District Three Safety Office

SR 61/Thomasville Road

From US 27/Monroe Street to Betton Road/Bradford Road

Leon County

Safety Study: Arterial
(Pedestrian/Bicyclist)

Prepared by:
Cardno

Completion Date: March 2016

SR 61/Thomasville Road

Pedestrian/Bicyclist Arterial Safety Study

Roadway ID Number: 55050000
Mile Post: 0.386 – 1.749
Leon County

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Executive Summary

This safety study has been conducted on behalf of FDOT District Three Safety Office to address pedestrian and bicyclist safety along the SR 61/Thomasville Road corridor from US 27/Monroe Street to Betton Road/Bradford Road. The SR 61/Thomasville Road at 7th Avenue/Meridian Road signalized intersection was also studied to include vehicle and pedestrian/bicyclist operations and safety. A project location map is included as Figure 1 on the next page. The study includes a summary of observed pedestrian activities (data collection), analysis of recent crash history, a qualitative assessment, lighting analysis, signalization and roundabout alternatives analysis at the 7th Avenue/Meridian Road signal, and improvement recommendations. In addition to the pedestrian/bicyclist improvements, the corridor qualitative review determined the need to also address the vehicle safety and operations.

Pedestrian and bicyclist crash data was reviewed for the six-year period from 2009 to 2014. There were only five bicycle crashes and three pedestrian crashes during the study period. Six of the crashes resulted in injuries and one pedestrian crash resulted in a fatality. The fatal crash report indicated that the pedestrian's death was due to complications from other health issues. Three of the crashes occurred during night-time conditions and three involved alcohol. The crashes were typically right-turn motorists failing to yield to a pedestrian/bicyclist. The pedestrian count data collected over the three-day period indicates that approximately 85 percent of the pedestrian crossings are occurring within the section from Johnston Street and 7th Avenue. These volumes increased throughout the evening with hundreds of crossings per hour counted. Most of the pedestrian crossings occurred as groups.

There were a total of 44 crashes reported at the SR 61/Thomasville Road and 7th Avenue/Meridian Road signalized intersection. There was one bicycle crash (night-time) and no pedestrian crashes at this intersection. There was a higher than average incidence of angle crashes. There was also a pattern of right-turn crashes involving southbound Meridian Road and westbound 7th Avenue vehicles.

The study location at SR 61/Thomasville Road/7th Avenue/Meridian Road Roundabout Analysis determined that a multi-lane roundabout footprint would be required while the capacity would still not be sufficient for the existing volumes. The roundabout would also result in significant impacts to the businesses. The 5-legged roundabout would also limit the safety benefits typically realized with a 4-legged roundabout. For these reasons a roundabout is not recommended at this location.

Since there were so few pedestrian and bicyclist crashes in the study area relative to the volumes, and the crashes typically occurred while crossing a minor side street or driveway, it is difficult to develop measureable crash countermeasures that would provide a reduction in these types of crashes. The qualitative review provided a clear picture of the need for both pedestrian and vehicle traffic improvements and oftentimes one improvement or countermeasure can benefit all roadway users. The majority of the recommended improvements can be incorporated during a RRR project since most are upgrades to meet current standards. Appendix G includes the concept plans of the site-specific improvements at the signalized intersections at (1) SR 61/Thomasville Road/Monroe Street and (2) SR 61/Thomasville Road/7th Avenue/Meridian Road. The concept plan also includes the pedestrian refuge islands recommended between US 27/Monroe Street and 7th Avenue. The corridor-wide improvements and the site-specific improvements are as follows:

Reduce Night-time (Non-daylight) Crashes

- Upgrade Roadway Lighting along the south end of the corridor. The two- to three-lane section between Monroe Street and Gadsden Street had the highest number of night-time crashes and pedestrian activity. Upgrading the roadway and intersection lighting to meet current FDOT standards will enhance safety.

Figure 1 – Project Location

Implement Corridor Access Management Strategy

- Where possible, reduce driveway widths and consolidate driveways to minimize potential conflicts with bicyclists and pedestrians.
- Obtain crash data and count data at the full median openings to determine closing and/or modifying these openings. The locations along SR 61/Thomasville Road are as follows:
  - 9th Avenue
  - 350 feet north of 9th Avenue

  - Grape Street
  - Colonial Drive Median Opening between Glenview Drive and Betton Road/Bradford Road
- Obtain crash and count data for the section of SR 61/Thomasville Road between 5th Avenue (south) and 5th Avenue (north), including the Whataburger driveways, to study restricting the number of conflicting movements.

Enhance Pedestrian/Bicyclist Crossing Safety

- Install pedestrian refuge islands in high pedestrian activity areas along SR 61/Thomasville Road between US 27/Monroe Street and 7th Avenue/Meridian Road. (Appendix G)
- Consider providing an additional RRFB located at Beard Street for pedestrians crossing between 5th Avenue and 6th Avenue.

Upgrade Signalized Intersections to MUTCD and FDOT Design Standards

- Upgrade intersection illumination.
- Provide one signal head per through lane.
- Provide reflectorized back plates on all traffic signals.
- Replace 5-section protected/permissive left-turn signals with 4-section flashing yellow arrow signals.
- Upgrade all crosswalks to high emphasis.
- Where possible, separate pedestrian pushbutton poles on each corner.
- Install overhead illuminated street name signs.
- Where possible, install NEXT SIGNAL advance street name signs.
- Add TURNING VEHICLES YIELD TO PEDS (R10-15) regulatory signs at signalized intersections.

Site Specific Improvements at Signalized Intersections

<u>SR 61/Thomasville Road at US 27/Monroe Street</u> (Appendix G)

- Install pedestrian crosswalks and signals across the north and east legs of the intersection
- Reduce turning radius for the northbound right-turn and signalize the right-turn.
- Realign the traffic signals on the southbound US 27/Monroe Street approach so they are not visible to the westbound SR 61/Thomasville Road approach motorists.
- Install delineator posts at the 1st Avenue intersection to enforce the NO LEFT TURN sign.
- During the next RRR project mill the pavement on SR 61/Thomasville Road to remove the pavement drop-off edge that could be hazardous to a bicyclist or motorist.

<u>SR 61/Thomasville Road at 6th Avenue</u>

- Consider half-cycling the signal to reduce delays and long queues.
- Install DO NOT BLOCK INTERSECTION signs on SR 61/Thomasville Road and on 6th Avenue. This intersection is currently planned for pedestrian improvements.

<u>SR 61/Thomasville Road at 7th Avenue</u> (Appendix G)

- Install pedestrian crosswalks and signals across the (1) north leg of SR 61/Thomasville Road, (2) the north leg of Meridian Road and (3) the entire west leg of 7th Avenue
- Signalize the southbound Meridian Road right-turn lane with right-turn arrow signals to stop motorists during a pedestrian actuation. Install NO TURN ON RED signs for pedestrian actuation.
- Install Leading Pedestrian Interval (LPI) for the crosswalks on the north, south and west legs.
- Install a 4-section flashing yellow arrow signal for the westbound and southbound right-turn lane movements and add blank-out signs for pedestrian actuation.
- Install an ADDED LANE sign (W4-3) for westbound 7th Avenue motorists to warn of the Meridian Road right-turn traffic.

- Install manufactured curbing (Kwik Kurb) downstream on the west side of the intersection to extend the channelized right-turn island. This will prohibit the Meridian Road southbound right-turn vehicles from accessing the gas station driveway
- Install overhead lane use signs on the span wire for westbound 7th Avenue motorists.
- Provide guidelines for the offset southbound SR 61/Thomasville Road through movement.
- Replace the NO LEFT TURN sign on the northbound SR 61/Thomasville Road approach with a NO TURNS sign.
- In advance of the intersection, install an overhead cantilever sign designating the through lane for SR 61/Thomasville Road and the right lane for Meridian Rd and 7th Avenue.

SR 61/Thomasville Road at Shopping Plaza

- Install guidelines on the side street to address for the offset alignment.

SR 61/Thomasville Road at Glenview Drive

- Obtain traffic counts and crash data for the Glenview Drive intersection, the full median opening located 260 feet north, and the Betton Road/Bradford Road intersection to assess (1) adding a southbound U-turn lane at Glenview Drive, (2) closing the median opening, and (3) lengthening the northbound left-turn lane at Betton Road/Bradford Road.
- Install pedestrian crosswalk and signals on the north and east legs.

SR 61/Thomasville Road at Betton Road/Bradford Road

- Straighten out the crosswalk on the east leg.
- Remove the RIGHT LANE MUST TURN RIGHT signs on the northbound approach.
- Lengthen the northbound SR 61/Thomasville Road left-turn lane.
- Lengthen the southbound SR 61/Thomasville Road left-turn protected left-turn green time.
- Install ONLY pavement messages on the westbound approach.

Introduction

This safety study has been conducted on behalf of FDOT District Three Safety Office to address pedestrian and bicyclist safety along SR 61/Thomasville Road from US 27/Monroe Street to Betton Road/Bradford Road and to address the vehicle operations and safety at the SR 61/Thomasville Road at 7th Avenue/Meridian Road signalized intersection. A Project Location Map is included on page 2.

The corridor is located within the "Midtown" area of Tallahassee. Midtown is the area of Tallahassee along SR 61/Thomasville Road and US 27/Monroe Street between 3rd Avenue on the south end and Betton Road/Bradford Road on the north end. The area is a popular gathering place with walkable restaurants, shopping and night-life in the central part of the corridor. Popular and historic downtown neighborhoods also border the Midtown area. Appendix A includes the Condition Diagram of the study area.

Study Methodology

This study has been performed in accordance with the District Three's standard Arterial Study Scope of Services with specific emphasis on Vulnerable Road Users (pedestrians and bicyclists). The study includes a summary review of observed pedestrian activities (data collection), analysis of recent crash history, qualitative assessment of the corridor, lighting analysis, signal and roundabout operations analysis (SR 61/Thomasville Road/7th Avenue/Meridian Road) and improvement recommendations that support the focus of this study.

Data Collection Methodology

The emphasis on pedestrians and bicyclists is addressed through targeted data collection efforts to document pedestrian and bicyclist crossing activities broken down into small, manageable segments as shown on the Count Sheets in Appendix B. The segments are:

- Segment 1 – from US 27/Monroe Street to Johnston Street
- Segment 2 – from Johnston Street to 5th Avenue (south)
- Segment 3 – from 5th Avenue (south) to 6th Avenue
- Segment 4 – from 6th Avenue to 7th Avenue
- Segment 5 – from 7th Avenue to Crosswalk at Gadsden Street
- Segment 6 – from Colonial Drive to Shopping Center Signal
- Segment 7 – from Shopping Center Signal to Glenview Drive
- Segment 8 – from Glenview Drive to Betton Road/Bradford Road

Prior to performing the data collection activities, field reconnaissance was conducted to determine the limits of the segments based on field conditions and site distance of the observers. It was determined that collecting three consecutive days of pedestrian data from a Thursday through Saturday instead of a single day would provide better results for determining possible locations of predominant pedestrian and bicyclist crossings. The hours of data collection for this study were also extended into late evening in order to capture frequent crossing activities occurring late-night.

Observations of pedestrians and bicyclists crossing SR 61/Thomasville Road were conducted in the above noted eight segments and smaller 'Blocks' within each segment. Pedestrian and bicyclist crossing data was recorded for three consecutive days.

Pedestrian and bicyclist crossings were recorded utilizing the FDOT Manual on Uniform Traffic Studies (MUTS) procedure for Pedestrian Volume Count Study (Chapter 9). Crossings were recorded in 15-minute intervals and by direction of crossing (eastbound or westbound). Persons crossing in groups (two or more) were noted separately with the specific numbers of each category.

Methodology for Evaluating Improvements
Improvement alternatives were evaluated as outlined in the scope of services. Benefit/cost ratios were developed for those improvements where the detailed crash data was obtained. Additional recommendations were developed based on the qualitative review and engineering judgment. These recommendations do not include B/C quantifiers at this time.

The evaluation of potential major improvements was based on current FDOT criteria for items such as midblock crossings and roadway lighting. Specific statewide (on-system) criteria in the Plans Preparation Manual (PPM) and the Traffic Engineering Manual (TEM) are used as primary guidance to determine where the observed pedestrian crossings meet minimum volumes and site conditions to consider midblock crosswalk improvements. Other factors considered in the evaluation of improvements include Manual on Uniform Traffic Control Devices (MUTCD), right-of-way (R/W) constraints, utility conflicts, access management and local agency stakeholder input.

Existing Conditions

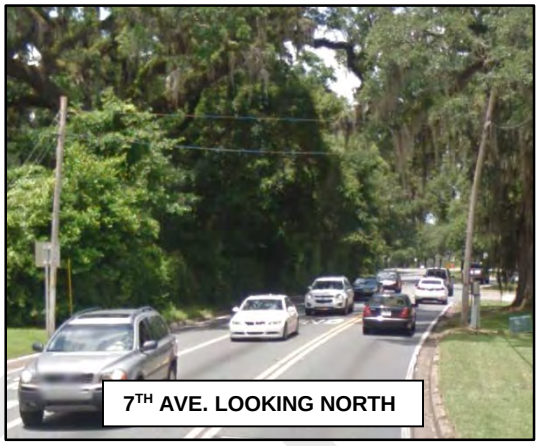
Existing Road:	Three-lane undivided (2-lanes plus center left-turn lane), four-lane divided and six-lane divided
Service Function:	Urban Principal Arterial
AADT:	17,800 to 28,000 vehicles per day (vpd)
Length:	1.363 miles
Posted Speed Limit:	25 MPH (north of US 27/Monroe Street) to 35 MPH (north of Gadsden Street) to 45 MPH (north of 9th Avenue)
Right-of-Way:	Varies 60 feet from US 27/Monroe Street to 6th Avenue, 40 feet from 6th Avenue to 7th Avenue, 120 feet plus from 7th Avenue to Betton Road/Bradford Road (Approx. using GIS)
Lane Widths:	11-foot lanes (south of Williams Street); 10-foot lanes (south of 7th Avenue);11-foot lanes (south of 9th Avenue); 12-foot lanes south of Betton Road/Bradford Road
Bike Lanes:	None
Sidewalks:	5-foot east and west sides from US 27/Monroe Street to 7th Avenue; 5-foot east side only from 7th Avenue to Colonial Drive; 5-foot both sides from Colonial Drive to Betton Road/Bradford Road
Adjacent Land Use:	Primarily Commercial
Alignment:	Straight with horizontal curve between US 27/Monroe Street and Johnston Street, and from south of 7th Avenue to Gadsden Street
Terrain:	Flat with slight rolling nature based on topography

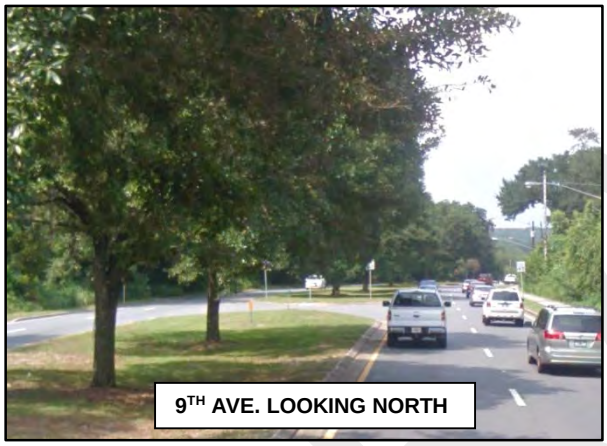
A condition diagram of the study area is included in Appendix A. The condition diagram shows existing conditions such as existing lane geometry, pedestrian and signalization features, guide signs, regulatory signs, and bus stop locations to provide additional details for reference.

The corridor has a varied urban cross-section with two travel lanes on the south end between US 27/Monroe Street and Calhoun Street. At Calhoun Street the typical section becomes three-lane until 7th Avenue where a median is provided to restrict the northbound left-turn movement. Between 7th Avenue and Gadsden Street the roadway is three-lane undivided and then transitions to four-lane divided at Gadsden Street then widening to six-lane divided at Grape Street to the project limits at Betton Road/Bradford Road. The curb-

to-curb distance varies based on lane widths and median widths throughout the corridor. Typical cross sections are shown in the photos below.


CALHOUN ST.LOOKING NORTH


7TH AVE. LOOKING NORTH


9TH AVE. LOOKING NORTH

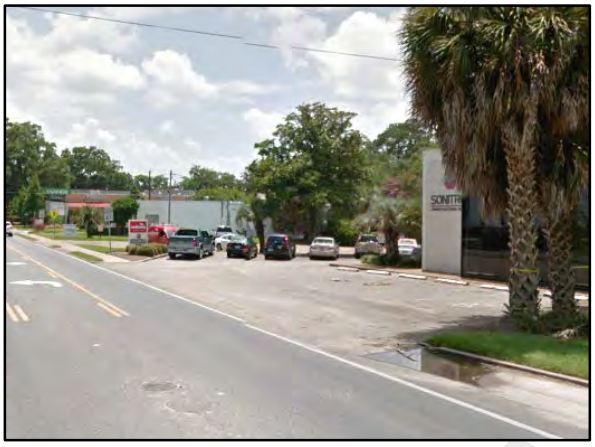

COLONIAL DR. LOOKING NORTH

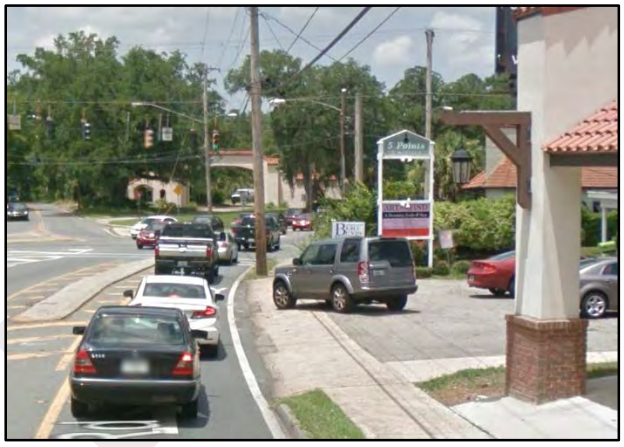

GLENVIEW DR. LOOKING NORTH

The posted speed limit along the corridor is 25 MPH on the south end, increases to 35 MPH north of Gadsden Street and then to 45 MPH north of 9th Avenue. Sidewalk currently exists along both sides of the corridor except between 7th Avenue and Colonial Drive where the west side ends and is provided on the

east side only. There are no paved shoulders or bicycle lanes along this segment of SR 61/Thomasville Road.

The adjacent property development is consistent with neighborhood commercial uses. Although the building structures are located in close proximity to the roadway, in many cases the parking is limited within the three-lane typical section and is located in front of the buildings. This creates large undefined driveways, motorists backing out into the street and conflicts with pedestrians walking along the sidewalk. Sidewalk is





not provided along many of these driveway connections. The close proximity of the parking restricts the ability to expand features of the roadway facility such as wider sidewalks or the addition of bike lanes.

Driveway turnouts are frequent and do not meet current Americans with Disability Act (ADA) sidewalk cross-slope requirements (exceeding 2 percent). While this is not a major safety issue as defined by a documented crash history, reconstructing the sidewalk through driveways to meet current ADA standards could be considered for future improvements during Resurfacing, Rehabilitation and Restoration (RRR) efforts if funding is available.

Existing lighting conditions within the corridor include the City of Tallahassee owned street lighting (luminaires) along the east side of the road only. The luminaires are mounted on the power poles that also carry the overhead power lines. Several of these poles do not meet clear zone criteria. During the review, not all the light fixtures were in working order. Additional information on the existing lighting conditions can be found in the *Lighting Analysis Section* of this report.

The StarMetro (city owned and operated public bus service) bus stop facilities are present along the corridor with six stops and are noted on the condition diagrams. Bus stop types range from locations with signs only and some with benches. The bus stop locations are as follows:

- south of 5th Avenue
- north of 6th Avenue
- at Grape Street
- north of Pine Street
- south of Betton Road/Bradford Road
- north of Betton Road/Bradford Road

The one existing marked midblock crosswalk within the corridor is located at 5th Avenue (south) with a Rectangular Rapid Flashing Beacon (RRFB) provided. Signalized intersection crosswalks are located at 6th Avenue (east, west and south legs), 7th Avenue (east, west and south legs), Shopping Center (all four legs), Glenview Drive (south and west legs) and Betton Road/Bradford Road (all four legs). This does not include crosswalks that are parallel along the mainline which are marked at each side street crossing.

Qualitative Assessment

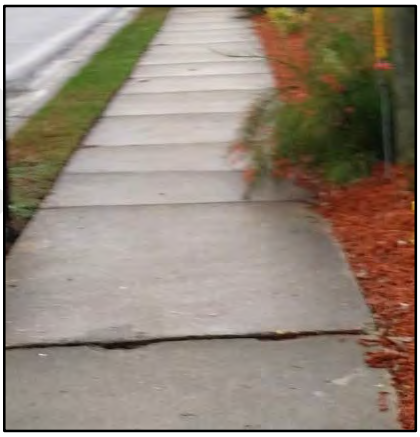
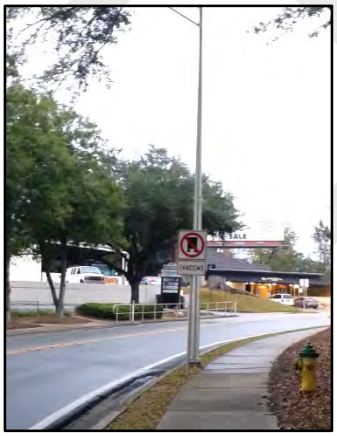
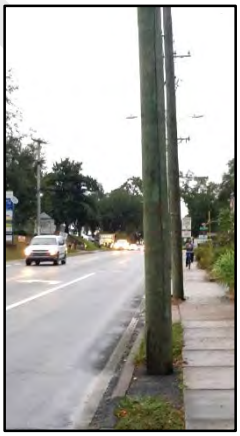
A field review was conducted on October 27, 2015 to assess possible deficiencies in the geometric and operational characteristics of the study corridor. The purpose of a qualitative assessment is to review the corridor under study to observe existing conditions and characteristics. The goal is to identify deficiencies in accordance with ADA and Department standards with possible corrective measures recommended.

Corridor-wide Analysis

The 1.4 mile section of SR 61/Thomasville Road corridor was reviewed with pedestrian and bicyclist safety in mind and the overall operations. The following general observations were made:

- Traffic flow is predominantly southbound in the AM peak and northbound in the PM peak hours.
- The two- and three-lane section of SR 61/Thomasville Road is oversaturated during the peak hours.
- Pedestrian signals and traffic signals are not to current standards.
- The overall guide signing is lacking in quality and quantity within the corridor.
- Sidewalks are cracked, worn, missing ADA, have tripping hazards and obstructions throughout the three-lane section of the corridor study limits.
- Several utility poles are located too close to the roadway.
- Wide and undefined driveways are located throughout the corridor increasing the potential for conflicts with pedestrians/bicyclists traveling on the sidewalks.




Operational Analysis (Signalized Intersections)
Six existing signalized intersections plus the RRFB are located on SR 61/Thomasville Road within the study area as shown in Table 1. There are marked crosswalks at all of the intersections except at US 27/Monroe Street.

Signalized Intersection	Mile Post	Distance to Next Signal*
US 27/Monroe Street	MP 0.386	---
5th Avenue RRFB	MP 0.696	1,600 ft.
6th Avenue	MP 0.842	770 ft.
7th Avenue	MP 0.942	528 ft.
Shopping Center	MP 1.492	2,900 ft.
Glenview Drive	MP 1.626	707 ft.
Betton Road/Bradford Road	MP 1.749	649 ft.

*from south to north

Table 1 – Existing Signalized Intersection Spacing

An operational analysis was conducted for each signalized intersection during the field review. The operational analyses focused primarily on pedestrian operations at the intersection with consideration for traffic operations characteristics. The corridor review determined that the signalized intersections are lacking standard features that have been added to FDOT's design criteria. The standards are based on research studies that have proven to reduce crashes at signalized intersections. The following includes upgrades that could potentially reduce all crash types including angle, left-turn, sideswipe, rear end and pedestrian.

- Missing advance street name signs – NEXT SIGNAL signs provide advance notice of an upcoming signal and give motorists enough time to properly change lanes to enter the appropriate lane.
- Lack of one signal head per through lane – One signal head per through lane provides improved signal head visibility thereby reducing sudden stops and motorists running a red signal.
- Missing Internally Illuminated Street Name Signs – As with advance street name signs, illuminated street name signs increase the distance at which a motorist can see the street name sign. These signs provide a benefit for both daytime and night-time driving.
- Missing back plates – Another measure to improve the signal head visibility is to provide retro-reflective yellow back plates on all signals, not just east-west signals. The retro-reflective yellow back plates have greater visibility during night-time conditions.
- Five-section traffic signals – Although 4-section flashing yellow arrow (FYA) signals have been in use throughout the country for some time, FDOT and local agencies have just recently started using them. The benefit over the 5-section is the FYA is less confusing for motorists that are turning left on the permissive green ball that is present in the 5-section signal. Additionally, the FYA provides a yield for motorists that are turning concurrent with a pedestrian crossing. The 4-section FYA can also provide more flexibility than a protected only 3-section left-turn signal. The 4-section FYA can replace a 3-section protected only signal and minimize delays during off-peak or low volume conditions.
- Lacking pedestrian signs – With the potential for pedestrian/bicyclist crashes at signalized intersections involving turning vehicles, greater emphasis is needed to notify motorists of their presence. TURNING VEHICLES YIELD TO PEDS (R10-15) signs installed at all locations where there is a potential conflict can aid in training motorists to not only yield to pedestrians but to

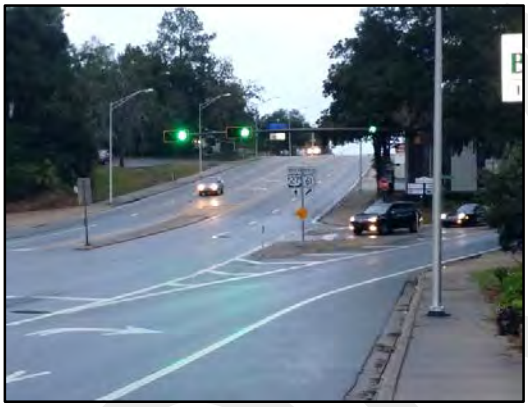
increase awareness of the possibility of their presence. Pedestrian pushbutton signs are also missing throughout the corridor.

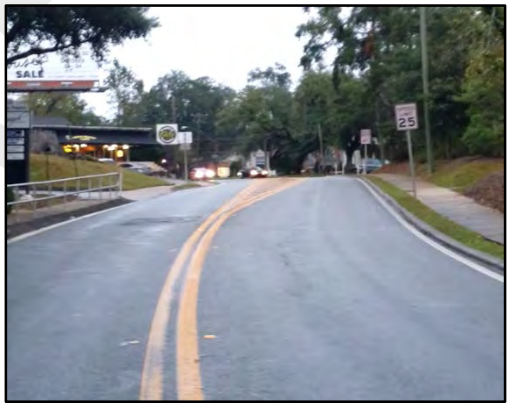
- Missing high emphasis crosswalks – Although in the past high emphasis crosswalks have been typically only used at mid-block crosswalks and school crossings, high emphasis crosswalks are now FDOT standard at signalized intersections. Studies have shown these crosswalks have a greater visibility to drivers than the transverse crosswalks.
- Separate poles for pedestrian pushbuttons – The MUTCD includes ADA standards to separate pedestrian pushbuttons on each corner by 10 feet to aid the visually impaired to differentiate between the two signalized crosswalks. The separate poles also aid sighted pedestrians and reduce unnecessary pedestrian actuations which can increase vehicle delays. If right-of-way is not available, the pushbuttons can be combined onto one pole.

In addition to the above general deficiencies, the following section discusses the site specific deficiencies at the signalized intersections within the corridor.

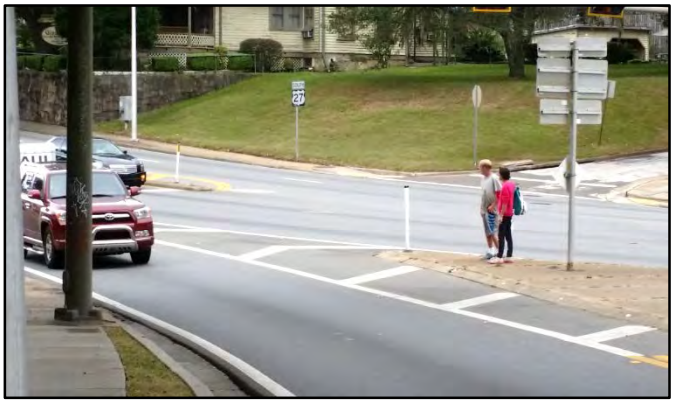
SR 61/Thomasville Road at US 27/Monroe Street Intersection:

- The northbound right-turns from US 27/Monroe Street onto SR 61/Thomasville Road were observed to be traveling at a high rate of speed for entering a 25 MPH posted pedestrian friendly area. The higher speeds can be attributed to the roadway design features on US 27/Monroe Street including the free-flow movement on a downgrade with excess pavement and a large turning radius.

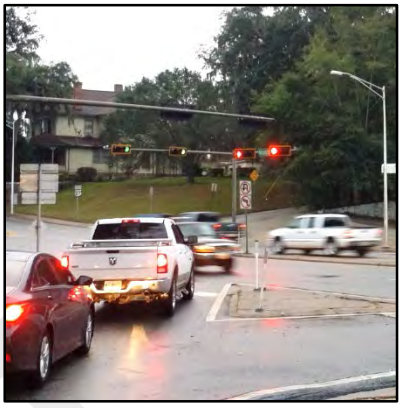




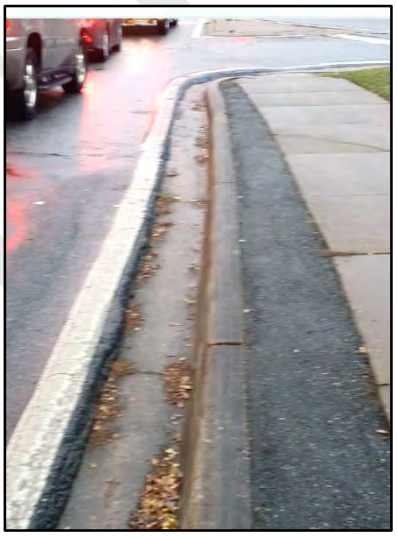
- The intersection is lacking pedestrian features across all legs. The average daily traffic (ADT) on the four-lane divided US 27/Monroe Street is 34,500 vpd. There are sidewalks on both sides of US 27/Monroe Street and SR 61/Thomasville Road. The photo to the right shows pedestrians trying to cross US 27/Monroe Street.



- The signals for the southbound approach, as shown in the photo to the right, are visible to the westbound approach motorists which could create confusion.



- The pavement edge on SR 61/Thomasville Road has a drop-off that could be hazardous if a motorist's or bicyclist's tire were to catch. See photos below.



SR 61/Thomasville Road at 5th Avenue Intersection (RRFB Crosswalk):

- Although not a signalized intersection, the marked crosswalk at 5th Avenue (south) has pedestrian actuated Rectangular Rapid Flashing Beacons (RRFB). The vehicle operations of the traffic into the Whataburger located on the northeast corner of 5th Avenue and the adjacent cross street offset appeared to need more access control. The Whataburger has two driveways (access and egress) on SR 61/Thomasville Road and a single access/egress on 5th Avenue (south). The northbound left-turn lane onto 5th Avenue (north) was observed being used by southbound left-turns into the Whataburger driveway since there is no turn lane. There was a steady volume of vehicles entering the Whataburger throughout the afternoon.

- A RIGHT TURN ONLY (R3-5) sign located on the westbound approach (in photo) should be combined with the STOP sign to minimize sign clutter and encroachments into the sidewalk area.

SR 61/Thomasville Road at 6th Avenue Intersection:

- The signalized intersection at 6th Avenue is 528 feet south of the 7th Avenue signal, 325 feet west of the Gadsden Street signal and 1,000 feet east of the signal at US 27/Monroe Street. The 6th Avenue intersection queues backed up along 6th Avenue through the intersection from Gadsden

Street and along SR 61/Thomasville Road during the peak hours. The intersection has a two-phase signal operation but is operating at a cycle length of 144 seconds and 150 seconds during the peak hours. The longer cycle with such close intersections can contribute to the back-ups. Half-cycling the signal operation could reduce the back-ups. The installation of DO NOT BLOCK INTERSECTION (R10-7) regulatory signs can help keep the intersections from being blocked. The guide sign (photo to right) for northbound motorists to turn right at 6th Avenue to travel west on 7th Avenue or to access Meridian Road reads as follows: ACCESS 7th AVE OR MERIDIAN RD VIA 6th AVE TO GADSDEN STREET. This sign is confusing for motorists unfamiliar to the area and should have upper and lower case lettering. An overhead sign with text TO MERIDIAN ROAD AND TO 7th AVENUE would be easier for motorists to understand.

SR 61/Thomasville Road at 7th Avenue/Meridian Road Intersection:

- The 7th Avenue/Meridian Road intersection is a 5-legged intersection. Seventh Avenue is one way westbound, SR 61/Thomasville Road is two-way but has a restricted northbound left-turn (no turn-lane provided) and no right-turn (one-way). Meridian Road is a two-way street but only the southbound to westbound right-turn is permitted at the intersection. Long queues on SR 61/Thomasville Road were observed southbound in the AM peak and northbound during the PM peak. There are no pedestrian features across the north leg of SR 61/Thomasville Road and Meridian Road except for an unsignalized crosswalk across the southbound channelized right-turn on Meridian Road. Very few pedestrians were observed at this intersection during the site review.

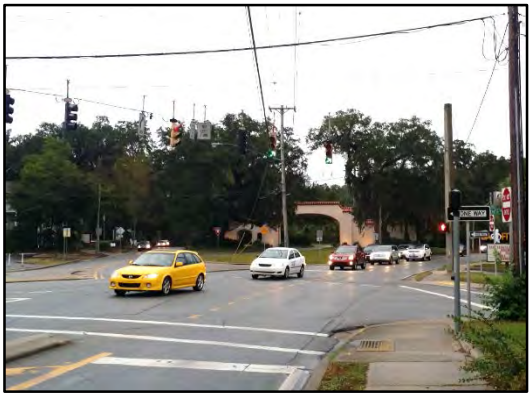
- The sign located on southbound SR 61/Thomasville Road approaching 7th Avenue is confusing for motorists looking for Meridian Road and 7th Avenue. An improvement to the existing sign shown to the right could be MERIDIAN ROAD FIRST RIGHT and 7TH AVENUE SECOND RIGHT. Supplemental signs placed at the intersections would also be helpful to motorists.

- Other operational issues observed were related to access to the gas station located on the southwest corner. Motorists northbound on SR 61/Thomasville Road were observed turning left prior to the concrete separator into the parking lot located south of the gas station and then drove through the lot to access the gas station. Also, motorists turning right from Meridian Road that want to access the gas station have to merge across the two lanes of westbound 7th Avenue traffic or stop and wait for a gap and block trailing Meridian Road motorists.

- The receiving lane for the southbound through lane on SR 61/Thomasville Road shifts approximately 10 feet west through the intersection but there are no guidelines to reflect the shift (see photo to right). The northbound through lane has guidelines for its shift.

- On the westbound approach the pavement is marked for the designated lane uses but additional overhead signs are needed to designate the left-through lane and the through only lane (see photo to right). The right turn only lane has an existing overhead mounted sign.

- Southbound SR 61/Thomasville Road transitions from the 4-lane divided section north to the constrained 2-lane area at 7th Avenue. The transition includes a southbound right-turn drop lane, one-way operation on 7th Avenue at the 5-legged signalized intersection. An advance cantilever overhead sign should be provided to clearly designate the through lane to SR 61/Thomasville Road and the right lane to Meridian Road and 7th Avenue. The pole-mounted street name signs at the intersection are not clearly visible to approaching motorists. Meridian Road is designated with the state route marker, SR 155, at the intersection but motorists need the additional local street name designation. Overhead illuminated street name signs would also benefit motorists in both daytime and night-time conditions.
- On the northbound approach a NO LEFT TURN sign is provided on the span wire and ONE WAY ground-mounted signs on the east side (see photo to the right). An overhead NO TURNS (R3-3) sign or additional NO RIGHT TURN sign would help clarify that both the left and right turns are not permitted on this approach.



- The alternatives of a (1) modified signal operations analysis and (2) a roundabout intersection analysis for this intersection were included in the Scope of Services and are outlined in more detail in the Improvement Evaluations section.

SR 61/Thomasville Road at Shopping Plaza Entrance Intersection:

- There are currently only two signal heads on SR 61/Thomasville Road for the four lanes approaching the Shopping Plaza traffic signal. As shown in the photo below right, visibility for motorists approaching at 45 MPH through this section could be improved with four signals; a 4-section flashing yellow arrow to replace the 5-section signal, and three, 3-section signals, one for each through lane.
- The westbound shared left-through lane aligns directly with the eastbound shared left-through-lane instead of the receiving lane (see photo below left). Guidelines should be provided to avoid head-on conflicts.

SR 61/Thomasville Road at Glenview Drive Intersection:

- Similar to the Shopping Plaza signal, the signal head visibility at Glenview Drive could be improved with upgrading the number of heads per lane to meet the MUTCD standards. The northbound approach should be changed from two signal heads (5-section and 3-section) to a 4-section flashing yellow arrow to replace the 5-section signal, and three, 3-section signals; one for each through lane. The southbound approach currently has two 3-section signals and should be upgraded to three, 3-section signals.
- The driveway on the east leg serves a tire center and functions as the business entrance and is not signalized for exiting traffic. There is a sign on-site for patrons to exit around the building to the north side. The driveway is too wide and lacks signs and markings to restrict a motorist from exiting this driveway into the signal. Likewise, the egress driveway located 60 feet north is not properly designed to restrict motorists from turning left into the signalized intersection.

- As shown in the photo to the right, the intersection is lacking a southbound left/U-turn lane and there is no sign restricting this movement. Since there are safety concerns associated with a 45 MPH vehicle stopping to turn left without a turn lane, a NO TURNS sign should be provided or installation of a left/U-turn lane to safely accommodate the movements.
- There are no crosswalks or pedestrian signals provided for the north leg and the east leg of the intersection. The east leg crosswalk is needed to avoid a conflict between an eastbound through vehicle into the tire store driveway and a pedestrian walking across the tire store driveway.

SR 61/Thomasville Road at Betton Road/Bradford Road Intersection:

- The east leg crosswalk has a kink in it due to a drainage inlet located on the southeast corner. Crosswalks should be straight for disabled pedestrians.
- The northbound RIGHT LANE MUST TURN RIGHT (R3-7R) regulatory signs on this approach are not per standard. These signs are to be used for drop lanes which this lane is not.
- As with the Shopping Plaza and Glenview Drive intersections, the north-south approach signals need to be upgraded to standards. Replace the two signals; a 5-section and a 3-section signal with a 4-section flashing yellow arrow and three, 3-section signals. On the east-west approaches replace the 5-section signal with a 4-section flashing yellow arrow signal and provide two 3-section signals per approach.

- The field review determined that the northbound left-turn lane is too short for the volume of turning vehicles. The lane often overflowed into the inside through lane. The southbound left-turn movement needs a longer protected left-turn phase to clear the queued vehicles that were not able to clear during the permissive phase. RIGHT LANE MUST TURN RIGHT signs exist for the westbound right-turn drop lane but the ONLY pavement messages are missing.

Pedestrian/Bicyclist Data Collection

Pedestrian and bicyclist crossing data was recorded for a three consecutive day period from Thursday, October 8th to Saturday, October 10th, 2015. The counts were collected for 12 hours each day from 12:00 noon to 12:00 midnight. Additionally, pedestrians and bicyclists were counted at the signalized intersection of 7th Avenue during the turning movement count periods from 7:15 AM to 8:45 AM, 11:00 AM to NOON and 4:45 PM to 6:15 PM.

It was noted that there was an away Florida State University football game during the evening of Saturday, October 10 that could have affected the counts as many students were inside watching the game instead of traveling to the businesses in the corridor. Appendix B contains the detailed results of the recorded count information. In summary, the data collected contains detailed data to assist in the decision-making process when evaluating improvement alternatives. Table 2 shows the number of crossings within each segment with the corresponding percentage of total crossings. About 85 percent of all crossings occurred within the sections between Segments 2 and 4 which extends from Johnston Street to 7th Avenue.

Segment	Total Crossings (3 days)	Daily Average	Percent of Corridor
Segment 1: US 27/Monroe St. to Johnston St.	112	37	3%
Segment 2: Johnston St. to 5th Ave. (south)	1249	416	40%
Segment 3: 5th Ave. (south) to 6th Ave.	999	333	32%
Segment 4: 6th Ave. to 7th Ave.	399	133	13%
Segment 5: 7th Ave. to Crosswalk at Gadsden St.	125	42	4%
Segment 6: Colonial Dr. to Shopping Ctr. Signal	53	18	1%
Segment 7: Shopping Ctr. Signal to Glenview Dr.	160	53	5%
Segment 8: Glenview Dr. to Betton Rd./Bradford Rd.	58	19	2%

Table 2 – Number of Crossings by Segment

Segment 2 had the highest number of crossings with 359 on Thursday, 683 on Friday, and 207 on Saturday. It should be noted that for the three-day study period, an average of 75 percent of all pedestrian and bicyclist crossings within Segment 2 occurred at the Rectangular Rapid Flashing Beacon (RRFB) crosswalk located on the south side of 5th Avenue (south). When comparing the types of crossings (pedestrian, bicyclist, or group) within each segment of the two busiest segments, Segment 2 and Segment 3, over half of all pedestrians crossing SR 61/Thomasville Road were in groups. Figure 2 depicts the types of crossings (pedestrian, bicyclist, or group) by segment that occurred on Friday, October 9, which was the busiest of the three days.

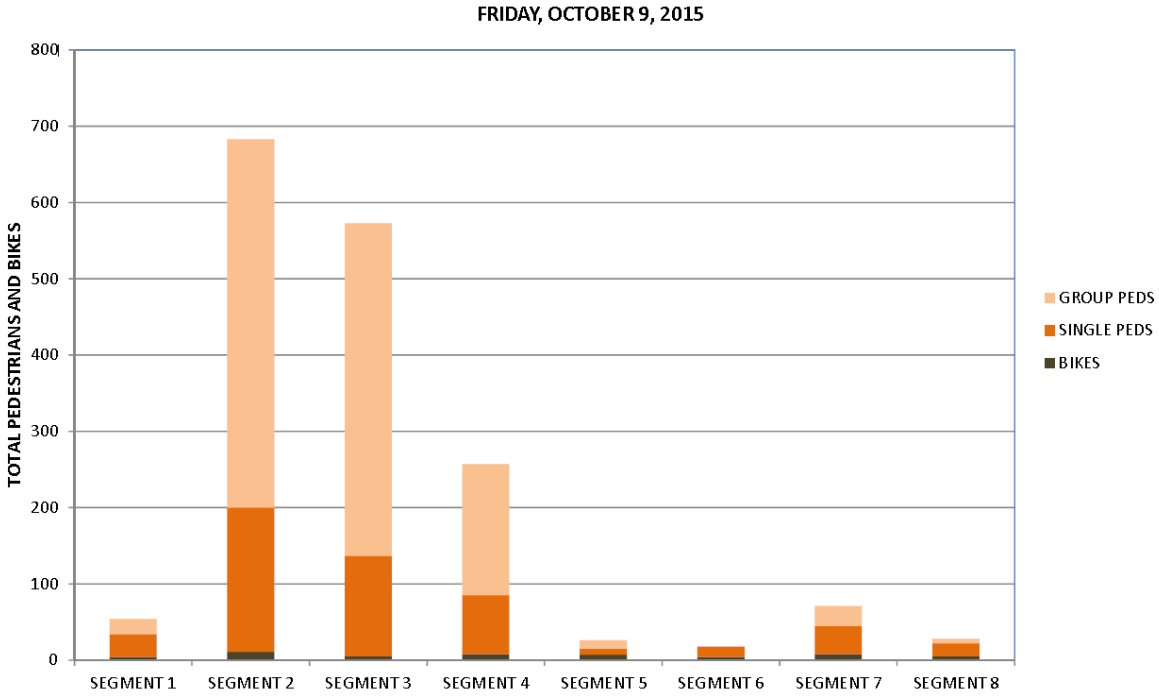


Figure 2 – Type of Crossings by Segment

Also of interest is the steady increase in volume of crossings after 6:00 PM, particularly on Friday evening. Figure 3 shows the graphical representation by time of day.

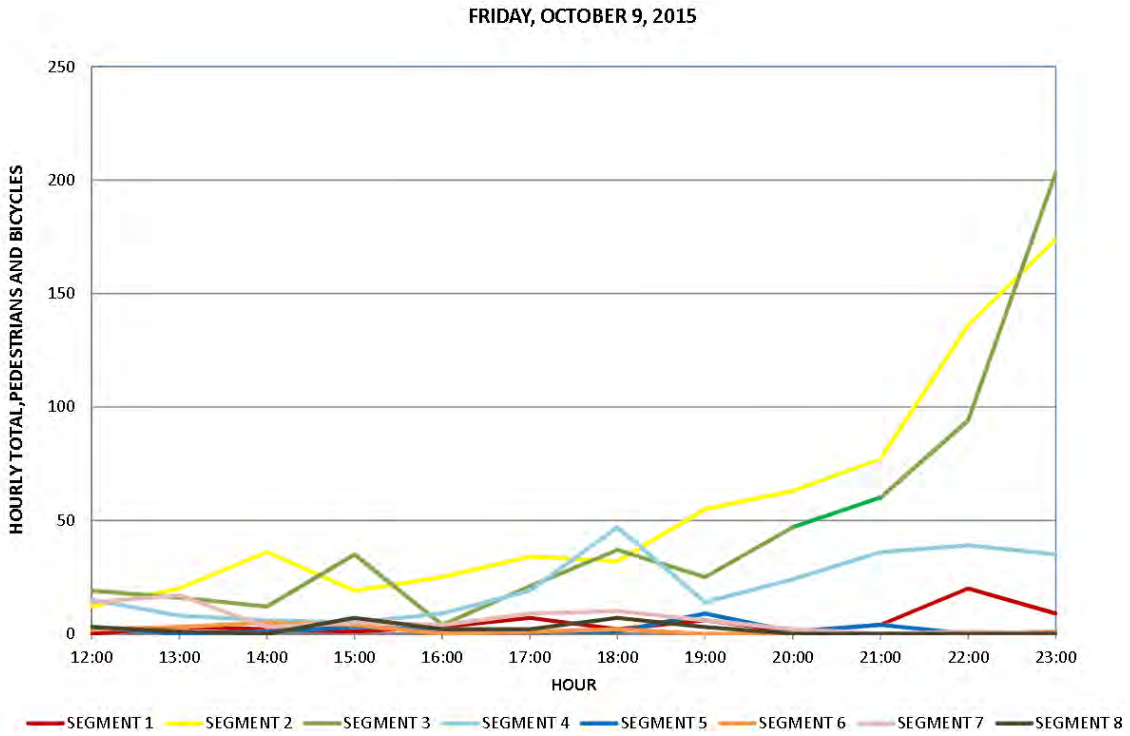


Figure 3 – Crossings by Hour and Segment

On Friday, 66 percent of the pedestrians and bicyclists were counted after 6:00 PM, and on Saturday, 83 percent of the pedestrians and bicyclists were recorded before 6:00 PM. Northbound and southbound pedestrian and bicyclist crossings at Gadsden Street and Colonial Drive were also counted. The total number of pedestrians and bicyclists crossing at the crosswalk at Gadsden Street was 15 on Thursday, 27 on Friday, and 36 on Saturday. At the Colonial Drive site, the total for Thursday, Friday, and Saturday was 27, 27, and 26 crossings, respectively, with even distribution throughout each of the days. The majority of all pedestrians at both sites were recorded on the east side of SR 61/Thomasville Road, as there is no sidewalk or shoulder on the west side of the roadway.

The FDOT Traffic Engineering Manual (TEM) Section 3.8.5 criteria for midblock crosswalks is under revision to reduce the minimum thresholds for the number of pedestrian crossings per hour. The existing criteria is 20+ pedestrians during any 1 hour or 60+ pedestrians over 4 hours. The new criteria is 20+ pedestrians during any 1 hour, or 18+ pedestrians per hour for 2 or more hours, or 15+ pedestrians per hour for 3+ hrs.

In summary, the following characteristics are based on the observed number of pedestrian and bicyclist crossings of SR 61/Thomasville Road:

- Count Segment 2 Block E, from Williams Street to 5th Avenue (south), which is the existing RRFB crosswalk, had the highest number of crossings. Hourly volumes ranged between 7 and 172 over the three days. Friday had the highest volumes with 10 of the 12 hour volumes ranging between

17 and 172 crossings per hour and steadily increasing between 6:00 PM and midnight. *This crossing meets the minimum pedestrian demand for a marked crosswalk.*

- Count Segment 3, from 5th Avenue (south) to 6th Avenue, had the next highest number of crossings. The highest number of crossings occurred on Friday. Hourly volumes ranged between 0 and 81 crossings per hour with increasing volumes between 8:00 PM and midnight. *The TEM volumes were met for the entire section combined (three blocks) for the three days and were also met for just the two blocks between 5th Avenue (south) and 6th Avenue.*
- On Friday, Count Segment 4, between 6th Avenue and 7th Avenue, had 19 or more crossings per hour during six of the 12 hours counted. Thursday and Saturday had 14 or less crossings per hour and therefore did not meet the minimum TEM crossing volumes for three days.
- Bicyclists accounted for minimal volumes overall with pedestrian group crossings making up the majority of the volume.
- At the 7th Avenue signalized intersection there were a total of 38 crossings across all legs of the intersection during the vehicle count period on Thursday, October 8.

Crash Analysis and Results

The crash data for this analysis was collected for a six-year period from 2009 through 2014. A detailed crash analysis was performed for the pedestrian and bicyclist crashes in the entire corridor and for all crashes at the signalized intersection of SR 61/Thomasville Road and 7th Avenue/Meridian Road. The crash data was limited to the Florida Traffic Crash Report – Long Form and the FDOT Crash Reporting System (CARS) reports.

Pedestrian and Bicyclist Crashes

In the six-year period from 2009 to 2014, there were a total of three pedestrian and five bicycle crashes in the corridor. There were three in 2009, three in 2011, and two in 2013. Three (38 percent) of the crashes occurred under night-time conditions, one on wet pavement and three (28 percent) were related to drugs or alcohol use. In general, the pedestrian crashes occurred in the higher pedestrian activity area within the two-lane section of SR 61/Thomasville Road and the bicycle crashes occurred in the six-lane divided section of SR 61/Thomasville Road. One of the pedestrian crashes resulted in a fatality but was attributed to complications from drug and alcohol use although her injuries were isolated to her knee. This crash occurred when the pedestrian crossed 5th Avenue during the day in a southbound direction and was struck by a westbound right-turn motorist. A bike crash occurred at 7th Avenue when a northbound motorist under the influence of alcohol struck a northbound bicyclist who was traveling in the roadway. A detailed table of the crashes is included in Appendix C along with the collision diagrams for the eight pedestrian and bicyclist crashes within the corridor.

The following summarizes the location and conditions of the eight pedestrian/bicyclist crashes:

- Bicyclist – SR 61/Thomasville Road at US 27/Monroe Street – bicyclist crossing driveway north of SR 61/Thomasville Road on west side was struck by an eastbound right-turn motorist (injury).
- Pedestrian – SR 61/Thomasville Road at Williams Street – pedestrian walking north across William Street was struck by a southbound left-turn motorist (night).
- Pedestrian – SR 61/Thomasville Road at 5th Avenue – pedestrian walking south across 5th Avenue was struck by a westbound right-turn motorist (fatal – see discussion above).
- Pedestrian – SR 61/Thomasville Road at 6th Avenue – two pedestrians were struck by a southbound motorist as they walked westbound across SR 61/Thomasville Road, south of the crosswalk at 6th Avenue (2 injuries - night).
- Bicyclist – SR 61/Thomasville Road at 7th Avenue – bicyclist struck by DUI motorist while both were traveling north in the travel lane, just north of 7th Avenue (injury – night).
- Bicyclist – SR 61/Thomasville Road at Pine Street – bicyclist traveling southbound across Pine Street was struck by a westbound right-turn motorist exiting Pine Street (injury).

- Bicyclist – SR 61/Thomasville Road at Glenview Drive – bicyclist (12-years old) traveling northbound across Glenview Drive in crosswalk was struck by an eastbound right-turn motorist (injury).
- Bicyclist – SR 61/Thomasville Road at Glenview Drive – bicyclist traveling north across driveway to bicycle shop was struck by a northbound right-turn motorist (injury).

The crash data indicates that the drivers were at-fault for seven of the eight crashes and were typically right-turning vehicles failing to yield the right-of-way. Six of the crashes involved a turning vehicle at a cross street or driveway striking a bicyclist or pedestrian. Only one of these occurred at a signalized intersection. Three of the bicycle crashes occurred as the bicyclist approached from the driver's right side and were therefore not visible as the driver looked for a gap in traffic. The crash analysis indicates a low incidence of crashes given the significant pedestrian/bicyclist activity and the traffic volumes in this corridor. The lower vehicle speeds (25 MPH) within the south section of the study corridor helps motorists to see and react, if necessary, to pedestrians and bicyclists in the area.

SR 61/Thomasville Road at 7th Avenue

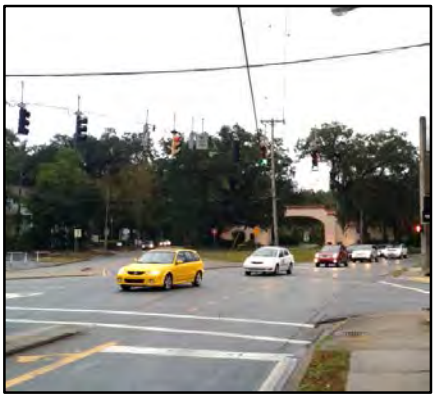
In the six-year period from 2009 to 2014 there were 44 crashes at the signalized intersection. Of the 44 crashes there were no fatalities and nine injuries (20 percent). About 27 percent of the crashes (12 crashes) occurred in non-daylight hours. Wet pavement was noted for three (7 percent) of the crashes. There were between seven and 11 crashes each year during each of the six years of data obtained. The lower incidence of injury crashes can be attributed to the slower speeds in this area of SR 61/Thomasville Road; posted at 25 MPH. Table 3 shows the breakdown of the highest occurrence of crash types for the intersection:

Top Crash Types	Total Crashes	Percent of Total
Angle	15	34%
Rear End	13	30%
Right-turn	6	14%
Sideswipe	4	9%

Table 3 – Predominant Crash Types

The predominant crash types occurring at the intersection are discussed below:

Right angle crashes - Of the 15 angle crashes, 13 occurred at the signal and two occurred at nearby driveways. The 13 right angle crashes occurring at the signal were reviewed and determined that there were six crashes in 2014 and one to two angle crashes during each of the prior five years. Four of the six angle crashes that occurred in 2014 were caused by a northbound motorist running the red signal indication. The crash reports noted that several of the at-fault drivers said they were distracted. Six (46 percent) of the 13 angle crashes at the signal occurred during dark conditions. The intersection was reviewed during the AM dark hours and appeared to be poorly illuminated. Additionally, the two northbound lenses are 45 degree arrow signals to direct motorists to stay right on SR 61/Thomasville Road through the curve and to restrict the left-turns. The red and green arrow indications are not as clearly visible indications as the solid red and green balls. The signals are also missing the standard retro-reflective yellow back plates that improve target visibility. The vehicle clearance intervals were reviewed. The yellow clearance



intervals meet the minimums. The red clearance intervals were determined to be longer than the 2.0 seconds required based on the field conditions.

Rear end crashes - The 13 rear end crashes occurred on the following approaches; five southbound, three northbound, two westbound and one southbound on Meridian Road. There were also two rear end crashes northbound that occurred north of the signal. Rear end crashes are typically the most predominant crash type at signalized intersections.

Right-turn crashes - The right-turn collisions occurred between the southbound Meridian Road right-turn and the westbound 7th Avenue movement. The southbound right-turners from Meridian Road are striking the westbound motorists on 7th Avenue due to improper lane changing. The crashes are due to the following; (1) Meridian Road motorists trying to access the gas station on the southwest corner, (2) motorist confusion with the one way operation and (3) motorists unaware of the westbound traffic approaching from the east. There were no reported crashes of this type in 2014.

Sideswipe crashes – Two of the four sideswipe crashes occurred westbound, downstream of the signal involving a southbound right-turn from Meridian Road improperly changing lanes. The other two sideswipe crashes occurred on the westbound approach; one motorist used the right-turn lane to travel straight and one motorist tried to use the through lane to turn right onto SR 61/Thomasville Road.

Pedestrian/bicyclist crashes - There was one bicycle crash at the intersection. As previously discussed, a DUI struck a bicycle at night. The bicycle did have proper night-time equipment.

Appendix C contains the collision diagrams for the 43 vehicle crashes and one bicycle crash at the intersection and the pedestrian and bicyclist crashes within the entire corridor.

Future Planned Improvements

Currently there are no future improvements programed in the Department's Work Program for this segment of SR 61/Thomasville Road or the Capital Region Transportation Planning Agency (CRTPA) adopted five-year program. There are unfunded intersection improvements within this segment and funded sidewalk projects in the vicinity but they are located outside the corridor.

Improvement Evaluations

Improvements proposed on the state highway system (on-system) are evaluated pursuant to FDOT guidelines and procedures for the types of improvements being considered. Based on potential reductions in pedestrian and vehicle related crash history, major improvement alternatives may include:

- Conventional roadway lighting.
- Midblock crosswalks located to meet current demand.
- Raised medians, refuge islands and/or channelizing techniques.
- Traffic signals, pedestrian-activated hybrid signals, or supplemental crosswalk beacons.
- SR 61/Thomasville Road/7th Avenue/Meridian Road signal phasing modification.
- SR 61/Thomasville Road/7th Avenue/Meridian Road signal conversion to a roundabout.

Conventional Roadway Lighting

FDOT Plans Preparation Manual (PPM) Chapter 7.3 (Lighting) provides standards for lighting on the state highway system. Existing lighting conditions within the corridor include the City of Tallahassee owned street lighting (luminaires) along the south side of the road only. The luminaires are mounted on the power poles that also carry the overhead power lines. Detailed information received from City of Tallahassee on the existing luminaires is included in Appendix D. The City of Tallahassee has also installed a number of light poles on the east side at the south end of the project by the US 27/Monroe Street intersection. The existing layout is a one-side pattern. The luminaire spacing ranges from approximately 100 feet to 180 feet between luminaires.

A design lighting analysis was conducted for the subject corridor to determine:

- If the existing lighting meets current FDOT standards.
- Identify possible improvements should the current illumination not meet current standards.

The analysis was performed using (1) three typical sections of the existing roadway, (2) assumed 250-watt luminaire and (3) mounting height to determine the pole spacing required to meet criteria. Using lighting software populated with the existing conditions information, it was determined that regardless of the pole spacing, the FDOT current minimum lighting criteria is not met as defined by the FDOT Plans Preparation Manual (PPM).

Two lighting alternatives were investigated to improve the lighting levels for the corridor:

- Replace existing lighting with utility conflict light poles on both sides of SR 61/Thomasville Road.
- Replace existing lighting with pole top decorative lighting on both sides of SR 61/Thomasville Road.

The three typical sections used for the analysis include:

- Typical Section 1: three 11-foot lanes and undivided (section from US 27/Monroe Street to 7th Avenue).
- Typical Section 2: four 12-foot lanes with a 35-foot raised grass median (north of 7th Avenue to 6-lane section).
- Typical Section 3: seven 12-foot lanes with 5-foot traffic separator (6-lane section to Betton Road/Bradford Road).

Alternative 1 – Install New Conventional Roadway Lighting with Utility Conflict Poles
This alternative replaces the existing lighting with new light poles designed and spaced to meet FDOT criteria. Since there are existing overhead power lines on the south side, utility conflict type light poles would be used to prevent violation of OSHA requirements. The poles would be installed on both the east and west sides using a staggered configuration. A lighting analysis was performed using the following typical parameters:

- 250-watt luminaire fixture
- 35-foot mounting height
- 15-foot arm length
- Eight-foot setback from back of curb

These parameters yield a light pole spacing of 345 feet for Typical Section 1 and 185 feet for Typical Sections 2 and 3 along both sides of SR 61/Thomasville Road which will provide adequate lighting levels and meet current FDOT lighting criteria.

Alternative 2 – Install New Conventional Roadway Lighting with Pole Top Luminaires on Decorative Poles
This alternative replaces the existing lighting with new light poles designed and spaced to meet FDOT criteria. There are existing overhead power lines on the south/east side. The Alternative 2 proposed lighting design considers use of decorative pole- top-mounted luminaires with a mounting height of 16 feet on both sides of the road. This type of light pole would be used to prevent violation of OSHA requirements. The poles would be installed on both sides using a staggered configuration. A lighting analysis was performed using the following typical parameters:

- 82-watt LED luminaire fixture for Typical Sections 1 and 2
- 136-watt LED luminaire fixture for Typical Section 3
- 16-foot mounting height on decorative pole
- Eight-foot setback from back of curb

These parameters yield a light pole spacing of 85 feet for Typical Sections 1 and 2 and 45 feet for Typical Section 3 staggered along both sides of SR 61/Thomasville Road which will provide adequate lighting levels and meet current FDOT lighting criteria. Although Alternative 2 provides better uniformity ratios, the cost is more than Alternative 1. Therefore, this alternative was not recommended.

Midblock Crosswalks

PPM Chapter 8 (Pedestrian, Bicycle and Transit Facilities) provides guidance on appropriate locations where a marked midblock crosswalk location may be considered. Based on conditions outlined in the PPM, the section between 5th Avenue and 6th Avenue meets the volume criteria but the intersection spacing of approximately 300-foot blocks (5th Avenue to Beard Street and Beard Street to 6th Avenue) is considered too close to consider midblock crosswalks (PPM recommends 660-foot spacing between intersections). Note that the existing mid-block crossing at 5th Avenue is located 180 feet south of 5th Avenue which does not meet the criteria. According to TEM Section 1.6, the Department may consider a variance to any of the recommended conditions for considering midblock crossing locations, including intersection spacing. The variance process requires approval from the District Traffic Operations Engineer (DTOE) and State Traffic Operations Engineer (STOE).

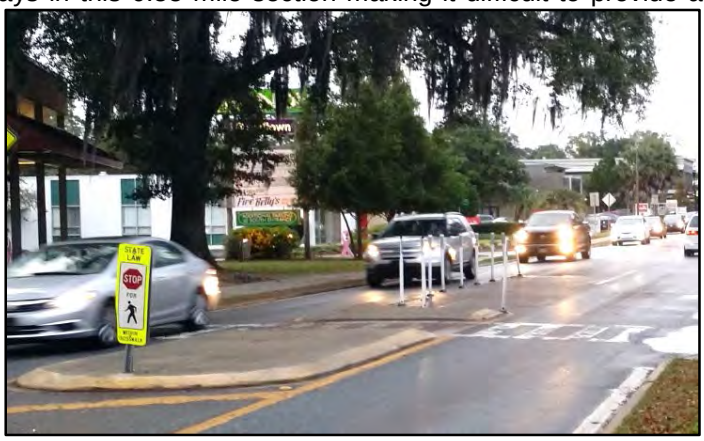
The PPM also recommends evaluating midblock crosswalks based on additional factors which are found in the FDOT Traffic Engineering Manual (TEM) Section 3.8 (Midblock Pedestrian Crosswalks) including:

- Midblock crosswalks should be illuminated;
- If Average Daily Traffic (ADT) is more than 12,000 vehicles per day (vpd) or crossings exceed 60 feet in distance, a raised median or refuge island is recommended for consideration; and
- Consideration should be given to relocating bus stops adjacent to planned midblock crossings, which will promote greater usage of the crossing facility.

Although the segment between 5th Avenue and 6th Avenue meets the volume criteria for a marked crosswalk, the minimum 660-foot distance to an intersection is not met and the crash history shows one pedestrian crash in this section. If implemented, a midblock crossing would need to be 300 feet from the adjacent crossing at the existing RRFB and 300 feet from the crosswalk at 6th Avenue. This location would be the Beard Street intersection. There are concerns with a crosswalk at this location during the PM peak hour when the northbound queues stack south past Beard Street. The TEM Section 3.8.5.4d states that a *proposed location must be outside the influence area of adjacent signalized intersections, including the limits of the auxiliary turn lanes. Where an adjacent intersection is signalized, the ends of standing queues should be observed not to extend to the proposed location.*

Raised Medians, Refuge Islands and/or Channelizing

The continuous left-turn and two-way-left-turn-lane along the south section of SR 61/Thomasville Road can make crossing difficult for pedestrians as they either wait for a gap across the three lanes of traffic or stand in the turn lane as a mid-way point with no barrier present from an approaching turning vehicle. The left-turn lanes are not only providing access to the seven cross streets located between US 27/Monroe Street and 7th Avenue, but there are also 35 driveways in this 0.55 mile section making it difficult to provide a raised median. Refuge islands could prove beneficial to provide a mid-way crossing point and protection from the left-turn traffic. Based on the volume of pedestrians and bicyclists crossing SR 61/Thomasville Road within this section and the adjacent land uses, refuge islands should be considered at locations where an existing turn lane would not be impacted. The photo to the right shows the median refuge at the existing RRFB.



Criteria for using channelizing, either through passive (landscaping) or active (fencing/barrier) are based primarily on engineering judgment. The effectiveness and proper use of midblock crosswalks as well as intersection

crosswalks can be enhanced through the use of channelizing when the need arises. To be most effective, channelizing limits should extend from one crossing location to the next. The crash data does not indicate a need to use channelizing techniques to control the pedestrian and bicyclist movements.

Traffic Signals, Pedestrian-Activated Hybrid Signals, or Supplemental Crosswalk Beacons
The TEM provides guidance for when to use various types of optional treatments at marked crosswalks ranging from the least restrictive types (midblock locations with signage and pavement markings only) to most restrictive types (fully signalized crossings with pedestrian activation). The TEM uses the Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices (MUTCD) as reference for considering traffic signals based on pedestrian volumes. Based on the MUTCD criteria, the minimum two-way traffic criteria and pedestrian volume criteria for a pedestrian signal would not be met for the four hours required for this corridor.

For other types of treatments, such as pedestrian activated devices that are intended to stop traffic, the TEM provides guidance on when these types of treatments may be appropriate. According to the TEM, the section of SR 61/Thomasville Road between 5th Avenue and 6th Avenue would meet criteria to consider optional pedestrian hybrid beacons or rectangular rapid flashing beacons (RRFBs) for enhanced safety if a mid-block crosswalk was approved for this location.

Traffic Signal Operations Analysis – SR 61/Thomasville Road at 7th Avenue/Meridian Road
The SR 61/Thomasville Road/7th Avenue/Meridian Road intersection is a 5-legged intersection currently operating as a 2-phase signal with pedestrian signals provided across the south leg of SR 61/Thomasville Road and the east and west legs of 7th Avenue. The fifth leg, Meridian Road, is not signalized but the southbound right-turn has Yield control. An unsignalized crosswalk is provided across this channelized right-turn. SR 61/Thomasville Road is two-way operation with restricted left-turns northbound. Seventh Avenue is one-way westbound and Meridian Road is two-way with only the southbound right-turn into the intersection. The intersection movements and phasing are currently restricted to minimize delays due to the volume of vehicles traveling during the peak hours.

The turning movement counts conducted in October 2015 indicate there were 3,085 vehicles during the 7:45-8:45 AM peak hour and 3,143 vehicles during the 4:45-4:45 PM peak hour. Mid-day volumes from 1:00-2:00 PM were 2,406 vehicles. The predominant movement in the AM peak is the SR 61/Thomasville Road southbound through movement with 1,030 vehicles and 821 northbound through vehicles during the PM peak hour. The peak hour turning movements are included on the condition diagram in Appendix A. The signal timings were obtained from the City of Tallahassee and used to analyze the existing operation for the three peak hours (AM, Midday, and PM) and the alternative of adding pedestrian signals across the north and west legs of the intersection. Leading Pedestrian Intervals (LPI) were added to the analysis by including a 3-second longer all-red time. The same cycle lengths were used for the before and after conditions. The results of the analyses are included in Appendix E. The Level of Service was determined to remain the same with the pedestrian crossings with approximately 2 to 6 seconds of additional delay experienced per cycle depending on the time of day.

Roundabout Analysis – SR 61/Thomasville Road at 7th Avenue/Meridian Road
At the intersection of SR 61/Thomasville Road and 7th Avenue/Meridian Road, an initial roundabout screening was performed. The intent was to identify whether a roundabout might be a viable alternative worthy of further investigation. This included identification of needed roundabout lane configurations, potential safety benefit, and possible “fatal flaws”. This memorandum summarizes the roundabout analyses, including: traffic operations for existing conditions, safety, conceptual roundabout layout, and benefit/cost. The detailed analysis is included in Appendix F.

In order to identify the potential footprint of a roundabout at the study intersection, operations analyses were conducted based upon existing 2015 AM and PM peak hour volumes. For the analysis, the SIDRA Intersection 6.1 software was applied using the SIDRA Standard capacity model (Environmental

Factor = 1.1). Based upon 2014 FDOT count data, the following AADTs were recorded for each leg: 22,500 on SR 61/Thomasville Road north of 7th Avenue and 22,000 south of 7th Avenue, 13,000 on 7th Avenue west of SR 61/Thomasville Road and 6,200 on Meridian Road, north of 7th Avenue and west of Proctor Road (1.5 miles west of the study intersection). Four-hour intersection turning movement volumes were collected on October 8, 2015. The 4-hour counts indicated the two peak hours during the day, an AM peak from 7:45 AM to 8:45 AM and a PM peak from 4:45 PM to 5:45 PM. During the peak hours, most individual intersection turning movements have truck percentages less than two percent, except for northbound SR 61/Thomasville Road in the AM, which had approximately 5 percent trucks.

Two lane-configuration options were evaluated. Option 1 provides lane configurations that generally match up with the existing numbers of lanes at the intersection (one entry and exit lane on the south leg, two entering and one exiting lane on the north leg, and one entering and exiting lane on the Meridian Drive approach. The westbound 7th Avenue approach was reduced from 3-lanes to two entering lanes for initial evaluation. This results in a partial two-lane roundabout configuration. Option 2 provides an additional through lane in each direction along SR 61/Thomasville Road. This would require widening of SR 61/Thomasville Road on the approaches upstream and downstream of the intersection, which would have additional property impacts beyond the immediate intersection. The 5-legged configuration introduces additional complications for achieving appropriate lane assignments. In order to avoid lane traps and exit-circulating conflicts, this option would require three-lanes for a portion of the circulatory roadway.

Based upon the operational analysis performed for the study intersection, a multilane roundabout is expected to be required. However, even with the use of two entry and exit lanes on the SR 61/Thomasville Road and 7th Avenue approaches, the two-lane roundabout is not expected to provide sufficient capacity to serve existing volumes. A two-lane roundabout is also expected to result in substantial property and business impacts to adjacent parcels. While a roundabout could be expected to help support reductions in crashes, the additional complexity of the 5-legged configuration and site constraints may limit a roundabout at this site from achieving the same level of crash reductions documented in prior studies. Given these considerations, a roundabout does not appear to be a practical option for further consideration at the study intersection.

Recommendations and Concepts

Based on results from this study, several appropriate options to enhance safety were evaluated including upgraded pedestrian facilities at the signalized intersections, upgraded roadway lighting, pedestrian refuge islands, traffic signal and sign upgrades to meet current standards and specific intersection improvements to enhance the safety and operations within the corridor. Further study, including count data and crash data analysis, is needed to implement access management improvements.

Based on the low number of pedestrian/bicyclist crashes, eight, within the corridor during the 6-year study period, the benefit cost analysis is expected to be difficult to support major improvements. The pedestrian/bicyclist count data and field observations support the need to ensure the corridor promotes pedestrian/bicyclist safety. Since the vehicle crashes were only obtained for the signalized intersection at SR 61/Thomasville Road and 7th Avenue/Meridian Road, a benefit/cost (B/C) ratio could not be determined for the improvements needed at the other five signalized intersections. Although not all the recommendations can be supported with a B/C analysis due to the additional data needed, a B/C and Net Present Value (NPV) analyses were performed to identify the measureable benefits associated with the recommendations for upgraded lighting. Countermeasures were obtained from the FHWA Crash Modification Factor (CMF) Clearinghouse in addition to the Crash Reduction Factor (CRF). The improvements that cannot be supported with a B/C at this time have been reviewed for crash reduction factors and are included in the following section.

Reduce Night-time (Non-Daylight) Crashes

- The corridor currently lacks adequate street lighting (as defined by FDOT criteria). The corridor has significant night-time pedestrian traffic between Monroe Street and 7th Avenue. The data analysis results determined there were a low percent of night-time crashes in the divided section of SR 61/Thomasville Road; the north end of the project study area. Approximately 27 percent of the crashes in the south end, undivided section, were night-time crashes. Therefore upgrading the lighting in this section is expected to provide a measureable reduction in non-daylight crashes, including crashes involving pedestrians. (32 percent CRF night-time crashes)

Implement Corridor Access Management Strategy

- Where possible, reduce driveway widths and consolidate driveways to minimize potential conflicts with bicyclists and pedestrians. (a reduction in 50 percent of driveways – 31 percent CRF all crashes)
- Obtain crash data and count data at the full median openings to determine closing and/or modifying (20 percent CRF all crashes). The full median opening locations along SR 61/Thomasville Road are as follows:
  - 9th Avenue
  - 350 feet north of 9th Avenue
  - Grape Street
  - Colonial Drive
  - Median Opening between Glenview Drive and Betton Road/Bradford Road
- Obtain crash and count data for the section of SR 61/Thomasville Road, between 5th Avenue (south) and 5th Avenue (north), including the Whataburger driveways, to study restricting the number of conflicting movements. The City of Tallahassee confirmed that they receive public complaints due to the amount of "friction" in the area.

Enhance Pedestrian / Bicyclist Crossing Safety

- Install pedestrian refuge islands in high pedestrian activity areas along SR 61/Thomasville Road between US 27/Monroe Street and 7th Avenue. Locate the islands to minimize impacts to turning movements.
- Consider providing additional RRFB located at Beard Street to provide controlled crossing for pedestrians crossing between 5th Avenue and 6th Avenue. The RRFB would be consistent with the one located at 5th Avenue.

Upgrade Signalized Intersections to MUTCD and FDOT Design Standards

- Upgrade intersection illumination (32 percent CRF night-time injury crashes).
- Provide one signal head per through lane (46 percent CRF angle crashes).
- Provide reflectorized back plates on all traffic signals (15 percent CRF all crashes).
- Replace 5-section protected/permissive left-turn signals with 4-section flashing yellow arrow signals (6.6 percent CRF all crashes, 14.7 percent CRF fatal/injury).
- Upgrade all crosswalks to high emphasis.
- Separate pedestrian pushbutton poles on each corner where possible.
- Install overhead illuminated street name signs (15 percent CRF for MUTCD signs – all injury crashes).
- Install advance NEXT SGNAL street name signs where possible (10 percent CRF – sideswipe crashes).
- Add TURNING VEHICLES YIELD TO PEDS (R10-15) signs at signalized intersections.

Site Specific Improvements at Signalized Intersections

<u>SR 61/Thomasville Road at US 27/Monroe Street</u>

- Install pedestrian crosswalks and signals across the north and east legs of the intersection.
- Reduce turning radius for the northbound right-turn and signalize right-turn.

- Realign the traffic signals on the southbound approach so they are not visible to the westbound approach motorists.
- Install optically programmed signals for southbound US 27/Monroe Street.
- Install delineator posts at E 1st Avenue to enforce the NO LEFT TURN sign.
- During the next RRR project mill the pavement on SR 61/Thomasville Road to remove the pavement drop-off edge that could be hazardous to a bicyclist or motorist.

SR 61/Thomasville Road at 6th Avenue

- Consider half-cycling the signal to reduce delays and long queues.
- Install DO NOT BLOCK INTERSECTION signs on SR 61/Thomasville Road and on 6th Avenue. This intersection is currently planned for pedestrian improvements.

SR 61/Thomasville Road at 7th Avenue

- Install pedestrian crosswalks and signals across the (1) north leg of SR 61/Thomasville Road, (2) the north leg of Meridian Road and (3) the entire west leg of 7th Avenue
- Signalize the southbound Meridian Road right-turn lane with right-turn arrow signals to stop motorists during a pedestrian actuation. Install NO TURN ON RED signs for pedestrian actuation.
- Install Leading Pedestrian Interval (LPI) for the crosswalks on the north, south and west legs.
- Install a 4-section flashing yellow arrow signal for the westbound and southbound right-turn lane movements and add blank-out signs for pedestrian actuation.
- Install an ADDED LANE sign (W4-3) for westbound 7th Avenue motorists to warn of the Meridian Road right-turn traffic.
- Install manufactured curbing (Kwik Kurb) downstream on the west side of the intersection to extend the channelized right-turn island. This will prohibit the Meridian Road southbound right-turn vehicles from accessing the gas station driveway
- Install overhead lane use signs on the span wire for westbound 7th Avenue motorists.
- Provide guidelines for the offset southbound SR 61/Thomasville Road through movement.
- Replace the NO LEFT TURN sign on the northbound SR 61/Thomasville Road approach with a NO TURNS sign.
- In advance of the intersection, install an overhead cantilever sign designating the through lane for SR 61/Thomasville Road and the right lane for Meridian Rd and 7th Avenue.

SR 61/Thomasville Road at Shopping Plaza

- Install guidelines on the side street to address the offset alignment.

SR 61/Thomasville Road at Glenview Drive

- Obtain traffic counts and crash data for the Glenview Drive intersection, the full median opening located 260 feet north, and the Betton Road/Bradford Road intersection to assess (1) adding a U-turn lane at Glenview Drive, (2) closing the median opening and (3) lengthening the northbound left-turn lane at Betton Road/Bradford Road.
- Install pedestrian crosswalk and signals on the north and east legs.

SR 61/Thomasville Road at Betton Road/Bradford Road

- Straighten out the crosswalk on the east leg.
- Remove the RIGHT LANE MUST TURN RIGHT signs on the northbound approach.
- Lengthen northbound left-turn lane.
- Lengthen southbound left-turn protected left-turn green times.
- Install ONLY pavement messages on the westbound approach.

Since standard signalization, signing, marking, and ADA upgrades would be incorporated with a RRR project, the concept plan in this study reflects only those designs that would be in addition to these upgrades to remedy existing known crash issues and to provide safer access for the significant pedestrian activity. These recommendations are included in Appendix G. Additionally, a B/C analysis was limited to the eight pedestrian/bicyclist crashes. A lighting B/C analysis was calculated since the number of night-time crashes was easily attainable from CARS. The concept plan is presented to the reader as one possible alternative to implementing these recommendations. Further discussion with local government agencies and vetting by the public is required to fully develop these recommendations into project-ready improvements.

Benefit Cost Analysis and Net Present Value

A Benefit Cost (B/C) ratio and Net Present Value (NPV) calculation was performed for those recommendations in which crash data was obtained for this study. The B/C Ratio and NPV are useful analysis tools when evaluating possible funding sources such as the Highway Safety Improvement Program (HSIP). Details of the B/C and NPV calculations are provided in Appendix H. The following recommendations were evaluated and included in the analysis:

(1) Roadway lighting for each of the three typical sections within the corridor.
(2) SR 61/Thomasville Road at 7th Avenue/Meridian Road Intersection Improvements

Reduce Night-time (Non-Daylight) Crashes

- Replace the Roadway Lighting for the section of SR 61/Thomasville Road between Monroe Street and Gadsden Street

Cost Estimate $540,000 (Includes Const. and PE/CEI)
B/C Ratio 1.55
NPV $68,996

- The consideration of upgrading the lighting along SR 61/Thomasville Road between Gadsden Street and Betton Road/Bradford Road was analyzed and determined that there were too few night-time crashes to justify this improvement. The back-up cost estimate and B/C analyses are included in Appendix H for reference.

SR 61/Thomasville Road at 7th Avenue/Meridian Road Signalized Intersection

- Install missing pedestrian features on the north and west legs and upgrade existing pedestrian features to meet current standards.
- Signalize Meridian Road southbound right-turn and add blank-out NO TURN ON RED sign during pedestrian actuation. Reduce turning lane width to reduce speeds.
- Restrict Meridian Road access to gas station driveway (100 percent CRF - right-turn crashes).
- Modify the signal heads for the southbound SR 61/Thomasville Road approach to two three-section balls and one four-section flashing yellow arrow. The FYA will be over the right-turn lane and on during the pedestrian phase of the west leg. Install LPI for the north, south and west legs of the intersection. The eat leg does not have any conflicting movements since it is one way.
- Upgrade all signal heads to LED and add back plates with yellow retro-reflective sheeting (15 percent CRF - all crashes).
- Upgrade the intersection lighting (16 percent CRF - injuries).
- Add overhead lane use signs for westbound approach.
- Add guidelines for the southbound through movement.

Cost Estimate $506,000 (Includes New Signal, Const. and PE/CEI)
B/C Ratio 1.67
NPV $113,220

Based on a B/C ratio of 1.55 for lighting the segment of SR 61/Thomasville Road between US 27/Monroe Street and Gadsden Street, the minimum threshold of B/C of 1.0 and a NPV greater than zero are met to consider upgrading the lighting through the Highway Safety Improvement Program (HSIP) funding. The B/C ratios are not met for the sections of SR 61/Thomasville Road between Gadsden Street and Betton Road/Bradford Road. The B/C ratio of 1.67 for the improvements at the signalized intersection of SR 61/Thomasville Road and 7th Avenue/Meridian Road are also greater than 1.0 to qualify for HSIP funding.

Conclusions

The results of this study indicate there are a low number of pedestrian and bicyclist crashes occurring within the corridor that can be corrected with proven countermeasures. With the crashes occurring at different locations throughout the corridor and typically at a driveway/side street, it is difficult to avoid these conflicts. The provision of a bicycle lane in this corridor would require significant reconstruction costs to provide a 7-foot bike lane. Even with a bike lane the bicyclists may still ride on the sidewalk, particularly in the 45 MPH speed zone, to provide a greater buffer from the vehicle traffic.

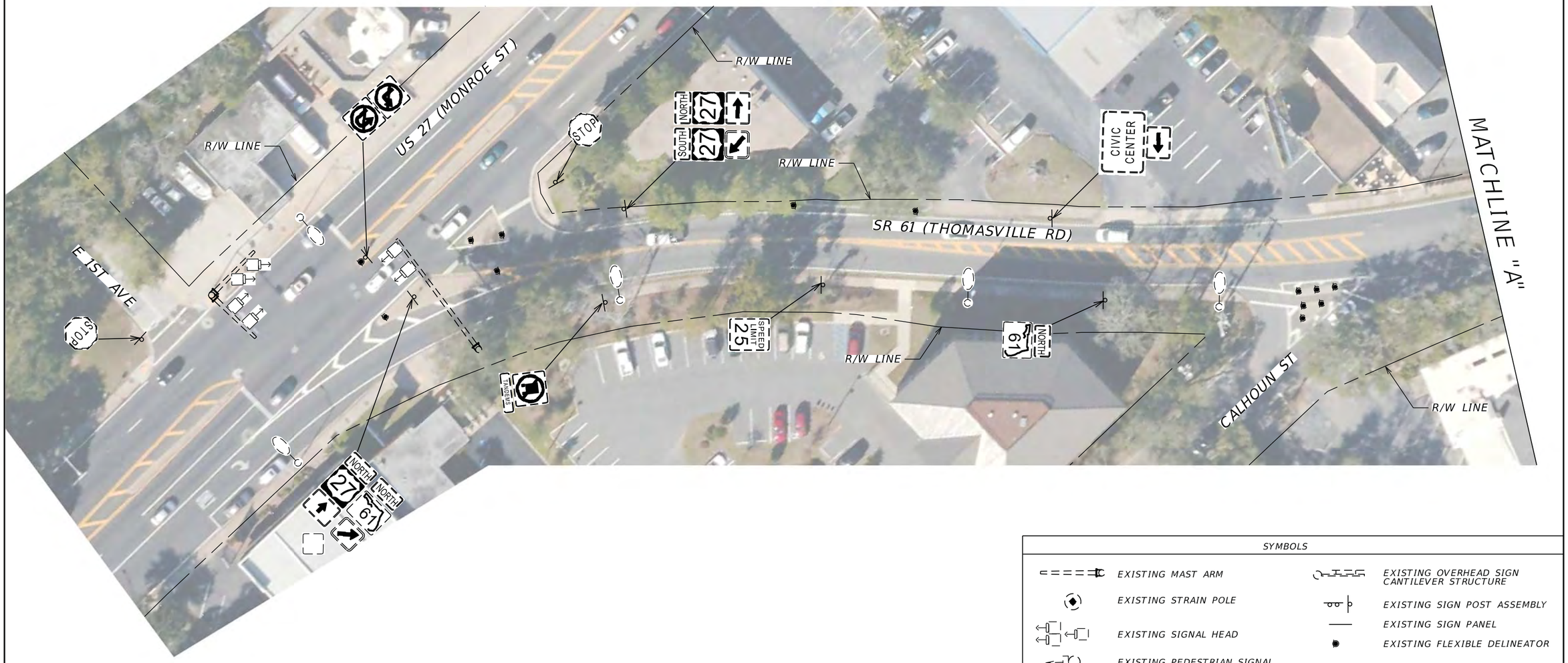
With the significant pedestrian activity in the corridor, corridor-wide pedestrian improvements are recommended. Many of these are upgrades to standards at the signalized intersections which can be implemented with a RRR project. Additionally, a significant percentage of pedestrians and bicyclists do not cross at marked crosswalks, even when crossing near an existing marked crosswalk. The existing conditions of the adjacent land uses and need for left-turn bays into these businesses rules out the option of installing a raised median throughout the corridor. Pedestrian refuge islands are recommended to allow for a two-step crossing for the pedestrians.

The study location at SR 61/Thomasville Road/7th Avenue/Meridian Road Roundabout Analysis determined that a multi-lane roundabout would be required while the capacity would still not be sufficient for the existing volumes. The roundabout would also result in significant impacts to the businesses. The 5-legged roundabout would also limit the safety benefits typically realized with a roundabout. For these reasons a roundabout is not recommended at this location.

The addition of crosswalks across all legs of the SR 61/Thomasville Road at 7th Avenue/Meridian Road intersection, with provision of a signalized stop condition when the pedestrians are crossing Meridian Road, is expected to create minimal additional delays during the pedestrian actuations. Both the signals and signing will need to be modified to limit the conflicts between the turning motorists and the concurrent pedestrian actuations. Since the signal span and signal heads appear old, it is anticipated that the entire signal will need to be replaced to implement needed upgrades.

Additional study is needed to justify closing or modifying median openings within the corridor and improving the traffic operations and safety near the 5th Avenue intersection.

Appendix A
Condition Diagram and Straight Line Diagram



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	EXISTING SIGNAL HEAD		EXISTING SIGN PANEL
	EXISTING PEDESTRIAN SIGNAL		EXISTING FLEXIBLE DELINEATOR
	EXISTING CCTV		EXISTING DELINEATOR/SIGNAGE ON METAL POLE
	EXISTING ROADWAY LIGHTING		EXISTING BUS STOP

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
61	LEON	

CONDITION DIAGRAM (1)

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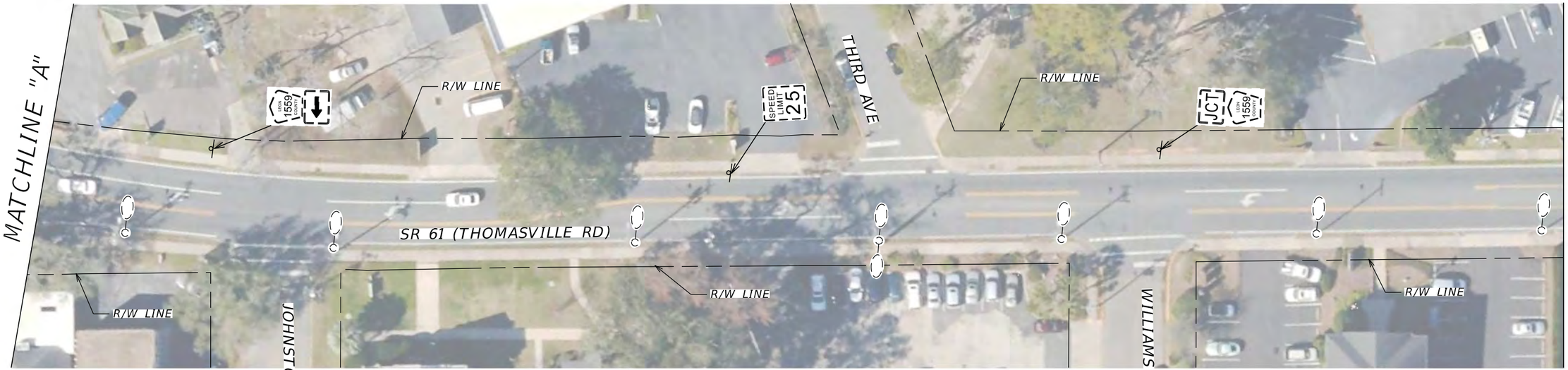

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- EXISTING DELINEATOR/SIGNAGE ON METAL POLE
- EXISTING BUS STOP

REVISIONS			
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

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CONDITION DIAGRAM (2)

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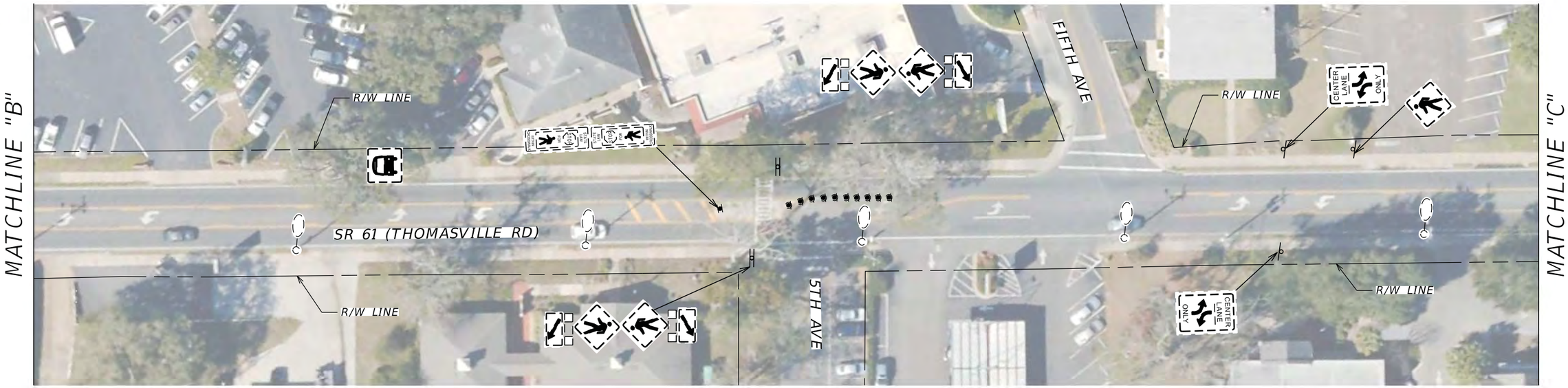

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EXISTING SIGNAL HEAD	EXISTING SIGN PANEL
EXISTING PEDESTRIAN SIGNAL	EXISTING FLEXIBLE DELINEATOR
EXISTING CCTV	EXISTING DELINEATOR/SIGNAGE ON METAL POLE
EXISTING ROADWAY LIGHTING	EXISTING BUS STOP

REVISIONS			
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
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CONDITION DIAGRAM (3)

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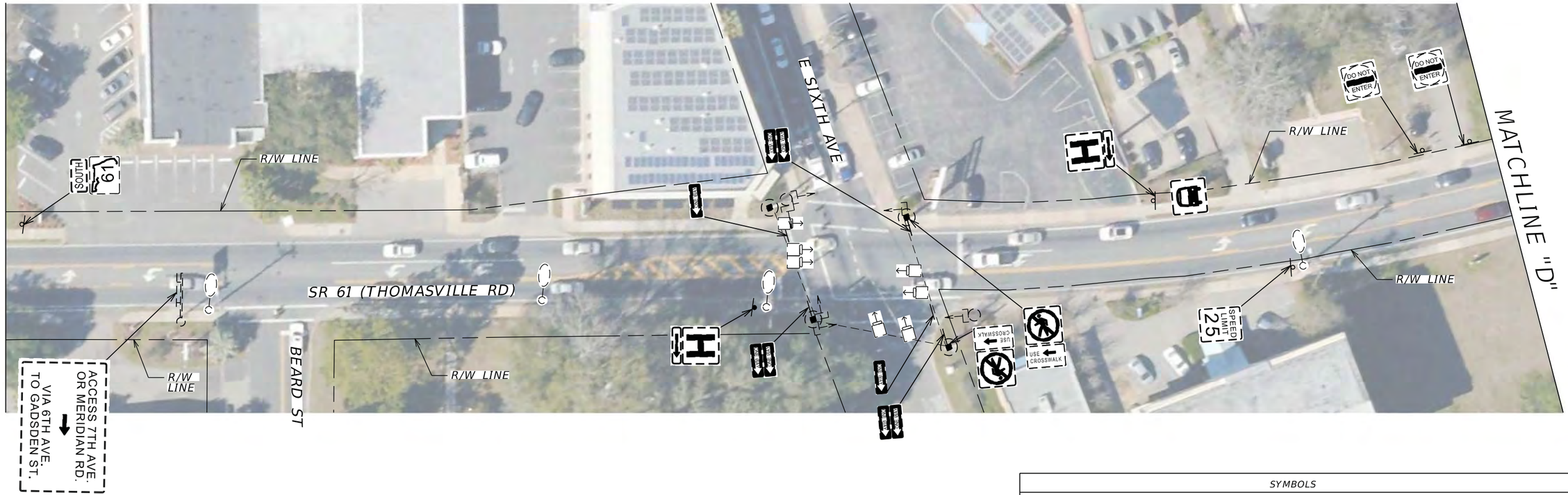

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- EXISTING DELINEATOR/SIGNAGE ON METAL POLE
- EXISTING BUS STOP

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DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
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CONDITION DIAGRAM (4)

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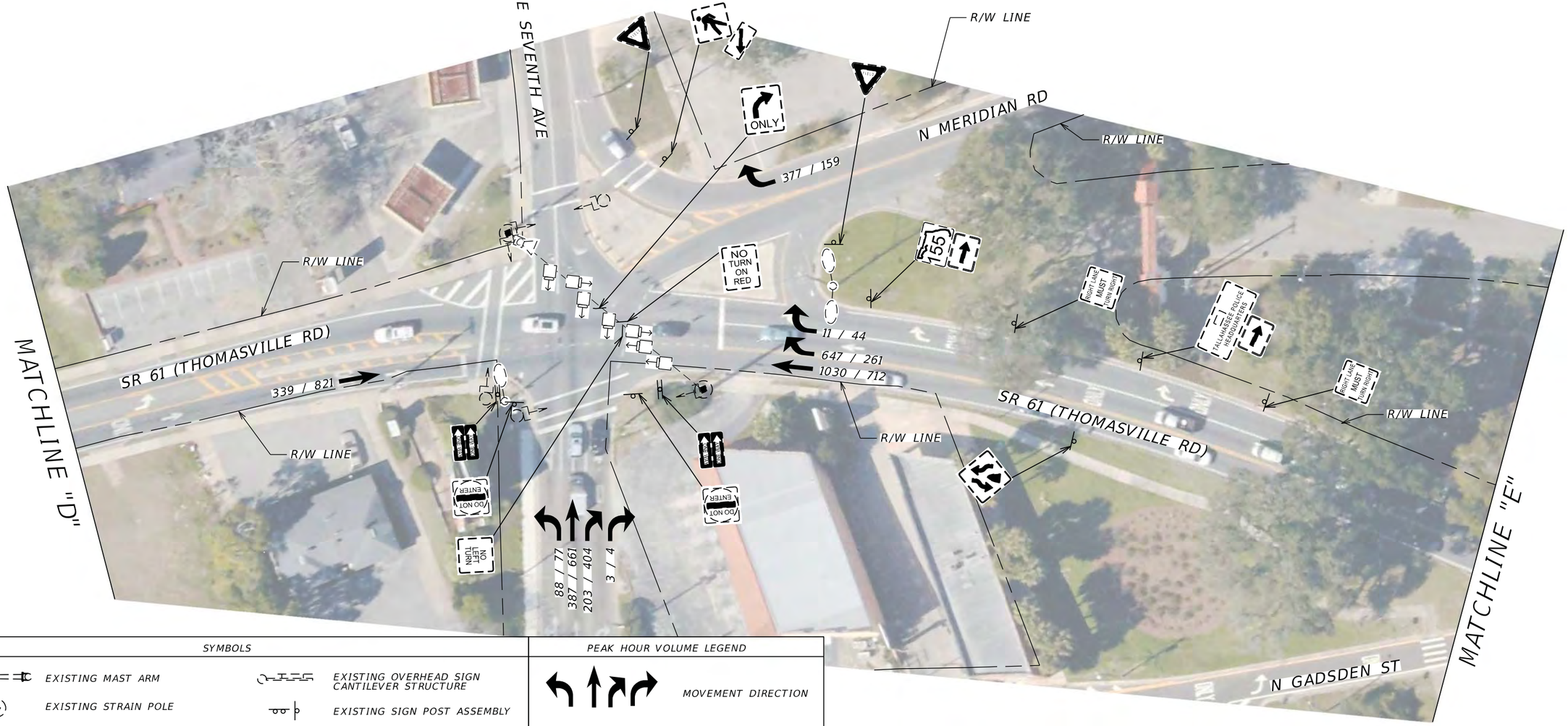

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			EXISTING FLEXIBLE DELINEATOR
	EXISTING PEDESTRIAN SIGNAL		EXISTING DELINEATOR/SIGNAGE ON METAL POLE
	EXISTING CCTV		EXISTING BUS STOP
	EXISTING ROADWAY LIGHTING		

PEAK HOUR VOLUME LEGEND	
	MOVEMENT DIRECTION
XXX / XXX	AM PEAK / PM PEAK

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
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CONDITION DIAGRAM (5)

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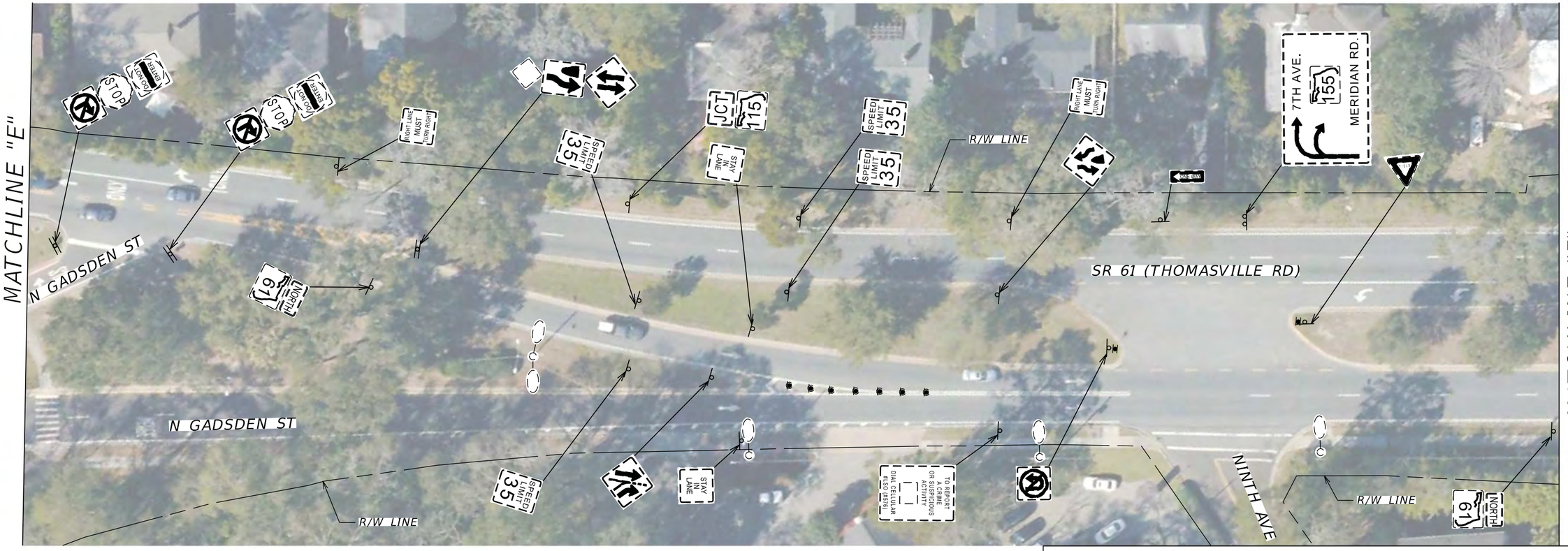

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EXISTING PEDESTRIAN SIGNAL	EXISTING FLEXIBLE DELINEATOR
EXISTING CCTV	EXISTING DELINEATOR/SIGNAGE ON METAL POLE
EXISTING ROADWAY LIGHTING	EXISTING BUS STOP

REVISIONS			
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STATE OF FLORIDA
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
61	LEON	

CONDITION DIAGRAM (6)

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SYMBOLS

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- EXISTING DELINEATOR/SIGNAGE ON METAL POLE
- EXISTING BUS STOP

REVISIONS

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STATE OF FLORIDA
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
61	LEON	

CONDITION DIAGRAM (7)

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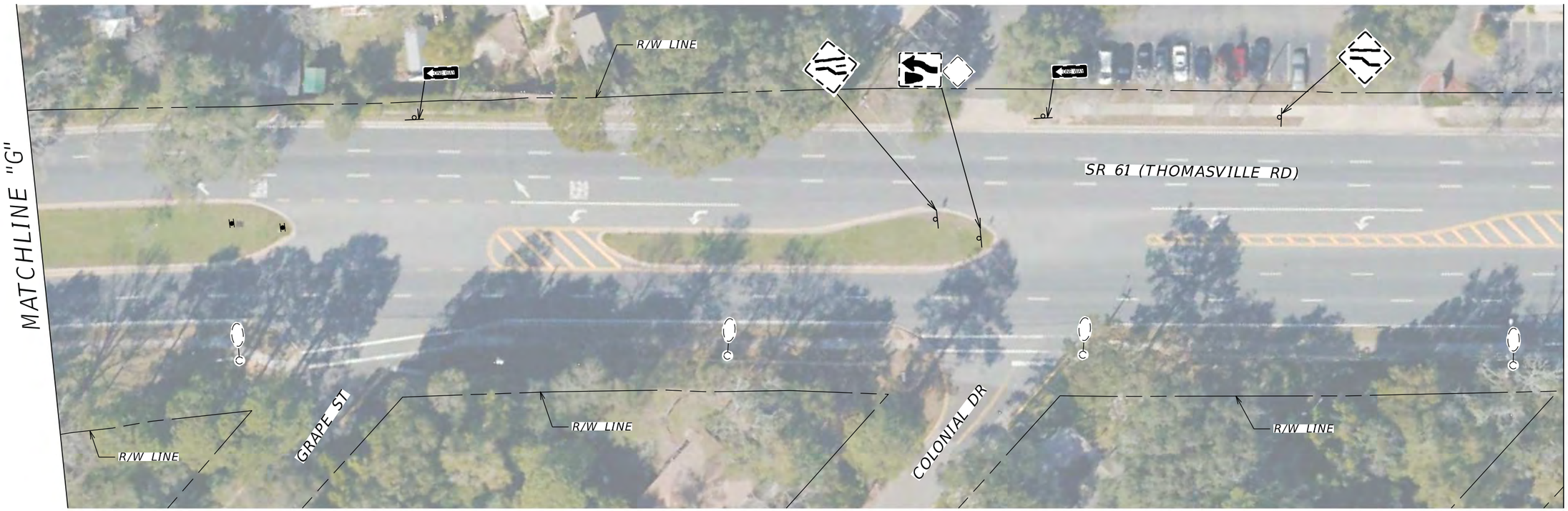

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EXISTING CCTV	EXISTING DELINEATOR/SIGNAGE ON METAL POLE
EXISTING ROADWAY LIGHTING	EXISTING BUS STOP

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
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CONDITION DIAGRAM (8)

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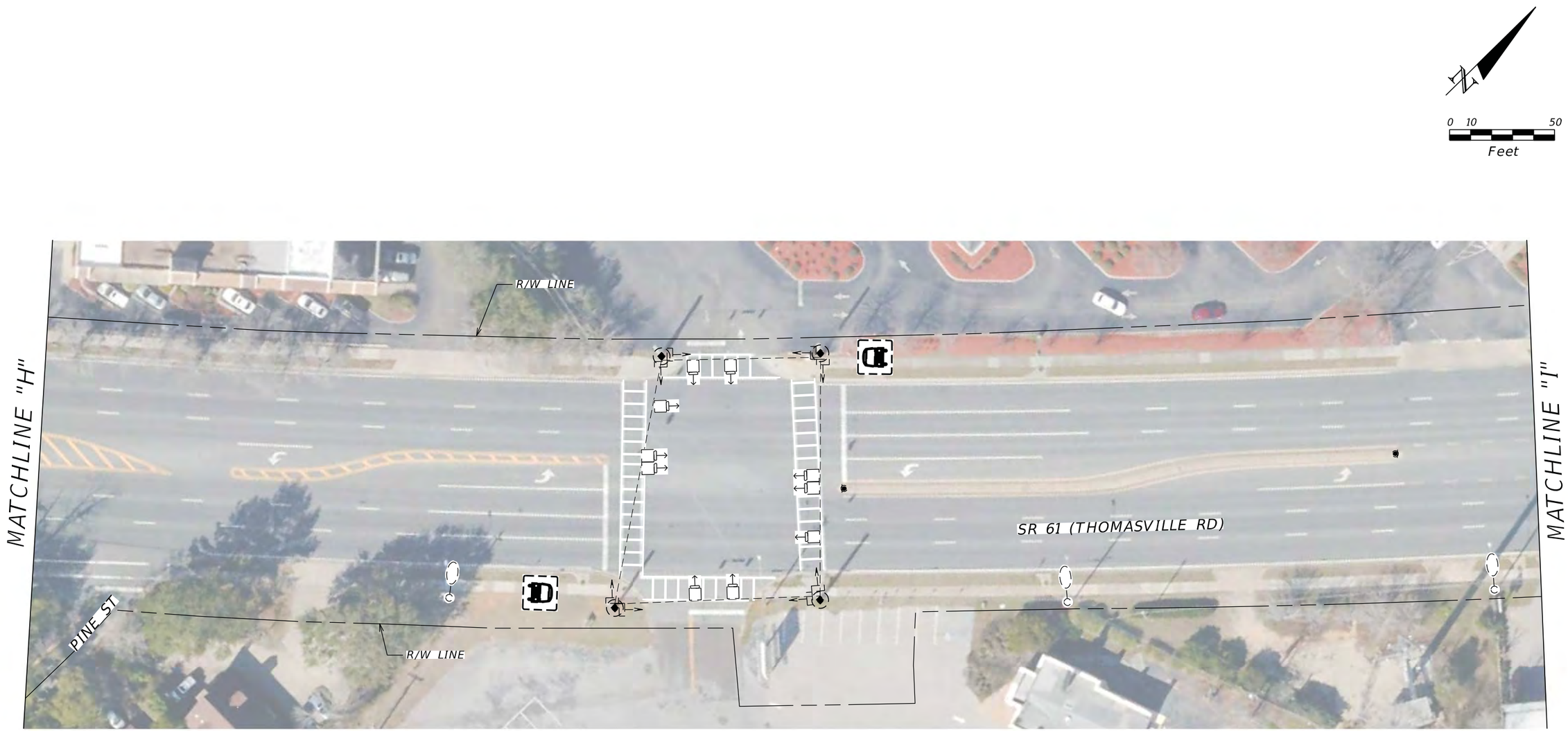

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	EXISTING ROADWAY LIGHTING		EXISTING BUS STOP

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
61	LEON	

CONDITION DIAGRAM (9)

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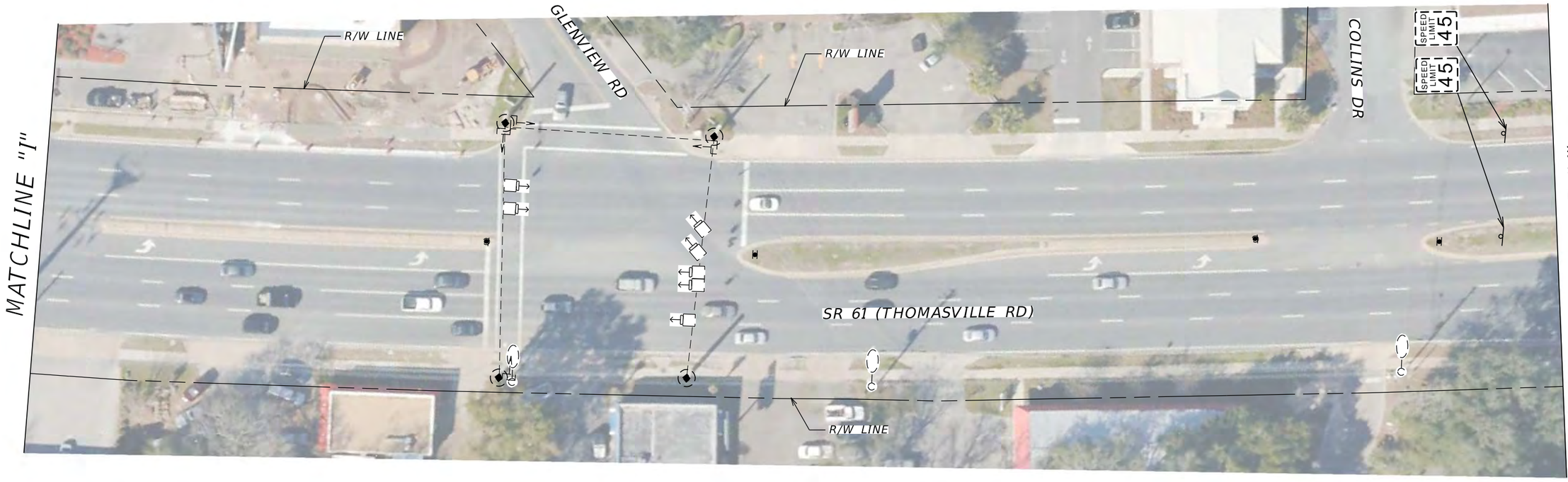

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EXISTING PEDESTRIAN SIGNAL		EXISTING FLEXIBLE DELINEATOR	
EXISTING CCTV		EXISTING DELINEATOR/SIGNAGE ON METAL POLE	
EXISTING ROADWAY LIGHTING		EXISTING BUS STOP	

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
61	LEON	

CONDITION DIAGRAM (10)

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	EXISTING CCTV		EXISTING DELINEATOR/SIGNAGE ON METAL POLE
	EXISTING ROADWAY LIGHTING		EXISTING BUS STOP

REVISIONS			
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STATE OF FLORIDA
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
61	LEON	

CONDITION DIAGRAM (11)

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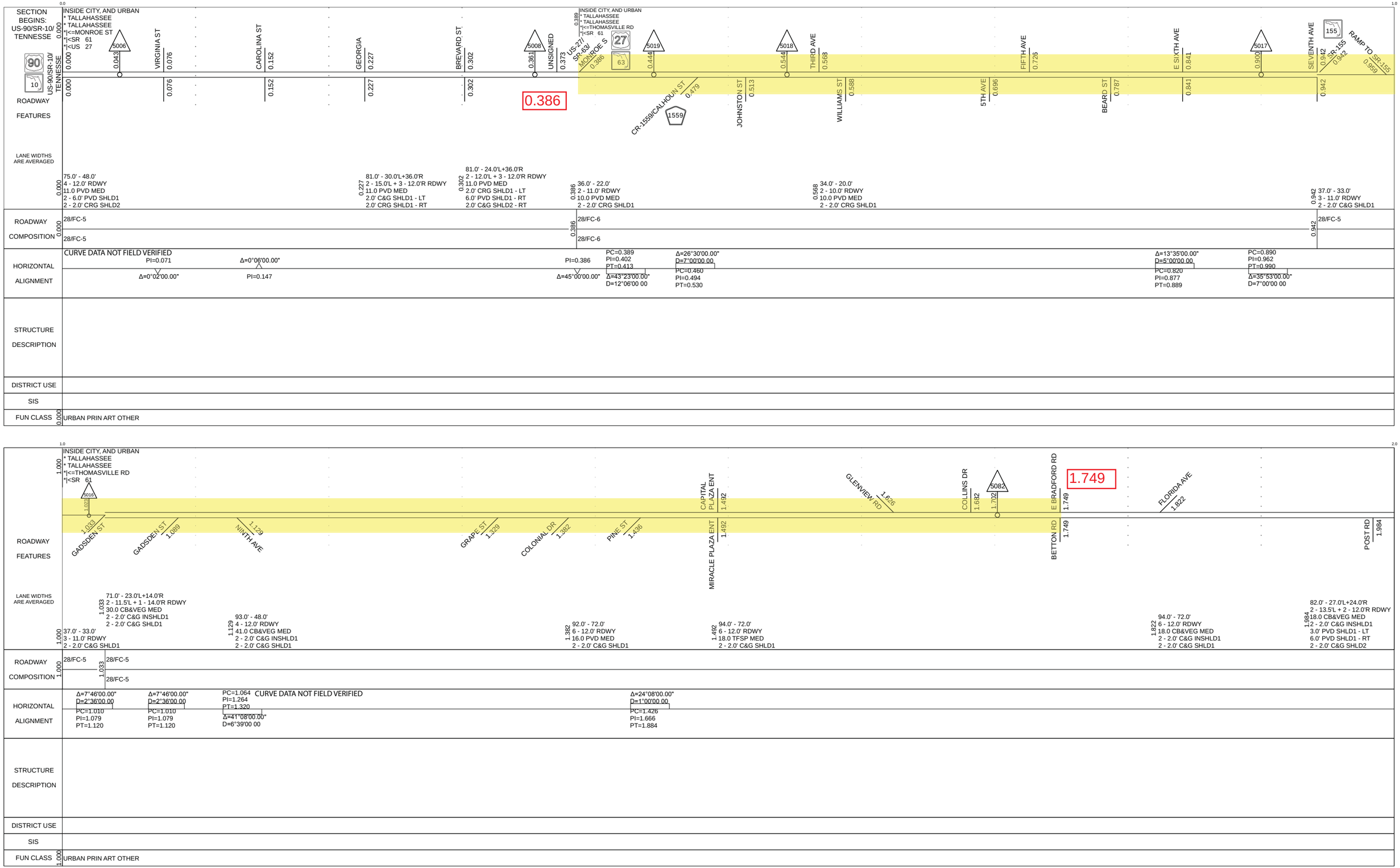
BY	NCG	FDOT/DE

BMP	EMP	INV	SLD REV
0.000	18.318	07/15/2015 METRIC	08/04/2015 METRIC
0.000	18.318	08/12/2014 FDOT	10/07/2014 HSA/DB

FLORIDA DEPARTMENT OF TRANSPORTATION

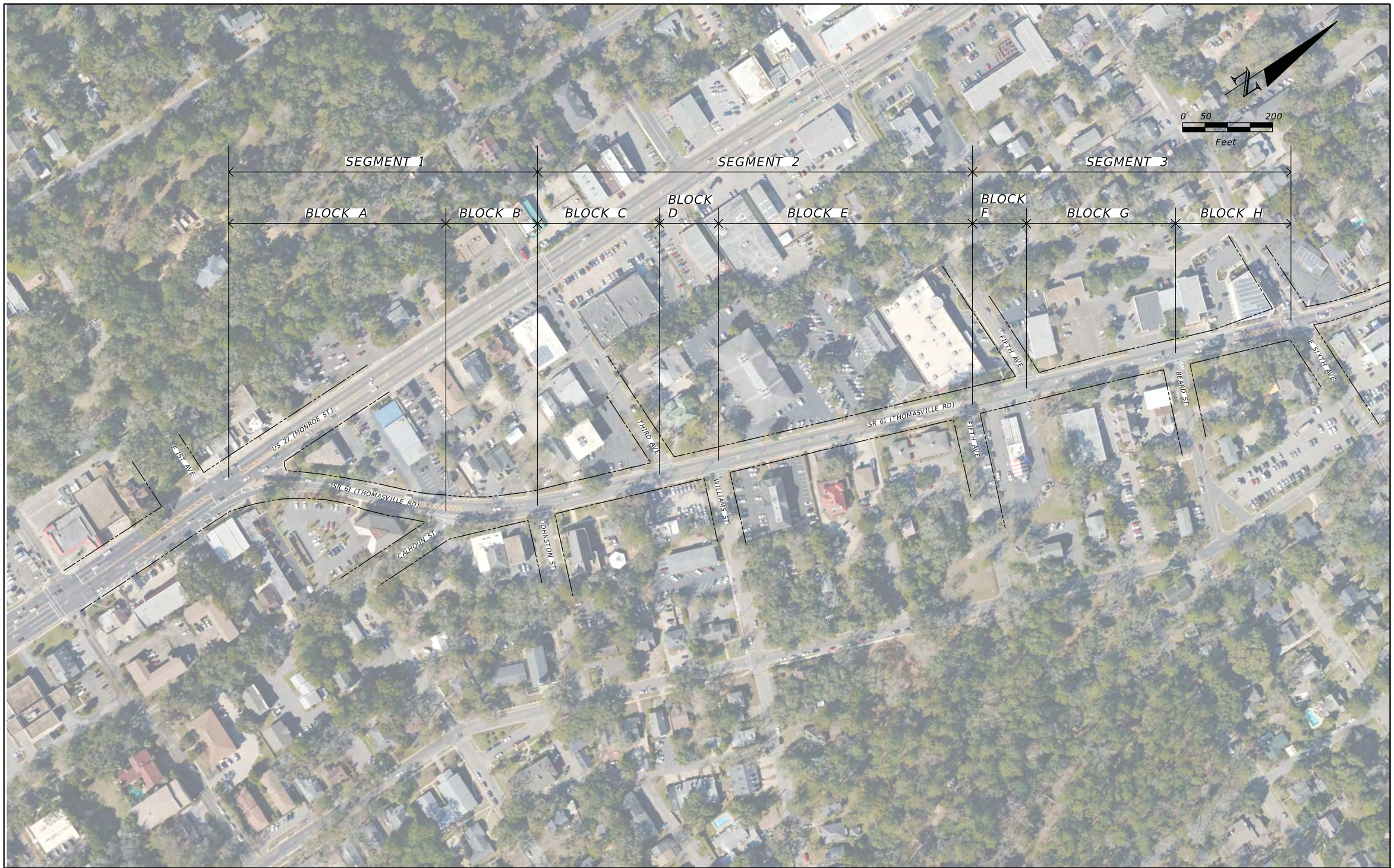
STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
02	US 27/US 319	SR 61	LEON	03	55050000	1 OF 10



Version: 1.4.2.24 08/04/2015

Appendix B
Pedestrian Count Information



REVISIONS						
DATE	DESCRIPTION	DATE	DESCRIPTION			

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
61	LEON	

COUNT SHEET (1)

SHEET NO. 1

$USER$ $DATE$ $TIME$ $FILE$

REVISIONS					STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	COUNT SHEET (2)	2
					61	LEON			

$USER$ $DATE$ $TIME$ $FILE$

REVISIONS					STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	COUNT SHEET (3)	3
					61	LEON			

David.Allen 3/23/2016 5:18:22 PM \\Dfs1\projects\00195\00195401.20\doc\reports\Condition_Diagram\MS\count_map_03.dg.

SR 61 (Thomasville Road) Pedestrian and Bicycle Crossing Counts
(SR 63 Monroe Street to Betton Road / Bradford Road)
October 8-10, 2015

Data was collected for pedestrian and bicycle crossings of SR-61 Thomasville Road from SR-63 (US-27) N. Monroe Street to Betton Road / Bradford Road. This overall segment was broken into eight segments, as per the project scope:

Segment 1 – from N. Monroe Street to Johnston Street
Segment 2 – from Johnston Street to 5th Avenue (South)
Segment 3 – from 5th Avenue (South) to 6th Avenue
Segment 4 – from 6th Avenue to 7th Avenue
Segment 5 – from 7th Avenue to Crosswalk at Gadsden Street
Segment 6 – from Colonial Drive to Shopping Center Signal
Segment 7 – from Shopping Center Signal to Glenview Drive
Segment 8 – from Glenview Drive to Betton Road / Bradford Road

Crossing counts were conducted from 12:00 noon to 12:00 midnight for three consecutive days, Thursday, October 8th, Friday, October 9th and Saturday, October 10th, 2015. Weather was clear with moderate temperatures for the three days of the study. Video cameras were used to record pedestrian activity and later reviewed to extract crossing data. Prior to conducting the counts, field research was conducted to determine the number of cameras required and the optimum locations for camera placement (depending on lines of sight and overlap throughout the segments). It was determined that a total of 14 cameras would be required to adequately cover the study area. **Exhibits A**, **B and C** show camera placement locations and positions throughout the study corridor. Video data files for each camera were reviewed daily following completion of each of the three days of data collection. In a couple of instances, missing video data was identified for a portion of time at a given location. Duplicate video data was collected for the same day of the week and hour(s) of the day to complete a full 12 hours for each of three days at every location.

Pedestrian and bicycle crossings were recorded in 15-minute intervals, by direction of crossing (eastbound or westbound). Crossing data collected within the segments noted above was further broken down into blocks, as follows:

Segment 1 – *Block A* (Monroe St to Calhoun St) and *Block B* (Calhoun St to Johnston St)
Segment 2 – *Block C* (Johnston St to 3rd Ave), *Block D* (3rd Ave to Williams St), and *Block E* (Williams St. to 5th Ave (South))
Segment 3 – *Block F* (5th Ave (South) to 5th Ave (North)), *Block G* (5th Ave (North) to Beard St), and *Block H* (Beard St to 6th Ave)
Segment 4 – *Block I* (6th Ave to 7th Ave)
Segment 5 – *Block J* (7th Ave to Gadsden crosswalk)
Segment 6 – *Block K* (Colonial Dr. to Pine St.) and *Block L* (Pine St to Shopping Center signal)
Segment 7 – *Block M* (Shopping Center signal to Glenview Dr.)
Segment 8 – *Block N* (Glenview Dr. to Bradford Rd – Betton Rd.) and *Block P* (Bradford Rd. – Betton Rd. to crosswalk)

Geographical positions of crossings occurring within each block were also noted. Crossings were indicated for the following locations within the blocks:

- ≠ at the intersection on the south end of the block
- ≠ midblock south of the block's midpoint
- ≠ midblock north of the block's midpoint
- ≠ at the intersection on the north end of the block

Pedestrians in groups were also recorded. The number of groups and pedestrians within each group are shown in the data, with group pedestrians summed in the pedestrian totals.

Northbound and southbound pedestrian and bicycle traffic was recorded at two locations:

1) Thomasville Road at the crosswalk at Gadsden Street (the north end of Segment 5)
2) Thomasville Road at Colonial Drive (the south end of Segment 6)

All pedestrians and bicycles entering or exiting Segments 5 and 6 along Thomasville Road were noted and recorded as northbound or southbound, on the east or west side of the roadway.

The video recorded for 12 hours on each day of the three day timeframe was viewed and the date/time-stamped crossing data was extracted using video-log software which exported the data directly into Excel spreadsheets for compilation.

NOTE: A crash involving two vehicles and a motorcycle stopping for the cross walk south of 5th Avenue occurred at 16:34 on Thursday, October 8. No noticeable delays or travel restrictions were observed due to this incident.

Figures 1A through **1H** present **daily totals** for each segment by block, location, and type of crossing, with geographical position of crosswalks indicated for each block.

Tables 1A through **1P** present crossing data for each block with **hourly summaries**, by location and type of crossing.

Figures 2A through **2C** graphically present the hourly totals of pedestrians and bicyclists within each of the eight segments, on Thursday, Friday, and Saturday, respectively. Segment 2 had the highest number of crossings with 359 on Thursday, 683 on Friday, and 207 on Saturday. It should be noted that for the three-day study period, an average of 75% of all pedestrian and bike crossings within Segment 2 occurred at the crosswalk south of 5th Avenue.

Daily comparisons of types of crossing (pedestrian, bicycle, or group) within each segment for each of the three days of the study are presented in **Figures 3A** through **3C.** Within the two busiest segments, Segment 2 and Segment 3, over half of all pedestrians crossing Thomasville Road were in groups.

Northbound and southbound pedestrian and bicycle data are presented in **Tables 2A and 2B**, summarized by the hour, with direction and side of roadway noted. The total number of pedestrians and bicyclists crossing at the crosswalk at Gadsden Street was 15 on Thursday, 27 on Friday, and 36 on Saturday. On Friday, 66% of the pedestrians and bicyclists counted occurred after 18:00, and on Saturday, 83% of the pedestrians and bicyclists recorded occurred before 18:00. At the Colonial Drive site, the total for Thursday, Friday, and Saturday were 27, 27, and 26, respectively, with even distribution throughout each of the days. The majority of all pedestrians at both sites were recorded on the east side of Thomasville Road, as there is no sidewalk or shoulder on the west side of the roadway.

EXHIBITS A, B, & C

VIDEO CAMERA PLACEMENT POSITIONS

EXHIBIT A

VIDEO CAMERA PLACEMENT POSITIONS

EXHIBIT B
VIDEO CAMERA PLACEMENT POSITIONS

EXHIBIT C
VIDEO CAMERA PLACEMENT POSITIONS

SEGMENT 1

NORTH MONROE STREET TO JOHNSTON STREET

(BLOCKS A & B)

FIGURE 1A
DAILY PEDESTRIAN AND BICYCLE CROSSING VOLUMES BY BLOCK, BY DIRECTION
SEGMENT 1 - MONROE STREET TO JOHNSTON STREET

SEGMENT 1 - MONROE ST. TO JOHNSON ST.

US-27
SR-63
MONROE ST.

N. CALHOUN ST.

JOHNSTON ST.

	BLOCK A										BLOCK B									
	EASTBOUND					WESTBOUND					EASTBOUND					WESTBOUND				
	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	EB TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	WB TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	EB TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	WB TOTAL
THURSDAY																				
PEDS*	4	8		1	13	5	4	4	1	14	1				1		1		2	3
BIKES						1				1	1				1	1				1
GROUP PEDS	2	5			7	2	2	2		6										
NUMBER OF GROUPS	1	2			3	1	1	1		3										
FRIDAY																				
PEDS*	13	8	3	4	28	8	3	5	6	22			1		1				3	3
BIKES	1				1	2				2									1	1
GROUP PEDS	2	6		2	10	4	2	2	2	10										
NUMBER OF GROUPS	1	3		1	5	2	1	1	1	5										
SATURDAY																				
PEDS*	7	2			9	6	1			7		1	1		2					
BIKES						2				2										
GROUP PEDS	3	2			5	4				4										
NUMBER OF GROUPS	1	1			2	2				2										

* INCLUDES GROUP PEDS

TABLE 1A
HOURLY PEDESTRIAN AND BICYCLE CROSSINGS BY DIRECTION , BY LOCATION
BLOCK A - SR-63 / MONROE STREET TO CALHOUN STREET

X (Y) -INDICATES NUMBER OF PEDESTRIANS IN GROUP AND (NUMBER OF GROUPS)

THURSDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*										
	BIKES										
	GROUPS										
13:00	PEDS*		1			1		1			1
	BIKES										
	GROUPS										
14:00	PEDS*										
	BIKES										
	GROUPS										
15:00	PEDS*						1				1
	BIKES										
	GROUPS										
16:00	PEDS*										
	BIKES										
	GROUPS										
17:00	PEDS*		3			3					
	BIKES										
	GROUPS		2 (1)			2 (1)					
18:00	PEDS*										
	BIKES						1				1
	GROUPS										
19:00	PEDS*								1		1
	BIKES										
	GROUPS										
20:00	PEDS*	1				1					
	BIKES										
	GROUPS										
21:00	PEDS*						2		2		4
	BIKES										
	GROUPS						2 (1)		2 (1)		4 (2)
22:00	PEDS*	2			1	3		2			2
	BIKES										
	GROUPS	2 (1)				2 (1)		2 (1)			2 (1)
23:00	PEDS*	1	4			5	2	1	1	1	5
	BIKES										
	GROUPS		3 (1)			3 (1)					
	TOTAL	4	8		1	13	6	4	4	1	15

FRIDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*										
	BIKES										
	GROUPS										
13:00	PEDS*		1	1		2	1				1
	BIKES										
	GROUPS										
14:00	PEDS*									1	1
	BIKES						1				1
	GROUPS										
15:00	PEDS*	1				1					
	BIKES										
	GROUPS										
16:00	PEDS*							2			2
	BIKES	1				1					
	GROUPS							2 (1)			2 (1)
17:00	PEDS*		4		1	5					
	BIKES										
	GROUPS		4 (2)			4 (2)					
18:00	PEDS*										
	BIKES						1				1
	GROUPS										
19:00	PEDS*	2		1		3			1	1	2
	BIKES										
	GROUPS										
20:00	PEDS*	1				1					
	BIKES										
	GROUPS										
21:00	PEDS*	2				2	2				2
	BIKES										
	GROUPS	2 (1)				2 (1)	2 (1)				2 (1)
22:00	PEDS*	5	3	1	3	12	3		2	3	8
	BIKES										
	GROUPS	4 (2)	2 (1)		2 (1)	8 (4)	2 (1)		2 (1)	2 (1)	6 (3)
23:00	PEDS*	2				2	2	1	2	1	6
	BIKES										
	GROUPS										
	TOTAL	14	8	3	4	29	10	3	5	6	24

SATURDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*						1				1
	BIKES										
	GROUPS										
13:00	PEDS*		2			2					
	BIKES						1				1
	GROUPS		2 (1)			2 (1)					
14:00	PEDS*	2				2	2				2
	BIKES						1				1
	GROUPS						2 (1)				2 (1)
15:00	PEDS*	3				3	1				1
	BIKES										
	GROUPS	3 (1)				3 (1)					
16:00	PEDS*										
	BIKES										
	GROUPS										
17:00	PEDS*										
	BIKES										
	GROUPS										
18:00	PEDS*							1			1
	BIKES										
	GROUPS										
19:00	PEDS*										
	BIKES										
	GROUPS										
20:00	PEDS*										
	BIKES										
	GROUPS										
21:00	PEDS*	2				2					
	BIKES										
	GROUPS										
22:00	PEDS*										
	BIKES										
	GROUPS										
23:00	PEDS*						2				2
	BIKES										
	GROUPS						2 (1)				2 (1)
	TOTAL	7	2			9	8	1			9

*** INCLUDES GROUP PEDS**

TABLE 1B
HOURLY PEDESTRIAN AND BICYCLE CROSSINGS BY DIRECTION , BY LOCATION
BLOCK B - CALHOUN STREET TO JOHNSTON STREET

X (Y) -INDICATES NUMBER OF PEDESTRIANS IN GROUP AND (NUMBER OF GROUPS)

THURSDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*										
	BIKES										
	GROUPS										
13:00	PEDS*										
	BIKES										
	GROUPS										
14:00	PEDS*										
	BIKES										
	GROUPS										
15:00	PEDS*									1	1
	BIKES										
	GROUPS										
16:00	PEDS*									1	1
	BIKES										
	GROUPS										
17:00	PEDS*										
	BIKES	1				1					
	GROUPS										
18:00	PEDS*										
	BIKES										
	GROUPS										
19:00	PEDS*	1				1					
	BIKES										
	GROUPS										
20:00	PEDS*							1			1
	BIKES						1				1
	GROUPS										
21:00	PEDS*										
	BIKES										
	GROUPS										
22:00	PEDS*										
	BIKES										
	GROUPS										
23:00	PEDS*										
	BIKES										
	GROUPS										
	TOTAL	2				2	1	1		2	4

FRIDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
	PEDS*										
	BIKES										
	GROUPS										
	PEDS*										
	BIKES										
	GROUPS										
	PEDS*										
	BIKES										
	GROUPS										
	PEDS*										
	BIKES										
	GROUPS										
	PEDS*									2	2
	BIKES										
	GROUPS										
	PEDS*									1	1
	BIKES										
	GROUPS										
	PEDS*										
	BIKES									1	1
	GROUPS										
	PEDS*										
	BIKES										
	GROUPS										
	PEDS*			1		1					
	BIKES										
	GROUPS										
	TOTAL			1		1				4	4

SATURDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
	PEDS*										
	BIKES										
	GROUPS										
	PEDS*		1			1					
	BIKES										
	GROUPS										
	PEDS*										
	BIKES										
	GROUPS										
	PEDS*										
	BIKES										
	GROUPS										
	PEDS*										
	BIKES										
	GROUPS										
	PEDS*										
	BIKES										
	GROUPS										
	PEDS*										
	BIKES										
	GROUPS										
	PEDS*			1		1					
	BIKES										
	GROUPS										
	PEDS*										
	BIKES										
	GROUPS										
	TOTAL		1	1		2					

*** INCLUDES GROUP PEDS**

SEGMENT 2

JOHNSTON STREET TO 5TH AVENUE (SOUTH)

(BLOCKS C,D, & E)

FIGURE 1B
DAILY PEDESTRIAN AND BICYCLE CROSSING VOLUMES BY BLOCK, BY DIRECTION
SEGMENT 2 - JOHNSTON STREET TO 5TH AVENUE (SOUTH)

SEGMENT 2 - JOHNSTON ST. TO 5TH AVE. (SOUTH)

JOHNSTON ST. | 3RD AVE. | WILLIAMS ST. | CROSSWALK | 5TH AVE. (SOUTH)

	BLOCK C										BLOCK D										BLOCK E									
	EASTBOUND					WESTBOUND					EASTBOUND					WESTBOUND					EASTBOUND					WESTBOUND				
	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	EB TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	WB TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	EB TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	WB TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	EB TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	WB TOTAL
THURSDAY																														
PEDS*	3		4	5	12	1	3	2	4	10	1		1	3	5	7		1	2	10	7	5	9	124	145	7	11	15	136	169
BIKES		1	1		2						1				1							1		3	4			1		1
GROUP PEDS				2	2		2	2	3	7				2	2	4				4	4	4		62	70	5	6	9	72	92
NUMBER OF GROUPS				1	1		1	1	1	3				1	1	2				2	2	1		28	31	2	2	4	31	39
FRIDAY																														
PEDS*	1	2	9	5	17		2	2	20	24	3	4	7	2	16	2	10	6		18	7	3	10	158	178	2	6	39	372	419
BIKES	1		1		2				1	1							1			1				2	2	1		1	3	5
GROUP PEDS			7	2	9			2	15	17	3	2	6	2	13		10	4		14	5		4	91	100		2	26	302	330
NUMBER OF GROUPS			3	1	4			1	6	7	1	1	1	1	4		5	2		7	2		1	37	40		1	9	94	104
SATURDAY																														
PEDS*				1	1	2		7		9	2			1	3	1	1			2	4	5	3	84	96	3	3	3	77	86
BIKES								1		1												1	2	3	6				3	3
GROUP PEDS						2		7		9	2				2						2	4	2	58	66		2	2	44	48
NUMBER OF GROUPS						1		3		4	1				1						1	2	1	23	27		1	1	18	20

* INCLUDES GROUP PEDS

TABLE 1C
HOURLY PEDESTRIAN AND BICYCLE CROSSINGS BY DIRECTION , BY LOCATION
BLOCK C - JOHNSTON STREET TO 3RD AVENUE

X (Y) -INDICATES NUMBER OF PEDESTRIANS IN GROUP AND (NUMBER OF GROUPS)

THURSDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*			3	5	8			2		2
	BIKES		1			1					
	GROUPS				2 (1)	2 (1)			2 (1)		2 (1)
13:00	PEDS*									3	3
	BIKES										
	GROUPS									3 (1)	3 (1)
14:00	PEDS*									1	1
	BIKES										
	GROUPS										
15:00	PEDS*						1	1			2
	BIKES										
	GROUPS										
16:00	PEDS*	1				1					
	BIKES										
	GROUPS										
17:00	PEDS*										
	BIKES			1		1					
	GROUPS										
18:00	PEDS*										
	BIKES										
	GROUPS										
19:00	PEDS*										
	BIKES										
	GROUPS										
20:00	PEDS*	2				2					
	BIKES										
	GROUPS										
21:00	PEDS*			1		1					
	BIKES										
	GROUPS										
22:00	PEDS*							2			2
	BIKES										
	GROUPS							2 (1)			2 (1)
23:00	PEDS*										
	BIKES										
	GROUPS										
	TOTAL	3	1	5	5	14	1	3	2	4	10

FRIDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*									2	2
	BIKES										
	GROUPS									2 (1)	2 (1)
13:00	PEDS*			1		1				6	6
	BIKES										
	GROUPS									4 (2)	4 (2)
14:00	PEDS*				5	5					
	BIKES									1	1
	GROUPS				2 (1)	2 (1)					
15:00	PEDS*									2	2
	BIKES										
	GROUPS									2 (1)	2 (1)
16:00	PEDS*										
	BIKES										
	GROUPS										
17:00	PEDS*	1				1					
	BIKES	1				1					
	GROUPS										
18:00	PEDS*									2	2
	BIKES			1		1					
	GROUPS										
19:00	PEDS*									5	5
	BIKES										
	GROUPS									4 (1)	4 (1)
20:00	PEDS*			4		4			2	3	5
	BIKES										
	GROUPS			4 (2)		4 (2)			2 (1)	3 (1)	5 (2)
21:00	PEDS*			3		3		2			2
	BIKES										
	GROUPS			3 (1)		3 (1)					
22:00	PEDS*		2	1		3					
	BIKES										
	GROUPS										
23:00	PEDS*										
	BIKES										
	GROUPS										
	TOTAL	2	2	10	5	19		2	2	21	25

SATURDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*										
	BIKES										
	GROUPS										
13:00	PEDS*				1	1					
	BIKES										
	GROUPS										
14:00	PEDS*										
	BIKES										
	GROUPS										
15:00	PEDS*										
	BIKES										
	GROUPS										
16:00	PEDS*										
	BIKES										
	GROUPS										
17:00	PEDS*										
	BIKES										
	GROUPS										
18:00	PEDS*								2		2
	BIKES										
	GROUPS								2 (1)		2 (1)
19:00	PEDS*						2				2
	BIKES										
	GROUPS						2 (1)				2 (1)
20:00	PEDS*								2		2
	BIKES										
	GROUPS								2 (1)		2 (1)
21:00	PEDS*								3		3
	BIKES										
	GROUPS								3 (1)		3 (1)
22:00	PEDS*										
	BIKES								1		1
	GROUPS										
23:00	PEDS*										
	BIKES										
	GROUPS										
	TOTAL				1	1	2		8		10

* INCLUDES GROUP PEDS

TABLE 1D
HOURLY PEDESTRIAN AND BICYCLE CROSSINGS BY DIRECTION , BY LOCATION
BLOCK D - 3RD AVENUE TO WILLIAMS STREET

X (Y) -INDICATES NUMBER OF PEDESTRIANS IN GROUP AND (NUMBER OF GROUPS)

THURSDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*	1				1					
	BIKES	1				1					
	GROUPS										
13:00	PEDS*						7			1	8
	BIKES										
	GROUPS						4 (2)				4 (2)
14:00	PEDS*				1	1					
	BIKES										
	GROUPS										
15:00	PEDS*										
	BIKES										
	GROUPS										
16:00	PEDS*								1		1
	BIKES										
	GROUPS										
17:00	PEDS*										
	BIKES										
	GROUPS										
18:00	PEDS*										
	BIKES										
	GROUPS										
19:00	PEDS*				2	2				1	1
	BIKES										
	GROUPS				2 (1)	2 (1)					
20:00	PEDS*			1		1					
	BIKES										
	GROUPS										
21:00	PEDS*										
	BIKES										
	GROUPS										
22:00	PEDS*										
	BIKES										
	GROUPS										
23:00	PEDS*										
	BIKES										
	GROUPS										
	TOTAL	2		1	3	6	7		1	2	10

FRIDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*										
	BIKES										
	GROUPS										
13:00	PEDS*						1				1
	BIKES										
	GROUPS										
14:00	PEDS*										
	BIKES										
	GROUPS										
15:00	PEDS*										
	BIKES										
	GROUPS										
16:00	PEDS*										
	BIKES										
	GROUPS										
17:00	PEDS*								1		1
	BIKES										
	GROUPS										
18:00	PEDS*			1		1		6	1		7
	BIKES										
	GROUPS							6 (3)			6 (3)
19:00	PEDS*		3		2	5	1	4			5
	BIKES							1			1
	GROUPS		2 (1)		2 (1)	4 (2)		4 (2)			4 (2)
20:00	PEDS*		1	6		7					
	BIKES										
	GROUPS			6 (1)		6 (1)					
21:00	PEDS*	3				3			2		2
	BIKES										
	GROUPS	3 (1)				3 (1)			2 (1)		2 (1)
22:00	PEDS*										
	BIKES										
	GROUPS										
23:00	PEDS*								2		2
	BIKES										
	GROUPS								2 (1)		2 (1)
	TOTAL	3	4	7	2	16	2	11	6		19

SATURDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*										
	BIKES										
	GROUPS										
13:00	PEDS*				1	1					
	BIKES										
	GROUPS										
14:00	PEDS*										
	BIKES										
	GROUPS										
15:00	PEDS*										
	BIKES										
	GROUPS										
16:00	PEDS*										
	BIKES										
	GROUPS										
17:00	PEDS*										
	BIKES										
	GROUPS										
18:00	PEDS*						1	1			2
	BIKES										
	GROUPS										
19:00	PEDS*										
	BIKES										
	GROUPS										
20:00	PEDS*										
	BIKES										
	GROUPS										
21:00	PEDS*										
	BIKES										
	GROUPS										
22:00	PEDS*	2				2					
	BIKES										
	GROUPS	2 (1)				2 (1)					
23:00	PEDS*										
	BIKES										
	GROUPS										
	TOTAL	2			1	3	1	1			2

* INCLUDES GROUP PEDS

TABLE 1E
HOURLY PEDESTRIAN AND BICYCLE CROSSINGS BY DIRECTION , BY LOCATION
BLOCK E - WILLIAMS STREET TO 5TH AVENUE (SOUTH)

X (Y) -INDICATES NUMBER OF PEDESTRIANS IN GROUP AND (NUMBER OF GROUPS)

THURSDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*		1		10	11				9	9
	BIKES				2	2					
	GROUPS				5 (2)	5 (2)			3 (1)	2 (1)	5 (2)
13:00	PEDS*			1	6	7	1		4	8	13
	BIKES										
	GROUPS										
14:00	PEDS*			2		2		1	3	7	11
	BIKES										
	GROUPS								4 (2)		4 (2)
15:00	PEDS*			3	6	9		3	4	6	13
	BIKES										
	GROUPS				4 (2)	4 (2)		2 (1)		2 (1)	4 (2)
16:00	PEDS*			2	10	12		2		10	12
	BIKES										
	GROUPS				5 (2)	5 (2)				5 (2)	5 (2)
17:00	PEDS*	1			18	19				19	19
	BIKES										
	GROUPS	2 (1)	4 (1)		8 (4)	14 (6)				8 (4)	8 (4)
18:00	PEDS*	5	4		9	18	1			17	18
	BIKES										
	GROUPS	2 (1)			2 (1)	4 (2)				6 (3)	6 (3)
19:00	PEDS*				4	4				7	7
	BIKES				1	1					
	GROUPS				3 (1)	3 (1)	2 (1)			4 (2)	6 (3)
20:00	PEDS*			1	10	11	2	5		6	13
	BIKES										
	GROUPS				2 (1)	2 (1)	3 (1)	4 (1)	2 (1)	4 (2)	13 (5)
21:00	PEDS*	1			12	13	3		3	7	13
	BIKES										
	GROUPS				14 (6)	14 (6)				16 (4)	16 (4)
22:00	PEDS*				20	20				29	29
	BIKES										
	GROUPS				15 (7)	15 (7)				20 (10)	20 (10)
23:00	PEDS*				19	19			1	11	12
	BIKES		1			1			1		1
	GROUPS										
	TOTAL	7	6	9	127	149	7	11	16	136	170

FRIDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*	1		1	6	8			1		1
	BIKES								1		1
	GROUPS				2 (1)	2 (1)					
13:00	PEDS*				6	6				6	6
	BIKES										
	GROUPS									3 (1)	3 (1)
14:00	PEDS*			1	18	19			2	9	11
	BIKES										
	GROUPS				7 (3)	7 (3)			2 (1)	2 (1)	4 (2)
15:00	PEDS*				7	7		1		7	8
	BIKES									2	2
	GROUPS				4 (2)	4 (2)					
16:00	PEDS*		1		11	12			1	12	13
	BIKES										
	GROUPS				7 (2)	7 (2)				6 (2)	6 (2)
17:00	PEDS*				11	11			1	18	19
	BIKES				1	1					
	GROUPS				4 (2)	4 (2)				12 (4)	12 (4)
18:00	PEDS*				10	10		1		8	9
	BIKES				1	1				1	1
	GROUPS				4 (2)	4 (2)				8 (4)	8 (4)
19:00	PEDS*		1	4	10	15		1	6	16	23
	BIKES						1				1
	GROUPS			4 (1)	8 (4)	12 (5)			6 (1)	8 (3)	14 (4)
20:00	PEDS*	1		1	9	11	2		1	33	36
	BIKES										
	GROUPS				6 (2)	6 (2)				28 (8)	28 (8)
21:00	PEDS*		1	1	9	11		2		54	56
	BIKES										
	GROUPS				4 (2)	4 (2)		2 (1)		48 (16)	50 (17)
22:00	PEDS*			1	23	24		1	7	101	109
	BIKES										
	GROUPS				13 (6)	13 (6)			4 (2)	90 (27)	94 (29)
23:00	PEDS*	5		1	38	44			20	108	128
	BIKES										
	GROUPS	5 (2)			32 (11)	37 (13)			14 (5)	97 (28)	111 (33)
	TOTAL	7	3	10	160	180	3	6	40	375	424

SATURDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*		1		9	10				6	6
	BIKES										
	GROUPS				6 (2)	6 (2)				2 (1)	2 (1)
13:00	PEDS*				10	10	1		1	14	16
	BIKES				1	1				1	1
	GROUPS				7 (2)	7 (2)				13 (4)	13 (4)
14:00	PEDS*				10	10				1	1
	BIKES										
	GROUPS				9 (3)	9 (3)					
15:00	PEDS*				2	2				6	6
	BIKES										
	GROUPS										
16:00	PEDS*				3	3		2		3	5
	BIKES									1	1
	GROUPS							2 (1)			2 (1)
17:00	PEDS*	2			4	6				7	7
	BIKES			1	1	2					
	GROUPS	2 (1)			2 (1)	4 (2)				2 (1)	2 (1)
18:00	PEDS*		4		7	11	1			9	10
	BIKES										
	GROUPS		4 (2)		5 (2)	9 (4)				6 (2)	6 (2)
19:00	PEDS*			3	4	7	1			3	4
	BIKES										
	GROUPS			2 (1)	2 (1)	4 (2)				2 (1)	2 (1)
20:00	PEDS*				10	10		1		1	2
	BIKES										
	GROUPS				7 (3)	7 (3)					
21:00	PEDS*	1			17	18			2	12	14
	BIKES			1		1				1	1
	GROUPS				14 (6)	14 (6)			2 (1)	9 (4)	11 (5)
22:00	PEDS*				8	8				10	10
	BIKES		1			1					
	GROUPS				6 (3)	6 (3)				6 (3)	6 (3)
23:00	PEDS*	1				1				5	5
	BIKES				1	1					
	GROUPS									4 (2)	4 (2)
	TOTAL	4	6	5	87	102	3	3	3	80	89

* INCLUDES GROUP PEDS

SEGMENT 3

5TH AVENUE (SOUTH) TO 6TH AVENUE

(BLOCKS F,G & H)

FIGURE 1C
DAILY PEDESTRIAN AND BICYCLE CROSSING VOLUMES BY BLOCK, BY DIRECTION
SEGMENT 3 - 5TH AVENUE (SOUTH) TO 6TH AVENUE

SEGMENT 3 - 5TH AVE. (SOUTH) TO 6TH AVE.

5TH AVE. (SOUTH) | 5TH AVE. (NORTH) | BEARD ST. | CROSSWALK | 6TH AVE.

	BLOCK F										BLOCK G										BLOCK H									
	EASTBOUND					WESTBOUND					EASTBOUND					WESTBOUND					EASTBOUND					WESTBOUND				
	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	EB TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	WB TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	EB TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	WB TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	EB TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	WB TOTAL
THURSDAY																														
PEDS*	1	7	14	22	44	1	8	15	7	31	6	5	8	1	20	3	5	13	2	23	9	17	2	17	45	2	9	4	20	35
BIKES			2		2				2	2	2		1		3	1			1	2	6	1		3	10	3			3	6
GROUP PEDS		6	9	10	25		5	10	5	20	6		2		8	2		8		10	6	14		7	27		4	2	9	15
NUMBER OF GROUPS		3	3	4	10		2	5	2	9	2		1		3	1		3		4	2	4		2	8		1	1	3	5
FRIDAY																														
PEDS*	8	40	21	15	84	10	12	62	31	115	6	19	14	22	61	27	5	22	26	80	15	37	2	48	102	6	14	5	101	126
BIKES									3	3						1				1				1	1					
GROUP PEDS	7	29	16	4	56	7	8	55	26	96	5	15	7	19	46	25	2	13	22	62	9	22	2	40	73	6	8	3	86	103
NUMBER OF GROUPS	2	9	8	2	21	3	3	16	10	32	2	6	3	8	19	7	1	5	9	22	2	9	1	16	28	3	4	1	33	41
SATURDAY																														
PEDS*	3	3	10	3	19	5	11	2	21	39	2	13	5	2	22	7	3	11	6	27	5	3	2	24	34	7	4	4	28	43
BIKES			2	3	5				3	3							1	2	1	4	3			4	7					
GROUP PEDS			8		8	5	8		16	29		11			11	5	1	6	4	16	4			14	18	5		2	21	28
NUMBER OF GROUPS			3		3	2	4		5	11		5			5	1	1	3	1	6	1			5	6	2		1	9	12

* INCLUDES GROUP PEDS

TABLE 1F
HOURLY PEDESTRIAN AND BICYCLE CROSSINGS BY DIRECTION , BY LOCATION
BLOCK F - 5TH AVENUE (SOUTH) TO 5TH AVENUE (NORTH)

X (Y) -INDICATES NUMBER OF PEDESTRIANS IN GROUP AND (NUMBER OF GROUPS)

THURSDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*										
	BIKES									1	1
	GROUPS										
13:00	PEDS*				4	4					
	BIKES										
	GROUPS										
14:00	PEDS*				4	4		1			1
	BIKES										
	GROUPS										
15:00	PEDS*									1	1
	BIKES										
	GROUPS										
16:00	PEDS*			1	3	4					
	BIKES										
	GROUPS										
17:00	PEDS*			3	1	4		1	2		3
	BIKES			1		1					
	GROUPS										
18:00	PEDS*			2		2			1		1
	BIKES									1	1
	GROUPS			2 (1)		2 (1)					
19:00	PEDS*				2	2	1		3	2	6
	BIKES										
	GROUPS				2 (1)	2 (1)			2 (1)	2 (1)	4 (2)
20:00	PEDS*							3			3
	BIKES										
	GROUPS							2 (1)			2 (1)
21:00	PEDS*		1	7	3	11			5	4	9
	BIKES										
	GROUPS			7 (2)	3 (1)	10 (3)			4 (2)	3 (1)	7 (3)
22:00	PEDS*	1	6			7			2		2
	BIKES			1		1					
	GROUPS		6 (3)			6 (3)			2 (1)		2 (1)
23:00	PEDS*			1	5	6		3	2		5
	BIKES										
	GROUPS				5 (2)	5 (2)		3 (1)	2 (1)		5 (2)
	TOTAL	1	7	16	22	46	1	8	15	9	33

FRIDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*		6			6	2	2		1	5
	BIKES									1	1
	GROUPS						2 (1)				2 (1)
13:00	PEDS*		4	2		6	1	3			4
	BIKES										
	GROUPS		4 (2)			4 (2)		2 (1)			2 (1)
14:00	PEDS*				2	2	2				2
	BIKES										
	GROUPS										
15:00	PEDS*		2		1	3	2		1	2	5
	BIKES										
	GROUPS						2 (1)				2 (1)
16:00	PEDS*		1			1				1	1
	BIKES										
	GROUPS										
17:00	PEDS*										
	BIKES										
	GROUPS										
18:00	PEDS*		1	1		2		1		4	5
	BIKES										
	GROUPS									4 (2)	4 (2)
19:00	PEDS*									2	2
	BIKES										
	GROUPS									2 (1)	2 (1)
20:00	PEDS*			1	1	2			10	2	12
	BIKES										
	GROUPS								9 (3)	2 (1)	11 (4)
21:00	PEDS*	3	2		3	8			11	4	15
	BIKES										
	GROUPS	3 (1)	2 (1)			5 (2)			9 (2)	4 (2)	13 (4)
22:00	PEDS*		11	4	3	18			15	8	23
	BIKES										
	GROUPS		11 (2)	4 (2)	2 (1)	17 (5)			14 (5)	7 (2)	21 (7)
23:00	PEDS*	5	13	13	5	36	3	6	25	7	41
	BIKES									2	2
	GROUPS	4 (1)	12 (4)	12 (6)	2 (1)	30 (12)	3 (1)	6 (2)	23 (6)	7 (2)	39 (11)
	TOTAL	8	40	21	15	84	10	12	62	34	118

SATURDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*				1	1		1		1	2
	BIKES									1	1
	GROUPS										
13:00	PEDS*										
	BIKES										
	GROUPS										
14:00	PEDS*										
	BIKES				1	1					
	GROUPS										
15:00	PEDS*			1		1				1	1
	BIKES										
	GROUPS										
16:00	PEDS*	1	1			2					
	BIKES									2	2
	GROUPS										
17:00	PEDS*	1	1	1		3		1			1
	BIKES										
	GROUPS										
18:00	PEDS*				1	1					
	BIKES										
	GROUPS										
19:00	PEDS*						2			4	6
	BIKES										
	GROUPS						2 (1)			3 (1)	5 (2)
20:00	PEDS*	1		3	1	5		6	1		7
	BIKES										
	GROUPS			3 (1)		3 (1)		6 (3)			6 (3)
21:00	PEDS*			2		2				5	5
	BIKES			1	1	2					
	GROUPS			2 (1)		2 (1)				4 (2)	4 (2)
22:00	PEDS*		1			1		3	1	5	9
	BIKES										
	GROUPS							2 (1)		4 (1)	6 (2)
23:00	PEDS*			3		3	3			5	8
	BIKES			1	1	2					
	GROUPS			3 (1)		3 (1)	3 (1)			5 (1)	8 (2)
	TOTAL	3	3	12	6	24	5	11	2	24	42

* INCLUDES GROUP PEDS

TABLE 1G
HOURLY PEDESTRIAN AND BICYCLE CROSSINGS BY DIRECTION , BY LOCATION
BLOCK G - 5TH AVENUE (NORTH) TO BEARD STREET

X (Y) -INDICATES NUMBER OF PEDESTRIANS IN GROUP AND (NUMBER OF GROUPS)

THURSDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*										
	BIKES										
	GROUPS										
13:00	PEDS*			1		1					
	BIKES										
	GROUPS										
14:00	PEDS*		2	1		3			2	1	3
	BIKES	1				1					
	GROUPS										
15:00	PEDS*		2	1		3					
	BIKES										
	GROUPS										
16:00	PEDS*			1		1	1	5			6
	BIKES						1				1
	GROUPS										
17:00	PEDS*			3		3					
	BIKES										
	GROUPS			2 (1)		2 (1)					
18:00	PEDS*				1	1			2		2
	BIKES										
	GROUPS								2 (1)		2 (1)
19:00	PEDS*										
	BIKES									1	1
	GROUPS										
20:00	PEDS*	2	1	1		4					
	BIKES										
	GROUPS	2 (1)				2 (1)					
21:00	PEDS*										
	BIKES										
	GROUPS										
22:00	PEDS*								6		6
	BIKES	1				1					
	GROUPS								6 (2)		6 (2)
23:00	PEDS*	4				4	2		3	1	6
	BIKES			1		1					
	GROUPS	4 (1)				4 (1)	2 (1)				2 (1)
	TOTAL	8	5	9	1	23	4	5	13	3	25

FRIDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*		2			2		2			2
	BIKES										
	GROUPS		2 (1)			2 (1)		2 (1)			2 (1)
13:00	PEDS*		1			1	1		2		3
	BIKES										
	GROUPS										
14:00	PEDS*										
	BIKES										
	GROUPS										
15:00	PEDS*			1	2	3		1	1		2
	BIKES										
	GROUPS				2 (1)	2 (1)					
16:00	PEDS*										
	BIKES										
	GROUPS										
17:00	PEDS*		3			3	1		4		5
	BIKES										
	GROUPS		2 (1)			2 (1)			2 (1)		2 (1)
18:00	PEDS*		3	3		6	6		7		13
	BIKES										
	GROUPS		2 (1)			2 (1)	6 (2)		6 (2)		12 (4)
19:00	PEDS*				2	2			3	5	8
	BIKES						1				1
	GROUPS				2 (1)	2 (1)			3 (1)	5 (2)	8 (3)
20:00	PEDS*			5	7	12		1		1	2
	BIKES										
	GROUPS			5 (2)	7 (2)	12 (4)					
21:00	PEDS*	1			8	9			2		2
	BIKES										
	GROUPS				8 (4)	8 (4)					
22:00	PEDS*		3	3		6	6		3	8	17
	BIKES										
	GROUPS		2 (1)	2 (1)		4 (2)	6 (2)		2 (1)	7 (3)	15 (6)
23:00	PEDS*	5	7	2	3	17	13	1		12	26
	BIKES										
	GROUPS	5 (2)	7 (2)			12 (4)	13 (3)			10 (4)	23 (7)
	TOTAL	6	19	14	22	61	28	5	22	26	81

SATURDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*			1		1	5	1			6
	BIKES							1			1
	GROUPS						5 (1)	1 (1)			6 (2)
13:00	PEDS*		2	1		3			3		3
	BIKES										
	GROUPS		2 (1)			2 (1)			2 (1)		2 (1)
14:00	PEDS*						1	2	1		4
	BIKES										
	GROUPS										
15:00	PEDS*		1			1					
	BIKES										
	GROUPS										
16:00	PEDS*			1		1					
	BIKES										
	GROUPS										
17:00	PEDS*			1		1			1		1
	BIKES										
	GROUPS										
18:00	PEDS*										
	BIKES										
	GROUPS										
19:00	PEDS*		1	1		2					
	BIKES										
	GROUPS										
20:00	PEDS*		2			2	1		4		5
	BIKES										
	GROUPS		2 (1)			2 (1)			2 (1)		2 (1)
21:00	PEDS*		4			4					
	BIKES								1		1
	GROUPS		4 (2)			4 (2)					
22:00	PEDS*	2	3		1	6			2	5	7
	BIKES								1		1
	GROUPS		3 (1)			3 (1)			2 (1)	4 (1)	6 (2)
23:00	PEDS*				1	1				1	1
	BIKES									1	1
	GROUPS										
	TOTAL	2	13	5	2	22	7	4	13	7	31

*** INCLUDES GROUP PEDS**

TABLE 1H
HOURLY PEDESTRIAN AND BICYCLE CROSSINGS BY DIRECTION , BY LOCATION
BLOCK H - BEARD STREET TO 6TH AVENUE

X (Y) -INDICATES NUMBER OF PEDESTRIANS IN GROUP AND (NUMBER OF GROUPS)

THURSDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*		5			5		1			1
	BIKES		1			1					
	GROUPS		5 (2)			5 (2)					
13:00	PEDS*		1			1				1	1
	BIKES										
	GROUPS										
14:00	PEDS*				2	2					
	BIKES										
	GROUPS										
15:00	PEDS*							1		1	2
	BIKES										
	GROUPS										
16:00	PEDS*		2		1	3			1	3	4
	BIKES	2			1	3	2				2
	GROUPS		2 (1)			2 (1)					
17:00	PEDS*	1				1	1		2	6	9
	BIKES	1				1					
	GROUPS								2 (1)	5 (2)	7 (3)
18:00	PEDS*			2	2	4		1			1
	BIKES	1				1					
	GROUPS										
19:00	PEDS*									2	2
	BIKES				1	1				2	2
	GROUPS										
20:00	PEDS*	1	4		4	9		1		1	2
	BIKES									1	1
	GROUPS		4 (1)		3 (1)	7 (2)					
21:00	PEDS*	4				4		1	1	6	8
	BIKES										
	GROUPS	4 (1)				4 (1)				4 (1)	4 (1)
22:00	PEDS*		5		7	12		4			4
	BIKES	2				2					
	GROUPS		5 (1)		4 (1)	9 (2)		4 (1)			4 (1)
23:00	PEDS*	3			1	4	1				1
	BIKES				1	1	1				1
	GROUPS	2 (1)				2 (1)					
	TOTAL	15	18	2	20	55	5	9	4	23	41

FRIDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*		1			1				2	2
	BIKES										
	GROUPS									2 (1)	2 (1)
13:00	PEDS*		1			1			1		1
	BIKES										
	GROUPS										
14:00	PEDS*		2		2	4		1		2	3
	BIKES				1	1					
	GROUPS				2 (1)	2 (1)				2 (1)	2 (1)
15:00	PEDS*	2	6			8	4	3		7	14
	BIKES										
	GROUPS	2 (1)	2 (1)			4 (2)	4 (2)	2 (1)		6 (2)	12 (5)
16:00	PEDS*		1			1		1			1
	BIKES										
	GROUPS										
17:00	PEDS*		2		1	3				10	10
	BIKES										
	GROUPS		2 (1)			2 (1)				6 (3)	6 (3)
18:00	PEDS*	2	1		7	10				1	1
	BIKES										
	GROUPS				6 (3)	6 (3)					
19:00	PEDS*				1	1				11	11
	BIKES										
	GROUPS									9 (4)	9 (4)
20:00	PEDS*	1	2		7	10		1	4	4	9
	BIKES										
	GROUPS		2 (1)		6 (2)	8 (3)			3 (1)	2 (1)	5 (2)
21:00	PEDS*		6			6		2		18	20
	BIKES										
	GROUPS		6 (2)			6 (2)		2 (1)		17 (7)	19 (8)
22:00	PEDS*	1	5		11	17	2	3		8	13
	BIKES										
	GROUPS		4 (2)		10 (4)	14 (6)	2 (1)	2 (1)		7 (2)	11 (4)
23:00	PEDS*	9	10	2	19	40		3		38	41
	BIKES										
	GROUPS	7 (1)	6 (2)	2 (1)	16 (6)	31 (10)		2 (1)		35 (12)	37 (13)
	TOTAL	15	37	2	49	103	6	14	5	101	126

SATURDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*		1		1	2	2			2	4
	BIKES										
	GROUPS						2 (1)				2 (1)
13:00	PEDS*				3	3					
	BIKES										
	GROUPS										
14:00	PEDS*										
	BIKES										
	GROUPS										
15:00	PEDS*						1	2			3
	BIKES										
	GROUPS										
16:00	PEDS*		1		2	3			1	2	3
	BIKES	2				2					
	GROUPS									2 (1)	2 (1)
17:00	PEDS*			1		1			1		1
	BIKES	1			1	2					
	GROUPS										
18:00	PEDS*				2	2				6	6
	BIKES										
	GROUPS				2 (1)	2 (1)				6 (2)	6 (2)
19:00	PEDS*				3	3				6	6
	BIKES										
	GROUPS				2 (1)	2 (1)				5 (2)	5 (2)
20:00	PEDS*				4	4	4	1		2	7
	BIKES										
	GROUPS				4 (1)	4 (1)	3 (1)				3 (1)
21:00	PEDS*	4			5	9			2	3	5
	BIKES				1	1					
	GROUPS	4 (1)			2 (1)	6 (2)			2 (1)	2 (1)	4 (2)
22:00	PEDS*	1		1		2				5	5
	BIKES				2	2					
	GROUPS									4 (2)	4 (2)
23:00	PEDS*		1		4	5		1		2	3
	BIKES										
	GROUPS				4 (1)	4 (1)				2 (1)	2 (1)
	TOTAL	8	3	2	28	41	7	4	4	28	43

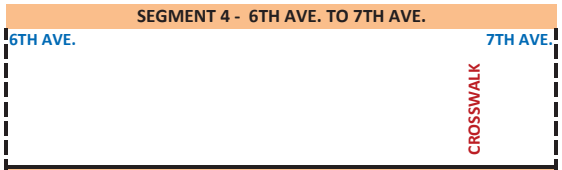
*** INCLUDES GROUP PEDS**

SEGMENT 4

6TH AVENUE TO 7TH AVENUE

(BLOCK I)

FIGURE 1D
DAILY PEDESTRIAN AND BICYCLE CROSSING VOLUMES BY BLOCK, BY DIRECTION
SEGMENT 4 - 6TH AVENUE TO 7TH AVENUE



	BLOCK I									
	EASTBOUND					WESTBOUND				
	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	EB TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	WB TOTAL
	THURSDAY									
PEDS*		6	6	6	18		7	14	1	22
BIKES			1		1			2	2	4
GROUP PEDS				2	2			4		4
NUMBER OF GROUPS				1	1			2		2
	FRIDAY									
PEDS*	16	86	36	17	155	4	41	23	26	94
BIKES		1	2	1	4		2	1	1	4
GROUP PEDS	13	65	23	12	113	2	29	11	17	59
NUMBER OF GROUPS	6	24	10	4	44	1	10	3	7	21
	SATURDAY									
PEDS*	8	28	8	3	47	9	19	9	7	44
BIKES	2	2			4				2	2
GROUP PEDS	7	21	2		30	6	11	6	2	25
NUMBER OF GROUPS	2	9	1		12	2	4	3	1	10

* INCLUDES GROUP PEDS

TABLE 1I
HOURLY PEDESTRIAN AND BICYCLE CROSSINGS BY DIRECTION , BY LOCATION
BLOCK I - 6TH AVENUE TO 7TH AVEAVENUE

X (Y) -INDICATES NUMBER OF PEDESTRIANS IN GROUP AND (NUMBER OF GROUPS)

		THURSDAY									
		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
	PEDS*				3	3			1		1
12:00	BIKES										
	GROUPS				2 (1)	2 (1)			2 (1)		2 (1)
	PEDS*			3	2	5			3		3
13:00	BIKES										
	GROUPS										
	PEDS*							1	1	1	3
14:00	BIKES									1	1
	GROUPS										
	PEDS*		2	1	1	4		1	3		4
15:00	BIKES								1		1
	GROUPS								2 (1)		2 (1)
	PEDS*		2			2		1	2		3
16:00	BIKES								1		1
	GROUPS										
	PEDS*										
17:00	BIKES										
	GROUPS										
	PEDS*		1	1		2		1	2		3
18:00	BIKES			1		1				1	1
	GROUPS										
	PEDS*							1	1		2
19:00	BIKES										
	GROUPS										
	PEDS*										
20:00	BIKES										
	GROUPS										
	PEDS*			1		1		1			1
21:00	BIKES										
	GROUPS										
	PEDS*		1			1		1	1		2
22:00	BIKES										
	GROUPS										
	PEDS*										
23:00	BIKES										
	GROUPS										
	TOTAL		6	7	6	19		7	16	3	26

		FRIDAY									
		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
	PEDS*		4	5		9		2		2	4
12:00	BIKES				1	1				1	1
	GROUPS		2 (1)	3 (1)		5 (2)		2 (1)			2 (1)
	PEDS*		2	1	1	4		1	1	1	3
13:00	BIKES							1			1
	GROUPS										
	PEDS*				1	1			1	2	3
14:00	BIKES			2		2					
	GROUPS										
	PEDS*		1			1		1		2	3
15:00	BIKES		1			1					
	GROUPS									2 (1)	2 (1)
	PEDS*			3	4	7		1	1		2
16:00	BIKES										
	GROUPS				3 (1)	3 (1)					
	PEDS*		4	8		12			3	4	7
17:00	BIKES										
	GROUPS		4 (2)	4 (2)		8 (4)			2 (1)	2 (1)	4 (2)
	PEDS*	4	12	7	5	28		9	6	4	19
18:00	BIKES										
	GROUPS	2 (1)	10 (3)	6 (3)	5 (2)	23 (9)		6 (1)	2 (1)	3 (1)	11 (3)
	PEDS*		1	3		4	2	3	2	2	9
19:00	BIKES								1		1
	GROUPS			3 (1)		3 (1)	2 (1)	3 (1)		2 (1)	7 (3)
	PEDS*	8	4	5	2	19		1	1	3	5
20:00	BIKES										
	GROUPS	7 (3)	4 (2)	4 (2)		15 (7)				2 (1)	2 (1)
	PEDS*	2	15	1	4	22		1	7	6	14
21:00	BIKES										
	GROUPS	2 (1)	11 (4)		4 (1)	17 (6)			7 (1)	6 (2)	13 (3)
	PEDS*	2	24	3		29	2	8			10
22:00	BIKES										
	GROUPS	2 (1)	21 (7)	3 (1)		26 (9)		5 (2)			5 (2)
	PEDS*		19			19		14	1		15
23:00	BIKES							1			1
	GROUPS		13 (5)			13 (5)		13 (5)			13 (5)
	TOTAL	16	87	38	18	159	4	43	24	27	98

		SATURDAY									
		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
	PEDS*	4		3		7				1	1
12:00	BIKES										
	GROUPS	4 (1)				4 (1)					
	PEDS*		3			3					
13:00	BIKES									1	1
	GROUPS		2 (1)			2 (1)					
	PEDS*		2	1	2	5		2	4	2	8
14:00	BIKES										
	GROUPS		2 (1)			2 (1)			2 (1)		2 (1)
	PEDS*		2	3		5	1	2			3
15:00	BIKES										
	GROUPS		2 (1)	2 (1)		4 (2)					
	PEDS*		2			2		1	5		6
16:00	BIKES									1	1
	GROUPS		2 (1)			2 (1)			4 (2)		4 (2)
	PEDS*	1				1	2	1		2	5
17:00	BIKES										
	GROUPS									2 (1)	2 (1)
	PEDS*		6		1	7				1	1
18:00	BIKES	2	1			3					
	GROUPS		5 (1)			5 (1)					
	PEDS*		2	1		3		1		1	2
19:00	BIKES		1			1					
	GROUPS										
	PEDS*	3				3	4	7			11
20:00	BIKES										
	GROUPS	3 (1)				3 (1)	4 (1)	7 (2)			11 (3)
	PEDS*		3			3		2			2
21:00	BIKES										
	GROUPS		2 (1)			2 (1)		2 (1)			2 (1)
	PEDS*		2			2		2			2
22:00	BIKES										
	GROUPS		2 (1)			2 (1)		2 (1)			2 (1)
	PEDS*		6			6	2	1			3
23:00	BIKES										
	GROUPS		4 (2)			4 (2)	2 (1)				2 (1)
	TOTAL	10	30	8	3	51	9	19	9	9	46

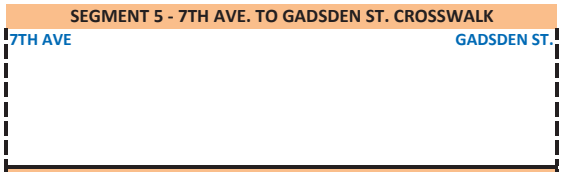
* INCLUDES GROUP PEDS

SEGMENT 5

7TH AVENUE TO GADSDEN STREET CROSSWALK

(BLOCK J)

FIG 1E
DAILY PEDESTRIAN AND BICYCLE CROSSING VOLUMES BY BLOCK, BY DIRECTION
SEGMENT 5 - 7TH AVENUE TO GADSDEN STREET CROSSWALK



	BLOCK J									
	EASTBOUND					WESTBOUND				
	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	EB TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	WB TOTAL
PEDS*	2	10			12		8			8
BIKES		1			1					
GROUP PEDS	2	2			4		4			4
NUMBER OF GROUPS	1	1			2		2			2
PEDS*	8	2			10	8	1			9
BIKES	1	2			3	2	2			4
GROUP PEDS	6				6	5				5
NUMBER OF GROUPS	2				2	2				2
PEDS*		9			9	5	8			13
BIKES										
GROUP PEDS		2			2	2	6			8
NUMBER OF GROUPS		1			1	1	3			4

* INCLUDES GROUP PEDS

TABLE 1J
HOURLY PEDESTRIAN AND BICYCLE CROSSINGS BY DIRECTION , BY LOCATION
BLOCK J - 7TH AVENUE TO CROSS WALK AT GADSDEN STREET

X (Y) -INDICATES NUMBER OF PEDESTRIANS IN GROUP AND (NUMBER OF GROUPS)

THURSDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*	2				2					
	BIKES										
	GROUPS	2 (1)				2 (1)					
13:00	PEDS*							2			2
	BIKES										
	GROUPS							2 (1)			2 (1)
14:00	PEDS*		1			1					
	BIKES										
	GROUPS										
15:00	PEDS*							1			1
	BIKES										
	GROUPS										
16:00	PEDS*		2			2		2			2
	BIKES										
	GROUPS							2 (1)			2 (1)
17:00	PEDS*		3			3		1			1
	BIKES		1			1					
	GROUPS										
18:00	PEDS*		1			1		1			1
	BIKES										
	GROUPS										
19:00	PEDS*										
	BIKES										
	GROUPS										
20:00	PEDS*										
	BIKES										
	GROUPS										
21:00	PEDS*		2			2		1			1
	BIKES										
	GROUPS		2 (1)			2 (1)					
22:00	PEDS*		1			1					
	BIKES										
	GROUPS										
23:00	PEDS*										
	BIKES										
	GROUPS										
	TOTAL	2	11			13		8			8

FRIDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*		1			1	2				2
	BIKES										
	GROUPS										
13:00	PEDS*										
	BIKES										
	GROUPS										
14:00	PEDS*										
	BIKES		1			1					
	GROUPS										
15:00	PEDS*										
	BIKES						2	1			3
	GROUPS										
16:00	PEDS*		1			1		1			1
	BIKES										
	GROUPS										
17:00	PEDS*										
	BIKES		1			1					
	GROUPS										
18:00	PEDS*						1				1
	BIKES										
	GROUPS										
19:00	PEDS*	3				3	5				5
	BIKES	1				1					
	GROUPS	2 (1)				2 (1)	5 (2)				5 (2)
20:00	PEDS*	1				1					
	BIKES										
	GROUPS										
21:00	PEDS*	4				4					
	BIKES										
	GROUPS	4 (1)				4 (1)					
22:00	PEDS*										
	BIKES										
	GROUPS										
23:00	PEDS*										
	BIKES							1			1
	GROUPS										
	TOTAL	9	4			13	10	3			13

SATURDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*										
	BIKES										
	GROUPS										
13:00	PEDS*		2			2	2	1			3
	BIKES										
	GROUPS										
14:00	PEDS*		1			1	1	2			3
	BIKES										
	GROUPS							2 (1)			2 (1)
15:00	PEDS*		3			3					
	BIKES										
	GROUPS		2 (1)			2 (1)					
16:00	PEDS*							5			5
	BIKES										
	GROUPS							4 (2)			4 (2)
17:00	PEDS*		1			1	2				2
	BIKES										
	GROUPS						2 (1)				2 (1)
18:00	PEDS*		1			1					
	BIKES										
	GROUPS										
19:00	PEDS*		1			1					
	BIKES										
	GROUPS										
20:00	PEDS*										
	BIKES										
	GROUPS										
21:00	PEDS*										
	BIKES										
	GROUPS										
22:00	PEDS*										
	BIKES										
	GROUPS										
23:00	PEDS*										
	BIKES										
	GROUPS										
	TOTAL		9			9	5	8			13

* INCLUDES GROUP PEDS

SEGMENT 6

COLONIAL DRIVE TO SHOPPING CENTER SIGNAL

(BLOCKS K & L)

FIGURE 1F
DAILY PEDESTRIAN AND BICYCLE CROSSING VOLUMES BY BLOCK, BY DIRECTION
SEGMENT 6 - COLONIAL DRIVE TO SHOPPING CENTER SIGNAL

SEGMENT 6 - COLONIAL DRIVE TO SHOPPING CENTER SIGNAL

COLONIAL DR. — PINE ST. — CROSSWALK — SHOPPING CENTER SIGNAL

	BLOCK K										BLOCK L									
	EASTBOUND					WESTBOUND					EASTBOUND					WESTBOUND				
	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	EB TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	WB TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	EB TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	WB TOTAL
THURSDAY																				
PEDS*						1				1	1	1		2	4					
BIKES																				
GROUP PEDS																				
NUMBER OF GROUPS																				
FRIDAY																				
PEDS*			1	1	2		1	1		2				5	5	1			4	5
BIKES														2	2			1	1	2
GROUP PEDS																				
NUMBER OF GROUPS																				
SATURDAY																				
PEDS*								1		1	1		1	13	15				11	11
BIKES																			3	3
GROUP PEDS														8	8				6	6
NUMBER OF GROUPS														3	3				3	3

* INCLUDES GROUP PEDS

TABLE 1K
HOURLY PEDESTRIAN AND BICYCLE CROSSINGS BY DIRECTION , BY LOCATION
BLOCK K - COLONIAL DRIVE TO PINE STREET

X (Y) -INDICATES NUMBER OF PEDESTRIANS IN GROUP AND (NUMBER OF GROUPS)

THURSDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*						1				1
	BIKES										
	GROUPS										
13:00	PEDS*										
	BIKES										
	GROUPS										
14:00	PEDS*										
	BIKES										
	GROUPS										
15:00	PEDS*										
	BIKES										
	GROUPS										
16:00	PEDS*										
	BIKES										
	GROUPS										
17:00	PEDS*										
	BIKES										
	GROUPS										
18:00	PEDS*										
	BIKES										
	GROUPS										
19:00	PEDS*										
	BIKES										
	GROUPS										
20:00	PEDS*										
	BIKES										
	GROUPS										
21:00	PEDS*										
	BIKES										
	GROUPS										
22:00	PEDS*										
	BIKES										
	GROUPS										
23:00	PEDS*										
	BIKES										
	GROUPS										
	TOTAL						1				1

FRIDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*								1		1
	BIKES										
	GROUPS										
13:00	PEDS*										
	BIKES										
	GROUPS										
14:00	PEDS*			1		1					
	BIKES										
	GROUPS										
15:00	PEDS*				1	1		1			1
	BIKES										
	GROUPS										
16:00	PEDS*										
	BIKES										
	GROUPS										
17:00	PEDS*										
	BIKES										
	GROUPS										
18:00	PEDS*										
	BIKES										
	GROUPS										
19:00	PEDS*										
	BIKES										
	GROUPS										
20:00	PEDS*										
	BIKES										
	GROUPS										
21:00	PEDS*										
	BIKES										
	GROUPS										
22:00	PEDS*										
	BIKES										
	GROUPS										
23:00	PEDS*										
	BIKES										
	GROUPS										
	TOTAL			1	1	2		1	1		2

SATURDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*										
	BIKES										
	GROUPS										
13:00	PEDS*										
	BIKES										
	GROUPS										
14:00	PEDS*								1		1
	BIKES										
	GROUPS										
15:00	PEDS*										
	BIKES										
	GROUPS										
16:00	PEDS*										
	BIKES										
	GROUPS										
17:00	PEDS*										
	BIKES										
	GROUPS										
18:00	PEDS*										
	BIKES										
	GROUPS										
19:00	PEDS*										
	BIKES										
	GROUPS										
20:00	PEDS*										
	BIKES										
	GROUPS										
21:00	PEDS*										
	BIKES										
	GROUPS										
22:00	PEDS*										
	BIKES										
	GROUPS										
23:00	PEDS*										
	BIKES										
	GROUPS										
	TOTAL								1		1

* INCLUDES GROUP PEDS

TABLE 1L
HOURLY PEDESTRIAN AND BICYCLE CROSSINGS BY DIRECTION , BY LOCATION
BLOCK L - PINE STREET TO SHOPPING CENTER SIGNAL

X (Y) -INDICATES NUMBER OF PEDESTRIANS IN GROUP AND (NUMBER OF GROUPS)

THURSDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*										
	BIKES										
	GROUPS										
13:00	PEDS*										
	BIKES										
	GROUPS										
14:00	PEDS*	1				1					
	BIKES										
	GROUPS										
15:00	PEDS*				1	1					
	BIKES										
	GROUPS										
16:00	PEDS*										
	BIKES										
	GROUPS										
17:00	PEDS*		1			1					
	BIKES										
	GROUPS										
18:00	PEDS*										
	BIKES										
	GROUPS										
19:00	PEDS*				1	1					
	BIKES										
	GROUPS										
20:00	PEDS*										
	BIKES										
	GROUPS										
21:00	PEDS*										
	BIKES										
	GROUPS										
22:00	PEDS*										
	BIKES										
	GROUPS										
23:00	PEDS*										
	BIKES										
	GROUPS										
	TOTAL	1	1		2	4					

FRIDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*				1	1					
	BIKES										
	GROUPS										
13:00	PEDS*				2	2				1	1
	BIKES										
	GROUPS										
14:00	PEDS*				1	1				2	2
	BIKES				1	1					
	GROUPS										
15:00	PEDS*				1	1				1	1
	BIKES										
	GROUPS										
16:00	PEDS*										
	BIKES										
	GROUPS										
17:00	PEDS*										
	BIKES				1	1					
	GROUPS										
18:00	PEDS*						1				1
	BIKES								1		1
	GROUPS										
19:00	PEDS*										
	BIKES										
	GROUPS										
20:00	PEDS*										
	BIKES										
	GROUPS										
21:00	PEDS*										
	BIKES										
	GROUPS										
22:00	PEDS*										
	BIKES										
	GROUPS										
23:00	PEDS*										
	BIKES									1	1
	GROUPS										
	TOTAL				7	7	1		1	5	7

SATURDAY

		EASTBOUND					WESTBOUND				
		@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL	@ INT SOUTH	MID BLK SOUTH	MID BLK NORTH	@ INT NORTH	TOTAL
12:00	PEDS*				2	2				1	1
	BIKES										
	GROUPS										
13:00	PEDS*				2	2				1	1
	BIKES										
	GROUPS										
14:00	PEDS*				7	7					
	BIKES										
	GROUPS				6 (2)	6 (2)					
15:00	PEDS*				2	2				2	2
	BIKES									3	3
	GROUPS				2 (1)	2 (1)				2 (1)	2 (1)
16:00	PEDS*	1		1		2				5	5
	BIKES										
	GROUPS									4 (2)	4 (2)
17:00	PEDS*									1	1
	BIKES										
	GROUPS										
18:00	PEDS*									1	1
	BIKES										
	GROUPS										
19:00	PEDS*										
	BIKES										
	GROUPS										
20:00	PEDS*										
	BIKES										
	GROUPS										
21:00	PEDS*										
	BIKES										
	GROUPS										
22:00	PEDS*										
	BIKES										
	GROUPS										
23:00	PEDS*										
	BIKES										
	GROUPS										
	TOTAL	1		1	13	15				14	14

* INCLUDES GROUP PEDS

Appendix C
Crash Data

SR 61 Pedestrian/Bicycle Crash Summaries

Location: Tallahassee
State Route: SR 61/Thomasville Road
Study Period: 2009 to 2014
County: Leon
Number of Years: 6
Location: Monroe Street to Betton Road/Bradford Road

NO.	DATE	DAY	TIME	TYPE	FATAL	INJURY	PROP DAMAGE ONLY	DAY/ NIGHT	WET/ DRY	UNDER INFLUENCE	GENDER PED/BIKE	RACE	AGE OF PED/BIKE	AGE OF DRIVER	AT-FAULT	AT SIGNAL LOCATION	AT DRIVEWAY	AT CROSS STREET	CONTRIBUTING CAUSE	COMMENTS
1P	8/4/2013	Sunday	2:40 AM	Ped		X		Night	Dry	X	Male Female		26 23	32	Ped					Pedestrians crossing street, south of 6th Ave., outside crosswalk, were struck by a southbound motorist. Peds possibly under influence of alcohol.
2P	3/27/2009	Friday	8:05 PM	Ped				Night	Wet		Male		60	61	Driver			X	FTYROW	Pedestrian crossing Williams St. on east side ofThomasville Rd. was struck by vehicle making a southbound left-turn.
3P	4/19/2011	Tuesday	1:30 PM	Ped	X			Day	Dry	X	Female		54	65	Driver			X	FTYROW	Pedestrian crossing 5th Ave. southbound in crosswalk was struck by a westbound right-turn. Pedestrian was under influence of alcohol and drugs. Initially received minor injuries. Contributing causes to death include chronic alcohol use and related issues.
4B	6/23/2011	Thursday	2:49 AM	Bike		X		Night	Dry	X	Female		22	31	Driver	X			FTYROW	Vehicle traveling northbound in roadway , north of 7th Ave., was struck by northbound motorist. Bicycle had appropriate safety equipment and lighting. Vehicle driver fled the scene and was altered sighted for DUI.
5B	5/16/2013	Thursday	4:48 PM	Bike		X		Day	Dry		Male		69	N/A	N/A			X	N/A	Vehicle traveling west on Pine St. turned right onto Thomasville Rd. and struck a bicyclist traveling south in crosswalk. Vehicle was hit and run, no information for vehicle or driver.
6B	3/1/2011	Tuesday	3:40 PM	Bike		X		Day	Dry		Male		N/A	N/A	Driver		X		FTYROW	Vehicle traveling north on Thomasville Rd. turned right into driveway on east side, north of Glenview Dr., then struck bicyclist traveling north across driveway.
7B	1/29/2009	Thursday	6:35 PM	Bike		X		Day	Dry		Male		12	18	Driver	X			FTYROW	Vehicle traveling eastbound on Glenview Dr. attempted to turn right and struck a bicyclist who was northbound in the crosswalk.
8B	6/30/2009	Tuesday	3:23 PM	Bike			X	Day	Dry		Male		23	37	Driver		X		FTYROW	Vehicle making eastbound right-turn out of driveway onto Monroe St., north of Thomasville Rd., struck bicycle traveling northbound on west sidewalk, against traffic flow.

0 100 400
Feet

ARTERIAL STUDY LAYOUT

SR 61 FROM MONROE STREET
TO
BRADFORD ROAD / BETTON ROAD

PREPARED BY:
CARDNO
3905 CRESCENT PARK DRIVE
RIVERVIEW, FL 33578
(813) 664-4500

SR 61 (THOMASVILLE ROAD)
ARTERIAL STUDY

CONTRACT NO. C9B63
TASK WORK ORDER NO. 20

Howard.Holley 12/18/2015

SHEET NO.
1

SYMBOLS

- OVERTURNED VEHICLE
- BACKING VEHICLE
- OUT OF CONTROL
- HEAD-ON COLLISION
- RIGHT ANGLE COLLISION
- RIGHT TURN COLLISION
- LEFT TURN COLLISION
- REAR-END COLLISION
- ANGLE COLLISION
- SIDE SWIPE
- S — SCOOTER
- COLLISION W/ BIKE
- M — MOTORCYCLE
- COLLISION W/ PED
- PERSONAL INJURY
- FATALITY
- ## — COLLISION NUMBER

COLLISION DIAGRAM

LOCATION: SR 61 @ MONROE STREET
COUNTY: LEON
DATE RANGE: 01/01/2009 TO 12/31/2014

PREPARED BY:
CARDNO
3905 CRESCENT PARK DRIVE
RIVERVIEW, FL 33578
(813) 664-4500

CRASH SUMMARY

	PROPERTY DAMAGE ONLY	INJURY	FATAL	TOTAL
DAYTIME	0	0	0	0
NIGHTTIME	0	1	0	1
TOTAL	0	1	0	1

SHEET NO.
2

SYMBOLS

- OVERTURNED VEHICLE
- BACKING VEHICLE
- OUT OF CONTROL
- HEAD-ON COLLISION
- RIGHT ANGLE COLLISION
- RIGHT TURN COLLISION
- LEFT TURN COLLISION
- REAR-END COLLISION
- ANGLE COLLISION
- SIDE SWIPE
- S — SCOOTER
- COLLISION W/ BIKE
- M — MOTORCYCLE
- COLLISION W/ PED
- PERSONAL INJURY
- FATALITY
- ## COLLISION NUMBER

COLLISION DIAGRAM

LOCATION: SR 61 BETWEEN WILLIAMS STREET & E 5TH AVENUE
COUNTY: LEON
DATE RANGE: 01/01/2009 TO 12/31/2014

PREPARED BY:
CARDNO
3905 CRESCENT PARK DRIVE
RIVERVIEW, FL 33578
(813) 664-4500

CRASH SUMMARY

	PROPERTY DAMAGE ONLY	INJURY	FATAL	TOTAL
DAYTIME	0	0	1	1
NIGHTTIME	0	0	0	0
TOTAL	0	0	0	1

Howard.Holley 12/18/2015 10:57:47 AM \\USCLWTBEFS01\proj2$\00195\00195401.20\doc\reports\TWO_20_SR61\MS\SR61_PED-BIKE_2.dgn

SHEET NO.
3

SYMBOLS

OVERTURNED VEHICLE
BACKING VEHICLE
OUT OF CONTROL
HEAD-ON COLLISION
RIGHT ANGLE COLLISION
RIGHT TURN COLLISION
LEFT TURN COLLISION
REAR-END COLLISION
ANGLE COLLISION
SIDE SWIPE
S SCOOTER
COLLISION W/ BIKE
M MOTORCYCLE
COLLISION W/ PED
PERSONAL INJURY
FATALITY
COLLISION NUMBER

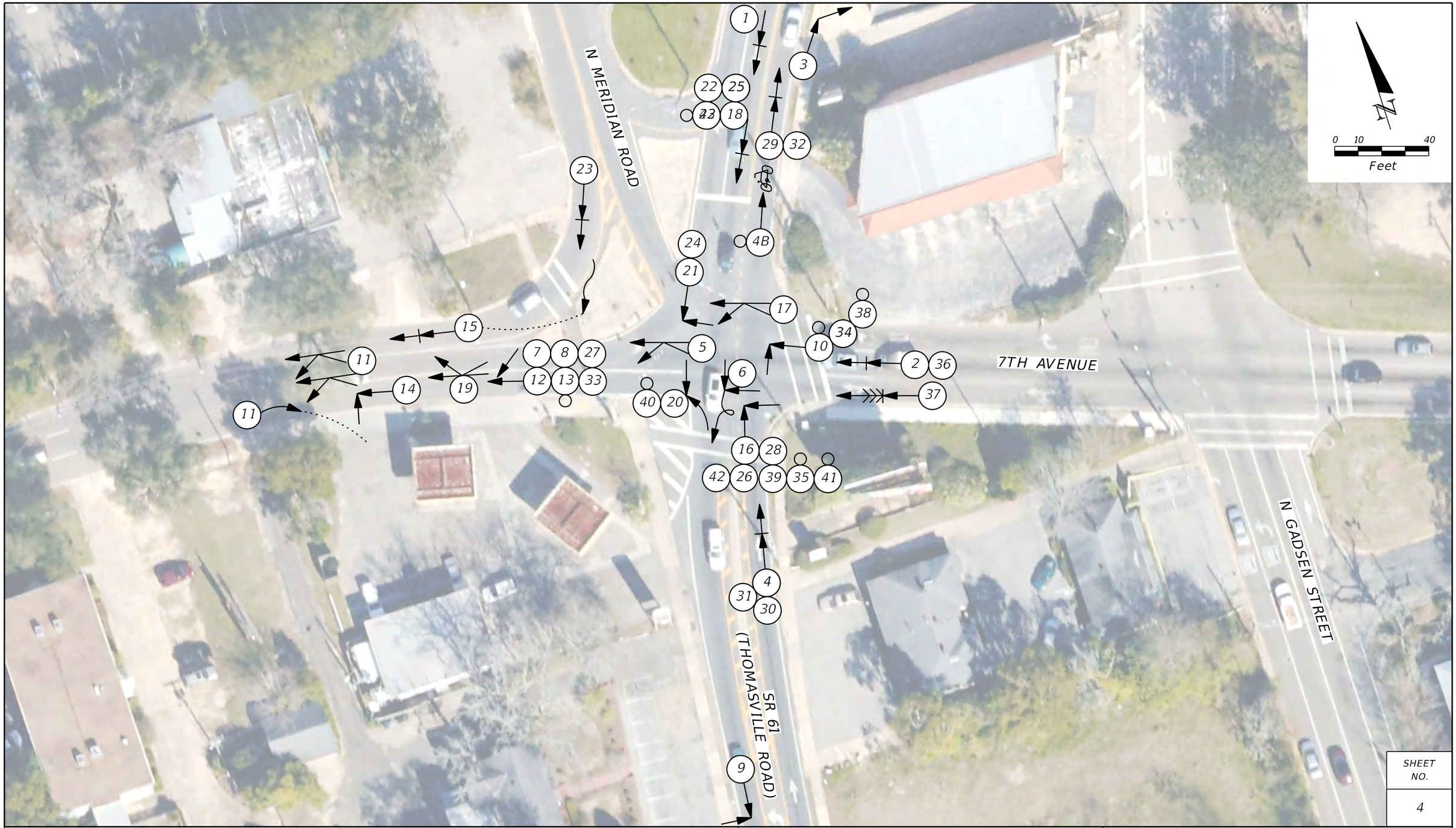
COLLISION DIAGRAM

LOCATION: SR 61 @ E 6TH AVENUE
COUNTY: LEON
DATE RANGE: 01/01/2009 TO 12/31/2014

PREPARED BY:
CARDNO
3905 CRESCENT PARK DRIVE
RIVERVIEW, FL 33578
(813) 664-4500

CRASH SUMMARY

	PROPERTY DAMAGE ONLY	INJURY	FATAL	TOTAL
DAYTIME	0	0	0	0
NIGHTTIME	0	1	0	1
TOTAL	0	1	0	1



SHEET NO. 4

SYMBOLS

- OVERTURNED VEHICLE
- BACKING VEHICLE
- OUT OF CONTROL
- HEAD-ON COLLISION
- RIGHT ANGLE COLLISION
- RIGHT TURN COLLISION
- LEFT TURN COLLISION
- REAR-END COLLISION
- ANGLE COLLISION
- SIDE SWIPE
- S — SCOOTER
- COLLISION W/ BIKE
- M — MOTORCYCLE
- COLLISION W/ PED
- PERSONAL INJURY
- FATALITY
- ## COLLISION NUMBER

COLLISION DIAGRAM

LOCATION: SR 61 @ 7TH AVENUE
COUNTY: LEON
DATE RANGE: 01/01/2009 TO 12/31/2014

PREPARED BY:
CARDNO
3905 CRESCENT PARK DRIVE
RIVERVIEW, FL 33578
(813) 664-4500

CRASH SUMMARY

	PROPERTY DAMAGE ONLY	INJURY	FATAL	TOTAL
DAYTIME	29	4	0	33
NIGHTTIME	6	5	0	11
TOTAL	35	9	0	44

SHEET NO.
5

SYMBOLS

OVERTURNED VEHICLE
BACKING VEHICLE
OUT OF CONTROL
HEAD-ON COLLISION
RIGHT ANGLE COLLISION
RIGHT TURN COLLISION
LEFT TURN COLLISION
REAR-END COLLISION
ANGLE COLLISION
SIDE SWIPE
S SCOOTER
COLLISION W/ BIKE
M MOTORCYCLE
COLLISION W/ PED
PERSONAL INJURY
FATALITY
COLLISION NUMBER

COLLISION DIAGRAM

LOCATION: SR 61 @ PINE STREET
COUNTY: LEON
DATE RANGE: 01/01/2009 TO 12/31/2014

PREPARED BY:
CARDNO
3905 CRESCENT PARK DRIVE
RIVERVIEW, FL 33578
(813) 664-4500

CRASH SUMMARY

	PROPERTY DAMAGE ONLY	INJURY	FATAL	TOTAL
DAYTIME	0	1	0	1
NIGHTTIME	0	0	0	0
TOTAL	0	1	0	1

SHEET NO. 6

SYMBOLS

OVERTURNED VEHICLE
BACKING VEHICLE
OUT OF CONTROL
HEAD-ON COLLISION
RIGHT ANGLE COLLISION
RIGHT TURN COLLISION
LEFT TURN COLLISION
REAR-END COLLISION
ANGLE COLLISION
SIDE SWIPE
S SCOOTER
COLLISION W/ BIKE
M MOTORCYCLE
COLLISION W/ PED
PERSONAL INJURY
FATALITY
COLLISION NUMBER

COLLISION DIAGRAM

LOCATION: SR 61 @ GLENVIEW DRIVE
COUNTY: LEON
DATE RANGE: 01/01/2009 TO 12/31/2014

PREPARED BY:
CARDNO
3905 CRESCENT PARK DRIVE
RIVERVIEW, FL 33578
(813) 664-4500

CRASH SUMMARY

	PROPERTY DAMAGE ONLY	INJURY	FATAL	TOTAL
DAYTIME	0	1	0	1
NIGHTTIME	0	0	0	0
TOTAL	0	1	0	1

Appendix D
Lighting Analysis Information

Lighting Analysis Details and Background Information

SR 61/Thomasville Road

A design lighting analysis was conducted for the subject corridor to determine:

- If the existing lighting meets current FDOT standards.
- Identify possible improvements should the current illumination not meet current standards.

Existing Conditions

The study segment includes SR 61/Thomasville Road from Monroe Street to Bradford Road/Betton Road. SR 61/Thomasville Road is classified as an Urban Principal Arterial along this segment of roadway. The typical sections for SR 61/Thomasville Road consists of the following:

- Two 11-foot lanes with a 10-foot paved median, a 5-foot sidewalk on each side and 2-foot utility strip
- Two 10-foot lanes with a 10-foot paved median, a 5-foot sidewalk on each side and 2-foot utility strip
- Three 11-foot lanes with a 5-foot sidewalk on each side and 3-foot utility strip
- Four 12-foot lanes with 41-foot raised median, a 5-foot sidewalk on south side only and 5-foot utility strip
- Six 12-foot lanes with 16-to 18-foot paved or raised median, a 5-foot sidewalk on each side and 3-foot utility strip

For the lighting analysis, only three typical sections were used. Some adjustments were done so multiple sections previously mentioned can be covered under one section. They are the following:

- Typical Section 1: Three 11-foot lanes and undivided
- Typical Section 2: Four 12-foot lanes with a 35-foot raised grass median
- Typical Section 3: Seven 12-foot lanes with 5-foot traffic separator

The corridor has City of Tallahassee owned street lighting along the south side only. The existing luminaires are mounted on the power poles that also carry the overhead power lines. There are also two light poles on the south side at the west end of the corridor where the power lines are not parallel to SR 61/Thomasville Road. The existing layout is a one-side pattern. The luminaire spacing ranges from approximately 100 feet to 180 feet. There are a few locations where the spacing exceeds the 180 feet.

The existing lighting provided by the City of Tallahassee is 250 watt high pressure sodium luminaire with SAG glass. The actual luminaire make and model was not provided so the design luminaire is assumed to be a Cooper Lighting OVZ drop glass model with a photometric curve of OVZ25SXX3EG.ies. Other assumptions used for the lighting analysis are a mounting height of 25 feet and a luminaire arm length of 8 feet.

Design Lighting Analysis

A design lighting analysis was performed using the existing cross section, assumed luminaire type and mounting height to determine the pole spacing required to meet the Florida Department of Transportation Plans Preparation Manual (PPM) lighting criteria. The following Table 7.3.1 of the PPM summarizing the average illumination levels, uniformity ratios and veiling luminance ratio that make up the lighting criteria guidelines.

Table 7.3.1 Conventional Lighting - Roadways

ROADWAY CLASSIFICATIONS	ILLUMINATION LEVEL AVERAGE INITIAL HORIZONTAL FOOT CANDLE (H.F.C.)	ILLUMINATION UNIFORMITY RATIOS		VEILING LUMINANCE RATIO
		AVG./MIN.	MAX./MIN.	Lv(max)/Lavg
INTERSTATE, EXPRESSWAY, FREEWAY & MAJOR ARTERIALS	1.5	4:1 or Less	10:1 or Less	0.3:1 or Less
ALL OTHER ROADWAYS	1.0	4:1 or Less	10:1 or Less	0.3:1 or Less
*SIDEWALKS AND SHARED USED PATHS	2.5	4:1 or Less	10:1 or Less	------

Note: These values shall be considered standard, but should be increased if necessary to maintain an acceptable uniformity ratio. The maximum value should be one and one-half values.

* This assumes a separate facility. Facilities within the range of the proposed or existing light poles shall use the levels for that roadway.

SR 61/Thomasville Road Street is classified as a principal arterial and is required to meet the following:

- Average lighting illumination: 1.5 foot candles (2.25 foot candles maximum)
- Uniformity rations
  - Average / Minimum: 4:1 or less
  - Maximum / Minimum: 10:1 or less
- Veiling Luminance Ratio: 0.3 or less

Using the Visual Roadway Tool lighting software loaded with the information previously mentioned and the assumed 250 watt Cooper OVZ luminaire with a typical eight foot setback and a one side pole configuration, the following table provides the three typical section spacing range results necessary to try to meet current FDOT requirements.

Typical Section	Direction (EB/WB)	Maximum Spacing				Minimum Spacing			
		Pole Spacing	Avg (FC) (1.5 to 2.25)	Max/Min (10:1 or less)	Avg/Min (4:1 or less)	Pole Spacing	Avg (FC) (1.5 to 2.25)	Max/Min (10:1 or less)	Avg/Min (4:1 or less)
1	EB	135	2.8	7.8	3.1	85	4.6	3.1	1.8
	WB	135	1.5	3.5	1.9	85	2.3	2.1	1.4
2	EB	255	1.5	70.0	15.0	165	2.2	17.5	5.5
	WB	225	0.1	*	*	165	0.1	*	*
3	EB	165	1.5	23.3	5.0	110	2.2	14.4	4.4
	WB	165	0.1	*	*	110	0.1	3.0	1.0

*** Uniformity cannot be calculated**

As shown in the above table, the existing lighting cannot provide adequate lighting based on FDOT criteria. The uniformity ratios and/or the average illumination levels do not meet the criteria.

Existing Lighting Analysis

An existing design lighting analysis was performed using the previously mentioned three typical sections, luminaire type, luminaire wattage, mounting height and spacing to determine if the existing lighting meets current FDOT lighting criteria. Since the luminaires are mounted on the power poles, the spacing varies, a weighted average was used for each three typical sections. The following table represents the lighting analysis with the existing luminaire spacing.

Typical Section	Lighting Pole Spacing (FT)	Direction (EB/WB)	Avg (FC) (1.5 to 2.25)	Max/Min (10:1 or less)	Avg/Min (4:1 or less)	Lv Ratio (0.3:1 or less)
1	130	EB	2.9	7.0	2.9	0.3
		WB	1.5	3.5	1.9	0.3
2	160	EB	2.5	11.7	4.2	0.3
		WB	0.1	2.0	1.0	0.5
3	150	EB	1.5	23.3	5.0	0.5
		WB	0.1	*	*	0.6

* **Uniformity cannot be calculated**

The above analysis indicates that the existing lighting does not meet current FDOT lighting criteria. For the Typical Section 3 analysis, the westbound lanes minimum foot–candles was zero, so the uniformity ratios could not be calculated. Since lighting was only on the south side, the lighting levels for the westbound lanes are considerably lower than the eastbound lanes. The westbound lane for the three lane geometry at the west end of the project was the only statistics zone that met the FDOT Lighting Criteria base on the assumptions of the luminaire and a weighted average for pole spacing. Inconsistent spacing affects the light throw and causes more bright and dark spots along the segment and makes it difficult to achieve an acceptable level of illumination. Also, one side lighting with low mounting height and only 250 watt luminaire for Typical Sections 2 and 3 due to the number of lanes and/or the median size. Also, there are trees in the medians that will prevent the light throw to illuminate the westbound lanes.

Alternatives to Enhance Lighting

Two lighting alternatives were investigated to develop a conventional lighting strategy to comply with current FDOT lighting standards:

- Replace existing lighting with utility conflict light poles on both sides on SR 61/Thomasville Road.
- Replace existing lighting with pole top decorative lighting on both sides of SR 61/Thomasville Road.

Alternative 1

The first alternative eliminates the power company owned lighting in lieu of new FDOT lighting. Since there are existing overhead power lines on the south side, Alternate 1 proposed lighting design will use a utility conflict light pole with a mounting height of 35 feet on both sides of the road. The pole upright will be 20 feet high which should meet OSHA requirements on distance for the power lines. The 15 foot bracket arm would be mounted at an approximately a 45 degree angle that would bring the mounting height to 35 feet. As shown in the condition diagrams in the report, there appears to be adequate right-of-way to install light poles on the north side of SR 61/Thomasville Road. A lighting analysis using a 250 watt Cooper luminaire (photometric curve number OVZ25SXX3EG.ies, mounting height of 35 feet, offset of eight feet, an arm length of 15 feet and a staggered light pole layout yields the following results.

Typical Section	Lighting Pole Spacing (FT)	Direction (EB/WB)	Avg (FC) (1.5 to 2.25)	Max/Min (10:1 or less)	Avg/Min (4:1 or less)	Lv Ratio (0.3:1 or less)
1	345	EB	1.6	6.0	2.7	0.2
		WB	1.5	5.7	2.5	0.2
2	185	EB	1.7	8.0	3.4	0.2
		WB	1.7	8.0	3.4	0.2
3	185	EB	1.7	7.6	3.4	0.2
		WB	1.7	7.6	3.4	0.2

Staggered pole spacing of 345 feet (Typical Section 1) and 185 feet (Typical Sections 2 and 3) between poles along both sides of SR 61/Thomasville Road will provide adequate lighting and meet the current FDOT lighting criteria. This alternative is recommended over Alternative 2 because it is less expensive due to the lower number of poles and load centers necessary to light SR 61/Thomasville Road.

Alternative 2

The second alternative also eliminates the power company owned lighting in lieu of new FDOT lighting. Since there are existing overhead power lines on the south side, Alternate 2 proposed lighting design will use decorative pole top mounted luminaires with a mounting height of 16 feet on both sides of the road. There should not be any issues with meeting the OSHA requirements on distance for the power lines. Since new types of luminaires are being used, the analysis is not matching any existing luminaire type. LED luminaires from Beacon will be the design luminaire. As shown in the condition diagram, there appears to be adequate right-of-way to install light poles on the north side of SR 61/Thomasville road. Due to the difference in the number of lanes between the typical sections, two luminaires will be used for analysis. Typical Sections 1 and 2 analysis is using the 82 watt Beacon Slide LED luminaire (photometric curve number 36NB-82-T5SW.ies, mounting height of 16 feet, offset of eight feet and a staggered light pole layout. Typical Section 3 is using the 136 watt Beacon Slide LED luminaire (photometric curve number 60NB-135-T5W. The lighting analysis yields the following results.

Typical Section	Lighting Pole Spacing (FT)	Direction (EB/WB)	Avg (FC) (1.5 to 2.25)	Max/Min (10:1 or less)	Avg/Min (4:1 or less)	Lv Ratio (0.3:1 or less)
1	85	EB	1.5	1.6	1.2	0.3
		WB	1.5	1.6	1.2	0.3
2	85	EB	1.7	1.5	1.3	0.3
		WB	1.7	1.4	1.2	0.3
3	45	EB	1.5	1.2	1.2	0.2
		WB	1.5	1.2	1.2	0.1

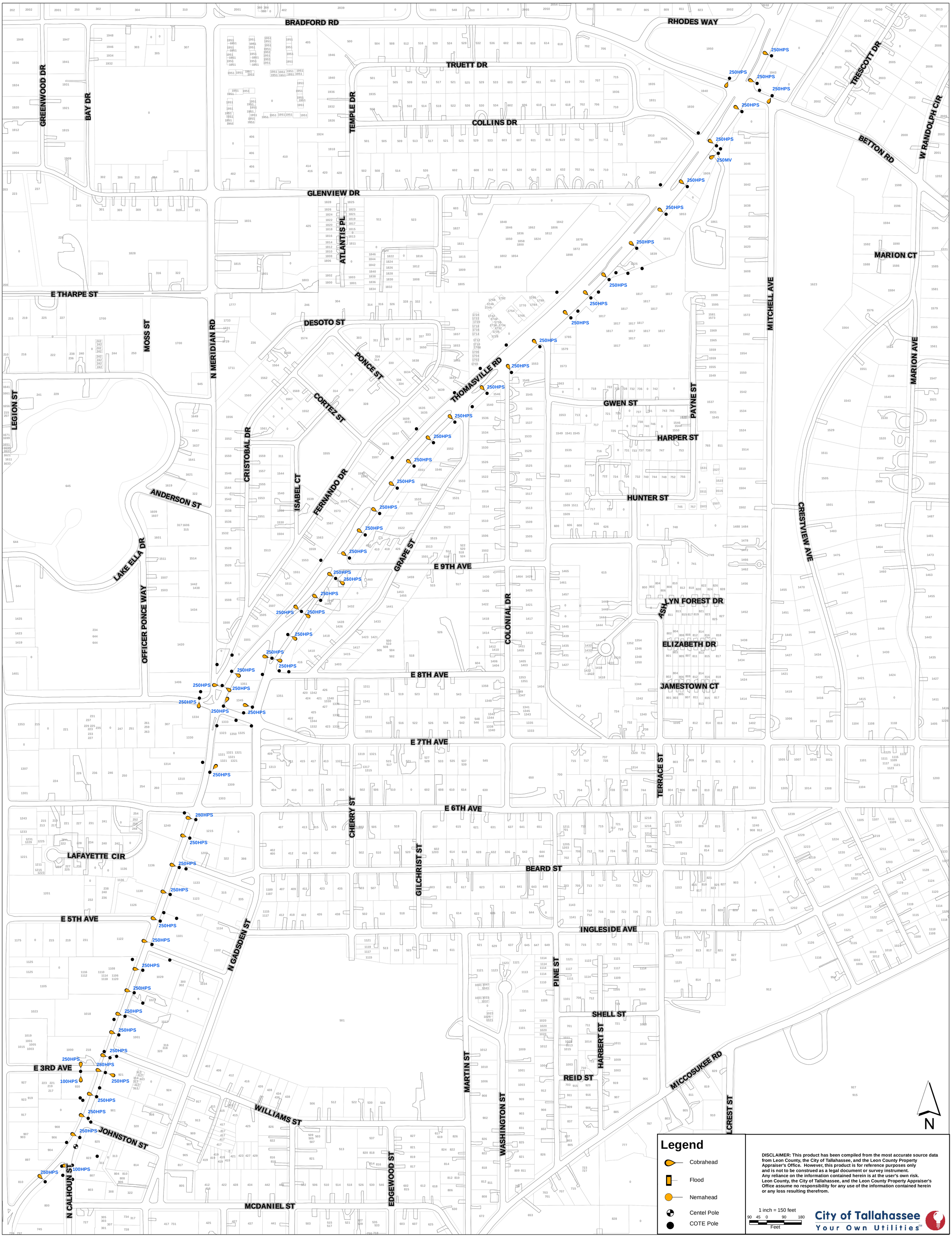
Staggered pole spacing of 85 feet (Typical Sections 1 and 3) and 45 feet (Typical Section 2) between poles along both sides of SR 61/Thomasville Road will provide adequate lighting and meet the current FDOT lighting criteria. Even though the uniformity ratios are better than Alternative 1, the cost is greater. Therefore, Alternative 2 is not recommended.

David Allen

From: Wiggins, Avis <Avis.Wiggins@talgov.com>
Sent: Wednesday, December 23, 2015 6:50 AM
To: Jeff Roberts
Cc: Drose, Tina
Subject: Thomasville Streetlights
Attachments: Thomasvillelights.pdf

Good Morning Mr. Roberts,
Here is a map showing Thomasville Road from N Monroe to Bradford with streetlights giving wattage and type (HPS, MV, LED).

Thanks,
Avis Wiggins, GISP
GIS Technician
City of Tallahassee - Power Engineering
Avis.Wiggins@talgov.com
Office: 850.891.5029



Production Date: 12/22/2015 Producted by A. Wiggins

DESCRIPTION

The OVZ Drop Lens refractor roadway luminaire is ideal for roadways, parking areas, residential neighborhoods and bridge structures. Suitable for 3G vibration conditions.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction
HOUSING: Die-cast aluminum housing and latch. 3G Vibration rated. DOOR: Die-cast aluminum door frame with integral hinges for hands free installation, relamping and maintenance. ANSI wattage/source label.

Optical
LENS: Removable prismatic refractor for use with High Pressure Sodium, Metal Halide and Pulse Start Metal Halide lamp sources. REFLECTOR: The optical system is a hydroformed anodized aluminum reflector with a Dacron polyester filter.

Electrical
SOCKET: Adjustable mogul-base porcelain socket. 150W Metal Halide and below is medium-base. BALLAST ASSEMBLY: Hard mounted ballast with encapsulated starter for protection from environmental abuse. Standard two position tunnel type compression terminal block. Three position available. Consult your Streetworks Representative. PHOTOCONTROL: Optional NEMA twistlock photocontrol receptacle also available.

Mounting
Two-bolt/one bracket slipfitter with cast-in pipe stop and leveling steps. Fixed-in-place birdguard seals around 1-1/4" or 2" mounting arms. (Birdguard not needed for 2" arm.)

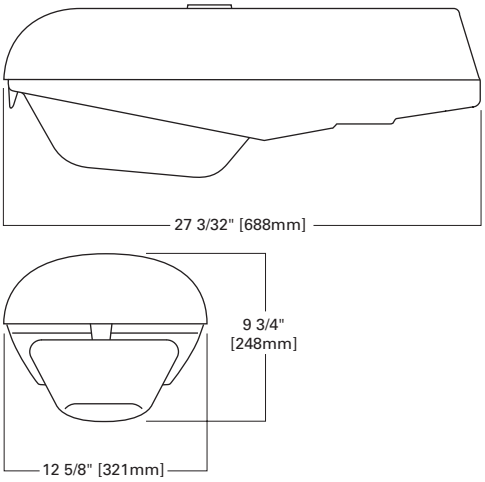
Finish
Standard grey polyester powder coat finish. Optional bronze, black and white finishes available.

OVZ
DROP LENS REFRACTOR

50 - 250W
Pulse Start Metal Halide
High Pressure Sodium
Metal Halide

ROADWAY LUMINAIRE

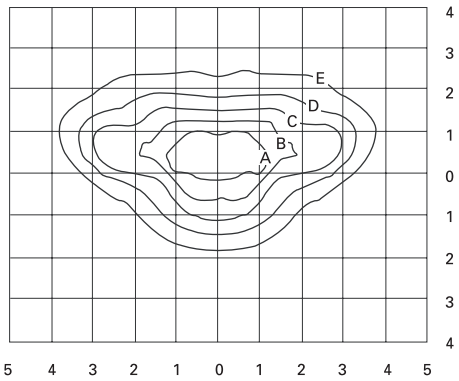
DIMENSIONS



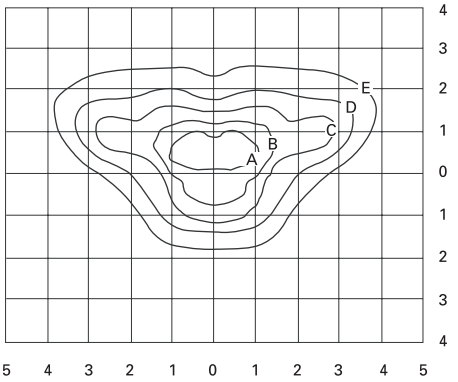
EPA
Effective Projected Area:
.85 Square Feet

SHIPPING DATA
Approximate Net Weight:
31 lbs. (14 kgs.)

PHOTOMETRICS (COMPLETE IES FILES AVAILABLE AT EATON.COM/LIGHTING)



OVZ15SWW2E
150—Watt HPS
16,000—Lumen Clear Lamp
Type II-Medium Semi-Cutoff



OVZ15SWW3E
150—Watt HPS
16,000—Lumen Clear Lamp
Type III-Medium Semi-Cutoff

Footcandle Table
Select mounting height and read across for footcandle values of each isofootcandle line. Distance in units of mounting height.

Mounting Height	Footcandle Values for Isofootcandle Lines				
	A	**B**	**C**	**D**	**E**
OVZ15SWW2E / OVZ15SWW2E					
20'	3.20	1.60	0.80	0.32	0.16
25'	**2.00**	**1.00**	**0.50**	**0.20**	**0.10**
30'	1.38	0.69	0.35	0.14	0.07
35'	1.02	0.51	0.26	0.10	0.05

PHOTOMETRIC DISTRIBUTION (CURVE NUMBER)

Wattage	Light Source [1]	Lens Type [2]	II MSCO	III MSCO	II MCO	II 4-Way
50-150	HPS (ED23 1/2)	Acrylic	OVZ15S2E (150W)	OVZ15S3E (150W)	N/A	N/A
50-150	HPS (ED23 1/2)	Glass	OVZ15S2EG (150W)	OVZ15S3EG (150W)	N/A	OVZ15S7EG (150W)
200-250	HPS (ED-18)	Glass	OVZ25S2EG (250W)	OVZ25S3EG (250W)	N/A	OVZ25S7EG (250W)
175	MH (ED-18)	Acrylic	OVZ17M2E (175W)	OVZ17M3E (175W)	N/A	N/A
175-250	MH (ED-28)	Glass	N/A	OVZ17M3EG (175W)	OVZ17M2DG (175W)	N/A

NOTE: 1 All light sources are clear unless noted otherwise. **2** Prismatic refractor.

ORDERING INFORMATION

Sample Number: OVZ25SWW3D

Product Family [1]	Lamp Wattage	Lamp Type	Ballast Type	Voltage	Distribution [5]	Optical Package [5]
OVZ=Drop Lens Refractor	**Pulse Start Metal Halide** **70**=70W **10**=100W **15**=150W **17**=175W **25**=250W **High Pressure Sodium** **50**=50W **70**=70W **10**=100W **15**=150W [2] **20**=200W **25**=250W **M (Probe Start)** [3] **17**=175W **25**=250W	**P**=Pulse Start Metal Halide **S**=High Pressure Sodium **M**=Metal Halide	**C**=CWI **H**=Reac. /HPF **K**=10KV CWA [4] **N**=Hi.Reac./NPF **P**=Hi. Reac./HPF **R**=Hi.Reac./NPF **W**=CWA **M**=Mag. Reg.	**2**=120V **0**=208V **4**=240V **7**=277V **8**=480V **9**=347V **F**=120/240V, wired 120V **W**=Multi-Tap, wired 120V **P**=240V w/PCR, wired 120V **V**=Multi-Tap, wired 240V **N**=Multi-Tap, wired 277V	**2**=Type II **3**=Type III	**D**=MCO **E**=MSCO

Options (Add as Suffix)		**Accessories** (Order Separately)
CEC=California Title 20 Compliant Ballast (Applies to 175-250W Pulse Start MH only) **1**=Single Fuse (120, 277 or 347V) **2**=Double Fuse (208, 240 or 480V) **4**=NEMA Photocontrol Receptacle **P**=Polycarbonate Refractor **G**=Glass Refractor **A**=Raw Aluminum Unfinished **WH**=White **BK**=Black	**BZ**=Bronze **E**=150/100V HPS Ballast **H**=Plug in Starter Receptacle **L**=Lamp Included **F**=Flat Glass **K**=Level Indicator **M**=MOV Lightning Surge Protectors [6] **U**=U.L./CSA Listed **3**=Three Position Terminal Block	**OA/RA1016**=NEMA Photocontrol - Multi-Tap **OA/RA1027**=NEMA Photocontrol - 480V **OA/RA1014**=NEMA Photocontrol - 120V **RA1001**=Cutoff Visor **OA1216**=TufGuard Vandal Shield **OA/RA1013**=Photocontrol Shorting Cap

NOTES:
1. Customer is responsible for engineering analysis to confirm pole and fixture compatiblity for all applications. Refer to our white paper WP513001EN for additional support information.
2. 150W Units are for S55 Lamps.
3. Probe Start Metal Halide available for non-US markets only (175-250W).
4. Available 50-150W. 120/240V or single voltage only.
5. Other distributions and cutoffs avialable. Consult your lighting representative at Eaton for more information.
6. MOV option not available for any system requiring a three position terminal block (example - 240V with PCR wired 120V). In order for MOV option to function center terminal of three positon terminal block must be connected to "Earth" ground.

BEACON
design . performance . technology
www.beaconproducts.com

Type:	
Project Name:	
Notes:	

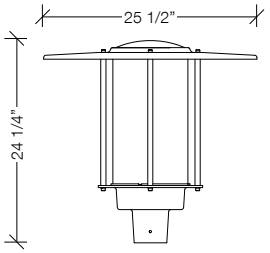
rev. 10.12.2015

SLIDE (LED)

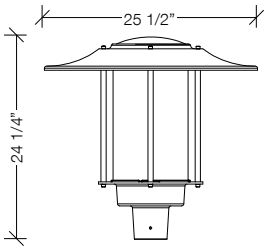
Architectural Area Luminaire
Max Weight: 25 lbs
Max EPA: 1.80 sq ft

Sample	*SLD*	*NL*	*24NB-27*	*5K*	*UNV*	*T5R*	*PEC*	*GENIXX*	*FLT*	*CTS*	*BBT*
Ordering		/	/	/	/	/	/	/	/	/	/
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**

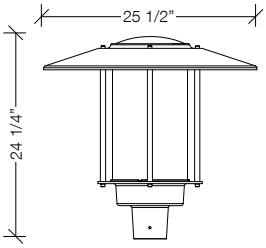
DETAILS



Flat Top / Flat Shade



Flat Top / Curved Shade



Flat Top / Sloped Shade

A. MODEL

SLD	Slide

B. LENS OPTIONS

NL	no lens

C. ENGINE-WATTS

24NB-27	27 Watts - LED array
24NB-55	55 Watts - LED array
36NB-80	80 Watts - LED array
48NB-110	110 Watts - LED array

D. CCT - COLOR TEMP

3K	3000K
4K	4000K
5K	5000K (std.)

E. VOLTAGE

UNV	120-277V

F. OPTICS

T2	type II
T3	type III
T4	type IV
T5R	type V, rectangular
T5QM	type V, square medium
T5W	round wide

G. ELECTRICAL OPTIONS

PEC	photocell, button
2PF	dual power feed

H. CONTROL OPTIONS

GENI-XX	energeni [1]

I. STYLE OPTIONS

FLT	flat top

J. SHADE OPTIONS

FTS	flat
STS	slope
CTS	curved

K. COLOR

BBT	basic black textured
BMT	black matte textured
WHT	white textured
MBT	metallic bronze textured
BZT	bronze textured
DBT	dark bronze textured
GYS	gray smooth
MST	metallic silver textured
MTT	metallic titanium textured
OWI	old world iron
RAL	_____

[1] When ordering Energeni, specify the routine setting code (example GENI-04). See Energeni brochure and instructions for setting table and options. Not available with sensor options.

rev. 10.12.2015

SLIDE (LED)

Architectural Area Luminaire
Max Weight: 25 lbs
Max EPA: 1.80 sq ft

Housing: All cast aluminum parts shall be low copper alloy A356. All extruded aluminum parts shall be alloy 6061-T6, 6063-T5 or equal.

Construction: The upper chamber/lid shall be topped by a decorative cast aluminum finial/cap and mechanically fastened to the optical chamber. The cast multi-sided cage shall accommodate UV stabilized acrylic or polycarbonate lenses (side panels) which shall be sealed for weather tight operation.
The electrical chamber/fitter shall be aluminum, decorative fitter designed to accommodate the ballast assembly and shall mount to 3 OD x 4" H tenon and secured by three stainless steel set screws.

Fasteners: All fasteners shall be Corrosion Resistant. When tamper resistant fasteners are required, spanner HD (snake eye) style shall be provided (special tool required, available at additional cost).

Finish: Finish shall be a Beacote V polyester powder-coat electro-statically applied and thermocured. Beacote V finish shall consist of a five stage iron phosphate chemical pretreatment regimen with a polymer primer sealer, oven dry off, and top coated with a thermoset super TGIC polyester powder coat finish. The finish shall meet the AAMA 605.2 performance specification which includes passing a 3000 hour salt spray test for corrosion resistance and resists cracking or loss of adhesion per ASTM D522 and resists surface impacts of up to 160 inch-pound.

Bezel Optical System: Each luminaire is supplied with an optical one piece cartridge system consisting of an LED engine, LED lamps, optics, gasket and stainless steel bezel. The cartridge is held together with internal brass standoffs soldered to the board so that it can be field replaced as a one piece optical system. Two-piece silicone and polycarbonate foam gasket ensures a weather-proof seal around each individual LED and allows the luminaire to be rated for high-pressure hose down applications.
The optical cartridge is secured to the extruded housing with fasteners and a heat pad to ensure thermal conductivity. The optics are held in place without the use of adhesives and the complete assemble is gasketed for high pressure hose down cleaning. The cartridge assembly is available in various lighting distributions using a specially designed acrylic optical lens over each LED.

Power Supply/Driver Requirements: U.L. UL1310, Class 2 and UL48 compliant

Color Rendering Index (CRI): Luminaire shall have a minimum CRI of 67 at 5000K.

Operating Environment: Shall be able to operate normally in ambient temperatures from -40°C to 40°C

LifeShield™ Circuit: Thermal circuit shall protect the luminaire from excessive temperature by interfacing with its 0-10V dimmable drivers to reduce drive current as necessary. The factory-preset temperature limits shall be designed to ensure maximum hours of operation to assure L70 rated lumen maintenance. The device shall activate at a specific, factory-preset temperature, and progressively reduce power over a finite temperature range in recognition of the effect of reduced current on the internal temperature and longevity of the LEDs and other components. A luminaire equipped with the device may be reliably operated in any ambient temperature up to 55ºC (131ºF). The thermal circuit will allow higher maximum Wattages than would be permissible on an unregulated luminaire (if some variation in light output is permissible), without risk of premature LED failure. Operation shall be smooth and undetectable to the eye. Thermal circuit shall directly measure the temperature at the LED solder point.

Thermal circuit shall consist of surface mounted components mounted on the LED engine (printed circuit board). For maximum simplicity and reliability, the device shall have no dedicated enclosure, circuit board, wiring harness, gaskets, or hardware. Device shall have no moving parts, and shall operate entirely at low voltage (NEC Class 2). The device shall be located in an area of the luminaire that is protected from the elements.

Thermal circuit shall be designed to "fail on", allowing the luminaire to revert to full power in the event of an interruption of its power supply, or faulty wiring connection to the drivers.

Device shall be able to co-exist with other 0-10V control devices (occupancy sensors, external dimmers, etc.). The device will effectively control the solder point temperature as needed; otherwise it will allow the other control device(s) to function unimpeded.

Surge Protector: The on-board surge protector shall be a UL recognized component for the United States and Canada and have a surge current rating of 20,000 Amps using the industry standard 8/20 pSec wave. The LSP shall have a clamping voltage of 825V and surge rating of 540J. The case shall be a high-temperature, flame resistant plastic enclosure.

Electrical: Luminaires are equipped with LED driver(s) that accept 90 through 305 VAC, 50 Hz to 60 Hz (UNIV). Power factor is .92 at full load. All electrical components are rated at 50,000 hours at full load and 25°C ambient conditions per MIL-217F Notice 2. All driver components supplied are component-to-component wiring within the luminaire will carry no more than 80% of rated current and is listed by UL for use at 600VAC at 50°C or higher. Plug disconnects are listed by UL for use at 600 VAC, 15A or higher.

Agency Certification: The luminaire shall bear an NRTL label and be marked suitable for wet locations.

Limited Warranty: Beacon luminaires feature a 5 year limited warranty. Beacon LED luminaires with LED arrays feature a 5 year limited warranty covering the LED arrays. LED drivers are covered by a 5 year limited warranty. PIR sensors carry a 5 year limited warranty from the sensor manufacturer. See Warranty Information on www.beaconproducts.com for complete details and exclusions.

Power/Lumens & Distributions

Engine	nominal Wattage	lumen output (5k) varies by optic	delivered LPW	TM21 Lumen Maintenance Tested at 25°C (77°F)	
				tested per IESNA LM-80-08	*tested per IESNA TM-21-11*
24NB-30	30	2752-3014	105-115	@60,000hrs > 95%	@100,000hrs > 87%
24NB-55	55	5138-5500	93-100	@60,000hrs > 95%	@100,000hrs > 87%
36NB-80	80	6935-8215	93-103	@60,000hrs > 95%	@100,000hrs > 87%
48NB-110	110	10240-10950	93-103	@60,000hrs > 95%	@100,000hrs > 87%

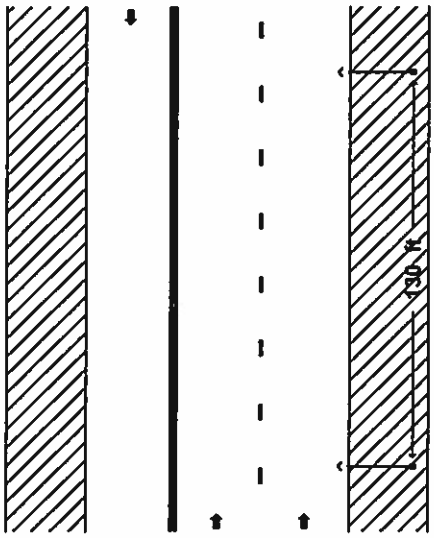
The lumen maintenance factor (LLF) is calculated based on the hours of operation anticipated and the operating conditions of the application. Select the desired number from the table above that corresponds to the specific application. For other lumen maintenance values, consult factory.

CCT (COLOR TEMP) Lumen Output Multipliers	**CRI (Color Rendering)**
5000° K = 1.0	min 67 CRI
4000° K = .92	min 70 CRI
3000° K = .75	min 80 CRI

Due to our continued efforts to improve our products, product specifications are subject to change without notice.

Design Information

Project	**Thomasville RdArterial Study**
Number	**00195-401-20**
Name	**David Allen**
Company	**Cardno**



Roadway Information

Number Left Lanes	**1**
Left Lane Width	**11 ft**
Median Width	**0 ft**
Number Right Lanes	**2**
Right Lane Width	**11 ft**
Calculation Method	**IES RP8-2000**
Pavement Reflectance	**Asphalt - R3**
Roadway Classification	**Major**
Pedestrian Conflict	**Medium**

Luminaire Information

Right Side

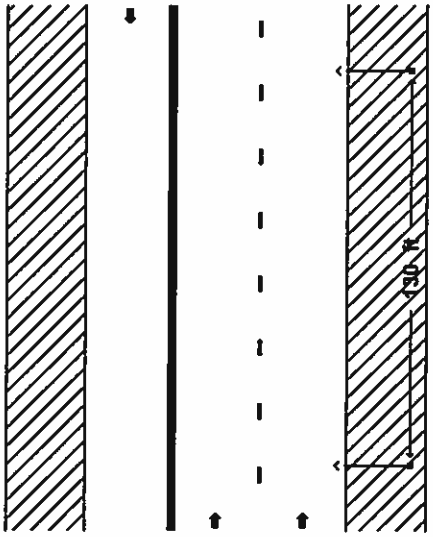
Label	**A**
Catalog Number	**OVZ25SXX3EG**
Photometric File	**OVZ25SXX3EG.ies**
Lamp Lumens	**27500**
Light Loss Factor	**1.00**
Input Power	**250 W**
Tilt	**0°**
Arm Length	**8 ft**
Mounting Height	**25 ft**
Setback	**8 ft**
Quantity	**8**

Calculation Results - Left Side

Luminance			Illuminance					
Average	**0.9**	**cd/m²**	Average	**1.5**	**fc**	Lv Ratio	**0.3**	
Max	**1.1**	**cd/m²**	Max	**2.8**	**fc**	STV	**3.4**	
Min	**0.7**	**cd/m²**	Min	**0.8**	**fc**	Spacing	**130**	**ft**
Max/Min	**1.6**		Max/Min	**3.5**		Length	**1000**	**ft**
Avg/Min	**1.3**		Avg/Min	**1.9**		Quantity	**8**	

Design Information

Project	**Thomasville RdArterial Study**
Number	**00195-401-20**
Name	**David Allen**
Company	**Cardno**



Roadway Information

Number Left Lanes	**1**
Left Lane Width	**11 ft**
Median Width	**0 ft**
Number Right Lanes	**2**
Right Lane Width	**11 ft**
Calculation Method	**IES RP8-2000**
Pavement Reflectance	**Asphalt - R3**
Roadway Classification	**Major**
Pedestrian Conflict	**Medium**

Luminaire Information

Right Side

Label	**A**
Catalog Number	**OVZ25SXX3EG**
Photometric File	**OVZ25SXX3EG.ies**
Lamp Lumens	**27500**
Light Loss Factor	**1.00**
Input Power	**250 W**
Tilt	**0°**
Arm Length	**8 ft**
Mounting Height	**25 ft**
Setback	**8 ft**
Quantity	**8**

Calculation Results - Right Side

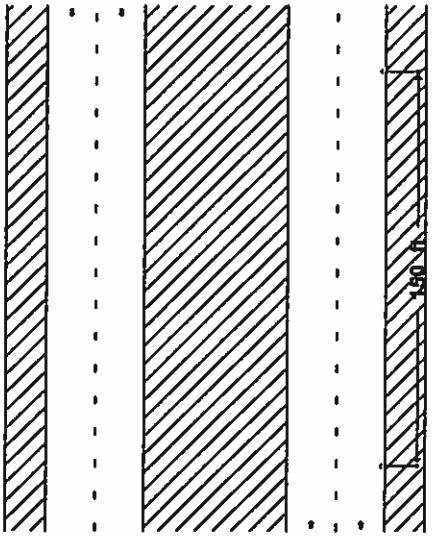
Luminance			Illuminance					
Average	**2.4**	**cd/m²**	Average	**2.9**	**fc**	Lv Ratio	**0.3**	
Max	**4.1**	**cd/m²**	Max	**7.0**	**fc**	STV	**4.1**	
Min	**1.3**	**cd/m²**	Min	**1.0**	**fc**	Spacing	**130**	**ft**
Max/Min	**3.2**		Max/Min	**7.0**		Length	**1000**	**ft**
Avg/Min	**1.8**		Avg/Min	**2.9**		Quantity	**8**	

Design Information

Project	**Thomasville RdArterial Study**
Number	**00195-401-20**
Name	**David Allen**
Company	**Cardno**

Roadway Information

Number Left Lanes	**2**
Left Lane Width	**12 ft**
Median Width	**35 ft**
Number Right Lanes	**2**
Right Lane Width	**12 ft**
Calculation Method	**IES RP8-2000**
Pavement Reflectance	**Asphalt - R3**
Roadway Classification	**Major**
Pedestrian Conflict	**Medium**



Luminaire Information

Right Side

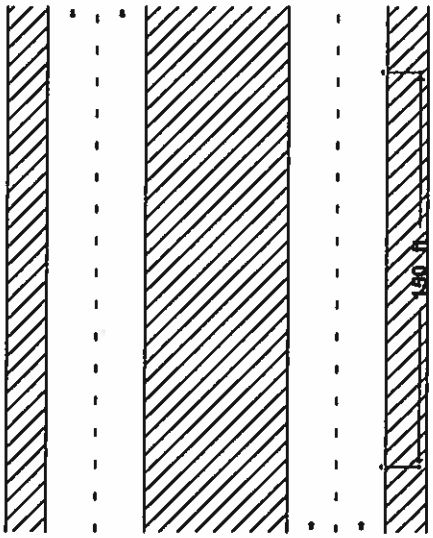
Label	**A**
Catalog Number	**OVZ25SXX3EG**
Photometric File	**OVZ25SXX3EG.ies**
Lamp Lumens	**27500**
Light Loss Factor	**1.00**
Input Power	**250 W**
Tilt	**0°**
Arm Length	**8 ft**
Mounting Height	**25 ft**
Setback	**8 ft**
Quantity	**7**

Calculation Results - Left Side

Luminance			Illuminance					
Average	**0.1**	**cd/m²**	Average	**0.1**	**fc**	Lv Ratio	**0.5**	
Max	**0.2**	**cd/m²**	Max	**0.2**	**fc**	STV	**1.9**	
Min	**0.1**	**cd/m²**	Min	**0.1**	**fc**	Spacing	**150**	**ft**
Max/Min	**2.0**		Max/Min	**2.0**		Length	**1000**	**ft**
Avg/Min	**1.0**		Avg/Min	**1.0**		Quantity	**7**	

Design Information

Project	**Thomasville RdArterial Study**
Number	**00195-401-20**
Name	**David Allen**
Company	**Cardno**



Roadway Information

Number Left Lanes	**2**
Left Lane Width	**12 ft**
Median Width	**35 ft**
Number Right Lanes	**2**
Right Lane Width	**12 ft**
Calculation Method	**IES RP8-2000**
Pavement Reflectance	**Asphalt - R3**
Roadway Classification	**Major**
Pedestrian Conflict	**Medium**

Luminaire Information

Right Side

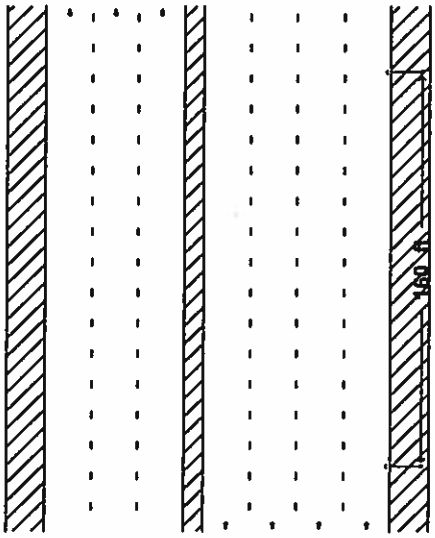
Label	**A**
Catalog Number	**OVZ25SXX3EG**
Photometric File	**OVZ25SXX3EG.ies**
Lamp Lumens	**27500**
Light Loss Factor	**1.00**
Input Power	**250 W**
Tilt	**0°**
Arm Length	**8 ft**
Mounting Height	**25 ft**
Setback	**8 ft**
Quantity	**7**

Calculation Results - Right Side

Luminance			Illuminance					
Average	**2.0**	**cd/m²**	Average	**2.5**	**fc**	Lv Ratio	**0.3**	
Max	**3.8**	**cd/m²**	Max	**7.0**	**fc**	STV	**5.0**	
Min	**0.9**	**cd/m²**	Min	**0.6**	**fc**	Spacing	**150**	**ft**
Max/Min	**4.2**		Max/Min	**11.7**		Length	**1000**	**ft**
Avg/Min	**2.2**		Avg/Min	**4.2**		Quantity	**7**	

Design Information

Project	Thomasville RdArterial Study
Number	00195-401-20
Name	David Allen
Company	Cardno



Roadway Information

Number Left Lanes	3
Left Lane Width	12 ft
Median Width	5 ft
Number Right Lanes	4
Right Lane Width	12 ft
Calculation Method	IES RP8-2000
Pavement Reflectance	Asphalt - R3
Roadway Classification	Major
Pedestrian Conflict	Medium

Luminaire Information

Right Side

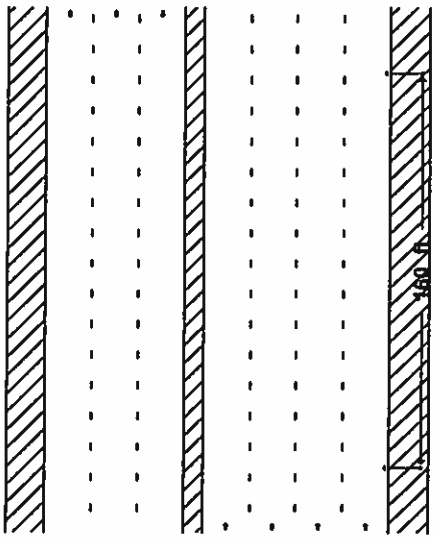
Label	A
Catalog Number	OVZ25SXX3EG
Photometric File	OVZ25SXX3EG.ies
Lamp Lumens	27500
Light Loss Factor	1.00
Input Power	250 W
Tilt	0°
Arm Length	8 ft
Mounting Height	25 ft
Setback	8 ft
Quantity	7

Calculation Results - Left Side

Luminance			Illuminance					
Average	0.1	cd/m²	Average	0.1	fc	Lv Ratio	0.6	
Max	0.2	cd/m²	Max	0.2	fc	STV	1.8	
Min	0.0	cd/m²	Min	0.0	fc	Spacing	160	ft
Max/Min	–		Max/Min	–		Length	1000	ft
Avg/Min	–		Avg/Min	–		Quantity	7	

Design Information

Project	Thomasville RdArterial Study
Number	00195-401-20
Name	David Allen
Company	Cardno



Roadway Information

Number Left Lanes	3
Left Lane Width	12 ft
Median Width	5 ft
Number Right Lanes	4
Right Lane Width	12 ft
Calculation Method	IES RP8-2000
Pavement Reflectance	Asphalt - R3
Roadway Classification	Major
Pedestrian Conflict	Medium

Luminaire Information

Right Side

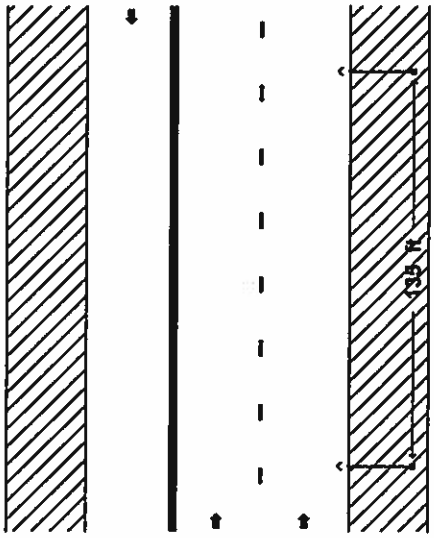
Label	A
Catalog Number	OVZ25SXX3EG
Photometric File	OVZ25SXX3EG.ies
Lamp Lumens	27500
Light Loss Factor	1.00
Input Power	250 W
Tilt	0°
Arm Length	8 ft
Mounting Height	25 ft
Setback	8 ft
Quantity	7

Calculation Results - Right Side

Luminance			Illuminance					
Average	1.2	cd/m²	Average	1.5	fc	Lv Ratio	0.5	
Max	3.7	cd/m²	Max	7.0	fc	STV	4.0	
Min	0.2	cd/m²	Min	0.3	fc	Spacing	160	ft
Max/Min	18.5		Max/Min	23.3		Length	1000	ft
Avg/Min	6.0		Avg/Min	5.0		Quantity	7	

Design Information

Project	Thomasville RdArterial Study
Number	00195-401-20
Name	David Allen
Company	Cardno



Roadway Information

Number Left Lanes	1
Left Lane Width	11 ft
Median Width	0 ft
Number Right Lanes	2
Right Lane Width	11 ft
Calculation Method	IES RP8-2000
Pavement Reflectance	Asphalt - R3
Roadway Classification	Major
Pedestrian Conflict	Medium

Luminaire Information

Right Side

Label	A
Catalog Number	OVZ25SXX3EG
Photometric File	OVZ25SXX3EG.ies
Lamp Lumens	27500
Light Loss Factor	1.00
Input Power	250 W
Tilt	0°
Arm Length	8 ft
Mounting Height	25 ft
Setback	8 ft
Quantity	8

Calculation Results - Left Side

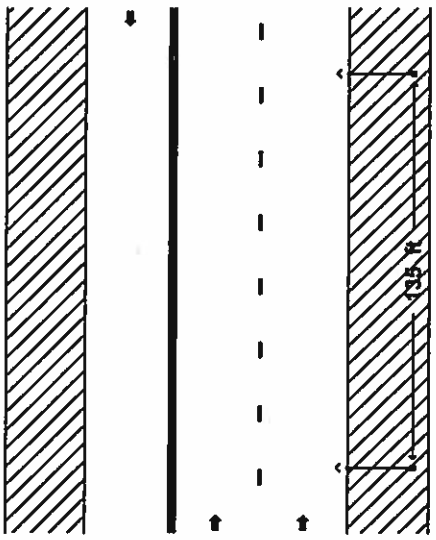
Luminance			Illuminance					
Average	0.9	cd/m²	Average	1.5	fc	Lv Ratio	0.3	
Max	1.1	cd/m²	Max	2.8	fc	STV	3.5	
Min	0.7	cd/m²	Min	0.8	fc	Spacing	135	ft
Max/Min	1.6		Max/Min	3.5		Length	1000	ft
Avg/Min	1.3		Avg/Min	1.9		Quantity	8	

Design Information

Project	**Thomasville RdArterial Study**
Number	**00195-401-20**
Name	**David Allen**
Company	**Cardno**

Roadway Information

Number Left Lanes	**1**
Left Lane Width	**11 ft**
Median Width	**0 ft**
Number Right Lanes	**2**
Right Lane Width	**11 ft**
Calculation Method	**IES RP8-2000**
Pavement Reflectance	**Asphalt - R3**
Roadway Classification	**Major**
Pedestrian Conflict	**Medium**



Luminaire Information

Right Side

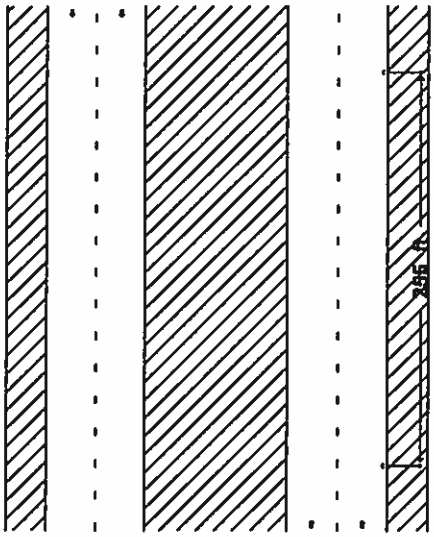
Label	**A**
Catalog Number	**OVZ25SXX3EG**
Photometric File	**OVZ25SXX3EG.ies**
Lamp Lumens	**27500**
Light Loss Factor	**1.00**
Input Power	**250 W**
Tilt	**0°**
Arm Length	**8 ft**
Mounting Height	**25 ft**
Setback	**8 ft**
Quantity	**8**

Calculation Results - Right Side

Luminance			Illuminance					
Average	2.3	cd/m²	Average	2.8	fc	Lv Ratio	0.3	
Max	4.0	cd/m²	Max	7.0	fc	STV	4.4	
Min	1.2	cd/m²	Min	0.9	fc	Spacing	135	ft
Max/Min	3.3		Max/Min	7.8		Length	1000	ft
Avg/Min	1.9		Avg/Min	3.1		Quantity	8	

Design Information

Project	Thomasville RdArterial Study
Number	00195-401-20
Name	David Allen
Company	Cardno



Roadway Information

Number Left Lanes	2
Left Lane Width	12 ft
Median Width	35 ft
Number Right Lanes	2
Right Lane Width	12 ft
Calculation Method	IES RP8-2000
Pavement Reflectance	Asphalt - R3
Roadway Classification	Major
Pedestrian Conflict	Medium

Luminaire Information

Right Side

Label	A
Catalog Number	OVZ25SXX3EG
Photometric File	OVZ25SXX3EG.ies
Lamp Lumens	27500
Light Loss Factor	1.00
Input Power	250 W
Tilt	0°
Arm Length	8 ft
Mounting Height	25 ft
Setback	8 ft
Quantity	4

Calculation Results - Left Side

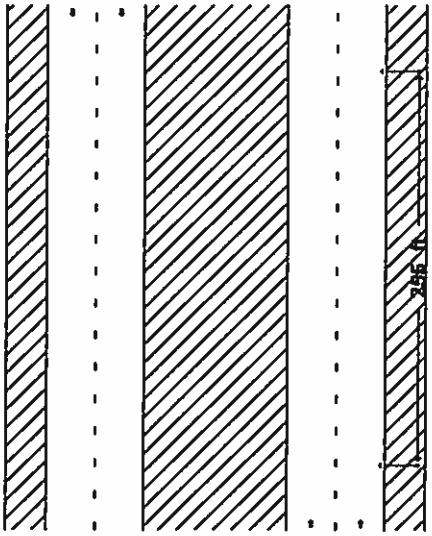
Luminance			Illuminance					
Average	0.1	cd/m²	Average	0.1	fc	Lv Ratio	0.4	
Max	0.1	cd/m²	Max	0.1	fc	STV	1.0	
Min	0.1	cd/m²	Min	0.0	fc	Spacing	255	ft
Max/Min	1.0		Max/Min	--		Length	1000	ft
Avg/Min	1.0		Avg/Min	--		Quantity	4	

Design Information

Project	Thomasville RdArterial Study
Number	00195-401-20
Name	David Allen
Company	Cardno

Roadway Information

Number Left Lanes	2
Left Lane Width	12 ft
Median Width	35 ft
Number Right Lanes	2
Right Lane Width	12 ft
Calculation Method	IES RP8-2000
Pavement Reflectance	Asphalt - R3
Roadway Classification	Major
Pedestrian Conflict	Medium



Luminaire Information

Right Side

Label	A
Catalog Number	OVZ25SXX3EG
Photometric File	OVZ25SXX3EG.ies
Lamp Lumens	27500
Light Loss Factor	1.00
Input Power	250 W
Tilt	0°
Arm Length	8 ft
Mounting Height	25 ft
Setback	8 ft
Quantity	4

Calculation Results - Right Side

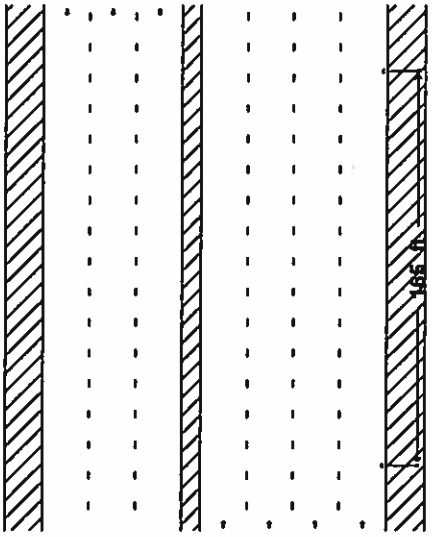
Luminance			Illuminance					
Average	1.3	cd/m²	Average	1.5	fc	Lv Ratio	0.4	
Max	3.6	cd/m²	Max	7.0	fc	STV	6.4	
Min	0.4	cd/m²	Min	0.1	fc	Spacing	255	ft
Max/Min	9.0		Max/Min	70.0		Length	1000	ft
Avg/Min	3.2		Avg/Min	15.0		Quantity	4	

Design Information

Project	Thomasville RdArterial Study
Number	00195-401-20
Name	David Allen
Company	Cardno

Roadway Information

Number Left Lanes	3
Left Lane Width	12 ft
Median Width	5 ft
Number Right Lanes	4
Right Lane Width	12 ft
Calculation Method	IES RP8-2000
Pavement Reflectance	Asphalt - R3
Roadway Classification	Major
Pedestrian Conflict	Medium



Luminaire Information

Right Side

Label	A
Catalog Number	OVZ25SXX3EG
Photometric File	OVZ25SXX3EG.ies
Lamp Lumens	27500
Light Loss Factor	1.00
Input Power	250 W
Tilt	0°
Arm Length	8 ft
Mounting Height	25 ft
Setback	8 ft
Quantity	7

Calculation Results - Left Side

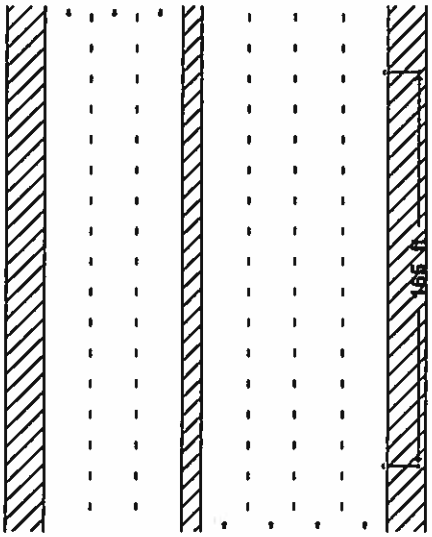
Luminance			Illuminance					
Average	0.1	cd/m²	Average	0.1	fc	Lv Ratio	0.6	
Max	0.2	cd/m²	Max	0.2	fc	STV	1.7	
Min	0.0	cd/m²	Min	0.0	fc	Spacing	165	ft
Max/Min	--		Max/Min	--		Length	1000	ft
Avg/Min	--		Avg/Min	--		Quantity	7	

Design Information

Project	Thomasville RdArterial Study
Number	00195-401-20
Name	David Allen
Company	Cardno

Roadway Information

Number Left Lanes	3
Left Lane Width	12 ft
Median Width	5 ft
Number Right Lanes	4
Right Lane Width	12 ft
Calculation Method	IES RP8-2000
Pavement Reflectance	Asphalt - R3
Roadway Classification	Major
Pedestrian Conflict	Medium



Luminaire Information

Right Side

Label	A
Catalog Number	OVZ25SXX3EG
Photometric File	OVZ25SXX3EG.ies
Lamp Lumens	27500
Light Loss Factor	1.00
Input Power	250 W
Tilt	0°
Arm Length	8 ft
Mounting Height	25 ft
Setback	8 ft
Quantity	7

Calculation Results - Right Side

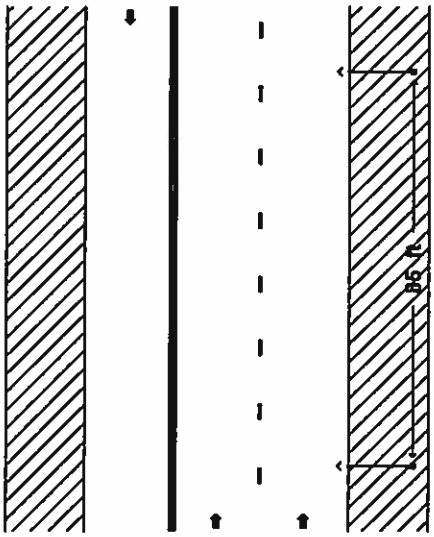
Luminance			Illuminance					
Average	1.2	cd/m²	Average	1.5	fc	Lv Ratio	0.5	
Max	3.7	cd/m²	Max	7.0	fc	STV	4.1	
Min	0.2	cd/m²	Min	0.3	fc	Spacing	165	ft
Max/Min	18.5		Max/Min	23.3		Length	1000	ft
Avg/Min	6.0		Avg/Min	5.0		Quantity	7	

Design Information

Project	**Thomasville RdArterial Study**
Number	**00195-401-20**
Name	**David Allen**
Company	**Cardno**

Roadway Information

Number Left Lanes	**1**
Left Lane Width	**11 ft**
Median Width	**0 ft**
Number Right Lanes	**2**
Right Lane Width	**11 ft**
Calculation Method	**IES RP8-2000**
Pavement Reflectance	**Asphalt - R3**
Roadway Classification	**Major**
Pedestrian Conflict	**Medium**



Luminaire Information

Right Side

Label	**A**
Catalog Number	**OVZ25SXX3EG**
Photometric File	**OVZ25SXX3EG.ies**
Lamp Lumens	**27500**
Light Loss Factor	**1.00**
Input Power	**250 W**
Tilt	**0°**
Arm Length	**8 ft**
Mounting Height	**25 ft**
Setback	**8 ft**
Quantity	**12**

Calculation Results - Left Side

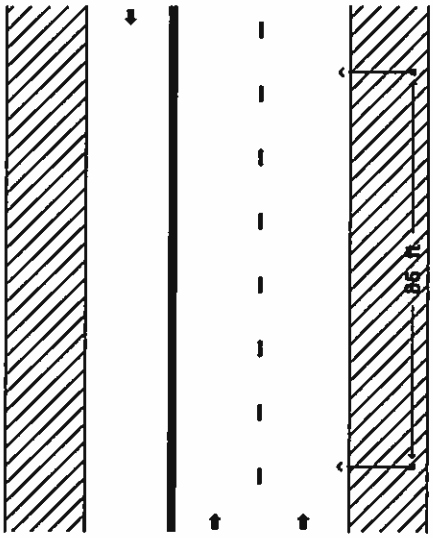
Luminance			Illuminance					
Average	1.4	cd/m²	Average	2.3	fc	Lv Ratio	0.3	
Max	1.7	cd/m²	Max	3.4	fc	STV	4.0	
Min	1.1	cd/m²	Min	1.6	fc	Spacing	85	ft
Max/Min	1.5		Max/Min	2.1		Length	1000	ft
Avg/Min	1.3		Avg/Min	1.4		Quantity	12	

Design Information

Project	Thomasville RdArterial Study
Number	00195-401-20
Name	David Allen
Company	Cardno

Roadway Information

Number Left Lanes	1
Left Lane Width	11 ft
Median Width	0 ft
Number Right Lanes	2
Right Lane Width	11 ft
Calculation Method	IES RP8-2000
Pavement Reflectance	Asphalt - R3
Roadway Classification	Major
Pedestrian Conflict	Medium



Luminaire Information

Right Side

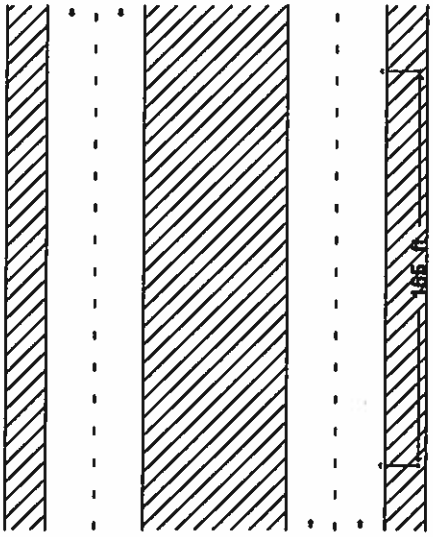
Label	A
Catalog Number	OVZ25SXX3EG
Photometric File	OVZ25SXX3EG.ies
Lamp Lumens	27500
Light Loss Factor	1.00
Input Power	250 W
Tilt	0°
Arm Length	8 ft
Mounting Height	25 ft
Setback	8 ft
Quantity	12

Calculation Results - Right Side

Luminance			Illuminance					
Average	3.5	cd/m²	Average	4.6	fc	Lv Ratio	0.2	
Max	5.1	cd/m²	Max	7.7	fc	STV	2.9	
Min	2.0	cd/m²	Min	2.5	fc	Spacing	85	ft
Max/Min	2.5		Max/Min	3.1		Length	1000	ft
Avg/Min	1.8		Avg/Min	1.8		Quantity	12	

Design Information

Project	Thomasville RdArterial Study
Number	00195-401-20
Name	David Allen
Company	Cardno



Roadway Information

Number Left Lanes	2
Left Lane Width	12 ft
Median Width	35 ft
Number Right Lanes	2
Right Lane Width	12 ft
Calculation Method	IES RP8-2000
Pavement Reflectance	Asphalt - R3
Roadway Classification	Major
Pedestrian Conflict	Medium

Luminaire Information

Right Side

Label	A
Catalog Number	OVZ25SXX3EG
Photometric File	OVZ25SXX3EG.ies
Lamp Lumens	27500
Light Loss Factor	1.00
Input Power	250 W
Tilt	0°
Arm Length	8 ft
Mounting Height	25 ft
Setback	8 ft
Quantity	7

Calculation Results - Left Side

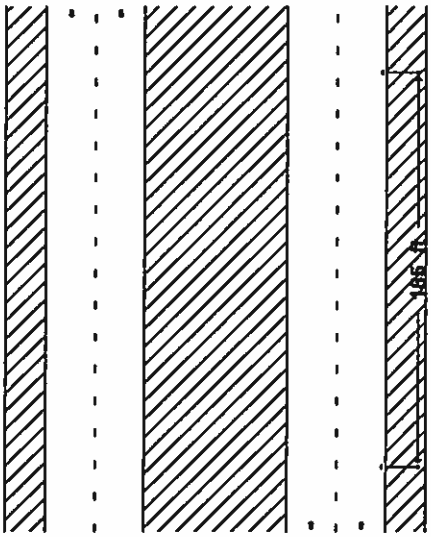
Luminance			Illuminance					
Average	0.1	cd/m²	Average	0.1	fc	Lv Ratio	0.5	
Max	0.2	cd/m²	Max	0.1	fc	STV	1.7	
Min	0.1	cd/m²	Min	0.0	fc	Spacing	165	ft
Max/Min	2.0		Max/Min	--		Length	1000	ft
Avg/Min	1.0		Avg/Min	--		Quantity	7	

Design Information

Project	Thomasville RdArterial Study
Number	00195-401-20
Name	David Allen
Company	Cardno

Roadway Information

Number Left Lanes	2
Left Lane Width	12 ft
Median Width	35 ft
Number Right Lanes	2
Right Lane Width	12 ft
Calculation Method	IES RP8-2000
Pavement Reflectance	Asphalt - R3
Roadway Classification	Major
Pedestrian Conflict	Medium



Luminaire Information

Right Side

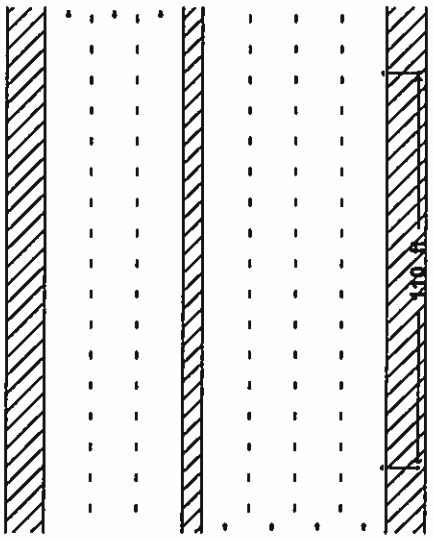
Label	A
Catalog Number	OVZ25SXX3EG
Photometric File	OVZ25SXX3EG.ies
Lamp Lumens	27500
Light Loss Factor	1.00
Input Power	250 W
Tilt	0°
Arm Length	8 ft
Mounting Height	25 ft
Setback	8 ft
Quantity	7

Calculation Results - Right Side

Luminance			Illuminance					
Average	1.8	cd/m²	Average	2.2	fc	Lv Ratio	0.3	
Max	3.7	cd/m²	Max	7.0	fc	STV	5.5	
Min	0.8	cd/m²	Min	0.4	fc	Spacing	165	ft
Max/Min	4.6		Max/Min	17.5		Length	1000	ft
Avg/Min	2.2		Avg/Min	5.5		Quantity	7	

Design Information

Project	**Thomasville RdArterial Study**
Number	**00195-401-20**
Name	**David Allen**
Company	**Cardno**



Roadway Information

Number Left Lanes	**3**
Left Lane Width	**12 ft**
Median Width	**5 ft**
Number Right Lanes	**4**
Right Lane Width	**12 ft**
Calculation Method	**IES RP8-2000**
Pavement Reflectance	**Asphalt - R3**
Roadway Classification	**Major**
Pedestrian Conflict	**Medium**

Luminaire Information

Right Side

Label	**A**
Catalog Number	**OVZ25SXX3EG**
Photometric File	**OVZ25SXX3EG.ies**
Lamp Lumens	**27500**
Light Loss Factor	**1.00**
Input Power	**250 W**
Tilt	**0°**
Arm Length	**8 ft**
Mounting Height	**25 ft**
Setback	**8 ft**
Quantity	**10**

Calculation Results - Left Side

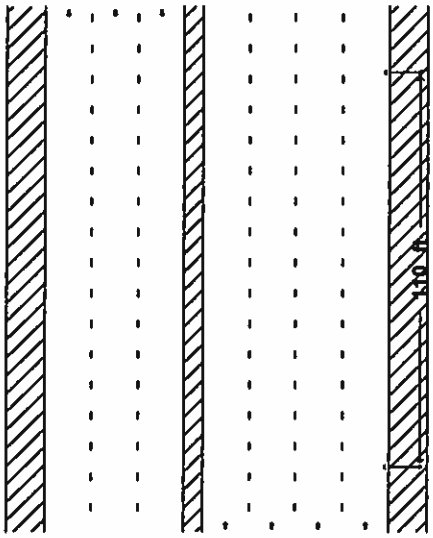
Luminance			Illuminance					
Average	**0.1**	**cd/m²**	Average	**0.1**	**fc**	Lv Ratio	**0.6**	
Max	**0.2**	**cd/m²**	Max	**0.3**	**fc**	STV	**2.8**	
Min	**0.1**	**cd/m²**	Min	**0.1**	**fc**	Spacing	**110**	**ft**
Max/Min	**2.0**		Max/Min	**3.0**		Length	**1000**	**ft**
Avg/Min	**1.0**		Avg/Min	**1.0**		Quantity	**10**	

Design Information

Project	Thomasville RdArterial Study
Number	00195-401-20
Name	David Allen
Company	Cardno

Roadway Information

Number Left Lanes	3
Left Lane Width	12 ft
Median Width	5 ft
Number Right Lanes	4
Right Lane Width	12 ft
Calculation Method	IES RP8-2000
Pavement Reflectance	Asphalt - R3
Roadway Classification	Major
Pedestrian Conflict	Medium



Luminaire Information

Right Side

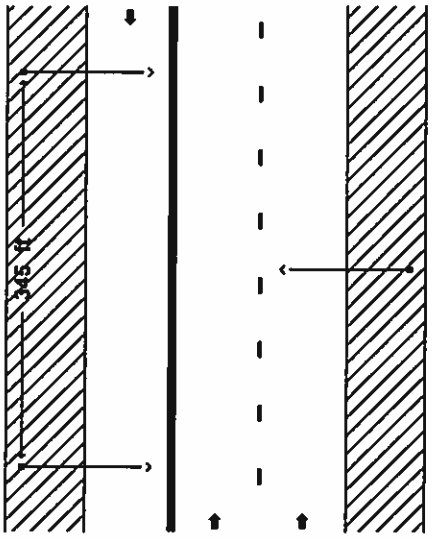
Label	A
Catalog Number	OVZ25SXX3EG
Photometric File	OVZ25SXX3EG.ies
Lamp Lumens	27500
Light Loss Factor	1.00
Input Power	250 W
Tilt	0°
Arm Length	8 ft
Mounting Height	25 ft
Setback	8 ft
Quantity	10

Calculation Results - Right Side

Luminance			Illuminance					
Average	1.7	cd/m²	Average	2.2	fc	Lv Ratio	0.4	
Max	4.3	cd/m²	Max	7.2	fc	STV	3.5	
Min	0.3	cd/m²	Min	0.5	fc	Spacing	110	ft
Max/Min	14.3		Max/Min	14.4		Length	1000	ft
Avg/Min	5.7		Avg/Min	4.4		Quantity	10	

Design Information

Project	**Thomasville RdArterial Study**
Number	**00195-401-20**
Name	**David Allen**
Company	**Cardno**



Roadway Information

Number Left Lanes	**1**
Left Lane Width	**11 ft**
Median Width	**0 ft**
Number Right Lanes	**2**
Right Lane Width	**11 ft**
Calculation Method	**IES RP8-2000**
Pavement Reflectance	**Asphalt - R3**
Roadway Classification	**Major**
Pedestrian Conflict	**Medium**

Luminaire Information

Left Side

Label	**A**
Catalog Number	**OVZ25SXX3EG**
Photometric File	**OVZ25SXX3EG.ies**
Lamp Lumens	**27500**
Light Loss Factor	**1.00**
Input Power	**250 W**
Tilt	**0°**
Arm Length	**15 ft**
Mounting Height	**35 ft**
Setback	**8 ft**
Quantity	**3**

Right Side

Label	**A**
Catalog Number	**OVZ25SXX3EG**
Photometric File	**OVZ25SXX3EG.ies**
Lamp Lumens	**27500**
Light Loss Factor	**1.00**
Input Power	**250 W**
Tilt	**0°**
Arm Length	**15 ft**
Mounting Height	**35 ft**
Setback	**8 ft**
Quantity	**3**

Calculation Results - Left Side

Luminance

Average	**1.4**	**cd/m²**
Max	**2.2**	**cd/m²**
Min	**0.9**	**cd/m²**
Max/Min	**2.4**	
Avg/Min	**1.6**	

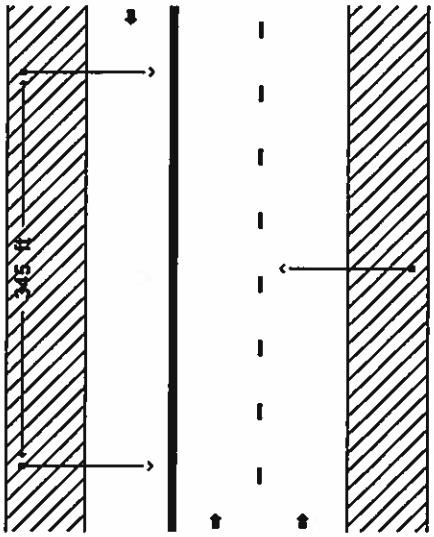
Illuminance

Average	**1.5**	**fc**
Max	**3.4**	**fc**
Min	**0.6**	**fc**
Max/Min	**5.7**	
Avg/Min	**2.5**	

Lv Ratio	**0.2**
STV	**3.0**
Spacing	**345 ft**
Length	**1000 ft**
Quantity	**6**

Design Information

Project	Thomasville RdArterial Study
Number	00195-401-20
Name	David Allen
Company	Cardno



Roadway Information

Number Left Lanes	1
Left Lane Width	11 ft
Median Width	0 ft
Number Right Lanes	2
Right Lane Width	11 ft
Calculation Method	IES RP8-2000
Pavement Reflectance	Asphalt - R3
Roadway Classification	Major
Pedestrian Conflict	Medium

Luminaire Information

Left Side

Label	A
Catalog Number	OVZ25SXX3EG
Photometric File	OVZ25SXX3EG.ies
Lamp Lumens	27500
Light Loss Factor	1.00
Input Power	250 W
Tilt	0°
Arm Length	15 ft
Mounting Height	35 ft
Setback	8 ft
Quantity	3

Right Side

Label	A
Catalog Number	OVZ25SXX3EG
Photometric File	OVZ25SXX3EG.ies
Lamp Lumens	27500
Light Loss Factor	1.00
Input Power	250 W
Tilt	0°
Arm Length	15 ft
Mounting Height	35 ft
Setback	8 ft
Quantity	3

Calculation Results - Right Side

Luminance

Average	1.5	cd/m²
Max	2.2	cd/m²
Min	0.9	cd/m²
Max/Min	2.4	
Avg/Min	1.7	

Illuminance

Average	1.6	fc
Max	3.6	fc
Min	0.6	fc
Max/Min	6.0	
Avg/Min	2.7	

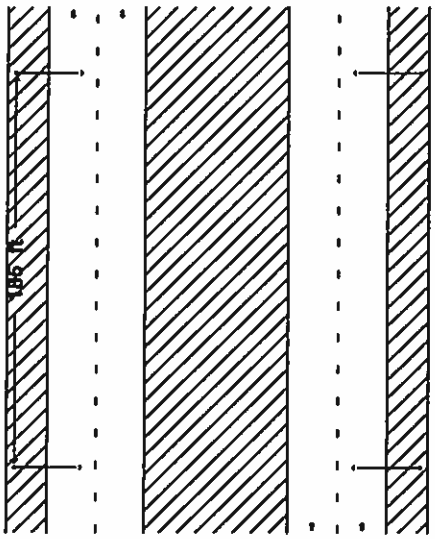
Lv Ratio	0.2
STV	3.2
Spacing	345 ft
Length	1000 ft
Quantity	6

Design Information

Project	**Thomasville RdArterial Study**
Number	**00195-401-20**
Name	**David Allen**
Company	**Cardno**

Roadway Information

Number Left Lanes	**2**
Left Lane Width	**12 ft**
Median Width	**35 ft**
Number Right Lanes	**2**
Right Lane Width	**12 ft**
Calculation Method	**IES RP8-2000**
Pavement Reflectance	**Asphalt - R3**
Roadway Classification	**Major**
Pedestrian Conflict	**Medium**



Luminaire Information

Left Side

Label	**A**
Catalog Number	**OVZ25SXX3EG**
Photometric File	**OVZ25SXX3EG.ies**
Lamp Lumens	**27500**
Light Loss Factor	**1.00**
Input Power	**250 W**
Tilt	**0°**
Arm Length	**15 ft**
Mounting Height	**35 ft**
Setback	**8 ft**
Quantity	**6**

Right Side

Label	**A**
Catalog Number	**OVZ25SXX3EG**
Photometric File	**OVZ25SXX3EG.ies**
Lamp Lumens	**27500**
Light Loss Factor	**1.00**
Input Power	**250 W**
Tilt	**0°**
Arm Length	**15 ft**
Mounting Height	**35 ft**
Setback	**8 ft**
Quantity	**6**

Calculation Results - Left Side

Luminance

Average	**1.6**	**cd/m²**
Max	**2.3**	**cd/m²**
Min	**1.0**	**cd/m²**
Max/Min	**2.3**	
Avg/Min	**1.6**	

Illuminance

Average	**1.7**	**fc**
Max	**4.0**	**fc**
Min	**0.5**	**fc**
Max/Min	**8.0**	
Avg/Min	**3.4**	

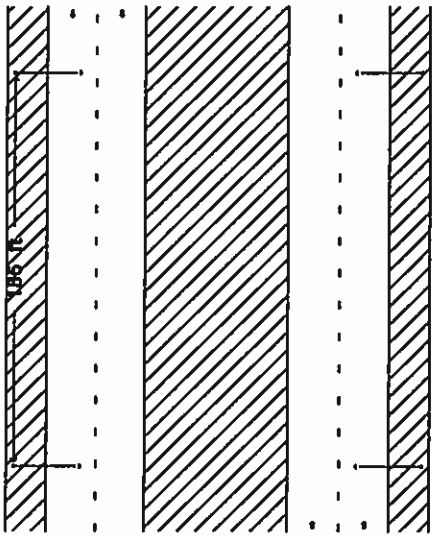
Lv Ratio	**0.2**
STV	**3.3**
Spacing	**185 ft**
Length	**1000 ft**
Quantity	**12**

Design Information

Project	Thomasville RdArterial Study
Number	00195-401-20
Name	David Allen
Company	Cardno

Roadway Information

Number Left Lanes	2
Left Lane Width	12 ft
Median Width	35 ft
Number Right Lanes	2
Right Lane Width	12 ft
Calculation Method	IES RP8-2000
Pavement Reflectance	Asphalt - R3
Roadway Classification	Major
Pedestrian Conflict	Medium



Luminaire Information

Left Side

Label	A
Catalog Number	OVZ25SXX3EG
Photometric File	OVZ25SXX3EG.ies
Lamp Lumens	27500
Light Loss Factor	1.00
Input Power	250 W
Tilt	0°
Arm Length	15 ft
Mounting Height	35 ft
Setback	8 ft
Quantity	6

Right Side

Label	A
Catalog Number	OVZ25SXX3EG
Photometric File	OVZ25SXX3EG.ies
Lamp Lumens	27500
Light Loss Factor	1.00
Input Power	250 W
Tilt	0°
Arm Length	15 ft
Mounting Height	35 ft
Setback	8 ft
Quantity	6

Calculation Results - Right Side

Luminance

Average	1.6	cd/m²
Max	2.3	cd/m²
Min	1.0	cd/m²
Max/Min	2.3	
Avg/Min	1.6	

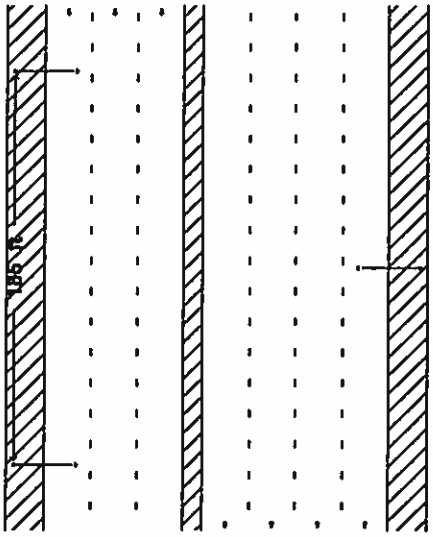
Illuminance

Average	1.7	fc
Max	4.0	fc
Min	0.5	fc
Max/Min	8.0	
Avg/Min	3.4	

Lv Ratio	0.2
STV	3.3
Spacing	185 ft
Length	1000 ft
Quantity	12

Design Information

Project	Thomasville RdArterial Study
Number	00195-401-20
Name	David Allen
Company	Cardno



Roadway Information

Number Left Lanes	3
Left Lane Width	12 ft
Median Width	5 ft
Number Right Lanes	4
Right Lane Width	12 ft
Calculation Method	IES RP8-2000
Pavement Reflectance	Asphalt - R3
Roadway Classification	Major
Pedestrian Conflict	Medium

Luminaire Information

Left Side

Label	A
Catalog Number	OVZ25SXX3EG
Photometric File	OVZ25SXX3EG.ies
Lamp Lumens	27500
Light Loss Factor	1.00
Input Power	250 W
Tilt	0°
Arm Length	15 ft
Mounting Height	35 ft
Setback	8 ft
Quantity	6

Right Side

Label	A
Catalog Number	OVZ25SXX3EG
Photometric File	OVZ25SXX3EG.ies
Lamp Lumens	27500
Light Loss Factor	1.00
Input Power	250 W
Tilt	0°
Arm Length	15 ft
Mounting Height	35 ft
Setback	8 ft
Quantity	5

Calculation Results - Left Side

Luminance

Average	1.4	cd/m²
Max	2.2	cd/m²
Min	0.9	cd/m²
Max/Min	2.4	
Avg/Min	1.6	

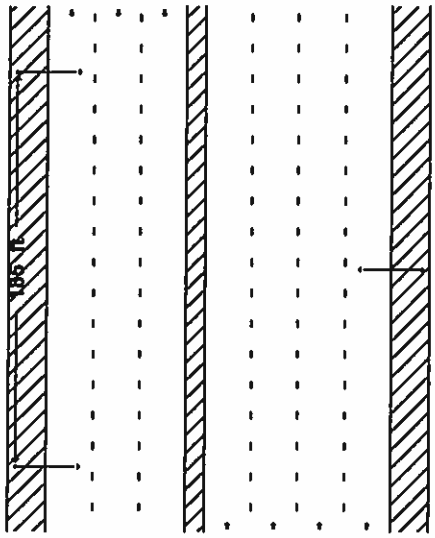
Illuminance

Average	1.7	fc
Max	3.8	fc
Min	0.5	fc
Max/Min	7.6	
Avg/Min	3.4	

Lv Ratio	0.2
STV	3.1
Spacing	185 ft
Length	1000 ft
Quantity	11

Design Information

Project	Thomasville RdArterial Study
Number	00195-401-20
Name	David Allen
Company	Cardno



Roadway Information

Number Left Lanes	3
Left Lane Width	12 ft
Median Width	5 ft
Number Right Lanes	4
Right Lane Width	12 ft
Calculation Method	IES RP8-2000
Pavement Reflectance	Asphalt - R3
Roadway Classification	Major
Pedestrian Conflict	Medium

Luminaire Information

Left Side

Label	A
Catalog Number	OVZ25SXX3EG
Photometric File	OVZ25SXX3EG.ies
Lamp Lumens	27500
Light Loss Factor	1.00
Input Power	250 W
Tilt	0°
Arm Length	15 ft
Mounting Height	35 ft
Setback	8 ft
Quantity	6

Right Side

Label	A
Catalog Number	OVZ25SXX3EG
Photometric File	OVZ25SXX3EG.ies
Lamp Lumens	27500
Light Loss Factor	1.00
Input Power	250 W
Tilt	0°
Arm Length	15 ft
Mounting Height	35 ft
Setback	8 ft
Quantity	5

Calculation Results - Right Side

Luminance

Average	1.3	cd/m²
Max	2.2	cd/m²
Min	0.9	cd/m²
Max/Min	2.4	
Avg/Min	1.4	

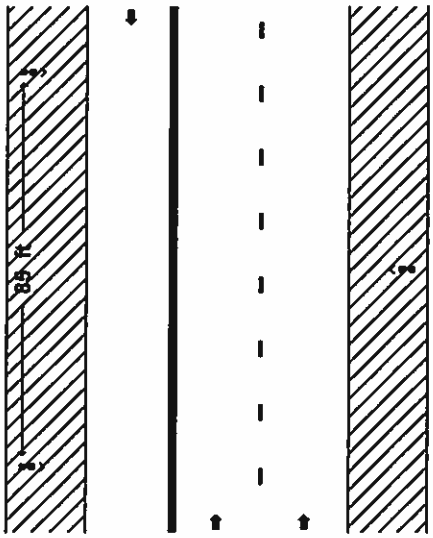
Illuminance

Average	1.7	fc
Max	3.8	fc
Min	0.5	fc
Max/Min	7.6	
Avg/Min	3.4	

Lv Ratio	0.2
STV	3.1
Spacing	185 ft
Length	1000 ft
Quantity	11

Design Information

Project	**Thomasville RdArterial Study**
Number	**00195-401-20**
Name	**David Allen**
Company	**Cardno**



Roadway Information

Number Left Lanes	**1**
Left Lane Width	**11 ft**
Median Width	**0 ft**
Number Right Lanes	**2**
Right Lane Width	**11 ft**
Calculation Method	**IES RP8-2000**
Pavement Reflectance	**Asphalt - R3**
Roadway Classification	**Major**
Pedestrian Conflict	**Medium**

Luminaire Information

Left Side

Label	**A**
Catalog Number	**36NB-82-T5SW**
Photometric File	**36NB-82-T5SW.ies**
Lamp Lumens	**7337**
Light Loss Factor	**1.00**
Input Power	**82 W**
Tilt	**0°**
Arm Length	**0.75 ft**
Mounting Height	**16 ft**
Setback	**8 ft**
Quantity	**12**

Right Side

Label	**A**
Catalog Number	**36NB-82-T5SW**
Photometric File	**36NB-82-T5SW.ies**
Lamp Lumens	**7337**
Light Loss Factor	**1.00**
Input Power	**82 W**
Tilt	**0°**
Arm Length	**0.75 ft**
Mounting Height	**16 ft**
Setback	**8 ft**
Quantity	**12**

Calculation Results - Left Side

Luminance

Average	**1.0**	**cd/m²**
Max	**1.3**	**cd/m²**
Min	**0.8**	**cd/m²**
Max/Min	**1.6**	
Avg/Min	**1.2**	

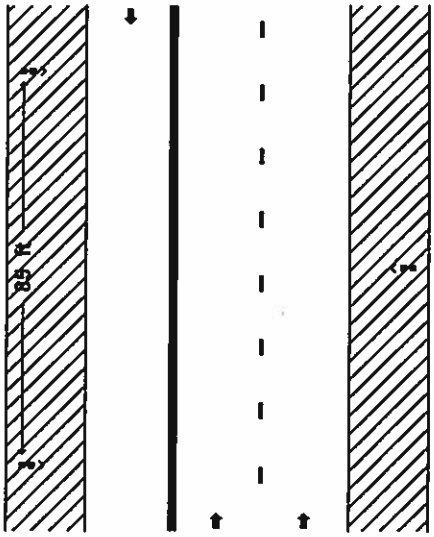
Illuminance

Average	**1.5**	**fc**
Max	**1.9**	**fc**
Min	**1.2**	**fc**
Max/Min	**1.6**	
Avg/Min	**1.2**	

Lv Ratio	**0.3**	
STV	**3.8**	
Spacing	**85**	**ft**
Length	**1000**	**ft**
Quantity	**24**	

Design Information

Project	Thomasville RdArterial Study
Number	00195-401-20
Name	David Allen
Company	Cardno



Roadway Information

Number Left Lanes	1
Left Lane Width	11 ft
Median Width	0 ft
Number Right Lanes	2
Right Lane Width	11 ft
Calculation Method	IES RP8-2000
Pavement Reflectance	Asphalt - R3
Roadway Classification	Major
Pedestrian Conflict	Medium

Luminaire Information

Left Side

Label	A
Catalog Number	36NB-82-T5SW
Photometric File	36NB-82-T5SW.ies
Lamp Lumens	7337
Light Loss Factor	1.00
Input Power	82 W
Tilt	0°
Arm Length	0.75 ft
Mounting Height	16 ft
Setback	8 ft
Quantity	12

Right Side

Label	A
Catalog Number	36NB-82-T5SW
Photometric File	36NB-82-T5SW.ies
Lamp Lumens	7337
Light Loss Factor	1.00
Input Power	82 W
Tilt	0°
Arm Length	0.75 ft
Mounting Height	16 ft
Setback	8 ft
Quantity	12

Calculation Results - Right Side

Luminance

Average	1.0	cd/m²
Max	1.3	cd/m²
Min	0.8	cd/m²
Max/Min	1.6	
Avg/Min	1.2	

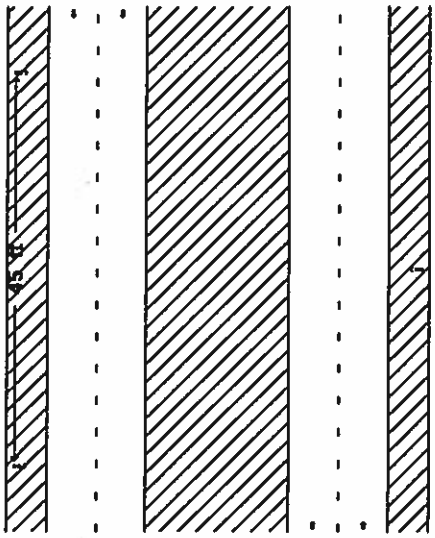
Illuminance

Average	1.5	fc
Max	1.9	fc
Min	1.2	fc
Max/Min	1.6	
Avg/Min	1.2	

Lv Ratio	0.3	
STV	4.4	
Spacing	85	ft
Length	1000	ft
Quantity	24	

Design Information

Project	**Thomasville RdArterial Study**
Number	**00195-401-20**
Name	**David Allen**
Company	**Cardno**



Roadway Information

Number Left Lanes	**2**
Left Lane Width	**12 ft**
Median Width	**35 ft**
Number Right Lanes	**2**
Right Lane Width	**12 ft**
Calculation Method	**IES RP8-2000**
Pavement Reflectance	**Asphalt - R3**
Roadway Classification	**Major**
Pedestrian Conflict	**Medium**

Luminaire Information

Left Side

Label	**A**
Catalog Number	**36NB-82-T5SW**
Photometric File	**36NB-82-T5SW.ies**
Lamp Lumens	**7337**
Light Loss Factor	**1.00**
Input Power	**82 W**
Tilt	**0°**
Arm Length	**0.75 ft**
Mounting Height	**16 ft**
Setback	**8 ft**
Quantity	**23**

Right Side

Label	**A**
Catalog Number	**36NB-82-T5SW**
Photometric File	**36NB-82-T5SW.ies**
Lamp Lumens	**7337**
Light Loss Factor	**1.00**
Input Power	**82 W**
Tilt	**0°**
Arm Length	**0.75 ft**
Mounting Height	**16 ft**
Setback	**8 ft**
Quantity	**22**

Calculation Results - Left Side

Luminance

Average	**1.1**	**cd/m²**
Max	**1.5**	**cd/m²**
Min	**0.8**	**cd/m²**
Max/Min	**1.9**	
Avg/Min	**1.4**	

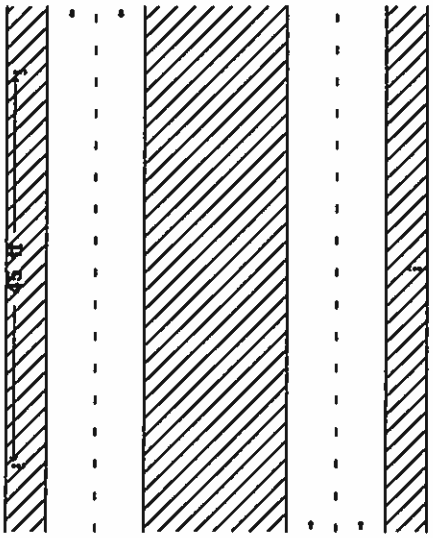
Illuminance

Average	**1.7**	**fc**
Max	**2.0**	**fc**
Min	**1.4**	**fc**
Max/Min	**1.4**	
Avg/Min	**1.2**	

Lv Ratio	**0.3**	
STV	**4.9**	
Spacing	**45**	**ft**
Length	**1000**	**ft**
Quantity	**45**	

Design Information

Project	**Thomasville RdArterial Study**
Number	**00195-401-20**
Name	**David Allen**
Company	**Cardno**



Roadway Information

Number Left Lanes	**2**
Left Lane Width	**12 ft**
Median Width	**35 ft**
Number Right Lanes	**2**
Right Lane Width	**12 ft**
Calculation Method	**IES RP8-2000**
Pavement Reflectance	**Asphalt - R3**
Roadway Classification	**Major**
Pedestrian Conflict	**Medium**

Luminaire Information

Left Side

Label	**A**
Catalog Number	**36NB-82-T5SW**
Photometric File	**36NB-82-T5SW.ies**
Lamp Lumens	**7337**
Light Loss Factor	**1.00**
Input Power	**82 W**
Tilt	**0°**
Arm Length	**0.75 ft**
Mounting Height	**16 ft**
Setback	**8 ft**
Quantity	**23**

Right Side

Label	**A**
Catalog Number	**36NB-82-T5SW**
Photometric File	**36NB-82-T5SW.ies**
Lamp Lumens	**7337**
Light Loss Factor	**1.00**
Input Power	**82 W**
Tilt	**0°**
Arm Length	**0.75 ft**
Mounting Height	**16 ft**
Setback	**8 ft**
Quantity	**22**

Calculation Results - Right Side

Luminance

Average	**1.1**	**cd/m²**
Max	**1.5**	**cd/m²**
Min	**0.8**	**cd/m²**
Max/Min	**1.9**	
Avg/Min	**1.4**	

Illuminance

Average	**1.7**	**fc**
Max	**2.0**	**fc**
Min	**1.3**	**fc**
Max/Min	**1.5**	
Avg/Min	**1.3**	

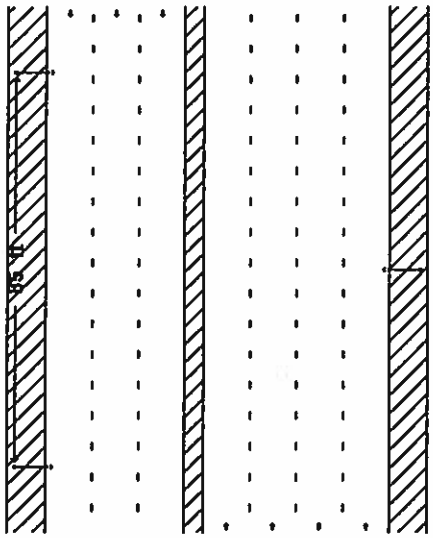
Lv Ratio	**0.3**	
STV	**5.0**	
Spacing	**45**	**ft**
Length	**1000**	**ft**
Quantity	**45**	

Design Information

Project	**Thomasville RdArterial Study**
Number	**00195-401-20**
Name	**David Allen**
Company	**Cardno**

Roadway Information

Number Left Lanes	**3**
Left Lane Width	**12 ft**
Median Width	**5 ft**
Number Right Lanes	**4**
Right Lane Width	**12 ft**
Calculation Method	**IES RP8-2000**
Pavement Reflectance	**Asphalt - R3**
Roadway Classification	**Major**
Pedestrian Conflict	**Medium**



Luminaire Information

Left Side

Label	**A**
Catalog Number	**60NB-135-T5W**
Photometric File	**60NB-136-T5W.ies**
Lamp Lumens	**13205**
Light Loss Factor	**1.00**
Input Power	**136 W**
Tilt	**0°**
Arm Length	**8 ft**
Mounting Height	**35 ft**
Setback	**8 ft**
Quantity	**12**

Right Side

Label	**A**
Catalog Number	**60NB-135-T5W**
Photometric File	**60NB-136-T5W.ies**
Lamp Lumens	**13205**
Light Loss Factor	**1.00**
Input Power	**136 W**
Tilt	**0°**
Arm Length	**8 ft**
Mounting Height	**35 ft**
Setback	**8 ft**
Quantity	**12**

Calculation Results - Left Side

Luminance

Average	**1.3**	**cd/m²**
Max	**1.9**	**cd/m²**
Min	**0.9**	**cd/m²**
Max/Min	**2.1**	
Avg/Min	**1.4**	

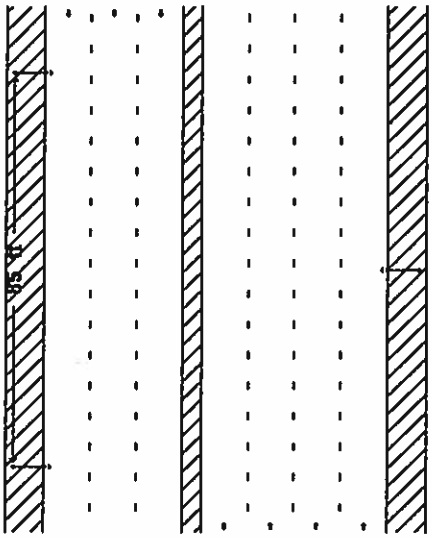
Illuminance

Average	**1.5**	**fc**
Max	**1.6**	**fc**
Min	**1.3**	**fc**
Max/Min	**1.2**	
Avg/Min	**1.2**	

Lv Ratio	**0.1**
STV	**2.3**
Spacing	**85 ft**
Length	**1000 ft**
Quantity	**24**

Design Information

Project	Thomasville RdArterial Study
Number	00195-401-20
Name	David Allen
Company	Cardno



Roadway Information

Number Left Lanes	3
Left Lane Width	12 ft
Median Width	5 ft
Number Right Lanes	4
Right Lane Width	12 ft
Calculation Method	IES RP8-2000
Pavement Reflectance	Asphalt - R3
Roadway Classification	Major
Pedestrian Conflict	Medium

Luminaire Information

Left Side

Label	A
Catalog Number	60NB-135-T5W
Photometric File	60NB-136-T5W.ies
Lamp Lumens	13205
Light Loss Factor	1.00
Input Power	136 W
Tilt	0°
Arm Length	8 ft
Mounting Height	35 ft
Setback	8 ft
Quantity	12

Right Side

Label	A
Catalog Number	60NB-135-T5W
Photometric File	60NB-136-T5W.ies
Lamp Lumens	13205
Light Loss Factor	1.00
Input Power	136 W
Tilt	0°
Arm Length	8 ft
Mounting Height	35 ft
Setback	8 ft
Quantity	12

Calculation Results - Right Side

Luminance

Average	1.2	cd/m²
Max	1.9	cd/m²
Min	0.8	cd/m²
Max/Min	2.4	
Avg/Min	1.5	

Illuminance

Average	1.5	fc
Max	1.6	fc
Min	1.3	fc
Max/Min	1.2	
Avg/Min	1.2	

Lv Ratio	0.2	
STV	2.8	
Spacing	85	ft
Length	1000	ft
Quantity	24	

Appendix E
Pedestrian/Signal Operations Analysis

SR 61/Thomasville Road at 7th Avenue/Meridian Road

Existing AM Geometry and Volumes

Lane Group	WBL	WBT	WBR	WBR2	NBT	SBT	SBR	SBR2	SER2
Lane Configurations									
Traffic Volume (vph)	88	387	203	3	339	1030	647	11	377
Future Volume (vph)	88	387	203	3	339	1030	647	11	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00							
Frt			0.850				0.850		0.865
Flt Protected		0.991							
Satd. Flow (prot)	0	3507	1583	0	1863	1863	1583	0	1611
Flt Permitted		0.991							
Satd. Flow (perm)	0	3504	1583	0	1863	1863	1583	0	1611
Right Turn on Red				No				No	No
Satd. Flow (RTOR)									
Link Speed (mph)		25			25	25			
Link Distance (ft)		150			500	1048			
Travel Time (s)		4.1			13.6	28.6			
Confl. Peds. (#/hr)	1								
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	421	221	3	368	1120	703	12	410
Shared Lane Traffic (%)									
Lane Group Flow (vph)	0	517	224	0	368	1120	715	0	410
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Left	Right	Right	Right
Median Width(ft)		0			0	0			
Link Offset(ft)		0			0	0			
Crosswalk Width(ft)		10			10	10			
Two way Left Turn Lane									
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9			9	9	9
Number of Detectors	1	2	1		2	2	1		1
Detector Template	Left	Thru	Right		Thru	Thru	Right		Right
Leading Detector (ft)	20	100	20		100	100	20		20
Trailing Detector (ft)	0	0	0		0	0	0		0
Detector 1 Position(ft)	0	0	0		0	0	0		0
Detector 1 Size(ft)	20	6	20		6	6	20		20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel									
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(ft)		94			94	94			
Detector 2 Size(ft)		6			6	6			
Detector 2 Type		Cl+Ex			Cl+Ex	Cl+Ex			
Detector 2 Channel									
Detector 2 Extend (s)		0.0			0.0	0.0			
Turn Type	Split	NA	Prot		NA	NA	Perm		Perm
Protected Phases	8	8	8		2	6			
Permitted Phases							6		6
Detector Phase	8	8	8		2	6	6		6

Lane Group	WBL	WBT	WBR	WBR2	NBT	SBT	SBR	SBR2	SER2
Switch Phase									
Minimum Initial (s)	9.0	9.0	9.0		12.0	6.0	6.0		6.0
Minimum Split (s)	24.0	24.0	24.0		29.3	24.3	24.3		24.3
Total Split (s)	34.0	34.0	34.0		110.0	110.0	110.0		110.0
Total Split (%)	23.6%	23.6%	23.6%		76.4%	76.4%	76.4%		76.4%
Maximum Green (s)	28.0	28.0	28.0		103.7	103.7	103.7		103.7
Yellow Time (s)	3.7	3.7	3.7		3.4	3.4	3.4		3.4
All-Red Time (s)	2.3	2.3	2.3		2.9	2.9	2.9		2.9
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0		0.0
Total Lost Time (s)		6.0	6.0		6.3	6.3	6.3		6.3
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	5.5	5.5	5.5		4.0	4.0	4.0		4.0
Recall Mode	None	None	None		C-Max	C-Max	C-Max		C-Max
Walk Time (s)	5.0	5.0	5.0		6.0				
Flash Dont Walk (s)	9.0	9.0	9.0		17.0				
Pedestrian Calls (#/hr)	1	1	1		0				
Act Effct Green (s)		27.5	27.5		104.2	104.2	104.2		104.2
Actuated g/C Ratio		0.19	0.19		0.72	0.72	0.72		0.72
v/c Ratio		0.77	0.74		0.27	0.83	0.62		0.35
Control Delay		64.1	70.7		7.5	21.0	13.1		8.4
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0
Total Delay		64.1	70.7		7.5	21.0	13.1		8.4
LOS		E	E		A	C	B		A
Approach Delay		66.1			7.5	17.9			
Approach LOS		E			A	B			

Intersection Summary			
Area Type:	Other		
Cycle Length: 144			
Actuated Cycle Length: 144			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 26.3		Intersection LOS: C	
Intersection Capacity Utilization 106.3%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 4: Thomasville Road & 7th Avenue & Meridian Road

SR 61/Thomasville Road at 7th Avenue/Meridian Road

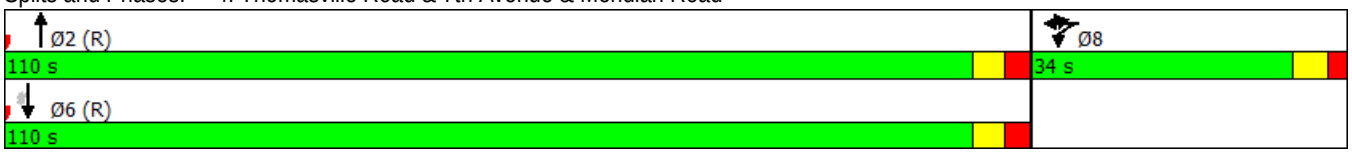
Existing Midday Geometry and Volumes

Lane Group	WBL	WBT	WBR	WBR2	NBT	SBT	SBR	SBR2	SER2
Lane Configurations									
Traffic Volume (vph)	80	410	168	13	572	778	210	31	144
Future Volume (vph)	80	410	168	13	572	778	210	31	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00					0.99		
Frt			0.850				0.850		0.865
Flt Protected		0.992							
Satd. Flow (prot)	0	3511	1583	0	1863	1863	1583	0	1611
Flt Permitted		0.992							
Satd. Flow (perm)	0	3499	1583	0	1863	1863	1563	0	1611
Right Turn on Red				No				No	No
Satd. Flow (RTOR)									
Link Speed (mph)		25			25	25			
Link Distance (ft)		150			500	1048			
Travel Time (s)		4.1			13.6	28.6			
Confl. Peds. (#/hr)	4						1		
Confl. Bikes (#/hr)							1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	446	183	14	622	846	228	34	157
Shared Lane Traffic (%)									
Lane Group Flow (vph)	0	533	197	0	622	846	262	0	157
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Left	Right	Right	Right
Median Width(ft)		0			0	0			
Link Offset(ft)		0			0	0			
Crosswalk Width(ft)		10			10	10			
Two way Left Turn Lane									
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9			9	9	9
Number of Detectors	1	2	1		2	2	1		1
Detector Template	Left	Thru	Right		Thru	Thru	Right		Right
Leading Detector (ft)	20	100	20		100	100	20		20
Trailing Detector (ft)	0	0	0		0	0	0		0
Detector 1 Position(ft)	0	0	0		0	0	0		0
Detector 1 Size(ft)	20	6	20		6	6	20		20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel									
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(ft)		94			94	94			
Detector 2 Size(ft)		6			6	6			
Detector 2 Type		Cl+Ex			Cl+Ex	Cl+Ex			
Detector 2 Channel									
Detector 2 Extend (s)		0.0			0.0	0.0			
Turn Type	Split	NA	Prot		NA	NA	Perm		Perm
Protected Phases	8	8	8		2	6			
Permitted Phases							6		6

Lane Group	WBL	WBT	WBR	WBR2	NBT	SBT	SBR	SBR2	SER2
Detector Phase	8	8	8		2	6	6		6
Switch Phase									
Minimum Initial (s)	9.0	9.0	9.0		12.0	6.0	6.0		6.0
Minimum Split (s)	24.0	24.0	24.0		29.3	24.3	24.3		24.3
Total Split (s)	34.0	34.0	34.0		110.0	110.0	110.0		110.0
Total Split (%)	23.6%	23.6%	23.6%		76.4%	76.4%	76.4%		76.4%
Maximum Green (s)	28.0	28.0	28.0		103.7	103.7	103.7		103.7
Yellow Time (s)	3.7	3.7	3.7		3.4	3.4	3.4		3.4
All-Red Time (s)	2.3	2.3	2.3		2.9	2.9	2.9		2.9
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0		0.0
Total Lost Time (s)		6.0	6.0		6.3	6.3	6.3		6.3
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	5.5	5.5	5.5		4.0	4.0	4.0		4.0
Recall Mode	None	None	None		C-Max	C-Max	C-Max		C-Max
Walk Time (s)	5.0	5.0	5.0		6.0				
Flash Dont Walk (s)	9.0	9.0	9.0		17.0				
Pedestrian Calls (#/hr)	4	4	4		1				
Act Effct Green (s)		27.6	27.6		104.1	104.1	104.1		104.1
Actuated g/C Ratio		0.19	0.19		0.72	0.72	0.72		0.72
v/c Ratio		0.79	0.65		0.46	0.63	0.23		0.13
Control Delay		65.1	64.8		9.7	12.8	7.3		6.5
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0
Total Delay		65.1	64.8		9.7	12.8	7.3		6.5
LOS		E	E		A	B	A		A
Approach Delay		65.0			9.7	11.5			
Approach LOS		E			A	B			

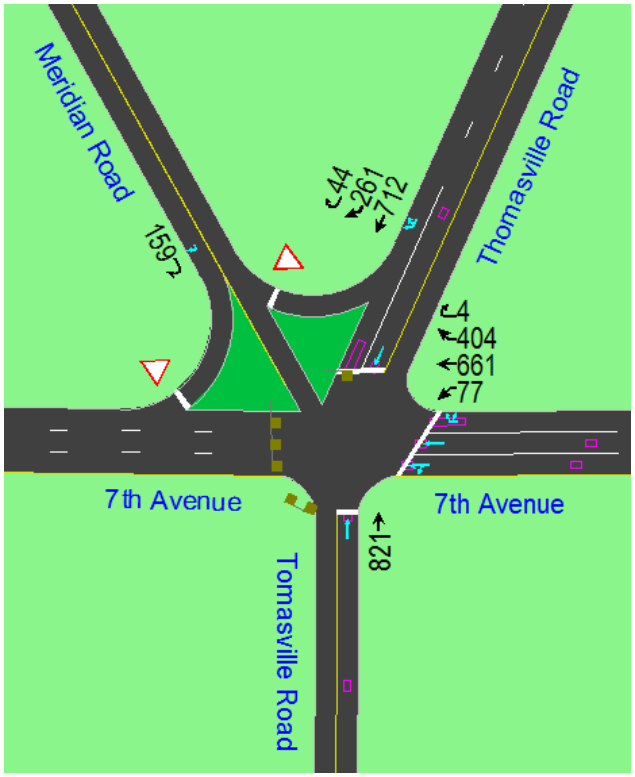
Intersection Summary			
Area Type:	Other		
Cycle Length: 144			
Actuated Cycle Length: 144			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 25.7		Intersection LOS: C	
Intersection Capacity Utilization 79.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 4: Thomasville Road & 7th Avenue & Meridian Road



SR 61/Thomasville Road at 7th Avenue/Meridian Road

Existing PM Geometry and Volumes

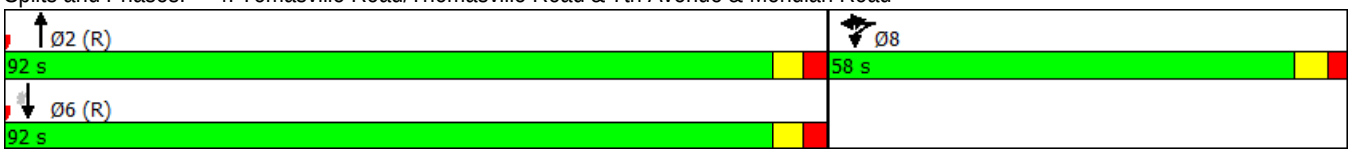


Lane Group	WBL	WBT	WBR	WBR2	NBT	SBT	SBR	SBR2	SER2
Lane Configurations									
Traffic Volume (vph)	77	661	404	4	821	712	261	44	159
Future Volume (vph)	77	661	404	4	821	712	261	44	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00					0.98		
Frt			0.850				0.850		0.865
Flt Protected		0.995							
Satd. Flow (prot)	0	3522	1583	0	1863	1863	1583	0	1611
Flt Permitted		0.995							
Satd. Flow (perm)	0	3514	1583	0	1863	1863	1558	0	1611
Right Turn on Red				No				No	No
Satd. Flow (RTOR)									
Link Speed (mph)		25			25	25			
Link Distance (ft)		150			500	1048			
Travel Time (s)		4.1			13.6	28.6			
Confl. Peds. (#/hr)	4						5		
Confl. Bikes (#/hr)							3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	84	718	439	4	892	774	284	48	173
Shared Lane Traffic (%)									
Lane Group Flow (vph)	0	802	443	0	892	774	332	0	173
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Left	Right	Right	Right
Median Width(ft)		0			0	0			
Link Offset(ft)		0			0	0			
Crosswalk Width(ft)		10			10	10			
Two way Left Turn Lane									
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9			9	9	9
Number of Detectors	1	2	1		2	2	1		1
Detector Template	Left	Thru	Right		Thru	Thru	Right		Right
Leading Detector (ft)	20	100	20		100	100	20		20
Trailing Detector (ft)	0	0	0		0	0	0		0
Detector 1 Position(ft)	0	0	0		0	0	0		0
Detector 1 Size(ft)	20	6	20		6	6	20		20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel									
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(ft)		94			94	94			
Detector 2 Size(ft)		6			6	6			
Detector 2 Type		Cl+Ex			Cl+Ex	Cl+Ex			
Detector 2 Channel									
Detector 2 Extend (s)		0.0			0.0	0.0			
Turn Type	Split	NA	Prot		NA	NA	Perm		Perm
Protected Phases	8	8	8		2	6			
Permitted Phases							6		6

Lane Group	WBL	WBT	WBR	WBR2	NBT	SBT	SBR	SBR2	SER2
Detector Phase	8	8	8		2	6	6		6
Switch Phase									
Minimum Initial (s)	9.0	9.0	9.0		12.0	6.0	6.0		6.0
Minimum Split (s)	24.0	24.0	24.0		29.3	24.3	24.3		24.3
Total Split (s)	58.0	58.0	58.0		92.0	92.0	92.0		92.0
Total Split (%)	38.7%	38.7%	38.7%		61.3%	61.3%	61.3%		61.3%
Maximum Green (s)	52.0	52.0	52.0		85.7	85.7	85.7		85.7
Yellow Time (s)	3.7	3.7	3.7		3.4	3.4	3.4		3.4
All-Red Time (s)	2.3	2.3	2.3		2.9	2.9	2.9		2.9
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0		0.0
Total Lost Time (s)		6.0	6.0		6.3	6.3	6.3		6.3
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	5.5	5.5	5.5		4.0	4.0	4.0		4.0
Recall Mode	None	None	None		C-Max	C-Max	C-Max		C-Max
Walk Time (s)	5.0	5.0	5.0		6.0				
Flash Dont Walk (s)	9.0	9.0	9.0		17.0				
Pedestrian Calls (#/hr)	4	4	4		5				
Act Effct Green (s)		51.0	51.0		86.7	86.7	86.7		86.7
Actuated g/C Ratio		0.34	0.34		0.58	0.58	0.58		0.58
v/c Ratio		0.67	0.82		0.83	0.72	0.37		0.19
Control Delay		45.4	59.2		34.2	27.9	18.7		15.9
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0
Total Delay		45.4	59.2		34.2	27.9	18.7		15.9
LOS		D	E		C	C	B		B
Approach Delay		50.3			34.2	25.2			
Approach LOS		D			C	C			

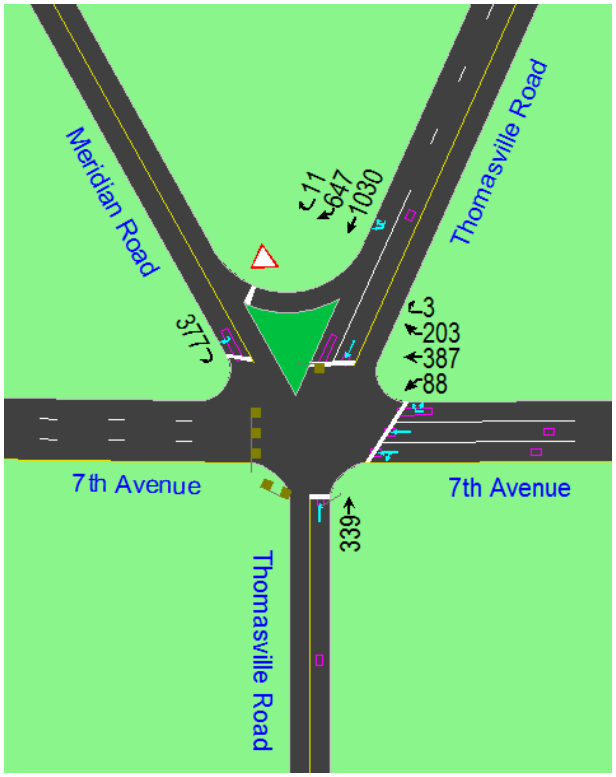
Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 36.2		Intersection LOS: D	
Intersection Capacity Utilization 83.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 4: Tomasville Road/Thomasville Road & 7th Avenue & Meridian Road



SR 61/Thomasville Road at 7th Avenue/Meridian Road

Proposed2 AM Geometry and Volumes



Lane Group	WBL	WBT	WBR	WBR2	NBT	SBT	SBR	SBR2	SER2
Lane Configurations									
Traffic Volume (vph)	88	387	203	3	339	1030	647	11	377
Future Volume (vph)	88	387	203	3	339	1030	647	11	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00					0.99		
Frt			0.850				0.850		0.865
Flt Protected		0.991							
Satd. Flow (prot)	0	3507	1583	0	1863	1863	1583	0	1611
Flt Permitted		0.991							
Satd. Flow (perm)	0	3506	1583	0	1863	1863	1562	0	1611
Right Turn on Red				No				No	No
Satd. Flow (RTOR)									
Link Speed (mph)		25			25	25			
Link Distance (ft)		150			500	1048			
Travel Time (s)		4.1			13.6	28.6			
Confl. Peds. (#/hr)	1		1	1			1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	421	221	3	368	1120	703	12	410
Shared Lane Traffic (%)									
Lane Group Flow (vph)	0	517	224	0	368	1120	715	0	410
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Left	Right	Right	Right
Median Width(ft)		0			0	0			
Link Offset(ft)		0			0	0			
Crosswalk Width(ft)		10			10	10			
Two way Left Turn Lane									
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9			9	9	9
Number of Detectors	1	2	1		2	2	1		1
Detector Template	Left	Thru	Right		Thru	Thru	Right		Right
Leading Detector (ft)	20	100	20		100	100	20		20
Trailing Detector (ft)	0	0	0		0	0	0		0
Detector 1 Position(ft)	0	0	0		0	0	0		0
Detector 1 Size(ft)	20	6	20		6	6	20		20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel									
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(ft)		94			94	94			
Detector 2 Size(ft)		6			6	6			
Detector 2 Type		Cl+Ex			Cl+Ex	Cl+Ex			
Detector 2 Channel									
Detector 2 Extend (s)		0.0			0.0	0.0			
Turn Type	Split	NA	Prot		NA	NA	Perm		Perm
Protected Phases	8	8	8		2	6			
Permitted Phases							6		6
Detector Phase	8	8	8		2	6	6		6

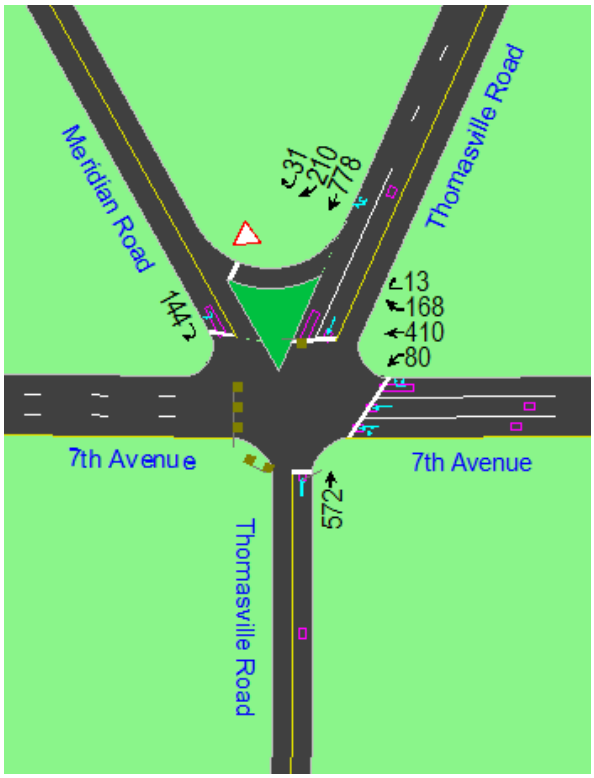
Lane Group	WBL	WBT	WBR	WBR2	NBT	SBT	SBR	SBR2	SER2
Switch Phase									
Minimum Initial (s)	9.0	9.0	9.0		12.0	6.0	6.0		6.0
Minimum Split (s)	44.0	44.0	44.0		35.3	35.3	35.3		35.3
Total Split (s)	44.0	44.0	44.0		100.0	100.0	100.0		100.0
Total Split (%)	30.6%	30.6%	30.6%		69.4%	69.4%	69.4%		69.4%
Maximum Green (s)	35.0	35.0	35.0		90.7	90.7	90.7		90.7
Yellow Time (s)	3.7	3.7	3.7		3.4	3.4	3.4		3.4
All-Red Time (s)	5.3	5.3	5.3		5.9	5.9	5.9		5.9
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0		0.0
Total Lost Time (s)		9.0	9.0		9.3	9.3	9.3		9.3
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	5.5	5.5	5.5		4.0	4.0	4.0		4.0
Recall Mode	None	None	None		C-Max	C-Max	C-Max		C-Max
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0		7.0
Flash Dont Walk (s)	28.0	28.0	28.0		19.0	19.0	19.0		19.0
Pedestrian Calls (#/hr)	2	2	2		1	0	0		0
Act Effct Green (s)		32.1	32.1		93.6	93.6	93.6		93.6
Actuated g/C Ratio		0.22	0.22		0.65	0.65	0.65		0.65
v/c Ratio		0.66	0.64		0.30	0.92	0.70		0.39
Control Delay		55.2	59.0		12.2	36.8	21.7		13.7
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0
Total Delay		55.2	59.0		12.2	36.8	21.7		13.7
LOS		E	E		B	D	C		B
Approach Delay		56.3			12.2	30.9			
Approach LOS		E			B	C			

Intersection Summary			
Area Type:	Other		
Cycle Length: 144			
Actuated Cycle Length: 144			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 32.4		Intersection LOS: C	
Intersection Capacity Utilization 114.3%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 4: Thomasville Road & 7th Avenue & Meridian Road

SR 61/Thomasville Road at 7th Avenue/Meridian Road

Proposed2 Midday Geometry and Volumes

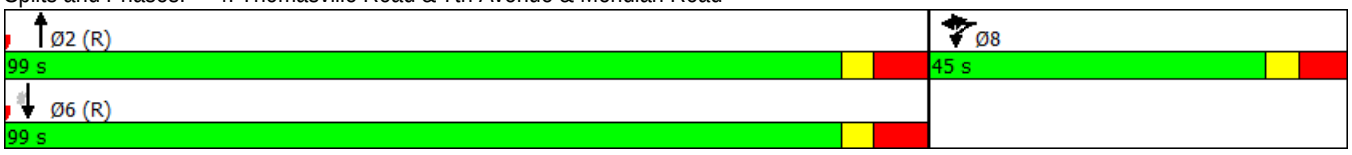


Lane Group	WBL	WBT	WBR	WBR2	NBT	SBT	SBR	SBR2	SER2
Lane Configurations									
Traffic Volume (vph)	80	410	168	13	572	778	210	31	144
Future Volume (vph)	80	410	168	13	572	778	210	31	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00					0.98		0.98
Frt			0.850				0.850		0.865
Flt Protected		0.992							
Satd. Flow (prot)	0	3511	1583	0	1863	1863	1583	0	1611
Flt Permitted		0.992							
Satd. Flow (perm)	0	3506	1583	0	1863	1863	1559	0	1586
Right Turn on Red				No				No	No
Satd. Flow (RTOR)									
Link Speed (mph)		25			25	25			
Link Distance (ft)		150			500	1048			
Travel Time (s)		4.1			13.6	28.6			
Confl. Peds. (#/hr)	4		2	2			2		2
Confl. Bikes (#/hr)			2	2			1		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	446	183	14	622	846	228	34	157
Shared Lane Traffic (%)									
Lane Group Flow (vph)	0	533	197	0	622	846	262	0	157
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Left	Right	Right	Right
Median Width(ft)		0			0	0			
Link Offset(ft)		0			0	0			
Crosswalk Width(ft)		10			10	10			
Two way Left Turn Lane									
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9			9	9	9
Number of Detectors	1	2	1		2	2	1		1
Detector Template	Left	Thru	Right		Thru	Thru	Right		Right
Leading Detector (ft)	20	100	20		100	100	20		20
Trailing Detector (ft)	0	0	0		0	0	0		0
Detector 1 Position(ft)	0	0	0		0	0	0		0
Detector 1 Size(ft)	20	6	20		6	6	20		20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel									
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(ft)		94			94	94			
Detector 2 Size(ft)		6			6	6			
Detector 2 Type		Cl+Ex			Cl+Ex	Cl+Ex			
Detector 2 Channel									
Detector 2 Extend (s)		0.0			0.0	0.0			
Turn Type	Split	NA	Prot		NA	NA	Perm		Perm
Protected Phases	8	8	8		2	6			
Permitted Phases							6		6

Lane Group	WBL	WBT	WBR	WBR2	NBT	SBT	SBR	SBR2	SER2
Detector Phase	8	8	8		2	6	6		6
Switch Phase									
Minimum Initial (s)	9.0	9.0	9.0		12.0	6.0	6.0		6.0
Minimum Split (s)	44.0	44.0	44.0		35.3	35.3	35.3		35.3
Total Split (s)	45.0	45.0	45.0		99.0	99.0	99.0		99.0
Total Split (%)	31.3%	31.3%	31.3%		68.8%	68.8%	68.8%		68.8%
Maximum Green (s)	36.0	36.0	36.0		89.7	89.7	89.7		89.7
Yellow Time (s)	3.7	3.7	3.7		3.4	3.4	3.4		3.4
All-Red Time (s)	5.3	5.3	5.3		5.9	5.9	5.9		5.9
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0		0.0
Total Lost Time (s)		9.0	9.0		9.3	9.3	9.3		9.3
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	5.5	5.5	5.5		4.0	4.0	4.0		4.0
Recall Mode	None	None	None		C-Max	C-Max	C-Max		C-Max
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0		7.0
Flash Dont Walk (s)	28.0	28.0	28.0		19.0	19.0	19.0		19.0
Pedestrian Calls (#/hr)	2	2	2		6	2	2		2
Act Effct Green (s)		32.6	32.6		93.1	93.1	93.1		93.1
Actuated g/C Ratio		0.23	0.23		0.65	0.65	0.65		0.65
v/c Ratio		0.67	0.55		0.52	0.70	0.26		0.15
Control Delay		55.0	54.9		16.0	21.2	12.2		11.0
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0
Total Delay		55.0	54.9		16.0	21.2	12.2		11.0
LOS		D	D		B	C	B		B
Approach Delay		54.9			16.0	19.1			
Approach LOS		D			B	B			

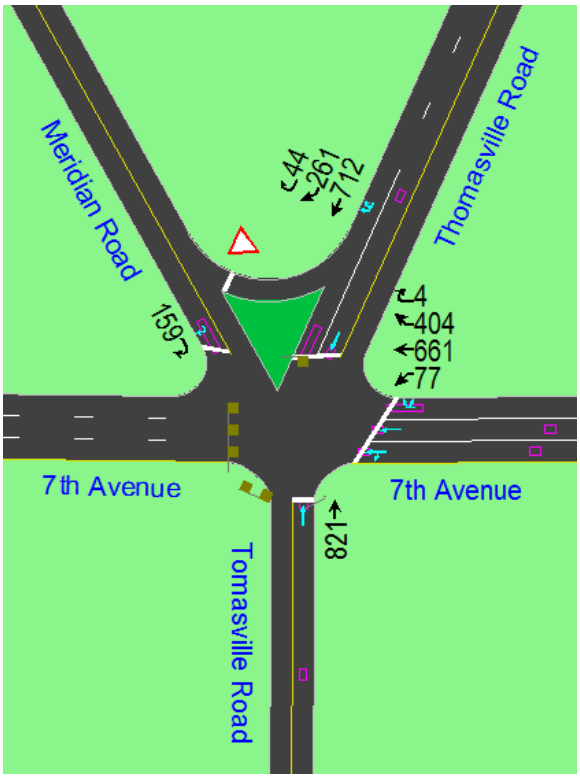
Intersection Summary			
Area Type:	Other		
Cycle Length: 144			
Actuated Cycle Length: 144			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 27.9		Intersection LOS: C	
Intersection Capacity Utilization 88.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 4: Thomasville Road & 7th Avenue & Meridian Road



SR 61/Thomasville Road at 7th Avenue/Meridian Road

Proposed2 PM Geometry and Volumes

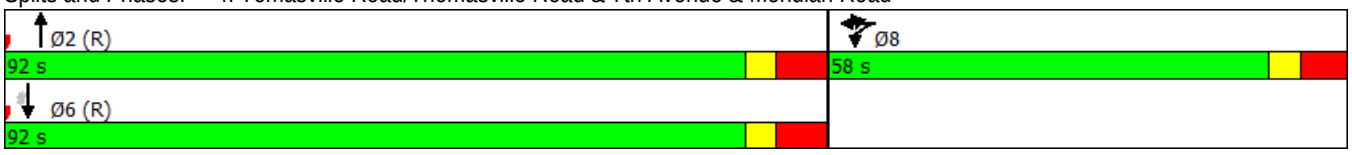


Lane Group	WBL	WBT	WBR	WBR2	NBT	SBT	SBR	SBR2	SER2
Lane Configurations									
Traffic Volume (vph)	77	661	404	4	821	712	261	44	159
Future Volume (vph)	77	661	404	4	821	712	261	44	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00					0.98		0.98
Frt			0.850				0.850		0.865
Flt Protected		0.995							
Satd. Flow (prot)	0	3522	1583	0	1863	1863	1583	0	1611
Flt Permitted		0.995							
Satd. Flow (perm)	0	3518	1583	0	1863	1863	1550	0	1577
Right Turn on Red				No				No	No
Satd. Flow (RTOR)									
Link Speed (mph)		25			25	25			
Link Distance (ft)		150			500	1048			
Travel Time (s)		4.1			13.6	28.6			
Confl. Peds. (#/hr)	4		2	2			5		5
Confl. Bikes (#/hr)			1	1			2		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	84	718	439	4	892	774	284	48	173
Shared Lane Traffic (%)									
Lane Group Flow (vph)	0	802	443	0	892	774	332	0	173
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Left	Right	Right	Right
Median Width(ft)		0			0	0			
Link Offset(ft)		0			0	0			
Crosswalk Width(ft)		10			10	10			
Two way Left Turn Lane									
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9			9	9	9
Number of Detectors	1	2	1		2	2	1		1
Detector Template	Left	Thru	Right		Thru	Thru	Right		Right
Leading Detector (ft)	20	100	20		100	100	20		20
Trailing Detector (ft)	0	0	0		0	0	0		0
Detector 1 Position(ft)	0	0	0		0	0	0		0
Detector 1 Size(ft)	20	6	20		6	6	20		20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel									
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(ft)		94			94	94			
Detector 2 Size(ft)		6			6	6			
Detector 2 Type		Cl+Ex			Cl+Ex	Cl+Ex			
Detector 2 Channel									
Detector 2 Extend (s)		0.0			0.0	0.0			
Turn Type	Split	NA	Prot		NA	NA	Perm		Perm
Protected Phases	8	8	8		2	6			
Permitted Phases							6		6

Lane Group	WBL	WBT	WBR	WBR2	NBT	SBT	SBR	SBR2	SER2
Detector Phase	8	8	8		2	6	6		6
Switch Phase									
Minimum Initial (s)	9.0	9.0	9.0		12.0	6.0	6.0		6.0
Minimum Split (s)	44.0	44.0	44.0		35.3	35.3	35.3		35.3
Total Split (s)	58.0	58.0	58.0		92.0	92.0	92.0		92.0
Total Split (%)	38.7%	38.7%	38.7%		61.3%	61.3%	61.3%		61.3%
Maximum Green (s)	49.0	49.0	49.0		82.7	82.7	82.7		82.7
Yellow Time (s)	3.7	3.7	3.7		3.4	3.4	3.4		3.4
All-Red Time (s)	5.3	5.3	5.3		5.9	5.9	5.9		5.9
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0		0.0
Total Lost Time (s)		9.0	9.0		9.3	9.3	9.3		9.3
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	5.5	5.5	5.5		4.0	4.0	4.0		4.0
Recall Mode	None	None	None		C-Max	C-Max	C-Max		C-Max
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0		7.0
Flash Dont Walk (s)	28.0	28.0	28.0		19.0	19.0	19.0		19.0
Pedestrian Calls (#/hr)	6	6	6		5	5	5		5
Act Effct Green (s)		48.7	48.7		83.0	83.0	83.0		83.0
Actuated g/C Ratio		0.32	0.32		0.55	0.55	0.55		0.55
v/c Ratio		0.70	0.86		0.87	0.75	0.39		0.20
Control Delay		48.2	65.1		39.3	31.5	20.8		17.6
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0
Total Delay		48.2	65.1		39.3	31.5	20.8		17.6
LOS		D	E		D	C	C		B
Approach Delay		54.2			39.3	28.3			
Approach LOS		D			D	C			

Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 40.1		Intersection LOS: D	
Intersection Capacity Utilization 93.7%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 4: Tomasville Road/Thomasville Road & 7th Avenue & Meridian Road



Appendix F
Roundabout Analysis

DRAFT MEMORANDUM

Date: **February 24, 2016**

To: **Susan Joel, PE, PTOE, Cardno**

From: **Justin Bansen, PE, Kittelson & Associates, Inc.**

Subject: **Roundabout Screening for SR 61 (Thomasville Road) at 7th Avenue/SR 155 (Meridian Road), Leon County, Roadway Section 55050000 M.P. 0.942**

INTRODUCTION

At the intersection of SR 61 (Thomasville Road), 7th Avenue, and SR 155 (Meridian Road), an initial roundabout screening was performed. The intent was to identify whether a roundabout might be a viable alternative worthy of further investigation. This included identification of needed roundabout lane configurations, potential safety benefit, and possible "fatal flaws". This memorandum summarizes the roundabout analyses, including: traffic operations for existing conditions, safety, conceptual roundabout layout, and benefit/cost.

OPERATIONS ANALYSIS

In order to identify the potential footprint of a roundabout at the study intersection, operations analyses were conducted based upon existing 2015 AM and PM peak hour volumes. For the analysis, the SIDRA Intersection 6.1 software was applied using the SIDRA Standard capacity model (Environmental Factor = 1.1).

Based upon 2014 FDOT count data, the following AADTs were recorded for each leg: 22,500 on SR 61 north of 7th Ave and 22,000 south of 7th Ave, 13,000 on 7th Ave west of SR 61, and 6,200 on SR 155, north of 7th Ave. west of Proctor Road (1.5 miles west of the study intersection). 4-hour intersection turning movement volumes were collected on October 8, 2015. The 4-hour counts indicated the two peak hours during the day were an AM peak from 7:45 to 8:45 AM and a PM peak from 4:45 to 5:45 PM. During the peak hours, most individual intersection turning movements have truck percentages less than two percent, except for NB SR 61 in the AM, which had approximately 5% trucks.

Two lane configuration options were evaluated. Results of the analysis, provided in Tables 1 and 2, are expressed in volume-to-capacity (v/c) ratio for the critical lane, level of service (LOS), average approach delay (seconds per vehicle), and 95th percentile queue length (vehicles) for the critical lane.

- **Option 1**, illustrated in Figure 1, provides lane configurations that generally match up with the existing numbers of lanes at the intersection (one entry and exit lane on the south leg of SR 61, two entering and one exiting lane on the north leg of SR 61, and one entering and exiting lane on the SR 155 approach). The westbound 7th Ave approach was reduced from 3-lanes to two entering lanes for initial evaluation. This results in a partial two-lane roundabout configuration.
- **Option 2,** illustrated in Figure 2, provides an additional through lane in each direction along SR 61. This would require widening of SR 61 on the approaches upstream and downstream of the intersection, which would have additional property impacts beyond the immediate intersection. The 5-legged configuration introduces additional complications for achieving appropriate lane assignments. In order to avoid lane traps and exit-circulating conflicts, this option would require three-lanes for a portion of the circulatory roadway.

Note that the roundabout layouts provided in Figure 1 and Figure 2 are very basic schematics generated by the SIDRA software. They are simply intended to provide a general illustration of the numbers of lanes assumed in the analysis for each entry, exit, and within various portions of the circulatory roadway. They do NOT reflect proper roundabout geometric features and should not be used as the basis for design. The software also has limitations when it comes to generating graphical illustrations for more complex configurations. For Option 2, Figure 2 shows the correct numbers of lanes; however, it does not correctly illustrate some of the spirals within the circulatory roadway needed for drivers to maintain their appropriate lane. This is only a limitation of schematic illustration and does not impact the roundabout analysis.

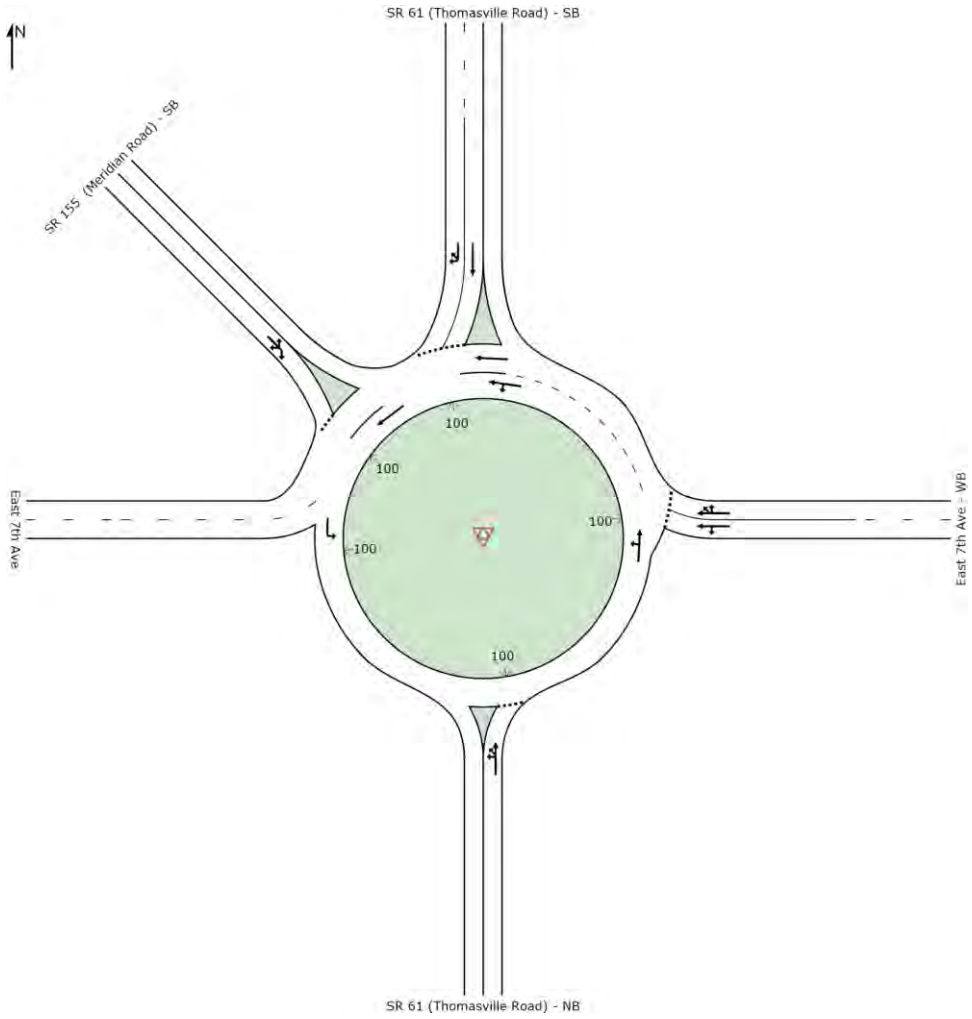


Figure 1: Roundabout Lane Configuration Option 1

Table 1: Roundabout Option 1 Analysis Results (Existing Conditions – 2015)

Intersection (Movement)	AM Peak (7:45 – 8:45 AM)				PM Peak (4:45 – 5:45 PM)			
	V/C Ratio	Delay	LOS	95th Queue	V/C Ratio	Delay	LOS	95th Queue
Overall Intersection	**N/A**	**>120**	**F**	**N/A**	**N/A**	**112.4**	**F**	**N/A**
NB SR 61	0.33	6.7	A	2	0.78	17.7	C	12
WB 7th Ave	0.47	11.3	B	3	**1.32**	**>120**	**F**	**>50**
SB SR 61	**1.63**	**>120**	**F**	**>50**	**1.30**	**>120**	**F**	**>50**
SB SR 155	**1.30**	**>120**	**F**	**35**	0.43	17.9	C	2

Notes: SIDRA Standard Capacity Model (EF = 1.1)
N/A – Not Applicable

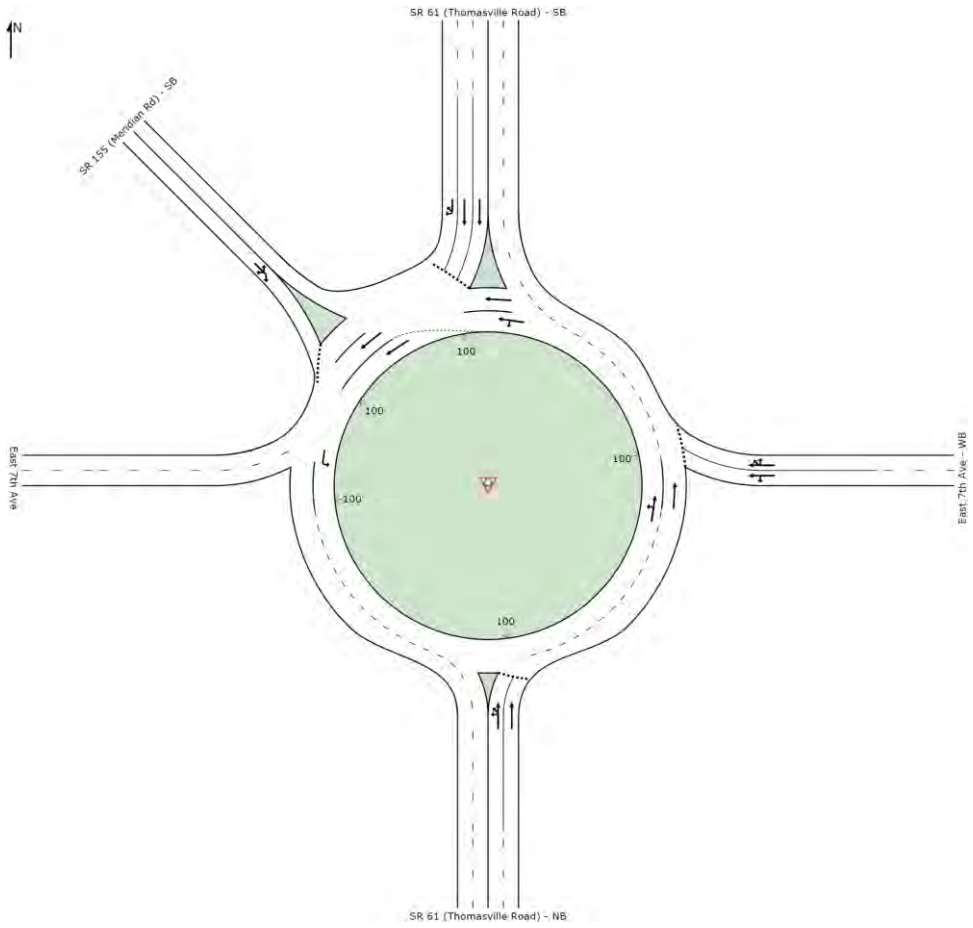


Figure 2: Roundabout Lane Configuration Option 2

Table 2: Roundabout Option 2 Analysis Results (Existing Conditions – 2015)

Intersection (Movement)	AM Peak (7:45 – 8:45 AM)				PM Peak (4:45 – 5:45 PM)			
	V/C Ratio	Delay	LOS	95th Queue	V/C Ratio	Delay	LOS	95th Queue
Overall Intersection	**N/A**	**78.6**	**F**	**N/A**	**N/A**	**112.4**	**F**	**N/A**
NB SR 61	0.17	4.8	A	1	0.39	7.3	A	3
WB 7th Ave	0.43	9.5	A	2	**1.03**	**72.9**	**F**	**19**
SB SR 61	**1.04**	**47.9***	**E**	**23**	0.80	33.7	D	5
SB SR 155	**1.78**	**>120**	**F**	**>50**	0.54	27.2	D	2

Notes: SIDRA Standard Capacity Model (EF = 1.1)
N/A – Not Applicable
**Critical lane delay is higher, resulting in a LOS F for individual movements.*

The following are notes and observations for each intersection approach:

- **NB SR 61** – A single-lane entry is sufficient for existing volumes as summarized in Table 1. However, all of the NB volume in a single-lane reduces the number of gaps available for vehicles on the WB 7th Ave entry. In order to increase capacity for westbound WB 7th Ave, consideration was given to a second NB entry lane, as illustrated in Figure 2.
- **WB 7th Ave** – As summarized in Table 1, a two-lane entry does not provide sufficient capacity for accommodating existing PM peak hour volumes.
  - A third entry lane (along with a corresponding third circulating lane on the north side of the roundabout and third westbound exit lane) was considered. It would provide a v/c ratio slightly less than 1.0. However, a third westbound through lane greatly increases the complexity of the roundabout. In particular, it creates additional exit-circulating conflicts in the northwest corner of the roundabout that would require a small portion of the circulatory roadway to be four lanes. This was considered a fatal flaw and therefore analysis of this option was discontinued.
  - In order to improve operations for the westbound entry while keeping it at two lanes, a second northbound through lane was added for Option 2. This option helps to process the conflicting NB traffic faster thereby increasing the capacity of the WB entry. As summarized in Table 2, this option provides better results, but still does not provide sufficient capacity to accommodate existing PM peak hour volumes.
- **SB SR 61** – A two-lane entry on the southbound SR 61 approach is not sufficient for existing volumes.
  - As summarized in Table 2, a three-lane entry (two SB through lanes and a dedicated right-turn lane) was evaluated. The additional lanes provide sufficient capacity for the PM peak hour. However, during the AM peak hour, the critical lane (right-turn lane) is still expected to be slightly over-capacity with existing volumes.
- **SB SR 155 –** A single-lane entry does not provide sufficient capacity for existing AM peak hour volumes.
  - Additional lanes were not considered due to the fact that the close spacing to the SB SR 61 approach and skewed intersection angles would result in lane assignment conflicts and lack of speed control with a two-lane entry.
  - For Option 2, the results summarized in Table 2 indicate worse performance for the SB SR 155 entry. This is due to the fact that under Option 1, flow from the SB SR 61 entry was being restricted due to over-capacity operations. Adding a second through lane on SB SR 61 removed this bottleneck, which negatively impacted SB SR 155.
  - Consideration could be given to maintaining the existing right-turn only configuration from SR 155 to 7th Avenue. This movement could be accommodated as a free-flow bypass lane instead of a lane entering the roundabout. This would remove some of the lane configuration conflicts, but would result in increased property impacts in the NW corner of the intersection.

Other operational notes and observations:

- The analysis assumes existing turning movement volume patterns will remain. However, some turning movements (e.g. northbound SR 61 left-turn, SB Meridian to SB SR 61) are currently restricted. Implementation of a roundabout would remove the restriction on these movements thereby potentially inducing additional demand. The northbound left-turn movement is currently accommodated at the nearby 7th Ave/Gadsden St intersection, approximately 200 feet to the east. The roundabout could result in re-assignment of some of that northbound left-turn traffic back over to the SR 61/7th Ave intersection. If further analysis of a roundabout at this location is undertaken, more detailed traffic forecasting is required to evaluate the potential for vehicle route shifts based upon removal of the turn restrictions.
- The operational analysis performed to date assumes an isolated intersection.
  - The close spacing of the study intersection to the adjacent signalized intersection at 7th Ave/Gadsden St will need to be further evaluated if a roundabout is advanced for further consideration. Given the one-way westbound configuration of 7th Ave, the signal is not expected to result in queue spillback into the roundabout. However, the over-capacity operations of the westbound roundabout entry would be expected to spill back through the signal.
  - The signal at 7th Ave/Gadsden St will result in platooning of vehicles on the westbound roundabout entry. This is expected to negatively impact queue lengths and delay on the westbound entry. However, it is likely to help increase gaps available for the southbound entry allowing it to operate better than indicated in Table 2.
- No future conditions analysis was undertaken as part of this screening. As summarized in Tables 2 and 3, the roundabout configurations evaluated to date do not provide sufficient capacity to accommodate existing volumes. Therefore, increases in volumes due to future growth would result in exacerbating the over-capacity conditions.

SAFETY SCREENING

As summarized in Table 3, 44 crashes were reported at the intersection during the 5-year period between 2009 and 2014.

Table 3: Collision Severity Summary (1/1/2009 to 12/31/2014)

Crash Type	Daytime	Nightime	Total
Fatal Crashes	0	0	0
Injury Crashes	4	5	9
Property Damage Only Crashes	29	6	35
Total Crashes	33	11	44
% Severe Crashes	**12%**	**45%**	**20%**

Due to the complexity of the existing 5-legged intersection configuration with one-way and prohibited turn movements, the FDOT Level 2 Roundabout B/C Spreadsheet is not applicable. The existing intersection configuration exceeds the limitations of the spreadsheet tool.

Based upon U.S. roundabout data documented in NCHRP Report 572, replacing an existing traffic signal with a roundabout resulted in a 47.8% reduction in all crash types and 77% reduction in injury and fatal crashes. This provides a relative estimate of the potential safety benefit that might be expected from implementation of a roundabout. Based upon the reduced speeds associated with a roundabout, a roundabout at the study intersection is expected to specifically address the history of injury crashes (9 over 5 years). However, with only 20% of the overall intersection crashes resulting in injury, the potential injury reduction benefit may be more limited than at other locations. In addition, the number of legs, skew angle between legs, relatively complexity of lane configurations, and limited space for being able to "optimize" the geometry may all contribute to the potential for property damage only crashes to remain higher than the average documented for previous signal to roundabout conversions.

GEOMETRIC SCREENING

As outlined in NCHRP Report 672, *Roundabouts: An Informational Guide – 2nd Edition*, roundabout design is based upon a set of fundamental principles which guide the design process. These principles include: (1) achieving speed control at entry, (2) providing appropriate lane numbers and arrangements, (3) appropriately aligning the natural path of vehicles, (4) accommodating the design vehicle, (5) accommodating non-motorized users, and (6) providing adequate sight distance and visibility. Achieving these principles, while fitting the context/constraints of the site, influences the selection of the roundabout size, placement, approach alignments, and other design details.

For this initial level of screening, a general footprint for a roundabout was assessed by plotting an appropriate sized inscribed circle diameter (ICD) over aerial photography. Based upon the operational analysis, a multilane roundabout will be required. The FDOT Intersection Design Guide recommends consideration of a 200 ft ICD for this level of initial screening. However, based upon the constrained urban environment, a smaller 160 ft ICD was also reviewed. Based upon prior experience, a 160 ft ICD is near the practical minimum for providing speed control on all approaches while also providing appropriate vehicle alignment (to minimize potential for vehicle path overlap), and accommodating WB-62FL design vehicles.

Figure 3 displays both a 160 ft and 200 ft diameter circle to demonstrate the relative impacts of a roundabout within this size range.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 61	Leon	

THOMASVILLE RD AT 7TH AVE ROUNDABOUT SCREENING

FIGURE NO. 3

jbansen 2/24/2016 8:54:16 AM H:\projfile\13508 - FDOT D-3 District Safety & Minor Design\Tasks\TWO 20\dgn\Figure.d

The following are general observations regarding the geometric screening:

- The severe skew angle between the SB SR 61 and SB SR 155 approaches are key constraints that will drive many of the design decisions, including the placement of the roundabout, which is shifted to the north of the existing center of the intersection. The skew angle may require the need for a right-turn bypass lane to accommodate design vehicles making the SB right-turn from SR 61onto SR 155. The skew angle and close spacing between the two legs will also negatively influence driver view angles and will complicated vehicle alignment, speed control, and signing/markings.
- The roundabout placement is expected to result in substantial impacts to the properties in the NW and NE quadrants (Midtown Caboose and BA Fitness). However, the shift to the north does help to reduce impacts to the south side of the intersection, including the Shell fuel station.
- Providing two entry and exit lanes, plus a raised splitter island, on the NB and SB SR 61 legs will require widening upstream of the roundabout. This will result in additional impacts upstream of the roundabout, in addition to those illustrated in Figure 3. This could increase the potential for impacts to the City Walk Thrift Store property as well as to the businesses fronting SR 61, south of 7th Ave.
- For multilane roundabouts, shared-use paths are typically accommodated around the intersection to allow bicyclists to exit the roadway and travel around the roundabout. A 10 ft path plus a landscaped buffer would add approximately 15 feet of additional space needed outside of the ICDs illustrated in Figure 3. This further increases impacts to the adjacent properties.

CONCLUSION

Based upon the operational analysis performed for the study intersection, a multilane roundabout is expected to be required. However, even with the use of two entry and exit lanes on the SR 61 and 7th Ave approaches, the two-lane roundabout is not expected to provide sufficient capacity to serve existing volumes. A two lane roundabout is also expected to result in substantial property and business impacts to adjacent parcels. While a roundabout could be expected to help support reductions in crashes, the additional complexity of the 5-legged configuration and site constraints may limit a roundabout at this site from achieving the same level of crash reductions documented in prior studies. Given these considerations, a roundabout does not appear to be a practical option for further consideration at the study intersection.

APPENDIX

Appendix A – Step 1 Roundabout Screening Form

FLORIDA DEPARTMENT OF TRANSPORTATION
STEP 1 - ROUNDABOUT SCREENING

Prepared by:	*Justin Bansen, PE*	**Date Prepared:**	*February 2016*
Financial Project ID:		**Project Name:**	
FAP No.:		**State Road:**	*SR 61*
County:	*Leon*	**Intersecting Road:**	*Thomasville Road at 7th Ave*

EXISTING CONTROL/PROJECT CLASSIFICATION

Control: ☐ Signal ☐ All Way Stop ☐ 2 Way Stop ☐ Yield ☐ None

Classification: ☐ Design. ■ Traffic Operations ☐ Other

SCREENING CRITERIA

1. Does the intersection have physical or geometric constraints that would limit visibility or complicate construction? *(comment below if "yes")* ■ yes ☐ no

The site has 5 legs with the North and NW legs intersecting in a skewed alignment. All adjacent parcels are developed, which limits opportunity for approach re-alignment. Close spacing(~150 ft) to adjacent signal at Gadsden St/7th Ave.

2. Does the major roadway AADT exceed 90% of the total intersection AADT? *(comment below if "yes")* ☐ yes ■ no

Based upon 4-hour counts during the AM, Midday, and PM peaks on 10/8/2015, the 7th Avenue approach represents approximately 29% of the total intersection entering volume.

3. Does the intersection have pedestrians with special needs that would have difficulty crossing the road? *(comment below if "yes")* ☐ yes ■ no

Fitness centers, restaurant, and other adjacent business have the potential to generate pedestrian traffic; however, specific generators or attractors of pedestrians with special needs is unknown at this time and requires additional investigation.

4. Is the intersection located within a coordinated signal network? *(comment below if "yes")* ■ yes ☐ no

Specific coordination information was not available. However, Synchro files recieved from the City indicated that the signal is actuated/coordinated. Based upon close spacing to adjacent signals, coordination is expected.

5. Is there downstream traffic control or conditions that could cause queues to back up into the intersection? *(comment below if "yes")* ☐ yes ■ no

A signal is located approximately 150 feet to the east. However, due to the one-way westbound flow of traffic along 7th Ave, the signal would not cause queue spillback into the roundabout. However, the roundabout would likely spill back into the signal.

6. Would the installation of a roundabout create impacts to historical, 4(f), or environmentally sensitive sites? Would the relocation of residences or businesses be required? *(comment below if "yes")* ■ yes ☐ no

Property impacts are expected due to the shape of the existing ROW. Specific impacts are unknown until a more detailed design layout is developed. The NE and NW corners are likely to be impacted (restaurant parking lot and fitness center building).

Step 2 evaluation is required if no is checked for all criteria. Level 2 is optional if yes is checked for one or more of the criteria.

Advance Roundabout Alternative to step 2 Roundabout b/c Evaluation ☐ yes ■ no

Approved by: ☐ DDE or ☐ DTOE

Signature: _____ Date: _____

Appendix B – Traffic Count Data

INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: East 7th Avenue at Thomasville Road - Existing AM (SIDRA EF 1.1)

2015 AM Peak Hour
Roundabout
Roundabout

Volume Display Method: Total and %

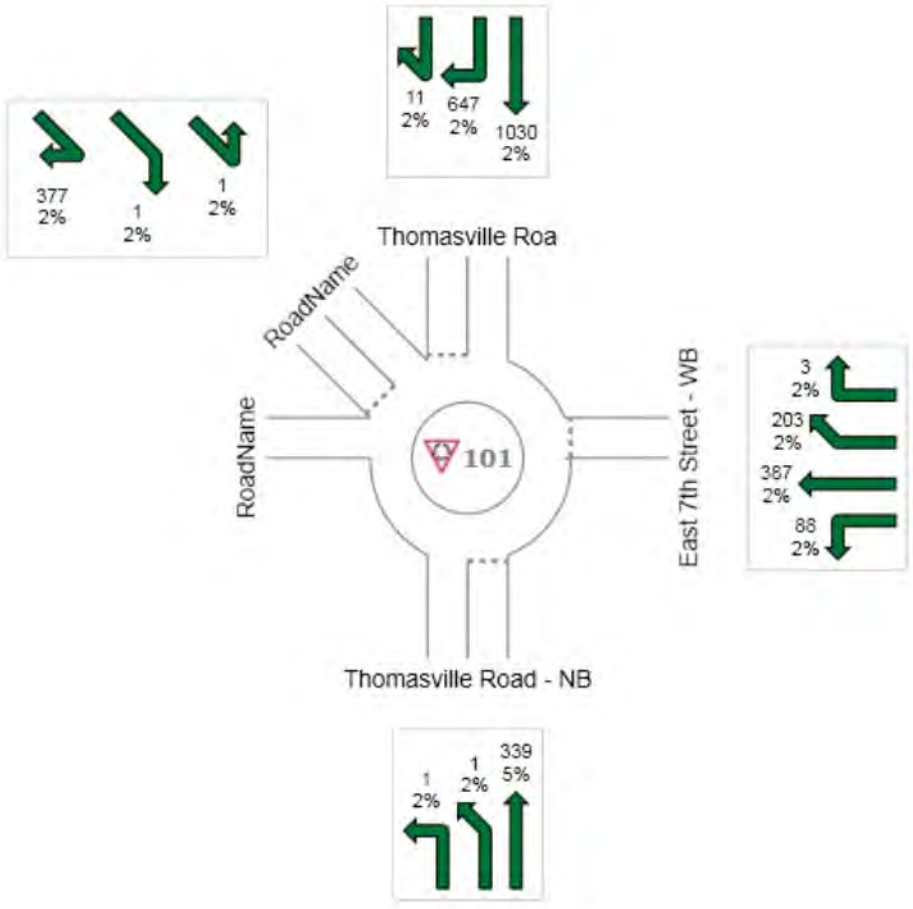
Volumes are shown for Movement Class(es): All Classes and Heavy Vehicles

Total Intersection Volumes (veh)

All Movement Classes: 3089

Light Vehicles (LV): 3017

Heavy Vehicles (HV): 72



INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: East 7th Avenue at Thomasville Road - Existing PM (SIDRA EF 1.1)

2015 PM Peak Hour
Roundabout
Roundabout

Volume Display Method: Total and %

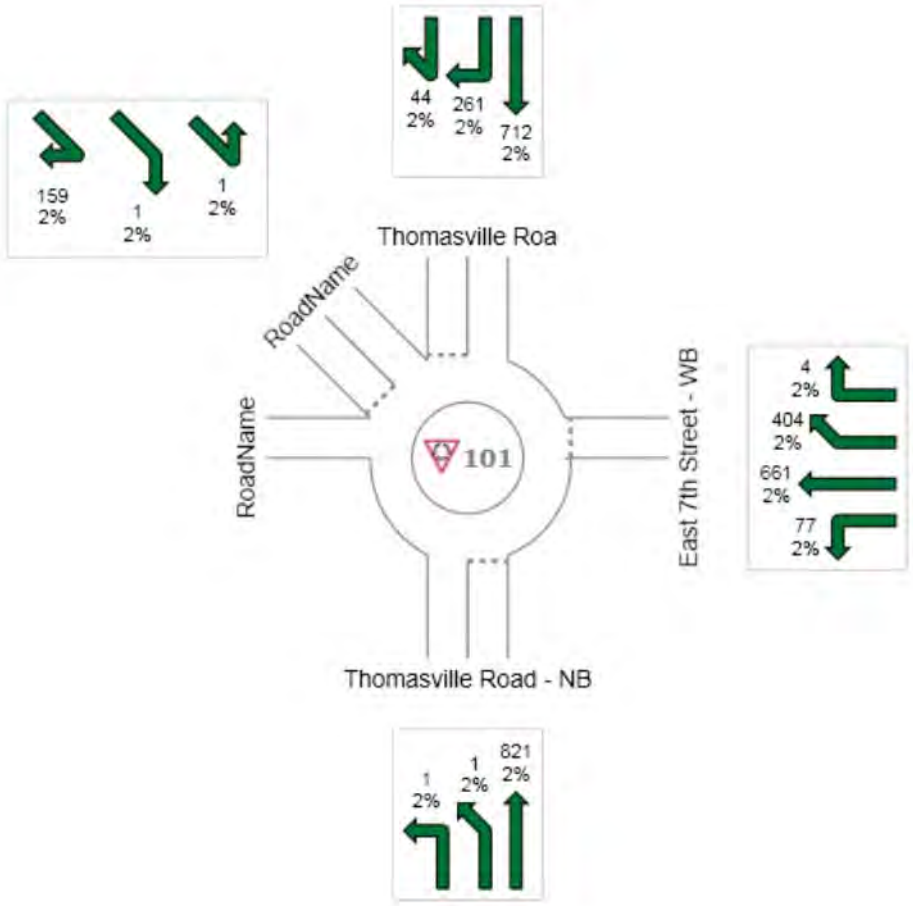
Volumes are shown for Movement Class(es): All Classes and Heavy Vehicles

Total Intersection Volumes (veh)

All Movement Classes: 3147

Light Vehicles (LV): 3084

Heavy Vehicles (HV): 63



FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2014 HISTORICAL AADT REPORT

COUNTY: 55 - LEON

SITE: 5014 - SR 155 (MERIDIAN RD) - 375' N OF SR 61

YEAR	AADT	DIRECTION 1		DIRECTION 2		*K FACTOR	D FACTOR	T FACTOR
2014	6200 C	N		S		7.50	68.40	2.60
2013	5300 C	N	0	S	0	7.50	65.90	2.00
2012	5100 C	N	0	S	0	7.50	71.30	2.50
2011	5300 C	N	0	S	0	7.50	67.30	1.90
2010	5700 C	N	0	S	0	11.49	66.79	2.60
2009	6100 C	N	0	S	0	11.12	62.90	2.20
2008	6800 C	N	0	S	0	11.19	63.04	1.70
2007	6700 C	N	0	S	0	10.89	64.26	3.40
2006	7100 C	N	0	S	0	10.96	65.06	1.80
2005	8800 C	N		S		10.80	64.40	4.70
2004	8200 C	N		S		10.80	61.10	1.60
2003	8400 C	N		S		10.80	61.80	3.60
2002	9100 C	N	4700	S	4400	10.30	60.30	2.70
2001	8700 C	N		S		10.30	59.40	2.80
2000	9600 C	N		S		10.10	57.10	2.30
1999	9800 C	N		S		10.10	56.70	2.70

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; F = FOURTH YEAR ESTIMATE
V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2014 HISTORICAL AADT REPORT

COUNTY: 55 - LEON

SITE: 5017 - SR 61 (US319) - 250' S OF 7TH AVE

YEAR	AADT	DIRECTION 1		DIRECTION 2		*K FACTOR	D FACTOR	T FACTOR
2014	22000 C	N		S		7.50	68.40	2.30
2013	22500 C	N	0	S	0	7.50	65.90	2.40
2012	19000 C	N	0	S	0	7.50	71.30	2.10
2011	19500 C	N	0	S	0	7.50	67.30	2.20
2010	21500 C	N	0	S	0	11.49	66.79	1.90
2009	24500 C	N	0	S	0	11.12	62.90	2.70
2008	25000 C	N	0	S	0	11.19	63.04	2.70
2007	24500 C	N	0	S	0	10.89	64.26	1.80
2006	23500 C	N	0	S	0	10.96	65.06	2.40
2005	21000 C	N		S		10.80	64.40	4.50
2004	21500 C	N		S		10.80	61.10	1.90
2003	23000 C	N		S		10.80	61.80	3.50
2002	31000 F	N		S		10.30	60.30	2.30
2001	29500 C	N		S		10.30	59.40	2.40
2000	22500 C	N		S		10.10	57.10	2.50
1999	24500 C	N		S		10.10	56.70	3.10

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; F = FOURTH YEAR ESTIMATE
V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2014 HISTORICAL AADT REPORT

COUNTY: 55 - LEON

SITE: 5016 - SR 61 (US319) - 400' N OF 7TH AVE

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2014	22500 C	N	S	7.50	68.40	2.30
2013	20000 C	N 0	S 0	7.50	65.90	2.40
2012	21000 C	N 0	S 0	7.50	71.30	2.10
2011	20000 C	N 0	S 0	7.50	67.30	2.20
2010	24500 C	N 0	S 0	11.49	66.79	1.90
2009	21400 C	N 9900	S 11500	11.12	62.90	2.70
2008	22000 C	N 0	S 0	11.19	63.04	2.70
2007	23500 C	N 0	S 0	10.89	64.26	1.80
2006	25000 C	N 0	S 0	10.96	65.06	2.40
2005	24000 C	N	S	10.80	64.40	4.50
2004	21500 C	N	S	10.80	61.10	1.90
2003	21000 C	N	S	10.80	61.80	3.50
2002	20500 F	N	S	10.30	60.30	2.30
2001	19500 C	N	S	10.30	59.40	2.40
2000	19500 C	N	S	10.10	57.10	2.50
1999	19000 C	N	S	10.10	56.70	3.10

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; F = FOURTH YEAR ESTIMATE
V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2014 HISTORICAL AADT REPORT

COUNTY: 55 - LEON

SITE: 5010 - SEVENTH AVE - 400' E OF SR 63 (US 27) MONROE ST

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2014	13000 C	W 13000		9.00	99.90	3.20
2013	12500 C	W 12500	0	9.00	99.90	3.20
2012	11500 C	W 11500	0	9.00	99.90	3.10
2011	12000 C	W 12000	0	9.00	99.90	2.80
2010	12500 C	W 12500	0	11.49	99.99	3.20
2009	14500 C	W 14500	0	11.12	99.99	3.60
2008	14000 T	0	0	11.19	63.04	2.80
2007	14000 S	0	0	10.89	99.99	2.90
2006	14000 F			10.96	99.99	2.00
2005	14000 C	W	E	10.80	99.90	6.20
2004	11500 C	W	E 11500	10.80	99.90	2.90
2003	10500 C	W	E 10500	10.80	99.90	6.10
2002	11000 C	W	E 11000	10.30	60.30	11.60
2001	11500 C	W	E 11500	10.30	59.40	7.50

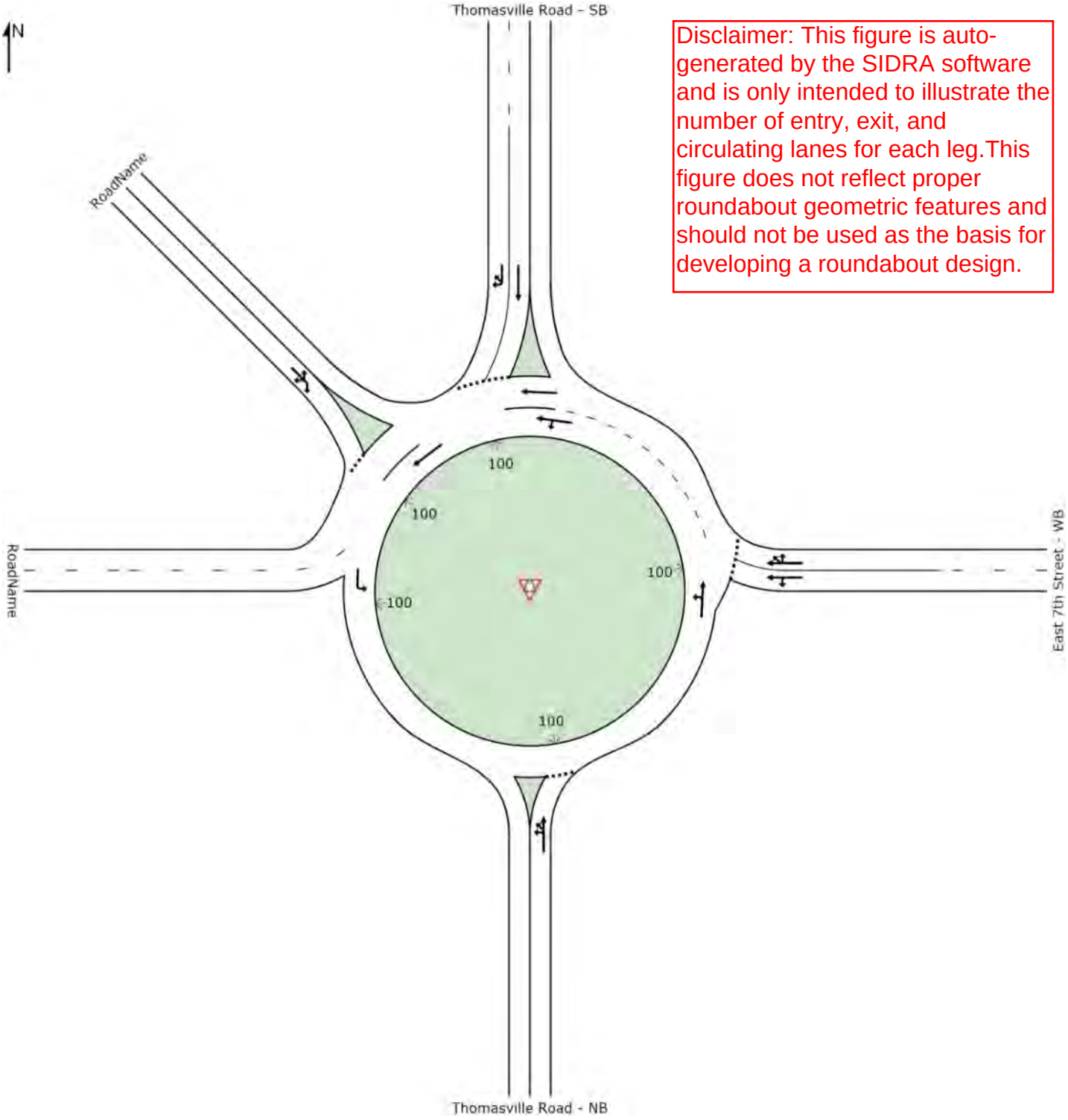
AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; F = FOURTH YEAR ESTIMATE
V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

Appendix C – Roundabout Capacity Analysis Results

SITE LAYOUT

Site: East 7th Avenue at Thomasville Road - Existing AM (SIDRA EF 1.1)

2015 AM Peak Hour
Roundabout
Roundabout



LANE SUMMARY

Site: East 7th Avenue at Thomasville Road - Existing AM (SIDRA EF 1.1)

2015 AM Peak Hour
Roundabout
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Thomasville Road - NB													
Lane 1[d]	359	5.0	1075	0.334	100	6.7	LOS A	1.6	40.8	Full	1600	0.0	0.0
Approach	359	5.0		0.334		6.7	LOS A	1.6	40.8				
East: East 7th Street - WB													
Lane 1	358	2.0	759	0.472	100	11.3	LOS B	2.4	61.4	Full	1600	0.0	0.0
Lane 2[d]	358	2.0	759	0.472	100	11.3	LOS B	2.4	61.4	Full	1600	0.0	0.0
Approach	717	2.0		0.472		11.3	LOS B	2.4	61.4				
North: Thomasville Road - SB													
Lane 1[d]	1084	2.0	665	1.632	100	308.0	LOS F	142.1	3608.2	Full	1600	0.0	40.6
Lane 2	693	2.0	641	1.081	100	84.2	LOS F	28.5	724.5	Full	1600	0.0	0.0
Approach	1777	2.0		1.632		220.7	LOS F	142.1	3608.2				
NorthWest: Meridian Road													
Lane 1[d]	399	2.0	307	1.298	100	190.2	LOS F	34.2	869.6	Full	1600	0.0	0.0
Approach	399	2.0		1.298		190.2	LOS F	34.2	869.6				
Intersection	3252	2.3		1.632		147.2	LOS F	142.1	3608.2				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: East 7th Avenue at Thomasville Road - Existing PM (SIDRA EF 1.1)

2015 PM Peak Hour
Roundabout
Roundabout

Lane Use and Performance													
	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Thomasville Road - NB													
Lane 1[d]	866	2.0	1107	0.783	100	17.7	LOS C	11.1	281.5	Full	1600	0.0	0.0
Approach	866	2.0		0.783		17.7	LOS C	11.1	281.5				
East: East 7th Street - WB													
Lane 1	603	2.0	457	1.319	100	183.7	LOS F	55.2	1402.4	Full	1600	0.0	1.2
Lane 2[d]	603	2.0	457	1.319	100	183.7	LOS F	55.2	1402.4	Full	1600	0.0	1.2
Approach	1206	2.0		1.319		183.7	LOS F	55.2	1402.4				
North: Thomasville Road - SB													
Lane 1[d]	749	2.0	577	1.299	100	168.9	LOS F	62.5	1587.5	Full	1600	0.0	4.8
Lane 2	321	2.0	551	0.583	100	18.2	LOS C	2.5	63.2	Full	1600	0.0	0.0
Approach	1071	2.0		1.299		123.7	LOS F	62.5	1587.5				
NorthWest: Meridian Road													
Lane 1[d]	169	2.0	396	0.428	100	17.9	LOS C	1.3	33.8	Full	1600	0.0	0.0
Approach	169	2.0		0.428		17.9	LOS C	1.3	33.8				
Intersection	3313	2.0		1.319		112.4	LOS F	62.5	1587.5				

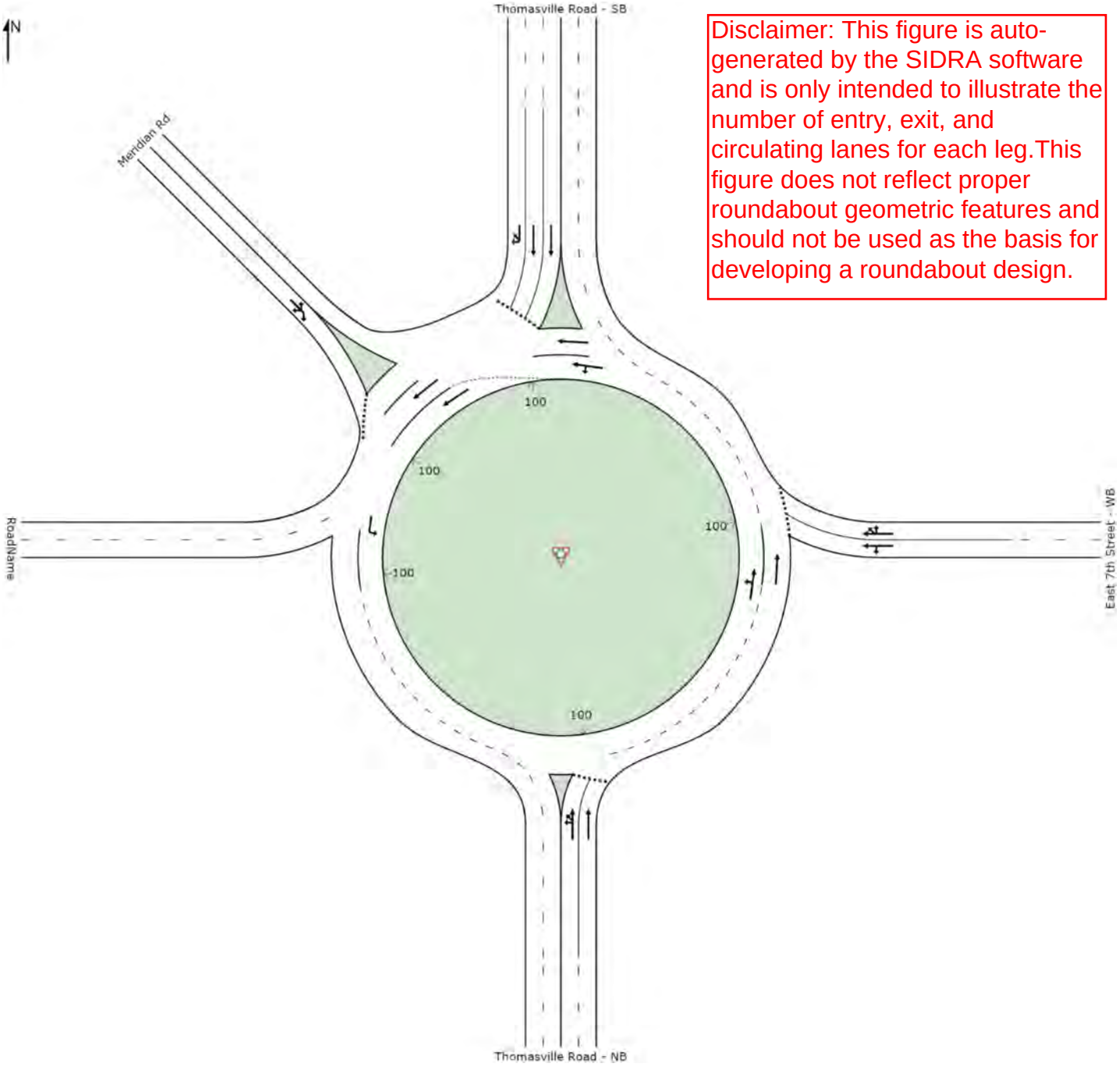
Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

SITE LAYOUT

Site: East 7th Avenue at Thomasville Road - Existing AM (SIDRA EF 1.1) - Option 2

2015 AM Peak Hour
Roundabout
Roundabout



Disclaimer: This figure is auto-generated by the SIDRA software and is only intended to illustrate the number of entry, exit, and circulating lanes for each leg.This figure does not reflect proper roundabout geometric features and should not be used as the basis for developing a roundabout design.

LANE SUMMARY

Site: East 7th Avenue at Thomasville Road - Existing AM (SIDRA EF 1.1) - Option 2

2015 AM Peak Hour
Roundabout
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Thomasville Road - NB													
Lane 1	180	5.0	1076	0.167	100	4.8	LOS A	0.6	16.6	Full	1600	0.0	0.0
Lane 2[d]	179	5.0	1076	0.167	100	4.9	LOS A	0.6	16.6	Full	1600	0.0	0.0
Approach	359	5.0		0.167		4.8	LOS A	0.6	16.6				
East: East 7th Street - WB													
Lane 1	355	2.0	835	0.425	100	9.6	LOS A	1.6	41.2	Full	1600	0.0	0.0
Lane 2[d]	362	2.0	851	0.425	100	9.5	LOS A	1.5	39.1	Full	1600	0.0	0.0
Approach	717	2.0		0.425		9.5	LOS A	1.6	41.2				
North: Thomasville Road - SB													
Lane 1	542	2.0	641	0.846	100	33.0	LOS D	6.6	168.5	Full	1600	0.0	0.0
Lane 2	542	2.0	641	0.846	100	33.0	LOS D	6.6	168.5	Full	1600	0.0	0.0
Lane 3[d]	693	2.0	665	1.042	100	71.2	LOS F	22.4	567.9	Full	1600	0.0	0.0
Approach	1777	2.0		1.042		47.9	LOS E	22.4	567.9				
NorthWest: Meridian Rd													
Lane 1[d]	399	2.0	224	1.781	100	405.9	LOS F	60.3	1532.7	Full	1600	0.0	3.7
Approach	399	2.0		1.781		405.9	LOS F	60.3	1532.7				
Intersection	3252	2.3		1.781		78.6	LOS F	60.3	1532.7				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: East 7th Avenue at Thomasville Road - Existing PM (SIDRA EF 1.1) - Option 2

2015 PM Peak Hour
Roundabout
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Thomasville Road - NB													
Lane 1	433	2.0	1107	0.391	100	7.3	LOS A	2.1	53.3	Full	1600	0.0	0.0
Lane 2[d]	433	2.0	1107	0.391	100	7.3	LOS A	2.1	53.3	Full	1600	0.0	0.0
Approach	866	2.0		0.391		7.3	LOS A	2.1	53.3				
East: East 7th Street - WB													
Lane 1	590	2.0	571	1.034	100	73.6	LOS F	18.7	476.1	Full	1600	0.0	0.0
Lane 2[d]	616	2.0	596	1.034	100	72.2	LOS F	18.9	479.0	Full	1600	0.0	0.0
Approach	1206	2.0		1.034		72.9	LOS F	18.9	479.0				
North: Thomasville Road - SB													
Lane 1	364	2.0	454	0.800	100	36.8	LOS E	4.4	111.8	Full	1600	0.0	0.0
Lane 2[d]	386	2.0	482	0.800	100	35.1	LOS E	4.3	109.4	Full	1600	0.0	0.0
Lane 3	321	2.0	454	0.707	100	28.4	LOS D	3.3	83.3	Full	1600	0.0	0.0
Approach	1071	2.0		0.800		33.7	LOS D	4.4	111.8				
NorthWest: Meridian Rd													
Lane 1[d]	169	2.0	312	0.544	100	27.2	LOS D	1.8	44.5	Full	1600	0.0	0.0
Approach	169	2.0		0.544		27.2	LOS D	1.8	44.5				
Intersection	3313	2.0		1.034		40.7	LOS E	18.9	479.0				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

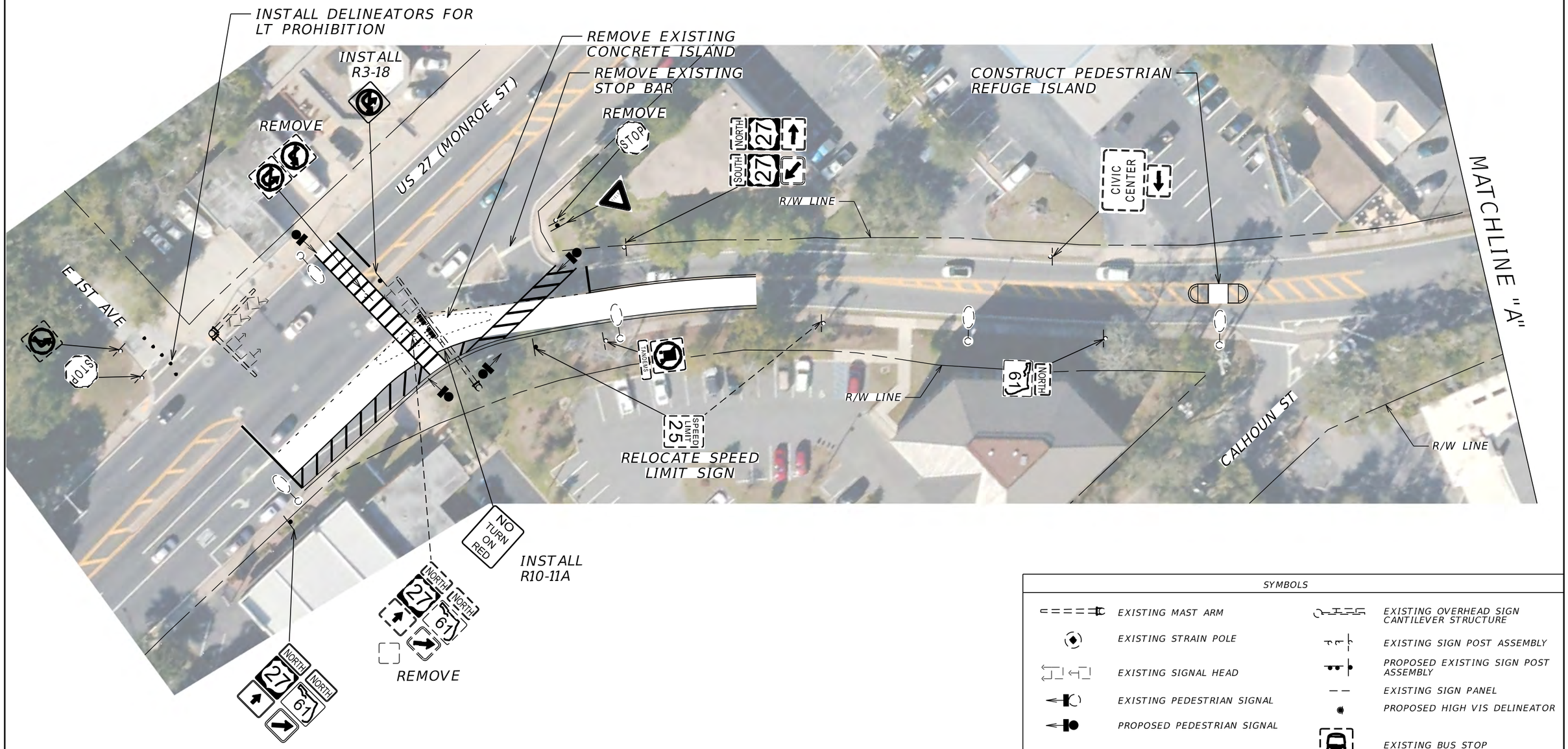
d Dominant lane on roundabout approach

Appendix G
Recommendations/Concepts

3-SECT., 1-WAY
2 AS
650-1-14

1-SECT., 1-WAY
EXISTING TO BE REMOVED

0 10 50
Feet



SYMBOLS

- EXISTING MAST ARM
- EXISTING STRAIN POLE
- EXISTING SIGNAL HEAD
- EXISTING PEDESTRIAN SIGNAL
- PROPOSED PEDESTRIAN SIGNAL
- EXISTING ROADWAY LIGHTING
- EXISTING OVERHEAD SIGN CANTILEVER STRUCTURE
- EXISTING SIGN POST ASSEMBLY
- PROPOSED EXISTING SIGN POST ASSEMBLY
- EXISTING SIGN PANEL
- PROPOSED HIGH VIS DELINEATOR
- EXISTING BUS STOP

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

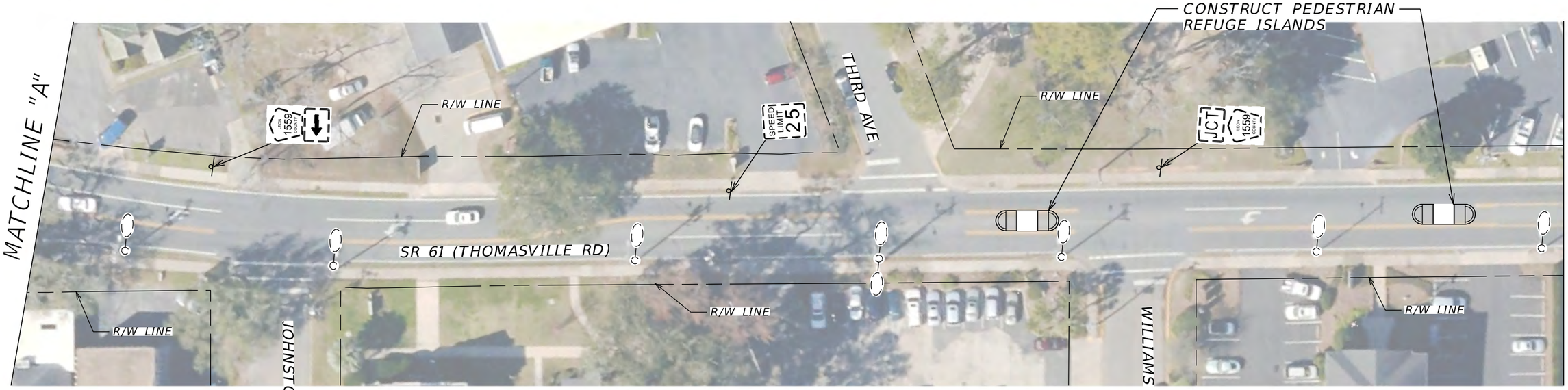
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
61	LEON	

RECOMMENDATIONS (1)

SHEET NO. 1

0 10 50
Feet



SYMBOLS

- EXISTING MAST ARM
- EXISTING STRAIN POLE
- EXISTING SIGNAL HEAD
- EXISTING PEDESTRIAN SIGNAL
- EXISTING CCTV
- EXISTING ROADWAY LIGHTING
- EXISTING OVERHEAD SIGN CANTILEVER STRUCTURE
- EXISTING SIGN POST ASSEMBLY
- EXISTING SIGN PANEL
- EXISTING FLEXIBLE DELINEATOR
- EXISTING DELINEATOR/SIGNAGE ON METAL POLE
- EXISTING BUS STOP

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
61	LEON	

RECOMMENDATIONS (2)

SHEET NO. R-2

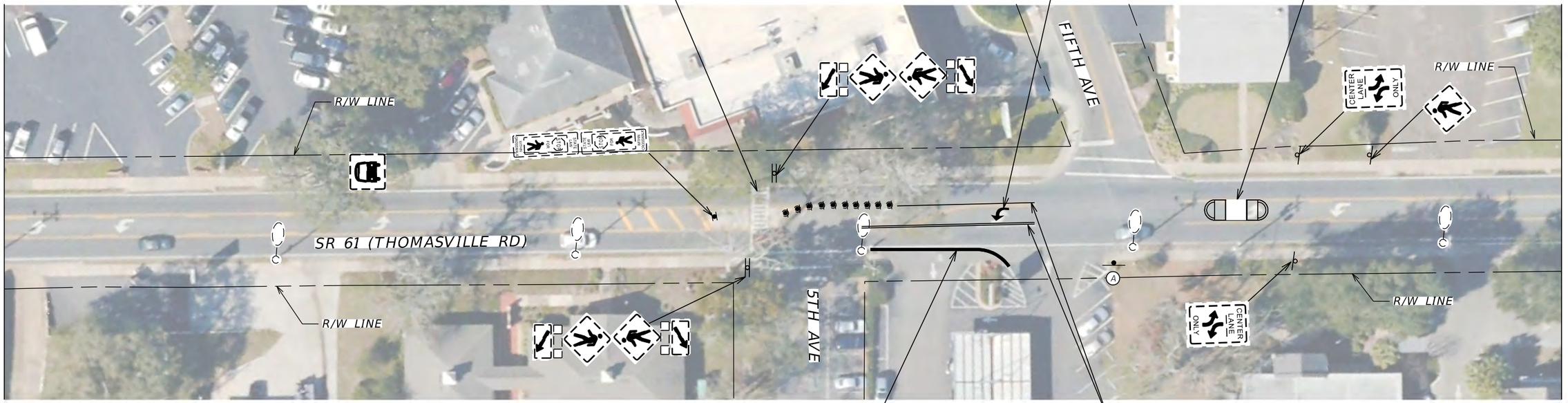
R3-2
(A)

0 10 50
Feet

EXISTING CROSSWALK WITH RRFB'S

INSTALL LEFT TURN ARROW

CONSTRUCT PEDESTRIAN REFUGE ISLAND



INSTALL CURB TO CLOSE SOUTH RESTAURANT DRIVEWAY

REMOVE EXITING NBLT BY INSTALLING DOUBLE YELLOW LINE AND ADD WHITE LINE TO EXTEND SBLT LANE

SYMBOLS

- EXISTING MAST ARM
- EXISTING STRAIN POLE
- EXISTING SIGNAL HEAD
- EXISTING PEDESTRIAN SIGNAL
- EXISTING CCTV
- EXISTING ROADWAY LIGHTING
- PROPOSED SIGN POST ASSEMBLY
- EXISTING SIGN POST ASSEMBLY
- PROPOSED MANUFACTURED CURBING
- EXISTING FLEXIBLE DELINEATOR
- EXISTING DELINEATOR/SIGNAGE ON METAL POLE
- EXISTING BUS STOP

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
61	LEON	

RECOMMENDATIONS (3)

SHEET NO.
R-3

0 10 50
Feet

CONSTRUCT CURB

CONSTRUCT PEDESTRIAN REFUGE ISLAND

MATCHLINE "C"

MATCHLINE "D"

E SIXTH AVE

SR 61 (THOMASVILLE RD)

BEARD ST

R/W LINE

R/W LINE

R/W LINE

R/W LINE

R/W LINE

SOUTH 61

DO NOT ENTER

DO NOT ENTER

SPEED LIMIT 25

USE CROSSWALK

USE CROSSWALK

ACCESS 7TH AVE. OR MERIDIAN RD. VIA 6TH AVE. TO GADSDEN ST.

TO 7TH AVE. TO MERIDIAN RD. NEXT SIGNAL

TO 7TH AVE. TO MERIDIAN RD.

REPLACE OVERHEAD SIGN

SYMBOLS

- EXISTING MAST ARM
- EXISTING STRAIN POLE
- EXISTING SIGNAL HEAD
- EXISTING PEDESTRIAN SIGNAL
- EXISTING CCTV
- EXISTING ROADWAY LIGHTING
- EXISTING OVERHEAD SIGN CANTILEVER STRUCTURE
- EXISTING SIGN POST ASSEMBLY
- EXISTING SIGN PANEL
- EXISTING FLEXIBLE DELINEATOR
- EXISTING DELINEATOR/SIGNAGE ON METAL POLE
- EXISTING BUS STOP

REVISIONS

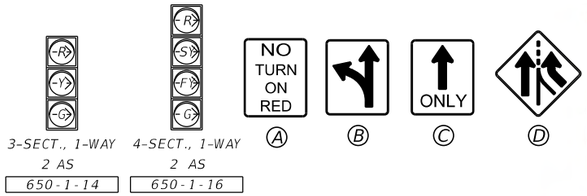
DATE	DESCRIPTION	DATE	DESCRIPTION

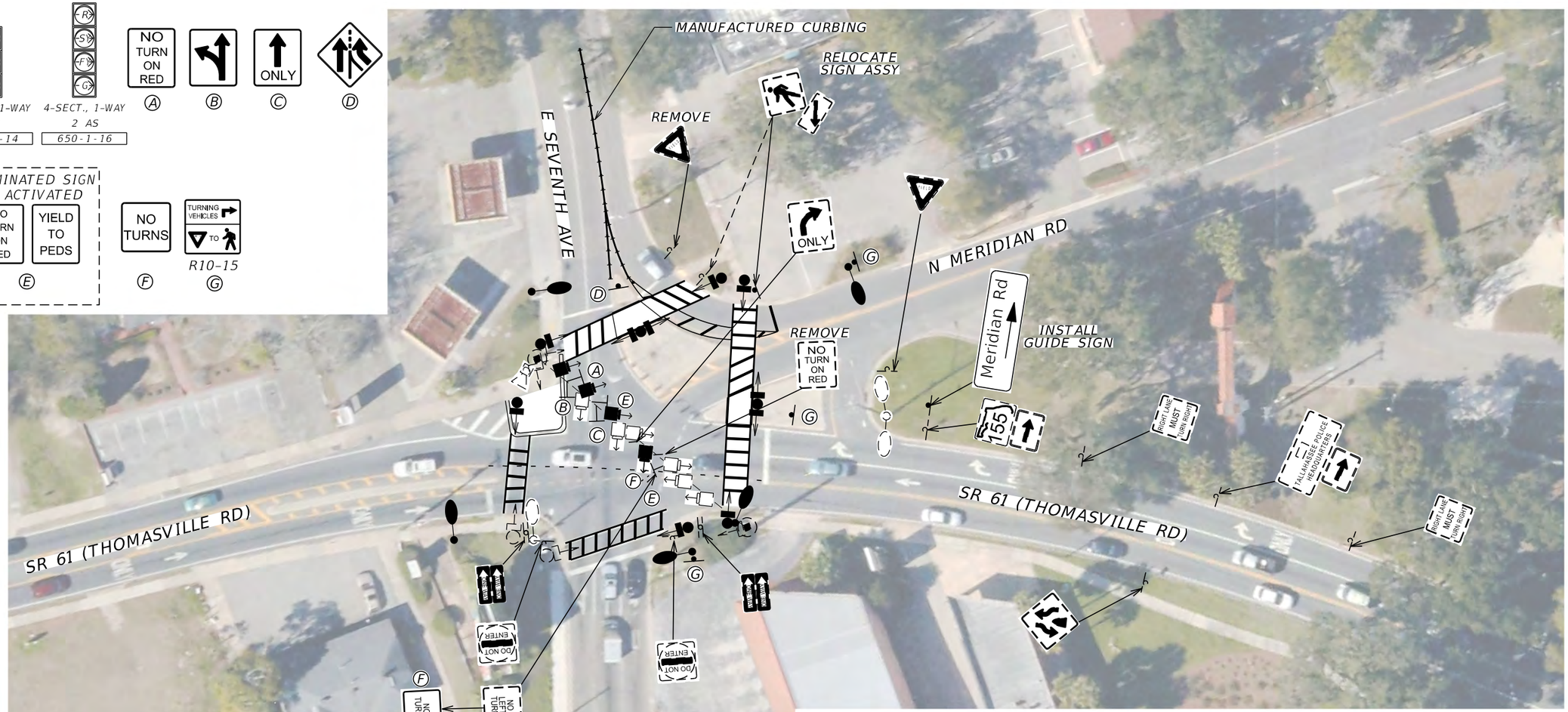
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
61	LEON	

RECOMMENDATIONS (4)

SHEET NO. R-4





0 10 50
Feet

NOTES:

1. ADD/OVERLAY EXISTING CROSSWALKS WITH HIGH EMPHASIS. MODIFY EXISTING CONCRETE ISLANDS AS NEEDED. PROVIDE BULBOUT ON SW CORNER. PROVIDE NEW PEDESTRIAN PEDESTALS/SIGNALS AS NEEDED. UPGRADE ALL RAMPS TO CURRENT ADA STANDARDS.
2. ADD ARROW SIGNAL HEAD INDICATIONS AND COMPLEMENTARY R10-11A SIGN FOR SB RT MOVEMENT ON MERIDIAN ROAD. MODIFY CONTROLLER TO ADD SAME MOVEMENT. MOVEMENT SHALL BE RED WHEN WEST OR NORTH PEDESTRIAN MOVEMENTS ARE ACTIVE. ADD GORE STRIPING TO SB RT LANE TO SLOW TURNING TRAFFIC.
3. ADD RT 4-SECTION HEAD TO SB AND WB THOMASVILLE ROAD MOVEMENT. PROVIDE LPI CONTROLLER FUNCTION AND INSTALL ILLUMINATED LPI SIGNS FOR SB THOMASVILLE ROAD AND WB MOVEMENTS.
4. INSTALL MANUFACTURED CURBING W/DELINEATORS TO PREVENT CROSSOVER TRAFFIC INTO GAS STATION.
5. INSTALL RETROREFLECTIVE BACKPLATES FOR ALL SIGNALS.
6. INSTALL OVERHEAD ILLUMINATED STREET NAME SIGNS AND REGULATORY SIGNS AS SHOWN.
7. ADD GUIDELINES FOR SB THROUGH MOVEMENT.
8. UPGRADE INTERSECTION LIGHTING.
9. INSTALL R10-15 SIGNS ON ALL APPROACHES.

SYMBOLS

EXISTING STRAIN POLE	EXISTING ROADWAY LIGHTING
PROPOSED SIGNAL HEAD	PROPOSED ROADWAY LIGHTING
EXISTING SIGNAL HEAD	PROPOSED SIGN POST ASSEMBLY
EXISTING PEDESTRIAN SIGNAL	EXISTING SIGN PANEL
PROPOSED PEDESTRIAN SIGNAL	PROPOSED SIGN PANEL
EXISTING CCTV	PROPOSED MANUFACTURED CURBING
	EXISTING BUS STOP

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
61	LEON	

RECOMMENDATIONS (5)

SHEET NO. R-5

Appendix H
Cost Estimates, Benefit Cost and Net Present Value Analyses

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

DISTICT THREE SAFETY OFFICE BENEFIT COST ANALYSIS

Rev. 01/2014

Date Prepared: **03/20/16**

Prepared By: **Cardno**

County: **55 - Leon**

Section : **55050000** SR: **61** US:

Beg. MP : **0.386** End MP: **1.06** Length: **0.674**

Description of Location:

SR 61 (Thomasville Road), from Monroe St. to N Gadsden St., in Leon County and within the City of Tallahassee. The typical section is an urban two-three lane section that is transitioning to a 4-lane section.

Roadway Type: **2 - 3 Lanes Urban UnDivided**

Cause of Crash Problems (List and Discuss):

Crash records for this segment were reviewed and analyzed for the 5-year period from 2010 to 2014, per Arterial Study completed under Task Work Order No. 20, Contract C-9B63 with District Three. The crash results showed 165 total crashes during the review period, with 44 injuries (27%) occurring during the hours of darkness and 24 property damage only crashes.

Proposed Improvements (List and Discuss):

Install roadway lighting to meet current FDOT criteria for an on-system Urban Principal Arterial.

Crash Reduction Factor Selection

Crash reduction factor	0.16	Install Lighting (All Night Crash Types / Serious & Minor Injury Only) Use 16 % (half of CRF) since lighting exists but does not meet FDOT criteria
Crash reduction factor	0.05	Install Lighting (Property Damage Only - Night Crashes - Use 5% since lighting exists and there were fewer PDO crashes than injuries.
Crash reduction factor		

Overall CRF **0.202**

Crash Year	2010	2011	2012	2013	2014	Avg.
Total Crashes	6	10	10	13	5	8.8
Correctable Crashes	1.212	2.02	2.02	2.626	1.01	1.778

Number of crashes by type and year contributable to identified deficiency

Crash Type	2010	2011	2012	2013	2014
	6	10	10	13	5
Total	6	10	10	13	5

Annual Benefit $ 194,677

Crash Information for Facility

Cost per Injury: $ 109,517.00

Crash Cleanup: $ 100.00

Interest Rate: 4.0%

Annual Cost of Improvements

Type	*Cost*	*Life*	*Capital*	*Annual Cost*
ROW				
P.E.C.E.I.	$81,000.00	1	1.0400	$ 84,240.00
Structure				
Roadway				
Pavement				
Drainage				
Signal				
Lighting	$ 459,000.00	15	0.0899	$ 41,264.10
Sub-Total	$ 540,000.00			$ 125,504.10
			Change in Maintenance	
			Crash Cleanup	$ 177.76
			Total Annual Cost	**$ 125,681.86**
			Benefit/Cost	**1.55**
			Net Present Value	**$ 68,995.56**

Comments

Adding adequate illumination to the roadway helps safety for all users of the roadway, especially pedestrians and bicyclists. All Night-time Crash Types for Serious and Minor Injury and for Property Damage Only were used in calculating B/C for the addition of roadway lights.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

DISTICT THREE SAFETY OFFICE BENEFIT COST ANALYSIS

Rev. 01/2014

Date Prepared: **03/20/16**

Prepared By: **Cardno**

County: **55 - Leon**

Section : **55050000** SR: **61** US:

Beg. MP : **1.033** End MP: **1.382** Length: **0.349**

Description of Location:

SR 61 (Thomasville Road), from Gadsden St. to Colonial Dr., in Leon County and within the City of Tallahassee. The typical section is a 4-lane divided section.

Roadway Type: **4 - 5 Lanes Urban Divided**

Cause of Crash Problems (List and Discuss):

Crash records for this segment were reviewed and analyzed for the 5-year period from 2010 to 2014, per Arterial Study completed under Task Work Order No. 20, Contract C-9B63 with District Three. There were only 2 injuries that occurred within this section during darkness hours of the 34 totalcrashes.

Proposed Improvements (List and Discuss):

Install roadway lighting meeting current FDOT criteria for an on-system Urban Principal Arterial.

Crash Reduction Factor Selection

Crash reduction factor	0.16	Install Lighting (All Night Crash Types / Serious & Minor Injury Only) Use 16 % (half) since lighting exists but does not meet FDOT criteria
Crash reduction factor		
Crash reduction factor		
Overall CRF	**0.16**	

Crash Year	2010	2011	2012	2013	2014	Avg.
Total Crashes	0	1	0	0	1	0.667
Correctable Crashes	0	0.16	0	0	0.16	0.107

Number of crashes by type and year contributable to identified deficiency

Crash Type	2010	2011	2012	2013	2014
	0	1	0	0	1
Total	0	1	0	0	1

Annual Benefit $ 13,276

Crash Information for Facility

Cost per Crash:	$	124,463.00
Crash Cleanup:	$	100.00
Interest Rate:		4.0%

Annual Cost of Improvements

Type	*Cost*	*Life*	*Capital*	*Annual Cost*
ROW				
P.E.C.E.I.	$ 42,000.00	1	1.0400	$ 43,680.00
Structure				
Roadway				
Pavement				
Drainage				
Signal				
Lighting	$238,000.00	15	0.0899	$ 21,396.20
Sub-Total	$280,000.00			$ 65,076.20
			Change in Maintenance	
			Crash Cleanup	$ 10.67
			Total Annual Cost	**$ 65,086.87**
			Benefit/Cost	**0.20**
			Net Present Value	**$(51,810.81)**

Comments

Adding adequate illumination to the roadway helps safety for all users of the roadway, especially pedestrians and bicyclists. 5-years of All Night-time Crash Types for Serious and Minor Injury were used in calculating B/C for the upgrade of roadway lighting.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

DISTICT THREE SAFETY OFFICE BENEFIT COST ANALYSIS

Rev. 01/2014

Date Prepared: **03/20/16**

Prepared By: **Cardno**

County: **55 - Leon**

Section : **55050000** SR: **61** US:

Beg. MP : **1.382** End MP: **1.749** Length: **0.367**

Description of Location:

SR 61 (Thomasville Road), from Colonial Dr. to Betton Rd./Bradford Rd., in Leon County and within the City of Tallahassee. The typical section is an urban divided 6-lane section.

Roadway Type: **6+ Lanes Urban Divided**

Cause of Crash Problems (List and Discuss):

Crash records for this segment were reviewed and analyzed for the 5-year period from 2010 to 2014, per Arterial Study completed under Task Work Order No. 20, Contract C-9B63 with District Three. Thee were 84 crashes witin this segment with 14 injuries occurring during night-time hours.

Proposed Improvements (List and Discuss):

Install roadway lighting to meet current FDOT criteria for an on-system Urban Principal Arterial.

Crash Reduction Factor Selection

Crash reduction factor	0.16	Install Lighting (All Night Crash Types / Serious & Minor Injury Only) Use 16 % (half) since lighting exists but does not meet FDOT criteria
Crash reduction factor		
Crash reduction factor		
Overall CRF	**0.16**	

Crash Year	2010	2011	2012	2013	2014	Avg.
Total Crashes	2	0	1	6	5	4.667
Correctable Crashes	0.32	0	0.16	0.96	0.8	0.747

Number of crashes by type and year contributable to identified deficiency

Crash Type	2008	2009	2010	2011	2012
	2	0	1	6	5
Total	2	0	1	6	5

Annual Benefit $ 102,931

Crash Information for Facility

Cost per Crash: $ 137,854.00

Crash Cleanup: $ 100.00

Interest Rate: 4.0%

Annual Cost of Improvements

Type	*Cost*	*Life*	*Capital*	*Annual Cost*
ROW				
P.E.C.E.I.	$118,000.00	1	1.0400	$122,720.00
Structure				
Roadway				
Pavement				
Drainage				
Signal				
Lighting	$680,000.00	15	0.0899	$ 61,132.00
Sub-Total	$798,000.00			$183,852.00
			Change in Maintenance	
			Crash Cleanup	$ 74.67
			Total Annual Cost	**$183,926.67**
			Benefit/Cost	**0.56**
			Net Present Value	**$(80,995.68)**

Comments

Adding adequate illumination to the roadway helps safety for all users of the roadway, especially pedestrians and bicyclists. 5-years of All Night-time Crash Types for Serious and Minor Injury were used in calculating B/C for the increased illumination of the roadway.