropriate for signalization and need not be provided at every local street." [3] **"Ideally median openings would be coordinated with street intersections at intervals of ¼ to ½ mile and would provide for signalization."** [3]

Active Transportation Modes

Findings from this study, including significant public input, concur with TRB's recommendation that sidewalks and bike paths or shared multiuse paths should be provided on both sides of any major arterial. [3] Due to the constrained right-of-way, Amenity Corridor designations in the adopted *Comprehensive Plan*, and findings of past studies, it is evident that on-street bicycle lanes are not feasible in the current four-lane configuration. Bicycle routes parallel to Victory Drive should be designated, and facilities should be constructed to allow for safe and comfortable bicycle travel. A parallel multiuse path is an option that should be studied. On the southside of Victory Drive, there are large gaps in the sidewalk. Sidewalks should be constructed as the area redevelops and as part of any reconstruction or rehabilitation projects. Where tree roots are significant behind the curb, alternative treatments such as boardwalk could provide pedestrian facilities.

> **Recommendation - Require sidewalk and bicycle connectivity with adjacent development(s). Provide for direct bicycle and pedestrian access to transit facilities. Key transit destinations should be within walking distance of transit stops and accessible via sidewalks or paths. Site designs that bring building entrances close to the street line and therefore transit stops and sidewalks should be promoted via frontage zone depth requirements.** [3]
>
> **Recommendation – Require bicycle parking, bicycle paths, and direct access to buildings.** [3]
>
> **Recommendation – Implement near term improvements at intersections to promote awareness, and the safety and comfort of people on bicycle and on foot. Develop detailed intersection designs at key intersections including Skidaway Road and Bee Road as well as the Truman Parkway interchange.**

Coordination and Implementation

The final Access Management policy should be fully coordinated with GDOT, including ordinance language, review process, and deviation criteria. Local standards should meet or exceed GDOT standards for driveway and encroachment control. Agencies should conduct simultaneous review and provide for conditional approval so that approval of local and state permits are conditional upon the receipt of the required permits from the other authority. Improvements on Victory Drive also need to be coordinated with the Savannah Regional Traffic Operations Program (SRTOP). As a next step, staff should develop cooperative agreement between GDOT, CORE MPO and the city of Savannah outlining roles, responsibility, funding, authority, and coordination mechanisms. [3]

Access Management Overlay District

An access management overlay district adds special access management requirements to existing zoning districts on a designated corridor, intersection, or interchange area while retaining the other requirements of the underlying zones. TRB's Exhibit 20-44 shows an example of an overlay district. [3] Note that overlay districts can be applied to properties with frontage on the major roadway, interior properties, as well as side street intersections to ensure adequate corner clearance.[1]

[1] See additional examples form Penfield, New York and Grand Traverse Bay, Michigan

An effective overlay district should set minimum standards that represent the target values discussed above. The regulation should include a deviation process to allow lesser standards where special or unique conditions make application of the standards unsafe or infeasible. [3]

Per best practices, the City, MPC, and GDOT should

- Address Access Management in the overall development review process.
- Include access management requirements in site plan review and traffic impact study procedures.
- Include a fee schedule to cover local administrative costs, scaled for larger or more complex developments.
- Designate a responsible party at the city as well as a supporting interdepartmental team for Access Management review as part of the development review process. [3]

Access management decisions may require input from all departments that participate in site plan review including Community Planning and Development, Development Services, Traffic Engineering, Stormwater Management, Park & Tree, Mobility & Parking Services, and Savannah Fire and Emergency Services. A review team should be established from these departments to manage review of access requests. A review team should address requests for deviation from standards as a group to ensure that each department contributes to the decision. [3]

TRB recommends a site plan review process that includes the following checklist: (See Section 9.5.)

a. Is the road system designed to meet the projected traffic demand and does the road network consist of a hierarchy of roads designed according to function?
b. Are access roads properly placed in relation to sight distance, connection spacing, operational capacity, and other related considerations?
c. Do units front on and obtain direct access from residential access streets, rather than major roadways?
d. Does the site layout allow on-site vehicular circulation without the use of the peripheral road network?
e. Does the pedestrian and bicycle path system link buildings with parking areas, entrances to the development, open space, and recreational and other community facilities?
f. Has the applicant provided a detailed description of any requested variance and proof of necessity for the variance request? [3]

The residents of neighborhoods along Victory Drive and other stakeholders have requested that GDOT and the city consider reducing the speed limit to 35 mph within the city limits. GDOT has expressed the intent to study this suggestion. Whether or not the speed limit is adjusted, through SRTOP, GDOT should refine signal timing to encourage compliance with the speed limit.

In order to have an effective access management of the corridor, the City and MPC should regulate change in use and redevelopment. Of course, coordination with GDOT will be essential. “Any access, whether constructed before, on, or after the effective date of a new access management code, may be required by a state transportation agency to be reconstructed, relocated, or closed, as necessary, to

bring the access into conformance with the adopted access code when a change in use occurs. The property owner typically bears the expense when the work is necessitated by a change in the use of the property that results in a change in the type of access operation. The state transportation agency bears the expense when the work is necessitated by changes in road or traffic conditions …establish criteria whereby existing properties must come into conformance with access management policies (to the extent feasible) when they redevelop or a change in use occurs… Similar conditions may be imposed when a site is abandoned or vacant for a specified period of time." [3]

a. Option – service roads may be implemented when roads are being improved. Some state transportation agencies contribute to local road improvements where this would advance corridor improvement objectives or reduce safety and operational problems on a state highway. Options include local street extensions to advance a corridor access management plan. [3]
b. Option - Locally or state funded projects. Improve existing access during **roadway reconstruction projects** through selected reconstruction of substandard access or closure of unsafe or superfluous driveways. Close or reconfigure full access median openings to directional openings to meet spacing standards. [3]
c. Option - Acquisition of access rights or development rights should be considered in extreme cases where no compromise can be reached and the safety and mobility benefits outweigh the cost of acquiring rights from property owners. [3]

References

[1] CORE MPO, "Congestion Management Process Update," Savannah-Chatham Metropolitan Planning Commission, Savannah, 2009 .

[2] Georgia Department of Transportation, "Regulations for Driveway and Encroachment Control," State of Georgia, Atlanta, 2016.

[3] K. Williams, V. Stover, K. Dixon and P. Demosthenes, "Access Management Manual," National Academy of Sciences, Washington, DC, 2014.

[4] Institute of Transportation Engineers, "Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities," Washington DC, 2010.

[5] K. a. K. S. Williams, "Model Regulations and Plan Amendments for Multimodal Transportation Districts," Center for Urban Transportation Research, Tampa, FL, 2004.

[6] R. Ewing, "Best Development Practices: Doing the Right Thing and Making Money at the Same Time," APA Planners Press, Chicago, Ill, 1996.

[7] AASHTO, "A Policy on Geometric Design of Highways and Streets," AASHTO, Washington, DC, 2011.

[8] Committee on Access Management, "Transportation Research Circular 456: Driveway and Street Intersection Spacing," TRB, National Research Council, Washington, DC, 1996.

[9] Center for Transportation Research and Education, "Access Management Handbook," Iowa State University, Ames, 2000.

[10] FDOT State Safety Office, "Twelve Steps Toward Walkable Comunities," Florida Department of Transportation, Tallahassee, 1995.

[11] J. S. H. S. L. a. V. G. S. Gluck, "NCHRP Report 420: Impacts of Access Manage-ment Techniques," TRB, National Research Coun-cil, Washington, DC, 1999.

[12] S&K Transportation Consultants, "Participant Notebook for National Highway Institute Course 133078: Access Management, Location and Design," FHWA, USDOT, 2000.

[13] V. Stover and F. Koepke, "Transportation and Land Development," Institute of Transportation Engineers, Washington, DC, 2002.

[14] Resource Systems Group, Inc., "A/GFTC Access Management Study," Adirondack/Glens Falls Transportation Council, South Burlington, VT, 2006.